

IONOSPHERIC DATA IN JAPAN

FOR August 2023

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«WDC for Ionosphere and Space Weather ... <https://wdc.nict.go.jp/IONO/wdc/index.html> »



NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the

National Institute of Information and Communications Technology, Japan.

Stations	Geographic(WGS84)		Geomagnetic (IGRF-10(2005))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
*Wakkanai/Sarobetsu	45°10'N	141°45'E	36.4°N	208.9°	Vertical Sounding (I)
Kokubunji	35°43'N	139°29'E	26.8°N	208.2°	Vertical Sounding (I)
Yamagawa	31°12'N	130°37'E	21.7°N	200.5°	Vertical Sounding (I)
Okinawa	26°41'N	128°09'E	17.0°N	198.6°	Vertical Sounding (I)
Hiraiso	36°22'N	140°37'E	27.6°N	209.1°	Solar Radio Emission (S)

*We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on a computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

f_oF2	Ordinary wave critical frequency for the F2 layer
fEs	Highest frequency of the Es layer whether it may be ordinary or extraordinary
$fmin$	Lowest frequency which shows vertical ionospheric reflections
$h'Es$ $h'F$	Minimum virtual height on the ordinary wave for the Es and F layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

- A Impossible measurement because of the presence of a lower thin layer, for example **Es** (for f_oF2).
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of very small ionization density of the layer (for fEs).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of problems occurring in the automatic data processing system, but existence of film record.

c. Definitions of CNT, MED, UQ, and LQ

Median count (CNT) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a descriptive letter G.

Median (MED) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number

of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the **lower quartile (LQ)** is the median value of the lower half.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of f_oF2 , fEs and $fmin$ were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

Daily Summary Plots which are made from quarter-hourly digital ionograms are published to present general ionosphere conditions. The upper and middle parts of a Summary Plot show the diurnal variation of the frequency range of the echoes reflected from the **F** and **E** regions, respectively. The two solid arcing lines indicate the predicted values of f_xE and f_oE calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily f -plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

f_xI	Top frequency of spread F trace
f_oF2 f_oF1 f_oE f_oEs	Ordinary wave critical frequency for the F2 , F1 , E , and Es (including particle type E) layers, respectively
$fbEs$	Blanketing frequency of the Es layer, e.g. the lowest ordinary wave frequency visible through Es
$fmin$	Lowest frequency that shows vertical ionospheric reflections
$M(3000)F2$ $M(3000)F1$	Maximum usable frequency factor for a path of 3000 km for transmission by the F2 and F1 layers, respectively
$h'F2$ $h'F$ $h'E$ $h'Es$	Minimum virtual height on the ordinary wave for the F2 , whole F , E and Es layers, respectively
Types of Es	See below b. (iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replace a numerical value on the monthly tabulation sheets, if necessary.

- A** Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.
- B** Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.
- C** Measurement influenced by, or impossible because of, any non-ionospheric reason.
- D** Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.
- E** Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.
- F** Measurement influenced by, or impossible because of, the presence of spread echoes.
- G** Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.
- H** Measurement influenced by, or impossible because of, the presence of a stratification.
- K** Presence of particle *E* layer.
- L** Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
- M** Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
- N** Conditions are such that the measurement cannot be interpreted.
- O** Measurement refers to the ordinary component.
- P** Man-made perturbations of the observed parameter; or spur type spread *F* present.
- Q** Range spread present.
- R** Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
- S** Measurement influenced by, or impossible because of, interference or atmospheric.
- T** Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- V** Forked trace which may influence the measurement.
- W** Measurement influenced or impossible because the echo lies outside the height range recorded.
- X** Measurement refers to the extraordinary component.
- Y** Lacuna phenomena, severe layer tilt.
- Z** Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets, if necessary.

- A** Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.
- D** Greater than.
- E** Less than.
- I** Missing value has been replaced by an interpolated value.
- J** Ordinary component characteristic deduced from the

extraordinary component.

- M** Mode interpretation uncertain.
- O** Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)
- T** Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- U** Uncertain or doubtful numerical value.
- Z** Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple trace is indicated after the type letter.

The types are:

- f** An *Es* trace which shows no appreciable increase of height with frequency.
- l** A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.
- c** An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
- h** An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
- q** An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
- r** An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
- a** An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
- s** A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
- d** A weak diffuse trace at heights below 95 km as-associated with high absorption and large *fmin*.
- n** The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.
- k** The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

c. Definitions of the CNT, MED, UQ and LQ

Median count (CND) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) is the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the **lower quartile (LQ)** is the median value of the lower half.

HOURLY VALUES OF fof2 AT Wakkanai

AUG. 2023

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	61	62	60	58	57	A	65	A	53	52	A	51	48	A	A	51	54	A	A	62	A	A	A	63	
2	59	59	60	57	53	69	72	84	81	84	75	69	79	A	74	A	74	75	A	92	85	71	79	N 73	
3	75	74	61	58	47	45	40	64	75	76	70	57	63	65	63	65	63	67	65	61	65	67	A	69	
4	67	69	63	59	58	65	68	84	73	75	70	74	69	75	75	75	73	67	68	70	73	81	70	70	
5	71	70	62	57	50	43	41	57	50	49	A	A	49	52	49	N 53	69	65	59	45	53	59	62	59	
6	57	51	41	40	40	55	54	58	A	A	A	A	71	77	71	A	A	65	68	A	78	72	72	73	
7	73	72	71	65	63	63	A	71	81	74	68	75	75	71	75	78	74	69	67	65	A	78	74	74	
8	67	68	65	57	53	57	69	65	52	49	A	51	51	51	56	51	57	59	59	61	67	67	66	62	
9	63	61	59	55	55	55	69	83	79	A	71	65	72	74	73	68	71	70	74	74	76	78	73	73	
10	65	61	59	56	58	59	63	45	A	56	57	53	59	62	64	55	66	71	68	79	78	72	65	65	
11	59	53	53	56	58	70	92	73	71	65	63	64	58	66	66	65	69	66	65	75	76	78	79	73	
12	68	63	62	60	60	67	65	78	79	86	73	77	79	82	75	78	81	79	77	78	80	82	71	73	
13	67	66	67	63	66	75	73	66	78	84	79	73	75	82	76	73	75	75	76	80	82	75	A	70	
14	69	65	65	65	60	64	76	85	85	81	75	68	75	77	78	76	71	73	73	79	81	82	67	70	
15	71	71	68	66	63	67	74	86	87	83	85	82	81	87	83	83	79	75	77	79	82	79	74	68	
16	A	67	A	A	65	74	78	91	A	95	89	83	81	80	79	79	80	79	77	76	87	84	A	75	73
17	69	69	65	67	65	70	97	77	A	70	74	70	72	N 76	81	80	81	77	75	76	73	77	69	73	
18	68	68	63	62	61	65	65	63	A	A	A	A	A	51	50	51	56	59	65	71	A	71	63	60	
19	59	59	57	57	55	61	69	73	62	68	67	68	76	70	73	75	70	73	77	81	79	73	64	71	
20	69	68	66	65	67	65	77	78	72	79	76	73	79	74	90	83	77	73	75	81	84	82	81	57	
21	61	61	60	59	59	63	67	76	91	83	78	73	82	82	51	77	77	77	77	88	82	76	44	A	
22	A	A	A	A	59	52	62	64	68	74	63	65	72	77	77	78	79	79	83	79	A	75	74	A	
23	64	59	55	53	54	63	84	95	112	97	97	85	84	82	84	85	80	80	83	89	80	71	74	73	
24	69	69	66	62	67	71	78	93	84	88	94	89	83	81	83	88	91	90	97	97	A	78	63	67	
25	65	62	A	60	63	68	81	91	96	85	84	A	86	90	85	86	85	85	87	79	A	80	72	62	
26	57	59	57	59	53	59	67	73	82	72	77	69	76	73	68	72	77	78	76	80	83	73	61	60	
27	59	58	59	57	55	61	62	60	65	A	76	62	74	75	77	85	73	75	89	85	77	71	61	57	
28	55	53	52	53	51	52	63	71	85	70	76	A	69	65	76	78	74	79	73	77	72	74	65	59	
29	57	54	54	53	51	49	60	59	62	62	63	64	67	65	69	72	69	71	79	77	77	73	63	59	
30	59	56	56	56	51	54	65	74	75	68	74	75	75	74	72	70	71	72	78	90	80	83	62	54	
31	53	53	52	55	49	51	72	82	77	84	97	78	67	A	75	76	76	80	87	95	87	70	A	64	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	30	28	29	31	30	30	30	27	27	26	26	30	28	30	29	30	30	29	30	25	29	27	29	
MED	65	62	60	58	58	63	68	74	78	75	75	70	74	74	75	76	74	74	76	79	79	75	69	68	
U Q	69	68	65	62	63	67	76	84	85	84	79	75	79	80	78	80	79	78	78	85	82	78	74	73	
L Q	59	59	56	56	53	55	63	64	68	68	70	64	67	65	68	66	69	69	68	74	74	71	63	60	

HOURLY VALUES OF fEs AT Wakkanai

AUG. 2023

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	G	G	G	28	33	60	63	74		65	103	110	98	96	108	50	38	76	114	36	150	70	72	30	
2	G	G		46	24	36	60	50	41	44	40	76	51	110	89	124	110	44	118	G	27	30	G	G	
3	49	24	G	G	33	35	94	58	92	84	63	52	49	50	50	41	43	33	40	35	38	39	87	G	
4	25	31	26	G	39	33	40	45	69	52	42	59	44	40	39	38	48	45	47	38	G	30	45	59	
5	G	30	28	G	G	33	41	54		62	54	51	36	36	39	64	60	40	63	103	46	55	93	40	
6	40	36	38	33	42	23	36	36	103	54	74	71	62	59	53	76	93	88	60	84	60		50	44	
7	40	32	G	G	G	71	107	44	37	38	132	45	46	50	60	50	42	38	54	47	81	60	34	60	
8	39	33	31	29	G	35	44	48	137	52	51	41	44		40	38	41	40	33	28	30	G	46	39	
9	31	31	G	G	G	32	38	44	64	132	85	93	61	44	110	42	42	43	46	40	G	G	30	23	
10	33	54	36	38	38	40	53	90	73	48	124	53	41	40		56	48	49	24	G	69	47	35	40	
11	27	36	33	G	32		36	54	60	95	74	56	108	109	61	57	58	53	133	49	40	59	50	43	
12	33	39	28	G	40	29	42	60	60	54	55	48	57	52	38	40	44	130	40	31	G	69	53	36	
13	32	28	29	G	31	G	145	91	49	39	37			57	56	42	42	43	127	33	39	54	91	40	
14	60	59	35	38	34	G	58	59	76	60	70	62	58	51	44	169	37	35	35	46	54	53	33	26	
15	28	30	G	G	G	G	35	110	47	37	101	50	56	38	38	42	37	39	51	40	32	38	56	38	
16	88	60	72	70	G	G	39	46	65	52	56	60	49	41	45	50	40	49	50	47	72	71	38	60	
17	49	36	28	G	27	G	36	59	78	66	50	57	55	108	49	41	36	40	40	40	31	28	45	37	
18	40	43	40	30	34	36	44	48	66	69	59	57	39	37	39	51	48	39	40	48	107	29	25	28	
19	G	36	26	24	G	G	38	45	55	50	37	48	46	54	39	38	49	54	43	76	39	60	40	50	
20	39	27	26	31	31	30	35	54	61	56	55	49	38	41	40	35	39	N		33	28	32	32	28	28
21	38	31	G	G	G	28	39	56	46	46	55	53	116	40	135	63	84	58	92	39	85	61	118	163	
22	92	72	82	85	39	40	151	60	61	94	78	61	73	47	52	57	49	71	46	G	94		59	92	
23	33	34	33	40	32	G	39	44	50	41	47	48	48	38	38	56	54	51	58	58	48	30	38	34	
24	28	27	G	33	26	29	33	47	41	48	50	40	57	53	36	51	57	55	77	65	77	69	44	34	
25	35	70	59	39	55	28	30	56	86	61		119	84	57	60	52	44	49	40	50	72	33	33	36	
26	50	38	31	32	26	29	40	43	50	57	57	61	86	49	41	53	54	58	81	46	31	33	28	36	
27	29	G	82	55	51	41	56	60	84	84	84	58	59	51	43	47	70	46	127	56	35	41	35	G	
28	G	25	32	34	G	33	65	60	56	84	72	96	65	56	125	50	38	33	34	50	54	57	32	36	
29	27	31	G	G	39	41	40	43	93	47	52	39	40	50	46	39	48	46	32	34	32	29	G	28	
30	20	25	G	G	G	G	40	46	43	36	48	54	36	42	41	40	52	79	39	G	41	31	36	24	
31	28	G	G	G	G	29	34	54	43	57	66	47	59	91	36	34	43	36	34	26	33	180	106	53	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	30	31	31	30	31	31	29	31	30	30	30	30	30	31	31	30	31	31	31	29	31	31	
MED	33	31	28	28	31	30	40	54	61	54	56	55	56	50	44	50	48	46	46	40	40	41	40	36	
U Q	40	38	35	38	38	36	58	60	77	66	74	61	62	57	60	56	54	55	77	50	72	60	56	44	
L Q	27	27	G	G	G	G	36	45	48	47	50	48	44	41	39	40	41	40	39	31	32	30	33	28	

HOURLY VALUES OF fmin AT Wakkanai

AUG. 2023

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	15	15	15	15	13	13	17	20	20	22	21	23	25	16	20	14	12	15	5	16	17	16
2	14	14	15	15	13	17	13	13	15	14	19	16	17	19	17	18	16	15	5	16	14	16	15	14
3	16	17	15	15	13	17	15	15	14	14	17	17	19	21	17	17	14	14	12	15	15	15	15	15
4	16	16	16	16	15	16	14	14	15	19	17	19	21	19	22	15	15	14	13	15	15	15	15	15
5	15	16	14	15	16	16	15	14	15	16	16	18	21	17	16	18	17	16	15	13	15	14	14	15
6	15	15	15	16	15	15	15	16	21	17	17	20	18	17	15	15	15	15	15	15	16	15	15	15
7	15	16	16	16	16	16	12	16	19	20	22	21	21	21	21	17	16	15	15	14	15	17	16	15
8	16	16	15	15	16	16	21	17	17	21	22	18	23	17	19	15	16	15	15	15	15	16	16	16
9	16	17	15	14	14	16	15	15	15	14	21	20	18	18	15	15	14	14	15	15	17	16	15	16
10	16	15	15	15	14	14	14	13	11	16	15	15	18	16	16	16	15	13	13	15	14	15	14	15
11	15	15	16	16	16	14	17	14	20	17	17	17	21	18	17	16	15	14	5	15	15	15	16	16
12	15	16	16	16	15	15	15	13	14	16	15	17	13	17	15	14	15	14	13	15	16	15	15	15
13	16	16	15	16	16	17	15	15	17	17	19	17	16	19	17	15	15	15	8	16	15	15	7	15
14	16	16	16	15	16	15	13	12	14	15	14	15	15	16	17	16	14	16	16	17	15	15	15	15
15	15	16	15	17	16	16	17	16	18	16	18	15	19	18	16	17	19	15	14	14	15	15	15	15
16	15	15	16	15	15	15	15	14	14	14	13	15	17	19	16	15	16	14	14	15	16	15	15	15
17	15	15	15	15	16	15	16	13	12	14	16	21	19	18	16	16	15	12	15	15	16	15	15	15
18	16	15	15	16	16	13	15	14	15	14	18	14	19	17	17	15	14	14	14	14	5	15	16	15
19	16	15	16	16	18	16	16	13	13	15	15	15	18	21	19	14	14	13	14	13	15	15	16	15
20	16	16	16	16	16	16	16	13	13	15	14	15	19	17	17	15	14	16	15	15	16	16	15	15
21	15	16	15	15	15	14	14	14	14	18	19	17	22	18	10	15	12	14	17	15	14	15	11	6
22	15	15	15	11	14	16	59	15	14	19	20	19	13	21	19	15	15	13	15	17	14	15	16	18
23	16	16	16	15	15	15	15	14	19	19	17	16	19	18	18	15	13	11	13	15	15	16	14	15
24	16	15	16	16	16	15	16	14	15	17	17	16	16	18	17	14	17	13	12	15	14	15	17	15
25	16	15	15	15	14	14	15	14	16	15	12	15	18	18	17	14	12	13	12	15	16	16	15	16
26	15	15	15	16	15	16	15	14	15	17	16	17	21	16	19	14	13	14	15	15	16	15	15	16
27	15	14	18	17	16	15	14	13	13	16	19	19	14	16	18	17	15	15	11	15	15	15	14	17
28	14	16	15	17	15	15	16	13	13	17	18	18	20	20	17	14	14	15	14	15	16	14	16	16
29	16	15	15	14	15	15	15	13	15	14	15	18	18	15	15	14	13	13	16	15	16	16	16	16
30	16	15	17	15	17	15	15	14	13	17	21	17	15	16	15	15	14	15	14	17	15	15	15	16
31	16	15	15	14	15	15	14	15	15	14	18	20	15	15	16	17	15	16	16	15	15	54	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	15	15	15	15	15	15	14	15	16	17	17	18	18	17	15	15	14	14	15	15	15	15	15
U Q	16	16	16	16	16	16	16	15	17	17	19	19	21	19	18	16	16	15	15	15	16	16	16	16
L Q	15	15	15	15	15	15	14	13	14	14	15	15	16	17	16	15	14	13	12	15	15	15	15	15

HOURLY VALUES OF fof2 AT Kokubunji

AUG. 2023

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	70	70	69	71	68	81	68	59	58	62		A			61	58	61	63	63	58	63	58	59
2	65	59	59	59	59	57	79	93	94	84	85	67	82	87	89	88	A	83	75	78	48	80	69	89
3	77	85	74	74	65	52	67	A	A	77	78	81	67	82	82	79	75	71	69	64	58	58	70	69
4	55	72	60	60	60	61	83	89	86	84	95	A	79	A	86	A	A	80	76	79	77	72	83	84
5	72	64	75	71	63	60	55	55	A	86	A	106	69	76	A	75	78	75	70	53	A	51	A	56
6	A	59	49	44	20	29	59	70	75	80	166	91	83	75	83	87	79	77	75	79	A	73	80	72
7	69	78	75	74	61	60	68	78	61	75	77	81	84	85	86	88	91	78	70	69	A	83	A	71
8	54	71	73	70	61	60	65	57	65	A	A	60	74	75	85	74	A	72	64	76	75	A	A	79
9	64	73	70	71	64	64	71	83	64	94	85	77	73	83	88	85	73	A	A	81	74	A	72	72
10	73	69	22	60	60	59	58	76	86	66	136	76	82	79	80	74	74	77	84	91	86	84	79	73
11	70	65	69	66	67	70	87	94	194	95	A	A	102	103	A	88	207	75	78	86	A	81	81	81
12	73	73	73	72	63	64	73	79	91	80	91	90	88	91	91	85	90	91	88	88	84	82	82	77
13	73	73	73	69	70	69	78	95	103	104	101	96	96	97	101	97	89	97	99	104	77	72	69	70
14	73	82	73	72	67	70	82	90	91	93	87	A	92	98	90	A	184	84	83	85	76	71	73	N 72
15	70	71	70	67	64	69	85	92	92	84	83	89	91	91	97	101	99	99	99	92	A	78	82	A
16	81	73	73	65	63	68	77	89	89	96	89	89	91	95	92	97	95	96	92	86	76	84	92	85
17	83	81	70	70	68	69	83	95	95	92	A	93	88	87	91	96	95	89	84	85	83	71	71	70
18	69	A	68	71	65	65	83	77	71	A	A	A	A	67	68	71	70	73	78	86	A	65	A	64
19	65	61	59	60	61	61	86	92	91	74	77	79	87	85	A	90	92	91	189	96	A	A	77	72
20	77	73	72	65	66	73	79	90	96	A	99	90	97	103	102	114	106	102	97	A	A	91	82	72
21	69	73	64	65	60	59	77	84	90	84	86	A	88	91	92	96	102	97	95	A	A	A	84	73
22	73	65	72	69	65	71	79	89	85	77	99	80	85	91	101	101	101	102	108	93	81	70	A	77
23	73	69	72	69	60	250	87	99	93	94	96	95	100	103	104	97	96	93	97	91	82	82	81	78
24	77	73	76	71	66	72	88	93	83	94	99	102	102	101	100	101	104	110	112	105	83	77	76	71
25	71	65	73	73	72	71	85	89	91	90	222	105	104	103	108	109	229	101	105	A	A	A	80	82
26	70	59	59	60	60	65	86	101	99	107	87	86	86	85	85	88	96	92	92	92	81	73	59	60
27	60	59	59	59	58	63	76	85	91	95	93	97	99	95	105	102	100	105	97	105	75	70	66	66
28	68	60	59	60	55	59	76	95	87	85	76	87	88	83	80	84	89	93	97	87	75	64	71	73
29	66	67	59	59	59	59	80	89	87	73	72	81	80	85	85	85	83	86	87	89	83	69	67	65
30	64	68	63	60	59	58	77	87	80	75	67	75	82	83	81	82	83	86	95	96	89	72	72	60
31	61	61	61	68	59	57	76	98	91	86	81	89	92	87	84	83	A	91	109	111	94	60	59	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	31	31	31	30	29	28	26	25	29	29	27	29	27	30	30	28	21	26	26	30
MED	70	70	70	68	63	64	79	89	90	84	87	89	88	87	89	88	92	90	90	86	77	72	74	72
U Q	73	73	73	71	66	69	83	93	92	94	99	94	94	96	100	97	101	97	97	92	83	81	81	77
L Q	65	64	59	60	60	59	73	79	81	77	78	79	82	83	84	82	79	77	76	79	75	69	69	66

HOURLY VALUES OF fmin AT Kokubunji

AUG. 2023

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	17	16	17	17	16	17	17	19	29	30	31		35		11	33	45	19	17	16	18	35	17	16
2	16	17	17	17	16	16	16	20	21	26	31	32	29	32	33	29	21	17	16	16	17	17	63	17
3	18	16	17	16	17	17	18	21	19	26	30	29	64	30	66	24	18	18	17	16	16	16	17	17
4	17	17	16	17	17	15	16	18	20	36	35	26	35	44	62	27	19	15	18	17	21	17	17	17
5	17	15	15	17	17	16	18	18	21	25	33	23	41	31	35	30	25	19	16	17	17	16	17	17
6	17	16	15	16	16	16	17	26	44	62	31	31	26	36	25	23	18	19	16	17	17	17	16	17
7	16	17	16	16	15	34	20	21	23	27	57	33	46	31	53	55	20	19	16	32	16	16	17	17
8	17	17	17	17	16	17	32	26	32	35	34	35	34	29	34	24	25	17	15	17	17	17	17	14
9	31	19	36	17	17	16	16	17	22	26	31	26	35	29	28	23	19	16	16	17	16	17	17	16
10	17	17	16	16	17	19	16	17	20	35	28	32	33	32	18	25	19	19	16	17	17	16	16	17
11	16	17	17	15	11	16	17	26	27	30	36	41	40	31	37	25	24	18	15	17	16	16	16	16
12	17	17	15	16	17	16	17	21	23	33	58	33	31	30	25	25	17	17	19	16	16	16	16	17
13	16	17	16	16	11	17	17	18	21	29	29	29	29	24	25	21	23	17	16	16	16	17	17	17
14	17	17	16	16	15	17	17	16	21	22	23	26	29	27	27	20	18	16	16	17	17	16	17	16
15	16	17	16	16	16	15	17	17	22	28	25	42	36	29	29	25	25	16	17	17	16	17	16	16
16	17	16	16	17	16	17	17	17	21	22	31	29	23	24	23	24	17	15	17	16	16	16	16	17
17	17	17	17	11	16	20	15	16	17	27	28	26	33	33	26	20	18	16	17	17	17	16	18	17
18	17	17	16	17	17	10	17	18	17	28	27	31	33	36	31	27	24	17	16	16	17	17	16	17
19	16	17	15	16	16	18	17	17	20	23	28	25	34	31	21	18	17	17	17	17	17	16	17	16
20	16	17	16	16	16	19	17	17	20	25	27	35	33	31	28	22	17	17	16	16	16	16	16	17
21	17	17	16	16	16	15	15	17	20	24	29	35	36	36	31	29	20	17	15	17	17	17	16	17
22	16	16	17	16	16	20	17	19	21	31	32	35	37	34	35	33	22	16	17	17	16	16	17	17
23	17	17	16	16	16	16	16	17	26	32	34	34	34	31	36	17	18	16	16	17	17	17	16	17
24	16	17	16	16	16	16	17	17	19	26	29	30	32	32	49	27	20	17	15	17	17	17	15	16
25	16	17	16	16	16	17	17	17	20	23	29	32	38	29	28	26	25	17	17	17	17	16	17	16
26	17	16	17	15	15	11	16	17	21	23	28	28	49	28	22	17	15	15	16	16	16	17	16	16
27	17	17	16	15	16	17	17	17	31	25	29	30	42	36	27	26	19	17	16	15	16	16	16	16
28	16	17	16	16	16	16	16	19	21	25	27	22	22	21	29	25	25	18	15	17	17	16	17	16
29	16	16	16	16	16	16	17	19	19	25	35	29	30	26	47	25	20	16	17	17	16	17	17	17
30	17	17	16	16	16	16	16	17	23	25	29	29	33	28	26	20	17	16	17	16	16	16	16	17
31	16	17	11	16	16	16	16	17	23	18	25	29	48	47	28	23	18	16	16	16	16	16	16	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31
MED	17	17	16	16	16	16	17	17	21	26	29	30	34	31	28	25	19	17	16	17	17	16	17	17
U Q	17	17	17	17	16	17	17	19	23	30	33	33	38	33	35	27	24	18	17	17	17	17	17	17
L Q	16	16	16	16	16	16	16	17	20	25	28	28	31	29	25	22	18	16	16	16	16	16	16	16

HOURLY VALUES OF fof2 AT Yamagawa

AUG. 2023

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	81	80	81	76	77	69	82	79	60	74	79	78	65	56	A	A	66	71	A	A	64	A	66	65
2	71	69	67	70	69	60	63	91	82	85	A	74	69	93	90	103	100	87	72	64	83	83	79	97
3	92	83	86	72	69	66	56	65	69	54	70	80	87	87	92	89	79	80	87	58	62	64	65	62
4	65	63	58	56	55	55	66	87	78	81	78	A	A	A	91	87	91	93	89	83	A	72	81	85
5	78	81	66	59	59	59	74	59	70	A	A	A	75	95	85	A	99	A	88	68	A	56	56	A
6	64	A	55	45	42	40	57	80	82	74	80	87	77	86	95	100	97	87	92	83	72	79	84	87
7	90	83	87	85	65	62	68	66	80	86	82	86	90	99	108	111	116	100	87	77	82	81	77	A
8	81	77	83	64	A	62	67	85	91	97	87	97	111	118	111	103	103	91	85	91	88	79	A	85
9	82	81	77	67	65	63	61	81	86	95	83	81	58	95	95	87	84	80	83	83	71	76	72	80
10	76	86	69	63	66	62	62	90	84	64	A	84	86	88	80	76	79	80	85	85	91	81	82	84
11	82	81	81	75	69	64	73	89	87	92	93	A	103	113	109	95	87	92	90	95	85	80	71	80
12	84	83	79	72	70	67	74	82	89	85	88	93	A	97	A	95	97	98	A	91	A	A	88	78
13	86	85	80	75	69	67	72	90	99	84	84	93	95	106	103	102	101	102	111	107	90	A	69	71
14	75	79	79	75	73	65	74	93	103	101	85	98	A	N 97	A	104	101	98	96	97	A	71	75	81
15	77	78	81	69	67	69	75	87	89	81	81	90	100	109	110	127	A	124	120	101	75	81	83	A
16	83	82	80	76	77	72	70	89	92	92	85	85	97	96	97	107	117	120	105	A	79	75	77	77
17	78	73	69	66	68	63	77	107	90	86	89	95	104	105	113	110	107	99	95	101	81	73	77	69
18	78	74	75	71	67	66	73	82	84	75	80	A	90	A	93	94	93	96	101	105	84	67	75	70
19	73	72	67	64	60	61	79	98	81	82	79	84	86	89	88	95	93	100	105	98	76	79	78	A
20	85	83	77	74	74	67	74	93	101	78	A	86	93	98	A	117	124	121	127	115	A	A	A	89
21	A	76	77	A	71	63	82	89	83	84	91	84	A	A	A	115	114	97	98	100	107	98	A	64
22	72	72	58	64	71	74	74	103	91	85	84	91	97	99	107	117	121	127	125	121	104	85	83	79
23	80	80	85	75	73	71	A	95	A	89	94	102	114	117	99	105	103	106	106	101	93	85	83	83
24	79	84	81	68	67	66	73	93	77	89	89	99	106	104	105	105	111	127	129	108	93	91	94	90
25	87	85	79	71	72	70	78	94	90	95	109	104	108	107	118	122	121	118	120	126	104	97	91	79
26	80	78	82	77	74	72	82	106	A	94	88	93	99	96	91	99	106	102	97	103	92	A	69	69
27	67	68	65	63	59	61	77	96	84	91	79	103	109	104	112	110	109	108	119	118	91	78	77	78
28	76	75	71	64	66	61	71	97	89	78	88	89	99	96	95	91	104	105	119	101	82	A	A	A
29	68	64	63	63	63	60	68	105	88	73	75	89	93	98	101	98	97	99	96	95	84	76	67	68
30	68	70	68	73	66	60	73	90	82	79	66	85	98	99	95	90	91	95	100	112	96	75	73	75
31	69	69	73	69	63	57	65	95	86	82	76	92	104	97	96	91	95	104	124	139	93	66	72	75
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	30	31	30	31	29	30	27	27	27	28	26	29	30	30	29	29	26	25	27	26
MED	78	78	77	70	68	63	73	90	86	84	84	89	97	98	96	102	100	99	98	100	84	79	77	78
U Q	82	83	81	75	71	67	75	95	90	91	88	95	104	104	108	110	109	106	119	107	93	82	83	84
L Q	72	72	67	64	65	61	67	82	81	78	79	84	86	95	92	92	93	92	88	84	79	72	71	70

HOURLY VALUES OF fEs AT Yamagawa

AUG. 2023

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	41	38	G	34	34	38	G	33	39	70	55	50	47	46	74	107	50	50	72	60	46	73	G	G
2	G	34	53	40	40	34	33	44	65	65	110	61	56	55	40	46	43	45	43	31	32	39	40	G
3	26	G	G	G	G	31	G	35	41	43	45	51	38	50	66	83	54	59	58	29	53	32	30	27
4	28	G	26	G	G	G	29	36	70	36	60	103	135	118	70	81	54	51	71	59	125	52	41	38
5	40	G	G	G	26	G	32	43	65	75	107	162	86	52	63	174	184	96	56	50	113	43	48	69
6	52	66	46	60	35	G	G	31	G	51	62	46	55	97	75	43	52	53	38	40	58	31	G	38
7	38	G	G	G		G	G	35	50	50	55	56	41	G	G	40	54	52	34	30	32	G	46	111
8	31	38	35	36	59	28	25	32	45	63	76	72	58	66	53	42	44	60	34	G	G	G	41	G
9	G	G	G	G	G	26	G	34	39	45	48	54	60	40	55	57	51	48	53	40	72	33	G	G
10	72	60	34	35	31	28	G	55	55	58	107	54	63	40	55	56	49	87	82	86	59	59	54	54
11	49	54	29	26	29	G	G	40	88	52	56	124	106	51	60	40	35	62	53	56	58	49	106	60
12	82	G	G	G	53	G	G	58	61	69	75	71	166	66	102	76	56	60	117	169	116	150	49	32
13	25	G	26	G	G	G	23	39	49	46	145	48	48	60	54	55	53	83	83	115	87	60	71	38
14	50	53	48	40	36	32	36	59	52	41	50	58	150	136	175	58	47	50	52	76	111	53	55	40
15	39	41	33	31	G	G	30	46	46	115	59	74	48	54	64	110	166	57	51	45	54	44	G	92
16	49	G	26	29	34	31	31	40	46	60	47	66	48	57	48	54	71	83	68	87	58	38	33	32
17	26	G	G	G	G	G	G	36	49	72	72	61	51	51	55	76	51	58	56	63	46	38	35	30
18	49	28	31	G	37	26	G	31	40	56	75	88	86	124	81	84	56	62	60	G	29	29	39	57
19	60	36	30	30	26	G	28	41	70	56	61	86	60	59	50	49	55	48	35	40	43	41	32	125
20	50	38	35	29	G	G	34	48	50	54	117	154	106	87	145	81	60	32	62	116	167	163	136	88
21	105	73	58	81	44	36	40	50	61	84	70	72	109	113	117	55	127	69	72	55	50	45	113	81
22	58	49	37	40	34	G	23	45	66	65	62	78	78	90	62	92	77	74	64	74	31	30	31	28
23	33	58	53	34	34	30	85	116	107	60	77	60	48	49	70	57	57	62	72	71	72	31	38	32
24	G	40	52	38	39	32	G	44	35	53	58	58	78	53	N	62	46	46	82	34	28	40	33	55
25	50	33	26	26	G	28	46	57	40	42	51	53	47	58	75	66	54	48	50	43	35	G	46	60
26	59	58	54	39	40	48	36	59	117	108	75	56	48	50	44	37	46	42	36	55	26	78	60	40
27	38	35	40	34	G	31	G	38	45	74	67	58	84	116	110	97	75	72	71	54	60	30	28	G
28	G	25	26	G	G	G	G	43	89	59	57	47	52	54	57	42	88	35	81	50	46	84	90	85
29	60	31	G	G	G	G	G	42	42	49	54	46	64	38	54	54	51	61	74	45	50	48	G	G
30	G	G	G	G	32	G	G	38	42	46	52	56	48	83	53	44	47	47	42	39	30	G	G	G
31	G	G	27	32	34		G	36	45	46	46	56	56	56	50	35	33	73	54	57	69	39	59	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	40	34	29	29	32	14	G	41	49	56	61	58	58	56	61	57	54	58	58	54	53	40	40	38
U Q	52	49	40	36	36	31	32	48	65	69	75	74	86	87	75	81	60	69	72	71	72	53	55	60
L Q	26	G	G	G	G	G	G	36	42	46	54	54	48	50	53	44	47	48	50	40	32	31	30	27

HOURLY VALUES OF fmin AT Yamagawa

AUG. 2023

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	16	16	15	15	16	16	19	17	21	23	46	42	30	23	44	18	15	13	15	15	15	15
2	15	15	15	15	15	15	16	15	17	16	20	21	21	19	17	21	20	18	14	16	15	15	15	16
3	15	14	15	15	16	16	15	16	16	19	20	19	17	22	16	17	16	13	15	16	15	16	15	15
4	16	16	16	16	15	17	15	17	17	19	17	19	14	33	23	20	18	15	16	15	12	15	15	15
5	15	15	16	16	16	15	17	16	17	15	19	11	31	43	15	22	19	19	14	15	14	15	15	15
6	15	17	16	15	15	14	15	15	39	35	19	39	18	21	19	19	18	15	15	15	16	16	17	15
7	16	15	16	16	16	15	15	15	18	24	38	40	42	44	55	16	16	19	17	15	16	15	15	10
8	16	15	15	15	16	15	15	17	20	20	21	29	28	19	19	21	18	15	15	15	14	15	15	16
9	15	15	16	15	14	15	15	15	17	20	21	23	23	34	23	21	18	14	15	15	15	15	14	16
10	16	16	15	15	16	15	15	14	15	15	19	24	24	33	17	23	18	16	15	15	15	15	16	16
11	15	15	16	16	16	15	15	15	15	19	19	23	22	23	23	21	22	15	14	15	16	16	16	15
12	14	15	15	16	15	15	16	14	18	18	19	21	22	18	19	19	15	13	14	13	11	8	15	16
13	16	15	16	16	15	15	15	15	14	19	16	19	17	21	22	19	18	20	15	5	13	14	16	15
14	16	15	17	15	16	16	15	15	15	17	17	21	13	21	21	19	16	15	15	17	10	15	15	15
15	15	15	16	16	16	15	16	15	16	17	20	18	24	20	19	21	14	20	15	14	15	15	16	13
16	15	15	16	15	15	16	16	14	14	17	20	20	20	20	21	20	18	15	16	17	16	15	16	16
17	16	15	16	15	14	14	16	17	15	15	19	21	21	24	22	22	18	14	15	15	15	15	16	16
18	15	16	15	15	15	16	16	17	17	16	18	21	26	23	21	21	17	15	15	15	16	16	15	15
19	15	15	16	16	15	14	16	14	17	16	17	21	22	21	20	18	17	15	14	15	15	15	16	16
20	15	15	15	16	15	15	15	15	15	19	17	13	22	21	13	21	21	15	15	14	13	127	5	14
21	11	15	15	16	15	15	15	15	13	16	22	17	25	25	17	18	18	17	15	15	15	15	14	15
22	15	15	15	15	16	15	15	15	14	17	20	22	21	29	19	18	19	8	15	15	16	15	15	16
23	15	16	15	16	15	16	14	15	17	20	19	17	21	21	23	22	17	18	13	16	15	16	17	16
24	15	15	15	15	15	16	15	15	15	16	18	21	20	19	14	17	15	16	14	16	15	15	16	15
25	15	15	15	15	17	16	15	13	15	19	18	39	22	23	17	13	18	15	15	14	16	15	15	15
26	15	16	15	15	16	14	15	15	15	18	18	21	21	23	19	17	15	15	15	15	15	15	15	15
27	15	15	16	15	16	16	15	17	20	17	19	20	21	17	23	17	19	13	14	15	15	15	15	15
28	16	16	15	15	14	15	15	15	13	17	21	21	23	22	24	19	15	17	16	15	15	15	16	17
29	16	16	16	15	16	15	15	16	18	18	19	19	22	21	23	22	15	16	15	15	17	16	15	15
30	16	17	14	14	16	16	17	15	16	20	19	21	20	20	21	20	15	14	14	15	15	14	15	15
31	14	15	16	15	15	16	15	16	16	16	19	21	21	21	37	27	17	17	16	15	15	15	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	16	15	15	15	15	15	16	17	19	21	22	21	21	20	18	15	15	15	15	15	15	15
U Q	16	16	16	16	16	16	16	16	17	19	20	23	24	25	23	21	18	17	15	15	16	15	16	16
L Q	15	15	15	15	15	15	15	15	15	16	18	19	20	20	17	18	16	15	14	15	15	15	15	15

HOURLY VALUES OF fof2 AT Okinawa

AUG. 2023

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	75	73	77	67	67	65	66	72	67	89	99	100	96	92	85	83	89	89	81	73	72	73	70	74
2	73	79	69	75	66	60	61	90	74	73	71	58	87	59	107	113	101	84	75	81	91	96	83	100
3	112	97	99	63	69	71	75	65	51	57	75	93	104	129	117	100	96	89	79	67	A	A	67	65
4	66	65	63	58	57	57	63	73	85	66	77	90	97	100	101	95	101	99	95	94	79	83	86	83
5	82	82	72	61	59	59	69	85	69	56	A	81	89	106	112	54	133	121	115	83	67	67	54	61
6	69	66	55	44	38	39	52	81	75	A	83	78	73	93	105	115	113	115	107	82	79	85	95	98
7	97	91	96	82	69	62	57	63	85	96	83	91	102	119	130	131	128	118	96	87	83	79	78	77
8	76	76	77	71	66	66	60	78	92	98	90	96	121	134	122	128	129	124	119	110	97	101	104	94
9	94	91	91	82	73	68	70	77	100	95	87	100	110	110	94	100	99	96	A	85	A	A	77	82
10	89	85	72	A	65	65	61	90	85	A	87	101	101	99	91	89	89	93	100	95	87	A	81	86
11	88	87	84	71	75	68	71	77	86	86	102	115	127	125	125	114	112	112	107	103	85	79	78	73
12	80	91	84	82	67	60	61	81	94	88	85	97	102	A	A	107	106	104	A	93	A	75	72	84
13	89	87	80	73	71	69	79	91	81	83	A	90	113	123	129	130	133	131	137	122	108	73	93	84
14	95	100	120	110	97	86	79	104	107	96	101	124	115	108	119	120	117	118	116	102	A	A	69	77
15	82	97	100	79	73	67	74	93	109	79	82	91	113	123	134	155	161	152	156	119	100	101	98	106
16	121	120	115	111	91	82	76	91	94	87	A	92	105	100	100	124	137	129	118	105	92	A	A	81
17	77	75	71	64	67	64	67	99	83	82	89	100	122	128	137	132	124	125	131	123	96	98	96	92
18	92	89	88	90	80	67	75	95	83	86	93	95	A	113	117	119	125	126	133	136	118	96	100	99
19	99	95	89	81	79	85	90	96	81	81	75	85	A	101	98	102	107	116	107	99	94	96	97	87
20	81	83	80	77	68	63	75	90	96	84	88	A	101	110	116	130	141	151	151	148	118	95	80	99
21	A	A	88	81	79	69	89	91	80	97	97	93	93	113	128	136	135	130	123	129	137	103	99	A
22	83	93	89	111	112	102	115	116	95	A	85	99	113	121	120	128	141	155	151	153	115	147	118	101
23	102	98	99	86	92	79	85	106	93	A	A	113	130	128	113	116	122	120	111	113	101	92	92	88
24	88	86	87	79	71	67	73	79	87	91	A	105	114	117	121	116	128	141	139	128	139	110	60	102
25	104	96	97	79	79	88	82	82	83	87	105	101	110	121	123	132	137	145	165	157	130	127	139	117
26	107	99	101	99	84	85	91	102	100	88	92	102	115	118	111	111	121	113	102	115	109	75	67	A
27	69	70	63	62	58	59	73	83	86	80	94	98	121	118	121	119	119	135	145	146	111	100	106	100
28	121	79	98	84	81	79	92	110	81	87	100	110	121	126	127	117	121	127	133	120	97	96	95	100
29	101	77	77	73	76	67	73	123	92	68	84	91	102	115	117	119	113	108	111	106	94	86	76	73
30	78	84	83	81	71	51	60	93	92	71	83	91	100	114	106	103	104	98	112	124	110	70	77	81
31	77	77	80	82	77	59	57	89	107	83	80	97	110	111	113	107	112	121	154	145	101	101	64	102
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	31	30	31	31	31	31	31	27	26	30	29	30	30	31	31	31	29	31	27	26	30	29
MED	88	86	84	79	71	67	73	90	86	86	87	96	110	114	117	116	121	120	116	110	97	96	82	87
U Q	99	95	97	82	79	79	79	96	94	89	94	101	115	123	123	128	133	130	138	128	111	101	97	100
L Q	77	77	77	71	67	60	61	79	81	79	83	91	100	106	106	103	106	104	104	93	87	79	72	79

HOURLY VALUES OF fEs AT Okinawa

AUG. 2023

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	26	53	32	33	39	G	37	36	46	54	66	54	47	57	56	132	78	52	59	G	G	G	36	34	
2	36	26	25	G	G	G	G	70	66	56	67	54	77	109	47	46	44	46	35	34	27	G	33	54	
3	33	26	G	G	G	G	30	33	38	43	46	45	56	39	41	49	50	42	51	G	90	78	35	27	
4	30	31	G	G	G	G	22	36	47	46	60	45	54	G	G	42	49	41	42	32	37	50	71	60	
5	35	26	G	G	G	G	29	40	50	74	71	53	G	55	47	54	62	42	42	46	32	57	48	39	
6	27	G	30	G	32	22	25	28	40	74	81	54	89	136	57	72	56	63	45	54	26	G	G	G	G
7	G	G	G		G	G	30	54	45	50	38	52	52	44	70	51	48	45	28	G	G	G	G	G	
8	47	27	70	37	38	38	36	50	40	43	50	55	57	185	61	47	41	40	37	83	33	G	G	48	
9	G	G	G	G	G	G	26	56	39	180	46	57	56	62	79	53	53	92	146	33	78	60	33	24	
10	G	28	59	125	59	39	24	49	58	178	52	56	46	49	55	65	85	60	75	70	60	90	60	49	
11	33	47	36	31	28	26	27	50	48	66	78	88	63	80	40	46	57	49	92	40	84	32	G	26	
12	59	50	40	32	40	G	27	36	179	54	45	76	114	175	116	62	85	94	127	29	144	91	G	92	
13	56	G	G	38	G	G	111	52	60	132	58	94	105	56	43	56	106	50	47	92	36	28	113		
14	32	46	39	G	G	G	30	41	46	75	55	51	56	57	52	56	81	62	108	32	69	126	111	59	
15	53	40	34	G	27	G	49	50	49	46	116	59	66	58	54	57	62	46	57	40	39	33	32		
16	24	G	G	G	32	G	36	37	72	97	108	84	61	65	84	93	84	93	N	59	115	109	41		
17	37	G	G	G	G	G	32	46	55	65	75	129	64	55	67	56	105	73	91	55	60	54	71		
18	56	29	G	G	G	G	32	38	41	61	82	115	96	106	98	54	50	36	30	60	71	58	28		
19	G	55	29	26	G	G	28	47	60	56	118	63	144	58	39	52	75	54	58	58	32	53	43	28	
20	G	56	29	G	G	G	144	46	49	74	106	91	75	64	48	43	39	40	46	72	34	38	70		
21	135	112	94	62	57	50	37	78	60	68	91	86	72	81	118	108	108	48	46	42	26	22	34	127	
22	93	58	58	50	40	40	30	40	56	108	84	53	60	61	71	54	54	60	53	52	38	58	29	G	
23	G	G	39	34	35	G	29	47	67	111	115	78	58	58	54	52	50	169	72	45	49	45	32	27	
24	28	27	G	46	G	G	36	39	53	106	67	74	78	45	62	57	74	70	49	25	33	33	40		
25	44	54	40	46	36	36	47	54	153	41	52	56	55	53	56	51	48	46	39	32	32	33	39	45	
26	33	40	47	40	30	32	40	70	86	77	92	76	54	49	51	53	49	45	54	46	G	40	36	92	
27	34	46	31	27	29	29	G	43	43	52	32	52	52	86	88	84	75	93	72	44	71	45	36	34	
28	36	G	G	G	50	G	48	42	49	75	53	46	50	60	40	40	33	32	11	G	30	G	G		
29	32	25	G	G	G	G	34	41	49	47	57	56	52	65	66	70	74	56	70	53	28	67	38		
30	G	G	G	G	G	G	35	57	54	54	51	59	59	45	58	49	55	66	58	72	71	25	G		
31	G	G	G	39	39	39	G	35	43	49	54	55	56	54	54	48	47	74	47	34	25	41	28	23	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	
MED	33	27	29	14	27	G	26	43	47	54	61	57	58	59	56	54	56	54	54	43	40	41	34	38	
U Q	44	47	39	38	38	32	30	54	60	74	84	78	84	80	70	65	75	74	72	52	71	60	48	59	
L Q	G	G	G	G	G	G	G	36	42	49	50	53	54	53	47	48	49	45	42	32	26	30	28	26	

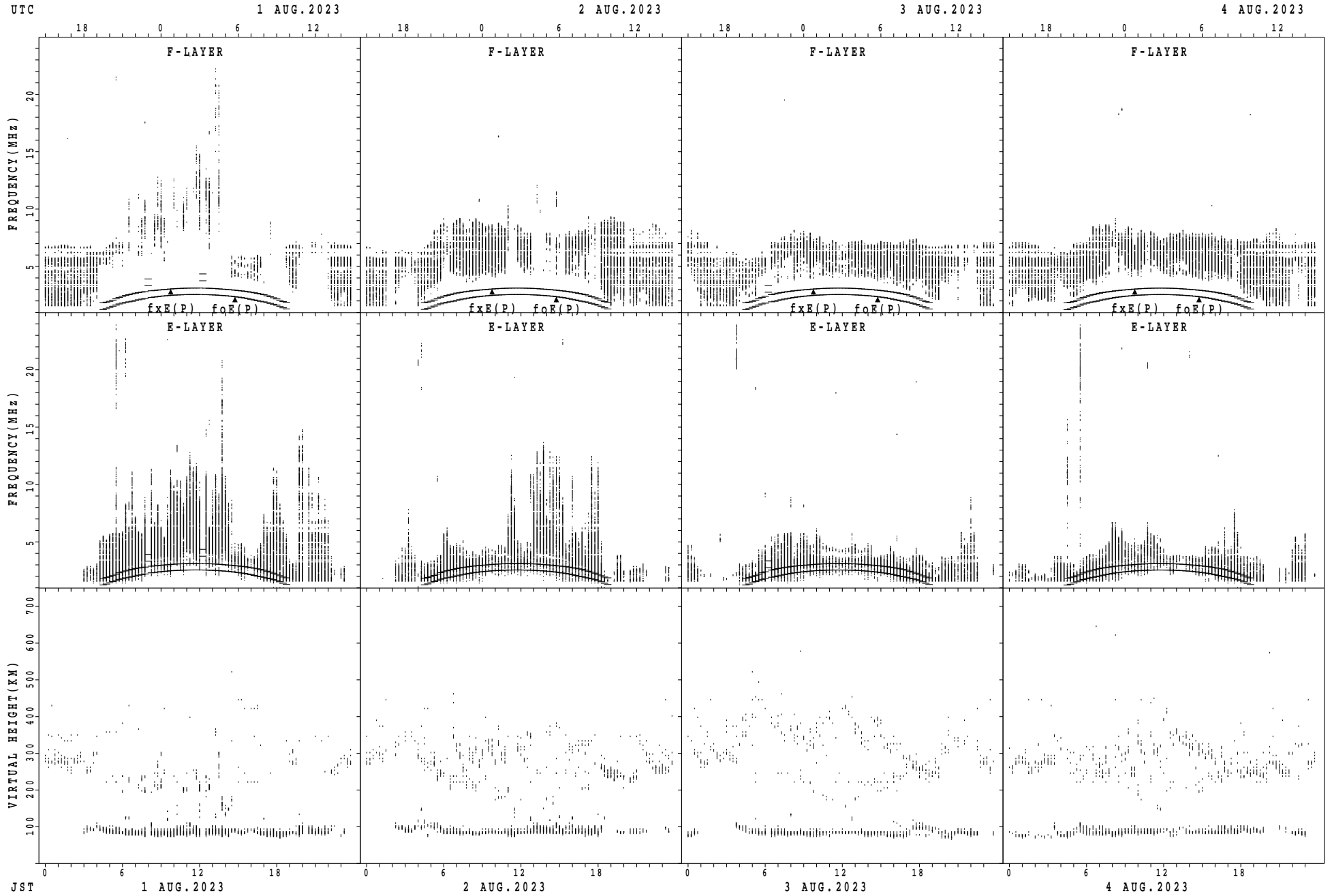
HOURLY VALUES OF fmin AT Okinawa

AUG. 2023

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

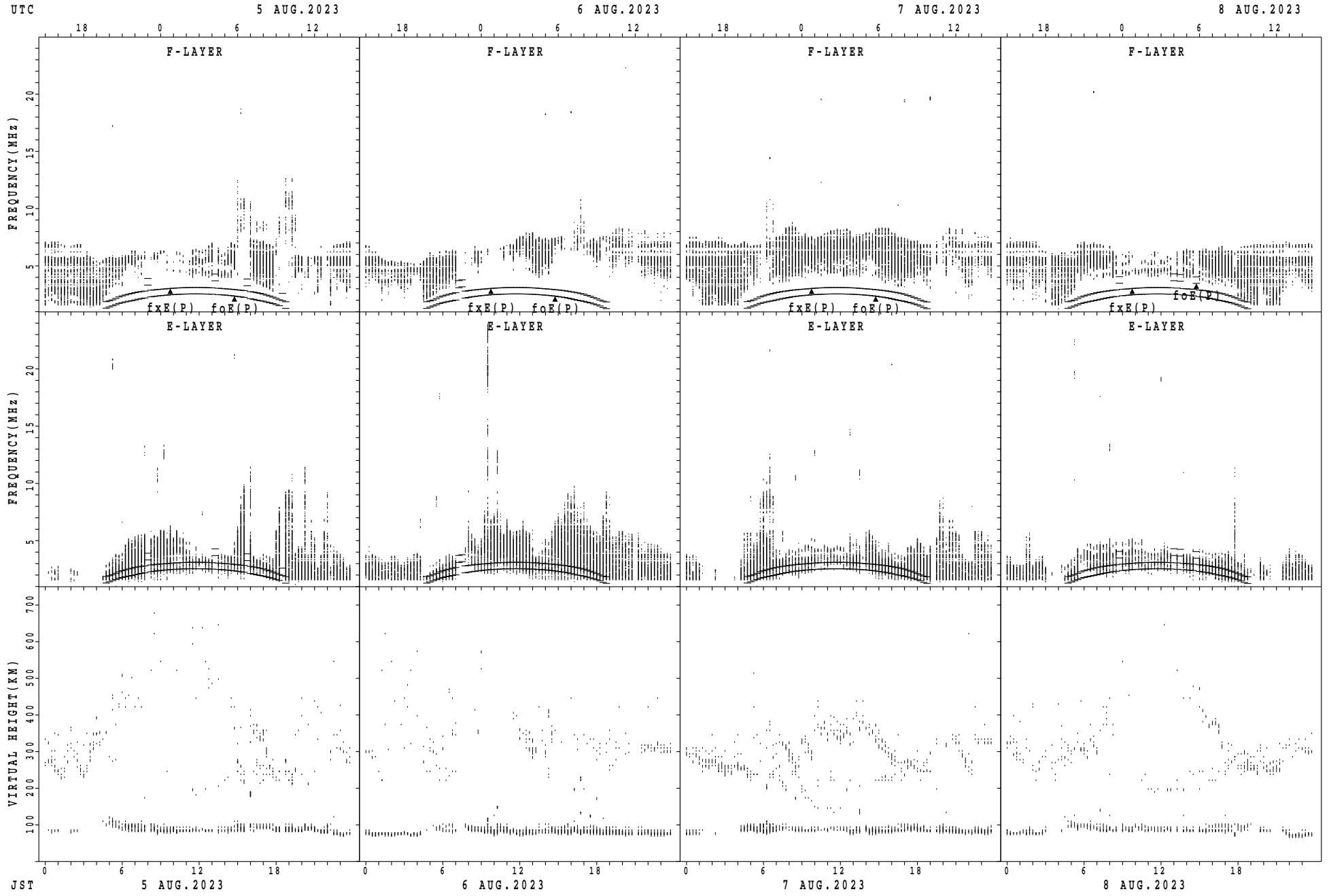
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	15	15	16	15	15	16	17	16	17	20	19	21	21	43	9	30	17	14	15	15	16	16	15
2	15	16	15	18	15	15	20	15	15	17	19	20	18	21	21	18	19	16	15	16	16	16	17	15
3	16	15	15	15	16	15	17	17	16	17	18	19	19	17	17	15	19	17	13	15	14	8	14	16
4	15	16	16	15	15	15	14	17	15	18	22	21	21	55	43	17	15	14	13	16	15	16	17	16
5	15	16	16	14	15	15	15	15	14	16	15	19	55	18	20	16	20	18	14	15	16	14	16	16
6	15	15	16	15	16	15	16	15	23	17	15	21	20	19	18	21	21	16	15	14	16	14	15	15
7	15	14	15	16	15	15	16	15	16	16	15	20	21	17	14	15	18	13	16	18	18	17	15	15
8	15	15	15	16	15	15	15	15	15	22	21	19	21	12	22	19	16	14	14	13	16	20	15	16
9	15	15	16	15	17	15	15	15	15	15	18	19	21	16	15	18	17	15	5	15	14	15	15	16
10	15	16	14	16	15	15	16	14	15	86	17	17	16	28	21	23	15	15	14	15	15	13	16	16
11	16	15	15	16	15	15	15	14	17	16	16	15	17	16	34	19	17	16	6	14	14	15	14	16
12	15	15	15	16	15	15	15	15	15	18	21	13	17	33	16	17	15	11	5	16	13	15	16	12
13	15	15	16	15	18	15	15	16	15	17	9	17	19	7	19	17	16	15	15	16	14	15	16	16
14	16	15	15	15	15	15	16	14	15	17	17	16	15	15	15	16	14	14	14	15	16	14	16	16
15	16	15	15	16	16	17	21	15	16	15	17	16	19	14	18	14	20	16	15	16	15	15	15	15
16	15	20	14	17	16	14	16	17	15	15	17	19	18	19	20	17	9	14	13	16	15	12	7	15
17	15	15	15	18	15	20	17	13	16	15	13	14	17	16	13	17	16	14	13	15	16	16	16	16
18	17	16	15	16	15	16	18	16	15	15	15	15	15	17	17	19	18	15	16	15	17	16	15	16
19	15	16	16	15	18	17	15	16	15	15	16	17	13	20	16	17	16	14	15	15	17	15	14	16
20	15	16	15	16	15	17	16	15	15	16	16	17	17	15	15	19	17	14	14	15	15	16	15	17
21	12	13	14	15	14	14	15	17	15	17	18	14	19	19	15	11	17	15	15	15	16	15	16	15
22	17	15	14	16	15	15	16	16	19	17	17	14	27	16	14	17	17	14	14	15	15	15	16	16
23	17	17	16	15	14	15	15	16	17	18	18	16	19	22	20	18	16	12	13	15	15	15	16	16
24	16	15	17	17	18	14	18	17	15	16	19	15	16	14	17	15	15	16	15	15	15	16	15	15
25	15	16	15	15	15	15	15	14	12	18	15	19	21	19	19	17	15	15	14	15	16	15	16	15
26	16	16	17	15	15	16	15	17	17	17	17	15	18	17	16	18	16	14	16	15	14	15	16	14
27	15	16	15	16	15	15	16	15	15	18	39	39	15	11	19	16	16	14	17	14	15	15	15	15
28	15	15	14	17	16	15	14	17	15	16	16	14	18	17	16	16	15	15	13	16	15	15	17	17
29	16	16	15	17	17	16	14	15	14	16	15	20	15	16	17	19	17	13	14	13	16	15	15	15
30	15	16	15	16	15	15	15	15	19	16	16	18	20	19	15	19	15	14	15	14	16	16	16	16
31	17	17	16	15	15	14	15	15	14	15	15	17	20	17	18	17	16	15	14	16	16	15	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	16	15	15	15	15	15	17	17	17	19	17	17	17	16	15	14	15	15	15	16	16
U Q	16	16	16	16	16	15	16	17	16	17	18	19	21	19	20	19	18	16	15	16	16	16	16	16
L Q	15	15	15	15	15	15	15	15	15	16	15	15	17	16	15	16	15	14	13	15	15	15	15	15

SUMMARY PLOTS AT Wakkanai



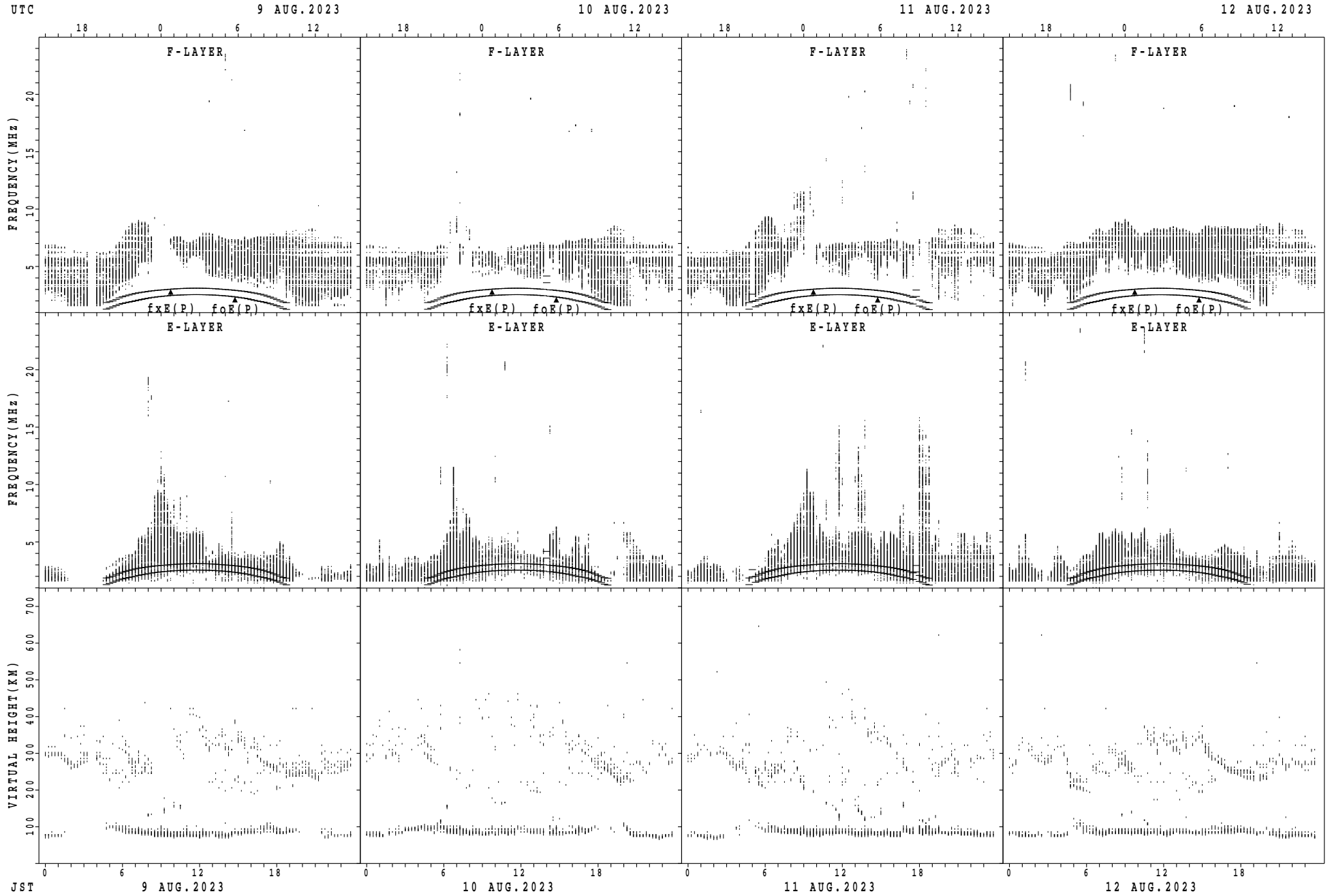
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



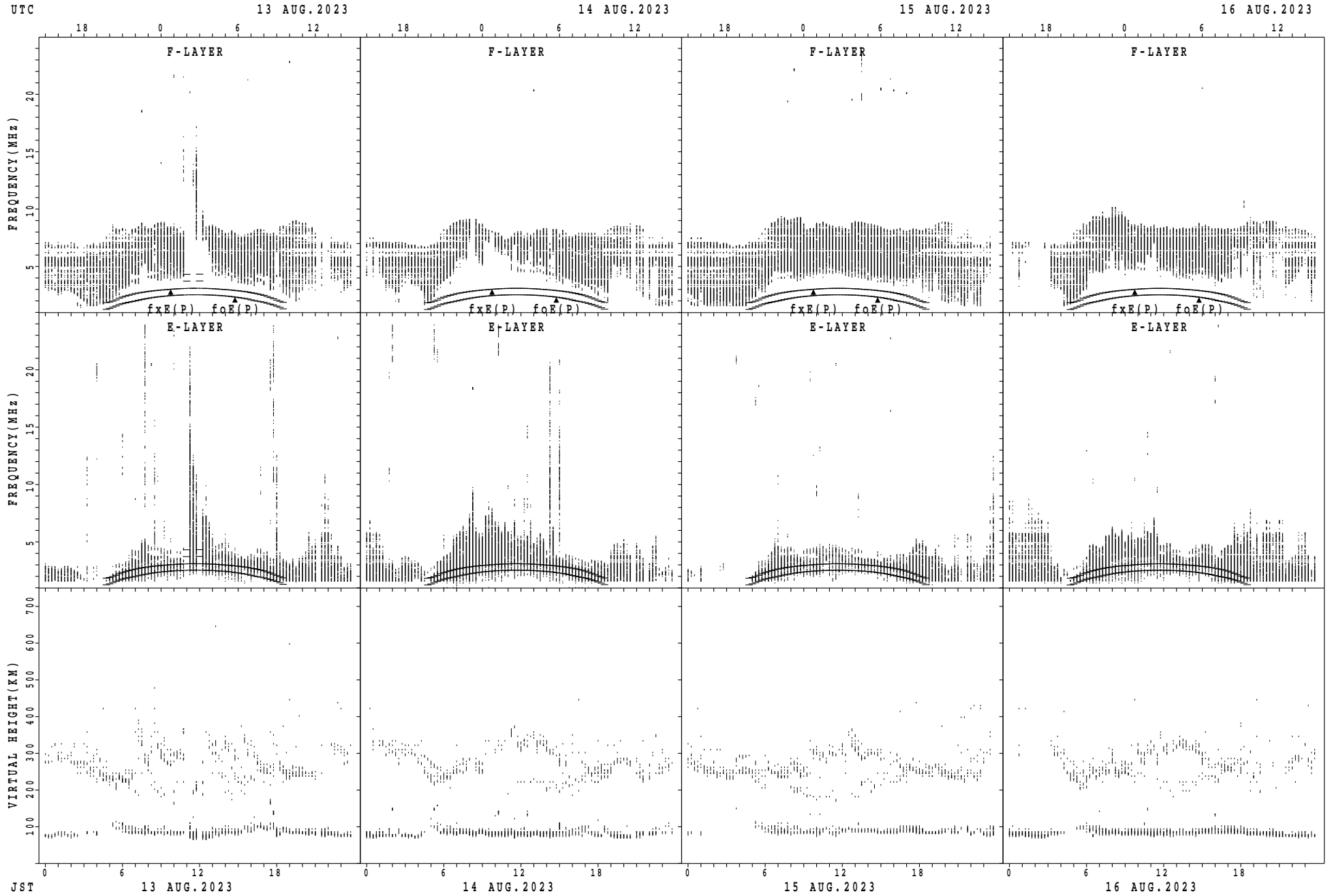
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



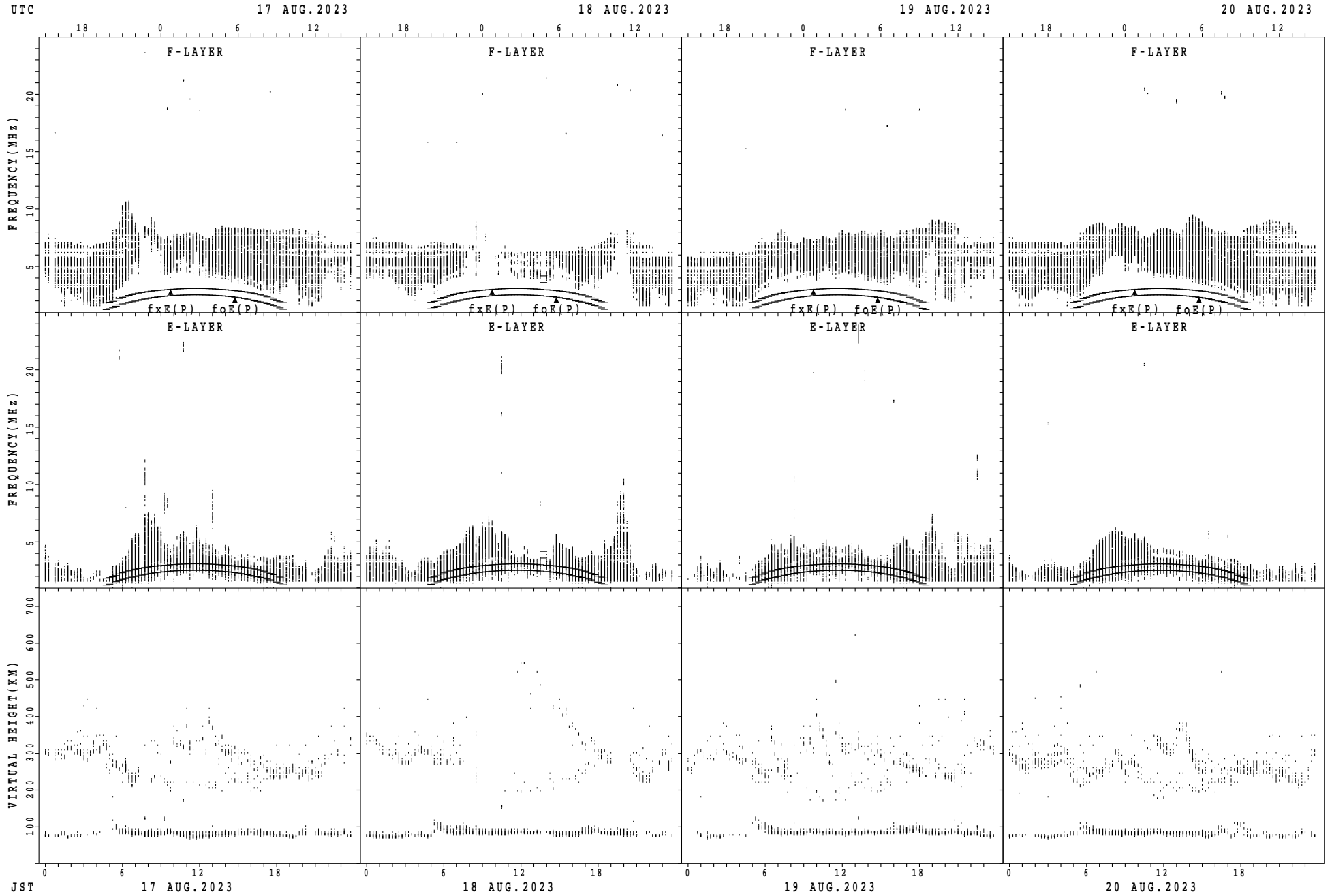
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



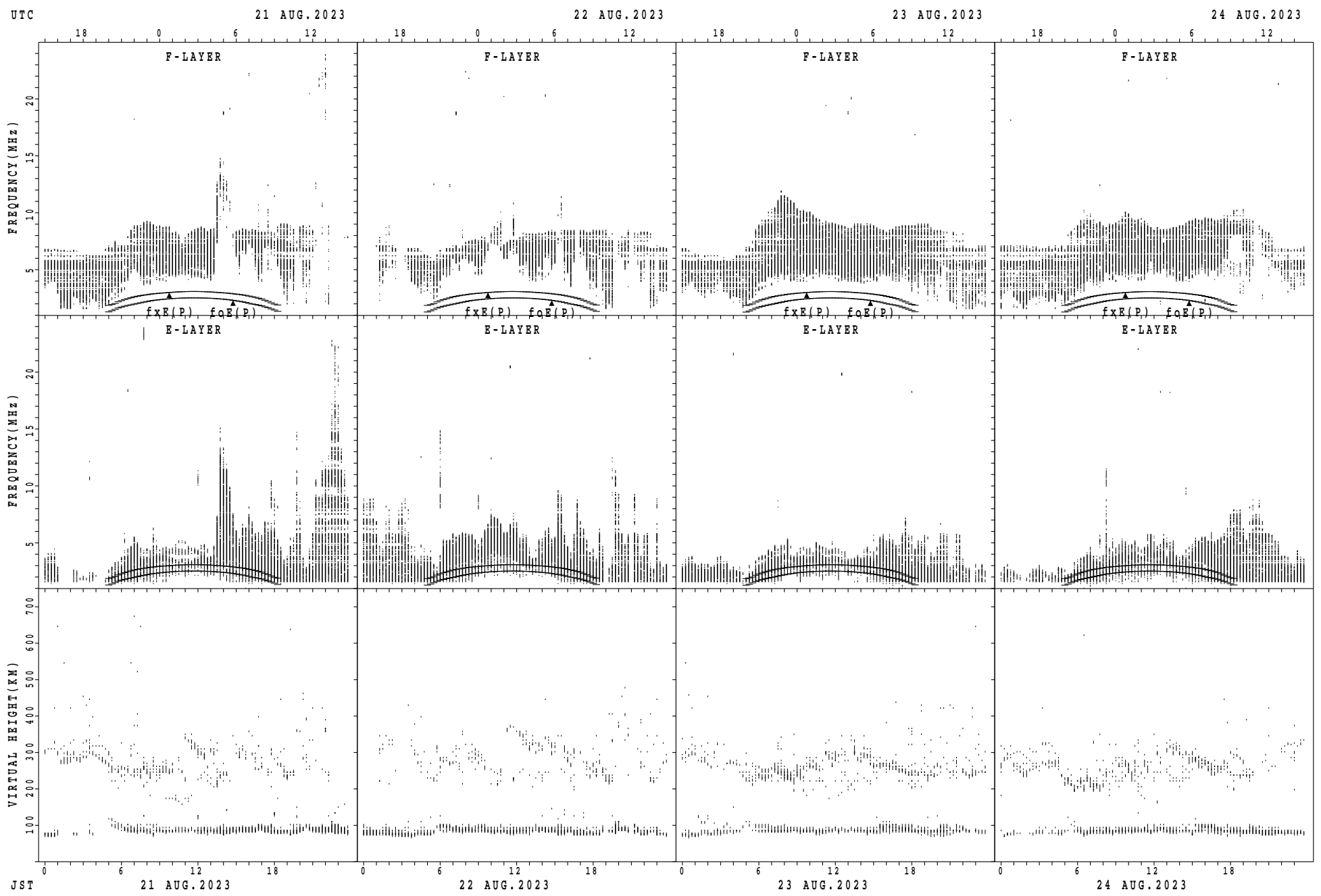
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



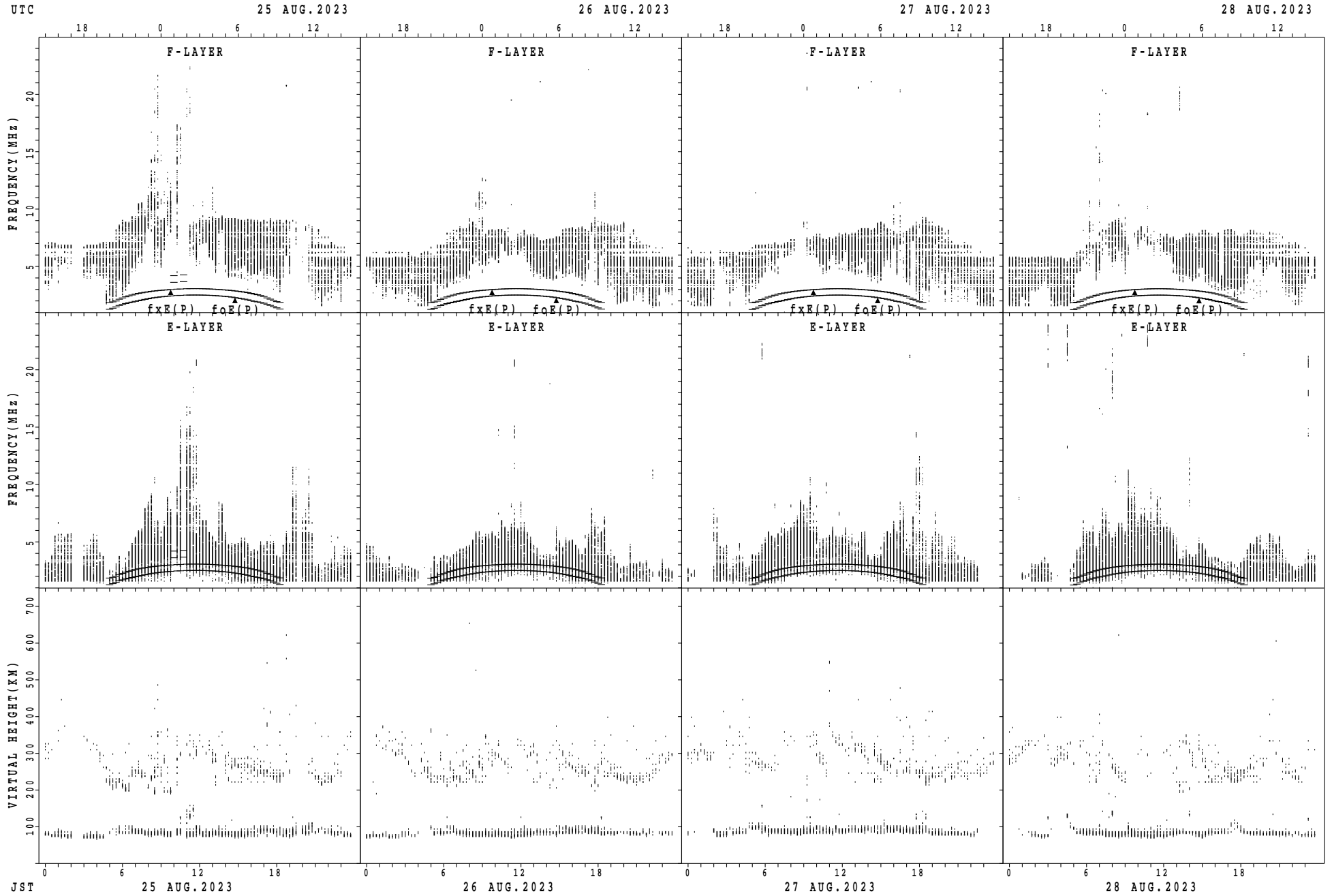
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



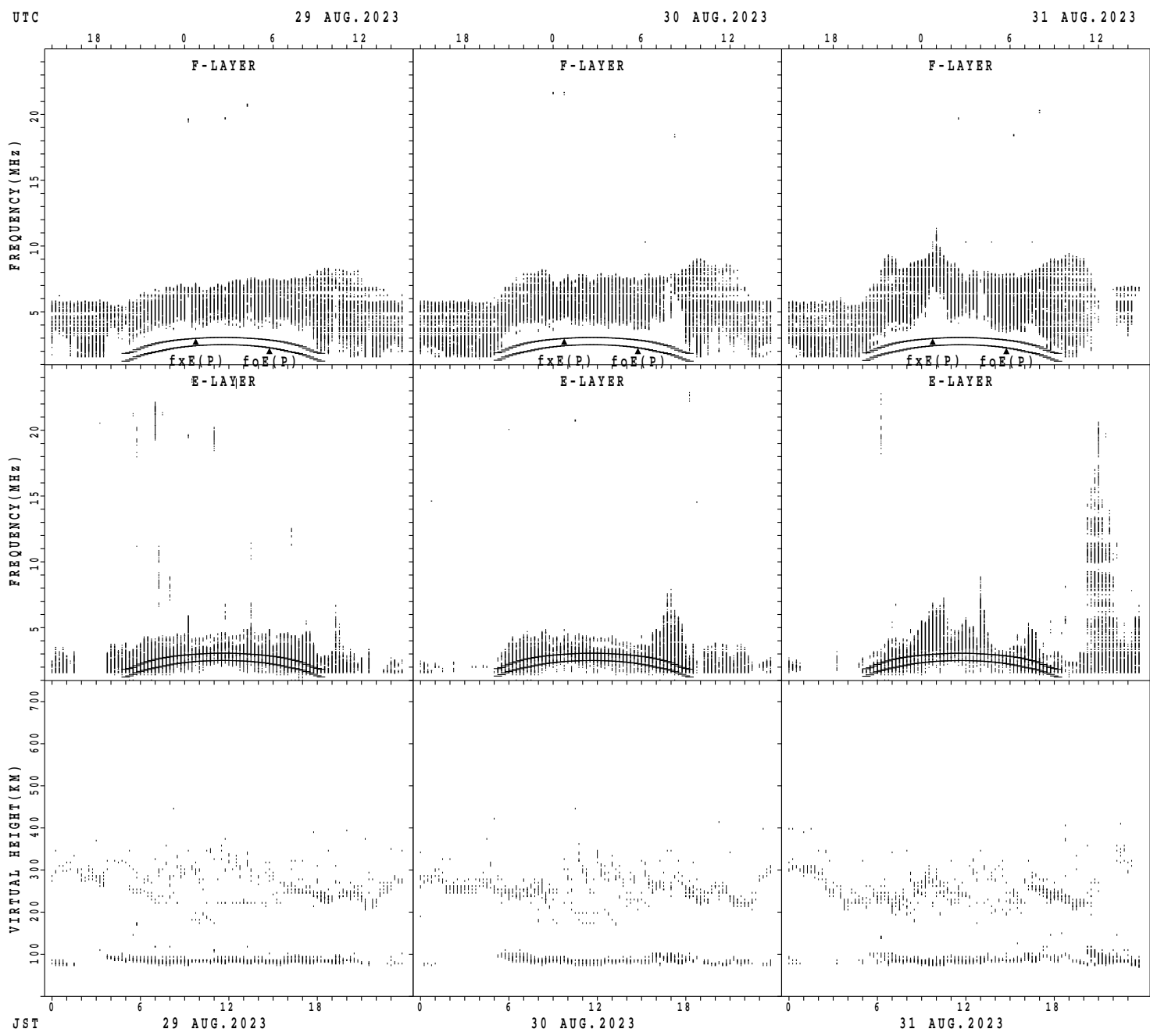
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



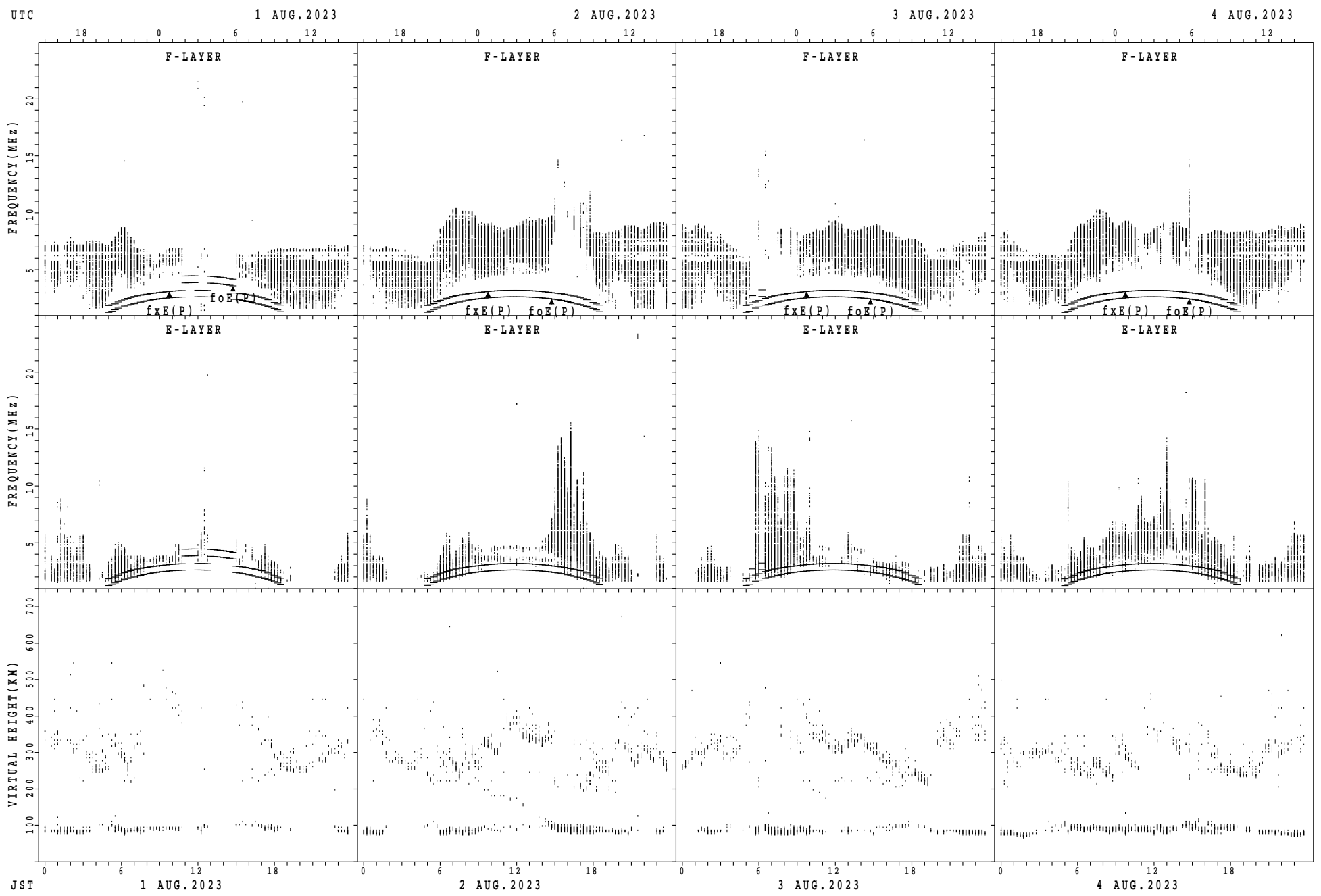
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



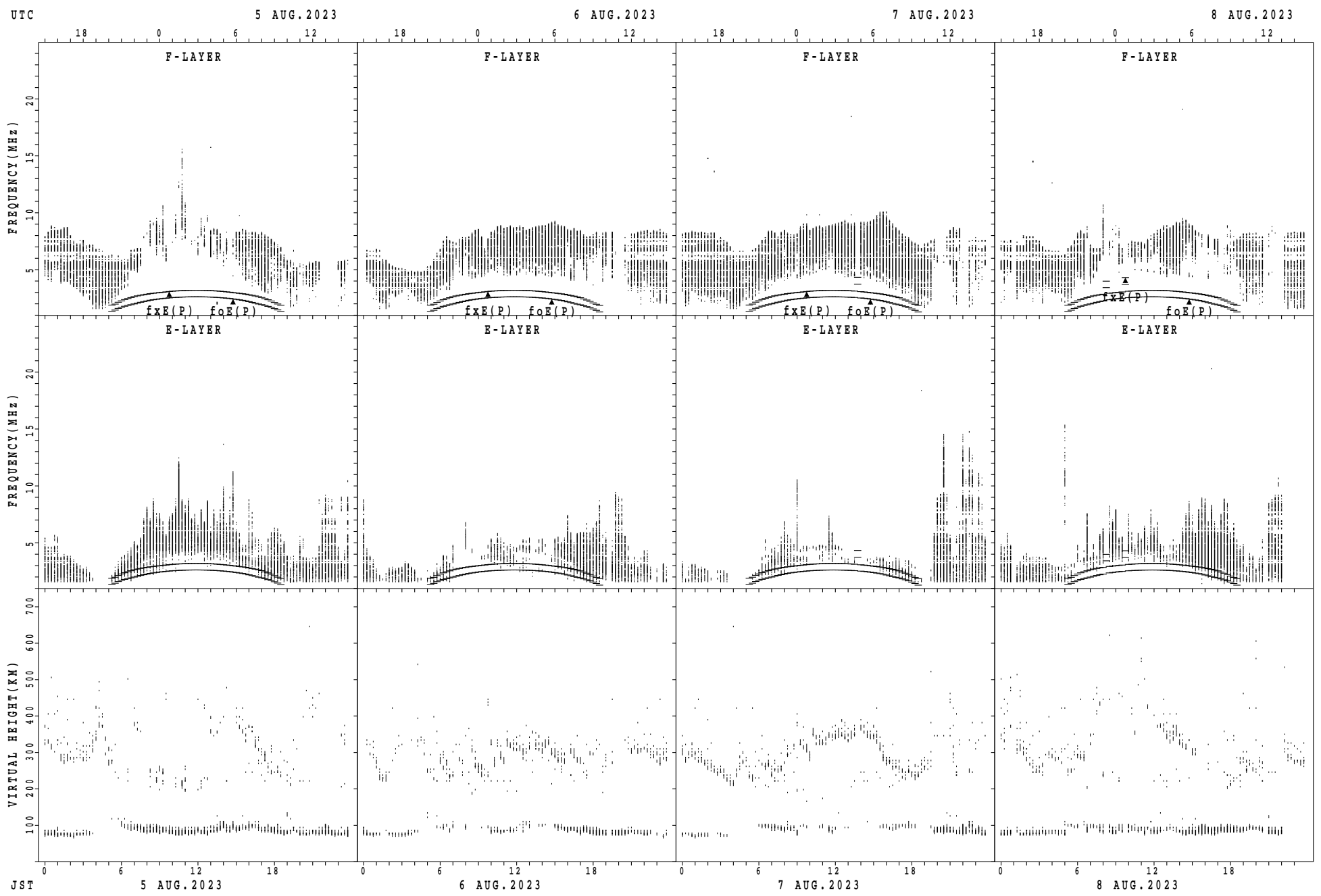
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



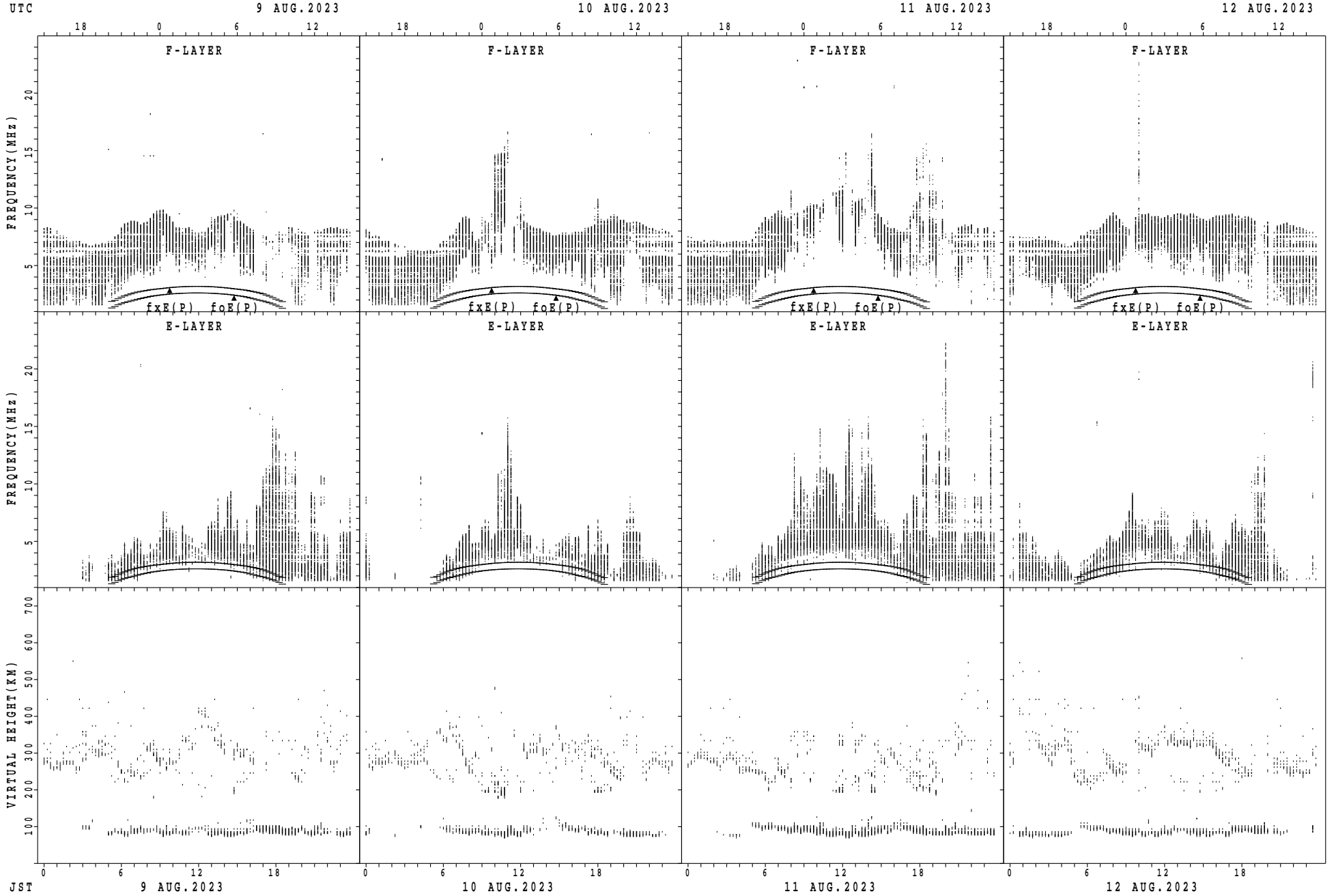
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



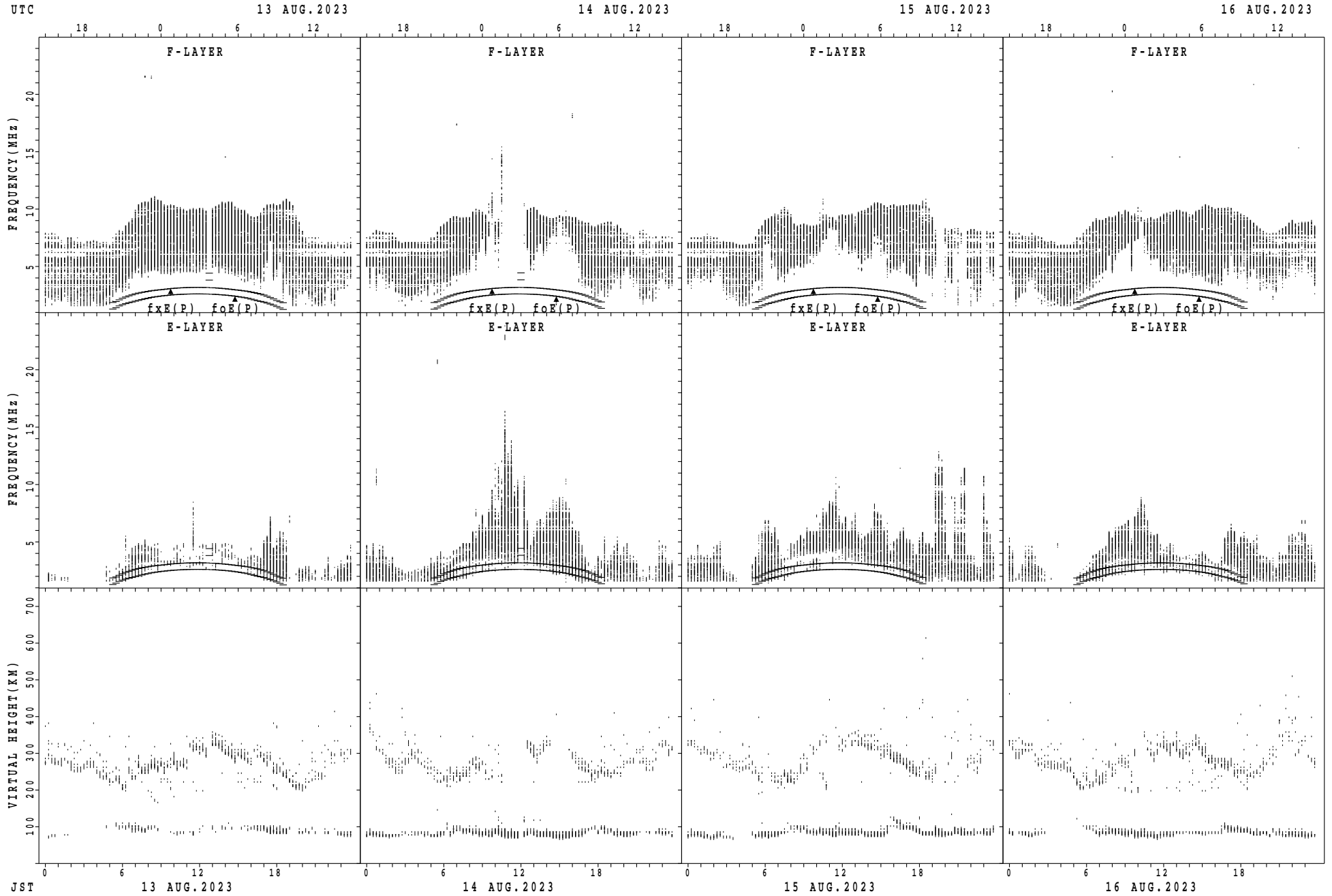
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



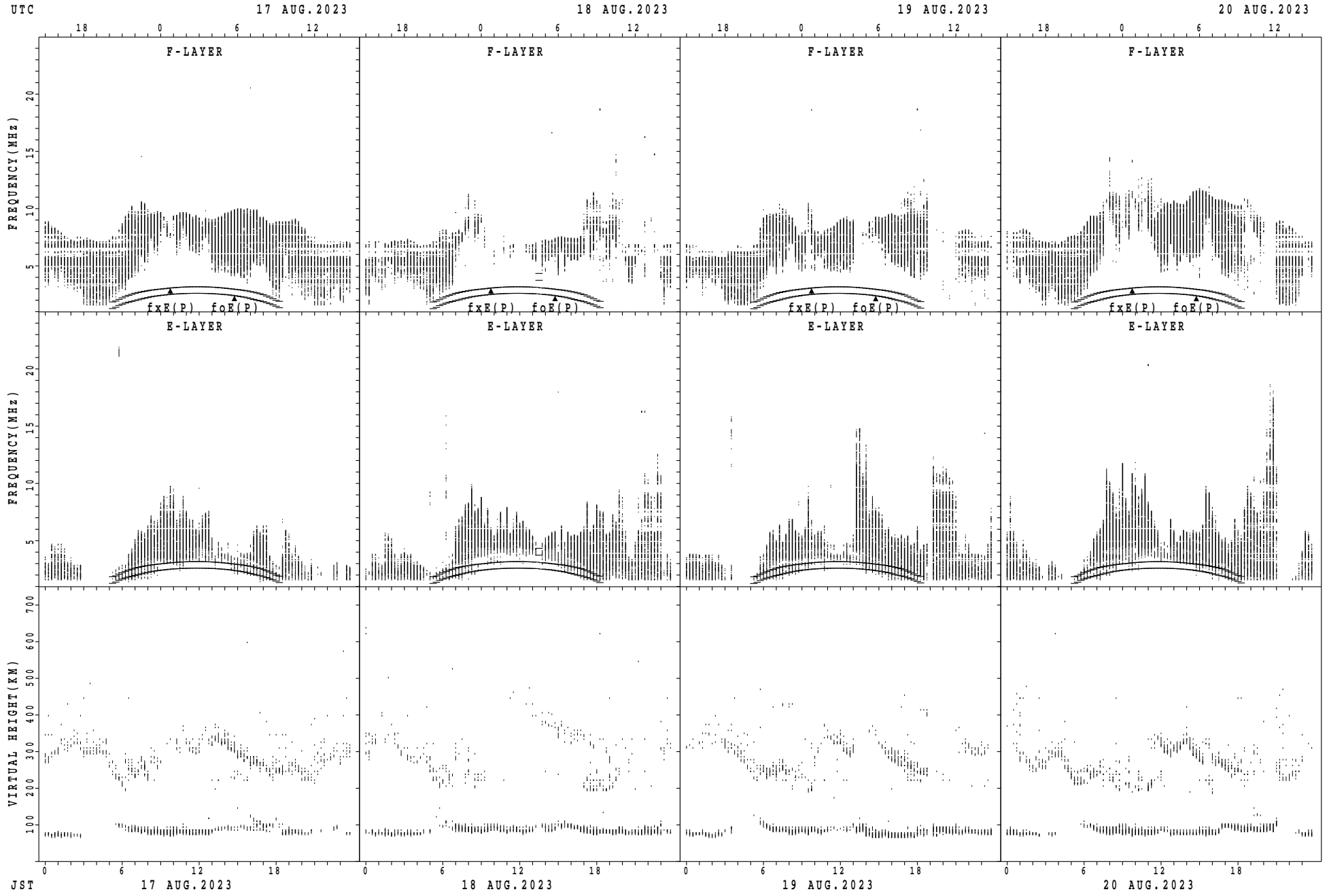
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



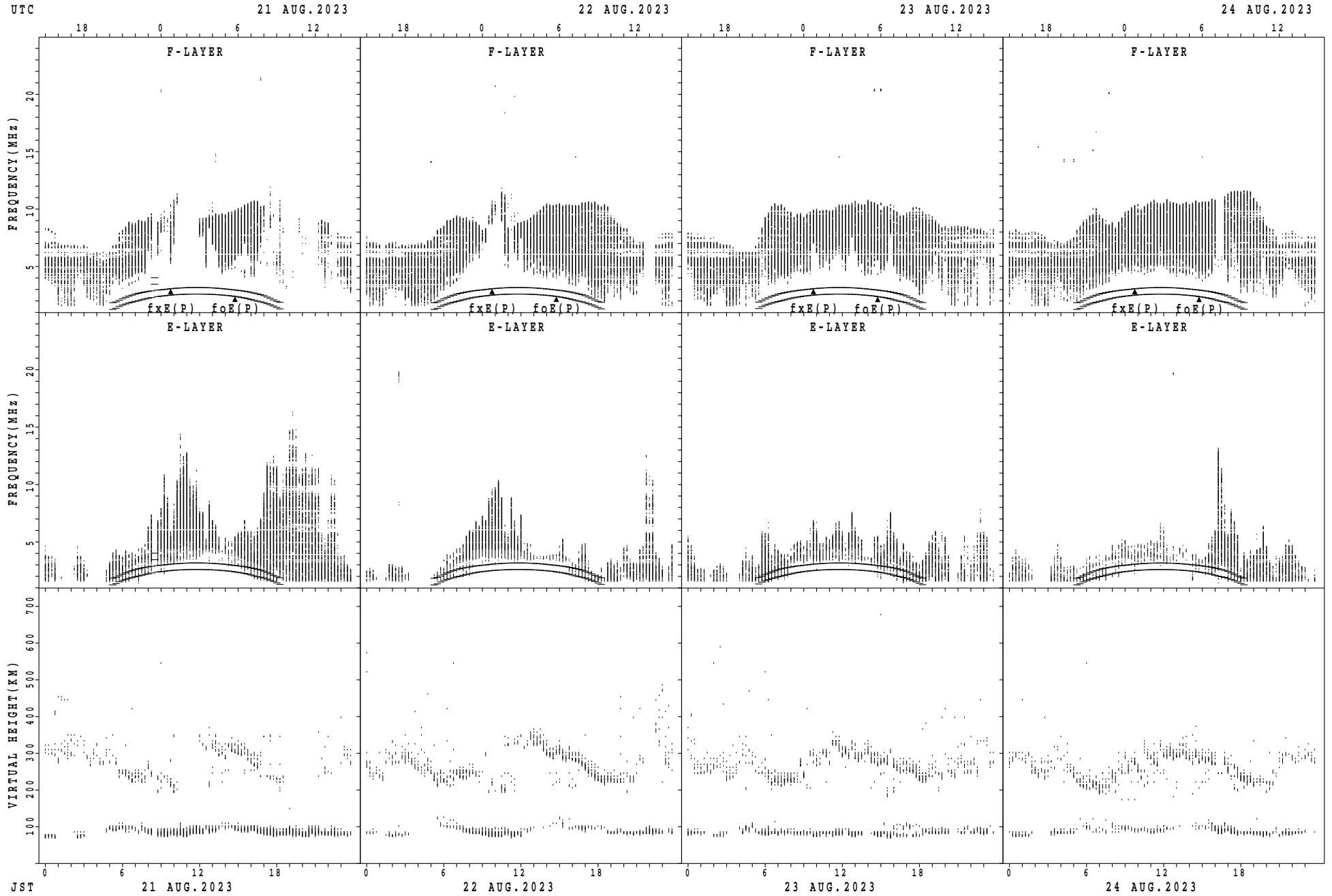
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



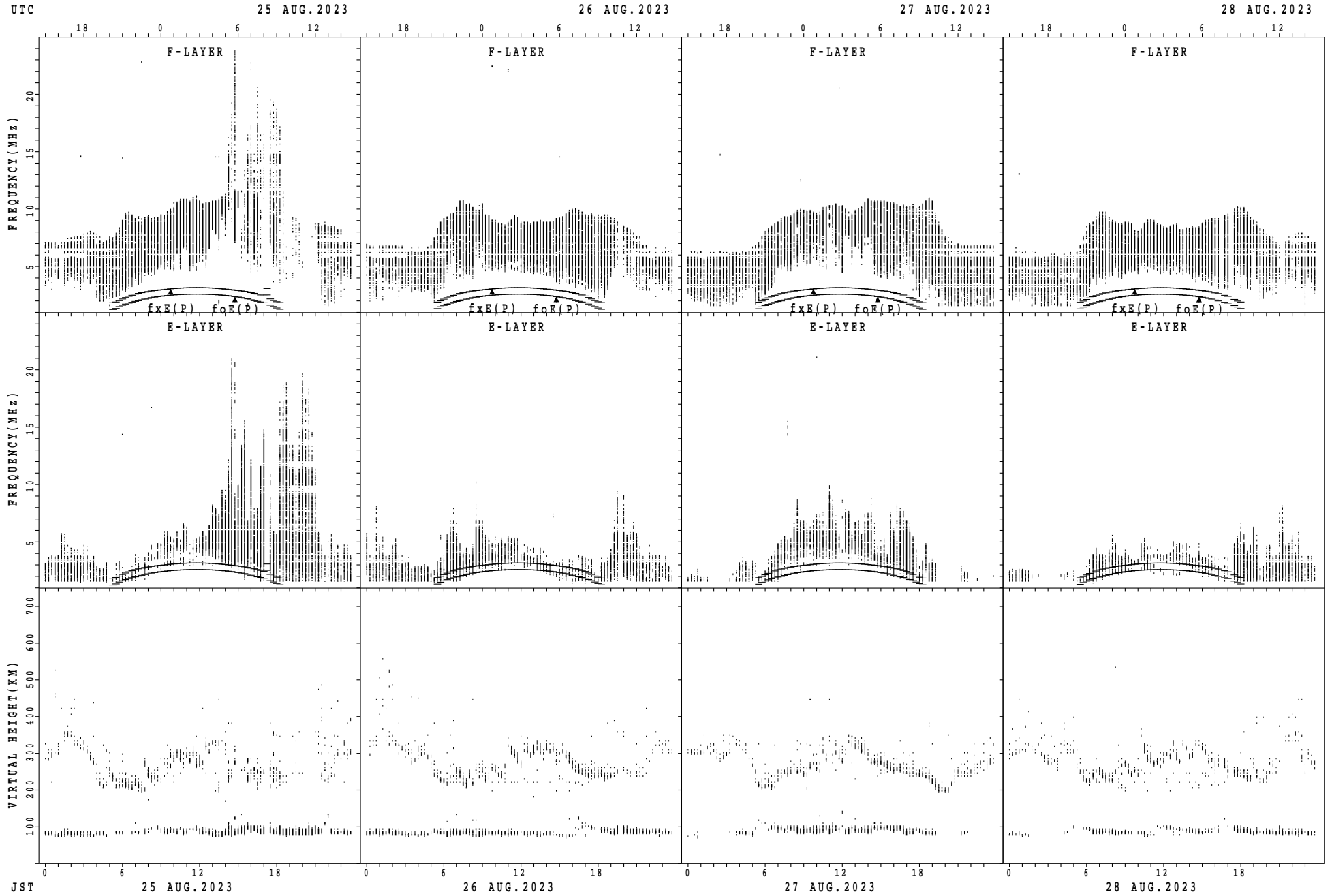
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



