

IONOSPHERIC DATA IN JAPAN

FOR JANUARY 2020

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« Real Time Ionograms on the Webhttp://wdc.nict.go.jp/index_eng.html »



NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

National Institute of Information and Communications Technology, Japan.

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

f_oF2	Ordinary wave critical frequency for the F2 layer
fEs	Highest frequency of the Es layer whether it may be ordinary or extraordinary
$fmin$	Lowest frequency which shows vertical 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 f_oF2).
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of very small ionization density of the layer (for fEs).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

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

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

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

of values.

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

(ii) Qualifying Letters

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

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

extraordinary component.

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

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

HOURLY VALUES OF fof2 AT Wakkanai

JAN. 2020

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	31	34	32	31	31	32	27	25	41	52	52	43	57	50	45	50	33	30	27	A	32	29	32	34			
2	25	31	31	30	27	A	25	33	47	56	55	55	46	51	41	55	35	22	24	25	25	29	31	31			
3	30	31	31	32	31	26	N	22	32	44	50	54	51	59	53	47	41	37	A	23	23	24	26	29			
4	30	32	A	31	25	31	25	32	45	44	59	56	55	51	51	44	38	25	A	31	27	29	A	31			
5	33	33	33	31	32	33	32	39	45	45	67	60	50	61	45	53	43	A	A	31	A	34	32	31			
6	A	A	33	35	25	33	35	31	55	45	57	58	57	63	51	48	39	35	38	45	37	36	49	39			
7	48	53	51	47	47	35	35	34	45	60	47	59	58	48	47	48	35	A	A	A	A	32	32	33			
8	33	31	30	25	25	26	A	31	43	44	50	51	53	48	47	45	A	A	29	A	A	A	A	A			
9	29	31	26	A	A	A	A	32	49	49	45	47	51	50	54	49	36	35	26	31	32	31	33	A			
10	34	32	25	31	26	25	31	34	54	58	68	48	60	53	55	58	39	A	35	31	26	30	26	A			
11	31	30	31	30	31	31	30	33	41	55	50	49	52	55	57	52	37	31	25	30	30	30	A	A			
12	A	33	34	34	33	31	31	33	39	55	67	59	55	55	53	49	33	25	26	A	A	A	A	A			
13	A	25	A	25	A	A	26	35	44	A	A	53	57	55	47	47	35	24	A	A	A	A	A	A			
14	35	34	32	33	31	31	23	31	41	59	56	51	53	46	53	43	39	A	26	A	25	26	30	31			
15	29	24	25	25	N	24	23	N	23	32	43	61	48	53	50	45	51	53	35	32	28	33	34	26	31	32	
16	32	32	31	34	33	36	33	36	52	64	51	62	65	49	48	51	46	32	A	A	A	30	27	31			
17	31	A	30	23	A	A	A	34	45	48	53	49	53	51	52	45	39	25	25	25	30	25	29	31			
18	29	25	A	A	24	31	24	34	44	54	49	52	48	47	50	N	47	40	32	31	30	31	26	31	31		
19	28	30	32	32	34	23	24	34	43	50	59	50	47	52	50	45	45	32	31	33	31	25	25	29			
20	29	31	24	26	25	23	N	23	33	42	43	47	43	51	49	43	50	41	32	N	23	29	27	31	31	30	
21	30	25	30	30	25	25	A	34	44	45	43	53	48	47	48	57	48	30	26	N	N	24	25	27	27	30	
22	31	31	30	25	31	32	23	33	43	41	55	55	59	59	A	56	48	32	37	37	37	38	41	39			
23	38	37	A	36	36	33	35	40	51	54	68	67	56	62	48	49	40	32	A	27	25	26	31	33			
24	31	30	30	31	30	25	30	32	45	49	46	A	A	64	46	55	57	N	24	25	27	30	31	29	30		
25	31	31	31	31	25	24	24	32	46	43	43	56	60	57	48	57	39	31	31	30	N	23	25	32	31		
26	25	30	26	31	31	32	29	37	47	45	43	50	57	53	53	56	47	34	A	31	A	A	A	31			
27	31	32	32	32	31	30	24	33	N	43	44	57	47	49	47	55	50	47	31	N	23	27	31	29	31	30	
28	A	30	29	25	31	25	N	23	36	46	43	46	44	53	52	43	50	56	34	N	24	32	N	24	26	30	25
29	32	31	31	31	31	26	30	36	43	41	47	49	57	49	50	61	45	38	25	32	37	36	39	34			
30	38	35	35	33	33	26	N	25	33	48	49	48	52	57	55	58	55	46	52	A	34	25	23	31	32		
31	33	33	35	36	37	33	32	53	43	47	69	62	50	59	63	58	51	38	39	43	40	39	43	39			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	27	29	27	29	28	27	27	31	31	30	30	30	30	31	29	31	31	25	23	24	24	27	25	25			
MED	31	31	31	31	31	31	26	33	44	49	52	52	54	52	50	50	40	32	26	31	30	29	31	31			
U Q	33	33	32	33	32	32	31	35	47	55	57	56	57	55	53	55	46	34	31	32	32	31	32	33			
L Q	29	30	30	28	25	25	24	32	43	44	47	49	50	49	47	47	37	27	25	27	25	26	29	30			

HOURLY VALUES OF fEs AT Wakkanai

JAN. 2020

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	58	46	G	G	G	26	30	24	39	38	35	33	41	G	G	42	36	29	33	40	29	G	34	G
2	G	29	28	G	31	38		G	39	30	40	42	34	G	37	G	36		G	G	G	G	G	G
3	G	G	35	30	G	G	G	G	G	G	48	G	84	G	48	38	26	38				G		59
4	G	G	58	27	G	32	G	21	115	167	90	106	48	34	G	31	19		29	29	G	G	35	G
5	G	G	G	G	G	G	G	11	32	38	58	48	40	G	G	41	27	29	28	28	39	G	G	30
6	39	36	35	33	32	G	G	26	34	60	39	59	43	45	34	38	40	G	G	G	11	G	G	29
7	G	25	24	G	40	24		G	28	35	35	G	38	56	36	60	29	34	38	40	35	34	32	G
8	G	G	G	G	34	25	28	G	32	37	40	40	44	37	60	34	G	46	56	29	61	38	34	33
9	32	G	G	46	46	38	38	28	39	32	59	57	60	40	44	43	32	38	26	G	G	G	G	39
10	G	28	G	31	G	G	G		29	115	40	38	38	38	50	56	G	115	60	G	29	G	26	34
11	G	G	128	G	G	G	G	35	36	46	49	103	44	41	43	39	34	25	114			G	92	46
12	57	26	G	G	G	G	G	11	36	40	35	34	G	48	48	48	31	G	G	57	55	38	49	32
13	38	G	31	30	53	59		60	33	64	92	36	54	G	G	38	32	G	32	57	39	86	59	72
14	G	G	G	G	G	G	135	31	28	46	36	36	38	40	91	31	G	35	54	39	23	24	24	26
15	G	G	G	G	G		G	G	39	128	44	39	G	42	G	33	38	29	G	G	39	G	G	G
16	G	G		G	G	39	G	G	G	G	61	G	G	G	G	36	G	G		60	57	58	33	28
17	G	34	24	G	33	28	25	26	48	G	43	43	G	G	G	G	43	G	G	G	G	38	26	35
18	G	G	38	33	G	G		G	G		46		G	G	44	G	G	G	G	G	G	G	G	G
19	G	G	G	G	G	G	G	G	36	33	40	40	42	G	G	40	G	32	G	G	G	G	G	30
20	24	G	G	G	114	27	G	G	37	34	57	104	36	39	35	31	41	35	G	G	G	G	G	G
21	24	G	G	G	G	G	29	34	28	31	40	37	G	41	33	31	G		G	G	G	G	G	G
22	G	G	G	G	G	33		24	44	67	40	38	35	36	54	32	50		G	G	G	G	G	G
23	G	25	84	G	G	G	27	34	30	40	43	38	35	34	32	32	G	20	33	G	G	G	28	G
24	G	G	G	G	59	G	G	G	47	53	39	69	66	59	38	34	32	26	G	G	G	G	G	G
25	G	G	169	G	G	G		G	29	G	46	G	49	G	38	34	28	G	G	G	G	24	G	25
26	26	G	106	G	G	G	G	126	49	49	43	149	43	G	32	34	38		30	G	53	136	33	28
27	G	G	G	G	G	G	G	20	28	32	38	37	36	39	39	34	30	32	G	G	G	G	G	G
28	38	G	G	G	G	G	26	39	128	39	40	40	84	36	36	33	28	35	G		G	G	G	G
29	G	G	G	G	G	G	G	22	47	45	47	35	G	44	G	43	37	22	G	G		G	G	G
30	G	G	G	G	G	G	G	24	45	33	58	90	47	40	48	49	36	48	56	36	G		26	G
31	G	25	G	G	G	G	G	48	32	39	38	113	35	36	G	32	27		G	G	G	G	30	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	30	26	30	31	31	31	30	31	31	31	31	31	26	30	29	29	29	30	31
MED	G	G	G	G	G	G	G	23	36	38	43	40	38	36	36	34	30	29	G	G	G	G	12	G
U Q	24	25	35	27	32	27	26	34	44	49	49	59	47	41	44	41	36	35	33	32	37	25	33	32
L Q	G	G	G	G	G	G	G	G	29	32	39	36	34	G	G	32	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

JAN. 2020

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	18	16	16	15	14	16	15	16	15	15	15	15	15	16	15	15	17	15	16	15	16	16	15	15
2	16	16	16	16	16	16	16	15	14	17	16	15	15	15	15	15	15		15	17	15	14	16	16
3	15	17	15	16	16	46	16	15	15	16	16	17	21	17	16	16	15	16	15		16	15	16	16
4	15	16	16	16	16	16	17	16	15	14	14	15	17	16	15	16	16	15	16	15	15	16	15	15
5	14	14	14	14	14	16	17	14	14	15	16	15	16	13	16	13	15	16	15	15	15	16	15	16
6	15	15	15	16	16	14	14	14	14	14	15	15	15	14	17	15	15	14	15	14	14	14	16	16
7	15	16	16	15	14	16	16	15	16	14	15	15	15	15	15	15	16	17	15	15	15	16	16	15
8	15	16	15	15	15	15	16	16	15	15	15	15	15	15	16	15	16	15	15	15	15	15	16	16
9	15	15	16	17	15	16	16	15	15	16	15	15	15	15	15	15	16	16	17	15	15	15	14	15
10	14	16	17	16	16	14	14	15	15	14	15	14	15	15	15	15	16	16	15	14	15	15	16	15
11	16	15	15	15	15	14	15	16	15	16	16	15	15	14	14	13	15	15	15			14	14	15
12	15	16	16	15	16	15	15	15	15	14	16	15	15	16	15	15	16	15	14	15	16	16	15	16
13	16	16	15	16	16	15	17	16	15	15	14	15	14	15	15	15	15	17	15	15	15	15	16	16
14	15	14	14	14	14	14	15	15	14	14	15	16	14	15	14	15	16	15	17	16	16	16	17	15
15	14	14	14	14	15		15	15	14	5	15	15	16	17	16	17	15	16	15	15	15	16	15	14
16	14	15	15	15	16	14	14	14	17	16	21	20	17	16	16	15	15	21	15	16	16	15	16	15
17	15	16	16	16	15	15	16	16	15	15	16	16	26	24	22	15	17	16	15	14	15	16	15	15
18	15	16	16	16	14	14		16	21	15	17	17	16	15	15	15	15	14	14	14	14	17	15	14
19	14	14	14	14	14	19	15	14	15	16	17	15	15	16	17	15	15	14	17	16	15	15	15	16
20	16	15	15	14	14	14	15	14	14	15	15	6	15	15	15	16	17	14	14	14	16	15	15	15
21	15	15	15	15	15	14	16	15	13	16	13	15	17	15	16	14	16		14	14	15	14	16	14
22	15	14	15	15	14	14		14	15	14	14	15	15	14	13	16	15	14	14	14	14	14	15	15
23	14	16	16	16	14	16	16	15	15	15	15	15	14	16	15	14	15	16	16	14	14	15	15	14
24	14	14	14	15	16	16	15	15	15	16	15	13	14	15	14	14	16	16	16	16	14	14	14	14
25	14	14	36	15	15	15		14	15	16	17	16	15	16	15	16	15	14	14	16	15	16	16	16
26	16	16	9	14	15	15	15	15	15	16	15	15	16	17	17	15	14	17	16	15	15	15	16	16
27	16	14	15	15	15	14	14	15	14	16	14	14	13	16	15	14	16	16	18	15	17	14	14	14
28	16	16	14	14	14	14	16	15	14	16	16	16	16	14	15	16	14	15	15	16	14	20	15	14
29	15	15	15	16	16	14	14	15	15	14	13	16	14	16	15	14	14	15	15	15	16	16	15	14
30	14	14	15	15	15	14	16	15	15	16	14	13	15	13	14	15	13	15	15	15	15	15	16	14
31	15	16	15	15	18	15	15	14	15	15	15	15	13	14	15	14	15	15	14	14	14	14	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	30	28	31	31	31	31	31	31	31	31	31	31	29	31	29	30	31	31	31
MED	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
U Q	16	16	16	16	16	16	16	15	15	16	16	16	16	16	16	15	16	16	16	15	16	16	16	16
L Q	14	14	15	15	14	14	15	14	14	14	15	15	15	15	15	14	15	15	15	14	15	14	15	14

HOURLY VALUES OF fof2 AT Kokubunji

JAN. 2020

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	A	A	30	31	23	A	N	23	41	42	A	49	60	49	47	52	52	39	35	29	29	31	A	A	27			
2	A	A	A	26	25	24		41	46	43	67	61	49	50	63	A	46	38	23	31	26	25	25	25				
3	24	25	25	30	A	A	A	36	47	44	A	61	58	47	49	45	42	A	25	30	33	25	25	N	27			
4	24	29	30	27	24	25	24	35	44	44	47	54	54	48	49	50	40	41	A	32	27	26	27	29				
5	26	A	29	26	26	25	N	23	34	42	47	66	53	58	42	57	48	42	35	30	29	33	26	N	30	28		
6	25	29	34	25	A	N	22	35	45	51	57	58	53	47	62	48	45	40	38	35	N	25	26	29	31			
7	31	30	30	30	27	26	25	38	48	46	59	59	51	65	47	47	43	A	23	32	24	25	27	30				
8	29	30	35	32	24	23	25	39	43	45	51	50	55	51	45	49	45	45	A	A	A	A	A	A	25			
9	25	A	A	A	A	N	25	N	23	38	40	49	64	53	51	52	52	A	A	35	34	31	31	A	33	31		
10	31	33	30	32		23	24	40	51	51	56	87	57	65	66	49	A	A	33	A	27	A	A	A	24			
11	N	24	24	24	25	27	N	23	23	37	42	49	52	50	57	60	56	54	A	A	A	27	31	A	N	23		
12	N	23	A	A	A	23		40	48	46	44	75	70	52	A	51	43	29	A	A	A	A	A	A	29			
13	A	A	A	N	23	23	N	22	23	37	42	43	50	56	51	54	47	51	44	31	A	31	33	26	N	22	23	
14	N	23	23	N	23	26	24		37	45	43	58	55	A	56	55	49	43	A	A	A	A	23	N	23	23		
15	23	N	23	N	23	23	N	A		45	46	48	A	64	57	57	48	51	48	33	A	29	31		N	24	25	
16	25	24	25	25	N	23	23	25	39	49	44	48	65	52	71	51	45	43	39	25	32	32	26	26	25			
17	26	A	A	29	24	23	24	37	43	44	53	59	55	52	49	48	51	39	25	26	33	30	23	23				
18	29	29	24	30	29	N	23		36	41	45	A	51	61	59	53	47	43	32	30	32	32	29	N	N	24		
19	25	29	24	N	24	25		37	N	45	45	45	49	56	60	50	47	42	37	32	26	35	24	24	23			
20	N	24	23	24	A			33	43	51	45	A	45	46	56	62	46	25	25	26	36	23	N	24	24			
21	24	24	N	N	23	25	A		37	47	47	46	45	50	49	50	49	53	40	24	26	25	N	28	N	24		
22	N	N	N	N	N	31		33	44	49	47	51	52	68	57	50	41	37	27	33	33	29	30	30				
23	31	31	29	31	27	A	N	23	38	49	55	63	89	75	59	51	49	51	43	32	33	38	26	25	29			
24	28	27	27	29	25	26	N	23	36	47	49	48	49	48	58	65	47	50	49	25	A	27	32	30	N	24		
25	25	25	29	25	N	N	23	23	38	44	48	49	56	53	51	49	51	58	49	27	31	25	N	27	26	25		
26	27	24	23	24	24	N	23	24	44	43	45	45	45	48	54	51	50	49	45	32	N	24	26	26	N	24	24	
27	24	25	N	N	N	23	25		38	47	44	A	50	59	54	55	52	45	43	25	27	32	32	25	25			
28	24	23	N	N	N	23	23	N	22	37	45	46	46	45	43	52	52	54	49	42	24	N	23	26	N	24	24	25
29	29	25	25	25	25	24		39	N	50	47	46	49	53	65	50	56	50	37	30	25	33	31	33	A			
30	25	30	31	29	32	25	25	45	N	44	44	58	51	62	65	63	57	48	44	39	33	32	25	27	30			
31	26	29	31	30	31	33	24	38	46	50	50	64	94	51	55	63	58	N	41	32	25	30	31	33	33			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	28	24	26	28	26	21	18	31	31	30	27	30	30	31	30	29	28	26	24	26	28	24	26	30				
MED	25	25	25	26	24	23	24	38	45	46	50	54	54	54	52	50	45	39	28	30	31	26	26	25				
U Q	27	29	30	30	27	25	24	39	47	49	58	61	58	60	56	52	49	43	32	32	33	29	29	29				
L Q	24	24	23	24	23	23	23	36	43	44	46	50	51	50	49	48	43	35	25	26	26	25	24	24				

HOURLY VALUES OF fEs AT Kokubunji

JAN. 2020

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	37	31	G	G	G	27	G	G	34	43	155	G	45	43	G	G	41	24	G	G	G	40	35	33
2	39	34	29	G	G			147	29	36	60	42	37	36	40	50	39	39		G	G			
3		G	G	G	57	41	40	31	G	36	40	G	G	40	41	32		31		G	G	G		G
4	G	G	G	G	G	G	G	34	47	42	G	G	G	G	34	33	G	G		27	24	G	G	G
5	G	34	G	29	G	G	G	G	29	40	40	40	45	40	37	36		G	G	G	G	G	G	G
6	G	G	29	33	26	G		37	43	37	79	45	41	48	39	45	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	30	35	37	70	39	40	G	42	G		31		G	G	G	G
8	G	G	G	21	G		G	G	45	38	G	44	41	42	39	37	38	26	41	52	52	29	40	
9	G	35	34	33	29	G	G	43	45	40	41	45	50	48	G	50	55	29	28		25	32	41	G
10	G	G	27	28			G	G	47	42	35	42	43	48	54	39	43	33		49	G	53	31	
11	G			G	31	G		40	35	39	38	38	43	48	43	51	84	33	26		G	36	35	40
12	G	33	36	31				G	G	35	39	G	G		39	65	44	G	G	72	39	52	35	53
13	29	32	26	G		G	G	40	45	41	64	49	44	45	93	36	37	28	25	25	24	G	G	G
14	G		G	G	G			G	33	35	37	42	59	G	39	46	69	41	38	36	25		G	G
15	G	G	G		G	28		G	33	49	45	37	G	42	46	34	G	34	34	G	35		G	
16	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
17	29	34	33	G	G		G	G	G	46	45	40	G	G	37	G	G		40		G	G		
18	G	G	27	G	G	23		G	30	39	38	G	G	G	G	48	47	33		G	G	G	G	G
19	G	G	G	G	G			G	47	44	43	37	G	37	G	G	G	40	G	G	G	G	G	G
20	G	G	G	31				G	40	38	41	G	G	G	38	33	29	28		G	G	G		G
21	G	G	G	G	27	38		G	48	38	36	G	41	G	G	G	G	43		G	G	G	G	G
22	G	G	G		11			G	29	38	39	41	37		39	33	G	G	G	G	G	G	G	G
23	G	G	G	G	G	29	G	G	G	G	39	G	G	G	40	G	G	21		G	G	G	G	G
24	G	G		G	G	G	G		G	43	G	39	39	G	G		52	43	11	26	28	24	G	G
25	G	G	G	G	G	G		G	30		39	40	41	40	40	42	32	24		G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	37	41	38	43	42	G	37	33	11	34		G	G	G	G
27	G	28	G	G	G			G	31	35	40	42	45	42	87	37	39	11		G	G	G	G	G
28	G		G	G	G		11	40	37	37	41	42	G	G	40	37	33			36		G	G	G
29	G	G	G	G	G	G		40	49	42	37	51	40	39	G	57	36	26	25		G	G	G	33
30	G	G	G	G	G	G	G	47	G	36	37	46	38	G	G	40	36	G	G	34	29	38	29	G
31	G	G	G	G	G	G	G	31	41	37	40	39	39	39	43	39	52		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	30	28	29	29	27	20	17	30	31	31	31	31	31	31	31	31	29	31	26	29	31	28	26	25
MED	G	G	G	G	G	G	G	G	33	38	39	40	39	39	39	37	33	26	G	G	G	G	G	G
U Q	G	29	26	11	G	25	G	37	45	42	41	43	43	42	42	45	42	33	27	26	24	15	29	G
L Q	G	G	G	G	G	G	G	G	29	35	37	37	G	G	G	33	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

JAN. 2020

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

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

HOURLY VALUES OF fof2 AT Yamagawa

JAN. 2020

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	31	31	26	29	A	N 29	B 23	27	53	45	A	A	69	53	51	56	45	47	A	A	38	31	26	29
2	A	A	32	35	33	N 23	N 24	30	48	45	55	A	A	A	69	56	A	59	39	31	A	36	26	23
3	30	30	29	26	32	N 29	B 23	B 23	49	48	47	61	59	55	49	48	47	43	33	31	30	31	31	25
4	31	25	30	27	27	N 24	N	24	N 42	44	50	52	57	58	47	53	50	39	51	37	30	31	33	31
5	33	31	29	26	33	N	23	24	45	45	51	64	63	59	57	61	59	50	37	34	32	31	31	31
6	30	N 30	33	31	B	B 24	B	32	44	49	51	66	75	75	53	67	54	46	A	A	B 25	B 24	31	31
7	32	32	33	39	33	32	35	35	50	47	52	63	67	A	56	A	52	46	37	31	B 31	B 32	A	A
8	A	25	25	27	25	25	32	31	45	49	54	60	63	62	49	49	56	44	64	44	A	36	33	31
9	31	27	A	30	35	A	A	32	43	45	53	54	59	53	54	60	49	50	39	30	34	35	A	31
10	29	A	A	34	31	A	N 23	27	58	51	55	87	92	97	100	69	51	53	37	37	50	28	N 25	N 23
11	24	N 24	N 24	30	30	30	B	25	47	47	54	50	61	72	66	56	A	42	A	A	33	34	A	A
12	26	26	26	A	29	A	A	N 24	51	56	49	52	60	81	59	61	55	44	A	A	A	39	A	A
13	29	A	30	31	31	A	A	31	41	46	48	A	A	A	A	55	54	47	A	A	31	30	N 23	B
14	N 29	A	31	33	31	B 23	B 23	25	56	47	A	56	49	62	59	53	53	41	34	35	31	25	A	N 24
15	N 25	33	31	31	31	B 23	B 24	25	49	47	44	58	77	65	56	51	53	49	36	30	34	N 26	23	23
16	25	B 23	N 23	B 23	28	24	B 23	25	45	46	47	47	57	89	84	54	54	55	38	31	32	37	N 24	24
17	27	30	25	31	31	25	24	A	46	58	48	68	68	54	51	47	55	A	A	A	33	36	N 24	A
18	N 23	31	27	30	31	35	N 25	29	41	49	48	A	73	67	57	51	45	47	33	32	34	31	32	N 24
19	29	29	25	30	24	31	B 22	29	N 43	48	50	44	52	58	51	50	49	45	37	32	38	33	N 26	27
20	26	31	27	32	B 23	N 23	B	N 25	47	46	50	53	52	A	63	79	53	42	35	27	33	30	N 26	31
21	28	32	29	25	26	B 24	B	N 25	46	49	C	C	A	51	52	51	55	68	33	33	36	30	31	31
22	B 26	B	B 26	B 24	31	B	B	N 25	44	47	49	A	47	71	69	57	49	41	35	35	33	N 25	31	29
23	28	32	32	32	B 23	N 23	N 23	25	45	57	63	73	73	72	A	48	53	47	37	33	33	33	26	27
24	29	30	26	25	26	26	31	33	44	49	50	50	46	59	64	71	63	58	42	30	26	32	31	25
25	24	N 29	N 25	25	26	31	23	31	43	47	52	60	55	54	54	55	59	50	45	24	26	25	32	30
26	25	25	24	26	27	25	32	30	45	45	47	49	46	51	54	64	53	51	49	30	30	N 23	N 27	A
27	N 25	N 23	B 24	A	A	25	A	30	43	45	50	45	61	62	58	49	47	47	38	30	33	A	B 25	24
28	32	30	31	25	26	30	26	30	45	44	45	47	47	52	53	61	49	51	38	31	25	26	25	
29	A	A	N 29	24	26	25	B 23	27	48	47	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	B	B	B		59	63	48	A	A	A	B 27	33	31
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	23	27	27	26	23	19	28	29	29	25	22	25	24	26	28	27	28	22	22	25	28	24	23
MED	28	30	27	30	30	25	23	27	45	47	50	55	60	60	56	56	53	47	37	31	33	31	26	27
U Q	30	31	31	31	31	30	26	30	48	49	52	63	68	71	63	61	55	50	39	34	34	34	31	31
L Q	25	25	25	25	26	24	23	25	43	45	48	50	52	54	52	51	49	44	35	30	30	27	25	24

HOURLY VALUES OF fEs AT Yamagawa

JAN. 2020

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	27	G	26	27	40	27	B	G	28	34	44	150	46	64	48	36	51	40	41	28	30	G	G	G	
2	48	40	30	28	27	G	G	G	30	40	42	116	103	108	60	88	73	31	40	26	41	34	27	25	
3	G	G	G	G	G	117	B	B	28	39	42	51	43	41	43	36	31	34	25	25	24	G	G	G	
4	G	G	G	G	G	20	G	G	29	34	40	43	45	44	52	35	32	28	24	G	G	G	G	G	
5	G	G	24	28	G	G	G	G	48	38	42	57	56	49	56	46	G	27	G	G	G	G	G	G	
6	G	G	G	11	B	B	B	34	30	34	40	50	57	148	46	39	35	33	46	41	B	B	G	G	
7	G	G	G	G	G	G	G	G	53	34	40	59	150	69	58	81	55	40	40	G	B	B	32	30	
8	39	29	G	G	25	G	G	29	G	32	40	47	45	40	40	60	33	36	30	39	36	28	G	G	
9	G	30	44	G	32	28	29	24	G	39	43	150	47	48	57	91	35	40	50	G	26	53	58	30	
10	G	40	36	28	23	27	G	G	48	G	41	44	45	47	52	45	42	40	30	26	26	G	G	G	
11	G	G	G	G	G	25	B	G	48	48	45	49	53	50	48	54	60	29	40	30	G	26	35	65	
12	G	30	28	32	27	31	28	24	30	38	41	46	48	50	41	43	38	41	41	70	48	36	38	35	
13	41	39	25	26	35	36	32	24	45	36	40	92	112	151	84	56	57	44	54	44	G	32	G	B	
14	G	41	G	23	B	B	G	G	28	35	60	50	50	42	41	36	32	29	29	24	24	28	34	G	
15	G	G	G	G	G	B	B	G	41	41	45	49	55	45	43	G	G	48	38	G	G	G	G	G	
16	29	B	26	B	G	113	B	G	28	40	39	44	46	43	37	36	41	48	26	26	G	G	G	G	
17	G	G	G	G	25	G	G	31	27	34	42	44	43	G	40	35	40	57	54	40	G	G	G	41	
18	G	G	G	G	G	28	19	G	29	36	44	59	45	40	G	36	32	41	33	G	G	G	G	G	
19	G	G	G	G	G	G	B	G	48	40	40	47	45	38	G	35	G	G	40	G	G	G	G	G	
20	G	G	G	33	B	11	B	G	32	36	45	48	49	46	51	38	38	45	G	G	G	G	G	G	
21	G	G	G	G	G	B	B	G	48	43	C	C	57	40	37	37	32	29	32	G	G	G	G	G	
22	B	B	B	B	G	B	B	G	G	40	46	43	43	40	39	35	G	G	G	G	G	G	G	G	
23	G	G	G	G	B	G	G	G	32	35	G	37	40	40	64	41	45	33	11	G	G	G	G	G	
24	G	G	G	G	G	G	G	G	46	32	41	41	40	44	40	G	34	30	43	G	G	G	G	G	
25	G	G	G	G	G	11	G	G	G	32	G	37	39	40	40	G	40	35	36	35	G	G	G	G	
26	G	G	G	G	G	G	11	G	48	48	44	45	48	46	43	40	36	38	25	33	G	G	G	37	
27	G	G	B	37	36	G	30	G	48	43	41	45	45	46	46	41	42	29	20	G	G	G	B	G	
28	G	G	G	G	G	G	G	G	33	47	46	45	45	46	42	42	34	149	39	G	G	30	24	G	
29	40	41	G	G	G	G	B	G	48	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31	C	C	C	C	C	C	C	C	C	C	C	B	B	B	G	38	57	41	71	40	39	B	G	G	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	27	26	27	26	24	17	28	29	29	27	27	28	28	29	29	29	29	29	29	29	27	26	28	28
MED	G	G	G	G	G	6	G	G	32	36	42	47	46	46	43	38	36	36	36	24	G	G	G	G	
U Q	G	30	25	27	25	27	23	G	48	40	44	57	54	49	52	45	43	41	41	34	26	28	12	13	
L Q	G	G	G	G	G	G	G	G	28	34	40	44	45	40	40	35	32	29	25	G	G	G	G	G	

HOURLY VALUES OF fmin AT Yamagawa

JAN. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	15	16	B	14	15	14	15	13	15	15	13	14	15	15	15	16	15	15	14	14
2	15	16	16	17	16	16	15	16	15	14	13	13	13	16	15	15	16	16	16	16	15	16	15	16
3	15	15	16	14	15	10	B	B	15	15	14	13	13	14	15	15	14	16	16	15	15	17	15	15
4	15	14	15	18	15	16	16	15	16	16	14	15	15	14	15	15	15	16	15	16	15	16	16	16
5	15	14	16	16	16	15	14	15	15	16	15	13	14	15	16	15	14	16	14	16	15	15	15	15
6	15	15	15	16	B	B	B	14	16	15	15	14	14	17	15	14	15	16	16	16	B	B	14	15
7	15	14	14	16	16	14	14	15	15	15	14	16	15	15	15	15	15	16	16	15	B	B	16	17
8	16	16	15	16	16	15	16	15	15	15	15	14	14	15	15	15	16	15	16	15	15	16	16	15
9	14	16	15	15	16	16	16	16	15	16	15	15	15	16	15	14	14	15	15	16	16	15	15	15
10	15	15	15	15	16	16	14	15	15	15	16	15	14	15	14	13	15	15	15	15	15	16	14	16
11	14	15	14	17	16	16	B	16	15	16	15	15	15	14	14	15	14	16	15	15	16	16	16	15
12	15	16	16	16	15	16	17	15	16	14	14	14	14	16	15	14	15	15	15	15	15	15	15	16
13	15	14	16	15	15	15	15	16	15	16	15	15	14	15	13	15	15	15	15	15	16	15	17	B
14	16	15	15	16	17	B	B	14	15	14	14	13	14	15	15	15	15	15	16	16	16	16	16	14
15	15	16	15	15	15	16	B	16	15	15	15	14	15	15	14	15	16	15	17	14	15	15	15	14
16	B	15	B	16	16	14	B	16	5	15	15	14	15	15	16	15	15	15	16	15	15	16	15	15
17	16	15	15	15	16	16	16	16	15	16	15	15	15	16	15	15	15	15	16	16	16	16	15	15
18	16	14	16	15	5	16	15	14	15	15	15	14	15	15	14	15	15	16	15	16	16	16	16	17
19	14	14	14	14	19	14	B	21	14	15	15	14	14	15	14	15	14	16	14	14	15	14	17	18
20	15	15	15	16	B	14	B	15	16	15	14	15	15	15	16	14	14	15	16	14	15	14	21	15
21	15	16	14	16	15	B	B	14	15	16	C	C	14	15	17	15	16	16	16	15	15	18	17	18
22	B	B	B	B	15	B	B	16	15	16	15	16	18	15	15	15	15	15	15	14	14	15	16	15
23	15	16	16	15	B	15	15	15	16	16	16	15	14	14	14	14	16	15	16	16	16	16	15	14
24	14	14	15	15	15	16	14	14	15	16	15	15	16	17	15	16	15	16	16	16	15	15	16	15
25	16	15	15	15	14	15	17	15	15	16	16	14	15	15	14	14	13	15	15	15	15	15	15	15
26	14	15	14	15	15	14	15	15	15	15	15	16	13	15	15	14	17	15	16	16	15	15	14	15
27	15	14	B	15	15	16	15	14	15	15	20	15	15	16	14	14	15	15	15	15	17	15	B	15
28	14	14	15	14	14	14	14	15	16	14	15	14	15	15	15	15	16	15	15	15	15	16	15	15
29	16	15	14	15	13	14	B	15	14	15	15	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	B	B	B	221	14	15	16	15	16	16	B	18	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	28	27	23	29	29	29	27	27	28	28	29	29	29	29	29	29	28	27	28	29
MED	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
U Q	16	16	16	16	16	16	16	15	15	16	15	15	15	16	15	15	16	16	16	16	16	16	16	16
L Q	15	14	15	15	15	14	15	14	15	15	14	14	14	15	14	14	15	15	15	15	15	15	15	15

HOURLY VALUES OF fof2 AT Okinawa

JAN. 2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	33	A	A	26	33	25	B	N	53	47	47	52	A	68	62	58	56	53	44	36	40	39	35	24		
2	25	24	A	A	A	25	N	23	25	47	53	76	90	110	79	81	74	54	61	59	34	A	38	25	N	24
3	A	31	30	27	31	27	N	N	43	51	64	57	62	57	52	52	51	53	46	31	31	31	32	25	A	
4	25	25	25	25	31	24	A	A	55	46	48	A	68	77	55	50	58	59	58	49	43	34	35	A	A	
5	31	35	31	32	37	N	24	23	34	45	49	48	60	89	101	81	69	82	77	A	A	A	A	A	A	
6	30	31	26	N	A	B	B	27	44	49	49	59	80	83	75	65	81	56	43	A	A	32	26	26	25	
7	25	29	23	27	33	N	N	25	55	48	48	60	76	67	72	76	73	52	A	A	A	33	34	25	B	23
8	B	N	N	N	24	A	A	A	48	47	58	57	59	73	62	58	47	55	63	55	33	38	A	A	A	
9	A	A	A	30	A	A	A	34	46	47	55	56	55	52	A	64	56	60	48	A	A	31	39	A	A	
10	A	32	A	32	A	A	B	N	58	79	64	94	110	101	117	99	64	57	49	32	37	45	A	A	A	
11	A	A	A	A	29	29	B	N	43	48	55	62	52	75	68	55	50	46	40	A	A	32	26	N	23	
12	A	A	A	A	A	A	A	A	51	63	64	55	N	75	103	97	A	A	A	A	A	34	39	A	N	23
13	24	N	29	29	26	A	A	A	45	45	53	50	A	88	104	91	A	64	A	50	A	31	N	23	B	
14	B	23	24	25	25	N	A	25	51	45	50	A	64	69	99	101	79	64	39	A	38	A	24	A	A	
15	23	24	33	33	32	A	N	24	54	47	A	51	89	95	89	80	61	58	45	26	31	34	A	A	A	
16	N	N	N	A	25	B	B	N	52	53	46	49	61	105	127	100	73	66	57	A	34	36	32	B	23	
17	25	32	B	N	31	A	B	N	50	47	56	54	57	62	69	54	66	59	63	42	41	40	36	N	24	
18	25	B	23	31	27	30	B	25	39	47	49	52	59	78	71	56	53	47	42	30	35	40	B	29	29	
19	N	23	23	24	31	25	N	22	39	49	48	48	N	45	66	51	51	64	49	43	36	37	30	26	31	
20	31	25	25	31	25	B	B	N	42	45	45	63	53	A	53	83	74	52	43	38	33	37	30	31	31	
21	26	N	24	27	B	N	B	N	48	51	50	63	55	52	57	54	60	66	55	34	36	33	32	31	31	
22	33	31	N	24	25	B	B	N	42	54	51	49	51	59	75	60	65	45	43	37	36	31	30	31	31	
23	28	29	27	31	B	A	A	26	41	49	65	93	77	63	60	61	53	50	52	39	34	33	30	25	25	
24	N	N	24	27	26	N	N	23	30	43	50	53	53	A	78	97	107	91	69	40	A	31	32	32	32	
25	24	N	N	B	26	31	B	N	42	45	51	75	65	61	70	74	70	60	48	40	A	26	27	27	27	
26	30	25	N	23	23	34	A	25	39	50	51	53	51	62	71	100	95	55	55	46	26	29	N	N	25	
27	N	B	A	N	N	24	N	23	27	40	46	47	50	57	66	68	56	56	51	44	37	27	31	23	23	
28	N	N	N	24	25	29	31	30	29	39	43	47	50	49	55	67	60	54	54	48	41	A	25	27	A	
29	25	26	A	31	24	24	B	22	31	41	50	48	49	55	58	72	59	51	51	40	41	33	33	31	32	
30	N	N	N	24	26	29	B	N	33	44	43	49	63	50	66	63	81	76	58	55	53	34	31	25	N	23
31	24	27	25	32	27	24	A	25	46	47	51	61	83	97	77	59	61	56	51	47	23	24	30	33	33	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	25	27	23	26	26	22	13	27	31	31	30	29	29	29	30	30	29	30	27	23	24	30	25	22		
MED	25	25	25	26	26	24	23	25	45	48	50	56	59	68	71	62	61	56	48	39	34	33	29	25		
U Q	29	29	27	31	31	27	24	27	51	50	55	62	76	85	81	81	73	60	55	46	36	38	32	31		
L Q	23	23	24	25	24	23	23	24	42	46	48	50	54	61	62	56	54	52	43	34	31	31	25	23		

HOURLY VALUES OF fEs AT Okinawa

JAN. 2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	35	57	40	G	27	G	B	124	28	42	43	44	127	53	70	44	69	44	26	31	27	G	G	G
2	G	G	33	37	45	89	G		G	38	43	48	65	62	55	43	42	36	34	32	47	G	G	G
3	33	G	G	G	G	29	G	G		35	39	44	49	76	49	44	40	32	29	28	G	G	G	G
4	G	G	G	G	G	G	28	26	G	32	43	59	163	127	45	42	G	45	29	48	24	26	G	26
5	24	G	G	G	24	G	G	G		29	38	43	47	50	52	36	39	67	61	56	41	28	25	28
6	G	G	26	G	26	B	B	92	27	40	39	53	56	73	69	45	40	44	36	57	G	24	G	
7	G	G	G	G	11	G	G	G	G	34	57	44	70	75	59	56	95	40	49	32	24	G	29	B
8	B	G	25	G	25	91	26	29	G	46	38	41	55	64	46	36	G	31	34	53	26	28	48	95
9	45	43	45	34	36	32	28	26	47	41	46	45	50	50	58	69	46	G	32	32	G	33	49	32
10	31	G	36	28	44	24	B	G	28	G	G	43	38	56	55	48	46	36	40	33	35	34	38	88
11	59	39	48	53	24	32	B	G	46	44	130	49	45	55	67	56	55	40	54	34	40	G	G	G
12	48	41	38	58	56	38	34	40	36	36	41	54	110	90	106	78	89	58	58	91	29	44	148	G
13	G	G	G	26	25	38	G	29	40	G	41	47	146	149	107	51	105	56	57	60	44	27	G	B
14	B	G	G	G	G	G	24	G	28	34	41	61	50	51	50	46	43	40	36	38	39	37	25	33
15	G	G	46	G	27	29	24	G	36	60	73	78	57	71	72	40	36	G	26	93	24	26	30	32
16	G	G	G	35	25	B	B	G	27	40	46	46	49	48	38	41	62	60	60	54	29	G	G	B
17	G	G	B	G	G	101	B	G	30	55	38	46	43	44	53	G	41	57	40	26	30	24	G	G
18	G	B	G	G	G	G	B	G	28	39	40	56	52	50	42	36	38	G	24	G	26	25	B	28
19	G	G	G	G	G	11	B	G	40	40	41	44	47	41	41	36	38	32	G	20	G	G	G	G
20	G	110	G	34	G	B	B	G	27	34	46	43	66	60	46	51	47	45	44	28	G	G	G	G
21	27	G	G	B	G	B	B	G	G	G	43	56	69	50	44	42	G	G	23	G	G	G	G	G
22	25	G	108	G	B	30	B	G	32	G	G	45	48	62	41	41	43	40	35	G	24	G	G	G
23	G	G	G	33	B	39	102	G	G	39	G	58	38	40	45	G	G	41	32	29	26	25	G	G
24	G	G	G	11	G	G	G	G	48	56	70	49	49	59	44	G	38	35	34	108	26	G	24	G
25		G	G	B	G	11	B	G	39	39	43	43	38	50	47	46	42	33	28	30	32	G	G	24
26	G	G	G	G	G	G	29	G	34	38	69	44	47	46	45	41	G	31	28	50	G	G	G	G
27	G	B	29	G	G	G	G	G	40	44	44	45	71	44	44	38	34	G	G	G	G	11	G	G
28	G	G	G	G	G	G	32	20	38	40	46	43	53	43	43	46	38	42	35	33	29	24	G	36
29	28	G	33	24	G	G	B	G	35	34	G	39	53	43	42	40	42	G	G	G	G	G	G	G
30	G	G	G	G	G	B	G	G	46	47	41	44	G	41	44	38	G	G	38	34	29	G	G	G
31	25	32	24	39	32	G	25	24	48	42	44	40	48	42	67	40	G	58	29	46	G	24	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	30	29	29	26	18	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	30	27
MED	G	G	G	G	G	11	24	G	32	39	43	46	52	51	46	41	40	40	34	33	26	11	G	G
U Q	27	G	33	33	26	32	28	24	40	42	46	53	69	62	59	46	46	45	40	53	30	26	25	28
L Q	G	G	G	G	G	G	G	G	27	34	41	44	47	44	44	38	32	29	28	26	G	G	G	G

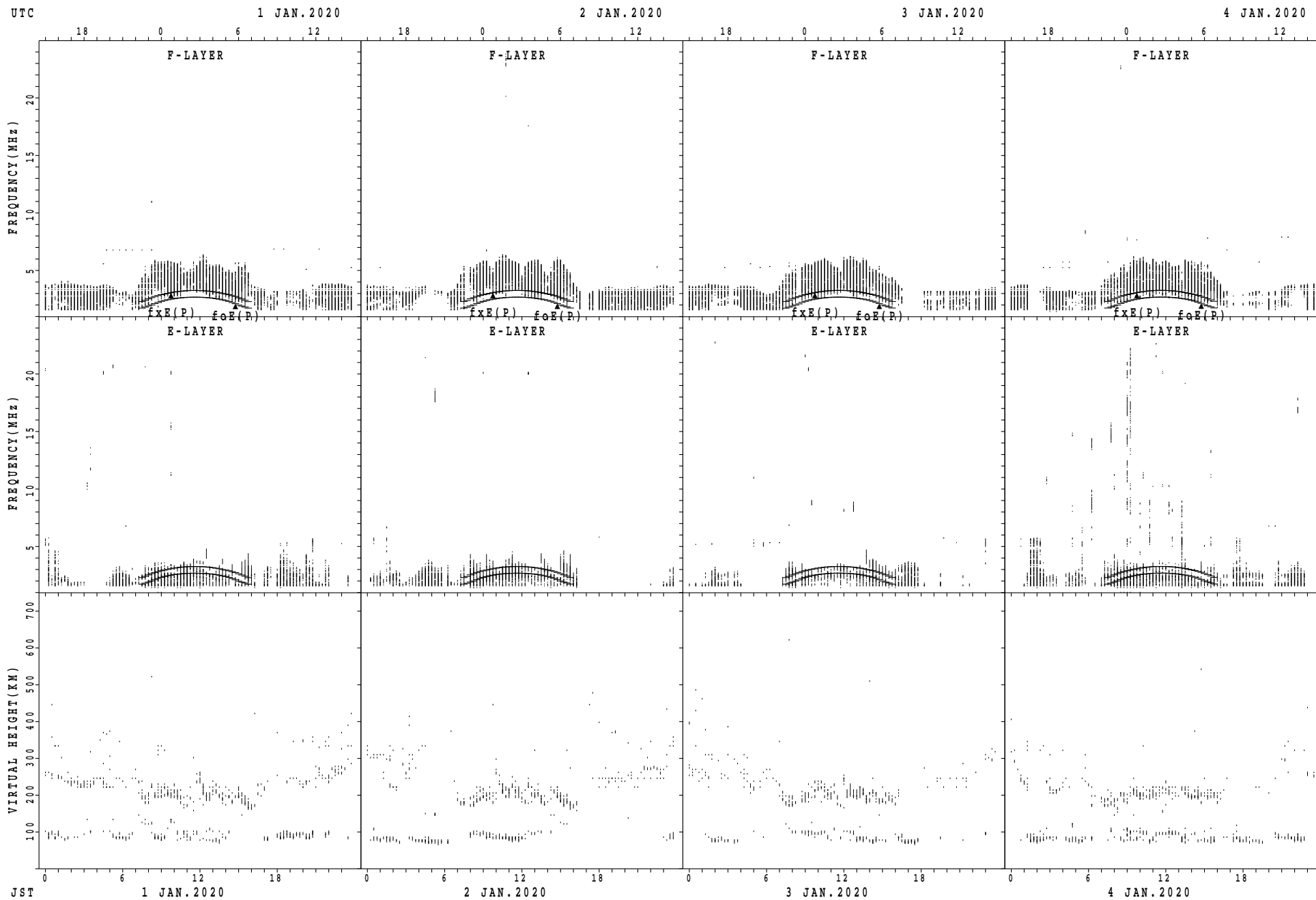
HOURLY VALUES OF fmin AT Okinawa

JAN. 2020

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

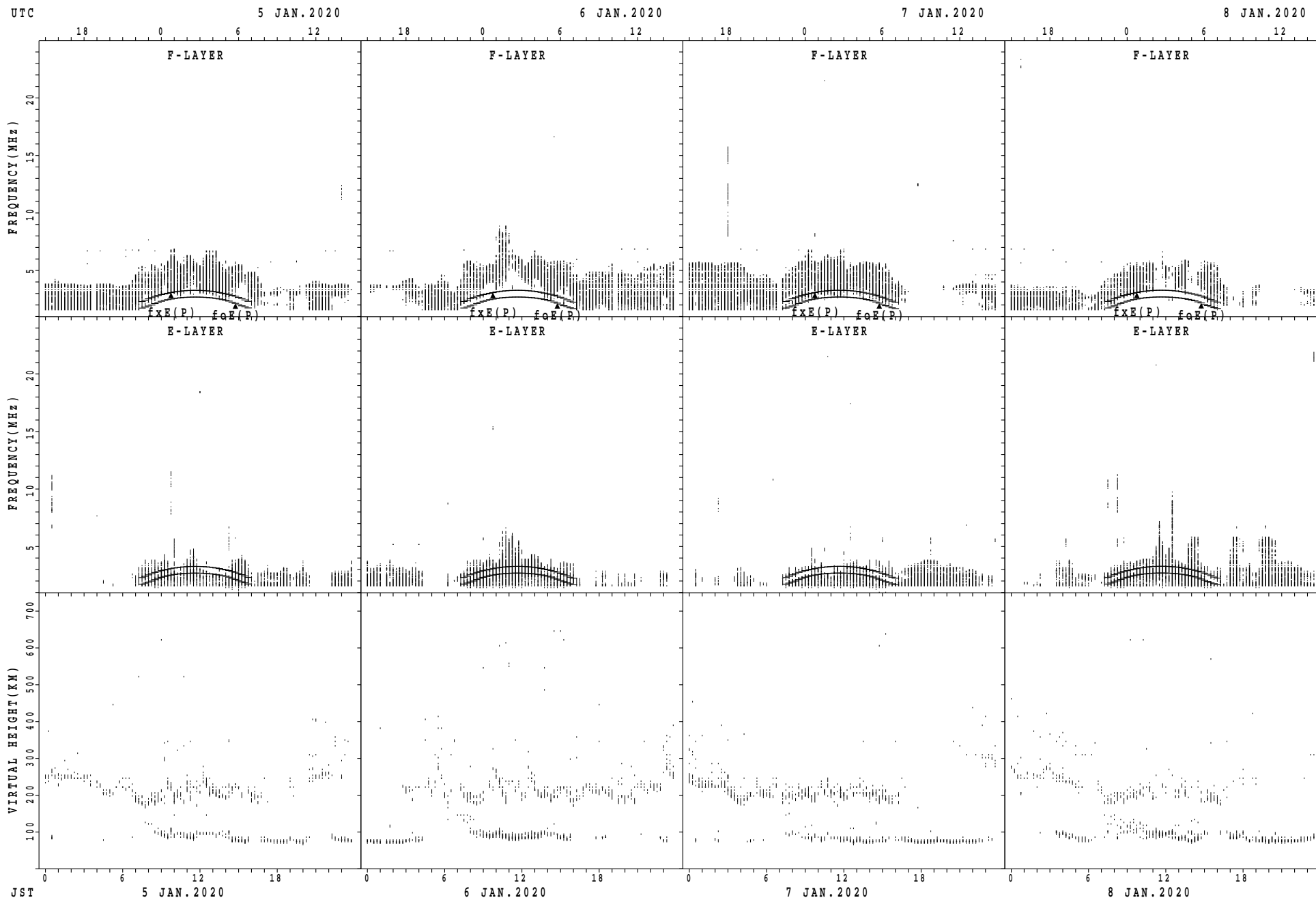
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	15	15	16	^B 15	14	15	15	16	14	15	14	13	15	15	15	16	16	15	15	15	15
2	15	15	15	15	15	15	15		15	14	14	13	14	15	14	13	14	15	15	16	14	16	14	16
3	16	15	15	15	14	15	15	15	15	15	14	14	13	15	16	17	16	15	16	16	15	14	14	14
4	15	14	14	14	15	15	16	16	16	15	15	15	15	15	13	14	16	14	15	16	15	15	16	15
5	16	16	15	16	15	15	15	14	15	14	14	14	14	15	15	14	14	15	15	16	16	16	15	16
6	15	16	16	16	16	^B 15	^B 14	5	15	14	14	14	14	13	15	15	15	15	14	15	16	15	17	
7	15	14	15	16	15	14	15	15	14	16	14	14	15	15	16	13	9	15	15	16	16	15	16	^B 15
8	^B	15	17	16	15	11	16	15	15	16	16	15	14	14	14	14	15	15	16	16	15	15	16	13
9	15	15	15	15	15	16	16	16	15	15	15	16	14	13	13	13	15	15	16	16	15	15	16	16
10	15	15	15	16	16	16	^B 16	15	15	15	15	14	15	13	14	15	15	16	15	15	15	16	16	16
11	15	15	15	15	16	14	^B 15	15	14	16	15	15	15	14	13	14	15	15	15	15	15	15	16	14
12	15	16	15	8	16	17	16	15	15	16	14	14	12	15	12	15	12	16	15	12	15	15	15	15
13	15	14	14	15	16	15	15	15	16	16	16	14	17	14	9	14	13	14	15	14	15	16	14	^B 15
14	^B 15	15	15	15	15	15	16	14	15	16	14	15	14	14	14	14	15	14	15	15	15	15	15	15
15	15	16	15	15	15	15	15	15	15	15	14	14	16	13	15	14	15	14	16	14	16	16	16	16
16	16	15	15	15	15	15	^B 15	^B 15	16	15	15	14	15	14	15	14	13	14	15	15	16	16	16	^B
17	15	16	^B 16	15	17	15	^B	16	16	15	14	16	14	15	15	15	14	15	15	16	16	15	14	14
18	15	^B 15	14	17	14	14	^B	14	15	17	15	14	15	14	15	15	14	15	16	14	16	16	^B 15	15
19	15	15	14	14	14	14	^B	15	15	16	15	15	14	14	16	15	13	14	16	15	16	14	14	14
20	14	14	14	15	14	^B 15	^B	14	15	16	15	14	15	15	14	14	14	14	16	16	15	15	16	14
21	16	16	15	^B 15	14	^B 15	^B 15	15	15	15	14	15	14	15	13	14	13	15	16	14	15	15	15	15
22	15	15	70	14	^B	14	^B	15	15	16	14	15	15	14	14	14	14	15	17	16	15	16	14	15
23	14	17	14	14	^B	15	93	15	15	16	15	14	14	14	13	16	14	15	15	16	16	16	15	15
24	16	14	15	14	14	15	14	14	15	17	14	14	15	13	14	15	13	13	15	16	15	15	16	15
25		14	14	^B	14	14	^B	14	15	15	16	16	15	13	14	14	14	13	15	16	15	15	15	16
26	14	14	16	66	15	15	14	17	15	17	15	15	14	13	14	14	16	15	16	15	14	14	15	15
27	17	^B 15	15	17	14	15	16	16	15	16	16	15	15	13	14	15	16	14	15	15	14	15	15	15
28	15	15	14	14	14	14	14	15	15	15	15	14	13	15	15	14	15	14	16	16	16	15	16	15
29	16	15	16	15	14	15	^B	14	15	15	15	14	14	14	13	14	15	15	16	16	14	14	15	14
30	15	15	14	14	15	^B 16	14	14	14	15	14	14	15	15	14	15	16	15	15	16	15	15	15	14
31	16	16	16	15	15	15	15	14	15	15	16	15	15	14	12	13	15	14	15	14	14	16	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	31	30	29	31	24	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29
MED	15	15	15	15	15	15	15	15	15	15	15	14	14	14	14	14	15	15	15	16	15	15	15	15
U Q	16	16	15	16	15	15	16	15	15	16	15	15	15	15	15	15	15	15	16	16	16	16	16	15
L Q	15	15	14	14	14	14	15	14	15	15	14	14	14	13	13	14	14	14	15	15	15	15	15	14

SUMMARY PLOTS AT Wakkanai



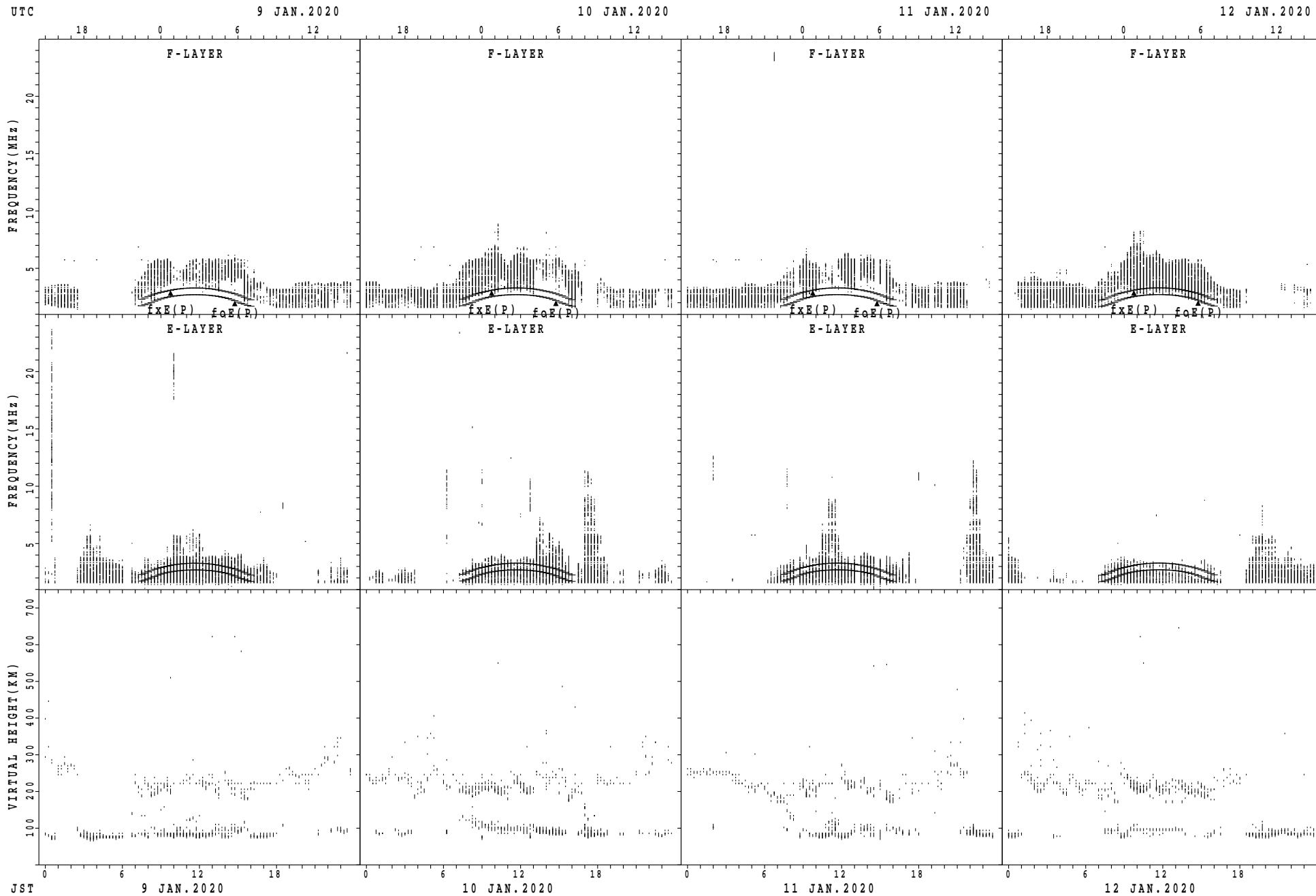
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



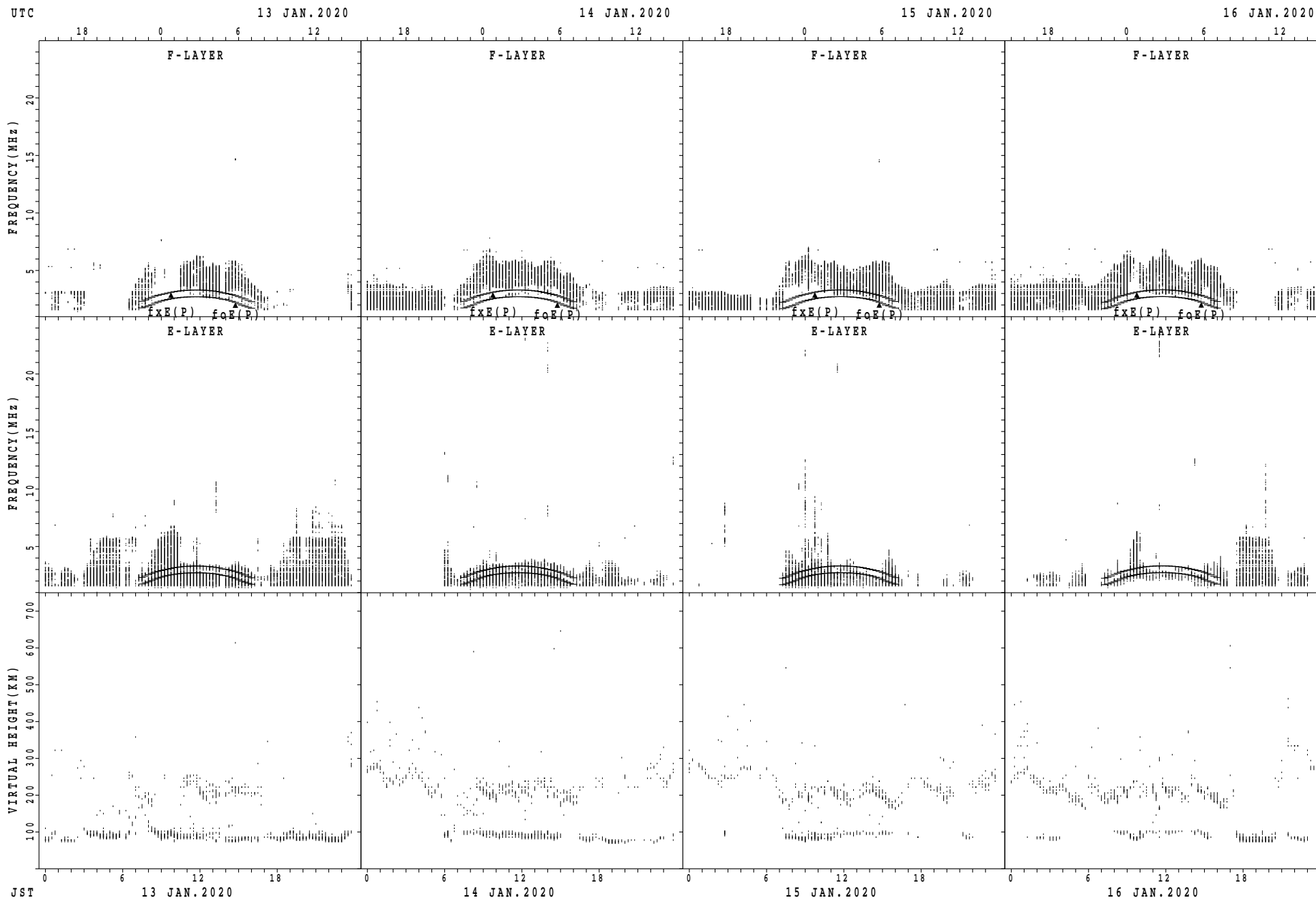
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



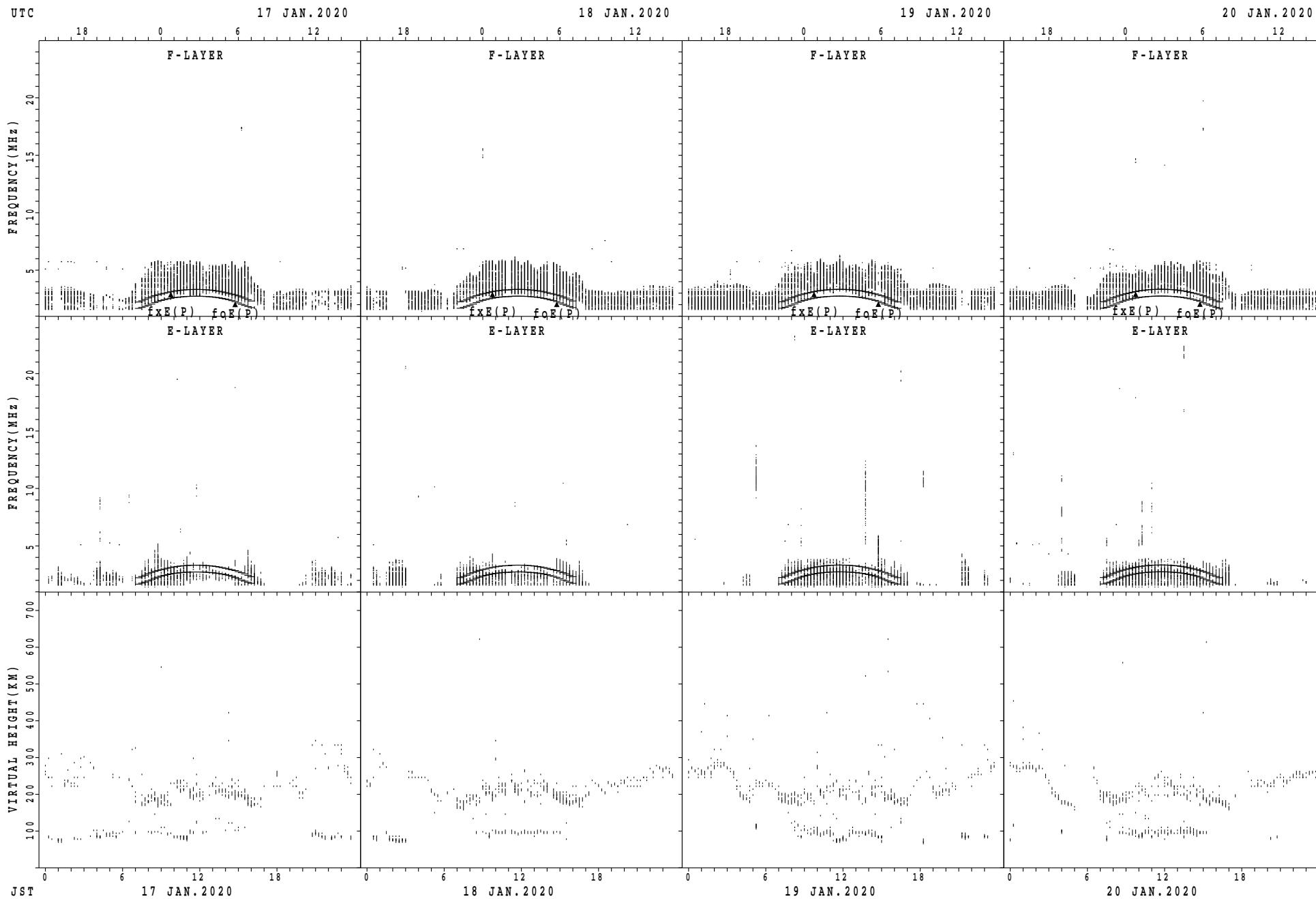
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



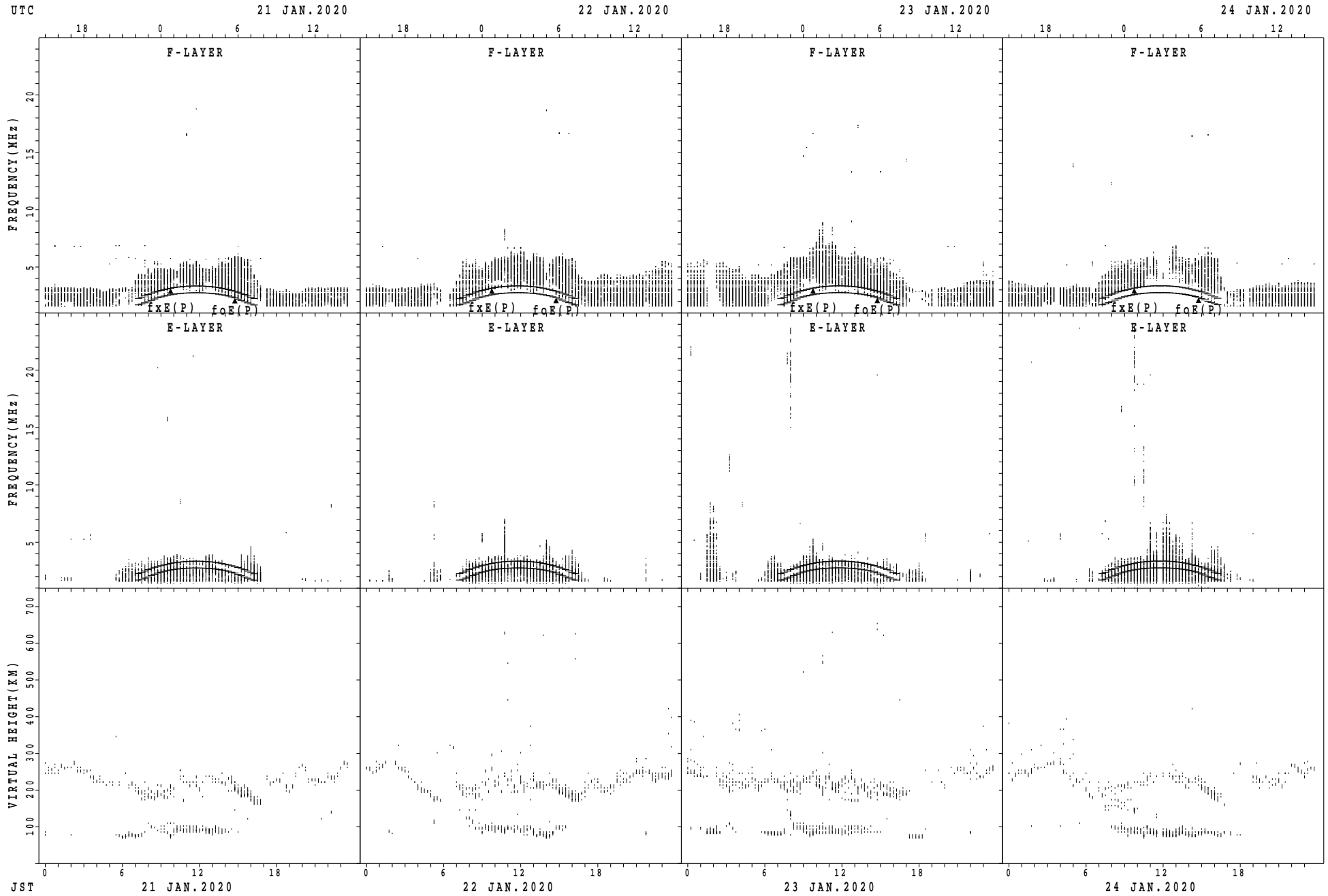
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



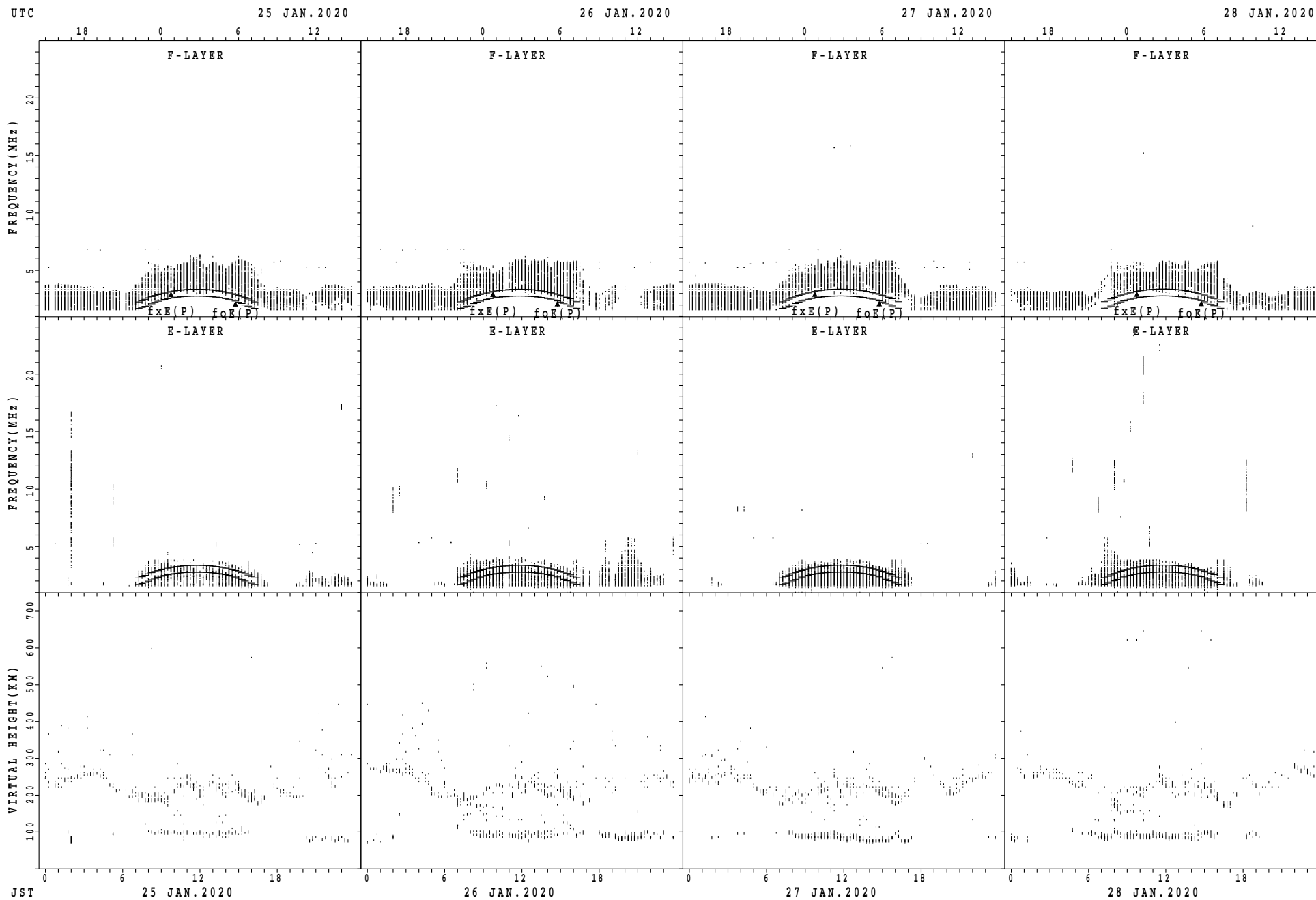
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



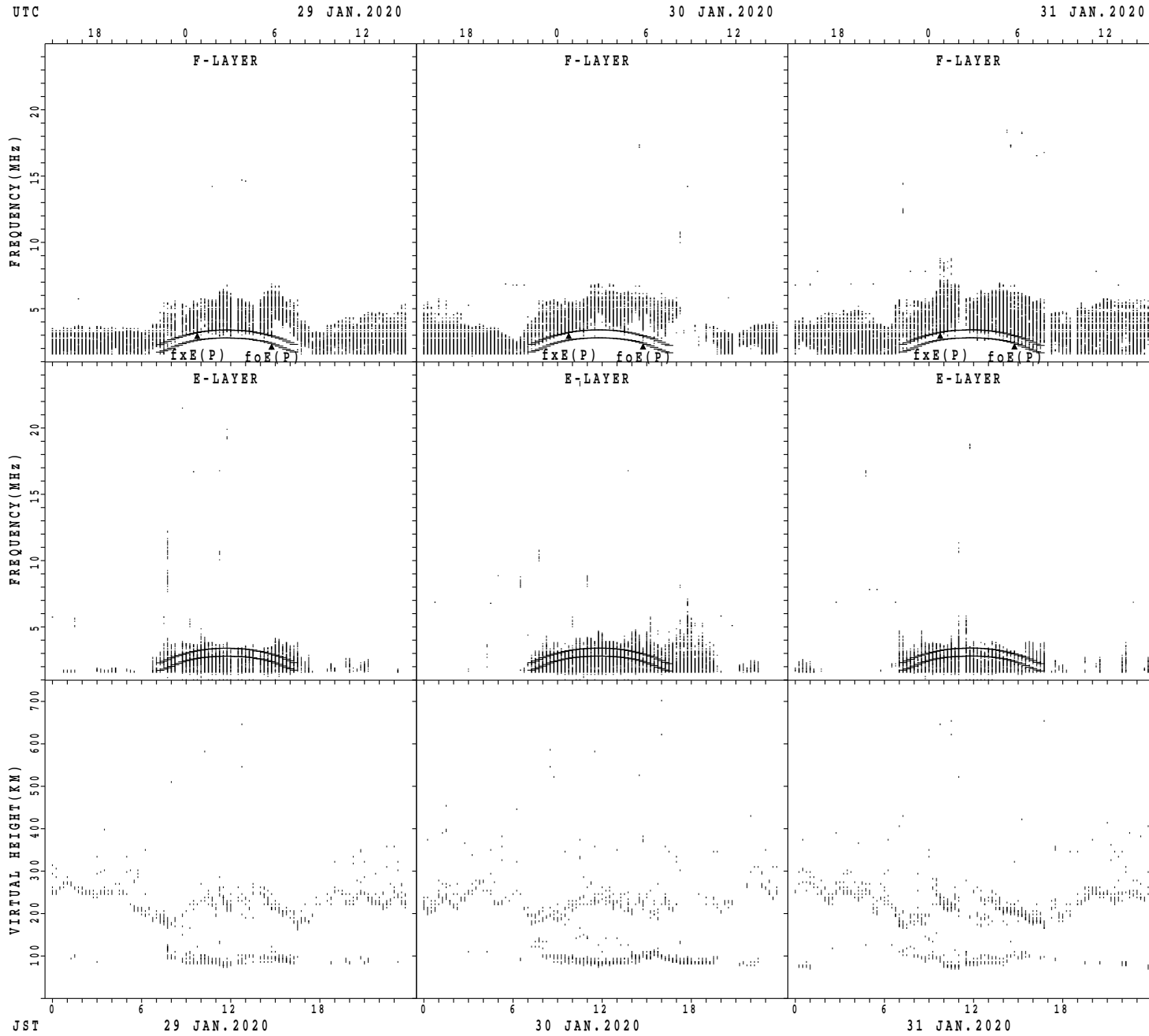
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



