

IONOSPHERIC DATA IN JAPAN

FOR January 2022

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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 obtained at the following stations under the National Institute of Information

and Communications Technology, Japan.

Stations	Geographic (WGS84)		Geomagnetic (IGRF-13 (2022))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
*Wakkanai/Sarobetsu	45°10'N	141°45'E	37.1°N	149.9°W	Vertical Sounding
Kokubunji	35°43'N	139°29'E	27.5°N	150.8°W	Vertical Sounding
Yamagawa	31°12'N	130°37'E	22.4°N	158.5°W	Vertical Sounding
Okinawa	26°41'N	128°09'E	17.8°N	160.5°W	Vertical Sounding

*We moved the observation facilities at Wakkanai to Sarobetsu in 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.

1. 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 ($foF2$, fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of $foF2$.

a. Characteristics of Ionosphere

$foF2$	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 iono-spheric 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 $foF2$).
- 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 $foF2$, 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 fxE and foE 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.

2. 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

fxI	Top frequency of spread F trace
$foF2$ $foF1$ foE $foEs$	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

JAN. 2022

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	30	31	31	31	30	24	N 23	33	62	66	77	78	65	54	62	58	49	35	N 23		24	26	32	32	
2	31	31	31	30	29	29	23	37	48	67	73	72	65	A	64	55	A	A	A	A	A	A	A	A	
3	A	A		31	33	32	32	31	32	A	58	64	69	63	56	56	53	49	35	33	30	24	26	30	33
4	32	30	31	30	29	30	29	41	56	69	64	88	65	63	65	52	51	36	25	28	A		A	33	
5	35	35	33	31	A	A		25	36	47	57	68	64	67	65	65	52	43	33	25	31	A	A	A	
6	38	37	39	35	36	36	31	34	51	57	75	N 67	65	53	48	57	51	31	A	A	A	A		32	31
7	31	36	35	33	32	26	A	A	A		59	59	55	57	50	66	55	45	32	31	A		A	30	30
8	27	30	31	31	29	27	23	32	49	51	56	65	59	59	58	59	44	35	25	24	A		31	32	32
9	30	33	32	33	33	31	26	32	71	75	70	85	61	64	66	61	57	A 39	39	37	37	33	37	39	
10	A 39	41	43	40	32	29	26	36	50	51	67	71	64	60	52	55	52	A	A	32	32	25	30	31	33
11		33	32	A	29	29	22	35	60	55	52	80	69	62	65	66	52	A	A		32	30	31	33	39
12	40	35	36	34	34	32	24	38	51	60	67	79	60	74	53	57	46	33	29	29					
13												67	73	65	67	62	55	38	32	33	31	29	35	36	
14	38	41	41	42	41	41	39	51	48	58	69	72	64	61	68	60	53	33	30	37	36	34	A 31	A 31	
15	32	A		32	29	33	32	29	49	78	65	77	84	80	85	87	69	73	55	48	34	48	33		
16	38	39	35	33	26	25	37	46	76	90	74	68	85	80	85	67	63	45	53	48	29	32	31	31	
17	31	24	29	30	23	23	25	43	52	64	77	75	65	82	60	71	46	33	32	29	33	27	31	33	
18	37	30	32	32	35	31	25	38	67	71	70	86	N 65	68	67	66	57	36	35	32	26	26	32	31	
19	32	34	34	32	33	30	24	40	51	65	83	70	91	66	82	78	55	37	45	44	44	43	55	52	
20	51	51	50	51	51	46	43	52	63	78	93	89	63	67	69	63	60	A		34	34	31	30	32	33
21	33	31	33	A	A		31	31	39	52	65	57	70	80	65	68	69	56	39	41	45	34	29	30	34
22	37	41	44	41	41	44	33	45	56	64	74	67	65	72	73	65	57	41	34	A		35	37	37	33
23	36	36	37	33	33	34	31	42	58	65	69	76	67	63	62	73	61	44	38	29	31	A		30	35
24	37	36	35	37	30	31	30	40	63	67	72	71	70	57	70	69	50	39	39	32	A	A		31	31
25	32	33	33	33	33	33	29	39	61	64	68	73	74	69	62	67	60	47	41	39	36	37	35	33	
26	38	34	31	33	32	34	32	46	66	65	79	92	77	71	66	69	67	40	30	30	31	27	30	31	
27	31	31	33	33	33	32	24	39	56	62	66	80	71	64	69	67	61	42	36	41	32	33	35	35	
28	35	35	35	36	35	34	32	43	65	68	84	86	79	77	61	74	64	42	39	38	32	31	35	35	
29	33	33	36	36	37	38	33	45	58	77	87	99	69	74	70	68	74	48	33	35	32	A 33	A 33	34	
30	39	38	38	37	37	39	39	54	67	67	89	77	81	80	81	68	71	52	36	30	49			35	
31	36	34	35	33	32	34	25	50	69	77	79	98	85	85	75	81	73	54	33	37	24	31	32	34	
	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	30	28	28	29	29	29	28	30	30	31	31	30	31	31	30	27	28	26	23	23	26	27	
MED	35	34	34	33	33	32	29	40	58	65	71	75	67	65	66	66	56	39	34	32	32	31	32	33	
U Q	38	36	36	36	35	34	32	45	65	68	77	85	77	74	70	69	61	44	39	37	36	33	35	35	
L Q	31	31	32	31	30	29	24	36	51	59	67	69	64	61	62	57	50	35	30	30	29	27	31	31	

HOURLY VALUES OF fEs AT Wakkanai

JAN. 2022

LAT. 45°10.0'N LON. 141°45.0'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	G	G	G	G	G	G	G	G		29	35	37	36	35	33	48	170	11	G	G		30	28	G	G	
2	G	G	G	G	G	G	G	G		49	30	43	54	41	96		95	125	146	146	92	56	59	46	35	
3	33	32	G	G	G	G	G		35	54	70	39	28	145	50	G	G	G	G	G	G	G		29	28	
4		29	30	G	G	G		25	26	35	52	90	32	165	48	57	71	39	G	G		28	29	59	26	
5	33	27	G	G	40	50	38	40	88	52	84	80	46	27	36	G	G		28	G	30	48	112	49	49	
6	38	34	32	34	33				34	56	60	36	34	27	32	24	20	30	38	84	90	43	32	33		
7	38	180	32	39	34		39	55	153	40	49	35	31	39	28	G	49	G	G		48	69	56	34	30	
8	30	G	G	26	G	G	G		35	48	41	146	57	28	34	G	48	48	G	G	G		27	29	G	G
9		G	G	G	G	G	G		32	33	50	49	34	28	28	G	G		11	G	G	G	G	G	G	
10	30	G	G	29	G	G		27	33	23	48	34	30	29	G	28	52	30	28		G	G	G	G	G	
11	29	G		29	G	G	G		11	32	27	38	32	35	59	35	G	34	36	33		G	G	G	G	
12	G	G	G	G	G	G	G		134	34	33	33	32	32	G	52	G	G	G	G						
13													G	G	G	G	G	G						G	30	
14	38	45	28	G	G	G	G		11	G	26	49	114	34	49	G	28	38	56	26	G	G	G	G	G	
15	G	36	29	G	G	G	G		29	39	46	43	40	46	40	36	52	36	11	31	G	32	40	48	109	
16	38	28	31	30	27	G	G	G		24	49	39	44	42	42	69	31	G	11	G	G	G	G	G	G	
17	G	G	G	G	G			161	G	26	35	32	28	37	49	24	48	G	G	G	G	G	G	G	G	
18	G	G	G	G	G	G	G	G		31	38	36	35	28	43	26					26					
19	G	209	G	G		G	G		28	24	56	43	G	33	29	31	48	22	G	G	G	G	G	32	33	
20	29	G	G	G	G	G		27		24	54	28	30	30	52	34	G	G		95	G	G	G	G	G	
21	29	G	G	39	38	G		33	11	48	48	44	34	G	G	G	G	G	G		G	G	G	G	G	
22	G	G	G	G	G	30	G	G		48	48	G	52	G	G	G		27	G	32	32	41	34	34	31	31
23	59	28	25	G	24	27		33	G	G	49		31	31	G	G	G		37	G	G	G	28	32	G	
24	G	G	G	34	G	G		26	G		48	30	31	52	53	31	34	32	41		G	50	28	29	32	
25	25	33	27	G	G	29	G		91	45	38	56	52	29	31	34	26	48	41	G	34	34	G	G	G	
26	G	G	G	G	G	24	G	G		35	39	41	29	31	30	28	26	48	39	G	G	G	G	G	G	
27	G	G	G	G	G	G	G	G		49	G	28	43	32	53	41	G	G	41	G	G	G	G	26	35	
28	G	G	G	G	G	G	G	G		40	38	40	39	32	50	25	48	40	G	G	G	G	27	28	G	
29	G	G	G	25	G	G	G		11	31	36	37	37	36	37	28	48	59	11	G	G	G	G	G	G	
30	G	G	G	G	G	G	G		11	G	26	34	46	32	34	30	28	48	54	55	G		59	39		
31	G		28	32	28	24	G	G		28	27	34	46	35	34	35	30	29	G	31	32	25	G	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	28	30	29	30	29	28	28	30	30	30	30	31	31	31	30	31	31	31	29	30	29	29	30	29		
MED	G	G	G	G	G	G	G	11	32	40	40	35	33	34	30	26	22	28	G	G	G	G	G	G		
U Q	31	29	27	28	12	G	13	33	48	48	49	46	39	48	36	48	48	40	31	G	33	31	32	31		
L Q	G	G	G	G	G	G	G	G	24	33	35	31	29	28	26	G	G	G	G	G	G	G	G	G		

HOURLY VALUES OF fmin AT Wakkanai

JAN. 2022

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	14	15	15	15	14	14	14	14	15	14	17	14	15	15	15	15	15	14	14		15	16	16	15
2	15	15	14	14	14	14	20	14	17	16	15	15	17	16	16	13	13	63	5	14	16	15	16	16
3	15	16	15	14	15	14	14	16	15	15	16	15	16	16	15	15	16	14	14	15	16	16	17	16
4	15	16	15	16	15	16	17	16	15	19	19	17	21	20	17	17	15	15	16	17	16	16	15	16
5	16	15	14	14	15	15	14	16	15	17	15	15	14	13	15	15	15	15	15	16	16	16	15	16
6	15	15	16	15	15	15	16	17	16	14	14	14	15	16	16	15	16	15	15	16	16	15	16	16
7	15	15	16	15	15	16	16	16	15	15	14	14	17	15	15	15	17	17	15	15	16	15	16	16
8	16	15	14	15	16	16	17	16	15	17	17	14	14	17	16	15	17	14	15	21	15	15	15	15
9		15	15	16	16	14	14	16	15	17	17	15	17	15	15	15	15	15	14	15	15	14	15	14
10	16	16	14	15	16	14	15	15	15	15	17	15	15	15	16	15	14	15	15	15	15	14	15	15
11	16	15	16	16	15	14	15	14	15	15	15	16	16	14	15	15	13	15	16	16	16	15	14	14
12	14	14	14	16	15	16	16	14	16	15	17	16	15	15	15	15	15	16	17	15				
13												28	29	29	27	15	15	16	16	15	14		16	16
14	15	16	15	15	14	14	14	14	16	16	15	38	32	16	27	27	15	16	17	15	15	17	15	14
15	17	15	16	15	15	14	14	15	15	14	16	15	16	15	17	16	16	15	13	15	16	15	17	16
16	14	15	16	16	16	14	14	14	15	15	15	14	14	17	15	15	16	14	14	14	14	15	15	15
17	15	15	15	14	14	17		140	15	15	17	14	15	17	16	15	17	14	14	14	14	15	14	14
18	14	15	15	14	14	15	14	14	15	15	13	14	17	16	17	15	18	15	14	15	16	15	16	15
19	15	17	14	14	16	16	17	15	15	15	15	16	15	15	16	17	15	15	14	14	14	14	16	16
20	16	16	15	14	14	15	15	16	15	15	28	17	17	13	17	27	18	18	16	14	14	14	14	14
21	15	14	16	15	15	16	14	17	15	22	21	28	32	29	28	28	20	15	16	15	14	14	14	14
22	14	14	14	14	14	15	15	16	20	27	28	32	30	28	27	24	15	15	16	15	15	16	15	15
23	15	15	15	14	16	15	16	16	15	26	28	30	29	29	29	16	15	15	16	15	16	16	16	14
24	18	14	14	15	16	14	15	15	15	15	16	22	30	16	15	16	15	15	15	15	16	15	16	16
25	15	15	15	15	15	16	14	15	15	15	14	16	15	15	17	15	18	16	16	16	16	14	16	14
26	16	15	14	17	14	15	15	16	14	16	16	17	17	15	15	15	16	14	14	14	15	17	17	17
27	15	15	15	14	14	15	18	17	16	16	15	15	17	17	14	16	20	16	14	14	16	14	15	15
28	15	15	15	14	14	14	14	15	15	15	14	15	15	17	17	16	14	14	14	14	14	15	16	15
29	15	14	14	16	15	15	14	17	15	16	15	14	17	15	15	15	17	15	16	14	14	14	14	14
30	14	15	14	16	16	15	14	16	15	16	23	17	17	17	15	15	16	15	16	15	16	17	15	15
31	14	15	16	15	16	14	18	14	15	16	17	15	15	20	17	17	15	14	16	16	16	14	14	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	29	30	30	30	30	30	29	30	30	30	30	31	31	31	31	31	31	31	31	30	30	29	30	30
MED	15	15	15	15	15	15	15	16	15	15	16	15	17	16	16	15	15	15	15	15	16	15	15	15
U Q	16	15	15	16	16	16	16	16	15	16	17	17	17	17	17	16	17	16	16	15	16	16	16	16
L Q	14	15	14	14	14	14	14	14	15	15	15	14	15	15	15	15	15	14	14	14	14	14	15	14

HOURLY VALUES OF fof2 AT Kokubunji

JAN. 2022

LAT. 35°43.0'N LON. 139°29.0'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	30	30	30	31	30	23	23	43	53	61	73		69	68	56	59	55	43	27	A	29	27	30	A	
2	32	33	33	32	25	26	25	41	54	60	64	86	86	65	63	65	49	42	38	35	32	31	26	31	
3	30	31	31	36	26	25	26	39	54	60	74	79	63	A	58	52	51	41	39	A	26	A	29	A	
4	27	A	A	A	30		23	43	51	52	76	81	77	66	62	A	N 61	45	35	A	A	29	26	28	
5	31	32	32	27	25	29	25	41	51	A	66	A	74	68	62	A	A	38	33	30	A	A	A	31	
6	33	26	30	33	32	30	32	A	51	52	54	75	76	63	62	54	43	41	33	31	26	A	A	31	
7	A			33	39	A	24	24	42	56	47	66	63	59	67	57	60	50	36	31	30	A	A	A	
8	A	A	A		33	29	N	A	39	49	48	66	65	61		60	52	45	43	39	33	25	A	25	
9	A	N 23	29	31	23	N 24		41	54	93	71	64	73	58	65	63	50	52	42	34	33	25	28	31	
10	31	32	35	36		23		47	51	59	65	78	74	68	57	63	49	41	33	33	34	31	27	30	
11	31	30	31	33	27	N 23	23	47	61	60	75	85	81	70	71	61	51	41	A	30	33	33	32	32	
12	34	31	31	31	35	24	N 23	43	66	63	65	77	81	59	69	62	51	36	33	30	A	A	27	31	
13	A	A		31	30	29	25	42	58	55	60	84	82	66	66	A	57	41	42	34	32	A	25	31	
14	32	33	33	34	30	32	33	55	54	N 65	65	70	68	74	66	60	51	44	31	36	38	27	25	30	
15	29	30	31	29	27	31	32	55	63	85	83	93	75	70	83	106	81	55	31	43	99	74	61	28	
16	31	25	N	A	A	A	A		39	68	94	97	105	104	105	89	71	107	83	65	60	58	46	34	37
17	41	32	25	A	31			42	77	89	81	67	106	56	62	57	63	42	31	44	26	24	25	31	
18	31	31	30	31	29	29	N 23	45	61	66	83	80	76	88	54	59	71	59	39	38	33	33	25	31	
19	30	31	A	33	26	30	29	49	65	66	79	81	75	87	81	73	64	51	41	40	41	40	38	43	
20	38	37	37	39	33	33	34	66	64	66	63	104	92	59	64	67	61	53	A	A	37	N 25		31	
21	31	31	31	31	36	32	30	50	59	60	74	67	64	85	66	83	63	51	33	48	30	25	25	25	
22	27	31	31	32	35	31	35	55	63	59	74	81	82	71	77	69	61	52	35	33	35	33	31	33	
23	32	34	35	35	35	33	36	57	N 61	60	69	83	74	68	64	67	79	67	38	35	30	28	31		
24	33	33	35	35	A	28	A	47	64	65	73	69	83	81	66	68	65	51	36	41	A	A	A	A	
25	33	A	34	35	34	34	28	56	63	61	65	75	77	67	66	66	69	56	45	41	39	37	A	35	
26	A	34	35	A	33	32	35	50	57	78	86	85	86	83	79	72	71	55	37	32	35	31	29	33	
27	32	32	31	33	33	31	29	48	56	60	72	74	74	71	62	67	70	56	32	36	37	26	A	30	
28	30	31	31	28	30	30	25	55	68	59	84	85	89	75	78	67	65	58	43	37	35	30	31	32	
29	34	33	34	35	41	N 24	24	54	69	60	81	98	113	71	70	65	70	74	35	31	36	35	33	35	
30	34	37	36	32	33	32	31	63	72	71	79	86	94	79	78	75	68	58	43	40	31	31	A	31	
31	31	33	35	39	31	29	25	53	68	76	85	101	97	97	83	80	73	61	42	34	37	27	30	33	
	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	26	26	27	27	27	27	25	30	31	30	31	29	31	29	31	28	30	31	29	27	26	24	23	26	
MED	31	32	31	33	30	29	26	47	61	60	73	81	77	70	66	66	62	51	36	35	34	30	29	31	
U Q	33	33	35	35	33	32	32	55	65	66	81	85	86	80	77	70	70	56	41	40	37	33	31	33	
L Q	30	31	31	31	27	24	24	42	54	59	65	72	74	66	62	60	51	41	33	32	30	26	25	30	

HOURLY VALUES OF fEs AT Kokubunji

JAN. 2022

LAT. 35°43.0'N LON. 139°29.0'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	G	G	G	G	G			G	106	135	40		107	37	40	37	G	33	G	26	G	29	26	41		
2	28	31	G	33	G	G	G	G		36	40	33	41	41	38	32	39	33	G	G	G		G	G		
3	G	G	G	G	G	G	G	G		33	33	35	34	31	76	50	40	61	112	31	33	25	39	28	54	
4	G		36	33	40	25		22	31	37	42	55	89	57	37	84	53	28	25	56	38		G	G		
5	G	G	G	G	G	G		40		60	106	82	78	70	54	71	75	28	G	69	57	94	48	33		
6	34	26	G	G	G	26	22	38	33	36	42	43	41	33	36	33	G	G	G	G	G		48	33	25	
7	33		32	32	31	G	G	33	47	42	37	36	31	50	29	175	G		31	22	G		39	32	48	43
8	49	41	32	G	G	G	27	22	60	70	40	42	39		35	G	41	26	24	24		G	27	G	G	
9	31	G	G	G		G		G	112	41	35	37	35	40	35	G	G	G	G		33	27		G	G	
10	124	G	G	G				123	29	33	35	35	36	G	29	31	25	24		G	G	G	G	G	G	
11	G	G	G	G	G	G	G	25	33	36	44	40	38	47	45	35	36	30	33	26	28	34		G	29	
12	G	G	G	G	G	G	G	G		52	36	41	43	45	55	42	36	G	G	G	26	49	31	G	23	
13	40	29	28	G	G	G	G	160	G		32	49	57	47	46	47	114	70	28	40		30	24	G	G	
14	G	G		31	71	G	33	27	22	30	42	42	36	40	39	36	34	23	26	24	24	29		G	G	G
15	G	25	G	G	G	G		23	43	31	46	106	71	47	62	110	39	31	11	G	G		60	33	59	G
16	53	40	G	57	39	32	29	G	127	33	41	38	39	33	37	34	G	G		28	25	G	G	G	G	G
17	G	G	G	35	27			G	32	29	37	38	33	39	53	34	23	40	G	G	G	22		G	G	G
18	G	G	G	G	G	G	G	G	32	40	47	44	36	38	39	34	24		G	G	G	G	G	G	G	G
19	G	G		24	G	G	G	G	G		31	70	40	58	38	38	34	24	G	G	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G		34	35	41	37	57	37	G	41	25	G	54	48		G	G		G
21	G		G	G	116	23		G	47	53	36	41	57	37	47	G	G	G	G		153	G		G	G	G
22	G	G	G	G	G	G	G	G	G		52	36	47	38	G	G		42	33	34	11	G	G	G	G	G
23	G	G	G	G	G	G	G	G	34		46	40	36	38	44	110	35	31	28	29	25	23		G		
24	G	G	G		24	37	25	36	G	32	50	36	43	39	38		29	24	21	26	29	40	35	29	31	31
25	27	24		G	G	G	G	29	47	34	32	60	34	168	80	40	G		11	23	G	G	G	G	50	G
26	35	G	G	28	G	G	G	G	31	40	42	42	46	37	40	42	40	34	G	G	G	G	G	G	G	24
27	G	24	G	26	G	G	G	28	26	32	38	42	40	55	38	34	30	23	G	G	G	G	G	G	G	G
28	G	G		27	G	G		23	24	31	34	43	40	39	38	35	35	G	29	G		24	25	G	G	G
29	G	G	G	G	G	28	G	G	32	35	42	40	37	107	40	35	24	20	34	G		G	G	G	G	G
30	G	G	G	G	G	G	G	G	27		37	62	55	45	33	33	41	30	28	G		24	29	31	37	G
31	G	G		31	24	11		G	G	27	45	41	39	36	38	42	38	109	35	27	26		G	G	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	31	30	30	31	28	27	24	31	29	31	31	30	31	30	30	31	31	31	31	31	31	27	30	29		
MED	G	G	G	G	G	G	G	G	32	36	41	40	39	39	38	35	25	26	11	24	G	G	G	G		
U Q	31	25	24	26	6	G	22	28	47	45	43	44	47	55	45	41	40	31	28	29	29	32	29	27		
L Q	G	G	G	G	G	G	G	G	29	33	37	38	36	37	35	33	G	G	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Kokubunji

JAN. 2022

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	15	15	13	15	13			18	16	15	15		15	13	14	14	15	16	16	16	17	16	16	16
2	16	16	16	15	15	13	14	15	17	16	13	13	15	14	14	15	18	16	15	16	14	16	18	15
3	17	14	14	13	13	14	13	17	16	15	14	14	31	14	13	14	14	15	16	16	16	15	16	16
4	15	15	16	15	15			15	15	15	14	14	16	14	14	14	15	17	15	16	15	14	15	15
5	15	13	13	13	13	14		15	13	15	16	15	15	14	15	15	15	16	13	16	16	15	16	17
6	15	16	13	14	16	14	16	16	16	15	13	15	14	16	16	15	14	14	15	16	15	15	17	17
7	16		16	16	16	16	21	16	15	15	15	16	16	15	14	85	18	16	17	16	17	16	16	15
8	15	15	16	15	15	15	17	16	16	14	14	14	15		15	15	15	17	16	15	14	16	15	16
9	16	16	14	13		15		14	15	15	16	15	15	14	16	15	15	14	17	17	17		17	13
10	43	13	15	16				16	14	15	13	15	16	13	14	14	23	16	15	17	16	13	15	14
11	15	15	16	15	13	18	15	15	16	15	15	15	14	14	15	15	15	16	16	16	16	15	15	16
12	15	17	15	15	15	14	15	17	15	16	14	15	15	15	15	14	15	16	14	15	16	16	16	16
13	16	16	16	16	16	16	15	17	25	14	16	15	15	14	14	16	16	16	15	16	16	16	16	13
14	14	15	16	16	13	15	16	15	14	15	14	14	13	14	16	15	15	16	17	16	16	16	16	15
15	16	15	14	13	13	17	15	17	16	16	10	14	15	17	14	15	15	14	22	15	15	16	17	15
16	19	15	16	17	16	16	16	15	15	16	15	14	15	15	15	16	15	16	16	16	16	13	15	21
17	15	13	13	14	15	16	14	15	15	15	16	14	17	16	14	16	15	13	15	15	16		15	13
18	13	14	13	13	13	15	15	16	15	15	15	14	15	17	15	16	23	14	13	13	13	13	18	13
19	14	15	15	13	15	14	15	17	15	15	15	13	15	14	16	16	14	14	17	16	13	14	16	13
20	13	13	13	13	13	13	15	15	15	15	14	14	12	13	31	30	14	16	15	16	15	14	15	16
21	15	16	13	20	28	16	34	18	14	29	39	30	34	26	15	30	24	17	17	16	13		18	14
22	14	17	13	14	13	17	15	20	25	29	33	33	29	33	31	15	16	15	16	15	15	14	14	17
23	14	14	13	13	13	15	13	18	13	14	21	13	17	15	14	15	15	16	17	16	16	15	15	15
24	17	13	14	15	15	16	16	17	15	14	33	15	20	21	14	16	16	16	16	16	17	16	16	16
25	15	15	15	13	15	15	14	16	14	16	15	15	16	14	16	15	15	16	16	16	16	16	15	16
26	16	13	15	16	15	15	16	17	17	15	14	14	14	14	15	16	15	16	15	13	13	17	15	15
27	14	16	15	15	15	14	13	13	15	16	15	15	15	15	17	15	15	15	15	16	16	15	15	16
28	13	16	16	15	16	15	16	15	17	16	14	15	14	15	15	17	14	16	16	16	16	13	14	16
29	14	13	13	14	13	14	15	18	16	15	14	15	15	15	15	16	15	14	14	14	17	15	17	14
30	13	13	13	13	16	16	13	15	13	14	16	14	14	13	16	16	15	16	16	15	15	16	16	15
31	15	16	15	15	14	15	13	18	14	18	14	24	25	13	14	14	15	16	16	16	15	15	14	14
	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	29	28	26	31	31	31	31	30	31	30	31	31	31	31	31	31	31	28	31	31
MED	15	15	15	15	15	15	15	16	15	15	15	15	15	14	15	15	15	16	16	16	16	15	16	15
U Q	16	16	16	15	15	16	16	17	16	16	16	15	16	15	16	16	16	16	16	16	16	16	16	16
L Q	14	13	13	13	13	14	14	15	14	15	14	14	15	14	14	15	15	15	15	15	15	14	15	14

HOURLY VALUES OF fof2 AT Yamagawa

JAN. 2022

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	31	A	A	34	33	B 24	24	25	56	67	69	79	88	78	70	55	56	67	43	30	A	33	N 24	31		
2	30	33	35	A	33	A	A	31	59	64	61	84	81	76	67	61	A	57	49	41	41	35	33	25		
3	30	30	31	34	39	25	N 24	32	54	67	77	69	69	78	74	66	61	51	48	34	30	A	27	31		
4	A	A	A	A	26	30	A	32	57	59	74	75	90	79	72	67	62	61	47	32	34	A	30	30		
5	29	31	30	30	25	30	N 25	32	50	57	57	72	71	71	72	61	57	52	N 40	33	A	A	A	A		
6	A	A	31	31	31	29	N 23	32	59	56	45	62	A	71	78	71	53	45	42	A	A	33	26	29		
7	31	25	A	37	A	A	A	33	49	50	60	67	72	A	73	57	66	53	37	33	34	25	B 23	A		
8	B 25	A	A	32	33	A	A	32	60	63	54	60	71	77	A	55	54	53	45	44	41	A	A	A		
9	A	A	25	30	26	B 24	N 24	32	52	77	67	69	81	83	68	65	77	59	51	35	A	28	26	30		
10	31	33	34	N 24	N 24	N 23	23	31	56	57	71	67	86	77	71	57	63	67	38	33	A	33	31	31		
11	33	33	32	32	32	27	26	33	53	67	65	88	81	103	93	68	63	51	43	35	A	38	33	N 29		
12	26	A	A	A	A	N 24	B 25	30	64	69	67	73	85	74	75	71	55	56	37	35	33	31	A	30		
13	30	33	31	32	35	30	B 25	35	53	55	61	70	87	76	75	59	69	61	45	43	33	24	B 23	N 26		
14	B 27	31	33	31	33	30	29	34	60	62	55	69	72	84	68	67	61	53	54	34	38	41	27	30		
15	29	30	31	31	35	A	33	37	61	70	87	92	77	A	90	97	99	75	42	58	N 98	45	47	57		
16	54	44	48	35	A	A	A	25	61	94	93	137	121	117	103	113	119	112	99	74	61	55	44	43		
17	42	48	31	33	42	B 24	30	35	98	87	75	83	96	71	72	67	62	57	41	39	36	31	26	29		
18	31	32	30	30	37	B 24	B 23	33	64	63	69	93	84	93	70	66	73	80	78	37	43	35	31	25		
19	30	31	N 27	30	27	26	31	39	61	66	70	83	89	86	76	81	87	59	69	44	51	48	37	39		
20	36	33	33	36	37	35	35	47	60	69	67	83	99	79	83	85	94	94	101	58	43	41	35	B 23		
21	B 29	29	31	31	34	35	N 24	33	62	58	67	65	81	89	75	71	71	71	57	36	43	27	B 24	N 24		
22	30	A	A	32	35	35	25	36	67	63	63	89	90	84	92	95	67	67	69	45	41	43	30	33		
23	33	32	34	36	38	30	32	37	67	66	69	83	82	91	92	84	84	97	91	57	49	38	32	31		
24	33	36	36	32	34	29	N 29	35	61	79	74	C	C	C	C	C	C	C	C	57	53	40	A	33	31	29
25	32	32	33	33	32	31	34	42	66	C	C	C	C	C	C	C	C	C	C	84	54	50	54	39	31	
26	29	31	A	A	33	31	31	37	55	C	C	C	C	C	C	C	C	C	C	85	49	44	48	33	A	
27	31	32	32	31	35	32	30	34	58	65	C	C	C	C	C	C	C	C	77	70	44	45	45	26	A	
28	30	31	31	29	30	31	31	35	81	71	69	73	79	85	98	80	65	71	62	41	40	45	41	A	A	
29	31	32	A	35	39	25	30	37	66	62	79	93	99	86	81	85	82	93	59	38	39	A	A	33	28	
30	32	35	34	35	36	34	32	38	77	72	83	86	86	95	77	81	75	75	60	44	41	A	A	35	35	
31	A	A	37	39	33	33	29	36	69	72	87	103	110	94	103	97	81	83	68	A	A	A	32	32	32	
	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	23	23	27	28	26	26	31	31	29	28	27	26	25	26	27	26	29	31	29	24	26	27	25		
MED	31	32	32	32	33	30	29	34	60	66	69	79	84	83	75	68	66	61	53	40	41	36	31	30		
U Q	32	33	34	35	35	31	31	37	66	70	74	88	90	90	90	84	81	76	69	44	44	45	33	31		
L Q	29	31	31	31	31	25	24	32	56	60	62	69	79	76	72	61	61	54	43	34	36	31	26	28		

HOURLY VALUES OF fEs AT Yamagawa

JAN. 2022

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

$\frac{H}{D}$	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	G		38	48	26	G	B	G	G				48	38	36	42	54	50	49	47	36	38	32	25	30	G	G	G			
2	G	G	G		33	27	73	28	G				29	35	41	59	44	44	44	42	75	32	31	28	G	G	G	G			
3	G	G	G	G	G	G	G	G	G				32	41	43	44	60	43	48	42	40	G	G		34	G	30	G	G		
4	33	32	28	31	140	27	26	G	159	33	41	76	72	55	53	32	34	44	31	27	24	71	G	G							
5	G	G		G	G	G	G	G					29	33	43	47	64	40	41	38	70	36	22	G	42	32	36	112			
6	39	48	27	G	G	G	G	G					40	40	79	50	70	63	57	46	38	40	35	49	56	G	G		21		
7	26	G		46	26	40	30	30	24	28	36	44	51	51	93	51	36	39	41	27				G	G	G	B		25		
8	B		32	56	33	33	34	26	G	30	55	49	46	52	37	109	39	31	28	38	27	40	40	29	32	G	G				
9	36	29	27	G	G	B		29	26	31	34	42	47	46	77	46	38	32			33	56	32	G	G	G					
10	G	G	G	G	54	G	G	G					29	34	40	46	40	40	36	37	37	32	23	23	23	G	G	G			
11	G	G	G	G	G	G	G	G					41	35	42	42	63	45	38	36	32	G		11	33	40	31	29	85		
12	29	73	94	70	43	G	B	G					27	35	41	50	55	42	41	38	34	28		G	G	G	G		43		
13	G	G	G	G	32	G	B	G					48	34	37	54	51	57	108	52	34	31	28	G	24	G	B	G			
14	B	G		G	G	G	G						27	29	39	59	74	60	76	45	38	33	G	27	27	25	G	25	G		
15	G	G	G	G	G		G	G					30	49	50	53	93	113	60	57	57	72	33	G	50	36	27	27			
16	29	28	24	32	49	32	31	G	28	39	54	107	49	50	39	31	32			G		11	11	G	G	G	G	G			
17	G	G	G	G	30	B	G	G					33	34	36	40	42	46	36	37	33	G	G	40	G	G	G	G			
18	G	G	G	G	G	B	B	G					29	32	43	41	40	54	57	45	34	30	11	30	G	G	G	G			
19	G	G	G	G	55	24	G	G					30	38	40	46	61	70	69	48	41	31	32	24	G	G	G	G			
20	G	G	G	G	G	G	G	G					28	38	38	46	48	48	51	G		43	41	30	G	G	25	B			
21	B		G		G	G		G	G					34	36	47	50	44	44	50	32	G		11	G	G	G	B	G		
22	G	135	32	G	G	G	G	G					48	36	52	40	70	60	56	44	34	G		33	G	G	G	G			
23	G	G		G	26	G	G	G					31	33	49	47	38	47	41	40	32	40	34	48	11	G	G	G			
24	G	G	G	G	G	G	G		110	48	55	36	C	C	C	C	C	C	C	C	C	G		21	47	40	28	70	G		
25	G	G	G	G	G	G	G	G					28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
26	G	G		31	34	27	G	G	G				30	C	C	C	C	C	C	C	C	C	C	C	11	33	G	G	G	29	
27	G		G	G	G	G	G						32	50																48	
28	G	25	G	G	G	G	G	G					26	32	35	44	45	45	42	38	38	27	25	22	G	26	25	27			
29	G	G		G	G	G	G	G					49	49	40	53	50	46	46	39	33	31	22	G	G		G				
30	G	G	G	G	G	G	G	G					32	34	40	50	74	60	80	45	38	28	11	G	24	43	32	29			
31				G	G	G	G	G					32	38	40	50	55	66	54	49	43	41	41	41	50	41	25	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	28	31	29	31	31	27	28	31	31	29	28	27	27	27	27	27	27	29	31	31	31	31	28	30							
MED	G	G	G	G	G	G	G	G	30	36	41	47	52	50	48	39	34	30	27	25	23	G	G	G							
U Q	13	29	31	26	32	24	13	G	40	39	46	53	63	63	57	46	40	39	32	33	40	31	26	27							
L Q	G	G	G	G	G	G	G	G	29	34	39	44	46	44	41	37	33	G	11	G	G	G	G	G							

HOURLY VALUES OF fmin AT Yamagawa

JAN. 2022

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	16	15	15	16	16	B 16	15	14	17	16	14	15	15	14	16	16	15	15	16	16	15	15	14	15
2	14	14	16	16	16	13	16	15	15	17	14	16	16	15	15	14	15	14	15	16	14	15	14	15
3	17	14	14	16	15	15	17	16	15	15	14	16	17	17	16	15	15	15	14	14	16	14	15	15
4	16	16	15	15	15	16	15	12	15	15	14	13	15	15	15	15	15	15	15	16	16	13	14	15
5	15	14		14	15	14	16	14	15	16	14	15	14	19	15	14	15	15	16	16	15	15	16	13
6	14	16	15	16	15	15	15	14	15	13	13	13	17	17	14	17	15	14	15	15	15	16	15	16
7	16	21	15	16	15	15	15	15	15	16	14	14	17	16	15	16	15	15	16	14	14	14	B 16	15
8	B	16	16	15	15	15	16	15	15	14	14	15	15	16	13	13	16	15	15	16	15	15	16	16
9	15	16	16	16	15	B 15	16	16	15	16	14	15	13	17	13	14	15	17	16	16	15	16	15	14
10	14	15	14	14	16	14	15	14	15	16	14	14	14	14	15	15	17	16	16	16	15	16	15	14
11	15	14	16	14	14	14	14	14	15	13	14	14	15	15	14	14	17	14	14	16	15	16	16	12
12	17	14	13	15	15	15	B	15	15	14	14	14	13	15	15	16	15	14	14	14	15	16	16	15
13	15	15	17	15	17	16	B	16	16	15	16	15	15	14	14	13	15	14	16	16	16	16	B	15
14	B	15	15	14	14	15	14	15	14	14	14	21	15	13	16	15	16	15	15	15	15	16	15	15
15	14	15	15	16	16	16	15	14	16	16	15	13	15	15	18	17	15	15	16	14	15	15	15	15
16	16	15	16	15	15	16	15	18	15	15	15	16	16	15	15	17	16	15	14	14	16	14	15	16
17	15	16	15	14	17	B 15	15	14	15	15	15	16	16	16	17	16	16	15	14	14	15	15	14	16
18	15	15	15	14	14	B	B	14	16	16	15	15	16	18	15	14	16	15	14	14	14	15	15	14
19	14	14	18	14	15	16	14	14	16	15	15	15	15	17	16	14	15	16	15	16	15	14	15	16
20	14	14	15	14	14	14	14	14	15	14	15	15	17	17	18	38	16	14	16	16	15	16	16	B 18
21	B	15	15	15	15	14	15	16	15	14	17	17	17	17	17	19	17	16	15	16	14	14	15	B 15
22	15	15	16	14	15	14	16	14	14	17	17	16	19	19	19	16	17	15	16	15	16	16	15	14
23	14	15	15	16	16	15	14	16	16	16	17	16	16	16	16	15	17	15	16	15	14	15	15	15
24	15	14	14	16	16	15	15	16	15	16	14	C	C	C	C	C	C	C	21	15	15	15	15	14
25	15	14	15	14	14	15	15	14	15	C	C	C	C	C	C	C	C	C	C	16	16	16	15	14
26	14	14	15	15	17	15	14	14	15	C	C	C	C	C	C	C	C	C	16	15	16	16	15	16
27	14	16	15	15	15	15	15	15	15	C	C	C	C	C	C	C	C	15	15	16	14	14	15	15
28	15	15	15	16	15	14	14	15	15	15	15	15	15	15	15	14	14	15	15	16	15	16	16	16
29	15	14	15	14	14	15	15	14	14	15	15	16	17	16	17	15	16	15	16	15	15	16	15	15
30	15	15	16	15	16	14	15	15	15	16	15	15	16	15	18	17	15	16	14	14	15	15	16	16
31	15	16	16	15	15	15	16	15	15	15	14	14	13	16	17	16	15	15	14	16	15	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	29	31	30	31	31	30	29	31	31	29	28	27	27	27	27	27	27	29	31	31	31	31	30	31
MED	15	15	15	15	15	15	15	15	15	15	14	15	15	16	15	15	15	15	15	15	15	15	15	15
U Q	15	16	16	16	16	15	16	15	15	16	15	16	17	17	17	16	16	15	16	16	15	16	16	16
L Q	14	14	15	14	15	14	14	14	15	15	14	14	15	15	15	14	15	15	14	14	15	15	15	14

HOURLY VALUES OF foF2 AT Okinawa

JAN. 2022

LAT. 26°41.0'N LON. 128°09.0'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	30	33	A	33	A	A	B	N	60	88	95	98	93	100	97	73	63	67	67	43	A	40	A	25		
2	30	A	43	B	B	A	A	31	65	66	66	77	85	91	79	67	57	69	62	48	A	37	26	B		
3	25	31	A	A	37	B	B	27	56	83	97	73	75	97	107	97	95	66	62	50	38	B	32	33		
4	A	A	31	A	A	N	24	23	29	61	71	85	80	92	91	106	91	85	89	71	55	45	43	37	32	
5	29	29	31	31	B	N	B	31	55	57	74	60	79	76	86	79	64	69	57	41	36	37	A	34		
6	A	A	A	29	A	26	B	29	57	74	78	64	A	A	102	116	95	64	54	44	52	41	35	N	24	
7	30	25	N	29	34	A	B	30	60	54	56	77	68	85	91	115	102	98	65	44	47	47	32	N	24	
8	B	23	A	29	32	A	A	26	56	67	67	52	68	85	89	61	59	54	52	40	45	32	A	A		
9	A	A	26	29	29	25	B	30	59	75	69	53	83	99	111	106	117	111	80	61	42	A	39	35		
10	31	39	41	N	B	B	B	27	62	71	64	82	70	92	100	93	91	75	63	A	37	46	35	27		
11	N	29	29	31	33	30	N	31	57	77	84	88	93	112	135	119	96	86	67	46	54	55	36	A		
12	A	A	31	A	A	A	A	34	55	76	93	78	85	99	98	80	70	63	56	40	43	40	38	25	B	24
13	N	24	29	30	B	31	B	31	55	59	67	66	A	111	91	77	71	82	66	54	A	38	25	B	24	
14	B	23	A	A	31	31	23	31	66	67	69	59	76	A	91	83	71	74	71	60	48	62	63	52		
15	36	33	31	31	33	32	26	37	59	63	83	91	75	79	94	106	94	77	51	62	97	46	116	57		
16	A	38	46	A	A	A	A	A	55	82	114	121	149	131	123	140	135	129	125	99	69	69	65	61		
17	48	37	B	23	25	35	N	32	77	75	86	116	109	99	112	109	89	74	65	44	51	47	35	27		
18	31	33	32	26	34	B	B	34	61	77	75	81	93	96	90	79	99	114	125	91	53	47	34	30		
19	N	N	B	31	35	32	B	32	67	76	67	75	84	83	A	79	92	77	79	52	51	53	53	33		
20	24	B	25	29	30	35	34	34	42	69	67	79	74	89	122	134	139	147	147	156	93	69	71	63	45	
21	B	30	30	A	30	33	30	A	30	61	69	83	73	87	91	94	87	79	97	114	55	49	51	32	29	
22	N	25	29	30	31	33	34	B	31	70	67	66	83	105	98	114	131	127	121	128	96	71	64	57	39	
23	37	34	34	36	40	28	N	33	66	73	85	84	88	100	121	111	98	130	151	119	86	70	43	34		
24	34	34	33	26	29	29	N	33	69	69	75	75	77	91	75	81	67	84	69	53	48	39	32	28		
25	29	29	29	30	30	27	30	37	61	69	77	68	78	83	95	84	93	107	119	116	121	111	71	45		
26	31	31	N	A	29	29	29	33	60	91	95	119	129	154	160	164	144	143	126	103	60	67	61	39	A	
27	31	31	30	B	32	31	30	34	54	76	94	78	80	81	93	111	111	109	143	132	72	90	69	A		
28	A	31	N	N	A	30	30	33	75	88	70	77	76	94	114	111	110	105	104	99	61	80	76	36		
29	32	33	33	35	33	26	31	36	62	63	76	92	104	87	102	104	112	111	104	59	49	55	50	32		
30	30	32	31	33	35	32	B	33	72	97	94	91	95	89	91	106	90	89	A	85	62	57	44	40		
31	A	36	39	39	34	B	B	33	63	84	100	106	110	104	116	136	155	139	141	114	90	63	50	42		
	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	24	25	25	25	25	24	22	30	31	31	31	31	29	29	30	31	31	31	30	30	28	30	28	27		
MED	30	31	31	30	33	28	23	32	61	73	78	78	85	94	99	104	94	89	71	57	52	49	41	33		
U Q	31	33	33	31	34	31	30	33	66	77	93	91	94	100	114	115	111	111	125	96	69	64	62	40		
L Q	27	29	29	27	29	24	23	30	57	67	69	73	76	86	91	80	71	74	63	46	46	40	34	27		

HOURLY VALUES OF fEs AT Okinawa

JAN. 2022

LAT. 26°41.0'N LON. 128°09.0'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	G	G	28	28	40	24	B	G	71	31	33	46	55	46	48	53	45	61	65	38	40	25	31	G
2	G	48	29	B	B	31	27	G	28	90	43	48	54	57	47	57	34	33	28	34	32	27	26	B
3	G	G	34	59	G	B	B	24	30	37	40	48	46	50	48	39	29	G	25	G	G	B	24	26
4	34	40	26	39	28	G	G	59	32	37	39	54	152	54	60	41	41	32	50	40	31	26	G	G
5	G	G	G	G	B	G	B	115	48	51	42	44	50	46	44	41	39	44	40	33	G	G	93	33
6	25	31	34	25	29	G	B	G	44	39	52	62	136	98	59	56	60	45	47	34	38	27	G	G
7	G	G	G	G	32	119	B	24	28	34	37	84	44	61	74	38	35	38	48	24	27	27	25	G
8	B	G	39	G	25	31	28	G	29	40	47	47	62	45	39	37	35	29	39	28	25	33	38	43
9	30	35	G	26	G	G	B	G	32	36	41	50	45	50	47	54	55	32	40	34	33	37	38	G
10	G	G	11	G	B	G	B	G	29	36	37	39	43	47	56	36	37	27	27	31	24	G	G	G
11	G	G	116	G	G	G	G	G	43	32	38	45	55	50	46	43	37	28	29	40	33	36	36	32
12	33	31	32	116	70	67	48	G	26	33	36	38	60	64	44	37	36	31	24	G	24	46	G	G
13	G	G	G	B	G	11	B	G	44	37	40	50	102	59	54	40	36	30	11	21	38	31	G	B
14	B	26	29	28	25	G	G	G	28	36	48	55	62	90	66	59	58	37	35	35	24	G	G	G
15	G	128	G	G	G	G	G	G	29	35	49	69	66	47	50	40	37	40	11	G	31	32	25	57
16	115	26	59	32	41	43	41	40	34	39	44	44	43	39	42	35	28	G	G	24	45	G	G	G
17	G	G	B	G	G	G	G	G	G	36	39	46	50	48	40	40	29	28	20	33	27	29	G	G
18	G	G	G	G	G	B	B	G	32	36	38	44	45	62	58	38	47	32	60	27	25	G	G	G
19	G	G	B	G	G	G	B	G	23	34	36	38	46	44	107	109	59	41	41	24	G	G	G	G
20	G	B	G	G	G	G	G	G	23	37	40	52	59	65	58	40	61	48	34	48	27	G	G	G
21	B	28	59	G	G	G	26	G	29	45	38	49	51	62	47	47	49	56	52	54	31	26	G	G
22	G	G	G	G	G	G	B	G	G	33	48	40	53	67	66	47	66	30	20	60	27	G	G	27
23	26	G	G	G	G	G	G	G	G	28	36	47	45	40	46	46	51	40	33	32	48	11	23	G
24	G	G	G	G	G	G	G	G	33	34	54	49	45	46	45	33	G	28	53	28	G	24	G	G
25	G	G	G	G	G	G	G	G	28	28	61	38	44	52	40	35	36	31	G	48	11	G	11	28
26	G	G	G	48	G	26	G	G	27	34	36	50	46	50	41	40	36	40	28	48	26	G	G	G
27	G	24	G	B	G	91	G	G	31	36	56	37	43	47	43	40	37	31	G	48	48	30	34	G
28	33	G	G	G	26	G	G	G	26	33	34	38	46	48	46	44	40	40	35	40	34	27	26	G
29	G	G	G	G	27	G	G	G	48	34	36	54	57	52	51	49	38	31	G	47	G	G	G	G
30	G	G	24	G	G	G	B	G	25	34	36	45	57	66	110	59	54	53	133	53	41	28	23	31
31	32	G	84	30	26	B	B	G	28	35	46	48	54	56	92	46	39	36	32	55	32	28	27	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	28	29	29	28	28	28	18	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	29
MED	G	G	G	G	G	G	G	G	29	36	40	47	51	50	48	41	38	32	33	34	27	24	11	G
U Q	25	27	33	28	26	25	26	G	33	37	47	50	59	62	59	49	51	40	47	48	34	28	27	27
L Q	G	G	G	G	G	G	G	G	26	34	36	44	45	47	44	38	36	30	20	27	24	G	G	G

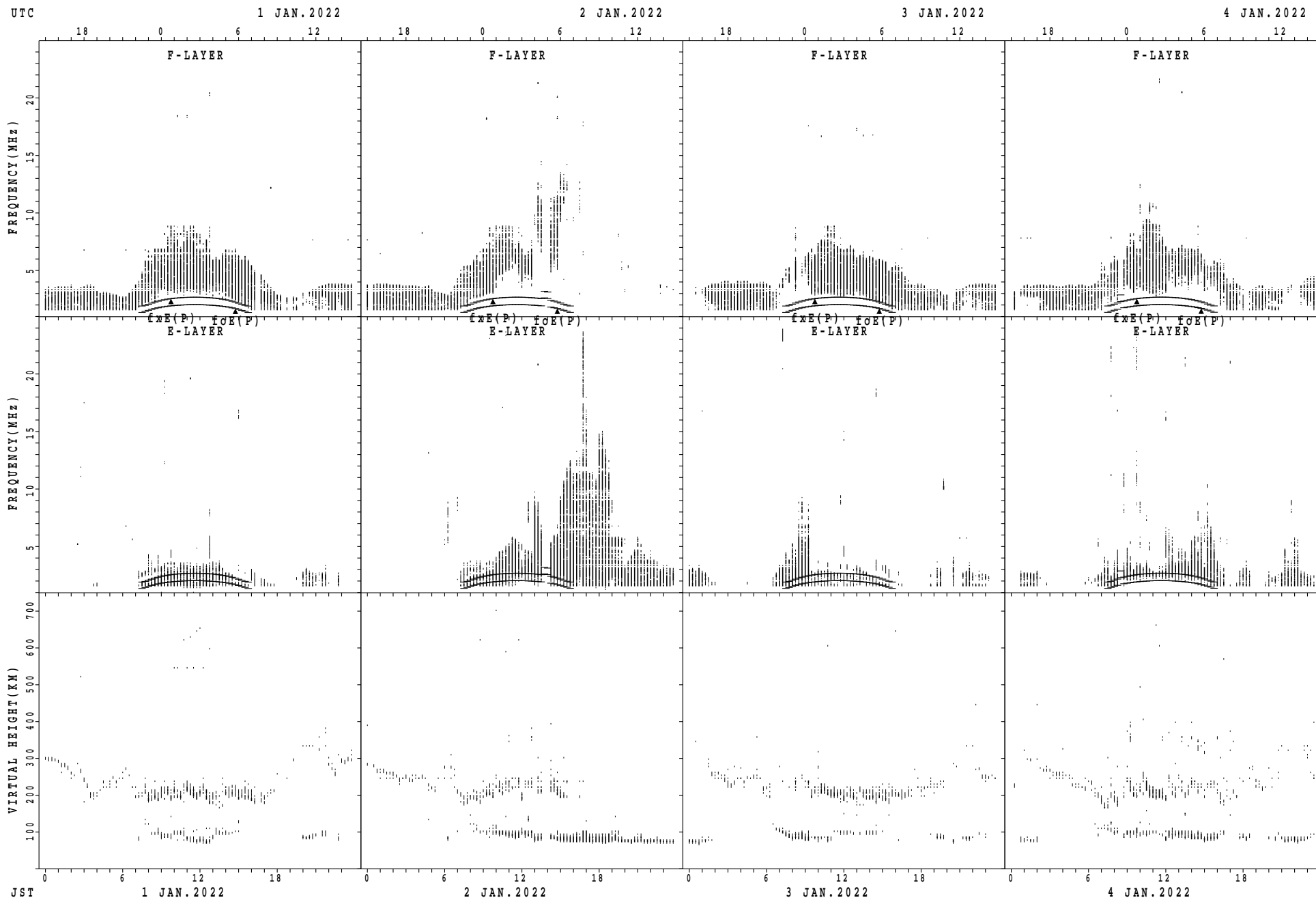
HOURLY VALUES OF fmin AT Okinawa

JAN. 2022

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

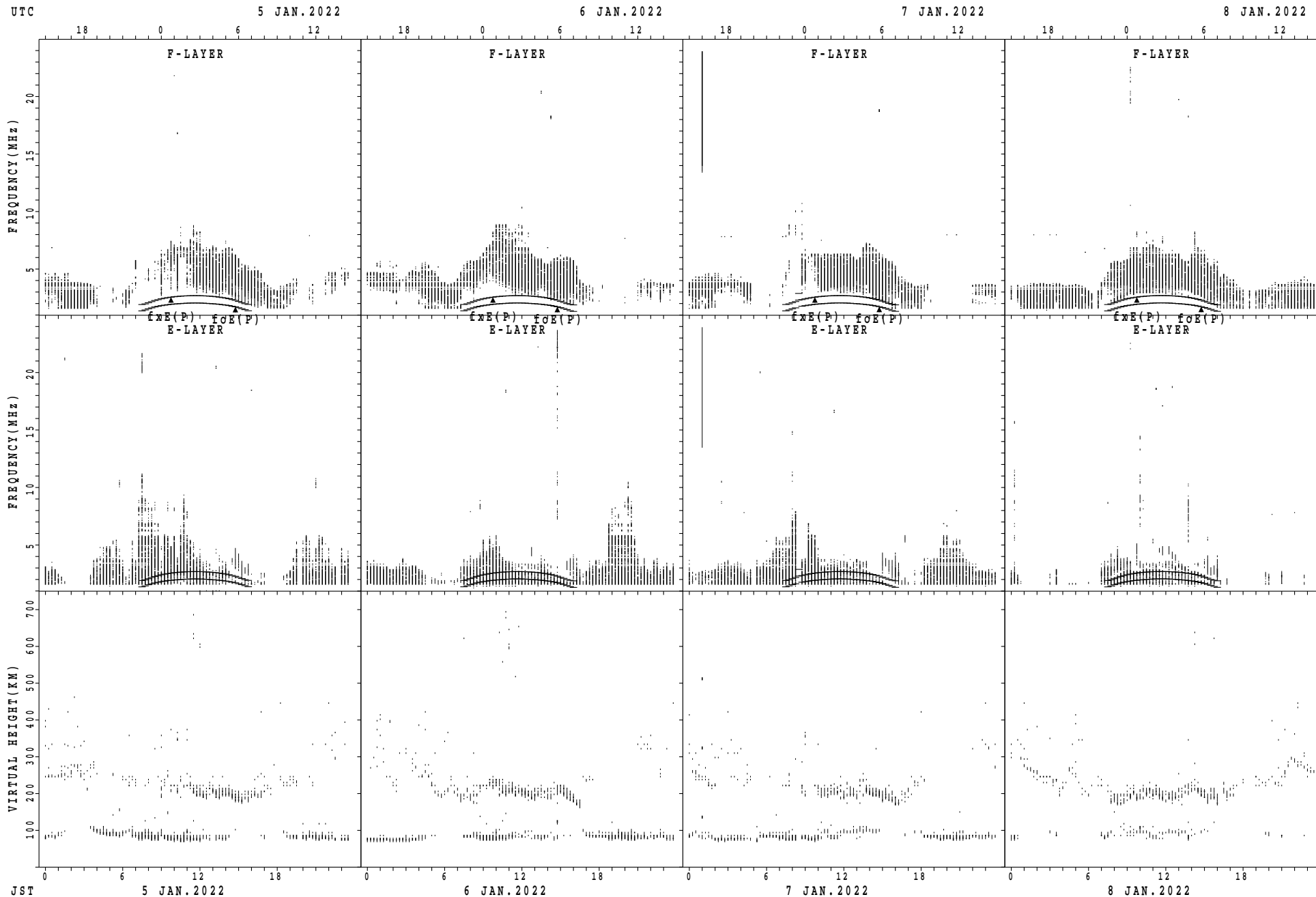
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	16	17	14	16	17	B 14	15	14	16	15	14	15	16	15	16	15	15	15	15	15	16	16	15
2	15	15	16	B 15	B 15	16	15	15	15	15	15	15	15	14	14	14	15	16	16	15	15	15	15	B 15
3	14	15	15	15	14	B 15	B 16	15	16	15	14	14	17	17	15	15	15	15	15	17	14	B 15	15	15
4	15	15	15	15	15	14	17	15	16	15	15	14	16	15	17	15	15	15	15	16	16	15	14	17
5	14	15	14	15	B 14	14	B 15	15	15	16	15	14	15	15	15	15	15	15	14	15	16	15	17	16
6	16	15	15	15	15	15	B 14	14	15	15	14	13	9	18	18	15	14	15	15	16	15	15	15	15
7	15	14	15	15	15	17	B 15	15	15	16	15	15	15	15	18	15	16	14	16	15	15	15	15	15
8	B 15	15	15	15	16	15	17	15	15	15	15	14	20	15	14	15	16	15	16	15	16	16	14	16
9	15	15	15	16	14	15	B 14	14	15	16	15	14	15	15	14	13	14	16	15	15	16	15	15	15
10	14	15	15	15	B 66	B 14	14	14	16	16	14	14	14	16	14	15	15	15	16	15	15	15	15	15
11	14	15	65	15	15	15	16	14	15	16	15	15	13	15	14	13	14	15	16	15	15	15	15	17
12	16	16	15	15	14	15	16	16	15	16	15	15	13	14	17	15	15	16	16	16	16	15	15	15
13	16	15	15	B 15	15	14	B 14	14	15	15	14	14	17	13	13	15	17	15	15	15	16	16	15	B 15
14	B 15	15	16	16	15	16	15	14	15	17	15	20	16	14	14	15	16	15	14	16	15	15	14	16
15	15	19	15	15	15	14	15	14	15	16	15	15	12	14	14	14	17	15	16	15	16	16	15	15
16	12	15	14	16	15	16	15	15	16	15	15	15	11	17	16	17	15	15	16	15	15	15	15	15
17	15	15	B 14	14	14	14	18	14	15	17	15	15	19	22	17	15	14	15	15	15	15	15	15	14
18	15	15	15	15	14	B 17	B 17	15	15	15	15	15	17	17	14	15	15	15	13	16	15	15	15	14
19	17	14	B 15	16	15	15	B 17	17	15	16	16	17	17	18	14	10	15	15	15	15	15	15	15	15
20	15	B 14	14	14	14	14	14	15	15	15	14	15	17	17	14	43	16	15	16	15	16	15	15	14
21	B 15	15	15	15	14	14	15	15	14	14	15	14	16	17	15	15	15	15	16	15	16	15	14	14
22	15	15	15	14	15	15	B 14	14	15	16	17	16	17	17	19	14	15	15	17	17	16	16	16	16
23	16	15	15	16	15	15	15	15	15	15	15	15	18	16	16	16	14	15	15	16	15	15	15	15
24	15	14	14	15	14	14	16	14	15	15	15	16	17	16	19	17	16	15	15	16	16	16	15	14
25	15	14	14	14	15	15	15	15	15	15	17	18	19	19	19	17	16	15	15	15	15	16	14	15
26	15	15	15	14	14	15	15	15	14	16	14	14	14	13	14	13	13	15	16	16	15	15	14	15
27	15	16	16	B 15	15	5	14	14	15	17	13	14	15	14	13	15	15	16	15	15	14	15	15	16
28	16	16	14	15	15	15	14	14	15	15	15	15	15	15	14	14	15	15	16	15	15	15	15	15
29	14	14	14	15	15	15	14	14	15	17	13	14	14	16	14	16	15	15	16	15	15	14	15	15
30	18	15	15	16	14	15	B 14	14	15	16	17	15	16	19	19	15	17	17	13	17	16	15	16	16
31	15	15	14	15	16	B 15	B 15	14	15	15	14	15	15	15	15	15	16	15	15	16	15	15	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	30	30	30	29	29	30	24	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	15	16	15	15	15	16	15	15	15	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	16	15	15	16	15	15	17	17	17	15	16	15	16	16	16	15	15	16
L Q	15	15	14	15	14	14	14	14	15	15	14	14	14	15	14	14	15	15	15	15	15	15	15	15

SUMMARY PLOTS AT Wakkanai



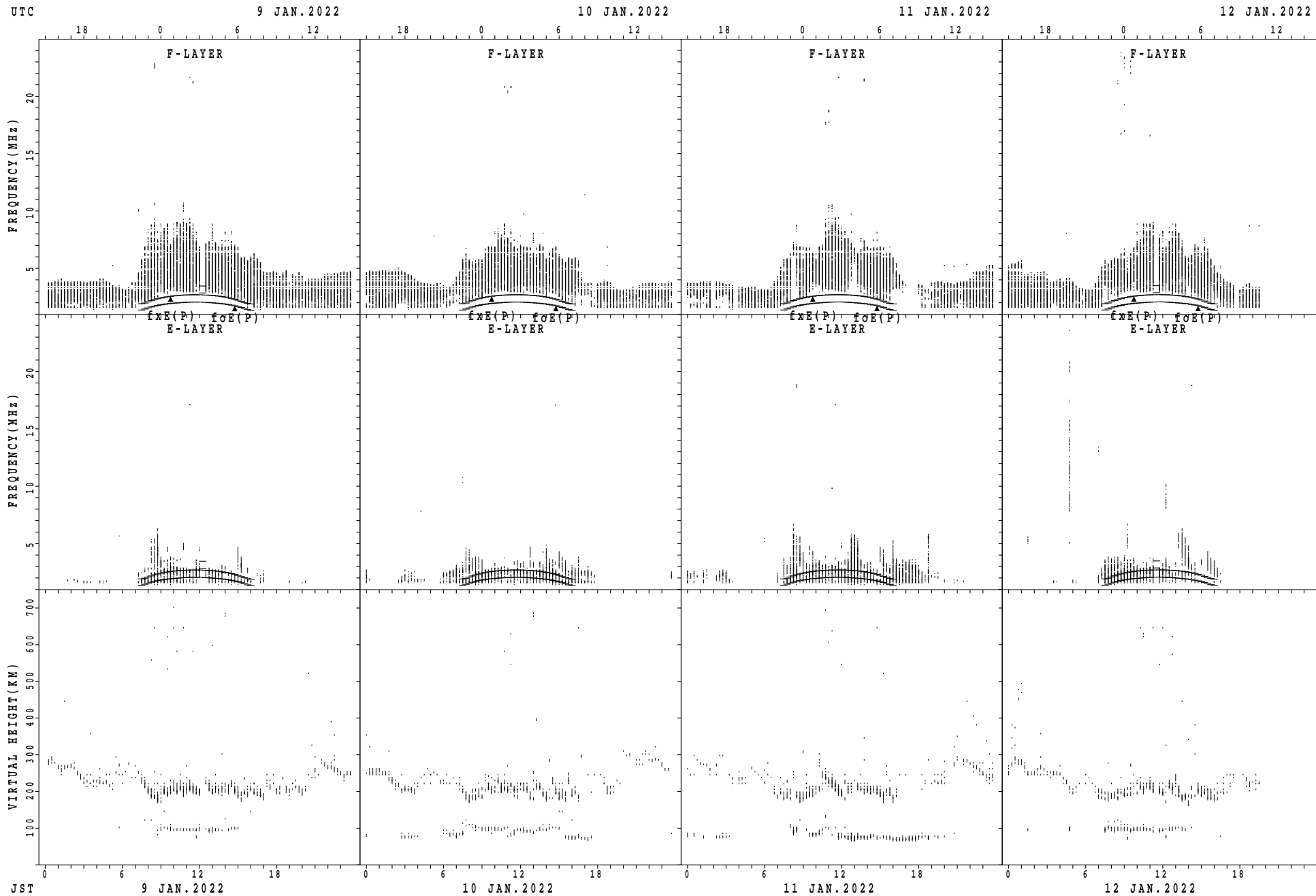
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



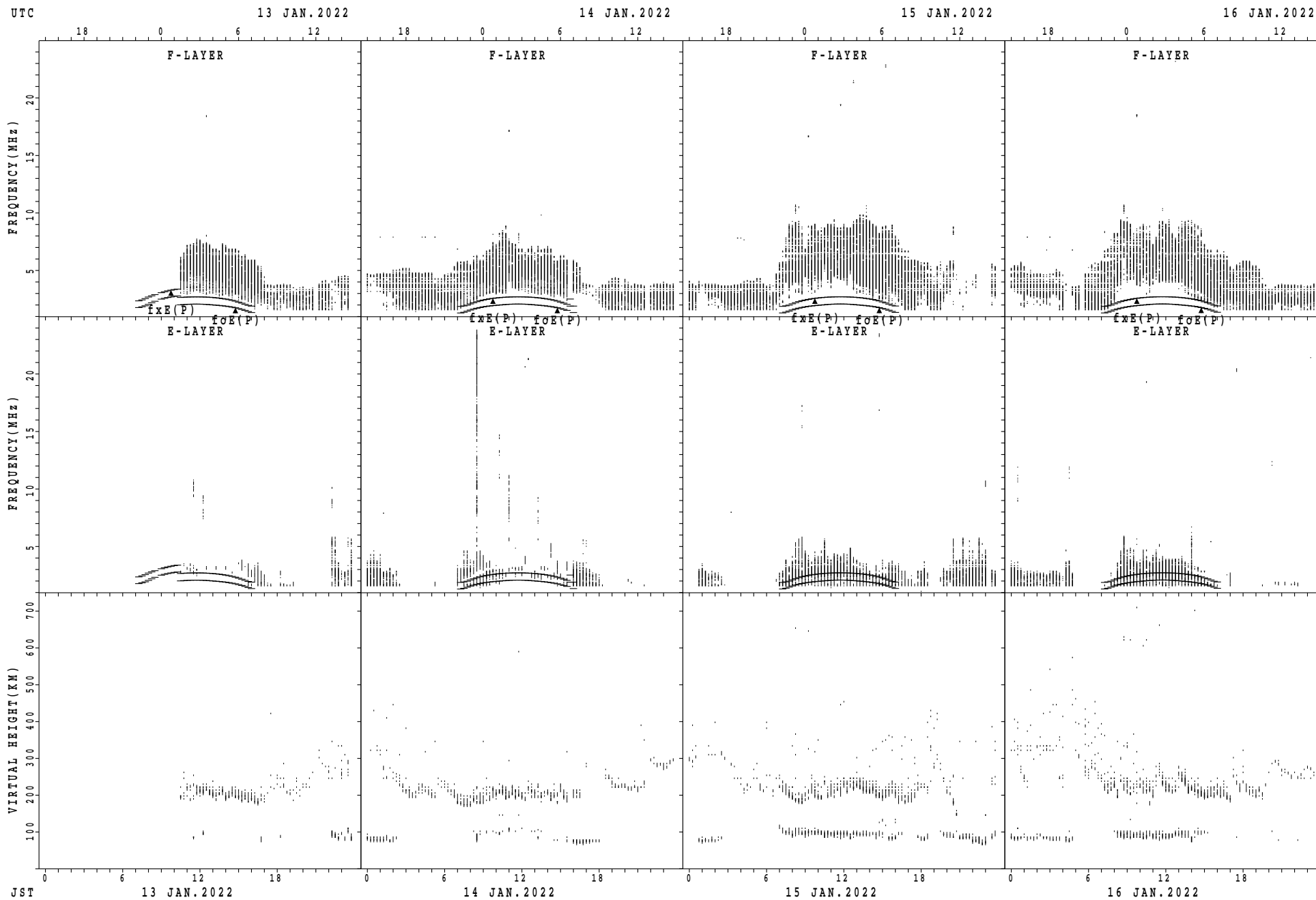
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



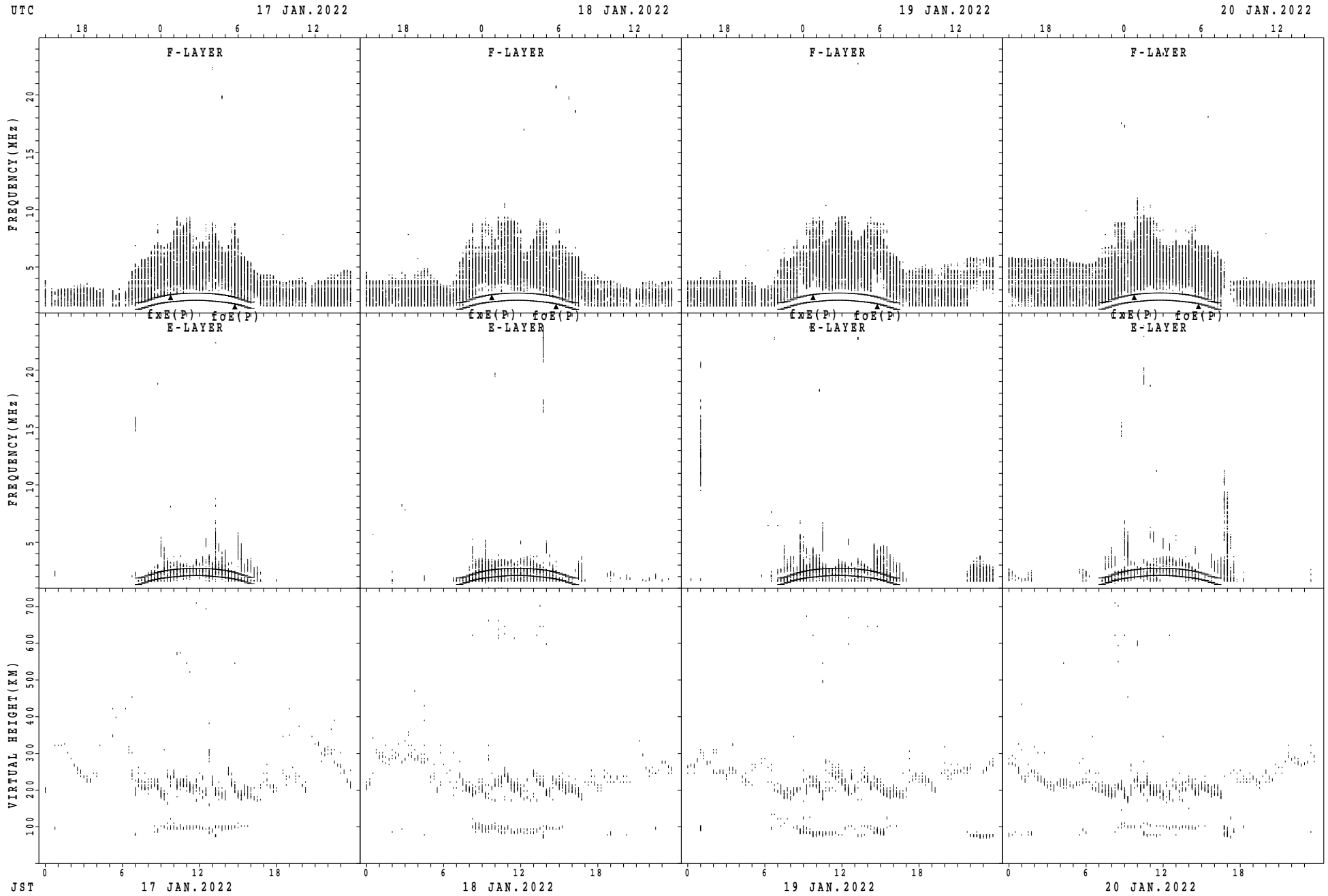
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



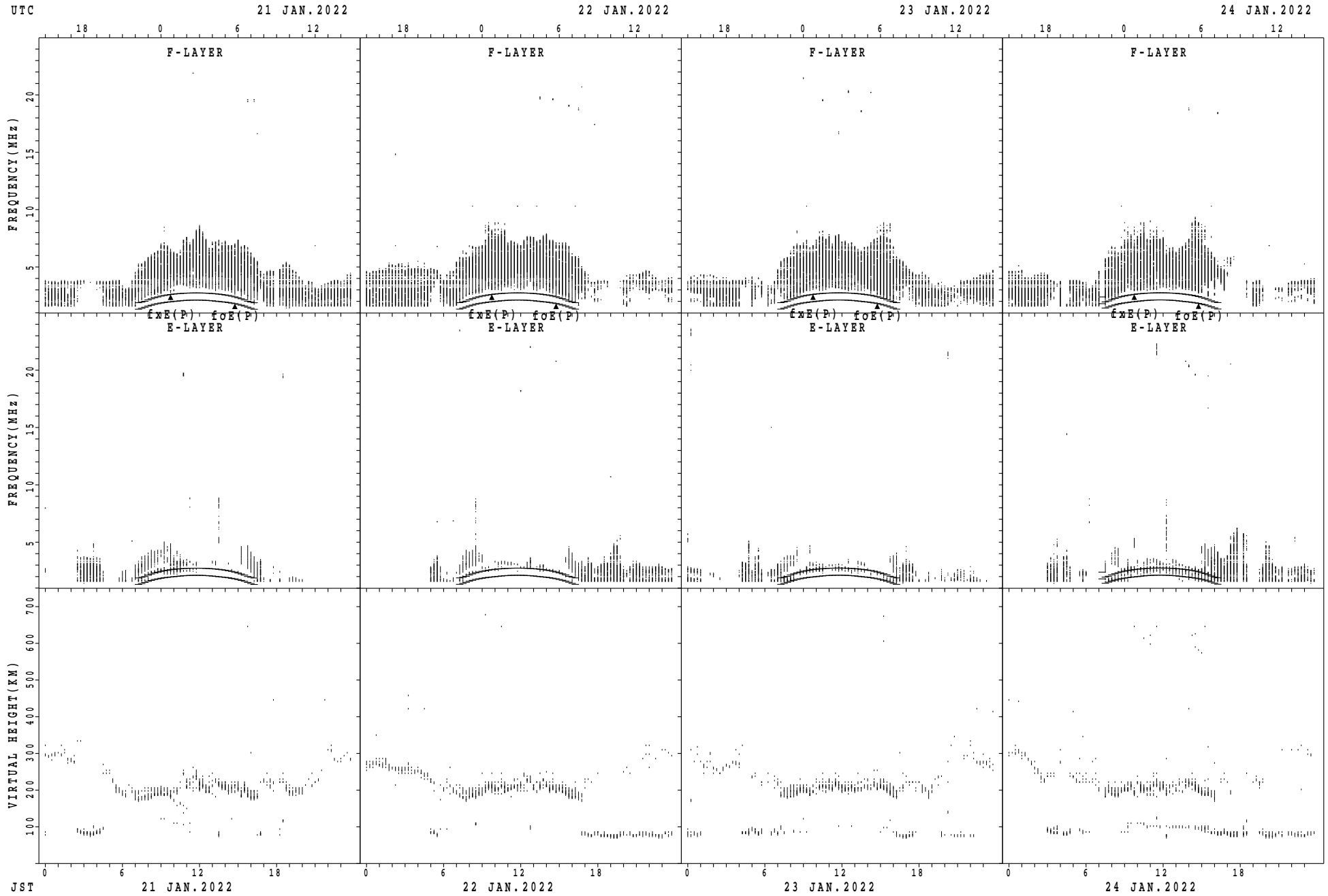
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



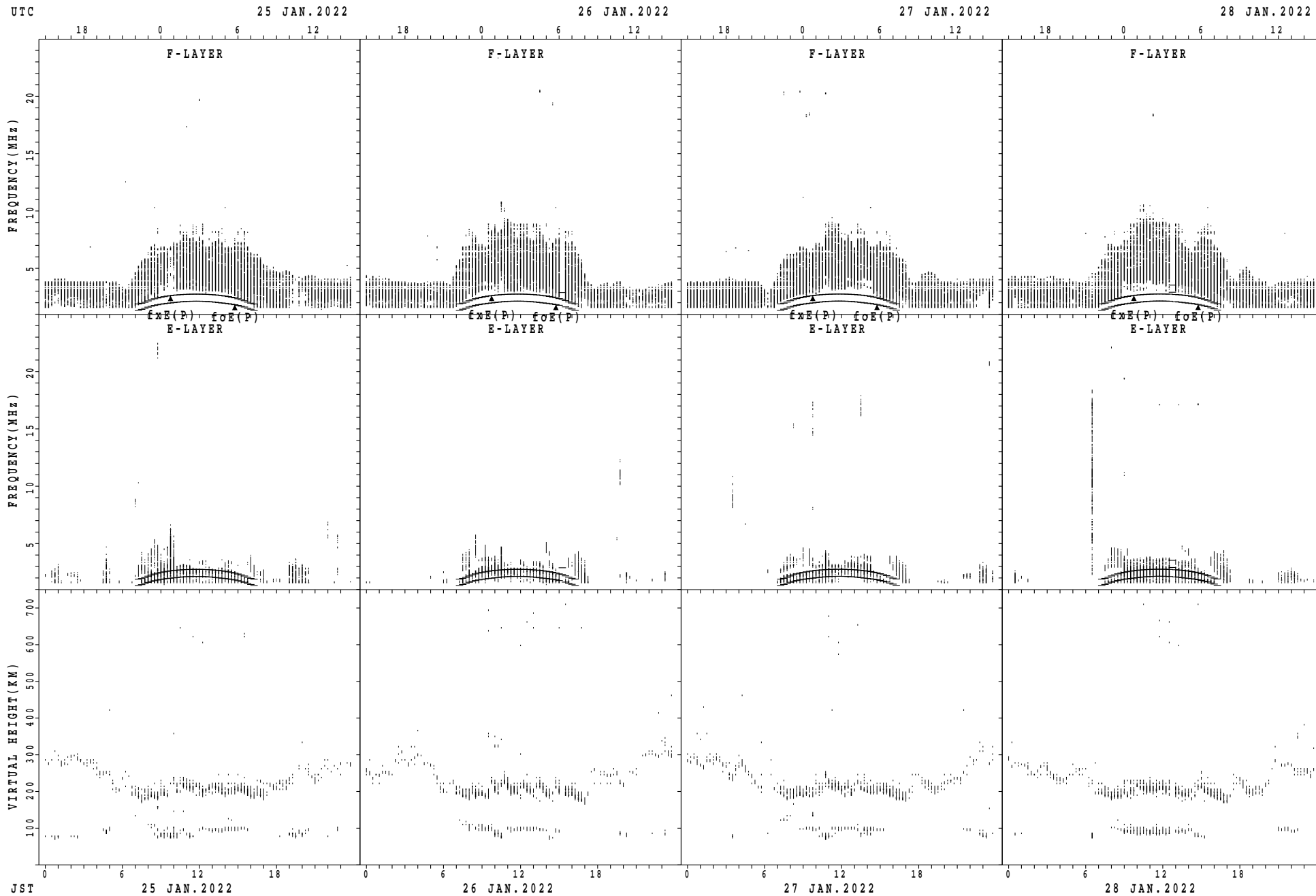
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



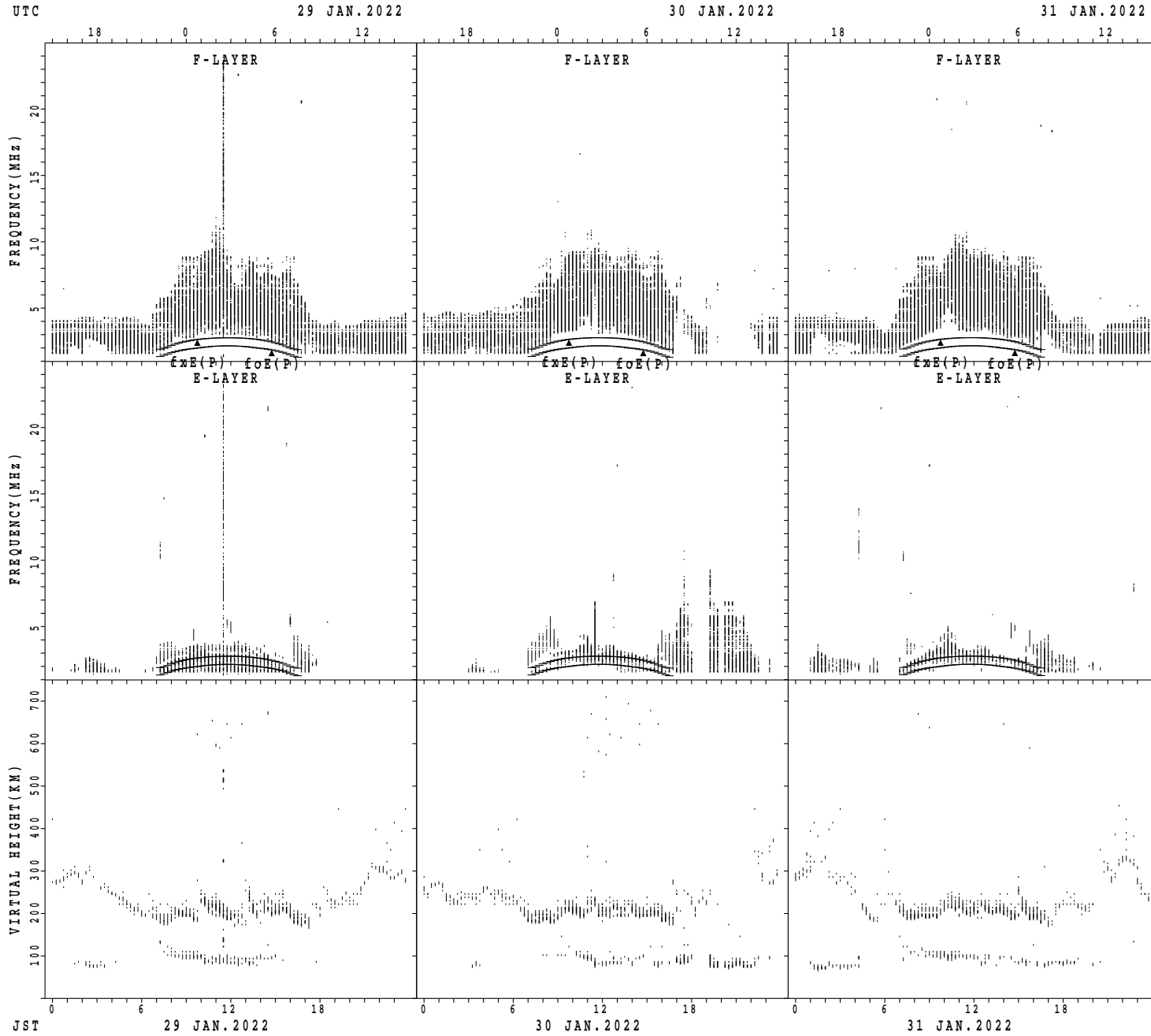
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



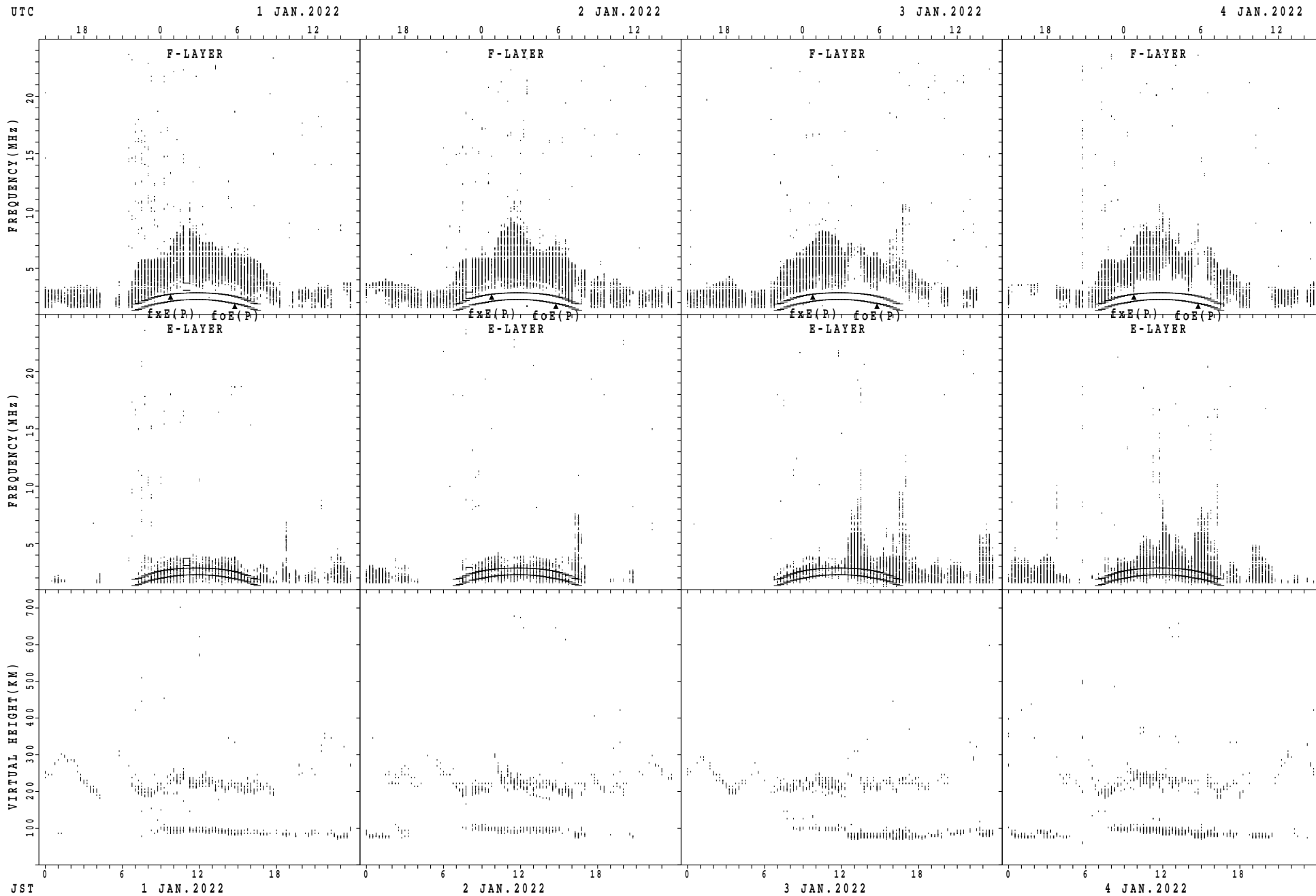
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



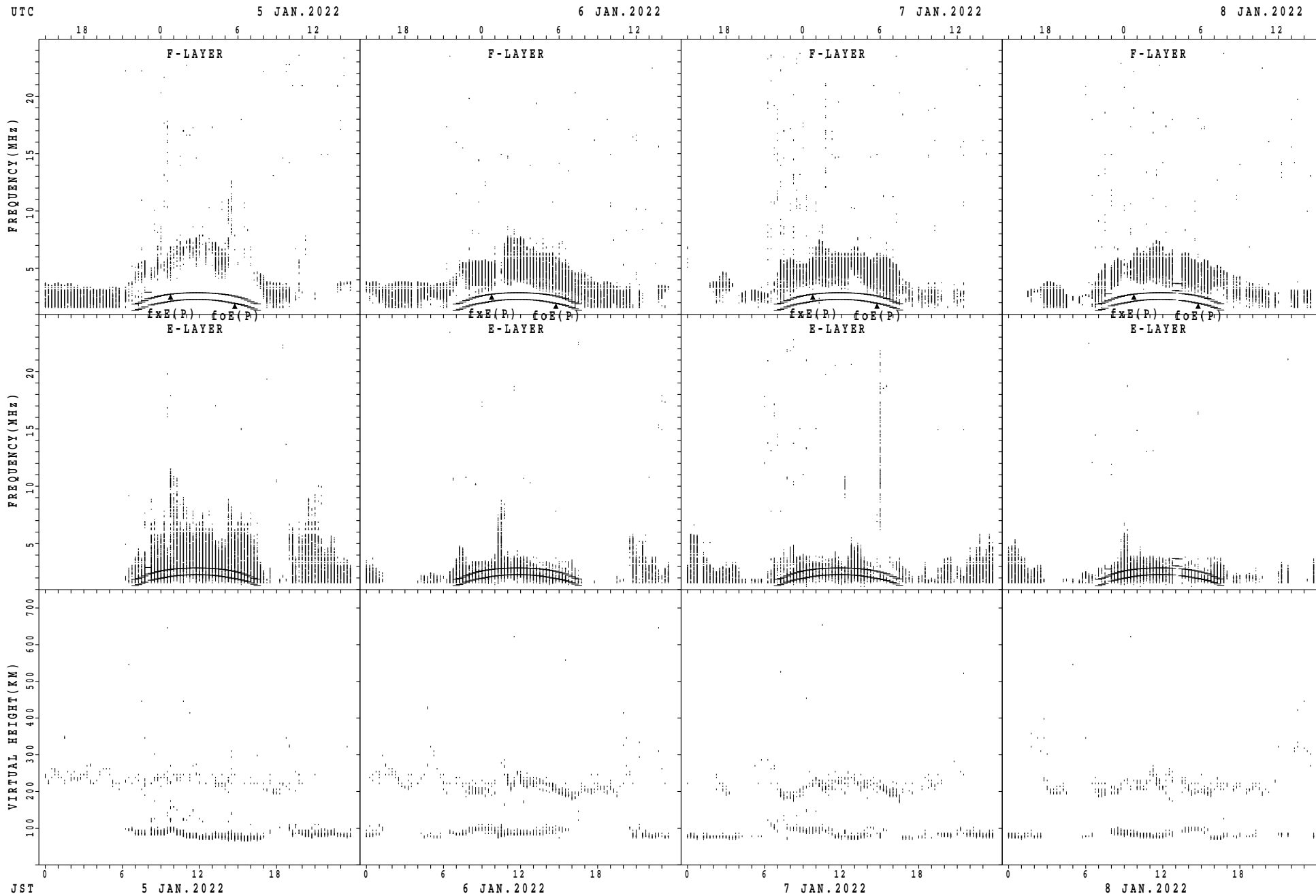
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



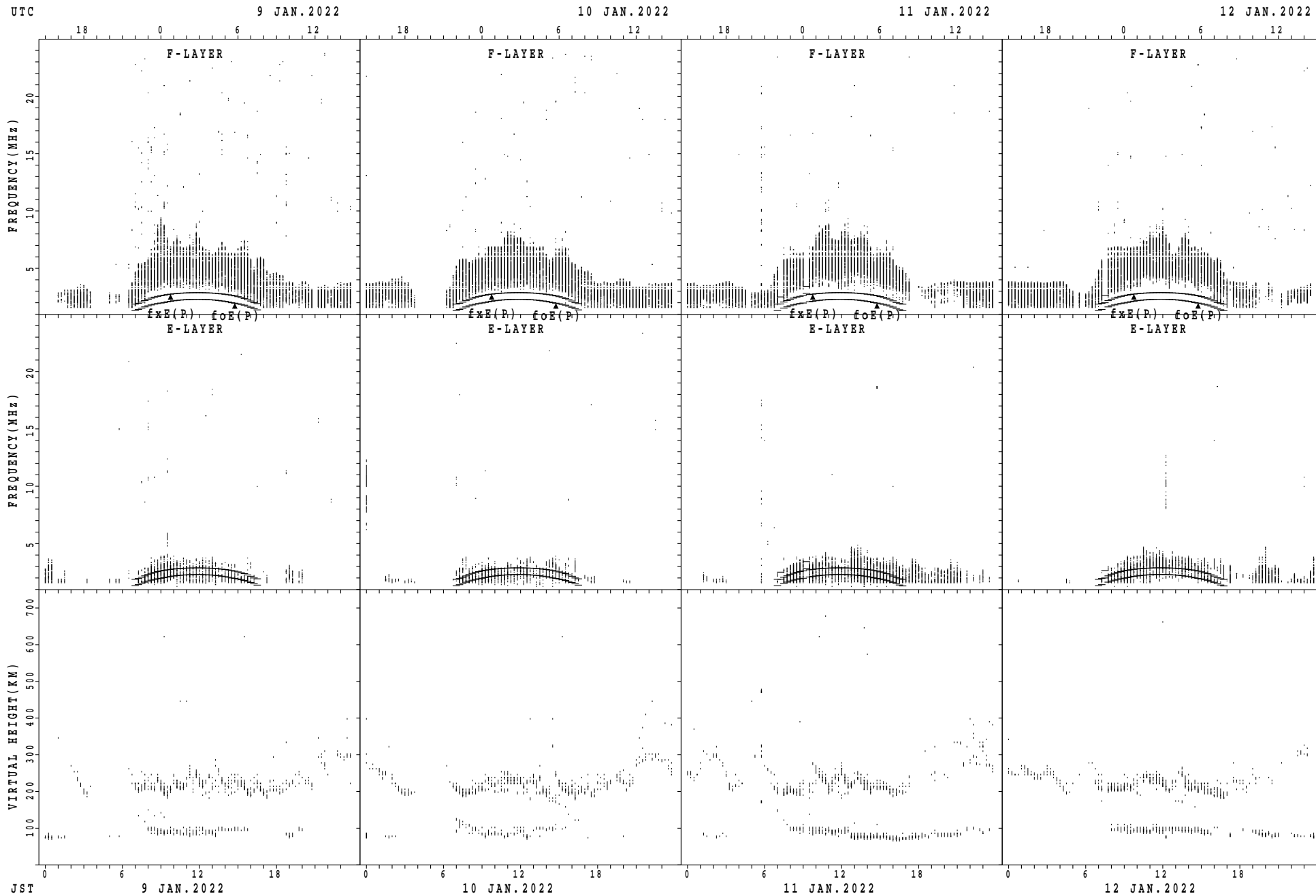
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



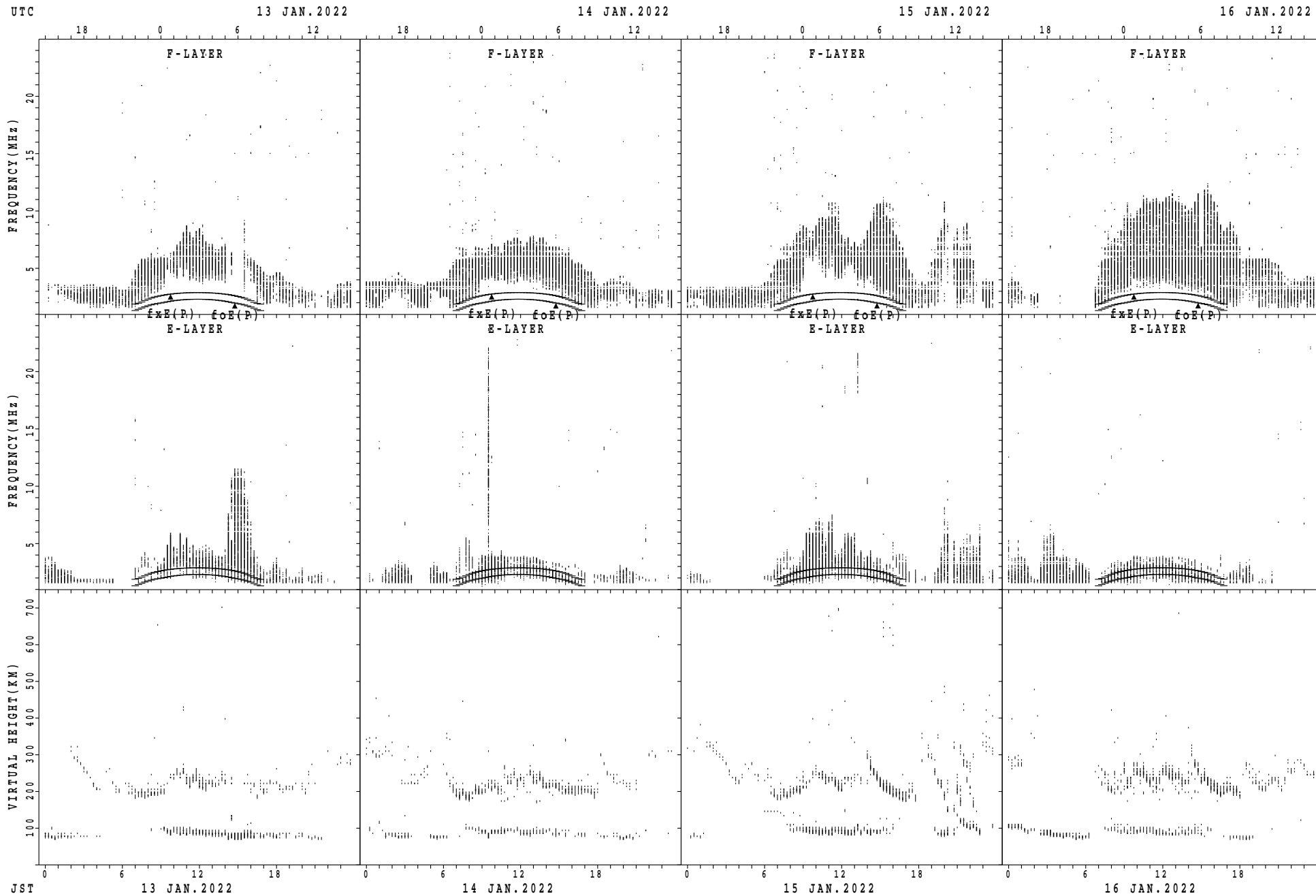
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



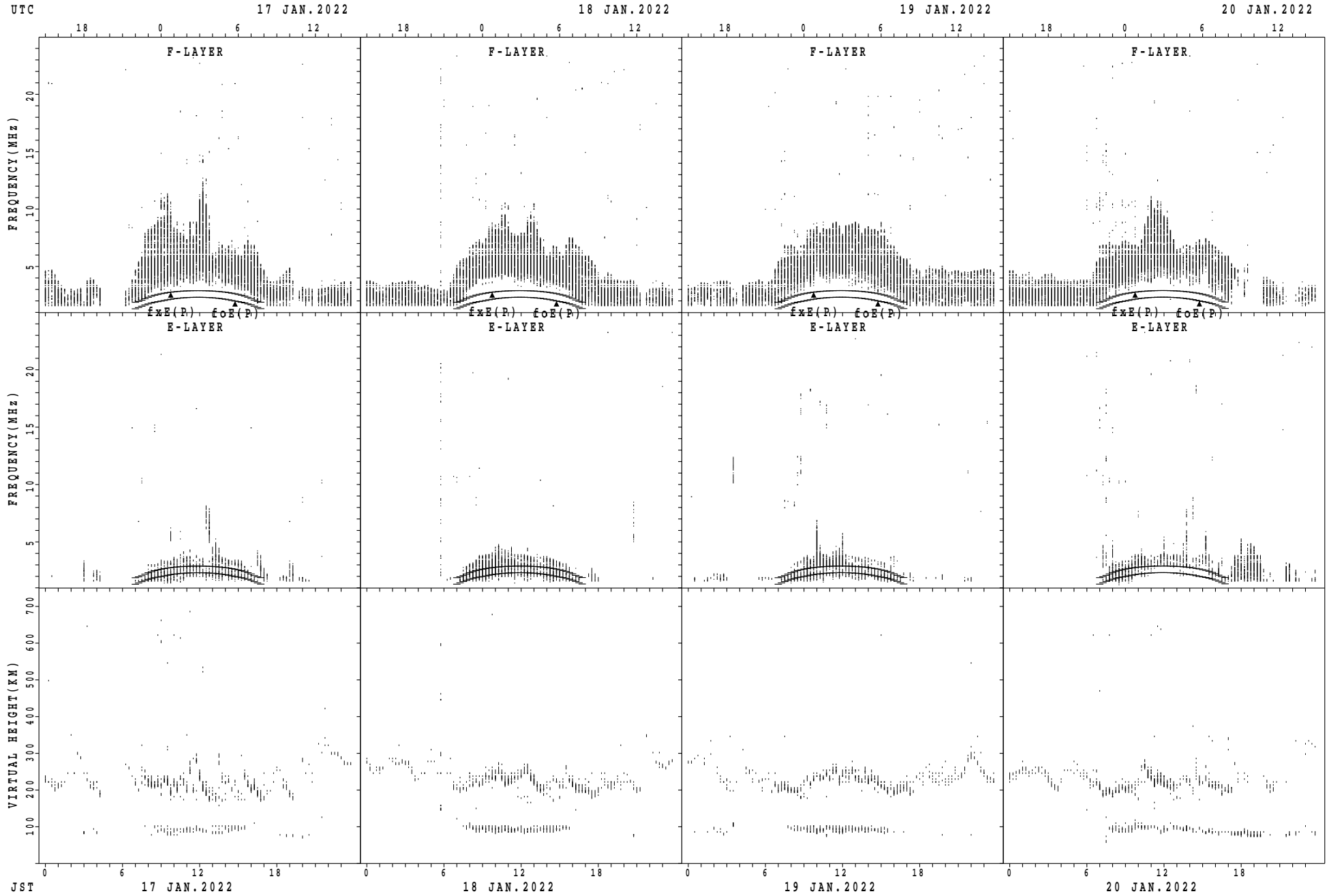
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



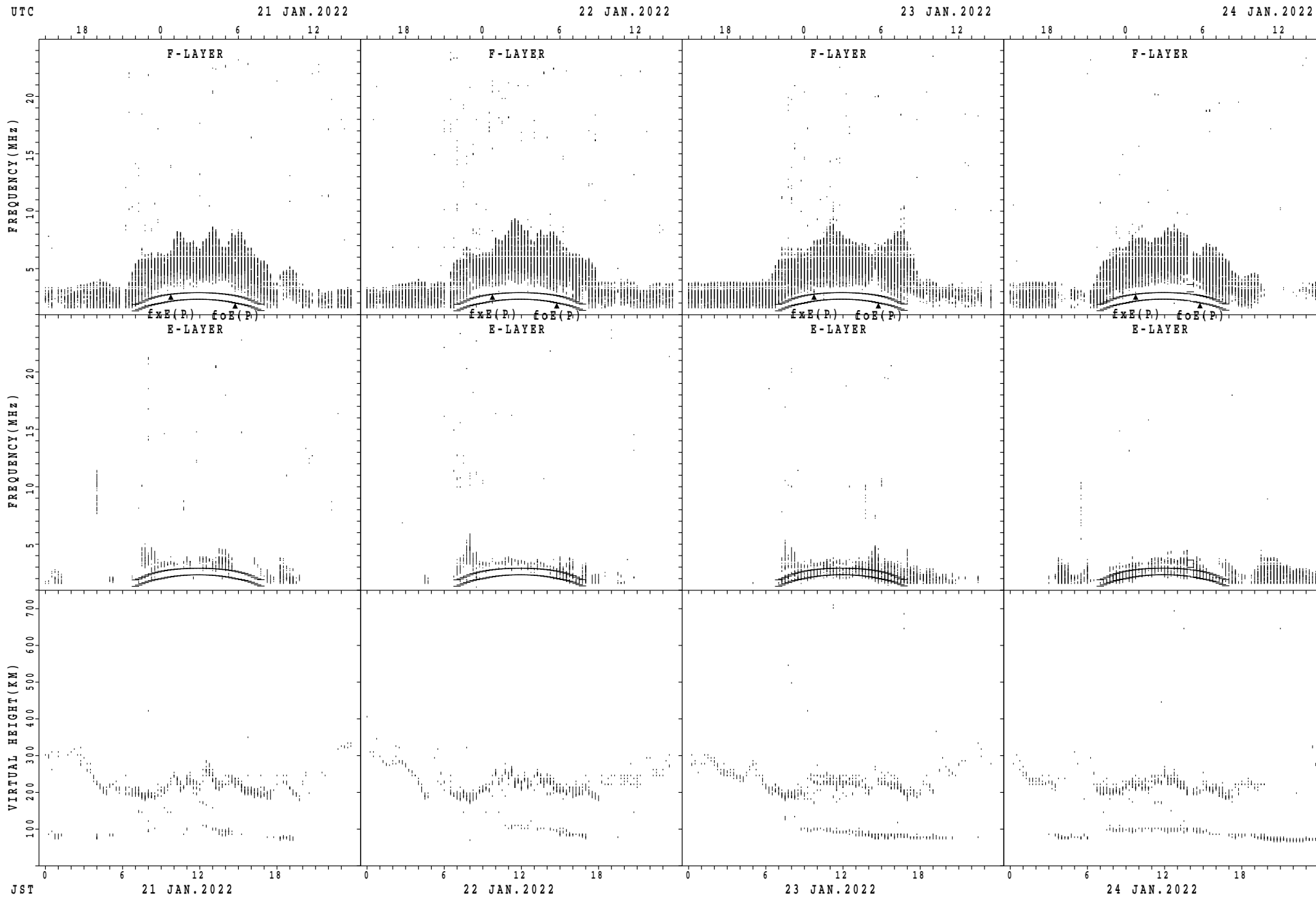
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