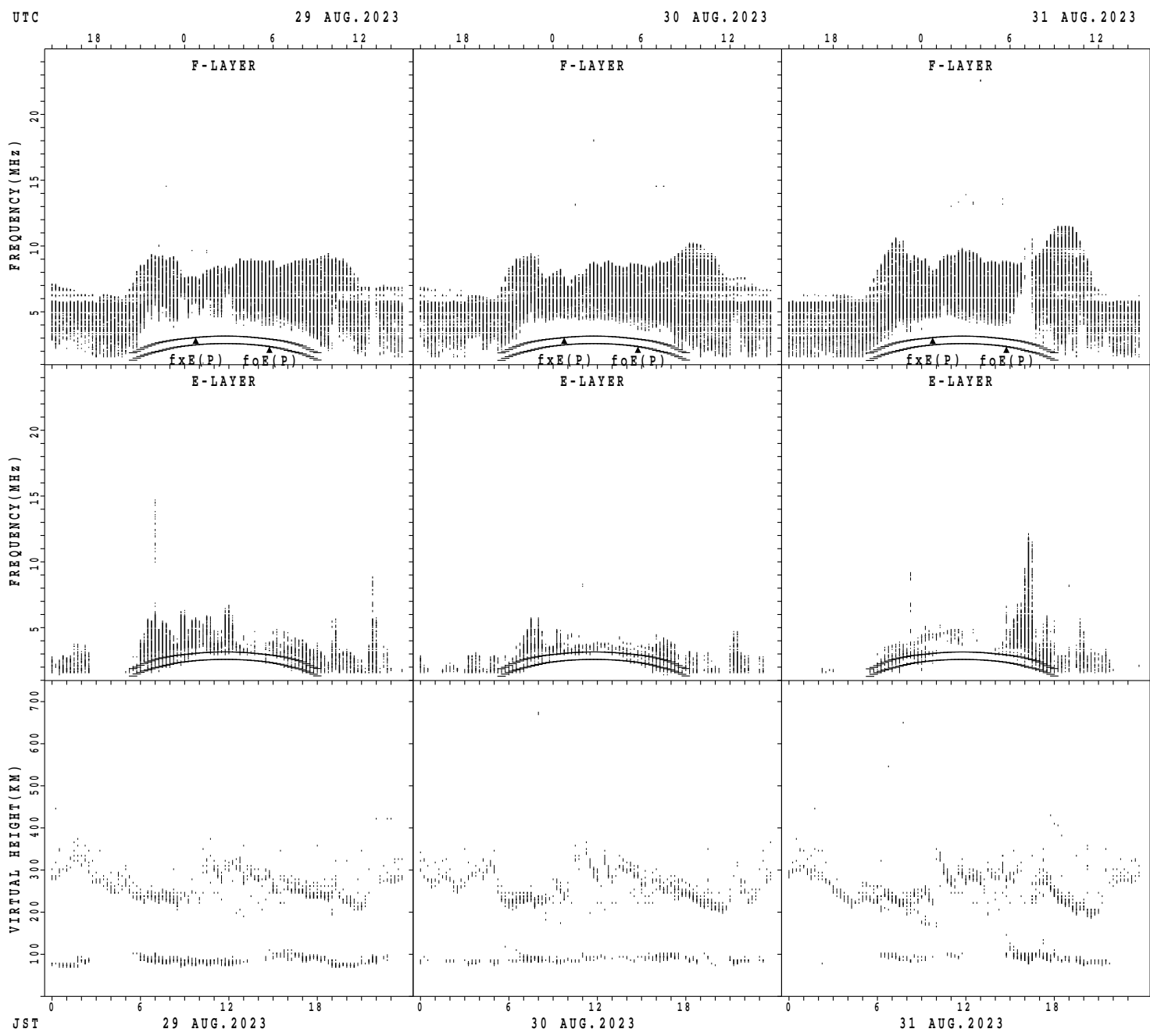
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



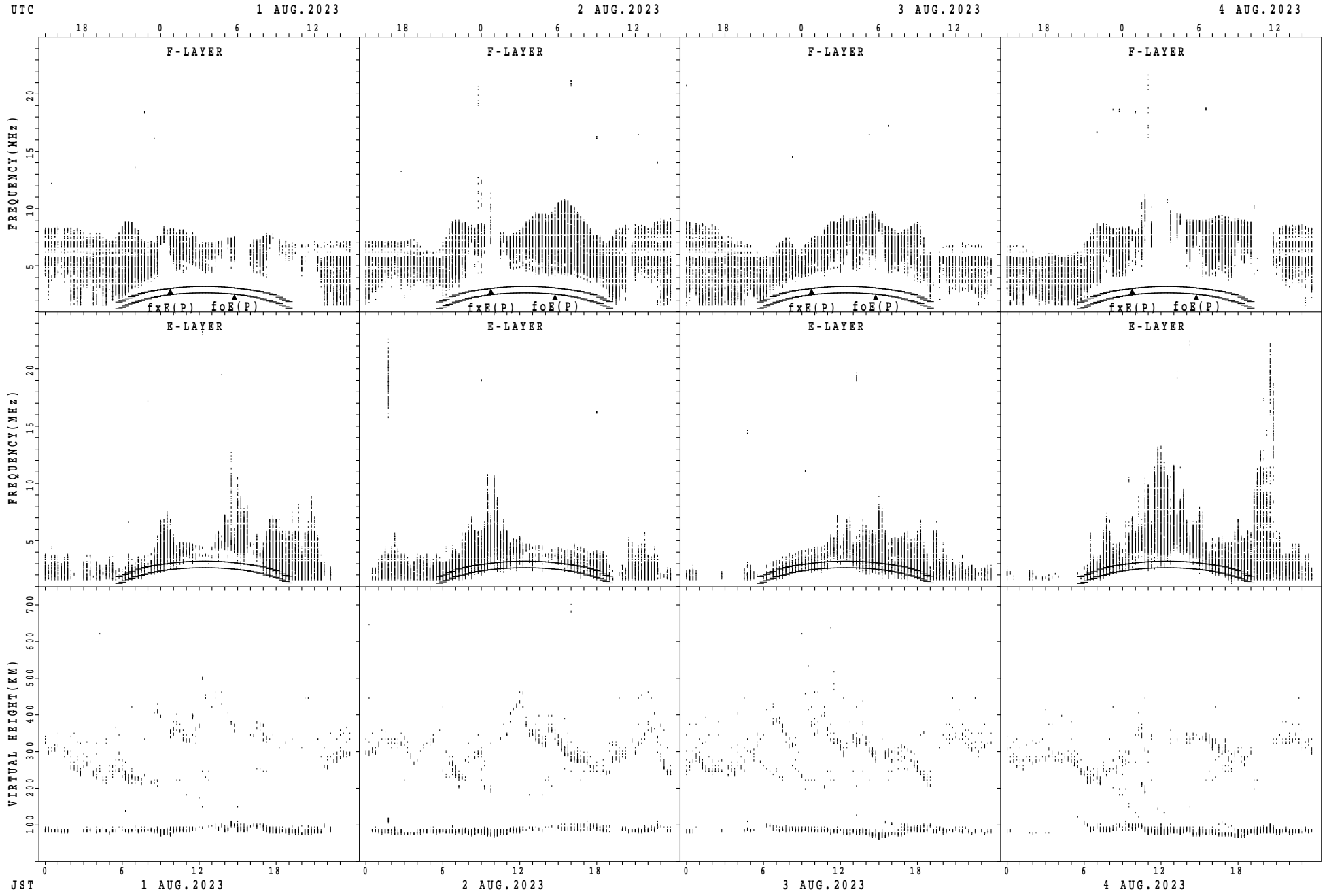
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



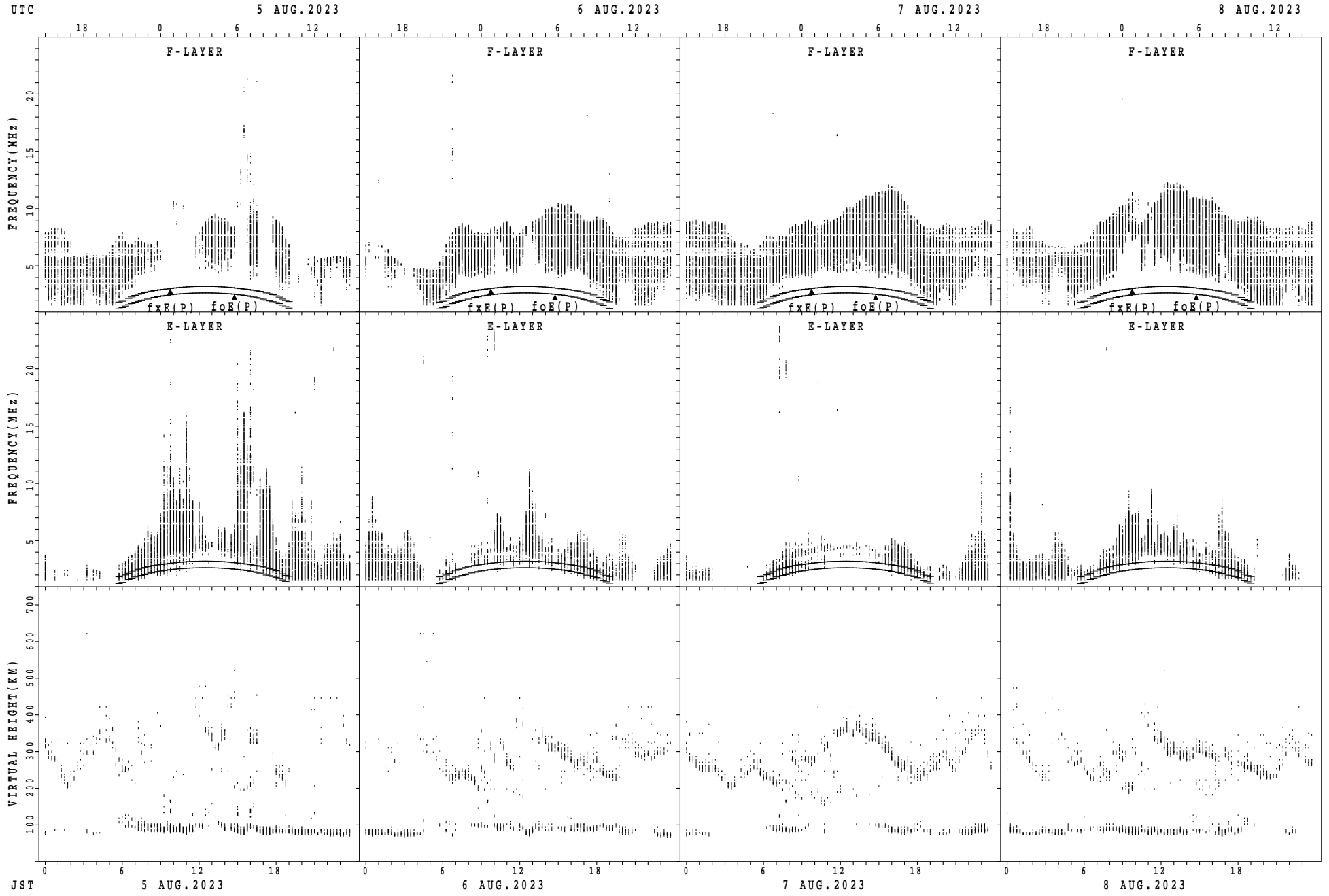
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



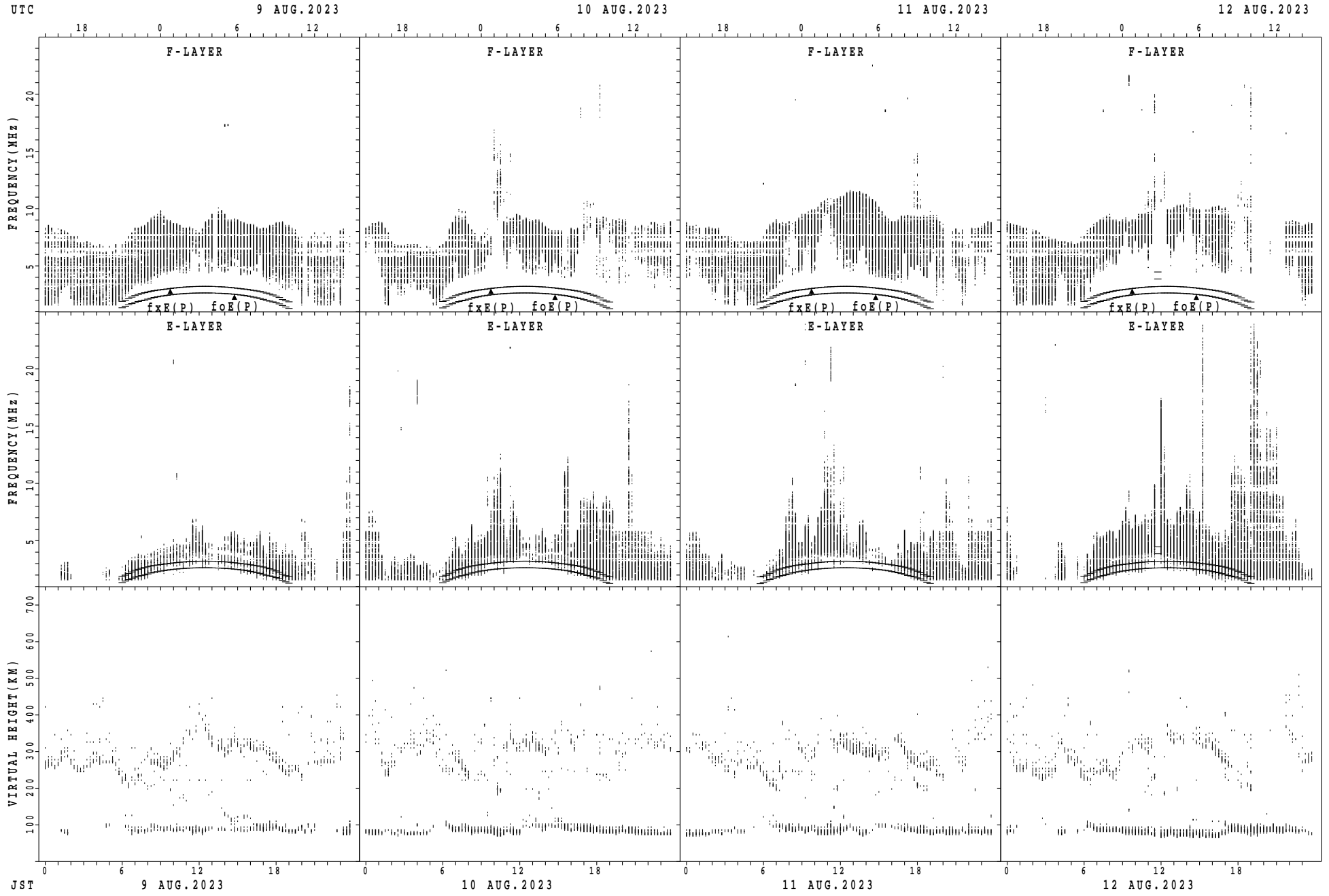
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



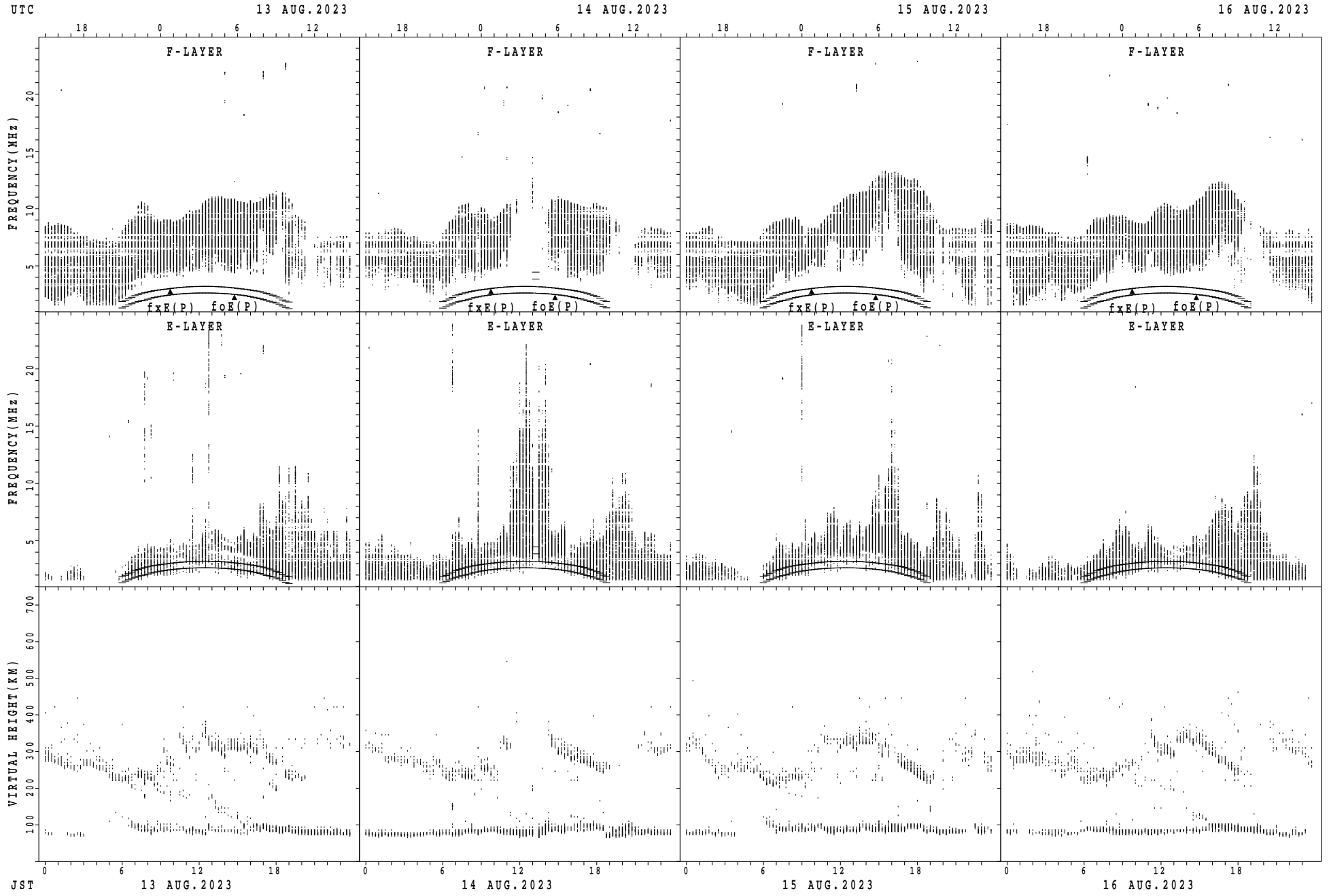
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



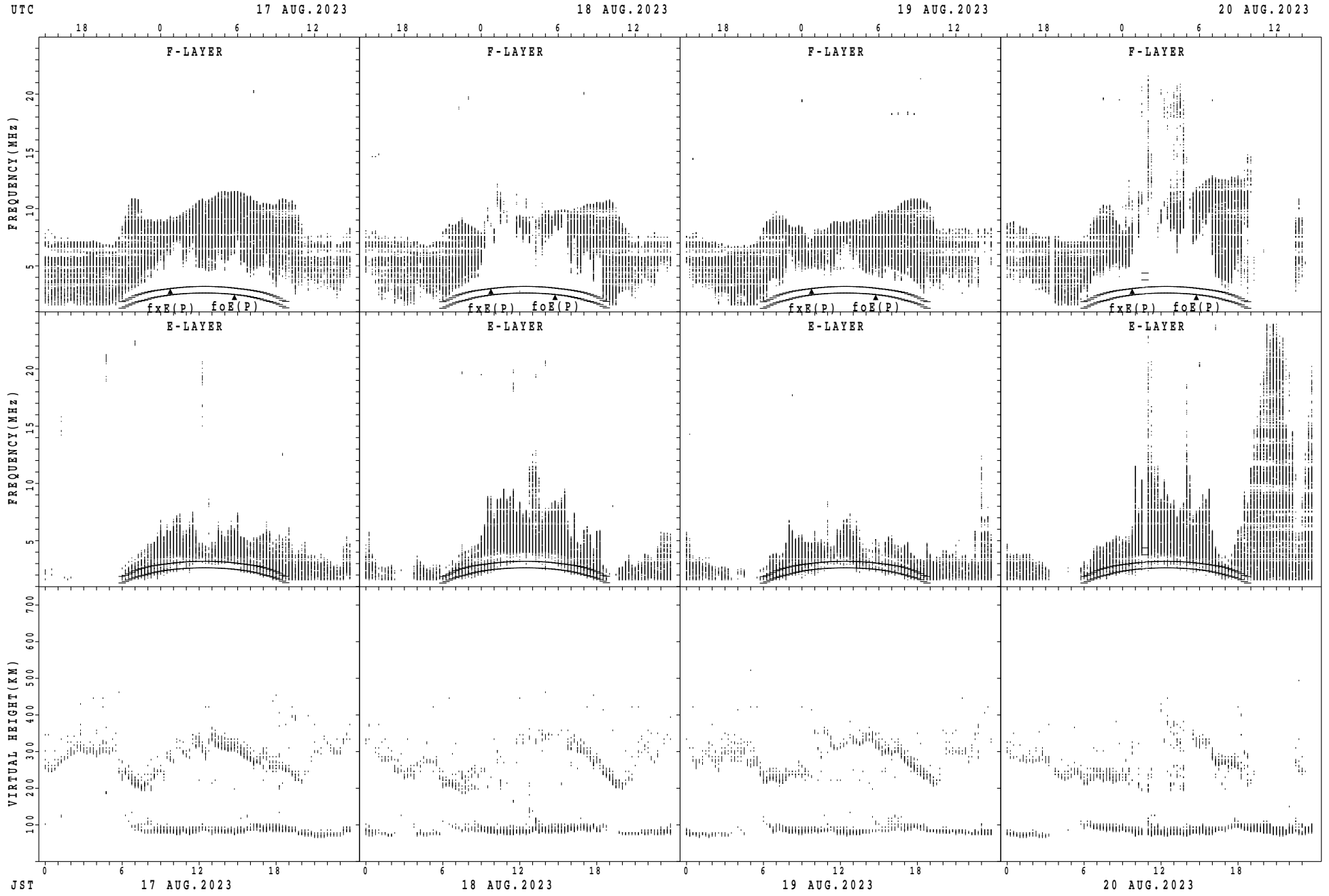
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



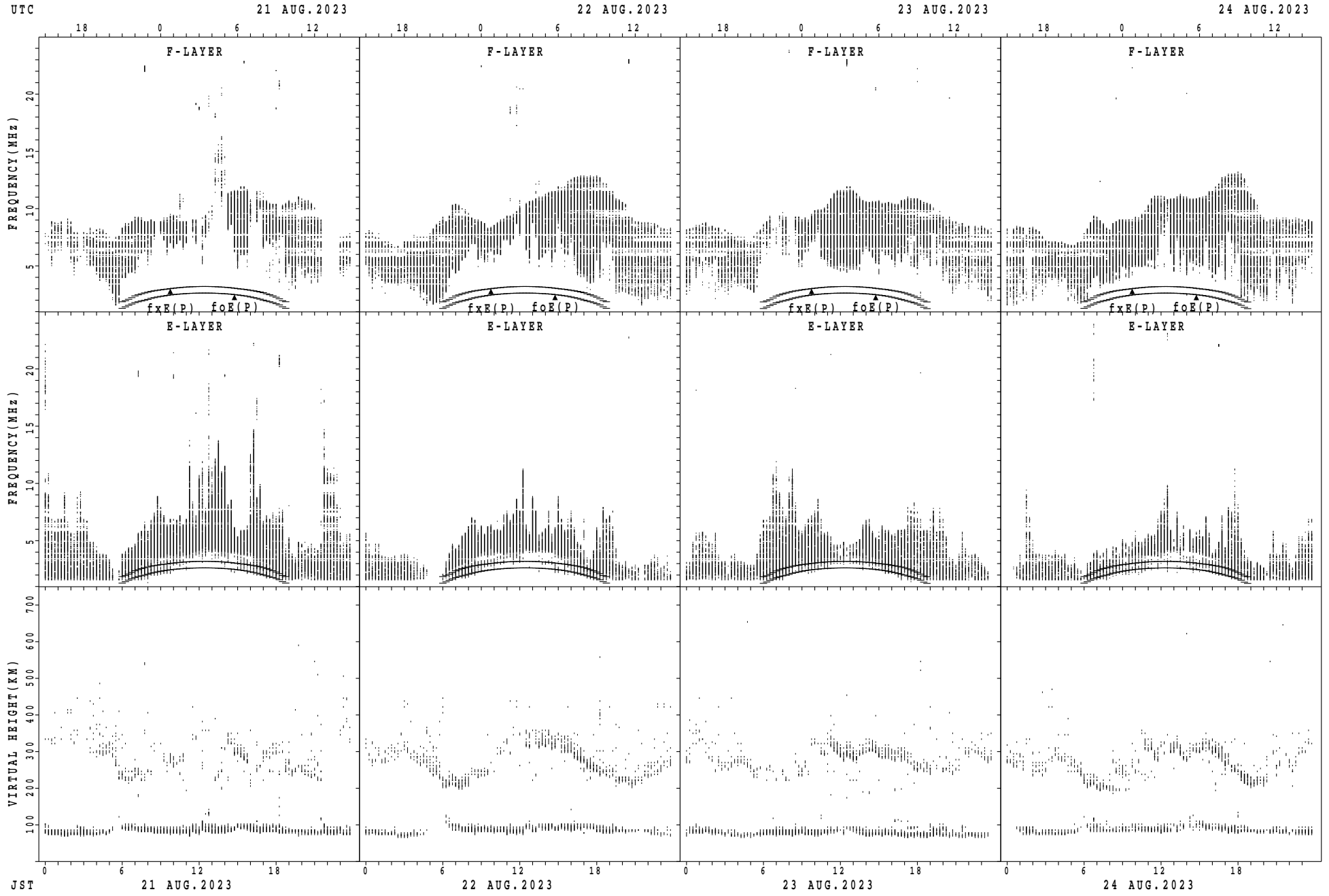
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



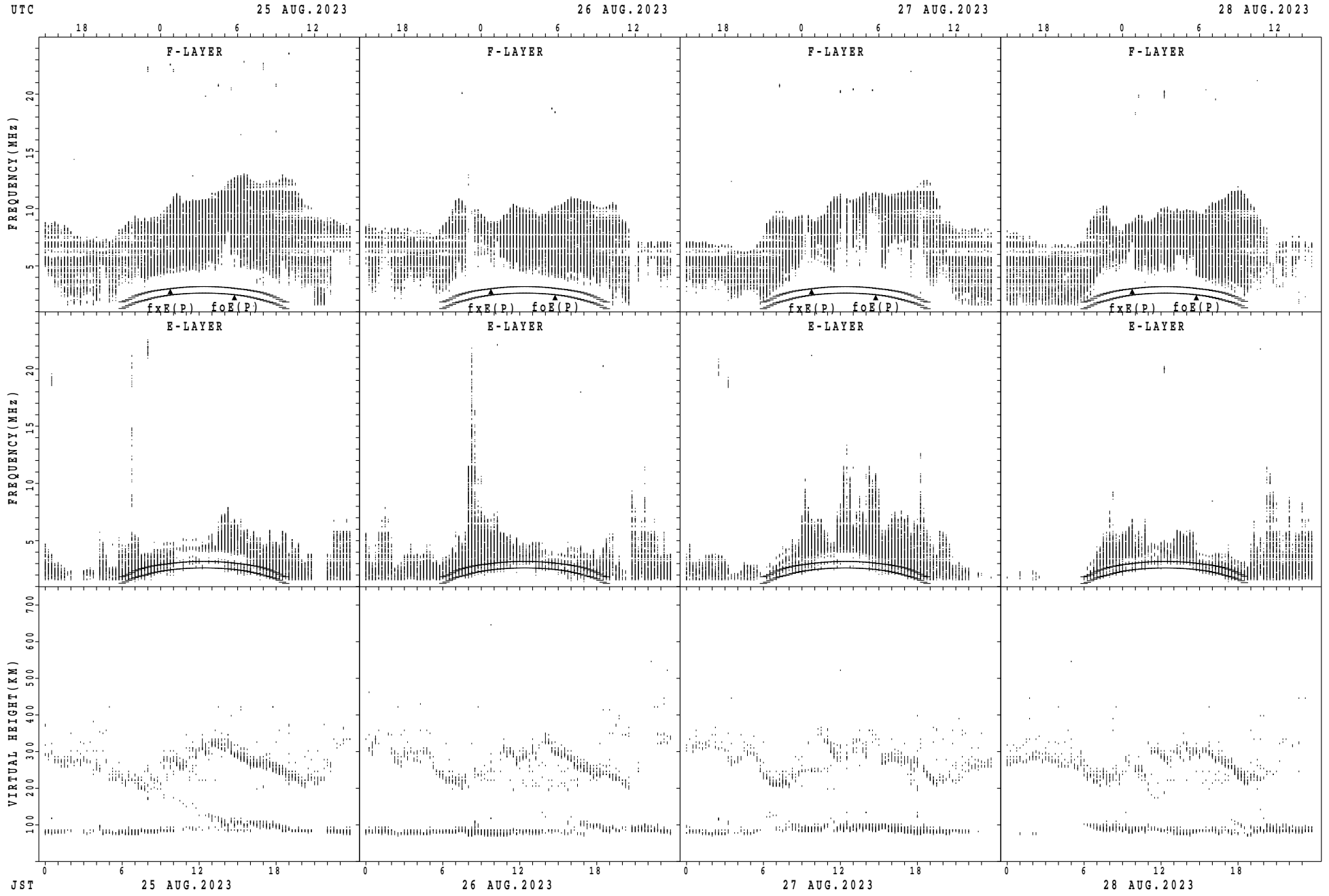
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



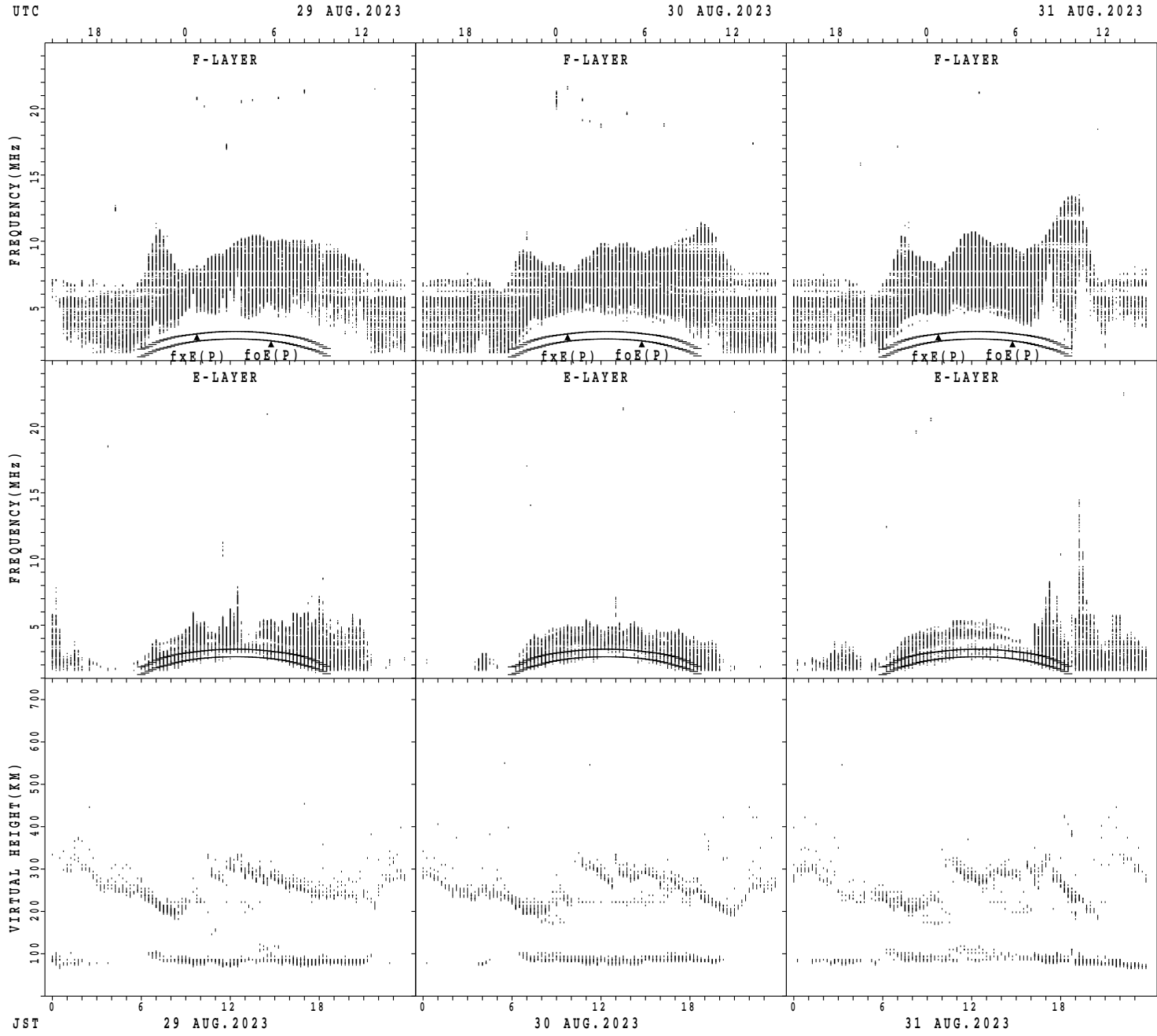
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



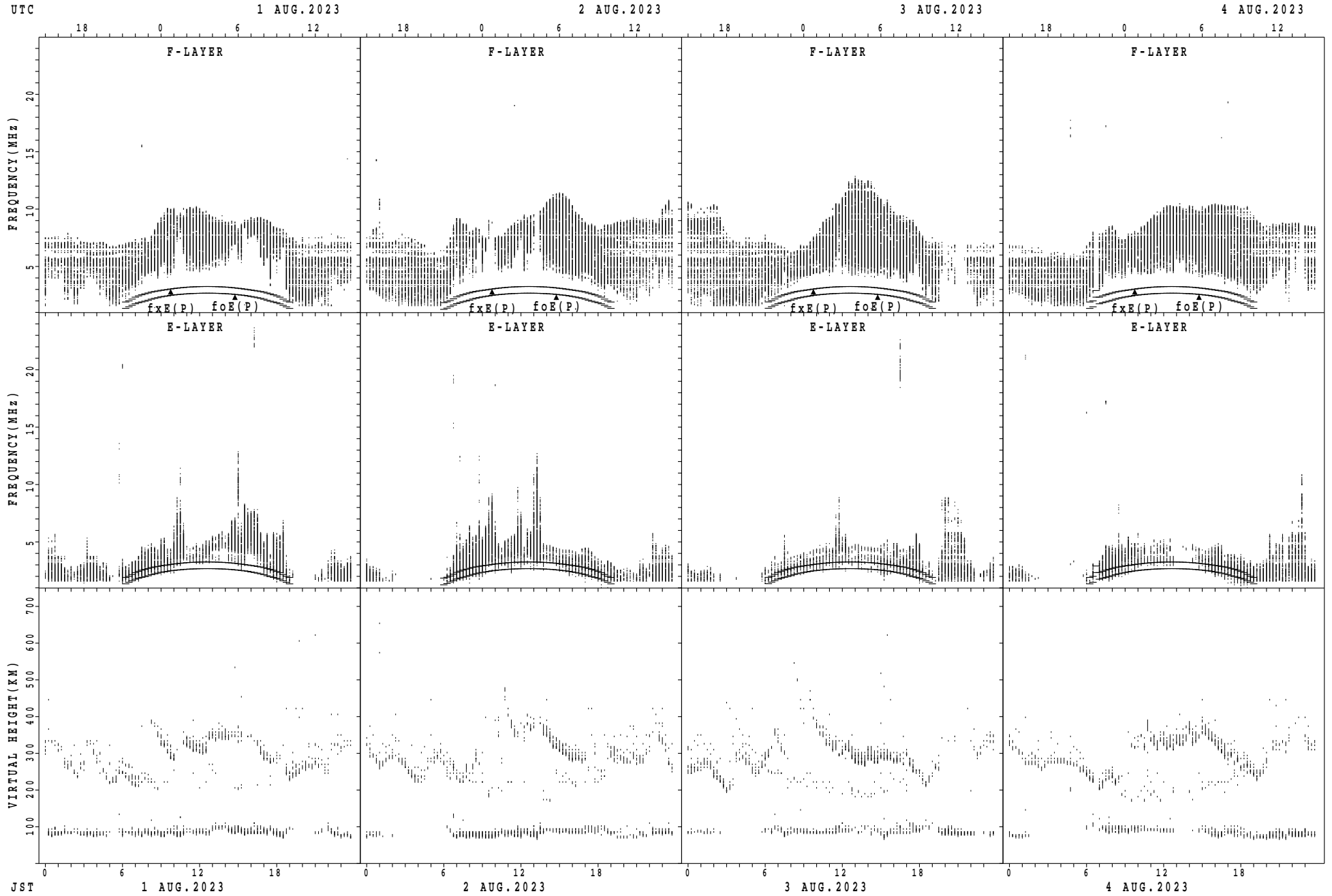
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



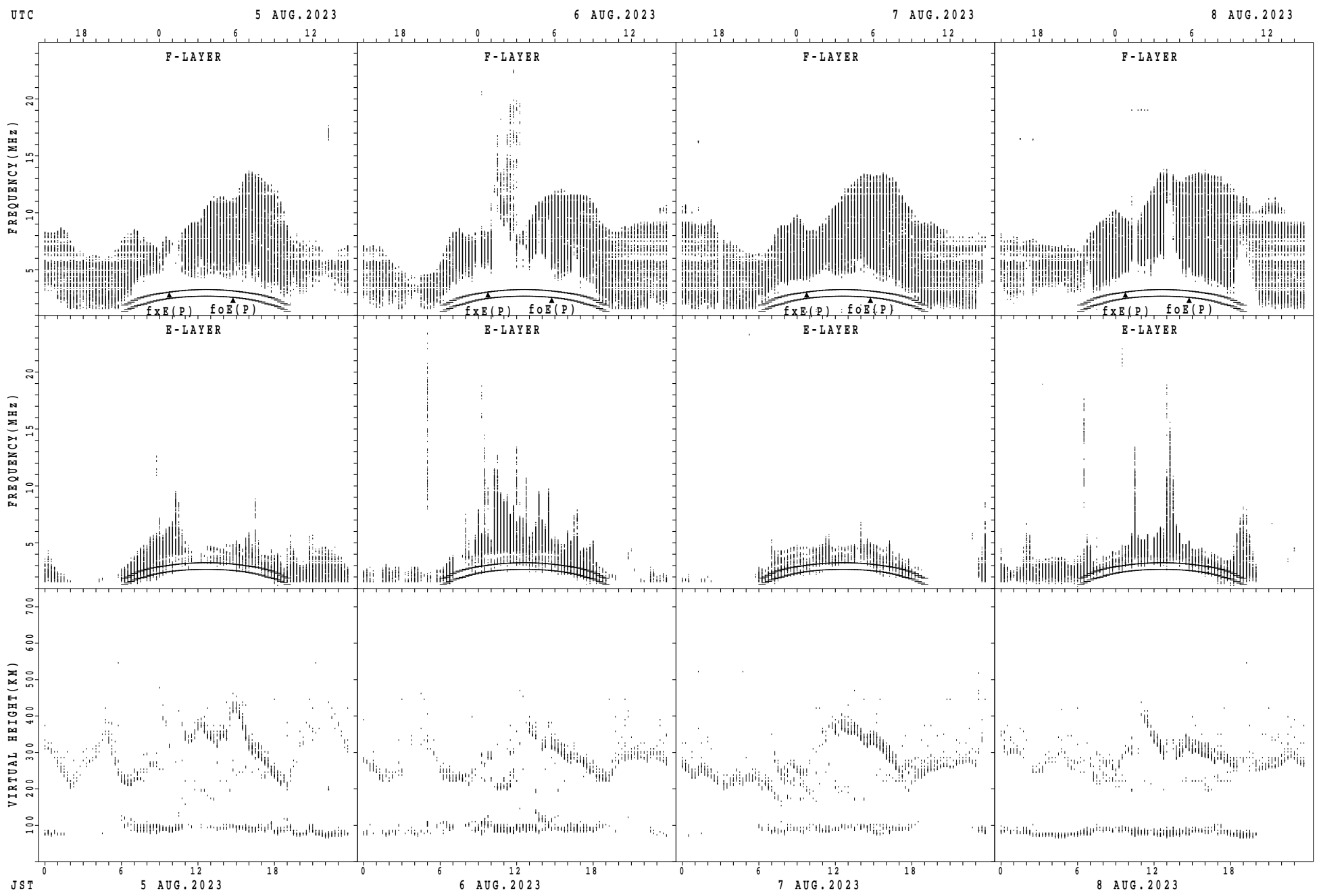
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



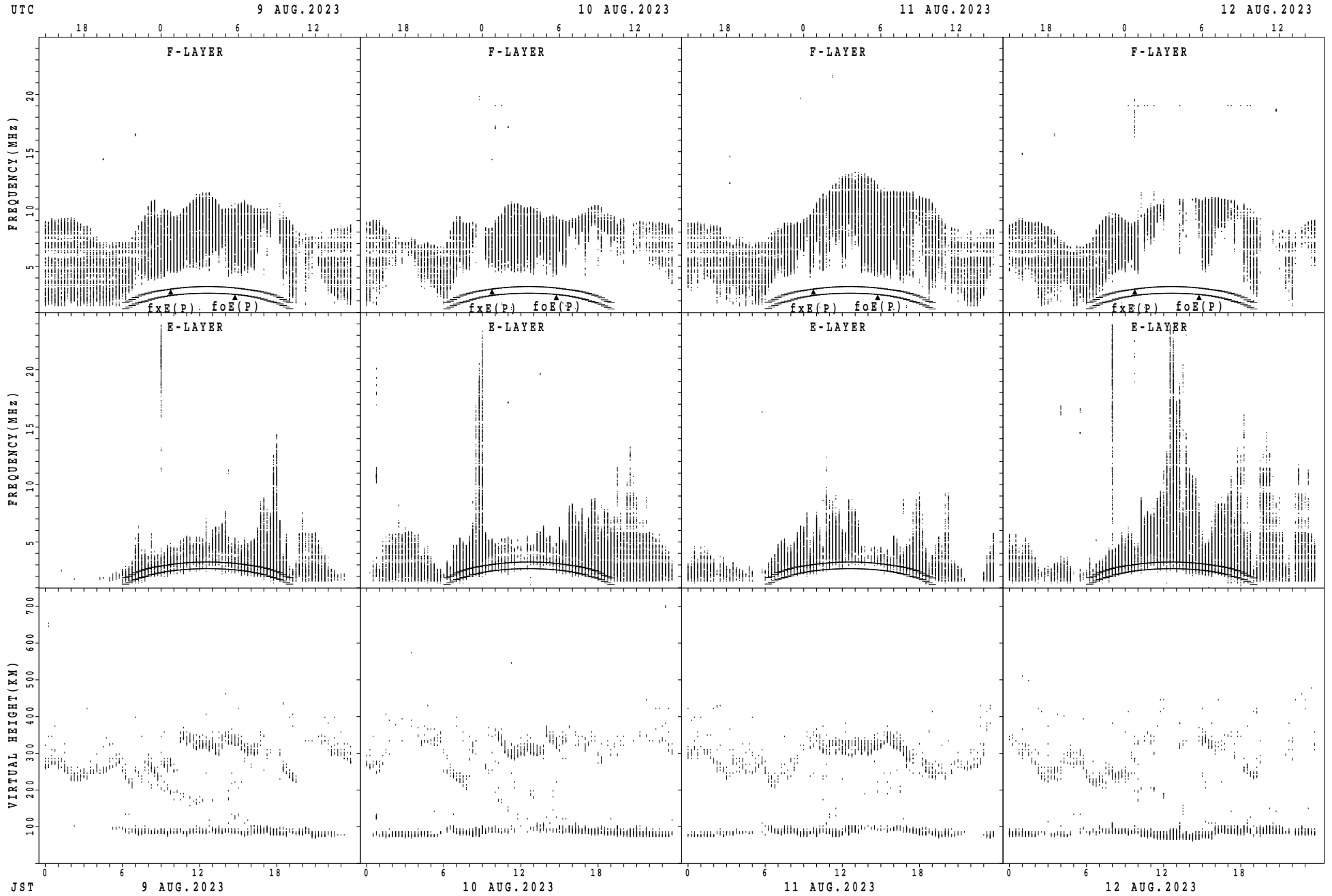
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



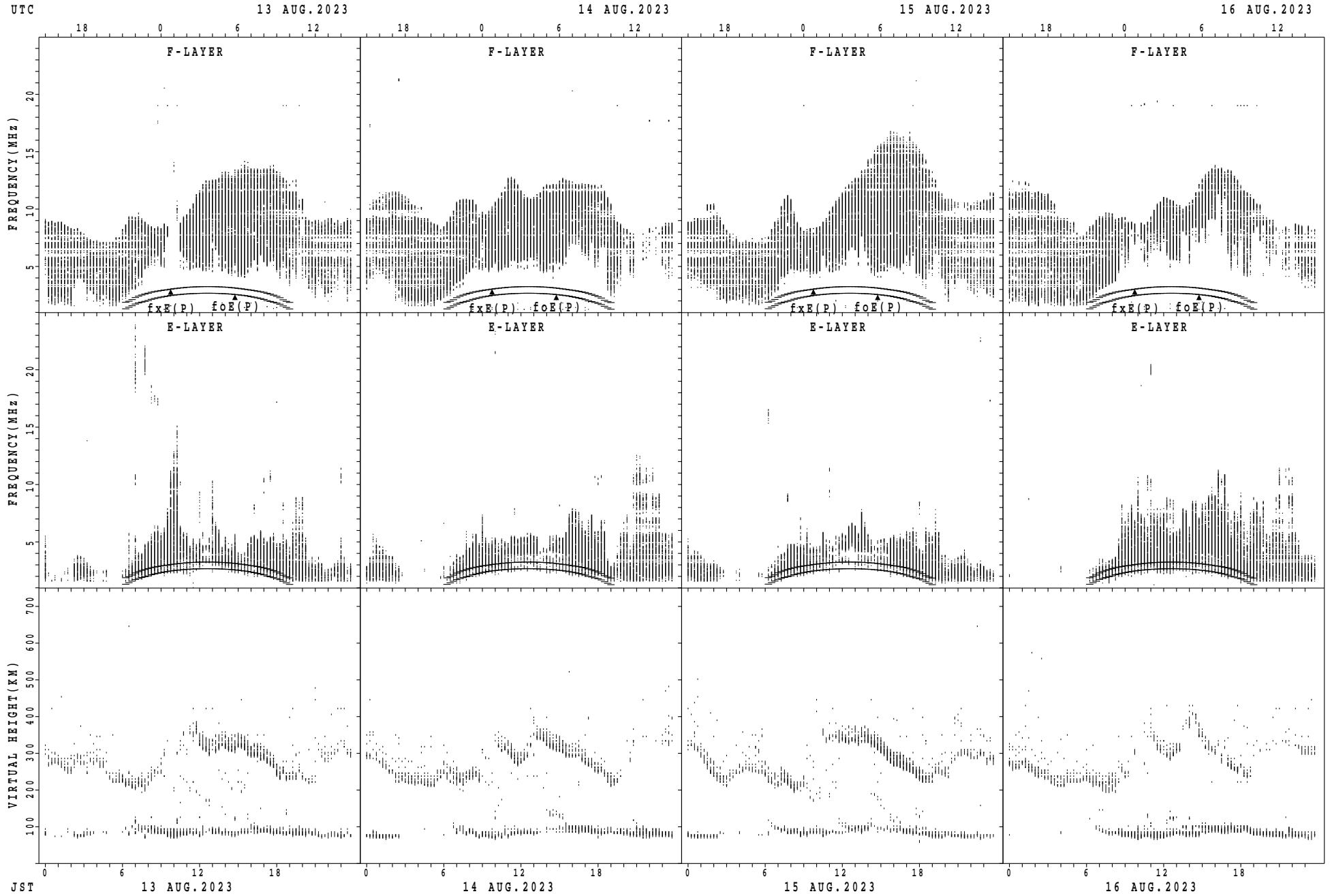
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



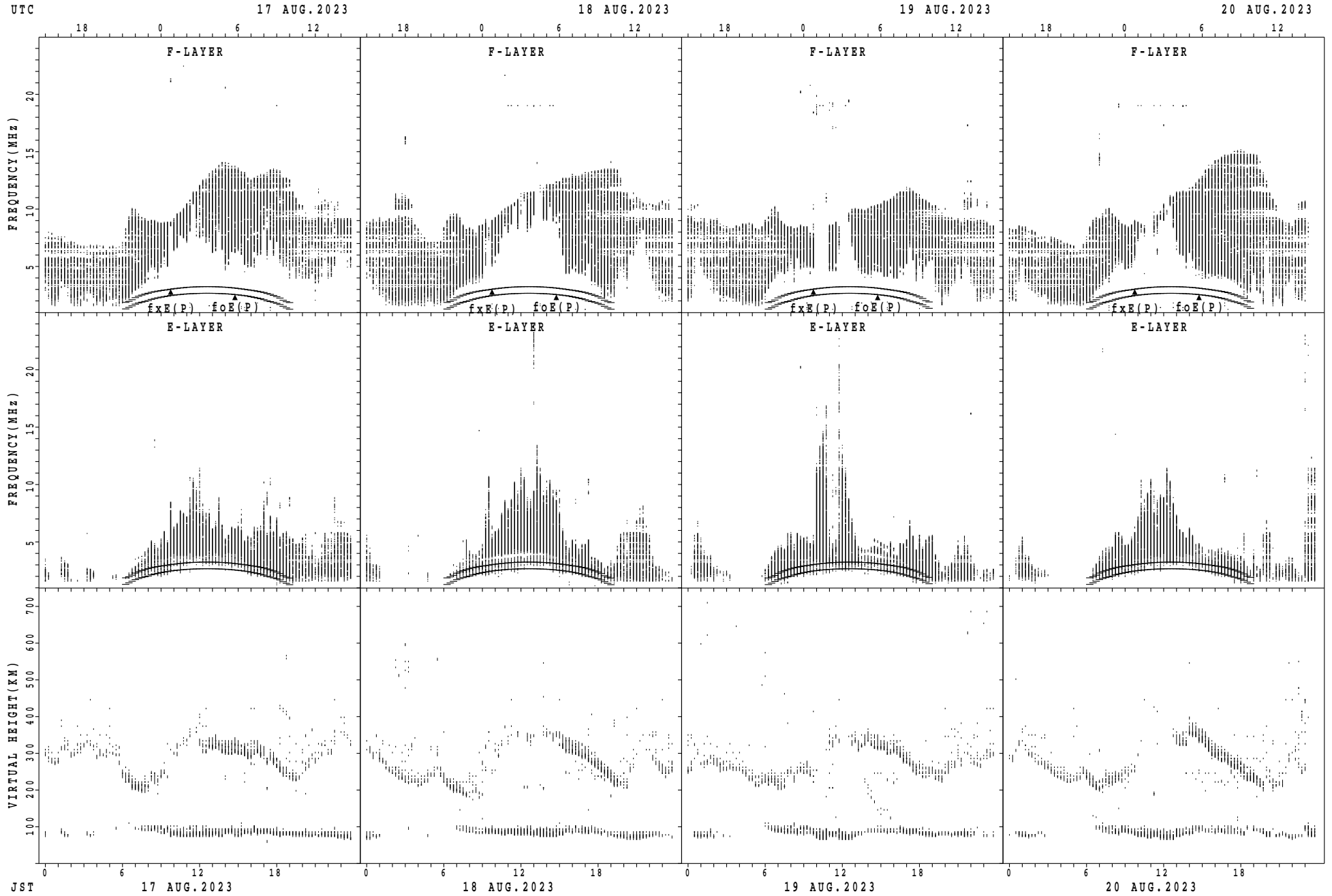
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



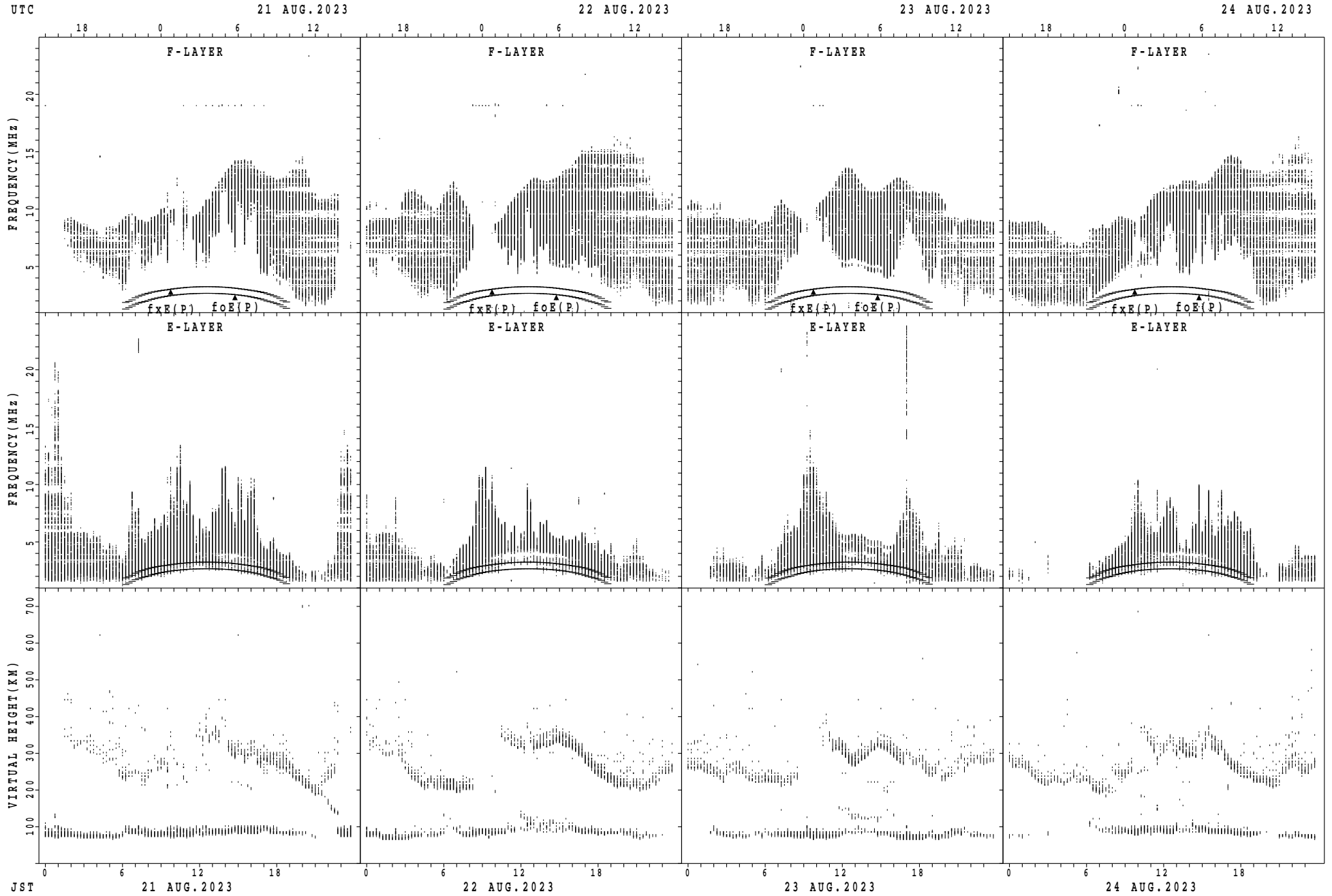
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



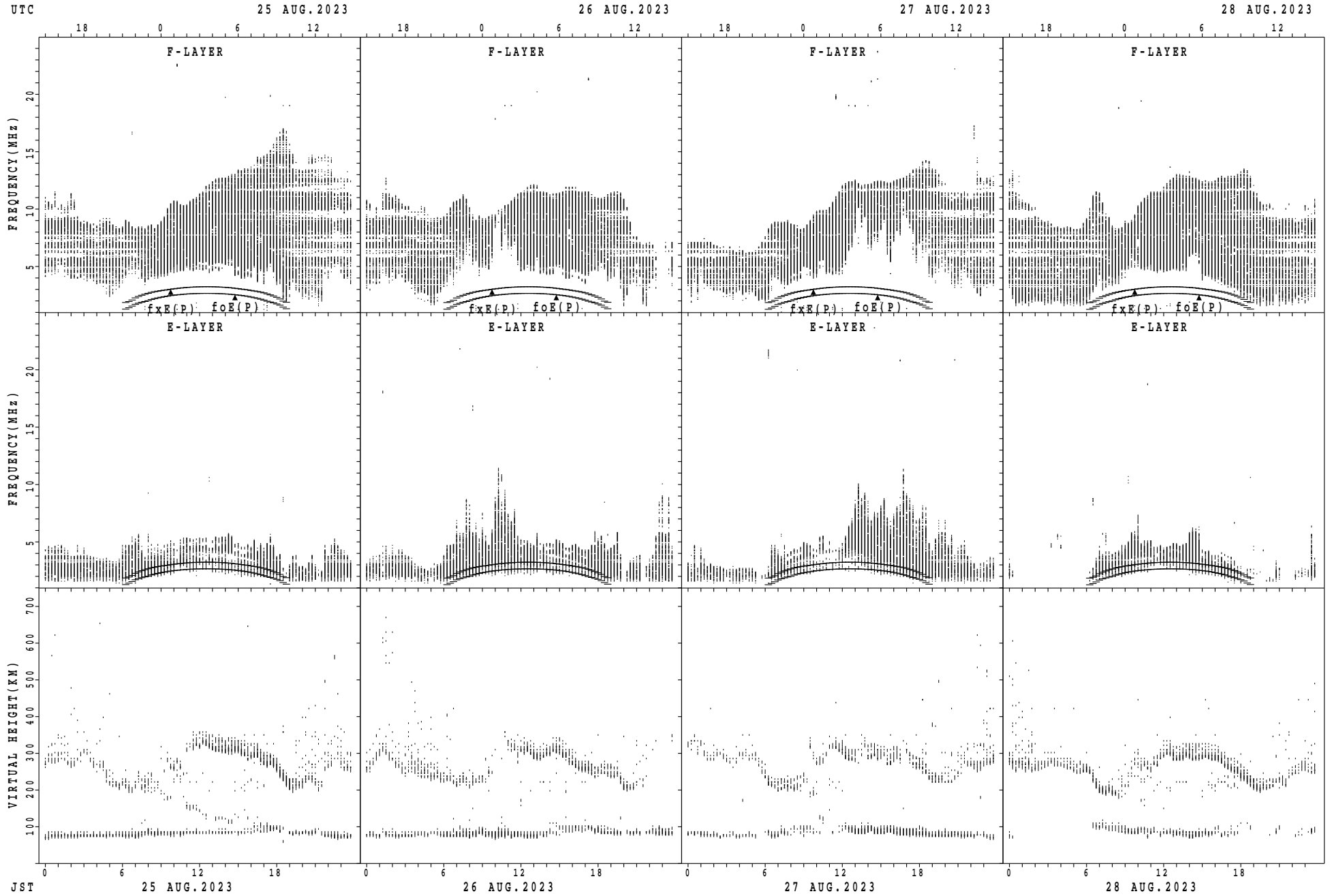
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



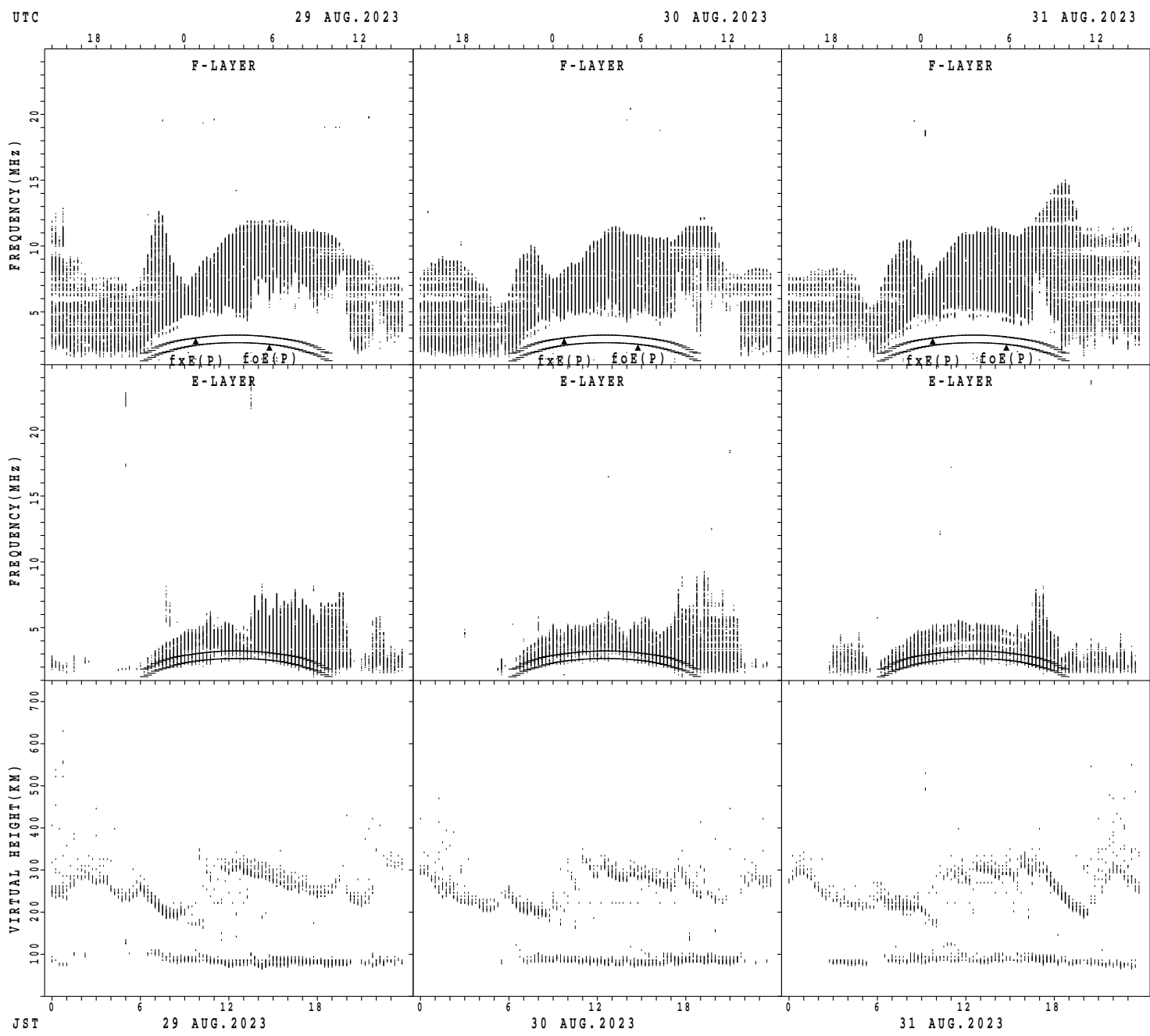
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

MONTHLY MEDIANS OF h'F AND h'Es
 AUG. 2023 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°10.0'N LON. 141°45.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1	2			6	14	22									16	22	21	22	13	9	5	1
MED	330	314	340			284	260	269									280	283	266	274	272	276	290	316
U Q	165	157	356			320	290	290									289	300	284	280	289	291	325	158
L Q	165	157	324			256	224	248									271	252	247	252	267	258	243	158

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	28	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29
MED	96	96	96	96	96	98	98	98	96	96	94	96	96	96	98	98	98	98	98	96	96	94	96	96
U Q	98	96	98	98	98	100	100	98	98	98	98	98	98	98	98	98	98	100	98	98	98	98	98	96
L Q	94	94	94	95	94	96	96	96	94	92	94	92	94	94	94	96	96	96	94	92	92	92	94	94

h'F STATION Kokubunji LAT. 35°43.0'N LON. 139°29.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	31	31	31	31	31	29	27	24	22	22	26	29	26	28	26	29	30	28	21	26	26	29
MED	285	283	290	268	270	252	232	232	240	242	272	262	270	290	274	251	257	264	248	242	236	258	260	274
U Q	311	294	312	288	286	274	274	254	260	258	290	296	328	328	306	295	274	275	278	263	277	330	310	306
L Q	267	266	260	254	250	244	218	215	226	220	224	232	240	220	238	220	232	243	242	232	213	228	244	260

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	27	28	21	23	31	31	31	29	30	29	29	29	25	30	30	31	31	29	30	30	27	27
MED	94	94	94	96	96	98	98	98	96	94	96	96	93	96	96	96	96	96	96	96	94	96	94	94
U Q	96	96	96	96	98	98	100	98	98	96	96	98	96	98	100	98	98	98	98	96	96	98	96	96
L Q	91	92	92	94	96	96	96	96	94	94	94	93	92	94	94	94	94	96	94	94	92	94	92	92

h'F STATION Yamagawa LAT. 31°12.0'N LON. 130°37.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	9	12	4	4	1	10	28	27									30	28	25	17	6	5	12
MED	333	322	311	318	351	306	261	239	238									270	256	240	256	269	350	343
U Q	354	359	332	390	383	153	282	259	250									278	269	257	308	316	403	368
L Q	320	298	296	280	330	153	248	224	226									222	233	211	235	256	303	317

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	26	27	22	30	31	30	31	31	31	31	30	30	31	31	31	31	31	30	28	28	29
MED	94	94	94	95	96	96	98	98	97	96	96	96	96	96	96	96	98	96	96	94	94	94	94	94
U Q	96	96	96	96	96	98	98	100	98	98	98	98	98	98	96	98	98	98	98	98	98	97	96	96
L Q	92	91	92	94	94	96	96	96	94	94	94	94	94	94	94	96	94	94	94	92	92	92	92	92

MONTHLY MEDIANS OF h'F AND h'Es
 AUG. 2023 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 26°41.0'N LON. 128°09.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	15	19	13	9	7	7	28	29									31	28	27	21	16	18	19
MED	314	306	290	308	260	280	248	224	232									278	249	248	256	313	315	346
U Q	336	314	316	335	292	368	276	237	245									286	263	262	294	330	330	352
L Q	291	296	274	276	252	248	234	215	213									254	233	232	232	277	288	312

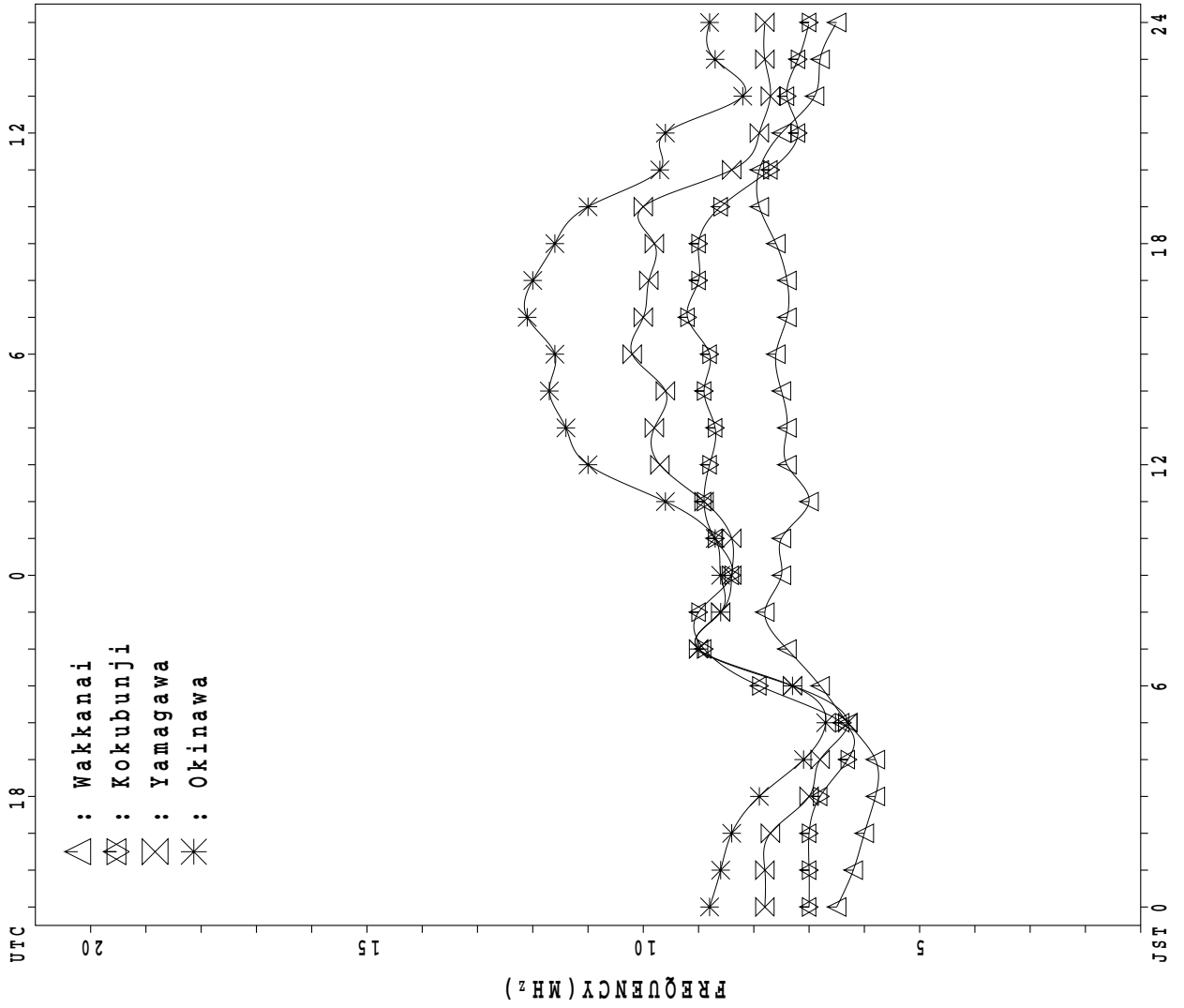
h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	25	26	24	20	21	24	31	31	31	31	31	30	30	30	31	31	31	31	30	29	28	29	30	
MED	94	94	94	96	94	96	97	96	96	96	96	94	96	96	96	96	96	98	94	96	94	94	94	94	
U Q	96	96	96	96	96	98	98	98	98	98	98	96	96	96	98	98	98	98	98	98	98	98	96	96	96
L Q	92	91	92	92	94	95	93	94	94	94	94	94	94	94	94	92	92	94	94	92	94	92	93	91	90

MONTHLY MEDIANS PLOT OF fOF2

AUG. 2023

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	X 70	X 70	X 69	X 68	X 66																X 77	X 81	X 76	X 71	
2	X 69	X 66	X 65	X 65	X 64																	X 93	X 84	X 88	X 84
3	X 83	X 81	X 70	X 66	X 58																	X 73	X 76	X 77	X 77
4	X 78	X 75	X 70	X 66	X 66																	X 82	X 88	X 82	X 79
5	X 78	X 78	X 70	X 66	X 58																	X 63	X 65	X 70	X 71
6	X 70	X 64	X 49	X 57	X 53																	X 84	X 83	X 81	X 80
7	X 79	X 79	X 76	X 71	X 70																	X 81	X 85	X 83	X 79
8	X 76	X 76	X 74	X 65	X 62																	X 76	X 75	X 75	X 72
9	X 72	X 70	X 67	X 64	X 64					75												X 85	X 85	X 81	X 79
10	X 75	X 68	X 66	X 65	X 66																	X 85	X 80	X 72	X 72
11	X 67	X 65	X 65	X 65	X 67																	X 84	X 86	X 85	X 79
12	X 73	X 70	X 70	X 68	X 67															X 87	X 89	X 89	X 86	X 79	
13	X 75	X 73	X 75	X 72	X 73															X 90	X 91	X 84	X 77	X 78	
14	X 76	X 75	X 72	X 72	X 68															X 86	X 88	X 89	X 81	X 77	
15	X 78	X 77	X 75	X 73	X 71															X 88	X 91	X 87	X 81	X 79	
16	X 76	X 75	X 75	X 71	X 72															X 92	X 92	X 88	X 85	X 83	
17	X 79	X 75	X 73	X 74	X 71															X 86	X 83	X 84	X 78	X 79	
18	X 79	X 76	X 73	X 71	X 69															X 81	X 83	X 80	X 74	X 67	
19	X 67	X 66	X 65	X 65	X 65															X 90	X 90	X 83	X 76	X 79	
20	X 79	X 76	X 75	X 75	X 74															X 89	X 91	X 90	X 87	X 71	
21	X 69	X 68	X 66	X 66	X 66															X 94	X 91	X 86	A	A	
22	X 91	X 82	X 79	X 71	X 71															X 88	X 80	X 86	X 85	X 77	
23	X 71	X 67	X 65	X 63	X 61															X 95	X 88	X 86	X 84	X 79	
24	X 78	X 76	X 75	X 72	X 71															X 106	X 94	X 86	X 74	X 76	
25	X 74	X 72	X 70	X 68	X 71															X 93	X 90	X 88	X 79	X 70	
26	X 67	X 66	X 64	X 65	X 62															X 89	X 91	X 81	X 70	X 69	
27	X 68	X 65	X 66	X 65	X 64															X 91	X 84	X 79	X 70	X 66	
28	X 63	X 61	X 60	X 61	X 59															X 84	X 81	X 81	X 77	X 68	
29	X 65	X 62	X 63	X 62	X 59															X 85	X 83	X 81	X 72	X 67	
30	X 65	X 64	X 64	X 62	X 59															X 94	X 89	X 89	X 73	X 63	
31	X 60	X 61	X 61	X 63	X 58															X 99	X 93	X 81	X 72	X 71	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31					1										20	31	31	30	30	
MED	X 74	X 70	X 70	X 66	X 66					75										X 90	X 85	X 84	X 78	X 77	
U Q	X 78	X 76	X 74	X 71	X 71															X 94	X 91	X 87	X 83	X 79	
L Q	X 68	X 66	X 65	X 65	X 61															X 86	X 82	X 81	X 74	X 71	

AUG. 2023 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	63	63	62	61	59	64	68	65	60	A	A	A	A	55	56	55	56	56	60	63	70	74	69	64	
2	62	59	58	58	57	70	82	85	83	V	84	78	77	81	72	75	74	76	77	84	91	86	77	81	77
3	76	74	63	59	51	53	62	70	74	75	71	66	65	67	64	67	65	67	66	62	66	69	70	70	
4	71	68	63	59	59	64	70	81	77	75	76	76	70	74	76	74	72	69	68	70	A	74	81	75	72
5	71	71	63	59	51	53	55	58	56	57	56	55	58	64	57	64	69	66	60	A	56	58	63	64	
6	63	57	42	F	F	55	58	59	54	56	58	64	72	75	69	70	70	66	70	74	77	76	74	73	
7	72	72	69	64	63	65	68	72	80	74	71	74	76	H	74	78	75	70	68	66	74	78	76	72	
8	69	69	67	58	55	58	69	67	58	55	53	E	G	57	63	61	59	60	61	60	64	69	68	68	65
9	65	63	60	57	57	59	72	83	80	F	66	72	66	72	74	72	70	69	72	73	75	78	78	74	72
10	68	61	59	58	59	59	64	A	61	59	57	61	62	63	64	64	67	70	70	79	78	73	65	65	
11	60	58	58	58	60	71	92	76	72	68	68	H	66	63	67	68	67	69	66	68	75	77	79	78	72
12	66	63	63	60	60	67	69	78	79	86	75	77	78	79	76	78	80	80	79	80	82	82	79	72	
13	68	66	68	65	66	74	77	80	81	84	84	76	78	81	75	73	76	76	76	83	84	77	70	71	
14	69	68	65	65	61	65	77	85	86	82	76	71	75	76	79	77	72	75	73	79	81	82	74	70	
15	71	70	68	66	64	65	76	86	87	83	83	81	80	85	82	80	77	76	77	81	84	80	74	72	
16	69	68	68	64	65	75	84	90	96	89	82	81	80	78	79	81	79	79	80	85	85	82	78	76	
17	72	68	66	67	64	72	97	82	77	73	73	74	75	76	80	79	79	78	77	79	76	77	71	72	
18	F	68	69	66	64	62	67	67	65	60	56	55	57	57	58	58	59	60	66	74	76	73	67	60	
19	60	59	58	58	58	61	67	72	65	68	67	69	75	73	73	75	72	75	77	83	83	76	69	72	
20	F	70	69	68	F	F	65	76	80	76	79	75	72	79	74	88	84	76	74	74	82	84	83	80	64
21	62	62	59	59	59	64	70	81	90	83	79	74	82	82	A	79	80	80	80	87	84	79	A	A	
22	F	70	F	F	F	56	62	66	70	74	A	68	74	77	76	80	81	81	81	81	73	79	78	70	
23	64	60	58	56	54	64	85	97	113	100	96	87	85	82	85	84	80	83	84	88	81	79	77	72	
24	71	69	68	65	64	73	84	89	85	87	94	90	V	81	81	84	88	91	90	95	99	87	79	68	69
25	67	65	63	61	64	70	85	90	94	86	84	82	87	90	87	88	86	85	86	86	83	81	72	63	
26	60	59	58	58	55	60	70	75	82	72	77	72	74	72	69	72	79	78	79	82	84	74	63	62	
27	61	58	59	58	57	60	65	65	69	69	74	H	73	73	76	79	84	76	76	88	84	77	72	63	59
28	56	54	53	54	52	54	64	72	84	74	76	70	71	69	76	77	74	78	72	77	74	74	70	61	
29	58	55	56	55	52	52	60	62	65	64	63	64	67	68	70	70	69	71	76	78	76	74	65	60	
30	58	57	57	55	52	56	69	74	75	69	73	73	74	73	72	70	72	74	79	87	82	82	66	56	
31	54	54	54	56	51	53	72	85	79	H	87	97	82	72	74	74	75	75	79	86	92	86	74	F	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	31	30	31	30	31	31	30	31	30	29	30	30	31	30	31	31	31	31	30	31	31	29	30	
MED	66	63	62	59	59	64	70	77	77	74	75	72	74	74	74	75	75	75	76	80	78	77	71	70	
U Q	70	69	66	64	63	67	77	85	84	84	80	77	79	78	79	80	79	79	80	85	84	80	76	72	
L Q	61	59	58	58	54	56	65	67	65	68	68	66	70	68	69	70	69	69	68	75	74	74	68	64	

AUG. 2023 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A		A	U	L	L	A					
2						L	A	L				A	H	U	L		488	452	L					
3																								
4							U	L	L	A														
5						U	L		A															
6																								
7							L	H																
8							L	A																
9								L																
10							L	A	A															
11							L	L	A															
12																								
13							L	L																
14																								
15																								
16																								
17							L	U	L	A	A													
18							L																	
19							L	L	L															
20																								
21							L		A	L	L													
22								L	A	L														
23								L	L	L	L													
24																								
25								L	A	A	U	L												
26							L	L																
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	9	11	16	27	27	24	28	30	28	25	18	7			1			
MED						344	404	464	480	512	524	552	540	536	522	508	488	448			188			
U Q						U	L	L	L															
L Q						372	428	492	506	524	552	568	556	548	532	524	500	460						
						340	384	452	470	500	508	528	528	516	506	494	484	412						

AUG. 2023 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	248	320	336	356	A	400	388	A	A	A	A	A	A	A				
2						A	268	312	352	380	A	384	A	412	388	360	336	A	A	B				
3						A	A	276	A	A	A	408	388	A	A	360	348	296	236	A				
4						A	268	316	336	364	400	A	408	A	A	372	A	288	216	A				
5						A	272	316	348	376	376	380	392	R	380	372	364	340	316	A	A			
6					200	A	256	328	376	376	A	A	A	A	376	348	A	212	A	A				
7						A	A	276	352	380	392	392	404	A	A	364	A	308	224	A	A			
8					184	U	324	336	344	364	380	396	A	404	A	364	332	284	A	A				
9						A	264	A	324	A	A	A	A	388	392	356	332	292	A	A				
10						A	264	300	344	364	A	356	400	396	372	348	320	252	236	A				
11						A	272	316	340	364	A	A	A	A	A	A	A	288	A	A				
12						A	268	304	328	364	368	376	A	384	368	352	316	260	184	A				
13						A	256	300	328	348	368	A	A	A	A	356	324	296	A					
14						A	260	308	A	A	A	A	A	A	372	360	320	276	A					
15						A	284	320	336	380	A	A	A	388	A	A	332	A	200					
16					200	A	268	308	336	352	364	364	A	A	A	316	328	268	200					
17						A	264	296	A	A	A	A	A	A	A	364	320	A	A					
18						A	248	296	332	348	364	A	A	A	364	A	A	264	A					
19						A	256	296	312	344	368	372	A	376	360	344	320	268	192					
20						A	276	300	324	344	A	A	A	364	360	340	316	260	196					
21						A	248	288	316	A	A	U G	A	A	A	340	312	264	A					
22						A	248	296	332	A	376	A	A	A	A	A	A	A	A					
23						A	A	288	348	A	A	A	A	376	372	A	312	260	A					
24						A	A	A	A	A	A	A	A	A	356	344	304	248	A					
25						A	256	292	320	A	A	A	A	A	A	A	A	A	A					
26						A	A	264	A	A	A	A	A	A	356	340	300	248	A					
27						A	248	292	332	352	388	A	A	A	A	340	300	A	A					
28						A	A	A	A	A	A	A	A	A	A	A	A	224	A					
29						A	A	A	A	A	368	A	A	A	A	328	296	244	A					
30						A	216	276	A	A	A	A	U G	372	368	352	A	296	236	A				
31						B	216	280	A	A	A	A	A	A	356	332	296	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	24	27	22	17	12	11	7	11	15	22	22	24	9					
MED						200	262	300	336	364	372	384	392	384	368	350	320	264	200					
U Q						200	268	316	344	376	384	396	404	396	372	360	332	288	230					
L Q						184	248	288	328	350	368	372	388	376	356	340	304	248	194					

AUG. 2023 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E 'SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 16	BE 16	BE 16	J 20	J 26	J 62	J 65	J 67	J 63	J 64	J 88	J 92	J 97	J 63	J 97	J 44	J 39	J 69	J 109	J 32	J 144	J 65	J 79	J 25	
2	E 16	BE 16	BE 20	J 39	J 17	J 29	J 56	J 47	G	G	44	J 78	42	103	87	104	63	J 42	J 113	J 16	J 24	J 24	J 16	J 16	
3	J 45	J 31	J 18	J 19	J 25	J 28	J 34	J 36	J 53	J 57	J 57	J 46	G	48	43	32	35	33	J 35	J 33	J 32	J 31	J 84	J 16	
4	J 21	J 25	J 21	J 20	J 30	J 26	33	37	J 63	J 44	G	J 52	44	39	38	G	J 41	38	J 45	J 32	J 18	J 25	J 38	J 63	
5	J 17	J 23	J 25	J 17	J 16	J 26	33	45	J 43	J 53	J 48	44	G	34	G	J 60	J 47	G	J 57	J 101	J 41	J 48	J 87	J 40	
6	J 34	J 31	J 32	J 27	J 39	J 24	31	G	J 67	J 51	J 67	J 63	J 59	J 57	J 45	J 69	J 86	J 67	J 51	J 88	J 53	J 52	J 47	J 40	
7	J 32	J 25	J 16	J 23	J 27	J 86	J 81	J 40	G	G	44	J 43	J 46	J 44	J 53	J 44	J 35	G	J 47	J 41	J 85	J 65	J 28	J 59	
8	J 31	J 26	J 32	J 23	J 19	J 27	J 44	J 41	J 48	J 43	J 43	G	42	G	41	G	G	32	J 25	J 22	J 26	J 16	J 42	J 47	
9	J 24	J 27	J 21	J 16	J 16	J 24	J 30	J 39	J 57	J 101	J 63	J 88	J 53	J 42	J 34	G	G	36	J 44	J 33	J 31	J 20	J 24	J 16	
10	J 25	J 48	J 51	J 31	J 31	J 33	J 47	J 72	J 69	J 41	J 40	J 45	G	G	50	45	40	J 41	G	19	J 16	J 47	J 29	J 33	
11	J 23	J 30	J 27	J 28	J 31	J 21	J 30	J 47	J 53	J 89	J 68	J 52	J 47	J 55	J 54	J 47	J 51	J 46	J 69	J 41	J 34	J 63	J 51	J 50	
12	J 29	J 45	J 21	J 19	J 33	J 22	J 34	J 53	J 52	J 46	J 48	J 53	J 49	G	G	G	31	J 36	J 40	J 35	J 29	J 26	J 63	J 49	J 31
13	J 25	J 22	J 25	J 19	J 29	J 22	J 30	J 36	J 42	J 39	G	J 42	J 67	J 42	J 56	G	36	J 36	J 121	J 25	J 32	J 51	J 86	J 32	
14	J 64	J 52	J 31	J 37	J 28	J 21	J 32	J 43	J 76	J 53	J 62	J 56	J 53	J 44	J 37	J 31	J 28	G	J 28	J 42	J 49	J 45	J 31	J 23	
15	J 22	J 25	J 16	J 16	J 16	J 22	G	J 45	J 39	G	J 48	J 42	J 65	G	38	J 37	J 33	J 34	J 43	J 32	J 27	J 69	J 32	J 31	
16	J 99	J 57	J 75	J 86	J 28	G	31	J 40	J 61	J 47	J 48	J 54	J 42	J 40	J 40	J 42	G	J 42	J 60	J 45	J 66	J 77	J 31	J 61	
17	J 42	J 29	J 21	J 17	J 23	J 21	G	J 51	J 70	J 63	J 44	J 51	J 49	J 49	J 41	G	G	31	J 33	J 33	J 25	J 23	J 38	J 32	
18	J 32	J 39	J 32	J 24	J 31	J 30	J 36	J 40	J 61	J 61	J 51	J 51	J 40	J 42	G	J 44	J 40	J 31	J 33	J 44	J 102	J 21	J 20	J 22	
19	J 19	J 34	J 19	J 16	J 20	J 21	J 32	J 37	J 51	J 42	G	J 42	J 40	J 48	G	G	41	J 47	J 42	J 69	J 33	J 62	J 52	J 50	
20	J 39	J 20	J 20	J 26	J 29	J 28	G	J 46	J 57	J 53	J 47	J 42	J 38	J 34	J 34	J 30	J 26	J 29	J 24	J 21	J 28	J 30	J 26	J 24	
21	J 32	J 25	J 16	J 15	J 19	J 22	J 30	J 51	J 40	J 40	J 39	J 45	J 44	J 41	J 109	J 62	J 76	J 74	J 63	J 35	J 87	J 62	J 112	J 187	
22	J 79	J 73	J 77	J 87	J 41	J 41	J 34	J 53	J 57	J 45	J 74	J 54	J 67	J 45	J 46	J 51	J 41	J 67	J 41	J 17	J 87	J 63	J 65	J 85	
23	J 30	J 29	J 25	J 40	J 25	J 20	J 33	J 38	J 42	J 40	J 40	J 41	J 41	J 34	G	J 39	J 52	J 49	J 53	J 52	J 43	J 23	J 31	J 29	
24	J 23	J 20	J 18	J 29	J 24	J 22	J 28	J 41	J 36	J 40	J 42	J 41	J 45	J 47	J 40	J 44	J 51	J 49	J 69	J 61	J 77	J 63	J 41	J 29	
25	J 29	J 63	J 51	J 39	J 51	J 20	G	J 49	J 89	J 55	J 78	J 89	J 66	J 49	J 46	J 40	J 36	J 50	J 34	J 52	J 76	J 29	J 35	J 33	
26	J 45	J 32	J 27	J 30	J 21	J 32	J 35	J 35	J 47	J 50	J 49	J 53	J 46	J 42	J 38	J 45	J 46	J 55	J 77	J 39	J 25	J 26	J 21	J 30	
27	J 21	J 16	J 83	J 53	J 59	J 33	J 49	J 52	J 58	J 76	J 78	J 51	J 49	J 43	J 43	J 40	J 63	J 40	J 123	J 49	J 31	J 42	J 31	J 17	
28	E 16	BE 18	BE 25	J 29	J 16	J 28	J 63	J 59	J 50	J 57	J 69	J 65	J 58	J 51	J 42	J 43	J 32	J 27	J 28	J 42	J 53	J 49	J 26	J 30	
29	J 23	J 25	J 16	J 16	J 33	J 35	J 33	J 35	J 37	J 40	G	J 39	J 40	J 45	J 41	J 37	J 41	J 46	J 25	J 28	J 27	J 24	J 18	J 26	
30	J 20	J 18	J 29	J 15	J 20	J 19	J 31	J 40	J 36	J 36	J 40	J 40	J 28	G	J 39	J 40	J 44	J 78	J 33	J 19	J 35	J 25	J 32	J 17	
31	J 22	J 16	J 16	J 16	J 16	J 21	J 27	J 37	J 36	J 50	J 63	J 43	J 52	J 89	G	J 36	J 35	J 28	J 27	J 21	J 25	J 203	J 63	J 51	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	J 25	J 26	J 25	J 23	J 26	J 24	J 33	J 41	J 52	J 47	J 48	J 51	J 46	J 43	J 41	J 40	J 40	J 40	J 43	J 33	J 33	J 47	J 35	J 31	
U Q	J 34	J 34	J 32	J 31	J 31	J 30	J 36	J 51	J 61	J 57	J 63	J 54	J 53	J 49	J 46	J 45	J 47	J 49	J 63	J 45	J 66	J 63	J 52	J 50	
L Q	J 21	J 20	BE 18	J 17	J 19	J 21	J 30	J 37	J 40	J 40	J 40	J 42	J 40	G	G	G	G	J 33	J 31	J 33	J 25	J 26	J 25	J 28	J 24

AUG. 2023 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E pSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 16	E 16	E 16	E 16		20	46	50	51	53	A 64	A 88	A 92	A 97	47	53	40	38	34	31	27	20	E 16	E 16	E 16
2	E 16	E 16	E 16	E 16	E 16		22	46	40		G 41	53	42	46	42	44	35	33	26	E 16	E 16	E 16	E 16	E 16	
3		E 16	E 16	E 16	E 16		25	29	36	39	39	45	45		G 41	40	28	27	31	32	22	22	20	38	E 16
4	E 16	E 16	E 16	E 16	E 16		22	28	35	57	41		G 47	44	U 39	G 38		38	35	25	24	E 16	E 16	31	30
5	E 16	E 16	E 16	E 16	E 16		23	32	44	40	49	44	42		G 34		40	38		G 31	A 101	19	E 16	E 16	E 16
6	E 16	E 16	E 16	E 16	E 16		23	28		G 50	44	46	47	42	41	43	55	38	31	30	23	24	24	21	18
7	E 16	E 16	E 16	E 16	E 16		24	36	37		G 44	42	45	41	40	31	34		G 41	37	24	22	E 16	E 16	20
8	22	19	E 16	E 16	E 16		25	41	40	38	40	42		G 42		39		G 32	23	16	E 16	E 16	22	21	
9	E 16	E 16	E 16	E 16	E 16		22	30	35	39	42	45	42	43	42	30		G 34	35	26	E 16	E 16	E 16	E 16	
10	18	E 16	E 16	E 16	E 16		23	A 41	A 72	47	40	40	42		G 47	38	36	31		G 13	E 16	E 16	E 16	E 16	
11	E 16	E 16	22	E 16	E 16		21	29	44	49	46	41	44	43	41	43	38	48	36	24	21	21	E 16	E 16	E 16
12	E 16	E 16	E 16	E 16	E 16		21	32	46	45	44	43	40	41		G 30	35	34	30	20	E 16	20	21	E 16	
13	18	E 16	E 16	E 16	E 16		22	28	34	41	38		40	57	42	40		G 34	34	27	21	21	E 16	E 16	
14	23	20	19	26	E 16		20	28	36	42	40	45	44	43	42	33	28	25		G 24	21	41	21	E 16	E 16
15	E 16	E 16	E 16	E 16	E 16		22		G 37	39		G 40	40	41		G 38	36	28	32	36	22	E 16	E 16	E 16	E 16
16	45	E 16	44	E 16	28		G 30	40	55	42	45	50	41	39	39	40		G 38	33	21	20	22	E 16	E 16	21
17	22	22	E 16	E 16	E 16		20		G 46	55	41	42	42	42	40	39		G 29	26	22	22	17	25	E 16	16
18	24	19	23	E 16	E 16		21	34	38	52	54	50	41	40	39		G 42	38	28	28	21	50	E 16	E 16	E 16
19	E 16	E 16	E 16	E 16	E 16		21	28	34	41	40		G 40	40	34		G 39	41	28	50	18	18	E 16	E 16	16
20	22	E 16	E 16	E 16	E 16		19		G 37	50	46	43	40	38	32	31	27	21	28	23	17	E 16	18	E 16	E 16
21	E 16	E 16	E 16	E 16	E 16		19	29	44	38	38	39	45	44	40	A 109	51	48	33	54	19	29	A 46	A 112	A 187
22	51	41	47	52	19	22	33	49	48	44	A 74	50	44	38	39	46	38	51	23	E 16	54	51	23	E 16	16
23	E 16	E 16	E 16	E 16	E 16		20	31	36	40	40	40	40	39	33		G 38	38	36	28	22	40	E 16	E 16	E 16
24	E 16	E 16	E 16	E 16	E 16		21	27	32	36	40	40	40	44	39	40	42	42	34	42	25	39	20	17	24
25	24	26	20	24	23	18		G 45	67	42	50	44	45	46	40	38	34	33	24	23	38	E 16	E 16	E 16	16
26	23	E 16	E 16	E 16	E 16		18	24	34	39	44	46	50	42	40	37	40	44	30	32	33	E 16	E 16	E 16	20
27	E 16	E 16	E 16	E 16	E 16		22	43	43	50	47	41	42	44	40	38	37	49	29	19	33	E 16	E 16	E 16	E 16
28	E 16	E 16	E 16	E 16	E 16		23	38	32	44	38	50	53	46	38	37	41	26	26	23	21	22	44	E 16	E 16
29	E 16	20	E 16	E 16	E 16		23	28	32	35	38		G 38	38	38	37	36	36	29	21	22	E 16	E 16	E 16	E 16
30	E 16	E 16	E 16	E 16	E 16		17	29	36	34	36	39	40	26		G 38	37	41	37	20	E 16	E 16	E 16	E 16	E 16
31	E 16	E 16	E 16	E 16	E 16		16	25	34	36	47	51	43	47	38		G 36	34	26	24	E 16	E 16	E 16	E 16	E 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E 16	E 16	E 16	E 16	E 16		22	29	37	41	41	43	42	42	39	38	37	36	32	27	22	20	E 16	E 16	E 16
U Q	22	16	16	16	16		23	34	44	50	44	46	47	44	41	40	40	38	34	32	25	24	20	21	18
L Q	E 16	E 16	E 16	E 16	E 16		20	28	34	38	38	40	40	40	38		G 38		G 29	23	19	E 16	E 16	E 16	E 16

AUG. 2023 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	12	16	20	23	24	27	25	26	28	20	27	16	16	16	16	16	16	16
2	16	16	16	16	16	17	16	14	16	16	21	17	20	19	20	16	16	16	13	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	20	20	22	25	18	19	16	14	16	16	16	16	16	16
4	16	16	16	16	16	16	14	16	15	22	20	23	28	24	25	17	18	14	14	16	16	16	16	16
5	16	16	16	16	16	16	16	16	17	16	21	21	27	21	18	18	18	17	16	16	16	16	16	16
6	16	16	16	16	16	16	13	16	28	22	21	23	19	16	15	16	15	15	16	16	16	16	16	16
7	16	16	16	16	16	16	16	17	19	22	23	24	26	16	23	17	17	16	16	15	16	16	16	16
8	16	16	16	16	16	16	28	20	21	19	25	20	27	22	22	16	16	16	14	15	16	16	16	16
9	16	16	16	16	16	16	16	16	17	17	23	23	22	22	16	14	15	15	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	17	16	21	21	21	16	17	16	14	16	13	16	16	16	16
11	16	16	16	16	16	16	16	15	18	19	17	21	22	23	22	16	16	14	15	16	16	16	16	16
12	16	16	16	16	16	16	16	13	16	19	16	19	16	18	16	15	15	15	13	16	16	16	16	16
13	16	16	16	16	16	16	16	15	19	17	21	18	21	19	15	16	16	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	10	12	16	16	18	20	19	19	12	16	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	20	18	18	16	21	22	21	19	16	15	15	15	16	16	16	16
16	16	16	16	16	16	16	16	14	15	16	16	18	18	23	16	20	16	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	12	13	16	17	21	24	18	18	18	16	15	16	16	16	16	16	16
18	16	16	16	16	16	16	16	15	15	16	17	16	20	18	24	16	15	14	15	15	16	16	16	16
19	16	16	16	16	16	16	16	14	13	15	18	16	17	22	18	15	15	13	15	16	16	16	16	16
20	16	16	16	16	16	16	16	13	15	15	16	17	20	19	21	14	12	14	11	16	16	16	16	16
21	16	16	16	16	16	16	16	13	15	19	22	22	21	22	18	14	12	14	16	16	16	16	16	16
22	16	16	16	16	16	16	15	16	16	20	20	21	20	23	20	15	16	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	21	21	20	17	21	18	22	16	14	10	14	16	16	16	16	16
24	16	16	16	16	16	16	16	14	16	17	17	17	18	19	23	16	16	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	15	17	15	18	17	16	15	16	10	12	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	14	16	18	18	20	16	21	17	14	12	16	16	16	16	16	16
27	16	16	16	16	16	16	14	17	19	21	21	21	22	22	22	17	16	15	15	16	16	16	16	16
28	16	16	16	16	16	16	16	12	12	17	22	18	22	21	20	15	14	13	16	16	16	16	16	16
29	16	16	16	16	16	16	14	12	14	16	16	18	21	17	16	13	12	10	15	15	16	16	16	16
30	16	16	16	16	16	16	16	13	15	18	21	17	16	17	14	14	16	16	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	16	16	17	16	17	17	15	15	14	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	17	20	18	21	19	19	16	16	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	19	19	21	21	22	22	22	17	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	13	15	16	16	17	19	18	16	15	15	14	15	16	16	16	16	16

AUG. 2023 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		265	284	275	272	259	273	284	290	A	A	A	A	A	220	277	268	275	284	289	283	277	283	273	275	
2		272	266	267	279	278	287	297	289	303	297	294	288	286	292	288	294	292	292	296	297	287	267	273	279	
3		264	273	254	265	261	257	251	266	275	290	283	281	277	285	307	294	296	313	318	291	269	272	267	272	
4		274	285	282	273	274	288	287	287	324	305	302	294	278	284	311	303	317	310	307	286	275	287	267	270	
5		272	292	265	283	256	252	246	268	277	260	242	214	267	250	222	260	279	290	314	A	258	248	260	273	
6		288	288	278	273	F	F	302	285	298	238	242	274	274	295	319	324	304	314	301	301	297	290	286	271	274
7		282	286	287	293	287	334	300	298	316	298	278	293	293	H	280	279	312	310	306	287	268	278	292	273	
8		268	281	292	277	267	290	309	305	274	242	192	G	250	222	285	276	281	302	297	288	278	278	276	268	
9		275	276	284	265	268	271	284	312	320	332	295	277	285	289	309	295	292	301	310	294	278	290	285	285	
10		280	281	271	275	267	294	287	A	305	290	332	282	271	290	266	279	296	301	292	290	285	300	283	275	
11		277	268	262	262	276	299	299	316	291	292	299	288	276	290	290	296	312	313	295	293	286	286	288	295	
12		282	273	270	279	278	324	296	319	296	316	287	291	290	301	286	289	299	305	307	290	282	277	280	296	
13		275	283	282	276	289	312	314	254	297	308	279	286	287	301	296	310	286	311	299	291	297	302	274	281	
14		275	277	276	275	284	306	320	303	322	322	316	276	298	294	299	312	297	305	311	299	286	297	288	288	
15		280	287	288	293	284	299	293	321	316	319	303	301	304	300	298	305	302	298	308	293	290	292	285	285	
16		271	272	286	273	275	302	304	306	310	325	305	301	300	295	293	310	304	308	300	304	288	284	282	284	
17		275	279	264	267	257	281	272	324	340	308	297	279	280	278	305	309	313	305	297	294	281	286	287	281	
18		F	280	279	279	266	284	296	307	293	A	257	266	251	250	266	273	276	292	289	284	269	277	291	270	
19		286	272	268	267	275	292	334	323	333	306	281	326	310	294	307	308	306	306	311	295	296	301	271	271	
20		F	288	281	287	F	F	298	315	312	311	318	334	286	302	284	297	305	307	316	299	287	293	302	314	263
21		279	270	277	274	274	298	311	327	327	328	318	292	314	299	A	293	304	307	306	309	271	288	A	A	
22		F	F	F	F	273	286	312	322	322	305	324	A	281	279	296	296	294	302	308	300	309	280	275	296	287
23		279	281	291	292	286	290	311	296	319	316	313	293	311	297	304	309	305	307	305	303	296	285	291	295	
24		283	285	291	291	283	313	312	340	318	308	324	303	290	298	300	298	301	303	301	314	307	296	280	288	
25		277	267	274	265	284	312	336	321	332	316	317	309	291	313	304	304	305	312	311	311	298	306	312	283	
26		268	273	267	284	272	313	309	304	333	337	313	331	308	309	298	287	312	324	301	299	302	306	282	281	
27		274	265	274	271	280	297	319	311	290	277	315	259	303	295	289	314	319	306	319	316	298	297	298	281	
28		271	265	267	277	271	282	313	305	330	324	321	305	302	308	307	314	306	322	308	302	287	294	297	276	
29		276	264	273	273	276	292	309	296	329	310	325	312	309	296	316	320	315	317	311	299	298	305	286	283	
30		283	273	289	287	274	279	308	329	334	335	330	312	304	304	300	301	306	314	303	303	295	312	319	275	
31		267	269	272	296	301	293	331	340	316	312	321	315	309	304	313	308	306	303	311	316	318	309	F	274	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		30	31	30	31	30	31	31	30	30	29	29	30	30	31	30	31	31	31	31	30	31	31	29	30	
MED		275	276	276	276	275	294	308	306	316	310	303	290	292	295	298	301	304	306	305	296	287	288	285	280	
U Q		280	284	284	286	283	306	314	321	327	323	320	303	304	301	307	309	312	312	311	303	296	301	292	285	
L Q		271	270	268	272	267	284	287	296	296	294	282	279	279	285	288	289	296	301	299	290	278	278	274	273	

AUG. 2023 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	387	A	U	L	L	A					
2						L	A	L	365	364	388	372	A	H	U	L	351	360	347	L	B			
3						328	360	372	364	404	379	400	395	401	358	380	U	L	U	L	A			
4							U	L	L	A	372	395	381	341	364	363	363	386	L	L				
5						U	L	A		A	399	397	401	364	369	334	346	348		A				
6						339	342	364		A	415	389	A	376	390	396	A	364						
7							L	H	349	384	365	356	384	332	365	384	373	368	367	L				
8						L	A	A		388	388	388	396	399	385	378	376	328	L	L	L			
9							L		367	373	398	376	376	373	361	376	364	355	U	L	L	A		
10						L	A	A		A	402	407	425	366	390	A	365	360	335	L	L			
11						L	L	A		A	431	419	379	395		A	379	A						
12								A	L	A	U	L	L		U	L	L	L	L	L				
13						L		L	360		399	377	363	376	374	354	351	L	L	L				
14							430	328	365	394	366	357		A	383	358	358	357	L	L	L			
15							L	L		L	L	U	L	L	377	358	367	397	U	L	L	L		
16								L	A		386	356	360	L	380	374	349	359	U	L	L	L		
17						U	L	A	A		373	367		A	364	354	368	359	L	L	L			
18						L	A	A	A	A		A	410	391	369	378	358	337	U	L	L	L		
19						L	L	L		L	404	374	353	382	385	357	357	368						
20							L	L	A	A		L	U	L	L		L	L	L	L				
21						L		A	L	L	383	428	375	394	354	A	A	A	L					
22							L	A	L	A		A	U	L	U	L	U	L	A	L	A			
23							L	L	L	L	L	L	L		L	L	L	L	L	A				
24								L	U	L	L	L	L	U	L	L	L	L	L					
25							L	A	A	U	L	A	L	L	L	353	377		L	L	L			
26							L	L		A	A	A	A	377	370	371	341	A						
27								A	A	A		388	353	382	367	357	364	A	L					
28							A	L	A		A	A	A	U	L	L	A	L	L					
29							U	L	U	L	U	L	U	L		A	U	L	U	L	A	L		
30							370	351	367	386	376	400	381		367	361		U	L	A	L			
31							L	L	L	L	L	L	L		U	L	A	L	L					
									421		A	A	L	A	399	364		U	L	L	L			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	8	9	14	21	24	22	27	30	26	23	18	6						
MED						328	362	365	376	386	386	381	376	367	366	362	358	348						
U Q						339	376	372	388	403	395	397	385	385	374	371	364	367						
L Q						U	L	L	L	L	L	L	L	L	L	L	U	L	L	L				
						318	354	350	365	374	371	360	364	358	358	354	348	343						