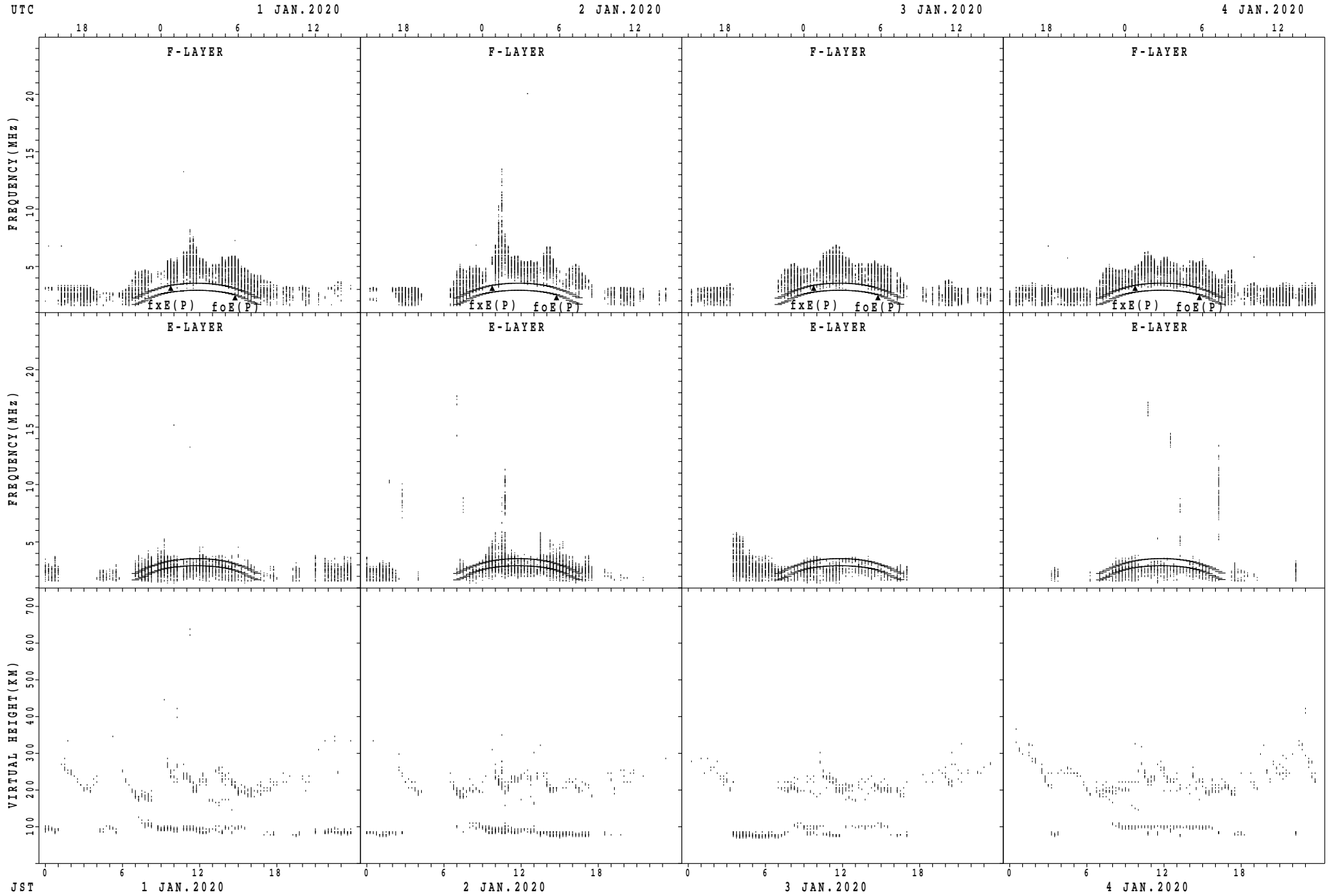
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



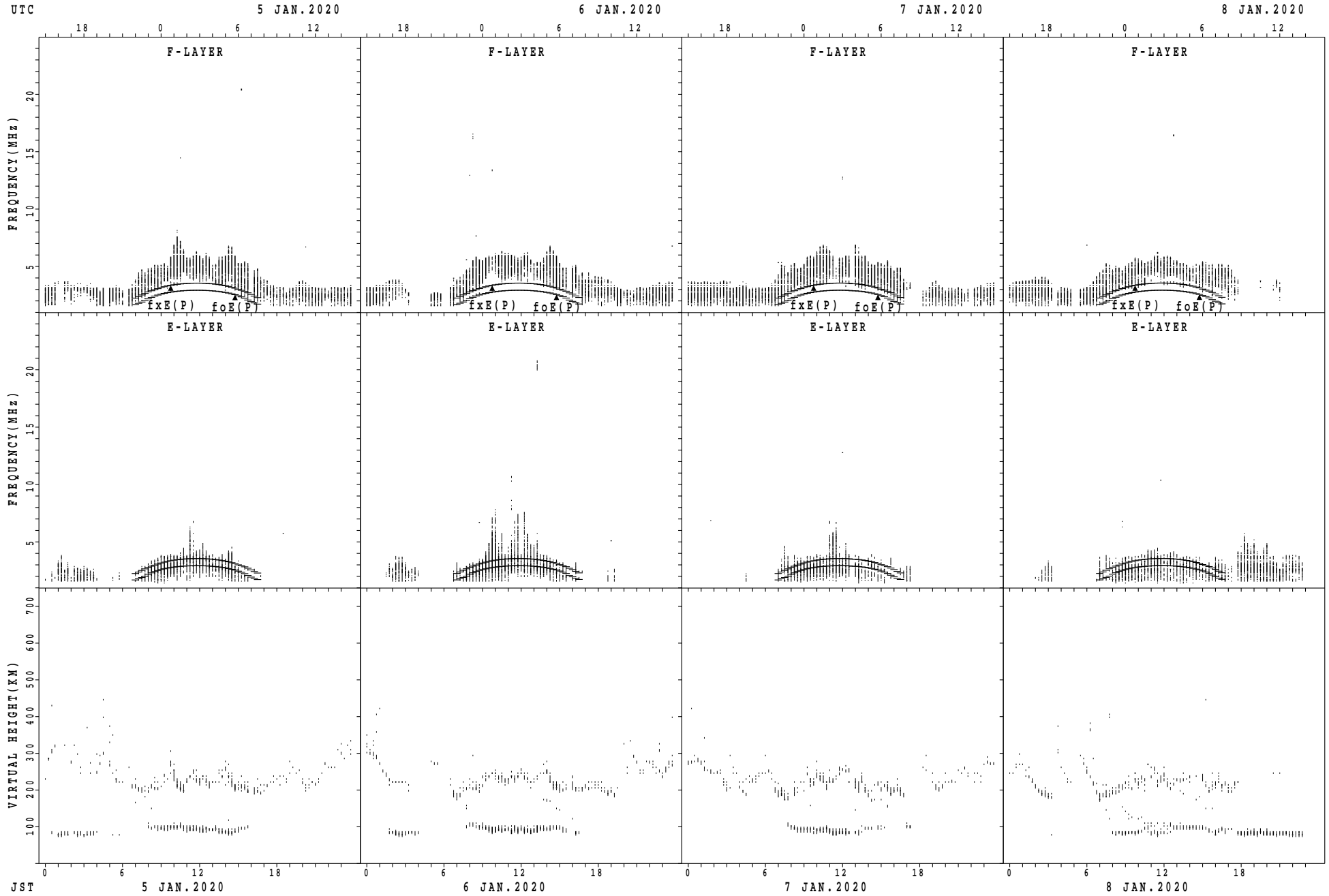
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



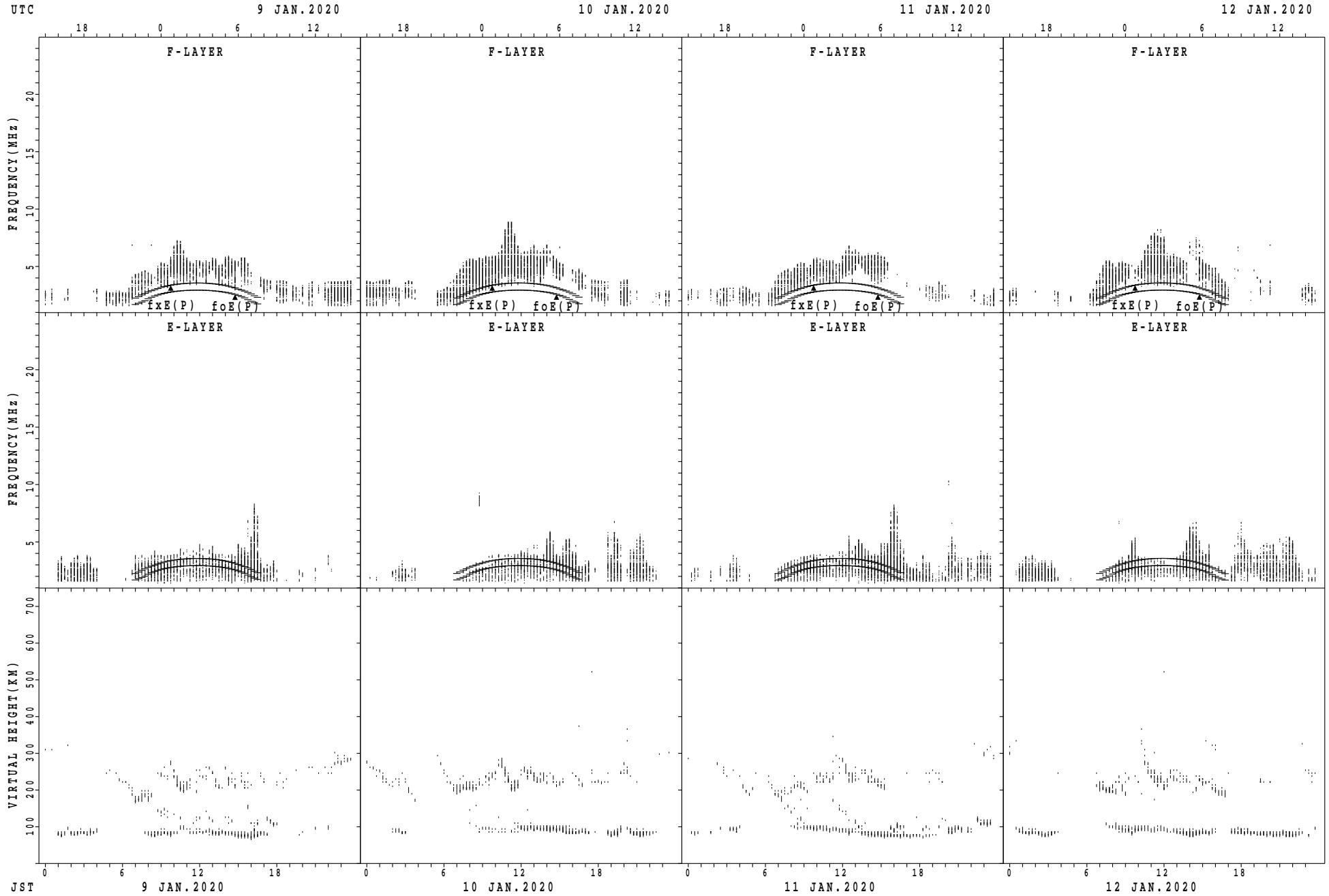
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



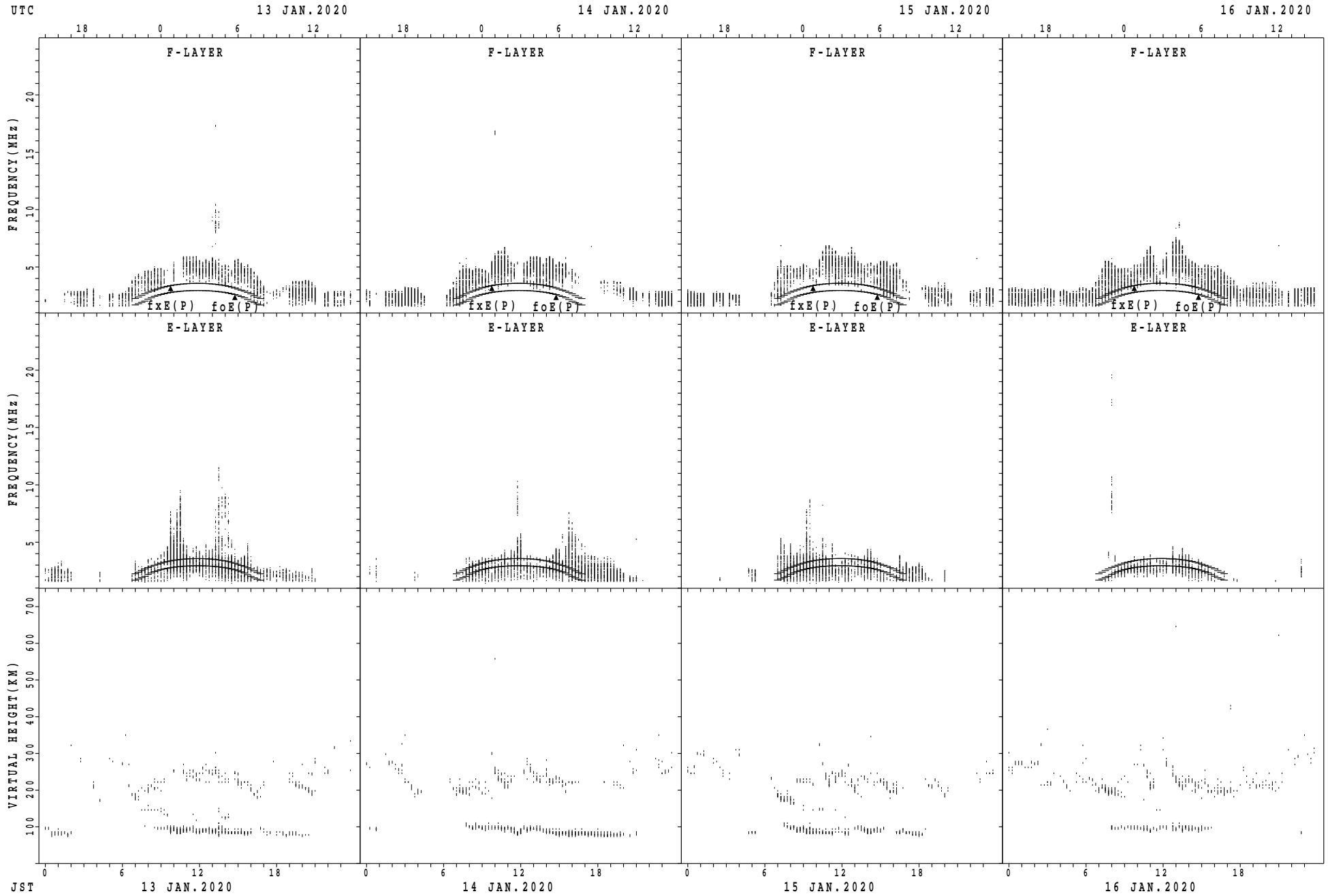
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



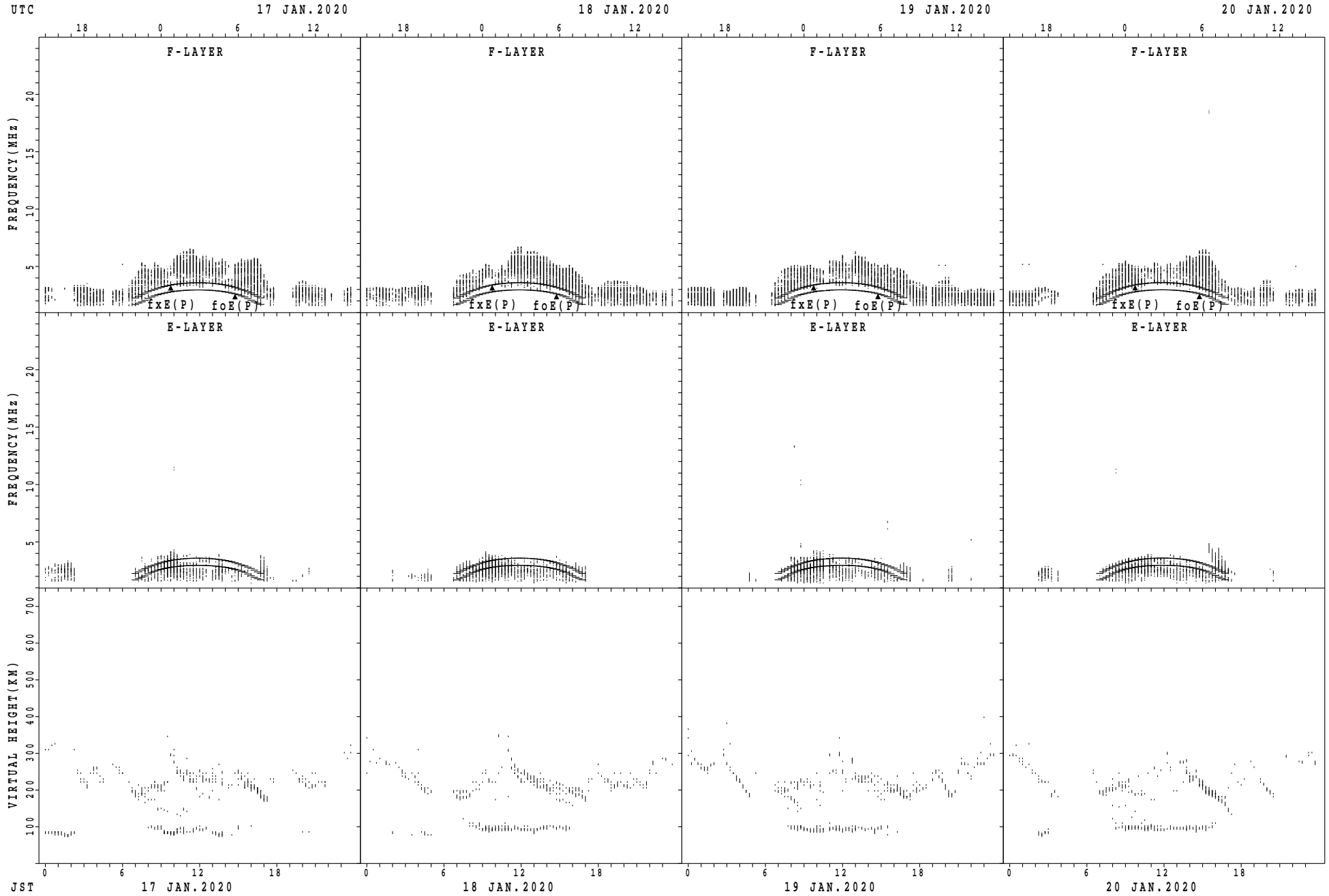
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



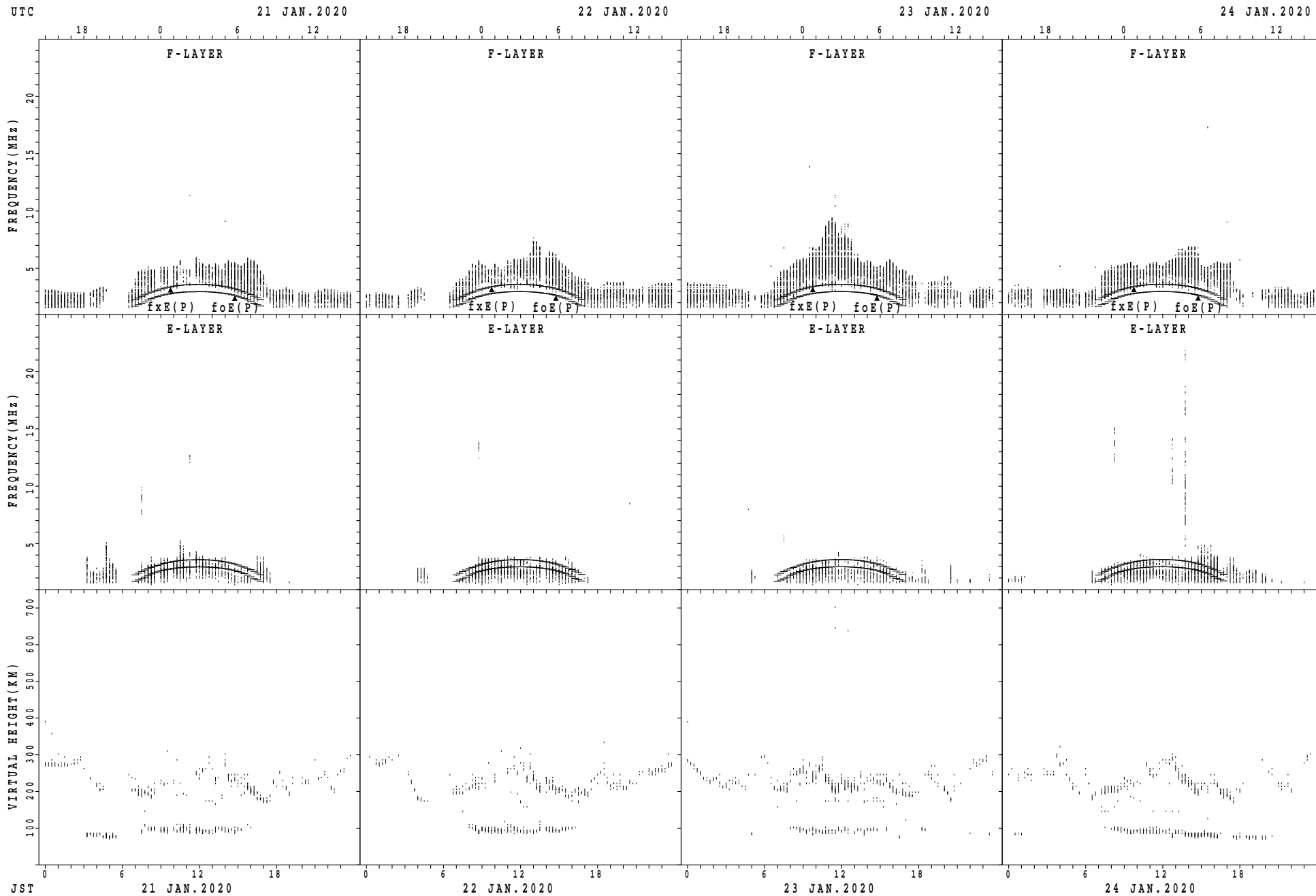
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



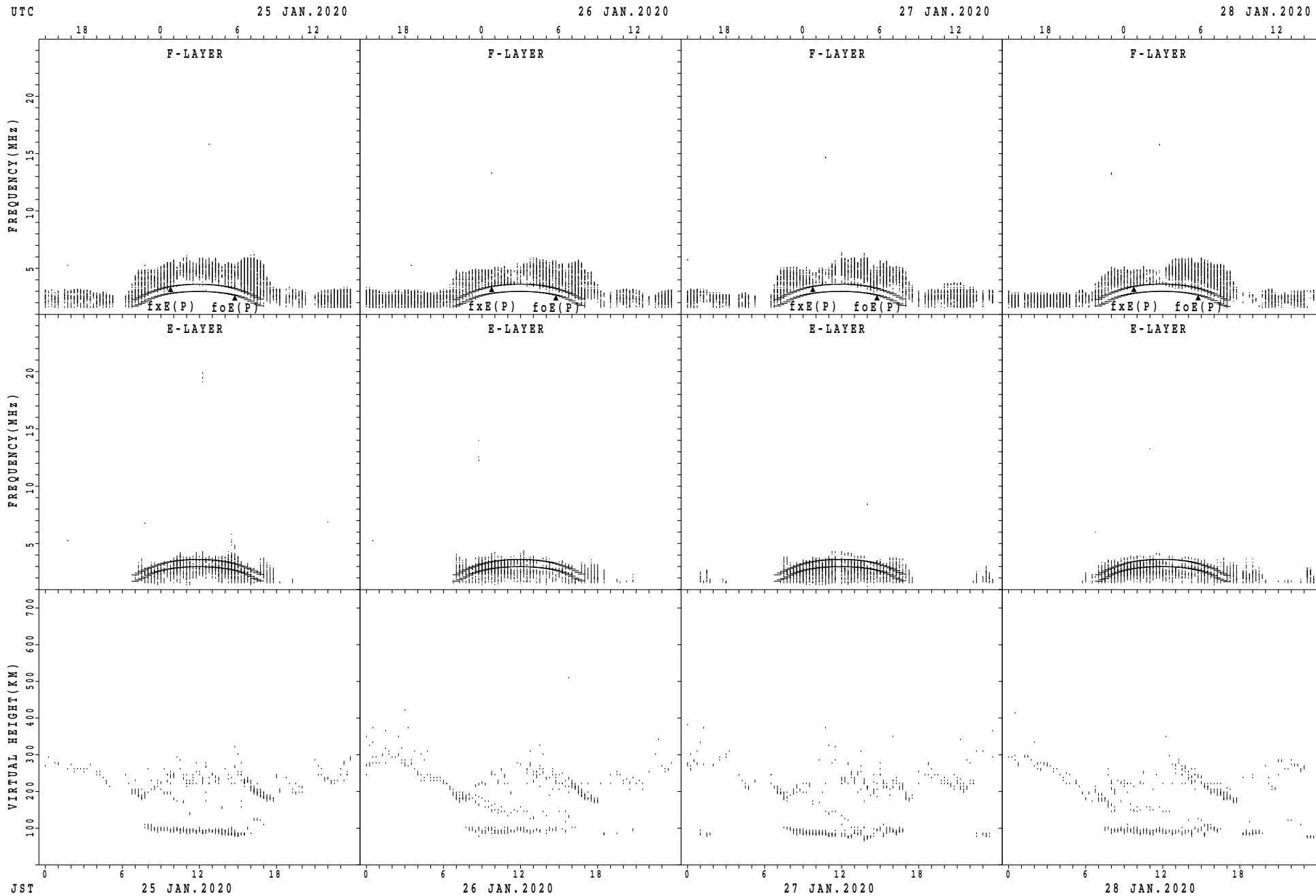
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



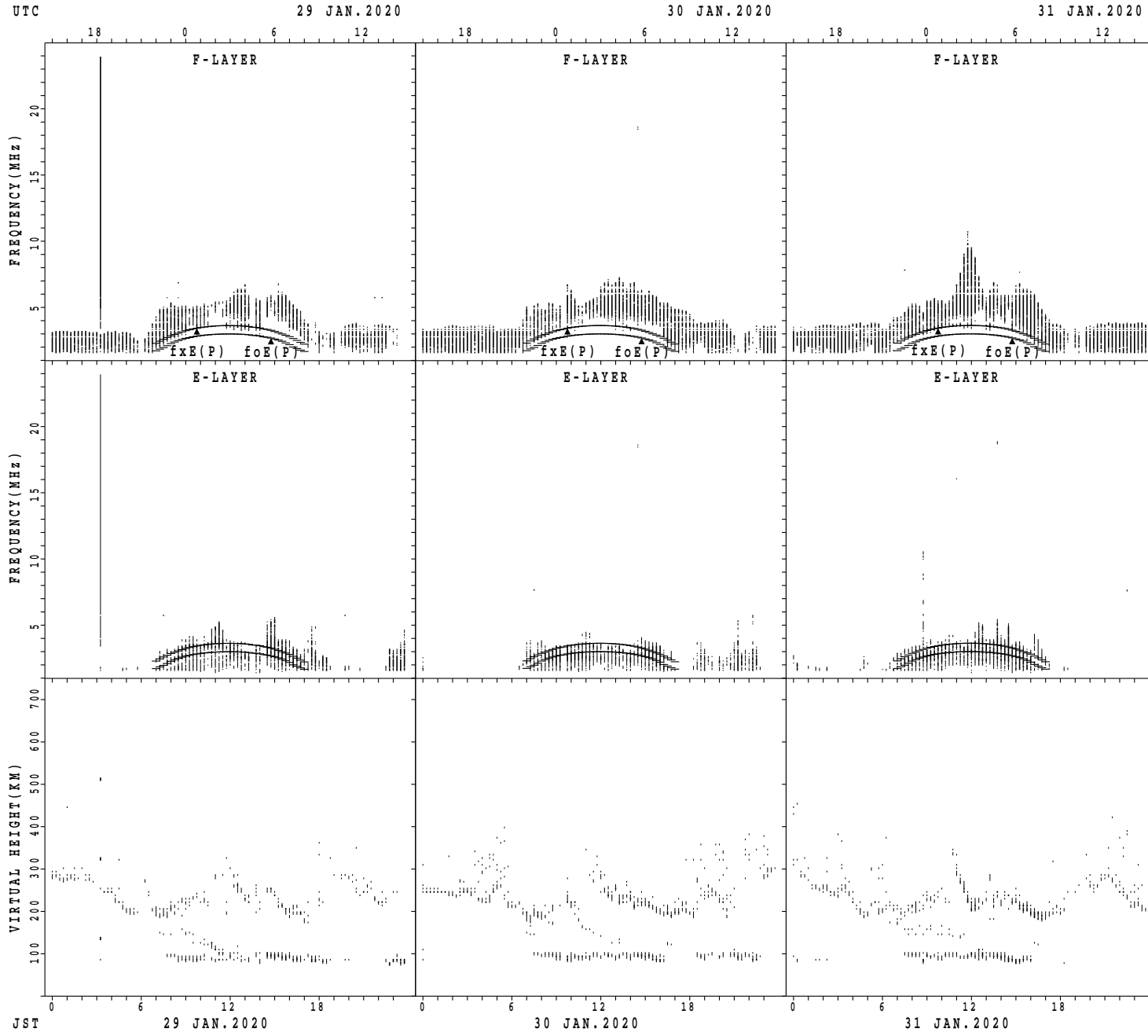
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



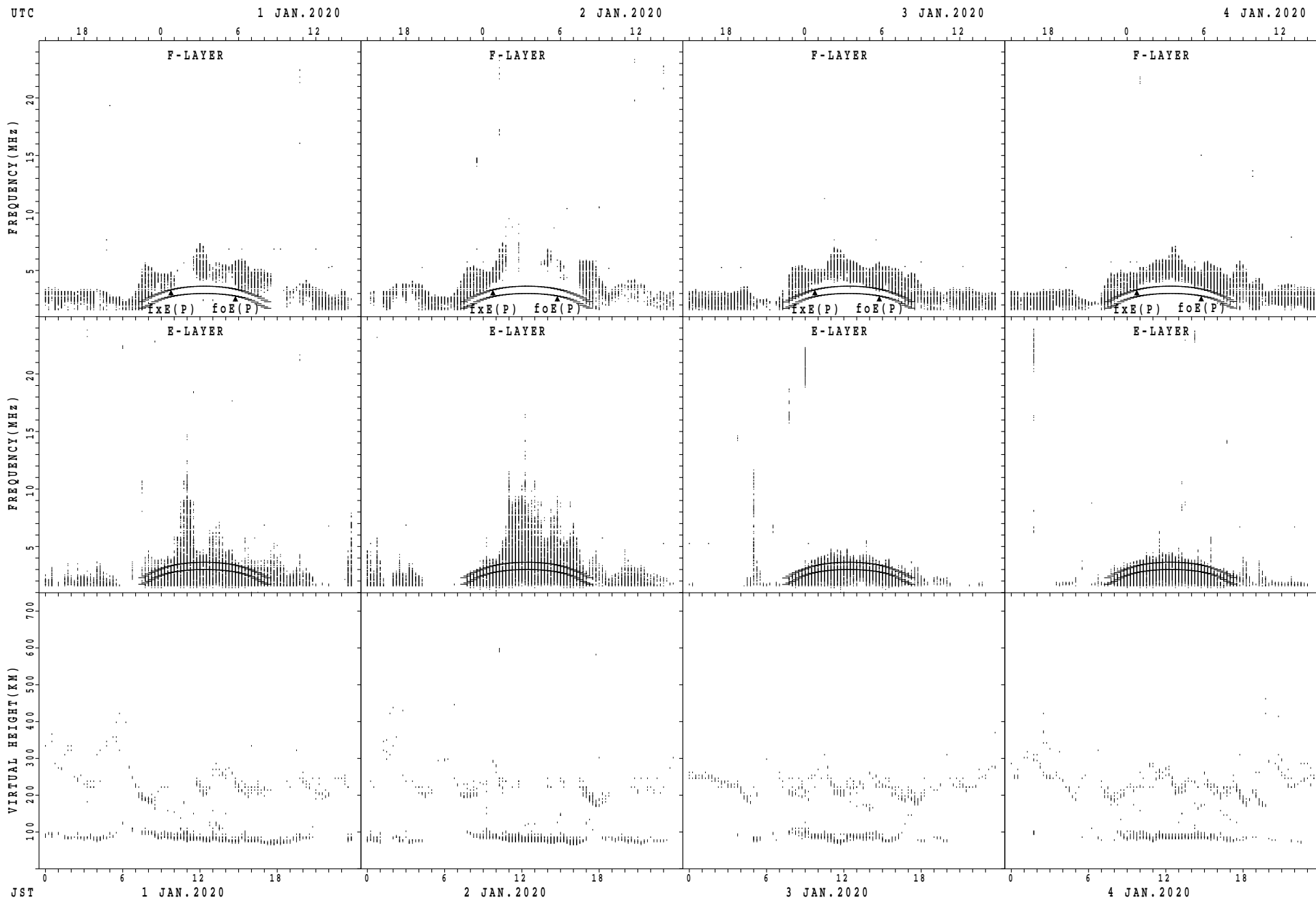
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



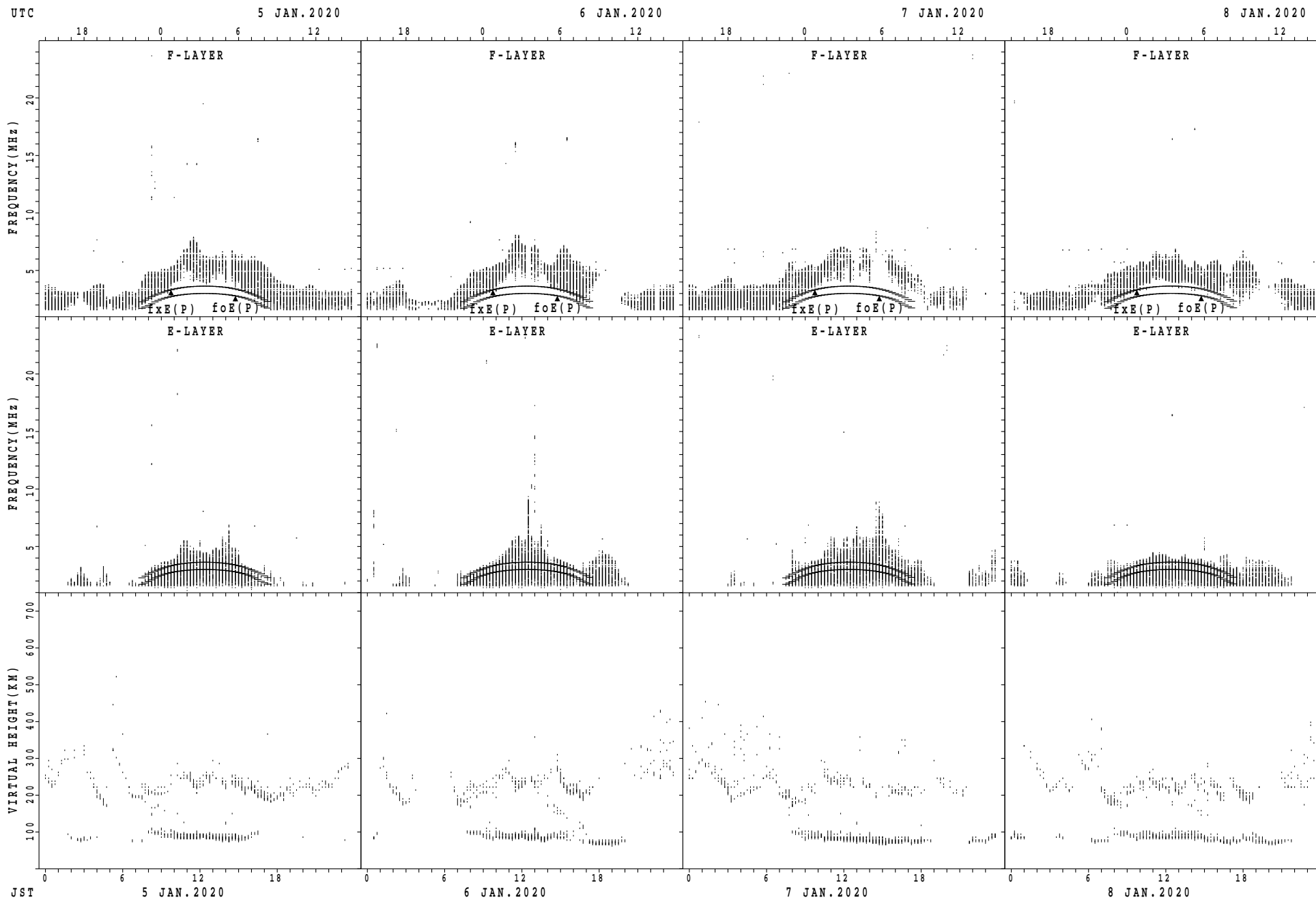
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



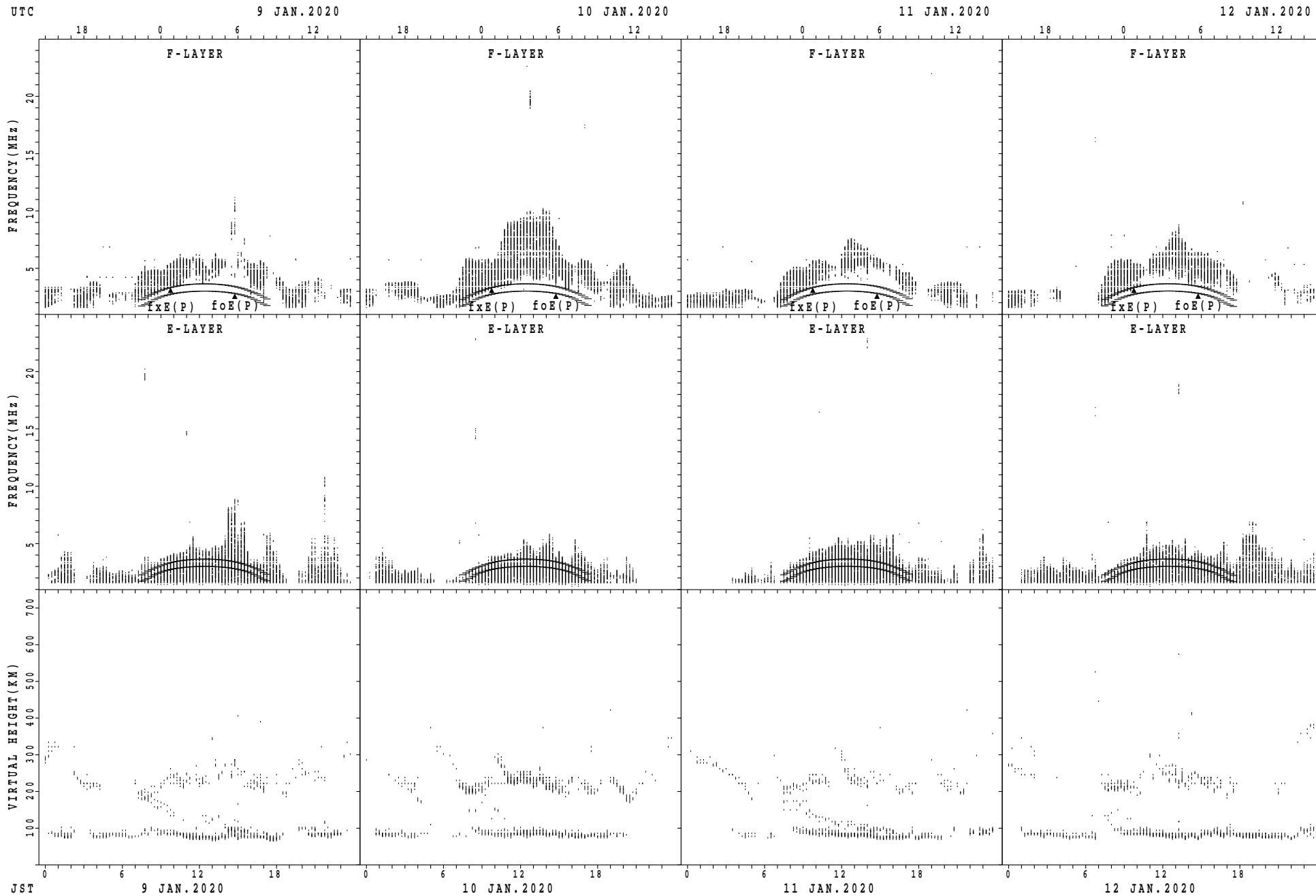
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



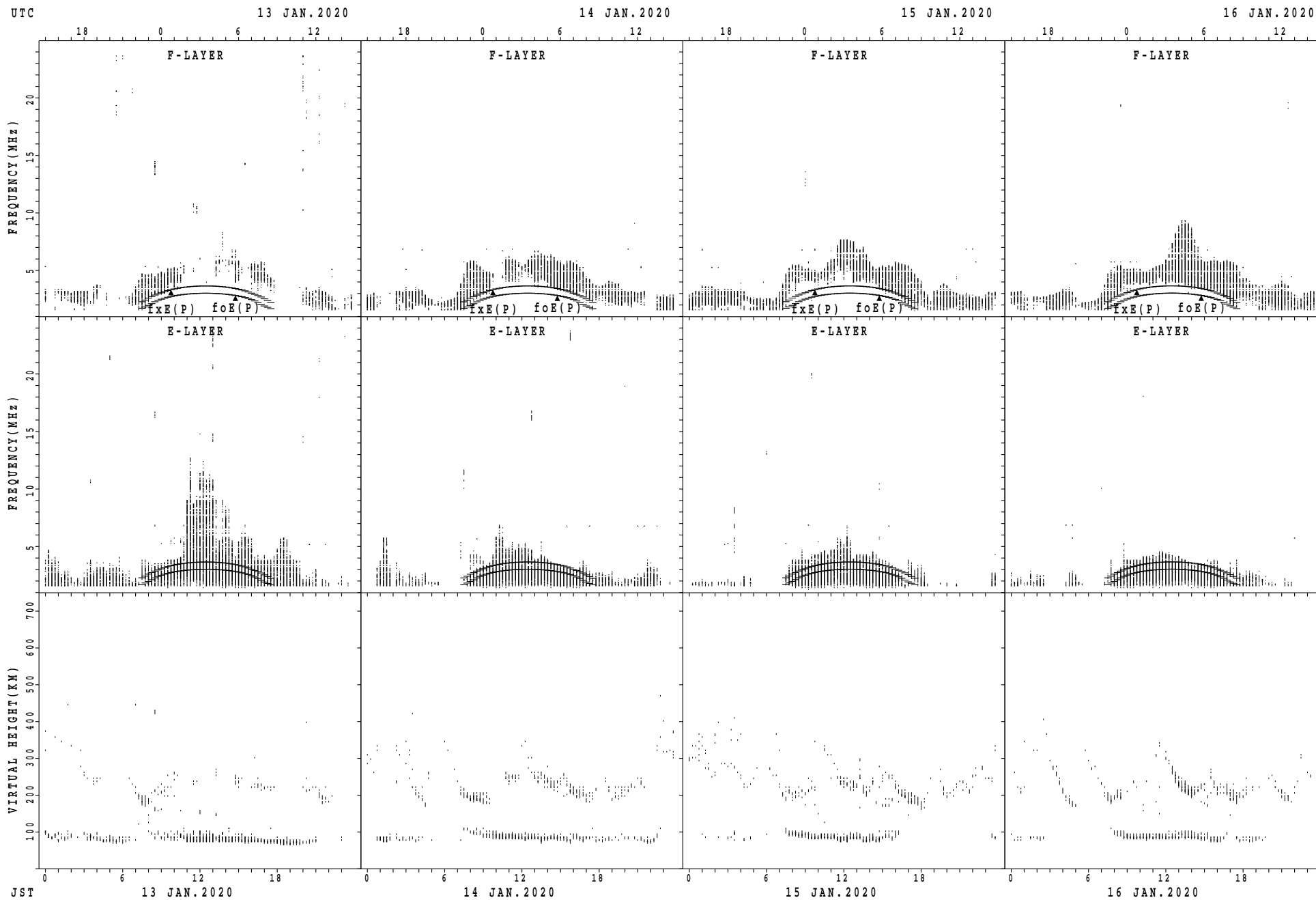
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



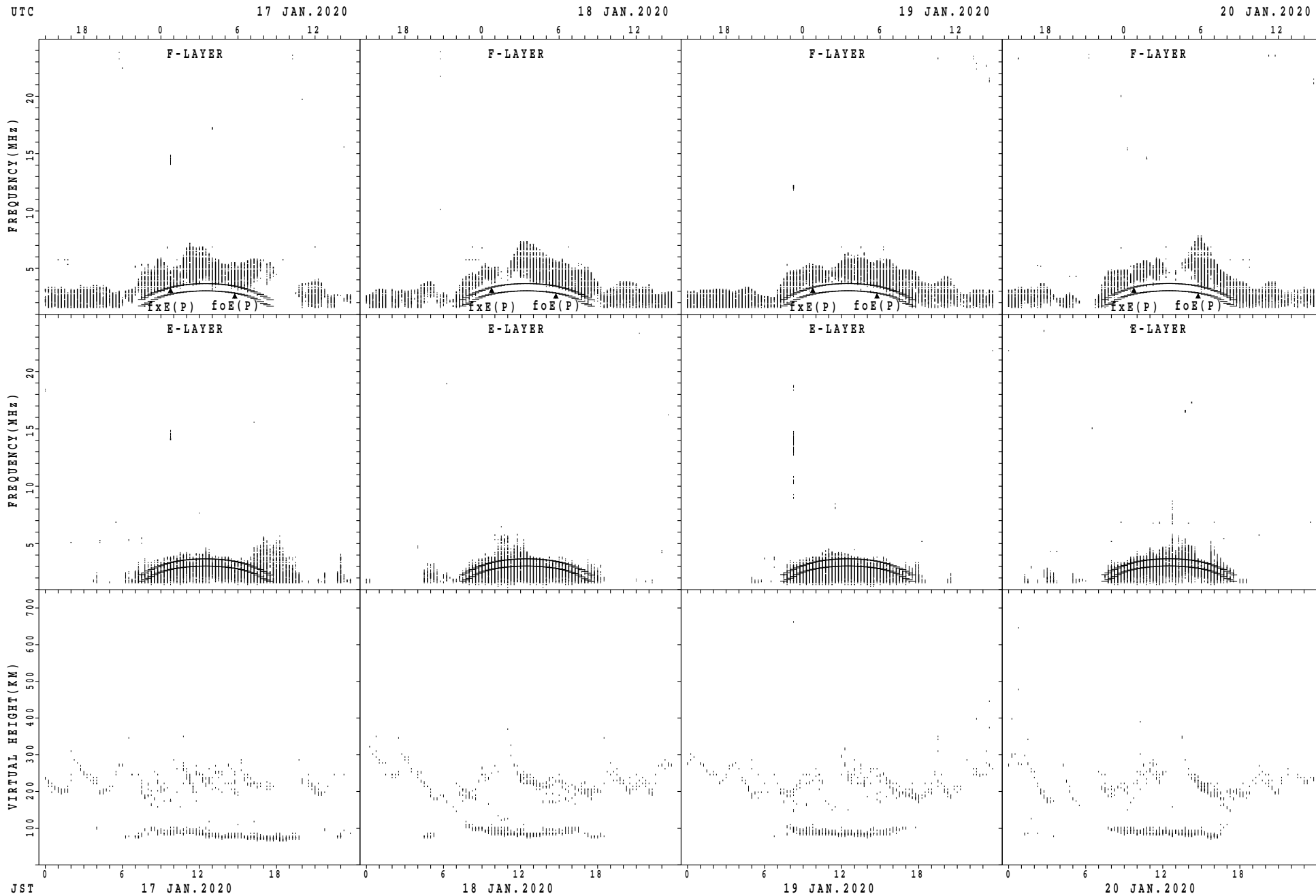
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



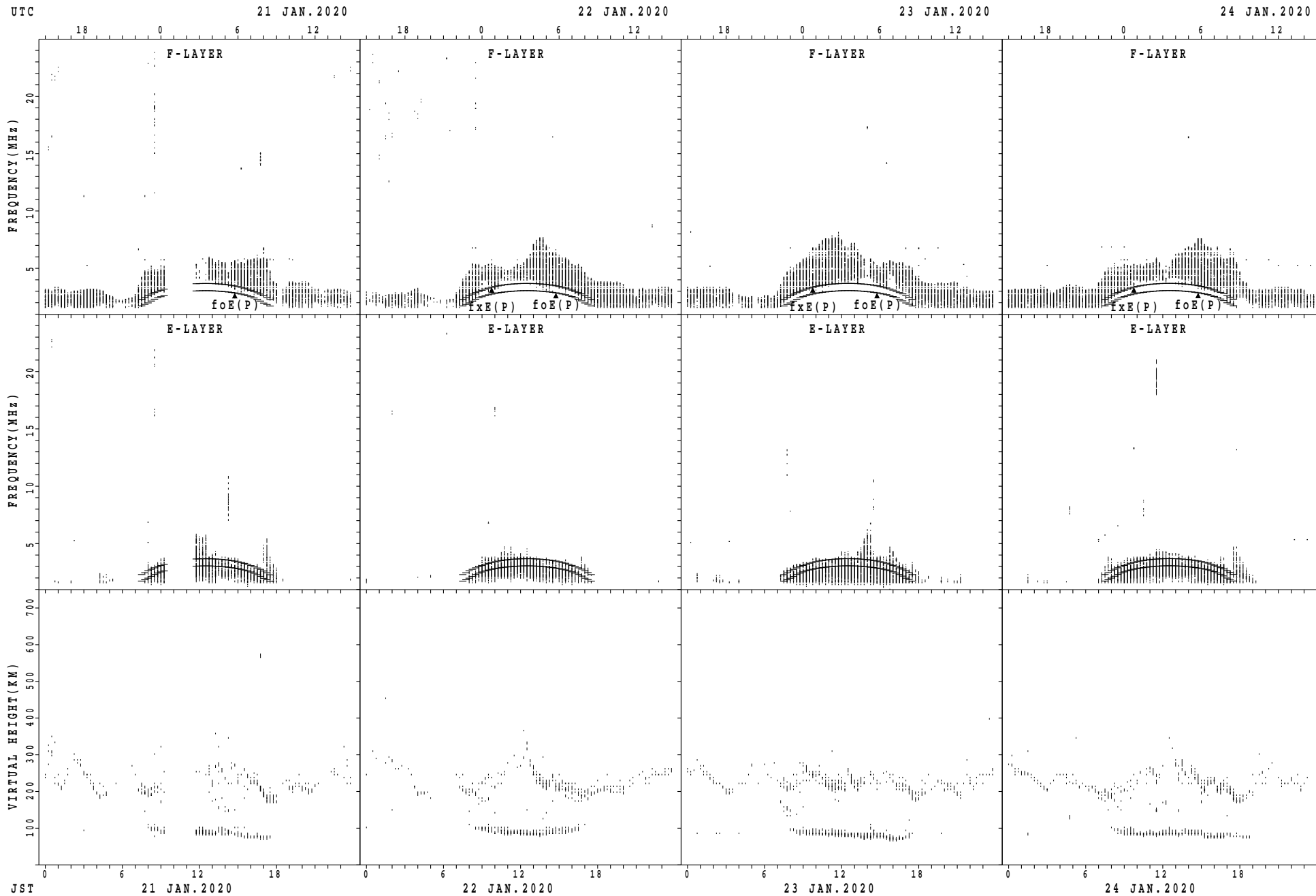
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



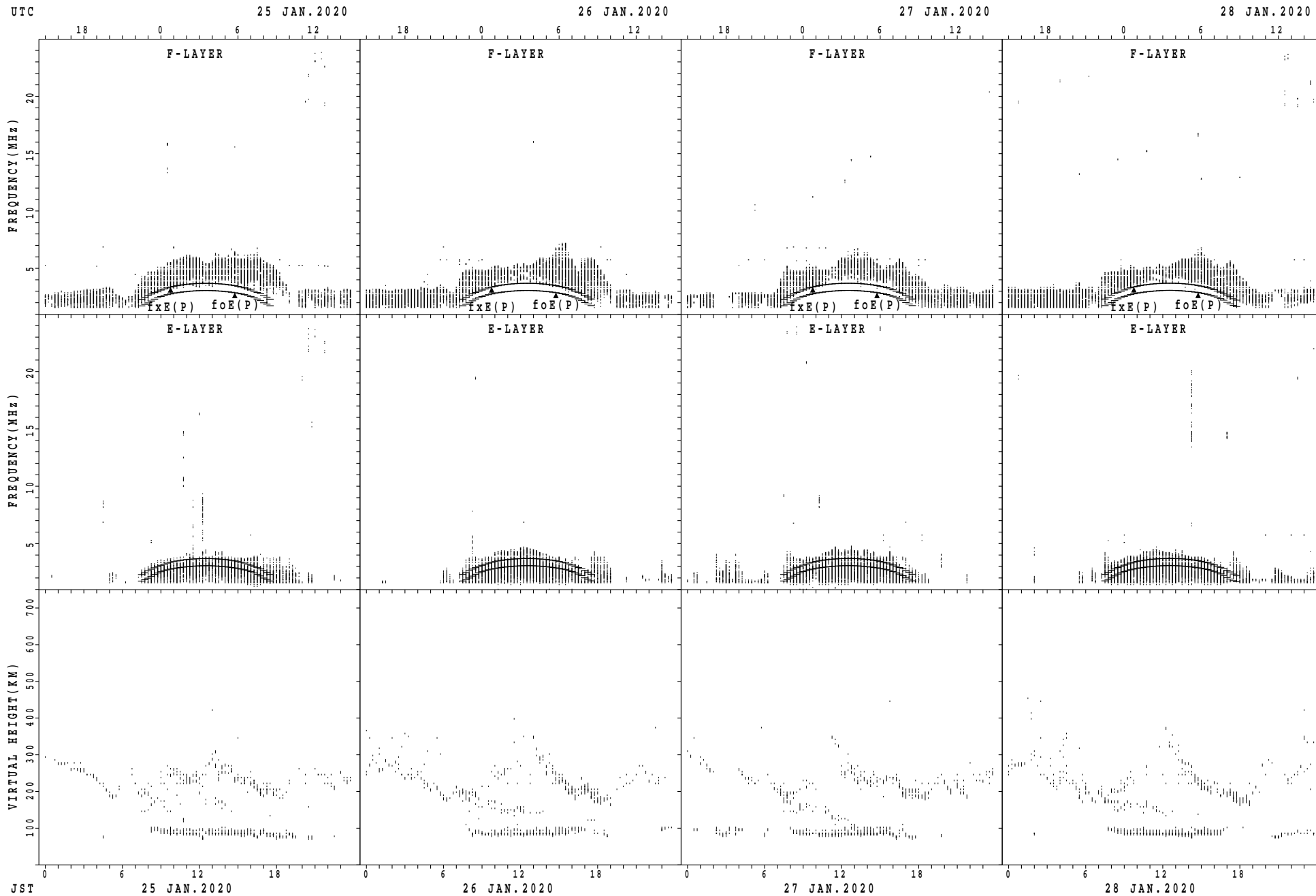
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



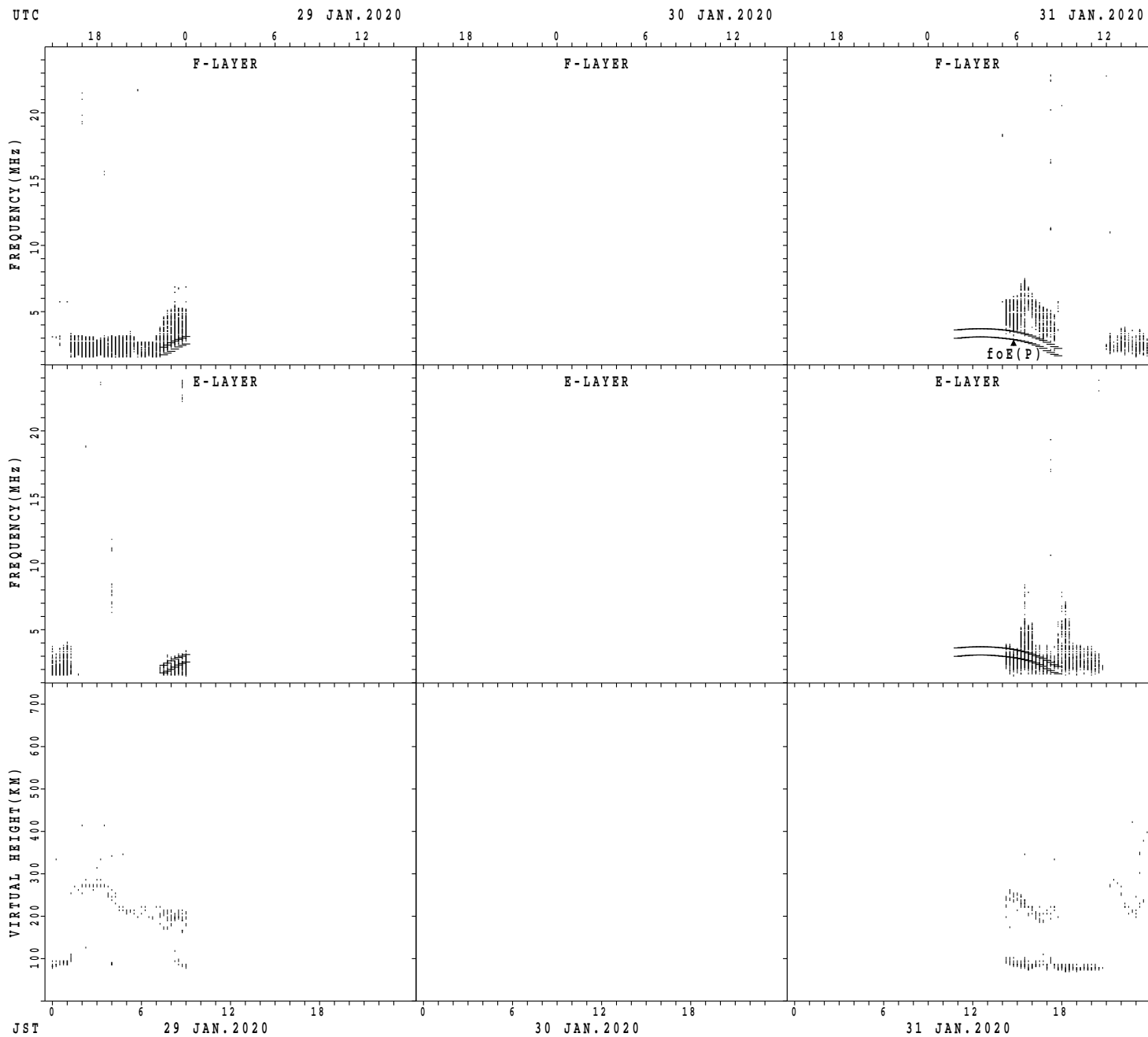
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



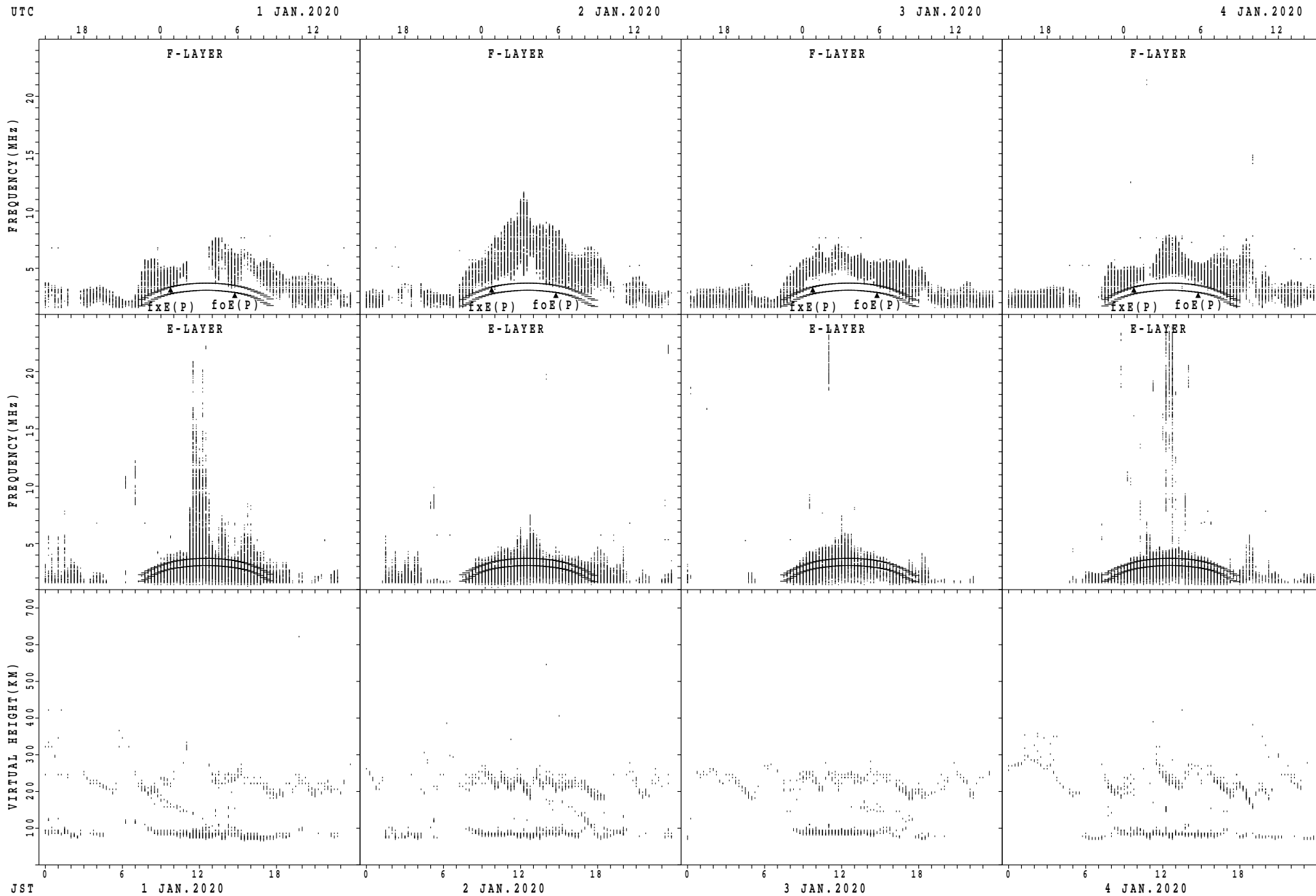
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



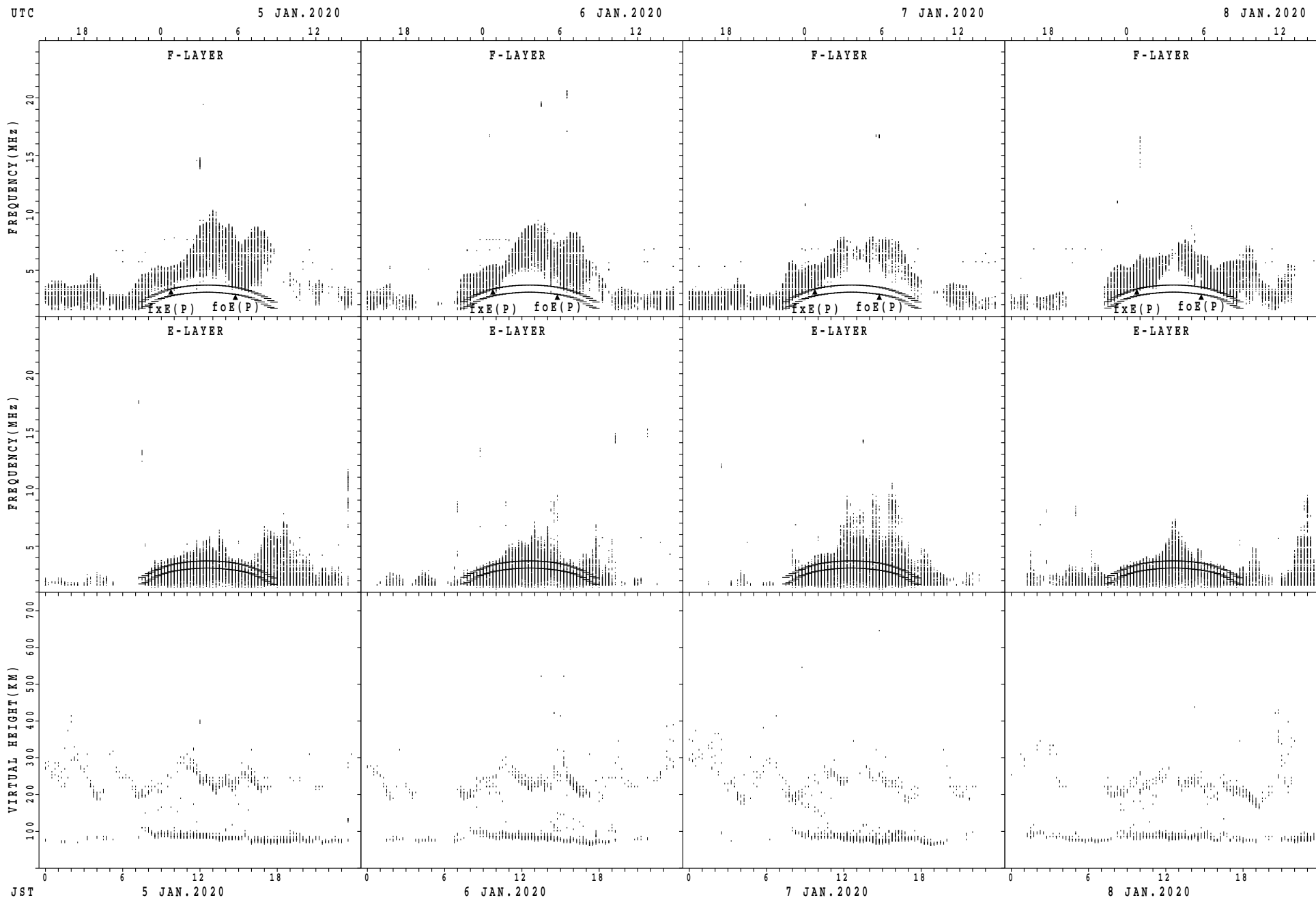
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



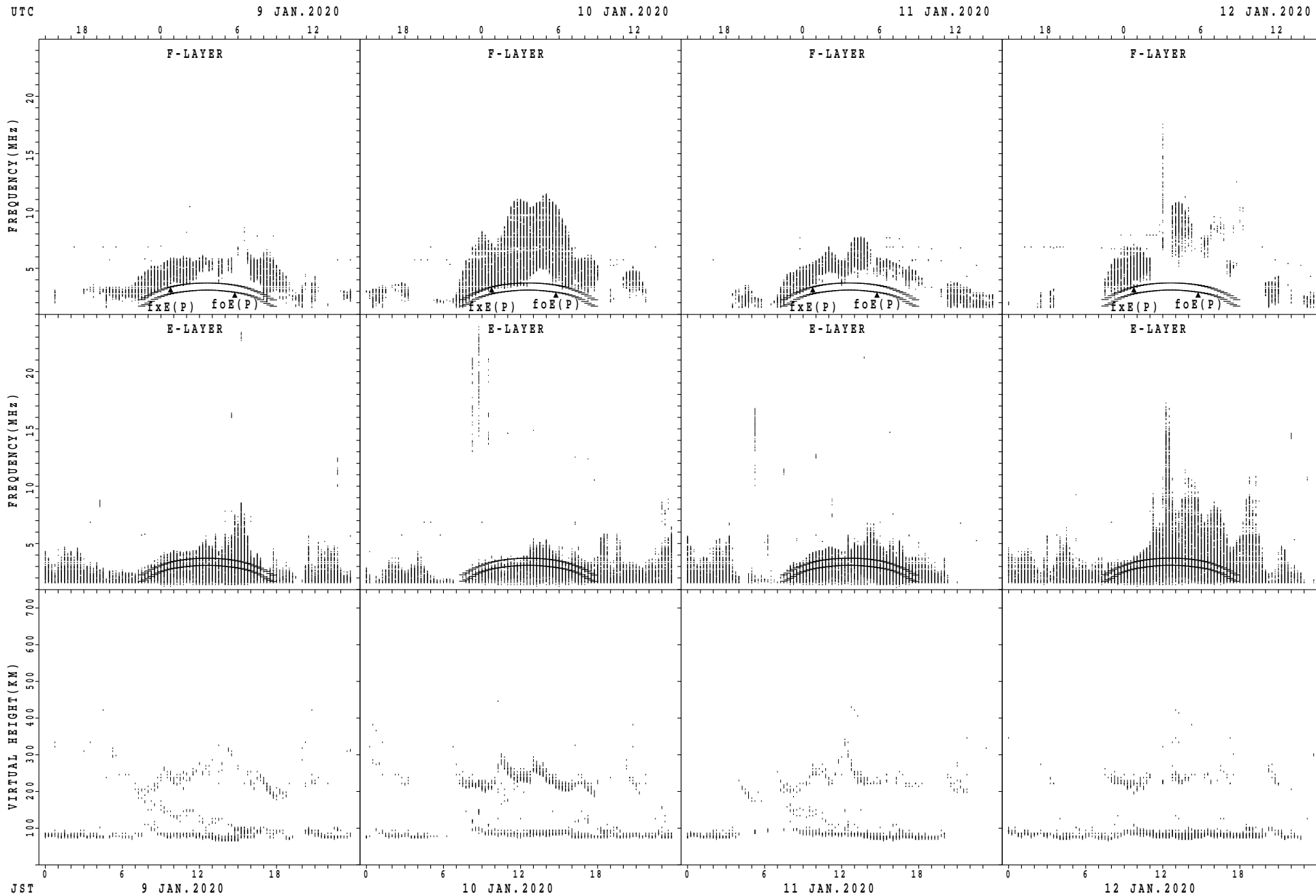
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



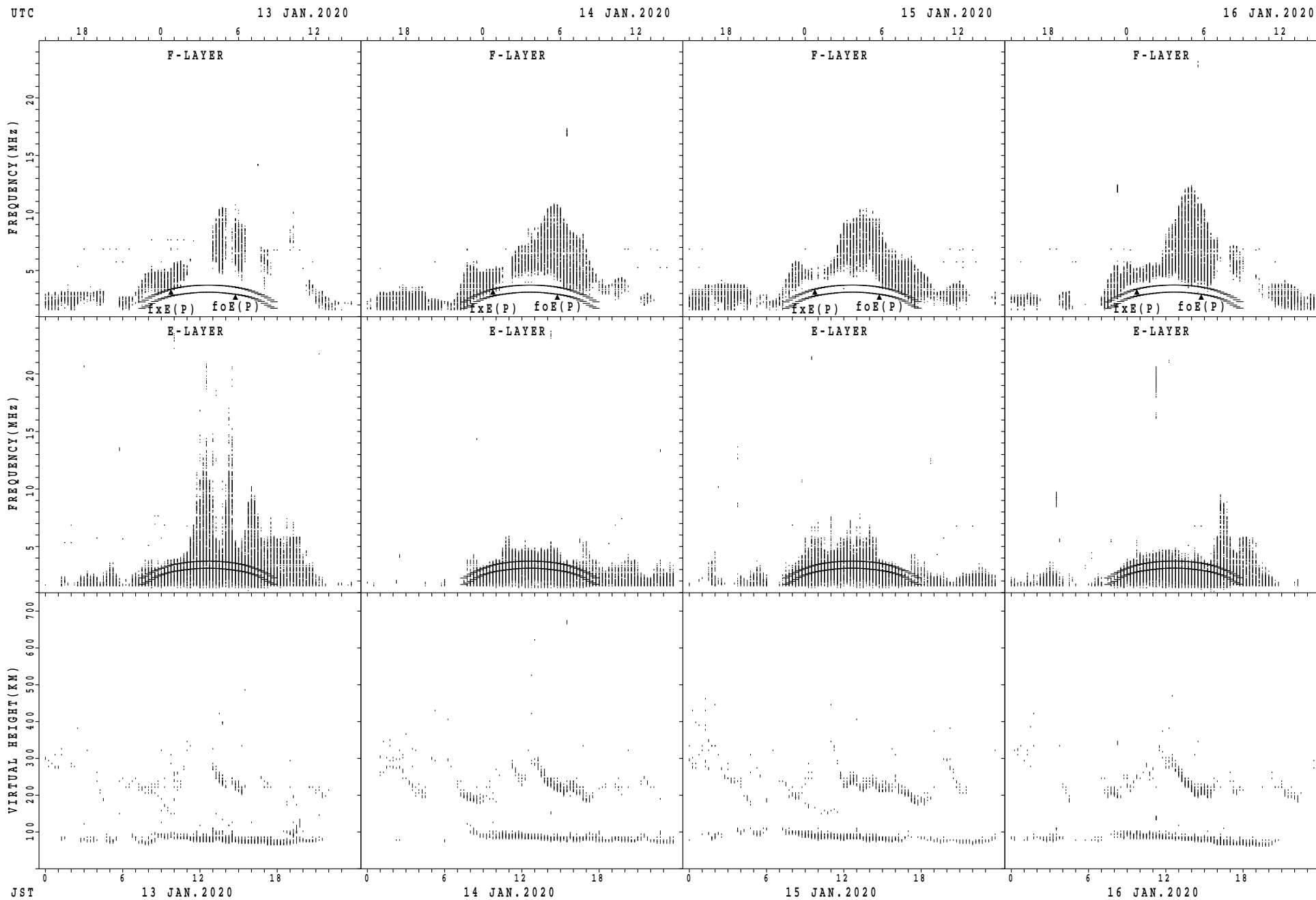
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



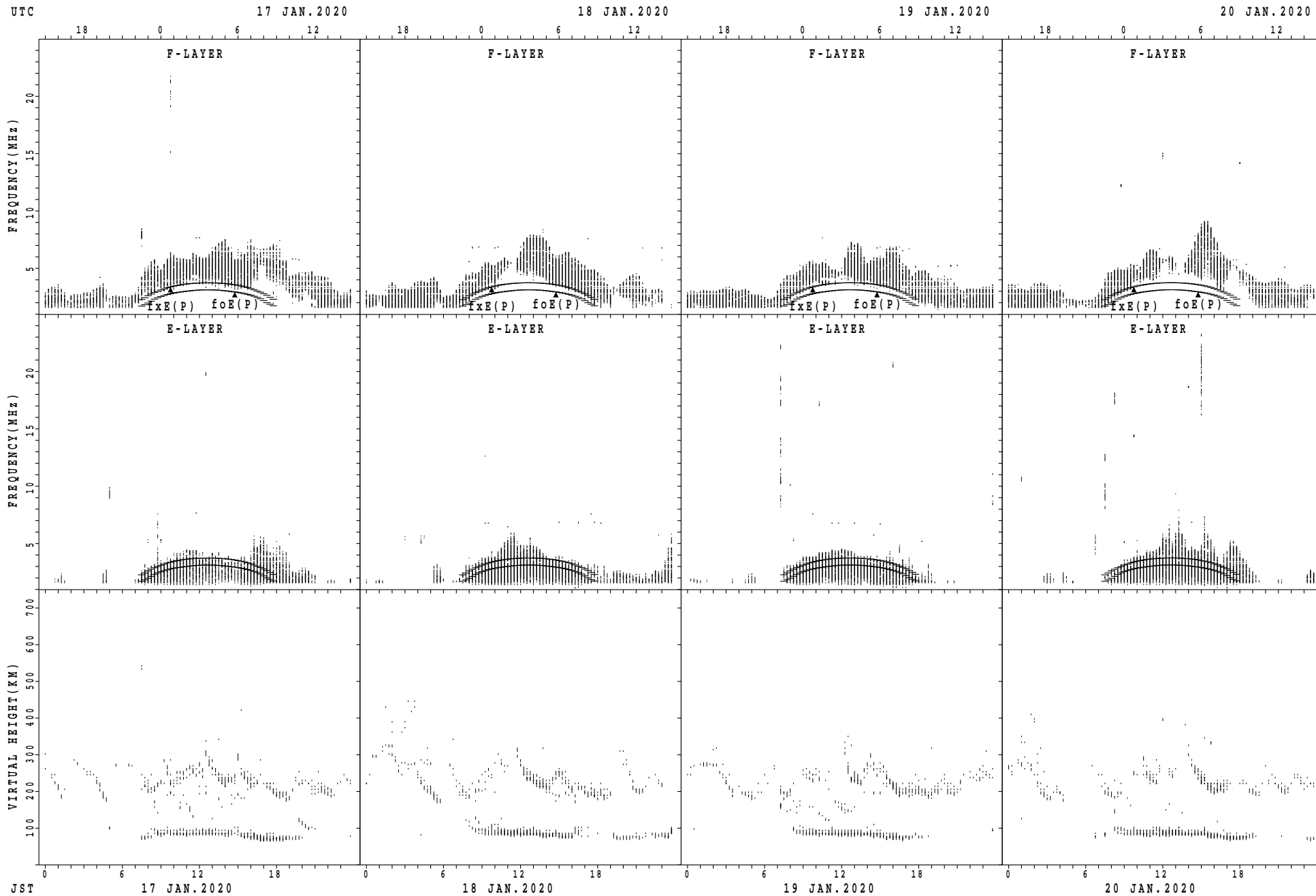
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