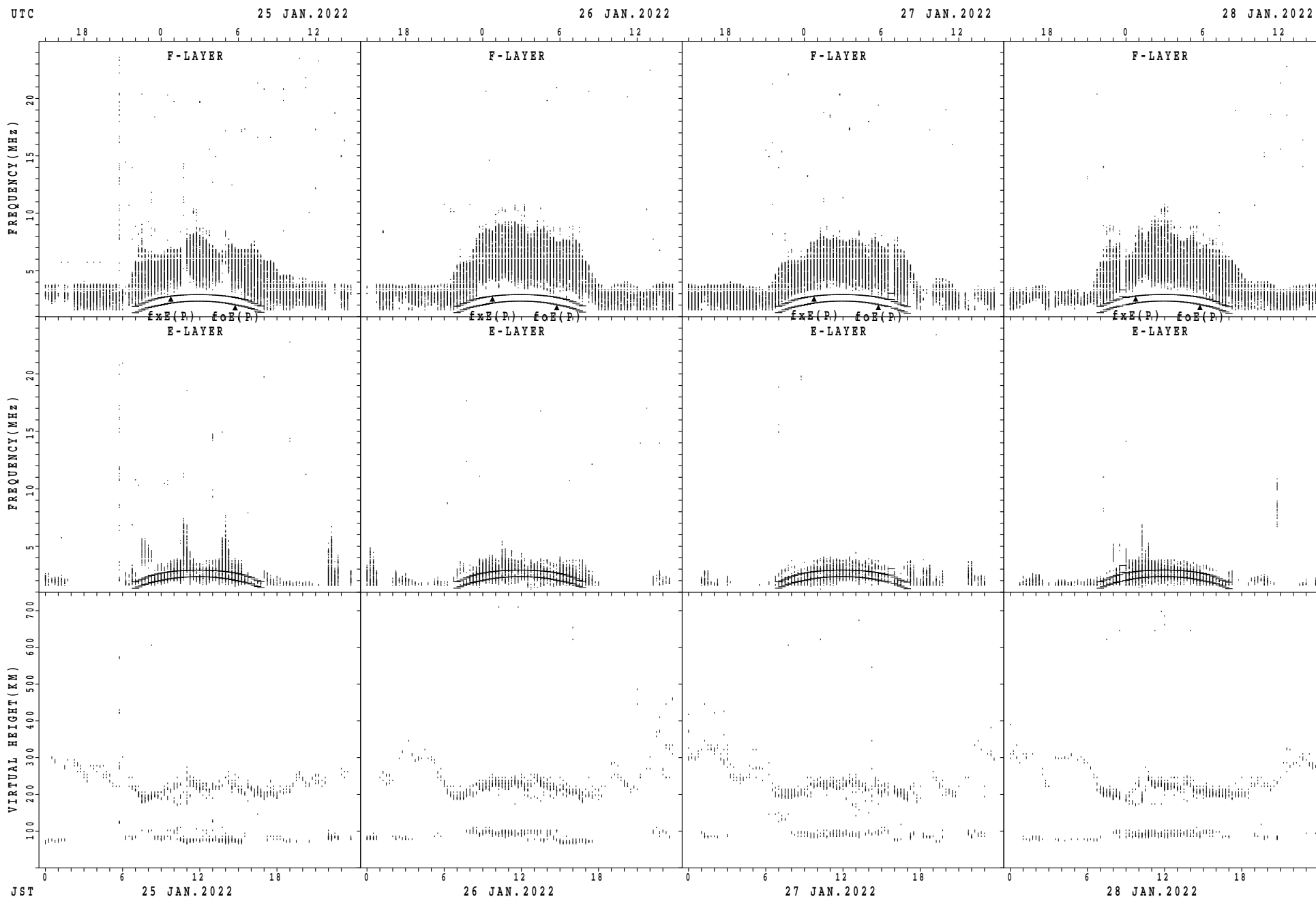
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



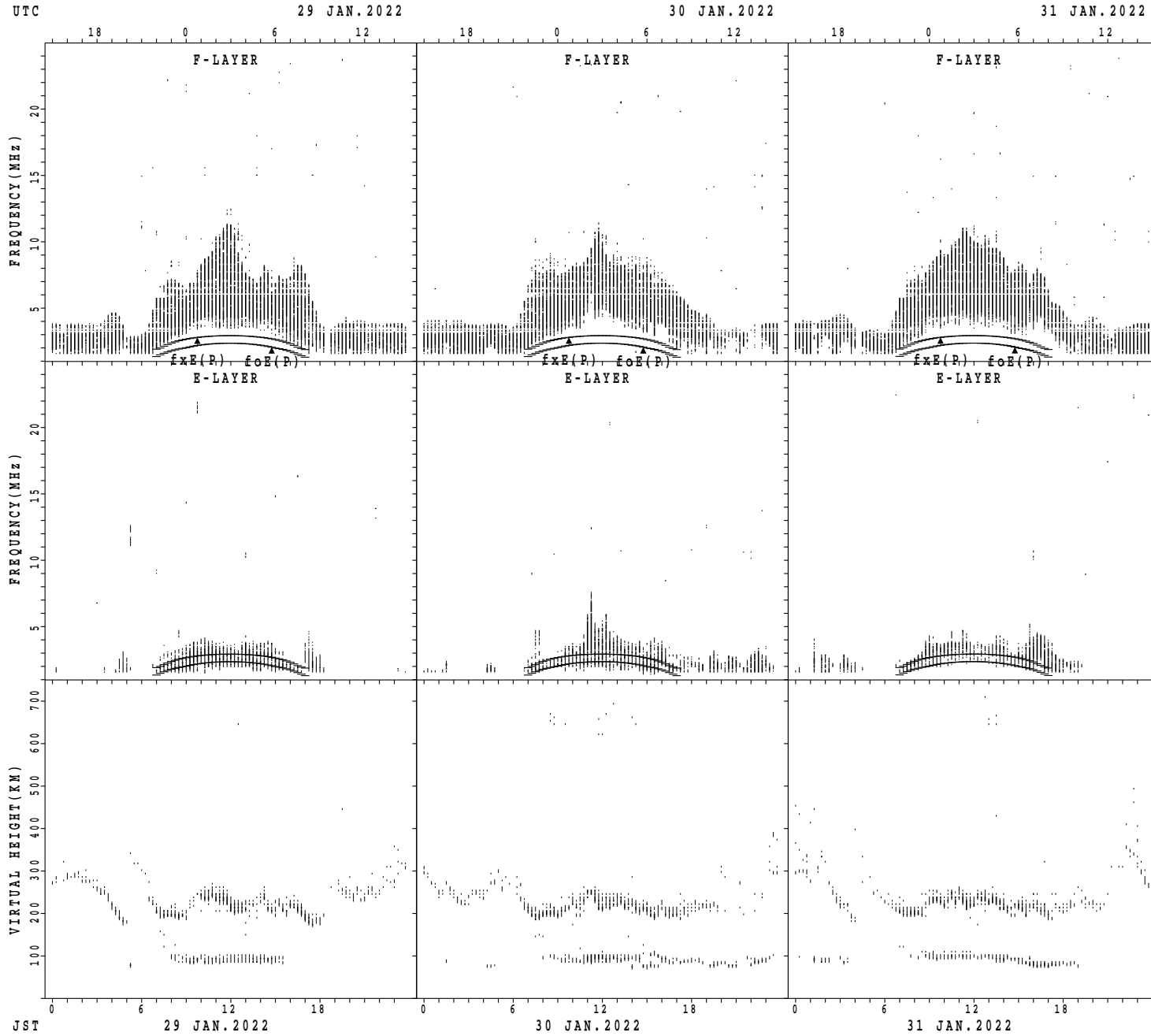
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



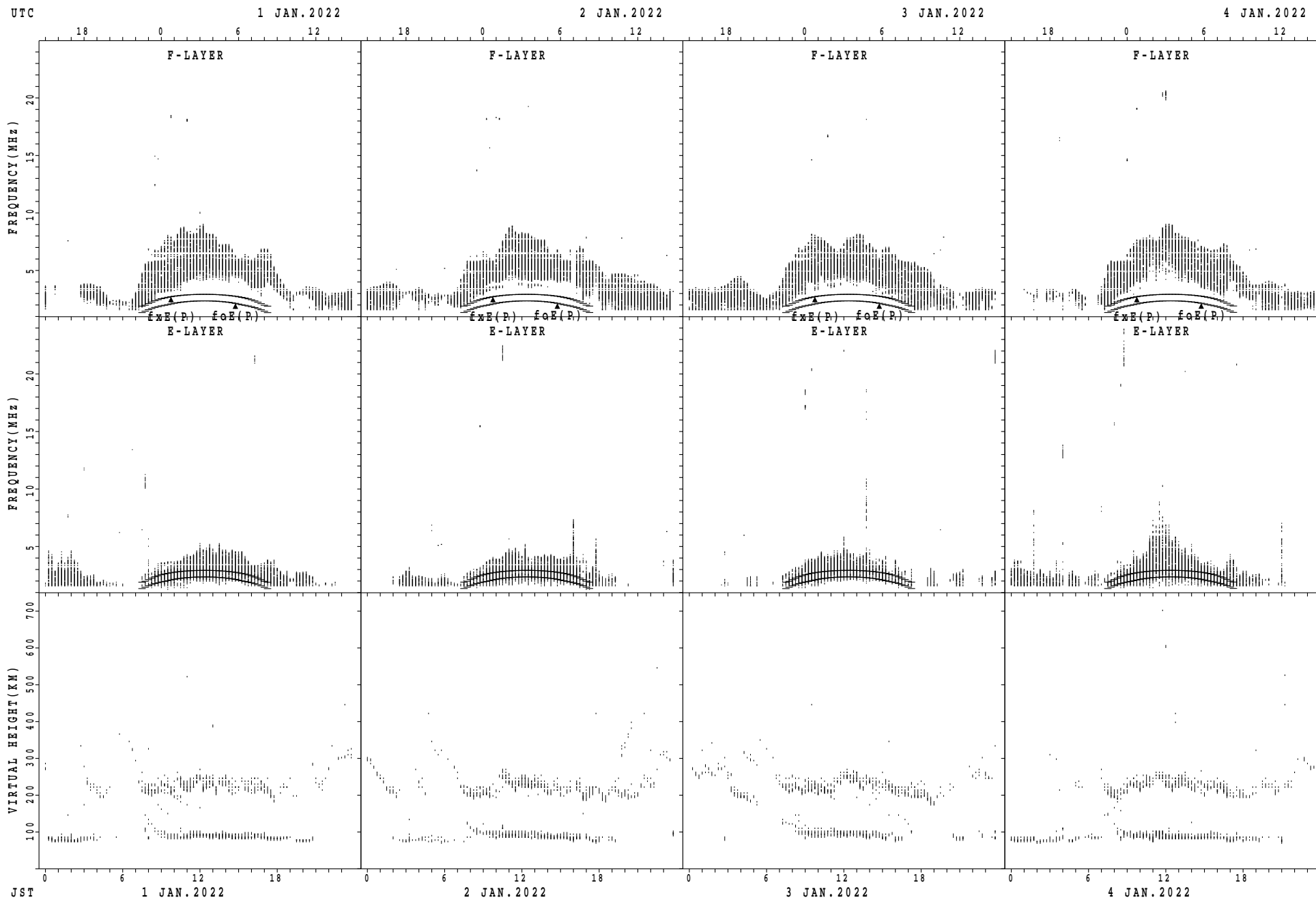
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



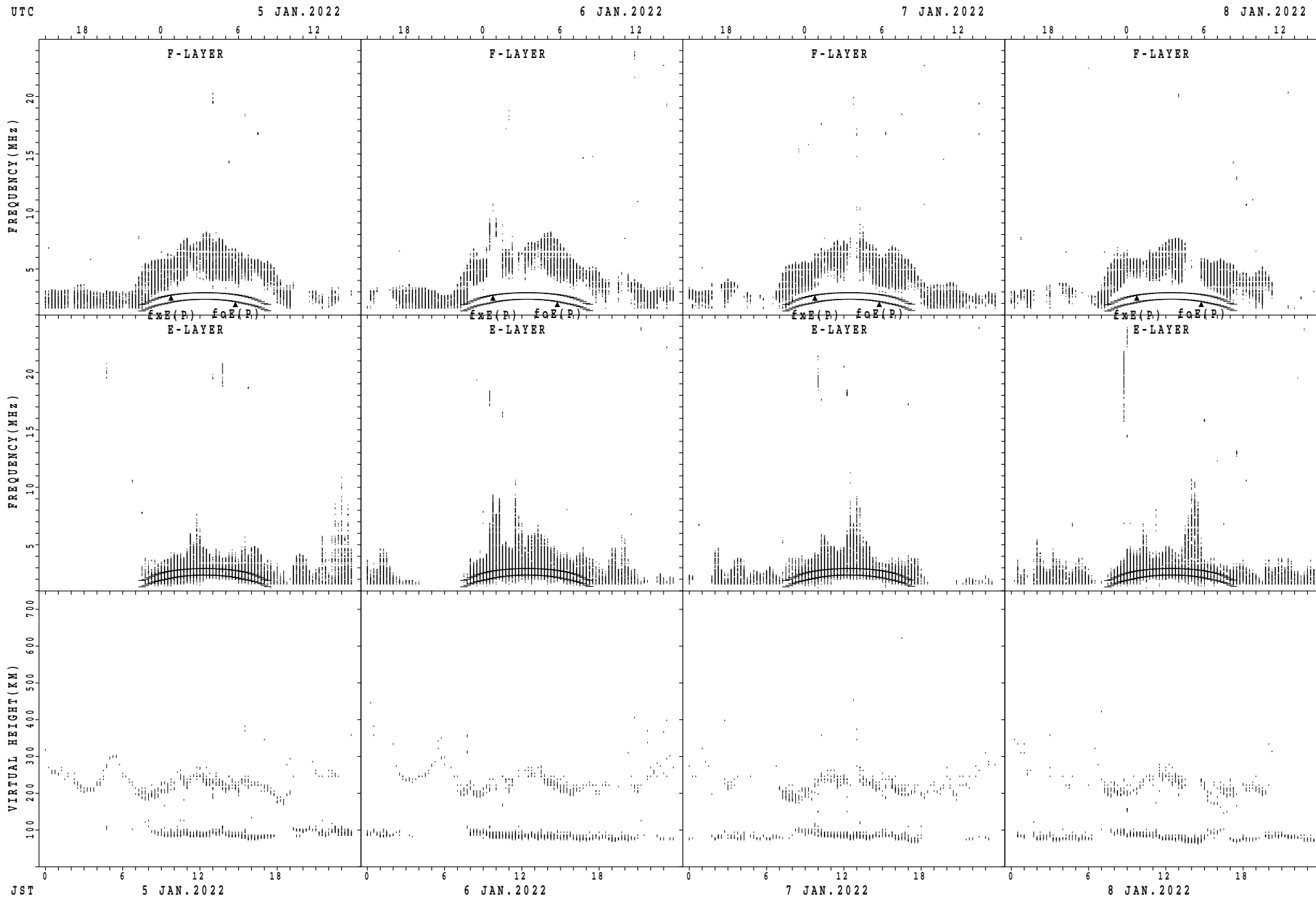
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



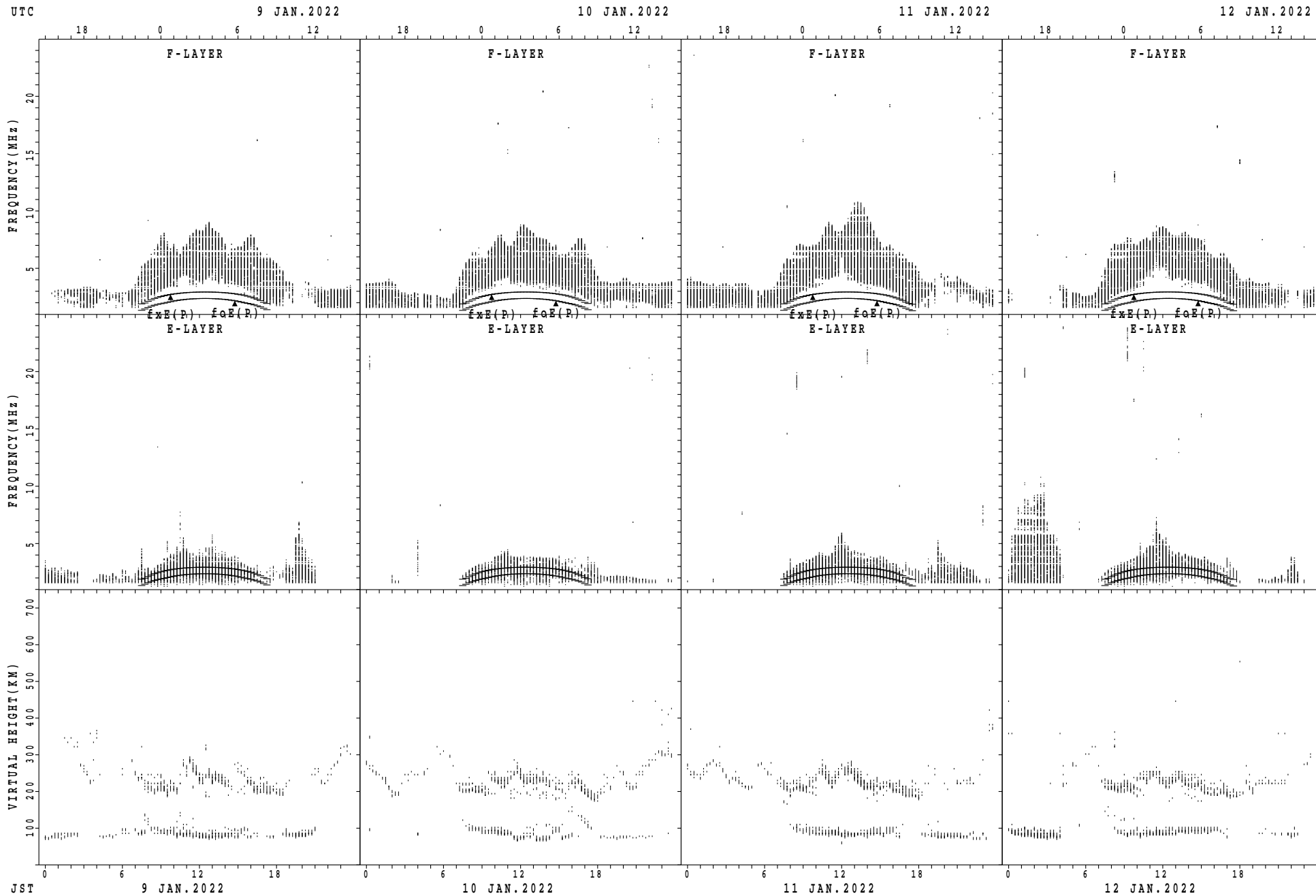
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



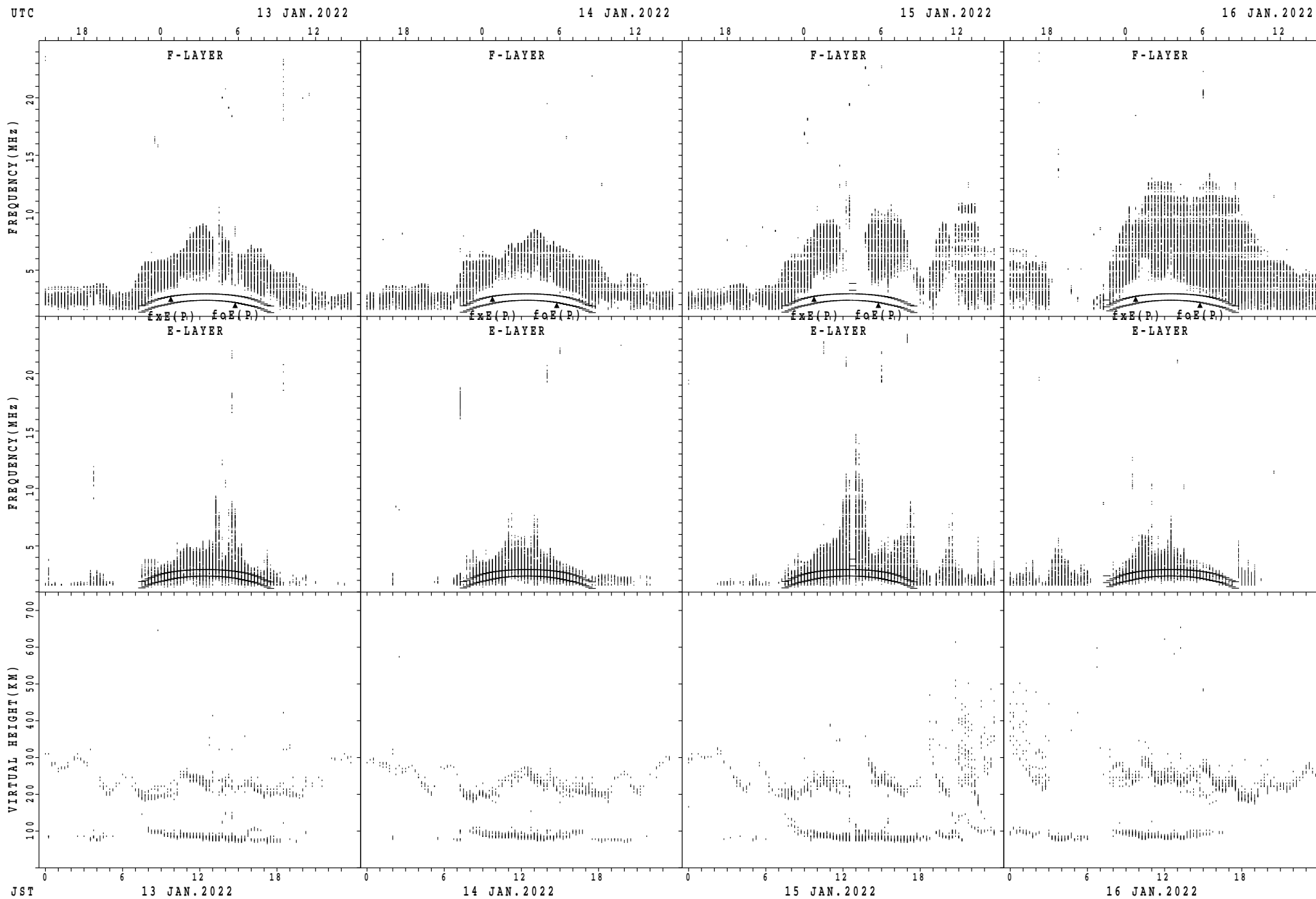
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



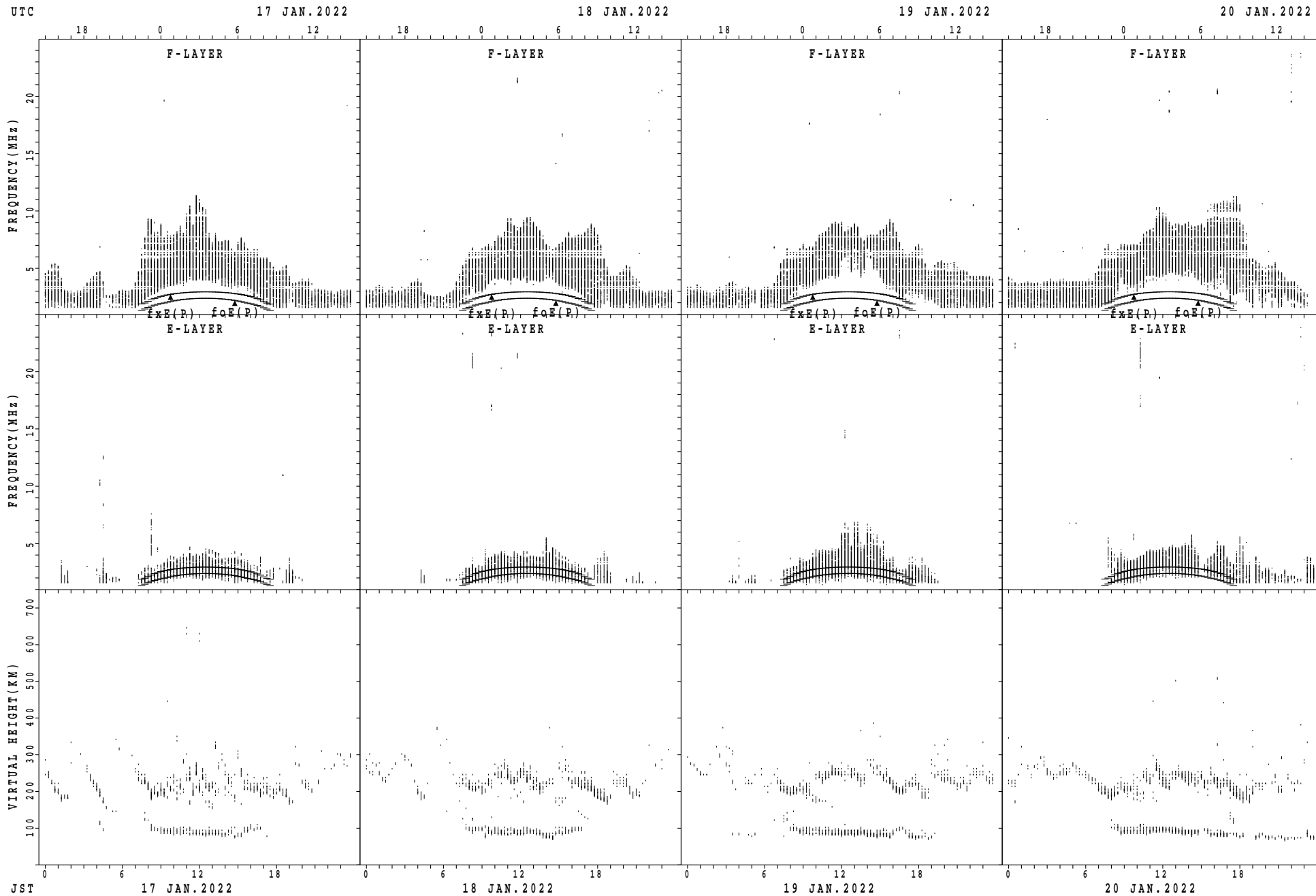
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



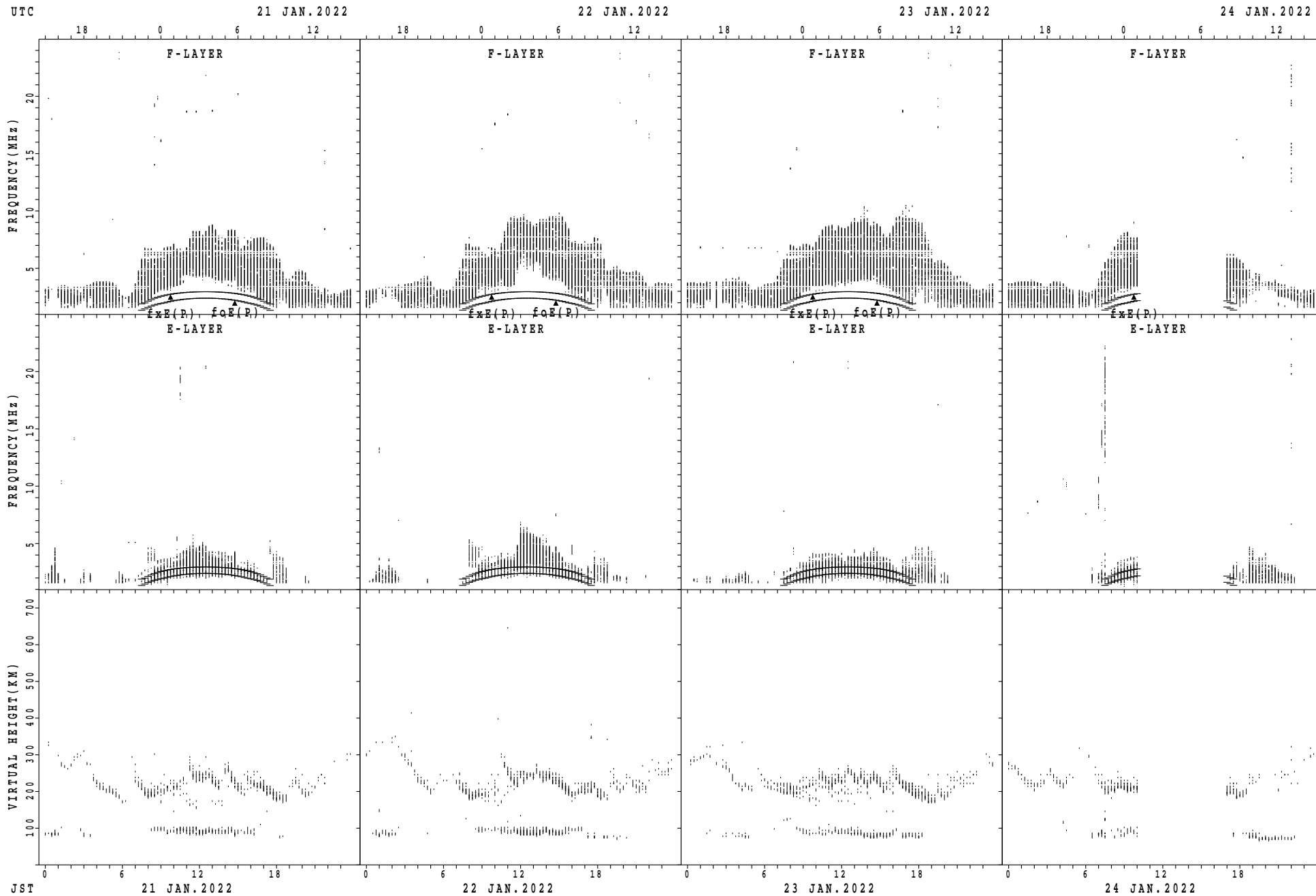
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



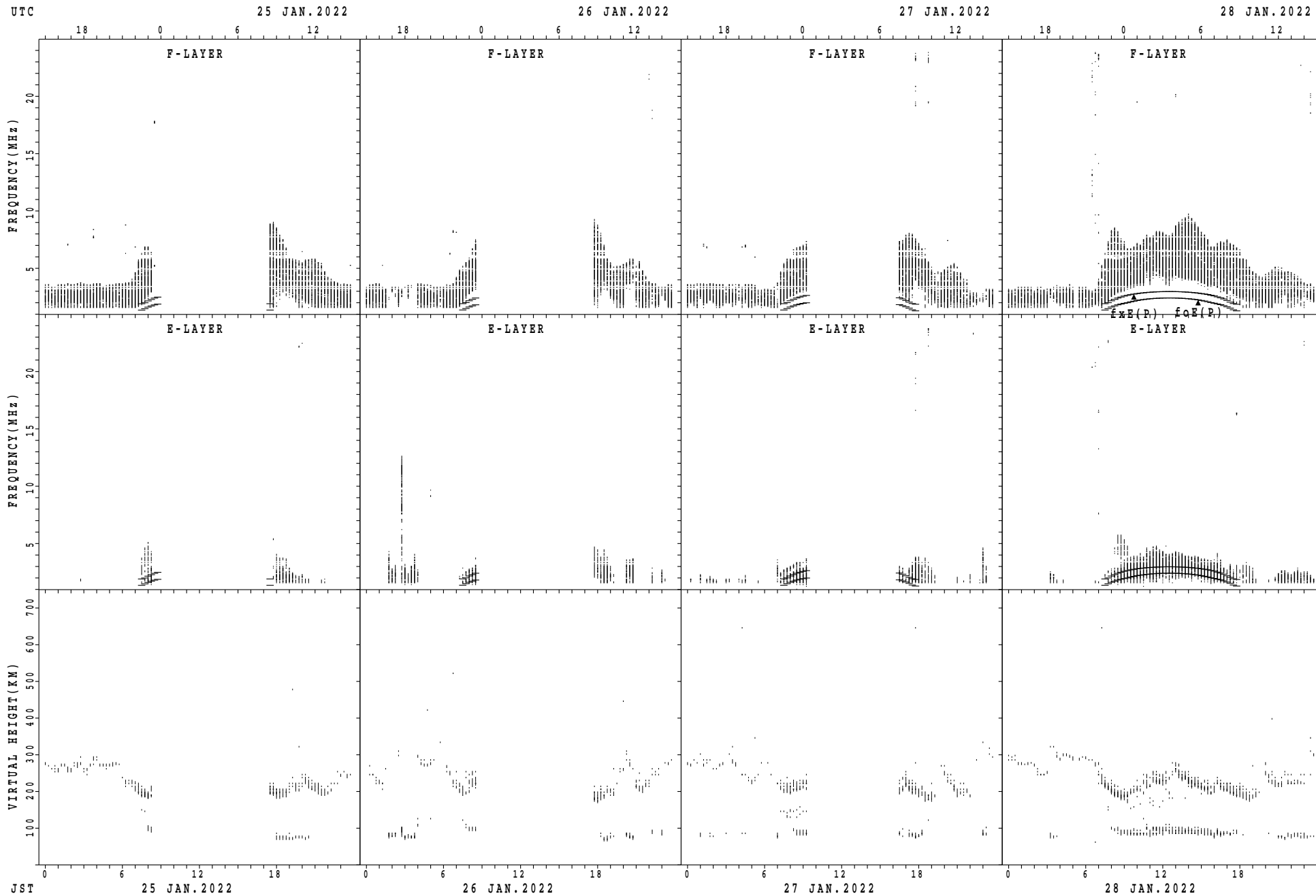
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



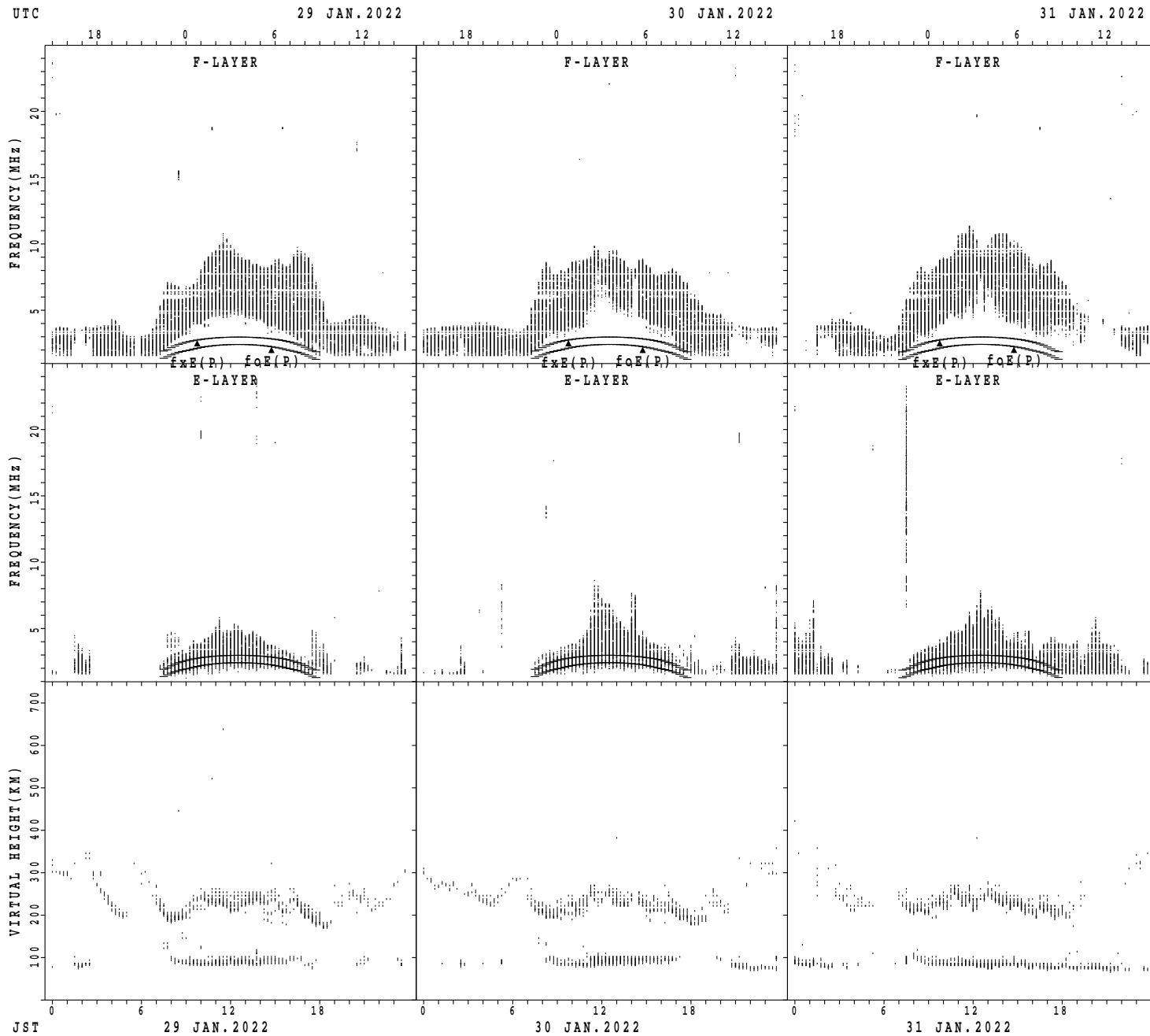
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



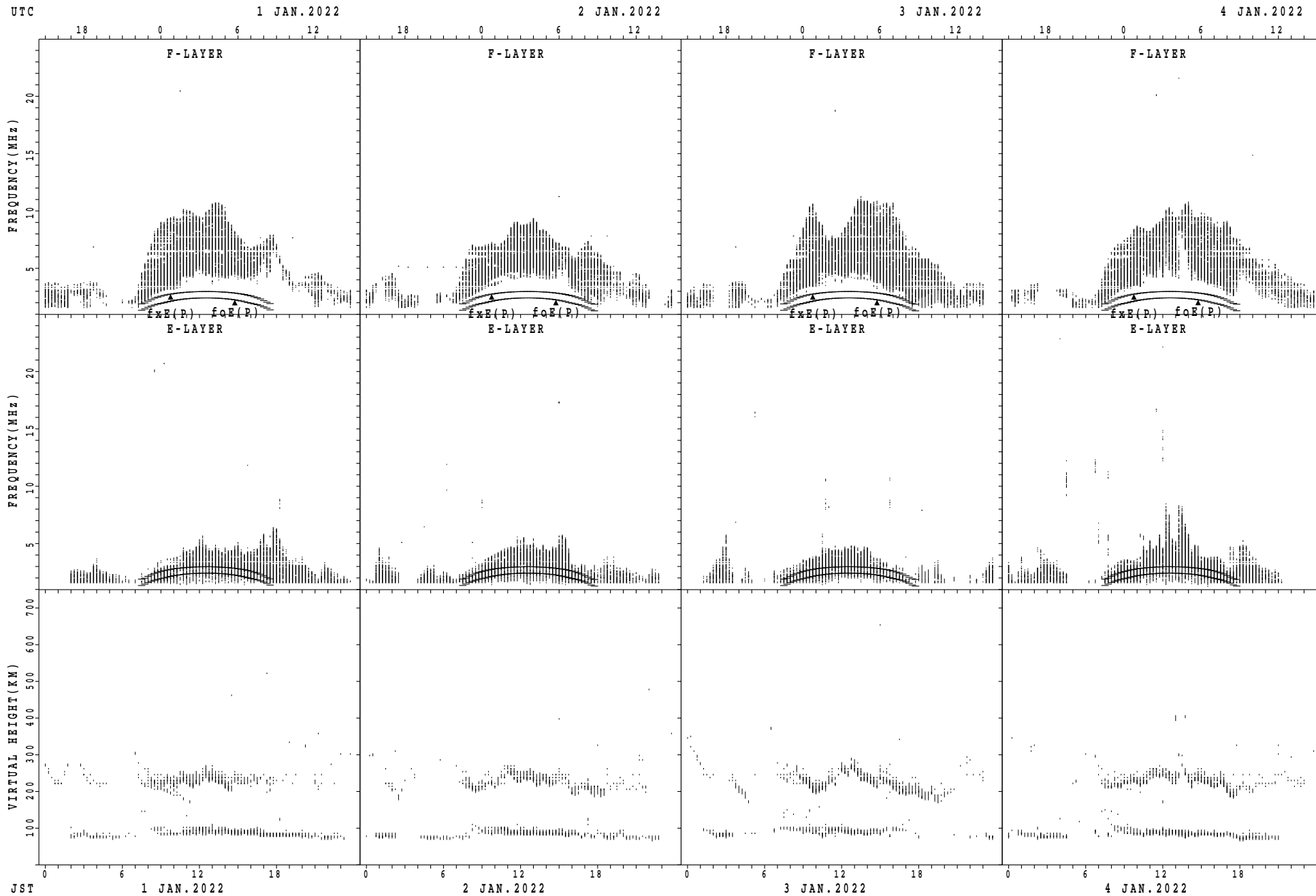
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



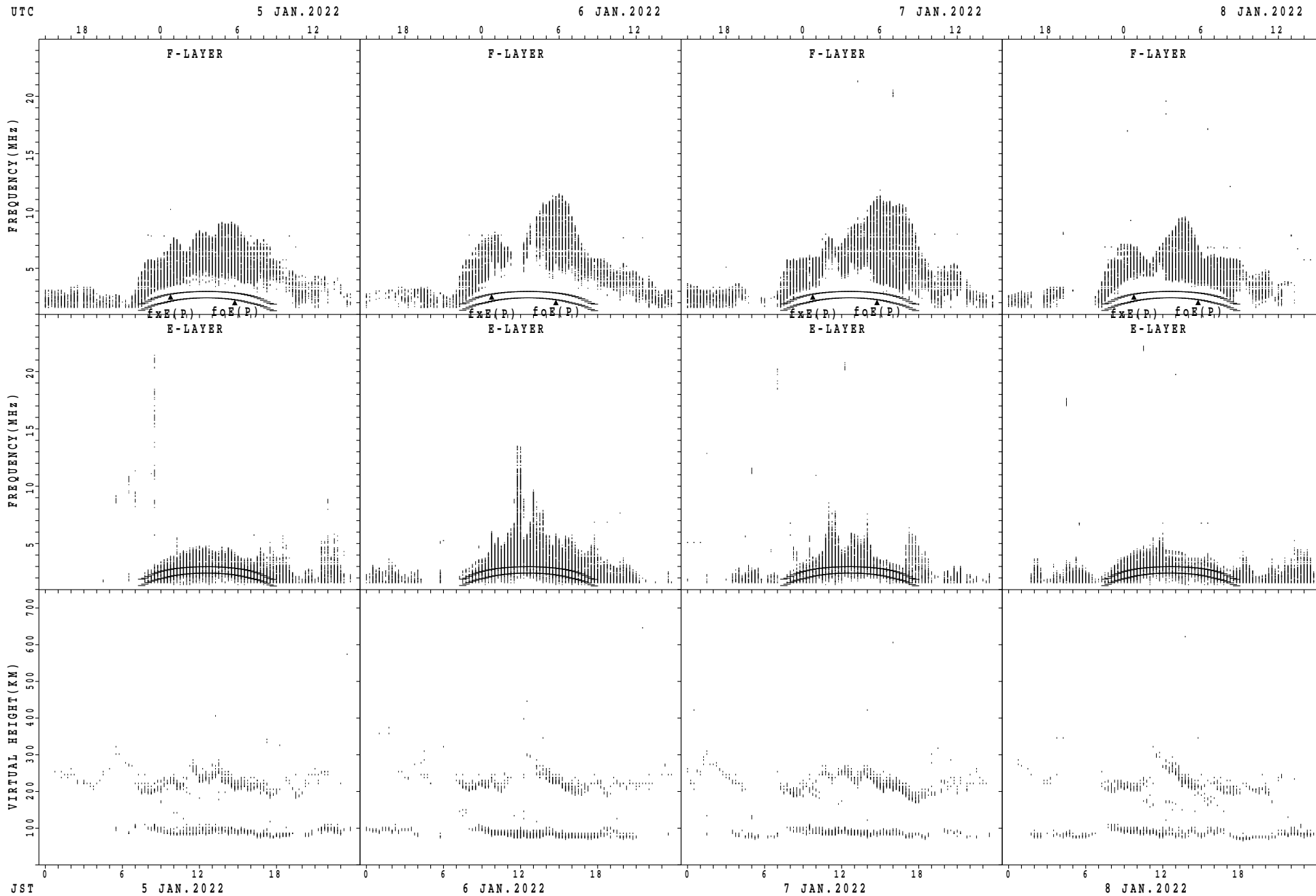
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



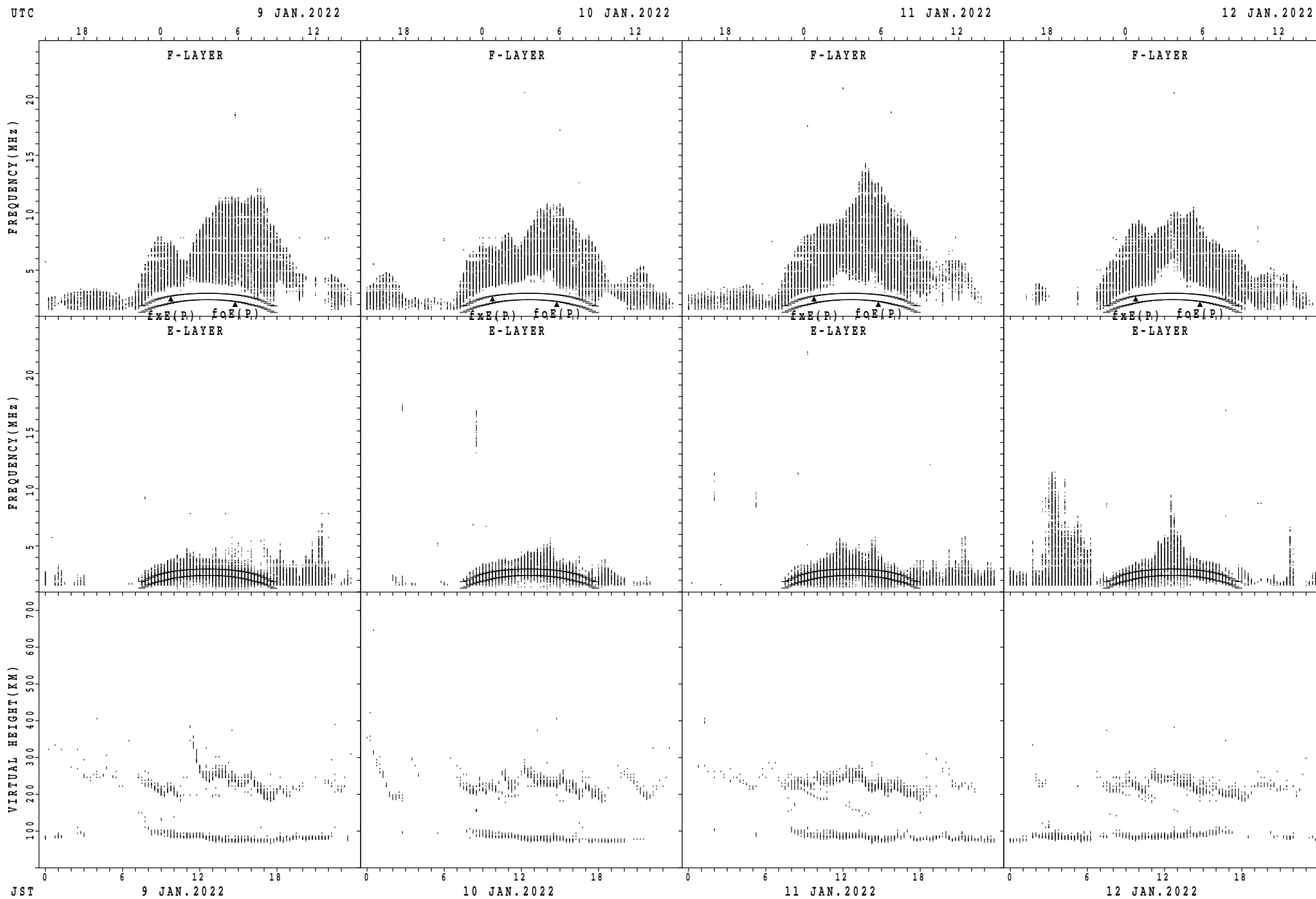
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



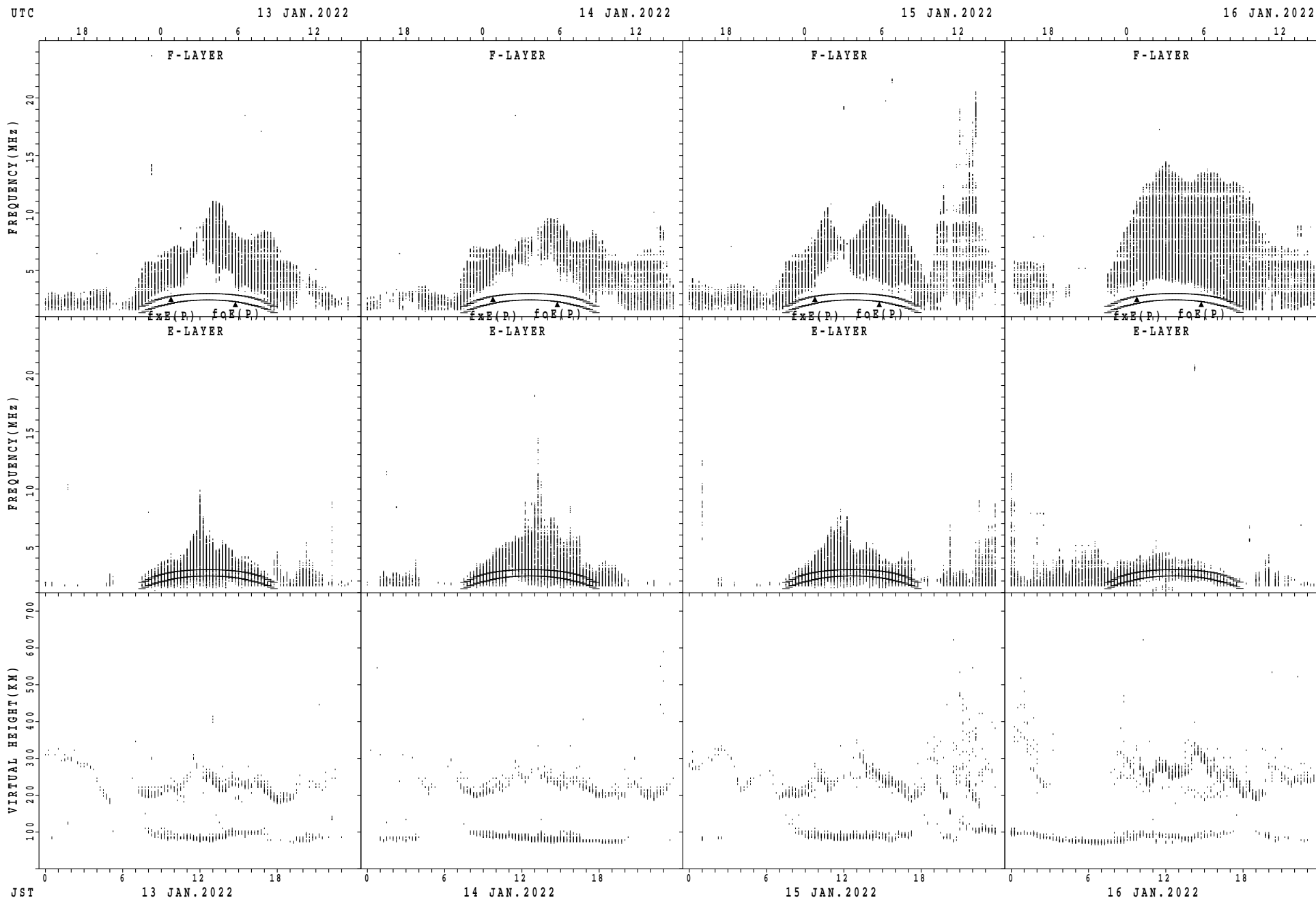
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



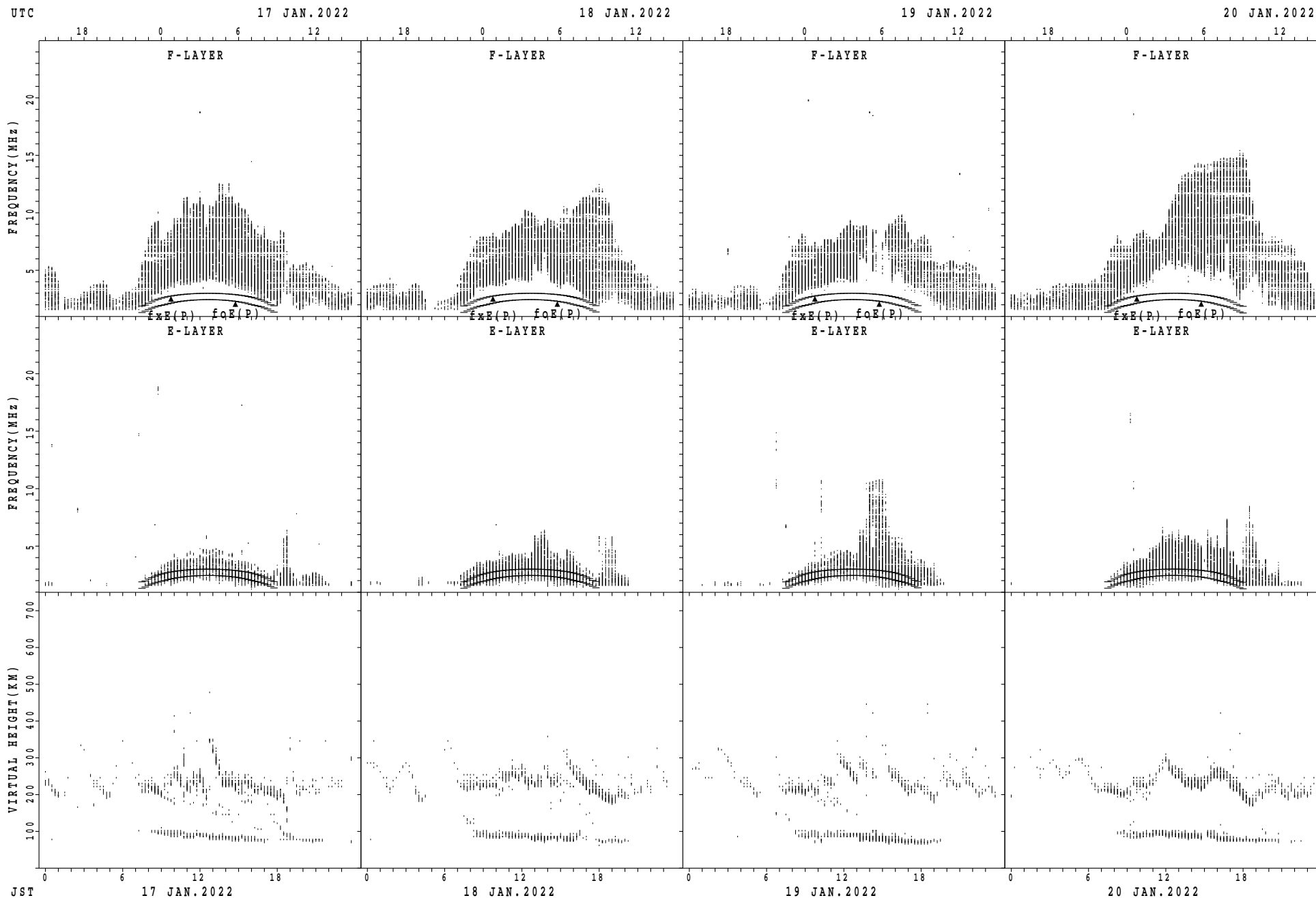
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



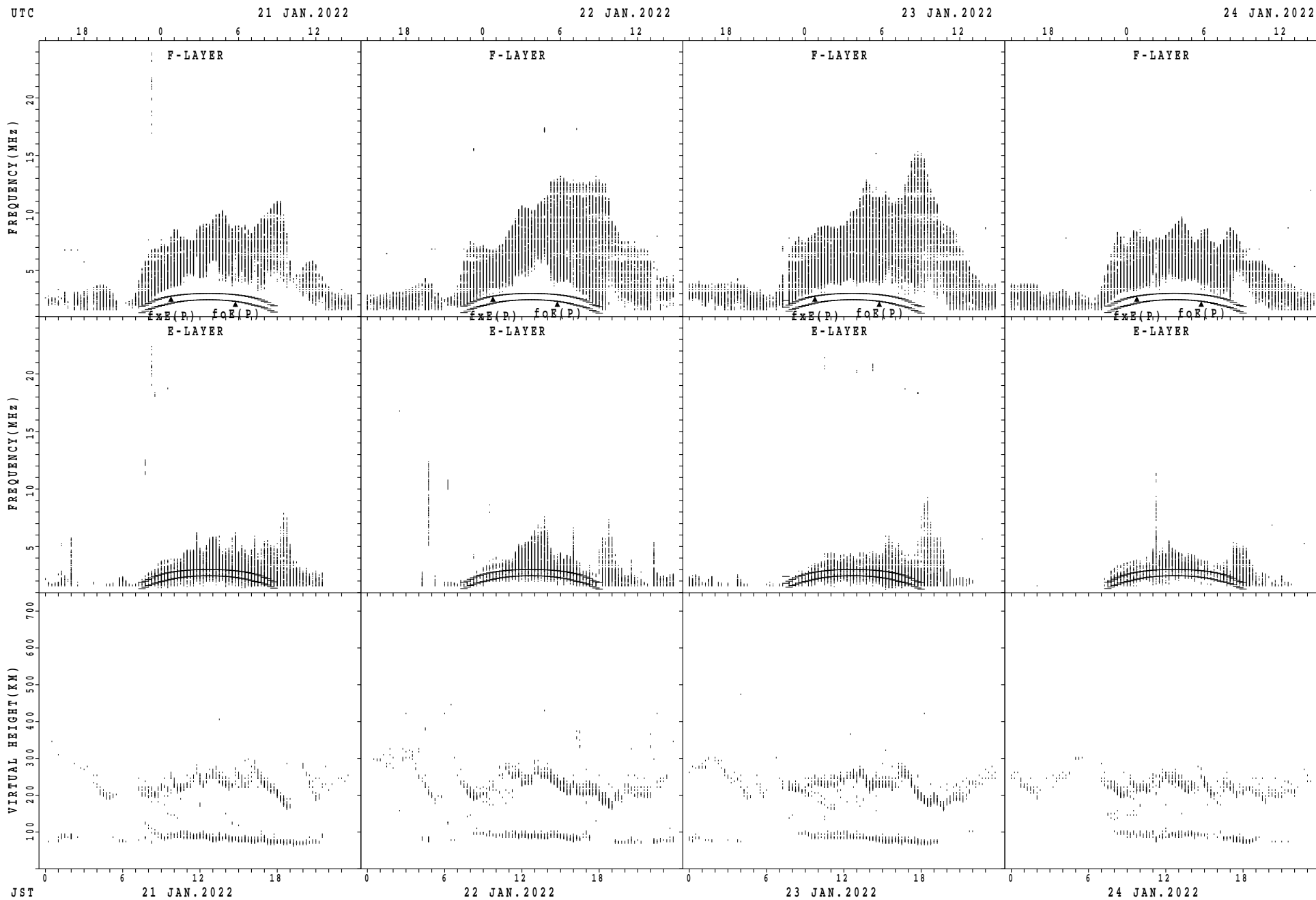
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



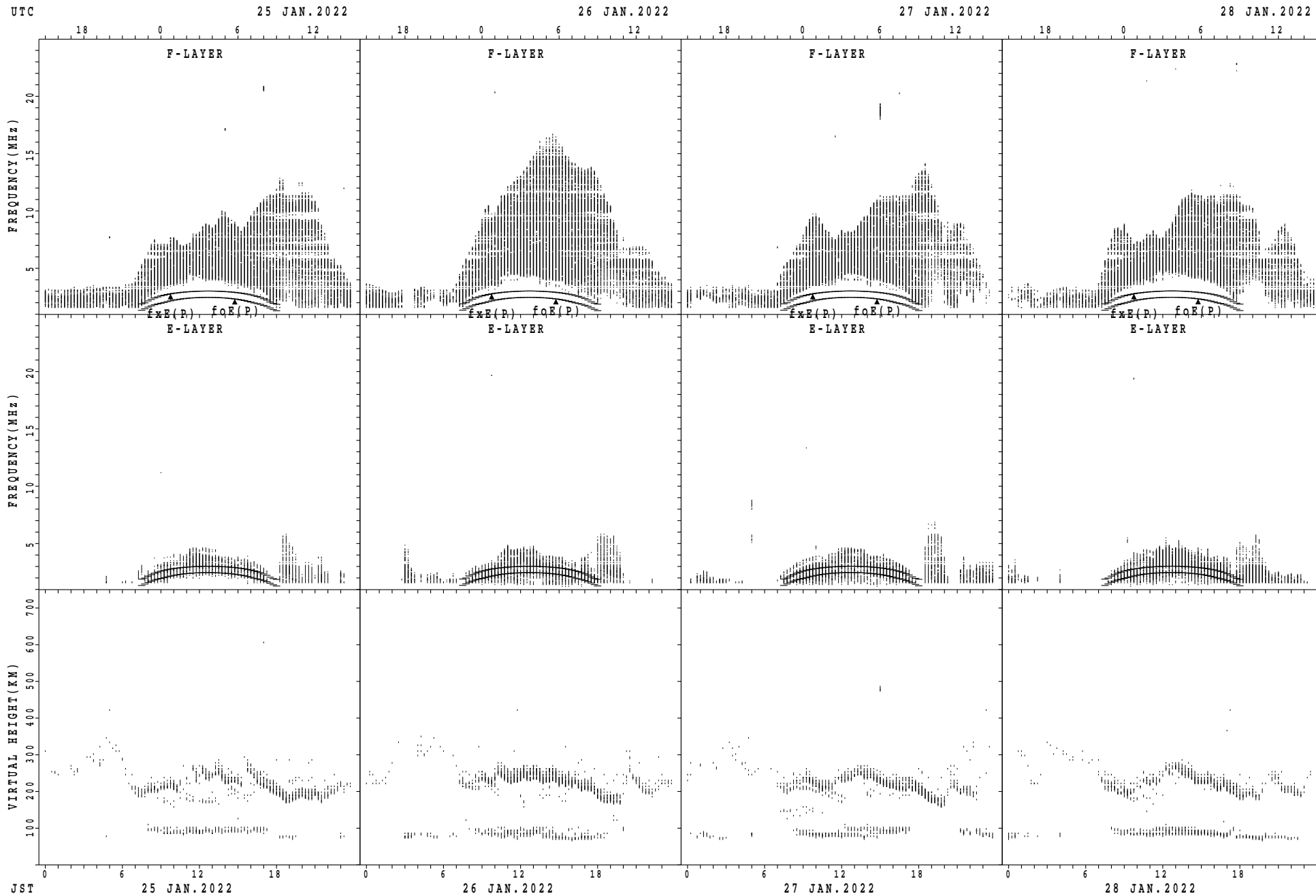
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



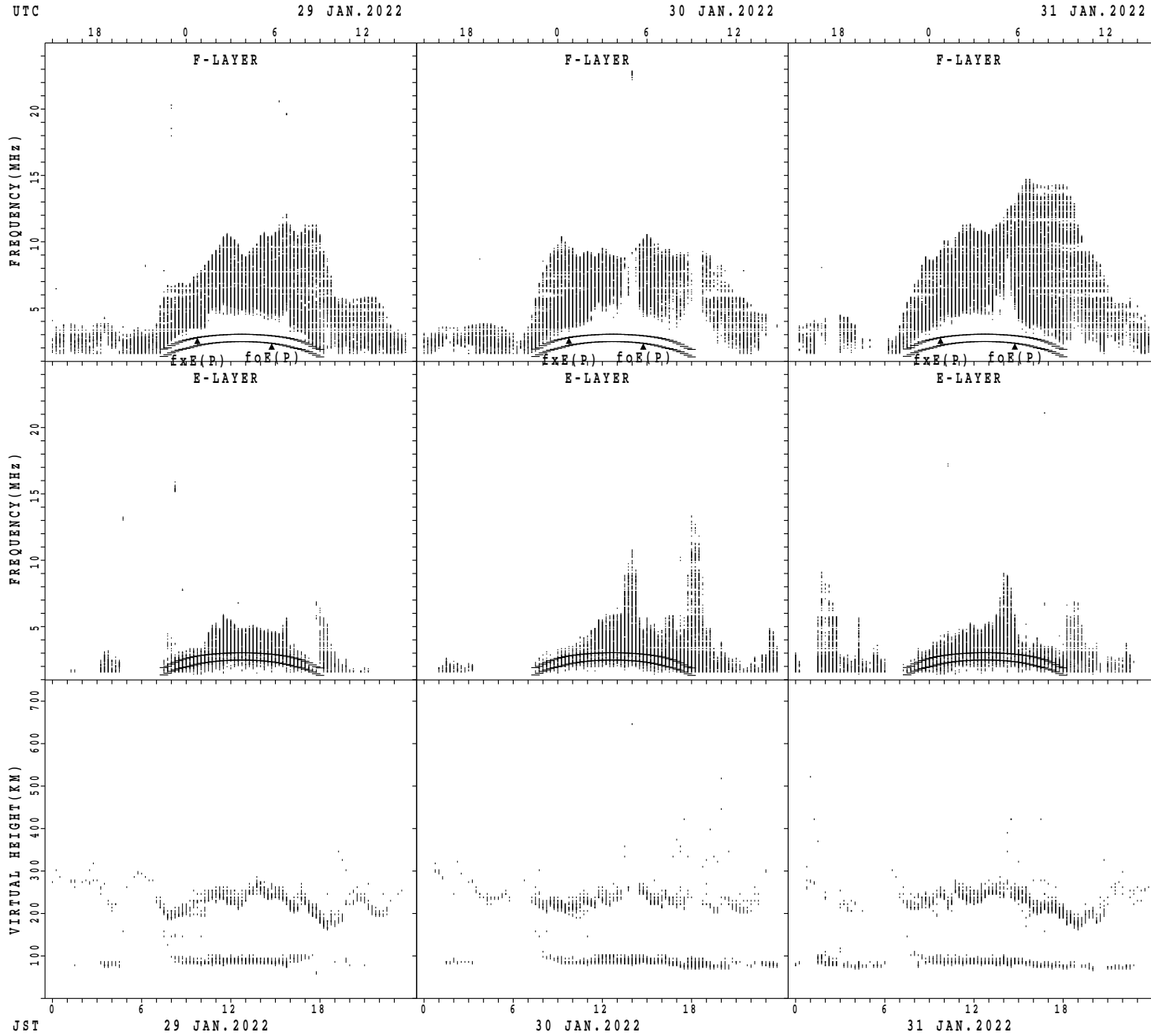
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



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

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
 JAN. 2022 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							10	15	26	28	29	20	18	21	5	1						
MED		326							208	216	227	217	212	223	222	220	212	216						
U Q		163							216	222	238	224	221	241	230	236	236	108						
L Q		163							204	208	218	212	206	214	212	213	203	108						

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	22	26	19	19	20	19	13	16	30	29	29	29	28	28	26	29	25	23	18	20	21	19	22	20
MED	96	96	96	96	98	98	98	98	98	98	98	98	98	98	98	98	96	98	96	96	96	96	96	96
U Q	98	98	98	98	98	98	99	100	98	100	102	100	100	100	100	99	98	98	98	98	98	98	98	98
L Q	94	96	94	94	96	98	98	96	96	96	97	96	96	97	96	97	92	96	96	95	94	94	94	96

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								1	9	11	26	4		8	19	15	13	5			1	1		
MED								224	216	228	236	218		230	226	228	232	212			190	224		
U Q								112	222	234	248	233		233	244	236	244	241			95	112		
L Q								112	202	218	230	211		227	222	218	216	206			95	112		

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	19	17	16	17	17	17	12	17	29	31	31	30	31	29	29	30	29	25	23	26	24	16	21	20
MED	94	96	98	98	98	96	96	96	96	96	98	98	98	96	98	96	96	96	96	96	96	96	96	96
U Q	98	98	98	98	98	98	98	102	98	98	100	98	102	98	98	98	97	99	96	98	96	96	96	97
L Q	92	96	98	96	96	96	96	96	94	94	94	94	94	94	94	92	94	95	94	94	94	94	94	94

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									7	13	21	7			11	18	12	12	8		1	1	1	
MED									216	226	236	218			230	232	228	233	224		208	304	328	
U Q									226	243	252	236			234	258	253	241	229		104	152	164	
L Q									208	213	218	216			222	216	214	221	213		104	152	164	

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	17	16	21	20	20	18	15	15	31	29	28	27	27	27	27	26	27	28	24	24	22	24	21	19
MED	96	96	96	97	97	98	96	98	98	98	98	98	96	96	96	98	98	97	96	98	96	98	96	96
U Q	98	98	98	98	98	98	96	98	98	102	99	98	98	98	98	100	100	98	98	98	98	98	98	98
L Q	96	95	95	96	94	96	94	96	98	98	96	96	94	94	94	96	94	94	94	94	96	96	96	96

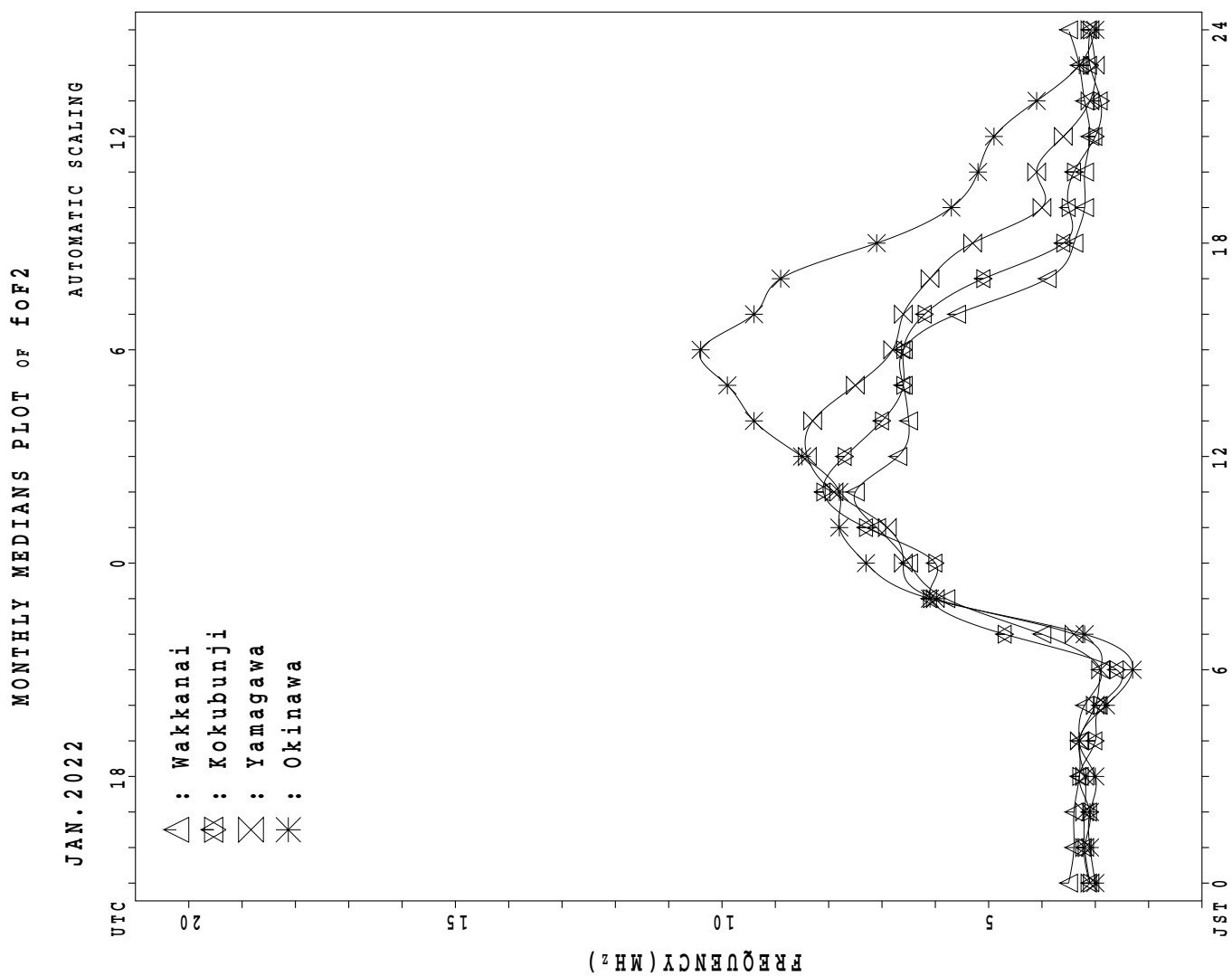
MONTHLY MEDIANS OF h'F AND h'Es
 JAN. 2022 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									7	22	28					29	25	25	18	10	3	6	1	
MED									234	228	225					224	224	224	208	200	218	239	248	
U Q									242	236	234					236	246	233	218	206	226	254	124	
L Q									232	218	216					220	216	209	200	192	202	234	124	

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	17	16	21	20	17	17	16	16	31	31	31	31	31	31	31	31	31	31	28	30	30	26	25	18
MED	96	98	96	98	96	96	96	98	98	98	98	98	96	96	96	98	98	96	96	96	96	98	98	97
U Q	98	98	98	98	98	98	96	98	98	100	100	98	98	98	98	98	98	98	98	96	98	98	98	98
L Q	96	96	94	95	94	93	94	97	98	98	96	96	94	94	94	94	92	92	92	92	94	96	96	96



IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 f_{XI} (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	X 36	X 37	X 38	X 39	X 35	X 31	X 29												X 31	X 27	X 32	X 36	X 39	X 40
2	X 39	X 39	X 39	X 37	X 36	X 36	X 29												A	X 63	A	X 33	X 37	X 38
3	X 33	X 37	X 39	X 43	X 42	X 39	X 38												X 40	X 35	X 30	X 35	X 39	X 40
4	X 38	X 38	X 38	X 38	X 37	X 37	X 36												X 35	X 37	X 35	X 35	X 38	50
5	47	48	43	38	X 33	X 34	X 33												X 32	X 37	X 41	X 38	56	48
6	54	57	57	48	52	52	40												X 31	X 38	X 36	X 39	X 38	37
7	X 38	47	49	X 39	X 39	X 38	A												X 37	X 33	X 39	X 35	X 36	X 38
8	X 35	X 37	X 37	X 36	X 36	X 36	X 32												0 34	X 33	X 35	X 38	49	47
9	X 38	X 40	X 41	X 40	X 39	X 39	X 34												X 47	X 46	X 44	X 43	X 46	X 48
10	X 47	X 57	X 50	X 48	X 39	X 37													X 39	X 39	X 33	X 37	X 39	X 41
11	X 40	X 40	X 40	X 38	X 37	X 34													X 37	X 38	X 34	X 39	X 43	X 44
12	54	58	48	48	X 43	X 39													X 35	X 36	C	C	C	C
13	C	C	C	C	C	C													X 39	X 39	X 37	X 37	X 44	X 45
14	X 46	X 46	X 51	X 53	X 48	X 49													X 37	X 44	X 43	X 40	X 38	X 40
15	X 39	X 39	X 39	X 37	X 40	X 42	39				86		88	95		85	84	69	X 55	X 58	X 54	X 40	X 47	X 55
16	53	56	54	54	52	55	54	58	83		85								X 61	X 55	X 36	X 39	X 39	X 39
17	X 38	X 31	X 35	X 37	X 30	X 30		54											X 41	X 40	X 41	X 37	X 41	X 48
18	47	39	45	47	49	49	36												X 44	X 39	X 35	X 35	X 39	X 39
19	X 41	X 41	X 41	X 40	X 40	X 38													X 53	X 51	X 54	X 56	X 62	X 60
20	59	59	59	60	59	55													X 42	X 41	X 40	X 39	X 40	X 40
21	X 40	X 39	X 41	X 41	X 40	X 38													X 49	X 53	X 41	X 36	X 39	X 42
22	X 45	X 49	X 54	X 50	X 50	X 51													X 41	X 42	X 43	X 45	X 45	X 44
23	X 43	X 44	X 45	X 41	X 40	X 42													X 46	X 37	X 37	X 37	X 39	X 45
24	X 45	X 49	X 44	X 44	X 38	X 40													X 44	X 38	X 35	X 34	X 37	X 40
25	X 40	X 41	X 41	X 41	X 39	X 39													X 49	X 49	X 43	X 45	X 44	X 42
26	X 45	X 43	X 41	X 40	X 40	X 40													X 37	X 38	X 37	X 35	X 36	X 38
27	X 39	X 39	X 39	X 41	X 40	X 38													X 44	X 48	X 40	X 42	X 42	X 43
28	X 44	X 44	X 43	X 43	X 42	X 42													X 47	X 45	X 39	X 39	X 42	X 43
29	X 41	X 43	X 45	X 45	X 45	X 45													X 40	X 42	X 39	X 40	X 44	X 44
30	X 48	X 46	X 46	X 45	X 48	X 52													X 44	X 37	A	X 35	X 38	X 48
31	X 44	X 48	X 44	X 47	X 41	X 44													X 41	X 45	X 32	X 38	X 39	X 45
	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	30	30	30	30	11	2	1		2		1	1		1	1	1	30	31	28	30	30	30
MED	X 42	X 43	X 43	X 41	X 40	X 39	X 36	56	83		86		88	95		85	84	69	X 41	X 39	X 38	X 38	X 39	X 43
U Q	47	48	48	47	45	45	39												46	46	41	40	44	47
L Q	X 39	X 39	X 39	X 39	X 38	X 37	X 32												X 37	X 37	X 35	X 35	X 38	X 40

JAN. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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	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	29	30	31	32	28	24	22	34	60	64	74	77	62	54	62	58	49	36	24	20	25	29	32	33		
2	32	32	32	30	29	29	22	38	49	66	73	72	66	64	65	60	50	A	A	R	A	26	30	31		
3	26	30	32	36	35	V	32	31	51	58	60	70	62	56	56	53	49	36	33	28	23	28	32	33		
4	31	31	31	31	30	30	29	40	57	68	64	84	65	64	63	53	53	U	R	28	30	28	28	F		
5	F	F	F	F	26	27	26	36	48	58	66	63	66	64	63	53	42	35	25	30	34	31	F	39		
6	F	F	F	F	F	F	F	35	50	58	74	67	65	54	49	56	50	30	24	F	27	29	32	31	30	
7	31	F	F	32	32	F	A	34	A	59	58	55	56	51	65	55	46	32	30	26	32	28	29	31		
8	28	30	30	29	29	29	25	32	50	51	59	65	59	58	57	57	45	36	27	26	28	31	F	F		
9	31	33	34	33	32	32	27	33	72	74	71	80	60	65	65	63	58	41	40	39	37	36	39	41		
10	40	F	43	41	32	30	28	37	50	55	70	70	65	59	53	57	52	30	32	32	26	30	32	R		
11	33	33	33	32	30	27	23	36	R	52	60	60	78	69	H	65	54	34	30	31	27	R	R	37		
12	F	F	F	F	36	32	25	39	52	60	69	79	60	Z	73	56	58	47	34	28	29	C	C	C		
13	C	C	C	C	C	C	C	C	C	C	C	67	72	64	66	62	55	38	32	32	30	30	37	38		
14	39	39	44	46	42	42	41	50	49	H	58	68	72	H	64	60	68	60	53	33	30	37	36	33	31	33
15	32	32	32	30	33	35	25	48	79	63	75	F	83	F	F	85	F	F	F	48	F	47	F	F	48	
16	F	F	F	F	F	F	F	F	72	84	75	F	68	83	79	83	69	61	45	54	48	29	32	32	32	
17	31	24	28	30	23	23	22	F	41	52	63	76	76	67	79	62	70	47	36	34	F	34	F	V	F	
18	F	32	F	F	F	F	F	F	25	38	65	72	70	84	66	68	68	58	39	37	32	28	28	32	32	
19	34	34	34	33	33	F	26	41	51	64	82	71	90	69	80	76	56	38	46	44	F	43	49	55	53	
20	F	52	F	53	52	48	45	54	64	76	90	87	63	67	70	63	H	37	35	34	33	32	33	33		
21	33	32	34	34	33	31	30	39	53	65	58	70	80	H	66	67	67	58	39	42	46	34	29	32	35	
22	38	42	42	43	43	44	34	46	56	62	74	66	64	71	73	66	58	42	34	35	36	38	38	37		
23	36	37	38	34	33	35	30	42	58	66	68	73	67	64	63	72	61	45	39	30	30	30	32	38		
24	38	F	37	37	31	33	30	38	61	69	74	70	71	58	69	68	52	41	37	31	28	27	30	33		
25	33	34	34	34	32	32	28	42	60	63	68	74	72	68	62	67	60	48	42	42	36	38	37	35		
26	38	36	34	33	33	33	33	47	66	66	80	88	77	70	68	70	68	42	30	31	30	28	29	31		
27	32	32	32	34	33	31	25	40	57	63	66	80	71	64	68	68	59	44	37	41	33	35	35	36		
28	37	37	36	36	35	35	33	44	66	70	82	84	78	74	62	73	66	44	40	38	32	32	35	36		
29	34	36	38	38	38	38	35	46	58	76	84	96	69	75	70	68	74	49	33	35	32	33	F	37		
30	41	39	39	38	F	F	39	55	66	68	88	H	79	81	79	81	69	69	52	37	30	A	28	31	41	
31	37	F	37	F	34	37	25	51	69	76	78	93	84	84	76	77	72	54	34	38	25	F	28	32	38	
	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	26	25	27	26	27	26	27	29	29	30	30	31	31	30	31	30	30	29	30	30	28	29	27	30		
MED	34	34	34	34	33	32	28	40	57	64	72	74	67	64	65	66	56	38	34	32	31	30	32	34		
U Q	38	37	38	37	35	35	33	46	66	69	76	83	76	71	70	69	61	44	39	38	34	32	35	38		
L Q	31	32	32	32	30	29	25	36	51	60	66	70	64	60	62	58	50	36	30	30	28	28	31	32		

JAN. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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											L	L		L	304									
2											L		L	A		A	A							
3								A			480	L			L									
4											L	L	L		564									
5										292			L	L		L								
6											L	L	L			300								
7												L	L			L								
8												L	L		364	L								
9											L	L	L	L		324								
10												408	404	404	328									
11										504	516	U L	L		340									
12											392	396	L		L									
13							C	C	C	C	C	L	408	U L	360									
14										292	388		L	L	340									
15											L		L		L	L								
16									L	L	L	404	L	424		L	L							
17										L	420	L	L	384	340	L	204							
18							196	L	L		380	L	424	376	L				L					
19										360	L	L	408	416	L									
20									L		L	L	L	380	264									
21											L	404	404	L	L		528	200						
22										268	396	L	L	L	L	L								
23											L	L	L	L										
24											408	U L	L	372	U L	336								
25											L	U L	416	420	L	L								
26											L	L	356	424		L	L							
27											L	324	L	420	L	L								
28											L	L	L	U L	L									
29							L			272	L	L	L	408	408									
30											L	L	L	464	372	L								
31									264			L	L	400		328								
							180					U L	L	428	L	U L	428							
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	5	9	8	14	13	9	4	2	1							
MED						180	196	268	292	396	404	408	388	340	332	366	200							
U Q									432	450	U L	412	420	420	350	382								
L Q									280	384	396	400	374	314	296									

JAN. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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								B	232	260	268	268	268	268	252	204	B	B							
2								A	188	248	276	276	276	264	252	A	A	A							
3								B	A	A	272	288	288	256	A	A	B	B							
4								208	192	268	288	288	288	272	252	256	A	A							
5								A	236	236	A	292	276	268	280	A	A	A							
6								B	A	244	308	284	276	272	232	212	188	A							
7								A	A	A	268	280	284	284	244	220	A	B							
8								196	220	260	276	292	276	264	248	204	B	B							
9								B	216	248	280	272	272	260	240	188	188	B							
10								B	A	216	260	272	272	276	252	260	220	208	A						
11								B	B	208	224	268	284	284	A	A	A	A							
12								B	B	192	264	268	292	276	292	260	200	188	A						
13								C	C	C	C	C	B	308	B	B	B	A	A						
14								B	B	212	220	276	304	304	292	264	276	A	A						
15								B	A	204	252	280	280	280	280	260	204	A	A						
16								B	B	256	268	296	248	316	284	272	224	184	B						
17								200	232	208	252	264	260	284	296	276	228	B	B						
18								B	B	192	244	276	276	292	280	260	232	192	B						
19								B	212	196	236	288	292	292	280	252	A	200	B						
20								B	188	212	252	280	280	280	280	276	276	188	A						
21								B	B	232	252	288	288	296	296	B	244	192	A						
22								A	160	240	248	284	296	292	B	292	A	A	A						
23								B	A	224	248	280	284	296	276	260	256	196	A						
24								B	B	212	252	268	304	304	292	268	236	A	A						
25								B	A	216	252	296	284	272	272	264	248	176	A						
26								A	B	212	252	228	296	304	296	268	236	184	B						
27								B	184	244	260	276	292	300	296	264	228	180	B						
28								B	B	224	280	296	300	300	300	272	224	200	B						
29								B	176	216	260	284	284	300	300	292	232	180	B						
30								B	A	228	268	296	300	308	280	300	240	212	A						
31								B	200	220	276	296	320	300	300	284	B	188	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	10	26	28	29	30	31	28	27	24	17								
MED							200	198	216	252	280	286	288	280	264	228	188								
U Q								208	228	260	288	292	300	294	276	242	198								
L Q								184	208	248	270	280	276	270	252	212	184								

JAN. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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	J 27	J 20	J 19	E 16	E 16	E 16	E 16	E 26	J 29	J 30	J 46	J 30	J 43	J 27	E 23	E 16	E 16	E 16	E 16	J 24	J 27	J 23	J 23	
2	J 20	J 24	J 18	E 16	E 16	E 16	E 11	J 10	J 88	J 51	J 29	J 36	J 52	J 36	J 93	J 61	J 88	J 118	J 180	J 153	J 86	J 52	J 53	J 43	J 42
3	J 32	J 31	J 23	J 17	J 25	J 20	E 16	J 16	J 28	J 47	J 63	J 31	J 31	G	J 28	J 25	J 26	E 16	E 16	E 16	J 25	J 27	J 23	J 30	J 23
4	J 18	J 30	J 30	J 27	J 27	J 28	J 31	J 28	J 30	J 52	J 85	J 32	J 61	J 40	J 43	J 63	J 32	J 25	J 27	J 20	J 19	J 20	J 51	J 19	
5	J 25	E 22	E 16	J 27	J 32	J 53	J 33	J 50	J 83	J 49	J 78	J 84	J 53	J 30	J 32	J 25	J 26	J 21	E 16	J 37	J 52	J 53	J 47	J 50	
6	J 50	J 32	J 25	J 35	J 32	J 22	J 20	J 24	J 34	J 50	J 57	J 32	J 28	J 45	J 32	J 25	J 25	J 25	J 35	J 87	J 84	J 46	J 29	J 31	
7	J 38	J 27	J 30	J 38	J 38	J 34	J 34	J 42	J 151	J 48	J 49	J 31	J 31	J 31	J 28	J 28	J 34	J 36	J 26	J 49	J 65	J 52	J 32	J 34	
8	J 31	E 25	E 16	J 25	J 23	J 19	J 19	J 28	J 23	J 31	J 146	J 30	J 38	J 30	J 29	J 21	E 16	E 16	E 16	E 16	E 16	J 21	J 16	J 21	
9	E 16	E 15	E 16	E 16	E 16	E 16	E 16	E 16	E 24	J 29	J 32	J 30	J 35	J 31	J 28	J 23	G	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
10	J 26	E 19	E 16	J 29	E 20	E 16	J 18	J 24	J 30	G	J 34	J 31	G	G	G	J 26	J 25	J 27	J 18	J 19	E 16	E 16	E 16	E 16	
11	J 25	J 20	J 20	J 23	E 16	E 16	E 16	E 16	J 26	J 26	J 35	J 31	J 31	J 61	J 27	J 26	J 26	J 29	J 31	J 21	J 21	J 21	E 16	E 16	
12	E 16	J 31	E 16	J 25	J 22	J 21	E 16	E 16	J 29	J 30	J 31	J 32	J 31	G	G	J 25	J 36	J 19	E 16	J 25	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	E 30	G	E 30	E 28	E 24	E 23	E 24	E 33	E 28	E 16	E 16	J 33	J 29
14	J 41	J 40	J 28	J 19	E 16	E 16	E 16	E 16	J 29	J 26	J 31	J 107	J 34	G	G	G	J 32	J 52	J 60	J 31	E 16	J 23	E 26	E 16	
15	J 51	J 32	J 30	J 21	J 20	E 16	E 15	J 29	J 36	J 46	J 49	J 35	J 48	J 34	J 31	J 27	J 30	J 26	J 23	J 23	J 25	J 40	J 52	J 51	
16	J 35	J 25	J 26	J 31	J 34	J 22	J 97	J 16	J 26	J 50	J 37	J 37	J 37	J 37	J 76	J 24	J 26	E 16	E 16	E 16	E 16	E 16	J 21	J 23	J 19
17	J 24	J 23	J 16	E 16	E 50	J 47	J 26	J 46	J 34	J 31	G	J 32	J 30	J 53	J 24	E 16	E 16	E 16	E 16	E 16	E 16	E 20	E 16	E 16	
18	E 16	J 26	J 20	E 16	E 16	J 22	E 16	J 17	J 23	J 30	J 29	J 53	J 30	J 29	J 30	J 23	G	J 21	E 16	J 26	J 24	J 20	J 22	J 19	
19	J 20	J 11	E 16	E 16	J 41	E 16	E 16	E 16	J 24	J 49	J 35	J 30	J 64	J 31	J 30	J 41	J 27	E 16	E 16	E 16	E 16	E 16	E 16	J 27	J 31
20	J 30	J 25	J 25	J 20	E 16	J 20	J 26	J 24	J 23	J 30	J 31	J 33	J 32	G	J 34	G	G	J 104	J 27	E 16	E 16	E 16	E 16	E 20	
21	J 31	J 20	J 24	J 34	J 34	J 18	E 16	J 32	J 26	J 28	G	J 34	J 33	G	E 30	J 26	G	J 26	J 27	J 23	E 16	E 16	E 16	E 16	
22	E 16	E 16	J 31	E 16	E 16	J 23	J 19	G	G	G	G	J 32	J 31	E 30	G	J 28	J 20	J 26	J 30	J 37	J 34	J 42	J 27	J 27	
23	J 66	J 23	J 25	J 18	J 32	J 30	J 25	J 33	J 21	J 28	J 32	J 32	J 32	J 32	J 29	G	G	J 19	J 37	J 30	J 21	J 21	J 29	J 25	J 18
24	J 25	J 25	E 16	J 30	J 45	E 16	J 25	E 16	J 25	J 29	J 31	J 33	J 33	J 32	J 32	J 28	J 27	J 36	J 53	J 22	J 52	J 21	J 25	J 30	
25	J 26	J 32	J 25	J 26	J 31	J 32	E 16	J 23	J 24	J 51	J 53	J 32	J 30	J 31	J 30	J 25	G	J 23	J 19	J 27	J 27	J 16	J 84	J 18	
26	J 20	J 20	E 16	J 49	J 19	J 23	J 31	E 16	J 29	J 32	J 42	G	J 56	G	J 35	J 26	J 20	E 16	E 16	E 16	J 20	J 20	J 21	E 16	
27	J 20	J 20	J 22	J 20	J 18	J 19	E 16	J 26	J 26	J 61	J 50	J 33	J 34	J 34	J 23	G	G	E 16	E 16	E 16	J 23	E 16	J 25	J 32	
28	J 21	J 27	J 29	E 16	J 20	E 16	E 16	E 16	G	J 51	J 31	J 39	J 32	J 31	J 29	J 33	G	E 16	E 16	E 16	E 16	J 16	J 27	J 25	J 20
29	J 20	J 21	J 18	J 25	J 20	J 20	E 16	J 31	J 24	J 29	J 34	J 31	J 30	J 38	J 29	J 26	J 22	E 16	E 16	E 16	E 16	E 16	E 16	E 18	
30	E 18	E 16	E 16	J 20	J 24	J 23	E 16	J 87	J 24	J 32	J 35	J 51	J 38	J 34	J 32	J 28	J 31	J 63	J 52	J 20	J 61	J 52	J 37	J 20	
31	E 16	J 25	J 28	J 26	J 21	E 16	E 16	J 21	J 28	J 33	J 39	J 36	J 36	J 36	J 30	J 28	J 20	J 31	J 29	J 20	J 24	J 20	J 15	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	30	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	30	30	30	30	
MED	J 24	J 25	J 21	J 22	J 20	J 20	E 16	J 25	J 26	J 32	J 34	J 32	J 33	J 31	J 30	J 26	J 22	J 24	J 23	J 20	J 22	J 21	J 25	J 20	
UQ	J 31	J 30	J 26	J 27	J 32	J 23	J 26	J 29	J 30	J 49	J 42	J 39	J 37	J 36	J 32	J 28	J 27	J 31	J 30	J 26	J 27	J 29	J 33	J 30	
LQ	E 18	E 20	E 16	E 17	E 16	E 16	E 16	E 16	J 24	J 29	J 31	J 31	J 31	G	J 29	J 28	J 24	G	E 16	E 16	E 16	E 16	E 16	E 16	

JAN. 2022 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

JAN.2022 fbEs (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	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 22	G 25	28	28	29	27	26	22	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
2	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	26	33	40	29	A 33	E 44	E 32	AA 180	AA 153	AA 36	A 52	A 17	A 18	A 18	18
3	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 23	35	38	28	29	G 28	E 24	22	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
4	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	27	28	28	G 28	G 36	30	25	E 24	E 16	E 16	E 16	E 16	E 16	E 16	E 16
5	E 16	E 16	E 16	E 16	E 16	22	18	24	G 24	G 22	27	29	G 27	G 27	26	22	E 16	E 16	E 16	E 18	19	17	16	20
6	E 21	AE 21	A 16	16	18	E 16	E 16	E 16	22	24	30	29	G 28	G 26	24	23	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
7	E 16	E 16	E 16	E 16	E 16	A 34	A 25	A 151	27	29	30	30	G 30	G 30	27	19	E 16	E 16	E 16	E 16	E 21	E 17	E 16	E 16
8	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	26	26	28	G 26	G 26	28	20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
9	E 16	E 15	E 16	E 16	E 16	E 16	E 16	E 16	20	28	30	30	G 30	G 27	26	21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
10	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21		28	30	G 26	G 26		25	E 21	E 17	E 15	E 16	E 16	E 16	E 16	E 16
11	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	25	27	30	G 28	G 28	26	24	E 22	E 22	E 16	E 16	E 16	E 16	E 16	E 16
12	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	18	28	28	28	G 30	G 30		24	E 17	E 16	E 16	E 16	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	E 30	E 30	E 28	24	E 20	E 16	E 16	E 16	E 16	E 16	E 16	E 16
14	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	24	29	30	G 33	G 30	G 27	24	E 23	E 16	E 16	E 16	E 16	E 16	E 16	E 16
15	E 16	E 16	E 16	E 16	E 16	E 16	E 15	20	26	34	34	33	G 28	G 30	27	24	E 23	E 16	E 16	E 16	E 17	E 16	E 16	E 16
16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	26	29	31	G 30	G 29	26	23	E 17	E 16	E 16	E 16	E 16	E 16	E 16	E 16
17	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	25	28		G 30	G 28	28	23	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	18	24	28	29	G 28	G 28	26	22	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 17	22	26	31	30	G 28	G 27	31	20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	29	33	G 30	G 33		G 21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
21	E 16	E 16	E 16	E 17	E 16	E 16	E 16	E 16	24	26		G 32	G 32	E 30	E 25	G 16	E 16	E 16	E 15	E 16	E 16	E 16	E 16	E 16
22	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 32	G 30	30	30	E 30	G 26	18	21	E 17	E 17	E 16	E 16	E 18	E 21	E 21	21
23	E 18	E 18	E 17	E 16	E 16	E 16	E 16	E 23	19	25	30	31	G 31	G 30	27		E 18	E 23	E 16	E 16	E 16	E 16	E 16	E 16
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	28	30	30	G 32	G 31	28	26	E 21	E 32	E 24	E 16	E 16	E 16	E 16	E 19
25	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	28	32	32	G 28	G 30	29	24	E 16	E 16	E 16	E 18	E 16	E 16	E 16	E 16
26	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	27	29	30	G 30	G 30	G 28	24	20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
27	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 18	25	27		G 33	G 31	G 31	22	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 28	G 29	30	30	G 30	G 29	28	25	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
29	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 17	22	26	30	29	G 29	G 29	27	25	E 19	E 16	E 16	E 16	E 16	E 16	E 16	E 16
30	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 17	22	30	32	35	G 31	G 31	29	26	E 20	E 35	E 17	E 16	E 61	E 16	E 16	E 16
31	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 18	25	31	36	32	G 31	G 31	30	26	E 20	E 20	E 16	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	30	30	30	30	30	30	30	30	30	30	30	31	31	30	31	31	31	31	31	31	30	30	30	30
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	27	30	30	G 30	G 28	24	20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16
U Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 18	24	28	30	32	G 31	G 30	26		E 20	E 16	E 16	E 16	E 16	E 16	E 16	E 16
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	25	28	29	G 28	G 28	26	22	E 17	E 16	E 16	E 16	E 16	E 16	E 16	E 16

JAN.2022 fbEs (0.1MHz)

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JAN. 2022 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

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	16	16	16	16	16	16	16	16	16	16	15	15	16	15	16	16	16	16	16	16	16	16	16	16	
2	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	17	16	16	16	16	15	16	16	15	
3	16	16	16	16	16	16	16	16	16	16	17	16	16	17	16	15	16	16	16	16	16	16	16	16	
4	16	16	16	16	16 ^E	16	16	16	15	16	17	22	20	18	20	16	16	16	16	16	16	15	16	16	
5	16	16	16	16	16	16	16	16	15	16	16	16	16	10	15	16	15	16	16	16	16	16	16	16	
6	16	16	16	16	16	16	16	16	16	16	15	14	15	16	16	16	16	16	16	16	16	16	16	16	
7	16	16	16	16	16	16	16	16	16	16	15	16	16	15	16	16	16	16	16	16	16	17	16	16	
8	16	16	16	16	16	16	16	16	15	14	15	14	14	14	14	15	16	16	16	16	16	16	16	16	
9	16	15	16	16	16	16	16	16	16	16	16	16	16	16	16	14	14	16	16	16	16	16	16	16	
10	16	16	16	16	15	16	16	16	16	15	16	14	16	15	16	13	15	16	16	16	16	16	16	16	
11	16	16	16	16	16	16	16	16	16	15	15	17	16	14	14	15	15	16	16	16	16	16	16	16	
12	16	16	16	16	16	16	16	16	16	16	16	16	16	17	16	18	16	16	16	16	16	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	30	26	30	28	24	16	16	16	16	16	16	16	
14	16	16	16	16	16	16	16	16	16	16	18	24	25	22	23	21	16	16	16	16	16	16	16	16	
15	16	16	16	16	16	16	15	15	17	16	15	16	16	16	16	16	16	16	11	16	16	16	16	16	
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	
17	16	16	16	16	16	16	16	16	16	15	16	18	17	18	16	16	16	16	16	16	16	16	16	16	
18	16	16	16	16	16	16	16	16	16	16	15	16	16	17	17	15	16	15	16	15	16	16	16	16	
19	16	16	16	16	16	16	16	16	16	16	17	16	16	16	16	16	16	16	16	16	16	16	16	16	
20	16	16	16	16	16	16	16	16	16	14	18	15	16	18	17	19	16	16	16	16	16	16	16	16	
21	16	16	16	16	16	16	16	16	16	20	22	25	26	22	30	18	16	16	16	12	16	16	16	16	
22	16	16	16	16	16	16	12	13	20	20	25	23	23	30	26	23	16	15	16	16	16	16	16	16	
23	16	16	16	16	16	16	16	16	16	18	24	22	23	24	23	16	15	16	16	16	16	16	16	16	
24	16	16	16	16	16	16	16	16	16	16	18	21	24	21	17	15	16	17	16	16	16	16	16	16	
25	16	16	16	16	16	16	16	16	15	15	15	16	16	16	16	16	16	16	16	16	16	16	16	16	
26	16	16	16	14	16	16	16	16	16	15	15	17	16	16	16	16	16	16	16	16	16	16	16	16	
27	17	16	16	16	16	16	16	16	16	16	16	16	16	16	18	16	16	16	16	16	16	16	16	16	
28	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	16	16	16	16	16	
29	16	16	16	16	16	16	16	15	15	16	16	15	16	16	16	15	11	16	16	16	16	16	16	16	
30	16	16	16	16	16	16	16	16	16	15	23	19	20	18	16	16	16	16	16	16	16	16	16	16	
31	16	16	16	16	16	16	16	13	16	15	18	20	22	23	21	18	16	16	15	16	15	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	30	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	30	30	30	30
MED	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	
U Q	16	16	16	16	16	16	16	16	16	16	18	20	20	18	18	16	16	16	16	16	16	16	16	16	
L Q	16	16	16	16	16	16	16	16	16	15	15	16	16	16	16	15	16	16	16	16	16	16	16	16	

JAN. 2022 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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		294	294	325	325	366	321	330	324	381	362	358	351	373	372	358	364	363	363	348	324	295	277	294	283
2		282	313	306	305	312	342	329	355	368	330	351	371	366	243	363	244	231	A	A	328 ^R	A	292	291	342
3		313	291	308	311	271	311	331	356	318	352	318	372	382	343	369	356	345	350	350	350	265	294	294	310
4		350	286	318	305	304	304	317	380	375	333	339	385	398	359	358	358	357	U ^R	343	325	325	324	291	314
5		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
6		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
7		283	297	F	F	306	305	336	A	358	A	372	372	380	379	337	370	369	380	346	333	328	357	318	276
8		274	256	295	311	311	311	346	371	371	372	335	384	358	369	354	376	375	339	338	338	313	312	F	F
9		274	305	283	330	330	330	330	299	361	336	347	R	377	364	328	382	317	316	355	335	347	307	295	294
10		293	290	F	316	328	327	308	338	340	376	316	307	356	370	351	383	363	357	315	314	360	289	292	292
11		306	305	304	303	314	313	318	368	R	326	280	340	340	363	363	380	380	359	319	318	298	295	290	289
12		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
13		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14		290	289	298	322	315	344	310	369	367	320	359	338	384	362	352	351	351	333	292	328	341	353	304	303
15		302	262	280	280	330	296	296	350	370	369	374	F	321	320	F	F	F	F	F	F	F	F	F	F
16		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
17		344	283	299	335	327	264	263	356	349	394	341	355	331	378	317	365	382	301	328	328	328	257	268	275
18		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
19		299	253	312	301	315	F	293	354	353	329	346	312	351	340	343	371	372	318	320	352	299	296	296	313
20		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
21		292	291	291	299	299	319	389	386	374	374	368	364	377	325	366	374	337	311	332	363	362	329	275	296
22		296	307	307	291	290	337	337	353	371	346	361	356	356	356	355	354	348	323	317	317	316	299	288	287
23		308	300	300	300	296	329	347	356	368	367	349	369	369	348	341	341	359	350	342	341	320	273	288	284
24		281	266	291	318	277	309	338	371	382	358	349	348	368	367	354	369	384	346	236	332	343	317	305	299
25		299	293	284	298	315	308	318	355	373	372	354	365	365	338	363	362	362	344	343	340	301	309	299	298
26		303	302	290	289	289	310	348	348	362	380	360	368	327	339	360	360	371	350	329	328	342	307	287	287
27		287	287	279	300	269	321	326	338	374	374	359	359	363	337	364	364	363	378	316	346	324	324	299	298
28		283	285	306	306	310	310	310	325	376	364	347	366	365	374	355	354	363	358	315	345	344	295	295	295
29		294	276	276	305	305	332	343	345	357	367	334	356	377	298	324	349	360	360	318	333	320	303	278	277
30		292	291	317	316	296	305	318	358	358	351	364	297	362	358	357	348	374	329	335	334	A	287	287	237
31		257	F	265	F	301	343	288	350	358	357	342	345	356	335	350	331	346	345	321	335	352	261	244	263
		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		26	25	27	26	27	26	27	29	28	30	30	30	31	30	31	30	30	29	30	30	28	29	27	28
MED		294	291	299	305	310	316	329	355	369	362	352	360	368	354	355	361	360	345	326	335	325	295	292	292
U Q		303	301	308	317	316	334	338	363	374	372	360	368	377	365	363	369	372	350	336	349	346	309	299	298
L Q		283	284	284	299	296	308	310	340	358	346	341	348	356	337	342	351	348	320	316	328	308	286	287	280

JAN. 2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 M(3000)F1 (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

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		L										
2											L		390	L	A		A	A						
3								A				L				L								
4											L		L											
5																L								
6												L	L											
7												388	L											
8												L	L											
9											L	L	L											
10													390	L										
11												392	373	400	427									
12												U L	L											
13												386	366	365										
14												400	401		397									
15								C	C	C	C	L		409	L	U L								
16														L	L									
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								
25																								
26																								
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							1	1	2	5	9	8	14	13	9	3								
MED							387	420	414	415	393	394	390	397	422	U L	397	404	386					
U Q										442	408	402	395	408	426	414								
L Q												U L	381	386	376	409	U L							

JAN. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 h'F2 (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											240	248	240	212	228									
2										260			210			466	A	A						
3									240		286	228		212	218									
4										264		226	206	264										
5										214			216	226	226									
6											238	246	232		214									
7									A			228	222		230									
8												222	224	234	248									
9										256		236	220	220	226									
10												226	244	272	206									
11										318	376	250	222	236	228									
12											254	238	220	246	350									
13							C	C	C	C	C		254	236	232	232								
14										204	232		222	236	250									
15											232		254		244	230								
16										252	248	248	224	248	284	246	234							
17										204	268	238	238	238	218	214	210							
18								216	232	232	240	252	220	276	224			288						
19										254	242	280	258	228	252									
20									220		248	220	220	228		224								
21											224	232	224	232	232		300	268						
22											212	234	222	246	230	246	240							
23											228	256	232	232	232									
24											256	224	232	226	256	228								
25										228		246	242	262	230	236								
26											218	236	236	238		220	220							
27											216	244	244	242	236	232								
28											252	234	234	228	222									
29							228		210		264	248	224	286	252									
30									226		234	244	230	238	244	224								
31							282					256	242	244	236	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							2	2	5	15	21	27	30	26	27	11	2	2						
MED							255	228	226	228	244	236	232	235	232	230	255	278						
U Q									242	256	256	248	242	246	246	240								
L Q									215	214	235	226	222	228	224	224								

