

IONOSPHERIC DATA IN JAPAN

FOR March 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

fxl	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 (CNT) 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
 MAR. 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	39	41	42	43	49	38	46	55	67	65	75	78	80	86	83	71	70	61	51	46	41	39	43	42
2	39	39	38	40	46	37	41	64	79	72	77	81	86	87	76	73	77	70	57	48	42	39	38	40
3	39	41	43	43	45	39	47	62	70	81	79	81	83	83	72	77	71	67	61	54	50	43	41	41
4	42	43	43	42	42	42	50	60	63	75	88		85	92	90	85	79	67	72	59	57	56	57	59
5	58	54	58	59	59	56	60	80	81	89	89	90	99	104	89	82	72	69	68	62	56	50	45	43
6	41	39	44	41	27	33	39	73	70	96	104	89	84	87	89	89	77	77	54	52	54	45	48	47
7	44	50	50	51	49	41	46	63	80	82	88	95	83	86	91	85	73	68	65	56	40	38	39	42
8	47	51	43	43	35	33	45	65	75	95	86	84	89	92	95	83	82	70	57	46	41	41	39	39
9	39	39	38	35	36	36	47	67	73	75	90	93	83	80	79	87	80	76	61	52	53	49	43	43
10	37	41	41	44	42	37	47	69	79	83	87	82	78	84	85	85	80	72	61	56	45	43	43	43
11	44	44	44	43	44	42	59	69	74	85	85	99	102	114	110	88	84	71	75	61	55	57	55	56
12	51	52	53	57	60	58	69	66	83	86	86	90	122	111	103	88	89	78	66	57	55	52	54	54
13	54	56	55	51	45	37	55	71	80	87	81	105	99	103	94	93	82	80	65	55	55	50	47	51
14	42	39	40	43	29	31	41	61	81	66	107	109	115	96	85	76	71	67	65	59	57	51	47	47
15	45	49	44	49	50	43	52	65	73	83	79	89	93	92	94	95	87	83	75	59	59	53	51	53
16	51	53	49	49	47	46	58	66	71	77	84	85	93	96	85	81	79	83	73	57	57	50	52	53
17	54	51	53	53	51	47	57	64	79	88	93	88	95	97	87	78	75	70	70	62	61	58	50	47
18	49	50	52	54	54	43	56	65	70	86	84	79	92	93	84	81	72	68	62	55	47	49	45	43
19	43	48	49	46	43	39	51	65	80	84	87	84	88	83	77	72	67	65	68	62	59	58	56	52
20	49	50	52	52	49	43	59	63	70		81	89	104	89	87	81	81	79	67	58	53	54	54	56
21	53	47	50	49	50	48	55	66	73	71	85	93	113	91	85	81	73	69	67	62	57	55	56	55
22	51	59	52	49	40	38	58	64	68	71	87	93	92	87	86	79	75	75	68	62	57	55	55	52
23	52	47	49	48	48	44	57	65	73	88	103	93	78	83	78	77	80	75	73	64	60	54	57	49
24	54	55	52	51	47	39	64	66	73	84	96	91	94	89	90	86	78	68	71	64	61	60	59	59
25	60	55	53	50	51	50	61	71	79	88	98	100	98	95	86	79	75	69	70	64	58	54	45	49
26	51	49	44	43	41	45	65	65	79	85	89	92	84	83	83	79	81	82	75	67	57	54	49	51
27	49	49	46	45	41	42	51	63	93	85	89	83	96	91	91	85	89	83	77	67	65	65	64	63
28	64	61	60	51	42	45	49	66	75	78	83	91	99	91	87	83	81	76	73	66	68	57	53	53
29	53	53	51	52	51	47	57	71	79	87	97	95	101	95	91	87	89	88	92	85	79	59	59	55
30	56	55	54	53	51	57	65	78	87	92	91	93	96	94	99	91	87	84	84	80	73	70	70	73
31	68	64	63	58	56	57	74	76	83	99	106	100	102	92	93	99	101	90	95	82	66	72	67	65
	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	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	49	50	49	49	47	42	55	65	75	84	87	90	93	91	87	83	79	72	68	59	57	54	51	51
U Q	54	54	53	52	51	47	59	69	80	88	93	93	99	95	91	87	82	80	73	64	60	57	56	55
L Q	42	43	43	43	42	38	47	64	71	77	84	84	84	86	84	79	73	68	62	55	53	49	45	43

HOURLY VALUES OF fEs AT Wakkanai

MAR. 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	G	G	
2	G	39	32	G	204	G	G	G										G			G	G	G	G	
3	G	G			G	G	G															G	G	G	G
4	G	G	30	26	G	G	G															G	G	G	G
5	G	G	G	G	G	G																	G	G	G
6	G	G	G	G	G	G	G																G	G	G
7	G	G	G	G	G	G	G																G	G	G
8	G			G	G	G																	G	G	G
9	G	29	26	G	G	G	G																G	G	G
10	G	G	G	G	G	G	G																	G	G
11	G	G	G	G		G	G																	G	G
12	G			G	G	G																		G	G
13	G	36	29	G	G	G	G																	G	G
14	G	G	G	G		G	G																	G	G
15	G	G		G	34	G	G																	G	G
16	G	G	23	G	27	27	G																	G	G
17	G	G	G	G	G	G	G																	G	G
18	G	G	G	G	G	G																		G	G
19	G	G	G	G	G	G	G																	G	G
20	35	G	G	G	G	G	G																	G	G
21	G	29	G	G	G	G																		G	G
22	G	G	G	G	G	G																		G	G
23	G	G	G	G	G	G																		G	G
24	G	G	G	G	G	G																		G	G
25	G	G	G	G	G	G																		G	G
26	G	G	G	G	G	G																		G	G
27	G	G	G	G		G																		G	G
28	G	G	G	G	G	G																		G	G
29	G	G	G	G	G	G																		G	G
30	38	28	26	26	G	G	G																	G	G
31	G	G	G	G	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	31	31	31	31	31	30	31	31	30	31	30	31	31	31	30	31	31	31	31	31	30	31	31	
MED	G	G	G	G	G	G	G	32	37	40	44	44	40	38	38	37	34	G	G	G	G	G	G	G	
U Q	G	G	G	G	G	G	32	43	40	45	54	50	47	44	40	39	35	37	26	25	G	24	25	G	
L Q	G	G	G	G	G	G	G	30	34	38	38	38	38	34	34	36	32	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Wakkanai

MAR. 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	16	15	16	16	14	14	15	15	16	15	16	16	16	17	15	14	15	15	16	16	14	14	15	14
2	14	14	14	15	14	15	14	14	15	14	15	15	16	15	15	15	16	17	14	14	14	14	14	14
3	14	14	15	15	16	14	15	15	16	15	15	16	15	16	17	15	16	16	15	15	17	15	15	15
4	14	15	14	14	14	14	14	15	14	14	15		16	15	15	15	15	15	14	14	14	14	14	14
5	17	14	14	14	15	14	14	15	14	14	15	17	17	17	15	16	15	20	14	14	14	15	15	14
6	14	15	14	15	16	14	15	15	16	15	15	15	19	15	17	15	15	20	14	14	15	14	15	14
7	14	15	14	15	16	14	14	15	15	15	17	17	18	19	16	15	15	20	16	14	14	14	16	14
8	14	15	16	14	14	15	74	14	15	15	18	22	23	19	17	17	15	14	14	14	14	14	15	14
9	14	14	16	16	14	14	16	14	17	17	15	17	16	15	15	15	15	21	14	14	15	14	14	14
10	14	14	14	14	14	14	17	15	14	17	17	17	17	15	17	15	15	15	14	16	14	14	15	16
11	14	14	14	14	14	14	17	15	17	15	17	19	19	16	15	16	16	14	14	14	14	14	14	15
12	14	15	15	14	15	14	15	15	15	14	14	18	15	15	17	15	16	14	14	15	14	15	14	14
13	15	14	14	14	14	14	18	15	15	15	15	17	16	16	15	15	17	18	14	14	14	14	14	15
14	14	15	15	17	14	18	17	16	14	15	15	14	17	18	15	15	16	15	14	14	14	16	16	15
15	16	17	17	16	16	16	15	15	14	13	14	15	15	16	14	14	13	15	16	16	14	16	14	15
16	14	14	15	14	15	15	18	16	15	15	16	14	16	15	13	13	13	15	15	14	14	15	15	14
17	14	14	14	15	15	15	18	15	15	18	14	17	15	16	17	15	15	15	14	14	14	14	14	14
18	14	14	14	14	14	14	15	16	16	17	17	15	15	17	16	17	16	15	14	15	14	14	16	15
19	16	15	14	15	16	15	18	16	14	15	15	16	15	17	17	15	16	15	14	14	14	15	15	15
20	15	17	15	14	14	14	17	16	14		15	18	17	16	16	15	14	15	15	16	16	14	17	15
21	14	16	14	14	14	14	14	15	15	14	15	15	15	15	15	15	16	15	14	14	14	16	16	16
22	15	14	16	14	14	15	16	15	14	14	15	15	16	16	14	14	14	14	15	16	15	15	16	16
23	14	15	15	15	15	14	15	16	13	14	14	14	13	15	15	15	16	15	15	14	15	15	14	14
24	16	15	16	14	15	15	16	16	15	15	15	14	17	15	15	11	15	15	16	14	14	14	14	14
25	15	14	15	16	15	14	15	16	13	14	14	15	15	15	14	15	14	15	14	14	15	14	14	14
26	14	14	15	14	14	15	15	15	13	13	15	15	16	15	14	14	15	16	14	15	16	17	15	14
27	16	15	15	14	16	16	15	16	14	15	15	15	16	15	14	14	14	15	16	16	16	15	15	14
28	14	15	15	14	14	14	15	16	15	15	19	15	17	15	15	14	16	15	15	15	16	16	15	15
29	14	14	15	14	15	14	15	17	16	15	18	39	20	22	16	15	13	15	15	14	15	16	16	16
30	15	16	15	16	14	15	15	16	15	15	18	16	15	18	17	14	15	15	15	15	17	15	16	15
31	15	15	14	14	14	14	15	16	15	16	21	23	19	15	15	14	16	13	14	16	16	15	17	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	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	15	15	14	14	14	15	15	15	15	15	16	16	16	15	15	15	15	14	14	14	15	15	14
U Q	15	15	15	15	15	15	17	16	15	15	17	17	17	17	17	15	16	16	15	15	15	15	16	15
L Q	14	14	14	14	14	14	15	15	14	14	15	15	15	15	15	14	15	15	14	14	14	14	14	14

HOURLY VALUES OF fof2 AT Kokubunji

MAR. 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	38	39	42	42	40	31	34	59	68	81	81	87	93	91	78	73	74	74	55	40	40	40	37	40
2	39	40	41	39	38	29	37	60	69	81	81	89	87	99	90	81	81	83	68	47	41	41	39	39
3	39	39	39	47	33	32	39	66	70	77	76	88	83	91	84	81	83	76	59	41	49	50	42	41
4	39	39	40	37	39	35	41	57	71	85	75	95	98	96	99	87	82	72	60	61	58	52	44	45
5	49	44	42	43	42	41	51	65	81	86	99	103	102	101	97	89	79	75	65	58	59	50	41	47
6	40	43	43	42	47		39	75	85	97	124	120	103	93	97	99	80	70	70	60	65	55	37	37
7	37	40	39	40	35	33	41	81	95	98	91	99	99	98	89	83	82	81	66	46	42	39	41	40
8	40	40	39	39	39	38	49	69	89	91	103	99	103	107	92	91	81	77	66	61	50	44	44	43
9	44	41	39	39	38	37	49	75	89	89	95	106	100	95	91	86	98	93	70	49	44	41	43	40
10		37	41	42	41	31	46	64	80	85	92	96	96	92	92	90	87	81	73	51	50	49	45	43
11	43	43	44	42	41	35	58	72	76	82	91	103	112	115	128	111	94	89	73	65	59	49	49	52
12	51	47	51	51	54	34	54	72	74	88	94	115	119	135	113	106	107	94	79	60	56	57	50	51
13	55	53	54	48	33	31	49	78	79	81	86	94	109	113	101	95	99	87	70	58	55	55	55	50
14	43	42	42	52	44	34	56	63	93	87	109	112	145	131	89	93	92	91	71	59	59	55	41	45
15	46	50	49	45	39	37	53	70	81	81	90	109	114	123	116	105	98	93	77	58	54	53	48	43
16	46	43	43	50	40	37	55	77	78	74	89	103	113	113	108	101	101	93	77	A	A	44	41	43
17	45	47	49	50	42	38	51	75	90	82	90	99	111	110	103	97	98	92	80	59	51	50	41	39
18	39	40	40	42	39	29	46	65	75	82	92	101	94	97	95	90	84	82	68	63	56	40	40	42
19	41	29	42	40	34	31	48	67	90	81	88	83	90	93	89	78	76	79	75	63	55	53	49	49
20	49	44	45	48	43	38	50	66	83	81	82	93	90	105	92	90	93	92	82	58	51	46	46	52
21	50	47	48	44	39	38	52	69	77	85	91	94	95	102	98	95	83	73	65	59	57	55	57	57
22	57	53	53	50	44	39	53	71	83	80	78	97	95	94	87	89	88	87	75	56	51	52	53	53
23	49	49	49	46	43	45	55	66	87	95	95	91	101	97	94	89	82	83	85	75	60	57	45	47
24	51	49	49	53	35	31	50	70	82	87	91	95	99	98	102	93	89	81	69	67	56	56	56	56
25	57	55	49	42	42	41	55	66	85	95	102	104	105	97	95	94	77	76	80	67	53	52	51	49
26	53	53	49	44	41	39	62	68	72	82	93	106	109	103	91	83	83	91	92	69	51	51	52	53
27	52	51	49	49	40	41	65	69	79	97	96	108	108	115	113	110	104	93	77	62	54	56	51	55
28	57	57	56	46	39	43	57	74	71	87	114	136	117	104	97	93	94	99	99	62	57	56	55	57
29	58	55	55	54	44	39	57	79	78	92	96	97	109	103	109	109	104	111	110	84	A	A	57	58
30	56	53	55	55	44	43	65	77	91	93	92	108	106	109	110	109	105	98	89	79	61	61	63	63
31	63	60	60	57	51	52	67	88	95	97	104	108	117	110	95	99	110	113	110	77	57	61	62	62
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	30	31	31
MED	48	44	45	45	40	37	51	69	81	85	92	99	103	102	95	93	88	87	73	60	55	52	46	47
U Q	53	53	49	50	43	39	56	75	89	92	96	108	111	110	103	99	98	93	80	65	57	55	53	53
L Q	40	40	41	42	39	32	46	66	75	81	88	94	95	96	91	87	82	77	68	58	50	46	41	42

HOURLY VALUES OF fEs AT Kokubunji

MAR. 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	G	104	46	40	40	41	41	47	46	37	39	35	33	24	G	24	G	G	
2	29	G	23	G	G	G	G	25	59	146	41	39	52	37	40	37	34	31	28	31	G	23	G	G	
3	G	G	G	G	G	G	G	26	37	40	34	38	G	39	34	34	33	47	33	36	40	G	G	G	
4	G	G	G	110	G	G	G	50	33	37	39	42	39	42	39	31	31	33	39	G	G	G	33	G	
5	G	G	G	G	G	G	G	29	56	37	41	40	41	G	33	33	34	G	G	G	G	G	G	G	
6	G	G	G	G	25	G	G	47	28	34	38	36	50	39	33	38	27	G	25	G	G	G	G	G	
7	G	G	G	G	G	G	G	25	30	32	57	G	52	34	G	32	43	G	G	G	G	G	G	G	
8	G	G	G	G	G	G	G	28	30	31	41	39	39	34	33	33	36	28	G	G	G	29	G	G	
9	G	G	G	G	G	G	G	29	33	34	36	36	33	33	47	38	32	40	11	11	G	G	G	G	
10	G	G	G	G	11	G	G	G	180	31	35	36	36	N	41	47	42	40	11	G	G	G	G	G	
11	G	G	G	G	28	G	G	52	38	45	54	43	37	39	43	41	35	G	G	G	G	G	G	G	
12	G	G	G	G	G	G	G	G	54	40	G	34	37	41	39	32	33	31	G	G	G	G	G	G	
13	G	G	G	G	G	G	G	47	33	31	G	43	36	37	34	35	42	G	G	33	G	38	G	G	
14	23	G	G	G	G	G	G	51	41	109	56	50	65	39	34	40	38	52	32	G	G	24	35	34	
15	40	G	41	41	34	25	25	47	G	32	41	58	65	60	40	45	42	37	47	39	G	G	G	26	
16	59	36	24	26	41	24	G	30	39	42	48	49	38	47	50	43	45	36	31	70	114	36	G	G	
17	G	G	G	G	G	G	G	34	41	45	95	39	38	45	33	32	35	G	35	35	31	26	G	G	
18	G	G	G	G	11	G	G	25	33	48	41	34	37	37	39	38	36	G	11	27	26	G	G	G	
19	G	28	39	31	27	G	G	38	34	38	34	G	44	40	33	34	37	33	G	26	25	29	G	G	
20	G	G	G	G	G	G	G	G	35	39	53	44	49	37	39	40	35	26	11	G	25	G	G	G	
21	G	G	G	G	G	G	G	32	35	39	48	42	34	34	40	40	37	28	G	35	32	33	G	G	
22	G	G	G	G	G	G	G	36	35	39	40	51	52	50	76	55	56	40	53	40	32	G	G	G	
23	G	G	G	G	G	G	G	28	31	43	47	51	41	45	41	32	31	34	28	G	26	26	26	22	G
24	G	G	G	G	G	G	G	29	37	34	39	40	40	52	40	40	36	35	28	G	28	G	G	G	G
25	G	G	G	G	G	G	G	29	54	41	36	42	33	G	39	33	G	34	29	G	G	G	G	G	G
26	G	G	G	G	G	G	G	46	31	42	45	46	38	34	37	38	40	36	32	G	21	25	32	G	G
27	G	G	G	G	G	G	G	28	31	34	45	72	57	50	40	49	45	42	40	G	G	G	26	41	G
28	G	G	G	G	G	G	G	36	40	45	32	67	44	N	41	35	33	36	39	40	54	52	48	35	40
29	26	32	G	24	22	G	G	47	26	38	37	45	42	46	51	50	51	34	50	45	67	108	59	58	G
30	G	G	G	G	G	G	G	38	33	39	42	50	37	G	37	33	33	29	37	G	G	G	G	29	G
31	G	G	G	G	G	G	G	31	34	107	48	41	37	G	G	36	49	45	45	29	27	52	56	31	25
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	31	31	31	31	29	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	G	G	G	G	G	G	G	32	38	39	41	40	38	39	39	37	35	32	11	24	G	G	G	G	
U Q	G	G	G	G	11	G	28	47	43	45	51	43	50	41	41	41	42	40	33	35	32	29	22	G	
L Q	G	G	G	G	G	G	G	26	33	36	39	36	34	37	33	33	34	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Kokubunji

MAR. 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	13	13	13	13	14	13	14	15	16	15	16	14	17	15	17	15	15	15	15	16	17	16	16	15
2	17	15	15	13	13	13	13	14	15	17	15	14	15	26	13	15	16	16	15	16	16	16	13	13
3	14	13	13	13	13	13	14	14	16	15	14	15	16	14	15	13	16	15	15	15	16	15	15	15
4	15	13	13	13	13	13	15	15	16	15	15	15	16	14	39	15	14	15	15	16	15	17	15	13
5	15	13	13	13	13	14	14	15	16	15	15	26	19	13	15	15	17	14	13	15	17	20	13	14
6	17	14	18	15	16		13	15	15	15	15	15	17	15	25	15	14	14	16	16	14	13	14	14
7	13	13	14	15	14	13	13	15	14	17	14	43	26	28	35	30	14	15	14	13	13	13	13	13
8	13	13	13	16	14	14	14	15	16	15	24	14	14	17	14	14	13	14	14	14	14	16	15	14
9	13	14	14	13	13	14	17	14	16	15	15	26	40	14	21	13	16	14	14	13	14	13	14	14
10		14	14	14	13	13	14	14	17	16	28	25	26	24	22	15	14	14	13	13	15	13	14	13
11	13	13	15	14	16	14	15	14	15	17	12	15	28	28	18	14	16	14	14	14	15	14	14	14
12	13	13	13	13	13	13	17	15	17	17	14	15	16	15	15	15	16	14	14	16	14	13	14	14
13	13	13	13	13	13	14	15	15	15	13	15	15	15	15	15	15	15	14	14	15	14	14	15	14
14	16	14	13	13	13	14	18	15	16	13	15	16	15	25	15	15	15	13	16	16	15	16	16	15
15	15	16	15	15	15	15	16	15	14	15	16	14	15	15	15	15	14	14	14	15	16	15	13	16
16	16	14	15	15	15	15	16	15	15	16	13	16	14	15	18	15	14	16	15	16	14	16	16	15
17	15	15	15	15	15	13	17	16	13	15	19	15	14	17	16	15	14	22	16	15	16	15	16	15
18	15	15	13	13	13	14	18	15	16	15	15	43	15	14	14	14	14	14	14	15	16	14	14	13
19	15	16	14	16	16	15	15	15	16	17	16	43	17	17	15	14	15	15	15	16	16	15	13	15
20	15	15	13	15	16	13	18	15	14	17	15	14	17	15	21	15	17	13	15	13	16	13	15	13
21	15	15	14	15	13	13	17	15	16	15	16	17	39	14	14	15	15	14	13	16	15	15	16	15
22	14	13	15	15	13	13	18	16	16	14	14	13	15	15	16	15	15	15	15	14	16	13	15	13
23	13	13	13	13	13	13	14	15	13	15	15	17	23	16	23	14	17	15	18	15	16	16	16	14
24	15	13	13	13	14	13	16	16	15	15	14	22	14	14	14	16	16	15	15	16	15	15	13	13
25	15	13	13	13	13	13	15	15	17	16	15	17	17	16	15	33	16	15	14	13	17	14	13	14
26	13	13	13	13	13	14	13	15	15	15	15	14	23	14	15	16	15	15	17	14	16	16	14	15
27	16	13	13	13	13	13	13	16	14	14	17	16	15	16	15	15	15	16	16	15	15	16	16	13
28	15	15	13	13	14	14	20	17	15	16	17	14	17	15	15	15	16	14	15	15	16	15	16	16
29	16	17	16	15	16	13	15	16	15	14	15	33	16	17	17	14	15	14	14	15	5	15	16	16
30	13	15	13	15	15	15	20	16	15	16	36	17	40	18	17	16	16	17	15	13	16	16	16	15
31	16	13	13	13	13	14	15	13	17	16	31	28	45	14	15	14	17	14	15	16	15	15	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	13	13	13	13	13	15	15	15	15	15	16	17	15	15	15	15	14	15	15	15	15	15	14
U Q	15	15	15	15	15	14	17	15	16	16	16	25	23	17	18	15	16	15	15	16	16	16	16	15
L Q	13	13	13	13	13	13	14	15	15	15	15	14	15	14	15	14	14	14	14	14	14	14	14	13

HOURLY VALUES OF fof2 AT Yamagawa

MAR. 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	40	39	42	42	41	26	32	49	68	71	91	101	100	95	84	83	83	81	70	52	47	48	43	36
2	37	39	41	41	41	33	28	50	58	73	83	90	97	91	98	99	101	95	89	65	47	48	43	41
3	40	39	37	42	35	33	^B 32	51	65	73	78	88	100	102	107	98	94	78	73	55	44	49	^A	43
4	40	41	41	42	41	33	32	50	65	77	76	81	94	102	112	103	93	77	73	62	60	56	49	49
5	42	41	41	42	43	37	37	57	75	82	87	92	99	102	99	97	88	79	77	61	59	55	42	40
6	40	43	41	42	39	35	39	58	83	93	121	95	106	103	109	106	100	83	82	75	70	57	35	39
7	40	40	39	44	35	33	34	⁶³	73	91	98	96	99	105	88	88	88	83	81	56	55	47	43	44
8	41	39	40	40	40	37	40	^N 62	75	94	98	100	109	111	109	102	92	83	85	75	71	57	48	44
9	39	37	40	39	39	35	38	70	81	81	92	97	109	105	103	103	95	97	99	80	56	45	43	41
10	40	38	37	39	41	32	33	57	68	81	91	99	105	106	101	91	95	98	95	70	63	59	51	49
11	45	43	43	44	44	35	36	62	67	79	87	103	114	119	118	117	106	100	91	83	68	48	44	44
12	44	47	44	51	59	32	32	64	61	82	96	107	121	121	107	112	117	112	96	89	73	64	63	58
13	59	59	59	50	37	33	33	60	79	80	88	94	101	112	109	106	97	99	89	69	59	61	59	57
14	51	50	51	57	47	35	52	63	67	98	97	130	121	119	99	100	104	105	88	72	61	55	48	46
15	50	50	51	47	^A 38	33	35	59	71	79	92	98	118	120	119	110	103	101	87	75	57	57	^A 54	^A 52
16	48	52	51	53	^A	36	38	61	65	77	88	109	117	132	136	133	116	105	89	59	45	46	^A	^A
17	45	44	43	43	41	35	39	64	87	87	89	99	118	124	127	123	123	118	102	89	63	50	49	43
18	41	41	40	43	45	^B 25	30	58	69	80	92	99	104	109	105	98	95	97	83	68	60	50	40	43
19	41	42	44	44	43	35	35	63	79	87	85	81	91	99	98	97	95	87	75	69	59	52	51	49
20	47	45	44	43	45	39	35	62	69	79	83	92	91	101	102	104	96	95	94	75	61	51	49	52
21	53	52	50	46	42	39	39	65	81	77	88	92	97	110	113	102	84	79	75	66	62	62	58	53
22	55	52	47	49	49	40	41	61	77	85	95	93	93	103	110	101	91	88	78	72	59	55	57	59
23	58	53	52	50	45	50	45	63	75	85	86	88	97	110	120	112	98	95	91	85	70	56	52	52
24	52	55	57	^N 64	33	31	32	61	80	88	92	104	99	103	113	116	98	87	78	77	59	52	55	57
25	57	58	53	43	41	39	38	60	82	98	96	107	101	109	116	104	98	85	73	68	61	51	55	52
26	51	53	52	47	37	^B 37	38	63	67	73	88	109	116	103	102	93	86	92	87	75	58	56	57	55
27	56	54	55	55	45	41	41	61	70	88	94	102	106	118	127	123	105	98	95	80	57	56	56	57
28	59	61	61	47	36	37	39	62	63	84	116	121	110	110	122	103	111	108	104	80	70	62	62	58
29	59	59	57	55	52	33	39	62	85	86	93	96	105	117	121	120	119	119	118	98	71	62	58	65
30	67	63	64	71	55	40	50	69	86	88	97	101	117	121	119	124	113	109	111	95	73	61	^A 65	65
31	71	70	66	67	58	45	50	74	95	92	96	112	121	123	112	116	114	119	110	92	65	57	^A	60
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	30
MED	47	47	44	44	41	35	38	62	73	82	92	99	105	109	109	103	98	95	88	75	60	55	51	50
U Q	56	54	53	51	45	39	39	63	81	88	96	104	116	119	119	116	106	105	95	80	68	57	57	57
L Q	40	41	41	42	39	33	33	58	67	79	87	92	99	103	102	98	93	83	78	66	57	50	43	43

HOURLY VALUES OF fEs AT Yamagawa

MAR. 2022

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	G	G	G	G	G	G	G	G		52	58	45	38	66	53	47	33	38	37	G	G	G	G	G	G			
2	G	G	G	G	G	G	G	G		46	38	44	48	47	44	43	42	38	32	G		G		31	31	G		
3	G	G	G	G	G	G	B		36	31	55	38	47	44	54	43	42	56	39	33		G	G	G		48	G	
4	G	G	G	G	G	G	G		34	38	36	43	49	43	52	42	40	32	39	G	G	G	G	G	G	G		
5	G	G	G	G	G	G	G			35	39	47	50	42	46	44	41	38		G	G	G	G	G	G	G		
6	G	G	G	G	G	G	G			33	36	46	49	49	42	50	42	38	32		G	G	G		48	G	G	
7	G	G	G	G	G	G	G			31	40	40	45	35	41	44	43	38	35		G	G	G	G	G	G	G	
8	G	G	G	G	G	G	G		G		36	44	47	44	41	41	40	43	33	35		G	G	G	G	G	G	
9	G	G	G	G	G	G	G			32	36	40	43	49	36	36	41	38	33		G			G	G	G	G	
10	G	G	G	G	G	G	G		23	36	38	41	41	52	41	49	57	49	33	34	39	46		G	G	G	G	
11	G	G	G	G	G	G	G			32	47	50	52	54	60	62	46	44	32		G	G	G	G	G	G	G	
12	G	G	G	G	G	G	G			31	50	40	44	43	38	42	41	40	37		G	G	G	G	G	G	G	
13	G	G	G	G	G	G	G		48	31	40	38	60	46	52	78	46	43	41		G	G	G		35	34	32	
14	G	G	G	G	G	G	G		54	38	39	47	46	51	48	36	42	41	36		G		G	G	G	G	G	
15	33		G	G	G	G	G		48	36	35	43	42	54	53	57	69	72	71	48	38	35	28		G	G	G	
16	G	144	G	G	65	G	G			53	38	41	44	41	42	49	42	42	34		G		G		43	69	58	
17	34	G	G	G	G	G	G		34	51	49	46	50	55	56	48	43	56	55	36	35		G	G	G	G	G	
18	G	G	G	G	G	B	G			33	36	46	43	45	50	38	36	40	34		G	G		G	G	G	G	
19	G	G	G	G	G	G	G		106	40	38	40	52	44	42	39	36	40	44	31		G		29	33	G	G	
20	G	39	G	G	G	G	G		32	55	44	49	41	35	36	54	45	48	49		G		11		G	G	G	G
21	G	G	G	G	G	G	G		31	40	40	71	38	50	49	37	42	36	33		G	G	G	G	G	G	G	
22	G	G	G	G	G	G	G		45	38	48	42	36	47	42	51	54	50	50	53	40		G	G	G	G	G	
23	G	G	G	G	G	G	G		43	40	43	45	34	50	50	41	46	37	34	33	33		G	G	G	G	G	
24	G	G	G	G	G	G	G		33	36	43	42	46	56	56	46	44	40	35		G	G	G	G	G	G	G	
25	G	G	G	G	G	G	G		48	36	49	55	42	50	48	43	34	36	28		G	G	G	G		31	G	
26	G	G	G	G	G	B	G		33	38	38	49	47	50	50	47	50	39	34	34	35	40	32		G	G	G	
27	G	G	G	G	G	G	G		49	42	41	48	50	49	47	48	50	41	34	23		G		27	41		G	G
28	G	G	G	G	G	G	G		32	40	45	48	46	43	44	46	34	38	54	35		G		G		46	38	G
29	G	G	G	G	G	G	G			35	40	47	42	46	44	48		50	90	78	70	55	47	41	40		G	G
30	40	33	31	G	G	G	G		33	31	41	44	44	48	43	39	36	40	36		G		29		G	G	G	G
31	G	G	G	G	G	G	G		31	35	46	50	48	41	42	41	42	39	35	34	23	31	44	55			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	31	31	31	31	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	G	G	G	G	G	G	G	32	36	40	45	46	47	46	44	42	40	35	G	G	G	G	G	G	G	G	G	
U Q	G	G	G	G	G	G	G	43	40	46	48	49	50	52	49	46	44	41	34	33	27	33	31	G				
L Q	G	G	G	G	G	G	G	32	38	41	42	43	42	41	40	38	33	G	G	G	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Yamagawa

MAR. 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	27	15	14	15	15	15	15	21	15	15	19	20	23	20	22	24	16	15	16	15	16	15	26	23
2	26	15	15	26	14	15	16	21	15	17	18	19	21	21	22	21	18	17	22	16	16	15	16	26
3	24	22	26	14	23	15	B	22	16	15	19	21	21	20	21	21	19	18	15	15	15	16	14	15
4	15	15	15	15	15	15	20	15	17	17	19	21	24	18	22	19	17	16	15	15	18	15	16	26
5	16	15	16	15	14	15	15	21	15	17	21	22	21	23	21	17	17	26	24	14	15	14	15	27
6	14	15	15	16	15	15	22	22	16	16	19	20	22	22	21	20	15	17	16	14	15	15	15	15
7	22	14	15	14	15	15	23	22	17	18	19	19	27	26	20	21	19	15	20	20	14	15	24	21
8	26	24	15	15	15	15	14	20	16	19	20	19	22	21	20	20	18	15	15	15	14	24	15	15
9	15	22	15	17	15	15	16	22	15	17	21	20	27	19	19	19	20	19	18	15	15	23	14	15
10	15	23	15	15	15	17	15	15	15	20	21	23	21	20	19	17	19	15	14	15	15	17	15	15
11	15	16	14	15	15	14	14	22	17	20	21	23	23	20	22	19	20	16	15	14	14	15	15	15
12	15	15	15	14	15	20	22	22	17	30	21	21	23	17	22	20	17	17	22	17	15	15	15	15
13	15	15	14	14	15	21	15	22	15	17	18	20	21	23	21	20	18	16	16	16	15	15	16	15
14	15	15	17	14	15	66	26	16	16	17	21	22	22	20	27	21	19	15	15	15	16	15	27	27
15	16	16	15	15	17	17	15	22	16	19	17	22	23	22	21	20	18	20	15	15	15	15	15	15
16	15	16	15	16	15	15	15	15	16	18	22	21	22	21	18	19	15	15	14	15	15	15	17	15
17	18	15	26	15	23	24	14	15	17	20	21	19	22	21	23	21	17	15	14	15	17	33	15	22
18	23	26	15	15	14	B	15	15	17	15	22	22	20	21	19	21	19	16	19	15	15	26	15	14
19	23	15	15	14	15	16	15	15	16	16	18	21	21	22	21	17	17	17	16	16	16	16	17	15
20	16	15	15	16	15	16	14	24	16	17	21	19	28	17	21	20	17	18	16	15	18	15	24	16
21	15	14	15	15	21	15	22	23	15	18	23	20	21	28	18	20	17	17	22	16	16	16	15	28
22	26	14	15	14	15	15	24	15	15	21	21	21	21	22	22	17	18	16	17	15	15	15	15	15
23	15	15	15	15	22	15	14	15	16	15	21	21	21	21	21	20	18	27	15	16	15	15	14	17
24	26	15	15	15	15	21	22	15	15	21	20	23	22	19	22	21	17	15	23	14	15	16	24	24
25	15	15	15	15	26	15	14	18	16	15	19	22	22	21	19	15	16	15	23	16	15	16	16	15
26	15	14	15	14	14	B	15	15	17	19	22	20	21	22	21	17	18	15	15	15	15	15	15	15
27	28	15	15	15	14	26	15	15	15	15	21	20	23	21	22	19	22	17	15	16	15	15	15	17
28	16	15	15	14	22	24	15	15	15	19	21	20	21	23	23	21	21	15	15	15	15	15	15	15
29	15	15	16	15	15	15	15	15	16	20	22	21	21	22	21	35	22	19	15	15	16	15	15	15
30	15	16	15	16	15	14	21	15	18	20	21	22	23	21	18	20	18	18	15	15	15	15	15	27
31	15	15	21	15	15	15	15	15	15	21	21	21	20	21	23	21	19	16	16	15	16	15	15	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	29	30	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	16	16	18	21	21	22	21	21	20	18	16	16	15	15	15	15	15
U Q	23	16	15	15	15	18	21	22	17	20	21	22	23	22	22	21	19	18	19	16	16	16	16	23
L Q	15	15	15	14	15	15	15	15	15	16	19	20	21	20	20	19	17	15	15	15	15	15	15	15

HOURLY VALUES OF fof2 AT Okinawa

MAR. 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	42	41	32	42	29	N	N	47	70	81	98	131	122	109	117	118	113	107	100	83	87	72	64	49		
2	41	41	N	43	45	38	29	B	23	47	60	72	86	97	114	111	124	125	124	121	119	106	100	48	67	54
3	52	51	44	41	42	33	B	25	45	67	73	90	104	127	142	178	165	154	119	106	100	69	73	71	66	
4	64	60	59	61	61	33	29	51	66	76	88	91	107	115	132	135	116	98	90	73	66	61	56	45		
5	41	38	37	40	40	35	33	54	79	93	99	97	103	111	120	115	116	103	96	86	71	65	51	45		
6	51	44	43	40	32	31	N	30	57	73	86	122	128	111	104	126	131	122	116	123	128	108	62	44	40	
7	A	42	42	43	31	24	25	50	67	90	108	B	B	B	B	B	C		90	88	83	54	67	59	53	
8	55	49	43	41	37	39	40	65	71	89		C	C	C	C	C	C	C		139	142	141	124	97	59	
9	45	40	37	36	35	33	34	59	77	78		C	C	C	C	C	C			146	151	151	130	87	72	68
10	57	51	49	45	43	B	N	29	25	52	68	74	104	113	124	129	119	112	113	123	123	120	115	103	79	64
11	57	57	51	50	45	31	32	60	73	76	90	116	124	134	150	132	130	132	121	105	91	61	53	44		
12	43	42	41	50	56	B	N	22	57	66	76	101	117	142	127	119	130	159	147	140	135	148	136	106	86	
13	83	76	76	75	45	35	30	59	73	82	113	111	109	120	127	127	117	111	109	94	85	86	91	71		
14	67	65	61	53	43	39	65	61	57	113	112	158	124	118	118	125	140	138	127	116	88	72	67	64		
15	61	62	60	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
16	B	B	B	B	B	B	B	B	B	B		100	124	149	153	172	188	169	156	136	95	68	A	51	46	
17	45	48	46	43	41	29	31	63	87	86	98	128	159	174	179	168	165	160	149	128	99	87	86	70		
18	76	67	60	66	58	B	B	23	24	54	69	94	102	113	121	136	127	126	127	125	109	94	83	73	46	44
19	46	47	53	58	49	42	39	63	78	93	89	90	106	117	121	138	132	123	95	90	80	A	51	50		
20	45	51	53	52	53	32	31	55	70	82	84	93	98	121	126	121	118	119	125	105	83	61	55	55		
21	55	57	59	48	41	35	35	63	77	84	87	101	106	128	139	129	112	108	91	80	71	71	66	63		
22	57	51	46	44	45	37	37	59	68	88	103	115	117	133	157	152	127	112	101	97	91	72	69	70		
23	63	63	63	58	53	52	51	62	74	93	95	103	104	127	164	155	141	141	132	107	110	96	87	79		
24	75	77	87	71	36	N	25	31	57	80	93	102	117	119	119	137	153	158	121	100	97	81	59	57	58	
25	59	61	60	43	37	33	32	63	79	99	109	115	116	130	141	137	133	115	93	79	69	62	61	59		
26	58	60	56	50	34	31	31	65	67	77	92	114	129	122	128	113	104	99	89	81	75	62	61	61		
27	58	59	59	60	43	37	36	62	71	87	94	106	115	129	151	149	131	145	128	104	75	70	63	A		
28	64	69	67	47	B	27	26	32	61	63	85	126	122	129	132	133	128	125	120	121	106	111	114	86	72	
29	77	81	92	99	59	30	31	63	81	91	94	108	124	145	179	160	154	152	149	137	117	96	94	103		
30	67	102	109	120	85	51	57	81	88	102	105	126	150	174	169	179	166	166	157	141	118	97	90	95		
31	102	103	111	111	58	41	42	69	93	97	99	118	149	167	153	149	162	137	119	105	73	64	66	64		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	29	30	30	29	29	27	28	29	29	29	28	27	27	27	27	27	27	29	30	30	30	28	30	29		
MED	57	57	54	50	43	33	32	59	71	86	99	114	121	128	133	132	130	121	120	104	86	72	66	61		
U Q	65	65	61	60	53	37	36	63	78	93	104	122	129	136	157	153	154	143	132	120	110	91	86	70		
L Q	45	47	43	43	36	29	29	54	67	77	91	103	109	118	124	125	117	111	100	90	73	62	56	49		

HOURLY VALUES OF fEs AT Okinawa

MAR. 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	31	G	G	G	29	G	G	G	35	41	48	46	50	48	48	40	43	33	G	33	G	G	G	24
2	G	G	G	G	G	G	B	35	116	42	46	33	58	46	46	43	41	36	29	43	32	G	G	G
3	G	G	G	24	26	G	B	G	38	35	46	53	50	44	49	46	44	40	29	23	26	58	G	G
4	25	30	G	G	G	G	G	29	38	35	49	50	50	53	49	70	38	34	30	26	G	G	G	G
5	G	G	139	27	G	G	G	G	35	41	46	53	55	47	48	40	40	44	37	26	33	11	G	G
6	G	G	G	G	G	G	G	G	32	41	43	46	50	45	42	40	40	34	G	29	50	44	30	29
7	28	G	G	G	G	G	G	G	33	40	46	B	B	B	B	B	C	63	40	25	G	G	G	G
8	G	G	G	G	G	G	G	G	26	35	C	C	C	C	C	C	C	C	46	54	23	29	23	G
9	G	G	G	G	G	G	G	G	35	38	C	C	C	C	C	C	C	35	55	11	48	43	G	G
10	G	G	G	G	G	B	G	G	34	38	48	49	44	37	50	52	70	73	53	11	11	11	G	G
11	G	G	G	G	G	G	G	48	32	30	49	50	50	50	51	47	40	36	38	36	G	G	G	G
12	G	G	G	G	11	B	G	G	34	38	49	52	49	51	46	37	40	36	G	G	11	G	G	G
13	G	G	G	G	G	G	G	G	28	53	59	46	48	53	54	51	50	43	G	26	49	33	41	26
14	46	G	G	G	G	G	G	48	45	57	60	52	47	G	46	51	43	36	G	G	G	47	32	G
15	27	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	39	49	51	52	48	40	43	28	G	24	11	44	41	43
17	32	41	56	G	G	G	G	28	41	43	48	50	46	45	43	45	56	59	56	48	28	G	G	G
18	G	G	G	G	50	B	B	23	29	37	38	50	51	50	39	41	37	36	G	11	28	G	G	G
19	G	G	G	G	G	G	G	29	29	36	44	46	48	52	50	46	43	41	34	34	28	60	32	30
20	26	G	G	G	G	G	G	40	54	43	48	47	48	47	45	35	44	42	G	22	G	44	G	G
21	G	G	G	G	G	G	G	G	30	40	34	46	50	50	47	N	32	34	G	G	G	G	G	G
22	G	G	G	G	G	G	G	25	34	35	52	48	36	50	53	39	39	39	36	34	47	29	27	G
23	G	G	G	G	G	G	G	29	37	44	45	48	48	52	35	34	37	34	G	G	28	33	G	G
24	G	G	G	11	34	G	G	29	33	36	38	52	G	49	G	46	44	39	42	G	G	G	G	G
25	G	G	G	G	G	G	G	148	32	39	92	43	49	37	52	34	34	34	28	23	G	G	G	G
26	G	G	G	G	G	G	G	30	38	36	47	51	48	51	48	41	40	38	31	G	29	24	G	G
27	G	G	G	G	G	G	G	27	39	41	48	47	52	49	46	43	38	34	26	30	33	26	135	36
28	24	G	G	40	B	G	G	30	41	46	47	53	52	36	G	35	49	46	32	46	G	32	34	41
29	G	G	G	G	G	G	G	50	40	39	36	G	53	G	57	52	49	57	55	40	50	30	G	G
30	G	G	G	G	58	G	G	33	34	47	44	49	54	47	45	41	33	29	25	26	G	G	G	G
31	G	G	G	G	49	G	G	33	33	39	47	48	G	38	37	49	34	38	40	35	40	35	47	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	29	28	26	26	29	29	29	28	27	27	27	27	26	27	29	30	30	30	30	30	30
MED	G	G	G	G	G	G	G	28	34	39	47	49	50	48	47	42	41	38	30	26	27	25	G	G
U Q	24	G	G	G	18	G	G	33	38	42	48	51	51	51	50	49	44	42	40	34	33	35	30	24
L Q	G	G	G	G	G	G	G	G	32	36	44	46	48	44	43	40	38	34	G	11	G	G	G	G

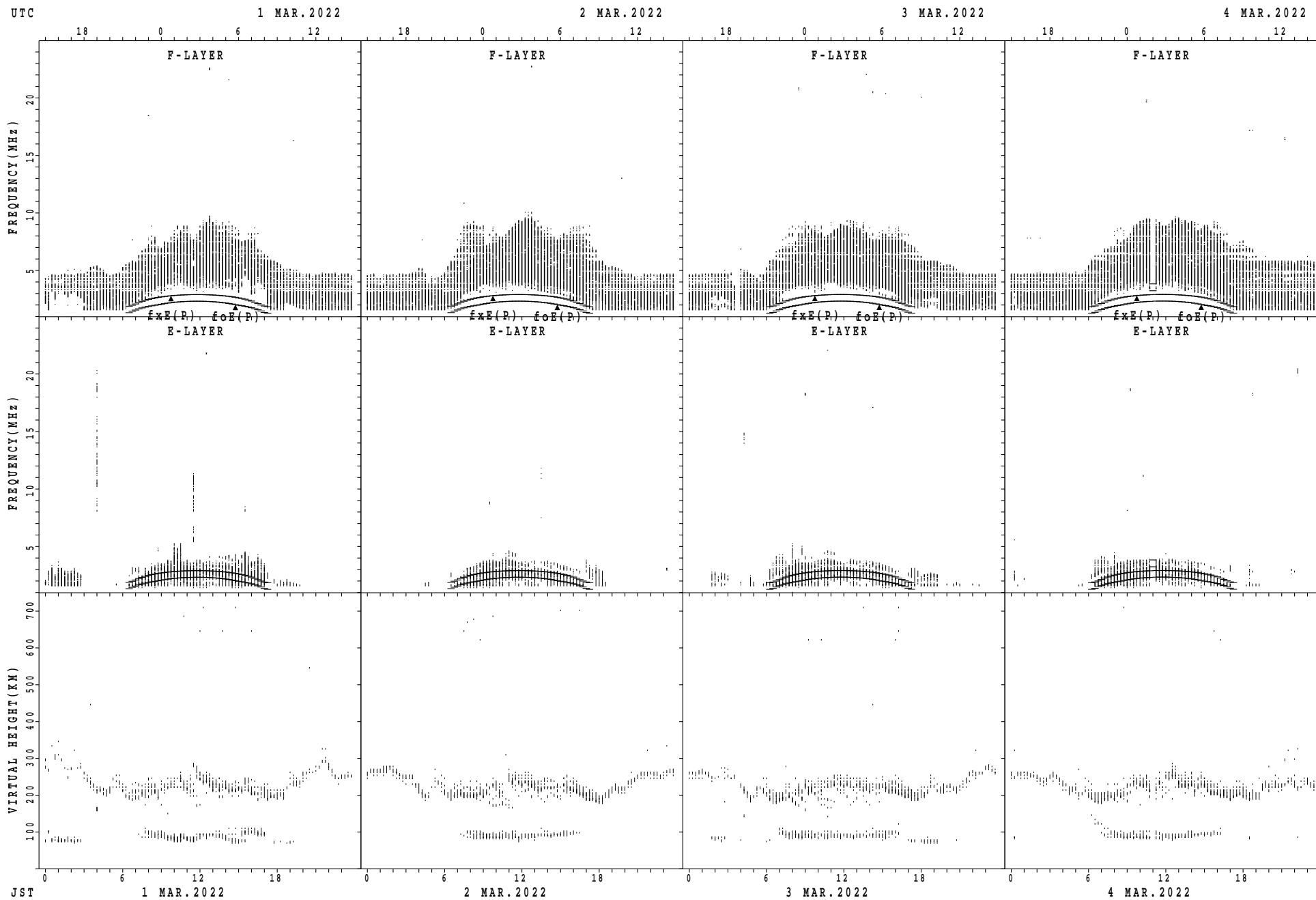
HOURLY VALUES OF fmin AT Okinawa

MAR. 2022

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

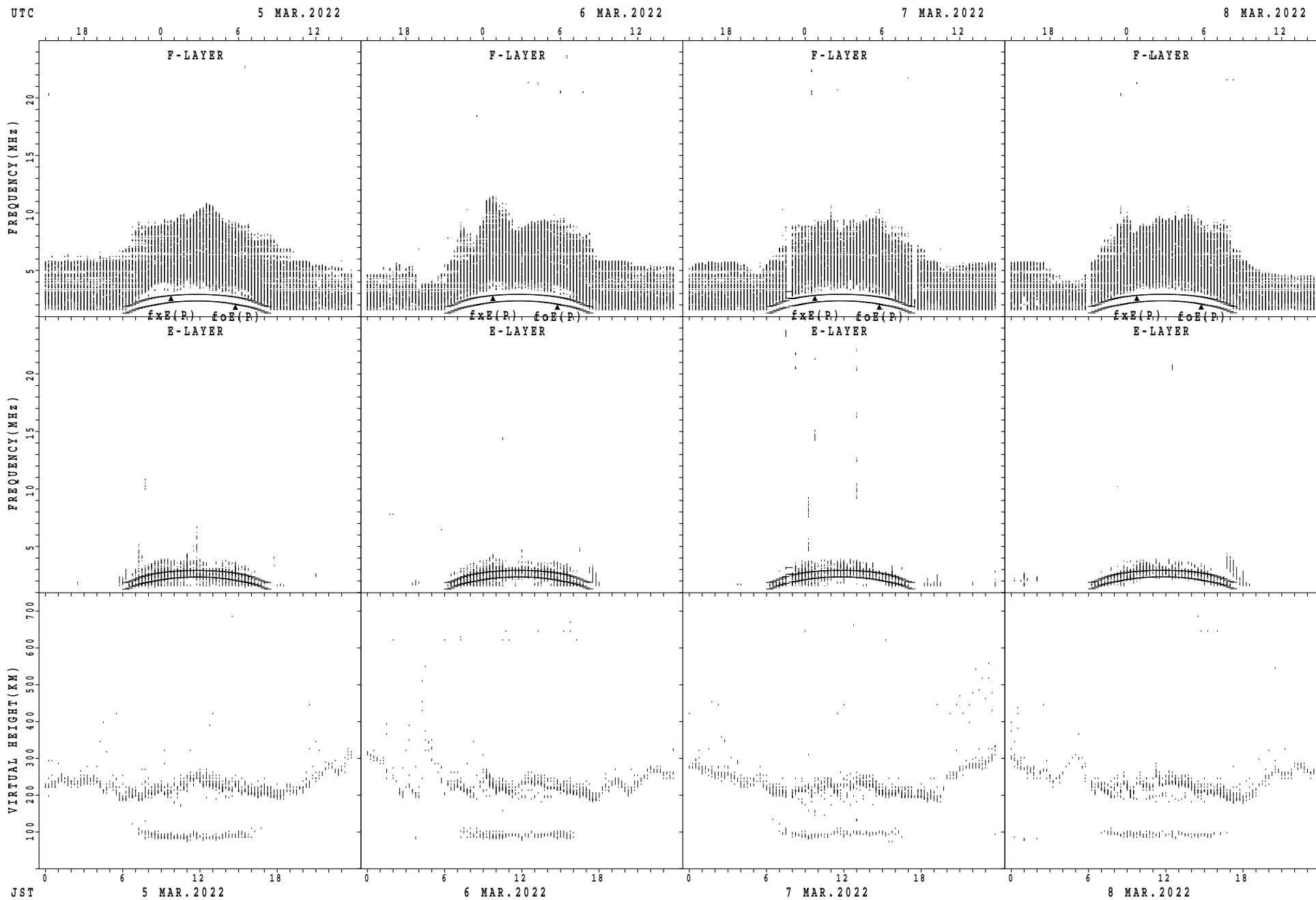
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	14	15	15	14	14	15	16	18	15	15	17	15	16	17	17	15	16	15	18	16	15	15	15	15	
2	14	15	15	14	15	14	^B 16	15	15	14	15	16	18	17	18	17	15	15	15	15	16	15	15	15	
3	15	16	15	15	15	15	^B 16	15	17	19	18	20	15	22	21	18	15	14	15	16	16	17	16	16	
4	14	16	15	15	14	14	14	16	16	16	17	18	20	21	19	19	16	16	15	16	15	14	14	15	
5	15	15	44	16	15	16	14	14	16	15	16	15	17	23	21	19	18	15	15	15	15	15	15	15	
6	14	14	14	14	14	15	15	18	17	15	15	18	19	20	21	16	17	16	15	14	14	14	14	14	
7	14	14	14	15	14	15	14	17	14	16	20	^B	^B	^B	^B	^B	^C		17	14	16	17	14	17	14
8	15	15	15	14	15	14	16	18	15	17	^C	^C	^C	^C	^C	^C	^C	^C		15	15	15	15	15	15
9	15	15	14	15	15	15	14	14	15	15	^C	^C	^C	^C	^C	^C	^C		14	20	14	15	15	14	14
10	14	15	15	15	14	^B		16	15	17	17	21	21	21	20	23	22	17	16	15	14	14	14	15	15
11	14	14	15	14	17	16	17	15	15	15	19	23	21	23	21	19	18	15	15	15	15	15	20	14	15
12	15	15	15	14	14	^B		17	21	17	16	21	21	19	21	19	18	17	15	15	14	16	14	14	14
13	15	14	14	14	14	14	15	21	16	17	16	16	22	21	16	18	15	15	15	16	16	16	15	16	
14	15	15	14	14	14	15	18	20	16	15	16	21	18	38	19	17	15	14	14	14	15	14	15	15	
15	15	15	14	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B
16	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B		17	18	18	17	19	17	16	15	15	15	14	15	15	15
17	15	16	17	16	15	15	14	15	15	16	19	21	20	22	23	21	16	13	13	15	15	15	15	15	15
18	17	14	20	14	14	^B	^B		15	17	16	17	18	19	19	18	17	18	14	14	14	15	14	14	15
19	15	16	15	15	15	14	15	16	17	15	17	16	23	30	16	17	16	13	16	16	15	15	16	16	
20	16	15	15	15	16	14	15	17	17	14	16	16	17	17	16	23	17	15	15	16	15	15	15	15	
21	14	14	14	14	14	14	15	16	15	16	35	36	35	38	23	23	17	17	18	14	15	17	14	15	
22	15	14	14	14	14	14	15	15	15	15	19	20	21	18	24	18	16	15	16	15	15	15	16	15	
23	14	15	14	14	14	14	14	16	16	15	19	22	22	18	17	17	17	15	16	14	15	15	16	15	
24	14	15	14	14	14	15	15	15	16	17	17	36	39	21	40	18	17	15	15	15	16	14	14	14	
25	14	14	16	14	14	15	15	15	15	15	12	16	40	23	17	36	18	15	15	16	14	14	15	15	
26	14	14	14	14	15	14	14	15	16	17	19	19	20	22	19	15	15	14	16	15	15	15	17	15	
27	14	15		14	14	15	14	15	17	15	17	21	21	21	23	17	16	16	14	15	15	15	16	15	
28	15	16	15	14	^B	66	17	15	14	15	21	19	20	18	38	17	17	14	16	15	20	16	15	15	
29	14	14	14	14	15	16	15	15	16	17	19	42	23	44	23	23	18	16	15	15	14	16	14	15	
30	15	15	15	14	14	15	14	15	15	16	20	21	22	24	23	19	22	15	15	16	15	14	15	14	
31	15	14	14	14	14	14	15	15	16	16	21	19	40	21	19	26	16	15	15	15	15	16	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	29	29	28	26	27	29	29	29	28	27	27	27	27	27	27	29	30	30	30	30	30	30	30
MED	15	15	15	14	14	15	15	15	16	16	18	19	20	21	19	18	17	15	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	16	17	17	16	19	21	22	23	23	21	17	15	16	16	15	15	15	15	
L Q	14	14	14	14	14	14	14	15	15	15	16	16	18	18	18	17	16	14	15	14	15	14	14	15	

SUMMARY PLOTS AT Wakkanai



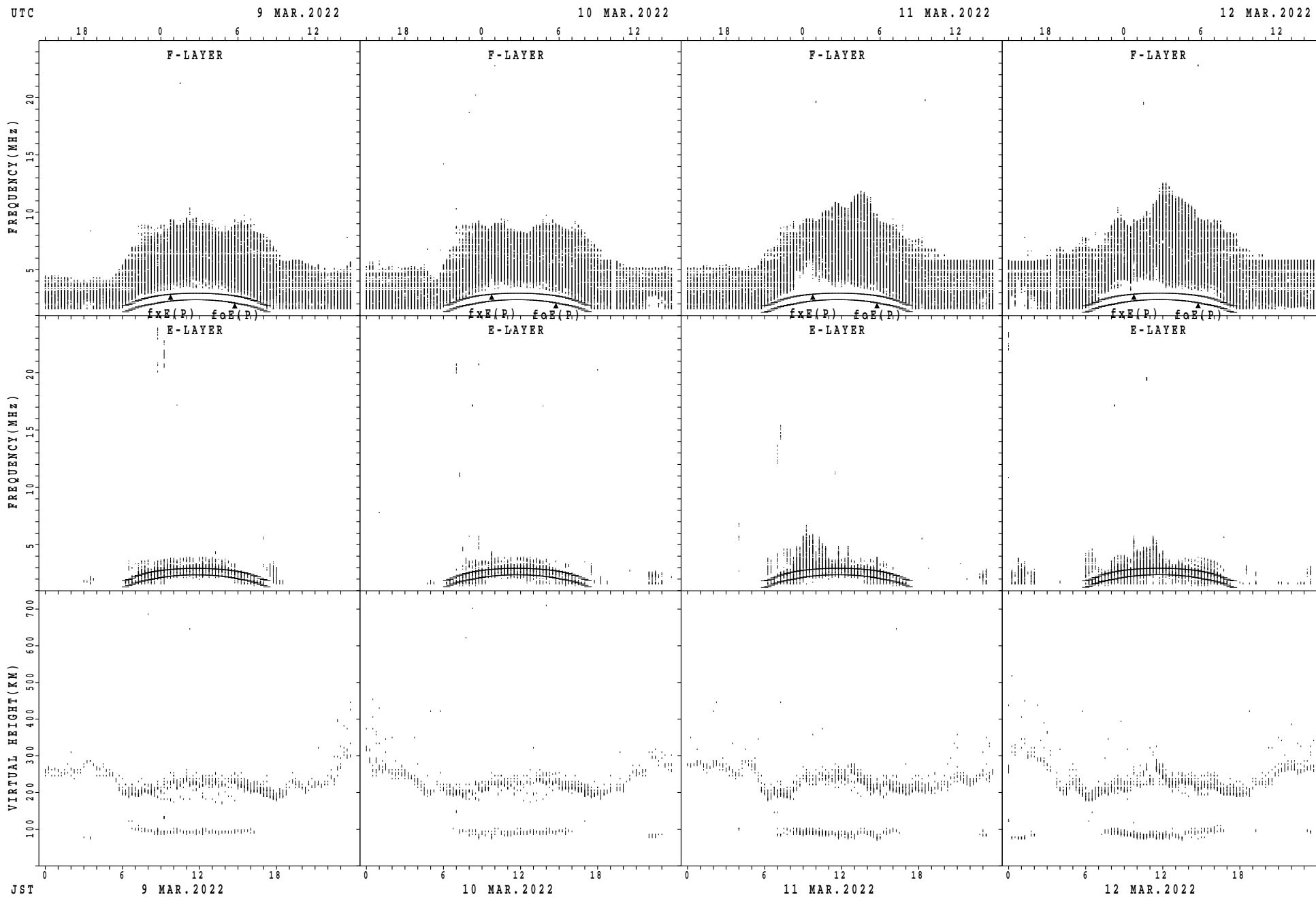
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



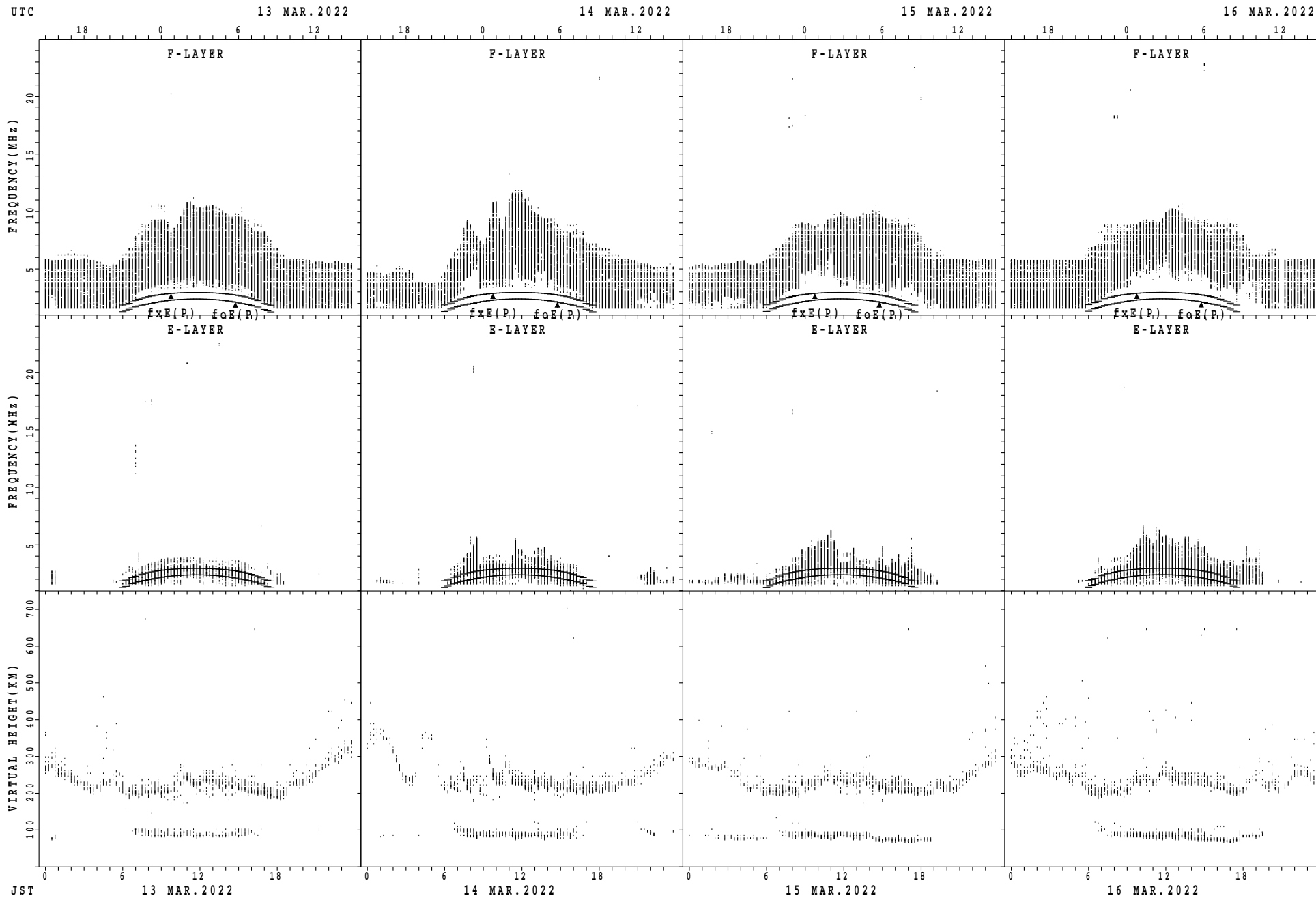
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



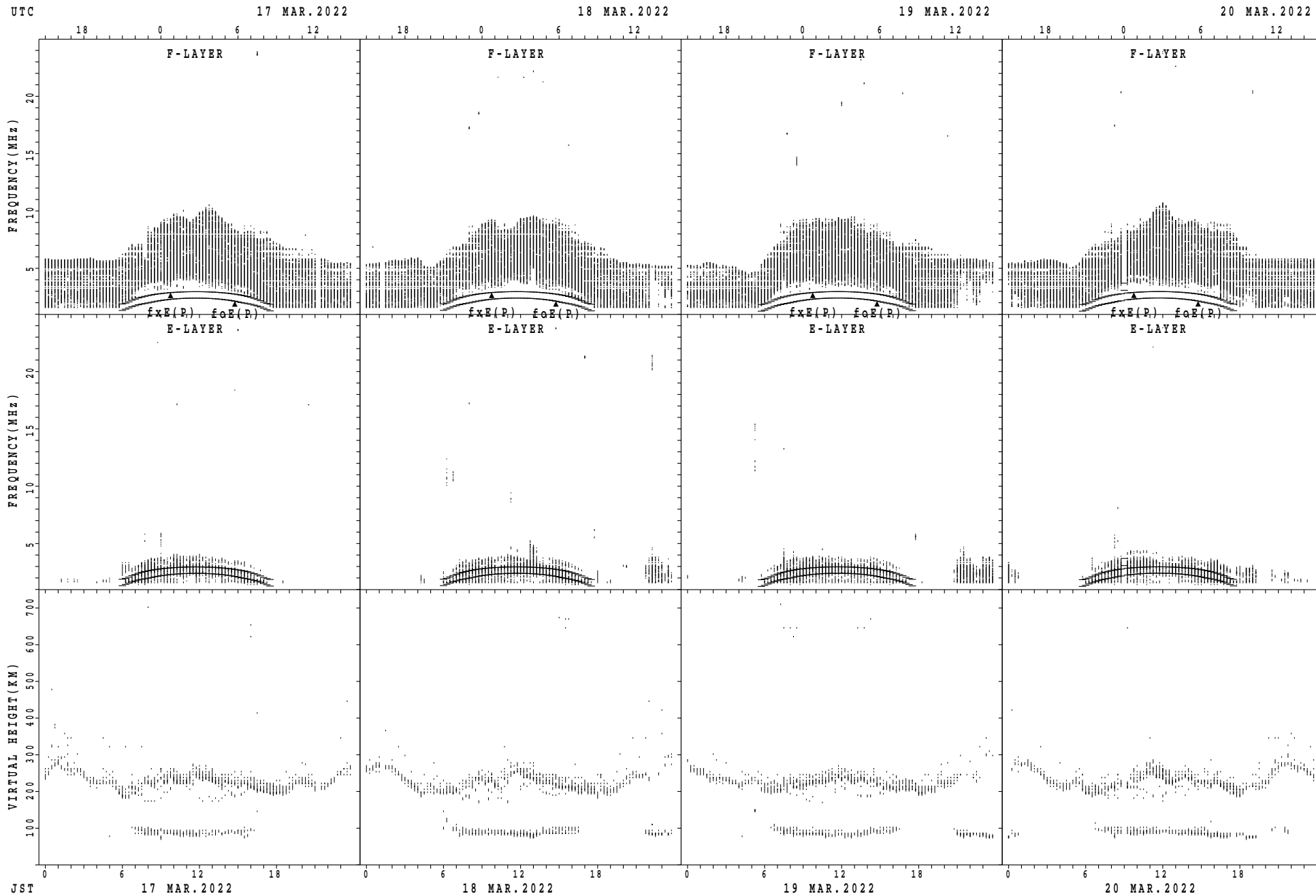
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



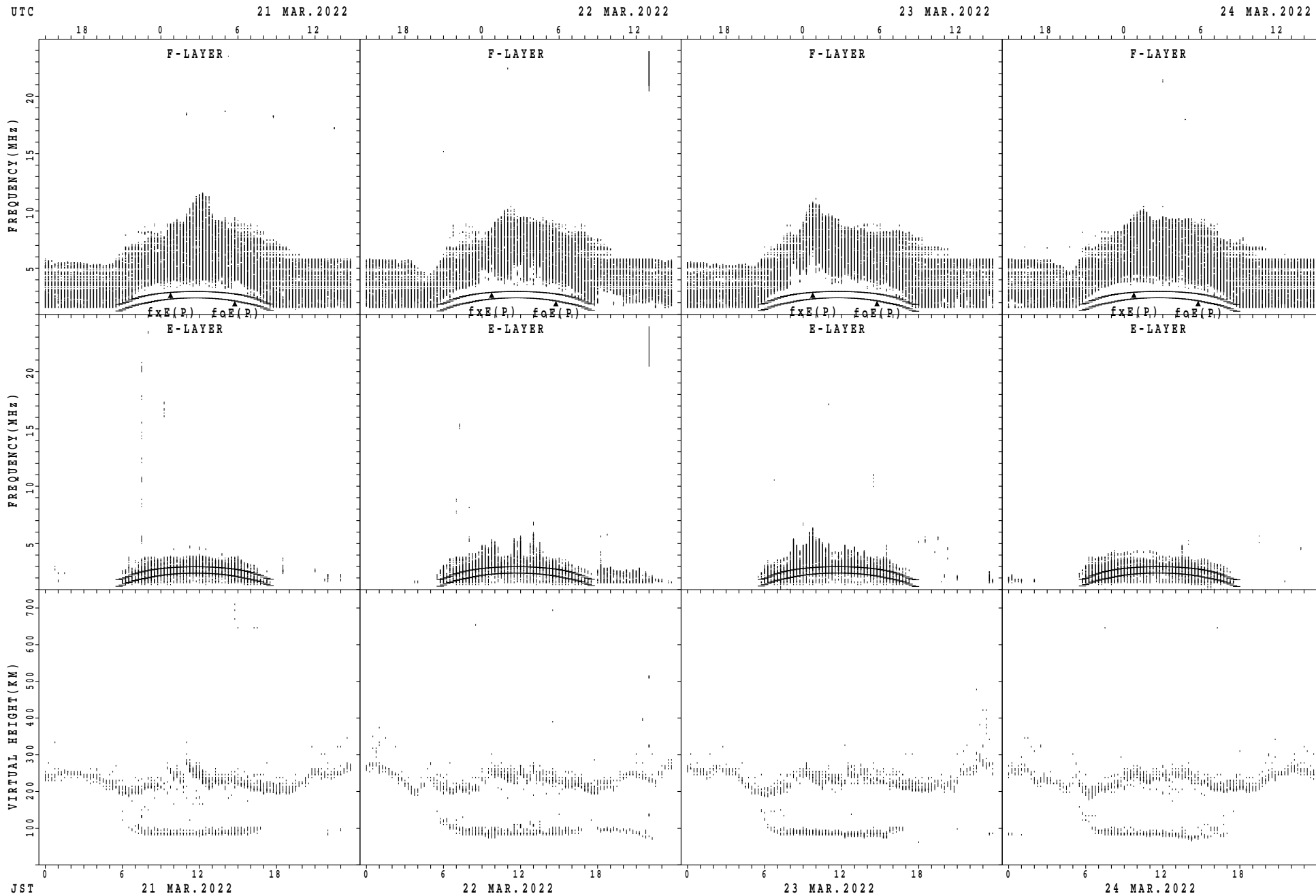
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



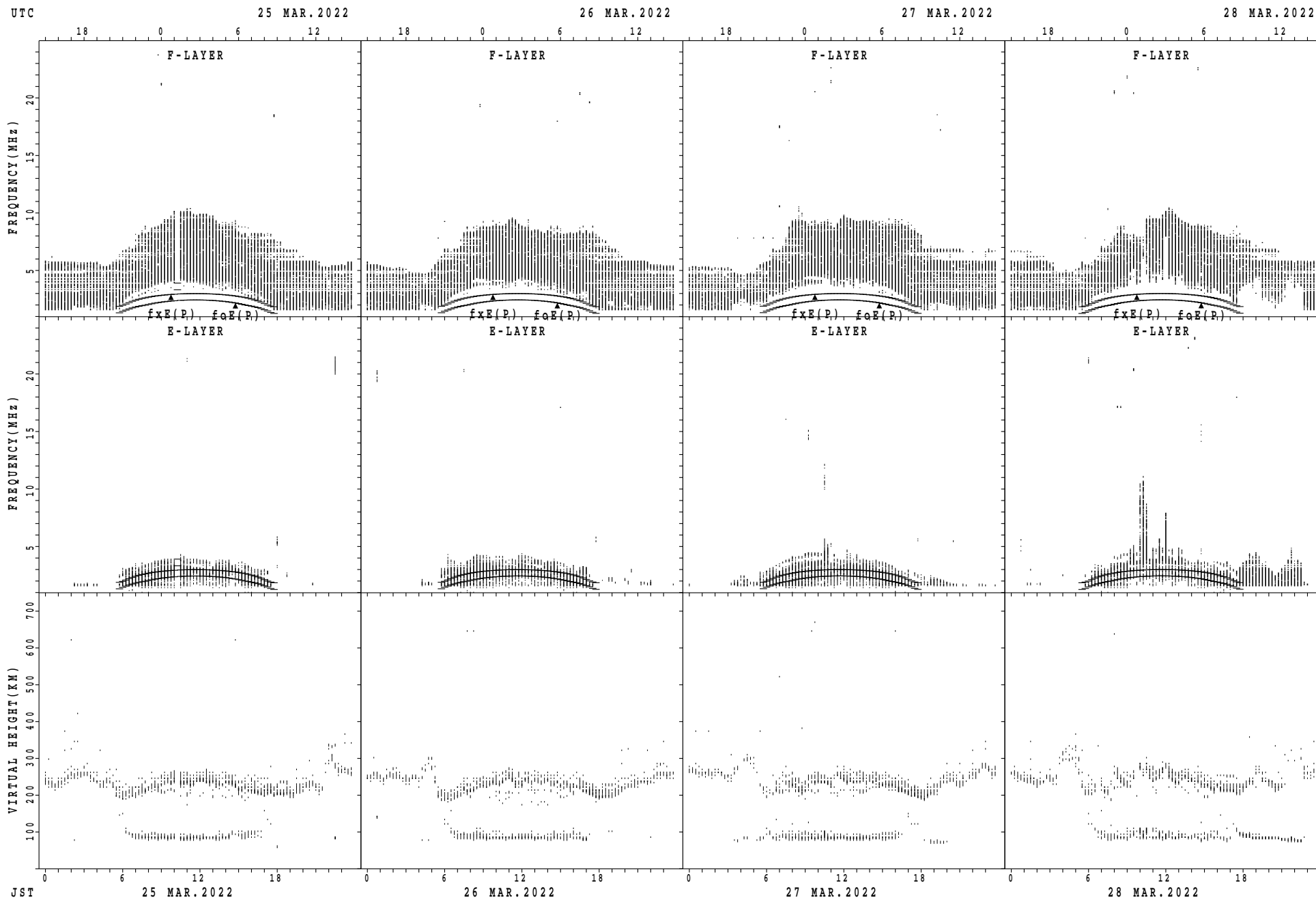
$fxE(P)$; PREDICTED VALUE FOR fxE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



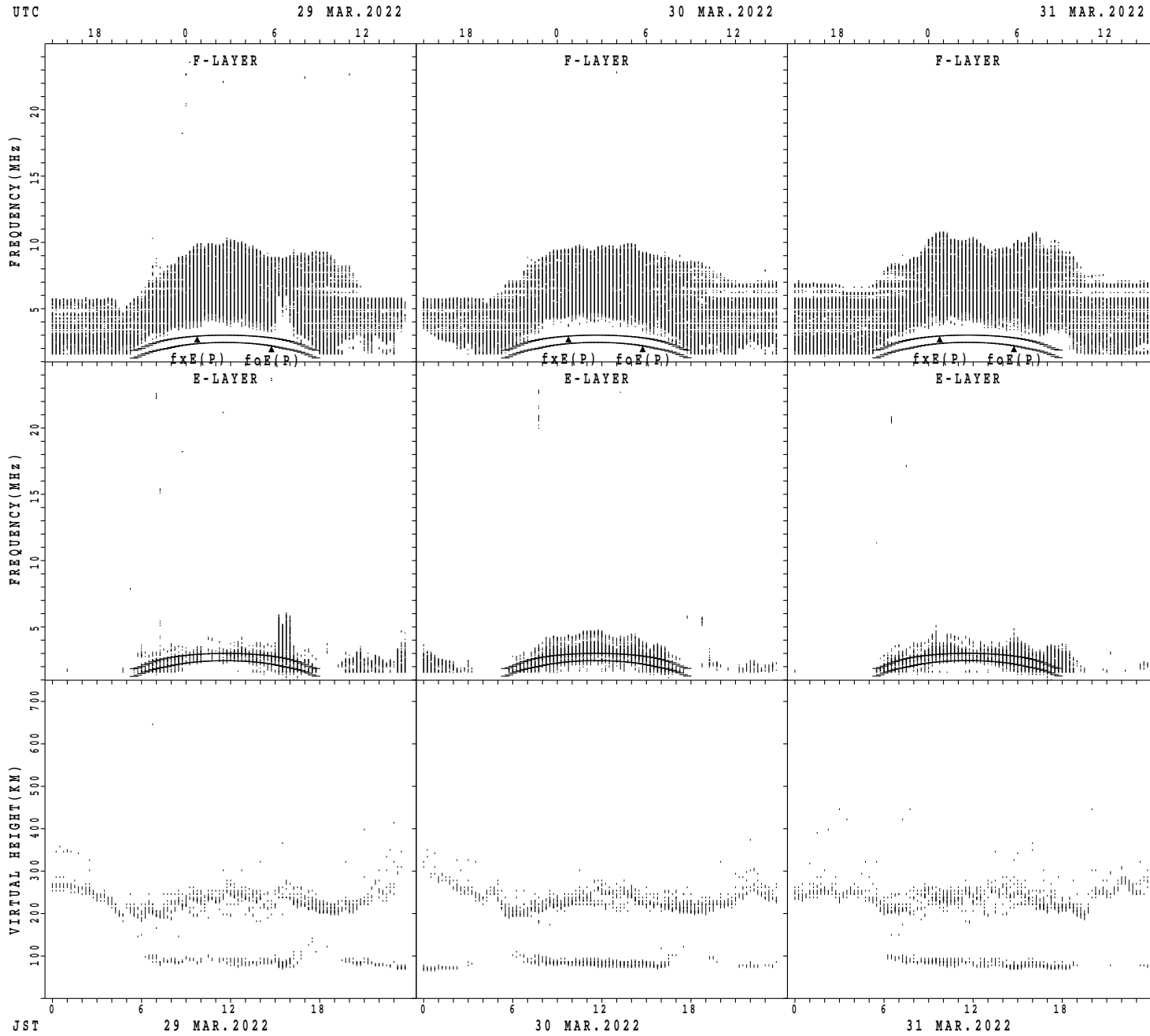
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



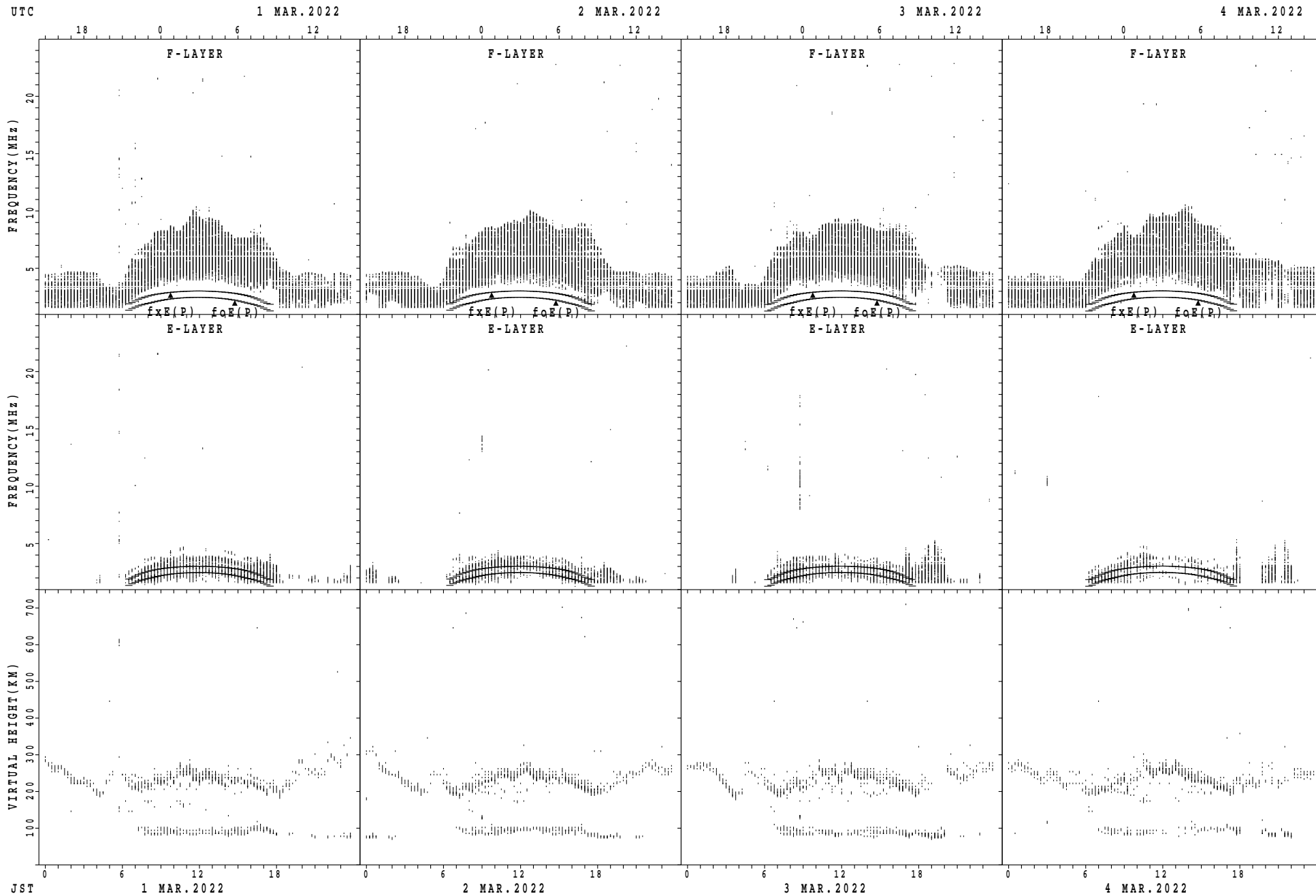
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



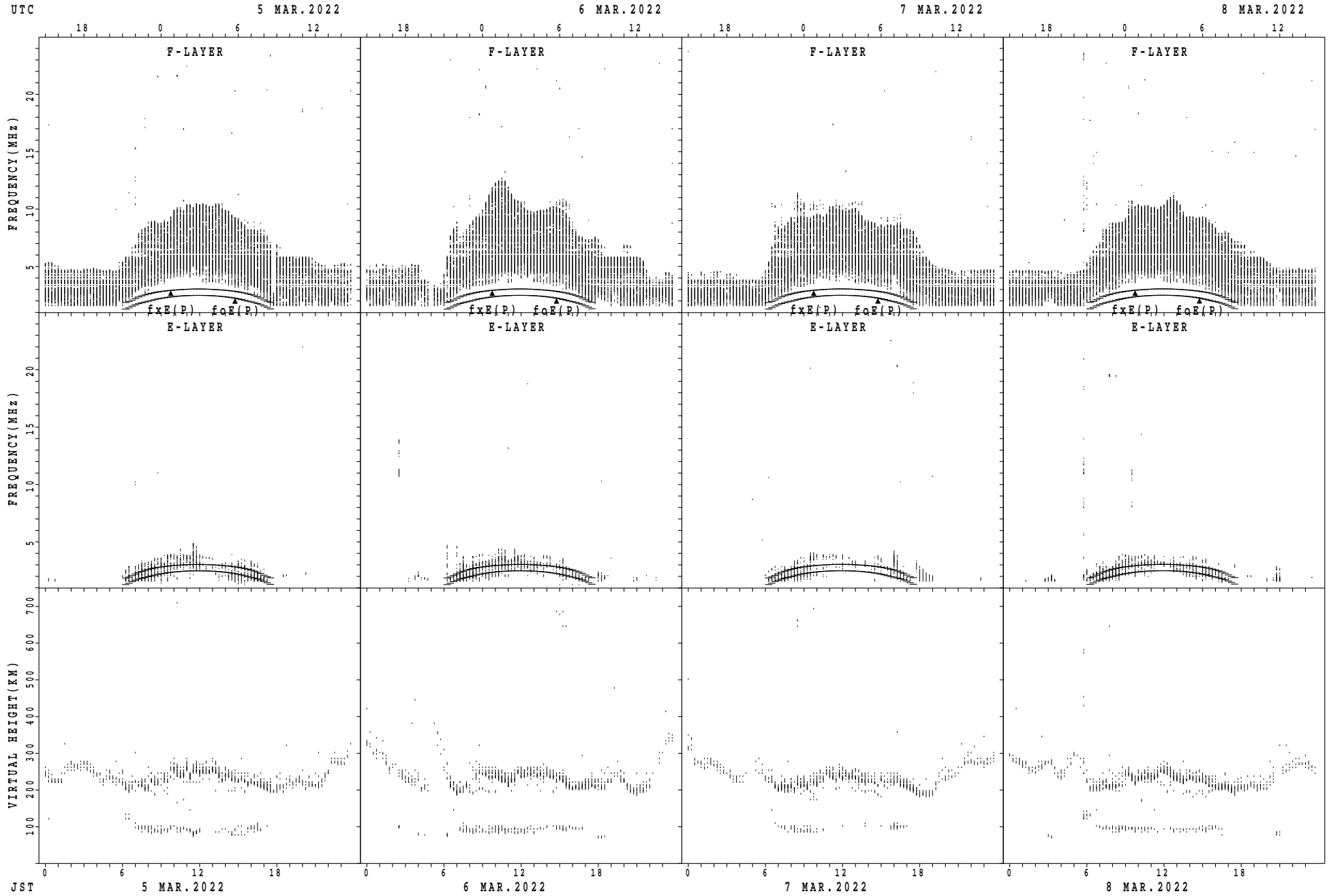
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



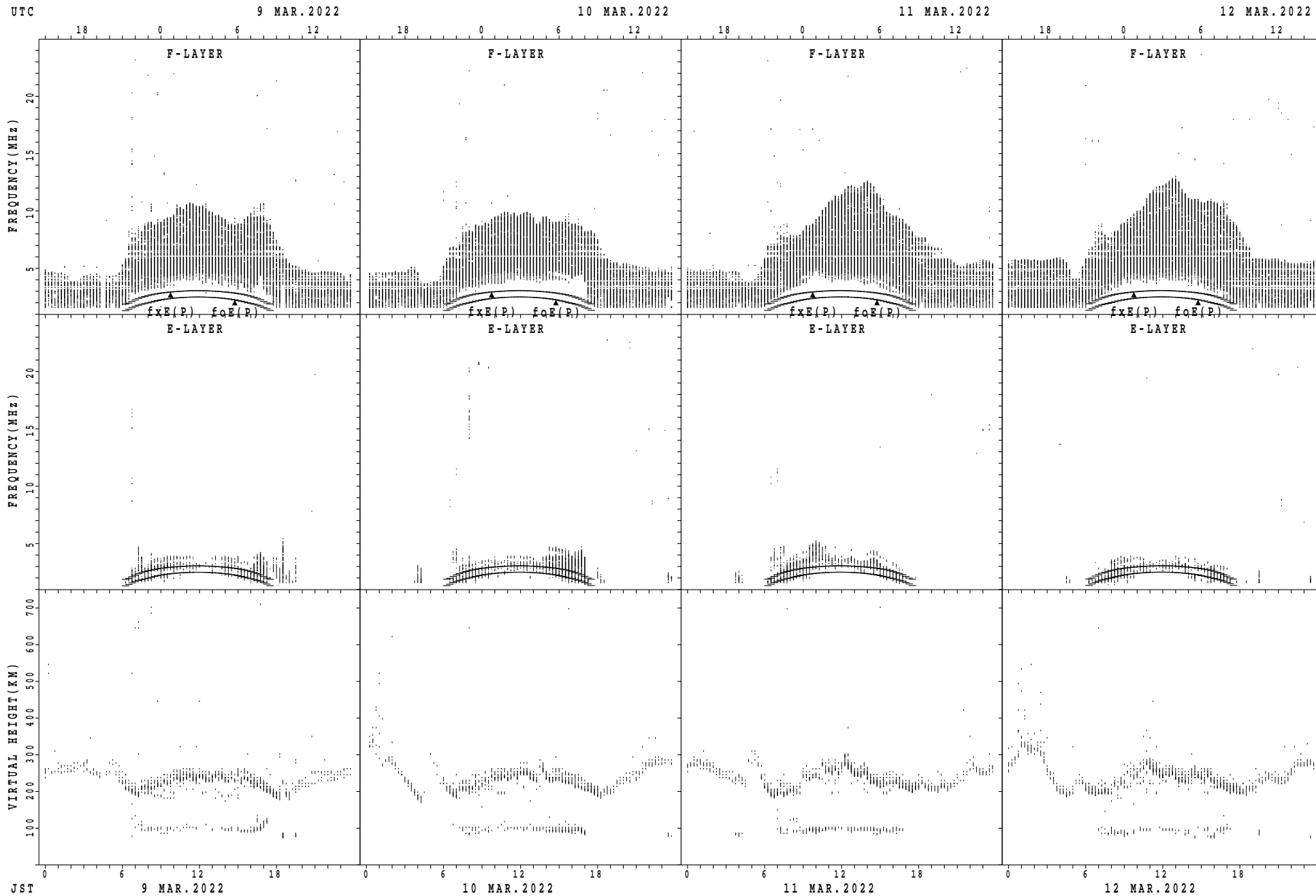
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



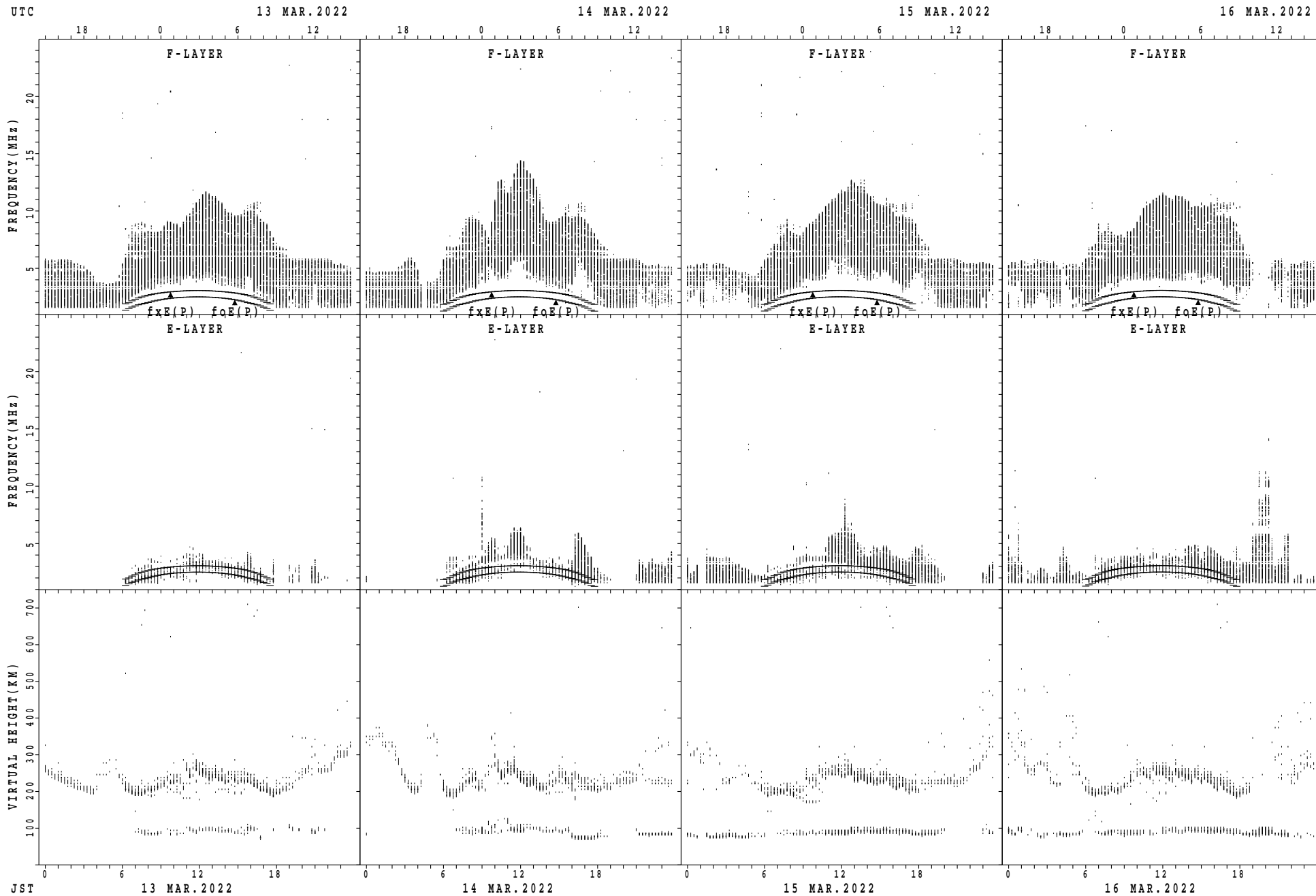
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



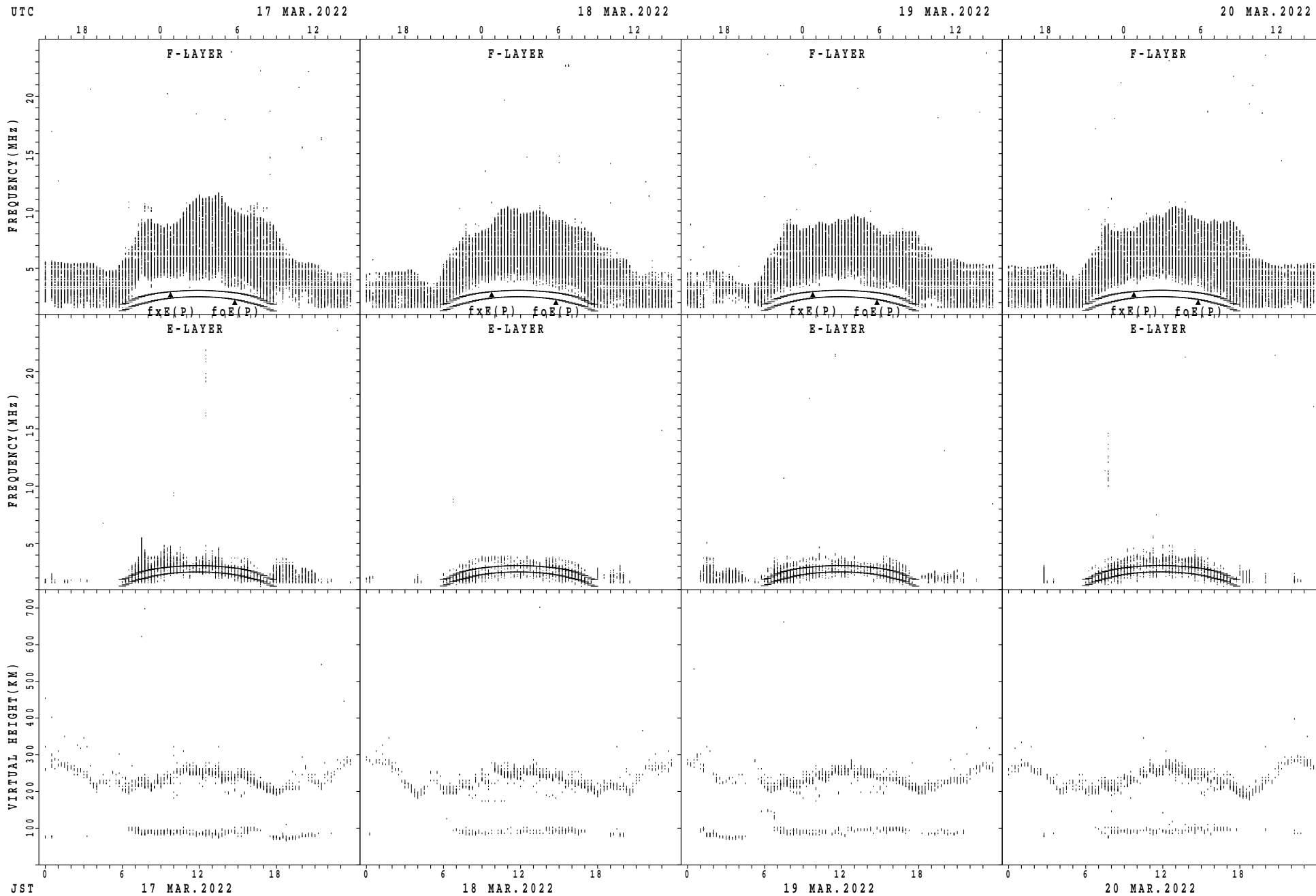
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



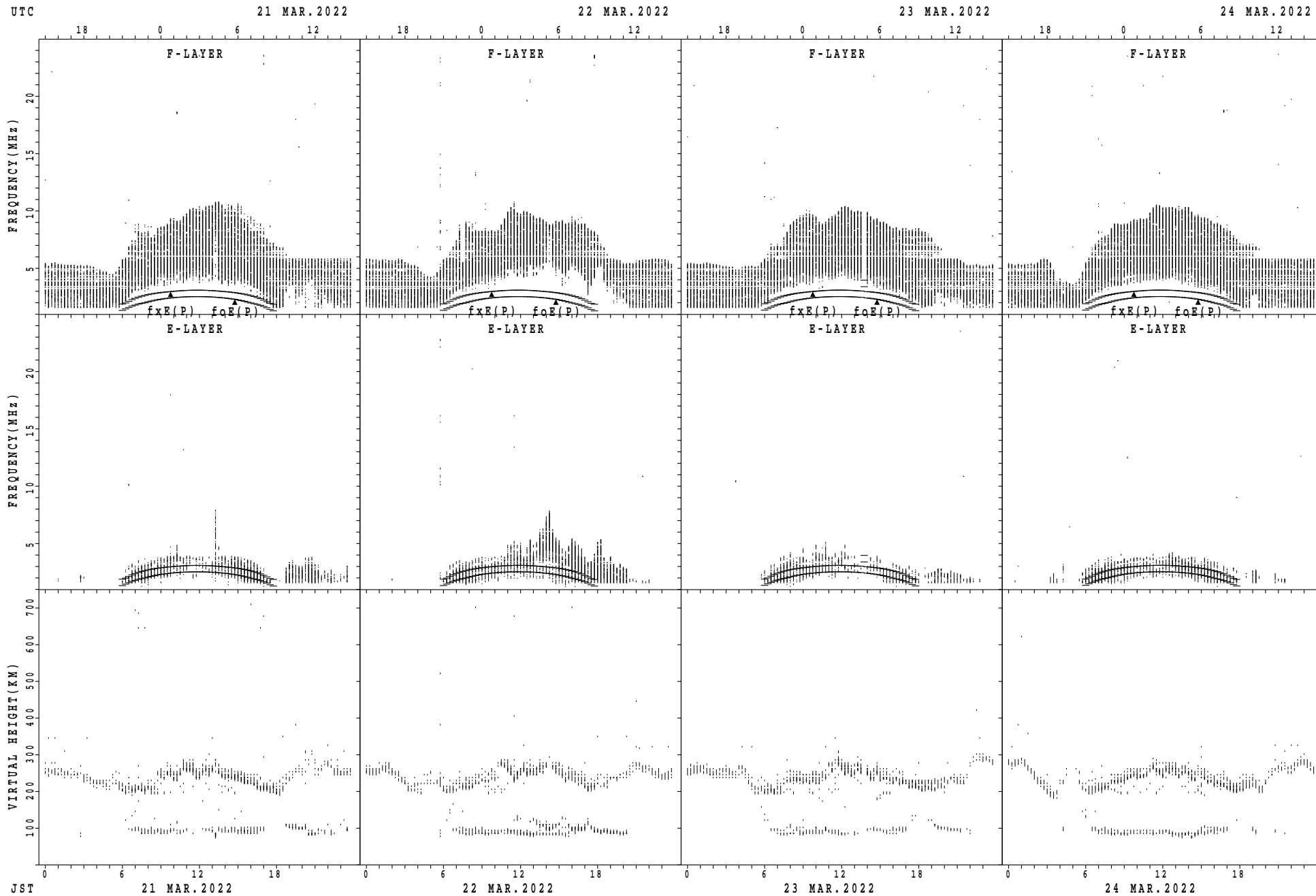
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