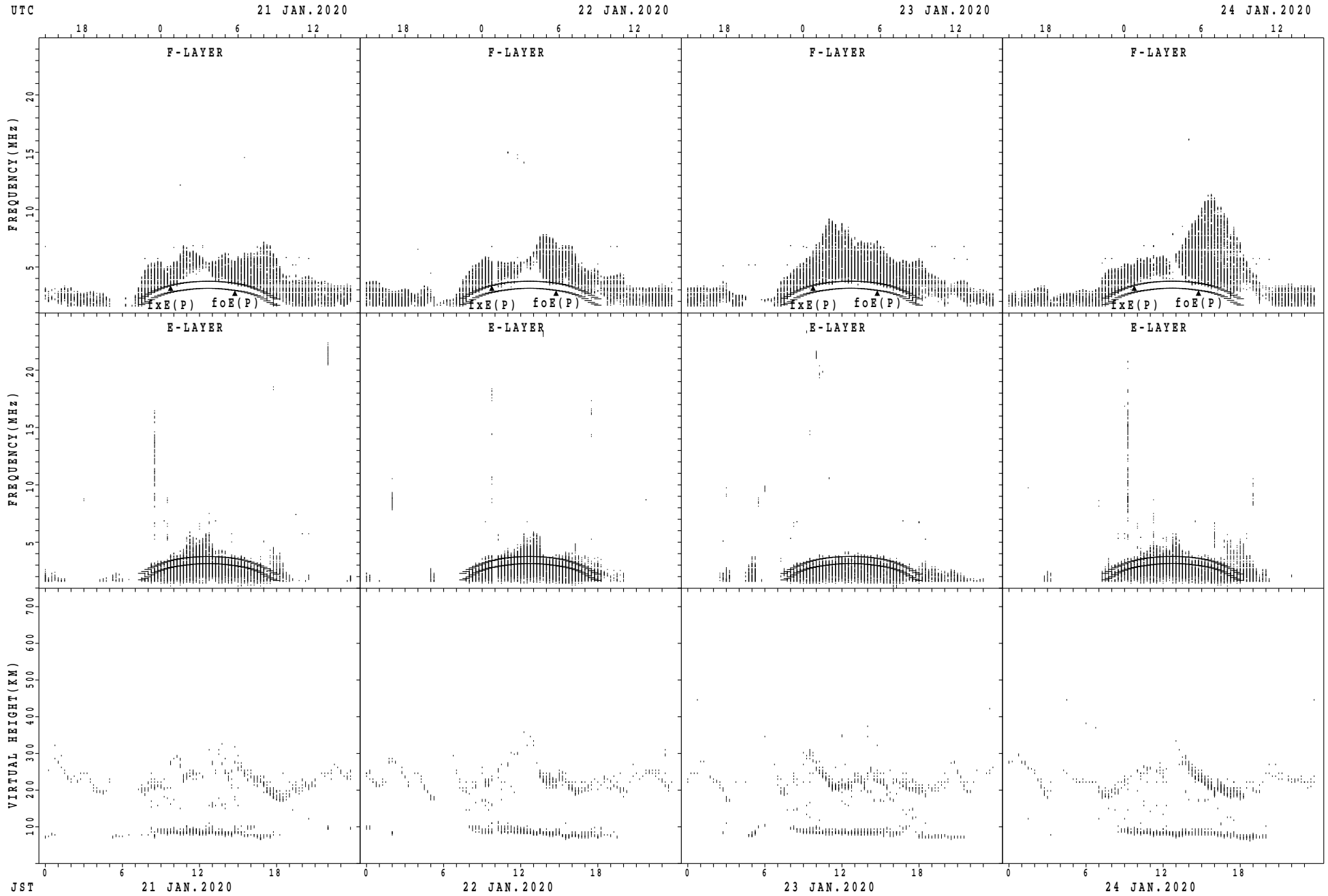
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



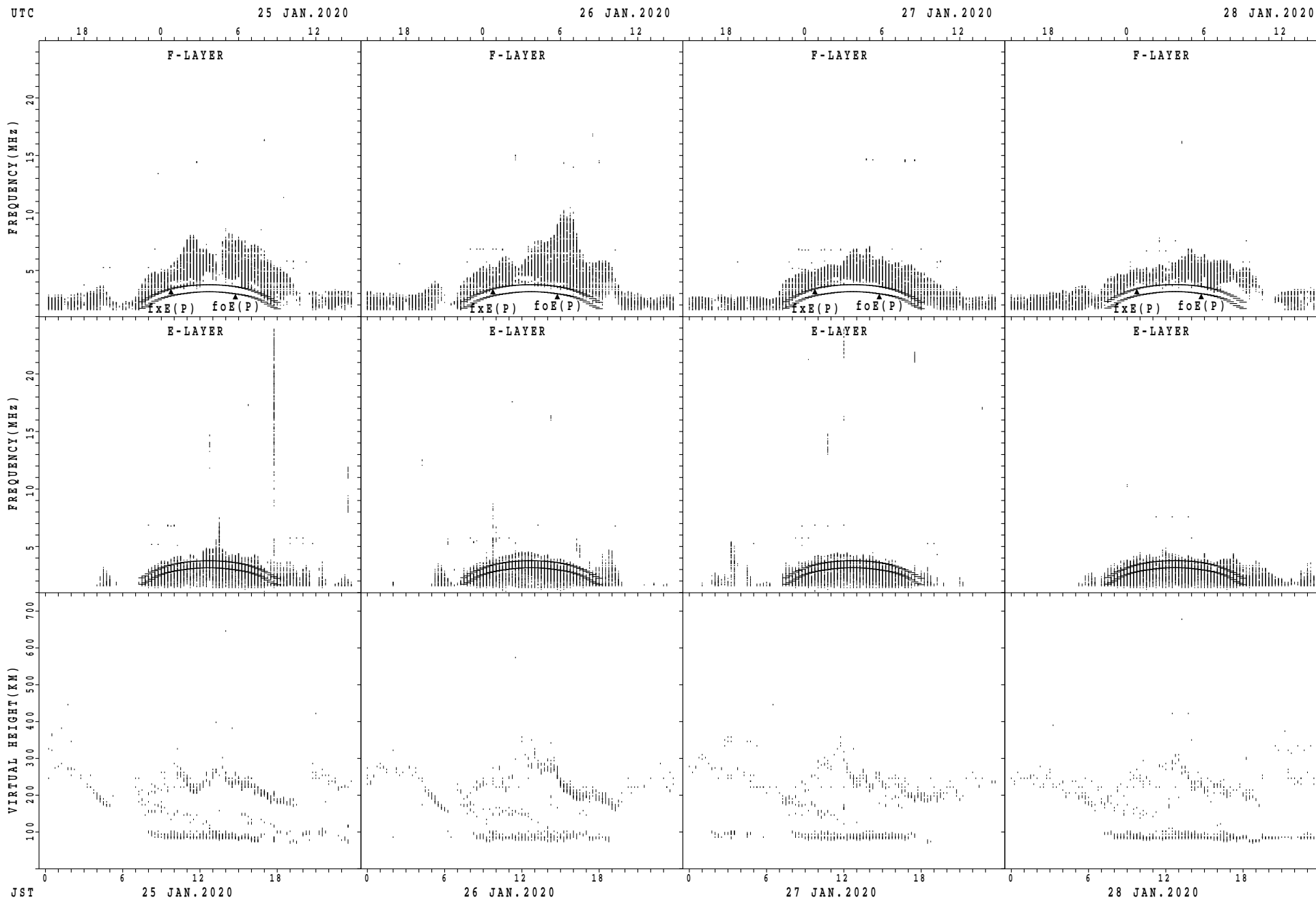
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



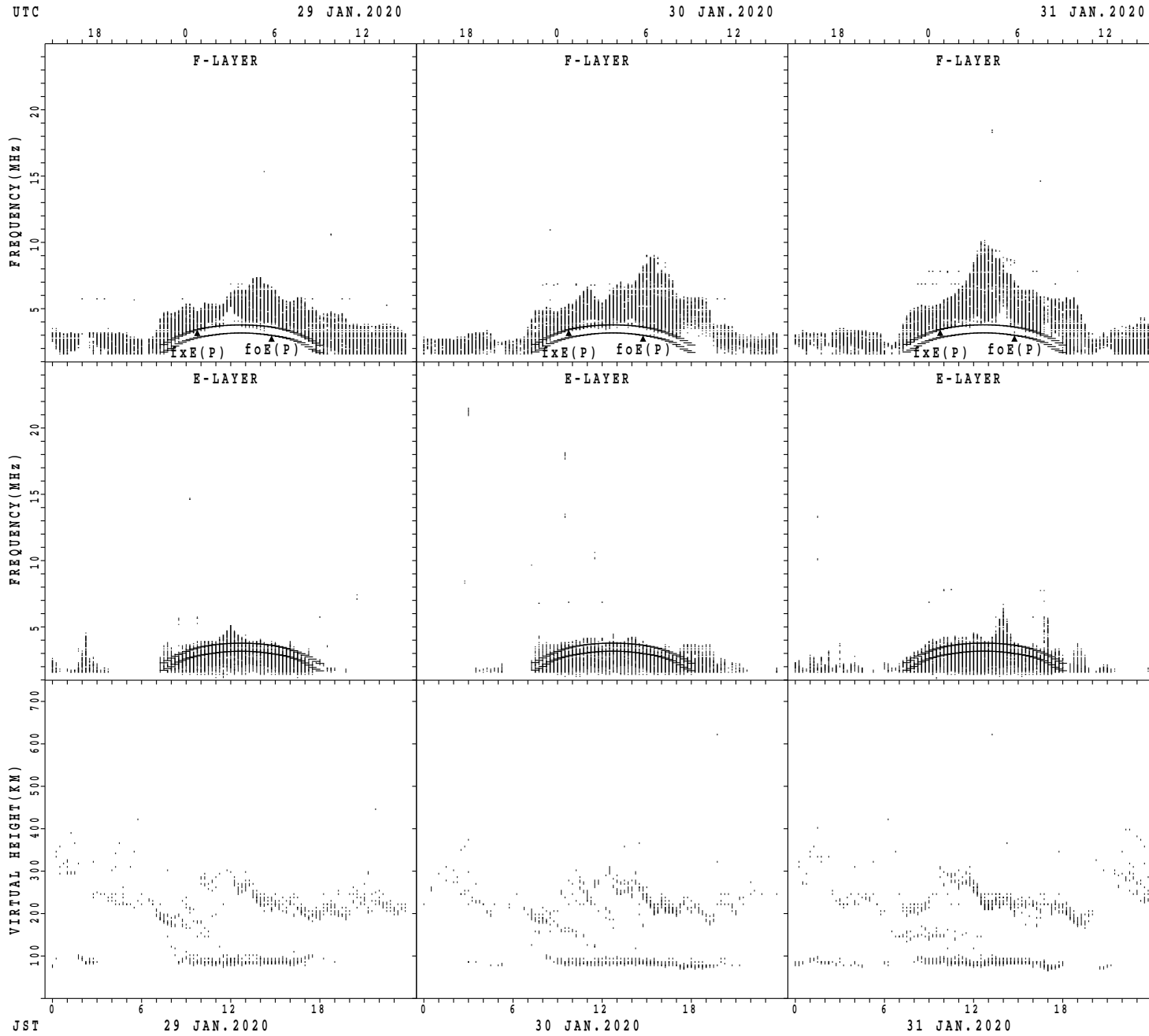
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

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
 JAN. 2020 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1		1				1	7	5	6	2	1									1
MED				246		216				216	222	220	229	243	216									252
U Q				123		108				108	234	230	242	248	108									126
L Q				123		108				108	208	214	222	238	108									126

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	23	24	26	21	20	20	16	22	29	31	31	30	30	30	30	31	27	23	22	20	21	22	28	23
MED	98	97	97	98	96	98	98	98	98	98	98	98	98	98	98	98	98	96	98	98	98	98	98	98
U Q	98	98	98	98	98	99	98	98	100	100	100	100	100	100	100	100	100	98	98	98	98	98	98	98
L Q	96	96	94	96	95	96	96	96	98	98	96	96	96	98	96	96	98	94	96	94	94	96	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											6	6		5	5	2								
MED											248	235		224	226	236								
U Q											258	238		260	241	246								
L Q											230	222		215	220	226								

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	14	14	14	13	17	11	6	14	31	31	31	31	30	31	31	31	26	24	17	17	13	11	13	13
MED	96	98	96	98	98	98	97	129	98	98	98	98	98	98	98	98	98	98	96	96	96	96	98	96
U Q	98	98	98	98	98	98	98	181	98	100	100	100	100	100	100	98	98	99	98	98	99	98	98	98
L Q	96	96	96	96	96	96	96	98	98	98	96	96	98	98	96	96	94	96	94	95	96	90	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										1		2			4	8	1	1						
MED										216		244			232	234	244	198						
U Q										108		258			233	250	122	99						
L Q										108		230			221	226	122	99						

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	17	17	22	20	23	18	14	17	29	29	27	27	28	28	28	29	29	29	28	24	22	20	13	16	
MED	96	96	98	97	98	96	96	98	98	98	98	96	96	98	97	98	96	96	96	96	96	96	96	96	
U Q	98	98	98	98	98	98	96	98	98	99	98	98	98	98	98	98	98	98	98	98	98	98	98	98	
L Q	96	96	96	96	96	94	94	96	98	98	98	92	94	96	94	95	93	94	94	94	94	94	96	92	94

MONTHLY MEDIANS OF h'F AND h'Es
 JAN. 2020 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										1	5					18	13	3	1	1				
MED										210	224					226	224	216	210	226				
U Q										105	236					236	238	242	105	113				
L Q										105	220					214	206	198	105	113				

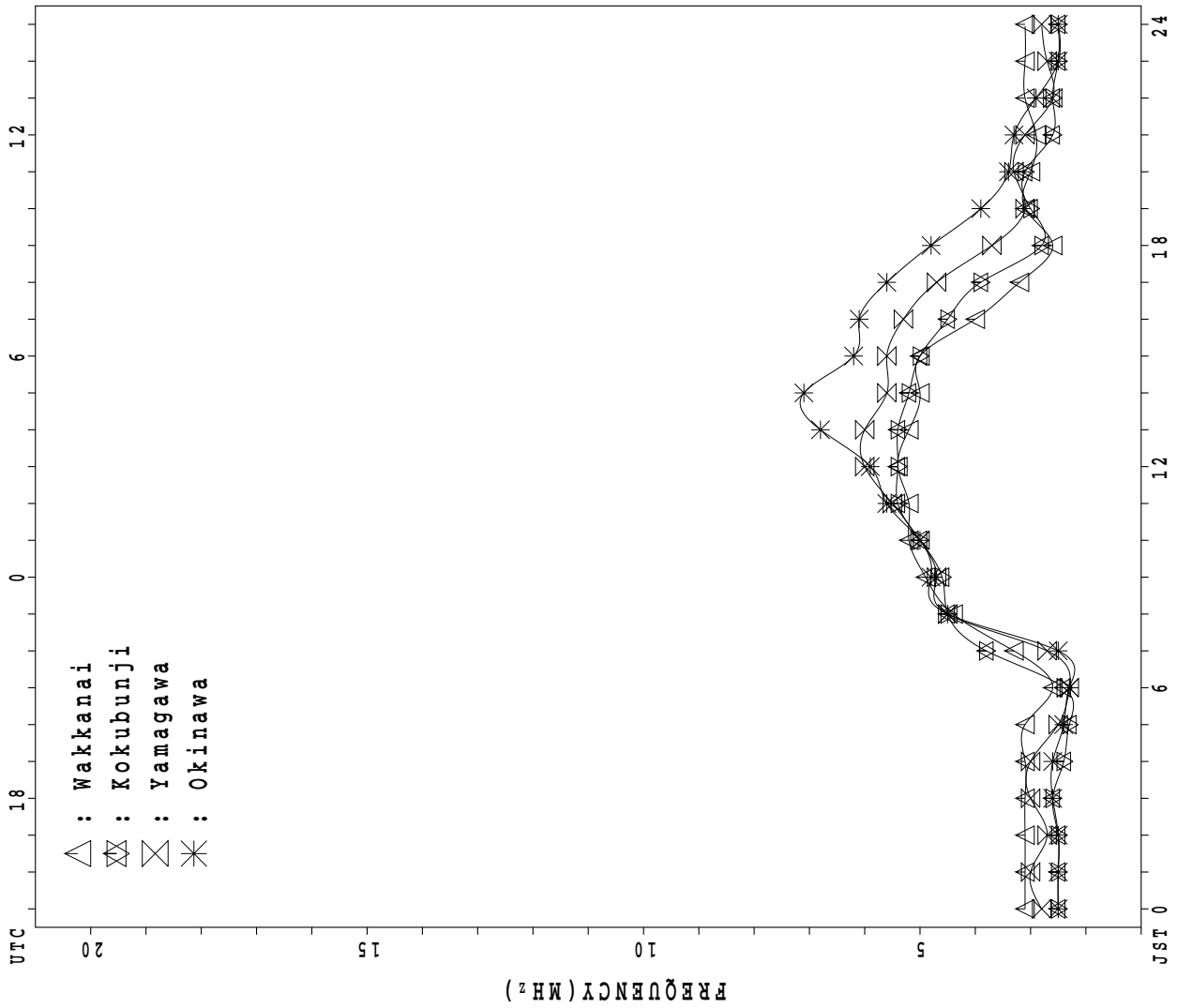
h'Es

	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	20	21	20	20	17	21	21	19	31	31	31	31	31	31	31	31	31	30	31	28	26	24	20	17
MED	96	96	96	96	96	96	96	98	98	98	98	96	96	94	96	96	96	96	96	96	96	96	96	96
U Q	98	98	98	98	98	98	98	98	98	100	98	98	98	96	98	98	96	98	98	98	98	98	98	98
L Q	96	96	94	95	93	96	96	96	98	98	96	96	94	92	94	94	94	92	90	92	94	96	93	94

MONTHLY MEDIANS PLOT OF fOF2

JAN. 2020

AUTOMATIC SCALING



UTC

20

15

10

5

JST 0

18

0

6

12

24

18

12

6

FREQUENCY (MHz)

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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 38	X 38	X 38	X 34	X 36	X 35	X 32												X 34	X 34	X 34	X 34	X 37	X 40
2	X 39	X 39	X 37	X 36	X 36	X 35	X 34											32	X 33	X 33	X 33	X 33	X 34	X 37
3	X 35	X 36	X 37	X 37	X 38	X 34	X 29												X 30	X 32	X 31	X 33	X 33	X 35
4	X 37	X 38	X 37	X 33	X 32	X 32	X 32												X 31	X 35	X 33	X 34	X 37	X 37
5	X 39	X 40	X 38	X 38	X 38	X 38	X 37												X 35	X 34	X 35	X 42	X 38	X 40
6	X 38	X 38	X 38	X 41	X 32	X 37	X 43											48	X 51	X 58	X 48	X 46	X 55	X 55
7	X 58	X 58	X 58	X 57	X 54	X 48	X 47												A	X 35	X 35	X 37	X 43	X 53
8	X 39	X 35	X 37	X 38	X 37	X 34	X 27												X 33	X 37	A	X 35	X 35	X 35
9	X 35	X 35	X 34	X 33	A	X 32	X 28												X 33	X 35	X 38	X 38	X 38	X 38
10	X 40	X 37	X 34	X 32	X 34	X 33	X 38												X 41	X 34	X 32	X 31	X 33	X 34
11	X 35	X 35	X 35	X 34	X 35	X 37	X 35												X 34	X 37	X 37	X 37	X 35	A
12	X 36	X 40	X 46	X 39	X 51	X 38	X 33												X 32	X 34	X 34	X 34	X 36	X 35
13	X 31	X 33	X 31	X 31	A	X 33	A												X 33	X 35	X 31	X 33	X 35	X 37
14	X 42	X 44	X 38	X 32	X 32	X 38													X 32	X 30	X 33	X 33	X 35	X 38
15	X 34	X 32	X 32	X 29	X 33	X 28													X 35	X 37	X 44	X 31	X 37	X 44
16	X 45	X 40	X 38	X 37	X 45	X 42													X 28	X 32	X 32	X 33	X 34	X 35
17	X 34	X 34	X 35	X 30	X 29	X 28													X 33	X 32	X 35	X 32	X 33	X 33
18	X 35	X 32	X 32	X 32	X 32	X 34													X 33	X 32	X 33	X 34	X 37	X 38
19	X 34	X 35	X 39	X 37	X 41	X 32	X 31												X 32	X 39	X 37	X 32	X 33	X 33
20	X 33	X 33	X 31	X 36	X 38	X 31													X 28	X 33	X 35	X 34	X 34	X 34
21	X 35	X 33	X 33	X 31	X 31	X 30													X 31	X 30	X 30	X 33	X 33	X 33
22	X 35	X 35	X 32	X 32	X 35	X 36													X 43	X 44	X 44	X 45	X 49	X 57
23	X 56	X 56	X A	X 52	X 53	X 47	X 41	X 47	X 58										X 31	X 31	X 32	X 32	X 39	X 40
24	X 38	X 35	X 35	X 36	X 33	X 31													X 30	X 33	X 35	X 38	X 37	X 36
25	X 38	X 39	X 37	X 32	X 34	X 33													X 35	X 35	X 30	X 31	X 36	X 36
26	X 33	X 33	X 35	X 37	X 37	X 36													X 29	X 37	X 37	X 32	X 32	X 36
27	X 37	X 38	X 38	X 38	X 38	X 33													X 28	X 32	X 38	X 35	X 37	X 37
28	X 34	X 35	X 33	X 32	X 32	X 32													X 29	X 33	X 31	X 31	X 33	X 37
29	X 35	X 35	X 35	X 36	X 33	X 34													X 34	X 39	X 44	X 48	X 49	X 47
30	X 58	X 58	X 53	X 37	X 36	X 34													X 39	X 39	X 32	X 31	X 37	X 39
31	X 42	X 38	X 48	X 50	X 50	X 47													X 47	X 51	X 54	X 58	X 58	X 56
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	29	31	14	1	1									2	30	31	30	31	31	30
MED	X 37	X 36	X 37	X 36	X 36	X 34	X 34	X 47	X 58									40	X 33	X 34	X 34	X 34	X 36	X 37
U Q	X 39	X 39	X 38	X 38	X 38	X 37	X 38												X 35	X 37	X 37	X 37	X 38	X 40
L Q	X 35	X 35	X 34	X 32	X 32	X 32	X 31												X 31	X 32	X 32	X 32	X 34	X 35

JAN. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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	31	31	F 27	27	F 24	28	25	25	40	50	52	44	53	50	44	48	32	28	F 27	27	27	27	30	F 26
2	F 24	F 27	F 27	F 21	F 22	28	F 22	33	44	53	53	54	47	54	42	52	34	F 19	26	26	26	26	27	30
3	28	29	30	30	F 24	27	22	30	43	50	54	50	57	53	44	42	36	A	23	25	24	26	26	28
4	30	31	30	26	25	25	25	30	42	44	56	55	52	49	49	43	37	26	24	28	26	27	30	30
5	32	33	31	31	31	31	30	39	44	44	63	60	V 52	61	46	50	42	26	28	27	28	35	31	F 28
6	F 27	F 27	31	34	25	30	36	28	52	44	57	57	54	62	54	48	39	F 34	F 36	F 36	F 36	Z 39	F 48	F 43
7	F 37	F 47	F 47	50	F 34	F 34	F 32	34	45	59	47	57	57	47	48	48	36	25	A	28	28	30	F 30	F 30
8	F 27	28	F 24	F 22	F 23	F 21	20	29	41	44	48	50	47	51	44	48	44	31	26	30	A	28	28	28
9	28	28	27	26	A	25	21	27	48	48	44	46	49	49	52	49	36	32	26	28	31	31	31	31
10	33	30	F 22	25	F 22	F 26	F 26	33	53	56	66	46	59	53	A	A	39	29	34	27	25	24	26	27
11	28	28	28	27	28	28	28	32	41	54	49	50	55	53	53	48	36	31	27	24	F 27	30	28	A
12	29	F 27	29	26	F 26	F 26	26	32	40	54	66	56	52	52	49	49	33	26	25	27	F 22	27	29	28
13	24	26	24	24	A	26	A	31	44	A	52	51	56	51	45	44	33	22	26	28	24	26	28	30
14	F 29	F 25	F 25	25	F 25	F 22	21	26	40	57	52	50	V 52	46	50	42	39	32	25	23	F 26	26	28	31
15	27	25	25	22	26	21	18	30	42	59	48	51	48	45	49	50	33	28	28	30	F 32	24	30	F 27
16	F 30	F 26	31	30	F 28	35	28	34	49	61	51	56	63	48	52	51	45	V 30	22	25	25	26	27	28
17	27	27	28	23	22	21	18	32	44	48	50	50	52	47	50	45	40	26	26	25	28	25	26	26
18	28	25	25	25	25	27	20	31	42	50	50	50	48	47	49	45	41	30	26	25	26	27	30	31
19	27	28	F 24	F 22	F 25	F 21	F 19	33	41	48	54	48	46	48	52	46	44	30	25	32	30	25	26	26
20	26	26	24	23	F 25	F 21	R 18	32	41	41	45	45	49	47	48	46	40	32	21	26	28	27	27	27
21	28	26	26	24	24	23	23	33	43	44	42	49	46	46	47	54	44	28	24	23	23	26	26	26
22	28	28	25	25	28	29	20	31	43	40	51	51	59	56	46	53	47	32	36	37	37	38	42	F 43
23	F 41	F 33	A	F 35	F 30	F 26	F 26	F 34	F 47	53	66	66	53	60	48	50	39	31	24	24	25	25	F 28	F 30
24	31	28	28	26	F 21	24	25	31	44	46	46	51	51	62	47	54	52	23	23	26	28	31	F 26	29
25	F 27	F 27	30	25	23	26	25	31	45	42	44	51	60	52	47	54	39	31	28	28	23	24	29	29
26	26	26	28	21	F 23	F 26	25	37	45	43	43	53	54	53	50	52	44	33	22	30	30	25	25	29
27	30	F 26	F 27	F 27	F 23	26	23	33	42	42	54	49	49	47	50	48	42	28	21	25	31	28	30	30
28	27	28	26	25	25	25	20	34	44	42	45	45	51	49	45	50	53	32	22	26	24	24	26	30
29	28	28	28	29	26	27	26	34	40	40	46	50	56	50	50	59	44	35	27	32	37	F 33	42	F 33
30	F 38	F 33	F 33	30	29	F 24	19	32	47	48	48	55	58	53	55	51	46	50	32	32	25	24	30	32
31	F 29	31	F 33	F 36	F 26	F 34	30	52	43	51	67	57	50	58	62	56	50	38	40	44	F 37	F 39	F 42	F 38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	28	31	30	31	31	30	31	31	31	31	30	30	31	30	30	31	30	31	31	30
MED	28	28	28	26	25	26	24	32	43	48	51	51	52	51	49	49	40	30	26	27	27	27	28	30
U Q	30	30	30	30	27	28	26	34	45	53	54	55	56	53	50	52	44	32	28	30	30	30	30	31
L Q	27	26	25	F 24	F 23	24	20	30	41	44	46	49	49	47	46	46	36	26	24	25	25	25	26	28

JAN. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	L	L	L	L	L								
2								L			392	L	288	L	L									
3										L	L	L	L	L		L		A						
4									L	L		L	L	L	L									
5											L	L	L	L										
6								L	L		L			L	L									
7										L	L	L	L		L			A						
8												L				L								
9								224	244		L	L	L	L		L								
10								L			L		L	L	A	A								
11										L		L	L	L	L	L								
12										L	L	L	L	L	L	L								
13								L		A	A	L	L	L	L	L								
14											L	L	L		L	L								
15									L		L	L	L	L	L	L								
16							L	L			L	L	L	L	L	L		L						
17										L	L	L	L	L	L									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20											L	L	L	L	L	L	L							
21										L		L	L	L	L	L								
22											L	L		L	L		L							
23								L	L		L	L	L	L	L									
24								L				A	L	A			L							
25											L	L	L	L	L	L								
26									L			L	L	L	L	L								
27									L	L	L	L	L	L	L									
28									L				L	L	L	L	L							
29								L	L		L	L	396	L	L									
30										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	1		1	1	2											
MED								224	244		392	388	342											
U Q																								
L Q																								

JAN. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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								208	176	232	252	264	272	268	244	232	B	A							
2								A	A	244	268	A	268	256	228	200	200	B							
3								B	200	252	268	A	280	276	232	A	180	A							
4								A	192	244	268	268	268	260	244	216	A	A							
5								B	164	224	240	264	276	248	236	A	A	A							
6								196	196	260	260	248	A	240	224	216	A	B							
7								B	220	248	240	260	260	248	A	216	A	A							
8								B	216	236	252	264	256	268	A	A	A	B							
9								216	200	224	296	264	268	256	232	208	A	B							
10								188	200	240	252	288	260	260	236	208	188	A							
11								184	188	216	240	264	276	256	232	200	172	A							
12								B	196	232	280	280	260	260	232	204	A	B							
13								A	176	236	256	268	280	260	260	A	A	260							
14								B	A	192	240	268	276	224	236	A	200	B	B						
15								B	B	180	252	248	276	268	244	236	228	A	A						
16								B	B	220	244	300	272	268	276	248	248	B	B						
17								B	196	216	240	256	276	276	264	244	188	168	A						
18								B	B	192	240	284	268	268	236	248	208	B	B						
19								B	B	220	228	264	264	264	272	220	220	172	B						
20								B	224	228	248	248	276	276	276	244	212	B	B						
21								B	B	180	220	252	276	272	228	248	200	180	B						
22								B	B	196	236	260	264	284	280	252	248	B	B						
23								B	B	216	240	256	284	280	264	236	200	172	B						
24								B	B	192	220	256	256	A	A	256	224	180	B						
25								B	B	228	228	276	276	276	268	268	232	204	B						
26								B	B	176	236	244	280	280	268	256	224	168	B						
27								B	B	196	236	252	264	276	264	248	224	172	B						
28								A	A	204	248	256	280	280	276	260	232	204	B						
29								B	B	A	220	252	264	264	272	248	192	A	B						
30								B	244	196	212	248	A	A	272	240	216	192	A						
31								B	192	192	224	248	A	260	252	224	200	184	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								9	29	31	31	27	28	30	28	27	15	1							
MED								196	196	236	256	268	270	262	244	216	180	260							
U Q								220	216	244	268	276	276	272	248	224	192								
L Q								190	190	224	248	264	264	252	232	200	172								

JAN. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E 17	E 17	E 17	E 17	E 17	E 17	E 16	E 16				G 26	G 27	G 20	G 23	18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
2	E 16	E 16	E 16	E 16	E 16	E 20	E 17	E 17		G 24	28	28	26	G 26	G 28	24	23	E 15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
3	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 19	G 25	G 23	G 27	G 26	G 28	24	20	GA 17	AE 41	E 17	E 16	E 16	E 16	E 16	E 16	
4	E 16	E 16	E 20	E 16	E 16	E 16	E 16	E 17		G 19	G 21	G 25	G 25	G 28	G 27	G 23	22	18	18	E 16	E 17	E 17	E 17	E 17	E 17	
5	E 16	E 16	E 17	E 17	E 16	E 17	E 17	E 16		22	27	25	27	29	29	18	26	E 16	17	E 16	E 16	E 16	E 16	E 16	E 16	
6	18	A	17	17	E 17	E 17	E 17	E 16		22	24	26	39	34	28	26	22	18	E 16	E 16	E 15	E 15	E 16	E 16	E 16	
7	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 20	G 24	25	28	28	28	24	21	18	18	AA 38	18	18	18	16	E 16	
8	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 21	28	30	30	33	28	26	23	17	19	E 16	18	AA 61	20	20	E 16	
9	E 16	E 16	E 16	AA	AA	49	17	E 16		G 19	G 20	G 27	G 24	28	30	27	33	21	17	E 15	17	17	17	16	17	
10	E 16	E 17	E 17	E 17	E 16	E 15	E 16	E 16		20	28	28	28	28	28	52	49	16	23	16	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	24	29	27	27	28	27	20	18	16	E 16	E 16	E 16	E 16	E 16	AA 49	
12	22	E 16	E 16	E 16	E 16	E 16	E 16	E 16		21	27	27	27	27	24	20	G 17	E 16	E 16	E 16	A	17	17	17	E 16	
13	E 17	E 17	E 17	E 17	AA 49	18	AA 62	E 16		AA 24	58	A	28	28	G 24	21	21	21	16	E 16	E 16	E 16	17	17	18	18
14	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		23	26	26	28	30	27	25	22	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		27	28	26	28	28	26	26	22	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 21	26	29	29	29	G 26	24	24	17	E 16	E 16	E 16	E 16	22	E 16	E 16	
17	E 16	E 16	E 16	E 16	E 16	E 16	E 18	E 16		G 20	24	26	28	G 30	26	22	22	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
18	E 16	E 16	E 17	E 17	E 16	E 14	E 16	E 17		G 22	26	28	30	29	28	28	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 20	24	30	30	32	28	28	22	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
20	E 16	E 16	E 16	E 15	E 16	E 16	E 16	E 16		G 17		26	30	30	28	26	23	E 16	E 16	E 16	E 17	E 17	E 17	E 17	E 17	
21	E 17	E 17	E 17	E 16	E 16	E 16	E 16	E 19		19	24	29	29	28	28	27	23	G 14	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
22	E 16	E 16	E 16	E 17	E 16	E 16	E 16	E 16		23	25	29	31	32	27	27	G 18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
23	E 17	E 16	AA 76	E 16	E 15	E 16	E 16	E 20		G 20	29	26	28	G 22	25	24	22	18	E 16	E 15	E 16	E 16	E 16	E 16	E 15	
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		25	28	28	EA 33	22	A 26	22	G 17	E 16	E 16	E 16	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		24	26	28	29	30	30	30	24	G 20	E 16	E 16	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		22	30	32	35	32	29	30	22	G 18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
27	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		21	25	26	28	G 26	28	28	22	18	E 16	E 15	E 15	E 16	E 16	E 16	E 15	
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 19		G 20	29	31	32	28	G 27	28	23	G 20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
29	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		19	31	29	29	25	28	28	22	28	E 17	E 16	E 16	E 16	E 16	E 17	E 17	
30	E 17	E 17	E 17	E 17	E 17	E 16	E 16	E 16		21	24	27	35	28	30	34	29	25	28	21	17	E 17	E 17	E 17	E 17	
31	E 17	E 17	E 17	E 17	E 16	E 17	E 16	E 18		22	30	29	29	26	28	25	22	G 17	E 17	E 16	E 16	E 16	E 16	E 16	E 16	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	30	31	30	31	31	31	31	31	31	30	31	31	30	31	31	31	31	31	31	30	31	31	31	31	
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		21	26	28	28	28	28	26	22	18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
U Q	E 17	E 16	E 17	E 17	E 16	E 16	E 16	E 16		22	28	29	30	30	28	28	24	20	17	E 16	E 16	E 17	E 17	E 16	E 17	
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G 20	G 24	26	28	G 27	G 27	G 24	22	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	

JAN. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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	15	16	16	16	16	12	15	15	16	14	14	16	16	16	11	16	16	16	16	16	16
2	14	15	16	16	16	16	16	17	15	15	17	16	16	15	11	16	15	16	16	16	16	16	16	16
3	16	16	17	16	16	16	16	16	16	16	16	18	18	16	15	15	14	16	15	16	16	16	16	16
4	16	16	16	16	16	16	16	17	15	11	13	15	17	16	15	15	16	15	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	12	15	15	15	15	15	15	15	16
6	16	16	16	16	16	17	17	16	12	12	16	16	13	16	14	15	16	16	15	15	15	15	16	15
7	16	16	16	16	16	16	16	16	15	15	15	15	15	13	13	13	15	15	15	17	17	16	16	16
8	16	16	16	16	16	16	16	16	16	16	14	16	16	16	15	16	16	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	16	16	15	15	16	16	15	16	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	16	16	15	15	15	15	15	16	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	16	15	15	15	15	13	11	12	16	17	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	15	15	15	15	15	16	16	16	16	16	16	16	16	16	17
13	16	16	16	16	16	16	16	16	11	15	15	15	15	15	14	14	14	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	14	14	14	14	15	15	15	12	16	16	16	16	16	16	16	16
15	16	16	16	16	16	16	17	16	14	14	14	15	15	15	15	15	16	14	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	22	20	19	19	16	17	17	16	16	16	16	16	16	16
17	82	16	16	16	16	16	18	16	16	16	16	16	21	18	19	16	16	16	16	16	16	16	16	16
18	16	16	16	16	16	14	16	16	15	15	15	16	16	16	15	16	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	15	15	14	15	15	15	15	14	16	16	16	16	16	16	16
20	16	15	15	15	15	16	16	16	15	15	15	15	15	15	15	15	16	16	16	17	17	16	16	16
21	16	16	16	16	16	16	16	16	10	14	12	14	14	18	15	14	16	14	16	16	16	16	16	16
22	16	16	16	17	16	16	16	16	14	15	14	16	16	15	15	12	18	16	16	16	16	16	16	16
23	17	17	17	15	15	15	15	15	15	16	16	14	14	14	11	10	10	17	16	16	16	16	15	15
24	16	16	16	16	16	16	16	16	12	13	13	13	13	15	14	11	14	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	14	16	16	16	16	16	16	16	14	16	16	16	16	16	16	16
26	15	15	16	16	16	17	16	16	11	15	15	15	15	14	14	12	11	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	15	11	12	14	11	11	14	10	12	16	15	16	16	16	16	16
28	16	16	16	16	16	16	16	16	12	15	12	15	15	14	14	12	9	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	15	11	11	13	10	16	16	15	16	16	16	16	16	16	16	16
30	17	17	17	16	16	16	16	16	13	13	14	11	11	14	16	16	14	15	16	15	16	16	16	16
31	16	16	16	16	16	16	16	16	14	12	14	12	10	12	11	14	16	16	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	13	14	14	14	14	14	14	12	14	16	16	16	16	16	16	16

JAN. 2020 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		290	290	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
2		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
3		290	329	312	316	310	326	318	344	391	362	361	388	366	391	398	386	397	A	323	321	333	325	325	303
4		279	348	329	347	313	313	313	400	422	376	398	375	369	348	388	344	380	319	331	342	358	306	298	324
5		308	297	312	291	292	354	326	377	387	391	399	373	V	317	355	361	373	359	350	F	F	F	F	F
6		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
7		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
8		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
9		298	321	326	287	A	337	364	368	374	355	386	350	356	370	356	358	345	350	334	316	326	314	273	299
10		321	322	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
11		333	323	334	310	341	342	342	391	393	373	379	347	360	370	395	374	388	335	321	347	F	F	F	F
12		318	285	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
13		325	304	332	332	A	368	A	373	396	A	235	355	381	382	358	377	393	339	334	349	385	307	348	287
14		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
15		296	316	316	299	274	327	334	386	396	383	385	348	387	374	344	396	390	377	341	365	F	354	333	287
16		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
17		293	306	313	321	339	358	341	393	410	379	362	362	391	374	385	370	400	378	357	368	359	335	315	315
18		345	331	331	331	331	365	396	390	412	353	334	359	377	369	376	412	337	366	365	351	330	325	294	283
19		336	304	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
20		313	300	304	329	369	369	373	372	406	406	395	345	374	374	290	396	395	403	319	346	344	344	318	319
21		314	328	335	320	329	346	346	386	403	396	402	387	390	348	357	378	411	317	365	355	322	365	354	315
22		328	324	314	339	348	397	371	344	383	370	376	372	370	376	369	388	393	354	340	351	330	310	319	289
23		F	F	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
24		270	302	280	312	309	299	372	383	378	404	369	363	356	258	369	375	406	392	330	337	314	318	284	277
25		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
26		306	307	267	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
27		307	299	290	290	310	291	340	366	387	411	385	307	336	380	355	375	418	398	313	351	343	313	296	296
28		278	310	281	321	321	321	352	399	414	390	382	340	374	341	351	368	387	390	324	373	338	332	306	265
29		302	282	283	308	326	316	326	386	401	392	364	345	377	363	344	372	392	388	304	321	327	F	306	F
30		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
31		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		29	28	27	27	26	30	29	31	31	30	31	31	31	31	30	30	31	30	30	31	28	30	31	27
MED		298	305	312	320	315	328	340	371	389	380	374	363	371	363	360	376	386	354	338	348	332	324	303	293
U Q		316	322	329	332	331	346	356	386	401	392	386	381	384	374	385	386	393	373	349	355	358	332	318	303
L Q		280	294	290	306	310	304	320	357	380	365	360	347	356	347	344	367	364	326	324	326	324	308	296	282

JAN. 2020 M(3000)F2 (0.01)

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JAN. 2020 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	L	L	L	L	L								
2								L			385	L	424	L	L									
3										L	L	L	L	L		L		A						
4									L	L		L	L	L	L									
5											L	L	L	L										
6								L	L		L			L	L									
7										L	L	L	L		L			A						
8												L				L								
9								402	423		L	L	L	L		L								
10								L			L		L	L	A	A								
11										L		L	L	L	L	L								
12										L	L	L	L	L	L	L								
13								L		A	A	L	L	L	L	L								
14											L	L	L		L	L								
15									L		L	L	L	L	L	L								
16							L	L			L	L	L	L	L	L		L						
17										L	L	L	L	L	L									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20											L	L	L	L	L	L	L							
21											L		L	L	L	L								
22											L	L		L	L		L							
23								L	L		L	L	L	L	L									
24								L				A	L	A			L							
25											L	L	L	L	L	L								
26									L			L	L	L	L	L								
27									L	L	L	L	L	L	L									
28										L			L	L	L	L	L							
29								L	L		L	L	397	L	L									
30										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	1		1	1	2											
MED								402	423		385	417	410											
U Q																								
L Q																								

JAN. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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								274	210	226	236	222	254	244	228	228								
2								228			290	220	216	312	204									
3										240	240	224	268	216		216			A					
4									190	210		224	236	242	218									
5											206	236	236	236										
6								282	216		270			242	230									
7										220	232	216	216		216				A	296				
8												218				296								
9								244	220	236	224	230	240		252									
10								252			234		236	238		A	A							
11										238		224	262	236	222	230								
12										288	238	238	228	240	222	222								
13								236		A	A	260	226	236	236	224								
14											206	236	236		224	216								
15									212		222	246	232	214	264	214								
16							268	232		218	218	228	230	240	250			278						
17										204	250	262	220	264	244									
18										244	318	240	238	240	236									
19										236	296	266	224	254	284									
20											224	262	248	248	392	230	214							
21										220		242	234	258	248	220								
22											236	236		236	228		206							
23								240	252		232	250	234	234	220									
24								220				240	262		A		204							
25											240	258	224	258	246	246								
26									192			284	266	258	234	234								
27									224	216	232	314	242	228	260									
28									218				246	298	284	250	220							
29								220	206		240	240	230	244	270									
30										224	234	284		260			242							
31										208	354	250	218	260	248	224	224	208						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	10	10	16	23	28	27	26	25	14	6	2						
MED							268	238	211	225	236	239	236	242	236	226	211	287						
U Q								252	220	239	250	259	248	258	256	234	220							
L Q								228	206	218	224	224	228	236	223	220	206							

JAN. 2020 h'F2 (KM)

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JAN. 2020 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	264	246	232 ^Q	232	242	210	212	218	186	204	196	186	186	196	190	180	188	218	238	220	220	252	238 ^Q	274 ^Q	
2	294 ^Q	286	218 ^Q	252	252	252	268	198	196	220	202	202	190	196	170	204	188	250	232	232	224	222	262	262	
3	272	272	250	234	252	208	250	224	192	194	196	196	180	198	206	186	198	A	B	262	240	234	252	250	280
4	310	238 ^Q	294 ^A	220 ^Q	234	236	236	192	168	188	216	198	200	200	194	216	202	218	218	202	224	288	266 ^Q	262	
5	242 ^Q	242 ^Q	262 ^Q	246 ^Q	238 ^Q	212	216 ^Q	208	208	220	210	184	184	220	216	224	204	206	230	240	240	246 ^Q	268 ^Q	266	
6	A	A	B	230	200	200	210 ^Q	216	216	184	212	202	208	208	210	200	216	198	234	218	206 ^Q	198	224	224	250 ^Q
7	242 ^Q	234 ^Q	224 ^Q	212 ^Q	188 ^Q	216 ^Q	202	210	208	208	190	208	194	216	192	206	210	A	A	210	202	238	266 ^Q	280 ^Q	
8	274 ^Q	244	250	262	224	222	222	212	200	214	234	202	220	204	210	200	210	226	226	248	A	220	A	244 ^A	
9	276	254	268	A	A	222	208	208	188	194	196	196	204	242	222	222	208	228	258	274	248	260	284 ^Q	298	
10	250	230	278	246	200	242	230 ^Q	200	220	232	208	212	198	198	A	A	208	A	224	214	230	242	244	270 ^A	
11	268	244	254	262	222	216	216	190	198	198	214	194	196	212	220	214	192	234	212	244	226 ^Q	270 ^Q	222	A	
12	A	250 ^Q	220 ^Q	232 ^Q	220 ^Q	230	218 ^Q	198	206	214	204	200	198	198	198	198	208	224	236	A	A	292	252	236 ^A	
13	270	264	264	242	A	224	A	208	204	A	A	196	196	200	184	198	206	224	252	232	212	212	212	A	
14	262 ^Q	282 ^Q	226 ^Q	246 ^Q	246 ^Q	202 ^Q	198	184	224	220	198	198	198	220	198	182	206	222	244	200	238	222	266	240 ^Q	
15	274 ^Q	260	232	232	260	240	260 ^A	218	184	210	182	192	202	186	218	200	184	220	246	218	198 ^Q	258	238	238	
16	238 ^Q	266 ^Q	222 ^Q	210 ^Q	220 ^Q	190 ^Q	214 ^Q	200	220	200	194	220 ^{E A}	222	196	196	210	212	208	206	192	A	258	286	286	
17	254 ^Q	258	230 ^Q	242	242	234	268	214	202	178	192	202	196	238	202	224	192	216	216	228	208	252	266	266	
18	236	266	A	238	238	214	196	196	192	216	196	196	196	196	212	208	204	202	226	214	236	238	282	264 ^Q	
19	250	250	268 ^Q	268 ^Q	196 ^Q	196	228	206	194	194	212	202	202	202	194	210	198	198	244	226	226	226	256	276	
20	274	266 ^Q	266 ^Q	222 ^Q	182 ^E	164 ^B	244	206	194	194	194	194	202	212	202	202	188	178	266 ^{E B}	234	234	248	248	262	
21	254	254	256	242	222	214	206	192	202	190	208	196	196	196	200	200	200	198	210 ^{E B}	198	260	242	242	252	
22	258	266	276	250	212	188	172	230	202	202	202	202	240	200	194	216	200	212	240	212	234	258	276	244 ^Q	
23	244 ^Q	246	A	222 ^Q	222 ^Q	260 ^Q	234 ^Q	196	200	230	208	190	190	190	190	228	208	198	210	214	200	252	252	238	
24	238 ^Q	248	258	272	264	222	204	192	214	206	220	A	198	A	198	230	194	202	258	240	240	228	260	242 ^Q	
25	242 ^Q	226 ^Q	248 ^Q	254 ^Q	254	230	210	208	208	208	194	214	198	198	198	216	212	190	232	206	194	242	242	250 ^Q	
26	266	266	266	276 ^Q	240 ^Q	210	230	196	200	216	224	236	202	210	202	202	214	194	226	238	198	228	206	248	
27	238 ^Q	238 ^Q	238 ^Q	262 ^Q	240 ^Q	224 ^Q	206	192	192	192	200	186	186	210	202	224	196	188	272 ^{E B E B}	228	206	206	242	260 ^Q	
28	280	256	256	256	246	232	232	194	194	166	228	228	220	194	202	202	202	202	226	234	236	244	280 ^Q	266	
29	246 ^Q	280 ^Q	260 ^Q	224 ^Q	250 ^Q	238	210	188	166	208	198	198	198	198	206	234	194	204	224	250	250	250	234	258 ^Q	
30	222 ^Q	222 ^Q	222 ^Q	248 ^Q	256 ^Q	208 ^Q	224	212	212	198	192	218	252	210	226	230	204	214	214	214	208	208	264	264 ^Q	
31	248 ^Q	266 ^Q	246 ^Q	272	236	256 ^Q	240	190	184	192	222	184	184	190	210	190	184	216	206	256	256	246	246	258 ^Q	
	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	29	30	29	31	30	31	31	30	30	30	31	30	30	30	31	28	30	30	28	31	30	29	
MED	254 ^Q	254	250 ^Q	244	238	222	216	200	200	205	202	198	198	200	201	209	202	213	227	225	226	244	252	262	
U Q	273	266	265	256	248	234	234	212	208	214	212	208	202	210	210	222	208	223	244	240	237	252	266	268	
L Q	242	244	230	232	220	210	208	192	192	194	196	194	194	196	194	200	194	200	218	212	207	226	242	246	

JAN. 2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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								110	110	110	110	106	100	100	108	E A 148	B	A							
2								A	A	114	114		A	114	112	112	106	G	B						
3								B	118	118	118		A	118	106	94		A	A						
4								A	108	108	106	106	108	116	104	104		A	A						
5								B	108	108	108	108	108	108	108		A	A	A						
6								B	106	114	114	114	114	106	106	116		A	B						
7								B	118	100	100	100	100	100		A		A	A						
8								B	118	118	98	106	114	100		A	A	A	B						
9								100	100	106	110	110	110	106	108	108		A	B						
10								B	120	94	94	102	114	112	112	92		B	A						
11								92	106	106	106	106	92	106	90	90	90		A						
12								B	104	104	116	108	108	108	102	108		A	B						
13								A	118	120	120	114	114	106	106		A	A	106						
14								B	A	116	116	116	116	104	104		A	B	B						
15								B	B	104	104	104	104	104	104	104		A	A						
16								B	B	108	118	110	112	112	112	112		B	B						
17								B	94	114	114	108	106	106	114	102	102	102	A						
18								B	B	104	112	112	112	112	112	112		B	B						
19								B	B	122	122	112	110	110	112	112	96	110	B						
20								B	100	118	118	108	108	108	108	108		B	B						
21								B	B	102	110	110	110	110	110	110	118		B						
22								B	B	118	110	104	104	112	112	104	116		B	B					
23								B	B	108	108	108	108	108	108	104	104	104		B					
24								B	B	116	116	116	116		A	A	116	94	100						
25								B	B	120	120	116	116	116	116	116	104	104		B					
26								B	B	104	104	104	104	104	104	104	104	118		B					
27								B	B	118	120	120	112	108	108	108	104	104		B					
28								A	A	116	116	104	104	104	104	104	114	114							
29								B	B	A	116	114	110	110	110	110		A	B						
30								B	102	112	112	112		A	A	112	112	112	112						
31								B	112	100	114	102		A		102	102	110	110						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								7	29	31	31	27	29	30	28	27	13	1							
MED								100	112	114	110	108	108	108	108	105	104	106							
U Q								110	118	118	114	112	113	112	112	112	113								
L Q								94	105	108	104	106	104	104	104	104	101								

JAN. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 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	108	108	102	102	102	110	154	154	124	98	128	112	116	90	92	116	98	98	104	104	104	88	102	102	
2	92	92	92	92	92	92	88	88	104	104	96	96	96	G	G	134	B	B	90	102	B	B	94	94	
3	88	106	96	86	96	102	90	96	118	116	104	92	116	90	90	90	98	92	92	100	92	92	92	104	
4	106	100	100	100	100	94	94	94	94	102	116	88		98	88	88	88	96	96	96	96	104	98	98	
5	B	B	86	96	B	96	96	B	132	108	128	98	166	84	96	96	88	94	88	100	82	92	102	94	
6	92	86	86	86	94	B	B	130	106	92	112	98	104	100	124	100	100	B	100	B	B	B	96	96	
7	102	92	92	88	B	88	88	104	104	122	122	96	88	88	88	88	88	88	88	88	88	88	88	88	
8	92	92	88	88	102	92	92	104	142	130	126	112	112	112	90	108	108	102	104	90	90	90	100	88	
9	90	90	100	100	96	98	106	96	96	154	118	118	94	98	108	108	96	96	96	96	96	106	B	106	
10	B	94	100	100	100	B	B	100	162	124	86	124	112	122	118	114	110	90	100	100	B	96	96	102	102
11	96	98	98	98	98	B	B	90	134	142	142	114	90	122	114	110	110	100	96	B	B	100	110	110	
12	98	98	88	96	96	88	88	B	106	96	122	128	146	164	94	94	100	B	B	100	100	104	104	104	
13	104	100	92	92	112	112	112	98	130	110	110	104	116	G	116	100	100	98	98	108	108	108	102	102	
14	102	B	B	B	B	B	110	110	156	104	116	104	102	102	102	102	B	92	116	92	92	92	92	92	
15	92	104	B	140	102	B	B	B	102	90	100	100	136	126	148	108	108	102	106	96	96	104	84	120	
16	B	98	98	98	98	B	B	B	152	112	104	138	122	G	160	102	B	B	102	102	100	100	100	92	
17	92	92	92	92	102	102	104	104	118	118	134	92	146	134	114	88	94	B	B	B	104	104	104	104	
18	104	104	102	96	B	B	B	96	146	148	136	136	136	130	166	G	B	B	B	B	B	B	86	B	
19	B	B	B	B	B	98	B	B	150	150	144	108	88	134	118	94	G	B	88	88	88	110	110	100	
20	90	90	90	100	B	B	100	116	G	96	96	128	110	110	130	B	B	B	B	B	86	108	98	98	
21	88	88	88	90	B	B	90	90	98	126	108	156	128	106	148	134	G	B	B	B	134	134	112	112	
22	112	B	98	B	B	B	98	138	98	106	106	106	106	96	96	G	B	B	B	B	B	B	128	114	
23	B	102	102	112	B	92	92	100	96	110	108	104	100	104	146	142	94	86	86	B	B	98	98	B	
24	B	98	B	98	106	94	B	B	162	146	148	106	106	100	100	100	100	100	92	92	B	B	B	B	
25	B	B	92	B	92	100	B	B	118	118	156	134	134	138	138	130	130	B	B	B	102	98	98	98	
26	86	86	94	B	94	112	100	B	146	164	158	98	134	146	130	136	114	102	112	112	104	104	104	104	
27	100	96	96	96	96	B	96	160	96	106	122	122	140	92	122	104	86	86	86	B	B	B	96	B	
28	96	96	96	96	B	96	100	104	120	152	162	146	146	124	106	110	160	98	98	98	B	B	98	B	
29	122	102	102	102	102	100	B	100	116	164	106	148	116	160	96	114	104	104	104	96	96	96	96	96	
30	B	B	96	108	108	B	B	136	136	106	106	100	120	144	120	112	112	112	102	102	102	96	96	96	
31	96	82	90	90	B	96	96	124	124	154	140	104	128	128	90	112	100	100	B	100	106	B	102	86	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	23	25	27	25	21	19	18	23	31	30	31	31	29	28	30	29	23	21	23	21	22	23	28	27	
MED	96	96	96	96	100	96	96	100	124	114	118	106	116	115	109	110	100	98	98	98	96	100	99	98	
U Q	104	101	100	100	102	102	104	110	142	146	136	122	131	136	130	119	108	101	104	102	104	104	103	104	
L Q	92	91	90	91	96	92	90	96	106	102	106	98	103	99	94	100	94	93	90	92	92	92	96	94	

JAN. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2020 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F1	F2	F1	F1	F1	F1	FF12	HL11	C3	LC31	C2	LC11	CL11	LC11	LC11	LC11	L1	L2	F3	F2	FF11	FF11	F1	F1	
2	F2	FF21	F2	F2	FQ32	FQ31	F2	L1	L3	C1	LC11	L1	LC11			C1			F1	F1			F1	F2	
3	F1	F2	F3	F3	F2	F1	F1	L1	L2	C1	LC11	L1	C1	LC11	LC11	L2	C1	L3	F2	F1	F1	F1	F1	F1	
4	F1	F1	F4	F1	F2	F2	F1	L1	LC11	CL21	CL21	LC11	LC11	LC11	LC11	L2	L2	L2	F3	F3	F2	FQ21	FQ31	F1	
5			F1	F1		F1	F1		C2	CL21	CL21	LC21	HL11	LC11	LC11	L4	L3	L3	F3	F2	F2	F1	F1	F2	
6	L4	F4	F4	F3	F2			C1	LC11	LC11	L2	C5	C3	C4	CL21	L2	L1		F1				F1	F2	
7	F1	F1	F1	F1		F1	F1	L1	LC11	CL21	C2	LC11	LC11	LC11	L2	L2	L1	L3	F4	F4	F4	F4	F6	F1	
8	F1	F1	F1	F1	F1	F2	F2	L1	C2	C3	C4	C4	C4	CL22	L3	L2	L1	L3	F2	F3	FQ61	FQ21	FQ31	F2	
9	F2	F1	F1	FQ31	FQ31	FQ31	FQ21	L2	LC41	HL22	CL22	CL44	LC32	C2	CQ31	CQ41	L3	L3	F1	F1	F1	F1		F3	
10		F3	F1	F2	FF11		F1	H1	C3	LC12	C2	C2	C2	C6	C8	LC11	LL42	F2			F2	F1	F1	FQ21	
11	F1	F1	F1	F1	F1			L1	C2	CL11	CL21	CL11	CL21	C6	C6	C2	C2	L1	F1			F1	FQ21	FQ41	
12	FQ31	FQ11	F1	F1	F1	F1	F1		LC11	LC21	C2	CL21	H1	H1	LC11	LC11	L1		F5		FQ21	FQ21	FQ31	FQ21	
13	FQ31	F1	F3	F11	FQ61	FQ41	FQ41	F2	C3	CQ41	CQ41	L2	CL21		CL21	L2	L2	L1	F2	F2	F2	FQ31	FFQ41	FFQ41	
14	F1						L3	L1	H2	LC32	C3	L2	C2	C2	L1	C2		L3	F1	F3	F2	F2	F2	F1	
15	F1	F1		F1	F1			L3	L4	L3	C1	C1	C1	C1	C1	L1	L1	L1	F1	F1	F1	F1	FF11	F1	
16		F1	F1	F1	F1				C1	LC11	LC11	C1	C2		H1	C2			F5	FQ41	FQ41	FQ11	F2	F2	
17	F1	FF21	F1	F1	F2	FQ21	LQ11	C1	C2	C1	CL11	LC11		C1	C1	C1	C1	L1			F1	F2	F1	F2	
18	F1	F1	F3	F2				L1	C2	C1	C2	C1	C1	C1	H1								F1		
19					F1			H1	CL21	C2	C2	LC12	C1	C2	C2			F1	F1	F1	F1	F1	F1	F1	
20	F1	F1	F1		F1			LC11	CL21		LC21	LC12	C2	C2	C2	CL22					F1	F1	F1	F1	
21	F1	F1	F1	F1			L4	L4	LC12	C2	C2	H2	C2	C2	CL21	C2					F1	F1	F1	F1	
22	F1		F2					LC11	C2	LC12	C2	C4	LC21	LC12	LC22								F1	F1	
23		F2	F7	F1		F1	L2	L4	LC12	C2	C2	LC22	LC21	C2	H2	H2	L1	L1	F2			F1	F2		
24		F1		F1	F1	F1			H1	CL22	HL22	CQ41	CQ51	LQ31	LQ21	LC21	LC11	LC11	F1	F1					
25			F1		F1	F1			C2	C1	H2	C1	C1	C1	C1	C1	C1				F1	F2	F2	F1	
26	F2	F1	F1		F1	F1	C1		C1	HL22	HL12	LC11	C2	C2	C1	C1	LC11	L1	F2	F1	FQ21	FQ41	FQ31	FQ11	
27	F1	F1	F1	F1	F1			C1	HL11	LH11	C2	C2	C2	HL21	L4	CL31	CQ31	L2	F1	F1				F1	
28	F2	F2	F1	F1		F1	L2	L9	C2	HL21	HL21	HL21	C2	C2	CL22	CL21	C2	L1	F1	F2			F1		
29	F1	F2	F1	F2	F2	F2		C1	LQ21	HL21	C2	HL21	CL11	H2	LC11	C3	L6	L1	F1	F2	F3	F2	F1	F1	
30			F1	F1	F1			C1	C2	C2	LC12	LC12	CL22	CL22	C4	C4	C4	L7	F4	F3	F2	F2	FF21	F1	
31	FF21	F2	F1	F1		F1	L2	C2	C1	H2	C2	CL13	C2	C2	LC12	C2	C2	L3		F2	FF11		F2	F1	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

JAN. 2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 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 34	X 34	X 34	X 36	X 31	X 27	X 30											X 42	X 36	X 34	X 36	A	X 32	X 39	
2	X 33	X 32	X 34	X 33	X 31	X 28	X 25											X 44	X 28	X 36	X 33	X 32	X 31	X 32	
3	X 32	X 32	X 32	X 35	A	A	A											X 35	X 33	X 34	X 38	X 32	X 32	X 34	
4	X 32	X 33	X 34	X 33	X 31	X 31	X 31	X 42												X 32	X 36	X 35	X 34	X 38	X 39
5	X 34	X 38	X 39	X 36	X 37	X 35	X 26										C	X 42	X 35	X 35	X 40	X 34	X 35	X 34	X 34
6	X 32	X 34	X 39	X 30	X 25	X 25	X 24												X 44	X 41	X 31	X 33	X 33	X 36	
7	X 36	X 36	X 35	X 36	X 32	X 36	X 32											X 38	X 30	X 38	X 33	X 33	X 34	X 36	
8	X 39	X 37	X 46	X 37	X 36	X 27	X 36											X 51	X A	X A	X 39	X 37	X A	X 31	
9	X 32	X 31	X 30	X 31	X 32	X 30	X 30											X 42	X 40	X 38	X 37	X 39	X 38	X 36	
10	X 38	X 39	X 34	X 36	X 25	X 27	X 30												X 40	X 42	X 42	X 35	X 30	X 30	
11	X 32	X 32	X 32	X 32	X 34	X 28														X 34	X 36	X 37	X 30	X 30	X 30
12	X 32	X 34	X 30	X 28	X 27	X 24												X 35	X A	X 42	X 40	X A	X A	X 34	
13	X 31	X 28	X 30	X 30	X 28	X 26	X 28											X 36	X 32	X 36	X 40	X 34	X 28	X 29	
14	X 31	X 32	X 30	X 38	X 34	X 24	X 26											X 36	X 38	X 39	X 34	X 30	X 32	X 30	
15	X 30	X 28	X 28	X 28	X 27	X ^O 24	X 28	X 52										X 40	X 32	X 36	X 36	X 26	X 31	X 32	
16	X 33	X 32	X 32	X 31	X 29	X 32	X 35											X 46	X 34	X 38	X 38	X 34	X 30	X 33	
17	X 32	X 33	X 32	X 34	X 30	X 30	X 31											X 46	X 32	X 34	X 39	X 36	X 31	X 30	
18	X 34	X 34	X 32	X 35	X 34	X 30	X 24											X 38	X 35	X 38	X 37	X 33	X 29	X 31	
19	X 32	X 33	X 31	X 29	X 30	X 25	X 25											X 45	X 38	X 34	X 41	X 32	X 31	X 30	
20	X 29	X 30	X 31	X 32	X 25	X 22	X 23											X 35	X 34	X 34	X 40	X 29	X 31	X 31	
21	X 31	X 31	X 30	X 30	X ^O 34	X 32	X 26											X 47	X 32	X 34	X 32	X 33	X 35	X 32	
22	X 30	X 30	X 28	X 29	X 36	X 24	X 25											X 44	X 35	X 41	X 39	X 35	X 37	X 38	
23	X 37	X 37	X 36	X 37	X 33	X 30	X 27	X 44										X 50	X 39	X 41	X 45	X 33	X 32	X 34	
24	X 36	X 35	X 34	X 34	X 34	X 33	X 29											X 54	X 32	X 32	X 34	X 38	X 34	X 31	
25	X 32	X 32	X 34	X 34	X 30	X 30	X 27												X 34	X 36	X 33	X 30	X 33	X 32	
26	X 33	X 32	X 30	X 34	X 31	X 29	X 29													X 37	X 31	X 33	X 32	X 27	X 31
27	X 31	X 31	X 30	X 29	X 29	X 27	X 25													X 32	X 32	X 38	X 38	X 34	X 33
28	X 31	X 30	X 29	X 29	X 29	X 29	X 28													X 32	X 31	X 34	X 29	X 31	X 31
29	X 32	X 34	X 36	X 30	X 31	X 32	X 25													X 35	X 34	X 38	X 38	X 40	X 36
30	X 34	X 38	X 34	X 36	X 39	X 38	X 32													X 46	X 39	X 44	X 32	X 35	X 38
31	X 38	X 38	X 38	X 39	X 40	X 38	X 38													X 39	X 33	X 36	X 41	X 39	X 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	30	30	28	3										20	29	30	31	29	29	31	
MED	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	X
U Q	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	X
L Q	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	X
	31	31	30	30	29	26	25	42										37	32	34	34	32	31	31	

JAN. 2020 f_{XI} (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 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	28	28	28	30	25	21	24	41	42	40	51	60	53	46	53	52	39	36	30	28	30	A	26	F
2	27	26	28	27	25	22	19	41	46	42	64	64	50	50	61	41	46	38	22	30	27	26	25	26
3	26	26	26	29	A	A	A	36	46	44	45	60	58	46	48	46	42	29	27	28	32	26	F	F
4	26	27	28	27	25	25	25	36	44	43	48	56	54	47	46	51	40	42	26	30	29	28	F	F
5	28	F	F	F	F	F	20	35	44	47	66	54	56	44	56	50	C	36	29	29	34	28	29	28
6	26	28	33	24	19	19	18	36	45	51	57	57	55	48	61	50	47	40	38	35	25	27	27	30
7	30	30	29	30	26	F	26	40	47	46	59	58	52	64	50	48	44	32	24	32	27	27	28	30
8	F	31	F	31	F	21	F	40	42	45	52	51	54	51	45	52	46	45	A	A	33	31	A	25
9	26	25	24	25	26	24	24	38	41	48	62	53	50	54	54	52	44	36	34	32	31	33	32	30
10	32	33	28	30	19	21	24	40	52	52	56	84	58	64	64	50	43	38	34	36	F	29	24	24
11	26	26	26	26	28	22	22	38	41	47	52	51	56	60	57	54	A	32	28	30	31	24	24	24
12	F	F	24	22	21	18	18	39	48	48	45	73	69	52	A	51	44	29	A	36	34	A	A	28
13	25	22	24	24	22	20	22	38	41	44	51	56	52	54	47	52	45	30	26	30	34	28	22	23
14	25	F	24	F	F	18	20	38	44	43	57	56	51	56	55	50	44	30	32	33	28	24	F	24
15	24	22	22	22	21	18	22	46	46	48	44	64	56	59	51	51	48	34	26	30	30	20	25	26
16	27	26	26	25	23	F	F	40	49	44	48	62	53	70	52	45	44	40	28	32	32	28	24	27
17	26	27	26	28	24	24	25	39	44	44	53	58	55	53	50	50	52	40	26	28	33	30	25	24
18	28	28	26	29	28	24	18	35	40	44	41	53	62	59	54	47	46	32	29	32	31	27	23	25
19	26	27	25	23	24	19	18	38	46	45	44	50	55	58	50	46	42	39	32	27	35	26	25	24
20	23	24	25	26	19	16	17	32	44	50	46	44	43	46	56	61	46	29	28	28	34	23	25	25
21	25	25	24	24	27	26	20	36	47	46	47	46	53	48	52	49	55	41	26	28	26	27	29	26
22	24	24	22	23	30	18	19	33	44	48	48	52	51	69	58	52	42	38	29	35	33	29	31	32
23	31	31	30	31	27	24	21	38	48	55	64	86	72	60	54	48	51	44	33	35	39	26	26	28
24	30	29	28	28	28	27	23	38	47	49	48	50	48	58	64	48	50	48	26	26	28	32	28	25
25	26	26	28	28	24	24	21	39	44	48	52	57	56	53	50	51	57	49	28	30	27	24	27	26
26	27	26	24	F	25	23	23	45	44	45	47	44	47	56	52	49	50	46	31	25	27	26	21	25
27	25	25	24	23	23	21	19	39	46	45	44	50	60	55	55	52	47	43	26	28	32	32	28	F
28	25	24	23	23	23	23	22	38	46	46	45	44	41	54	54	55	50	44	26	25	28	23	25	25
29	26	28	F	24	25	26	19	38	49	46	48	49	55	62	51	57	51	37	29	28	F	F	34	30
30	28	F	28	30	F	F	26	44	45	45	57	50	60	63	62	57	49	44	40	F	F	26	F	F
31	F	F	F	F	F	F	F	39	47	50	52	64	92	54	57	62	59	41	33	27	30	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	27	27	25	26	27	31	31	31	31	31	31	31	30	31	29	31	29	29	29	28	25	26
MED	26	26	26	26	25	22	21	38	45	46	51	56	55	54	54	51	46	38	28	30	31	27	26	26
U Q	28	28	28	29	26	24	24	40	47	48	57	60	58	60	57	52	50	43	32	32	33	29	28	28
L Q	25	25	24	24	22	19	19	36	44	44	46	50	51	50	50	48	44	32	26	28	28	26	24	25

JAN. 2020 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 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											U L	U L	U L	U L	L		U L								
2											396	L	U L	U L	U L		216								
3									L		U L	U L	L	L	L										
4								L			412	404	U L	L	L										
5											A		U L	L	L			C							
6												L	L		U L										
7											L	U L	U L												
8									L			424	L				U L								
9								L				A	A		U L										
10											L	A	L	L											
11											L	A	U L	A			A								
12											U L	U L		L	A	A									
13											A	A	L	A	L										
14								L			376	L	A	U L	U L	A									
15											U L	A	L		U L	L									
16											U L	U L	U L	U L	L	L	L								
17											408	388	392	388											
18											U L	U L	L	L	L	L									
19											404	364	U L	U L	L	L									
20											U L	U L	U L	U L	L	L	A	L							
21											L		L	U L	U L										
22											L	U L	A	L											
23											L	U L	U L	L											
24								L			L	L	A	U L	L										
25											L	L	U L	U L	L	A									
26											U L	L	U L	A	L										
27											372	U L	A	L	L										
28											U L	U L		U L	U L										
29									L		404	420	404	380	372										
30											L	A	U L	U L	L	A									
31										A	U L	U 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										1	10	12	13	9	7	2	1								
MED										U L	U L	U L	U L	U L	U L	U L	U L								
U Q										388	404	404	404	392	380	352	216								
L Q											U L	U L	U L	U L	U L										
											408	410	412	410	388										
											U L	U L	U L	U L	U L										
											400	400	396	388	376										

JAN. 2020 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

JAN.2020 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	A	A	A	U	R	A	U	R	A	A						
									280		300		288	280	228	172								
2								B	A	A	A	U	R	A	A	A	A							
									220		304	296												
3								B	U	R	A	A	U	R	U	R	R	B						
									224		312	316		276										
4								U	R	A	U	A	U	R	A	U	R	A	A	B				
									220	256	288	312		292	288		180							
5								U	R	A	A	A	A	A	A	A	C							
									180	212														
6								B	U	A	R	A	A	A	A	A	B	B						
									220	288														
7								B	U	R	R	A	A	U	R	R	U	A	A					
									236	288			308	276		224								
8							B	B	U	R	A	A	A	A	A	A	A							
									216	260														
9								B	U	R	A	A	A	A	A	A	A							
									228	244														
10								B	U	A	R	A	A	A	A	A	A	B						
									196	272	292													
11							B	B	U	A	A	A	A	A	A	A	A	B						
									212	288														
12							B	B	U	R	A	U	A	R	R	A	A	A						
									228		312													
13								B	U	A	A	A	A	A	A	U	R	A						
									236	288						276								
14								B	A	U	A	U	A	A	A	A	A	A						
									264	292														
15									A	U	A	A	A	A	A	A	A							
									268	304														
16								B	U	R	R	R	A	U	A	A	U	R	U	R				
									240	284			300				252	188						
17								B	U	A	A	U	A	A	R	U	A	U	R	U	A			
									208	272		296			272	248	204							
18								B	U	R	A	U	A	U	R	U	R	R	U	R	R			
									240	264	308	316	320	296			248	180						
19								B	U	A	U	A	A	R	R	R	U	R	U	R				
									240	284	308						252	200						
20								B	U	A	R	R	A	U	A	A	U	R	U	R				
									220	268	308		308				260	216						
21								B	U	R	R	R	A	U	R	R	R	U	R					
									244	284	308			292				204						
22								B	U	A	R	R	A	U	R	A	A	R	U	R				
									224	280			304	288				208						
23								U	A	R	U	A	A	R	R	U	A	U	A	A				
									224		292	308				276	240	216						
24								B	U	A	A	R	U	A	U	A	A	A						
									200	260		312	308	276										
25								B	U	A	A	R	A	A	U	A	A	U	A	B				
									224	256					280		196							
26								B	U	R	A	U	R	U	R	A	A	A	B					
									204	268	280	296	304				260							
27								B	U	A	A	A	U	A	A	A	A	A	B					
									216		308													
28								B	U	A	U	A	U	A	U	R	A	A	A	B				
									220	268	288	296	304	316										
29								B	U	A	U	A	U	A	A	U	R	A	A	B				
									200	248	292	308			292									
30								B	U	R	A	U	R	U	A	U	R	A	A					
									236	260	292	304	312		320				184					
31								B	U	A	A	A	A	A	A	A	U	A	B					
									224	276	288						204							
	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	28	25	15	13	11	8	8	10	12	1						
MED								U	R	U	A	U	A	U	R	U	U	U	U	U	U	U	U	U
									180	222	268	292	308	308	290	280	250	202	184					
U Q									U	R	U	U	U	R	U	U	U	U	U	U	U	U	U	U
										232	284	308	312	312	294	290	260	206						
L Q									U	A	U	U	U	A	U	U	U	U	U	U	U	U	U	U
										214	260	288	298	304	282	276	240	184						

JAN.2020 foE (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

JAN.2020 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
1	J	A	J	A	E	B	E	B	J	A	J	A	G	J	A	G	32	27	G	J	A	E	B	E	B	J	A	J	A	J	A	
2	J	A	J	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	E	B	E	B
3	E	B	E	B	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B
5	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	C	E	B	E	B	E	B	E	B	E	B	
6	E	B	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B	J	A	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	J	A	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	J	A	E	B	E	B	E	B	E	B	E	B
9	J	A	J	A	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	J	A	E	B	E	B	E	B	E	B	E	B
10	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
11	J	A	J	A	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	J	A	E	B	E	B	E	B	E	B	E	B
12	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	E	B	E	B	E	B	E	B	E	B	E	B
13	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
14	J	A	E	B	E	B	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
15	E	B	E	B	E	B	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	J	A	E	B	E	B	E	B	E	B	E	B
17	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
18	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	J	A	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	J	A	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	J	A	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	J	A	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	J	A	E	B	E	B	E	B	E	B	E	B
24	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	J	A	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	J	A	E	B	E	B	E	B	E	B	E	B
27	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	J	A	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	J	A	E	B	E	B	E	B	E	B	E	B
30	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
31	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	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	30	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	E	B	E	B	E	B	E	B
UQ	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
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	E	B	E	B	E	B

JAN.2020 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	E 16	B 16	E 16	B 15	E 16	B 16	E 16	B 16		24	31	30	G 31	G 30	25		G 16	E 16	B 16	E 16	B 16	E 16	A 37	A 16	E 16	B 16		
2	19	21	E 16	B 16	E 17	B 17	E 16	B 16		24	28	33	G 27	G 30	28	29	24	22	E 16	B 16	E 16	B 16	E 16	19	E 16	B 16		
3	E 16	B 16	E 15	B 16	E 64	B 48	E 46	B 20		G 26	29	23	G 23	G 23	G 23		22	17	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16		
4	E 16	B 16	E 16	B 16	E 16	B 15	E 16	B 15		G 29	33		G 32	G 32	G 25	21	E 15	18	E 16	B 16	E 16	B 16	E 15	17	E 16	B 16		
5	E 16	B 16	E 16	B 15	E 16	B 15	E 15			26	30	31	37	34	29	29	27	C 14	E 16	B 16	E 16	B 15	E 15	16	E 16	B 15		
6	E 16	B 16	E 16	B 20	E 15	B 16	E 16	B 16		G 24		35	29	32	37	29	26	20	18	E 17	B 16	E 16	B 16	E 16	15	E 16	B 16	
7	E 16	B 16	E 16	B 16	E 16	B 15	E 15	B 15		G 30		33	31	G 32	G 28		22	22	E 16	B 16	E 16	B 16	E 16	16	E 16	B 16		
8	E 16	B 16	E 15	B 16	E 15	B 16	E 16	B 16		G 30	32	37	33	34	31	26	25	21	A 50	A 50		22	20	A 37	A 19	E 16	B 16	
9	E 16	B 21	E 22	B 18	E 16	B 16	E 16	B 20		G 32	33	37	40	42	31	38	31	19	18	20		E 16	B 24	E 15	E 15	E 16	B 16	
10	E 16	B 16	E 20	B 19	E 16	B 16	E 16	B 16		G 23	27	33	34	35	32	42	28	36	25	18	30	E 15		E 20	E 16	B 15		
11	E 16	B 16	E 16	B 15	E 16	B 14	E 16	B 16		G 26	31	32	34	35	39	35	33	A 79	20	18	16	21	E 16	E 16	E 16	B 16		
12	E 16	B 16	E 16	B 15	E 16	B 16	E 16	B 15		G 26			G 31	A 60	A 32	21	E 15	B 70	A 30		24	A 33	A 48	A 16	E 16	B 16		
13	18	18	E 16	B 16	E 15	B 16	E 16	B 16		28	32	36	35	32	36	30	23	21	E 16	B 16	E 16	B 16	E 16	16	E 16	B 16		
14	E 16	B 16	E 16	B 16	E 15	B 16	E 16	B 16		21	29	32	32	43	31	30	36	30	20	20	18	E 16	E 16	E 16	E 16	B 16	B 16	
15	E 16	B 16	E 16	B 15	E 16	B 17	E 17	B 17		23	32	34	33	34	32	38	26	20	23	22	17	E 16	E 16	E 16	E 16	B 16	B 16	
16	E 16	B 16	E 16	B 16	E 15	B 15	E 16	B 14		G 30		30	35	32	30		G 15	E 16	B 16	E 16	B 16	E 16	16	E 16	14	E 16	B 16	
17	E 16	B 20	E 18	B 16	E 16	B 15	E 16	B 16		24	32	33	32	31	G 30		G 16	E 16	B 16	E 16	B 16	E 16	16	E 16	16	E 16	B 16	
18	E 16	B 16	E 18	B 15	E 15	B 16	E 16	B 16		G 30	34		G 30	G 30	G 30		G 16	E 16	B 15	E 16	B 16	E 16	16	E 16	15	E 16	B 16	
19	E 16	B 16	E 15	B 16	E 15	B 15	E 15	B 16		29	30	35	34	G 34	G 34	G 34		G 16	E 16	B 16	E 16	B 16	E 16	16	E 16	17	E 16	B 16
20	E 16	B 16	E 16	B 17	E 16	B 16	E 16	B 16		24		31	32	32	31		G 20	15	E 16	B 16	E 16	B 16	E 16	16	E 16	15	E 16	B 16
21	E 16	B 16	E 16	B 16	E 16	B 19	E 15	B 15		G 34		35	35	G 35	G 35		G 16	E 16	B 16	E 16	B 16	E 16	16	E 16	16	E 16	15	
22	E 17	B 16	E 16	B 16	E 16	B 16	E 15	B 16		23		32	G 32	G 32	31		G 15	E 16	B 16	E 15	B 15	E 15	16	E 16	16	E 16	16	
23	E 16	B 16	E 16	B 16	E 16	B 19	E 16	B 16		24		31	34	G 35	G 28		24	18	E 16	B 16	E 16	B 16	E 16	15	E 16	16	E 16	B 16
24	E 16	B 16	E 16	B 15	E 16	B 16	E 16	B 15		25	27		35	33	33	31	27	24	E 16	B 17	E 19	E 16	16	E 16	16	E 16	16	
25	E 16	B 16	E 16	B 16	E 16	B 16	E 15			G 28	31	32	34	32	32	32	23	16	E 17	E 16	E 15	15	E 15	16	E 16	16		
26	E 16	B 16	E 16	B 16	E 15	B 16	E 16	B 16		G 27		G 34	G 34	G 32	29	26	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	B 16	B 16
27	E 15	B 16	E 16	B 16	E 16	B 16	E 16	B 16		26	26	28	36	37	34	30	31	26	E 16	E 16	E 15	E 15	E 16	E 16	E 16	E 16	B 16	B 16
28	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16		30	31	32	36	34	G 32	30	26	E 15	E 16	E 16	E 16	E 17	E 16	E 16	E 16	E 16	B 16	B 16
29	E 16	B 16	E 16	B 16	E 16	B 16	E 15	B 16		25	28	35	42	34	32		37	27	18	17	16	E 16	E 16	E 15	20	E 16	B 16	
30	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 17		G 30	31	37	37	33	G 33		24	G 16	E 16	B 18	E 16	E 16	E 16	E 18	E 16	E 16	B 16	B 16
31	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 21		27	30	31	35	33	36	34	30	24	E 16	E 16	E 16	E 15	E 16	E 16	E 16	E 16	E 16	B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	
MED	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16		23	28	32	33	33	32	30	27	22	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16
U Q	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16		25	30	33	35	35	34	32	31	26	20	18	17	E 16	17	E 16	E 16	E 16	B 16	B 16
L Q	E 16	B 16	E 16	B 16	E 15	B 16	E 16	B 16		G 28		G 28	G 28	G 28	G 28	G 28		G 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16