JAN. 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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	290	292	260	242	198	234	254	226	212	226	208	220	196	190	180	216	210	210	234	254	318	330	282	300
2	286	262	256	256	250	222	266	236	202	202	252	230	214	A	222	A	A	A	A	194	A	A	A	232
3	270	282	264	236	246	262	216	A	224	214	214	222	204	182	200	212	228	224	220	220	346	278	288	254
4	238	288	272	272	250	238	238	204	212	212	236	210	200	200	236	226	208	220	242	250	260	260	260	316
5	212	256	262	252	246	A	226	202	202	176	206	234	190	190	190	202	222	216	260	248	206	206	272	188
6	A	A	204	238	234	228	206	216	198	210	220	192	192	218	178	226	206	222	234	250	214	268	282	270
7	274	244	222	222	234	220	A	212	A	206	220	202	194	218	202	208	192	212	252	214	198	234	310	296
8	260	282	254	246	226	248	194	212	200	204	218	184	184	186	198	212	198	222	206	214	232	250	288	272
9	290	272	272	228	240	224	232	218	222	192	234	202	202	200	184	202	238	206	214	200	212	232	280	248
10	252	274	234	218	224	246	226	242	198	210	236	200	188	188	178	206	214	242	226	218	270	266	282	282
11	250	262	262	266	224	238	228	210	204	202	224	224	206	196	182	218	196	190	250	240	232	292	266	248
12	272	288	258	258	258	212	246	214	214	212	202	202	194	196	198	226	204	222	246	222	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	202	202	208	194	226	218	200	252	226	226	246	272
14	286	284	274	224	224	214	258	210	200	168	190	216	198	198	198	244	214	228	276	246	234	228	260	296
15	296	302	304	288	236	256	242	240	226	214	202	234	202	256	202	202	224	220	220	288	222	A	306	330
16	236	252	304	322	230	316	268	264	210	206	198	184	220	200	212	210	234	214	250	224	256	274	268	280
17	216	340	284	244	244	244	338	214	230	204	228	200	200	196	174	198	184	238	210	234	218	326	316	270
18	216	292	300	282	286	236	268	176	210	204	180	220	194	194	200	234	218	194	216	242	240	274	250	250
19	264	302	272	254	236	196	242	228	204	182	212	200	200	200	220	218	204	208	242	216	264	264	270	256
20	264	252	264	232	242	236	240	222	200	200	220	220	182	176	252	226	214	214	262	244	246	264	286	274
21	304	294	282	282	264	256	208	198	198	212	182	200	212	200	214	224	202	202	240	212	210	214	270	280
22	278	276	272	266	248	224	206	224	202	184	198	200	200	204	210	198	202	244	266	258	250	266	262	292
23	272	284	264	272	280	244	206	222	208	196	194	206	206	204	236	234	210	210	220	208	224	316	296	290
24	290	290	260	232	276	242	232	226	218	228	194	194	214	190	216	206	198	244	A	244	208	234	266	286
25	286	292	296	284	272	248	250	220	210	192	238	218	198	198	198	204	214	214	226	238	300	248	284	284
26	264	246	262	290	304	276	200	218	218	208	208	198	190	210	206	216	216	192	270	244	222	258	302	302
27	276	276	276	266	274	234	240	224	208	198	178	232	198	198	204	228	214	200	262	220	232	240	288	288
28	302	276	248	266	240	266	260	224	206	220	192	202	194	194	186	242	214	204	258	218	224	278	278	266
29	280	288	288	274	254	228	206	224	174	220	208	200	190	198	192	238	222	208	222	230	246	294	308	298
30	276	282	236	260	260	266	252	212	196	222	210	204	190	202	220	188	212	226	222	242	A	256	256	292
31	292	294	280	274	258	210	208	242	224	218	258	220	206	206	216	214	214	198	214	226	224	310	332	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	29	29	30	30	30	29	29	29	29	30	30	31	31	30	31	30	30	30	29	31	28	28	29	30
MED	274	282	264	259	246	238	238	220	208	206	209	202	198	198	200	216	214	214	240	230	232	263	282	281
U Q	288	292	280	274	260	252	253	226	216	214	224	220	204	204	216	226	218	222	255	244	253	278	292	292
L Q	256	267	258	238	234	224	208	212	200	198	198	200	192	194	190	206	204	204	220	218	220	243	267	262

JAN. 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 h'E (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								B									B	B							
2								A	124	110	110	110	104	104	112	116	A	A	A						
3								B	A	A						A		B	B						
4								120	108	108	108	108	108	108	108	96	A	A							
5								A	104	110		A	110	104	98	98	A	A	A						
6								B	A										A						
7								A	A	A								A	B						
8																			B	B					
9								B	112	118	118	118	110	110	110	98	106	146							
10								B	A										A						
11								B	100	106	110	110	110	106	106	114	106	A	A						
12								B	130	110	110	110	106		A	A	98								
13								B	122	124	116	116	106	112	112	100	110		A	A					
14								C	C	C	C	C	B	104		B	B	B	A	A					
15								B	106	96	112	118	118	118	118	108			A	A					
16								B	A									A	A						
17								B	124		110	110	110	110	110	110									
18								B	114	112	112	100	102	112	102	116	E	B	B						
19								B	112	104	104	112	112	112	114	110		B	B						
20								B	90	98	104	104	112	100	102	106	124								
21								B	102	102	102	104	104	102	102	102	A								
22								B	114	114	112	112	112	112	108	112	112	G							
23								B	116	108	112	112	120	106		98									
24								A	B					B		A									
25								B	108	108	108	108	108		108		102								
26								B	A																
27								B	118	108	124	112	112	112	104	98	110								
28								B	106	106	106	116	116	116	116	112		A	A						
29								B	96	96	100	100	100	100	106	106	106								
30								A	106	106	106	114	110	110	106	106	110								
31								B	120	136	120	104	104	104	112	112	110								
								B	108	114	104	104	104	114	116	116									
								B	130	124	124	106	106	106	112	112	96								
								B	A		E	B													
								B	114	114	114	114	114	114	114	108	108	122							
								B	134	106	118	108	108	108	108	108		B	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								9	25	28	29	30	31	28	27	25	14								
MED								120	108	109	108	110	108	108	108	108	110								
U Q								127	118	113	112	112	112	112	112	112	124								
L Q								112	105	106	106	106	104	105	104	103	106								

JAN. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 h'Es (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	B	92	92	86	B	B	B	B	124	102	144	94	142	96	110	176	B	B	B	B	104	100	100	100	
2	100	100	92	B	B	B	106	106	92	138	116	116	116	108	108	100	100	102	102	102	102	102	96	96	
3	90	88	92	92	84	84	B	112	96	96	96	96	G	142	106	96	B	B	B	108	94	98	98	106	
4	102	90	90	90	90	94	98	96	114	112	132	112	92	102	102	94	102	112	98	100	100	94	94	104	
5	98	100	B	136	114	104	104	104	96	108	94	112	94	96	90	90	90	90	B	100	100	100	102	100	
6	86	96	90	90	92	92	92	102	100	100	100	100	100	98	98	98	98	98	98	104	104	104	104	104	
7	94	94	94	94	94	94	100	98	100	112	100	118	118	106	120	94	94	98	100	100	98	102	102	98	
8	98	96	B	96	88	88	88	96	96	130	112	96	84	146	150	112	B	B	B	B	96	B	B	102	
9	B	B	B	B	B	B	B	B	132	144	136	160	118	150	134	112	G	B	B	B	B	B	B	B	
10	94	90	B	90	90	B	98	98	106	G	114	122	G	116	G	146	86	86	96	96	B	B	B	B	
11	96	96	96	96	B	B	B	B	116	116	100	144	120	94	94	176	90	90	96	96	96	96	B	B	
12	B	98	B	92	94	94	B	B	116	114	114	134	116	G	G	164	90	90	B	90	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	B	G	B	B	B	96	94	96	96	B	B	96	102	
14	102	98	94	88	B	B	B	B	100	114	144	116	126	G	G	102	90	90	90	B	90	94	B	B	
15	94	94	94	94	94	B	B	122	110	110	100	108	104	108	108	140	100	100	100	120	106	102	94	94	
16	98	98	104	100	114	100	92	B	110	114	104	104	104	106	96	116	90	B	B	B	B	92	92	92	
17	92	98	B	B	90	118	130	102	94	172	G	132	126	92	112	B	B	B	B	B	88	B	B	B	
18	B	98	98	B	B	98	B	B	104	120	110	110	102	118	110	170	112	G	B	B	92	92	92	90	90
19	94	108	B	B	90	B	B	114	124	108	96	158	88	152	114	98	126	B	B	B	B	B	94	94	
20	92	92	94	94	100	100	110	116	156	156	156	120	G	154	G	G	96	96	B	B	B	B	96	96	
21	90	96	96	96	102	100	B	82	164	128	G	152	120	G	B	122	G	108	100	100	B	B	B	B	
22	B	B	82	B	102	102	G	G	G	G	164	166	B	G	104	100	96	96	94	96	96	96	96	88	
23	94	94	94	94	104	104	102	102	96	116	164	158	136	136	128	G	132	86	94	94	94	90	90	82	
24	82	82	B	106	106	104	B	144	120	120	120	174	148	118	102	102	102	96	104	92	92	92	92	92	
25	92	92	92	106	98	100	106	124	94	102	146	122	126	116	106	G	96	94	98	98	B	86	86	86	
26	88	92	B	98	98	98	104	B	110	110	98	G	100	G	92	140	156	B	B	B	92	96	96	B	
27	96	96	96	96	88	98	B	134	152	96	G	92	116	116	108	108	G	B	B	B	92	108	98	98	
28	94	98	92	B	92	B	B	B	G	108	108	108	120	120	120	96	G	B	B	B	B	112	112	112	
29	102	102	102	86	86	86	B	124	124	124	108	124	120	102	110	154	144	B	B	B	B	B	B	108	
30	108	B	B	88	100	98	B	110	136	152	132	106	98	104	124	124	98	106	118	100	98	98	90	108	
31	B	96	92	88	88	B	B	154	126	114	114	114	114	106	106	96	138	94	94	100	100	174	130	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	24	27	20	23	21	19	14	20	28	28	27	28	28	24	25	28	20	20	18	19	19	21	21	22	
MED	94	96	94	94	94	98	101	106	115	113	112	116	118	109	110	110	99	96	96	100	98	96	96	98	
U Q	98	98	96	96	101	100	104	118	124	122	132	145	121	131	122	132	114	101	100	102	100	102	102	104	
L Q	92	92	92	90	89	92	98	100	100	108	100	105	102	103	100	98	90	90	96	96	92	93	92	92	

JAN. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2022 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		F1	F1	F1					C2	LC21	HL21	LH11	HL22	LC11	LC21	HL11					F2	F2	F1	F1	
2	F1	F1	F1				F1	L1	L1	H2	C2	C3	C2	C4	C4	L4	L6	L9	F8	F3	F5	F7	F5	FQ21	
3	FQ21	FQ21	F1	F1	F1	F1		L5	LQ31	L4	LC21	LC11		H1	L1	LC11				FC11	F1	F2	FQ11	F1	
4	F1	F2	F1	F1	F1	F1	F1	LC11	C2	C2	CC2	C2	C3	C3	C4	C3	L3	L1	F2	F1	F1	F2	F2	F1	
5	F2	F1		F1	F2	F7	F3	L7	L2	C1	L4	L2	LC11	LC11	C1	L1	L1	L1		F5	F4	F4	F4	FQ41	
6	FQ21	FQ31	FQ41	F4	F2	F2	F1	L1	L3	C2	C2	C1	LC11	LC11	LC11	LH11	LC11	L3	F4	FQ41	F3	F3	F3	F2	
7	F3	F2	F2	F2	FQ21	F3	F6	L7	L6	L2	LC21	CL22	C1	C2	C2	LC11	L1	L1	F2	F3	FQ41	FQ21	FQ21	FQ21	
8	FQ21	F1		F1	F1	F1	F1	LC11	LC11	C1	LC11	LC11	LC11	H2	H1	LC21						L2		F2	
9									H2	H2	H2	H2	C2	H1	H2	CH21									
10	F1	F1		F1	F1		L1	L2	LC11		LC11	C1		CL11		HL22	LC11	L1	F1	F1					
11	F1	F1	F1	F1					LC11	C1	LC11	C1	CL22	L3	L2	HL11	L4	L3	F2	F1	F1	F1			
12		F1		F1	F1	F1			C2	LC11	C2	HL21	C2			H1	LC11	L1		F1					
13																	L1	L1	F1	F1			F1	FF11	
14	FQ31	FQ31	F3	F1					LC11	C1	H1	LC21	C1			LH11	L1	L1	F1		F1	F1			
15	F1	FQ21	FQ11	F1	F1			C3	L3	C3	C2	C3	C3	C2	CH42	HL22	LL21	L2	F2	F1	F4	F3	FQ31	FQ41	
16	FQ31	FQ21	FQ21	F3	F2	F1	L1		C1	C6	C2	C2	C2	C2	LC12	C2	LC11					F1	F2	F1	
17	F1	F2			F1	LC11	H1	LC11	LC11	HL21		H1	C1	C1	LC11	C2						F1			
18		F1	F2		F1		L1	C2	C2	C2	LH11	C2	C1	H2	C1		L1		F2	F1	F3	F1	F1	F1	
19	F1	F1		F1			C2	C1	CH21	LC21	HL11	LC11	HL11	C1	L2	C2							FQ41	FQ31	
20	F2	F1	F1	F1	F1	F2	C1	C2	H1	H1	H1	C1		H1			L4	F1						F1	
21	F1	F1	F1	F3	F2	F1		F1	H1	C1		H1	C1		C1		L1	L1	F1	F1					
22			F1			F3	L1					H1	H1			L1	L1	L2	F3	F4	F2	FQ21	F2	F3	
23	F2	F2	F2	F1	F2	F2	L1	L4	LC11	CL11	H1	H1	H1	H1	C1		HL11	L4	F1	F1	F1	F1	F1	F1	
24	F1	F1		F2	F2		L2		C1	C1	C2	C1	C1	H1	C1	C2	L2	L3	F6	F1	F3	F2	F3	F4	
25	F1	F1	F2	FF11	F1	F2		F1	C1	LH11	LH21	H1	C1	C1	C1	C1		L1	F1	F2	F3		F1	F1	
26	F1	F1		FF11	F1	F1	F1		C2	C2	C2		C1		C1	H1	H1				F1	F1	F1		
27	F1	F1	F1	F1	F1	FF11		C2	C1	LC11		LC21	C2	C2	C2	C1					F1		F1	F4	
28	F1	F1	F1		F1				LC11	C2	C2	CL11	C2	C2	C2	LH11						F1	F2	F1	
29	F1	F1	F1	F3	F2	F1		LC11	C1	CH21	C2	C2	C2	C2	C2	C2	H1		F1					F1	
30	F1			F1	F1	F1		L1	C1	H1	H1	C2	LC21	C2	CL11	CL11	LC11	L3	F2	F1	F9	FF51	F2	F1	
31		F1	F3	F2	F2			H2	C2	C2	C2	C1	C1	C1	C1	C1	CL11	L2	F3	F2	F2	F1	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																									

JAN. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2022 f_{XI} (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	X 36	X 34	X 35	X 36	X 35	X 28						C							X 34	X 35	X 35	X 36	X 36	X 37
2	X 38	X 38	X 39	X 38	X 34	X 32													X 45	X 42	X 38	X 37	X 34	X 37
3	X 36	X 34	X 38	X 43	X 34	X 33													X 46	X 36	X 32	X 32	X 34	X 35
4	X 36	X 36	X 36	X 36	X 36	C													X 44	X 40	X 34	X 34	X 34	X 34
5	X 39	X 38	X 37	X 34	X 37	X 34													X 40	X 36	A	X 36	X 37	X 38
6	X 39	X 34	X 38	X 38	X 38	X 36													X 38	X 36	X 30	X 32	X 30	X 36
7	X 31	C	X 38	X 46	X 29	X 31													X 36	X 36	A	X 33	X 33	X 33
8	A	A	X 33	X 38	X 34	X 26												X 47	X 46	X 39	X 33	X 30	X 31	X 31
9	X 30	X 31	X 33	X 36	X 28	X 29	C												X 50	X 40	X 39	X 33	X 34	X 38
10	X 38	X 40	X 42	X 42	X 28	X 29	X												X 40	X 40	X 41	X 34	X 40	X 35
11	X 38	X 35	X 37	X 38	X 35	X 31	X 31												X 36	X 37	X 38	X 40	X 38	X 38
12	X 39	X 39	X 39	X 39	X 41	X 32	X 29												X 40	X 37	X 38	X 31	X 33	X 36
13	X 37	X 37	X 36	X 36	X 36	X 36												X 48	X 48	X 38	X 37	X 30	X 32	X 38
14	X 37	X 38	X 40	X 39	X 36	X 37													X 37	X 40	X 43	X 34	X 33	X 36
15	X 36	X 36	X 36	X 36	X 35	X 36													X 39	X 55	X 100	X 84	X 75	X 43
16	X 46	X 37	X 32	A	A	A													X 70	X 68	X 64	X 54	X 42	X 44
17	X 48	X 38	X 32	X 36	X 36	X 26		X 50											X 40	X 51	X 33	X 30	X 34	X 36
18	X 38	X 38	X 36	X 37	X 36	X 34													X 45	X 45	X 39	X 36	X 32	X 35
19	X 34	X 37	X 37	X 38	X 31	X 37													X 48	X 50	X 50	X 47	X 47	X 50
20	X 47	X 45	X 45	X 46	X 40	X 40													X 44	A	X 44	X 33	X 30	X 34
21	X 36	X 36	X 36	X 38	X 42	X 38										X 84	X 68		X 42	X 54	X 36	X 32	X 31	X 33
22	X 34	X 36	X 38	X 38	X 41	X 37													X 45	X 40	X 45	X 39	X 38	X 38
23	X 38	X 39	X 42	X 42	X 41	X 40													X 45	X 43	X 37	X 36	X 36	X 38
24	X 38	X 40	X 41	X 41	X 38	X 33													X 44	X 47	X 36	X 35	X 32	X 35
25	X 39	X 39	X 40	X 41	X 40	X 40													X 52	X 48	X 46	X 45	X 41	X 41
26	X 10	X 40	X 40	X 39	X 39	X 39													X 43	X 37	X 42	X 38	X 34	X 40
27	X 39	X 36	X 37	X 38	X 39	X 37													X 38	X 44	X 44	X 34	X 34	X 36
28	X 36	X 37	X 38	X 36	X 36	X 36													X 49	X 44	X 42	X 35	X 38	X 38
29	X 40	X 40	X 40	X 42	X 48	X 30													X 42	X 38	X 43	X 42	X 39	X 39
30	X 41	X 42	X 43	X 39	X 39	X 39													X 50	X 47	X 35	X 38	X 37	X 38
31	X 38	X 40	X 42	X 44	X 36	X 33													X 48	X 41	X 44	X 34	X 36	X 39
	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	29	31	30	30	29	3	1								1	1	2	31	30	29	31	31	31
MED	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X
U Q	39	40	40	41	39	37	31												48	47	44	38	38	38
L Q	X	X	X	X	X	X	X												X	X	X	X	X	X
	36	36	36	36	35	31	29												40	37	36	33	33	35

JAN. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2022 foF2 (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	30	28	29	31	29	22	22	44	55	59	72	C	70	68	57	59	56	45	28	29	28	30	30	31	
2	32	32	33	32	28	26	28	44	56	59	66	83	83	65	62	66	52	46	39	36	32	31	28	31	
3	30	28	32	37	28	27	27	38	54	61	72	78	64	64	58	53	51	46	40	30	26	26	28	29	
4	30	30	30	30	30	C	24	44	53	52	76	80	74	66	61	56	58	46	38	34	28	28	28	28	
5	33	32	31	28	F	28	25	44	53	59	68	71	74	68	61	58	51	39	34	30	A	30	31	32	
6	33	28	32	32	32	30	32	40	51	52	53	74	73	62	60	55	43	42	32	30	24	26	24	30	
7	25	C	32	40	23	25	24	43	57	48	66	62	59	65	56	59	51	35	30	30	A	27	27	27	
8	A	A	27	32	28	20	20	40	49	49	63	64	62	C	58	52	46	41	40	33	27	24	25	25	
9	24	25	27	30	22	23	C	44	55	90	70	61	72	58	64	63	54	53	44	34	33	27	28	32	
10	32	34	36	36	22	23	23	47	50	58	64	76	72	68	57	61	50	43	34	34	35	28	F	29	
11	32	29	31	32	29	25	25	47	61	61	72	84	80	70	70	60	53	41	30	31	32	34	32	32	
12	33	33	33	33	35	26	23	44	63	63	65	75	77	60	69	61	A	53	38	34	31	32	25	27	31
13	31	31	30	30	30	30	27	44	57	56	61	82	81	66	66	A	57	42	42	32	31	24	26	32	
14	30	32	34	33	30	31	32	55	56	63	64	69	68	73	65	61	53	45	31	34	37	28	27	30	
15	30	30	30	30	29	30	31	58	64	82	82	91	74	68	78	102	79	55	33	49	94	F	69	F	
16	F	31	26	A	A	A	A	42	70	94	94	101	102	103	95	R	103	80	64	62	58	48	36	38	
17	42	32	26	30	30	20	22	44	78	84	78	67	104	55	61	56	62	42	34	45	27	24	28	30	
18	32	32	30	31	30	28	24	46	60	66	79	79	75	84	55	58	70	58	39	39	33	30	26	28	
19	28	31	31	32	25	31	29	50	64	64	78	80	74	84	80	73	64	52	42	44	44	41	41	44	
20	41	39	38	40	34	34	36	64	63	68	62	101	90	60	63	66	64	54	38	A	38	27	24	28	
21	30	30	30	32	36	32	29	50	58	60	72	68	64	81	65	78	62	52	36	48	30	26	25	27	
22	28	30	32	32	35	31	36	54	62	60	73	80	83	70	76	68	60	53	39	34	39	33	32	32	
23	32	33	36	36	35	34	36	57	60	60	70	83	74	69	65	65	77	70	39	37	31	30	30	32	
24	32	34	35	35	32	27	A	49	63	65	72	68	79	79	66	66	65	52	38	42	30	29	26	29	
25	33	33	34	35	34	34	30	57	62	61	65	74	77	68	66	66	69	56	46	42	40	39	34	35	
26	34	34	34	33	33	33	36	51	59	80	84	83	84	80	78	72	71	55	37	31	36	32	27	34	
27	33	30	31	32	33	31	29	48	56	60	74	73	73	71	63	67	69	56	32	38	38	28	28	29	
28	30	31	32	30	30	30	26	56	68	58	82	84	87	74	76	67	64	58	43	38	36	29	32	32	
29	34	34	34	36	42	24	25	54	68	60	79	95	108	72	70	65	70	70	36	32	37	36	33	33	
30	35	36	37	33	33	33	31	61	71	70	78	85	94	78	76	74	68	58	44	41	29	32	31	32	
31	32	34	36	38	30	27	27	53	68	75	86	99	96	92	83	78	72	60	42	35	38	28	30	33	
	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	29	31	30	29	29	28	31	31	31	31	30	31	30	31	29	31	31	31	30	29	30	30	30	
MED	32	32	32	32	30	28	27	47	60	61	72	80	75	68	65	65	62	52	38	34	33	28	28	31	
U Q	33	34	34	35	34	31	31	54	64	68	78	84	84	78	76	68	69	56	42	41	38	32	32	32	
L Q	30	30	30	31	28	25	24	44	55	59	65	71	72	65	61	58	53	42	34	31	30	27	27	29	

JAN. 2022 foF2 (0.1MHz)

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JAN. 2022 foF1 (0.01MHz) 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											L	C	L	L										
2											U L 472	L	L	L	L	L								
3												L	L	A	A		A							
4											L	L	A	A	L	A								
5										A	L	A	A	A	A		A							
6								A				384	432		L	L								
7											L	L	L	L	L									
8											L	L		C										
9								C					380	L	L	L	L							
10											L	L	L	L	L									
11											L		440	L	L	L								
12											L	L	L	L	L									
13										L		A	L	L	L	A								
14												L	L		444	L								
15												A	L			L								
16							A				L	L	L	L	L	L								
17										472	L					L								
18											L	400	448			L	L							
19										L	A	L	L	444	L	L	L	L						
20												L	L	L	L									
21											L	A	U L 460	L	L									
22											U L 440	L	L	L	L	L								
23											L	L	L	L			360							
24							A			L	L	L	L	A	L	L								
25											L	A	L		A									
26										L	L	L	L	L	L	L	272							
27											L	L	L	L										
28											440	L	L	L	L	L								
29											L	L		L	L									
30											L	A	A	A										
31											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										1	3	2	4	4		1	1							
MED										472	440	392	436	446		360	272							
U Q											U L 472		444	454										
L Q											440		406	444										

JAN. 2022 foF1 (0.01MHz)

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JAN.2022 foE (0.01MHz) 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							B	B	U	R	U	R	A	C	U	R	A	A	U	R	B				
2							B	B	U	R	U	R	A	C	U	R	A	A	U	R	B				
3							B	U	R	U	A	U	R	A	U	R	A	A	A	A	B				
4							B	B	U	R	U	R	A	A	A	A	A	A	A	A	B				
5							B	A	A	A	A	A	A	A	A	A	A	A	A	B					
6							B	A	A	A	A	A	A	A	U	R	U	R	U	R	A	B			
7							B	B	A	A	U	A	A	U	R	U	R	U	R	U	R	B			
8							B	B	U	R	A	U	R	A	C	U	R	U	R	A					
9							C	B	U	R	U	A	U	R	U	R	U	R	U	R	B				
10							B	U	R	U	R	U	R	U	R	U	R	U	R	B	B				
11							U	R	U	R	U	R	A	U	R	A	A	U	R	A	B				
12							B	U	A	A	A	A	A	A	A	U	R	U	R	B					
13							B	B	U	R	A	A	A	A	A	A	A	A	A						
14							B	B	U	R	A	A	A	U	R	U	R	U	R	B					
15							B	U	R	U	A	A	A	A	A	A	A	U	R	B					
16							B	B	U	A	U	R	U	R	U	R	U	R	U	B					
17							B	U	A	U	R	A	R	U	R	U	R	U	R	A	B				
18							B	B	U	A	A	A	A	U	R	U	R	U	R	B					
19							B	B	U	R	A	A	A	U	R	A	A	U	R	B					
20							B	B	U	R	U	A	A	A	A	A	A	A	A	B					
21							B	B	U	R	A	U	A	A	A	A	A	A	A	B					
22							B	B	U	R	A	U	A	A	A	A	A	A	A	B					
23							B	U	R	U	R	A	U	R	A	R	A	R	A	B					
24							B	U	R	A	U	R	A	A	U	A	A	A	A	B					
25							B	B	U	R	U	R	A	A	U	R	A	A	U	R	B				
26							B	B	U	R	U	A	A	A	A	A	A	A	A	B					
27							B	U	R	U	R	U	R	U	R	U	R	U	R	B					
28							B	U	R	U	R	A	U	R	U	R	U	R	U	B					
29							B	U	R	U	R	A	U	R	U	R	U	R	U	B					
30							B	U	R	U	R	A	A	A	U	A	A	A	A	B					
31							B	U	R	U	R	A	A	U	R	A	A	A	A	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								10	27	20	14	9	19	14	13	16	14								
MED								U	R	U	R	U	R	U	R	U	R	U	R						
U Q								194	236	288	314	332	332	320	304	272	224								
L Q								200	244	292	320	338	340	328	312	280	240								
								188	236	284	312	324	324	312	298	266	216								

JAN.2022 foE (0.01MHz)

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JAN. 2022 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		23	24		J A	E B	E B	E B	E B	G	G	J A	C		G	J A	J A	G	J A	J A	J A		J A	J A	J A
2	J A	J A	J A		J A	E B	E B	E B	E B	G	G	G	G		G	J A	G	G	J A			E B	E B	E B	E B
3	E B	E B	E B	E B	E B	E B	E B	E B	G		G	G		G	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			C E	B J	A	G	G	J A	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		E B	E B	E B	E B	E B	E B	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	J A	J A	J A	J A	J A	J A
6	J A		E B	E B					J A									E B	E B	E B		J A	J A	J A	J A
7	J A		C J	J A	J A	J A			J A					G	J A	G	G	G	J A			J A	J A	J A	J A
8	J A	J A	J A	J A				E B		G	J A	G	G	G	C	G	G	J A				E B	E B	E B	E B
9	J A		E B	E B	E B			C E	B	G			G	G	G	G	G	E B	E B	J A	J A	J A	E B	E B	E B
10	E B	E B	E B				E B	E B	E B	G	G	G	G	G	G	G			E B	E B	E B		E B	E B	E B
11	E B	E B			E B	E B	E B	E B	G	G				G	J A	J A	J A	G	J A	J A	J A	J A	J A	J A	J A
12	E B	E B	E B		E B	E B	E B	E B	E B				J A					G	G		E B	J A	J A	J A	J A
13	J A	J A	J A	J A				E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A		J A	J A	E B
14	E B	E B	J A	J A	J A	E B	J A	J A		G	J A	J A		G	G	G			J A			J A	J A	J A	E B
15		23	24	E B	E B	E B	E B		G	G	J A	J A	J A	J A	J A	J A	J A	J A	E B	E B	E B	J A	J A	J A	J A
16	J A	J A	J A	J A	J A	J A	J A	E B		G	G	G	G	G	G	G	G					E B	E B	E B	E B
17	E B	E B	E B	J A	J A	J A		E B		G			G	G	G	G	G			E B	E B	E B	E B	E B	E B
18	E B	E B	E B	E B	E B	E B	E B			J A	J A	J A	J A	G	G	G	G			E B	E B	E B	E B	E B	E B
19	E B		21	24	23		E B	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	E B	E B	J A	J A	E B	E B	E B
20	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	G			J A	J A	J A	J A	J A			J A	J A	J A	J A	J A
21		J A	E B	E B	E B	E B	E B	E B	E B	G				J A	E B	E B	E B	E B	E B	E B	J A	E B	E B	E B	E B
22	E B	E B	E B	E B	E B	E B	E B	E B	E B	G						J A	J A	J A	E B	E B	E B	J A	E B	E B	E B
23	E B	E B	E B	E B	E B	E B		E B	G					G	J A	J A	J A	J A	J A	J A	J A		E B	E B	E B
24	E B	E B	E B		J A		J A		G										J A	J A	J A	J A	J A	J A	J A
25	J A		24	23	E B	E B	E B		J A	G	G		J A	J A	J A	J A	J A	J A	E B			E B	J A	E B	E B
26	J A	E B	J A	J A	J A			E B		G	G		J A	J A	J A	J A	J A	J A	E B	E B	E B	E B	E B	E B	E B
27	E B		24	21	24	22	22		E B	G	G	G	G					G	E B			E B	J A	J A	J A
28	E B		21	26	21	22	22	20		G	G	G	G	G	G	G	G	G	J A			E B	E B	E B	E B
29		E B	E B	E B	E B	E B	E B	E B	G	G	G							G	E B	E B	E B	E B	E B	E B	E B
30		20	20	20		E B	E B		G		G	J A	J A	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		E B	J A	J A		E B	E B		G	G					J A	J A	J A	J A	J A	J A	J A	E B	E B	E B	E 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	31	30	31	31	31	30	30	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	20	18	21	20	E B	18	E B	16	G	G												E B	17	22	20
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
L Q	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	G	G	G	G	G	G	G	G	E B	E B	E B	E B	E B	E B	E B

JAN. 2022 foEs (0.1MHz)

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JAN. 2022 fbEs (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	E 16	E 16	E 16	E 16	E 16	E 15	E 17	E 18	G	G	32	C	33	G	31	27	G	19	19	E 15	E 15	E 15	E 15	18
2	E 16	E 16	E 16	E 16	E 16	E 16	E 14	E 14	G	G	G	G	G	G	28	G	G	23	E 16	E 16	E 16	E 16	E 16	16
3	E 16	E 16	E 16	E 15	E 15	E 15	E 15	E 15	24	G	G	32	G	35	35	36	30	24	20	20	E 16	E 16	E 16	17
4	E 16	E 19	E 16	E 19	E 16	C E	E 18	E 17	G	G	32	36	45	41	28	45	21	E 16	E 16	E 19	E 16	E 16	E 15	15
5	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 32	28	41	34	50	41	43	37	30	34	E 16	E 16	E 16	E 16	E 16	E 16	16
6	E 16	E 16	E 16	E 16	E 15	E 15	E 16	E 30	25	27	33	33	32	G	G	G	19	E 15	E 15	E 16	E 16	E 16	E 16	16
7	E 16	C	18	20	E 16	E 16	E 16	E 16	23	34	34	33	G	33	G	G	G	E 18	E 16	E 16	E 16	E 16	E 16	16
8	A 55	A 40	A E	E 16	E 16	E 16	E 16	E 19	G	30	G	G	G	C	G	G	28	E 16	E 16	E 16	E 16	E 16	E 16	17
9	E 18	E 16	E 15	E 15	E 15	E 15	E 15	C E	G	32	34	G	G	G	G	G	G	E 16	E 16	E 17	E 17	E 17	E 17	17
10	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 19	G	G	G	G	G	G	G	G	30	24	23	E 17	E 16	E 17	E 16	16
11	E 16	E 16	E 16	E 16	E 16	E 16	E 15	E 15	G	G	36	33	G	32	29	G	24	19	20	E 17	E 20	E 17	E 16	16
12	E 16	E 16	E 16	E 16	E 15	E 16	E 16	E 18	25	30	34	36	34	33	33	G	G	E 16	E 16	E 16	E 16	E 16	E 16	16
13	E 19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	30	33	45	33	33	33	110	27	16	17	E 16	E 16	E 16	E 16	16
14	E 17	E 16	E 16	E 16	E 16	E 15	E 18	E 16	G	30	33	33	G	G	G	32	22	16	E 16	E 17	E 20	E 17	E 16	16
15	E 16	E 16	E 16	E 16	E 16	E 16	E 18	E 18	G	34	34	36	35	37	33	24	G	E 16	E 16	E 17	E 27	E 16	E 16	16
16	E 16	E 16	E 16	E 54	E 38	E 28	E 28	E 15	25	G	G	G	G	G	G	G	G	E 16	E 17	E 17	E 16	E 15	E 16	16
17	E 16	E 16	E 16	E 15	E 15	E 15	E 18	E 18	24	G	31	G	G	G	G	G	22	E 15	E 15	E 16	E 16	E 16	E 16	15
18	E 16	E 16	E 15	E 15	E 15	E 15	E 15	E 16	26	29	32	34	G	G	G	G	24	E 14	E 16	E 15	E 15	E 15	E 14	14
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	30	42	32	35	G	30	27	G	E 15	E 15	E 17	E 15	E 16	E 16	15
20	E 16	E 16	E 15	E 15	E 16	E 16	E 16	E 16	G	G	34	35	34	34	32	38	25	19	28	E 44	E 16	E 16	E 16	16
21	E 16	E 18	E 16	E 16	E 16	E 16	E 17	E 17	G	26	34	38	34	34	35	30	E 22	E 18	E 16	E 22	E 16	E 15	E 14	15
22	E 16	E 16	E 16	E 16	E 16	E 15	E 15	E 17	G	34	35	39	37	34	32	32	22	E 25	E 15	E 16	E 16	E 16	E 15	15
23	E 16	E 16	E 15	E 16	E 15	E 15	E 16	E 16	26	G	35	35	35	G	30	22	26	E 19	E 16	E 16	E 15	E 17	E 17	17
24	E 16	E 16	E 15	E 15	E 18	E 15	E 33	E 16	24	G	34	37	37	36	36	30	24	E 19	E 18	E 15	E 19	E 16	E 18	20
25	E 18	E 15	E 16	E 15	E 16	E 16	E 16	E 19	G	G	G	36	35	28	39	29	G	E 16	E 16	E 16	E 16	E 16	E 16	16
26	E 24	E 15	E 15	E 17	E 16	E 16	E 16	E 16	G	G	32	33	36	34	32	28	24	E 27	E 15	E 15	E 15	E 15	E 16	16
27	E 16	E 16	E 16	E 15	E 15	E 16	E 15	E 15	G	G	G	G	G	36	34	G	G	E 14	E 16	E 16	E 16	E 16	E 21	18
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	G	33	G	G	G	G	G	G	E 17	E 16	E 16	E 16	E 16	E 16	16
29	E 15	E 15	E 15	E 15	E 15	E 15	E 15	E 15	G	G	35	G	G	35	G	G	G	E 19	E 16	E 16	E 16	E 16	E 17	15
30	E 15	E 15	E 15	E 15	E 15	E 15	E 15	E 16	G	G	36	44	38	42	36	32	33	E 18	E 15	E 16	E 16	E 16	E 19	16
31	E 15	E 15	E 15	E 15	E 15	E 15	E 15	E 15	G	G	35	35	35	G	35	34	34	E 34	E 34	E 15	E 15	E 16	E 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	30	31	31	31	30	30	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 18	G	G	33	33	32	33	30	E 27	22	E 17	E 16	E 16	E 16	E 16	E 16	16
U Q	E 16	E 16	E 16	E 16	E 16	E 16	E 17	E 16	24	30	34	36	35	35	34	32	25	E 19	E 17	E 17	E 17	E 16	E 16	16
L Q	E 16	E 16	E 15	E 15	E 15	E 15	E 15	E 16	G	G	G	G	G	G	G	G	G	E 16	E 16	E 16	E 16	E 16	E 16	16

JAN. 2022 fbEs (0.1MHz)

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JAN.2022 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	15	17	18	18	17	16	C	16	16	16	16	16	16	16	15	15	15	16	16
2	16	16	16	16	16	14	14	17	16	16	16	16	16	16	14	15	13	15	16	16	16	16	16	16
3	16	16	16	15	15	15	15	15	15	15	17	16	17	16	14	14	15	16	16	16	16	16	16	16
4	16	16	16	16	16	C	18	17	16	16	17	17	18	17	16	15	15	16	16	16	16	16	15	15
5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	15	16	16	16	16	16	16	16	16
6	16	16	16	16	15	15	16	15	14	14	12	14	14	14	14	16	15	15	15	16	16	16	16	16
7	16	C	16	16	16	16	16	15	14	15	16	16	16	18	17	17	16	16	16	16	16	16	16	16
8	15	15	16	16	16	16	16	19	16	15	15	15	15	C	16	16	16	16	16	16	16	16	16	18
9	16	16	15	15	15	15	C	17	16	16	16	17	17	17	17	16	16	16	16	17	17	17	17	17
10	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	19	17	17	16	17	17	16	16
11	16	16	16	16	16	16	15	15	15	15	15	15	16	14	14	14	14	16	16	17	17	17	16	16
12	16	16	16	16	15	16	16	18	16	16	16	16	17	17	17	17	17	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	19	19	19	19	19	18	18	18	16	16	16	16	16	16	16	16
14	17	16	16	16	16	15	16	16	16	14	14	17	18	18	16	16	16	15	15	17	17	17	16	16
15	16	16	16	16	16	16	16	16	16	16	16	18	18	18	18	19	16	16	16	17	16	16	16	16
16	16	16	16	16	15	15	15	15	15	14	14	14	16	16	16	16	15	16	17	17	16	15	16	16
17	16	16	16	15	15	15	18	18	16	16	16	17	17	17	17	17	15	15	15	16	16	16	16	15
18	16	16	15	15	15	15	15	16	16	16	16	16	18	18	17	16	14	14	16	15	15	15	14	14
19	16	16	16	16	16	16	16	16	16	16	16	16	16	18	16	16	16	15	15	17	15	16	16	15
20	16	16	15	15	16	16	16	16	12	14	20	20	20	17	17	24	16	16	16	15	16	16	16	16
21	16	16	16	16	16	16	17	17	18	17	24	23	23	21	23	30	22	18	16	16	16	15	14	15
22	16	16	16	16	16	15	15	17	16	20	20	19	22	21	20	18	18	15	15	16	16	16	15	15
23	16	16	15	16	15	15	16	15	15	15	15	15	17	21	18	18	15	16	16	16	16	17	17	17
24	16	16	15	15	15	15	15	13	15	18	18	18	18	19	19	19	15	15	16	15	15	16	16	16
25	15	15	16	15	16	16	16	16	17	17	18	23	18	16	16	14	14	16	16	16	16	16	16	16
26	16	15	15	16	16	16	16	16	16	16	16	16	18	16	15	15	15	15	15	15	15	15	16	16
27	16	16	16	15	15	16	15	14	16	16	16	15	15	17	17	18	16	14	16	16	16	16	15	15
28	16	16	16	16	16	15	16	15	15	15	15	15	15	15	15	17	17	17	16	16	16	16	16	16
29	15	15	15	15	15	15	15	14	15	14	16	16	16	17	16	16	16	19	16	16	16	16	17	15
30	15	15	15	15	15	15	16	16	16	17	17	17	17	17	17	14	17	14	15	16	16	16	16	16
31	15	15	15	15	15	15	15	14	16	18	18	20	20	20	19	18	16	15	15	15	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	30	31	31	31	30	30	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	15	16	16	16	16	16	16	17	17	16	16	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	17	16	17	17	18	18	18	17	18	16	16	16	16	16	16	16	16
L Q	16	16	15	15	15	15	15	15	15	15	16	16	16	16	16	15	15	15	15	16	16	16	16	15

JAN.2022 fmin (0.1MHz)

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JAN. 2022 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

$\begin{matrix} H \\ D \end{matrix}$	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	340	300	296	337	362	322	292	364	375	357	347	C	359	359	391	365	367	362	392	269	322	310	242	305	
2	288	321	345	341	321	311	311	358	378	363	315	332	367	383	351	363	365	369	335	365	359	308	301	316	
3	318	298	314	352	351	308	336	363	350	345	327	380	364	360	336	372	373	354	363	357	340	301	304	315	
4	281	319	320	321	321	C	348	357	365	368	339	358	359	387	350	353	394	356	364	304	333	313	297	316	
5	316	332	336	344	F	335	364	365	394	361	349	342	370	360	375	370	362	358	372	376	A	331	318	324	
6	329	327	316	358	345	294	356	364	386	387	358	367	370	365	378	390	400	341	346	325	318	319	283	296	
7	309	C	353	394	314	327	334	365	392	410	361	380	364	359	384	376	379	368	357	357	A	333	313	279	
8	A	A	283	365	353	282	305	400	381	398	384	326	385	C	394	365	331	350	361	366	372	333	317	302	
9	319	291	312	375	326	315	C	348	330	383	359	327	369	373	356	349	348	364	351	328	336	303	300	277	
10	273	329	334	355	299	287	305	373	384	368	367	360	372	373	401	373	375	339	337	337	329	294	F	309	
11	333	306	299	361	363	295	320	367	372	361	340	365	336	348	369	371	388	345	345	322	343	324	289	289	
12	305	305	317	305	341	326	344	352	362	364	358	364	376	347	375	356	A	368	359	340	332	354	329	305	281
13	291	277	290	317	362	324	342	363	374	383	344	367	372	377	369	A	369	359	361	369	366	375	307	295	
14	293	287	307	353	296	298	315	384	392	388	379	368	354	368	369	354	367	333	352	343	369	366	307	293	
15	293	285	282	300	325	321	315	335	351	362	338	355	376	317	311	361	373	378	276	285	405	F	349	F	
16	F	336	271	A	A	A	A	309	367	340	337	332	313	330	288	R	344	335	332	321	339	338	307	340	
17	346	352	312	330	355	303	322	357	370	362	352	333	352	387	357	363	378	358	316	397	319	283	296	304	
18	307	323	307	312	302	302	332	344	341	351	356	379	341	377	378	382	364	358	344	357	332	390	291	331	
19	324	306	307	362	309	329	357	382	382	359	347	338	330	343	340	365	367	347	323	323	A	327	332	281	323
20	314	299	310	335	311	312	333	372	377	382	359	346	375	375	385	349	354	368	350	A	344	332	315	298	
21	307	305	310	311	347	359	368	390	375	368	344	363	338	355	332	355	371	352	312	355	339	333	313	292	
22	283	301	290	319	337	300	349	387	413	375	363	334	358	332	351	380	360	349	343	317	325	335	314	325	
23	303	297	296	327	321	309	366	370	393	356	361	354	369	363	379	354	345	346	353	355	311	323	304	301	
24	304	320	324	341	365	323	A	362	371	359	365	344	349	363	386	336	367	375	332	352	337	357	302	310	
25	348	310	299	315	298	321	293	360	403	362	369	351	365	365	348	369	361	355	373	338	316	311	321	316	
26	307	317	325	285	297	297	355	369	327	360	353	355	357	329	361	343	351	346	351	313	340	315	308	310	
27	281	284	285	302	314	306	327	377	377	349	349	352	352	362	344	355	373	374	370	321	357	334	300	296	
28	301	306	309	313	299	299	310	357	393	388	361	354	363	356	361	359	359	363	358	331	350	306	299	314	
29	308	308	308	313	361	413	312	381	386	375	342	341	368	371	327	340	347	373	375	316	339	338	304	304	
30	305	330	330	327	327	328	311	378	377	386	361	337	368	364	343	368	349	362	348	346	313	321	294	293	
31	293	285	293	374	361	319	338	359	372	344	347	323	349	345	358	350	346	384	361	326	337	303	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	29	29	31	30	29	29	28	31	31	31	31	30	31	30	31	29	31	31	31	30	29	30	30	30	
MED	307	306	309	332	326	312	332	364	377	363	353	353	364	362	361	363	367	358	351	334	339	326	304	304	
U Q	318	322	320	355	354	325	348	377	386	383	361	364	370	373	378	370	373	368	361	357	352	334	313	316	
L Q	293	298	296	313	310	300	312	357	367	359	344	337	352	348	344	354	351	347	337	321	326	310	296	293	

JAN. 2022 M(3000)F2 (0.01)

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JAN. 2022 M(3000)F1 (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

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	C	L	L										
2											U L 375	L	L	L	L	L								
3												L	L	A	A		A							
4											L	L	A	A	L	A								
5										A	L	A	A	A	A		A							
6								A				424	388		L	L								
7											L	L	L	L	L									
8											L	L	442	C										
9								C					L	L	L	L								
10											L	L	L	L	L									
11											L		396	L	L	L								
12											L	L	L	L	L									
13										L		A	L	L	L	A								
14												L	L	386		L								
15												A	L		L									
16							A				L	L	L	L	L	L								
17										372	L		472	376		L								
18											L	L	L	380	L	L								
19										L	A	L	L	L	L	L	L							
20												L	L	L	L									
21											L	A	U L 389	L	L									
22											U L 386	L	L	L	L	L								
23											L	L	L	L		413								
24							A			L	L	L	L	A	L	L								
25											L	A	L	403	A		420							
26										L	L	L	L	L	L	L								
27											L	L	L	L										
28											400	L	L	L	L	L								
29											L	L		L	L									
30											L	A	A	A										
31											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										1	3	2	4	4		1	1							
MED										372	386	448	392	388		413	420							
U Q											400		419	396										
L Q											U L 375		382	383										

JAN. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2022 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											246	C	230	230											
2											310	250	234	222	234	222									
3												222	222	230	230		230								
4											248	236	230	228	236	E A	242								
5										E A	234	242	250	230	230	214		212							
6								E A				228	234	226	240										
7											244	236	242	242	224										
8											224	244	236		C										
9										C															
10											238	238	238	234	218										
11											258		258	250	230	230									
12											238	238	232	232	214										
13											222	232	222	240	230		A								
14												234	238	244	234										
15												238	216		292										
16								A			258	258	234	256	256	244									
17											244	230	218	232		230									
18											240	230	242	234	230	234									
19											234	238	238	250	250	240	224	224							
20												236	220	226	226										
21											250	234	234	232											
22											254	254	232	262	238	222									
23											250	230	230	230		236									
24								A			250	234	250	250	228	222	256								
25											236	248	232	232	242		222								
26											236	244	230	240	266	236	236								
27											236	236	240	240											
28											240	240	224	236	236	236									
29											250	250		226	262										
30											240	244	226	236											
31											236	246	246	234	234										
	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		7	24	28	30	28	25	12	4								
MED								E A		236	241	237	233	234	234	236	223								
U Q										250	250	245	240	242	240	243	227								
L Q										234	237	233	230	230	228	227	217								

JAN. 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2022 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							B	B	112	112	A	C	108	108	A	A	108	B							
2							B	B	112	112	112	112	112	112	A	112	112	B							
3							B	120	120	120	120	A	114	A	A	A	A	B							
4							B	B	108	108	108	A	A	A	A	A	A	B							
5							B	A	A	A	A	A	A	A	A	A	A	B							
6							B	A	A	A	108	A	A	108	108	108	A	B							
7							B	B	A	108	108	112	112	A	112	112	112	B							
8							B	B	112	A	112	112	108	C	108	108	A								
9							C	B	108	108	110	110	110	110	110	110	110	B							
10							B	118	112	112	112	112	112	110	110	B	B								
11							122	122	122	116	A	114	A	A	114	A	B								
12							B	114	114	114	A	A	A	114	114	114	B								
13							B	B	114	114	A	A	A	A	A	A									
14							B	B	114	A	A	A	114	114	110	A	106	B							
15							B	118	118	118	A	A	A	A	A	118	120	B							
16							B	110	110	110	110	110	110	110	110	110	110	B							
17							B	110	110	110	110	110	110	110	110	110	110	B							
18							B	B	110	A	A	A	110	110	110	110	110	B							
19							B	B	110	110	A	A	A	108	A	A	108	B							
20							B	B	108	108	A	A	A	A	A	A	A	B							
21							B	B	114	114	128	A	A	A	A		B								
22							B	B	128	128	122	122	122	122	118	A	A	B							
23							B	130	116	116	112	112	112	112	A	112	A	B							
24							B	120	A	114	114	114	114	110	110	A	A	B							
25							B	B	114	114	114	A	108	112	A	A	118	B							
26							B	B	118	118	A	A	A	A	A	A	A	B							
27							B	124	124	110	110	114	114	114	114	112	112	B							
28							B	118	118	108	108	110	110	110	110	110	110	B							
29							B	116	116	110	110	110	110	A	110	108	108	B							
30							B	130	122	110	110	A	A	A	110	108	A	B							
31							B	118	118	A	A	A	118	A	A	A	A	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								10	27	25	21	13	20	16	16	17	15								
MED								120	114	112	112	112	112	110	110	110	110								
U Q								124	118	115	114	113	114	112	111	112	112								
L Q								118	110	110	110	110	110	110	110	109	108								

JAN. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2022 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

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	94	94	94	94	B	B	B	B	G	G	94	C	144	G	92	92	G	92	92	92	92	92	92	92
2	88	88	88	88	88	B	B	B	G	G	G	G	G	G	96	G	G	96	96	88	B	88	B	B
3	B	B	B	B	B	B	B	G		G	G		G	84	84	84	84	84	84	84	84	92	96	92
4	110	88	88	88	88	C	B		G	G	116	104	98	98	98	88	88	88	88	88	88	B	B	B
5	88	B	B	B	B	B	B			90	94	94	102	92	86	86	86	86	82	82	B	96	94	94
6	94	94	B	B	94	94	94	94	98	98	108	96	96	G	G	G	96	B	B	96	96	88	88	88
7	88	C	86	86	86	86	130	102	102	126	138	128	G	90	G	G	G		80	86	86	86	86	86
8	86	86	86	90	90	90	88	B	G	88	G	G	G	C	G	G	88	88	88	88	B	88	92	92
9	86	86	B	B	B	86	C	B	G		124	124	G	G	G	G	G	B	B	86	94	B	B	B
10	B	B	86	86	86	B	B	108	G	G	G	G	G	G	G		162	140	84	B	B	84	B	B
11	B	B	92	88	B	B	B	B	G	G	110	100	G	90	90	G	86	76	76	86	86	86	104	90
12	B	B	90	B	B	B	B	B		136	136	118	98	98	98	110	G	G	92	B	92	90	90	90
13	88	88	88	88	88	88	B	B	G	114	104	94	94	94	94	86	86	86	86	86	86	86	86	86
14	B	B	86	86	B	84	84	82	G	94	94	94	G	G	G	94	120	90	90	90	86	86	86	B
15	86	86	B	B	B	B	142	G	G	120	104	96	96	96	96	96	G	B	B	110	98	138	114	114
16	112	112	100	100	90	90	90	B	C	120	G	G	G	G	G	G	G		86	86	86	78	B	B
17	B	B	B	88	88	88	B	118	136	110	G	G	G	G	G	G	118	B	B	90	88	B	B	B
18	B	B	B	B	B	B	88	88	124	104	104	102	G	G	G	G	150	B	B	B	B	B	B	B
19	B	98	98	98	94	B	B	B	G	120	102	102	102	G	102	102	G	B	B	102	B	B	84	B
20	B	B	B	B	B	B	B	B	G	G	100	102	102	102	100	98	98	90	88	88	88	B	88	106
21	88	88	B	B	B	88	B	B	G	96	130	96	110	102	98	B	B	B	88	88	B	B	B	B
22	B	B	B	B	B	B	B	B	G	146	126	114	114	114	114	96	96	92	B	B	90	B	B	B
23	B	B	B	B	B	90	B	G	124	G	158	132	132	G	92	92	84	84	82	82	82	80	88	B
24	B	B	B	88	88	88	86	G	G	98	146	112	146	124	116	100	96	92	92	90	86	86	76	76
25	76	76	86	B	B	B	90	90	G	G	84	134	84	82	82	G	B	B	82	82	82	B	88	B
26	88	B	88	86	86	86	86	B	G	G	96	98	98	96	96	76	76	76	B	B	B	B	92	108
27	B	108	94	94	94	94	B	G	G	G	G	G	G	136	142	G	G	B	86	86	92	B	92	92
28	B	90	90	88	88	88	86	G	G	G	110	G	G	G	G	G	G	102	102	94	94	B	94	94
29	94	B	B	B	B	B	B	G	G	G	110	G	G	G	G	G	G	B	B	B	B	B	B	B
30	100	100	100	100	B	92	B	G	G	142	150	100	100	100	128	110	110	96	96	96	96	92	92	92
31	92	B	92	94	94	B	B	G	G	100	100	100	G	100	100	100	88	86	86	86	86	B	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	17	15	18	18	15	15	11	9	11	14	24	21	16	18	20	17	18	21	19	26	24	15	21	16
MED	88	88	89	88	88	88	88	90	124	109	110	100	101	98	97	94	92	88	88	88	88	88	90	92
U Q	94	98	94	94	94	90	94	105	136	124	125	103	123	102	106	100	110	92	92	92	93	92	93	95
L Q	87	86	86	88	88	86	86	88	98	96	102	96	97	90	92	86	86	84	86	86	86	86	86	90

JAN. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2022 TYPES OF Es 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	F	F	F	F								L		H		L	L		L	F	F	F	F	F	F	
	1	1	1	1								1		1		3	3		3	1	2	2	2	3	3	
2	F	F	F	F	F											L			L	F	F		F			
	2	2	2	1	3	1										1			2	2	2		2			
3										H			L		L	L	L	L	L	L	F	F	F	F	F	
	3									1			1		2	2	2	4	3	2	2	1	2	2	5	
4	F	F	F	F	F			L				C	L	L	L	L	L	L	L	F	F	F				
	4	4	2	4	2			1				1	3	2	2	2	3	3	2	2	1	4	4			
5	F							L	L	L	L	L	L	L	L	L	L	L	L		F	F	F	F	F	
	5							5	3	3	2	3	3	3	3	2	3	3	3	1		3	6	4	3	
6	F	F			F	F	F	F	F	L	L	C	L	L				L			F	F	F	F	F	
	6	3	2		2	2	1	5	2	2	2	2	1	1				1			1	1	3	3	3	
7	F		F	F	F	F	C	L	L	C	H	C		L				L	F	F	F	F	F	F	F	
	7	2		3	2	2	1	2	2	2	2	1			2				1	1	1	3	1	2	2	
8	F	F	F	F	F	F	L			L								L	L	F	F		F	F	F	
	8	2	3	3	1	1	2	3		2								2	1	1	1		1	1	2	
9	F	F								C		C									F	F				
	9	4	2							2		1									3	2				
10			F	F	F			C								H	H	L				F		F	F	
	10		1	1	1			2								1	1	2				2			1	
11			F	F							C	L		L	L			L	L	F	F	F	F	F	F	
	11		1	1							2	2		2	2			2	2	2	2	3	2	1	2	
12			F					H	H	C	L	L	L	L	C			L		F	F	F	F	F	F	
	12		1					2	2	1	3	3	2	1	2	2		1		1	1	2	4	2	2	
13	F	F	F	F	F	F				C	L	L	L	L	L	L	L	L	L	F	F	F	F	F	F	
	13	2	2	2	1	2				1	2	3	1	2	3	3	3	3	3	2	1	2	1	1		
14			F	F		F	L	L		L	L	L	L			L	C	L	F	F	F	F	F	F	F	
	14		3	3		2	3	2		1	1	2				1	1	1	1	1	2	2	1	1		
15	F	F					H			C	L	L	L	L	L	L					F	F	F	F	F	
	15	1	1				2			1	2	2	2	2	3	3					1	5	2	4	1	
16	F	F	F	F	F	F	L		C									L	F	F	F	F				
	16	1	2	2	2	3	3	3	2									1	1	1	1	1	1			
17				F	F	F			C	H		C						C			F	F				
	17			2	1	2			1	2		1						1			1	1				
18							L	L	C	L	L	L	L					H								
	18						2	1	1	2	1	2						1								
19		F	F	F	F					C	L	L	L	L	L	L	L	L	L		F	F		F	F	
	19	1	2	2	1					2	2	2	2	2	2	2	2	2	2		1	3	3		1	
20											L	L	L	L	L	L	L	L	L	F	F	F	F	F	F	
	20										1	1	1	1	1	1	1	1	1	3	3	3	1	2	1	
21	F	F				F				L	C	L	L	L	L	L	L	L		F	F					
	21	1	2			1				1	2	1	1	1	1	1	1	1		1	3	3				
22									H	H	C	C	C	C	C	L	L	L	L			F	F	F	F	
	22								1	1	1	1	1	1	1	2	2	2	3			1	1	2	1	
23					F				C	H	H	H	H		L	L	L	L	F	F	F	F	F	F	F	
	23				1				2	1	1	1	1		1	1	1	2	2	1	1	2	1	2	2	
24				F	F	F	L		L	H	C	H	C	C	C	L	L	L	L	F	F	F	F	F	F	
	24			1	2	2	3		2	2	2	1	1	1	1	1	1	1	1	1	1	2	4	3	3	
25	F	F	F				L	L				L	H	L	L	F				F	F	F	F	F	F	
	25	2	1	1			1	2				3	1	2	2	2				1	2	2	2	3	2	
26	F		F	F	F	F	L				L	L	L	L	L	L	L	L						F	F	
	26	3		1	2	1	1				1	1	1	1	1	2	3	2	2						1	1
27		F	F	F	F	F								H	H					F	F	F	F	F	F	
	27		1	1	2	1								1	2					1	1	1	1	2	2	
28		F	F	F	F	F	F				C							L	L	F	F	F	F	F	F	
	28		2	2	2	1	2				1							1	1	1	1	1	1	1	1	
29	F										C			L												
	29	1									1			1												
30	F	F	F	F		F			H		H	L	L	L	L	C	C	L	L	F	F	F	F	F	F	
	30	1	1	1	1	1			1		1	2	2	2	2	1	1	3	3	1	2	2	3	2	2	
31	F		F	F	F					L	L	L		L	L	L	L	L	L	F	F	F	F	F	F	
	31	1		1	1	1				1	1	1		1	1	2	3	3	4	2	1	1	1	1	1	
		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																									

JAN. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 f_{XI} (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	X 38	X 38	X 36	X 39	X 38	X 26													X 49	X 33	X 37	X 37	X 32	X 33
2	X 36	X 38	X 41	X 34	X 36	X 30													X 55	X 48	X 49	X 40	X 37	X 33
3	X 35	X 36	X 37	X 38	X 44	X 32													X 55	X 41	X 35	X 31	X 35	X 36
4	X 34	X 34	X 35	X 36	X 34	X 34		X 38											X 52	X 38	X 40	X 37	X 33	X 33
5	X 34	X 34	X 36	X 36	X 34	X 32													X 48	X 38	A	X 33	X 34	X 36
6	X 32	A	X 35	X 36	X 35	X 33													X 48	A	X 44	X 38	X 32	X 34
7	X 34	X 32	A	X 42	X 34	X 28		X 39											X 42	X 38	X 38	X 32	X 30	X 30
8	X 33	X 34	X 32	X 36	X 38	X 34													X 48	X 50	X 44	X 30	X 28	X 30
9	X 32	X 32	X 33	X 34	X 34	X 30													X 56	X 42	X 41	X 35	X 32	X 34
10	X 38	X 39	X 40	X 32	X 30	X 29													X 45	X 38	X 43	X 38	X 37	X 41
11	X 37	X 37	X 36	X 38	X 38	X 34													X 49	X 42	X 44	X 44	X 37	X 33
12	X 33	A	A	A	X 36	X 28														X 40	X 38	X 37	X 32	X 34
13	X 36	X 38	X 37	X 37	X 38	X 35													X 50	X 50	X 39	X 33	X 29	X 31
14	X 34	X 36	X 38	X 37	X 39	X 35		X 40											X 60	X 41	X 45	X 50	X 35	X 35
15	X 35	X 34	X 36	X 37	X 41	X 36													X 48	X 63	X 100	X 110	X 117	X 71
16	X 70	X 59	X 62	X 50	X 37	X 29													X 104	X 88	X 68	X 61	X 52	X 50
17	X 48	X 54	X 34	X 36	X 48	X 29													X 49	X 46	X 41	X 34	X 34	X 32
18	X 36	X 36	X 34	X 35	X 43	X 28	X 28												X 82	X 44	X 51	X 43	X 31	X 34
19	X 34	X 36	X 34	X 38	X 34	X 32		X 46											X 73	X 53	X 55	X 54	X 44	X 44
20	X 43	X 39	X 39	X 43	X 42	X 42													X 108	X 66	X 50	X 50	X 41	X 32
21	X 34	X 36	X 36	X 36	X 41	X 41		X 38											X 66	X 43	X 49	X 35	X 31	X 31
22	X 32	X 34	X 35	X 37	X 42	X 41													X 76	X 50	X 49	X 50	X 37	X 39
23	X 39	X 39	X 40	X 43	X 45	X 34													X 92	X 68	X 56	X 45	X 38	X 36
24	X 39	X 41	X 41	X 37	X 40	X 35		X 40				C	C	C	C	C	C		X 59	X 48	X 43	X 38	X 36	X 33
25	X 36	X 38	X 38	X 38	X 38	X 38	X 40			C	C	C	C	C	C	C	C		X 88	X 62	X 58	X 59	X 46	X 38
26	X 37	X 37	X 35	X 36	X 38	X 38		X 43		C	C	C	C	C	C	C	C		X 89	X 56	X 56	X 56	X 40	X 35
27	X 37	X 37	X 37	X 37	X 37	X 37				C	C	C	C	C	C	C			X 75	X 51	X 50	X 53	X 32	X 34
28	X 34	X 36	X 36	X 36	X 36	X 36													X 67	X 49	X 48	X 52	X 48	X 39
29	X 38	X 39	X 39	X 39	X 45	X 34													X 66	X 42	X 46	X 47	X 40	X 36
30	X 37	X 38	X 40	X 40	X 42	X 39													X 66	X 51	X 48	X 42	X 38	X 39
31	X 38	X 40	X 41	X 42	X 40	X 37	X 32	X 42											X 74	X 53	X 48	X 39	X 38	X 38
	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	30	31	31	3	8											30	30	30	31	31	31
MED	X	X	X	X	X	X	X	X											X	X	X	X	X	X
U Q	38	39	40	39	42	37	40	42											75	53	50	50	40	38
L Q	X	X	X	X	X	X	X	X											X	X	X	X	X	X
	34	35	35	36	36	30	28	38											49	41	41	35	32	33

JAN. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 foF2 (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	32	32	30	33	32	20	20	28	57	69	70	80	85	77	68	56	57	65	43	27	31	31	26	27	
2	30	32	35	28	30	24	25	32	59	60	61	83	80	73	66	61	59	58	49	42	43	34	31	27	
3	29	30	31	32	38	26	23	32	54	65	75	67	70	77	68	65	61	54	49	35	29	25	29	30	
4	28	28	29	30	28	28	21	32	57	60	71	74	88	77	70	66	62	62	46	32	34	31	27	27	
5	28	28	30	30	28	26	26	33	50	56	56	71	70	70	66	60	57	51	42	32	A	27	28	30	
6	26	A	29	30	29	27	22	30	58	56	A	62	59	69	77	74	53	46	42	A	38	32	26	28	
7	28	27	A	36	28	22	20	33	50	52	60	64	69	69	68	57	64	52	36	32	32	26	24	24	
8	27	28	26	30	32	28	22	30	60	60	54	59	68	73	A	56	53	52	42	44	38	24	22	24	
9	26	26	27	28	28	24	24	32	52	75	66	66	78	81	67	64	74	60	50	35	35	29	26	28	
10	32	33	34	26	24	23	21	30	56	57	68	68	84	77	72	57	64	68	39	32	37	32	31	F	
11	31	31	30	32	32	28	28	33	55	66	65	86	79	102	89	68	61	52	43	36	38	38	31	27	
12	27	A	A	A	30	22	20	28	62	68	67	70	81	72	74	70	56	56	38	34	32	31	26	28	
13	30	32	31	31	32	29	26	36	53	55	60	72	84	74	72	60	67	60	44	44	33	27	23	25	
14	28	30	32	31	33	29	27	34	60	61	57	68	69	81	66	67	61	56	54	35	39	44	29	29	
15	29	29	30	31	35	30	32	36	63	70	85	89	75	70	87	94	96	70	42	57	94	F	F	F	
16	F	F	F	F	31	23	19	27	59	95	100	130	126	118	107	119	122	114	98	R	62	55	46	44	
17	42	48	28	30	42	23	28	34	92	84	74	80	92	70	70	65	62	56	43	40	35	28	28	26	
18	30	30	28	29	37	22	22	33	61	62	70	90	83	88	67	66	71	77	76	38	45	37	25	28	
19	28	30	28	32	28	26	28	40	60	67	70	81	85	83	72	78	86	60	67	47	49	48	38	38	
20	37	33	33	37	36	36	36	47	60	67	66	79	95	78	80	83	94	93	102	60	44	44	35	26	
21	28	30	30	30	35	35	21	32	61	60	66	64	76	84	72	69	69	71	60	37	43	29	25	25	
22	26	28	29	31	36	35	28	37	69	60	62	85	90	83	87	93	68	67	70	44	43	44	31	33	
23	33	33	34	37	39	28	31	38	66	68	68	82	81	90	90	82	82	96	86	62	50	39	32	30	
24	33	35	35	31	34	29	26	34	61	77	73	C	C	C	C	C	C	59	53	42	37	32	30	27	
25	32	32	32	32	32	32	34	43	64	C	C	C	C	C	C	C	C	C	82	56	52	55	40	32	
26	31	31	29	30	32	32	31	37	55	C	C	C	C	C	C	C	C	C	83	50	50	50	34	29	
27	31	31	31	31	31	31	28	35	59	65	C	C	C	C	C	C	C	C	74	68	45	44	47	26	28
28	28	30	30	30	30	30	29	35	78	70	68	70	76	83	92	78	64	71	61	43	42	46	42	33	
29	32	33	33	33	39	28	27	39	66	60	76	91	96	84	79	84	79	91	60	36	40	41	34	30	
30	31	32	34	34	36	33	31	37	76	73	82	82	83	91	76	80	72	74	60	45	42	36	32	33	
31	32	34	35	37	34	31	26	36	69	73	85	102	107	95	102	96	80	80	68	47	42	33	32	32	
	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	28	28	29	31	31	31	31	31	29	27	27	27	27	26	27	27	29	31	29	30	30	30	29	
MED	30	31	30	31	32	28	26	34	60	65	68	79	81	78	72	68	64	62	53	42	41	34	30	28	
U Q	32	32	33	32	36	31	28	37	64	70	74	85	88	84	87	82	79	74	68	46	44	44	32	31	
L Q	28	30	29	30	30	24	22	32	56	60	62	68	75	73	68	61	61	56	43	35	35	29	26	27	

JAN. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 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	412	420	L	L	A	A								
2											L	L	L	L	L	A	A								
3												L	L		L	L									
4											L	A	L	L	L	L									
5										A		L	U L	U L	L	L	A								
6											A	A	A	L	L		L								
7											L	A	L		L	L									
8												L	444	A	A	L									
9											L	L	L		L	L	L								
10											L	L	444		L	L	L								
11											L	436	448	A	L										
12										L	L	L	452	L	L	L									
13											L	456		A	L		L								
14											U L	U L	476		L	L	L								
15												L		A	U L	L	A								
16									L	L	L	540	472	L	L	L	L								
17										L	L	L	484	A	U L	L	L								
18									L	L	L	476	L	L	A	L	L								
19										L	L	456	A	U L	A	L									
20											L	L	L	L	L	L	L								
21											L	E A	452	452	L	L	L								
22										L	L	L	A	A	L	L	L								
23									L	L	A	L	L	468	L	L	L								
24											L	C	C	C	C	C	C								
25										C	C	C	C	C	C	C	C	C							
26										C	C	C	C	C	C	C	C	C							
27											C	C	C	C	C	C	C								
28										L	L	L	L	L	L	L									
29											L	L	L	L	L	L	L								
30											L	L		A	A	L	L								
31											L	U L	A	A	L	L									
											488														
	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												8	9	8	2										
MED												456	452	450	490										
U Q												482	466	470											
L Q												446	444	430											

JAN. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN.2022 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							B	B	U R	U R	A	A	A	A	A	A	A	A							
2							B	B	U R U R	U R	A	A	A	A	A	A	A	U R							
3							B	B	U A U R U A	U A	A	A	A	U R U R U R	U R U R	U R U R	U R U R	U R							
4							B	U R	U R	A	A	A	A	A	A	A	U A	A							
5							B	B	U R	U A	A	A	U R	A	U R	A	A	B							
6							B	B	A	A	A	A	A	A	A	A	A	B							
7							B	U R U R	A	A	A	A	A	A	U R	A	B								
8							B	B	U R	A	A		A	A	A	U R U R	U R								
9							B	B	U R U R	A	A	U R U R U R	A	U R	U R	U R	U R	B							
10							B	B	U R U R	A	A	U R U R U R	A	U R	U R	U R	U R	B							
11							B	B	U R U R U R	U R	U R	A	U R	U R	U R	U R	U R								
12							B	B	U R U A	A	A	A	U R	A	A	U R	B	B							
13							B	B	U R U R U R	A	A	A	A	A	A	U R	B								
14							B	U R	R	A	A	A	A	A	U R U R U R	U R									
15							B	B	U R U A	A	A	A	A	A	A	A	B								
16							B	B	U R	A	A	U R	A	A	U R U R U R U R	U R U R	U R U R								
17							B	B	U A U R U R U R	U R U R U R	U R U R U R	U R U R U R	U R U R U R	U R U R U R	U R U R U R	U R U R	U R U R								
18							B	U R	A	U R U R	A	A	A	A	A	U R U R U R	U R U R								
19							B	U R U R U R	U R	A	A	A	A	A	A	A	U R								
20							B	B	U R U A U R	A	A	A	A	A	B	U R	B								
21							B	U R U A U A	A	A	A	A	A	A	U R U R	U R	B								
22							B	B	U A U R U R U R	U A	A	A	A	A	A	U R U R	U R								
23							B	B	U A U R U A	A	U R U R	U R	U R	A	U R U A	A									
24							B	U R U A U A	A	C	C	C	C	C	C	C	R								
25							B	U R	C	C	C	C	C	C	C	C	C								
26							B	U R	C	C	C	C	C	C	C	C	C								
27							B	B	U A U A	C	C	C	C	C	C	C	B								
28							B	B	U R U A	A	U R	U R U R U R U R	U R U R U R	U R U R U R	U R U R U R	U R U R	U R								
29							B	B	U A	U R	A	A	A	A	A	U R U A	U R								
30							B	B	U A U R U A	A	A	A	A	A	A	U R U R	U R								
31								U A U A U R	A	A	A	A	A	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									30	25	16	7	6	8	7	14	18	13							
MED									U R U R U R U R	U R U R U R U R	U R U R U R U R	U R U R U R U R	U R U R U R U R	U R U R U R U R	U R U R U R U R	U R U R U R U R	U R U R U R U R								
U Q									228	284	318	344	352	334	324	300	276	212							
L Q									U A U A	U A	U R U R	U R U R	U R U R	U R U R	U R U R	U R U R	U R U R	U R U R							

JAN.2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 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	24	J A	J A	J A	22	J A	21	E B	G	30	G	35	J A	J A	J A	J A	J A	J A	J A	24	J A	22	22	19
2	E B	E B	24	J A	25	23	J A	J A	J A	G	34	J A	J A	J A	J A	J A	J A	J A	J A	25	E B	E B	E B	E B
3	J A	E B	E B	E B	E B	E B	E B	E B	E B	G	34	37	58	41	G	G	J A	E B	E B	E B	E B	J A	23	21
4	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	32	34	72	68	60	44	31	27	J A	J A	25	25	21	E B
5	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	30	33	38	63	34	G	J A	J A	J A	24	J A	J A	J A	J A
6	J A	J A	J A	22	22	E B	E B	E B	J A	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	20	23
7	24	E B	J A	22	J A	J A	J A	J A	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	E B	E B	E B	
8	E B	J A	J A	J A	J A	J A	J A	J A	G	J A	J A	J A	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	24	22	22	J A	J A	G	G	36	41	G	G	36	G	G	E B	J A	J A	J A	J A	E B	
10	E B	E B	E B	E B	E B	E B	E B	E B	G	G	34	41	G	G	J A	G	31	25	23	23	23	23	20	E B
11	22	E B	22	E B	E B	E B	E B	E B	G	G	G	J A	59	40	G	33	28	E B	J A	J A	J A	J A	E B	
12	J A	J A	J A	J A	J A	E B	E B	E B	G	G	31	34	J A	J A	G	J A	J A	G	E B	E B	22	22	J A	
13	21	E B	21	J A	28	22	20	E B	G	G	G	J A	48	47	50	38	47	24	J A	23	23	22	E B	
14	E B	E B	J A	E B	E B	E B	E B	E B	G	G	J A	J A	J A	J A	J A	J A	J A	G	G	24	24	24	21	E B
15	E B	E B	E B	22	22	J A	23	20	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	45	33	J A	J A	
16	J A	J A	J A	J A	J A	J A	J A	E B	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	E B	E B	E B	E B	
17	E B	E B	E B	E B	E B	15	22	E B	G	G	36	G	G	G	G	G	G	E B	E B	15	15	21	E B	
18	E B	E B	E B	E B	E B	E B	21	21	G	J A	38	G	G	J A	36	52	G	G	E B	E B	E B	E B	E B	
19	E B	E B	E B	E B	E B	15	23	15	G	G	G	J A	41	54	65	62	43	39	J A	33	24	E B	E B	
20	E B	E B	E B	E B	E B	E B	E B	E B	G	30	G	J A	J A	J A	J A	E B	J A	J A	J A	E B	J A	27	24	22
21	J A	J A	J A	J A	E B	E B	E B	E B	G	32	32	J A	J A	J A	J A	J A	G	G	E B	E B	E B	E B	E B	
22	E B	J A	J A	E B	E B	E B	E B	E B	24	32	G	J A	J A	J A	J A	J A	G	G	J A	E B	E B	E B	E B	
23	E B	22	E B	22	23	21	E B	E B	G	G	36	38	G	G	J A	G	29	J A	J A	E B	E B	E B	E B	
24	E B	E B	E B	E B	E B	E B	18	24	G	31	33	C	C	C	C	C	C	C	J A	J A	J A	J A	E B	
25	E B	E B	E B	E B	E B	E B	E B	E B	G	C	C	C	C	C	C	C	C	C	J A	J A	22	22	E B	
26	E B	E B	J A	J A	24	21	E B	E B	G	C	C	C	C	C	C	C	C	C	E B	J A	E B	21	21	J A
27	E B	25	22	22	22	E B	J A	34	26	30	C	C	C	C	C	C	C	J A	J A	E B	E B	E B	J A	
28	21	E B	E B	22	19	E B	E B	19	22	G	37	37	G	G	G	G	G	G	20	20	20	24	23	24
29	20	E B	J A	E B	E B	E B	E B	E B	26	31	G	J A	J A	J A	J A	J A	G	24	23	20	18	J A	E B	19
30	19	19	19	19	21	E B	E B	E B	G	35	44	J A	J A	J A	J A	J A	G	E B	E B	E B	J A	J A	27	23
31	J A	J A	J A	J A	E B	E B	E B	E B	G	33	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E 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	31	31	31	31	31	31	31	31	31	29	28	27	27	27	27	27	27	29	31	31	31	31	31	31
MED	E B	E B	22	22	19	E B	E B	E B	G	30	34	J A	J A	J A	J A	40	32	27	23	24	23	23	22	E B
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	E B	E B	E B	E B	E B	E B	E B	E B	G	G	G	G	G	G	G	G	G	G	E B	E B	E B	E B	E B	E B

JAN. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN.2022 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	E	B	E	B	E	B	E	B	E	B	G													
2	E	B	E	B	E	B	E	B	E	B	G													
3	E	B	E	B	E	B	E	B	E	B	G													
4	E	B	E	B	E	B	E	B	E	B	G													
5	E	B	E	B	E	B	E	B	E	B	G													
6	E	B	E	B	E	B	E	B	E	B	G													
7	E	B	E	B	E	B	E	B	E	B	G													
8	E	B	E	B	E	B	E	B	E	B	G													
9	E	B	E	B	E	B	E	B	E	B	G													
10	E	B	E	B	E	B	E	B	E	B	G													
11	E	B	E	B	E	B	E	B	E	B	G													
12	E	B	E	B	E	B	E	B	E	B	G													
13	E	B	E	B	E	B	E	B	E	B	G													
14	E	B	E	B	E	B	E	B	E	B	G													
15	E	B	E	B	E	B	E	B	E	B	G													
16	E	B	E	B	E	B	E	B	E	B	G													
17	E	B	E	B	E	B	E	B	E	B	G													
18	E	B	E	B	E	B	E	B	E	B	G													
19	E	B	E	B	E	B	E	B	E	B	G													
20	E	B	E	B	E	B	E	B	E	B	G													
21	E	B	E	B	E	B	E	B	E	B	G													
22	E	B	E	B	E	B	E	B	E	B	G													
23	E	B	E	B	E	B	E	B	E	B	G													
24	E	B	E	B	E	B	E	B	E	B	G													
25	E	B	E	B	E	B	E	B	E	B	G													
26	E	B	E	B	E	B	E	B	E	B	G													
27	E	B	E	B	E	B	E	B	E	B	G													
28	E	B	E	B	E	B	E	B	E	B	G													
29	E	B	E	B	E	B	E	B	E	B	G													
30	E	B	E	B	E	B	E	B	E	B	G													
31	E	B	E	B	E	B	E	B	E	B	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	31	31	31	31	31	31	31	31	31	29	28	27	27	27	27	27	27	29	31	31	31	31	31	31
MED	E	B	E	B	E	B	E	B	E	B	G													
UQ	16	16	16	16	16	16	16	16	16	23	30	33	37	38	38	36	32	28	23	17	16	18	16	16
LQ	E	B	E	B	E	B	E	B	E	B	G													
	15	16	15	15	15	15	15	15	15															

JAN.2022 fbEs (0.1MHz)

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JAN.2022 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

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	16	16	16	16	16	16	16	16	14	14	14	14	15	15	16	16	14	15	15	15	15	15	15	15
2	16	16	15	15	15	15	16	16	16	16	16	16	16	16	18	17	15	12	12	16	16	16	16	16
3	16	16	16	16	16	16	16	15	14	14	16	18	18	18	18	18	17	13	15	14	14	15	15	15
4	16	16	16	16	16	16	16	16	15	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15
5	16	16	15	15	15	15	16	16	16	15	16	16	16	16	19	15	15	15	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	15	15	15	16	18	17	17	14	14	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	15	16	16	16	16	16	19	18	15	15	15	15	15	15	16	16
8	15	16	16	15	16	16	16	16	16	15	14	14	17	17	17	13	15	15	15	15	15	15	16	16
9	16	16	16	15	15	15	15	15	16	15	16	16	16	16	16	16	15	14	15	15	15	15	14	14
10	16	16	15	15	15	14	16	16	16	13	16	15	14	17	14	16	16	16	16	15	15	16	16	15
11	15	15	15	16	16	16	16	16	15	15	15	15	15	15	20	18	15	15	16	17	17	16	16	16
12	17	15	16	16	16	16	15	16	14	14	15	14	15	15	19	19	18	16	16	16	16	16	16	16
13	15	16	16	16	16	16	15	15	15	16	16	18	16	16	14	14	16	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	15	15	15	15	20	16	16	17	17	16	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	15	16	16	16	16	16	17	17	16	16	14	16	16	16	16
16	16	16	16	15	16	16	16	16	15	17	17	17	16	19	21	20	18	13	15	16	16	15	16	16
17	16	16	16	16	15	15	15	16	15	16	18	18	18	18	18	18	18	15	15	15	15	16	16	16
18	16	16	16	16	16	16	16	16	15	16	18	17	19	20	16	16	16	15	16	16	16	15	15	15
19	15	15	15	15	15	16	15	15	15	15	15	17	17	19	16	13	14	15	16	16	15	15	15	15
20	15	16	16	16	16	16	16	16	14	14	16	17	21	21	19	34	19	17	16	15	16	16	16	15
21	16	16	16	16	16	16	15	16	15	16	17	19	21	21	21	21	19	17	15	14	16	16	16	16
22	15	16	16	16	16	16	16	16	14	17	20	20	21	20	20	19	18	15	16	16	15	15	15	15
23	15	15	15	15	15	15	15	15	13	15	16	16	20	19	18	17	16	16	15	15	15	15	15	15
24	15	15	15	15	15	15	15	15	15	14		C	C	C	C	C	C		22	16	16	15	16	16
25	15	15	15	15	15	16	16	16	15		C	C	C	C	C	C	C	C		16	16	16	16	16
26	16	15	16	15	16	16	16	16	15		C	C	C	C	C	C	C	C		15	16	16	16	16
27	16	16	16	16	15	15	15	15	14	14		C	C	C	C	C	C	C		17	16	15	15	15
28	16	16	16	16	16	16	16	15	15	15	15	16	16	17	16	16	16	16	15	15	15	15	15	15
29	16	16	16	16	16	16	16	16	14	15	16	18	18	16	18	18	18	14	16	16	16	16	15	15
30	16	16	16	16	16	16	16	16	16	16	16	16	18	17	17	17	16	16	16	16	16	16	16	16
31	16	16	16	16	17	17	16	16	16	16	16	16	16	17	17	17	16	14	14	17	17	17	17	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	29	28	27	27	27	27	27	27	29	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	15	15	16	16	16	17	17	17	16	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	18	18	19	19	18	18	16	16	16	16	16	16	16
L Q	15	16	15	15	15	15	15	15	14	15	15	16	16	16	16	16	15	14	15	15	15	15	15	15

JAN.2022 fmin (0.1MHz)

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JAN. 2022 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

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	302	327	296	320	365	360	295	288	367	349	355	366	357	373	356	368	361	358	358	339	303	346	294	300		
2	287	330	369	326	339	293	327	324	374	382	341	355	346	365	380	372	348	367	360	322	337	331	314	282		
3	313	301	298	300	386	375	296	340	357	349	380	379	311	349	345	335	352	347	348	370	340	307	315	312		
4	309	311	315	304	318	358	338	315	385	353	365	360	362	358	355	355	360	361	378	320	325	340	317	306		
5	303	320	339	381	333	301	329	357	370	378	371	375	344	364	387	368	372	359	363	360	A	356	348	311		
6	333	A	314	332	346	301	320	352	366	377	A	380	334	359	351	383	394	357	365	A	331	338	315	330		
7	330	295	A	371	383	293	304	369	394	381	360	355	377	347	363	354	368	389	369	341	338	338	325	326		
8	301	311	292	345	353	326	305	336	370	390	387	364	351	370	A	380	345	362	362	362	368	316	332	311		
9	347	317	284	352	320	329	342	328	357	354	399	348	355	350	368	335	362	348	356	333	346	326	331	287		
10	310	324	384	337	351	312	316	338	361	376	368	342	352	347	372	363	339	376	370	368	340	346	307	F		
11	307	307	313	322	347	356	309	345	351	369	346	369	332	349	354	366	367	359	366	311	352	366	374	305		
12	262	A	A	A	349	329	343	320	369	359	338	343	366	327	364	379	377	376	342	378	333	338	311	314		
13	289	314	299	301	350	363	311	333	385	386	363	340	354	344	358	332	356	384	344	353	359	346	322	299		
14	296	305	300	297	332	378	311	329	389	381	354	353	337	362	353	341	356	347	378	350	304	343	333	285		
15	298	312	287	306	349	308	335	355	357	339	346	351	343	315	309	331	362	390	319	275	394	F	F	F		
16	F	F	F	F	261	306	278	278	327	300	287	326	332	338	306	298	328	313	329	R	298	320	323	298		
17	314	373	290	318	373	268	289	318	388	378	364	319	367	359	358	327	363	354	331	389	337	349	319	312		
18	322	340	317	301	377	326	296	339	369	376	339	357	330	375	364	333	347	339	369	327	324	356	316	317		
19	303	332	289	323	340	368	375	347	380	363	330	350	353	335	332	323	367	343	363	302	326	332	316	313		
20	323	284	309	329	316	304	329	354	382	382	360	351	367	344	358	345	340	319	329	323	300	347	328	297		
21	307	331	294	297	343	348	425	329	387	362	375	312	360	362	332	371	340	365	352	323	358	325	339	303		
22	306	308	300	302	340	368	325	331	386	389	366	346	334	337	333	353	357	348	349	309	324	338	321	311		
23	291	308	311	306	348	339	343	356	371	368	354	361	353	342	342	352	329	349	360	339	332	323	336	299		
24	317	329	347	318	360	304	303	344	355	372	384	C	C	C	C	C	C	358	347	338	339	363	320	296		
25	314	314	308	312	304	305	327	345	397	C	C	C	C	C	C	C	C	C	C	355	333	310	335	346	308	
26	317	354	295	284	311	302	311	350	368	C	C	C	C	C	C	C	C	C	C	312	358	275	336	335	326	
27	318	318	322	295	335	336	308	333	366	369	C	C	C	C	C	C	C	C	C	364	375	364	300	368	396	294
28	301	318	310	306	306	316	311	341	372	387	367	360	354	333	365	359	351	354	370	328	303	350	337	335		
29	298	291	278	298	346	343	315	327	395	369	341	347	364	346	342	337	324	359	360	327	321	331	342	300		
30	300	326	312	305	335	325	306	318	366	349	366	362	359	362	349	363	345	362	348	334	346	319	315	304		
31	313	306	326	317	341	329	315	329	351	354	352	342	361	325	353	341	337	351	351	327	324	329	322	277		
	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	28	28	29	31	31	31	31	31	29	27	27	27	27	26	27	27	29	31	29	30	30	30	29		
MED	307	316	308	312	343	326	315	336	370	369	360	353	353	349	354	353	356	358	358	334	332	338	322	305		
U Q	317	328	316	328	351	356	329	347	385	381	368	362	361	362	364	368	363	364	366	359	340	347	336	312		
L Q	300	308	294	301	332	304	305	327	361	354	346	343	337	338	342	335	340	348	347	323	310	329	316	298		

JAN. 2022 M(3000)F2 (0.01)

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JAN. 2022 M(3000)F1 (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

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	427	428	L	L	A	A							
2											L	L	L	L	L	A	A							
3												L	L		L	L								
4											L	A	L	L	L	L								
5										A		L	400	391	U	L	L	L	A					
6											A	A	A	L	L		L							
7											L	A	L		L	L								
8												L	398	A	A	L								
9											L	L	L		L	L	L							
10											L	L	L	455	L	L	L							
11											L	390	393	A	L									
12										L	L	L	390	L	L	L								
13											L	394		A	L		L							
14											U	L	U	L		L	L	L						
15												409	393	L	A	U	L	L	A					
16									L	L	L		L		346	L	L	L						
17										L	L	L	380	A	U	L	L	L						
18									L	L	L	387	L	L	388	A	L	L						
19										L	L	366	A	U	L	A	L							
20										L	L	L	404	L	369	L	L	L						
21											L	E	A		L	L	L							
22										L	L	L	405	A	A	L	L	L						
23								L	L	A	L	L	L		L	L	L							
24										L	C	C	C	C	C	C	C							
25										C	C	C	C	C	C	C	C	C	C					
26										C	C	C	C	C	C	C	C	C	C					
27											C	C	C	C	C	C	C							
28										L	L	L	L	L	L	L								
29											L	L	L	L	L	L	L							
30											L	L		A	A	L	L							
31											L	U	L	A	A	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												8	9	8	2									
MED												392	393	392	U	L								
U Q												406	402	400										
L Q												374	388	382										

JAN. 2022 M(3000)F1 (0.01)

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JAN. 2022 h'F2 (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										254	240	232	252	240	244	218	218							
2											274	248	248	248	222	222	222							
3												222	258	250	248	268								
4											234	228	228	232	240	240								
5										214		240	268	230	230	230	218							
6											A	218	242	246	230		218							
7											244	244	242	264	230	250								
8											240	258	240		A	230								
9											224	270	244	236	236	268	240							
10											248	248	248	234	232	232								
11											258	236	268	242	228									
12										242	256	256	230	246	240	230								
13											246	262		236	236		240							
14											254	254			254	246	234							
15											234		E A	306	290	260	222							
16									298	276	262	258	256	234	256	280	236							
17										222	250	272	220	220	254	304	230							
18										238	268	246	250	228	220	274	252							
19											262	262	250	250	258	262								
20											234	242	236	250	236	242	242							
21											224		250	234	270	226	246							
22										208	238	254	244	244	244	232	218							
23									224	224	220	230	230	236	224	224	264							
24										224	C	C	C	C	C	C	C							
25										C	C	C	C	C	C	C	C	C						
26										C	C	C	C	C	C	C	C	C						
27										C	C	C	C	C	C	C	C							
28										204	218	226	246	262	232	230								
29											258	238	226	238	246	246	254							
30											234	234		234	234	234	236							
31											256	256	222	254	232	232								
	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	9	22	26	24	26	26	24	17							
MED									261	224	245	243	247	240	236	237	236							
U Q										248	258	256	253	250	248	261	244							
L Q										211	234	234	233	234	230	230	220							

JAN. 2022 h'F2 (KM)

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JAN. 2022 h'F (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	E 266	B 248	B 276	A 238	E 206	B 202	E 312	B 242								A	A			E 214	B 214	E 214	B 278	E 234	B 258	B 292
2	E 292	B 236	B 206	B 238	E 218	B 296	E 272	B 230								A	A			E 198	B 198	E 198	B 198	E 198	B 216	B 286
3	E 268	B 256	B 256	B 240	E 198	B 198	E 278	B 224												E 202	B 202	E 202	B 188	E 196	B 254	B 236
4	E 280	A 288	A 276	E 262	B 244	E 206	B 256	B 240												E 204	B 204	E 186	B 204	E 212	B 218	B 230
5	E 254	B 254	B 234	B 206	E 212	B 278	B 230	B 198									A			E 206	B 188	E 206		E 226	B 246	B 246
6	E 258		A 258	B 220	B 238	E 256	B 272	B 206												E 202	B 186		A	E 228	B 202	B 238
7	E 238	B 284		A 208	E 208	B 294	B 318	B 204												E 204	B 204	E 186	B 204	E 232	B 220	B 234
8	E 264	B 264	B 290	B 226	E 218	B 230	B 270	B 212												E 194	B 184	E 198	B 198	E 198	B 250	B 216
9	E 252	B 288	B 298	B 252	E 236	B 226	B 230	B 230												E 196	B 196	E 196	B 196	E 214	B 220	B 228
10	E 270	B 232	B 188	B 216	E 216	B 244	B 294	B 216												E 220	B 202	E 192	B 202	E 228	B 202	B 244
11	E 260	B 234	B 268	B 234	E 220	B 214	B 246	B 216												E 204	B 200	E 192	B 256	E 222	B 218	B 208
12	E 336		A	A	E 222	B 246	B 274	B 238												E 190	B 184	E 202	B 194	E 192	B 210	B 276
13	E 294	B 260	B 284	B 274	E 240	B 204	B 222	B 212												E 198	B 188	E 198	B 198	E 198	B 198	B 200
14	E 280	B 274	B 272	B 250	E 242	B 202	B 248	B 234												E 202	B 202	E 182	B 186	E 186	B 230	B 204
15	E 286	B 286	B 300	B 274	E 222	B 264	B 222	B 202												E 188	B 200		A	E 192	B 208	B 280
16	E 310	B 280	B 220	B 204	E 392	B 300	B 400	B 284												E 226	B 226	E 216	B 216	E 204	B 202	B 188
17	E 248	B 204	B 274	B 260	E 204	B 320	B 270	B 250												E 194	B 194	E 194	B 194	E 194	B 178	B 220
18	E 256	B 244	B 244	B 276	E 204	B 204	B 278	B 218												E 218	B 206	E 206	B 200	E 200	B 194	B 180
19	E 290	B 236	B 288	B 266	E 226	B 226	B 200	B 226												E 198	B 198	E 198	B 198	E 198	B 198	B 198
20	E 222	B 240	B 240	B 240	E 240	B 256	B 238	B 214												E 202	B 210	E 196	B 196	E 196	B 196	B 196
21	E 296	B 262	B 266	B 284	E 220	B 200	B 188	B 226												E 188	B 182	E 188	B 182	E 188	B 188	B 196
22	E 272	B 304	B 280	B 280	E 228	B 202	B 216	B 226												E 192	B 182	E 182	B 182	E 196	B 200	B 200
23	E 268	B 268	B 270	B 266	E 218	B 204	B 220	B 210												E 194	B 190	E 176	B 176	E 176	B 190	B 210
24	E 266	B 236	B 204	B 230	E 214	B 232	B 270	B 222												E 204	B 212	E 202	B 202	E 204	B 212	B 202
25	E 262	B 246	B 246	B 246	E 268	B 262	B 226	B 208												E 190	B 190		C	E 190	B 190	B 210
26	E 232	B 216	B 276	B 348	E 282	B 262	B 262	B 214												E 212	B 212		C	E 212	B 212	B 212
27	E 266	B 266	B 266	B 286	E 248	B 228	B 256	B 220												E 204	B 216		C	E 204	B 216	B 216
28	E 286	B 274	B 266	B 254	E 270	B 272	B 272	B 234												E 206	B 182	E 182	B 182	E 182	B 190	B 190
29	E 282	B 282	B 332	B 264	E 216	B 204	B 274	B 228												E 194	B 202	E 202	B 202	E 202	B 192	B 192
30	E 282	B 252	B 252	B 252	E 236	B 226	B 260	B 242												E 212	B 210	E 200	B 188	E 214	B 214	B 188
31	E 290	B 292	B 246	B 242	E 208	B 208	B 240	B 240												E 216	B 216	E 206	B 198	E 198	B 198	B 198
	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	30	31	31	31	31	31	28	26	24	23	19	23	25	23	29	31	30	30	31	31	31		
MED	E 268	B 260	B 266	B 251	E 222	B 228	B 260	B 224												E 204	B 205	E 200	B 198	E 196	B 196	B 194
U Q	E 286	B 281	B 278	B 266	E 240	B 262	B 274	B 234												E 212	B 211	E 206	B 202	E 206	B 202	B 198
L Q	E 258	B 238	B 245	B 234	E 214	B 204	B 230	B 212												E 196	B 197	E 196	B 193	E 192	B 184	B 190

JAN. 2022 h'F (KM)

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 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							B	B	118	112	108	A	A	A	A	A	A	A						
2							B	B	118	116	114	A	A	A	A	A	A	114						
3							B	B	114	114	114	114	A	A	114	114	114	114						
4							B		114	112	112	A	A	A	A	112	112	A						
5							B	B	112	112	112	112	A	A	A	112	A	B						
6							B	B	A	A	A	A	A	A	A	A	A	B						
7							B		112	112	112	A	A	A	A		A	B						
8							B	B	112	A	A	112	A	110	A	A	110	126						
9							B	B	126	116	110	110	110	110	110	110	110	B						
10							B	B	110	110	110	A	110	110	110	110	110	B						
11							B	B	110	110	110	112	A	110	110	110	110	110						
12							B	B	110	110	110	A	A	110	A	A	110	B	B					
13							B	B	110	110	110	A	A	A	A	A	110	B						
14							B		110	110	A	A	A	A	A	112	108	108						
15							B	B	114	114	A	A	A	A	A	A	A	B						
16							B	B	114	A	A	114	A	A	110	110	110	110						
17							B	B	110	110	110	110	108	108	108	108	108	118						
18							B		118	118	118	112	112	A	A	112	110	110						
19							B		118	118	118	A	A	A	A	A	A	118						
20							B	B	118	118	116	116	A	A	A	B	116	B						
21							B		116	114	112	A	A	A	A	112	112	B						
22							B	B	114	114	114	114	A	A	A	A	114	114						
23							B	B	114	114	112	108	108	108	A	108	108	A						
24							B		108	108	108	C	C	C	C	C	C	118						
25							B		118	C	C	C	C	C	C	C	C	C						
26							B		118	C	C	C	C	C	C	C	C	C						
27							B	B	116	108	C	C	C	C	C	C	C	B						
28							B	B	108	108	108	108	112	112	112	112	112	112						
29							B	B	112	112	112	A	A	A	A	A	112	112						
30							B	B	112	112	112	112	A	A	A	A	112	112						
31									112	112	112	A	A	A	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									30	26	23	13	6	9	7	14	19	14						
MED									114	112	112	112	110	110	110	112	110	113						
U Q									118	114	114	114	112	111	112	112	112	118						
L Q									110	110	110	110	108	109	110	110	110	110						

JAN. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 h'Es (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

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		94	86	86	86	86	92	90		B	G														
2		B	B	100	90	90	82	82	92	92	G	112	102	102	102	102	102	88	86	86	86	B	B	B	B
3		118		B	B	94					G	134	124	102	102		G	G		B	B	B		94	94
4		94	90	86	86	86	86	90	90		G	156	122	94	94	94	128	134	90	90	90	90	90	112	
5		B	B	B	B	B	B	B	B		G	152	142	120	88		G		92	92	92	118	106	100	100
6		100	94	94	94	94		B	B	B		98	98	94	94	94	94	94	90	90	82	82	82	94	86
7		86		86	86	86	86	86	84		G		112	96	96	96	88		88	86	86			86	86
8		B	86	86	96	92	92	88	100		G	94	94	144	84	148	74	84		84	84	84	84	90	90
9		88	88	88	88	88	88	100	100		G	G	116	116		G	G		G	B	84	84	90	100	
10		B	B	B	B	B	B	B	B		G	G	112	96		G	G		76			140	120	88	88
11		98		B	B	B	B	B	B		G	G		G							B	B	B	B	B
12		92	92	92	84	84			90		G	144	108	100	92		96	96		96			96	94	94
13		94		B	88	88	88	88		B	G	G		96	96	88	88	88		G	122	86	86	94	96
14		B	B	90		B	B	B		90		G	G	100	94	94	94	92		G	G		92	92	84
15		B	B	B		84	88	88	88		B	G	134	102	96	90	90	90	90		B		86	92	112
16		102	102	98	98	92	84	86		B	G	102	94		94	94		G	G	G	B	B	B	B	94
17		B	B	B	B	B	158			B	G	144	144		G	G		148	148		G	G	B	B	B
18		B	B	B	B	B		154	154	154		G	112		G	G		106	90		132		84	84	
19		B	B	B	B	B	84		B	B	G	G		90	90	90	90	90		G		90	90	B	B
20		B	B	B	B	B	B	B	B		G	110		114	112	102	102		B			92	92	92	84
21		84	94	92	86		B	B	B	B		G	150	142	100	100	98	100		G	G	B	B	B	B
22		B	88	88		B	B	B	B		B	128	118		G				G	G		B	B	B	B
23		B	80		86	86	86		B	B		G	138	158	140		G		92			B	B	B	B
24		B	B	B	B	B	B		84	92		G	152	152		C	C	C	C	C	C	G	82	82	82
25		B	B	B	B	B	B		82		B	G	C	C	C	C	C	C	C	C	C	C	82	82	80
26		B		86	84	114	94		B	B		G	C	C	C	C	C	C	C	C	C	B	B	92	96
27		B	96	94	94	94		B	94	88	136	152		C	C	C	C	C	C	C	100	90		B	90
28		78		B	96	92		B	92	148		G	142	112		G	G	G	G	G	G	96	96	96	94
29		86		86		B	B	B		B		G	136	142		98	98	98	98	98		G	136	88	88
30		94	94	94	94	94		B	B	B		G	138	138	118	94	98	98	98		G	G	B	B	98
31		94	92	92	92		B		92		B		G	130	130		100	92	92	92	92	90	88	88	86
		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		15	13	19	19	16	13	14	11	12	15	20	23	21	21	23	14	14	18	22	18	21	22	20	15
MED		94	92	88	88	89	88	88	92	136	142	114	100	94	98	94	96	93	92	88	87	88	90	89	94
U Q		98	94	94	94	93	92	92	100	141	152	142	118	99	102	98	98	134	104	92	92	95	94	94	96
L Q		86	87	86	86	86	85	86	90	129	110	105	96	90	94	90	90	90	88	86	84	84	84	86	88

JAN. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2022 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	F2	F4	F4	F2	F2	F2	L1			H2		L1	L2	L3	L2	L3	L3	L2	F7	F2	F8	F2	F1	F1
2			F2	F5	F3	F3	L4	L2	L1		C3	L2	L2	L2	L2	L4	L4	L2	F1	F2				
3	F1			F1					H2		H2	C2	L2	L2			L2					F3	F1	F1
4	F4	F3	F5	F4	F2	F2	F1	F2		H2	C3	L6	L3	L3	L3	C2	H2	L5	F2	F2	F1	F1	F1	
5									H2	H2	C3	L4	L4	L3	L3		L5	L7	F1	F4	F8	F4	F6	F2
6	F3	F4	F2	F2	F1			L3	L3	L7	L4	L3	L2	L2	L2	L3	L2	L6	F1	F5	F4	F1	F1	F2
7	F1		F6	F1	F3	F2	L3	L2			C2	L3	L3	L2	L4		L1	L2	F1				F2	F1
8		F2	F2	F2	F3	F2	L2	L1		L2	L1	H2	L2	L2	L5	L2		L2	F3	F3	F1	F3	F2	F3
9	F3	F2	F2	F1	F1	F2	L2	L2			C2	C1			H1				F1	F2	F3	F1		
10											C2	L2			L3		H1	C2	F1	F2	F1	F2	F2	
11	F1		F1										L2	H1		H1	C2			F3	F6	F3	F2	
12	F2	F5	F8	F5	F2			L1		H1	C1	L3	L2		L1	L2		L1			F1	F2	F3	F1
13	F1		F1	F1	F2	F1	L1					L2	L2	L3	L4	L3		C1	F3	F1	F1	F1		
14			F2				L2				L3	L1	L2	LH21	L2				F3	F2	F3	F1	F1	
15			F2	F1	F2	F2	L2			H1	L1	L3	L3	L4	L2	L3	L4	L3	F2		F6	F3	F2	F1
16	F2	F2	F3	F1	F5	F3	L2			L3	L2		L1	L2										F1
17					F1				H2		H2			H1	H1						F1			
18						H1	H1	H2			C2			L2	L4			H2				F1	F1	
19					F2							L2	L3	L3	L2	L2	L2		F2	F2				
20										C2		C2	L2	L2	L2		L3	L4	F1		F4	F1	F2	F2
21	F2	F2	F1	F1					H1	H1	L2	L2	L2	L1	L1		L1							
22		F3	F1						C1	C1	C1	L3	L3	L3	L1	L3			F1		F1			
23		F1		F1	F3	F2			C2		H1	H1			L2		H1	L2	F1				F1	
24							L1	L2		H1	H1								F1	F3	F5	F3	F2	
25							F1												F1	F3	F3	F1		
26			F2	F4	F1	F1														F2		F1	F1	F4
27		F2	F2	F1	F2		L1	L2	H1	H1							L1	F3						F3
28	F1			F2	F1			F1	H1		H1	C2							F1	F1	F1	F2	F2	F2
29	F2		F4						H2	H2		L2	L2	L1	L2	L2		H2	F1	F1	F1	F2	F1	F1
30	F1	F2	F1	F1	F2				H2		H1	C2	L2	L2	L3	L2					F1	F2	F2	F2
31	F4	F4	F2	F1			L1		H1	C2		L1	L3	L4	L2	L2	L3	L4	F5	F5	F5	F3	F3	
	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																								