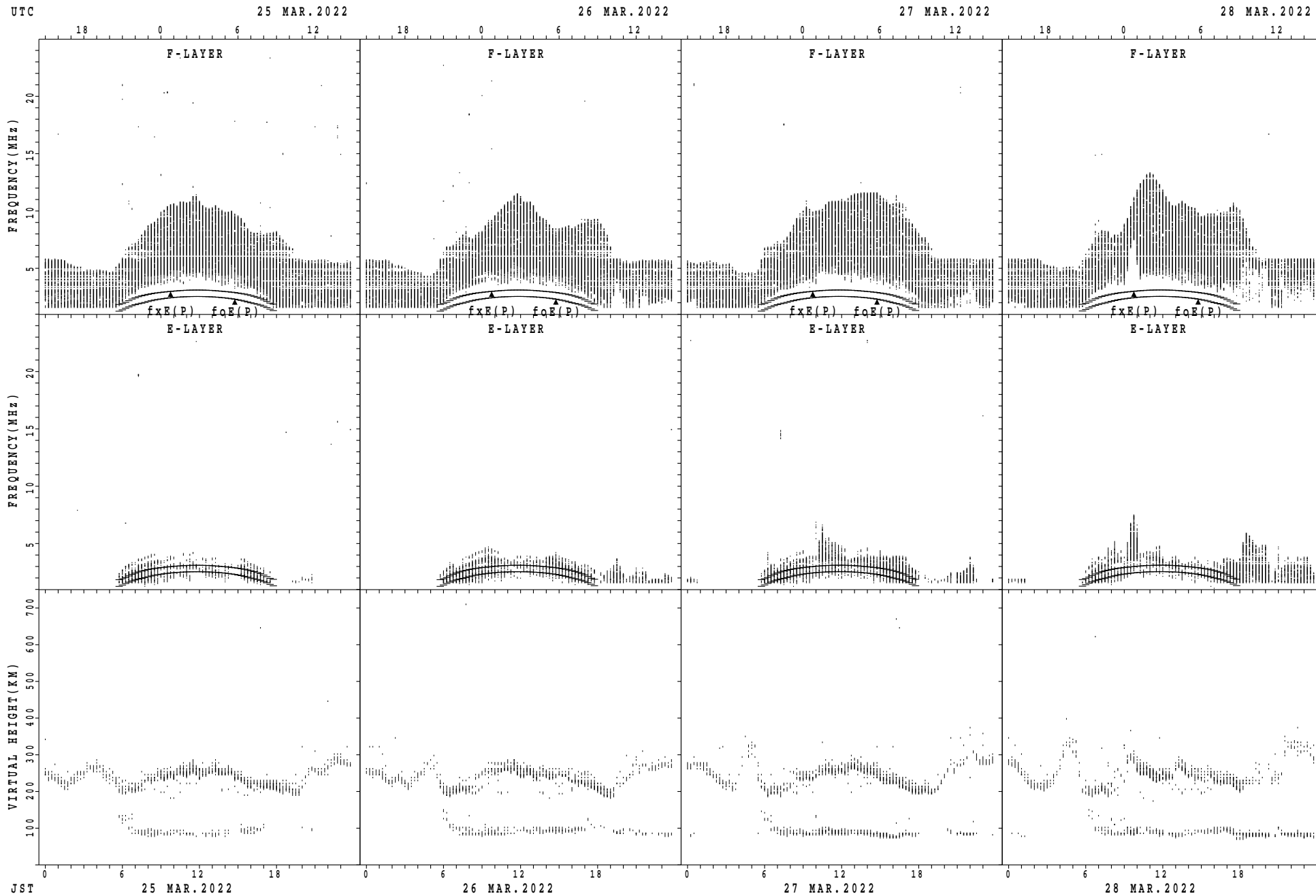
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



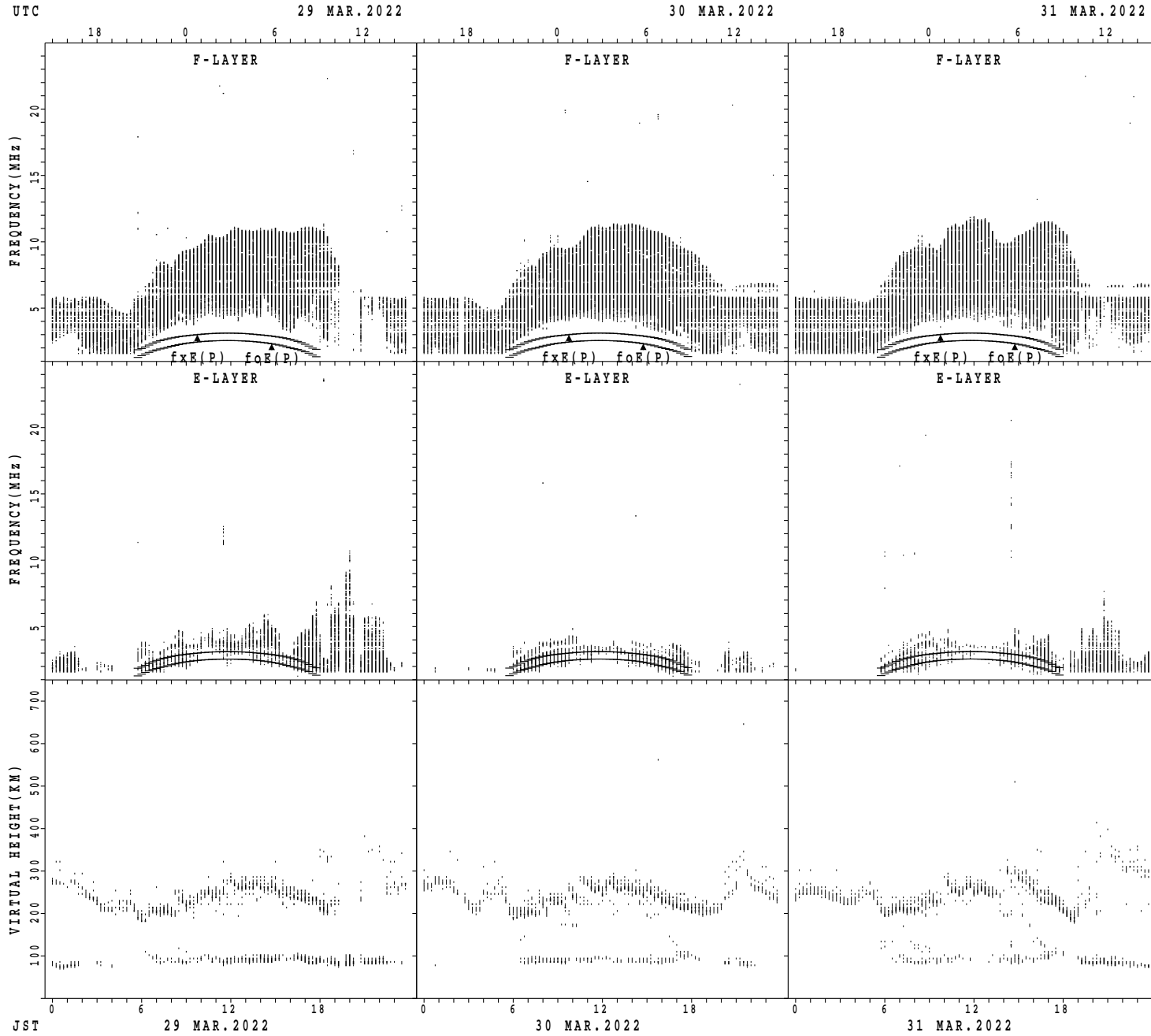
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



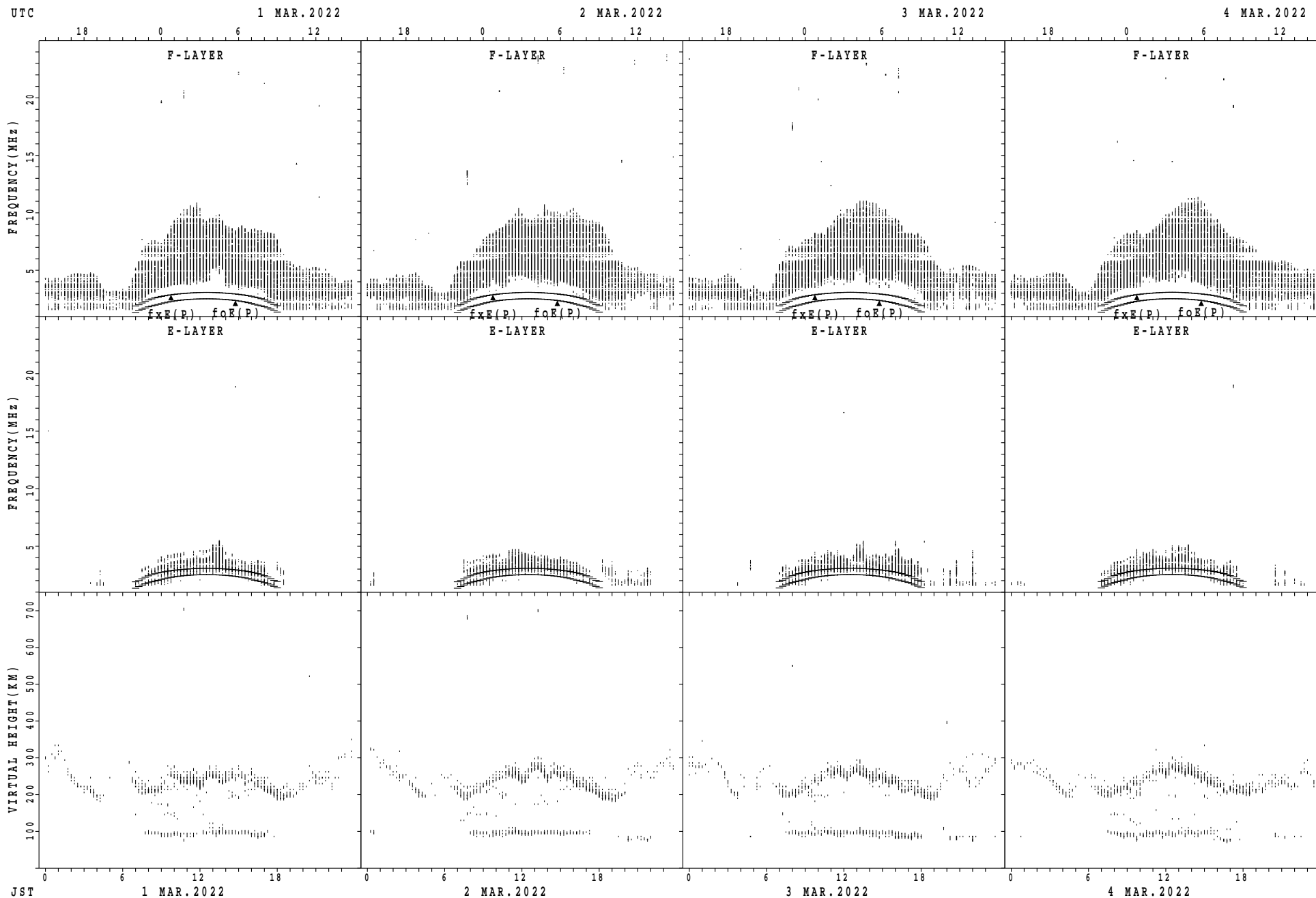
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



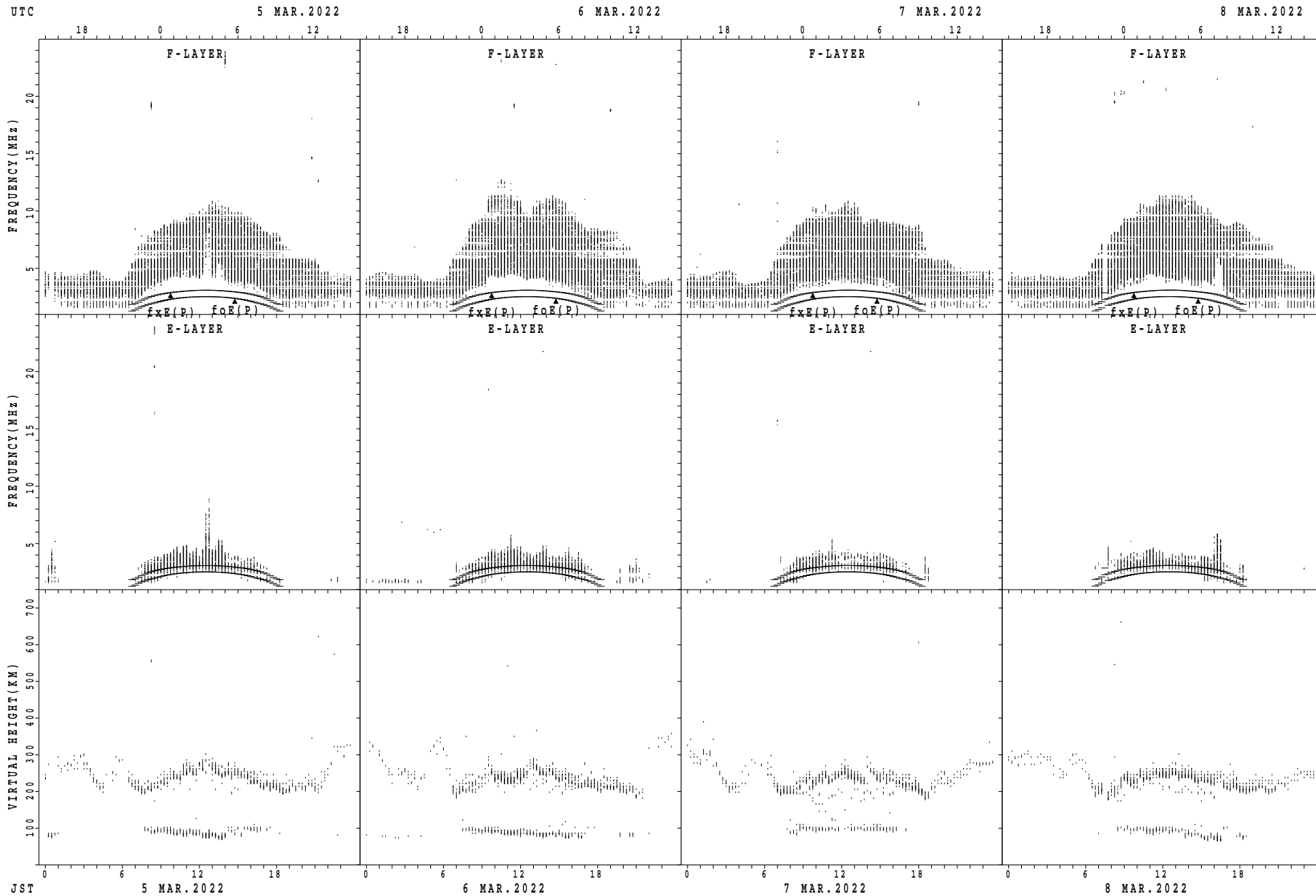
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



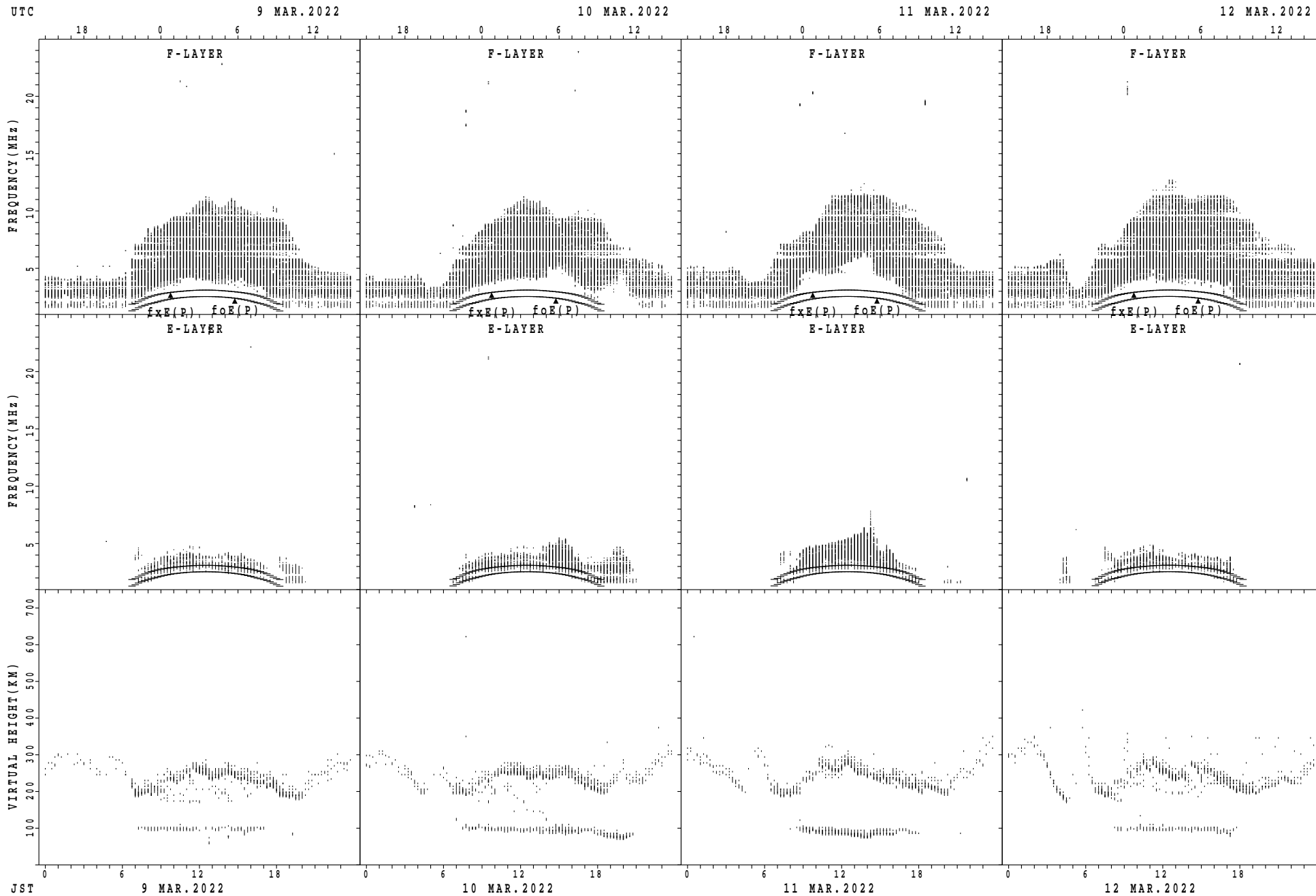
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



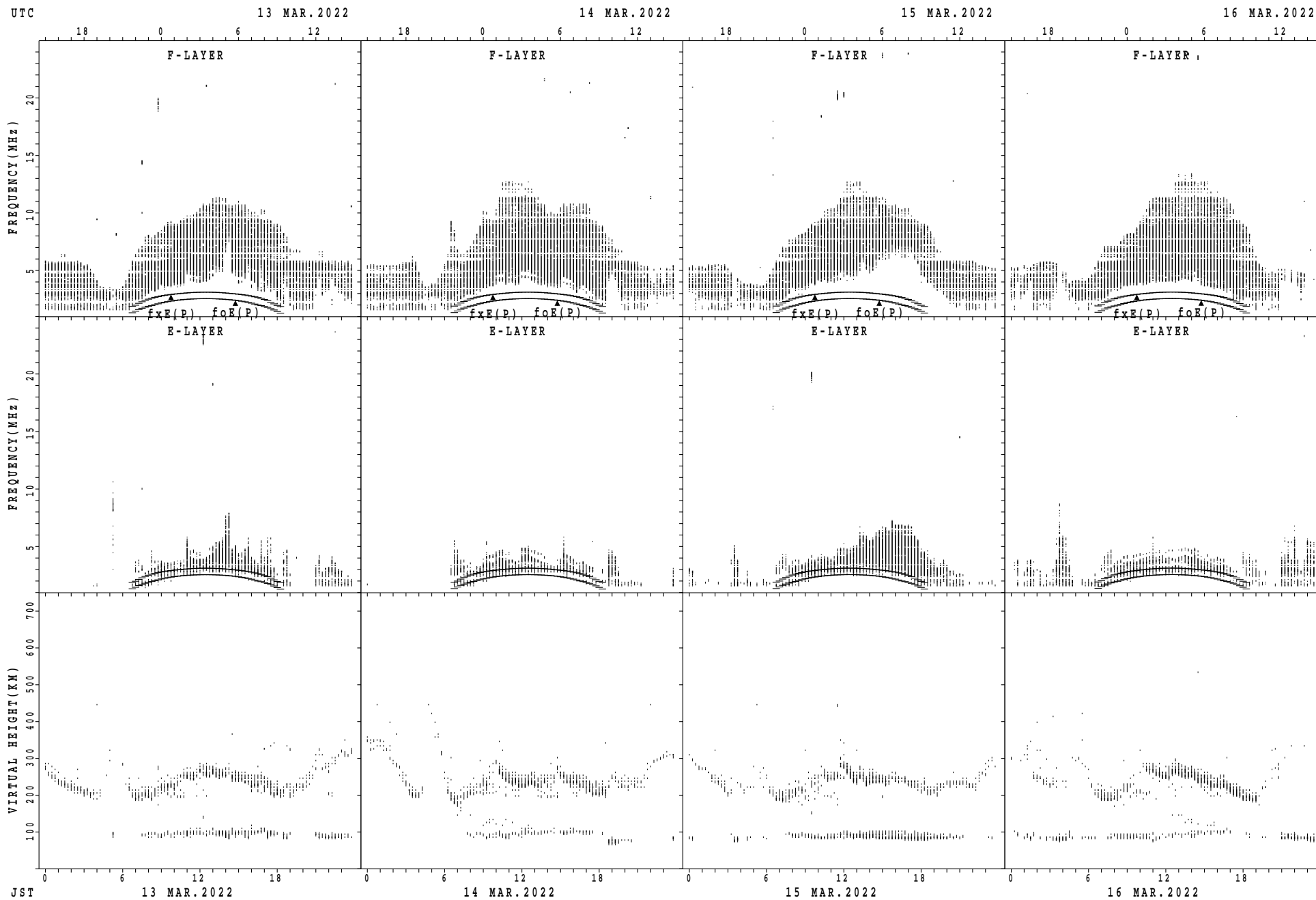
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



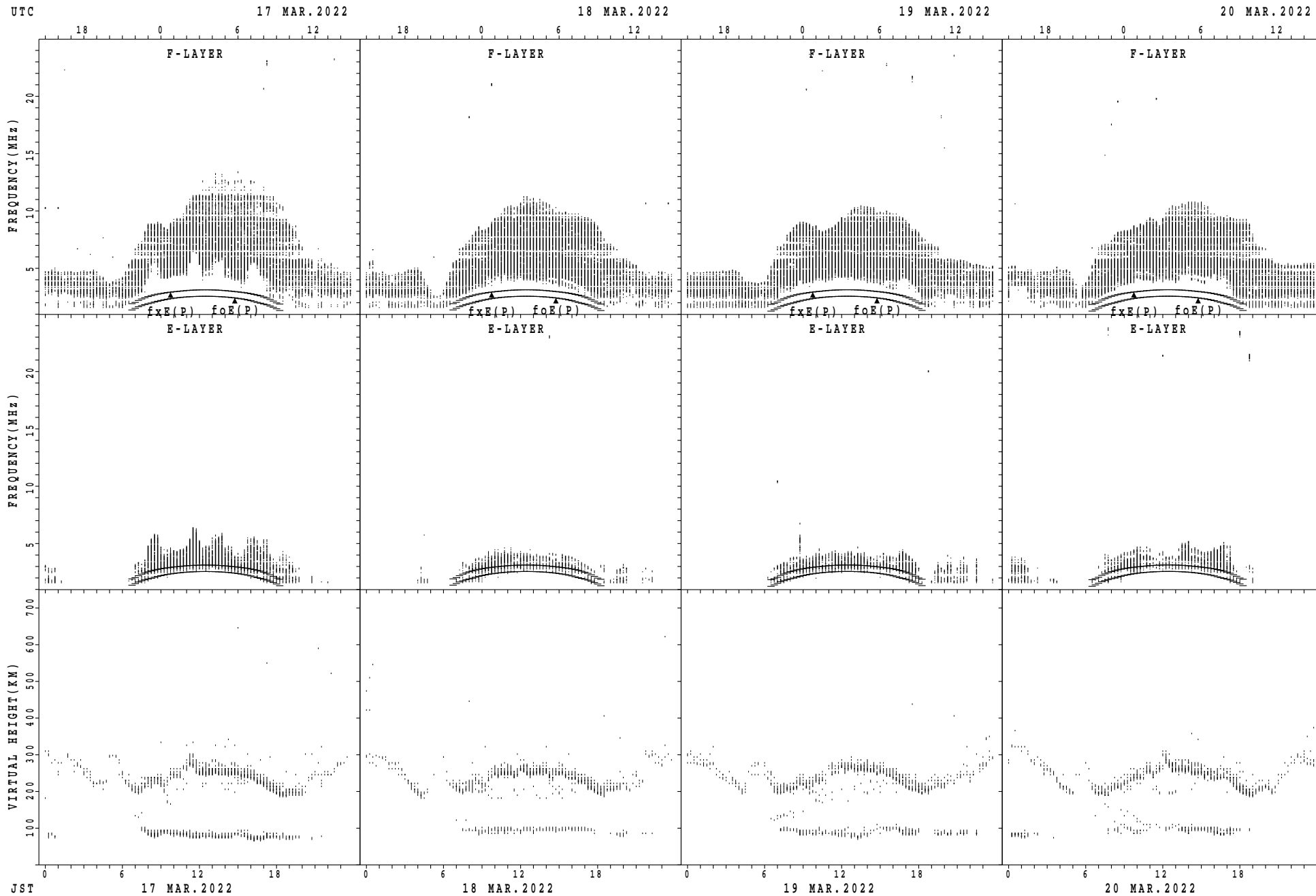
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



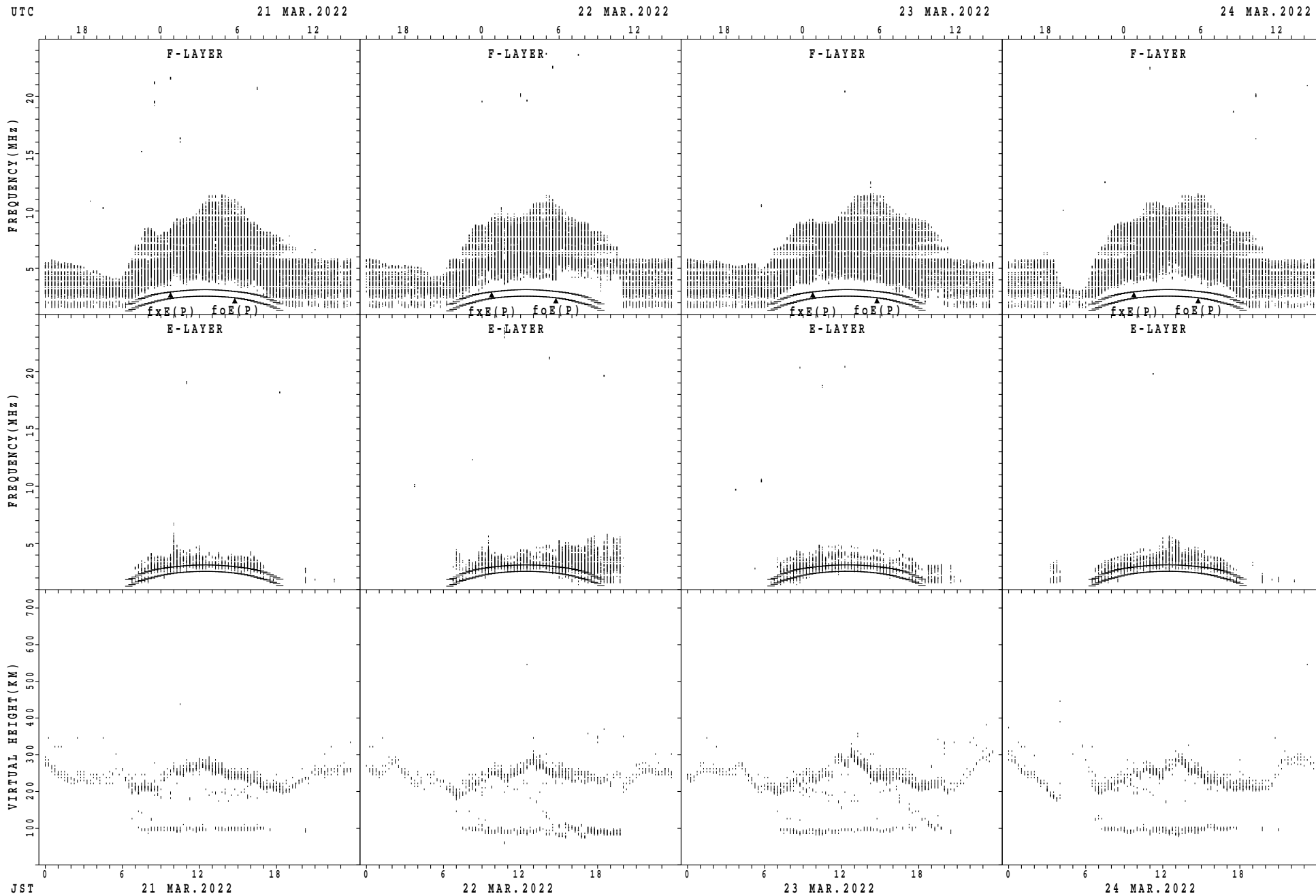
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



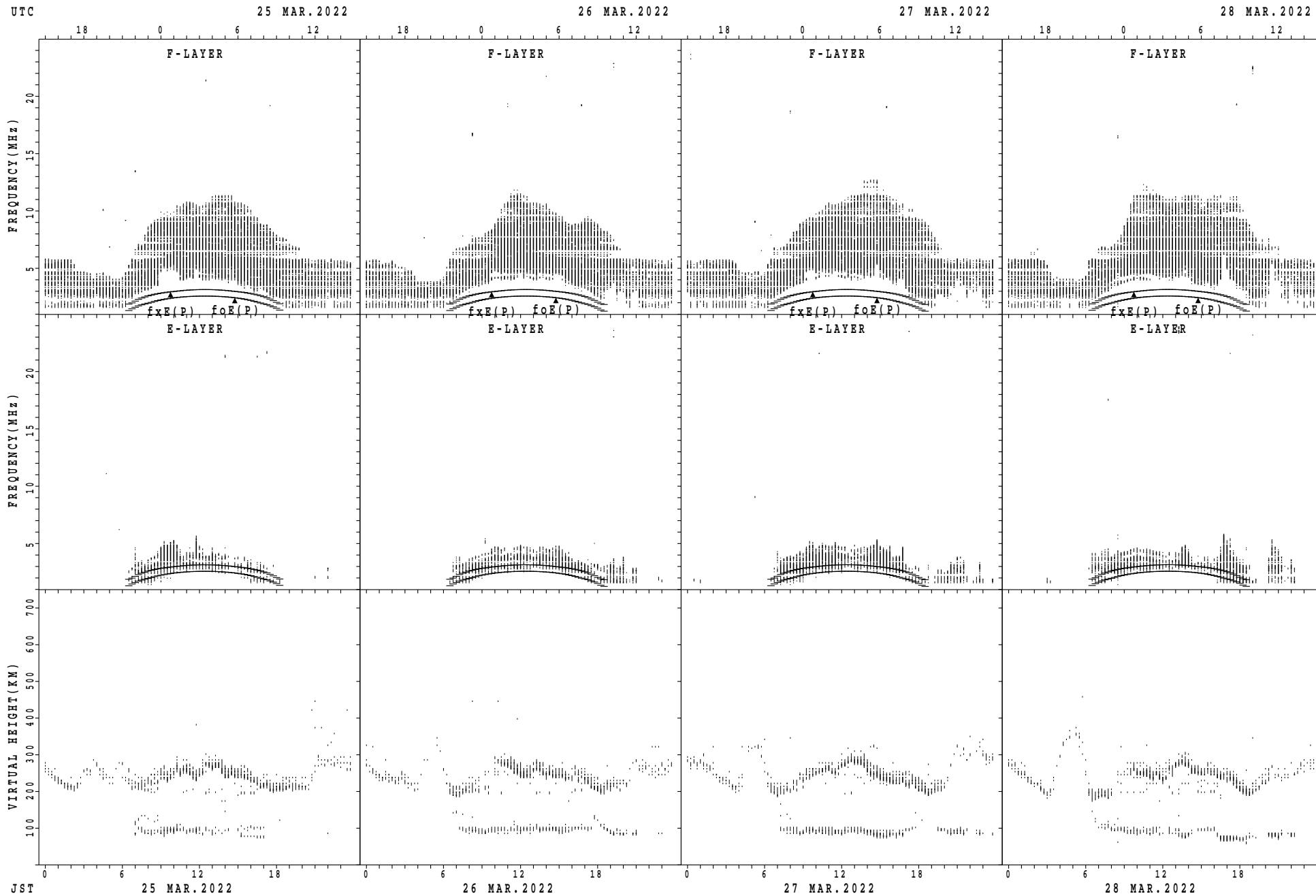
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



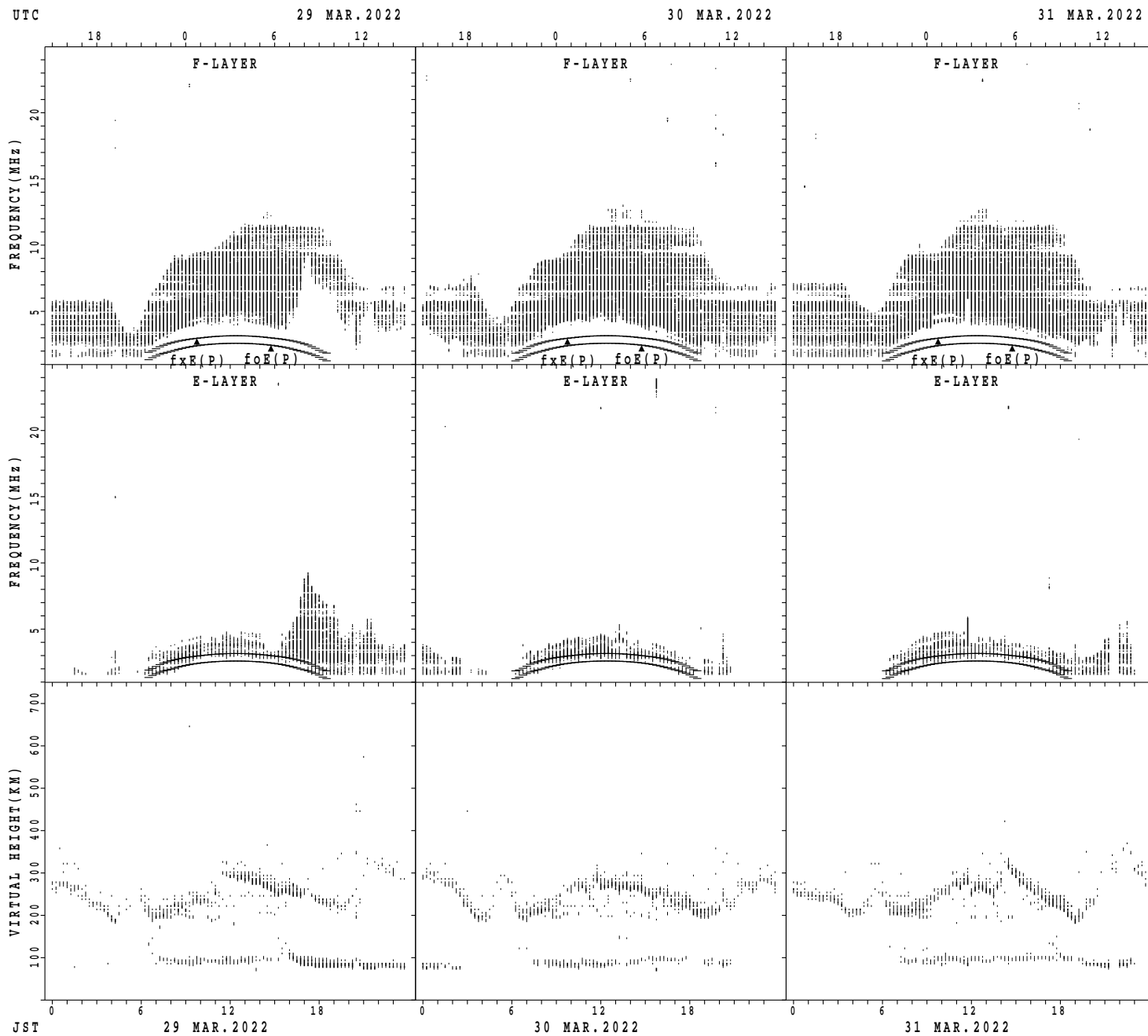
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



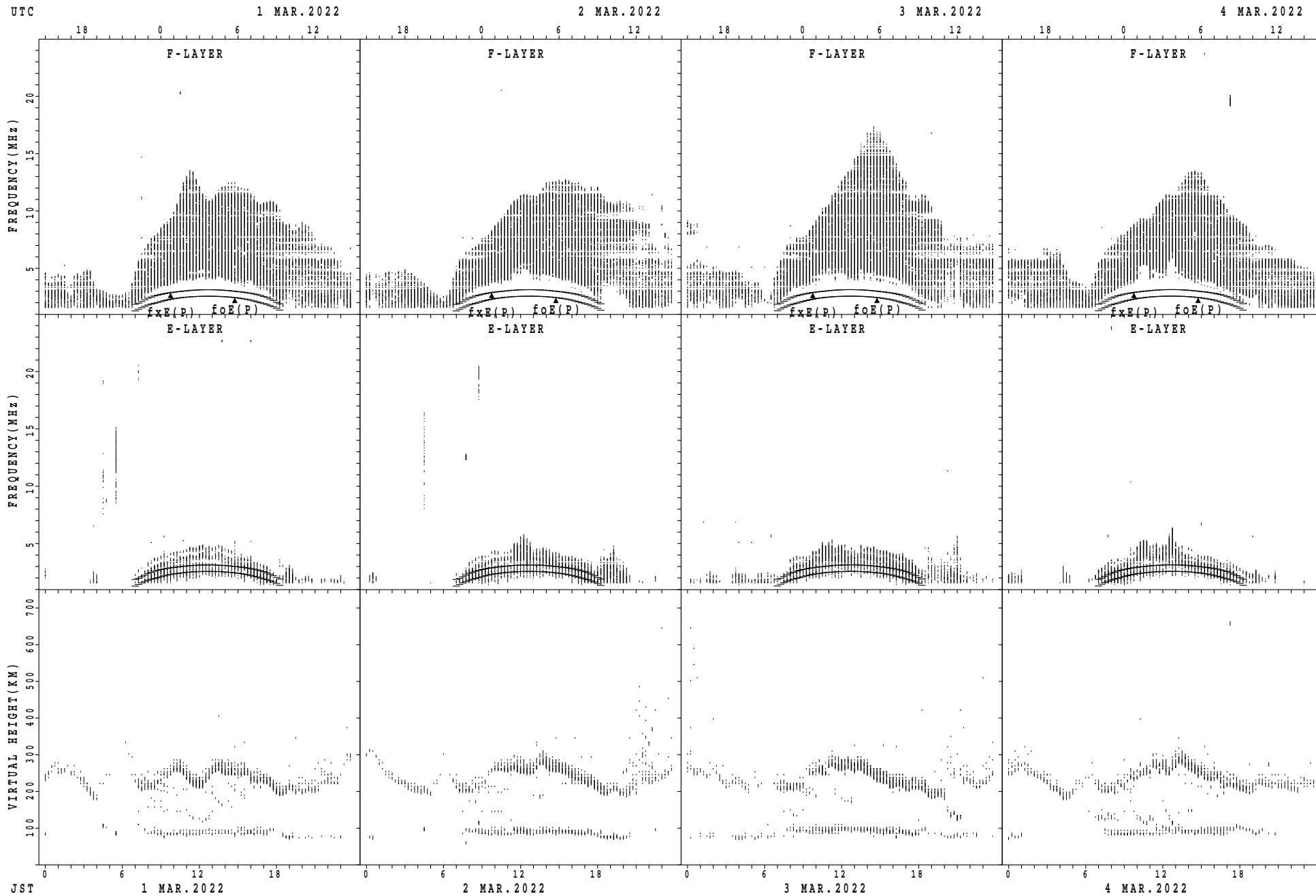
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



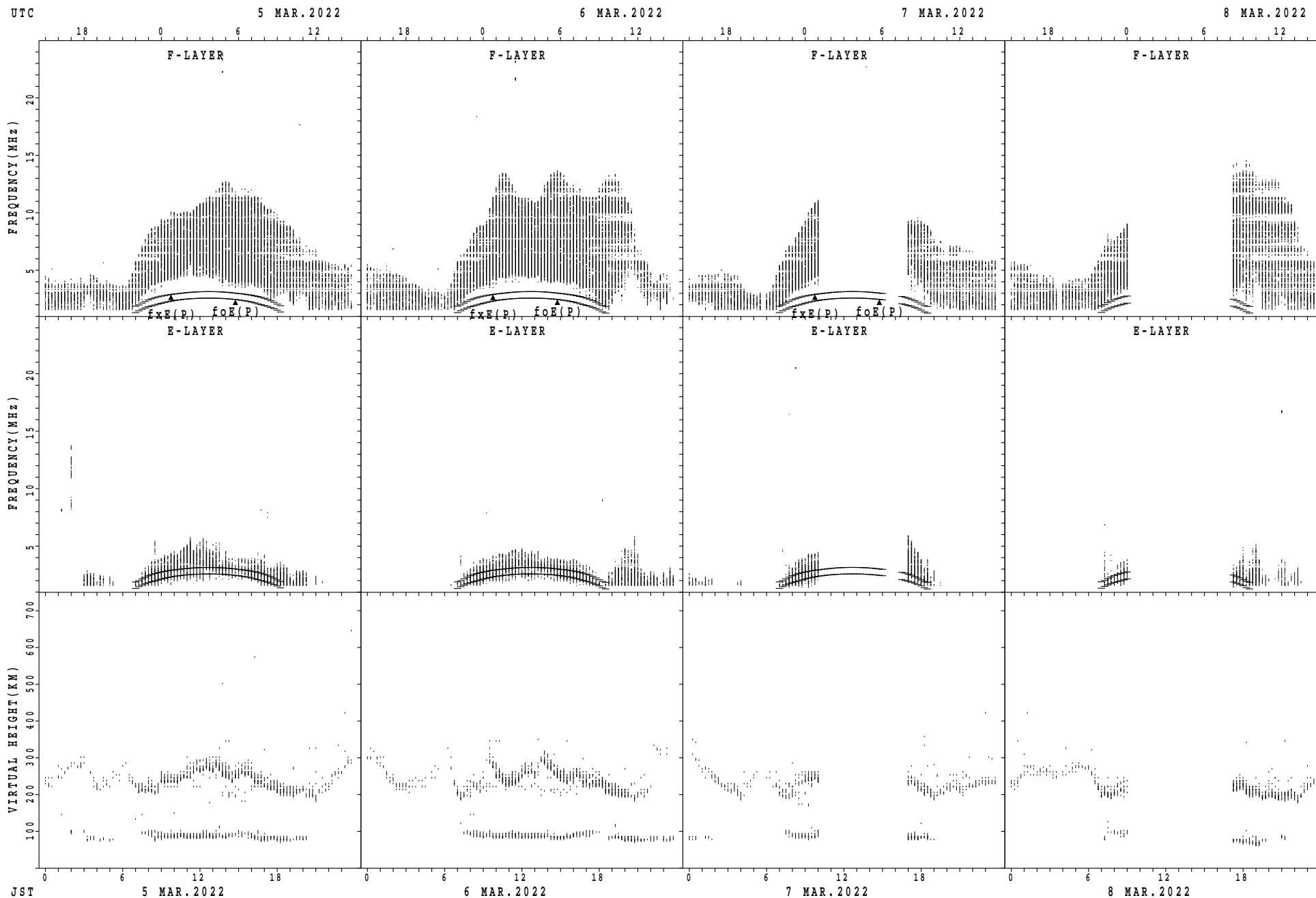
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



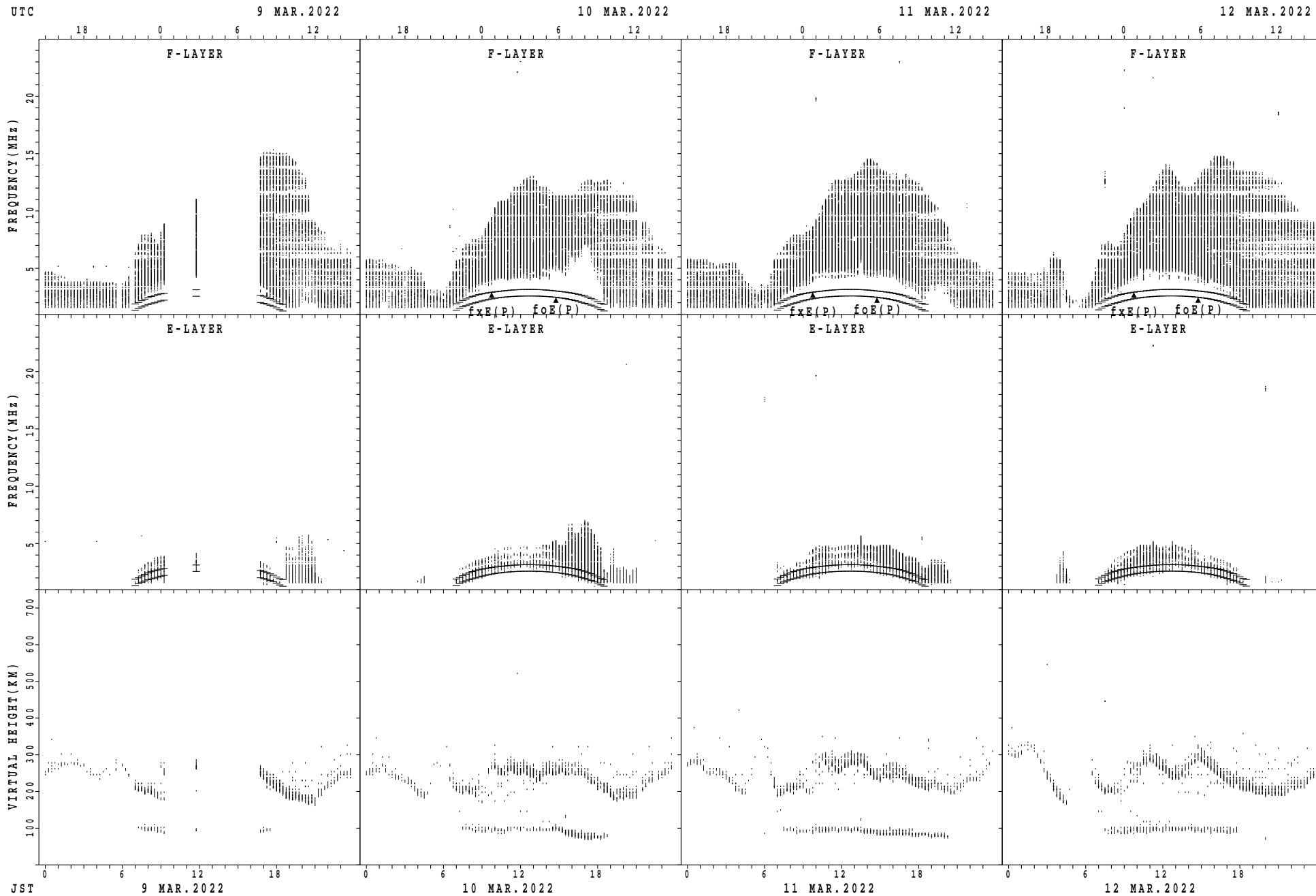
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



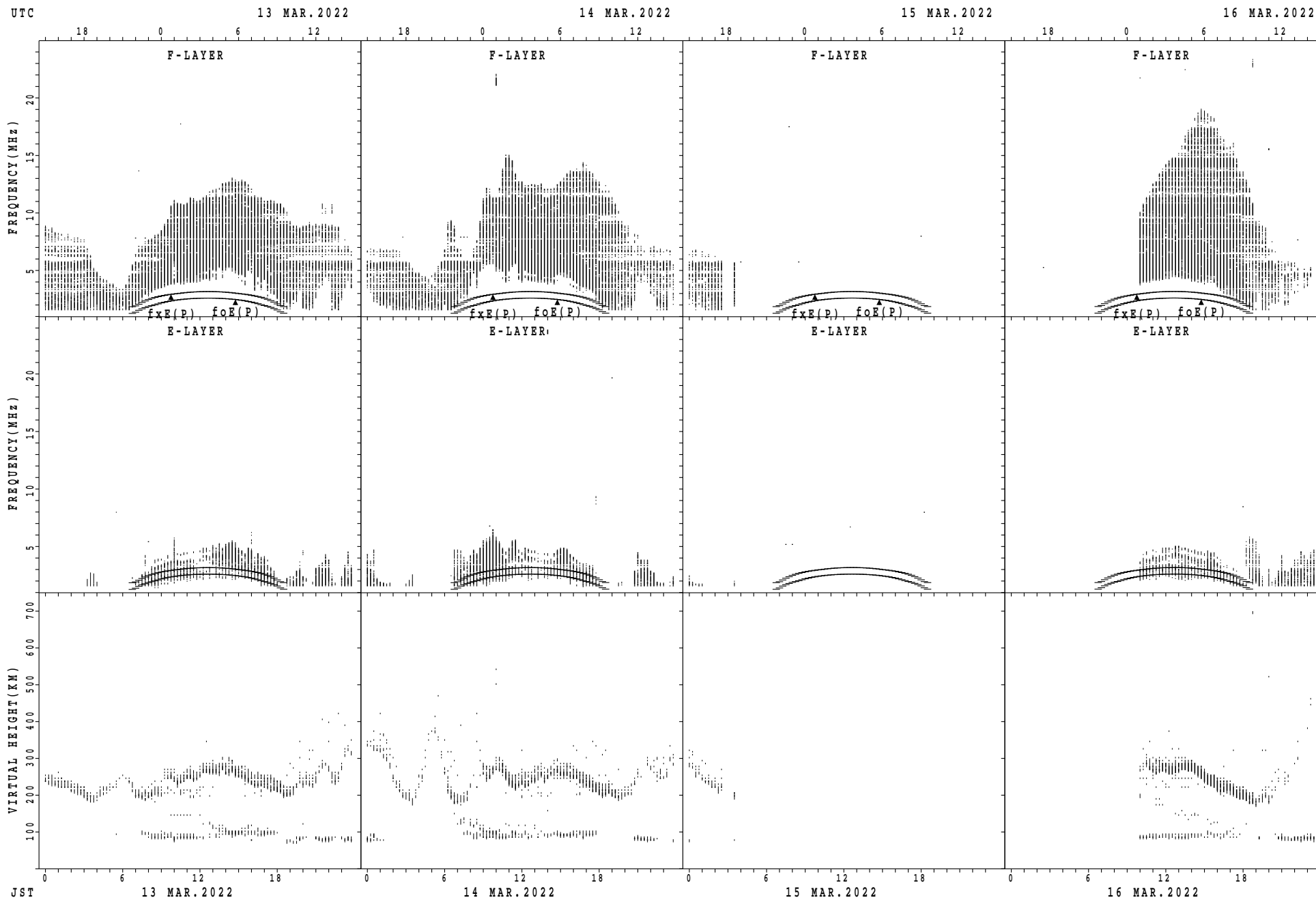
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



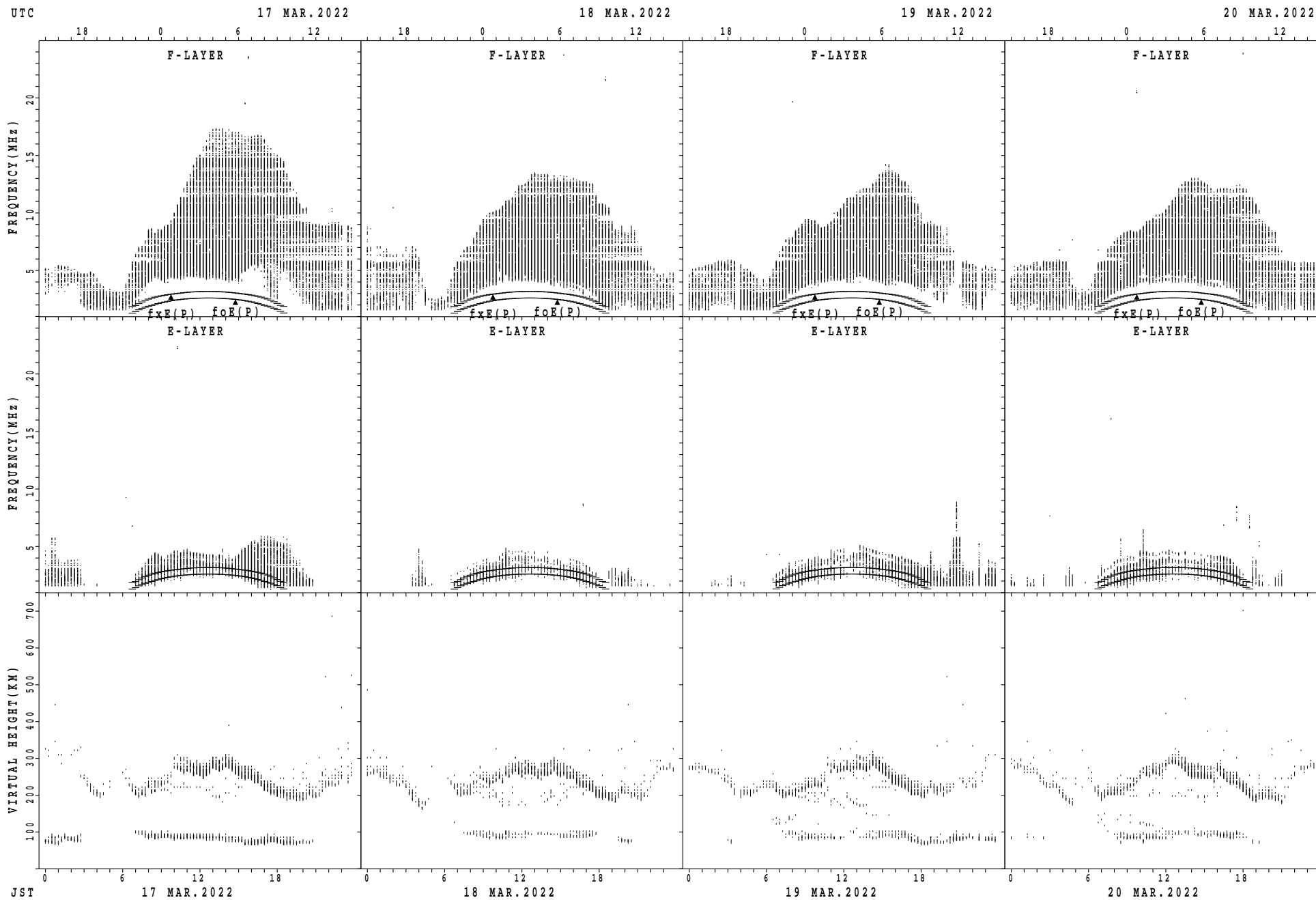
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



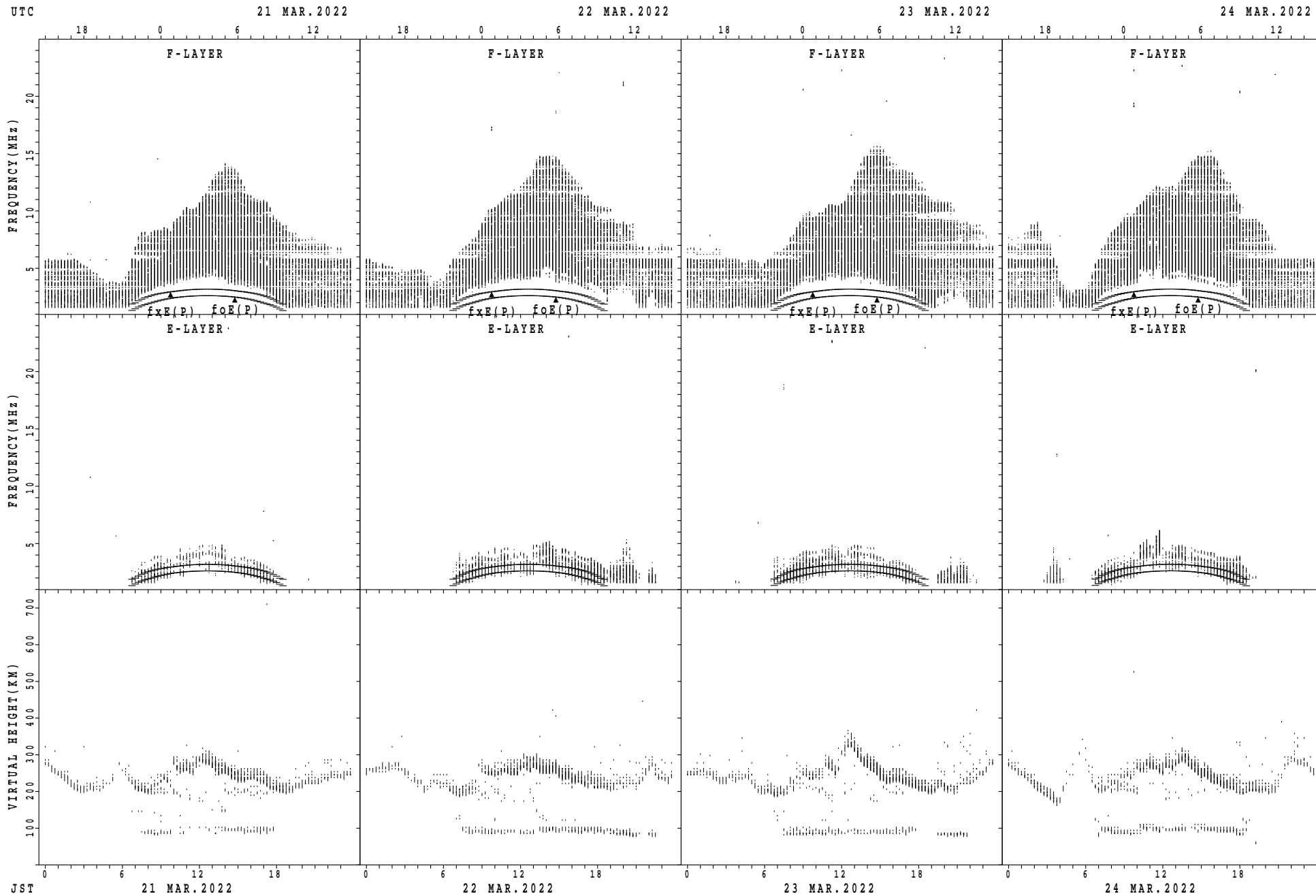
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



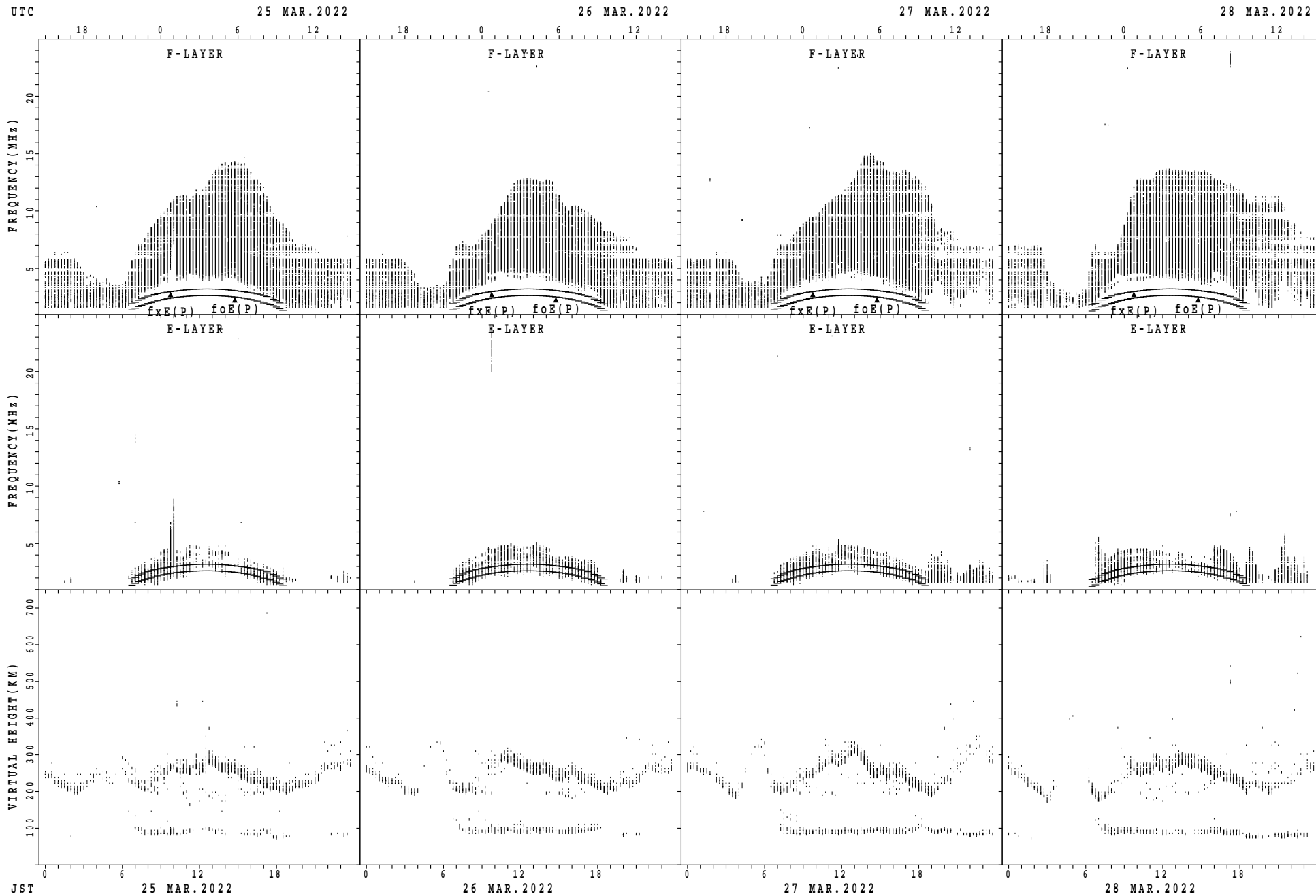
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



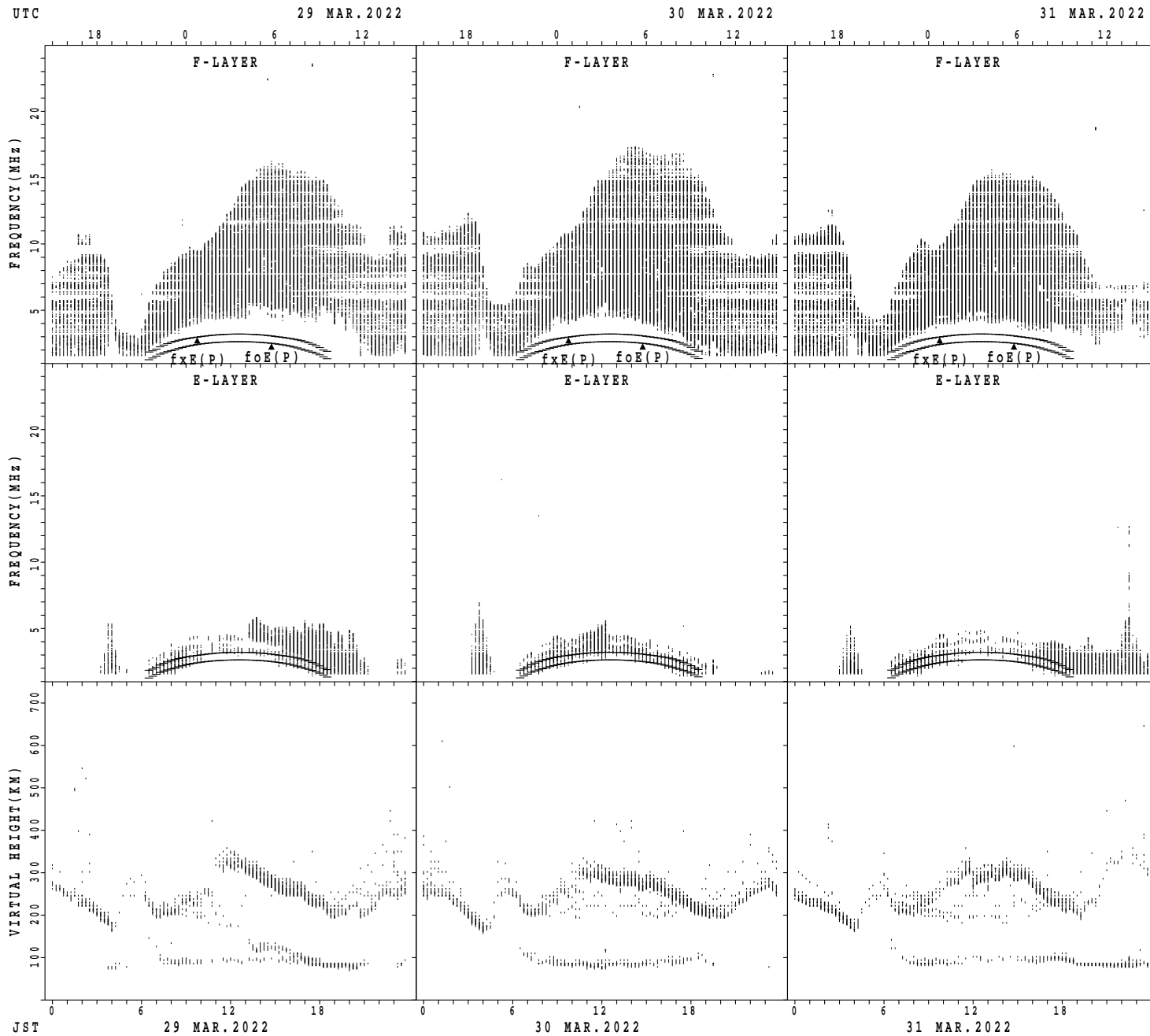
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es
 MAR. 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		5	14	30	6						22	31	24	13	3	2	1		1
MED					324		220	224	226	225						224	226	224	236	240	250	296		290
U Q					162		236	234	234	248						228	238	232	243	254	266	148		145
L Q					162		205	216	216	216						222	224	218	229	232	234	148		145

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	11	14	16	10	16	9	16	31	31	30	31	29	31	31	31	31	31	25	12	14	12	16	17	13
MED	98	98	96	97	98	98	98	98	98	100	98	98	98	98	98	98	98	98	98	98	98	98	96	96
U Q	98	98	98	98	98	98	98	100	100	100	100	100	98	100	100	100	100	98	99	98	100	98	98	98
L Q	96	94	96	94	96	96	98	98	98	98	96	96	98	96	98	98	98	98	96	96	97	97	96	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								18	28	3						11	31	31	15	2				1
MED								231	226	222						232	232	226	224	217				312
U Q								242	235	230						244	242	240	240	242				156
L Q								220	216	220						230	228	216	218	192				156

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	13	10	8	12	9	5	14	30	31	31	31	29	29	30	30	30	31	29	16	23	24	20	17	15
MED	96	98	97	98	96	98	99	98	98	98	96	98	98	96	98	98	98	96	98	98	98	98	96	96
U Q	98	98	98	98	98	98	131	98	100	98	98	100	100	98	100	98	100	98	98	98	98	98	98	98
L Q	95	96	96	96	95	97	96	96	98	96	94	96	96	94	96	96	96	94	96	94	96	96	96	96

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								4	16	20							31	30	27	12				
MED								215	236	238							240	234	224	232				
U Q								227	243	251							246	240	230	250				
L Q								210	223	232							236	224	216	230				

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	10	10	8	6	4	3	3	23	31	31	31	31	31	31	31	30	31	30	24	21	20	19	16	10
MED	96	96	96	96	96	96	98	98	98	100	98	98	98	98	98	98	98	98	96	96	98	96	96	96
U Q	96	96	97	98	97	98	98	143	100	100	100	98	98	98	98	98	100	98	98	98	98	98	96	98
L Q	96	96	96	86	94	86	96	96	98	98	98	96	96	96	96	98	96	96	96	92	96	96	93	96

MONTHLY MEDIANS OF h'F AND h'Es
 MAR. 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	3	3	5	5	1			3	19	27							16	29	30	28	18	12	6	3
MED	278	264	258	218	206			228	234	244							246	230	221	228	229	258	291	288
U Q	304	298	266	244	103			232	242	250							249	237	232	241	240	275	314	290
L Q	272	248	250	213	103			218	226	232							233	221	214	211	216	225	274	256

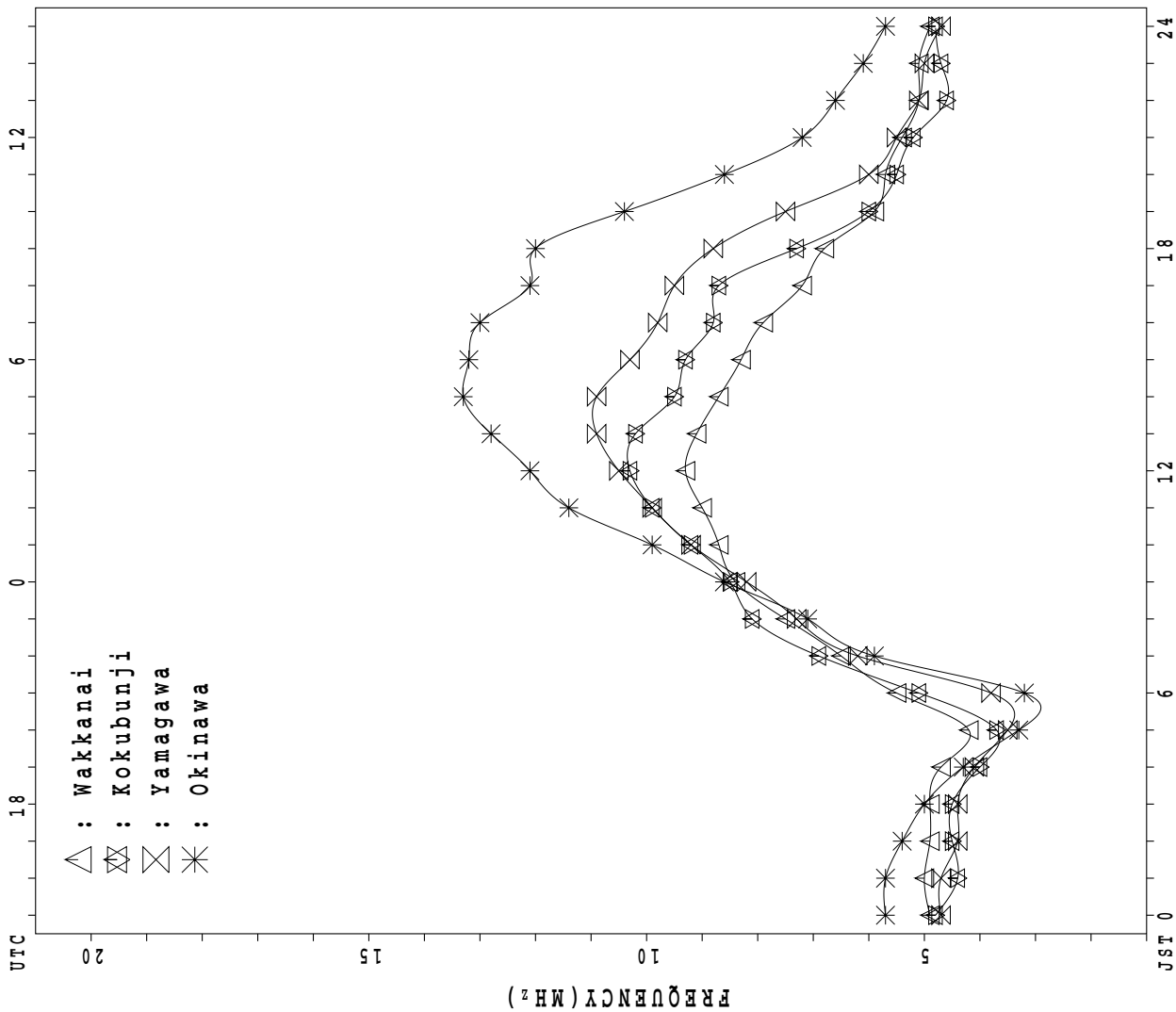
h'Es

	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	12	8	8	6	12	4	6	21	29	29	28	26	25	25	25	26	27	29	28	22	22	18	15	16
MED	95	96	96	98	98	98	96	98	100	98	98	96	98	96	98	98	98	98	98	96	96	98	98	96
U Q	97	96	98	98	171	98	96	98	102	100	98	98	98	97	98	98	100	100	99	98	98	98	98	98
L Q	90	94	96	96	98	98	94	98	98	98	96	94	96	95	96	96	98	96	95	88	96	96	96	96

MONTHLY MEDIANS PLOT OF fOF2

MAR. 2022

AUTOMATIC SCALING



UTC

20

15

10

5

JST 0

FREQUENCY (MHz)

0

6

12

18

24

6

12

18

24

IONOSPHERIC DATA STATION Wakkanai

MAR. 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 46	X 48	X 49	X 52	X 55	X 45														X 54	X 49	X 48	X 51	X 49
2	X 48	X 48	X 49	X 49	X 54	X 46														X 55	X 50	X 47	X 49	X 48
3	X 48	X 49	X 51	X 52	X 52	X 47														X 62	X 58	X 51	X 49	X 49
4	X 48	X 51	X 51	X 51	X 53	X 52														X 66	X 63	X 63	X 65	X 66
5	X 65	X 63	X 62	X 66	X 65	X 62														X 70	X 64	X 58	X 54	X 53
6	X 51	X 49	X 51	X 54	X 35															X 61	X 61	X 54	X 55	X 54
7	X 54	X 58	X 58	X 59	X 57															X 62	X 58	X 58	X 58	X 58
8	X 58	X 58	X 58	X 51	X 45															X 53	X 50	X 49	X 48	X 47
9	X 46	X 46	X 46	X 44	X 44															X 60	X 61	X 55	X 51	X 58
10	X 58	X 58	X 58	X 51	X 51															X 63	X 55	X 53	X 52	X 51
11	X 53	X 53	X 53	X 53	X 52															X 67	X 63	X 63	X 62	X 59
12	X 59	X 59	X 59	X 69	X 70	X 68	X 79													X 65	X 63	X 60	X 60	X 60
13	X 59	X 59	X 67	X 64	X 58	X 54														X 63	X 62	X 58	X 55	X 57
14	X 51	X 48	X 49	X 51	X 39															X 66	X 65	X 59	X 55	X 53
15	X 55	X 55	X 55	X 55	X 58															X 66	X 66	X 61	X 59	X 59
16	X 59	X 59	X 59	X 60	X 59	X 59	X 67													X 65	X 64	X 59	X 57	X 59
17	X 57	X 58	X 58	X 60	X 59															X 69	X 66	X 66	X 59	X 56
18	X 56	X 57	X 58	X 60	X 62															X 62	X 57	X 55	X 56	X 51
19	X 55	X 55	X 55	X 52	X 51															X 68	X 66	X 64	X 63	X 59
20	X 55	X 57	X 58	X 60	X 57															X 65	X 61	X 61	X 61	X 62
21	X 60	X 59	X 57	X 57	X 55															X 69	X 64	X 63	X 63	X 61
22	X 58	X 60	X 59	X 58	X 51															X 69	X 64	X 62	X 62	X 59
23	X 59	X 56	X 56	X 54	X 56															X 74	X 66	X 62	X 62	X 59
24	X 60	X 60	X 60	X 59	X 53															X 72	X 66	X 66	X 65	X 66
25	X 66	X 63	X 61	X 59	X 59															X 72	X 65	X 63	X 55	X 55
26	X 58	X 56	X 53	X 53	X 51															X 73	X 66	X 62	X 59	X 57
27	X 55	X 55	X 54	X 54	X 48															X 75	X 73	X 71	X 68	X 70
28	X 70	X 69	X 67	X 59	X 51															X 74	X 75	X 65	X 62	X 61
29	X 60	X 59	X 59	X 59	X 59																X 85	X 67	X 66	X 64
30	X 63	X 63	X 63	X 61	X 60																X 80	X 77	X 74	X 79
31	X 72	X 70	X 67	X 68	X 68	X 68															X 77	X 77	X 74	X 72
	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	9	2													28	31	31	31	31
MED	X 58	X 58	X 58	X 57	X 55	X 54	X 73													X 66	X 64	X 61	X 59	X 59
U Q	X 60	X 59	X 59	X 60	X 59	X 65														X 70	X 66	X 64	X 63	X 61
L Q	X 53	X 53	X 53	X 52	X 51	X 46														X 62	X 61	X 55	X 55	X 53

MAR. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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

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	39	41	42	45	48	38 ^R	47	56	68	65	75	76	80	87	81	72	72	60	52	47	42	41	44	42	
2	41	41	42	42	47	39	44	64	78	73	77	80	88	87	75	74	76	72	57	48	43	40	42	41	
3	41	42	44	45	45	40	48	63	70	82	78	80	83	82	74	75	73	68	60	55	51	44	42	42	
4	42	44	44	44	46	45	50	59	66	74	88	C	84	92	88	84	78	67	70	59	56	56	58	59	
5	58	56	55	59	58	55	58	78	80	85	85	89	96	101	88	80	74	72	69	63	57	51	47	46	
6	44	42	44	43 ^F	28	32	45	72	72	94	102	89	82	86	88	84	76	76	56	54	54	47	48	47	
7	47 ^F	51	51	52	50	42	47	64	82	81	87	92	81	84	90	84	73	70	65	55	41 ^F	F	F	F	
8	46 ^F	51	46	44	38	35	47	66	76	92	84	84	88	88	93	82	80	70	58	46	43	42	41	40 ^F	
9	39 ^F	39	39	37 ^F	37	38	48	67	76	76	87	90	82	82	79	85	80	76	61	53	54	48	44		
10		44		44	44	38	48	69	78	82	86	82	78	81	84	84	79	74	64	56	48	46	45	44	
11	46	46	46	46	45	45	58	70	74	85	84	96	100	110	108	86	82	72	72	60	56	56	55	52	
12	52	52	52	F	F	F	F																		
12	52	52	52	F	F	F	F																		
13	52	52	50 ^F	50 ^F	44 ^F	38 ^F	56	72	79	86	80	102	96	101	94	91	81	78	65	56	55	51	48	50	
14	44	41	42	44	32	33	44	60	84	66	103	106	115	93	84	76	73	68	65	59	58	52	48	46	
15	48	48	48	48	51	47	53	64	73	82	80	90	92	91	92	91	84	81	74	59	59	54	52	52	
16	52	52	52	53	46 ^F	44 ^F	54 ^F	66	75	78	83	83	93	93	83	80	77	80	72	58	57	52	50	52	
17	50	51	51	53	52	49	57	66	78	86	93	88	94	96	85	76	75	70	69	62	59	59	52	49	
18	49	50	51	53	55	45	55	64	71	84	85	79	89	92	83	79	71	69	59	55	50	48	49	44	
19	48	48	48	46	44	39	52	66	78	83	85	85	88	82	76	74	67	66	70	61	59	57	56	52	
20	48	50	51	53	50	46	59	64	71	C	80	90	102	88	86	81	78	78	69	58	54	54	54	55	
21	53	52	51	50	48	48	59	66	72	74	86	92	110	92	83	79	74	70	69	62	57	56	56	54	
22	51	53	52	51	44	41	58	65	68	70	84	93	88	86	83	77	74	75	70	62	57	55	55	52	
23	52	49	49	47	49	46	56	66	76	86	101	93	78	81	77	77	78	76	72	67	59	55	55	52	
24	53	53	53	52	47	41	64	67	73	82	94	90	91	88	89	84	76	69	70	65	59	59	58	59	
25	59	56	54	52	52	50	61	72	79	86	96	98	94	93	84	79	76	72	70	65	58	56	48	48	
26	51	49	46	46	44	46	65	66	78	83	85	89	84	81	81	76	78	80	74	66	59	55	52	50	
27	48	48	47	47	41	44	54	63 ^R	90	88	85	83	94	88	88	84	85	83	76	68	66	64	61	63	
28	63	62 ^R	60	52	44	46	50	65	74	76	82	91	98	92	84	82	78	74	72	67	68	58	55	54	
29	53	52	52	52	52	47	59	70	77	86	94	93	98	94	89	85	85	87	90	82	78	60	59	57	
30	56	56	56	54	53	58	66	76	84	91	91	91	92	92	94	88	85	82	82	79	73	70	67	72	
31	65	63	60	58	F	F	55	71	75	82	94	102	95	98	91	91	96	101	90	92	81	70	70	67	65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	31	30	30	30	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	30	30	29	
MED	50	50	50	49	46	45	55	66	76	83	85	90	92	91	85	82	78	74	69	59	57	54	52	52	
U Q	53	52	52	52	51	47	59	70	79	86	93	93	98	93	90	85	81	78	72	65	59	57	56	54	
L Q	46	44	46	45	44	39	48	64	72	76	83	84	84	86	83	77	74	70	64	55	54	48	48	46	

MAR. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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		H		L		L								
2								196	L	L	L	L	U	L	U	L	L		L					
3									L	L	L	L	U	L	L	L								
4									L	L	L	C	L		L	L								
5									L	L	L	L	L	L	L	L								
6									L	L	L	L	L	L	L	L								
7									U	L	L	L	L	L	L	L								
8									L	L	L	L	L	L	L	L								
9									U	L	L	L	L	L	L	L								
10									L	L	L	L	L	L	L	L								
11									L	U	L	L	L	L	L	L								
12									L	L	L	L	L	L	L	L								
13									U	L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L								
15									L	L	L	L	L	L	L	L								
16									L	L	L	L	L	L	L	L								
17									L	L	L	L	L	L	L	L								
18									L	L	L	L	L	L	L	L								
19									L	L	L	L	L	L	L	L								
20									L	L	L	L	L	L	L	L								
21									L	L	L	L	L	L	L	L								
22									L	L	L	L	L	L	L	L								
23									L	L	L	L	L	L	L	L								
24									L	L	L	L	L	L	L	L								
25									L	L	L	L	L	L	L	L								
26									L	L	L	L	L	L	L	L								
27									L	L	L	L	L	L	L	L								
28									L	L	L	L	L	L	L	L								
29									L	L	L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31									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							1	4	17	22	22	28	28	26	25	20	9	1						
MED							264	278	400	428	456	474	472	468	436	402	360	200						
U Q							312	418	452	480	488	482	484	460	424	376								
L Q							222	372	412	436	450	454	452	424	382	302								

MAR. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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	200	248	280	316	320	324	324	304	U R	284	236	U R	168	192				
2							B	212	244	292	312	320	324	312	304	284	248		B	B					
3							A	216	264	296	324	336	336	328	312	284	236	188	184						
4							B	244	276	296	308	C	340	324	312	292	252	192		B					
5							B	228	288	264	A	280	324	332	324	280	240	184		B					
6						B	B	220	276	300	304	328	340	340	324	280	248	184		B					
7						B	B	224	276	296	312	332	340	332	320	296	252	184		B					
8						B	B	224	280	280	332	304	316	332	320	284	252	196		B					
9						B	B	220	268	316	328	344	340	340	316	280	256	180		B					
10						B	B	220	276	312	328	340	348	340	320	308	244	176		B					
11						B	B	252	296	312	312	352	352	348	320	308	256	196		B					
12						B	B	176	232	268	304	A	A	A	332	312	300	264		A	B				
13						B	B	180	224	268	308	324	340	348	332	284	304	244	184		B				
14						B	B	180	232	280	304	312	320	320	336	296	296	244	208		B				
15						B	A	220	272	300	324	320	316	264	332		A	256		A	A				
16						A	A	184	224	288	300	308	276	336	316	328	304	256		A	A				
17						B	B	176	248	272	272	300	A	328	336	324	292	252	184		B				
18						B	B	176	240	280	308	320	328	344	196	324	300	260	192		B				
19						B	B	192	236	268	288	328	340	348	340	316	292	264	200		B				
20						B	B	168	236	284	C	332	336	356	308	316	300	264		A	160				
21						B	B	188	244	272	300	320	328	344	344	328	300	256	196		B				
22						B	A	248	292	316	344	352	340	340	320	304	256	200		A					
23						B	B	220	240	292	316	340	352	328	A	316	304	272	188		B				
24						B	B	208	248	312	312	348	344	344	344	324	304	256	212	220		B			
25						B	B	212	264	276	332	352	A	340	312	312	312	256	220		B				
26						B	B	200	256	300	324	324	336	312	300	312	260	256		A	B				
27						B	B	236	248	304	324	336	348	324	284	324	300	252	232	240		A			
28						B	B	192	240	288	328	348	352	352	336	320	296	268	228		A				
29						B	B	188	252	308	324	328	380	360	360	340	A	A	232		B	B			
30						B	B	212	272	284	304	A	A	A	276	A	A	272	228		B	B			
31						B	B	200	264	276	332	A	324	360	336	280	320	276	240		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							18	31	31	30	27	26	29	30	30	28	30	25	5						
MED							190	236	276	304	324	336	340	332	320	298	256	196	192						
U Q							208	248	288	316	332	344	348	340	324	304	260	216	230						
L Q							180	224	272	296	312	320	324	312	312	284	248	184	172						

MAR. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	31	31	31	31	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
UQ	20	21	20	20	21	19	26	29	34	38	41	50	47	42	40	35	30	27	22	25	20	20	24	22
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B

MAR. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR.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

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	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	31	31	31	31	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
U Q	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
L Q	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B

MAR.2022 fbEs (0.1MHz) NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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

$\begin{matrix} H \\ D \end{matrix}$	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	17	15	16	15	16	17	12	13	16	12	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	15	14	16	16	19	16	16	16	16	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	15	18	17	16	16	15	16	16	12	16	16	16	16	16
4	16	16	16	16	16	16	16	16	12	14	14	C	14	16	18	16	16	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	15	15	16	16	16	16	17	16	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	15	16	15	18	17	17	16	16	16	16	16	16	15	16	16
7	16	16	16	16	16	16	16	16	16	16	16	20	18	16	16	18	16	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	17	15	18	22	22	22	23	16	15	15	17	15	15	15	15	15
9	16	16	16	16	16	16	16	16	17	15	16	17	16	19	20	15	15	16	16	16	16	16	16	16
10	16	17	16	16	16	16	16	16	16	15	21	17	16	16	16	16	15	15	16	16	16	16	16	16
11	16	16	16	16	16	16	16	17	16	18	18	21	22	17	16	15	14	14	16	16	16	16	16	16
12	16	16	16	16	16	16	16	15	16	16	16	18	16	16	19	15	15	15	16	16	16	16	16	16
13	16	16	16	16	16	16	15	15	16	16	16	16	17	16	14	15	15	15	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	14	14	14	16	16	16	16	16	16
15	16	16	16	16	16	16	16	15	16	13	16	15	16	15	15	16	16	16	15	16	16	16	16	15
16	16	16	16	16	16	16	16	16	16	16	16	17	17	16	12	13	15	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	16	16	17	17	17	16	16	15	14	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	15	15	16	16	16	14	15	16	14	15	16	16	16	16	16	16
19	17	16	16	16	16	16	15	16	17	16	16	17	17	17	17	16	16	15	16	16	16	16	16	16
20	16	16	16	16	16	16	14	16	16	C	15	16	21	20	16	15	15	15	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	16	15	14	16	16	15	15	12	15	16	16	16	16	16	16
22	16	16	16	16	16	16	16	15	15	17	17	16	16	16	16	14	16	15	15	16	16	16	16	15
23	16	16	16	16	16	16	16	16	11	14	14	16	16	16	17	16	16	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	14	16	16	16	16	17	15	12	14	15	17	16	16	16	16	16
25	16	16	16	16	16	16	16	16	10	14	14	15	16	16	14	15	15	14	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	10	12	15	15	14	15	15	15	10	16	16	16	16	16	16	15
27	16	16	16	15	16	16	16	16	12	14	16	15	19	14	13	14	12	16	16	16	16	16	16	16
28	16	16	16	16	16	16	16	15	13	15	17	16	14	18	15	15	12	15	16	16	15	15	16	16
29	16	16	16	16	16	16	16	15	16	15	16	25	23	22	16	16	16	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	15	17	16	16	16	16	17	21	15	14	15	16	16	16	16	16	16
31	15	15	16	16	16	16	16	16	16	15	22	23	23	16	15	16	14	11	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	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	15	16	16	16	16	16	15	15	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	17	18	17	17	16	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	15	15	16	16	16	16	16	15	15	14	15	16	16	16	16	16

MAR. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	296	299	305	286	333	303 ^R	337	345	345	343	343	338	327	344	348	348	339	350	329	304	298	299	292	302			
2	288	287	294	299	337	294	323	345	370	360	347	329	328	353	334	326	343	350	349	318	315	299	298	297			
3	297	297	297	296	319	318	341	362	361	361	337	318	336	344	343	338	349	349	334	316	313	310	296	295			
4	310	302	302	297	294	317	337	363	362	333	318	^C	323	326	332	338	350	347	335	315	314	306	305	305			
5	305	301	315	303	303	301	318	346	346	346	328	319	325	332	332	342	341	336	330	316	299	296	279	286			
6	261	261	302	284 ^F	360	243	314	329	332	301	349	340	333	332	339	339	338	344	299	296	329	315	276	302			
7	286	283	281	273	304	309	333	333	333	333	343	350	327	326	337	341	341	340	340	340	280 ^F	^F	^F	^F			
8	255 ^F	284	288	306	281	281	323	346	312	356	336	313	334	333	348	343	343	368	325	317	296	296	271	289 ^F			
9	288 ^F	308	298	298	297	299	348	357	358	358	347	346	333	333	329	330	343	343	330	294	318	315	305	^F			
10	^F	268	^F	299	303	329	349	372	354	341	340	339	339	319	333	335	335	353	338	311	308	292	272	279			
11	278	278	277	277	288	284	360	357	345	310	316	313	313	313	331	324	336	336	321	321	292	292	311	285			
12	276	250	272	^F	^F	^F	^F	315	274	359	348	332	341	319	318	317	317	323	323	330	329	319	292	292	288	283	280
13	277	290	301	308 ^F	307 ^F	290 ^F	339	358	352	333	329	323	319	326	325	325	331	346	337	294	306	293	275	273			
14	239	245	269	315	255	260	323	335	335	318	345	308	330	339	339	338	338	331	323	304	300	297	294	279			
15	277	277	287	290	312	309	329	357	356	355	336	310	334	319	329	335	345	345	334	310	304	303	277	269			
16	257	282	252	265	280 ^F	286 ^F	332 ^F	331 ^F	352	352	352	353	315	333	332	331	331	350	350	292	307	303	290	287			
17	293	256	288	301	303	300	335	352	349	339	333	333	323	337	336	336	348	340	340	315	315	314	313	302			
18	295	292	289	325	330	327	363	371	335	327	343	313	335	322	337	343	342	341	330	320	311	308	294	293			
19	291	296	317	314	311	311	348	348	350	335	340	339	326	339	339	339	338	337	333	323	306	306	305	295			
20	294	282	291	311	309	305	339	358	352	^C	327	309	327	323	323	322	329	340	333	313	303	288	282	283			
21	306	299	294	294	301	314	343	356	228	352	330	302	329	322	334	340	335	336	327	326	307	297	297	294			
22	293	290	300	304	326	310	344	352	351	341	322	333	325	319	331	342	328	343	332	319	299	299	310	297			
23	278	302	289	293	302	325	358	355	345	309	334	328	338	338	337	337	333	332	328	317	317	307	292	255			
24	291	289	310	308	316	309	357	343	343	330	330	330	321	313	315	323	341	331	320	306	317	297	282	281			
25	303	303	292	289	301	297	348	340	339	325	325	325	325	332	331	331	330	330	332	319	302	302	255	278			
26	297	302	299	297	296	293	360	350	353	337	332	325	338	332	332	333	327	327	341	324	298	298	295	297			
27	291	288	286	303	290	284	318	311 ^R	323	322	327	326	325	313	324	324	338	337	330	302	285	304	288	270			
28	290	294 ^R	305	290	278	277	338	329	313	333	319	319	319	312	321	328	328	328	327	296	304	303	288	285			
29	283	293	290	296	317	314	348	348	331	330	330	318	318	320	328	318	317	322	322	324	320	297	296	296			
30	278	275	274	286	284	301	349	336	330	330	316	321	320	311	331	319	318	327	327	315	311	296	295	295			
31	295	291	290	285	^F	282 ^F	338	339	315	315	324	324	323	307	303	302	299	299	316	318	283	297	268	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	31	30	30	30	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	30	30	29			
MED	290	290	292	297	303	301	339	348	345	334	332	324	326	326	332	335	338	340	330	315	306	299	292	287			
U Q	295	299	301	304	316	311	349	357	352	346	343	333	333	333	337	339	342	346	335	319	314	306	297	296			
L Q	278	278	287	289	294	284	332	339	332	327	325	318	321	319	328	324	330	331	325	304	298	296	279	279			

MAR. 2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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		H		L		L								
2								502	L	L	L	L	U	L	U	L		L						
3									L	L	L	L	U	L	U	L		L						
4									L	L	L	C	L		L		L							
5									L	L	L	L	L	L	L		L							
6									L	L	L	L	L	L	L		L							
7									U	L	L	L	L	L	L		L							
8									L	L	L	L	L	L	L		L							
9									U	L	L	L	L	L	L		L							
10									L	L	L	L	L	L	L		L							
11									L	U	L	L	L	L	L		L							
12									L	L	L	L	L	L	L		L							
13									U	L	L	L	L	L	L		L							
14								341	L	L	L	L	L	L	L		L							
15									L	L	L	L	L	L	L		L							
16									L			L	L	L	L		L							
17								L	L	L	L	L	L	L	L		L							
18								429	L	L	L	L	L	L	L		L							
19									L	L	L	L	L	L	L		L							
20									C	L	L	L	L	L	L		L							
21									L	L	L	L	L	L	L		L							
22									L	L	L	L	L	L	L		L							
23									L	L	L	L	L	L	L		L							
24									L	L	L	L	L	L	L		L							
25									L	L	L	L	L	L	L		L							
26									L	L	L	L	L	L	L		L							
27									L	L	L	L	L	L	L		L							
28									L	L	L	L	L	L	L		L							
29									L	L	L	L	L	L	L		L							
30								388	409	431	404	374	374	361	361	373	398							
31									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							1	4	17	22	22	28	28	26	25	20	9	1						
MED							388	419	398	398	382	378	380	378	388	393	392	449						
U Q							466	414	407	404	396	393	385	396	398	395								
L Q							375	383	388	374	372	372	366	376	384	386								

MAR. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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									236	256	256	252	264	258	244	244								
2								232	228	228	250	274	264	242	242	246	242	218						
3									220	244	258	258	254	254	246	246	242							
4										252	254	C	272	274	264	254	246							
5									244	248	252	252	264	258	244	244	244							
6									244	266	236	236	266	262	250	250	244							
7									228	240	246	246	264	272	256	238	240							
8									254	252	264	264	264	264		236								
9									228	234	252	262	238	238	246	246								
10									234	232	240	240	252	252	252	252	252							
11										284	248	270	274	274	248	248								
12										236	256	256	268	254	258	246								
13									234	236	244	274	260	268	262	250	250							
14								230	240	270	256	292	264	264	250	250	250							
15									244	238			270	260	264	256	248							
16									236			248		262	260	260								
17								218	258	258	258	244	272	262	254	244	234							
18									242	252	238	258	282	270	258	246		240						
19									244	244	248	248	248	248	248	238								
20									244	C	254	278	260	256	260	258	258							
21									240	242	264	300	264	260	256	258								
22									238	260	268	248	272	268	268	264	248							
23									248	278		268	248	272	256	256	256							
24									238	264	264	254	272	272	272	256								
25									248	264	268	268	268	268	268	244	244							
26									244	254	254	272	260	266	276	264	262							
27									270	252	276	244	274	274	284	268	266							
28									290	264	294	260		256	266	268	266							
29									244	256	268	268	274	274	266	274								
30							218	240	230	246	250	270	280	280	268	258	258							
31									282	278	258	274	268	296	296	298	260							
	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	4	28	29	28	29	29	31	30	31	20	2						
MED							218	231	243	252	255	260	264	264	258	250	249	229						
U Q								236	246	264	264	271	272	272	266	258	258							
L Q								224	235	241	249	248	260	256	250	246	244							

MAR. 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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	284	296	264	276	226	220	238	206	202	176	178	182	188	200	198	206	232	212	218	256	262	280	304	256		
2	268	278	284	244	230	236	236	192	176	194	186	190	202	202	202	194	200	200	210	226	228	256	264	268		
3	268	274	268	264	242	204	230	208	200	178	194	190	204	200	208	202	196	234	218	248	246	240	280	286		
4	280	280	252	256	234	242	222	204	208	194	194	C	218	218	204	210	210	222	228	214	246	252	252	252		
5	250	256	238	246	246	238	232	232	202	188	188	196	196	210	192	206	208	230	226	226	232	260	294	274		
6	316	304	274	226	212	286	228	250	200	192	216	208	200	202	202	218	206	236	216	246	248	248	296	266		
7	274	286	262	264	244	248	238	224	202	180	202	190	190	190	200	200	200	228	238	204	252	274	296	296		
8	300	282	270	258	262	308	246	240	200	200	196	196	202	200	190	190	222	202	202	224	254	262	266	266		
9	266	266	266	276	266	266	224	214	204	188	188	200	194	194	200	212	226	228	206	224	234	234	240	272		
10	314	262	248	256	244	204	240	214	182	180	188	188	194	194	200	214	202	220	228	228	228	268	300	300		
11	284	290	298	286	266	294	232	208	214	218	192	188	192	208	208	208	248	226	242	236	246	246	236	266		
12	280	314	304	282	238	258	222	216	236	198	210	198	202	198	198	198	234	220	226	256	242	280	290	284		
13	284	262	268	236	226	254	226	222	198	198	192	200	202	202	202	212	204	228	226	236	252	272	298	318		
14	E B	318	352	326	258	E B E B	312	310	236	204	220	194	194	208	214	202	206	190	202	228	228	236	260	260	280	312
15	298	286	296	280	256	232	228	216	218	206	248	260	190	198	198	184	210	236	230	238	252	248	270	300		
16	310	262	280	276	268	254	228	214	196	230	230	208	282	210	210	228	238	222	222	260	244	232	260	270		
17	250	282	270	272	242	238	210	198	182	200	184	206	198	190	190	206	214	228	216	220	244	232	232	262		
18	284	294	272	248	220	234	216	216	196	186	200	188	208	226	198	198	228	196	218	218	238	256	256	288		
19	288	258	248	246	222	238	236	224	200	192	202	200	200	200	196	196	226	226	214	224	242	232	262	268		
20	296	282	284	238	240	228	212	218	190	C	198	210	194	212	194	198	200	226	212	232	232	286	278	264		
21	248	266	258	264	250	246	214	232	184	184	180	224	186	216	204	196	234	224	232	228	240	272	260	262		
22	276	276	266	244	208	268	236	224	200	214	188	188	206	200	214	200	194	230	230	234	246	270	256	278		
23	278	272	272	272	246	226	210	224	202	218	250	226	200	210	194	210	210	238	234	230	230	230	282	280		
24	256	270	240	242	220	248	210	212	202	202	220	204	204	204	190	206	234	234	232	218	256	278	290	278		
25	258	234	280	280	256	262	212	224	196	196	196	196	196	204	204	212	204	222	238	222	238	238	284	284		
26	276	282	272	266	260	308	218	226	204	204	204	206	188	188	188	194	212	242	234	232	232	242	246	280		
27	292	272	296	266	286	298	218	238	198	198	200	200	210	196	196	206	206	238	224	228	268	258	292	302		
28	274	262	272	262	308	310	244	236	226	214	198	208	282	202	210	210	210	234	234	254	254	230	276	280		
29	272	272	272	254	238	256	208	216	194	200	208	190	200	200	200	200	254	246	232	242	228	246	264	280		
30	306	300	272	270	244	264	202	194	192	186	186	196	196	202	194	194	212	246	234	242	242	256	256	264		
31	264	264	270	246	282	268	240	240	210	214	214	194	188	194	214	214	214	224	238	236	260	260	312	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	31	31	31	31	31	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31		
MED	279	276	272	262	244	251	228	216	200	197	196	199	200	202	200	206	210	228	228	232	244	256	276	278		
U Q	296	286	280	272	262	268	236	226	204	204	208	208	204	208	204	210	228	234	234	242	252	270	292	286		
L Q	268	264	264	246	230	236	214	208	196	188	188	190	194	198	194	196	204	222	218	224	234	240	256	266		