JAN. 2020 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JAN.2020 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JAN.2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		306	320	335	377	355	342	321	405	437	415	349	359	377	366	352	403	391	360	362	330	335	A	325	F
2		305	296	304	357	412	330	331	390	385	374	364	361	381	321	390	422	365	380	293	356	342	355	341	300
3		326	327	352	358	A	A	A	379	388	371	311	377	399	396	372	367	391	378	329	355	322	337	F	325
4		292	301	315	343	338	355	374	371	396	398	356	385	349	375	358	375	374	368	353	378	330	293	F	F
5		326	F	F	F	F	F	397	367	383	360	363	364	391	375	343	364	C	342	352	313	349	352	327	307
6		304	313	351	389	377	353	324	382	370	363	384	369	340	375	337	381	362	363	356	373	328	324	323	321
7		285	294	311	376	370	F	346	370	367	343	346	374	350	386	376	375	346	364	304	358	332	321	347	313
8		F	323	F	383	F	309	F	409	390	370	385	369	389	377	372	357	375	386	A	A	364	340	A	304
9		317	316	329	328	326	329	360	417	407	359	363	393	366	363	350	346	387	355	353	332	330	332	320	296
10		308	328	386	376	437	330	336	384	378	363	349	375	319	369	382	380	362	374	349	374	F	354	322	322
11		312	325	324	339	349	376	348	396	389	406	376	368	327	373	382	393	A	371	316	330	353	369	308	304
12		F	F	321	335	360	317	323	373	392	373	281	359	384	360	A	380	388	347	A	A	322	356	A	A
13		314	323	325	329	385	323	338	390	411	393	359	386	379	371	353	379	386	356	341	353	360	327	338	308
14		302	F	315	F	F	325	338	374	395	402	364	382	350	375	358	372	388	341	339	362	370	337	F	319
15		334	287	297	322	307	342	340	391	421	389	319	379	377	391	304	373	376	391	325	341	386	358	305	353
16		312	319	319	370	351	F	F	364	403	377	344	400	325	372	365	373	367	363	330	341	350	369	361	297
17		323	308	312	352	331	318	339	372	376	390	351	356	354	376	361	356	379	373	323	347	352	358	345	312
18		329	300	320	342	368	389	382	410	404	364	388	323	372	386	397	387	372	376	337	356	349	354	334	324
19		304	317	322	312	355	380	355	373	395	380	375	343	375	378	369	369	377	384	364	332	367	313	322	287
20		306	304	331	397	415	348	371	388	381	386	382	378	375	331	374	385	416	377	366	339	385	335	337	332
21		313	298	335	342	347	347	343	367	402	389	382	363	388	352	337	369	389	399	342	376	354	332	358	334
22		303	312	297	321	367	328	328	391	347	383	385	359	320	346	362	397	398	383	323	345	360	334	316	309
23		324	332	330	358	368	332	314	371	355	356	342	356	357	376	344	351	382	375	345	308	363	402	335	319
24		333	323	352	336	303	352	350	386	391	384	397	364	352	349	372	403	363	395	393	332	337	354	373	328
25		318	320	323	324	337	359	366	378	385	372	373	393	353	345	340	361	373	383	345	348	363	324	338	311
26		301	292	294	F	312	323	345	407	395	394	357	385	340	363	370	350	378	396	402	353	348	357	362	337
27		307	322	296	292	332	370	331	375	392	392	371	323	384	384	397	375	377	388	352	332	344	333	306	F
28		315	311	312	311	320	342	408	404	406	390	375	376	388	363	367	372	380	382	375	355	325	330	333	316
29		293	292	F	338	333	354	296	391	402	389	352	365	327	379	344	365	406	402	360	307	309	320	334	329
30		302	F	352	312	F	F	322	419	418	381	399	314	335	359	376	372	398	356	355	F	F	F	F	F
31		F	F	F	F	F	F	367	F	381	380	363	353	315	373	355	358	366	381	359	333	333	308	F	F
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		28	26	27	27	25	26	27	31	31	31	31	31	31	31	30	31	29	31	29	29	29	28	25	26
MED		310	314	322	342	351	342	340	384	392	381	363	368	366	372	364	373	379	375	345	345	349	337	334	318
U Q		320	323	335	370	369	355	360	396	403	390	382	379	381	377	374	381	388	384	358	356	362	355	343	325
L Q		304	300	312	324	332	328	328	373	381	364	349	359	340	359	350	365	372	360	330	332	331	328	322	307

JAN. 2020 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 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											U L 417	U L 406	U L 454											
2											L	U L 389	U L 398											
3								L		U L 389	U L 397	L	L	L										
4								L			U L 391	L	L											
5										A		A	L			C								
6											L	L	U L 392											
7											L	U L 385												
8								L				L			U L 429									
9								L			A	A	U L 419											
10											L	A	L	L										
11											L	U L 386	A				A							
12											U L 391	U L 410		L	A	A								
13											A	A	L	A	L									
14								L			401	L	A	U L 388	L	A								
15											U L 378	A	L		U L 391	L								
16											U L 394	U L 419	U L 412	U L 381	L	L	L							
17											U L 370	410	L	L	L		L							
18											U L 404	U L 419	L	L	L	L	L							
19											U L 378	U L 412	U L 395	L	L	L								
20													U L 388	A	L									
21											L		L	U L 403										
22											L	U L 388	A	L										
23											L	U L 374	U L 402	U L 396	U L 382	L								
24								L			L	L	U L 391	U L 416	L									
25											L	L	U L 426	U L 435	L	A								
26											U L 447	U L 439	A	L	L									
27												U L 437	A	L	L									
28											U L 415	U L 412		U L 384	U L 407	U L 402								
29											L		U L 405	U L 414	L	A								
30												U L 358	U L 382	L	L									
31										A	L	U L 405	U L 399		A		A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	10	12	13	9	7	2	1						
MED											U L 374	U L 398	U L 407	U L 391	U L 395	U L 398	U L 416	U L 454						
U Q											U L 405	U L 414	U L 416	U L 415	U L 407									
L Q											U L 389	U L 396	U L 386	U L 386	U L 391									

JAN. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2020 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											252	240	226	268	246		210							
2												226	244	284	222									
3									228	370	232	212	240	236										
4									216		236	262	244	242										
5											246		230		264		C							
6												234	250		268									
7											260	232	254											
8									214				228			254								
9									204			216	242		262									
10											270	236	258	252										
11											244	234	284	232			A							
12											418	242		246		A	224							
13											256	232	242	248	264									
14									214		254	230	E A 274	242	254	228								
15											370	224	252		R 386	232								
16											276	222	310	236	238	238	222							
17											280	250	258	240	254		220							
18												308	236	224	222	226	214							
19												284	252	250	238	238								
20													324	242	230									
21											238		252	264	278									
22											240	258	284	242	240									
23											254	262	252	232	238	228								
24								218		248	236	252	280	272	238									
25										244	242	226	254	254	268	254								
26										232	256	238	266	242	266									
27												320	234	240	222									
28											254	274		260	248	238								
29										234		262	282	234	256	238								
30												336	282	270	232									
31											228	252	256	292		236		236						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	7	6	20	27	27	25	24	12	4							
MED								218	216	246	255	236	252	244	247	237	217							
U Q								228	252	273	262	274	262	264	238	221								
L Q								214	234	245	232	238	238	238	229	212								

JAN. 2020 h'F2 (KM)

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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	274	270	234	202	212	E B E B	256	244	194	194	192	212	200	198	178	200	198	174	196	200	216	216	A E B	268	234		
2	E A E A E B	300	346	282	214	196	E B E B	250	298	204	202	200	234	192	186	188	194	200	210	194	304	218	218	E B	236	220	E B	256
3	E B E B E B	268	254	244	212	A	A	A		206	182	198	192	194	186	180	180	196	202	196	E B	230	218	226	216	228	E B	236
4	E B E B E B	274	296	262	212	E B E B	230	244	208	194	176	204	198	200	196	188	192	218	202	208	216	218	E B	238	228	E B E B	282	
5	E B E B E B	220	296	264	264	E B	E B	254	202	210	200	214	A	218	A	206	202	204	C	192	210	236	220	212	250	E B E B	286	
6	E B E B E B	294	278	214	204	E B E B	244	282	300	192	206	212	226	194	198	218	192	210	210	208	208	196	E B E B	248	252	E B E B	236	
7	E B E B E B	266	268	240	214	E B	210	218	234	194	182	208	214	202	180	214	190	208	198	208	E B	232	214	218	224	214	E B	240
8	E B E B E B	240	246	214	194	E B	244	228	236	186	180	208	206	216	198	218	194	170	202	204	A	A		224	220	A E A	278	
9	E B E A E A E A E A E B	268	340	334	278	234	248	212	182	176	228	240	A	A	E A	250	186	242	202	210	214	206	220	258	232	E B E B	262	
10	E B E B E B	260	236	206	208	184	E B E B	278	250	202	208	202	222	A	204	220	218	208	E A	234	206	216	224	E B	244	E B E B	280	
11	E B E B E B E B	276	264	264	238	224	190	230	196	200	212	202	A	224	A	224	210	A	208	256	216	210	212	306	E B E B	288		
12	E B E B E B E B	284	302	264	242	226	E B E B	276	270	208	200	196	200	180	208	198	A	A		206	210	A E A	296	212	A	A E B	246	
13	E A E A E B E B	252	330	290	256	200	E B E B	254	250	186	202	210	A	A	200	A	192	222	198	184	E B	226	212	204	192	E B E B	240	
14	E B E B E B E B	250	280	266	224	202	E B E B	264	256	206	186	202	198	196	A	E A	216	200	A	204	224	228	208	202	242	E B E B	240	
15	E B E B E B E B	250	294	274	232	280	E B E B	284	278	190	184	216	200	A	220	206	212	192	194	196	E A	316	208	190	240	E A E B	236	
16	E B E B E B E B	254	268	266	212	220	E B	230	210	202	202	188	188	188	196	222	202	188	184	198	E B	194	210	208	198	272	E B	276
17	E B E A E A E A E B	276	282	256	218	E B E B	236	244	226	198	180	206	E A	234	200	196	192	202	206	188	186	E B	214	236	228	210	E B	286
18	E B E B E B E B	244	256	272	236	216	E B	194	236	188	194	208	210	190	182	204	194	182	172	186	E B	230	206	206	218	E B	E B	258
19	E B E B E B E B	258	260	258	270	220	E B	194	236	204	202	206	212	206	192	216	196	178	204	194	194	220	212	224	226	E B	E B	262
20	E B E B E B E B	284	274	234	198	190	E B	200	230	198	206	212	196	188	188	198	A	200	194	206	200	238	206	228	254	E B E B	272	
21	E B E B E B E B	266	256	262	262	210	E A E B	292	266	202	204	202	184	198	208	176	178	200	206	178	198	194	208	238	224	E B E B	234	
22	E B E B E B E B	290	268	284	266	192	E B	170	278	200	214	202	200	202	196	A	198	206	186	200	218	212	212	210	240	E B E B	246	
23	E B E B E B	266	252	228	216	214	E A E B	270	268	208	206	196	202	188	192	198	216	224	210	194	194	E A	230	214	196	E B E B	274	
24	E B E B E B E B	248	230	234	242	264	E B	218	238	178	202	194	186	A	186	184	206	194	214	198	196	E A E B	264	236	214	E B	262	
25	E B E B E B E B	260	260	252	252	252	E B	214	244	214	190	194	194	192	192	190	194	A		210	194	216	204	204	244	E B E B	232	
26	E B E B E B E B	236	272	276	264	250	E B	234	220	186	186	188	186	162	162	A	206	210	218	190	184	210	222	200	230	E B E B	254	
27	E B E B E B E B	256	264	264	270	250	E B	214	278	210	190	190	190	190	A	212	196	234	206	196	204	228	212	216	216	E B	244	
28	E B E B E B E B	272	272	268	268	238	E B	230	186	182	212	212	196	198	206	226	206	196	208	192	188	200	E B E B	236	236	E B E B	258	
29	E B E B E B E B	274	270	270	252	236	E B	204	192	204	210	202	208	A	200	198	192	A	192	184	206	266	264	232	220	E A	244	
30	E B E B E B E B	244	244	240	240	220	E B	248	208	200	196	196	218	E A	220	202	202	216	196	196	196	206	222	218	268	E B E B	278	
31	E B E B E B E B	302	270	256	232	214	E B	196	188	192	A	192	192	182	206	A	218	A	202	192	192	216	260	258	242	E B E B	218	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	31	31	31	31	30	30	30	31	30	31	29	24	27	26	29	26	29	31	29	30	31	29	29	31				
MED	E B E B E B E B	266	270	262	236	208	E B E B	239	236	198	200	202	200	194	196	200	198	205	202	196	204	212	214	208	240	E B E B	256	
U Q	E B E B E B E B	276	282	270	262	238	E B E B	256	266	204	204	210	213	201	206	216	206	210	209	206	227	228	228	237	265	E B E B	276	
L Q	E B E B E B	250	256	240	212	210	E B	214	212	190	186	196	193	189	188	190	192	196	194	192	196	208	208	212	222	E B	240	

JAN. 2020 h'F (KM)

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JAN. 2020 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	A		A		A											
2								B		120	A	A			A	A	A							
3								B		118	A	A												
4									114	114	112	112	116	116	116		A							
5								136	108	114	112		A	A	A	A	A							
6								B		128	128		A	A	A		118					B	B	
7								B		128	116	120		A										
8								B	B		110	116	120	110										
9								B		120	112	110	108	108		A		A						
10								B		118	98	110	110		A	A	A	A						
11								B	B		114	118	118	118		A		A	A					
12								B	B		110		110	112	108		A	A	A					
13								B		116	112		A	A	A									
14								B		A		118	118		A	A	A	A						
15										A	118	122	120	110	112		A	A						
16								B		114	112	112		A										
17								B		112	116		A											
18								B		124	124	120	120	116	114	114	112	112						
19								B		112	114	122	124	122	116	110	112	108						
20								B		114	116	120		A										
21								B		118	120	118		A										
22								B		118	124	118		A										
23									122	122	126	120	118	112	108	106	118							
24								B		116	122	114	114	116	116	110								
25								B		120	120		120		A									
26								B		118	110	110	116	114	106	108	112	118						
27								B		112		A		114	118	110								
28								B		120	122	118	118	112	118	114	114							
29								B		112	114	114	108	108	108	108								
30								B		108	108	108	118	118	118	118								
31								B		118	118	118	118	118	118									
	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	28	27	23	22	21	21	18	15	15	1						
MED								136	117	116	118	117	114	112	113	112	118	118						
U Q									120	120	120	120	117	116	114	114	118							
L Q									112	114	112	112	110	108	108	112	112							

JAN. 2020 h'E (KM)

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JAN. 2020 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	106	96	B	B	96	98	B	B	106	154	102	G	100	G	162	152	G	88	94	B	B	94	92	92	
2	92	92	92	B	B	B	B	B	162	102	102	98	G	100	94	90	88	86	B	92	90	B	84	B	
3	B	B	B	B	86	86	86	86	G	94	96	92	G	G	G	G	92	92	B	B	B	B	B	B	
4	B	B	B	B	92	B	B	B	G	160	148	G	120	G	G	106	146	B	88	88	B	B	B	B	
5	90	90	84	86	92	90	86	G	154	126	118	106	98	96	94	100	C	B	B	B	B	B	B	B	
6	B	110	98	96	92	B	B	B	156	G	100	100	100	100	106	140	124	96	B	B	144	B	B	B	
7	B	B	B	B	92	B	B	B	G	G	120	100	G	142	G	162	126	112	B	B	B	B	B	B	
8	B	B	94	92	88	B	B	B	G	132	122	116	104	104	102	108	96	96	92	92	94	92	92	94	
9	82	86	90	94	98	B	100	96	G	144	124	118	120	88	124	92	86	100	118	90	86	92	100	B	
10	96	96	96	92	100	86	98	104	150	154	142	120	108	104	106	102	96	100	108	98	112	100	96	100	
11	104	90	90	92	108	B	B	B	138	146	126	122	144	114	114	88	98	90	86	102	138	96	102	124	
12	B	98	94	84	104	102	B	B	G	96	G	G	G	96	88	92	94	B	90	88	86	88	82	90	
13	100	92	92	B	B	144	154	96	144	146	96	98	96	92	92	94	94	98	88	86	78	86	B	B	
14	100	B	B	B	100	98	B	B	104	152	164	104	96	102	98	92	92	92	88	84	82	94	98	B	
15	B	B	B	96	B	90	B	B	102	150	146	136	122	118	100	96	118	100	94	94	B	B	B	B	
16	B	B	B	B	B	B	B	B	G	G	G	102	136	112	102	G	G	B	B	B	B	B	B	96	
17	96	92	88	B	B	B	B	B	132	150	92	134	126	G	156	G	G	B	B	82	94	98	B	B	
18	B	98	94	94	84	90	88	90	G	146	170	G	G	G	G	G	G	B	B	B	B	B	B	B	
19	B	B	B	90	90	90	86	B	160	156	150	122	G	G	G	G	G	B	B	B	B	B	100	B	
20	B	B	100	96	96	96	B	B	156	G	G	100	136	112	120	G	G	B	B	B	B	B	B	B	
21	B	B	B	94	88	82	86	B	G	G	G	104	106	G	G	G	G	B	B	B	B	B	B	B	
22	B	B	B	B	B	B	B	150	148	G	G	108	G	136	108	G	G	B	B	B	118	B	B	B	
23	B	B	B	B	100	B	B	B	162	152	178	G	G	G	166	164	148	120	B	B	B	98	B	B	
24	92	90	90	B	90	90	B	B	144	152	G	148	148	138	124	90	90	B	B	90	84	84	84	80	76
25	B	B	B	B	B	B	B	B	G	G	162	102	102	102	100	150	98	130	120	B	B	B	120	120	
26	B	B	B	B	B	B	B	B	G	120	G	G	G	132	128	138	124	B	B	B	B	96	120	120	
27	102	94	94	90	B	B	B	B	142	106	100	142	112	120	88	108	102	102	B	B	B	102	98	98	
28	96	B	B	B	B	B	B	B	152	154	148	156	144	G	124	122	104	B	100	100	98	122	122	118	
29	B	B	B	B	B	88	88	B	152	152	140	116	116	114	G	104	104	104	100	100	98	98	B	98	
30	106	B	B	B	B	B	B	134	G	156	154	154	144	128	G	100	100	108	108	102	102	104	104	104	
31	102	102	B	B	B	B	B	148	148	146	146	126	130	122	108	98	140	B	84	84	B	B	B	104	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	14	14	14	14	17	15	9	8	19	24	24	26	22	22	23	23	22	18	16	16	15	13	16	14	
MED	98	93	93	92	92	90	88	100	148	148	125	116	118	112	108	100	101	100	91	92	98	94	99	99	
U Q	102	98	94	94	99	98	99	141	156	154	148	134	136	122	124	122	124	108	100	99	112	99	103	118	
L Q	92	90	90	90	89	88	86	93	138	129	102	102	102	100	98	92	94	92	88	87	86	90	92	94	

JAN. 2020 h'Es (KM)

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JAN. 2020 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1	F1			F1	F2				L2	H2	L2		L2		H1	H1		F3	F2			F2	F2	F3
2	F4	F4	F2							H1	L2	L2	L1		L2	L2	L2	L1	F3		F1	F1		F1	
3					F4	F3	F3	L2			L1	L2	L2				L2	F1							
4					F1						H1	H1		C1			L2	H1		F2	F2				
5	F1	F3	F2	F2	F1	F2	F1			H2	C2	C2	L2	L2	L2	L2	L4								
6		F1	F2	F4	F1					H1		L3	L2	L2	L2	L2	H2	C2	L1			F1			
7					F1							CL22	L2			H1	H1	C1	L2						
8			F1	F1	F2						CL22	CL11	C2	L2	L2	L2	L2	L2	F1	F3	F4	F4	F4	F3	F2
9	F1	F3	F4	F3	F2		F1	L2			HL23	CL1	CL22	CL22	L2	CL22	L3	L3	F2	F2	F1	F2	F2	F2	
10	F1	F1	F3	F3	F2	F2	F2	L1		H2	H2	C2	L1	L2	L2	L3	L3	L4	L3	F2	F6	F2	F4	F2	F2
11	F1	F2	F2	F1	F1					H2	H2	C1	C2	HL12	CL22	CL12	L2	LL32	L2	F2	F2	F3	F1	F2	F3
12		F2	F2	F5	F1	F1					L2				L2	L3	L3	L2		F3	F6	F5	F4	F5	F1
13	F2	F3	F2			F1	F1	L1		H2	H3	L2	L2	L2	L2	L2	L2	L1	F1	F2	F2	F3	F2		
14	F1				F1	F1				L2	H2	H1	L1	L3	L2	L3	L3	L4	F2	F3	F3	F2	F2	F1	
15				F2		F2				L2	H1	HL12	CL22	C2	C1	L2	L3	C1	F3	F5	F2				
16													L2	H1	C1	L2									F2
17	F2	F2	F3							H1	H2	L3	H1	C1		H2			F1	F1	F1				
18		F2	F1	F1	F2	F1	F1	L1			H2	H1													
19				F1	F2	F1	F2			H3	H2	H2	C1											F1	
20			F2	F1	F1	F1				H2			L2	H1	C2	C2			F3						
21				F2	F2	F4	F2						L1	L2											
22								H1		H2			L2			H1	L1					F1			
23					F3					H2		H1	H1			H1	H1	H2	F2					F2	
24	F2	F2	F1		F2	F1				H1	H1		H1	H1	H1	C1	L2	L2		F3	F3	F2	F1	F1	F1
25										H1	L1	L2	L2	L2	L2	H1	L3	H1	C1					F1	F2
26											C1				C1	C1	H2	C2					F1	F1	F1
27	F1	F2	F2	F2						H2	L2	L2	H2	C2	C2	L2	L2	L3	L1					F1	F2
28	F2									H2	H1	H1	H2	H1		C1	C2	L2		F2	F2	F2	F1	F1	F1
29				F1		F1				H2	H2	H2	C3	C2	C2		L3	L5	L2	F3	F2	F2	F1		F5
30	F1							H1		H1	H1	H1	H1	C1	C1		L3	L4	L1	L1	F2	F2	F3	F2	F2
31	F2	F2						H3	H3	H1	H1	C1	C1	C2	L2	L3	H2		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																									

JAN. 2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 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	38	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
2	32	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
3	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
4	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
5	40	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
6	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
7	39	36	38	48	39	39	40	46											X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
9	38	34	35	34	40	30	30												X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
11	28	30	31	32	32	32	24	32											X	X	X	X	X	X	X
12	X	X	X	X	X	A	A	X											A	A	X	X	A	X	X
13	34	34	32	33	38	28	28	36											X	A	X	X	X	X	X
14	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
15	33	39	39	38	37	26	26	32											X	X	X	X	X	X	X
16	X	X	X	X	X	X	A	X											X	X	X	X	X	X	X
17	35	35	32	35	35	33	31												X	X	X	X	X	X	X
18	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
19	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
20	32	38	34	36	25	28	27												X	X	X	X	X	X	X
21	X	X	X	X	X	X	X				C	C							X	X	X	X	X	X	X
22	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
23	35	35	35	35	29	27	28												X	X	X	X	X	X	X
24	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
25	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
26	29	31	31	33	33	35	27												X	X	X	X	X	X	X
27	32	32	30	33	33	31	34	33											X	X	X	X	X	X	X
28	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
29	37	35	34	38	35	31	32	34											X	X	X	X	X	X	X
30	35	A	X	32	35	35	28	34				C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C											X	X	A	X	X	X	X
																			45	40		35	38	37	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	28	29	29	29	28	27	18	1										26	27	28	29	27	28	
MED	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
U Q	33	33	32	33	34	30	28	34	55										45	36	38	36	34	32	
L Q	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X
	35	35	35	35	36	34	30	35											46	39	41	38	35	35	
	X	X	X	X	X	X	X	X											X	X	X	X	X	X	X
	32	32	31	32	32	28	26	32											41	34	34	34	30	31	

JAN. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 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	F	27	27	27	28	F	18	28	49	42	42	58	67	49	50	56	44	46	33	29	36	31	25	28	
2	26	26	F	F	32	22	21	28	48	46	55	A	A	57	64	52	A	57	40	30	36	37	28	27	
3	28	28	29	28	30	24	20	22	48	47	46	61	59	52	47	48	47	43	34	31	28	30	29	26	
4	27	25	27	28	28	23	18	25	42	43	47	54	56	58	47	52	48	39	50	39	27	30	30	28	
5	F	27	25	27	32	20	23	27	45	45	50	62	62	57	59	59	59	52	38	33	31	31	29	29	
6	28	30	33	26	18	19	19	29	43	47	51	63	68	67	50	64	55	48	43	31	28	25	F	F	
7	F	F	F	F	F	F	F	F	49	48	48	E	63	65	A	A	51	46	37	28	30	30	25	25	
8	26	26	26	27	26	F	F	F	45	50	53	61	60	61	50	46	55	45	61	44	32	36	F	F	
9	F	28	27	28	34	24	24	31	44	43	52	52	58	53	53	62	50	52	40	29	35	36	31	28	
10	28	29	32	32	F	20	22	30	58	52	55	86	92	94	95	65	A	49	53	39	38	51	28	23	22
11	22	24	25	26	26	26	18	26	46	46	52	48	59	69	63	54	A	43	30	30	32	32	A	25	
12	26	26	25	F	25	A	A	24	49	52	50	54	61	77	62	61	53	44	A	A	37	39	A	24	
13	28	28	26	27	F	22	22	30	41	45	48	A	58	54	56	53	51	46	31	A	30	28	24	20	
14	24	F	26	26	26	18	18	24	55	46	45	57	50	62	60	51	52	40	32	34	28	25	23	F	
15	F	F	F	F	F	20	20	26	49	46	42	56	73	64	52	49	53	49	38	28	32	24	24	24	
16	26	23	23	24	29	22	A	26	44	44	46	47	55	84	81	52	54	54	40	28	31	36	24	26	
17	29	29	26	29	29	27	25	28	48	58	48	63	64	55	49	47	53	53	40	27	33	36	25	25	
18	22	26	28	24	29	34	24	25	40	48	46	48	68	65	56	52	46	46	34	28	35	32	30	23	
19	24	25	26	26	26	26	20	26	43	47	48	43	52	56	52	52	49	45	38	32	40	30	24	26	
20	F	F	28	30	19	22	21	23	44	45	49	50	49	43	62	73	53	41	35	29	32	30	26	29	
21	27	29	24	24	26	22	18	24	45	46	C	C	48	56	50	50	53	64	32	33	36	30	27	28	
22	25	24	24	25	29	20	20	25	45	48	48	43	47	66	66	57	50	42	36	35	32	28	28	29	
23	29	29	29	29	23	21	22	27	45	56	64	71	69	68	52	49	52	48	38	32	33	33	28	26	
24	26	27	28	26	27	28	28	32	45	49	48	49	46	58	62	71	V	62	57	43	26	28	30	29	26
25	23	25	25	27	27	29	21	26	42	46	53	57	55	52	56	58	58	52	44	26	26	26	29	26	
26	26	26	24	27	27	25	28	27	44	44	47	46	46	50	56	64	54	52	48	28	27	23	24	A	
27	22	23	23	23	23	24	22	28	45	44	46	44	58	61	61	48	48	47	39	28	31	30	24	24	
28	F	F	F	F	F	25	26	28	42	44	44	45	46	49	54	61	48	50	39	28	26	27	28	F	
29	F	A	F	F	F	F	22	28	48	47	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	59	61	49	39	34	A	29	32	31	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	21	23	25	23	23	24	25	27	29	29	27	25	27	27	28	28	27	29	28	27	28	29	25	24	
MED	26	26	26	27	27	22	21	27	45	46	48	54	58	58	56	54	52	48	38	30	32	30	27	26	
U Q	28	28	28	28	29	26	24	28	48	48	52	62	65	66	62	61	54	52	40	33	35	32	29	28	
L Q	24	25	25	26	26	20	20	25	44	44	46	48	50	53	51	50	49	44	34	28	28	28	24	24	

JAN. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	U L 388	A	U L 404	U L 432	U L 412	L	L							
2									L		U L 400	A	A	A	A	L	A							
3										L	U L 396	U L 404	U L 404	L	U L 428	L	L							
4									L		U L 404	U L 416	U L 416	L	L	L	L							
5											U L 400	L	L	L	L	L	L							
6									L		U L 404	L	L	L	L	L	L							
7										L	U L 400	U L 404	U L 404	A	L	A								
8									L		L	U L 412	L	L	L	L								
9									L	A	A	A	L	U L 448	A	A								
10											L	U L 428	A	U L 420	L	L	A							
11												A	A	A			A							
12											L	U L 408	U L 408	U L 416	L	L								
13											U L 392	A	U L 400	L	400	L	L							
14											U L 412	U L 412	U L 428	U L 408	U L 408	L	L	L						
15										L	U L 404	U L 404	U L 420	U L 420	L	L	L							
16									L		U L 416	U L 408	L	A	U L 408	L	L							
17									L	L	U L 420	U L 392	U L 404	L	L	L	L							
18											U L 396	U L 404	U L 412	U L 404	L	L	L							
19										L	L	A	U L 404	U L 408	L	L	L							
20										L	L	L	L	U L 404	L	L	L			L				
21									L	L	C	C	U L 444	404	L	L	L							
22										L			U L 396	L	L	L	L	L						
23										L	L	404	416	416	L	L	A							
24									L		L	U L 424	U L 420	U L 416	U L 388	L								
25											U L 396	A	U L 412	U L 428	U L 404	U L 376	A							
26									L		A	U L 432	A	U L 424	U L 400	U L 408	L							
27									L			A	404	412	L	L	L							
28									L		U L 408	A	416	408	L	L	L							
29										244	L	C	C	C	C	C	C	C	C					
30									C	C	C	C	C	C	C	C	C	C	C					
31									C	C	C	C	C	C	C	U L 384	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		8	14	19	15	11	4								
MED									244		U L 400	U L 404	U L 408	U L 416	U L 408	U L 386								
U Q											U L 416	U L 408	U L 416	U L 424	U L 412	U L 398								
L Q											U L 394	U L 400	U L 404	U L 408	U L 404	U L 380								

JAN. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JAN. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J A	J A	J A	J A	J A	J A	E B	E B	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	E B	E B
2	J A	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
3	J A	J A	J A	E B	J A	J A	J A	J A			J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
4	E B	E B	J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
5	E B	E B	J A	J A	J A	J A	E B	E B			J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
6	E B	E B	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
7	J A	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
8	J A	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
9	E B	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
10	J A	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
11	E B	E B	E B	E B	J A	J A	J A	J A			J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
12	E B	J A	J A	J A	J A	J A	J A	J A			J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
13	J A	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
14	J A	J A	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
15	E B	J A	J A	J A	J A	J A	E B	E B	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
16	J A	J A	J A	J A	J A	J A	E B	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
17	E B	E B	E B	E B	J A	J A	E B	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18	E B	J A	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
19	E B	E B	E B	E B	E B	E B	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
20	E B	J A	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
21	E B	J A	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22	J A	J A	J A	J A	J A	J A	E B	E B	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
23	E B	J A	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
24	E B	E B	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
25	E B	E B	E B	E B	E B	E B	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
26	E B	E B	E B	E B	E B	E B	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
27	J A	J A	J A	J A	J A	J A	J A	J A	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28	E B	E B	J A	J A	J A	J A	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
29	J A	J A	J A	E B	E B	E B	E B	E B	G		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
30	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	J A	J A	J A	J A	J A	J A	J A	J A	J A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	29	29	29	29	27	27	28	28	28	29	29	29	29	29	29	29	29	29	29
MED	20	20	22	22	22	21	E B	E B	G		29	36	39	40	40	38	32	24	29	23	23	21	16	19	
U Q	J A	J A	J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	E B	E B	E B	E B	E B	E B	E B	E B	G		G	34	37	38	36	35	G	G	E B	E B	E B	E B	E B	E B	E B

JAN. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 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 16	E 16	E 16	E 16	E 17	E 16	E 16	E 16	G 18	G 24	34	46	32	32	28	30	G 22	20	19	E 16	E 16	E 16	E 16	E 16
2	22	E 16	E 16	E 16	E 16	E 16	E 16	E 15	G 31	31	A 118	A 100	39	36	27	A 71	20	16	E 16	E 16	20	16	E 16	
3	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 22	G 33	31	31	G 31	G 31	G 26	G 21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
4	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 15	G 16	28	30	31	32	30	29	G 23	20	16	E 16	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	G 23	29	32	32	33	36	31	27	24	G 15	E 16	E 16	E 16	E 16	E 16	
6	E 16	E 16	E 15	E 15	E 16	E 16	E 16	E 16	G 34	G 33	32	29	32	26	G 32	24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
7	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 29	G 31	32	A 64	A 32	A 80	A 32	22	23	16	E 16	E 16	E 16	20	18	
8	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 29	32	34	34	32	31	31	23	22	18	18	23	E 16	E 16	E 16	
9	E 16	E 16	E 16	E 16	E 16	E 16	E 16	20	G 30	34	32	33	34	39	36	29	20	20	16	E 16	E 16	20	18	
10	E 16	E 16	E 18	E 16	E 16	E 16	E 16	E 16	G 33	G 35	34	31	30	30	28	19	16	E 16	E 16	E 16	E 16	15	16	
11	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 36	39	41	39	39	41	A 61	20	21	16	E 16	E 16	E 16	32	16
12	E 16	E 16	E 16	E 16	E 16	A 28	A 31	A 16	22	30	31	32	32	32	31	32	26	22	A 36	A 66	E 16	E 16	E 16	16
13	E 16	18	E 16	E 16	E 16	E 16	E 16	E 16	21	29	31	A 90	34	33	33	26	22	22	20	A 43	E 16	E 16	E 16	16
14	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 29	G 33	33	33	30	G 18	G 18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	26	37	36	33	33	33	G 20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
16	E 16	E 16	E 17	E 16	E 16	E 15	E 31	E 16	G 25	28	34	36	34	32	G 25	20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
17	E 16	E 16	E 16	E 16	E 16	E 15	E 15	E 16	G 28	33	35	34	G 33	G 28	30	34	21	E 16	E 16	E 16	E 16	E 16	E 16	
18	E 16	E 16	E 16	E 16	E 16	E 16	E 15	E 16	22	G 34	G 34	G 33	G 33	G 21	16	15	16	E 16	E 16	E 16	E 16	E 16	E 16	
19	E 16	E 16	E 16	E 16	E 16	E 15	E 15	E 16	23	29	30	35	33	G 33	G 20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
20	E 16	E 16	E 16	E 16	E 15	E 15	E 15	E 15	G 33	G 34	34	30	33	G 22	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
21	E 16	E 16	E 16	E 15	E 16	E 16	E 16	E 15	G 32	G 32	G 34	30	G 20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
22	E 16	E 16	E 16	E 15	E 16	E 16	E 15	E 15	20	26	32	31	34	34	G 30	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
23	E 16	E 16	E 16	E 16	E 16	E 15	E 16	E 16	24	27	31	G 31	G 31	G 31	31	21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
24	E 150	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 28	G 34	36	35	32	G 27	20	16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
25	E 15	E 15	E 16	E 16	E 16	E 16	E 16	E 16	22	29	G 35	33	32	31	29	32	20	16	E 16	E 16	E 16	E 16	E 16	
26	E 16	E 16	E 16	E 17	E 16	E 16	E 16	E 16	22	24	35	38	40	38	34	32	28	G 16	E 16	E 16	E 16	E 16	E 16	
27	E 17	E 17	E 16	E 16	E 16	E 16	E 16	E 16	G 32	G 37	36	36	32	31	28	26	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 31	33	36	36	33	28	28	G 15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
29	E 16	A 42	A 15	E 16	E 15	E 15	E 15	E 16	G 31	G 33	C 36	C 36	C 33	C 28	C 28	C 15	C 15	C 15	C 16	C 16	C 16	C 16	C 16	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	29	36	21	26	26	A 39	E 16	E 16	E 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	27	27	28	28	28	29	29	29	29	29	29	29	29	29
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 26	32	34	33	G 31	G 25	20	16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	
U Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	33	36	35	34	33	31	28	21	20	16	E 16	E 16	E 16	E 16
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 29	G 32	G 32	G 32	G 29	G 18	G 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16

JAN. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	16	15	16	16	15	15	15	13	14	15	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	15	15	16	13	16	16	16	15	16	16	15	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	14	16	15	16	16	16	16	16	16
4	16	16	16	16	16	16	16	15	16	15	16	15	16	16	17	15	15	16	16	16	16	16	15	16
5	16	16	16	16	16	16	16	16	14	16	16	14	16	15	15	15	13	12	15	15	16	16	15	16
6	16	16	15	15	16	16	16	16	16	18	17	16	15	15	17	15	15	16	16	17	16	16	16	16
7	16	16	16	16	16	16	16	16	15	15	14	16	15	15	16 ^A	15	16	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	14	16	16	16	15	15	15	15	15	14	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	15	16	15	15	16	14	16	14	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	14	14	16	16	16	16	16	15	16
11	16	16	16	16	16	16	16	16	16	17	17	16	16	14	16	16	16	15	16	16	16	16	16	15
12	16	16	16	16	16	16	16	16	15	16	14	14	16	16	14	16	16	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	16	17	16	16	16	15	16	15	16	16	17	16	16	16	16
14	16	16	16	16	16	16	16	16	15	15	15	15	15	16	16	16	16	15	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	15	14	14	14	14	15	16	16	16	16	16	16	16	16	16
16	16	16	17	16	16	15	15	16	15	15	15	15	16	16	14	15	16	16	16	16	16	16	15	16
17	16	16	16	16	16	15	15	16	16	16	17	17	17	17	17	16	15	16	16	16	16	16	16	16
18	16	16	16	16	16	16	15	16	14	16	16	16	16	15	14	16	15	14	16	15	16	16	16	16
19	16	16	16	16	15	15	16	16	15	15	16	16	16	16	16	16	16	14	16	16	16	16	15	15
20	16	16	16	16	15	15	15	15	14	20	17	17	16	16	15	15	14	15	16	16	16	16	16	16
21	16	16	16	15	16	16	16	15	15	16	^C	^C	16	16	19	18	17	17	17	16	16	15	16	16
22	16	16	16	15	16	16	15	15	15	16	18	18	18	16	17	17	16	14	16	16	16	16	16	16
23	16	16	16	16	16	15	16	16	14	14	16	15	14	15	15	15	16	17	16	16	16	16	16	16
24	150	16	16	16	16	16	16	16	16	16	16	17	17	18	17	17	16	16	16	16	16	16	16	16
25	15	15	16	16	16	16	16	16	15	16	17	17	15	16	16	16	14	14	16	16	16	16	15	16
26	16	16	16	17	16	16	16	16	16	16	16	16	14	16	17	16	16	16	16	16	16	16	16	16
27	17	17	16	16	16	16	16	16	16	15	20	16	16	16	16	15	14	15	16	16	17	17	16	15
28	16	16	16	16	16	16	16	16	16	15	15	15	16	15	16	16	17	16	15	15	16	15	16	15
29	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C
30	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C
31	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	^C	17	17	16	16	16	17	16	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	29	29	29	29	29	29	29	29	29	29	27	27	28	28	28	29	29	29	29	29	29	29	29	29
MED	16	16	16	16	16	16	16	16	15	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	17	16	16	16	16	16	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	15	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16

JAN. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 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	F	291	304	361	366	F	312	352	414	393	373	359	386	338	351	375	384	372	370	351	337	369	367	328		
2	335	338	F	F	354	357	301	350	395	368	356	A	A	383	381	379	A	373	370	314	348	358	353	360		
3	327	324	337	332	376	370	322	347	387	389	370	374	389	399	351	380	375	362	374	363	320	339	322	330		
4	311	302	298	301	320	370	345	342	388	387	366	329	347	395	364	343	367	342	383	367	305	290	305	300		
5	F	295	278	303	375	293	316	336	384	380	329	353	375	349	368	368	372	358	349	349	327	348	328	309		
6	317	304	366	395	330	321	302	385	382	381	348	341	358	378	344	362	371	340	384	342	325	320	F	F		
7	F	F	F	F	F	F	F	F			E			A		A										
8	341	315	315	369	324		F		403	374	371	355	383	381	347	378	375	340	386	381	348	309	F	F		
9	F	297	311	368	385	328	342	362	378	381	354	362	387	317	347	363	363	372	352	337	319	341	343	292		
10	311	320	351	369		325	288	338	385	381	312	362	332	348	370	380	A	364	372	350	327	376	366	338	290	
11	308	326	312	321	354	405	343	350	380	384	381	391	340	373	381	380		365	352	321	349	370	A	277		
12	300	307	313		399	A	A	317	380	384	387	337	352	332	330	360	385	397	A	A		347	405	A	314	
13	307	311	311	334		F	383	340	355	409	380	372	A	353	346	368	380	358	377	357	A		366	373	372	310
14	280		F	334	299	370	419	325	355	396	393	317	370	318	362	366	365	373	390	316	376	366	346	370	F	
15	F	F	F	F	F		359	314	351	393	394	412	344	365	337	386	364	371	402	356	307	357	368	345	340	
16	319	371	312	304	363	433	A	348	379	379	368	326	329	361	364	381	370	369	376	397	329	375	366	309		
17	337	363	304	312	330	340	327	338	385	380	343	370	361	371	342	361	386	394	410	330	336	350	351	357		
18	296	295	330	333	337	406	410	353	403	358	370	334	371	373	385	353	373	381	392	320	361	349	363	329		
19	326	309	330	317	322	397	375	353	401	373	369	408	339	368	368	369	393	383	381	354	350	382	336	336		
20	F	F		335	393	332	388	307	345	395	373	358	372	379	380	354	386	404	381	365	324	332	349	329	354	
21	335	373	325	326	402	362	337	337	384	356		C	C	334	386	372	379	381	390	371	352	369	345	322	337	
22	344	318	330	315	369	407	323	331	363	371	385	379	345	348	380	381	385	392	346	345	367	315	345	336		
23	331	312	347	386	370	336	330	327	370	344	347	352	374	387	373	340	373	388	367	343	350	366	346	333		
24	300	325	328	349	343	334	359	369	403	379	383	374	360	347	350	366	347	355	396	370	337	355	350	353		
25	316	324	336	329	333	379	366	359	400	368	375	388	385	336	342	331	378	367	379	366	340	318	358	352		
26	310	329	301	290	290	324	401	356	401	393	373	365	352	327	361	359	374	365	402	408	340	322	370	A		
27	306	302	334	309	324	325	327	362	408	372	377	375	369	375	393	386	362	387	363	349	344	343	335	336		
28	F	F	F	F	F		314	387	356	397	381	376	365	361	355	350	391	372	374	385	372	310	333	334	F	
29	F	A		F	F	F		344	362	380	403		C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	354	390	363	383	385	A	313	341	352	
	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	21	23	25	23	23	24	25	27	29	29	27	25	27	27	28	28	27	29	28	27	28	29	25	24		
MED	316	315	325	329	354	360	330	351	393	380	370	362	361	362	365	368	373	373	372	349	342	349	345	332		
U Q	333	326	334	368	370	392	352	356	402	386	376	374	376	380	372	380	385	389	384	370	354	367	360	346		
L Q	306	302	311	309	330	326	315	338	381	372	348	348	345	346	350	360	370	364	356	327	328	328	334	310		

JAN. 2020 M(3000)F2 (0.01)

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JAN. 2020 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1											L 425	U 409	L 403	U 409	L	L									
2									L		U 376	A	A	A	A	L	A								
3										L	L 404	U 434	L	L 409	L	L									
4									L		L 401	U 391	L	L	L	L									
5											U 387	L	L	L	L	L									
6									L		L 376	L	L	L											
7										L 388	U 408	L 427	U	A	L	A									
8									L		L	L	L	L	L										
9									L	A	A	A	L	U 383	A	A									
10											L 364	U 399	L	L	L	A									
11											A	A	A				A								
12											L 426	U 394	U 409	L	L										
13											U 414	L	A 416	L	394	L	L								
14											U 387	L 399	U 396	U 387	U 386	L	L	L							
15											L	U 372	U 403	U 419	L	L									
16									L		U 407	U 419	L	A 394	L	L									
17									L	L 380	U 404	U 415	L	L	L	L									
18											U 410	L 384	U 404	U 409	L	L									
19											L	L	A 404	U 388	L	L									
20											L	L	L	U 372	L			L							
21									L	L	C	C	U 403	L 422	L	L	L								
22											L		U 392	L	L	L	L	L							
23											L	L	422	410	386	L	L	A							
24									L		L	L	U 422	U 385	U 386	U 411	L								
25											U 400	L	A 410	U 404	U 423	U 409	A								
26										L	A 392	L	A 384	U 408	U 370	L									
27									L			A	L	L	L										
28										L	U 418	L	A	410	393	L	L								
29										436	L	C	C	C	C	C	C	C	C						
30									C	C	C	C	C	C	C	C	C	C	C						
31									C	C	C	C	C	C	C	U 421	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		8	14	19	15	11	4									
MED									436		U 388	U 404	U 404	U 395	U 394	U 410									
U Q											U 407	U 410	U 416	U 409	U 409	U 416									
L Q											U 378	U 392	U 399	U 386	U 386	U 390									

JAN. 2020 M(3000)F1 (0.01)

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JAN. 2020 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										232	276	E A 242	230	290	260	232	224								
2									220		276	A	A	228	234	222	A								
3										238	264	244	216	228	268	230	230								
4									218		274	278	274	232	252	260	238								
5												254	238	260	236	236	234								
6									234		260	266	236	226	248										
7										248	282	238	232	A	226	A									
8									216		246	246	242	226	256										
9									206	224	248	244	232	356	258	238									
10										224	306	244	244	244	224	214									
11											244		282	232			A								
12											230	292	260	242	242	240									
13											256	A	260	268	244	244	234								
14											332	248	316	258	250	250	234	220							
15										220		276	242	240	224	258	230								
16									230			320	298	238	222	230	228								
17									226	224	294	244	254	240	286	252	240								
18												334	242	236	220	248	226								
19										250	262	274	282	258	258	246	222								
20										240	256	C 256	248		258		226								
21									216	232	C	C	328	230	244	244	244								
22										232				250	230	230	226	220							
23										260	260	238	222	212	236	256	228								
24									218		236	254	284	270	250	222	234								
25										248	230	224	294	260	238	238									
26										228	250	268	258	320	252	236	220								
27									202			232	252	240	230	240	242								
28									222			272	272	276	260	228	236								
29												C	C	C	C	C	C	C							
30									C	C	C	C	C	C	C	C	C	C							
31									C	C	C	C	C	C	C	240	220								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									12	14	20	23	26	26	27	24	19	4							
MED									218	232	260	254	250	241	248	239	234	220							
U Q									224	240	276	274	274	268	258	247	238	223							
L Q									213	224	248	244	236	232	230	230	226	220							

JAN. 2020 h'F2 (KM)

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JAN. 2020 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		E B	E B					A	188	188	180	196	180	194	194	194	E B			E B
2	E A	E B	E B	E B		E B	E B					A	A	A	A	182	A	200	198	228	E B			E B
3	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
5	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 A			E B
7	E B	E B	E B	E B		E B	E B														E B			E A
8	E B	E B	E B	E B		E B	E B														E A	E B		E B
9	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
11	E B	E B	E B	E B		E B	E B														E A	E A		E B
12	E B	E B	E B	E B		E B	E B														E A	E A		E B
13	E B	E B	E B	E B		E B	E B														E A			E B
14	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
16	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 A			E B
18	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
20	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
22	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
24	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
26	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
28	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
30	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
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	29	29	28	27	29	29	28	24	19	24	24	26	26	25	29	28	27	28	29	27	28
MED	E B	E B	E B	E B		E B	E B														E B			E B
U Q	275	273	267	259	231	228	268	223	200	206	202	204	203	205	204	198	204	204	200	226	229	220	234	258
L Q	E B	E B	E B	E B		E B	E B														E B			E B
	245	248	232	212	200	193	200	202	182	188	194	192	190	188	188	186	186	192	190	192	204	202	208	224

JAN. 2020 h'F (KM)

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JAN. 2020 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										118	118	A	A	A	A	110	110	A							
2									110	118	A	A	A	A	A	A	A	B							
3								B	118	114	A	A	A	114	110	A	110	110	B						
4									112	112	114	116	A	A	A	116	A	B							
5									116	116	116	A	A	A	A	A	A	116							
6									124	126	126	A	A	A	A	126	120	124							
7								B	124	124	A	A	A	A	A	A	A	A	A						
8									110	110	110	110	110	A	A	110	110	A							
9								B	110	110	110	A	110	110	110	110	112	A							
10									138	118	118	118	A	A	A	A	A	B							
11									118	118	112	112	112	112	112	112	A	B							
12									114	108	108	A	A	A	112	A	114	A							
13									B	114	112	A	A	A	A	A	A	A							
14								B	114	114	A	A	A	A	A	114	114	B							
15									A	A	114	122	A	A	A	114	114	B							
16									114	A	A	116	118	120	A	118	A	B							
17								B	110	110	110	110	110	112	A	112	A	A							
18								B	124	124	124	112	114	114	114	114	114	114							
19								B	114	114	114	114	114	114	116	116	116	116							
20								B	120	120	120	120	A	A	A	114	114	114							
21								B	114	114	C	C	A	114	114	106	106	B							
22									108	108	110	A	A	110	110	110	110	110							
23								B	110	124	112	112	112	A	A	112	A	B							
24								B	112	114	114	114	112	112	112	112	112	B							
25								B	112	112	116	112	116	A	A	A	116	118							
26									116	116	110	112	110	114	112	114	114	114							
27									118	118	116	112	114	114	A	A	A	B							
28									116	108	108	118	118	A	122	124	124	128							
29									114	114	C	C	C	C	C	C	C	C							
30								C	C	C	C	C	C	C	C	C	C	C							
31								C	C	C	C	C	C	C	C	A	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									26	27	22	16	13	12	11	19	17	10							
MED									114	114	114	113	112	114	112	114	114	115							
U Q									118	118	116	117	115	114	114	116	115	118							
L Q									112	112	110	112	110	112	110	110	110	114							

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JAN. 2020 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	98	90	90	90	90	90	B	B	100	172	156	90	90	90	90	142	94	86	82	82	82	108	B	B
2	90	94	94	94	88	88	88	88	G	160	100	90	90	92	92	92	88	130	92	92	90	86	84	84
3	82	82	82	B	92	92	92	92	150	G	94	94	92	G	G	92	G	142	82	82	82	82	86	86
4	84	B	94	90	88	88	88	88	88	168	132	120	98	98	96	G	96	136	88	88	88	88	86	86
5	B	B	84	92	92	90	B	B	82	162	158	152	94	94	96	98	86	98	G	B	B	96	96	88
6	88	B	86	86	86	98	B	B	G	G	G	98	98	96	96	148	124	G	82	82	82	B	B	B
7	100	B	B	92	84	B	B	B	G	G	96	94	94	94	92	92	86	86	86	84	B	B	84	84
8	86	86	B	92	92	92	92	86	G	148	148	128	126	102	102	134	92	82	92	92	84	84	90	B
9	B	90	90	100	100	100	98	98	G	156	148	92	114	118	118	118	118	88	88	88	100	100	90	90
10	90	90	90	90	90	100	B	100	G	G	134	136	106	98	98	88	88	88	88	88	88	88	B	B
11	B	B	B	B	90	90	90	90	136	G	128	126	126	118	118	118	102	90	88	86	86	86	98	98
12	B	100	100	100	102	96	90	90	150	130	116	102	96	96	122	100	114	106	96	92	92	92	86	94
13	94	94	94	94	96	96	96	96	128	152	138	90	90	90	90	90	90	90	90	86	86	86	106	94
14	94	94	94	94	92	92	B	B	G	G	92	96	96	96	96	G	G	96	96	96	96	96	96	B
15	B	96	96	96	96	96	B	B	96	96	140	134	90	90	90	G	G	136	B	B	B	98	98	B
16	98	98	98	98	98	B	98	B	G	98	98	118	118	118	100	G	100	136	94	94	94	94	B	86
17	B	B	B	B	92	92	B	92	G	148	150	128	138	G	84	G	84	84	84	84	84	90	B	90
18	90	B	90	B	92	92	B	B	160	G	G	144	G	G	G	G	G	144	92	92	92	92	92	B
19	B	B	B	B	B	B	B	B	150	152	152	152	152	162	G	G	G	162	B	B	B	B	B	B
20	B	82	88	94	B	B	B	B	G	G	138	120	98	98	98	G	94	G	B	B	B	B	B	B
21	B	78	78	B	B	B	B	B	G	G	C	C	100	G	150	142	G	90	90	B	B	B	B	B
22	104	B	B	B	B	B	B	B	144	114	148	94	94	112	G	152	G	G	B	B	B	B	B	B
23	B	108	108	100	100	B	B	B	136	136	144	G	G	92	92	G	88	140	100	94	94	94	B	B
24	B	B	94	90	B	90	B	B	G	158	G	158	158	150	132	G	146	144	100	92	B	B	B	B
25	B	B	B	B	B	B	B	B	146	146	G	150	118	106	98	98	116	134	92	92	92	92	B	90
26	B	B	B	B	B	B	B	B	146	130	156	156	152	134	122	116	126	G	102	100	B	B	102	102
27	106	116	114	96	96	96	92	B	G	G	148	138	122	108	102	100	98	96	86	B	B	B	B	110
28	B	B	92	B	B	B	B	92	G	152	152	152	136	100	100	102	G	G	B	100	120	86	92	96
29	96	98	108	C	C	C	96	C	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	96	96	94	92	84	84	88	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	16	21	18	19	18	12	12	14	18	23	26	26	24	24	19	21	23	23	22	21	20	13	15
MED	94	94	94	94	92	92	92	91	145	150	140	120	99	98	98	100	96	96	90	90	90	91	90	90
U Q	98	98	97	96	96	96	96	94	150	158	150	138	126	115	110	134	115	136	94	92	95	95	97	96
L Q	88	88	89	90	90	90	90	88	128	130	116	94	94	95	92	92	89	88	86	84	84	86	86	86

JAN. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2020 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

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	F2	F1	F2	F3	F5	F2			L3	H3	H2	L4	L3	L2	L2	H2	L2	L4	F3	F3	F2	F2		
2	F3	F2	F2	F1	F2	F1	F1	F1		H3	L2	L7	L5	L5	L4	L2	L5	HL32	F3	F2	F3	F4	F1	F1
3	F1	F1	F1		F1	F2	F2	L1	H3		L4	L2	L2			L4		H3	L3	F1	F1	F2	F1	F1
4	F2		F1	F1	F1	F1	F1	F1	L1	H1	C2	CL32	L2	L3	L3		L2	HL35	F1	F1	F2	F2	F2	F1
5			F2	F2	F1	F2		F1	H2	H2	H2	L2	L3	L4	L3	L3	L2				L1	F1		F1
6	F2		F1	F1	F1	F1						L4	L3	L4	L2	H2	C2		F7	F6	F1			
7	F1			F1	F1						L2	L2	L2	L4	L4	L5	L6	L3	L3	F2			F2	F2
8	F3	F2		F1	F2	F1	F2	F3		H2	H2	C2	C2	L2	L2	HL22	L2	L4	F1	F2	F6	F4	F2	
9		F2	F2	F2	F5	F2	F2	F2		H2	H3	L5	CL23	CL34	CL72	CL42	CL22	L3	L3	L1	F2	F5	F4	F2
10	F2	F2	F3	F3	F2	F2		F2			H2	H2	L2	L2	L2	L5	L6	L5	F2	F3	F3	F1		
11				F2	F1	F3	F1	H1			C3	C3	C4	C4	C4	C5	C6	L2	F4	F2	F1	F3	F6	F4
12		F2	F2	F2	F1	F4	F3	F2	H2	H3	C3	L3	L3	L2	CL22	L2	C2	L3	F6	F6	F6	F1	F4	F2
13	F2	F6	F2	F2	F2	F2	F2	F1	C3	H2	H2	L6	L5	L3	L6	L3	L3	L4	F6	F5	F2	F2	F1	F1
14	F1	F2	F2	F1	F1	F2					L2	L2	L4	L2	L3			L2	F2	L1	L1	F2	F3	
15		F2	F2	F2	F2	F1			L4	L4	H2	CL22	L2	L2	L3			H2			F1	F1		
16	F1	F1	F2	F1	F1		F1		L2	L2	C2	C2	C2	C2	L2		L2	H2	F1	F1	F1	F1		F1
17				F1	F1		F2		H2	H3	C2	H2		L3			L5	L6	F8	F3	F2	F1		F4
18	F2		F1		F1	F1			H2			H1						H2	F2	F1	F1	F1	F1	
19									H2	H2	H2	H2	H2	H2					H2					
20		F2	F2	F1							H2	C2	L2	L2	L3		L3							
21		F1	F2										L2		H1	H2		L2	F1					
22	F2								H2	C2	H2	L2	L2	C1		H1								
23		F2	F2	F1	F1				H3	H2	H2			L4	L3		L5	HL22	F1	F1	F1	F1		
24			F1	F1		F1				H2		H1	H1	H2	C2		H2	HL11	F3	F2				
25									H1	H1		H2	C2	L2	L2	L2	C3	H2	F2	F2	F1	F1		F1
26									H2	H2	H2	H2	H2	H2	C2	C2	C2		F3	F1			F1	F7
27	F1	F1	F1	F2	F2	F3	F2				H1	H2	C1	C2	L1	L3	L3	L2	F1					F1
28			F1					F1		H2	H2	HL23	HL22	L3	L2	L2				F2	F1	F7	F4	F2
29	F2	F6	F1				F1																	
30																								
31																L3	L3	L2	F7	F5	F6	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																								

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 f_{XI} (0.1MHz)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 39	X 34	X 32	X 32	X 36	X 32	X 25													X 44	X 47	X 46	X 41	X 32
2	X 32	X 32	X 30	X 44	X 43	X 31	X 28													X 39	X 38	X 45	X 34	X 31
3	X 32	X 34	X 34	X 34	X 36	X 33	X 27													X 37	X 35	X 36	X 39	X 32
4	X 33	X 32	X 32	X 33	X 35	X 32	X 22													X 60	X 52	X 38	X 41	X 37
5	X 38	X 40	X 37	X 37	X 43	X 30	X 29													X 49	X 41	X 43	X 39	X 36
6	X 35	X 36	X 33	X 32	X 24	X 24	X 23													X 34	X 36	X 31	X 32	X 34
7	X 44	X 34	X 33	X 37	X 43	X 30	X 34	X 34												X 35	X 39	X 40	X 32	X 28
8	X 30	X 30	X 29	X 31	X 31	X 25	X 24													X 61	X 39	X 48	X 58	
9	X 35	X 33	X 31	X 33	X 36	X 34	X 34													X 40	X 38	X 44	X 39	X 34
10	X 31	X 33	X 36	X 36	X A	X 26	X 25													X 40	X 44	X 51	X A	X A
11	X A	X 29	X 30	X 32	X 34	X 33	X 22													X 35	X 36	X 39	X 33	X 30
12	X 28	X 31	X 30	X 30	X A	X A	X A													X A	X 40	X 45	X 33	X 30
13	X 31	X 33	X 32	X 32	X 33	X A	X 28													X A	X 40	X 36	X 28	X 24
14	X 26	X 29	X 38	X 39	X 39	X 28	X 24													X 42	X 44	X 31	X 32	X 26
15	X 35	X 38	X 43	X 43	X 40	X A	X 30													X 32	X 36	X 41	X 28	X 28
16	X 30	X 32	X 29	X 28	X 32	X A	X 22													X 48	X 40	X 42	X 38	X 30
17	X 32	X 37	X 28	X 31	X 34	X 28	X 28													X 53	X 49	X 47	X 45	X 30
18	X 32	X 29	X 32	X 34	X 44	X 44	X 26													X 35	X 40	X 47	X 33	X 32
19	X 30	X 31	X 31	X 35	X 31	X 30	X 25													X 44	X 44	X 37	X 33	X 35
20	X 37	X 32	X 39	X 34	X 31	X 24	X 23													X 44	X 39	X 43	X 34	X 37
21	X 33	X 33	X 32	X 29	X 29	X 24	X 23													X 44	X 44	X 41	X 38	X 36
22	X 37	X 36	X 30	X 32	X 29	X 32	X 23													X 44	X 43	X 35	X 34	X 37
23	X 34	X 34	X 34	X 37	X 26	X A	X 23													X 46	X 40	X 39	X 34	X 32
24	X 30	X 31	X 32	X 32	X 28	X 30	X 30													X 48	X 37	X 36	X 37	X 36
25	X 32	X 30	X 31	X 32	X 36	X 28	X 24													X 45	X 29	X 33	X 34	X 34
26	X 33	X 31	X 30	X 30	X 30	X 39	X 30													X 53	X 33	X 32	X 29	X 31
27	X 29	X 28	X 30	X 30	X 28	X 31	X 26													X 43	X 35	X 34	X 29	X 29
28	X 30	X 30	X 31	X 31	X 33	X 34	X 33													X 46	X A	X 32	X 34	X 33
29	X 38	X 34	X 33	X 34	X 32	X 34	X 28													X 48	X 39	X 38	X 40	X 38
30	X 30	X 29	X 30	X 32	X 34	X 26	X 28													X 59	X 40	X 35	X 32	X 31
31	X 31	X 33	X 32	X 36	X 34	X 32	X 26													X 56	X 31	X 31	X 38	X 43
	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	29	26	30	1												29	30	31	30	29
MED	X	X	X	X	X	X	X													X	X	X	X	X
U Q	X	X	X	X	X	X	X													X	X	X	X	X
L Q	X	X	X	X	X	X	X													X	X	X	X	X
	30	30	30	31	30	28	23													40	36	35	32	30

JAN. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 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

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		33	28	26	26	30	26	19	23	52	46	47	52	72	70	64	58	57	52	45	38	41	40	34	26
2		26	26	24	F 27	F 33	25	22	25	47	52	73	87	105	80	81	H 77	59	61	59	33	32	39	28	25
3		26	28	28	28	30	27	21	22	42	52	62	56	61	56	52	51	52	53	46	31	29	30	33	26
4		27	26	26	27	29	26	J 16	B 22	51	46	45	46	68	73	56	51	58	61	58	54	46	32	35	31
5		32	34	31	31	37	23	23	32	44	48	48	60	84	98	83	71	82	78	A	43	35	37	33	30
6		29	30	27	26	18	18	17	28	42	47	49	59	79	88	74	68	81	56	44	28	30	25	26	28
7		F 26	F 25	F 23	F 26	F 31	F 20	F 24	F 26	56	47	49	61	74	65	72	72	72	50	37	29	33	34	26	22
8		24	24	23	F 22	25	19	18	23	48	48	59	56	58	69	H 66	58	48	55	61	55	33	F	F	A
9		F	27	25	27	30	28	28	32	45	47	56	56	55	52	52	64	59	59	49	34	32	38	26	F 24
10		25	27	30	30	A	20	19	26	58	79	67	92	106	100	112	98	64	56	49	34	38	V 45	A	A
11		A	23	24	26	28	26	16	24	42	47	53	63	54	74	67	54	50	45	39	29	30	33	27	24
12		22	25	24	24	A	A	A	A	50	63	63	54	77	102	92	72	A	53	A	A	34	39	27	24
13		25	27	26	26	27	A	22	27	44	45	52	50	67	89	100	88	59	64	A	A	34	30	22	18
14		20	23	F 25	F 25	F 27	F 19	18	25	50	45	48	54	70	78	103	101	79	64	38	36	38	25	26	20
15		F 24	F 26	F 32	F 34	F 31	A	24	24	51	46	47	52	86	92	91	77	64	58	45	26	30	35	22	22
16		24	F 25	23	22	26	A	16	23	50	53	47	48	71	H 101	119	98	73	66	58	42	34	36	32	24
17		26	31	22	25	28	22	22	24	49	45	57	53	56	60	71	54	69	61	66	47	43	41	39	24
18		26	23	26	F 26	F 29	F 34	F 19	26	39	47	48	52	61	75	68	56	54	48	42	29	34	41	27	26
19		24	25	25	29	25	F 23	19	25	40	47	49	47	47	66	52	54	64	47	44	38	38	31	27	29
20		31	26	F 24	28	25	18	17	23	42	44	44	61	52	50	55	81	73	53	44	38	33	37	28	31
21		27	27	26	23	23	18	17	21	47	49	49	62	55	52	57	55	57	67	54	38	38	35	32	30
22		31	30	24	26	23	26	17	23	42	52	49	47	49	59	74	61	63	44	42	38	37	29	28	31
23		28	28	28	31	20	A	17	26	40	50	64	87	75	63	H 66	64	52	50	52	40	34	33	28	26
24		24	25	26	26	22	24	24	30	44	48	51	52	55	56	78	97	110	88	68	42	31	30	31	30
25		26	24	25	26	30	22	18	24	41	45	52	72	64	60	75	73	68	60	49	39	23	27	28	28
26		27	25	24	24	24	F 33	24	25	41	49	49	52	50	68	72	93	90	54	55	47	27	26	23	25
27		23	22	24	24	22	F 22	20	28	40	46	46	50	54	64	66	58	52	50	44	37	29	28	23	23
28		24	24	25	25	27	28	27	28	40	44	46	47	47	56	64	59	53	52	48	40	A	26	28	27
29		F 27	F 26	27	28	26	F 24	22	30	42	48	47	48	58	60	70	59	51	50	41	42	33	32	F 30	32
30		24	23	24	26	28	20	22	31	46	44	50	62	50	65	63	82	76	58	54	53	34	29	26	25
31		25	27	26	30	28	26	20	27	46	46	52	60	81	94	78	62	61	55	52	50	25	25	F 28	F 32
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		29	31	31	31	29	26	30	30	31	31	31	31	31	31	31	31	30	31	28	29	30	30	29	29
MED		26	26	25	26	27	24	20	25	44	47	49	54	61	68	71	64	62	55	48	38	34	32	28	26
U Q		27	27	26	28	30	26	22	28	50	49	56	61	75	88	81	81	73	61	54	42	37	37	32	30
L Q		24	24	24	25	24	20	17	23	42	46	47	50	54	60	64	58	54	50	44	34	30	29	26	24

JAN. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 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		A			L	L							
2									L	L						L	A							
3									L	L						U	L	L						
4									L	L	U	L				L	U	L	L					
5											L							L		A				
6											L		A	A	L	A	U	L						
7									L				L					L						
8									L	A							L		A					A
9									U	L		L		A	U	L	U	L	A	A	L			
10											L					L								
11									U	L	L		A	U	L	A	L							
12								A	L	L			A	A	A			A	A	A				
13											L							A		A				
14											U	L						L	L					
15											L	U	L				U	L	L					
16											L													
17											L						L	L						
18									U	L		L						L	U	L				
19									L		U	L					U	L						
20										A								L	L					
21									U	L	L	U	L				L	L						
22											L							L	L					
23											L													
24									L	L	L							L						
25											L							L						
26									L	L	U	L												
27											L							U	L	L				
28									L	A	U	L	U	L			L		A					
29											L	U	L	U	L			U	L	L				
30											L							L	L					
31											A							U	L	U	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									9	3	20	28	25	27	28	29	11	2						
MED									L	U	L	L					L							
U Q									248	328	396	412	420	416	412	396	376	244						
L Q									U	L	U	L					L	L						
									258	356	400	414	424	424	414	404	384							
									L	U	L						L							
									238	316	392	408	414	412	406	388	360							

JAN. 2020 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 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	A		A	A	A	A	A	284	A	A	B					
2								B	192	A	A	A	A	A	308	A	A	A	A					
3								B	A	A	A	A	A	A	300	284	248	172	A					
4								B	184	244	288		A	A	A	A	A	184	A					
5								B	196	244	288	304		A	A	A	280	A	A	A				
6								B	196	240		A U A	A	A	A	284	248	A	A					
7								B	172	256	284	296		A	A	A	A	A	B					
8								A	184	244	284	336		A	A	A	292	A	A	A				A
9								B	192	244	268	288		A	A	A	A	A	A					
10								B	B	240	268	284	296	U A	A	A	A	A	A					
11								B	176	244	280	288	296	A	300		A	A	A	A				
12								A	204	240	284		A	A	A	A	A	A	A					
13								A	A	244	276	328		A	A	A	A	A	232	A				
14								B	216	264	U A	292	A U A	320	A	A	A	A	A	A				
15								B	A	A	A	A	A	A	A	A	268	184	B					
16								B	A	A	A	A	A	A	A	A	A	A	A					
17								B	192	248	U A	280	308	316	312	308	296	256	A	A				
18								B	196	236	304		A	A	A	308	292	260	196	B				
19								B	180	244	A	292	300	A	A	308	296	264	A	B				
20								B	172	236	A	300		A	A	A	A	A	A	A				
21								B	188	252	280	300	A	316	308	296	256	A	B					
22								B	180	240	292	312		A	A	A	276	260	220	A				
23								B	188	244	A	292	312	316	304	292	252	196	A					
24								B	A	248	280		A	A	A	300	280	256	196	A				
25								B	184	244	284	304	324	316	300		A	A	204	A				
26								B	A	220	268	296	320	320	312	292	260	200	A					
27								B	176	236	280	300	316	308	300	300	268	208	B					
28								B	A	A	A	A		324	320		284	256	A	A				
29								B	184	248	276	312	316	316	300		A	A	216	B				
30								B	172	240	276	300	312		A	304	272	A	A					
31								B	180	248	284	292	308	316		A	A	264	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									22	26	21	20	13	10	14	15	17	12						
MED									184	244	280	300	316	316	304	292	260	198						
U Q									192	248	286	306	320	316	308	296	266	212						
L Q									180	240	276	292	304	312	300	284	256	190						

JAN. 2020 foE (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 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	J A	J A	J A	J A	20	18	16	E B	20	28	35	37	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B
2	E B	E B	J A	J A	J A	J A	42	22	19	E B	16	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B
3	J A	18	E B	E B	E B	E B	E B	E B	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
4	E B	E B	E B	E B	E B	18	19	J A	J A	J A	G	32	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
5	J A	J A	J A	J A	J A	J A	J A	E B	E B	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
6	J A	18	J A	J A	J A	J A	J A	J A	J A	G	28	31	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
7	J A	E B	J A	J A	J A	E B	E B	E B	E B	20	30	37	38	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
8	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
9	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	G	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
10	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	G	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
11	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	G	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
12	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
13	19	E B	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
14	20	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	J A	E B	
15	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
16	J A	19	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
17	E B	J A	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
18	20	J A	E B	E B	E B	E B	E B	E B	E B	E B	G	30	35	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
19	J A	J A	E B	E B	E B	E B	E B	E B	E B	E B	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
20	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
21	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
22	J A	18	E B	E B	E B	E B	E B	E B	E B	E B	G	32	33	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
23	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
24	J A	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
25	18	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	32	35	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
26	18	E B	21	E B	E B	E B	E B	E B	E B	E B	22	31	35	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
27	E B	20	J A	J A	E B	E B	J A	J A	J A	J A	21	32	37	37	39	36	38	J A	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
29	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	E B	
30	E B	16	E B	E B	J A	J A	E B	E B	E B	E B	G	34	36	36	35	39	J A	J A	J A	J A	J A	J A	J A	E B	
31	J A	J A	J A	J A	J A	J A	E B	J A	J A	J A	22	35	37	38	40	35	J A	J A	J A	J A	J A	J A	J A	E B	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
U Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
L Q	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	G	G	33	36	38	38	37	31	28	23	25	20	18	16	16

JAN. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	B	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	A	A	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

JAN. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 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	14	14	14	14	15	14	15	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	16	14	14	14	16	15	16	14	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	17	15	15	15	16	16	17	17	14	15	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	16	15	15	14	16	14	14	14	14	14	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	16	14	15	14	15	16	14	14	15	14	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	15	13	14	14	14	16	14	14	16	14	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	15	14	14	14	15	15	13	14	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	16	16	15	15	16	16	15	14	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	15	15	16	15	14	14	14	16	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	17	16	14	15	13	14	14	16	15	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	15	14	15	16	14	14	14	14	14	14	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	16	13	14	14	14	13	15	14	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	14	15	14	15	14	14	14	14	14	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	14	16	16	14	14	14	16	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	16	15	15	16	14	16	15	16	16	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	14	16	14	14	15	14	14	14	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	16	14	14	14	16	17	16	14	15	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	16	15	15	15	15	15	15	14	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	16	15	16	15	14	16	14	13	12	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	14	16	16	14	16	15	14	14	14	14	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	16	14	16	14	15	15	12	12	14	16	16	16	16	16	16
22	16	16	16	16	16	16	17	16	14	15	14	16	15	16	14	14	13	15	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	15	15	15	15	14	14	15	14	15	14	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	16	16	14	17	14	14	15	14	14	14	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	14	17	16	15	15	15	14	12	15	16	16	16	16	16
26	16	16	16	16	16	16	16	16	16	16	16	17	14	14	14	15	16	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	16	14	15	15	15	15	15	15	15	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	16	15	15	14	15	15	15	14	14	14	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	14	14	15	15	14	14	14	14	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	14	14	12	15	16	14	14	15	15	15	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	15	16	16	14	15	14	14	14	14	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	16	15	15	15	15	14	14	14	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	15	16	15	15	15	15	14	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	15	14	14	14	14	14	14	14	14	15	16	16	16	16	16

JAN. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	322	325	339	341	364	383	284	331	385	380	383	314	375	351	350	343	389	370	382	335	323	364	366	327
2	329	342	327	325 ^F	370 ^F	363	336	329	367	349	374	374	360	327	331	342 ^H	323	353	392	385	318	355	372	357
3	324	334	326	332	346	392	341	330	358	374	387	362	395	374	375	355	337	391	382	354	356	323	382	343
4	322	313	300	323	347	388		329	393	386	371	322	356	383	334	337	366	345	353	351	357	305	337	353
5	316	316	297	309	404	303	336	373	381	390	347	340	364	359	332	321	320	348		359 ^A	327	352	348	305
6	317	337	394	353	397	321	304	354	398	374	371	339	357	328	347	312	352	381	379	327	334	343	334	332
7	291 ^F	301 ^F	318 ^F	334 ^F	398 ^F	380 ^F	308 ^F	341 ^F	409 ^F	378	357	345	362	352	341	366	375	414	359	348	328	365	359	331
8	339	328	305	320 ^F	386	347	315	343	380	366	398	367	363	378	335 ^H	360	324	354	360	394	359			
9		311 ^F	327	332	320	328	340	382	380	363	376	368	356	351	341	368	357	362	368	371	296	361	369	335 ^F
10	317	313	339	379		323	296	320	366	370	327	330	342	316	347	350	369	356	377	322	321	385		
11		308 ^A	329	347	367	420	499	335	397	375	359	379	316	367	384	391	372	377	388	328	328	358	353	324
12	314	312	350	340						363	376	392	371	296	340	366	340		361					
13	310	318	307	326	331		355	344	381	369	371	321	354	313	357	371	329	371						
14	324	341	290	335	361	312	340	353	401	380	365	351	340	279	324	350	359	396	368	337	381	369	374	334
15	303 ^F	296 ^F	309 ^F	314 ^F	348		418	352	396	398	367	321	357	363	325	349	317	375	367	360	308	377	365	315
16	300	303	331	311	370			342	388	380	350	368	281 ^H	331	370	358	349	351	380	346	323	354	389	321
17	331	371	324	336	360	370	318	336	383	383	384	357	357	343	346	331	336	362	377	321	329	351	339	331
18	350	327	319	332	323	384	378	352	395	333	356	362	342	374	382	358	389	383	380	337	320	355	339	377
19	317	315	311	350	371	410	347	353	395	361	368	387	273	368	354	347	375	403	372	359	344	325	324	331
20	325	302	343	391	408	349	302	356	389	360	376	365	369	369	323	363	380	375	375	364	327	345	356	349
21	372	353	363	342	394	395	373	357	388	390	337	374	363	358	355	350	364	373	370	326	345	335	324	337
22	342	349	308	334	345	420	322	333	355	363	376	352	348	334	376	366	390	378	372	337	374	339	337	350
23	351	308	348	398	354		323	360	343	332	344	385	373	367	307 ^H	354	369	373	384	366	354	350	382	319
24	313	319	336	401	322	347	347	359	402	377	375	365	376	322	320	340	334	365	398	372	333	328	343	356
25	348	310	329	334	393	411	323	351	383	365	347	375	373	351	318	343	358	382	385	405	321	329	351	363
26	354	320	320	321	329	380	448	359	383	374	355	373	311	279	311	364	392	377	368	422	342	340	341	359
27	336	313	328	336	304	350	379	356	392	378	349	360	337	373	385	377	372	376	372	355	344	403	344	334
28	336	356	335	337	359	376	406	394	376	356	360	342	358	336	383	391	383	387	369	409				
29	296 ^F	308 ^F	303	313	346	364	336	384	391	380	350	351	344	340	379	379	359	382	368	351	313	334	345	362
30	358	321	314	350	357	391	352	354	395	392	354	376	357	351	346	349	359	393	370	393	344	379	323	348
31	319	315	309	349	355	329	406	332	385	371	343	339	335	369	372	328	367	370	347	356	356	309	314	342
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	31	31	29	26	28	30	31	31	31	31	31	31	31	31	30	31	28	29	30	30	29	29
MED	324	316	326	335	359	373	340	352	385	374	365	362	357	351	347	350	362	375	372	355	331	352	348	337
U Q	340	334	336	349	378	391	376	357	395	380	376	373	363	368	372	366	375	382	381	372	345	363	370	352
L Q	315	310	309	325	346	347	320	335	380	363	350	340	340	331	331	342	337	362	368	337	321	334	338	329