JAN. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 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

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 39	X 38	X 34	X 39	X 40	X 29	X 25													X 49	X 44	X 48	X 39	X 34	
2	X 35	X 40	X 47	X 28	X 29	X 30	X 31														X 54	X 48	X 39	X 32	X 28
3	X 33	X 38	X 38	X 40	X 42	X 27	X 25														X 57	X 46	X 36	X 38	X 38
4	X 33	X 36	X 36	X 36	X 34	X 32	X 28														X 66	X 52	X 52	X 43	X 39
5	X 33	X 34	X 36	X 36	X 31	X 29	X 26														X 49	X 48	X 44	X 47	X 38
6	X 30	X 32	X 34	X 36	X 35	X 33	X 30														X 56	X 56	X 49	X 41	X 32
7	X 38	X 34	X 36	X 36	X 39	X 26	X 26														X 53	X 56	X 55	X 38	X 31
8	X 29	X 32	X 34	X 35	X 35	X 32	X 28														X 47	X 51	X 37	X 34	X 27
9	X 29	X 31	X 33	X 34	X 34	X 32	X 30														X 69	X 50	X 45	X 48	X 44
10	X 38	X 45	X 47	X 28	X 28	X 29	X 27														X 41	X 44	X 53	X 43	X 34
11	X 33	X 35	X 36	X 37	X 38	X 37	X 32														X 58	X 60	X 65	X 41	X 30
12	X 29	X 34	X 40	X 33	X 43	X 34															X 46	X 50	X 47	X 42	X 32
13	X 32	X 33	X 34	X 34	X 36	X 32	X 26														X 60	X 50	X 43	X 33	X 30
14	X 31	X 33	X 34	X 33	X 37	X 35	X 30														X 67	X 58	X 68	X 72	X 61
15	X 44	X 40	X 38	X 37	X 39	X 36	X 34														X 68	X 100	X 115	X 187	X 93
16	X 70	X 63	X 65	X 43	X 44	X 29	X 32														X 105	X 82	X 75	X 72	X 69
17	X 54	X 42	X 29	X 35	X 41	X 32	X 32														X 57	X 58	X 59	X 44	X 34
18	X 37	X 40	X 40	X 35	X 40	X 27	X 27														X 100	X 61	X 55	X 41	X 36
19	X 34	X 35	X 33	X 37	X 39	X 38	X 24														X 64	X 58	X 56	X 57	X 40
20	X 33	X 33	X 36	X 38	X 42	X 40	X 42														X 97	X 78	X 78	X 72	X 54
21	X 36	X 35	X 35	X 35	X 39	X 36	X 25														X 63	X 55	X 59	X 38	X 34
22	X 32	X 34	X 36	X 36	X 40	X 40	X 28														X 104	X 80	X 74	X 67	X 47
23	X 45	X 42	X 43	X 44	X 46	X 36	X 31														X 119	X 93	X 78	X 55	X 46
24	X 40	X 42	X 39	X 34	X 36	X 33	X 31														X 61	X 54	X 46	X 39	X 35
25	X 34	X 34	X 36	X 36	X 36	X 37	X 38														X 128	X 132	X 117	X 79	X 57
26	X 39	X 36	X 32	X A	X 35	X 35	X 34														X 107	X 85	X 72	X 67	X 48
27	X 39	X 37	X 36	X 36	X 38	X 36	X 35														X 130	X 95	X 91	X 77	X 46
28	X 36	X 38	X 34	X 34	X 36	X 36	X 36														X 109	X 78	X 85	X 82	X 47
29	X 41	X 41	X 39	X 41	X 40	X 34	X 36														X 68	X 59	X 62	X 56	X 38
30	X 36	X 38	X 38	X 39	X 41	X 38	X 35														X 108	X 90	X 65	X 54	X 48
31	X 41	X 42	X 46	X 46	X 38	X 29	X 28														X 117	X 96	X 75	X 58	X 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	31	30	30	31	31													31	31	31	31	31	
MED	X	X	X	X	X	X	X													X	X	X	X	X	
U Q	39	40	39	38	40	36	34													105	82	75	67	48	
L Q	X	X	X	X	X	X	X													X	X	X	X	X	
	33	34	34	34	35	29	27													56	50	47	39	34	

JAN. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 foF2 (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	33	32	28	33	34	23	19	25	60	86	91	97	91	102	99	75	63	69	68	43	38	42	33	28
2	29	34	41	22	23	24	25	31	62	65	68	76	83	90	78	66	58	68	60	48	42	33	26	22
3	27	32	32	34	36	21	19	29	55	81	94	70	76	98	105	104	102 ^H	69	62	51	39	30	32	32
4	27	30	30	30	28	26	22	30	58	70	82	78	91	92	102	94	99 ^{J R}	87	72	60	46	46	37	33
5	27	28	30	30	25	23	20	30	56	57	72	60	78	74	84	84	66	69	58	43	42	38	41	32
6	24	26	28	30	29	27	24	30	57	70	76	65	86 ^A	86	102	112	91	64	56	50	50	43	35	26
7	32	28	30	30	33	20	20	29	58	54	55	73	68	86	98 ^H	116	102	99	70	47	50	49	32	25
8	23	26	28	29	29	26	22	28	55	68	63	50	68	83	86	60	57	54	53	41	45	31	28	21
9	23	25	27	28	28	26	24	29	59	75	67	55	82	98	111	113	117 ^H	109	80	63	44	39	42	38
10	32	39	41	22	22	23	21	28	60	69	65	78	69	90	101 ^{J R}	103 ^{J R}	89 ^H	74	63	35	38	47	37	28
11	27	29	30	31	32	31	26	31	56	74	82	87	94	109	135	120	96	87	69	52	54	59	35	24
12	23	28	34	27	37 ^A	28	33	56	74	88	77	86	97	98	80	70	63	58	40	44	41	36	26	
13	26	27	28	27	30	26	20	32	56	58	67	64	85	106	91	76	73	81	69	54	44	37	27	24
14	25	27	28	27	31	29	24	31	65	64	66	59	74	78	94 ^H	87	72	74	71	61	52	62	66	54
15	38	34	32	31	33	30	28	39	59	64	80	90 ^H	74	77	95	103	92	76	51	62	94	92 ^{F U}	118 ^{F U}	60 ^F
16	52 ^F	38 ^F	25 ^F	33 ^F	23	26	56	86	114	124	140	130	124	134	130	122	120	99	76	69	66	63		
17	48	36	23	29	35	26	26	32	76	72	90 ^H	111	114 ^H	102	116	107	89	82 ^R	71	51	52	53	38	28
18	31	34	34	29	34	21	21	34	60	75	74	79	92	93	91	90 ^H	98	120	120	94	55	49	35	30
19	28	29	27	31	33	32	18	34	67	72	66	74	82	81	84	77	90	78	75	58	52	50	51	34
20	27	27	30	32	36	34	36	41	69	68	77	73	87	120	130	139	140	144	151	91	72	72	66	48
21	30	29	29	29	33	30	19	30	60	69	80	76	84	90	94	85	79	95	108	57	49	53	32	28
22	26	28	30	30	34	34	22	32	70	68	64	81	102	97	114	128	129	124	127	98	74	68	61	41
23	39	36	37	38	40	30	25	34	67	71	83	84	85	100	120	114	107	130	152	113	87	72	49	40
24	34	36	33	28	30	27	25	32	70	70	76	73	76	90	75	81	66	84	68	55	48	40	33	29
25	28	28	30	30	30	31	32	38	61	68	73	67	77	83	97	82	92	106	120	122 ^{J R}	126 ^{J R}	111	73	51 ^R
26	33	30	26	29 ^A	29	28	34	60	90	95	117	127	144	160	158	139	132	127	101	79 ^{J R}	66	62	42	
27	33	31	30	30	32	30	29	34	56	74	92	77	79	79	96	110	110	121 ^R	129	124	89	85	71	40
28	30	32	28	28	30	30	30	34	72	84	69	76	74	94	110	110	118 ^R	120 ^R	110	103	72	79	76	42
29	35	35	33	35	34	28	30	38	62	63	75	91	100	86	101	104	110	109	103	62	53	56	50	32
30	30	32	32	33	35	32	29	34	73	96	92	90	92	86	90	101	91	88	91	100	84	59	48	42
31	35	36	40	40	32	23	22	33	64	82	97	102	107	101	115	134	142	144 ^R	141	111	90	69	52 ^R	47
	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	30	30	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	30	30	30	30	32	27	24	32	60	70	76	77	84	92	99	103	92	87	72	60	52	53	41	32
U Q	33	34	33	31	34	30	28	34	67	75	90	90	92	101	114	114	110	120	120	99	76	69	62	42
L Q	27	28	28	28	29	23	21	30	56	68	67	70	76	86	91	82	73	74	63	50	44	41	33	28

JAN. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 foF1 (0.01MHz) 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										L	440	440	452	464	448	L	L							
2											L	L	L	L	L	L	L							
3										L	444	468	464	440	424	368	L							
4										L	L	A	L	L	L	L	L							
5											420	L	L	L	L	L	L							
6										L	A	A	A	A	444	424								
7											L	L	U L	L	L	L	L							
8										L	L	U L	U L	L	L	L	L							
9											L	L	L	L	L	L	L							
10											L	L	U L	L	L	L	L	L						
11										L	L	L	L	L	L	L	L							
12										L	L	L	A	L	L	L	L							
13											L	L	A	L	L	L	L							
14									252	L	L	L	A	L	L	L	L	L						
15											U L	A	A	U L	L	L	L							
16								A		U L	L	L	L	L	L	L	L	L						
17								L		L	L	L	L	L	L	L	L	L						
18										L	L	L	L	L	L	L	L	L						
19										L	L	L	L	L	L	L	L	L						
20										L	L	L	L	L	L	L	L	L	A	A				
21											L	L	L	L	L	L	L	L						
22										L	L	L	L	L	L	L	L	L	U L	L				
23										L	L	L	L	L	L	L	L	L	L	L				
24											L	L	L	L	L	L	L	L	L	L				
25										L	L	L	L	L	L	L	L	L	L	L				
26									240	L	L	L	L	L	L	L	L	L	L	L				
27										L	L	L	L	L	L	L	L	L	L	L				
28										L	U L	L	U L	L	L	L	L	L	L	L				
29											L	L	L	L	L	L	L	L	L	L				
30										L	L	L	L	L	L	L	L	L	L	L				
31										L	L	L	L	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									2	1	12	25	25	28	27	29	11	1						
MED									U L	L	L	L	L	L	L	L	L	L	U L	L				
U Q									246	460	452	460	468	472	456	444	416	300						
L Q											464	472	480	484	480	462	432							
											442	446	454	460	448	432	380							

JAN. 2022 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 foE (0.01MHz) 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								B	176	232	288	A	320	328	A	A	A	A						
2								B	188	256	296	316	320	308	A	A	A	A	B					
3								B	200	260	296	320	328	308	A	A		A	B					
4								B	A	A	280	300	320	312	304	A	A	192	A					
5								B	192	A	300	U A 324	336	328	A	A	A	A	A					
6								B	200	264	292	312	312	288	A	A	A	A	A					
7								B	A	264	288	U A 320	A	A	A	A		A	B					
8								B	A	A	A	A	A	336	324	308	276	176	A					
9								B	192	268	292	A	340	A	320	A	A	A	A					
10								B	208	268	296	324	A	A	A	300	A	200	A					
11								B	188	260	296	308	A	A	A	A	268	196	A					
12								B	188	252	A	A	U A 292	336	316	288	232	B						
13								B	192	A	304	316	312	U A 304	312	292	236	A						
14								B	204	280	308	348	348	320	U A A	A	A	A	A					
15								B	A	264	304	324	U A 324	A	A	300	316	A	A	A				
16								A	A	A	U A 316	A	A	332	A	304	268	216	B					
17								B	176	260	308	324	344	A	324	296	276	A	A					
18								B	192	260	296	320	336	A	A	312	A	216	A					
19								B	180	A	284	316	336	A	A	A	A	A	A					
20								B	188	248	296	348	A	A	A	A	A	A	A					
21								B	212	272	304	320	332	316	A	A	A	A	A					
22								B	192	252	300	336	332	U A 292	A	A	A	220	176					
23								B	A	260	284	328	332	336	328	A	A	A	A					
24								B	204	272	304	312	324	324	A	A	A	A	A					
25								B	208	268	300	328	A	344	332	312	292	232	B					
26								B	208	260	284	312	320	328	U A 280	A	A	A	A					
27								B	184	244	280	A	328	328	U A 292	A	A	232	B					
28								B	184	256	284	328	336	328	A	A	292	244	A					
29								B	188	260	284	312	340	336	A	A	296	232	B					
30								B	196	276	304	328	340	336	U A 316	A	A	A	A					
31								B	216	276	A	A	336	336	A	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									25	25	28	24	22	20	10	13	11	13	1					
MED									192	260	296	320	332	328	322	308	276	220	176					
U Q									204	268	304	328	336	336	328	314	292	232						
L Q									188	256	286	314	320	314	304	294	268	198						

JAN. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 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	E 16	B 16	J 22	J 22	J 43	J 20	J 13	J 20		23	30	32	J 42	J 49	J 40	J 43	J 48	J 39	J 56	J 58	J 33	J 34	J 20	J 25	J 16	
2	J 16	J 42	J 28	E 16	J 15	J 26	J 22	J 14		23	28	36	41	J 50	J 49	J 40	J 46	27	J 29	J 22	J 32	J 34	J 22	J 24	J 20	
3	E 16	B 16	J 30	J 52	E 16	J 18	J 20	J 18		25	30	35	J 43	J 40	J 43	J 42	J 34		G	J 21	J 21	19	J 16	J 16	J 20	J 21
4	J 31	J 35	J 20	J 32	J 39	E 16	E 16	E 18		25	32	32	J 49	J 43	J 49	J 57	J 53	J 37	J 26	J 46	J 40	J 28	J 22	J 20	E 16	
5	E 16	B 16	B 16	B 16	E 16	E 16	E 16	E 16		22	30	36	39	J 46	J 43	J 37	J 35	J 33	J 50	J 34	J 28	20	20	J 52	J 27	
6	J 19	J 26	J 32	J 20	J 23	E 16	E 16	E 16		25	33	48	J 55	J 129	J 93	J 54	J 56	J 56	J 43	J 44	J 29	J 38	J 26	J 22	J 20	
7	J 16	J 16	J 18	J 15	J 39	J 32	J 18	J 17		23	28	32	J 80	J 41	J 58	J 72	J 31			J 32	J 27	J 20	J 22	J 20	J 19	J 14
8	E 16	B 16	J 38	J 16	J 21	J 25	J 28	J 15		24	33	39	J 44	J 58			J 35	J 28		J 24	J 25	J 22	J 21	J 26	J 32	J 41
9	J 24	J 30	J 18	J 22	E 16	E 18	E 16	E 16		25	30	35	J 44	J 37	J 52	J 52	J 52	J 62	J 40	J 35	J 32	J 32	J 33	J 36	J 18	
10	E 16	B 18	J 19	J 17	J 19	E 16	E 20	E 16		23	31		G	J 37	J 41	J 52	J 32	J 31	J 24	J 22	J 28	J 17	J 20	E 18	E 16	
11	E 16	B 16	B 18	E 16	E 19	E 16	E 16	E 16		25		G	J 38	J 49	J 44	J 38	J 40	J 32	J 24	J 23	J 39	J 32	J 33	J 39	J 30	
12	J 28	J 24	J 30	J 32	J 64	J 59	J 45	J 23		22	28	32	J 34	J 55	J 54						J 17	J 20	J 17	J 20	J 50	J 15
13	J 18	J 16	J 20	E 16	E 16	J 22	E 16	E 16		23	36	34	J 44	J 97	J 56	J 49	J 34	J 32	J 26	J 20	J 18	J 34	J 28	J 16	J 20	
14	J 17	J 22	J 22	J 23	J 23	J 18	J 20	E 16		23		40	J 49	J 56	J 84	J 62	J 52	J 55	J 31	J 31	J 29	J 19	J 16	J 16	J 17	
15	J 18	E 16	J 20	J 17	J 19	J 20	J 14	E 16		21	30	J 42	J 64	J 58	J 41	J 44		J 30	J 33	J 18	J 19	J 32	J 26	J 28	J 53	
16	J 125	J 19	J 62	J 29	J 50	J 46	J 39	J 35		26	35	38	J 37	J 37		J 36				J 26	J 23	J 18	J 40	J 18	J 19	J 20
17	J 17	J 20	E 16	E 16	E 16	E 16	E 16	E 16		23	30		G	J 35		J 39	J 39	J 33	J 35	J 24	J 19	J 32	J 20	J 22	J 19	E 16
18	J 18	J 14	J 16	J 16	J 16	J 16	J 16	J 15		25	30	35	J 37	J 40	J 56	J 63		J 47	J 25	J 22	J 22	J 20	J 16	J 16	J 16	
19	J 18	J 18	J 14	J 18	J 15	J 18	E 16	E 16		23	28	32		G	J 39	J 38	J 101	J 108	J 63	J 50	J 42	J 21	J 19	J 16	J 16	J 16
20	E 16	B 16	B 16	B 16	E 16	E 16	E 16	E 16		22	30	35	J 43	J 62	J 62	J 54	J 43	J 62	J 43	J 28	J 42	J 22	J 17	J 15	J 16	
21	J 19	J 22	J 58	E 16	E 16	E 16	J 19	J 19		24	32	34	J 42	J 49	J 56	J 43	J 43	J 47	J 53	J 41	J 42	J 28	J 20	J 18	J 17	
22	E 16	B 18	J 18	E 16	J 18	J 18	J 18	J 19		23	28	35		G	J 46	J 68	J 62	J 40	J 62			J 21	J 26	J 19	J 27	J 20
23	J 22	J 20	J 20	J 21	J 19	J 18	J 18	J 19		24	29		G	J 39	J 38		J 41	J 62	J 54	J 50	J 52	J 40	J 16	J 16	J 16	J 16
24	E 16	B 16	B 16	B 16	E 16	E 16	E 16	E 16		26	32		G	J 44	J 43	J 40	J 40	J 34	J 29	J 32	J 47	J 24	J 18	J 18	J 18	E 16
25	E 16	B 16	B 16	B 16	E 16	E 16	J 18	J 18		23		35		G	J 41			J 34			E 16	J 18	J 20	J 16	J 16	J 24
26	E 16	B 16	B 16	J 44	E 16	J 19	J 18	J 17		30	32	J 44	J 40	J 51	J 34	J 34	J 30	J 38	J 26	J 18	J 20	J 20	J 16	J 16	J 16	
27	E 16	J 22	J 16	J 20	E 16	E 16	E 16	E 16		25	30	34	J 37	J 37	J 40	J 36	J 34	J 31		J 18	J 16	J 16	J 20	J 24	J 28	
28	J 27	J 18	J 16	E 16	J 25	J 18	E 16	J 18		20	28	36	J 36	J 39	J 45	J 39	J 40	J 36	J 33	J 30	J 33	J 33	J 22	J 22	J 18	
29	J 16	J 18	J 18	J 17	J 22	E 16	E 16	E 16		22	30	33	J 48	J 52	J 46	J 44	J 44			J 25	J 16	J 21	J 21	J 14	J 18	J 16
30	E 16	J 16	J 21	J 17	J 20	J 19	E 16	E 16		24	29	35	J 38	J 54	J 62	J 104	J 53	J 54	J 72	J 135	J 52	J 41	J 21	J 21	J 28	
31	J 26	J 16	J 77	J 32	J 25	J 22	J 59	J 16		24	30	44	J 46	J 48	J 49	J 98	J 40	J 32	J 30	J 26	J 18	J 27	J 24	J 26	J 18	
	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	J 16	J 18	J 19	J 17	J 19	J 18	J 16	E 16		23	30	35	J 42	J 46	J 46	J 43	J 40	J 32	J 30	J 26	J 24	J 22	J 20	J 20	J 18	
U Q	J 19	J 22	J 28	J 22	J 23	J 20	J 20	J 18		25	31	36	J 44	J 54	J 56	J 57	J 48	J 54	J 43	J 41	J 33	J 32	J 22	J 26	J 21	
L Q	E 16	B 16	B 16	B 16	E 16	E 16	E 16	E 16		23	28	32	G	J 37	J 39	J 40	J 38	J 33		J 24	J 20	J 19	J 19	J 17	E 16	E 16

JAN. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 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 16	E 16	E 16	E 16	E 18	E 16	E 16	E 16	23	30	32	36	35	36	35	33	28	54	53	24	18	E 16	E 21	E 16
2	E 16	E 23	E 16	E 16	E 16	E 16	E 16	E 16	21	28	34	39	36	36	37	36	27	22	E 16	18	17	E 16	E 16	E 16
3	E 16	E 16	E 16	E 24	E 16	E 16	E 16	E 16	24	29	32	36	36	38	35	32	G	21	E 16	E 16	E 16	E 16	E 16	E 16
4	E 16	E 16	E 16	E 22	E 16	E 16	E 16	E 16	24	30	32	45	40	35	38	30	26	22	E 16	E 16	E 20	E 16	E 16	E 16
5	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	34	35	36	36	34	31	28	22	22	18	E 16	E 16	E 16	E 16
6	E 16	E 18	E 16	E 16	E 16	E 16	E 16	E 16	24	31	42	50	A 129	50	33	35	28	24	19	23	19	18	E 16	E 16
7	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	28	32	41	35	38	40	30	G	29	E 16	E 16	18	18	E 16	E 16
8	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	30	32	34	36	G	34	26	G	G	24	22	18	E 16	E 16	E 16
9	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	29	34	35	36	34	22	30	28	22	23	21	23	25	E 16	E 16
10	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	G	G	34	35	34	23	G	28	24	19	20	E 16	E 16	E 16
11	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	G	G	33	36	34	37	32	28	23	19	32	16	16	E 16	E 20
12	E 20	E 16	E 16	E 16	E 64	E 16	E 20	E 16	22	28	32	33	50	36	G	G	G	G	E 16	E 16	E 16	E 16	E 16	E 16
13	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	28	33	41	59	42	46	34	32	25	17	16	E 16	E 16	E 16	E 16
14	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	G	37	42	46	37	34	33	28	23	26	26	E 16	E 16	E 16	E 17
15	E 17	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	28	40	50	48	37	36	G	30	28	17	E 16	20	E 16	E 16	22
16	E 16	E 16	E 16	E 16	E 16	E 16	E 19	E 35	24	30	34	36	34	34	34	G	G	G	E 16	E 16	E 38	E 16	E 16	E 16
17	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	29	G	35	G	36	38	32	35	24	19	25	E 16	18	E 16	E 16
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	30	34	34	36	41	35	G	29	25	20	18	17	E 16	E 16	E 16
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	28	30	G	36	38	52	36	28	27	22	E 16	E 16	E 16	E 16	E 16
20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	28	32	38	42	41	43	42	36	36	23	36	19	E 16	E 16	E 16
21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	32	34	38	35	47	35	35	31	25	22	22	22	E 16	E 16	E 16
22	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	27	35	G	41	37	39	35	29	G	G	E 16	E 16	E 16	E 16	E 16
23	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	28	G	38	37	G	G	28	32	32	26	21	18	E 16	E 16	E 16
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	31	G	38	38	37	36	32	28	26	29	20	E 16	E 16	E 16	E 16
25	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	G	35	G	36	G	G	G	G	G	E 16	E 16	E 16	E 16	E 16	19
26	E 16	E 16	E 16	E 44	E 16	E 16	E 16	E 16	G	30	32	41	38	36	34	32	28	29	20	E 16	E 16	E 16	E 16	E 16
27	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	30	34	35	36	39	35	32	28	G	E 16	E 16	E 16	E 16	E 21	E 21
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	20	28	36	35	38	36	35	34	23	18	20	29	18	E 16	E 16	E 16
29	E 16	E 16	E 16	E 16	E 18	E 16	E 16	E 16	21	30	32	40	40	41	40	38	G	25	E 16	E 16	E 16	E 16	E 16	E 16
30	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	29	35	36	42	37	42	33	29	27	20	32	E 16	E 16	E 16	E 20
31	E 22	E 16	E 16	E 16	E 18	E 16	E 16	E 16	24	30	32	35	40	44	35	35	31	27	22	E 16	23	E 21	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
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	29	32	36	36	37	35	32	28	24	20	18	E 16	E 16	E 16	E 16
U Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	30	34	40	41	39	38	35	29	27	22	23	19	E 16	E 16	E 16
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	28	32	34	36	35	34	30	G	G	G	E 16	E 16	E 16	E 16	E 16

JAN. 2022 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

JAN.2022 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	16	16	16	16	15	14	16	17	16	16	16	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	16	16	18	18	17	16	16	16	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	14	16	21	18	16	16	16	16	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	16	16	15	17	17	17	16	16	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	16	15	15	16	15	16	16	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	16	16	16	18	20	17	16	14	15	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	16	16	16	17	19	20	16	17	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	16	16	16	21	18	14	15	15	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	16	16	14	16	15	14	12	13	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	16	14	14	15	20	13	14	14	15	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	16	14	15	14	16	14	13	12	16	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	14	14	15	15	15	16	18	17	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	16	14	15	15	14	14	16	16	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	16	26	17	17	15	15	17	16	16	16	16	16	16	17
15	17	16	16	16	16	16	16	16	16	16	16	17	14	16	15	14	16	16	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	17	20	20	20	19	19	16	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	16	17	17	21	24	21	17	14	16	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	17	17	18	18	18	15	16	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	16	17	18	19	20	19	14	15	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	14	14	17	21	18	16	36	17	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	14	15	15	17	18	16	16	16	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	16	18	20	22	20	18	16	17	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	16	18	16	18	18	20	15	14	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	16	18	18	19	20	20	22	20	17	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	18	20	20	20	21	19	18	16	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	16	15	14	15	14	14	14	14	14	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	15	15	15	15	16	15	15	16	16	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	16	15	15	17	17	17	14	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	14	15	18	19	19	18	16	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	15	17	17	19	21	18	16	16	16	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	16	14	16	18	18	17	16	18	17	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	16	16	16	18	18	16	16	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	17	18	19	20	19	16	17	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	16	14	15	16	16	15	15	15	16	16	16	16	16	16	16

JAN.2022 fmin (0.1MHz)

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JAN. 2022 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

$\begin{matrix} H \\ D \end{matrix}$	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	301	343	319	336	382	309	299	297	341	347	357	350	351	329	340	351	344	342	377	353	281	329	331	289	
2	282	327	382	319	301	308	310	316	358	360	355	330	351	352	355	352	373	342	363	351	357	343	327	283	
3	282	314	349	321	380	323	290	313	340	351	375	353	324	315	331	291	312 ^H	337	358	367	352	318	310	341	
4	282	285	285	322	327	345	312	322	361	361	364	342	330	330	340	320	282 ^{J R}	366	339	316	338	294	316	342	
5	299	318	313	358	357	319	311	328	370	367	371	352	366 ^A	345	359	322	354	366	347	332	300	303	322	392	
6	303	306	313	340	318	354	284	330	372	376	373	374		314	327	344	374	353	347	326	345	343	323	303	
7	337	302	307	329	369	337	314	344	392	373	371	378	339	340	305 ^H	330	335	346	332	328	313	347	346	344	
8	305	321	330	341	333	312	308	325	372	383	400	382	331	342	362	374	358	362	377	337	373	317	339	348	
9	318	309	308	321	316	328	339	312	343	374	398	324	331	319	307 ^{J R}	304 ^{J R}	317 ^H	334	327	342	312	329	305	338	
10	269	306	364	354	336	314	307	325	371	378	362	376	324	347	335 ^{J R}	284 ^{J R}	341 ^H	343	368	331	305	339	352	330	
11	289	313	325	329	333	356	306	328	351	358	337	349	320	321	348	327	330	340	340	299	308	308	369	361	
12	299	280	349	365		351 ^A	318	328	349	331	357	337	333	348	344	347	345	339	337	310	321	334	361	295	
13	290	294	304	305	325	413	305	330	373	377	367	344	332	353	353	342	314	349	359	336	336	332	352	330	
14	285	293	322	292	327	357	317	313	368	385	369	376	356	332	323 ^H	333	324	334	364	351	287	313	327	307	
15	304 ^F	299 ^F	301 ^F	293 ^F	355 ^F	320	300	332	373	354	340	347 ^H	341	288	298	337	342	361	335	272	367	292 ^{F U}	362 ^{F U}	320 ^F	
16	302 ^F	277 ^F		353 ^F	322 ^F	306	270		298	283	294	302	316	310	283	299	305	304	319	317	273	300	297	301	
17	342	385	287	268	340	380	288	317	356	382	297	371	318 ^H	270	320	325	331			323	261	317	332	314	335
18	283	308	306	309	388	301	294	324	344	359	352	344	332	357	317	283 ^H	309	302	343	339	339	308	355	339	
19	305	311	287	292	347	374	359	320	376	387	360	356	309	330	323	307	331	352	335	351	306	326	340	328	
20	345	280	315	286	320	289	308	345	367	360	355	342	306	332	338	312	313	327	349	326	301	334	341	341	
21	277	294	314	304	355	387	323	321	370	352	368	337	351	329	338	322	312	338	361	366	303	357	328	325	
22	305	294	304	298	336	381	281	312	380	373	333	322	345	322	326	340	307	307	348	337	306	314	315	303	
23	292	293	276	310	351	308	333	325	364	355	354	346	341	313	340	309	285	326	350	370	308	326	283	279	
24	319	339	357	331	324	294	292	322	362	353	366	353	347	356	367	354	333	333	372	350	335	336	341	323	
25	306	317	317	304	306	275	294	343	365	369	375	365	323	326	343	347	315	320	326	303	309 ^{J R}	330 ^{J R}	319	297 ^R	
26	308	341	305		293	292	288	321	351	348	337	337	327	326	322	317	318	324	339	354	236 ^{J R}	323	338	313	
27	302	303	313	280	304	307	308	325	345	347	369	371	355	334	320	329	314	288 ^R	339	351	268	340	329	292	
28	279	294	337	279	290	293	303	318	358	359	361	356	321	312	335	334	308 ^R	294 ^R	318	336	261	316	333	303	
29	291	298	304	315	356	301	297	326	377	368	353	342	354	324	319	309	338	336	362	321	281	309	356	318	
30	289	295	306	310	332	326	297	304	355	348	361	356	349	338	328	342	332	326	330	263	234	315	314	280	
31	309	318	345	354	348	260	289	323	340	358	339	339	346	334	321	324	334	305 ^R	346	357	316	282	291 ^R	285	
	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	30	30	31	31	30	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	
MED	301	306	313	317	333	319	305	324	362	360	361	349	332	330	331	327	330	336	346	336	308	326	329	320	
U Q	306	318	330	336	355	354	312	328	372	374	369	365	349	342	343	342	341	346	361	351	336	334	346	339	
L Q	285	294	304	298	320	301	292	317	349	352	352	339	324	319	320	309	312	324	335	317	287	309	315	297	

JAN. 2022 M(3000)F2 (0.01)

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JAN. 2022 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

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											L	389	401	399	374	384	389	L	L						
2												L	L	379	381	374	385	U	L	L					
3											L		398	379	369	383	385	398	L	L					
4											L	L	A	382	394	375	374	L	L						
5												L	383	398	386	379	393	L	L						
6											L	A	A	A	A		377	373							
7												L	A	U	L	403	374	386	375	L					
8											L	L	U	L	U	L	405	376		409					
9												L	U	L	L				L						
10											L	L	L	U	L		U	L	L	L					
11											L	L	374	385	406	390	378	381	385	L					
12											L	L		388	A	404	380	399	L						
13												L	423		A	A	A	392	L						
14											L	L	L	A		373	371	395	U	L					
15												U	L	A	U	L	L	374	L	L					
16									A		U	L	L	L	L	L		338	L	L					
17									L			L	382	407	447	391	372	384	L	L					
18											L	L	378	380	378	399	397	372	L	L					
19											L	L	L	L	L	A	U	L	L	L					
20											L	L	401	356	390	378		A	L	A	A				
21												L	383	397	414	A	L	L	L	L					
22											L	U	L	377	373	367	360	383	L	U	L				
23											L	L	397	392	386	387	390	386	L	L					
24												L	392	L	390	395	398	389	L	L					
25											L	L	394	418	395	381	399	371	L	L					
26										423	L	L	392	394	373	374	387	L	L						
27											L	L	398	392	384	377	381	L	L						
28											L	U	L	409	394	400	371	369	378	392	L				
29											L	L	391	385	399	361	389	L	L	L					
30											L	L	L	L	L	L	L	L	L	L					
31											L	L	393	384	A	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										2	1	12	24	25	26	27	28	11	1						
MED										424	U	L	384	394	392	385	378	384	387	424					
U Q												390	401	402	394	384	392	398							
L Q												L	L	L	L	L	L	L	L						

JAN. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 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										236	230	236	236	254	228	238	230								
2											230	268	240	248	240	238	212								
3										244		238	272	274	246	252	226								
4										238	238	252	260	238	242	244	232								
5											240	244	242	256	240	224	224								
6										234	232	228	A	266	254	236									
7											230	236	266	234	256	224	218								
8										222	220	242	284	262	232	226	234								
9												274	276	260	262	238	258								
10										226	224	232	270	246	238	248	234	234							
11										242	256	242	254	266	226	230	234								
12										250	232	260	256	238	240	230	236								
13											238	250	266	250	226	242	244								
14									218	226	246	232	256	266	250	224	240								
15											258	226	252	330	274	250	236								
16								A		310	288	254	282	268	284	302	270	258							
17									238		268	232	254	332	242	244	242								
18										236	236	256	270	238	266	244	274								
19										218	228	244	296	256	276	300	258								
20										226	238	244	308	262	236	234	262	238	204						
21											240	236	248	266	240	262	262								
22										220	276	274	242	276	262	232	228	218							
23										232	246	242	248	252	230	242	242	258							
24											226	256	262	240	230	242	232	236							
25										230	222	238	246	256	236	238	268	230							
26									224	248	246	242	248	252	240	236	232								
27										252	228	226	242	260	252	238	228	222							
28									214	230	238	256	280	258	236	230	222								
29											250	246	236	248	270	256	226	240							
30										230	226	238	244	248	270	252	232								
31										236	250	256	236	258	256	252	220								
	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	21	29	31	30	31	31	31	30	10	1						
MED									224	234	238	242	255	256	242	238	234	235	204						
U Q									238	243	248	254	270	266	262	250	244	240							
L Q									218	226	229	236	244	248	236	234	228	222							

JAN. 2022 h'F2 (KM)

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JAN. 2022 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

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	266	226	270	238	208	274	312	266	232	220	206	186	172	194	210	210	216	E A 248	216	202	238	228	E A 234	270		
2	314	E A 268	196	230	244	300	278	244	228	220	212	208	214	202	210	E A 208	204	218	210	202	202	214	222	316		
3	328	268	232	E A 268	204	286	354	246	238	228	214	208	208	206	188	198	182	210	204	206	200	228	246	236		
4	292	298	280	E A 298	250	222	278	244	224	224	212	A 220	E A 192	E A 224	180	206	214	204	186	216	208	232	212			
5	274	254	248	214	206	266	290	228	212	216	226	210	194	216	188	206	200	212	196	196	188	232	206	196		
6	330	284	286	242	254	220	296	234	220	220		A A	A A	A A	A A	E A 182	222	212	204	204	194	202	212	216	244	
7	232	248	264	240	206	256	296	238	206	202	202	A A	172	E A 218	E A 218	184	208	206	184	186	210	196	216	220		
8	272	262	252	222	240	292	284	244	218	218	206	172	184	160	216	200	190	212	202	202	208	224	244	242		
9	276	280	274	256	248	226	204	260	234	218	216	202	226	186	190	196	208	206	206	196	218	E A 244	220	208		
10	312	262	192	232	246	286	300	254	220	214	208	194	198	190	192	192	196	228	206	E A 206	236	226	196	230		
11	278	260	244	236	236	216	250	240	230	226	206	196	184	172	212	208	194	208	198	234	252	216	190	E A 238		
12	E A 358	322	216	222	A 224	E A 266	240	222	214	208	196		A A	A A	A A	168	206	200	192	210	200	208	220	214	208	276
13	306	300	286	280	240	190	310	222	212	214	206	196		A A	A A	A A	194	214	228	196	200	202	220	216	252	
14	302	308	264	250	248	220	272	248	198	208	210	E A 214	A A	A A	174	186	208	200	234	202	200	202	224	202	212	
15	266	274	302	290	218	236	284	202	216	220	226	E A A	A A	A A	218	224	212	224	204	218	306	192	238	196	224	
16	266	342	250	218	250	240	E A 400	A A	236	232	218	190	174	194	200	198	216	230	210	204	270	252	250	242		
17	234	198	308	280	224	196	316	256	218	212	190	182	192	162	H 224	202	230	218	206	E A 302	222	204	224	222		
18	288	250	220	266	192	298	314	238	230	228	214	190	190	230	184	200	190	234	212	188	200	206	212	244		
19	278	254	286	290	228	210	260	228	226	210	208	182	174	236	A A	196	194	220	220	186	234	224	226	208		
20	192	288	252	276	248	282	260	218	220	204	208	200	222	198	E A 222	A A	252		A A	A A	190	218	216	204	204	
21	310	296	282	266	222	194	284	238	212	216	218	202	180		A 166	210	194	236	210	170	262	196	210	232		
22	276	288	278	306	248	198	350	252	212	192	204	200	224	192	228	206	198	188	202	176	204	206	200	226		
23	248	264	286	246	228	234	210	242	232	212	196	216	194	194	184	180	214	224	200	190	182	198	216	246		
24	250	226	198	238	246	286	302	250	230	214	172	210	192	194	186	192	194	218	206	198	202	202	206	244		
25	286	246	258	268	276	332	280	204	216	214	218	194	182	180	182	194	194	218	206	176	198	198	190	222		
26	218	216	254	A 298	298	266	296	242	202	216	210	E A 218	186	200	192	200	196	222	198	188	202	234	202	220		
27	236	256	256	302	272	248	276	222	218	222	214	198	184	206	194	208	200	204	212	186	176	212	196	228		
28	306	280	216	308	306	284	280	252	216	202	198	182	188	174	190	202	198	212	198	192	198	226	208	208		
29	274	280	266	256	216	250	286	236	206	214	202	E A 214	E A 208	210	210	206	200	230	194	184	216	230	200	234		
30	282	282	244	260	238	232	252	262	228	220	208	192	E A 226	E A 186	E A 230	188	198	220	210	210	216	204	208	270		
31	E A 272	260	224	220	216	344	304	252	228	226	206	202	198		A 192	208	206	218	206	178	200	218	246	226		
	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	30	31	31	30	31	31	30	27	26	27	29	30	31	30	30	31	31	31	31	31		
MED	276	268	256	252	240	248	284	242	220	216	208	197	190	194	192	200	200	218	205	193	204	216	209	229		
U Q	306	288	280	280	248	286	304	252	230	220	214	208	208	206	217	208	212	228	210	204	220	228	224	244		
L Q	266	254	232	236	218	220	272	234	212	212	206	190	184	180	187	194	194	210	200	186	200	206	202	220		

JAN. 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 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								B				A			A	A	A	A							
									110	104	104		104	104											
2								B							A	A	A	A	B						
									110	110	108	102	102	102											
3								B							A	A		A	B						
									102	104	104	104	104	104			102								
4								B	A	A						A	A		A						
											102	102	102	102	102				102						
5								B		A					A		A	A	A						
									108		104	104	104	104		104									
6								B							A	A	A	A	A						
									112	108	106	102	102	102											
7								B	A				A	A	A	A		A	B						
										102	102	102						106							
8								B	A	A	A	A	A						A						
														110	106	106	102	102							
9								B				A			A		A	A	A						
									106	106	104				100										
10								B						A	A	A		A							
									106	102	102	102					108		112						
11								B					A	A	A	A			A						
									108	104	102	102						102	102						
12								B			A	A	A						B						
									102	102					102	104	108	108	108						
13								B		A					A				A						
									108		106	98	100			104	104	104	110						
14								B							A	A		A	A						
									108	104	104	104	102	98											
15								B	A						A	A		A	A						
										104	104	102				102	102								
16								A	A	A		A				A				B					
											102				102		102	102	104						
17								B							A			A	A						
									114	110	106	104	104			102	102	102							
18								B							A	A		A	A						
									118	106	102	100	100				100		104						
19								B		A					A	A	A	A	A						
									108		104	102	102												
20								B							A	A	A	A	A						
									108	104	100	106													
21								B							A	A	A	A	A						
									118	102	102	102	102	100											
22								B							A		A	A							
									106	106	102	102	102			102			102	142					
23								B	A								A	A	A	A					
										102	102	102	104	104	104										
24								B							A	A	A	A	A						
									110	108	102	102	102	102				108							
25								B							A				B						
									108	102	102	102			102	102	106	106	104						
26								B								A		A	A						
									104	104	102	102	102	102			102								
27								B				A				A		A	B						
									104	102	100			102	104		104		106						
28								B								A	A		A						
									104	104	100	100	100	100				102	110						
29								B								A	A			B					
									106	102	102	102	102	102				102	106						
30								B								A		A	A						
									106	106	102	102	102	102			102								
31								B			A	A				A	A	A	A						
									102	102					102	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									25	25	28	24	22	20	10	13	12	13	1						
MED									108	104	102	102	102	102	102	104	102	104	142						
U Q									110	106	104	102	104	104	104	106	106	109							
L Q									105	102	102	102	102	102	102	102	102	102							

JAN. 2022 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 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

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	B	B	92	100	90	90	90	88	158	160	148	110	112	116	108	104	104	100	96	98	94	92	88	88	
2	88	92	92	B	90	86	86	86	140	126	116	110	104	104	104	102	100	94	94	88	96	86	86	86	
3	B	B	96	94	B	94	160	110	144	144	142	108	116	104	102	104	G	108	90	98	B	96	88	108	
4	96	98	94	90	90	B	B	B	154	160	150	128	106	106	104	102	102	100	106	88	90	86	86	98	
5	B	B	B	B	B	B	B	B	158	174	144	130	122	114	114	106	106	98	96	96	96	100	108	100	
6	104	102	102	106	92	B	B	B	150	114	104	102	102	100	106	98	98	96	92	112	90	90	106	94	
7	82	B	92	92	92	92	92	88	176	170	136	102	106	104	98	100	G	94	94	94	106	104	88	90	
8	B	B	92	92	92	92	92	92	170	110	110	108	100	G	150	92	G	164	90	90	90	100	102	98	
9	96	96	92	98	B	98	B	B	152	146	134	104	186	92	90	88	88	88	96	94	96	96	96	102	
10	B	96	96	92	92	B	88	B	108	108	G	G	96	94	92	92	90	128	90	86	86	86	86	B	
11	B	B	94	B	94	B	B	B	172	G	G	108	100	100	152	92	92	128	94	94	98	92	92	88	
12	88	88	98	98	98	96	94	94	156	142	140	136	104	104	G	G	G	G	100	100	98	98	98	96	
13	94	B	94	B	130	B	B	B	144	118	162	106	98	98	118	118	164	172	88	84	106	98	92	92	
14	88	90	92	92	94	94	94	B	122	G	110	104	102	94	94	94	96	90	90	88	92	B	B	B	
15	92	B	98	92	100	94	92	B	134	186	112	102	100	106	106	G	G	112	104	156	142	100	142	120	122
16	110	106	102	96	96	90	84	86	90	108	108	104	104	G	94	G	G	216	84	112	104	98	90	84	
17	92	86	B	B	B	B	B	B	154	132	G	G	98	162	152	196	118	134	104	90	88	86	B	B	
18	88	86	B	B	B	B	B	B	138	196	184	108	100	98	98	G	94	160	88	88	88	B	B	B	
19	110	100	98	94	94	94	B	B	162	104	138	G	108	148	96	96	100	90	86	86	86	B	B	B	
20	B	B	B	B	B	B	B	B	126	116	124	112	106	108	102	102	98	94	94	90	90	88	86	B	
21	90	90	100	B	B	B	90	90	182	170	148	110	106	98	98	94	90	90	88	86	80	86	106	106	
22	B	98	98	B	94	96	90	90	156	144	176	G	108	104	104	104	94	G	G	90	84	86	100	94	
23	94	92	92	92	92	100	86	86	192	178	G	174	144	G	96	92	92	88	86	86	B	86	114	B	
24	B	B	B	B	B	B	B	B	150	156	G	110	114	142	104	104	120	98	90	90	90	84	84	B	
25	B	B	B	B	B	94	86	90	174	G	164	G	104	G	G	138	G	G	B	86	86	B	B	90	
26	B	B	B	90	B	92	92	88	G	186	130	108	108	108	106	104	102	90	90	90	104	100	B	B	
27	B	96	88	88	84	B	B	B	146	170	146	134	122	108	110	108	106	G	82	B	B	118	102	94	
28	88	96	B	B	92	90	90	90	144	178	172	144	112	110	108	104	98	96	92	88	90	90	86	86	
29	86	86	84	94	94	B	B	B	142	186	152	110	104	104	104	100	G	172	B	94	98	84	84	B	
30	B	100	98	98	96	96	B	B	142	162	180	148	114	108	102	106	114	98	98	94	90	90	100	96	
31	94	B	106	118	88	88	98	B	202	188	110	108	108	100	102	98	94	94	92	90	86	82	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	18	18	23	19	20	19	16	14	30	28	26	27	30	27	29	27	24	27	28	30	28	27	26	20	
MED	92	96	94	94	92	94	91	90	151	153	139	108	106	104	104	102	99	98	91	90	90	90	92	94	
U Q	96	98	98	98	94	96	93	92	162	176	152	130	112	108	108	104	106	128	95	96	98	98	102	99	
L Q	88	90	92	92	91	90	87	88	142	122	116	106	102	98	98	94	94	94	88	88	87	86	86	88	

JAN. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2022 TYPES OF Es 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			F2	F1	F3	F2	F1	L1	H1	H1	H1	C1	C1	C1	C1	C2	C2	L3	L9	F5	F3	F2	F3	F2	
2	F1	F4	F4		F1	F4	F3	LH11	HL11	C1	C2	C1	C1	C2	C2	C3	L2	L2	L2	F3	F2	F3	F1	F1	
3			F3	F2		F1	F1	C1	H2	H1	H1	C2	C1	C2	C2	C1		C1	L1	F1		F1	F1	F1	
4	F2	F3	F4	F6	F3			H1	HC21	HC11	C1	C2	C3	C1	C3	C2	C2	C1	L8	F4	F3	F2	F1		
5									H1	H1	H1	H1	C2	C1	C1	C1	C2	L2	L5	F4	F3	F1	F2	F3	
6	F1	F5	F3	F2	F3				H2	C3	C3	C3	C5	C4	C2	L3	LQ21	LQ31	LQ21	FF32	F3	F2	F1	F1	
7	F1		F1	F1	F2	F3	F1	L2	HC11	H1	H1	C3	C1	C2	L3	L2		L4	L2	F1	F4	F4	F2	F1	
8			F4	F2	F3	F3	F2	L1	HC11	CH11	C2	C2	C2		H1	L1		H1	L4	F2	F2	F3	F2	F2	
9	F4	F2	F1	F1		F1			H1	H1	H1	C2	HC11	L1	L1	L1	L1	L1	L3	F4	F5	F5	F3	F1	
10		F1	F1	F1	F1		F2		C1	C1			L2	L3	L2	L1	LH31	CL11	L4	F3	F1	F1			
11			F1		F1				H2			C1	C2	C1	HC11	L2	LH11	C1	L5	F6	F3	F4	F4	F2	
12	F3	F3	F2	F3	F9	F9	F4	L1	H1	H1	HC11	H1	C4	C2					C1	F1	F1	F1	F3	F2	
13	F4		F1			F1			H1	C2	H1	C2	L5	L3	C2	C2	H1	H1	L1	F2	FF13	F2	F1	F1	
14	F1	F1	F3	F2	F1	F1	F1		C1		C2	C1	C3	L3	L2	L2	L2	L2	L6	F6	F1				
15	F1		F1	F1	F1	F1	F1		H1	H1	C3	C4	C5	C1	C1		CL21	C2	H1	F1	F3	FQ21	F2	F3	
16	F6	F5	F4	F3	F4	F4	F5	L5	L2	C1	C1	C1	C1		L1			H1	L1	F2	F3	F1	F1	F1	
17	F1	F1							HC11	H1		H1		L1	HL11	HL12	HL11	CL12	HL21	F6	F2	F2	F1		
18	F1	F1						H1	H1	H1	HC11	C1	C1	L2	L2		L3	HL11	L2	F5	F1				
19	F1	F1	F2	F2	F2	F1			H1	C1	H1		C1	HC11	L3	L3	L3	L3	L5	F3	F1				
20									C1	C1	C1	C2	C2	CQ31	CQ31	C1	L3	L4	L3	F7	F3	F2	F1		
21	F1	F1	F2			F2	L1	H1	H1	H1	H1	C2	C1	L3	L2	L2	L2	L3	L6	L3	L2	F3	F1	F1	
22		F1	F1		F2	F1	F1	L1	H1	H1	H1		C2	C2	C3	C1	L2			F1	F2	F1	F1	F2	
23	F2	F1	F1	F1	F2	F1	F1	L1	H1	H1		H1	HC11		L1	L2	LHQ11	LQ21	LQ21	FQ11		F1	F1		
24									H2	H1		CH11	CH11	HC11	C1	C1	C1	LH11	L3	F1	F1	F1	F1		
25					F1	F1	L1	H1			H1		C1			H1				F1	F1			F3	
26			F3		F2	F2	L1		H1	H1	H1	C2	C2	C1	C1	C1	C1	L2	L2	F1	F1	F1			
27		F2	F2	F1	F1				H1	H1	H1	HL11	C1	C2	C2	C1	C1		L1			F1	F3	F4	
28	F2	F1			F3	F1	L1	H1	H1	H1	H1	H1	C2	C2	C1	C2	L2	L2	L4	F5	F2	F2	F3	F2	
29	F1	F1	F1	F1	F4				H1	H1	H1	C2	C2	C2	C2	C2		H1		F1	F1	F1	F1		
30		F2	F1	F1	F1	F1			H1	H1	H1	H1	C2	C1	C3	C2	C1	C3	L3	F6	F3	F2	FF12	F5	
31	F6		FF13	FF11	F4	F1	F1		H1	H1	C1	C1	C2	C2	C2	L2	L2	L4	L3	F1	F4	F2	F1	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																									

JAN. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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

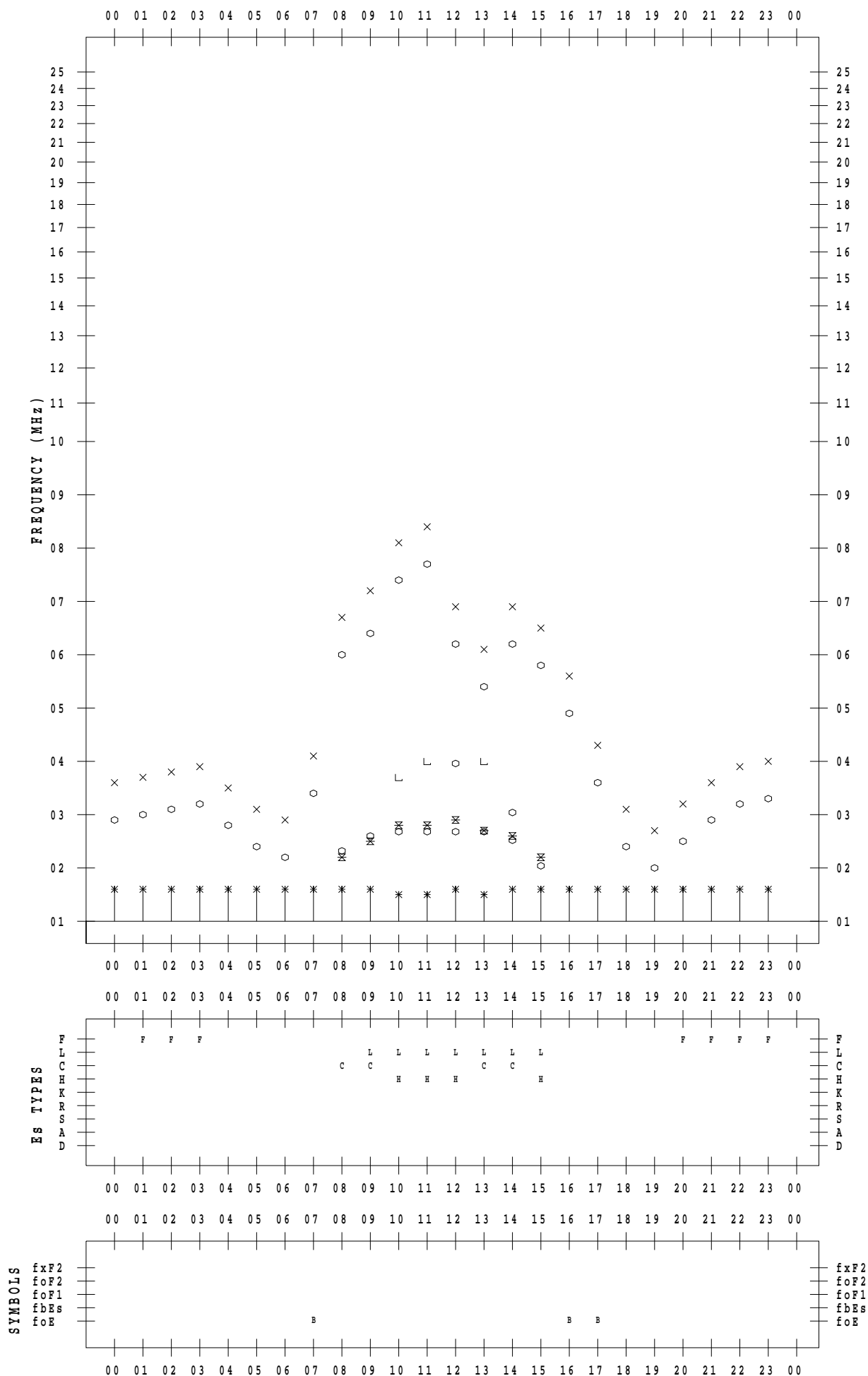
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 1

135 ° E MEAN TIME



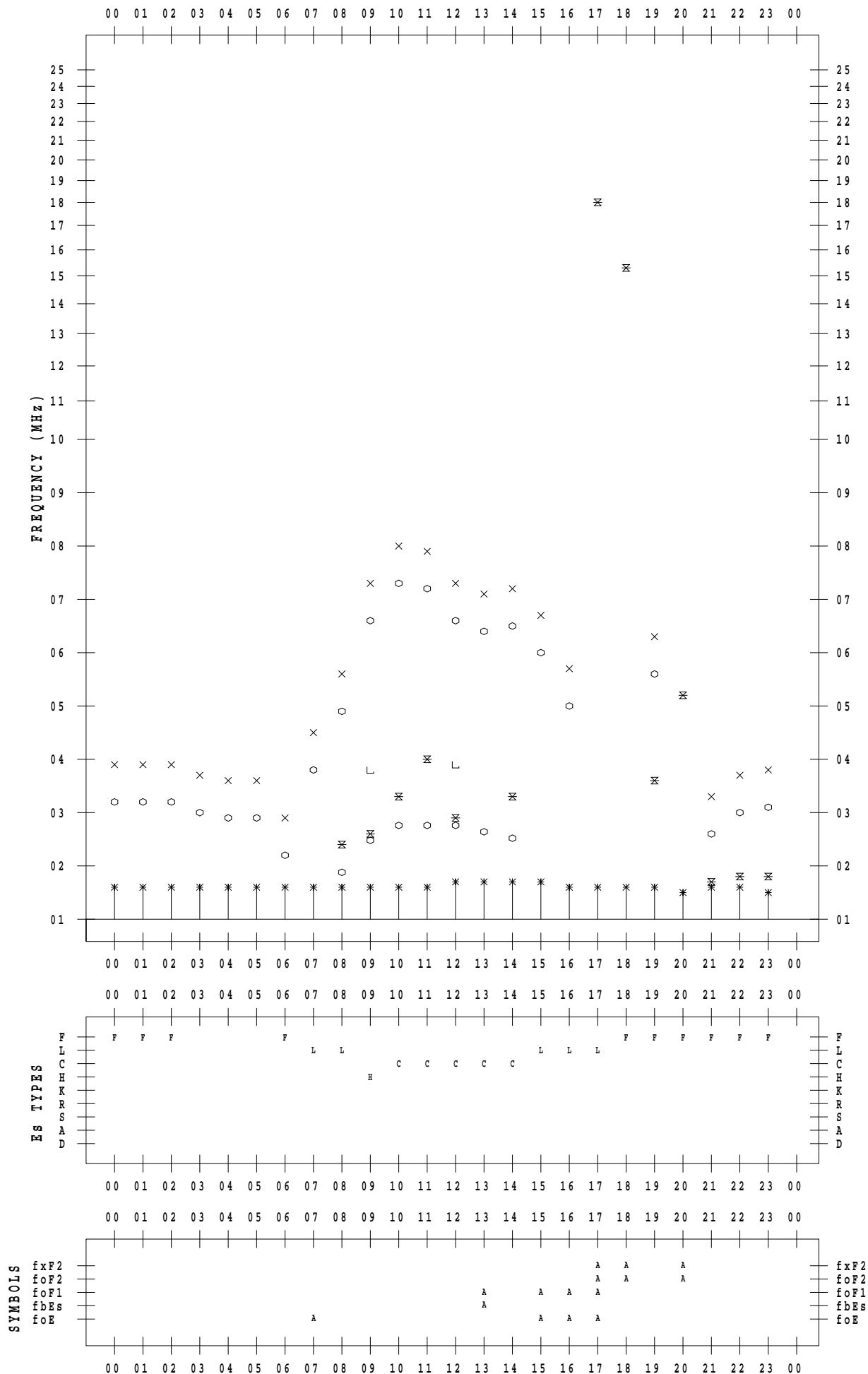
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 2

135 ° E MEAN TIME



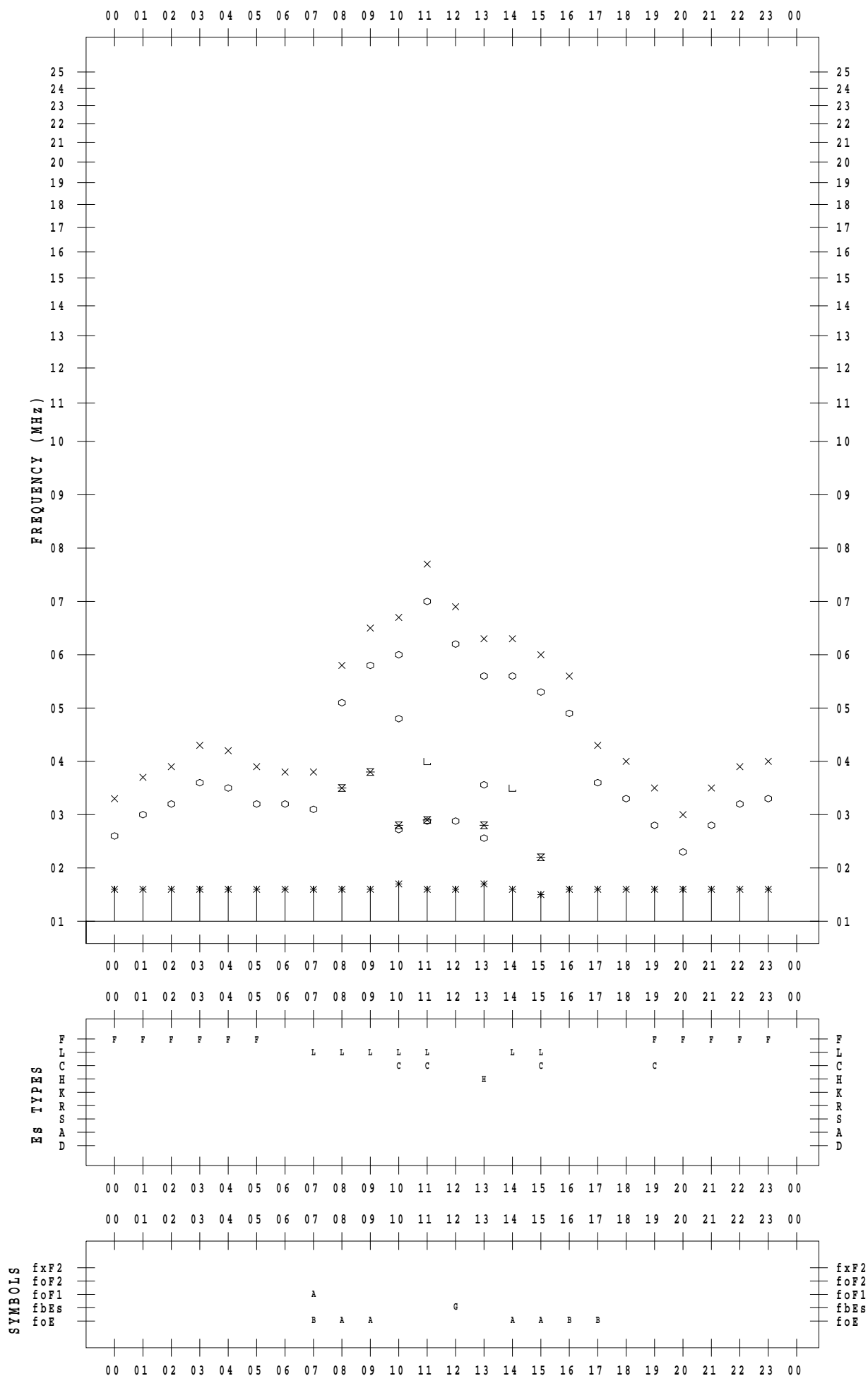
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 3

135 ° E MEAN TIME



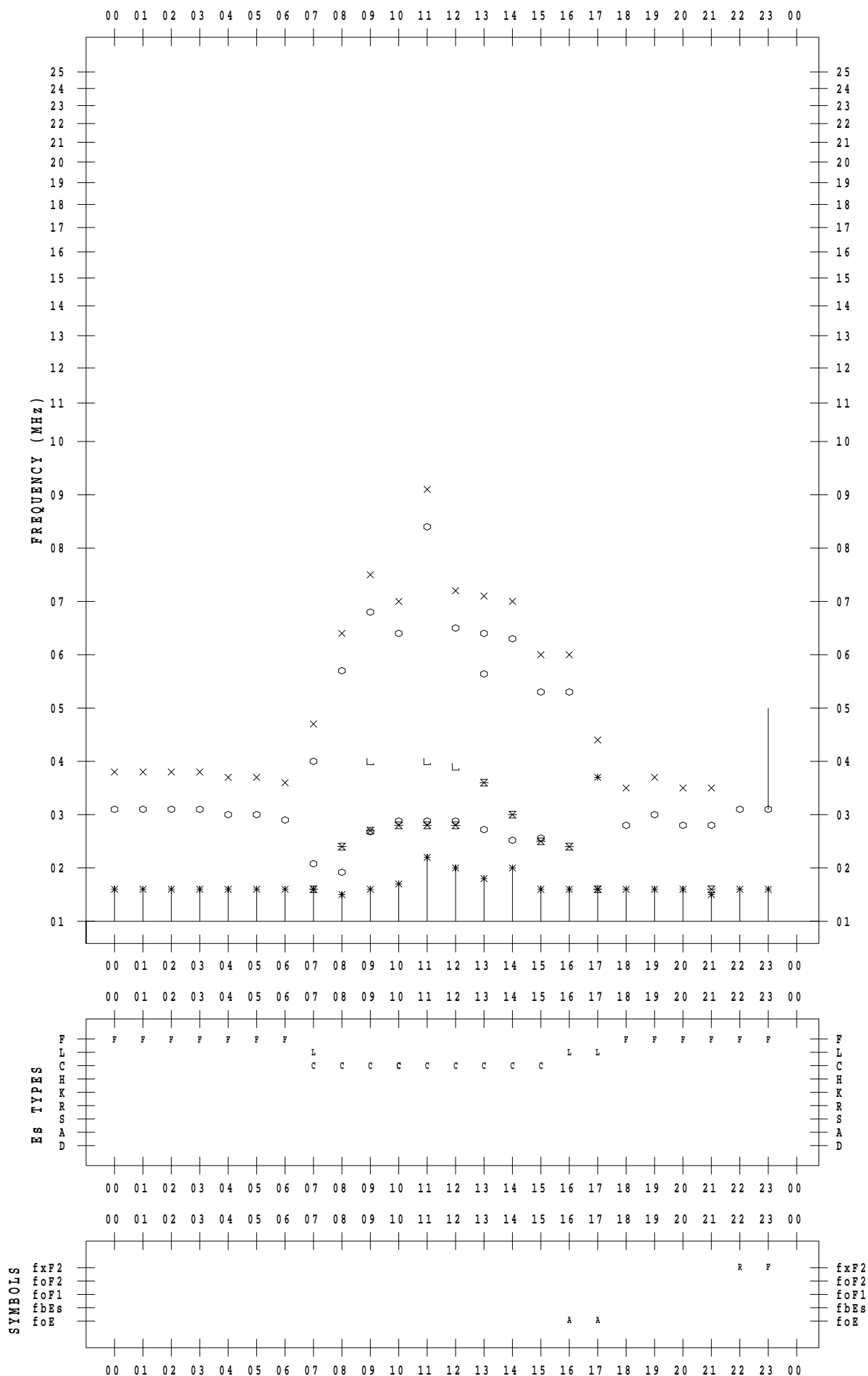
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 4

135 ° E MEAN TIME



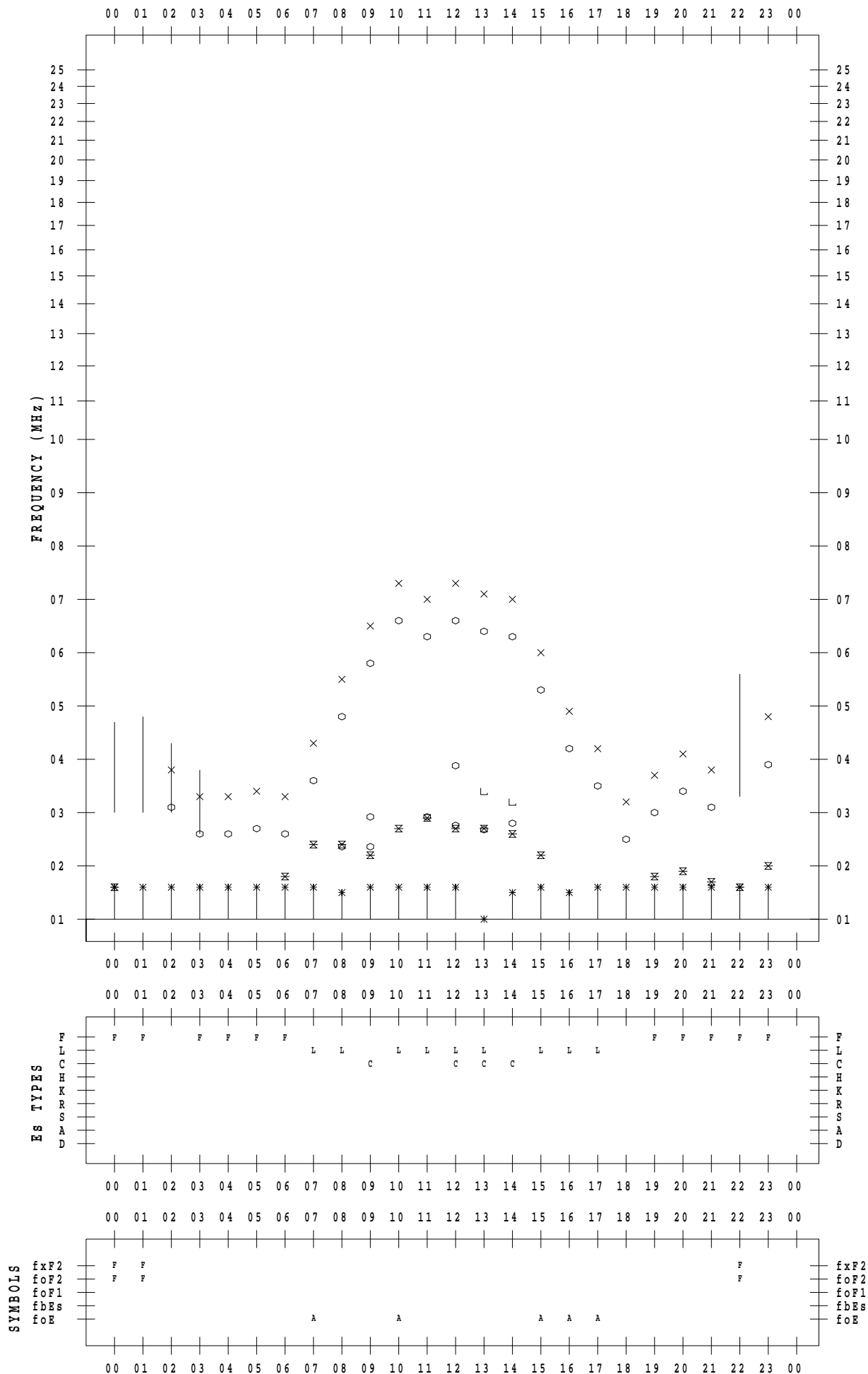
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 5

135 ° E MEAN TIME



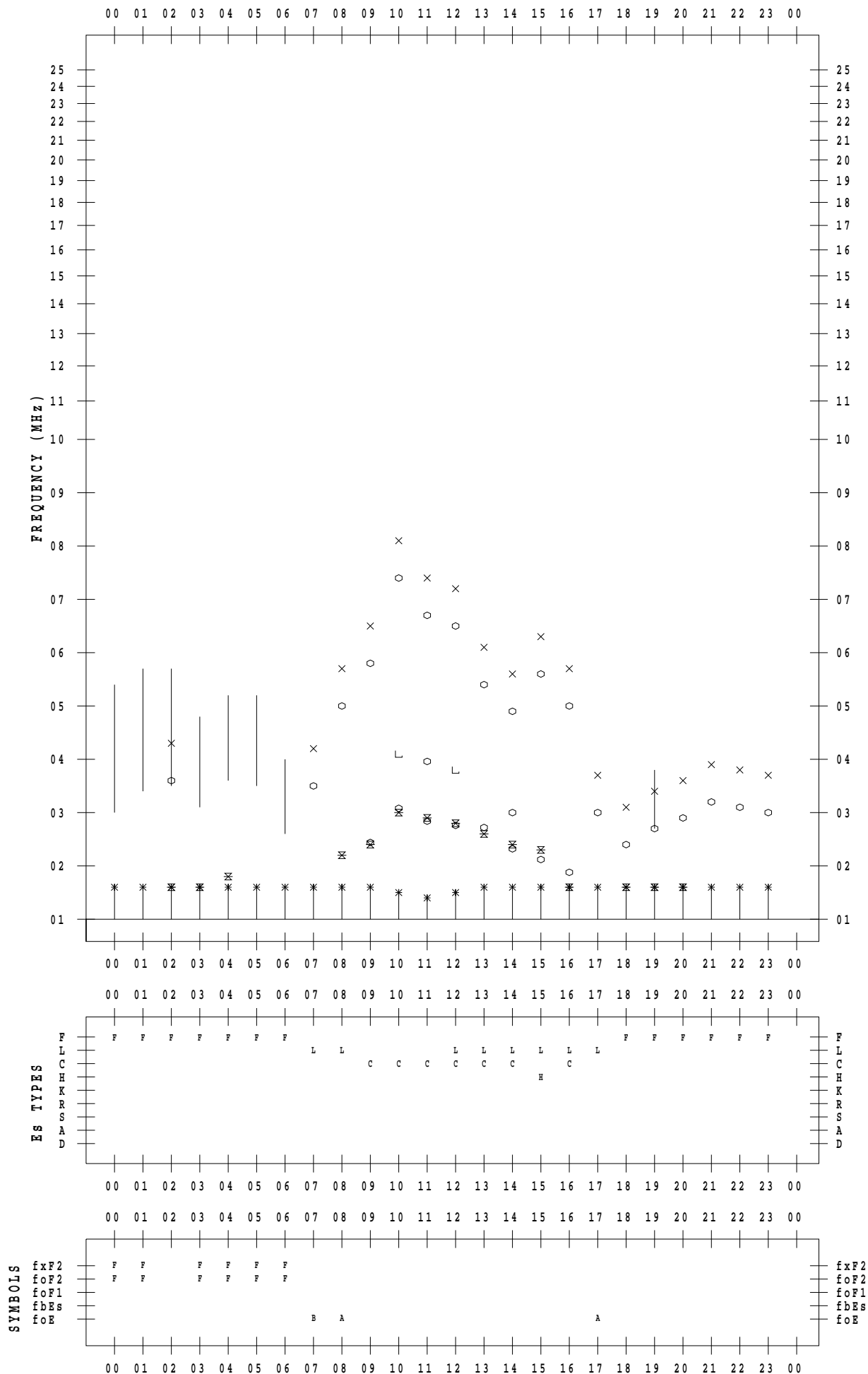
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 6

135 ° E MEAN TIME



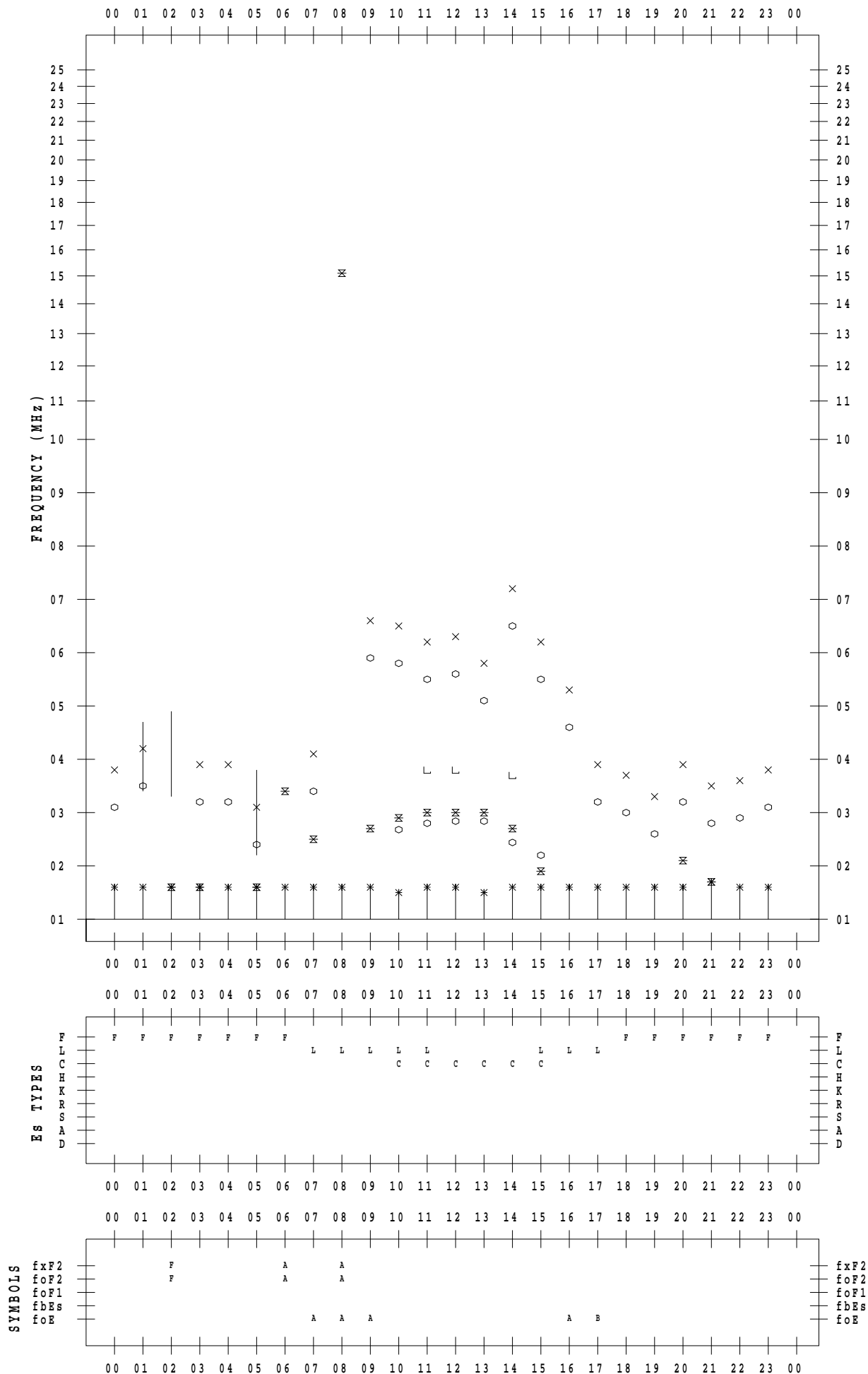
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 7

135 ° E MEAN TIME



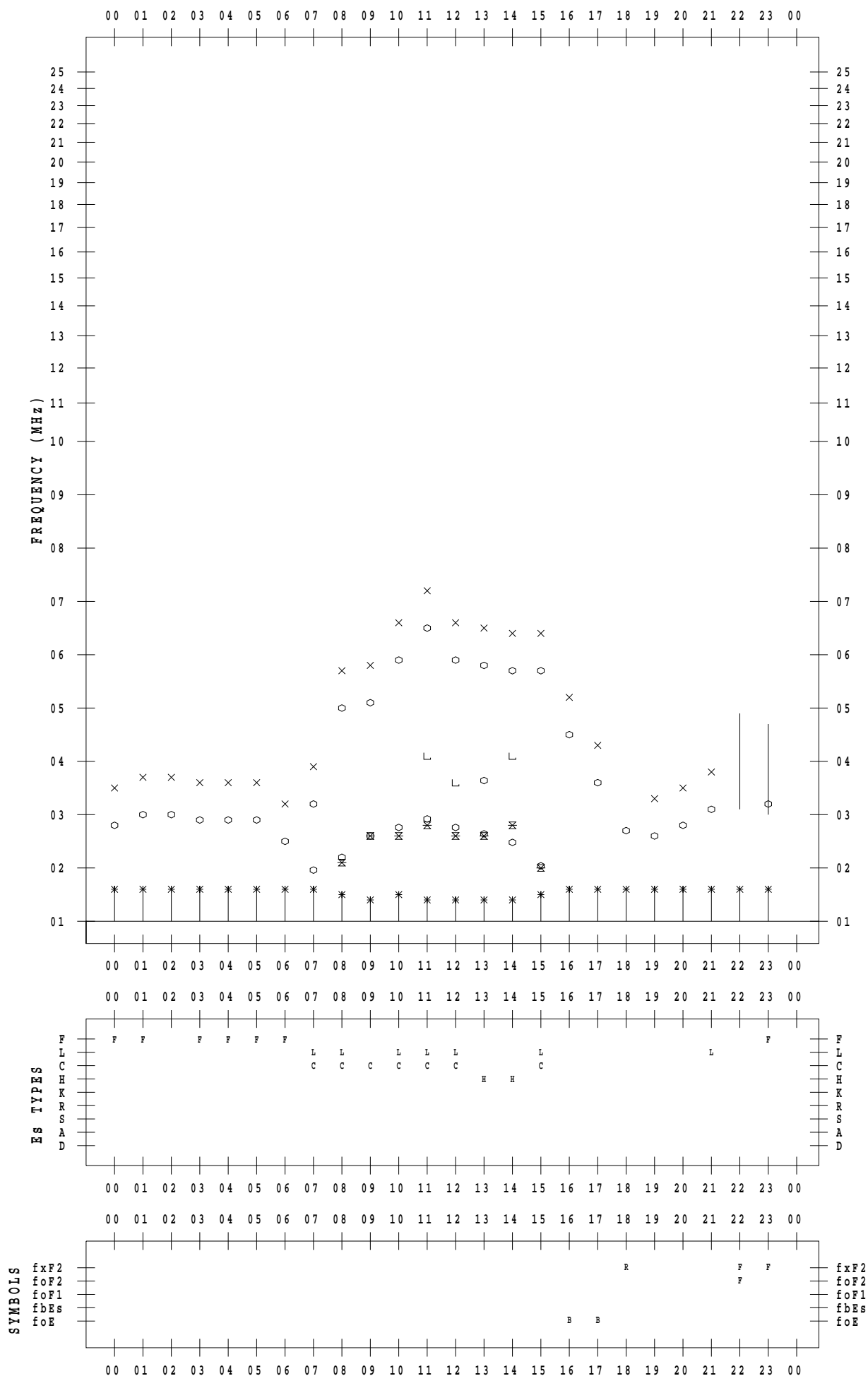
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 8

135 ° E MEAN TIME



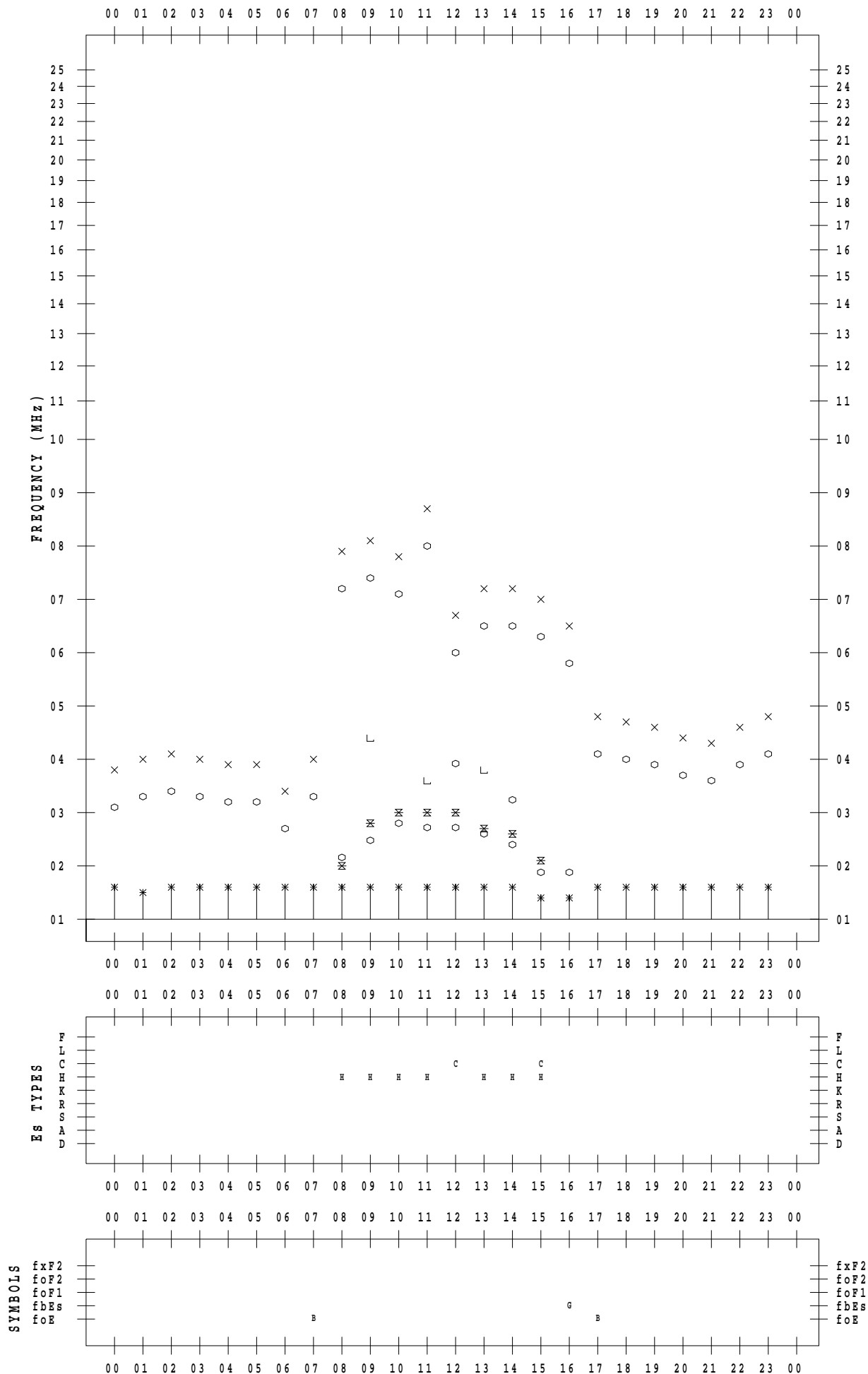
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 9

135 ° E MEAN TIME



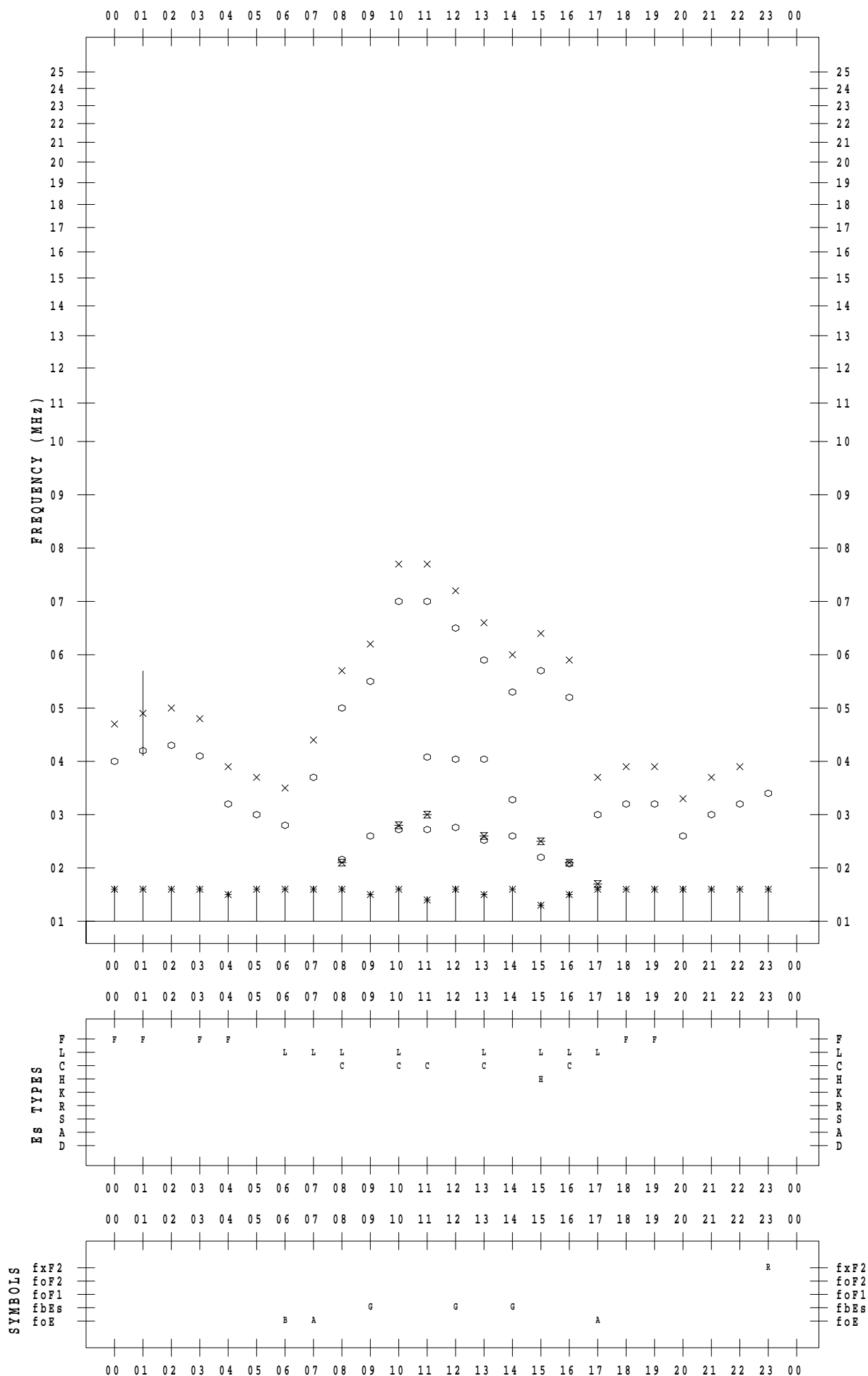
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 10

135 ° E MEAN TIME



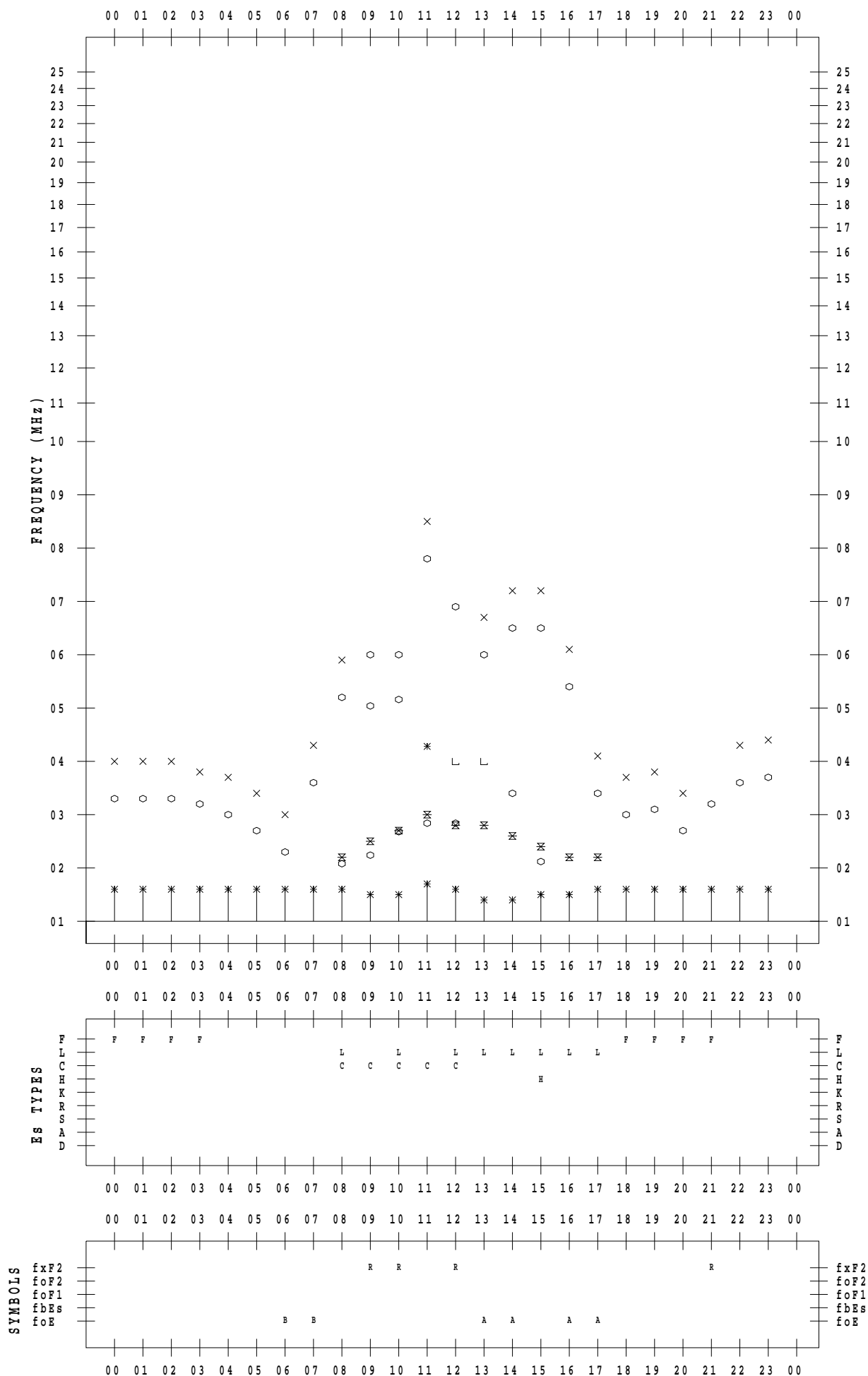
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 11

135 ° E MEAN TIME



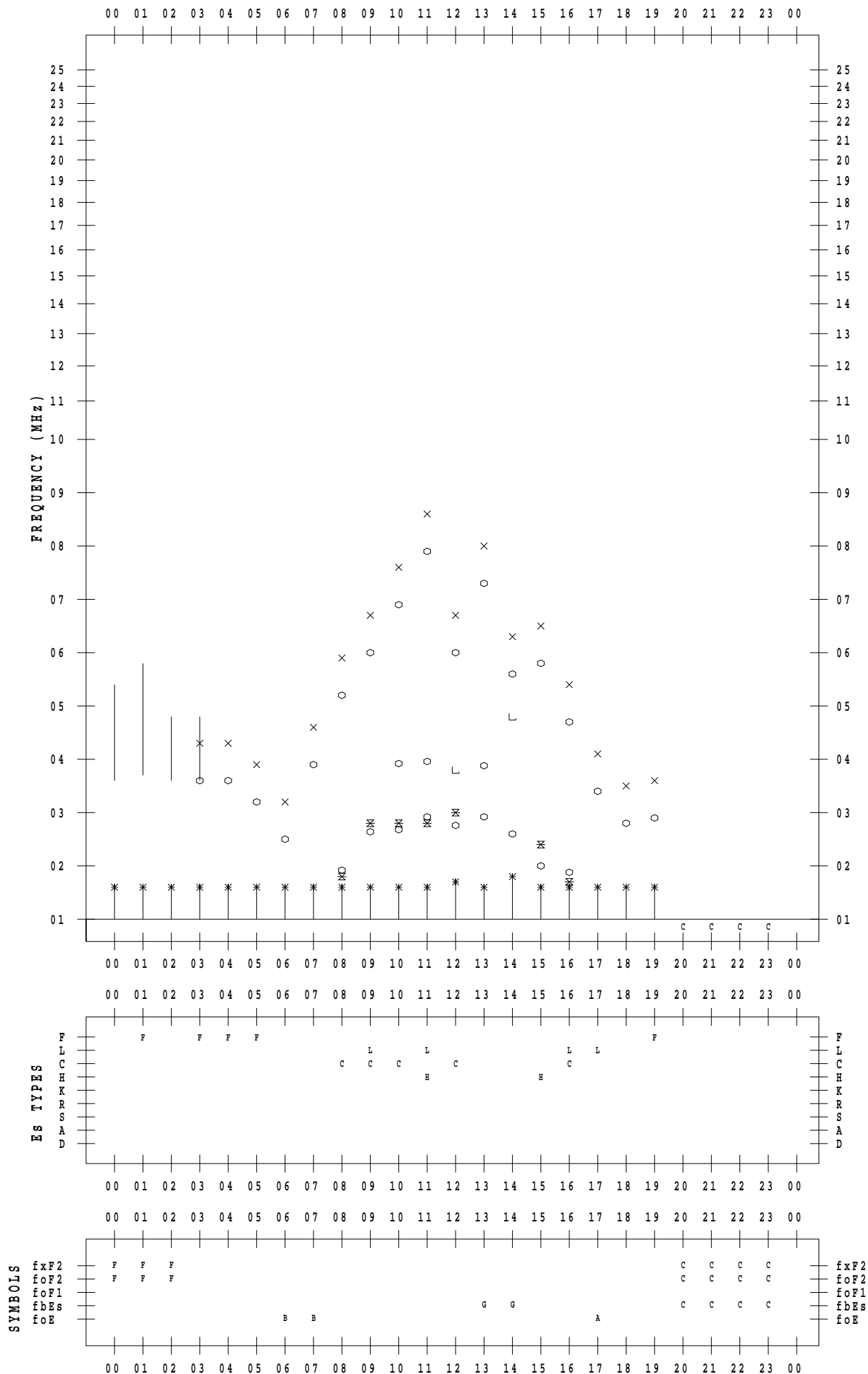
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 12

135 ° E MEAN TIME



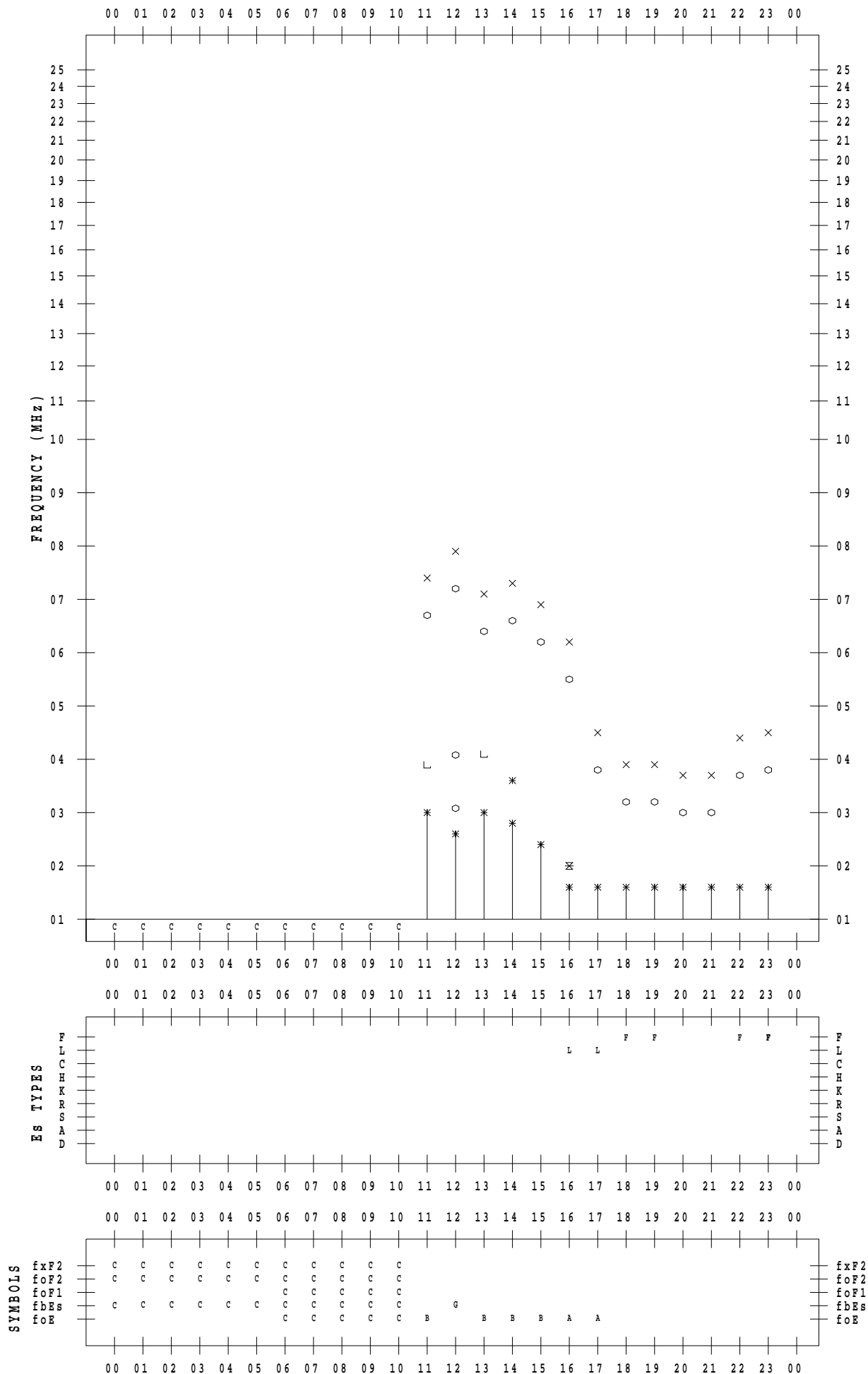
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 13

135 ° E MEAN TIME



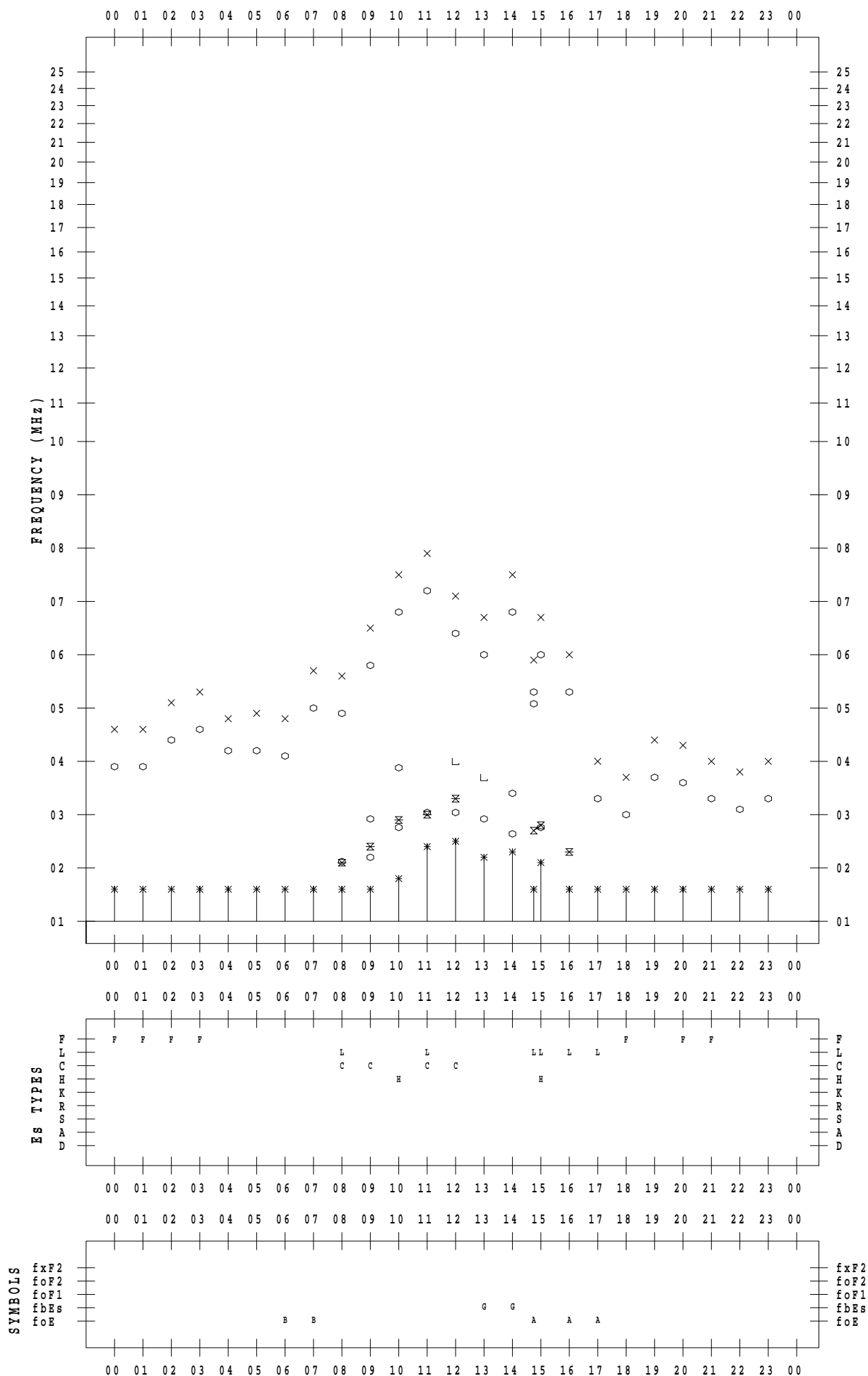
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 14