MAR. 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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	112	104	104	108	104	102	106	102	98	98	90	90						
2							B	98	110	108	108	104	98	98	100	108	108	B	B						
3							A	116	100	110	110	110	102	102	112	104	104	130	92						
4							B	120	106	106	106	C	106	118	106	106	108	120	B						
5							B	120	108	100	A	100	102	102	110	110	110	110	B						
6						B	B	104	104	112	100	102	102	100	100	102	102	122	B						
7						B	B	114	114	98	108	108	114	102	108	108	108	108	B						
8						B	B	108	108	108	108	92	108	108	108	108	110	118	B						
9						B	B	106	106	106	106	106	106	106	112	112	110	108	B						
10						B	B	106	98	104	104	104	104	104	104	104	98	98	B						
11						B	B	126	108	100	100	108	116	102	104	104	110	106	B						
12						B	E B	136	108	100	100	A	A	A	94	106	106	116	A	B					
13						B	B	116	100	108	108	106	106	106	100	108	108	108	B						
14						B	B	94	94	100	100	98	98	106	94	100	100	104	B						
15						B	A	104	102	102	102	102	102	96	96	A	82	A	A						
16						A	E B	146	100	100	100	100	100	100	100	100	100	A	A						
17						B	E B	136	98	102	102	102	A	102	110	104	90	96	96						
18						B	B	112	108	104	104	104	104	90	104	104	104	104	B						
19						B	E B	132	106	96	96	96	96	102	102	102	102	104	116	B					
20						B		112	110	106	C	106	106	106	106	106	96	A	A						
21						B	B	114	102	104	98	106	106	106	106	100	110	100	112	B					
22						B	A	104	104	104	98	104	104	104	104	104	98	104	A						
23						B	B	128	114	108	100	100	100	100	A	100	100	104	104	B					
24						B	B	124	104	104	104	104	104	104	104	100	108	108	92	B					
25						B		98	92	100	100	100	A	100	100	100	100	100	B						
26						B	B	108	88	102	102	102	102	102	102	94	94	98	A	B					
27						B	B	128	94	106	106	106	106	98	98	98	98	100	132	116					
28						B	B	116	96	106	92	104	104	104	104	104	104	98	A						
29						B	B	102	102	102	108	100	110	104	104	G	A	A	112	B	B				
30						B	B	108	104	100	100	A	A	A	98	A	A	92	98	B	B				
31						B	B	98	106	100	100	A	100	100	100	100	100	92	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							17	31	31	30	27	26	29	30	29	28	30	25	4						
MED							112	104	104	102	104	104	102	102	104	104	103	108	92						
U Q							E B	130	110	106	106	106	106	106	106	107	108	114	104						
L Q							108	100	100	100	100	100	101	100	100	100	98	99	91						

MAR. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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	92	92	92	92	B	B	B	168	152	122	90	94	94	128	120	122	114	110	92	82	82	B	86	B
2	B	B	B	80	B	B	B	G	114	110	110	170	170	168	G	118	142	B	B	B	B	B	B	B
3	B	B	94	94	92	B	92	118	114	108	96	176	172	196	168	198	128	92	94	86	86	86	86	86
4	86	114	B	B	B	B	B	146	146	102	106	C	170	170	184	110	136	132	B	B	B	B	B	B
5	B	B	B	B	B	B	B	114	122	102	102	98	160	G	G	102	102	174	B	B	B	124	88	B
6	B	94	152	B	98	B	B	130	130	114	104	G	92	G	112	112	G	162	B	B	86	B	B	B
7	B	90	B	90	90	B	B	128	116	108	170	G	118	116	G	G	G	G	B	B	B	B	84	B
8	B	94	94	100	B	B	B	176	G	100	104	104	172	102	G	106	G	G	B	B	B	B	B	B
9	B	B	96	88	B	B	B	132	136	142	116	G	132	108	170	168	146	142	B	B	B	B	B	B
10	B	B	B	B	B	B	B	170	90	118	180	G	G	G	118	118	158	116	B	98	B	B	98	98
11	B	B	B	B	108	B	B	148	128	106	106	100	100	98	G	90	130	G	B	B	B	B	B	98
12	B	92	96	B	96	B	B	106	106	104	98	98	98	G	100	118	106	120	B	90	B	84	84	82
13	94	B	86	B	B	B	B	158	148	168	134	100	100	G	102	108	114	124	124	B	B	B	A	130
14	B	94	94	90	90	B	188	110	94	110	110	212	100	122	122	122	112	G	B	B	B	A	108	108
15	100	100	92	102	94	94	88	98	124	108	102	96	96	96	G	92	96	86	94	86	B	86	84	B
16	B	B	B	B	92	98	G	150	116	106	106	100	100	108	108	106	106	86	98	102	B	102	102	B
17	B	98	B	B	B	90	G	118	106	100	102	204	112	G	100	110	110	128	B	B	B	B	B	B
18	B	B	138	B	B	B	110	120	110	110	196	102	102	100	G	108	86	G	B	B	B	B	96	96
19	96	94	B	B	94	94	142	112	112	106	168	164	178	114	G	114	108	G	B	B	B	108	98	98
20	90	B	96	B	B	B	154	174	114	C	114	106	G	102	116	138	114	96	94	94	94	120	96	B
21	B	92	B	B	B	B	138	158	142	134	124	130	122	186	108	102	110	182	B	B	B	B	102	102
22	B	B	B	B	B	B	132	132	100	112	112	186	120	120	128	110	104	172	120	110	110	102	96	96
23	B	B	B	102	B	B	142	128	118	114	110	102	102	94	98	170	158	150	B	B	114	114	B	94
24	96	96	96	104	B	B	136	122	108	108	108	104	104	104	104	164	120	92	G	B	B	B	B	B
25	B	B	B	92	92	B	150	150	162	116	106	194	196	94	204	112	144	144	B	B	B	110	B	B
26	B	B	B	98	B	92	158	156	134	104	104	104	98	100	114	114	114	98	B	110	110	B	106	B
27	106	B	98	98	98	98	98	160	120	120	112	108	102	102	102	102	174	158	84	84	84	98	98	98
28	98	116	114	124	B	B	148	148	126	126	116	116	110	114	98	112	142	124	110	104	104	104	92	92
29	B	B	120	B	B	96	154	154	158	118	126	G	94	102	G	102	106	96	B	B	102	102	98	98
30	86	86	86	92	B	B	98	110	100	100	100	100	100	96	96	96	88	112	B	104	100	92	92	92
31	92	92	B	B	92	92	150	140	108	100	100	100	92	134	104	92	94	94	94	94	94	94	90	90
	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	11	15	16	15	12	8	18	30	30	30	31	25	28	26	22	30	28	24	9	13	12	16	20	16
MED	94	94	96	94	93	94	142	136	117	109	106	104	103	106	110	112	114	122	94	94	97	102	96	97
U Q	98	98	106	102	97	97	154	154	134	118	116	167	146	122	122	118	139	147	104	104	107	112	98	98
L Q	90	92	93	90	92	92	110	118	108	104	102	100	99	100	102	102	106	96	93	86	86	93	87	92

MAR. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 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	F2	F4	F2	F1				H2	H2	C2	L3	L1	L1	C1	C2	CL22	CL41	C2	L1	F2	F1		F1		
2				F1					C2	C2	C2	HL11	HL11	HL11		CL21	HL21								
3			F2	F2	F1		L2	LC21	C2	C2	LC21	HL11	HL11	C1	H2	CL21	C2	LC11	L3	F3	F2	F1	F1	F1	
4	F1	F1						H2	HL21	LC12	C2		H1	H1	H1	C2	C2	C2							
5								LC12	C2	C2	L1	C2	CL11			LC11	LC21	H1				F1	F1		
6		F1	F1		F1			C2	C2	C2	C2		LC11		C2	C2		H1			F1				
7		F1		F2	F2			C1	C1	C2	H1		C1	CC21										F1	
8		F4	F1	F1				H1		C2	C1	C2	HL11	C1		LC11									
9			F1	F1				C1	C2	HL11	C1		C2	C1	H1	H1	H1	H1							
10								H1	LC11	C2	H1				C1	C1	H1	C1		F1			F4	F2	
11				F1				HL11	HL11	C3	C2	C2	C2	LC21		C2	C2								L5
12		F4	F1		F1			LC21	C2	C2	C3	C2	C3		LC11	CL21	C2	L2		F1		F1	F1	F1	
13	F1		F1				H1	H1	H1	H2	C2	LH11		CL11	C1	C2	C2	C2							C1
14		F2	F1	F2	F1		H1	C3	LC24	C1	C2	C1	C2	C1	C2	C2	C2					F1	F8	F1	
15	F2	F2	F2	F2	F4	L2	L1	LC21	CL21	C3	C3	C5	C2	C2		L2	CL33	L4	L2	F2		F2	F2		
16				F1	L2			H2	C2	C2	C2	C3	C3	C2	C2	C2	CL22	L4	L4	F4		F1	F1		
17		F1			L2			L2	C2	C2	C2	L2	C1		C1	C2	C2	C2							
18			F1				LC11	C2	C2	C2	HL11	C1	LC11	C2		C2	LC12						F3	F3	
19	F2	F1		F1	L1		HL11	CH21	C2	C2	HL11	HL11	HL11	CH11		C1	C2					F2	F3	F4	
20	F4		F1				H1	H2	C2		C2	C2		C1	C2	H2	CL22	L3	L1	F3	F1	F1	F2		
21		F1					H1	H2	H2	HL21	CL21	CL21	C1	H1	C2	C2	C2	H1					F2	F1	F1
22							C2	C2	LC12	C2	C2	C1	C2	C2	C2	C2	C2	H1	L3	F3	F2	F4	F2	F1	
23				F1			H2	C2	C2	C2	C2	C3	C2	L3	L3	HL11	H2	H2			F1	F1		F1	
24	F3	F3	F2	F1			C2	C2	C2	C2	C2	C2	C2	C2	CL12	HL21	C2	LC12							
25			F2	F2			HL21	HL21	HL11	CL21	C2	L2	C1	LC11	C2	C1	H2	HL11				F1			
26			F1		L1		H2	H2	C2	C2	C2	C1	C2	C2	C2	C2	C2	L4		L1	F1		F3		
27	F1		F1	F1	F1	LQ21	LQ31	HL21	CL21	CL21	CL21	C2	C2	C2	C2	C2	HC11	HL22	LC21	F3	F2	F1	F1	F1	
28	F1	F1	F1	F1			H2	HL22	CL22	C2	C2	C1	C4	C2	LC11	C1	HL21	CL21	L2	F8	F4	F4	F7	F1	
29			F1		L1		H1	H1	H1	C1	C1		L2	L2		L2	L4	LC11			F3	F5	F5	F2	
30	F4	F2	F2	F2			LH11	C1	C2	C2	L2	L2	L2	C2	L2	L2	C2	C2		L1	F1	F2	F3	F1	
31	F1	F1			F1	L1	H2	C1	C2	C1	L2	C2	C1	HL11	C2	C2	C2	L4	L4	L1	F1	F1	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																									

MAR. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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 45	X 47	X 50	X 49	X 46	X 37													X 62	X 50	X 48	X 48	X 45	X 48
2	X 47	X 47	X 49	X 47	X 46	X 36													X 74	X 53	X 50	X 49	X 48	X 47
3	X 45	X 45	X 47	X 53	X 40	X 40	X 45												X 65	X 52	X 54	X 55	X 51	X 48
4	X 46	X 46	X 46	X 45	X 46	X 42													X 66	X 67	X 64	X 58	X 52	X 52
5	X 54	X 53	X 51	X 51	X 50	X 49													X 70	X 64	X 64	X 57	X 51	X 56
6	X 53	X 52	X 52	X 53	X 52	X 36													X 76	X 66	X 70	X 62	X 44	X 45
7	X 45	X 46	X 46	X 46	X 43	X 41													X 72	X 56	X 50	X 46	X 48	X 50
8	X 47	X 47	X 48	X 47	X 47	X 45													X 72	X 67	X 56	X 51	X 51	X 51
9	X 51	X 48	X 47	X 46	X 46	X 44													X 76	X 56	X 52	X 50	X 50	X 48
10	X 45	X 47	X 47	X 50	X 49	X 38													X 78	X 59	X 56	X 54	X 52	X 52
11	X 52	X 51	X 52	X 50	X 49	X 44													X 78	X 72	X 66	X 56	X 56	X 58
12	X 58	X 60	X 60	X 58	X 60	X 40	X 62												X 84	X 66	X 62	X 63	X 57	X 59
13	X 58	X 58	X 60	X 54	X 42	X 38													X 76	X 65	X 60	X 61	X 60	X 56
14	X 53	X 51	X 51	X 58	X 50	X 42													X 77	X 68	X 65	X 61	X 55	X 54
15	X 54	X 56	X 56	X 54	X 48	X 46													X 82	X 65	X 62	X 60	X 55	X 53
16	X 55	X 53	X 54	X 53	X 50	X 56													X 79	X 56	X 53	X 60	X 52	X 60
17	X 60	X 54	X 54	X 55	X 52	X 47													X 83	X 64	X 56	X 56	X 50	X 46
18	X 47	X 47	X 48	X 50	X 46	X 37														X 69	X 62	X 48	X 48	X 48
19	X 48	X 48	X 50	X 48	X 41	X 38													X 81	X 70	X 62	X 60	X 55	X 56
20	X 55	X 52	X 52	X 53	X 50	X 45													X 84	X 65	X 58	X 54	X 55	X 54
21	X 57	X 56	X 54	X 54	X 51	X 46													X 71	X 66	X 63	X 62	X 62	X 63
22	X 62	X 60	X 60	X 58	X 53	X 46													X 80	X 63	X 58	X 58	X 60	X 60
23	X 57	X 55	X 55	X 53	X 52	X 53													X 86	X 78	X 67	X 63	X 54	X 55
24	X 54	X 54	X 56	X 60	X 41	X 38													X 75	X 74	X 63	X 62	X 62	X 60
25	X 62	X 62	X 56	X 52	X 52	X 48													X 83	X 73	X 59	X 59	X 58	X 57
26	X 59	X 58	X 55	X 53	X 48	X 46													X 94	X 75	X 58	X 58	X 58	X 58
27	X 58	X 57	X 57	X 55	X 48	X 48													X 81	X 68	X 62	X 62	X 60	X 60
28	X 63	X 63	X 62	X 56	X 51	X 51													X 100		X 64	X 62	X 61	X 62
29	X 63	X 62	X 62	X 61	X 53	X 46													X 111	X 90	X 70	X 63	X 64	X 64
30	X 62	X 60	X 60	X 60	X 52	X 52													X 95	X 82	X 70	X 68	X 71	X 70
31	X 68	X 66	X 66	X 63	X 58	X 58													X 110	X 82	X 65	X 67	X 67	X 67
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	2												30	30	31	31	31	31
MED	X 54	X 53	X 54	X 53	X 49	X 45	X 54												X 78	X 66	X 62	X 59	X 55	X 56
U Q	X 59	X 58	X 57	X 56	X 52	X 48													X 84	X 72	X 64	X 62	X 60	X 60
L Q	X 47	X 47	X 49	X 50	X 46	X 38													X 74	X 63	X 56	X 54	X 51	X 50

MAR. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

MAR. 2022 foF2 (0.1MHz)

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MAR. 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			L										
2									A	L	L	476	472	L	L	L								
3										L	L	L	L	L	L	L								
4									L	L	L	484	484	472		L	L							
5										L	L	L	U	L	L	L	L							
6										L	L	L	L	L	L	L	L							
7									L	L	L	L		L	L	L								
8										L	480	L	L	L	L	L								
9									L	L	L	L	L	L	L	L	L							
10									L		L	L	L	L	L									
11									L	L	A	L	L	L	L									
12										L	L	516		L	L	L	L	L						
13									L	L	L	508	468	U	L	L	L	L						
14											L	L	A	L		L	L							
15									L		A	L	L	L	L	L								
16									L	L	L	L	L	L	L	L	L	A						
17									L	L	L	L	L		L	L	L							
18									L		L	L	L	488	L	L	L	L						
19									L	L	L	492	492	L	L	L	L							
20									L	L	L	524	500	L	480		L	L						
21										L	U	L	L	L	L	412								
22									L	L	L	488	472	A	A	A	L	A						
23									L	L	A	L	L	L	L	L			A					
24									L	L	L	L	L	500	L	L	L							
25									L	L	L	L	496	L	L	L	L							
26										L	L	L	U	L	L	L	L							
27										L	L	512	L	L	L	L	L							
28									L	L	A	528	L	L	L	L	A				A			
29										L	L	L	L	L	L	L	L	A						
30									L	L	496	L	L	L	L	L	L							
31										L	L	L	L	L	L	L	L	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	3	11	10	4	2	1								
MED										452	488	492	488	492	476	412								
U Q										496	516	496	498											
L Q										480	484	480	480											

MAR. 2022 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAR. 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	U															
	2								B	U															
	3								U	U															
	4								B	U															
	5								B	U															
	6								B	U															
	7								B	U															
	8								B	U															
	9								B	U															
	10								B	U															
	11								B	U															
	12								B	U															
	13								B	U															
	14								B	U															
	15								B	U															
	16								B	U															
	17								B	U															
	18								U	U											B				
	19								U	U															
	20								U	U															
	21								B	U															
	22								B	U															
	23								B	U															
	24								B	U															
	25								B	U															
	26								B	U															
	27								B	U															
	28								U	U												A			
	29								U	U															
	30								B	U															
	31								B	U															
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								5	30	25	15	14	18	18	20	17	18	16	17						
MED								U	R	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
UQ								19	6	25	30	33	2	35	6	37	3	2	29	2					
LQ								18	4	22	28	32	34	36	0	35	3	38	31	6	27	8	20		

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	32	39	39	42	42	42	40	36	33	J 30	A 30	A 24	24	23	23	22
2	J 28	22	22	20	E 16	E 16	E 15	G	34	35	39	G	G	41	G	G	G	G 27	J 27	A 27	23	26	E 17	E 16
3	E 16	E 16	E 16	E 16	E 16	E 20	E 16	24	34	G	G	G	G	G	G	G	G	J 52	A 29	A 34	A 44	21	E 16	23
4	E 16	E 15	E 15	E 15	E 15	E 15	E 16	26	G	38	38	42	40	G	39	G	32	25	J 34	A 36	A 28	E 16	J 28	E 15
5	E 16	E 15	E 16	E 16	E 16	E 20	E 16	G	G	G	38	39	40	41	G	33	G	G	E 15	E 15	E 16	E 17	E 16	E 15
6	E 15	E 16	E 18	E 16	E 24	E 16	E 16	G	33	36	36	37	G	G	G	G	G	G	24	15	E 16	E 16	E 16	20
7	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	G	36	G	G	G	G	G	G	J 41	A	E 15	E 15	E 15	E 15	E 16	E 16
8	E 15	E 15	E 16	E 21	E 16	E 16	E 20	31	G	G	G	G	G	G	G	G	G	G	E 15	E 15	E 21	J 25	E 16	E 16
9	E 16	E 16	E 16	E 16	E 15	E 16	E 16	G	34	35	G	G	G	G	G	G	32	J 35	A 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	G	34	36	G	G	G	G	G	40	41	36	J 36	A 15	E 15	E 16	E 16	E 16
11	E 16	18	E 16	E 16	J 30	A 16	E 16	G	33	39	52	46	G	40	36	35	G	G	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	G	G	J 37	A 41	G	G	G	G	G	30	G	E 17	E 23	E 16	E 16	E 16	E 16
13	E 16	22	E 16	E 16	E 16	E 16	E 17	26	33	36	38	G	G	G	G	35	J 40	A 19	E 16	40	E 16	J 34	E 22	E 16
14	24	E 16	E 16	E 16	E 16	E 16	E 20	28	34	38	J 51	A 48	J 62	A 41	37	G	G	J 49	A 30	22	E 16	25	J 30	A 30
15	J 37	24	J 36	A 37	J 34	A 25	24	G	G	G	41	J 54	A 64	J 58	41	46	J 37	A 33	A 42	41	23	E 16	E 16	24
16	J 54	A 34	24	24	J 36	A 24	23	G	G	J 40	A 40	41	G	40	44	37	J 42	A 31	A 28	67	108	32	20	21
17	21	21	21	21	E 16	E 16	E 16	G	J 36	A 41	A 40	41	G	J 47	A	G	G	G	J 30	A 32	25	24	21	E 16
18	21	21	E 16	E 16	E 16	E 16	G	G	G	G	G	G	G	39	39	G	30	G	E 14	E 24	24	E 16	E 16	E 16
19	E 16	J 26	A 34	A 27	J 22	A 21	G	30	33	G	G	42	42	G	G	34	34	26	E 15	24	24	J 27	E 16	24
20	E 16	E 16	E 16	E 19	E 19	E 16	G	G	35	38	G	40	G	G	40	40	G	G	E 16	E 16	22	E 16	20	E 16
21	20	21	E 16	E 23	E 16	E 16	20	29	33	38	41	G	G	G	40	36	J 33	G	E 16	J 16	A 27	J 33	21	24
22	E 16	E 16	24	E 16	E 16	E 16	22	29	34	36	G	J 46	A 46	44	J 70	A 49	J 51	A 36	A 47	A 36	27	20	20	E 16
23	E 16	E 16	E 16	E 16	E 16	E 16	22	29	38	40	44	39	40	40	G	G	G	28	19	J 21	25	25	23	E 16
24	E 16	E 16	E 16	E 16	E 16	E 16	24	31	34	38	39	40	38	41	G	G	G	G	E 16	E 26	22	20	E 16	17
25	E 16	E 16	E 16	E 16	E 16	E 16	23	28	33	37	36	39	43	G	G	G	G	G	E 16	E 16	21	E 16	E 15	E 16
26	E 16	E 16	E 16	E 16	E 15	E 16	22	29	34	39	39	G	38	39	38	G	G	27	E 16	20	24	J 27	E 19	19
27	20	E 16	E 16	E 16	E 19	E 15	21	29	34	39	39	J 51	A 48	G	J 45	A 40	J 35	A	24	21	22	J 23	A 41	E 16
28	20	20	E 16	E 16	E 16	E 16	G	34	38	G	J 64	A 44	G	40	G	G	G	J 36	A 36	52	47	J 50	A 33	36
29	25	J 28	22	24	24	E 16	23	G	38	38	45	45	44	50	47	48	36	J 46	A 40	65	103	J 53	A 53	22
30	E 16	E 21	E 16	E 21	E 20	E 20	E 16	29	34	39	G	G	G	41	41	37	32	J 30	A 22	16	22	J 24	A 28	23
31	E 21	E 16	E 16	E 16	E 16	E 16	23	32	38	42	42	G	G	G	41	41	38	J 40	A 26	23	46	52	33	25
	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	G	25	34	37	39	39	G	39	36	G	30	25	19	23	23	23	19	E 16
U Q	21	21	18	21	19	16	22	29	34	39	41	J 42	A 42	41	40	37	J 36	A 35	A 30	A 34	27	27	23	23
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	G	G	G	G	G	G	G	G	G	G	E 16	E 16	E 16	E 16	E 16	E 16

MAR. 2022 foEs (0.1MHz)

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MAR. 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	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	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	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
UQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B

MAR. 2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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

$\frac{H}{D}$	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	16	16	16	16	16	16	16	16	16	16	19	15	16	15	18	16	15	16	16	16	16	15	15	16
2	16	16	16	16	16	16	15	15	15	16	16	16	18	22	20	18	15	14	16	16	16	16	17	16
3	16	16	16	16	16	15	16	15	15	15	15	15	17	19	17	17	15	15	15	15	16	16	16	16
4	16	15	15	15	15	15	16	16	16	16	17	19	19	18	20	19	18	14	16	16	16	16	16	15
5	16	15	16	16	16	16	16	15	15	15	16	17	19	17	17	15	15	15	15	15	16	17	16	15
6	15	16	18	16	16	16	16	16	16	18	18	18	18	18	18	18	17	11	13	15	16	16	16	16
7	16	16	16	16	16	16	16	15	17	17	19	23	23	23	22	19	19	15	15	15	15	15	16	16
8	15	15	16	16	16	16	16	16	16	20	22	22	22	23	18	17	17	14	15	15	16	16	16	16
9	16	16	16	16	15	16	16	16	16	17	17	22	22	22	22	17	17	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	18	17	22	22	22	22	22	20	17	16	15	15	16	16	16	16
11	16	16	16	16	16	16	16	16	16	17	19	20	23	23	20	18	17	15	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	16	18	23	26	26	20	18	14	16	17	16	16	16	16	16
13	16	16	16	16	16	16	17	14	16	17	18	20	24	24	20	20	17	19	16	16	16	16	16	16
14	16	16	16	16	16	16	20	18	16	16	19	19	27	27	20	18	17	15	15	16	16	16	16	16
15	16	16	16	16	15	15	16	16	15	15	15	20	22	20	16	16	17	15	15	16	16	16	16	16
16	16	16	16	16	16	16	16	16	18	18	16	20	19	20	16	18	18	15	15	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	16	18	21	23	22	18	18	17	14	16	16	15	16	16	16
18	16	16	16	16	16	16	14	13	16	16	18	20	20	20	18	18	14	13	14	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	17	19	19	19	19	19	19	16	15	15	15	16	16	16	16
20	16	16	16	16	16	16	15	15	17	18	17	18	18	19	19	19	17	16	16	16	16	16	16	16
21	16	16	16	16	16	16	15	16	16	16	20	24	24	21	19	17	16	14	16	16	16	16	16	16
22	16	16	16	16	16	16	17	17	16	16	16	16	16	17	18	14	14	15	14	15	15	16	16	16
23	16	16	16	16	16	16	16	16	12	16	16	18	22	19	19	19	17	14	14	17	17	16	16	16
24	16	16	16	16	16	16	16	16	15	15	20	21	20	27	20	18	16	16	16	16	16	16	16	17
25	16	16	16	16	16	16	15	16	16	16	17	18	22	22	18	18	17	16	16	16	16	16	15	16
26	16	16	16	16	15	16	16	15	15	15	16	20	20	19	19	18	16	16	16	16	16	16	15	16
27	16	16	16	16	16	15	16	16	15	16	17	18	18	20	18	16	16	16	16	16	16	16	16	16
28	15	16	16	16	16	16	14	16	16	17	22	20	20	19	19	19	16	15	15	17	16	16	16	16
29	16	17	17	16	16	16	15	16	16	16	21	27	22	26	21	21	20	17	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	18	18	24	23	23	20	19	20	18	15	16	16	16	16	16	16
31	16	16	16	16	16	16	17	18	19	19	19	24	22	20	20	18	15	15	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	18	20	22	20	19	18	17	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	17	19	22	23	23	20	19	17	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	15	15	16	16	18	19	19	18	17	15	14	15	15	16	16	16	16

MAR. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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

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	307	300	315	326	352	300	310	353	351	345	356	323	344	342	326	341	350	364	355	321	295	298	298	302
2	286	320	318	328	343	323	338	384	357	347	350	345	312	334	338	328	344	354	351	334	302	311	293	307
3	311	308	306	347	347	298	337	375	369	362	337	337	323	337	339	341	346	350	341	306	305	323	294	303
4	302	303	326	305	329	316	346	369	361	364	330	331	333	321	337	336	348	359	335	318	322	328	301	312
5	320	330	293	294	309	327	344	295	345	326	330	332	328	317	324	334	339	358	324	325	326	334	296	284
6	256	270	285	320	331	264	305	369	329	323	329	345	338	323	325	336	352	343	336	307	326	349	345	303
7	287	316	316	316	320	300	337	350	368	358	342	340	351	348	339	351	339	349	345	309	318	303	302	300
8	292	305	299	294	293	295	341	345	342	329	349	331	322	346	334	342	352	360	332	333	322	313	291	292
9	315	298	304	303	302	294	337	372	362	353	330	345	322	329	335	332	343	360	348	333	316	298	322	306
10	301	292	300	323	374	306	350	368	365	346	340	341	323	343	343	334	346	345	348	308	305	304	291	289
11	290	298	299	310	319	280	343	367	370	330	313	303	305	317	326	331	330	344	320	318	321	300	291	299
12	292	F	F	290	345	352	F	366	335	311	315	309	315	325	308	313	327	339	329	319	297	308	288	279
13	295	300	334	336	317	302	335	374	365	345	347	321	327	332	329	323	334	347	336	324	294	303	298	278
14	269	248	267	324	372	264	348	348	327	331	290	306	332	346	328	332	334	351	327	302	303	307	299	288
15	282	287	292	324	327	316	344	366	379	321	325	321	331	335	329	333	341	357	347	329	301	314	288	271
16	F	271	306	307	332	F	342	370	358	342	315	321	331	322	333	332	348	359	372	352	298	F	298	F
17	F	286	292	314	330	308	340	338	360	348	319	317	328	331	330	324	338	340	369	346	300	319	310	302
18	303	292	300	342	359	325	355	364	360	337	324	332	331	330	335	330	339	355	338	333	333	323	303	305
19	294	307	335	340	336	305	357	358	353	348	341	329	337	341	334	337	342	349	341	331	322	314	300	295
20	311	294	301	326	353	336	353	336	360	356	326	321	320	327	332	331	340	345	350	327	307	295	290	282
21	302	306	313	314	318	329	361	348	356	348	353	316	315	312	335	341	348	346	338	321	311	303	291	315
22	303	302	300	322	322	315	356	343	369	338	331	319	325	333	332	332	335	359	352	314	306	295	295	319
23	300	305	304	311	299	345	350	364	336	332	339	318	321	317	332	329	331	349	329	336	323	323	290	281
24	305	301	312	361	343	327	342	366	338	337	330	306	311	334	320	320	345	344	331	322	298	290	293	291
25	311	318	316	309	302	323	350	355	341	335	332	322	331	316	321	338	340	346	341	331	306	295	290	293
26	298	311	316	318	316	295	355	359	356	323	313	321	332	331	338	329	338	335	346	357	303	296	294	298
27	310	298	320	318	305	290	371	360	334	320	328	313	316	310	325	329	340	350	345	332	278	290	283	281
28	287	311	319	313	285	269	331	341	322	293	311	324	327	311	315	313	317	326	350	335	306	301	268	277
29	293	303	301	320	330	340	366	355	342	347	318	320	302	307	310	308	320	324	332	353	309	291	292	292
30	295	295	307	321	306	298	366	357	345	339	324	307	306	309	309	316	326	335	340	327	311	292	290	292
31	305	299	301	308	298	297	344	344	340	331	298	315	312	322	293	297	301	318	337	322	296	270	276	275
	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	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30
MED	300	300	305	318	327	306	344	359	356	338	330	321	325	329	330	332	340	349	341	327	306	303	293	292
U Q	306	307	316	326	343	325	355	368	362	348	340	332	331	335	335	336	346	357	348	333	321	314	299	303
L Q	291	294	300	309	306	295	338	348	340	329	318	316	315	317	324	324	334	343	332	318	300	295	290	282

MAR. 2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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			L										
2									A	L	L	403	394	L	L									
3										L	L	L	L	L	L									
4									L	L	L	388	388	397		L	L							
5										L	L	L	U	L	L	L	L							
6										L	L	L	L	L	L	L								
7									L	L	L	L	408	L	L	L								
8										L	381	L	L	L	L	L								
9									L	L	L	L	L	L	L	L	L							
10									L		L	L	L	L	L									
11									L	L	A	L	L	L	L									
12										L	L	385	L	L	L	L	L							
13									L	L	L	384	418	U	L	L	L							
14										L	L	L	A	L		L	L							
15									L		A	L	L	L	L	L								
16									L	L	L	L	L	L	L	L	A							
17									L	L	L	L	L	396	L	L	L							
18									L	404	L	L	L	L	L	L	L							
19									L	L	L	386	396	L	L	L	L							
20									L	L	L	374	392	L	383	L	L							
21										L	U	L	L	L	L	413								
22									L	L	L	392	A	A	A	L	A							
23									L	L	A	L	422	L	392	L		A						
24									L	L	L	L	L	382	L	L								
25									L	L	L	L	400	L	L	L	L							
26										L	L	L	U	L	L	L	L							
27										L	L	379	L	L	L	L	L							
28									L	L	A	383	L	L	L	L	A				A			
29										L	L	L	L	L	L	L	L	A						
30									L	L	409	L	L	L	L	L	L							
31										L	L	L	L	L	L	L	L	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	3	11	10	4	2	1								
MED										404	381	386	395	391	388	413								
U Q											409	392	408	396										
L Q											U	L	U	L										
											377	383	388	384										

MAR. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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											230	256	238	238												
2										210	242	242	254	258	250	250										
3											236	252	264	242	242	246	240									
4										224	242	260	260	260	248	248										
5											250	266	264	252	258	248	248	248								
6											256	246	226	244	256	256	244									
7										236	228	228	240	240	238	240	240									
8											252	232	252	258	250	250	236									
9										230	230	256	256	256	236	236	244	244								
10										232		240	240	256	246	246										
11										224	268	252	272	276	252	252										
12											242	252	266	252	252	252	252	252								
13										230	250	242	266	256	256	236	254									
14											294	264	242	230		272	254									
15										216		216	270	258	248	248	252									
16										214	226	270	246	250	266	266	256	232								
17										240	222	244	262	262	262	238	262	244								
18										228	248	260	244	244	258	250	250	238								
19										238	238	254	254	254	254	250	250	250								
20										230	248	252	278	258	266	244	242	250								
21											250	248	268	242	270	256	248									
22										248	248	248	268	260	252	266	272	234								
23										248	248	234	280	264	264	248	248		234							
24										250	250	248	260	260	258	258	258									
25										256	254	254	254	246	268	264	256	238								
26											278	278	268	252	244	244	262	254								
27											254	254	262	262	276	262	240	238								
28										238	320	266	256	236	276	268	258	248		E A						
29											256	256	292	280	280	280	252	252								
30										242	232	256	282	262	260	278	280	254								
31											254	284	260	260	260	268	284	284	238							
	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	26	31	31	31	31	29	27	17	3			1					
MED									232	248	252	260	256	256	250	252	248	238		E A						
U Q									242	254	260	268	260	264	263	262	253	252								
L Q									224	238	242	254	244	248	246	244	238	234								

MAR. 2022 h'F2 (KM)

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MAR. 2022 h'F (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	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	31	31	31	31	31	31	31	30	31	27	31	29	30	30	31	28	28	31	30	31	31	31	31
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
UQ	272	270	256	236	230	250	216	208	206	202	200	202	198	206	202	206	210	213	208	210	234	250	260	274
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
	250	248	232	214	202	216	204	200	194	190	190	190	190	196	196	194	203	208	196	196	210	218	236	248

MAR. 2022 h'F (KM)

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	114	104	104	108	108	108	106	106	112	112		B					
2							B	112	104	104		A	114	114	114	114	112	110	110					
3								110	110	110	110	110	112	110	110	110	110		A					
4							B	110	112		A	A	112	112	112	112	112		A	112				
5							B	112	112	112	112	112		A	108	108	108	108	108					
6							B	108	108	108		A	A	108	108	108	108	108	116					
7							B	116	116	114	114	114	114	114	114	114		A	112					
8							B	112	112	112	112	112	112	112	112	110	110	110						
9							B	112	112	112	112	112	112	112	112	110	110	110						
10							B	110	110	112	112	112	112	112	112	112		A	B					
11							B	112	110	110		A	A		A	A		110	110					
12							B	110	110		A	110	110	110	110	110	110	110	110					
13							B	108	108	110	110	110	110	110	110	110		A	B					
14							B	110	110	110	110	110		A	A	A		110	110					
15							B	114	114	110	104		A	A	A	112		A	A					
16							B	112	110		A	A		A				A	A					
17							B	112		A	A	A	112	112		A		114	110	110	110			
18								116	116	116	110	110	110	110		A		110		A		B		
19								110	110	110	110	110	110	110	110		A		A		B			
20								132	110	112	112	112		A	112	112	112	112	112	112				
21							B	112	112	112	112	112	112	112		A	114		A	112				
22							B	110	110	110	110		A	A	110	110	110		A	110				
23							B	120	120	110		A	110		A	108	108	108	108	116				
24							B	116	116	116	116		A		A	112	112	112	112					
25							B	112	112	108		A	108	108	108	108	108	108	108					
26							B	110	112	108		A	106		A	A	A	112	112	112				
27							B	112	112	112	112		A	A	112		A		A	118				
28								116	112	112	108		A	A	114		A	108	108	108				A
29								108	108	108		A	A	A	A	A	A		A					
30							B	B		A	A	108	104	112	112	108	108	108	110					
31							B	110	110	110	110	110	110	110	110		A	112		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							5	30	29	25	20	21	22	21	24	25	20	20						
MED							116	112	112	110	110	110	112	110	110	110	110	110						
U Q							124	112	112	112	112	112	112	112	112	112	111	112						
L Q							109	110	110	109	110	110	110	109	108	109	108	110						

MAR. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	B	B	B	B	B	B	B	152	164	152	152	140	138	126	126	124	118	110	98	92	92	92	88	88	
2	86	86	86	100	B	B	B	G	146	136	96	G	G	166	G	G	G	G	82	82	82	82	B	B	
3	B	B	B	B	B	B	B	B	160	160	G	G	G	G	G	G	G	88	88	88	88	88	B	88	
4	B	B	B	B	B	B	B	B	148	G	98	92	156	150	G	130	G	102	122	102	116	102	B	B	
5	B	B	B	B	B	B	B	B	G	G	G	164	152	96	116	G	116	G	G	B	B	B	B	B	
6	B	B	B	B	94	B	B	G	114	114	100	94	G	G	G	G	G	G	78	B	B	B	B	82	
7	B	B	B	B	B	B	B	B	G	G	G	G	G	G	G	G	G	G	B	B	B	B	B	B	
8	B	B	B	78	B	B	B	B	148	G	G	G	G	G	G	G	G	G	B	B	80	86	B	B	
9	B	B	B	B	B	B	B	B	G	G	G	G	G	G	G	G	G	146	120	B	B	B	B	B	
10	B	B	B	B	B	B	B	B	G	146	146	G	G	G	G	G	126	120	100	100	B	B	B	B	
11	B	88	B	B	86	B	B	G	138	114	102	102	G	102	102	100	G	G	B	B	B	B	B	B	
12	B	B	B	B	B	B	B	B	G	G	94	134	G	G	G	G	120	G	B	96	B	B	B	B	
13	B	90	B	B	B	B	B	B	154	160	160	140	G	G	G	G	118	104	B	B	104	100	100	B	
14	100	B	B	B	B	B	B	B	144	130	120	120	120	100	100	100	G	G	86	86	86	B	98	88	88
15	90	90	82	82	82	82	92	G	G	G	152	88	92	92	126	98	98	98	94	94	94	B	B	94	
16	94	94	94	94	94	94	94	G	G	94	90	90	G	94	116	118	100	98	96	96	96	96	96	96	
17	84	84	84	90	B	B	B	B	G	90	90	96	152	G	92	G	G	G	82	82	84	84	84	B	
18	88	88	B	B	B	B	G	G	G	G	G	G	G	G	92	94	94	G	B	94	94	B	B	B	
19	B	94	94	88	88	88	G	G	128	156	G	G	156	156	G	G	102	100	100	B	98	98	98	98	
20	B	B	B	98	94	B	G	G	134	134	G	102	G	G	112	120	G	G	B	B	104	104	B	B	
21	90	90	B	90	B	B	114	140	140	124	124	G	G	G	102	132	104	G	B	104	104	98	98	110	
22	B	B	110	B	B	B	144	138	138	138	G	102	126	120	114	114	102	110	98	98	98	98	98	B	
23	B	B	B	B	B	B	118	138	116	114	104	108	92	162	G	G	G	162	134	124	100	100	100	B	
24	B	B	B	B	B	B	122	122	122	122	112	96	94	100	G	G	G	G	B	100	100	100	B	B	
25	B	B	B	B	B	B	116	134	132	122	104	120	136	G	G	G	G	G	B	B	110	B	B	B	
26	B	B	B	B	B	B	132	134	120	114	98	G	98	98	98	G	G	138	B	100	98	98	98	92	
27	92	B	B	B	92	B	124	138	134	122	122	102	98	G	100	90	88	G	88	88	100	100	92	B	
28	92	92	B	B	B	B	G	G	126	122	G	104	102	G	92	G	G	G	90	90	90	90	96	90	90
29	90	88	88	88	88	B	118	G	118	102	102	102	104	104	98	98	124	102	100	92	92	90	94	94	
30	B	88	B	88	88	88	B	94	94	94	G	G	G	166	156	138	160	124	104	B	98	98	96	94	
31	90	B	B	B	B	B	124	130	112	112	118	G	G	G	120	98	146	104	104	104	88	88	88	88	
	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	11	12	7	10	9	6	12	18	23	24	21	18	14	16	16	15	17	16	16	21	22	19	16	13	
MED	90	89	88	89	88	88	120	138	132	119	104	102	102	101	113	116	104	103	95	96	97	98	95	92	
U Q	92	91	94	94	94	94	124	148	146	135	129	140	138	123	126	120	122	121	101	102	100	98	98	95	
L Q	88	88	84	88	87	82	115	128	118	107	99	102	96	93	100	98	100	98	87	89	90	88	88	88	

MAR. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 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

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

MAR. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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 47	X 46	X 48	X 48	X 48	X 35													X 78	X 60	X 55	X 55	X 52	X 43	
2	X 43	X 45	X 47	X 48	X 48	X 37															X 71	X 57	X 55	X 50	X 48
3	X 47	X 45	X 44	X 49	X 38	X 38	X 33													X 81	X 62	X 54	X 56	X 56	X 51
4	X 48	X 47	X 46	X 49	X 48	X 36														X 79	X 70	X 65	X 63	X 55	X 54
5	X 50	X 49	X 47	X 48	X 51	X 43														X 82	X 69	X 66	X 62	X 50	X 48
6	X 48	X 49	X 47	X 48	X 45	X 42														X 87	X 85	X 78	X 64	X 38	X 43
7	X 45	X 45	X 45	X 50	X 40	X 38														X 88	X 64	X 61	X 54	X 52	X 51
8	X 49	X 46	X 47	X 47	X 44	X 44	X 47														X 81	X 77	X 64	X 54	X 51
9	X 46	X 45	X 45	X 45	X 45	X 42														X 105	X 86	X 65	X 53	X 50	X 48
10	X 45	X 44	X 44	X 46	X 46	X 36														X 100	X 78	X 72	X 66	X 58	X 55
11	X 53	X 53	X 52	X 52	X 50	X 41														X 96	X 87	X 75	X 56	X 52	X 52
12	X 53	X 54	X 52	X 56	X 64	X 35														X 104	X 94	X 80	X 75	X 72	X 64
13	X 64	X 65	X 65	X 58	X 44	X 38														X 94	X 76	X 67	X 66	X 67	X 62
14	X 58	X 58	X 59	X 63	X 52	X 42														X 93	X 79	X 69	X 62	X 56	X 56
15	X 56	X 56	X 56	X 53	X 45	X 40														X 93	X 83	X 65	X 65	X 61	X 57
16	X 54	X 57	X 57	X 60	X 54	X 44														X 94	X 66	X 54	X 54	X 52	X 48
17	X 51	X 50	X 50	X 50	X 49	X 41														X 113	X 96	X 77	X 64	X 60	X 52
18	X 48	X 48	X 48	X 50	X 52	X 33														X 74	X 66	X 54	X 48	X 49	
19	X 49	X 49	X 50	X 52	X 50	X 40														X 83	X 75	X 66	X 59	X 56	X 54
20	X 54	X 52	X 51	X 50	X 52	X 44														X 98	X 82	X 68	X 58	X 56	X 57
21	X 59	X 59	X 56	X 53	X 48	X 45														X 82	X 74	X 70	X 69	X 58	X 61
22	X 62	X 60	X 55	X 55	X 53	X 47														X 84	X 78	X 66	X 62	X 63	X 64
23	X 64	X 60	X 59	X 56	X 54	X 57														X 97	X 89	X 78	X 63	X 60	X 59
24	X 59	X 60	X 62	X 67	X 39	X 34	X 38													X 84	X 82	X 68	X 60	X 61	X 61
25	X 62	X 64	X 60	X 50	X 49	X 46														X 77	X 68	X 60	X 62	X 59	
26	X 59	X 59	X 59	X 53	X 44	X 42														X 82	X 66	X 63	X 63	X 62	
27	X 61	X 60	X 61	X 60	X 53	X 49														X 85	X 65	X 64	X 64	X 64	
28	X 65	X 66	X 68	X 54	X 46	X 45														X 109	X 86	X 78	X 70	X 67	X 65
29	X 64	X 64	X 63	X 60	X 60	X 38	X 45													X 122	X 106	X 80	X 71	X 68	X 73
30	X 74	X 71	X 70	X 77	X 61	X 48														X 100	X 79	X 70	X 70	X 75	X 75
31	X 77	X 77	X 72	X 72	X 64	X 54	X 55													X 95	X 74	X 66	X 68	X 70	
	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	5												23	31	31	31	31	31	
MED	X 54	X 54	X 52	X 52	X 49	X 42	X 45												X 93	X 81	X 68	X 63	X 58	X 56	
U Q	X 62	X 60	X 60	X 58	X 53	X 45	X 51												X 100	X 86	X 77	X 66	X 63	X 62	
L Q	X 48	X 47	X 47	X 49	X 45	X 38	X 36												X 83	X 74	X 65	X 56	X 52	X 51	

MAR. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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	41	40	43	42	42	29	30	48	70	71	90	101	100	93	84	82	81	80	72	54	49	49	46	37
2	37	39	41	42	42	31	27	50	59	72	81	90	95	94	100	97	99	93	88	65	50	49	44	42
3	41	39	38	43	32	32	27	51	68	72	77	86	101	104	109	100	92	78	75	56	48	50	50	45
4	42	41	40	44	42	30	29	50	67	78	76	81	94	102	111	104	92	76	73	64	59	57	49	48
5	44	43	41	42	45	37	37	58	75	81	88	91	96	106	100	97	89	79	76	63	60	56	44	42
6	42	43	41	42	39	36	39	59	80	91	123	118	106	102	108	108	96	82	81	79	72	58	35	37
7	39	39	39	44	34	32	33	61	74	89	98	98	101	103	88	87	85	82	82	58	55	48	46	45
8	43	40	41	41	41	38	41	61	77	93	97	100	110	114	109	102	91	83	84	75	71	58	48	45
9	40	39	39	39	39	36	38	69	80	80	93	95	106	105	102	102	95	96	99	80	59	47	44	42
10	39	38	38	40	40	30	32	57	69	80	89	99	105	106	100	90	93	96	94	72	66	60	52	49
11	47	47	46	46	44	35	38	61	69	77	85	106	115	125	124	118	104	102	90	81	69	49	46	46
12	47	48	46	50	58	29	30	64	64	82	96	111	125	126	110	113	116	116	98	88	74	69	66	58
13	58	59	59	52	38	32	32	63	78	82	88	94	102	112	112	106	99	98	88	70	60	60	61	56
14	52	52	53	57	46	36	52	64	69	99	101	132	127	120	97	101	106	107	87	73	63	56	50	50
15	50	50	50	47	39	34	37	60	72	78	90	100	118	125	121	113	104	101	87	75	59	59	55	51
16	48	51	51	54	48	38	38	60	67	78	89	114	113	132	136	134	114	106	88	60	48	48	46	42
17	45	44	44	44	43	35	39	61	85	86	88	100	116	126	132	132	124	116	107	90	70	58	54	46
18	42	42	42	44	46	27	29	58	70	79	90	102	105	107	107	97	94	94	82	68	60	48	42	43
19	43	43	44	46	44	34	35	63	78	87	83	81	92	99	102	98	95	88	77	69	60	53	51	48
20	48	46	45	44	46	39	35	61	71	79	81	92	91	102	104	104	94	94	92	76	62	52	50	51
21	53	53	50	47	43	39	39	66	82	76	87	91	100	114	114	106	88	78	76	68	64	63	52	55
22	56	54	49	49	47	41	41	59	76	84	93	92	93	102	114	100	89	87	78	72	60	56	57	58
23	58	54	53	50	48	51	47	66	76	85	88	87	97	110	127	113	98	95	91	83	72	57	54	53
24	53	54	56	61	33	28	32	60	80	86	92	106	100	103	115	115	98	86	78	76	62	54	55	55
25	56	58	54	44	43	40	40	61	82	95	94	107	102	110	115	105	97	84	76	71	62	54	56	53
26	53	53	53	47	38	36	40	64	70	73	86	110	115	104	101	94	84	91	86	76	60	57	57	56
27	55	54	55	54	47	44	44	62	72	88	95	104	107	118	130	129	106	98	96	79	59	58	58	58
28	59	60	62	48	40	39	38	62	65	84	120	124	114	110	117	109	110	109	103	80	72	64	61	59
29	58	58	57	54	54	32	39	63	84	85	92	96	106	117	125	126	123	122	116	100	74	65	61	67
30	68	65	64	71	55	42	50	70	83	86	96	110	121	127	127	125	115	111	113	94	73	64	69	69
31	71	71	66	66	58	48	49	76	94	92	97	113	126	128	114	116	116	120	113	89	68	60	62	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	48	48	46	46	43	36	38	61	74	82	90	100	105	110	111	105	97	94	87	75	62	57	52	50
U Q	56	54	54	52	47	39	40	64	80	87	96	110	115	120	121	115	106	106	96	80	70	60	57	56
L Q	42	41	41	43	39	32	32	59	69	78	87	92	100	103	102	98	92	83	78	68	59	50	46	45

MAR. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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								A	L	L	L	488	A	A	L	L	L								
2									L		L	484	L	504	464	484	L								
3											L	U L	L	L	L	L	A								
4										L	L	U L	U L	A		L	L								
5								A	L	L	L	516	504		504	L	L								
6											L	L	L	L	L	L	L								
7										L	L	492	L	L	L	L	L								
8									L	L		L	L	L	L	L	L								
9											L	L	500	L	L	L	L	L							
10											L	L	512	L	L		L								
11											L	504	L	A	A	L	L								
12										L	L	L	L	L	L	L	L								
13									L	L	L	L	L	L	A	L									
14									A	L	L	L	L	L	L	L	L								
15											L	L	U L	A	A	A	A								
16										L	L	L	U L	U L	L	L	L								
17										L	L	L	528	540	L	L	L	L							
18										L	L	U L	U L	L	U L	L	L	L							
19										L	U L	488	L	U L	L	U L	L	L	A						
20									L	L	L	500	492	484	A	U L	A	L							
21										L	L	488	488	500	472	L	396								
22										L	L	L	488	520	500	L	L	A							
23										L	452	500	512	488	L	L	L								
24										L	L	L	L	L	U L	L	L								
25									L	L	A	516	L	528	520	L	L	L							
26										L	L	520	L	L	L	L	L	L							
27										L	L	524	L	524	524	L	L	L							
28											L	500	L	L	L	L	L	A							
29											L	L	L	U L	L	L	L	A							
30											L	L	L	592	L	L	L								
31										L	L	L	504	L	540	L	L								
											L	L	L	L	L	U 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	14	14	10	10	3	1								
MED											470	500	504	512	502	484	396								
U Q											516	528	528	520	544										
L Q											488	492	488	476	484										

MAR. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR.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	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 A	U A					A	U R	U R	U R						
2							B	B	U R	U R	A	A	A	U R	U R	U R	U R	U R	B					
3								184	260	340	U R	A	U R	U R	A	U R	U R	A	B					
4							B	176	268	308	U R	A	A	U R	U R	A	U R	U R	A					
5							B	B		A	A	A	A	U R	U R	U R	U R	U R	U R	U R				
6							B	U R	U R	A	A	A	A	U R	U R	A	U R	U R	U R					
7							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	A					
8								U R	U R	A	A	A	U R	U R	U R	U R	U R	A	U R	B				
9							B	U R	U R	U R	A	A	A	U R	U R	U R	U R	U R	U R					
10							B	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R					
11							B	U R	U R	A	A	A	A	A	A	A	A	A	U R					
12							B	U R	U R	U R	U R	A	A	A	U R	U R	U R	U R	U R	A				
13							B	U R	U R	U R	U R	A	A	A	A	A	A	A	A					
14							B	B	U A	U A	A	A	U A	A	U R	A	A	A	A					
15							B		A	U R	U R	U R	U R	A	A	A	A	A	A					
16							B	B	U R	U R	A	A	A		U R	A	A	U R	U R					
17							B	A	A	A	A	A	A	A	A	U R	A	A	A					
18							B	U R	U R	U R	A	A	A	A	A	A	A	A	A	A				
19							B	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	A				
20							B	172	288	312	340	U R	U R	A	A	A	A	A	A					
21							B	U R	U R	U R	A	A	A	U R	U R	U R	U R	U R	U R					
22							B	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R					
23							B	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R	U R					
24								A	A	A	A	A	A	A	A	U R	U R	U R	U R	A				
25							B	U R	U R	U R	A	A	A	A	U R	U R	U R	U R	U R					
26							B	U R	U R	U R	A	A	A	A	A	U R	U R	U R	U R	B				
27							B	U R	U R	U R	A	A	A	A	A	A	A	A	B	A				
28							B	U R	U R	U R	A	A	A	R	A	U R	U R	U R	A					
29								U R	U R	U R	A	A	A	A	A	U R	U R	U R	A					
30							B	U R	U R	U R	A	A	A	U R	U R	U R	U R	U R	U R					
31								U R	U R	U R	A	A	A	U R	U R	U R	U R	U R	U R					
	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								23	28	20	12	11	12	19	15	19	17	13	3					
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 Q								240	288	324	348	372	374	376	364	356	326	276	232					
L Q								188	268	310	336	356	362	360	352	340	308	256	172					

IONOSPHERIC DATA STATION Yamagawa

MAR. 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	E 16	E 16	E 16	B 20	E 16	E 16	E 15	B 20	G	G	38	39	40	46	40	G	G	G	E 17	B 22	21	E 15	E 16	E 15		
2	E 16	E 15	E 15	E 15	E 15	E 15	E 15	E 15	G	37	37	39	J 45	A	G	G	G	G	19	19	22	J 29	A 29	A 31	B 15	
3	E 15	E 15	E 15	E 15	E 15	E 15	E 16	B 24	30	G	37	G	G	J 50	A	G	J 38	A 53	A 34	A 30	E 16	J 26	A 29	A 44	B 26	
4	24	20	E 16	E 16	E 16	E 16	E 16	B 22	32	36	36	J 43	A	G	45	42	G	G	32	22	E 17	E 17	J 17	A 27	A 31	B 17
5	J 33	A 22	E 16	E 16	E 16	E 16	E 15	B 15	32	36	42	45	G	G	G	G	G	G	E 20	E 15	E 16	E 16	E 16	E 16	E 16	
6	22	22	22	22	22	21	E 16	G	G	33	J 44	A 50	A 50	G	J 53	A	G	G	E 17	E 13	22	J 24	A 24	B 23		
7	E 15	E 16	E 16	E 16	E 16	E 15	E 16	B 19	G	G	G	41	G	41	G	G	G	J 32	A 18	E 16	E 16	E 16	E 16	E 16	E 16	
8	E 16	E 15	E 16	E 16	E 16	E 16	E 16	B	G	G	34	J 38	A 43	G	G	G	J 36	A	J 36	A 17	E 17	E 16	E 16	E 16	E 16	
9	E 15	E 15	E 16	E 16	E 16	E 16	E 15	B	G	G	G	37	37	G	G	G	G	E 23	E 21	16	E 16	E 16	E 16	E 15		
10	E 16	E 16	E 16	E 16	E 16	E 16	E 15	B 24	29	35	38	40	40	42	43	J 52	A 43	J 30	A 35	J 38	A 42	A 28	A 16	E 16	E 16	
11	E 16	E 16	E 15	E 15	E 15	E 15	E 15	B	G	J 44	A 46	A 48	A 50	A 55	A 58	A 42	A 41	G	E 22	E 15	E 15	E 25	E 16	E 15		
12	E 15	E 15	E 14	E 15	E 15	E 15	E 15	B	G	G	38	40	44	42	G	G	G	G	E 38	E 19	E 16	E 16	E 15	E 15		
13	E 16	E 16	E 16	E 16	E 15	E 15	E 15	B	G	G	36	J 38	A 56	42	46	79	40	35	J 44	A 27	J 33	E 16	30	A 30	A 27	
14	20	E 16	E 15	E 16	E 16	E 15	E 16	B 25	32	37	42	40	44	42	G	36	35	J 33	A 18	A 44	26	23	E 16	E 16		
15	J 32	A 21	E 21	E 23	E 21	E 20	B	G	J 34	A	G	G	G	J 43	A 49	A 53	65	66	66	48	38	30	J 25	A 21	A 21	
16	20	J 28	A 34	E 22	E 63	E 22	E 22	B 20	J 30	A	G	36	40	41	43	42	G	37	G	20	E 16	20	J 45	A 64	A 56	
17	J 42	A 21	E 17	E 16	E 16	E 16	E 16	B 26	J 53	A 48	A 40	A 44	A 49	A 53	A 45	G	J 50	A 53	A 39	A 31	23	E 16	E 20	E 16		
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	B	G	G	J 42	A 40	46	39	39	35	33	28	J 36	A 22	31	E 16	24	E 16		
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	B	G	31	G	38	G	G	G	G	J 39	A	J 30	A 27	J 28	A 29	22	22		
20	22	J 33	A 22	E 22	E 20	E 16	E 16	B 23	33	37	42	40	G	J 40	A 48	38	J 44	A 44	A 25	E 16	E 16	E 16	E 16	E 16		
21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	B	G	34	J 36	A 76	G	J 46	A	G	G	G	E 19	E 16	E 16	E 16	E 16	E 16		
22	E 15	E 16	E 16	E 16	E 16	E 16	E 17	B	G	J 46	A 40	G	39	G	44	50	46	46	54	36	33	E 15	E 15	E 15		
23	E 16	E 16	E 16	E 15	E 15	E 15	E 16	B	G	34	37	39	38	G	G	G	G	G	J 34	A 26	J 29	E 26	20	E 15	E 16	
24	E 15	E 15	E 15	E 15	E 15	E 15	E 15	B 26	31	35	39	41	J 55	A 52	43	G	G	G	32	27	E 16	22	23	E 16	E 16	
25	E 16	E 16	E 16	E 16	E 15	E 15	E 15	B 28	31	41	51	G	42	42	G	G	G	G	E 23	E 15	E 15	E 23	E 28	E 15		
26	E 15	E 15	E 15	E 16	E 16	E 16	E 16	B 27	32	36	41	41	43	42	J 45	A 44	G	G	26	J 30	A 37	J 31	22	23		
27	E 16	J 28	A 16	E 16	E 16	E 16	E 16	B	G	33	36	41	42	45	43	46	44	38	28	24	23	27	42	22	22	
28	E 15	E 16	E 19	E 16	E 16	E 16	E 15	B	G	34	37	40	J 42	A	40	46	G	J 53	A 30	22	E 16	44	A 34	E 15		
29	22	19	20	E 16	E 16	E 16	E 16	B	G	G	J 37	A 42	42	43	45	41	G	J 43	A 87	A 76	66	63	45	40	40	
30	J 34	A 30	A 30	E 22	E 16	E 16	E 16	B	G	J 31	A 39	42	42	45	G	42	G	G	G	26	27	E 26	E 15	E 15	E 16	
31	E 16	E 16	E 16	E 16	E 16	E 16	E 15	B	G	33	39	41	42	44	G	42	G	G	G	32	24	J 28	A 40	A 51	A 36	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	B	G	31	36	40	41	42	42	42	G	G	32	25	22	22	23	20	E 16	
U Q	22	21	17	16	E 16	E 16	E 16	B	G	J 33	A 37	A 42	A 43	A 45	A 45	A 39	41	39	30	30	28	29	30	22		
L Q	E 15	E 16	E 16	E 16	E 16	E 15	E 15	B	G	G	G	38	38	G	G	G	G	G	E 19	E 16	E 16	E 16	E 16	E 15		

MAR. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B	E	B	E	B
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	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	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
UQ	16	16	16	16	16	16	16	16	22	30	35	38	42	40	41	36	33	30	23	23	22	20	16	16
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
	15	16	16	16	16	15	15				35	38		39					19	16	16	16	15	

MAR. 2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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

$\begin{matrix} H \\ D \end{matrix}$	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	15	16	16	16	20	21	21	22	22	24	22	17	17	16	16	15	16	15
2	16	15	15	15	15	15	16	15	15	15	15	23	23	24	24	24	24	16	11	15	15	16	15	15
3	15	15	15	15	15	15	16	14	15	15	22	23	24	24	23	23	18	17	16	16	16	16	16	16
4	16	16	16	16	16	16	16	15	15	16	20	23	25	26	26	26	24	17	17	17	17	17	17	17
5	15	16	16	16	16	16	15	15	15	15	19	23	23	23	23	23	23	19	20	15	16	16	16	16
6	16	16	16	16	16	16	16	16	15	14	18	17	21	25	25	23	21	17	17	13	16	16	16	16
7	15	16	16	16	16	15	16	19	16	17	22	22	23	25	25	24	23	17	18	16	16	16	16	16
8	16	15	16	16	16	16	16	16	16	22	22	24	24	24	23	23	19	19	17	17	17	16	16	16
9	15	15	16	16	16	16	15	15	15	20	22	22	26	28	27	26	24	20	23	16	16	16	16	15
10	16	16	16	16	16	16	15	15	16	23	24	27	27	27	26	24	21	14	16	16	16	16	16	16
11	16	16	15	15	15	15	15	15	17	18	21	25	25	25	25	23	23	15	15	15	15	16	16	15
12	15	15	14	15	15	15	15	16	16	24	23	25	25	26	26	25	23	17	19	16	16	16	15	15
13	16	16	16	16	15	15	15	15	15	15	20	23	24	25	26	24	24	17	15	15	16	16	15	15
14	16	16	15	16	16	15	16	16	15	18	18	21	24	24	26	26	25	16	18	16	16	16	16	16
15	16	16	16	16	16	16	16	15	15	15	21	22	23	23	24	23	23	20	16	17	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	24	24	24	24	23	23	20	20	12	16	16	16	17	16
17	16	16	17	16	16	16	16	16	16	16	22	22	25	25	24	23	18	16	16	15	16	16	16	16
18	16	16	16	16	16	16	16	16	16	16	22	23	23	22	24	24	21	17	18	16	16	16	16	16
19	16	16	16	16	16	16	16	15	15	15	21	22	24	23	23	23	22	18	15	16	16	16	16	16
20	15	16	16	16	16	16	16	15	15	22	22	25	25	25	25	25	24	17	17	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	18	21	23	24	26	26	25	24	17	19	16	16	16	16	16
22	15	16	16	16	16	16	17	16	16	20	22	24	25	25	25	25	18	14	15	15	16	15	15	15
23	16	16	16	15	15	15	16	14	14	14	20	22	24	24	23	23	23	20	15	15	15	15	15	16
24	15	15	15	15	15	15	15	14	14	20	22	25	26	26	24	23	23	18	17	16	16	16	16	16
25	16	16	16	16	16	15	15	15	14	16	22	24	25	24	23	23	19	16	13	15	15	16	16	15
26	15	15	15	16	16	16	16	15	15	20	21	21	22	24	25	25	25	19	17	16	15	16	16	16
27	16	16	16	16	16	16	16	15	14	16	16	19	21	26	24	24	22	17	14	16	16	16	16	15
28	15	16	16	16	16	16	15	15	15	18	23	23	24	26	26	26	24	16	14	16	16	16	16	15
29	16	16	16	16	16	16	16	16	17	23	27	27	27	27	27	27	24	21	16	15	16	16	16	16
30	16	16	16	16	16	16	16	15	15	20	20	22	22	24	24	24	23	18	15	15	15	15	15	16
31	16	16	16	16	16	16	15	15	18	24	24	25	27	27	28	27	24	19	14	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	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	15	15	17	22	23	24	25	25	24	23	17	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	20	22	24	25	26	26	25	24	19	17	16	16	16	16	16
L Q	15	16	16	16	16	15	15	15	15	15	20	22	23	24	23	23	21	16	15	15	16	16	16	15

MAR. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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	301	270	322	343	357	291	295	344	366	354	336	330	353	331	338	321	338	352	355	328	301	311	319	288
2	295	302	319	322	356	346	313	348	353	350	347	327	339	308	326	320	334	339	358	359	314	306	311	304
3	307	309	306	337	325	330	332	365	370	362	353	332	335	310	328	335	342	344	359	346	292	304	312	296
4	306	309	314	299	366	324	338	358	361	366	354	332	317	315	322	334	321	342	334	324	312	324	324	317
5	328	302	296	299	339	310	296	353	366	347	338	326	320	323	317	329	335	335	349	328	338	340	304	285
6	273	286	297	302	332	286	283	351	338	317	322	349	335	308	315	324	335	329	333	329	347	363	286	276
7	292	294	301	345	356	307	308	370	349	338	327	348	323	341	325	331	337	345	346	322	319	300	291	296
8	301	293	283	289	308	289	308	355	342	333	317	327	330	327	334	328	337	329	342	327	338	324	316	310
9	301	299	300	308	308	305	311	372	372	350	343	328	330	332	314	331	332	331	357	346	320	312	309	305
10	308	290	304	312	366	302	329	363	350	343	329	330	326	330	332	324	326	338	347	320	302	308	305	291
11	278	284	303	302	345	292	312	370	369	342	291	314	314	314	316	326	317	334	339	322	337	304	294	290
12	285	282	274	296	385	317	301	355	341	311	311	302	316	325	300	304	320	331	331	329	320	294	319	295
13	297	324	327	335	343	302	313	355	366	349	338	336	316	320	320	311	323	329	348	332	325	296	303	283
14	263	258	279	321	372	250	307	380	337	321	288	335	323	339	323	327	329	327	335	321	319	301	293	280
15	289	294	322	360	341	310	302	366	346	342	323	316	313	325	328	330	327	337	337	347	311	311	315	297
16	280	294	299	326	367	286	319	368	366	336	301	312	334	321	324	329	337	358	362	381	292	315	293	281
17	298	303	290	314	344	291	324	363	357	352	328	311	347	321	319	312	331	352	332	325	313	297	286	289
18	287	300	294	325	372	330	322	361	353	352	333	322	315	321	321	317	325	350	353	338	331	330	287	294
19	296	291	310	328	335	310	323	356	362	349	357	323	315	313	319	324	333	349	352	331	325	302	309	292
20	293	293	299	302	342	350	308	366	358	358	343	329	290	312	318	327	312	319	334	337	332	299	289	286
21	288	309	324	320	318	313	322	358	358	332	332	333	298	314	332	315	334	341	340	313	295	294	300	309
22	302	302	292	317	324	317	336	393	348	343	338	338	317	312	319	326	336	339	339	338	309	282	301	304
23	317	296	305	305	294	325	334	355	340	340	339	323	301	300	323	326	316	327	337	338	335	310	299	284
24	296	301	323	371	352	305	306	359	346	338	322	324	309	298	314	334	335	341	336	333	333	277	291	295
25	301	327	349	310	296	323	303	352	333	335	319	326	316	304	331	316	330	335	340	325	325	284	288	292
26	290	323	326	329	337	293	305	364	342	335	303	313	335	322	331	330	318	337	356	339	311	287	305	295
27	296	291	304	324	318	274	288	381	330	336	322	315	303	307	317	319	329	328	348	335	306	280	285	285
28	294	316	335	346	279	266	332	376	328	290	320	333	322	304	316	306	323	325	357	319	307	304	315	287
29	298	295	306	330	345	332	324	352	341	341	333	315	293	297	304	309	313	324	339	345	323	300	289	293
30	295	287	289	329	339	282	316	357	346	335	303	303	305	312	304	312	312	315	334	341	311	286	292	284
31	299	301	311	327	319	303	299	342	347	337	305	294	307	316	292	297	304	324	319	326	289	262	273	265
	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	296	296	304	322	341	305	312	359	349	341	328	326	317	315	320	324	329	335	340	331	319	302	300	292
U Q	301	303	322	330	356	323	324	368	362	350	338	332	330	325	328	329	335	342	353	339	331	311	311	296
L Q	289	291	296	305	319	291	303	355	341	335	317	315	309	308	316	315	320	328	335	325	307	294	289	285

MAR. 2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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								A	L	L	L		A	A	L	L	L								
2									L		L	384	L	388	402	354	L								
3											L	U L	L	L	L	L	A								
4										L	L	U L	U L	A		L	L								
5								A	L	L	L	377	386		377	L	L	L							
6											L	393	L	L	L	L	L								
7										L	L		L	L	L	L	L								
8									L	L		405	L	L	L	L	L								
9											L	L		L	L	L	L	L							
10											L	L		L	L		L								
11												L		A	A	L	L								
12										L	L	L	L	L	L	L	L								
13									L	L	L	L	L	L	A	L									
14									A	L	L	L	L	L	L	L	L								
15											L	L	U L	A	A	A	A								
16										L	L	L	U L	U L	L	L	L								
17										L	L	L	L	U L	L	L	L	L							
18										L	L	U L	U L	L	U L	L	L	L							
19										L	U L	L	U L	L	U L	L	L	L	A						
20									L	L	L	384	391	396		A	U L	A	L						
21										L	L	389	390	381	388		L	428							
22										L	L	L	403	366	375		A	L	A						
23										L		427	417	408	410		L	L							
24										L	L	L	L	L	U L	L	L								
25									L	L	A	385	L	377	371		L	L	L						
26										L	L	380	L	L	L	L	L	L							
27										L	L	377	L	382	364		L	L	L						
28										L	L	411	L	L	L	L	L	L	A						
29										L	L	L	L	U L	L	L	L	L	A						
30										L	L	L	L	L	L	L	L	L							
31										L	L	L	L	L	L	U L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT											2	14	14	10	10	3	1								
MED											410	385	390	382	373	355	428								
U Q												396	403	396	388	380									
L Q												380	379	367	370	354									

MAR. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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								226	234	234	256	238	218	250	250	272	258								
2									230		254	254	238	276	250	250	250								
3											250	264	254	286	250	256	248								
4											236	236	268	264	268	246	246								
5											210	244	244	264	276	262	262	254							
6												248	224	242	276	262	244	244							
7											244	242	230	254	246	270	252	252							
8											240	244		258	258	252	252	244	242						
9												242	256	256	242	262	248	248	248						
10												256	256	256	250	250	268								
11													268	268	268	252	252	254							
12													294	280	280	260	242	258	268	254					
13													220	242	240	262	270	270	250	254					
14													212	264	302	242	242	242	266	256					
15														256	256	274	244	244	244	244					
16														250	282	282	254	264	250	248	238				
17														238	248	270	250	250	250	250	250	240			
18														240	256	254	266	254	254	254	254	240			
19														238	238	280	280	280	270	266	264	234			
20														234	234	258	258	310	272	272	264	234	258		
21														258	268	268	280	260	240	246	238				
22														262	260	238	264	284	270	258	258	234			
23														244	242	266	290	290	266	252	252				
24														252	258	258	248	290	264	240	238				
25														252	262	246	256	256	268	248	258	240	240		
26														264	286	282	248	262	244	260	260	250			
27														250	272	272	272	288	274	248	248	238			
28														258	244	244	274	274	260	260	244				
29														246	260	286	286	280	264	264	256				
30														256	264	264	264	272	272	272	272				
31														250	268	282	264	264	284	292	292				
	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	8	22	29	31	31	31	31	30	30	11							
MED								226	232	247	256	260	260	268	258	254	252	240							
U Q								237	258	266	268	272	276	270	264	258	250								
L Q								216	240	245	254	250	250	250	248	244	238								

MAR. 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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	B	E	B	E	B	E	B	A											E	B	E	B	E	B		
2	256	276	234	212	194	228	284		204	178	200	192		A	A	192	192	192	208	196	196	204	230	222	258		
3	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
4	284	266	252	232	198	198	226	208	192	210	202	202	188	188	186	186	204	210	200	190	E	B	E	B	E	B	
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
6	252	252	252	230	206	216	216	214	208	208	194	194	194	236	200	200		A	208	206	194	230	242	242	242		
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
8	280	260	260	236	206	206	230	204	204	200	190	180	180		A	196	196	184	210	208	E	B	E	B	E	B	
9	E	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
10	230	244	260	260	216	216	246	218		A	182	194	194	194	200	192	186	202	202	208	204	204	204	230	284		
11	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
12	304	278	216	222	206	258	286	194	206	204	200	200	198	198	192	204	202	206	206	206	206	204	192	260	280		
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
14	286	262	262	210	200	236	242	206	206	198	190	190	190	206	196	196	196	206	206	196	212	222	246	246	246		
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
16	258	258	262	262	232	260	258	210	198	198	198	198	198	198	188	188	206	206	206	206	206	206	220	234	234		
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
18	234	272	272	260	244	250	250	192	204	194	182	178	178	178	194	204	196	202	204	188	188	210	220	240	240		
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
20	264	276	254	244	212	226	234	200	200	198	198	200	188	196	214	222	212	210	208	208	E	A		E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
22	282	276	260	242	216	234	258	202	202	202	202	208	208		A	A	198	198	198	198	206	198	214	214	256		
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
24	272	288	300	256	190	198	250	202	192	208	208	214	194	194	202	202	202	202	202	202	E	B	E	B	E	B	
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
26	262	228	212	202	194	260	248	196	196	194	200	198	198	204		A	200	210	210	210	200	220	262	262	318		
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
28	322	328	268	232	200	364	242	176		A	202	204	198	198	198	190	208	208	E	B	E	B	E	B	E	B	
29	E	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
30	292	252	234	208	208	216	192	190	190	190	184	190		A	A	A	A	220	212	202	214	218	218	248	248		
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
32	272	272	238	220	208	256	228	192	190	180	174	196	196	196	210	210	202	212	198	192	200	268	268	310	310		
33	E	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
34	306	248	256	246	214	216	234	204	204	200	200	200	200	196	196	190	198	198	196	196	E	B	E	B	E	B	
35	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
36	278	264	256	232	200	200	246	210	210	210	194	188	184	184	188	194	202	202	202	200	E	B	E	B	E	B	
37	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
38	268	268	252	228	210	230	240	208	206	194	194	190	190	190	190	198	198		A	202	204	208	218	218	238		
39	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
40	266	266	266	246	214	200	246	200	188	196	212	198	198	198		A	188		A	202	202	194	202	214	250	270	
41	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
42	268	238	220	220	220	220	226	212	208	192	190	190	190	190	190	190	188	212	206	206	222	240	240	240	240		
43	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
44	248	238	264	242	214	214	214	196	208	200	190	190	190	188	214		A	200		A	206	206	206	230	244	244	
45	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
46	232	244	254	242	260	218	206	194	206	198	178	188	172	182	176	194	194	210	210	208	208	206	238	266	266		
47	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
48	284	250	234	208	180	258	246	210	208	202	202	202	190	244	186	198	192	208	208	206	206	238	260	260	260		
49	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
50	258	228	212	226	236	214	232	216	206	208		A	198	198	190	190	190	182	194	208	208	206	242	282	262		
51	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
52	256	230	224	224	208	282	244	204	204	196	196	180	202	188	188	188	184	202	202	202	204	E	A	E	B	E	B
53	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
54	262	262	240	222	204	288	250	196	196	194	198	196	196	186	186	186	186	190	204	204	204	272	272	274	274		
55	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
56	262	240	218	192	242	332	240	196	196	208	208	192	192	192	194	194	200		A	E	B	E	B	E	B		
57	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
58	256	256	240	220	194	210	230	202	202	202	194	194	194	194	196	196	214		A	226	226	222	250	280	276		
59	E	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
60	276	276	258	216	196	220	240	196	212	194	194	188	188	178	190	190	194	202	218	206	206	210	258	266	266		
61	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
62	248	240	236	230	204	204	244	204	204	194	194	194	194	194	194	194	210	214	214	188	214	338	288	288	288		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	31	31	31	31	31	31	31	30	29	31	30	31	30	27	27	29	28	27	31	31	31	31	31	31	31		
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
UQ	282	272	260	242	216	258	248	208	206	202	200	198	198	198	198	199	202	210	208	206	214	242	260	272	272		
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
	256	244	234	220	200	210	230	196	196	194	190	190	190	188	190	190	192	202	202	196	204	214	220	242	242		

MAR. 2022 h'F (KM)

NATIONAL

IONOSPHERIC DATA STATION Yamagawa

MAR. 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																
2							B	B	98	114	116	116	104	108	108	108	108	108		B				
3									108	114	114	114	114	114	114	114	114	A	B					
4							B		114	114	114	114	114	116	116	116								
5							B	B	116	120	120	114	A	114	114	112	112	112						
6							B	B	112	112		A	A	110	110	110	110	110	110					
7							B	B	110	110	110	A	A	110										
8									112	112	112	112	112	112	112	112	A	A		B				
9							B		112	112	112	114	108	108	108	108	108	108						
10							B		108	110	110	110	110	110	110		A	A						
11							B		120	120	A	A	A	A	A	A	A	A						
12							B		132	116	116	116	116	116	114	114	114	114						
13							B		120	114	114	114	A	114	A	114	114	A						
14							B	B	114	114	114	114	114	114	114	114	114							
15							B		120	A	114	114	114	A	A	A	A	A						
16							B	B	114	114		A	114	112	112	112	114	114						
17							B		114	A	A	A	A	A	A	112	A	A						
18							B		110	110	110	110	110	A	112	112	112	112	A	A				
19							B		112	112	112	112	112	112	112	106	106	114	A					
20							B		118	118	118	118	118	118		A	A	A	A					
21							B		110	110	110	A	110	110	110	110	110	110						
22							B		116	116	116	116	116	A	116	116	116	116	116					
23							B		112	110	110	110	108	108	108	108	108	108	A					
24									108	108	108	108	A	A	A	A	108	108						
25							B		110	110	110	110	110	110	110	110	110	110	110					
26							B		110	110	110	110	110	110	A	A	A	110	110	B				
27							B		110	110	110	110	110	A	A	A	A	A	B					
28							B		110	110	110	A	A	110	A	A	110	110	A					
29									110	110	110	A	106	A	104	A	104	112						
30							B		112	112	A	A	A	110	110	110	110	110	110					
31									110	110	110	110	110	A	110	110	108	108	108	108				
	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	29	28	22	21	19	24	20	24	23	17	4					
MED								112	112	112	113	112	112	112	111	111	112	110	110					
U Q								116	114	114	114	114	114	114	114	113	114	113	110					
L Q								110	110	110	110	110	110	110	110	108	110	109	109					

MAR. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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

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	94	B	B	B	146	G	G	146	128	126	122	120	G	G	G	B	98	98	B	B	B
2	B	B	B	B	B	B	B	B	G	138	138	114	122	G	G	G	G	G	122	98	94	94	90	B
3	B	B	B	B	B	B	B	162	154	G	118	G	G	G	G	152	92	92	92	B	106	96	84	84
4	84	84	B	B	B	B	B	146	144	134	112	102	G	126	124	G	G	112	112	B	B	112	102	B
5	94	92	B	B	B	B	B	146	122	96	96	G	G	G	G	G	G	B	B	B	B	B	B	B
6	88	88	88	88	88	88	B	G	G	110	102	98	98	G	98	G	G	G	B	B	98	98	96	94
7	B	B	B	B	B	B	B	B	G	G	G	134	G	134	G	102	G	104	B	B	B	B	B	B
8	B	B	B	B	B	B	B	G	G	110	114	102	G	G	G	G	86	G	86	B	B	B	B	B
9	B	B	B	B	B	B	B	G	G	G	112	112	G	G	G	156	G	G	B	92	B	B	B	B
10	B	B	B	B	B	B	B	134	120	158	140	156	132	132	132	100	100	122	96	90	90	90	B	B
11	B	B	B	B	B	B	B	G	G	102	102	98	98	92	84	92	92	G	92	B	B	92	B	B
12	B	B	B	B	B	B	B	G	G	142	140	116	114	G	G	G	G	96	B	B	B	B	B	B
13	B	B	B	B	B	B	B	G	G	142	142	98	96	116	104	112	112	112	110	100	B	100	98	98
14	98	B	B	B	B	B	B	134	126	124	122	120	110	110	G	110	116	106	B	82	226	80	B	B
15	86	86	86	B	86	84	84	G	90	G	G	G	114	100	100	100	94	94	94	92	92	90	90	90
16	94	92	92	92	92	90	90	88	94	G	92	142	112	142	126	G	116	G	110	B	80	88	88	88
17	88	88	B	B	B	B	B	120	94	92	92	92	92	92	90	G	86	82	82	82	82	B	82	B
18	B	B	B	B	B	B	B	G	G	G	114	114	104	108	108	108	108	104	104	96	96	B	96	B
19	B	B	B	B	B	B	B	G	G	138	128	G	G	128	138	G	G	102	102	92	92	92	92	92
20	92	92	94	82	80	B	B	138	130	130	124	118	G	118	100	98	96	96	96	B	B	B	B	B
21	B	B	B	B	B	B	B	G	126	118	106	G	106	G	G	G	G	G	B	B	B	96	B	B
22	B	B	B	B	B	B	B	G	G	118	118	G	106	G	128	118	116	114	102	98	116	B	B	B
23	B	B	B	B	B	B	B	G	114	114	124	130	G	G	G	124	G	160	132	112	110	96	B	B
24	B	B	B	B	B	B	B	120	120	120	120	100	100	92	96	G	G	100	114	B	104	104	B	B
25	B	B	B	B	B	B	B	118	120	110	110	G	110	110	G	G	G	G	B	B	B	94	94	B
26	B	B	B	B	B	B	B	122	132	124	114	114	112	100	100	100	G	G	110	98	86	86	86	86
27	B	86	B	B	B	B	B	G	124	124	118	118	92	92	92	92	92	90	124	102	102	102	102	90
28	B	B	90	B	B	B	B	G	112	112	102	100	G	100	94	G	G	78	78	78	B	82	82	B
29	82	82	82	B	B	B	B	G	G	110	106	102	102	102	102	G	120	98	98	98	90	90	90	90
30	90	90	88	88	B	B	B	G	130	88	88	88	88	G	136	G	G	G	126	94	94	B	B	B
31	B	B	B	B	B	B	B	G	130	122	112	112	102	G	110	G	G	128	G	104	96	94	94	94
	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	10	7	5	4	3	2	11	19	23	29	25	21	20	20	14	14	19	22	18	19	20	16	10
MED	89	88	88	88	87	88	87	134	126	120	114	112	106	110	103	105	98	102	103	97	96	94	91	90
U Q	94	92	92	93	90	90		146	132	130	124	119	113	124	125	118	116	112	114	98	104	97	96	94
L Q	86	86	86	85	83	84		120	114	110	104	99	98	100	97	100	92	94	94	92	90	90	87	88

MAR. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 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					H2			H1	H1	H1	C2	C2					F1	F1			
2										H2	H2	C2	C1						F1	F1	F2	F2	F2	
3								H2	H2		C1			C2		H2	L4	L3	F1		F1	F2	F3	F2
4	F2	F2						H2	H2	H2	C2	L2		C2	C1			C2	F1			F1	F1	
5	F3	F2							H2	C2	L3	L2												
6	F1	F2	F2	F2	F2	F1				C1	L1	L2	L2		L1						F1	F4	F2	F1
7												H1				L1								
8									C1		C1	L1					L4		F2					
9											C1	C1				H1				F1				
10								C2	C1	H1	H1	H1	H1	H2	H2	L2	L2	C1	F2	F3	F5	F1		
11										L1	L1	L3	L2	L2	L3	L1			F1			F2		
12										H2	H1	C2	C1					L2						
13										H1	L1	L2	L1	C2	L5	C1	C1	L1	F2	F3		F4	F7	F9
14	F1							H2	C2	C1	C1	C1	C2	C1	C1	C1	C1	L1		F9	F2	F2		
15	F2	F1	F2		F1	F1	L1		L1				C2	L2	L3	L5	L5	L5	F9	F2	F7	F2	F1	F1
16	F1	F2	F3	F2	F5	F2	F2	L1	L1		L1	H1	C1	H1	C1		C1		F1		F2	F5	F6	F7
17	F3	F1						C2	L4	L3	L3	L2	L2	L2	L2		L4	L3	F2	F2	F1		F1	
18											C2	C1	L1	C1	C1	C1	C1	L2	L2	F2	F3		F2	
19									H2		C2			C2	H1			L7	F1	F1	F4	F3	F2	F1
20	F2	F2	F2	F2	F1			H1	H1	H2	C2	C1		C1	L3	L2	L3	L4	L1					
21									C2	C1	L2		L2									F2		
22										C2	C2		L1		C2	C2	C1	C5	F3	F4	F2			
23									C3	C2	C1	C1				C2		C2	F2	F3	F1	F1		
24								C1	C2	C2	L1	L1	L2	L2	L1			L1	F1		F1	F2		
25								C2	C2	C4	C3		C2	C1					H2			F1	F3	
26								C2	C2	C1	C2	C1	C1	L1	L2	L2			C1	F4	F7	F3	F1	F2
27		F1							C2	C2	C2	C2	L1	L1	L2	L4	L2	L2	C1	F1	F8	F7	F1	F2
28			F1						C2	C1	L2	L1		L1	L2			L5	F2	F1		F5	F3	
29	F1	F1	F2						C1	L2	L1	L1	L1	L1	L1		C2	L7	F8	F9	F7	F8	F2	F4
30	F5	F4	F4	F2					C1	L2	L2	L1	L1		H1				C1	F3	F3			
31									H2	C1	C1	C1	L2		C1			C1		F1	F2	F9	F3	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAR. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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 48	X 47	X 45	X 49	X 37	X 31	X 32														X 95	X 88	X 77	X 58	
2	X 49	X 48	X 51	X 50	X 44	X 34	X 28														128	121	77	64	
3	X 59	X 57	X 54	X 50	X 49	X 40	X 33														X 87	X 80	X 78	X 74	
4	X 72	X 66	X 65	X 69	X 66	X 44	X 36														X 75	X 70	X 62	X 53	
5	X 48	X 45	X 44	X 46	X 47	X 42	X 40														X 78	X 76	X 62	X 58	
6	X 58	X 53	X 51	X 46	X 39	X 37	X 37														X 124	X 88	X 60	X 48	
7	X 45	X 48	X 48	X 50	X 42	X 33	X 32					C	C	C	C	C	C				X 76	X 76	X 72	X 65	
8	X 62	X 58	X 51	X 48	X 45	X 45	X 47				C	C	C	C	C	C	C	C			X 138	X 124	X 102	X 73	
9	X 56	X 47	X 44	X 44	X 43	X 40	X 40				C	C	C	C	C	C	C				X 136	X 95	X 83	X 81	
10	X 67	X 60	X 58	X 54	X 49	X 34	X 33														X 130	X 118	X 92	X 74	
11	X 64	X 64	X 58	X 57	X 53	X 38	X 39														X 95	X 72	X 60	X 55	
12	X 51	X 50	X 48	X 57	X 62	X 27	X 30														X 147	X 138	X 121	X 107	
13	X 95	X 89	X 81	X 79	X 52	X 42	X 37														X 93	X 100	X 98	X 89	
14	X 76	X 73	X 73	X 62	X 50	X 49	X 71	X 72													X 94	X 83	X 76	X 73	
15	X 70	X 69	X 65	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C										X 80	X 67	X 58	X 53	
17	X 53	X 54	X 54	X 52	X 47	X 37	X 38														X 108	X 96	X 95	X 108	
18	X 80	X 74	X 70	X 75	X 65		X 32													X 98	X 91	X 86	X 61	X 52	
19	X 54	X 57	X 61	X 64	X 57	X 48	X 44														X 90	X 66	X 59	X 54	
20	X 54	X 59	X 63	X 62	X 60	X 39	X 37														X 94	X 76	X 60	X 60	
21	X 61	X 61	X 66	X 55	X 48	X 43	X 42														X 79	X 79	X 73	X 70	
22	X 63	X 56	X 54	X 52	X 52	X 45															X 103	X 91	X 76	X 76	
23	X 71	X 69	X 70	X 68	X 60	X 59															X 116	X 104	X 95	X 92	
24	X 92	X 88	X 92	X 77	X 44	X 34															X 90	X 70	X 62	X 64	
25	X 64	X 66	X 64	X 50	X 45	X 42															X 76	X 71	X 68	X 65	
26	X 64	X 65	X 62	X 57	X 40	X 38															X 83	X 70	X 67	X 66	
27	X 64	X 64	X 66	X 66	X 50	X 44															X 90	X 93	X 74	X 72	
28	X 73	X 75	X 72	X 54	X 37	X 35															X 117	X 125	X 105	X 81	
29	X 84	X 94	X 102	X 100	X 64	X 36															X 126	X 113	X 105	X 111	
30	X 115	X 108	X 113	X 125	X 87	X 57															X 119	X 110	X 97	X 102	
31	X 110	X 112	X 120	X 115	X 64	X 48															X 82	X 74	X 73	X 75	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	29	29	28	19	1												1	30	30	30	30	
MED	X	X	X	X	X	X	X													X	X	X	X	X	
U Q	73	73	70	68	60	44	40														98	94	87	75	71
L Q	X	X	X	X	X	X	X														X	X	X	X	X
	54	54	51	50	44	36	32														X	X	X	X	X
																						83	74	62	58

MAR. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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

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	42	41	38	43	31	25	26	44	70	80	95	127	118	108	J R	R	114	106	104	88	89	R	82	71	52	
2	43	42	45	44	38	28	22	47	61	71	83	96	110	109	121	122	122	117	118	105	122	115	71	58		
3	R	53	51	48	44	43	34	27	46	68	74	88	102	123	143	166	168	144	122	110	102	R	81	74	68	
4	65	60	59	63	60	38	30	51	66	75	86	90	107	113	130	128	114	100	88	72	69	64	56	47		
5	42	39	38	40	41	36	34	55	78	91	96	96	104	111	125	116	120	105	J R	98	86	72	70	52		
6	52	47	45	40	33	31	31	58	73	86	120	127	108	105	124	131	120	115	126	131	J R	R	82	54	42	
7	39	42	42	44	36	27	26	52	69	90	108	C	C	C	C	C	C	90	90	83	J R	70	70	66	59	
8	56	52	45	42	39	39	41	64	72	86	C	C	C	C	C	C	C	140	137	132	118	96	67	67		
9	R	50	41	38	38	37	34	34	60	75	77	C	C	C	C	C	C	R	150	152	145	130	89	J R	75	
10	61	54	52	48	43	28	27	53	69	74	99	108	119	126	116	110	112	122	123	122	J R	R	R	R	68	
11	58	58	52	51	47	32	33	59	72	76	89	115	123	128	141	134	128	129	121	106	89	66	54	49		
12	45	44	42	51	56	21	24	58	68	77	98	112	133	128	116	129	145	143	135	136	141	132	115	101		
13	89	83	75	73	46	36	31	60	72	79	107	106	108	116	122	125	118	107	105	90	87	94	92	83		
14	70	67	67	56	44	42	F	F	60	60	108	108	148	124	119	116	124	R	140	R	124	119	88	77	70	67
15	64	63	59	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	96	122	139	151	172	186	173	159	139	101	74	61	52	47		
17	47	48	48	46	41	31	32	63	81	82	96	124	152	J R	169	168	166	163	161	147	J R	102	90	89	F	88
18	74	68	64	69	59	24	26	56	69	91	99	107	121	132	130	129	128	122	105	92	85	R	80	55	46	
19	48	51	55	58	51	42	38	63	75	90	86	89	104	115	120	133	136	121	98	89	R	84	60	53	48	
20	48	53	57	56	54	33	31	56	71	79	81	92	99	117	127	122	118	120	120	J R	107	88	70	54	54	
21	55	55	60	49	42	37	36	66	76	80	86	99	103	123	137	130	114	108	90	81	73	73	67	64		
22	57	50	48	46	46	38	38	58	68	86	99	111	119	137	144	146	130	111	103	100	97	85	70	70		
23	65	63	64	62	54	53	51	60	72	92	93	101	102	124	147	153	140	137	122	108	110	98	J R	89	86	
24	U R	R	86	82	86	71	38	28	30	58	77	90	99	114	116	117	134	143	146	125	105	98	R	R	56	58
25	58	60	58	44	39	36	34	61	77	95	106	110	113	128	138	140	130	114	94	79	70	65	62	59		
26	58	59	56	51	34	32	33	65	66	75	90	110	122	122	122	110	100	96	88	80	77	64	61	60		
27	58	58	59	60	44	38	38	63	71	85	93	104	112	126	146	142	131	132	122	103	84	87	68	66		
28	67	69	66	48	31	29	33	60	62	84	124	122	133	132	130	131	125	120	114	106	111	119	99	75	R	
29	78	88	96	94	58	30	33	66	79	90	93	105	123	143	156	161	152	150	145	134	J R	R	99	105	105	
30	F	106	102	107	119	81	51	57	82	85	98	106	127	148	164	170	166	167	167	160	139	113	R	91	96	
31	104	106	114	109	58	42	43	70	91	96	96	116	142	150	151	150	148	139	120	103	76	68	67	69		
	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	29	29	29	29	29	28	27	27	27	27	27	27	29	30	30	30	30	30	30	30	
MED	58	56	56	51	43	34	33	60	72	85	96	110	119	126	130	131	130	122	119	103	88	81	69	65		
U Q	67	67	64	62	54	38	38	63	76	90	102	122	124	137	147	150	145	140	126	122	113	98	89	75		
L Q	48	48	45	44	38	28	28	56	68	77	90	101	108	116	122	124	118	110	103	89	77	68	56	52		

MAR. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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

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	484	488	488	512	484	500	464							
2										L	U	L	L	L	L	L	L	L							
3										L	U	L	492	512	504	512	516	496	456	372					
4										L	L	L		508	528	504	492	L	L	L					
5									U	L	L	L	L	L	L	U	L	L	L						
6									L	L	L	U	L	L	U	L	L	U	L	L					
7									L	L	L	C	C	C	C	C	C	C	C						
8								L	L	C	C	C	C	C	C	C	C	C	C						
9									L	C	C	C	C	C	C	C	C	C	L						
10										U	L	L	L	L	L	L	L	L							
11										L	L	L	U	L	L	L	L	L	L						
12										L	L	L	L	U	L	U	L	L	L						
13										U	L	L	U	L	L	U	L	L	L						
14									L	L	L	U	L	L	L	L	L	L	L						
15								C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16								C	C	C	U	L	U	L	U	L	L	L	L	L					
17									L	L	U	L	L	U	L	L	L	L	L	L					
18									L	U	L	U	L	L	L	L	L	L	L	L					
19									L	L	L	L	L	L	U	L	L	L	L	L					
20									L	U	L	L	L	L	L	L	U	L	L						
21									L	L	L	L	U	L	L	L	L	L	L	L					
22								L	L	L	L	L	L	U	L	L	L	L	L	L					
23								L	L	L	L	U	L	L	L	L	L	L	L	L					
24									L	U	L	L	L	U	L	L	L	L	L	L					
25									L	L	L	L	L	U	L	L	L	L	L	L					
26										U	L	L	L	L	L	L	L	L	L	L					
27									L	L	U	L	U	L	L	L	L	L	L	L					
28									L	L	L	L	L	L	L	L	L	L	L	L					
29									L	U	L	U	L	L	L	L	L	L	L	L					
30									L	L	L	L	L	L	L	L	L	L	L	L					
31								L	L	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										1	19	24	27	27	26	25	15	5							
MED										U	L	U	L	L	L	L	L	L	L	L					
U Q										444	496	516	516	520	516	500	464	392							
L Q										U	L	U	L	L	L	L	L	L	L	L					
										512	532	532	532	528	512	492	412								
										L	L	L	L	L	L	L	L	L	L	L					
										484	502	508	508	508	508	492	460	380							

MAR. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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	228	284	316	344	348	352	332	332	304	264		A	A				
2								B	232	288	332	348	348	344	U A 328	328	308		A	A	A				
3								B	252	300	332	336	U A 364	368	360	348	U A 320		A	A	B				
4								A	232	292	316	344	360	376	364	336	308	264		A	B				
5								A	232	296	348		A	A	A	A			A	A	A				
6								A	240	292	332		A	A	A						B				
7								A	256	292	332		U A C	C	C	C	C	C	A	A	A				
8								A	260	296			C	C	C	C	C	C	C	A	A				
9								176	A 304			C	C	C	C	C	C		276	192	B				
10								A	A 316		A	360	368	372	364	352		A	A	A	B				
11								A	252	308	352	364	368	372	348	304	280		A	A	A				
12								A	260	292	308	360	372	360	344	364		A	280		A	B			
13								172	240	296	332	356	372	348	360	344	320	284	196		B				
14								184	244	312	336	352	364	364	348	336	312	U A 264		A	B				
15								C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16								C	C	C		332	352	372	364	360	344	328	272		A	A			
17								A	A	U A 300	A	A	A	A	A	A	A	A	A	A	A				
18					J K 144			188	272	304	340	352	368	364	360	324	308		A	A					
19								A	244	292		352	368	356		352	316	276		A	A				
20								184	240	280	320	336	360	348	332	332	308	252		A	B				
21								A	252	300	304	356	364	U R 368	352	344	320	276	204		B				
22								B	196	272	312	344	364	368	360	U A 336	356	324	276	204		A			
23								B	176	256	308	340	356	344	368	364	344	324	276	196		B			
24								B	188	272	316	344	364	364	360	356	336	308	268		A	B			
25								B	212	272	316	344	360	368	368	352	344	316	268		A	B			
26								B	212	264	312	348	356	364	364	340	340	316	296	212		B			
27								B	196	264	312	348	360	360	360	A	348	316	276	192		A			
28								B	208	272	320	348	348	A	376	352	356	324	276		A	A			
29								B	224	292	328	356	B	384	B	384	360	348	296		A	A			
30								B	180	288	312	A	A	A	A	A		372	324	308	212				
31								B	220	292	336	360	376	380	392	380	360	344	304	216		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		15	26	29	24	22	22	22	22	26	24	21	10						
MED					J K 144			188	256	304	338	356	366	364	354	344	316	276	202						
U Q								212	272	312	348	360	368	368	360	352	324	284	212						
L Q								180	240	292	332	348	360	360	344	336	308	268	196						