JAN. 2020 M(3000)F2 (0.01)

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JAN. 2020 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		A			L	L							
2									L	L						L	A							
3									L	L						U	L	L						
4									L	L	U	L				L	U	L	L					
5																		L		A				
6											L		A	A	L	A	U	L						
7									L				L					L						
8									L	A									A					A
9									U	L	L			A	A	U	L	A	A	L				
10											L				L	A		A						
11									U	L	L		A	U	L	A	L			A				
12								A	L	L				A	A	A		A	A	A				
13																		A		A				
14											U	L						L	L					
15											L	U	L		A		U	L	L					
16																								
17									L								L	L						
18									U	L	L							L	U	L				
19									L		U	L					U	L						
20									A									L	L					
21									U	L	L	U	L					L	L					
22										L	L							L	L					
23										L														
24									L	L	L													
25									L															
26									L	L	U	L												
27									L									U	L	L				
28									L	A	U	L	U	L			A	L	A					
29									L	U	L	U	L	U	L		U	L	L					
30									L	L	U	L					L	L	L					
31									L	A	L						U	L	U	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									9	3	20	27	24	26	26	27	10	1						
MED									L	U	L	L					L	U	L					
U Q									458	444	403	409	408	414	406	399	397	457						
L Q									U	L	L						L							
									468	461	414	420	424	421	413	406	408							
									U	L	L						L							
									432	431	394	400	401	394	399	394	390							

JAN. 2020 M(3000)F1 (0.01)

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JAN. 2020 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										240	244	328	238	244	226	254	216								
2										212	268	222	222	236	216	236	226	224							
3										216	248	232	248	214	240	244	260	232							
4											226	242	326	250	228	264	262	238							
5												282	244	228	240	244	248		A						
6											246	276	240	220	228	254									
7									200			264	236	262	260	248	220								
8									208	206	218	240	254	242	244	228		224						A	
9									212		238	246	276	276	266	252	224	232							
10											240	264	244	274	244	224	220								
11									204	228	258	234	282	252	226	228		210							
12								A	244	234	218	238	300	244	236	260		A	226	A					
13											252	320	256	272	232	224	236		A						
14											258	278	244	300	240	224	226	202							
15										214	256	328	236	238	232	224	254	214							
16										240		260	290	266	228	218	230								
17									214	230	228	252	266	276	230	298	228								
18									198		266	256	284	236	222	256	212	210							
19									200		258	252	462	240	266	268	224								
20										176		244	256	258	314	236	210	220							
21									216	222	300	236	252	262	258	268	250	226							
22										260	246	266	294	294	234	244	214	208							
23										292	270	224	220	238	242	230	230								
24									204	232	254	258	246	318	268	234	202								
25									214	256	284	238	226	260	256	248	236								
26									202	240	260	246	348	316	282	238									
27									198		288	272	306	240	228	238	250	214							
28									190	226	260	296	282	306	228	224	238	206							
29									200	218	286	274	292	272	232	232	232	210							
30									196	204	252	244	276	262	256	242	230	210							
31									216	226	284	272	270	226	222	240	230	220							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									19	21	27	31	31	31	31	31	26	15							
MED									204	230	254	258	256	258	240	240	230	214							
U Q									214	244	266	276	284	274	258	254	236	224							
L Q									200	220	240	244	240	238	228	228	220	210							

JAN. 2020 h'F2 (KM)

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JAN. 2020 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	248	244	256	236	212	204	E A 330	244	206	190	204	196	A	160	172	164	206	212	184	204	212	198	210	200	
2	254	210	250	264	198	214	228	242	186	206	210	182	174	184	172	176	A	224	190	178	246	218	182	202	
3	250	242	258	228	218	184	258	248	196	214	218	198	184	172	160	202	202	204	200	184	204	244	194	240	
4	262	274	282	270	216	190	B	268	210	190	202	186	178	210	186	178	216	210	216	162	198	256	234	210	
5	246	232	282	260	194	284	232	200	216	212	204	202	232	196	178	170	228	218	A	210	218	214	228	264	
6	266	242	182	218	224	310	E B 374	222	206	220	198		A	210		190	232	208	182	208	228	228	238	230	
7	246	292	262	216	184	206	266	238	178	202	234	202	176	238	222	218	212	190	184	222	242	202	204	252	
8	246	272	292	292	212	252	316	254	180		186	190	218	178	192	202	184	A	196	178	190	268	268	A	
9	256	316	256	256	250	260	230	200	166	240		198	A	234	226			220	190	192	284	212	212	272	
10	304	268	228	206	A	268	338	246	228	218	212	190	204	196	A	204	A	224	212	234	276	196		A	
11	A	296	300	E A 266	220	180	168	232	160	182	240		174	A	A	206	206	A	A	200	214	250	208	212	256
12	292	296	234	236	A	A	A	A	228	208	198	190	A	A	E A 234	A	A	A	A	A	A	260	210	196	278
13	284	270	270	276	224	A	228	222	208	208	208	192	A	194	A	214	A	212	A	A	A	238	196	198	296
14	286	242	278	242	204	294	304	218	198	200	194	176	192	192	214	194	214	196	196	212	186	216	196	284	
15	282	278	280	244	210	A	186	220	216	196	180	186	A	212	206	172	194	196	192	186	262	206	228	272	
16	292	290	250	310	224	A	B	226	212	226	188	200	200	186	222	188	212	228	200	E A 232	E A 236	224	196	254	
17	248	208	274	250	224	194	270	242	162	196	184	182	206	202	188	198	194	208	192	178	218	198	196	230	
18	218	288	296	254	244	204	224	210	172	214	210		218	198	190	178	192	164	190	190	250	200	218	206	
19	246	280	260	228	202	182	230	212	158	216	212	196	170	H 162	190	186	188	202	202	192	222	194	240	238	
20	218	274	250	184	194	286	392	226	198		196	188	A	176	178	204	202	198	212	184	216	214	216	210	
21	210	254	220	244	194	226	272	246	168	200	196	198	202	208	166	206	216	182	188	186	202	216	234	242	
22	230	212	286	232	250	180	B	244	198	212	216	210	196	204	190	194	190	190	200	206	190	230	240	226	
23	224	260	226	180	224	A	340	212	208	208	176	208	178	202	190	178	180	220	202	194	214	226	194	252	
24	268	278	244	188	256	224	220	202	158	200	188	190	204	178	232	168	196	198	192	186	208	234	218	216	
25	214	280	262	240	196	178	304	220	164	224	204	212	198	A	204		E A 226	214	192	178	244	238	238	216	
26	226	270	274	278	250	198	164	210	170	214	226	206	200	192	172	236	204	204	198	172	202	214	234	230	
27	258	292	248	248	274	218	208	200	184	220	238	222	216	206	218	186	188	198	198	188	204	188	236	244	
28	232	228	236	234	220	202	184	184	172	A	214	190	200	186	208		212	A	194	186	A	274	230	240	
29	Q 308	292	298	246	240	228	226	202	182	176	196	188	218	180	188	200	186	192	200	200	204	226	224	204	
30	212	256	272	224	222	214	202	198	166	160	194	216	202	186	180	176	H 192	188	208	192	208	194	238	210	
31	248	272	282	220	220	232	196	246	162	A E A 248	208	196	208	212	200	180	A	210	182	196	302	264	244		
	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	29	26	27	30	31	27	30	28	24	28	26	28	26	26	28	29	30	31	30	29	
MED	248	272	262	241	220	214	229	222	184	208	204	196	200	194	190	193	200	204	197	189	216	214	221	239	
U Q	268	288	282	260	232	252	304	244	208	216	214	204	205	207	212	204	212	214	201	207	244	230	236	255	
L Q	230	242	248	224	203	194	208	210	166	196	194	189	181	182	178	178	190	196	191	183	204	200	198	213	

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JAN. 2020 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	A		A	A			A		A	A	B					
2								B		104	A	A	A	A		104	A	A	A					
3								B	A	A	A	A	A	A		104	104	106	106					
4								B				A	A	A	A	A	A	A						
5								B	108	104	102			A	A	A		A	A	A				
6								B	108	108	108	102		A	A	A	102		A	A				
7								B	110	108		104		A	A	A	102	108		A	A			
8								B	104	104	104	104		A	A	A		A	A	A				A
9								B	106	102	102	106		A	A	A	104		A	A				
10								B	110	102	102	102		A	A	A		102	A	A				
11								B	110	102	102	102	102	102		A	A	A	A	A				
12								B	108	104	104	104	100		A	A	A	A	A	A				
13								A					A	A	A	A	A	A	A					
14								A	132	108	102			A	A	A	A	A		A				
15								B	A		102	102	102		A	A	A	A	122					
16								B	114	104	102		102		A	A	A	A	A	A				
17								B	A	A	A	A		A	A	A		106	102					
18								B	A	A	A	A	A	A	A	A	A	A	A					
19								B	102	104	104	104	104	110	108	106	104		A	A				
20								B	114	104	104		A	A	A	104	104	110	106					
21								B	110	106		A	106	106	106	106	106		A	B				
22								B	110	106		A	106	106	106	106		A	A					
23								B	104	104		104		A	A	A		112		A	B			
24								B	104	104	104	104		A	102	102	102	102						
25								B	104	104	104	104		A	102	102	102	102						
26								B	102	102	102	104		A	A	A		106	106	112				
27								B	104	104		104	100	102	106	102	102	102		A				
28								B	104	104		104	100	102	106	102	102	102		A				
29								B	A		102	104		A	A	104	118							
30								B	120	104	98	100	100	100	100		A	A	100					
31								B	112	98	100	100	100		A	A	100		A	A				
								B	106	100	100	100	100	100		A	100		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									22	26	21	20	13	10	13	15	17	12						
MED									107	104	102	103	102	102	104	104	106	103						
U Q									110	104	104	104	103	104	106	106	107	106						
L Q									104	102	102	102	100	102	102	102	102	101						

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JAN. 2020 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	96	90	98	94	94	96	B	108	174	166	138	94	90	92	98	88	86	86	92	102	114	96	B
2	B	B	96	90	86	86	82	B	G	100	94	96	92	92	94	96	92	132	92	106	100	92	B	86
3	86	86	B	B	B	B	B	B	158	148	110	102	100	98	98	154	152	130	86	86	86	92	B	B
4	B	B	B	B	88	88	86	82	86	G	178	84	106	100	100	94	162	150	90	90	88	86	86	84
5	84	84	84	100	92	92	B	B	162	104	154	102	102	96	114	92	86	86	86	90	90	90	82	84
6	92	82	84	88	86	86	92	86	G	176	132	102	100	96	94	144	138	82	80	110	96	92	100	B
7	98	B	96	88	B	B	88	88	126	164	156	136	92	92	92	88	98	92	86	80	80	84	98	104
8	B	94	96	94	94	88	88	84	92	160	G	G	104	96	96	164	116	88	94	84	94	88	88	94
9	94	94	92	92	90	88	90	92	G	162	132	138	128	120	82	110	110	106	98	82	86	94	90	90
10	88	98	92	94	90	90	94	94	G	G	G	G	120	104	100	118	96	140	110	100	90	92	92	90
11	90	92	92	90	94	90	98	88	G	G	140	122	130	120	94	92	112	92	90	84	94	86	84	82
12	100	98	94	90	86	90	90	90	84	124	112	98	94	94	94	94	96	96	94	96	96	94	86	86
13	86	B	B	90	90	88	90	98	86	170	146	98	92	100	92	92	88	88	88	112	112	90	B	86
14	84	B	90	B	88	B	86	B	92	G	112	102	106	102	96	94	96	96	92	92	90	90	90	86
15	86	96	96	B	106	106	112	112	112	102	118	98	96	116	98	96	92	128	102	90	88	86	84	86
16	92	88	98	96	90	90	90	86	100	104	108	108	108	102	92	92	88	86	84	84	80	80	84	B
17	B	84	B	84	84	84	B	84	88	96	164	148	142	128	166	G	92	86	86	86	122	108	B	B
18	94	88	B	B	B	B	B	B	G	156	146	102	108	104	96	92	88	G	90	86	86	86	84	90
19	110	98	B	B	B	B	B	B	G	120	104	124	108	146	162	G	86	88	86	88	B	B	B	B
20	B	B	B	94	B	92	B	B	122	118	104	124	102	100	102	100	94	88	88	86	88	88	86	B
21	84	84	84	84	B	B	80	86	G	150	166	112	94	160	160	168	188	134	84	84	84	B	B	114
22	106	108	B	B	B	B	B	B	G	186	158	146	106	96	100	98	88	86	82	82	86	B	B	B
23	B	B	B	B	B	92	B	B	G	G	100	158	G	162	156	G	G	148	86	82	84	80	80	82
24	98	B	B	B	B	B	B	B	132	G	98	104	100	90	168	G	92	88	86	84	84	B	96	B
25	104	B	B	B	B	B	B	B	G	166	148	156	164	110	104	96	128	128	112	110	104	118	86	88
26	82	B	98	B	B	B	B	B	104	160	158	154	154	130	116	140	164	140	94	98	B	B	108	112
27	B	90	98	102	B	92	92	96	164	180	160	148	128	126	108	G	B	154	B	B	B	B	B	B
28	B	B	B	110	B	B	102	104	100	164	104	138	110	120	140	114	126	106	G	102	88	98	98	96
29	88	96	104	92	100	96	B	B	G	G	166	138	106	104	104	102	94	G	94	94	B	B	B	B
30	B	100	B	B	90	88	B	B	142	G	154	132	132	136	114	102	92	92	92	90	98	88	84	B
31	92	100	96	98	90	B	88	150	156	142	144	138	134	164	96	100	92	86	92	B	B	86	B	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	22	20	18	19	18	19	18	16	19	23	29	29	30	31	31	26	29	29	30	29	26	24	21	19
MED	92	94	95	92	90	90	90	89	108	156	144	124	106	104	100	98	94	92	90	88	90	90	86	88
U Q	98	98	96	98	94	92	94	97	142	166	158	138	128	126	114	114	121	131	94	95	98	93	96	96
L Q	86	87	90	90	88	88	88	86	92	118	109	102	100	96	94	94	90	87	86	84	86	86	84	86

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2020 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	F	F	F	F	F	F	F		C	H	H	HC	LQ	LQ	L	LQ	LQ	LQ	LQ	LQ	F	F	F	F		
2			FQ	FQ	FQ	F	F			C	LQ	LQ	LQ	LQ	L	LQ	LH	HC	LC	FF	FF	FF		F		
3	F	F							H	HQ	CQ	CQ	CQ	L	L	H	HL	H	L	F	F	F				
4					F	F	F	L	LH		H	LCQ	CLQ	CQ	C	L	HL	H	L	F	F	F	F	F	F	
5	F	F	F	F	F	F			H	CHQ	HQ	CQ	C	L	CL	L	LH	L	L	F	F	F	F	F	F	
6	F	F	F	F	F	F	F	L	H	HQ	CQ	CQ	LQ	LQ	L	HL	HL	L	LC	FF	FF	F	F	F		
7	F		F	F			F	F	C	H	H	HC	LQ	LHQ	LHQ	LQ	CL	LQ	LQ	F	FQ	F	FF	F	F	
8		F	F	F	F	F	F	L	L	H			C	C	C	H	C	L	LL	F	F	F	F	FQ		
9	F	F	F	F	F	F	F	L		H	H	HL	CL	CL	LH	CL	CL	C	L	F	F	F	F	F	F	
10	F	F	F	FQ	FQ	F	L						C	C	C	CH	L	HL	CL	FF	F	F	F	F	F	
11	F	F	F	F	F	F	L			H	C	H	CL	LC	LC	CL	L	LQ	FQ	F	F	F	F	F	F	
12	F	F	F	FQ	FQ	FQ	L	L	C	C	L	L	L	LQ	LQ	L	L	L	F	F	F	F	F	F	F	
13	F			F	F	F	LL	L	H	H	L	L	LQ	L	L	L	LC	LQ	LC	FF	FF	FF		F	F	
14	F		F		F		F	L		C	C	C	C	L	L	L	L	L	F	F	F	F	F	F	F	
15	F	F	F	F	F	F	C	CH	CH	CQ	LQ	LQ	CQ	LQ	LQ	L	C	CL	F	F	F	F	F	FQ		
16	FQ	F	F	F	F	F	L	C	C	C	CH	CH	CQ	LH	LC	LQ	LQ	LQ	FQ	F	F	F	F	F		
17		F		F	F		L	L	LH	HC	H	H	CL	HL		L	L	L	F	FF	FF					
18	F	F							HC	H	CQ	CQ	CQ	L	L	L	L	L	F	F	F	F	F	F	F	
19	F	F							CLQ	CH	CL	C	HC	H		L	LC	L	F							
20			F		F			C	C	CH	C	CQ	CQ	C	L	L	L	L	F	F	F	F	F	F		
21	F	F	F	F		F	L		H	H	C	L	H	HL	H	H	H	L	F	F					F	
22	F	F							H	H	H	C	L	CH	LH	L	L	LQ	L	F						
23					F						L	HL		HL	HL			H	L	F	F	F	F	F	F	
24	F							H		L	C	CH	L	HL		LH	LH	L	F	F						
25	F							H	H	H	H	H	C	CH	L	CL	C	C	FF	FF	F	F	F	F	F	
26	F		F					CH	HC	H	H	H	H	C	H	H	H	L	F							
27		F	F	F		F	F	L	H	H	H	H	C	C	C			H								
28				F		F	C	C	H	CH	HC	CH	HC	CH	HC	C	CL	C	C	F	F	F	F	F	F	
29	F	F	F	F	F	F				H	H	C	C	C	C	C	C	L	F							
30		F			F	F			H	H	H	H	HC	C	C	L	L	LQ	FQ	F	F	F	F	F		
31	F	F	F	F	F		F	H	H	H	H	H	H	H	L	CH	L	L	L				F	F	F	
		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																										
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JAN. 2020 TYPES OF Es
 NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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

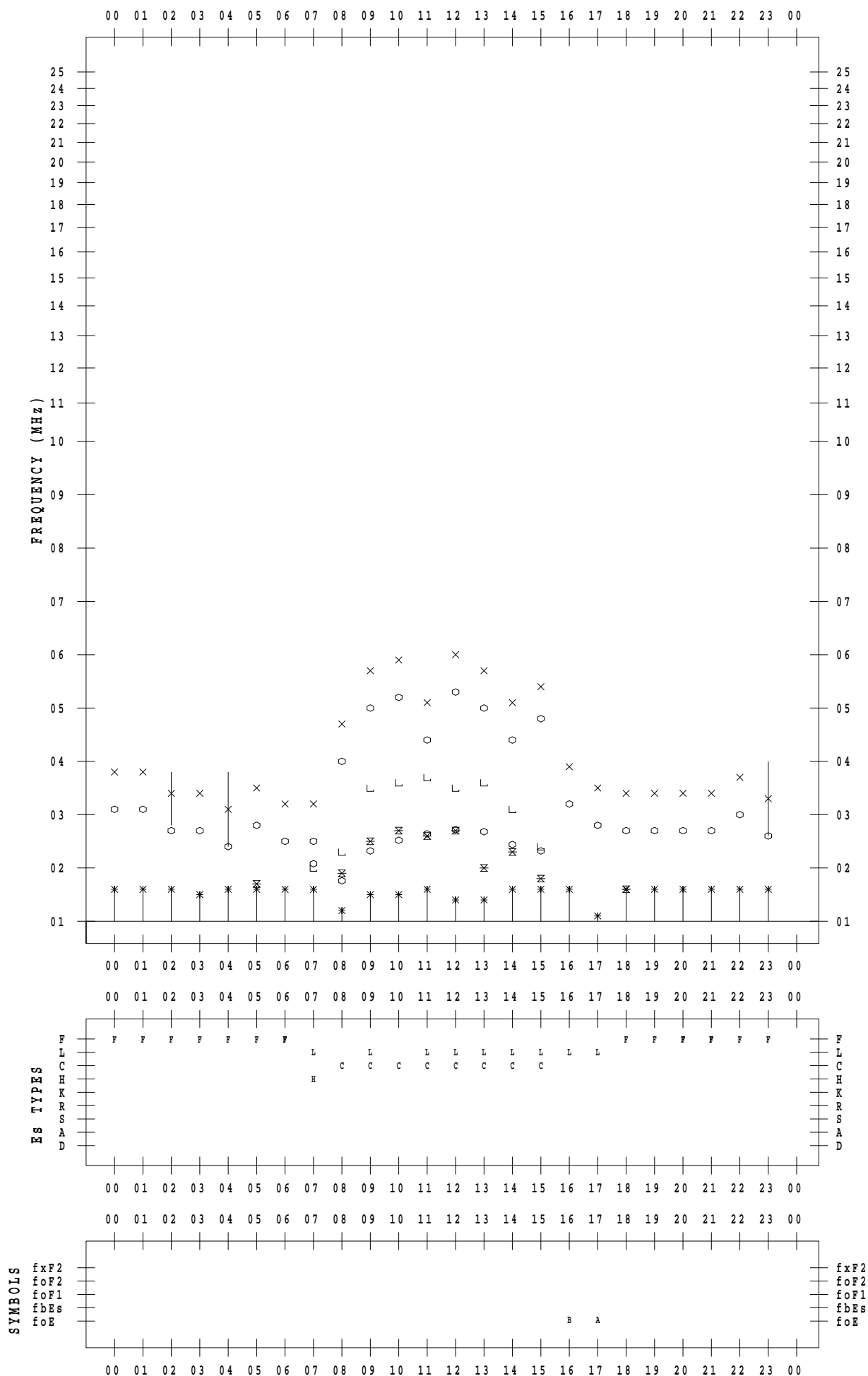
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 1

135 ° E MEAN TIME



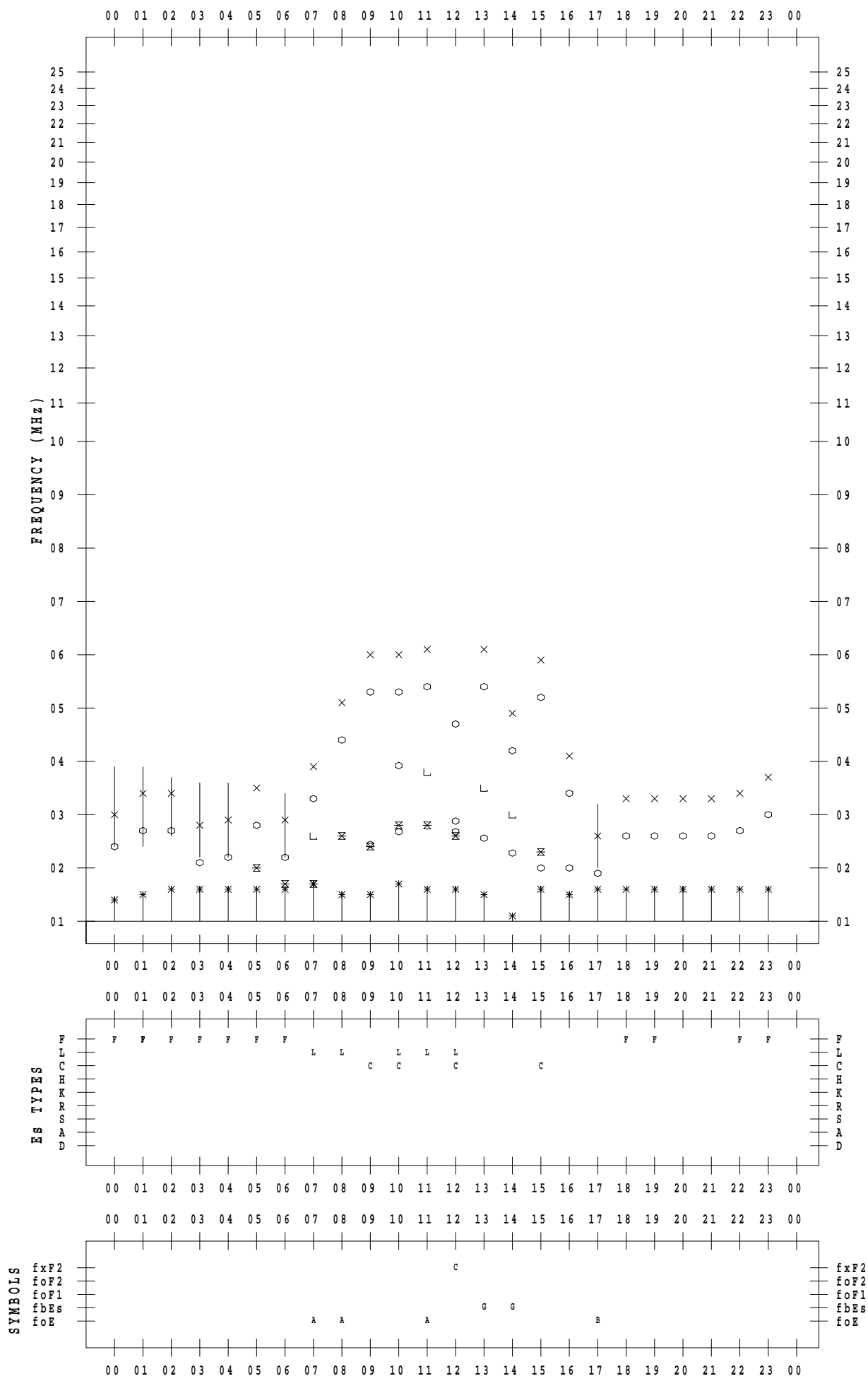
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 2

135 ° E MEAN TIME



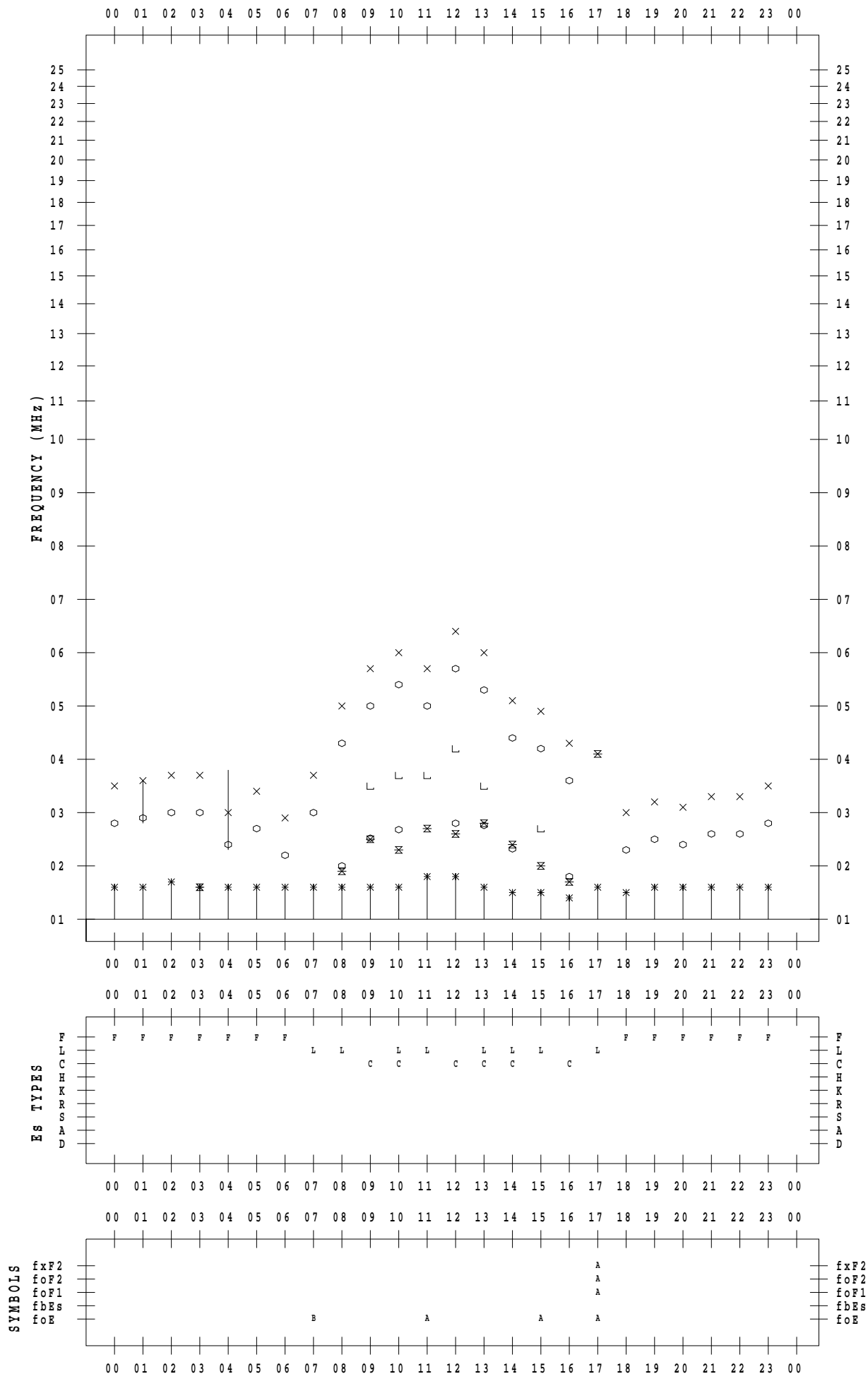
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 3

135 ° E MEAN TIME



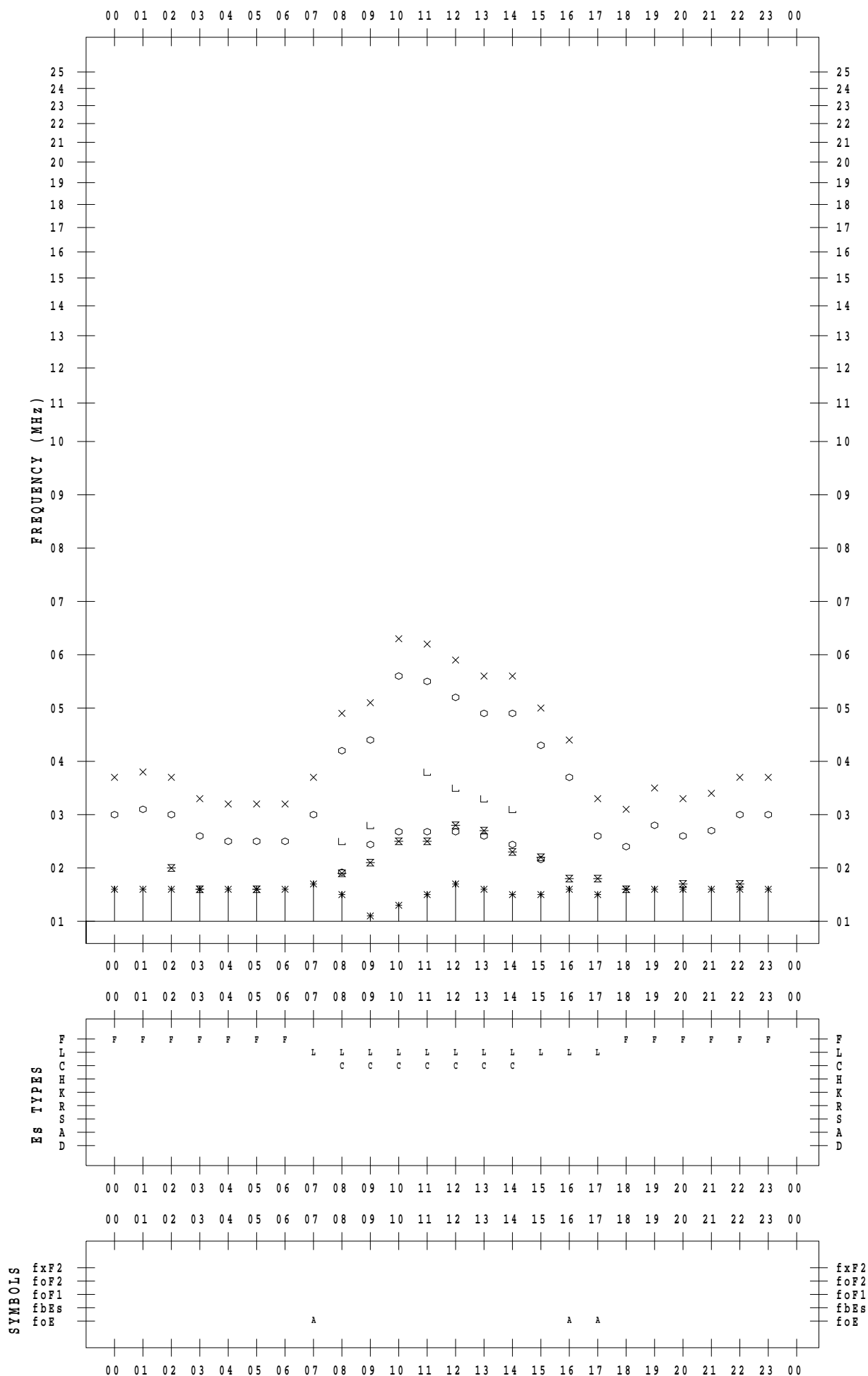
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 4

135 ° E MEAN TIME



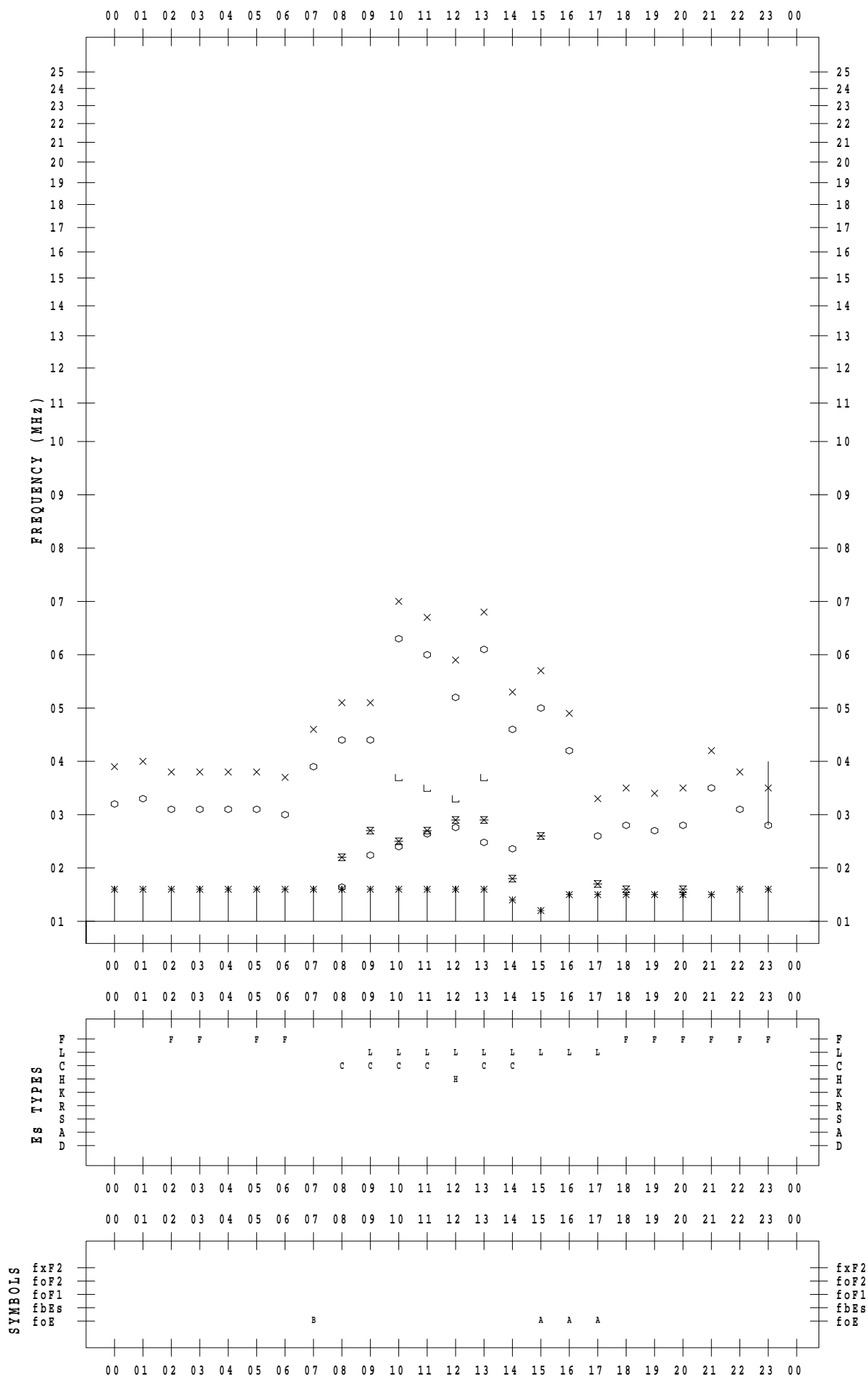
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 5

135 ° E MEAN TIME



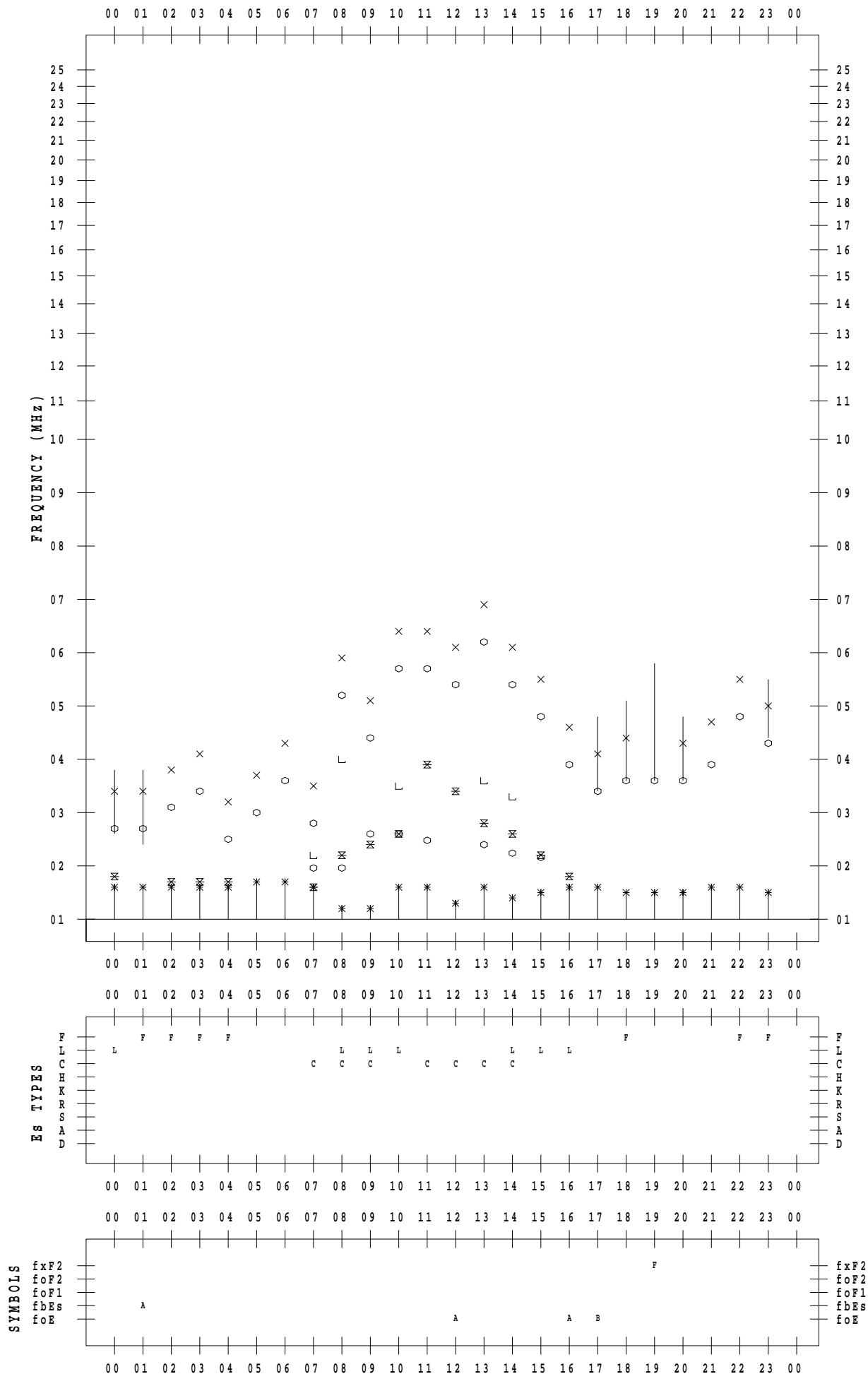
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 6

135 ° E MEAN TIME



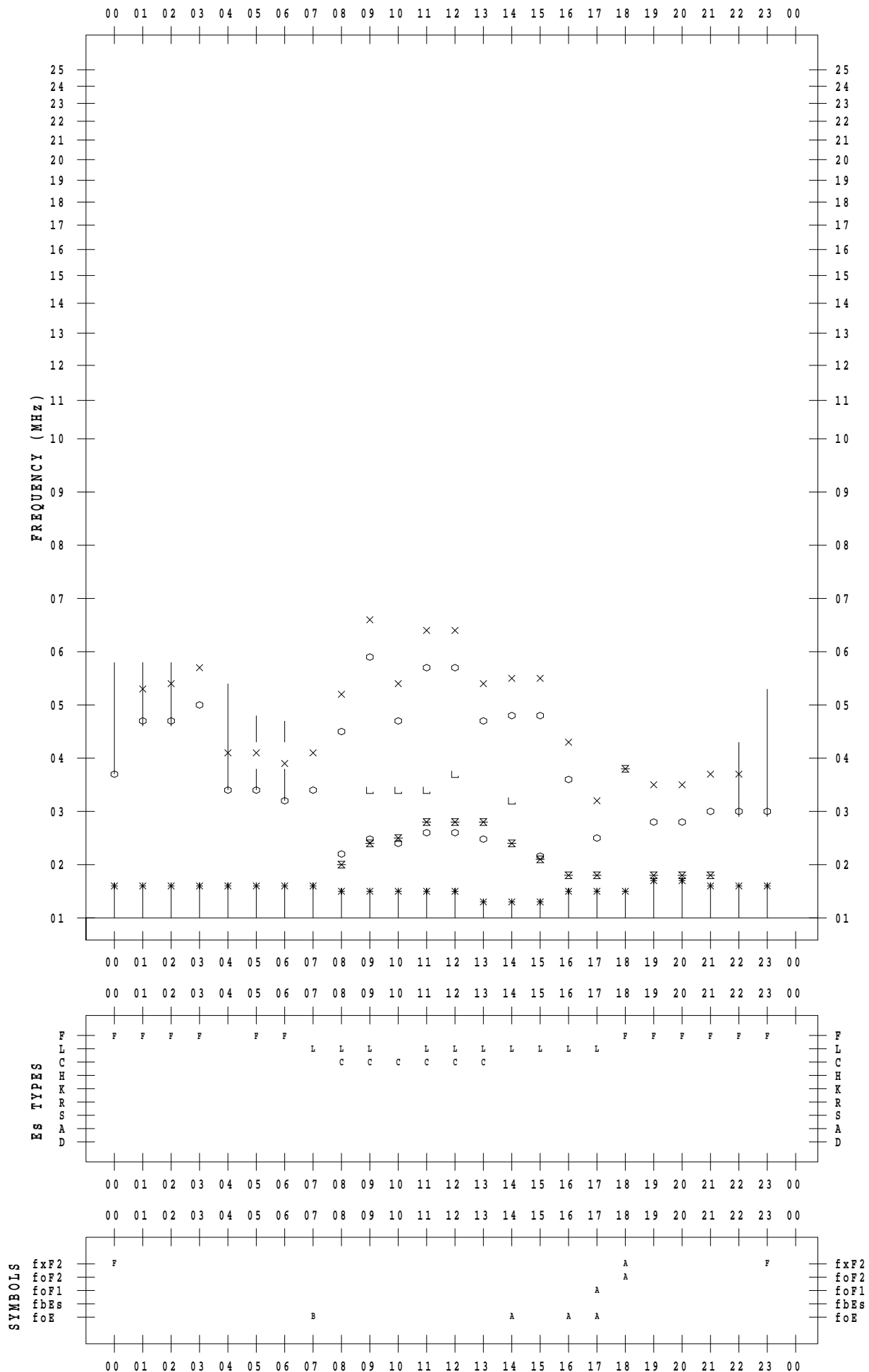
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 7

135 ° E MEAN TIME



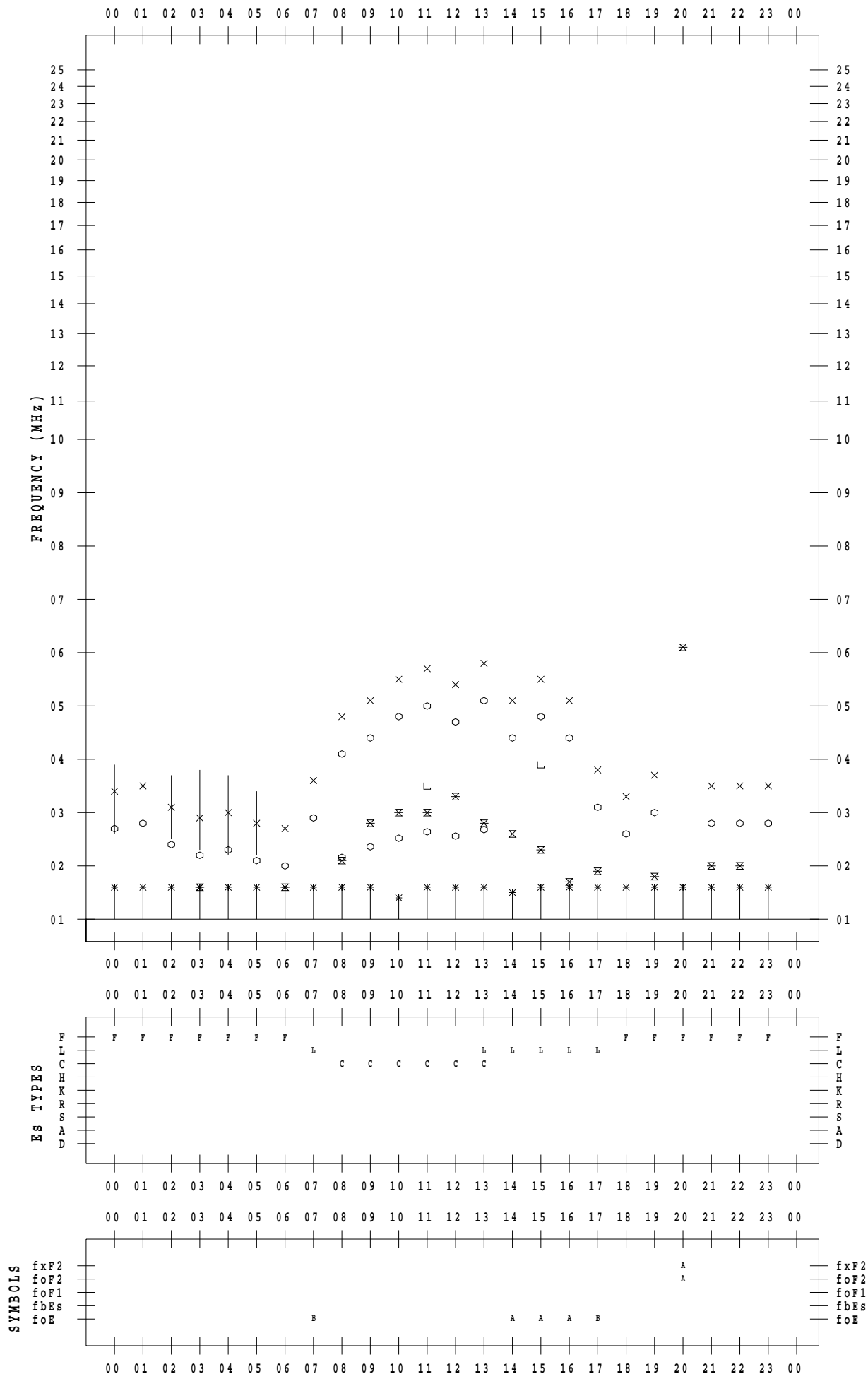
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 8

135 ° E MEAN TIME



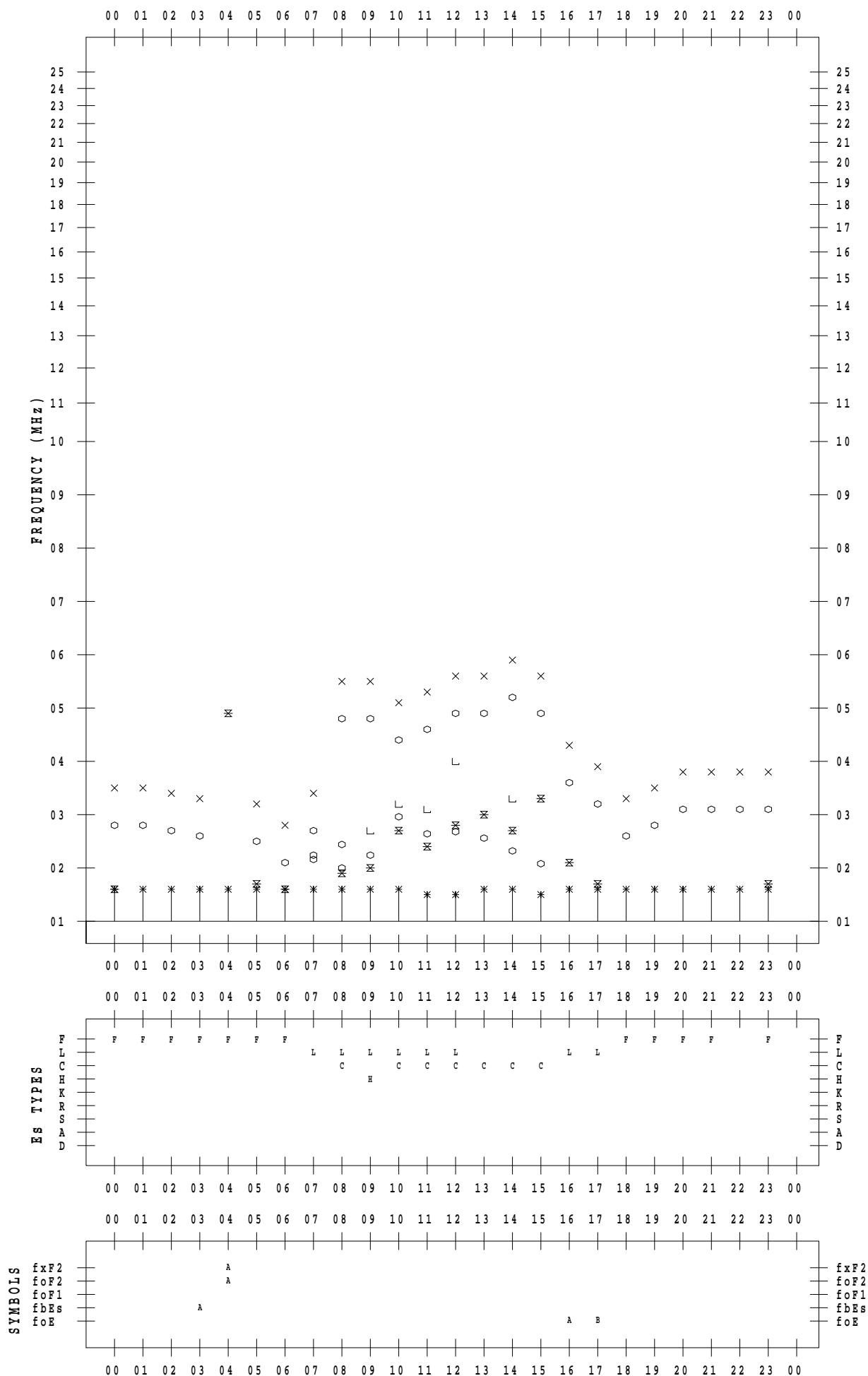
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 9

135 ° E MEAN TIME



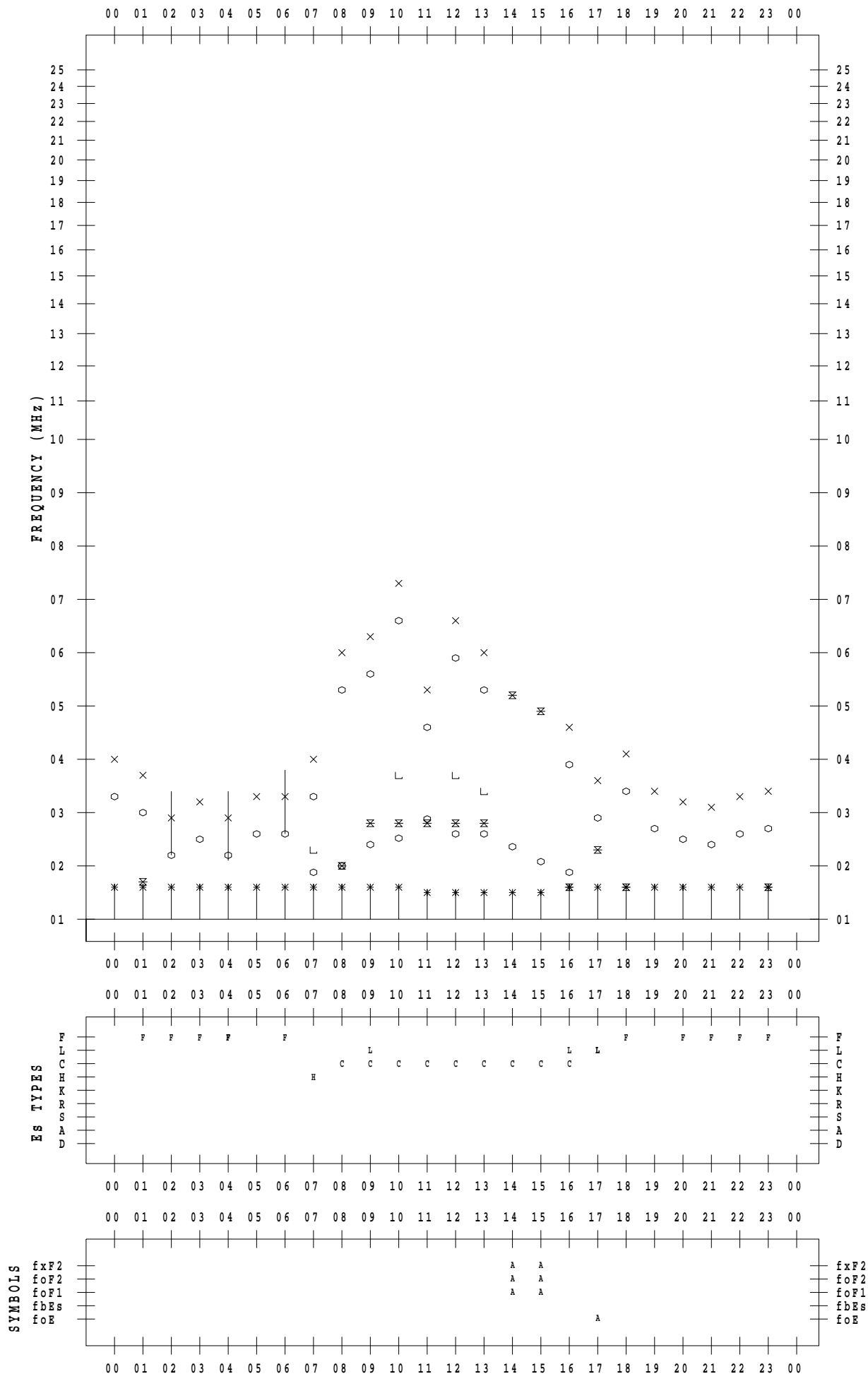
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 10

135 ° E MEAN TIME



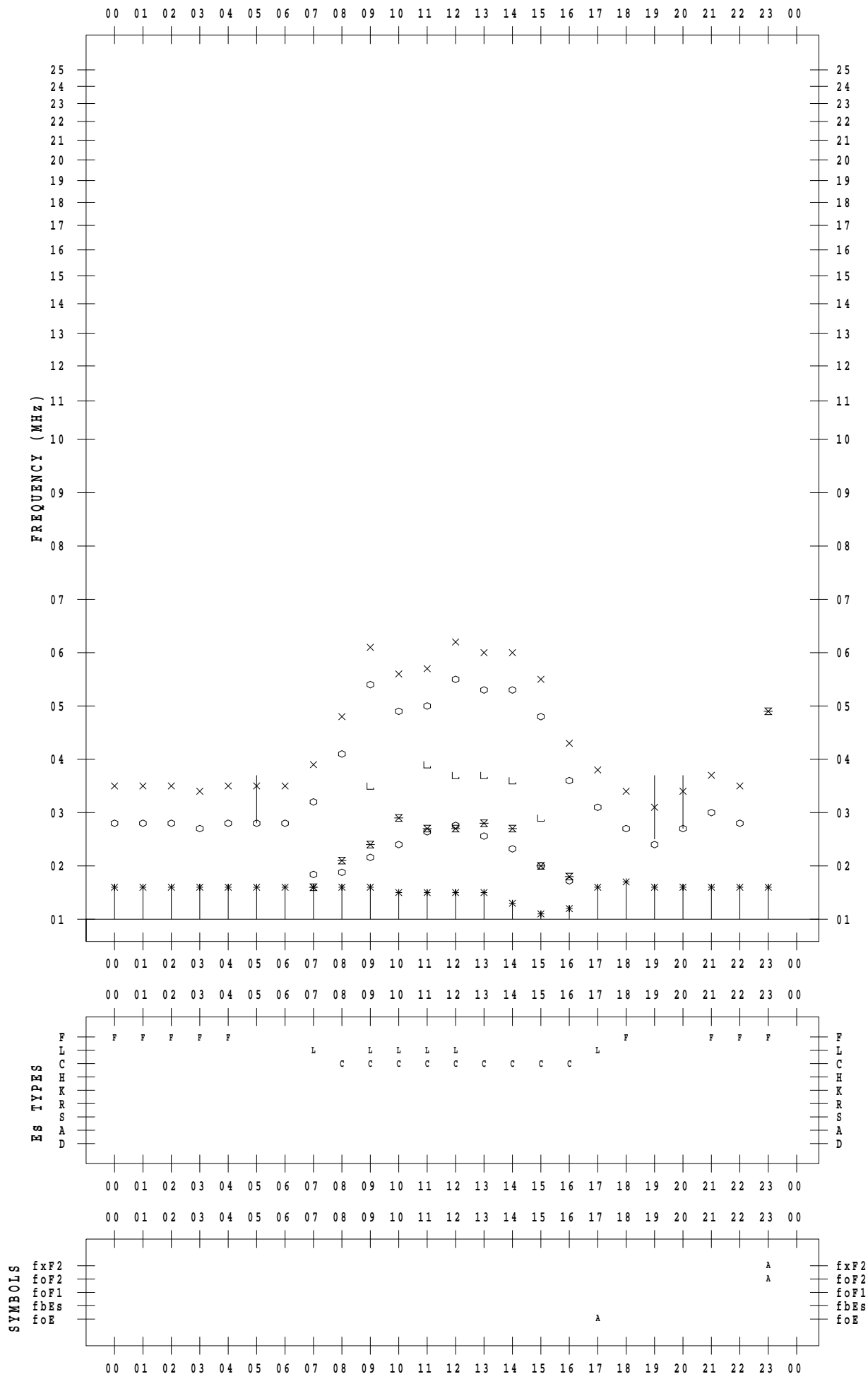
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 11

135 ° E MEAN TIME



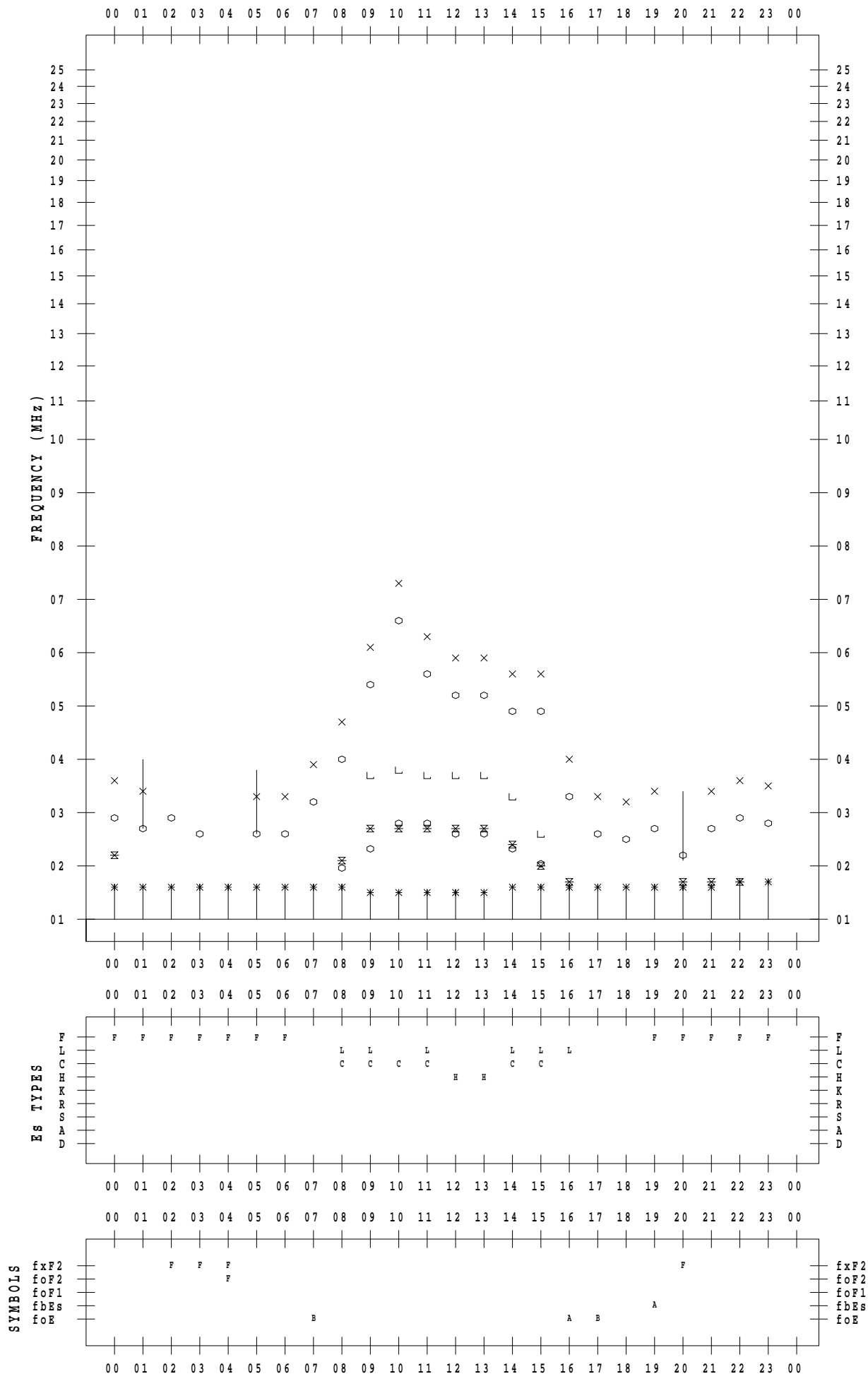
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 12

135 ° E MEAN TIME



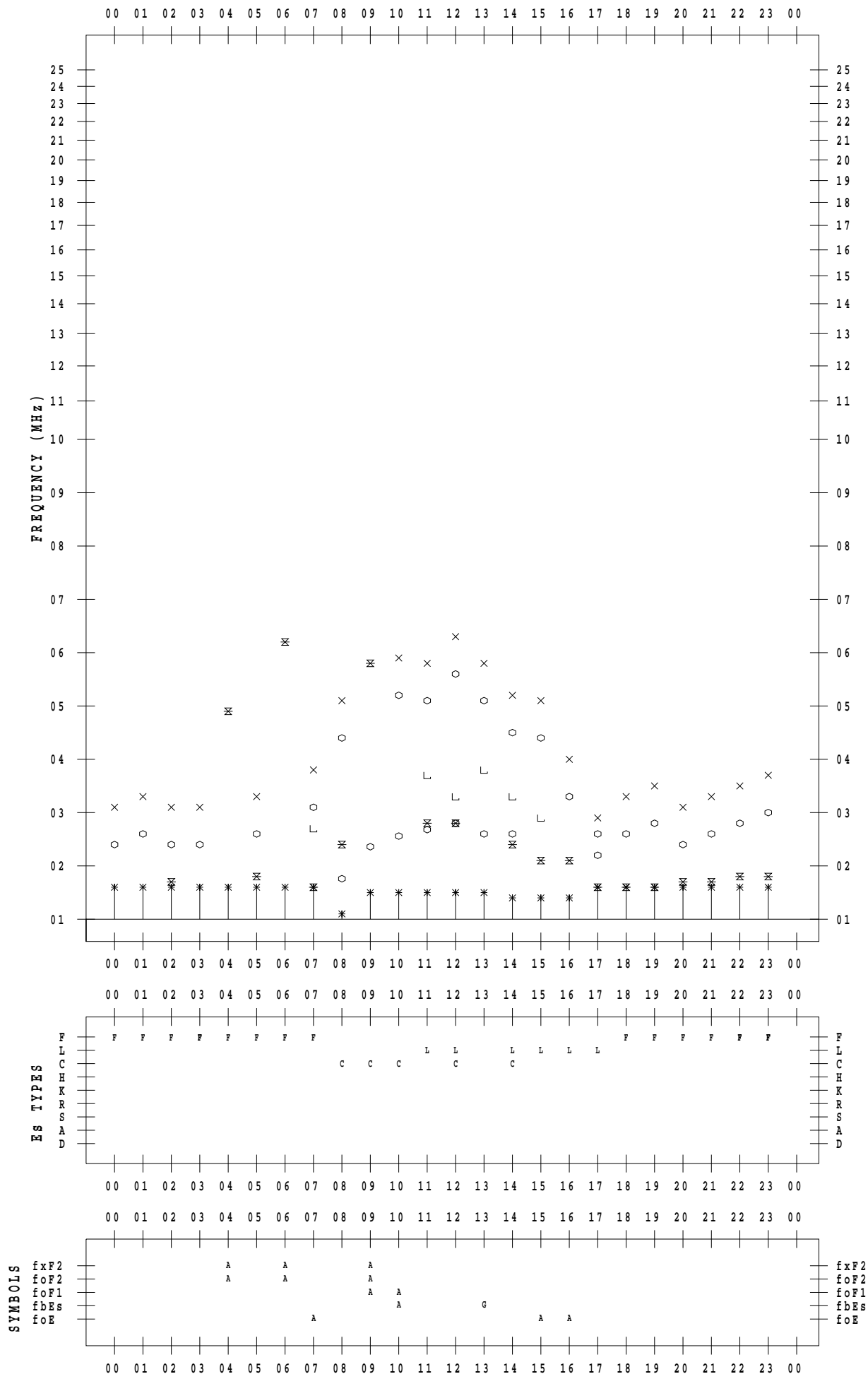
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 13

135 ° E MEAN TIME



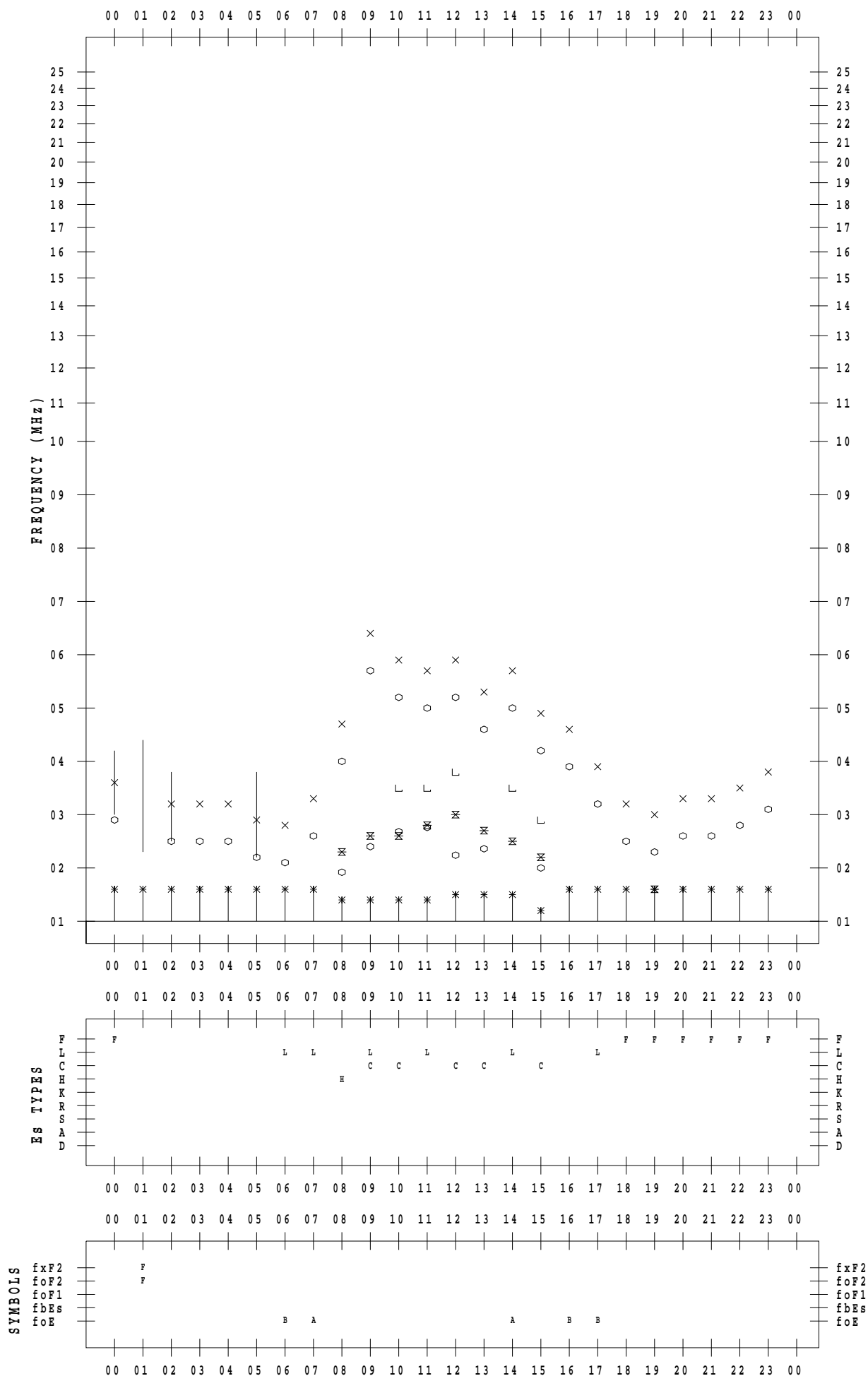
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 14

135 ° E MEAN TIME



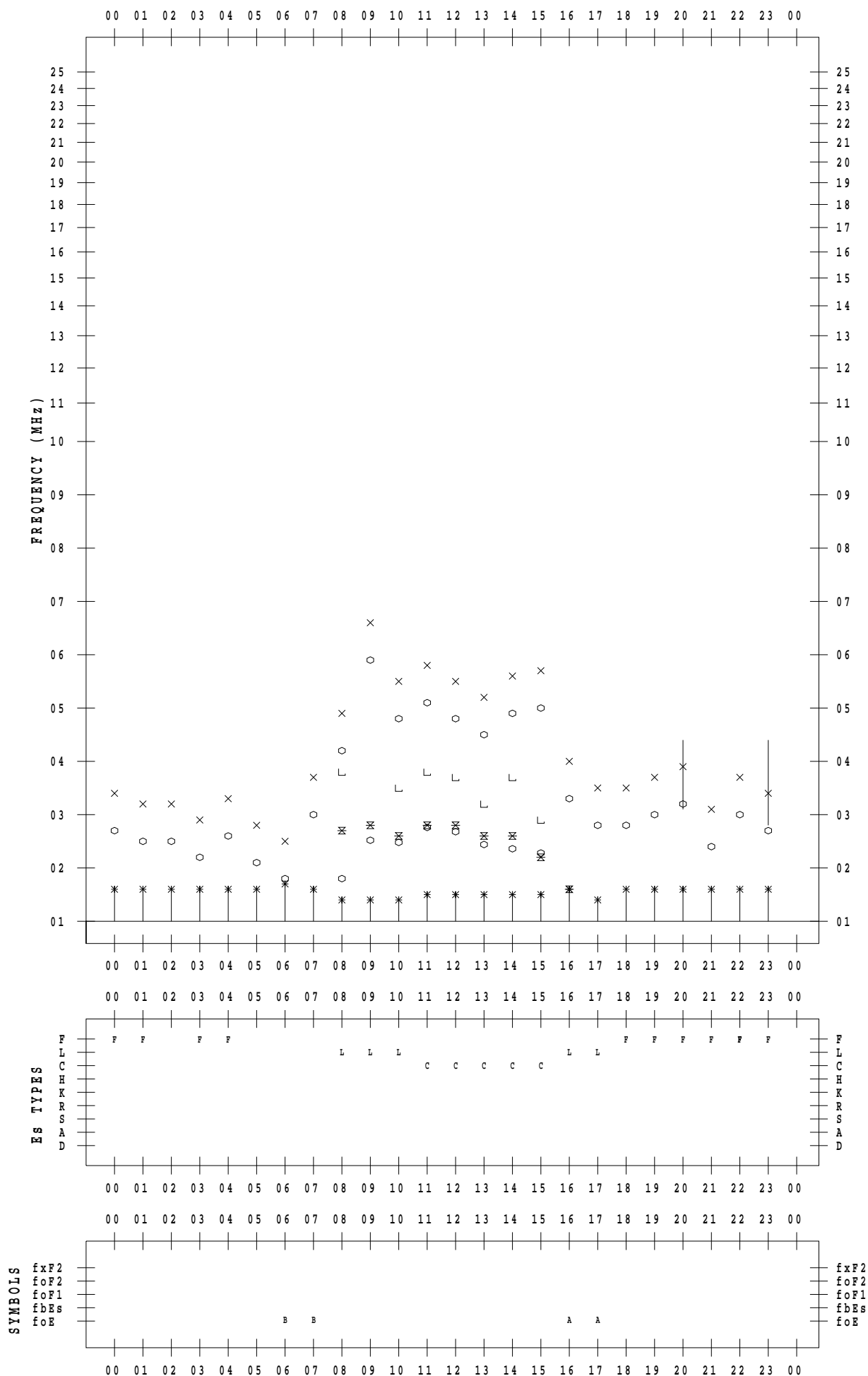
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 15