135 ° E MEAN TIME



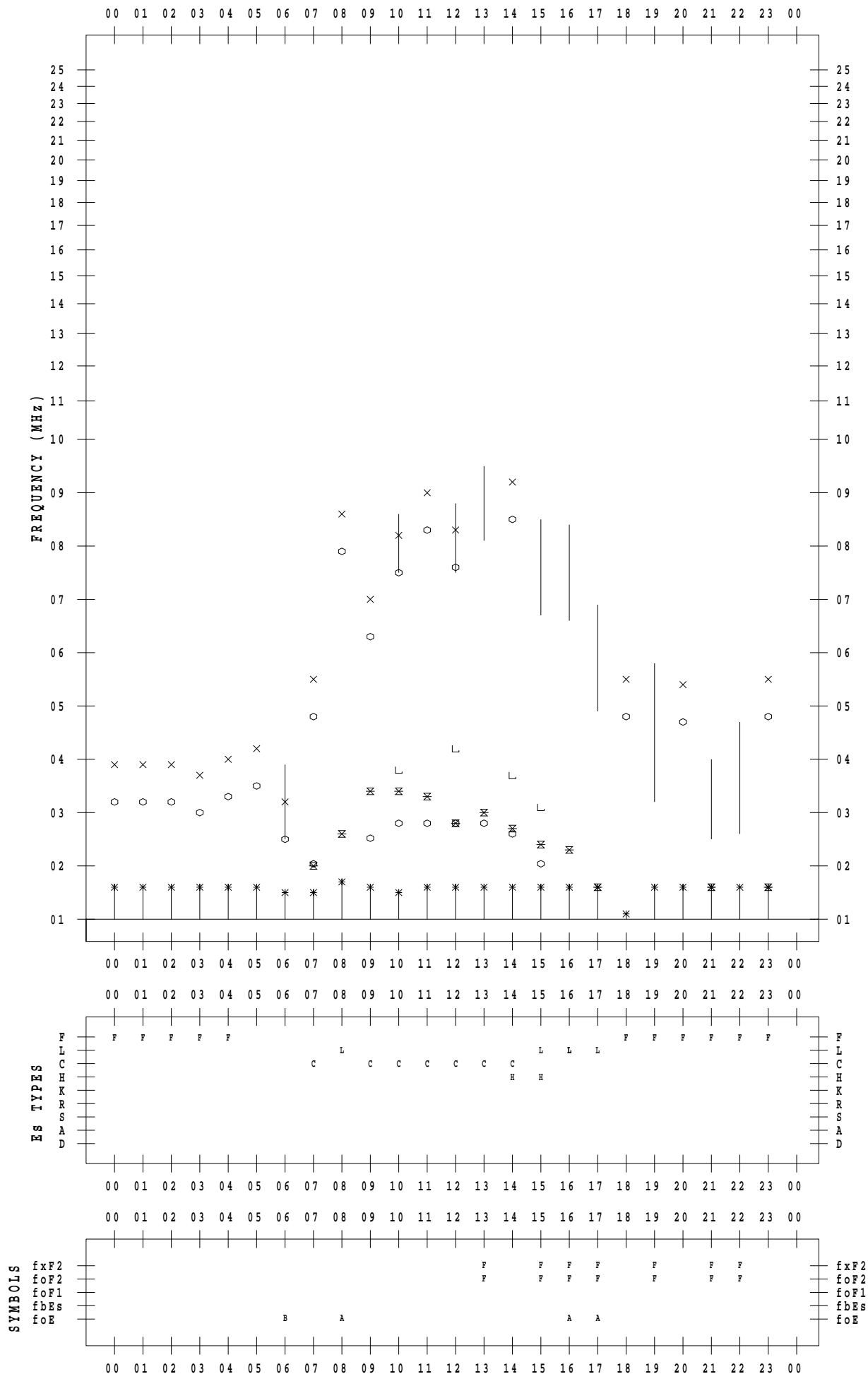
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 15

135 ° E MEAN TIME



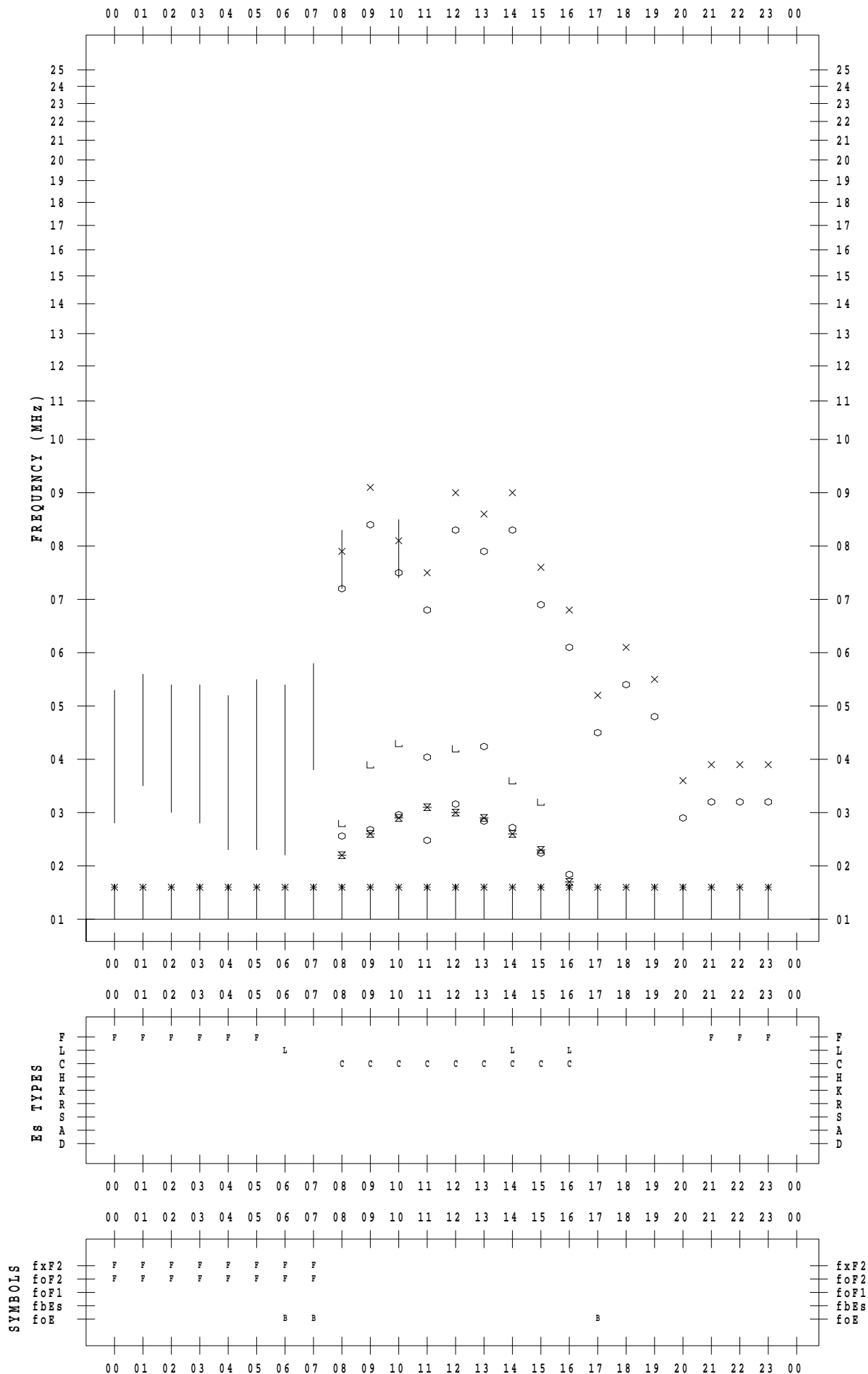
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 16

135 ° E MEAN TIME



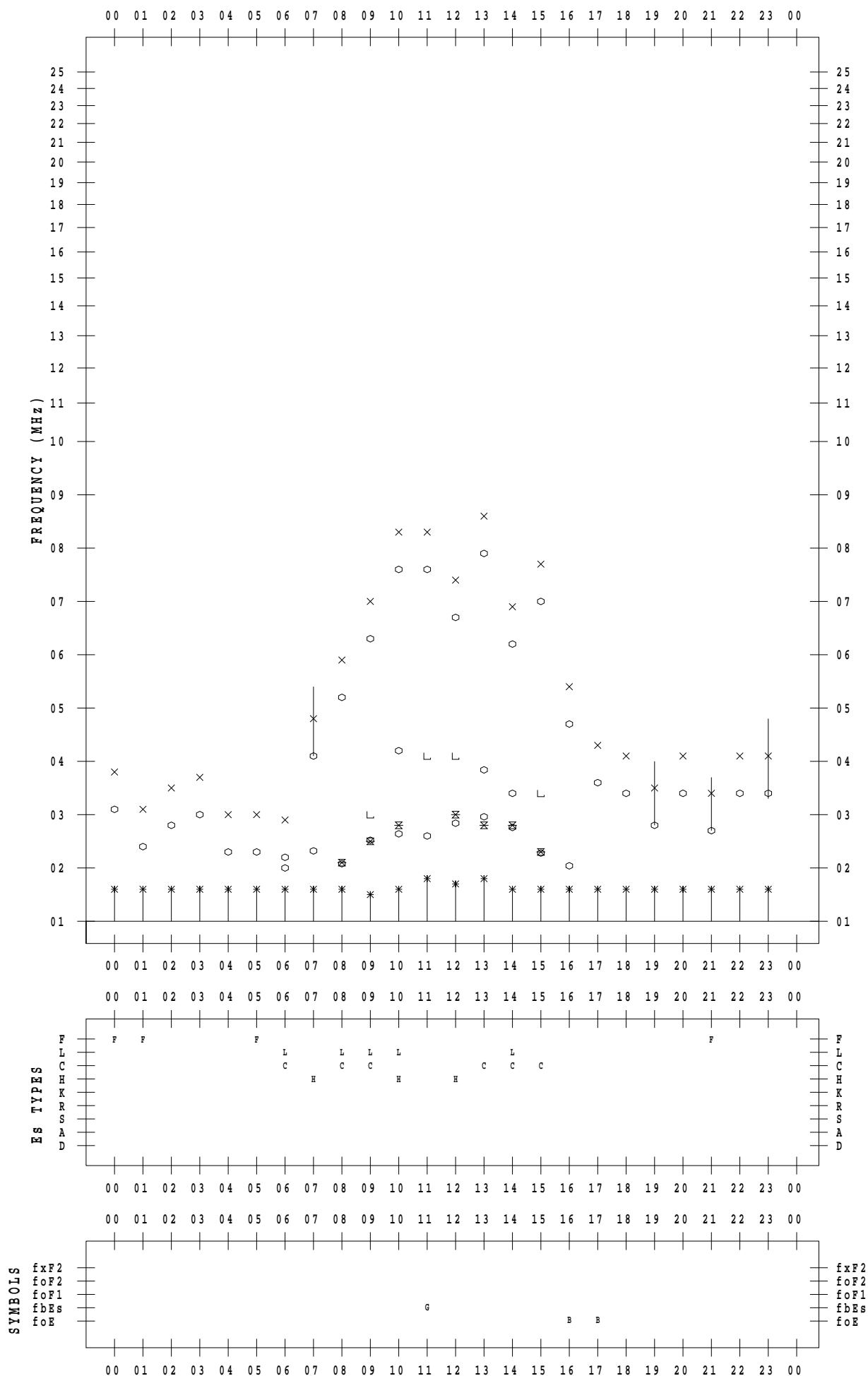
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 17

135 ° E MEAN TIME



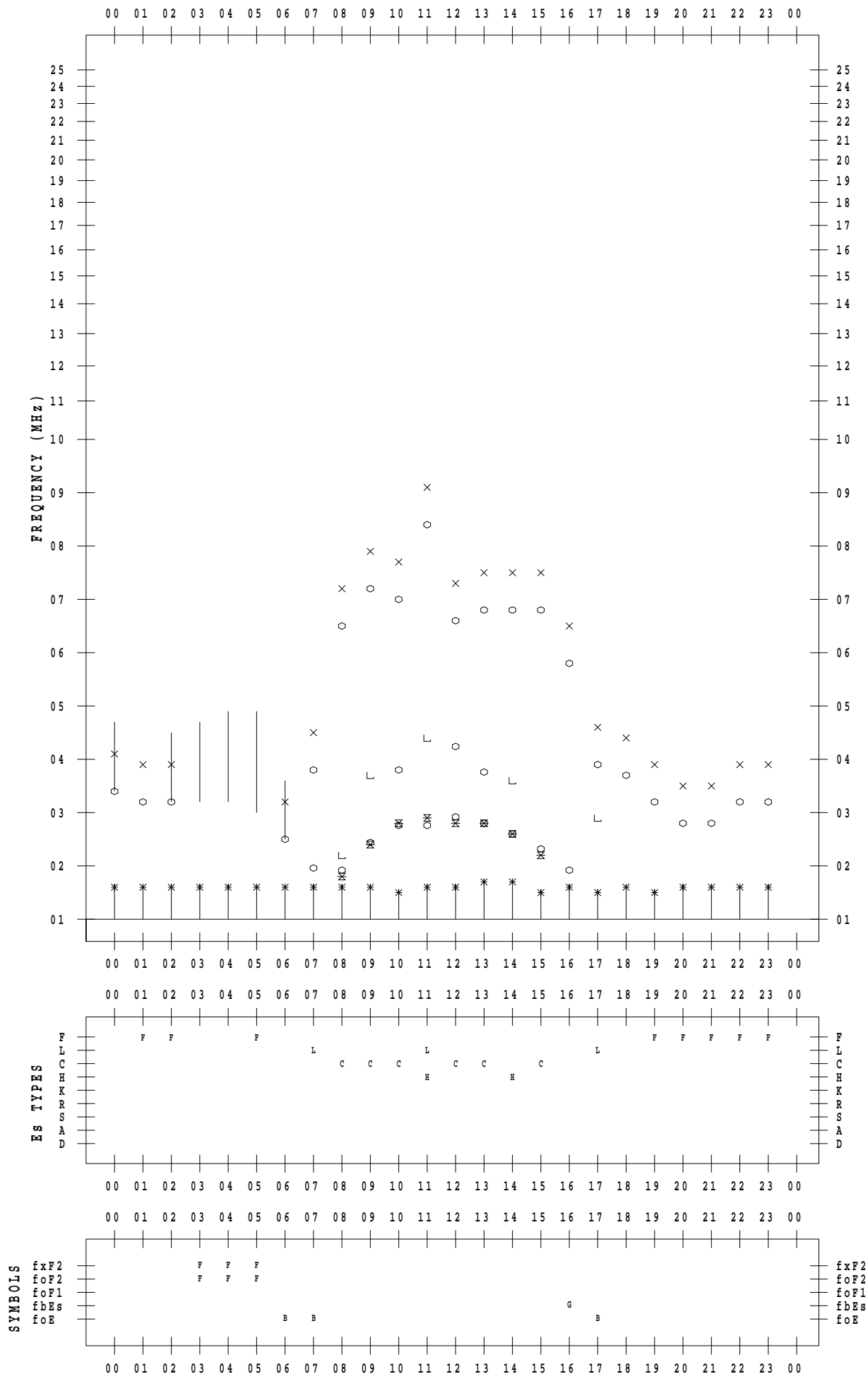
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 18

135 ° E MEAN TIME



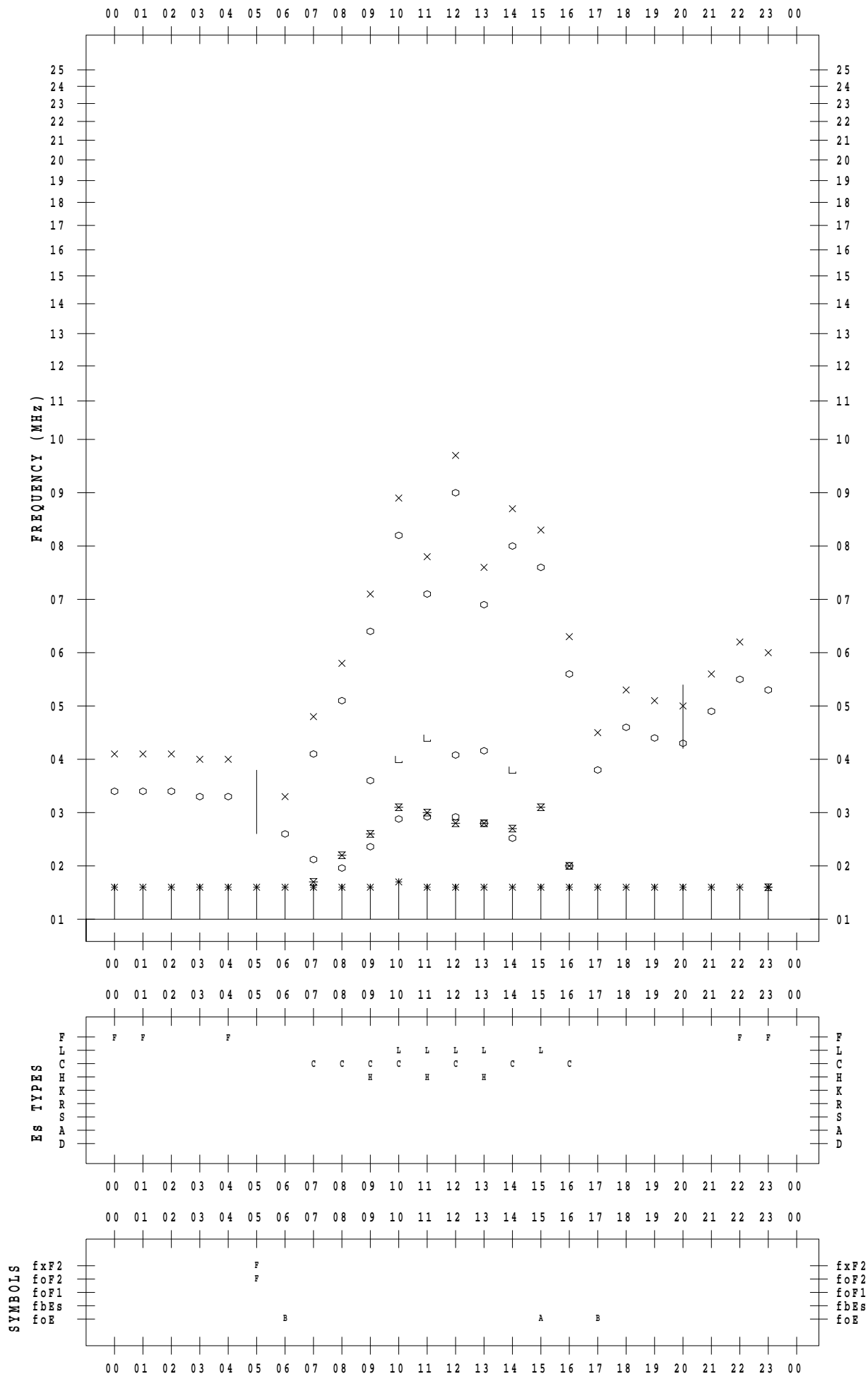
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 19

135 ° E MEAN TIME



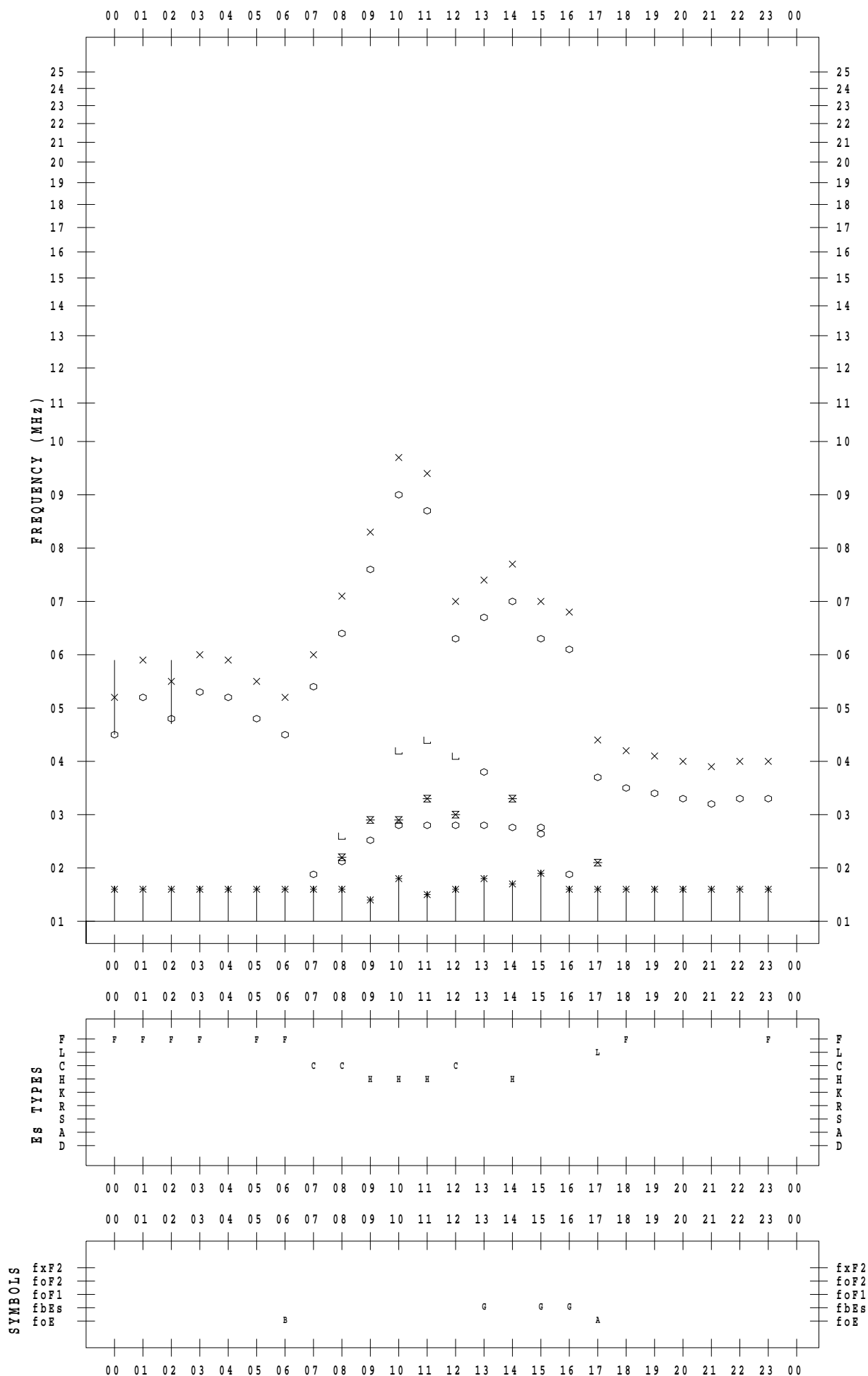
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 20

135 ° E MEAN TIME



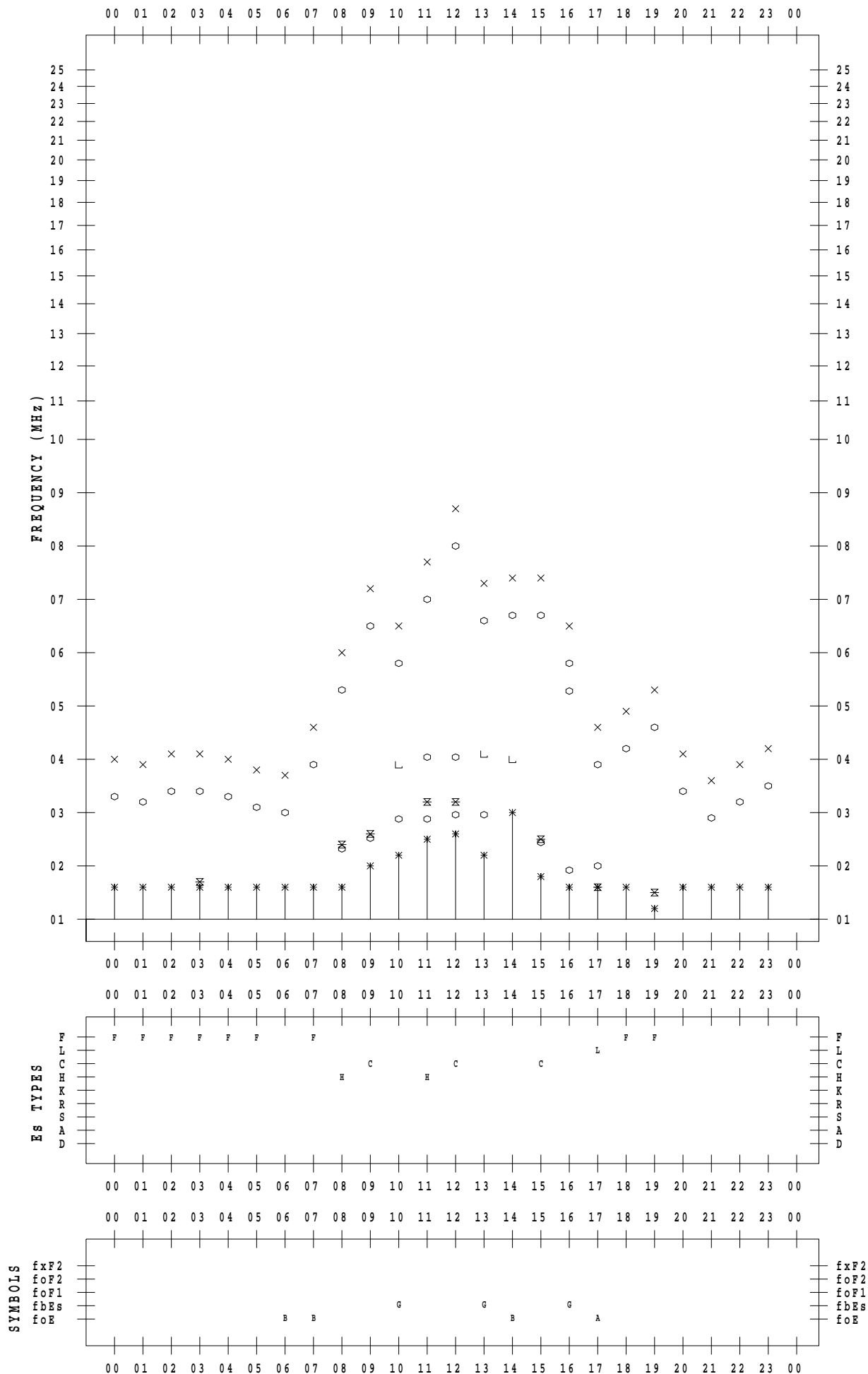
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 21

135 ° E MEAN TIME



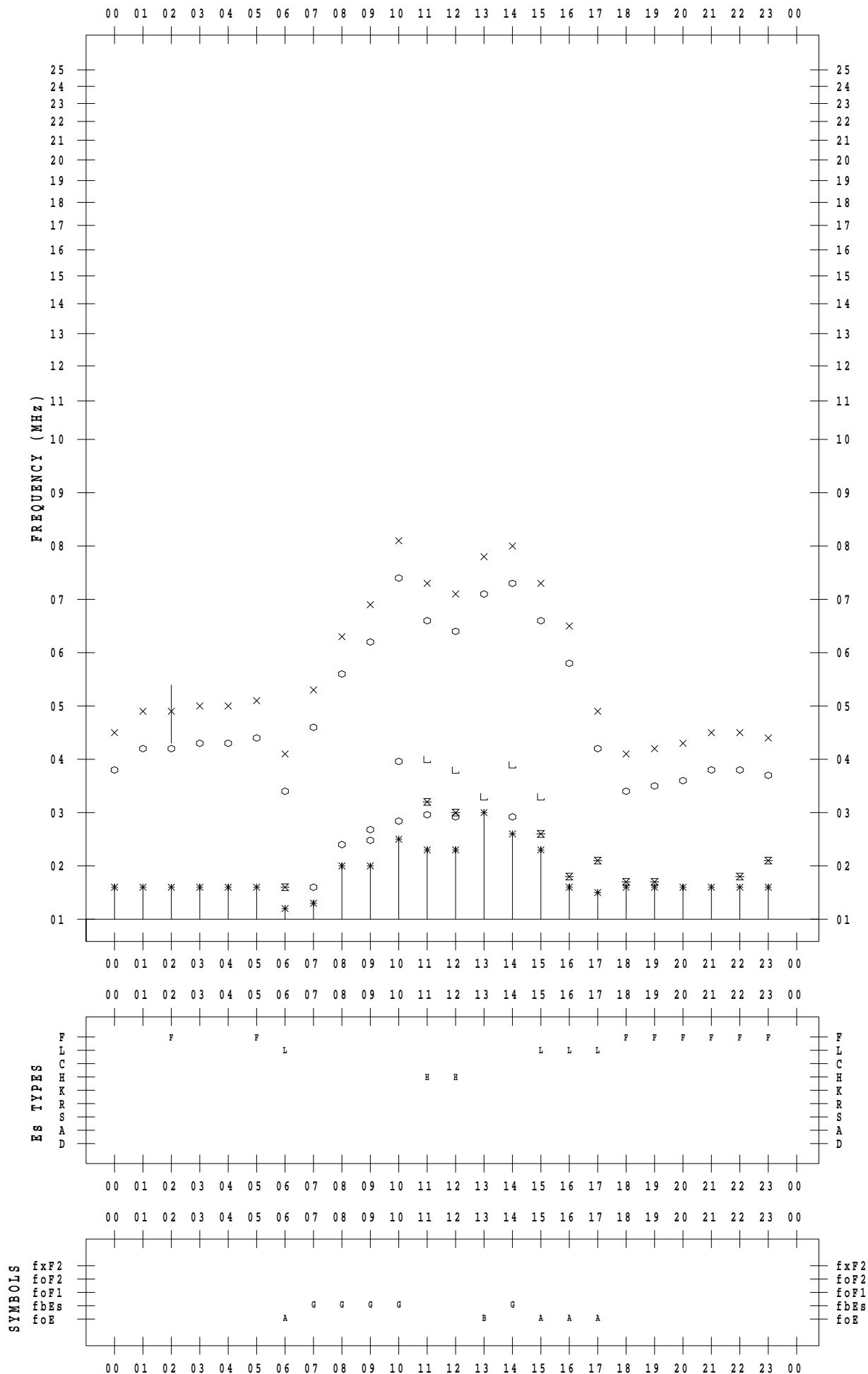
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 22

135 ° E MEAN TIME



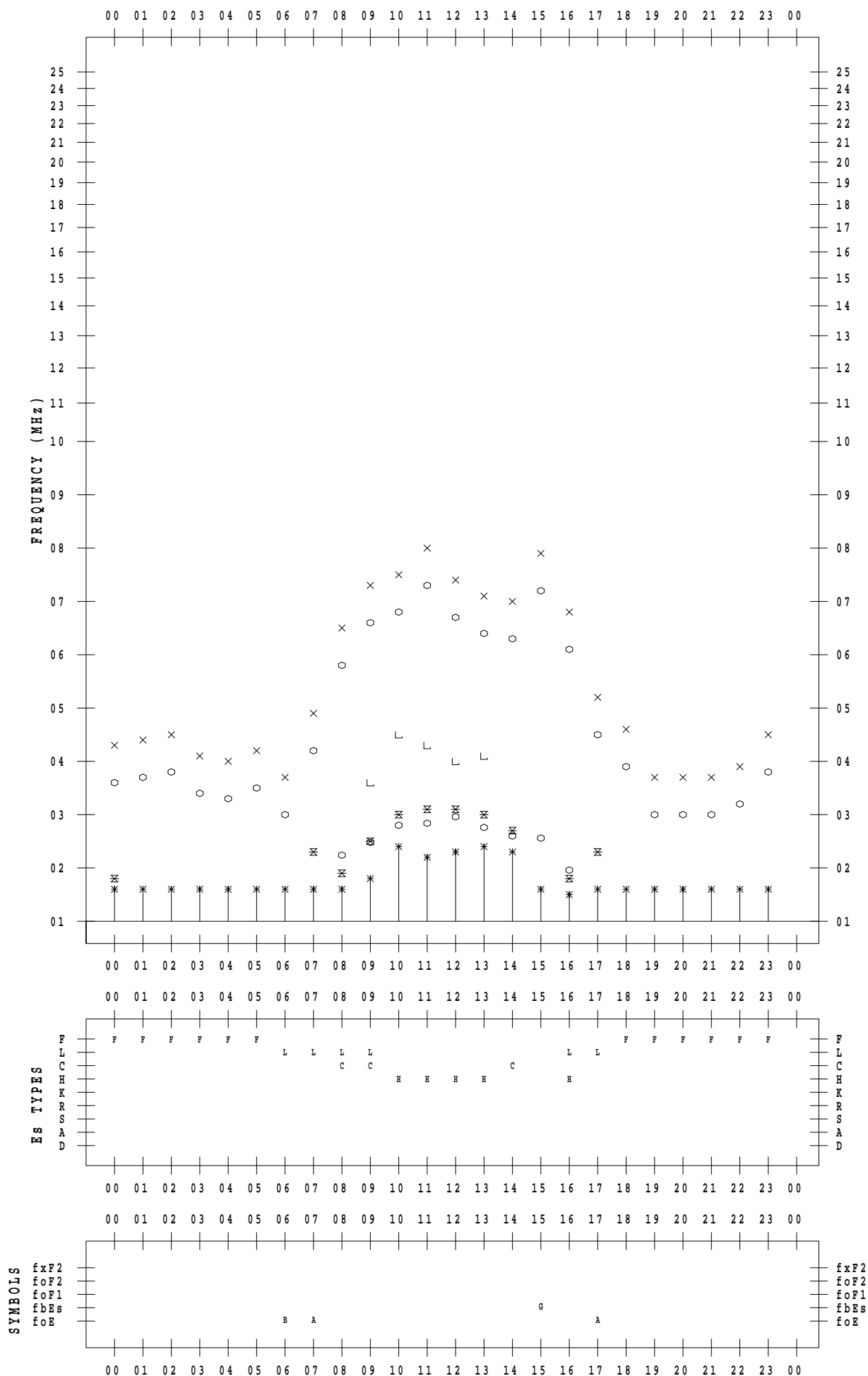
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 23

135 ° E MEAN TIME



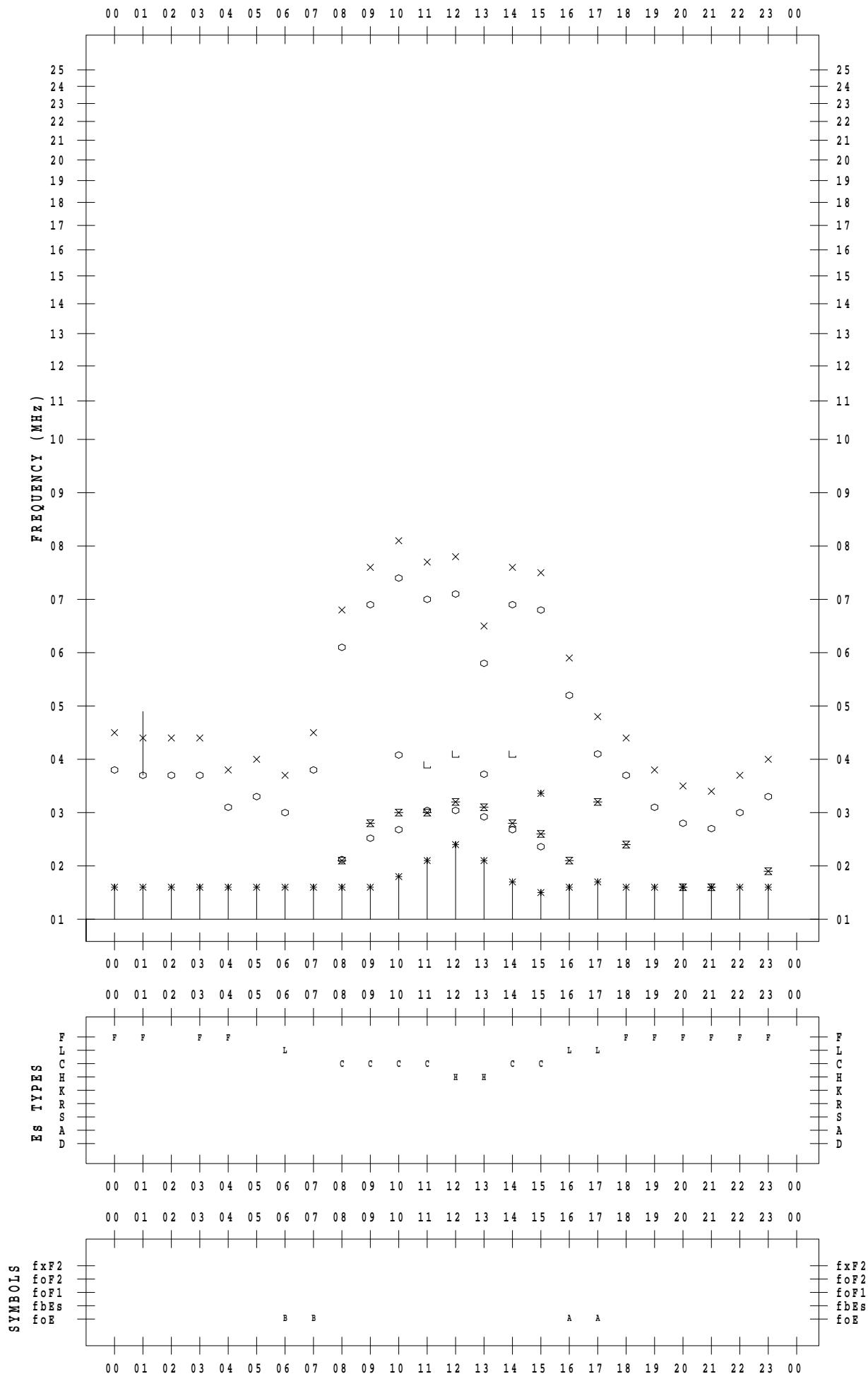
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 24

135 ° E MEAN TIME



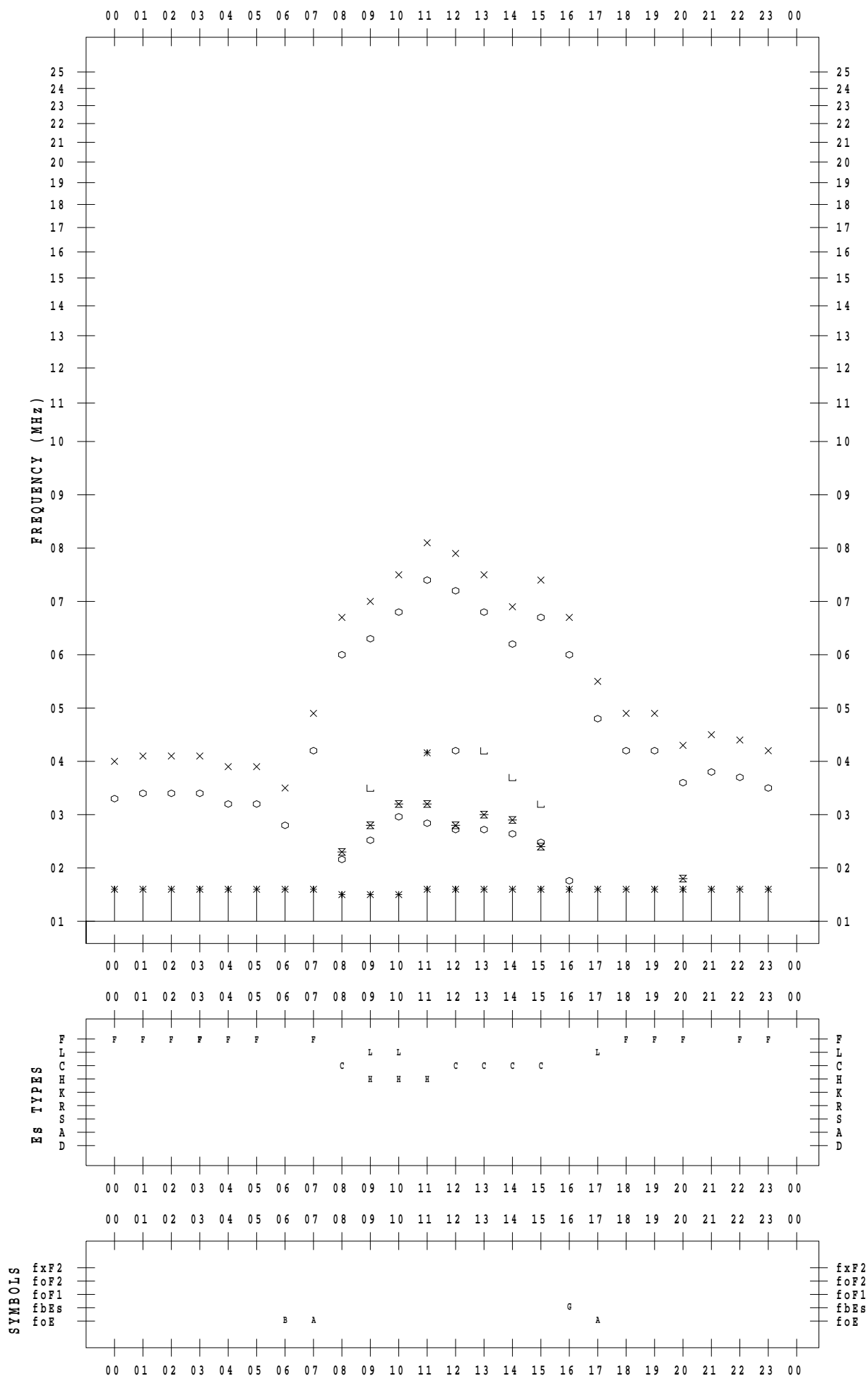
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 25

135 ° E MEAN TIME



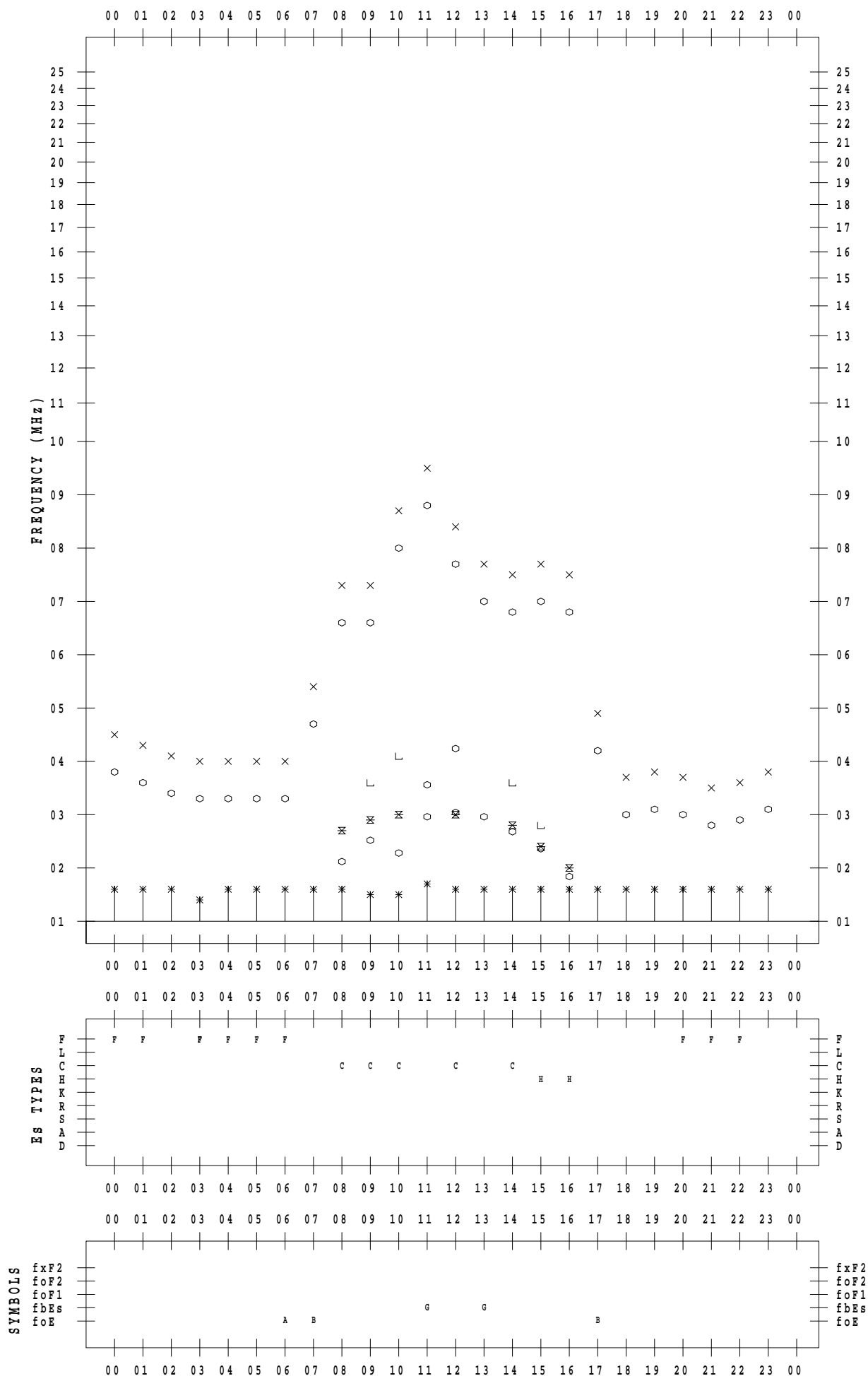
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 26

135 ° E MEAN TIME



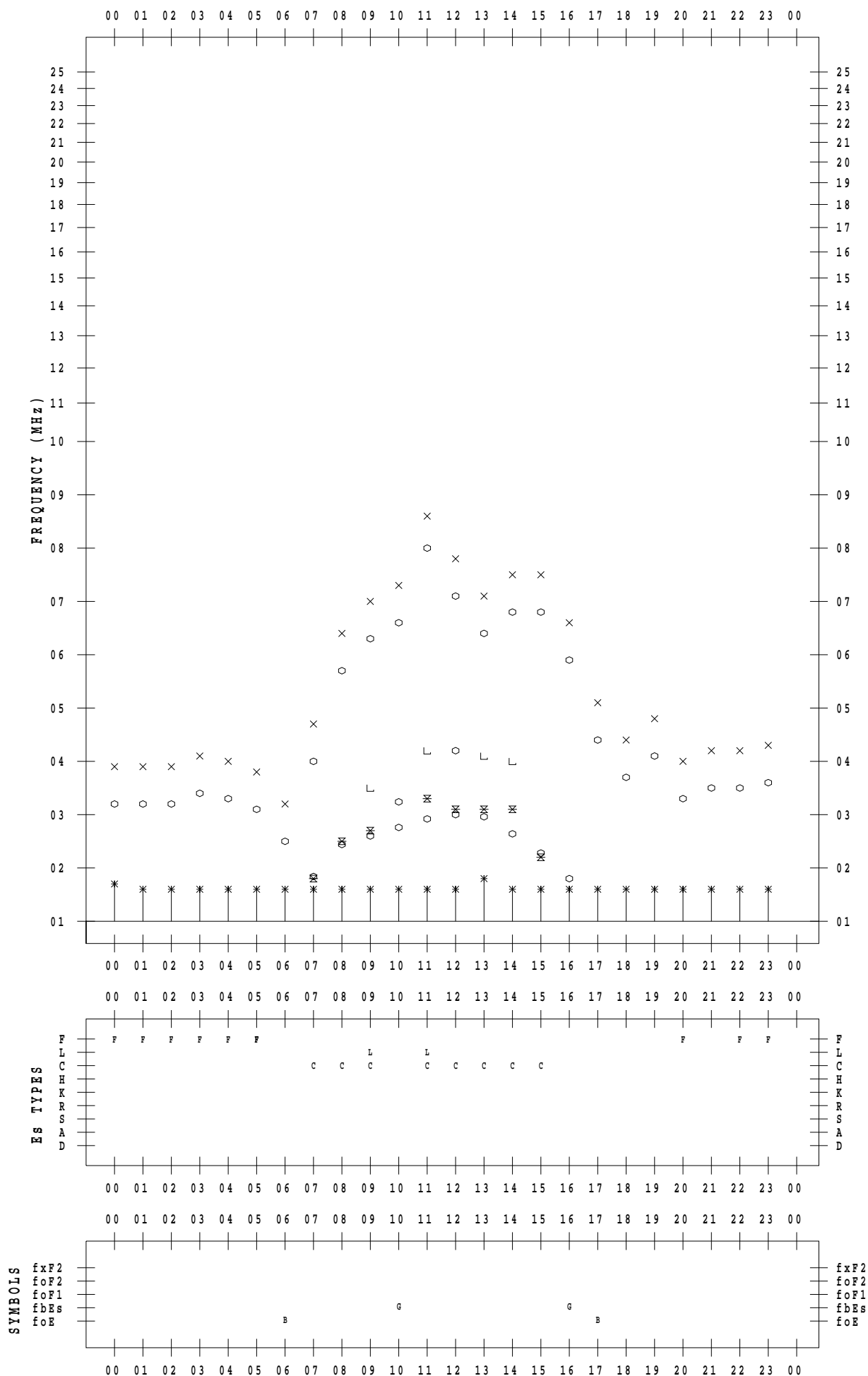
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 27

135 ° E MEAN TIME



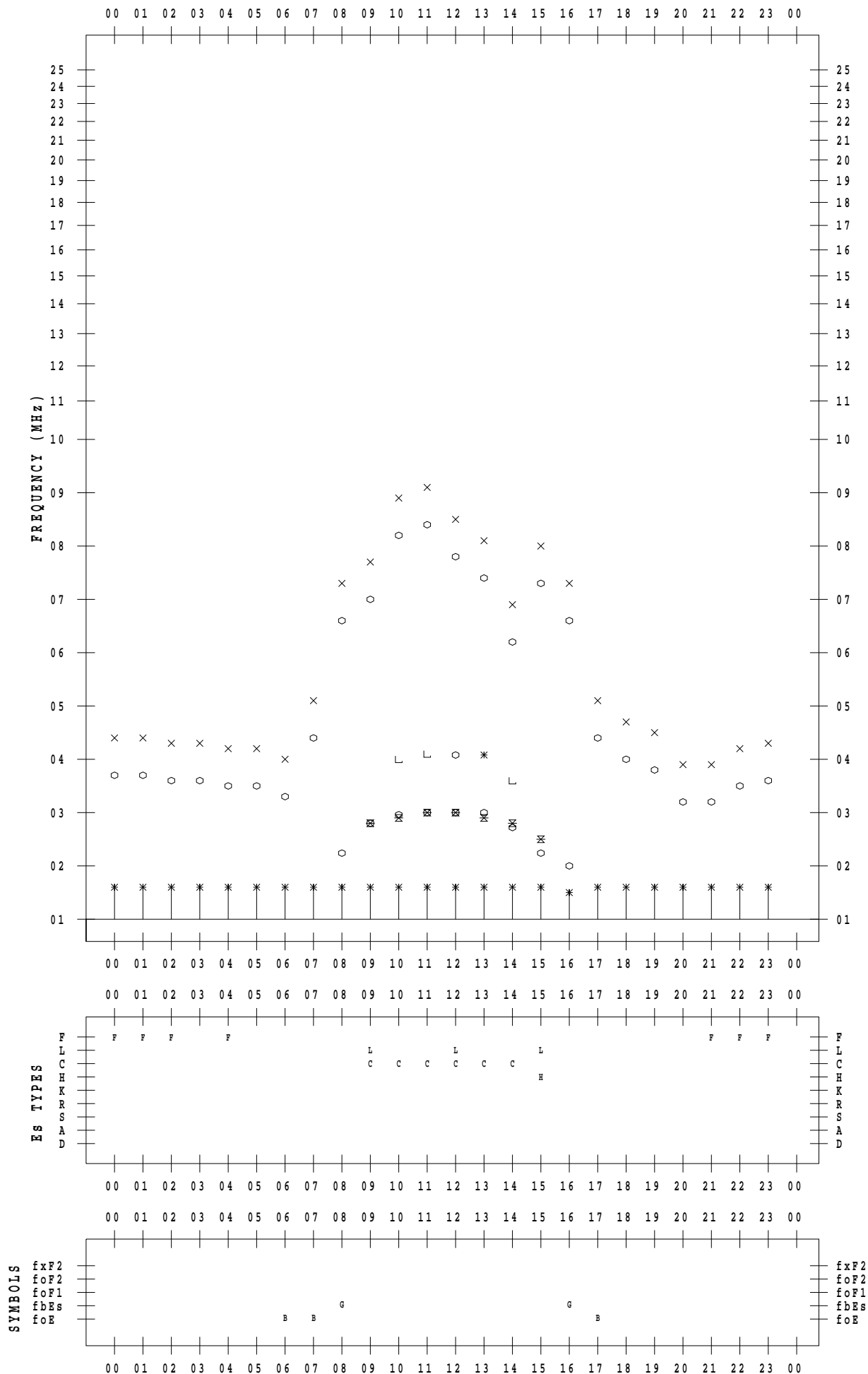
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 28

135 ° E MEAN TIME



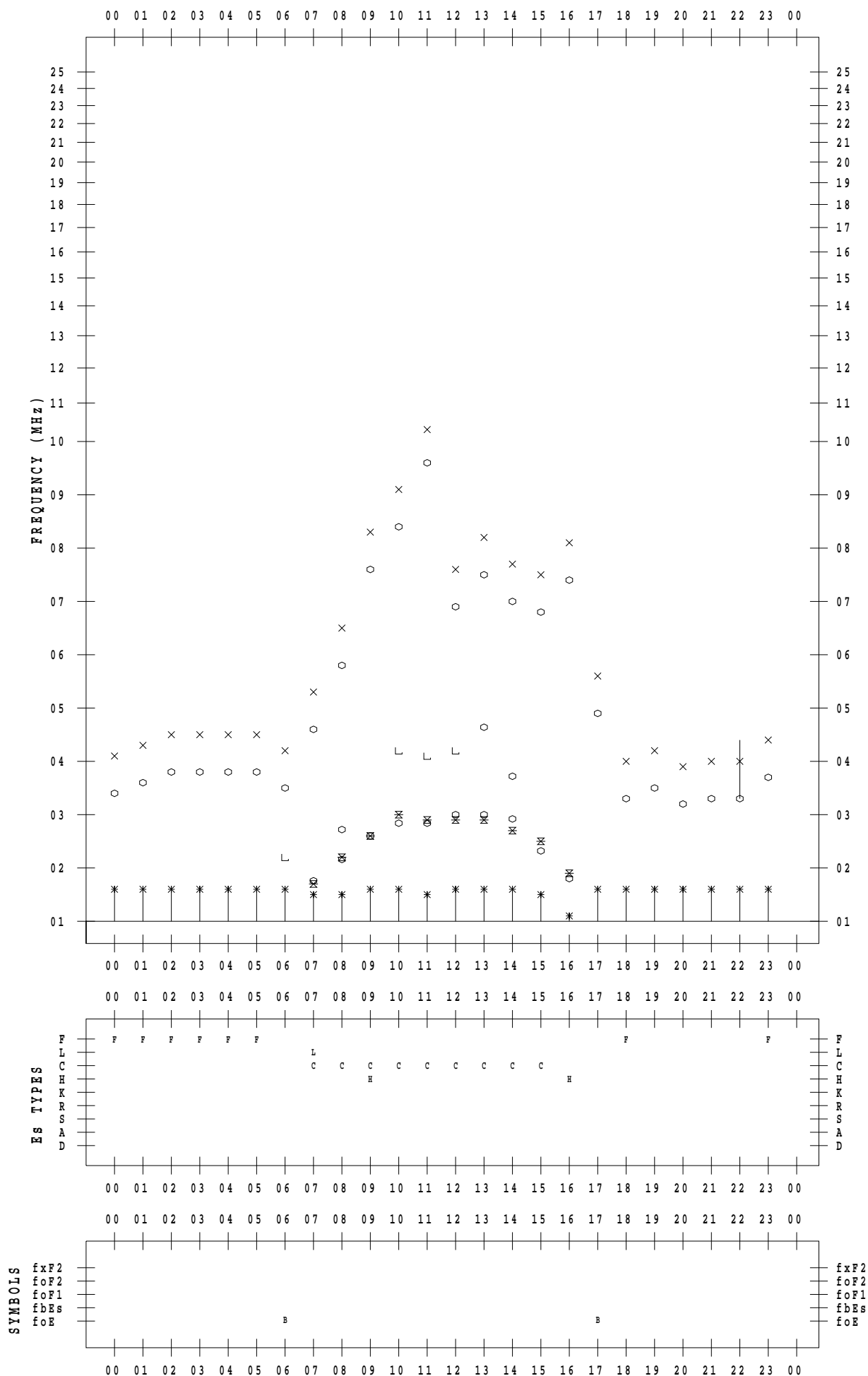
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 29

135 ° E MEAN TIME



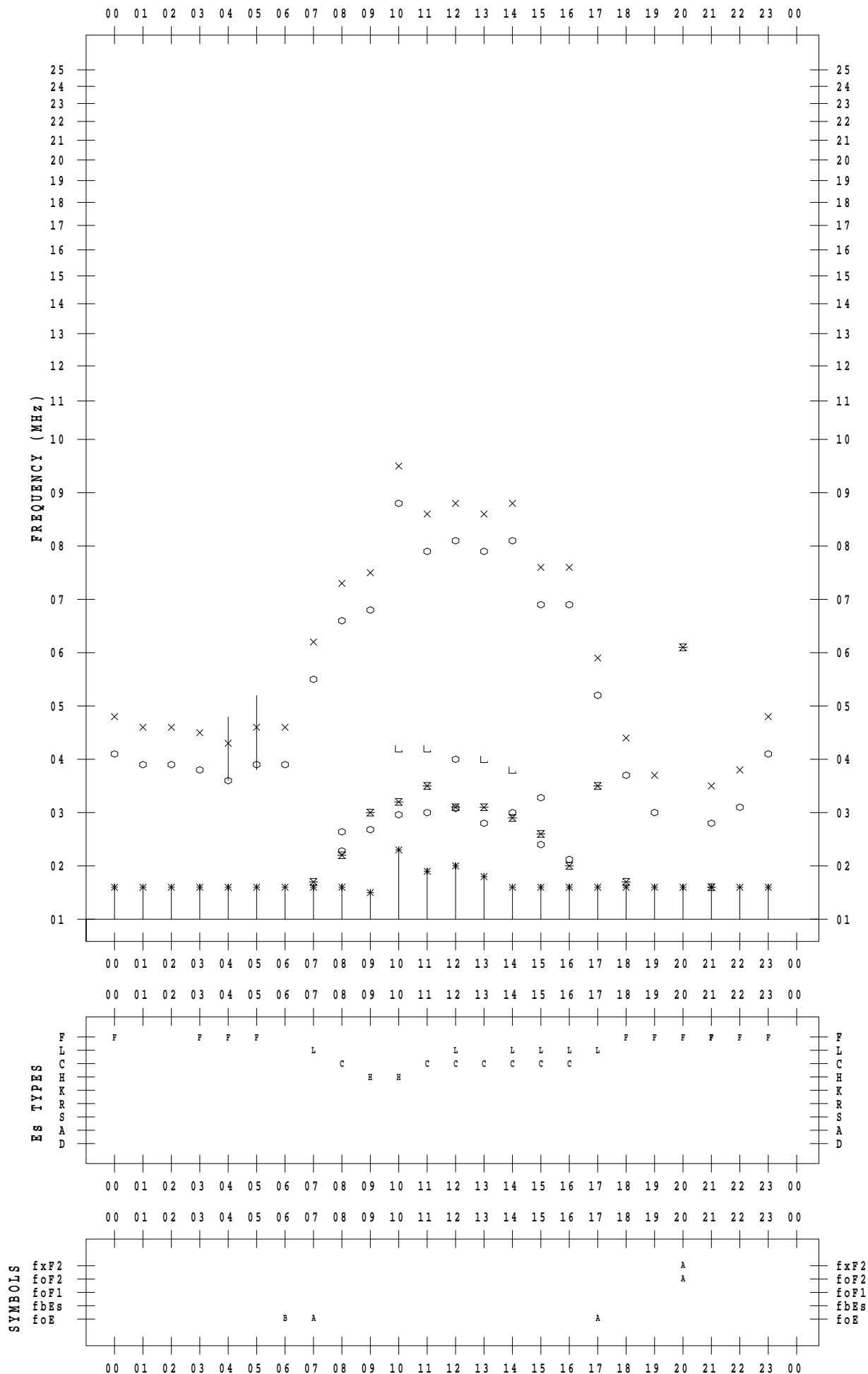
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 30

135 ° E MEAN TIME



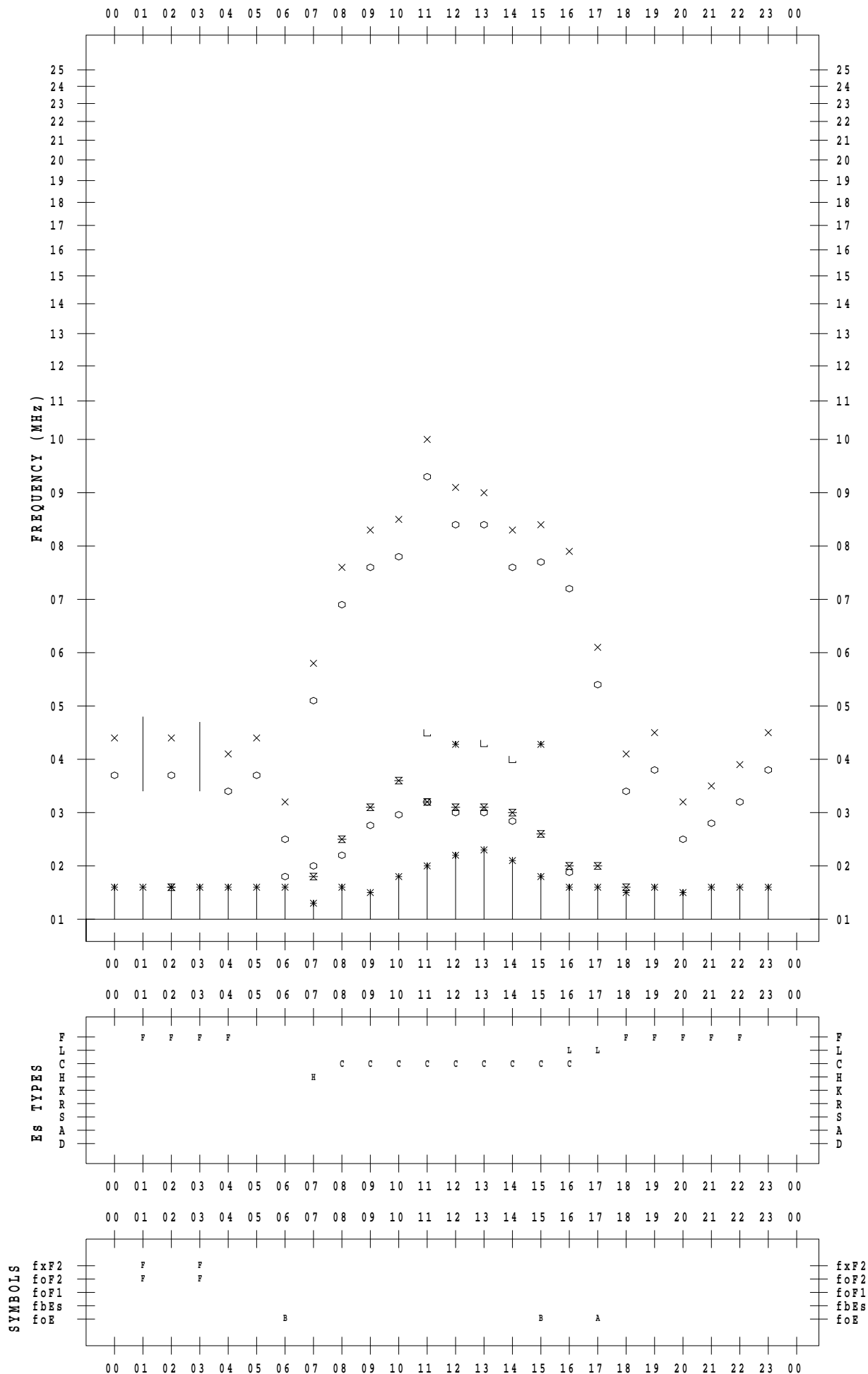
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 1 / 31

135 ° E MEAN TIME



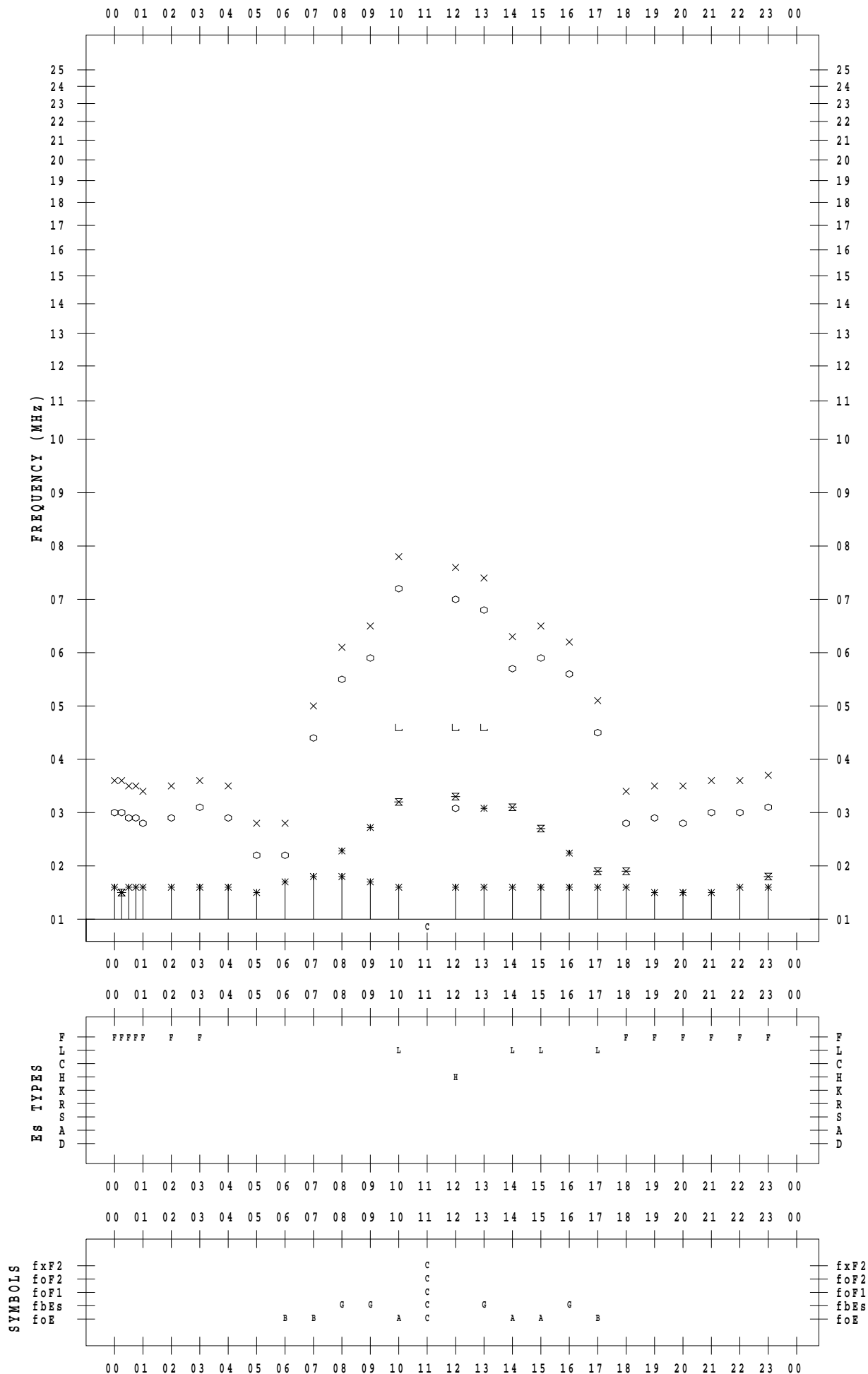
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 1

135 ° E MEAN TIME



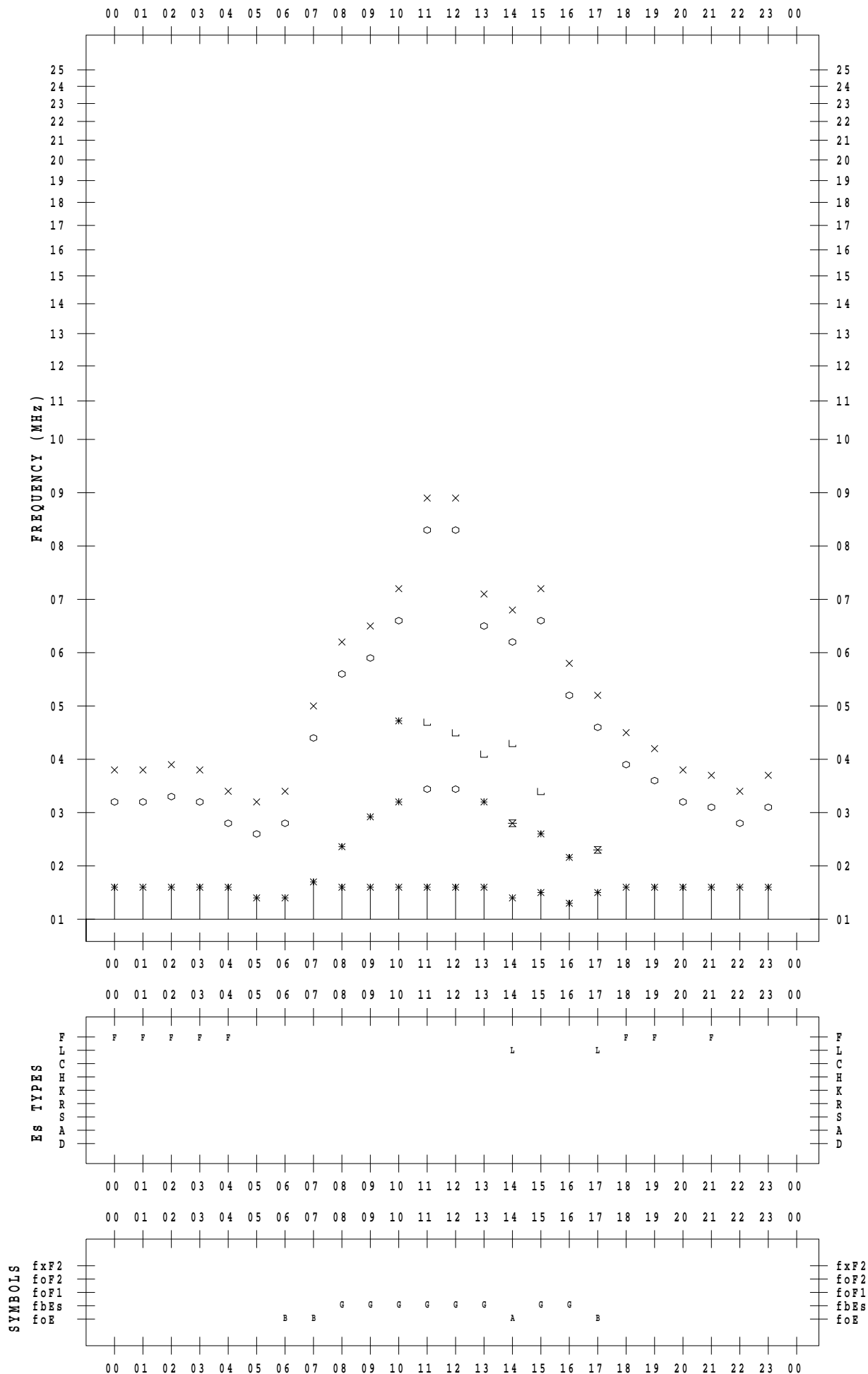
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 2

135 ° E MEAN TIME



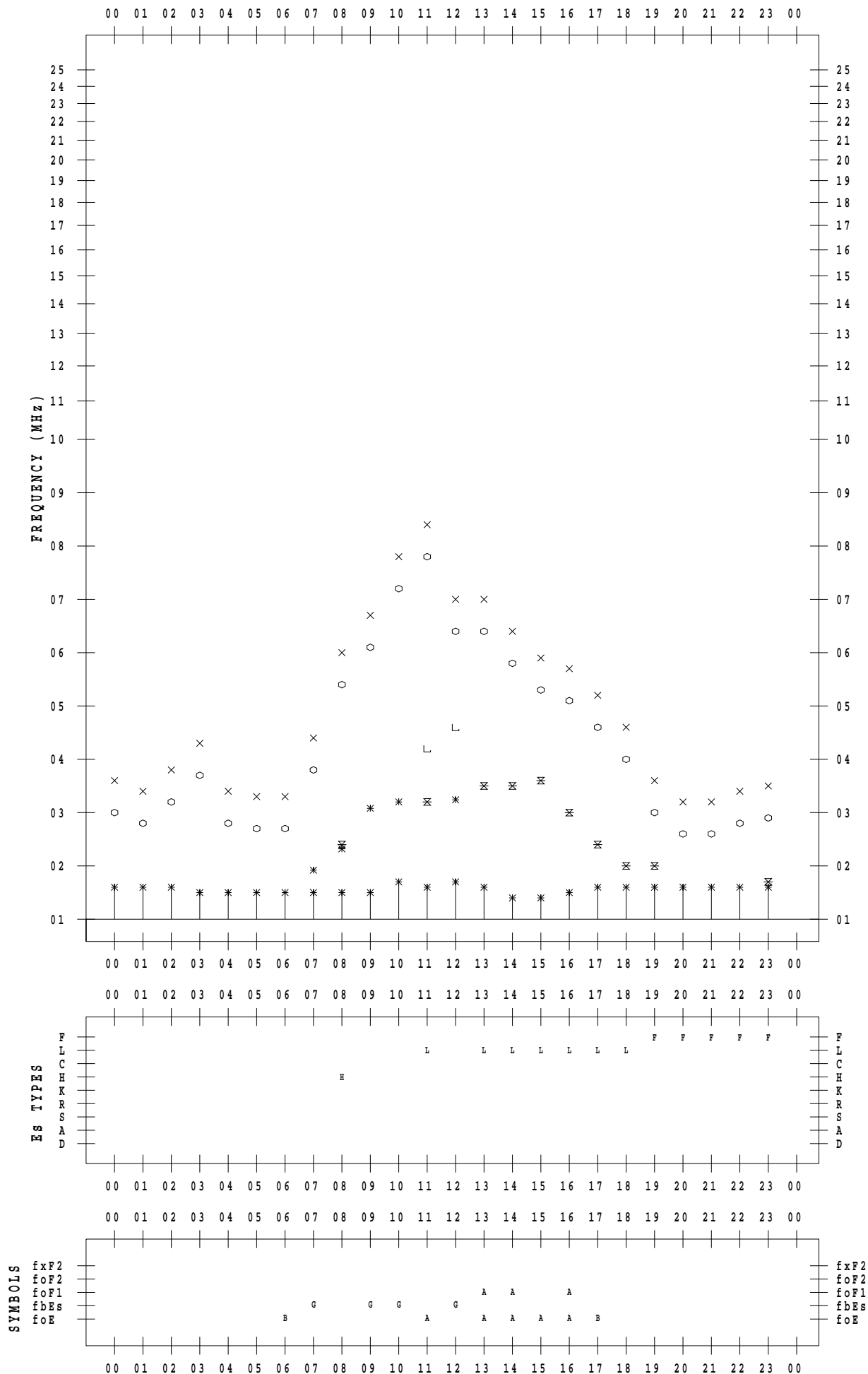
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 3

135 ° E MEAN TIME



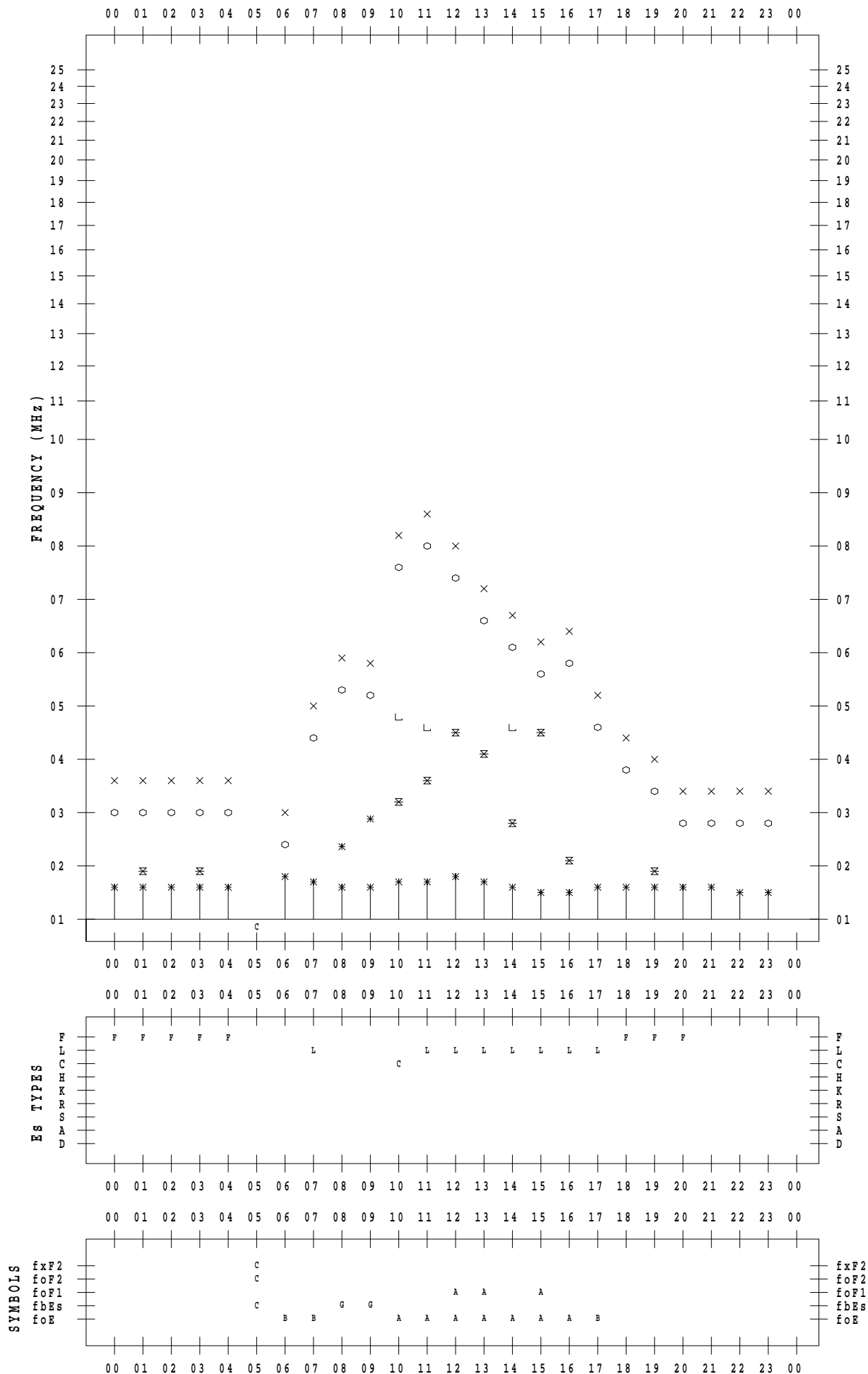
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 4

135 ° E MEAN TIME



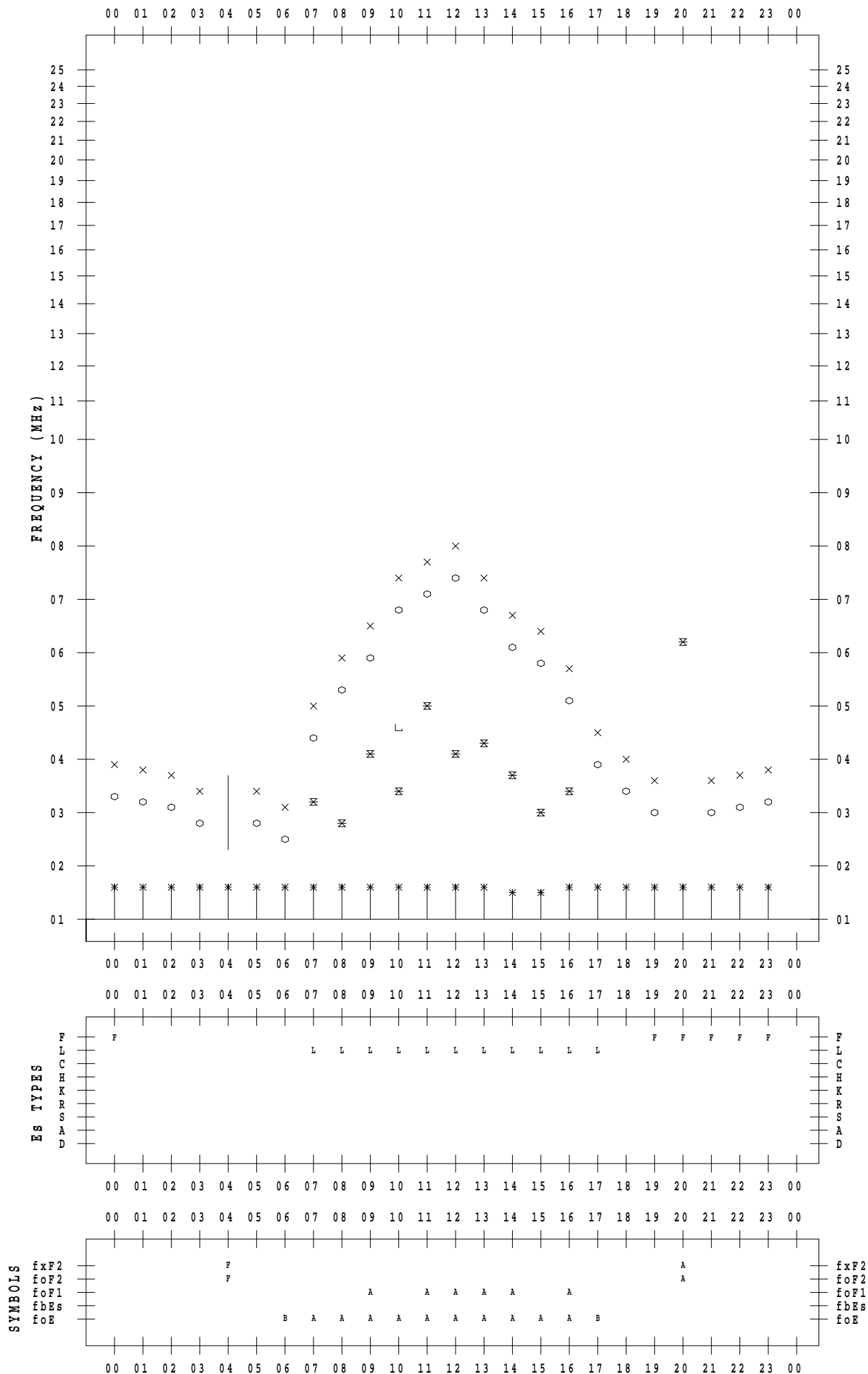
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 5

135 ° E MEAN TIME



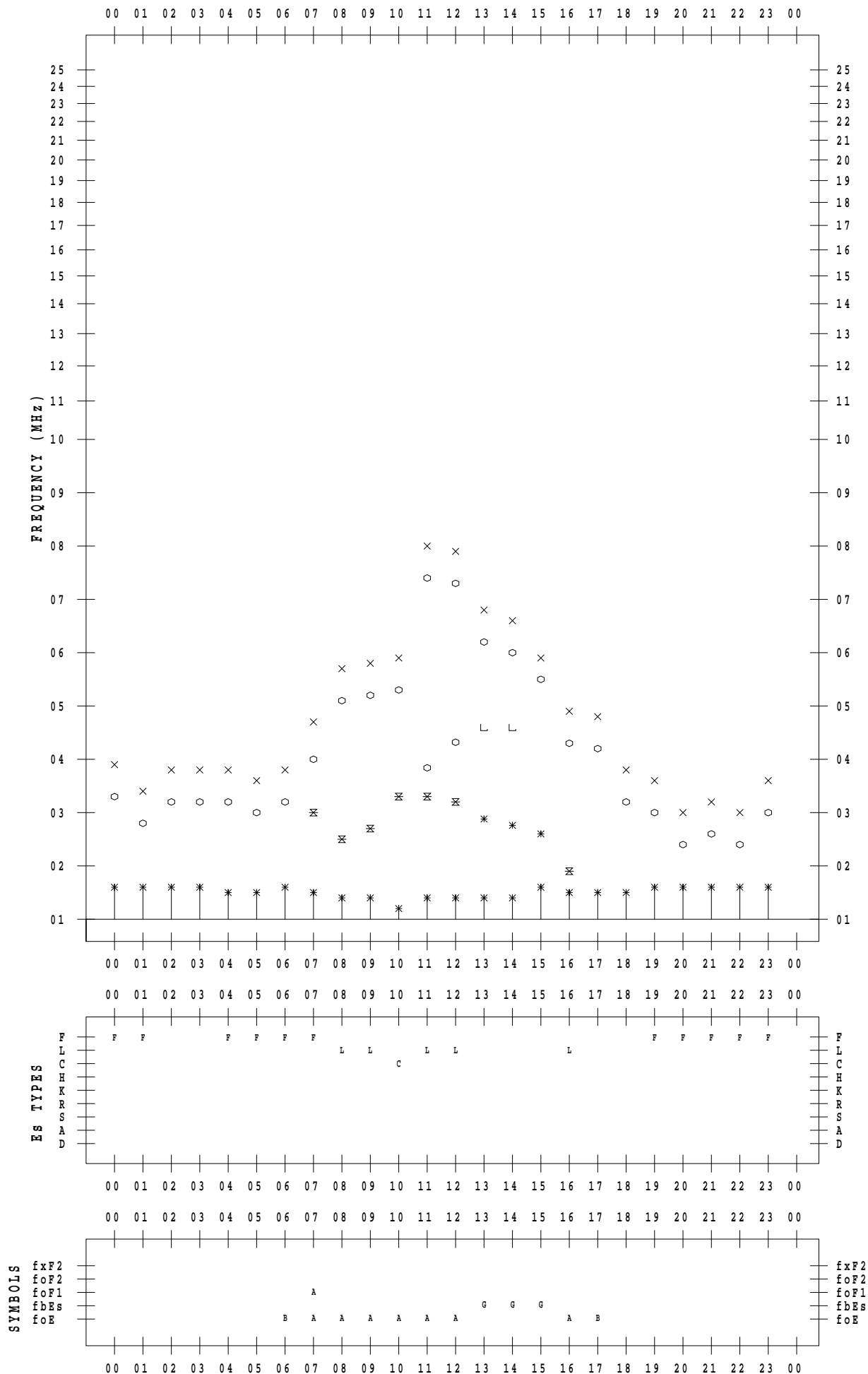
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 6

135 ° E MEAN TIME



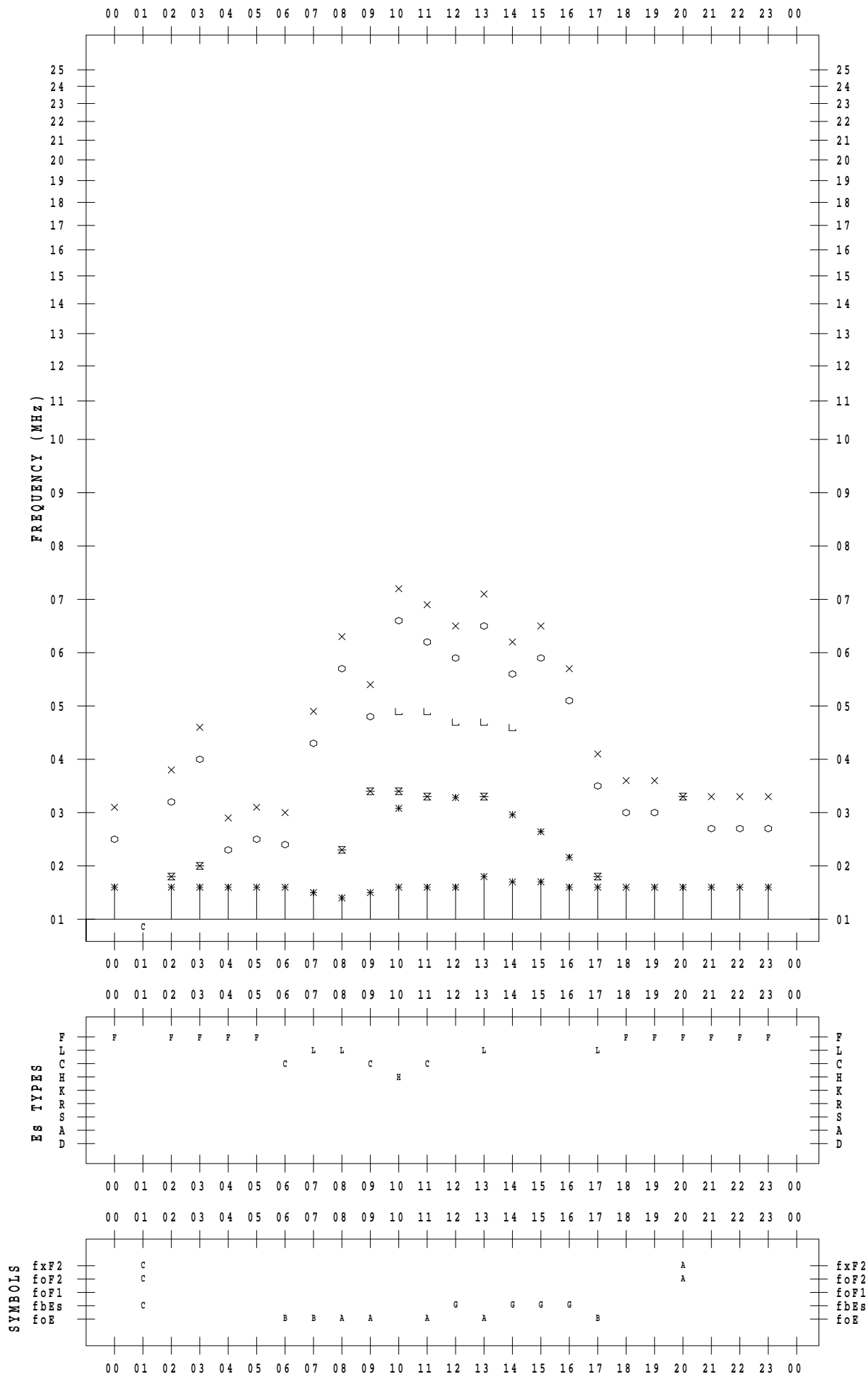
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 7

135 ° E MEAN TIME



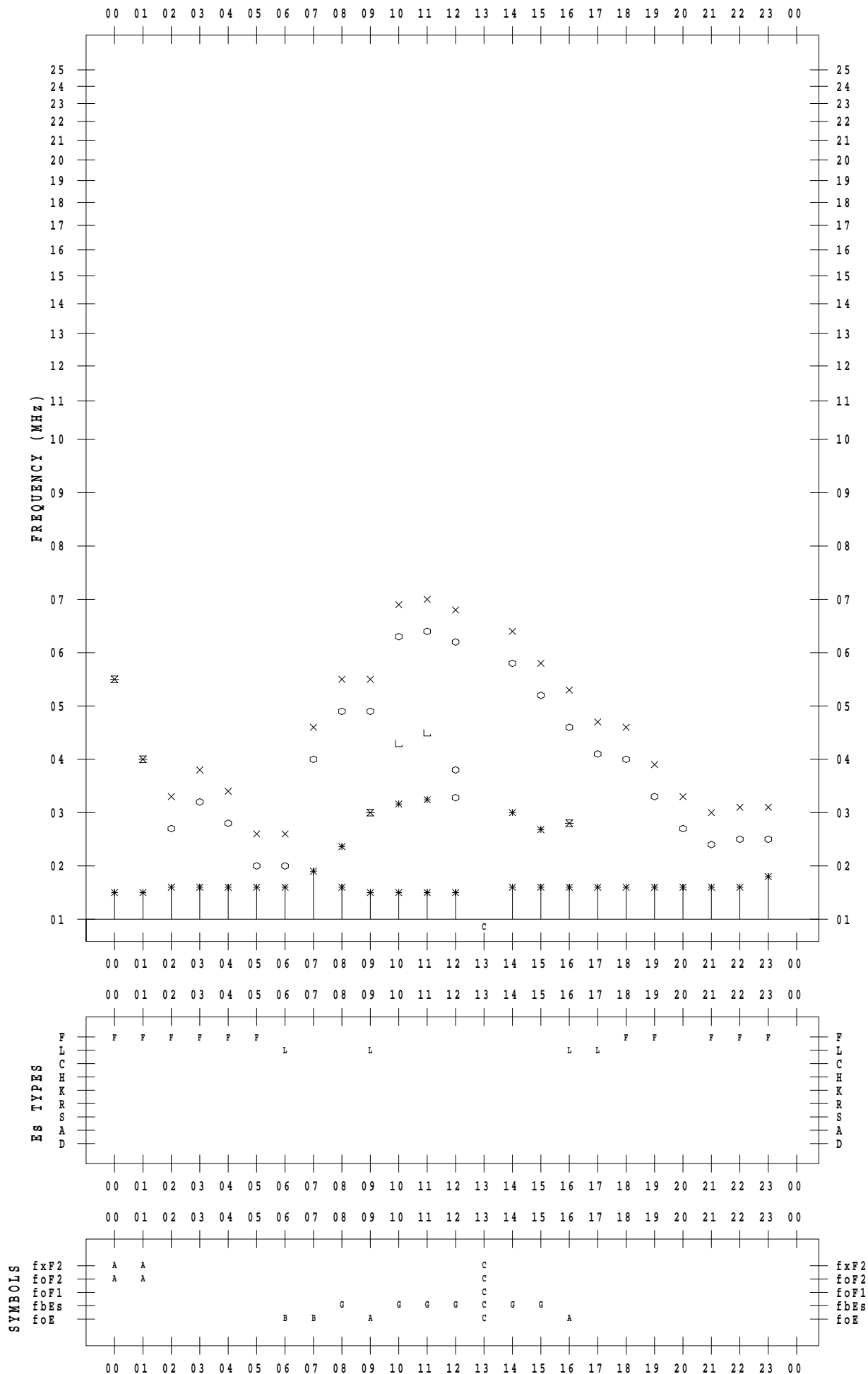
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 8

135 ° E MEAN TIME



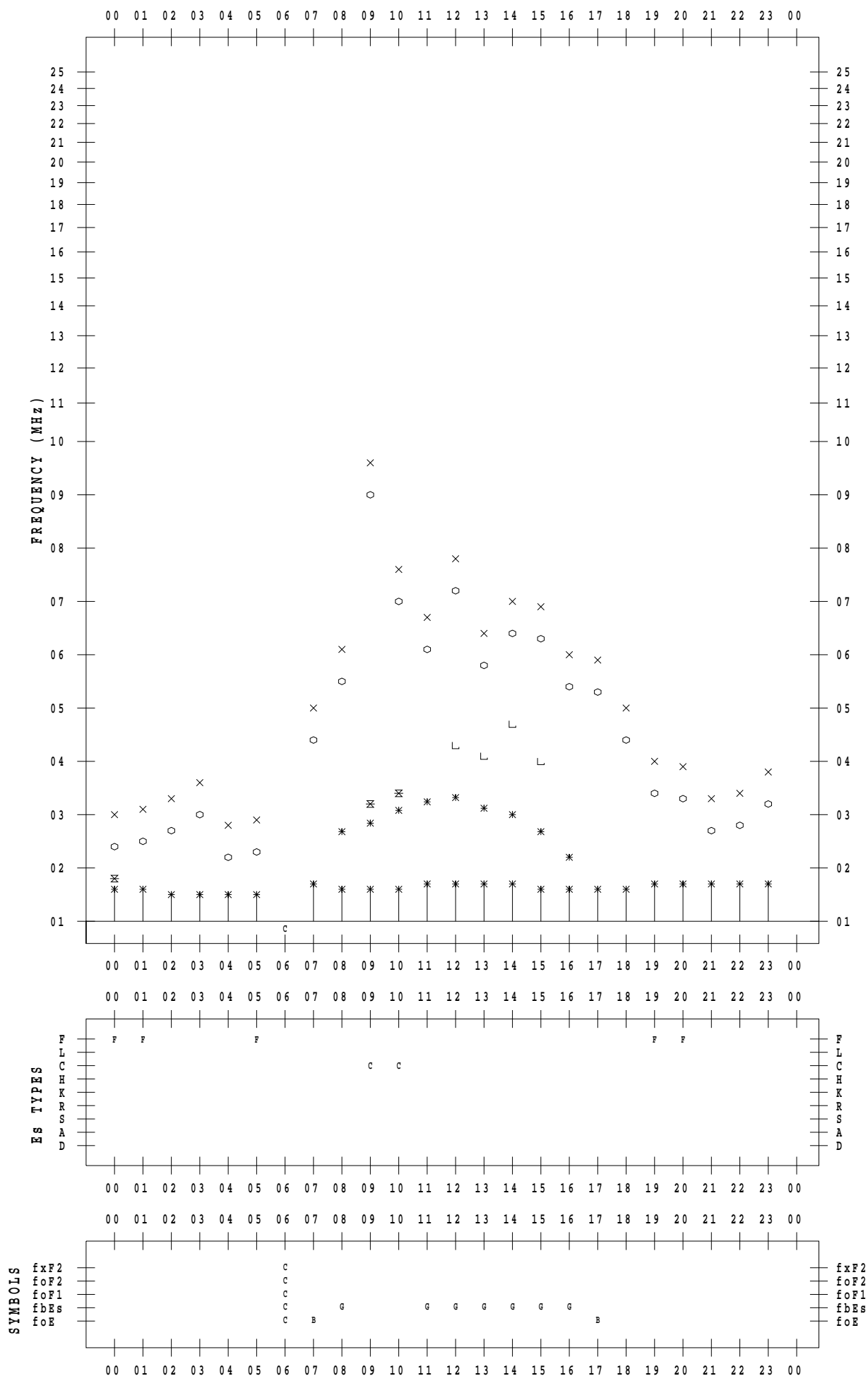
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 9

135 ° E MEAN TIME



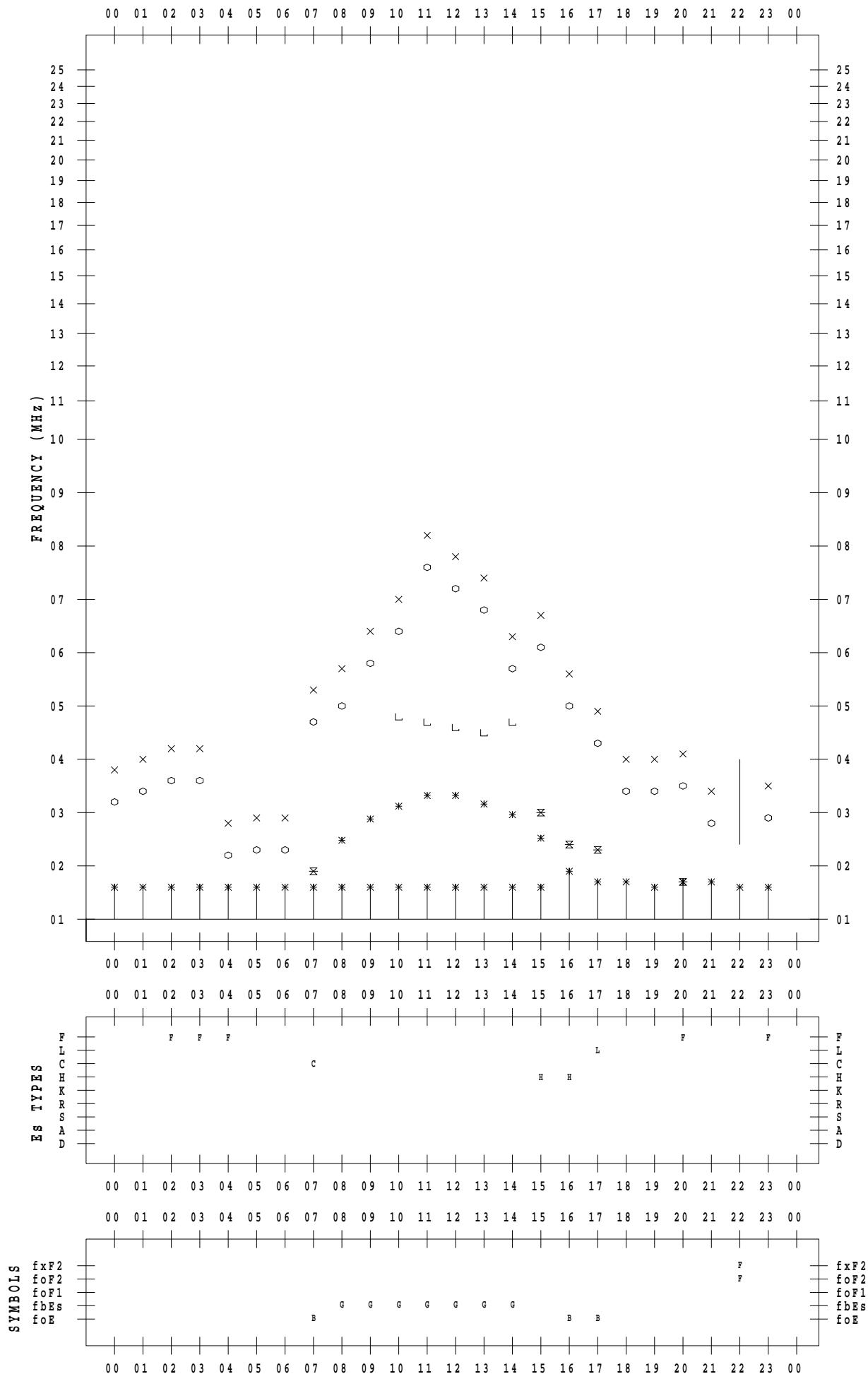
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 10

135 ° E MEAN TIME



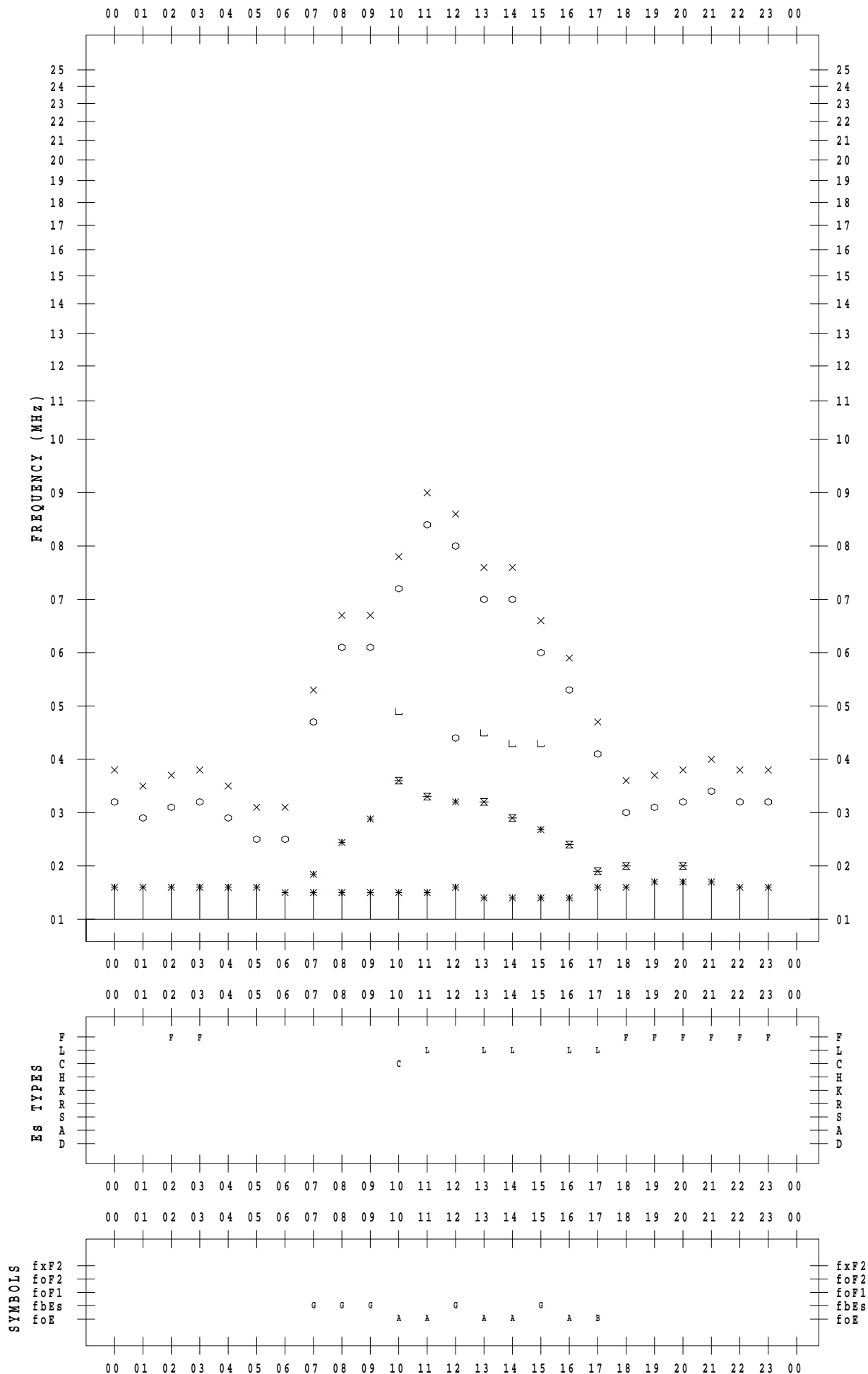
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 11