MAR. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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	J A E B E B E B E B E B E B G	26	16	16	16	16	16	16	28	34	38	39	43	40	38	36	J A	G	19	J A J A	J A	17	19	19	J A		
2	E B E B E B E B E B E B E B J A	16	18	16	16	16	16	16	29	35	39	38	45	39	J A	42	G J	A J	A J	A J	A J	28	18	E B E B	E B		
3	J A J A J A J A J A J A J A J A	15	18	22	19	20	15	28	23	31	35	40	47	48	G	43	40	37	33	J A J A	J A J A	20	53	19	J A		
4	J A J A J A E B E B E B E B E B	18	25	19	16	16	16	16	22	30	35	42	42	J A	45	46	42	36	34	31	24	J A	20	18	E B		
5	E B E B J A J A J A E B E B E B	20	16	16	23	20	19	16	20	28	36	48	48	J A J A	J A J A	J A	G	G J	A J	A J	A J	A E	32	16	E B E B		
6	E B E B E B E B E B E B E B J A	16	16	16	16	16	16	17	20	28	34	36	40	J A J A	J A	G	G	G	G	J A J A	J A J A	26	45	40	J A J A		
7	J A J A E B E B E B E B E B E B	23	20	18	16	16	16	16	18	32	36	39	C	C	C	C	C	C	J A J A	J A J A	E B E B	16	16	19	E B		
8	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	18	G	34	C	C	C	C	C	C	C	C	J A J A	A E	B J	A J	A E	B		
9	E B E B E B E B E B E B E B E B	20	16	16	20	15	16	16	G	28	32	C	C	C	C	C	C	C	G	E B E B	E B E B	16	16	16	E B		
10	E B E B E B E B E B E B E B E B	16	19	16	16	16	16	16	20	28	36	38	40	43	42	44	45	J A J A	J A J A	A E	B E	B E	B E	B E	B E		
11	E B E B E B E B E B E B E B E B	16	16	16	16	16	17	16	21	29	35	42	42	43	44	43	44	41	33	J A J A	J A J A	32	16	16	16		
12	E B E B E B E B E B E B E B E B	16	16	19	16	16	16	16	19	28	36	44	45	44	44	39	G	34	G	E B J A	E B	E B	18	18	E B		
13	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	20	22	G	35	54	40	41	46	47	44	44	36	G J	A J	A J	A J	A J	A J		
14	J A J A E B E B E B E B E B E B	40	15	16	16	16	16	16	21	37	52	54	45	40	41	39	44	37	30	21	E B E B	J A J A	40	25	19		
15	J A E B E B E B E B E B E B E B	26	19	16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C C C C C C C C C C C G	C	C	C	C	C	C	C	C	C	32	42	44	45	42	39	37	G	22	J A E B	J A J A	16	40	36	40		
17	J A J A J A J A E B J A E B J A	26	44	52	25	20	16	19	23	34	40	43	44	39	40	37	J A J A	J A J A	J A J A	J A J A	J A	22	20	J A E B			
18	E B E B E B E B E B E B E B E B	16	16	16	16	16	14	16	22	G	34	G	J A	40	52	40	G	36	35	30	22	16	21	16	E B E B		
19	E B E B J A J A J A E B E B E B	16	16	22	18	17	16	16	22	32	33	36	39	44	46	44	40	36	33	J A J A	J A J A	20	66	28	26		
20	J A J A J A E B E B E B E B E B	24	17	17	16	16	16	19	23	30	36	41	40	41	40	38	36	36	J A	J A J A	J A J A	18	18	15	E B E B		
21	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	22	30	35	36	39	G	44	41	37	G	G	E B E B	E B E B	16	16	16	E B E B		
22	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	24	30	35	41	52	40	44	46	38	36	33	J A J A	J A J A	42	22	20	20		
23	E B E B E B E B E B E B E B E B	18	16	16	16	18	16	16	23	31	37	39	41	38	45	G	39	G	G	E B J A	J A J A	21	26	24	19		
24	E B E B E B E B E B E B E B E B	18	17	16	16	16	16	16	24	31	34	37	45	39	42	40	39	37	31	J A J A	J A E B	17	14	16	E B E B		
25	E B E B J A E B E B E B E B E B	16	16	18	16	16	16	16	24	G	38	88	42	42	G	G	G	G	G	J A E B	E B E B	22	20	16	E B		
26	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	24	31	36	41	44	42	44	42	40	37	G	25	20	J A J A	J A J A	18	20		
27	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	24	32	38	42	42	J A	42	40	G	G	G	23	24	32	19	28	38		
28	J A J A E B E B E B E B E B E B	18	20	17	16	16	16	16	24	33	39	40	40	39	G	G	G	40	J A	40	25	48	16	25	33	40	
29	E B E B E B E B E B J A E B E B	16	16	16	16	18	20	20	26	34	36	41	43	G	45	52	46	J A J A	J A J A	J A J A	J A J A	49	35	44	E B E B		
30	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	26	32	39	43	43	J A J A	J A	50	43	G	G	24	19	16	16	16	19		
31	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	26	G	31	40	42	42	G	G	G	G	G	J A J A	J A J A	36	29	33	32	42	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	30	30	30	29	29	29	29	29	29	29	28	27	27	27	27	27	27	27	29	30	30	30	30	30	30		
MED	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	22	30	35	40	42	43	42	41	38	36	31	24	J A J A	20	18	18	17		
U Q	J A J A J A E B E B E B E B E B	20	18	17	16	16	16	16	24	32	36	42	44	45	45	43	40	40	36	32	29	28	28	24	20		
L Q	E B E B E B E B E B E B E B E B	16	16	16	16	16	16	16	20	G	34	38	40	40	40	37	G	G	G	G	E B E B	E B E B	21	17	16	E B E B	

IONOSPHERIC DATA STATION Okinawa

MAR. 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 16	E 16	E 16	E 16	G	28	34	36	39	42	40	38	36	32	G	19	21	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	E 16	28	34	38	37	43	37	36	G	34	27	19	29	21	E 16	E 16	E 16			
3	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	18	30	33	37	40	43	G	40	37	35	30	24	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	21	29	35	41	40	40	46	40	35	33	31	21	E 16	E 16	E 16	E 16				
5	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	20	28	33	36	43	38	38	37	G	G	30	23	22	18	E 16	E 16	E 16			
6	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	19	28	32	36	38	38	38	G	G	G	G	E 16	16	25	25	21	E 16			
7	E 17	E 16	E 16	E 16	E 16	E 16	E 16	E 16	18	32	36	37	C	C	C	C	C	C	C	37	24	19	E 16	E 16	E 16			
8	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	33	C	C	C	C	C	C	C	C	C	25	36	E 16	E 16	E 16	E 16			
9	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	27	32	C	C	C	C	C	C	C	G	E 16	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	20	27	36	38	40	42	41	42	43	40	56	32	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	21	28	35	40	41	42	42	42	41	38	32	27	29	27	E 16	E 16	E 16			
12	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	19	28	36	38	42	40	42	38	G	33	G	19	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	22	G	35	37	39	40	42	44	40	39	36	G	E 16	16	17	26	31	18		
14	E 19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	37	44	49	41	40	40	38	41	35	29	20	E 16	E 16	40	21	E 16			
15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C	C	G	31	41	43	44	41	38	36	G	20	18	E 16	31	28	22		
17	22	23	24	E 16	E 16	E 16	E 16	E 16	20	32	33	37	39	38	38	36	37	42	29	24	33	20	E 16	E 16	E 16			
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	32	G	37	38	40	G	35	33	30	21	E 16	18	E 16	E 16	E 16	E 16			
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	33	36	37	43	45	42	39	36	31	25	22	E 16	21	E 16	E 16			
20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	30	35	39	39	41	39	37	35	36	34	20	E 16	E 16	E 16	E 16	E 16			
21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	34	36	38	G	44	41	37	G	G	E 16	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	E 16	23	29	33	38	38	40	43	43	37	35	31	27	25	E 16	18	E 16	E 16			
23	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	30	36	38	40	38	43	G	39	G	G	E 16	16	19	E 16	E 16	E 16			
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	30	34	37	42	39	40	39	38	34	30	28	E 16	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	G	35	42	39	42	G	G	G	G	G	G	22	E 16	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	23	30	35	39	42	39	42	41	37	34	G	G	22	E 16	21	E 16	E 16			
27	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	31	34	38	38	43	41	40	G	G	G	22	21	E 16	18	22	20			
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	32	38	40	39	38	G	G	G	38	37	24	36	E 16	22	22	E 16			
29	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	32	35	41	43	E 16	G	44	50	44	40	37	44	24	42	E 16	E 16			
30	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	31	38	43	41	44	42	43	30	G	G	G	24	E 16	E 16	E 16	E 16			
31	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	G	29	39	41	41	G	G	G	G	G	42	35	33	29	24	30	27	26	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	30	30	30	29	29	29	29	29	29	29	28	27	27	27	27	27	27	27	29	30	30	30	30	30	30			
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	29	34	38	40	40	41	39	37	34	30	22	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 16	23	30	36	40	41	42	43	42	39	36	32	25	24	19	21	E 16	E 16			
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	33	36	38	38	38	38	36	G	G	G	G	E 16	E 16	E 16	E 16	E 16			

MAR. 2022 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

MAR. 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	16	17	17	21	21	17	16	15	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	16	15	17	18	17	18	18	16	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	18	18	21	20	23	22	20	14	14	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	14	17	18	23	22	20	22	17	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	17	19	20	20	21	20	21	20	15	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	16	16	19	20	22	22	17	19	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	16	19	C	C	C	C	C	C	18	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	18	C	C	C	C	C	C	C	C	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	19	C	C	C	C	C	C	C	14	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	19	24	26	27	26	26	23	20	17	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	16	19	23	28	25	25	22	20	17	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	17	16	22	22	23	26	29	23	21	14	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	17	18	20	23	22	20	20	15	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	20	21	22	32	22	21	18	16	16	16	16	16	16	16
15	16	16	16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	20	24	23	21	21	21	20	17	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	17	22	24	23	23	24	23	17	14	14	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	17	20	21	21	26	23	22	21	14	14	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	19	18	22	24	27	20	21	18	14	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	14	17	21	20	22	22	22	19	19	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	18	20	28	28	26	23	24	20	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	21	22	23	22	23	28	20	18	14	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	15	22	26	28	21	20	23	17	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	14	19	21	27	28	26	25	22	21	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	14	15	20	21	24	27	22	26	20	16	14	16	16	16	16	16
26	16	16	16	16	16	16	16	16	14	20	21	21	24	24	23	20	16	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	16	19	23	25	24	30	19	20	18	15	16	16	16	16	16
28	16	16	16	16	16	16	16	16	14	17	24	23	23	24	26	19	19	17	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	21	24	43	32	43	26	25	22	19	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	21	22	23	25	30	25	22	23	16	14	15	16	16	16	16
31	16	16	16	16	16	16	16	16	16	20	24	21	27	24	25	22	17	18	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	29	29	29	29	29	29	28	27	27	27	27	27	27	29	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	16	17	20	22	23	24	23	22	19	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	19	22	24	27	26	25	23	20	17	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	16	18	21	21	22	21	20	17	14	16	16	16	16	16	16

MAR. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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

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	323	306	306	339	350	322	288	333	351	345	321	345	349	308	J R	R	310	317	320	304	290	270	277	271			
2	273	301	317	343	367	353	303	347	366	342	325	318	324	309	313	320	319	331	337	326	272	279	312	286			
3	R	289	301	291	330	336	325	337	344	367	342	326	304	316	298	308	320	320	312	309	327	R	296	320	306		
4	298	293	303	330	365	304	334	353	360	337	346	315	312	307	317	321	308	311	J R	336	325	307	318	332	320		
5	322	305	287	302	326	318	296	343	350	341	336	323	306	304	304	302	302	313	J R	324	325	332	285	283	266		
6	253	280	315	334	317	318	269	359	329	307	319	341	317	299	305	321	305	308	289	324	J R	R	287	279	256		
7	288	310	318	355	370	317	325	334	345	328	334		C	C	C	C	C		319	339	289	J R	290	305	281	288	
8	317	266	290	295	299	305	297	347	356	330		C	C	C	C	C	C			320	315	308	332	335	279		
9	R	276	289	291	304	318	309	305	362	364	329		C	C	C	C	C			309	321	336	J R	303	283	J R	264
10	280	284	285	309	357	298	308	357	353	313	322	318	316	329	318	312	306	325	329	326	J R	R	285	299	269	277	
11	271	276	292	313	354	305	283	369	357	330	294	298	310	305	313	309	305	314	318	308	317	294	298	278			
12	276	277	283	326	387	322	273	346	358	303	313	300	316	316	295	297	305	312	309	311	301	302	282	267			
13	281	292	324	350	335	339	299	357	366	329	340	321	305	312	306	316	315	326	328	327	285	276	284	258			
14	266	264	284	319	314	234	310	F	F	317	315	296	342	320	308	307	305	320	R	320	R	302	292	288	285		
15	292	301	334		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C		289	306	310	302	307	326	330	330	337	319	320	288	312	270		
17	289	296	300	311	352	316	290	357	362	337	298	309	314	J R	303	290	307	314	331	339	J R	316	287	289	F	286	
18	289	293	282	321	375	308	310	347	343	337	320	316	313	315	299	300	318	328	344	343	310	302	268	288			
19	282	284	289	315	324	330	334	355	352	347	347	309	309	305	296	312	313	338	327	319	R	304	304	305	299		
20	289	281	279	286	348	325	306	370	354	354	333	321	290	304	306	311	295	303	334	J R	322	303	282	286	284		
21	285	310	331	325	330	312	303	360	355	345	318	323	298	310	313	317	301	314	333	317	299	299	303	310			
22	301	298	295	303	332	334	327	369	353	326	326	324	298	295	312	308	310	322	308	304	276	257	281	J R	304		
23	294	298	300	284	296	320	338	367	343	335	320	309	280	292	310	323	308	310	330	311	309	287	280	J R	266		
24	U R	R	242	274	332	361	357	307	286	345	345	327	309	313	311	300	305	317	324	323	312	311	303	269	283	289	
25	309	339	358	338	305	317	302	341	332	327	327	327	312	303	315	312	324	324	339	314	299	286	280	284			
26	297	317	325	354	336	275	289	359	363	316	300	306	322	322	324	331	312	337	341	325	307	300	291	307			
27	293	295	310	339	337	267	281	364	342	331	311	301	296	293	318	305	309	325	341	339	276	229	266	271			
28	293	313	345	372	252	246	298	404	352	296	324	311	306	300	304	302	317	319	335	304	315	290	261	277			
29	269	265	293	324	396	305	305	368	350	330	306	277	281	290	299	305	312	324	326	318	J R	R	279	267	R	285	
30	F	301	289	311	345	373	285	303	354	330	311	292	294	299	292	295	295	301	307	329	332	318	271	275	267		
31	293	298	305	333	368	302	292	336	337	335	296	289	299	292	284	286	303	311	324	324	291	262	261	272			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	30	30	29	29	29	29	29	29	29	28	27	27	27	27	27	27	29	30	30	30	30	30	30	30		
MED	289	294	302	326	337	312	303	357	352	330	320	313	310	304	306	311	310	319	328	320	303	288	283	282			
U Q	297	301	318	341	366	322	310	366	359	339	326	323	316	309	313	320	318	326	337	326	315	300	298	288			
L Q	276	281	290	310	321	303	290	346	343	321	303	304	299	298	299	302	305	312	320	311	291	279	277	270			

MAR. 2022 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Okinawa

MAR. 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

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	373	370	390	373	375	362	379							
2										L	U	L	L	L	L	L	L	L							
3										L	U	L	L	L	L	L	L	L							
4										L	L	L	L	L	L	L	L	L							
5									U	L	L	L	L	L	L	U	L	L							
6									L	L	L	U	L	L	U	L	L	U	L						
7									L	L	L	C	C	C	C	C	C	C							
8									L	L	C	C	C	C	C	C	C	C							
9									L	C	C	C	C	C	C	C	C	C							
10									U	L	L	L	L	L	L	L	L	L							
11									L	L	L	U	L	L	L	L	L	L							
12									L	L	L	L	L	L	U	L	U	L							
13									U	L	L	U	L	L	U	L	L	L							
14									L	L	L	U	L	L	L	L	L	L							
15								C	C	C	C	C	C	C	C	C	C	C			C	C			
16								C	C	C	U	L	U	L	U	L	L	L							
17								L	L	U	L	L	U	L	L	L	L	L							
18									L	U	L	U	L	L	L	L	L	L							
19									L	L	L	L	L	L	U	L	L	L							
20									L	U	L	L	L	L	L	L	U	L							
21									L	L	L	L	U	L	L	L	L	L							
22								L	L	L	L	L	U	L	L	L	L	L							
23								L	L	L	L	U	L	L	L	L	L	L							
24									L	U	L	L	L	U	L	L	L	L							
25									L	L	L	L	L	L	L	L	L	L							
26									U	L	L	L	L	L	L	L	L	L							
27									L	L	U	L	U	L	L	L	L	L							
28									L	L	L	L	U	L	L	L	L	L							
29									L	U	L	U	L	L	L	A	L	L							
30									L	L	U	L	U	L	L	L	L	L							
31								L	L	L	L	U	L	U	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	19	24	27	27	25	25	15	5							
MED									U	L	U	L	L	L	L	L	L	L							
U Q									391	373	372	374	369	367	368	379	393								
L Q									U	L	L	L	L	L	L	L	L	L							
									369	366	369	358	362	360	368	384									

MAR. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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									232	250	274	250	230	266	256	258	246	242							
2										244	274	272	272	264	280	270	256	240							
3										236	274	280	276	270	266	242	228	220							
4										240	254	268	278	286	278	258	258	236							
5										252	254	264	280	280	264	268	264	240							
6										262	264	242	266	262	290	258	252	254							
7										258	252	C	C	C	C	C	C								
8									218	230	C	C	C	C	C	C	C	C							
9										234	C	C	C	C	C	C	C	252							
10											286	274	264	258	264	272	270								
11											268	280	276	290	272	246	268	258							
12											274	306	278	254	266	302	272	246							
13											258	262	270	276	274	272	248								
14										276	296	246	250	256	264	278	266	244							
15								C	C	C	C	C	C	C	C	C	C	C	C	C					
16								C	C	C		278	278	282	286	284	254	230	230						
17									244	248	290	284	270	292	296	270	260	232							
18										260	258	268	268	272	272	270	262	238							
19										238	240	280	284	290	290	278	248	230							
20										240	266	278	298	298	268	260	282	252							
21										246	292	274	294	284	270	248	250	242							
22										224	270	262	266	278	288	270	260	242	234						
23										226	264	256	280	316	328	286	252	246	240						
24										258	280	282	268	294	290	258	240	228							
25										266	274	270	266	290	274	260	240	230							
26											274	296	280	264	270	250	272	242							
27										254	264	290	288	326	276	264	260	246							
28										302	266	268	272	286	286	274	250	246							
29										248	246	316	328	316	298	280	264								
30										244	268	304	298	288	290	280	274	256							
31										238	248	264	288	278	280	308	302	280	250						
	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									6	24	28	27	27	27	27	27	27	25							
MED									229	249	267	278	278	286	274	264	258	242							
U Q									238	261	274	284	284	290	290	274	268	248							
L Q									224	242	258	268	268	266	268	258	246	233							

MAR. 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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	244	258	250	222	182	232	306	242	222	218	210	200	214	202	188	208	202	214	210	206	202	214	234	232		
2	298	272	242	222	206	192	282	228	214	214	208	190	212	184	186	184	218	208	222	212	194	204	232	236		
3	254	252	248	214	216	208	216	218	226	208	204	216	218	196	220	212	198	204	224	196	188	E A 284	236	226		
4	250	264	248	228	200	200	222	222	220	216	224	192	192	E A 242	210	198	208	224	220	208	218	218	214	222		
5	228	250	280	270	220	224	258	234	228	202	198	206	190	182	202	200	202	230	224	210	214	192	222	258		
6	290	282	234	220	218	244	312	216	212	214	202	204	194	190	198	192	198	226	238	216	198	184	216	310		
7	308	260	246	218	196	242	248	214	214	216	198		C	C	C	C	C		234	222	198	218	218	230	238	
8	228	256	256	264	260	262	264	208	208	192		C	C	C	C	C	C			228	210	202	194	196	222	
9	256	264	278	260	242	252	264	222	214	192		C	C	C	C	C	C			218	220	198	188	174	220	246
10	248	258	242	232	200	222	260	216	212	212	200	228	214	218	212	232	E A 236	250	216	202	188	194	232	248		
11	270	274	252	242	206	240	308	204	214	220	220	214	210	218	214	212	214	228	228	220	210	208	236	250		
12	304	304	312	244	192	230	326	226	214	220	224	234	202	208	198	202	208	210	224	214	198	200	220	224		
13	242	232	222	206	194	216	238	212	208	216	214	200	200	202	232	208	228	240	226	212	234	246	268	272		
14	324	316	246	202	222	378	264	194	220	E A 248	E A 266	216	206	200	208	216	216	220	220	214	E A 208	256	256	250		
15	274	246	228		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16		C	C	C	C	C	C	C	C	C		182	202	222	238	208	220	E A 224	218	208	186	192	E A 266	254	322	
17	278	278	276	240	204	222	264	216	220	206	200	194	168	192	178	206	E A 248	214	212	204	198	200	238	254		
18	260	260	242	224	180	266	266	216	216	202	204	178	172	196	182	198	210	224	212	198	214	204	230	278		
19	272	274	258	236	208	208	226	218	214	204	196	188	232	256	242	228	228	218	212	218	206	222	232	260		
20	284	270	256	228	204	202	250	206	218	214	212	202	214	200	196	192	206	240	226	198	200	188	258	276		
21	278	248	224	206	208	226	262	224	214	202	202	188	184	272	216	212	198	212	220	214	222	224	238	242		
22	254	260	262	252	220	216	220	204	208	196	200	186	192	224	E A 242	198	216	212	226	218	212	212	256	244		
23	250	254	246	228	240	228	204	202	204	208	206	186	184	212	188	218	210	208	220	214	212	200	230	252		
24	276	248	224	196	176	246	282	218	216	218	202	202	180	192	190	228	224	212	214	222	212	218	288	282		
25	248	224	208	212	234	226	266	232	220	216	E A 224	194	218	194	186	214	196	206	226	216	220	232	268	264		
26	266	240	228	208	204	304	286	220	216	208	200	206	182	216	206	206	192	208	224	220	228	224	266	258		
27	262	258	242	216	202	304	302	220	216	202	204	194	236	190	202	216	200	214	222	200	218	258	292	306		
28	266	242	214	182	278	384	274	194	218	220	208	188	176	198	192	210	E A 224	E A 230	230	228	212	220	228	254		
29	268	250	228	208	174	230	254	212	220	212	200	210	190	218		E A 236	E A 228	256	240	204	220	200	244	244		
30	Q 250	252	236	204	172	240	258	218	220	208	234	196	194	186	212	208	228	220	228	216	206	224	252	270		
31	248	230	218	202	178	226	262	220	214	206	204	204	196	200	190	222	220	230	230	210	E A 236	E A 294	E A 318	318		
	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	29	29	29	29	29	28	27	27	27	26	27	27	29	30	30	30	30	30	30	30	
MED	264	258	244	222	204	230	264	218	216	210	204	200	196	200	201	209	212	218	223	211	211	210	236	253		
U Q	278	270	256	238	220	249	282	222	220	216	213	206	214	218	212	218	224	230	226	216	218	224	256	272		
L Q	250	248	228	207	193	219	249	210	214	203	200	190	184	192	190	200	202	212	220	202	198	200	230	242		

MAR. 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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				
									102	102	98	102	102	102	102	102	102	102						
2								B											A	A	A			
									106	102	102	100	100	100	100	100	100							
3								B											A	A	B			
									102	102	102	102	102	102	102	102								
4								A												A	B			
									102	102	102	102	96	96	104	104	104	104						
5								A				A	A	A	A				A	A	A			
									104	102	102					102	102							
6								A				A	A	A								B		
									106	106	100				108	102	102	102	108					
7								A				C	C	C	C	C	C	A	A	A				
									100	100	100													
8								A				C	C	C	C	C	C	C	A	A				
									104	104														
9								116		104		C	C	C	C	C	C		104	102				
									A	A	A							A	A	A	B			
10										104		104	104	104	104	104								
11								A											A	A	A			
									106	102	102	102	102	102	102	102	102							
12								A										A		A	B			
									102	102	102	102	102	102	102	104		104						
13								E B													B			
									126	102	102	102	102	102	102	102	102	102	102	110				
14									126	102	102	102	102	102	102	102	102	102		A	B			
15									C	C	C	C	C	C	C	C	C	C	C	C	C			
16									C	C	C									A	A			
											104	102	102	102	102	100	108	102						
17								A	A	102		A	A	A	A	A	A	A	A	A	A			
18					K														A	A				
					168				122	108	102	102	102	102	102	102	102							
19								A			A				A				A	A				
									102	102		102	102	102		106	100	104						
20									128	102	102	102	102	102	102	102	102	102		A	B			
21								A														B		
									102	102	102	110	110	104	104	104	104	104	104	108				
22								B													A			
									118	106	102	100	100	100	100	106	102	104	106					
23								B													B			
									116	108	102	102	102	100	100	100	100	100	104					
24								B											A	B				
									110	108	104	102	102	102	102	102	102	102						
25								B											A	B				
									108	100	100	100	100	100	100	100	100	100						
26								B													B			
									110	104	104	104	104	102	102	102	102	102	102	110				
27								B								A				A				
									110	106	102	102	102	102		106	104	104	108					
28								B					A						A	A				
									112	104	104	104	102		102	102	102	102						
29								B				B		B					A	A				
									110	104	104	102		102		102	102	102	106					
30								B			A	A	A	A	A						B			
									102	102	102					110	104	102	102					
31								B												A				
									112	102	108	104	100	100	100	100	100	104	106	106				
	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		15	26	29	24	22	22	22	22	26	24	21	10					
MED					K	168		112	103	102	102	102	102	102	102	102	102	102	107					
U Q								122	106	104	102	102	102	102	102	104	103	104	108					
L Q								110	102	102	102	102	100	100	102	102	102	102	104					

MAR. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	96	B	B	B	B	B	B	G		174	172	152	142	126	144	166	148	104	G	148	92	86	80	90	86		
2	B	88	B	B	B	B	B	B	88	164	158	142	134	108	106	108	G	102	100	94	92	88	88	B	B		
3	106	88	92	110	82	84	84	86	148	150	118	104	112	G	108	110	110	102	126	96	90	136	92	92			
4	84	92	96	B	B	B	B	B	140	136	182	132	130	112	130	146	166	162	196	112	100	100	100	B	92		
5	92	B	B	106	94	88	B	B	144	110	108	104	102	100	100	98	G	G	96	96	98	94	B	B	B		
6	B	B	B	B	B	B	B	90	182	172	136	112	106	102	102	G	G	G	G	G	96	92	92	92	92		
7	92	90	90	B	B	B	B	B	172	194	172	108	C	C	C	C	C	C	C	98	98	92	B	B	122	B	
8	B	B	B	B	B	B	B	B	138	G	114	C	C	C	C	C	C	C	C	86	82	B	96	90	B		
9	86	B	B	86	96	B	B	G	114	116	C	C	C	C	C	C	C	C	G	G	B	B	B	B	B		
10	B	84	B	B	B	B	B	B	142	112	182	176	168	152	138	122	112	98	94	92	B	B	B	B	B		
11	B	B	B	B	B	86	B	B	156	180	188	112	112	110	108	106	102	102	102	98	96	92	B	B	B		
12	B	B	86	B	B	B	B	B	154	188	162	136	124	118	110	110	G	106	G	106	B	98	B	88	B		
13	B	B	B	B	B	B	B	88	202	G	168	90	140	140	126	114	112	116	110	G	88	98	98	96	96		
14	94	92	B	B	B	B	B	B	146	134	118	116	118	128	118	114	108	106	106	126	B	B	96	96	96		
15	90	82	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C	C	98	178	158	150	146	142	128	G	138	108	B	96	92	92		
17	86	98	92	106	88	B	B	102	110	102	102	98	100	100	96	94	94	90	90	90	86	84	84	98	B		
18	B	B	B	B	B	K	B	B	168	146	G	128	G	116	114	170	G	116	112	106	104	B	90	B	B	B	
19	B	B	86	86	86	B	B	B	132	134	138	120	116	178	188	158	142	110	104	86	88	96	96	96	94		
20	98	98	98	B	B	B	B	92	142	150	142	130	120	110	114	116	124	110	104	102	86	92	86	B	B		
21	B	B	B	B	B	B	B	B	144	148	128	166	126	G	160	160	172	G	G	G	B	B	B	B	B		
22	B	B	B	B	B	B	B	B	136	144	128	120	110	166	180	130	138	134	122	110	104	102	94	98	98		
23	88	B	B	B	88	B	B	B	146	140	126	124	118	118	118	G	188	G	G	G	B	96	94	114	114		
24	86	82	B	B	B	B	B	B	140	132	132	144	112	134	112	112	110	110	108	102	120	104	B	B	B		
25	B	B	94	B	B	B	B	B	136	G	128	106	116	170	G	G	G	G	G	168	90	B	B	102	B		
26	B	B	B	B	B	B	B	B	140	138	128	122	114	120	110	110	116	112	G	G	G	122	124	96	96	96	92
27	B	B	B	B	B	B	B	B	146	142	142	114	114	104	104	102	G	G	G	130	110	108	100	96	96		
28	96	84	84	B	B	B	B	B	124	110	110	110	110	102	G	G	G	120	104	100	92	B	94	94	94		
29	B	B	B	B	90	90	94	168	140	120	112	B	G	166	130	128	128	108	102	98	92	98	B	B	B		
30	B	B	B	B	B	B	B	B	114	124	110	174	96	94	98	168	98	G	G	134	102	B	B	B	88		
31	B	B	B	B	B	B	B	B	136	G	98	118	114	114	G	G	184	186	132	108	102	98	98	96	94		
	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	13	11	9	5	7	5	6	27	24	29	27	26	25	23	21	20	20	18	25	23	20	19	18	15			
MED	92	88	92	106	88	88	91	142	140	128	118	116	114	118	114	120	110	104	104	96	95	96	96	94			
U Q	96	92	95	108	94	129	94	146	157	160	136	126	137	150	146	145	124	108	126	102	98	98	98	96			
L Q	86	84	86	86	86	85	88	136	128	117	110	110	106	106	108	110	105	100	97	90	91	92	92	92			

MAR. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 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

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	F1								H1	H1	H1	H1	H1	H1	H1	H1	C1		H1	L4	F1	F1	F1	F1		
2		F1						L1	H1	H1	H1	H1	C1	C1	C1		CH11	C1	L3	L7	F6	F2				
3	F1	F1	F1	F1	F3	F1	F1	L1	H2	H2	C1	C1	CH11		C1	C1	C1	C1	CL11	L1	F2	FF32	F1	F1		
4	F2	F2	F1					H3	H2	H2	H2	H1	H1	H2	H1	H1	H1	H1	HH11	C3	C3	F1	F1		F1	
5	F1			F2	F2	F1		H2	C1	C1	CH11	C2	C2	C1	C1			L2	L2	L1	F3					
6							F1	H1	H1	H1	C1	C1	C1	C1						L2	F5	F7	F1	F3		
7	F3	F1	F1					H1	H1	CH21	C1								L3	L2	L2			F1	F1	
8								H1		C1										L3	L5		F1	F1		
9	F1			F1	F1				C1	C1																
10		F1						H2	C1	H1	HL11	H1	H1	H1	C1	C1	L3	L5	L7							
11					F1			H1	H1	H1	C1	C1	C1	C1	C1	C1	C1	C2	L2	L4	F3					
12			F1					H1	H1	HC11	HC11	C1	C1	C1	C1	C1	C1		C1		F1		F1			
13							F1	H1		H1	LH11	H1	H1	C1	C1	C1	C1	C2		L1	F2	F5	F9	F4		
14	F9	F2						H1	H2	C2	C2	C2	C1	C1	C1	C1	C1	C1	C1	CL11		F4	F9	F1		
15	F1	F1																								
16												L1	H1	H1	H1	H1	C1		HC11	C1		F5	F6	F2		
17	F2	FF13	F2	F1	F1		F1	C1	C3	C1	L1	C1	C1	L1	L1	L1	L4	L4	L4	L4	F2	F1	F1			
18						K1		H1		C1		C1	C1	C1	H1		C1	C1	C1	C1	F3					
19			F1	F1	F1			H1	H1	H1	CL11	C1	H1	H1	HC11	H1	C1	C1	L2	L2	F2	F3	F3	F3		
20	F2	F1	F1				F1	H1	H1	H1	H1	C1	C1	C1	C1	C1	C1	C1	C1	L1	F1	F1				
21								H1	H1	C1	HC11	C1		H1	H1	H1										
22								H1	H1	C1	C1	C1	H1	H1	HC11	H1	H1	C1	C4	C2	F3	F3	F2	F1		
23	F1				F1			H1	H1	C1	C1	C1	C1	C1		H1					F2	F3	F1	F1		
24	F1	F1						HL11	H1	H1	H1	C1	H1	C1	C1	C1	C1	C1	C3	C1	F1					
25			F3					H2		C1	C2	C1	H1						HL11	L1			F1			
26								H1	H1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	F7	F1	F1	F1		
27								H2	H1	H1	C1	C1	C1	C1	C1	C1			H1	C3	F2	F2	F5	F3		
28	F2	F1	F2					C1	C1	C1	C1	C1	C1				C1	C2	C1	L9	F6	F4	F4			
29					F1	F1	L1	H1	H1	C1	C1			H1	H1	C1	C1	C3	C3	L3	F7	F3				
30								C2	C1	C1	HCL11	L2	L2	L1	HL11	L1			H1	C1					F1	
31								H1		L1	C1	C1	C1			H1	H1	H1	C3	C3	F3	F3	F4	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	
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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

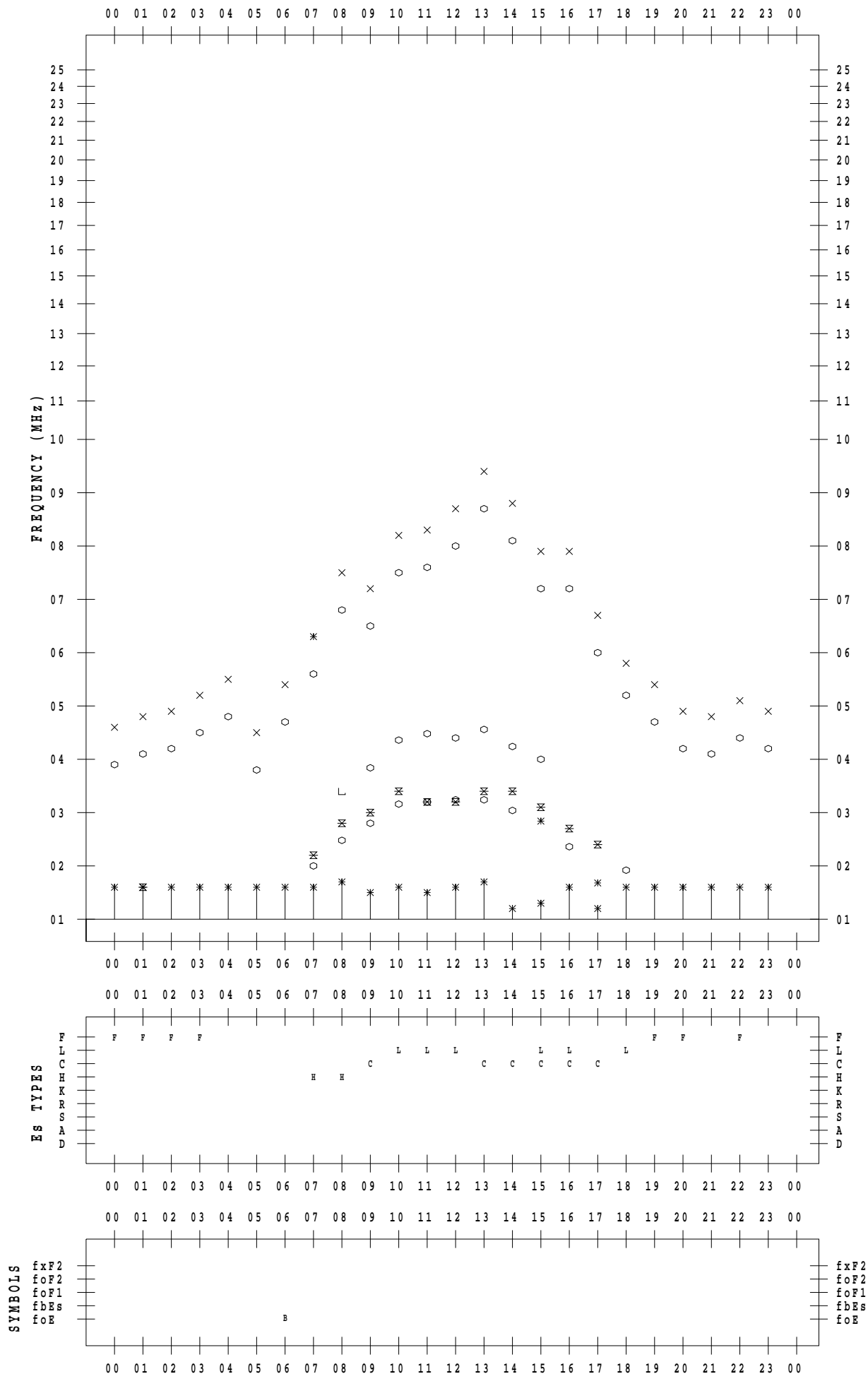
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 1

135 ° E MEAN TIME



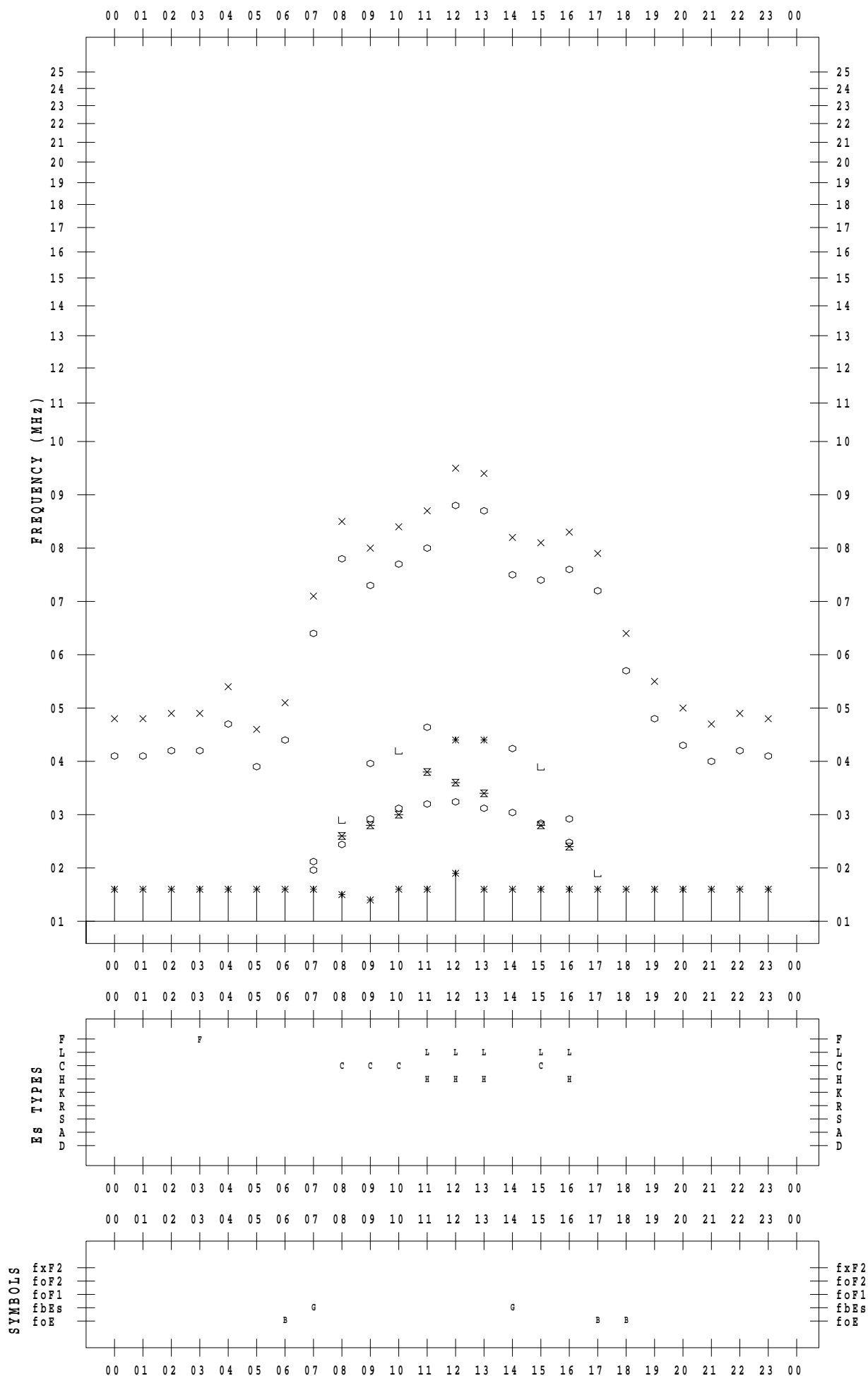
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 2

135 ° E MEAN TIME



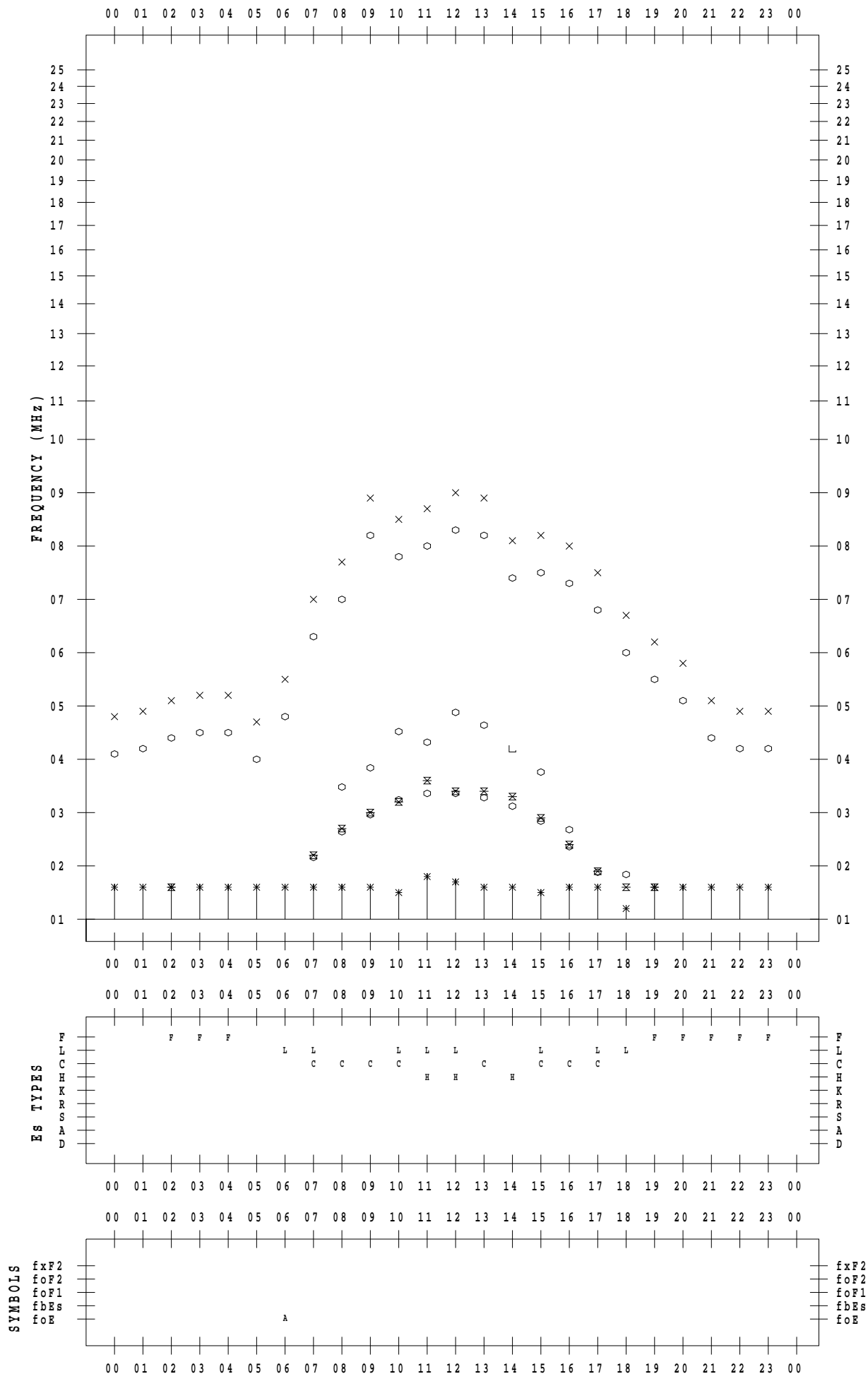
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 3

135 ° E MEAN TIME



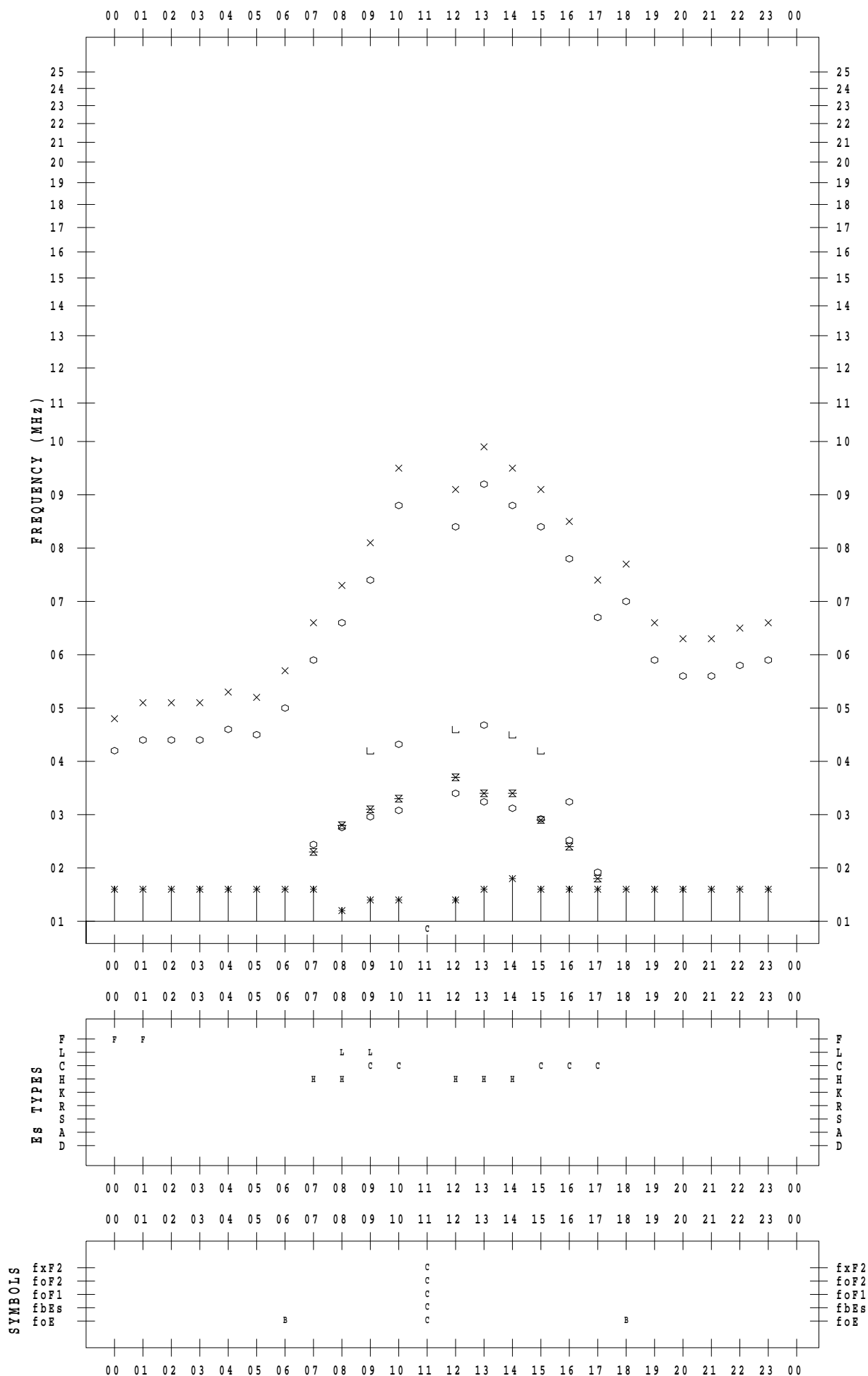
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 4

135 ° E MEAN TIME



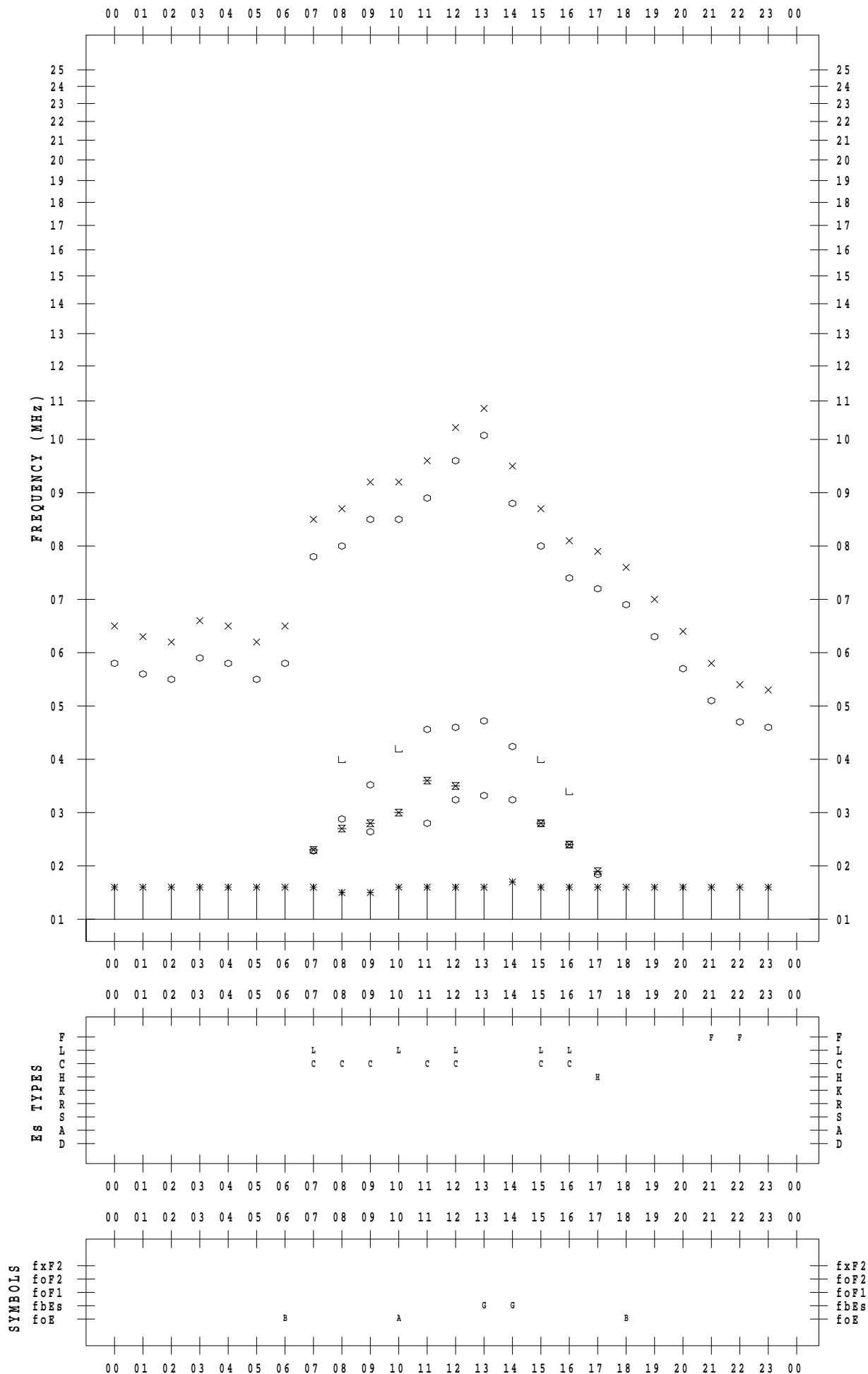
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 5

135 ° E MEAN TIME



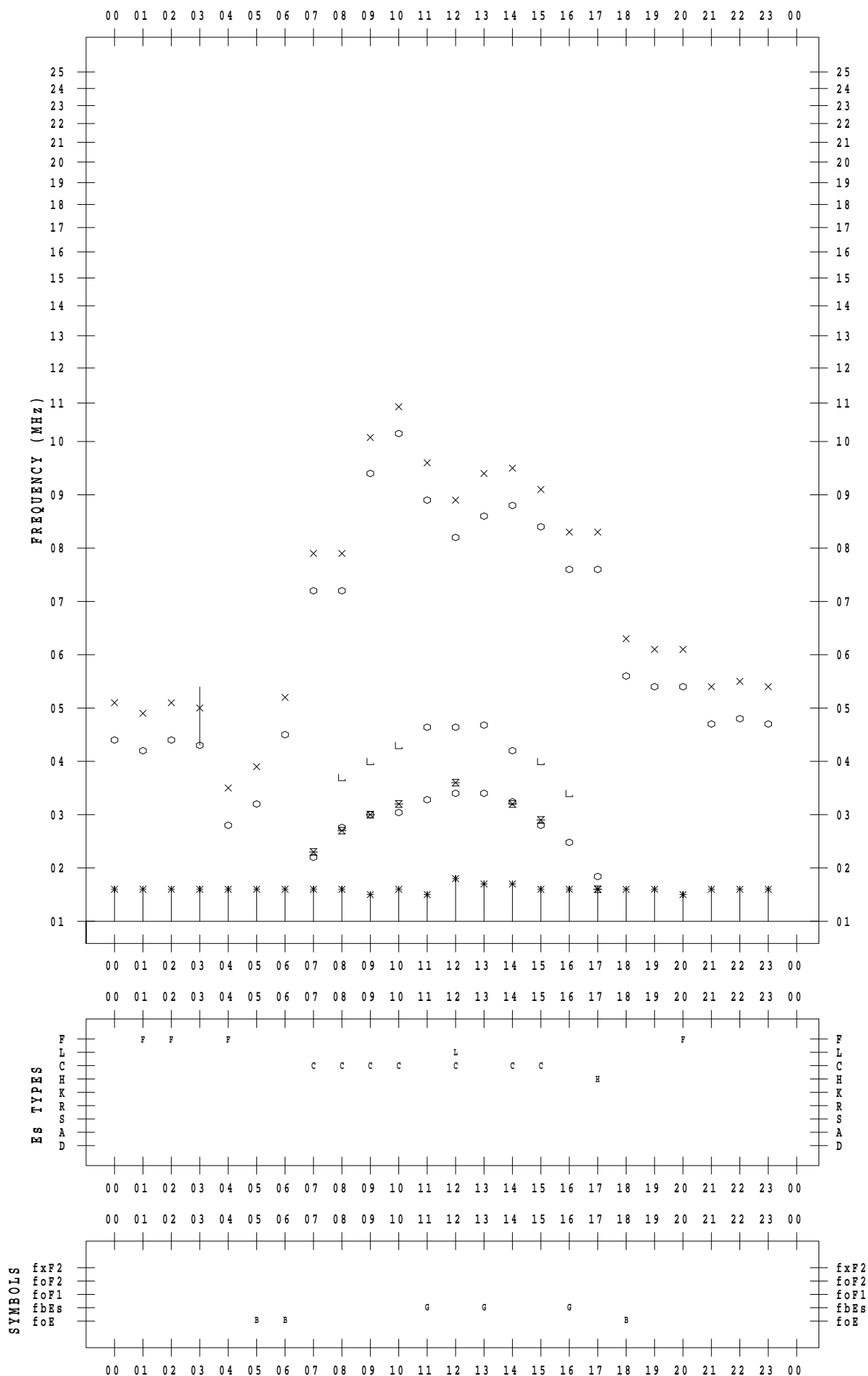
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 6

135 ° E MEAN TIME



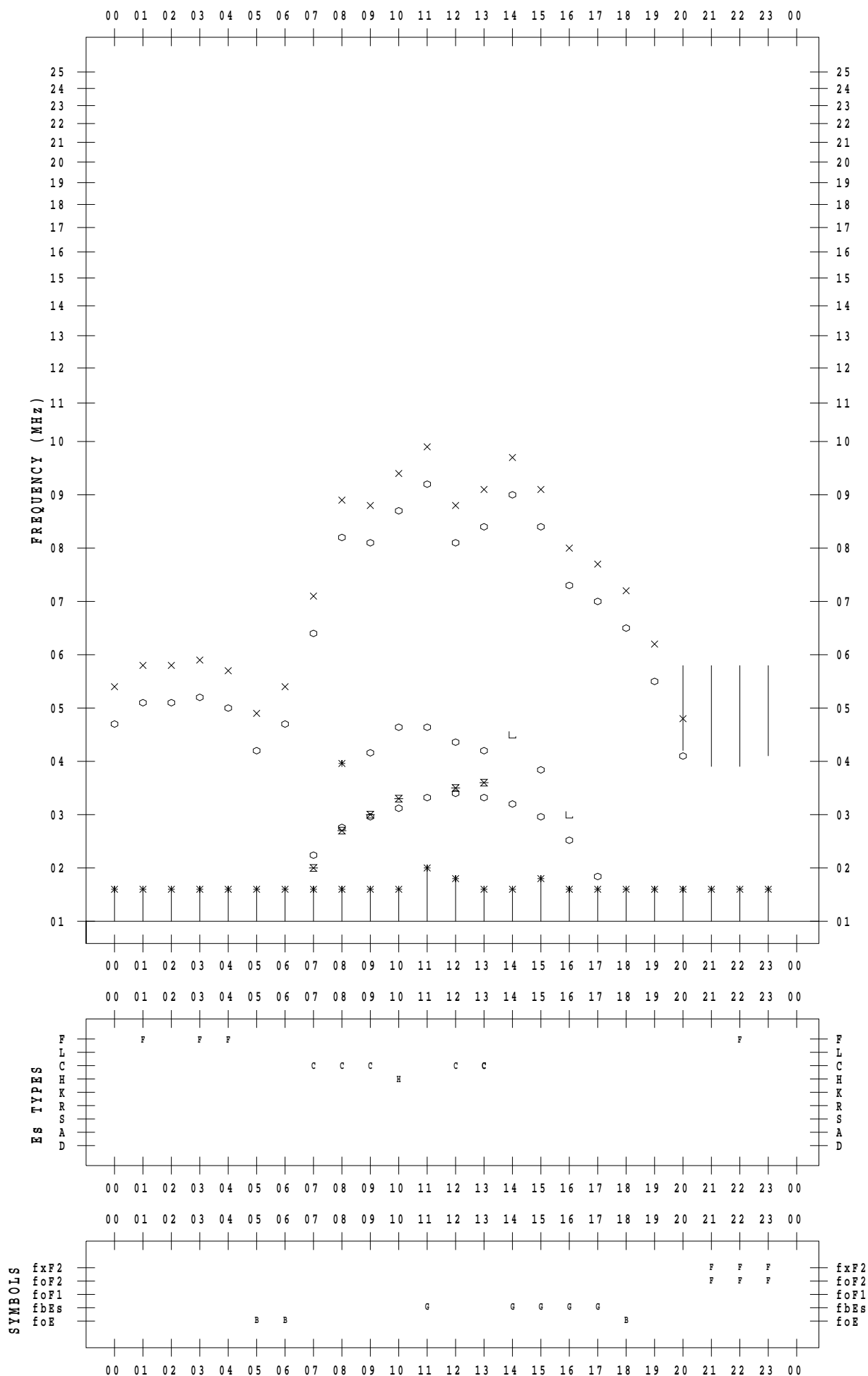
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 7

135 ° E MEAN TIME



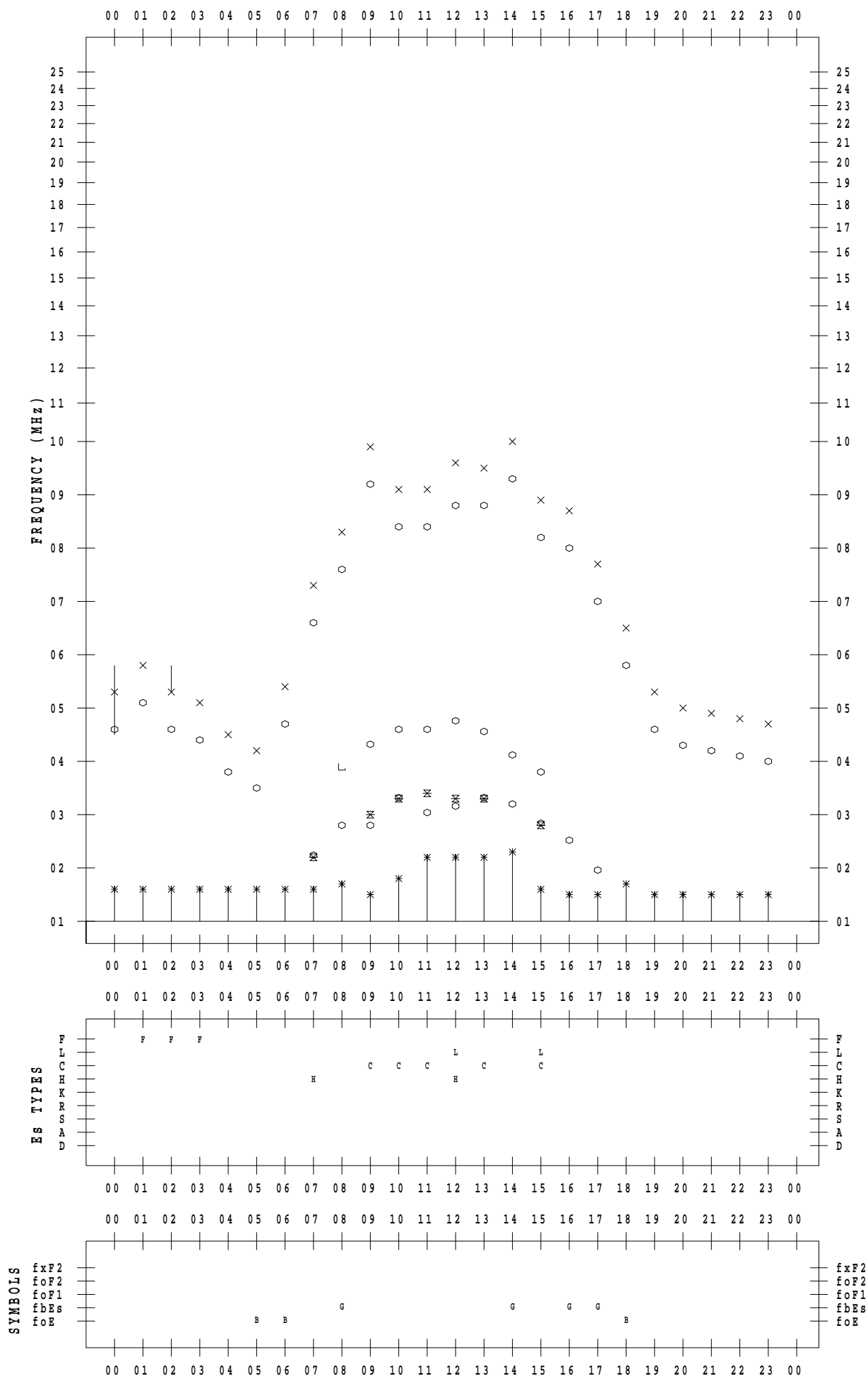
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 8

135 ° E MEAN TIME



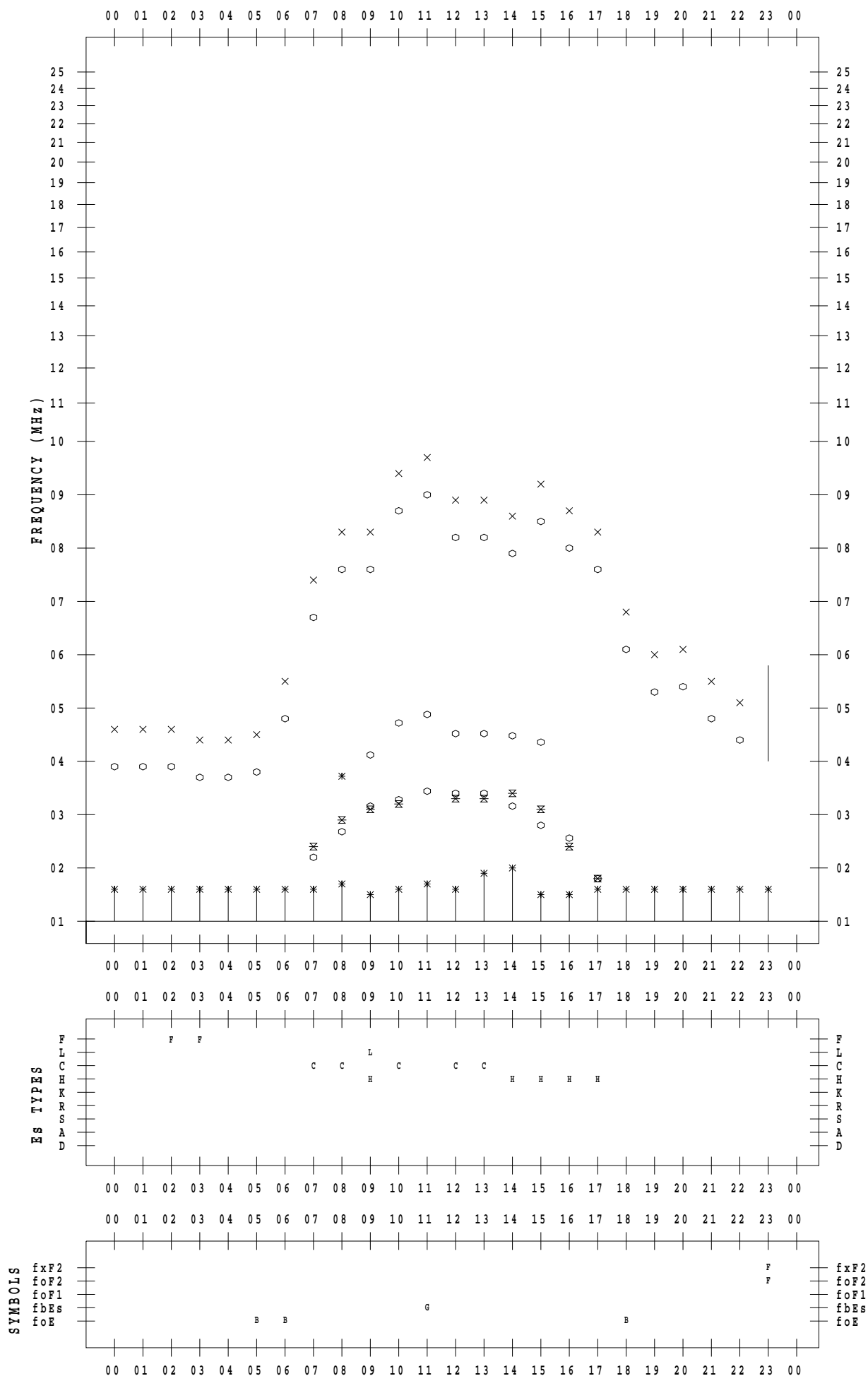
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 9

135 ° E MEAN TIME



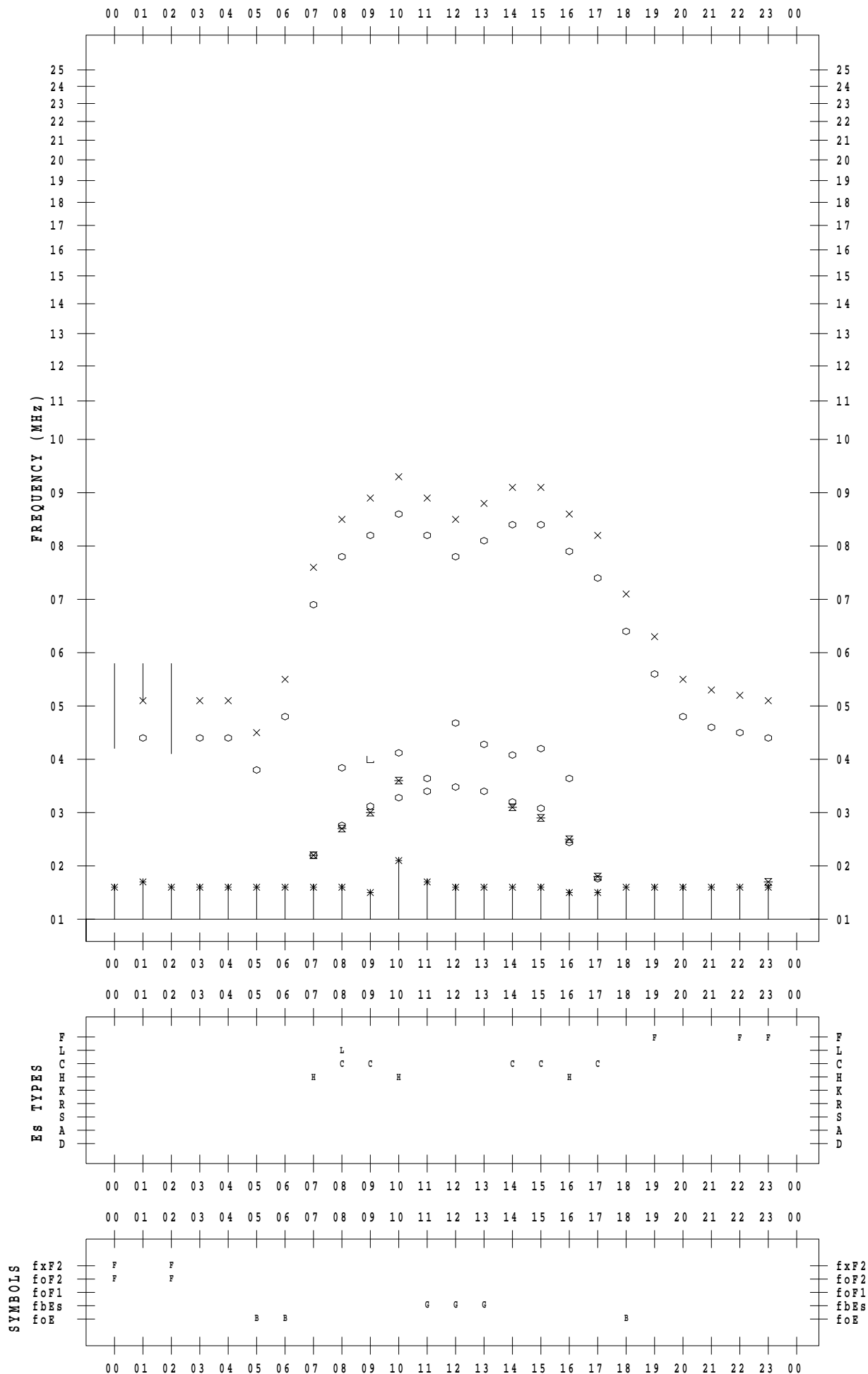
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 10

135 ° E MEAN TIME



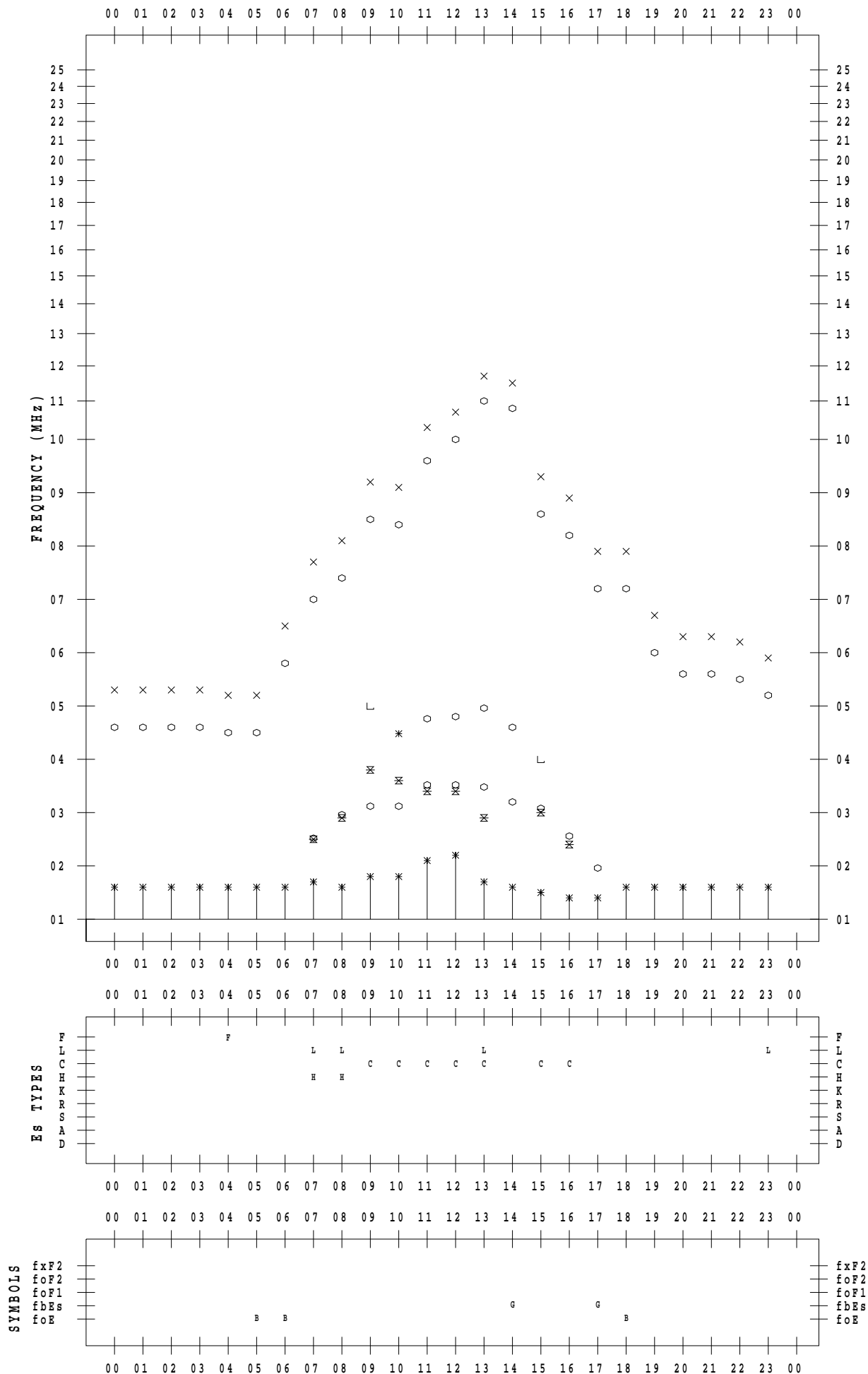
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 11

135 ° E MEAN TIME



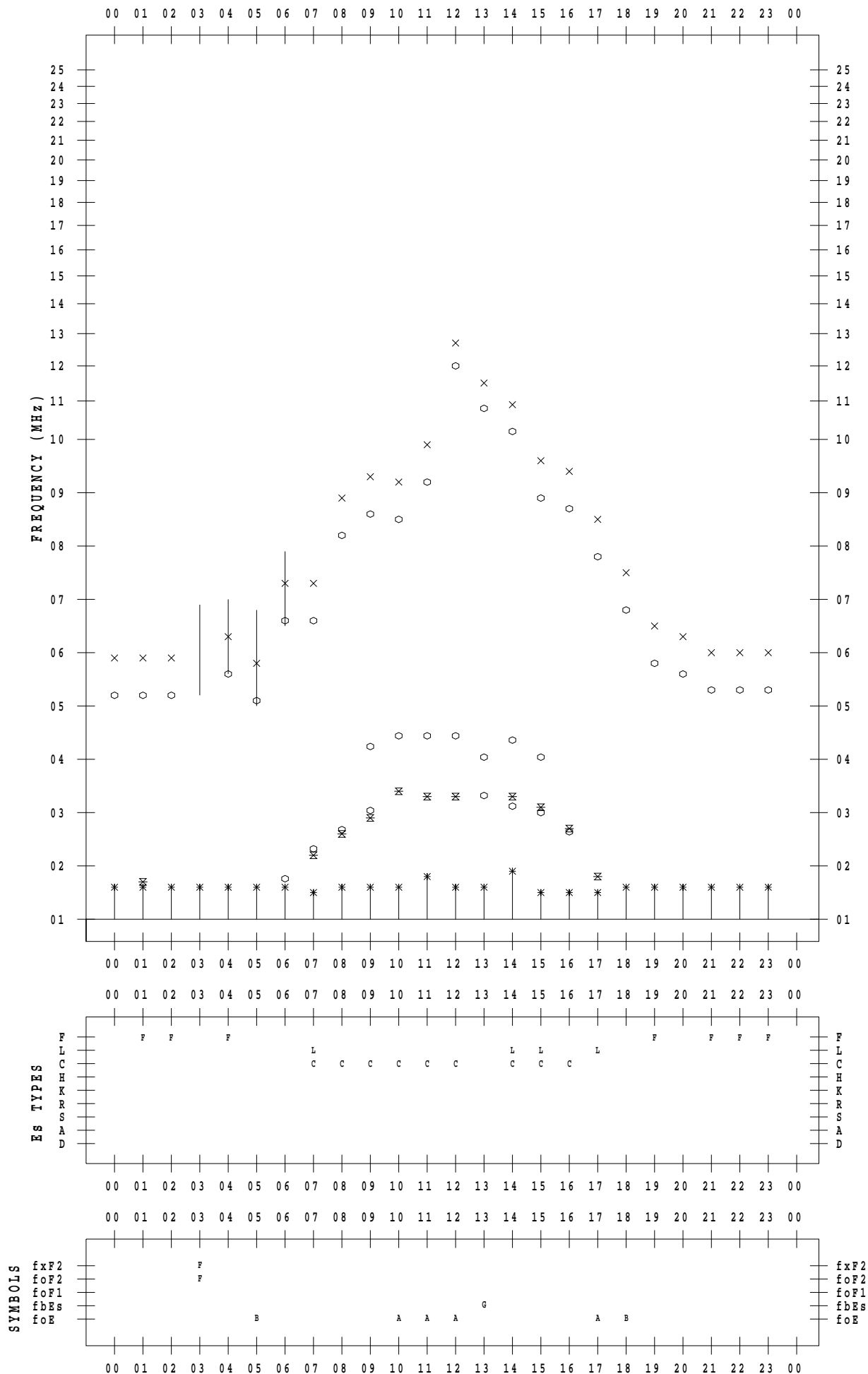
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 12

135 ° E MEAN TIME



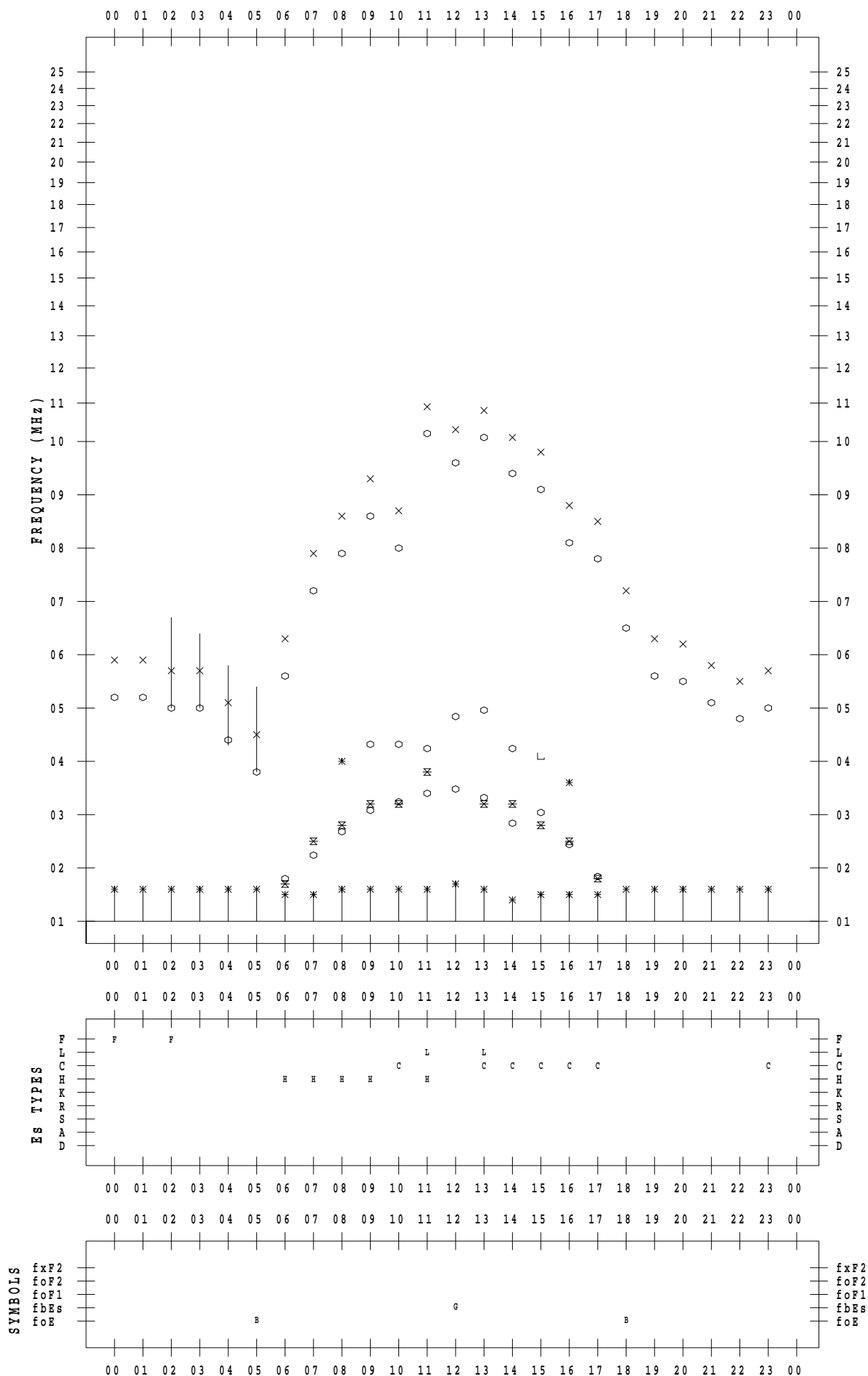
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 13

135 ° E MEAN TIME



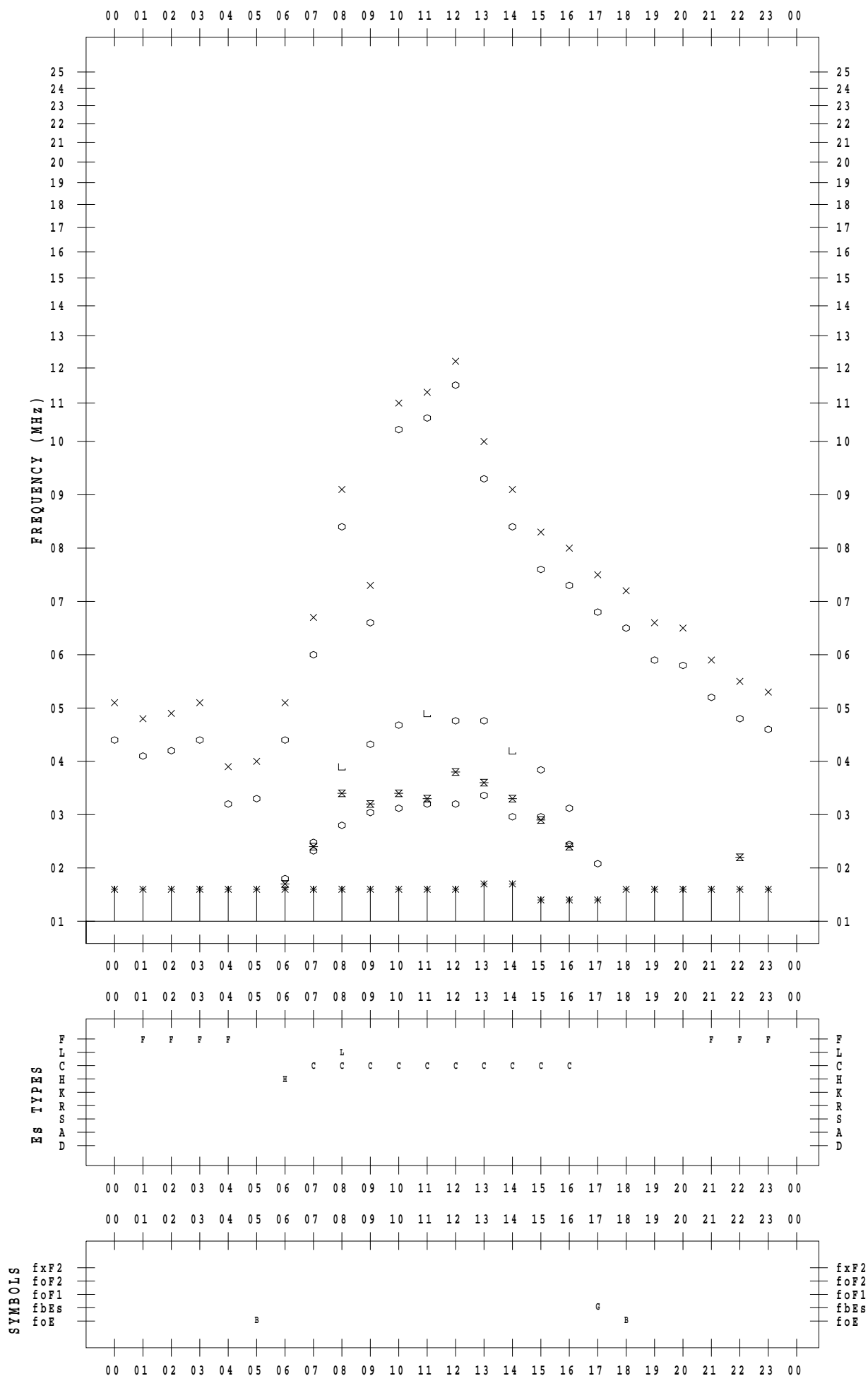
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 14

135 ° E MEAN TIME



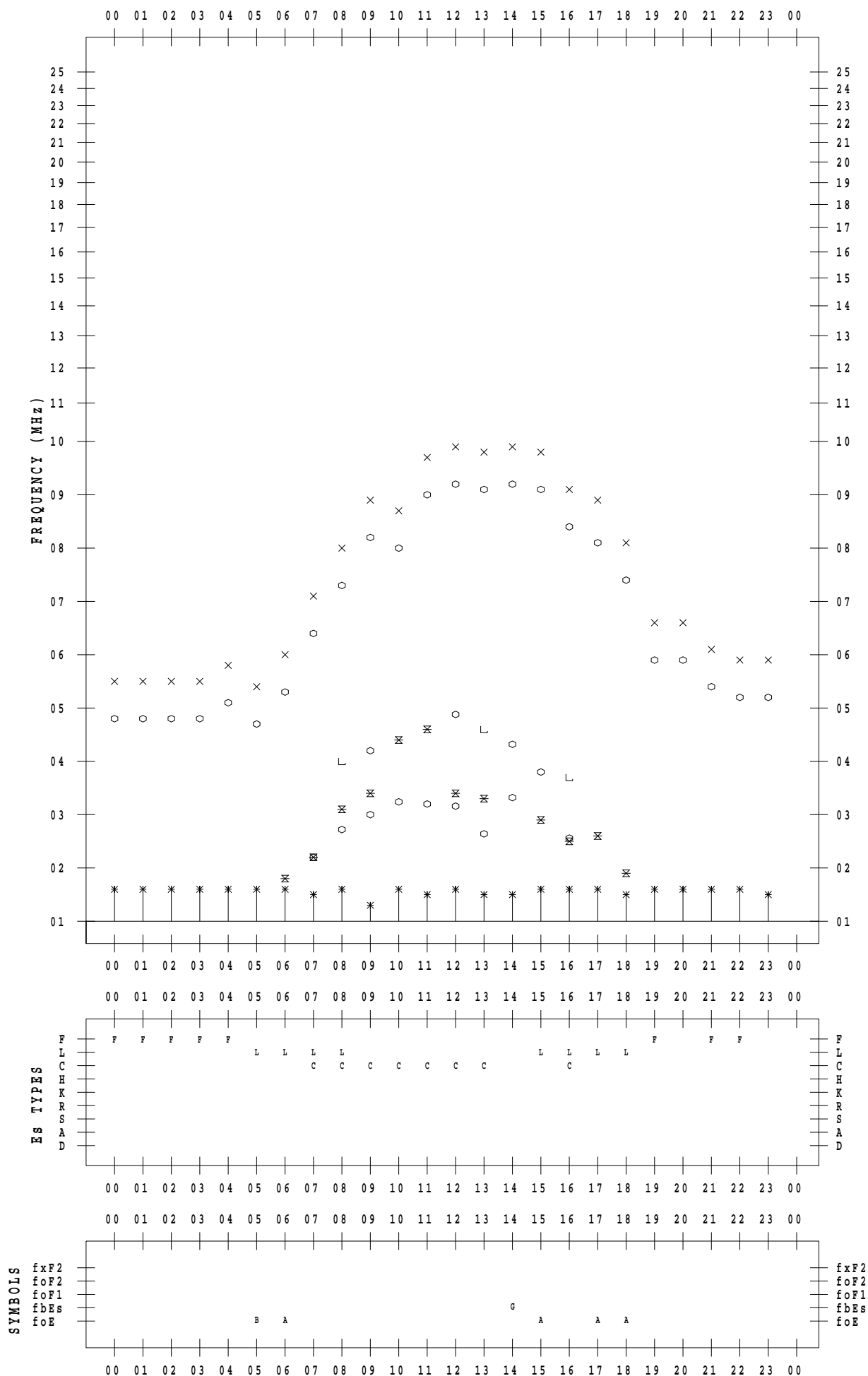
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 15

135 ° E MEAN TIME



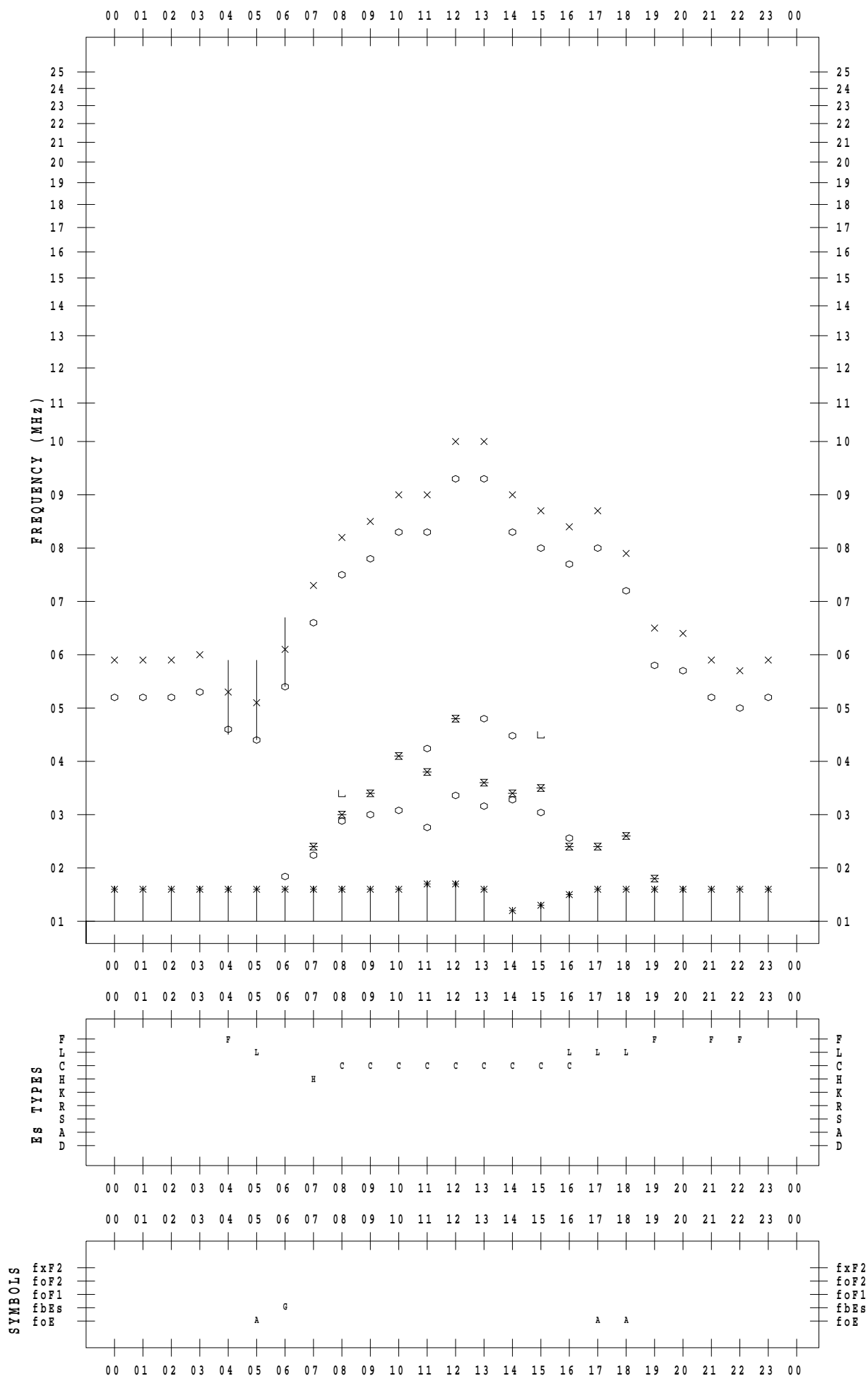
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 16

135 ° E MEAN TIME



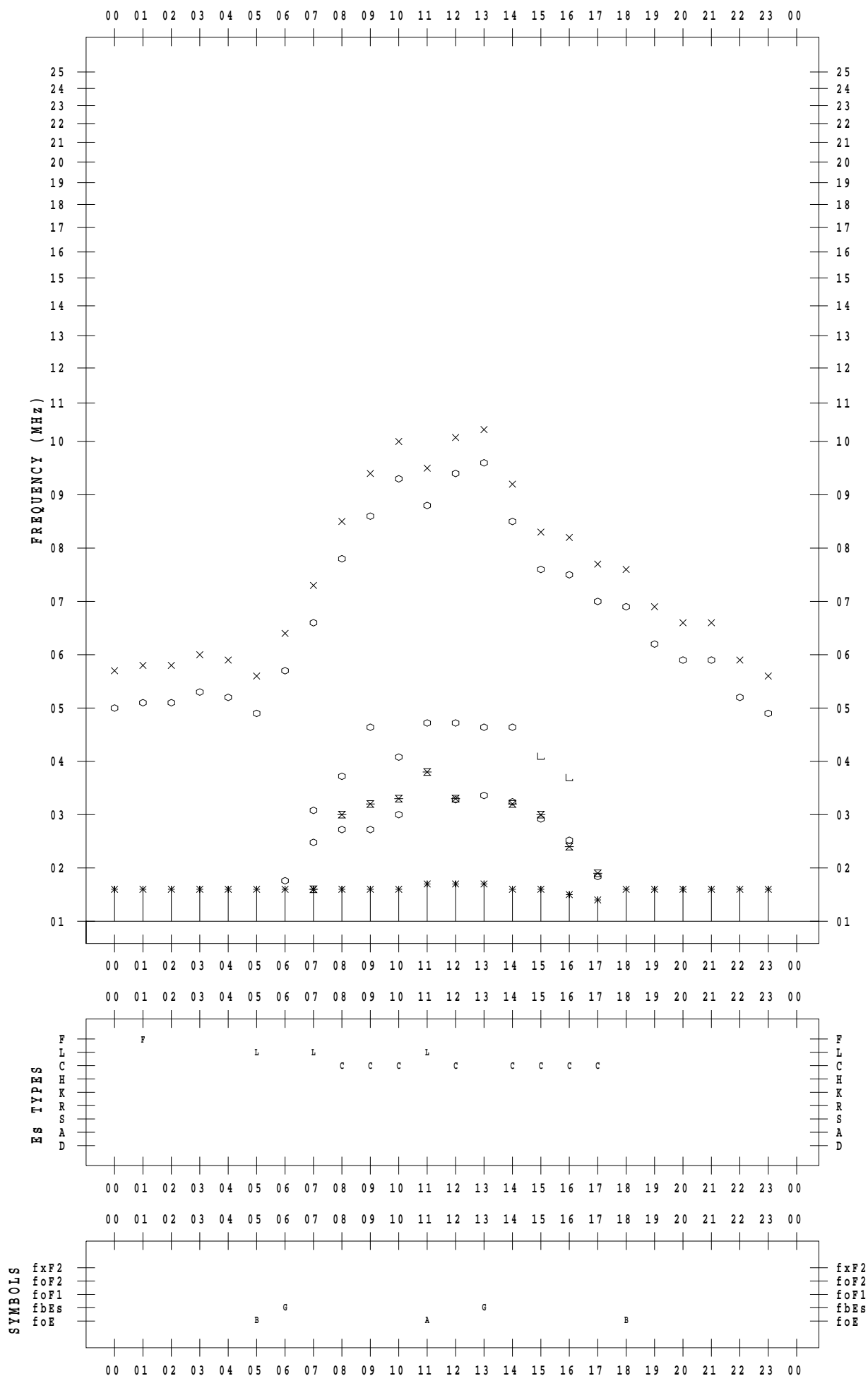
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 17

135 ° E MEAN TIME



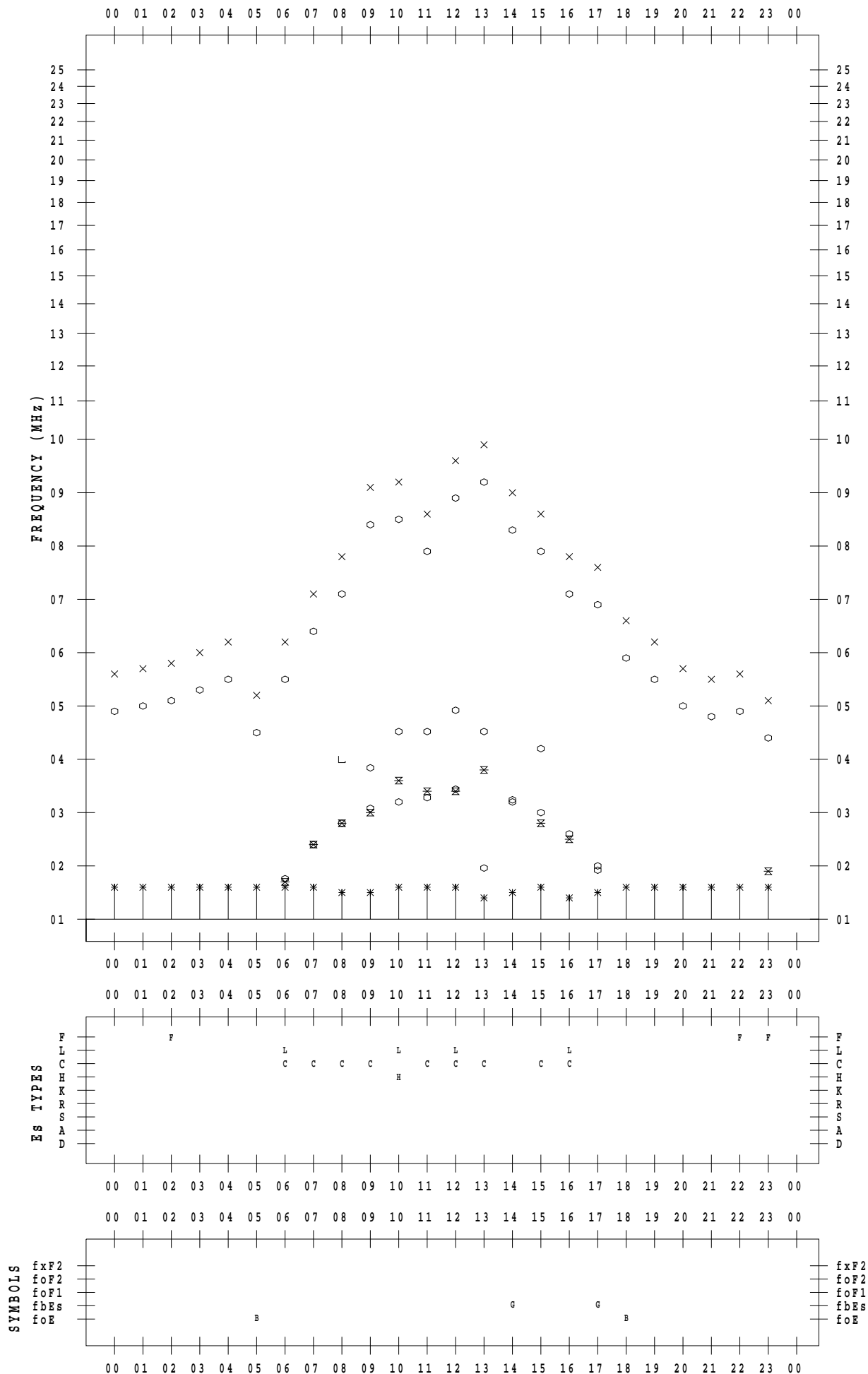
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 18