AUG. 2023 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							E A 320	338	E A 456	A	A	A	A	628	442	448	426	386	302					
2						298	230	322	292	300	284	280	306	352	354	334	320	310	282	250				
3						400	414	374	358	346	364	404	412	366	322	354	338	270	244					
4							308	280	252	298	338	352	396	362	306	312	280	254						
5						382	472	420	418	480	554	650	456	456	622	436	376	336		A				
6						316	316	344	576	588	436	404	344	294	302	322	298							
7							324	300	284	336	364	346	338	336	378	324	278	276						
8						306	300	304	430	548	828		G 510	646	390	428	388	298	300					
9							322	262	260	252	360	350	374	334	324	342	330	286	258					
10						290	334	A	338	402	316	416	418	372	450	402	320	308	284					
11						262	268	254	342	322	276	380	424	362	352	340	300							
12								262	304	276	270	338	344	318	312	340	292	260	248					
13						242	232	370	276	294	288	334	346	308	322	278	330	258						
14							248	252	262	260	290	382	318	348	318	282	254	264	252					
15								246	268	254	308	308	308	316	306	294	290							
16								252	278	256	310	314	316	322	310	280	276	262						
17						300	260	226	250	288	340	380	342	370	308	300	278	270						
18						294	296	306	E A 382	E A 392	A 488	470	514	512	454	426	384	320	292					
19						280	248	272	244	332	400	284	316	322	298	302								
20							260	252	260	254	264	330	310	356	312	262	270	252						
21						274		246	252	252	258	348	296	312	A 282	E A 282	262	268						
22							268	278	316	280	A	378	342	316	320	312	286	270						
23							246	248	236	246	272	280	288	298	286	272	266	246						
24								214	230	272	254	278	332	318	300	286	274							
25							220	248	256	250	282	258	314	284	278	272	260	252						
26							232	242	252	248	298	260	314	308	296	322	270							
27								270	E A 312	366	304	394	314	314	284	284	268	268						
28							264	264	268	238	286	268	278	270	312	288	262	248						
29							282	336	276	300	292	322	328	220	282	276	234	254						
30							244	262	252	244	284	306	330	322		320	244	266						
31									222	252	270	240	234	270	288	298	284	266						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						12	24	29	31	30	29	30	30	31	29	31	30	25	9	1				
MED						296	267	264	269	281	298	342	331	322	312	312	282	268	282	250				
U Q						311	318	314	338	336	362	382	374	362	353	340	320	292	296					
L Q						277	247	250	252	252	279	284	314	308	299	282	268	256	250					

AUG. 2023 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	252	264	254	260	E A 308	E A 344	A	A	A	A	A	A	A	240	A	208	216	214	A	274	E A 258	248	236	256	
2	272	284	286	266	296	238	A	222	198	182	206	A	184	242	234	242	220	224	244	E B 248	224	236	274	256	
3	308	274	308	294	294	256	214	244	232	198	222	202	182	182	220	208	214	208	A	234	E A 288	E A 276	E A 328	E A 266	
4	252	254	250	270	270	232	214	214	A	208	200	206	238	198	216	204	208	232	248	254	254	258	E A 278	E A 292	
5	264	242	282	234	322	250	230	A	A	230	212	192	184	208	224	262	A	234	234	262	A	E A 284	324	304	258
6	230	230	E A 294	E A 284	E A 300	252	220	218	A	200	234	E A 258	202	202	202	A	218	222	260	240	E A 248	266	272	266	
7	266	260	260	240	262	220	244	212	184	196	238	182	272	186	196	184	208	216	260	268	E A 290	270	248	E A 286	
8	E A 296	266	238	252	238	266	A	E A 272	202	208	208	200	202	220	200	200	222	228	226	258	E A 250	256	E A 286	E A 278	
9	280	268	264	274	296	238	208	222	204	204	192	188	224	214	202	218	196	224	A	244	248	238	248	254	
10	258	288	280	E A 284	E A 298	256	A	A	A	188	184	166	188	206	E A 268	208	206	242	230	254	228	228	244	270	
11	264	284	252	292	262	236	212	A	E A 324	E A 248	172	192	206	172	232	202	A	244	244	238	E A 252	242	250	242	
12	254	276	276	268	268	222	202	A	E A 234	E A 208	208	180	190	188	190	194	232	250	240	232	E A 238	262	E A 248	232	
13	260	274	272	258	228	216	192	198	242	192	194	188	A	178	194	210	208	222	244	234	242	218	270	260	
14	E A 278	E A 274	E A 282	E A 282	E A 252	234	210	206	244	208	192	196	186	190	184	194	194	214	218	E A 240	E A 278	E A 230	E A 226	E A 250	
15	270	256	244	242	252	242	212	214	198	194	176	182	176	188	200	196	210	224	246	244	242	230	236	252	
16	E A 326	E A 268	E A 314	E A 272	E A 286	234	216	222	A	196	204	E A 258	184	184	190	212	218	E A 236	248	E A 228	E A 248	E A 240	E A 236	E A 252	
17	E A 266	E A 278	E A 296	E A 278	E A 312	256	222	A	A	186	196	204	210	196	188	240	202	214	240	E A 236	E A 236	240	E A 260	264	
18	E A 304	E A 282	E A 260	E A 256	E A 286	240	E A 242	E A 248	A	A	A	188	194	202	204	236	234	222	262	E A 250	E A 326	234	228	268	
19	258	288	270	290	280	240	222	232	204	186	184	162	180	210	196	196	252	272	248	E A 282	E A 236	E A 232	236	278	
20	E A 274	258	258	254	268	234	220	234	A	E A 230	196	184	184	198	212	208	204	218	242	248	E A 246	E A 236	E A 224	E A 216	
21	278	266	272	276	290	254	216	A	210	180	178	230	194	214	A	A	A	E A 238	E A 262	230	E A 282	E A 276	A	A	
22	E A 296	E A 306	E A 284	E A 338	E A 254	230	246	A	E A 308	E A 224	A	266	186	190	212	E A 254	232	A	244	228	E A 320	E A 334	E A 240	E A 224	
23	262	270	246	234	252	232	218	202	212	188	172	198	166	192	204	226	222	A	238	236	E A 258	236	236	242	
24	256	260	242	250	256	220	206	196	190	186	182	184	192	186	206	238	256	248	254	228	E A 216	234	234	270	
25	E A 280	E A 326	E A 298	E A 290	E A 252	222	212	A	A	204	E A 254	228	220	244	218	212	198	238	232	234	E A 268	226	206	242	
26	E A 298	296	288	260	240	230	224	214	A	E A 212	E A 220	244	A	190	196	198	226	A	248	250	E A 250	232	212	234	272
27	278	300	274	268	260	256	256	A	A	268	196	208	208	210	214	214	A	226	242	240	228	232	228	250	
28	278	288	304	284	286	270	A	214	A	190	274	242	192	190	244	198	230	236	254	266	E A 278	230	226		
29	252	E A 276	278	272	E A 302	272	234	208	184	192	184	168	186	A	198	206	A	236	238	226	236	228	218	248	
30	262	272	254	254	266	252	236	216	186	180	180	180	184	182	224	208	A	254	246	230	238	224	202	254	
31	278	294	278	242	212	226	226	210	196	A	A	230	A	176	206	210	206	228	244	220	216	210	E A 286	278	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	26	21	20	27	27	27	28	30	29	29	25	29	28	30	31	31	30	30	
MED	264	271	267	264	264	238	218	214	204	192	194	190	190	196	203	209	214	228	244	238	E A 248	234	234	254	
U Q	E A 280	288	286	284	296	256	230	227	E A 233	E A 208	212	208	207	210	217	231	227	240	249	250	E A 268	E A 262	E A 270	E A 270	
L Q	258	264	254	254	252	230	212	209	197	188	184	182	184	186	196	203	205	222	239	232	236	230	230	248	

AUG. 2023 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E 0SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	100	100	98	98	A	98	98	A	A	A	A	A	A	A				
2						A	98	98	98	98	A	98	A	98	98	104	98	A	A	B				
3						A	A	98	A	A	A	98	98	A	A	100	102	102	102	A				
4						A	100	98	98	98	100	A	100	A	A	100	A	100	104	A				
5						A	104	100	100	100	98	98	98	110	98	98	106	102	A	A				
6						108	100	100	100	98	A	A	A	A	98	98	A	96	A	A				
7						A	A	96	96	98	98	98	98	A	A	100	A	100	106	A				
8						106	106	106	104	104	104	100	A	100	A	100	100	100	A	A				
9						A	100	A	98	A	A	A	A	98	106	98	98	104	A	A				
10						A	102	100	96	96	A	96	100	100	100	100	100	100	100	A				
11						A	104	102	100	98	A	A	A	A	A	A	A	100	A	A				
12						A	100	96	96	96	96	96	A	98	98	104	100	100	100	A				
13						A	96	98	98	98	96	A	A	A	A	96	102	102	A					
14						A	98	100	A	A	A	A	A	A	98	102	102	100	A					
15						A	100	100	100	100	A	A	A	98	A	A	104	A	100					
16						104	104	98	98	98	96	96	A	A	A	96	100	100	104					
17						A	100	96	A	A	A	A	A	A	A	98	102	A	A					
18						A	100	98	98	96	100	A	A	A	100	A	A	98	A					
19						A	100	96	96	96	96	96	A	106	96	98	98	98	104					
20						A	100	98	96	96	A	A	A	102	106	104	102	104	106					
21						A	100	100	98	A	A	110	A	A	A	100	100	100	A					
22						A	114	100	98	A	100	A	A	A	A	A	A	A	A					
23						A	A	100	98	A	A	A	A	100	100	A	100	100	A					
24						A	A	A	A	A	A	A	A	A	100	100	100	100	A					
25						A	102	98	96	A	A	A	A	A	A	A	A	100	A					
26						A	A	98	A	A	A	A	A	A	98	98	98	102	A					
27						A	104	104	98	98	98	A	A	A	A	98	100	A	A					
28						A	A	A	A	A	A	A	A	A	A	A	A	98	A					
29						A	A	A	A	A	98	A	A	A	A	100	100	100	A					
30						A	100	102	A	A	A	A	98	98	98	A	100	100	A					
31						B	100	100	A	A	A	A	A	A	100	100	100	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	24	27	22	17	12	11	7	11	15	22	22	24	9					
MED						106	100	100	98	98	98	98	98	100	98	100	100	100	104					
U Q						108	103	100	98	98	100	98	100	102	100	100	102	101	105					
L Q						104	100	98	96	96	96	96	98	98	98	98	100	100	100					

AUG. 2023 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	96	106	98	96	92	92	92	94	92	94	94	94	98	102	90	92	96	100	94	94	86
2	B	B	116	100	108	110	98	98	G	G	168	96	96	106	104	104	108	100	92	B	98	98	B	B
3	88	88	92	92	104	100	94	96	92	92	100	158	G	118	90	90	88	134	104	102	94	94	92	B
4	88	88	84	84	88	92	100	98	90	96	G	94	160	98	90	G	94	102	102	98	104	106	94	90
5	92	92	92	104	B	110	114	106	104	100	98	98	G	92	G	106	106	G	98	98	98	98	102	86
6	88	88	84	90	90	148	114	G	98	98	88	106	94	92	100	98	90	94	94	94	88	90	92	86
7	88	88	B	88	88	104	94	98	G	G	156	146	156	88	100	94	100	G	102	100	98	94	92	92
8	90	90	88	90	96	102	104	100	102	100	100	G	100	G	102	G	G	110	100	102	94	B	80	84
9	86	80	88	B	B	100	100	98	98	114	88	104	88	154	86	G	G	108	100	100	88	88	98	88
10	90	90	94	106	102	106	112	100	98	104	100	96	G	G	114	116	106	98	G	94	B	88	88	82
11	86	86	82	82	106	116	126	102	98	98	98	94	134	112	92	92	90	104	94	94	94	96	92	90
12	92	92	86	92	86	116	104	98	98	94	96	94	92	G	G	92	126	104	98	94	98	90	88	88
13	88	86	86	84	84	116	124	100	100	104	G	88	84	162	106	G	146	104	90	98	94	92	92	86
14	86	86	86	86	84	112	102	100	94	96	94	92	92	92	90	90	90	G	90	88	84	96	92	94
15	90	90	B	B	B	120	G	108	106	G	106	102	98	G	98	98	94	112	98	96	98	98	92	92
16	92	92	86	86	94	G	108	100	98	98	92	90	90	92	98	94	G	G	102	102	94	92	88	88
17	88	88	86	86	86	150	G	98	88	92	90	86	86	90	94	G	G	90	88	84	98	98	92	90
18	88	88	82	86	86	88	102	104	102	96	96	92	94	92	G	88	88	100	100	92	92	90	92	88
19	90	86	86	88	88	120	106	98	98	98	G	98	94	92	G	G	108	100	100	94	94	94	94	88
20	86	86	86	84	86	88	G	96	96	96	92	90	90	90	90	88	86	130	102	102	82	84	84	88
21	84	90	B	82	90	110	106	98	102	98	94	164	160	100	92	98	98	102	94	94	98	98	94	96
22	92	88	88	86	86	88	116	102	100	102	98	98	92	92	100	94	94	92	92	102	102	96	90	90
23	86	86	88	90	90	120	106	100	100	96	96	88	96	94	G	94	110	104	98	94	94	94	100	94
24	88	88	88	90	88	130	124	96	104	98	98	96	94	96	108	116	108	102	96	92	92	92	92	92
25	92	90	88	86	84	90	G	100	96	94	90	90	96	92	92	88	100	102	100	88	98	96	100	92
26	86	86	82	86	92	100	92	94	90	88	88	88	88	90	138	104	104	102	102	94	94	90	94	90
27	90	B	96	90	96	108	104	100	96	96	104	100	98	100	114	128	100	102	102	92	92	92	90	104
28	B	92	90	86	120	102	92	112	90	90	106	88	88	94	104	86	94	120	102	90	90	90	90	90
29	92	86	92	B	102	98	98	96	90	90	G	114	114	94	92	118	104	98	96	94	98	90	86	100
30	88	88	94	84	112	104	100	100	96	96	94	90	88	G	150	114	104	98	96	100	88	90	94	90
31	92	B	B	B	B	92	102	100	100	92	90	156	92	92	G	148	110	102	98	100	90	102	96	112
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	26	27	27	30	27	30	29	28	27	30	28	26	25	25	27	28	30	30	30	30	30	29
MED	88	88	88	86	90	105	104	100	98	96	96	95	94	93	98	98	100	102	98	94	94	94	92	90
U Q	91	90	92	90	102	116	112	100	100	98	100	102	98	100	105	110	108	104	102	100	98	96	94	92
L Q	87	86	86	86	86	98	98	98	93	93	92	90	90	92	92	91	94	99	94	94	92	90	90	88

AUG. 2023 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2023 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1			F2	F2	C4	C3	L3	L2	L3	LQ21	L3	L3	L2	L2	L1	C1	L3	LQ31	LQ31	FQ41	FQ31	FQ21	F2		
2			F1	F5	F1	C2	C5	C3			HC11	C2	C1	C2	C2	C2	C1	C2	L2		F2	F2			
3	F3	F1	F1	F1	F2	C3	C2	C2	L2	L1	CH11	H1		C1	L2	L2	L3	HL11	C5	C3	FF23	F3	F4		
4	F2	F5	F2	F2	F2	LC11	C1	C2	L4	C1		L1	H1	C1	L1		L2	C2	C3	C4	F2	F3	F7	F5	
5	F1	F1	F1	F1		C1	C2	C3	C2	C2	C2	C1		L1		C2	C2		C4	C8	F5	F6	FF14	F5	
6	F3	F4	F4	F4	F4	H2	C1		C1	C2	L2	CL21	L2	LC11	C1	C2	L2	L3	L3	L3	F5	F6	F3	F4	
7	F3	F1		F1	F1	C2	L3	C2			H1	H1	H1	L1	C1	L1	C1		C5	C6	C4	F4	F4	F3	
8	F4	F3	F3	F2	F1	C3	C1	C2	C1	C1	C1		C1		C1			C2	C3	C2	F3		F7	FQ31	
9	FQ21	FQ11	F1			C2	C2	C2	C2	CL22	L2	C2	L2	H1	L2			C2	C6	C4	F1	F1	FF22	F2	
10	F4	F8	F4	F7	F6	C3	C5	C7	C4	C2	C1	C2			C2	C2	C2	C3		L2		F4	F5	F5	
11	F2	F2	F3	F1	FF11	C1	C1	C2	C2	C3	C2	L2	HL11	CL11	L2	L2	L3	C3	LQ31	LQ31	F8	FQ41	FQ41	F8	
12	F3	FQ31	F4	F2	F5	C2	C3	C4	C3	C2	C1	L1	L2			L2	CL11	C3	C6	F4	F2	FQ31	FQ21	FQ21	
13	F3	F2	F2	F2	F1	C1	C2	C3	C2	C1		L2	L4	HC11	C1		HC11	C3	LC13	C3	F5	FQ41	FQ31	F3	
14	F5	F3	F4	F3	F5	C2	C3	C3	LQ21	L1	L2	L2	L2	L2	L2	L2	L2		LC31	F3	F6	FF24	F4	F2	
15	F2	F2				CL11		C2	C2		C1	C1	C1		C1	C2	L1	C3	C5	F4	F2	F2	F4	F3	
16	F6	FQ41	F5	F3	F5		C2	C3	C2	C2	L2	L2	L2	L1	C1	L2		C4	C8	F4	F5	F6	F5	F7	
17	F4	F4	F4	F1	F1	HC21		C4	L4	L2	L2	L2	L2	L1	L1			L2	L4	L5	F4	F3	F7	F3	
18	F9	FQ41	F3	F3	F4	L3	C3	C2	C3	C3	C2	L2	L1	L2		L3	L5	C1	C4	F6	F7	F4	F2	F2	
19	F1	F4	F2	F2	F2	C2	C3	C2	C2	C2		C2	L2	L2			C3	C3	C7	F6	F3	F3	F5	F4	
20	F7	F3	F3	F3	FQ41	LH11		C3	C3	C3	L2	L2	L2	L2	L2	L2	L2	H1	C3	FF32	F3	F2	F2	F2	
21	F3	F2		F2	F1	C2	C2	C3	C2	C1	L2	HL11	HL12	C1	L5	C3	C3	C2	L6	F4	F3	F7	F9	FQ51	
22	FQ51	FQ61	F7	FQ71	FQ41	L3	C2	C4	C2	C2	C3	C2	LQ21	L1	L1	L4	L4	L4	L4	L1	F7	F4	FQ71	F4	
23	F4	F4	FF33	FF22	FQ11	C1	C3	C3	C1	L2	L2	L1	L1			L2	C2	C4	C4	F4	F6	F2	F3	F3	
24	F3	F3	F2	F2	F1	HL22	CL22	L2	CL12	C2	L2	L1	L2	L1	C1	C2	C4	C4	C6	F3	FQ71	FQ61	F6	F5	
25	F7	F8	F4	FQ41	F5		C3	C7	L2	L3	LQ21	L2	L2	L2	L2	L2	C3	C3	CL51	F5	FQ31	F3	F1	F3	
26	F4	F5	F3	F2	F1	C1	L3	L3	L3	L2	L2	L3	L2	L2	H1	C2	C3	C4	C7	F5	F3	F3	F2	F6	
27	F2		F2	F2	F3	C4	C4	C4	C3	C2	L1	L1	L2	L1	C1	C1	C3	C2	C2	C3	F6	F3	F3	F1	
28		F2	F5	F5	F1	C6	L6	CL22	L4	L2	CL23	L3	L2	L2	CL12	L3	L3	C2	C6	F7	F6	F9	F3	FQ41	
29	F3	F4	F1		F8	C5	C4	C4	L3	L2		CL11	CL11	L2	L2	CL12	C3	C6	L3	F4	F2	F3	F1	FF32	
30	F2	F2	F1	F1	F1	C1	C3	C3	C2	C1	L2	L2	L1		H1	C2	C2	C5	L4	F1	F6	F3	F3	F2	
31	F2					L2	C2	C3	C3	L2	L2	HL12	L3	L2		H1	C3	C4	C2	F1	F3	FF27	F5	FF15	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

AUG. 2023 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	X 79	X 74	X 76	X 76	X 76																X 72	X 72	X 72	X 73		
2	X 72	X 69	X 70	X 68	X 64																	X 88	X 92	X 88	X 96	
3	X 93	X 91	X 86	X 83	X 72																	X 70	X 73	X 76	X 76	
4	X 82	X 78	X 68	X 66	X 66																	X 86	X 87	X 89	X 88	
5	X 82	X 91	X 81	X 78	X 69																	X 58	X 59	X 60	X 64	
6	X 71	X 69	X 56	X 52	X 50																	X 80	X 83	X 86	X 86	
7	X 85	X 85	X 82	X 81	X 68																	X 81	X 87	X 84	X 80	
8	X 77	X 84	X 83	X 76	X 67																	X 84	X 80	X 80	X 84	
9	X 85	X 81	X 76	X 72	X 70																	X 81	X 80	X 86	X 84	
10	X 82	X 77	C	X 68	X 66																	X 91	X 90	X 85	X 82	
11	X 76	X 73	X 74	X 72	X 73																X 92	X 90	X 85	X 89	X 84	
12	X 78	X 75	X 74	X 76	X 72																	X 93	X 89	X 88	X 88	X 84
13	X 80	X 81	X 79	X 75	X 75																	109	X 84	X 78	X 75	X 76
14	X 81	X 82	X 83	X 73	X 74																	X 91	X 84	X 80	X 80	X 78
15	X 76	X 77	X 76	X 74	X 70																	X 97	X 84	X 82	X 83	X 78
16	X 80	X 74	X 79	X 73	X 69																	X 92	X 82	X 84	X 91	X 90
17	X 89	X 81	X 75	X 75	X 73																	X 91	X 89	X 78	X 77	X 77
18	X 75	X 74	X 70	X 75	X 71																	X 92	X 77	X 70	X 74	X 71
19	X 70	X 66	X 66	X 62	X 66																	X 101	X 80	X 83	X 83	X 79
20	X 83	X 82	X 80	X 71	X 69																	X 104	X 93	X 90	X 88	X 78
21	X 75	X 71	X 70	X 72	X 66																	X 102	X 95	X 96	X 90	X 78
22	X 78	X 71	X 75	X 69	X 71	76																X 99	X 87	X 77	X 75	X 83
23	X 78	X 76	X 76	X 71	X 68																	X 97	X 88	X 88	X 87	X 84
24	X 83	X 81	X 81	X 76	X 73																	X 112	X 90	X 83	X 83	X 78
25	X 76	X 73	X 79	X 80	X 79																	X 101	X 93	X 90	X 87	X 84
26	X 71	X 72	X 75	X 72	X 69																	X 98	X 87	X 80	X 69	X 66
27	X 67	X 64	X 65	X 64	X 64																	X 110	X 81	X 76	X 74	X 72
28	X 68	X 67	X 65	X 65	X 63																	X 94	X 81	X 74	X 78	X 79
29	X 72	X 69	X 65	X 64	X 65																	X 95	X 89	X 76	X 73	X 72
30	X 70	X 69	X 69	X 66	X 64																	X 103	X 94	X 78	X 79	X 70
31	X 68	X 66	X 67	X 68	X 66																	X 117	X 101	X 69	X 64	X 64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	30	31	31	1															21	31	31	31	31	
MED	X 78	X 74	X 75	X 72	X 69	76															X 98	X 86	X 80	X 83	X 78	
U Q	X 82	X 81	X 79	X 76	X 72																X 104	X 90	X 87	X 87	X 84	
L Q	X 72	X 69	X 69	X 68	X 66																X 92	X 81	X 76	X 75	X 73	

AUG. 2023 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	73	68	70	70	70	68	82	72	63	61	65	63	62	60	60	60	59	61	63	64	66	66	66	67	
2	66	63	64	62	58	57	81	99	98	90	88	83	86	90	91	94	97	83	79	81	82	86	82	90	
3	87	85	80	77	66	60	68	76	82	80	79	82	91 ^H	82	80	86	79	75	74	65	64	67	70	70	
4	76	72	62	60	60	62	82	89	95	82	88	76	82	88	86	79	75	81	79	81	80	81	83	82	
5	76	81 ^F	75	72	63	62	58	65	A	A	62	A	70	82	77	80	79	79	70	54	52	53	52 ^F	58	
6	F	63	50	46	44	48	64	71	75	81	80	84	84	82	86	88	81	80	77	80	74	77	80	80	
7	79	79	76	75	62	61	68	81	80	81	82	84	87	88	89	92	96 ^H	80	72	69	75	81	78	74	
8	F	F	F	74	70	61	60	76	68	70	A	69	71	78	84	88	85	77	73	71	78	78	74	74 ^F	78 ^F
9	79	75	70	66	64	67	77	83	83	95	86	78	75	82	90	85	78	76	78	83	75	74	F	75 ^F	
10	76	71	C	62	60	60	66	78	87	66	67	78	82	79	74	74	74	77	84	90	85	84	79	76 ^F	
11	70	67	68	66	67	70	88	94	89	94	101	99	103	104	99	88	78	75	79	86	84	F	F	F	
12	72	69	68	68	F	64	74	79	90	81	90	90	88	92	91	86	89	90	88	87	83	82	82	78	
13	74	75	73	69	69	69	79	95	102	103	101	96	96	96	102	98	90	97	99	103	78	72	69	70	
14	F	F	F	67	F	70	82	90	90	93	88	A	93	98	90	89	88	84	83	85	78	74	74	72	
15	70	71	70	68	64	69	85	92	92	84	82	89	92	94	96	102	100	100	100	91	78	76	76	72	
16	74	68	73	67	63	67	77	89	89	96	90	89	91	96	92	98	97	97	92	86	76	78	85	84	
17	83	75	69	69	67	68	84	94	96	92	88	92	88	87	92	96	96	89	85	85	83	72	71	71	
18	69	68	64	69	65	66	77	77	70	A	58	A	66	67	69	71	70	73	A	86	71	64	68	65	
19	64	60	60	56	60	60	86	92	90	76	77	78	87	86	84	89	92	92	94	95	74	77	77	73	
20	F	76	F	65	63	72	79	90	97	A	80	90	98	104	103	114	106	103	99	98	87	84	82	72	
21	69	65	64	66	60	58	76	83	89	84	80	84	88	91	92	96	102	99	97	96	89	90	84	72	
22	72	65	69	63	65	69	79	90	86	78	A	80	85	91	101	101	101	102	101	93	81	71	69	77	
23	72	69	F	F	F	58	87	99	92	94	96	95	101	103	103	99	96	92	96	91	82	82	81	78	
24	77	75	75	70	67	72	87	94	83	94	100	102	103	101	100	102	104	110	111	105	84	77	77	72 ^F	
25	70	68	73	74	73	71	84	88	90	90	100	105	104	104	109	112	110	A	100	95	87	84	81	73	
26	65	F	F	F	F	64	86	96	100	100	86	85	86	85	84	89	96	93	92	92	82	74	63	60	
27	61	58	59	58	58	63	76	84	91	95	93	98	100	95	105	102	100	98	98	104	75	70	68	66	
28	62	61	59	59	57	58	80 ^H	95	86	85	77	87	82	82	80	84	89	92	98	88	75	68	72	73	
29	66	63	59	58	59	59	80	89	87	73	73 ^H	80	80	85	85	85	82	85	86	89	83	70	67	66	
30	64	63	63	60	58	58	78	86	80	75	69	75	82	83	80	82	82	86	95	97	88	72	72	64	
31	62	60	61	62	60	57	77	98	91	86	80	88	93	87	84	83	84	90	108	111	95	63	58	58	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	29	30	31	29	31	31	31	30	27	30	28	31	31	31	31	31	30	30	31	31	30	29	30	
MED	72	68	68	66	63	63	79	89	89	85	82	84	87	88	90	89	89	88	90	88	80	74	74	72	
U Q	76	75	73	69	66	69	84	94	92	94	90	91	93	96	99	98	97	97	98	95	84	81	81	77	
L Q	66	63	63	60	60	59	76	79	83	80	77	79	82	82	84	84	79	79	79	81	75	70	68	67	

AUG. 2023 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E 0SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							400	468	496	500	508	E B 540	524	508	E B 524	488	500	448							
2								L 480		504	520	560	600	548	536	528		A	A	A	A				
3						296		A	A	492	520	536	556	544	536	512	508		L	L					
4								L U 508	L	512	528	504	640		A	A	520		A	A	L	L			
5							L		A	A	A	A	A	A	A		556	516	516		L	L	A		
6							376		A		L	L	556	556	U L 572	560	536	512		L	A	A			
7								L	L	544	588	528	532	556	520	548	520	484		L	L				
8								L	A		A	508	560	536	536	540	524		A	A	A				
9						L	L U 460	L	L	544	540	524	540	588		520	516		L	L	L	L			
10							420	464		A	A	552		A	A	540	556	556	U L U L 544	472					
11							L	L		A	L			A	A	A	A			L	L	A			
12								L	L		A	A			L	L					L	A			
13								L	L	484	540	544	540	576	556	524	544	512	456						
14								L	L	528		584		A	A	548	548		484		L	L			
15								L	L		592	564		A	A	564	552	548	500		L	L			
16							L	L	L	A	A	L	552	584	552	548	524	496		L	L	A			
17								L	A	A	A	L	L	L	568	580	576	556	516		L	L			
18							L	A	A	A		528		A	A	512	524	500		A	A	A			
19							L	A	A	U L U L 504	548	592	L	572	552	552		500		L	L	A			
20								A	A	A	A	A		560	572	556	536		A	A	A				
21								L	A	A	A	A		A	A	520	524		L	A	A				
22								L	A	A	A	L	A		556	560	552	504		L	L				
23							L	L	L	L	A	U L 556	544	540	548	532		L	A	L					
24								L U L 588	536	568	604	576	556	536		L	A	A		A	L				
25					L 220		L	L	U L 436	484	576		512		A	L	A	A	A						
26							L	L	L	484	492	620	524	536	564		456		L	L					
27								A	A		532		L	L	A	520	532		L	L					
28					L		L	L	L	468	540	504	516	552	556	524	508		L	L					
29								L	A	L	L	U L 568	564	516	532	468	444		L	L	A				
30							L	L	L U L U L 476	500	524	540	544	L	L	528	516		L	L					
31								L	L	U L 508	492	532	556	520	540	532		L	L	A	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT						2	3	6	14	16	22	21	22	24	29	24	16	5							
MED						258	400	474	500	524	534	556	556	546	548	524	500	472							
U Q							420	488	528	560	560	578	572	560	556	536	510	492							
L Q							376	464	484	506	508	540	544	530	524	516	488	452							

AUG. 2023 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	404	B		B	B		B	A	A	B				
2						A	A	A	A	A	416	U G	U G			G			A	B				
3						A	A	A	A	A	A	A	B	A		U G				A				
4						A		A		A	A	A	A	A	A									
5						200	248	316	356	368	380	372		A	A	A	A	A	A	A				
6						A	248	316		A	A	A	A	U G				A		A				
7						A	248		A	A	U G	A	A	A	B				A	A	B			
8						A	A		336	364	A	A	A	A	A	A	A							
9						A	A		304	348	A	A	A	A	A	A	A							
10						B	256	296	332		A	A	A	A										
11						A	252	312	344	372		A	A	A	A									
12						B	252	304	352	376		A	A	A	A	A								
13						A	212	300	312	360	404	U G	U G											
14						A	A		304	328	352	A	A	A	A	A	A							
15						A	A		A		A	A	A	A	A	A								
16						B	252		A		A	A	A											
17						B	260		A	A	A	A	A	A										
18						B	228	300	340	360	372	372	368		A	A	A	A	A	A				
19						B	248	288	320		A	A	A											
20						B	240	300	332	360	376		A	A	A	A	A							
21						A	236	296	328		A	A	A											
22						B	252	292	340	364	364		A	A	A									
23						B	A	A	A	A	A	A	A											
24						A	224	292	332	360	360	368		A										
25						B	232		320		A	A	A	A	A	A								
26						B	A	A	A	A	A	A	A											
27						A	216	284	336	348	364	376	388	388	360									
28						A	A	A	A	A	A	A		A	A	A								
29						A	A	U A		A	A	A	A											
30						A	212	284	324		A	U G	U G											
31						B	188	280		A	U G	U G	G											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	20	19	20	13	12	8	8	11	14	19	17	23	2					
MED						200	246	300	338	360	378	374	398	388	378	368	336	280	208					
U Q							252	304	348	366	404	U G	U G											
L Q							226	288	328	350	366	370	382	376	368	360	316	264						

AUG. 2023 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E 'SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
2	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
3	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
4	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
5	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
6	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
7	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
8	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
9	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
10	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
11	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
12	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
13	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
14	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
15	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
16	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
17	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
19	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
20	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
21	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
23	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
24	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
25	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
26	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
27	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
29	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
30	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
31	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
U Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A

AUG. 2023 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	E B 16	19	E B 16	26	E B 16	27	34	33	36	38		E B 54	E B 46	E B 44	E B 52	46	E B 47	34	25	E B 16	E B 16	E B 16	E B 16	20			
2	40	24	E B 16	E B 16	E B 16	18	28	34	42	41		G	G	G	47	47	62	88	51	36	E B 16	26	E B 16	E B 16			
3	E B 16	E B 16	24	22	E B 16	20	42	46	44	44	45	44	E B 46	43		G	G	G	G		18	21	E B 16	26	19		
4	25	24	24	E B 16	22	19	30	37	44	42	47	48	55	72	44	68	56	38	24	E B 16	E B 16	20	23	50			
5	23	24	24	E B 16	E B 16	G	30	44	A A 76	A A 72	58	A A 80	56	55	44	45	38	32	32	28	35	20	29	E B 16			
6	32	E B 16	E B 16	E B 21	E B 16	18	28	42	54	43	46	44	46	48	47	44	45	50	48	30	40	E B 16	18	20			
7	25	22	18	18	E B 15	20	29	33	40	44		G	43	47	43	45		G		E B 31	24	16	40	42	27	20	
8	36	E B 16	E B 16	E B 20	22	20	42	37	52	A A 74	46	48	47	42	45	43	47	42	36	26	20	52	E B 16	E B 16			
9	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	40	37	45	45	46	44	57	46	44	41	41	25	23	E B 16	22	26	23			
10	29	E B 16	E B 16	E B 16	E B 16	18	28	36	54	56	50	59	65	42	41	43	40	33	37	20	26	42	E B 16	E B 16			
11	E B 16	E B 16	E B 16	E B 16	E B 16	21	32	46	52	44	50	84	57	58	84	53	37	48	45	36	24	27	E B 16	E B 16			
12	E B 16	E B 16	20	20	E B 21	16	27	38	43	51	56	46	48	44	48	44	35	40	43	24	E B 16	19	E B 16	E B 16			
13	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	36	40		G	34	44	44	43	43		G		E B 39	36	34	22	E B 16	17	16	16
14	21	37	E B 16	E B 16	19	24	25	36	41	62	46	A A 119	59	44	48	56	42	31	24	28	32	22	E B 16	E B 16	E B 16		
15	28	24	20	19	E B 16	24	41	38	42	45	48	76	62	52	48	52	42	44	36	23	57	E B 16	E B 16	E B 16			
16	E B 16	E B 16	23	E B 16	E B 16	E B 16	G	34	44	58	63	51	44	32	G	32	39	35	35	36	31	25	E B 16	29	34		
17	27	24	24	E B 16	E B 16	E B 16	G	37	48	51	47	51	50	42	43	43	39	45	23	22	E B 16	E B 16	E B 16	E B 16			
18	E B 16	23	27	33	E B 16	E B 16	26	45	A A 65	A A 84	46	A A 80	57	48	45	40	48	50	A A 77	47	46	35	54	22			
19	E B 16	E B 16	28	E B 16	E B 16	E B 16	31	43	58	46	44	43	43	43	48	51	45	44	50	23	55	21	34	22			
20	41	26	17	E B 16	E B 16	E B 16	28	45	80	A A 114	73	57	45	48	50	35	62	41	36	44	44	E B 16	E B 16	34			
21	24	E B 16	E B 16	E B 20	E B 16	25	31	36	50	51	63	64	60	62	46	46	40	46	49	46	36	66	33	21			
22	E B 16	E B 16	21	E B 16	E B 16	17	28	37	50	60	A A 94	46	67	42	40	42		G		34	21	25	28	20	20	E B 16	
23	27	E B 16	E B 16	E B 16	E B 16	16	26	36	36	44	54	46	49	51		G	44	49	34	22	27	42	18	23	25		
24	E B 16	E B 16	E B 16	E B 16	E B 16	20	30	33	42	43	43	45	45	42	42		G	47	35	24	21	36	25	25	21		
25	22	25	25	23	E B 21	E B 16	G	11	37	38	43	44	58	47	72	46	72	66	A A 148	36	50	28	49	E B 16	E B 16		
26	34	24	25	22	E B 18	E B 16	31	36	42	43	46	45	44	39	38	27	G	36	30	22	32	26	23	E B 16	E B 16		
27	E B 16	E B 16	E B 16	E B 16	E B 16	23	25	42	46	53	47	50	43	55	44	36	39	32	23	25	E B 16	E B 16	E B 16	E B 16	E B 16		
28	E B 16	E B 16	E B 16	E B 16	E B 16	18	24	32	38	40	U Y 36	40		G	41	42	36	32	30	31	43	23	E B 16	E B 16	E B 16		
29	20	20	E B 16	E B 16	E B 16	17	34	35	43	53	46	43	46	U Y 36	40	40	37	33	27	25	24	E B 16	20	E B 16			
30	21	E B 16	E B 16	E B 16	E B 16	23	25	36	44	36		G	G	G	G		G	40	37	37	32	26	E B 16	E B 16	E B 16	E B 16	
31	E B 16	E B 16	E B 16	E B 16	E B 16	16	24	33	34		G	G	G	G	G		G	40	55	27	18	30	19	E B 16	E B 16	E B 16	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MED	21	E B 16	E B 16	E B 16	E B 16	18	28	37	44	45	46	46	46	44	44	43	40	35	31	25	26	19	E B 16	E B 16	E B 16		
U Q	27	24	24	20	16	21	31	42	52	56	50	58	56	52	47	46	47	44	36	31	36	25	26	21			
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	35	40	43	G	44	44	42	40	G	37	32	24	21	E B 16	E B 16	E B 16	E B 16			

AUG. 2023 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	19	27	30	29	54	34	44	52	32	47	18	16	16	16	16	16	16
2	16	16	16	16	16	16	16	19	22	26	30	28	28	30	32	29	20	17	16	16	16	16	16	16
3	16	16	16	16	16	16	17	21	20	26	25	28	46	30	27	23	18	18	18	16	16	16	16	16
4	16	16	16	16	16	16	16	17	18	36	33	26	32	44	41	26	19	14	17	16	16	16	16	16
5	16	16	16	16	16	16	18	18	21	23	23	23	39	31	32	29	24	18	16	17	16	16	16	16
6	16	16	16	16	16	16	16	20	43	40	30	31	26	28	25	22	17	18	16	16	16	16	16	16
7	16	16	16	16	15	15	20	22	23	24	34	32	35	30	45	31	19	19	16	16	16	16	16	16
8	16	16	16	16	16	16	32	25	32	34	33	35	34	28	32	25	18	18	16	16	16	16	16	16
9	16	16	16	16	16	16	15	17	22	25	30	25	34	28	26	22	18	16	15	16	16	16	16	16
10	16	16	16	16	16	18	16	17	19	34	28	32	32	32	26	24	19	19	16	16	16	16	16	16
11	16	16	16	16	16	16	16	20	26	29	35	40	37	30	36	26	24	18	15	16	16	16	16	16
12	16	16	16	16	16	16	16	18	22	29	42	34	30	30	24	23	16	16	17	16	16	16	16	16
13	16	16	16	16	16	16	16	18	21	26	29	29	29	24	22	26	23	15	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	17	22	19	25	28	26	26	20	18	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	17	21	28	25	41	34	28	28	23	24	16	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	20	21	30	28	22	24	22	21	17	14	16	16	16	16	16	16
17	16	16	16	16	16	16	14	14	16	23	27	25	32	33	26	20	17	16	17	16	16	16	16	16
18	16	16	16	16	16	16	15	17	16	28	27	26	30	38	27	26	24	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	20	22	27	23	34	27	20	18	16	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	17	21	22	27	36	32	31	27	22	16	17	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	20	24	28	34	36	35	24	27	18	16	16	16	16	16	16	16
22	16	16	16	16	16	17	17	18	19	31	30	35	36	34	34	26	21	17	16	16	16	16	16	16
23	16	16	16	16	16	16	16	18	25	31	33	34	34	30	31	16	16	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	19	24	25	29	34	31	33	27	20	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	19	21	28	28	38	28	28	26	24	16	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	18	23	26	26	32	28	22	17	13	14	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	24	24	27	28	36	36	22	21	16	16	16	16	16	16	16	16
28	16	16	16	16	16	16	16	18	22	24	26	21	22	21	26	19	25	17	14	16	16	16	16	16
29	16	16	16	16	16	16	16	16	18	24	34	27	29	26	30	24	18	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	22	24	25	29	29	28	26	20	17	16	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	22	17	24	28	31	39	27	22	18	16	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	17	21	24	28	28	32	30	27	23	18	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	18	22	29	30	34	35	33	32	26	23	18	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	19	23	26	26	29	28	25	21	17	16	16	16	16	16	16	16

AUG. 2023 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1		262	274	275	274	287	266	292	279	256	236	270	278	253	260	261	288	278	301	303	290	273	266	269	277			
2		269	258	283	283	283	258	273	302	299	301	291	264	264	282	280	284	A	313	292	271	259	269	250	281			
3		282	268	274	256	257	249	257	275	290	288	282	285	282	H	299	293	300	317	322	308	315	256	261	266	254		
4		276	298	269	269	273	275	306	294	322	316	316	279	291	311	301	297	299	306	302	292	283	262	268	273			
5		266	F	281	286	273	242	285	260	271	A	A	A	A	266	273	254	264	278	280	308	299	250	240	F	258		
6		F	304	298	271	263	279	306	318	314	340	312	296	306	287	297	308	313	318	304	297	265	267	266	277			
7		275	282	282	298	283	300	298	317	300	283	304	289	278	273	262	270	290	H	315	310	278	264	272	310	283		
8		F	F	F	285	299	278	279	290	294	270	A	278	234	279	283	286	304	301	306	293	288	280	269	261	273		
9		270	281	281	276	261	270	312	300	290	306	317	293	265	280	298	306	309	308	297	293	276	244	F	F	287		
10		282	276	C	277	273	256	271	284	339	295	248	285	300	310	295	294	293	284	289	288	284	285	F	F	F		
11		276	267	282	275	280	278	318	307	276	284	288	283	281	284	306	316	308	298	301	295	302						
12		283	271	265	F	F	298	319	299	324	303	298	302	283	281	286	288	295	302	307	298	275	271	289	290			
13		276	282	287	277	288	294	296	294	299	306	300	277	281	282	287	286	288	296	304	318	311	278	276	279			
14		F	F	F	F	282	301	277	279	291	317	325	315	315	301	A	284	299	291	287	308	307	296	310	292	271	286	272
15		267	277	292	286	288	295	316	328	350	313	293	292	289	280	283	290	291	301	312	318	282	284	288	262			
16		278	292	287	287	275	303	323	327	318	305	296	298	289	299	286	294	295	309	316	303	275	261	284	282			
17		279	277	263	269	260	272	274	317	324	323	286	299	298	285	287	291	307	306	293	294	298	273	272	276			
18		270	279	262	285	279	286	309	309	A	A	252	A	266	280	274	291	295	292	A	308	304	257	276	267			
19		271	275	270	264	279	269	320	328	339	300	316	289	297	303	295	299	303	308	315	327	275	266	274	276			
20		F	290	F	310	285	274	309	306	315	336	A	288	302	286	275	272	294	297	296	301	305	318	279	285	295		
21		277	279	270	271	281	286	319	333	325	327	295	306	302	291	283	288	298	293	290	298	282	293	297	274			
22		286	287	272	271	281	291	329	327	329	334	A	298	290	287	287	289	291	303	311	316	301	282	279	273			
23		283	285	F	F	F	272	286	279	282	319	332	322	309	291	278	293	296	297	295	304	300	318	308	280	283	290	278
24		284	287	299	291	287	311	331	340	328	306	312	289	290	291	289	291	296	302	316	316	312	276	284	273	F	276	
25		284	273	F	F	F	F	300	303	331	337	332	294	293	292	286	287	292	300	A	303	288	299	289	284	276		
26		277	F	F	261	285	F	290	330	319	339	335	330	293	295	299	299	290	313	305	305	311	300	297	279	277		
27		274	271	265	267	264	288	322	320	305	319	300	295	296	288	303	303	309	315	307	331	297	282	279	277			
28		275	269	260	280	267	278	H	318	317	328	326	307	321	311	316	298	295	299	309	314	315	305	274	261	285		
29		272	264	272	283	291	282	330	348	348	347	310	H	305	304	319	320	329	322	321	316	310	315	294	272	278		
30		275	279	284	290	281	282	336	340	353	327	318	287	319	306	298	316	309	306	306	317	327	283	294	280			
31		269	269	275	295	309	300	325	339	337	320	281	310	314	315	300	309	297	293	315	329	336	288	276	276			
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT		27	29	30	31	29	31	31	31	29	27	29	28	31	31	31	31	30	30	30	31	31	30	29	30			
MED		276	279	275	277	279	285	317	317	324	309	296	292	290	287	289	294	299	306	306	305	284	274	276	276			
U Q		282	284	286	286	285	295	323	328	336	326	311	298	298	299	298	303	308	309	312	316	304	283	286	280			
L Q		270	271	269	271	270	275	296	299	300	300	287	284	281	281	283	288	295	298	301	293	275	266	268	273			

AUG. 2023 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E 0SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	366	370	401	411	B	415	381	B	A	B		L					
2							L	361	386	398	384	367	409	369	A	A	A	A	A					
3						308	A	A	359	379	385	412	379	400	389	378	366	L	L					
4							L	U	L	A	400	438	330	A	A		A	L	L					
5						L		A	A	A	A	A	A	A	A		A	L	L	A				
6							377	A		L	403	371	389	U	L	341	368	A	A	A				
7							L	L	383	352	409	418	352	396	357	367	360	L	L					
8							L	A	A	400	358	393	391	376	357		A	A	A					
9						L	L	A	L	346	358	392	422	356	A	A	L	L	L					
10							334	346	A	A	A	A	A	A	384	367	363	A	U	L	A			
11							L	L	A	L	A	A	A	A	A	A	A	A	A	A				
12							L	L	A	A	A	A	A	L	A		358	A	A					
13							L	L	A	A	A	A	A	L	A		371	354	L	A				
14							L	L	A	L	A	A	A	A	A	A	A	A	A	L	L			
15							L	L	A	A	A	A	A	A	A	A	A	A	A	A				
16							L	L	A	A	A	A	A	L	L	L	L	L	L	A				
17							L	A	A	A	A	A	A	A	L	A	L	A						
18							L	A	A	A	A	A	A	A	352	355		A	A	A				
19							L	A	A	A	U	L	L	370	365	359	383	364	A	A	A	A		
20								A	A	A	A	A	A	377		A	A	A	A	A				
21								L	A	A	A	A	A	A	A	A	A	L	A	A				
22								L	A	A	A	L	A	364	371	343	342	345	L	L				
23							L	L	L	L	A	U	L	374	A	367	370	L	A	L				
24								L	L	A	L	A	A	A	A	L	A	A	A	A				
25						L	368	L	445	A	366	A	A	A	L	A	A	A	A					
26							L	A	L	464	354	400	387	340	L	L	L	L	L					
27								A	A	A	L	L	A	365	367	355	L	L						
28					L		L	L	388	370	411	412	382	367	365	367	L	L						
29								L	A	L	L	U	L	373	361	398	360	399	384	L	L	A		
30							L	L	A	U	L	U	L	L	L	L	L	L	L	L				
31								L	L	U	L	L	L	365	381	371	357	L	L	A	L			
								L	L	414	437	406	359	379	366	365								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	2	5	11	14	18	18	19	21	21	19	10	5						
MED					338	356	361	375	376	396	374	365	381	365	365	359	350							
U Q							368	388	400	411	406	389	389	369	370	368	359							
L Q							345	359	363	370	365	359	369	358	357	354	344							

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AUG. 2023 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							300	322	458	532	426	406	480	492	476	400	396	330	300					
2							280	280	292	264	324	374	388	340	330	326	E A 336	266	274					
3						378	398	366	326	304	358	344	310	326	346	308	280	256						
4							276	276	252	286	290	352	346	312	308	E A 336	316	290	272					
5						284		384	A	A E A 444	A		428	364	388	392	350	312	252					
6							282	238	288	256	330	276	314	324	308	298	280	276	274					
7								248	268	362	288	334	354	338	368	346	280	268						
8								332	390	A	390	516	376	348	334	304	302	274	266					
9						314	258	246	320	274	282	342	414	370	312	292	296	294	284					
10							344	338	256	350	482	352	342	312	320	346	328	308	280					
11							238	270	268	308	314	356	324	312	318	284	298	282	280					
12								278	262	254	318	304	342	330	324	328	306	276	254					
13								282	260	274	282	270	308	332	308	304	282	292	256					
14								250	270	266	306	A	336	304	322	324	284	266	260					
15								230	230	298	308	E A 348	314	332	320	294	288	270						
16							240	226	272	272	288	304	326	316	306	304	270	266	246					
17								242	236	262	322	302	312	330	330	294	272	262						
18							272	292	E A 386	A	498	A	438	394	384	352	328	316	A					
19							252	248	250	252	280	350	330	310	322	306	286	282	264					
20								240	264	A E A 394	298	324	312	336	286	264	260	260						
21								242	264	242	342	302	322	314	298	308	284	266	264					
22								254	248	244	A	336	E A 332	332	306	312	294	268						
23								252	230	230	248	272	286	302	298	308	282	276	268					
24									240	298	256	296	306	298	294	292	282	264						
25						248		228	250	234	290	298	278	316	294	294	282	A						
26								252	242	264	258	326	274	308	322	302	270	252						
27									252	252	266	284	286	322	290	282	266	254						
28						310		254	238	276	248	286	284	290	298	320	278	262						
29									238	236	236	310	292	278	284	262	264	256	242					
30							232	234	226	250	260	302	284	280	306	276	286	278						
31								240	224	246	234	274	280	276	290	294	292	280						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	13	28	30	27	30	28	31	31	31	31	31	30	17					
MED						310	272	251	256	264	294	306	323	316	318	304	284	269	264					
U Q						346	291	281	272	298	342	349	346	332	330	326	302	282	277					
L Q						266	246	240	240	250	272	297	302	308	306	292	278	264	255					

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135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
1	296	E A	292	E A	280	310	258	256	E A	262	202	202	180	180		B	194	226		B	E A	E B	354	362	224	238	264	248	264	278	E A	298
2	E A	330	E A	322	270	270	264	246	220	206	206	206	186	178	172	238	E A	246		A	A	A	A	A	A	242	E A	296	276	308	270	
3	264	302	E A	E A	300	296	290	272				268	220	220	180	218	184	184	198	202	212	240	226	312	314	312	E A	E A	E A	E A		
4	E A	302	E A	E A	282	292	E A	252	230	214		A	186	188	E A	220		214		A	A	238	236	242	234	E A	E A	E A	E A	E A		
5	E A	268	E A	E A	270	278	342	270	226		A	A	A	A	A	A	A	204	272	232	240		A	E A	E A	E A	E A	E A	E A	E A		
6	E A	304	252	236	E A	290	272	254	222		A	274	200	188	228	196	234	E A	270	212	E A	A	A	250	E A	288	280	294	E A	276		
7	E A	292	286	250	240	212	256	232	208	218	198	186	172	252	212	226	190	212	220	242	264			250	E A	E A	E A	E A	E A	E A		
8	E A	316	298	250	E A	E A	236	272	266	288	226		A	A	216	246	216	200	220	226		A	A	A	264	254	324	288	270			
9	274	262	256	272	292	266	242	222	E A	194	244	202	182	210		A	E A	230	232	246	238	242	260	232	310	308	272					
10	E A	282	272	274	264	270	256	234	234		A	E A	282		A	A	200	192	212	E A	218	220		E A	E A	E A	E A	E A	E A	E A		
11	264	290	274	278	242	248	222	248		222	276		A	A	A	A		210					A	E A	E A	256	236	298	242	232		
12	234	300	306	E A	E A	264	274	244	226	218	212		A	198	244	194	E A	244	240	204	260		A	E A	252	238	258	244	248			
13	272	268	262	258	246	222	212	210	200	182	190	212	190	172	184	216	228	256				A	226	202	232	258	272					
14	290	E A	290	246	264	272	248	232	210	208		198		198	238		E A	E A	252	220	240	242	E A	256	264	252	282					
15	E A	310	274	266	258	252	228	212	210	200	250		A	E A	E A	E A	A	252		A		A	248	226	304	234	238	292				
16	286	286	E A	274	254	258	238	210	212	236		A	E A	278	194	206	210	190	196	258		A	E A	E A	E A	E A	E A	E A	E A	E A		
17	E A	268	E A	E A	306	290	296	264	216	220		A	216	286	258	194	202	236	240		A	246	238	220	218	274	266					
18	284	298	E A	E A	E A	330	282	242	250	220		A	A	E A	E A	A		238	238	220		A	A	E A	E A	E A	E A	E A	E A	E A		
19	292	270	E A	312	306	286	248	238		A	E A	216	204	190	194	186	240		E A	272		A	220	E A	E A	E A	E A	E A	E A	E A		
20	E A	284	272	238	260	296	238	220		A	A	A	A	A	206	256	286	196				A	A	E A	E A	E A	E A	E A	E A	E A	E A	
21	E A	274	272	296	E A	284	272	278	236	220		A	A	A	A	A	E A	E A	E A	218	242	250		A	E A	E A	E A	E A	E A	E A	E A	
22	256	234	E A	264	272	258	252	234	216		A	A	A	196		198	208	220	212	254	238	222	220	232	240	286						
23	E A	258	240	250	238	258	264	224	214	202	240		A	200	226		212	246		A			E A	E A	E A	E A	E A	E A	E A	E A		
24	264	268	252	238	252	242	212	202	212	212	214	198	188	196	198	218		A	A	A		242	240	216	214	256	262	280				
25	E A	278	E A	E A	E A	E A	E A	E B																								
26	E A	310	E A	E A	E A	E A	272	262	230	210		A	190	182	204	190	182	182	216	200	214	246	E A	236	238	228	226	274				
27	288	294	304	280	300	256	218	226		A	E A	244	260	198		238	206	232	240	248	222	200	240	244	262							
28	276	292	304	278	278	294	230	202	196	194	194	170	204	186	218	200	208	238	240	240	238	244	290	252								
29	E A	266	E A	294	264	252	268	238	222		A	E A	214	184	242	192	212	194	222	236		A	E A	234	224	210	262	268				
30	E A	278	264	266	254	272	294	216	222		A	186	176	182	182	208	192	212	228	238	248	218	212	218	238	244						
31	288	296	280	252	228	234	230	226	198	182	172	172	174	198	210	226		A	226	246	222	208	190	266	282							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
CNT	31	31	31	31	31	31	30	25	16	18	24	21	22	23	29	24	22	20	17	31	31	31	31	31								
MED	E A	282	278	268	266	268	253	226	214	207	200	196	191	198	198	211	214	220	238	240	233	E A	U	U	251	267						
U Q	E A	292	294	304	284	286	266	234	222	215	216	218	224	226	226	238	234	250	241	246	260	278	298	292	282							
L Q	268	268	256	258	252	246	220	210	199	186	187	181	190	192	203	203	210	222	238	226	224	232	240	262								

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AUG. 2023 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E 'SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	98	B	96	B	B	104	B	A	A	B				
2						A	A	A	A	A	100	100	100	100	102	106	102	100	A	B				
3						A	A	A	A	A	A	A	B	A		100	100	100	104	110	A			
4						A	104	A	100	A	A	A	A	A	A	A	106	106	104	A	B			
5						132	104	104	98	98	98	98	A	98	A	A	A	A	A	A	A			
6						A	98	98	A	A	A	A	A	A	96	96	100	A	98	A	A			
7						A	108	A	A	A	108	A	A	A	B	102	102	A	A	B				
8						A	A	102	102	A	A	A	A	A	A	A	A	108	98	A	A			
9						A	A	98	96	A	A	A	A	A	A	A	A	98	98	A	A			
10						B	100	100	96	A	A	A	A	104	102	102	102	102	A	A				
11						A	102	104	100	100	A	A	A	A	A	A	102	A	102	A				
12						B	106	102	96	96	A	A	A	A	A	A	A	A	A	A				
13						A	96	100	100	100	106	100	100	100	100	104	104	104	A					
14						A	A	100	98	96	A	A	A	A	A	A	A	A	106	A				
15						A	A	A	98	98	A	A	A	A	A	A	A	108	108	A				
16						B	104	A	102	96	A	A	A	106	108	106	A	A	A					
17						B	102	A	A	A	A	A	A	A	A	102	102	102	A					
18						B	102	100	102	100	100	100	100	A	98	104	104	98	A					
19						B	104	100	98	A	A	A	A	98	A	A	A	A	A					
20						B	104	100	98	98	100	A	A	A	A	A	A	A	A					
21						A	106	104	98	A	A	A	A	108	104	102	104	102	A					
22						B	108	106	98	96	96	A	A	A	A	110	106	106	A					
23						B	A	A	A	A	A	A	A	A	100	A	A	108	A					
24						A	106	104	102	100	100	98	A	98	110	106	A	106	A					
25						B	102	A	98	A	A	A	A	A	A	A	A	102	A					
26						B	A	A	A	A	A	A	A	A	A	102	102	102	A					
27						A	114	102	98	98	98	100	E	B	E	B	A	A	A	A				
28						A	A	A	A	A	A	A	102	A	A	A	A	A	102	A				
29						A	A	98	A	A	A	A	A	A	A	98	96	98	100	A				
30						A	102	98	96	A	98	102	104	102	100	100	102	100	A					
31						B	98	98	A	98	98	98	98	A	102	104	104	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	20	19	20	13	12	8	8	11	14	19	17	23	2					
MED						132	104	100	98	98	99	100	100	100	101	102	102	102	104					
U Q							106	104	100	100	100	100	103	106	102	106	104	106						
L Q							102	98	98	96	98	98	99	98	100	102	101	100						

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AUG. 2023 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	96	102	92	92	100	100	96	94	98	98	G	B	B	B	104	B	102	96	100	98	B	B	96	
2	92	90	94	B	94	102	90	98	92	98	G	G	G	134	116	104	96	98	94	92	100	96	B	92
3	98	96	92	90	96	98	94	94	94	92	92	90	B	92	G	88	G	G	G	100	92	92	90	90
4	90	86	84	86	106	110	106	98	98	98	104	98	92	92	98	102	104	102	98	106	B	92	88	84
5	84	84	82	84	88	G	114	104	98	96	98	92	94	96	106	98	108	106	98	90	90	92	106	86
6	90	84	86	84	90	124	106	102	102	112	90	92	106	102	102	102	98	98	92	92	90	90	88	82
7	84	80	80	80	B	114	106	98	98	90	G	102	160	172	B	G	G	110	102	B	94	96	96	92
8	86	96	90	88	88	86	104	104	98	94	98	98	92	96	94	108	102	102	98	96	100	94	92	B
9	B	B	B	104	B	118	110	100	120	94	94	94	96	92	92	92	112	100	102	94	102	96	94	90
10	116	B	88	B	B	B	116	102	96	94	92	92	90	112	126	110	102	102	92	96	100	104	90	94
11	102	B	88	84	84	112	108	104	98	100	98	90	92	94	94	98	110	108	98	92	96	96	90	92
12	92	90	90	84	88	136	110	98	98	92	98	90	108	96	92	92	146	116	100	96	96	90	B	84
13	86	84	88	B	B	102	150	102	102	G	90	156	154	98	98	G	116	106	96	96	92	92	92	92
14	86	88	86	92	88	88	94	102	102	92	96	88	88	92	90	86	90	124	94	96	88	92	90	94
15	86	86	94	80	B	92	86	88	106	100	100	98	92	92	88	110	126	106	94	90	92	96	94	92
16	92	88	90	90	B	B	G	110	98	94	88	86	88	92	94	128	134	106	102	94	92	102	90	88
17	84	82	80	82	B	G	98	90	90	88	92	88	90	100	142	124	108	102	88	84	84	92	B	
18	88	86	82	86	86	90	142	106	96	96	98	92	94	94	98	110	104	100	94	92	90	90	90	88
19	90	86	82	90	B	B	108	100	94	94	94	94	96	108	102	82	82	108	100	96	96	92	92	90
20	88	86	86	86	88	B	116	100	88	90	90	90	98	88	88	88	86	108	100	100	98	112	B	86
21	82	86	82	84	B	106	106	106	96	92	92	92	100	102	104	102	106	96	92	96	92	92	92	90
22	92	96	86	90	90	B	118	106	96	92	88	90	90	102	106	120	G	102	108	96	92	92	96	96
23	90	90	86	90	100	112	94	94	94	90	90	94	94	90	G	90	108	106	104	96	96	94	94	94
24	90	86	94	108	96	94	104	112	106	100	98	94	106	106	120	G	104	102	98	92	90	88	90	94
25	92	88	88	88	88	92	90	106	104	100	96	96	96	92	94	102	102	98	96	94	96	98	134	94
26	90	92	92	90	90	96	92	92	92	92	92	92	92	92	90	84	112	110	102	94	100	96	94	94
27	82	80	94	94	94	90	124	106	100	98	98	100	106	100	98	108	100	94	98	92	94	94	94	B
28	88	88	94	86	90	104	142	96	94	94	94	94	G	100	98	98	100	114	98	94	94	108	92	108
29	86	82	92	B	92	116	98	94	94	88	92	92	90	92	128	108	104	98	98	84	84	90	92	96
30	90	96	92	88	92	90	114	98	98	92	G	G	G	98	134	116	108	100	98	B	86	98	96	92
31	B	B	B	88	B	104	122	100	98	G	G	G	G	G	G	118	100	108	106	96	88	88	86	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	29	27	21	25	29	31	31	29	26	28	27	29	26	28	27	30	30	29	30	30	27	27
MED	90	86	88	88	90	102	106	100	98	94	94	92	94	96	98	102	104	104	98	94	93	93	92	92
U Q	92	90	92	90	95	112	116	104	100	98	98	97	100	102	106	110	112	108	102	96	96	96	94	94
L Q	86	84	85	84	88	92	95	98	94	92	90	91	92	92	94	92	100	100	96	92	90	92	90	88

AUG. 2023 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2023 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E 0SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F3	FF22	F3	F3	F1	C2	L2	L1	C1	C1			C1			C1	C1	C2	C1	F1				F2	
2	F4	F4	F1		F1	CH11	L3	C1	C2	C1			H1	C1	C3	C3	C4	L3	L2	FF24	F2			F2	
3	F1	F2	F3	F3	F1	C1	L2	LQ21	L2	L1	L1	L1	L1		L1				C1	F3	F2	F4	F3	F3	
4	F4	F4	F4	F1	FF42	C1	C2	C2	C2	C1	CL11	C2	L2	L2	C1	C3	CL21	C2	C1		F4	F2	F5	F5	
5	F4	F4	F4	F2	F1		C1	C2	C3	C3	C3	L3	L2	C2	C1	C2	C1	C2	L5	F5	F4	FF23	F4	F4	
6	F4	F3	F2	F3	F2	C1	C1	C1	C1	L2	L2	L1	C1	C1	C1	C3	C3	L3	L4	F3	F3	F2	F2	F2	
7	F2	F3	F3	F2		C2	C1	C1	C1	L1		C1	HC11	HC11				C1	C2		F3	F4	F4	F3	
8	F3	FQ21	F2	F2	F2	LC11	C1	C1	C2	L2	C1	C1	L1	L1	L2	CL22	CL32	C3	C4	C4	F4	F5	FQ31		
9				F1		CL22	CL12	C2	CL11	L2	L1	L1	L1	L3	L2	L2	C1	C3	C2	F2	F2	FQ31	F4	F4	
10	FF24		F1			C1	C2	C3	L2	L2	LQ21	L2	L2	C1	C1	C2	C2	L2	L2	FF23	FF13	F2	F2	F2	
11	F1		F1	F2	F2	C2	C2	C2	C2	C2	L3	L2	L2	L3	L2	C1	C3	C3	F5	F4	F4	F2	F2	FQ31	
12	F2	F4	F4	F5	FQ21	HL11	C1	C2	C2	L2	C1	L1	CL11	L1	L2	L2	H1	CL22	C3	F3	F2	F2		F2	
13	F1	F1	F1			C1	HC11	C1	C1		L1	H1	H1	C1	L1		C1	C3	C3	F1	F3	F4	F3	F2	
14	FQ31	FQ61	F2	F2	F4	L3	L2	C2	C1	C2	L1	LQ31	LQ31	L1	L2	L3	L2	CL11	L3	F3	F3	F1	F2	F2	
15	F3	F2	FF22	F2		L3	L2	L2	C2	C2	C2	C3	L2	L2	L3	CL13	C1	C2	L2	F6	F5	F3	F3	F3	
16	F2	F2	F4	F1			CL11	C2	C3	C2	L2	L2	L2	L1	L1	CL11	HC11	CL31	CL42	F4	F2	FF12	F4	F4	
17	F5	F2	F2	F1		C1		C3	L4	L2	LQ21	L1	L2	L1	L1	C1	H1	C1	C3	F1	F2	F1	F1		
18	F2	F4	F2	F2	F2	L2	H1	C3	C3	C3	C2	L2	L2	L2	C2	C1	C2	C3	C5	F7	F5	F3	F5	F3	
19	F3	F3	F4	F1			C2	C2	L3	L2	L1	L1	L1	C1	CL22	LC22	L3	CL23	CL32	FF43	F6	F3	F4	F5	
20	F5	F5	F4	F2	F1		C2	C2	L3	L4	L3	L2	L1	L2	L2	L2	L3	C2	C3	F4	F4	F2		F4	
21	F3	F1	F1	F1		C3	C2	C2	C3	L3	L3	L2	C2	C2	C1	C2	C2	C3	L4	FQ51	FQ31	FQ51	FQ41	F4	
22	F2	F1	FQ21	F1	F1		C1	C2	C2	L2	L2	L2	L2	C1	C1	C1		C2	C1	F3	F2	F3	F2	F2	
23	F4	F2	F3	F2	F2	C2	L2	L2	L1	L1	L2	L1	L2	L2		L2	CL21	CL21	CL21	F6	F5	F2	F3	FQ21	
24	F2	F3	F1	F1	F2	L1	C1	C1	C1	C1	L1	C1	C1	C1	C1		C3	C2	C2	F3	F4	F4	F6	F2	
25	F4	F3	F2	F3	F4	L1	L1	CL11	C1	C1	L1	L1	L2	L3	LQ21	CL42	L3	C4	C4	F5	F4	F5	F1	F3	
26	F3	F4	F3	F5	F7	L1	L2	L3	L2	L1	L2	L2	L1	L1	L1	L1	C1	CL11	C1	F4	F2	F3	F2	F2	
27	F2	F2	F1	F1	F3	F2	C1	C2	C1	C2	C2	C2	C1	C2	C1	C1	C2	C2	C2	F4	F1	F2	F1		
28	F2	F2	F1	F1	F1	C1	HC11	C1	L2	L2	L2	L1		C1	C1	C1	C1	C4	F6	F3	FF23	F3	FF11		
29	F3	F3	F2		F1	C2	C2	L3	L3	L3	L2	L2	L2	L1	L1	C1	C1	C2	C3	F4	F3	F2	FQ31	F1	
30	F3	F1	F2	F2	F2	L4	C1	C2	C2	L1		L1		H1	C1	C3	C2	C1		F1	F2	F2	F2	F2	
31				F1		C1	C1	C1	C1		C1		C1			C1	C3	C1	C1	F2	F3	F2	F1		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

AUG. 2023 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	X 86	X 86	X 85	X 81	X 82	X 75															X 72	X 74	X 75	X 74	
2	X 76	X 76	X 73	X 74	X 72	X 65																X 88	X 90	X 86	X 97
3	X 94	X 88	X 89	X 82	X 76	X 71						148										X 69	X 71	X 74	X 71
4	X 70	X 69	X 65	X 63	X 62	X 61																X 88	X 85	X 87	X 88
5	X 84	X 86	X 76	X 67	X 65	X 65																X 58	X 62	X 59	X 65
6	X 71	X 70	X 62	X 52	X 49	X 49																X 81	X 86	X 90	X 91
7	X 90	X 92	X 90	X 87	X 72	X 68																X 89	X 86	X 84	X 91
8	X 86	X 82	X 85	X 72	X 69	X 68																X 92	X 86	X 88	X 89
9	X 88	X 85	X 82	X 74	X 72	X 70																X 80	X 81	X 83	X 83
10	X 86	X 90	X 76	X 72	X 71	X 69	72															X 94	X 88	X 87	X 88
11	X 89	X 85	X 84	X 79	X 75	X 72																X 90	X 86	X 82	X 87
12	X 89	X 86	X 83	X 78	X 76	X 72																X 86	X 84	X 92	X 88
13	X 89	X 88	X 85	X 79	X 76	X 76																X 96	X 78	X 76	X 78
14	X 79	X 83	X 84	X 80	X 78	X 74																X 86	X 82	X 85	X 86
15	X 81	X 83	X 85	X 75	X 73	X 73																X 88	X 86	X 86	X 92
16	X 90	X 88	X 86	X 82	X 80	X 76																X 86	X 83	X 83	X 84
17	X 83	X 77	X 77	X 75	X 76	X 70																X 89	X 82	X 83	X 84
18	X 85	X 82	X 80	X 76	X 73	X 70																X 92	X 79	X 81	X 78
19	X 78	X 78	X 76	X 72	X 71	X 70																X 85	X 86	X 84	X 83
20	X 90	X 88	X 81	X 78	X 78	X 73																X 106	A	A	X 96
21	X 96	X 93	X 93	X 85	X 88	X 90																X 111	X 104	X 89	X 78
22	X 82	X 81	X 72	X 73	X 80	X 79	93															X 108	X 93	X 90	X 88
23	X 84	X 86	X 87	X 82	X 79	X 76																X 99	X 92	X 88	X 87
24	X 86	X 86	X 85	X 75	X 72	X 70																X 98	X 96	X 97	X 94
25	X 90	X 90	X 82	X 77	X 78	X 76		X 97														X 111	X 104	X 94	X 88
26	X 86	X 86	X 85	X 82	X 77	X 76																X 96	X 80	X 74	X 74
27	X 74	X 72	X 70	X 69	X 66	X 66																X 98	X 87	X 84	X 84
28	X 83	X 81	X 76	X 72	X 72	X 70																X 88	X 76	X 76	X 75
29	X 75	X 70	X 71	X 72	X 70	X 66																X 92	X 83	X 76	X 75
30	X 74	X 76	X 75	X 78	X 72	X 66																X 101	X 82	X 79	X 79
31	X 76	X 76	X 77	X 75	X 70	X 64																X 98	X 77	X 79	X 83
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	2	1				1									31	30	30	31	
MED	X 85	X 85	X 82	X 75	X 73	X 70	82	X 97				148									X 90	X 84	X 84	X 84	
U Q	X 89	X 88	X 85	X 80	X 78	X 75															X 98	X 87	X 88	X 88	
L Q	X 78	X 77	X 76	X 72	X 71	X 66															X 86	X 80	X 79	X 78	

AUG. 2023 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	80	80	79	75	76	69	80	78	69	74	79	76	66	66	69	70	68	72	72	68	66	68	69	68	
2	70	70	67	68	66	59	66	87	81	83	A	74	78	90	92	101	100	86	74	71	82	84	80	91	
3	88	82	83	76	70	65	59	65	71	62	70	F	87	84	88	86	79	77	83	60	63	65	68	65	
4	64	63	59	57	56	55	66	82	77	82	77	84	90	94	90	86	89	90	88	86	82	79	81	82	
5	78	80	70	61	59	59	74	66	68	67	64	69	76	91	89	89	100	96	88	65	52	56	53	59	
6	65	65	56	46	43	43	58	79	82	74	80	85	76	85	95	100	99	88	89	82	75	80	84	85	
7	84	86	84	81	66	62	69	70	79	82	82	86	90	99	108	111	116	104	86	78	83	80	78	85	
8	80	76	79	66	63	62	68	82	91	99	90	94	111	118	112	106	105	92	89	90	86	80	82	83	
9	82	79	76	F	F	64	67	80	85	H	94	84	80	78	91	92	86	83	80	84	82	74	76	77	77
10	80	84	70	F	F	60	64	88	83	75	76	85	90	86	81	77	79	83	87	86	88	82	81	82	
11	83	79	78	73	69	66	75	87	86	92	96	106	106	111	110	98	86	91	90	94	84	J	R	81	
12	83	80	76	72	F	63	72	84	90	87	89	94	A	98	99	95	97	96	90	88	80	78	F	82	
13	83	82	79	73	70	70	76	89	98	88	85	92	96	106	107	102	105	106	110	106	90	72	70	72	
14	73	77	78	74	72	68	75	92	100	97	89	101	103	100	101	104	102	98	98	98	80	76	79	80	
15	F	77	79	69	67	67	76	85	87	80	80	92	104	110	112	126	127	123	120	102	82	80	80	F	84
16	F	82	80	76	74	70	72	87	91	90	84	85	98	96	95	106	117	118	104	90	80	77	77	78	
17	77	71	71	F	F	64	79	105	87	87	89	95	103	105	112	112	107	101	100	103	83	76	77	78	
18	79	76	74	70	67	64	75	82	83	75	80	83	89	90	94	96	98	99	102	104	86	73	75	72	
19	72	72	F	F	F	64	77	94	82	79	77	81	84	86	86	93	94	102	104	98	79	80	78	77	
20	84	82	75	72	72	67	72	90	98	78	A	86	96	103	103	117	125	122	125	118	100	A	A	90	
21	90	F	F	F	F	F	78	84	83	84	90	86	86	96	A	114	112	104	100	102	105	98	83	F	
22	76	F	F	F	F	F	F	98	92	85	82	90	99	104	109	115	122	126	126	116	102	87	84	82	
23	78	80	81	76	73	71	81	90	88	89	94	100	114	113	103	103	102	104	105	101	93	86	82	81	
24	80	80	79	69	66	64	74	90	80	87	89	100	108	105	107	105	112	124	128	109	92	90	91	88	
25	84	83	76	71	72	70	78	91	88	93	107	103	104	107	116	124	122	117	119	124	105	98	88	82	
26	80	F	79	76	71	70	80	102	100	91	86	92	97	94	91	98	105	102	98	99	90	74	68	68	
27	68	66	64	63	60	60	74	94	86	91	86	98	109	104	110	109	108	110	117	120	92	81	78	78	
28	77	75	70	66	66	64	71	94	87	78	87	85	96	95	96	93	101	106	116	100	82	70	70	69	
29	69	64	65	66	64	60	68	101	86	74	76	86	91	98	100	96	96	96	95	94	86	77	70	69	
30	68	70	69	72	66	60	72	88	80	77	72	84	94	92	92	87	90	95	99	109	95	76	73	73	
31	70	69	71	69	64	58	65	92	87	81	76	92	103	97	96	91	92	100	122	135	92	71	73	77	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	29	29	31	31	30	30	31	31	31	29	31	30	31	30	31	31	31	31	31	31	30	29	30	
MED	79	77	76	69	66	64	73	88	86	83	84	86	96	97	98	100	101	100	99	98	84	78	78	79	
U Q	83	81	79	74	71	68	76	92	90	90	89	94	103	105	108	109	112	106	116	106	92	81	82	82	
L Q	72	70	70	66	64	60	68	82	81	77	77	84	87	91	92	91	92	91	88	86	80	74	72	72	

AUG. 2023 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							L	L	U	L	A	556	508	556	532	A	U	L	A						
2							L	L	L	L	A	U	L	572	532	H	560	512	L	L					
3							L	360	452	460	556	512	564	540	L	552	A	L	L	L					
4							L	L	A	L	U	L	A	572	A	564	568	L	L	A					
5							U	L	580	472	516	548	548	516	536	560	512	500	A	A					
6							L	L	L	L	540	552	608	504	548	H	580	508	L	L					
7							L	U	L	L	L	536	556	588	L	548	540	540	L	L					
8							L	A	564	L	A	568	564	556	556	524	L	L	L						
9							L	L	512	532	U	L	516	588	532	516	528	520	L	L					
10							A	472	U	L	A	572	544	560	528	508	524	A	A						
11							U	L	L	L	L	504	540	544	556	592	548	552	L	U	L	A	A		
12							A	A	A	A	552	A	564	580	512	512	L	A	A						
13							L	L	L	L	L	520	544	564	580	L	560	544	548	L	L	A			
14							L	L	L	L	L	532	548	592	A	596	528	500	L	L	A				
15							L	U	L	L	A	U	L	600	568	568	A	524	A	A					
16							L	L	U	L	U	L	536	680	564	520	L	576	576	A					
17							L	L	L	A	L	584	612	568	548	548	556	L	L	L	A				
18							A	A	A	A	A	A	A	552	560	A	548	L	A	A					
19							L	A	L	U	L	L	516	564	580	L	568	564	540	L	L	L	A		
20							L	L	L	A	A	A	A	A	A	A	536	L	A	A					
21							A	A	A	A	A	A	A	A	A	L	A	A	A	A					
22							A	A	A	A	A	A	A	A	564	544	A	L	A	A					
23							A	L	L	U	L	540	564	536	L	A	516	L	A	A					
24							L	L	L	L	L	552	A	564	548	L	536	L	L	L	A				
25							L	456	L	508	592	508	592	A	A	508	L	L	L						
26							A	L	U	L	L	488	620	576	588	580	532	508	L	L	L	L			
27							A	U	L	L	L	516	576	552	A	524	540	528	L	A	A				
28							L	L	A	L	L	520	640	560	U	L	556	540	L	L	L	L			
29							L	L	U	L	U	L	472	492	568	608	524	576	524	L	L	A	A		
30							L	L	L	U	A	L	460	484	500	576	560	612	552	528	500	476	L		
31							L	L	U	L	L	480	480	564	564	L	572	536	524	516	368	L			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							1	2	8	17	20	24	23	25	26	25	27	15	1						
MED							L	L	L	L	L	360	516	476	516	538	564	568	560	558	536	524	480	368	
U Q							U	L	L	L	L	536	540	552	576	588	568	568	548	536	508				
L Q							L	L	L	L	L	466	486	518	552	560	534	548	526	508	476				

AUG. 2023 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							A	A	A	A	A	A	A		A	A	A	A	A						
2							A	A	A	A	A	A	A	404											
3							A	A	A	A	A	A	A	412	396	392	364	324	260						
4							A	A	A	A	A	A	A	416			360	340							
5							A	A	A	A	A	A	A	A	A	A									
6							A	A	A	A	A	A	A	416	400	376									
7							200	300		380	400	400		A	A	408	396	356	324	260					
8							A	A	A																
9							240	292	340	364		A	A	A	A										
10							200	300	336	372		A	A	A	A										
11							180	260						A	A	412	392	388	360	316	244				
12							176	276	320	348	376		A	A	A	A	U G	404	376	324					
13							196	268	324	356		A	A	A	A	A	A								
14							A	A	A	A															
15							A	A	A	A															
16							A	A	A	A															
17							A	A	A	A															
18							A	A	A	A															
19							A	A	A	A															
20							A	A	A	A															
21							A	A	A	A															
22							A	A	A	A															
23							A	A	A	A															
24							A	A	A	A															
25							A	A	A	A															
26							A	A	A	A															
27							A	A	A	A															
28							A	A	A	A															
29							A	A	A	A															
30							A	A	A	A															
31							A	A	A	A															
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							7	21	18	20	13	11	7	13	15	20	22	21	15						
MED							196	268	318	352	380	384	396	404	392	376	350	308	244						
U Q							200	278	324	364	392	400	412	414	400	386	360	320	260						
L Q							176	254	300	348	366	376	384	398	380	366	344	298	228						

AUG. 2023 foE (0.01MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	J 38	A 32	J 26	A 28	J 27	A 31			G		J 35	A 65	J 53	A 44	J 47	A 46	J 68	A 80		J 50	A 51	J 66	A 54	J 83	A 80	J 16	A 16		
2	E 16	B 32	J 52	A 36	J 39	A 29	J 28	A 38	J 65	A 70	J 108	A 55	J 53		G		G			42	39	38	34	25	26	40	39	17	
3	J 20	A 16	E 19	B 16	E 16	B 25	J 22		G		J 37	A 48	J 44	A 49	J 67	A 86	J 49	A 53	J 66	A 28	J 50	A 32	J 24	A 22					
4	J 31	A 20	J 20	A 21	J 16	A 16			G	J 74	A 44	J 57	A 98	J 90	A 111	J 64	A 76	J 44	A 48	J 68	A 53	J 121	A 62	J 36	A 44				
5	J 34	A 21	J 24	A 24	J 27	A 16	J 26	A 37	J 59	A 69	J 104	A 184	J 79	A 50	J 56	A 90	J 42	A 92	J 51	A 46	J 121	A 37	J 49	A 63					
6	J 50	A 66	J 52	A 53	J 31	A 16	J 23		G		J 41	A 45	J 56	A 47	J 49	A 68	J 46			G		J 44	A 51	J 34	A 34	J 64	A 26	J 16	A 33
7	J 32	A 21	J 30	A 16	E 16	B 16	J 21	A 31	J 44						G		J 46	A 43	J 40		J 48	A 42			J 23	A 26	J 23	A 44	J 106
8	J 21	A 34	J 31	A 26	J 59	A 22	J 21	A 32	J 38	A 61	J 74	A 68	J 51	A 60	J 46	A 36				G	J 59				J 16	A 16	J 39	A 16	
9	E 16	B 25	J 20	A 16	E 16	B 22			G			J 42		G	J 54	A 45	J 48	A 50	J 43	A 40	J 32	A 34	J 82	A 46	J 16	A 16	J 26	A 26	
10	J 83	A 66	J 30	A 30	J 26	A 20	J 22	A 48	J 48	A 54	J 89	A 52	J 57	A 44	J 48	A 51	J 42			G	J 82	A 78	J 80	A 65	J 84	A 58	J 52	A 52	
11	J 44	A 49	J 26	A 20	J 25	A 18	J 22	A 33	J 88	A 45	J 49	A 90	J 101	A 44	J 54					G	J 55	A 47	J 52	A 62	J 46	A 109	J 58	A 58	
12	J 78	A 18	E 16	B 20	J 53	A 16			G	J 58	A 59	J 64	A 68	J 68	A 170	J 60	A 100	J 71	A 52	J 68	A 110	J 164	A 137	J 152	A 53	J 28	A 28		
13	J 19	A 20	J 21	A 21	J 15	A 16	J 22	A 32	J 48	A 40				G	J 46	A 40	J 52	A 47	J 48	A 45	J 79	A 79	J 110	A 85	J 53	A 80	J 33	A 33	
14	J 45	A 48	J 49	A 42	J 31	A 29	J 31	A 62	J 46	A 42	J 42	A 50	J 149	A 110	J 200	A 52	J 42				J 46	A 48	J 76	A 122	J 50	A 51	J 40	A 40	
15	J 32	A 44	J 27	A 26	J 24	A 16	J 23	A 41	J 36	A 42	J 53	A 76	J 46	A 48	J 62	A 110	J 185	A 59	J 44	A 40	J 48	A 38	J 21	A 102					
16	J 46	A 20	J 22	A 32	J 32	A 26	J 26	A 32	J 40	A 63	J 44	A 61	J 45	A 37	J 46	A 48	J 66	A 76	J 66	A 82	J 64	A 34	J 25	A 28					
17	J 25	A 16	J 20	A 16	E 16	B 16	J 21	A 30	J 42	A 70	J 68	A 55	J 50	A 46	J 48	A 74	J 45	A 59	J 49	A 62	J 46	A 33	J 30	A 24					
18	J 46	A 23	J 25	A 17	J 32	A 24	J 20		G		J 37	A 50	J 69	A 81	J 80	A 110	J 82	A 78	J 49	A 57	J 55	A 16	J 23	A 23	J 34	A 65			
19	J 52	A 32	J 26	A 25	J 24	A 16	J 21	A 33	J 64	A 54	J 58	A 82	J 64	A 59			G	J 45	A 52	J 40		J 28	A 38	J 40	A 43	J 29	A 78		
20	J 47	A 31	J 32	A 26	J 16	A 16	J 26	A 45	J 48	A 48	J 114	A 286	J 85	A 82	J 126	A 74	J 62				G	J 56	A 110	J 218	A 261	J 130	A 110		
21	J 110	A 76	J 62	A 88	J 44	A 29	J 33	A 46	J 65	A 79	J 66	A 68	J 102	A 110	J 110	A 49	J 121	A 64	J 67	A 49	J 43	A 42	J 123	A 82					
22	J 61	A 50	J 32	A 48	J 32	A 18	J 22	A 37	J 60	A 59	J 56	A 72	J 72	A 86	J 59	A 110	J 72	A 36	J 58	A 68	J 25	A 24	J 25	A 32					
23	J 32	A 53	J 50	A 31	J 27	A 24	J 80	A 114	J 88	A 53	J 70	A 57	J 41	A 42	J 64	A 54	J 54	A 60	J 75	A 66	J 76	A 26	J 33	A 30					
24	J 18	A 38	J 63	A 38	J 33	A 25	J 19	A 38	J 35	A 48	J 46	A 55	J 72	A 48	J 42	A 62	J 40	A 42	J 86	A 28	J 22	A 38	J 25	A 53					
25	J 48	A 28	J 21	A 21	J 16	A 22	J 42	A 53	J 36	A 38	J 42	A 46	J 46	A 52	J 69	A 61	J 49	A 42	J 45	A 38	J 30	A 16	J 46	A 54					
26	J 62	A 66	J 62	A 33	J 34	A 44	J 41	A 53	J 113	A 72	J 63	A 50	J 45	A 44	J 44	A 40	J 40	A 35	J 28	A 52	J 28	A 74	J 78	A 41					
27	J 40	A 32	J 34	A 32	J 18	A 25	J 19	A 30	J 38	A 68	J 64	A 52	J 82	A 60	J 70	A 95	J 70	A 66	J 65	A 52	J 70	A 25	J 22	A 18					
28	J 20	A 20	J 20	A 16	E 16	B 18	J 20	A 35	J 87	A 53	J 52	A 43	J 52	A 46	J 53	A 40	J 32	A 53	J 27	A 51	J 50	A 85	J 86	A 102					
29	J 62	A 32	J 22	A 18	E 18	B 16	J 19	A 35	J 35	A 42	J 48	A 40	J 58	A 42	J 47	A 47	J 43	A 55	J 72	A 40	J 64	A 48	J 16	A 19					
30	J 26	A 16	E 16	B 16	E 16	B 26	J 21	A 18	J 30	A 36	J 40	A 53	J 50	A 43	J 45	A 48					J 39	A 36	J 33	A 29	J 16	A 16	J 16	A 16	
31	E 16	B 16	J 22	A 30	J 30	A 19	J 17	A 29	J 37	A 39	J 40	A 49	J 48	A 49	J 44	A 41	J 36	A 70	J 52	A 52	J 64	A 37	J 61	A 40					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31					
MED	J 38	A 32	J 26	A 26	J 26	A 20	J 22	A 33	J 44	A 50	J 56	A 55	J 53	A 49	J 53	A 51	J 45	A 53	J 52	A 51	J 62	A 38	J 36	A 40					
U Q	J 50	A 48	J 34	A 32	J 32	A 25	J 26	A 45	J 64	A 64	J 68	A 72	J 80	A 60	J 68	A 76	J 52	A 64	J 67	A 66	J 82	A 53	J 58	A 63					
L Q	J 21	A 20	J 21	A 18	E 16	B 16	J 21	A 30	J 37	A 42	J 44	A 47	J 46	A 45	J 46	A 41	J 40	A 42	J 34	A 34	J 29	A 26	J 24	A 24					

AUG. 2023 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	26	E B	E B	E B	E B	22	22	G	35	56	42	43	47	44	66	45	49	38	65	34	23	40	E B	E B	E B			
2	E B	E B	E B	E B	E B	20	E B	23	33	40	39	A A	108	50	46	G	G	41	38	36	31	22	23	20	E B	E B	E B	
3	E B	E B	E B	E B	E B	E B	E B	20	G	34	G	G	42	43	36	43	58	44	38	30	20	21	E B	E B	E B	E B		
4	E B	E B	E B	E B	E B	E B	E B	21	G	37	44	46	75	53	59	46	47	G	28	38	42	35	18	28	21	E B	E B	
5	22	E B	E B	E B	E B	E B	E B	23	33	43	43	44	50	48	48	47	46	38	66	39	20	24	24	35	28			
6	22	34	E B	E B	E B	E B	E B	22	G	41	44	44	45	43	44	44	G	41	35	29	21	23	E B	E B	E B	E B		
7	E B	E B	E B	E B	E B	E B	E B	20	28	36	G	G	G	G	46	43	40	43	35	G	21	21	E B	E B	E B	24		
8	E B	E B	E B	E B	E B	E B	E B	20	G	32	37	53	50	56	50	48	44	32	G	33	29	18	E B	E B	E B	E B		
9	E B	E B	E B	E B	E B	E B	E B	G	G	G	G	40	G	45	45	45	46	42	38	28	30	E B	E B	E B	E B	E B		
10	31	23	E B	E B	E B	19	17	21	45	37	43	60	43	47	43	47	44	41	56	57	46	23	24	22	E B	E B		
11	26	23	20	E B	E B	E B	E B	21	30	38	41	46	47	46	42	42	G	G	55	44	40	E B	16	21	22	41		
12	44	E B	E B	E B	E B	E B	E B	G	46	51	59	65	47	A A	170	50	52	40	37	36	69	36	66	42	E B	E B	E B	
13	E B	E B	E B	E B	E B	E B	E B	21	31	35	40	G	43	35	50	46	45	42	40	57	21	22	22	20	E B	E B	16	
14	20	34	E B	E B	E B	E B	E B	23	34	40	38	41	43	58	91	52	45	40	41	42	51	35	22	24	25			
15	E B	E B	E B	E B	E B	E B	E B	21	34	34	39	44	54	43	46	53	53	43	37	38	21	45	35	E B	E B	24		
16	24	E B	E B	E B	E B	E B	E B	21	29	36	47	41	45	44	G	34	44	44	52	43	37	46	E B	E B	E B	E B	E B	
17	E B	E B	E B	E B	E B	E B	E B	21	29	38	44	56	42	42	43	40	46	43	41	24	27	21	25	22	E B	E B	16	
18	27	21	20	E B	E B	E B	E B	20	G	35	47	62	78	59	42	51	74	43	48	49	E B	16	20	20	22	42		
19	28	26	23	E B	E B	E B	E B	20	31	61	40	40	44	40	42	G	41	46	37	27	28	24	32	21	24			
20	25	22	18	21	E B	E B	E B	24	32	38	39	A A	114	78	62	76	60	56	49	G	44	100	28	A A	A A	A A	22	
21	24	30	34	40	31	E B	E B	30	37	47	60	55	64	79	69	A A	110	48	72	53	43	46	36	36	46	E B	E B	16
22	22	23	21	22	25	E B	E B	21	36	48	55	53	60	68	79	54	45	50	35	50	64	19	E B	16	20	19	E B	E B
23	18	29	24	24	22	20	43	41	45	40	51	42	41	41	56	39	40	52	42	30	20	18	27	E B	E B	E B	16	
24	E B	E B	E B	E B	20	25	22	19	34	34	40	45	43	56	44	42	42	38	38	44	20	18	E B	16	21	25		
25	26	27	E B	E B	E B	E B	E B	22	31	33	37	40	45	45	51	62	59	39	31	32	34	20	E B	16	19	40		
26	42	E B	18	20	21	19	27	33	85	36	46	49	43	43	42	40	38	33	27	28	E B	16	30	21	E B	E B	E B	16
27	E B	21	E B	E B	E B	E B	E B	18	28	35	50	43	43	51	53	44	44	48	48	57	20	19	E B	E B	E B	E B	E B	16
28	E B	E B	E B	E B	E B	E B	E B	19	33	37	46	40	42	47	44	45	38	G	27	31	26	22	21	E B	E B	E B	E B	16
29	27	22	E B	E B	E B	E B	E B	18	30	35	40	42	40	56	42	46	46	42	40	33	34	26	25	E B	E B	E B	E B	16
30	E B	E B	E B	E B	E B	E B	E B	18	28	34	37	40	44	41	44	44	39	36	35	28	22	E B	E B	E B	E B	E B	E B	16
31	E B	E B	E B	E B	E B	E B	E B	17	28	36	37	40	46	46	46	43	40	35	35	24	43	40	E B	16	23	21		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MED	20	E B	E B	E B	E B	E B	E B	21	31	37	40	44	45	46	44	45	44	41	38	38	28	21	20	20	E B	E B	16	
U Q	26	23	18	20	20	16	22	34	41	47	53	50	56	50	52	46	44	43	44	40	24	28	22	24				
L Q	E B	E B	E B	E B	E B	E B	E B	G	G	35	38	40	43	43	42	43	40	38	35	28	21	E B	E B	E B	E B	E B	E B	16

AUG. 2023 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	19	22	22	22	35	36	31	42	29	42	21	16	14	16	16	16	16
2	16	16	16	16	16	16	16	17	19	19	24	25	24	24	26	30	23	21	16	17	16	16	16	16
3	16	16	16	16	16	16	16	16	20	22	22	24	25	26	20	20	19	16	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	18	21	24	22	22	40	37	25	21	18	16	16	16	16	16	16
5	16	16	16	16	16	16	16	17	19	19	22	22	42	35	32	28	25	21	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	34	29	25	25	22	26	29	28	20	18	16	16	16	16	16	16
7	16	16	16	16	16	16	16	17	19	23	29	30	36	37	38	30	20	20	18	16	16	16	16	16
8	16	16	16	16	16	16	16	21	22	28	28	30	34	25	26	25	21	17	17	16	16	16	16	16
9	16	16	16	16	16	16	16	16	18	23	25	32	28	34	25	26	22	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	19	25	30	34	28	28	26	21	18	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	20	21	27	27	27	36	30	30	26	20	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	20	22	23	26	26	22	23	21	16	14	16	15	16	16	16	16
13	16	16	16	16	16	16	16	17	17	20	20	22	21	28	26	21	21	21	17	16	16	16	16	16
14	16	16	16	16	16	16	16	16	17	20	22	24	24	27	24	24	19	18	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	18	19	24	26	24	29	24	21	21	20	17	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	20	22	23	25	26	24	19	21	17	17	16	16	16	16	16
17	16	16	16	16	16	16	16	16	17	20	22	26	29	30	30	26	22	18	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	19	19	24	23	29	24	23	26	20	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	20	17	20	22	26	28	25	24	19	17	17	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	23	20	24	22	26	23	24	23	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	18	17	20	23	24	27	30	23	24	21	20	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	18	24	23	23	27	40	29	22	22	20	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	19	20	22	25	29	29	29	24	22	17	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	20	22	24	30	35	27	22	19	19	15	16	16	16	16	16
25	16	16	16	16	16	16	16	16	18	20	22	29	29	27	23	20	19	17	16	16	16	16	16	16
26	16	16	16	16	16	16	15	17	17	20	21	24	26	27	22	20	15	16	17	16	16	16	16	16
27	16	17	16	16	16	16	16	16	22	21	24	26	26	25	27	21	21	18	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	18	18	23	25	23	26	27	24	20	17	14	16	16	16	16	16
29	16	16	16	16	16	16	16	17	19	22	22	22	24	27	28	24	20	17	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	19	23	20	25	28	24	24	23	20	16	16	16	16	16	16	16
31	16	16	16	16	16	16	17	16	17	20	22	26	24	25	25	27	19	18	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	18	20	22	25	26	27	26	24	21	18	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	17	20	22	24	26	29	31	29	26	22	20	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	17	20	22	23	24	26	24	21	19	17	16	16	16	16	16	16

AUG. 2023 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1		265	280	281	288	307	297	304	329	258	278	281	303	297	273	284	288	280	296	311	297	269	277	271	264		
2		267	260	282	274	297	272	280	336	325	312	A	288	254	278	277	286	303	303	283	253	269	265	246	279		
3		292	281	286	282	271	271	267	264	296	229	286	F	291	305	282	298	321	302	302	334	289	259	258	266	261	
4		268	282	274	271	273	280	323	345	317	310	272	294	282	292	285	279	287	296	302	282	288	262	265	271		
5		266	288	289	276	260	253	299	278	308	295	256	262	271	287	267	237	267	296	321	311	250	250	256	253		
6		287	299	304	278	273	260	297	341	344	358	326	335	264	290	290	289	310	298	305	314	268	264	270	277		
7		275	287	292	322	290	293	325	328	301	307	309	297	271	264	265	271	296	290	299	282	270	273	260	278		
8		282	276	305	297	272	282	289	297	280	299	298	264	271	287	298	285	288	294	288	298	295	266	262	279		
9		280	277	283	284	F	F	280	282	315	309	325	306	278	266	296	304	295	298	294	299	304	273	269	274	275	
10		283	286	286	269	F	F	274	268	279	306	H	272	293	282	294	303	288	297	297	295	290	288	271	J	R	276
11		272	275	283	285	F	F	280	272	286	298	296	295	274	286	274	287	291	292	274	296	300	301	302	276	F	271
12		286	291	293	297	284	270	310	306	332	300	284	288	A	279	280	285	285	302	293	304	288	278		F	276	
13		275	278	290	280	280	301	295	311	329	292	300	291	271	283	281	283	272	288	307	322	315	263	265	268		
14		286	294	291	295	296	294	312	321	331	320	287	282	297	282	275	287	296	297	307	314	290	269	287	F	272	
15		267	274	304	303	279	293	322	341	337	338	288	285	271	276	271	284	292	302	317	323	275	269	271	F	279	
16		F	286	280	287	280	295	293	308	326	328	318	302	275	291	290	273	276	294	307	314	300	278	268	266	276	
17		288	279	268	F	F	274	275	260	297	345	329	329	313	295	286	273	283	288	298	289	296	307	302	269	269	270
18		269	281	288	F	F	304	288	285	302	323	321	314	300	A	292	286	286	280	275	283	300	316	306	262	281	296
19		273	293	F	F	F	279	322	346	343	340	286	296	298	294	290	297	286	304	311	331	270	273	280	A	257	
20		282	291	287	290	303	295	330	329	350	315	A	A	275	269	264	284	293	297	309	319	301	A	A	A	325	
21		302	F	F	F	F	F	321	327	322	313	331	302	A	281	A	286	293	293	292	299	311	315	295	F		
22		289	F	F	F	F	F	358	351	335	298	293	278	279	277	282	290	297	311	312	302	294	293	287			
23		283	269	288	289	289	301	316	353	350	322	293	273	292	297	282	302	284	296	308	307	298	287	267	281		
24		286	295	315	292	289	287	330	368	322	321	299	278	291	286	279	279	283	300	321	320	290	278	287	284		
25		289	296	282	279	289	301	334	352	331	291	300	282	277	281	284	293	296	293	304	315	321	287	287	287		
26		283	F	281	282	288	292	319	335	339	342	311	295	298	304	290	296	305	310	310	311	327	308	273	268		
27		272	272	270	279	282	282	302	333	313	328	288	286	294	284	301	300	302	305	304	329	315	279	276	278		
28		272	278	273	282	279	282	302	336	365	305	320	300	310	286	295	288	298	305	329	326	321	275	256	290		
29		290	274	259	291	288	297	312	354	381	346	316	314	299	298	308	308	317	319	317	318	309	302	271	275		
30		275	277	289	303	304	300	340	363	368	344	318	297	311	295	318	306	315	311	301	326	334	290	278	290		
31		275	273	288	301	304	315	328	345	350	327	296	294	306	301	296	299	296	288	303	334	361	264	275	278		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT		31	29	28	30	30	30	30	31	31	31	29	29	29	31	30	31	31	31	31	31	31	30	29	30		
MED		282	280	287	284	286	284	309	333	329	315	298	291	286	286	284	288	294	297	305	311	295	272	271	276		
U Q		286	290	290	295	295	295	322	345	350	329	310	296	298	294	296	296	298	303	311	320	311	279	279	281		
L Q		272	274	282	279	275	272	297	315	313	299	286	282	271	279	277	283	285	294	299	299	273	265	266	271		

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AUG. 2023 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E pSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L	U	L	A					A		A						
2							L	L	L	L	A	A							L	L				
3							L	L	L	L	A	A							L	L				
4							L	L	L	L	A	A							L	L				
5							U	L	A										A	A				
6							L	L	L	L	A	A							L	L				
7							L	U	L	L	L	A							L	L				
8							L	L	L	L	A	A							L	L				
9							L	L	L	L	A	A							L	L				
10							A	U	L	L	A	A							A	A				
11							U	L	L	L	L	A							L	L	A	A		
12									A	A	A	A	A	A	A				L	A				
13							L	L	L	L	L	A							L	L	A			
14							L	L	L	L	L	A							L	L	A			
15							L	L	L	L	L	A							L	L	A			
16							L	L	L	L	L	A							L	L	A			
17							L	L	L	L	L	A							L	L	A			
18							L	L	L	L	L	A							L	L	A			
19							L	A	L	U	L	L	A						L	L	A			
20							L	L	L	L	A	A	A	A	A	A	A	A	L	A	A			
21							A	A	A	A	A	A	A	A	A	L	A	A	A	A				
22							A	A	A	A	A	A	A	A	A	A	A	A	L	A				
23							A	L	L	L	U	L	L	A					L	A	A			
24							L	L	L	L	L	A							L	A				
25							L	L	L	L	L	A							L	L				
26							A	L	U	L	L	L	A						L	L	L			
27							A	U	L	L	L	A							L	A	A	A		
28							L	L	L	L	L	A							L	L	L			
29							L	L	L	L	L	A							L	L	A	A		
30							L	L	L	L	L	A							L	L	L			
31							L	L	L	L	L	A							L	L	L			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	7	17	19	21	20	22	21	22	22	14	1					
MED							L	L	L	L	L	L	L	L	L	L	L	L	L	L				
U Q							321	314	360	382	382	377	368	380	366	364	360	360	359					
L Q							L	L	L	L	L	L	L	L	L	L	L	L	L	L				

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135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E pSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							272	232	432	374	354	336	364	426	E A 426	370	366	340	E A 344						
2							318	246	260	294	A	346	442	356	326	330	284	278	260						
3							350	390	322	590	360	354	318	338	326	288	282	292	254						
4								238	216	278	292	E A 368	344	316	334	342	318	304	276						
5								398	326	360	472	426	400	342	342	428	336	322	250						
6								244	246	260	282	274	436	326	328	318	282	276	282						
7								216	300	282	278	318	360	354	348	330	288	262	248						
8									320	288	286	378	338	306	286	310	290	282	274						
9								266	292	268	286	264	404	326	298	324	316	316	278						
10								288	236	344	E A 370	306	312	332	302	300	328	318	304						
11									292	308	300	318	320	302	296	288	336	304	272						
12										280	326	308	A	336	326	320	318	284	E A 314						
13								248	236	260	276	308	320	312	292	314	324	300	266						
14								244	244	262	262	316	310	E A 412	334	304	288	280	262						
15									228	236	336	314	322	320	332	306	284	266	242						
16									230	252	264	370	302	298	348	330	298								
17									220	254	276	298	326	342	314	304	286	292	272						
18										238	294	E A 400	314	332	326	E A 340	312	302	276						
19								234	238	252	342	344	318	332	340	318	302	284	256						
20								246	236	254	A 366	E A 324	E A 342	E A 350	A	306	292	276	264						
21									240	286	270	E A 282	E A 366	E A 340			292	278	276						
22										216	236	E A 236	314	332	342	324	314	302	278	252					
23										222	244	294	286	296	286	308	298	288	288	254					
24										246	292	304	292	310	284	308	306	272	246						
25										258	226	280	272	314	326	312	294	268	270						
26									E A 276	232	294	294	286	304	334	298	284	262	246						
27										250	240	330	284	294	294	286	280	270	266						
28							268		216	224	260	332	290	306	314	294	296	270	240						
29										206	222	240	292	306	286	294	286	264	258	242					
30										210	226	224	306	290	326	286	300	270	276	260					
31										230	210	226	222	306	288	280	300	292	300	304	272				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							4	14	27	31	29	31	30	31	30	31	31	30	29						
MED							295	245	237	254	284	311	318	326	322	307	292	281	262						
U Q							334	266	292	286	313	346	344	342	334	324	316	302	276						
L Q							270	234	220	236	263	298	302	306	298	298	284	272	251						