135 ° E MEAN TIME



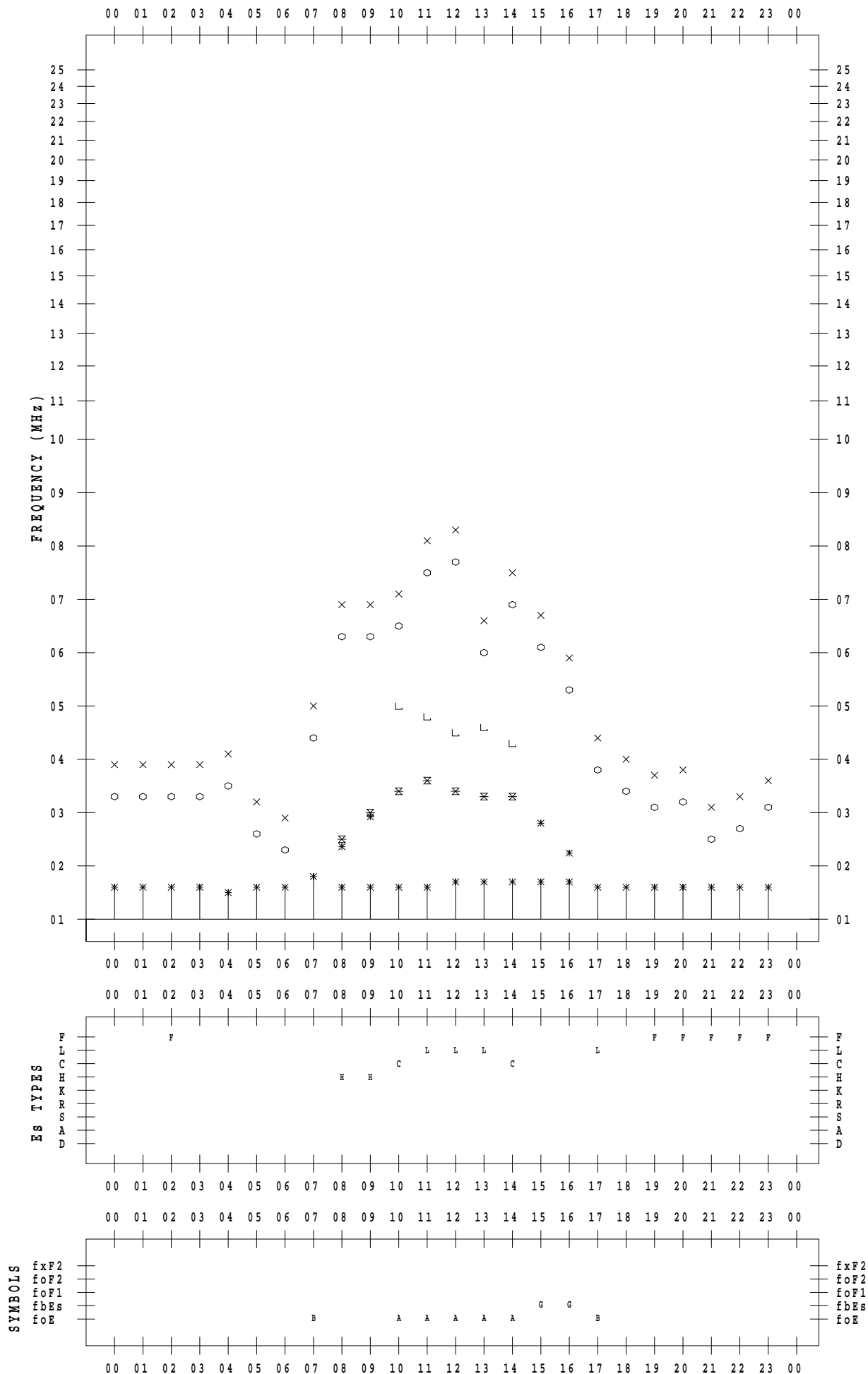
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 12

135 ° E MEAN TIME



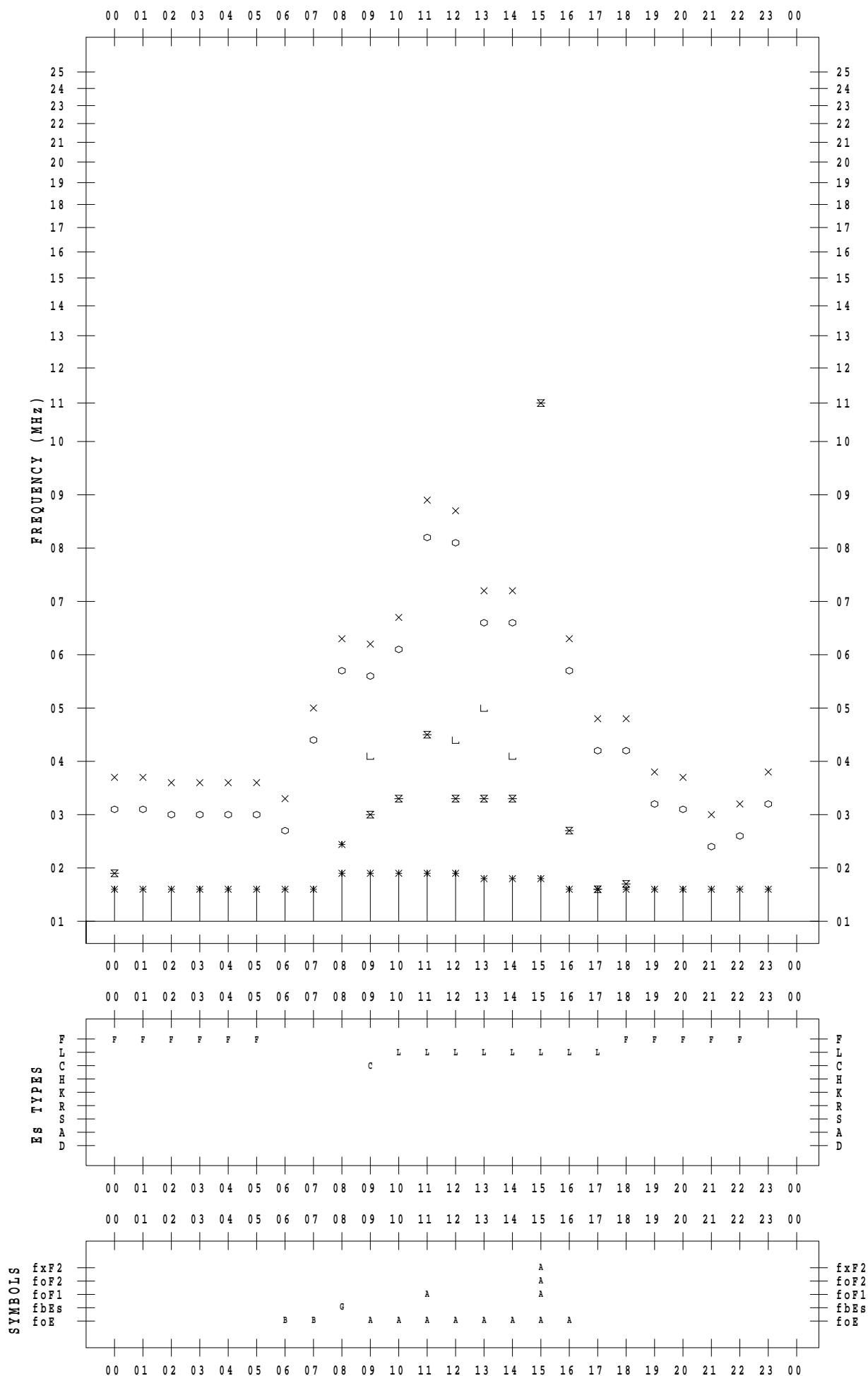
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 13

135 ° E MEAN TIME



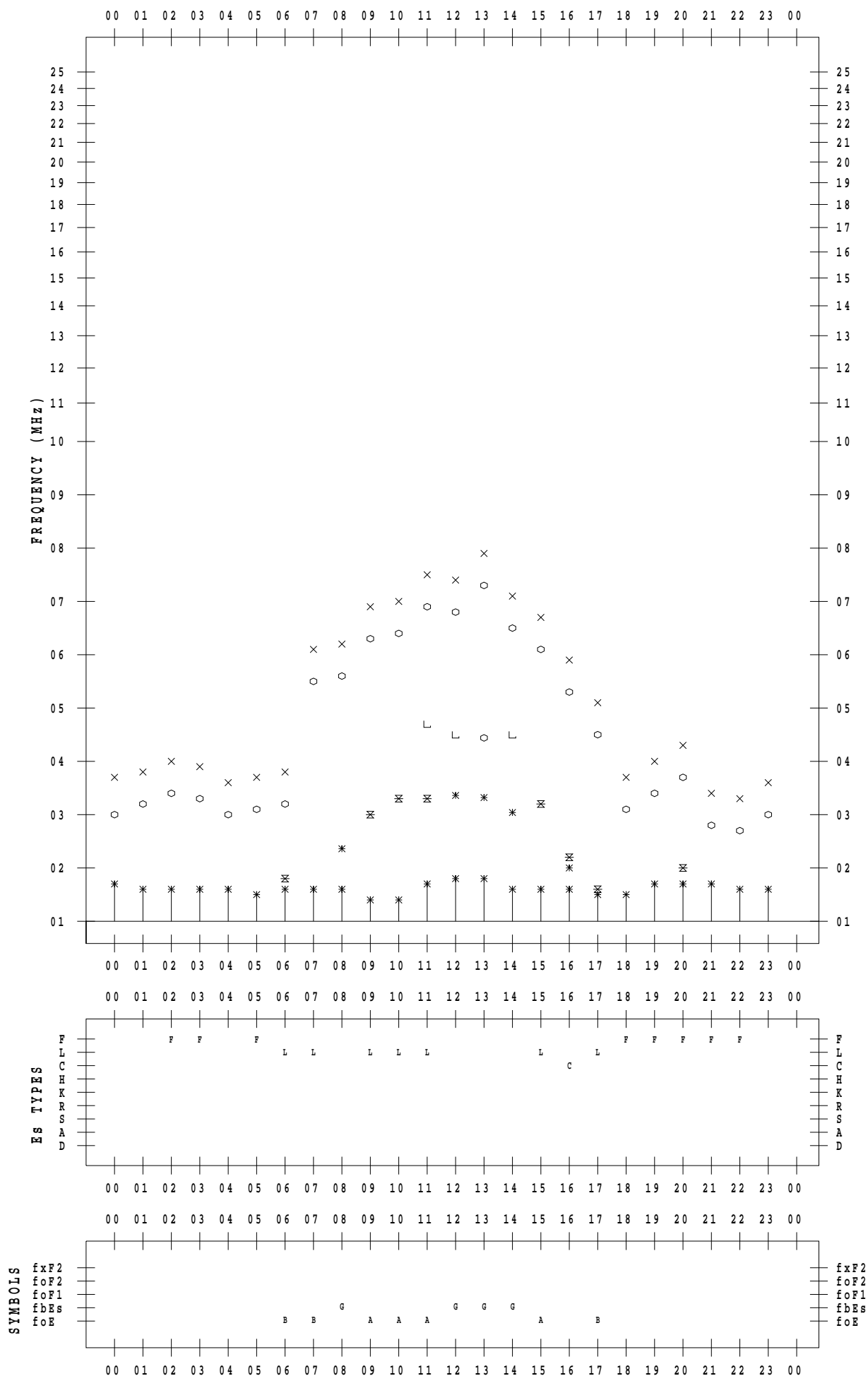
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 14

135 ° E MEAN TIME



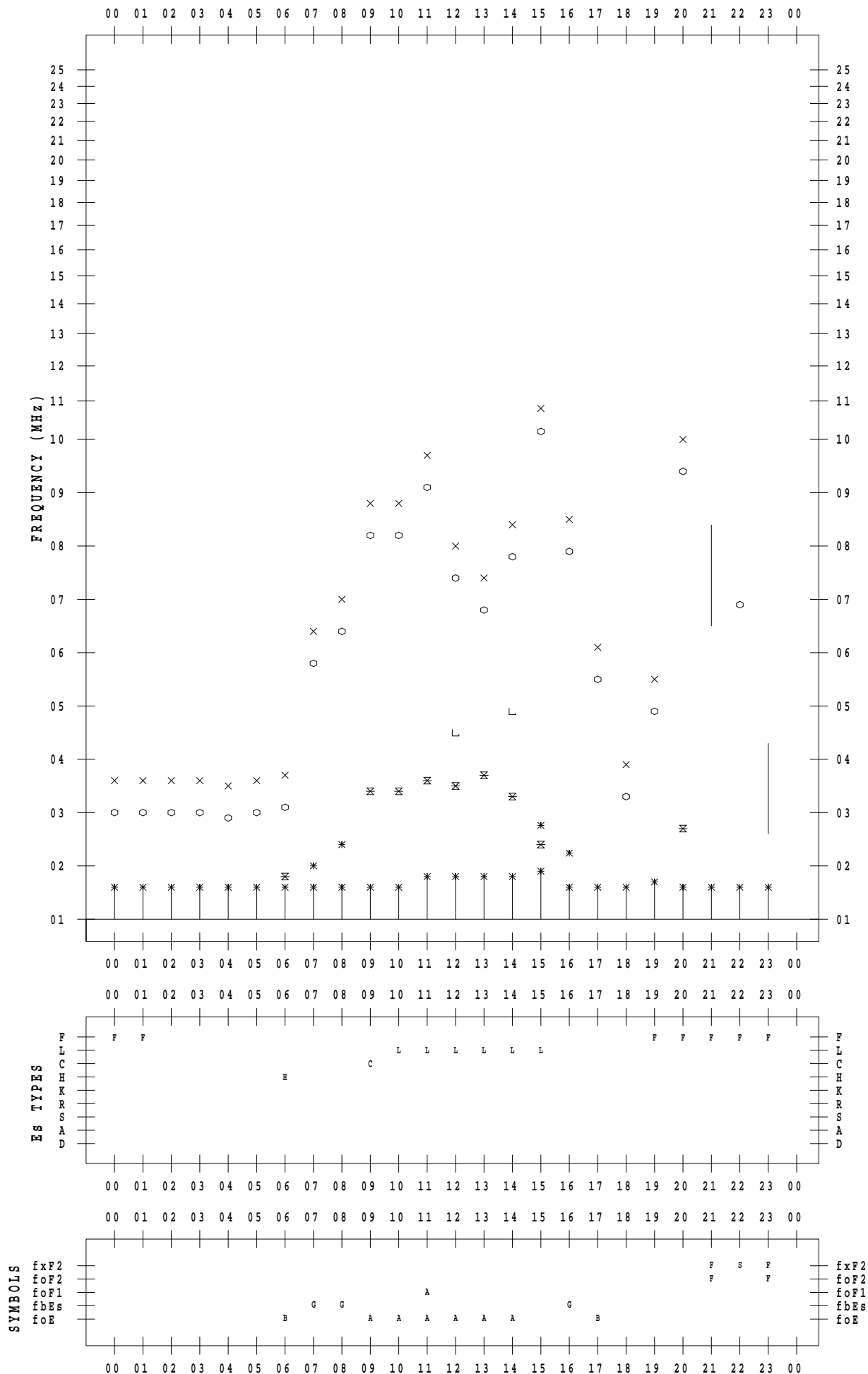
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 15

135 ° E MEAN TIME



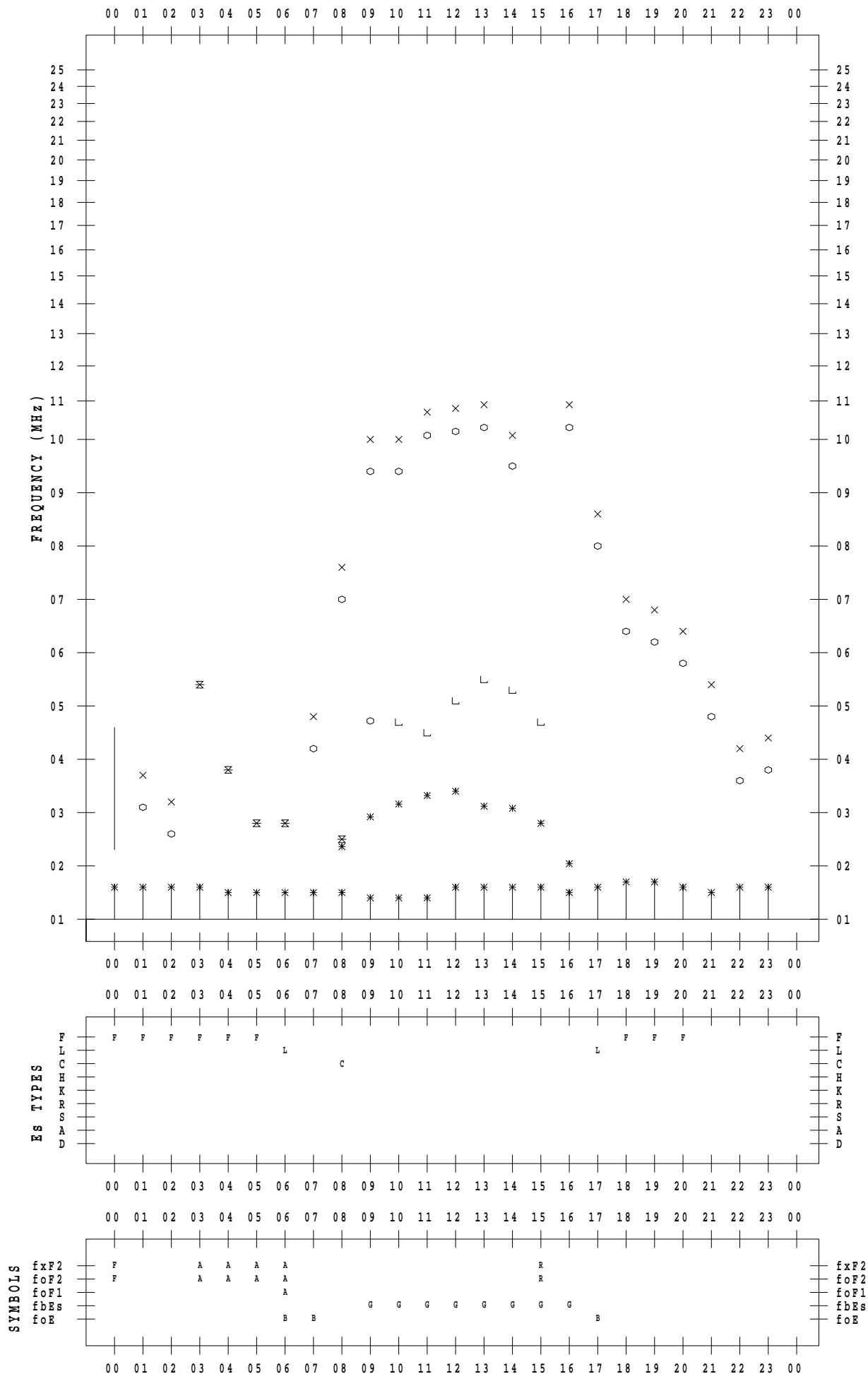
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 16

135 ° E MEAN TIME



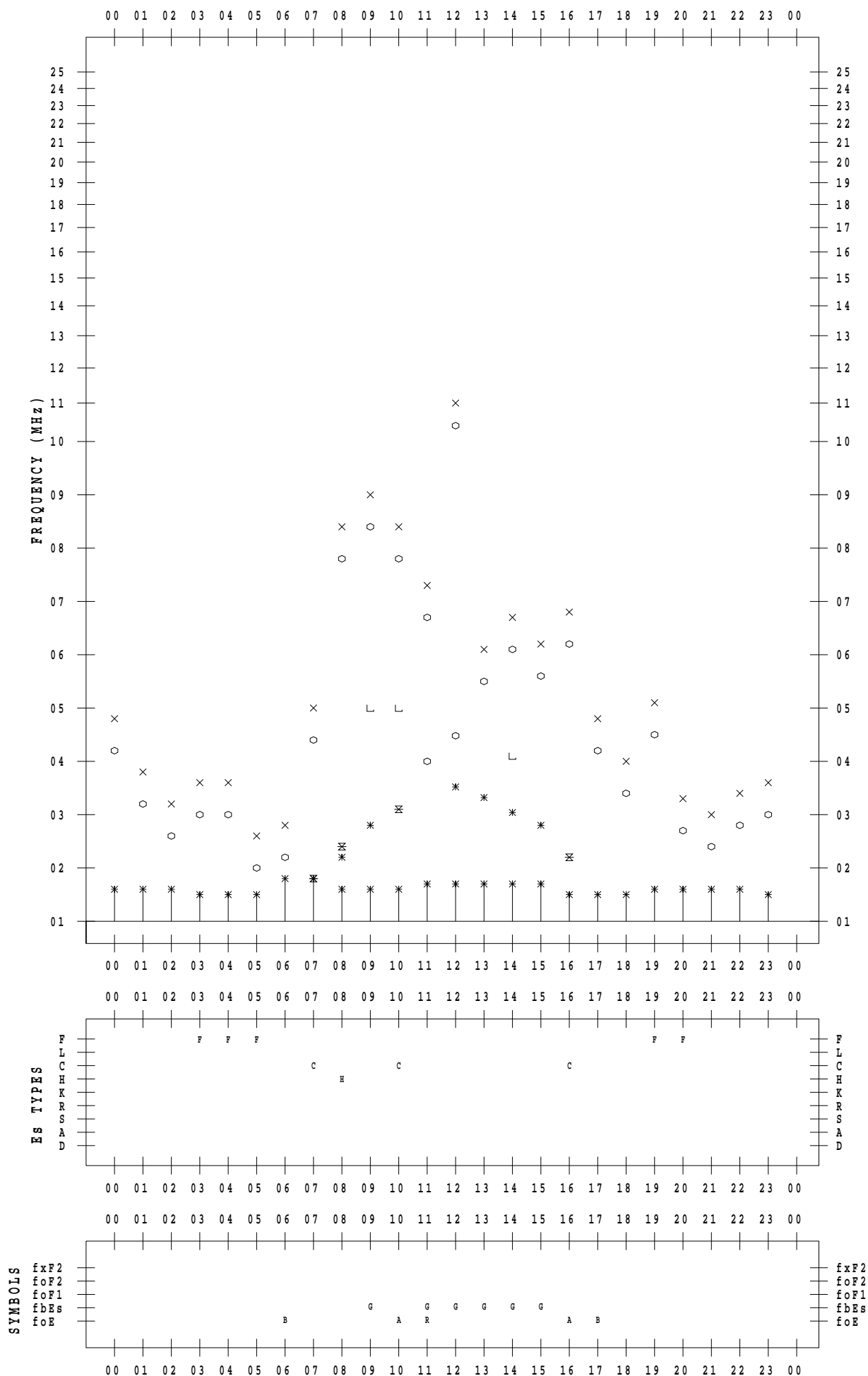
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 17

135 ° E MEAN TIME



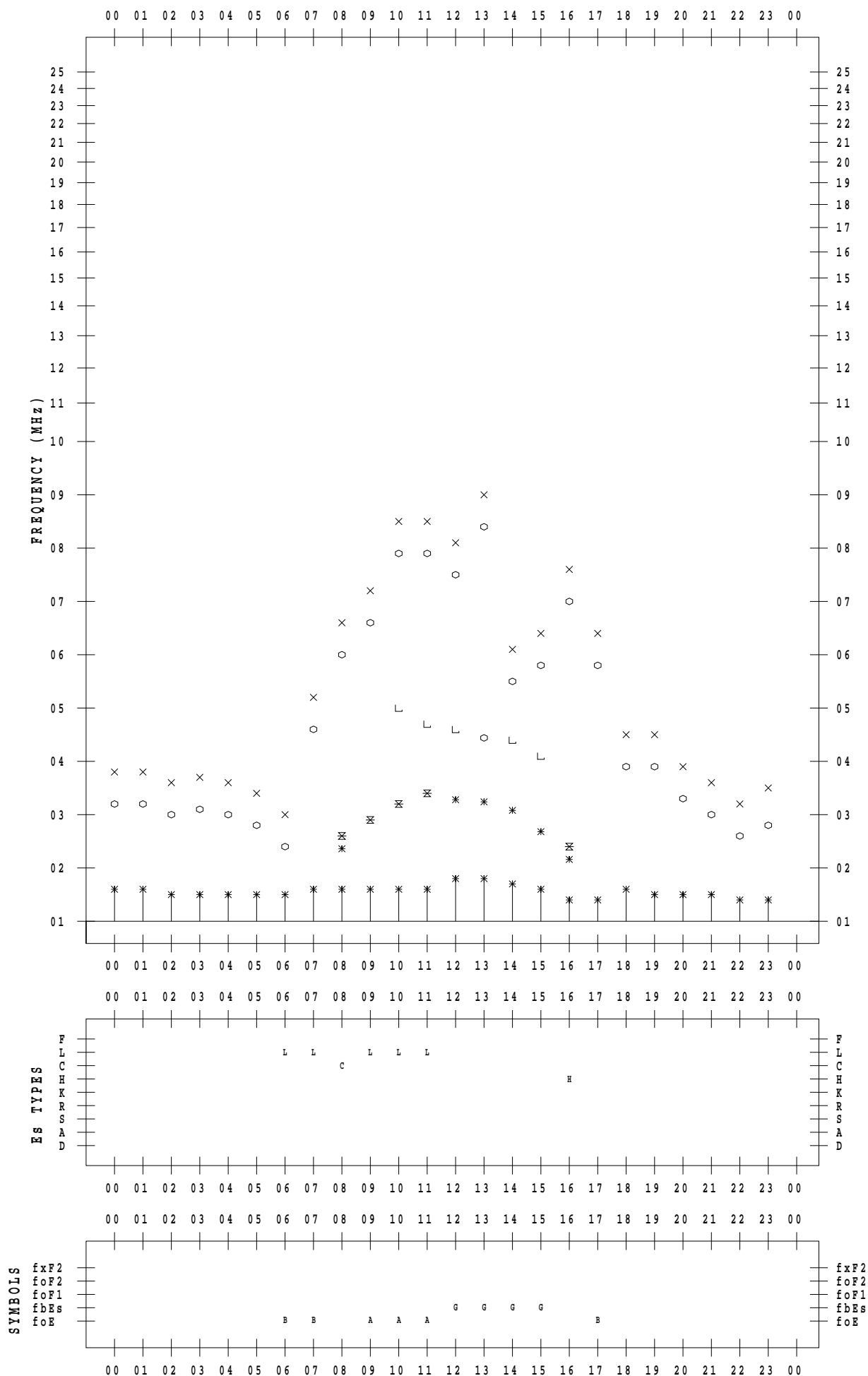
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 18

135 ° E MEAN TIME



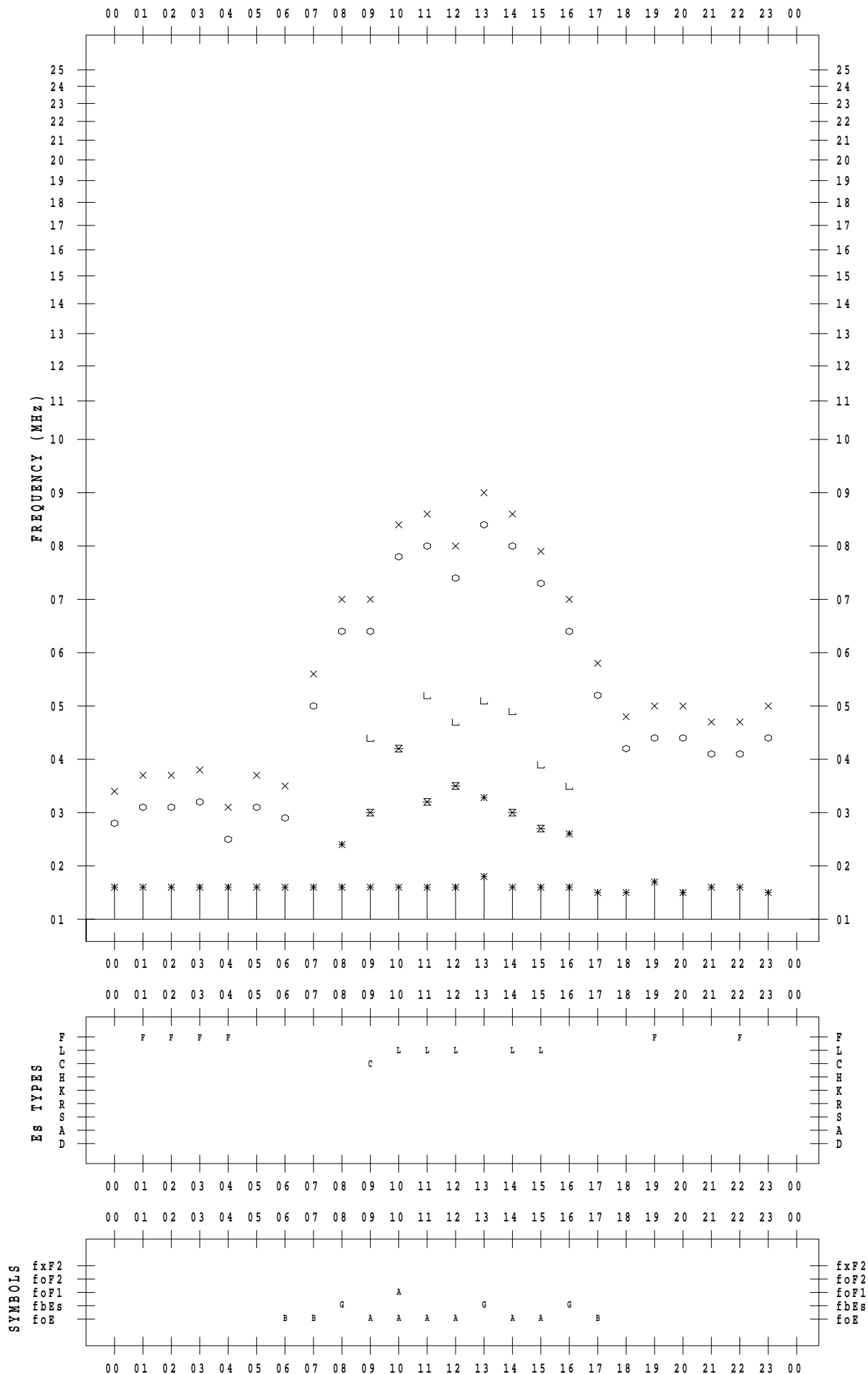
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 19

135 ° E MEAN TIME



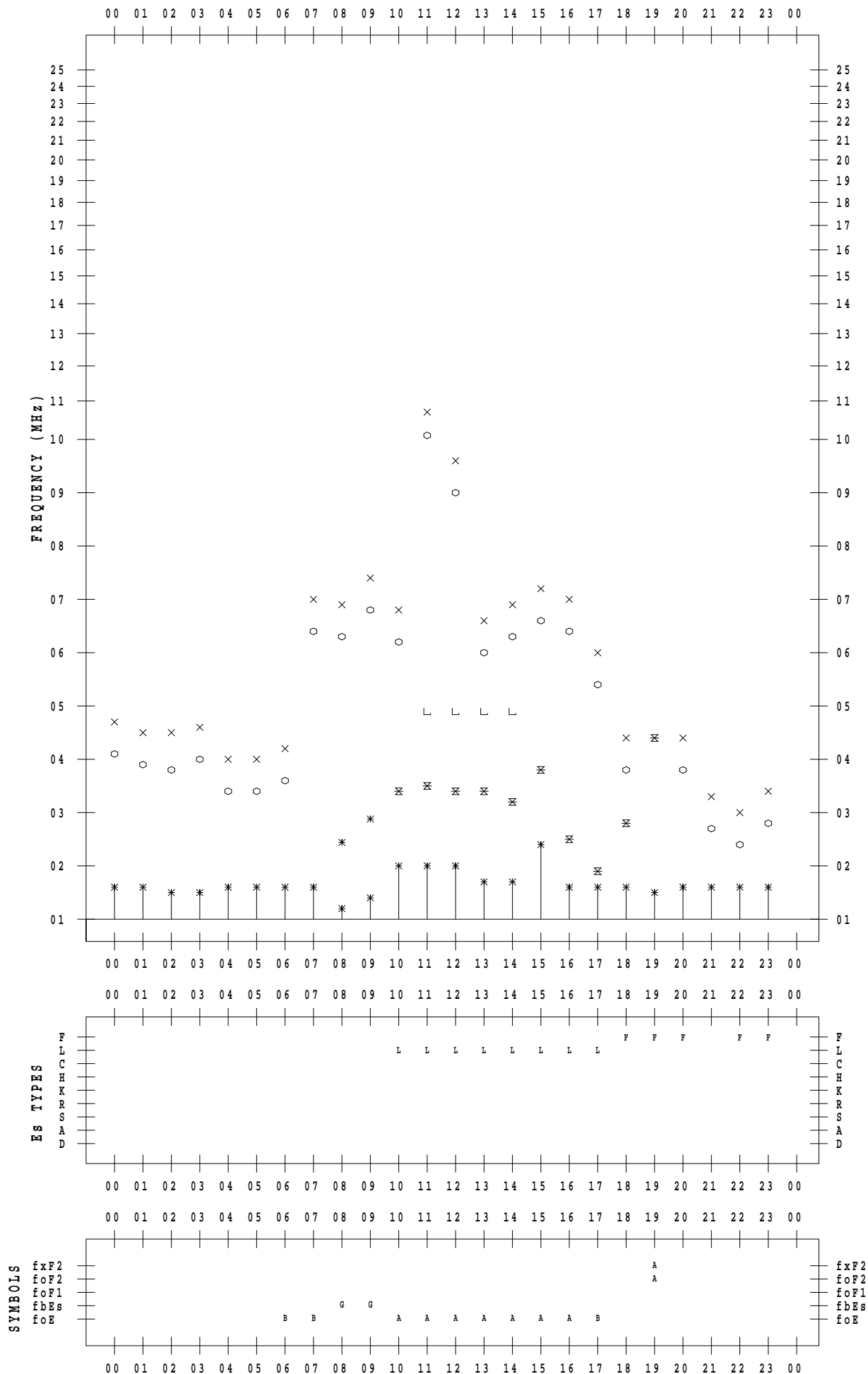
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 20

135 ° E MEAN TIME



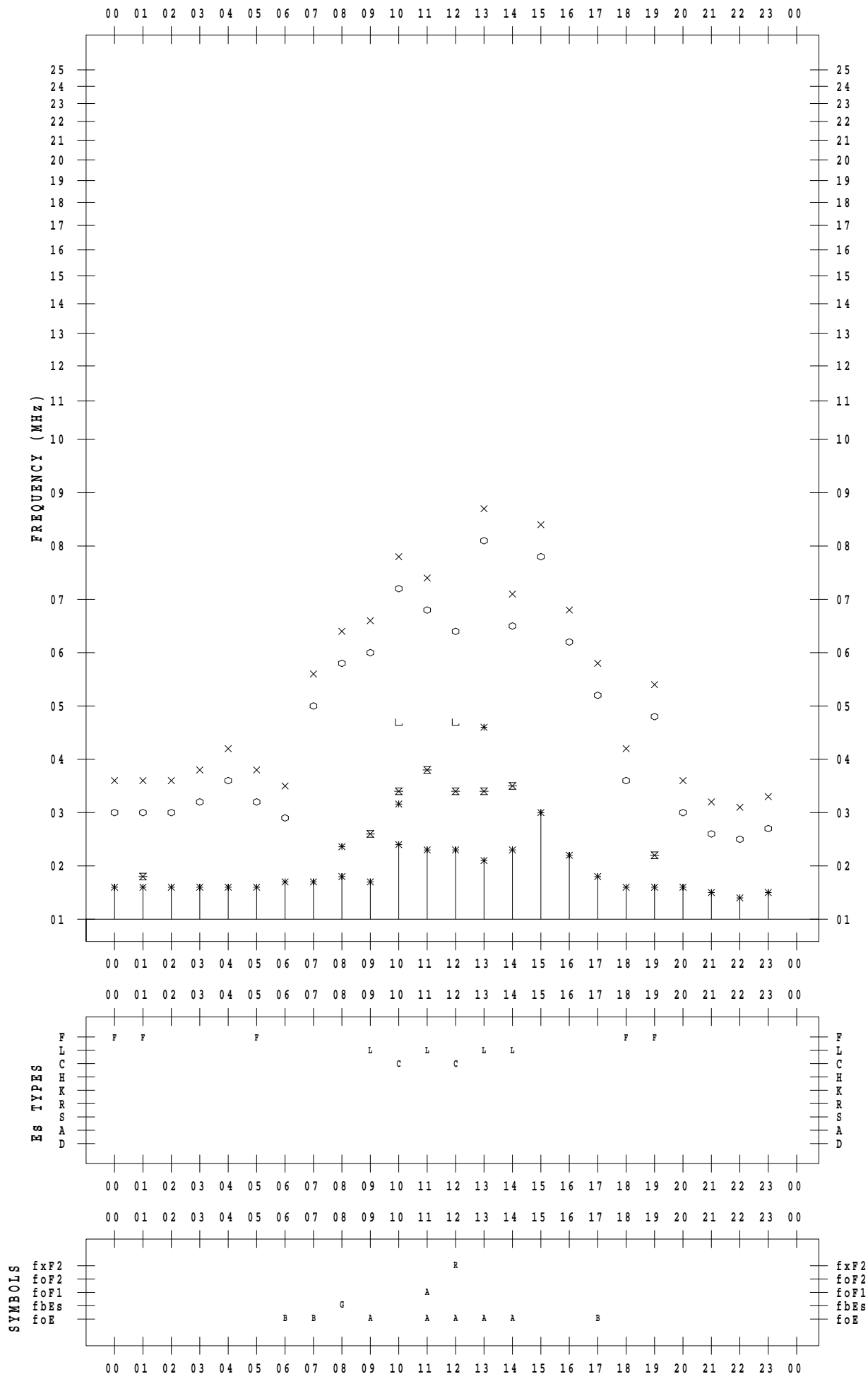
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 21

135 ° E MEAN TIME



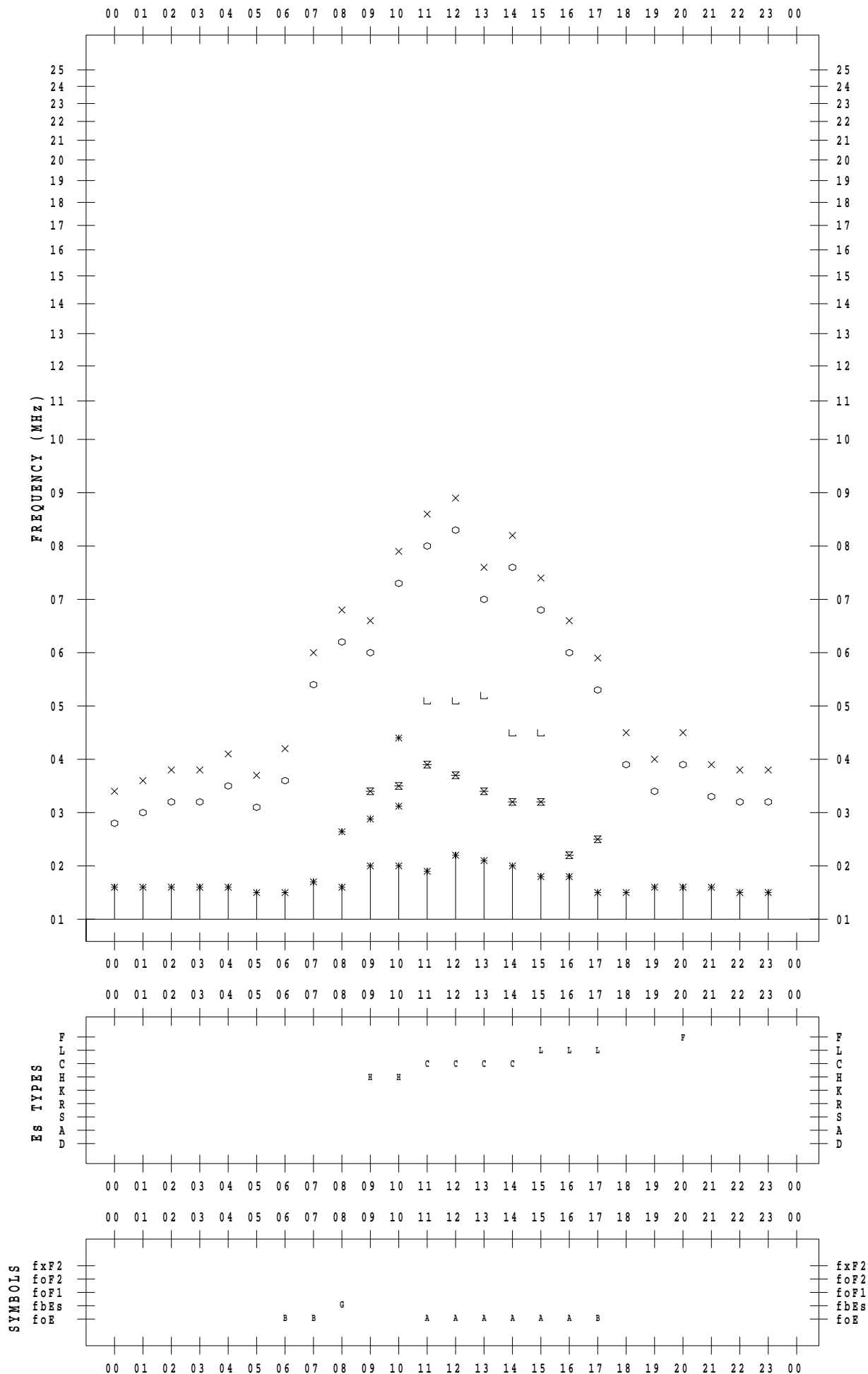
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 22

135 ° E MEAN TIME



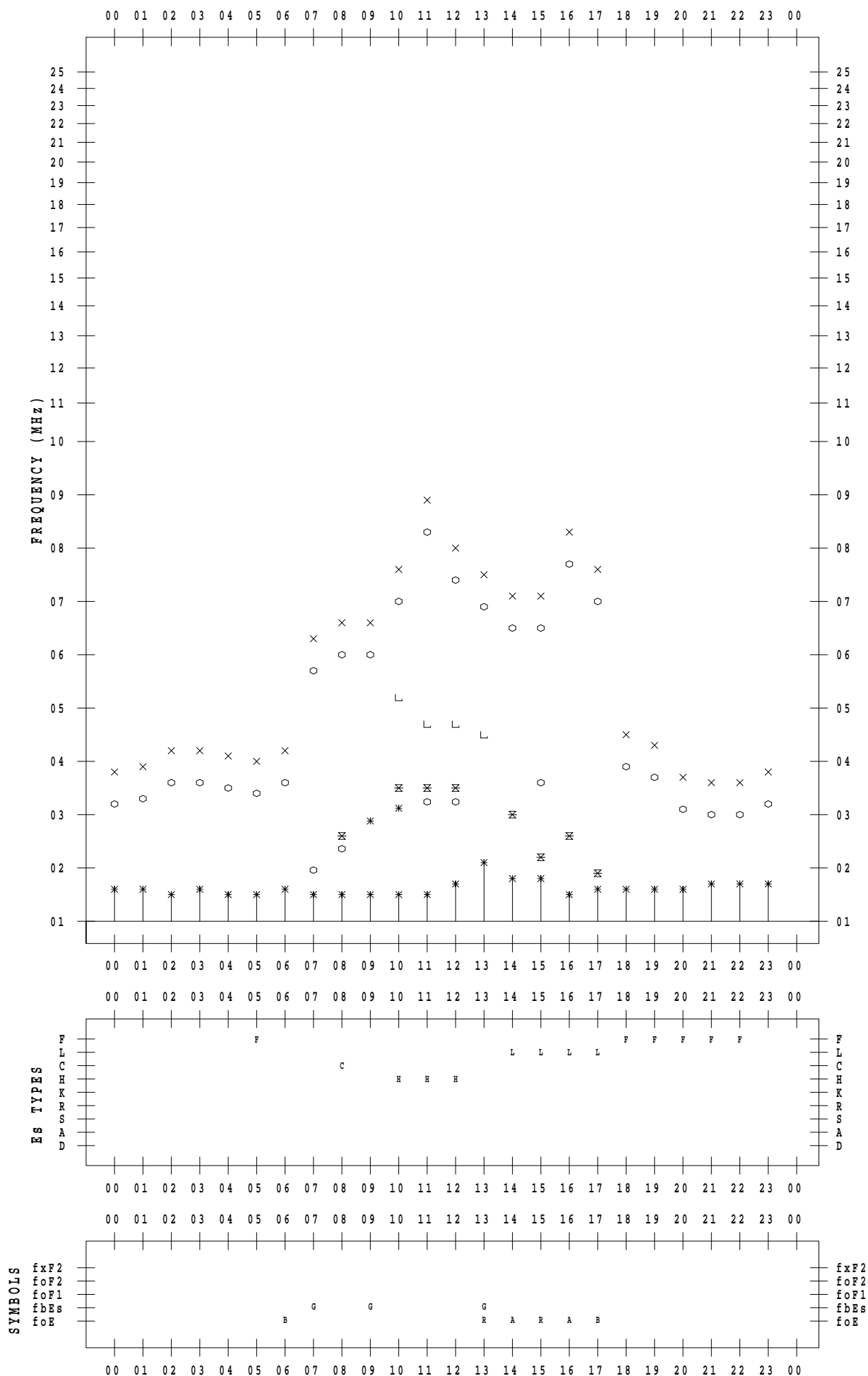
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 23

135 ° E MEAN TIME



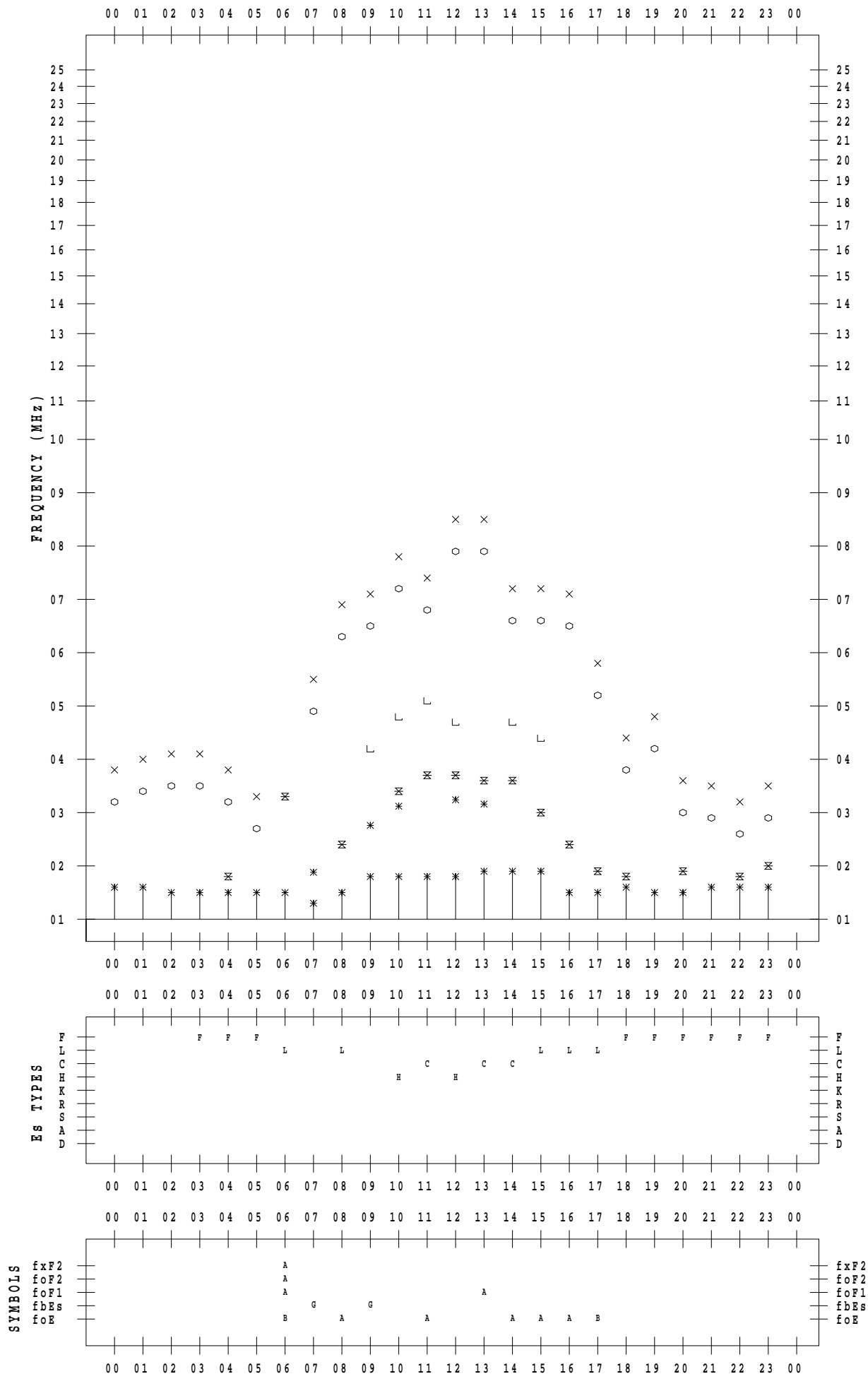
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 24

135 ° E MEAN TIME



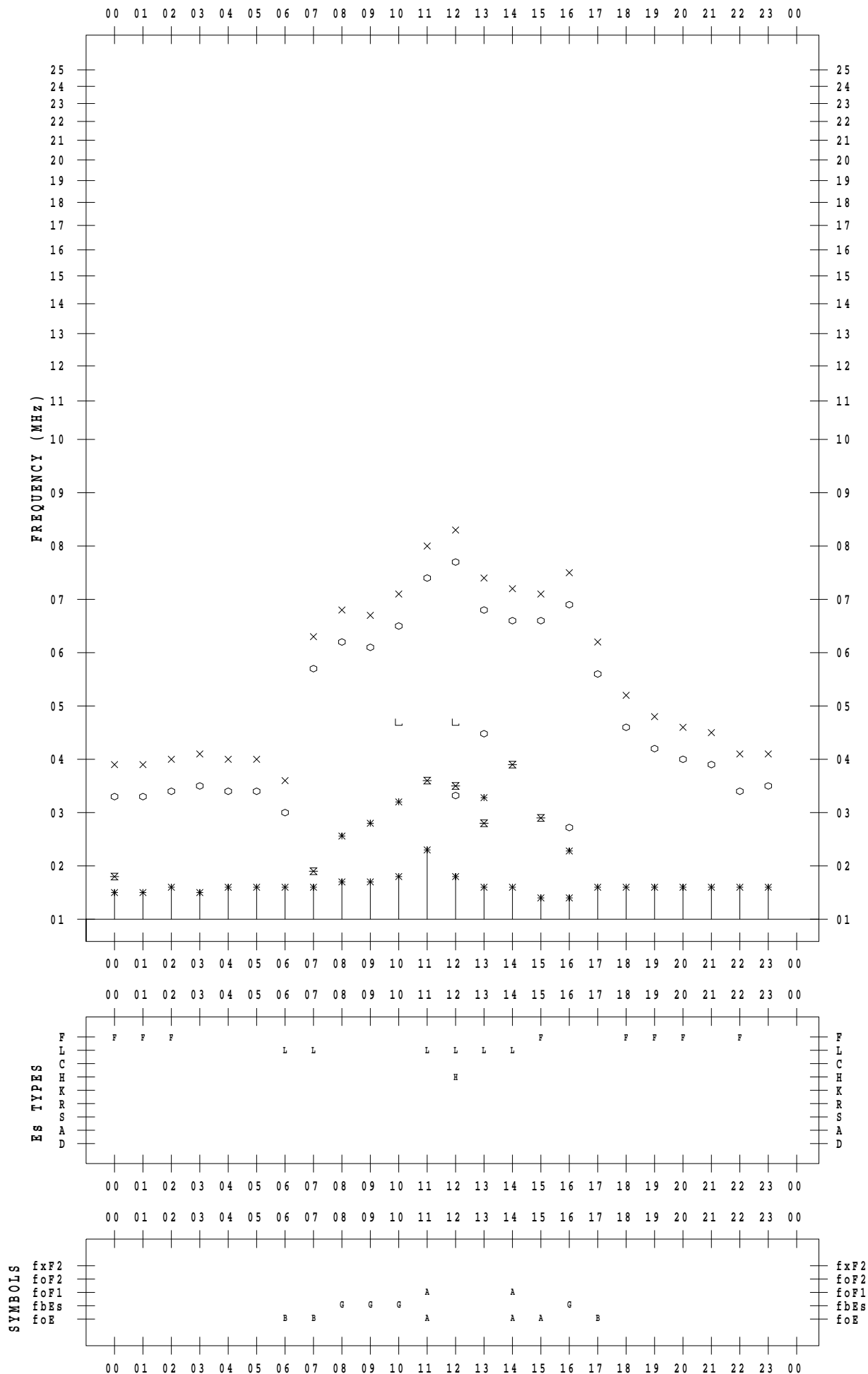
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 25

135 ° E MEAN TIME



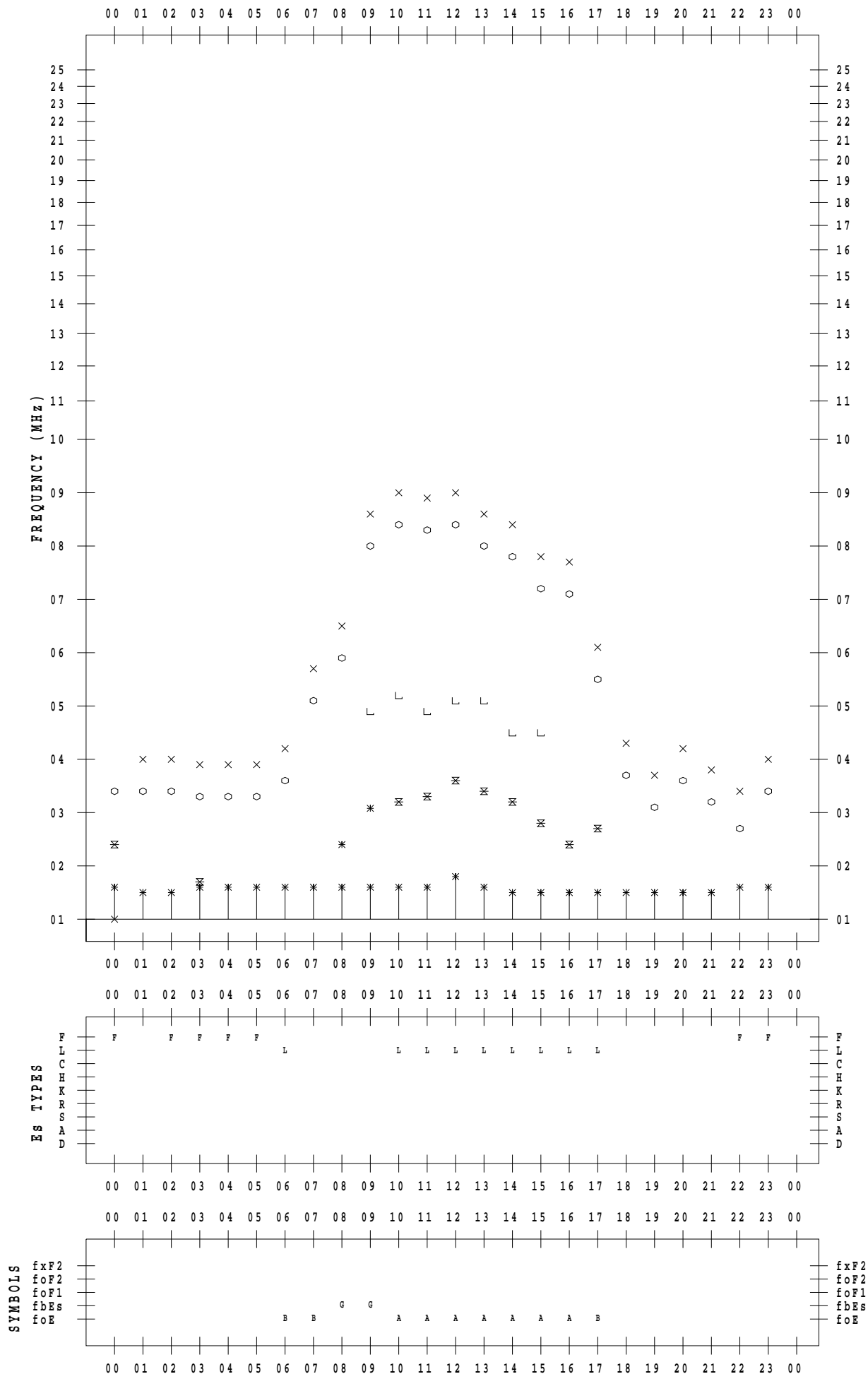
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 26

135 ° E MEAN TIME



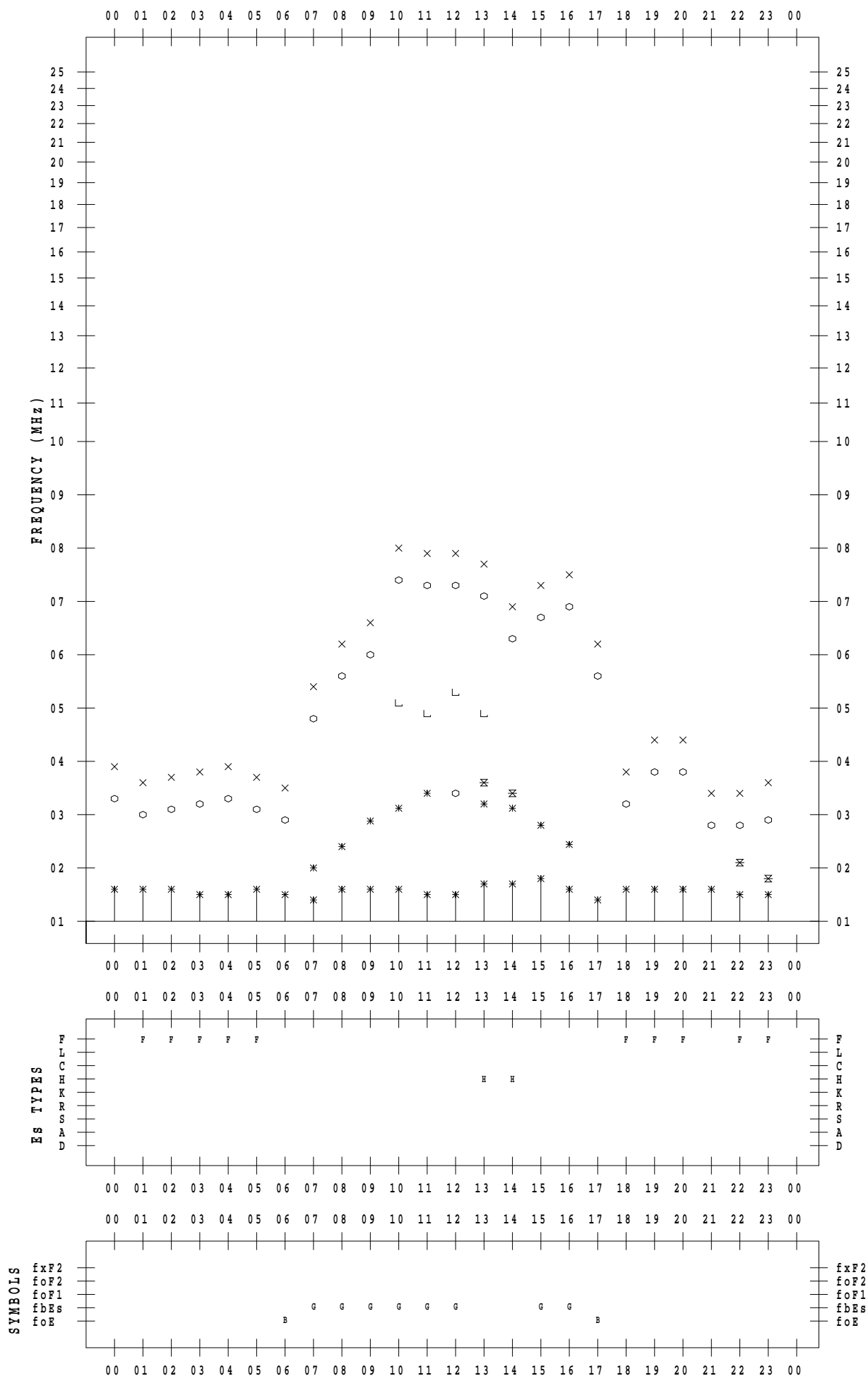
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 27

135 ° E MEAN TIME



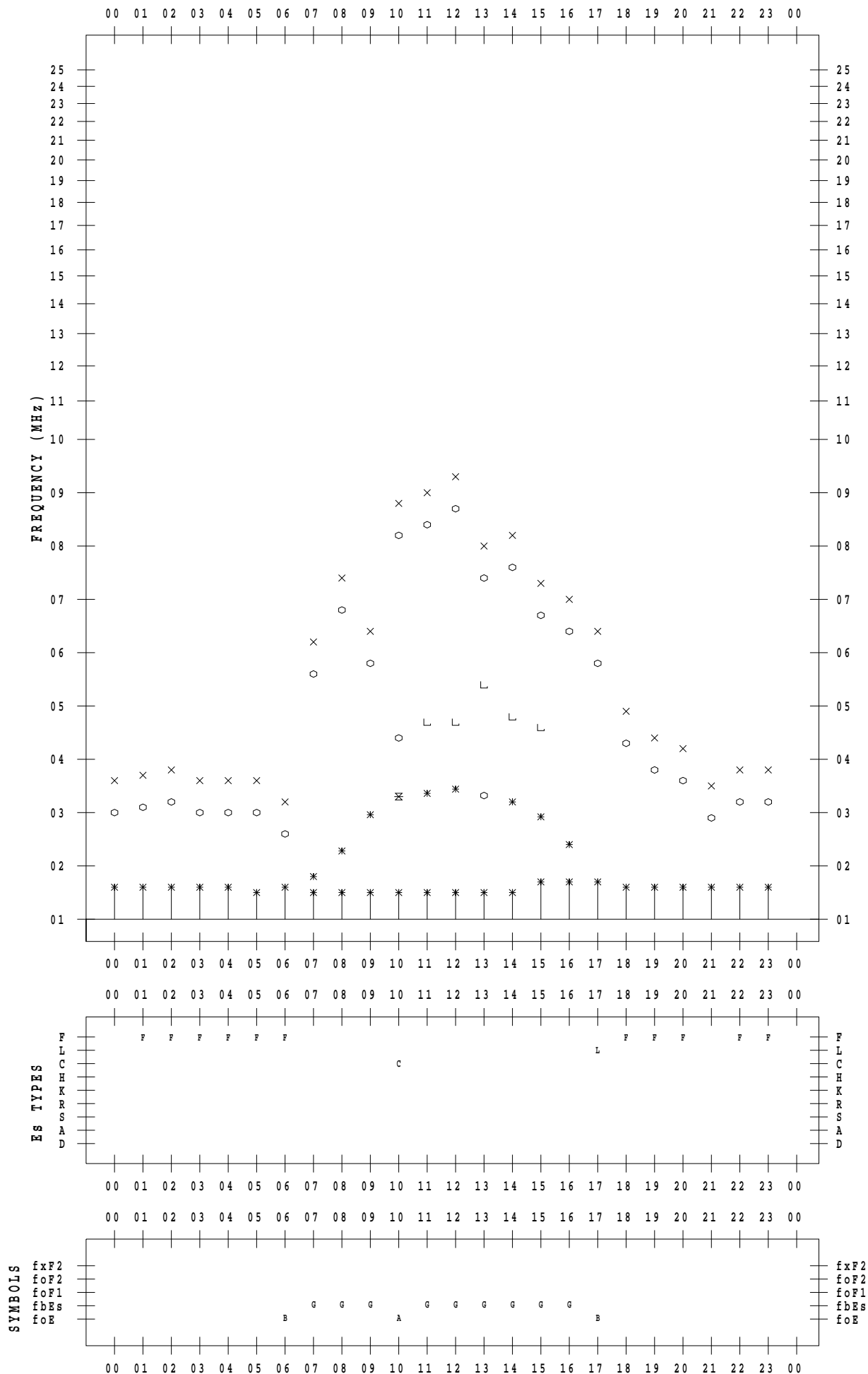
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 28

135 ° E MEAN TIME



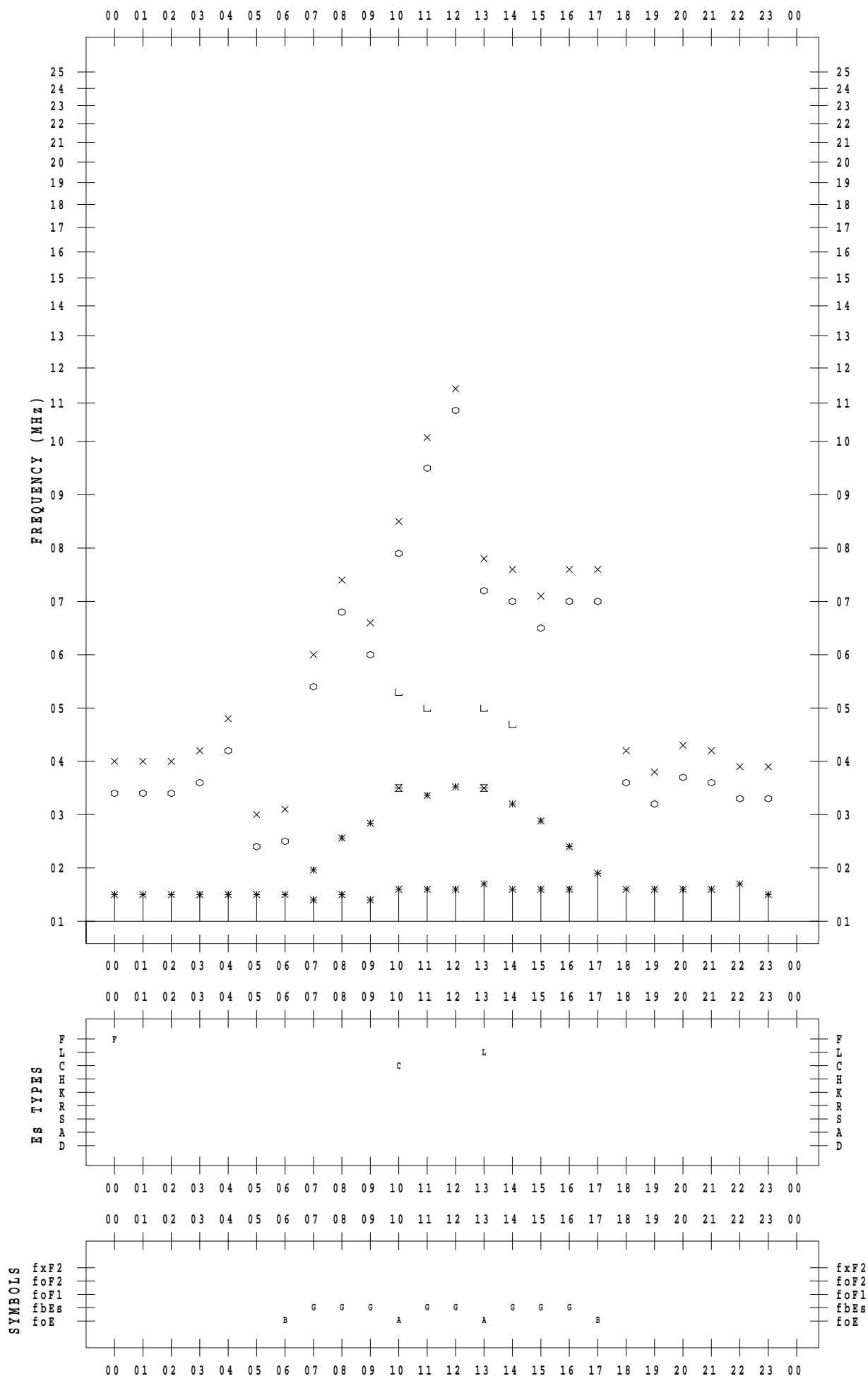
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 29

135 ° E MEAN TIME



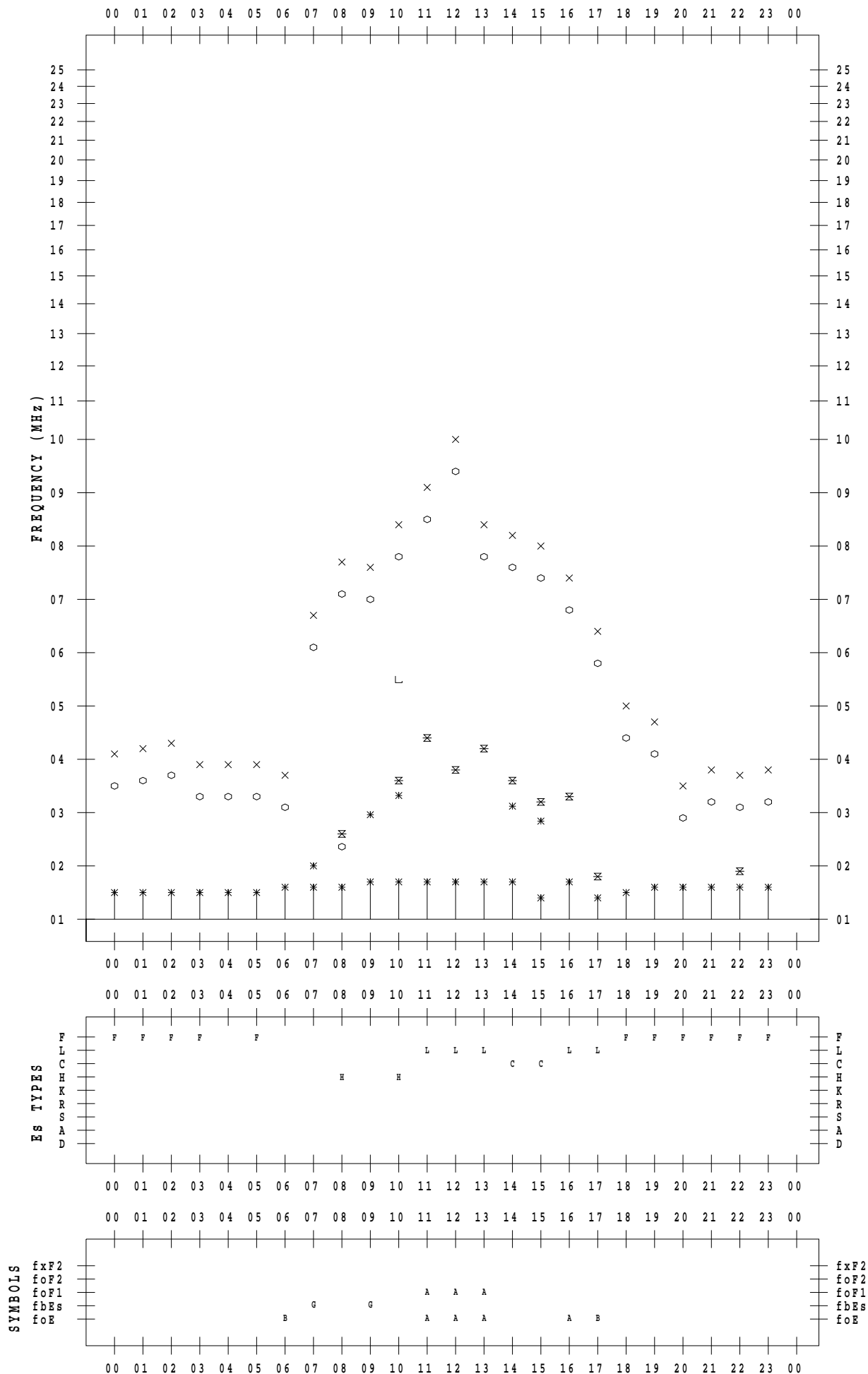
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 30

135 ° E MEAN TIME



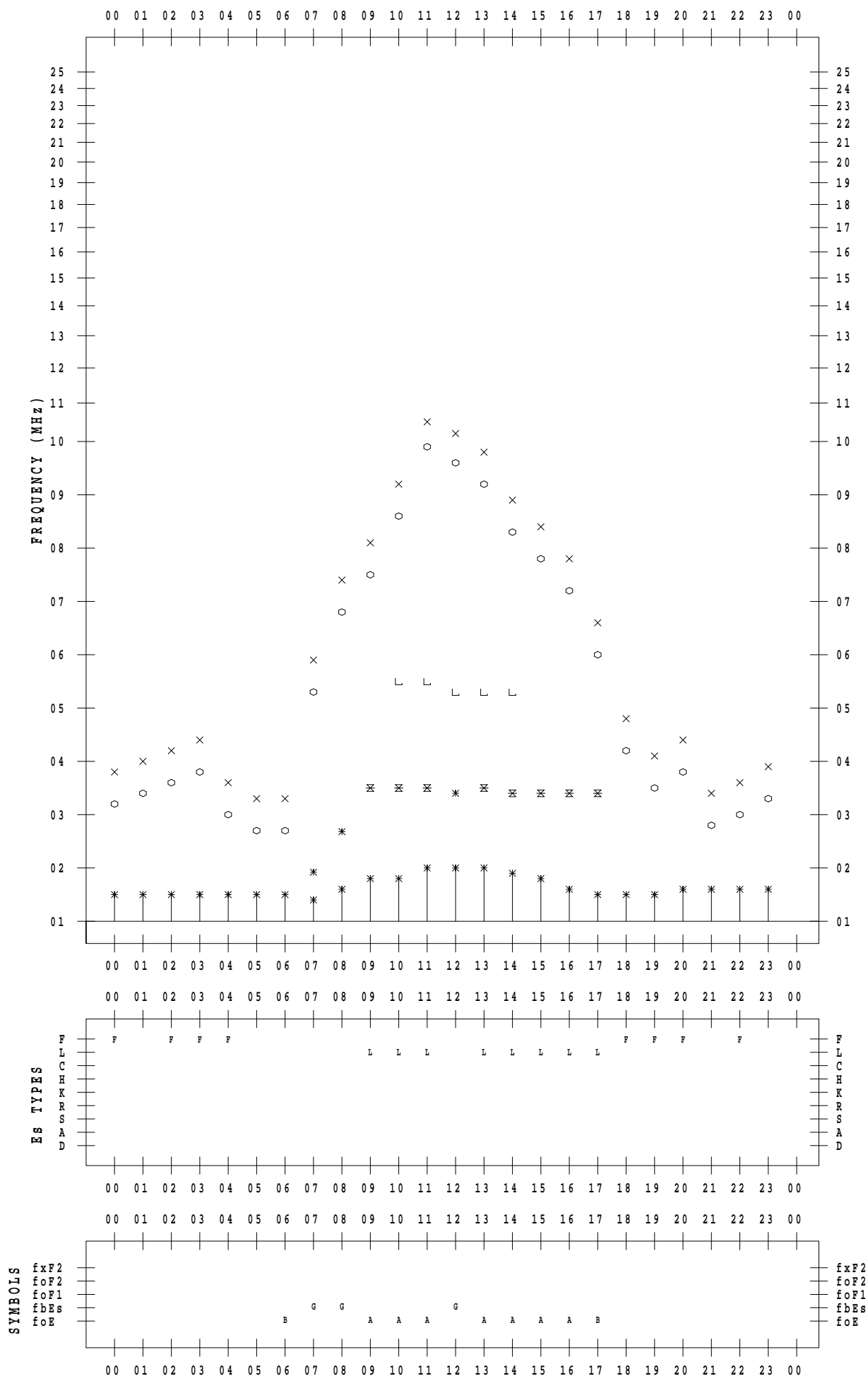
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 1 / 31

135 ° E MEAN TIME



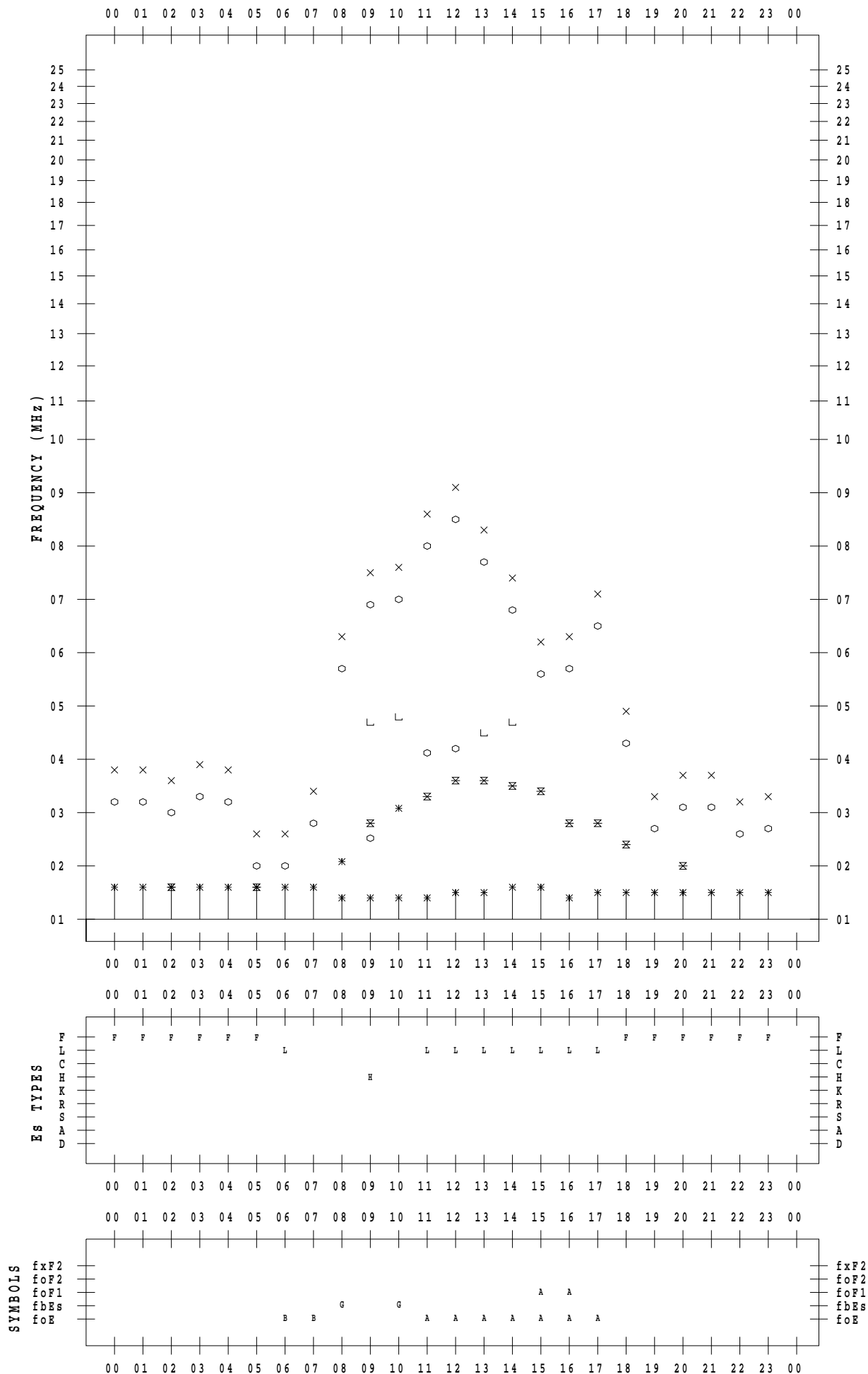
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 1

135 ° E MEAN TIME



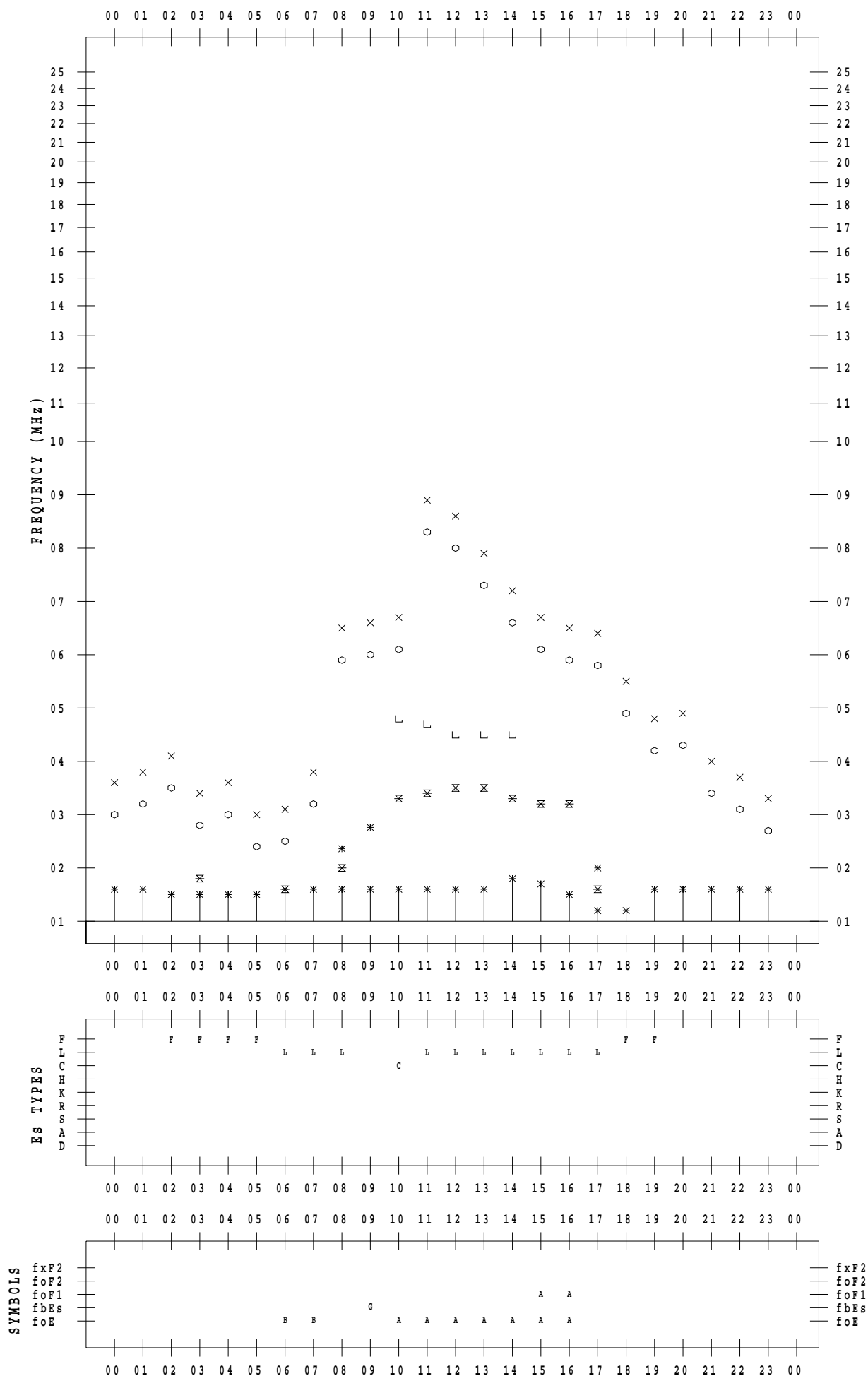
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 2

135 ° E MEAN TIME



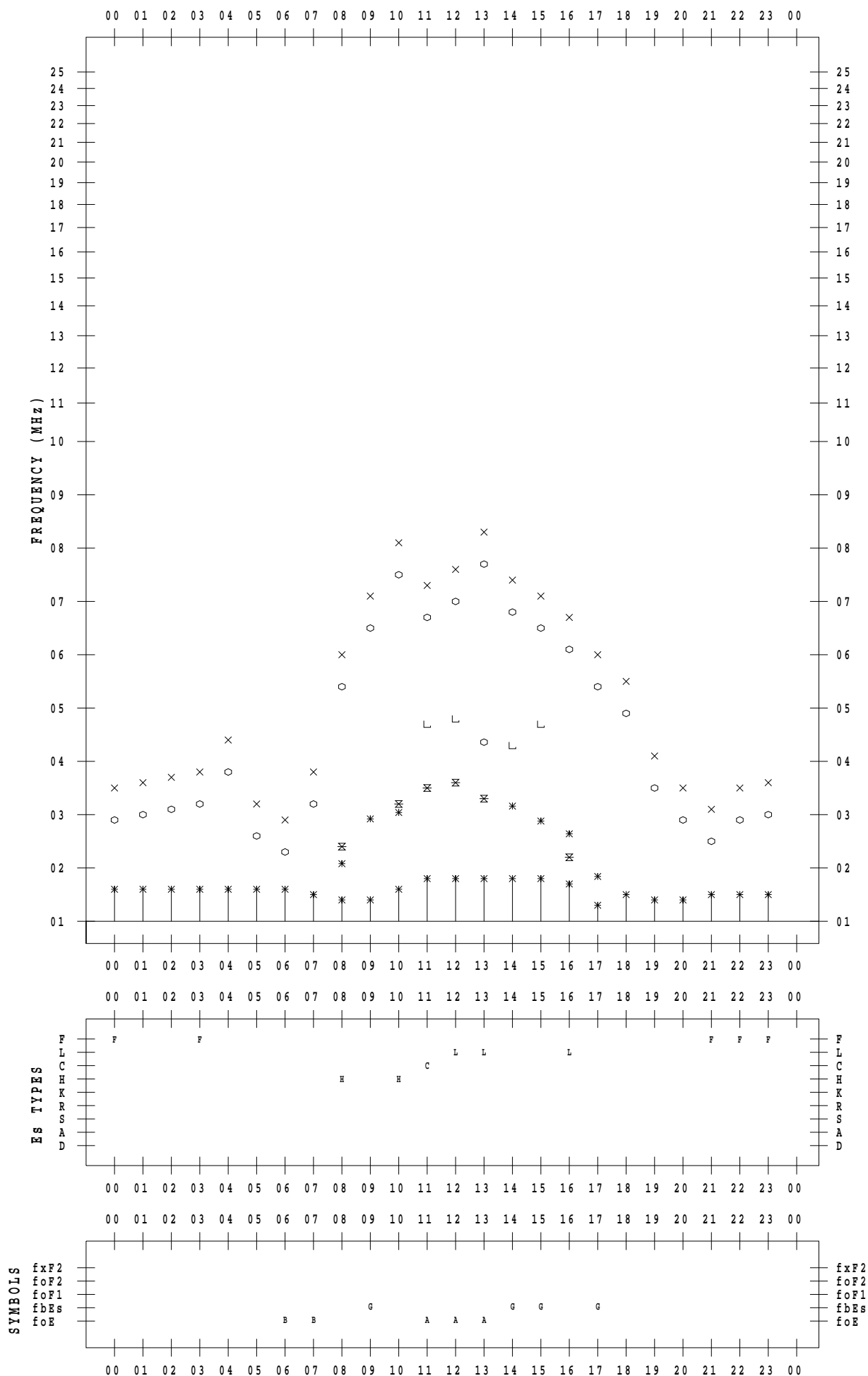
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 3

135 ° E MEAN TIME



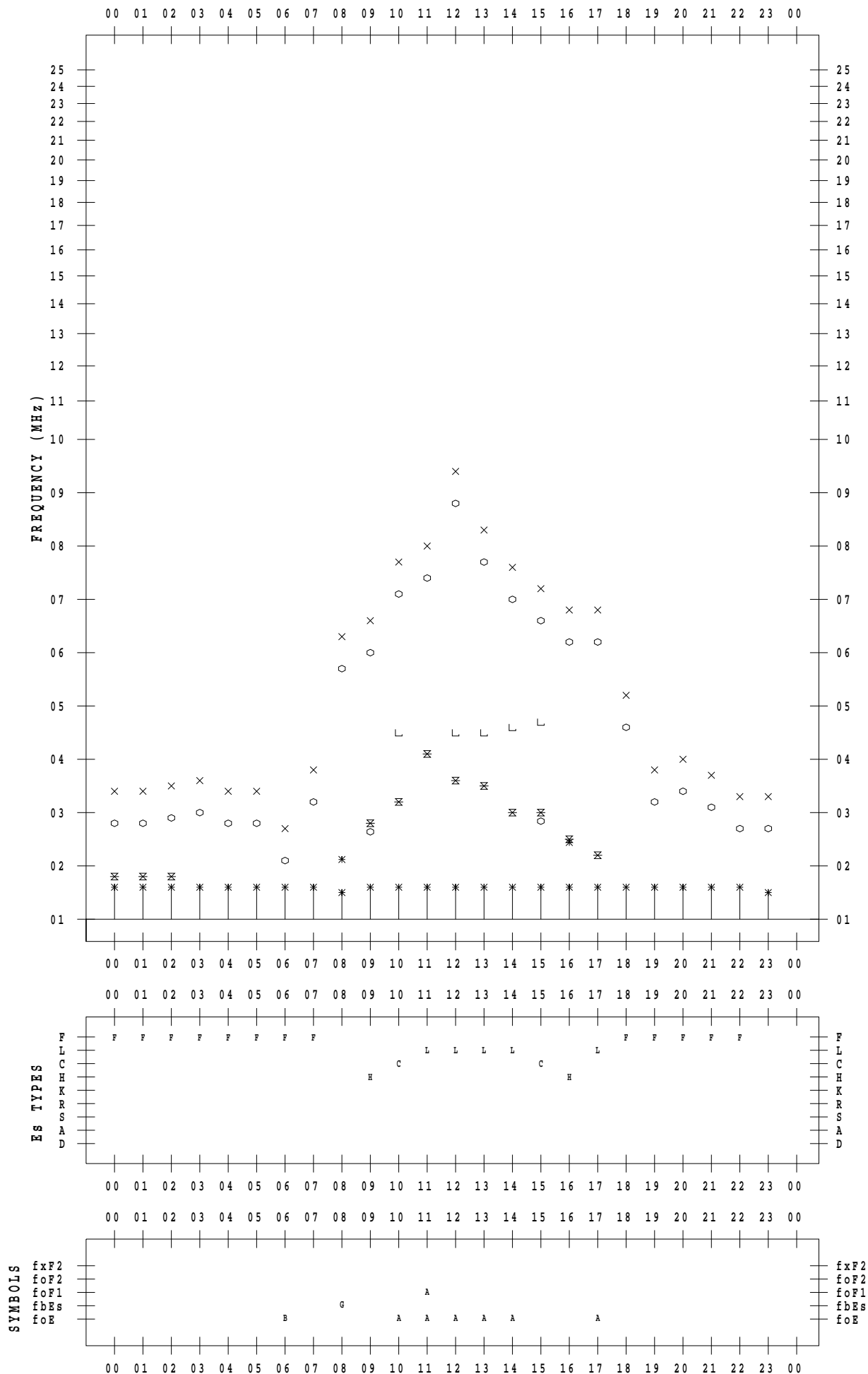
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 4

135 ° E MEAN TIME



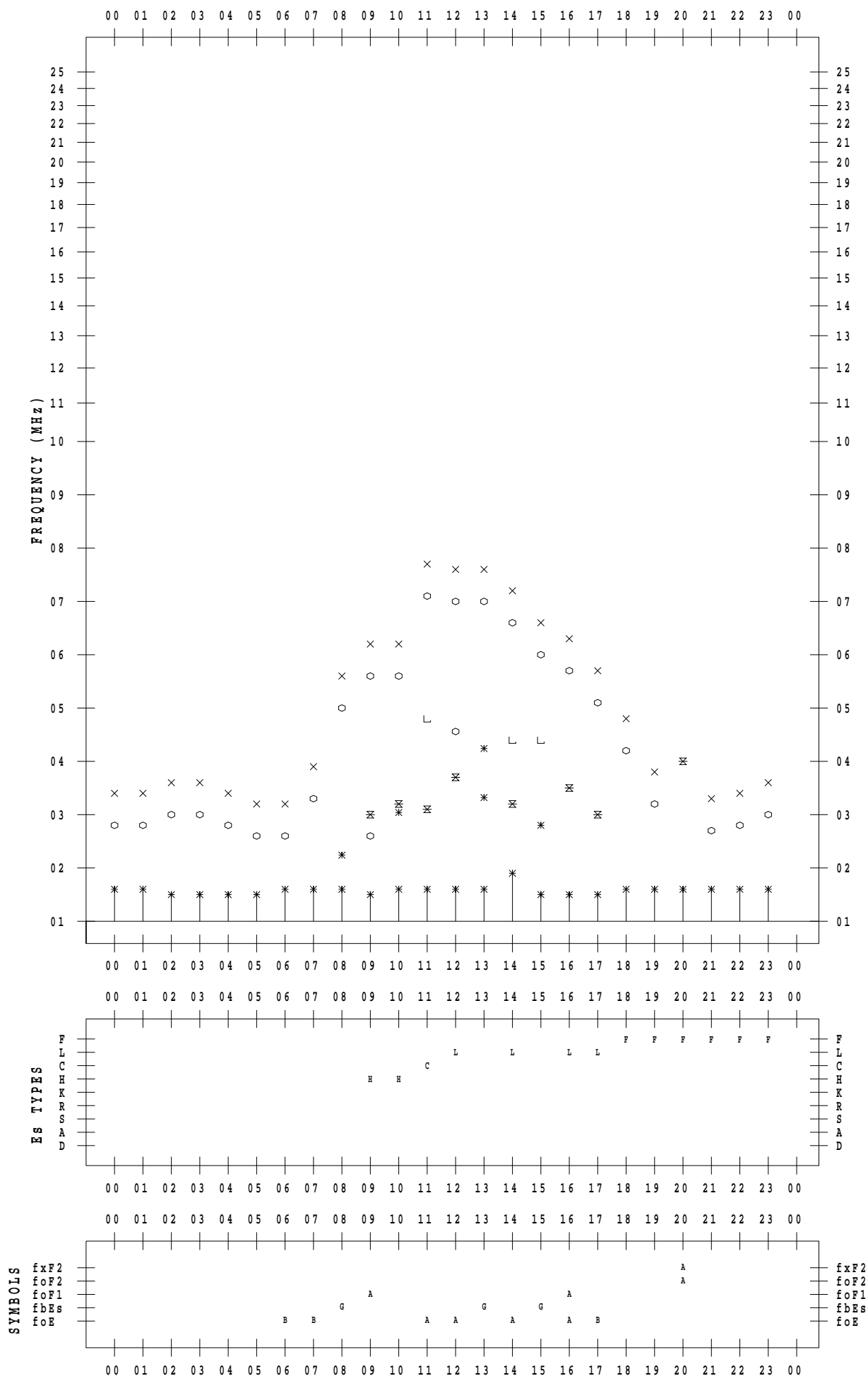
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 5

135 ° E MEAN TIME



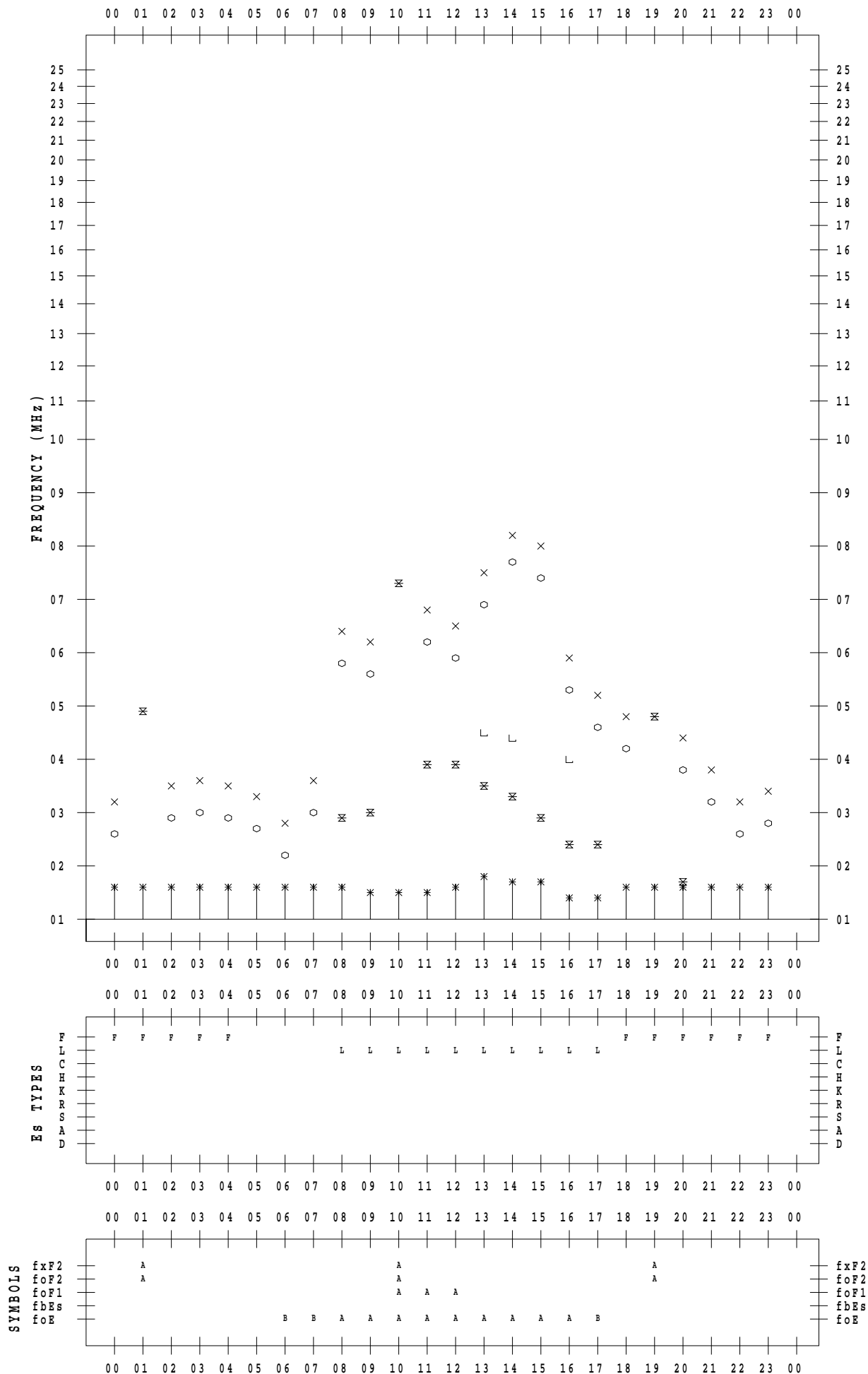
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 6

135 ° E MEAN TIME



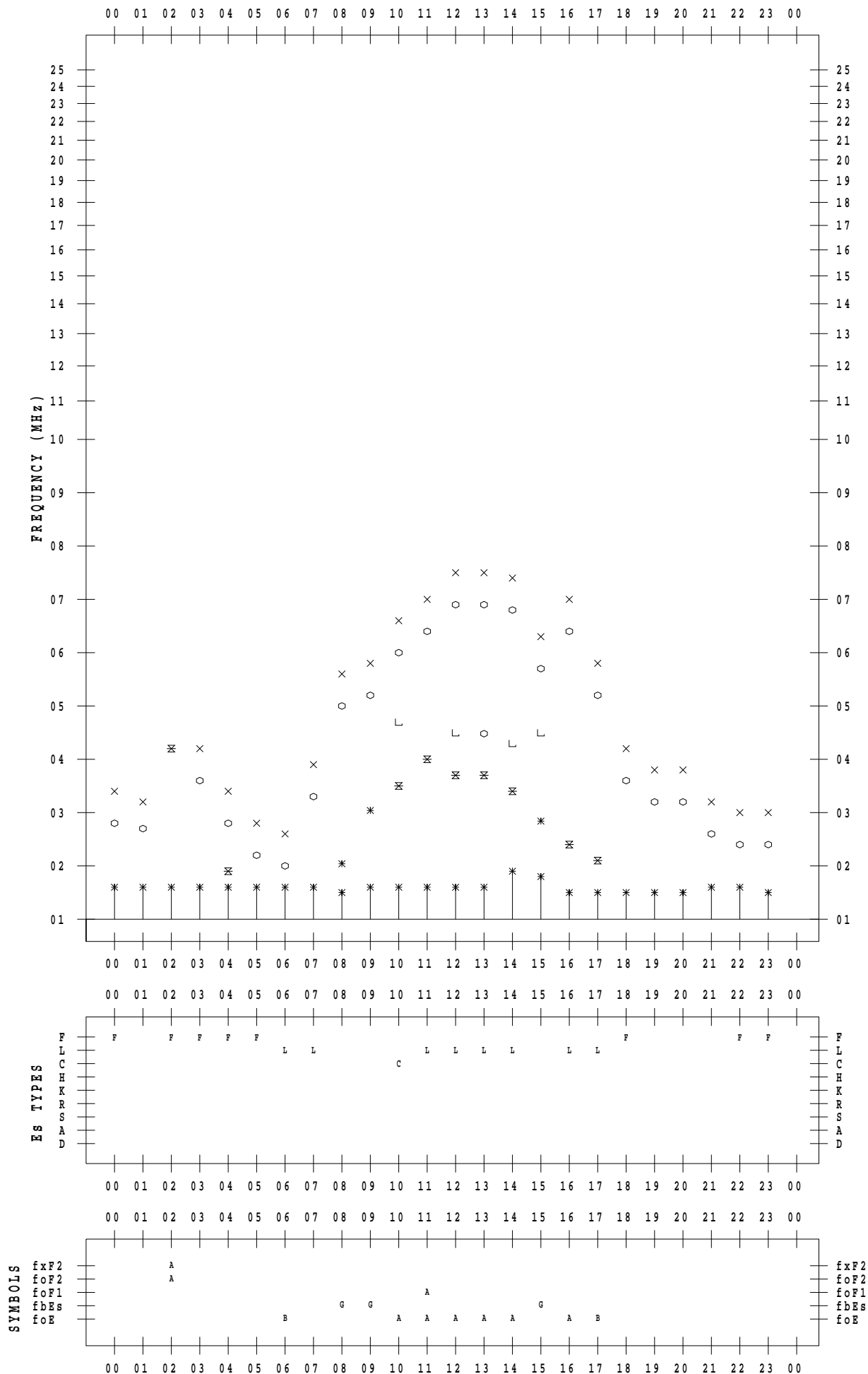
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 7

135 ° E MEAN TIME



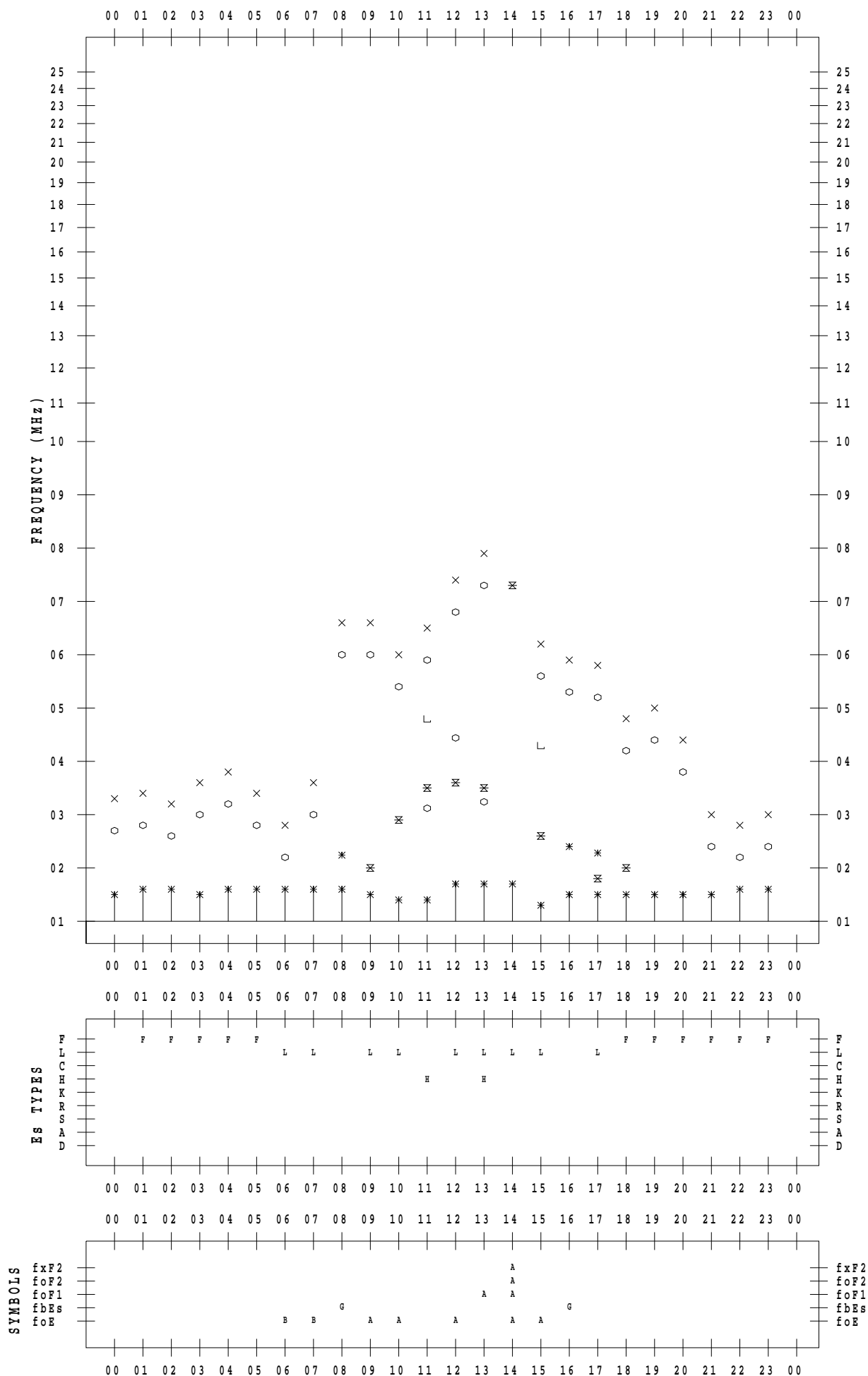
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 8