135 ° E MEAN TIME



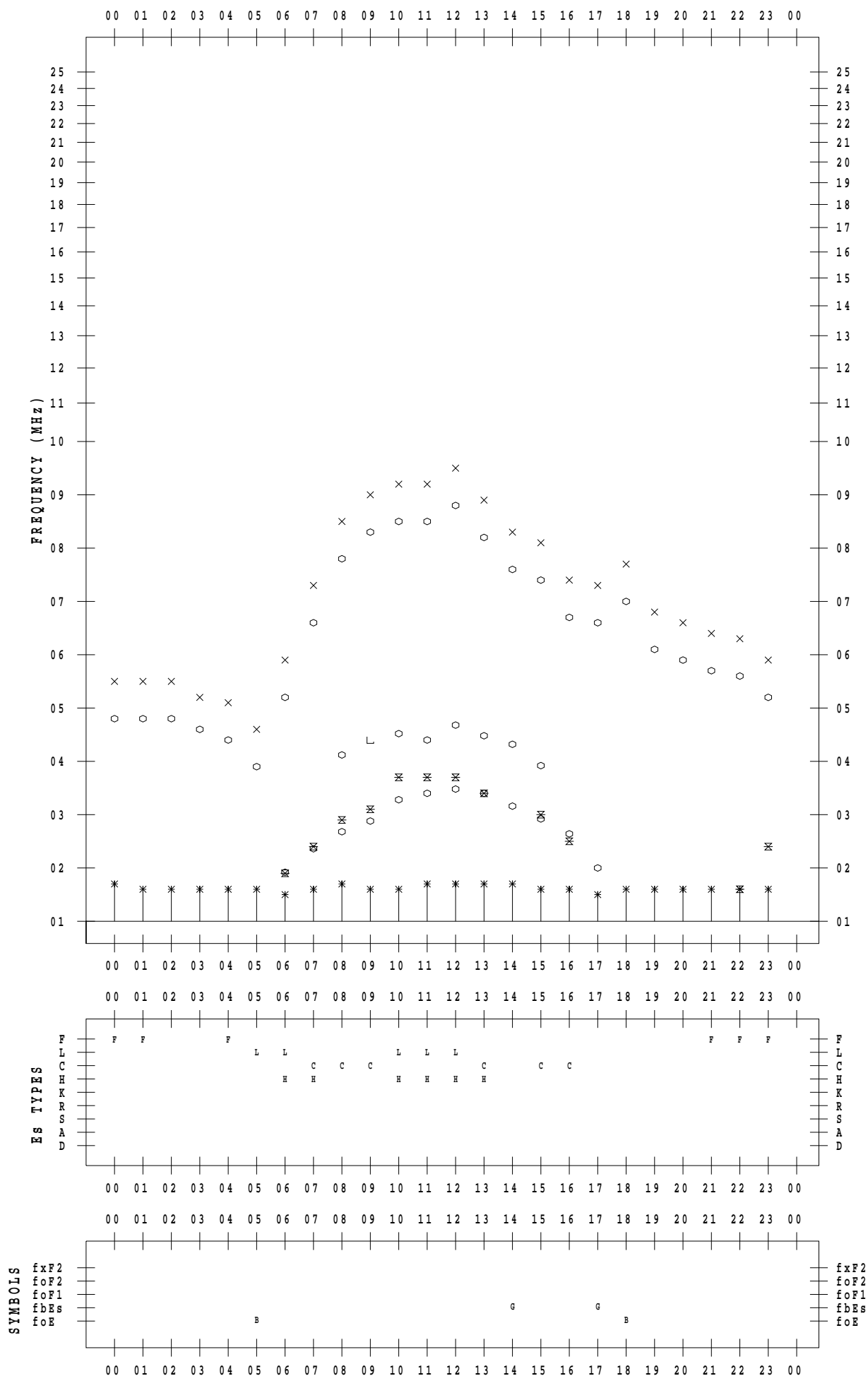
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 19

135 ° E MEAN TIME



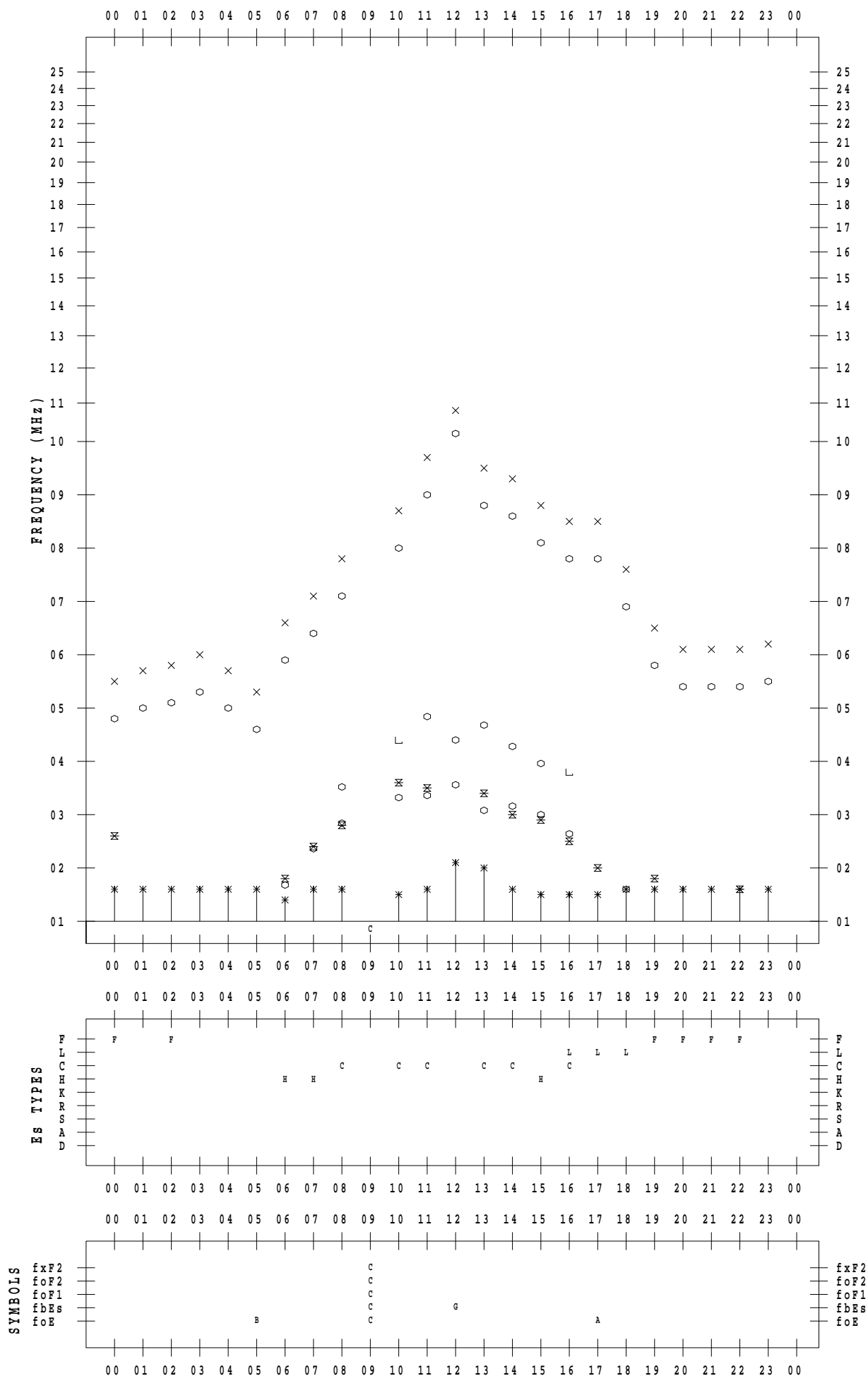
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 20

135 ° E MEAN TIME



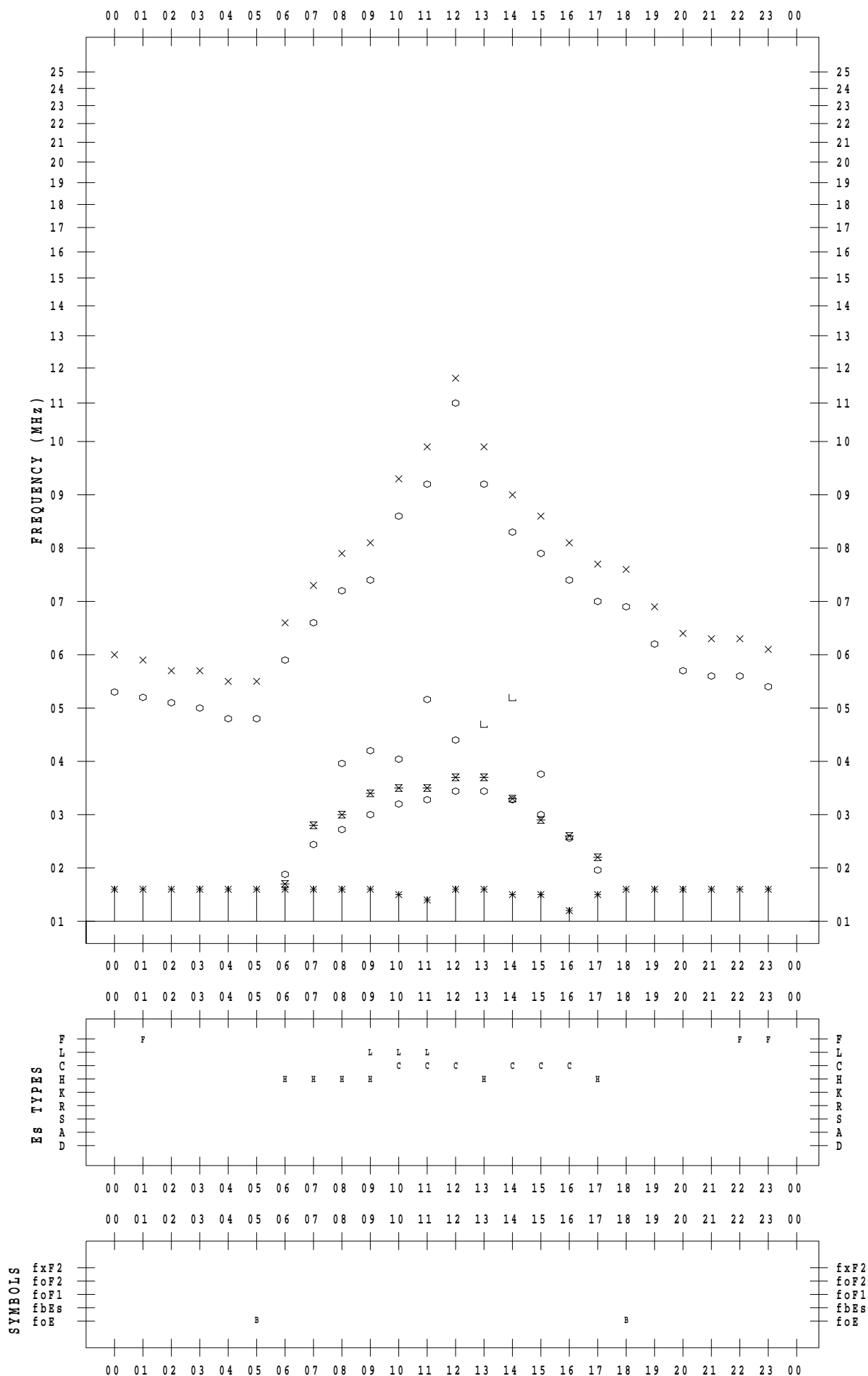
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 21

135 ° E MEAN TIME



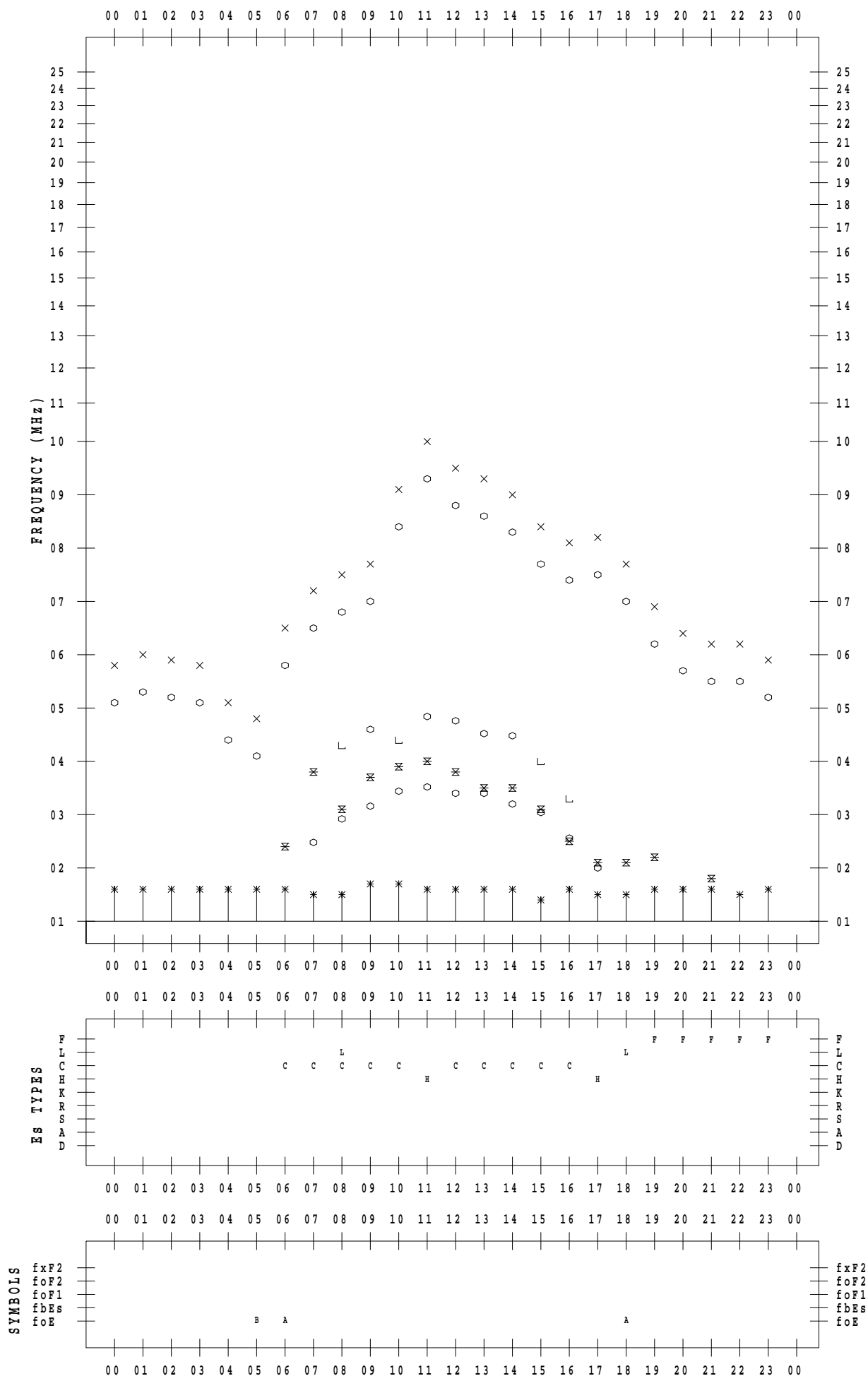
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 22

135 ° E MEAN TIME



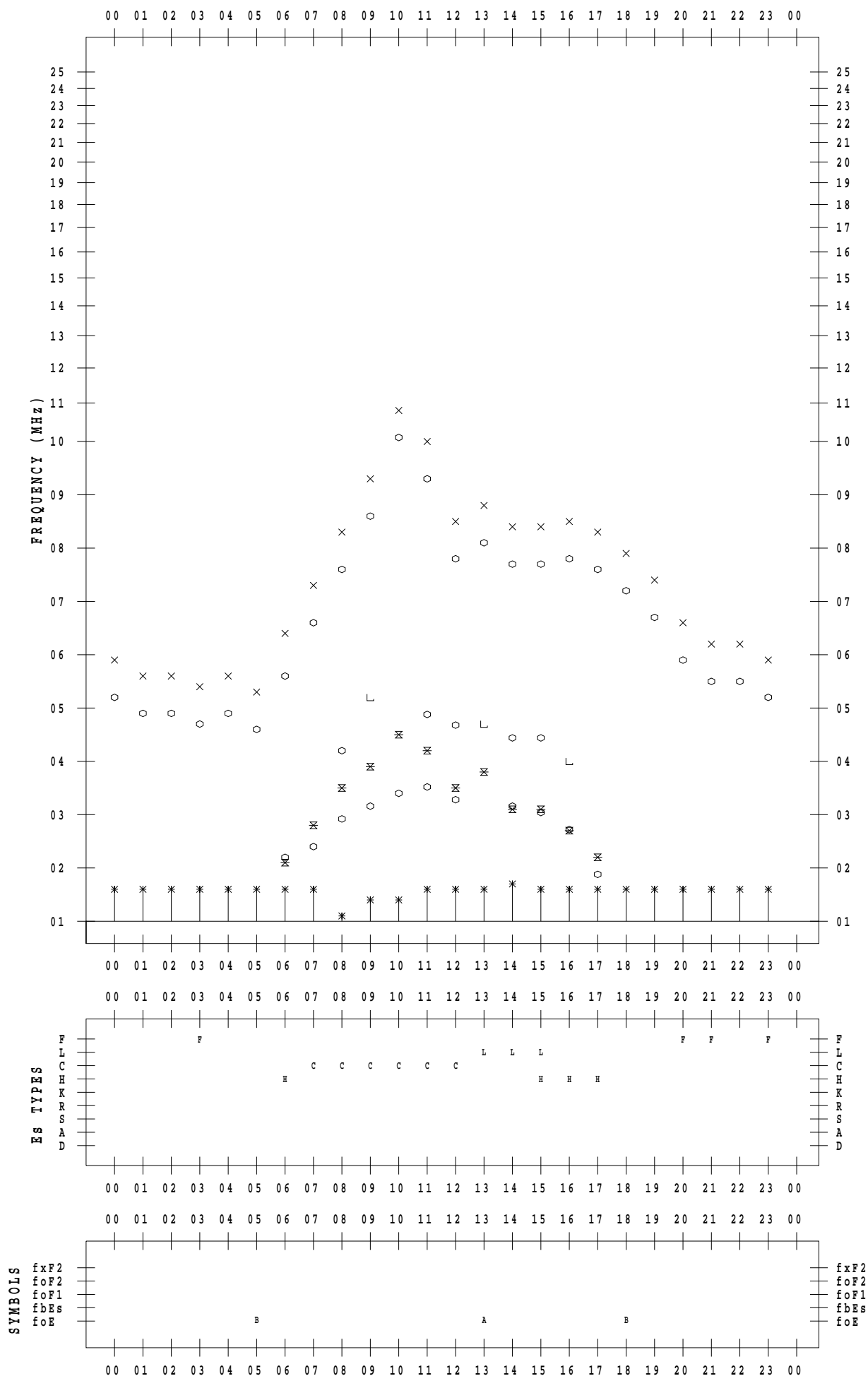
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 23

135 ° E MEAN TIME



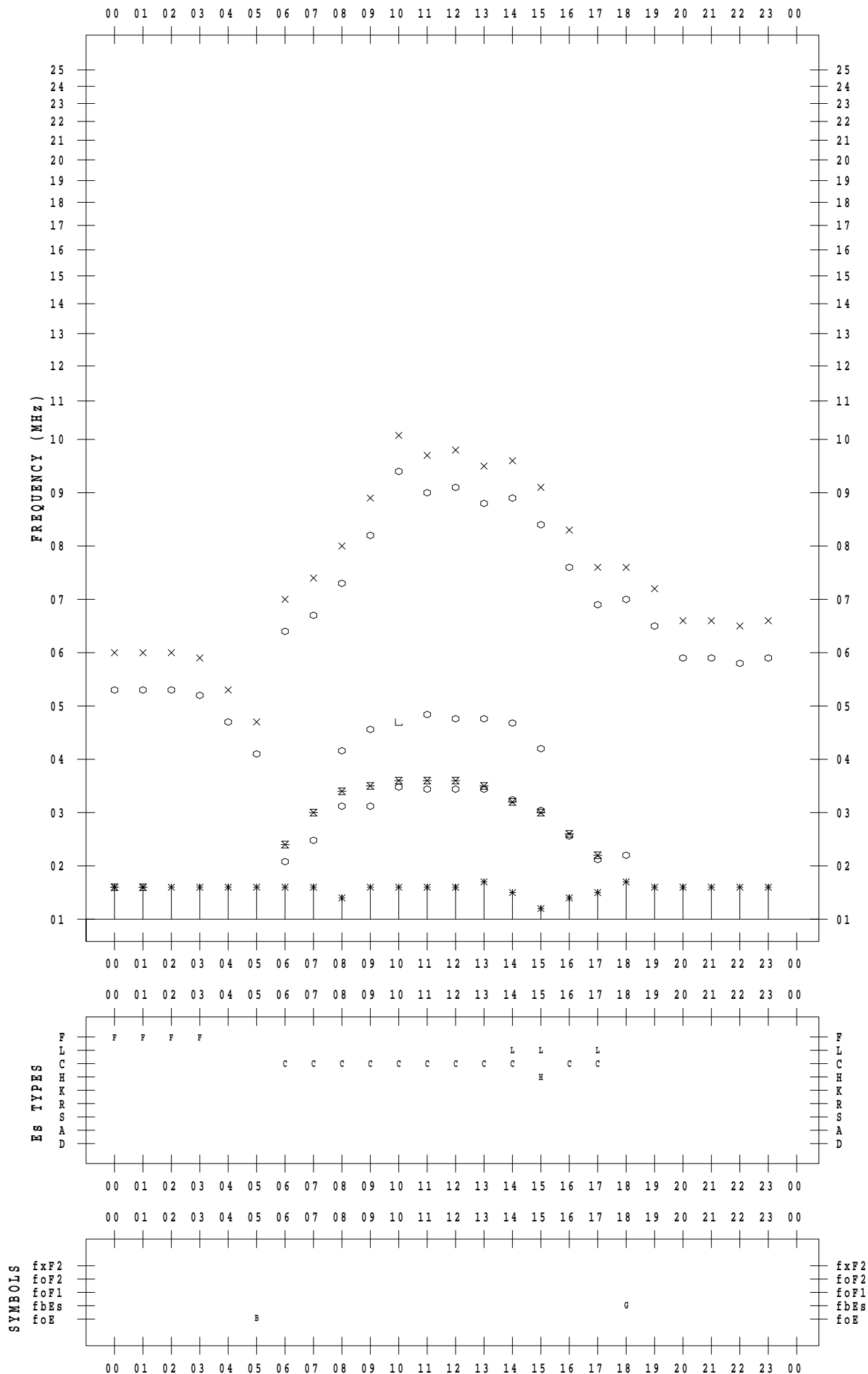
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 24

135 ° E MEAN TIME



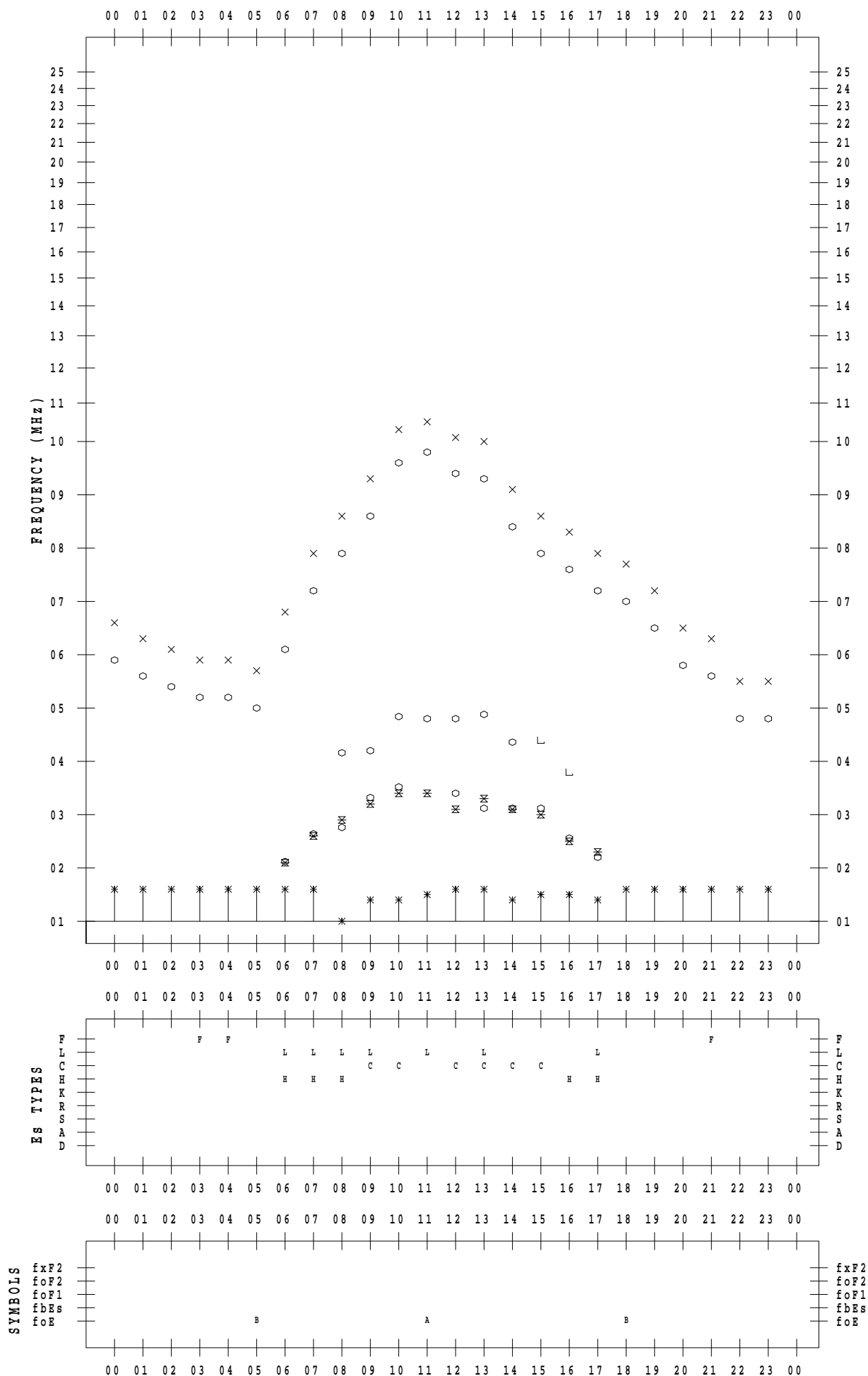
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 25

135 ° E MEAN TIME



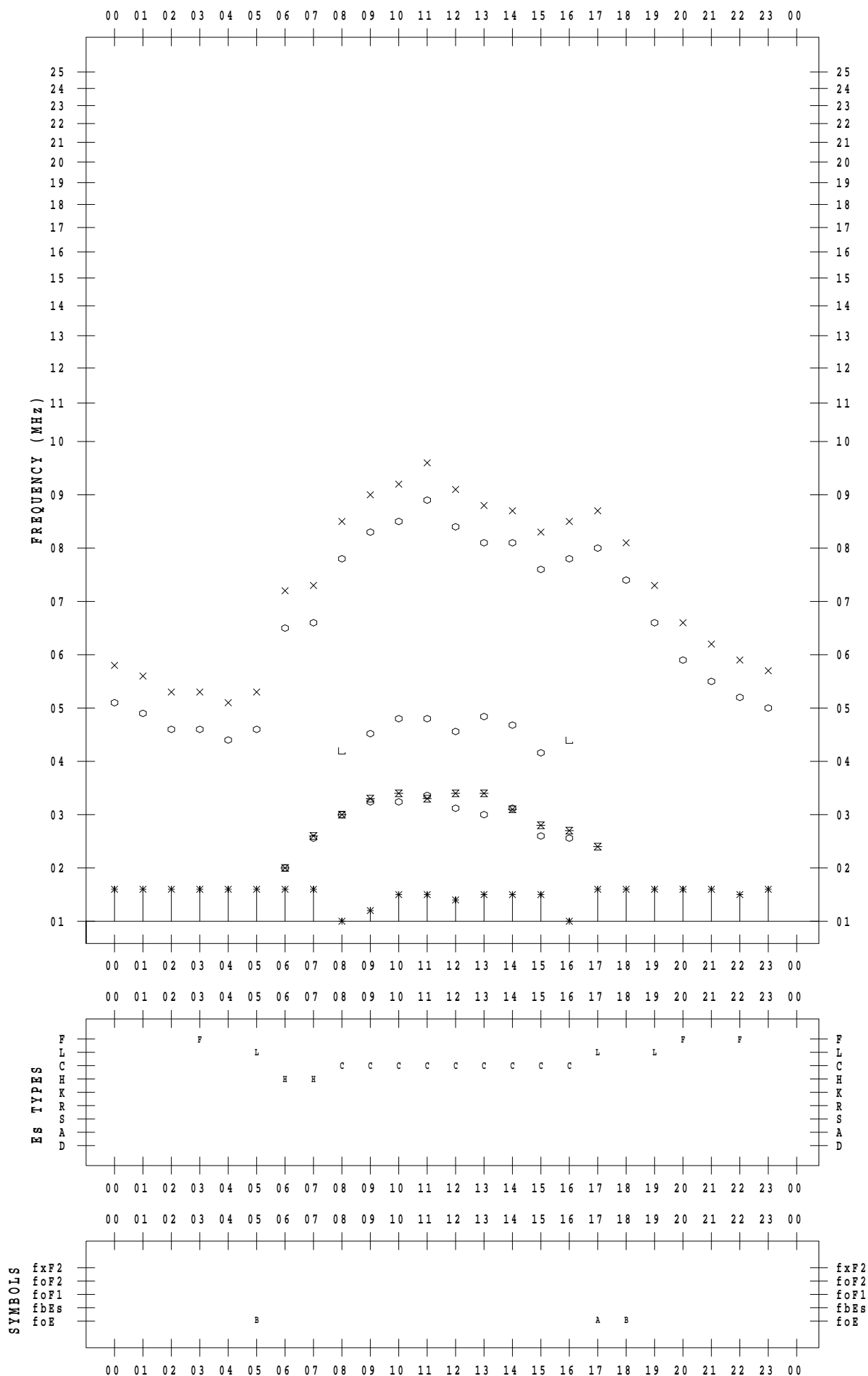
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 26

135 ° E MEAN TIME



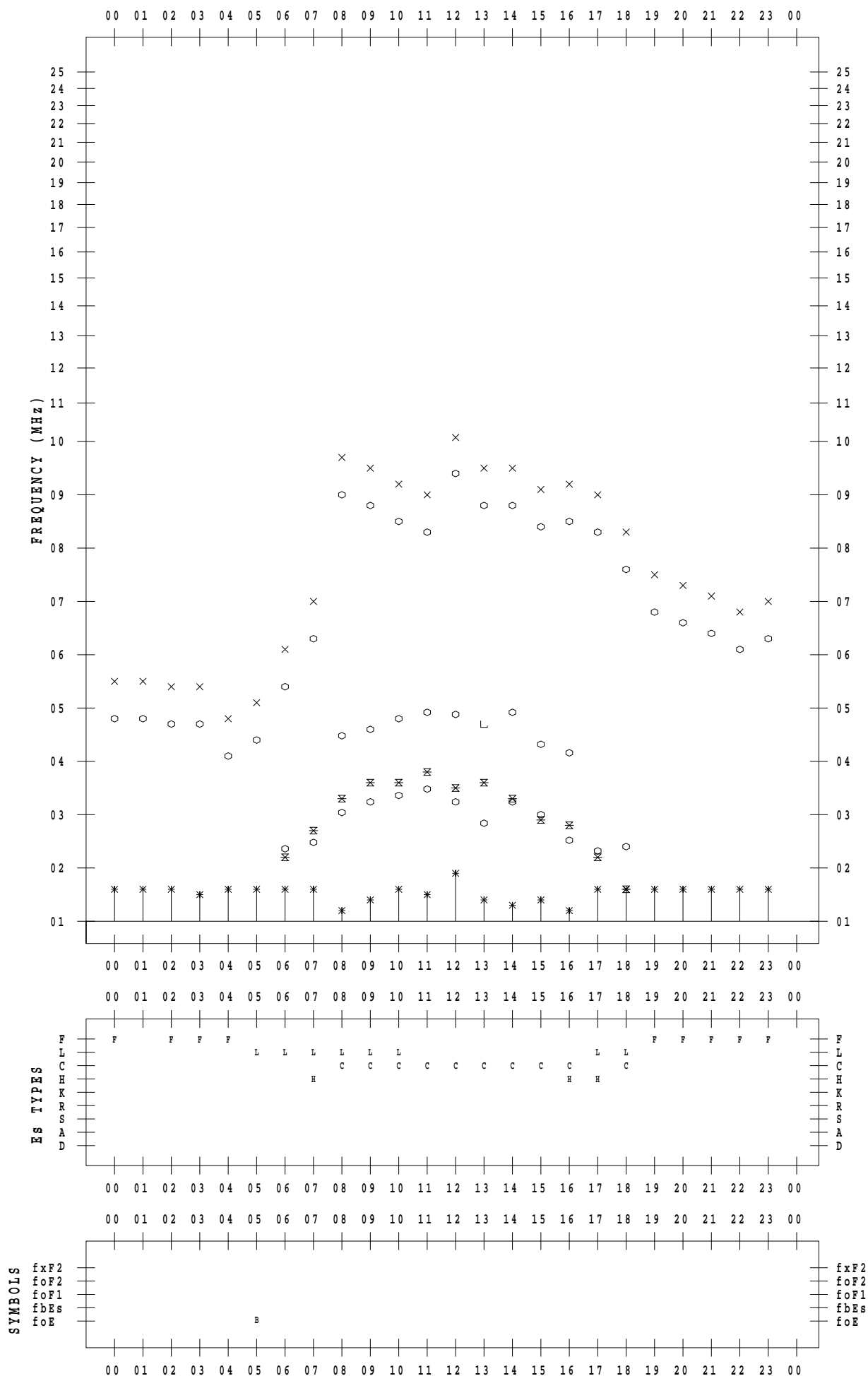
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 27

135 ° E MEAN TIME



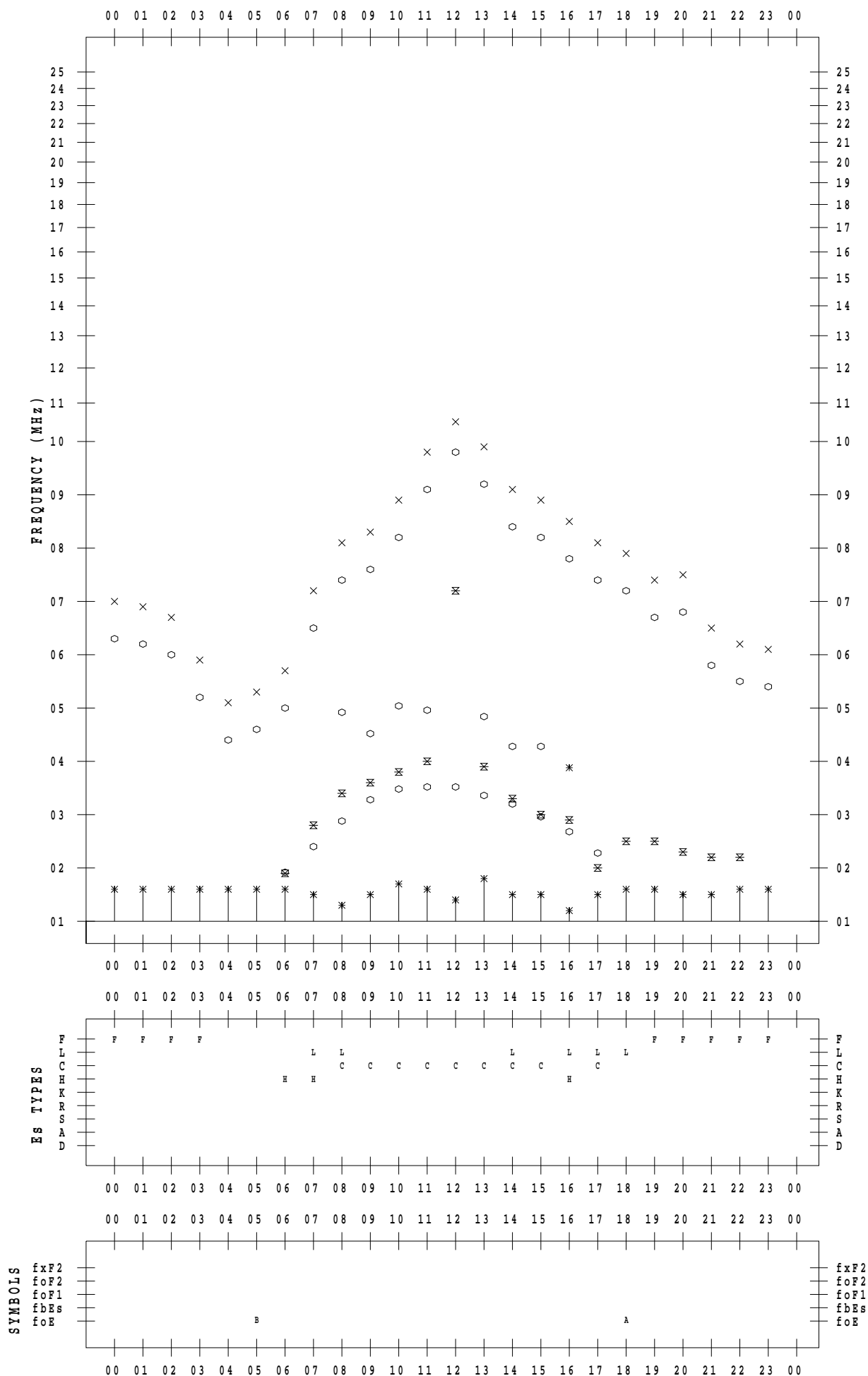
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 28

135 ° E MEAN TIME



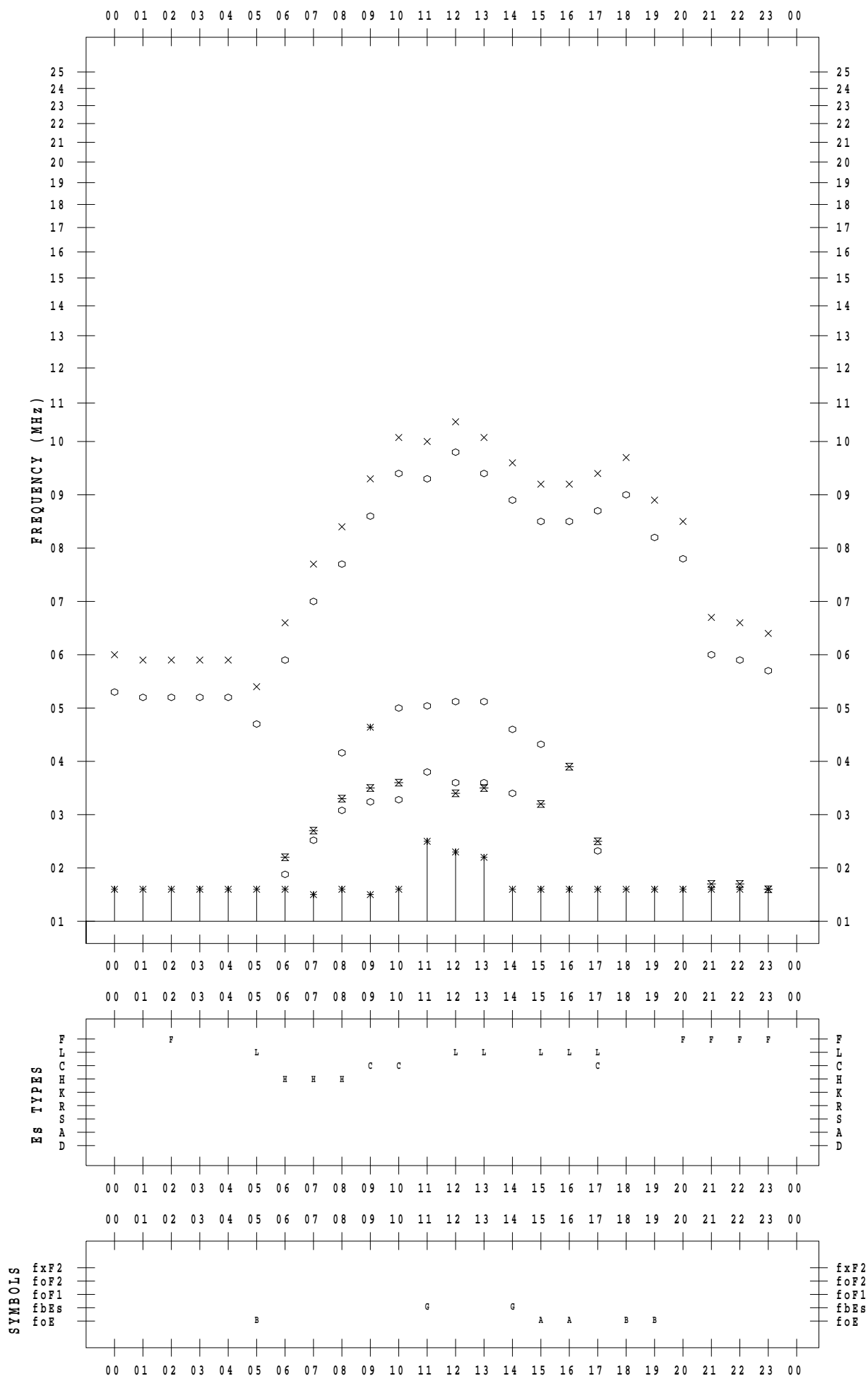
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 29

135 ° E MEAN TIME



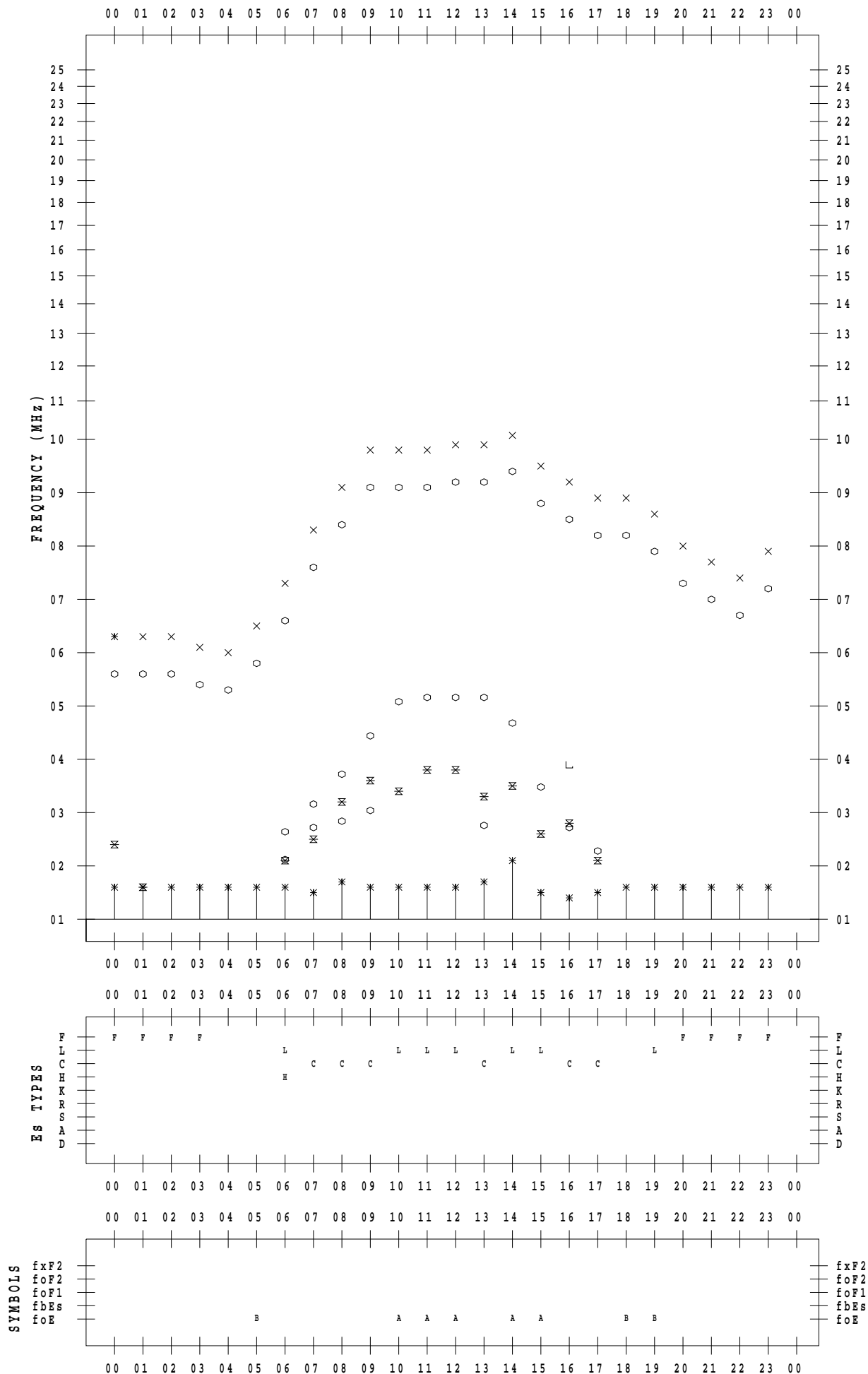
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 30

135 ° E MEAN TIME



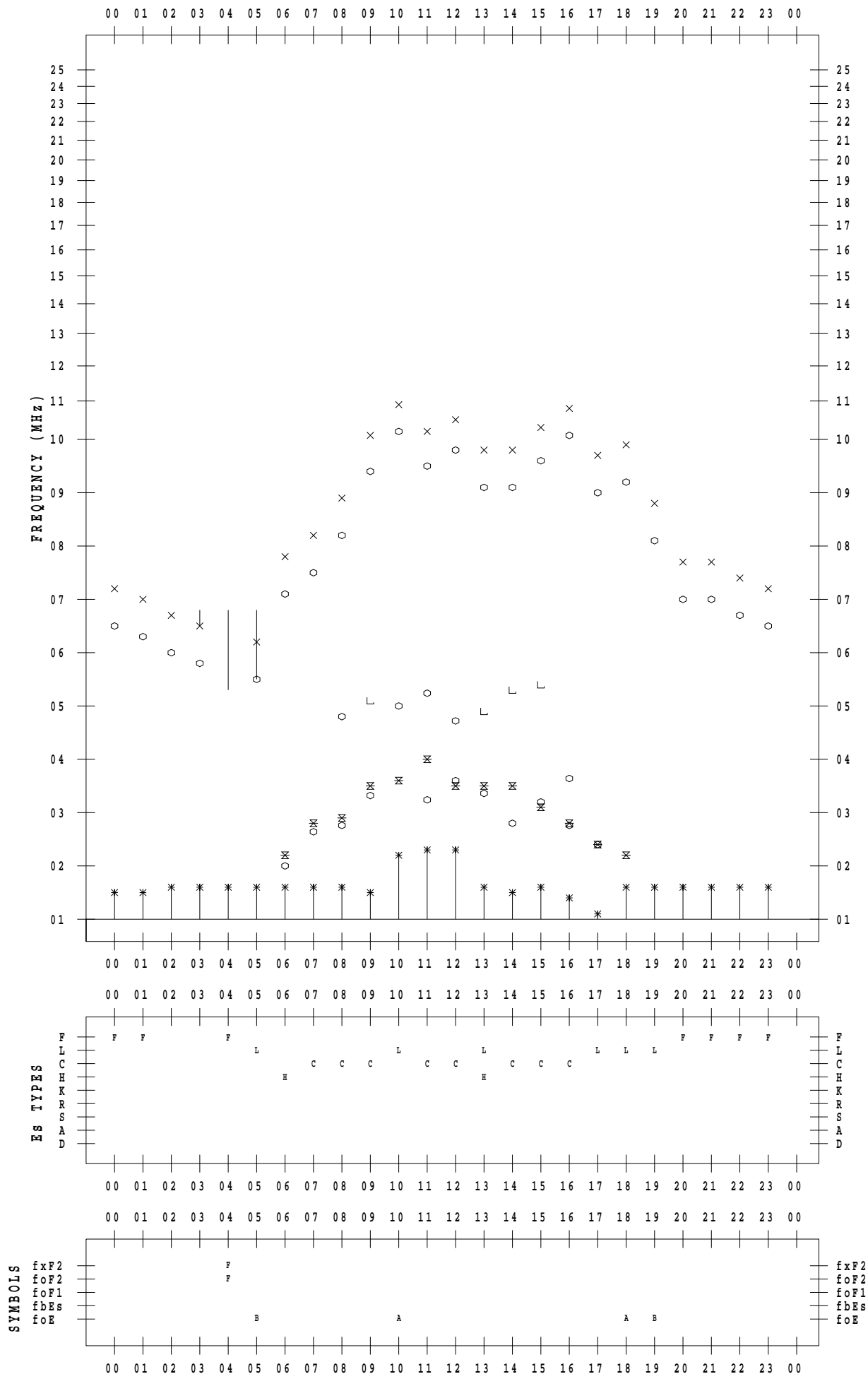
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 3 / 31

135 ° E MEAN TIME



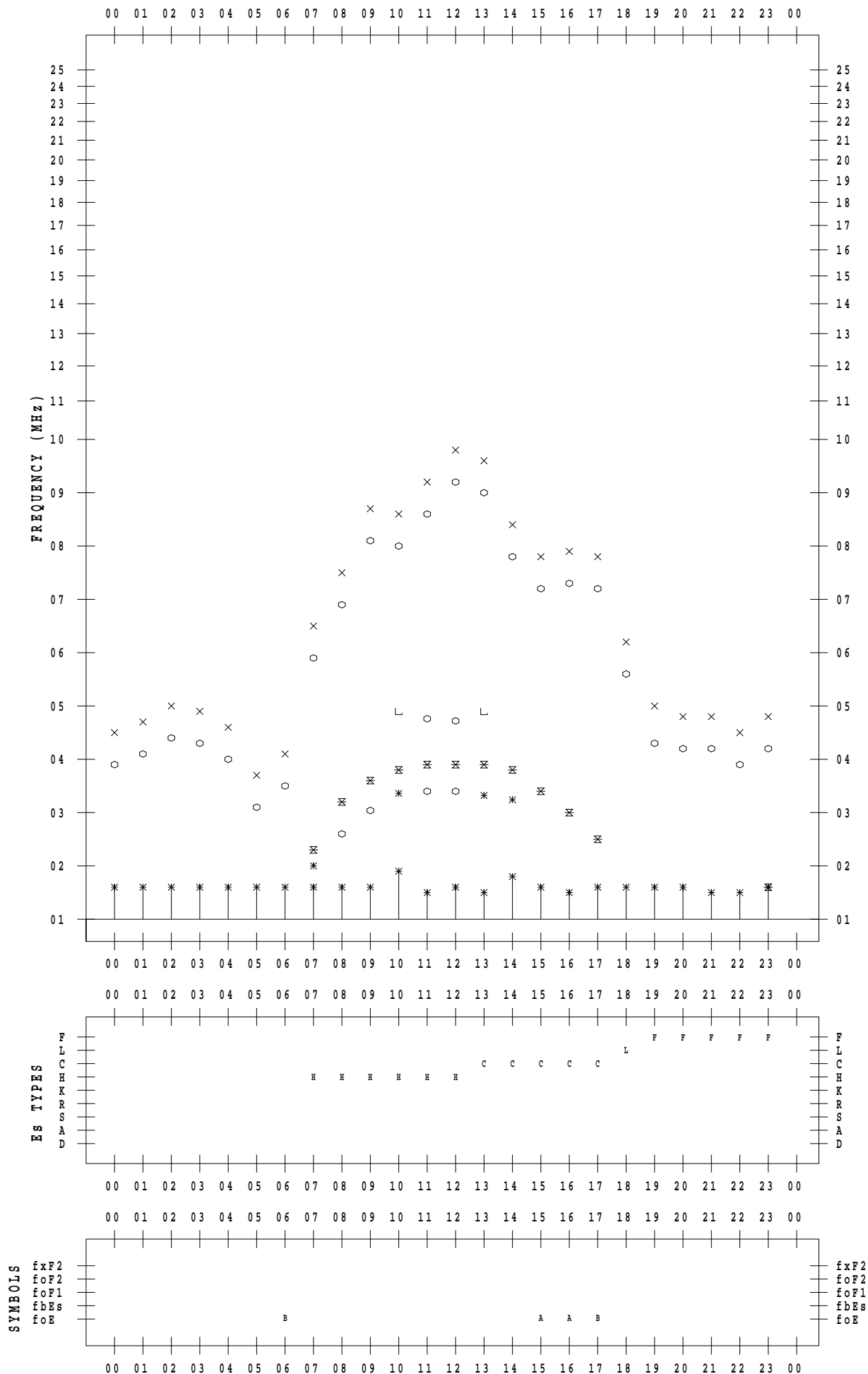
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 1

135 ° E MEAN TIME



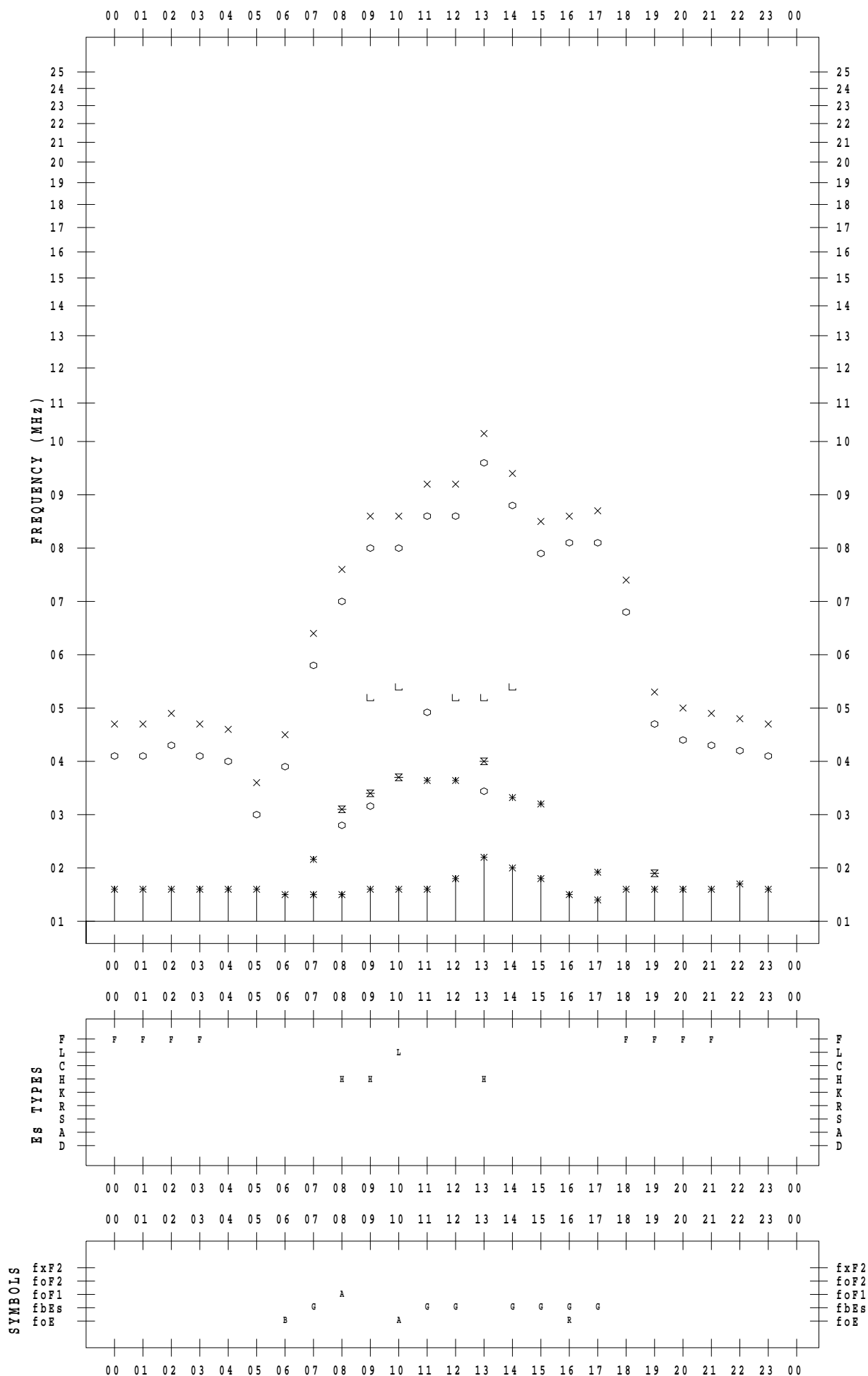
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 2

135 ° E MEAN TIME



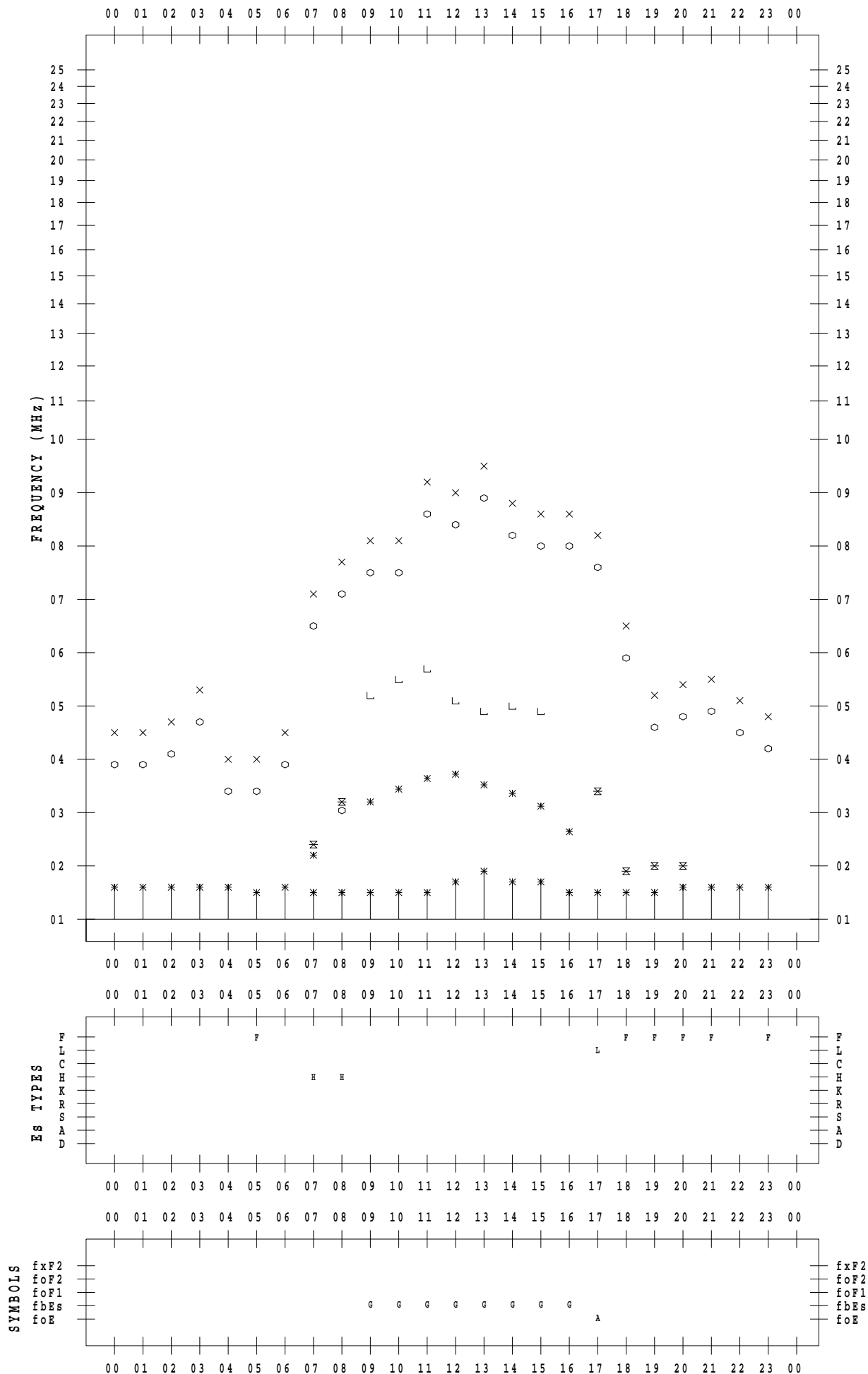
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 3

135 ° E MEAN TIME



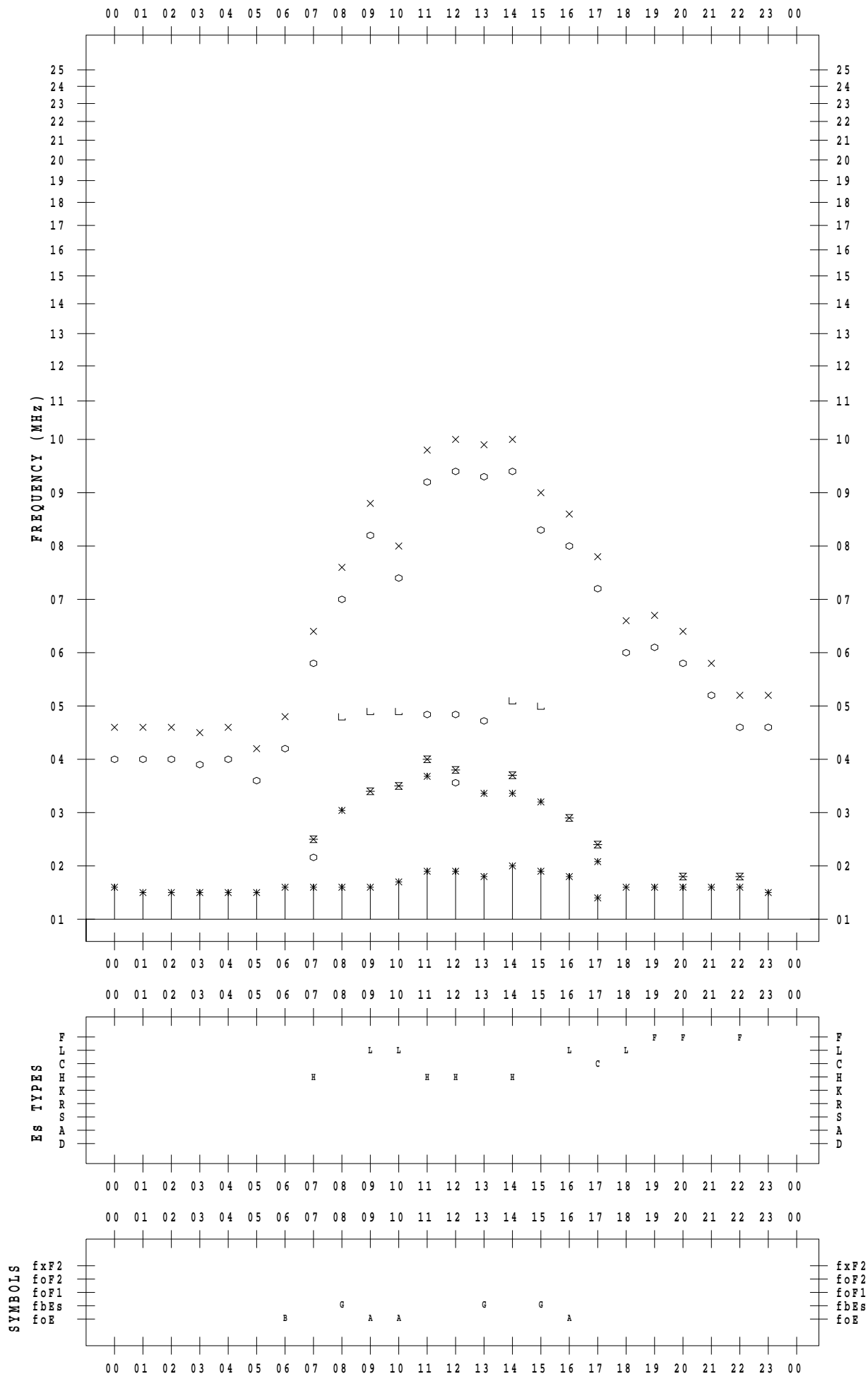
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 4

135 ° E MEAN TIME



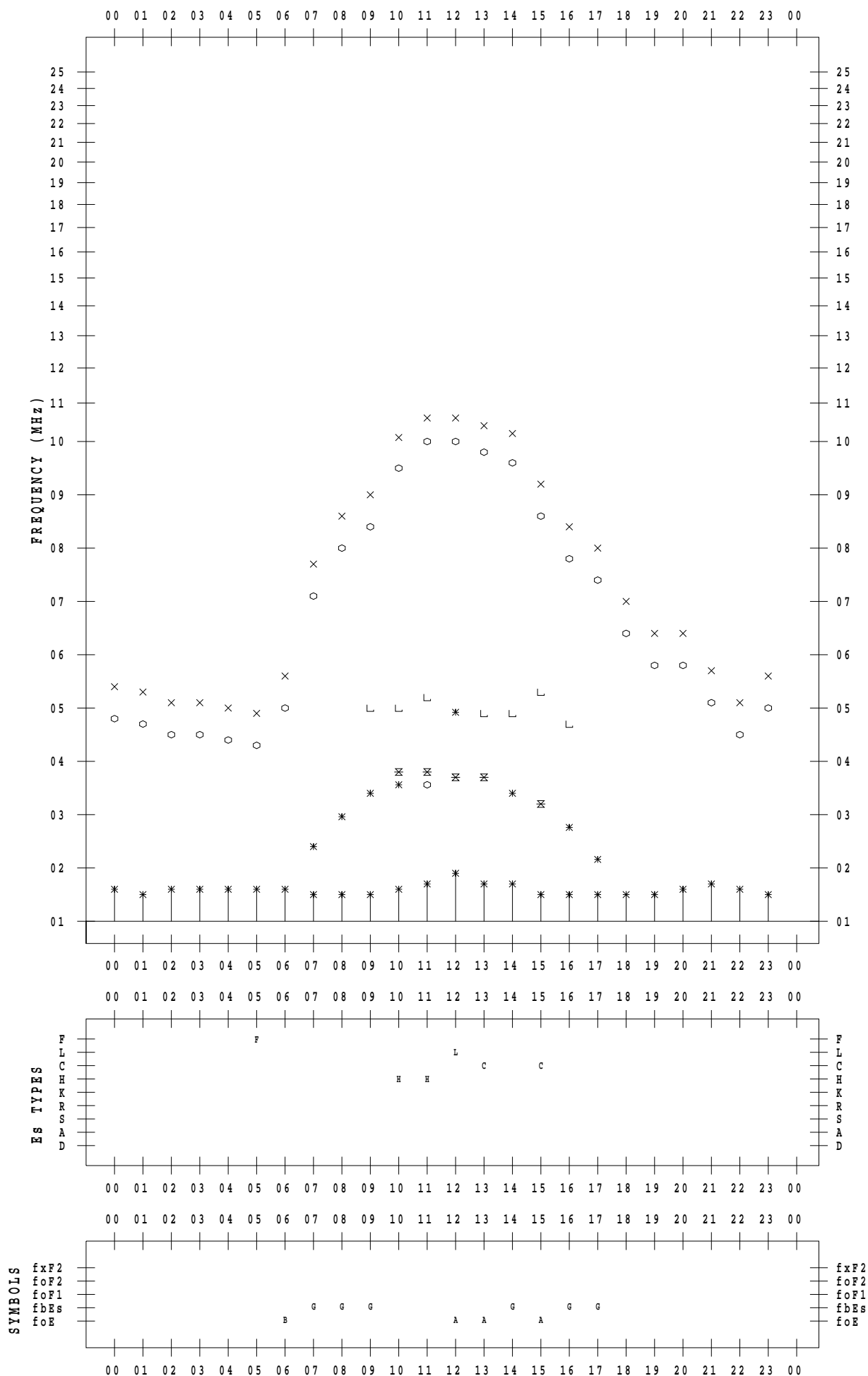
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 5

135 ° E MEAN TIME



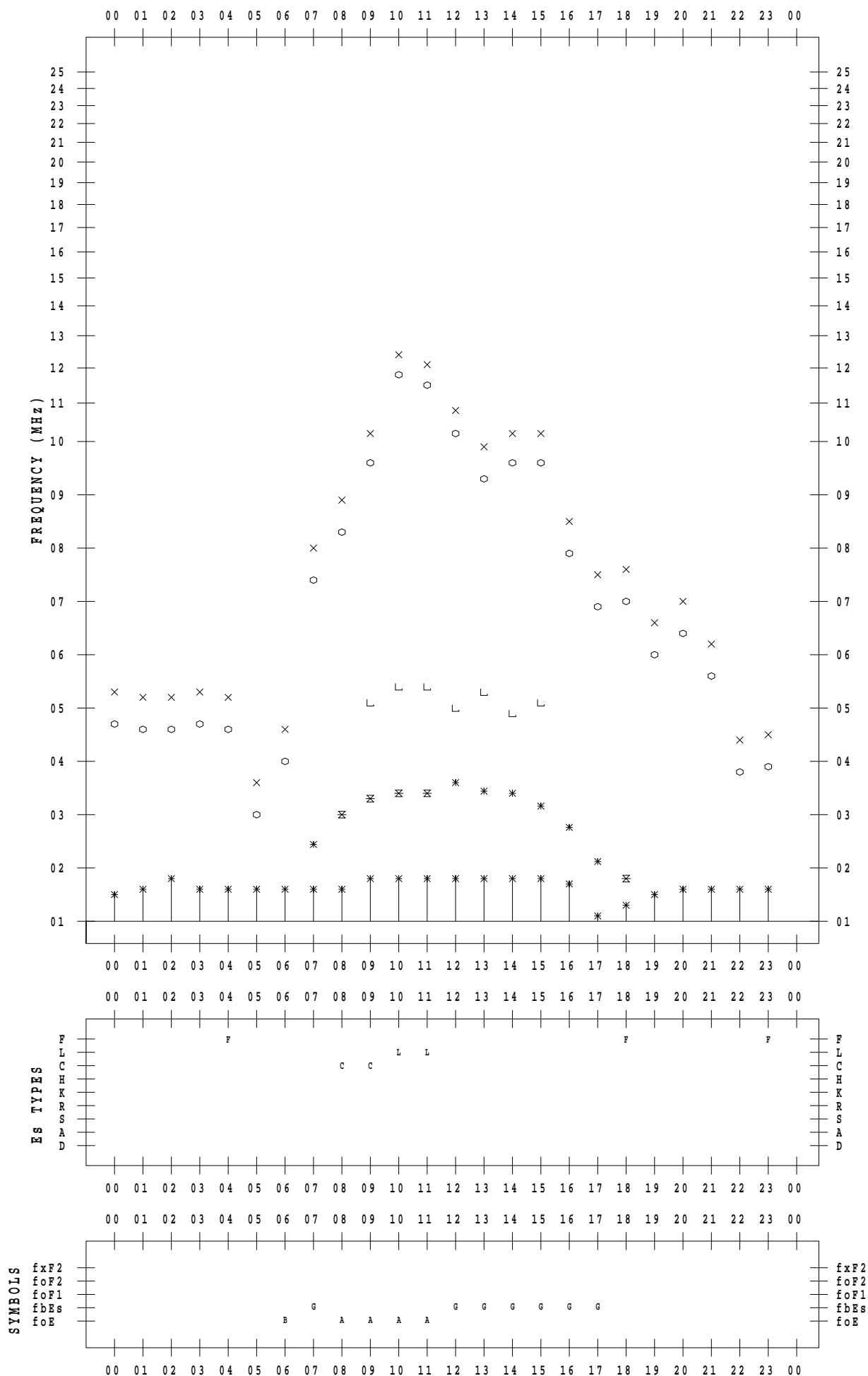
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 6

135 ° E MEAN TIME



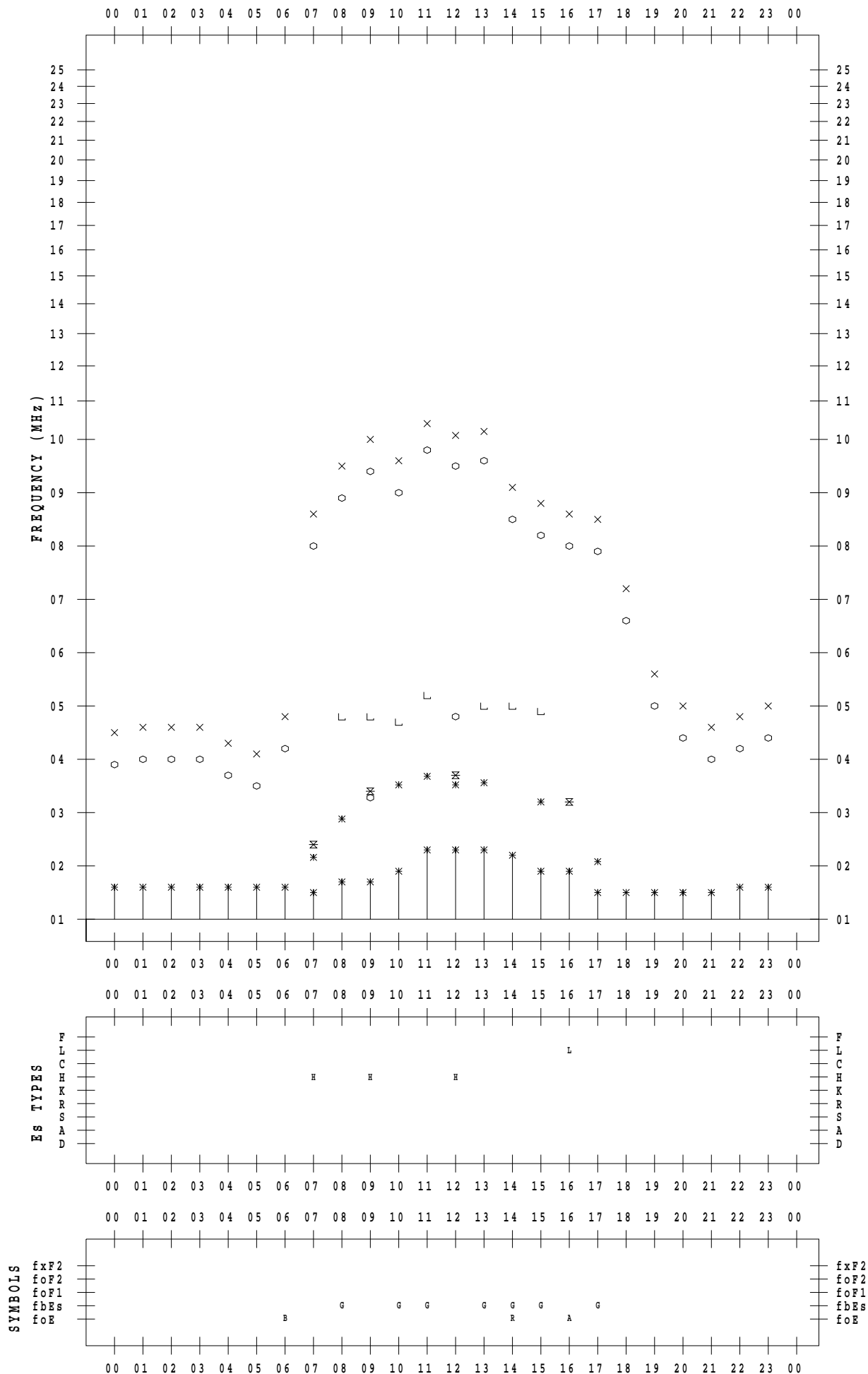
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 7

135 ° E MEAN TIME



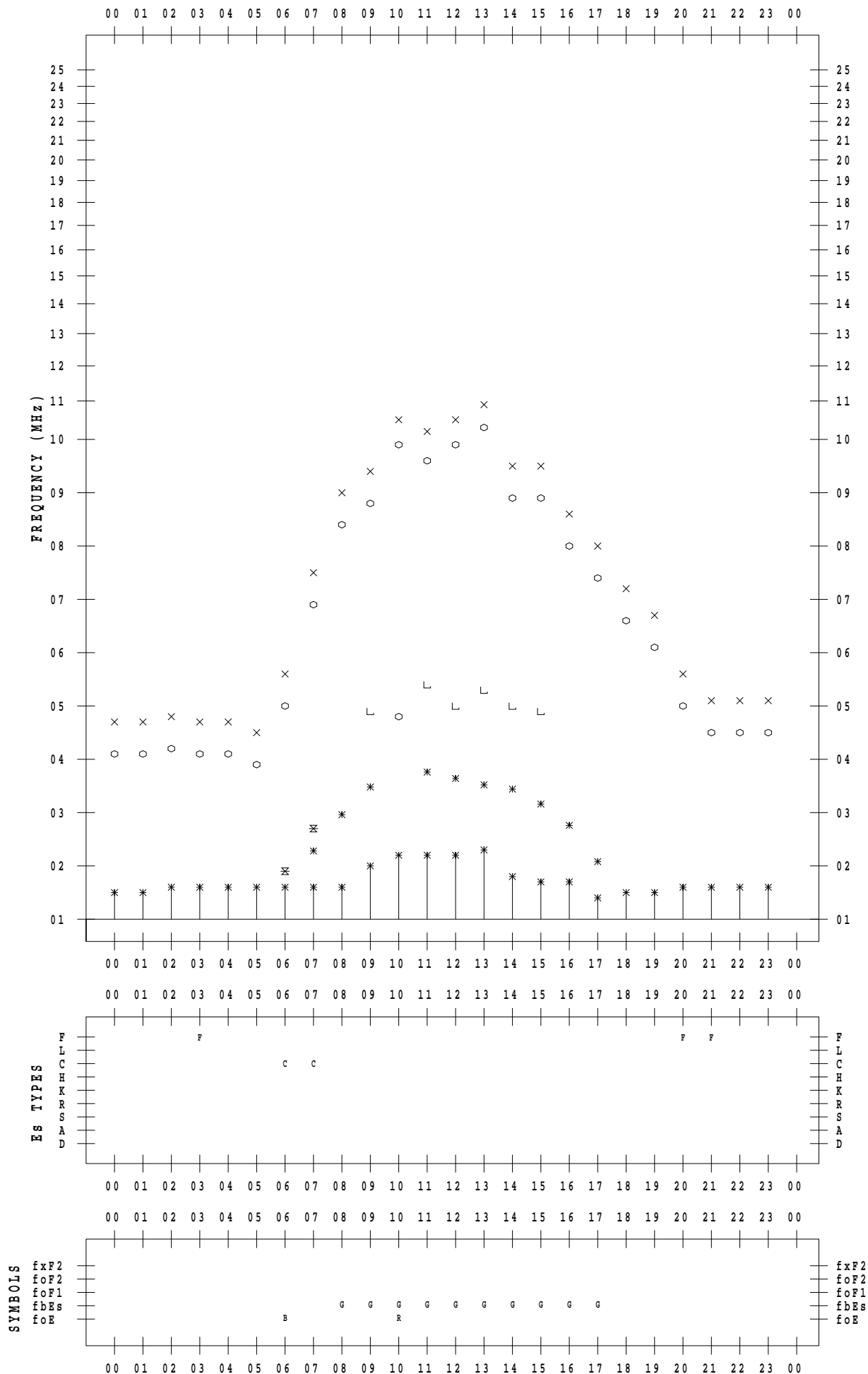
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 8

135 ° E MEAN TIME



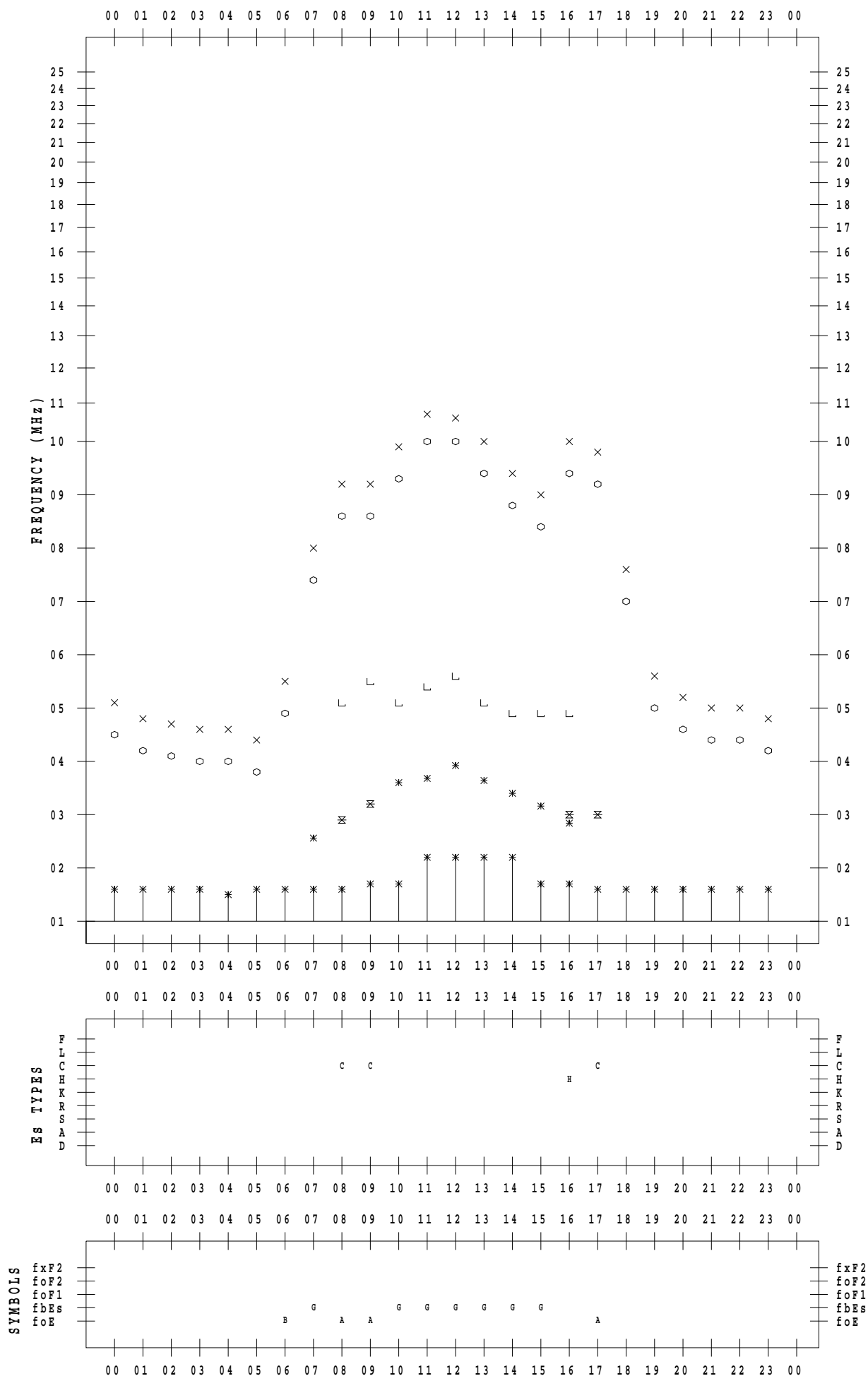
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 9

135 ° E MEAN TIME



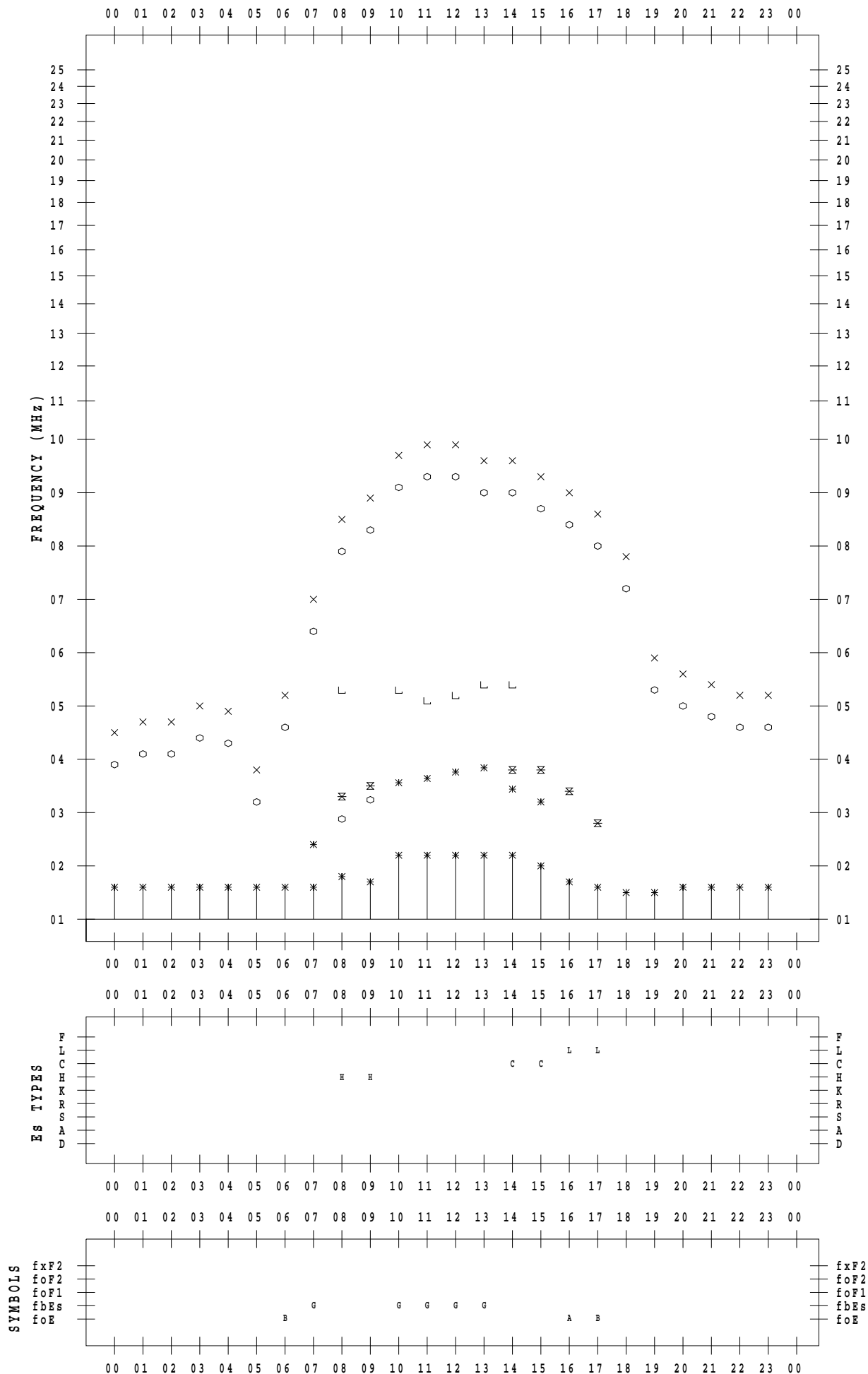
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 10

135 ° E MEAN TIME



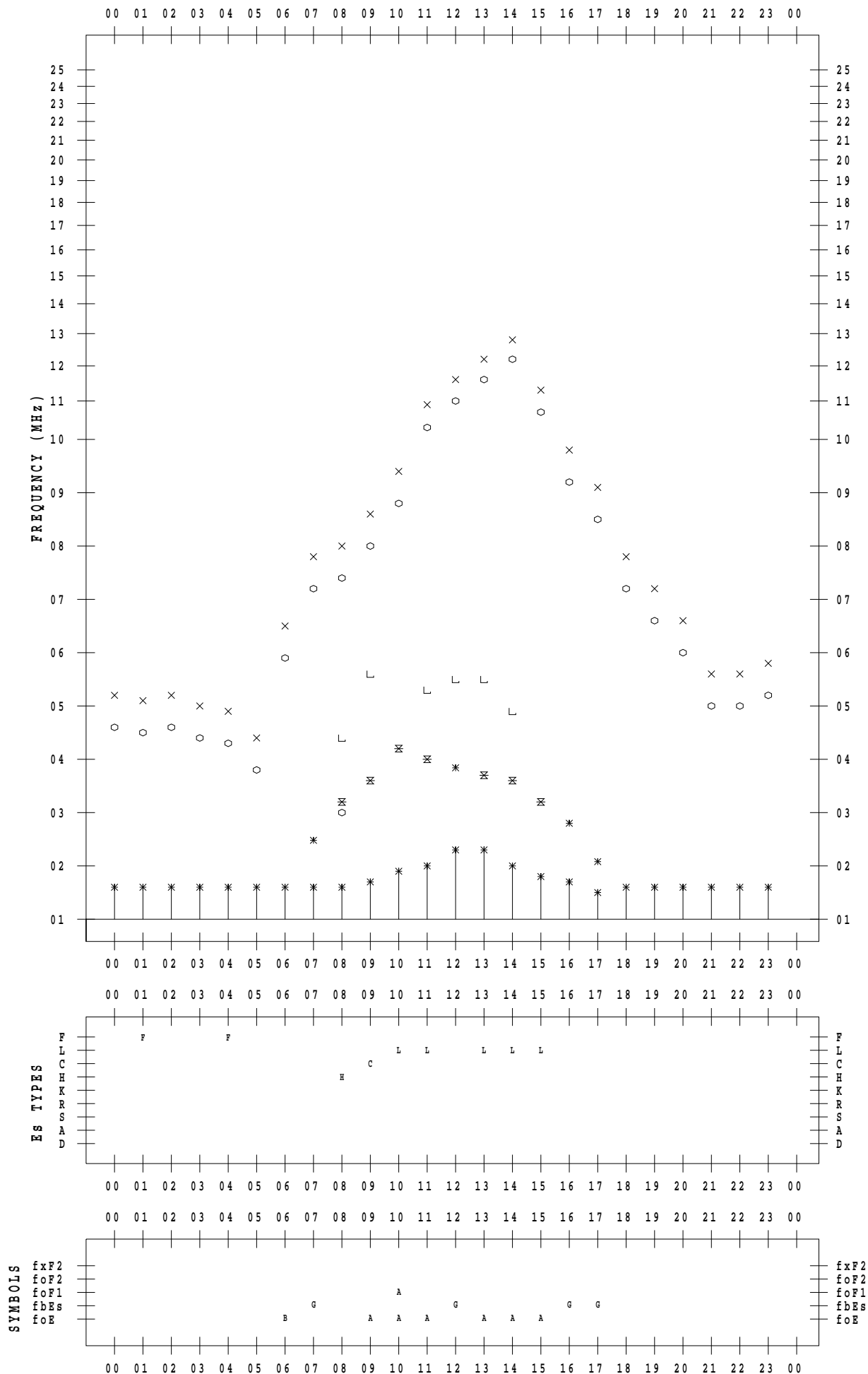
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 11

135 ° E MEAN TIME



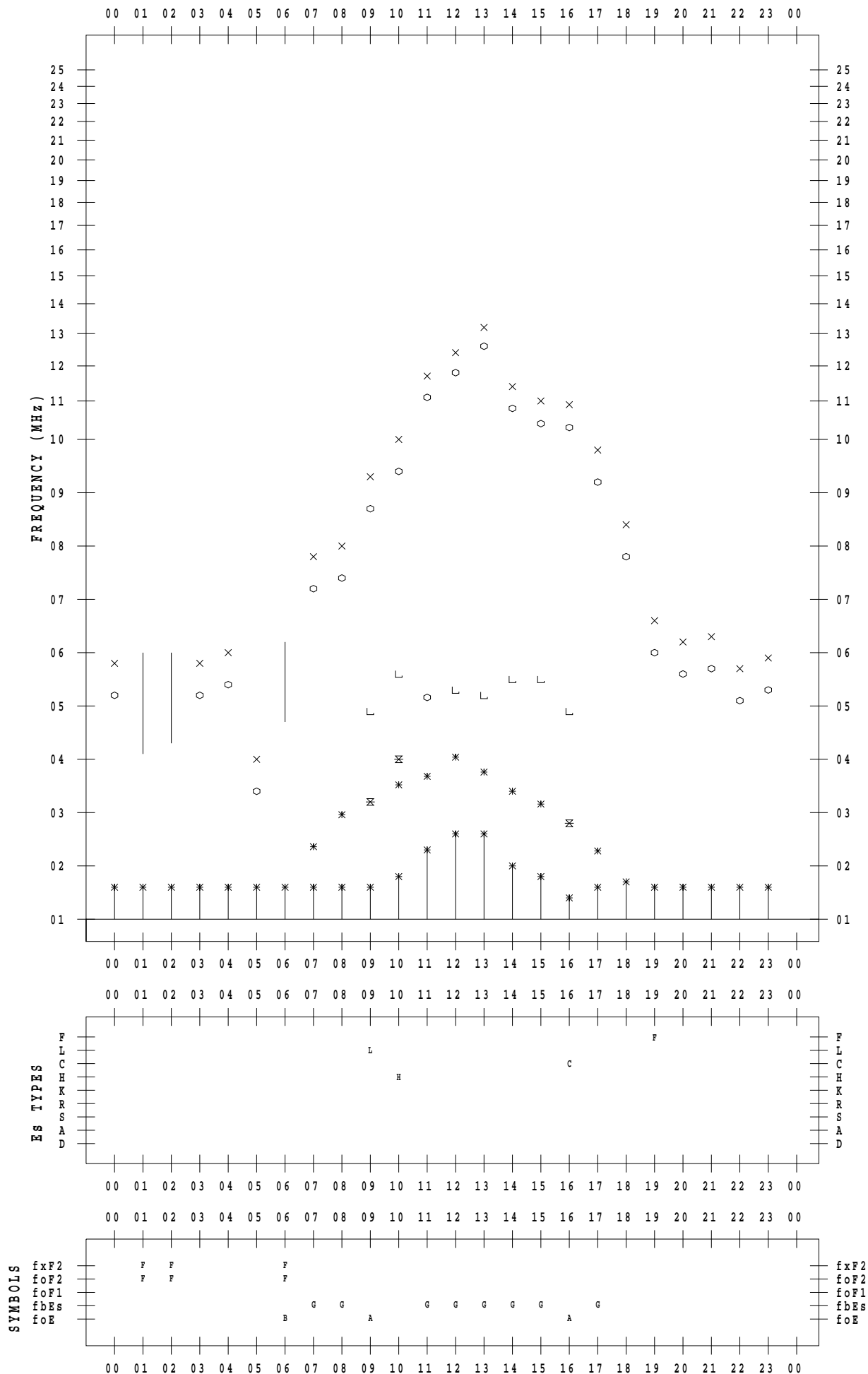
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 12

135 ° E MEAN TIME



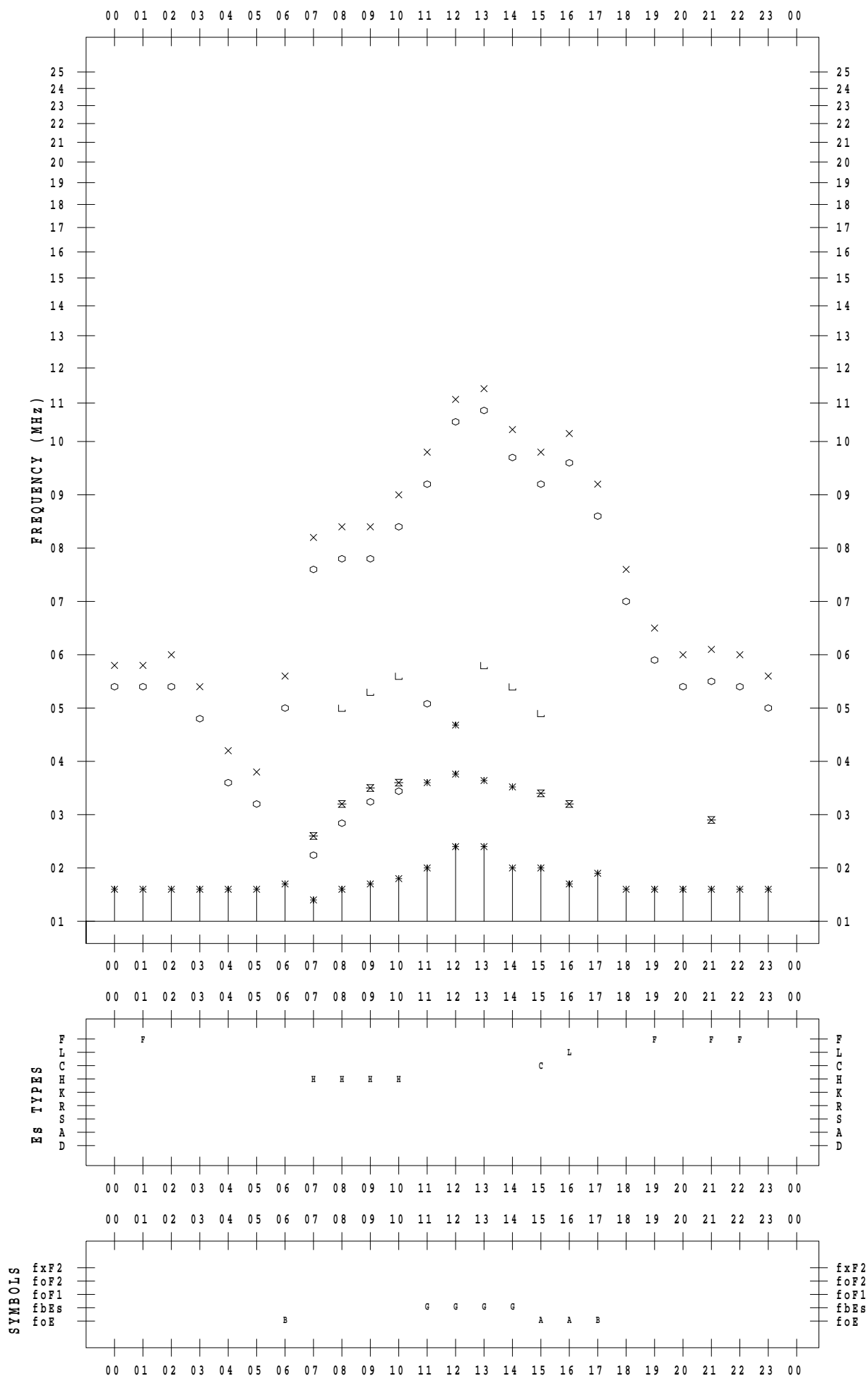
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 13