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AUG. 2023 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E 0SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 308	270	256	262	232	232	240	222	206	A	204	190	272	206	A	210	E A 328	E A 216	A	E A 264	E A 256	E A 312	248	280
2	290	296	270	304	254	284	244	232	232	178	A 288	190	180	200	210	202	218	230	254	E A 278	278	326	282	
3	246	274	250	238	258	286	264	232	200	232	192	224	194	198	192	A	242	E A 214	228	216	300	316	296	294
4	294	258	256	274	276	266	244	212	A	240	226	A 306	E A 222	A	E A 272	198	210	A	E A 252	E A 252	E A 296	296	296	290
5	296	258	208	264	316	332	256	222	E A 264	218	196	E A 252	256	250	210	276	218	A	A	E A 228	E A 328	E A 350	E A 406	E A 358
6	282	E A 268	234	272	E A 306	292	250	224	224	204	198	188	188	166	202	180	220	204	222	238	E A 264	292	286	284
7	286	252	252	226	216	250	234	200	178	174	174	168	198	208	174	214	E A 232	208	216	250	278	250	288	294
8	256	282	252	220	272	266	260	224	218	A 250	A	A	262	232	210	204	184	204	226	260	242	238	298	276
9	262	266	266	248	274	270	224	208	206	198	172	164	218	190	194	232	220	216	248	246	226	278	274	280
10	E A 288	E A 268	254	288	274	318	250	A	218	218	A	244	238	206	232	210	210	A	E A 280	E A 266	E A 244	E A 286	E A 284	
11	E A 284	E A 292	264	248	252	260	242	208	214	214	240	214	192	192	174	192	192	A	E A 254	E A 218	E A 268	E A 288	E A 306	
12	E A 296	256	242	232	266	284	236	240	242	A	A 216	A 216	E A 272	E A 304	194	194	194	244	A	E A 242	E A 342	E A 294	E A 324	E A 252
13	278	272	254	264	256	240	226	204	206	198	178	174	178	A	238	224	226	246	A	236	224	220	306	290
14	E A 282	E A 290	252	E A 248	E A 252	230	238	220	214	194	214	190	A	E A 274	E A 216	220	246	A	E A 250	E A 240	E A 252	E A 272	E A 284	
15	278	E A 286	252	232	252	248	232	216	192	182	188	A	194	206	E A 314	A	238	198	A	216	E A 266	E A 298	E A 264	E A 296
16	E A 272	Q 270	268	252	256	248	218	222	206	238	176	230	208	186	204	224	A	274	244	E A 258	242	292	286	282
17	260	262	292	298	292	294	232	216	206	240	A	184	188	206	192	E A 246	258	268	214	246	212	276	292	286
18	E A 296	288	260	234	240	262	218	210	202	A	A	A	A	A	E A 186	E A 310	A	E A 244	A	234	200	238	286	286
19	E A 302	E A 246	E A 262	Q 278	Q 274	266	228	216	A	198	182	186	190	198	182	206	E A 268	E A 232	226	224	E A 240	E A 284	E A 268	E A 294
20	E A 278	E A 264	E A 258	E A 264	E A 236	E A 236	E A 216	E A 216	200	188	A	A	A	A	A	A	A	200	A	E A 306	E A 218	A	E A 222	
21	E A 264	E A 278	E A 300	E A 310	E A 270	280	228	238	A	A	A	A	A	A	A	A	268	A	A	E A 258	E A 248	E A 238	E A 260	E A 252
22	E A 268	E A 256	E A 254	E A 284	E A 262	250	214	218	A	A	A	A	A	A	E A 246	A	228	A	E A 242	220	214	240	E A 248	
23	264	E A 314	E A 264	E A 250	E A 252	E A 246	262	206	A	200	E A 260	176	174	176	A	208	230	A	A	236	232	236	286	274
24	276	262	244	236	E A 262	E A 248	224	212	204	204	206	190	A	200	204	208	202	256	A	218	216	236	254	270
25	E A 270	E A 266	266	270	248	226	218	224	190	178	170	212	228	270	A	A	214	210	252	230	214	210	246	274
26	E A 300	E A 306	E A 262	E A 270	E A 258	260	240	220	A	194	222	238	172	202	206	202	212	204	234	236	212	E A 244	E A 248	E A 286
27	282	E A 296	278	264	256	274	234	216	210	A	196	190	A	A	212	212	A	A	A	226	204	214	252	260
28	266	268	288	282	264	274	242	226	210	A	190	196	242	208	214	206	200	222	234	224	220	222	310	240
29	E A 268	288	298	258	254	248	244	222	196	186	180	158	A	202	220	216	216	A	A	242	236	228	240	278
30	280	272	242	238	242	242	228	206	182	178	180	194	168	216	212	200	204	216	238	234	206	196	248	248
31	280	294	270	244	226	226	238	216	192	182	180	204	E A 220	E A 242	218	198	210	222	230	E A 226	E A 192	E A 218	E A 286	E A 284
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	25	23	23	24	22	24	25	26	26	23	14	31	31	30	30	31
MED	274	268	256	255	254	260	236	217	206	198	190	191	194	202	207	209	214	216	230	236	U 225	U 236	283	278
U Q	E A 290	288	268	274	272	280	244	224	216	218	214	220	238	212	E A 227	224	E A 232	E A 244	238	254	E A 264	E A 292	E A 296	E A 290
L Q	268	262	252	238	252	246	226	212	198	182	180	185	188	191	197	204	202	208	226	228	216	228	254	270

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AUG. 2023 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							A	100	A	A	A	A	A		A	A	A	A	A	A					
2							A	A	A	A	A	A	A	100	100	100	100	104	102		A				
3							A	102	A	98	98		A	102		A	100	100		A	A				
4							A	100	A	100	100		A	A	A	A	106	102		A	A				
5							A	102	102	100		A	A	A	104	104	104		A	A	A	A			
6							110	102	A	102	102	102		A	A	108	102	100	100	100					
7							A	A	A						A	A	A	A		A	A				
8							122	114	100	100		A	92	108	106		106	102		A	102				
9							110	102	102	98		A	98		A	98	98	98		A	A	A			
10							108	102						A	102	102	102	100	100	100					
11							114	104	100	98	98		A	A	A	A	102	100	100		A	A			
12							112	100	100	98				A	A	A	A	A		A	A				
13							A	A	100	100	100		A	100	100	100	102	100	100		A	A			
14							A	A	A	A							100	102	102	102					
15							A	100	100	100	100				A	A	102	102		A	A	102			
16							A	A	A	A	A			106		A	104	102		A	A	A			
17							A	102	102	96		A	A	A	A	A		96	98	98					
18							A	100	98	96	96	96	96		A	A	96		102	102		B			
19							A	98	96		A				A	98	102	102	100	100		A			
20							A	102	102	96		A	96		A	A	A	A		96	104				
21							A	104	98	98			A	100	100	100	100	100	102		A	A			
22							A	100	100	100	100	96		A	A		A		A	A		A	A		
23							A	A	A	A	A			A	A	A	A	A	A	A	A	A			
24							A	A		96	98	98	98		A	104	98	100	102	102		A	A		
25							A		A	A			102	100	100	100	100	102	104	104		A			
26							A	A	A	A	A				A	98	98	98	104	100		A			
27							A	100	102	100	100	100	100	100	104	104	104		A	A		A			
28							A	104		A	A	A	A	A	A	A		102	102	102		A			
29							116	104	104													A			
30							A	A	102	102		A	A	A	A		98	100	100	100		A			
31							B	98	98	98	98	98	98	98	104	102	100	98		A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							7	21	18	20	13	11	7	13	15	20	22	21	15						
MED							112	102	100	99	100	98	100	100	100	102	100	100	102						
U Q							116	103	102	100	100	102	100	104	104	102	102	102	102						
L Q							110	100	98	98	98	96	98	100	98	100	100	100	100						

AUG. 2023 h'E (KM)

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AUG. 2023 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	96	92	100	92	92	92	120		134	88	92	92	170	108	96	100	102	102	94	92	86	92		B	B				
2		B	90	92	88	90	94	94	92	88	92	86	86	92		G	G	142	126	108	100	96	96	92	96	100			
3	92		B	98		B		92	106		G	100		G			92	134	92	90	82	106	102	98	100	90	100	94	90
4	92	86	84	82	84		B		108		G	112	184	104	90	90	94	96	88	90	106	96	92	92	92	90	90		
5	90	88	88	92	88		B		118	116	106	100	96	92	106	160	100	96	100	90	90	92	92	88	88	88			
6	92	92	86	86	86		B		136		G	112	104	108	110	100	92	114		G	108	104	102	100	92	92		B	84
7	86	88	84		B		B		104	98	88		G		G			174	110	104	94	90		G	90	86	100	88	98
8	92	90	90	90	92	92	92	144	102	98	92	90	90	88	88	88		G		88	122	104			B	B	86	B	
9		B	118	80		B		B		G	G		G															B	100
10	92	88	88	88	90	94	128	96	98	96	92	92	92	138	100	118		G	G	114	100	96	94	92	92	90	90	86	
11	86	86	90	90	92	96	120	110	104	100	94	90	92	96	88						96	94	90	94	90	94	90	90	
12	90	90		B	90	90		G	98	98	96	90	90	84	88	86	84	82	110	96	100	94	94	98	90	90			
13	86	84	78	78	78		B		128	102	102	102		G															
14	84	84	84	84	84	90	90	90	98	104	100	92	88	88	92	98	114	116	104	102	100	96	92	90	90	90			
15	90	90	88	84	84		B		120	102	118	106	96	96	94	94	100	104	98	98	104	98	92	92	94	94	94		
16	92	90	86	94	82	88	98	104	108	92	114	90	142	88	144	126	106	106	102	94	94	104	80	84	84				
17	104		B	86		B		B	150	140	112	96	94	92	94	92	92	116	104	100	112	86	80	82	82				
18	94	86	80	84	86	84	122		G	112	98	96	90	92	92	92	94	100	108	98		B	90	88	88	88			
19	88	80	80	82	96		B		120	106	92	92	96	110	116	92		G	118	116	110	102	94	94	92	90	92		
20	88	82	86	80		B		B	104	106	102	102	88	120	92	92	86	94	92		G	108	100	96	90	92	104		
21	94	90	88	88	88	92	102	100	100	94	94	92	92	96	96	104	98	96	96	92	92	90	92	98	98				
22	94	86	88	80	80	92	126	106	100	100	96	92	94	98	102	102	100	104	94	92	96	94	94	82	82				
23	92	92	90	84	84	80	90	88	90	94	90	90	96	92	88	88	88	114	104	104	102	80	80	82	82				
24	86	90	94	90	88	90	134	108	114	100	98	98	96	104	170	112	108	100	94	94	92	94	90	88	88				
25	92	90	90	88		B	88	92	88	114	124	116	152	134	120	114	114	112	122	104	96	92		B	94	92			
26	92	92	108	90	86	90	92	92	88	88	88	86	92	90	128	132	116	114	106	94	98	96	98	92	92				
27	92	90	84	86	88	88	146	116	114	96	102	108	102	102	102	102	96	94	90	92	92	92	92	88	88				
28	92	80	82		B		B		104	108	100	98	96	98	102	92	90	90	178	94	128	106	102	92	96	96	96		
29	96	98	90	84	82		B		148	102	104	96	88	90	86	148	120	110	104	98	94	90	92	92	84	84			
30	84		B	B	B	88	88	134	100	98	102	94	90	92	92	92	122	108	104	100	92	96		B	B	B			
31		B		B	96	94	90	98		B	106	98	100	108	112	110	104	106	116	136	96	94	90	92	90	86	82		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	28	27	29	25	24	20	28	25	30	28	28	29	30	30	29	29	29	30	30	30	30	28	26	28					
MED	92	90	88	88	88	92	119	102	102	98	95	92	92	94	100	104	106	104	99	94	92	92	91	90					
U Q	92	90	90	90	90	94	128	107	112	102	99	100	102	108	114	118	114	108	104	100	96	95	94	93					
L Q	88	86	84	84	84	88	100	97	98	95	92	90	92	92	91	94	97	98	94	92	92	90	88	85					

AUG. 2023 h'Es (KM)

IONOSPHERIC DATA STATION Yamagawa

AUG. 2023 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F3	F3	F1	F4	F3	F4	CL11		HL11	L4	L2	L1	HL11	C1	C2	C2	C1	C2	L4	L6	FQ31	FQ51			
2		F4	F3	F4	FQ31	F2	L2	L3	L4	L2	L4	L3	L2			H1	C1	C1	C2	C2	F3	F5	FQ41	F1	
3	F3		F1			F2	C1		C1			C1	HL11	CL11	LQ11	LQ21	CL31	C2	C3	C2	F4	F2	F4	F2	
4	F2	F1	F2	F2	F2		C1		CL11	H1	C2	C2	L3	L2	L1	L3	LC21	CL12	CL43	L7	F4	F4	F4	F2	
5	F2	F1	F1	F1	FQ11		C2	C3	C3	C2	C2	L2	C1	H1	C1	C3	C1	L5	L4	LQ21	FQ31	F5	F5	F5	
6	F3	F4	F4	F4	F3		H1		C1	C1	C1	C1	LQ11	C1		C1	C1	C1	C1	C3	F5	F3		F5	
7	F2	F2	F1				C1	C2	L1					H1	C1	C1	L2	L3		L2	F2	F1	FQ21	FQ51	
8	F1	F4	F5	F2	F2	F2	L1	H1	C1	C3	L2	L2	L2	L2	L2	L1		L2	CL11	C1			C4		
9		F1	F1			F1					L1		L2	HL11	C1	C1	C1	C1	C3	C2	F2	F2		F1	
10	FQ31	F3	F3	F5	F5	F5	C1	C4	C4	C4	L3	L2	L2	H1	C1	C2	C1	C3	C6	L7	F5	F3	F3	F4	
11	F4	F4	F2	F2	F3	F1	C1	C1	C2	C2	C2	LQ31	L2	C1	L1			C2	L3	L4	F3	F3	F3	F7	
12	F7	F1		F1	F2			C6	C4	C3	C3	L2	L4	L3	L3	L2	L2	C2	C5	C4	FQ41	FQ31	FQ41	F2	
13	F2	F1	F2	F2	F1		C1	C2	C1	C1		L1	L1	H1	H1	C1	C1	C3	L5	L3	F5	F5	F5	F4	
14	F4	F6	F3	F5	F4	F2	L2	L3	C2	C1	C1	L2	L3	L6	L2	C2	C2	C2	C5	CL36	FF35	F3	F3	F4	
15	F3	F3	F2	F2	F1		C1	C3	C1	C1	C2	C2	L1	L1	C2	C2	CQ21	CH21	C4	CH31	F8	F8	F1	FQ31	
16	F4	F1	F3	F2	F2	F4	C2	CQ11	C1	L3	CL12	L2	HL11	L1	HL11	CL11	C2	C7	C7	L9	F4	F2	F4	F2	
17	F1		F1				H1	H1	C2	C3	L4	L2	L1	L1	L2	L2	C2	C4	C2	CL24	F3	F4	F2	F2	
18	F3	F1	F2	F1	F2	F2	CL11		C1	C2	C3	C4	L2	L2	L3	L3	L2	C5	C5		F6	F2	F3	F8	
19	F6	F5	F2	F3	F1		C2	C2	L5	C2	C1	CL11	CL11	L1		C1	C2	C3	C2	L4	F7	F7	F6	F4	
20	F5	F6	F3	F2			C4	C3	C2	C1	L3	CL25	L4	L4	LQ31	LQ31	L3		C3	C8	FQ41	FQ71	FQ71	FFQ23	
21	FQ41	FQ41	FQ51	FQ51	FQ31	F4	C3	C4	C5	C4	L4	L3	L3	C3	C4	C2	C4	C4	C8	L6	F4	F5	FQ51	FQ31	
22	FQ31	FQ51	FQ31	FQ31	F1	F1	C1	C4	C4	C3	C2	C5	C4	C4	C2	CQ11	CH31	C2	L4	L8	F5	F3	F3	F1	
23	FF22	F3	F2	F3	F4	F3	L6	LQ51	LQ31	LQ21	LQ21	LQ11	L1	L1	L4	L2	L3	CL44	CL26	CL54	FF35	F2	F5	FQ21	
24	F1	F2	F2	FQ31	F4	F3	HC11	C3	C1	C2	C2	C1	C3	C1	C1	C2	C1	C1	L2	L2	F5	F3	F3	F3	
25	F4	F4	F2	F2		F3	F3	F3	CL11	CL11	CL11	HL11	H1	C1	C2	C2	C2	C1	C4	C8	F9		F3	F9	
26	F4	F3	FF23	F2	F3	F3	L3	L3	L5	LQ21	L3	L2	L2	L1	L1	H1	C1	C2	L3	L3	F1	F4	FQ21	F3	
27	F2	F3	F4	FQ21	F2	F4	H1	C1	C1	C3	C2	C1	C2	C2	C2	C2	C4	C5	L4	L3	F3	F3	F3	F2	
28	F1	F1	F1			F1	C2	C3	C2	C2	C1	C1	L1	L1	L3	HL11	L1	C1	CL11	CL23	L6	F3	F3	F2	
29	F2	FF11	F1	F1	F1		H1	C2	C1	C1	L2	L1	L3	HL11	CL11	CL21	CL21	CL53	L4	L6	F6	F3		F1	
30	F1				F5	F1	H1	C1	C1	C1	L2	L2	L1	L2	L2	C1	C1	C2	C4	L5	F3				
31			F2	F3	F3	F2		C2	C2	C1	C1	C1	C1	C2	C1	C1	H1	L4	L3	L6	F5	F3	F5	F4	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X	X	X	X	X	X	X															X	X	X	X
	78	80	80	74	72	69																79	82	78	78
2	X	X	X	X	X	X	X															X	X	X	X
	80	83	76	81	73	66																95	99	96	103
3	X	X	X	X	X	X	X															X	X	X	X
	109	103	104	84	76	76																76	74	74	72
4	X	X	X	X	X	X	X															X	X	X	X
	72	71	69	65	63	62																88	90	90	87
5	X	X	X	X	X	X	X															X	X	X	X
	85	86	78	66	65	64																85	80	70	69
6	X	X	X	X	X	X	X															X	X	X	X
	76	75	62	51	46	47																88	91	97	102
7	X	X	X	X	X	X	X															X	X	X	X
	110	98	98	87	74	68																90	85	83	83
8	X	X	X	X	X	X	X															X	X	X	X
	84	79	80	77	72	72																104	118	114	99
9	X	X	X	X	X	X	X															X	X	X	X
	96	98	99	88	82	76																81	81	85	88
10	X	X	X	X	X	X	X															X	X	X	X
	91	90	82	73	70	70	70															94	92	93	90
11	X	X	X	X	X	X	X															X	X	X	X
	91	90	88	80	79	74																91	85	84	82
12	X	X	X	X	X	X	X															X	X	X	X
	88	94	90	86	76	70																92	84	80	92
13	X	X	X	X	X	X	X															X	X	X	X
	93	89	85	79	76	75																114	96	97	92
14	X	X	X	X	X	X	X															X	X	X	X
	104	118	127	117	105	93																86	80	86	86
15	X	X	X	X	X	X	X															X	X	X	X
	92	104	109	84	78	78																116	108	108	115
16	X	X	X	X	X	X	X															X	X	X	X
	128	132	119	114	100	90																101	90	89	88
17	X	X	X	X	X	X	X															X	X	X	X
	84	80	76	73	72	70																106	110	106	98
18	X	X	X	X	X	X	X															X	X	X	X
	97	98	94	116	84	72																130	119	115	123
19	X	X	X	X	X	X	X															X	X	X	X
	112	112	96	88	86	89																107	100	101	92
20	X	X	X	X	X	X	X															X	X	X	X
	87	82	82	80	76	70																128	101	88	98
21	X	X	X	X	X	X	X															X	X	X	X
	94	A	96	91	78	93	94	96														156	125	124	107
22	X	X	X	X	X	X	X															X	X	X	X
	114	106	101	116	116	107																166	174	139	128
23	X	X	X	X	X	X	X															X	X	X	X
	115	110	110	98	95	94																107	97	96	92
24	X	X	X	X	X	X	X															X	X	X	X
	92	91	92	83	76	72																148	152	179	154
25	X	X	X	X	X	X	X															X	X	X	X
	116	102	99	89	86	90																141	147	151	164
26	X	X	X	X	X	X	X															X	X	X	X
	114	102	106	101	101	94	100															111	80	73	71
27	X	X	X	X	X	X	X															X	X	X	X
	75	76	70	67	66	65																126	122	123	122
28	X	X	X	X	X	X	X															X	X	X	X
	146	115	104	93	87	85																110	110	114	109
29	X	X	X	X	X	X	X															X	X	X	X
	111	90	87	80	80	74																98	92	85	79
30	X	X	X	X	X	X	X															X	X	X	X
	82	90	94	86	77	58																116	83	84	86
31	X	X	X	X	X	X	X															X	X	X	X
	82	81	84	86	81	65																112	115	148	102
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		31	30	31	31	31	31	3	1													31	31	31	31
MED		X	X	X	X	X	X															X	X	X	X
U Q		92	90	92	84	77	72	94	96													106	96	96	92
L Q		X	X	X	X	X	X															X	X	X	X
		111	103	101	91	86	89	100														116	115	114	107
		X	X	X	X	X	X															X	X	X	X
		84	82	80	77	72	68	70														90	84	84	86

AUG. 2023 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E 0SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	72	74	74	68	66	63	65	72	71	88	97	98	99	92	86	82	92	88	80	74	72	76	72	72
2	74	77	70	75	67	60	61	88	78	H 75	72	79	88	92	102	110	100	85	82	86	89	93	90	97
3	103	97	98	H 78	70	70	74	66	59	66	74	90	105	125	V 118	V 102	92	86	77	70	70	68	68	66
4	66	65	63	59	57	56	64	75	81	70	77	88	97	100	99	96	102	99	98	93	82	84	84	82
5	79	80	72	60	59	58	70	81	70	61	70	83	89	107	111	110	V 137	126	116	87	79	74	64	63
6	70	69	56	45	40	39	53	78	74	76	81	A	78	90	108	114	114	117	106	85	82	85	91	96
7	104	92	92	81	68	62	60	69	86	94	80	89	104	119	129	130	128	118	99	90	84	79	77	77
8	F 75	73	74	71	66	66	63	79	91	99	91	96	120	134	124	131	134	126	120	112	98	112	108	93
9	90	92	93	82	76	70	72	78	99	97	90	99	109	108	97	103	100	96	94	87	75	75	79	82
10	85	84	76	67	64	64	61	90	84	83	86	100	100	96	89	90	89	94	99	94	88	86	87	84
11	85	84	82	74	73	68	71	78	84	86	101	113	128	129	126	115	114	111	109	102	85	79	78	76
12	F 80	F 84	84	80	F 68	F 60	64	81	93	87	87	98	102	110	106	104	108	104	103	94	86	78	74	F
13	F 86	83	F 76	73	70	69	77	89	82	82	84	93	114	122	129	134	135	134	128	120	108	90	91	86
14	F 98	F 112	F 121	111	99	87	82	102	104	95	103	122	114	108	118	121	120	119	116	101	79	74	80	80
15	F 100	F 100	F 78	72	72	72	90	105	78	80	94	112	124	138	156	165	159	150	128	110	102	102	109	
16	U 122	R 127	U 113	R 108	V 94	84	76	89	91	87	83	91	105	101	101	124	135	131	118	106	95	84	83	82
17	78	74	70	67	66	64	69	96	H 86	84	88	102	117	130	138	133	124	127	130	122	100	104	100	92
18	91	92	88	F 90	78	66	80	92	80	83	90	100	108	113	118	122	126	128	131	140	124	113	109	R 117
19	R 106	106	90	82	80	83	84	94	80	82	A	82	89	98	98	101	108	114	108	100	101	94	95	86
20	81	76	76	74	70	64	74	92	V 92	82	85	A	101	111	115	126	139	145	149	146	122	95	82	92
21	F 88	A	F	F	72	F 65	F	F 87	84	96	94	92	94	V 113	129	140	138	129	124	128	H 150	R 119	R 118	101
22	F 82	F 86	F 85	110	110	101	109	114	92	A	84	99	113	125	121	127	136	148	151	169	J 160	R 168	R 133	R 122
23	109	104	104	92	89	88	84	100	95	89	100	112	129	127	114	113	123	122	110	111	101	91	90	86
24	86	85	86	77	70	66	70	81	83	88	88	104	114	116	121	120	129	143	138	128	U 142	R 146	F	148
25	110	96	93	83	80	84	81	80	82	86	104	101	110	121	124	131	134	144	161	156	135	141	145	F
26	108	94	100	95	F	F	88	105	97	89	94	100	111	118	110	110	116	112	106	111	105	74	67	65
27	69	70	64	61	60	59	71	85	84	80	95	98	116	122	117	120	120	126	135	136	120	116	117	116
28	F	F	98	87	81	79	89	V 110	81	85	99	112	117	127	129	123	122	125	128	118	R 104	U 104	R 108	R 103
29	105	84	81	74	74	68	72	115	89	67	81	92	104	114	114	116	114	107	108	104	92	86	79	73
30	76	84	F 84	80	70	52	60	90	89	71	80	88	100	110	105	103	101	99	110	119	110	77	78	80
31	76	75	78	80	75	59	58	87	100	81	80	96	106	106	110	106	109	121	140	142	106	109	F	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	30	30	30	30	30	31	31	30	30	29	31	31	31	31	31	31	31	31	31	31	29	29
MED	85	84	84	78	70	66	72	88	84	84	86	98	106	113	115	116	120	121	116	111	100	90	87	86
U Q	104	93	93	83	78	72	80	94	92	88	94	100	114	124	124	127	134	129	131	128	110	109	105	99
L Q	76	76	74	71	66	60	64	79	81	78	80	90	100	106	105	104	108	104	103	93	84	78	78	78

AUG. 2023 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2023 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										536	548	596	556	584	572	544	A	488	L					
2								L	L	L	U	L	L	L	L	L	L	L	L					
3							L	U	L	404	536	492	536	560	560	556	564	564	528	548	A	228		
4								L	U	L	U	L	612	552	548	568	580	568	568	528	U	L		
5								L	U	L	488	564	568	588	536	576	516	532	468	L				
6								L		A	L	540	A	U	L	564	548	556	528	L	L			
7								L	L	L	U	L	L	604	580	540	556	536	L	L				
8								L	L	L	564	636	572	A	548	564	556	L	L					
9								L	L	L	516	568	564	H	576	556	572	540	504					
10								L	L	U	L	600	560	556	560	588	A	A	L	L				
11								L	A	L	532	568	528	568	604	568	572	556	500	L	L			
12								L	L	L	556	A	A	A	A	568	520	A	L					
13								L	U	L	500	A	552	560	588	576	584	560	512	L	L			
14								L	L	U	L	572	580	552	652	548	572	A	A	A				
15								L	L	L	L	584	612	604	600	552	536	520	L	L				
16								L	L	U	L	564	584	560	584	604	552	A	A	L	L			
17								L	L	U	L	516	608	592	592	580	560	L	A					
18								L	U	L	U	L	A	A	A	A	544	532	496	L	L			
19								L	L	A	L	584	600	600	572	564	540	L	L	L				
20								L	L	A	A	A	A	L	L	604	612	588	568	L	L	L		
21									A	A	A	A	A	A	A	A	A	A	L	L				
22									A	A	A	L	L	A	L	L	L	L	A	A				
23								L	L	A	U	L	L	L	L	L	L	L	A	A				
24								L	L	L	568	A	584	560	L	L	552	A	A					
25								A	L	L	560	580	572	592	564	580	L	L	L	L				
26									L	L	500	612	624	564	576	544	L	L	A					
27								L	L	L	552	608	588	A	572	548	A	A						
28								L	L	U	L	U	L	L	L	L	L	L	L	L				
29								L	L	L	608	L	572	580	L	A	A	A	A					
30								L	L	U	L	U	L	612	584	564	572	552	540	524	L	L		
31								L	L	U	L	U	L	L	L	588	548	560	540	508	L	L		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	2	9	23	24	25	26	25	26	22	14		1				
MED								L	L	U	L	L	L	L	L	L	L	L	L	L				
U Q								404	534	516	560	582	572	582	568	564	536	504		228				
L Q								L	U	L	L	L	L	L	L	L	L	L	L					
								324		L	L	496	540	566	562	572	554	552	528	492				

AUG. 2023 foF1 (0.01MHz)

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AUG. 2023 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E PSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A		A		A	A	A		A		A		A					
2							A	272		368		A	A	A	416		404		344					
3							A	A	A	A	A	A	A	A		400	404	372	332	268				
4							A	264	320	360		A	396	404	404	416	396	368	316	268				
5							A	260		A	356	388	396	408	B	420	404	368	344	264				
6							A	256	308	348	368	408		B	412	404		A	A	A	A			
7							A	A		356	384	400	400	400	408	404	392	372	324	244				
8							A	260		A	372	388		A	424		A	A	A		256			
9							A	A	A	A	A	A	A	A	A	A		368	336	284				
10							196	276	316	360	400		A	A	408	396	388	356	324					
11							A	A	A	A		A	A	A	A	A	A	A	A	A				
12							A	244	288		A	388	400	416	412	404	384	364	320	248				
13							A	A		A		A	A	A	A	A								
14							A	304			344		A	A	400	416	400	380	332	248				
15							A	A		308	352	388		A	A		392	368	332		A			
16							A	256	320	348		A	A	A	392	404	384	352	308					
17							B	256	312		A	A	A	A		400	396	376	320	256				
18							B	260	296	340		A	A	G	412	408	400	424	368		A	A		
19							B	240	320		A	A	A	A		A	388	360	320	256				
20							B	236	316	356	356		A	A	A	A	A	A						
21							B	240	316	348	368	380	400	400	388	356			312		A			
22							A	A		A		A	A	A	A									
23							A	240	308	344		A	A	A	A	400	380	356	308	228				
24							B	256		A	A	A	A	A	A	A	A		A	A				
25							A	232		A	A	A	A	A	A	396	380	360	324	256				
26							A	244		A	A	A	380	404	416	400	380	360	316		A			
27							B	A	A	A	A	A	A	A	A	396	380		A	A				
28							B	A	A	A	A	A	A	A	A	396	380	360	324	256				
29							B	232		A	A	A	A	A	A	396	380	360	324	256				
30							B	244		A	A	A	380	404	416	400	380	360	316		A			
31							B	A	A	A	A	A	A	A	A	396	380		A	A				
							B	A	A	A	A	A	A	A	A	396	380		A	A				
							B	A	A	A	A	A	A	A	A	396	380		A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	17	19	19	16	12	10	18	22	25	25	24	17					
MED							196	256	312	348	368	390	402	408	400	384	360	318	248					
U Q							260	320	360	388	398	408	412	404	396	368	328	260						
L Q							240	304	340	358	380	400	400	396	374	348	308	230						

AUG. 2023 foE (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2023 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J 23	A 48	J 25	A 30	J 34	A 19	J 31	A 31	J 39	A 48	J 67	A 44	J 44	A 50	J 51	A 126	J 72	A 51	J 58	A 20	E 16	B 18	J 41	A 32
2	J 32	A 23	J 25	E 16	B 16	J 20	A 19	J 86	A 62	J 50	A 64	J 48	A 68	J 69	A 47	G	G	40	30	J 29	A 26	J 30	A 32	A 52
3	J 30	A 20	J 20	E 16	B 16	J 16	A 25	G	G	39	40	44	54	G	G	43	44	37	45	21	88	85	33	22
4	J 33	A 25	J 19	E 16	B 16	J 16	A 20	J 31	A 44	J 41	A 57	J 43	A 48	J 51	G	G	G	G	31	J 26	A 38	J 52	A 87	A 64
5	J 30	A 22	J 21	J 19	A 17	E 16	B 22	J 33	A 43	J 69	A 64	J 46	A 43	G	46	47	59	37	42	30	26	52	50	40
6	J 25	A 16	J 26	J 19	A 31	J 20	A 21	J 36	A 73	J 75	A 48	J 83	A 67	J 51	A 66	50	56	38	48	20	J 21	A 16	J 19	A 16
7	J 17	A 18	J 24	J 21	A 16	J 19	A 24	J 53	A 38	J 41	G	J 50	A 46	G	68	44	42	40	28	20	16	16	16	16
8	J 44	A 22	J 73	J 32	A 30	J 33	A 44	J 36	A 42	J 44	A 48	J 54	A 104	J 54	A 41	33	24	30	78	26	16	16	16	16
9	E 16	B 20	A 16	J 15	A 16	J 20	G	J 41	A 34	J 38	G	J 50	A 44	J 55	A 76	51	46	86	140	35	74	58	39	24
10	E 16	B 25	J 60	J 61	A 40	J 33	A 18	J 44	A 54	J 24	A 47	J 50	A 46	J 44	A 50	J 58	A 81	J 61	A 70	J 70	A 62	J 86	A 62	A 44
11	J 28	A 47	J 36	J 27	A 20	J 20	A 26	J 48	A 43	J 62	A 73	J 70	A 60	J 78	G	G	51	42	107	34	79	29	19	21
12	J 58	A 52	J 45	J 29	A 34	J 20	A 24	J 28	A 38	J 54	G	J 71	A 81	J 168	A 109	59	80	90	128	27	163	87	16	103
13	J 53	A 20	J 16	J 33	A 24	J 19	A 22	J 32	A 47	J 57	A 128	J 54	A 54	J 109	A 50	42	48	51	50	49	87	36	24	53
14	J 30	A 48	J 32	E 16	B 16	J 16	A 31	J 30	A 40	J 70	A 50	J 44	A 49	J 52	A 45	48	74	56	58	26	67	110	84	60
15	J 48	A 38	J 41	J 29	A 25	E 16	B 19	J 30	A 43	J 42	A 41	J 42	A 52	J 59	A 52	47	49	57	41	53	35	33	28	30
16	J 17	A 16	J 16	E 16	B 16	J 16	A 16	J 30	A 36	J 69	A 91	J 60	A 74	J 54	A 59	79	87	80	88	74	68	110	110	44
17	J 31	A 19	J 21	J 16	A 16	J 16	A 16	J 30	A 39	J 48	A 60	J 69	A 129	J 58	A 48	65	51	79	67	50	51	33	53	84
18	J 43	A 24	J 16	E 16	B 16	J 16	A 19	J 27	A 34	J 41	A 54	J 78	A 118	J 90	A 102	74	48	47	30	27	58	73	52	21
19	J 24	A 51	J 25	J 19	A 18	E 16	B 21	J 52	A 64	J 49	A 115	J 65	A 129	J 53	G	46	40	J 47	A 54	J 52	A 30	J 52	A 46	A 24
20	J 21	A 52	J 24	E 16	B 25	J 16	A 16	G	J 46	A 46	J 68	A 100	J 88	A 69	J 58	A 42	G	J 35	A 34	A 46	J 66	A 31	J 32	A 110
21	J 142	A 206	J 99	J 61	A 52	A 44	A 30	J 71	A 62	A 63	A 91	A 84	A 66	A 77	A 111	A 102	A 101	J 40	A 40	A 36	A 20	A 17	A 26	A 127
22	J 87	A 64	J 53	J 48	A 43	J 38	A 24	J 34	A 52	A 101	A 78	A 48	A 53	A 54	A 65	A 48	A 47	J 53	A 47	A 46	A 37	A 53	A 26	A 23
23	E 16	B 17	J 52	J 38	A 34	A 24	A 25	A 44	A 64	A 105	A 119	A 77	A 50	A 52	A 47	A 46	A 42	A 106	A 66	A 39	A 48	A 43	A 27	A 24
24	J 24	A 20	J 16	J 43	A 16	J 16	A 19	J 28	A 34	J 52	A 100	J 58	A 70	A 73	A 43	56	52	78	64	46	20	29	31	34
25	J 40	A 52	J 34	J 42	A 33	J 29	A 43	J 49	A 53	A 41	A 45	A 48	A 49	A 47	A 49	A 44	A 42	A 40	J 34	A 26	A 26	A 30	A 33	A 40
26	J 26	A 33	J 48	J 34	A 27	J 29	A 36	J 67	A 74	A 78	A 93	A 69	A 47	A 44	A 44	A 46	A 42	A 37	J 49	A 41	A 19	A 36	A 30	A 119
27	J 33	A 44	J 24	J 22	A 23	J 22	A 22	J 43	A 37	A 44	A 40	A 46	A 48	A 91	A 90	A 77	A 73	A 89	A 78	A 40	A 73	A 41	A 32	A 31
28	J 33	A 16	J 20	E 16	B 16	J 16	A 18	J 47	G	40	J 70	A 46	A 44	A 44	A 55	A 33	A 36	A 32	A 25	A 21	A 18	A 28	A 22	A 25
29	J 32	A 20	J 16	E 16	B 16	J 21	A 18	J 28	A 35	A 42	A 40	A 45	A 49	A 44	A 59	A 60	A 63	A 67	A 50	A 64	A 44	A 22	A 65	A 26
30	J 20	A 16	J 16	E 16	B 16	J 16	A 16	J 28	A 54	A 51	A 48	A 44	A 53	A 53	A 43	A 54	A 41	A 48	A 60	A 53	A 85	A 75	A 19	A 22
31	E 16	B 16	J 16	J 35	A 39	J 32	A 18	J 30	A 38	A 42	A 40	A 48	A 49	A 47	A 47	A 42	J 45	A 83	A 45	A 28	A 19	A 36	A 26	A 28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J 30	A 23	J 24	J 22	A 18	J 20	A 21	J 33	A 43	J 49	A 57	J 50	A 53	J 53	A 50	J 47	A 48	J 48	A 49	J 36	A 38	J 36	A 32	A 31
U Q	J 40	A 48	J 41	J 34	A 33	J 25	A 25	J 47	A 54	J 69	A 78	J 69	A 68	J 73	A 65	J 59	A 63	J 78	A 66	J 50	A 68	J 58	A 50	A 53
L Q	E 21	B 19	J 16	E 16	B 16	J 16	A 18	J 30	A 36	A 42	A 41	A 46	A 48	A 47	A 45	A 42	A 42	A 38	A 34	J 26	A 21	A 29	A 24	A 23

AUG. 2023 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	21	E B 16	19	E B 16	E B 16	19	28	36	32	40	43	44	48	50	50	55	42	38	19	E B 16	E B 16	E B 16	E B 16
2	21	E B 16	E B 16	E B 16	E B 16	E B 16	19	28	40	44	44	44	49	43	44	G	G	39	29	24	20	E B 16	E B 16	20
3	22	E B 16	E B 16	E B 16	E B 16	E B 16	18	G	G	38	40	42	43	G	G	42	42	36	39	20	45	35	27	E B 16
4	E B 16	19	E B 16	E B 16	E B 16	E B 16	20	28	35	41	42	42	42	E B 51	G	G	G	G	29	20	24	21	36	21
5	24	E B 16	E B 16	E B 16	E B 16	E B 16	20	33	38	41	51	46	43	E B G	44	46	44	35	29	19	19	E B 16	26	23
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	30	40	52	46	A A 83	49	48	62	41	40	36	29	19	E B 16	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	19	38	40	G	44	46	G	44	43	40	35	28	20	E B 16	E B 16	E B 16	E B 16
8	20	E B 16	18	21	24	26	24	32	36	40	42	48	49	69	51	40	G 30	G 21	G 20	45	21	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 20	34	38	G	44	44	44	46	44	44	35	64	20	E B 16	E B 16	20	E B 16
10	E B 16	E B 16	31	48	30	21	17	39	43	45	42	48	44	43	44	54	70	39	40	63	21	22	22	E B 16
11	24	28	18	21	E B 16	E B 16	20	34	38	48	42	42	42	51	G	G	49	37	35	31	22	E B 16	E B 16	E B 16
12	22	21	21	E B 16	E B 16	E B 16	18	27	35	41	G	57	78	62	60	32	39	74	27	20	74	20	E B 16	E B 16
13	34	E B 16	E B 16	19	E B 16	E B 16	20	28	39	42	61	43	43	43	46	41	48	46	36	32	21	E B 16	E B 16	34
14	14	33	28	E B 16	E B 16	E B 16	17	28	37	39	44	42	46	48	45	48	57	50	47	24	18	26	20	22
15	20	22	21	E B 16	E B 16	E B 16	19	29	37	40	39	42	50	53	50	46	48	42	35	31	21	28	22	20
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	28	35	36	49	47	49	49	46	52	58	52	44	73	39	36	19	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	29	36	40	53	60	48	53	45	54	41	51	62	38	27	28	24	47
18	31	19	E B 16	E B 16	E B 16	E B 16	19	27	34	40	52	56	82	81	80	46	45	40	28	22	40	36	24	18
19	20	29	20	E B 16	E B 18	E B 16	20	35	37	46	A A 115	41	56	44	G	45	39	44	50	50	23	22	21	E B 16
20	E B 16	E B 16	21	E B 16	E B 16	E B 16	16	G	33	38	60	A A 100	70	53	58	40	G	32	27	43	44	20	24	E B 16
21	50	A A 206	32	38	38	28	22	69	46	54	64	68	60	70	102	89	84	38	37	32	17	E B 16	25	67
22	24	32	32	28	24	E B 16	20	32	49	A A 101	70	48	51	53	63	46	45	46	43	32	20	26	20	E B 16
23	E B 16	E B 17	E B 17	21	20	E B 16	E B 16	29	35	46	45	51	49	51	46	45	41	66	50	36	24	26	22	E B 16
24	20	E B 16	E B 16	E B 16	E B 16	E B 16	16	27	33	40	44	45	60	50	42	51	47	63	60	38	E B 16	21	22	29
25	33	26	28	22	25	23	23	37	27	35	44	48	48	46	48	42	40	35	31	22	20	19	32	35
26	23	24	24	22	18	E B 16	29	29	38	36	47	42	46	44	43	44	41	35	45	38	E B 16	22	E B 16	22
27	19	24	21	19	20	19	E B 17	28	35	43	40	45	43	64	50	54	47	56	54	36	43	28	24	24
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	33	G	38	44	44	43	42	49	32	36	31	24	18	E B 16	E B 16	E B 16	E B 16
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	26	34	40	40	45	46	43	56	56	59	64	47	60	42	20	21	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	27	34	45	43	41	45	36	42	39	37	45	58	31	23	37	18	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	26	34	40	40	47	47	46	45	40	38	33	29	22	E B 16	20	17	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	36	40	44	45	47	48	46	44	42	39	37	31	21	20	20	E B 16
U Q	23	24	21	21	18	16	20	32	38	45	51	48	50	53	51	50	48	50	47	38	27	26	24	22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	27	34	38	40	42	44	43	44	40	G 39	35	29	20	E B 16	E B 16	E B 16	E B 16

AUG. 2023 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	14	16	19	22	24	33	31	30	44	28	40	22	14	14	16	16	16	16
2	16	16	16	16	16	16	16	16	14	19	21	26	28	24	28	24	22	18	16	16	16	16	16	16
3	16	16	16	16	16	16	16	18	21	22	24	28	26	25	24	20	23	20	15	17	16	16	16	16
4	16	16	16	16	16	16	16	16	16	20	27	29	26	51	38	22	20	18	14	16	16	16	16	16
5	16	16	16	16	16	16	16	16	17	18	23	27	43	32	28	24	26	24	14	16	16	16	16	16
6	16	16	16	16	16	16	16	18	33	30	26	27	30	23	23	24	22	17	16	14	16	16	16	16
7	16	16	16	16	16	16	16	17	21	21	23	25	29	32	29	25	28	21	18	20	16	16	16	16
8	16	16	15	15	16	16	14	18	21	28	25	24	32	26	30	26	21	15	13	16	16	16	16	16
9	16	16	16	16	16	16	15	14	20	19	22	24	25	25	23	24	20	17	16	16	16	16	16	16
10	16	16	16	16	16	16	14	15	17	20	26	22	26	28	26	24	20	20	16	16	16	16	16	16
11	16	16	16	16	16	16	16	17	21	22	22	25	26	29	31	29	25	22	18	14	14	16	16	16
12	16	16	16	16	16	16	14	16	18	24	24	28	26	22	22	21	22	14	14	16	16	16	16	16
13	16	16	16	16	16	16	14	16	16	22	23	22	27	23	26	22	21	21	20	16	16	16	16	16
14	12	16	14	16	16	16	17	16	19	22	20	24	25	22	24	22	21	17	20	16	16	16	16	16
15	16	16	16	16	16	16	19	18	20	20	20	24	30	22	27	23	24	20	18	16	14	16	16	16
16	16	16	16	16	16	16	16	16	18	20	22	24	22	25	25	23	22	19	15	16	16	16	16	16
17	16	16	16	16	16	16	16	20	21	20	21	26	24	26	24	25	21	19	18	16	16	16	16	16
18	16	16	16	16	16	16	19	17	20	20	22	24	27	24	26	23	21	20	17	14	16	16	16	16
19	17	17	16	16	18	16	16	16	18	21	21	24	24	25	23	24	22	20	17	16	17	16	16	16
20	16	16	16	16	16	16	16	17	17	20	22	24	28	30	28	28	21	21	14	16	16	16	16	16
21	16	16	16	14	16	16	14	17	17	20	24	24	26	26	27	24	20	20	18	16	16	16	16	16
22	16	16	16	16	16	16	16	18	20	21	24	27	26	25	25	22	23	19	16	16	16	16	16	16
23	16	17	17	16	14	16	16	19	22	23	22	25	25	27	27	22	21	15	14	16	15	16	16	16
24	16	16	16	16	16	16	16	17	20	23	24	23	25	28	23	20	21	20	19	18	16	16	16	16
25	16	16	15	16	16	16	16	17	18	21	22	24	28	24	22	21	20	19	16	16	16	16	16	16
26	16	17	17	16	16	16	16	16	20	22	20	21	23	22	23	23	22	20	18	16	16	16	16	16
27	16	16	14	16	16	16	17	16	22	22	24	26	25	24	25	22	21	19	17	16	16	16	16	16
28	16	16	16	16	16	16	16	18	18	20	24	26	27	25	25	22	21	18	14	18	16	16	16	16
29	16	16	16	16	16	16	16	16	20	22	22	26	25	24	25	22	22	19	14	14	17	18	16	16
30	16	16	16	16	16	16	18	16	21	23	22	24	24	26	23	23	21	20	17	16	16	16	16	16
31	16	16	16	16	16	16	16	17	20	22	21	25	28	22	23	22	20	18	17	14	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	17	20	21	22	25	26	25	25	23	21	19	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	18	21	22	24	26	28	28	28	24	22	20	18	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	18	20	22	24	25	24	23	22	21	18	14	16	16	16	16	16

AUG. 2023 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2023 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		268	284	296	290	297	311	313	322	306	284	307	279	285	273	282	289	275	304	303	297	273	274	273	272
2		273	283	273	287	291	273	286	332	331	308 ^H	275	264	270	276	268	288	300	289	265	254	271	274	255	265
3		291	280	298	265 ^H	264	284	294	283	226	269	279	290	281	298	288	284 ^V	303	303	319	272	268	255	265	260
4		265	279	280	281	279	284	324	351	353	283	292	288	286	278	269	259	276	278	285	302	266	269	262	260
5		266	283	304	281	270	264	318	337	319	326	292	285	264	267	268	238	266	285	302	292	223	240	247	256
6		281	310	320	300	263	268	309	351	353	317	318		279 ^A	277	283	283	289	290	311	291	254	256	270	268
7		273	291	297	316	307	308	324	291	323	337	304	268	254	263	276	272	290	298	285	270	277	269	269	278
8		272 ^F	275	293	301	288	283	278	307	303	301	284	247	278	299	278	277	280	280	284	299	274	252	259	273
9		280	273	287	293	286	271	279	290	304	294	299	282	278	282	276	274	286	298	294	307	269	263	262	272
10		287	291	284	270	272	271	271	333	303	323	266	298	297	301	284	281	281	284	302	288	274	270	266	266
11		275	280	286	291	285	281	297	318	311	286	274	281	276	279	281	271	269	290	291	306	296	278	272	261 ^F
12		262 ^F	288 ^F	293	300	296 ^F	282 ^F	291	315	323	322	270	276	269	277	280	274	288	292	300	303	290	266	270	
13		285 ^F	283	288	301	283	299	333	341	326	311	290	266	273	279	272	269	283	286	320	308	303	252	259	262
14		272 ^F	270 ^F	289	294	293	286	290	323	326	293	266	282	293	260	276	281	289	292	313	327	280	266	277	267
15				317 ^F	300	289	267	309	320	349	321	283	260	269	272	271	283	297	304	311	294	261	252	259	263
16		267 ^{U R}	274 ^{U R}	285	301	285	281	300	328	340	332	296	281	290	284	251	273	296	303	301	289	269	266	268	275
17		277	279	269	262	268	268	286	357	320 ^H	328	289	275	283	275	280	286	277	290	308	313	271	250	260	258 ^R
18		267 ^R	267	281	297 ^F	314	284	291	350	340	315	294	281	280	275	275	272	278	288	296	300	286	252	248	245
19		254 ^R	261	279	280	283	309	320	358	328	323		289	287	274	276	282	279	299	307	296	258	275	278	270
20		279 ^F	271 ^A	277 ^F	295 ^F	301	301	312	331 ^V	353	334	309		259 ^A	270	262	276	291	299	312	307	303	282	262	296
21		289 ^F			298 ^F	298 ^F				322	317 ^F	328	317	272	257	285	290	290	283	286	299	287 ^H	277 ^R	243 ^R	265
22		275 ^F	283 ^F	287 ^F	286 ^F	313	305	325	348	375		296 ^A	273	273	275	274	271	282	299	300	276	283	270	268	246
23		265	267 ^R	273	280	293	268	305	338	332	292	282	276	291	299	276	278	288	299	291	300	297	273	279	280
24		285	289	307	308	302	295	319	338	327	321	284	277	286	283	287	268	280	302	319	305	269 ^{U R}	258		275 ^F
25		274	288	300	265	284 ^F	318 ^F	336 ^F	351	324	300	299	275	272	283	285	285	285	294	313	333	285	276	255	
26		286	281	285	291			311	327	343	315	309	292	292	289	287	290	302	304	303	314	340	294	272	264
27		269	281	278	283	275	274	314	354	342	309	292	275	290	301	296	298	295	297	303	320	289	258	260	279
28				280	262	273	286	301	355	354	313	302	287	284	287	284	279	290	310	327	332	282 ^{R U}	267 ^{R J}	241 ^R	267
29		282	276	254 ^F	273	294	305	302	355	377	387	290	272	282	296	300	310	315	315	324	317	308	287	269	272
30		275	287	295	306	337	334	314	372	381	353	303	286	292	300	302	298	307	304	305	319	333	265	270	283
31		277	273	293	296	324	339	316	347	360	377	296	290	296	292	297	294	287	291	316	339	320	256		283
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		29	28	30	30	30	30	30	30	31	30	30	29	31	31	31	31	31	31	31	31	31	31	29	29
MED		275	280	287	291	288	284	309	338	328	316	292	281	281	279	280	281	288	297	303	302	280	266	265	267
U Q		282	286	296	300	298	305	318	351	353	326	302	288	290	292	285	288	295	303	313	314	296	274	270	275
L Q		268	274	280	280	279	273	291	322	320	300	283	274	272	274	274	272	280	289	294	292	269	256	259	262

AUG. 2023 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										371	371	L				A	A	A	A	L				
2								L	L	L	U	L			A				L	L				
3								L	U	L	373	373	372	372	391	375	360	357	343	A	405			
4									L	U	L	U	L		A			U	L	L				
5									L	U	L	A								L				
6								L		A	L	A	U	L		A		L	L	L				
7								L	L	L	U	L	L						L	L				
8								L	L	L	L	L	L		A	A			L	L				
9									L	L	L	L	H				L							
10									L	L	U	L					A	A	L	L				
11									L	A	L	L					L	A	L	L				
12									L	L	L	A	A	A	A			A	L					
13								L	U	L	A				L			L	A					
14								L	L		U	L	L		L			A	A	A				
15									L	L	L	L		A	A	A		A	A					
16									L	L	A			A		L	A	A	A					
17									L	L	A	A	A	A		A	L	A						
18									L	U	L	U	L	A	A	A		L	A	L				
19									L	L	A			A				L		L				
20									L	L	A	A	A	A	A			L	L	L				
21										A	A	A	A	A	A	A	A	L	L					
22										A	A	A	L	A	A	L	A	A	A					
23								L	L	A	U	L	A	A	A	L	L	L	A	A				
24									L	L				A	A	L	L	A	A	A				
25								A		L	L	L	L	L	A	H	L	L	L					
26										L	L	L	L	L			L	L	A					
27										L	L	L	L	A	A	A		A						
28									L	L	U	L	U	L	L	L	L	L	L	L				
29										L	L	L	L	L		L	A	A	A					
30									L	L	U	L	L	U	L	U	L	L	A					
31									L	L	U	L	U	L	L	L	L	L	L	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	2	9	20	23	18	18	19	23	18	9		1				
MED								335	334	387	371	369	374	376	361	355	349	345		405				
U Q								431		398	383	377	386	385	374	359	356	354						
L Q								L			U	L	L	L										
								331		372	356	355	358	357	356	342	344	341						

AUG. 2023 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										334	292	328	312	350	344	336	336	296	282					
2								244	238	230	384	416	368	360	358	316	290	296	288					
3							296	342	588	392	380	334	310	286	296	300	290	304	242	240				
4									244	384	316	344	332	338	368	364	334	298	272					
5									284	264	356	344	372	350	354	426	322	288	246					
6							232		280	294		A	326	368	318	318	286	284	260					
7								354	250	254	286	366	364	362	348	332	294	256	272					
8								274	286	252	318	416	340	290	300	310	300	294	278					
9								222	278	244	260	336	330	324	332	332	306	300						
10									288	274	370	300	306	306	356	316	364	318	286					
11									290	294	338	304	310	310	308	328	328	290	266					
12									242	252	340	324	E A	356	332	334	334	306	304	266				
13								218		262	312	308	334	314	324	330	302	292						
14								242	246		308	312	282	364	334	314	302	284	260					
15									220	228	250	352	348	344	342	314	278	266						
16									238	248	284	352	302	316	390	340	302	276						
17									216	246	310	330	334	322	312	310	302	290						
18									242	272	314	296	344	334	338	328	310	300	270					
19									236	254	A	342	346	340	344	322	316	286						
20									228	260	282	A	370	326	364	342	304	280	260					
21									272	268	272	346	350	354	300	296	294	280						
22									216	A E A	340	346	328	322	330	342	322	288	252					
23								230	222	234	282	330	310	278	310	326	302	284	262					
24									256	254		336	312	306	300	320	322	282	250					
25								214		284	266	316	328	322	314	318	300	284	266					
26									230	282	314	318	298	306	312	282	268	248						
27									236	284	328	310	292	298	294	288	286							
28									206	272	274	262	306	294	300	300	294	266	248					
29									208	342	278	304	300	290	282	266	258							
30									208	222	320	336	288	298	288	292	282	262						
31									222	212	284	306	288	310	290	300	318	292	264					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	10	23	29	29	29	31	31	31	31	31	31	22	1				
MED							296	237	242	254	301	330	327	322	330	318	302	288	265	240				
U Q								274	278	273	339	344	346	344	348	332	318	296	272					
L Q								222	222	235	282	307	310	300	300	310	290	280	252					

AUG. 2023 h'F2 (KM)

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	298	E A 286	258	248	250	220	256	218	202	190	182	174	184	236	E A E A 256 270		A E A 266	258	240	264	264	250	292		
2	300	266	290	266	226	276	272	228	218	E A 212	214	194	E A 226	206	184	218	204	218	222	278	280	278	294	312	
3	256	260	248	200	286	254	270	244	206	214	200	196	188	190	186	192	214	202		214	E A E A 338 344	E A E A 318 306			
4	306	288	278	266	278	268	250	214	210	188	180	194	184	E B 244	196	210	198	212	220	254	260	290	E A E A 330 314		
5	310	260	214	258	290	334	226	222	214	214	E A 264	216	196	180	202	246	242	220	236	208	E A 282	306	E A E A 352 342		
6	272	248	228	242	318	308	252	220	226		A 202		A 218	200		A 210	202	202	230	228	272	290	286	282	
7	264	238	242	216	220	226	218	192	224	194	190	184	216	186	176	226	228	220	222	250	258	260	278	266	
8	Q 308	302	258	236	E A E A 264 272	268	246	234	212	194	268	224					A 204	198	220	230	260	252	260	274	290
9	266	272	232	242	254	262	256	198	216	198	178	172	172	172	212	204	232	210	E A 304	242	252	296	302	290	
10	272	252	E A E A 262 334	E A E A 310 312	260	238	226	248	E A 248	186	266	266	194	186	208		A 218	E A 278	E A E A 294	268	286	300	292		
11	E A E A 284 292	268	238	258	252	254	214	206		A 200	186	192	262	182	186	278	238	242	244	232	252	264	282		
12	E A E A 314 274	250	228	236	268	242	220	206	208	180						198	204		236	242	E A 360	248	278	338	
13	E A 284	276	250	254	276	242	232	208	212	198		188	182	168	220	226	290		A 252	234	218	204	280	E A 314	
14	280	E A E A 272 246	226	222	216	246	220	204	196	204	166	216	216	216	264			A 226	A 234	A 290	E A 274	E A 294			
15	E A 296	282	Q 240	218	252	258	248	226	212	194	186	180	E A E A E A 256 296 250	246			A E A 238	240	230	242	E A E A 284 288	288			
16	270	270	252	234	216	230	238	222	210	182	E A 236	206	E A 248	234	208		A 234	A 268	E A E A 270 306	280	280				
17	278	280	294	316	292	298	248	214	200	190	E A 254		E A E A 210 300	210			234		A 268	238	234	270	E A E A 282 336		
18	E A 304	282	252	230	218	240	230	206	186	188	254		A 182	A 330	186	188	238	208	E A 278	E A 256	E A 246	248	258	266	284
19	256	266	276	260	254	236	228	212	212		A 188		A 292	A 214	226	200	244	236	226	220	280	248			
20	284	306	276	264	236	234	242	212	200	188		A 182	A 292	A 214	226	200	244	236	226	220	280	248			
21	E A 284	E A E A 300 288	E A E A 278 258	E A E A 238 248			E A 228		A 228		A 228		A 228		A 260		A 256		A 222	198	242	316			
22	E A E A 290 280	E A E A 270 258	224	212	216	208			A 202		A 230	E A E A 266 290	A E A 244 252					A 232		A 212	212	212	240		
23	262	262	242	230	246	232	236	218	208		A 202	230	244	262	208	208	210			248	228	E A 256	276	266	
24	278	264	236	218	222	240	236	202	182	194	224	186		242	190	286	264			234	224	222	260	248	
25	E A E A 260 270	E A E A 260 282	244	218	210				A 202	184	224	240	220	212	244	204	216	216	236	216	214	214	262	262	
26	250	294	276	240	242	236	234	212	210	192	230	186	206	180	212	210	230	208		A 244	210	194	250	E A 328	
27	298	292	272	272	E A 276	276	244	210	218	214	194	218	204		E A 260		E A 252		A 266	230	224	240	260	266	
28	Q 274	Q 264	260	270	272	260	264	206	196	194	196	196	192	190	E A 240	188	206	218	234	220	208	216	248	260	
29	254	240	286	266	258	230	264	222	200	190	180	202	212	172					A 244	252	246	226	238	302	
30	292	262	252	224	218	214	242	210	200	204	188	174	188	210	192	200	206		A 270	240	210	216	270	270	
31	276	298	254	234	208	200	236	214	200	200	174	218	E A 226	198	224	208	206	210	236	224	200	228	286	264	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	30	31	31	31	31	31	30	30	25	26	25	26	26	23	25	24	20	25	31	31	31	31	31	
MED	275	269	255	240	247	239	242	214	209	194	195	191	U 200	U 196	200	210	214	214	239	238	229	248	270	U 277	
U Q	298	286	276	266	276	268	256	222	216	210	224	218	E A E A E A 226 244 224	245	244	228	262	250	264	286	286	312			
L Q	266	262	246	230	224	230	234	210	200	190	186	183	192	186	190	204	206	210	232	230	218	220	260	266	

AUG. 2023 h'F (KM)

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E @SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							A	106	A	106	A	A	A		A	100	100	A	100	A	A				
2							A	A	A	A	A	A	A	A	98	98	98	98	100	A					
3							A	100	100	100	A	98	98	98	98	98	98	102	102	A					
4							A	102	A	100	100	100	100	B	104	104	98	100	100	A					
5							A	100	100	100	100	98	B	98	98	A	A	A	A	A	A				
6							A	A	110	104	104	104	102	102	100	100	100	100	98	A					
7							A	98	A	98	98	A	A	A	A	A	A	A	A	100	B				
8							A	A	A	A	A	A	A	A	A	A	106	102	102	A					
9							102	106	102	100	98	A	A	100	100	100	100	100	A	A					
10							A	100	96	A	98	100	100	102	102	98	98	102	102	A					
11							A	A	100	A	98	A	A	104	102	104	104	102	96	A					
12							A	A	96	96	96	A	A	A	A	A	106	102	A	A					
13							A	102	102	98	A	A	A	98	104	102	102	100	A	A					
14							A	104	98	A	A	A	A	A	98	98	102	102	102	A					
15							B	102	100	100	A	A	100	100	100	104	104	A	A	A					
16							B	100	96	A	A	A	A	96	A	98	98	98	102	A					
17							B	102	102	102	98	A	A	A	A	A	A	98	96	A					
18							B	102	100	98	98	98	98	98	98	98	A	98	A	A					
19							A	98	98	102	A	A	A	A	98	98	100	100	100	A					
20							B	104	A	A	98	98	A	A	A	A	98	A	A	A					
21							A	100	A	A	A	A	A	A	98	98	98	96	104	A					
22							A	102	A	A	A	100	102	102	102	102	102	102	A	A					
23							B	A	A	A	A	A	A	A	98	104	A	A	A	A					
24							B	A	A	100	100	100	102	102	102	102	100	100	A	A					
25							A	A	110	A	A	A	98	98	98	98	98	102	102	A					
26							A	A	A	A	A	A	A	A	102	102	102	104	108	A					
27							B	A	100	98	98	100	A	100	100	100	100	A	A	A					
28							B	A	104	100	100	A	A	A	A	104	102	102	104	B					
29							B	A	102	100	100	96	A	A	A	A	108	108	A	A					
30							B	A	100	98	A	A	A	104	106	102	104	102	102	A					
31							B	A	A	102	102	102	102	102	102	102	104	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							1	17	19	19	16	12	10	18	22	24	25	24	17						
MED							102	102	100	100	98	100	100	100	100	100	100	101	102						
U Q							103	102	102	100	100	102	102	102	102	102	104	102	102						
L Q							100	98	98	98	98	98	98	98	98	98	98	100	100						

AUG. 2023 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	98	96	92	92	90	90	92	114	114	90	108	124	126	108	106	102	96	100	92	136	B	92	108	90	
2	84	86	82	B	B	86	136	86	86	86	88	90	88	90	102	G	G	110	114	98	94	94	116	96	
3	94	94	96	B	B	B	96	G	G	154	94	118	114	G	G	124	112	144	104	114	92	92	90	94	
4	86	86	86	B	B	B	130	130	116	110	102	112	102	B	G	G	G	G	106	98	82	94	94	94	
5	88	88	84	84	84	B	122	114	108	102	98	162	B	G	112	98	98	98	118	100	82	98	84	98	
6	86	B	86	90	84	86	140	106	106	102	108	98	104	104	124	118	112	110	98	116	94	B	84	80	
7	84	80	80	84	B	100	100	88	162	154	G	94	168	G	102	98	98	100	124	B	B	B	B	B	
8	96	90	96	84	84	80	86	90	194	94	94	196	88	86	88	92	88	88	86	84	84	B	B	B	
9	B	104	B	102	B	100	G	94	156	140	G	88	118	100	100	138	110	98	90	96	92	86	92	86	
10	B	84	88	88	88	88	98	98	96	98	104	134	132	134	124	108	104	106	98	94	94	92	90	88	
11	88	88	88	90	94	90	110	98	100	98	90	98	94	98	G	G	102	102	94	90	90	90	90	90	
12	90	90	90	122	90	94	96	130	100	98	G	90	84	86	82	86	104	98	96	106	98	98	96	94	
13	94	82	B	88	104	92	94	114	102	98	88	92	92	96	124	132	114	102	98	96	92	90	86	86	
14	86	86	84	B	B	B	84	104	98	90	86	102	94	92	148	132	110	104	98	98	94	102	92	90	
15	88	84	84	90	86	B	B	B	108	96	102	102	98	112	104	108	162	122	94	94	88	90	88	86	88
16	84	B	B	B	B	B	B	B	146	148	90	104	88	88	120	126	114	104	104	104	94	92	90	92	100
17	86	80	80	B	B	B	B	B	136	108	104	94	92	90	90	94	92	116	98	96	94	90	90	88	86
18	84	84	B	B	B	B	B	B	138	150	116	98	98	98	96	96	96	116	102	98	90	86	82	90	82
19	88	88	80	80	B	B	108	102	110	104	88	90	86	88	G	142	134	98	96	90	90	90	90	86	
20	86	88	84	90	B	B	B	G	108	102	96	88	88	94	92	110	G	108	94	108	90	88	84	104	
21	92	102	92	86	86	84	90	96	100	100	104	100	104	102	98	102	102	106	98	92	92	78	78	94	
22	94	88	82	82	86	100	94	114	104	98	98	110	130	118	112	118	112	100	92	96	96	96	86	98	
23	B	B	108	88	86	94	94	90	90	90	90	88	140	124	122	120	128	84	82	98	98	98	90	86	
24	82	82	B	86	B	B	132	118	114	100	96	102	100	104	122	108	100	100	92	92	96	86	84	84	
25	84	90	88	88	86	86	88	88	96	92	158	164	136	134	120	130	122	120	106	94	94	94	88	84	
26	88	86	90	90	88	94	92	88	88	98	88	92	160	148	126	108	112	114	100	96	120	94	94	94	
27	92	92	86	86	84	86	94	108	110	102	122	148	108	104	104	98	98	94	94	90	90	88	88	84	
28	84	B	94	B	B	B	100	108	G	102	98	94	158	94	86	92	136	130	114	104	86	102	112	86	
29	94	84	B	B	B	B	106	104	110	102	100	100	160	86	130	112	104	100	98	94	90	90	90	94	94
30	98	B	B	B	B	B	96	120	104	96	94	92	92	94	132	112	110	104	98	94	96	94	90	96	
31	B	B	B	90	90	90	92	110	108	102	136	114	110	110	106	112	110	96	94	92	94	88	82	82	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	25	23	21	16	19	25	29	29	31	28	31	30	27	27	28	28	30	31	30	29	28	29	29	
MED	88	88	86	88	86	90	96	108	106	100	98	98	103	102	108	109	110	101	98	95	92	91	90	90	
U Q	94	90	92	90	90	94	109	116	114	102	104	118	126	118	124	122	115	106	104	98	94	94	93	94	
L Q	84	84	84	85	85	86	92	95	99	96	92	92	90	94	98	98	101	98	94	92	90	88	86	86	

AUG. 2023 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2023 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E OSWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F1	F3	F3	F3	F3	FQ11	L2	CL11	CL11	L2	CL11	CL11	CL11	C1	C1	C2	C1	C2	L6	HC11		F1	FQ11	FQ21	
2	FQ21	FQ11	F1			F1	H1	L4	L5	L4	L2	L1	L2	L2	C1			C1	C1	C3	F2	F1	FF11	F3	
3	F3	F1	F2				C1			H1	L1	C1	C1			C1	C1	HC21	C2	C1	F5	F5	F5	F1	
4	F2	F2	F1				H1	H1	C1	C1	C1	C1	C1						C1	CL12	F2	FF23	F2	F2	
5	F2	F2	F1	F1	F1		C2	C3	C2	C2	C2	H1			C1	C1	C2	C1	CL11	C1	F3	F2	F3	FF12	
6	F1		F2	F1	F1	F1	HC11	CQ11	C1	C2	C1	C3	C1	C1	C2	C1	C2	C2	C2	C1	F2		F1	F1	
7	F2	F1	F1	F1	F1	F1	C2	L1	HL11	H1		L1	HL11		C1	C1	C1	CH11	C1						
8	FQ21	FQ11	FQ21	FQ31	F4	F4	LQ31	L2	HL11	L1	L1	HL11	L2	L4	L2	L1	L1	L3	L6	F2					
9		F1		F1		F1		L1	H1	H1		L2	C1	C1	C2	H1	C1	C2	L4	L2	F3	FQ41	F2	F1	
10		F1	F5	F6	F6	F6	C1	C3	C2	C3	C1	H1	H1	H1	C1	C2	C4	C2	C7	L9	FQ41	FQ41	FQ51	F6	
11	F4	F6	F4	F3	F2	F1	C1	C3	C2	C3	L3	C1	L1	C2			C1	C1	L4	L6	F4	F3	F1	F2	
12	FQ51	F3	F4	FF23	F2	F1	C1	HC11	C1	C2		L2	L4	L3	LQ41	L1	C2	C4	C3	CL12	FQ91	FQ31	F1	FQ41	
13	F5	F1		F2	F1	F1	L1	C1	C2	C1	LQ41	L2	L2	C1	CL11	HL11	C3	C4	C6	C3	F2	F2	F2	F3	
14	F4	F5	F6				L1	C2	C1	L2	L3	CL12	L3	L2	H1	H1	C3	C3	C6	C4	FQ31	FF24	FF22	FQ31	
15	F5	FQ21	F2	F1	F1			C1	C3	C1	C1	C1	C1	C2	C2	C1	C2	L2	L4	L6	F6	F6	F4	F2	
16	F1						H1	H1	L3	CL23	L2	LH11	LQ11	C1	CL21	C2	C4	C5	C7	C9	F7	F6	FQ41	FF12	
17	F1	F1	F1				HC11	C2	C2	L2	L4	L2	L2	L1	L2	L1	CL12	C4	C7	L6	F4	F4	F4	F9	
18	F7	F1					HC11	H1	C1	C2	C3	C5	C4	C7	C3	C11	C3	C2	C3	F7	F7	FQ21	F2		
19	F1	FQ31	F1	F1			C1	C4	CQ21	C2	L5	L2	L5	L2		H1	H1	C4	C8	L5	F5	FQ41	FQ21	F1	
20	F1	F2	F1	F1		F1			CQ11	CQ11	CQ41	L3	L5	L4	L2	C1		CQ11	L3	C2	F3	F2	F3	F2	
21	FQ41	FFQ35	F7	F6	F5	F5	L3	L9	C3	CL32	CL32	CL41	CL31	C3	C5	C8	C2	C4	C8	F1	F2	F2	F2	FQ51	
22	FQ31	FQ41	FQ41	FQ41	F1	FF11	L1	C2	CL33	C6	C3	C1	C1	C2	C2	C1	C1	C3	C3	C3	F3	FF33	FQ21	FQ11	
23			FQ11	FQ21	F2	F2	L1	L3	L2	LQ41	LQ21	FQ21	HL11	CL11	C1	CL11	CL12	L7	L7	CL32	FF54	F3	F3	F2	
24	F1	F1		F1			H1	CL11	C1	C1	CH21	C2	C2	C1	C2	C3	C6	C7	L9	L9	F1	F3	F2	FQ61	
25	FQ61	FQ31	FQ41	F3	F6	F8	L8	LQ41	L1	L1	HL11	HL11	H1	H1	C1	H1	H1	C3	C3	L3	F3	F2	F7	FQ31	
26	F2	F1	F2	FQ41	F3	F1	L3	LQ41	LQ31	L1	L3	L1	HL11	HL11	CL11	C2	C1	C2	C6	L6	F1	F3	F3	F5	
27	F2	F4	F3	F2	F2	F4	L1	CL22	C1	C1	C1	H1	C1	C3	C2	C3	C3	C5	C8	C9	F9	F4	F4	F2	
28	F2		F1				C1	CQ31		C1	C2	L1	HL11	L1	L1	L1	L1	HL11	H1	C1	F1	F1	F1	F1	
29	F1	F1				F1	C1	C1	C2	C1	C1	HL11	L2	HL11	CL22	CL22	CL62	CL61	C9	C9	F6	F1	FQ31	F2	
30	F1						C1	CL11	C2	C1	L1	L1	LH21	LC11	HL11	CL12	CL12	C3	C8	C9	FQ41	FQ51	FQ11	F1	
31				F3	F3	F3	L1	CL11	CL22	C2	H1	C1	C1	C1	C1	C2	C2	CQ21	LQ31	L3	F1	F2	F1	F2	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
◊	f _o F ₂ , f _o F ₁ , f _o E
×	f _x F ₂
*	DOUBTFUL f _o F ₂ , f _o F ₁ , f _o E
⊗	f _b E _s
└	ESTIMATED f _o F ₁
†, ‡	f _{min}
^	GREATER THAN
∨	LESS THAN

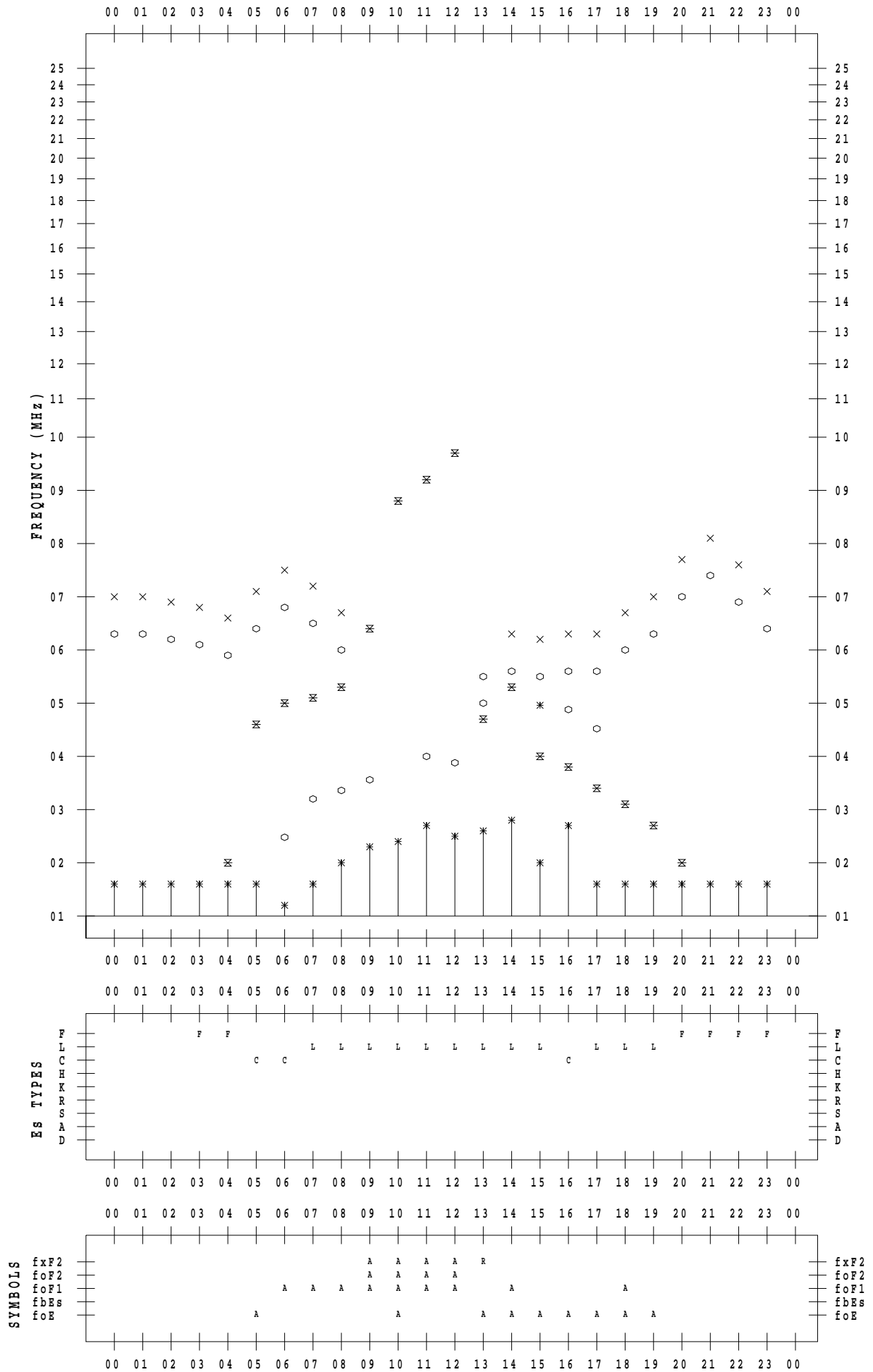
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 1

135 ° E MEAN TIME



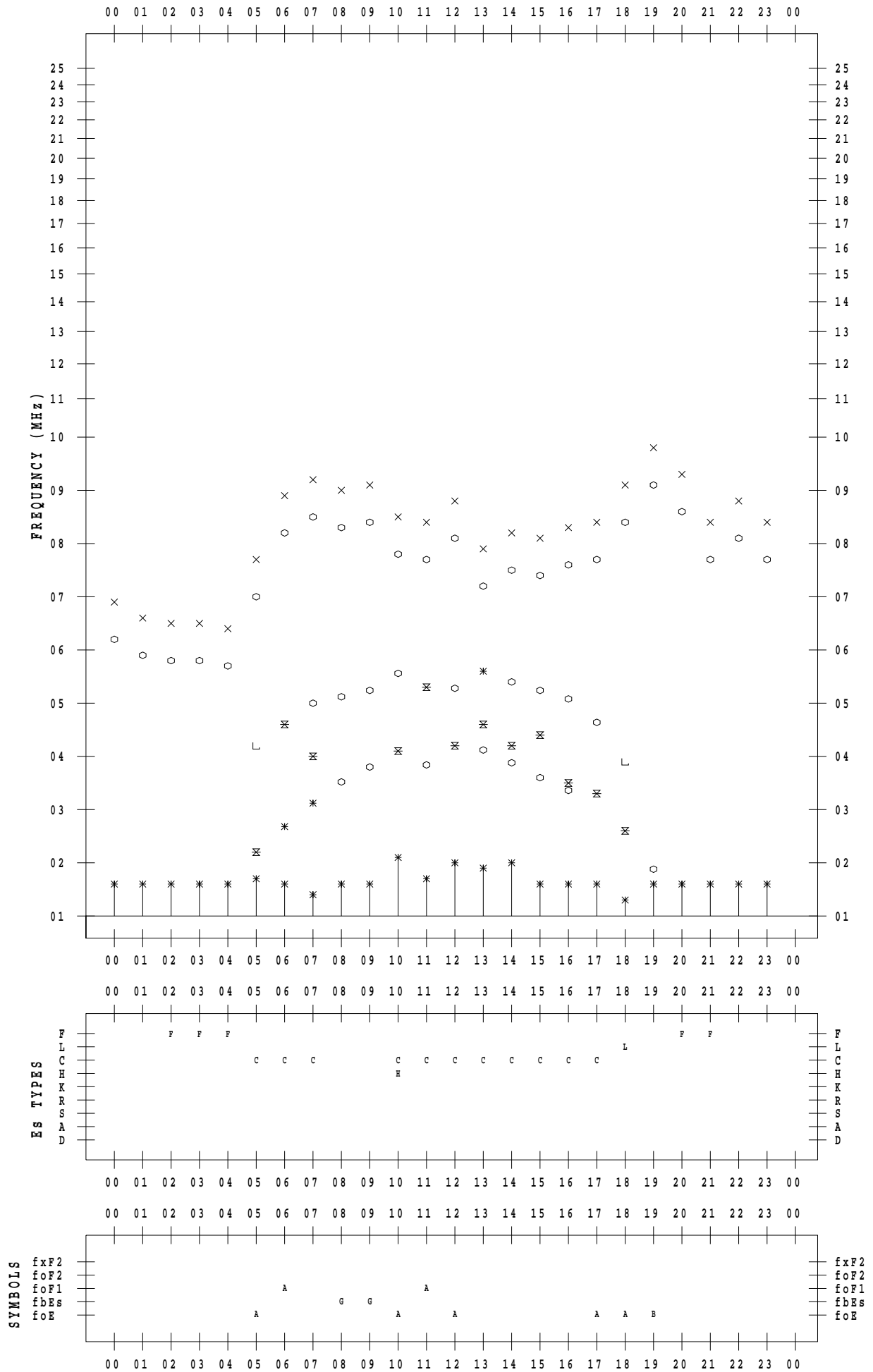
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 2

135 ° E MEAN TIME



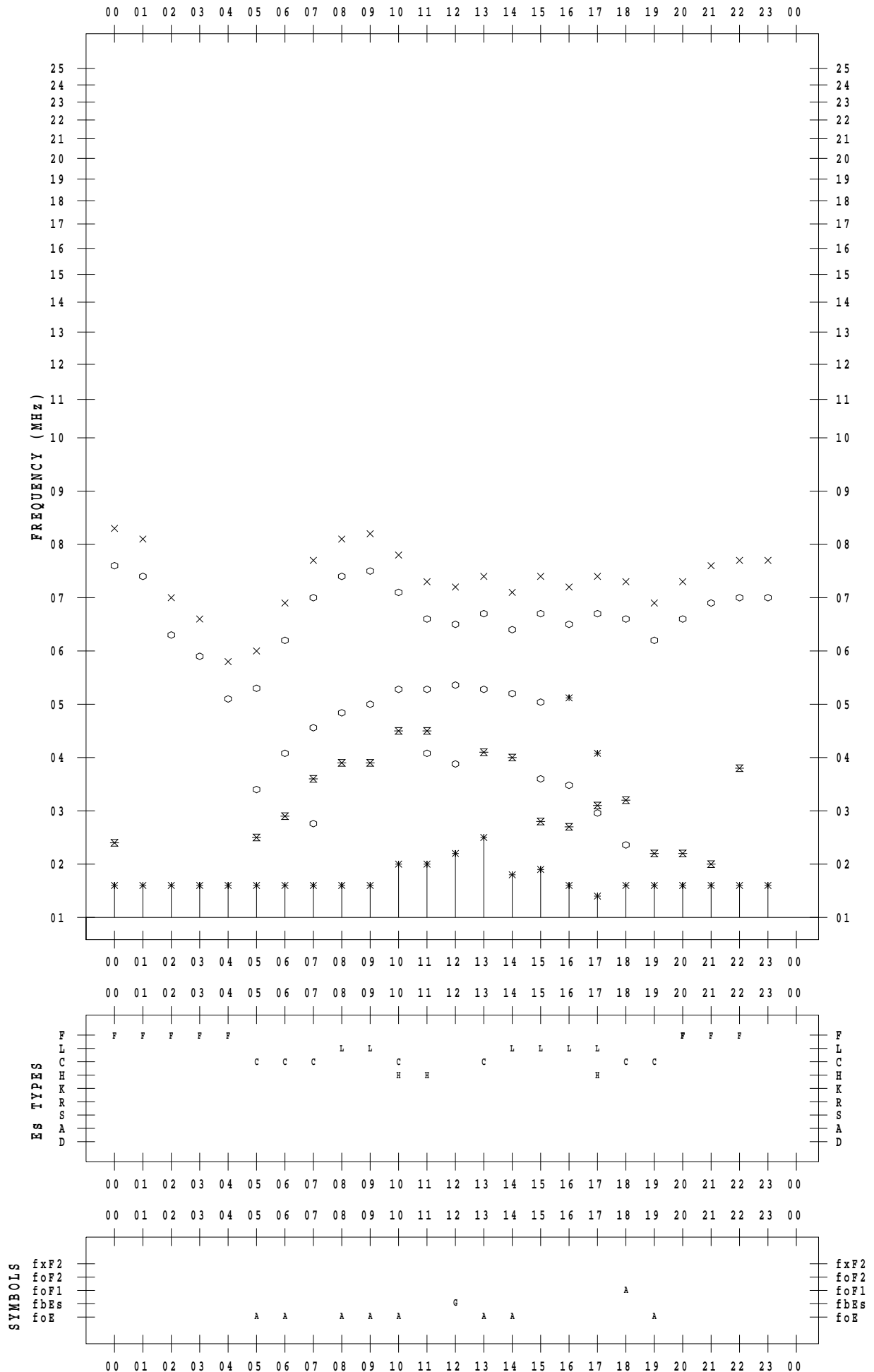
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 3

135 ° E MEAN TIME



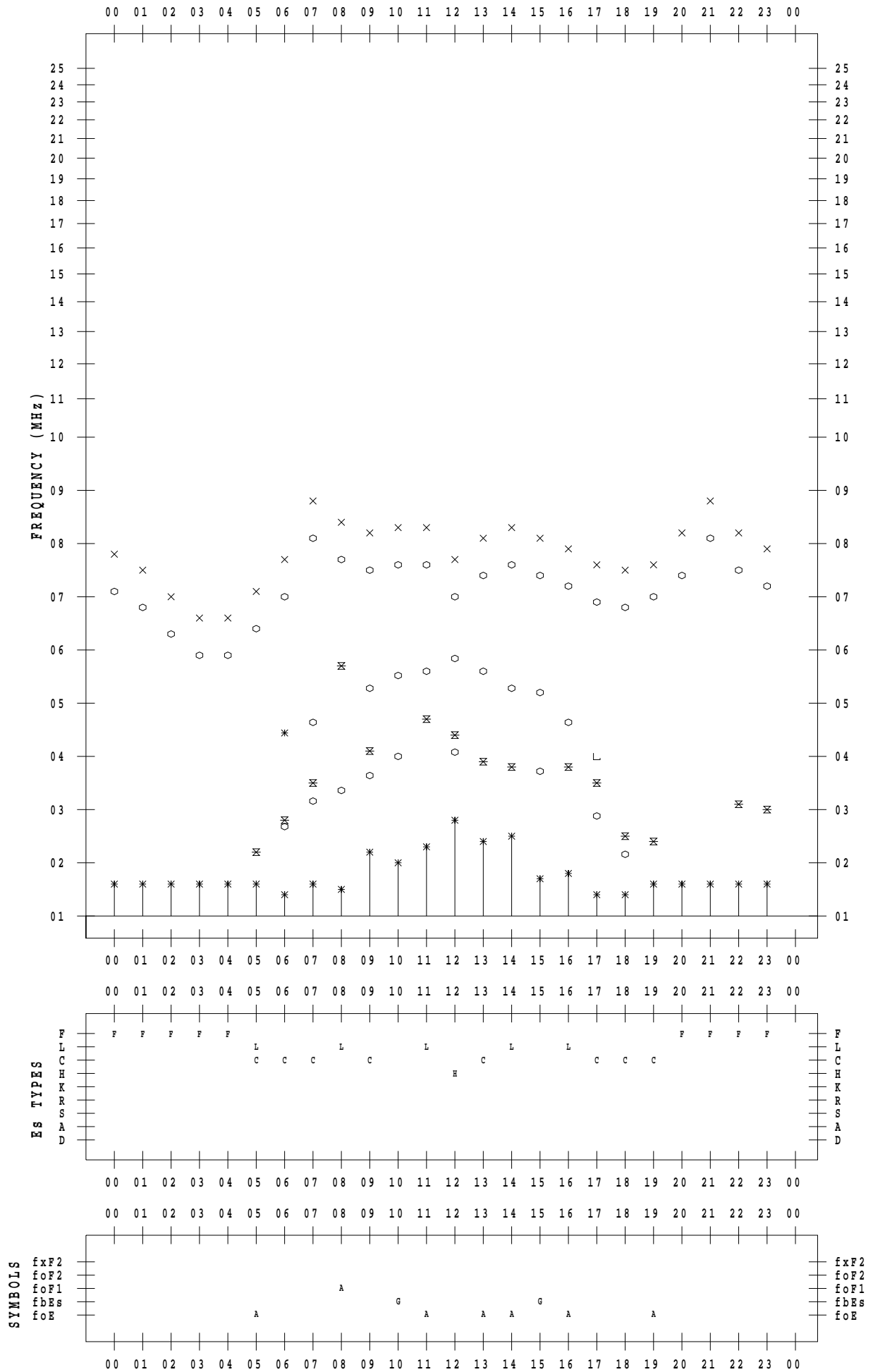
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 4

135 ° E MEAN TIME



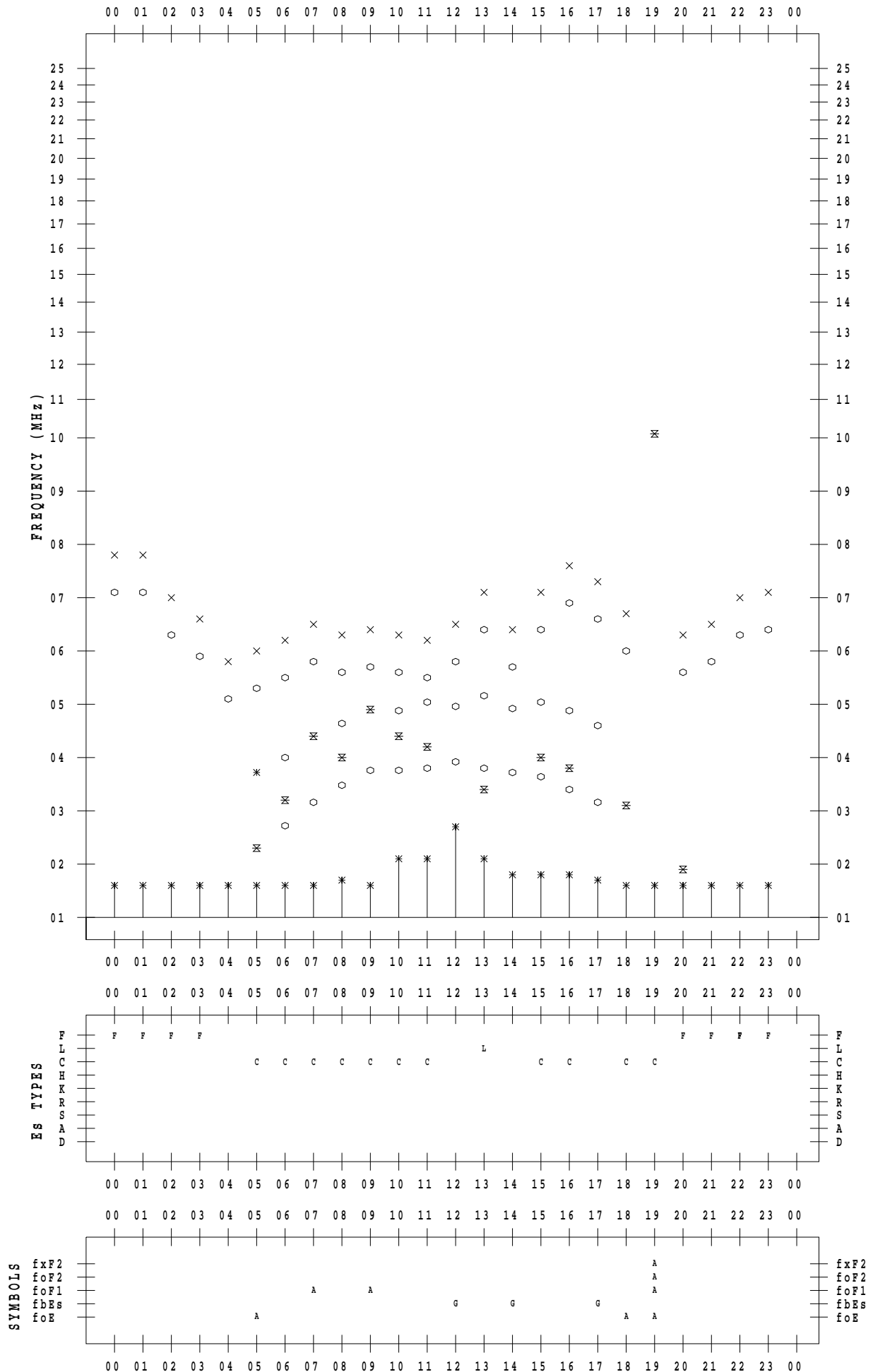
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 5

135 ° E MEAN TIME



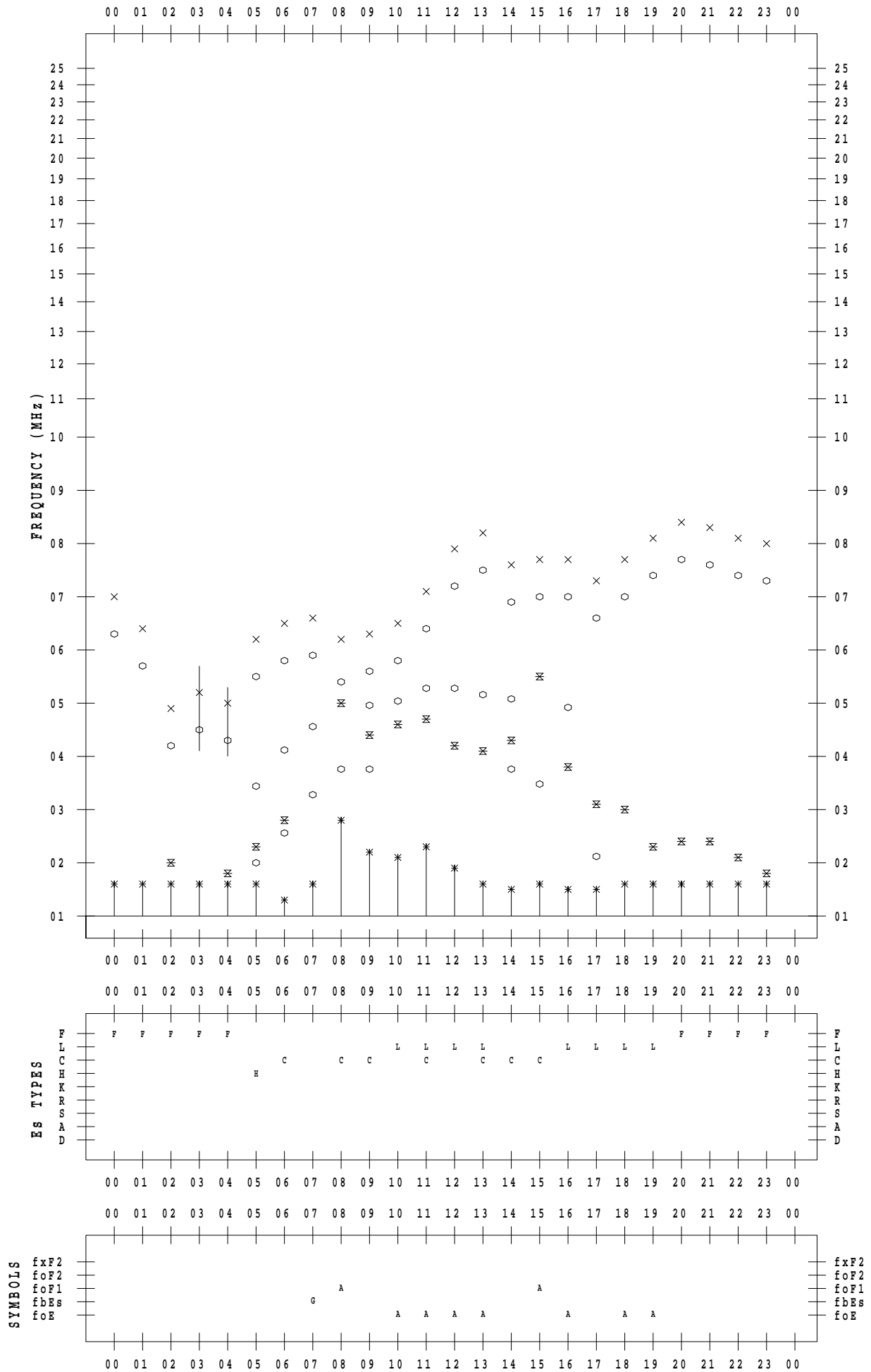
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 6

135 ° E MEAN TIME



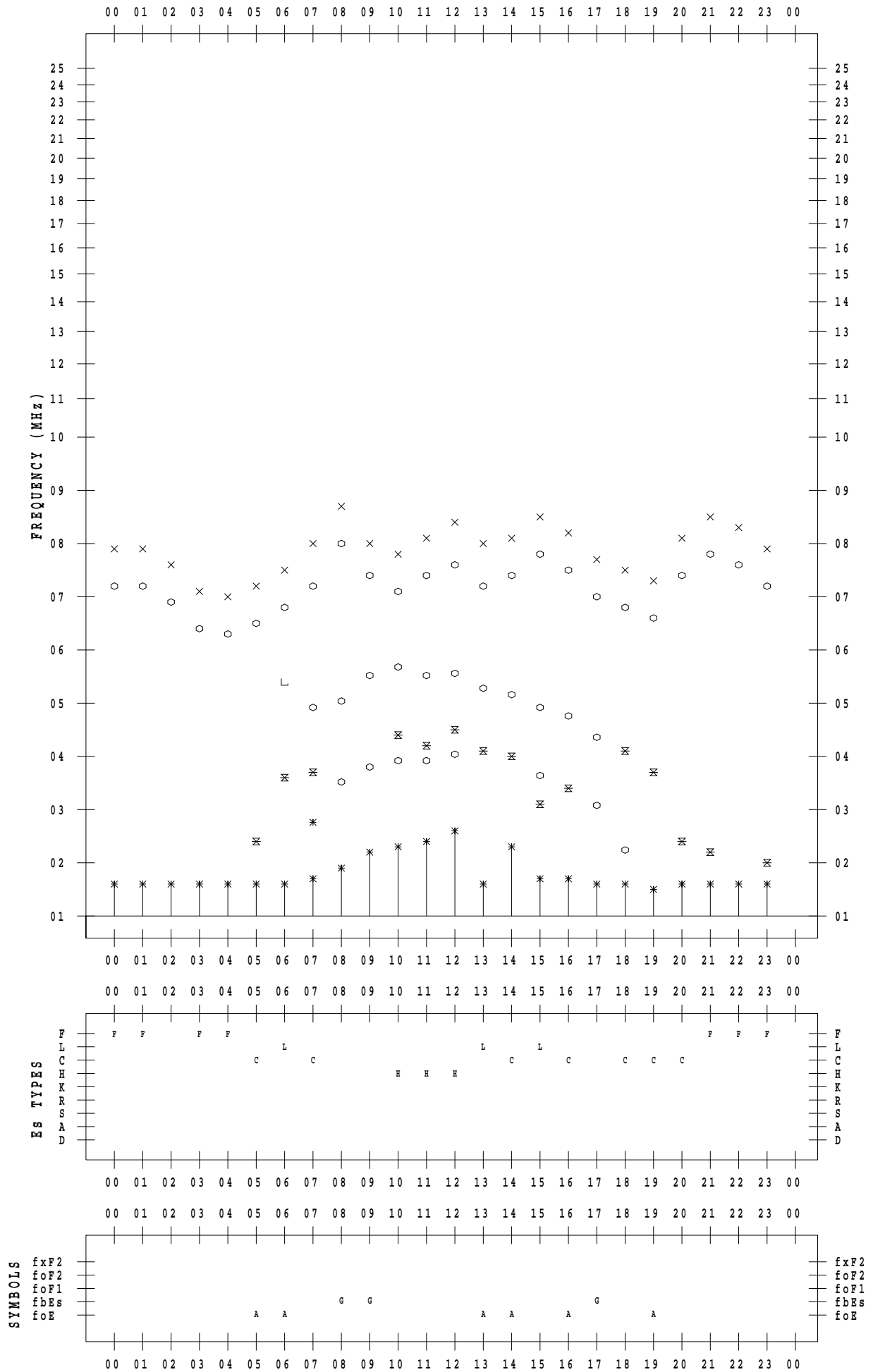
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 7

135 ° E MEAN TIME



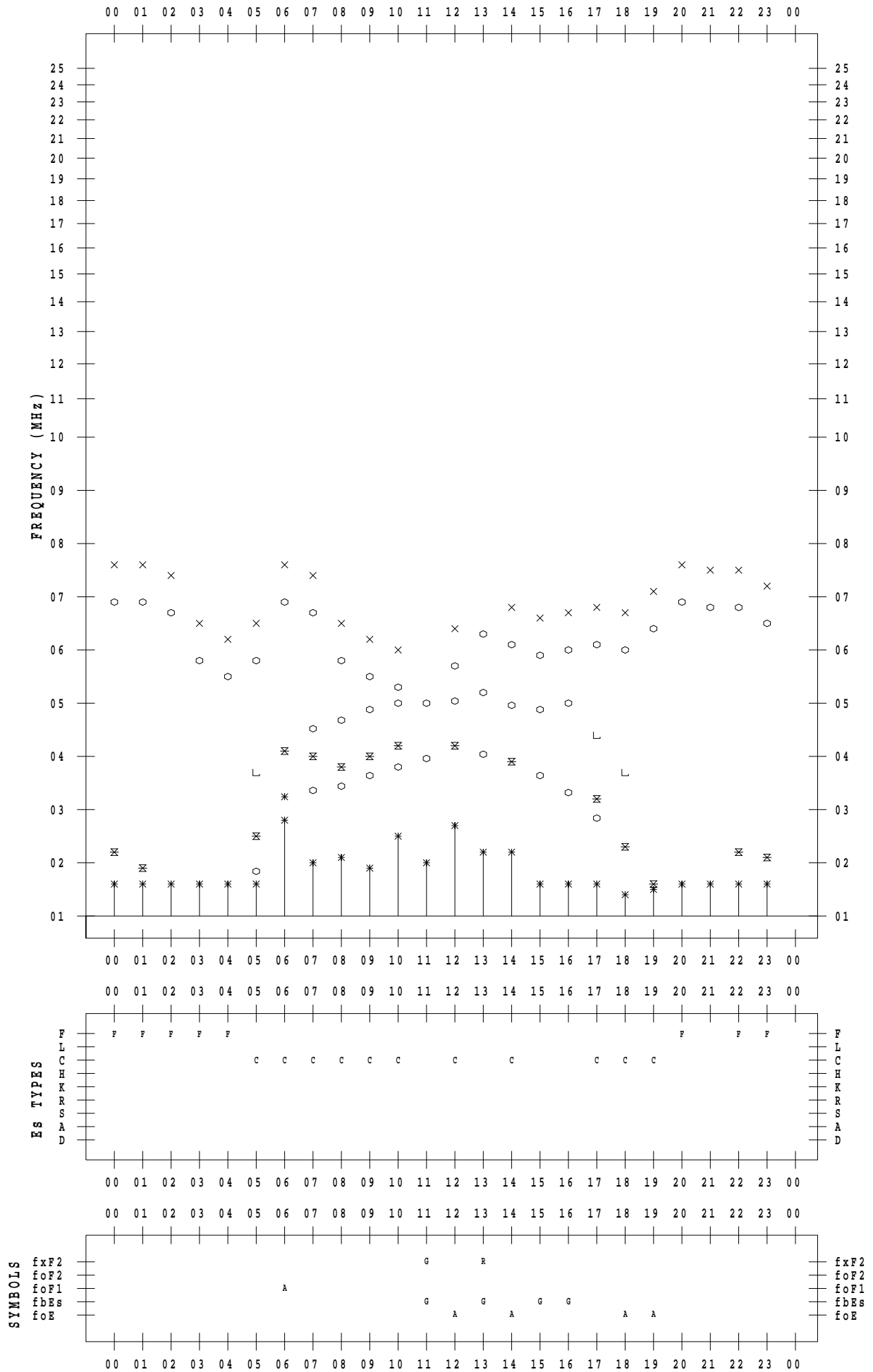
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 8

135 ° E MEAN TIME



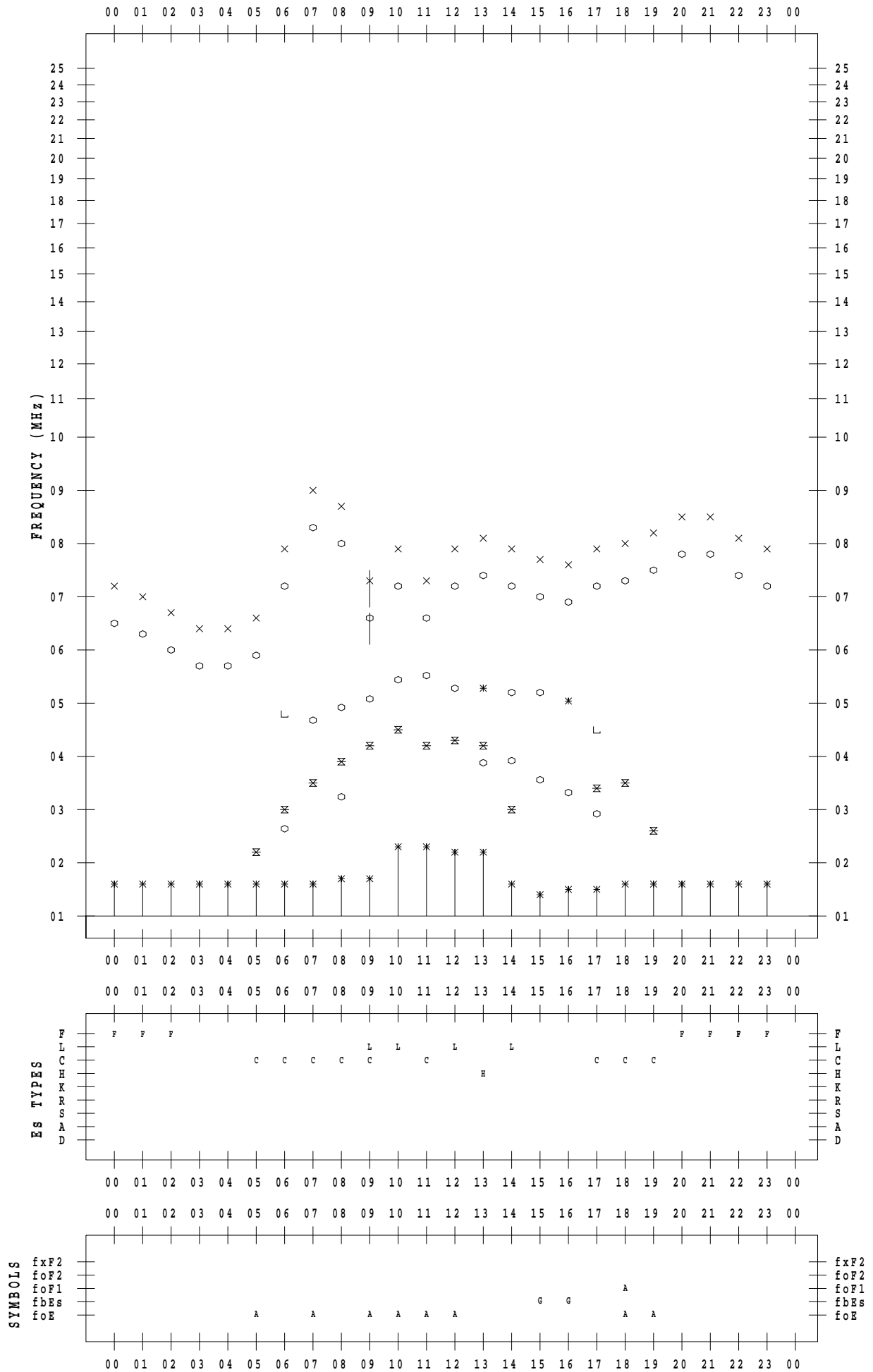
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 9