135 ° E MEAN TIME



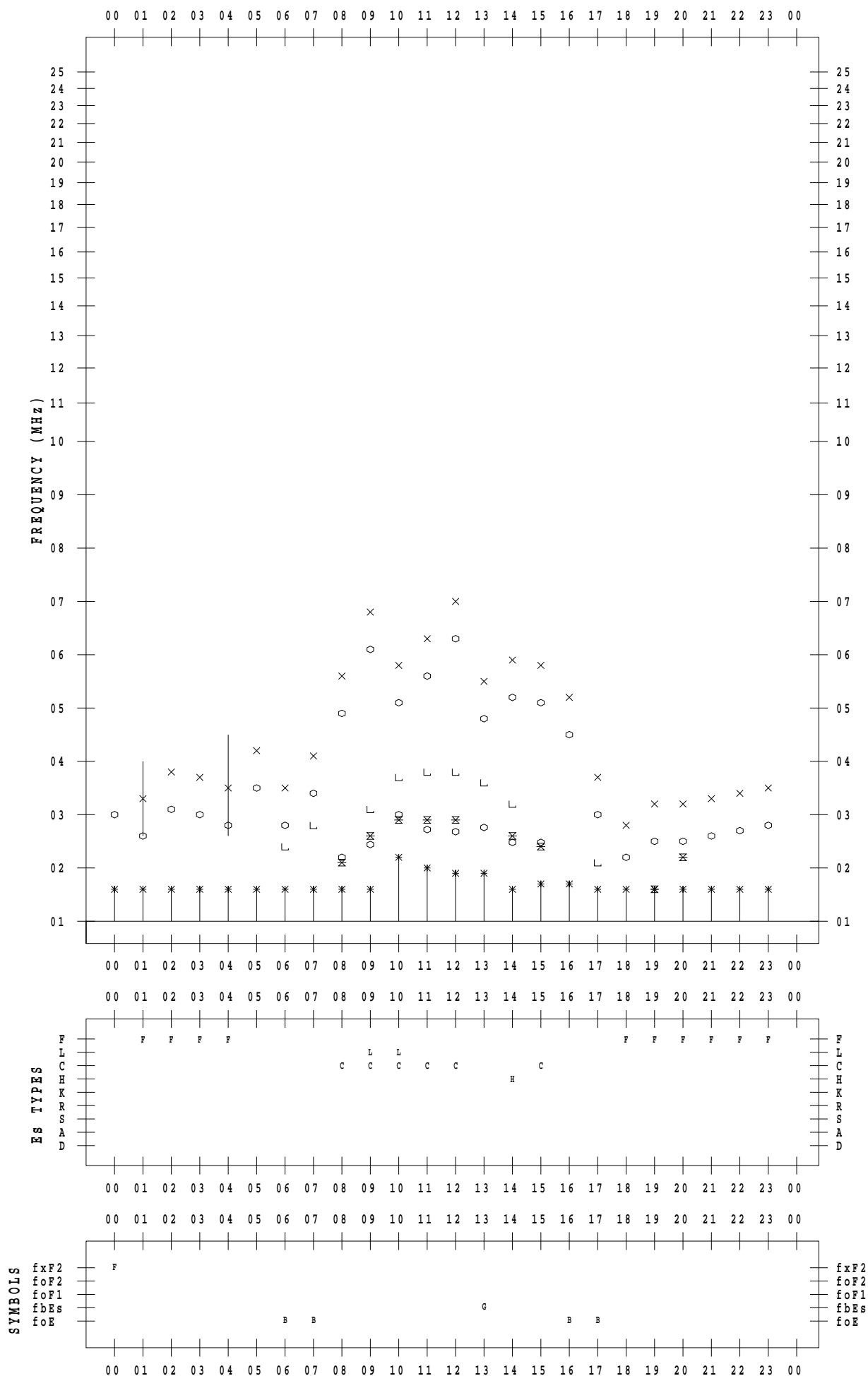
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 16

135 ° E MEAN TIME



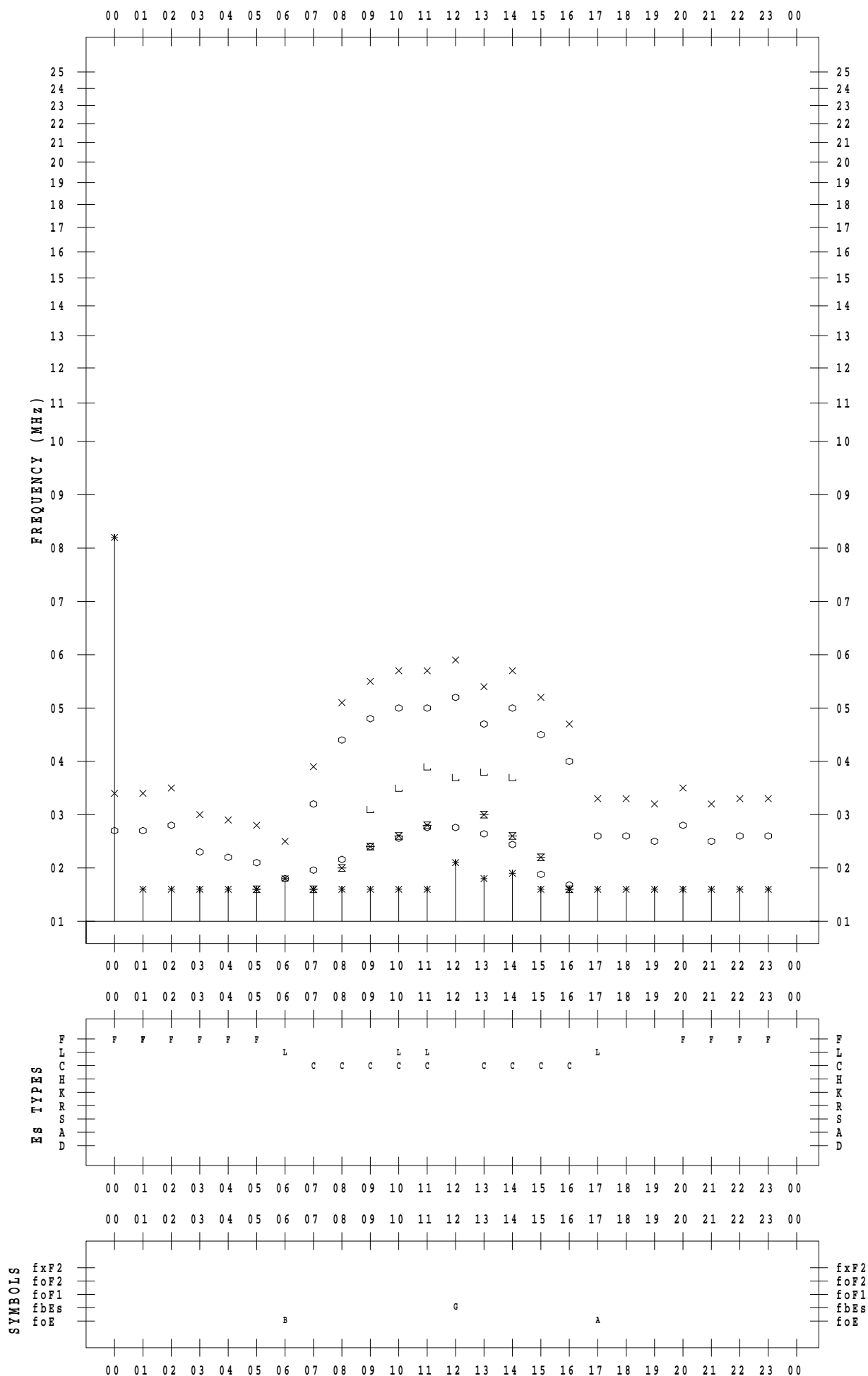
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 17

135 ° E MEAN TIME



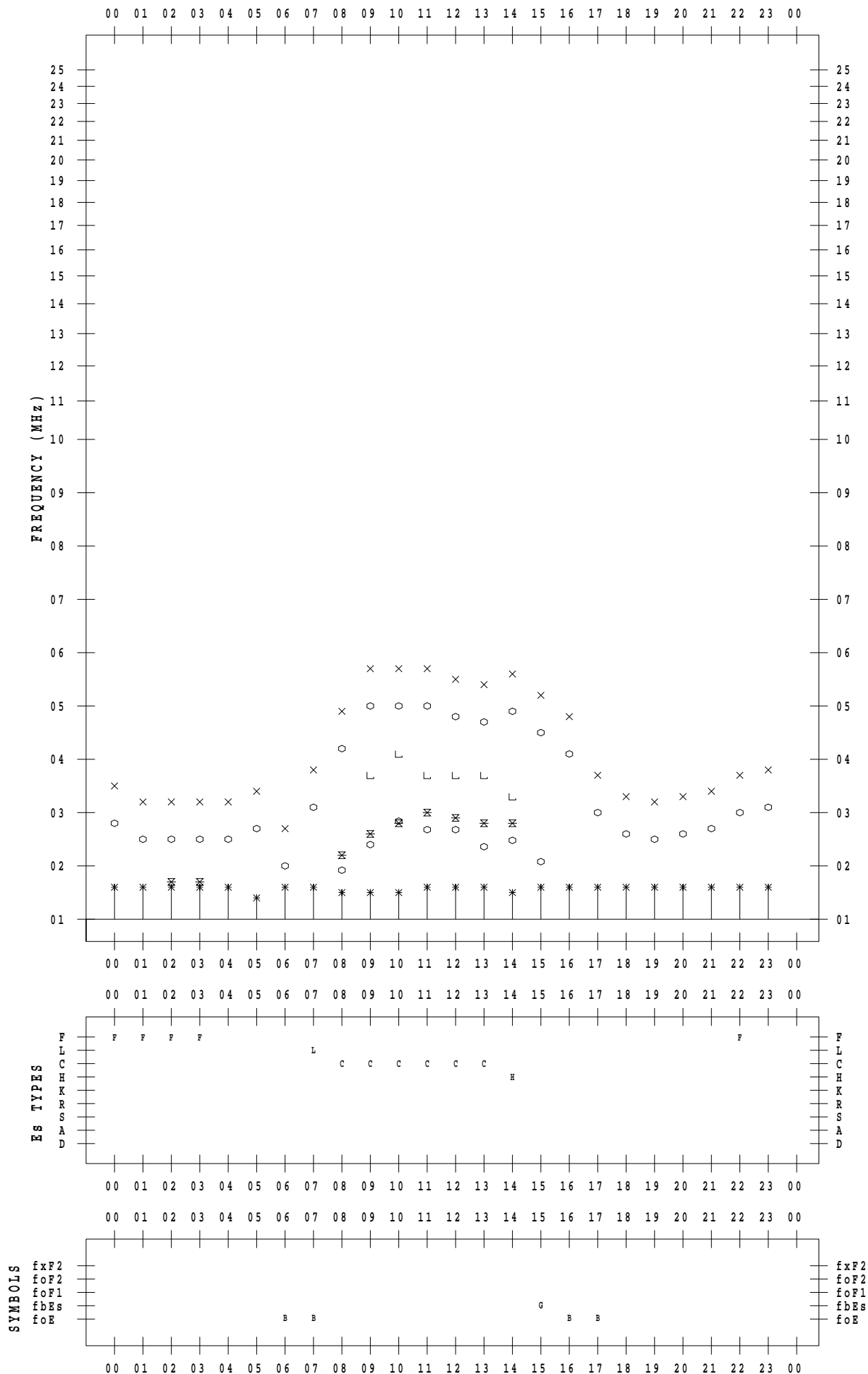
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 18

135 ° E MEAN TIME



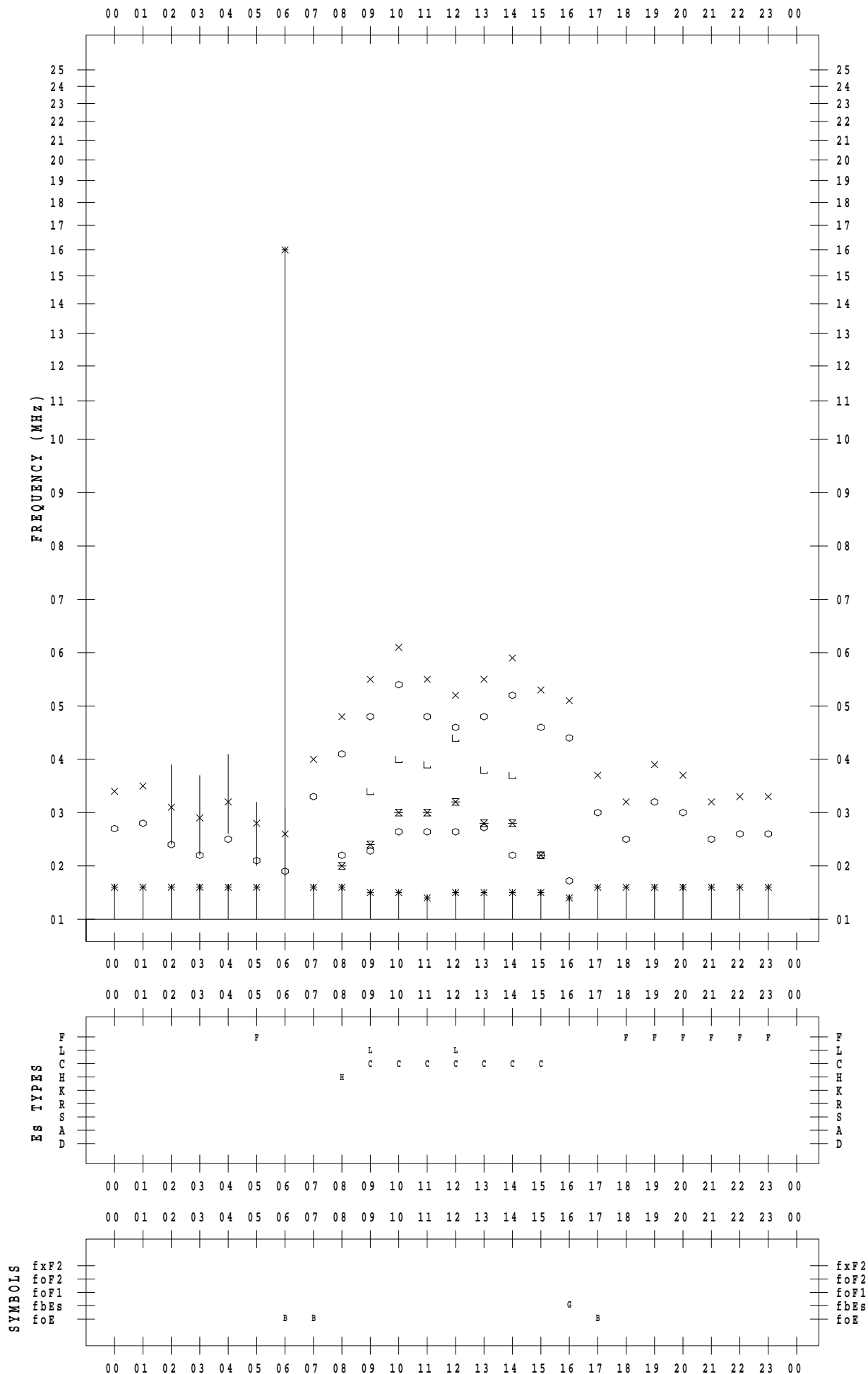
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 19

135 ° E MEAN TIME



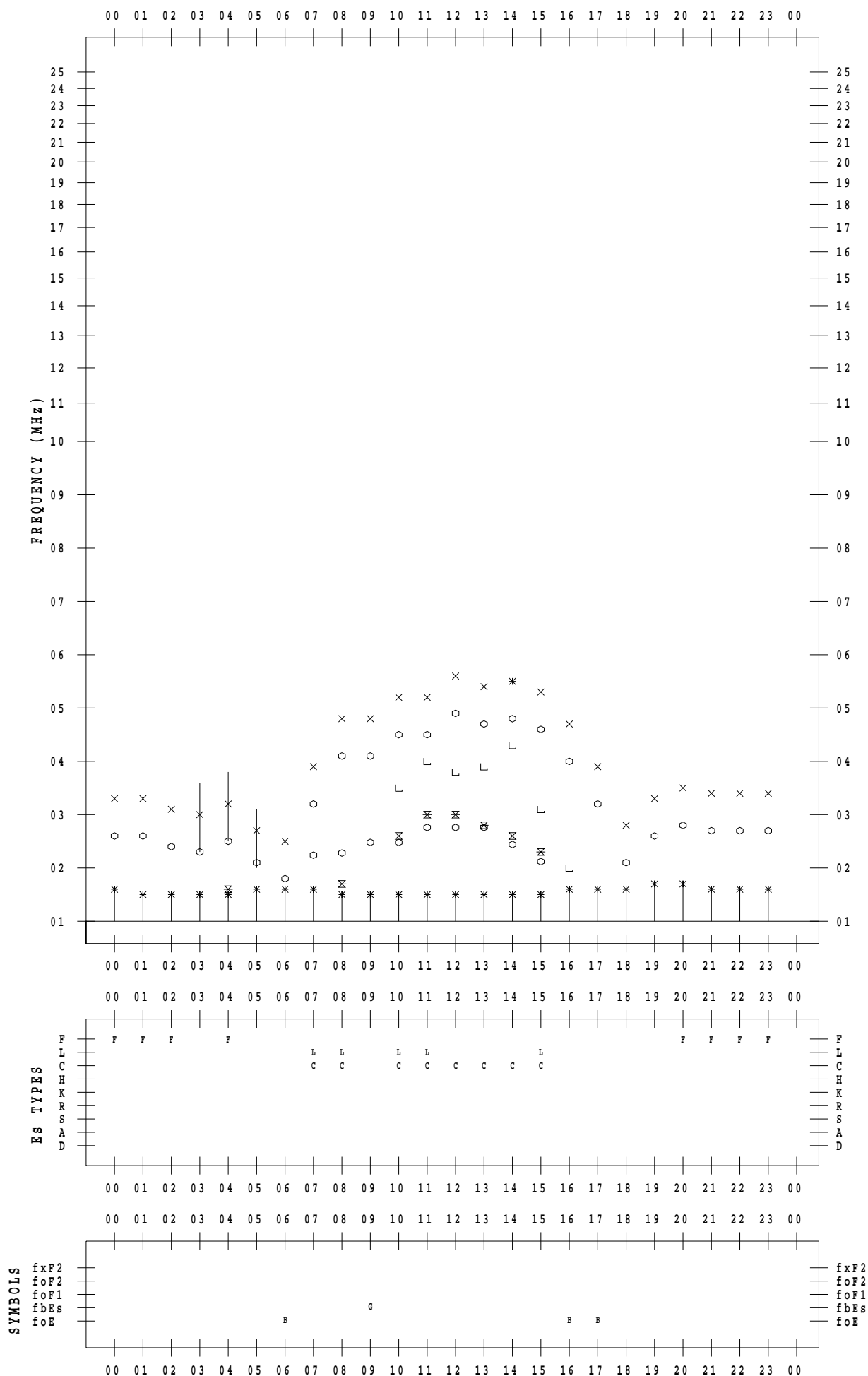
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 20

135 ° E MEAN TIME



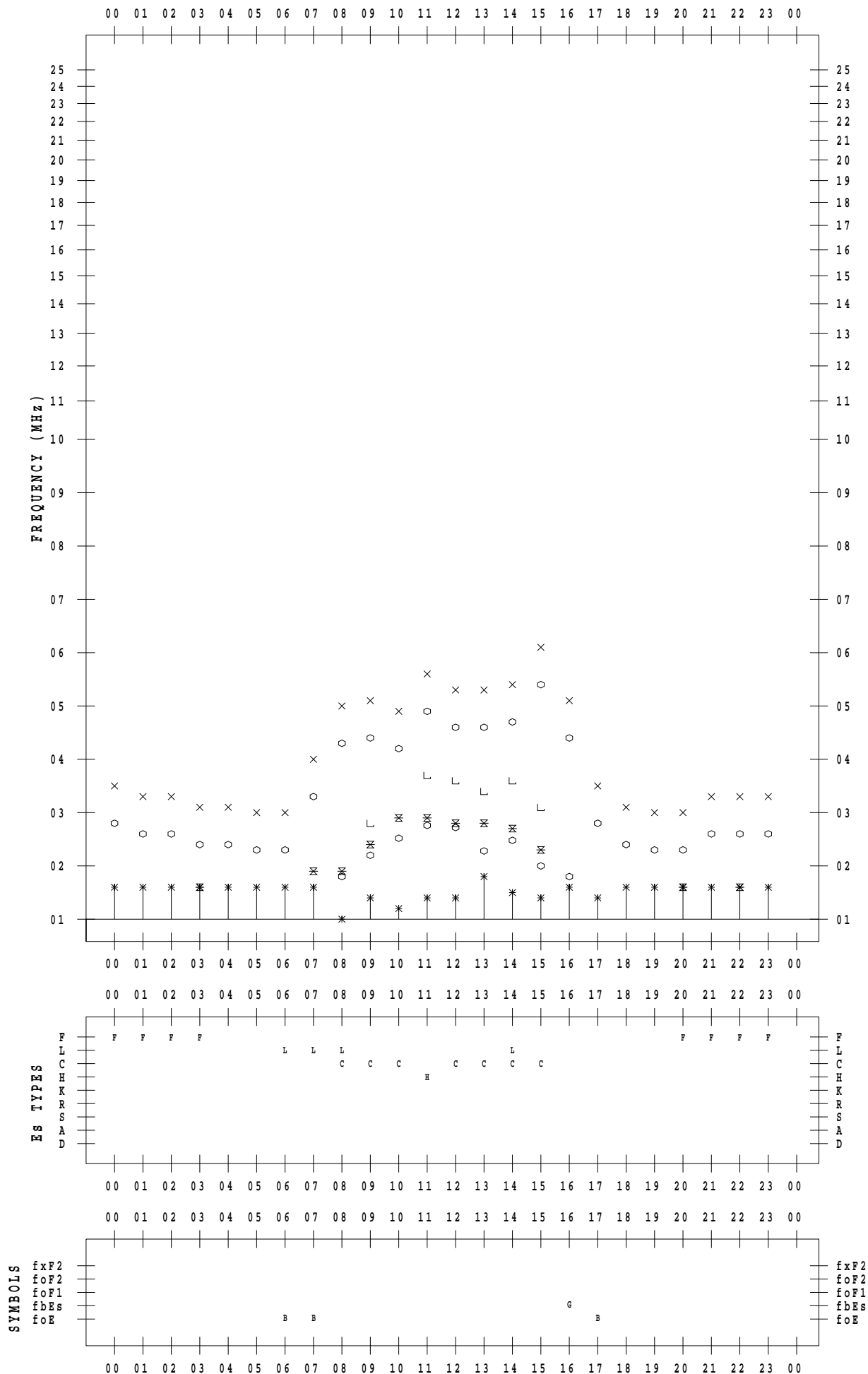
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 21

135 ° E MEAN TIME



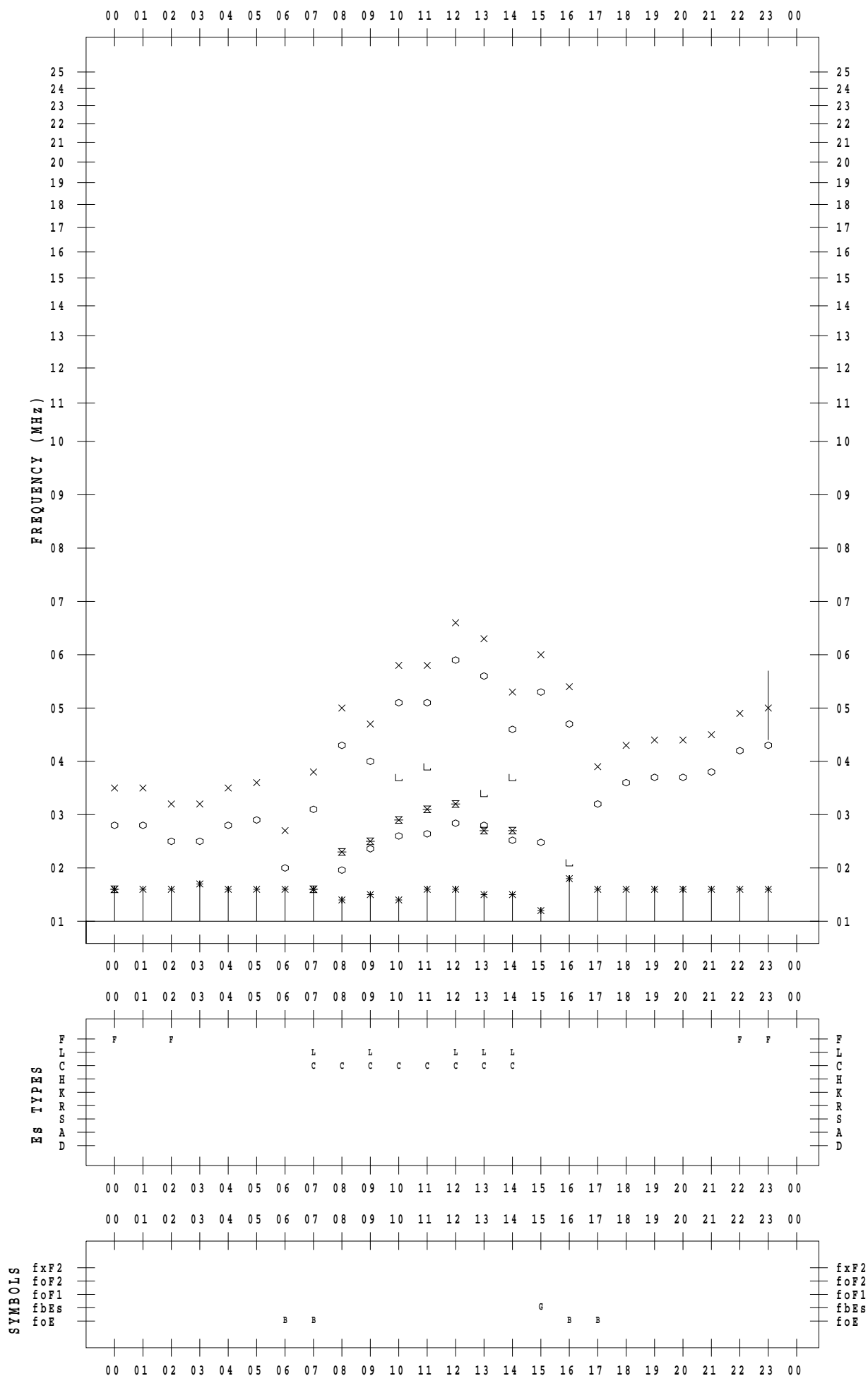
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 22

135 ° E MEAN TIME



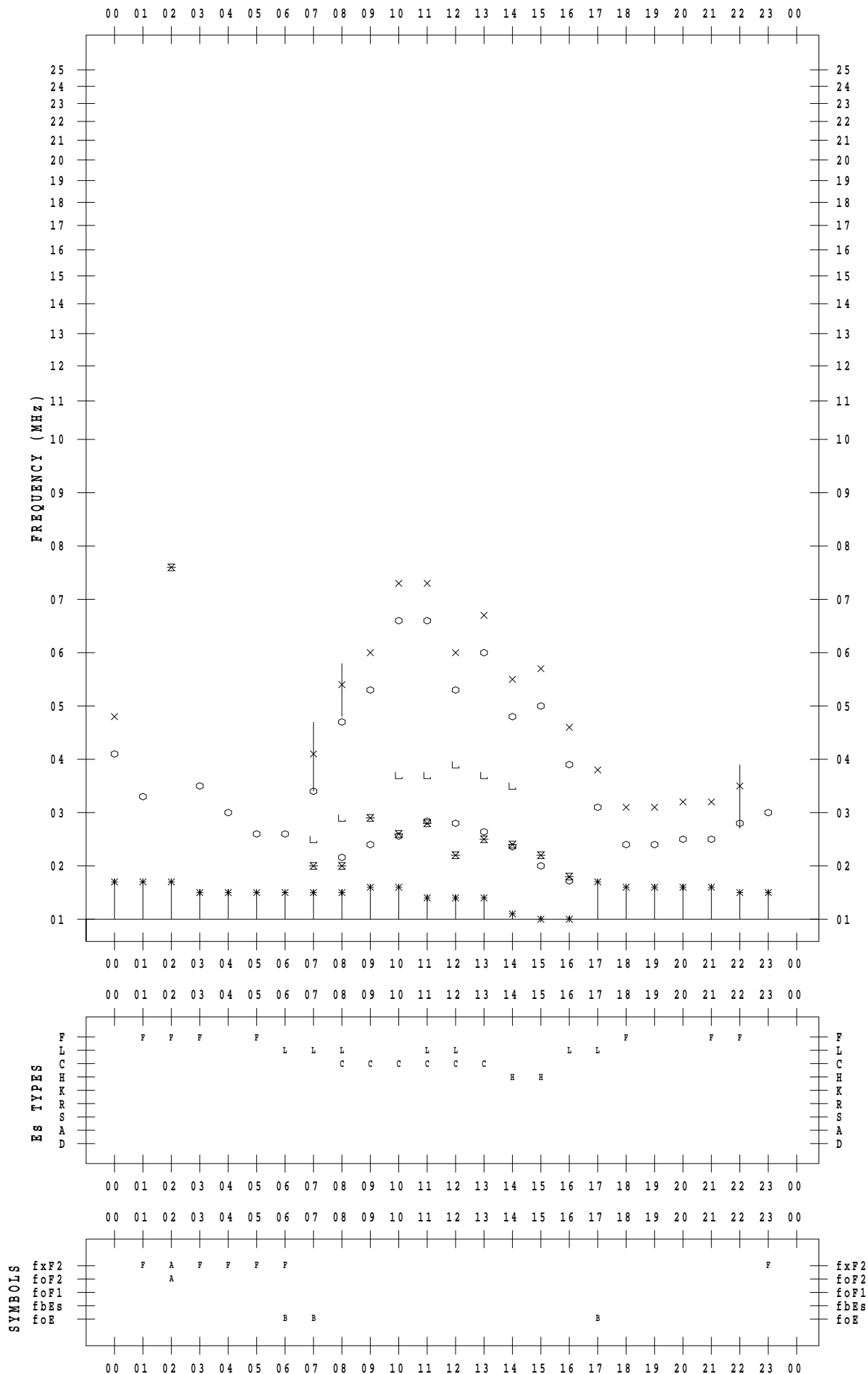
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 23

135 ° E MEAN TIME



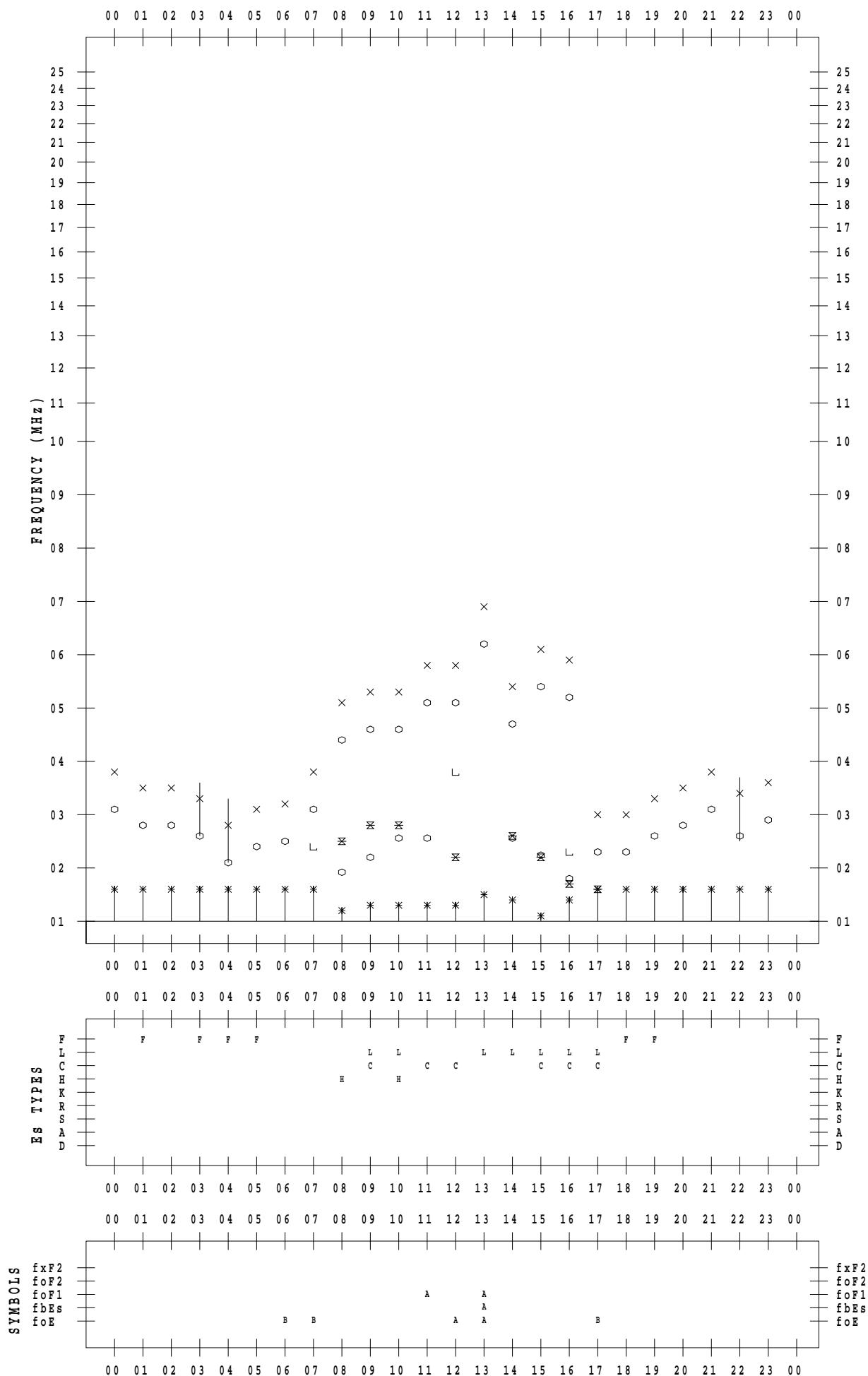
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 24

135 ° E MEAN TIME



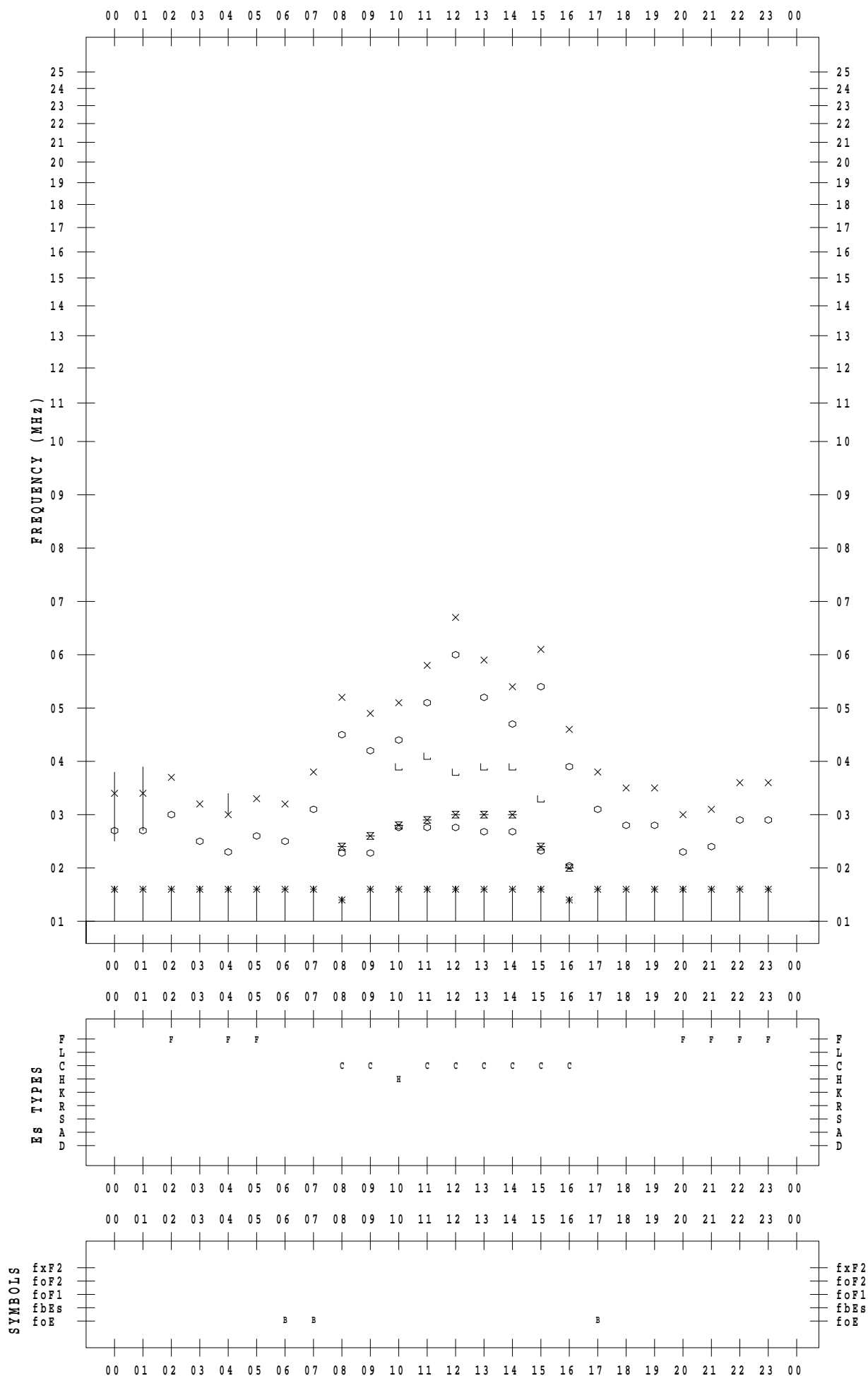
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 25

135 ° E MEAN TIME



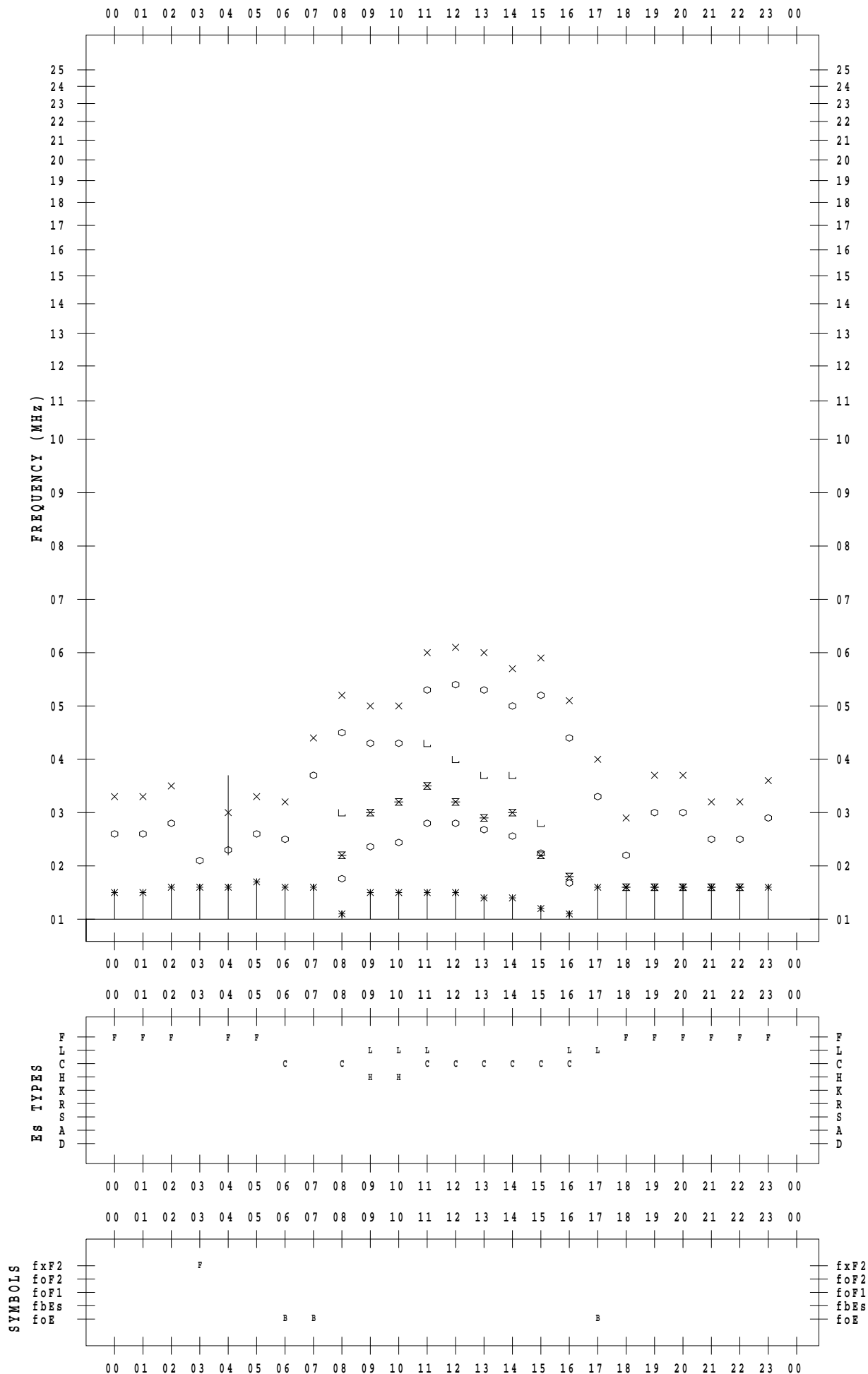
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 26

135 ° E MEAN TIME



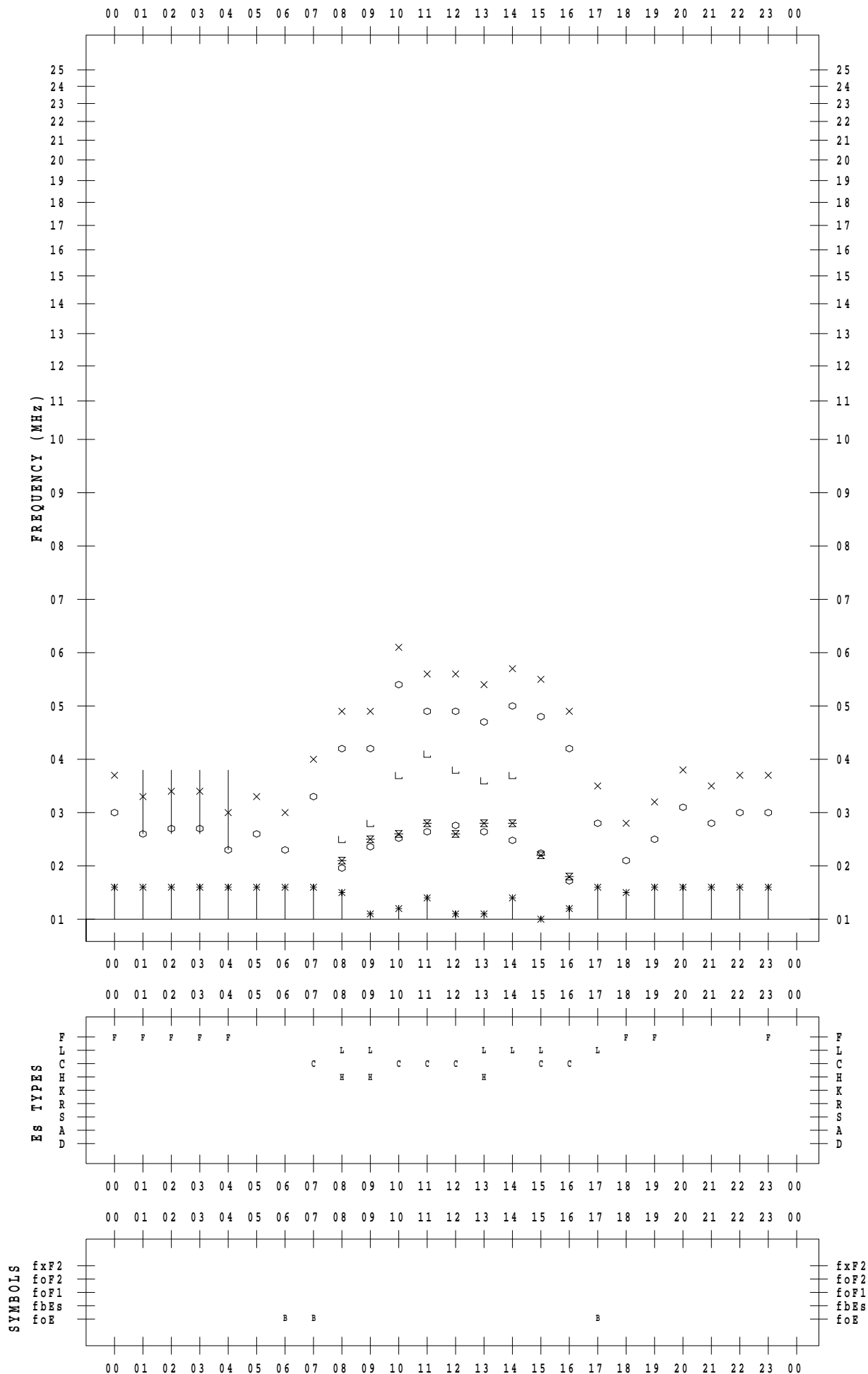
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 27

135 ° E MEAN TIME



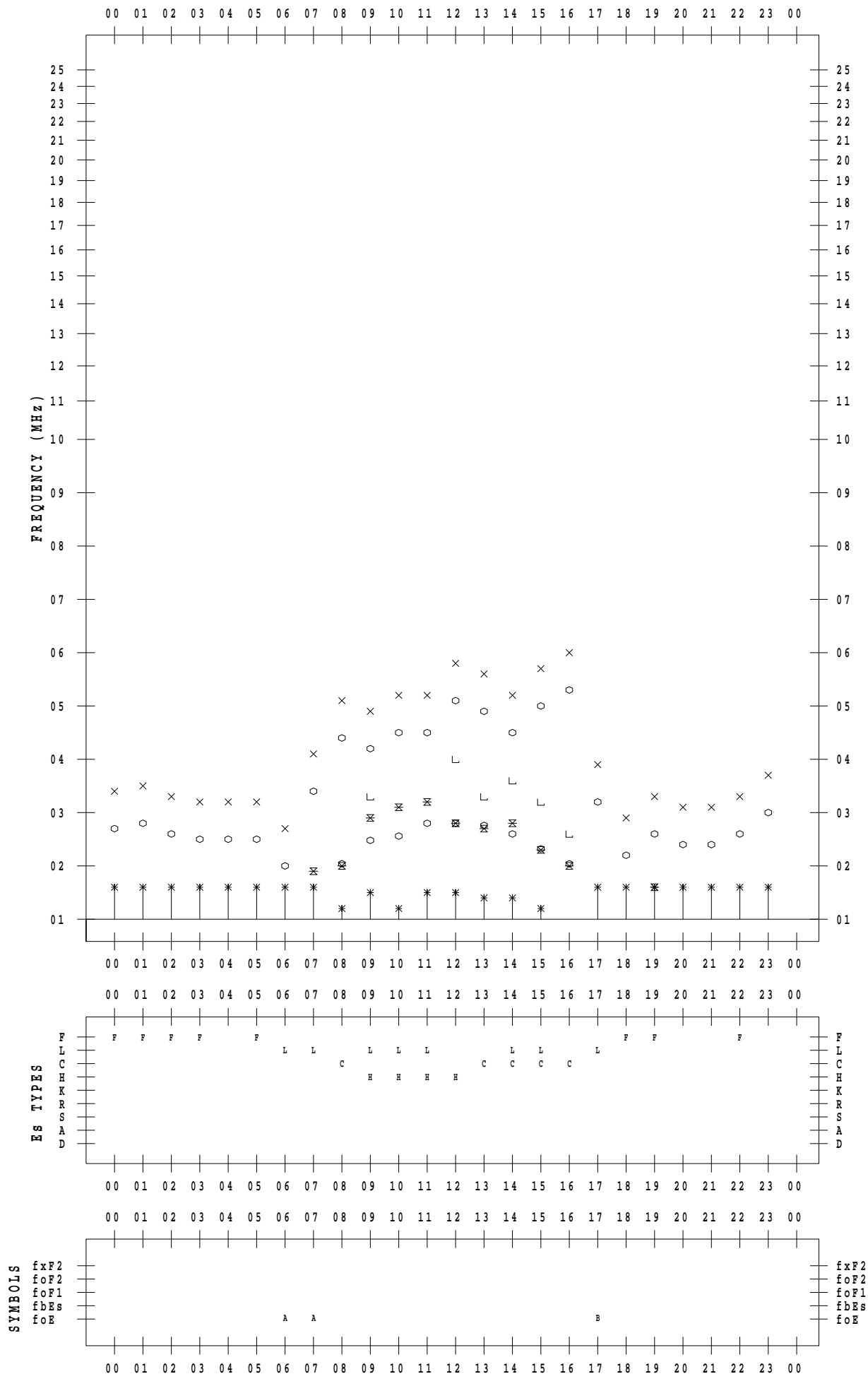
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 28

135 ° E MEAN TIME



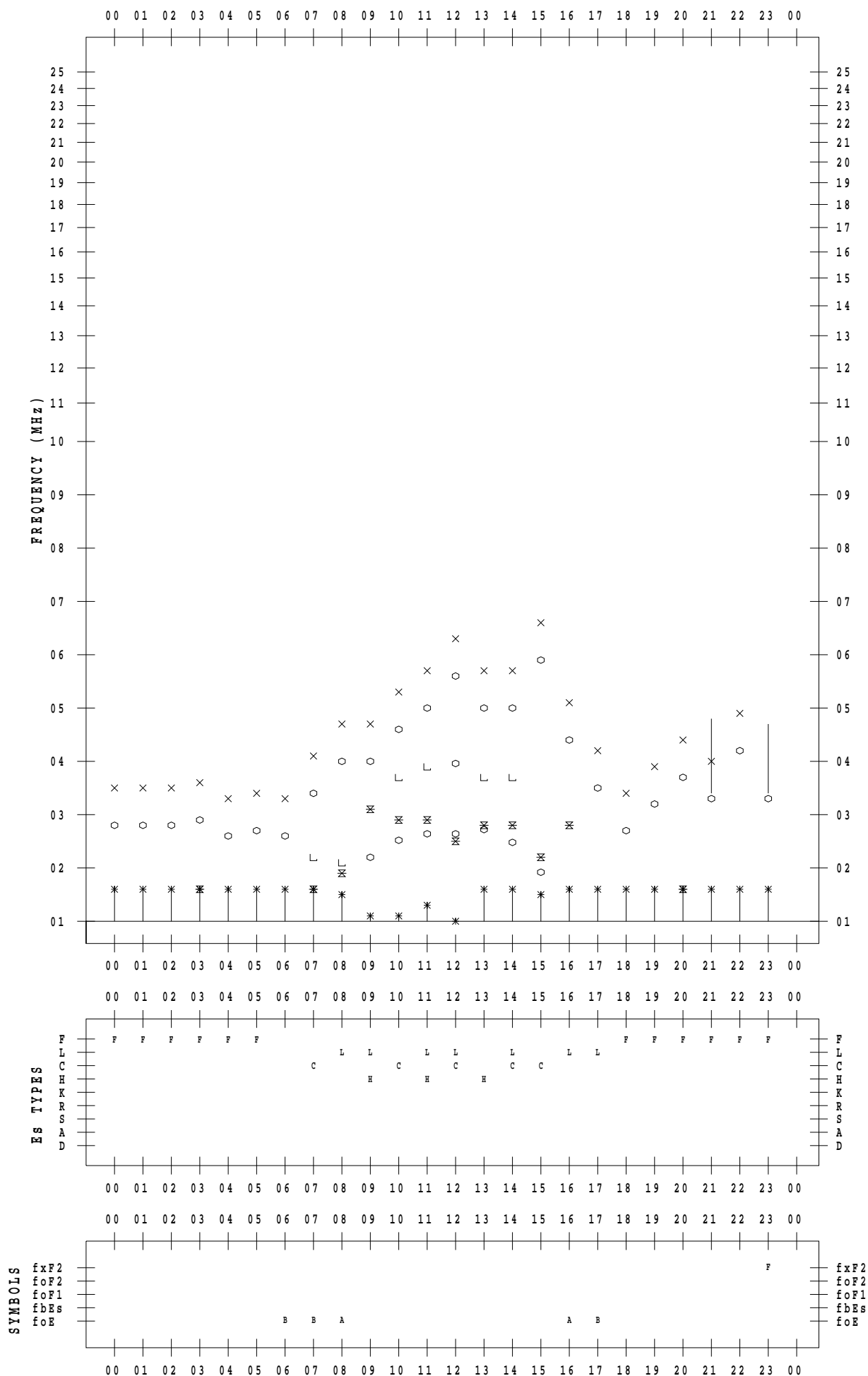
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 29

135 ° E MEAN TIME



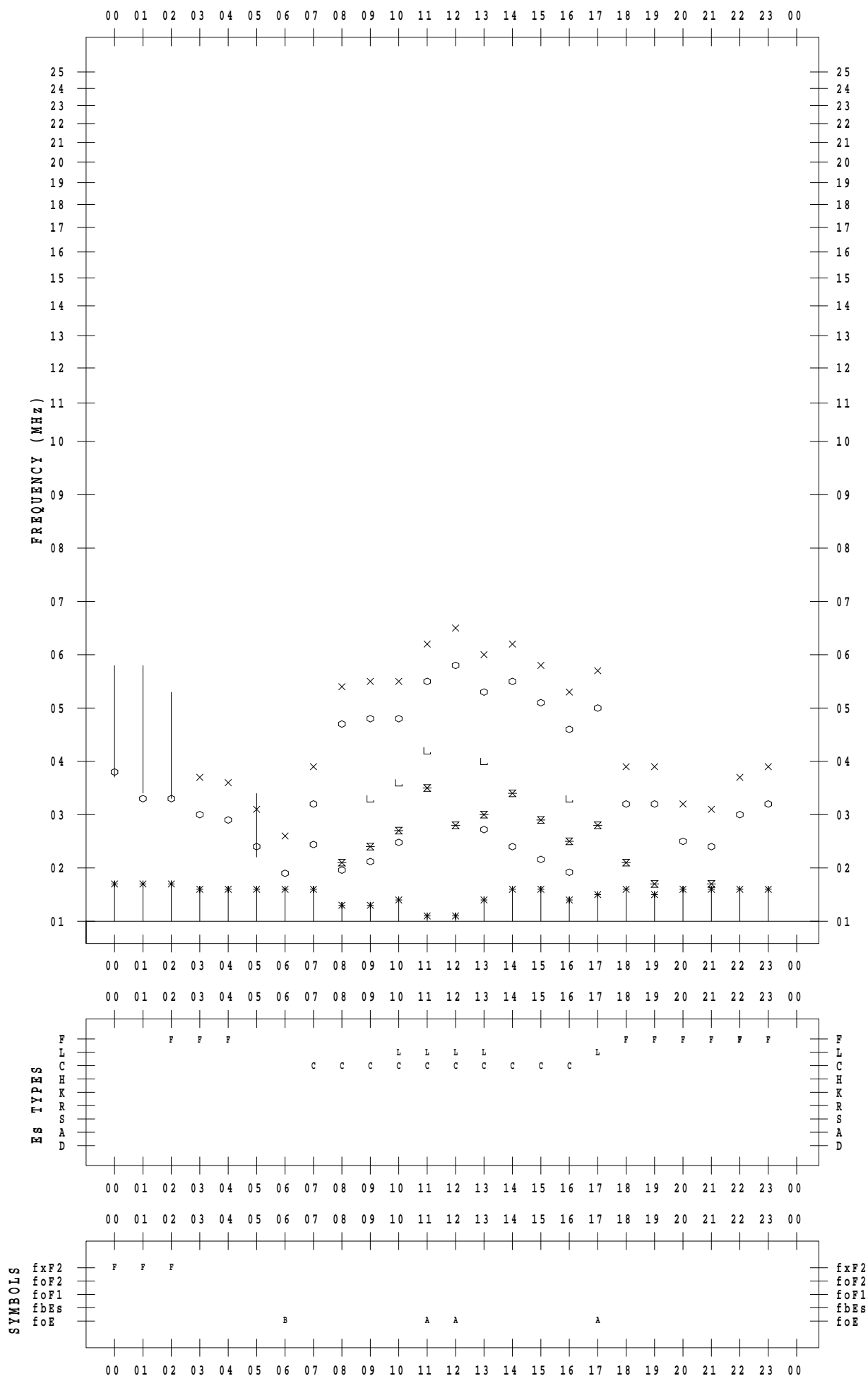
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 30

135 ° E MEAN TIME



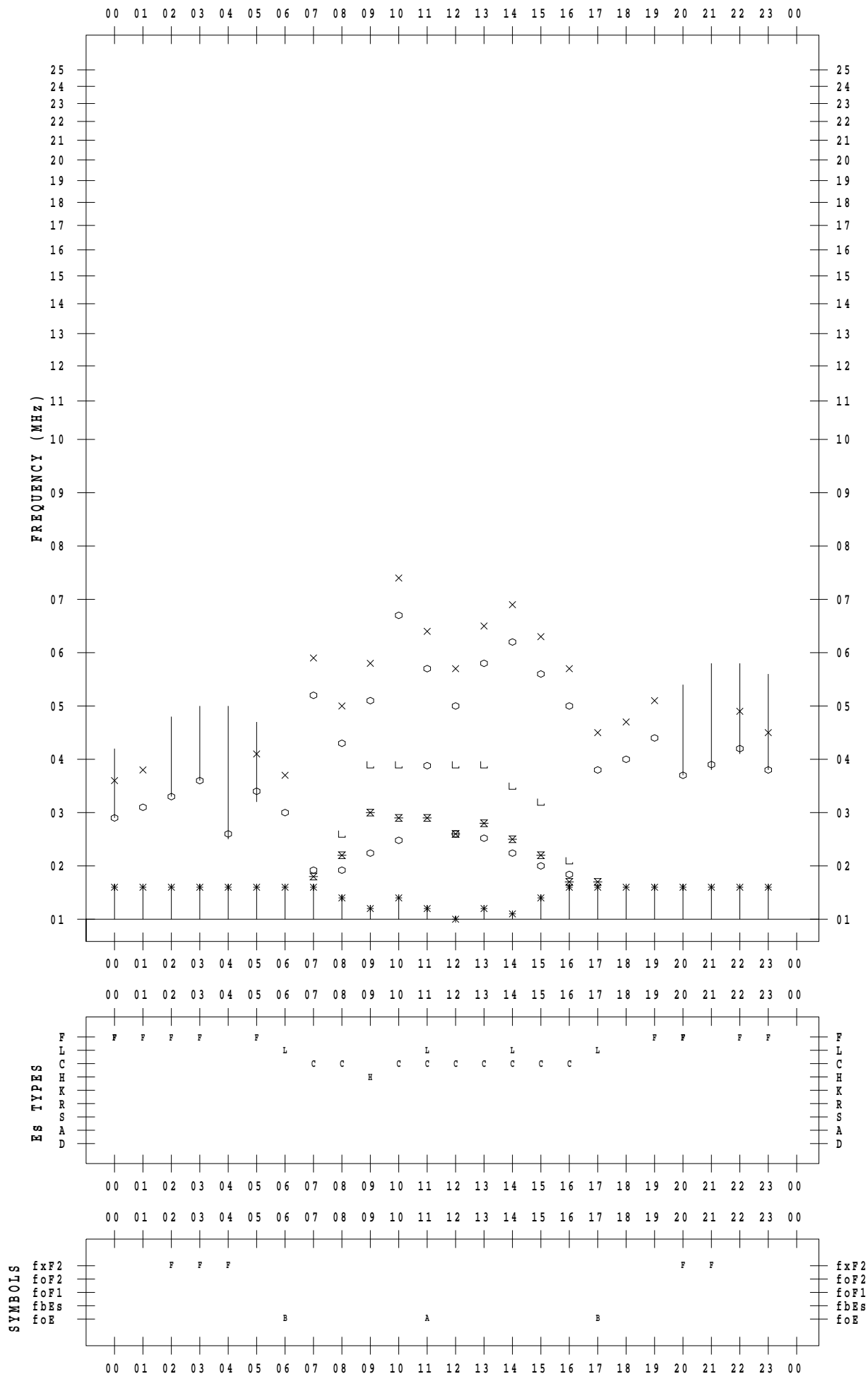
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 1 / 31

135 ° E MEAN TIME



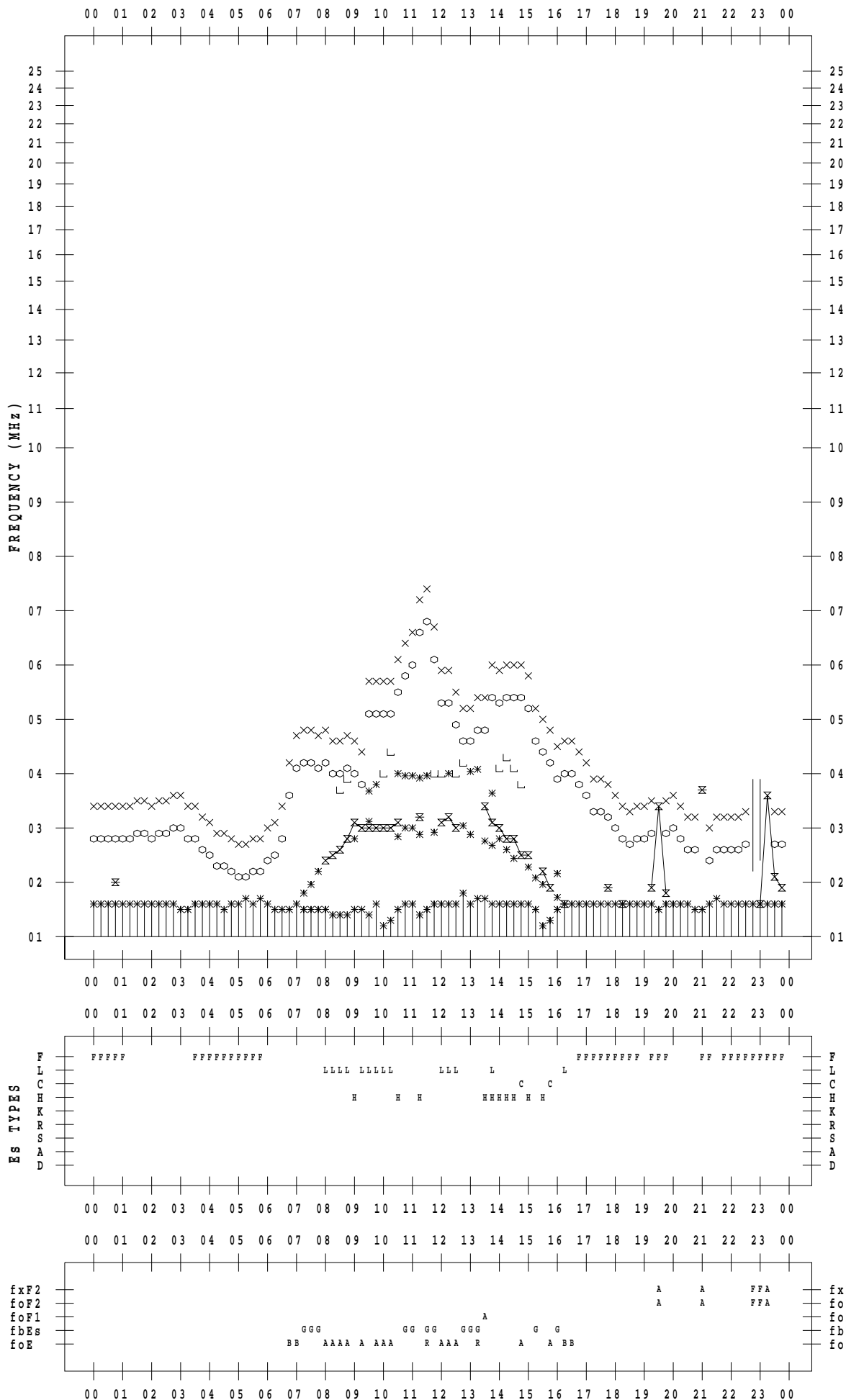
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 1

135 ° E MEAN TIME



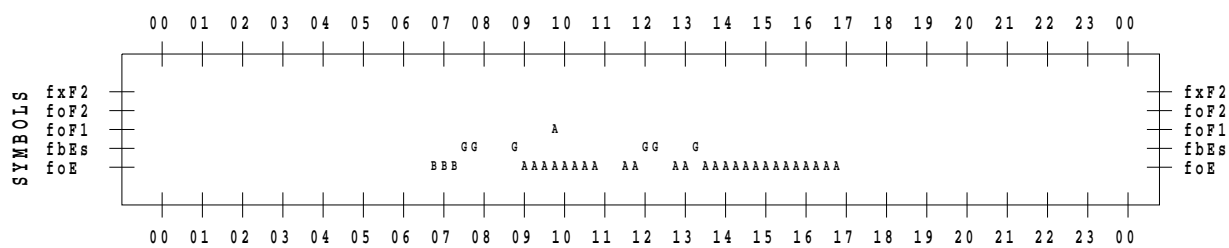
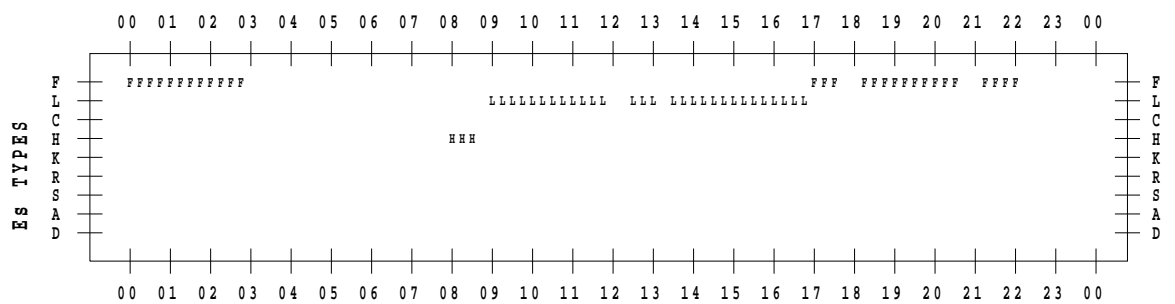
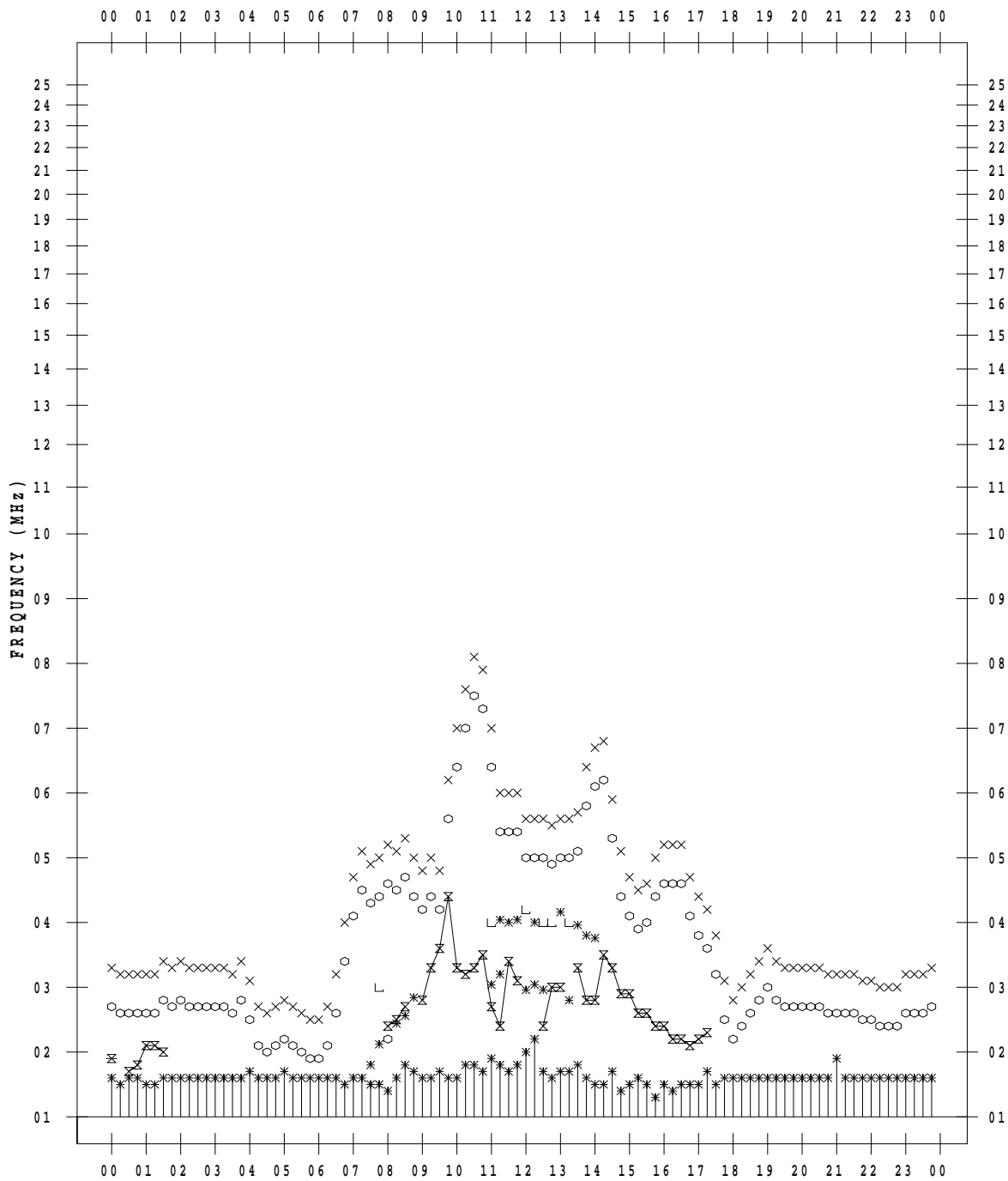
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 2

135 ° E MEAN TIME



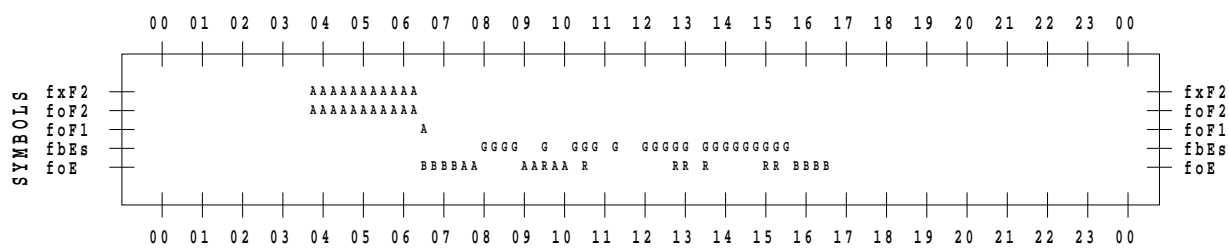
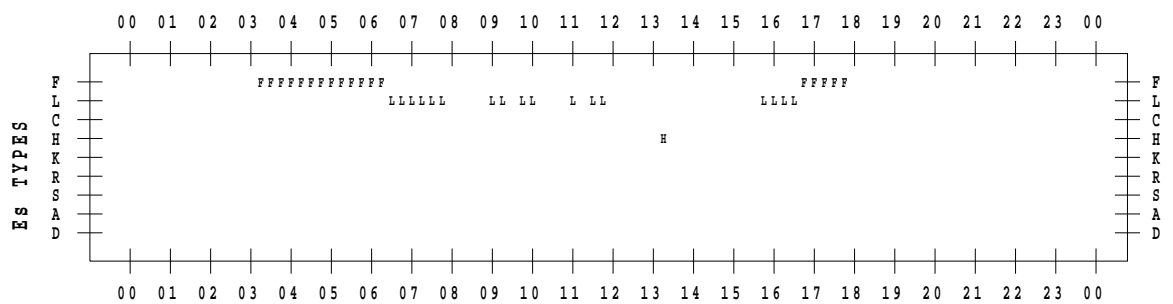
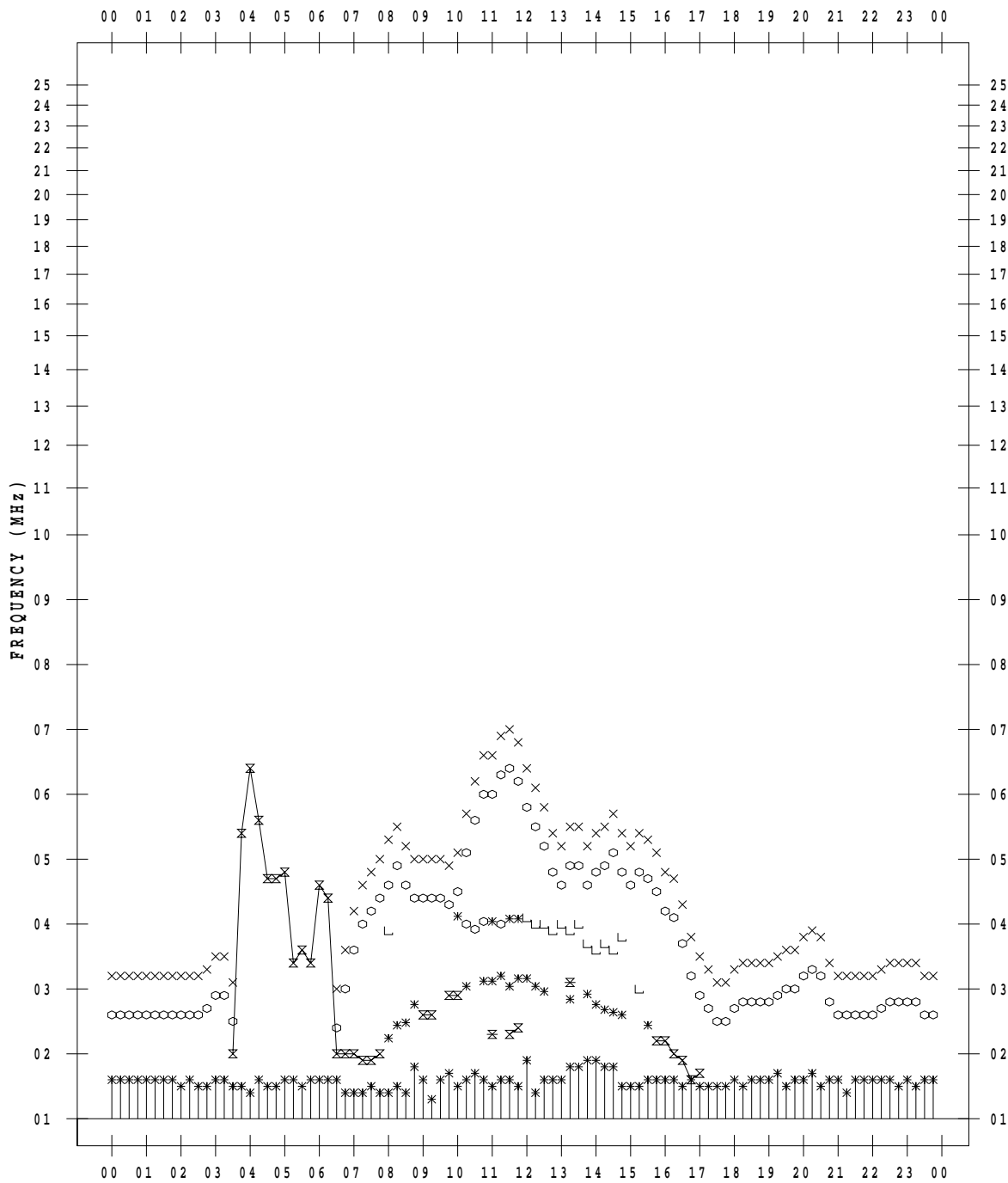
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 3

135 ° E MEAN TIME



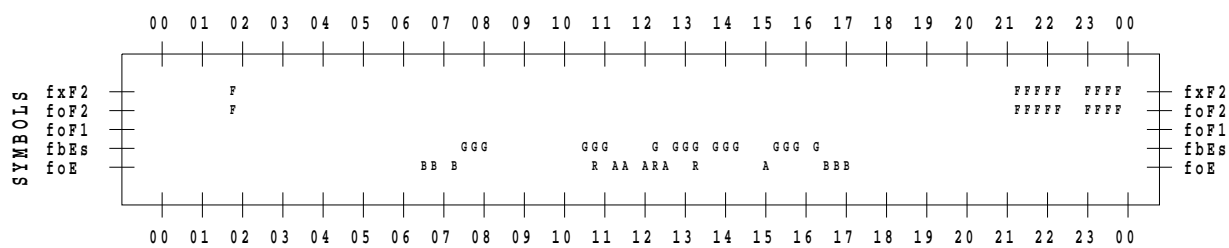
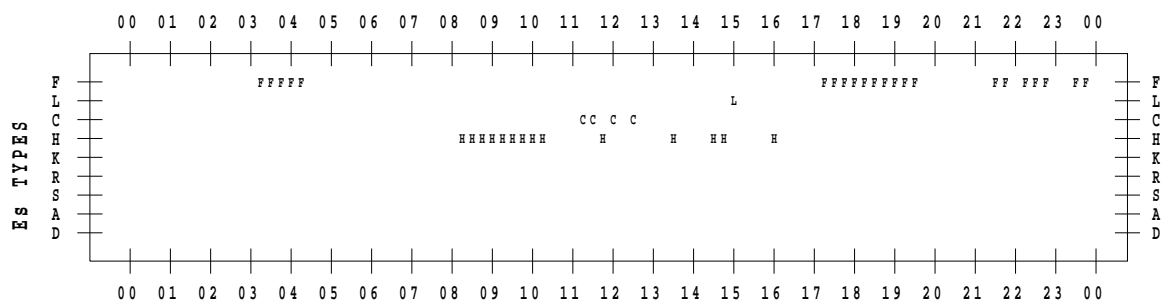
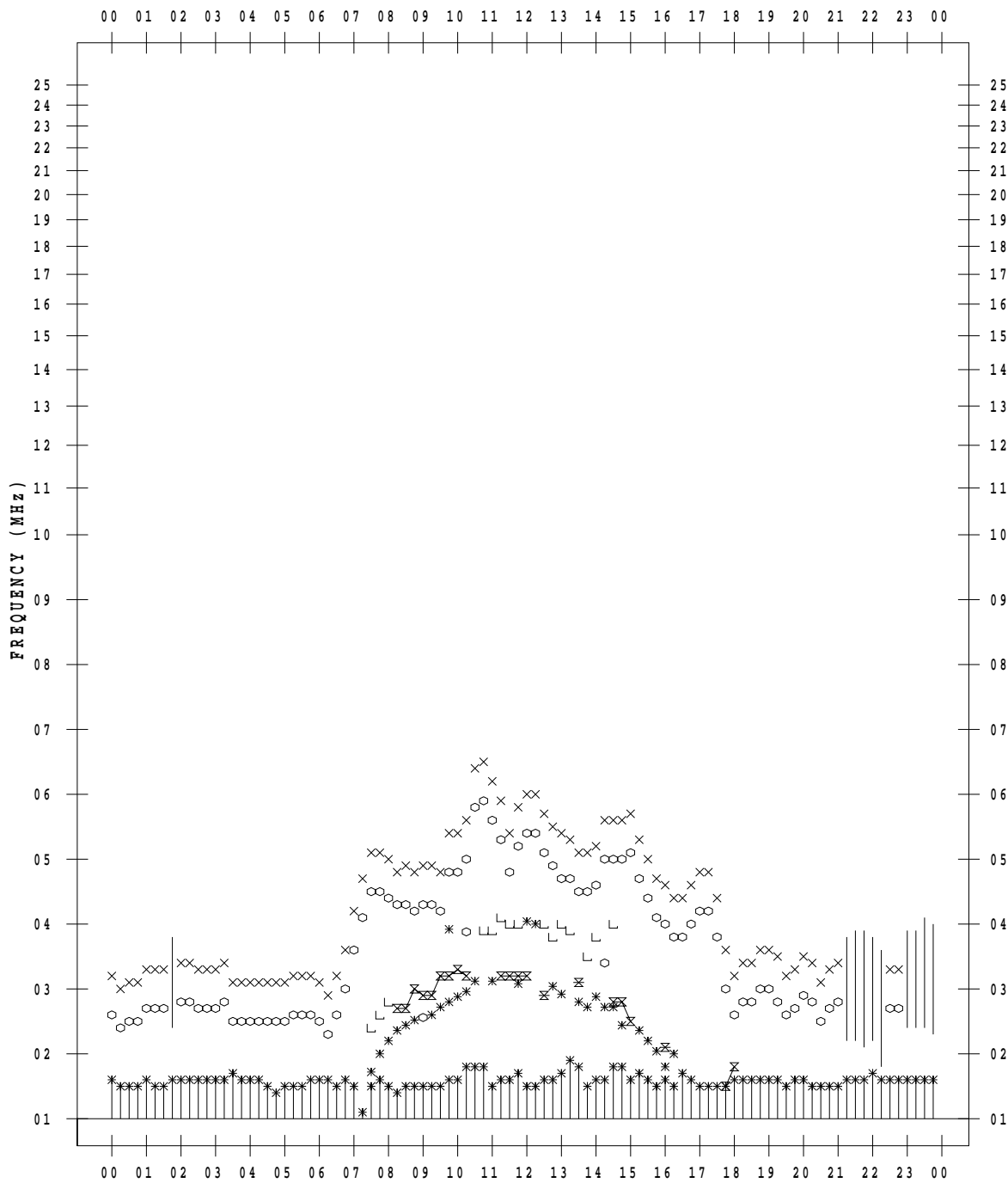
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 4