135 ° E MEAN TIME



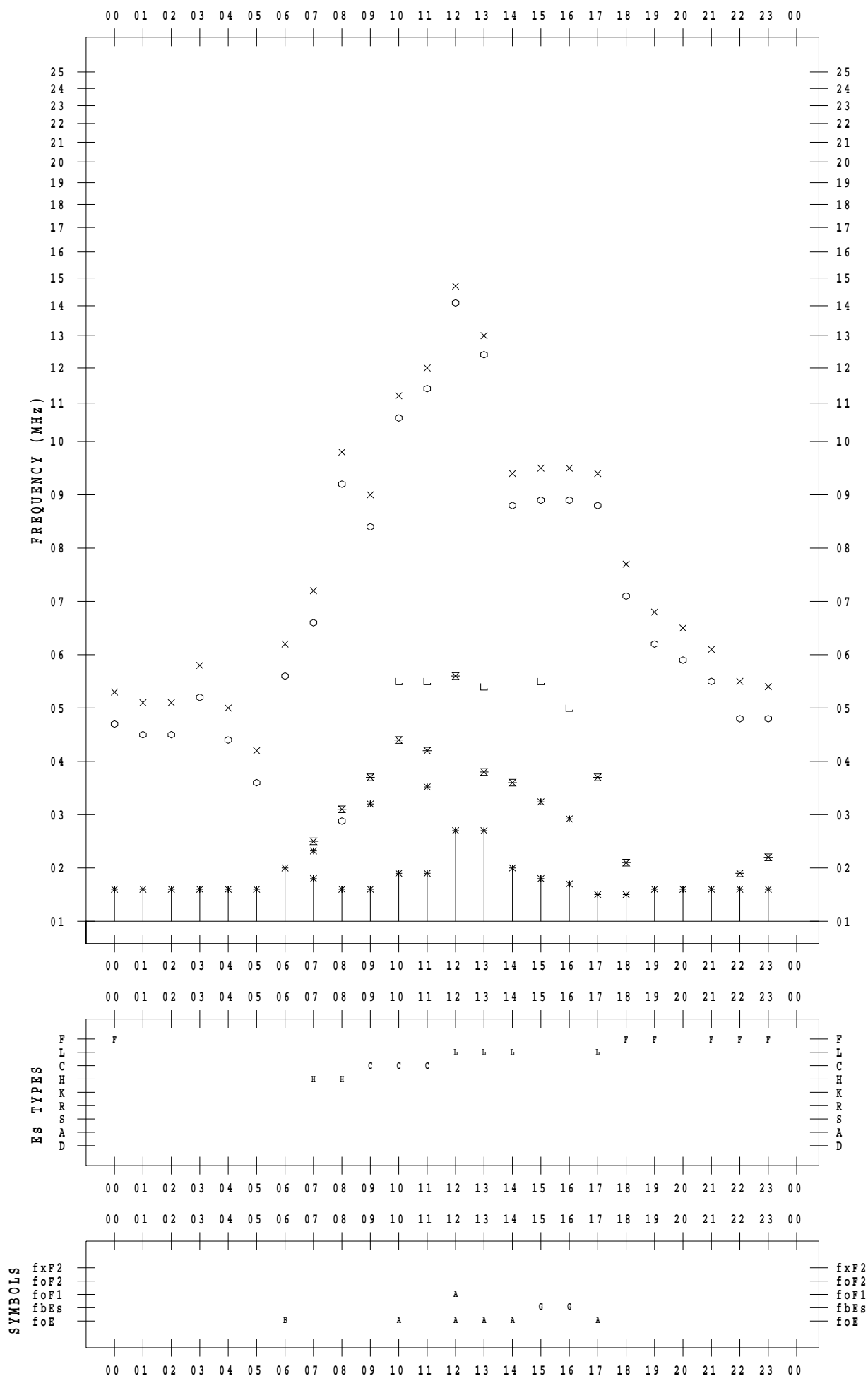
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 14

135 ° E MEAN TIME



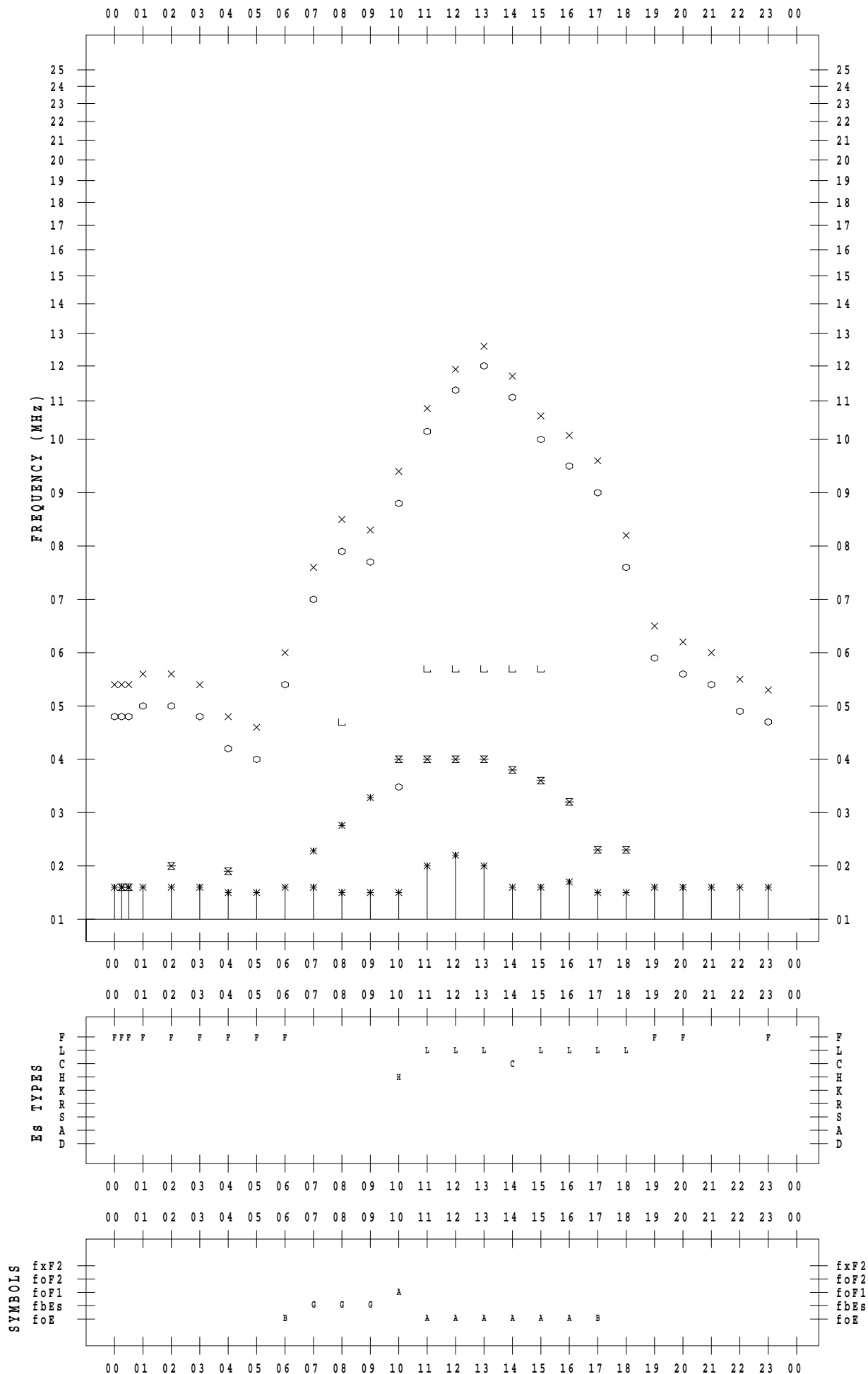
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 15

135 ° E MEAN TIME



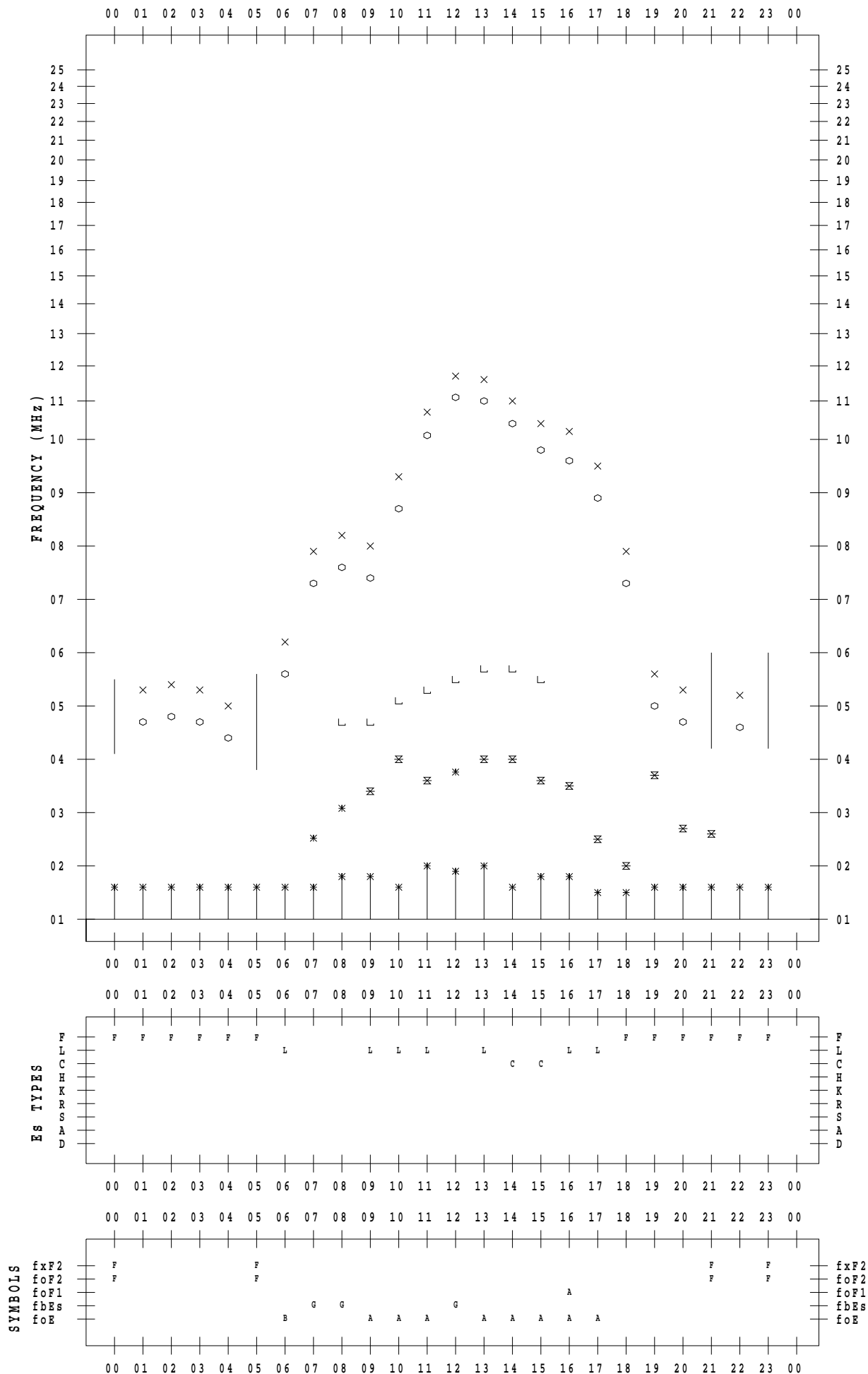
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 16

135 ° E MEAN TIME



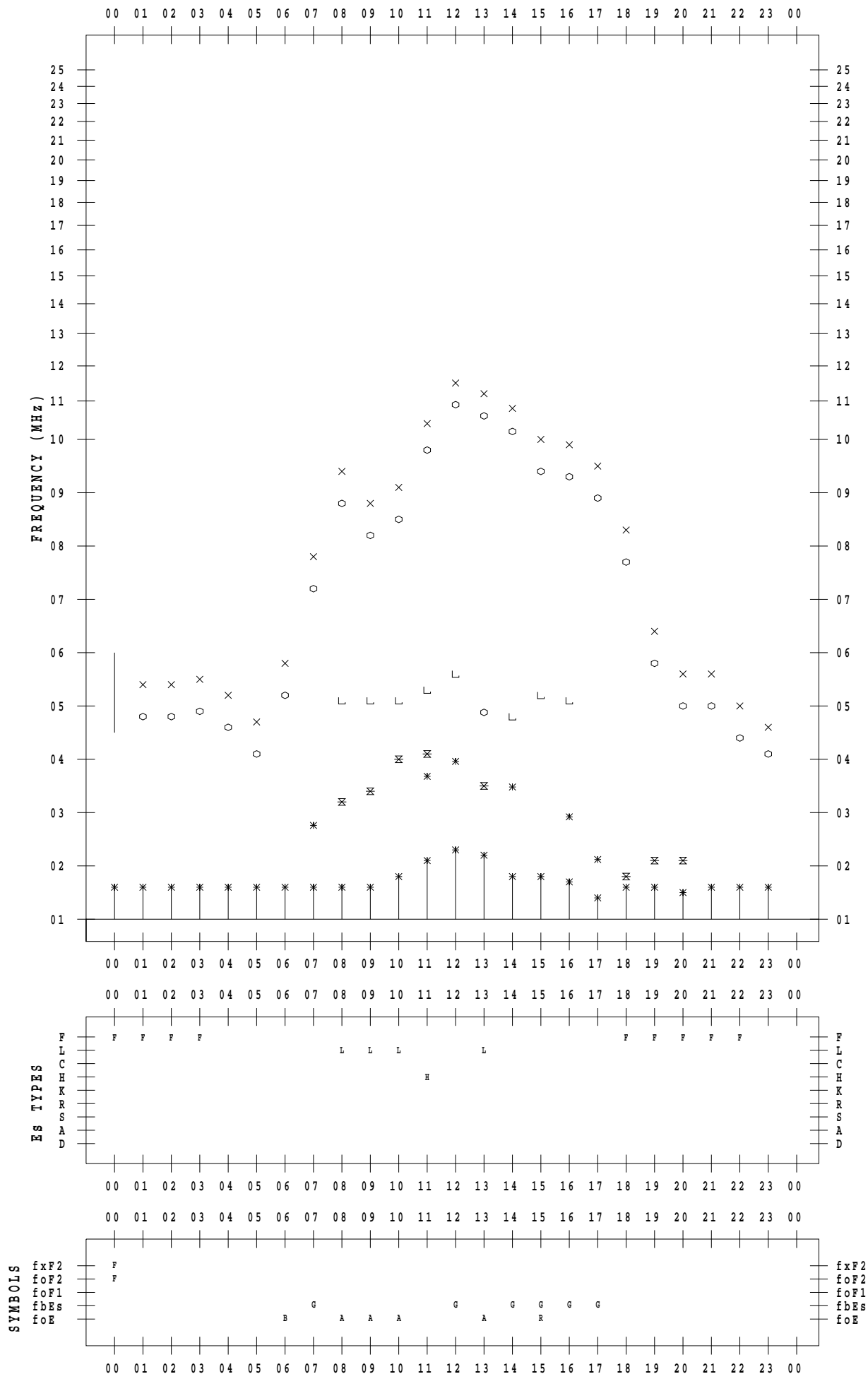
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 17

135 ° E MEAN TIME



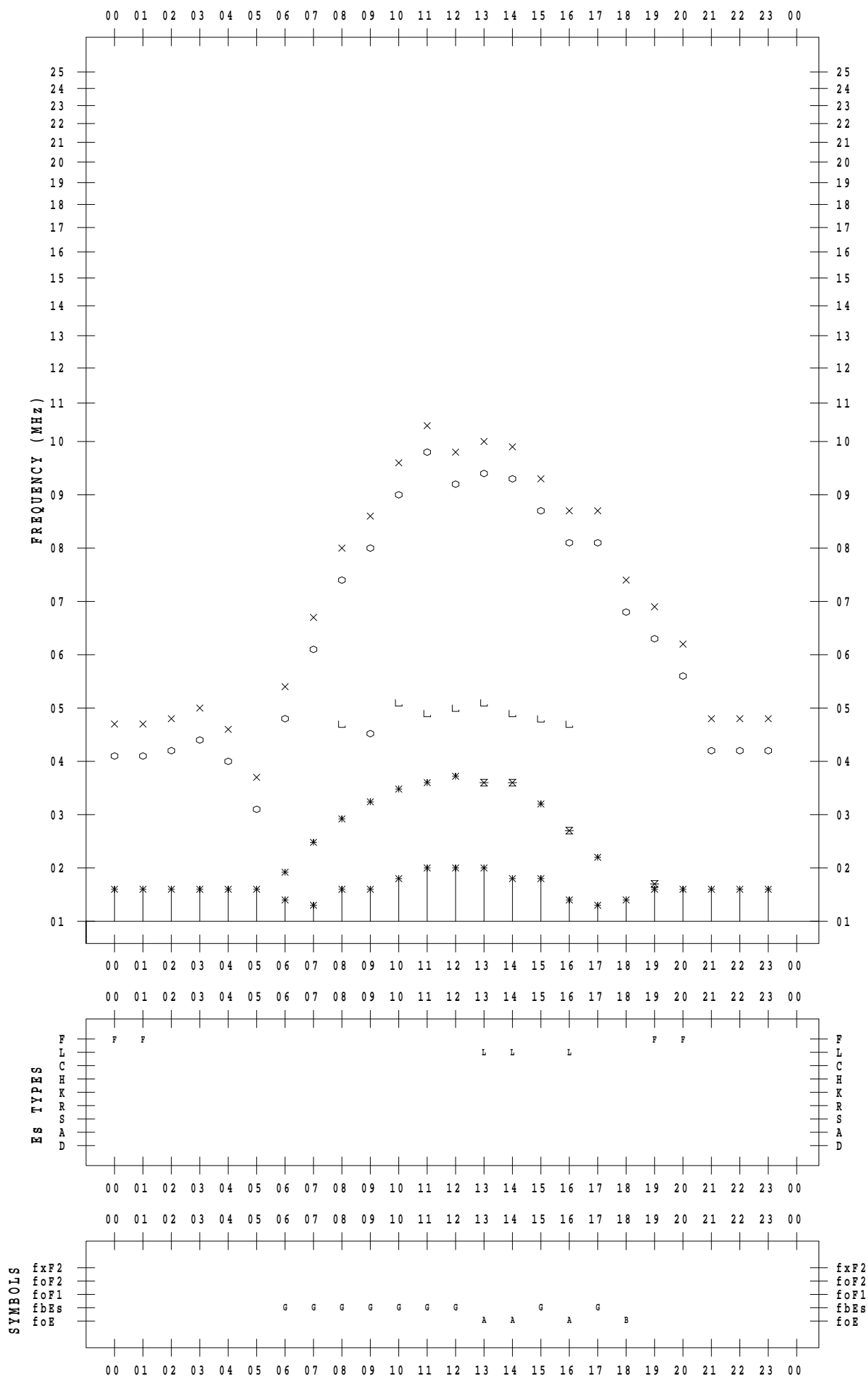
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 18

135 ° E MEAN TIME



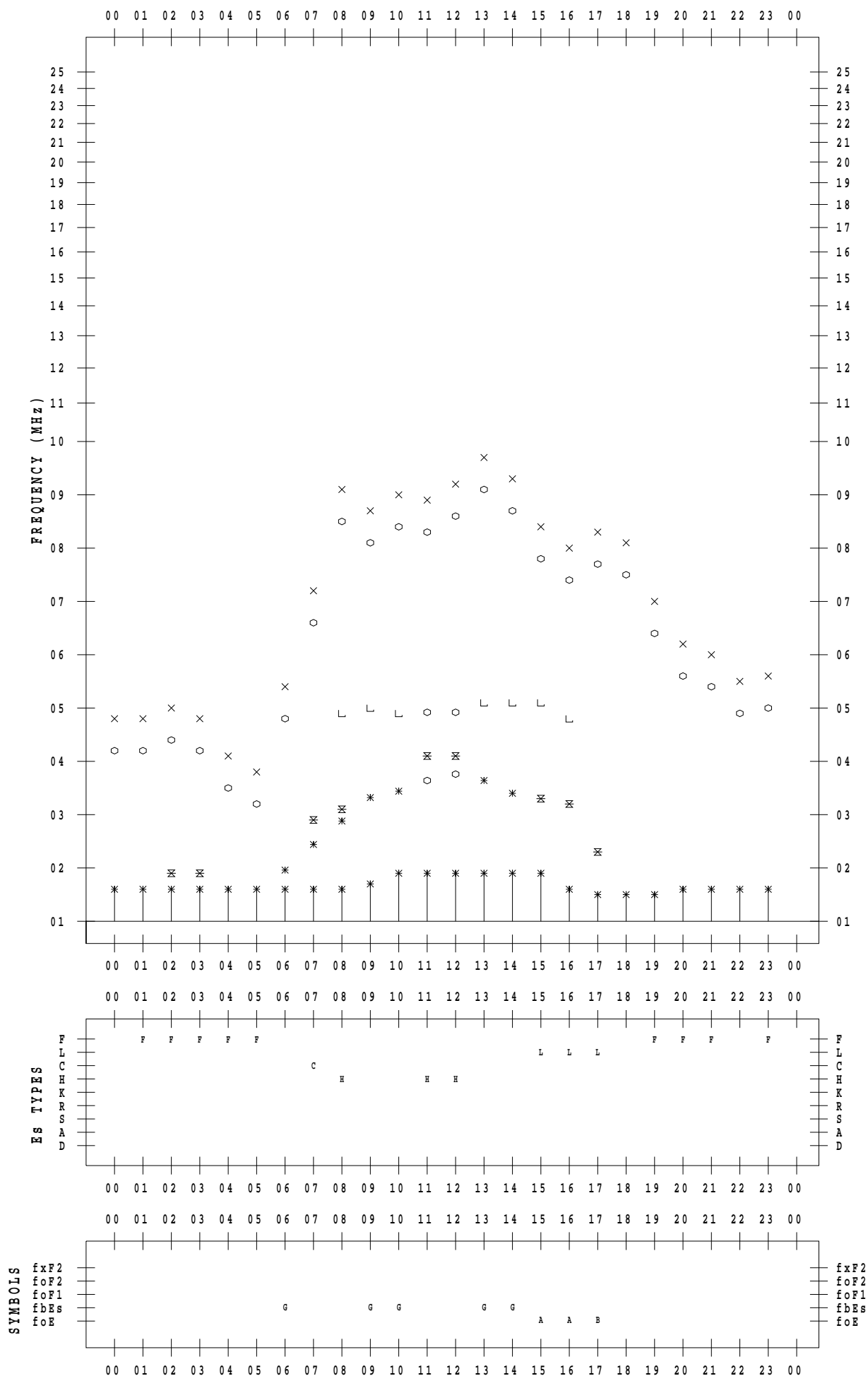
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 19

135 ° E MEAN TIME



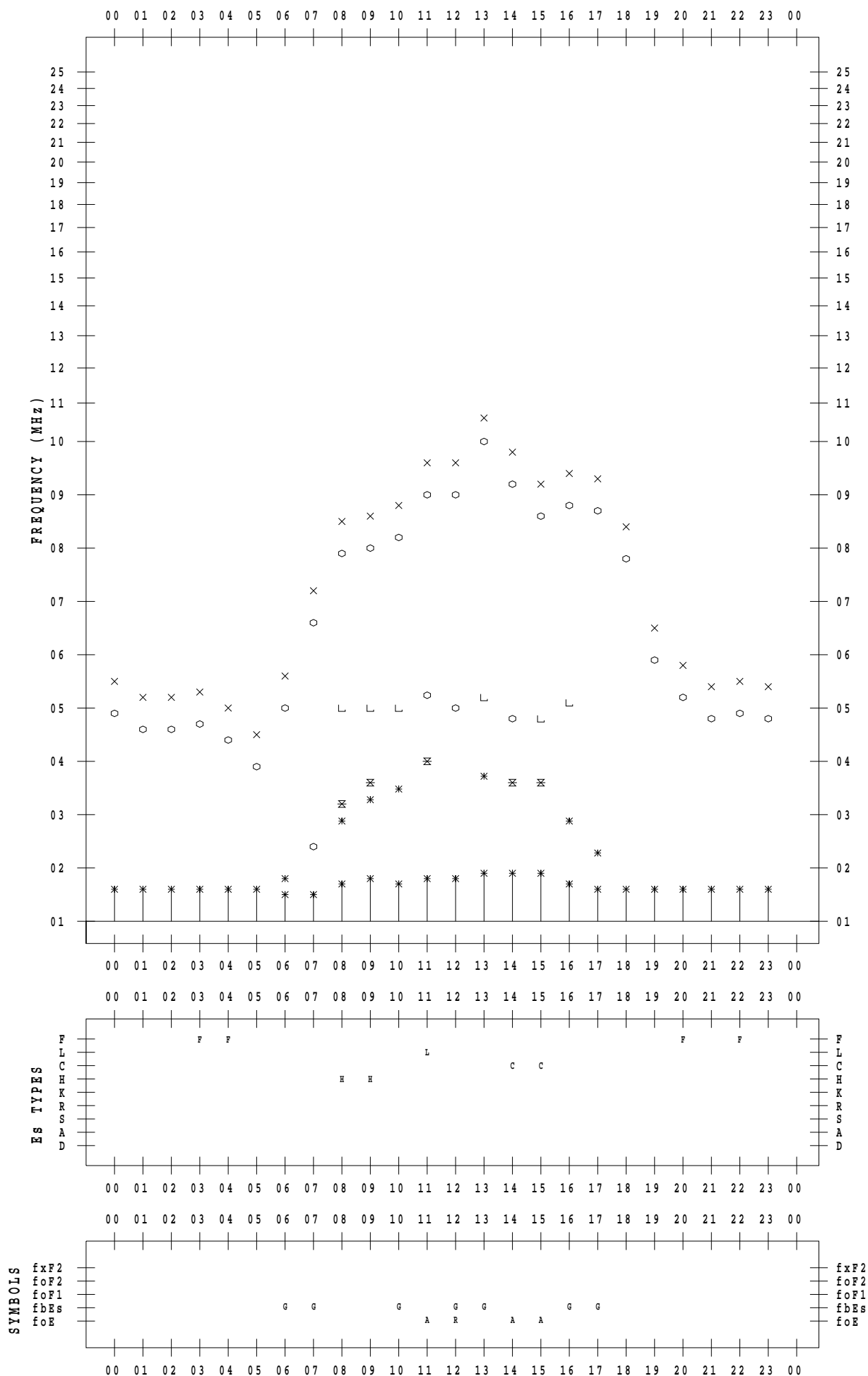
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 20

135 ° E MEAN TIME



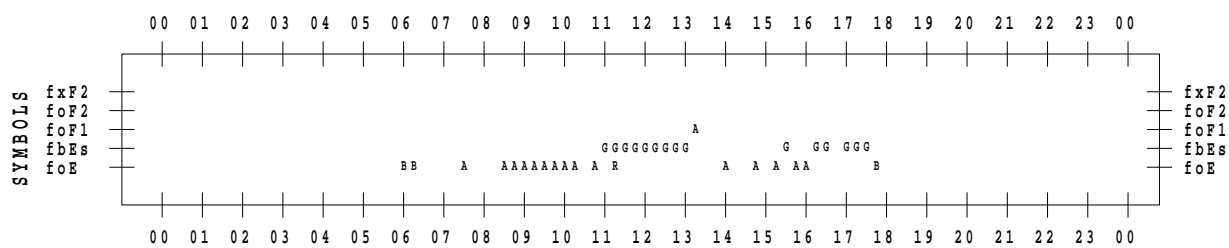
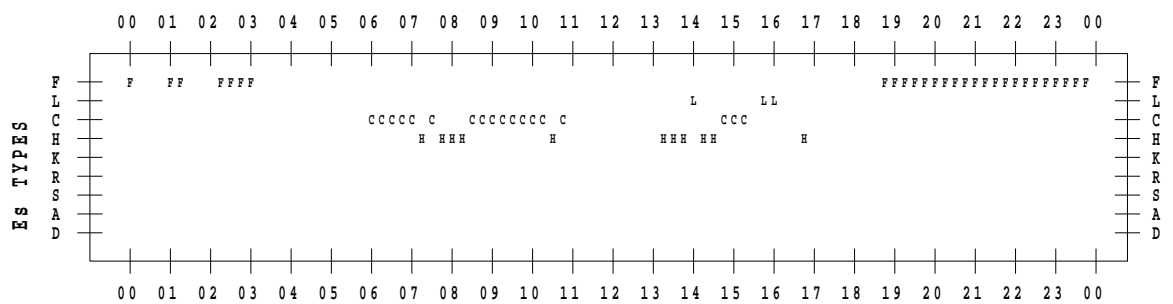
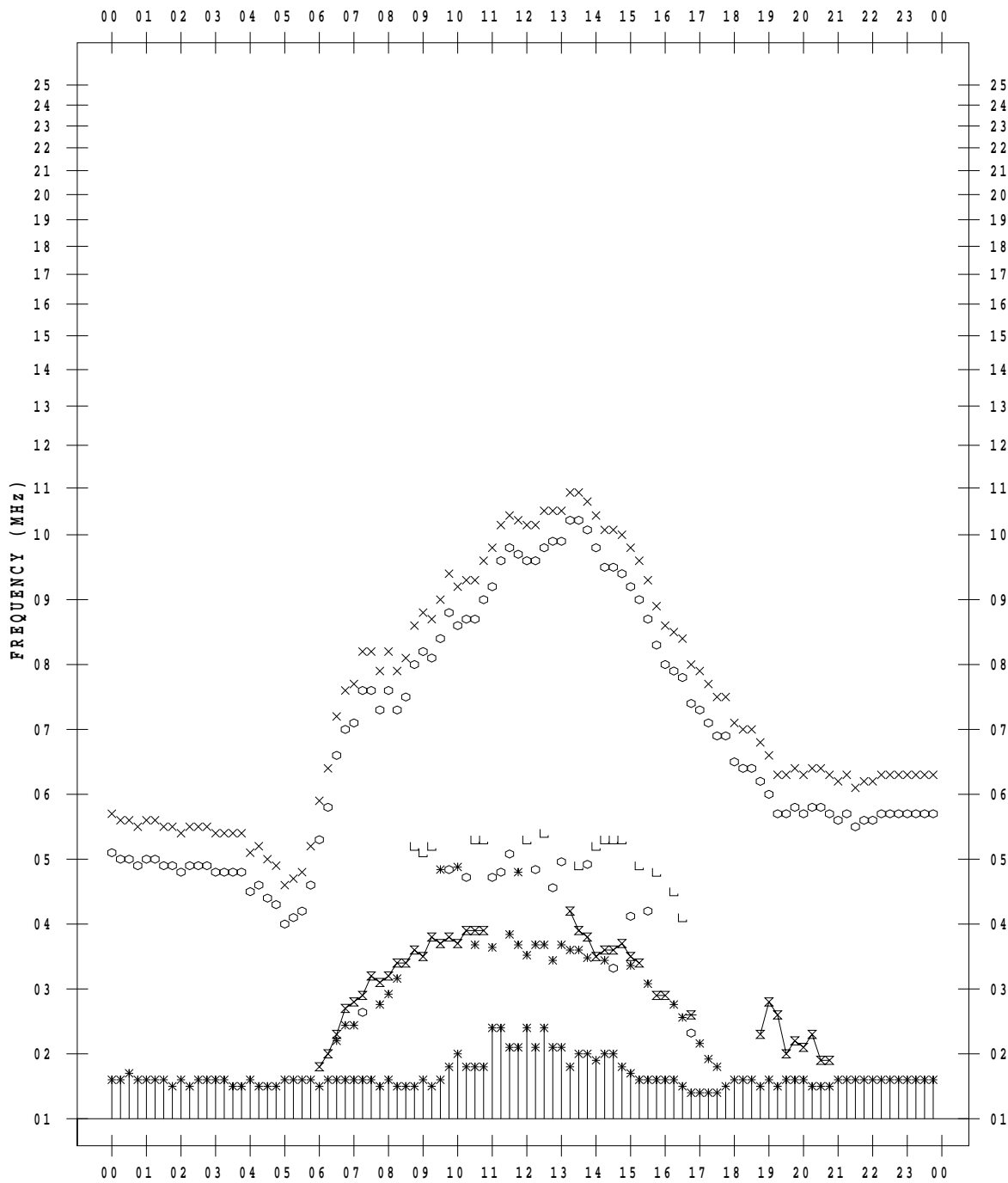
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 21

135 ° E MEAN TIME



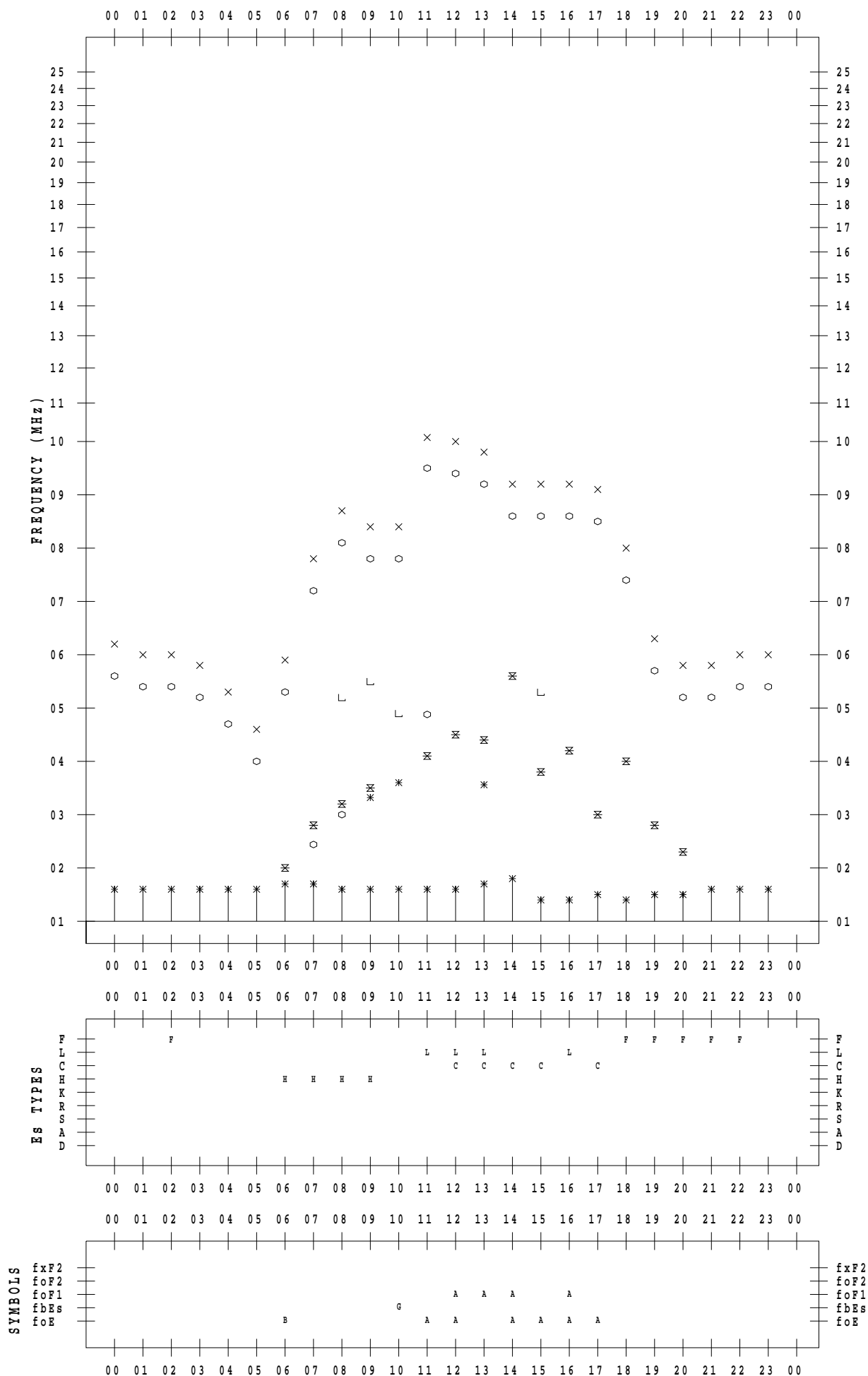
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 22

135 ° E MEAN TIME



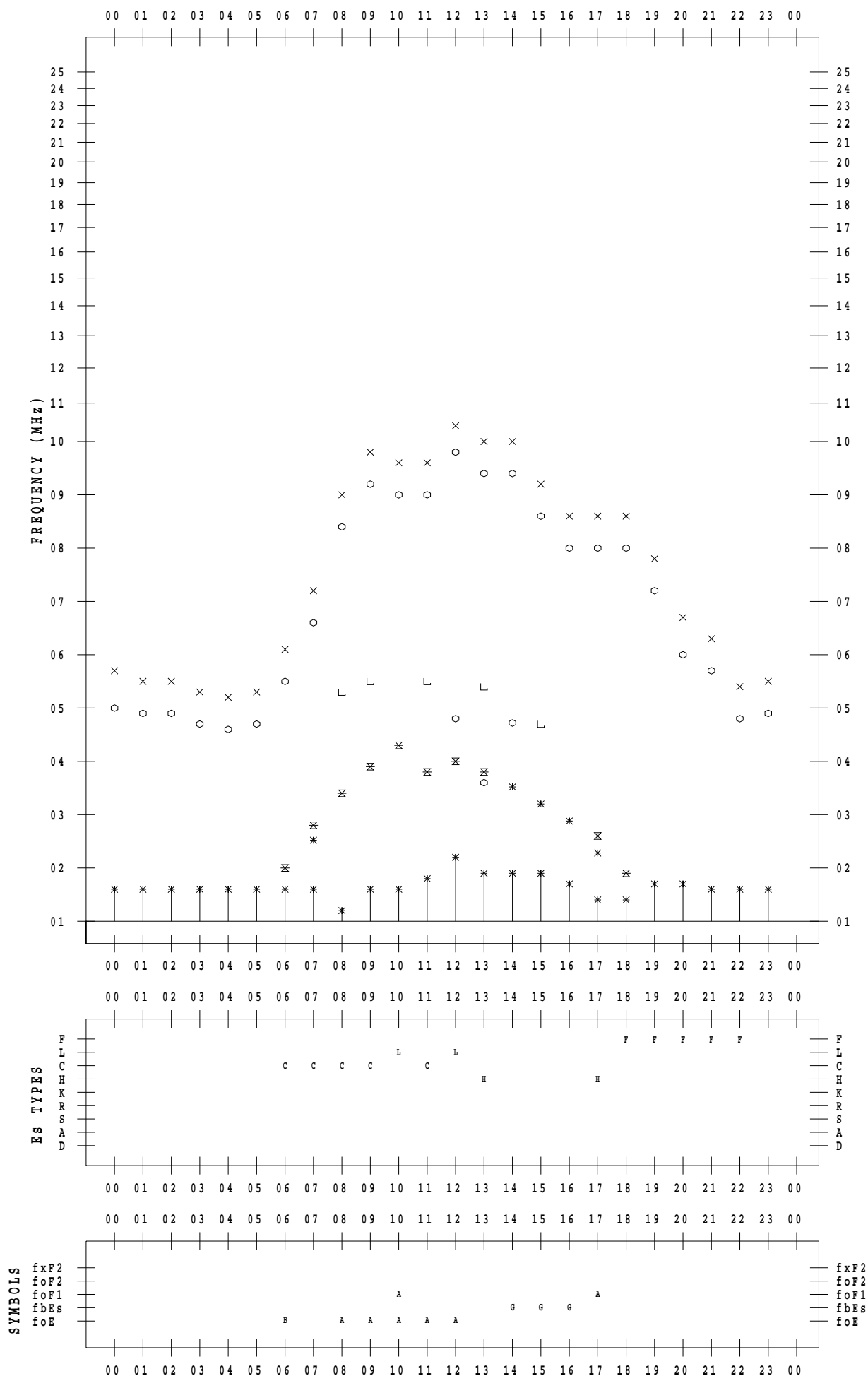
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 23

135 ° E MEAN TIME



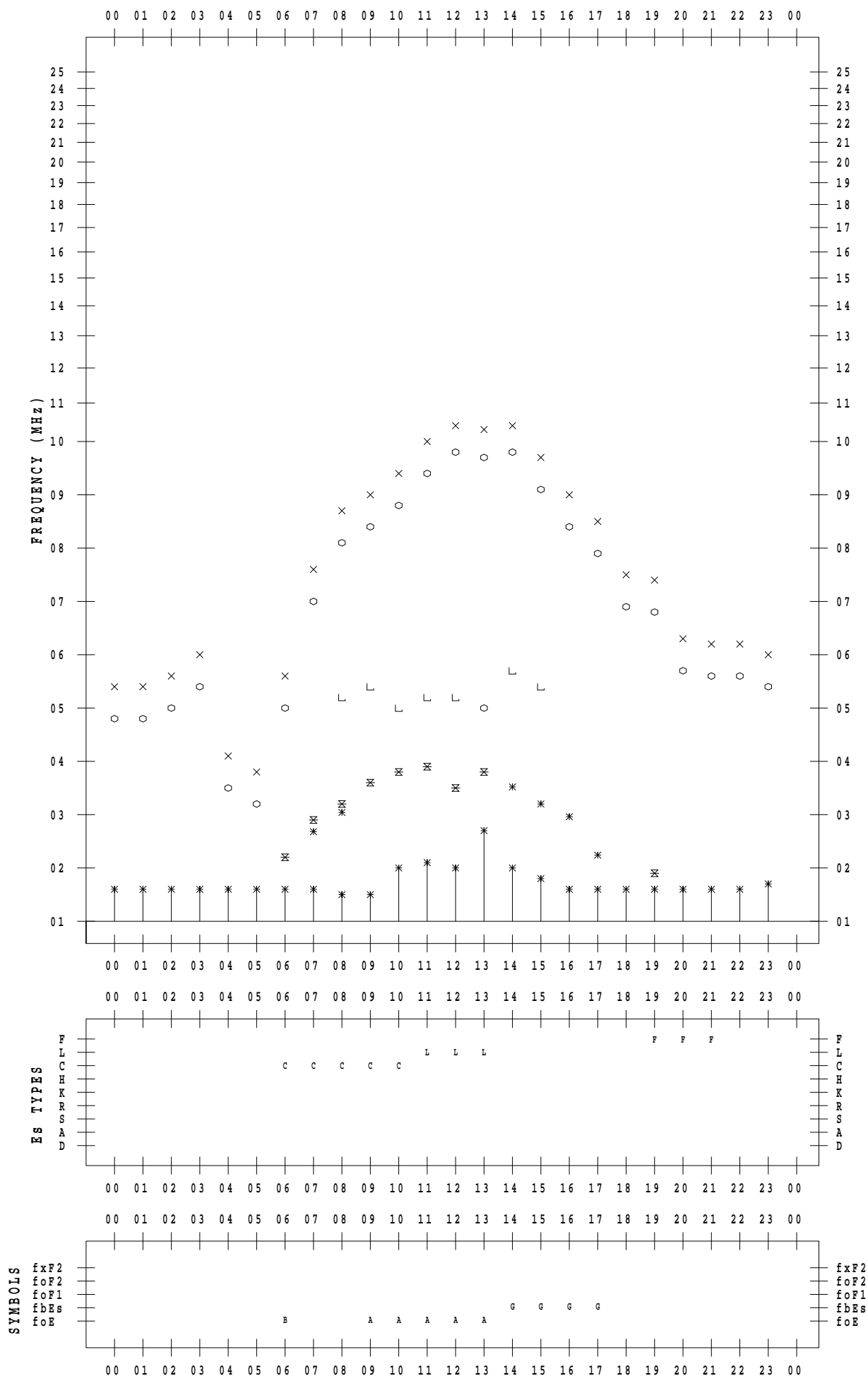
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 24

135 ° E MEAN TIME



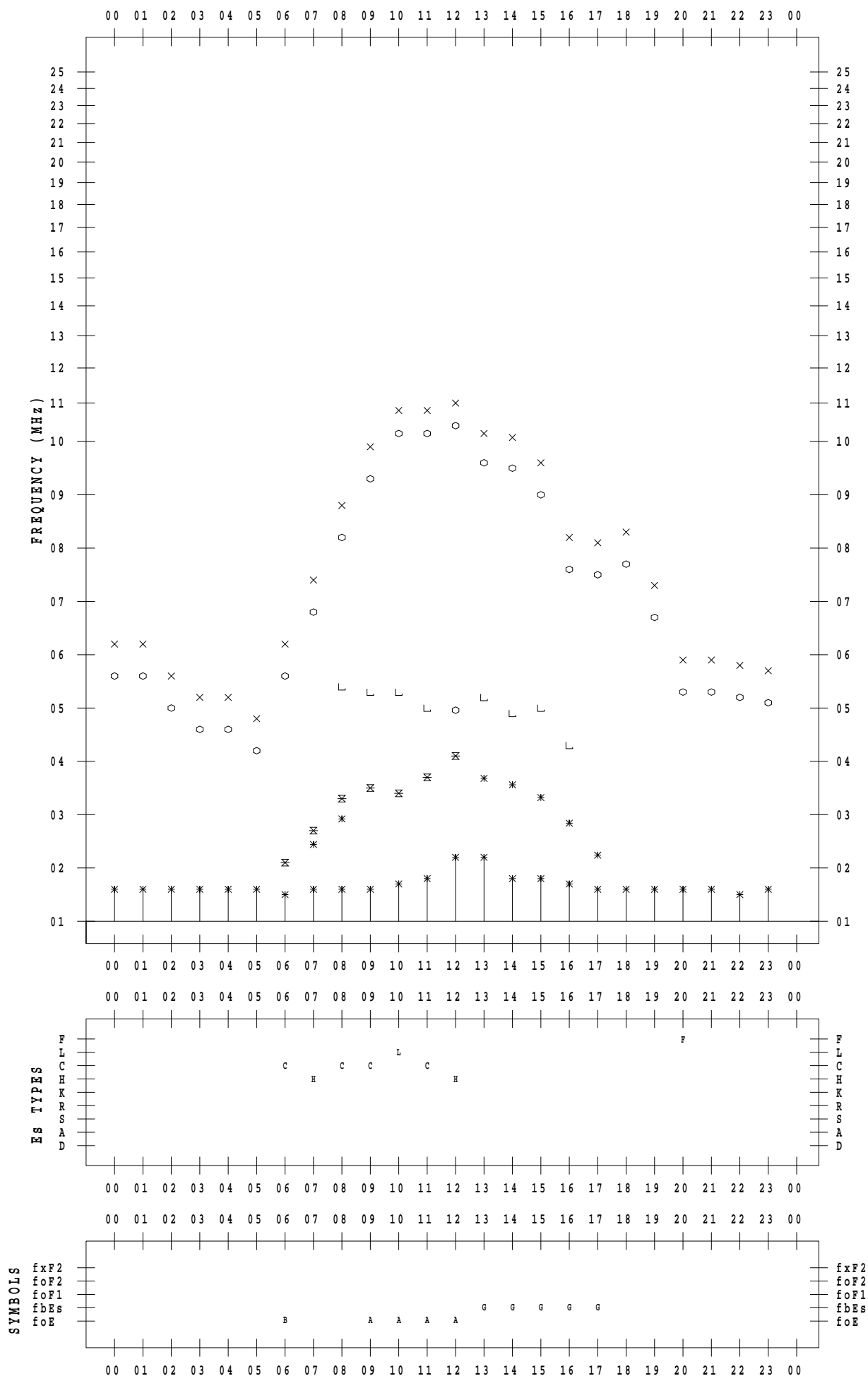
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 25

135 ° E MEAN TIME



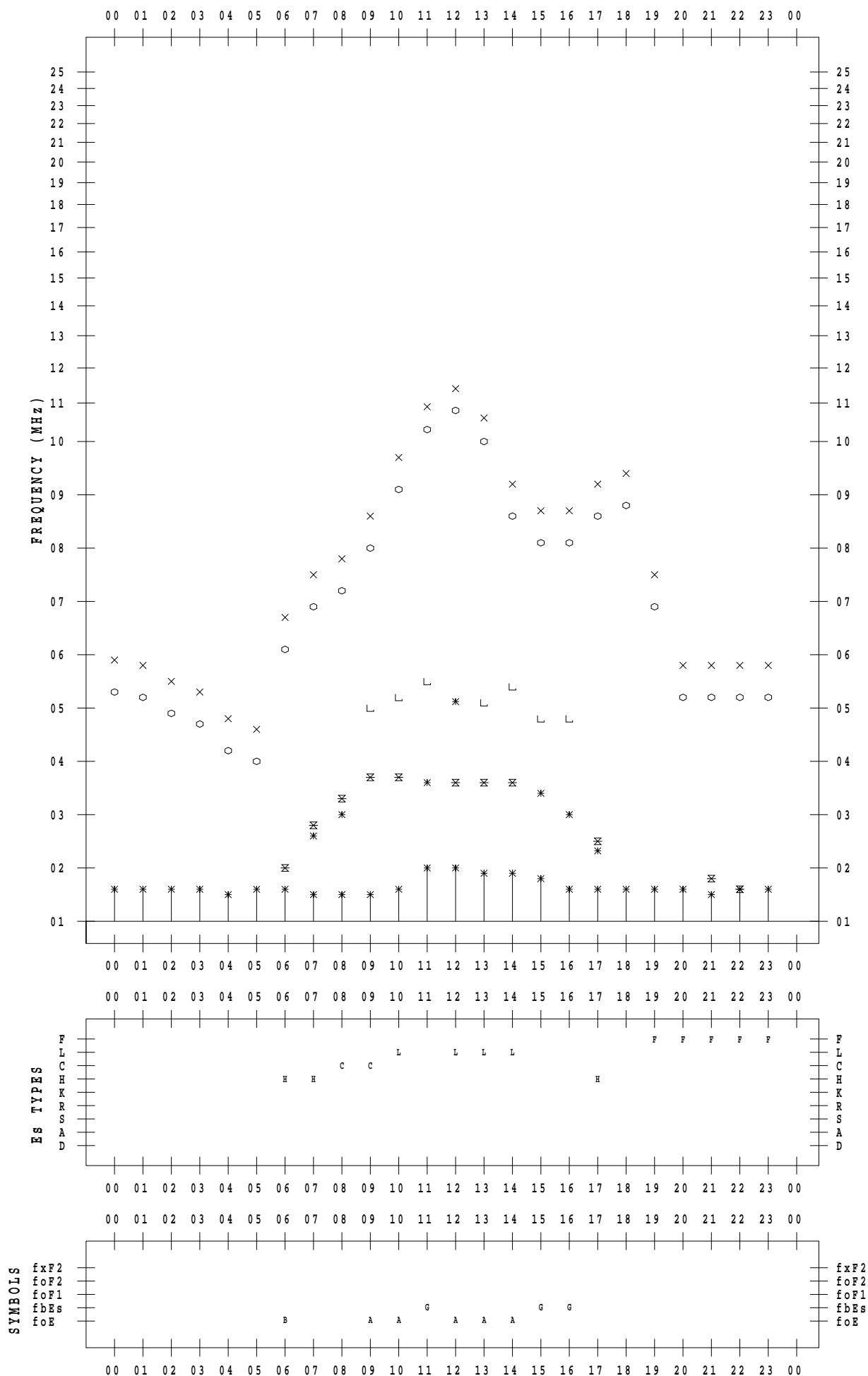
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 26

135 ° E MEAN TIME



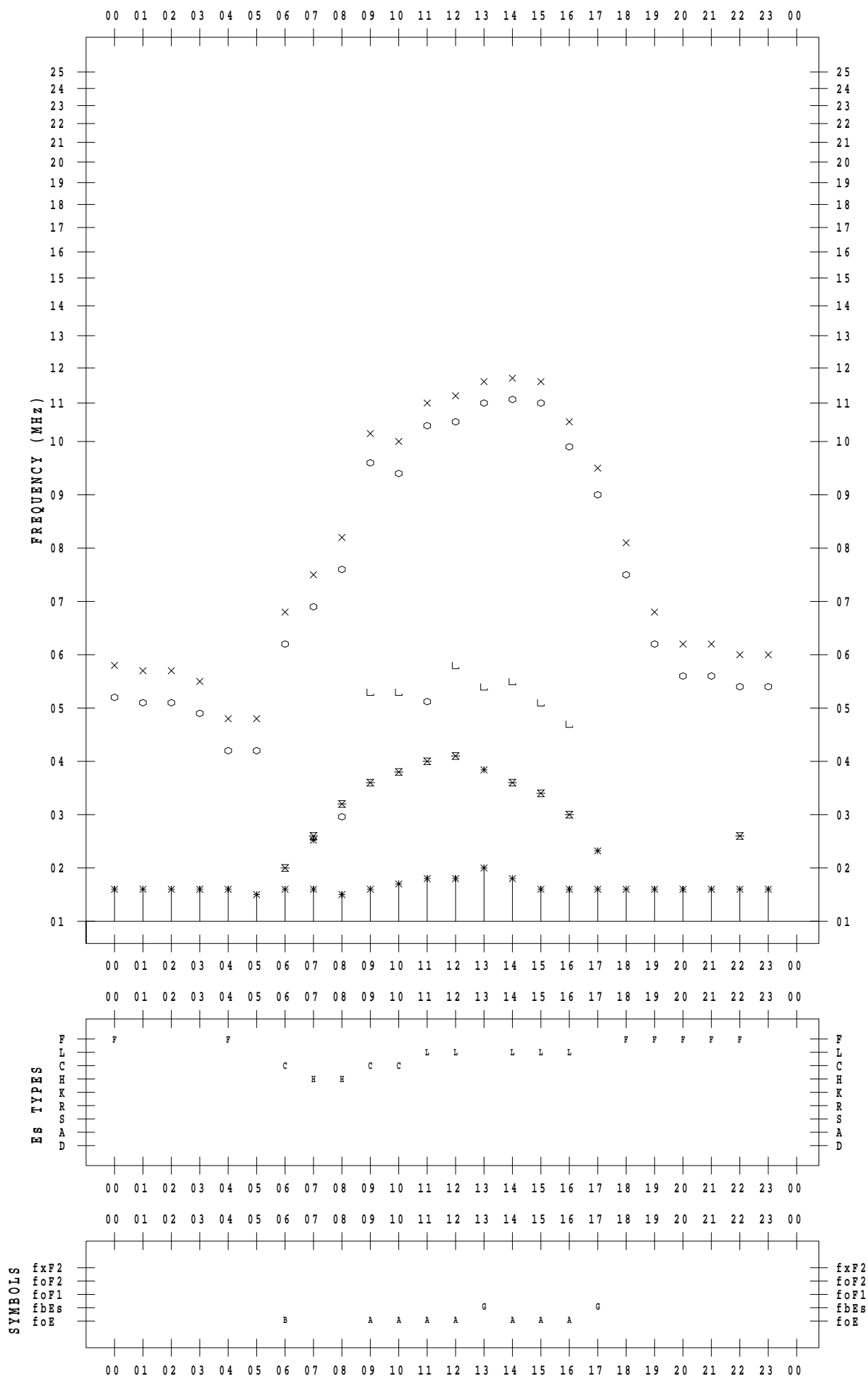
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 27

135 ° E MEAN TIME



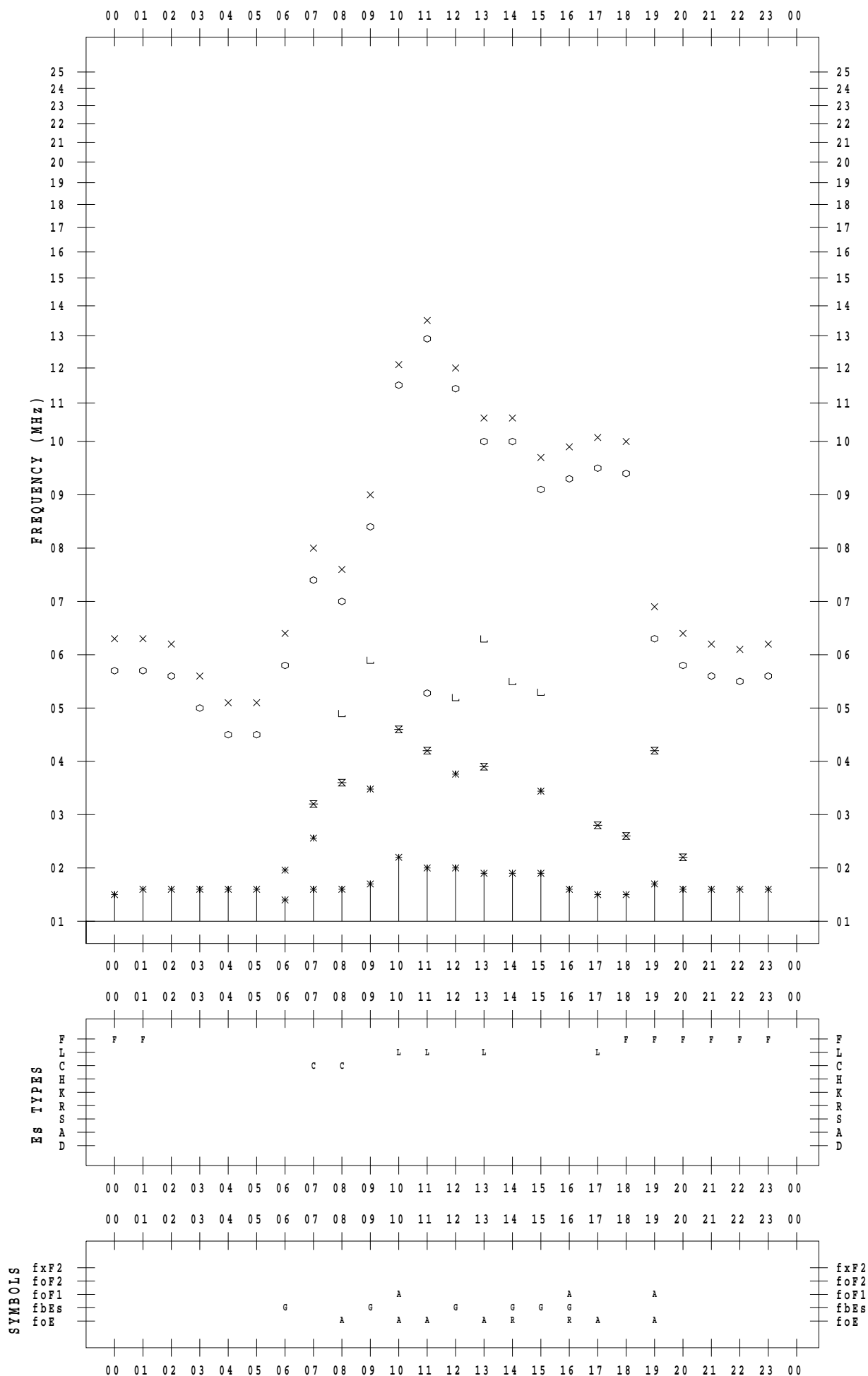
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 28

135 ° E MEAN TIME



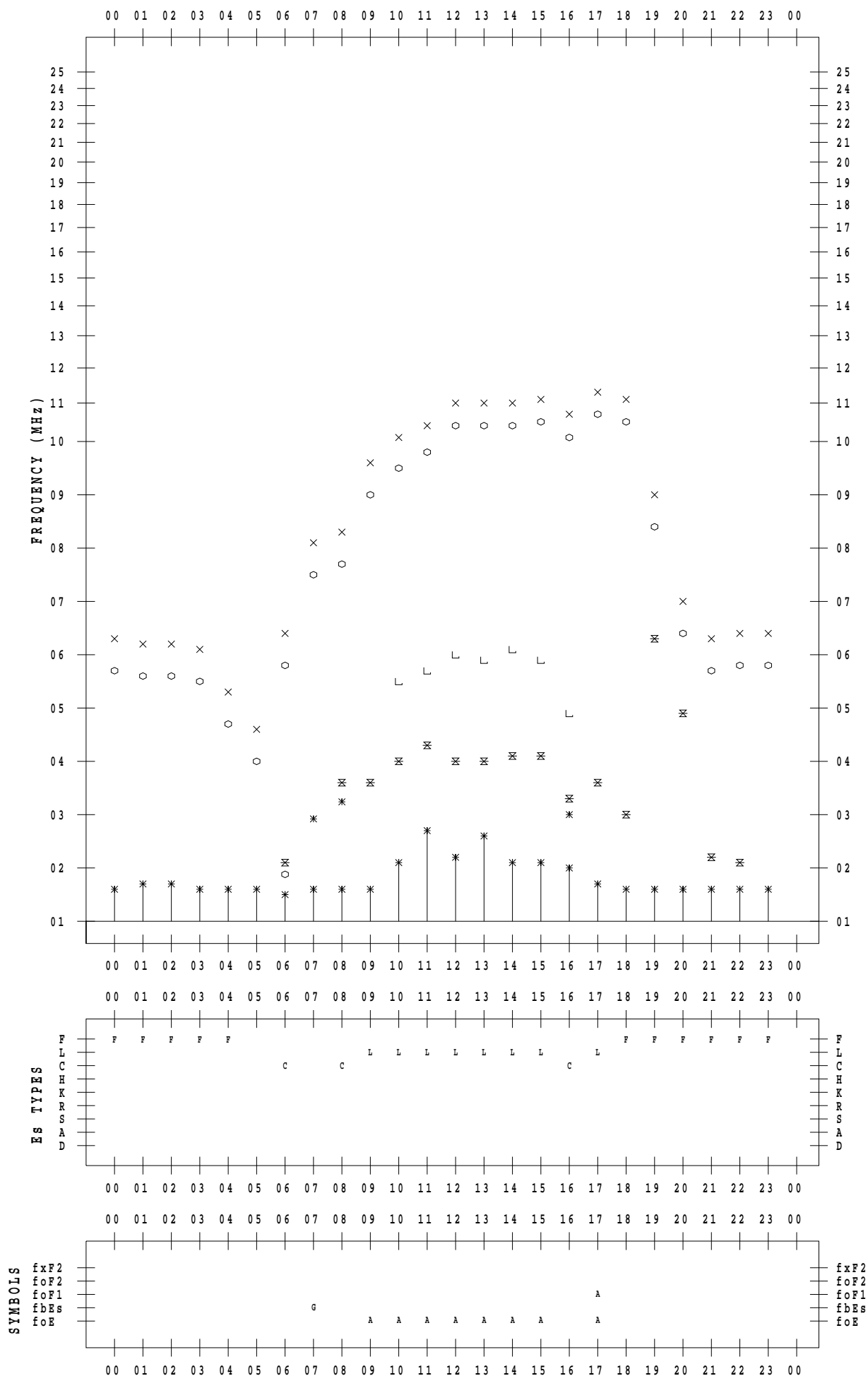
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 29

135 ° E MEAN TIME



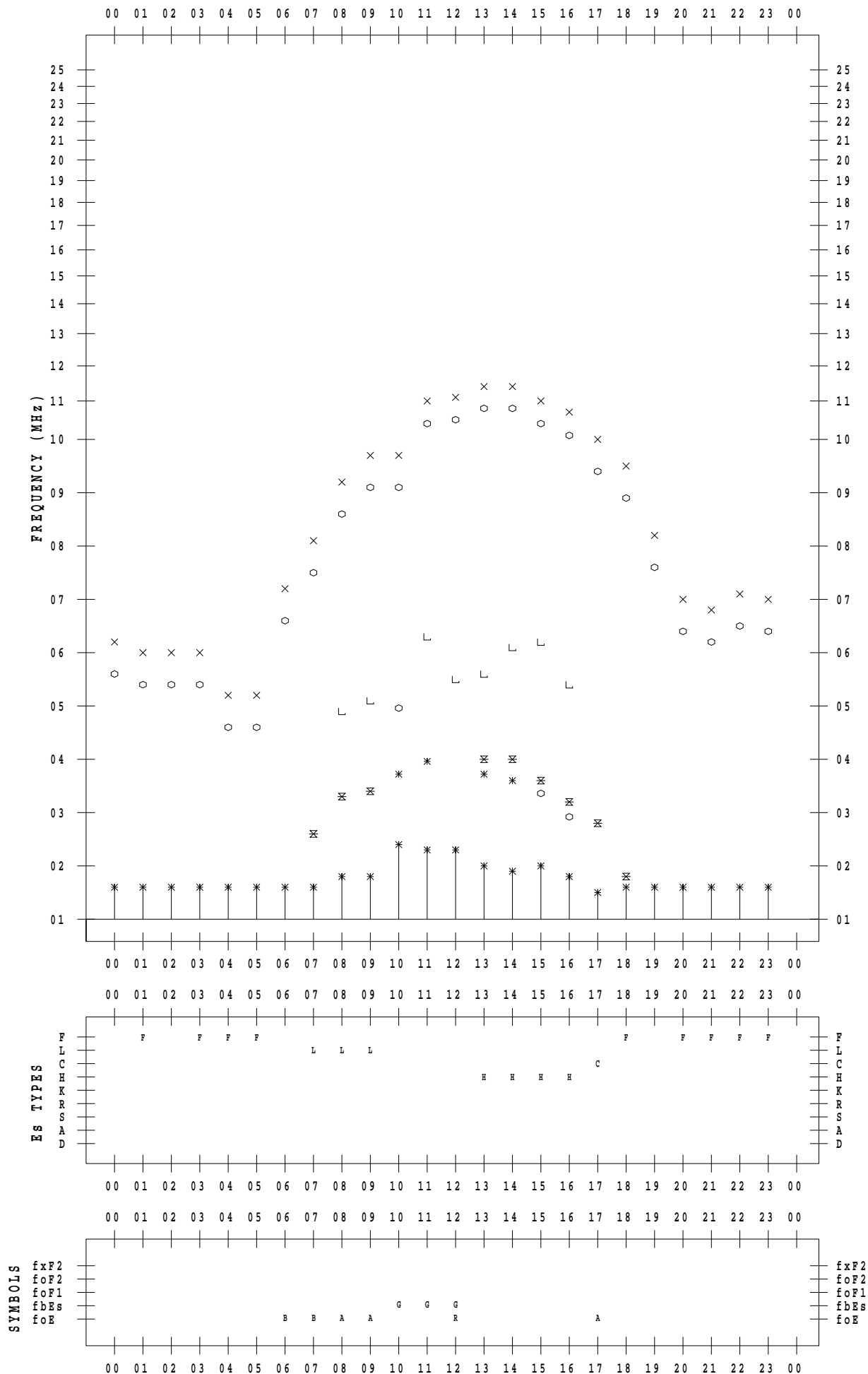
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 30

135 ° E MEAN TIME



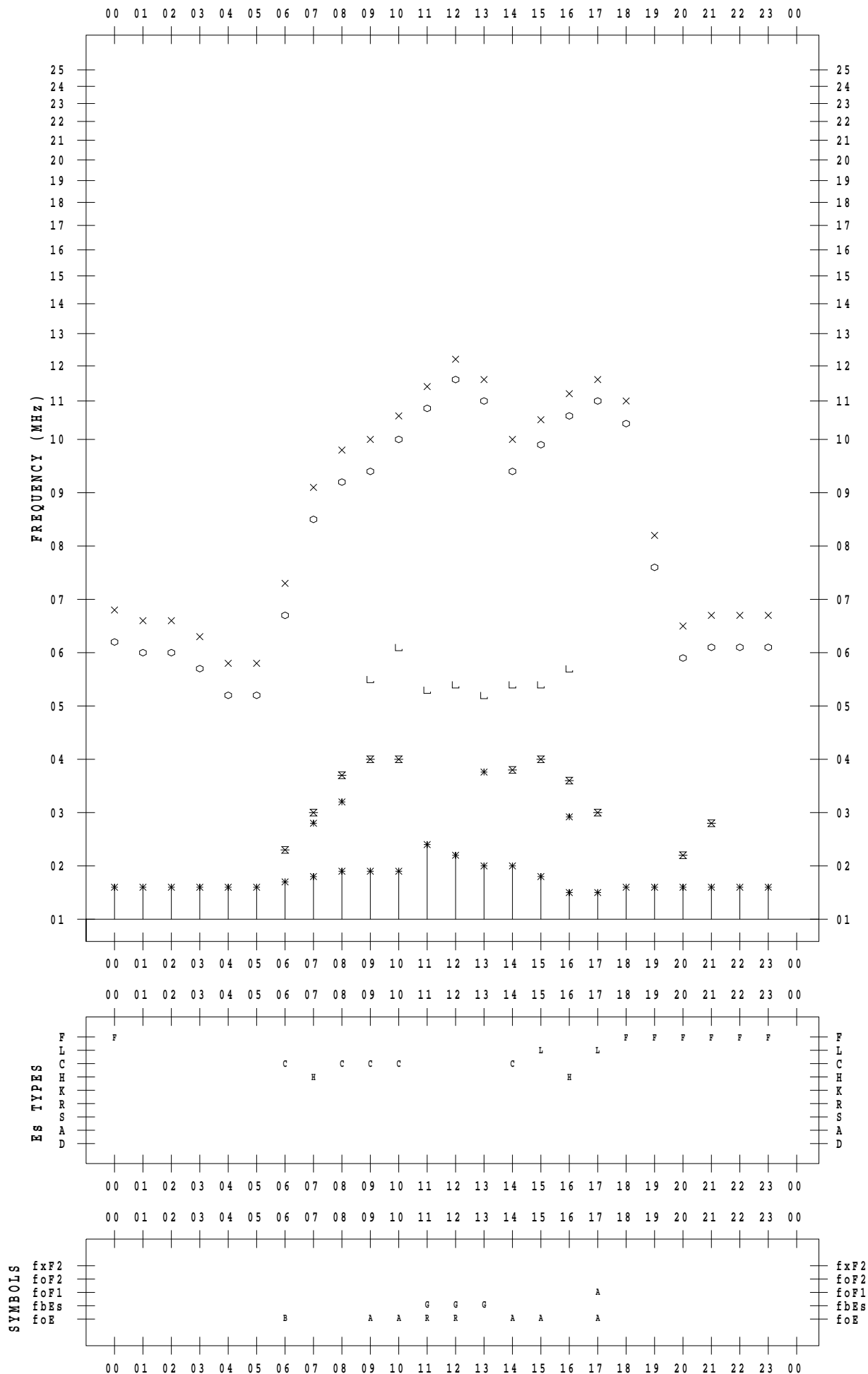
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022 / 3 / 31

135 ° E MEAN TIME



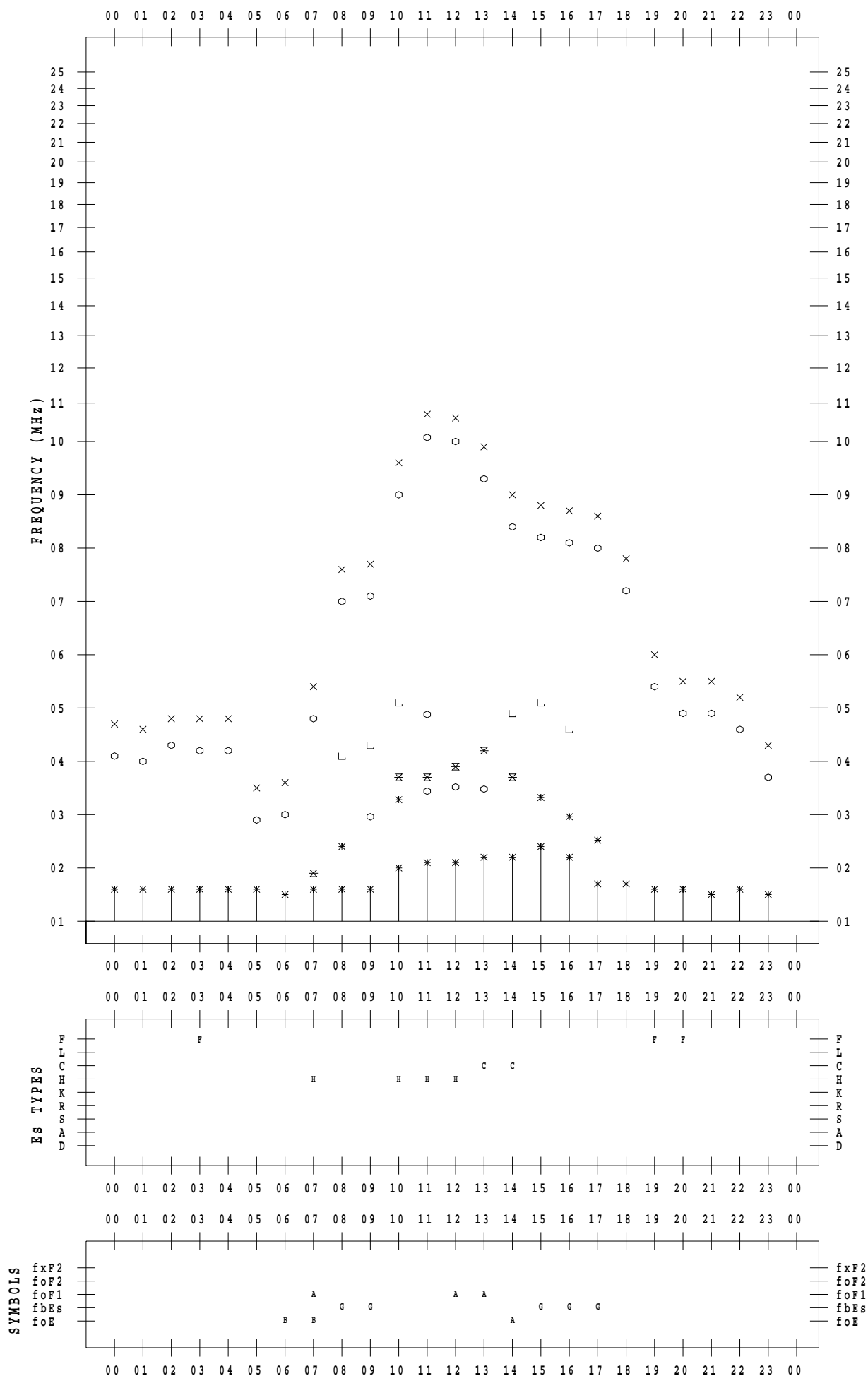
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 1

135 ° E MEAN TIME



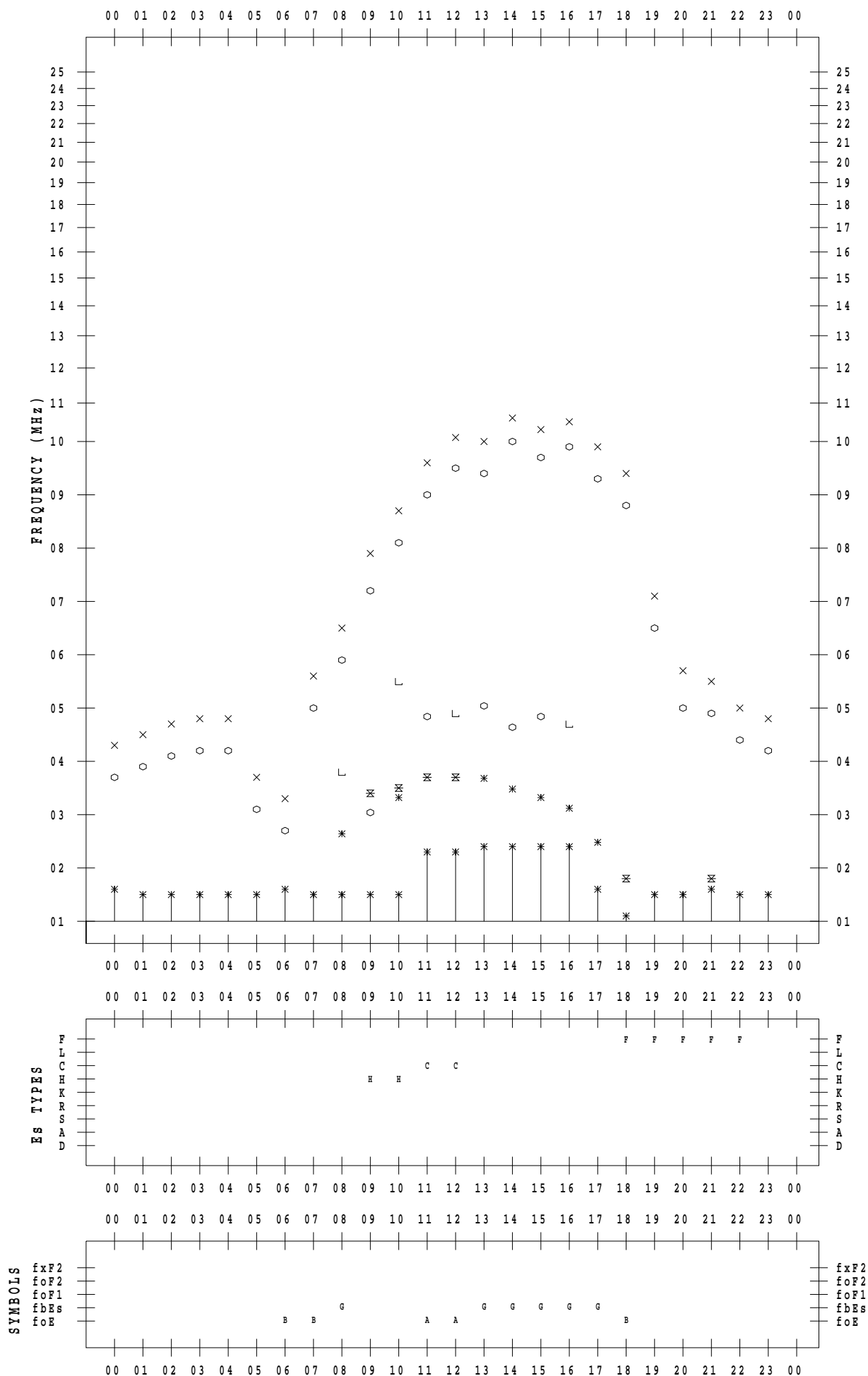
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 2

135 ° E MEAN TIME



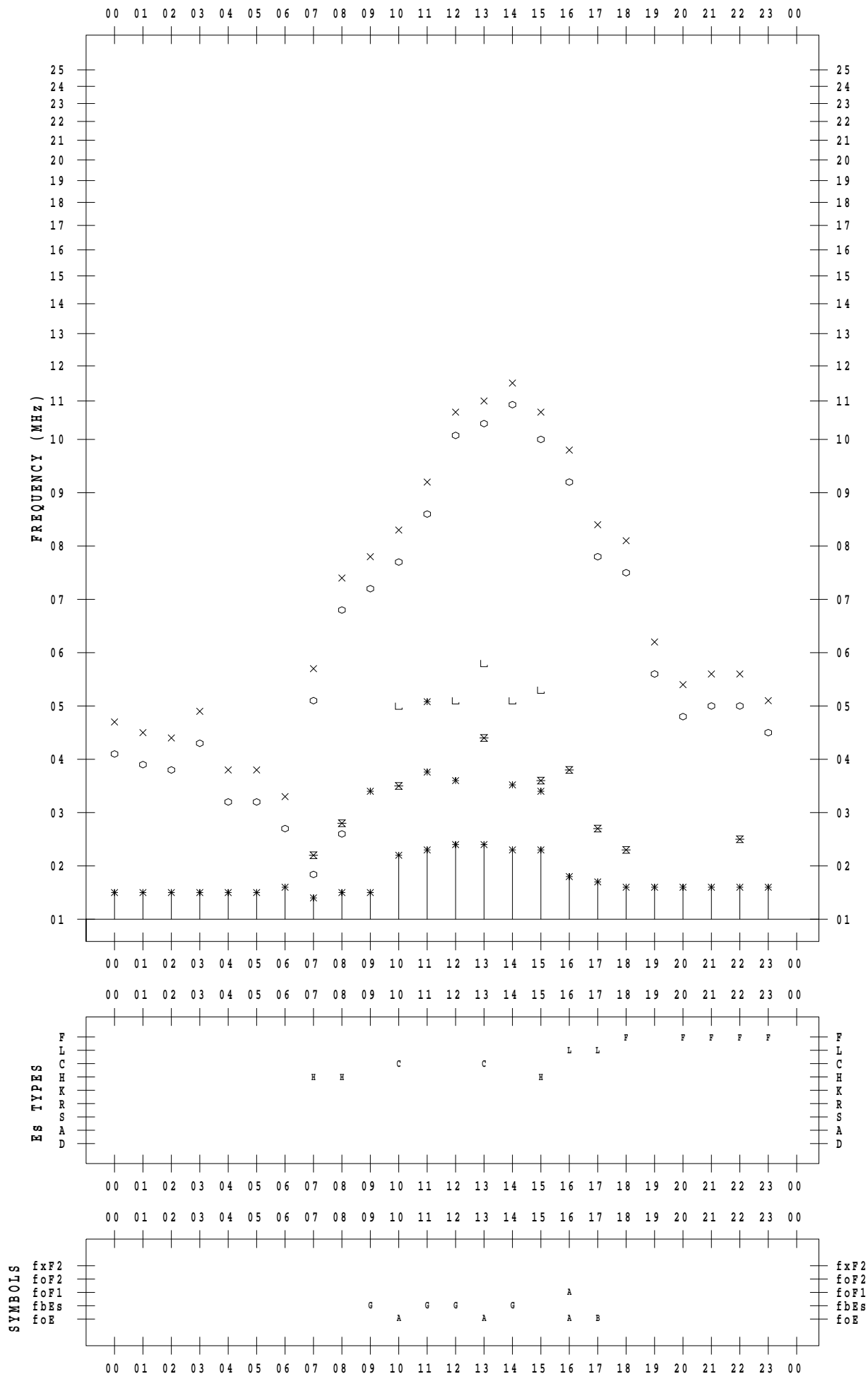
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 3

135 ° E MEAN TIME



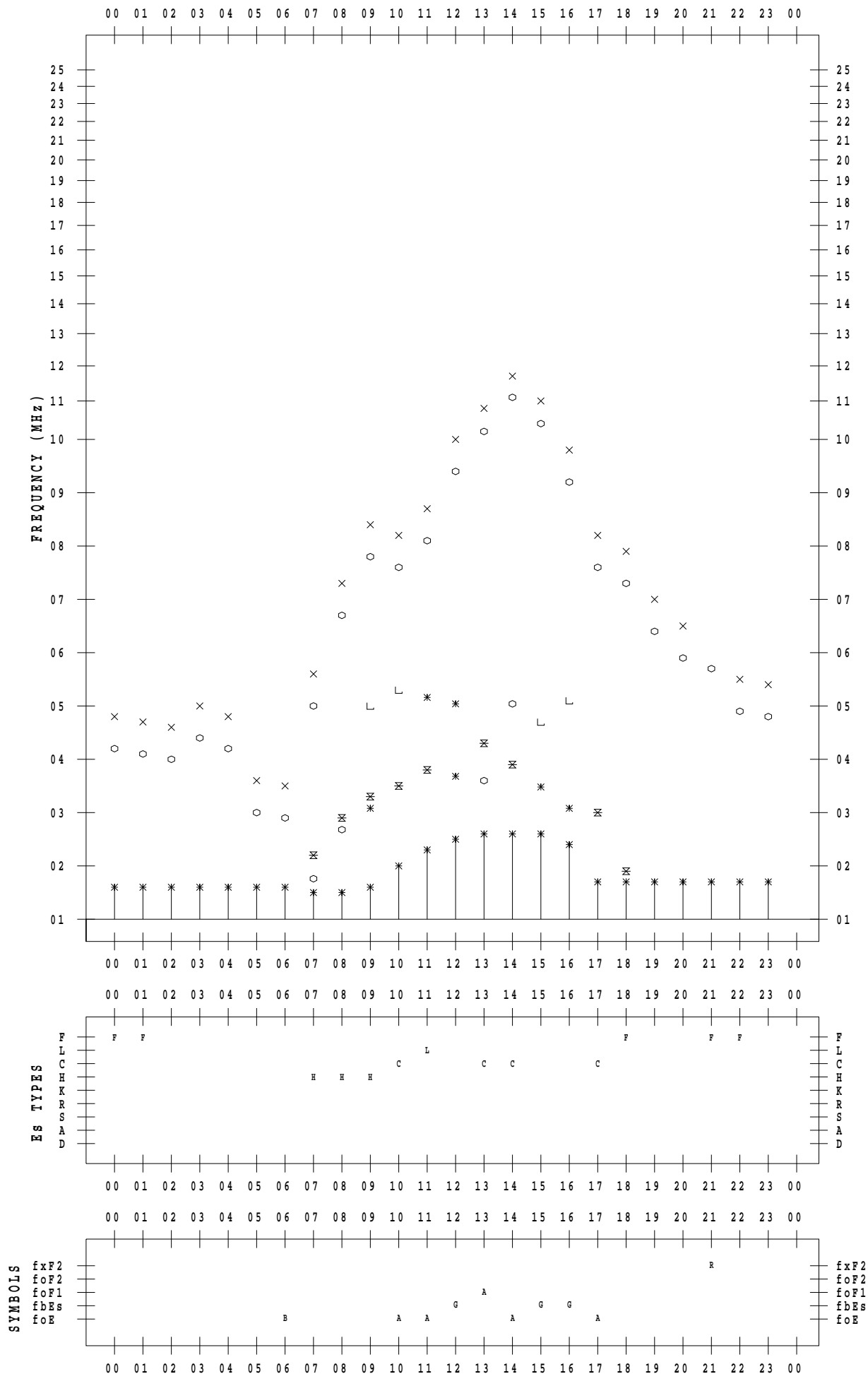
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 4

135 ° E MEAN TIME



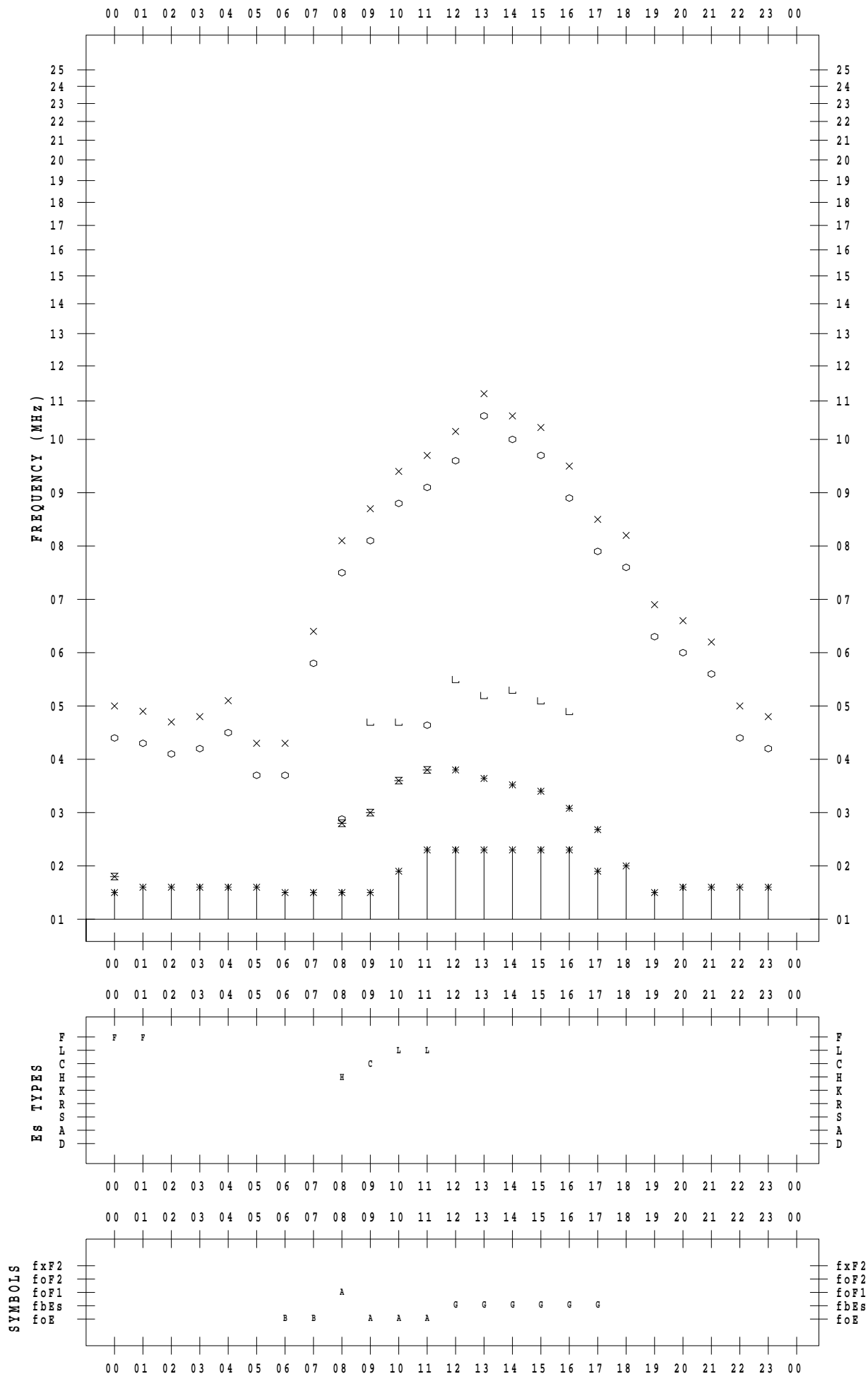
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 5

135 ° E MEAN TIME



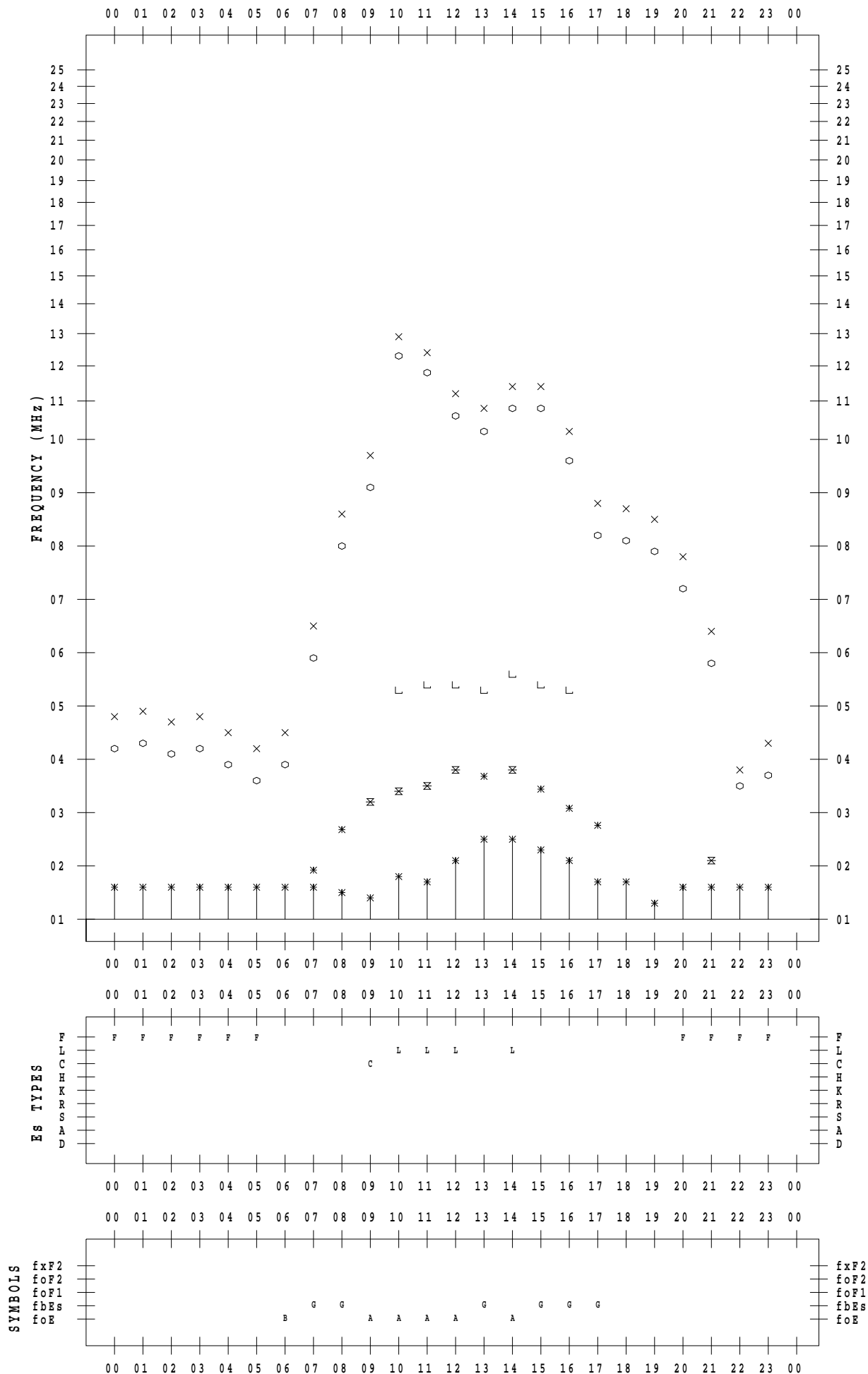
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 6

135 ° E MEAN TIME



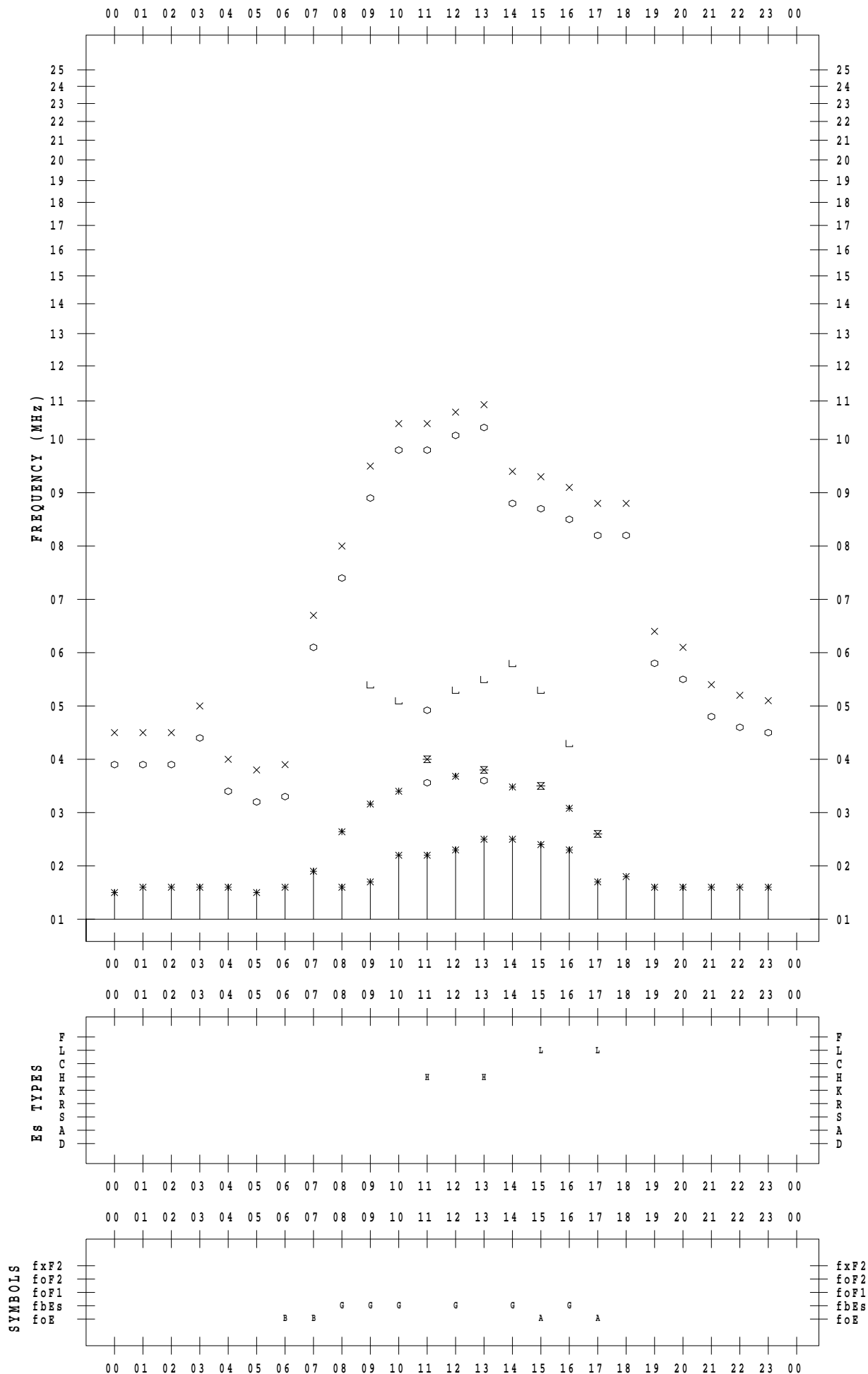
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 7

135 ° E MEAN TIME



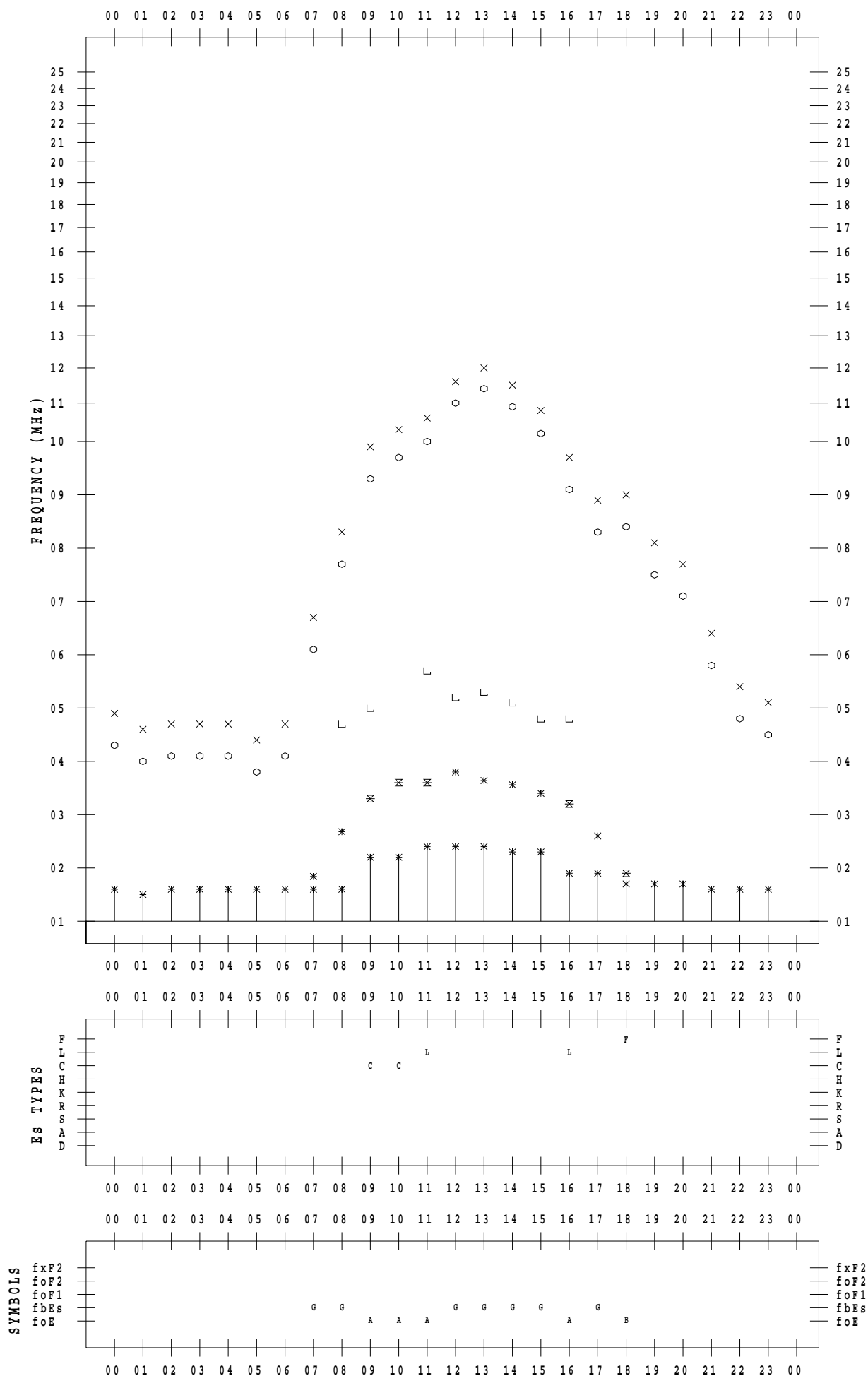
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 8