135 ° E MEAN TIME



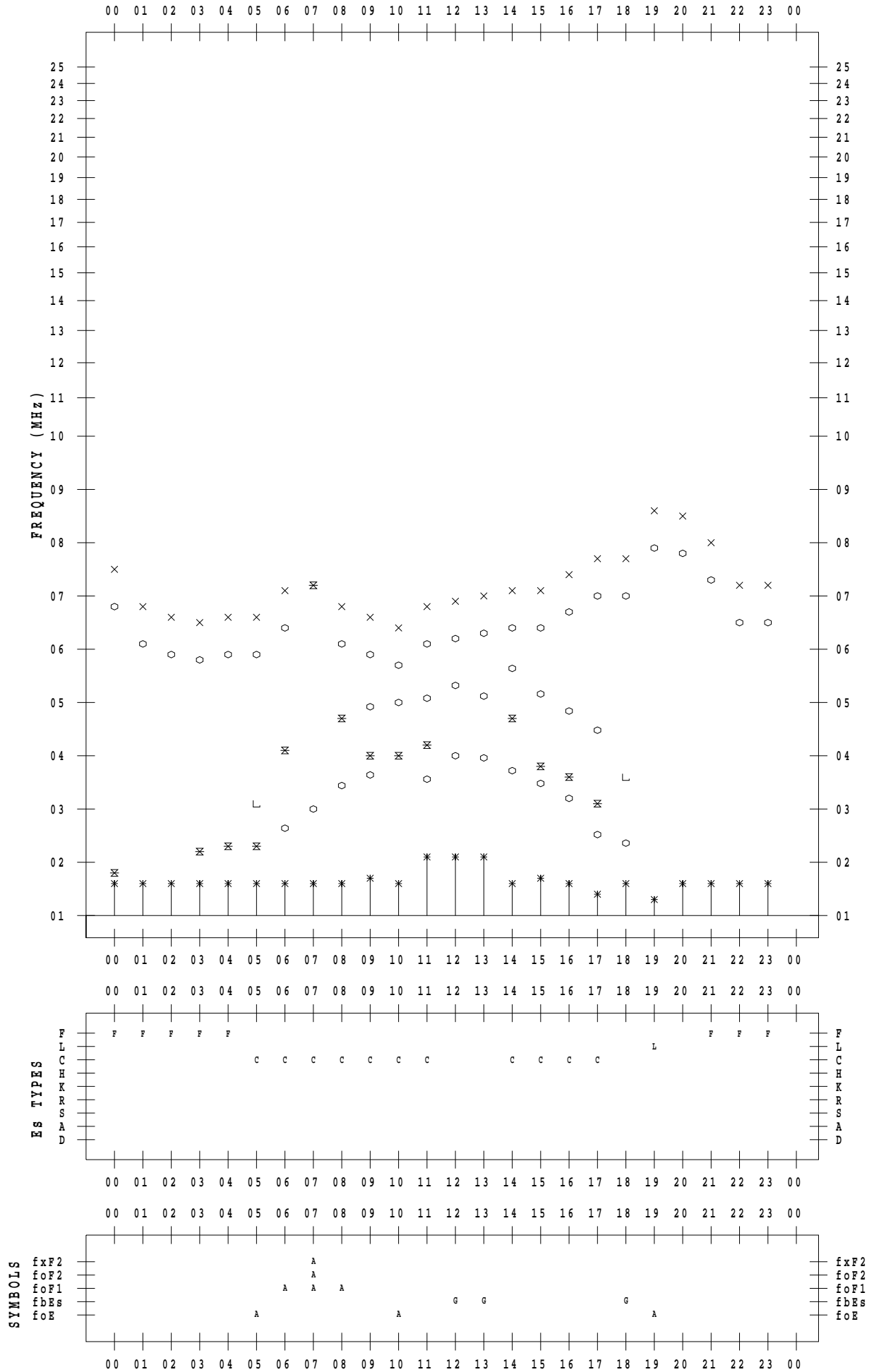
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 10

135 ° E MEAN TIME



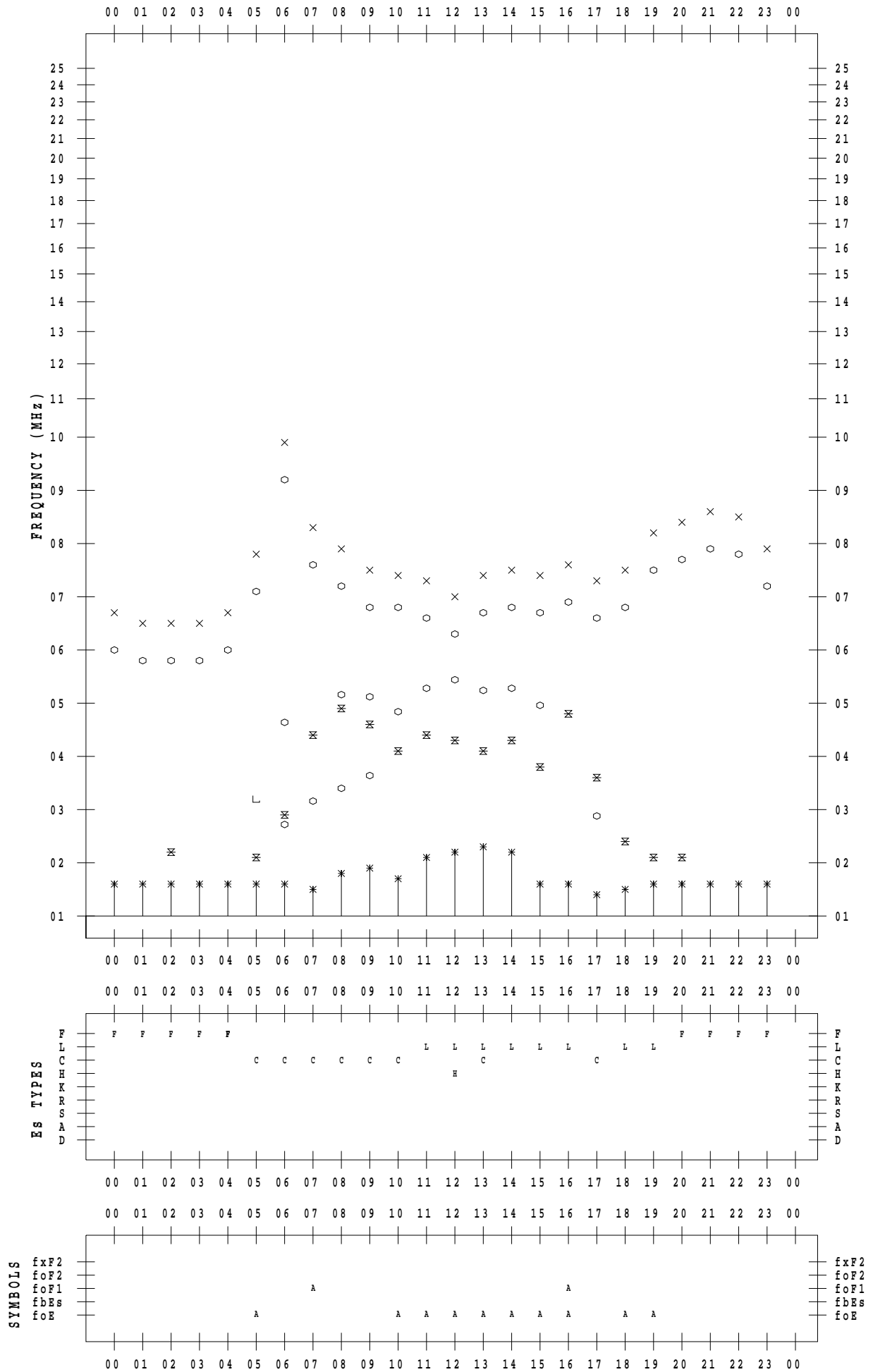
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 11

135 ° E MEAN TIME



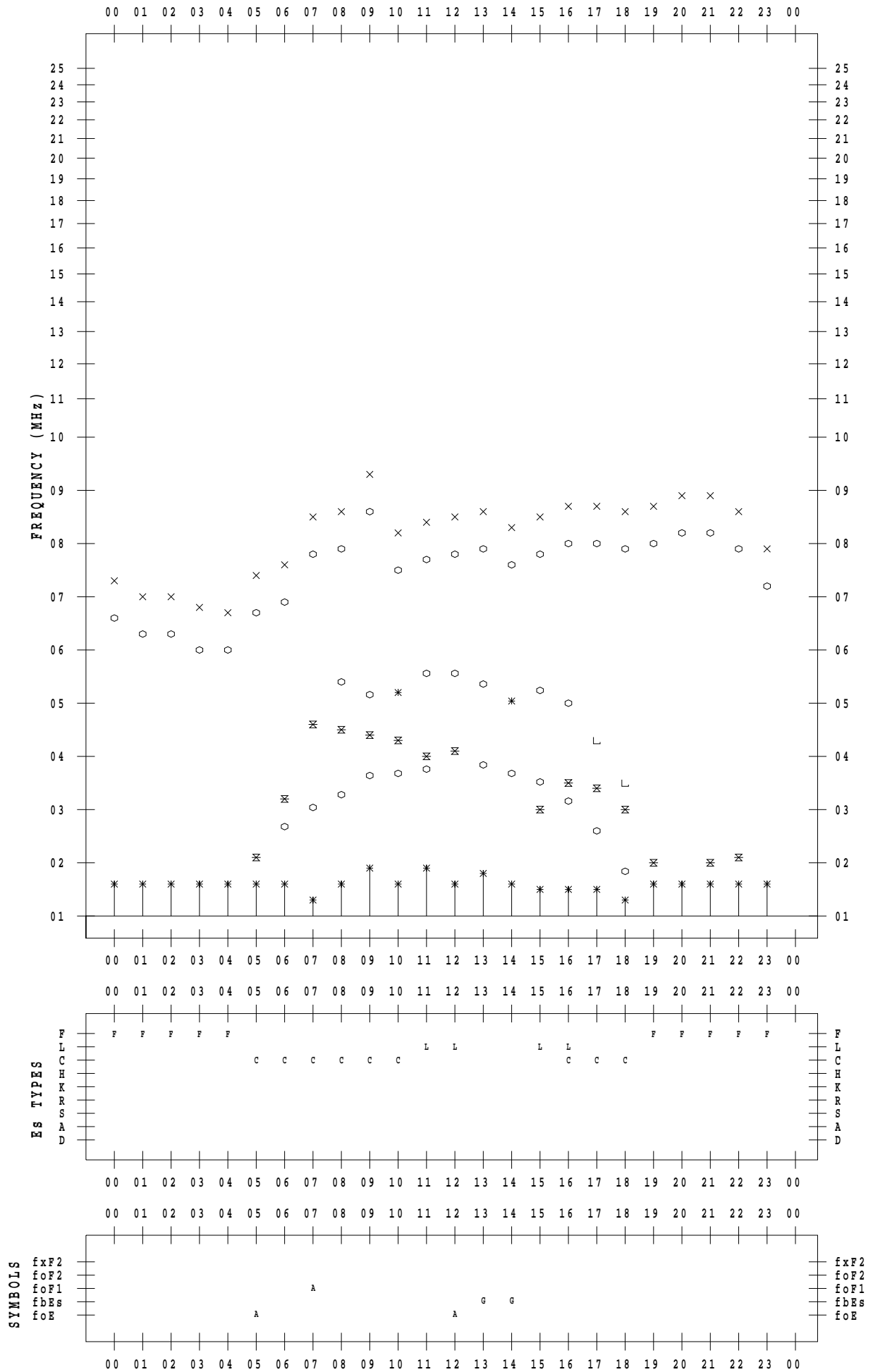
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 12

135 ° E MEAN TIME



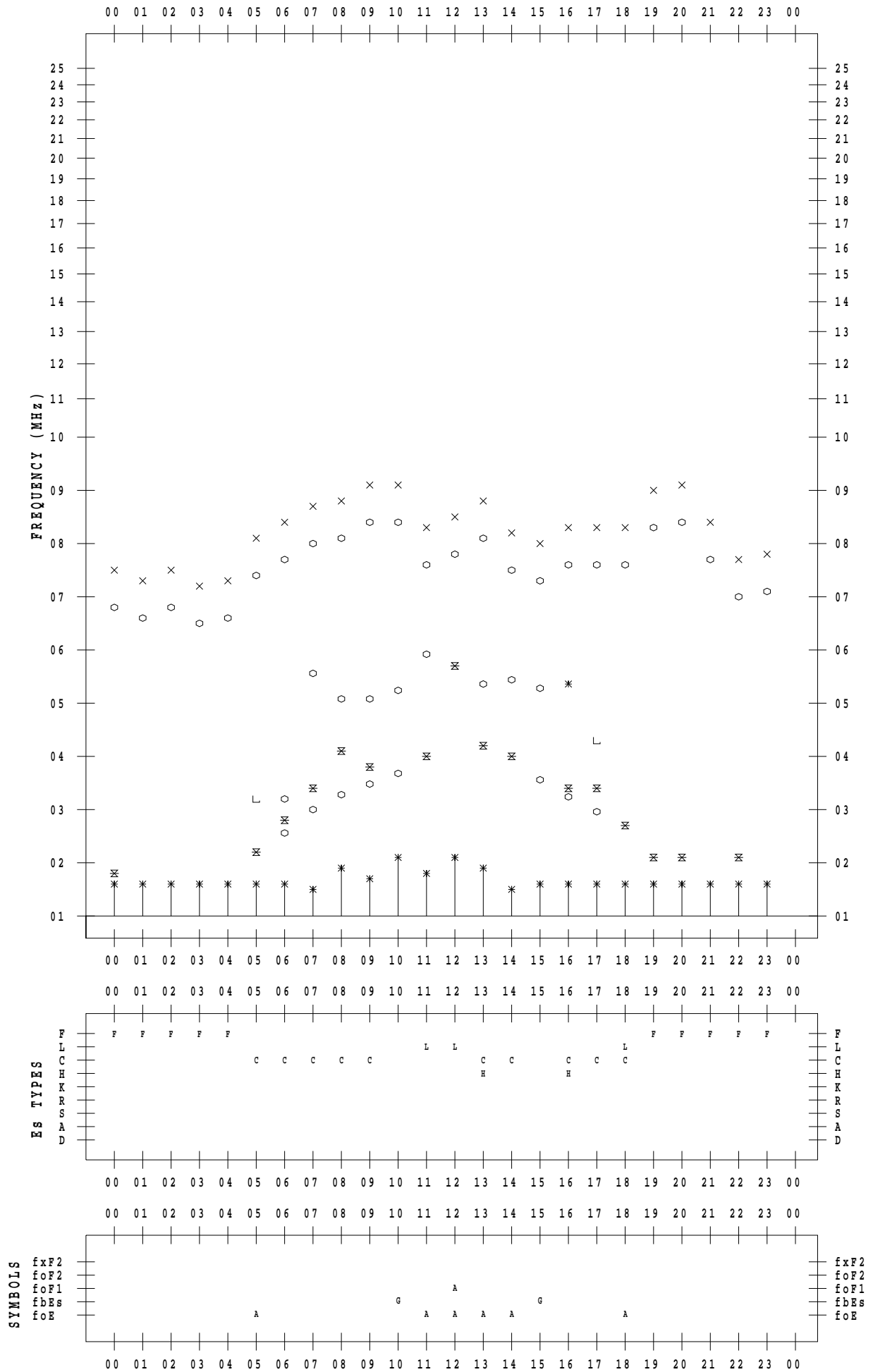
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 13

135 ° E MEAN TIME



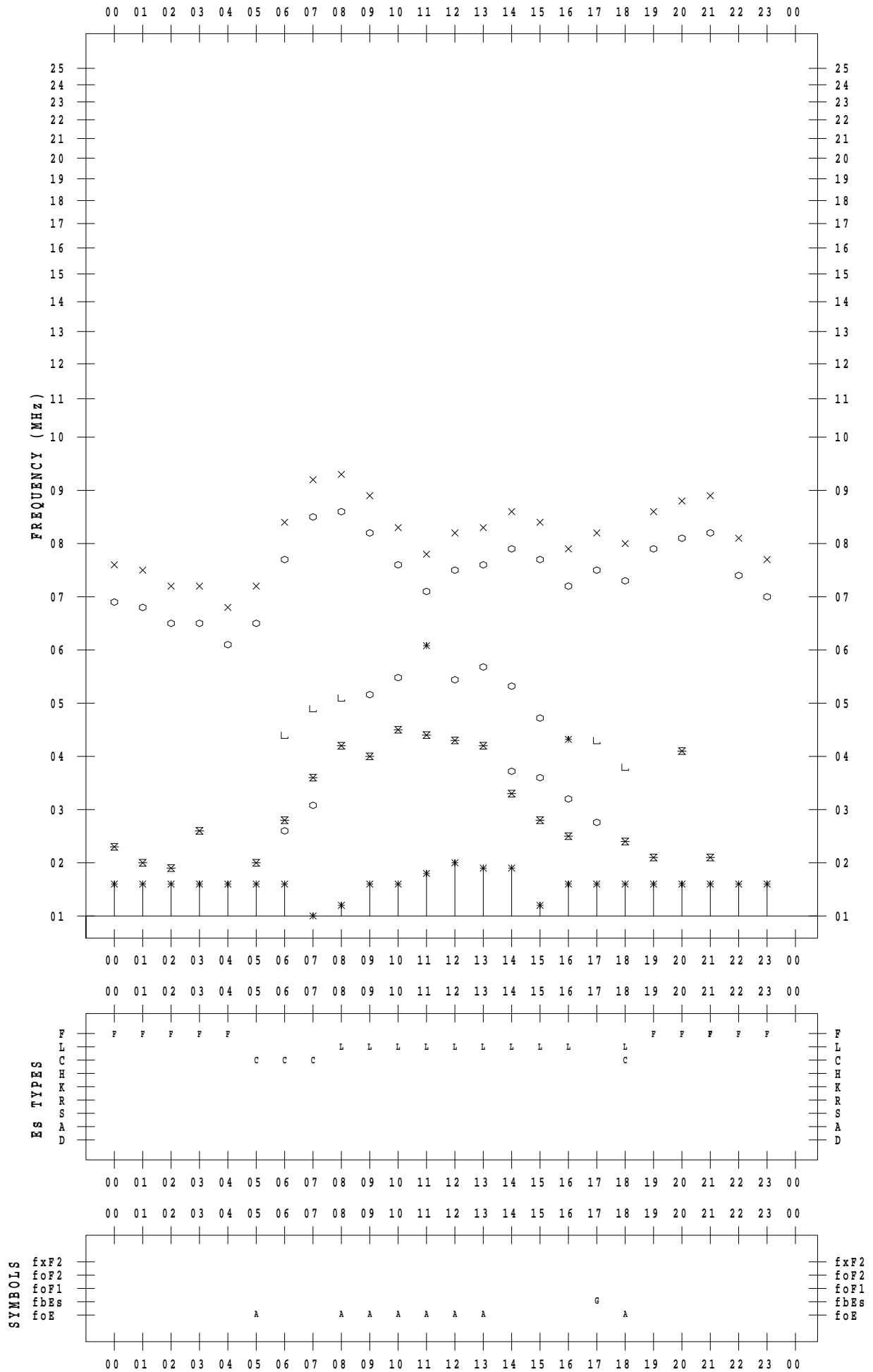
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 14

135 ° E MEAN TIME



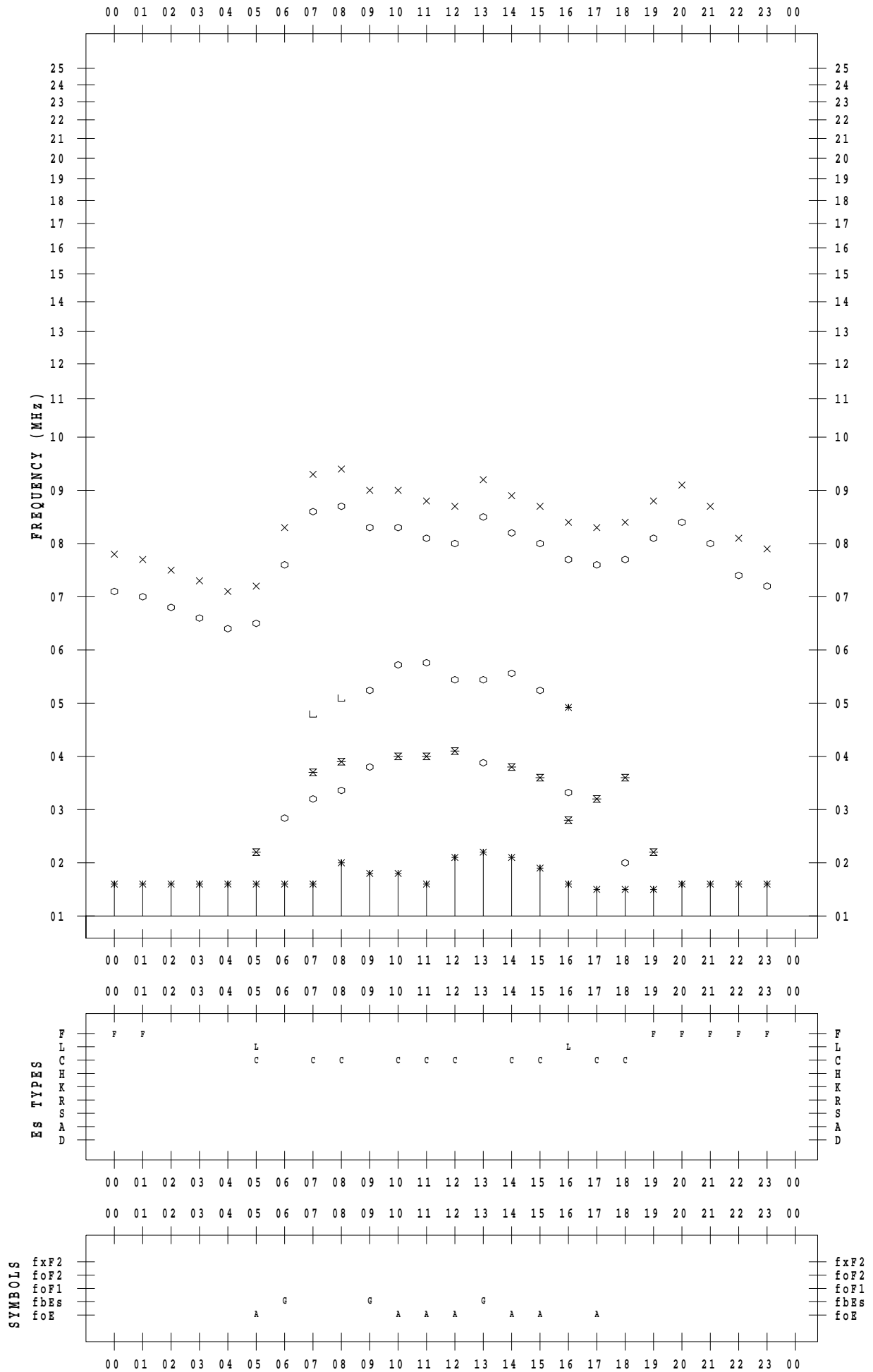
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 15

135 ° E MEAN TIME



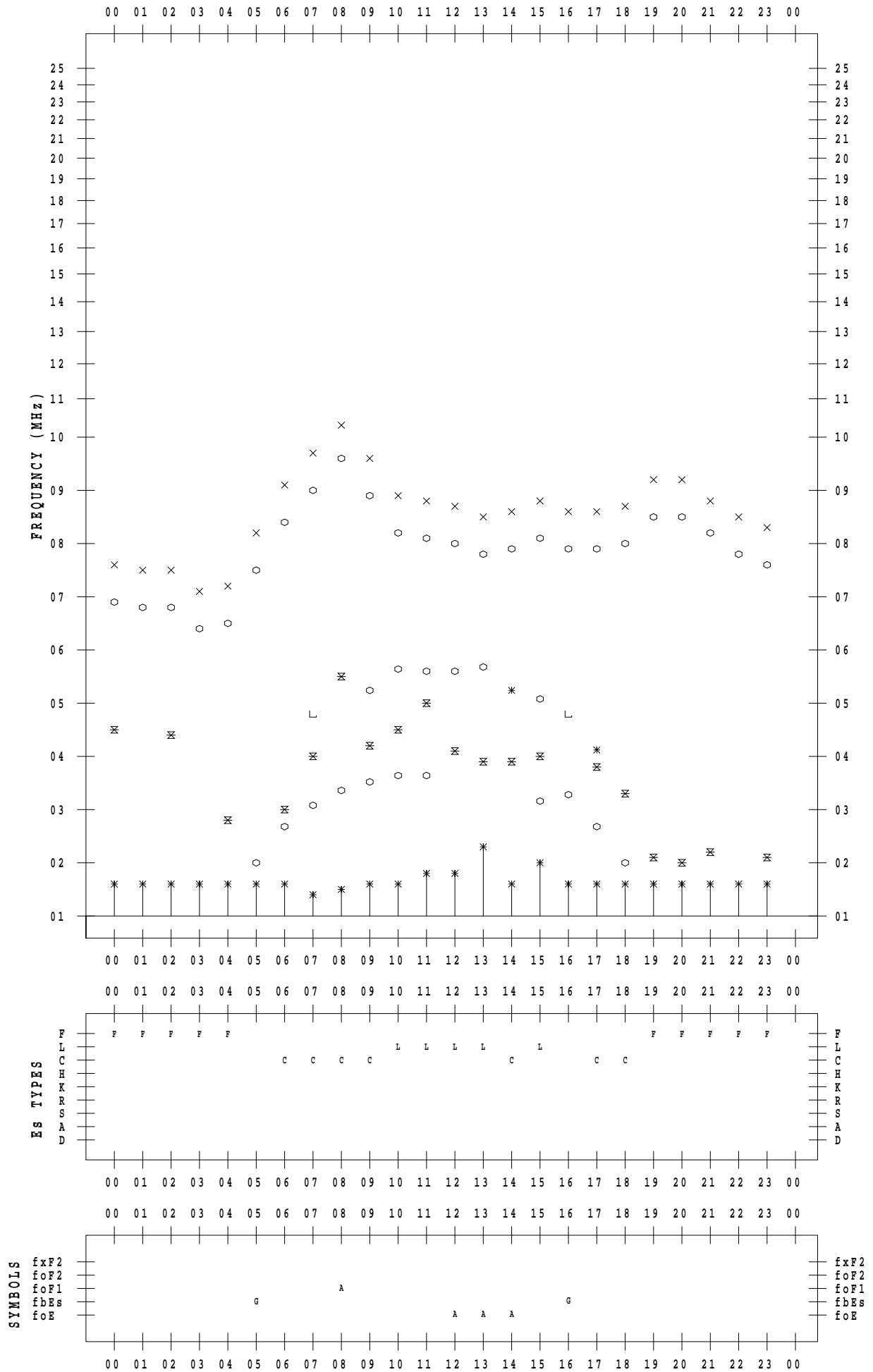
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 16

135 ° E MEAN TIME



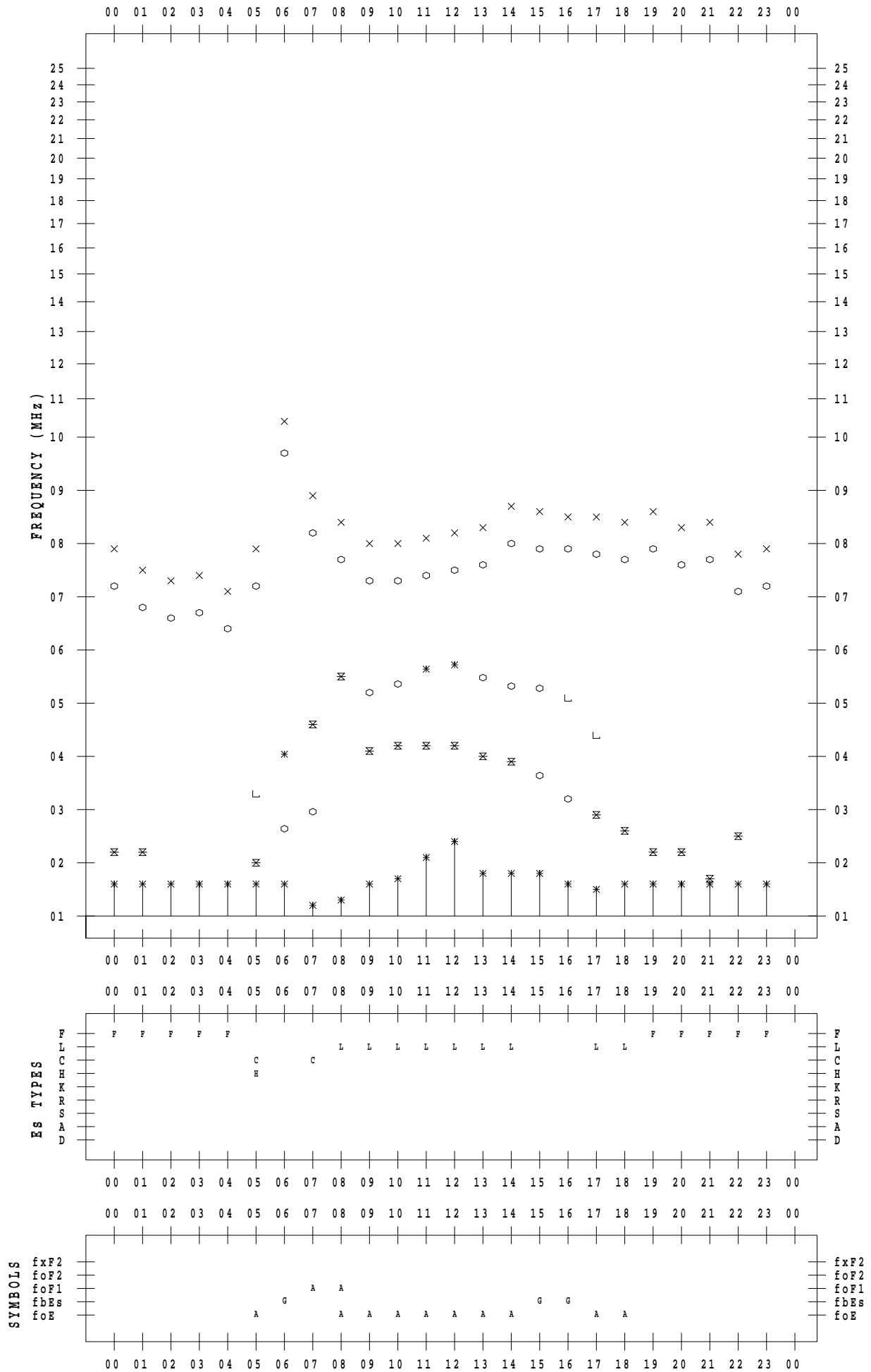
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SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 17

135 ° E MEAN TIME



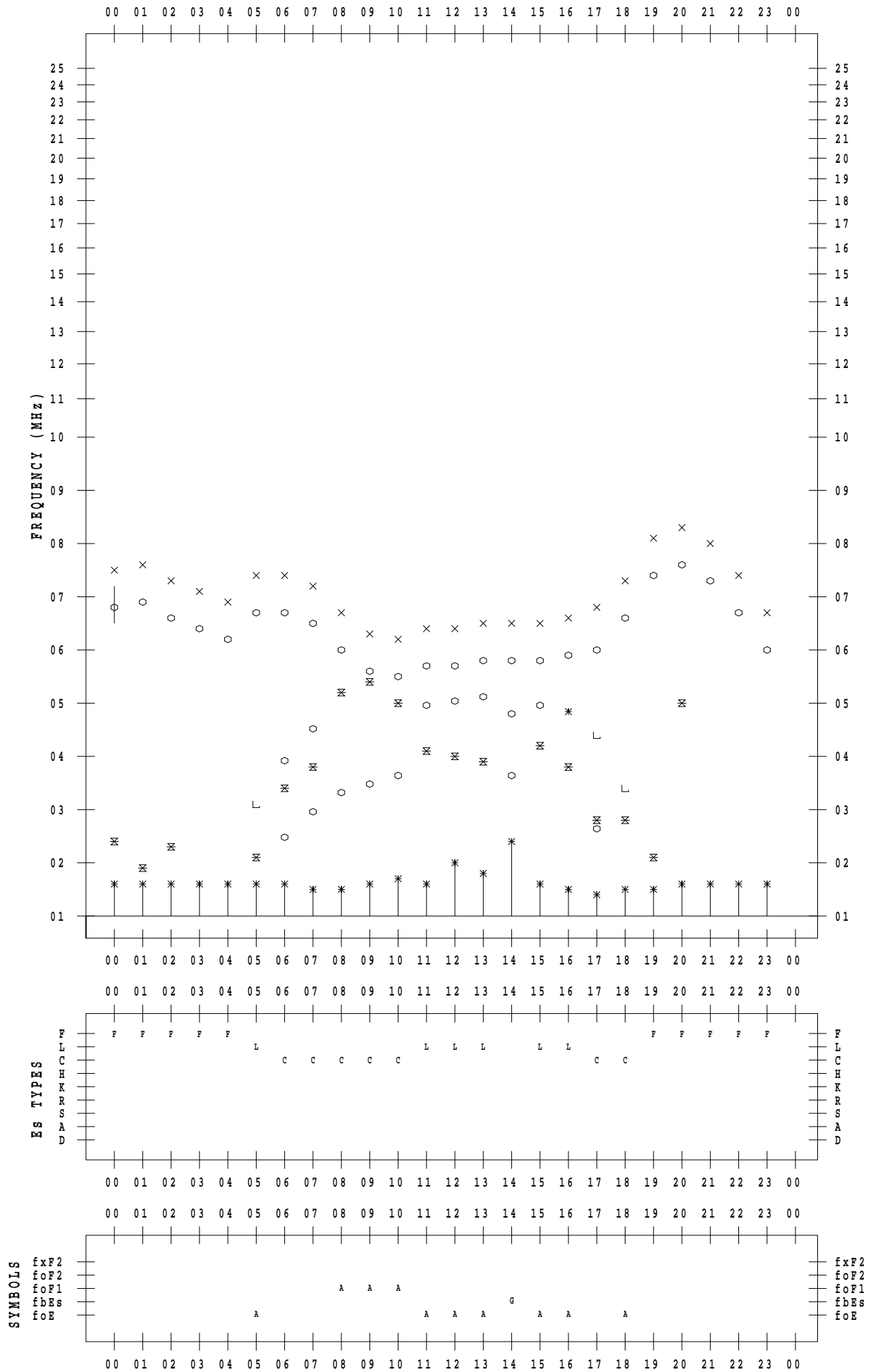
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SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023/ 8/18

135 ° E MEAN TIME



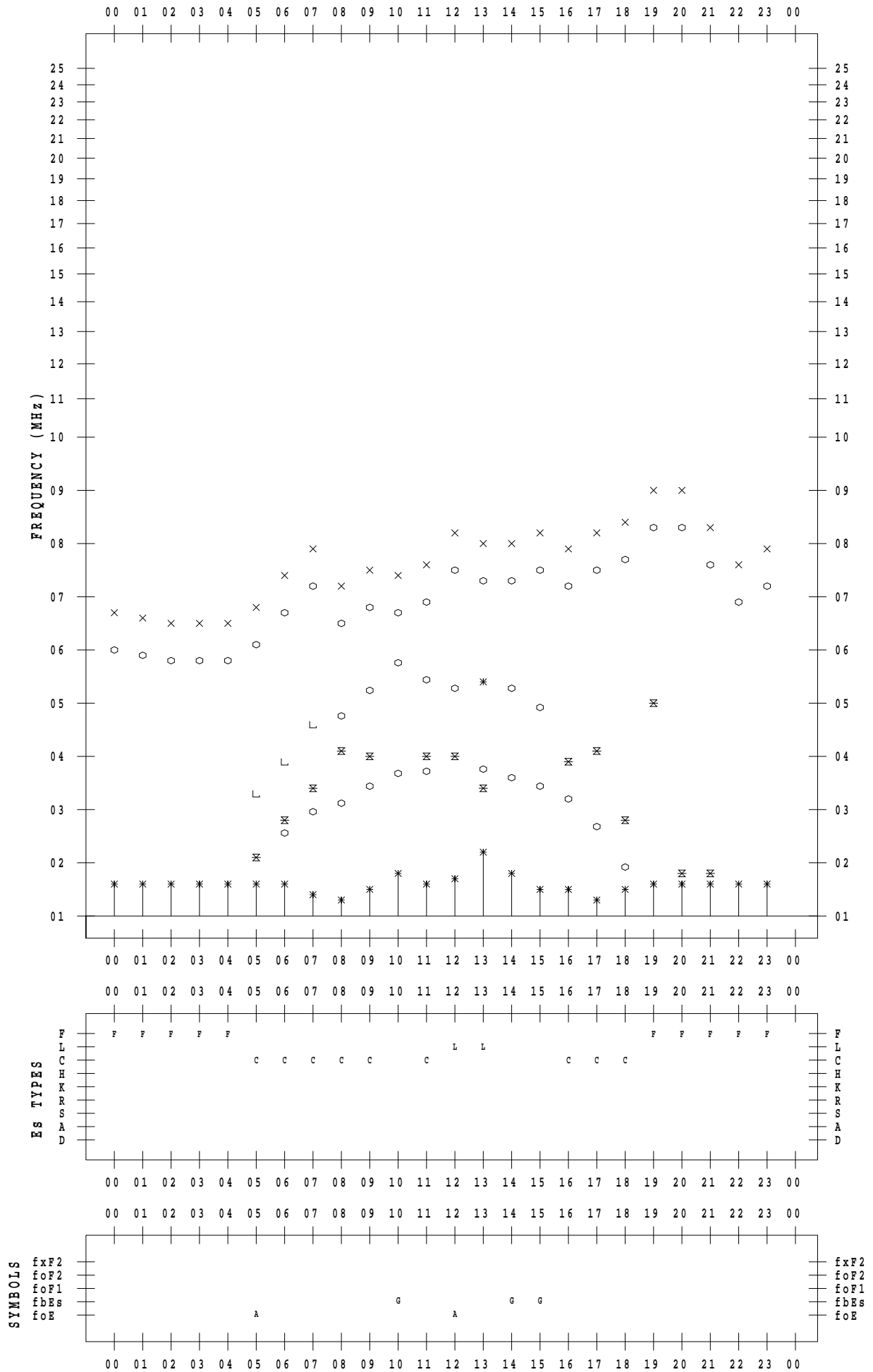
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SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 19

135 ° E MEAN TIME



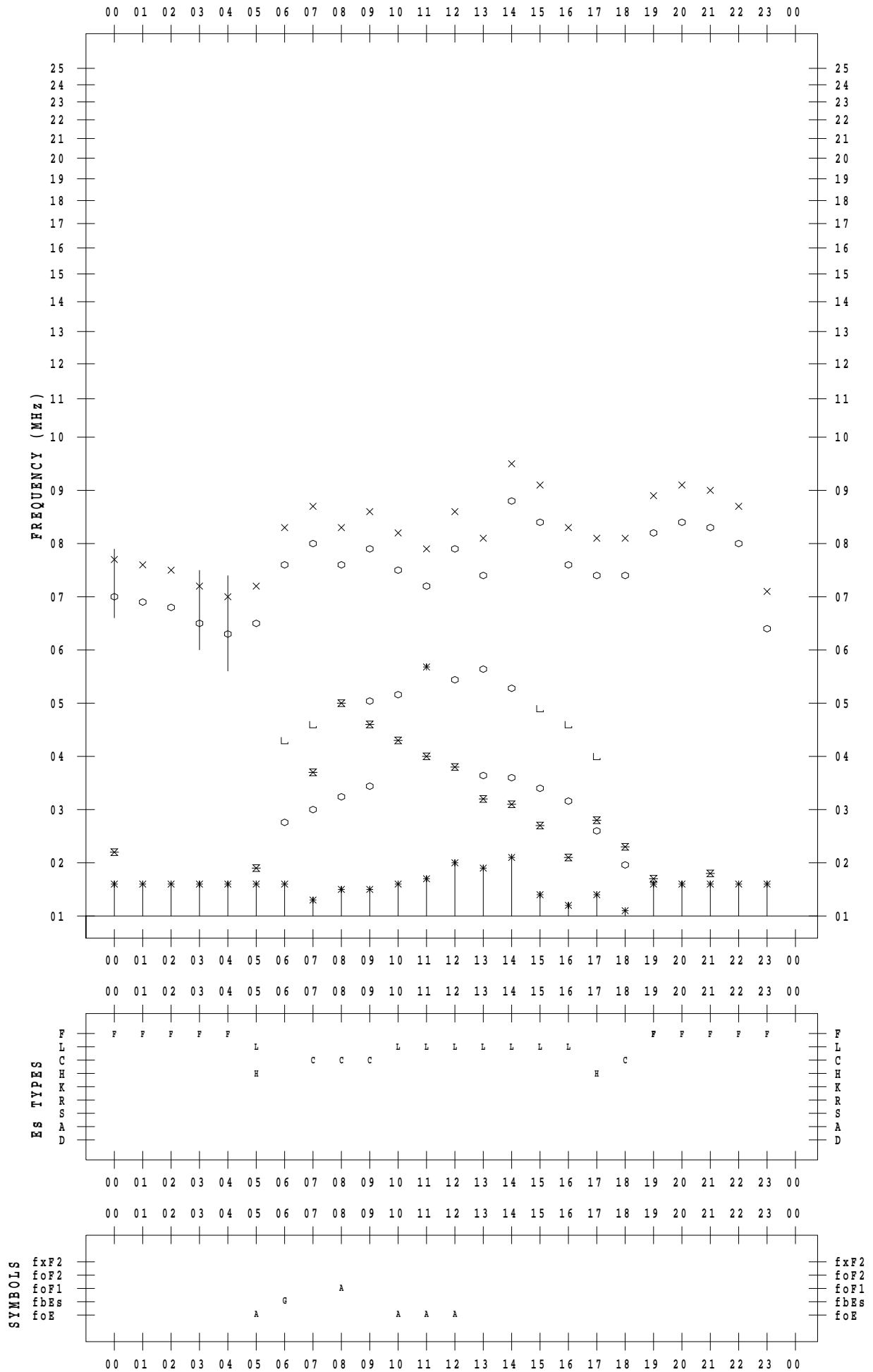
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SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 20

135 ° E MEAN TIME



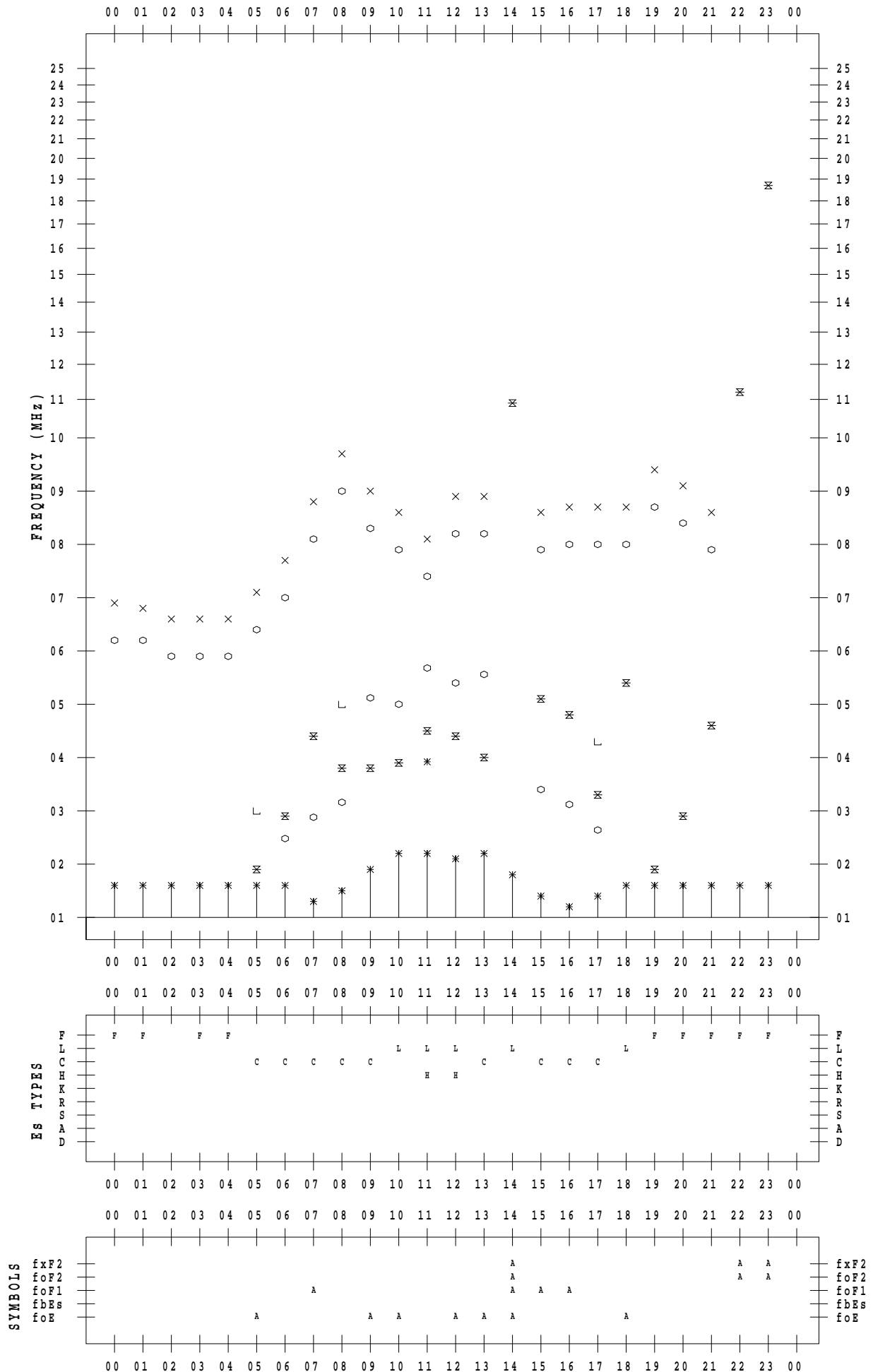
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SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 21

135 ° E MEAN TIME



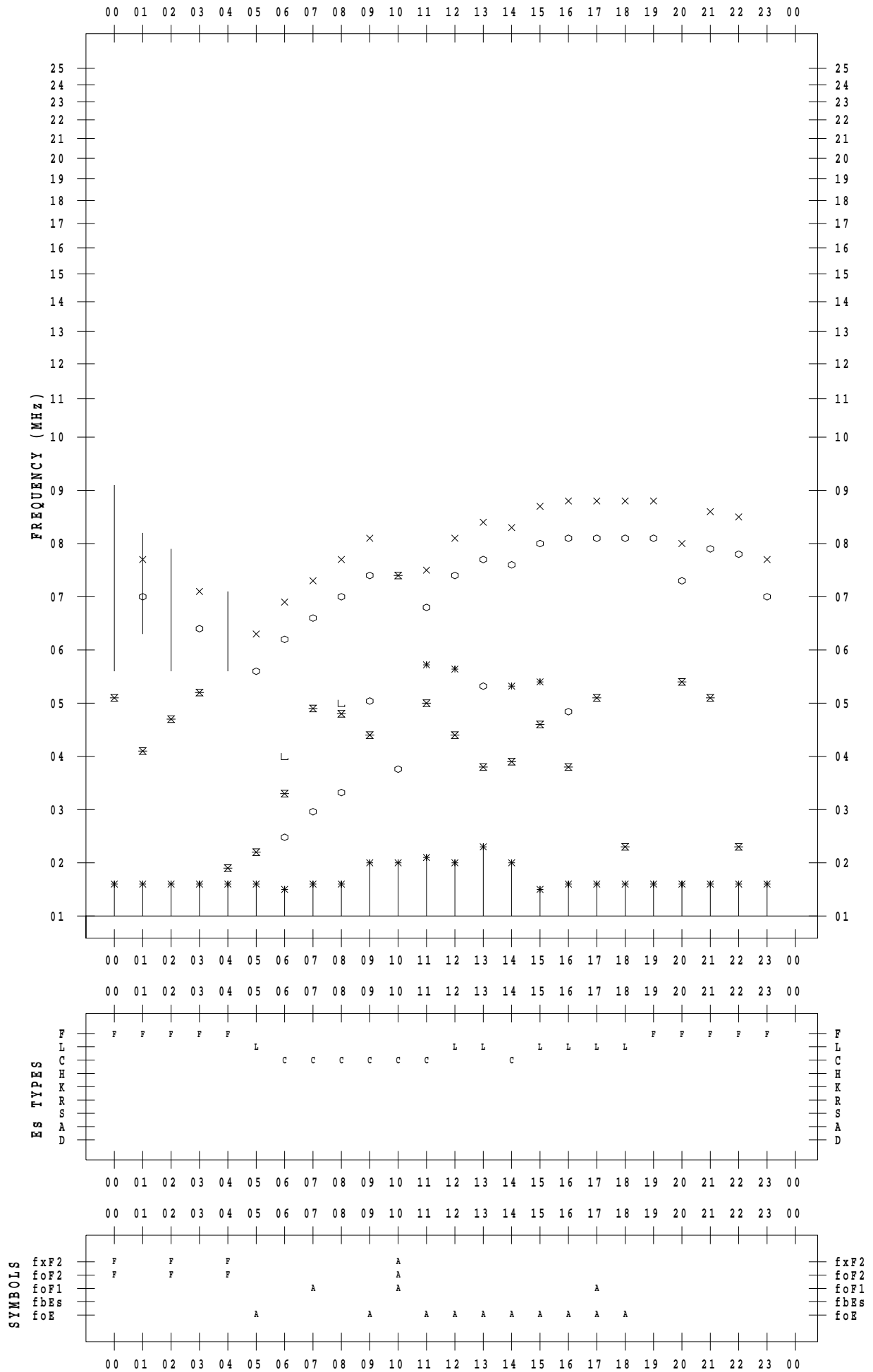
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 22

135 ° E MEAN TIME



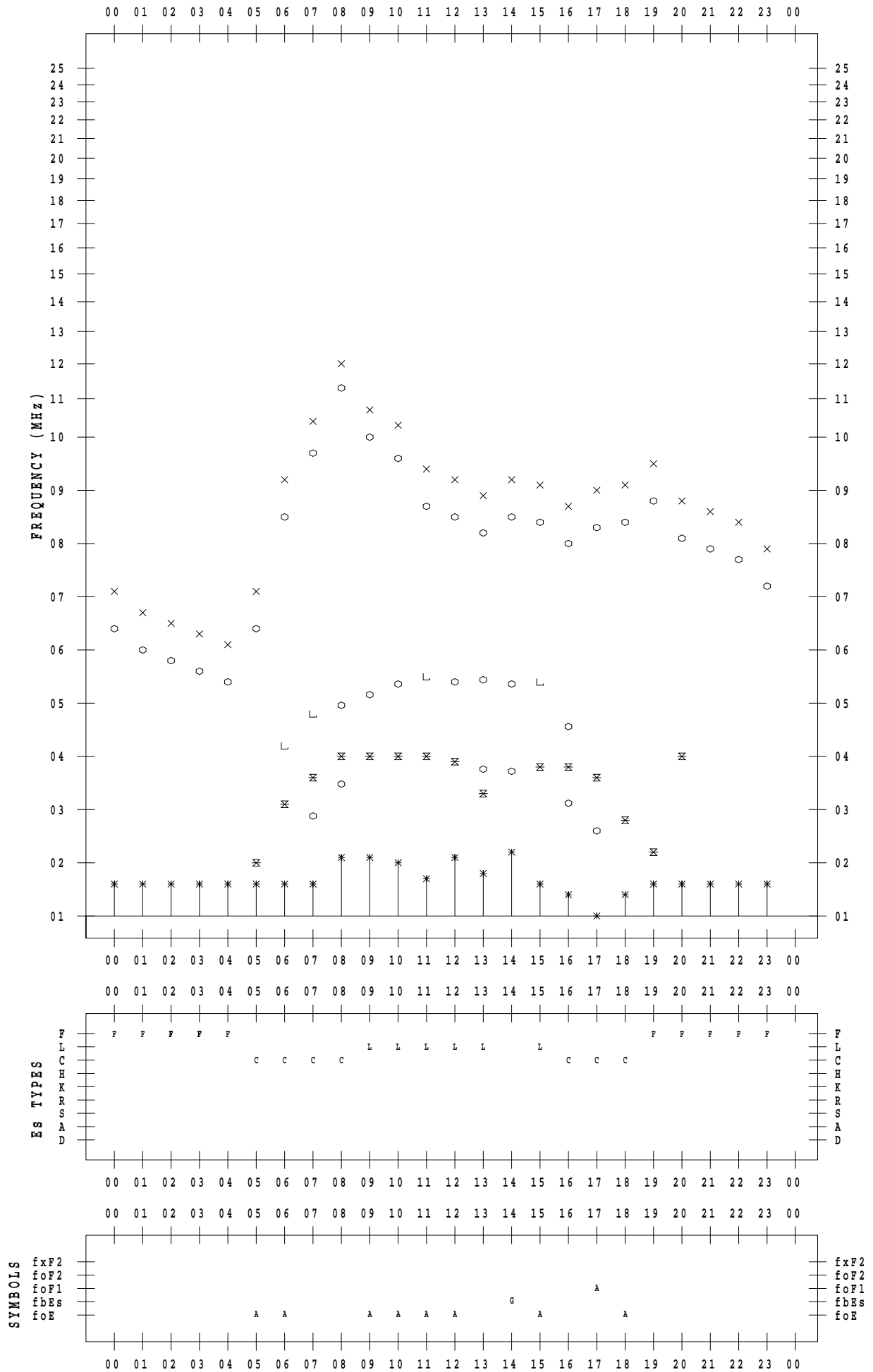
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 23

135 ° E MEAN TIME



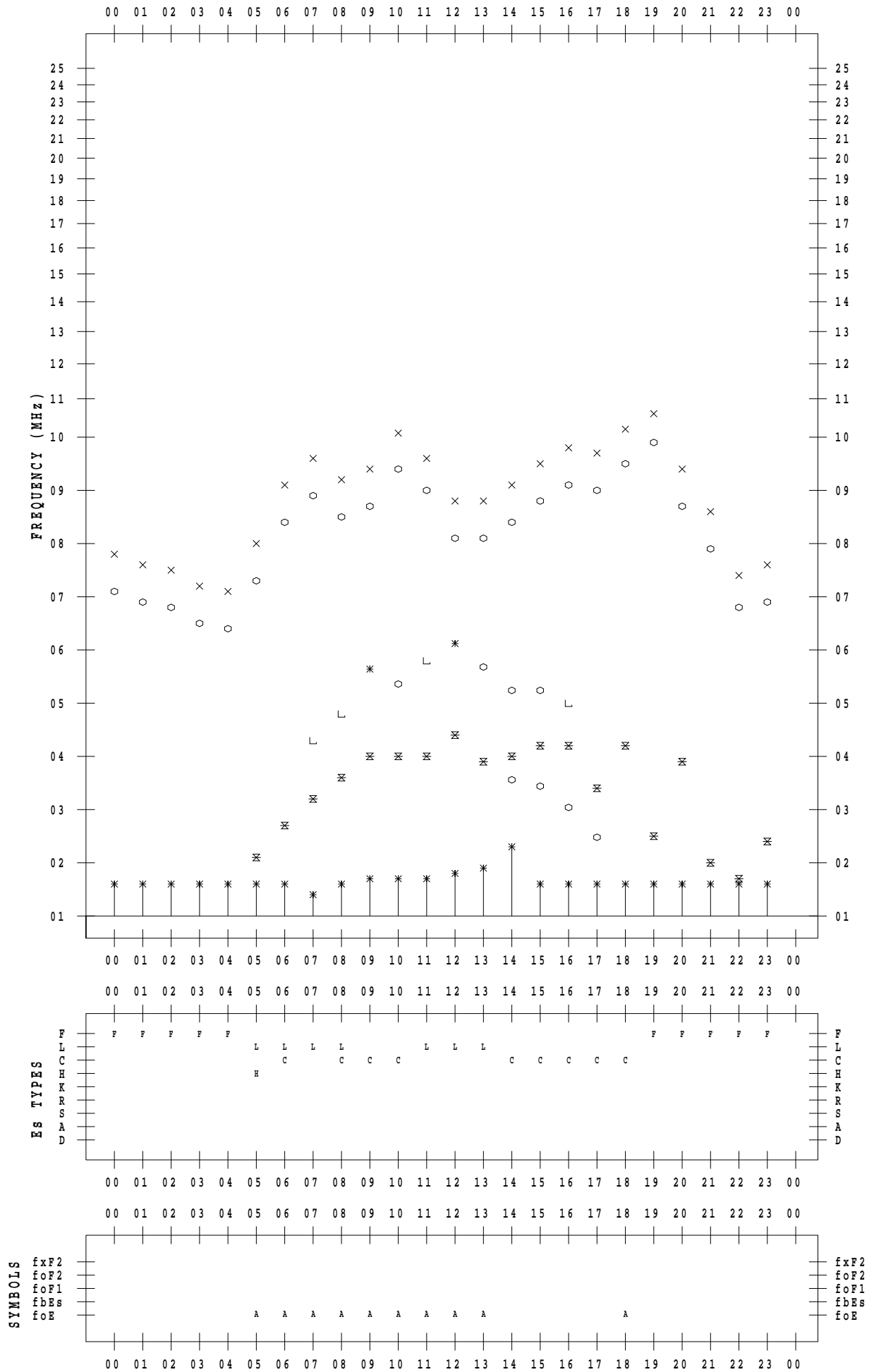
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 24

135 ° E MEAN TIME



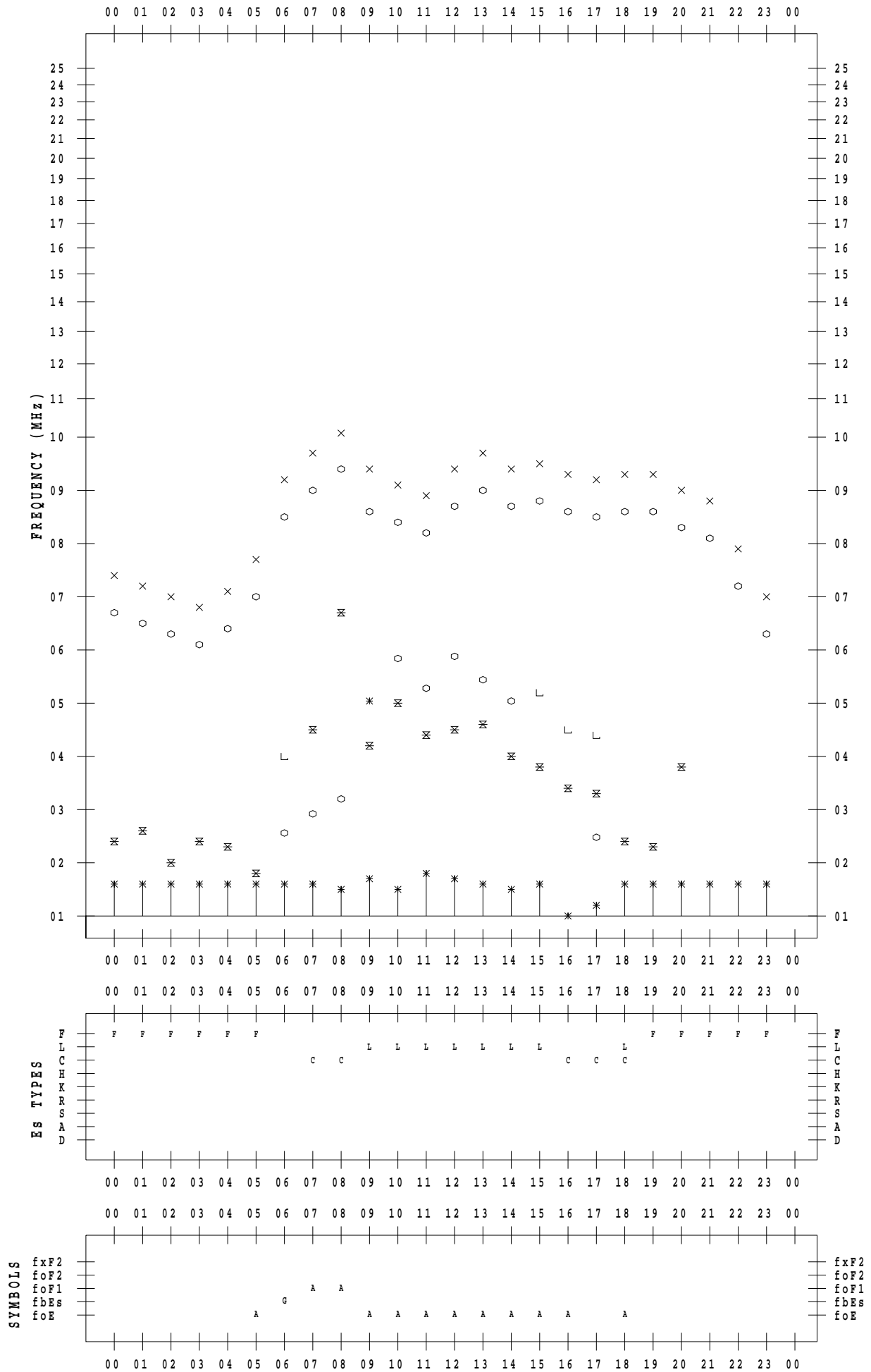
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 25

135 ° E MEAN TIME



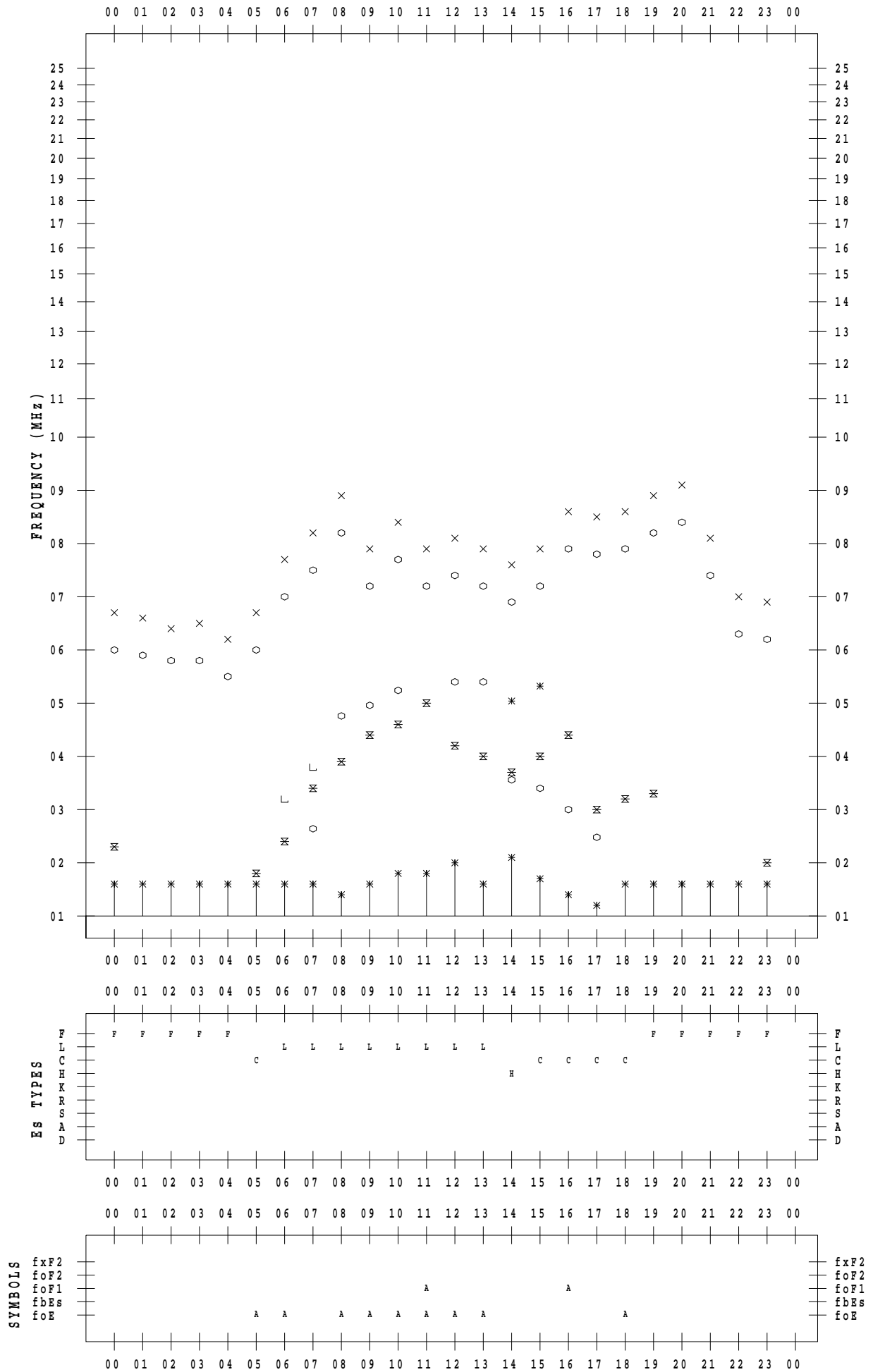
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 26

135 ° E MEAN TIME



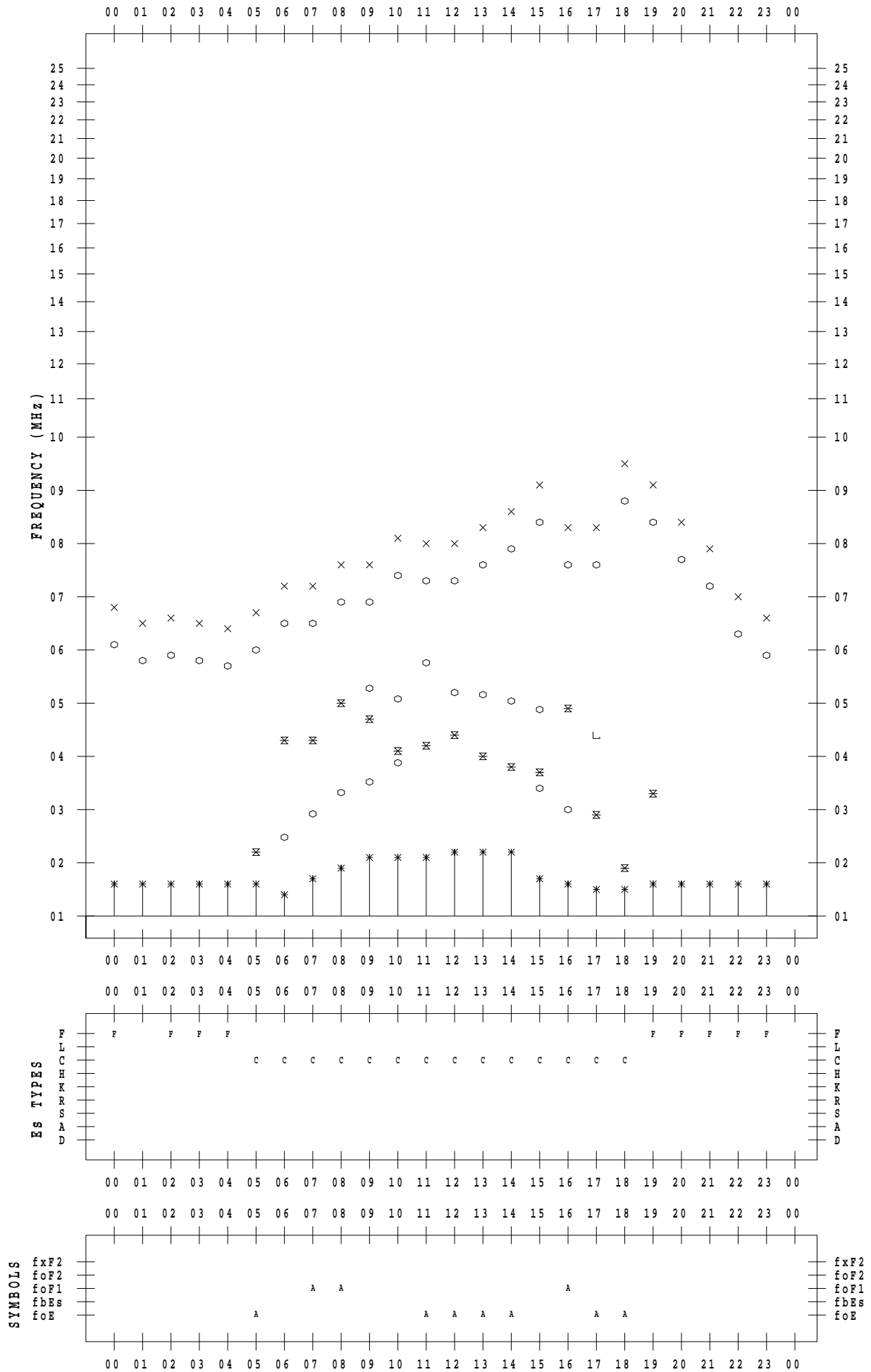
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 27

135 ° E MEAN TIME



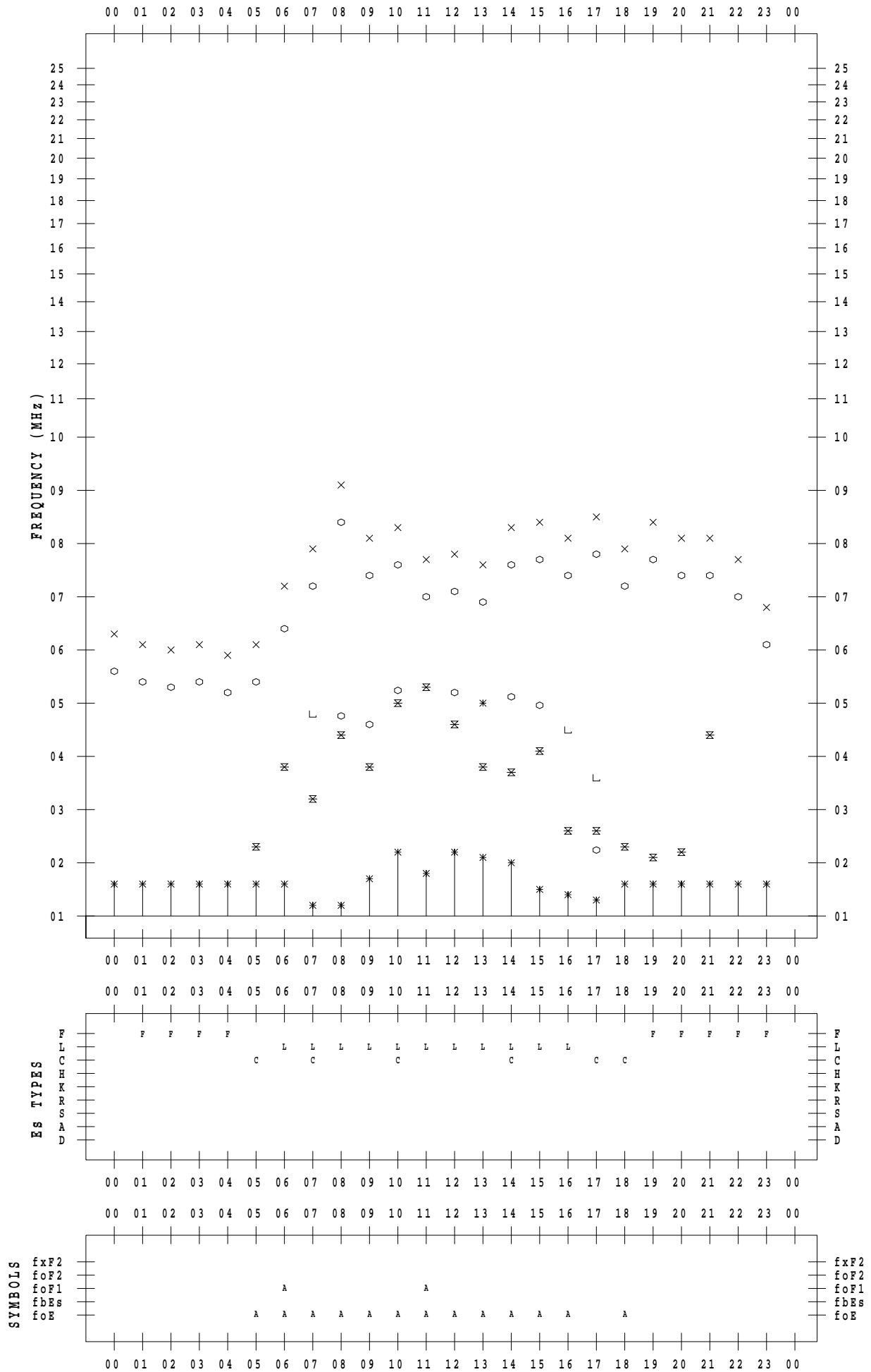
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 28

135 ° E MEAN TIME



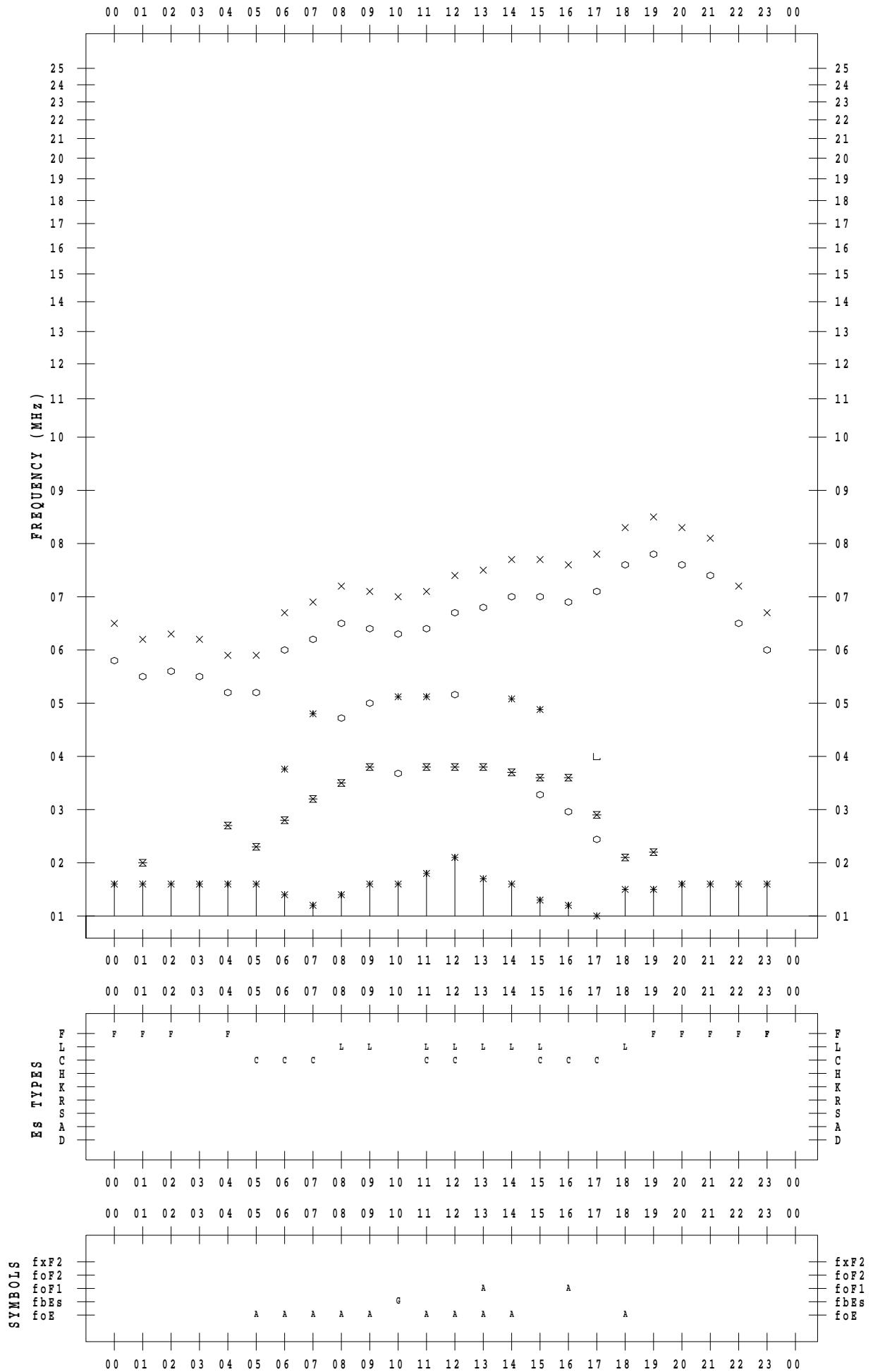
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 29

135 ° E MEAN TIME



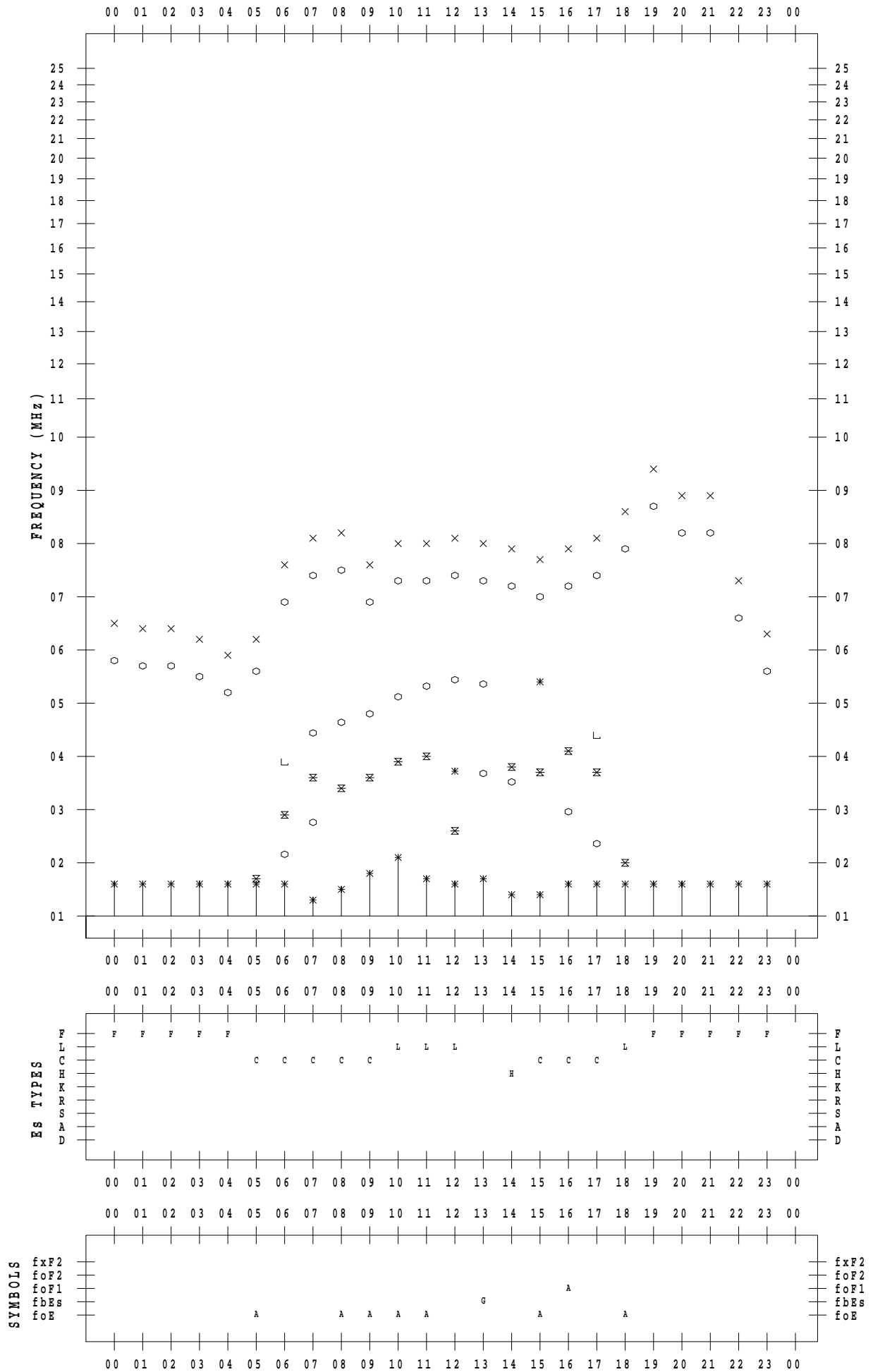
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SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 30

135 ° E MEAN TIME



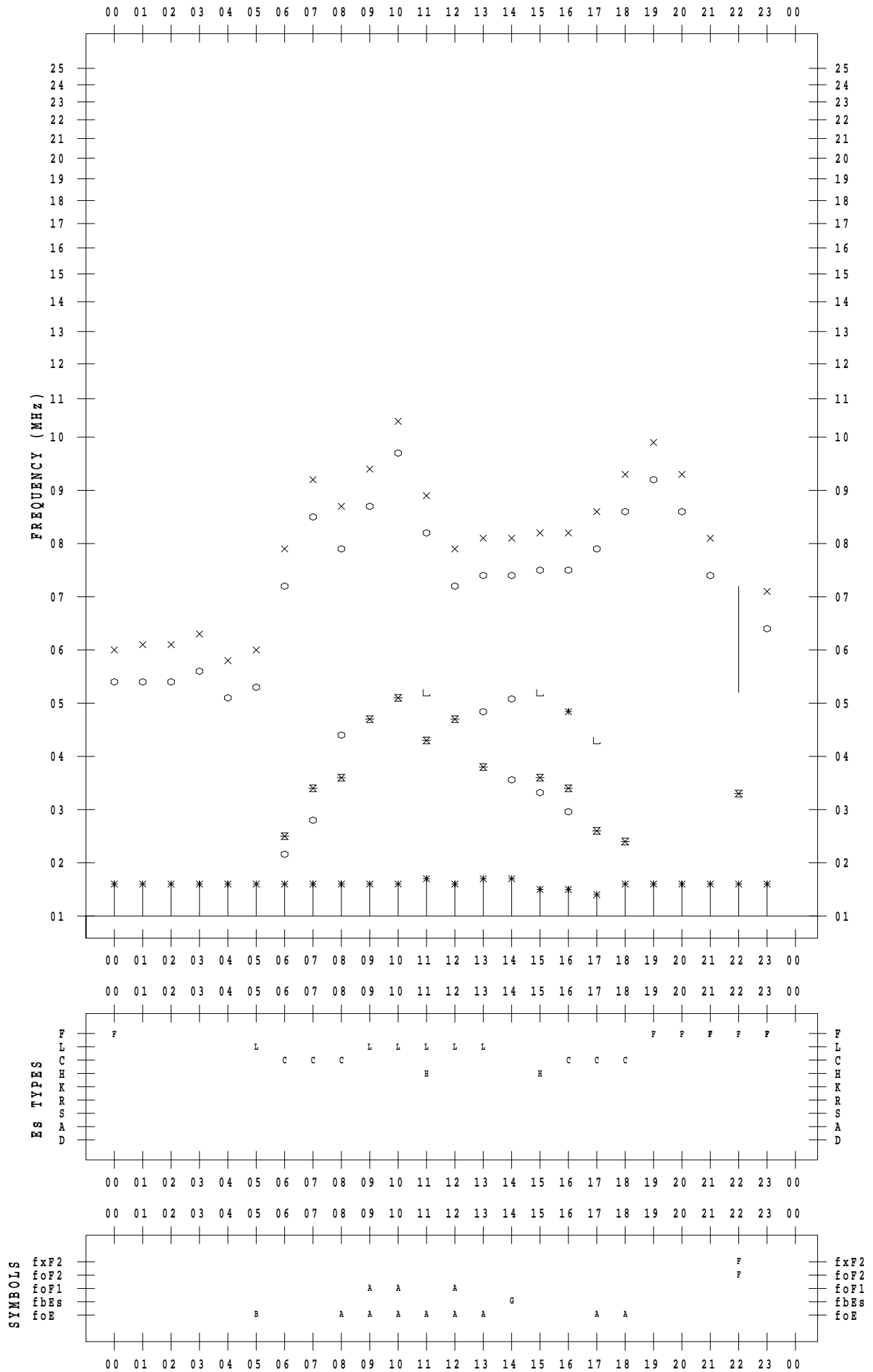
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Wakkanai

DATE : 2023 / 8 / 31

135 ° E MEAN TIME



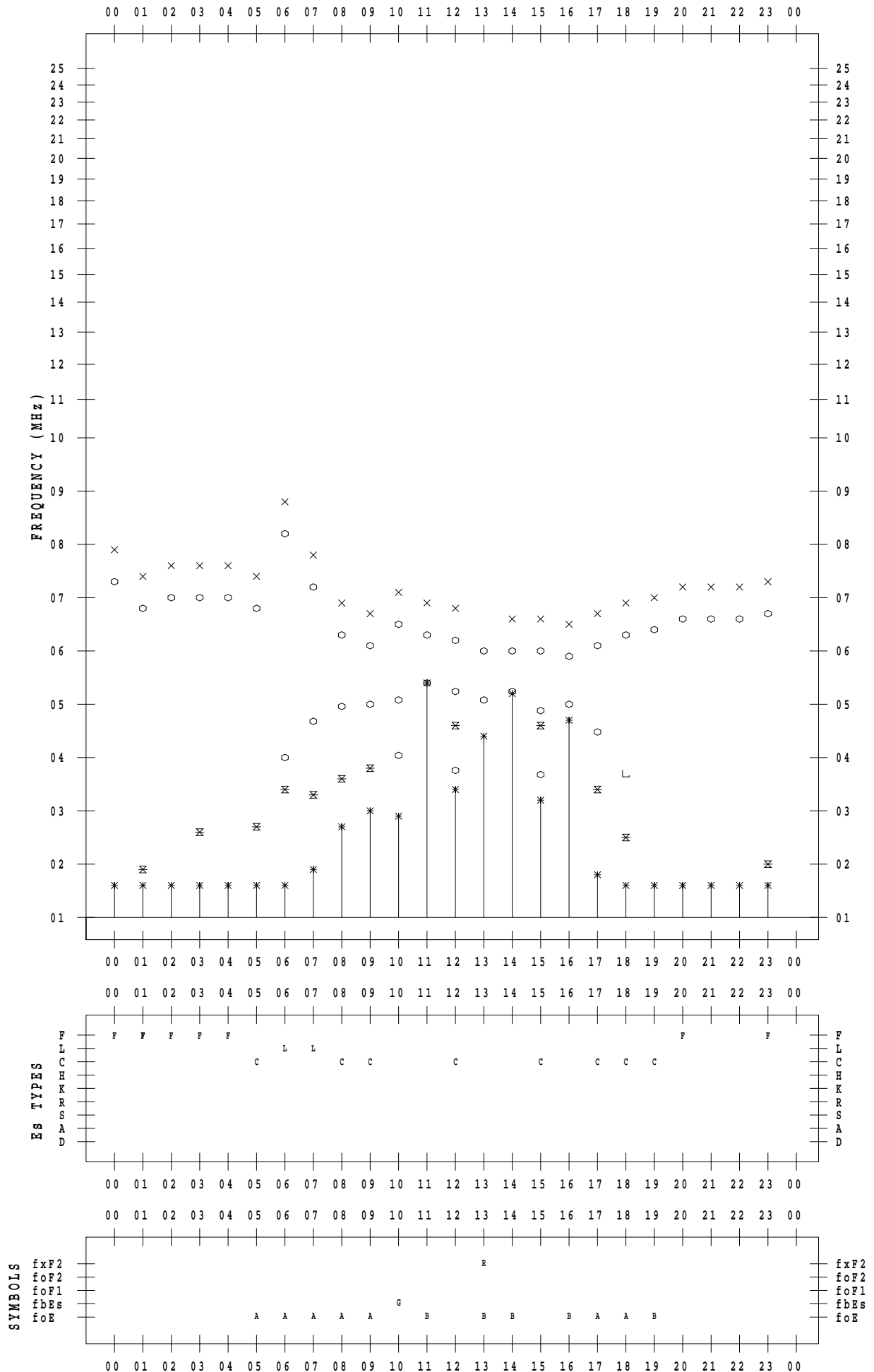
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 1

135 ° E MEAN TIME



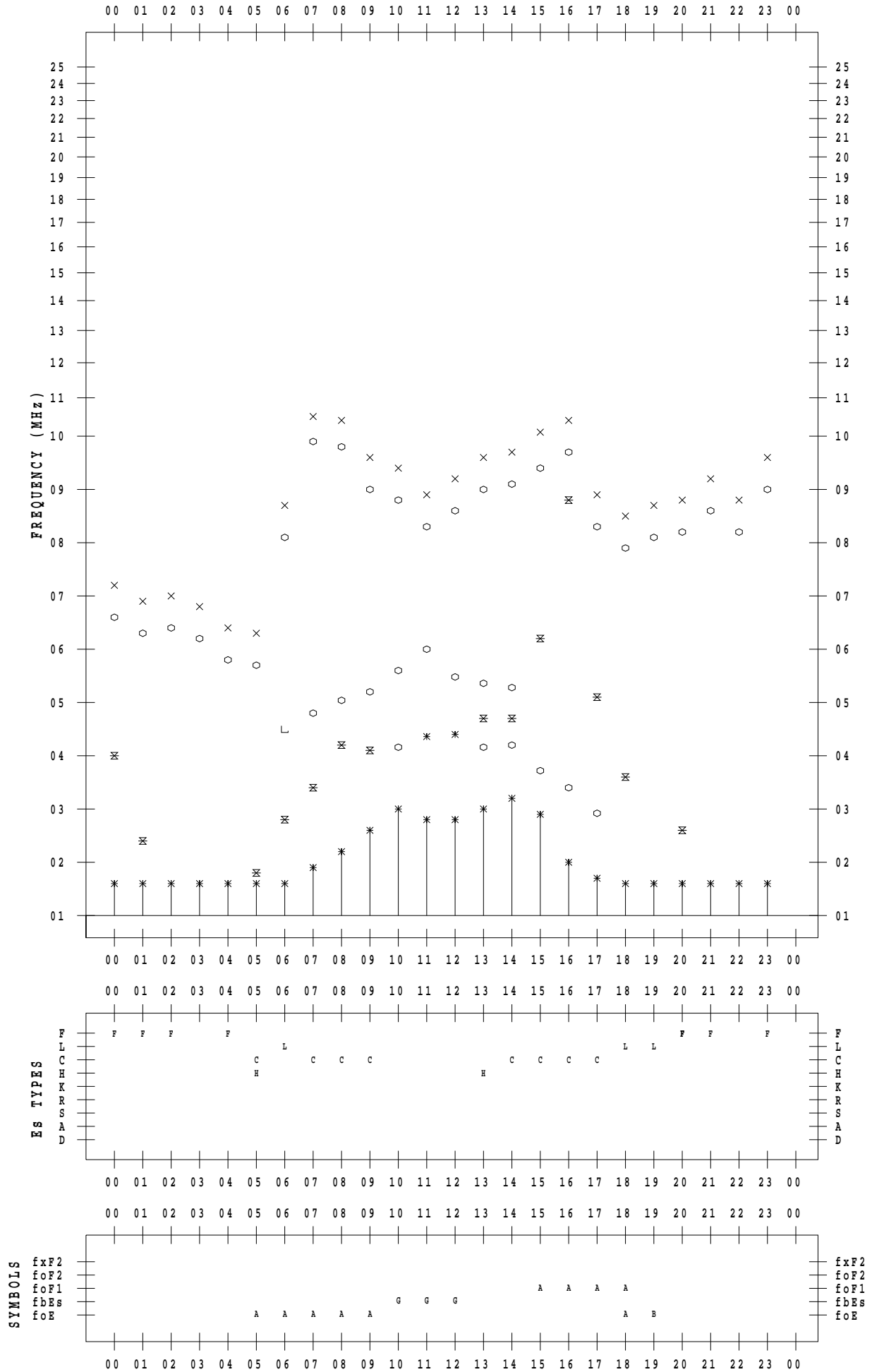
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 2

135 ° E MEAN TIME



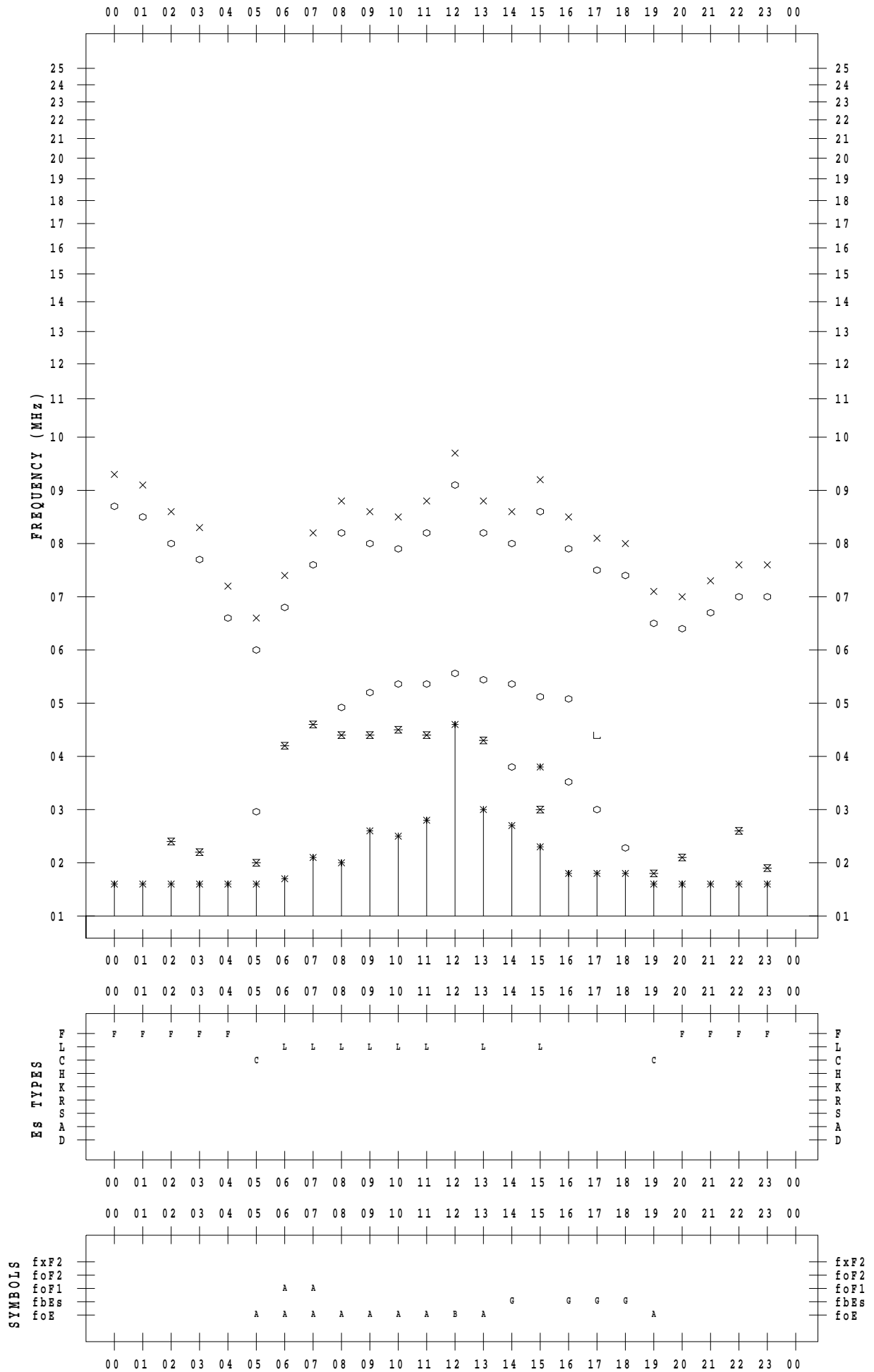
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 3

135 ° E MEAN TIME



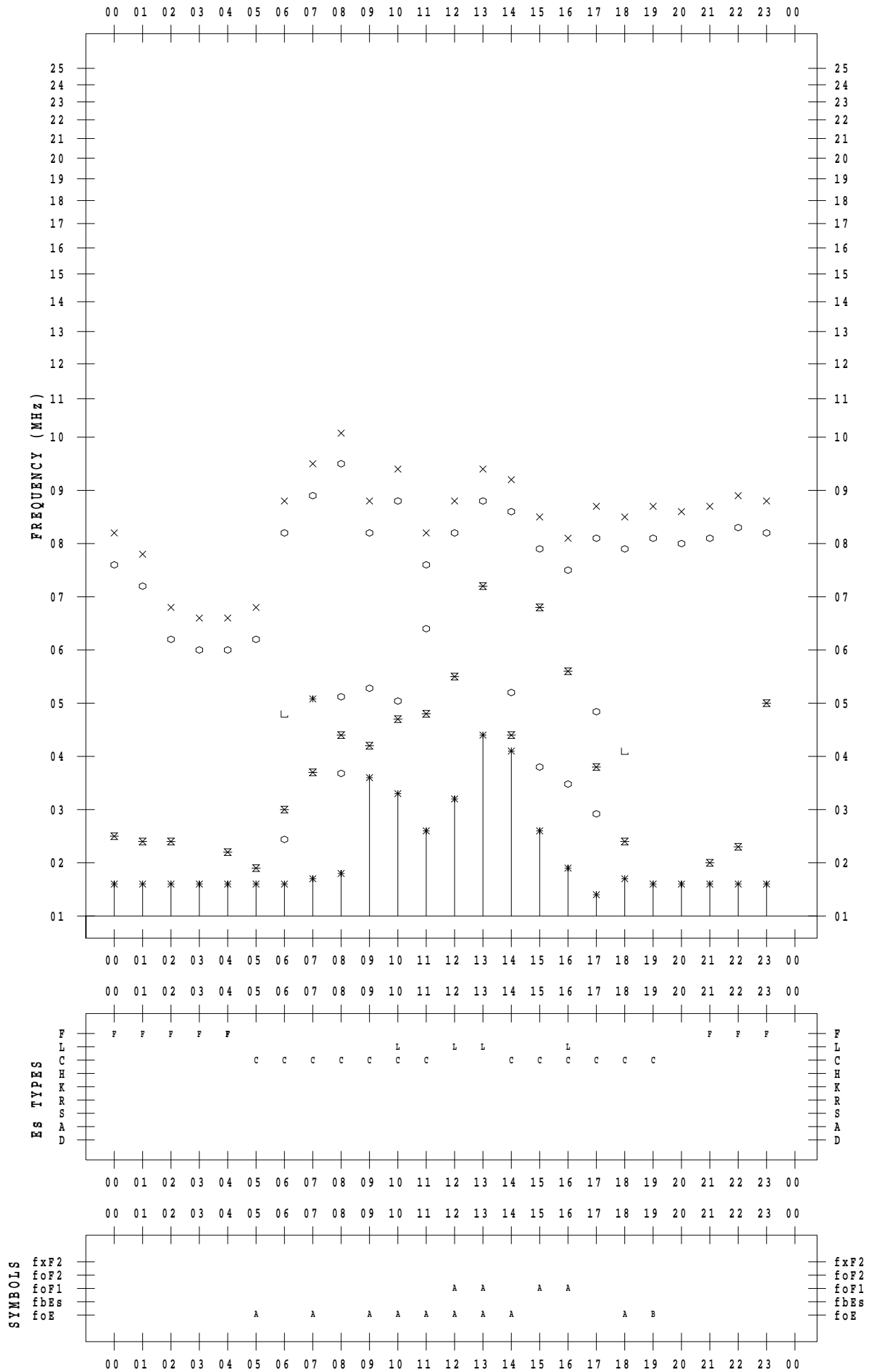
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/ 4

135 ° E MEAN TIME



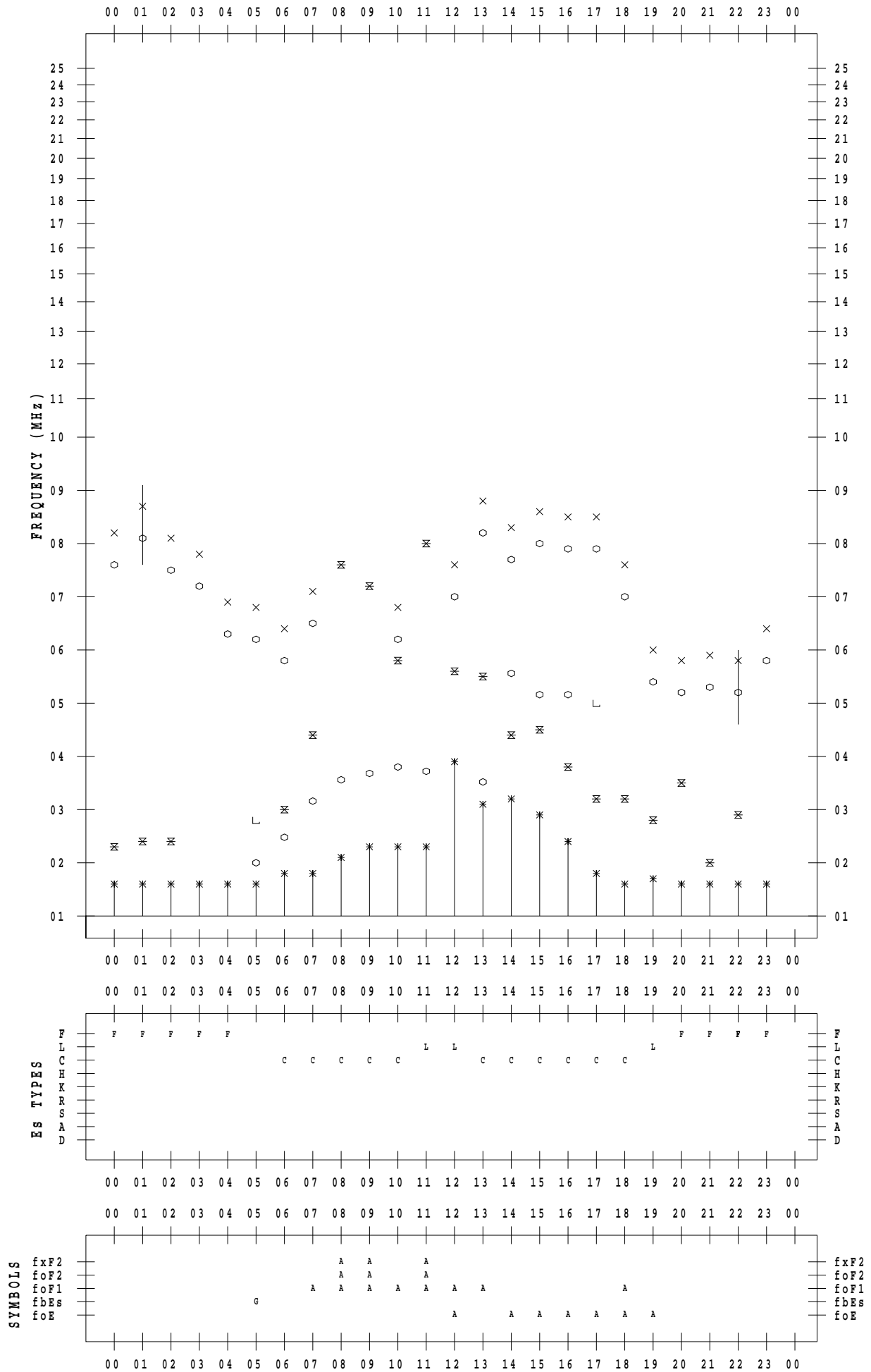
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/ 5

135 ° E MEAN TIME



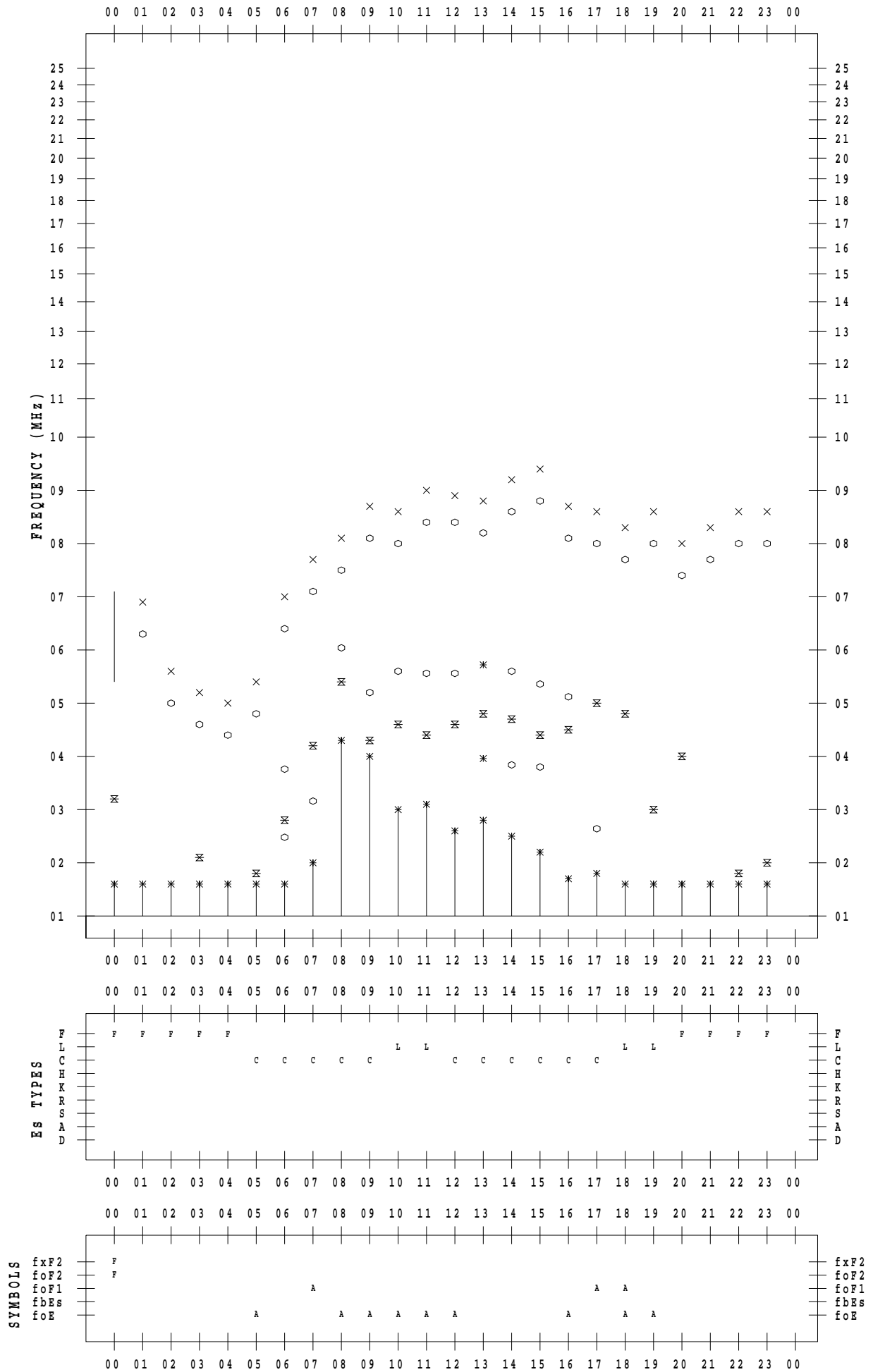
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 6