135 ° E MEAN TIME



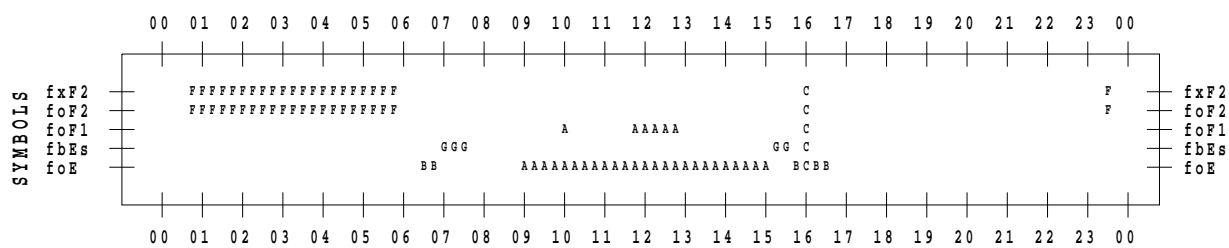
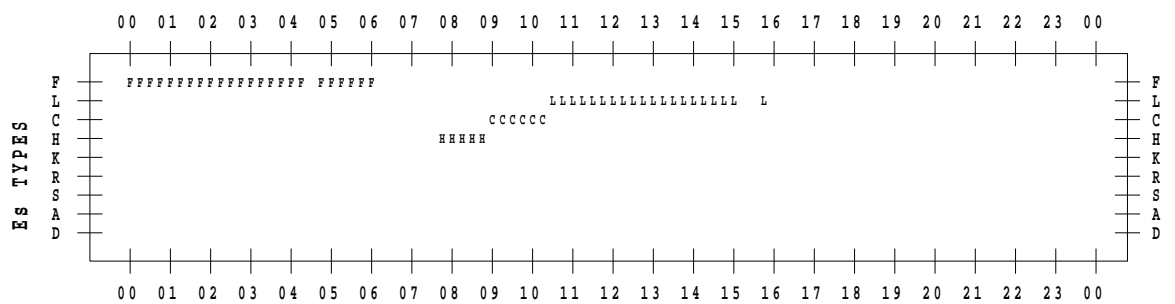
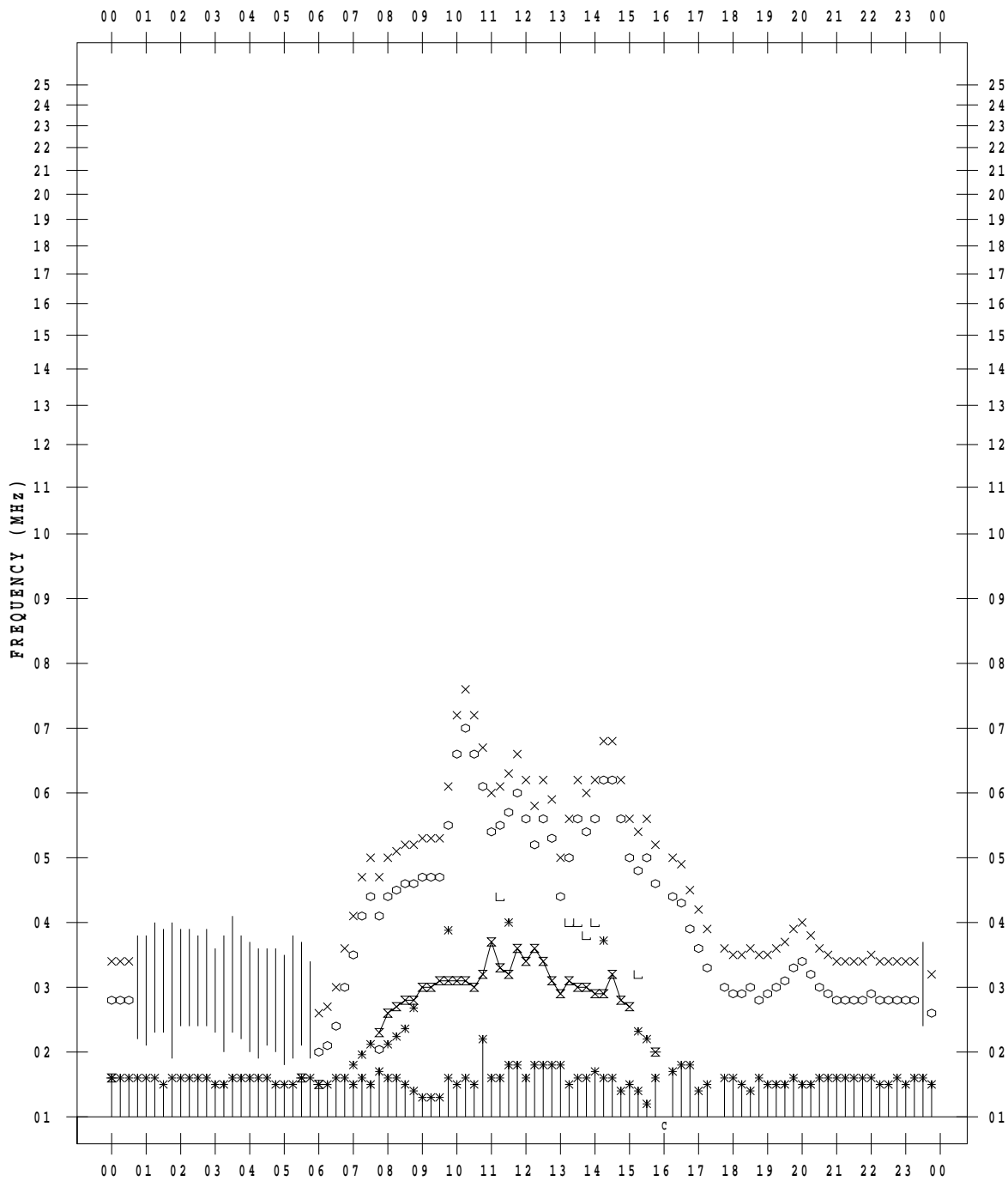
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 5

135 ° E MEAN TIME



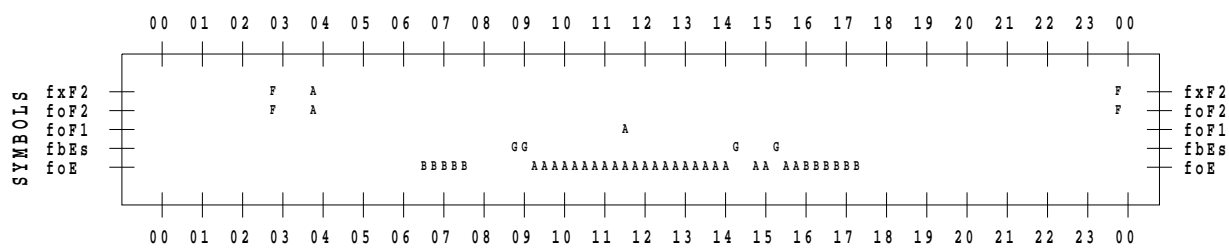
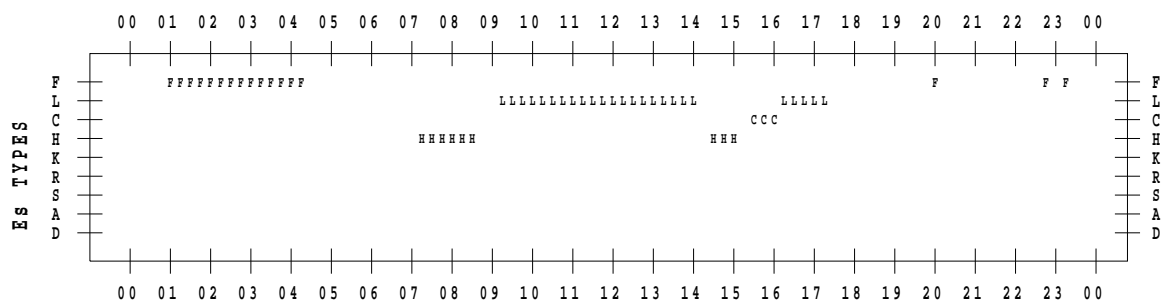
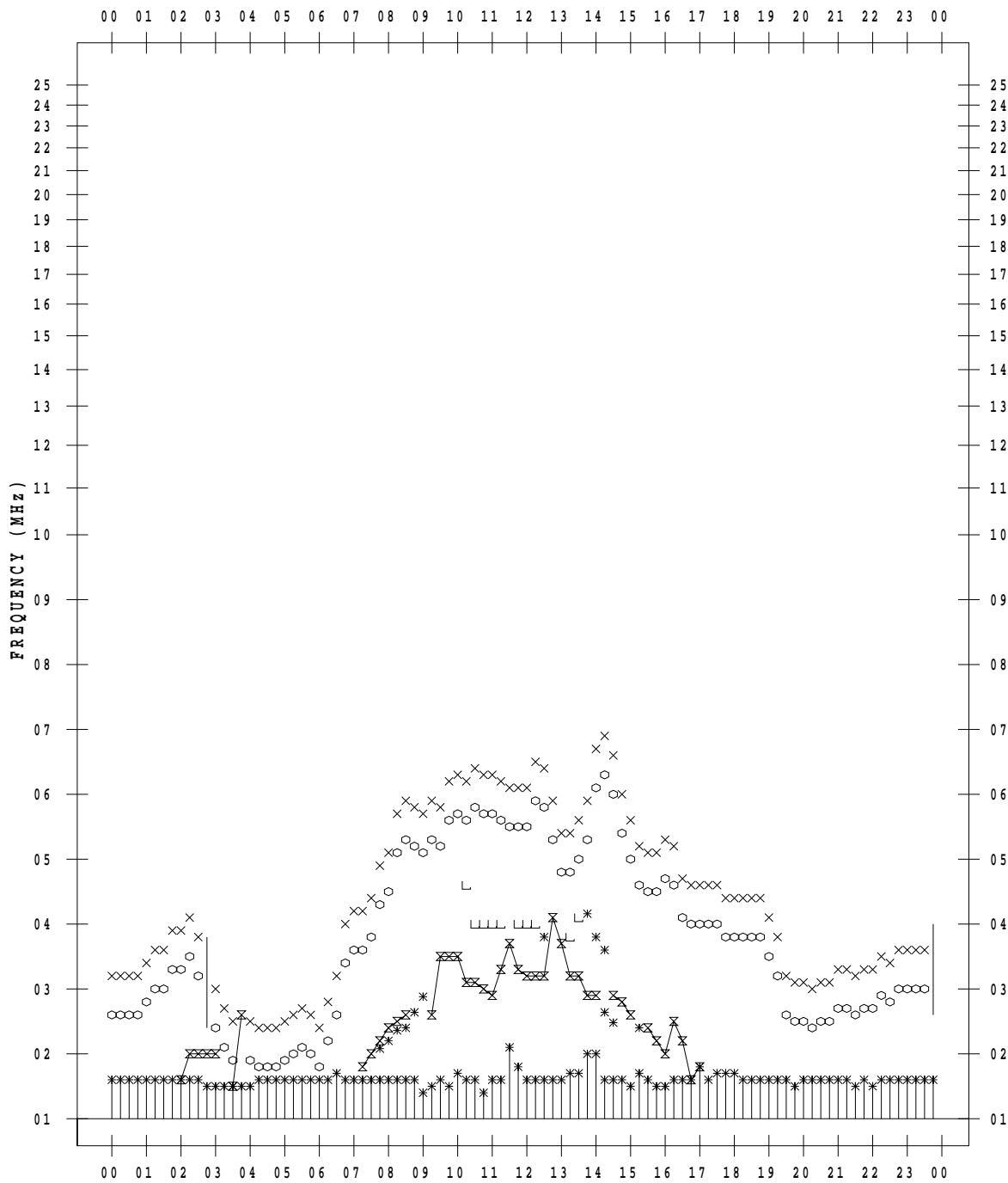
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 6

135 ° E MEAN TIME



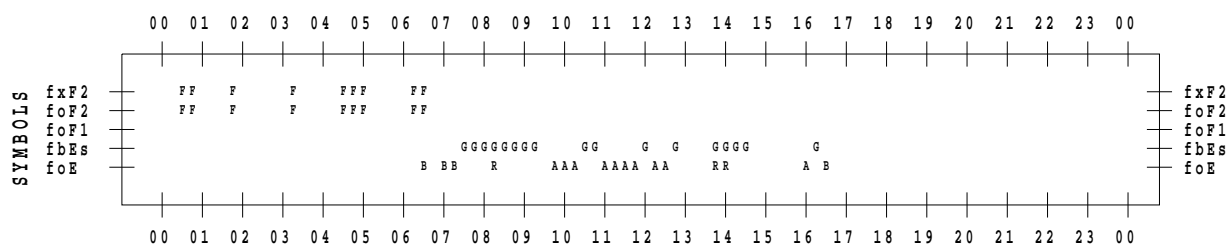
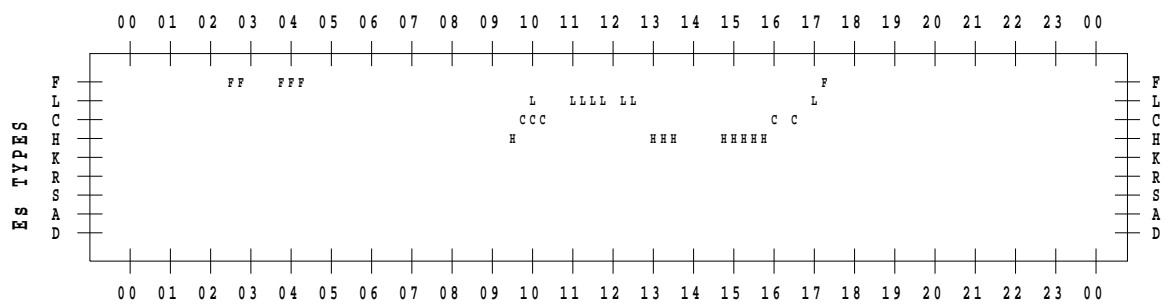
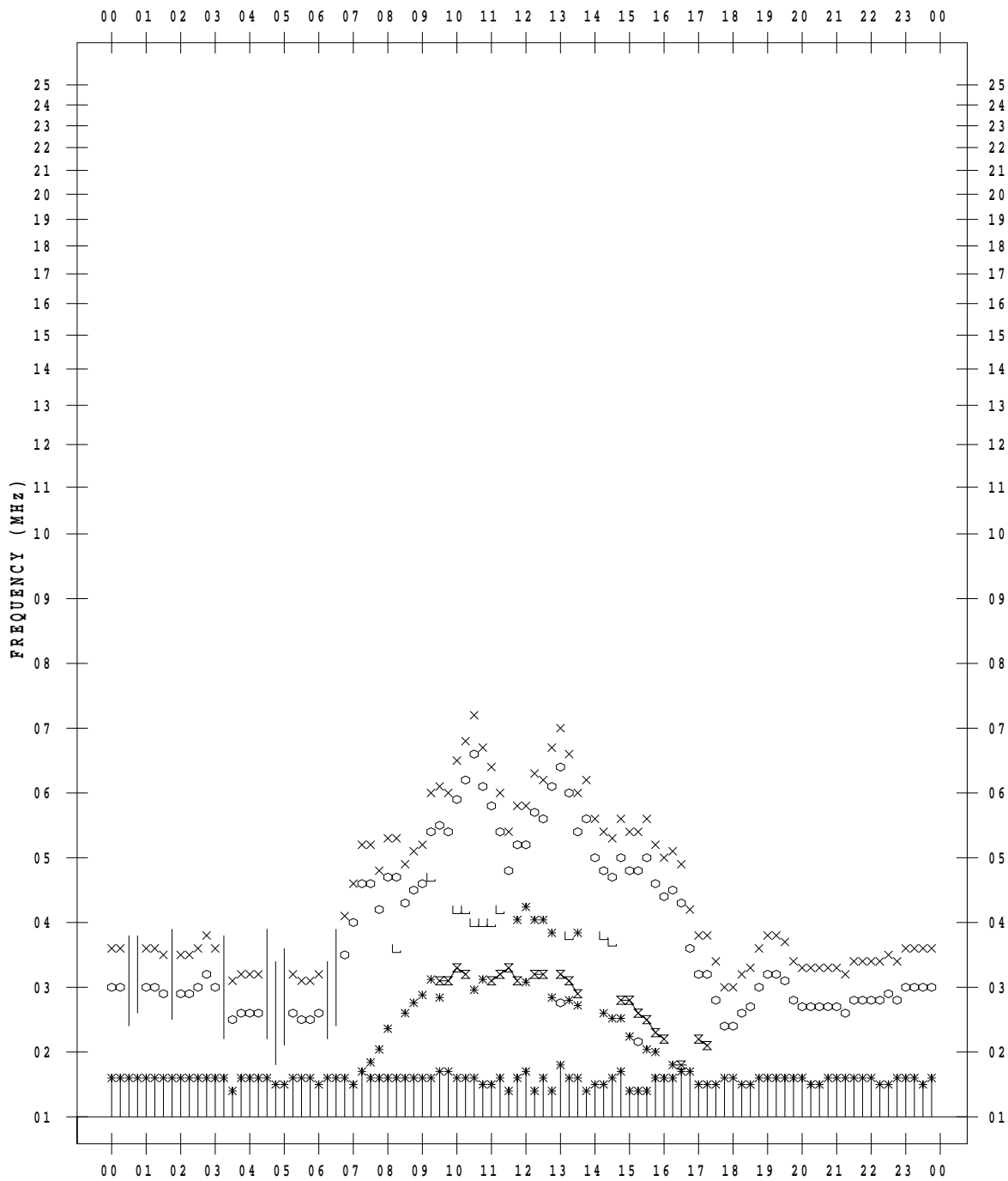
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 7

135 ° E MEAN TIME



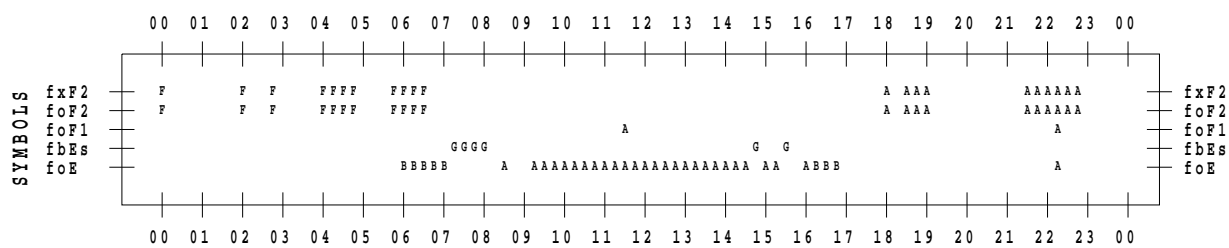
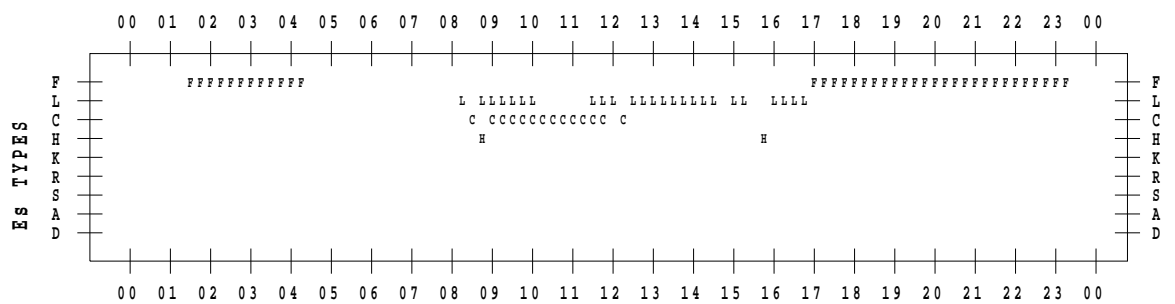
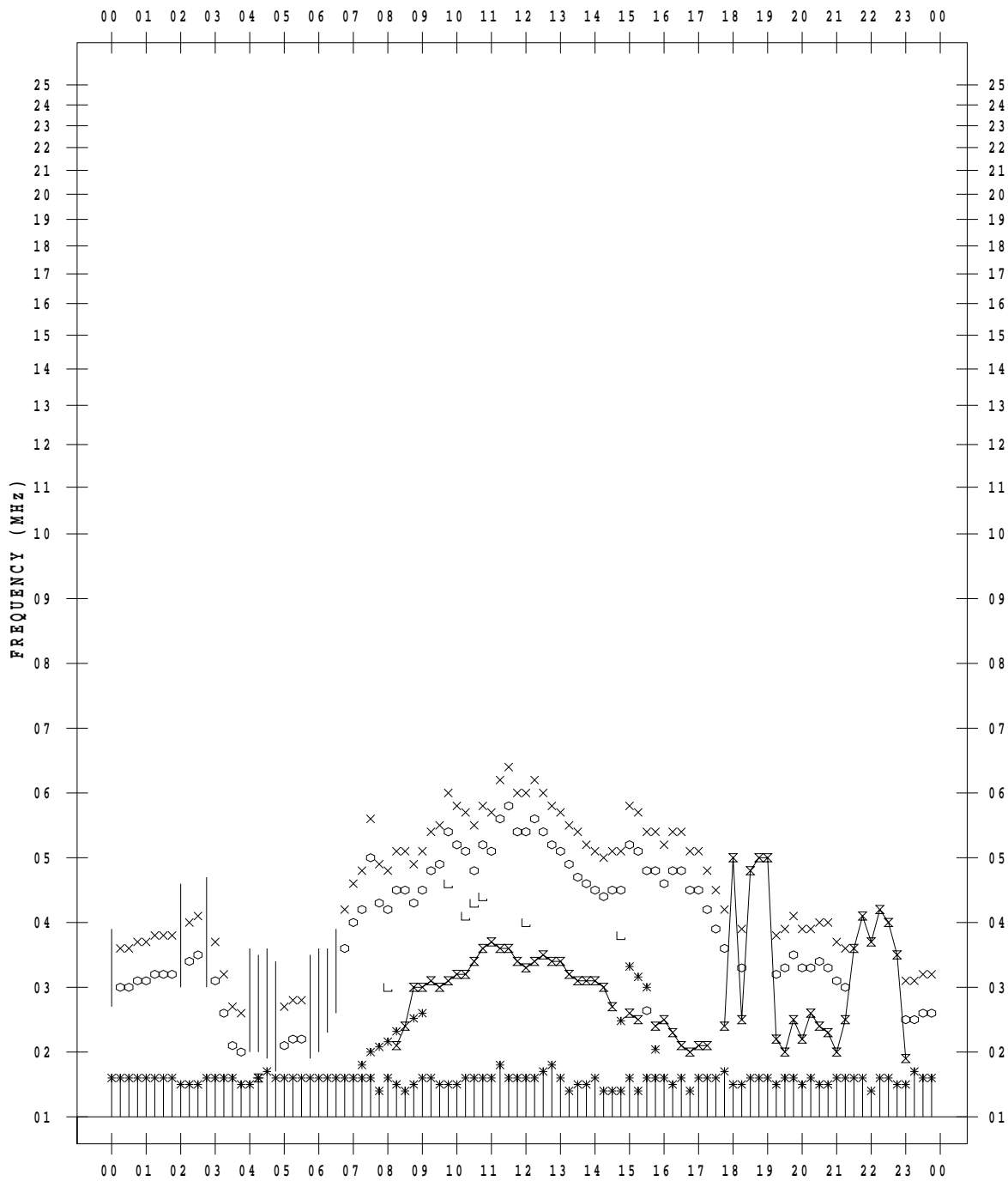
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 8

135 ° E MEAN TIME



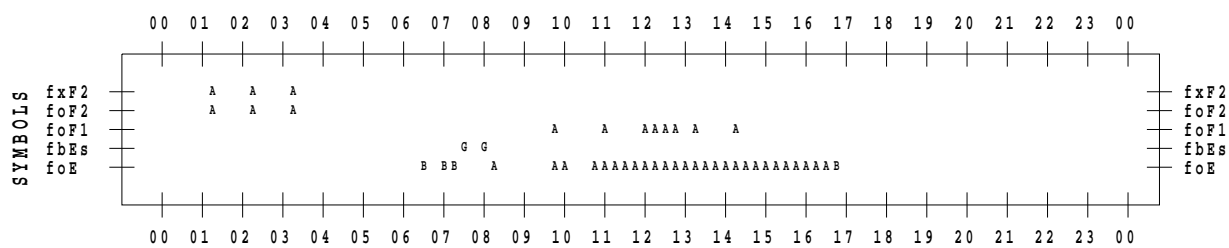
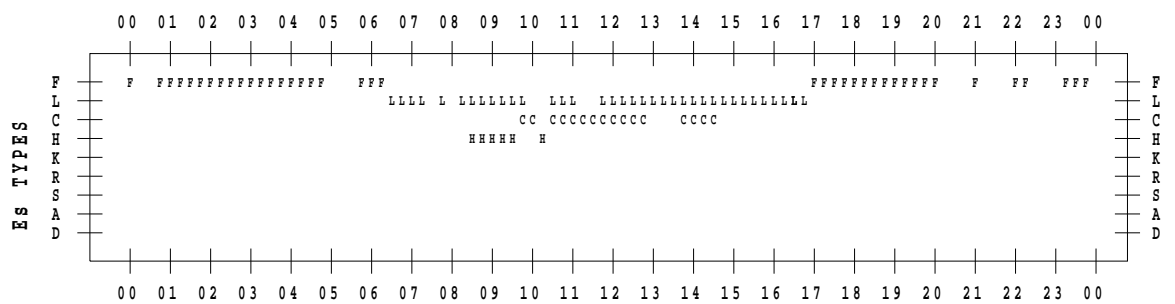
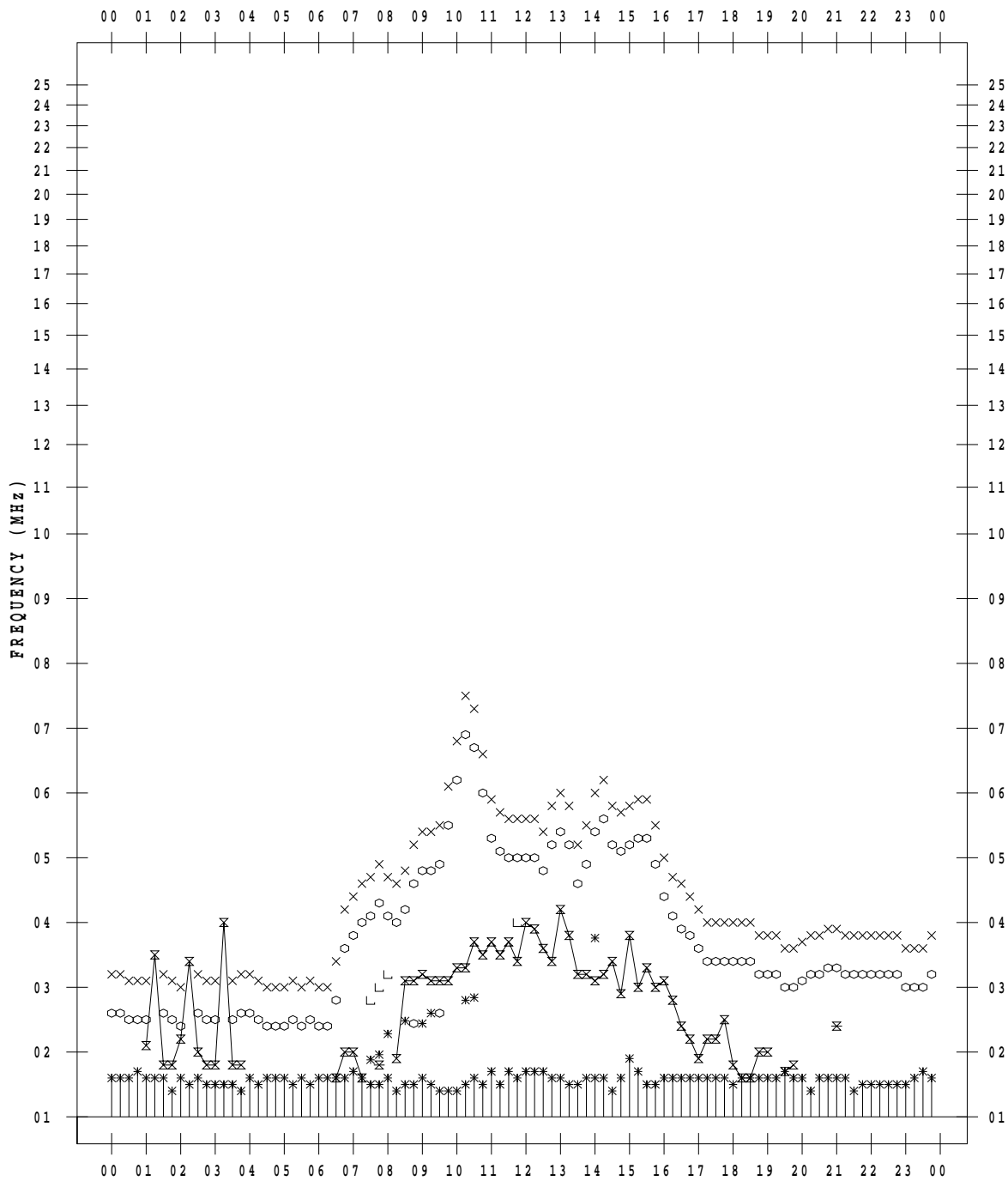
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 9

135 ° E MEAN TIME



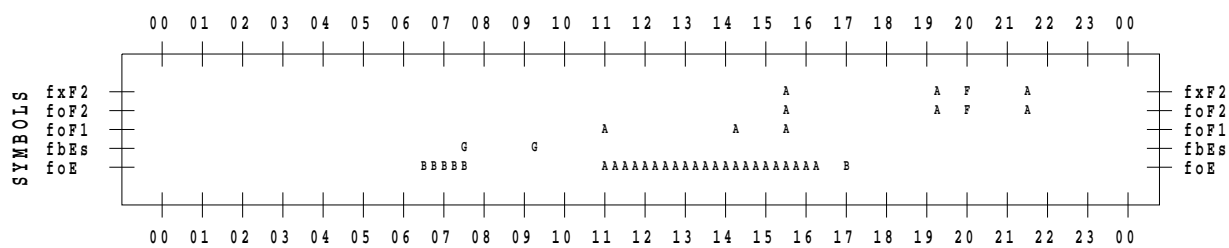
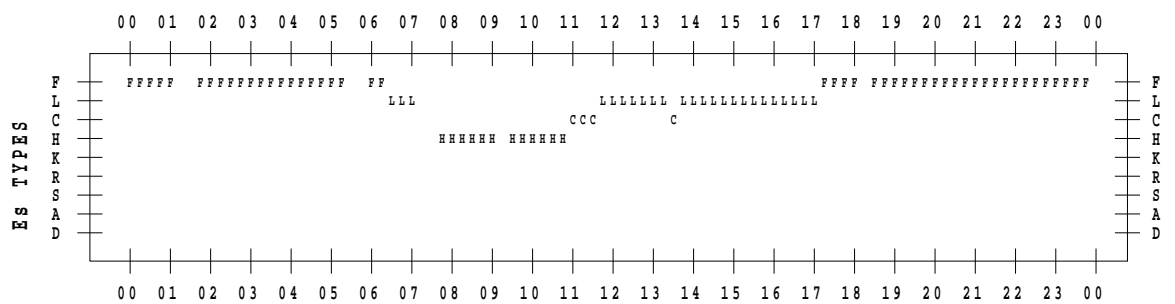
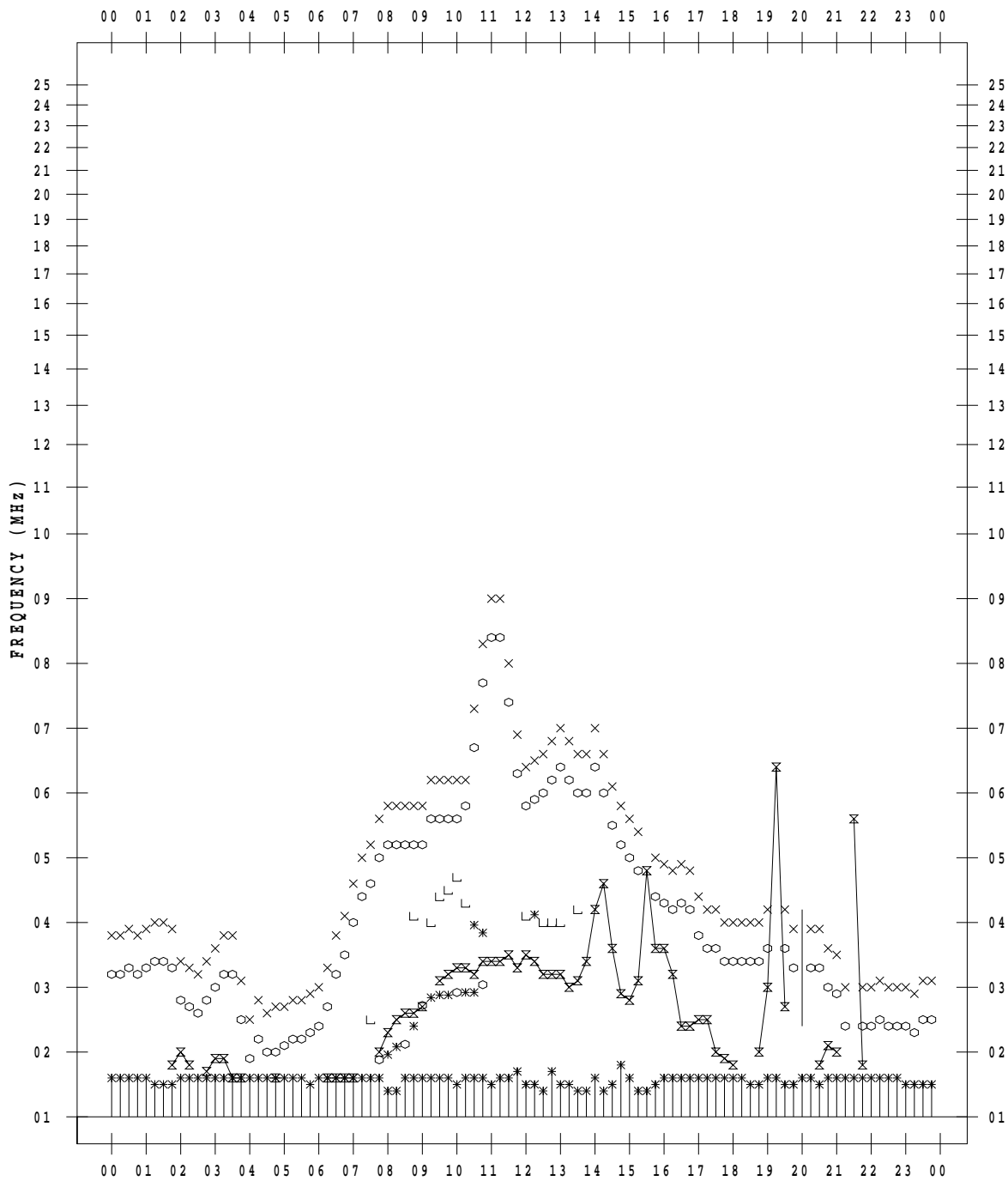
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 10

135 ° E MEAN TIME



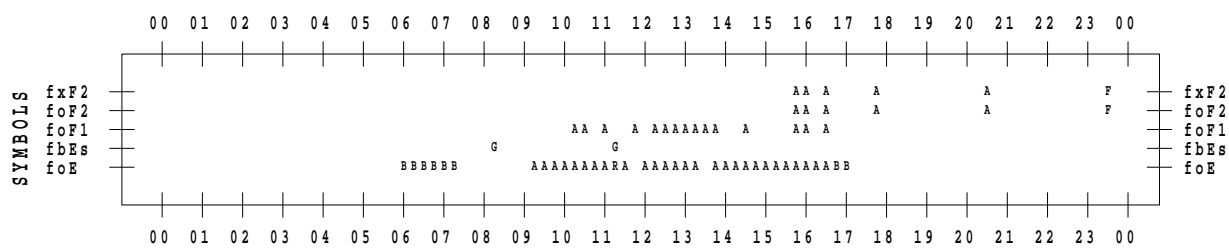
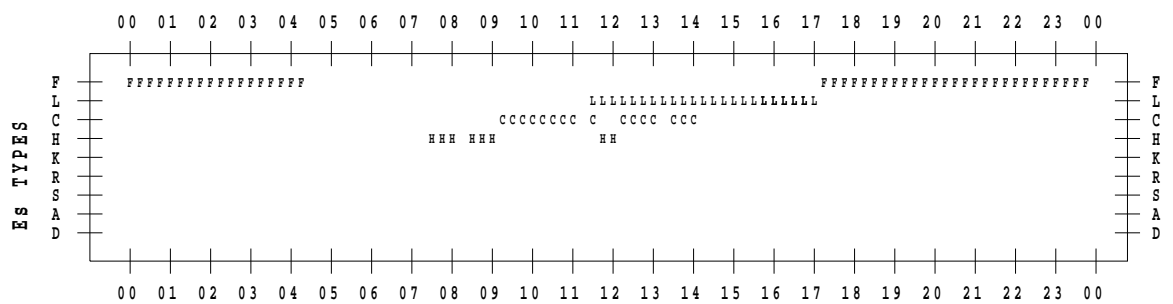
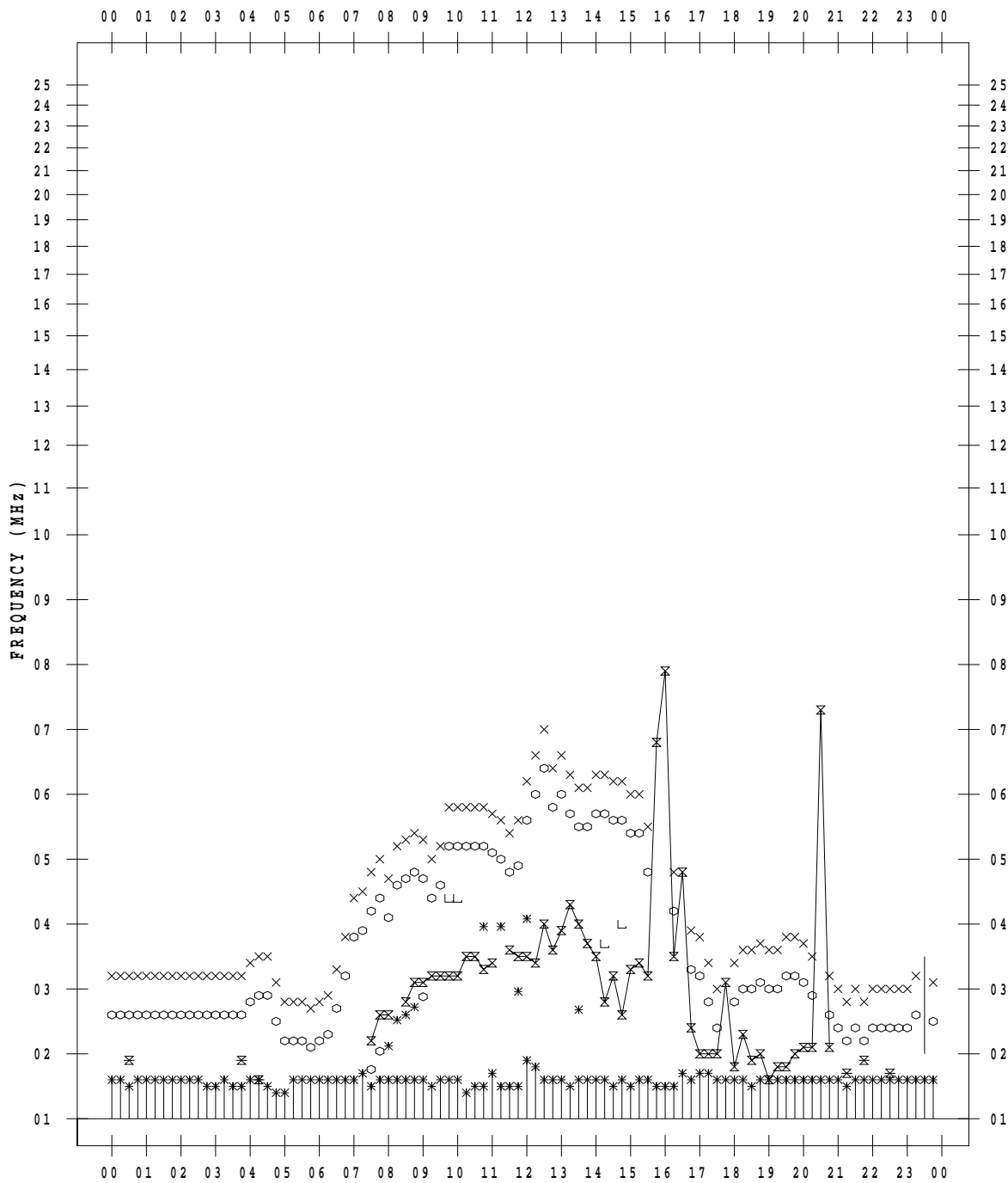
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 11

135 ° E MEAN TIME



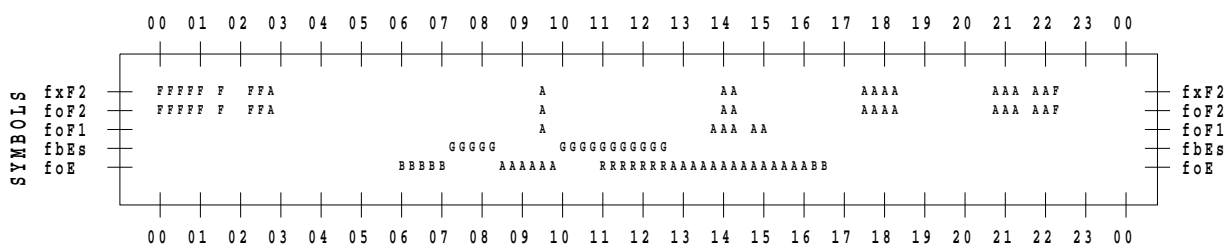
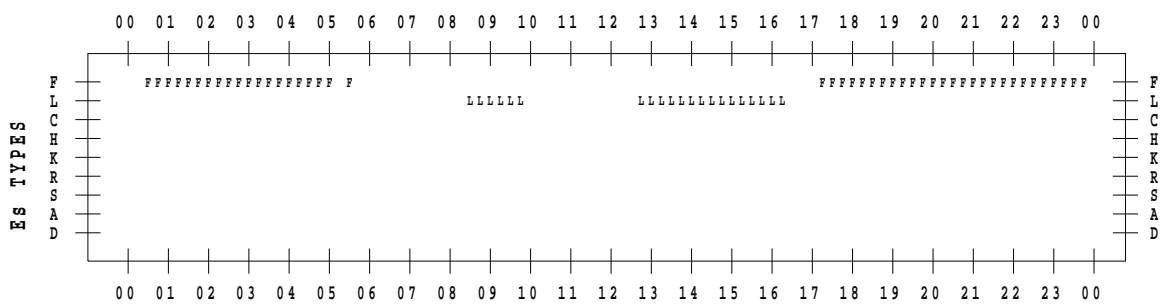
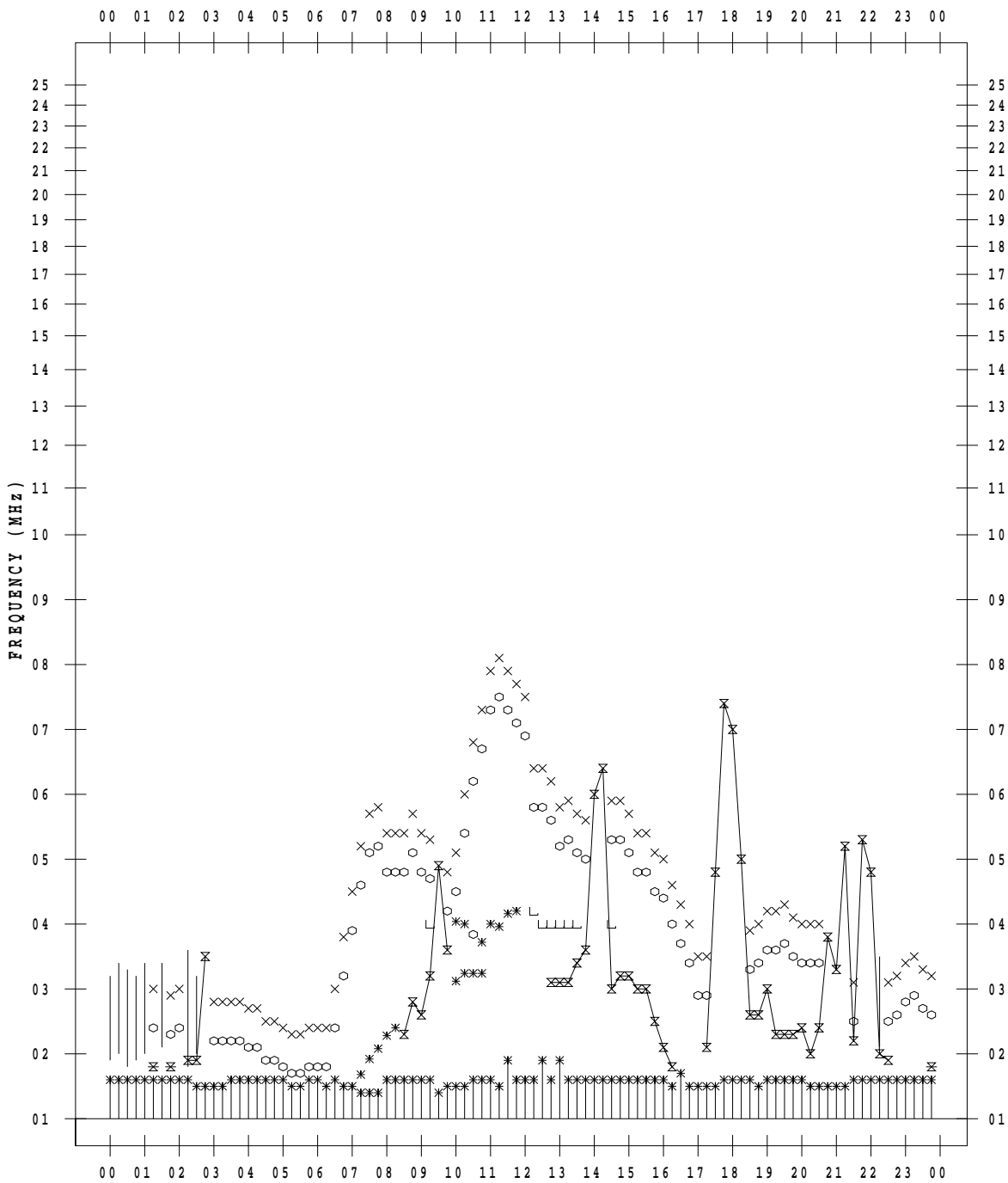
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 12

135 ° E MEAN TIME



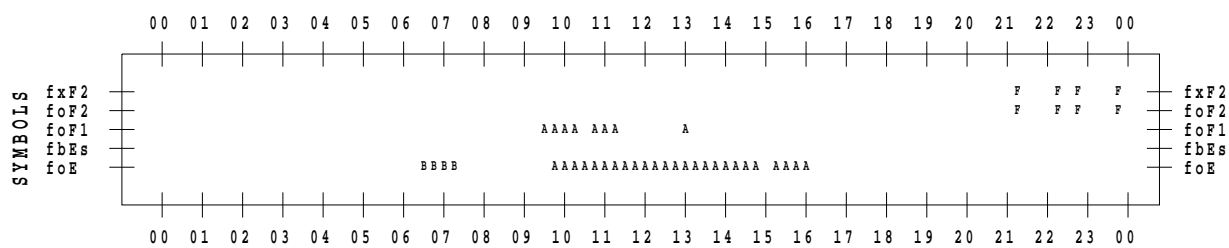
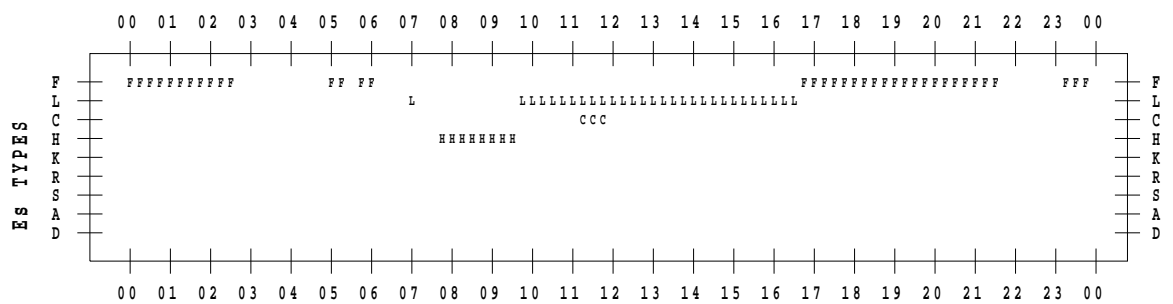
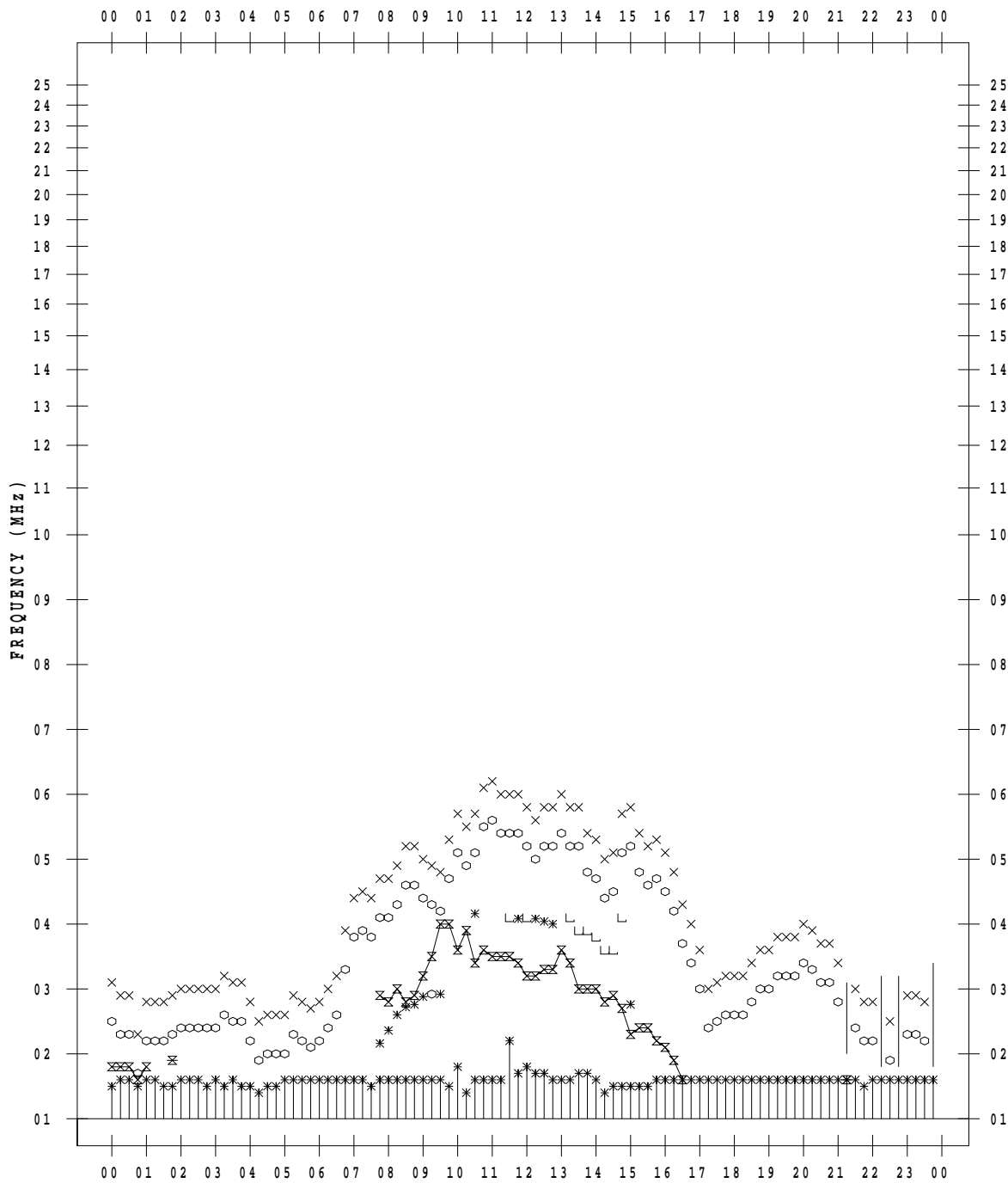
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 13

135 ° E MEAN TIME



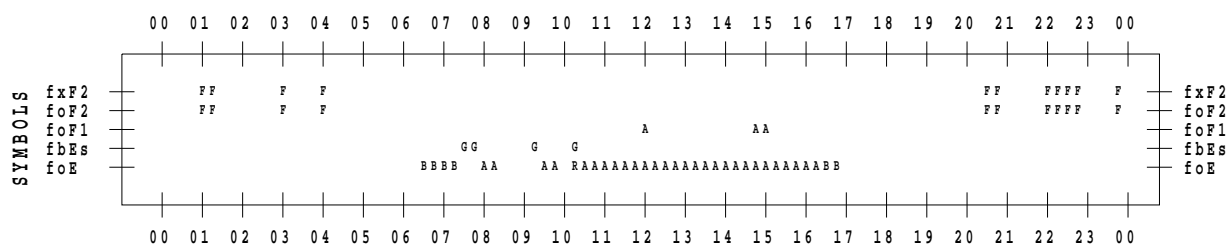
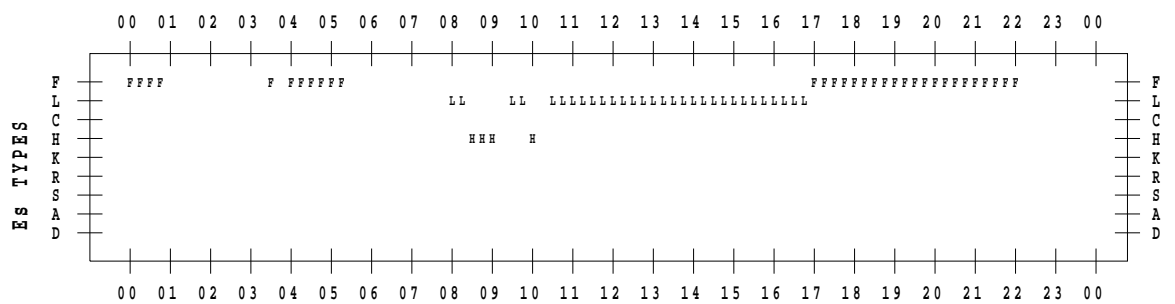
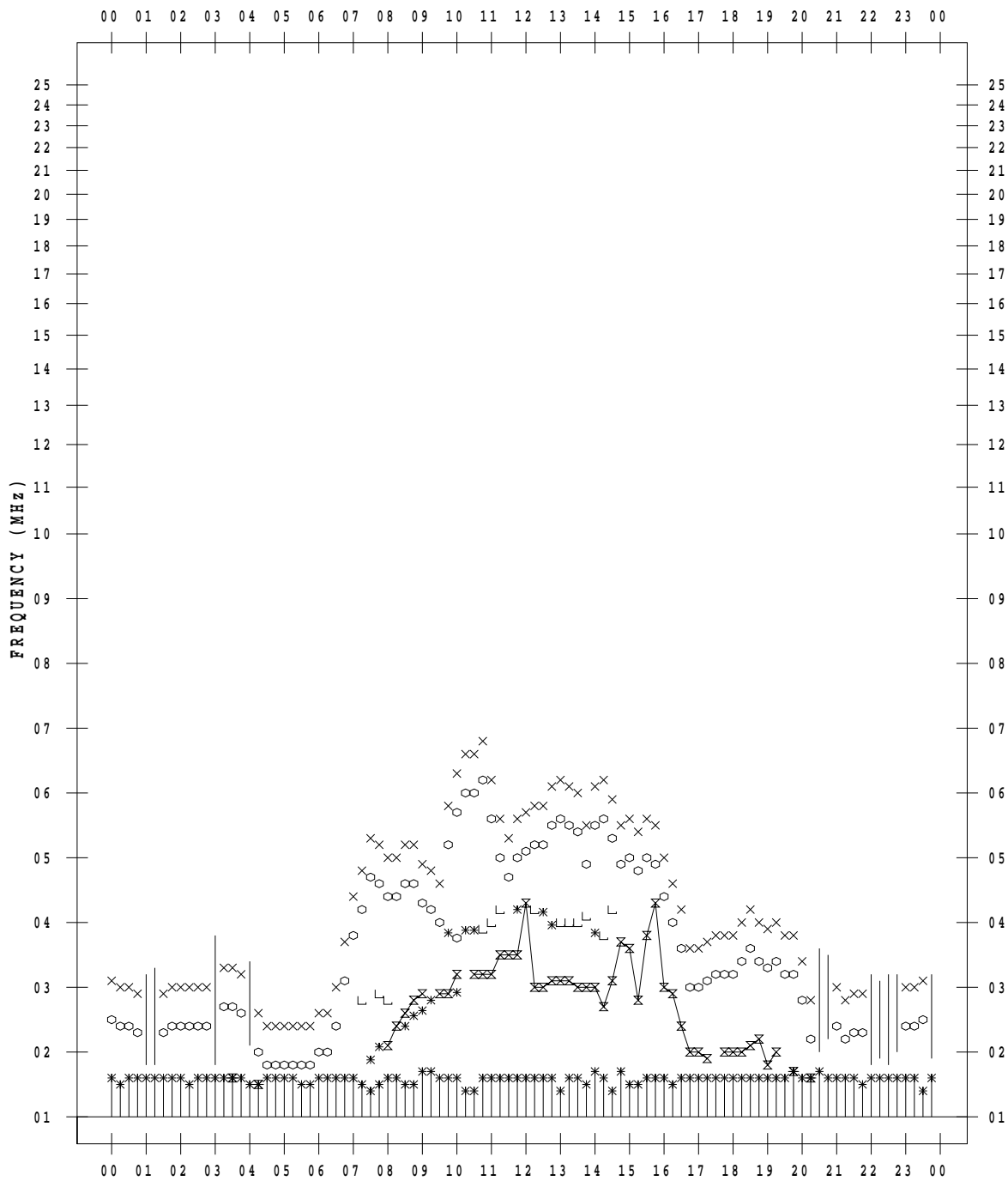
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 14

135 ° E MEAN TIME



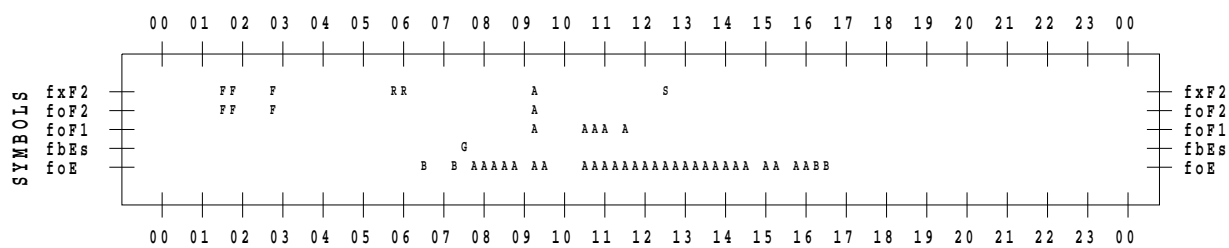
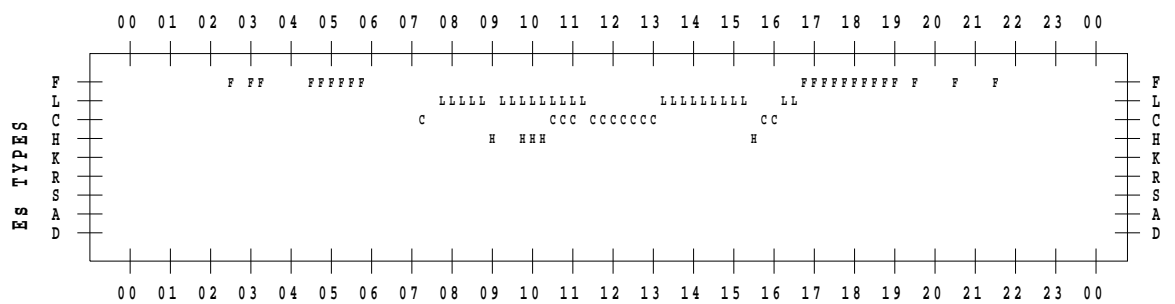
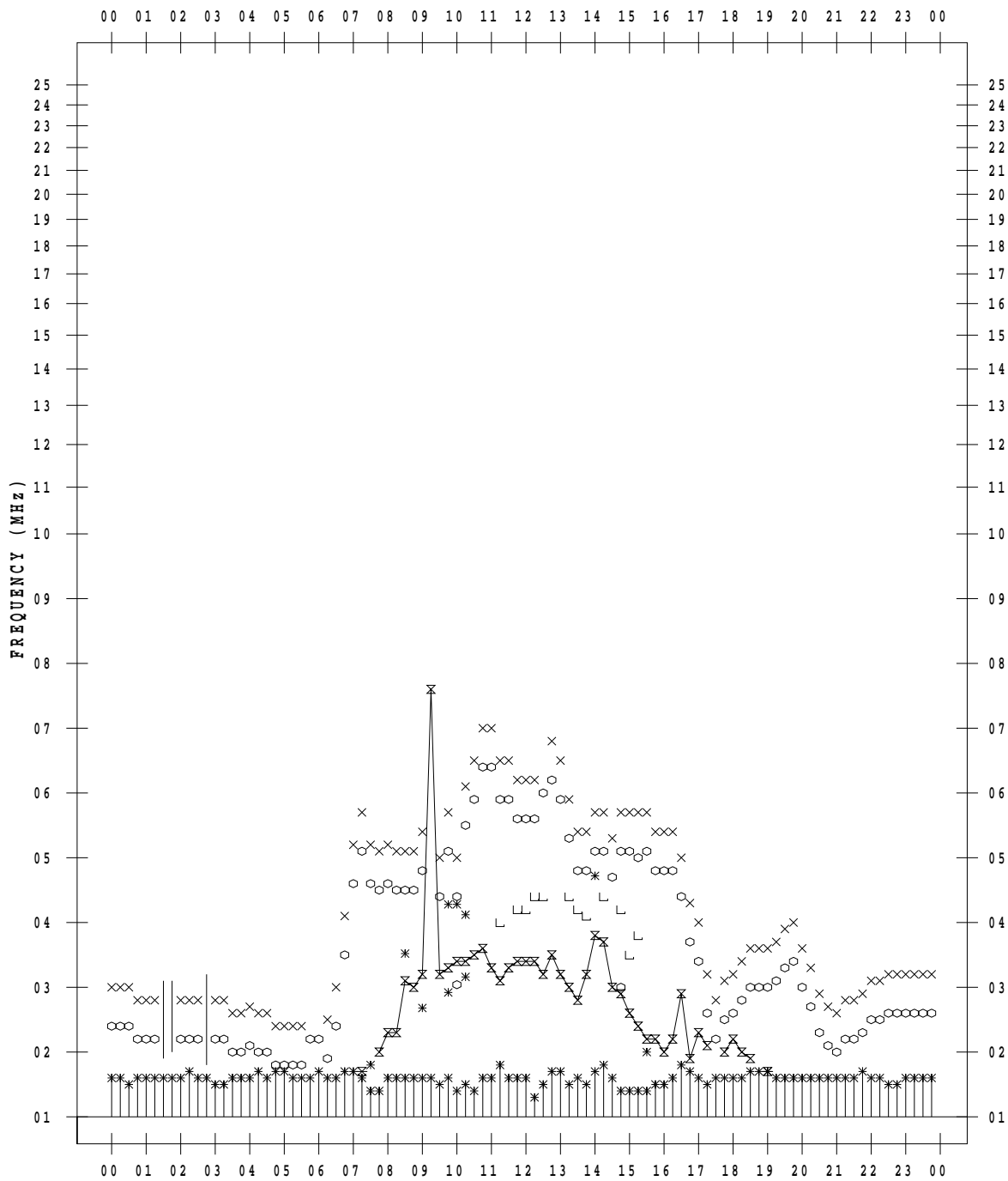
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 15

135 ° E MEAN TIME



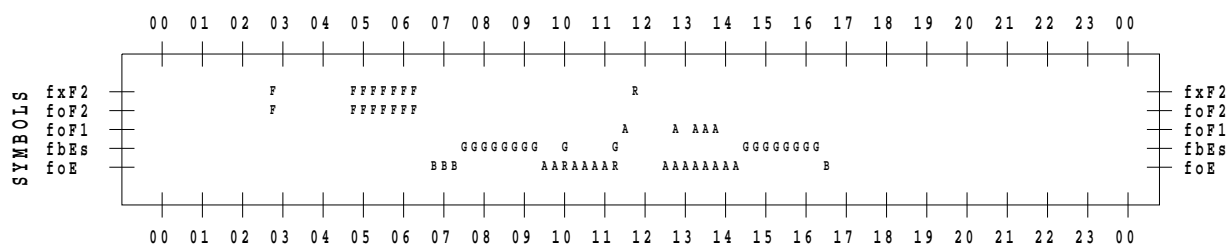
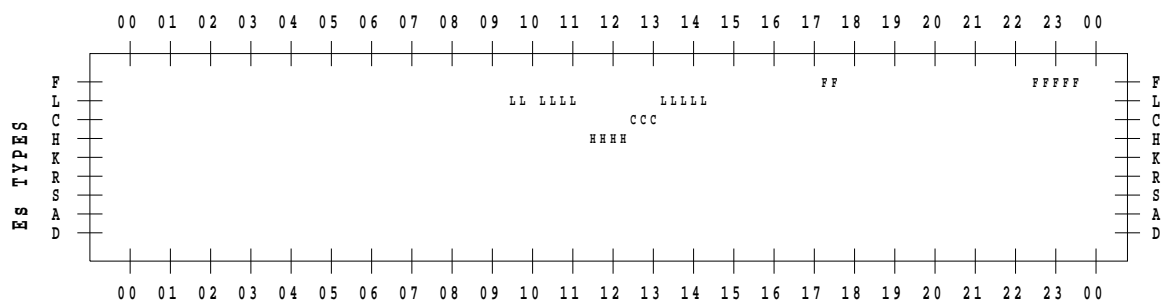
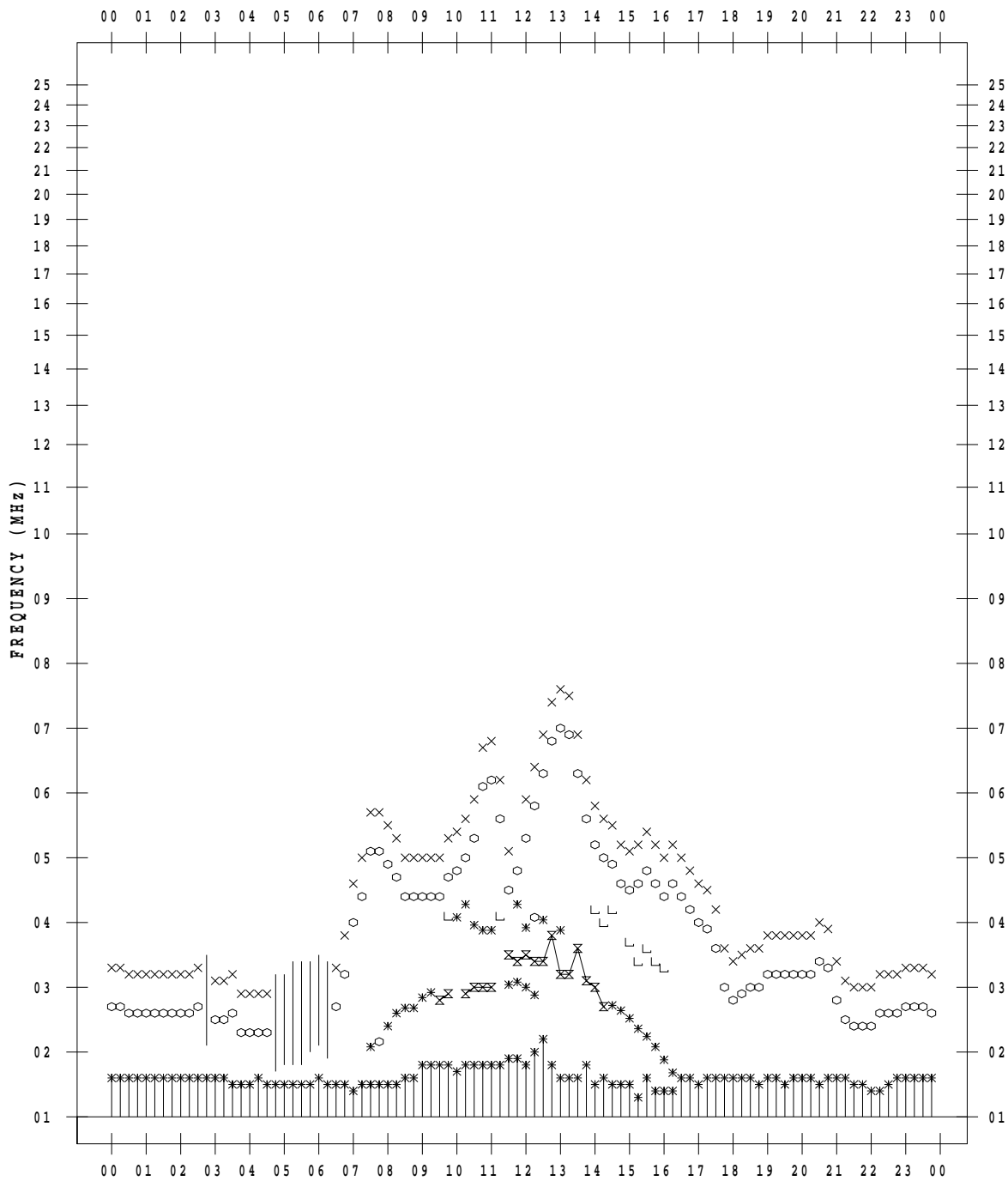
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1/16

135 ° E MEAN TIME



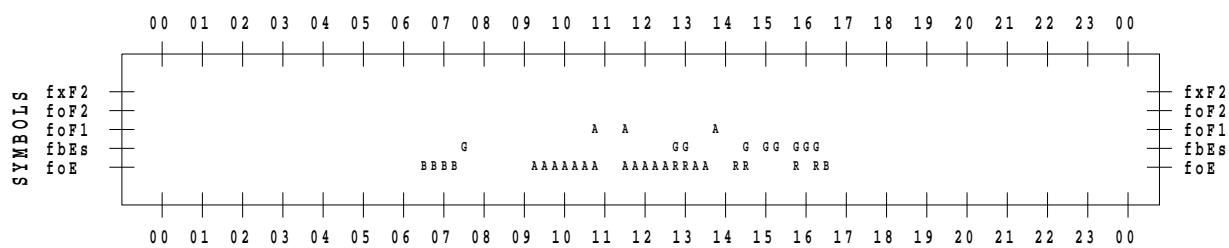
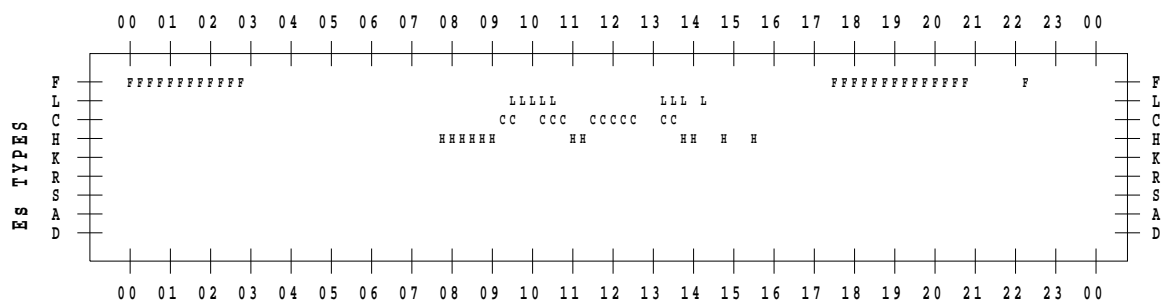
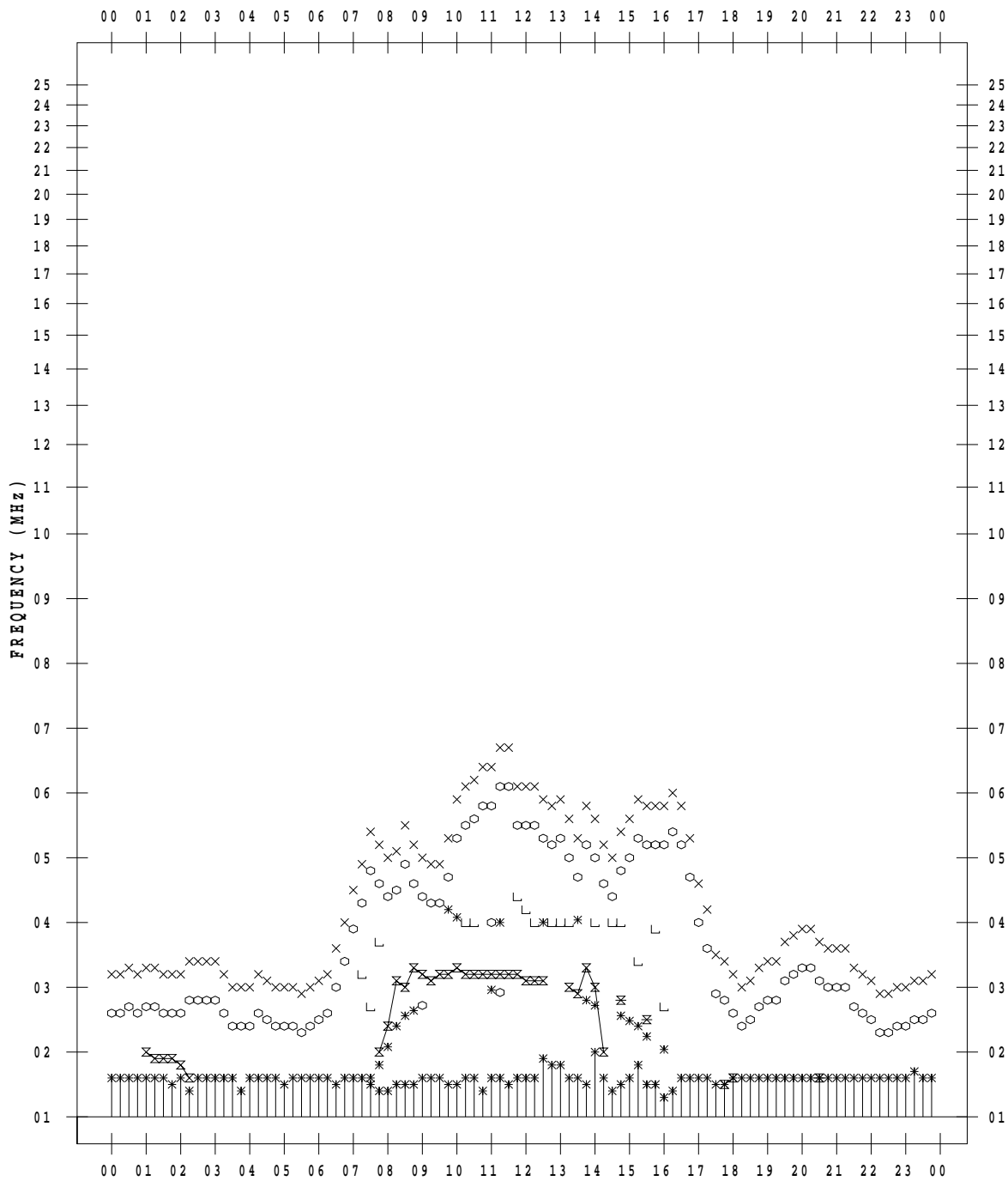
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 17