135 ° E MEAN TIME



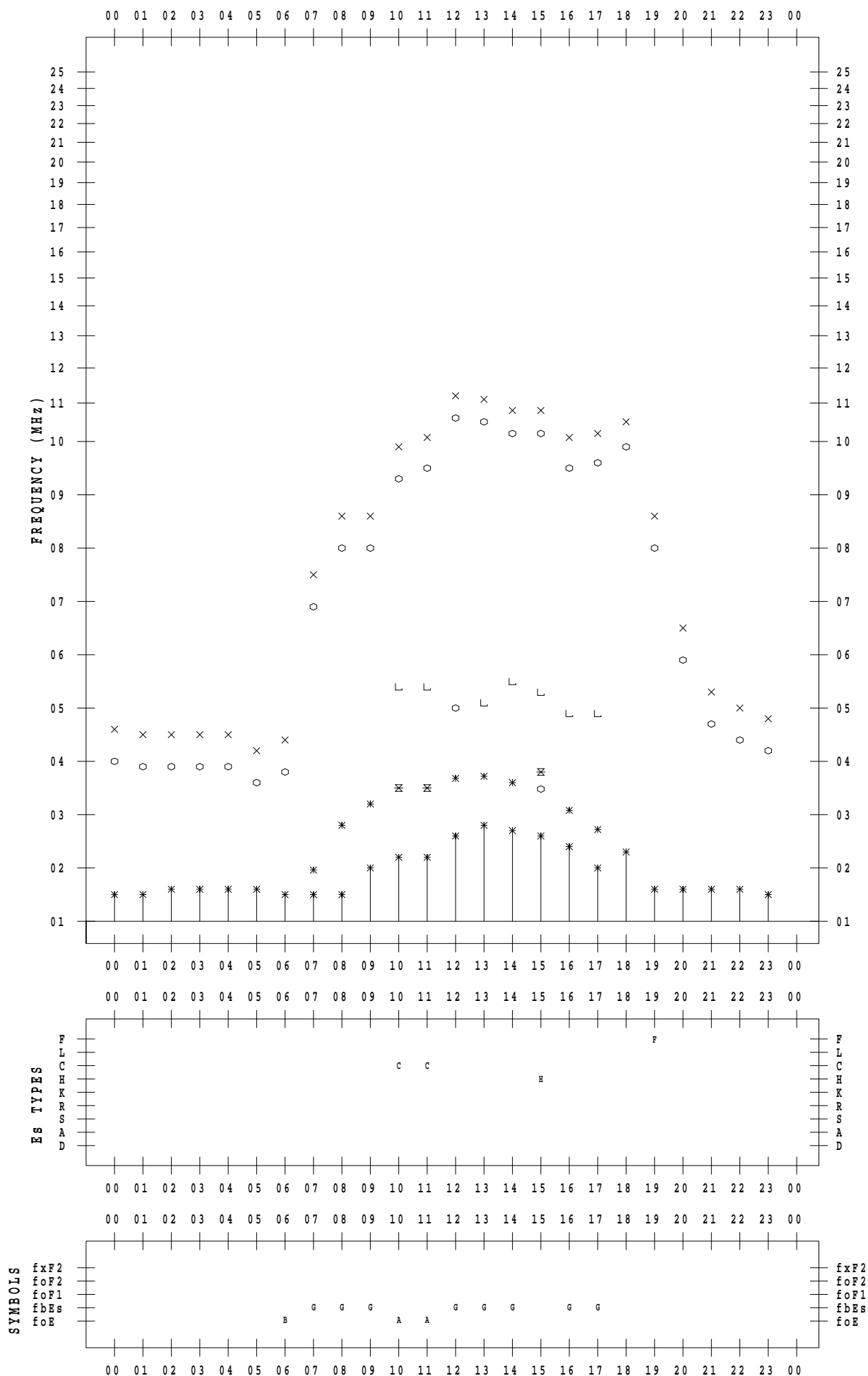
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 9

135 ° E MEAN TIME



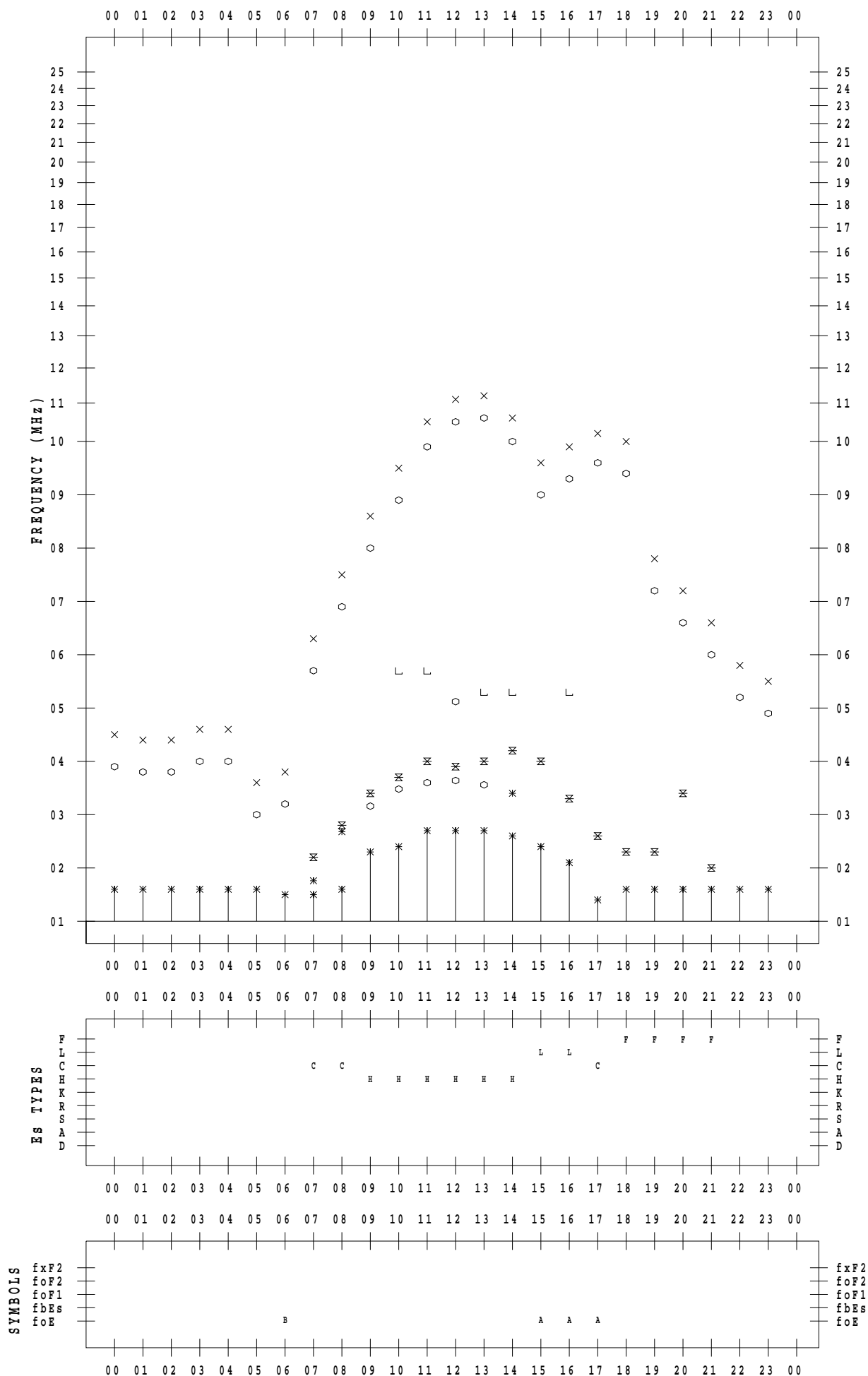
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 10

135 ° E MEAN TIME



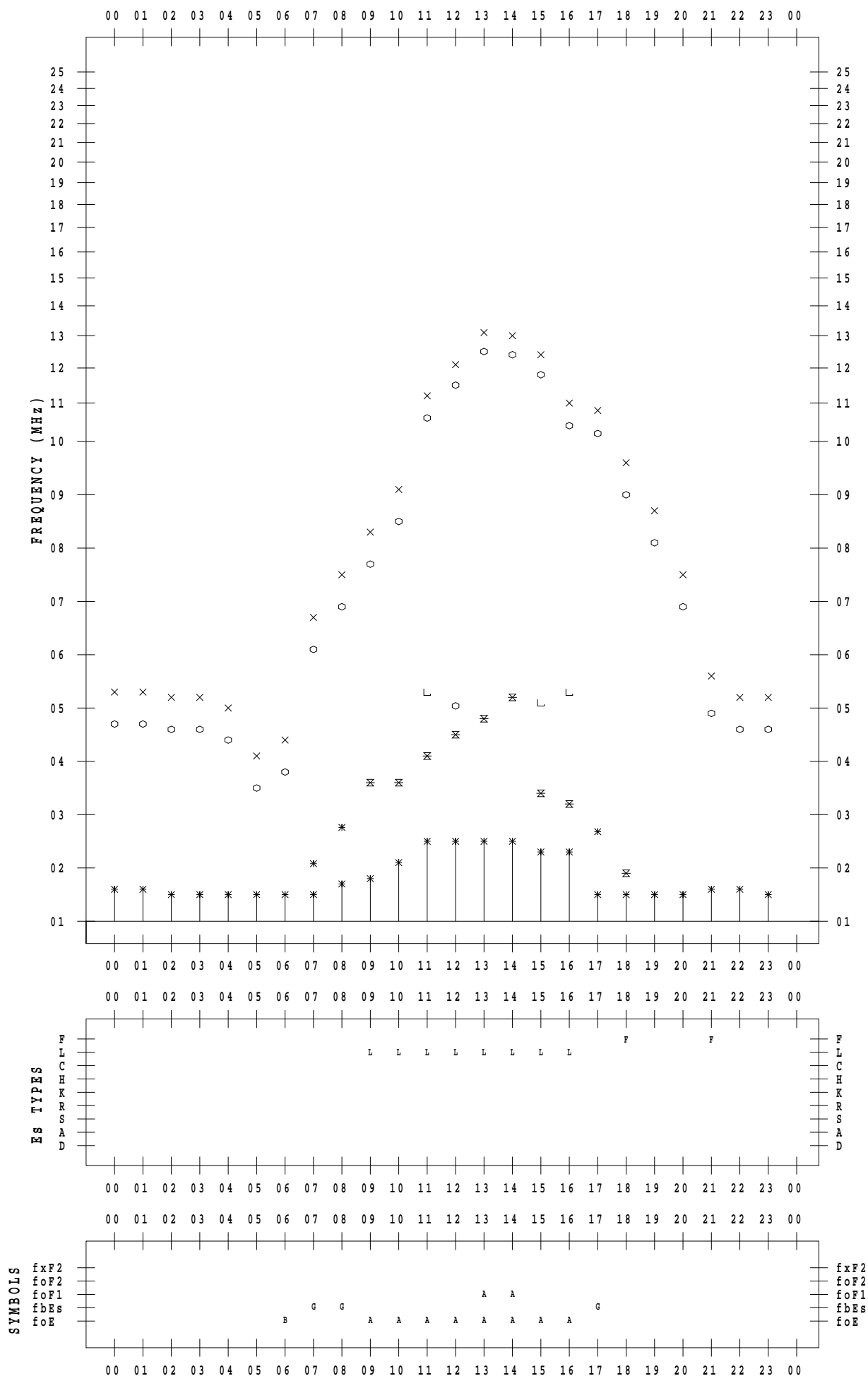
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 11

135 ° E MEAN TIME



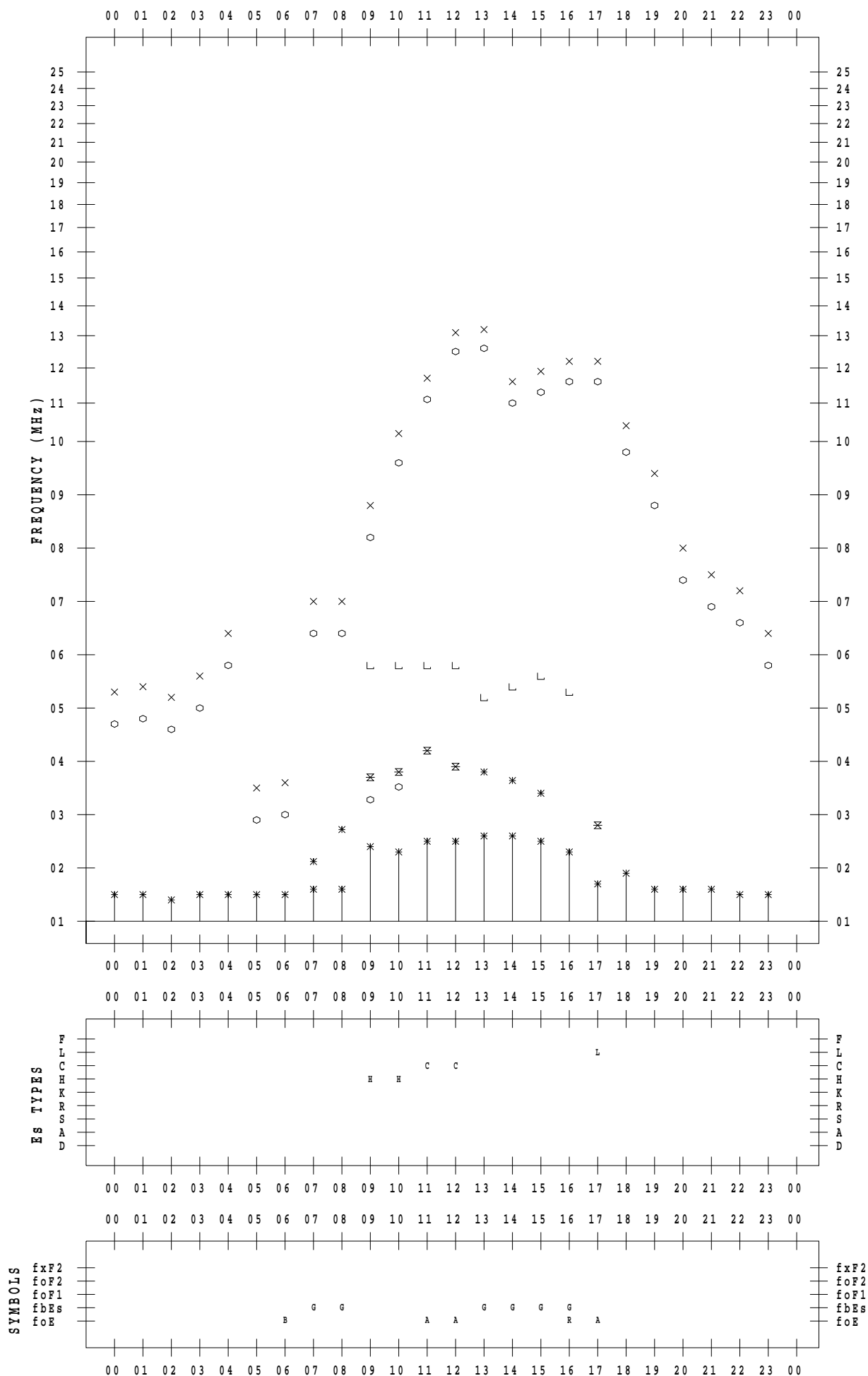
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 12

135 ° E MEAN TIME



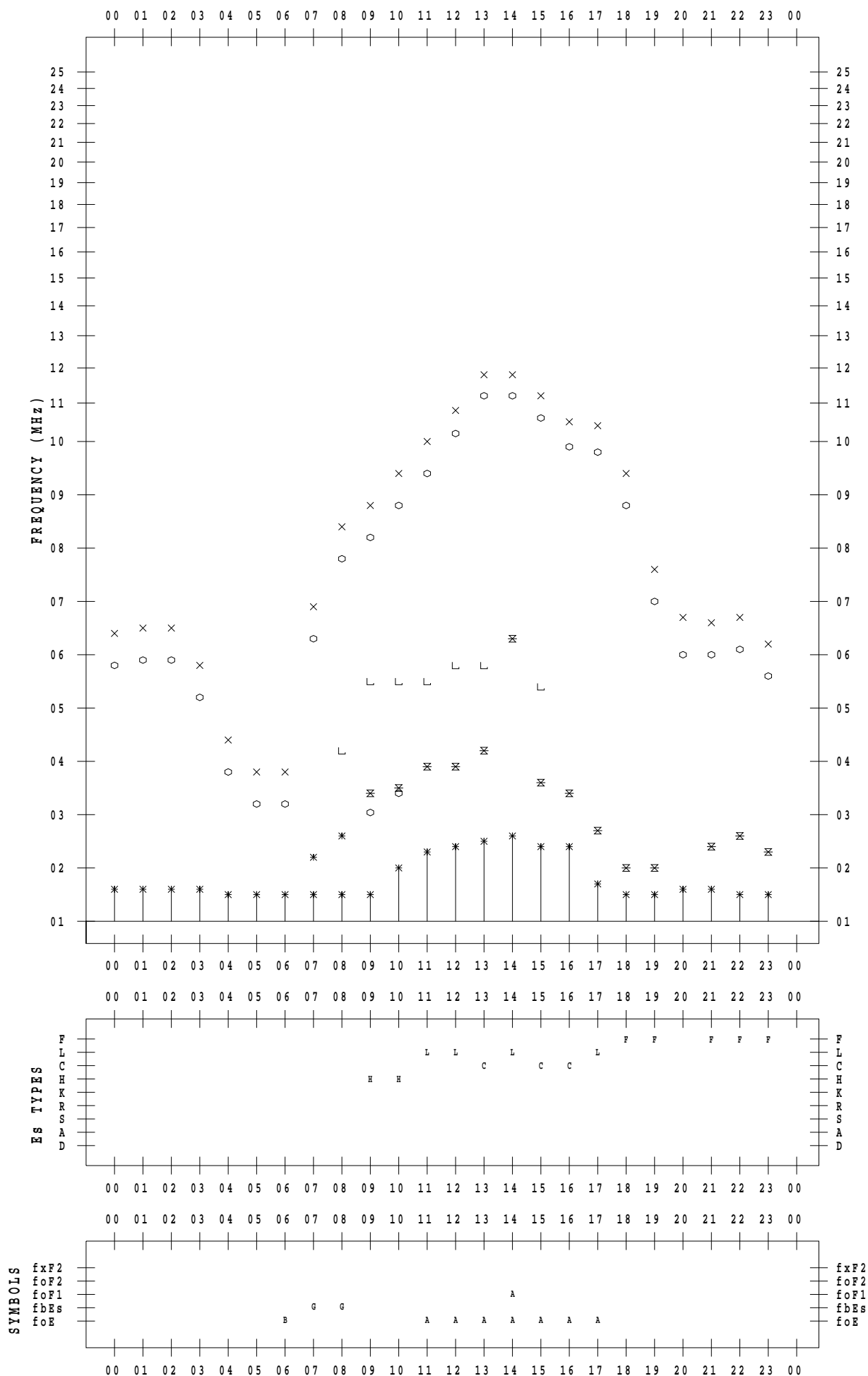
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 13

135 ° E MEAN TIME



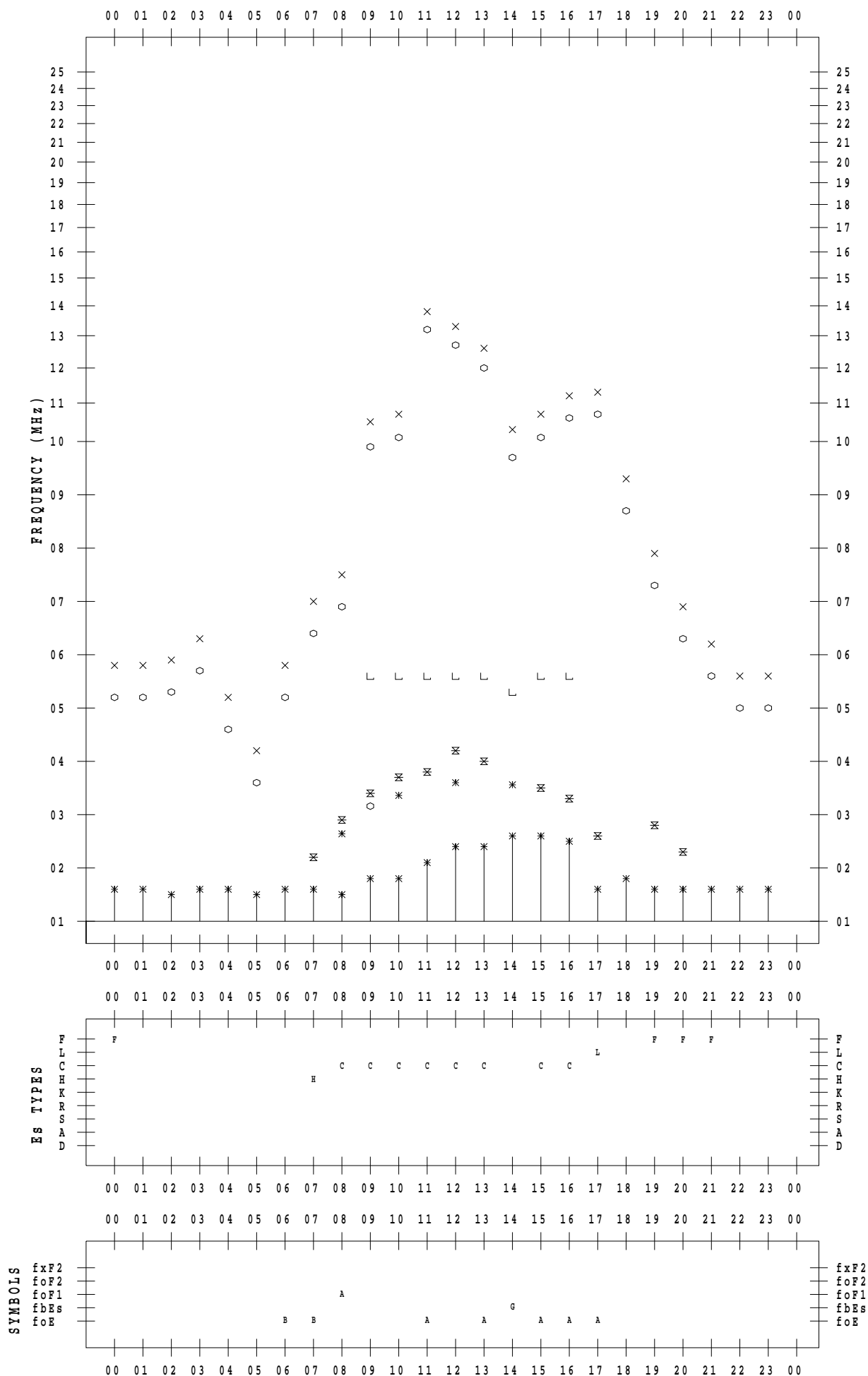
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 14

135 ° E MEAN TIME



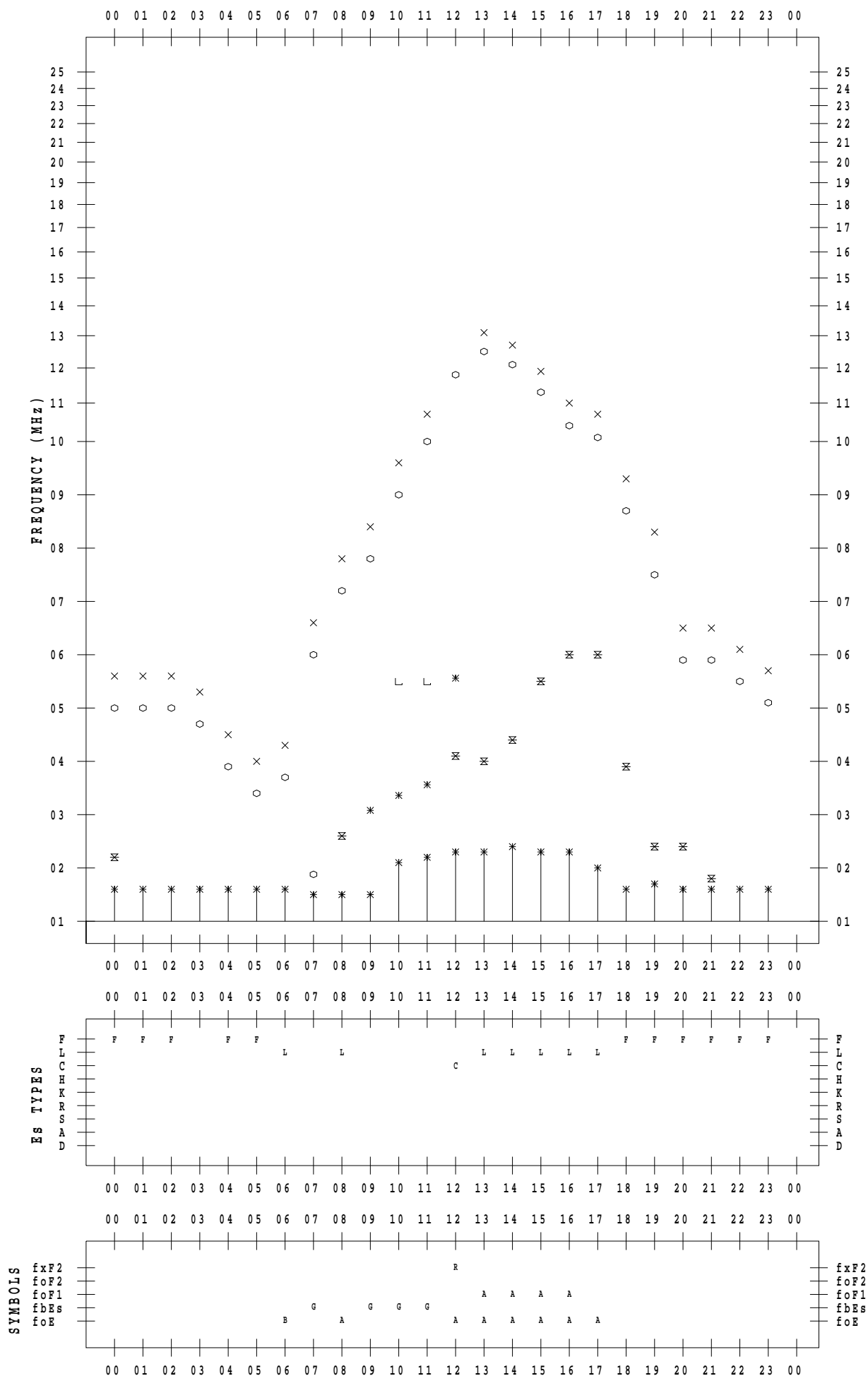
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 15

135 ° E MEAN TIME



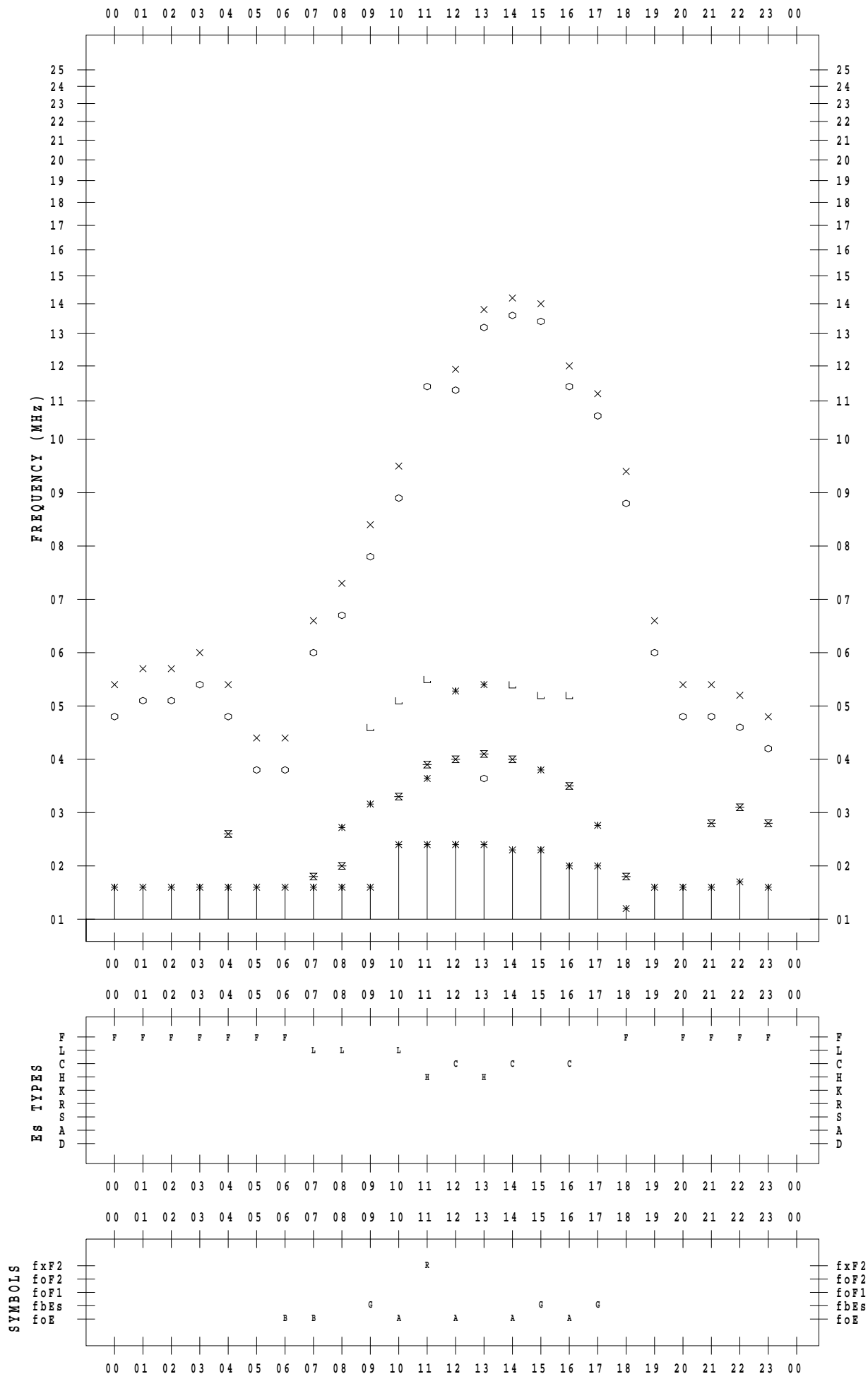
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 16

135 ° E MEAN TIME



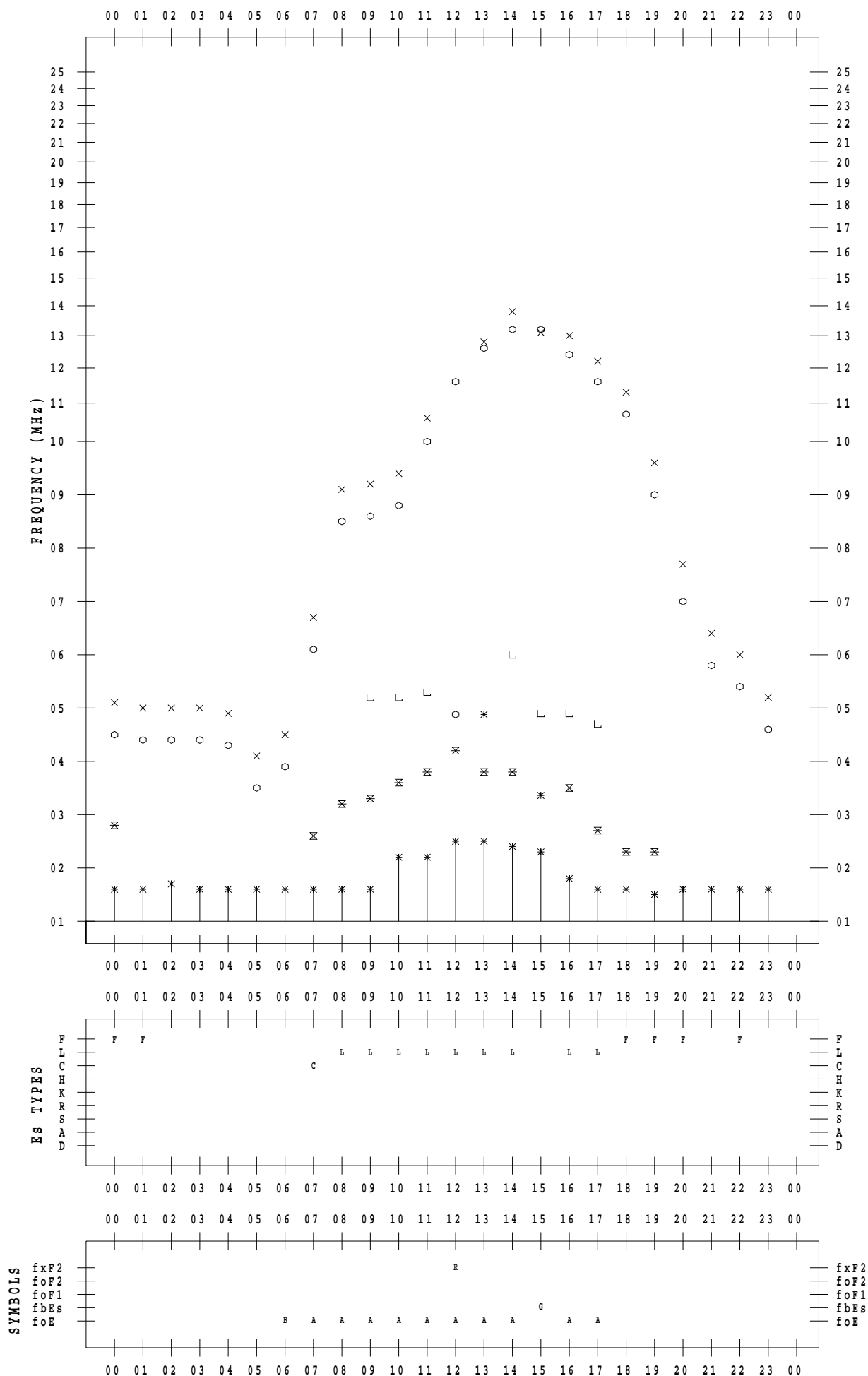
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 17

135 ° E MEAN TIME



SYMBOLS

- fxF2
- foF2
- foF1
- fbEs
- foE

- fxF2
- foF2
- foF1
- fbEs
- foE

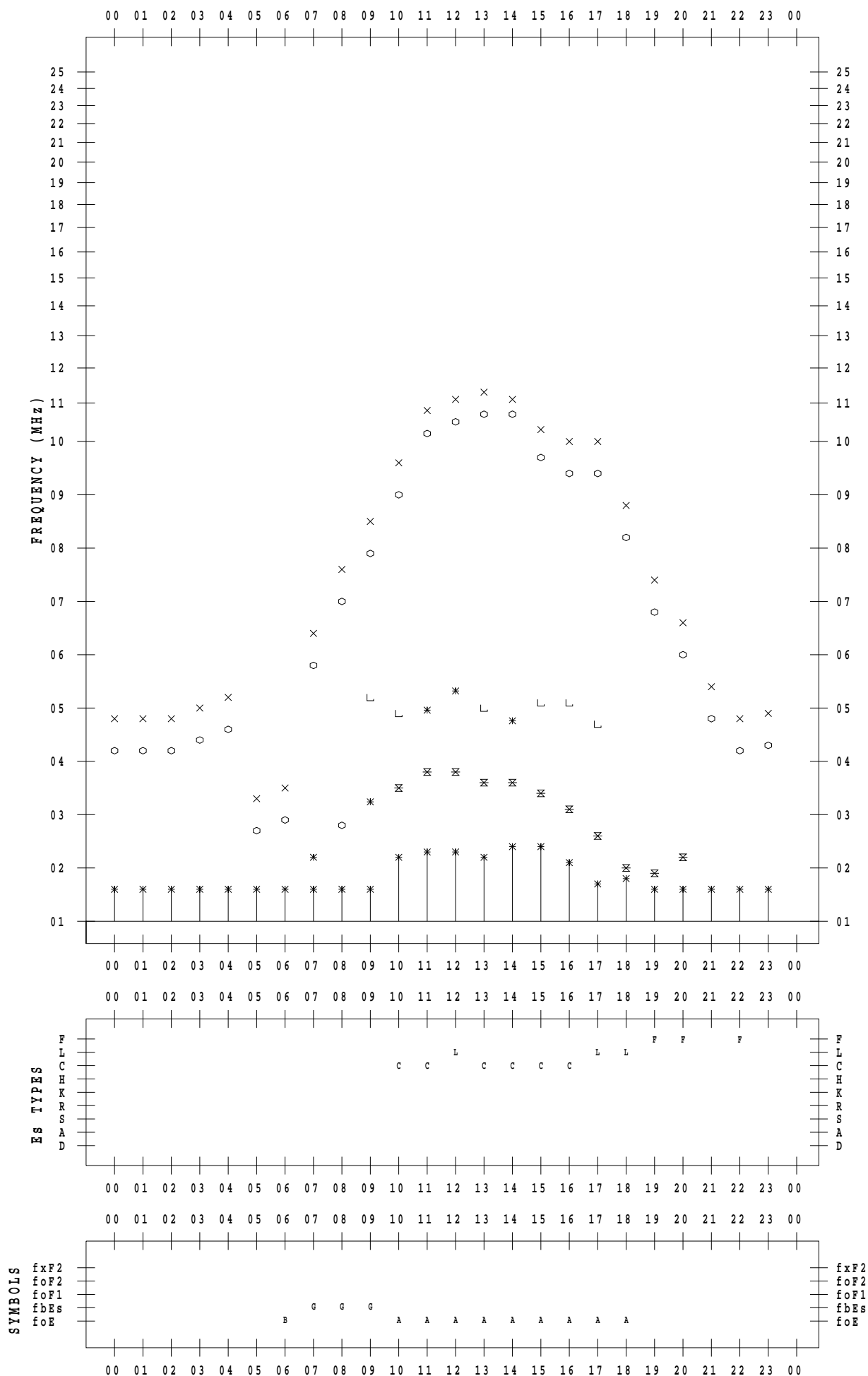
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 18

135 ° E MEAN TIME



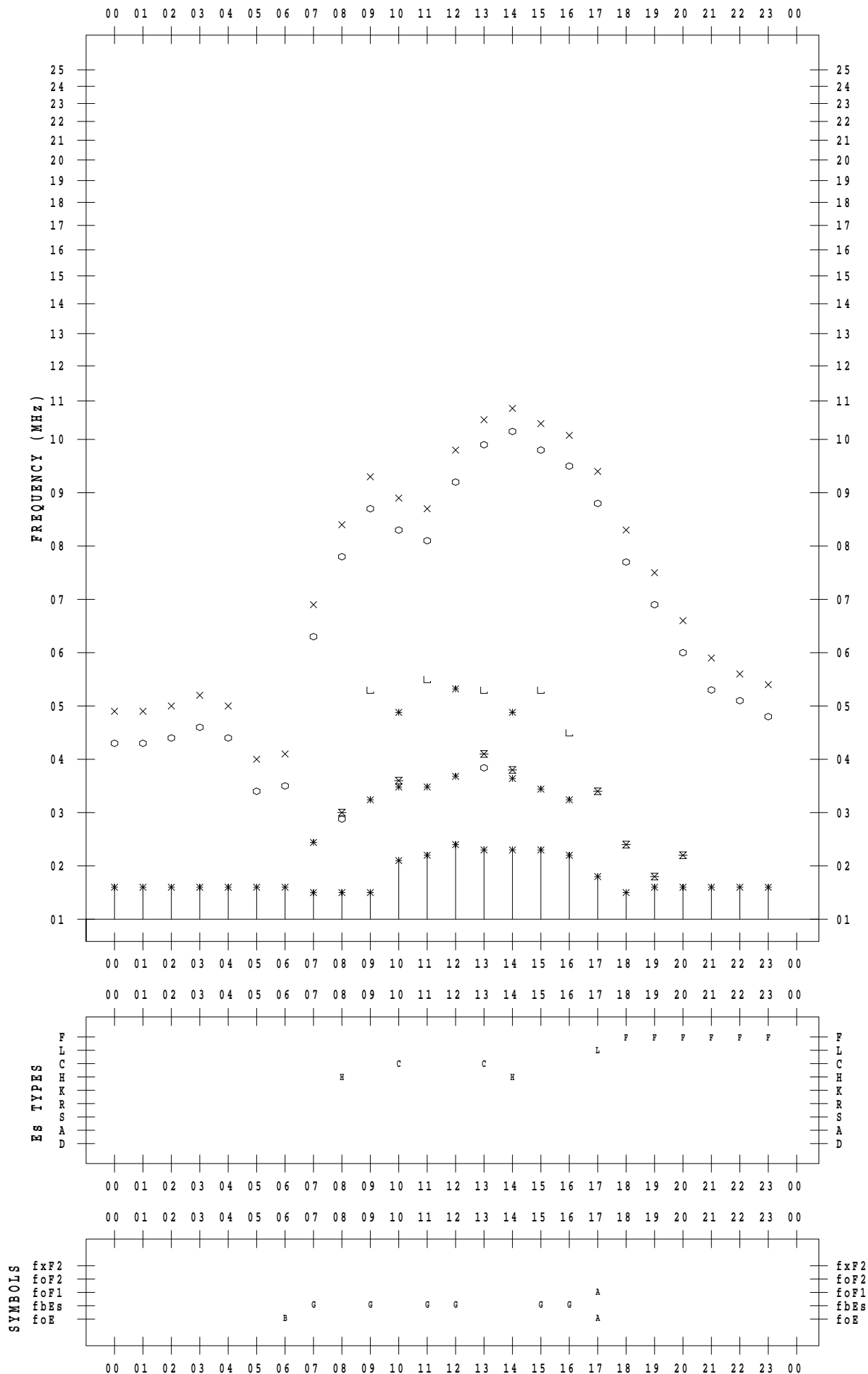
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 19

135 ° E MEAN TIME



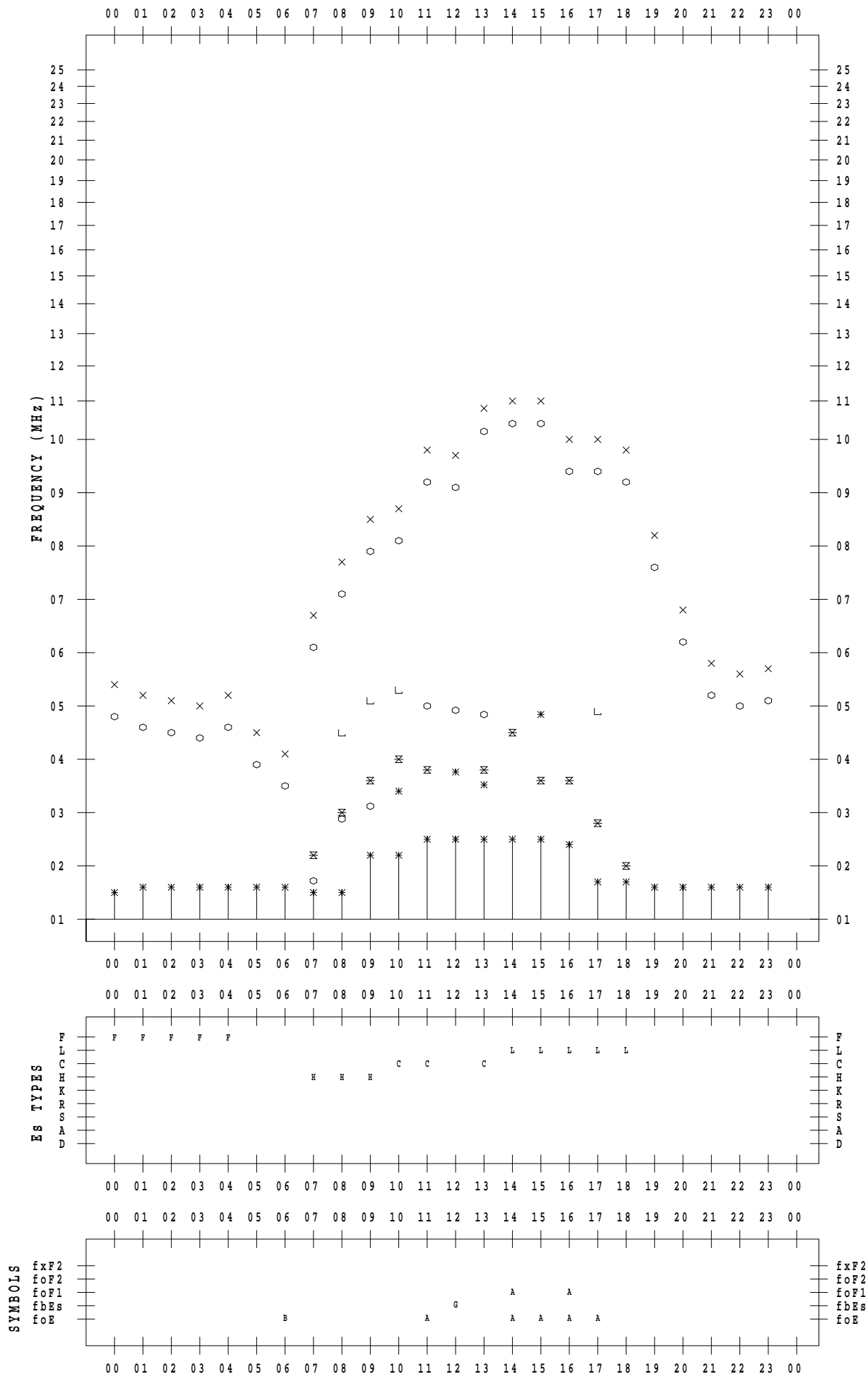
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 20

135 ° E MEAN TIME



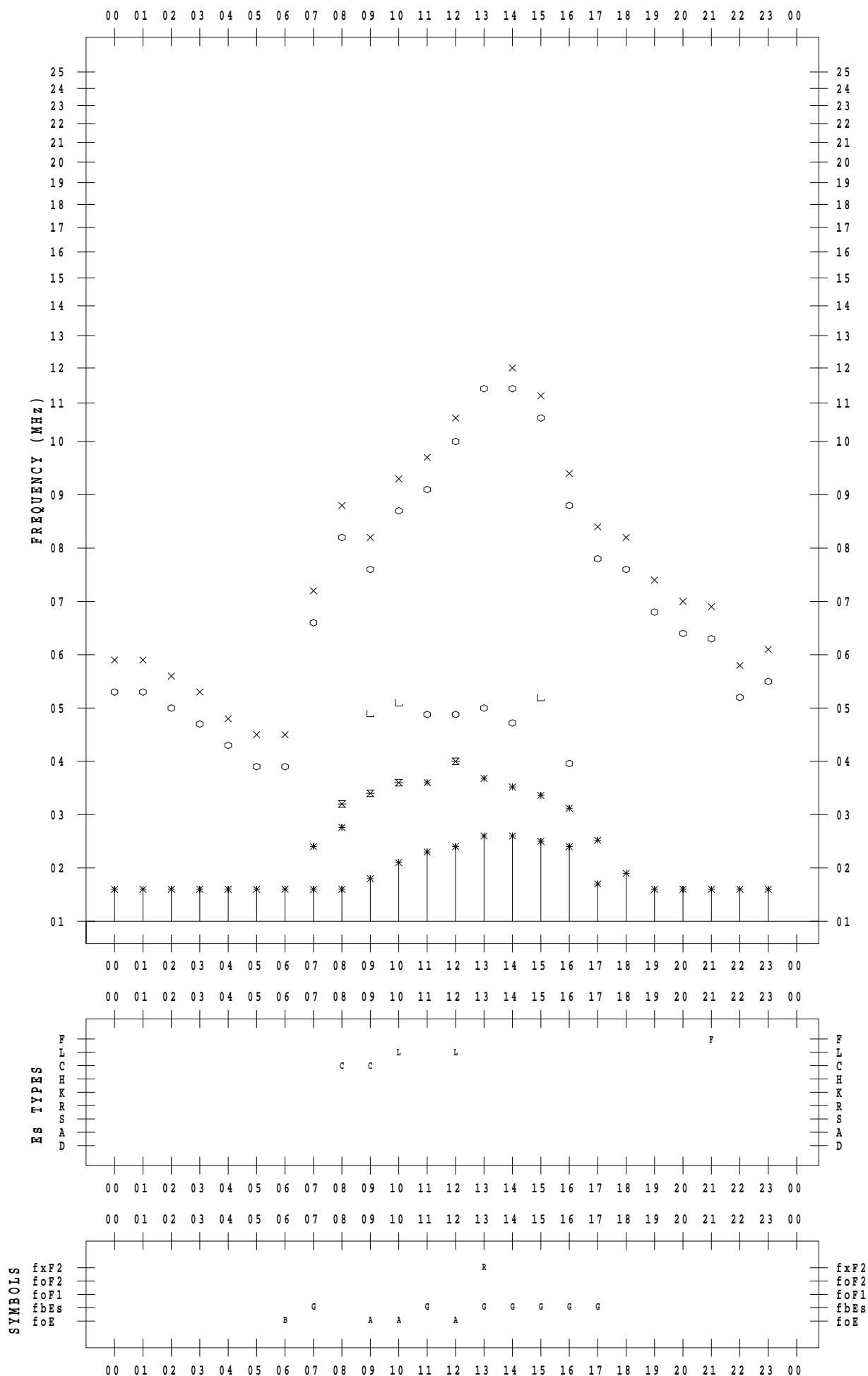
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 21

135 ° E MEAN TIME



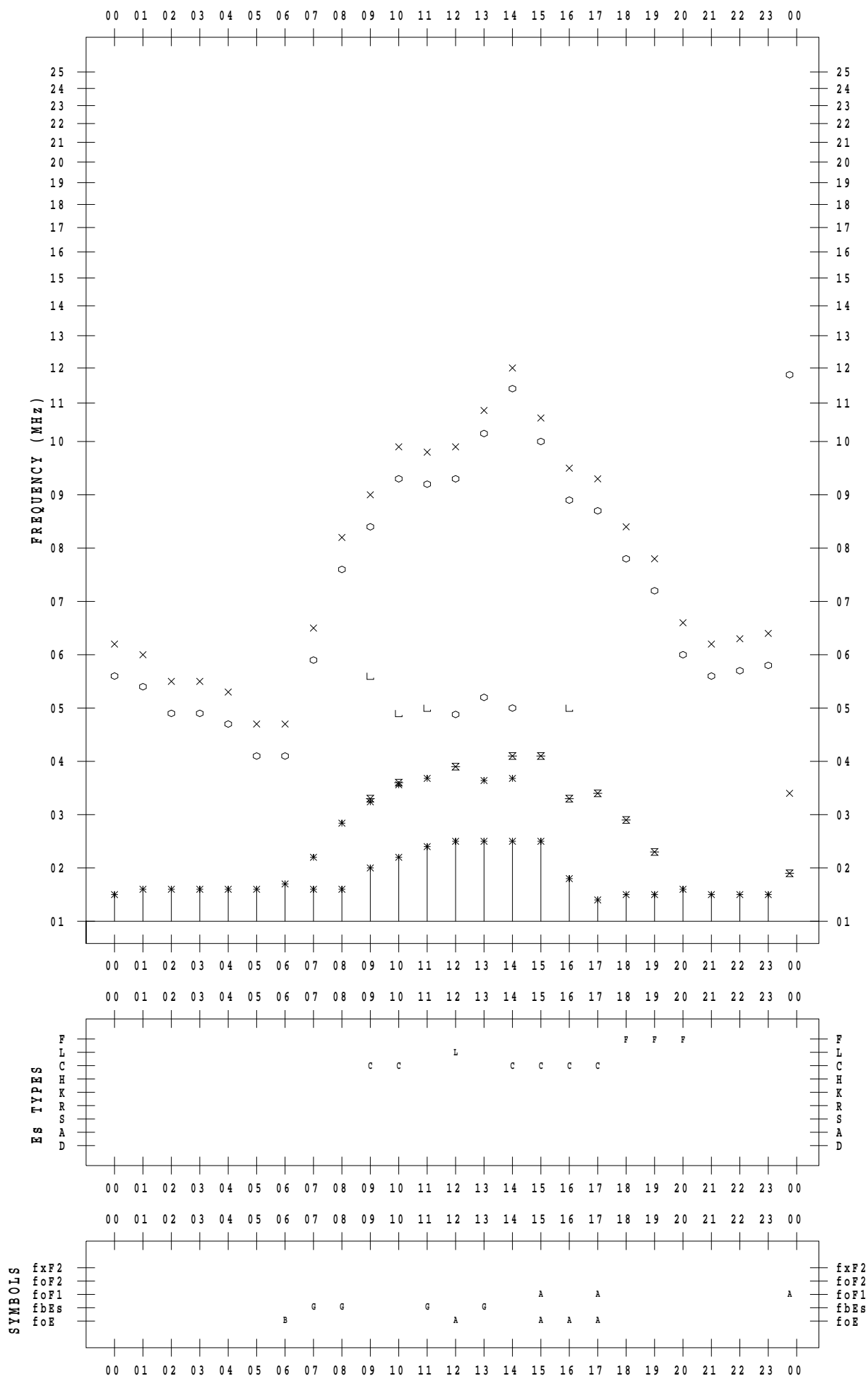
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 22

135 ° E MEAN TIME



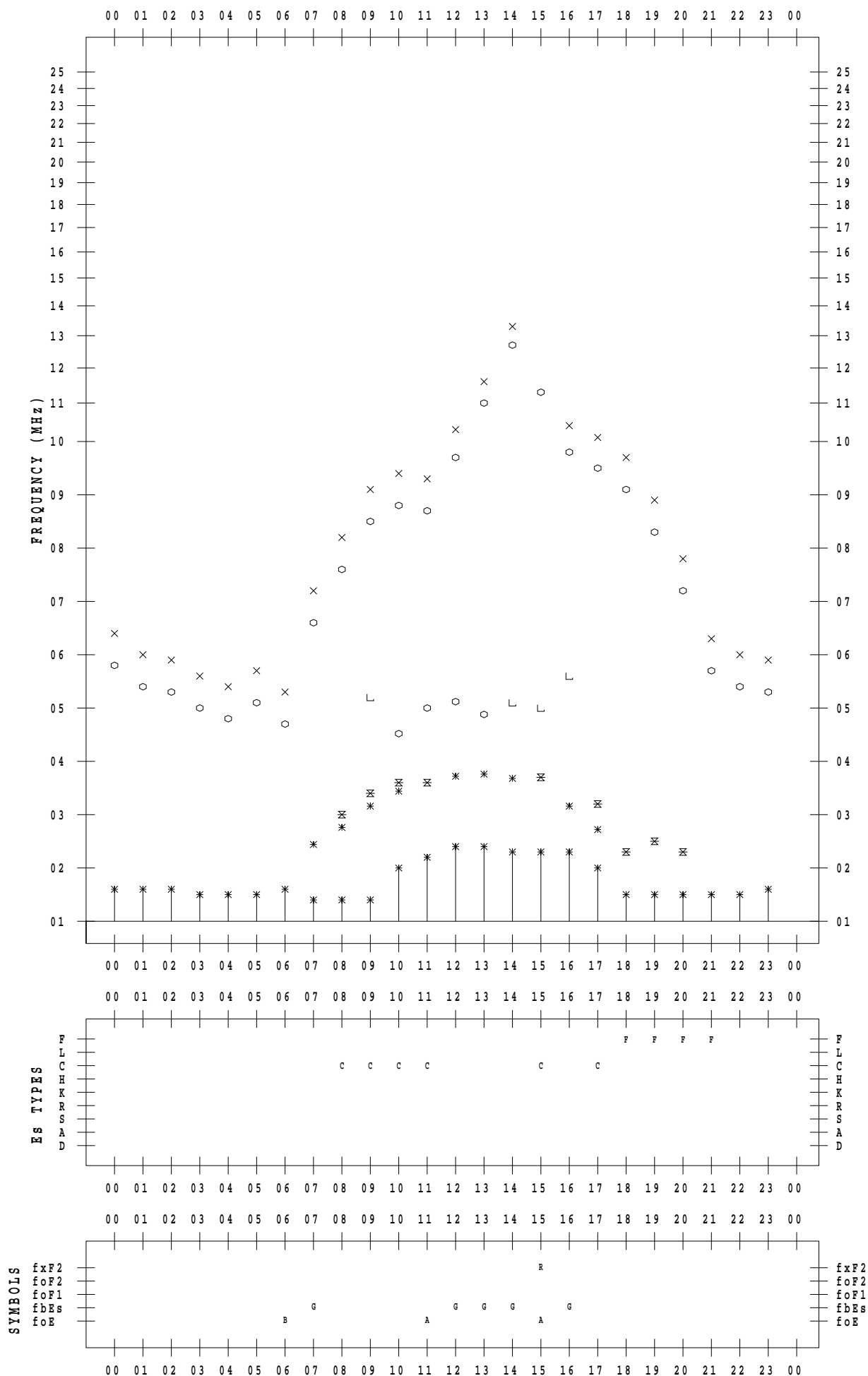
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 23

135 ° E MEAN TIME



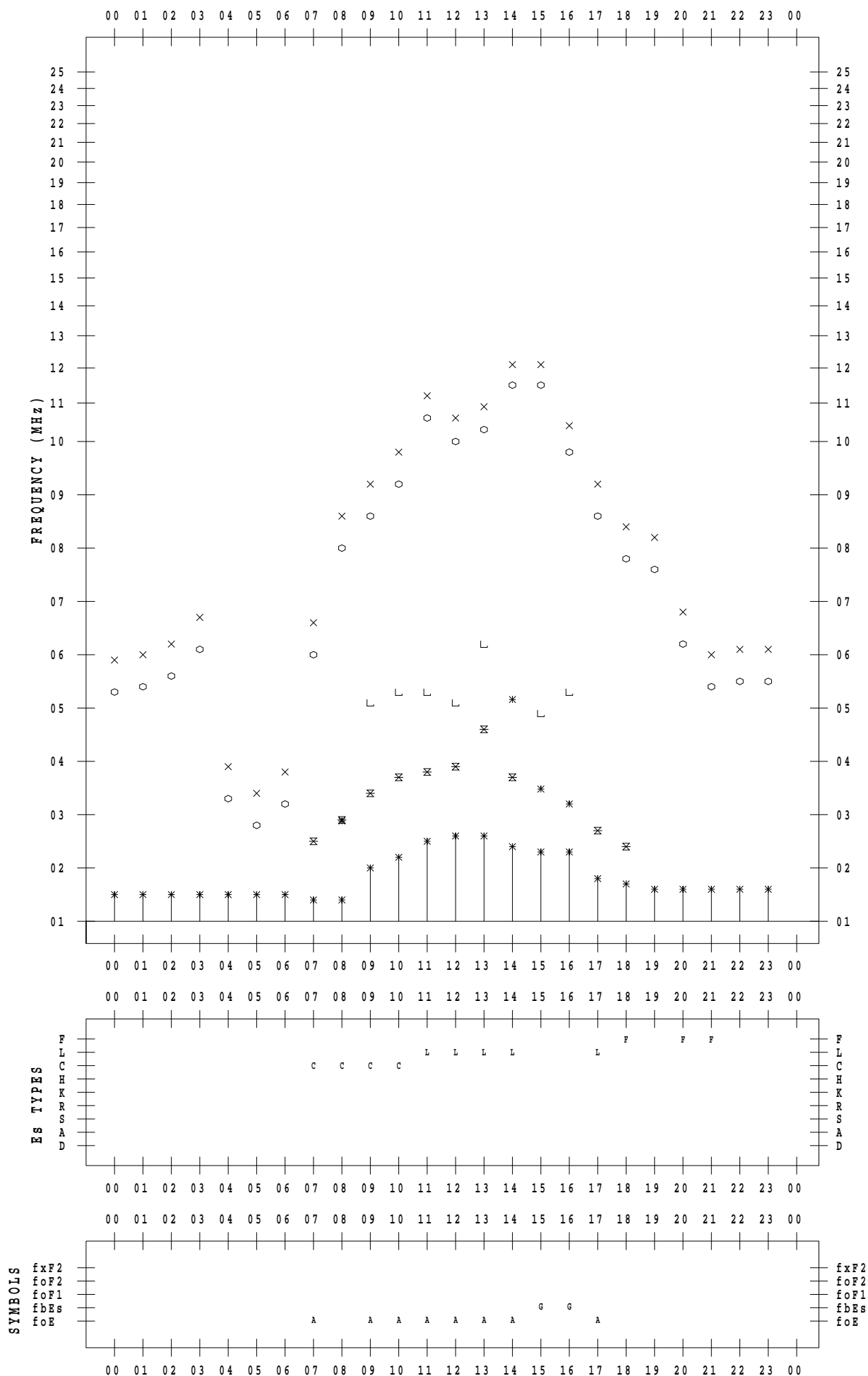
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 24

135 ° E MEAN TIME



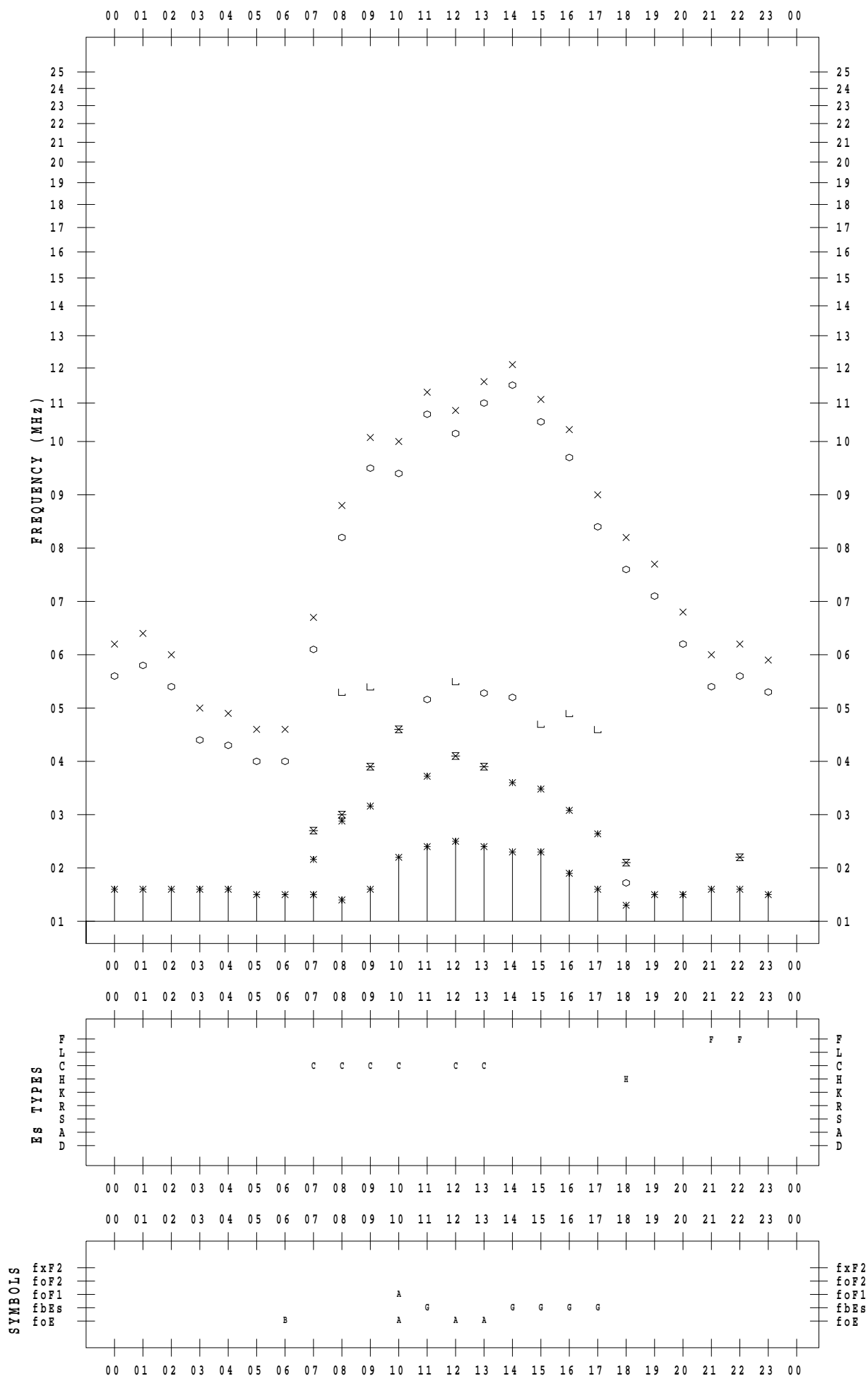
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 25

135 ° E MEAN TIME



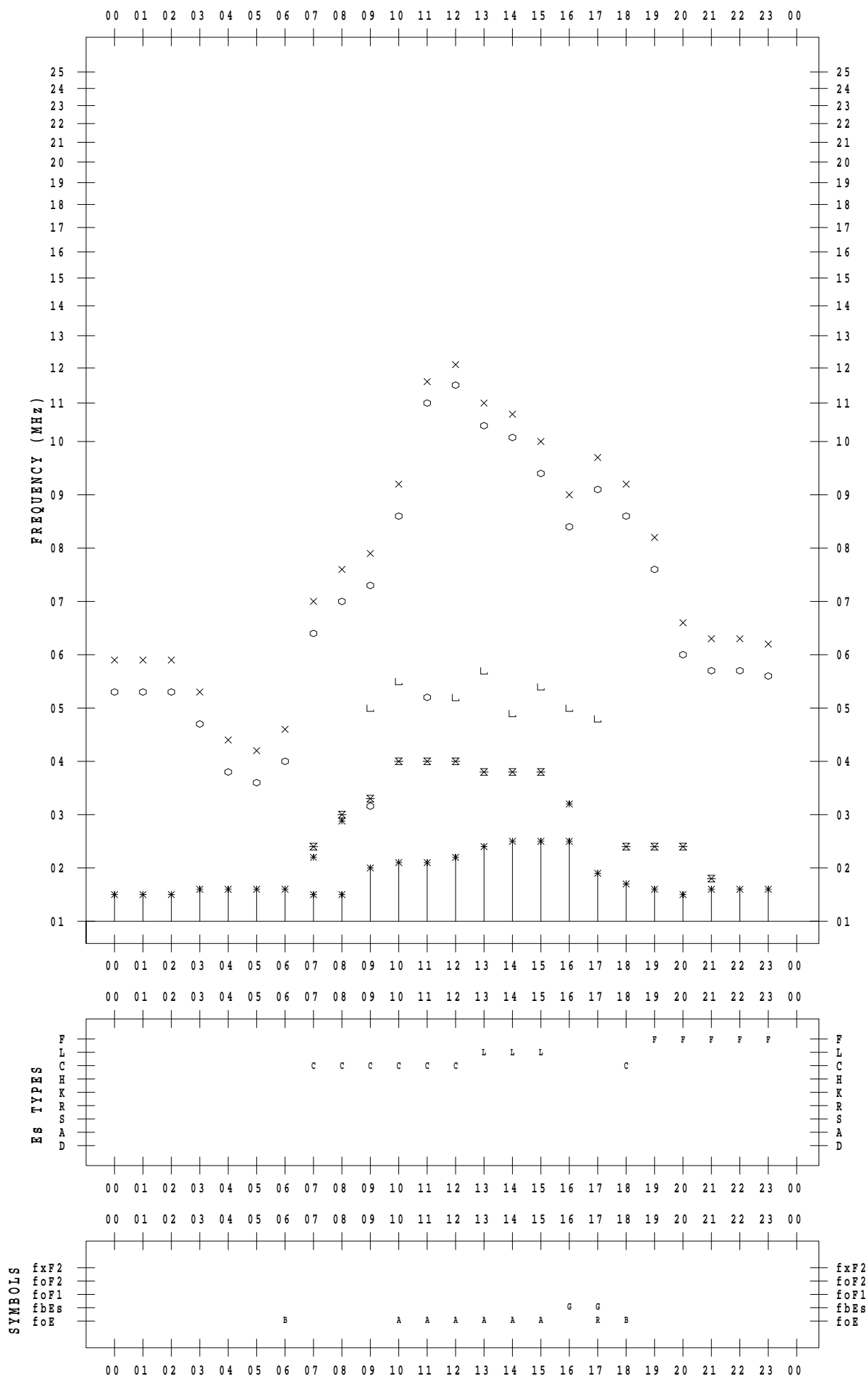
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 26

135 ° E MEAN TIME



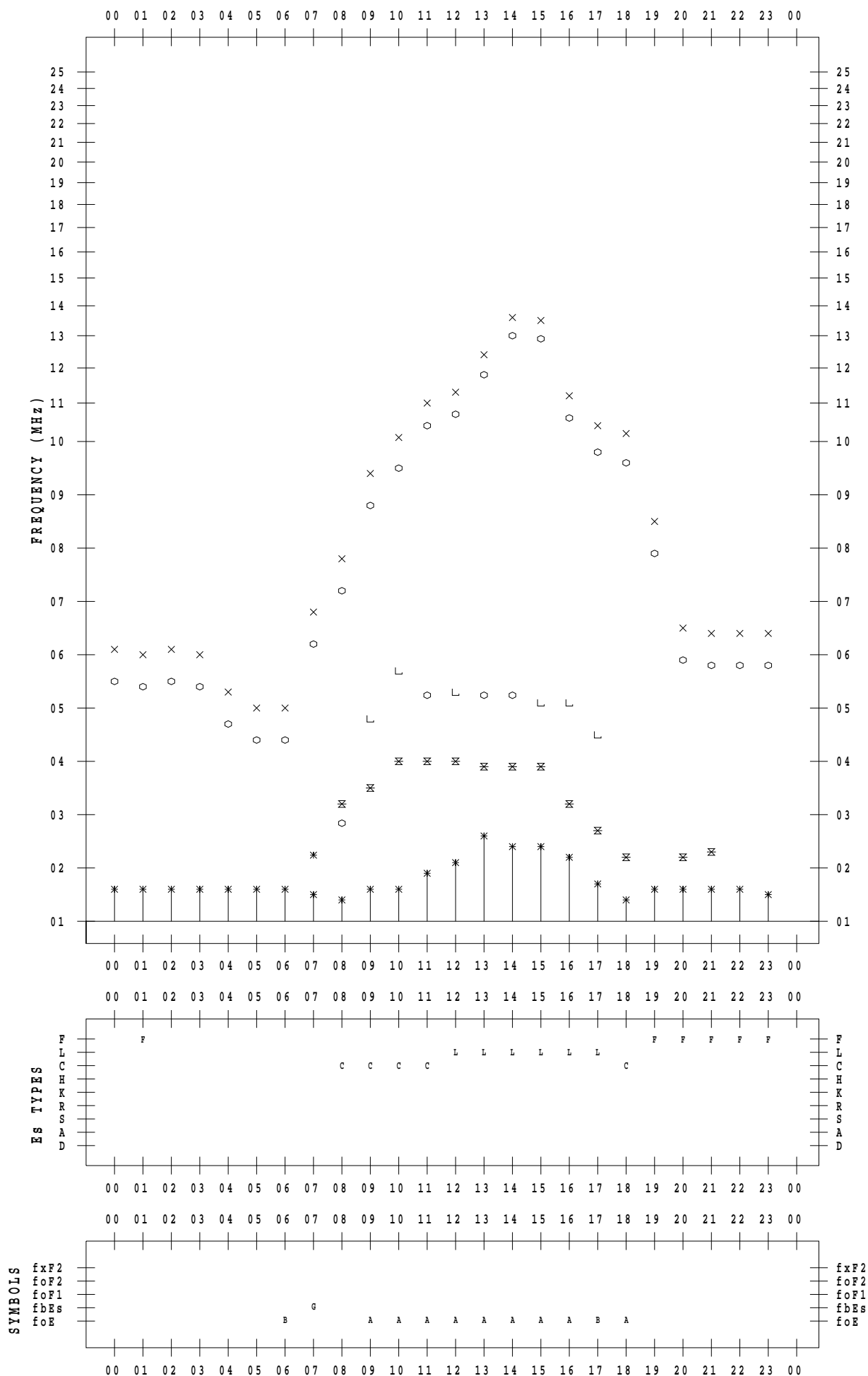
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 27

135 ° E MEAN TIME



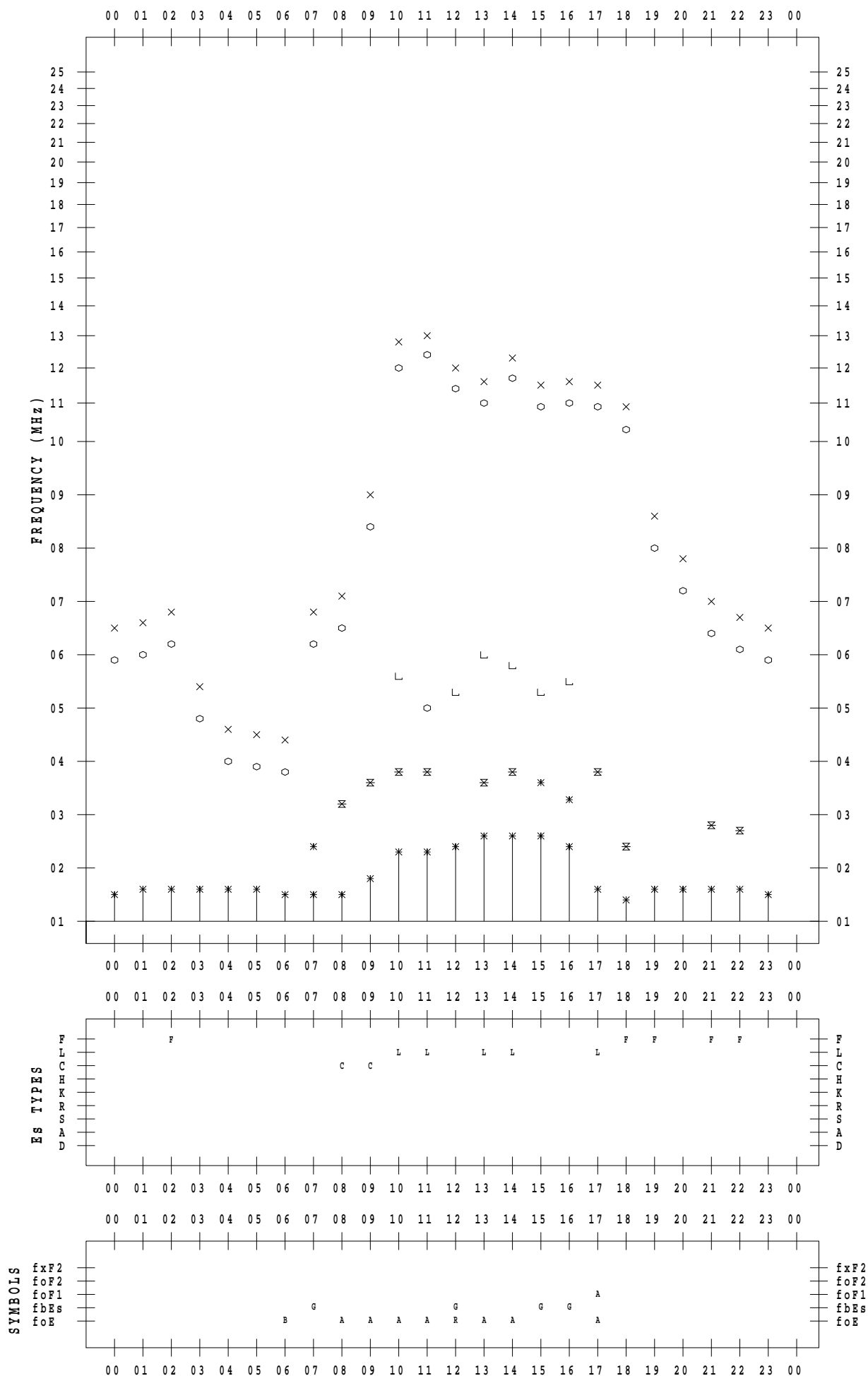
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 28

135 ° E MEAN TIME



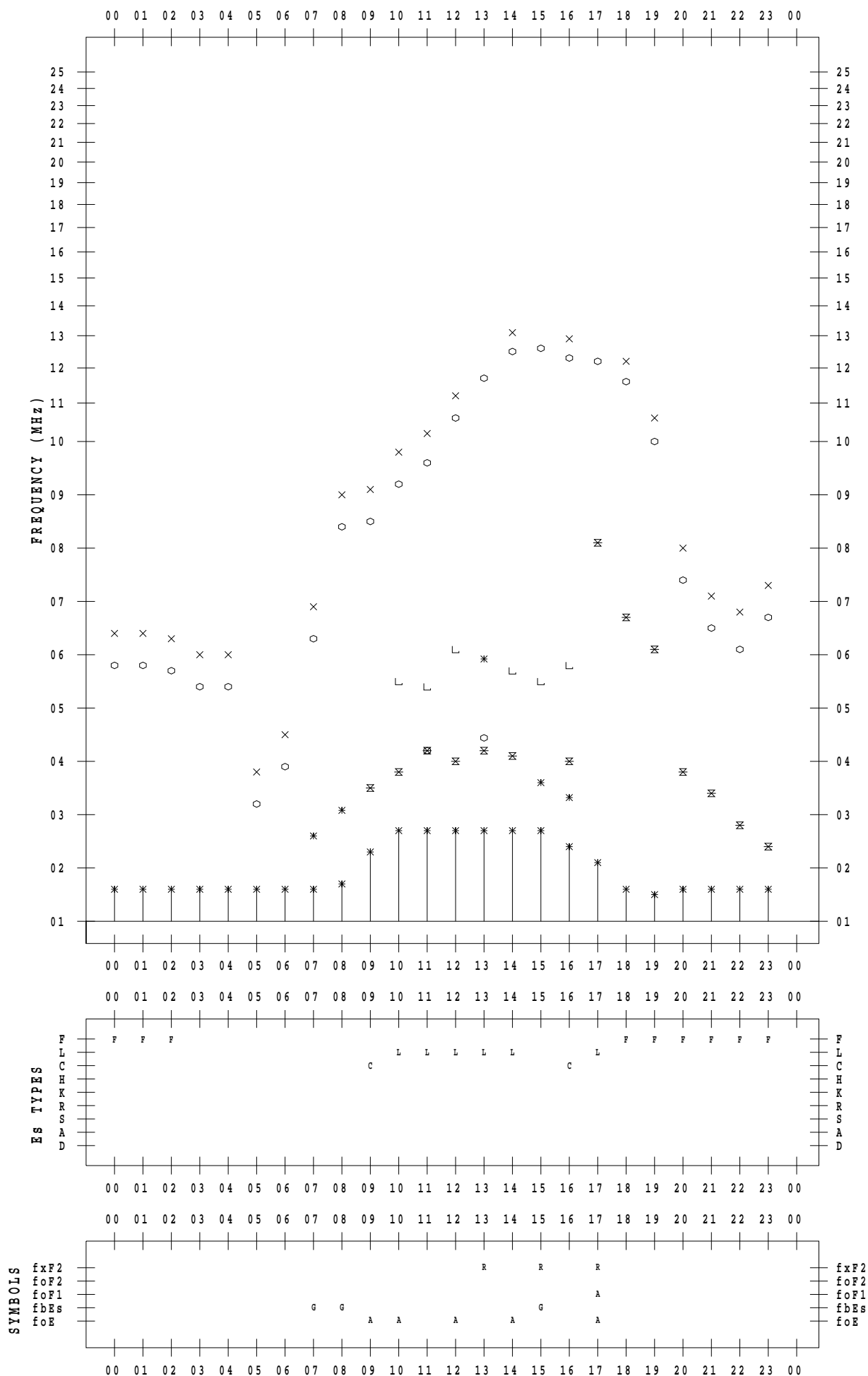
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 29

135 ° E MEAN TIME



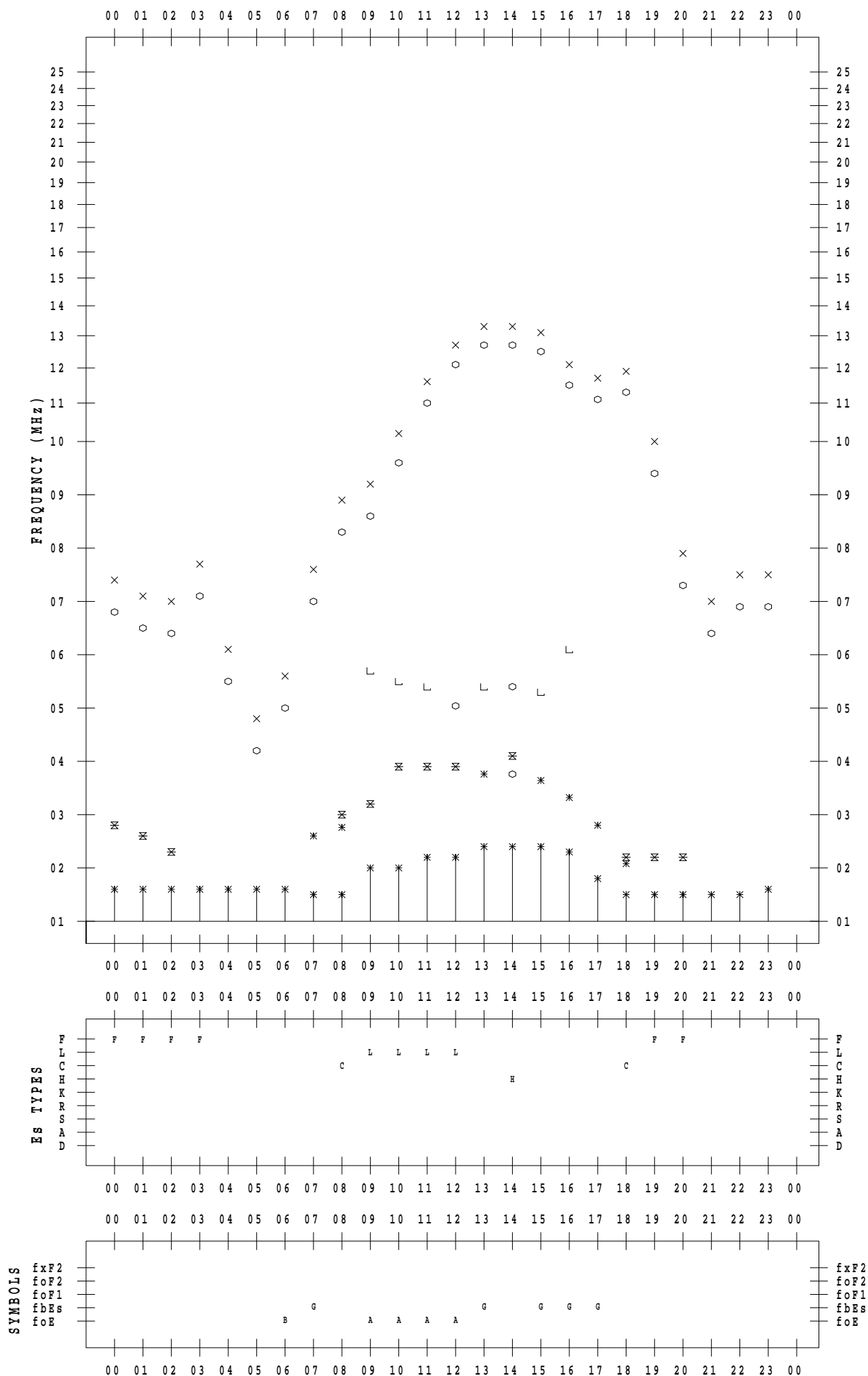
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 30

135 ° E MEAN TIME



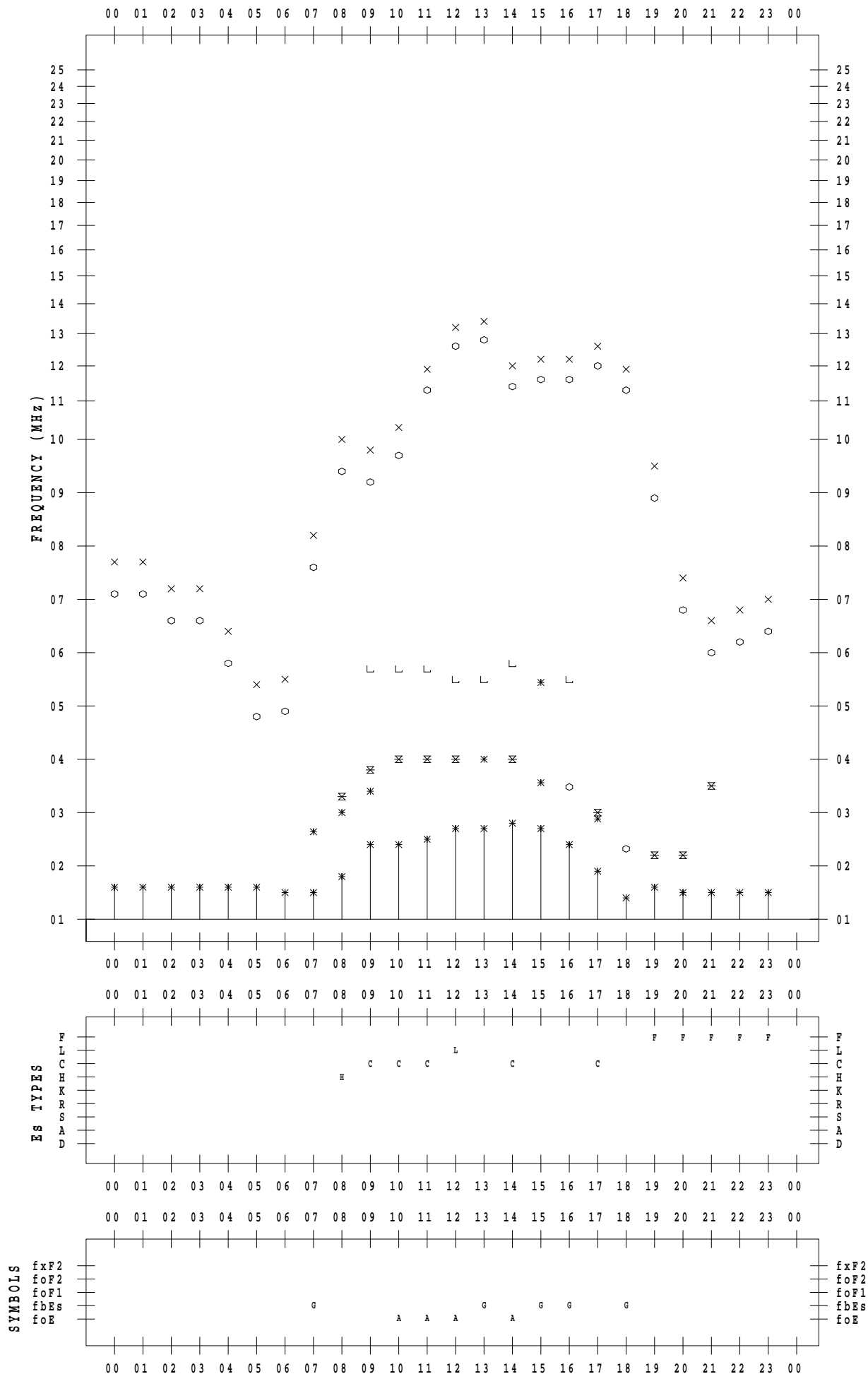
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022 / 3 / 31

135 ° E MEAN TIME



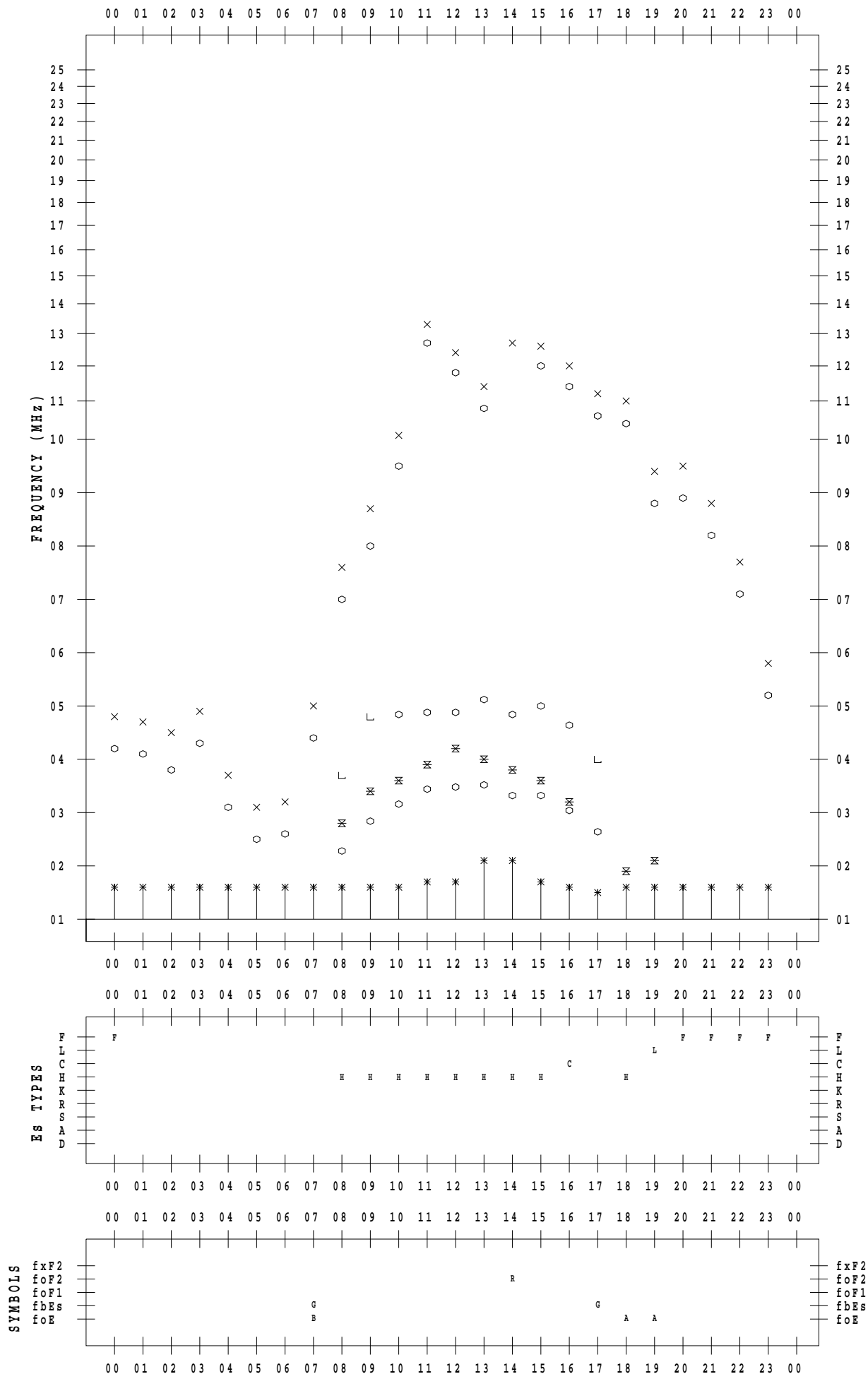
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 1

135 ° E MEAN TIME



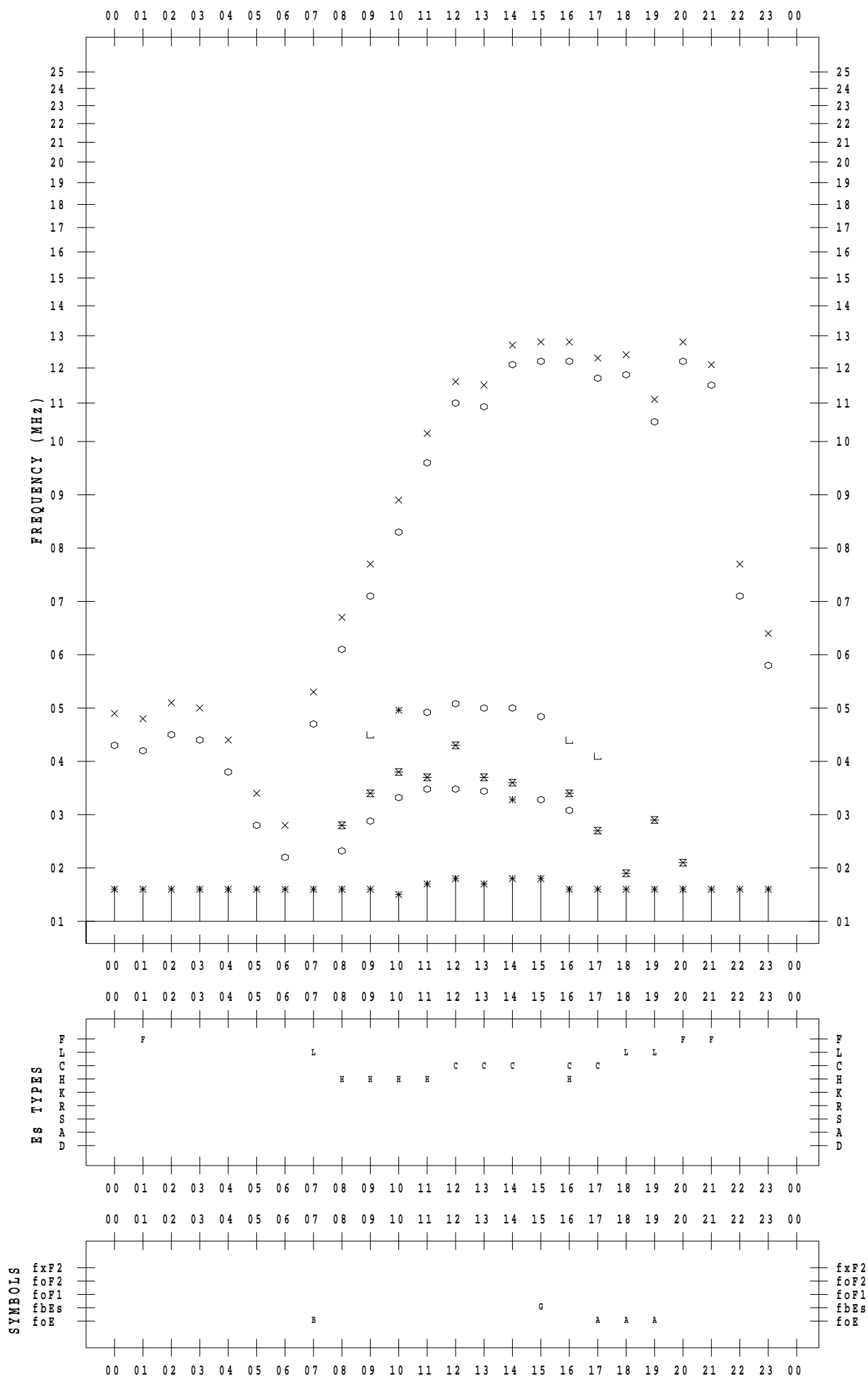
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 2

135 ° E MEAN TIME



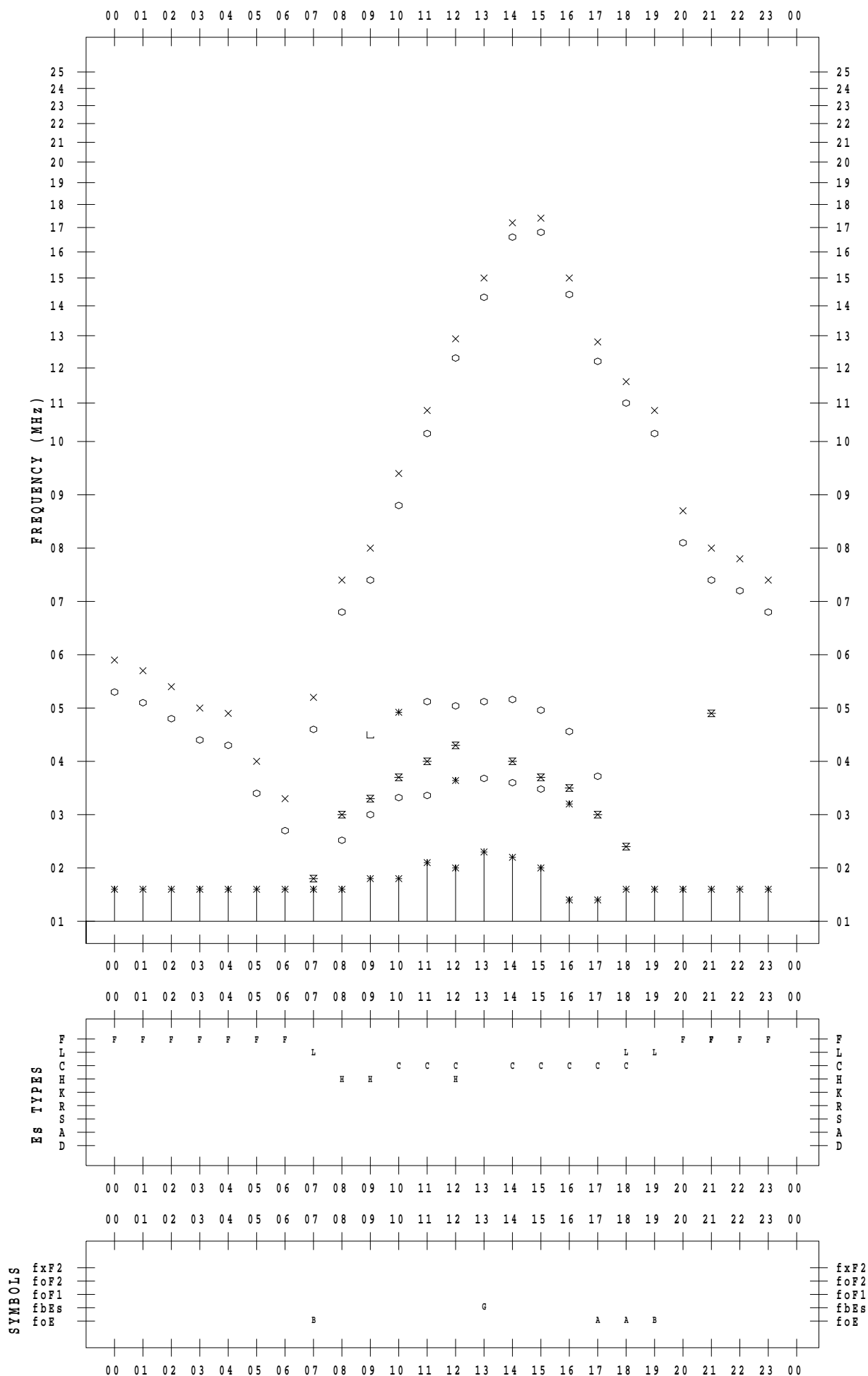
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 3

135 ° E MEAN TIME



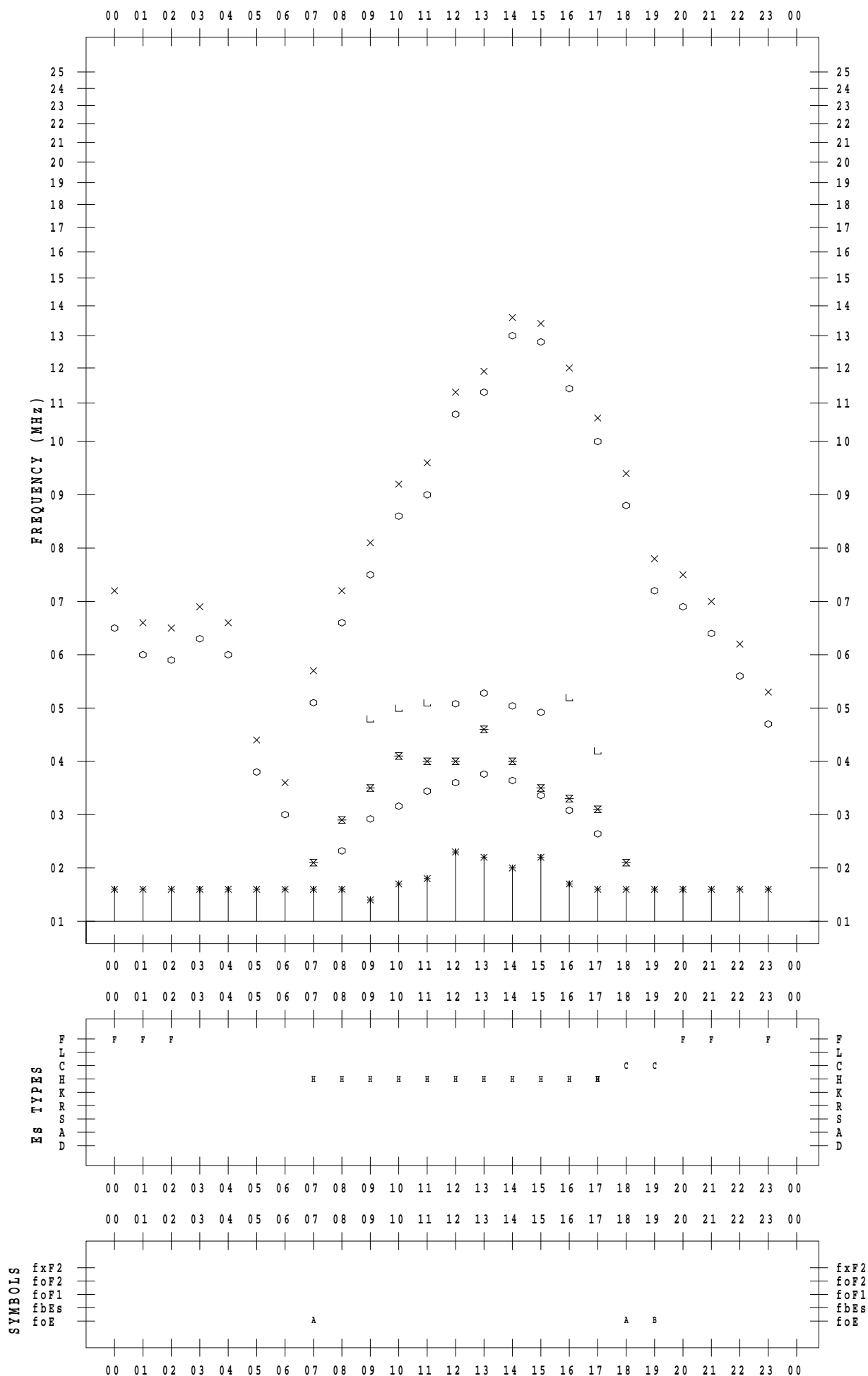
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 4