135 ° E MEAN TIME



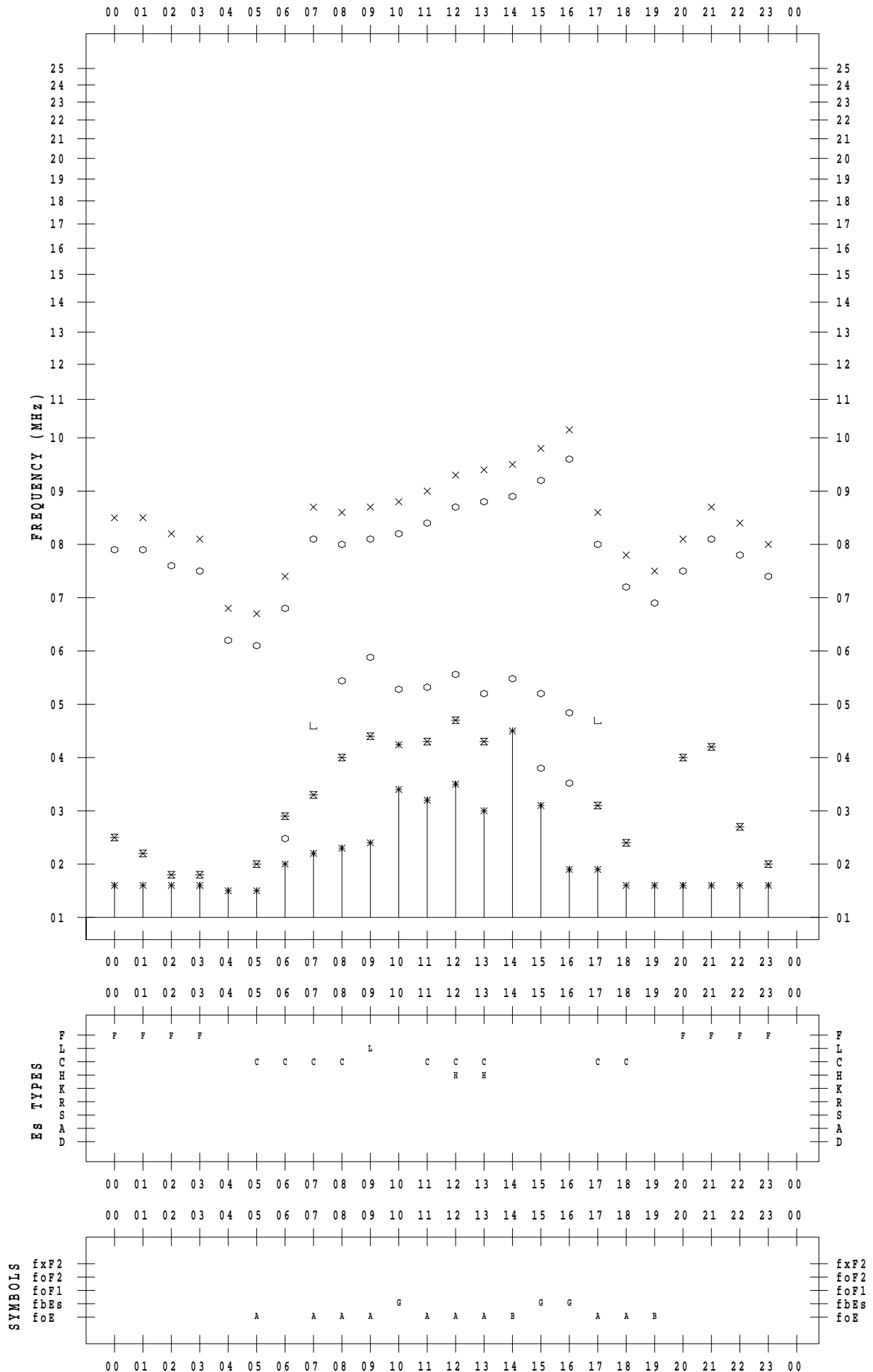
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/ 7

135 ° E MEAN TIME



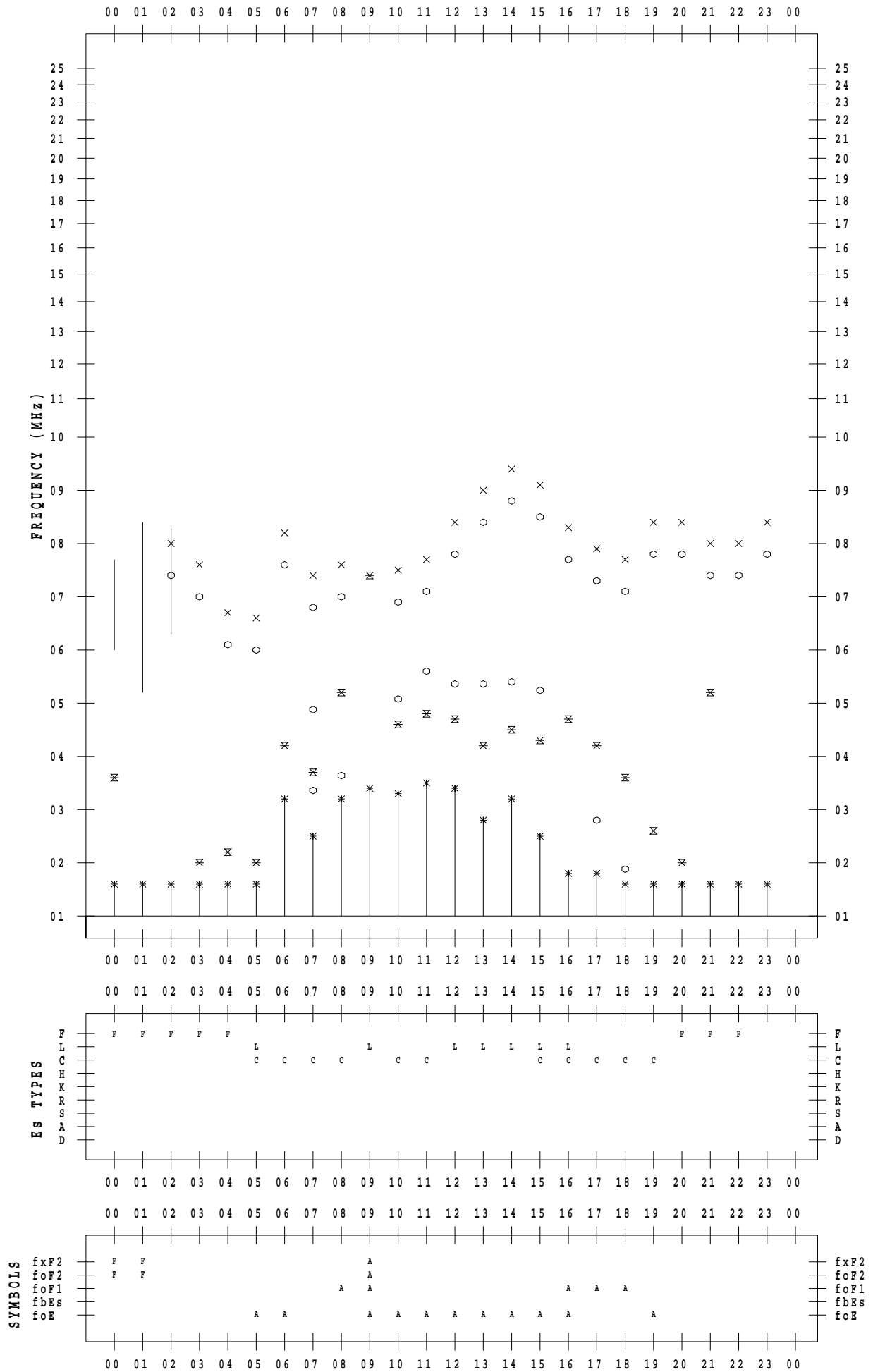
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/ 8

135 ° E MEAN TIME



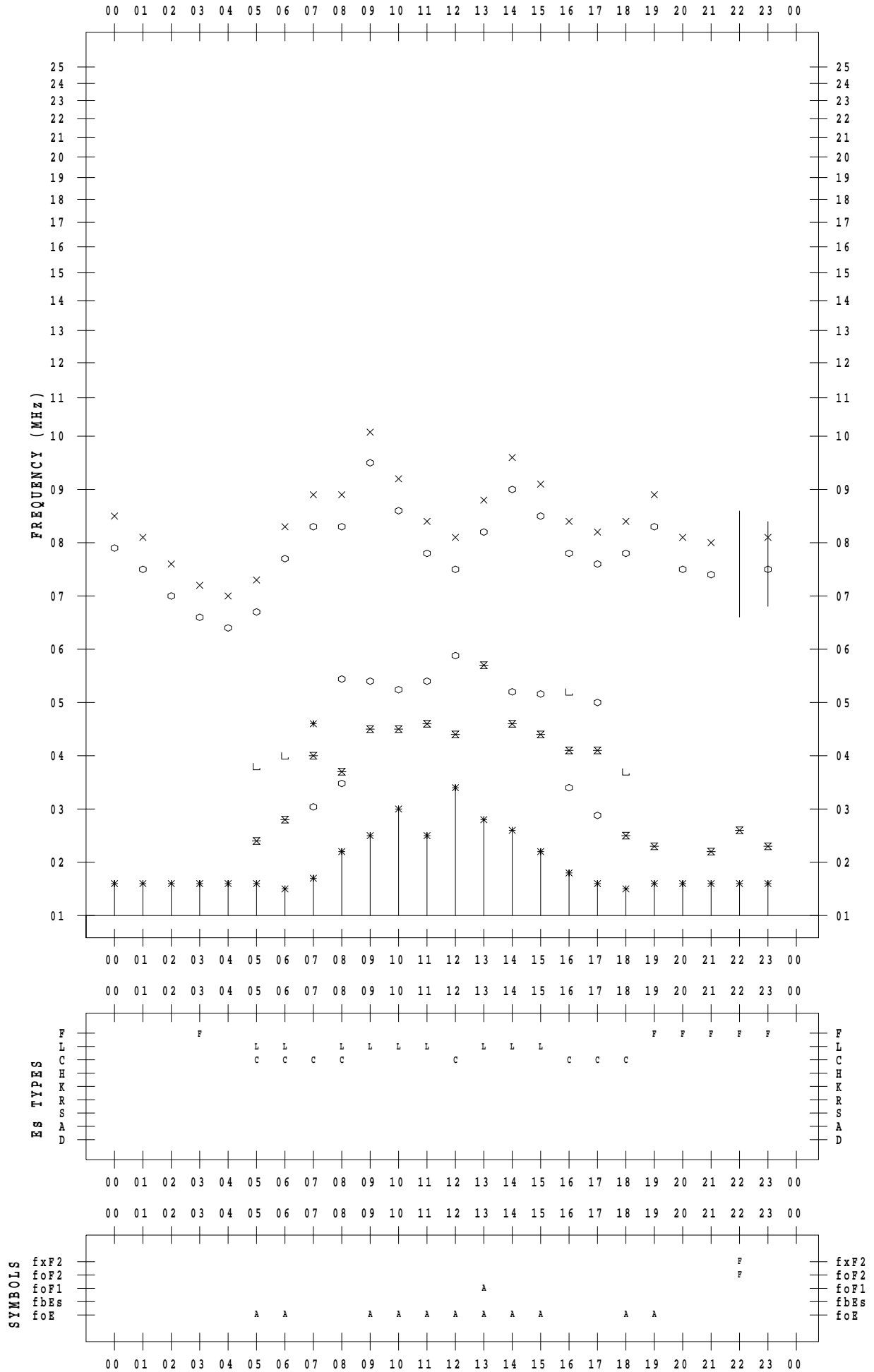
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 9

135 ° E MEAN TIME



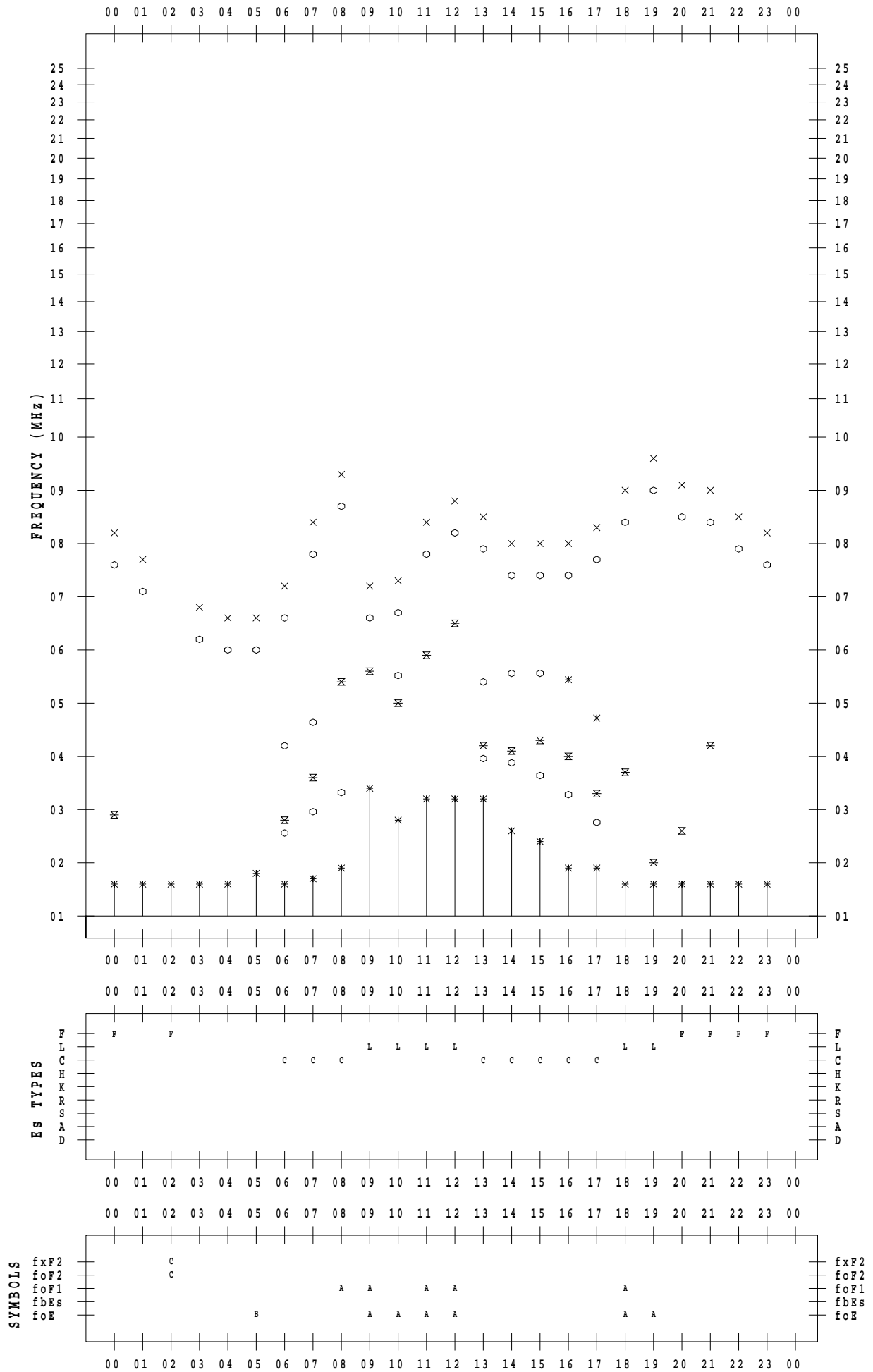
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/10

135 ° E MEAN TIME



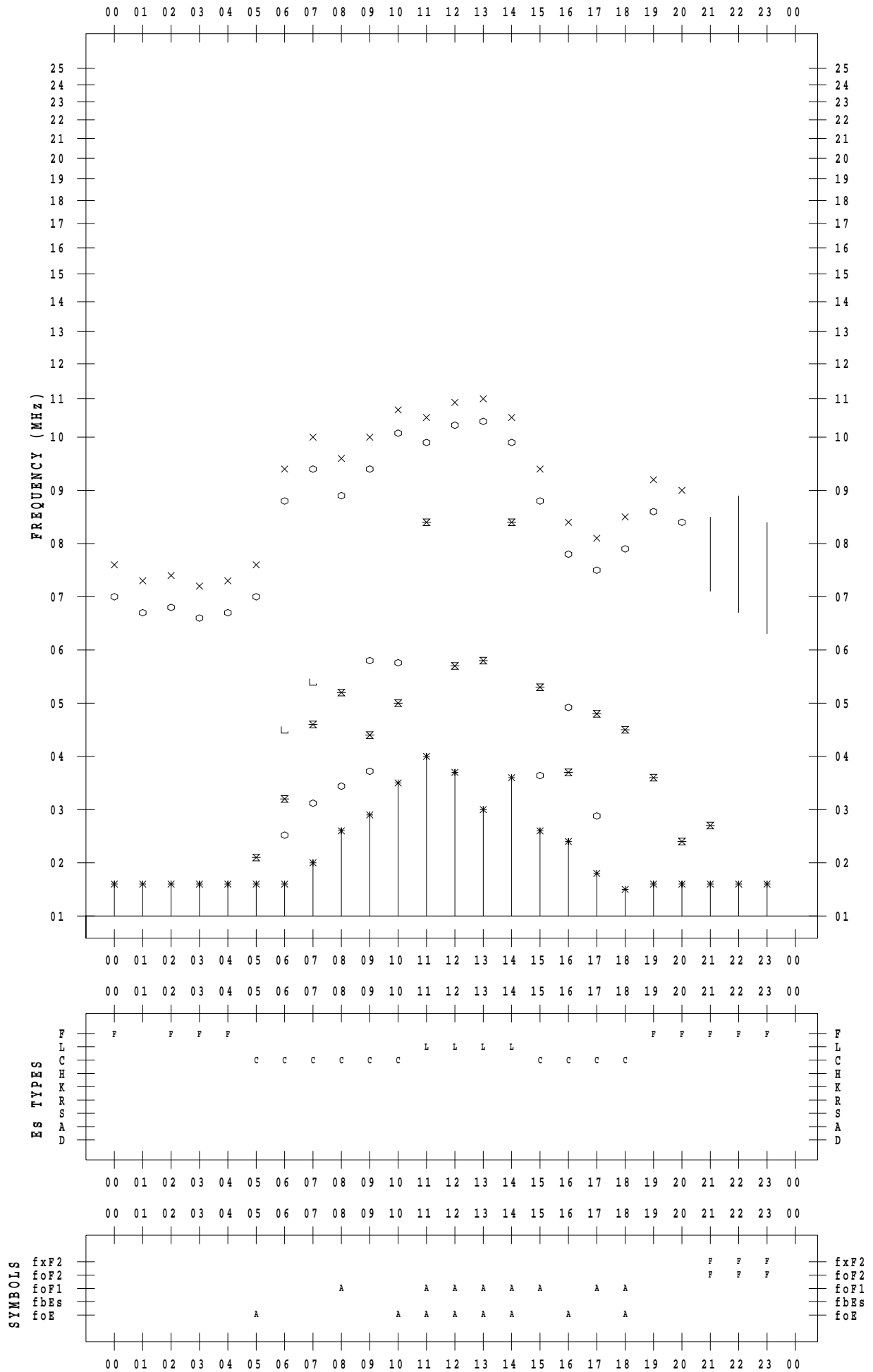
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 11

135 ° E MEAN TIME



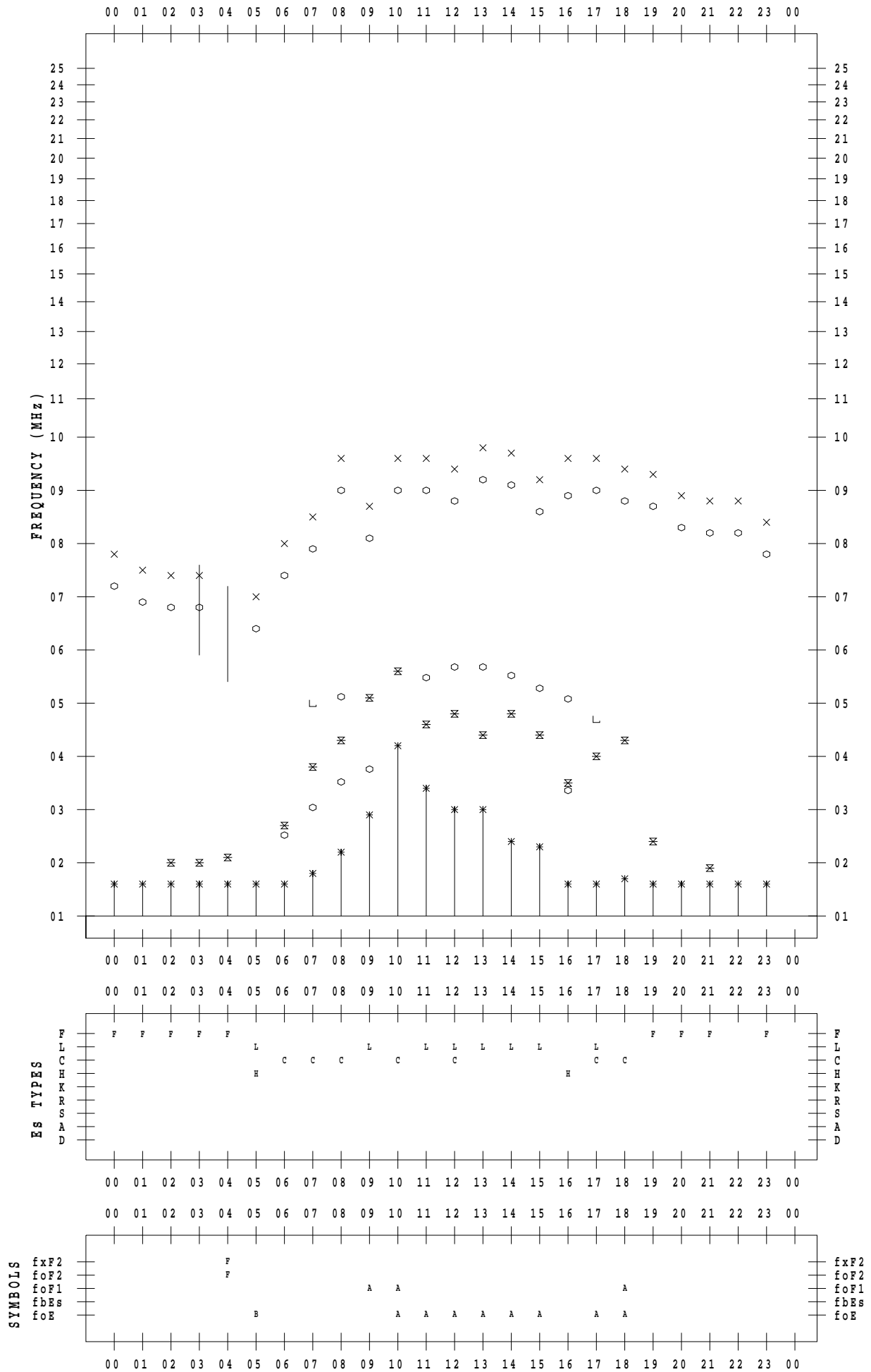
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/12

135 ° E MEAN TIME



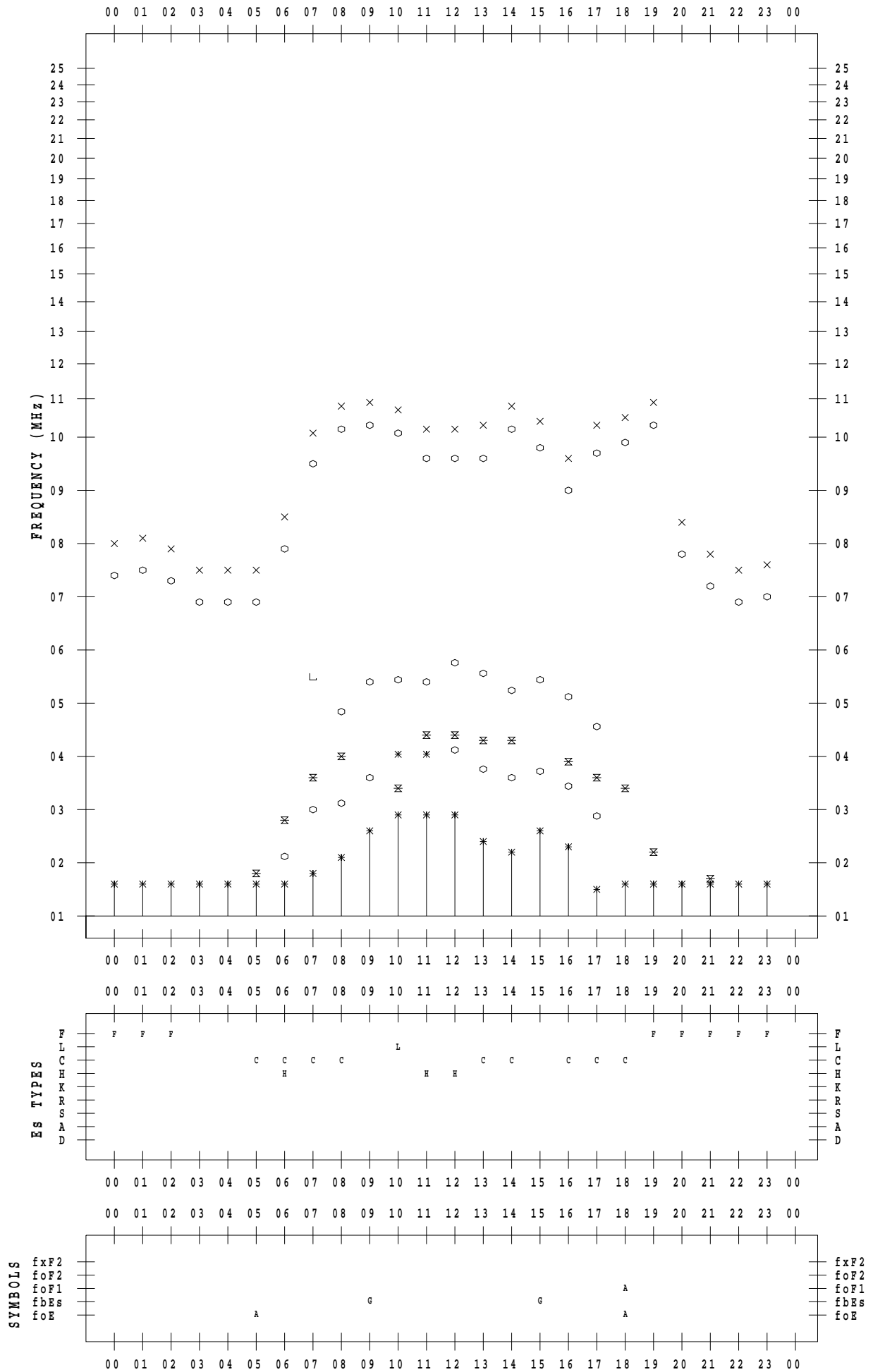
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 13

135 ° E MEAN TIME



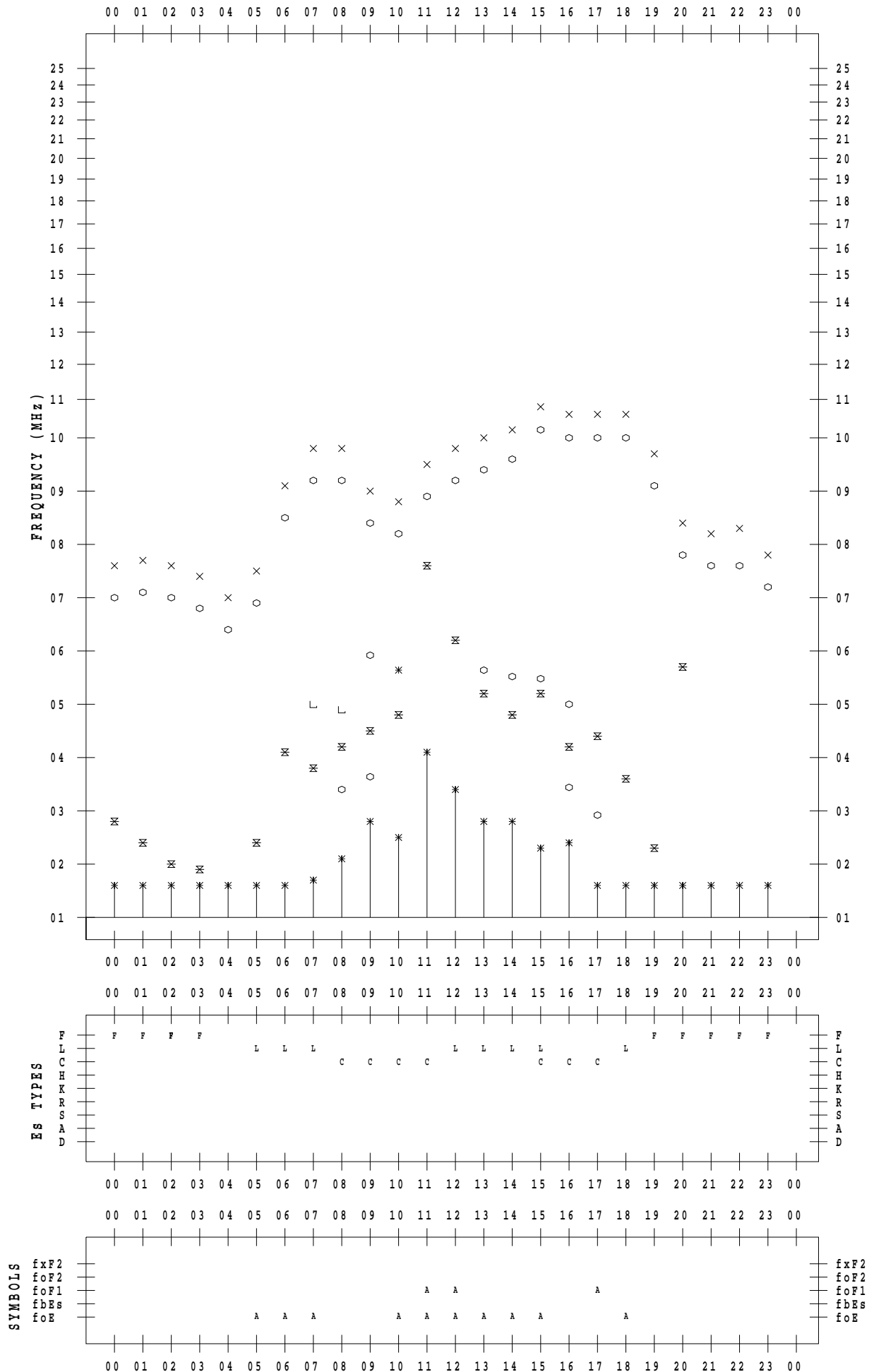
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/15

135 ° E MEAN TIME



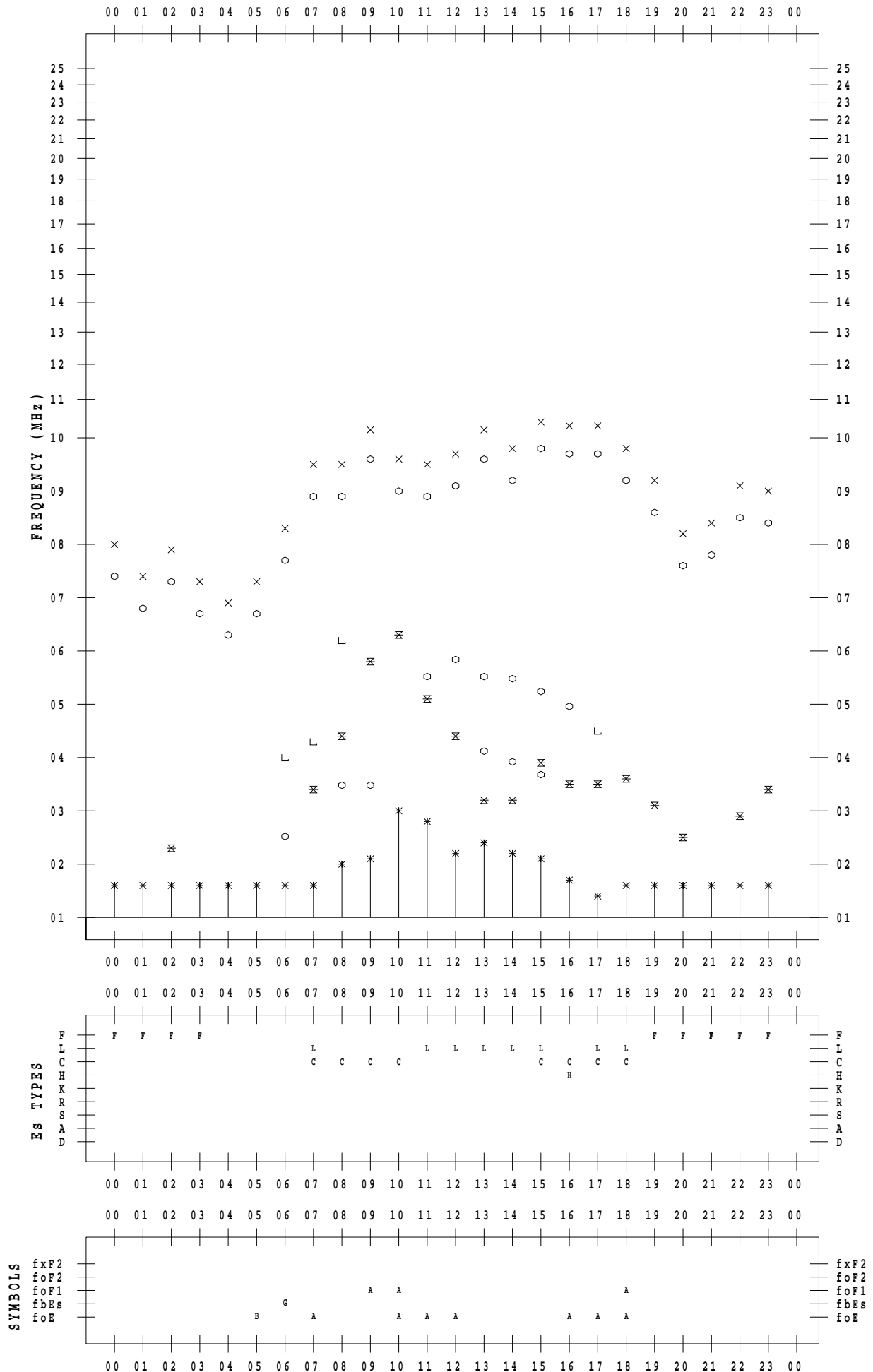
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/16

135 ° E MEAN TIME



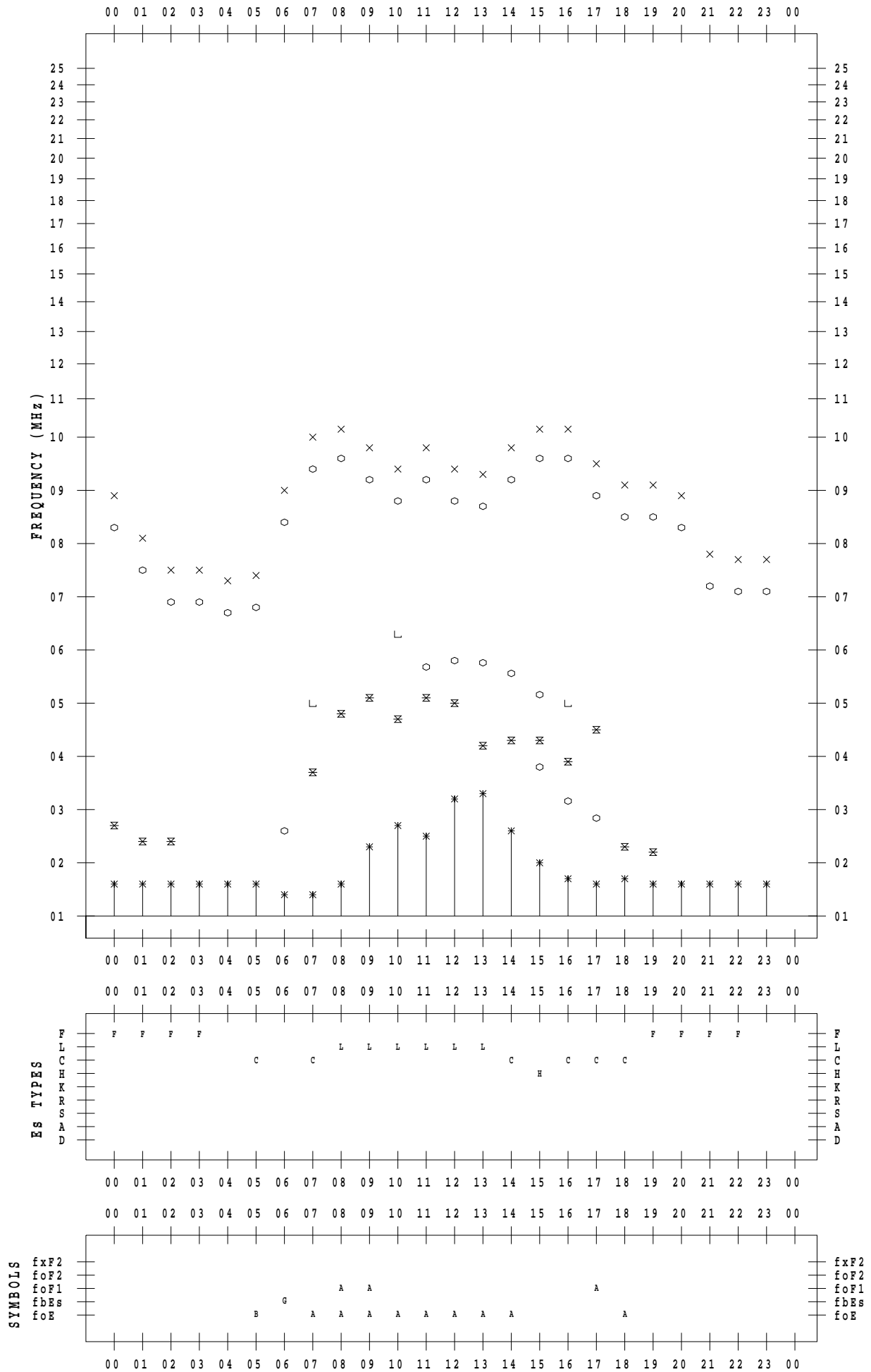
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/17

135 ° E MEAN TIME



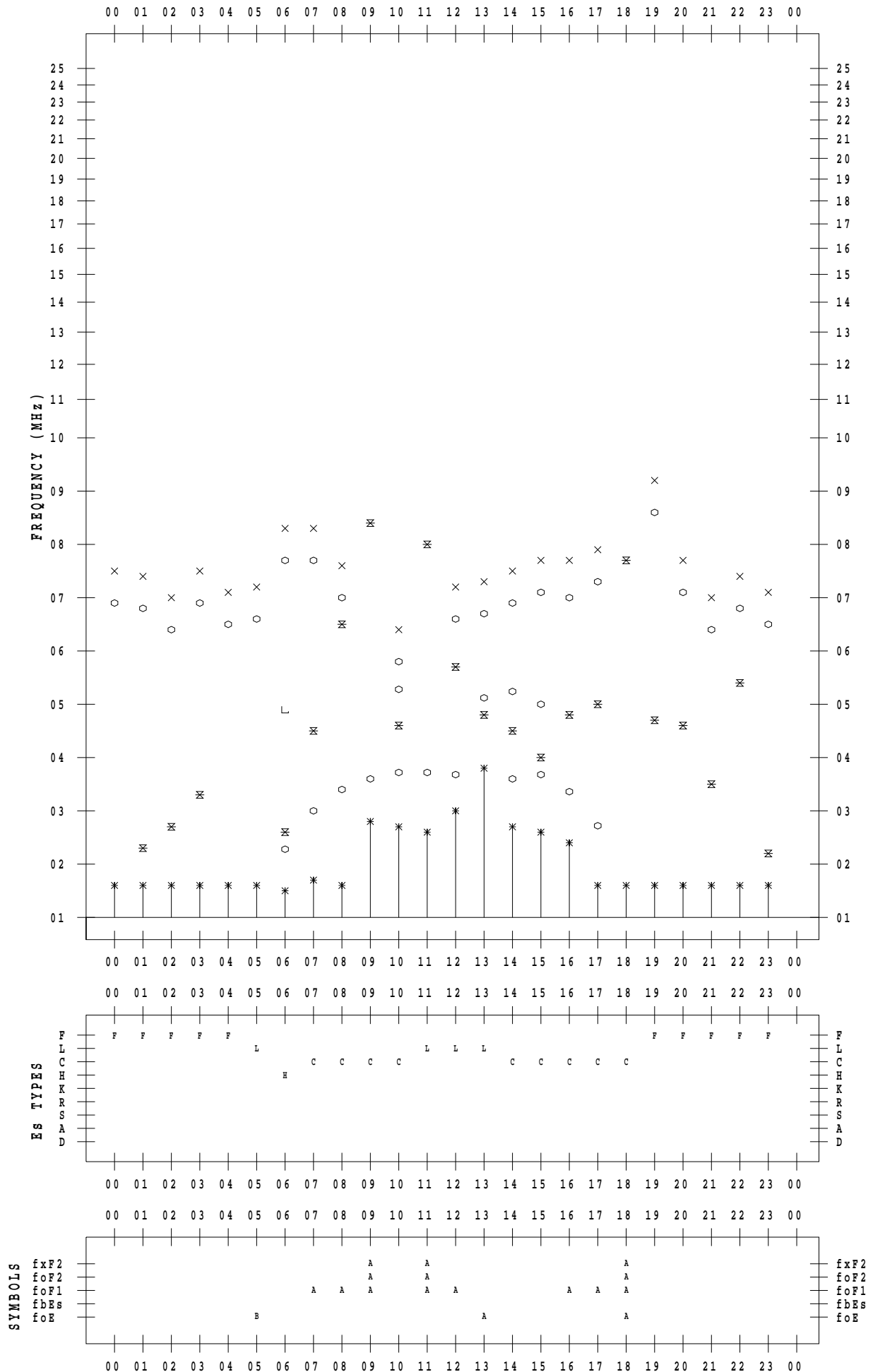
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/18

135 ° E MEAN TIME



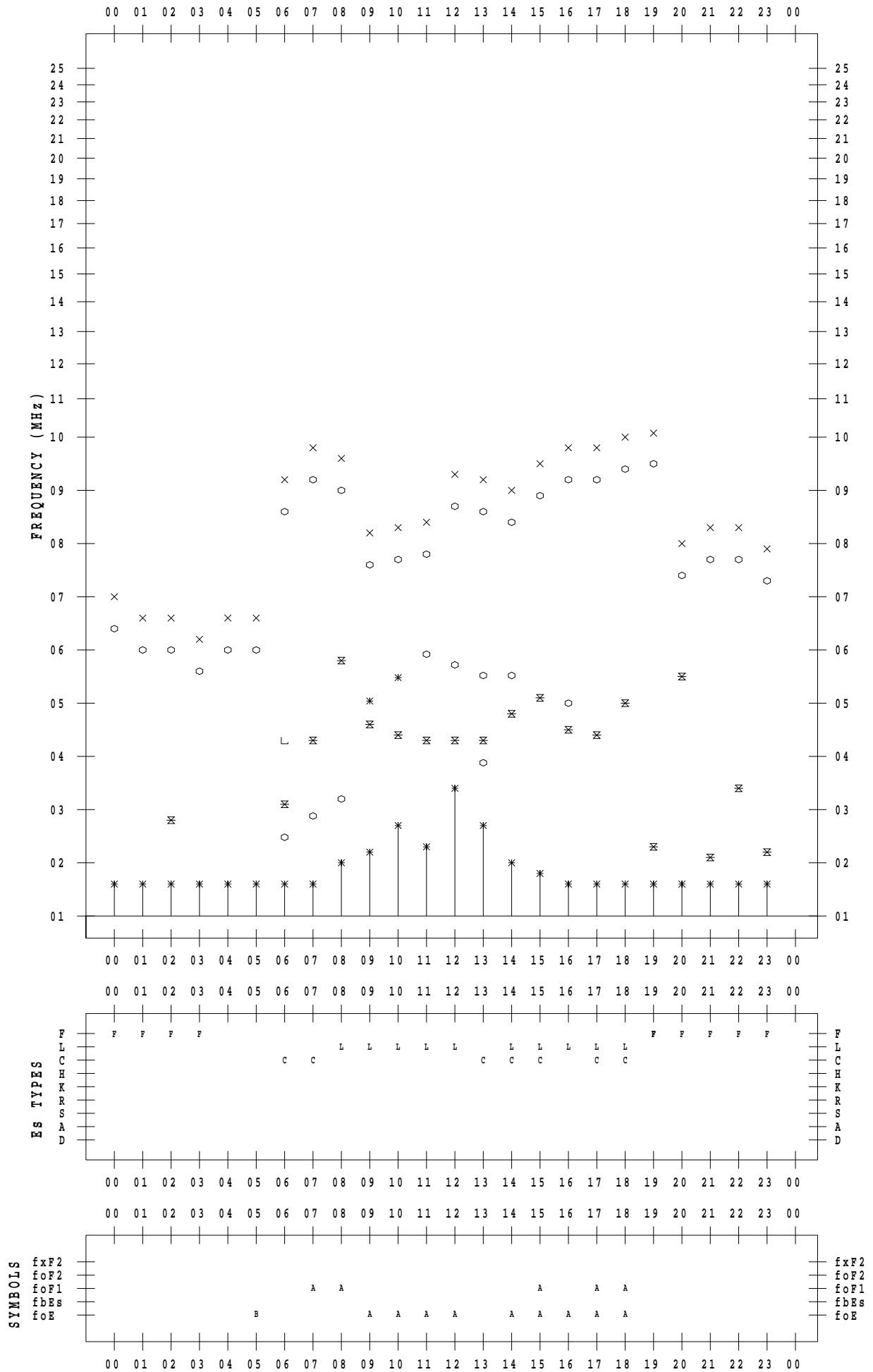
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/19

135 ° E MEAN TIME



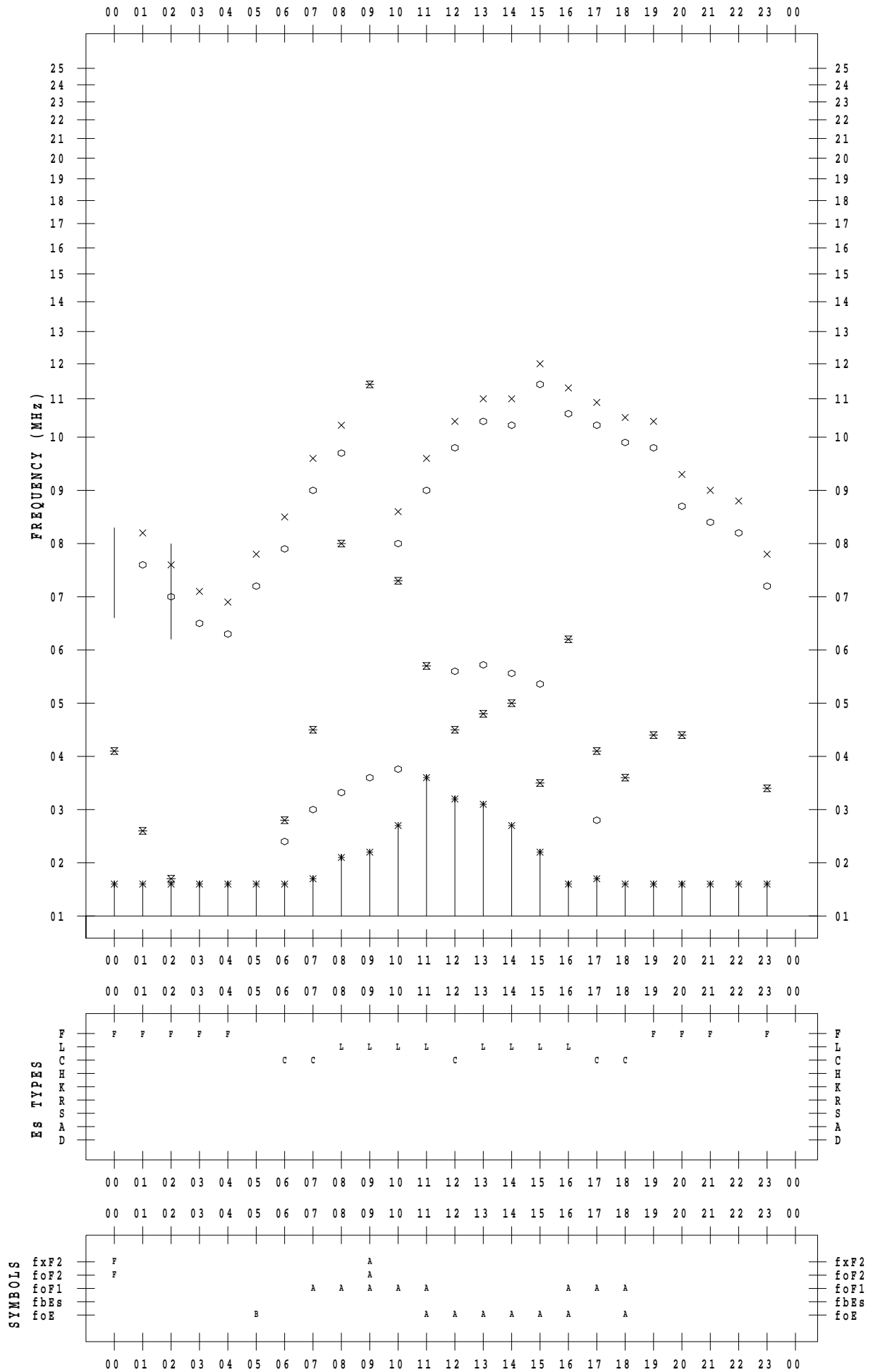
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/20

135 ° E MEAN TIME



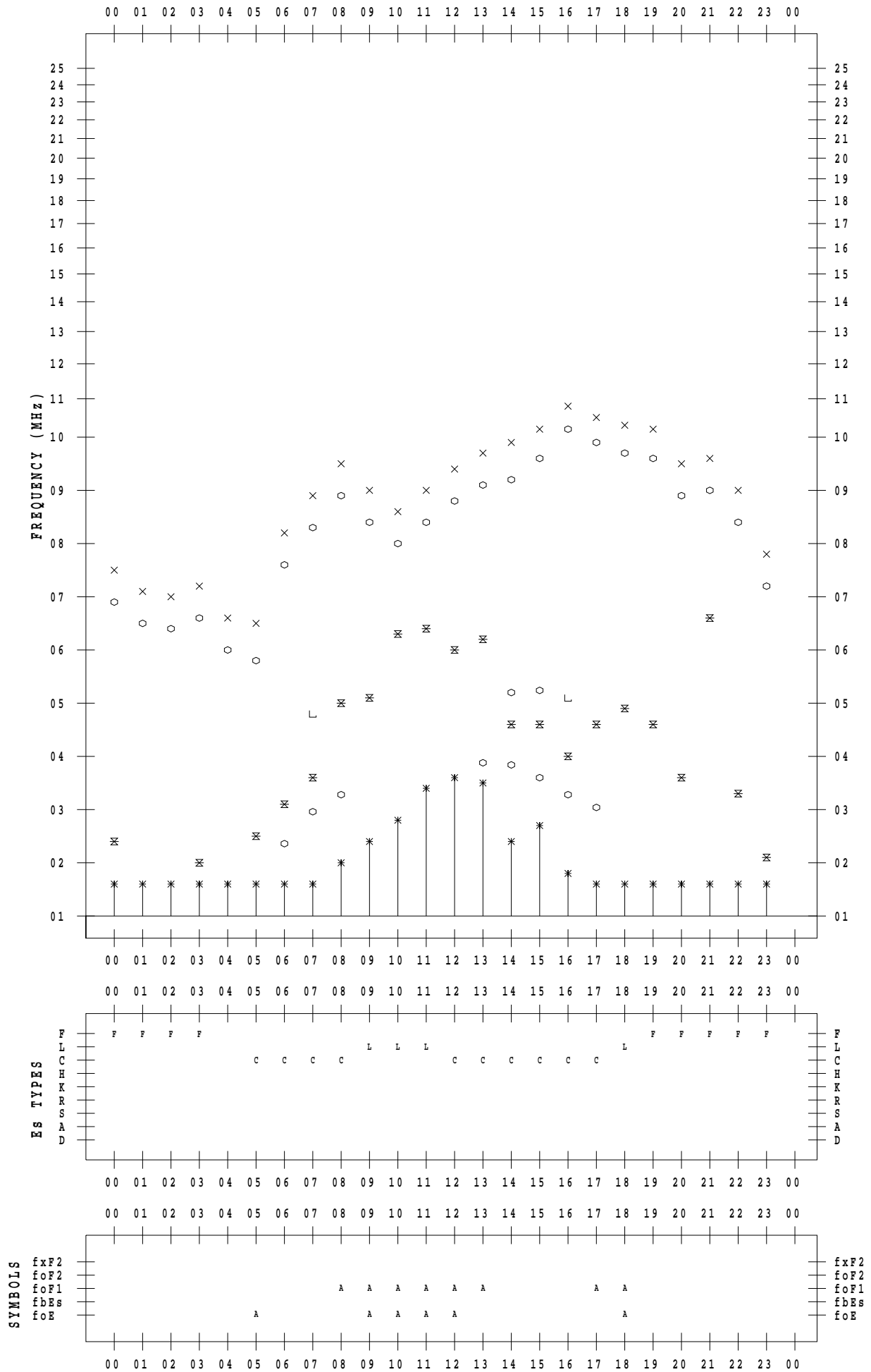
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/21

135 ° E MEAN TIME



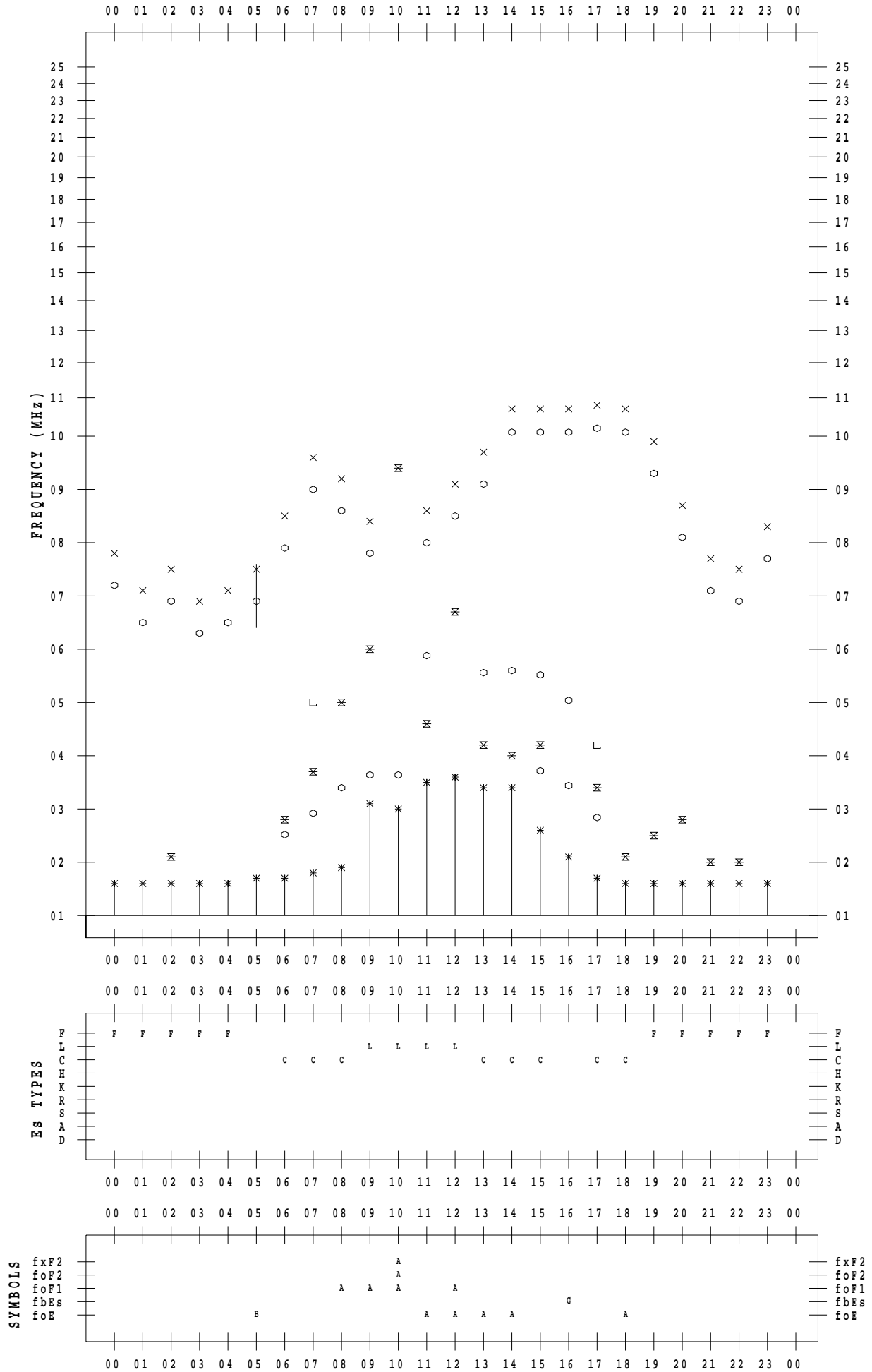
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 22

135 ° E MEAN TIME



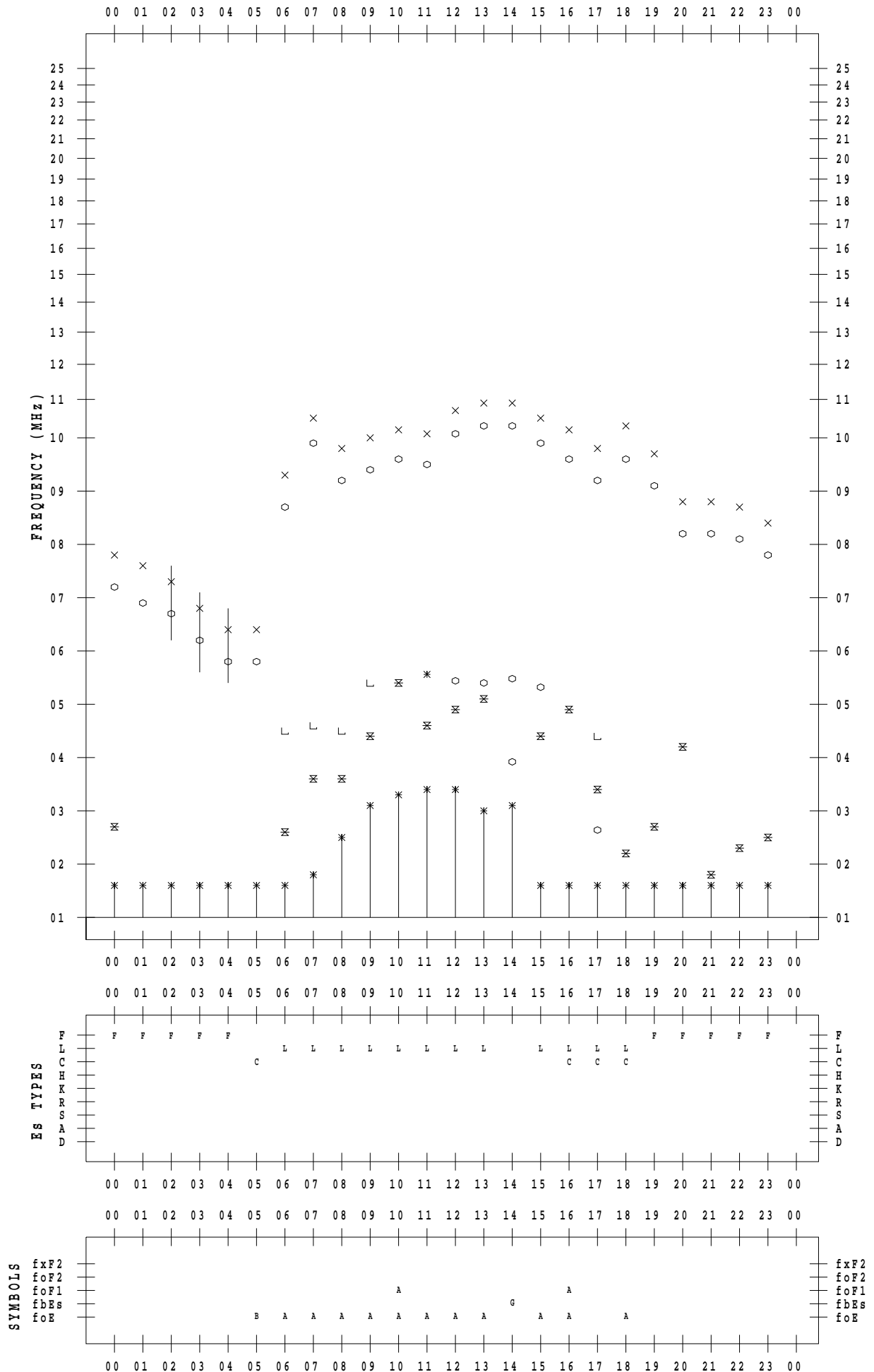
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 23

135 ° E MEAN TIME



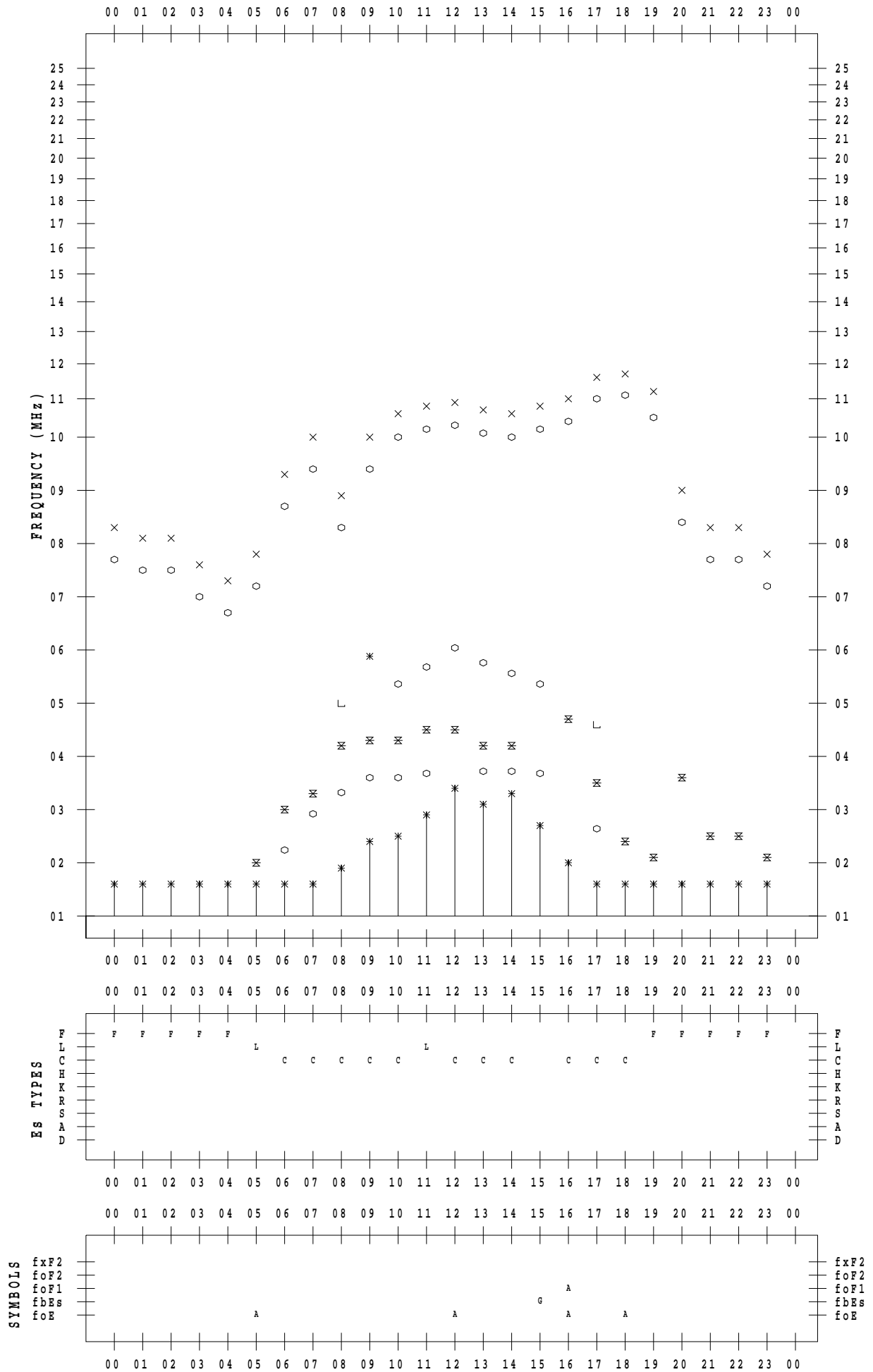
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 24

135 ° E MEAN TIME



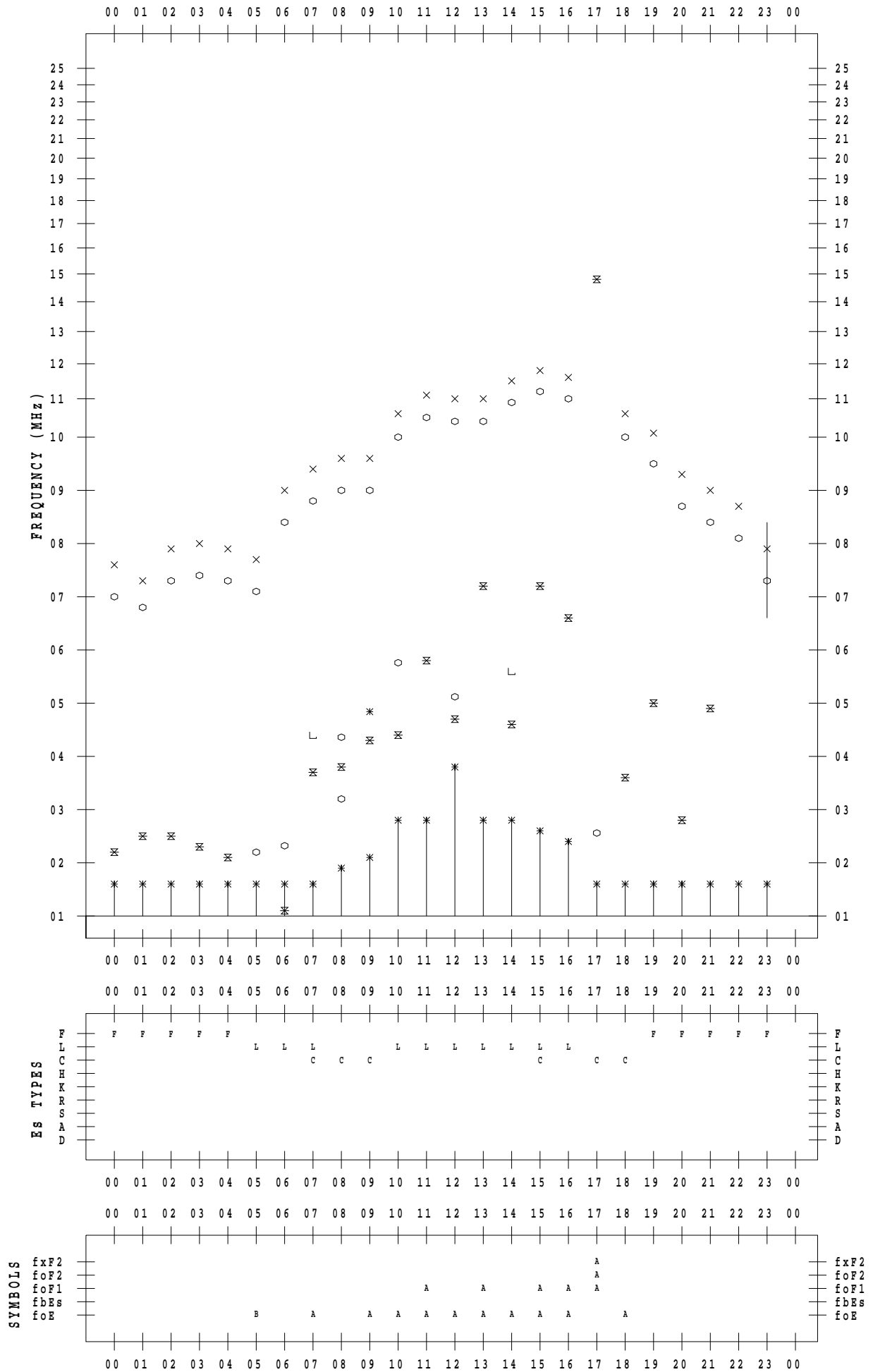
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/25

135 ° E MEAN TIME



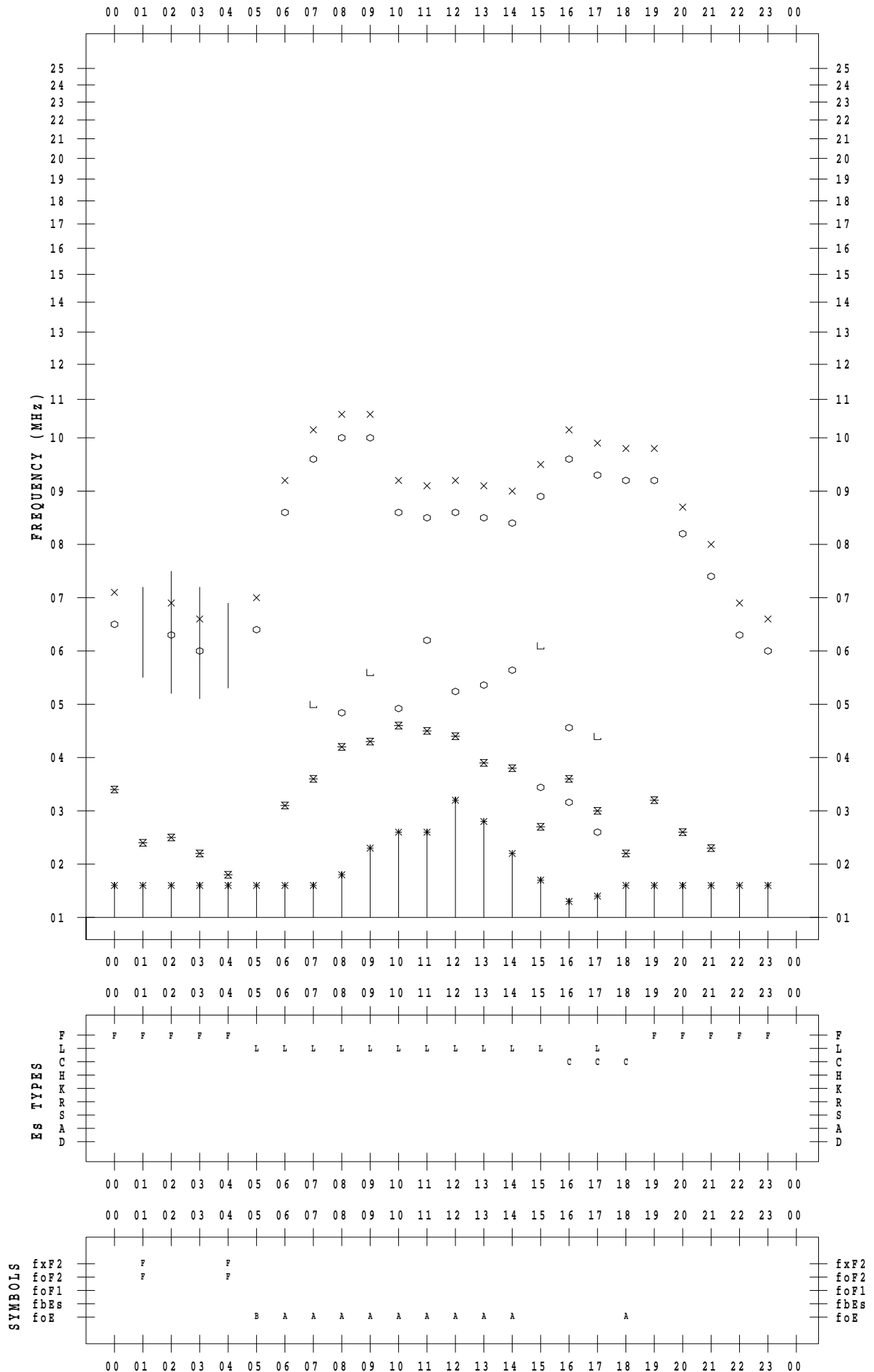
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 26

135 ° E MEAN TIME



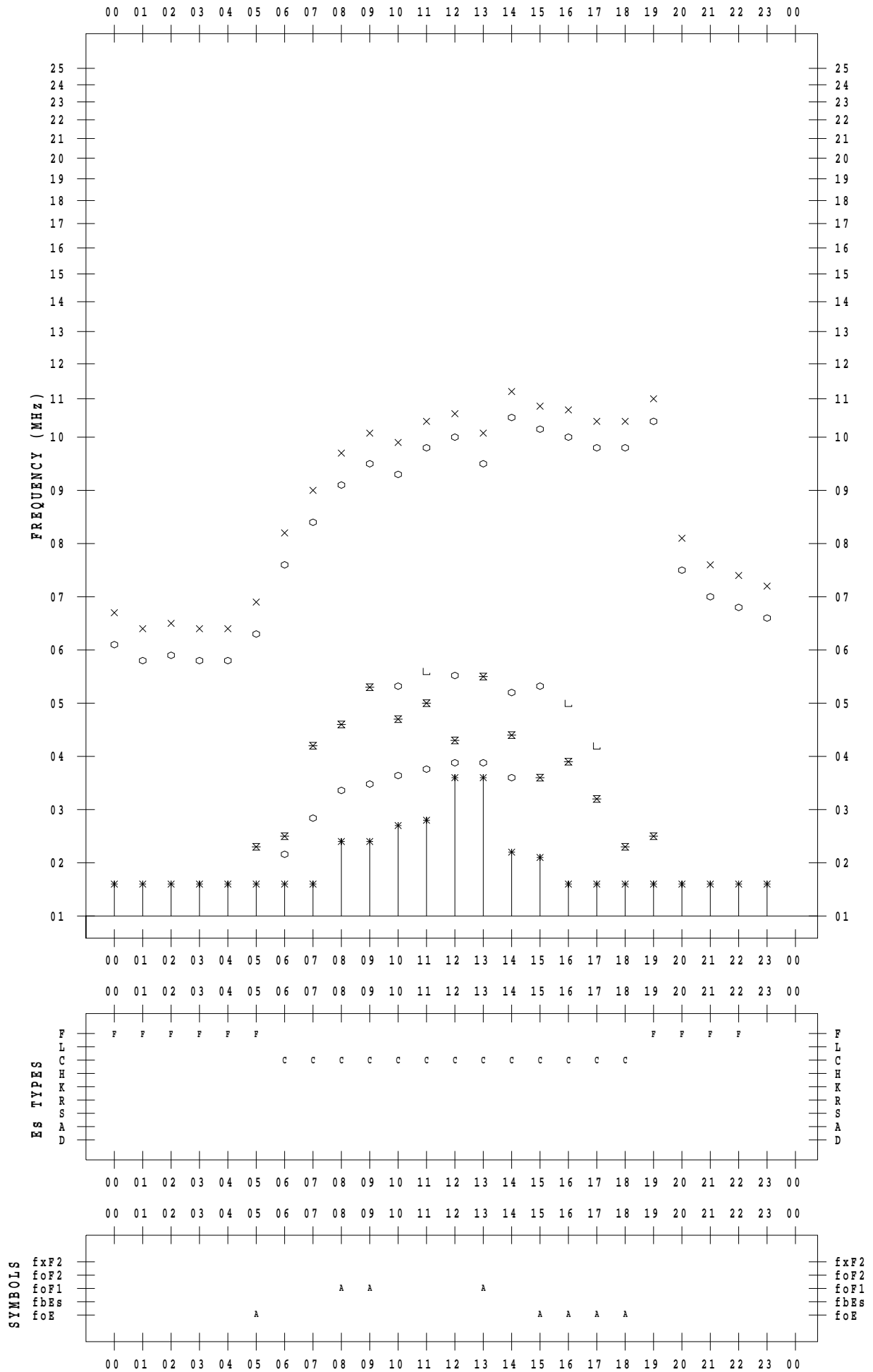
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/27

135 ° E MEAN TIME



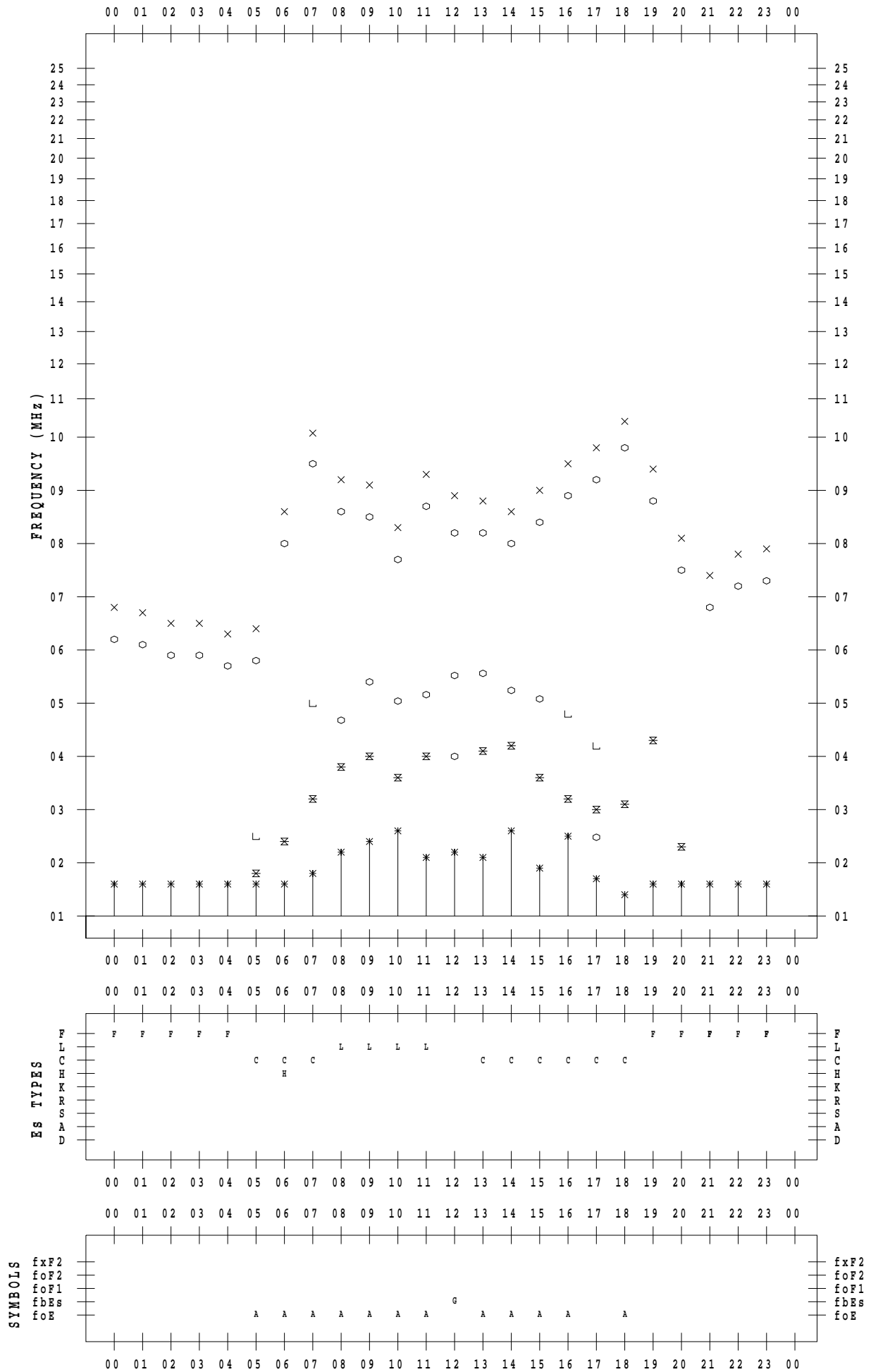
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 28

135 ° E MEAN TIME



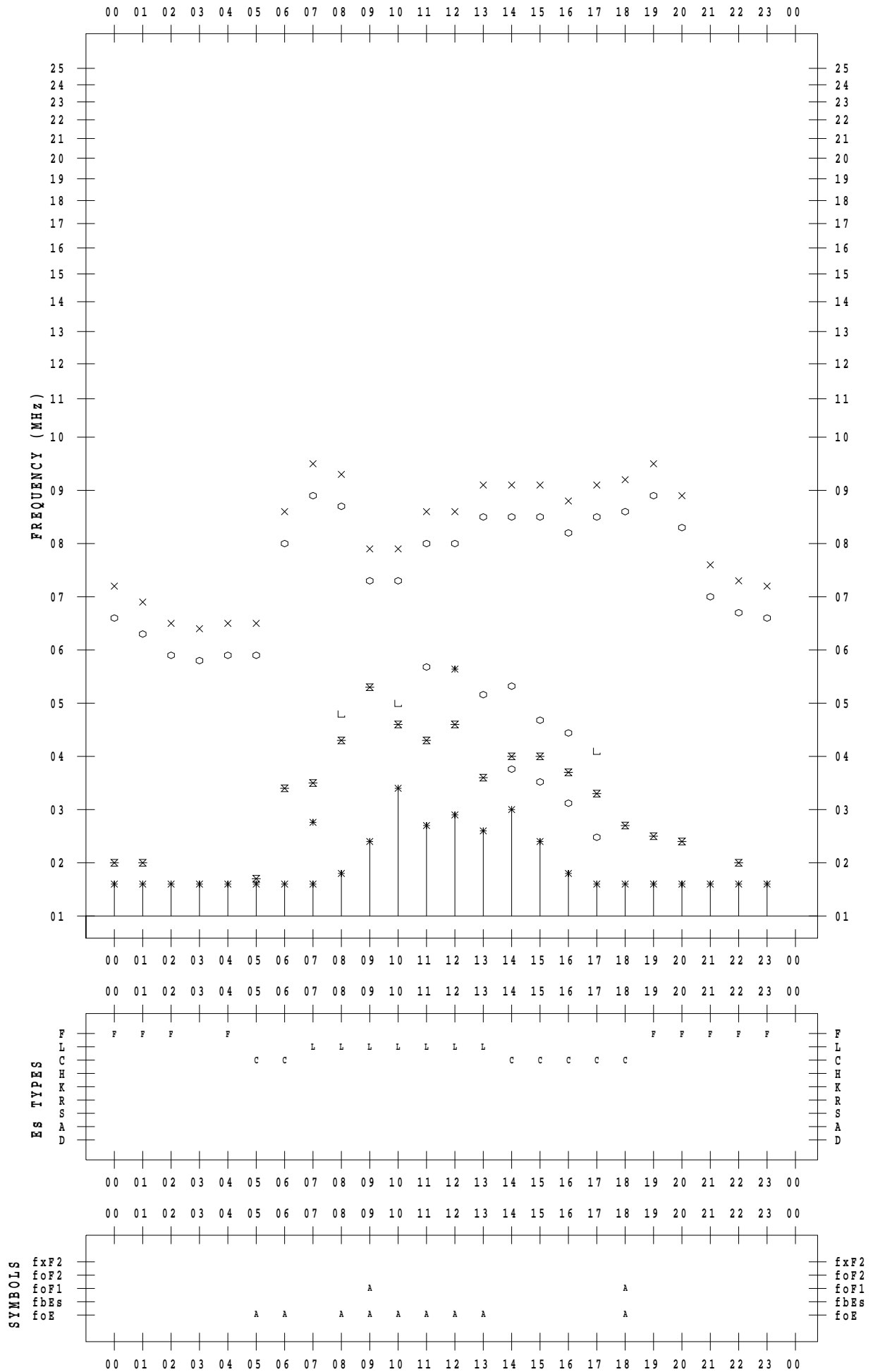
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/29

135 ° E MEAN TIME



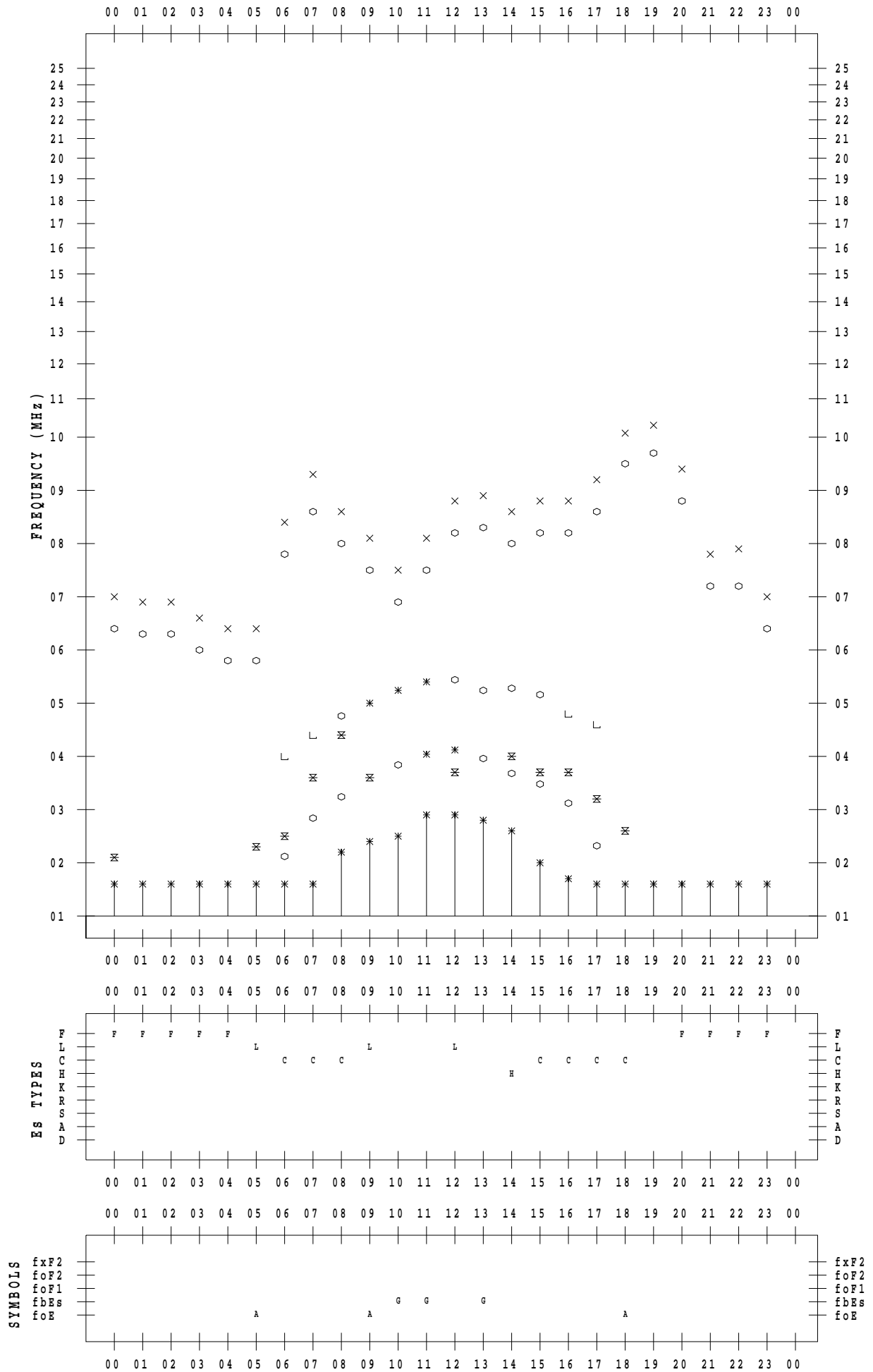
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023/ 8/30

135 ° E MEAN TIME



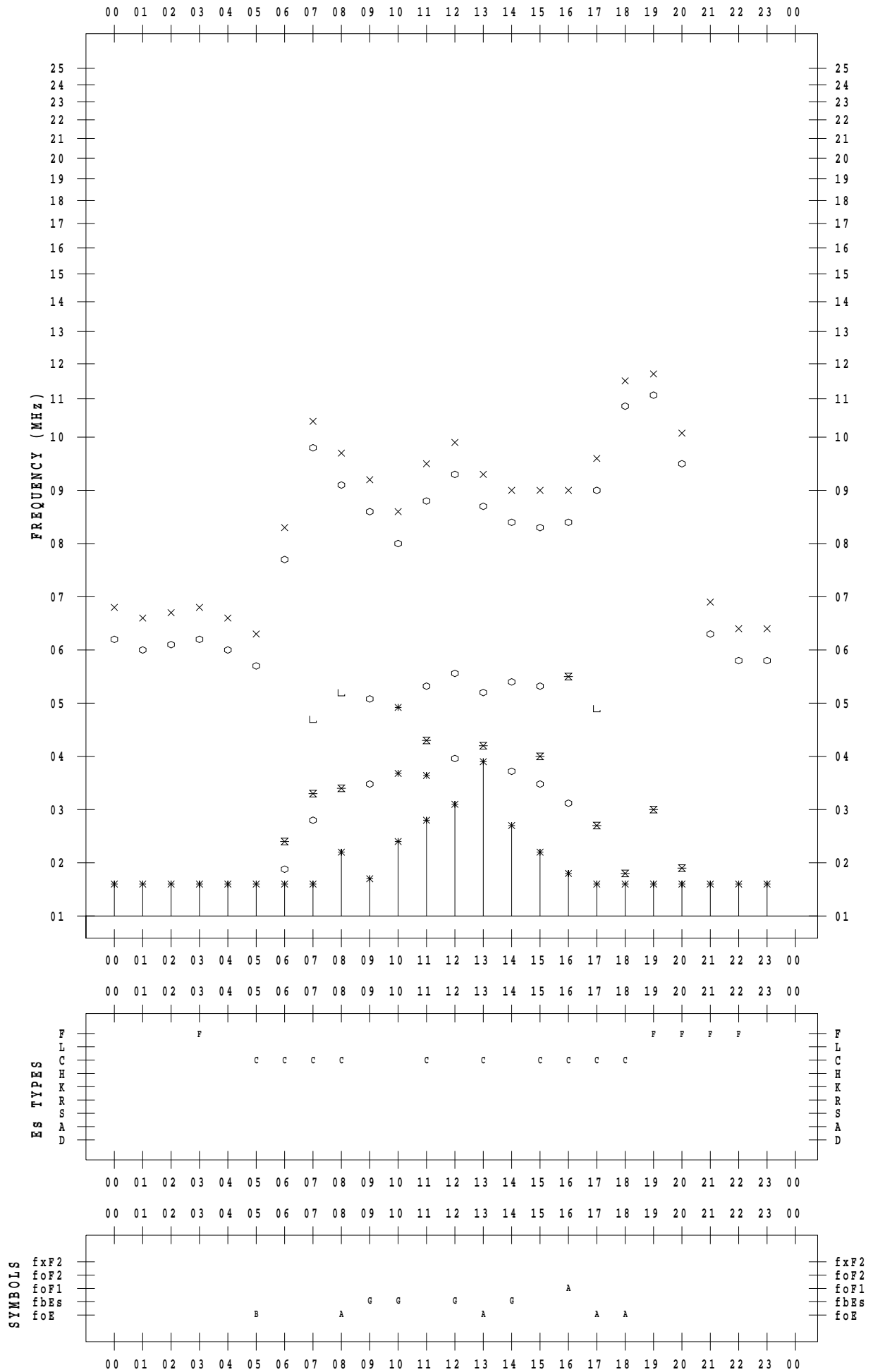
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2023 / 8 / 31

135 ° E MEAN TIME



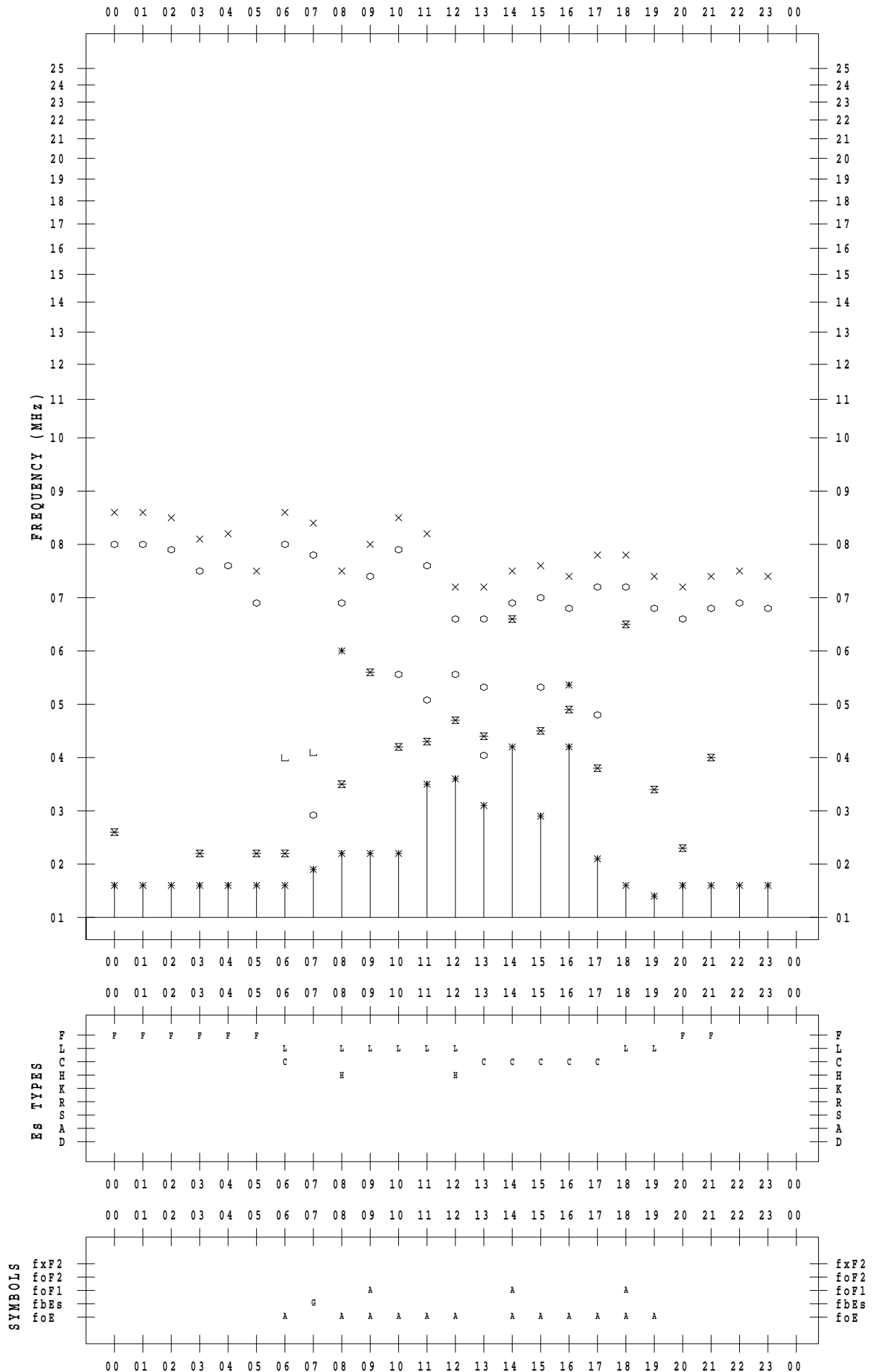
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 1

135 ° E MEAN TIME



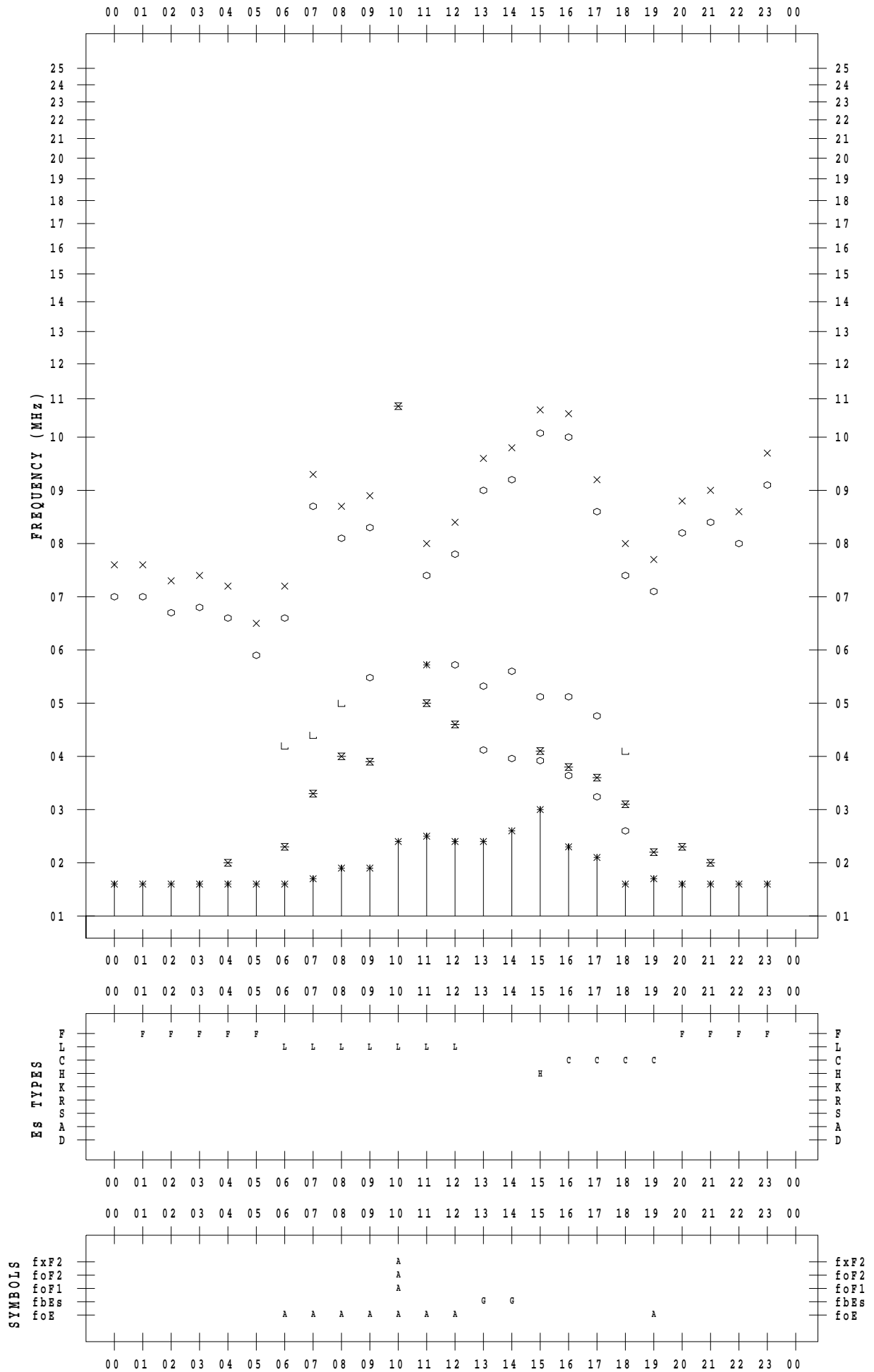
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 2

135 ° E MEAN TIME



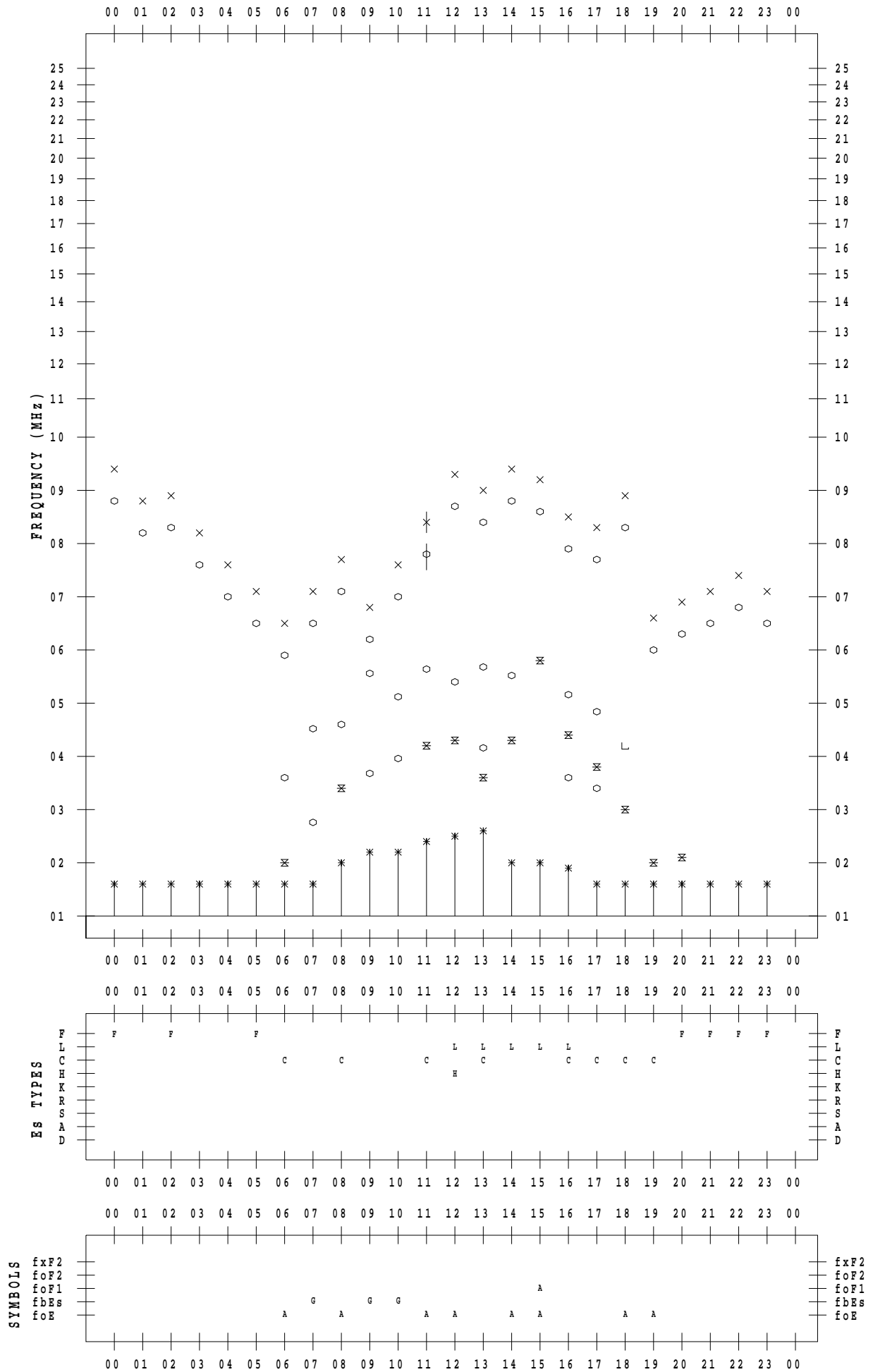
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 3

135 ° E MEAN TIME



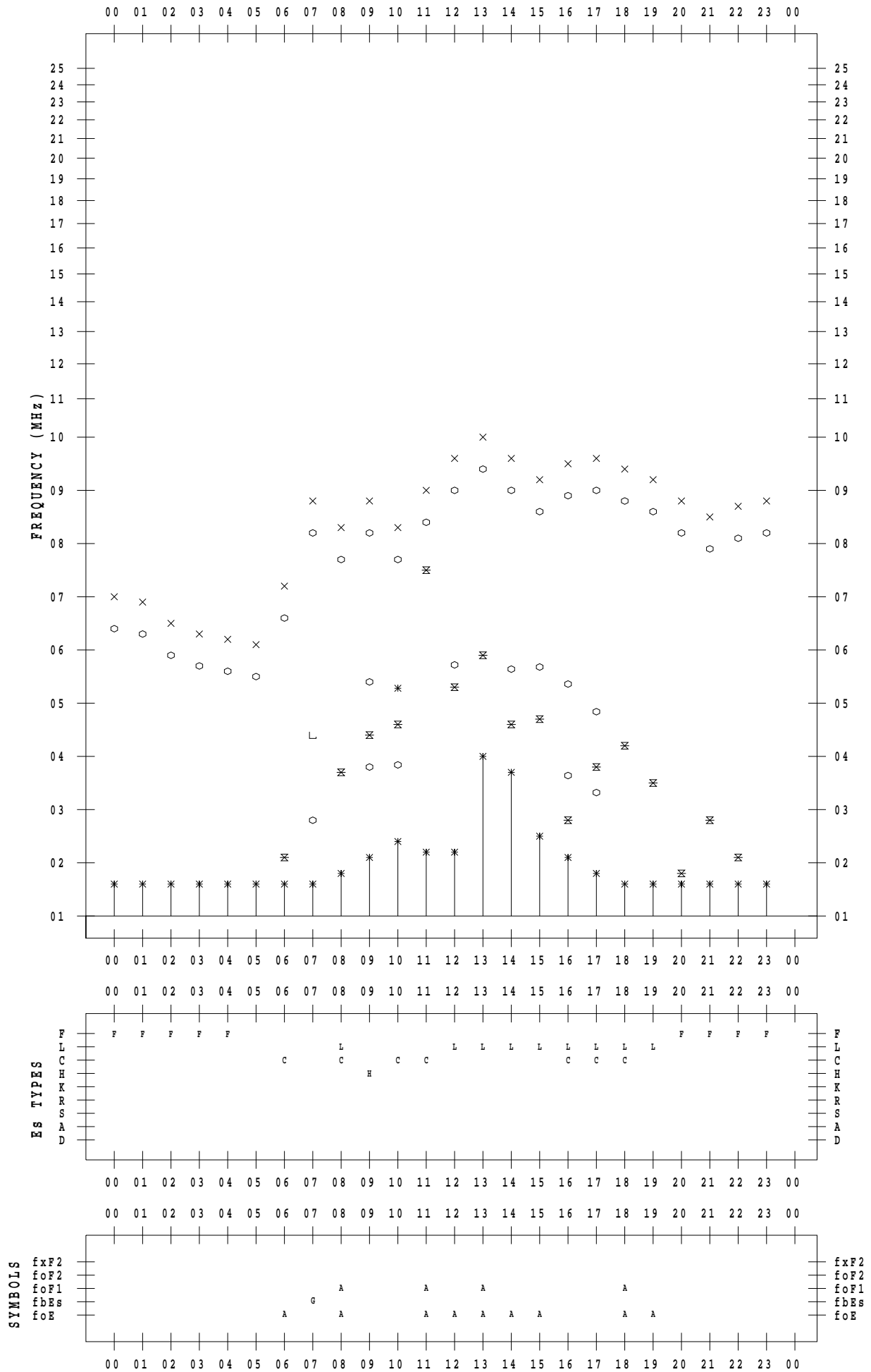
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 4