135 ° E MEAN TIME



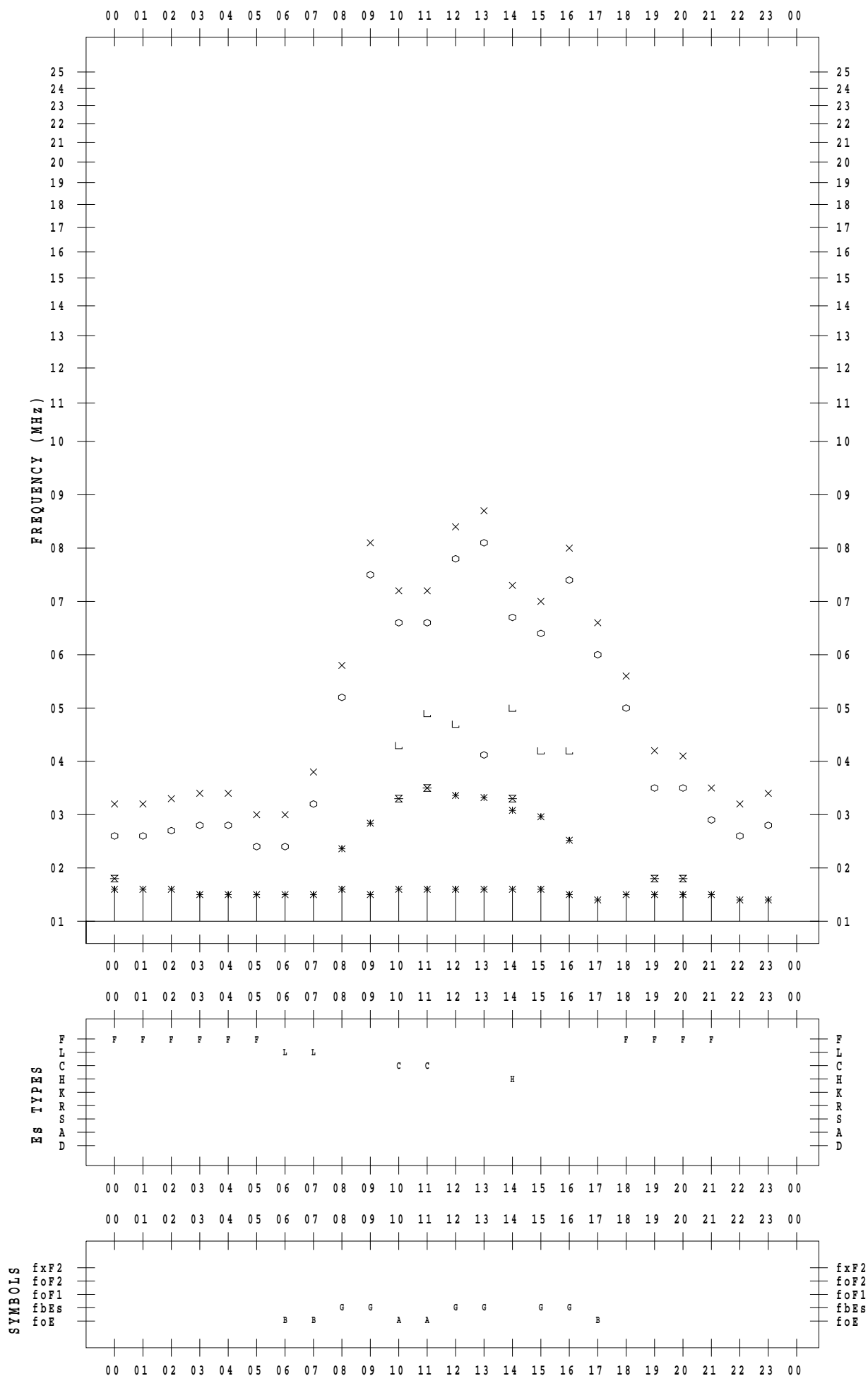
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 9

135 ° E MEAN TIME



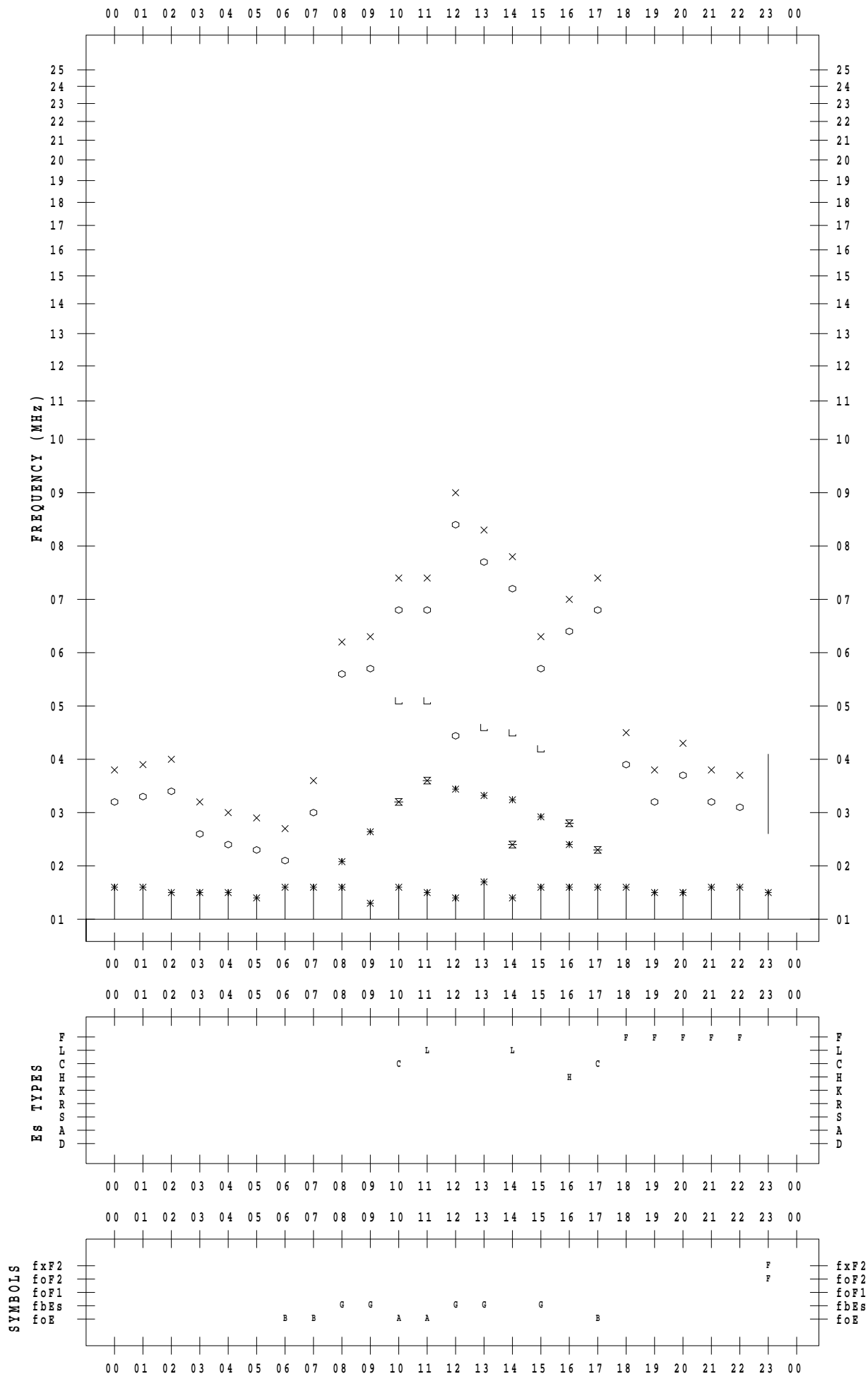
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 10

135 ° E MEAN TIME



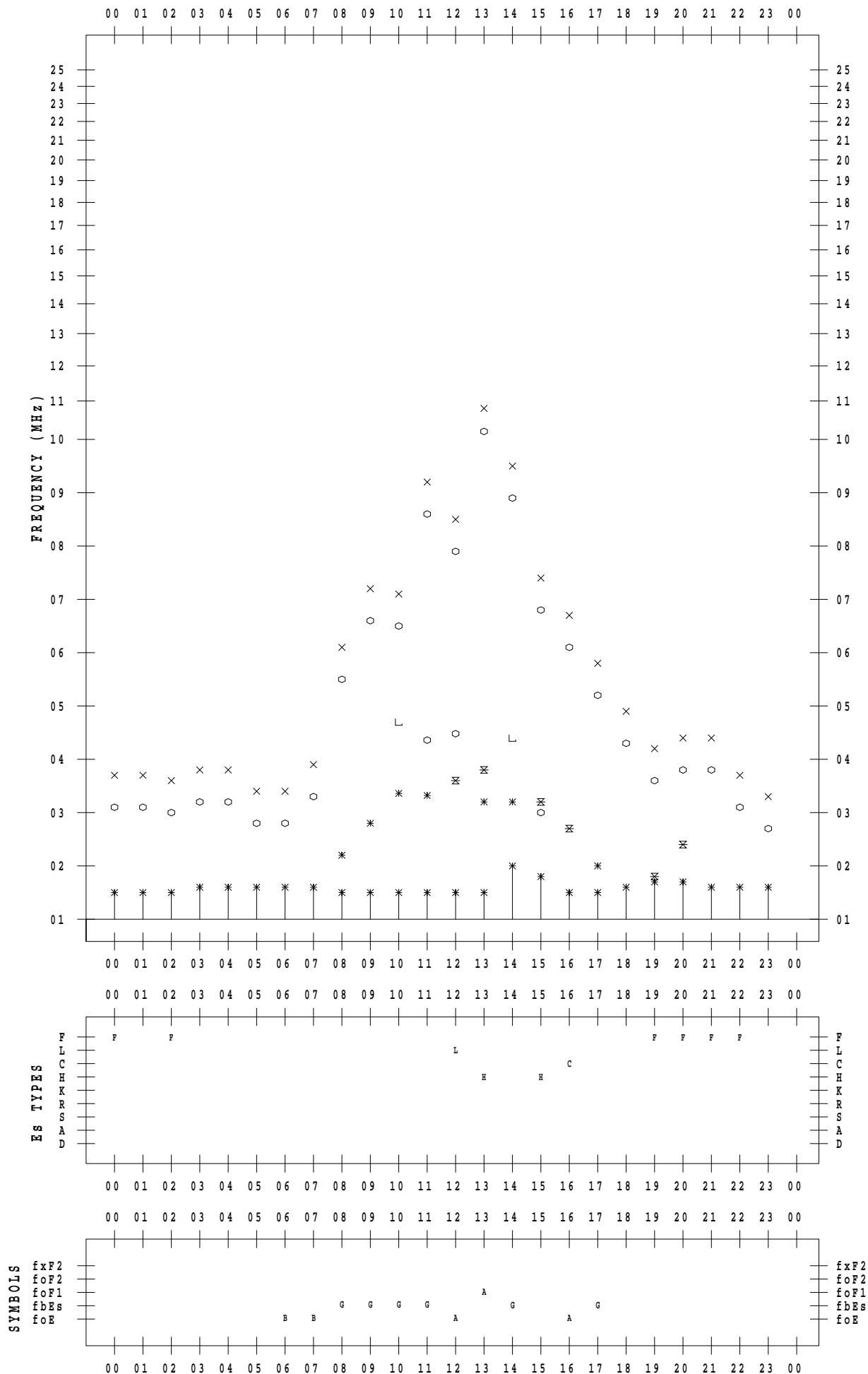
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 11

135 ° E MEAN TIME



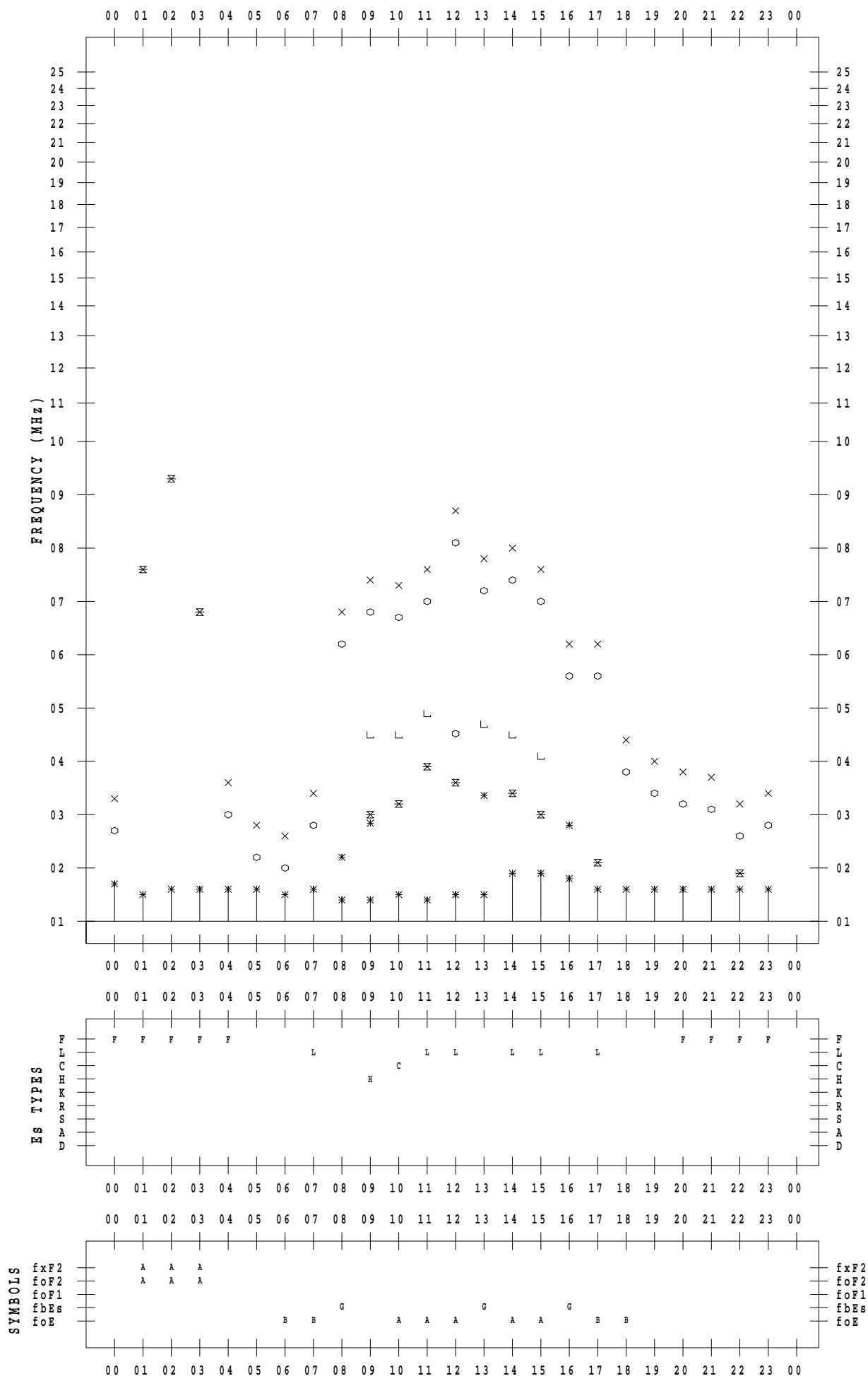
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 12

135 ° E MEAN TIME



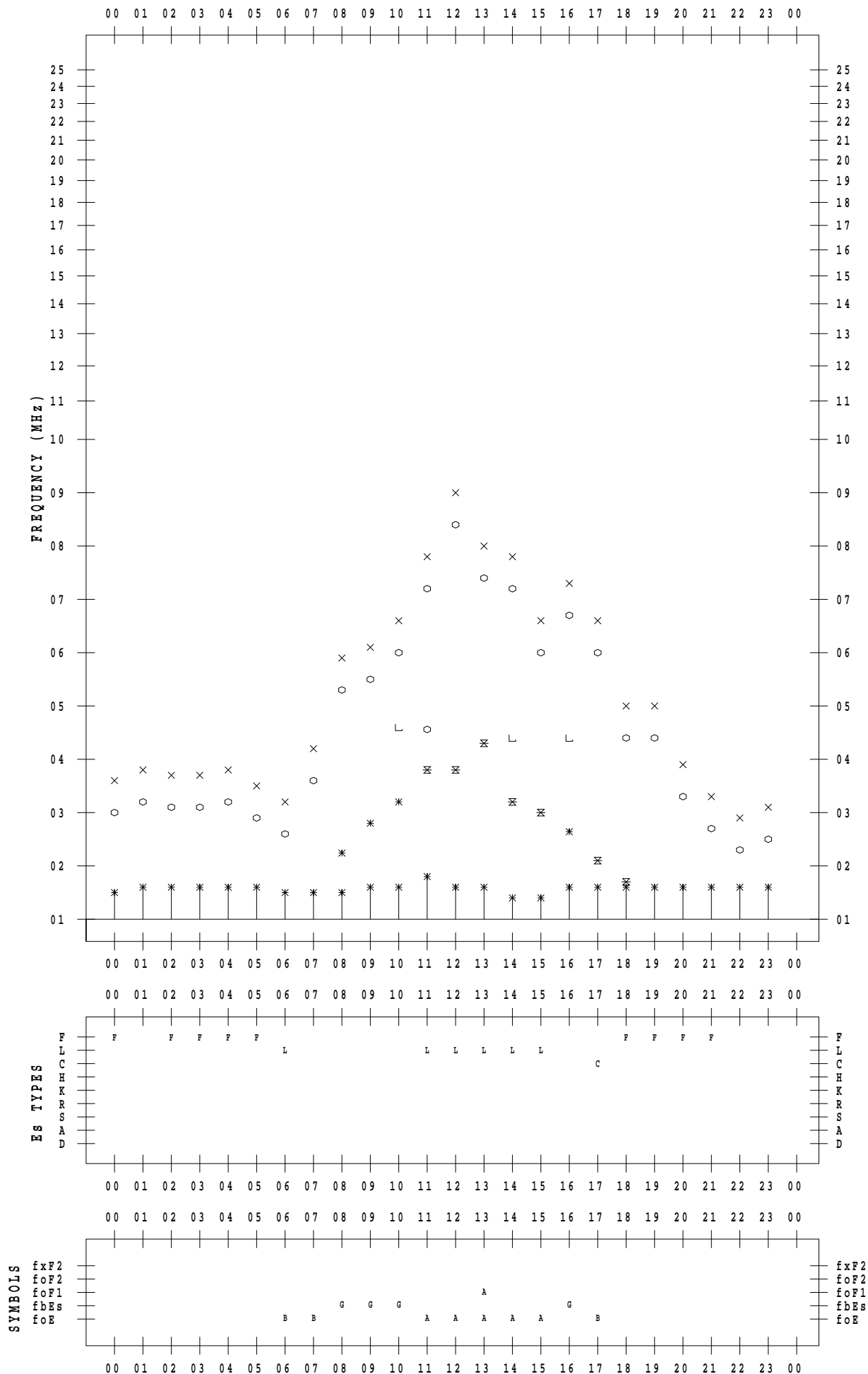
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 13

135 ° E MEAN TIME



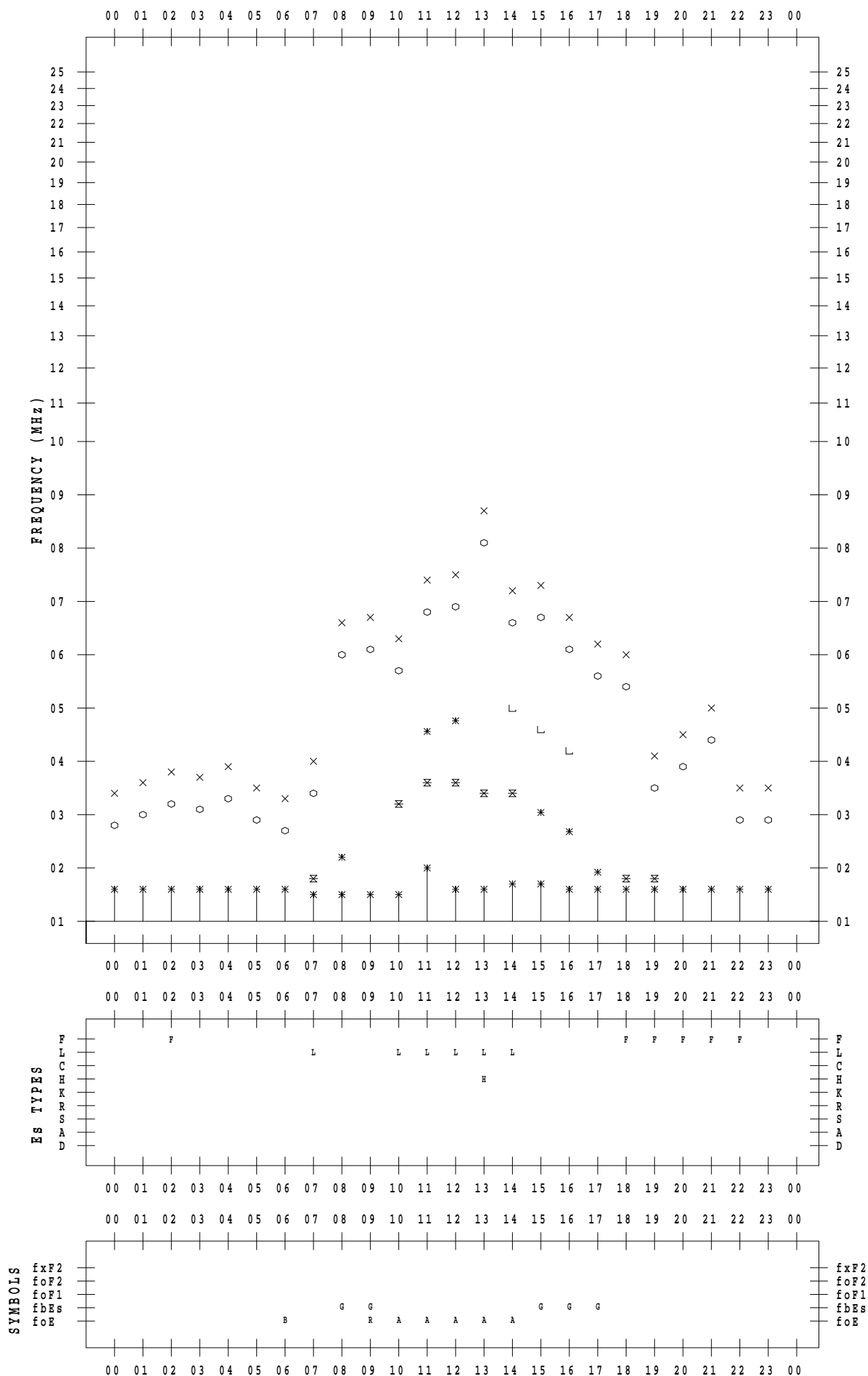
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 14

135 ° E MEAN TIME



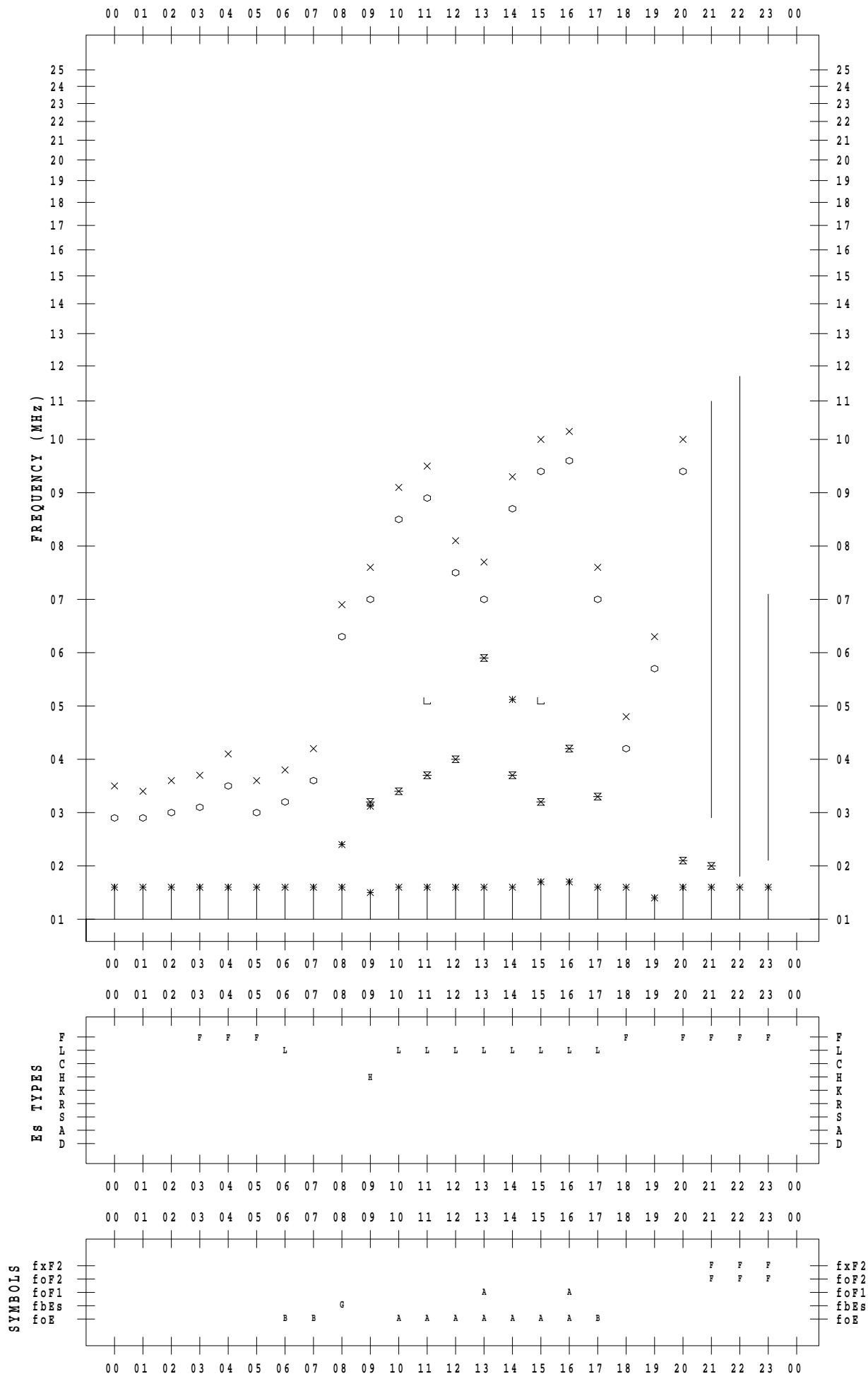
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 15

135 ° E MEAN TIME



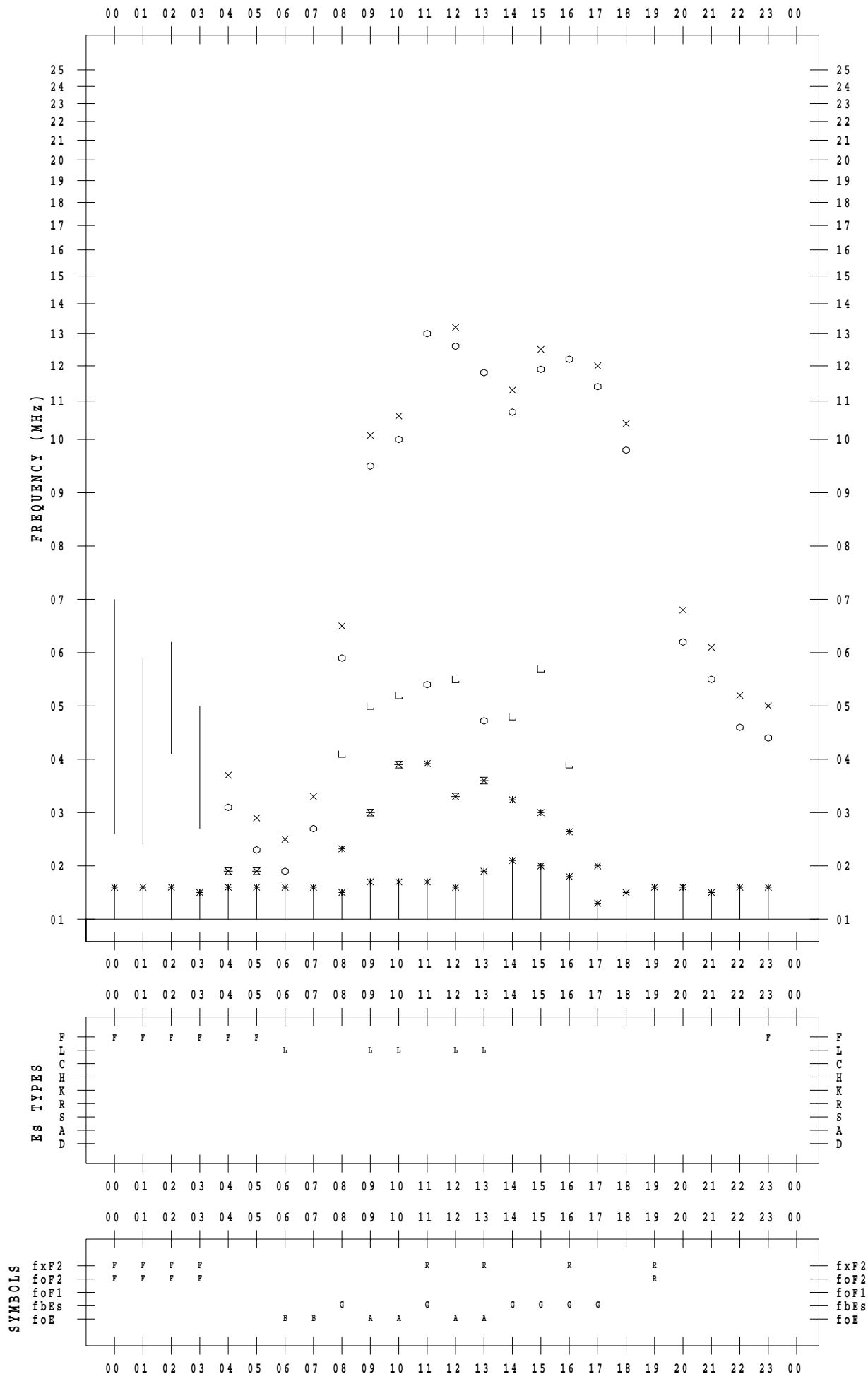
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 16

135 ° E MEAN TIME



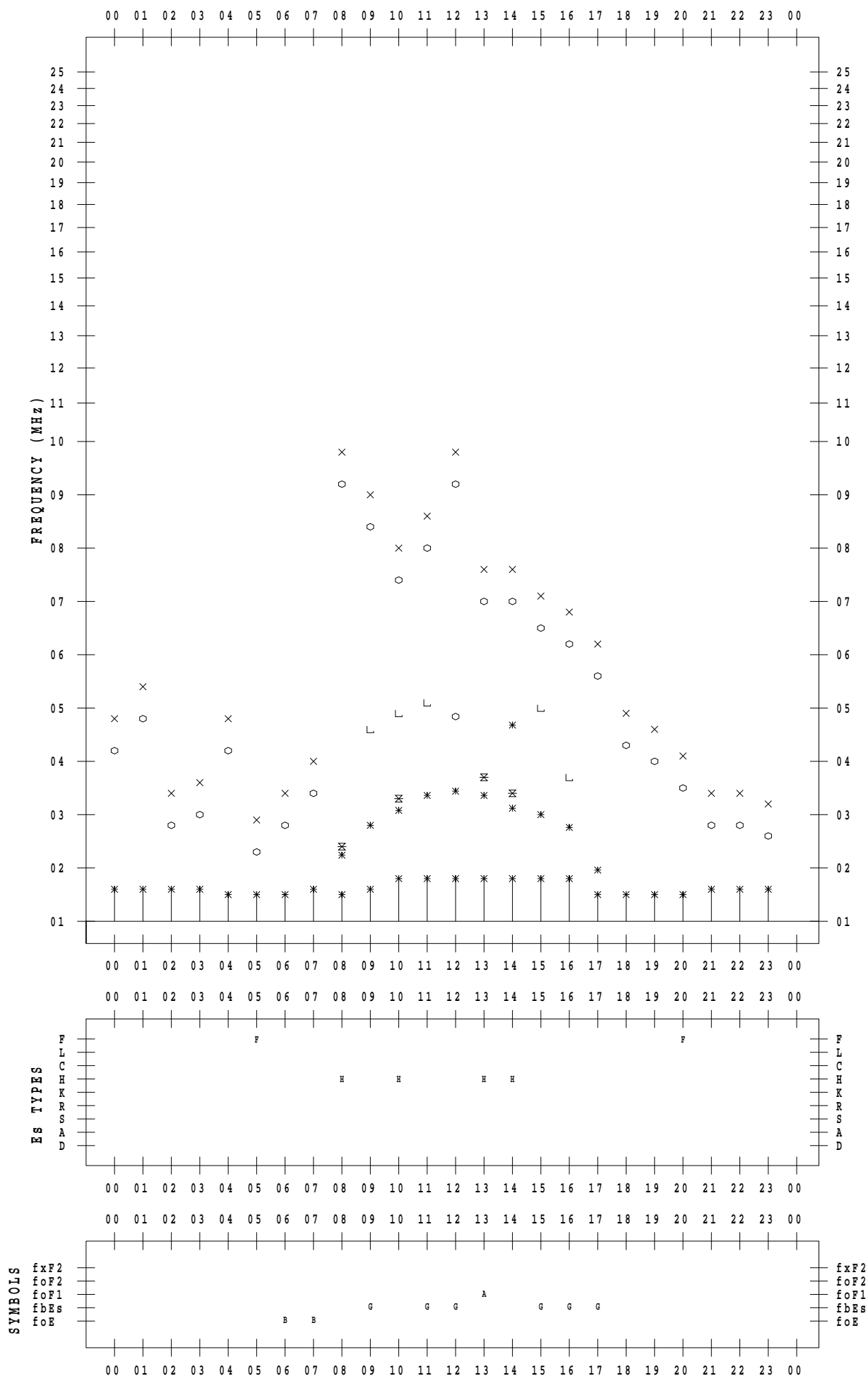
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 17

135 ° E MEAN TIME



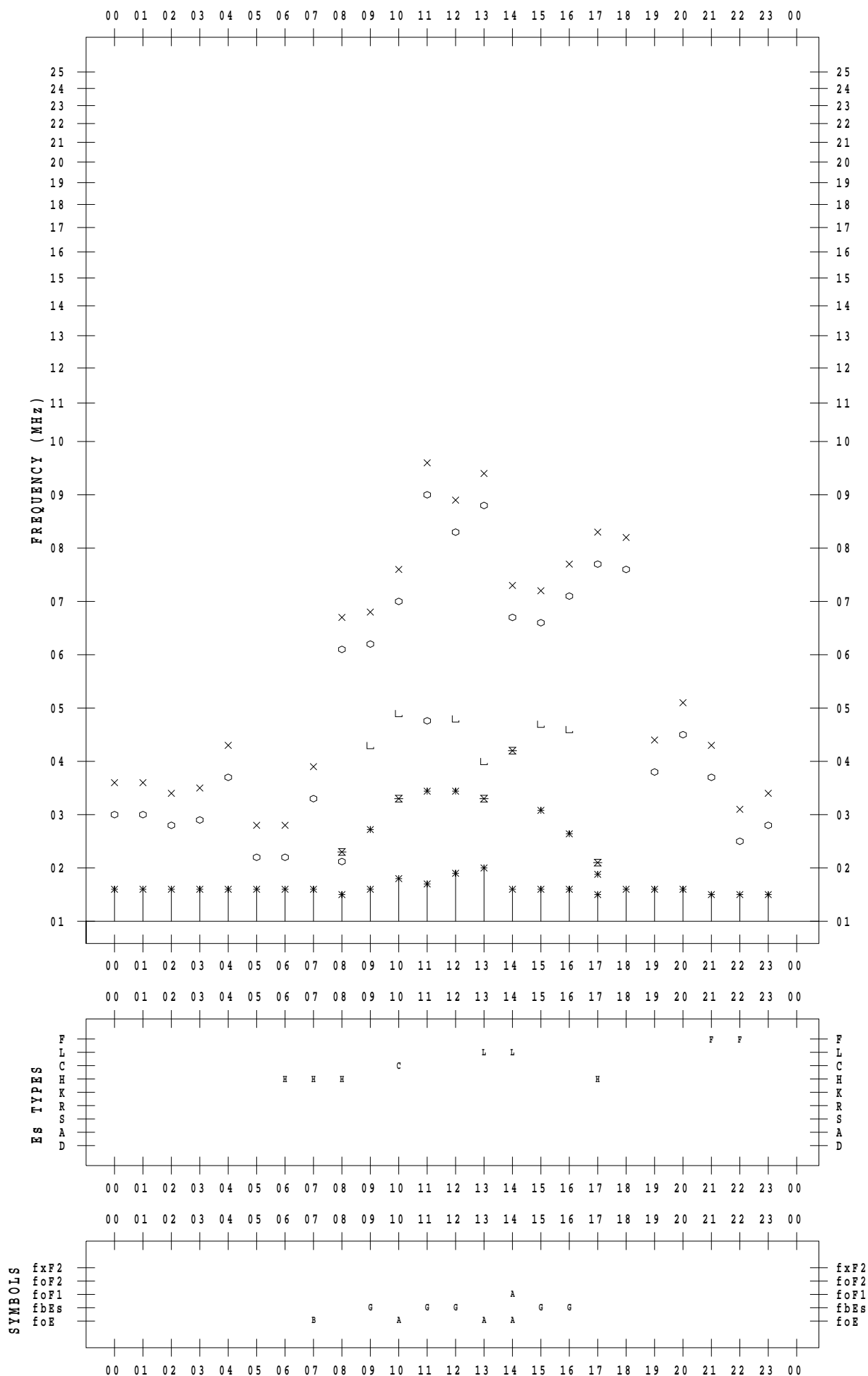
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 18

135 ° E MEAN TIME



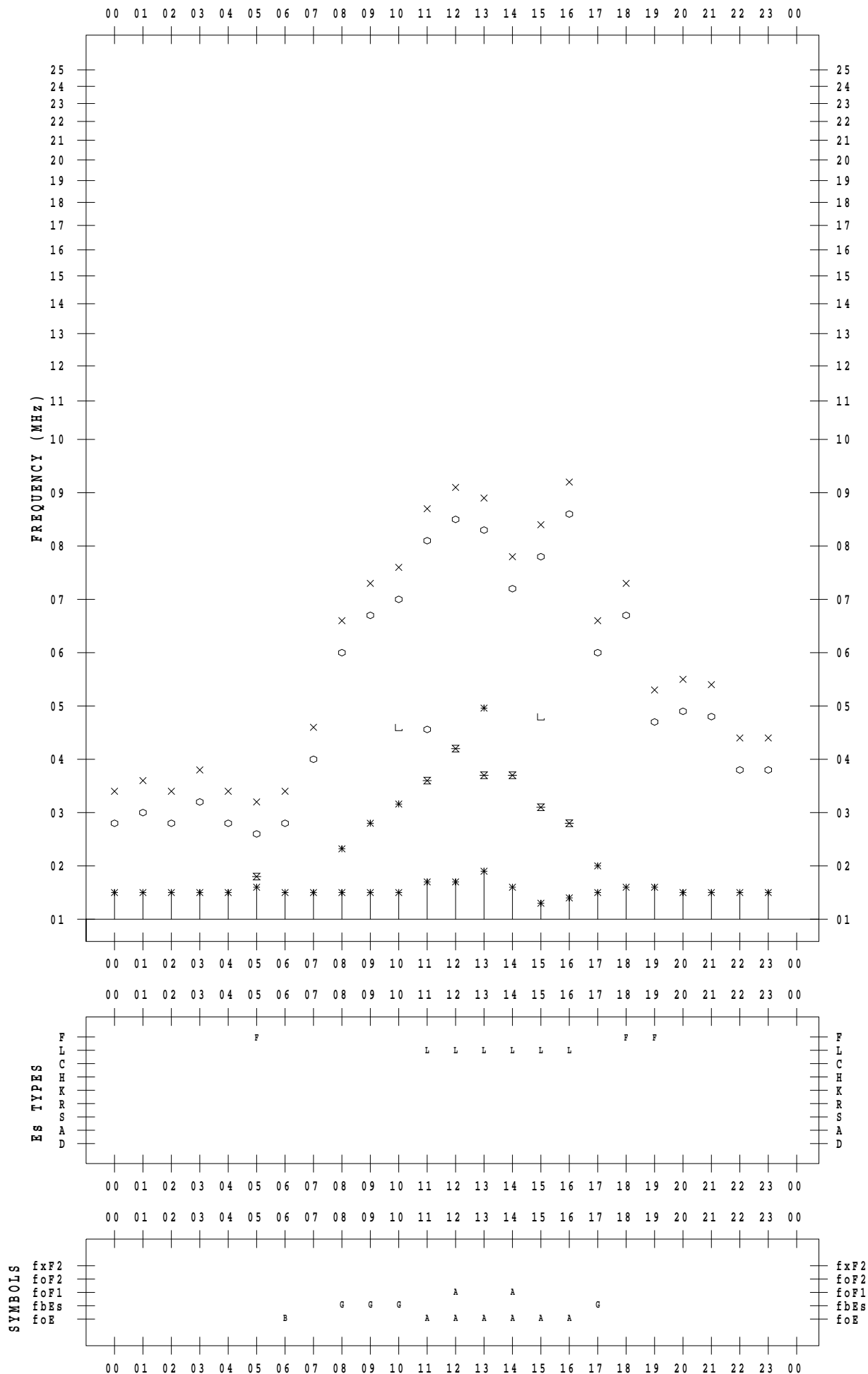
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 19

135 ° E MEAN TIME



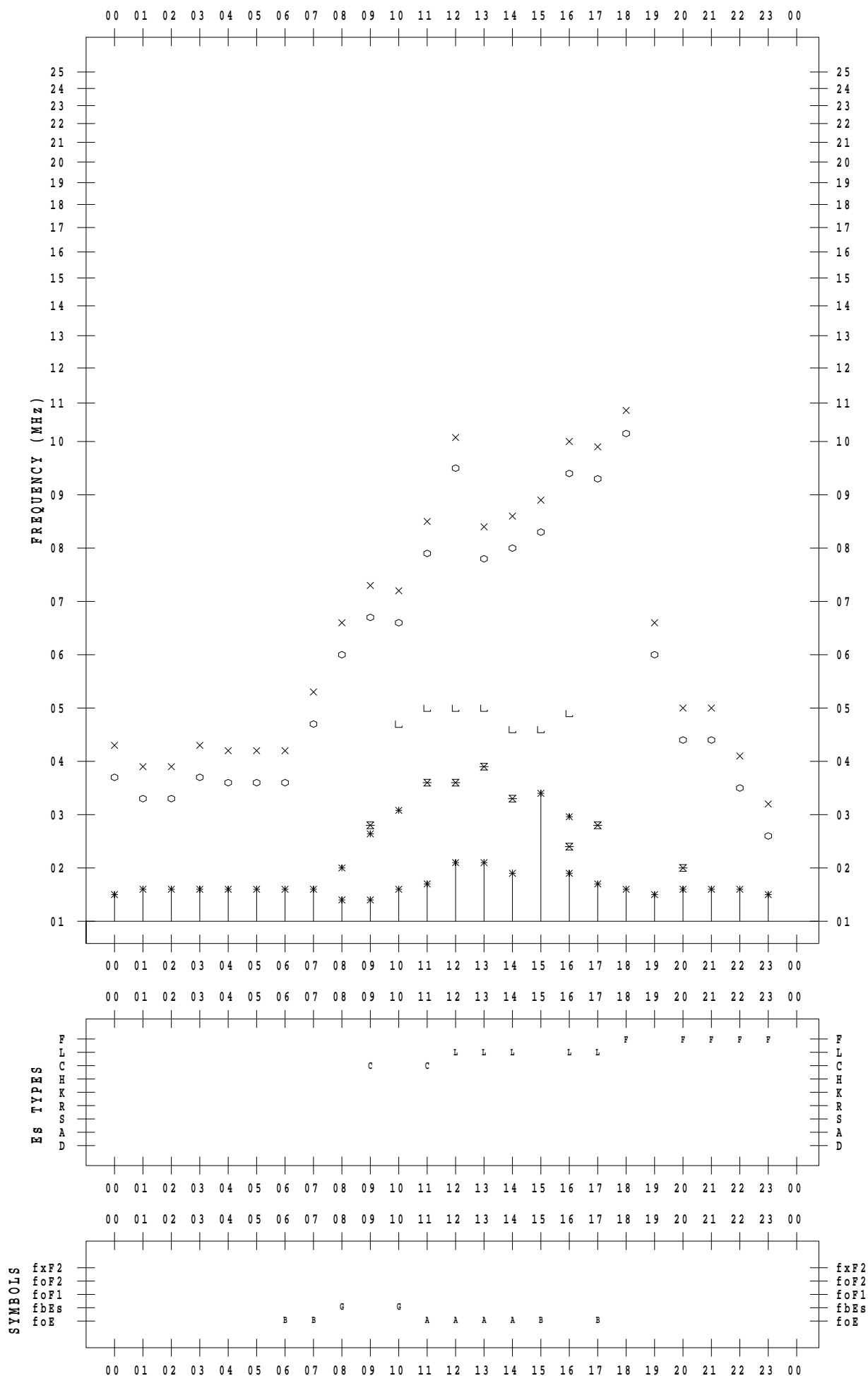
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 20

135 ° E MEAN TIME



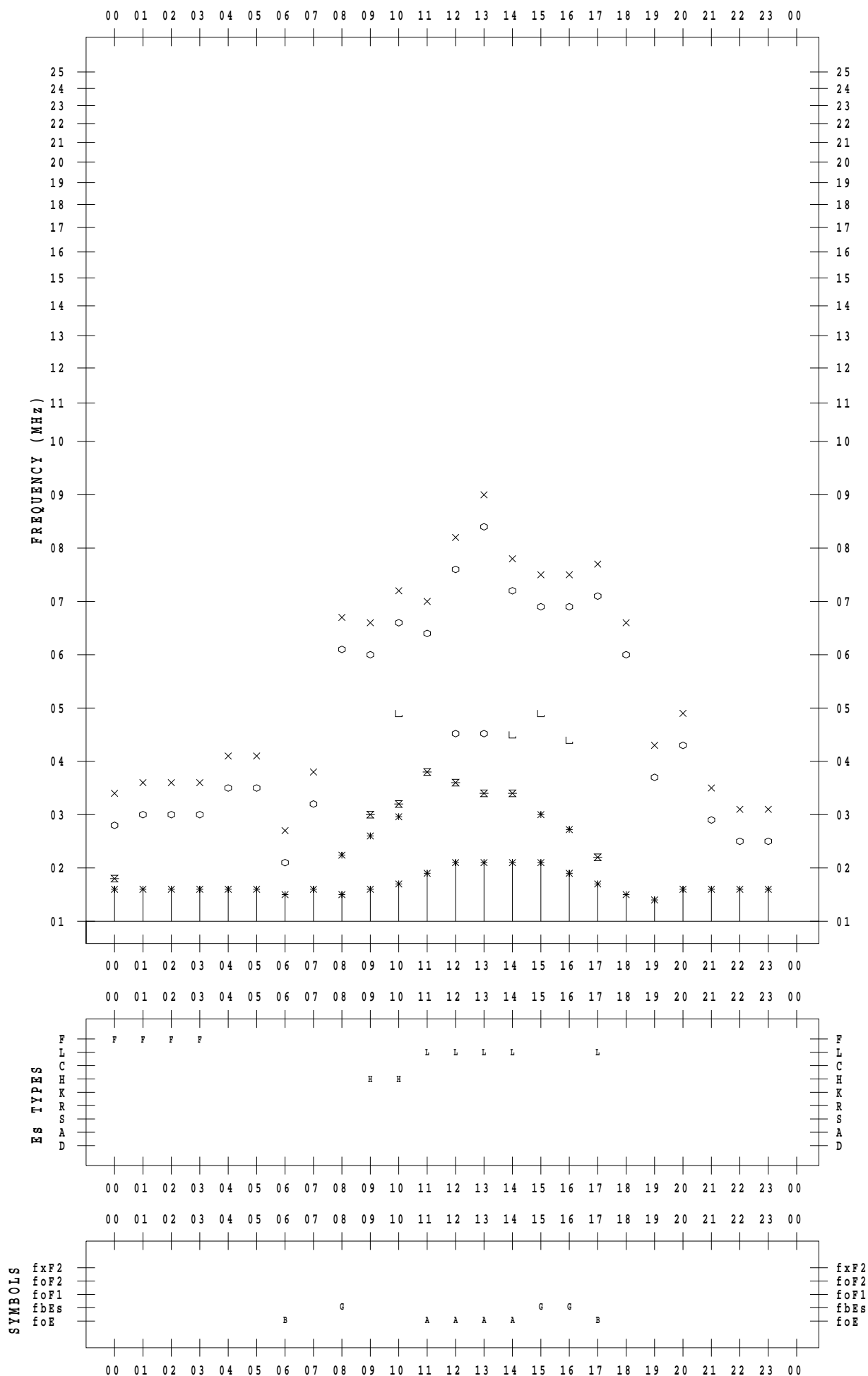
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 21

135 ° E MEAN TIME



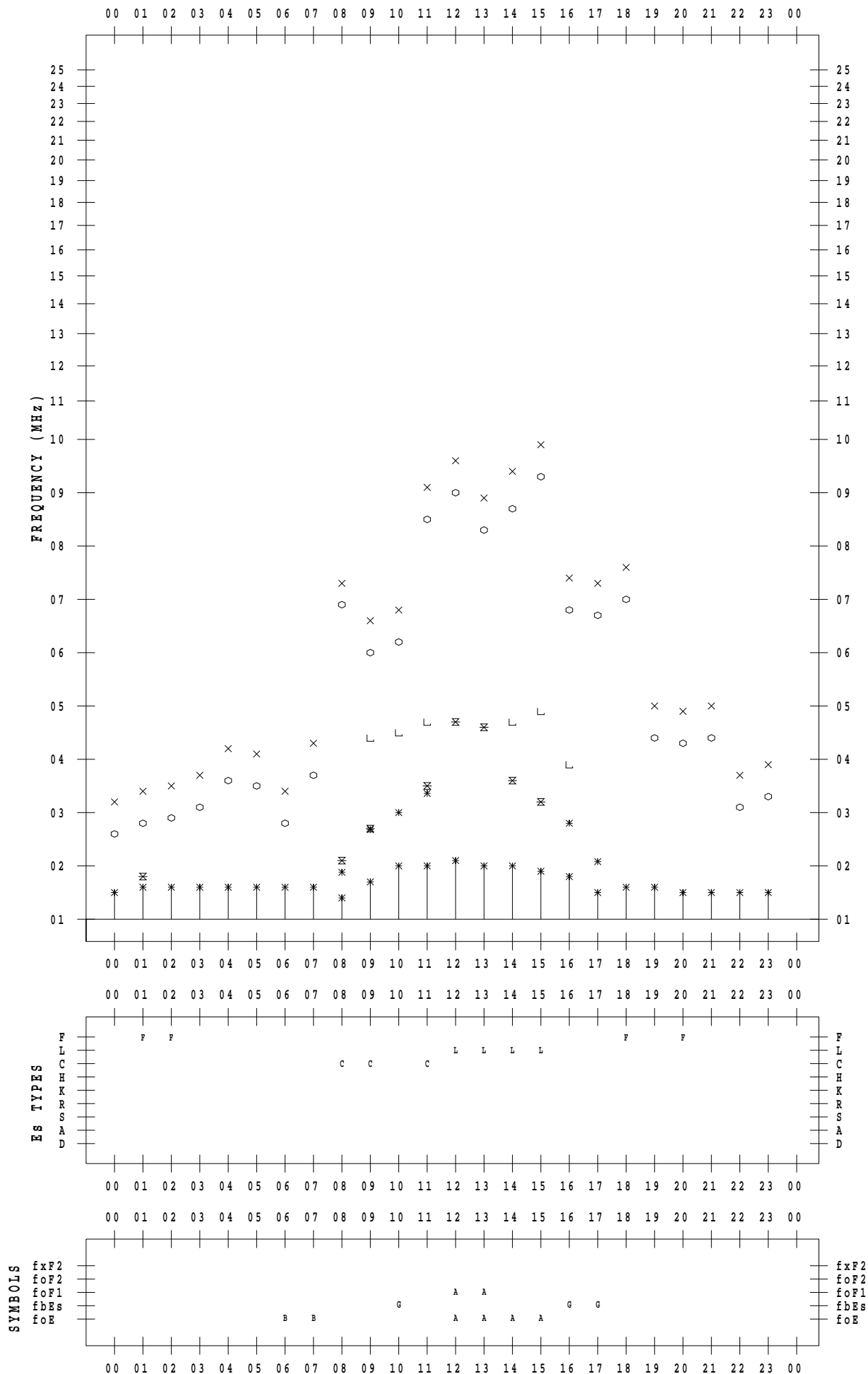
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 22

135 ° E MEAN TIME



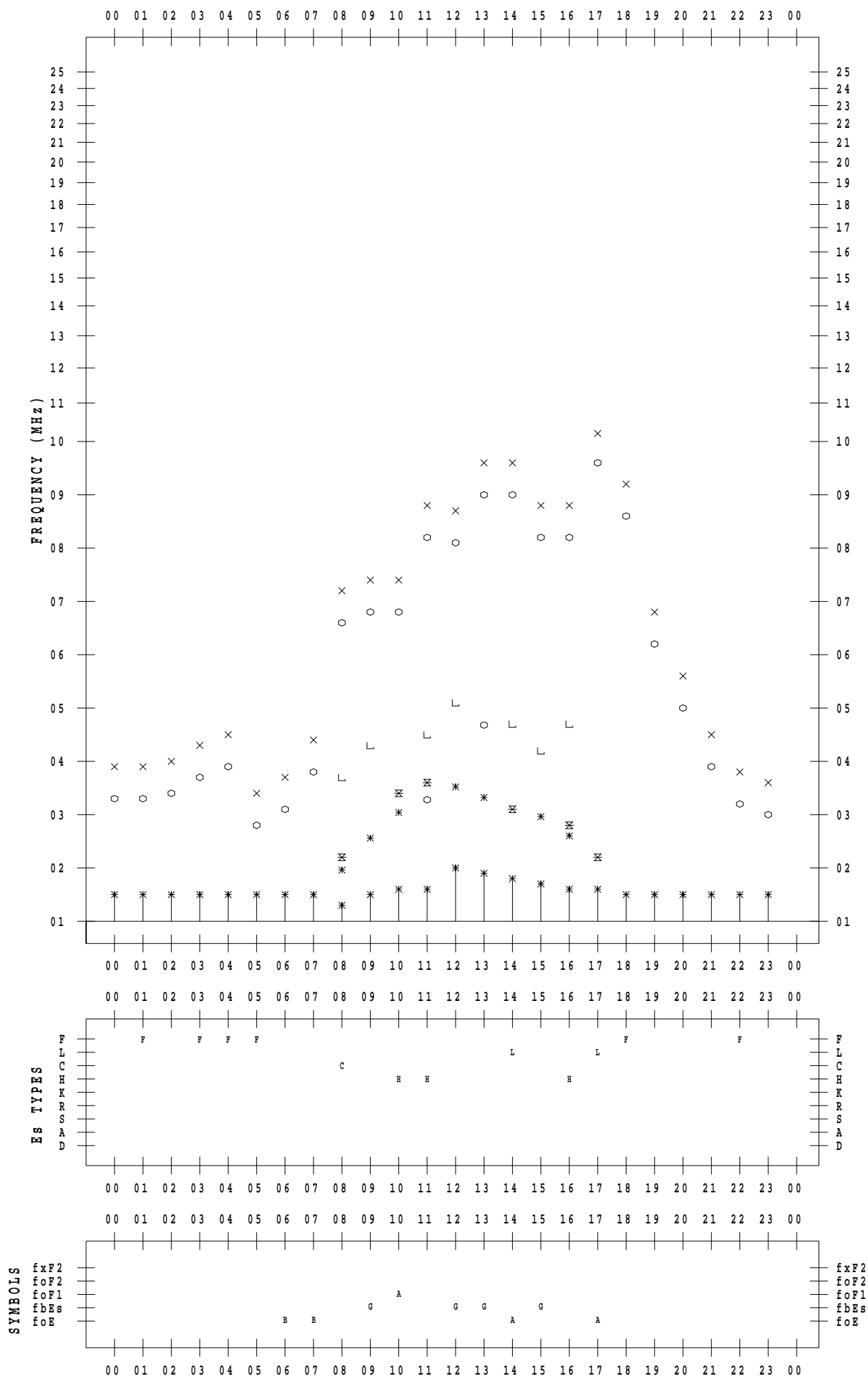
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 23

135 ° E MEAN TIME



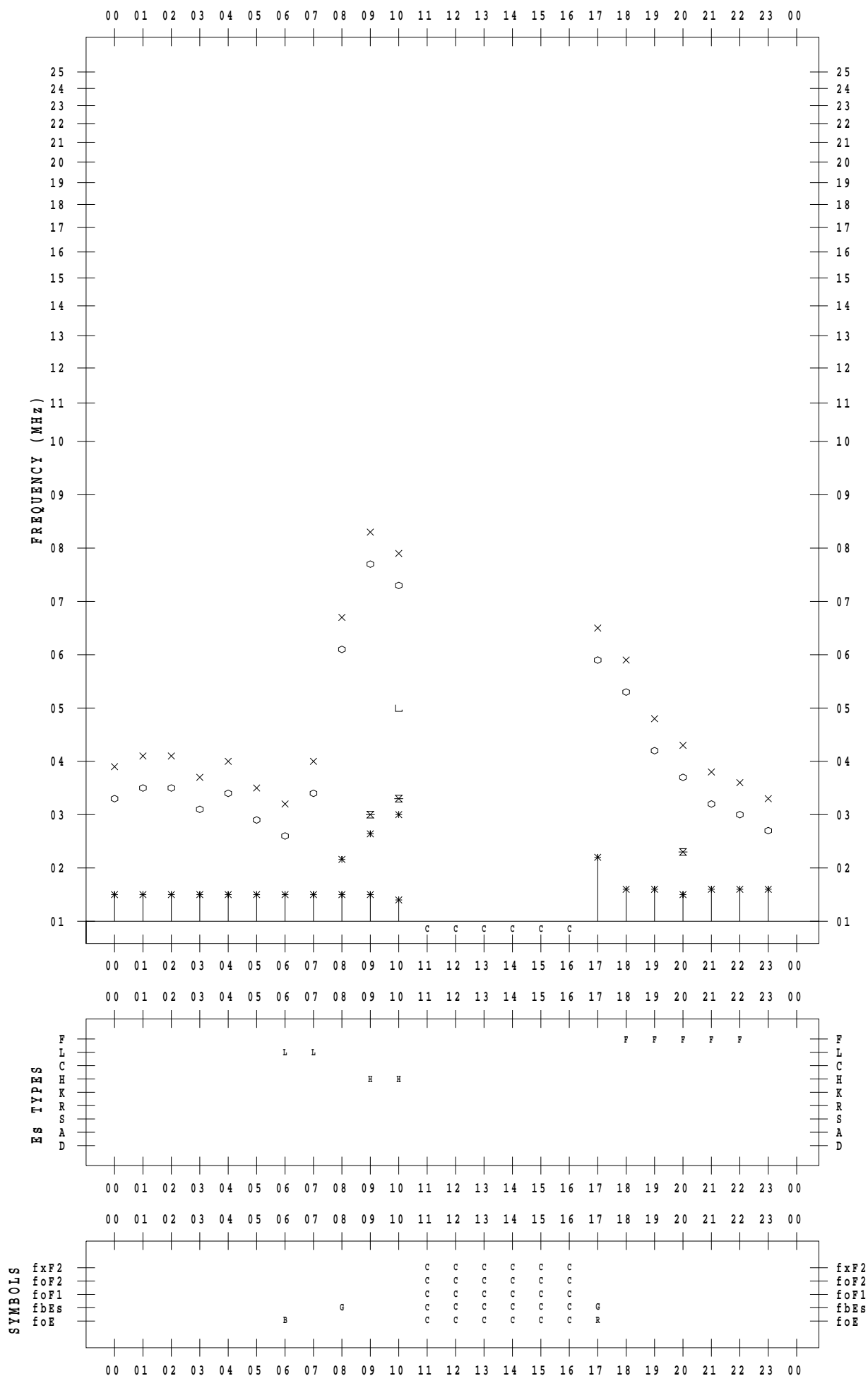
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 24

135 ° E MEAN TIME



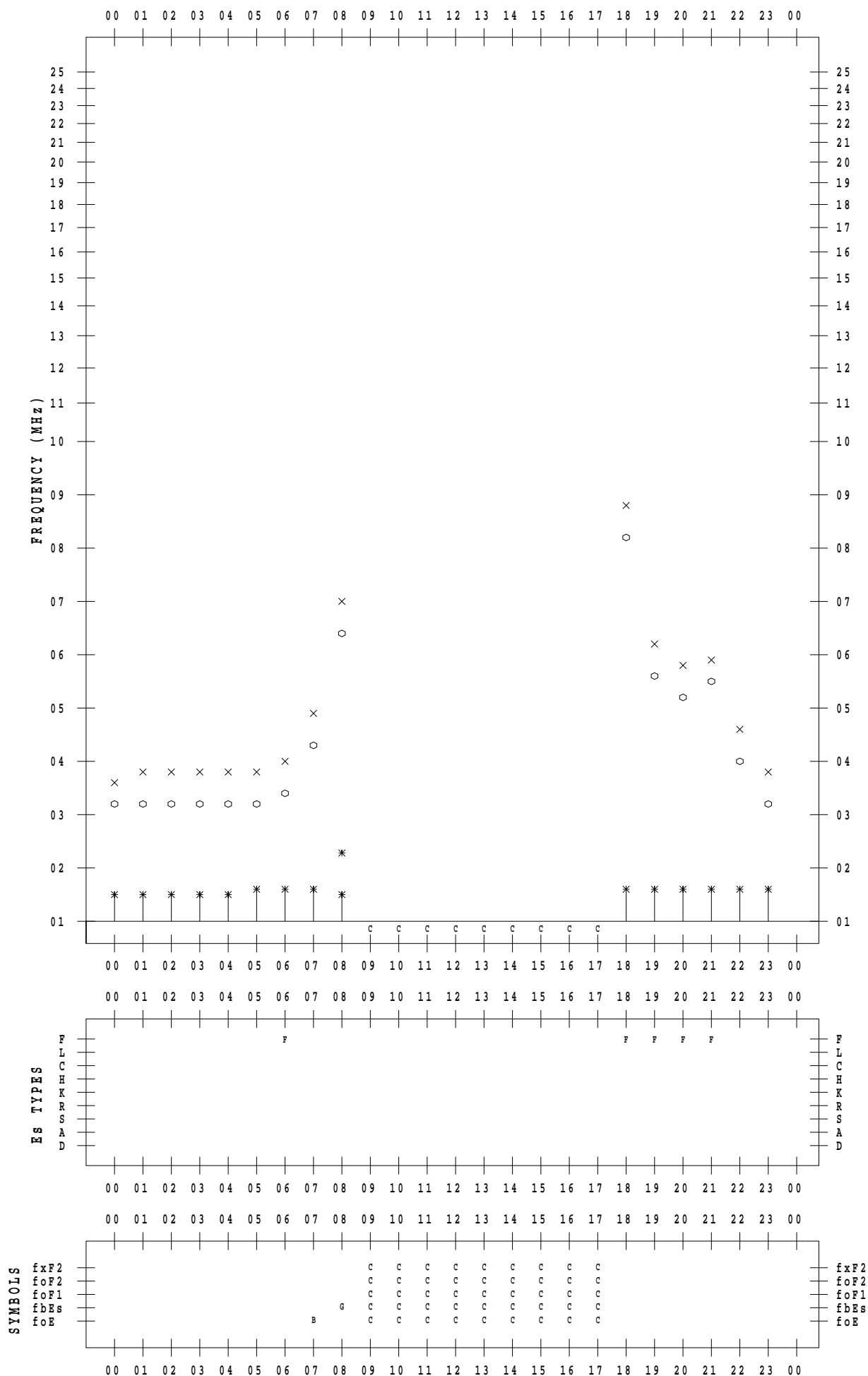
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 25

135 ° E MEAN TIME



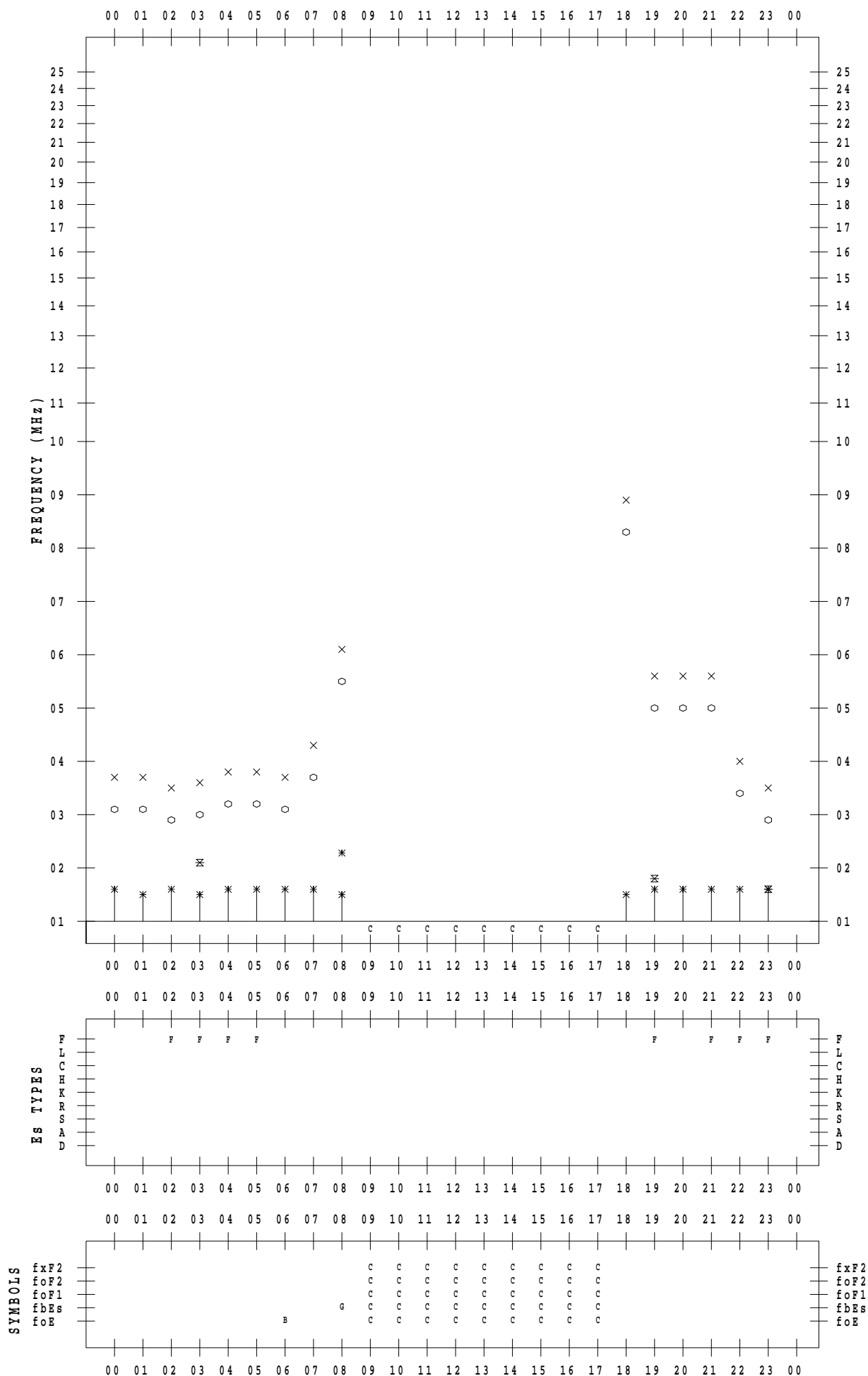
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 26

135 ° E MEAN TIME



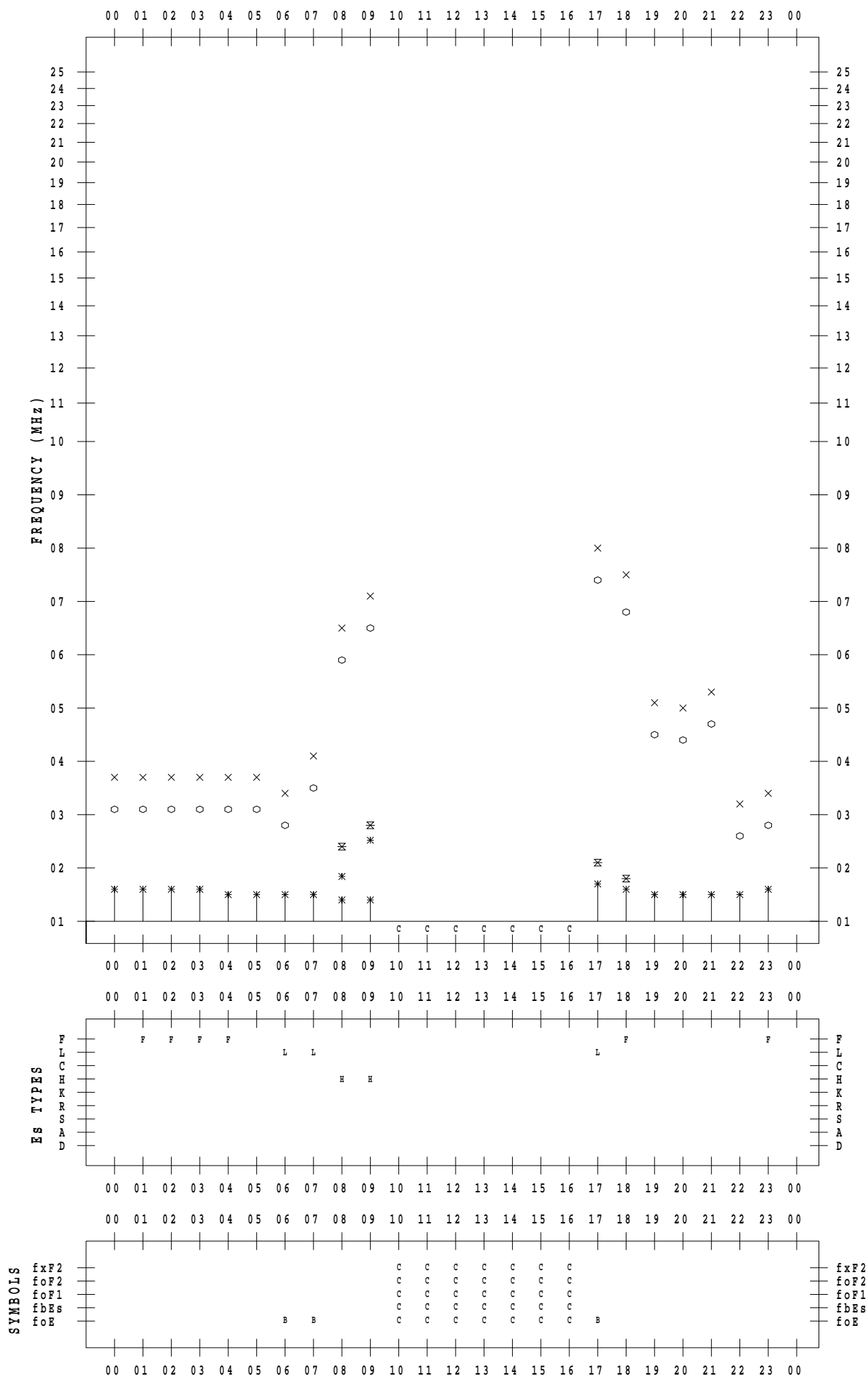
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 27

135 ° E MEAN TIME



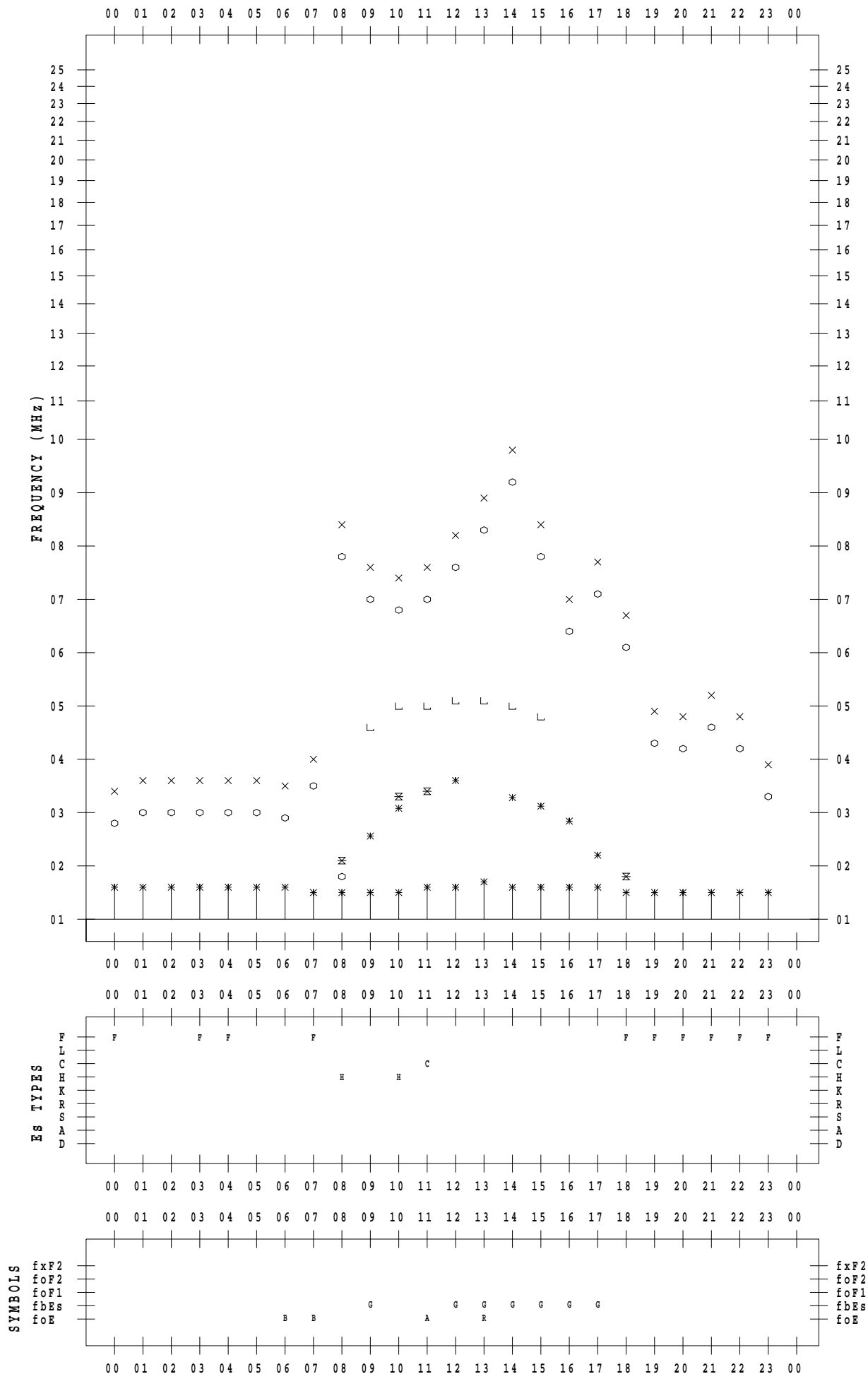
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 28

135 ° E MEAN TIME



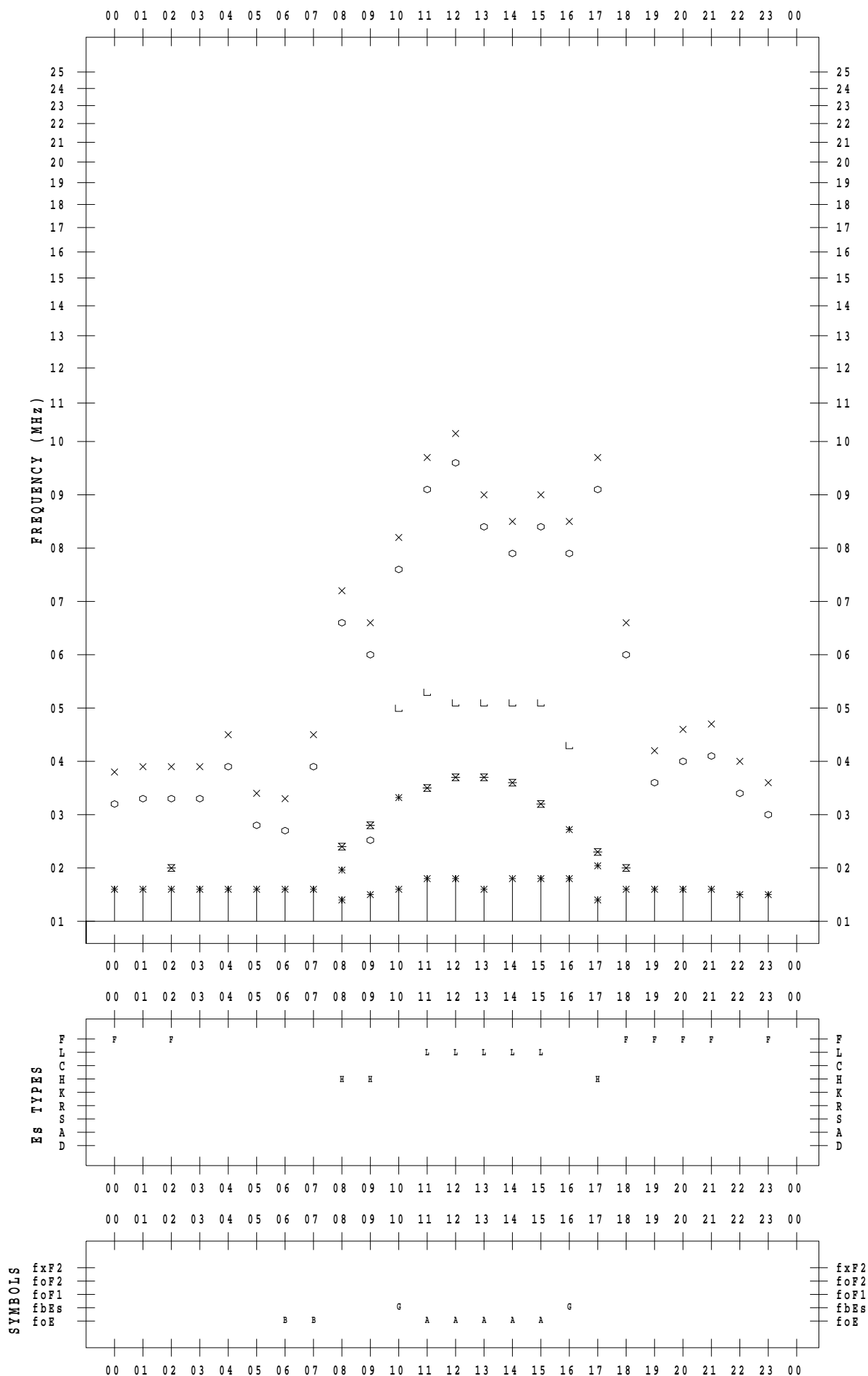
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 29

135 ° E MEAN TIME



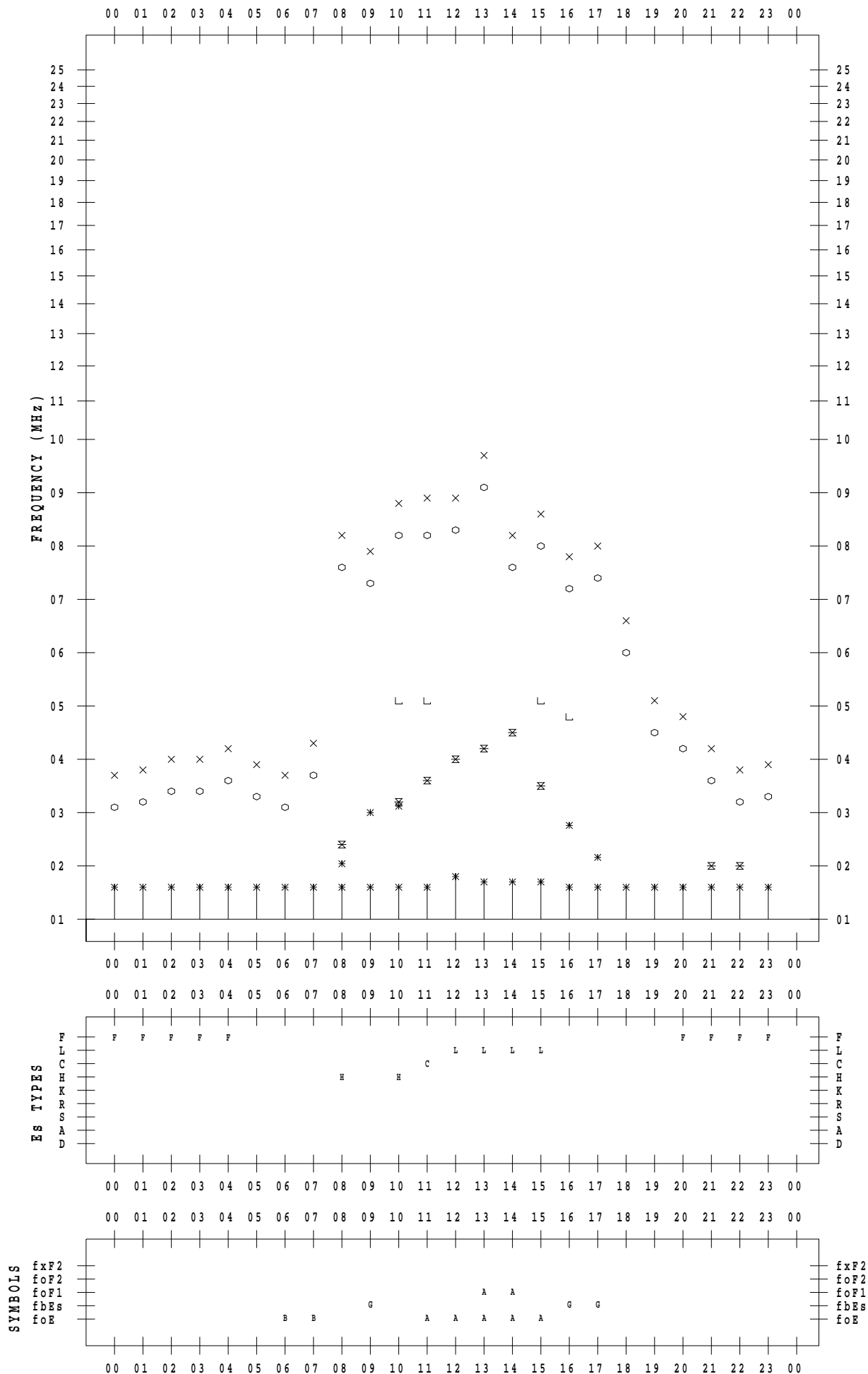
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 30

135 ° E MEAN TIME



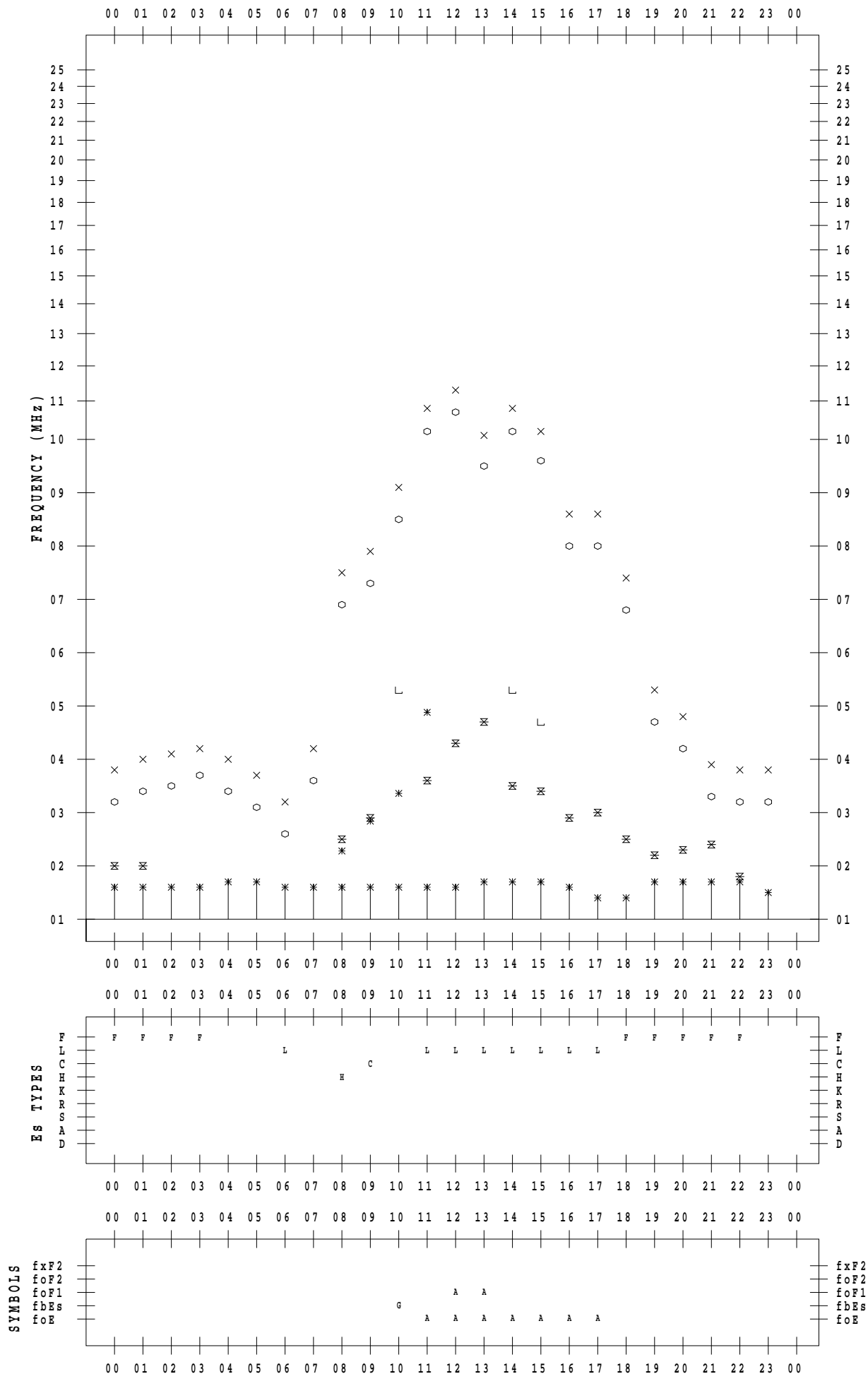
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 1 / 31

135 ° E MEAN TIME



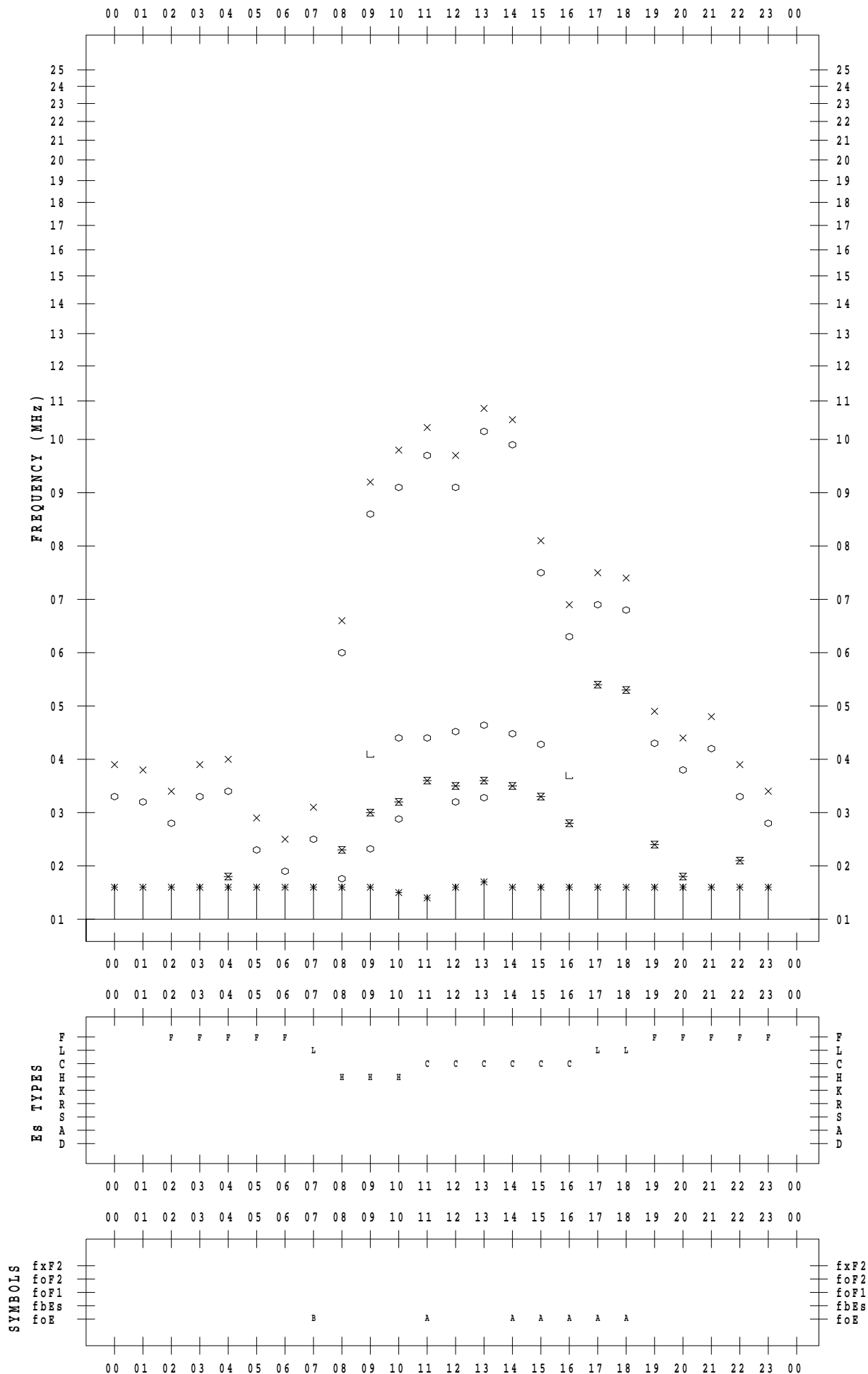
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 1

135 ° E MEAN TIME



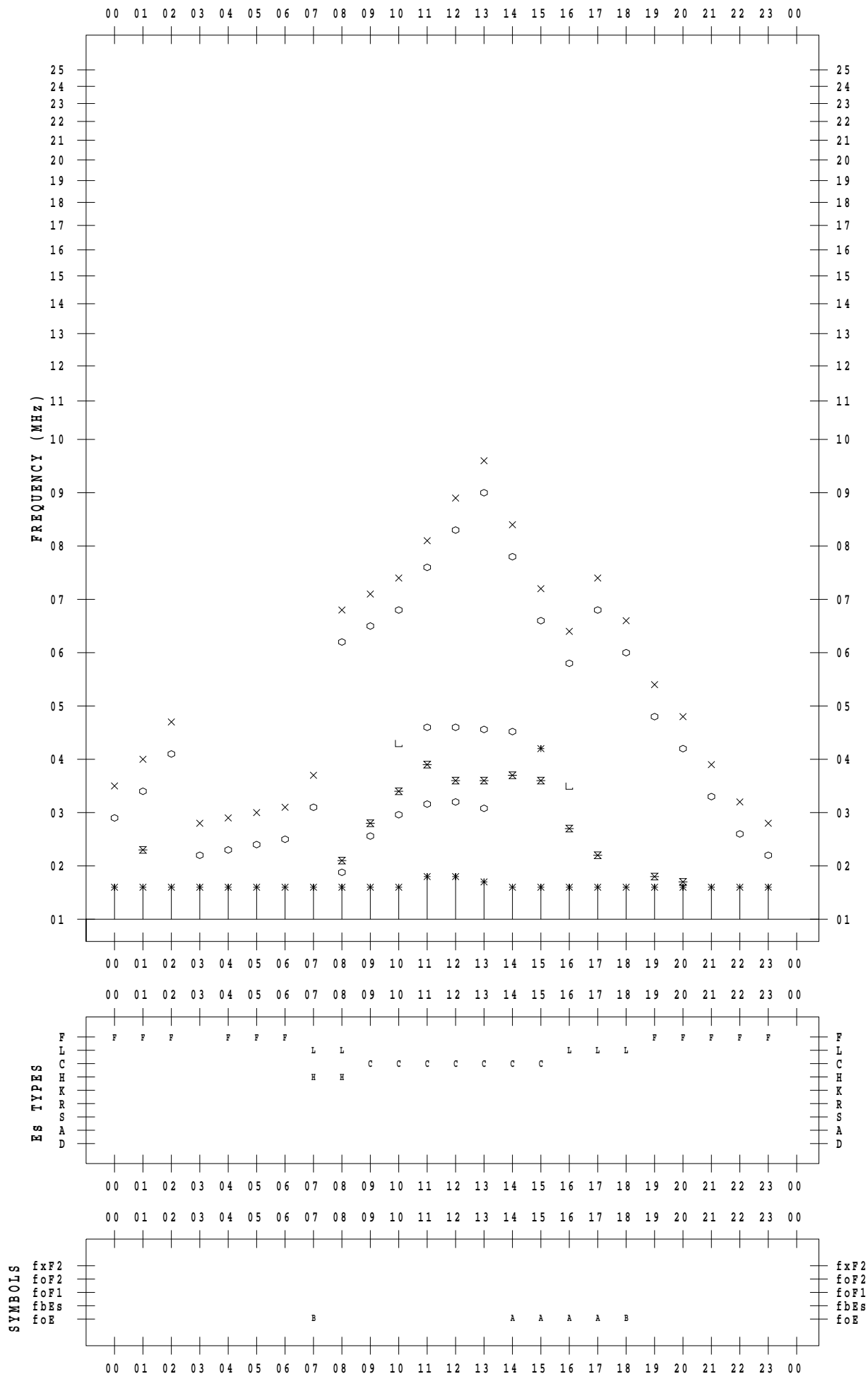
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 2

135 ° E MEAN TIME



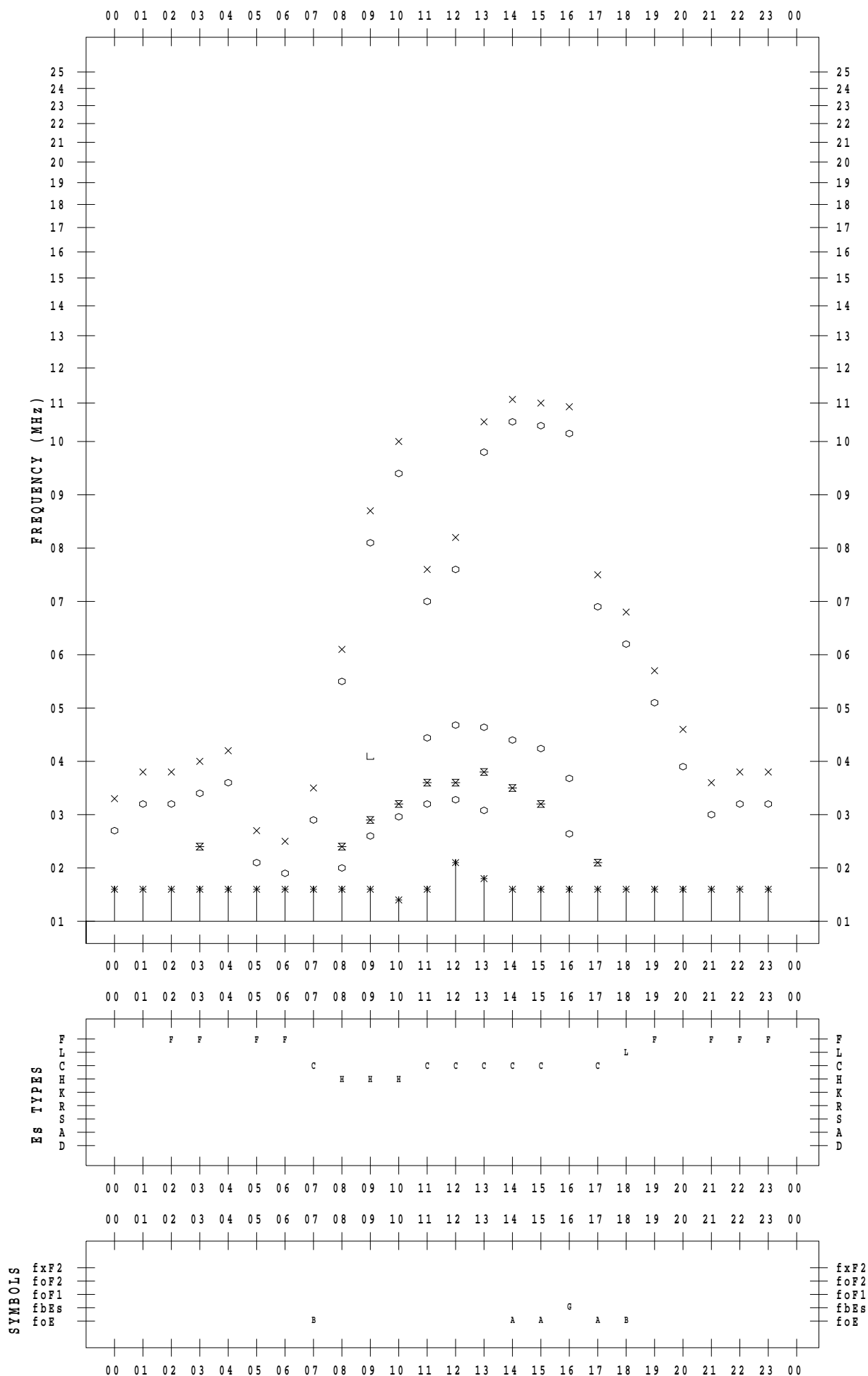
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 3

135 ° E MEAN TIME



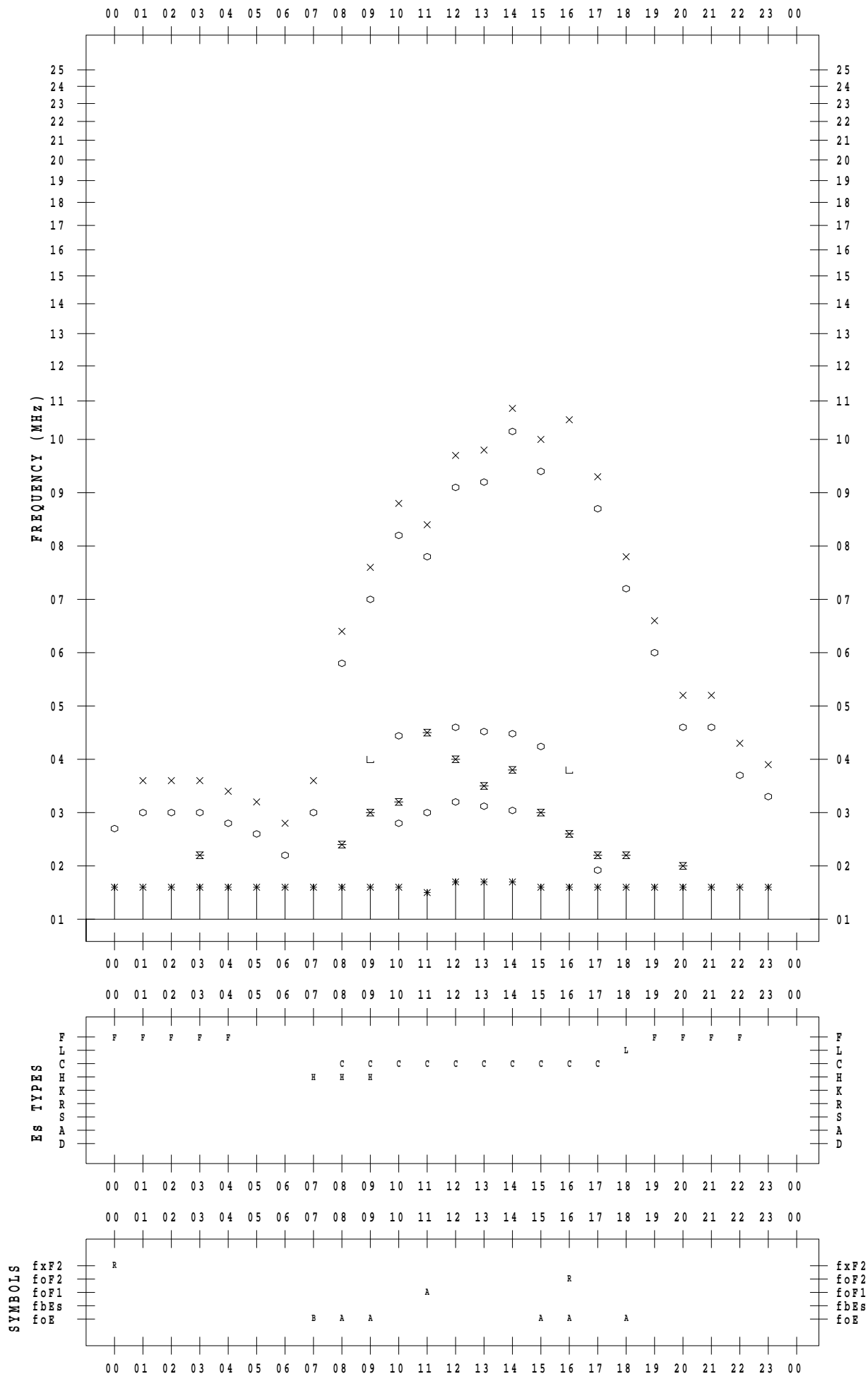
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 4

135 ° E MEAN TIME



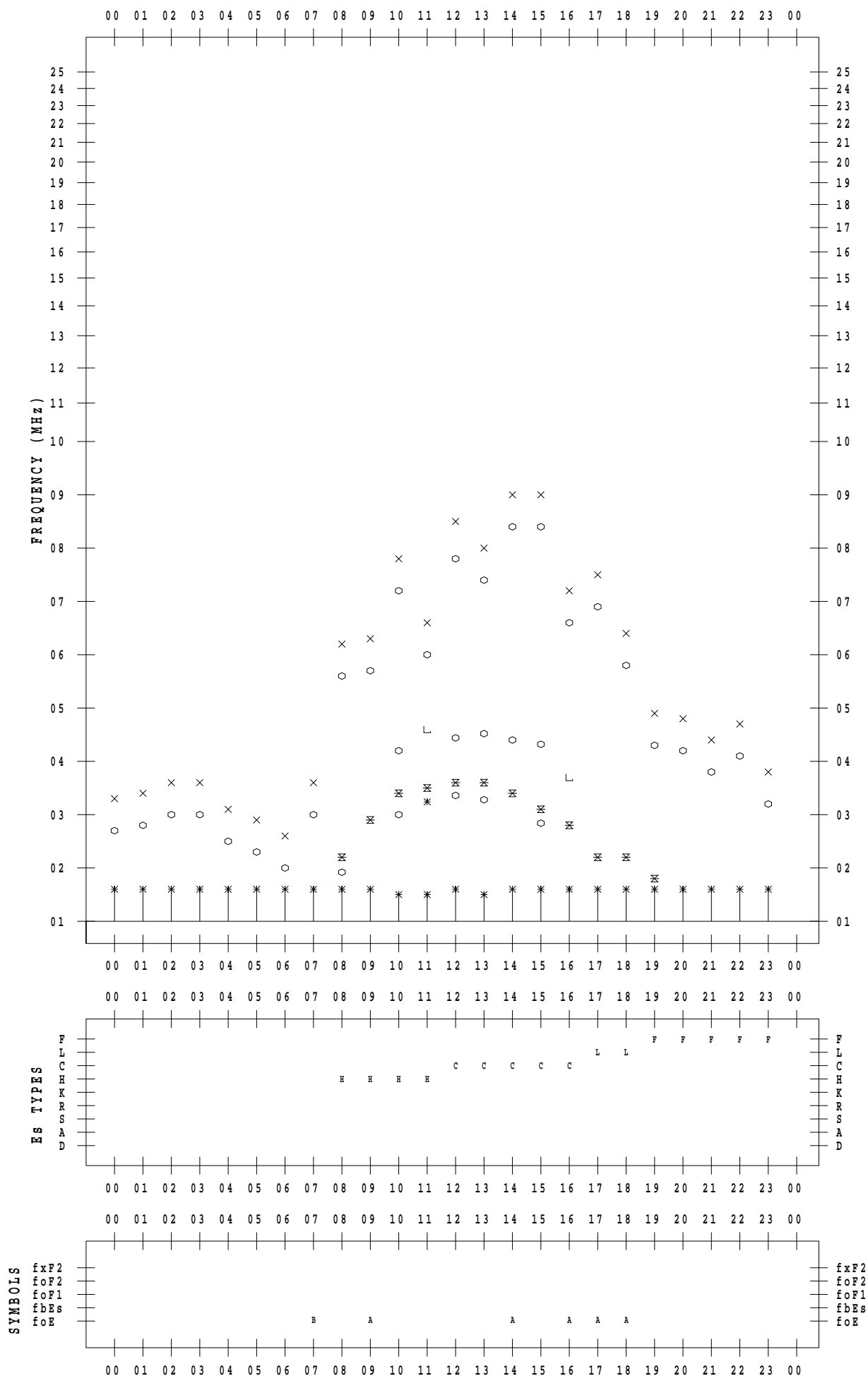
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 5