135 ° E MEAN TIME



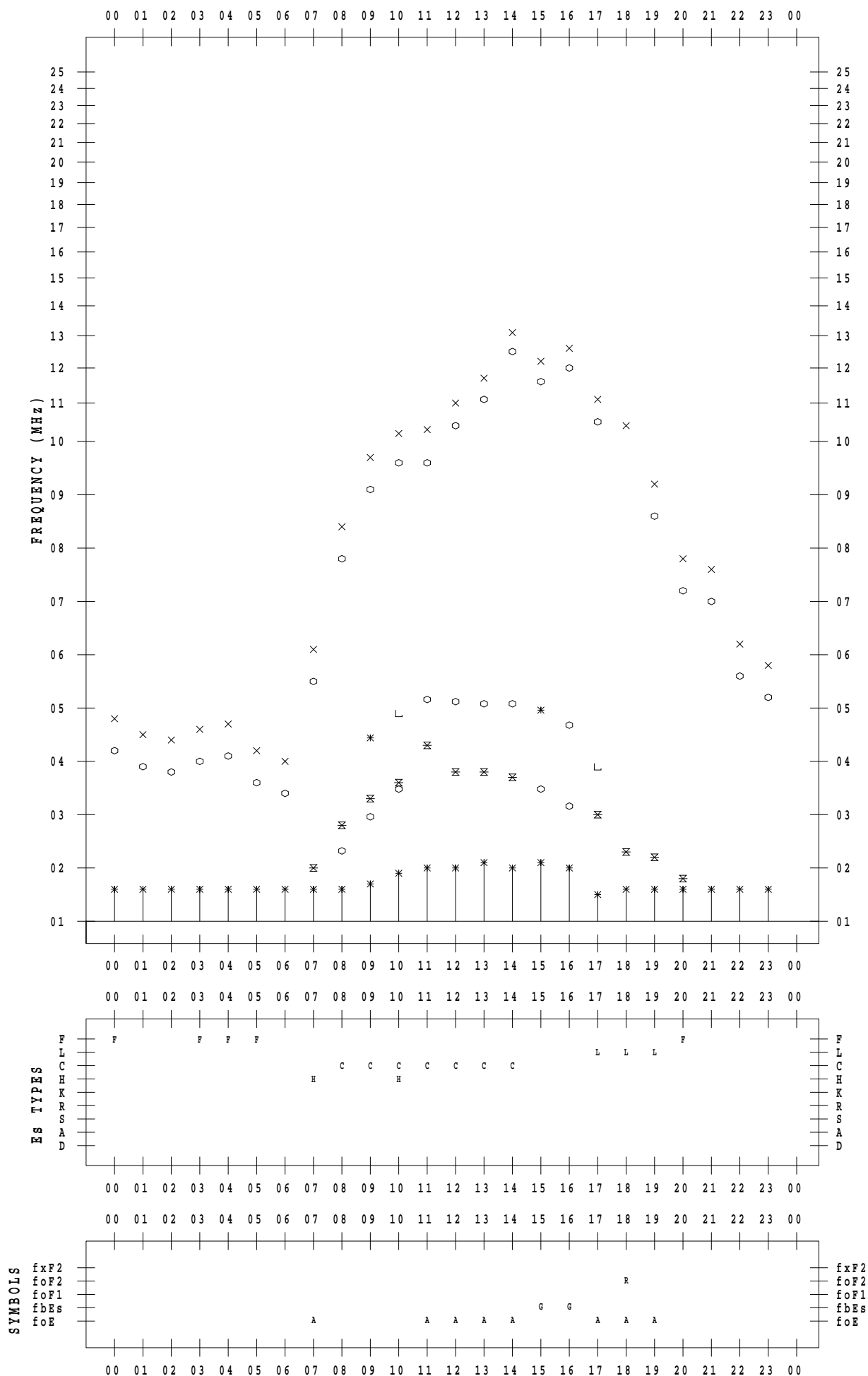
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 5

135 ° E MEAN TIME



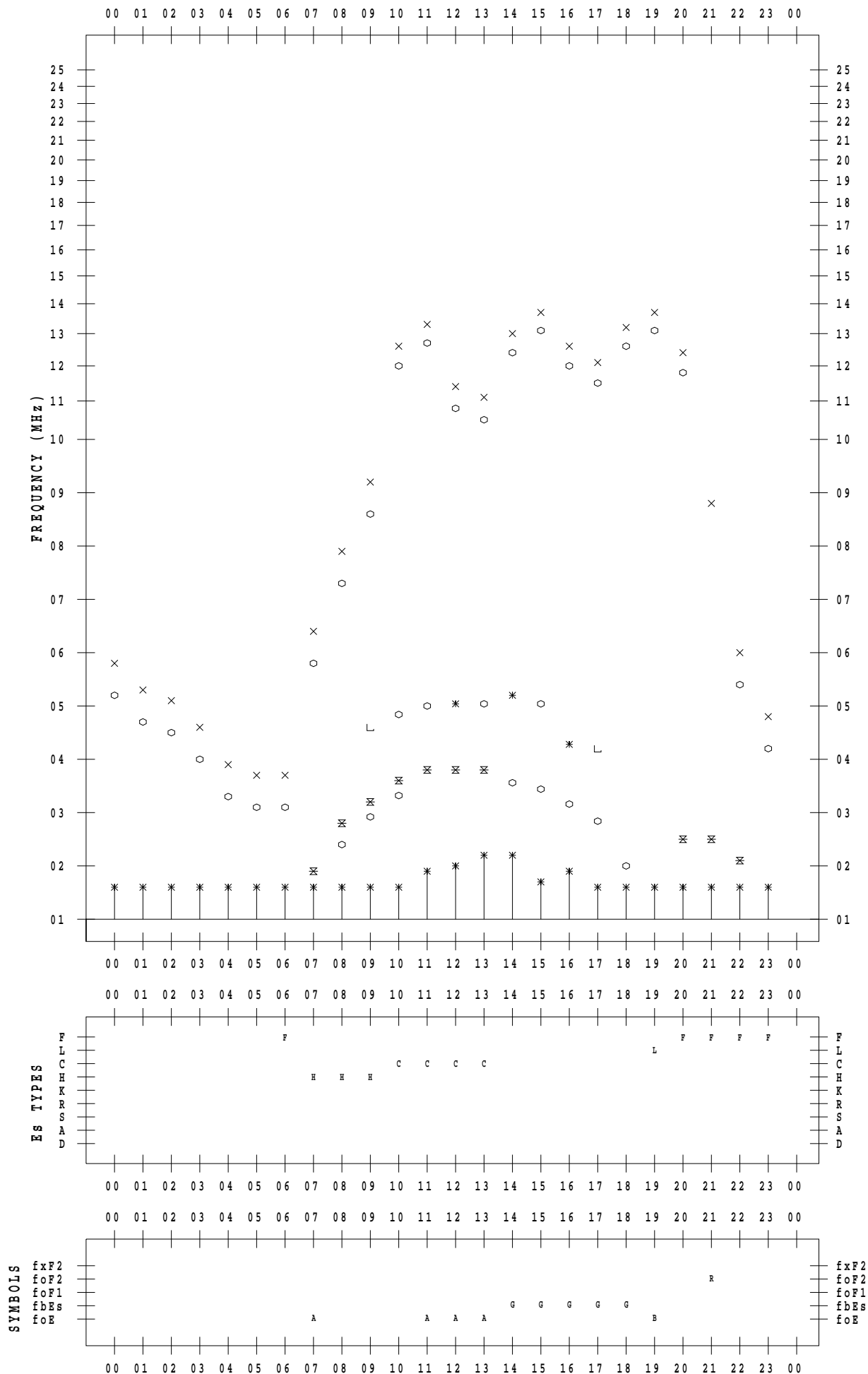
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 6

135 ° E MEAN TIME



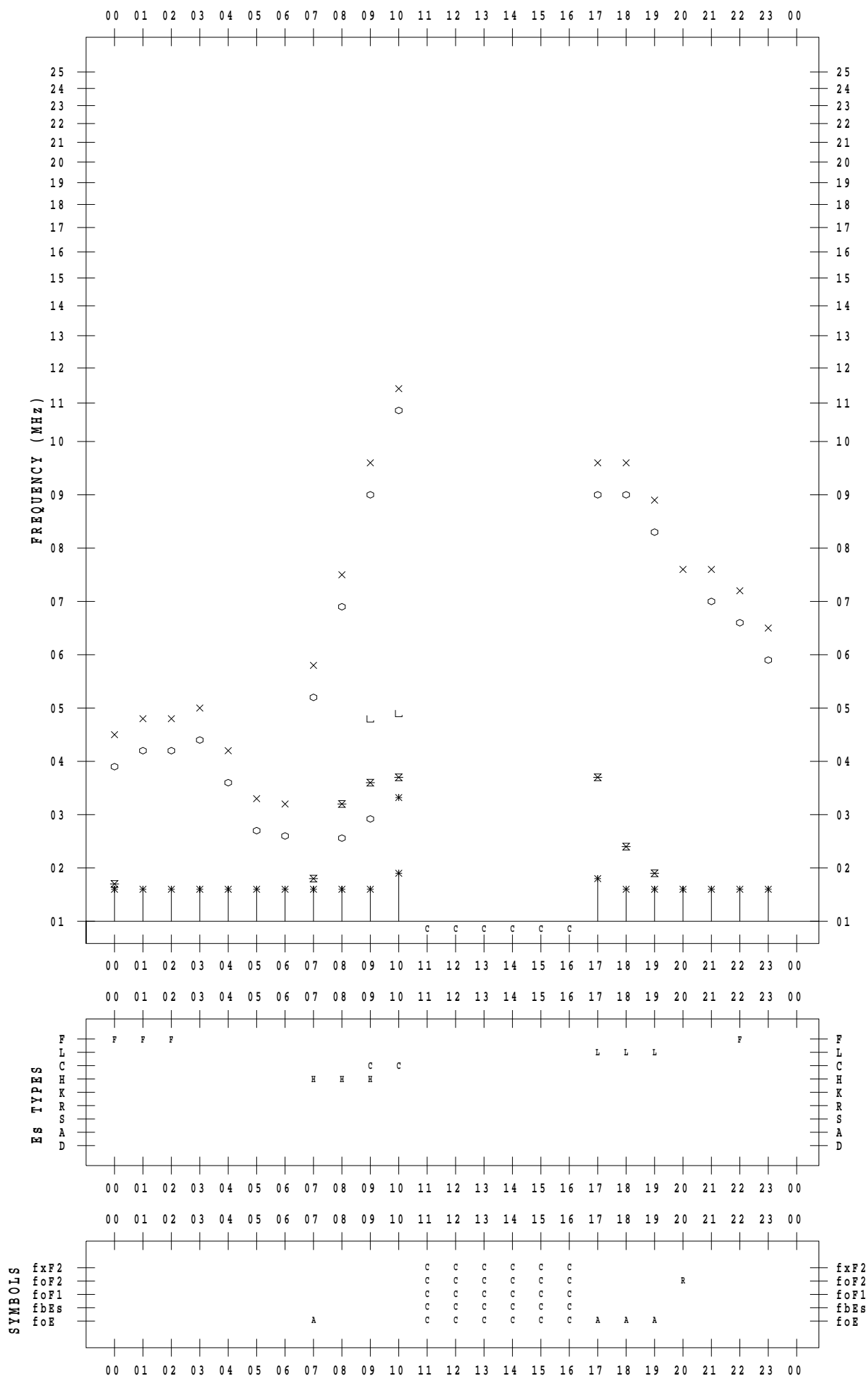
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 7

135 ° E MEAN TIME



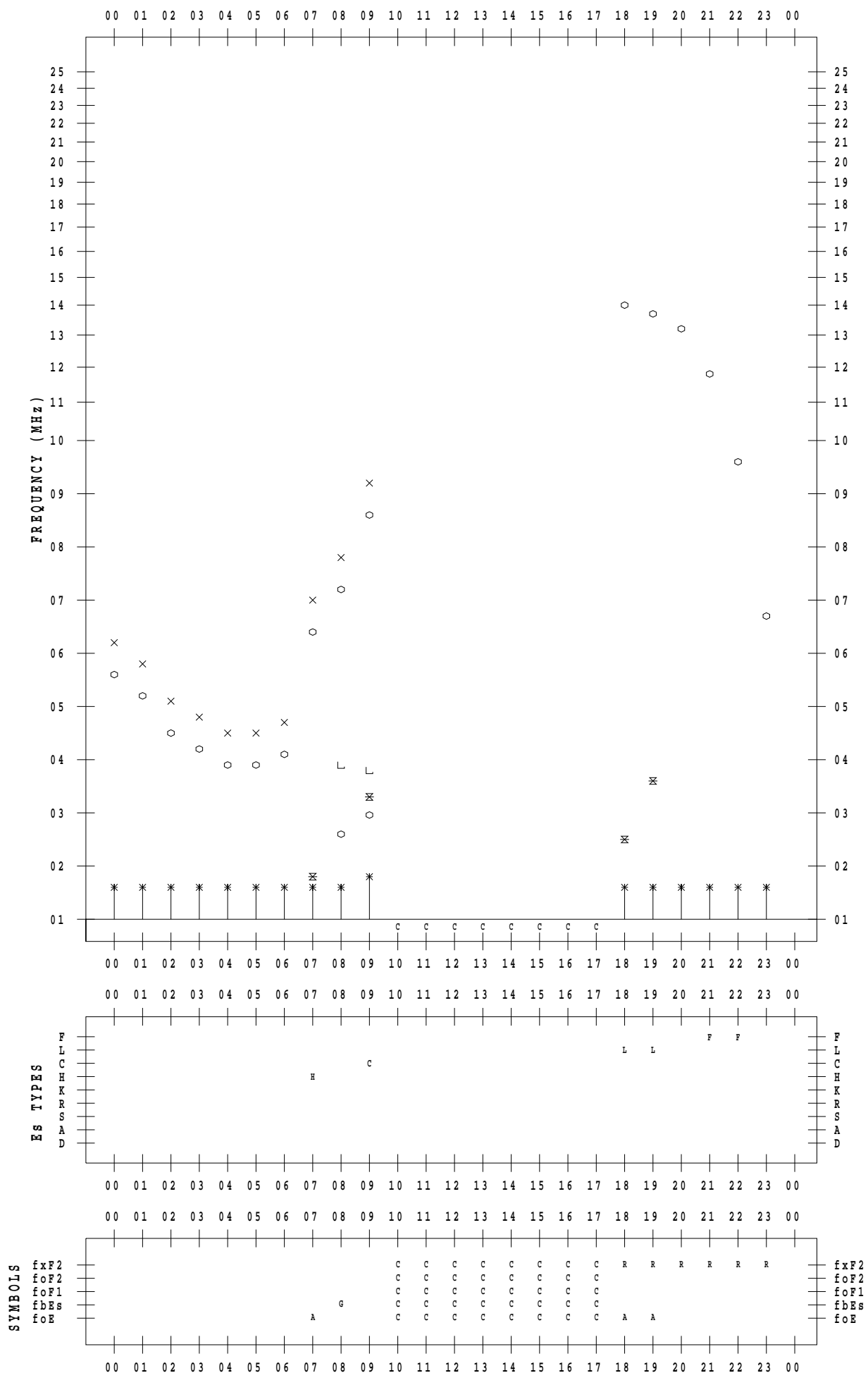
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 8

135 ° E MEAN TIME



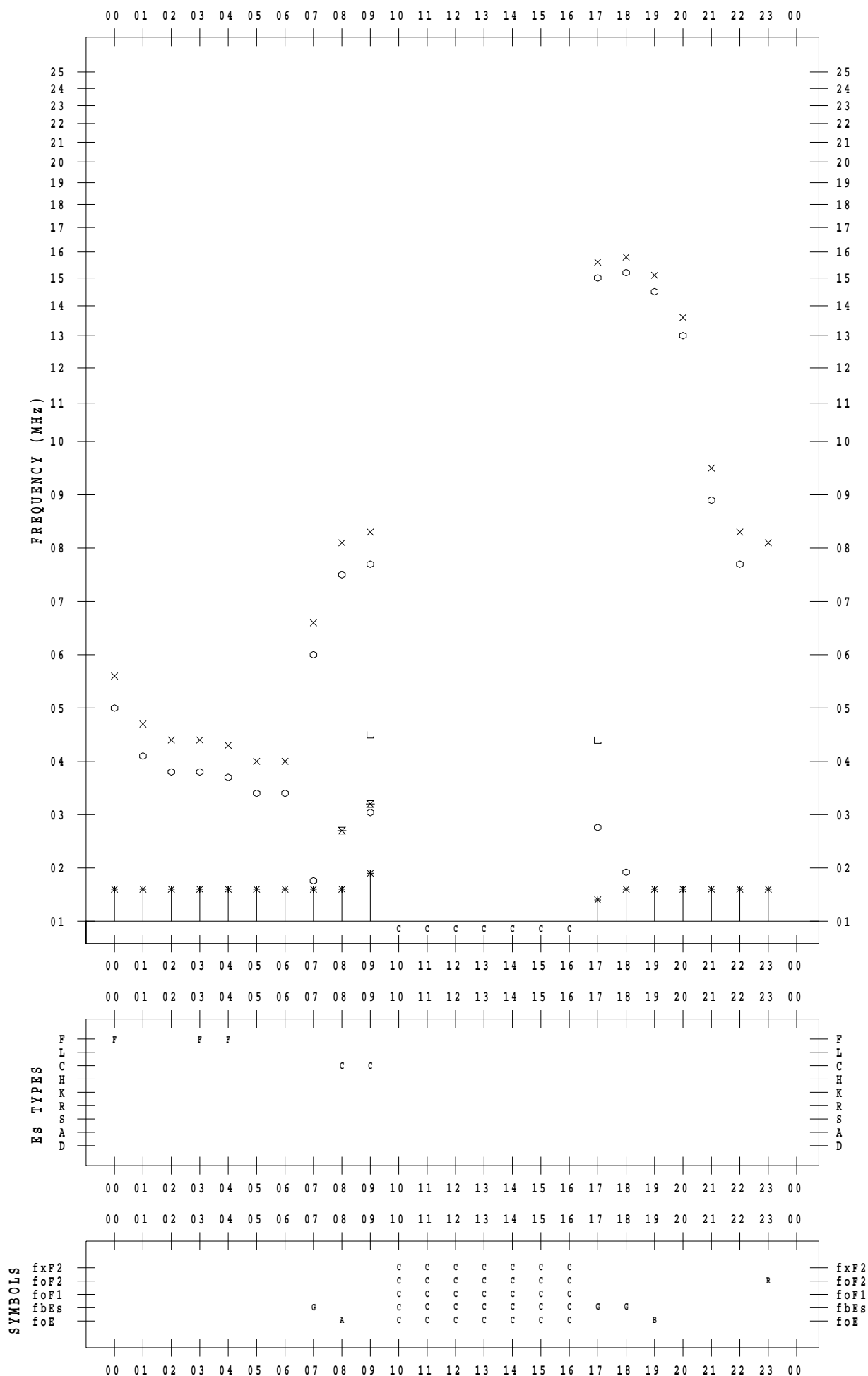
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 9

135 ° E MEAN TIME



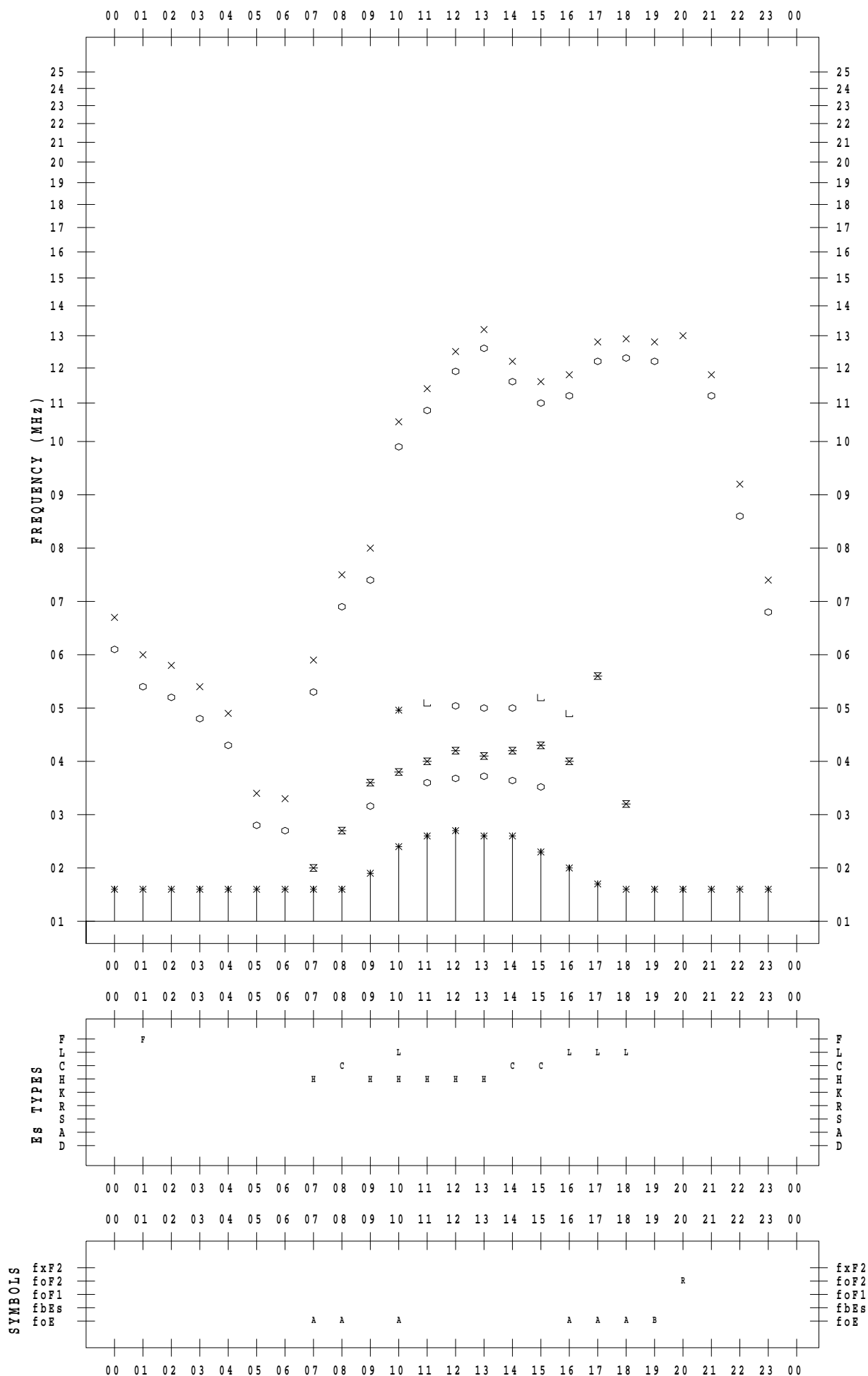
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 10

135 ° E MEAN TIME



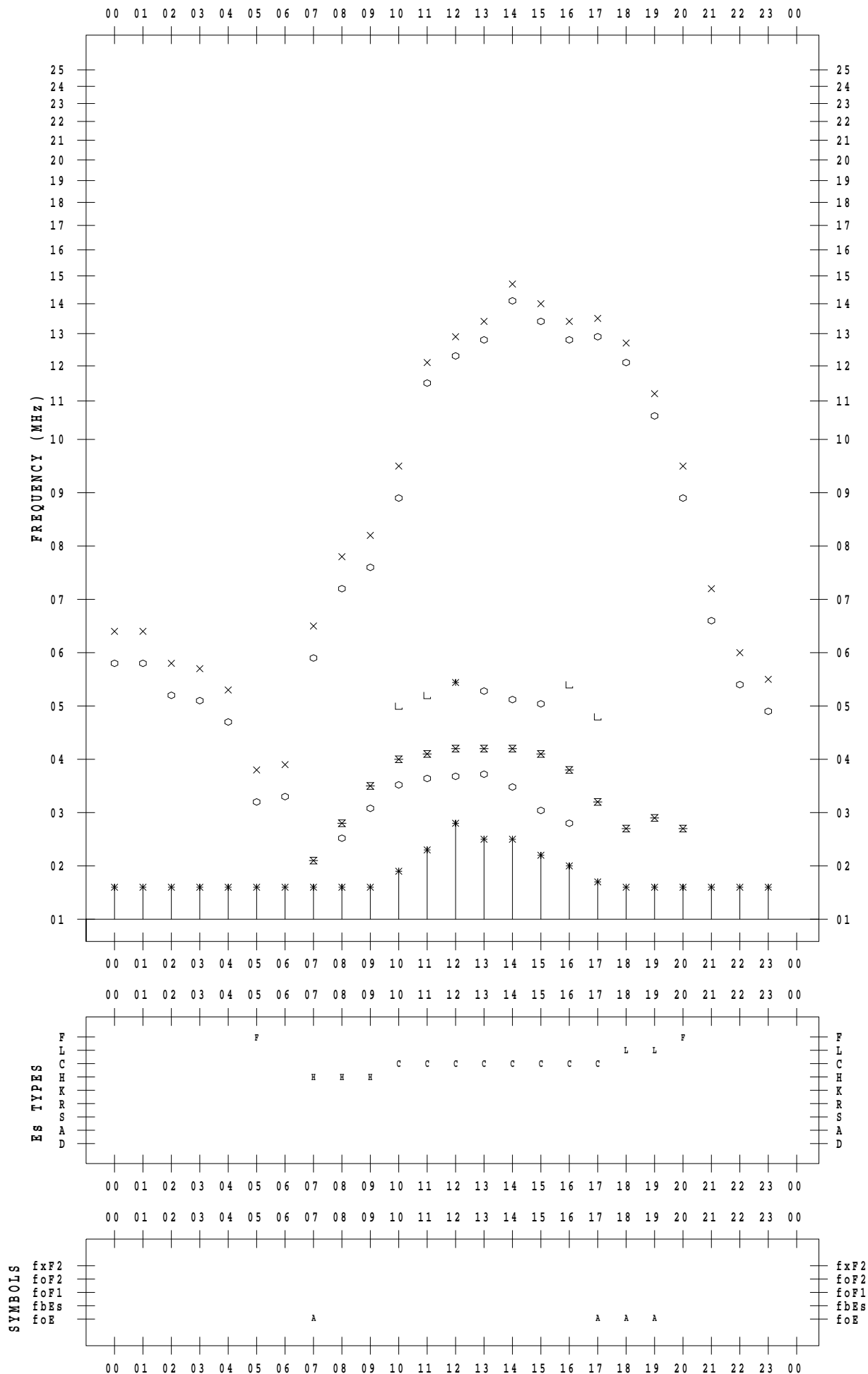
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 11

135 ° E MEAN TIME



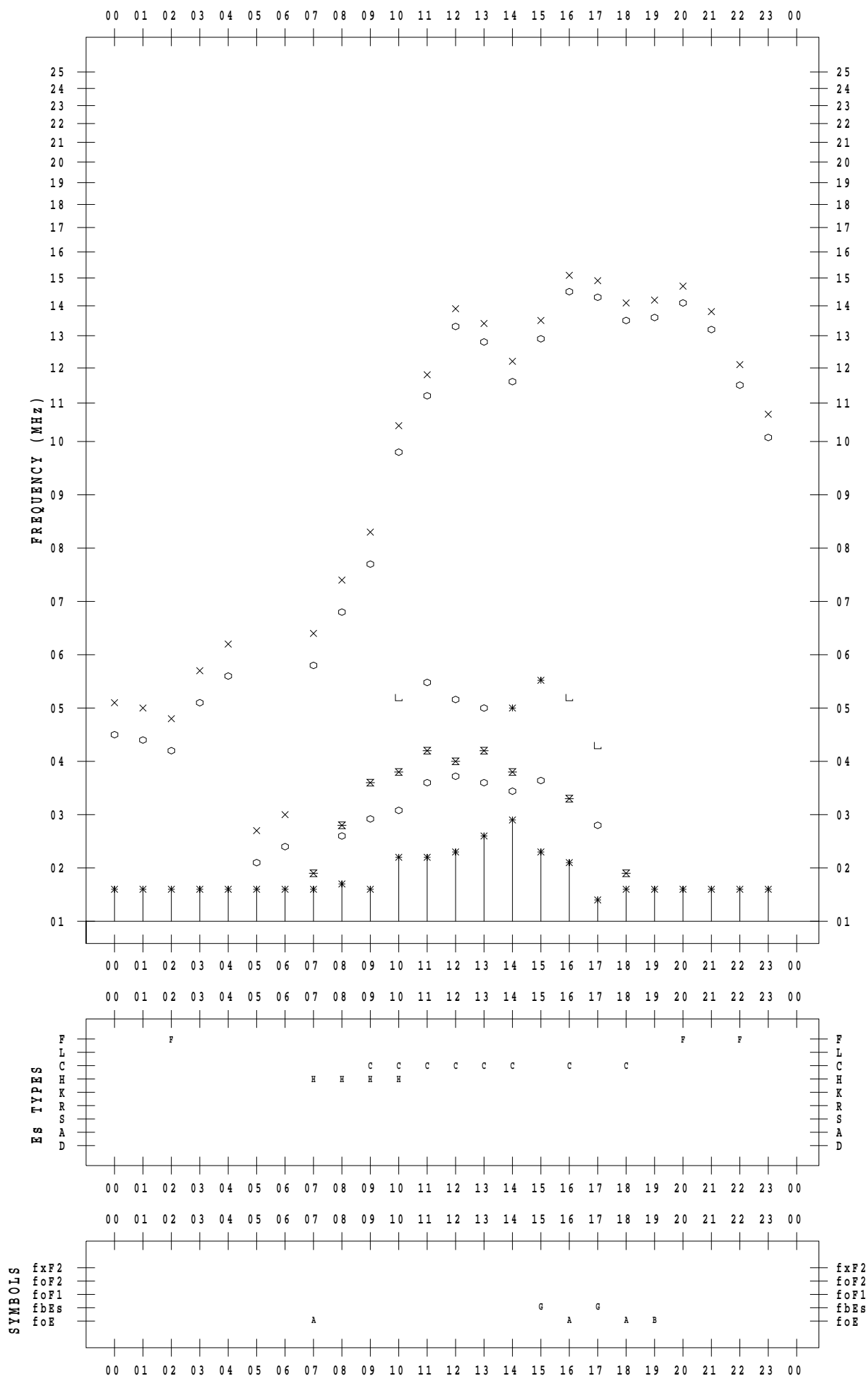
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 12

135 ° E MEAN TIME



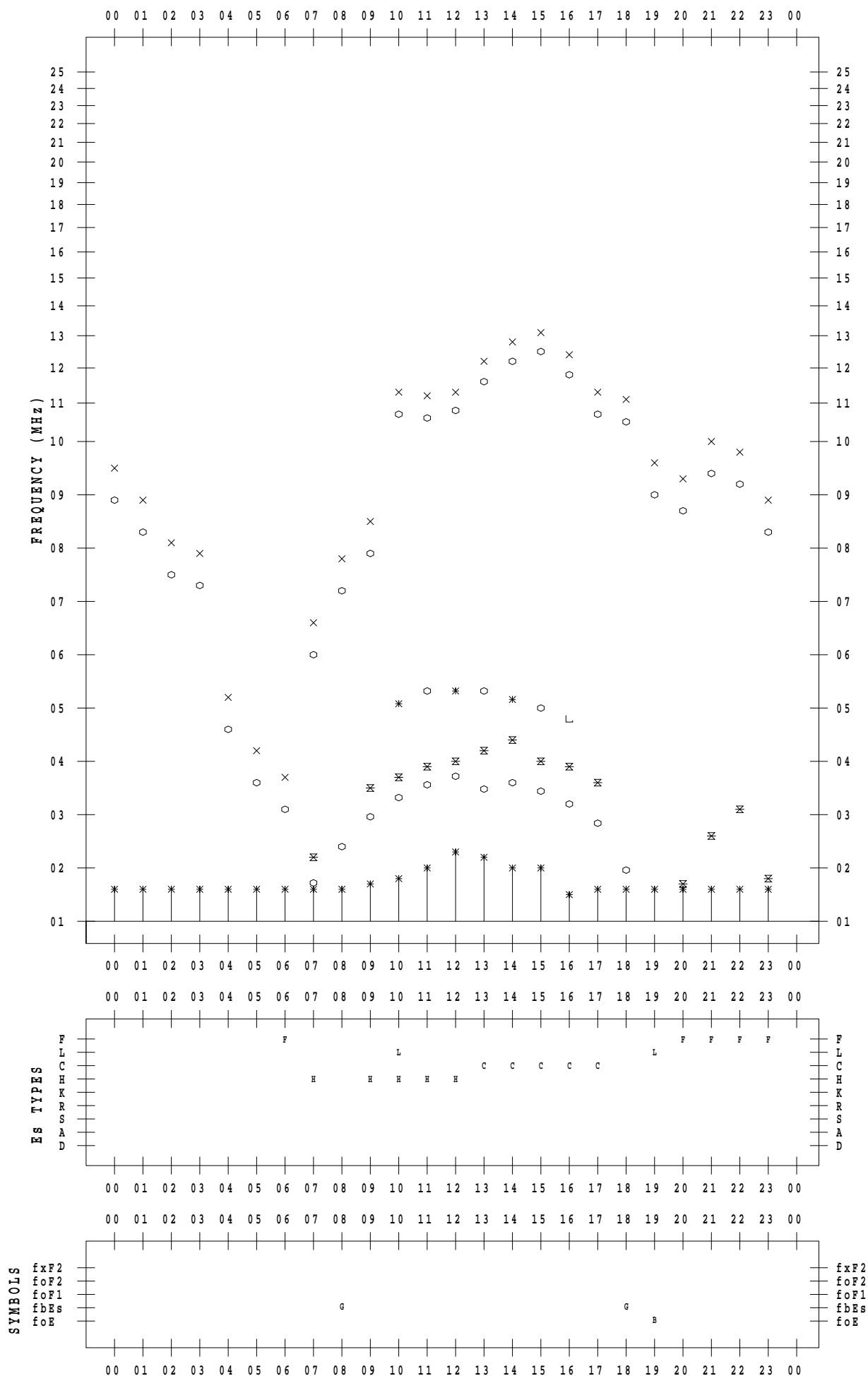
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 13

135 ° E MEAN TIME



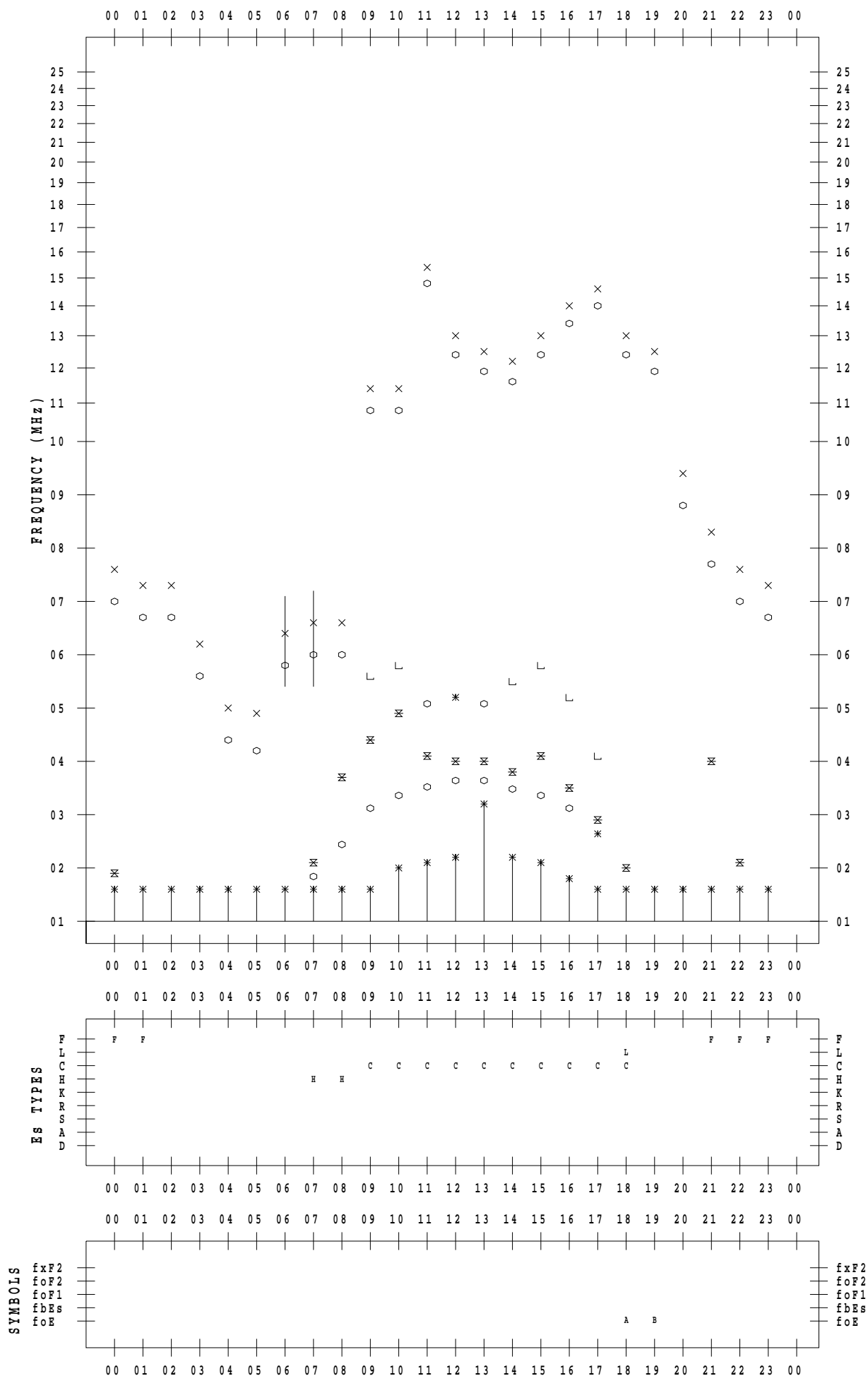
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 14

135 ° E MEAN TIME



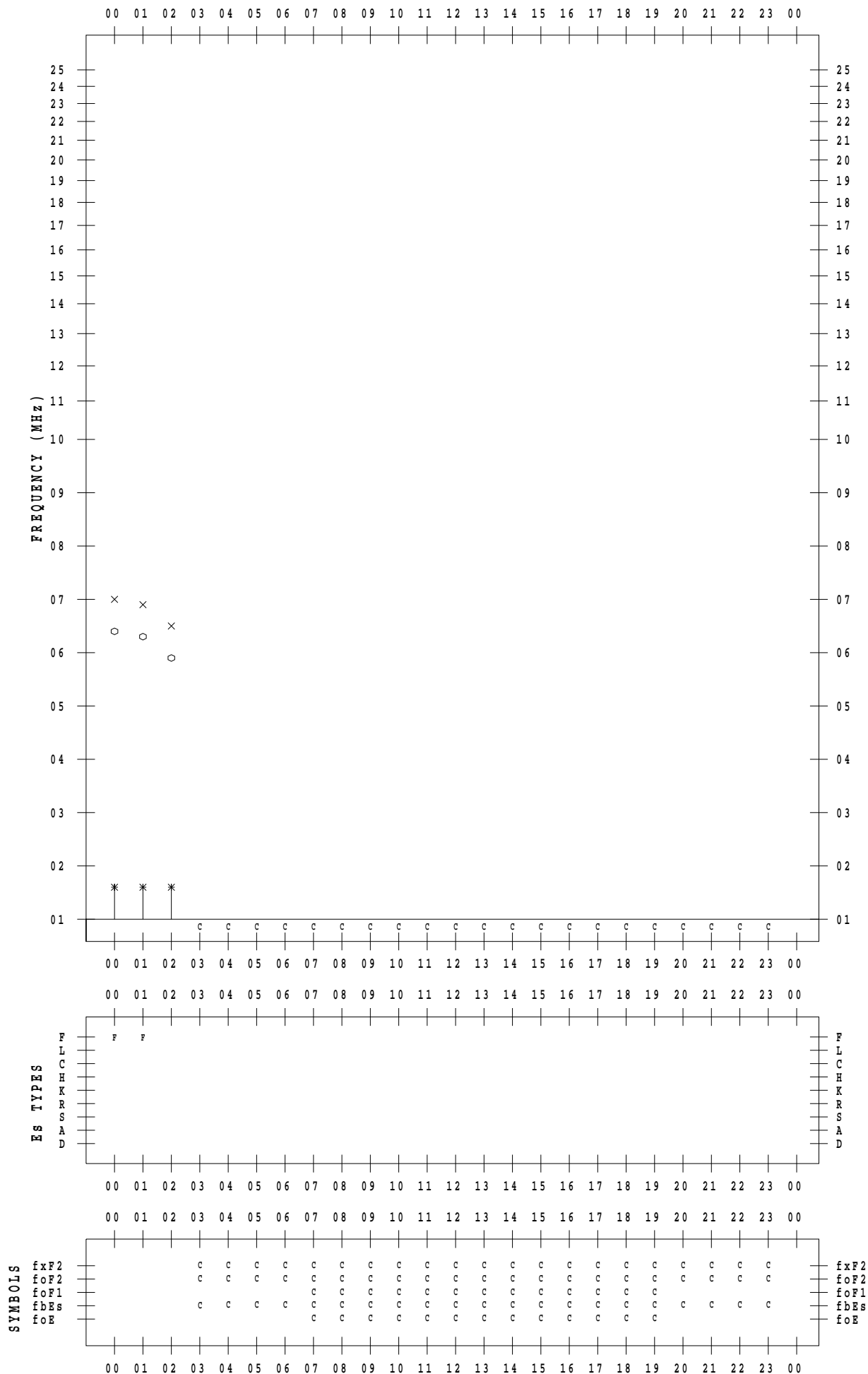
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 15

135 ° E MEAN TIME



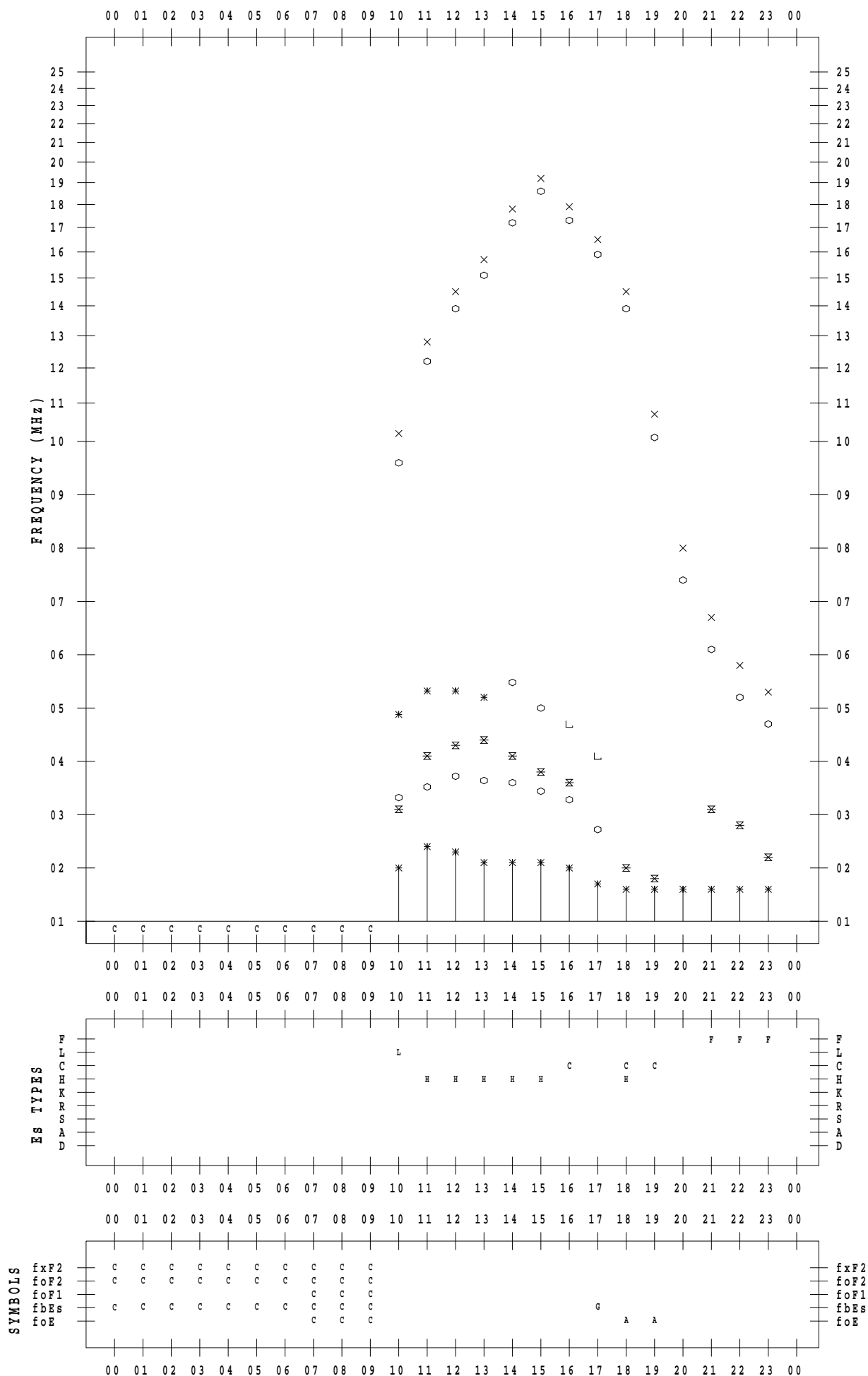
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 16

135 ° E MEAN TIME



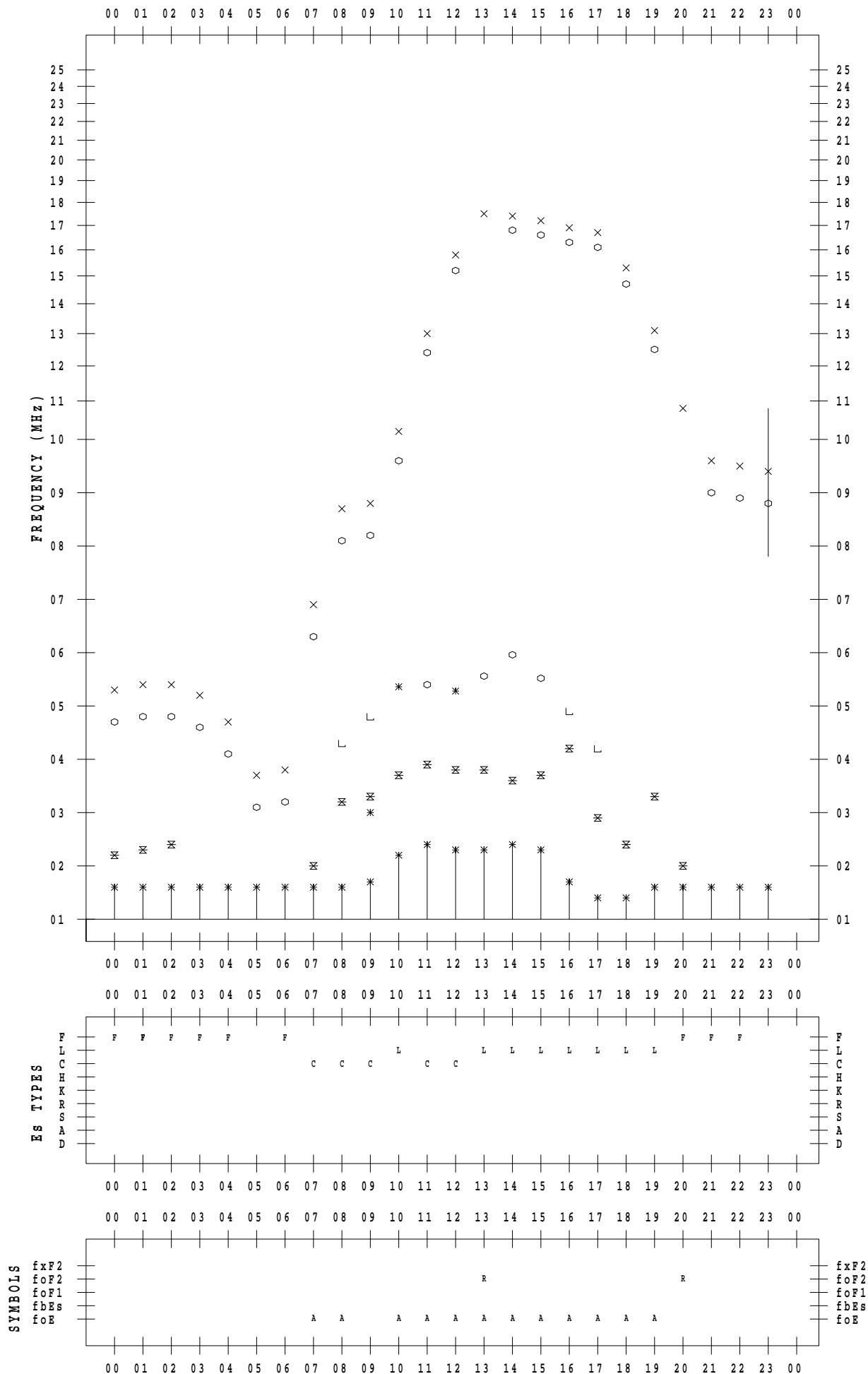
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 17

135 ° E MEAN TIME



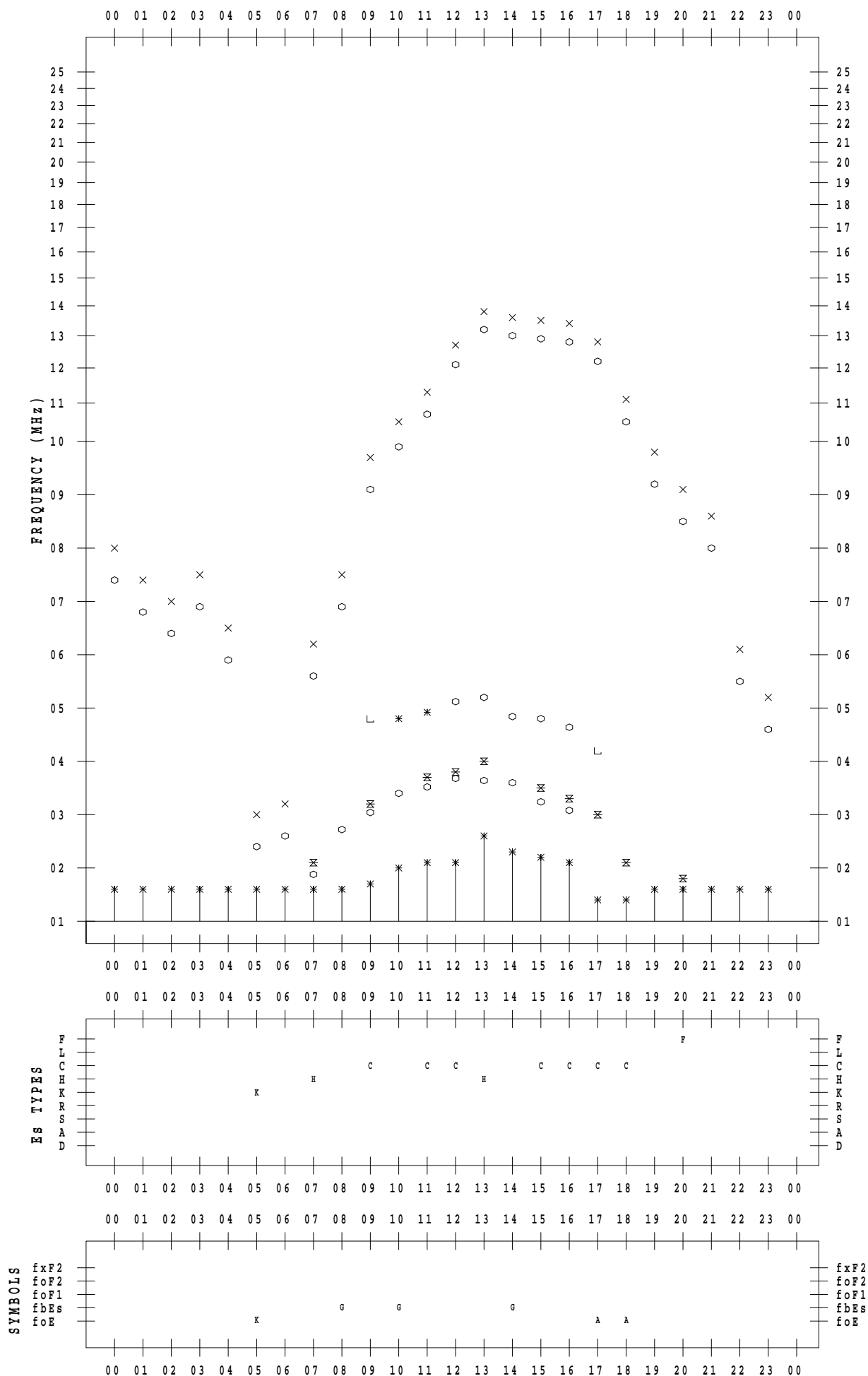
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 18

135 ° E MEAN TIME



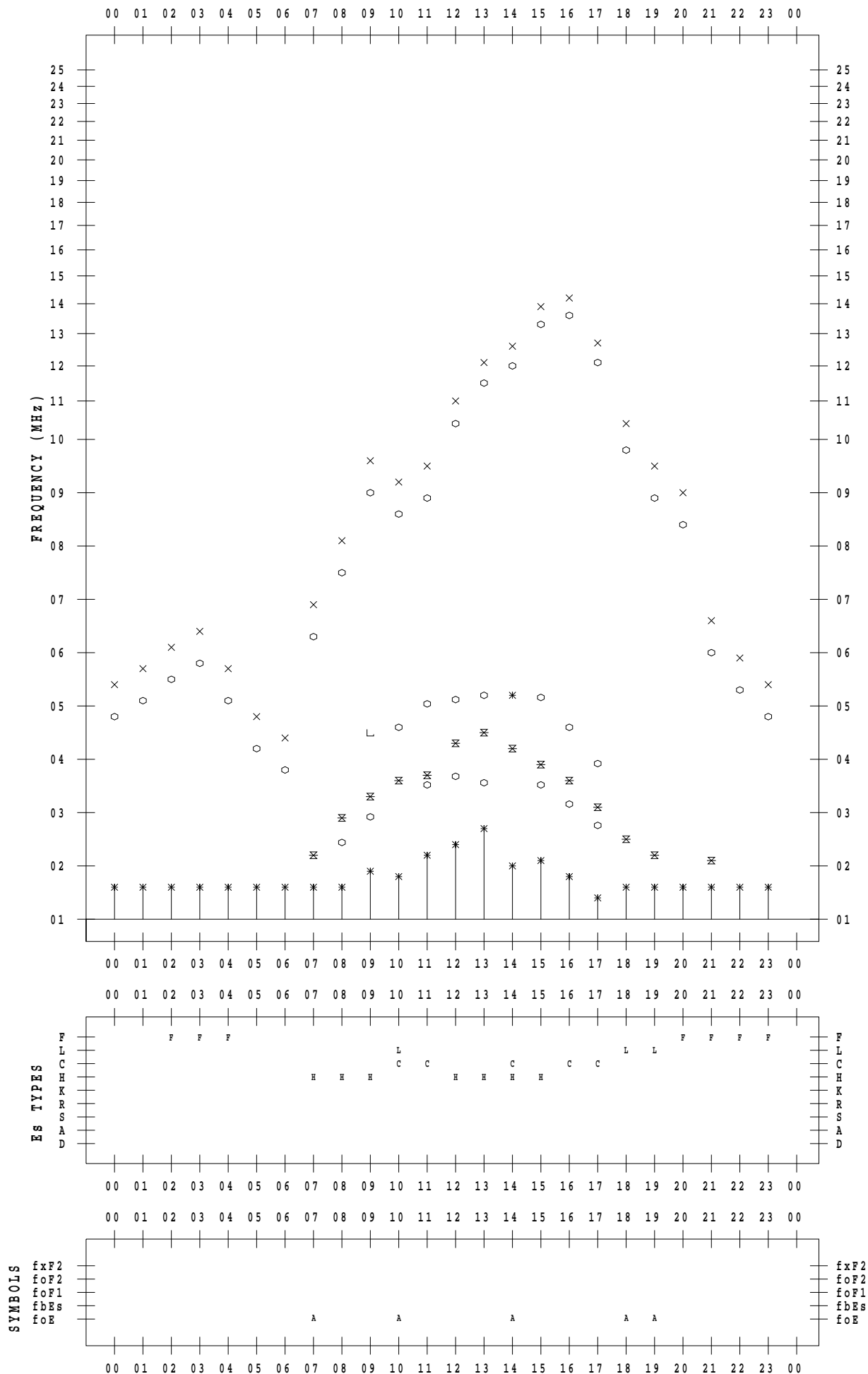
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 19

135 ° E MEAN TIME



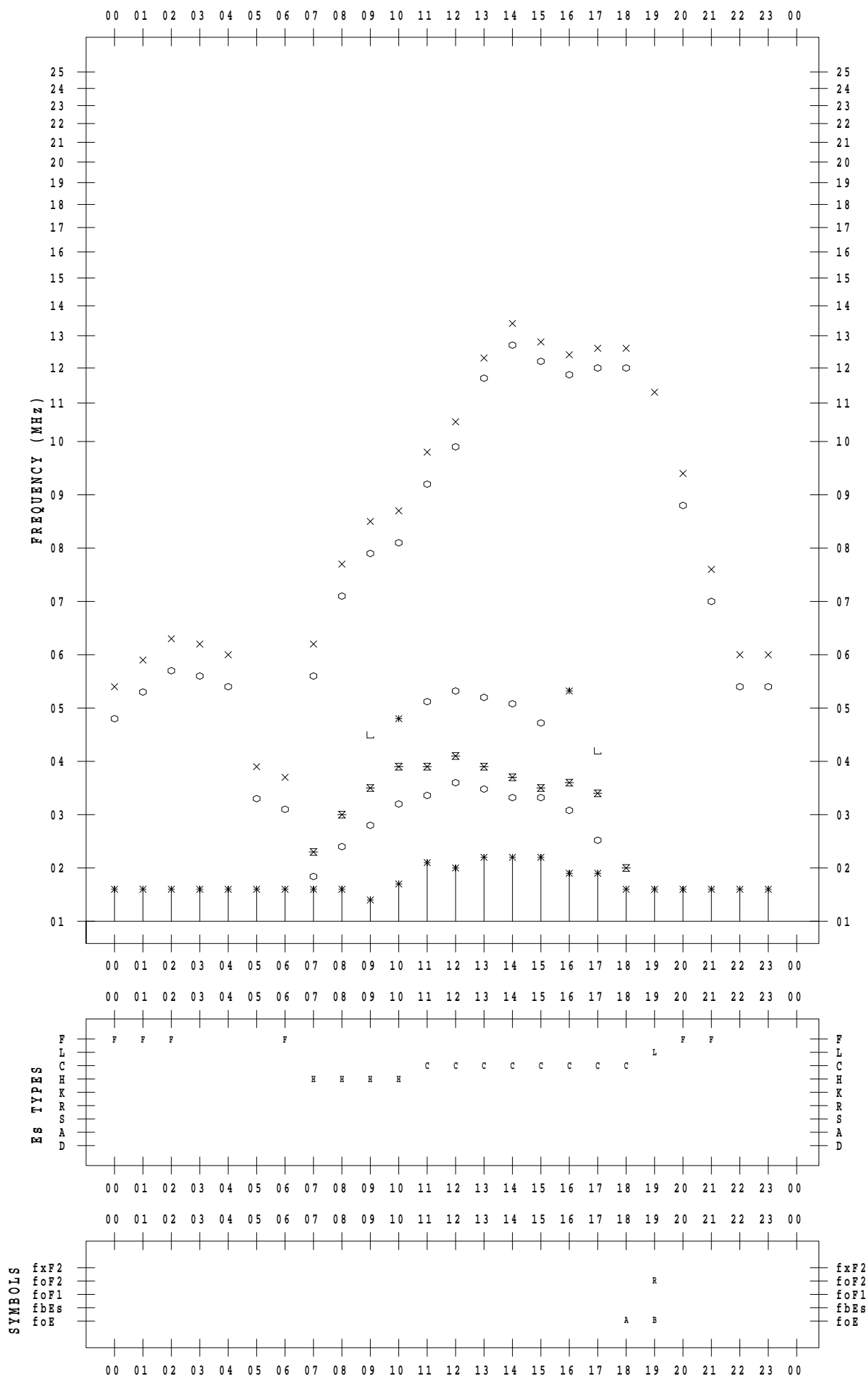
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 20

135 ° E MEAN TIME



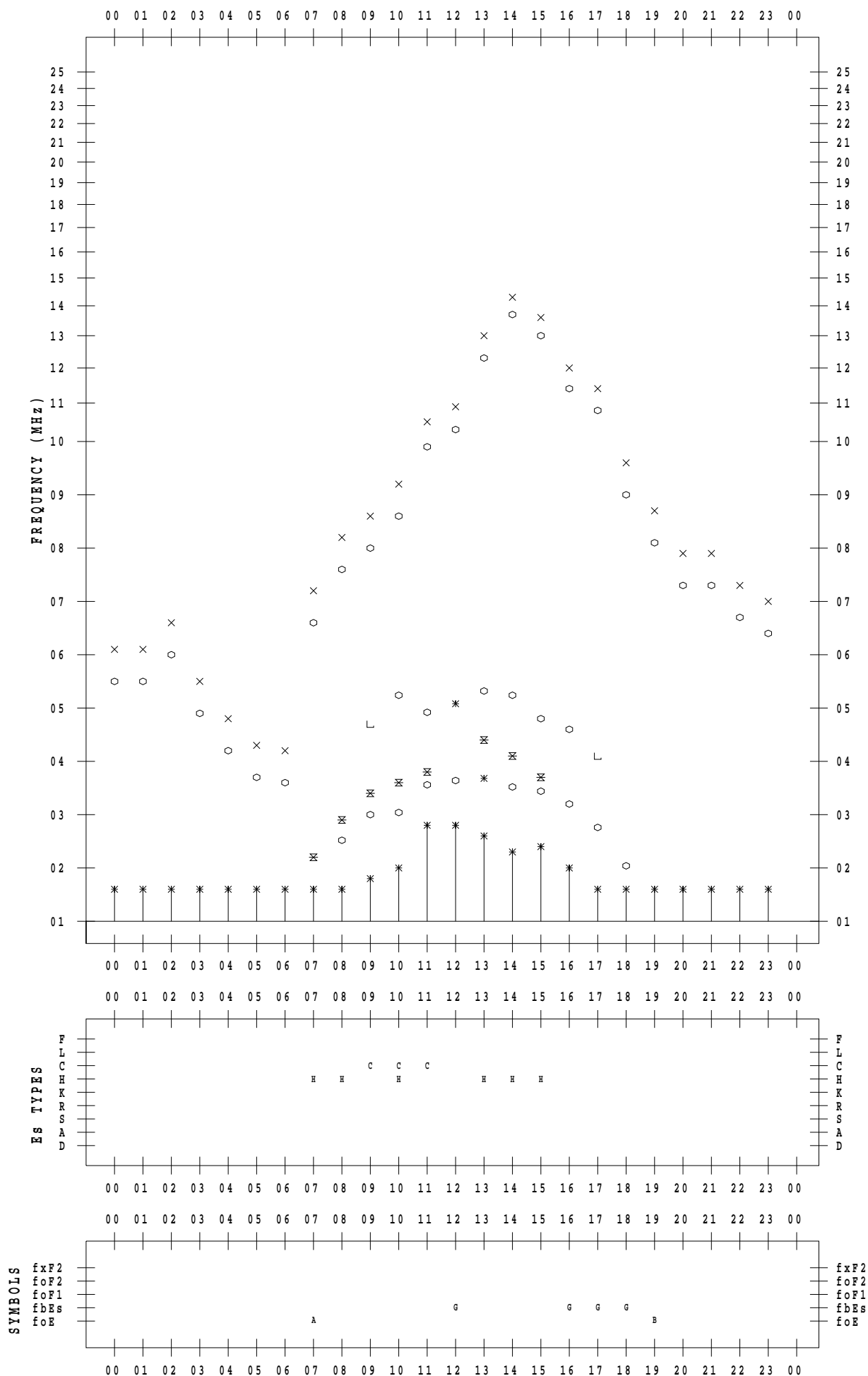
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 21

135 ° E MEAN TIME



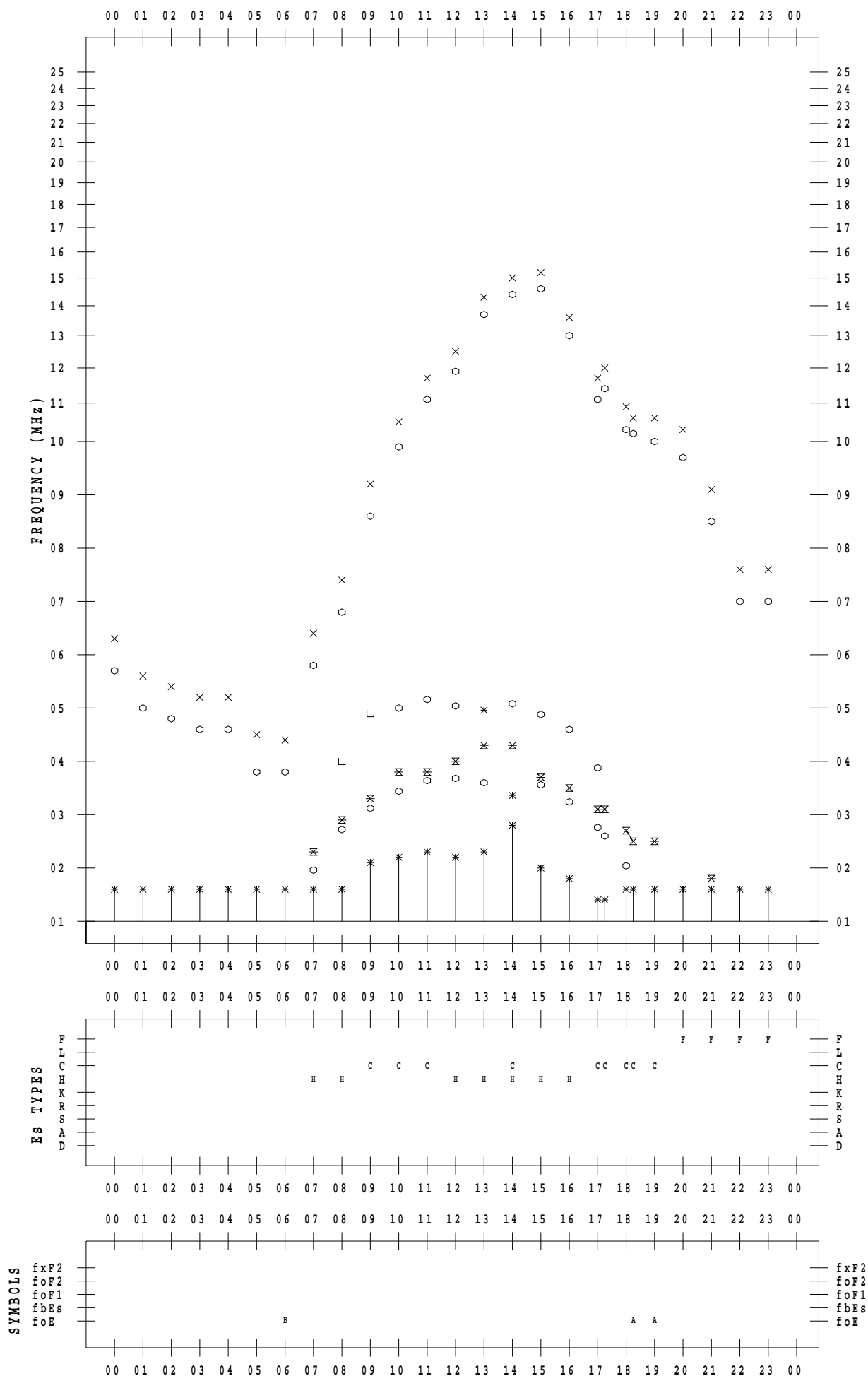
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 22

135 ° E MEAN TIME



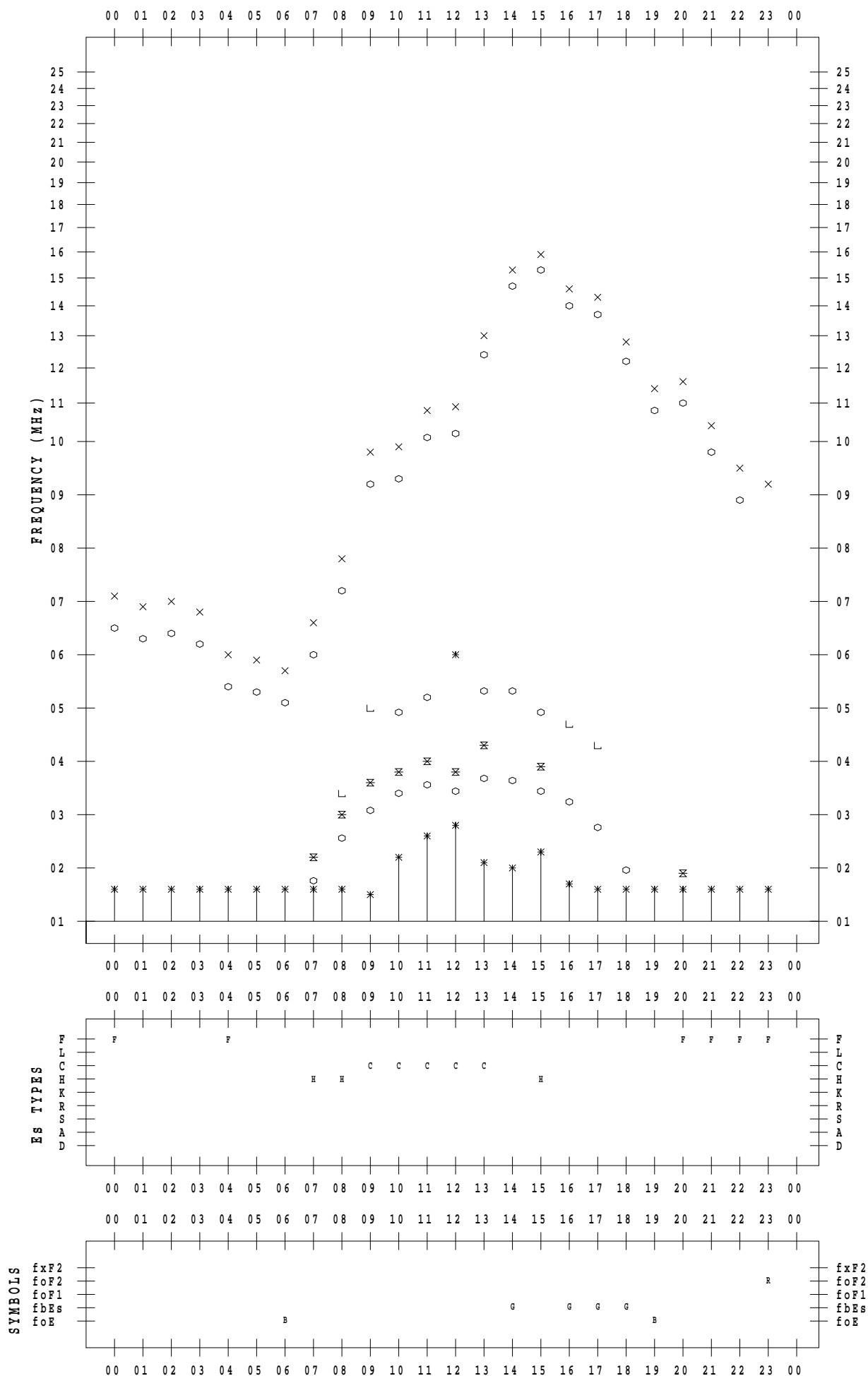
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 23

135 ° E MEAN TIME



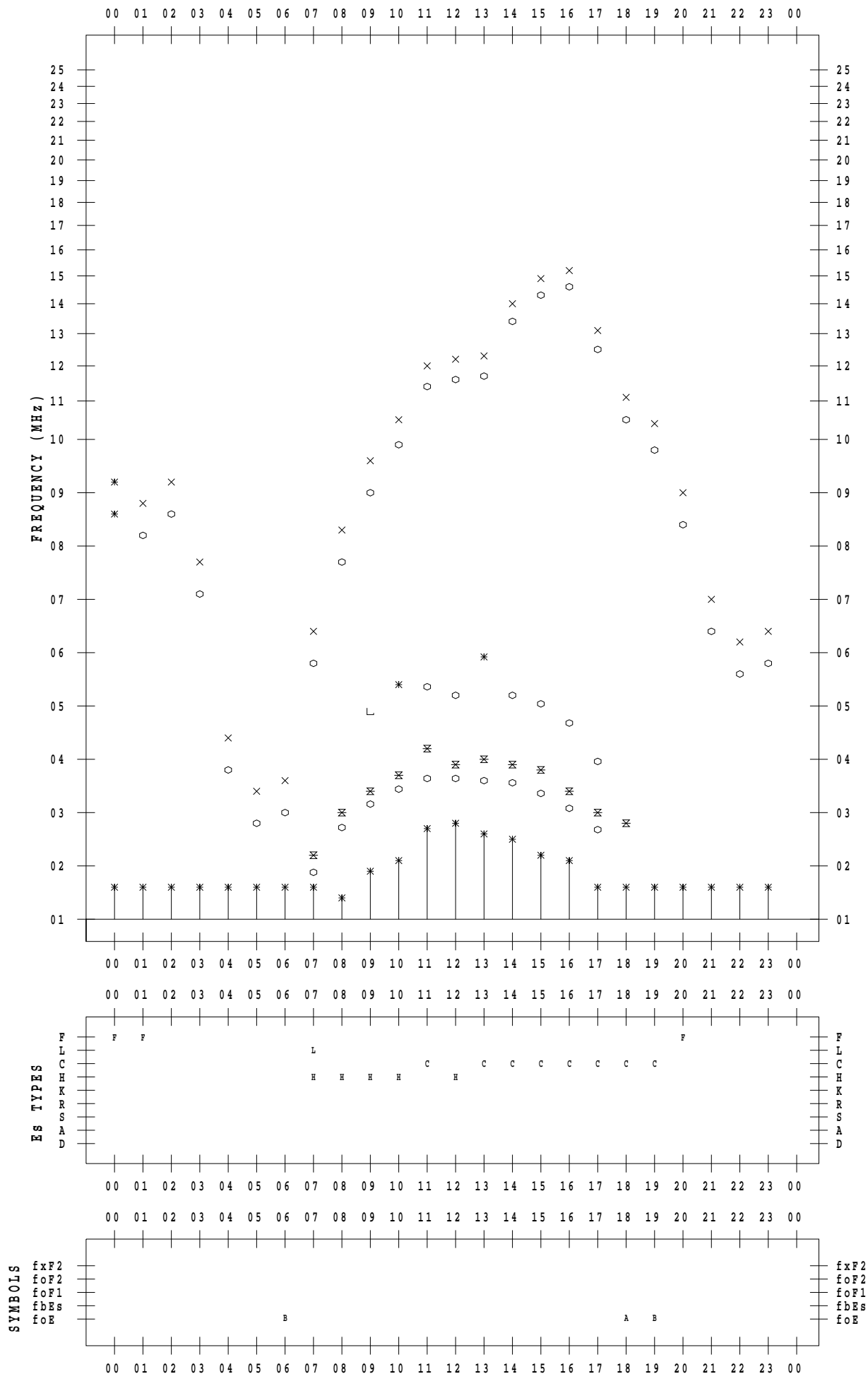
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 24

135 ° E MEAN TIME



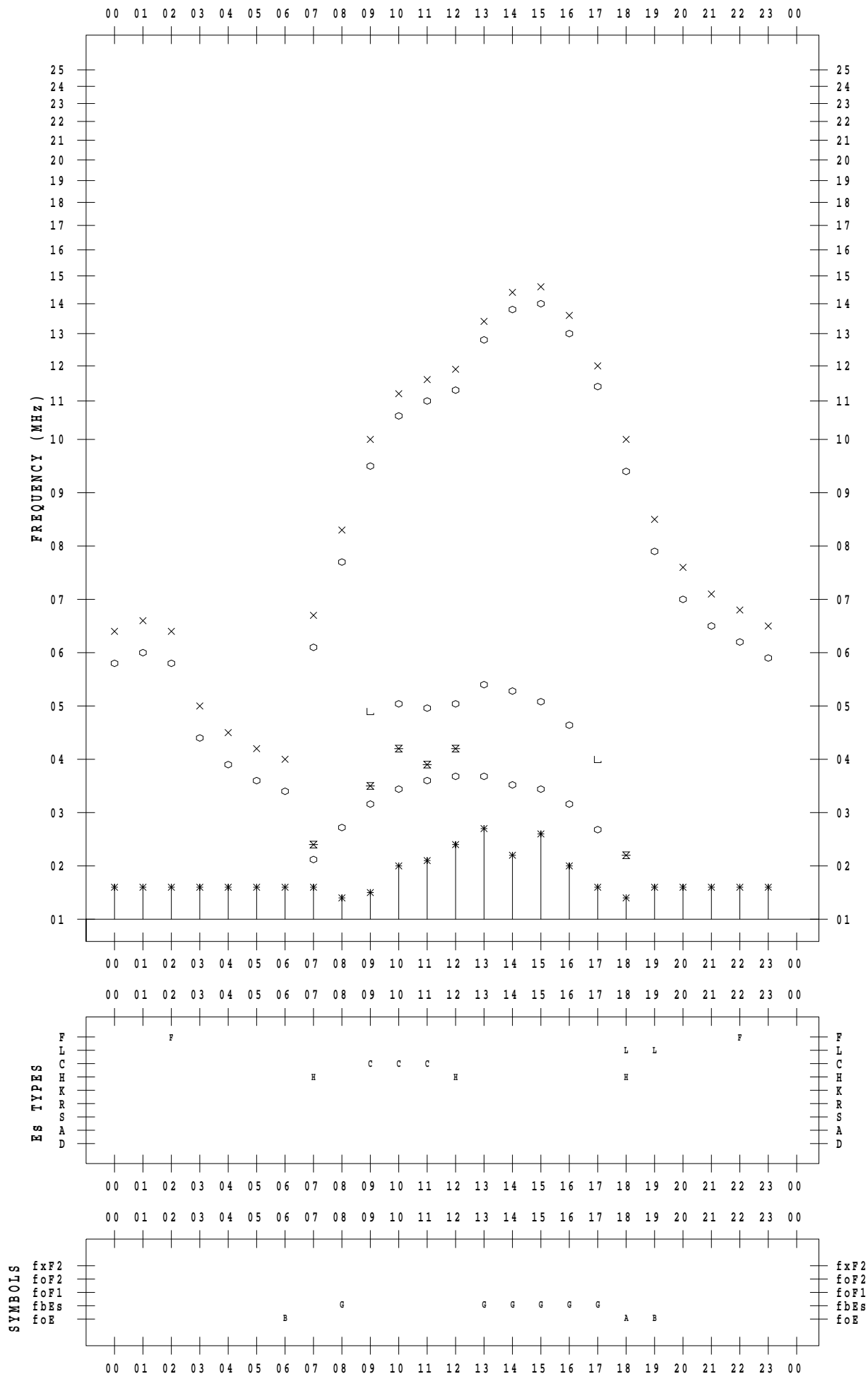
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 25

135 ° E MEAN TIME



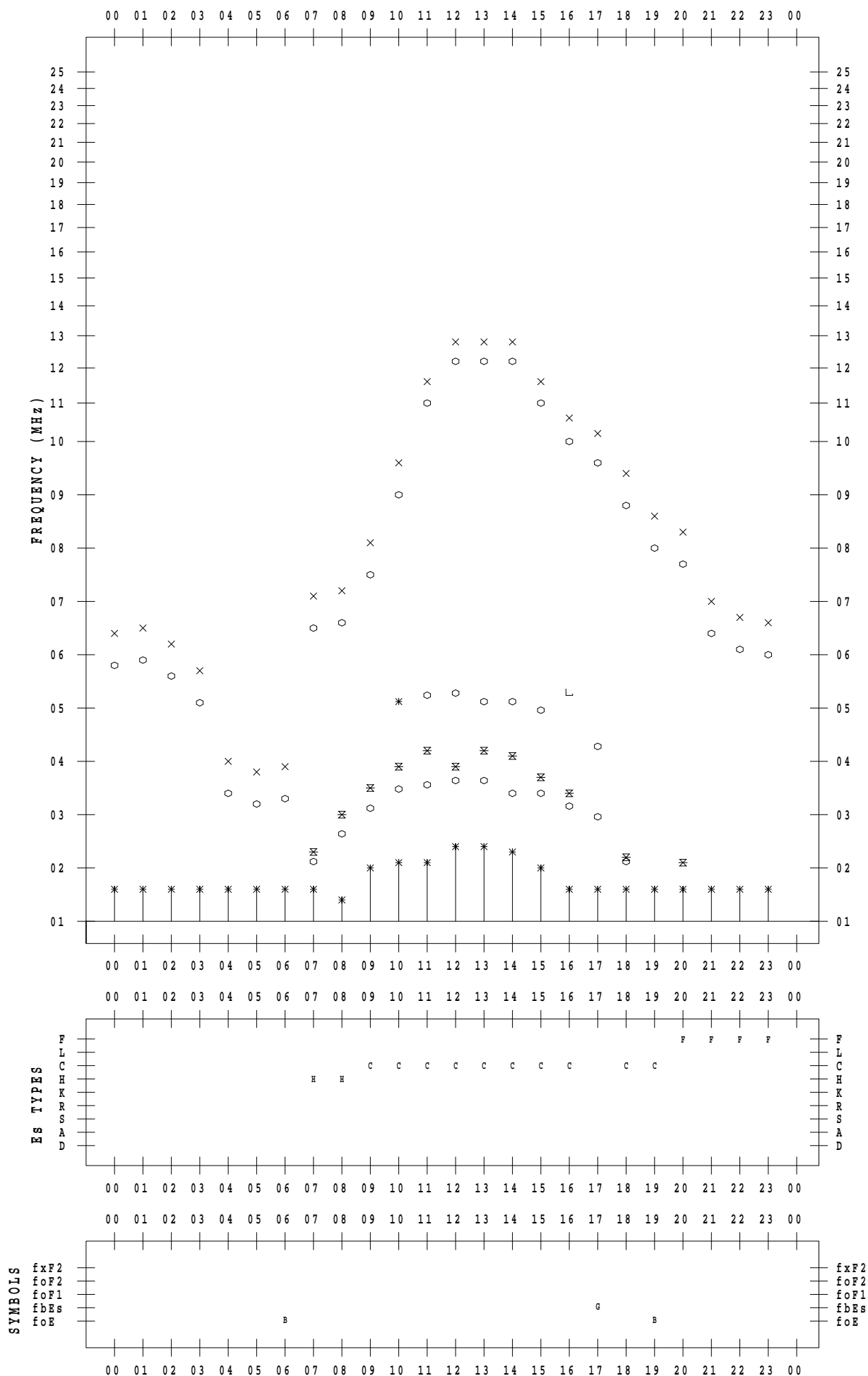
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 26

135 ° E MEAN TIME



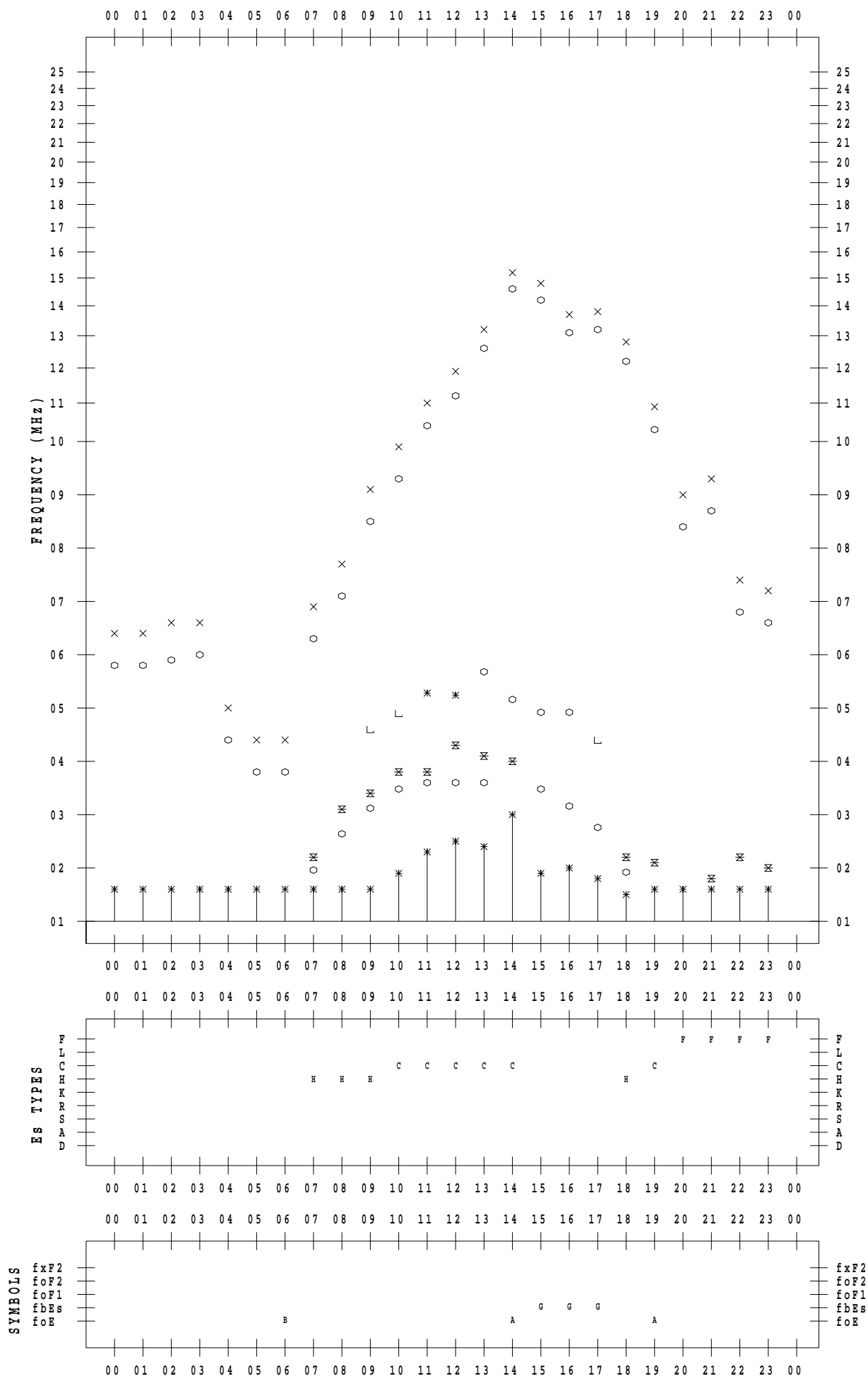
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 27

135 ° E MEAN TIME



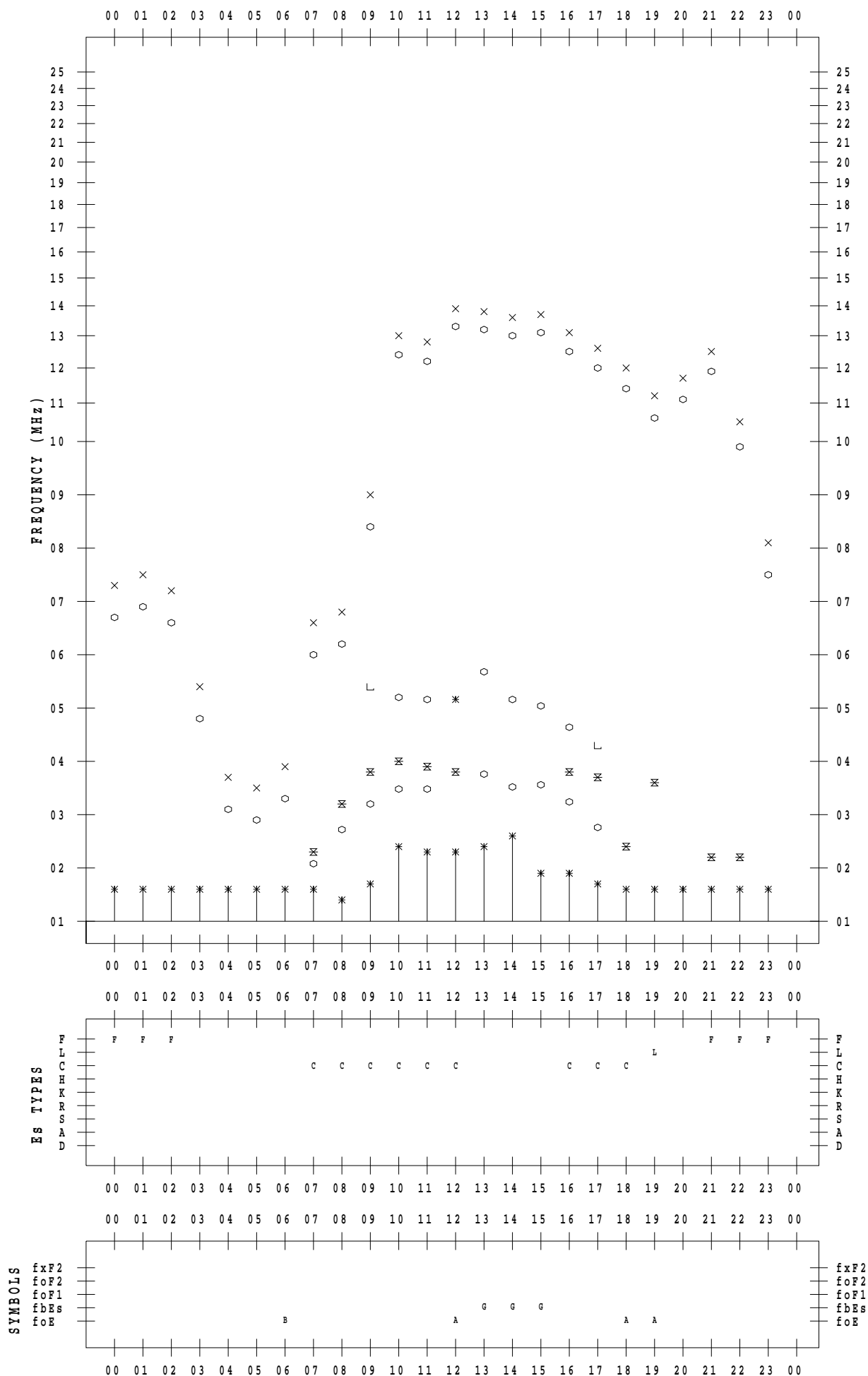
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 28

135 ° E MEAN TIME



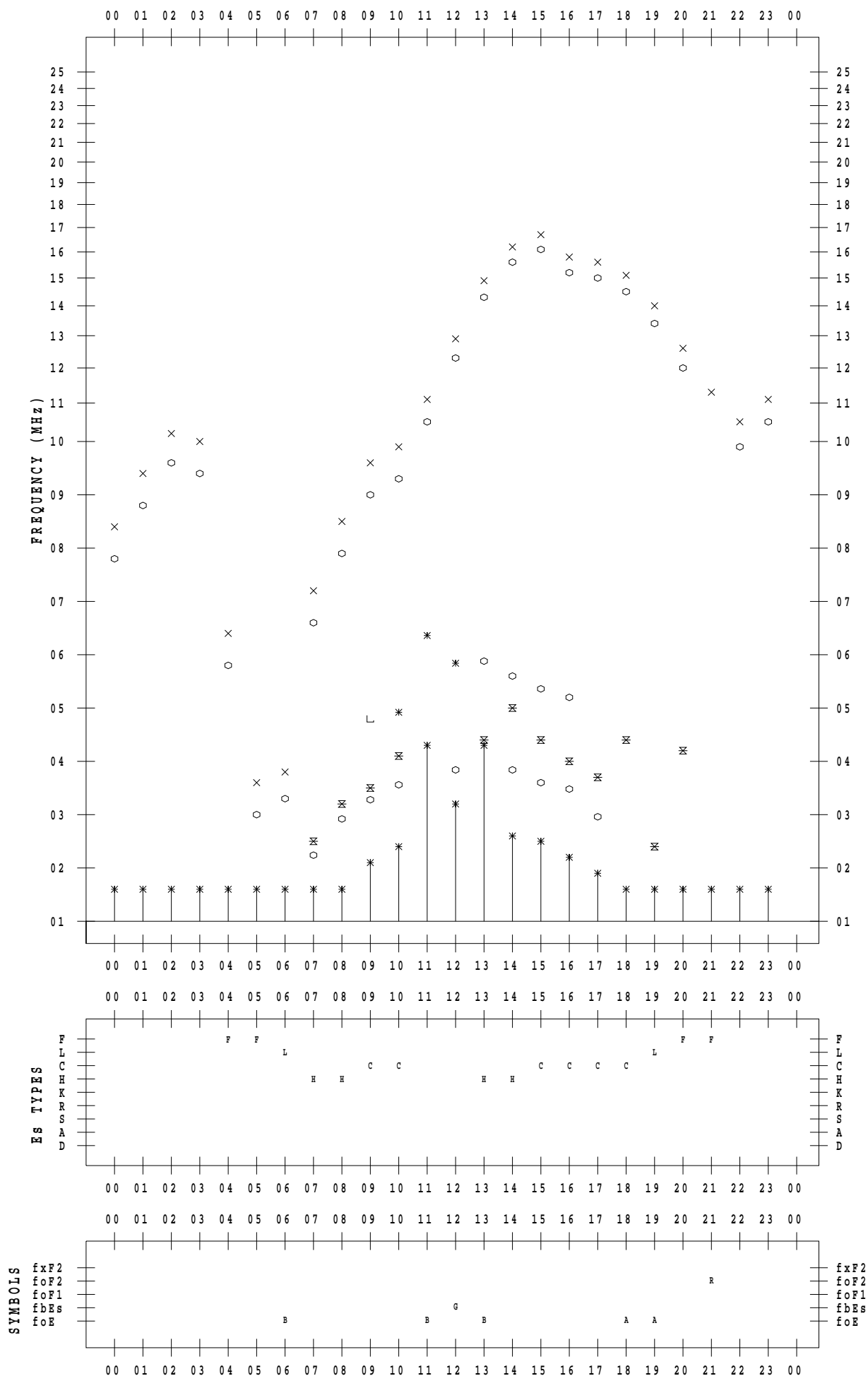
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 29

135 ° E MEAN TIME



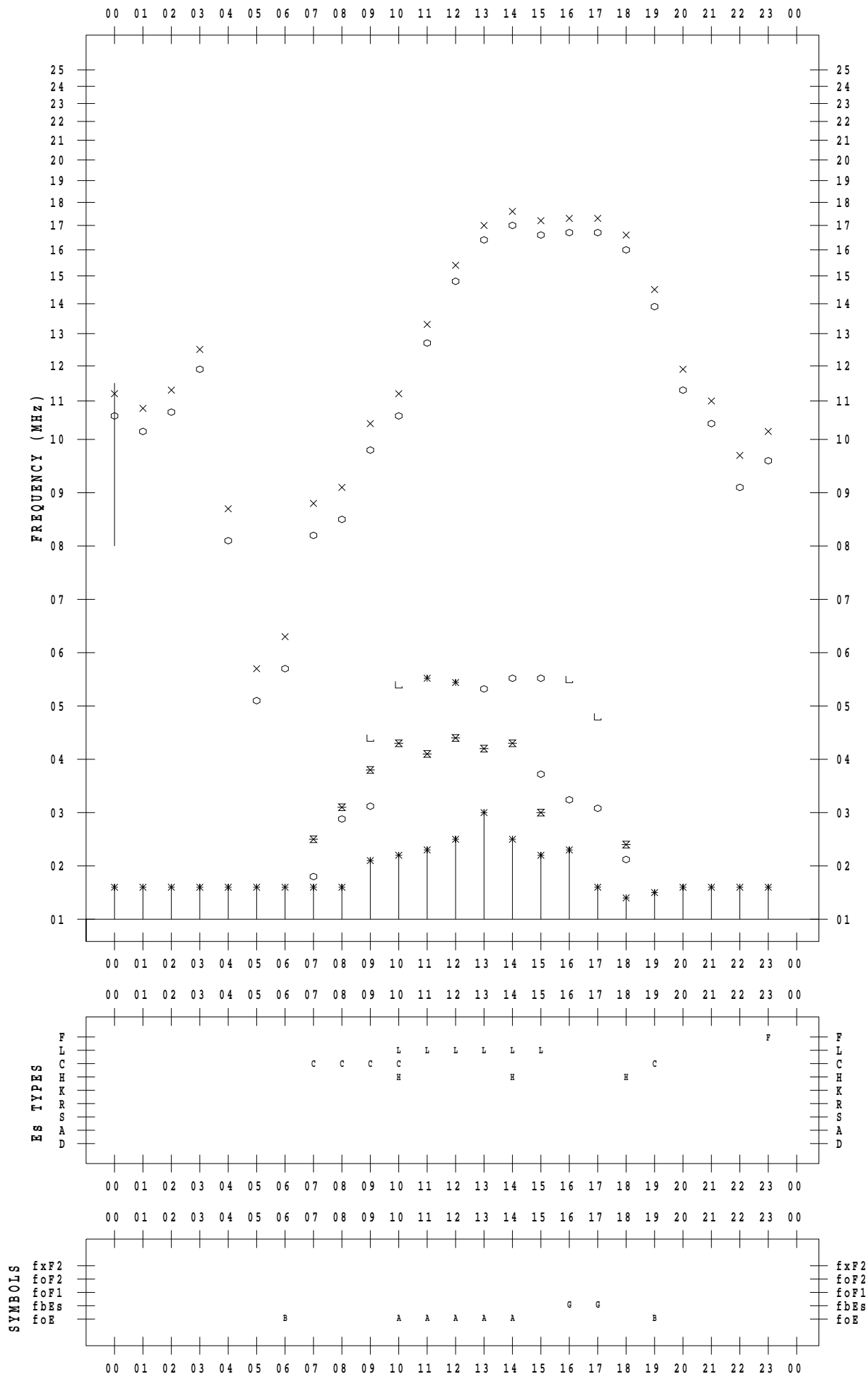
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 3 / 31

135 ° E MEAN TIME