135 ° E MEAN TIME



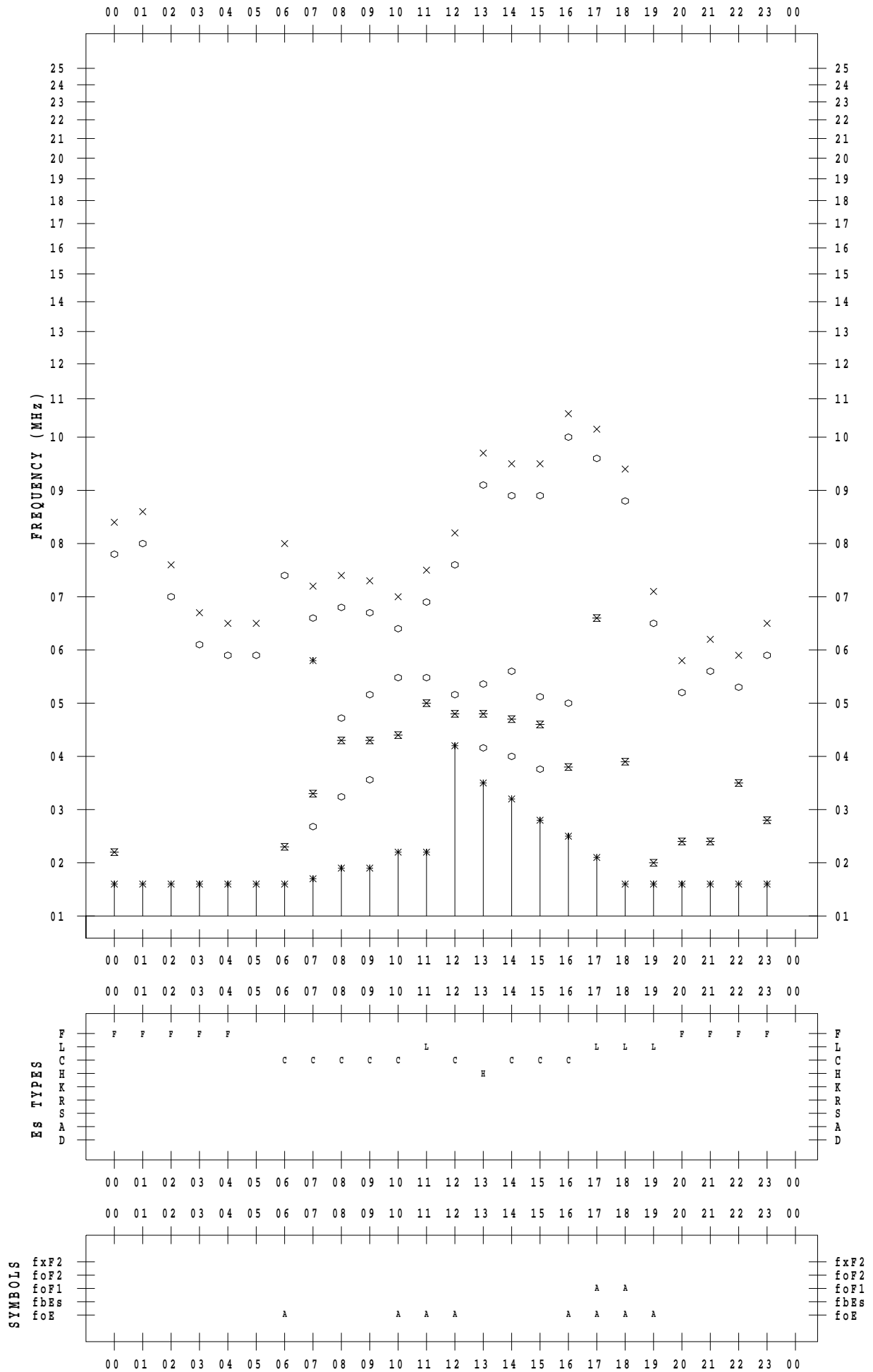
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 5

135 ° E MEAN TIME



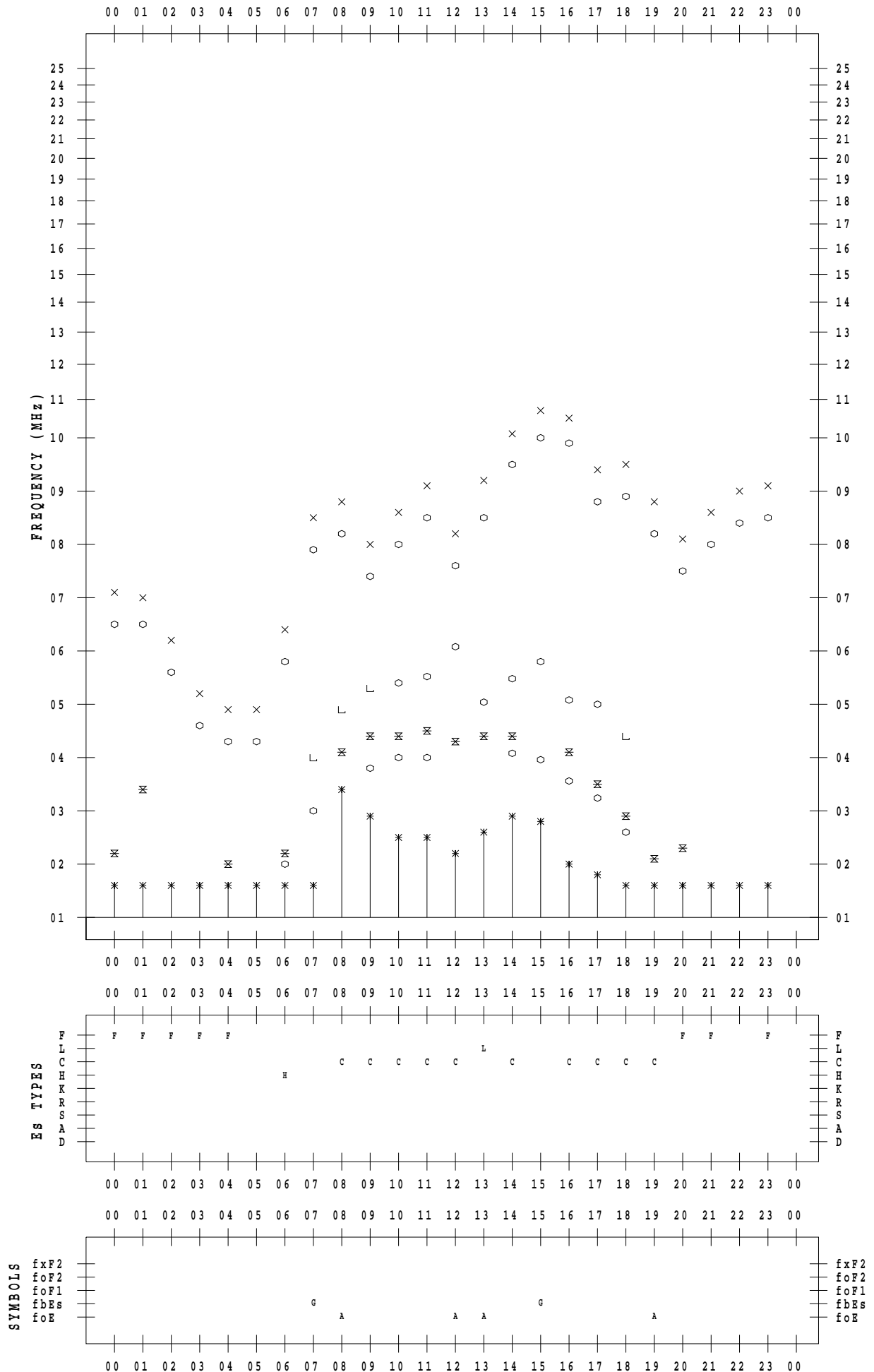
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 6

135 ° E MEAN TIME



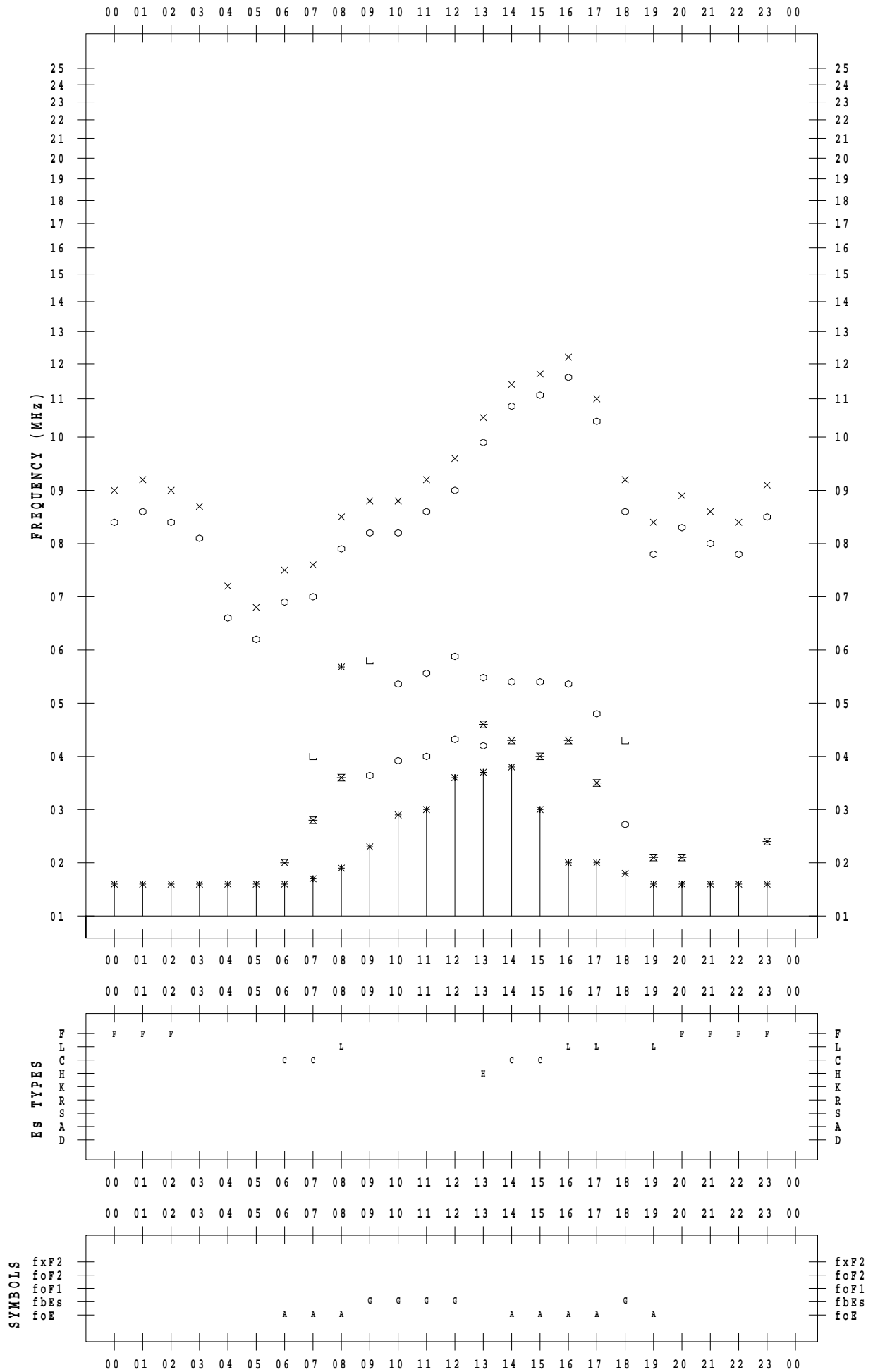
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 7

135 ° E MEAN TIME



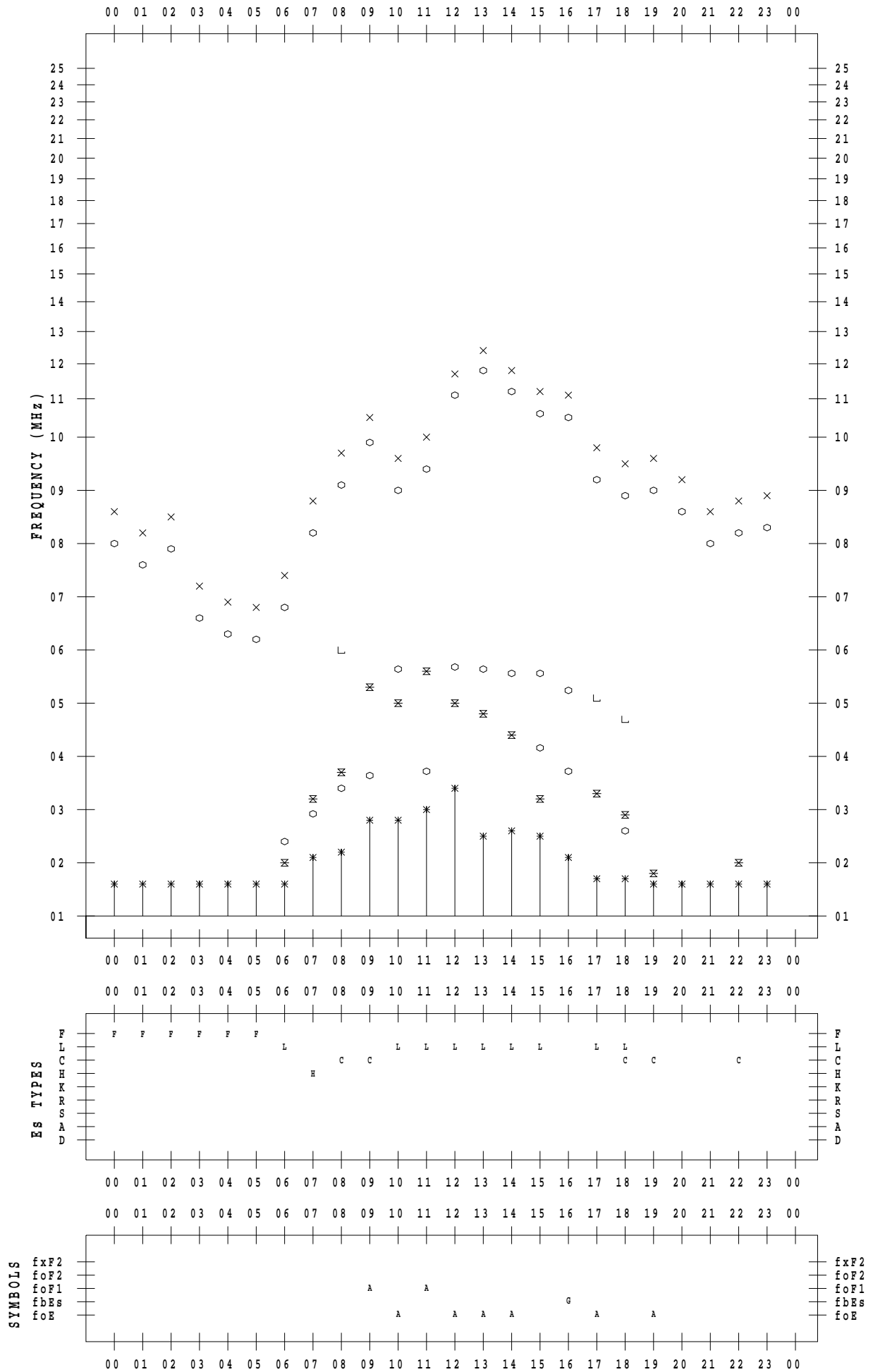
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 8

135 ° E MEAN TIME



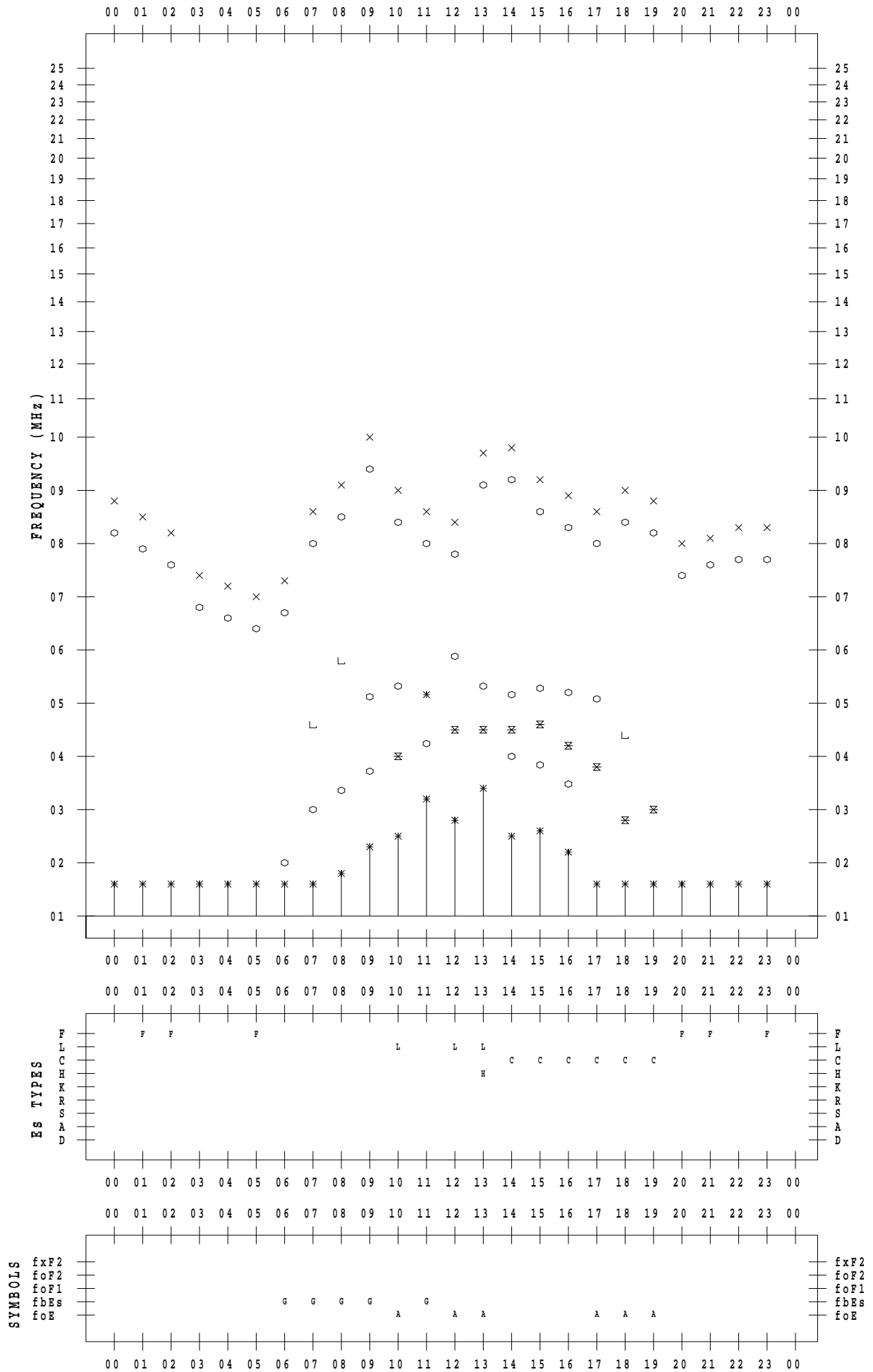
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 9

135 ° E MEAN TIME



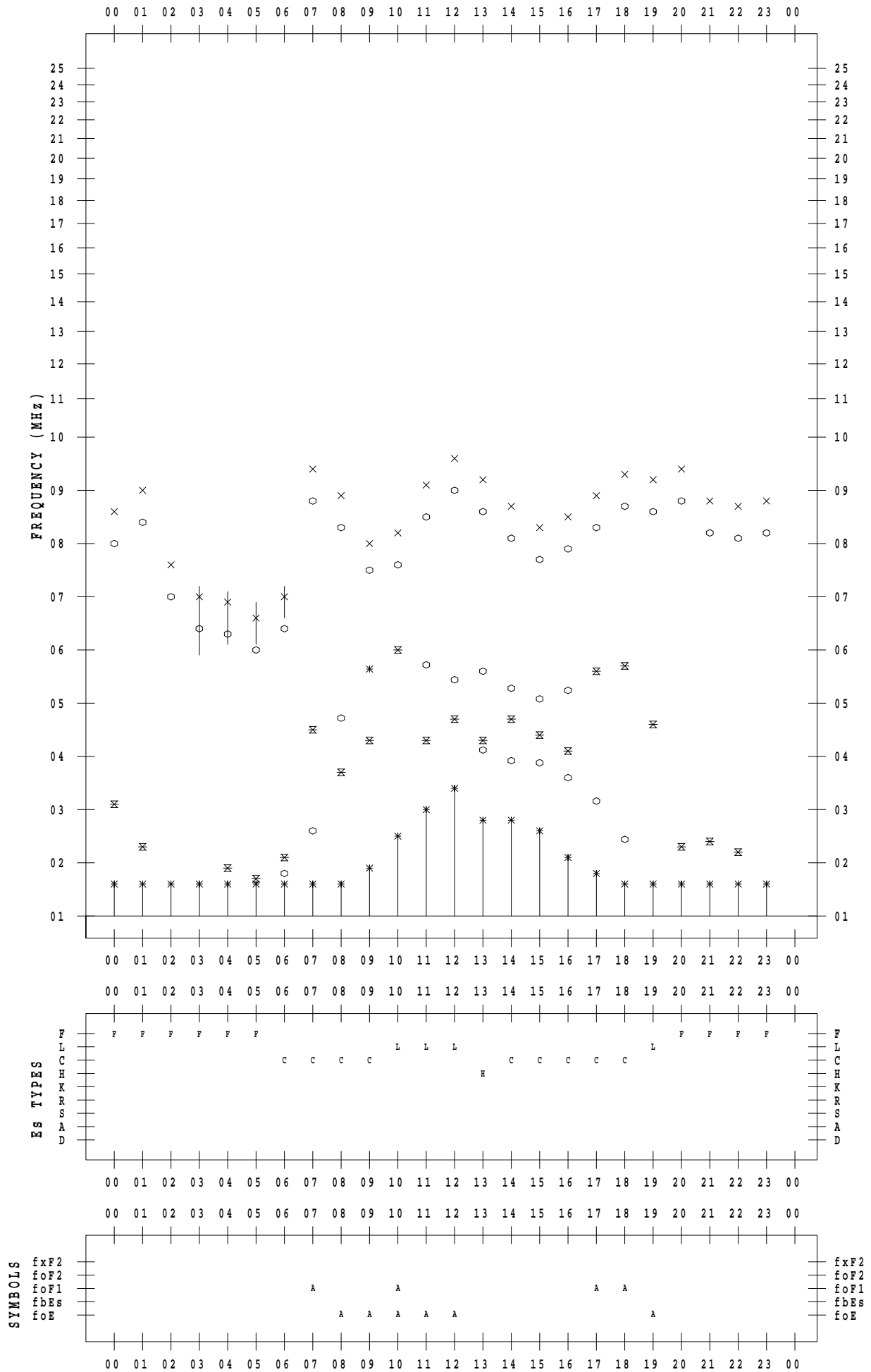
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/10

135 ° E MEAN TIME



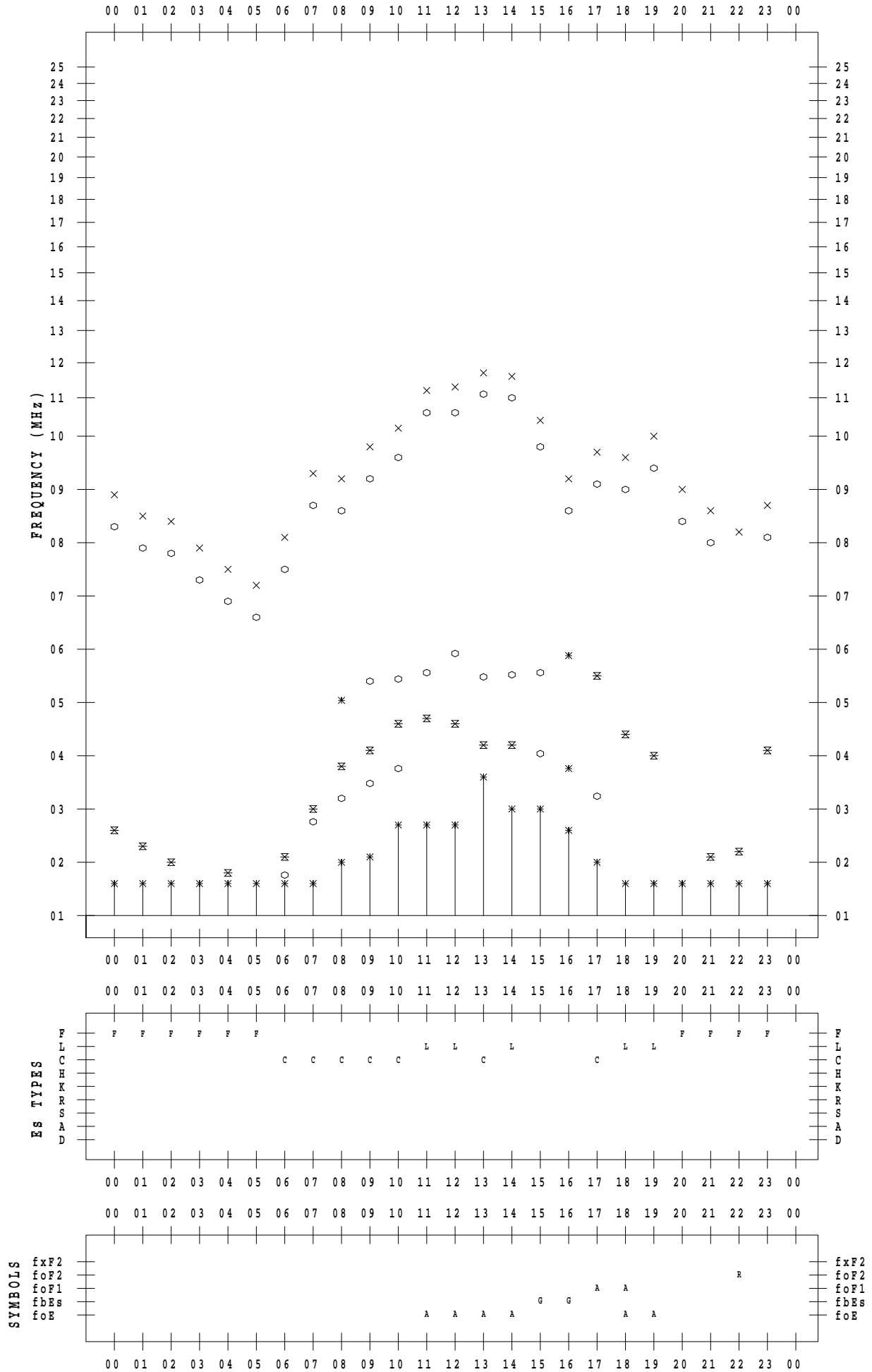
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/11

135 ° E MEAN TIME



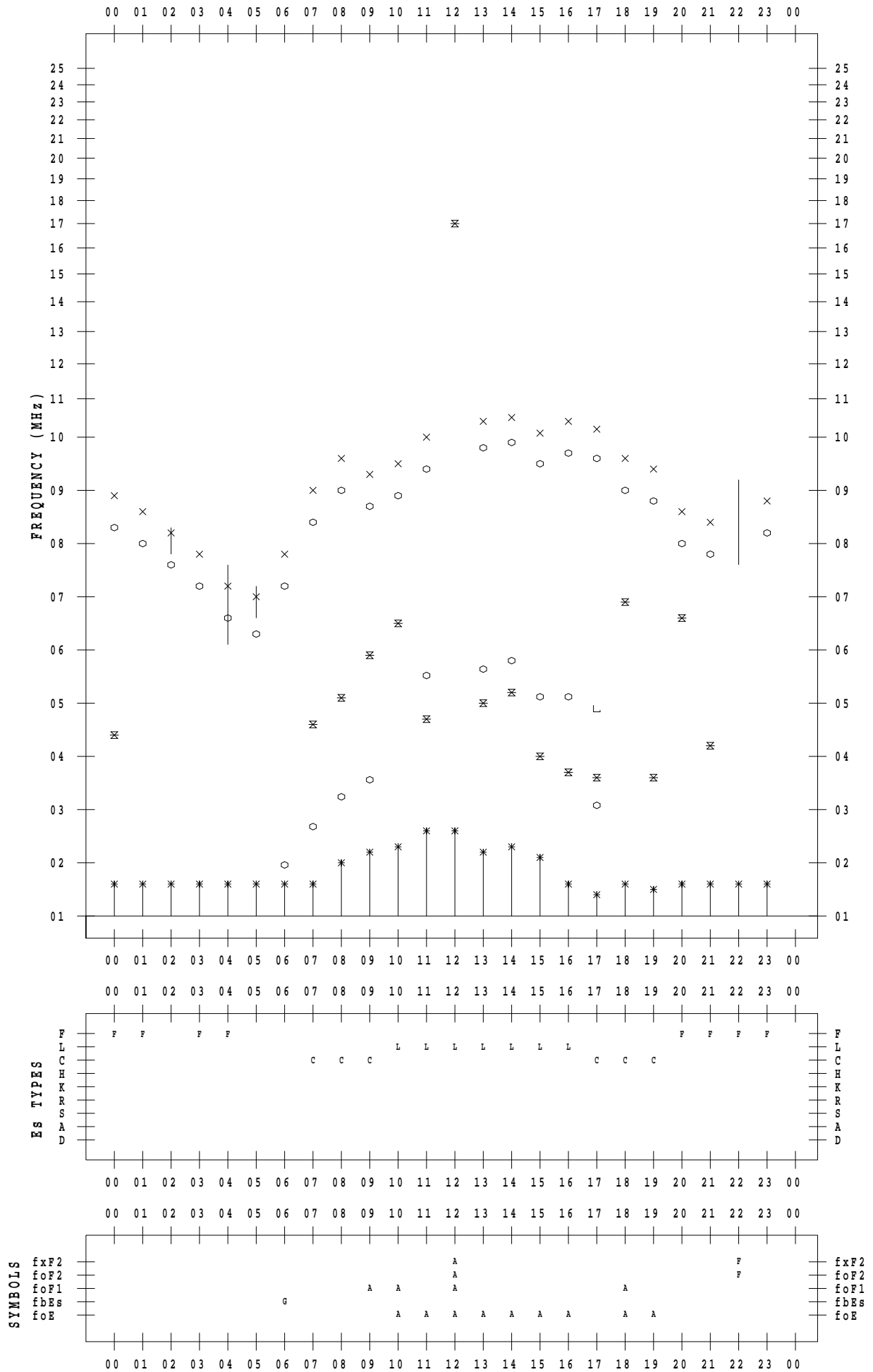
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 12

135 ° E MEAN TIME



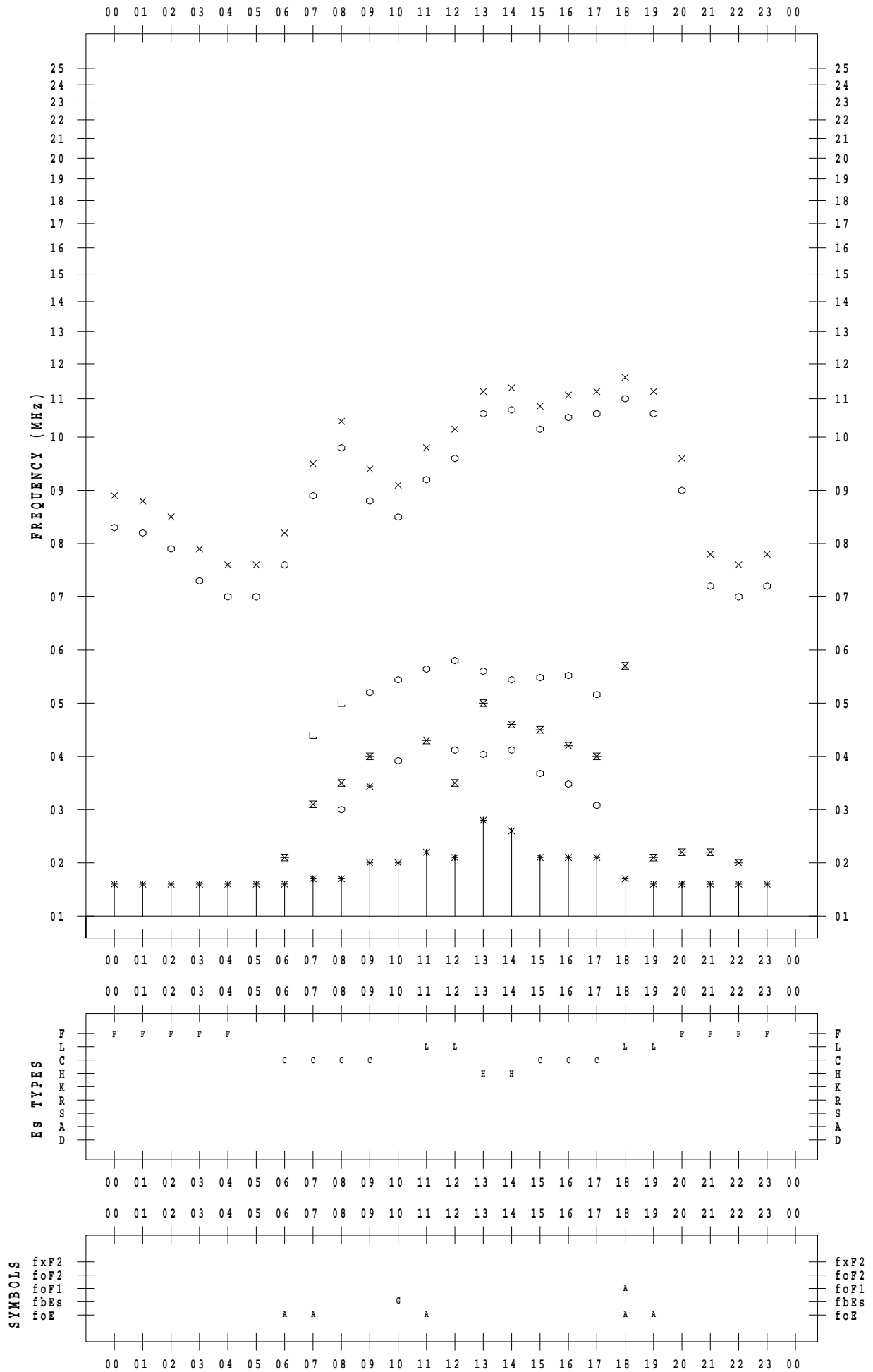
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/13

135 ° E MEAN TIME



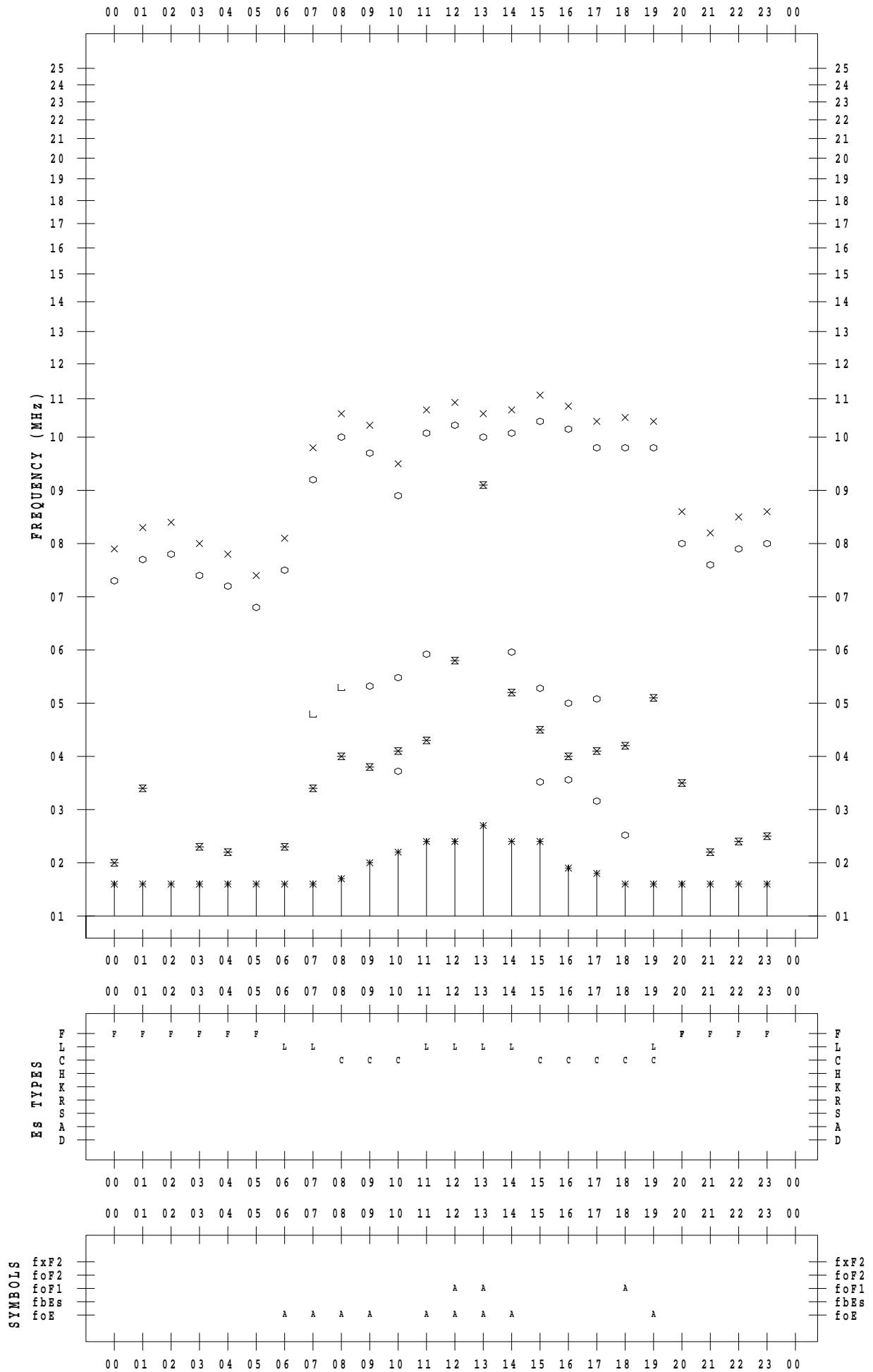
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/14

135 ° E MEAN TIME



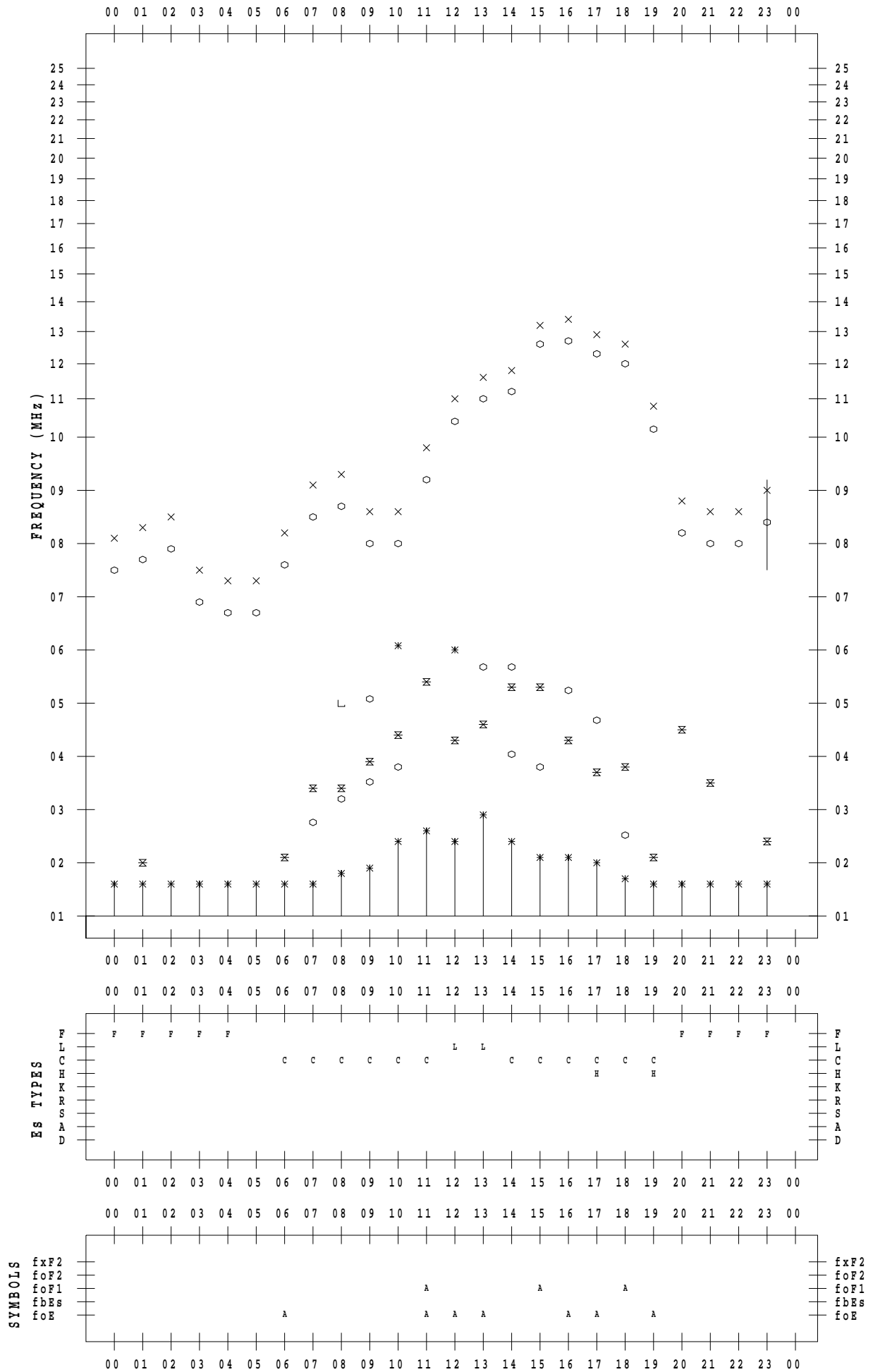
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 15

135 ° E MEAN TIME



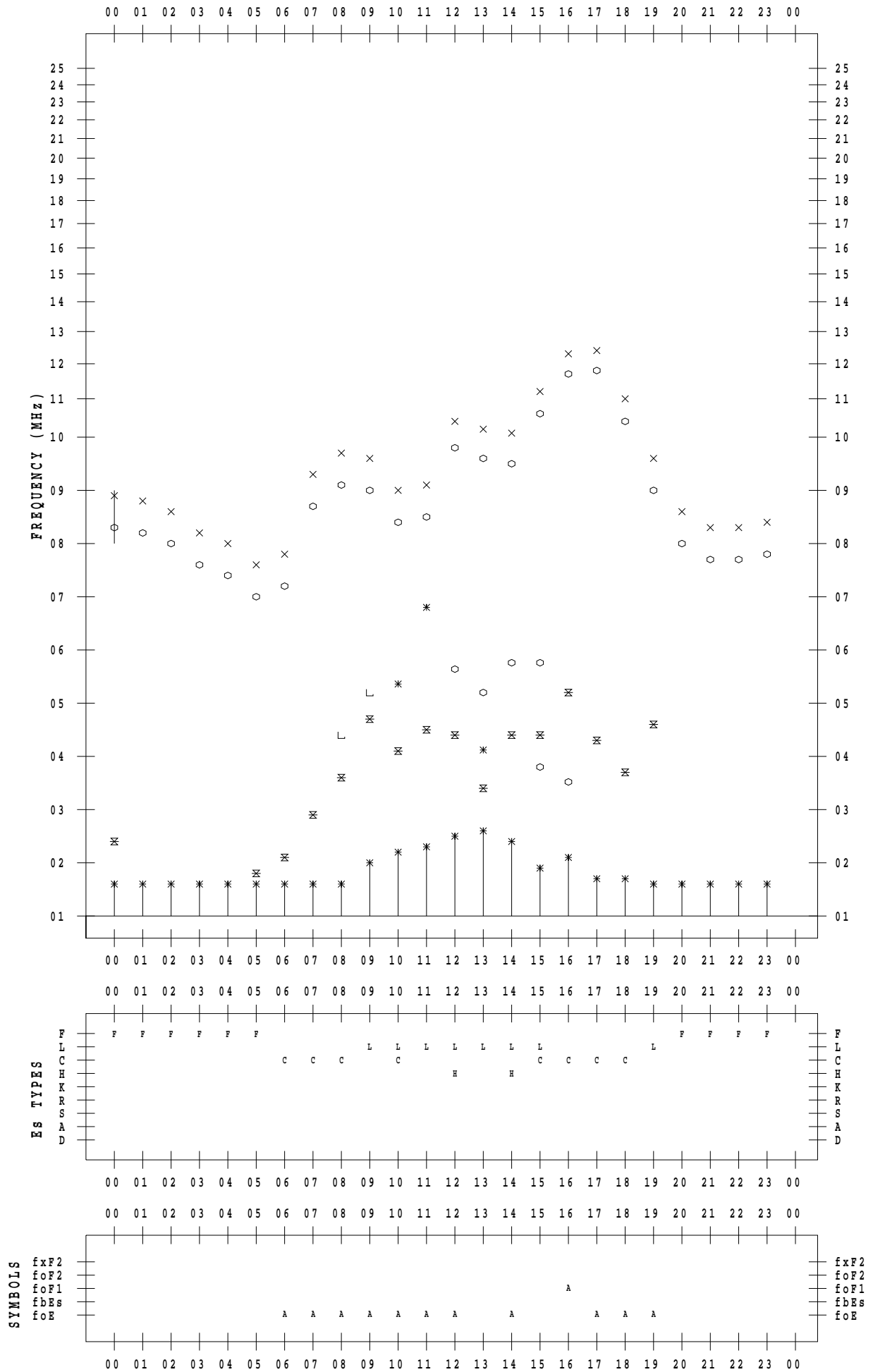
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/16

135 ° E MEAN TIME



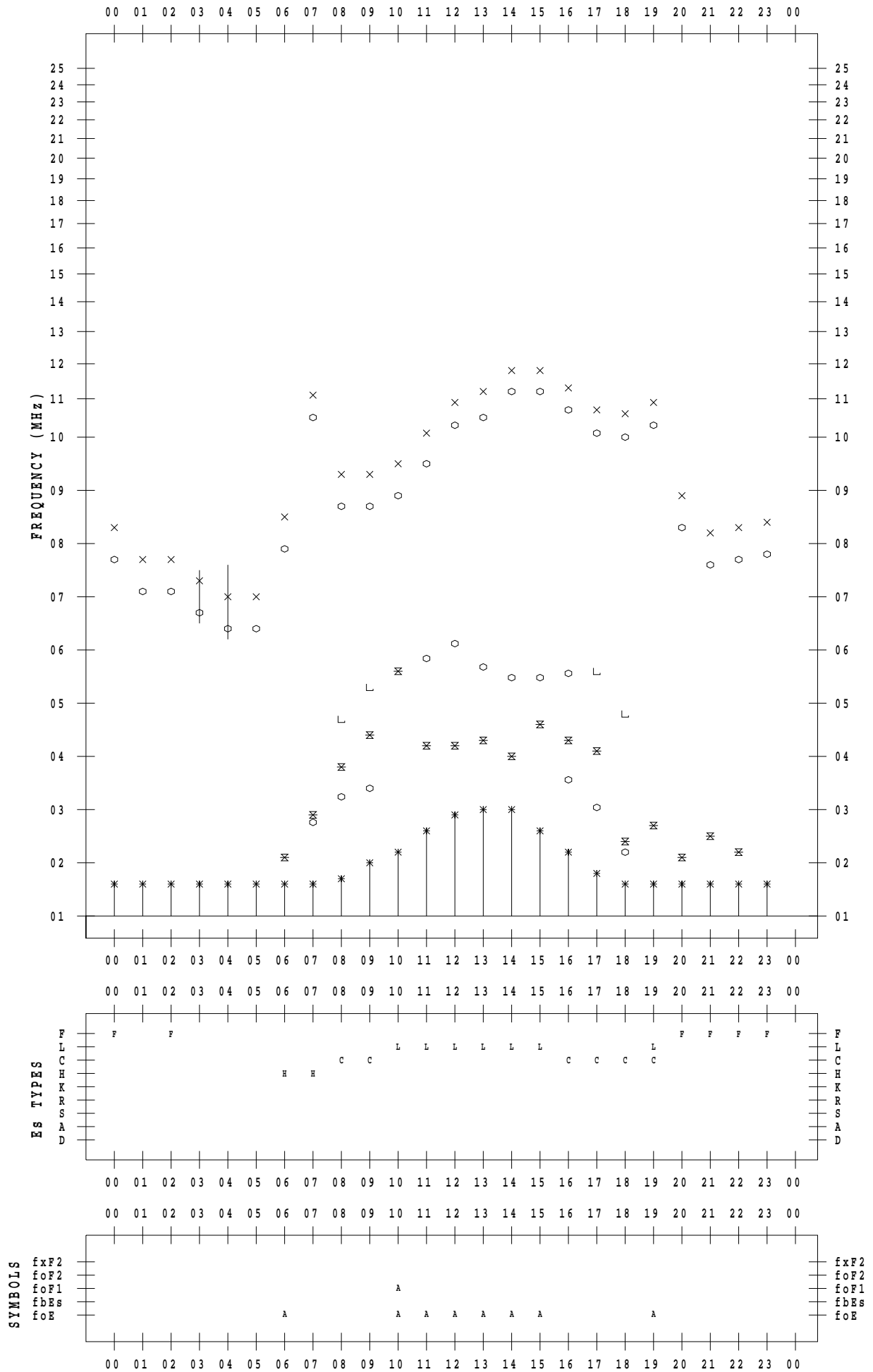
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/17

135 ° E MEAN TIME



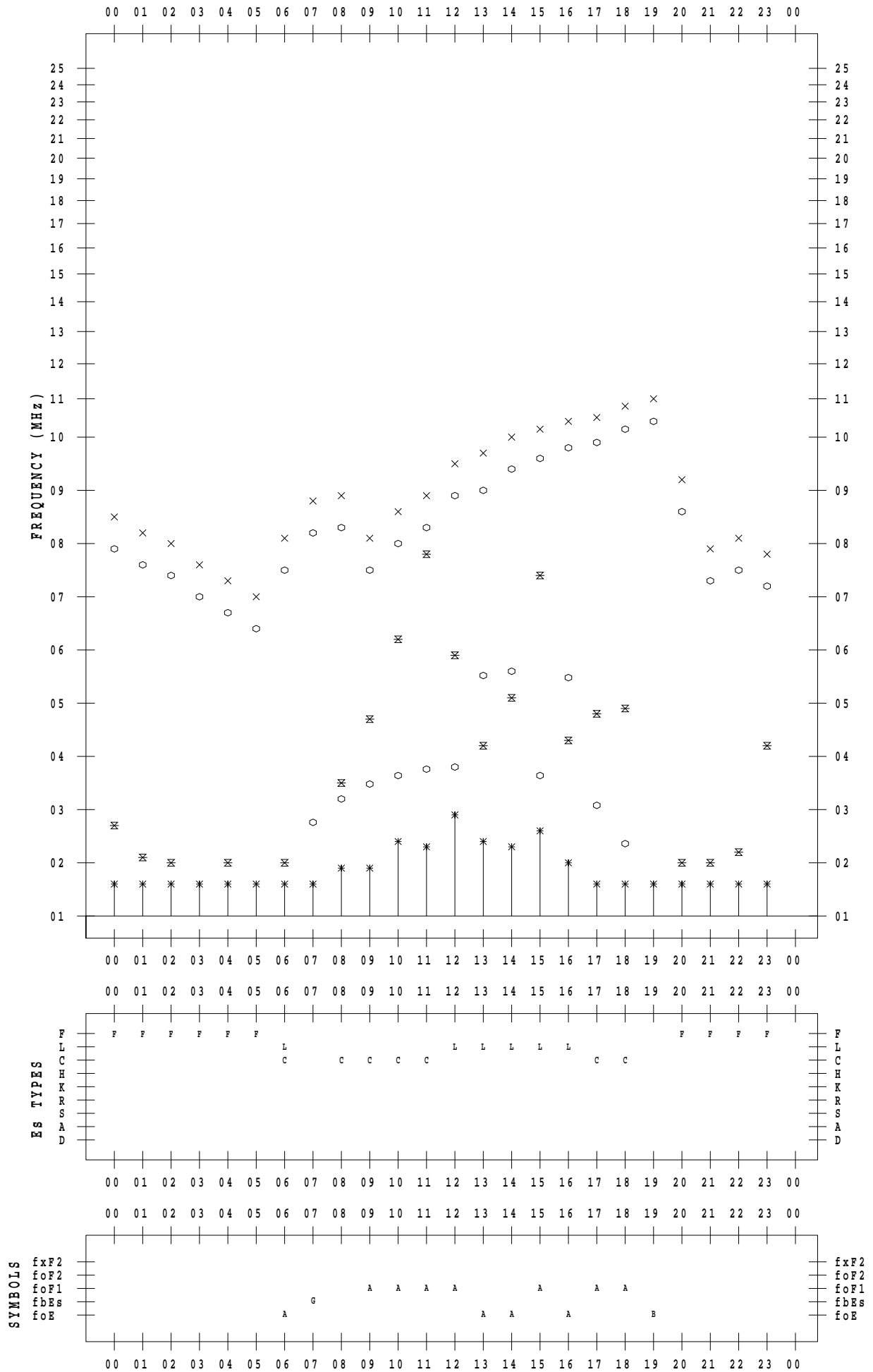
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 18

135 ° E MEAN TIME



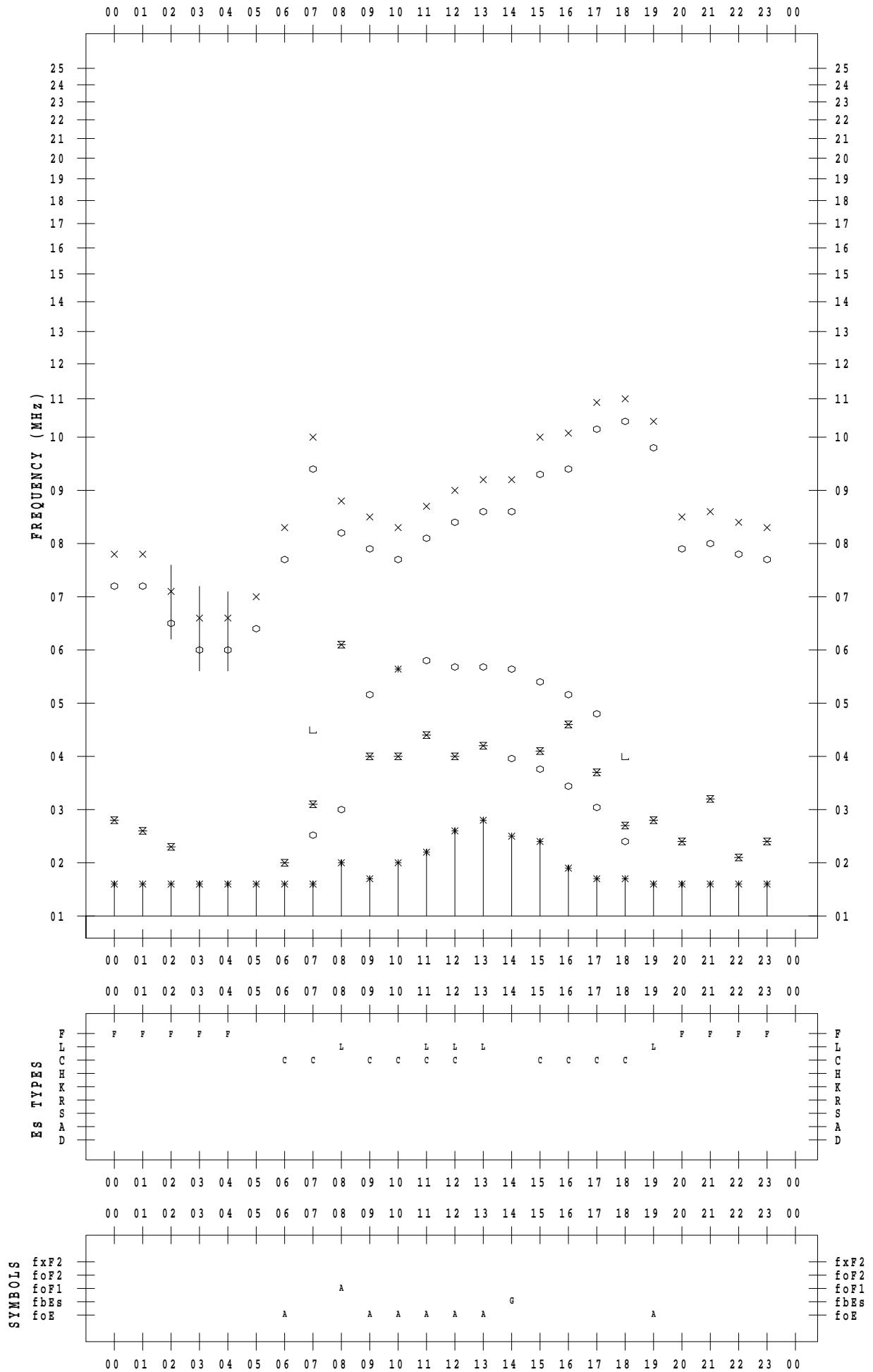
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/19

135 ° E MEAN TIME



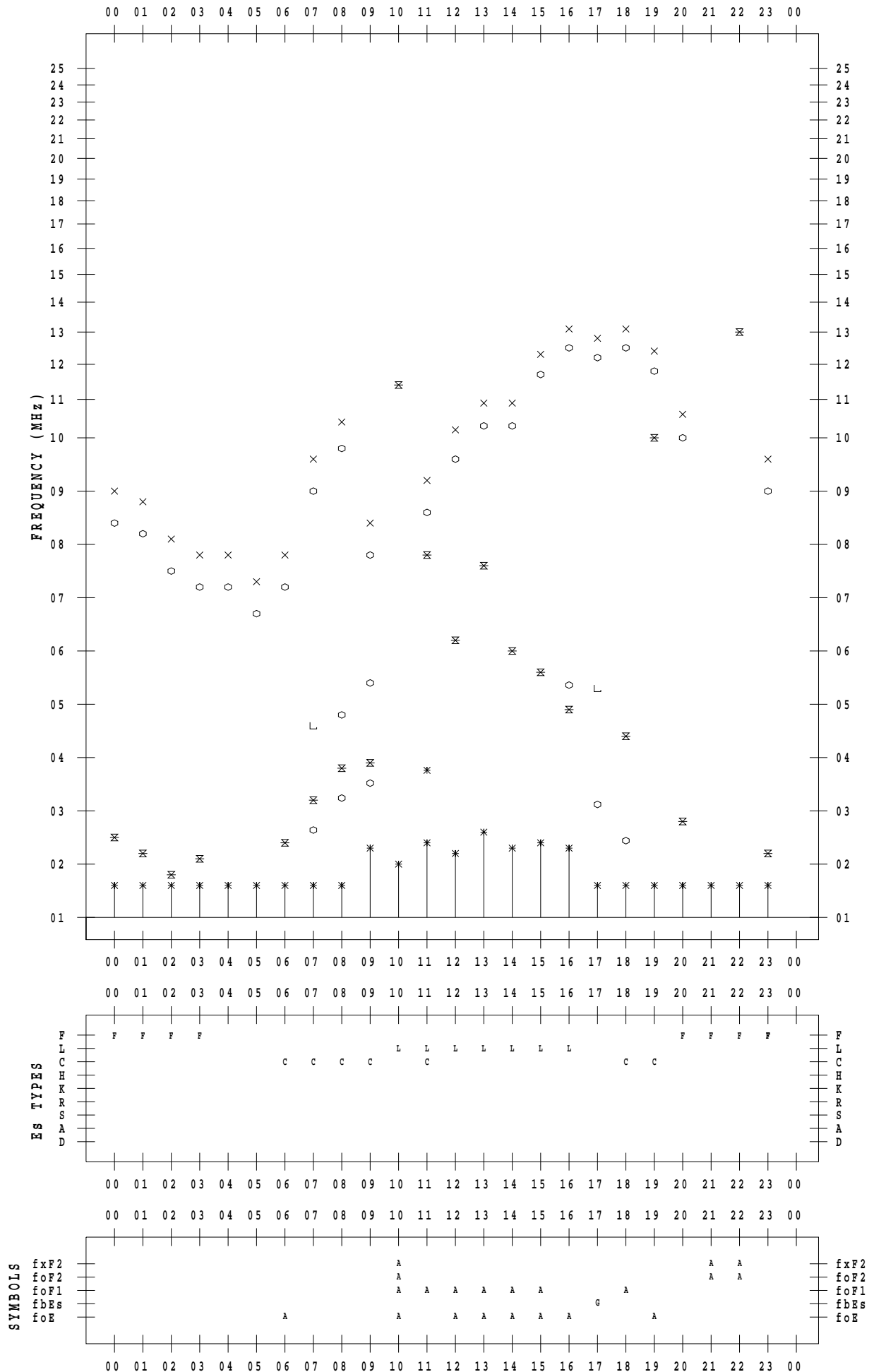
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 20

135 ° E MEAN TIME



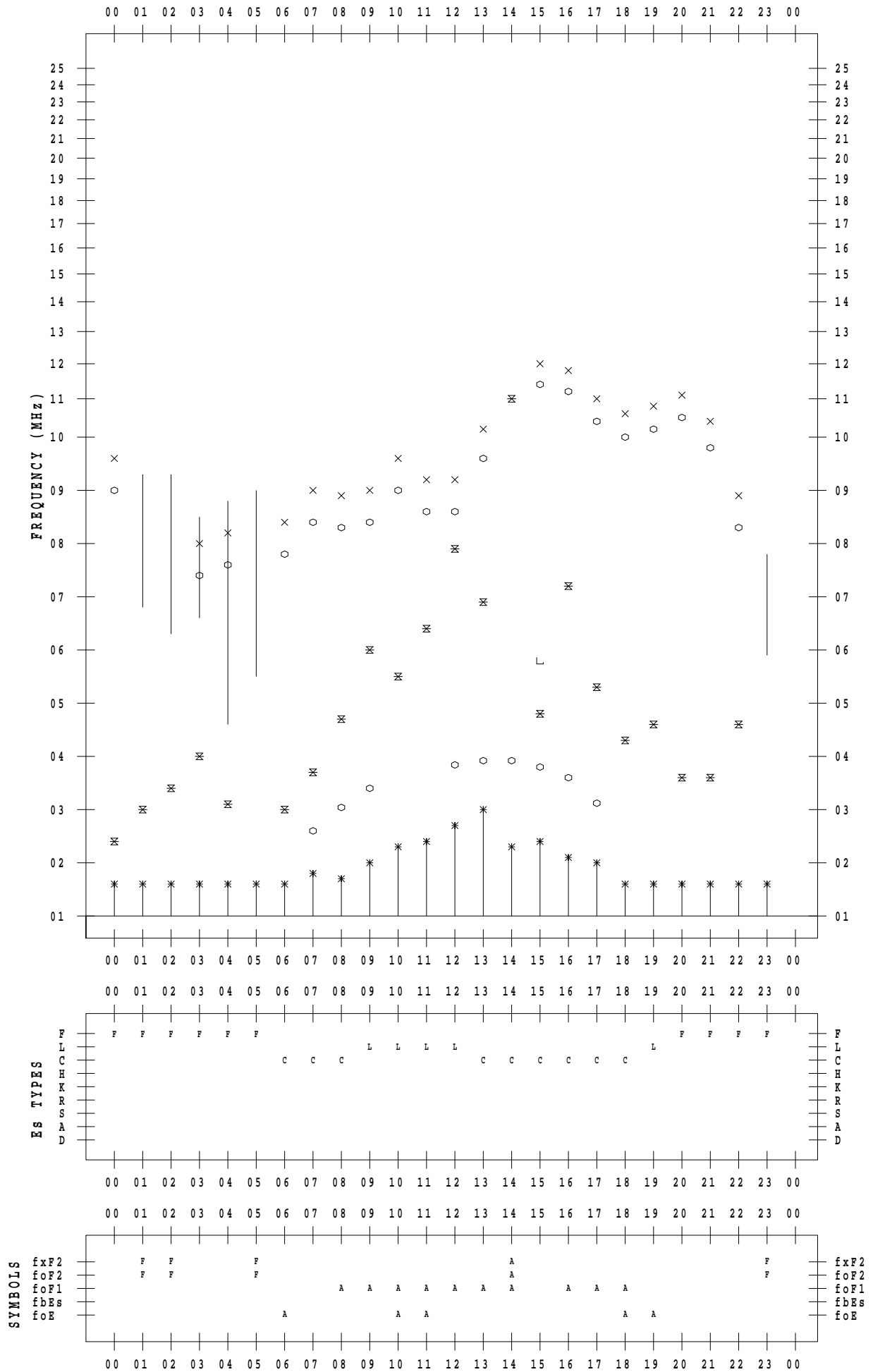
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 21

135 ° E MEAN TIME



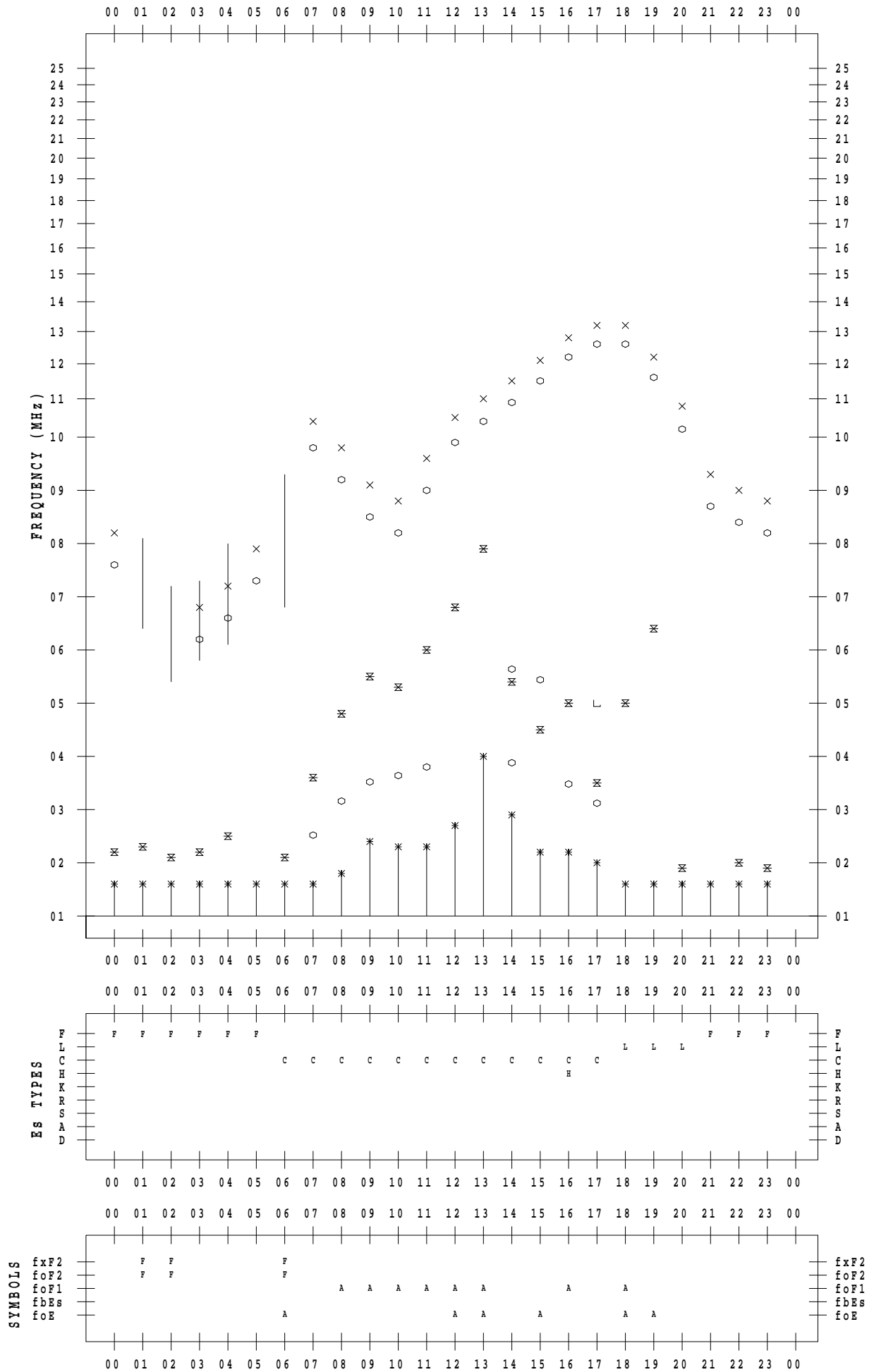
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 22

135 ° E MEAN TIME



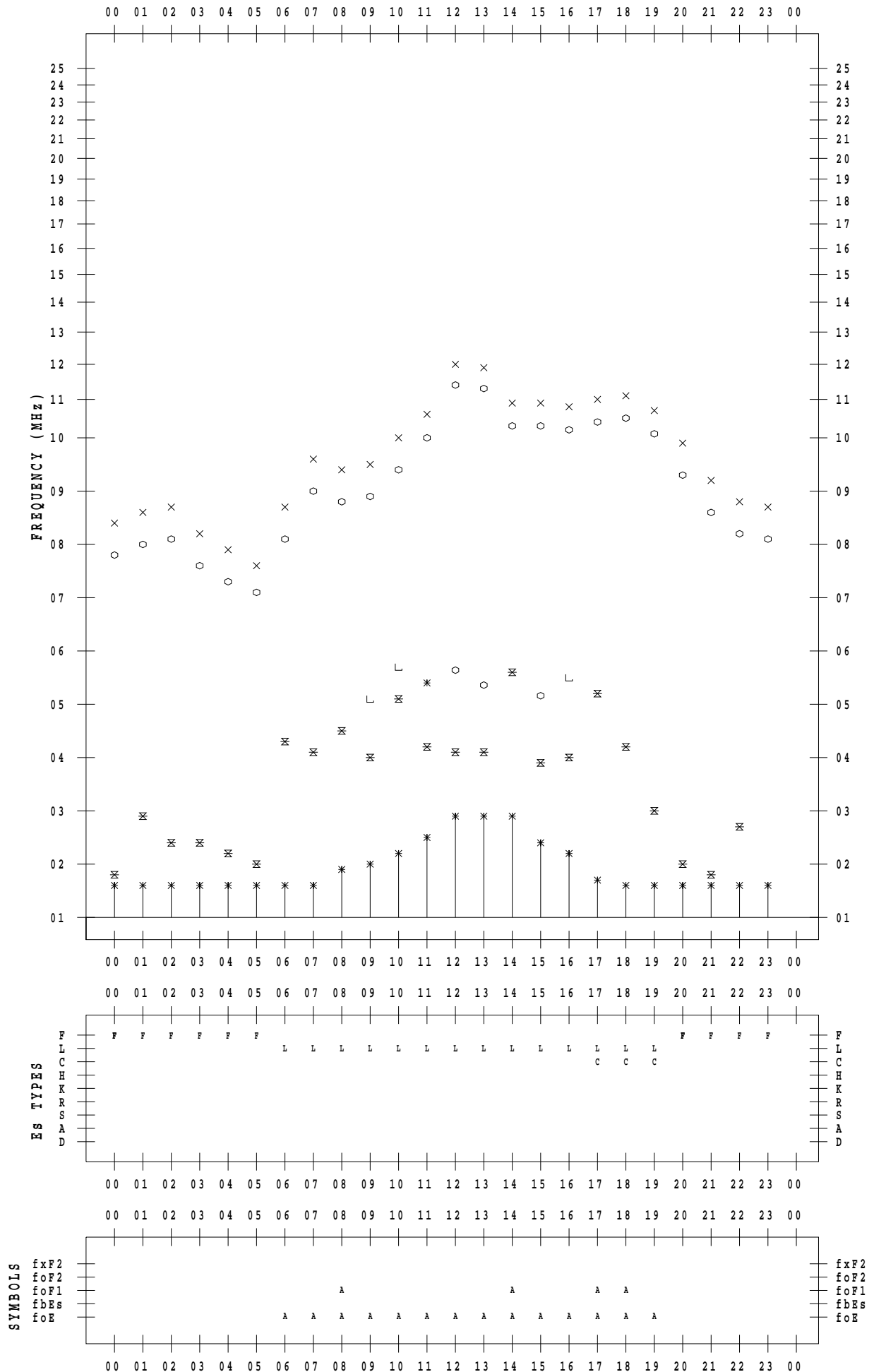
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/23

135 ° E MEAN TIME



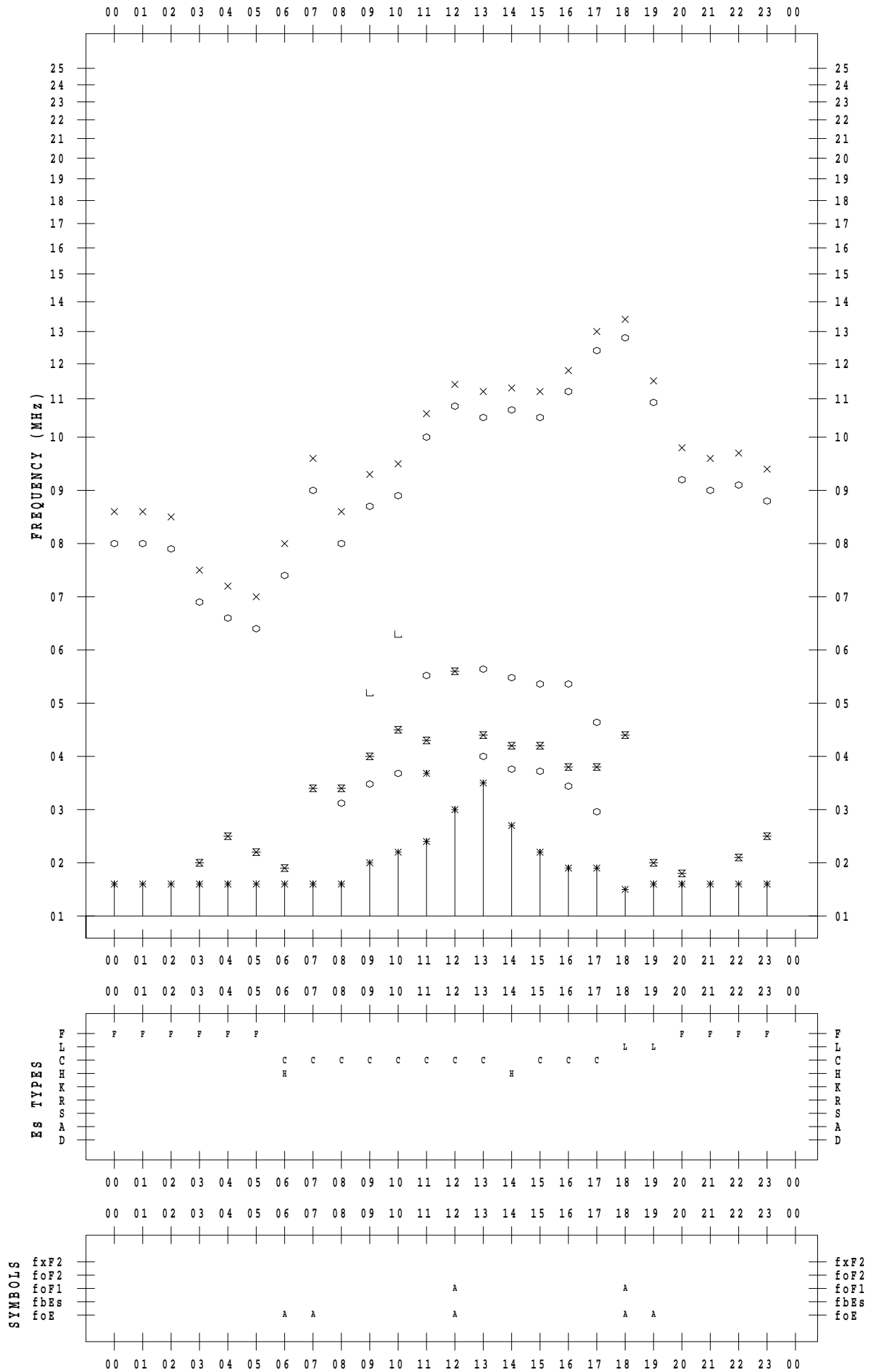
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 24

135 ° E MEAN TIME



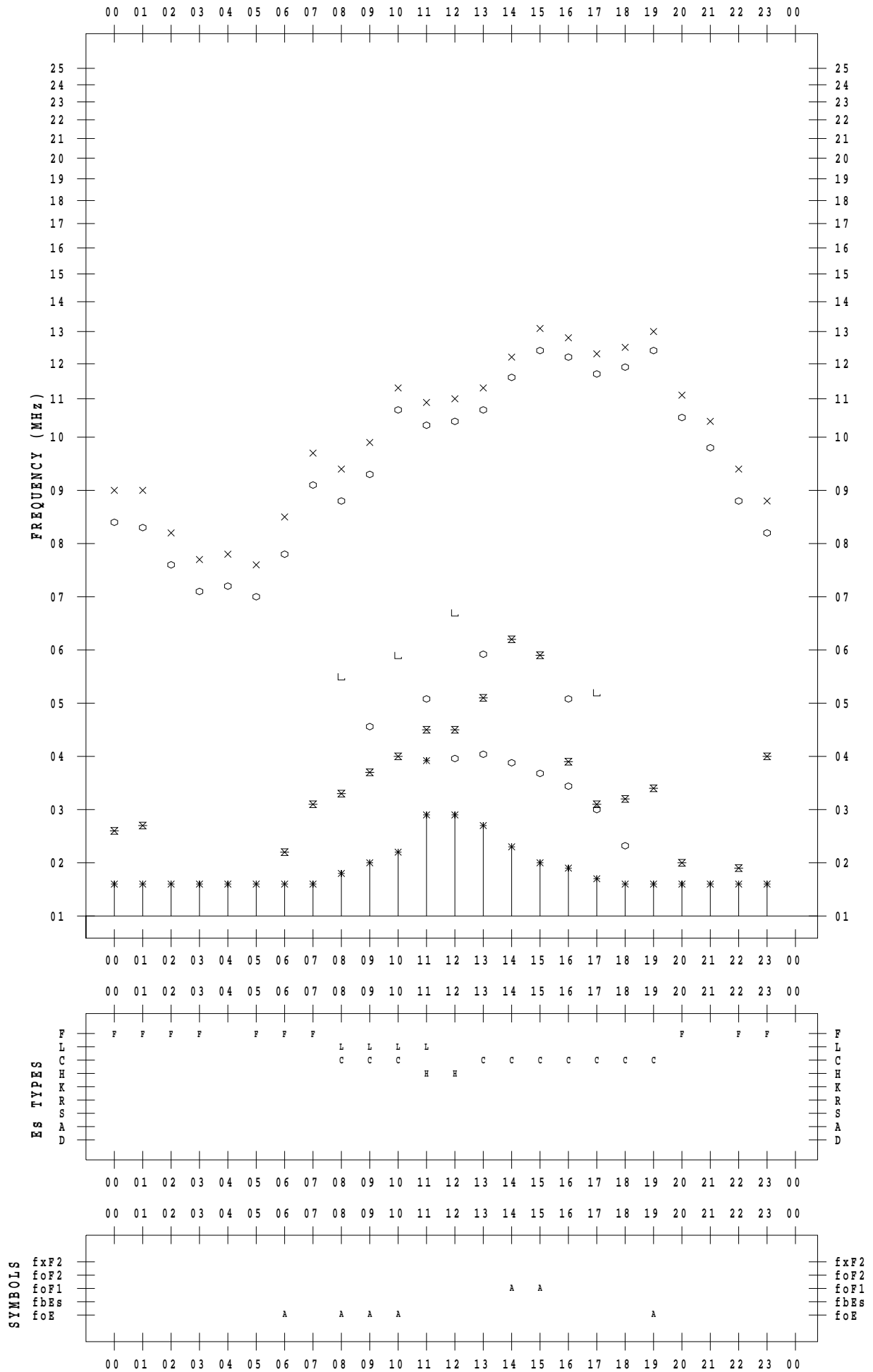
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 25

135 ° E MEAN TIME



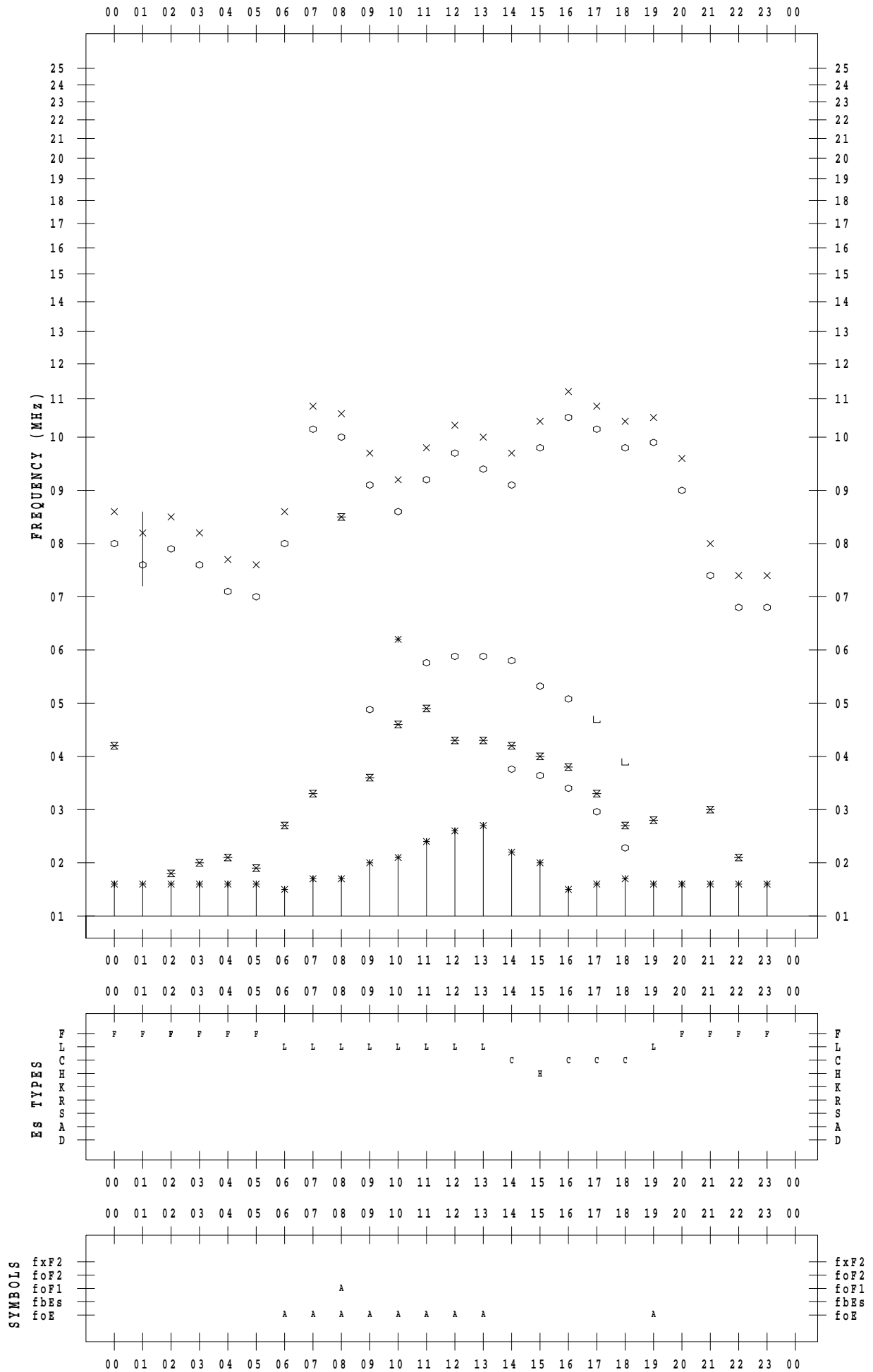
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/26

135 ° E MEAN TIME



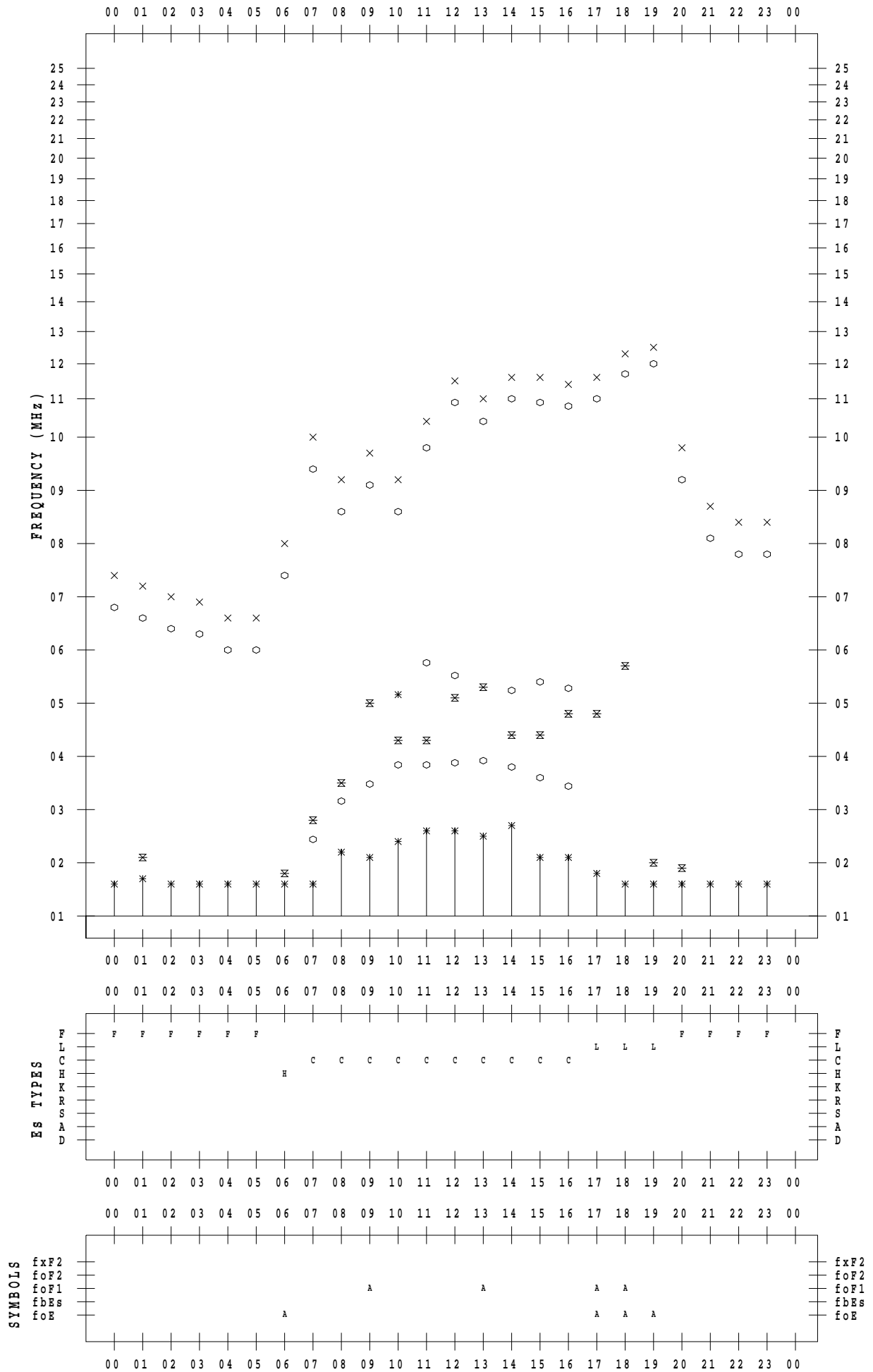
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 27

135 ° E MEAN TIME



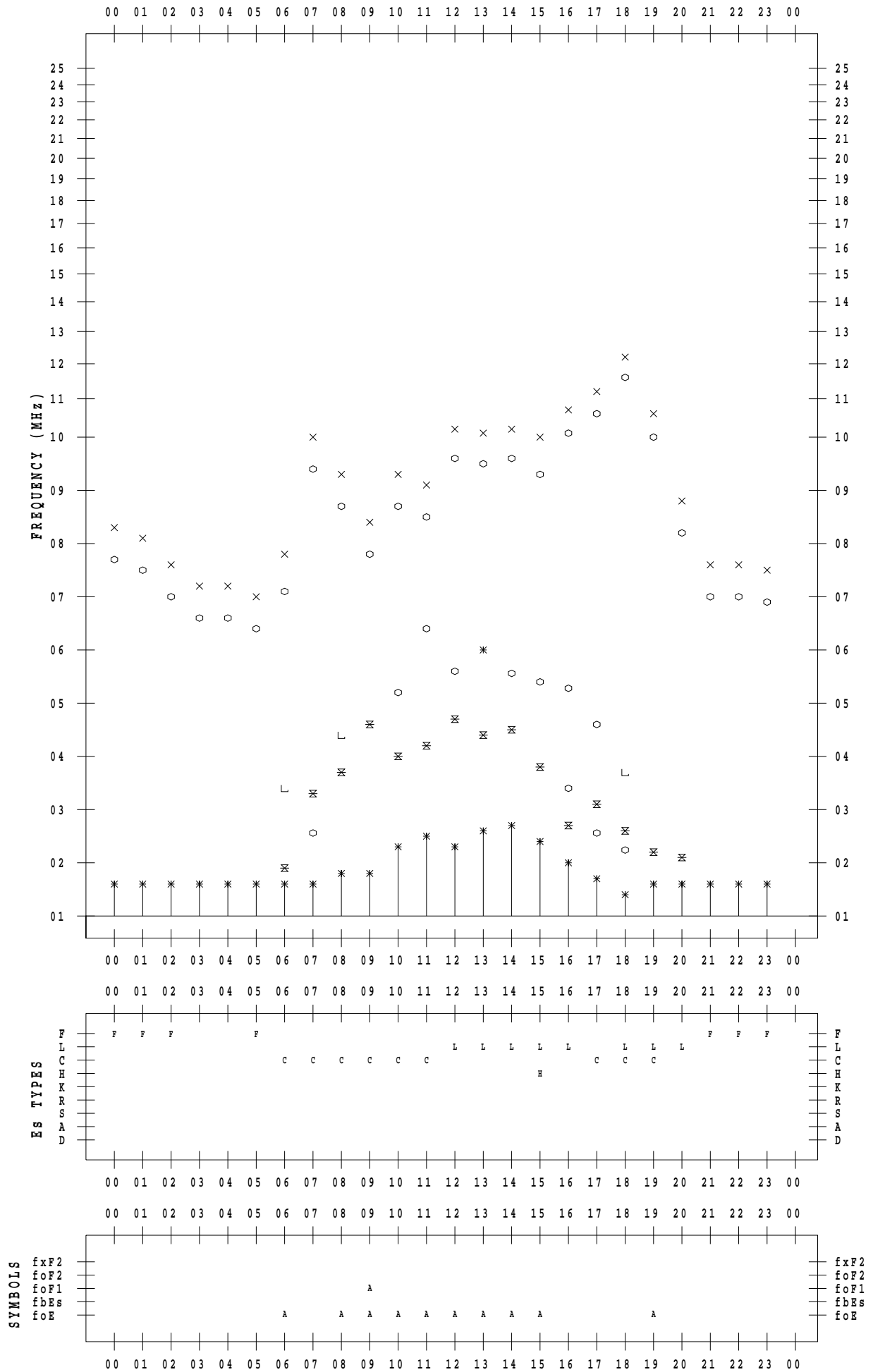
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 28

135 ° E MEAN TIME



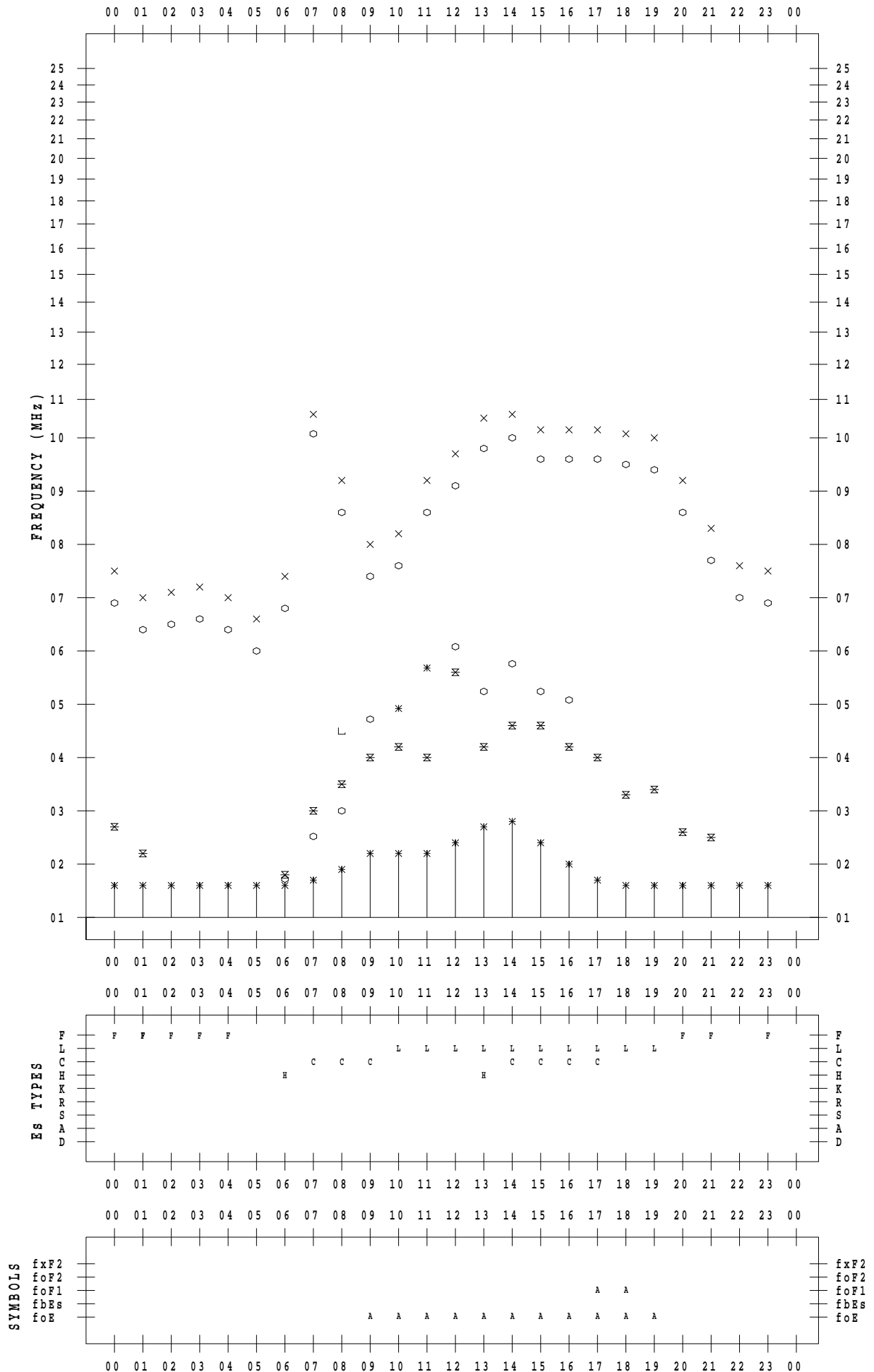
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023/ 8/29

135 ° E MEAN TIME



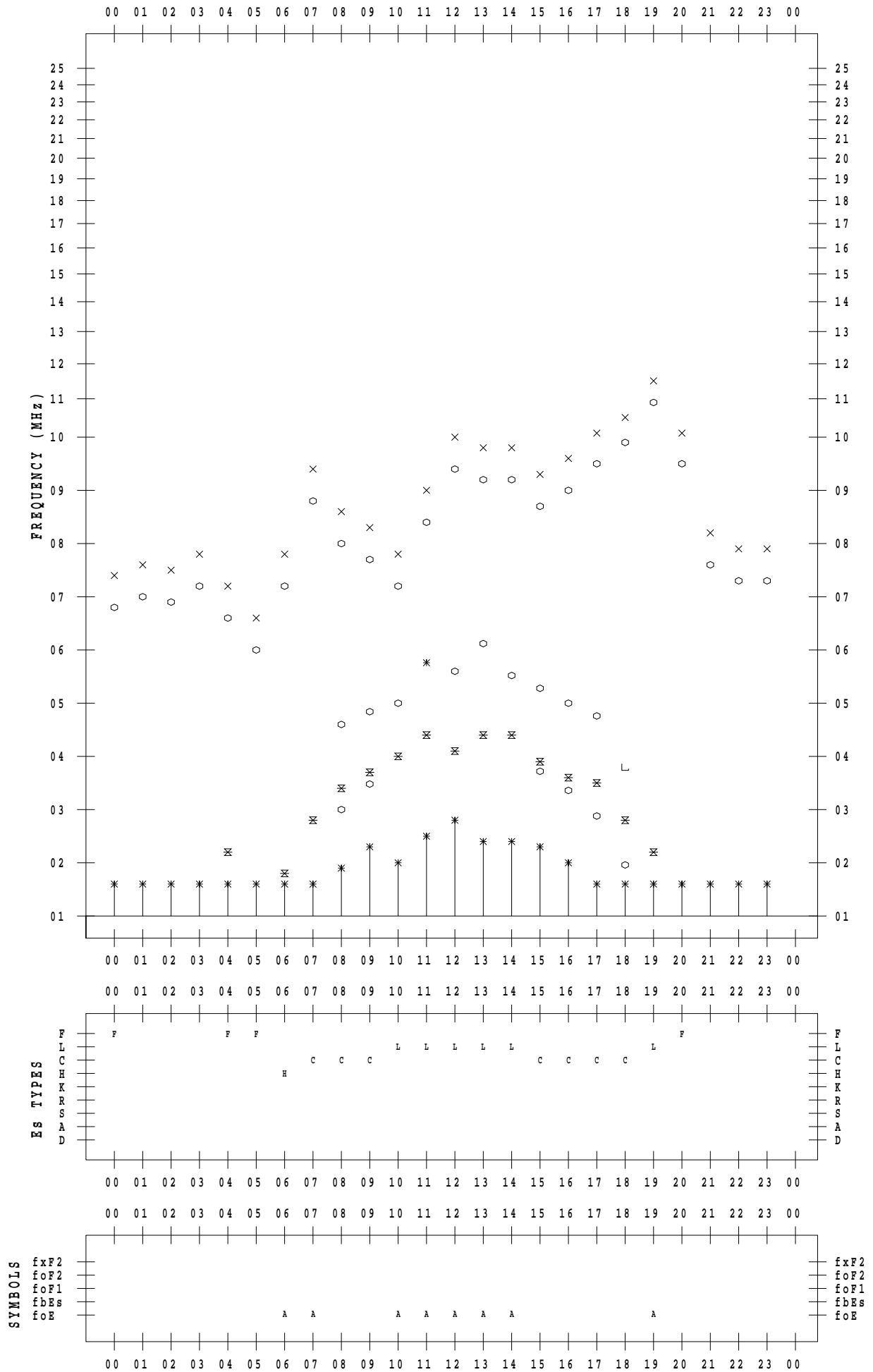
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 30

135 ° E MEAN TIME



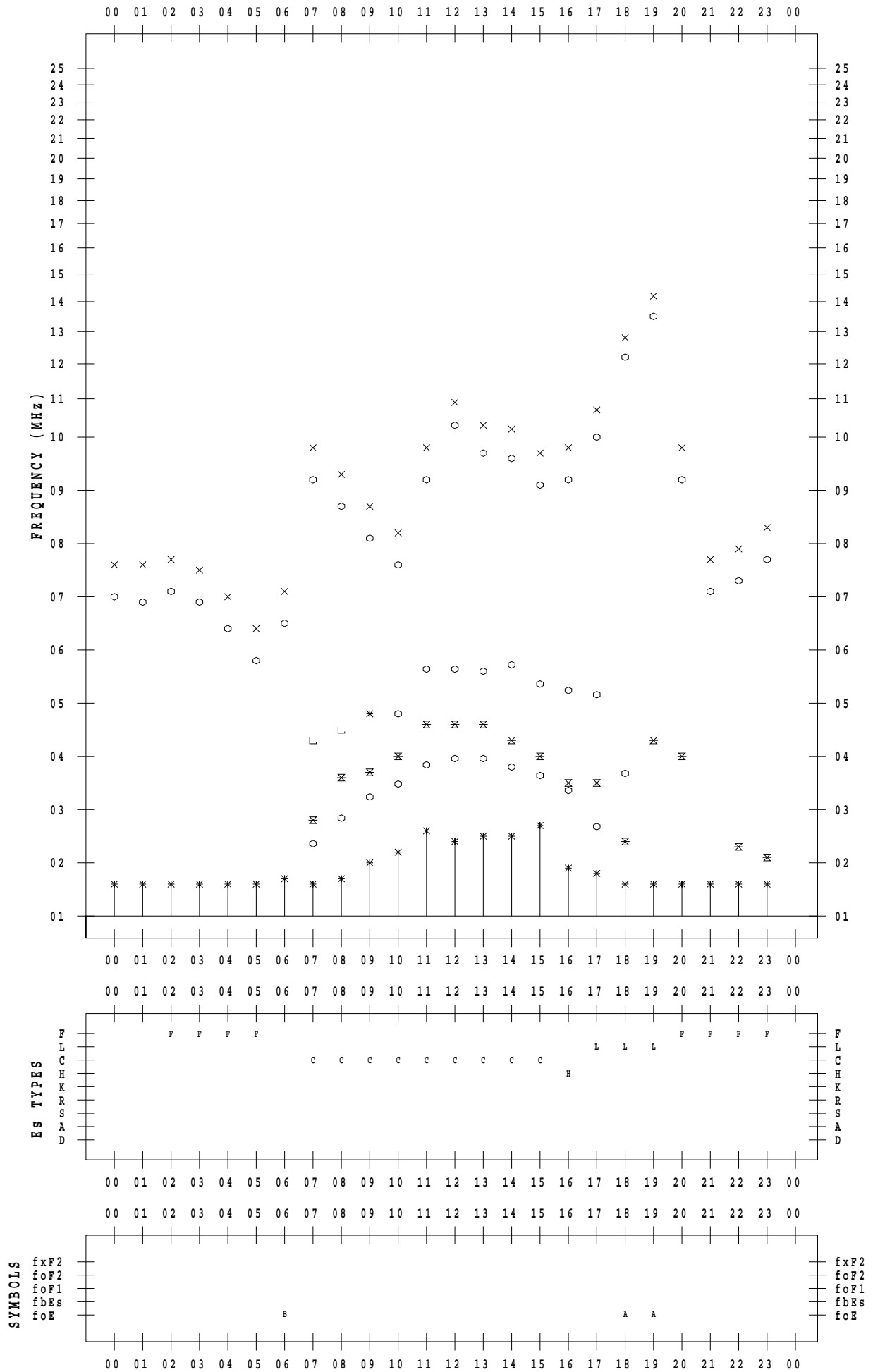
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2023 / 8 / 31