135 ° E MEAN TIME



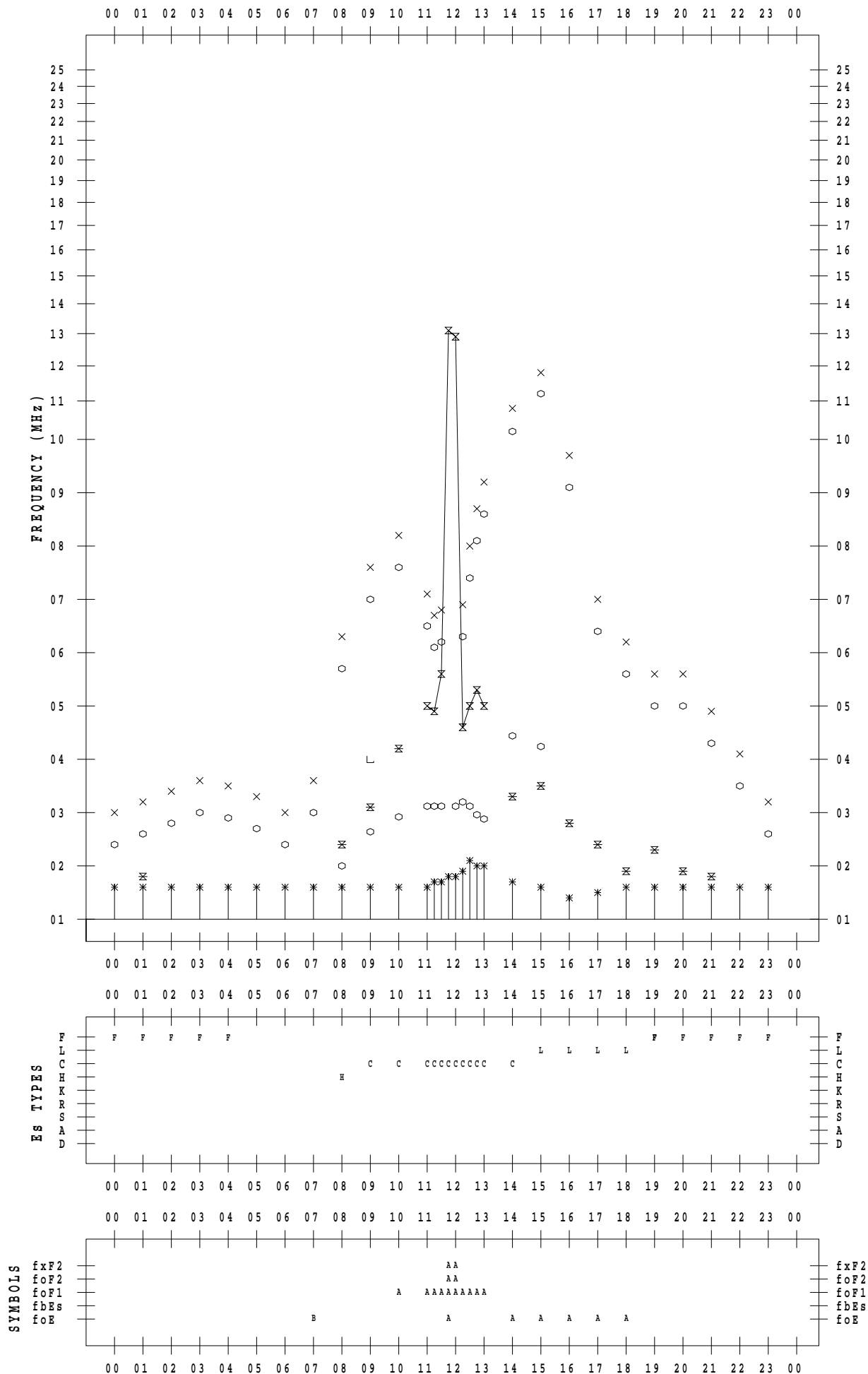
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 6

135 ° E MEAN TIME



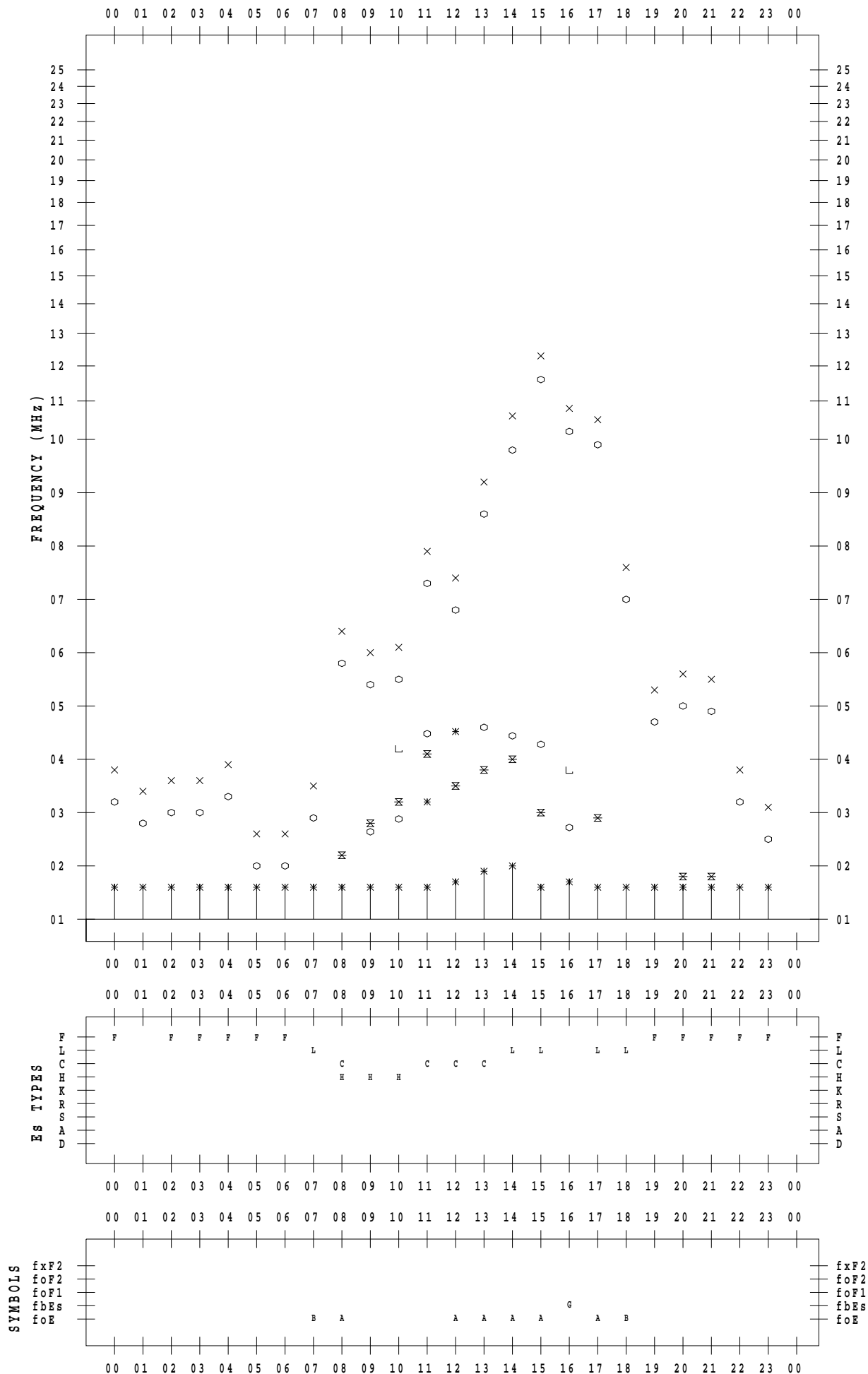
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 7

135 ° E MEAN TIME



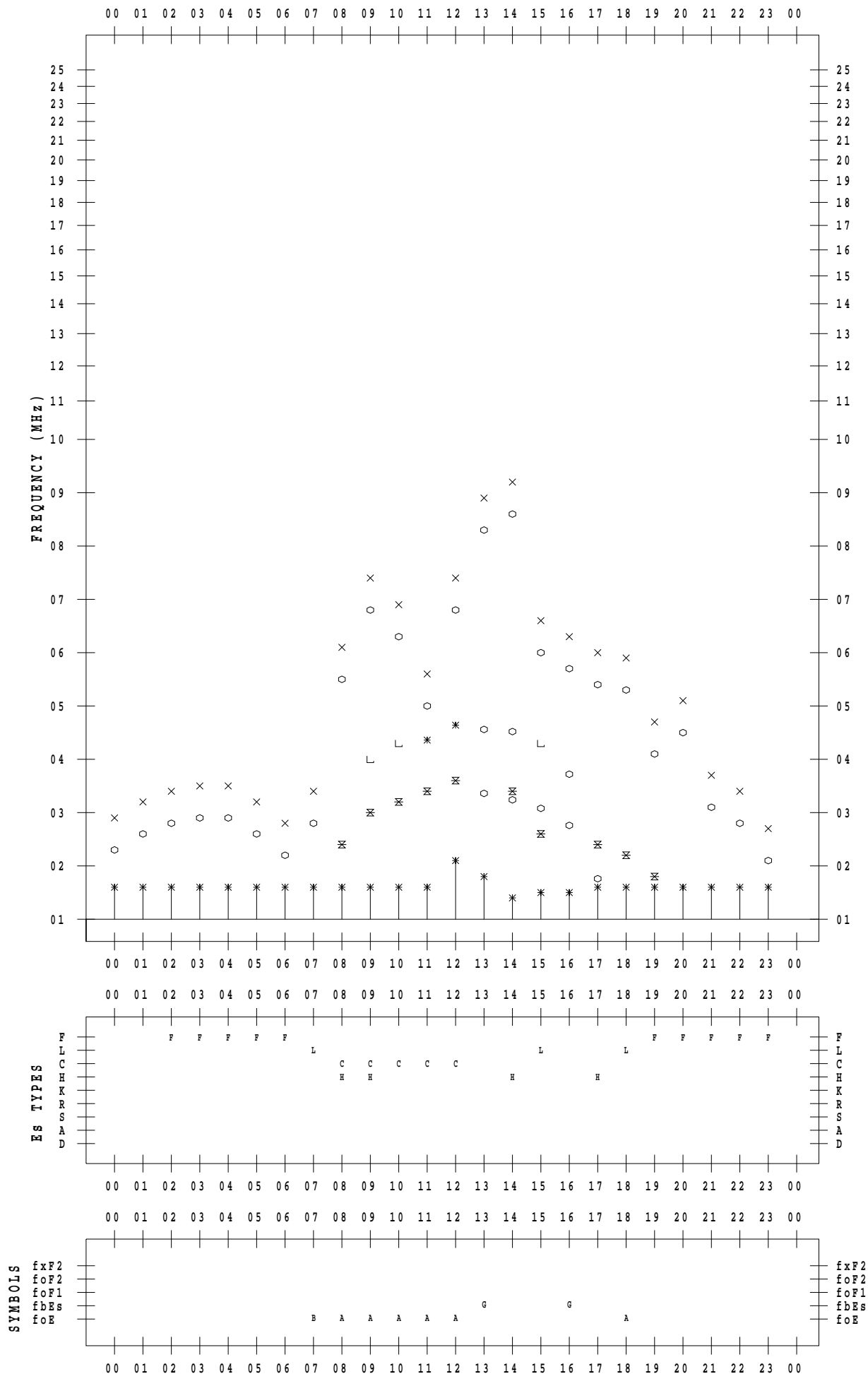
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 8

135 ° E MEAN TIME



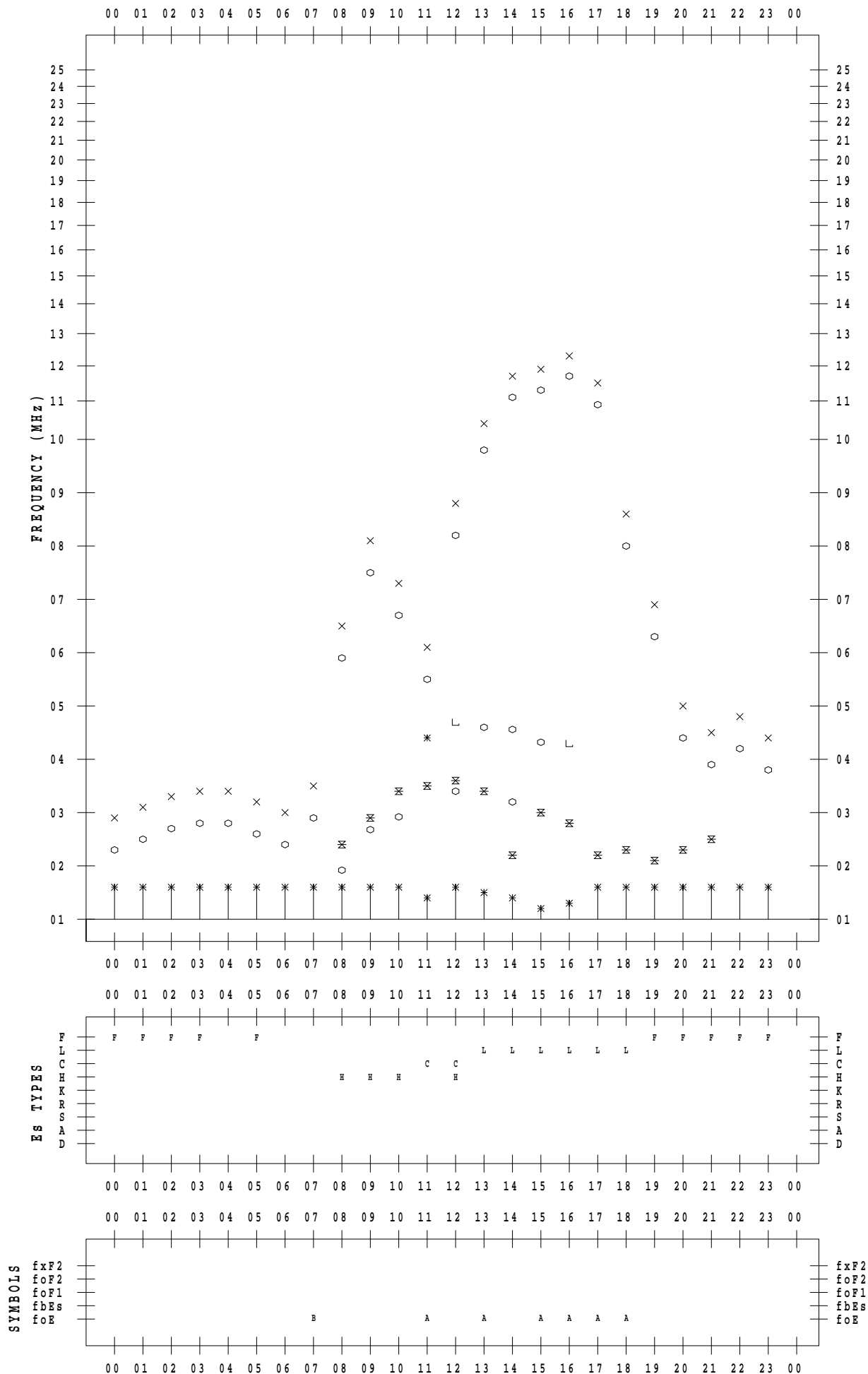
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 9

135 ° E MEAN TIME



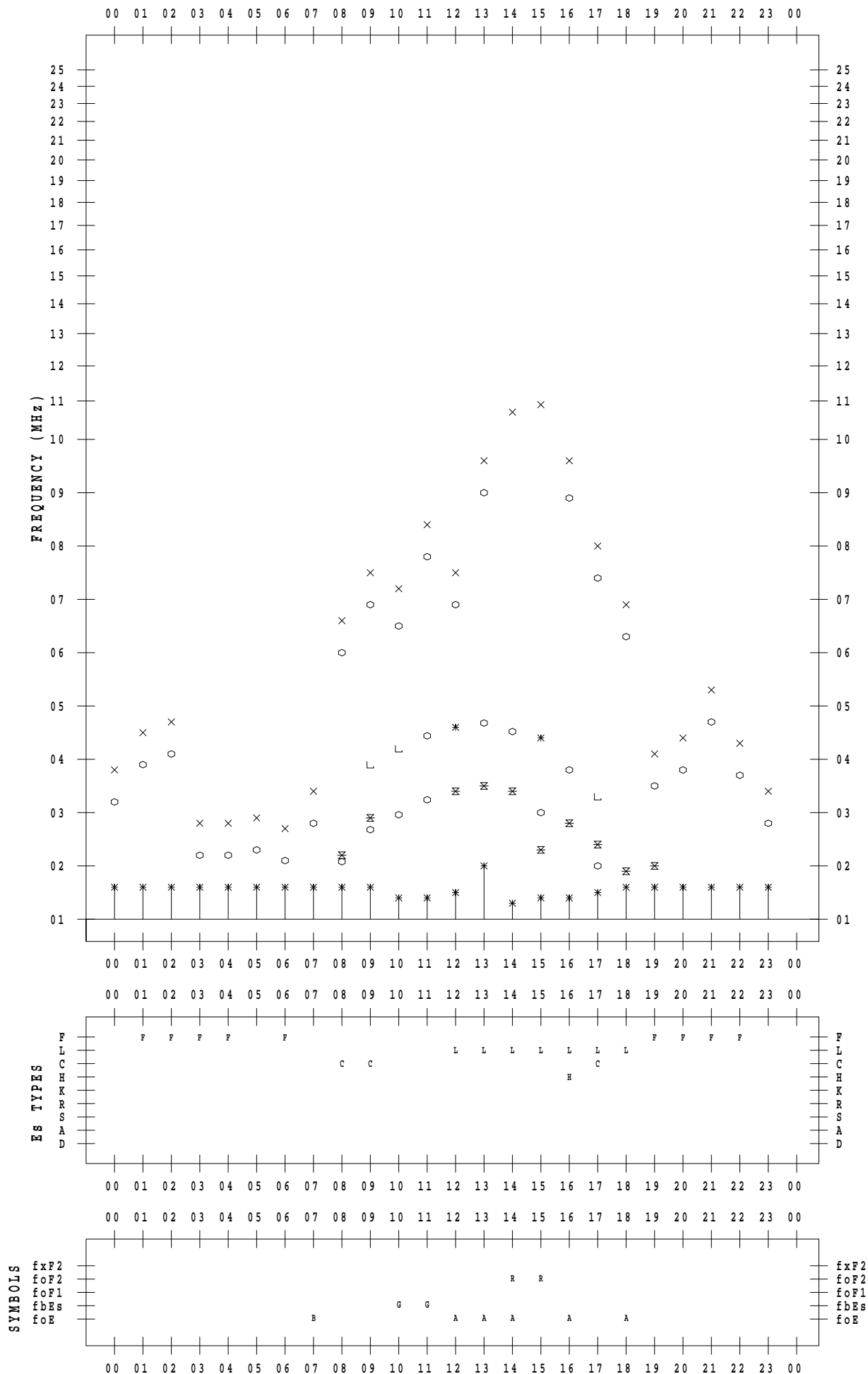
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 10

135 ° E MEAN TIME



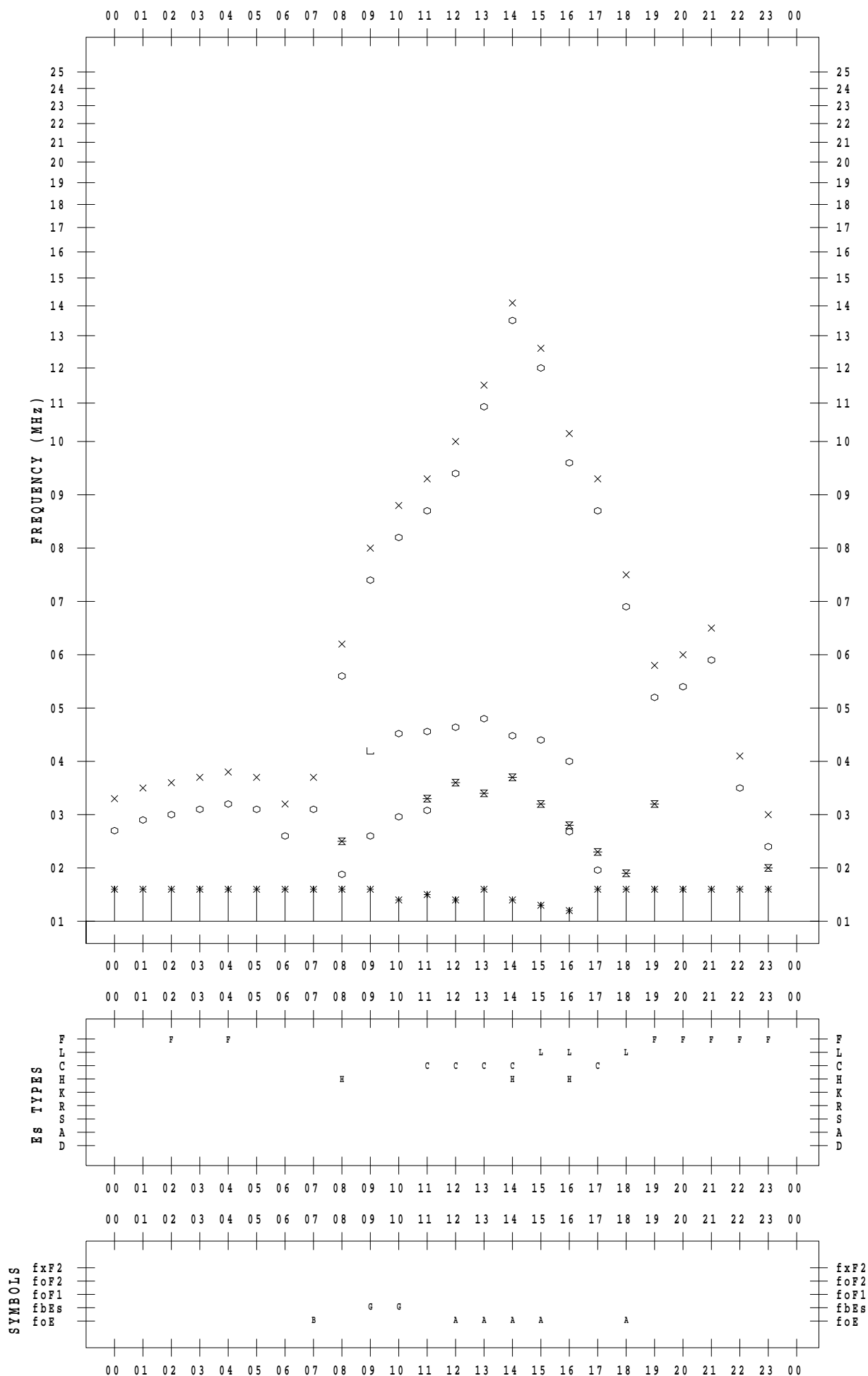
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 11

135 ° E MEAN TIME



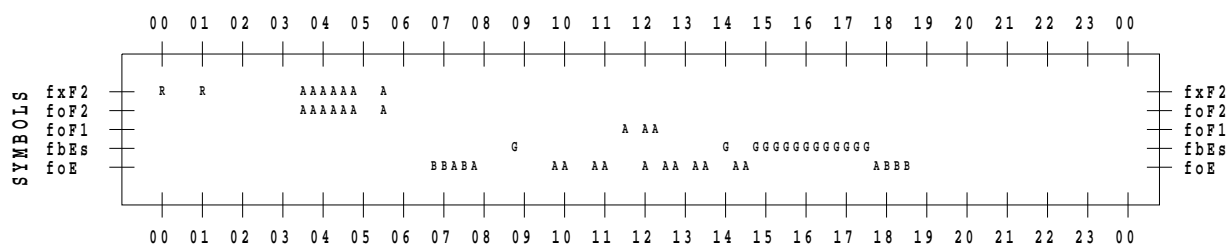
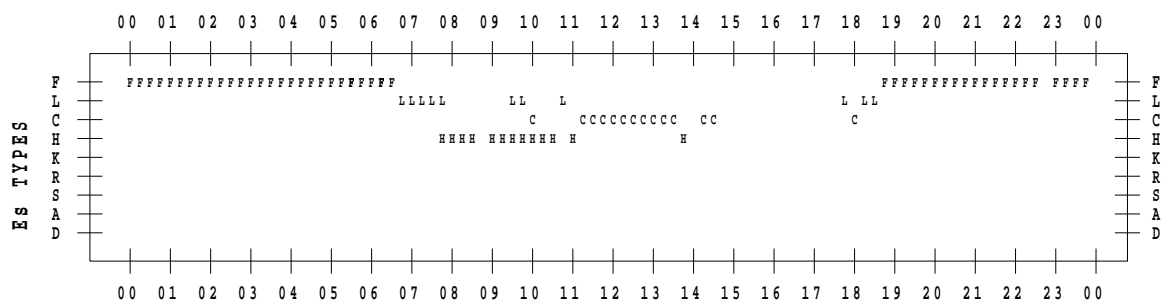
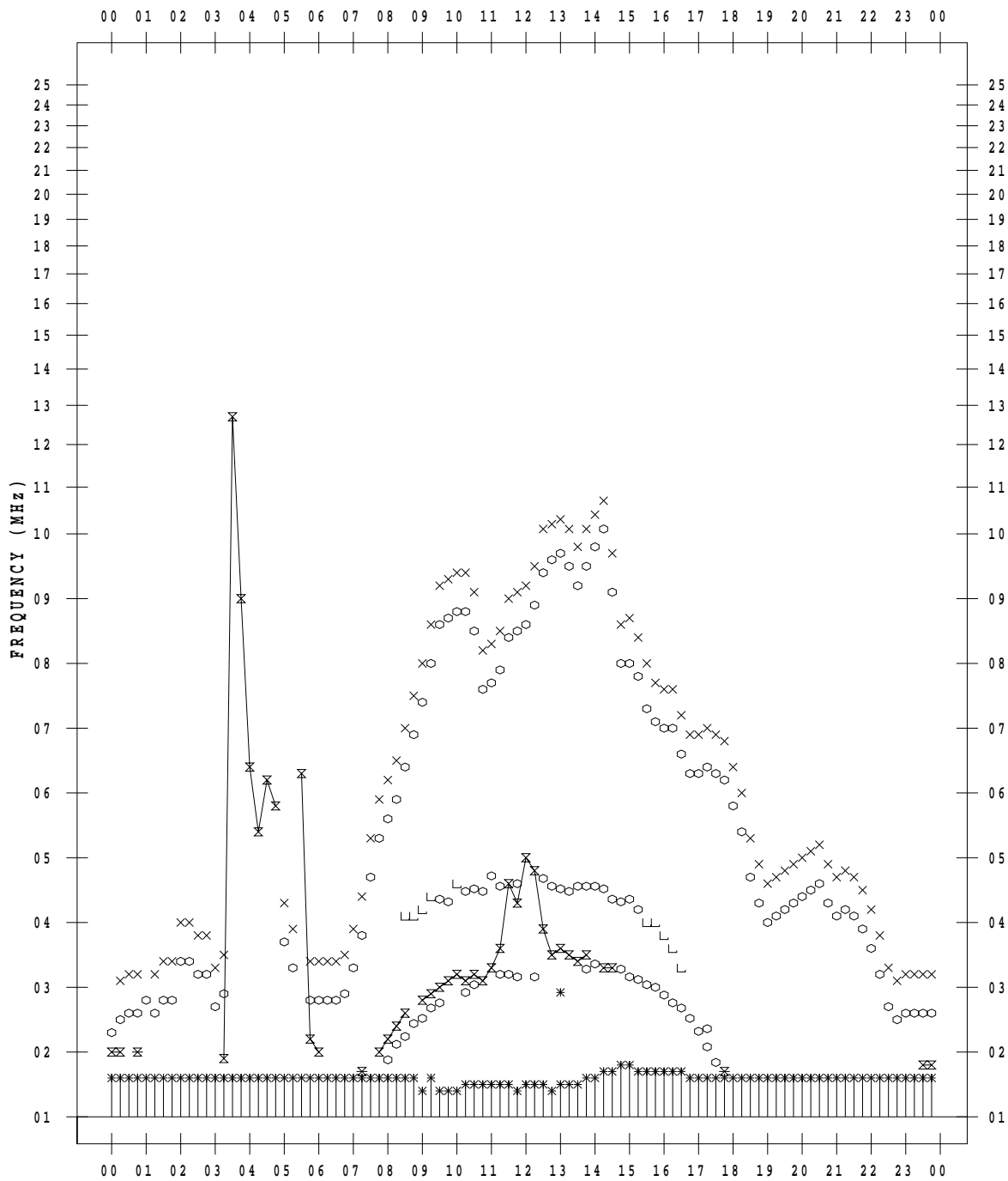
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 12

135 ° E MEAN TIME



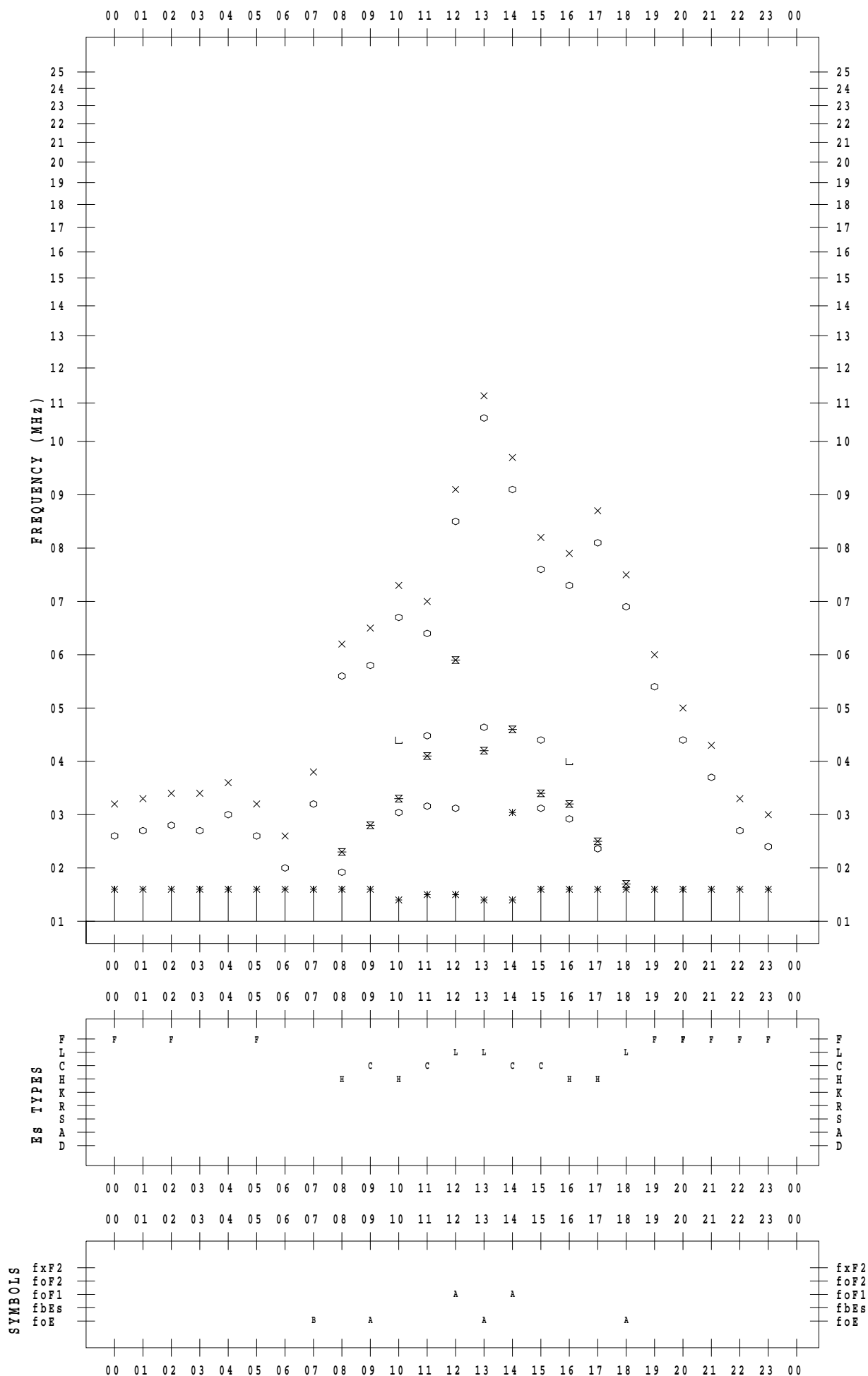
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 13

135 ° E MEAN TIME



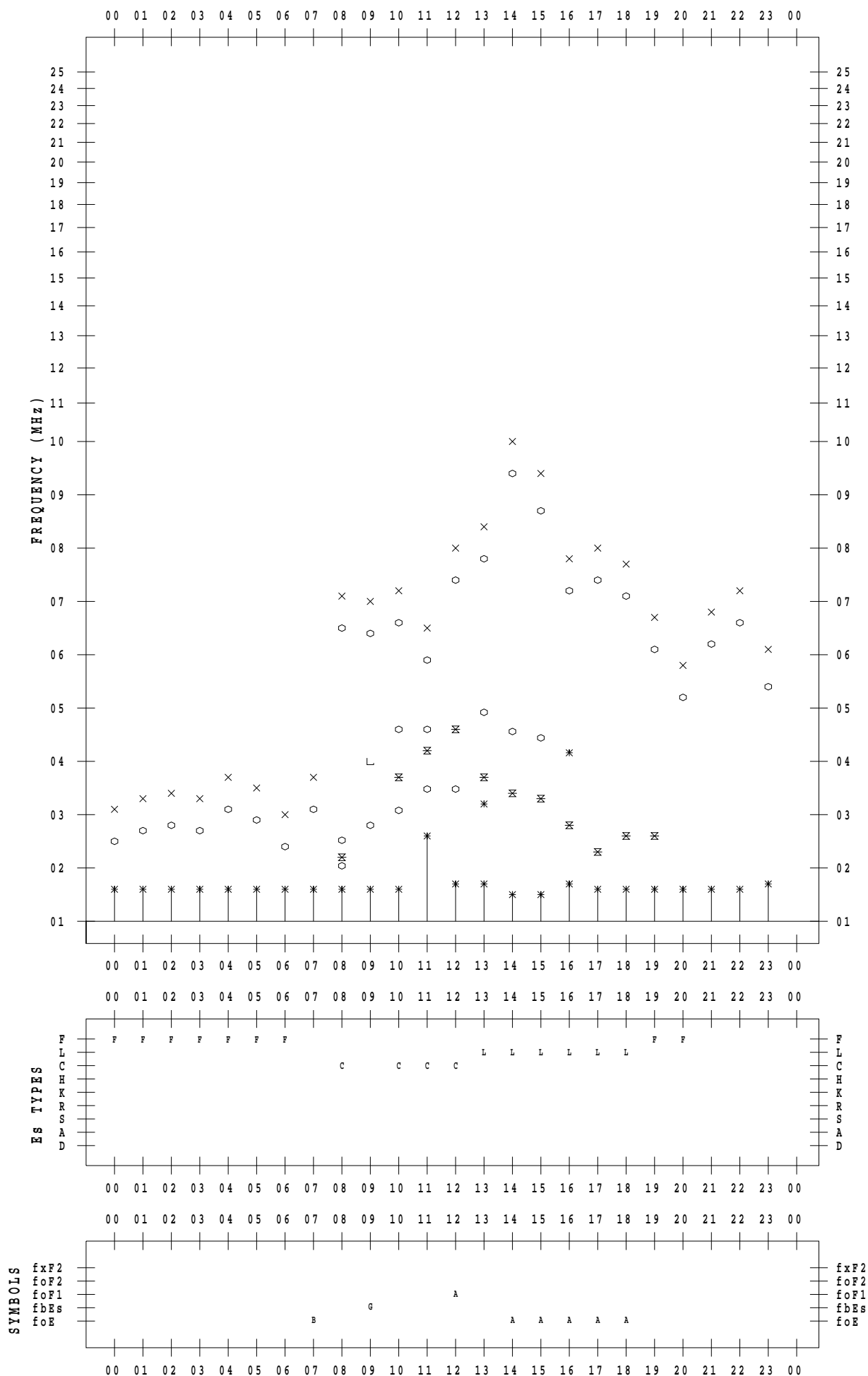
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 14

135 ° E MEAN TIME



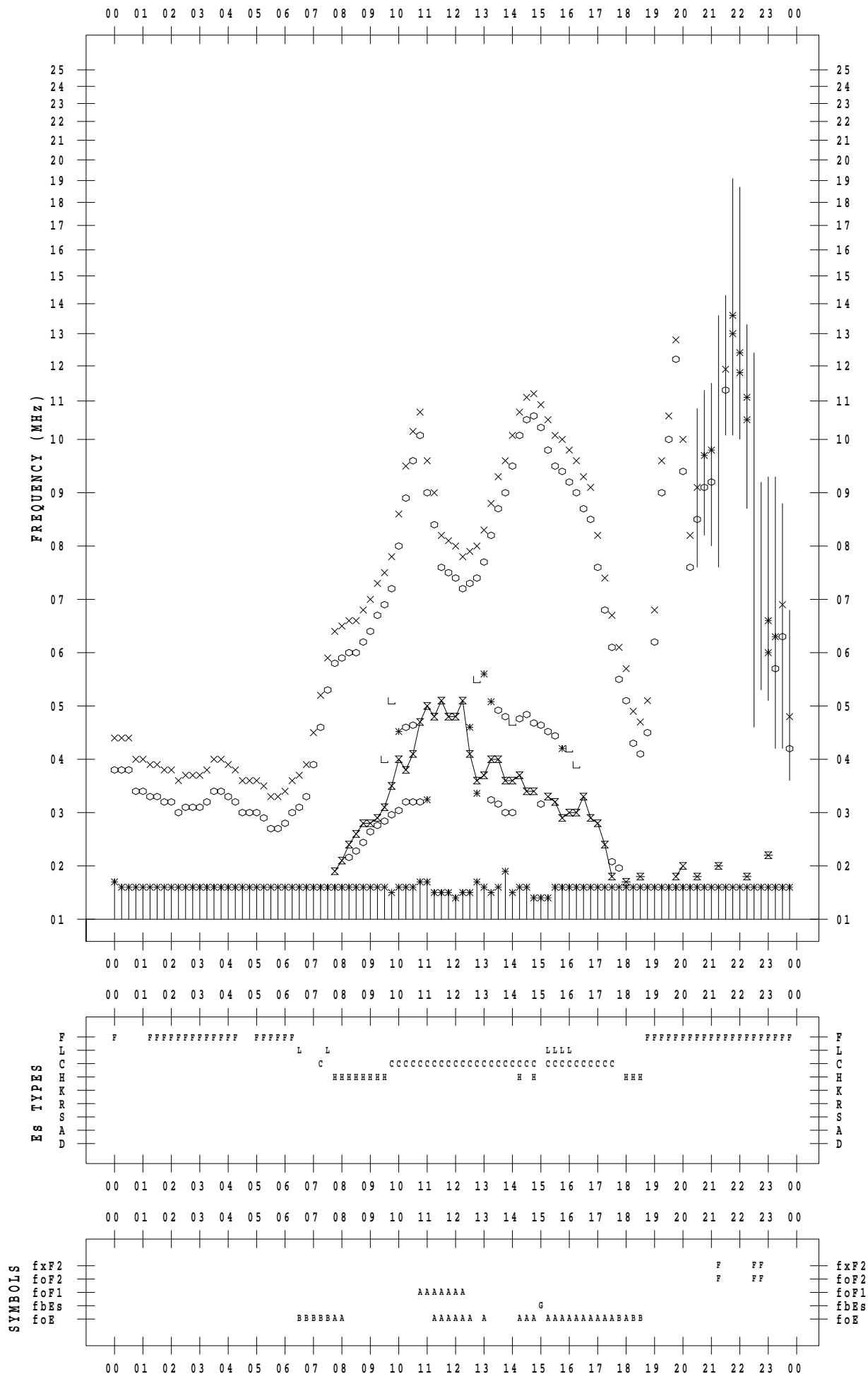
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 15

135 ° E MEAN TIME



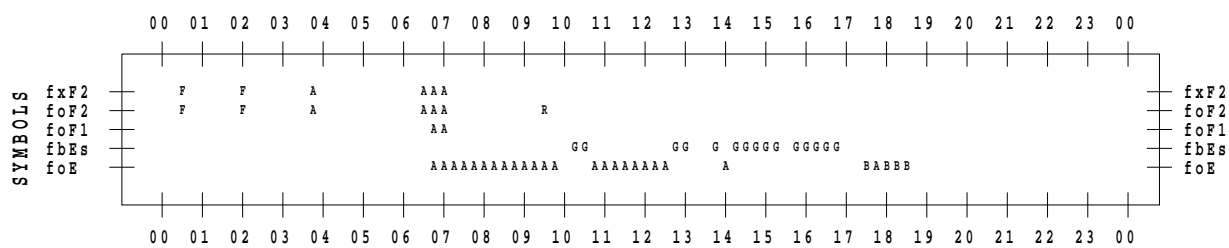
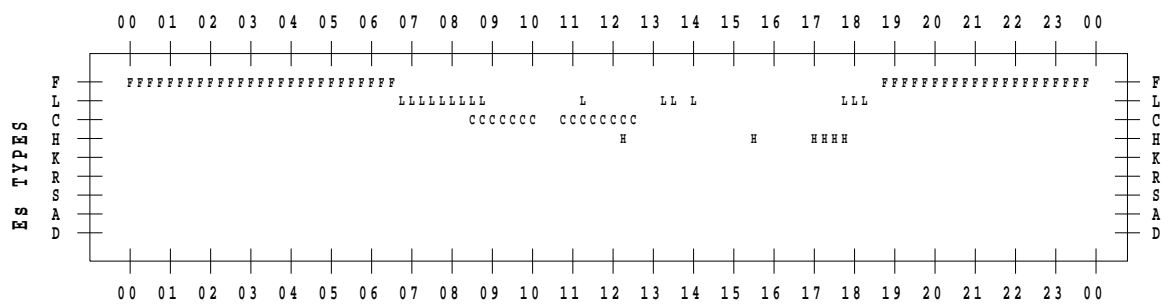
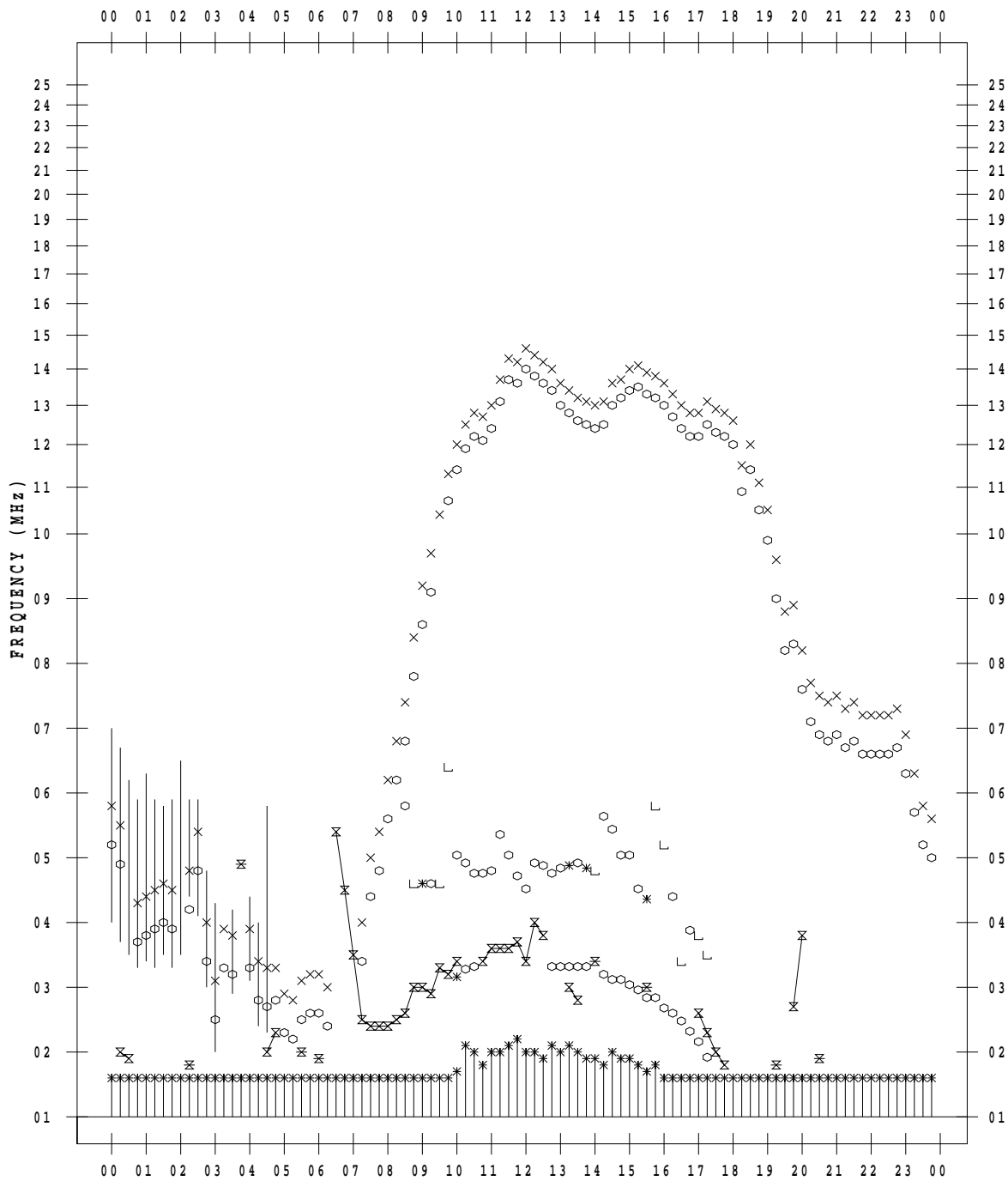
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 16

135 ° E MEAN TIME



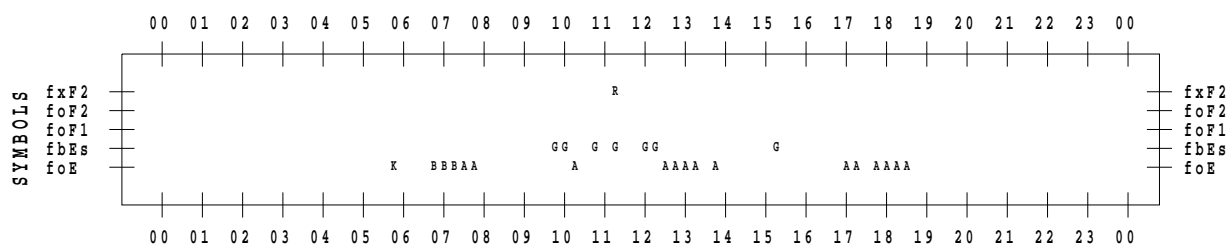
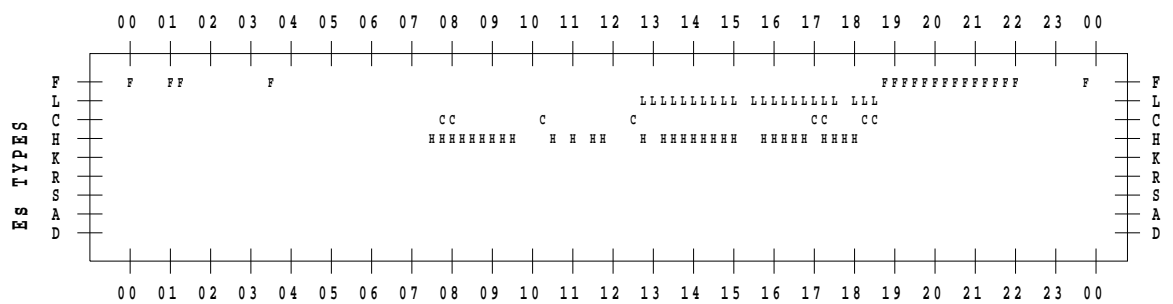
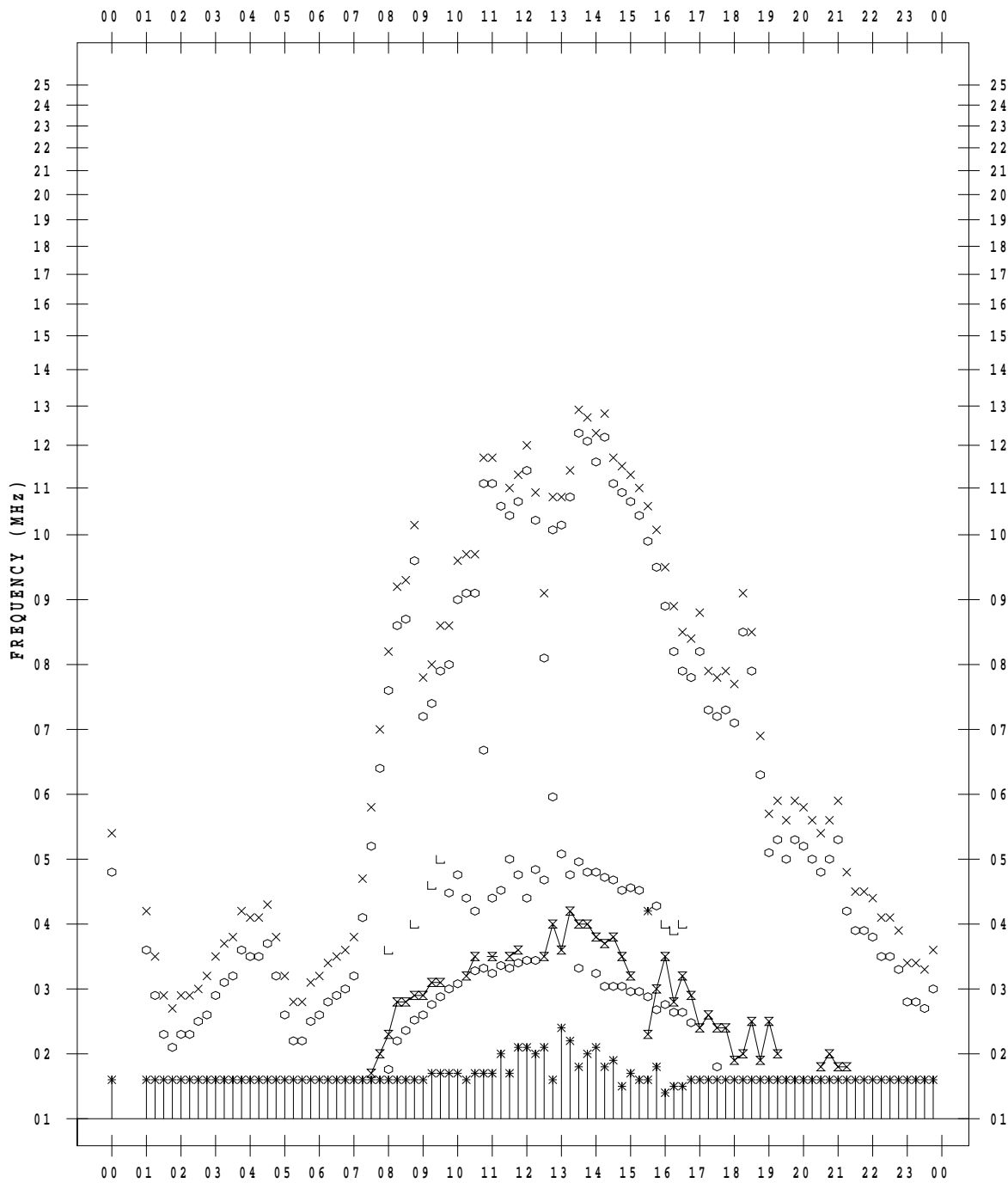
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 17

135 ° E MEAN TIME



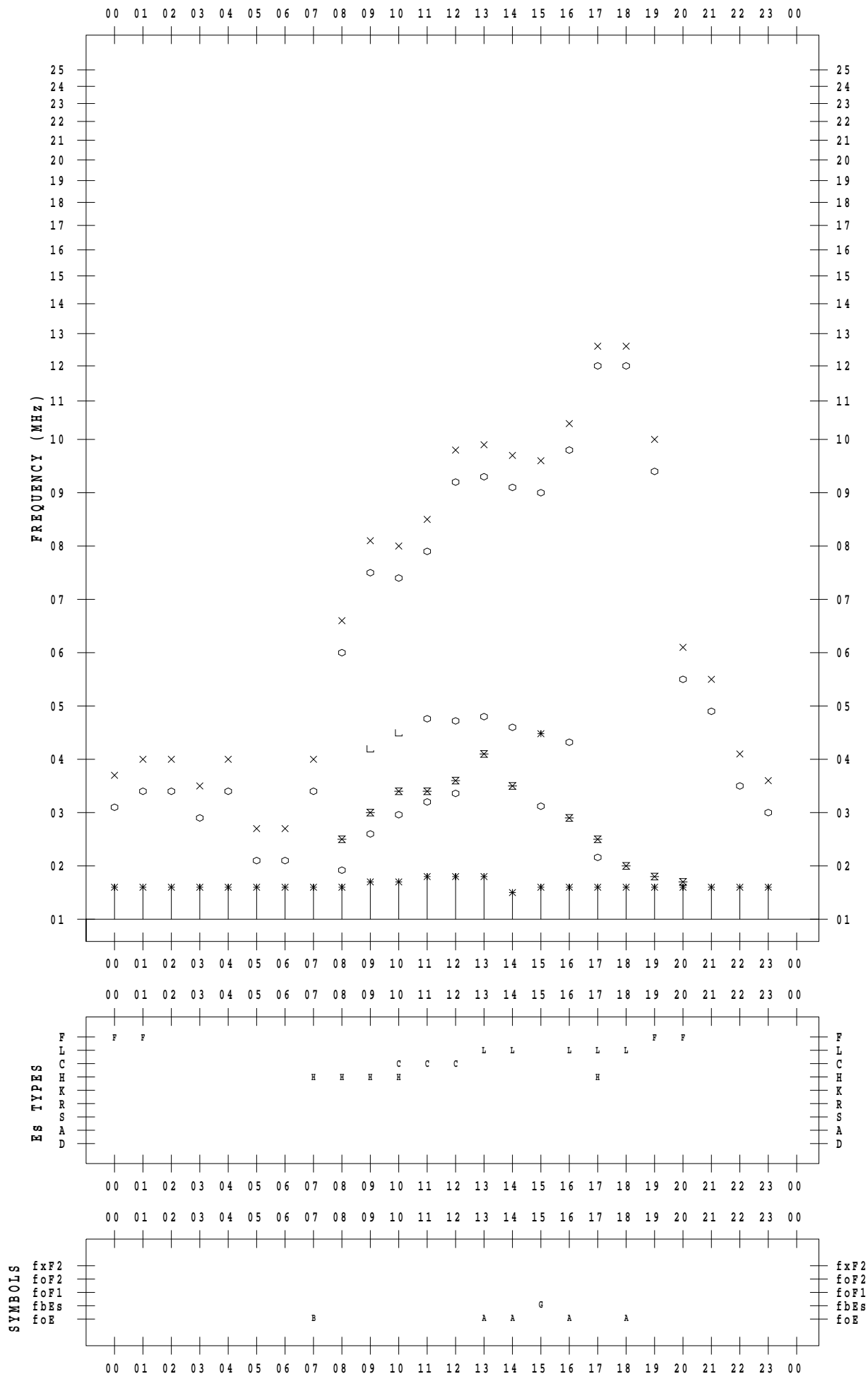
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 18

135 ° E MEAN TIME



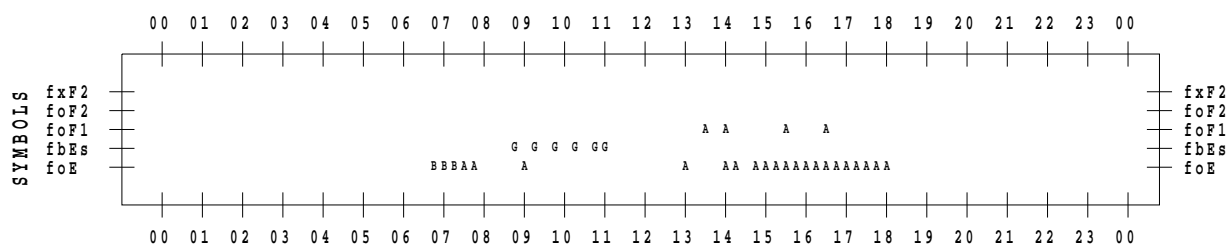
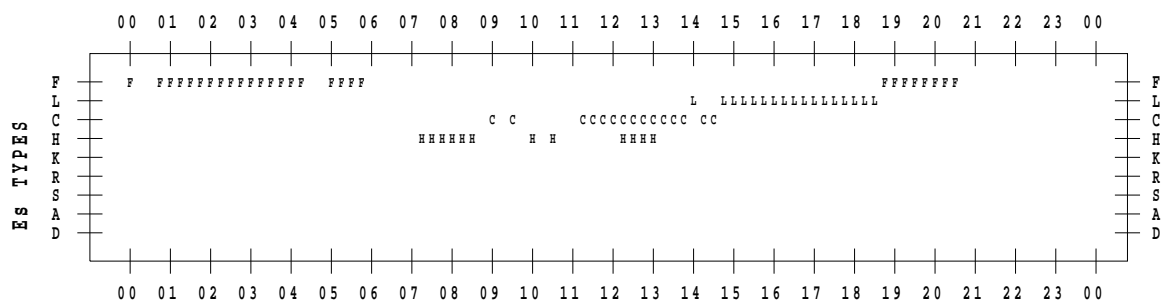
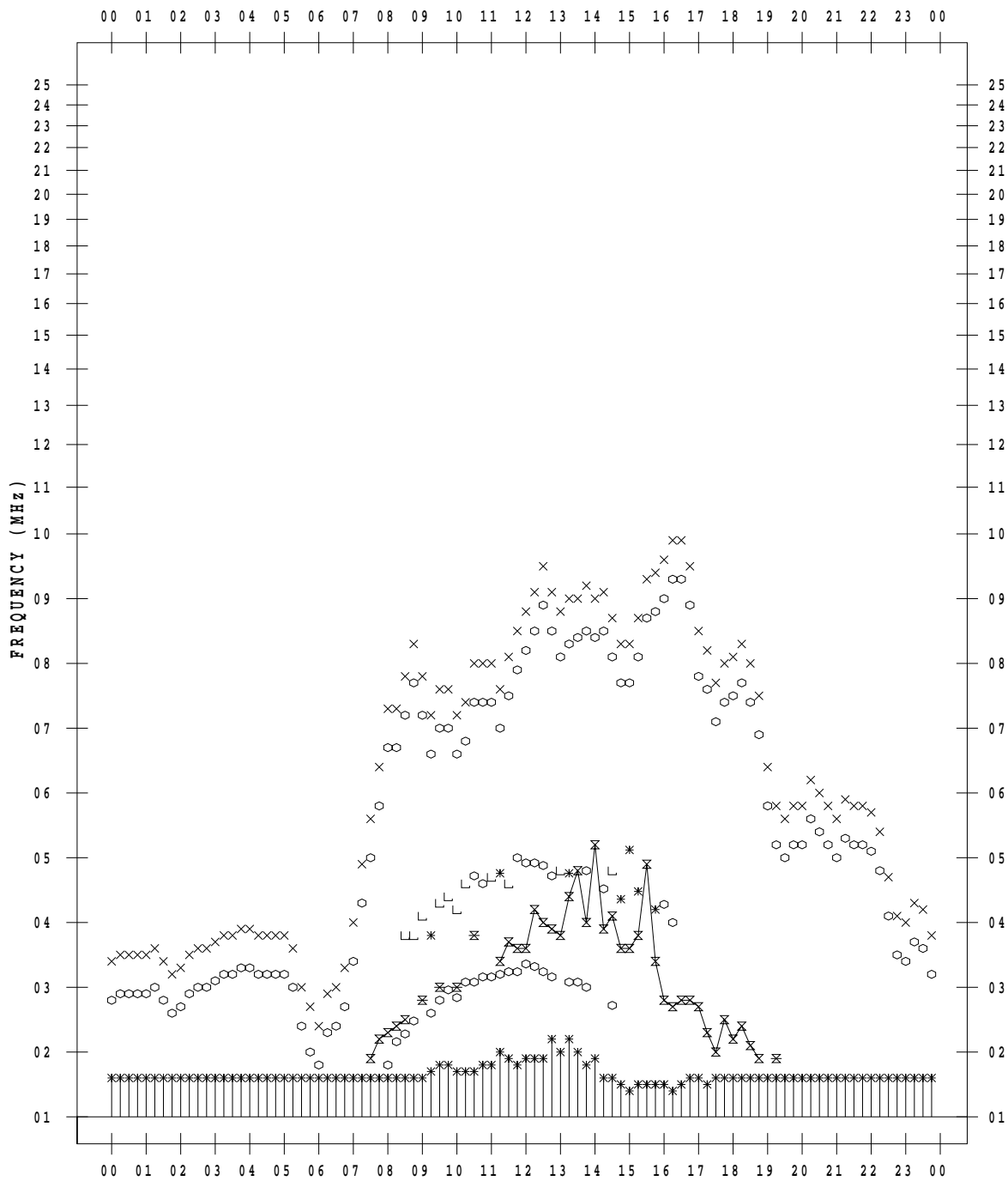
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 19

135 ° E MEAN TIME



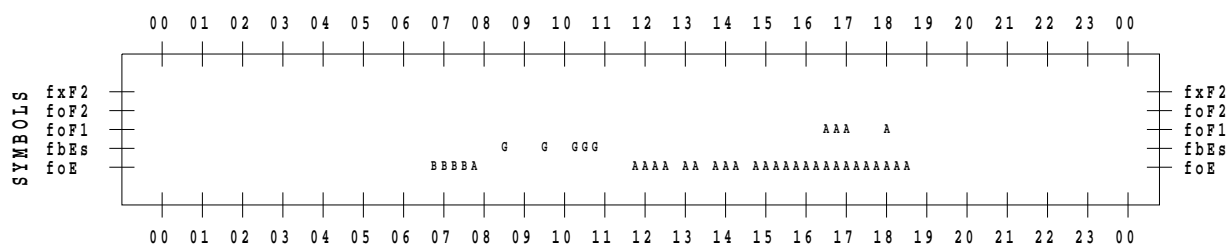
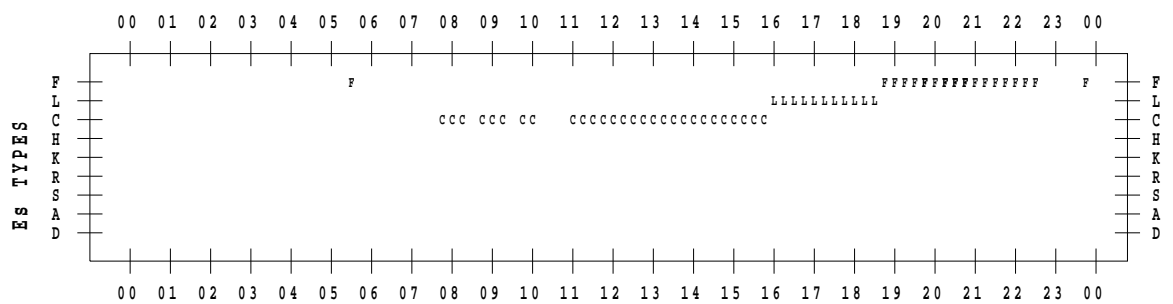
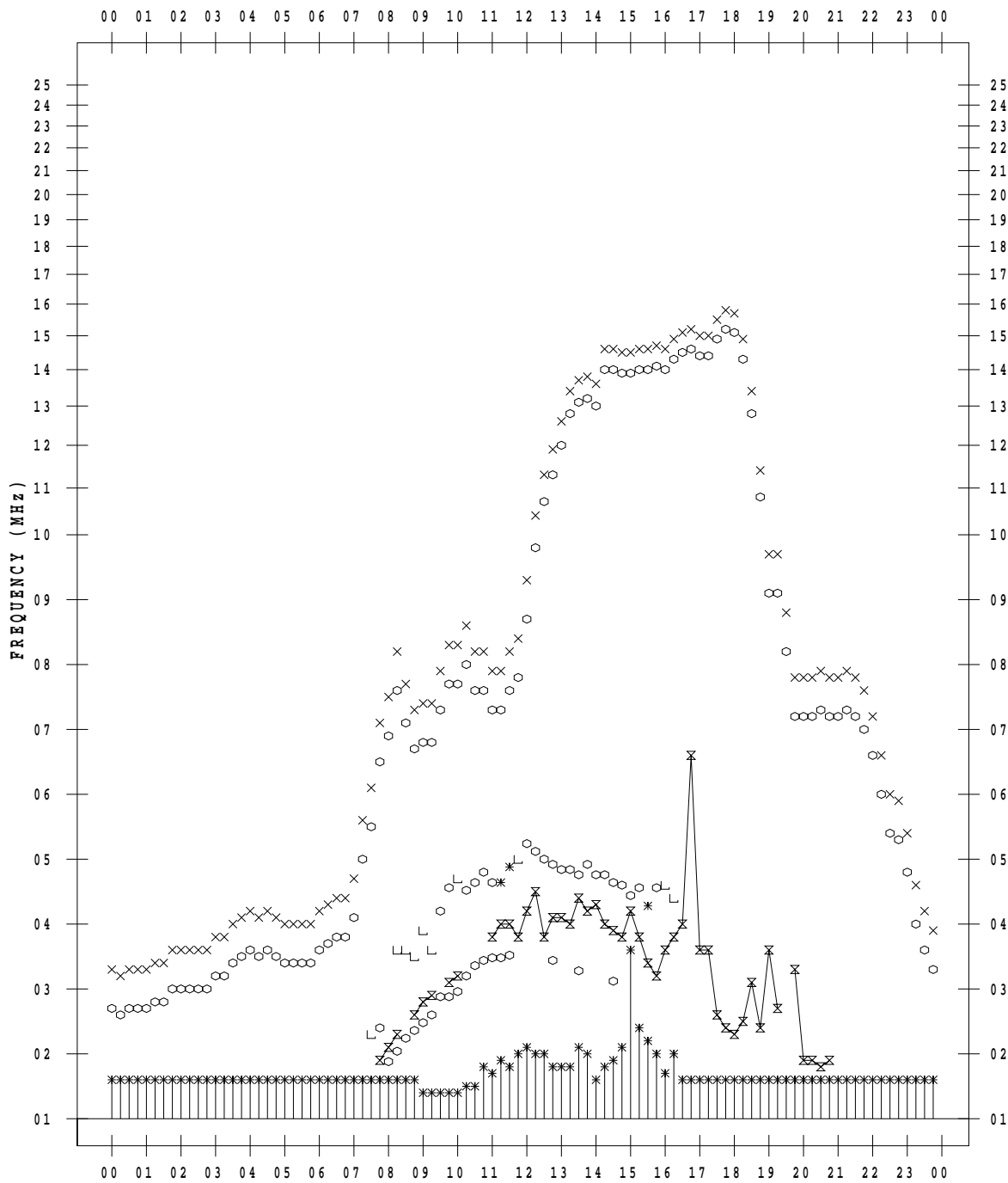
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 20

135 ° E MEAN TIME



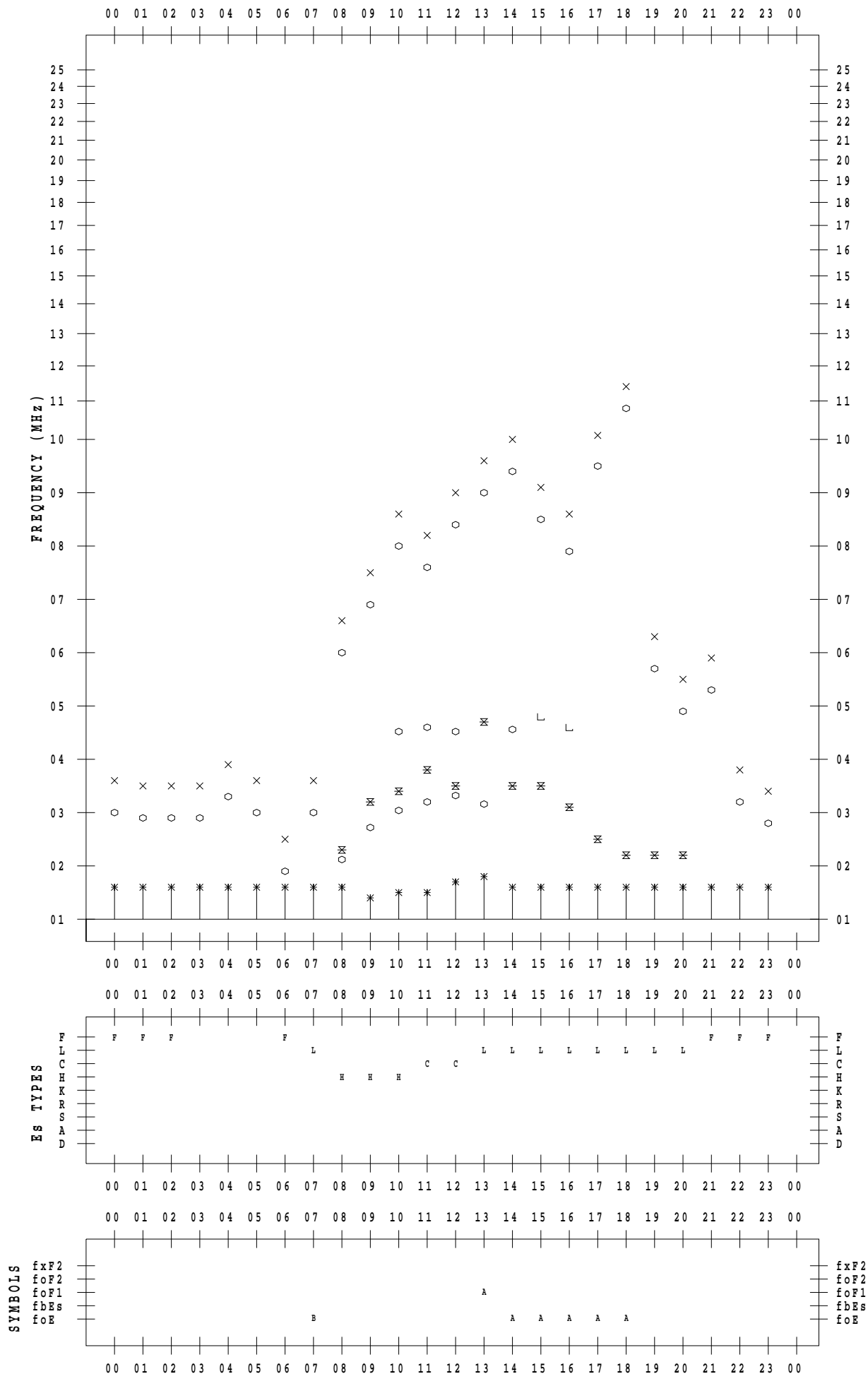
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 21

135 ° E MEAN TIME



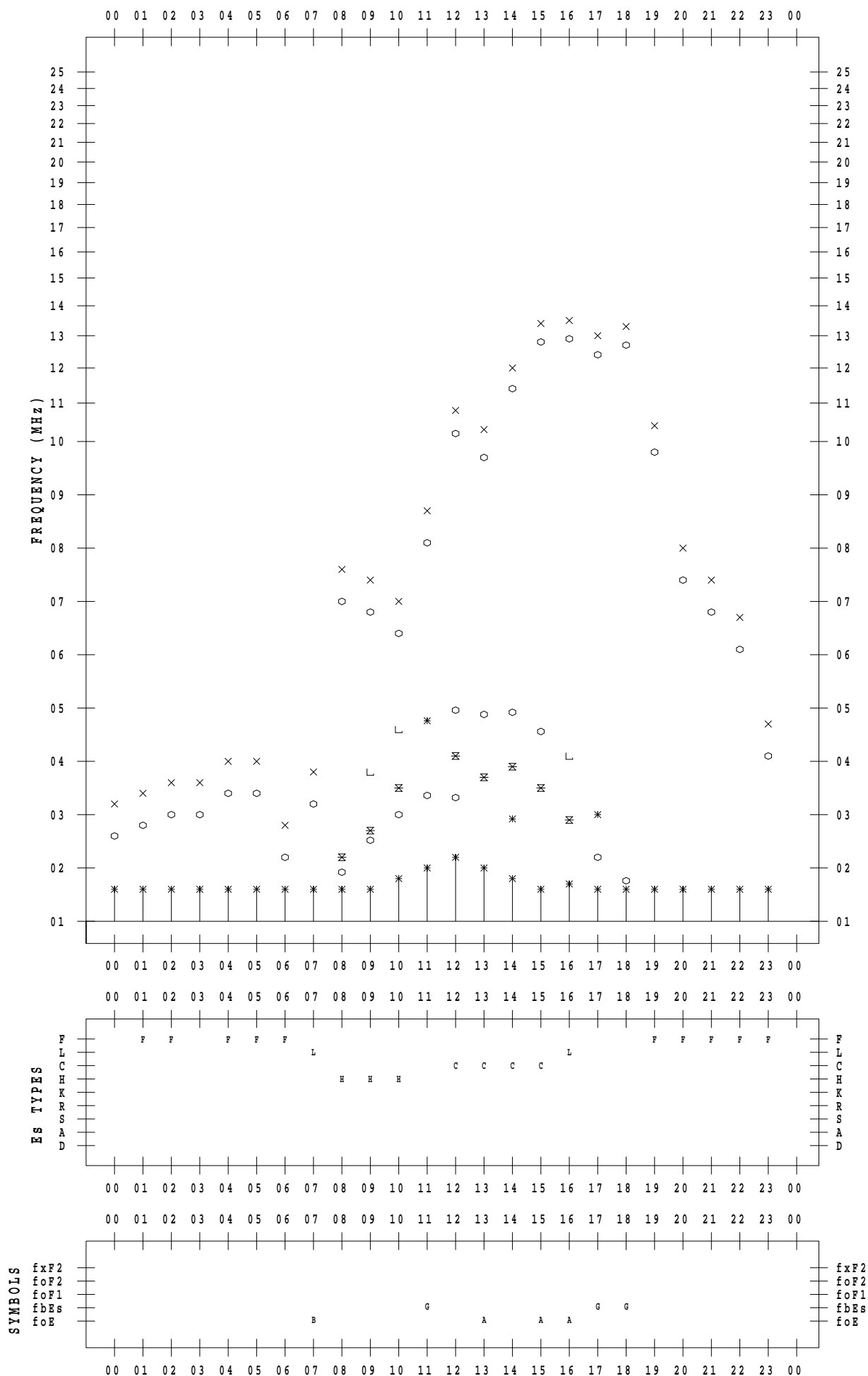
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 22

135 ° E MEAN TIME



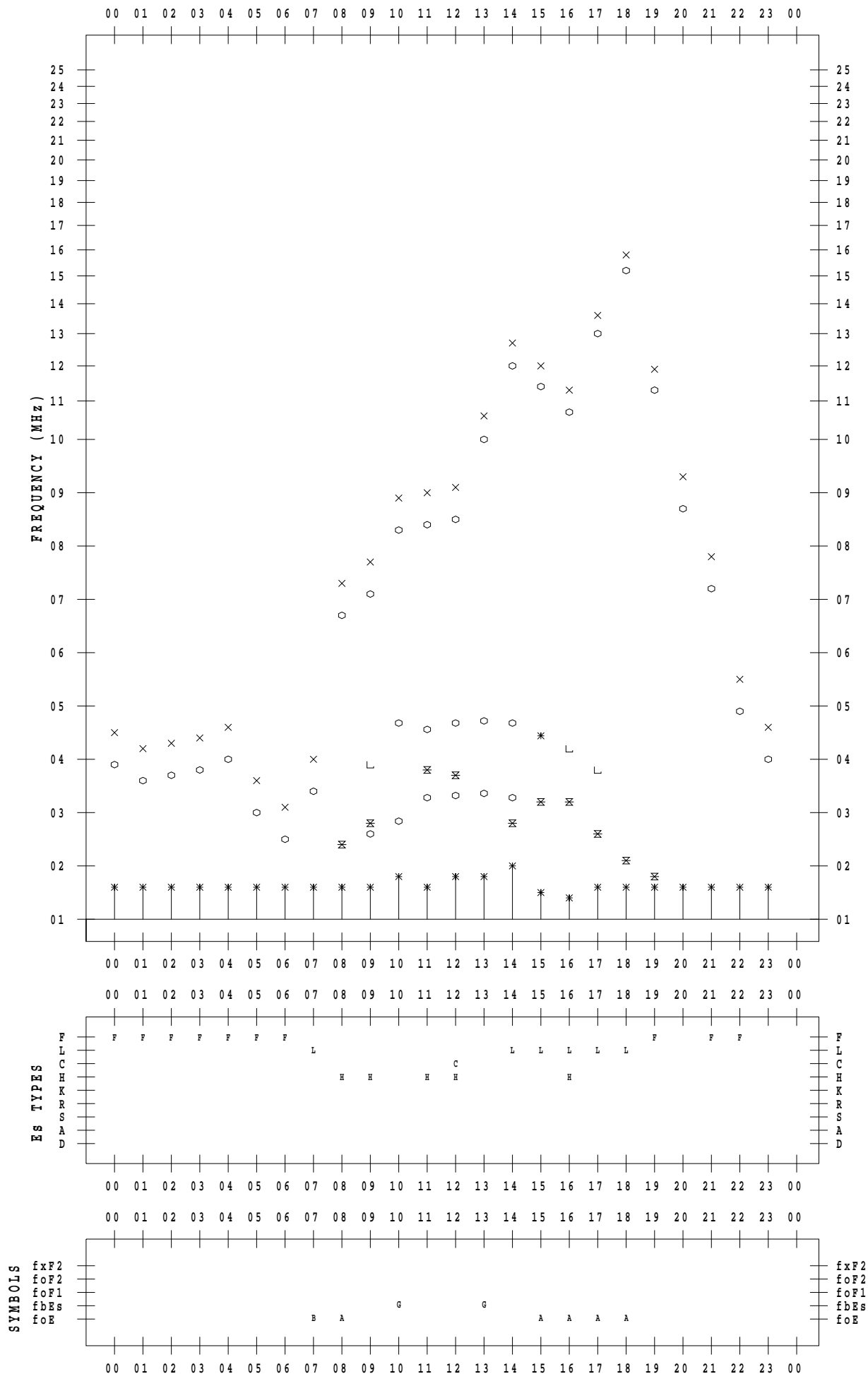
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 23

135 ° E MEAN TIME



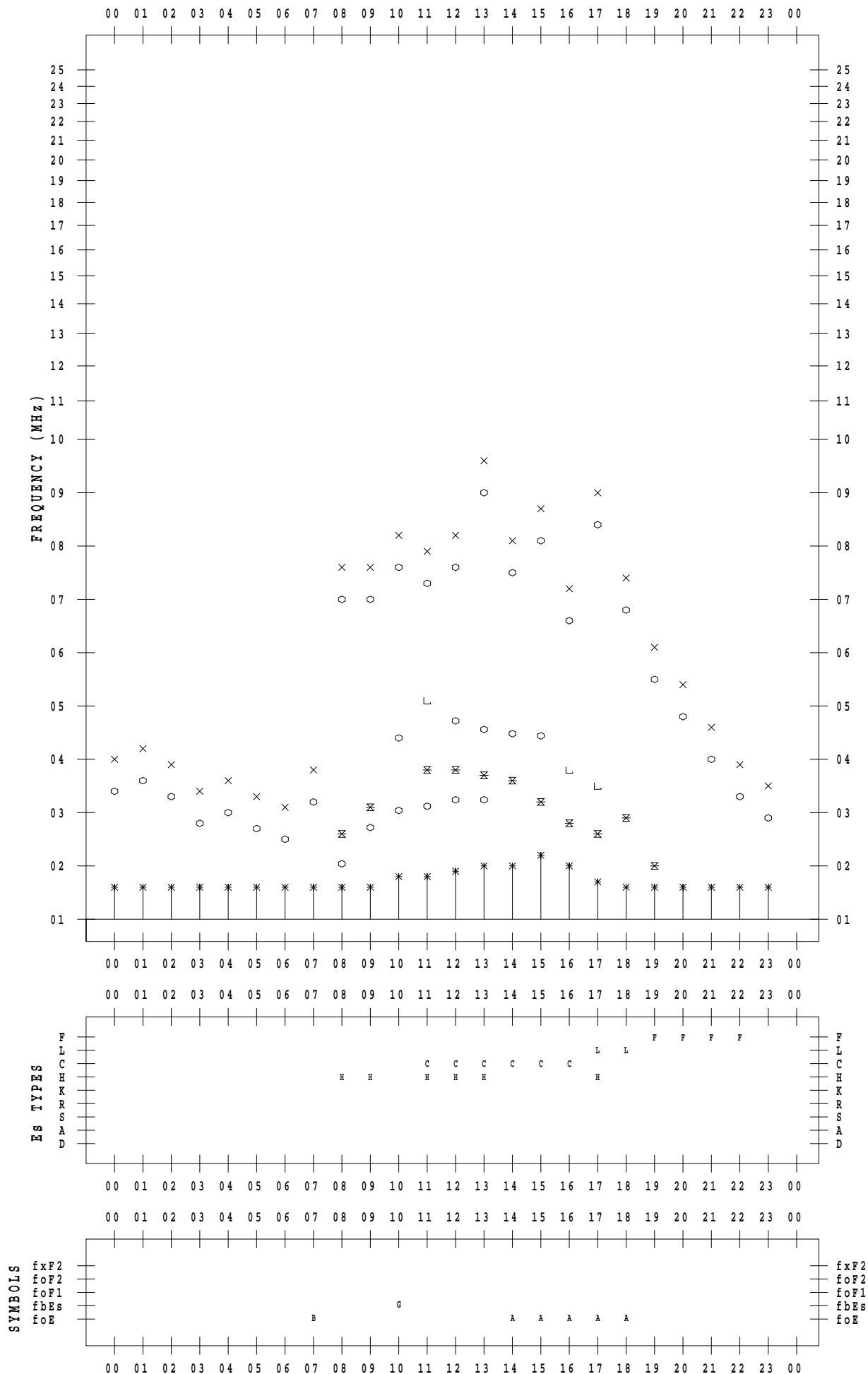
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 24

135 ° E MEAN TIME



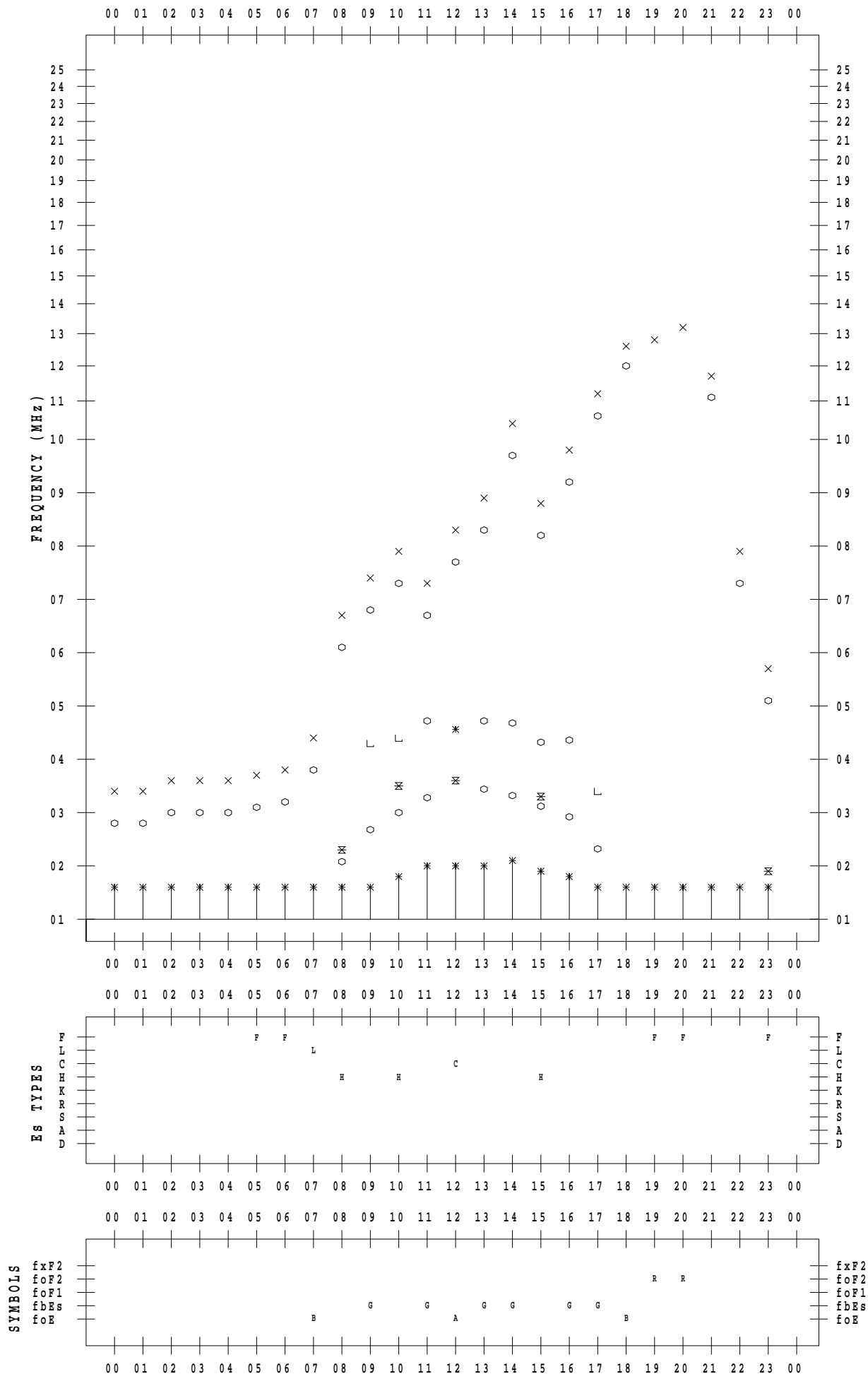
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 25

135 ° E MEAN TIME



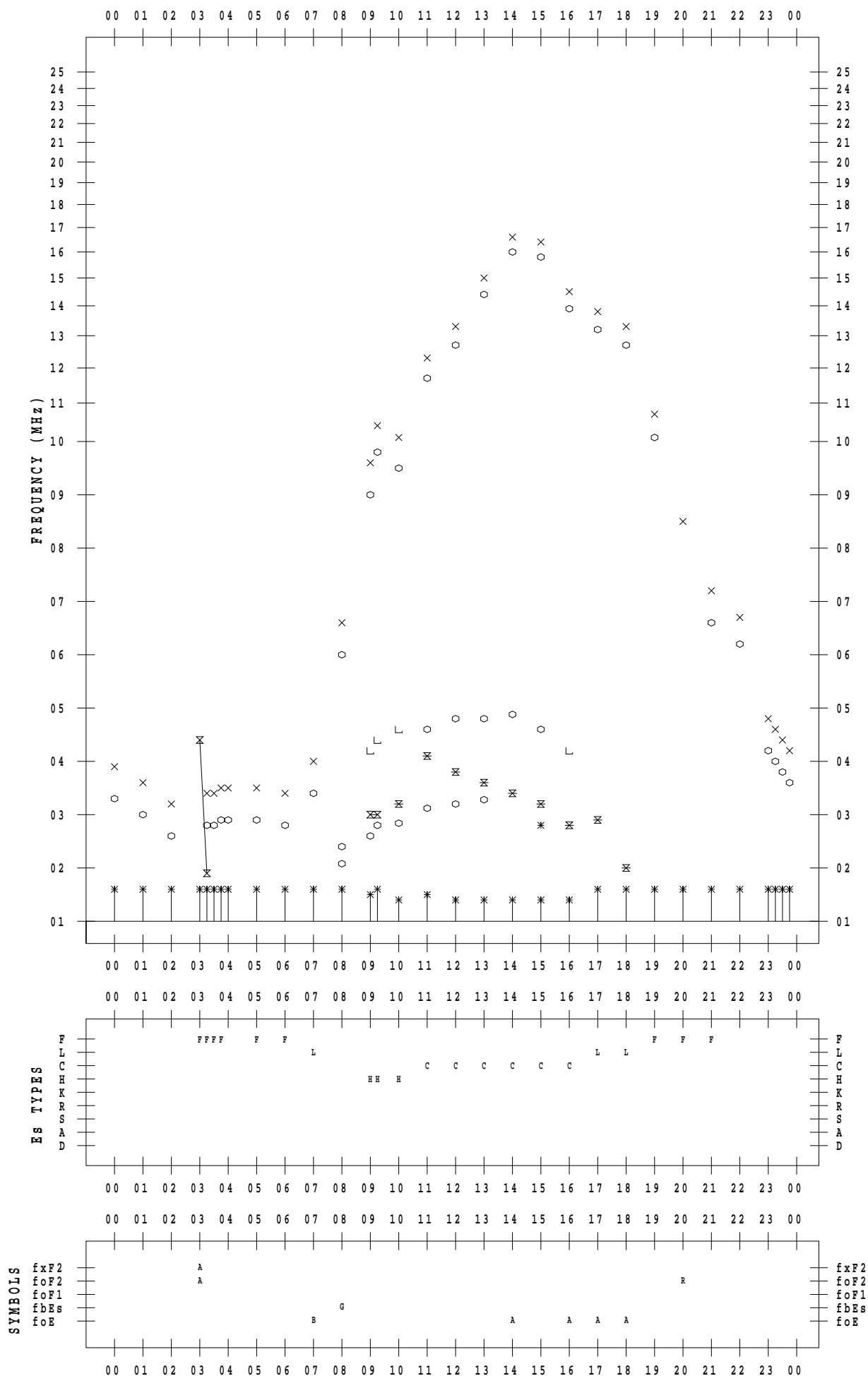
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 26

135 ° E MEAN TIME



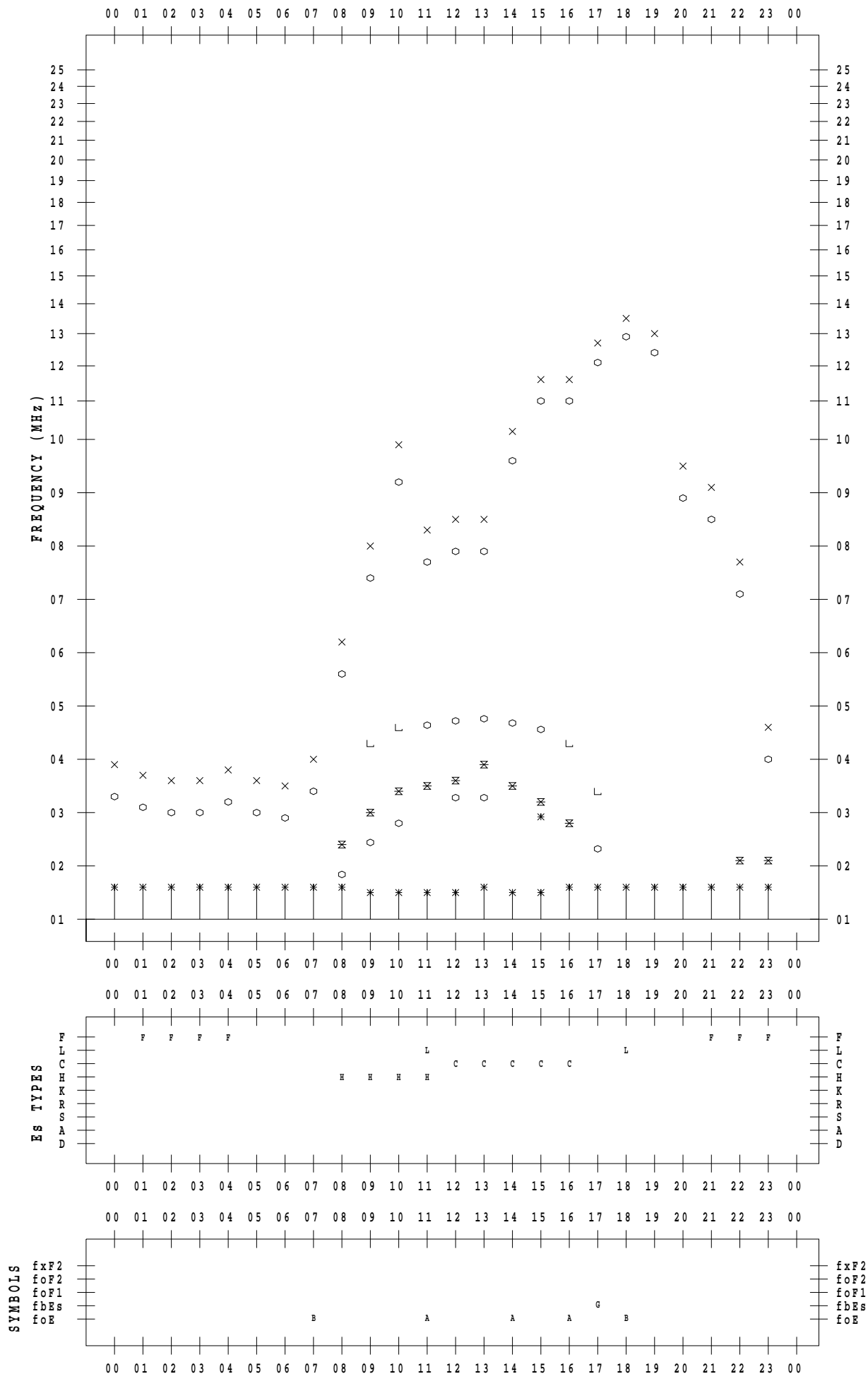
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 27

135 ° E MEAN TIME



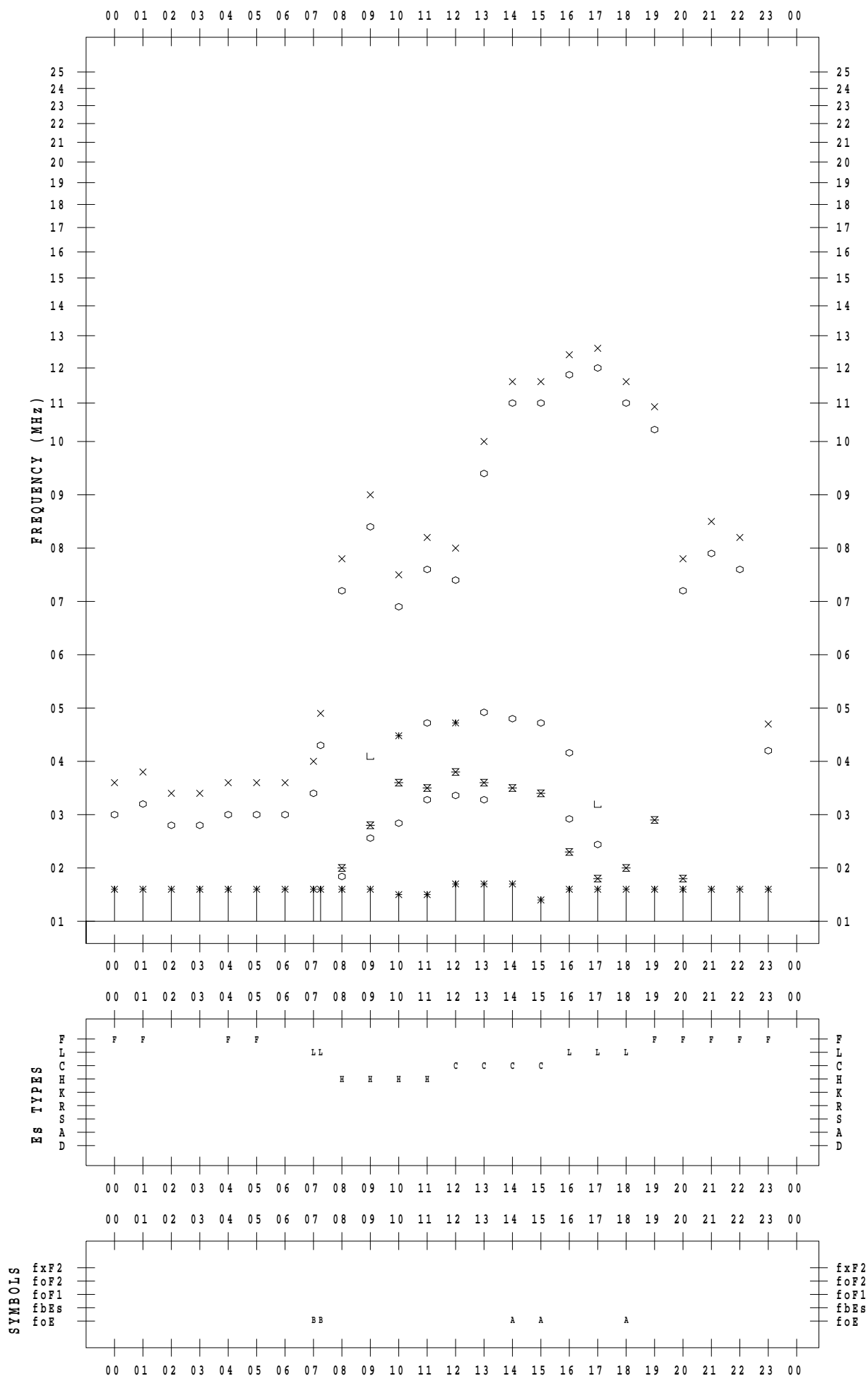
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 28

135 ° E MEAN TIME



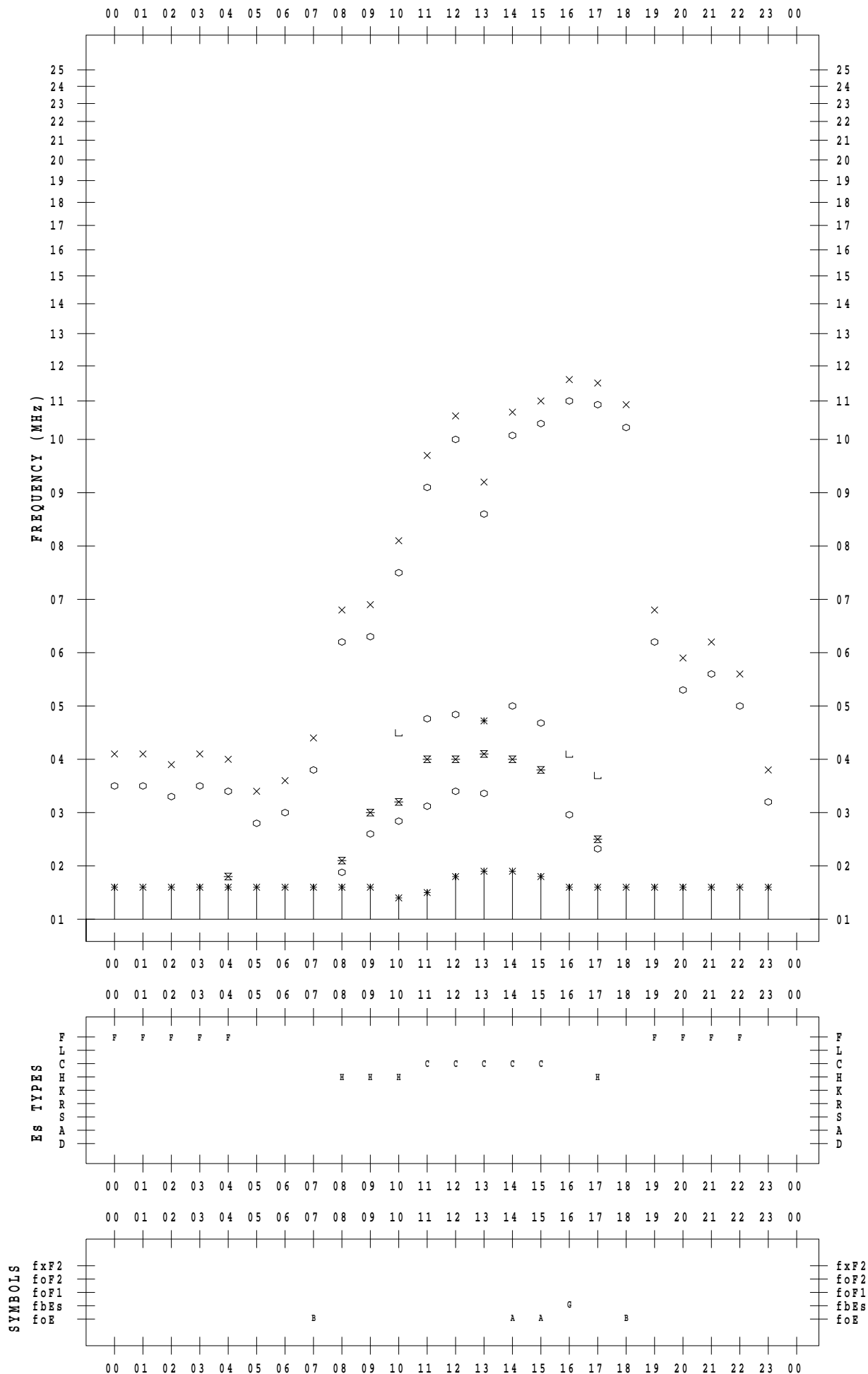
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 29

135 ° E MEAN TIME



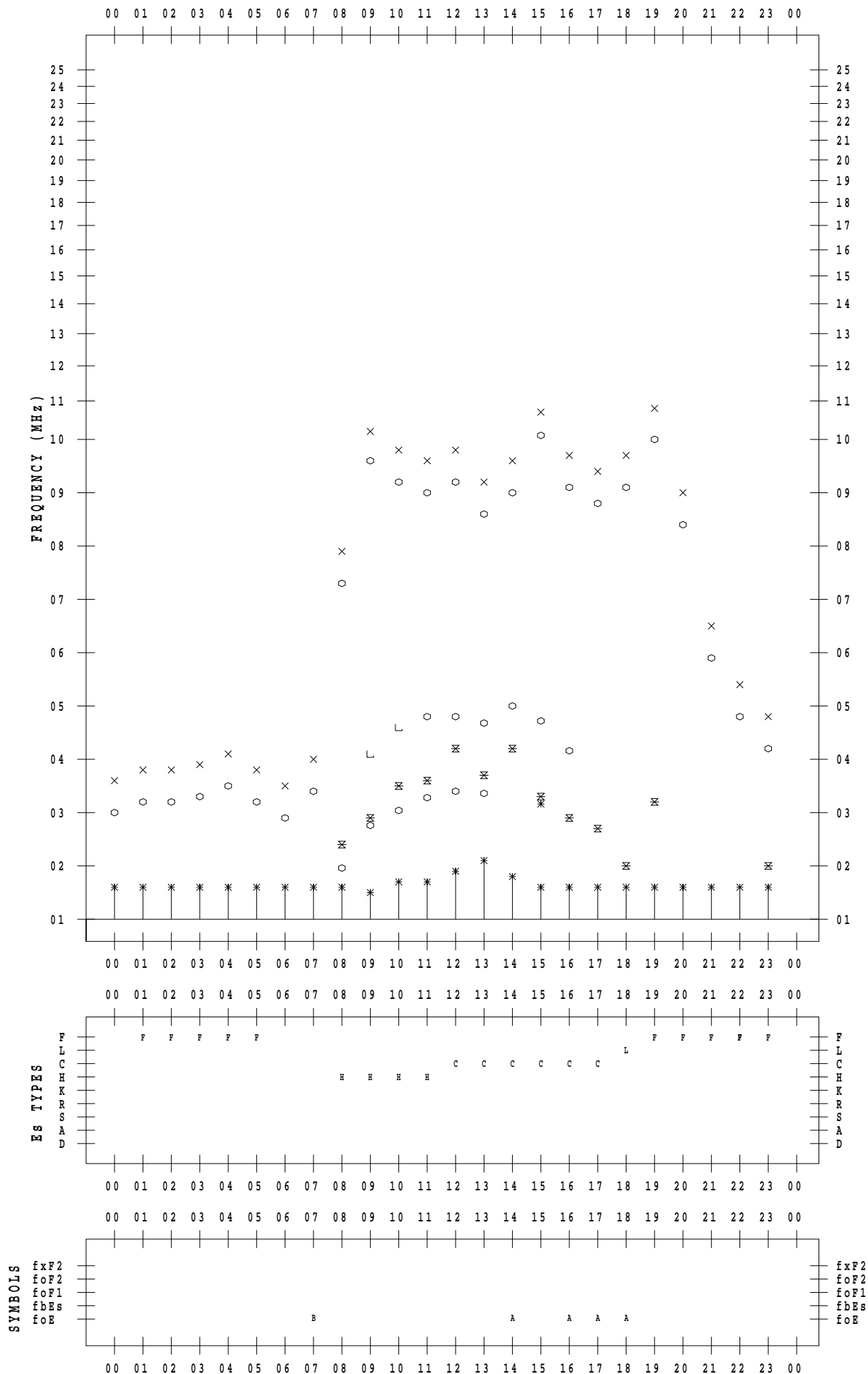
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 1 / 31

135 ° E MEAN TIME