135 ° E MEAN TIME



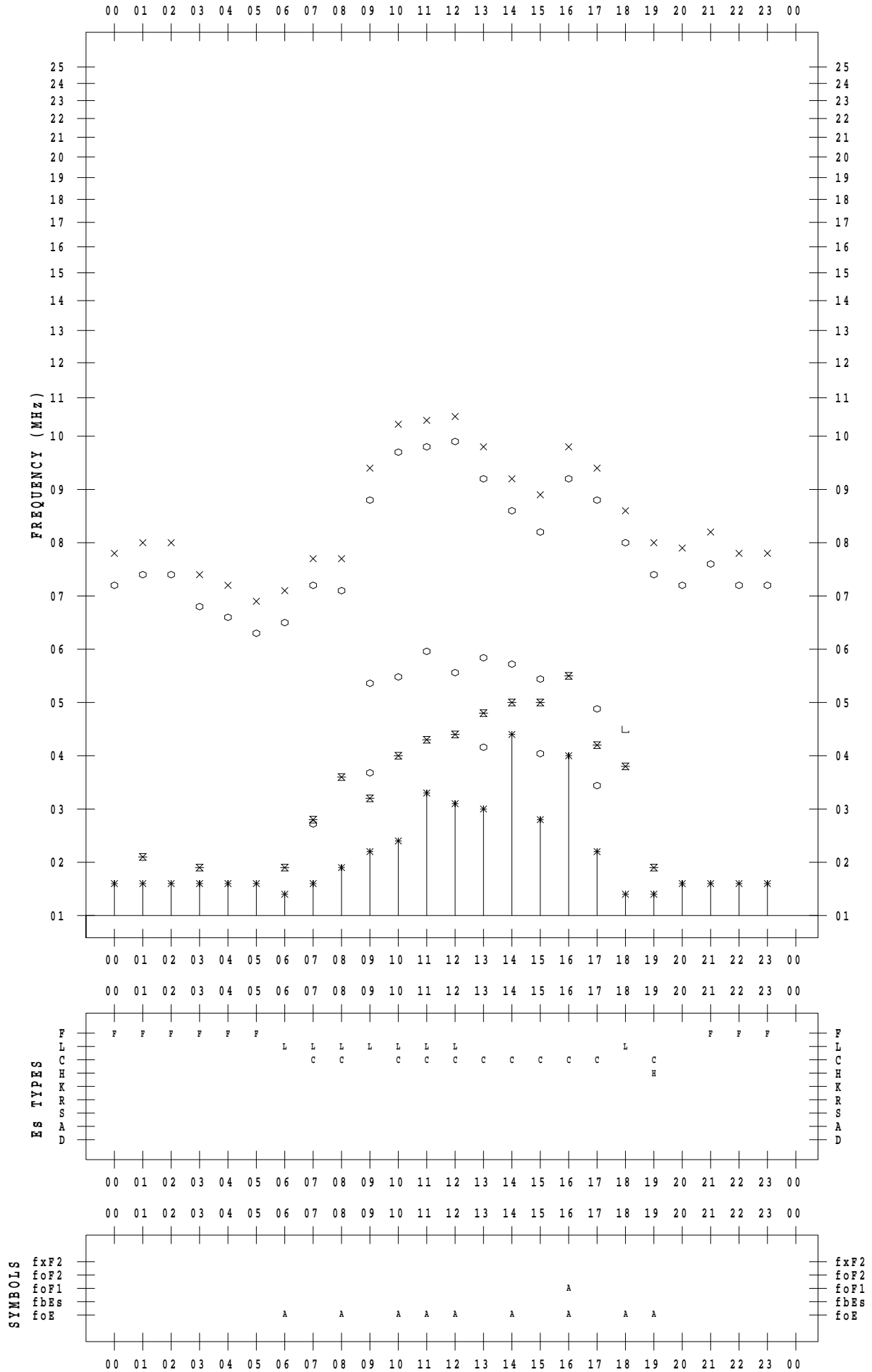
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 1

135 ° E MEAN TIME



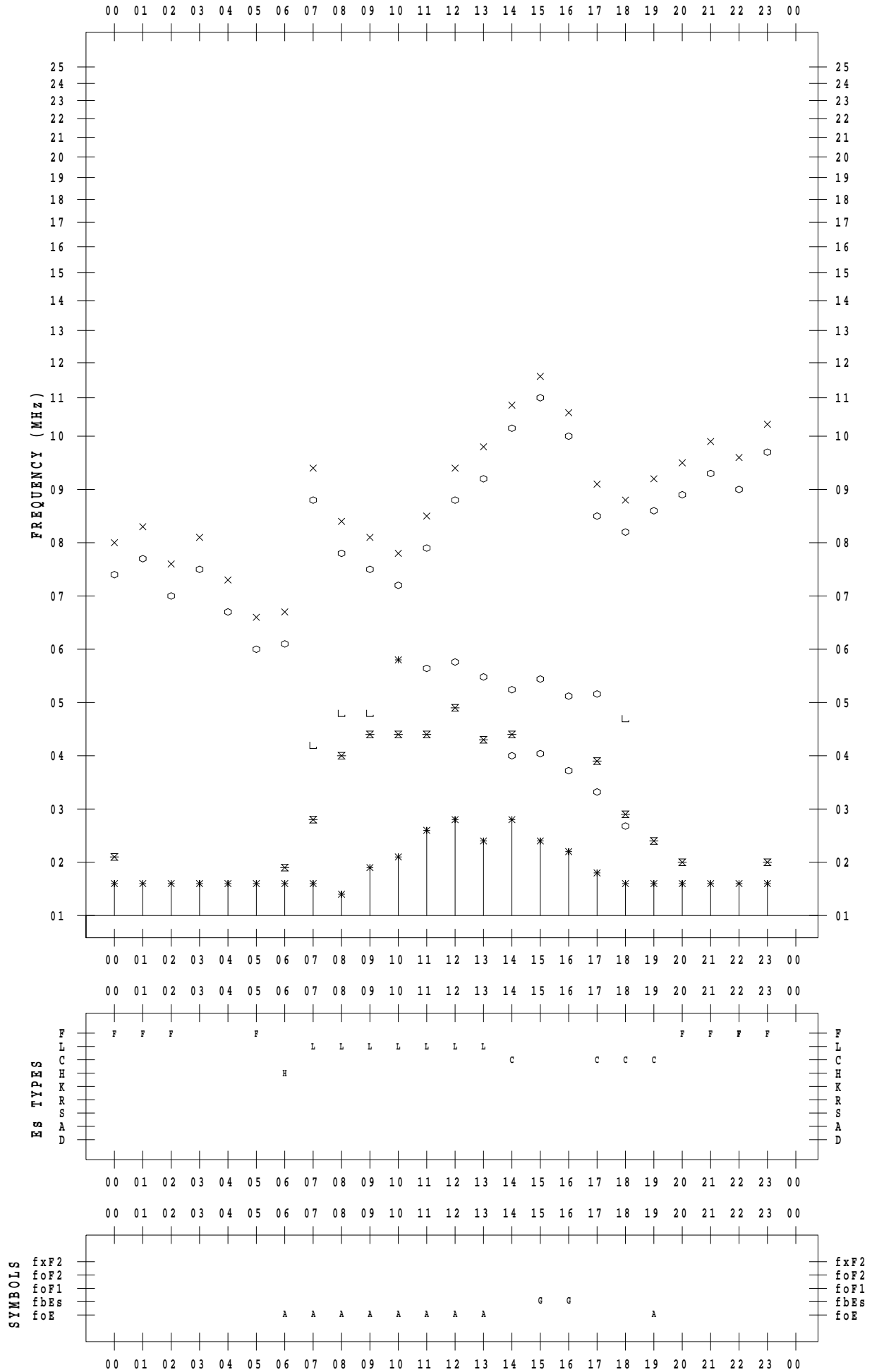
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/ 2

135 ° E MEAN TIME



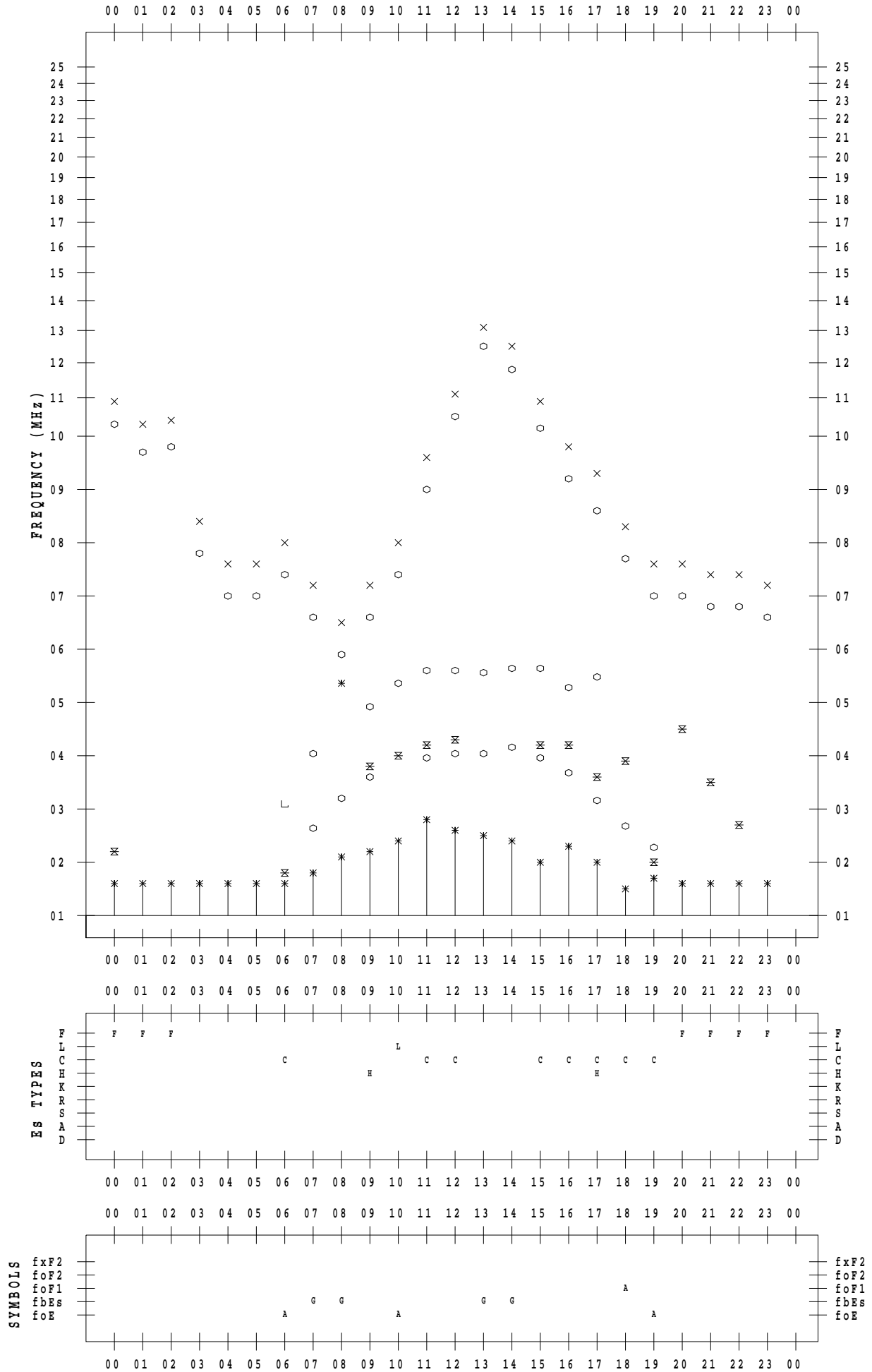
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 3

135 ° E MEAN TIME



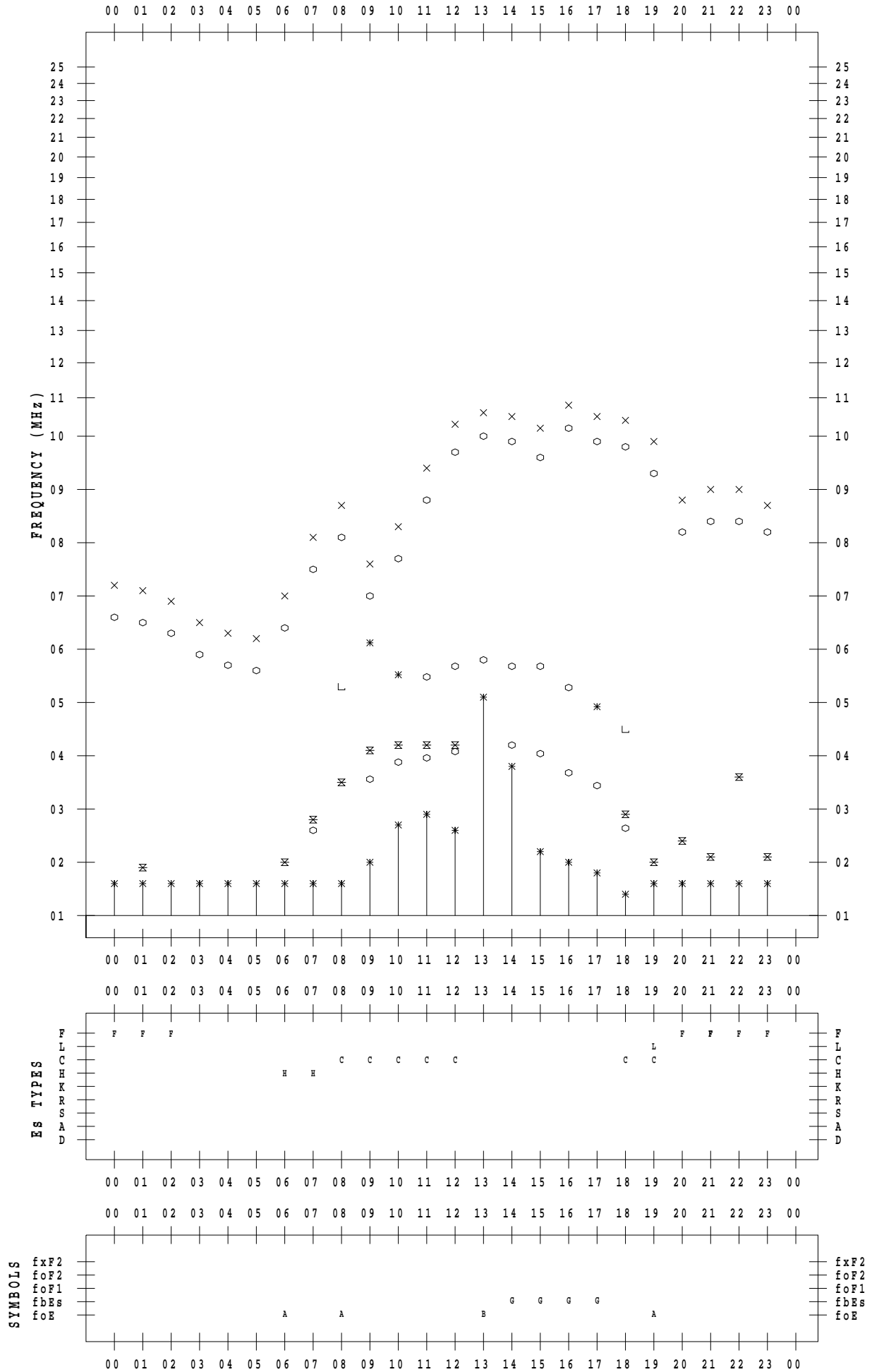
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 4

135 ° E MEAN TIME



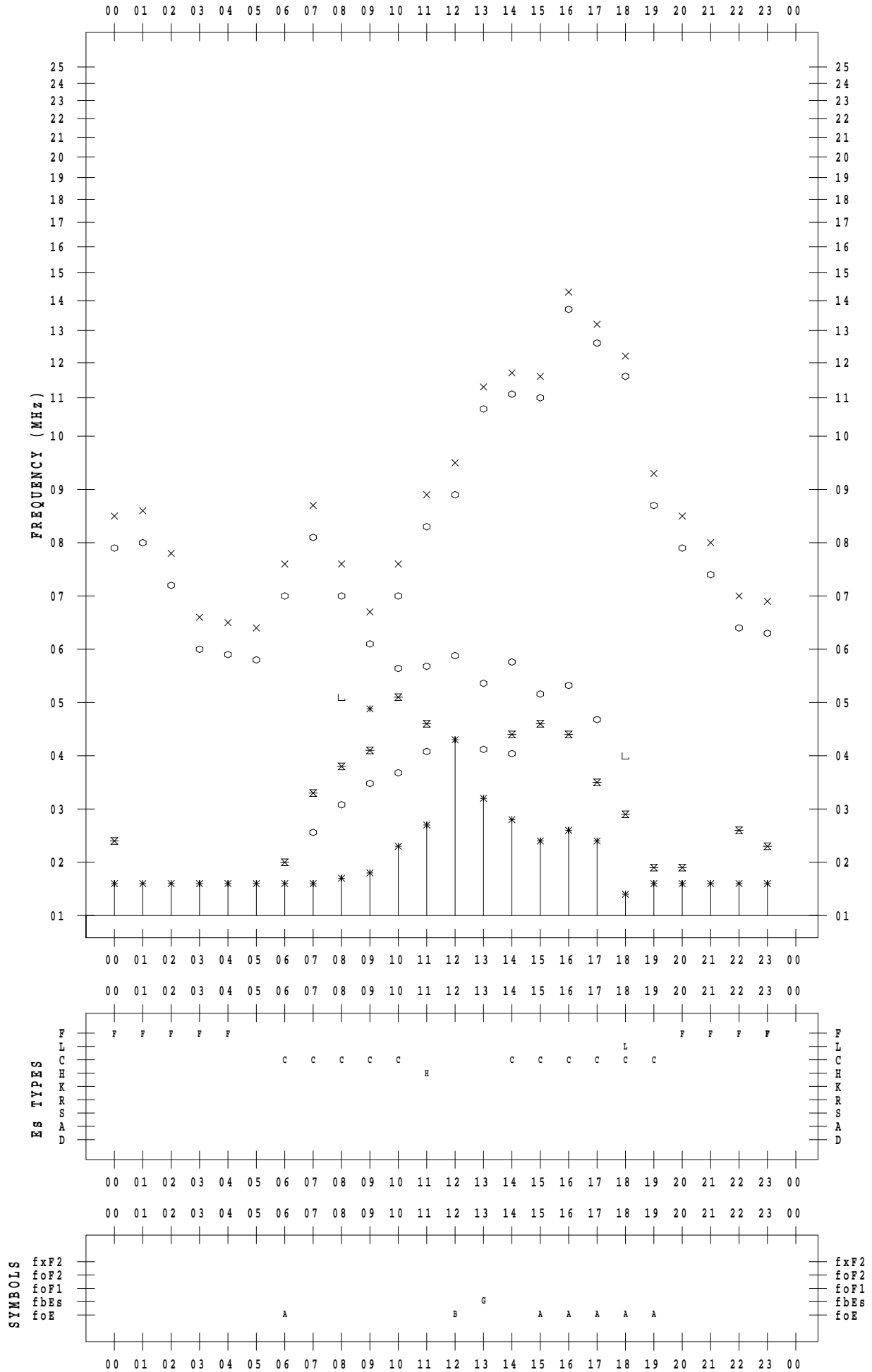
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 5

135 ° E MEAN TIME



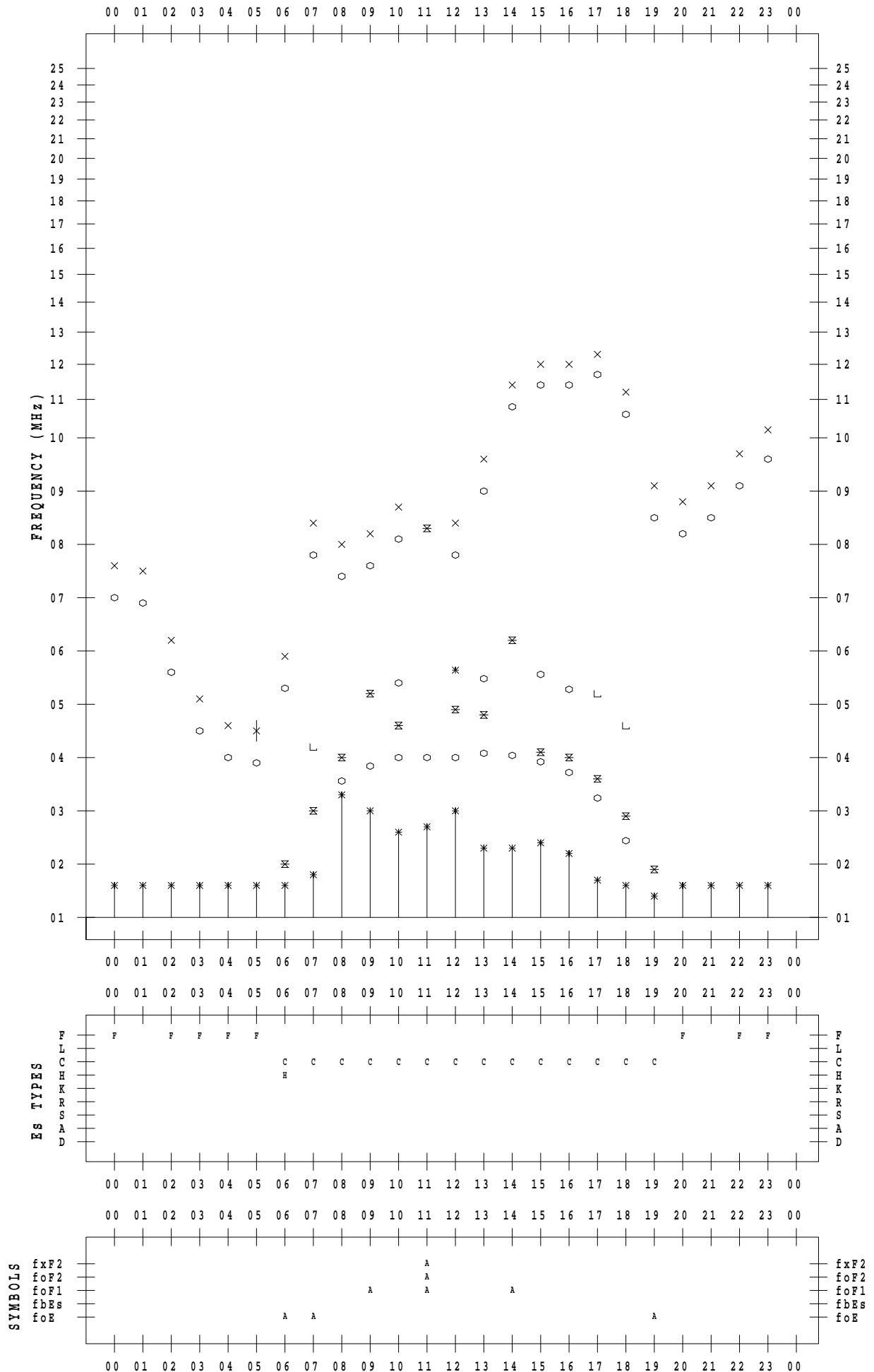
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 6

135 ° E MEAN TIME



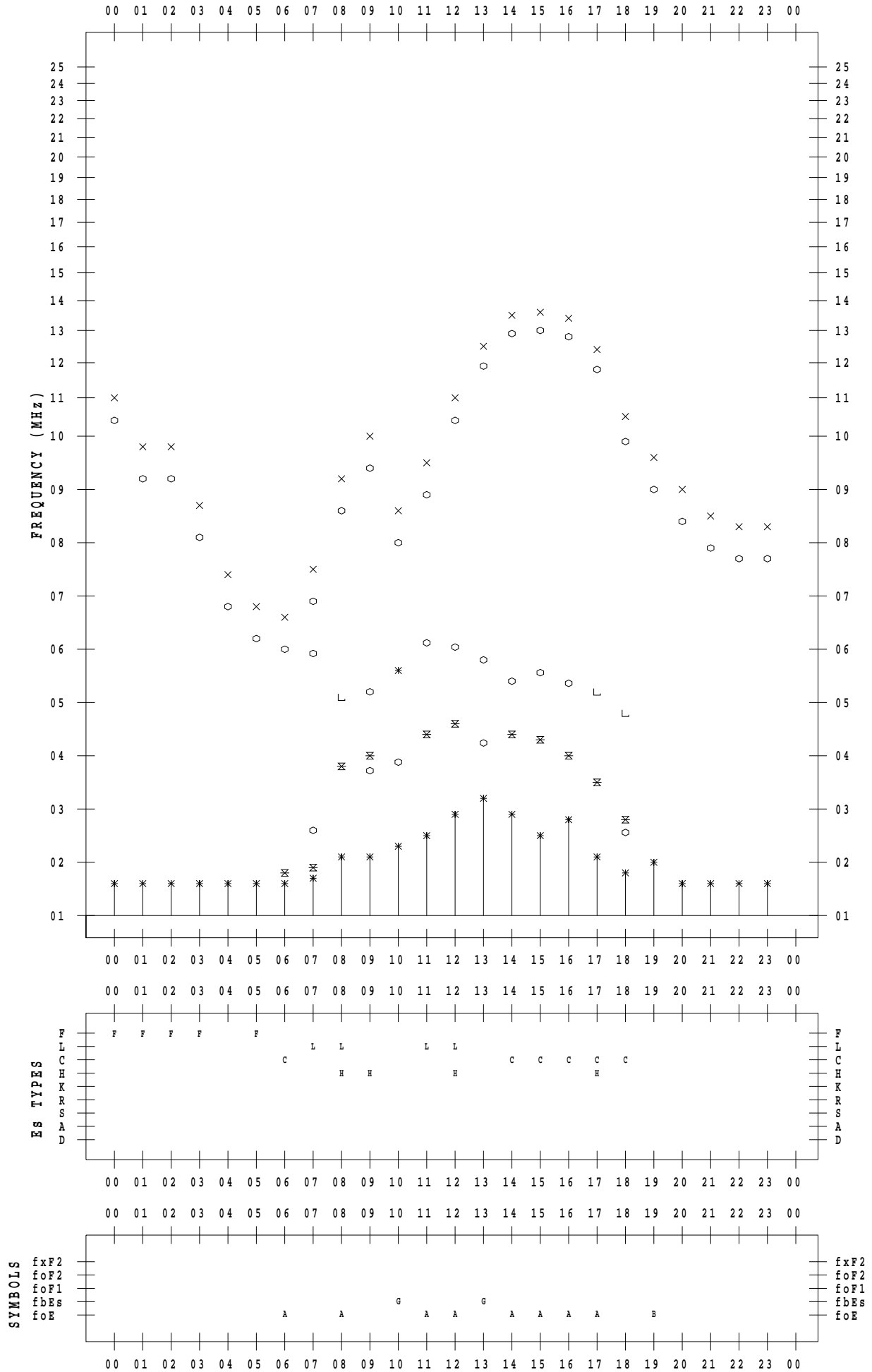
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 7

135 ° E MEAN TIME



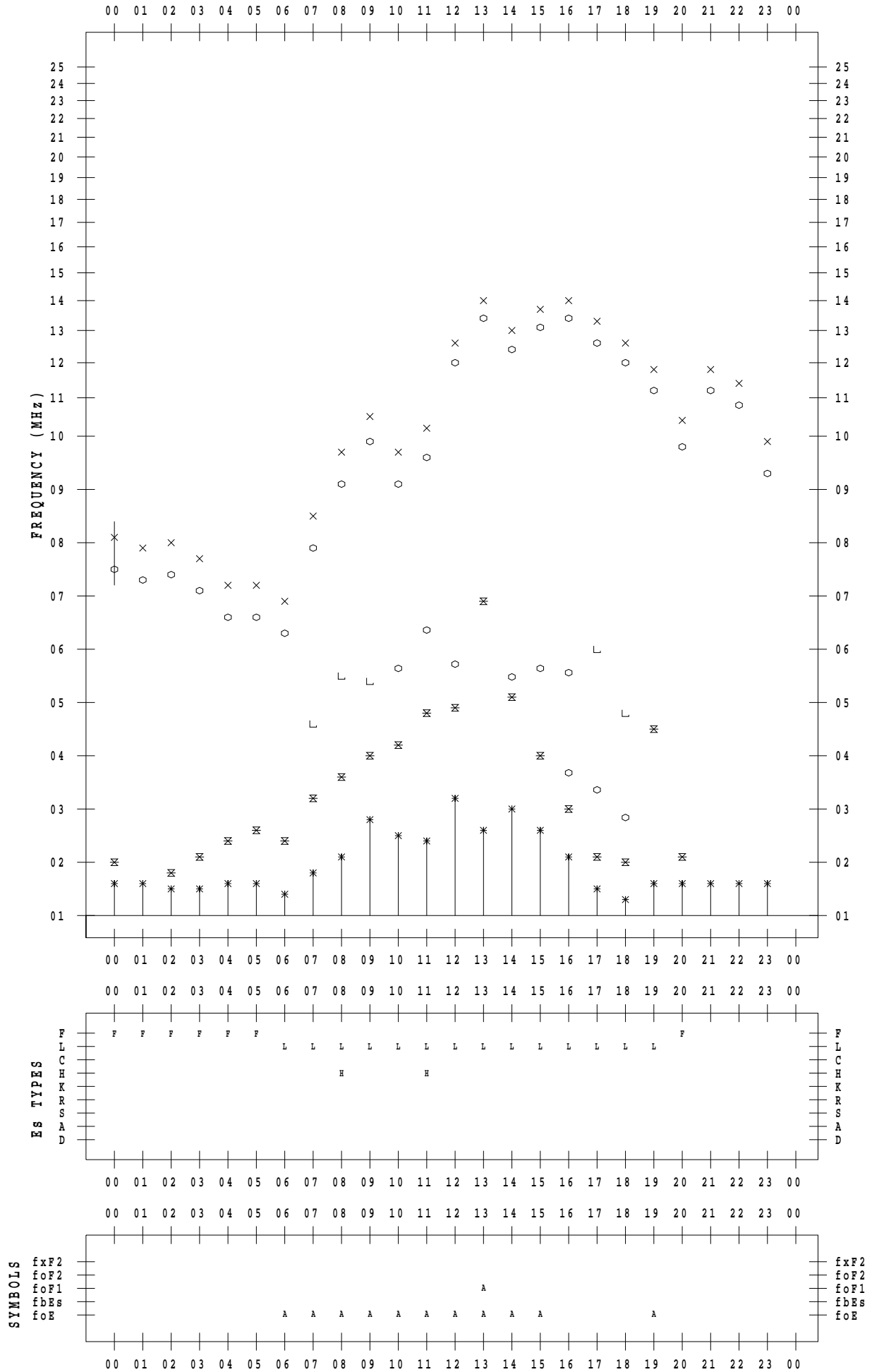
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 8

135 ° E MEAN TIME



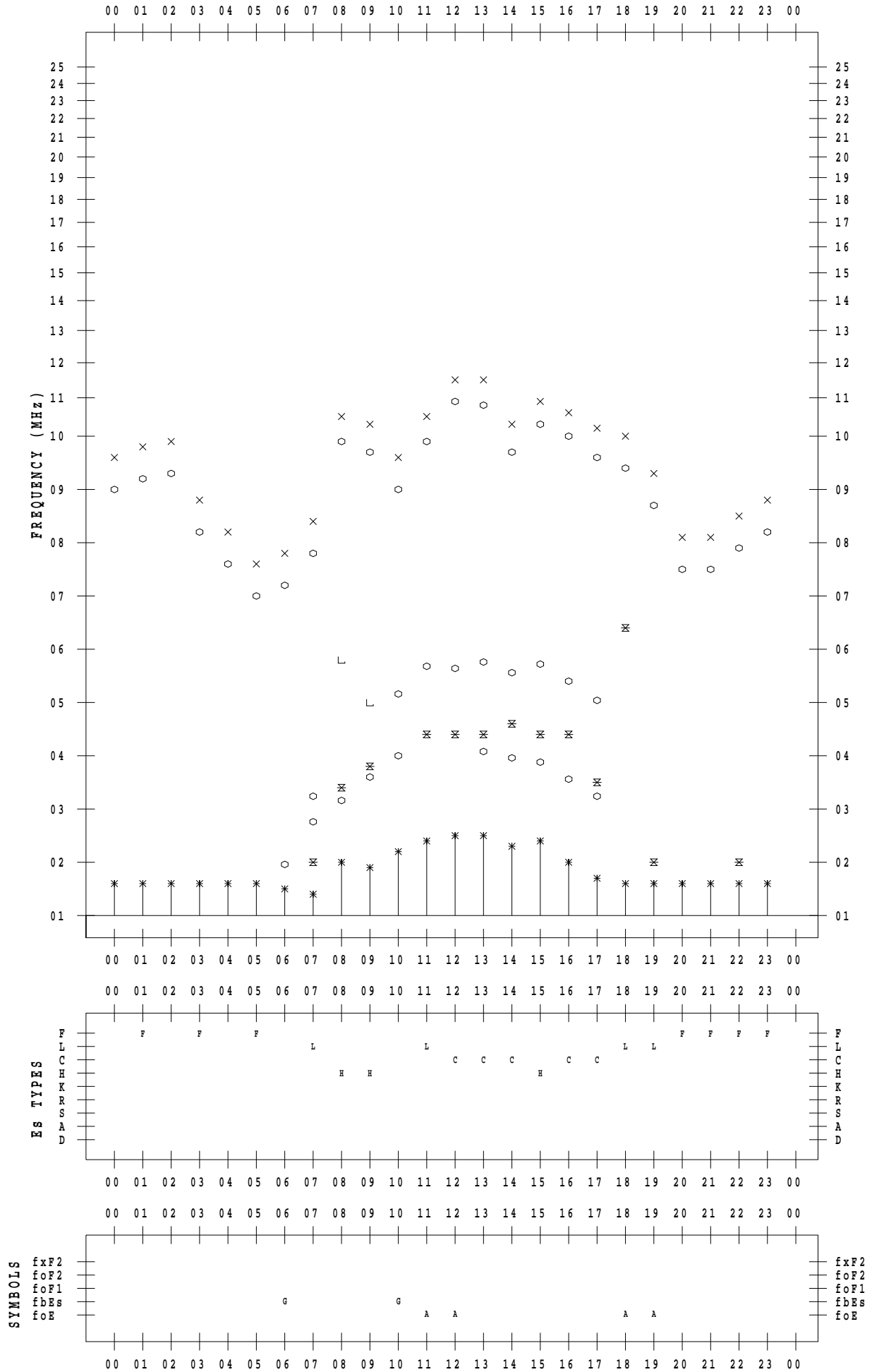
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/ 9

135 ° E MEAN TIME



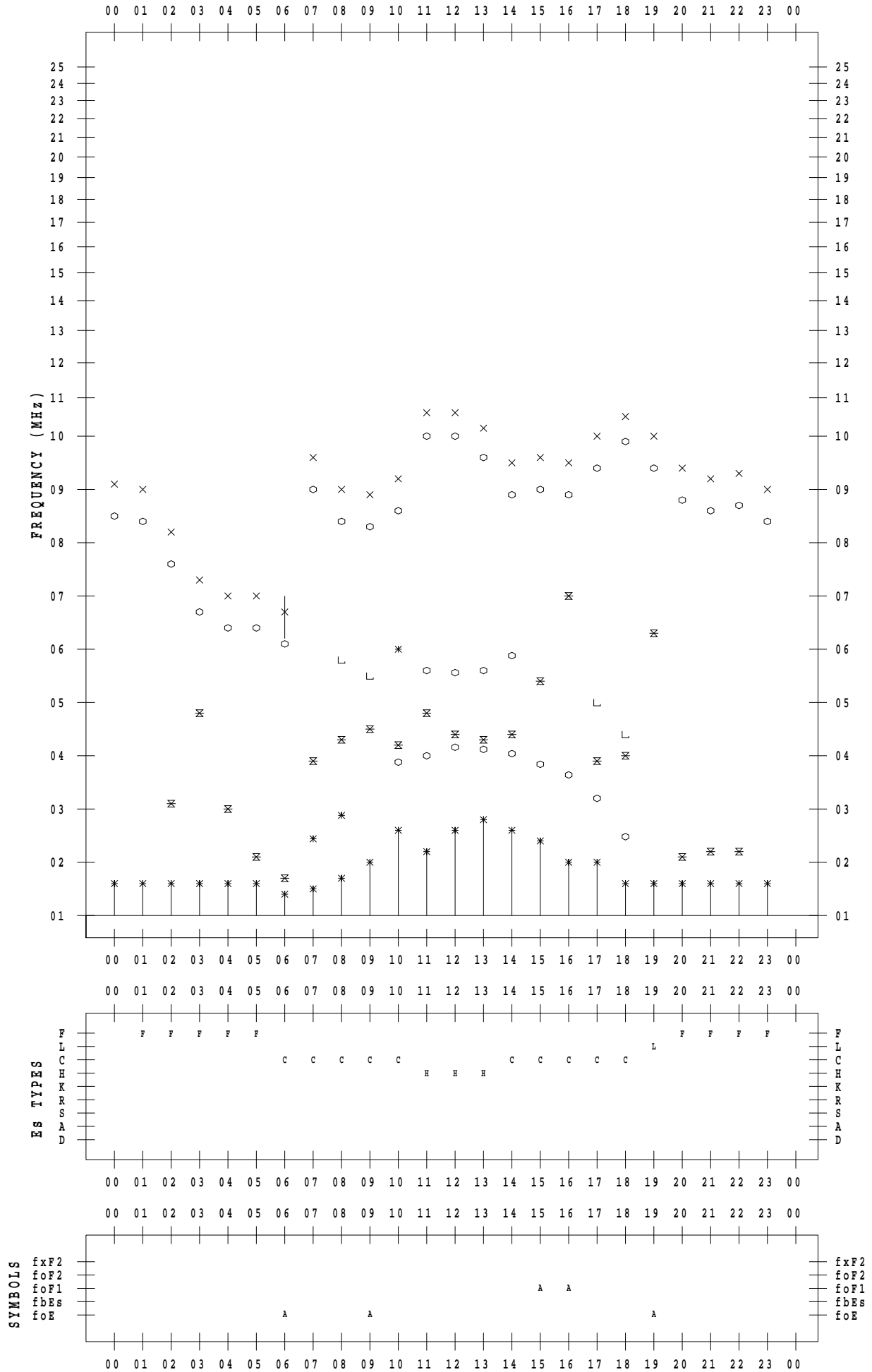
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/10

135 ° E MEAN TIME



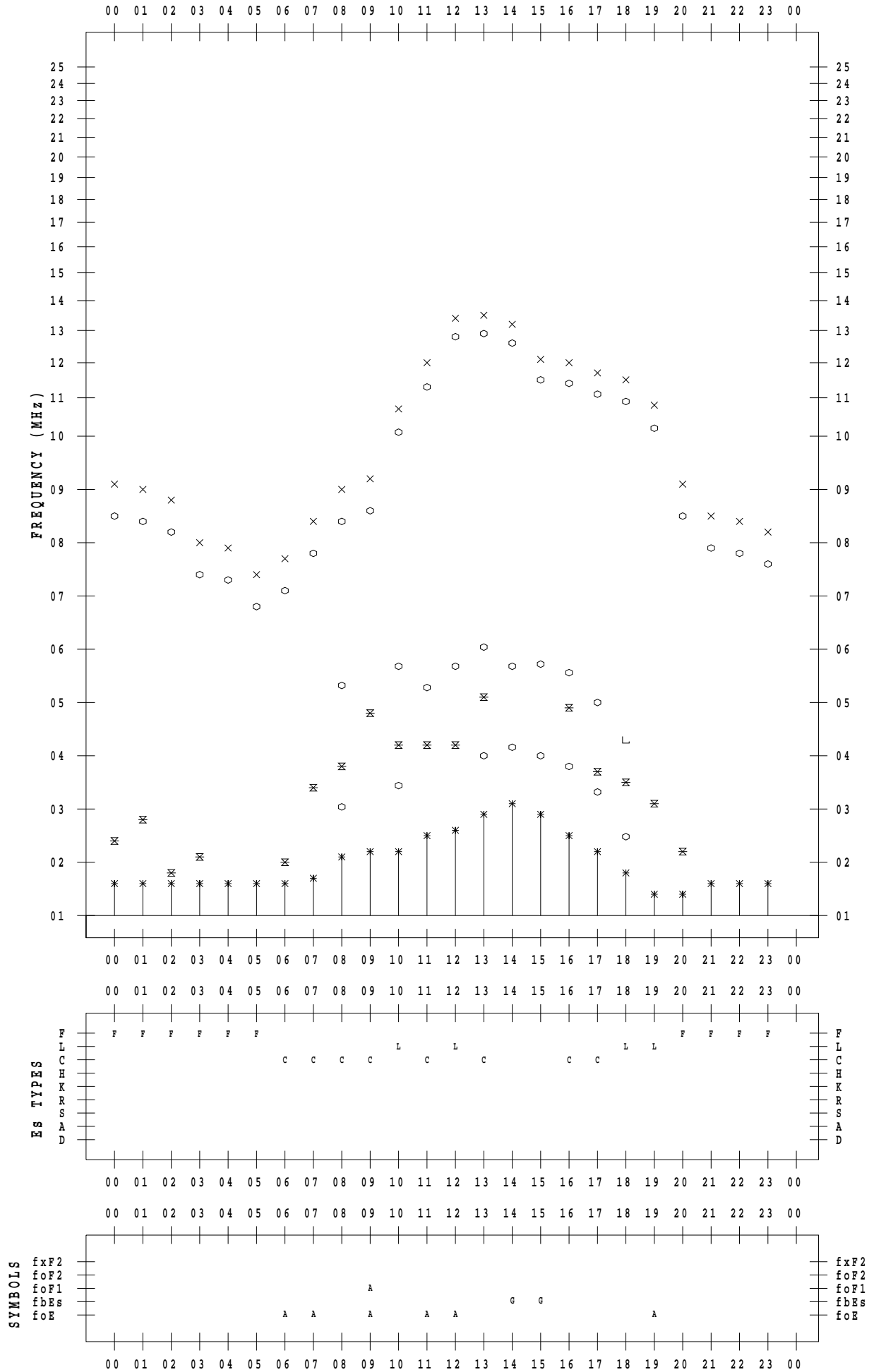
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/11

135 ° E MEAN TIME



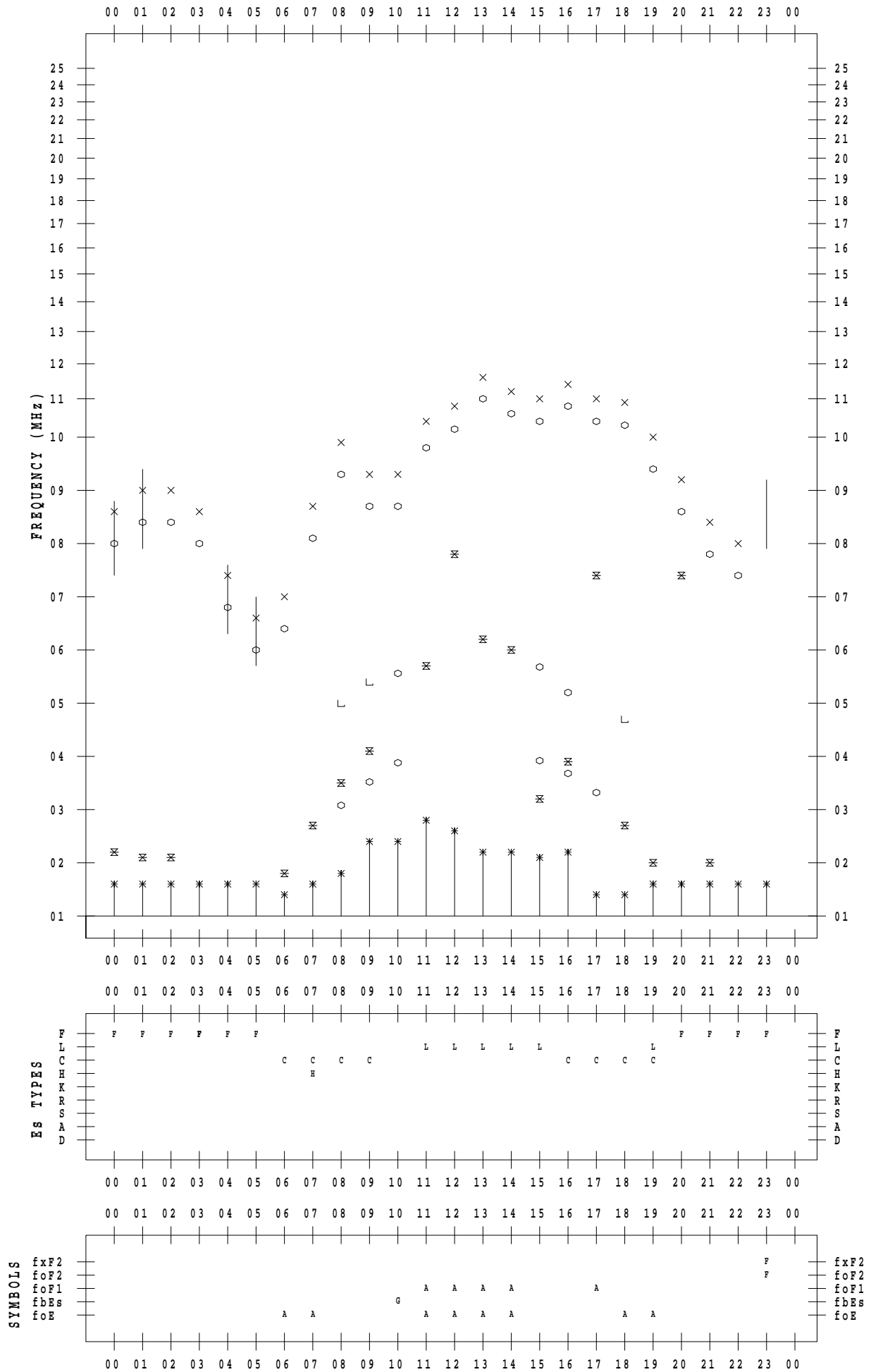
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/12

135 ° E MEAN TIME



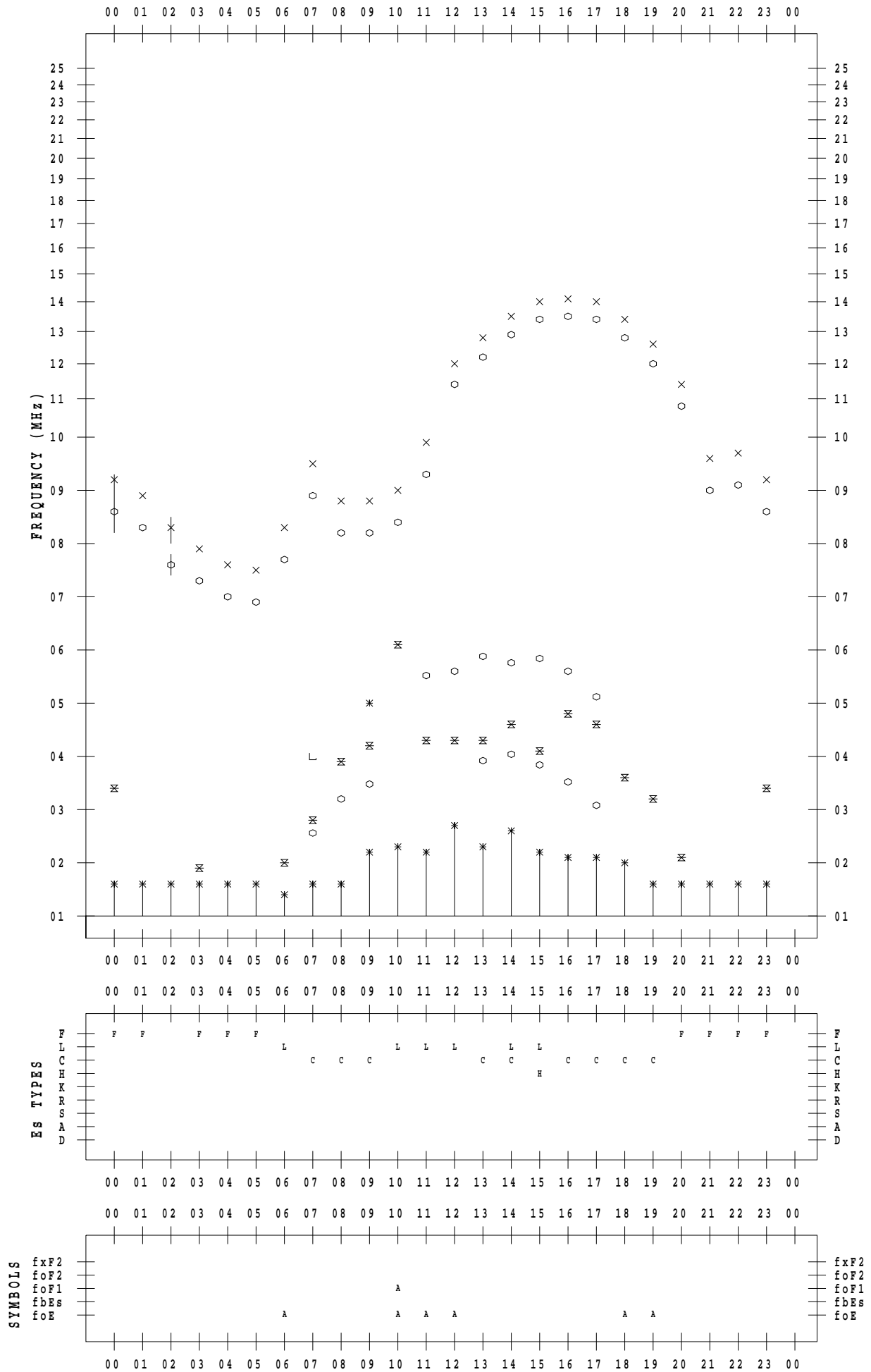
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/13

135 ° E MEAN TIME



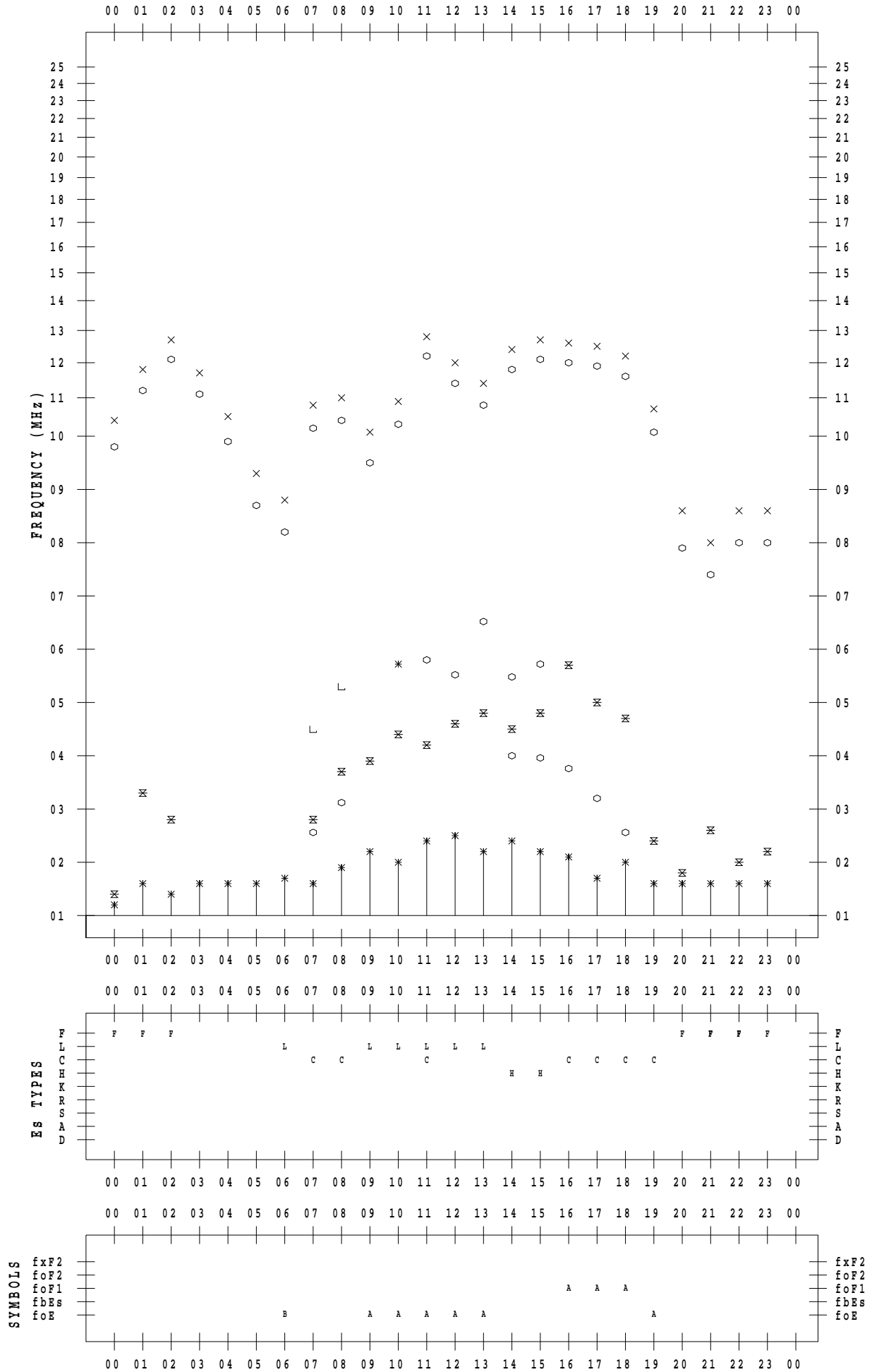
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/14

135 ° E MEAN TIME



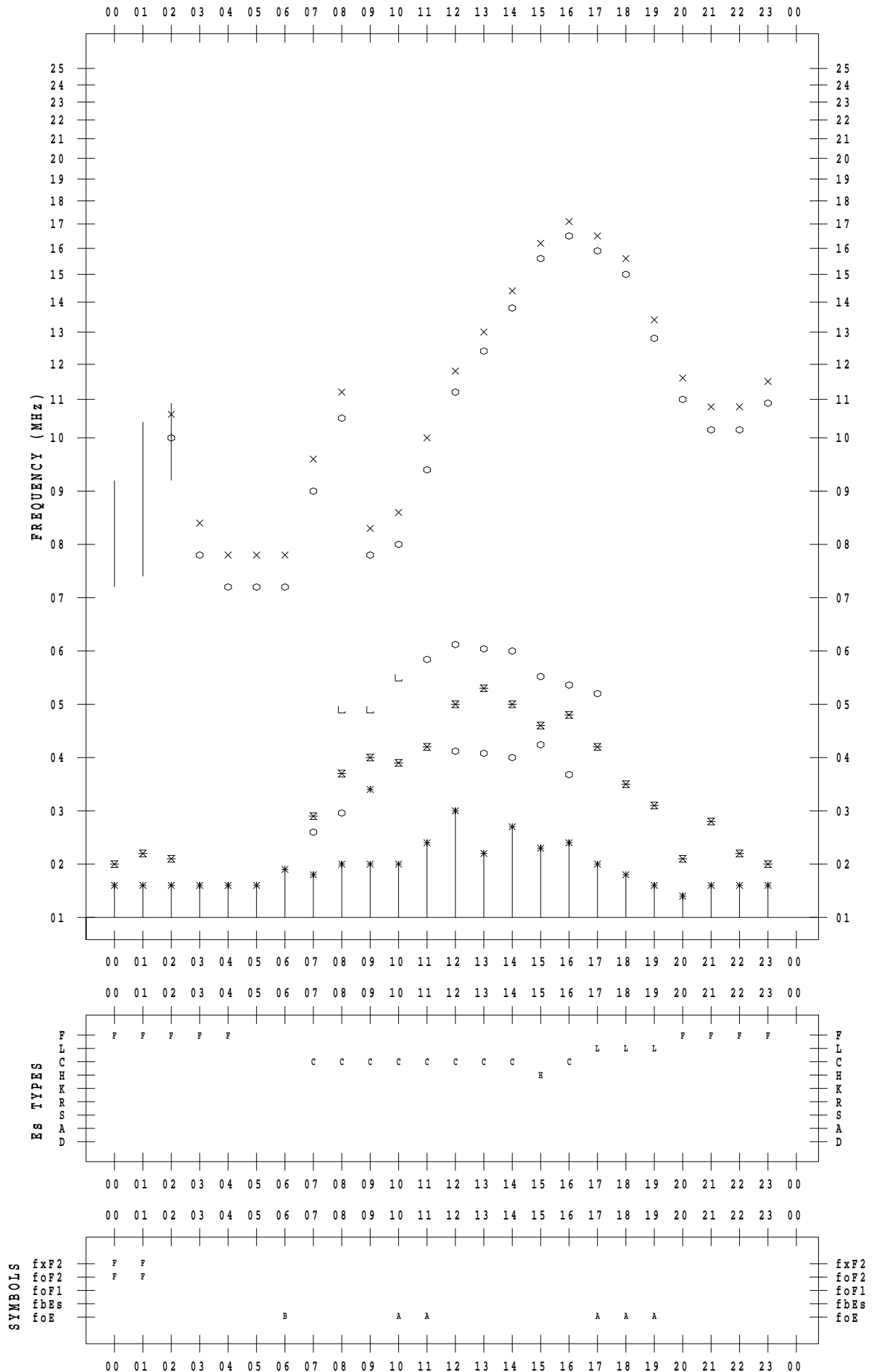
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/15

135 ° E MEAN TIME



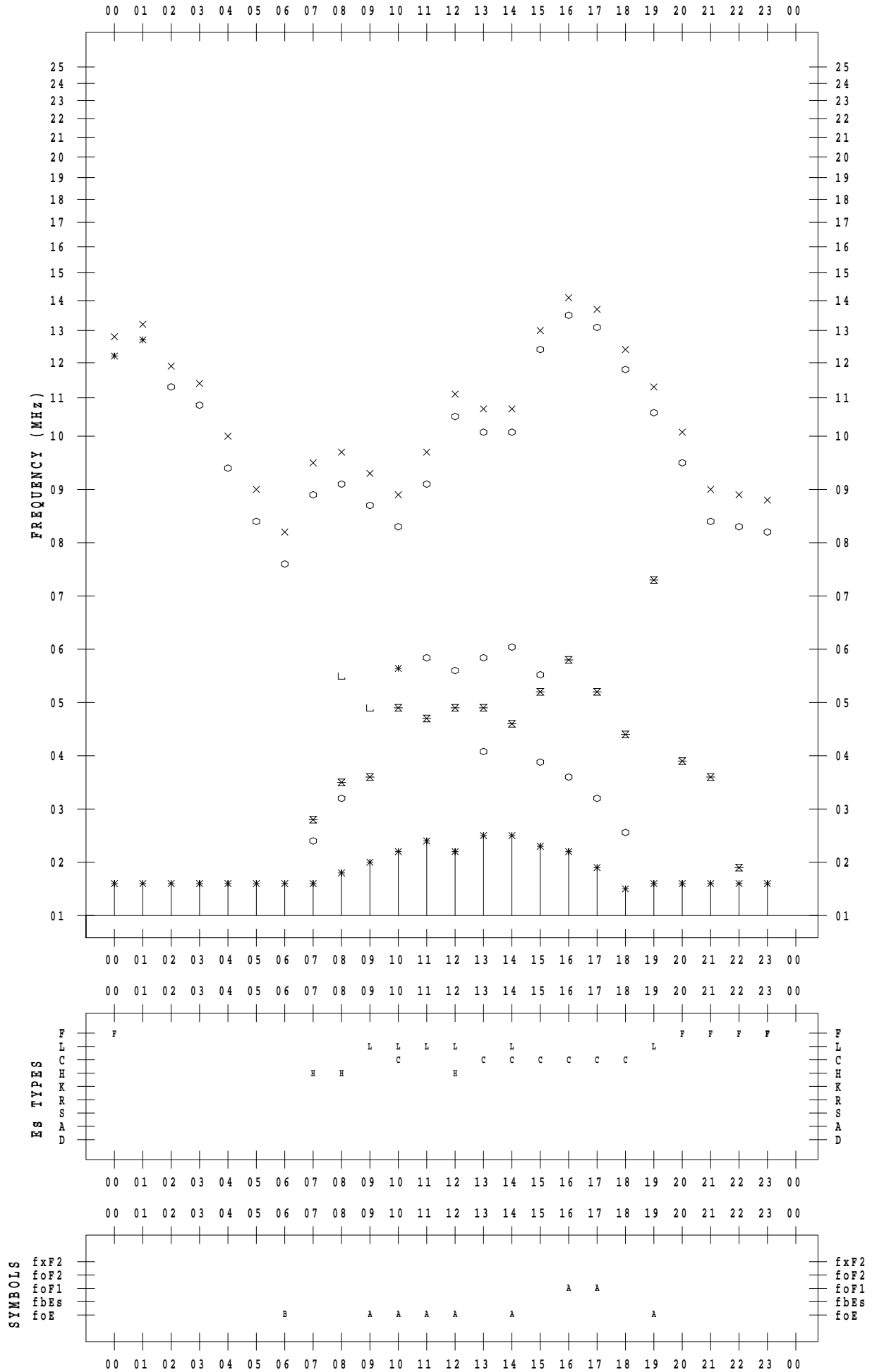
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 16

135 ° E MEAN TIME



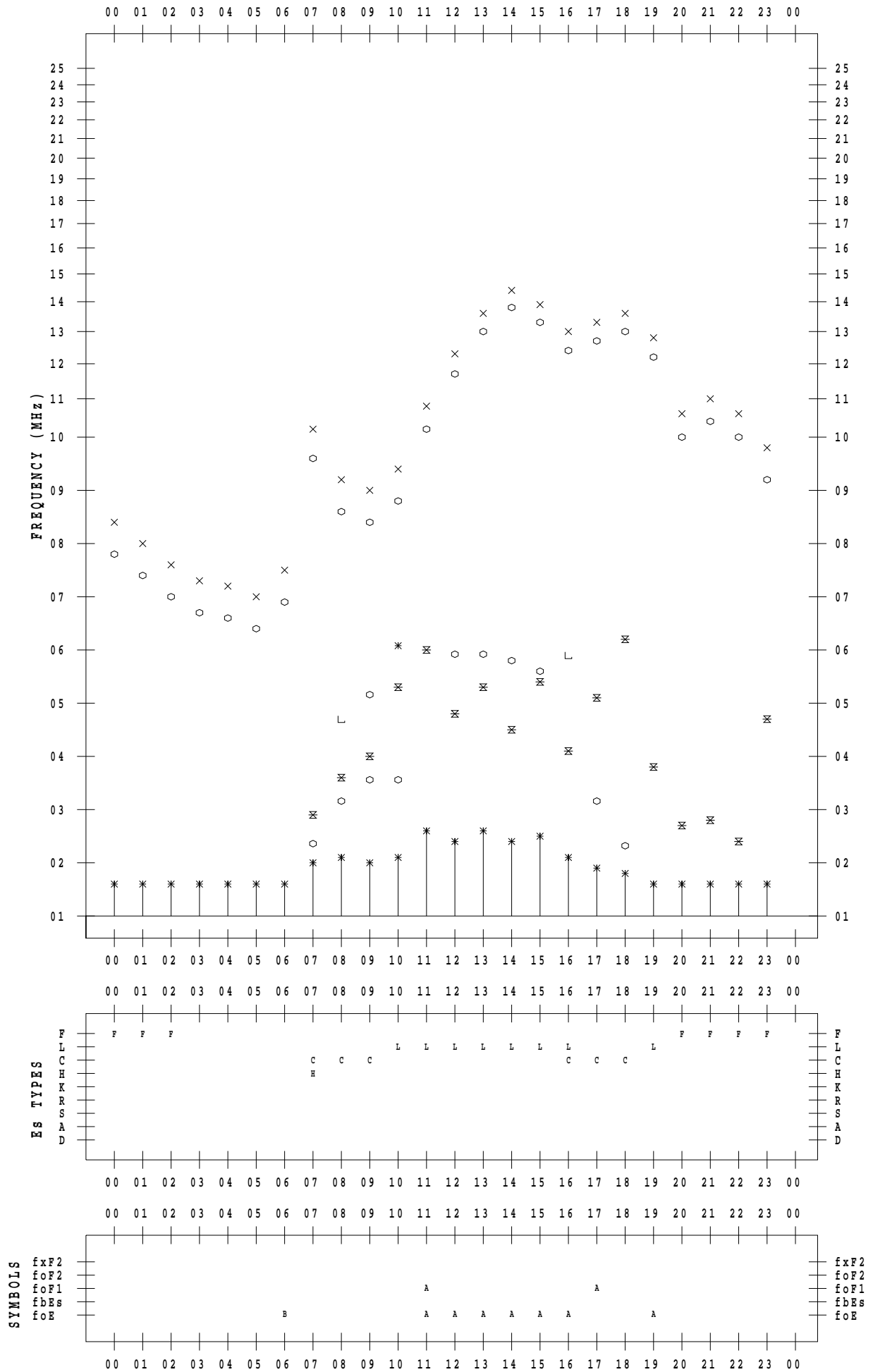
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/17

135 ° E MEAN TIME



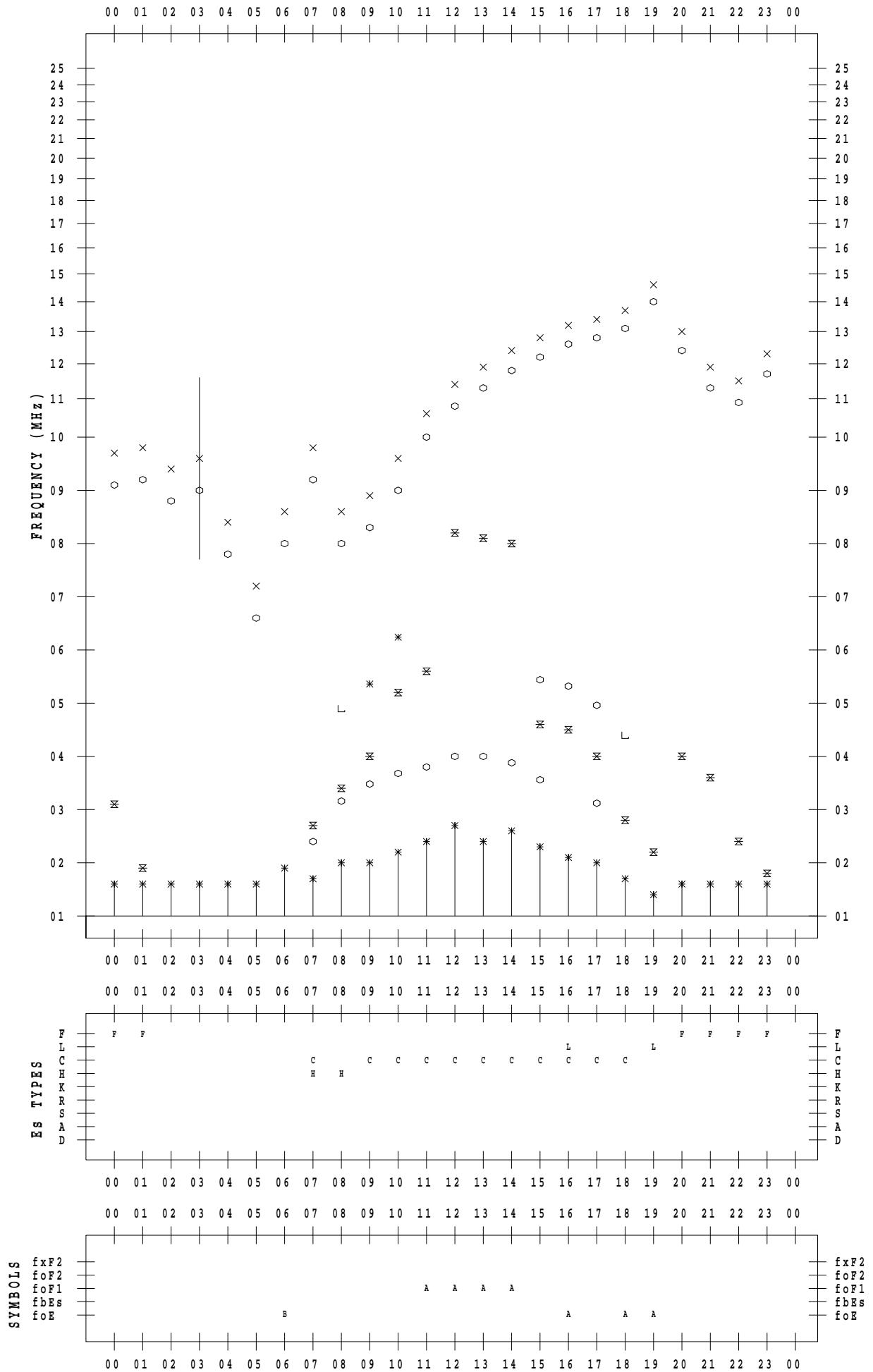
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/18

135 ° E MEAN TIME



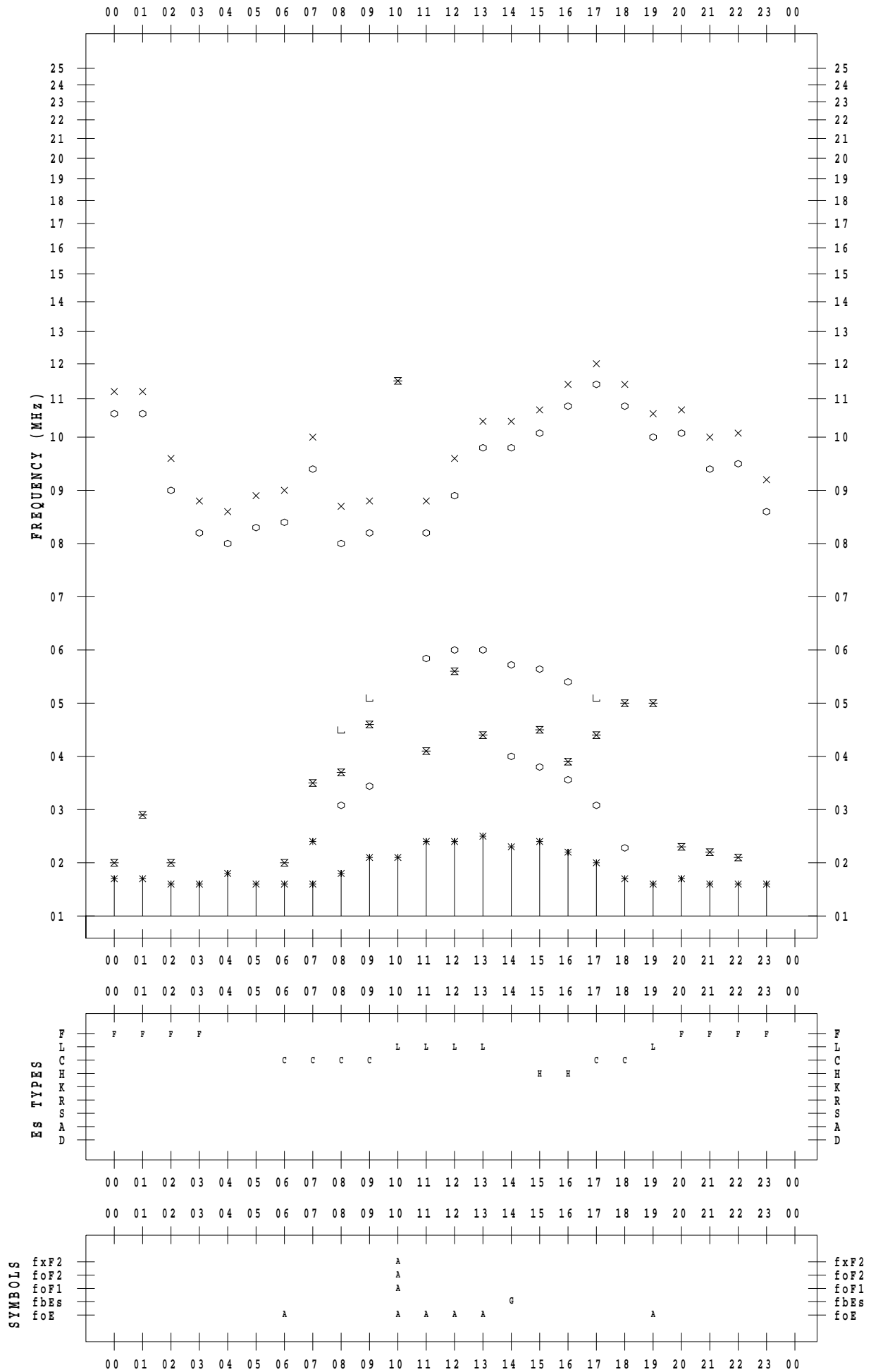
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/19

135 ° E MEAN TIME



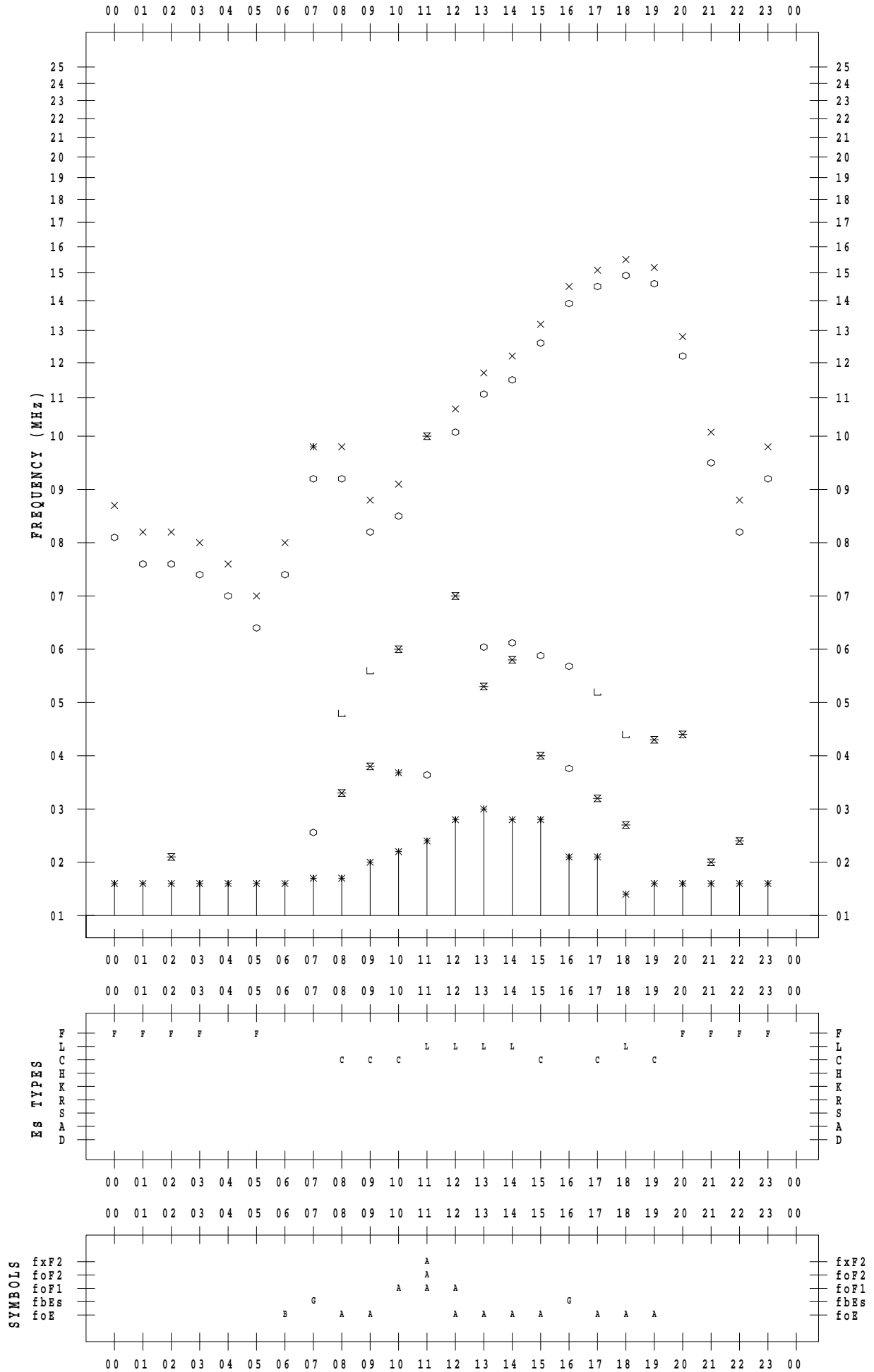
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/20

135 ° E MEAN TIME



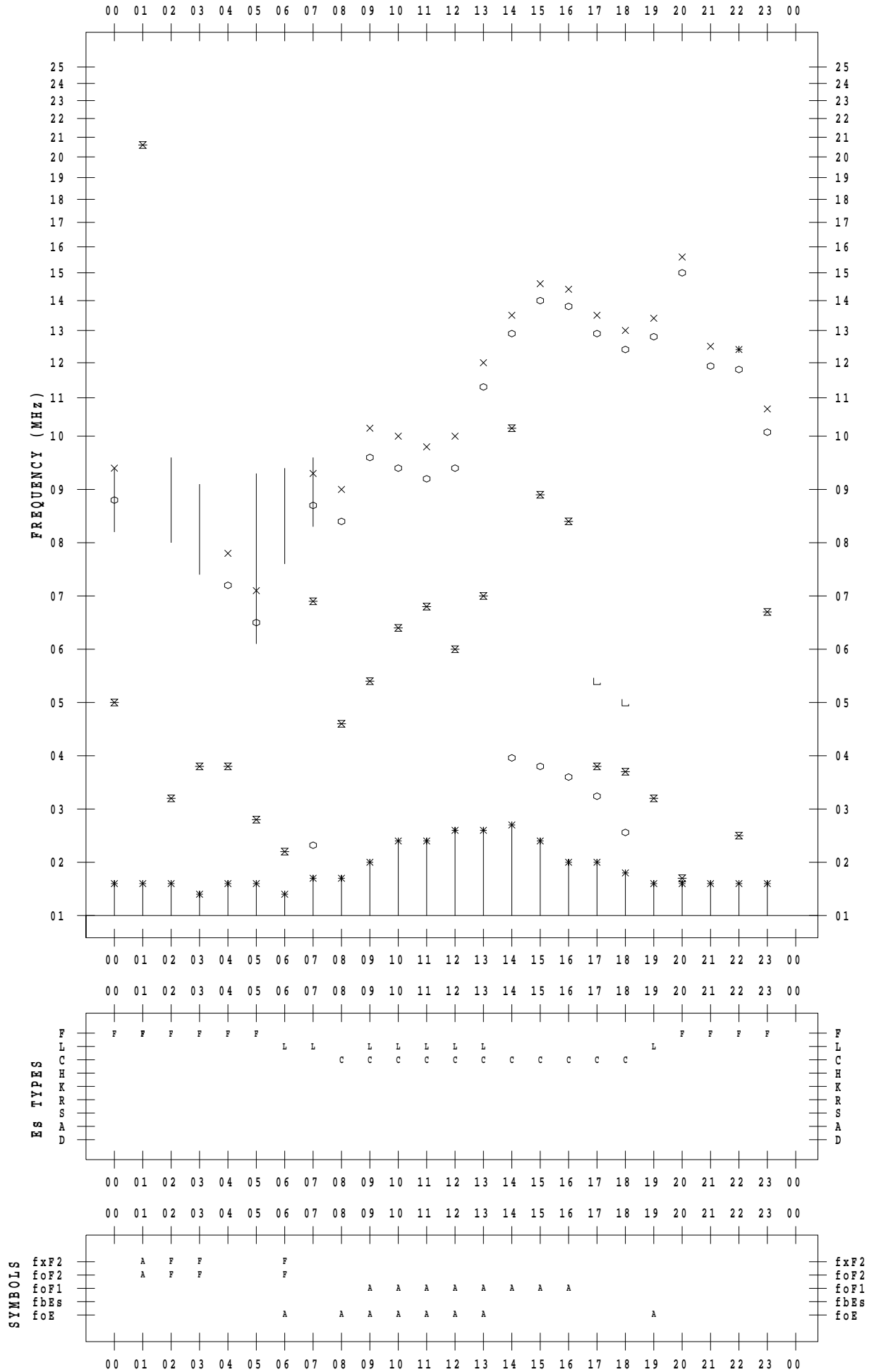
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/21

135 ° E MEAN TIME



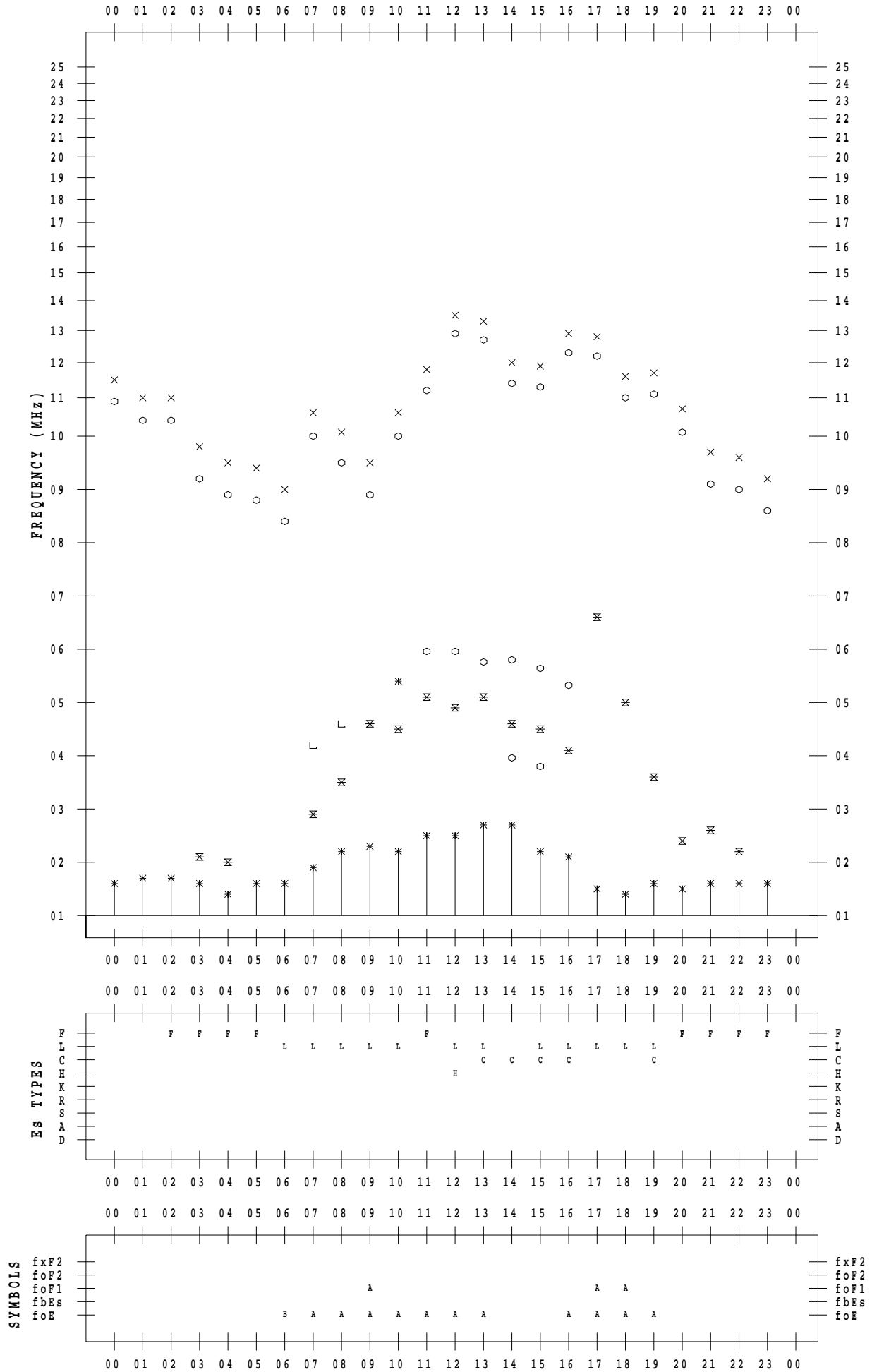
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/23

135 ° E MEAN TIME



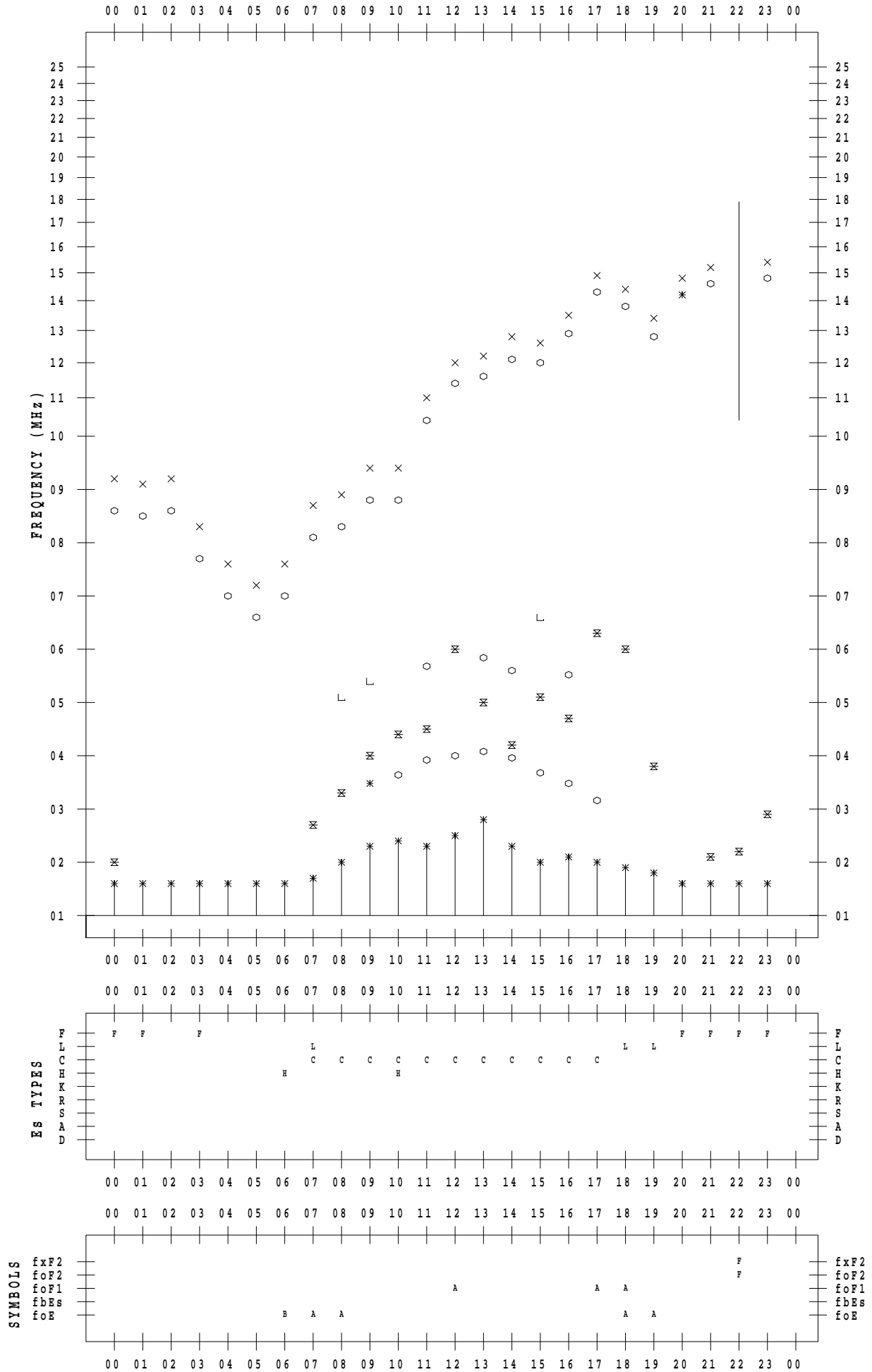
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/24

135 ° E MEAN TIME



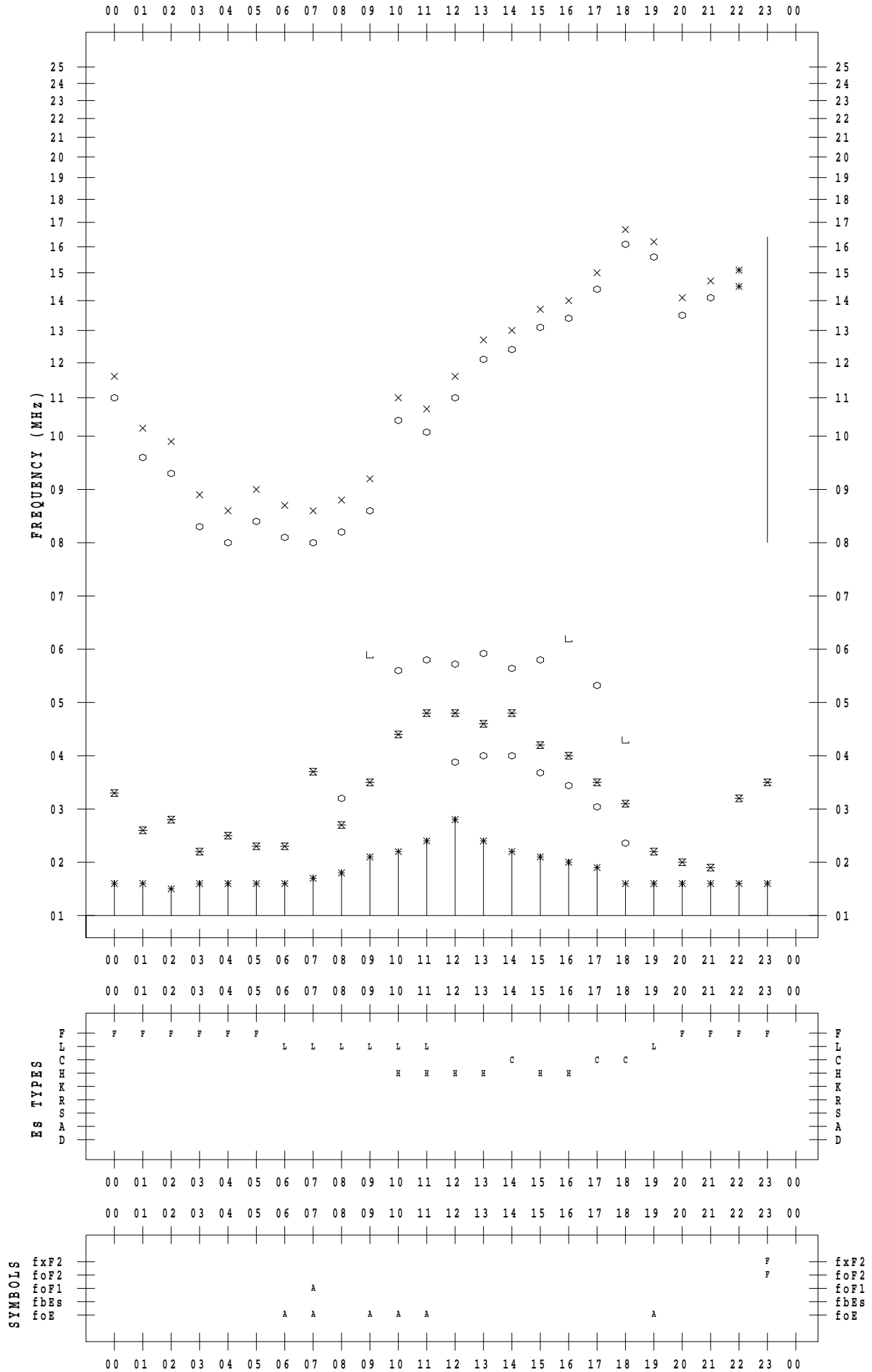
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 25

135 ° E MEAN TIME



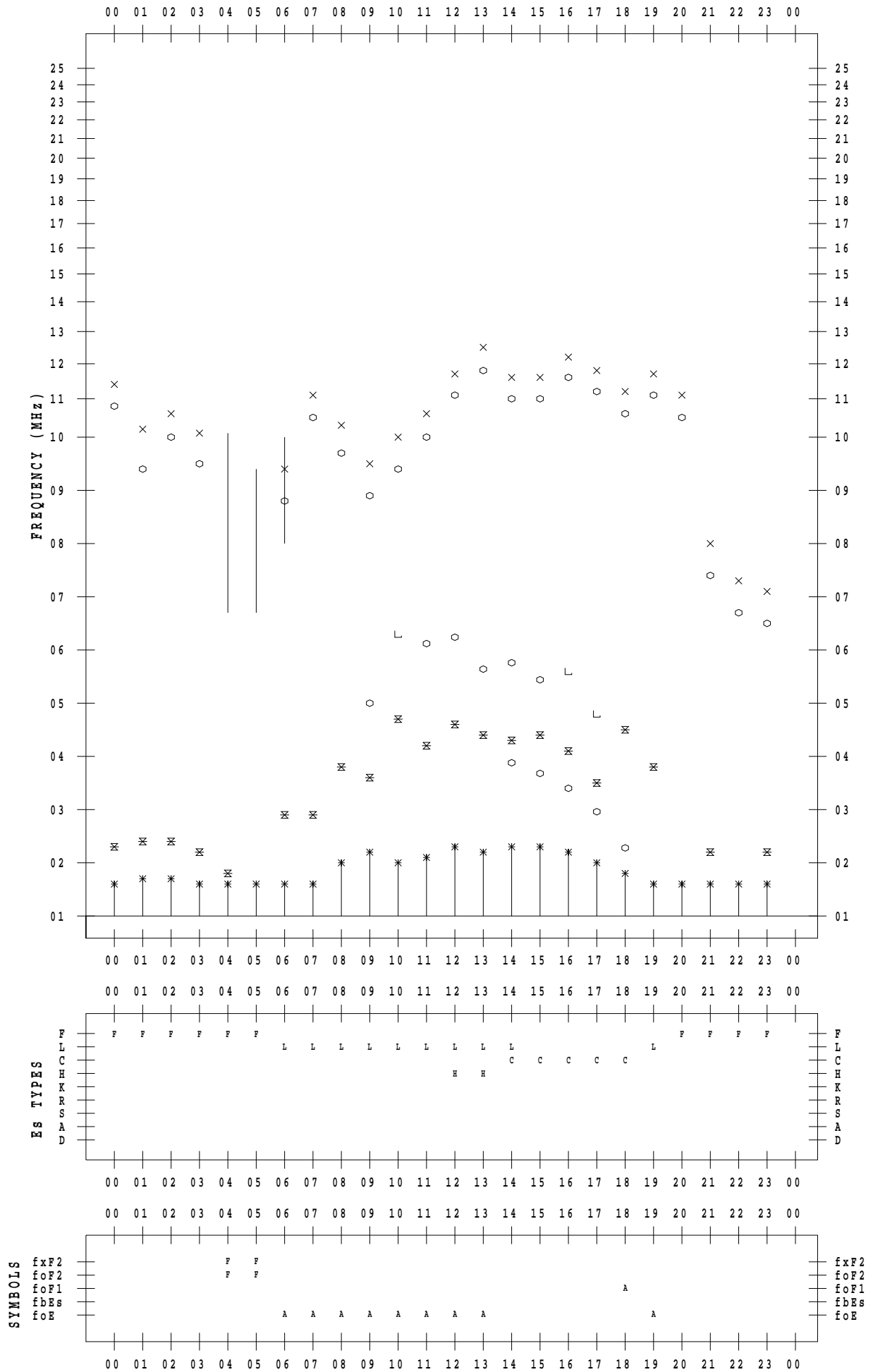
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/26

135 ° E MEAN TIME



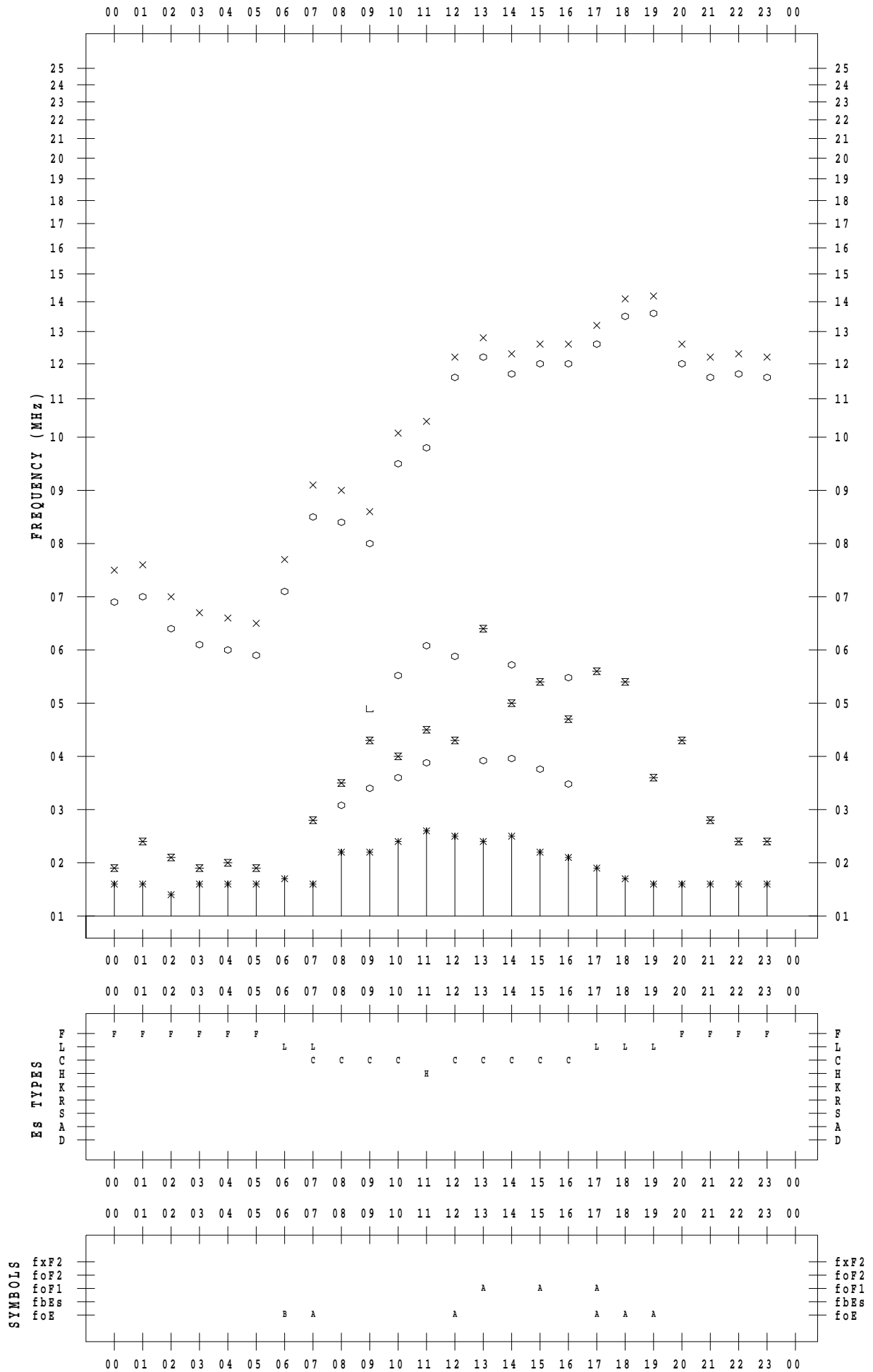
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 27

135 ° E MEAN TIME



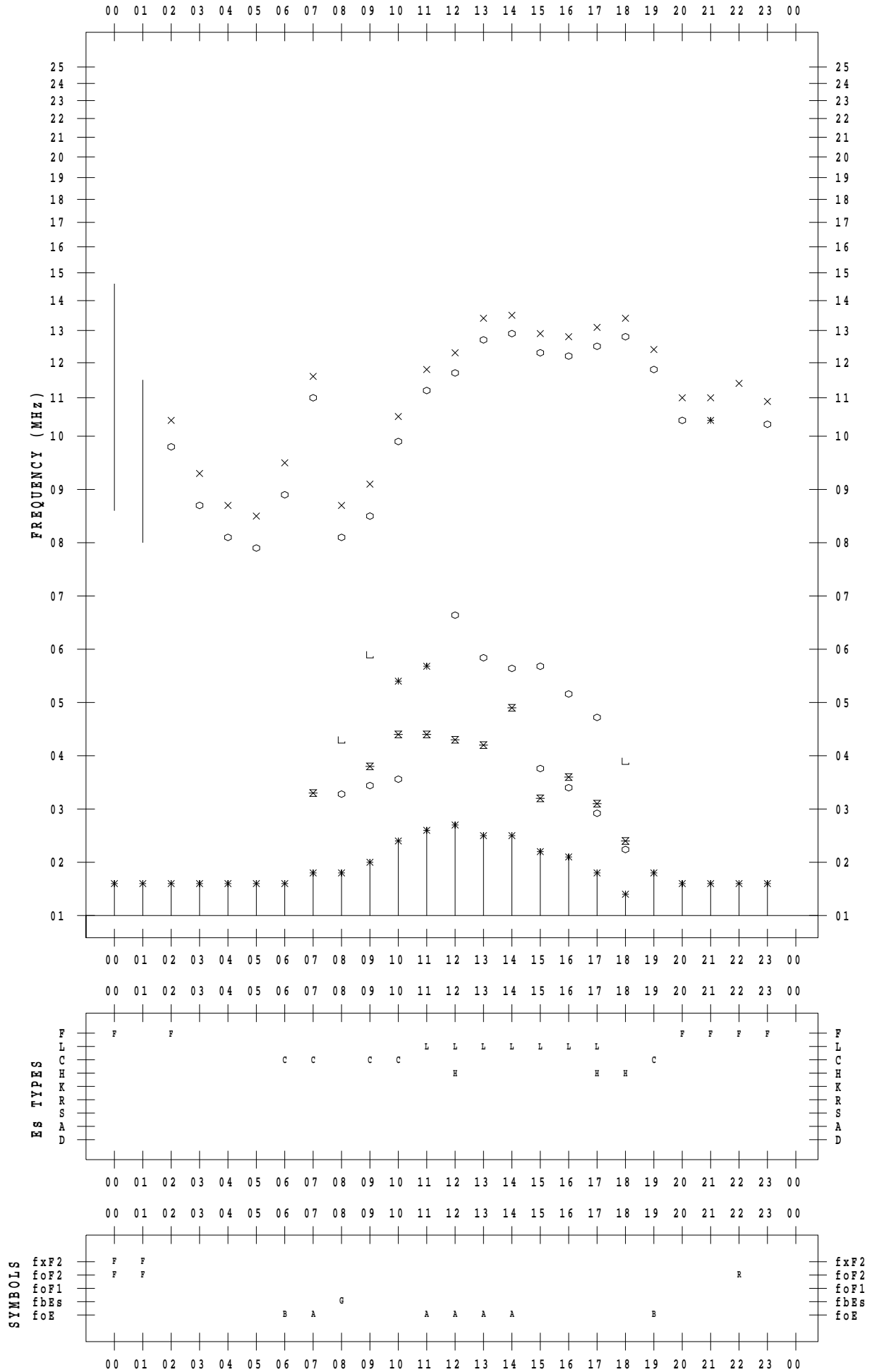
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 28

135 ° E MEAN TIME



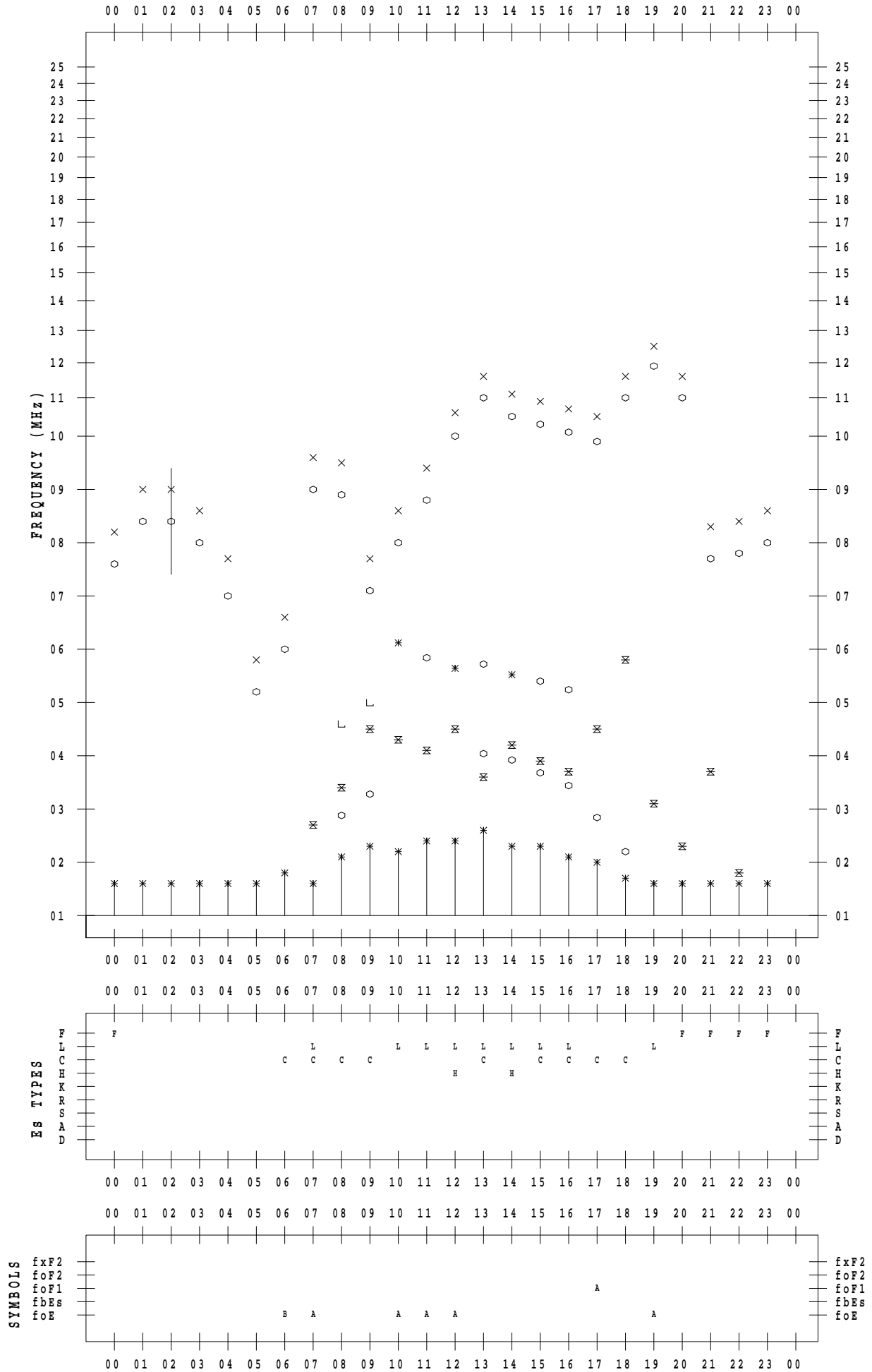
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023/ 8/30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2023 / 8 / 31

135 ° E MEAN TIME