135 ° E MEAN TIME



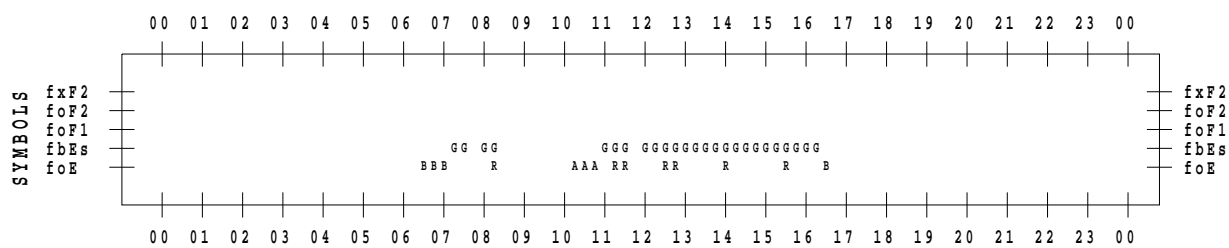
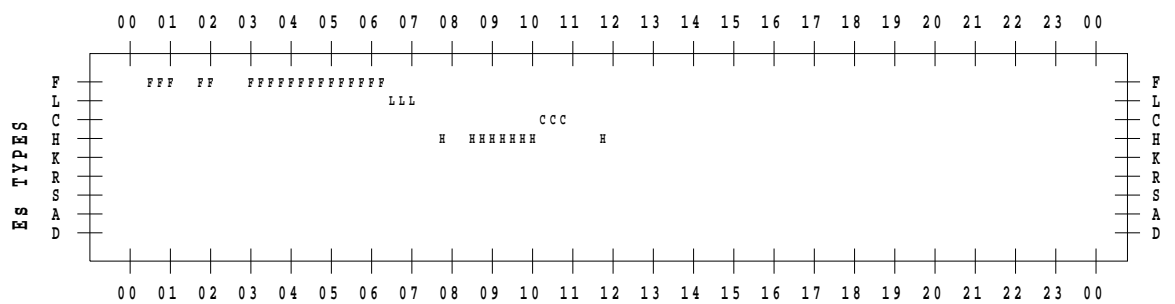
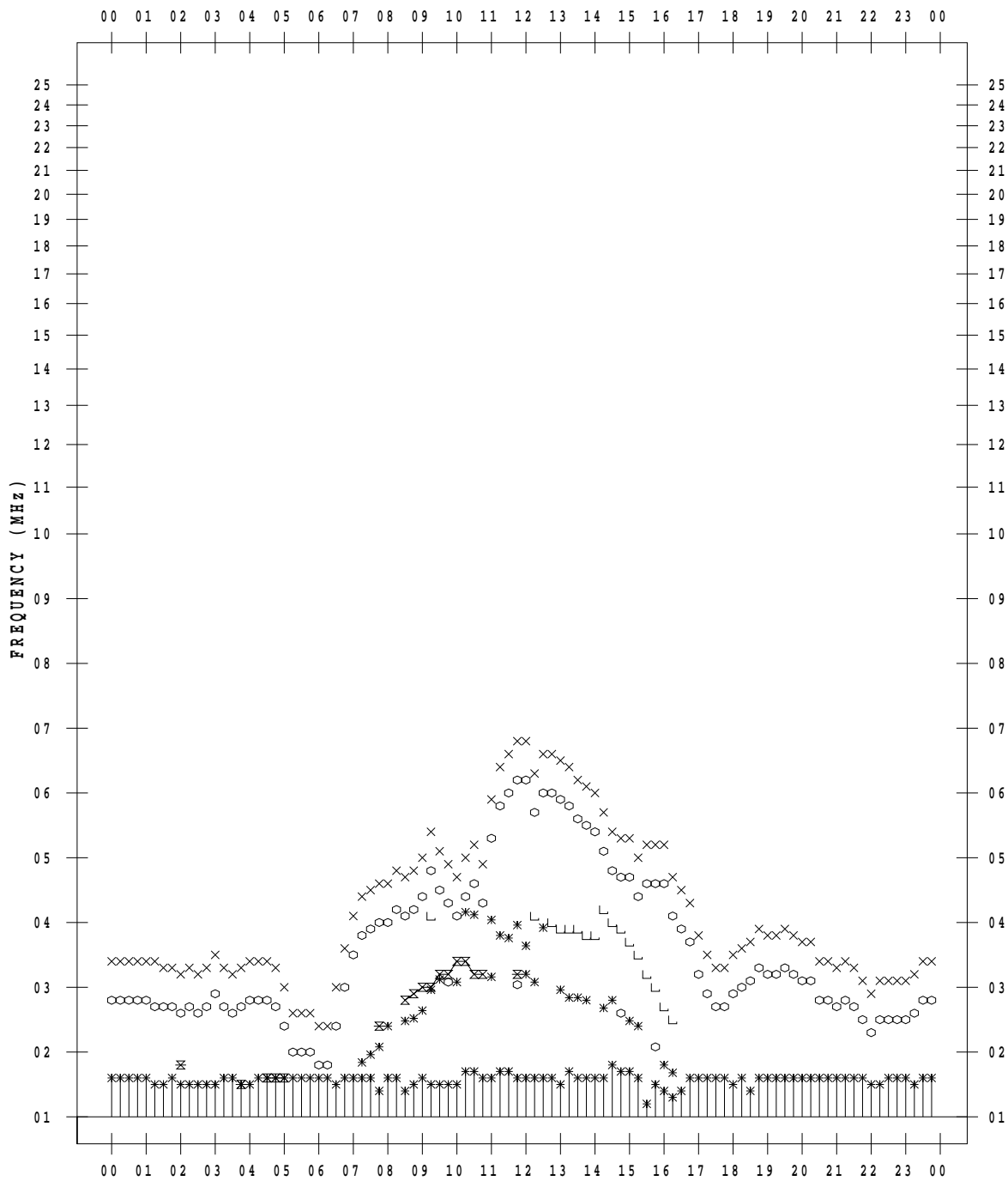
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 18

135 ° E MEAN TIME



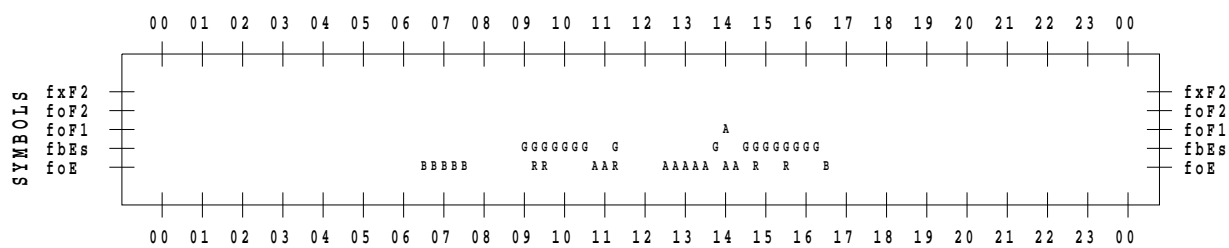
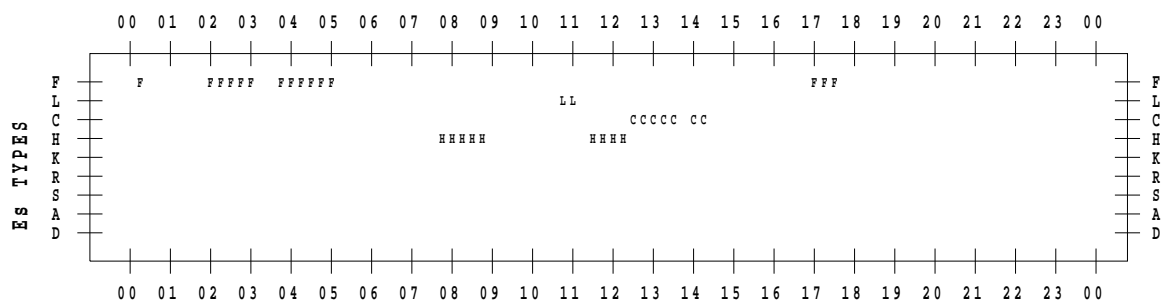
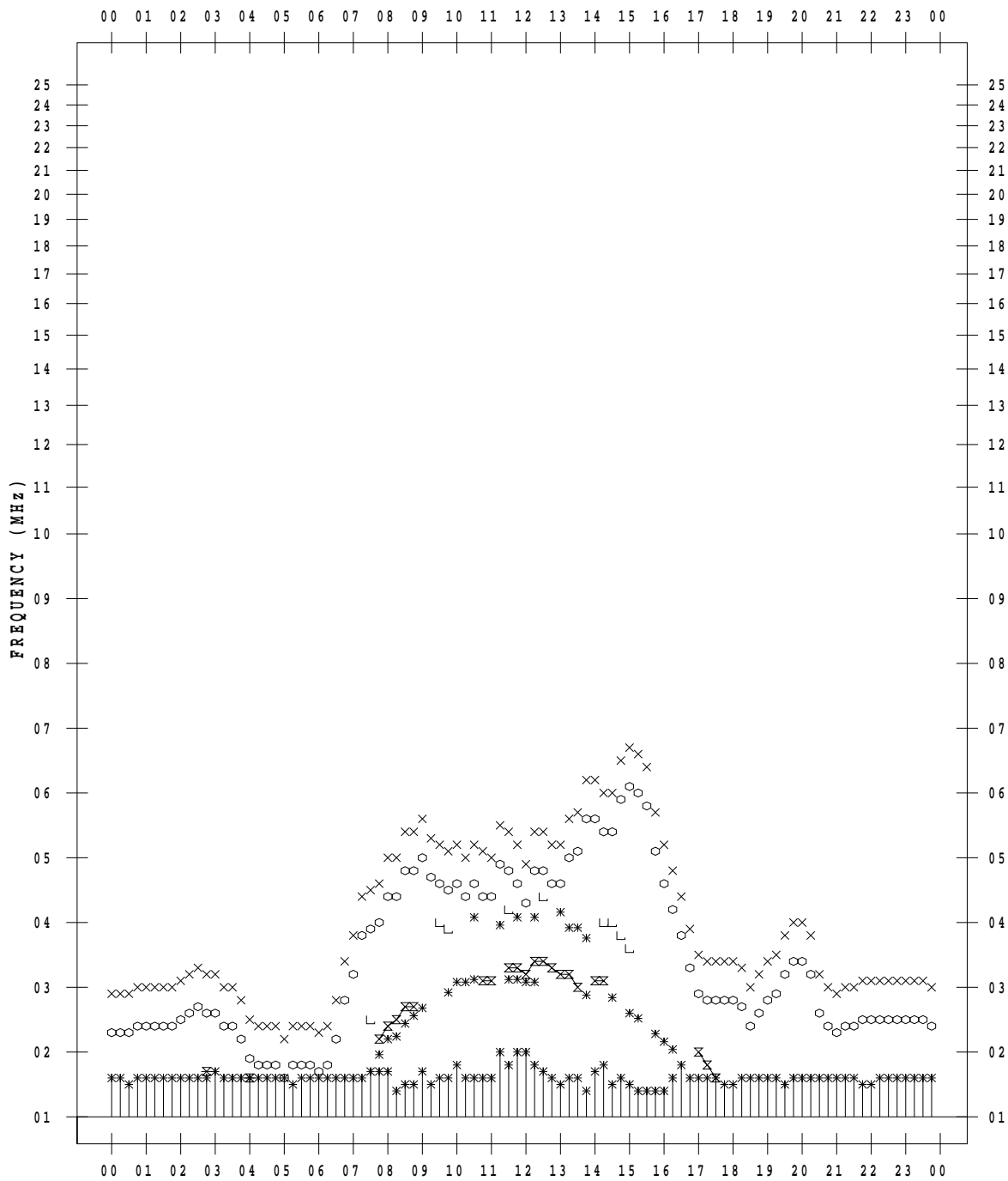
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 20

135 ° E MEAN TIME



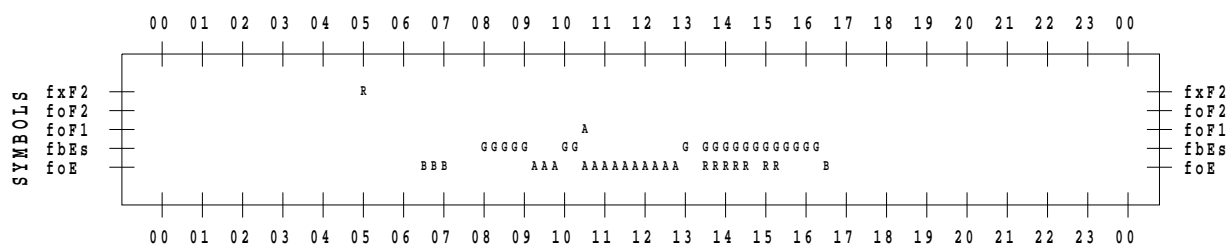
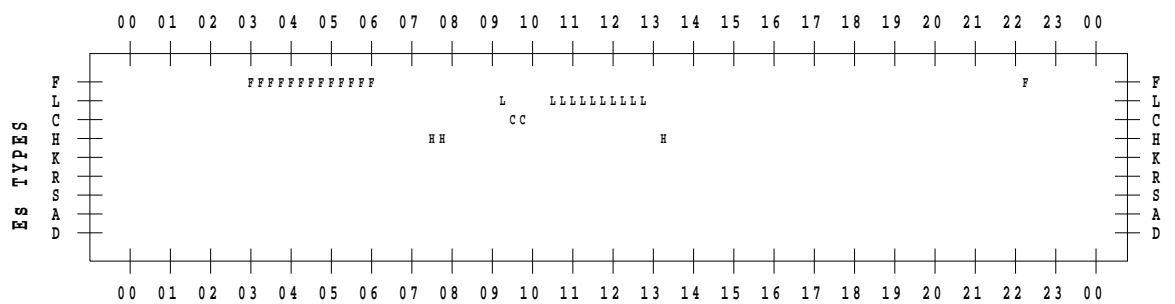
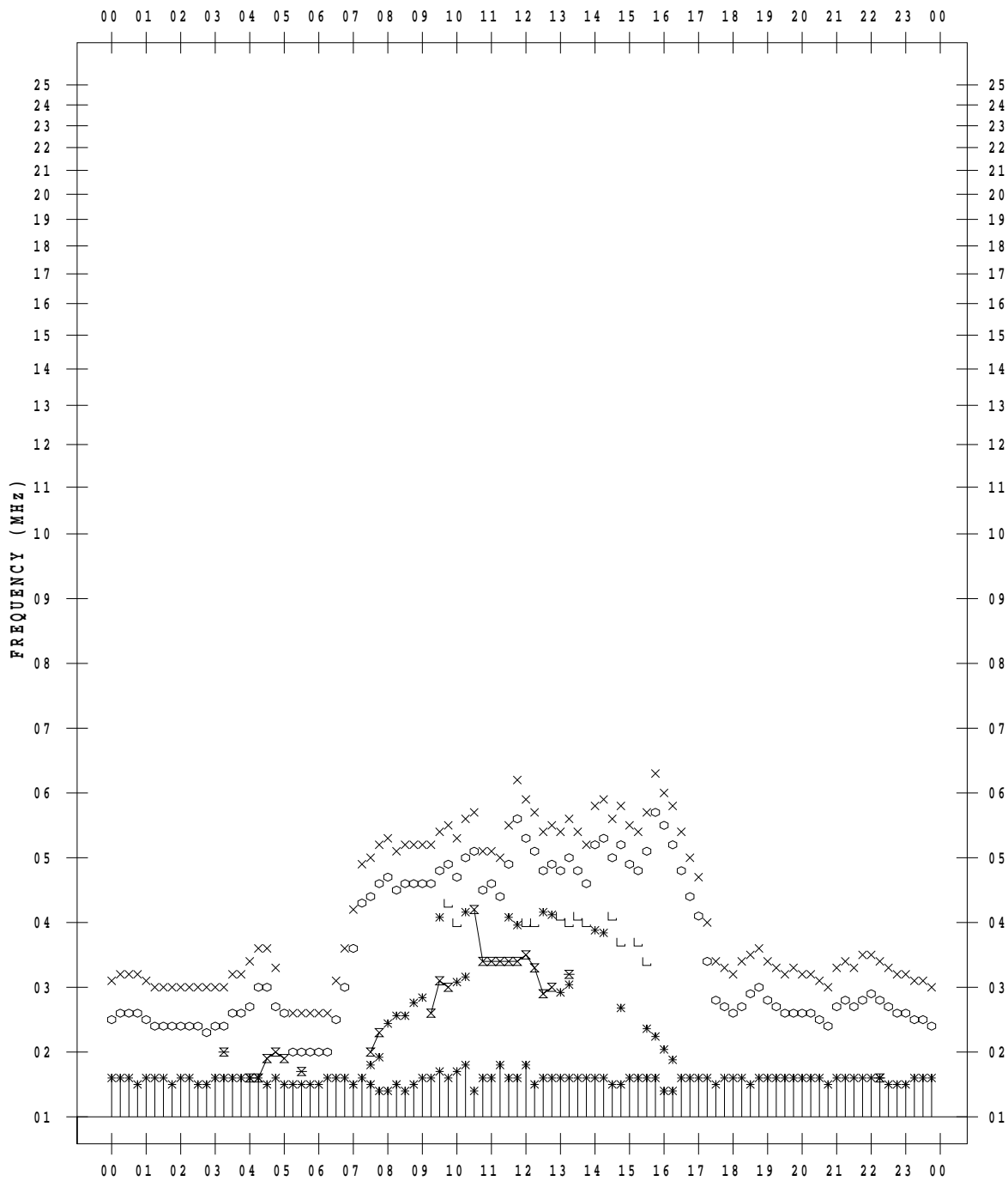
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 21

135 ° E MEAN TIME



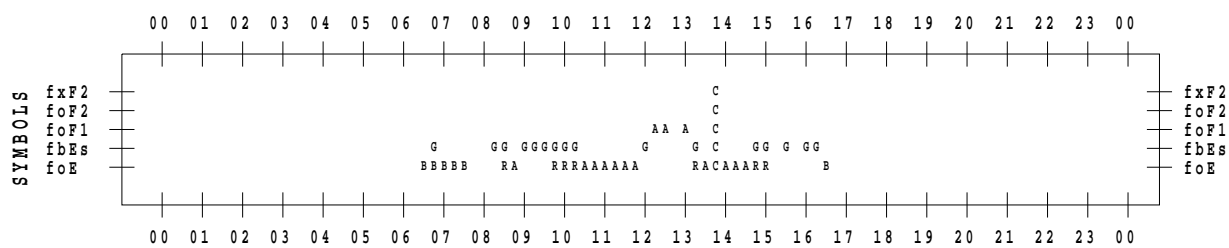
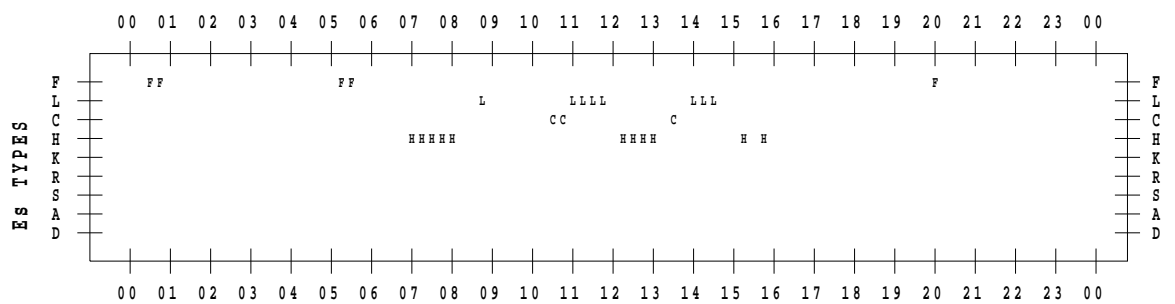
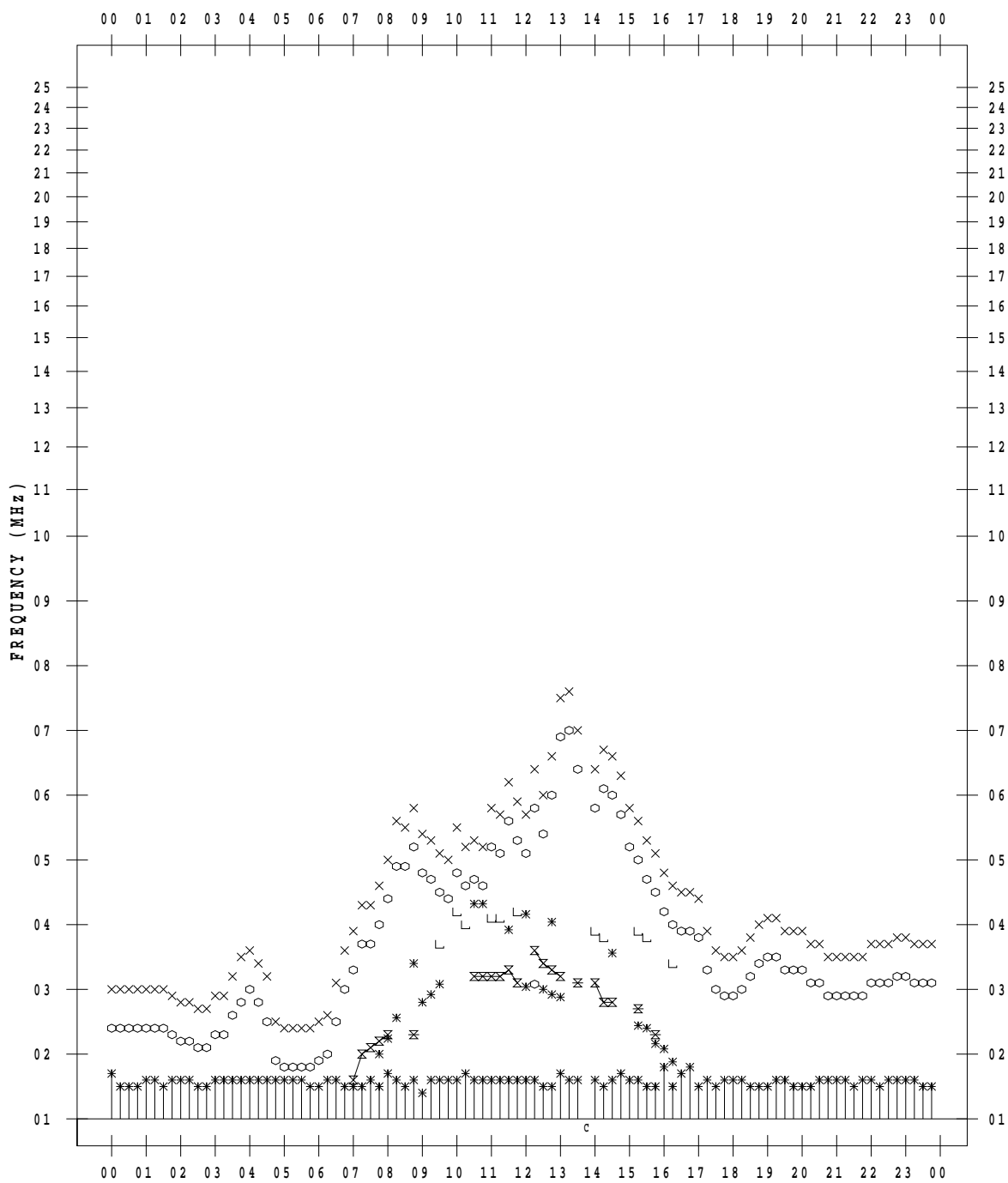
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 22

135 ° E MEAN TIME



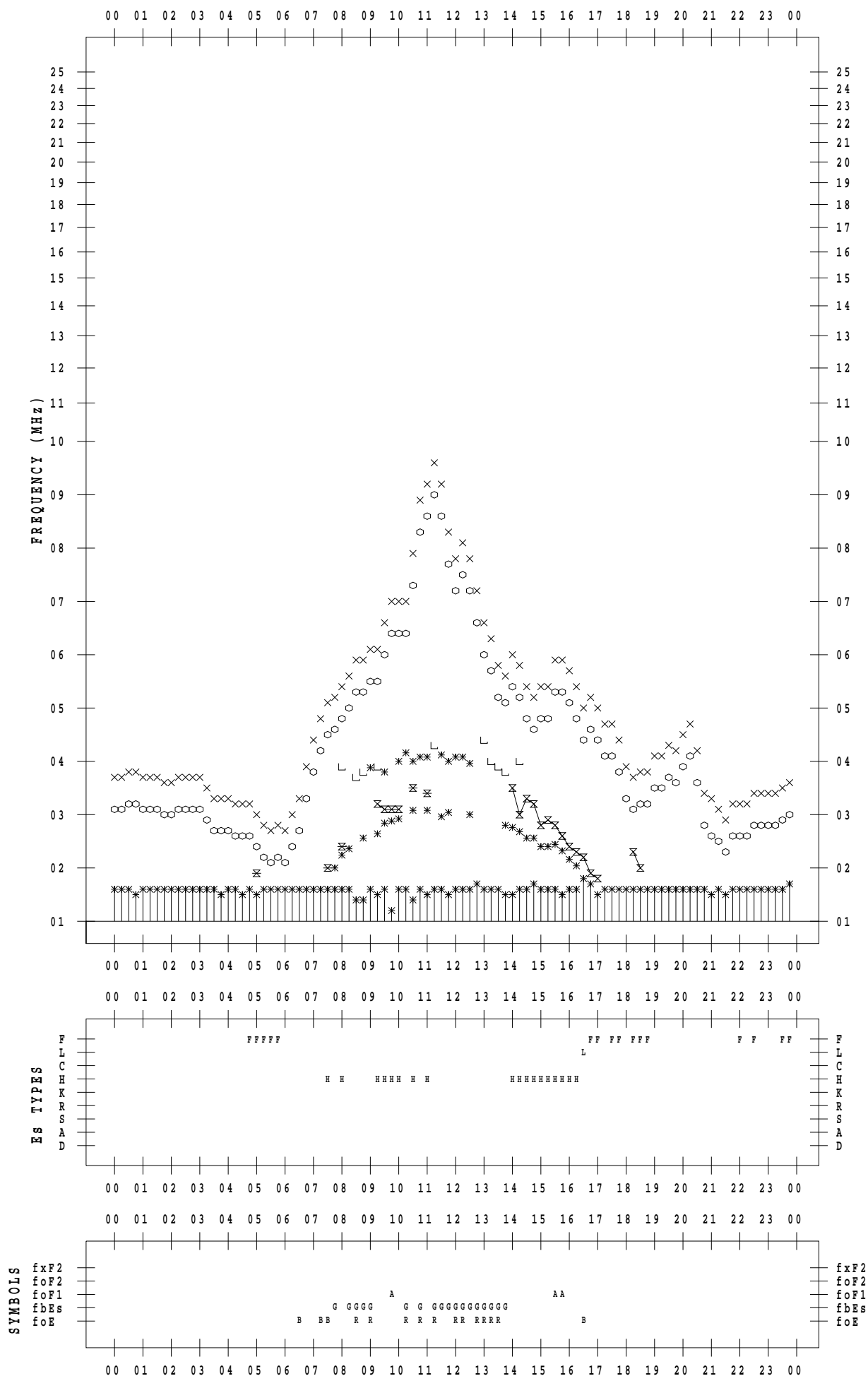
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 23

135 ° E MEAN TIME



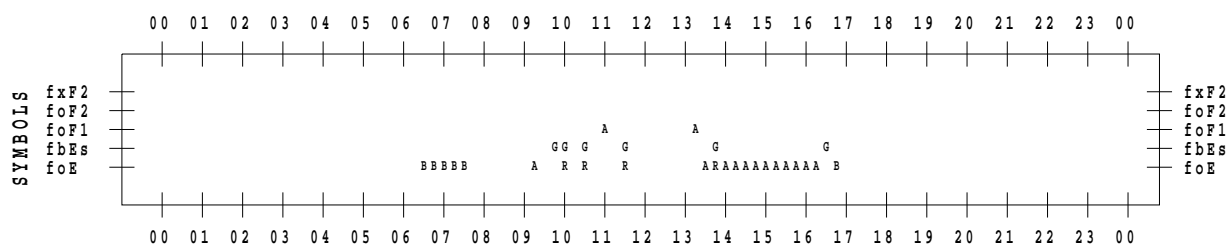
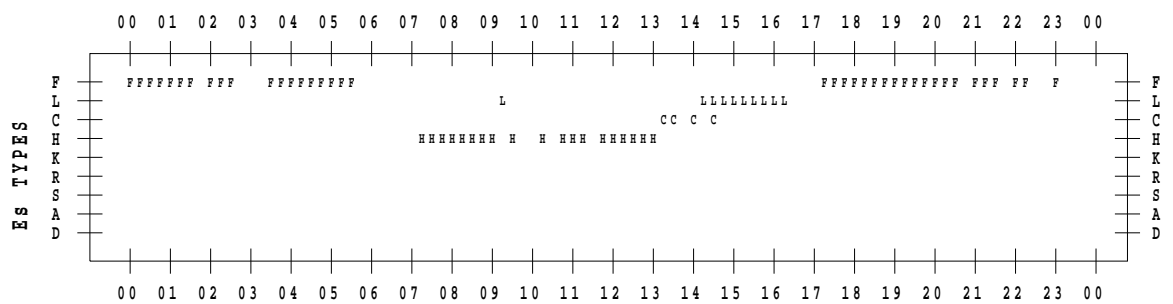
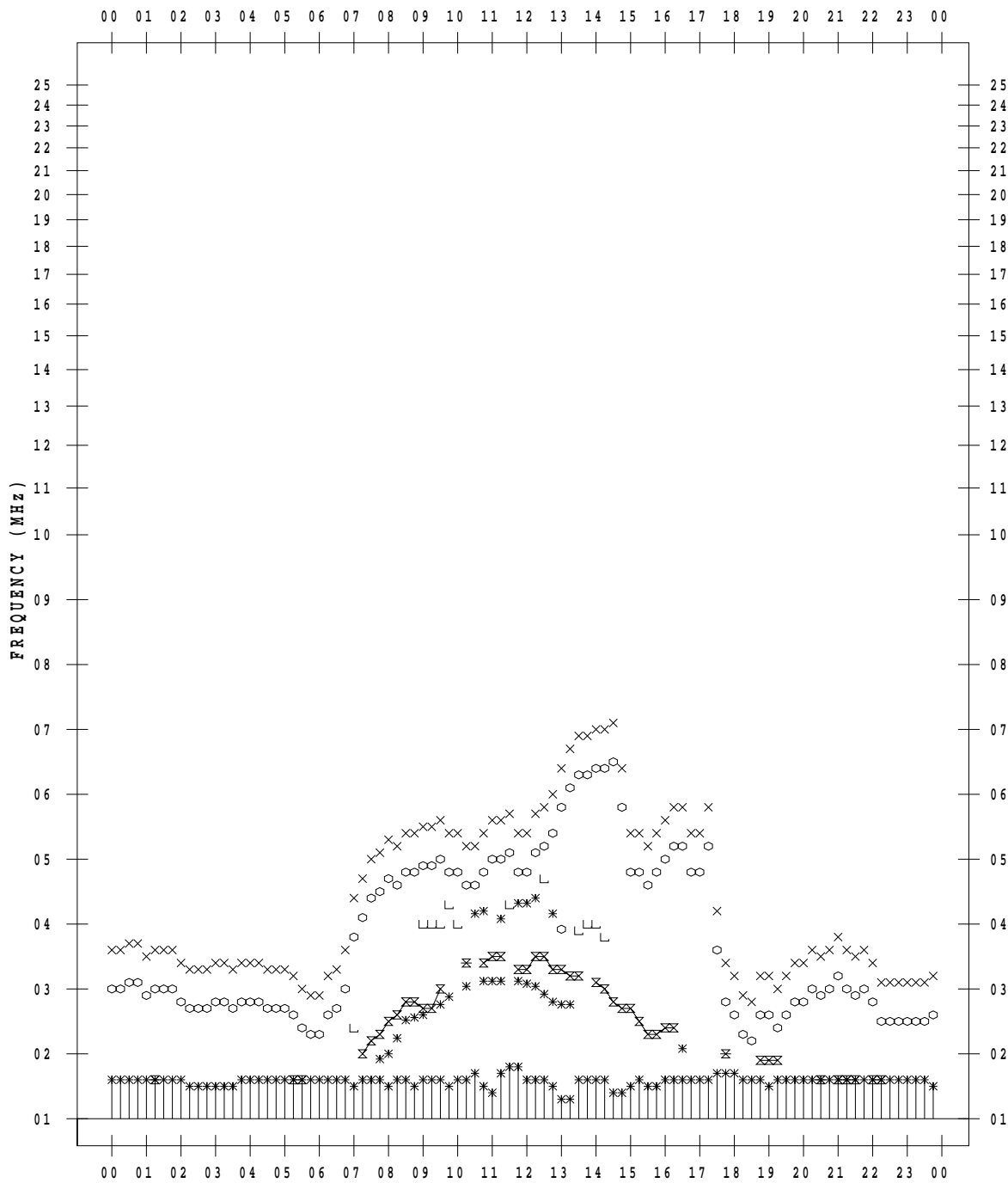
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 24

135 ° E MEAN TIME



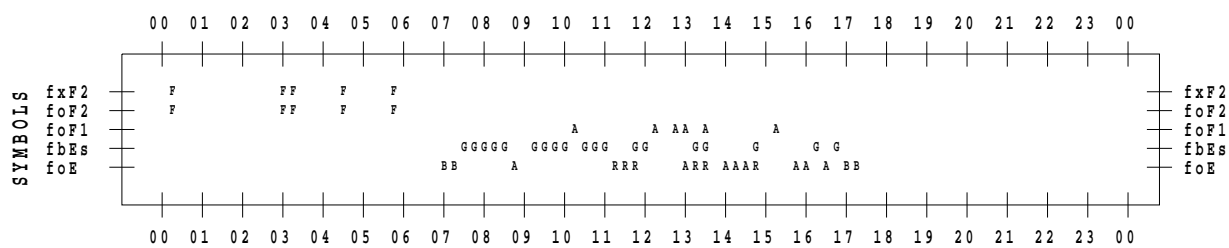
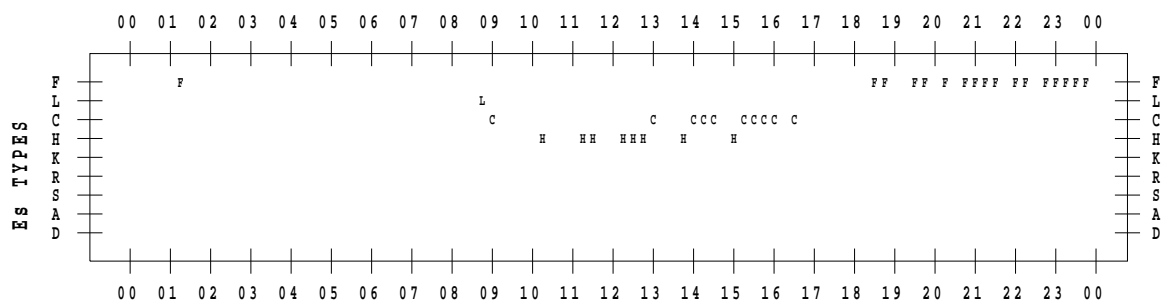
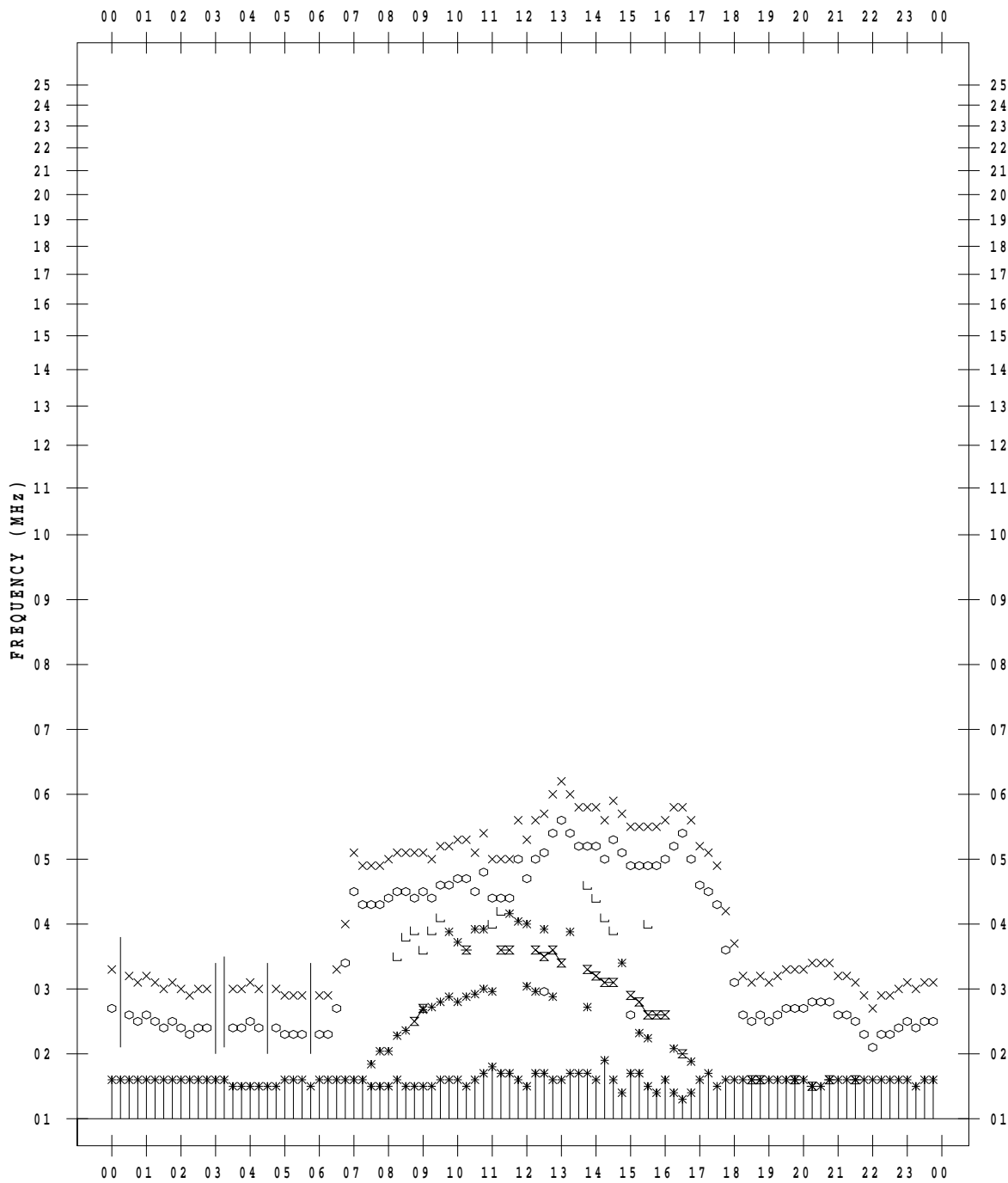
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 26

135 ° E MEAN TIME



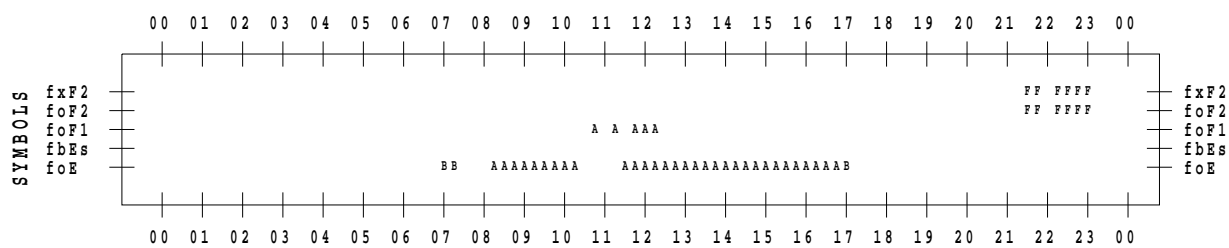
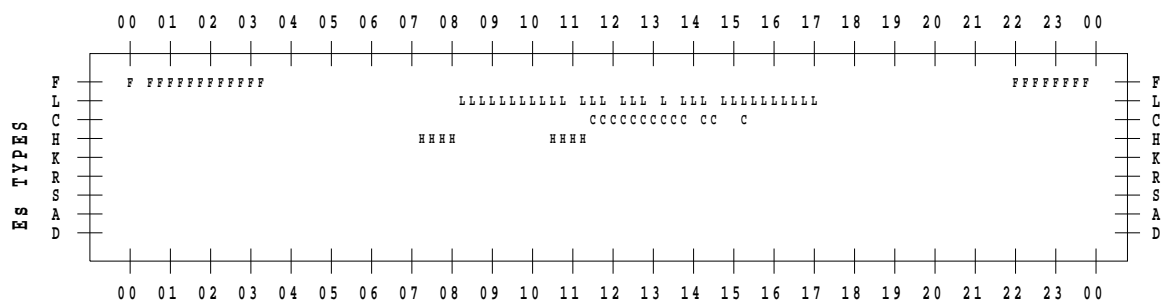
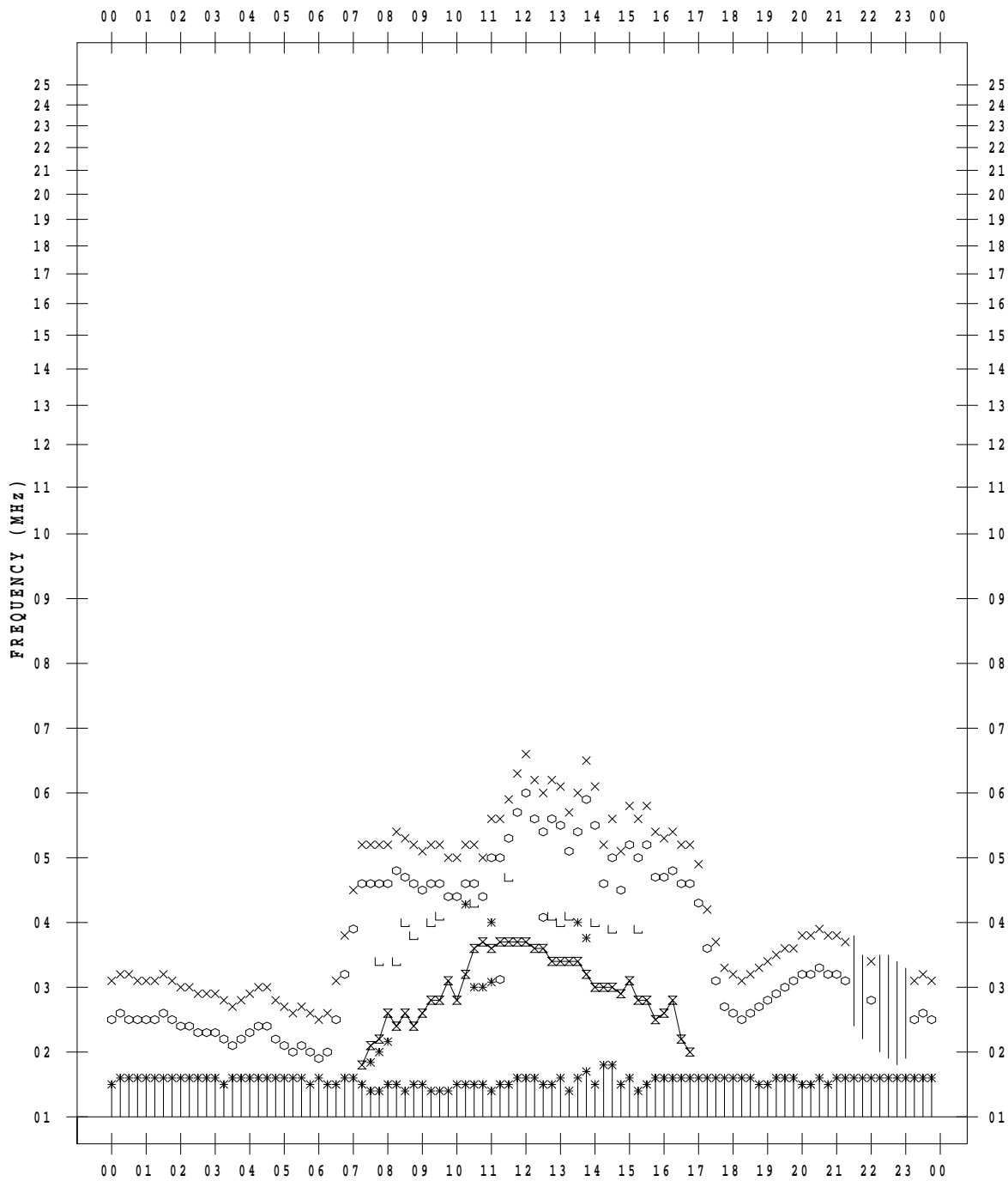
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 27

135 ° E MEAN TIME



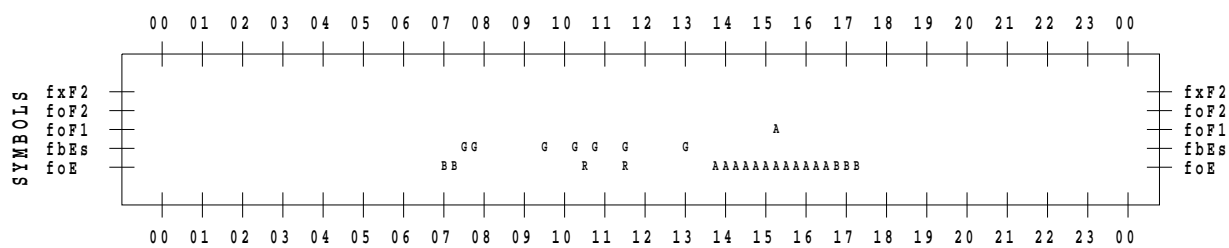
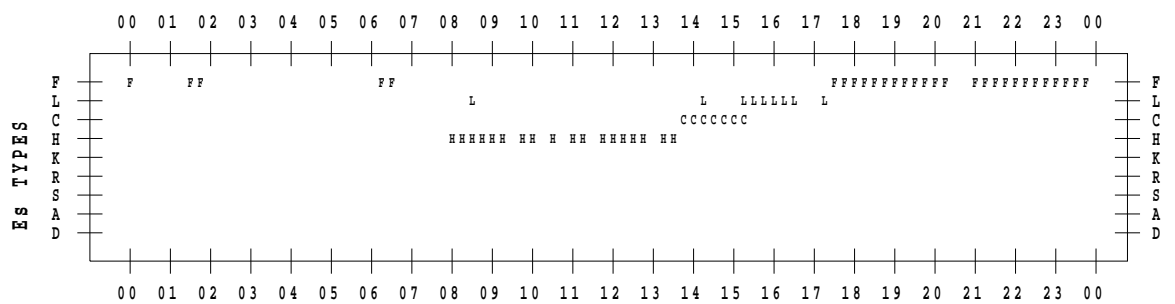
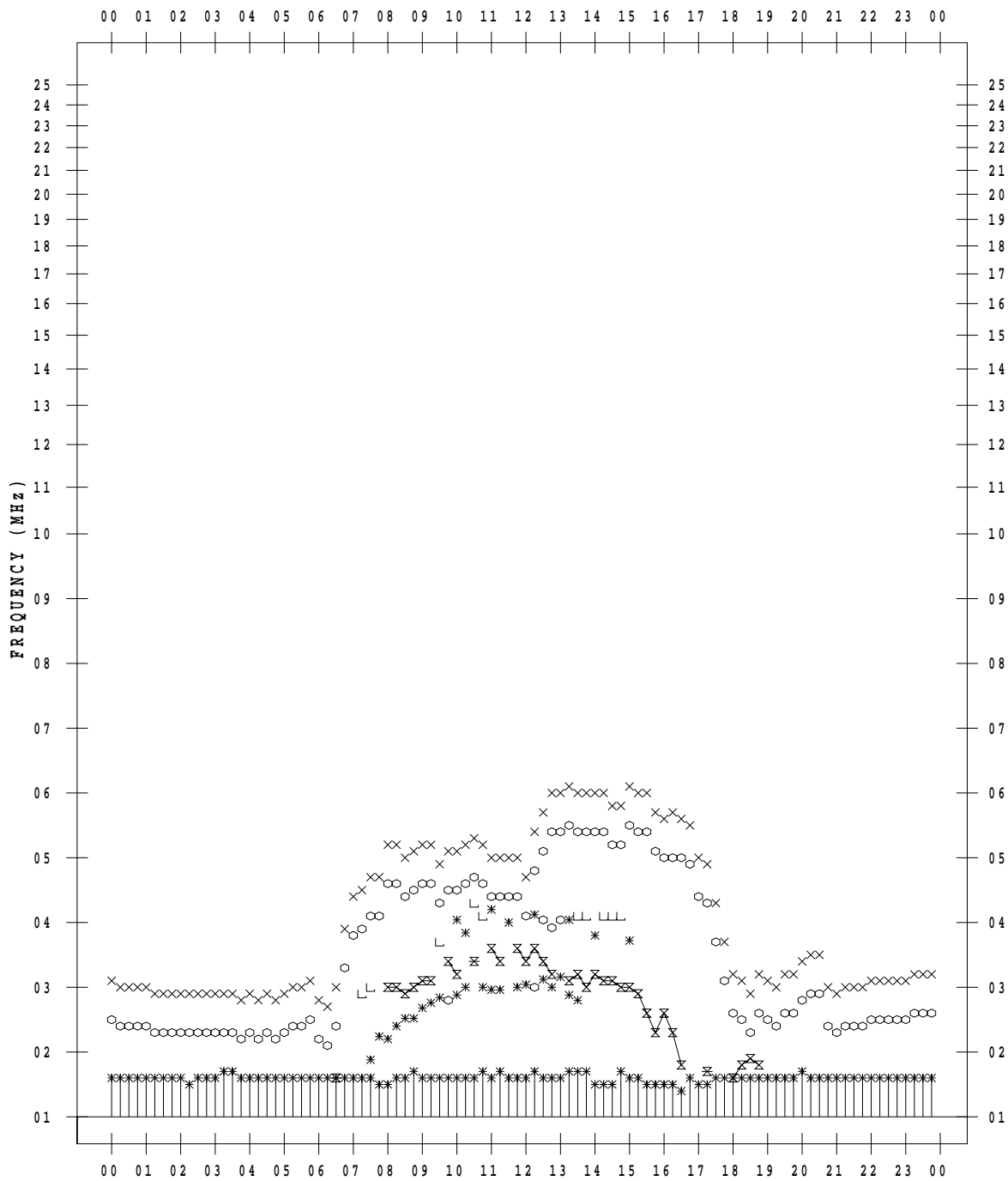
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 28

135 ° E MEAN TIME



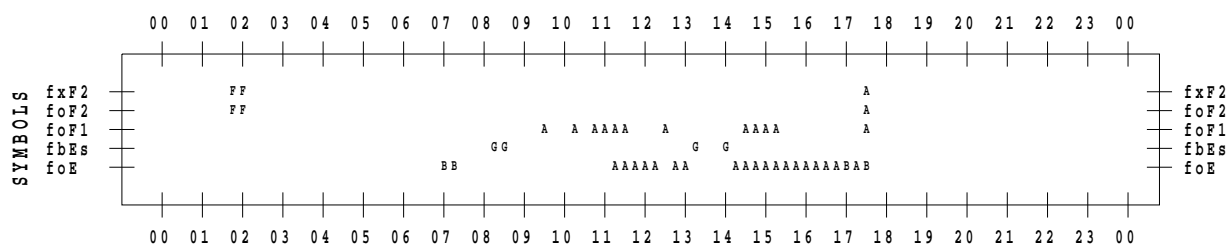
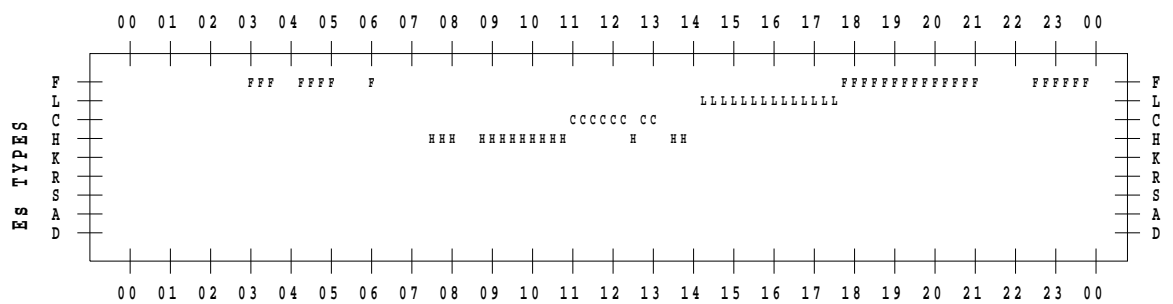
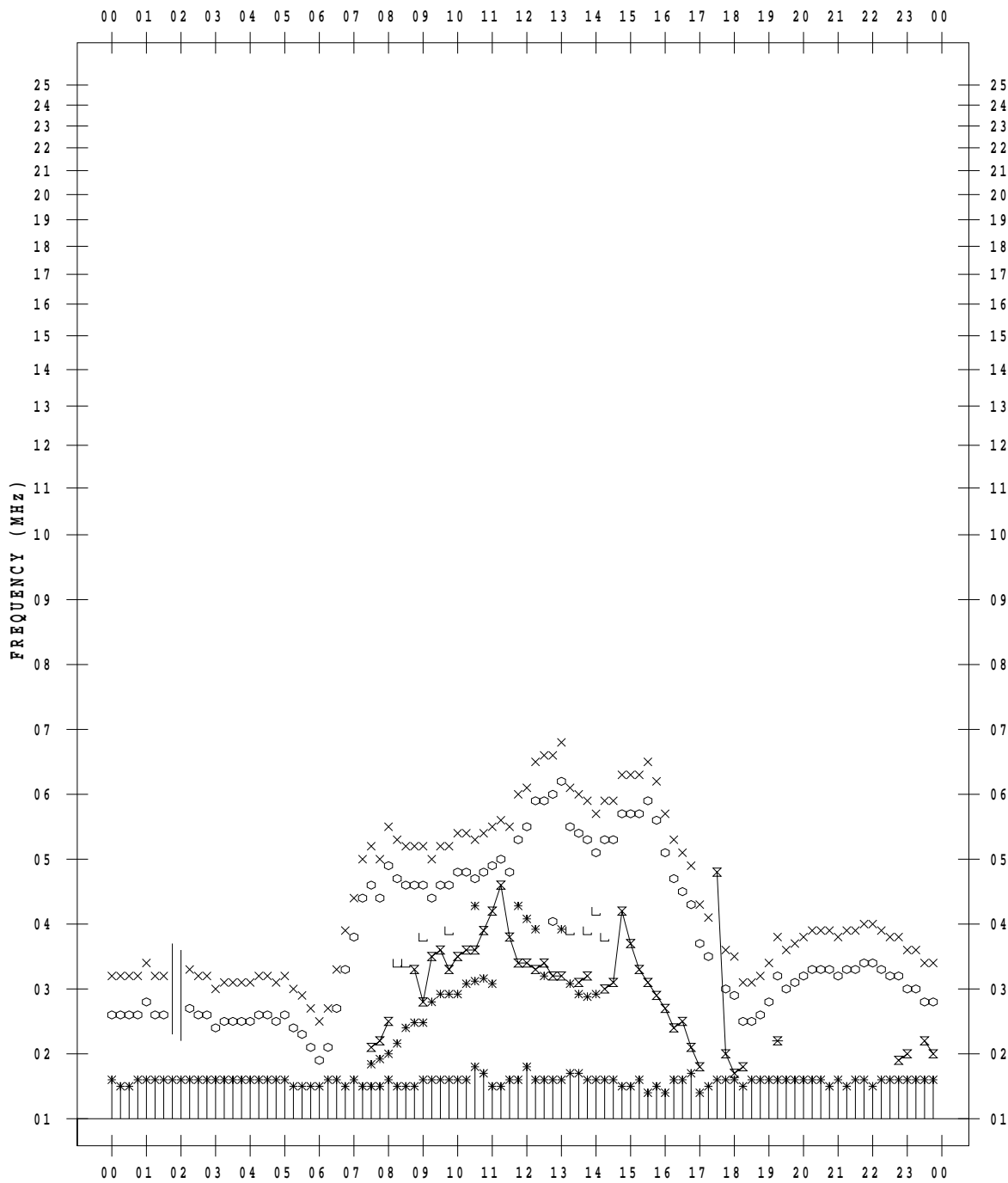
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 29

135 ° E MEAN TIME



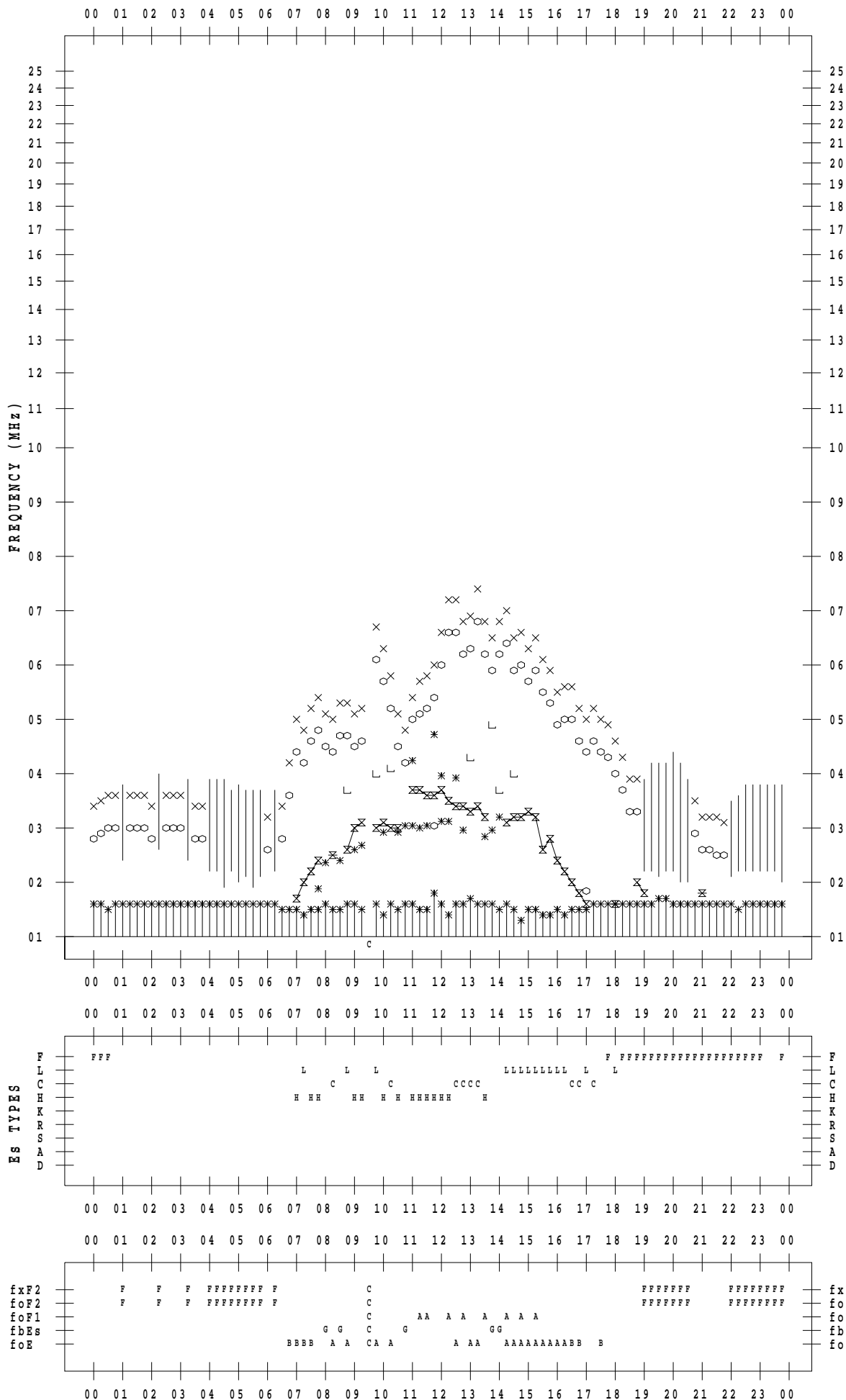
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 30

135 ° E MEAN TIME



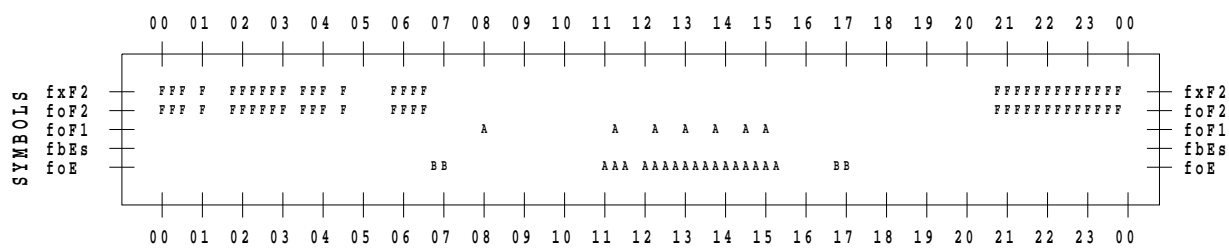
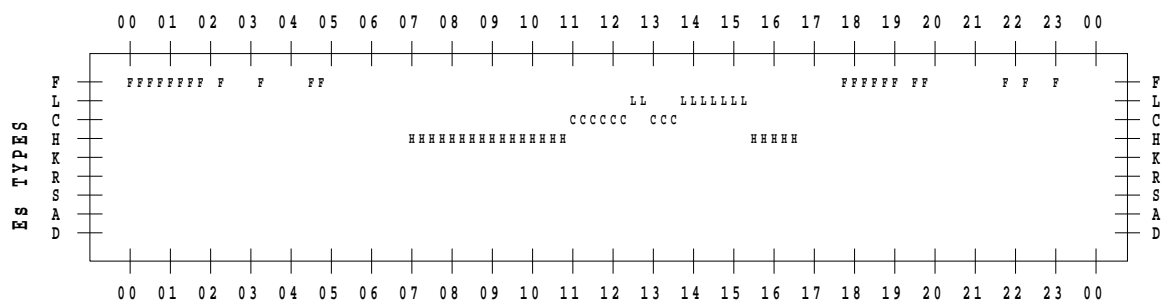
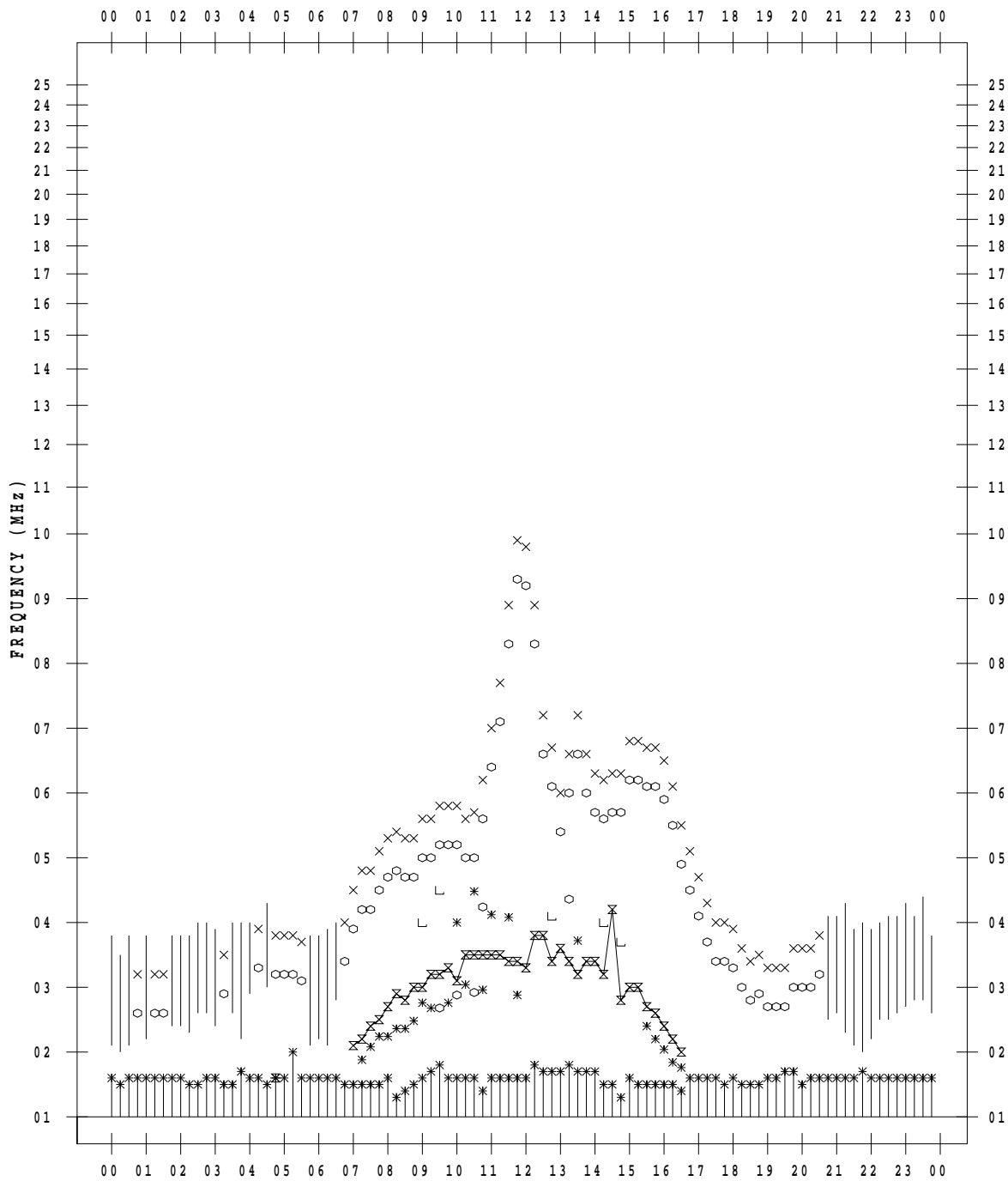
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 1 / 31

135 ° E MEAN TIME



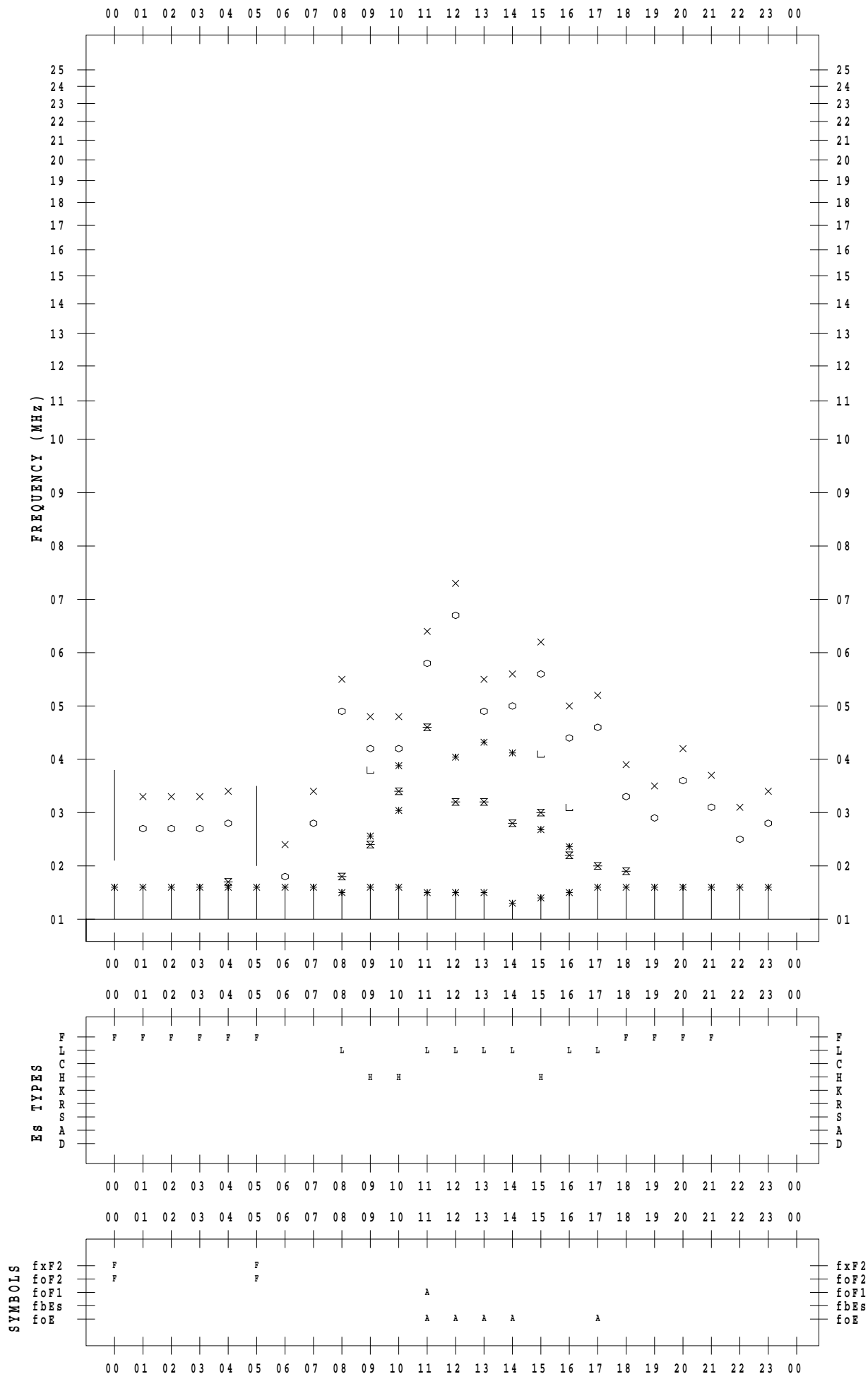
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 1

135 ° E MEAN TIME



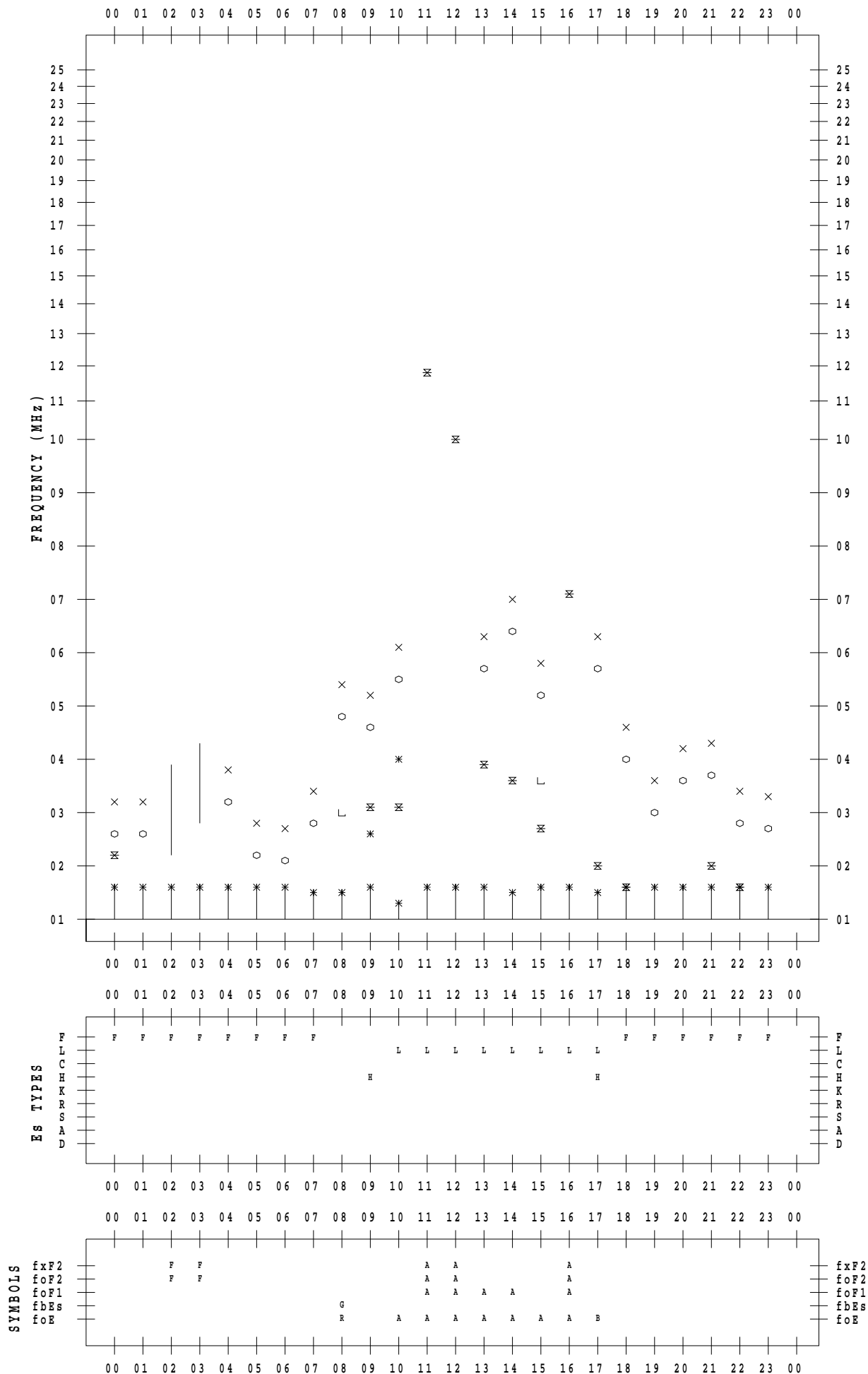
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 2

135 ° E MEAN TIME



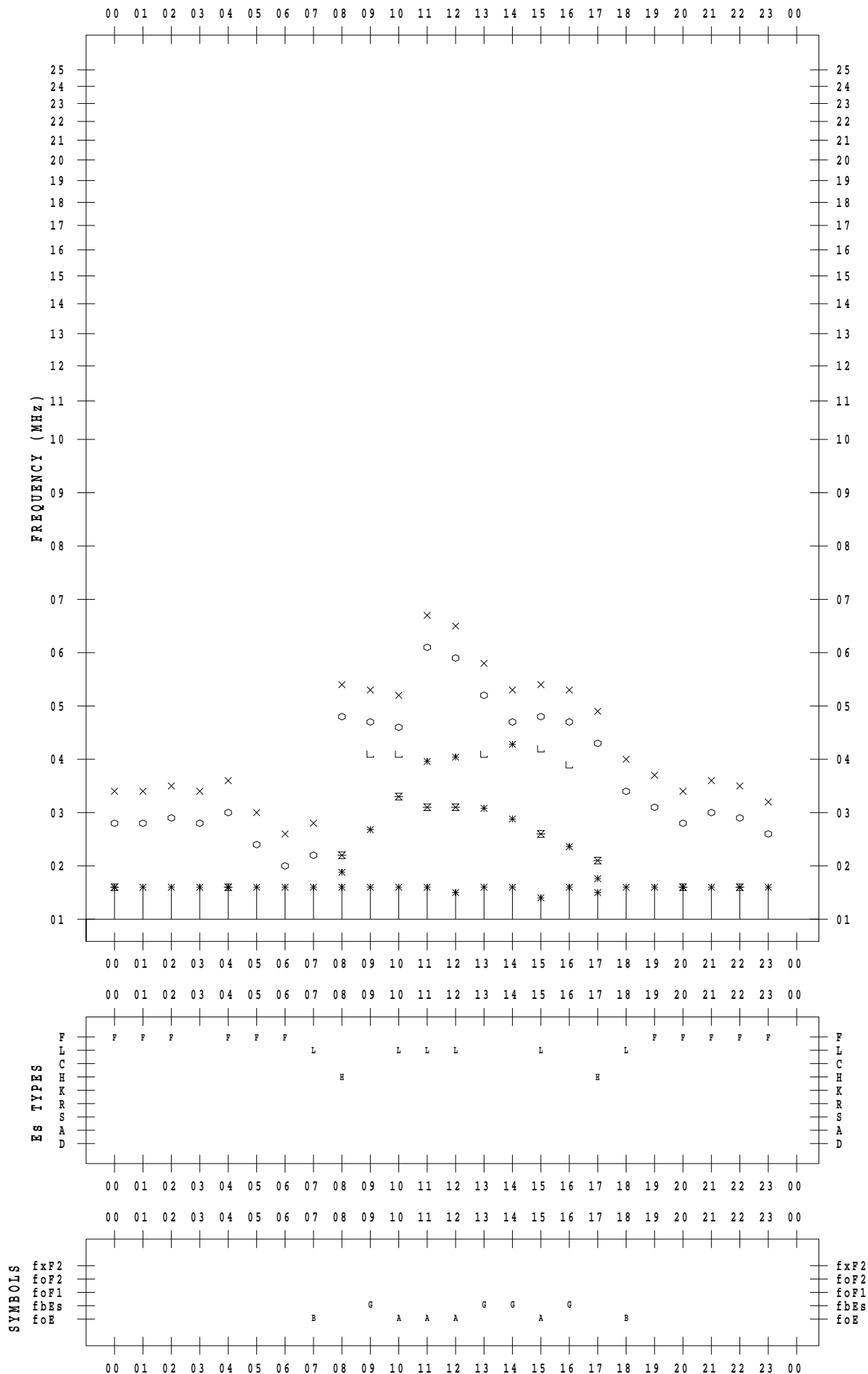
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 3

135 ° E MEAN TIME



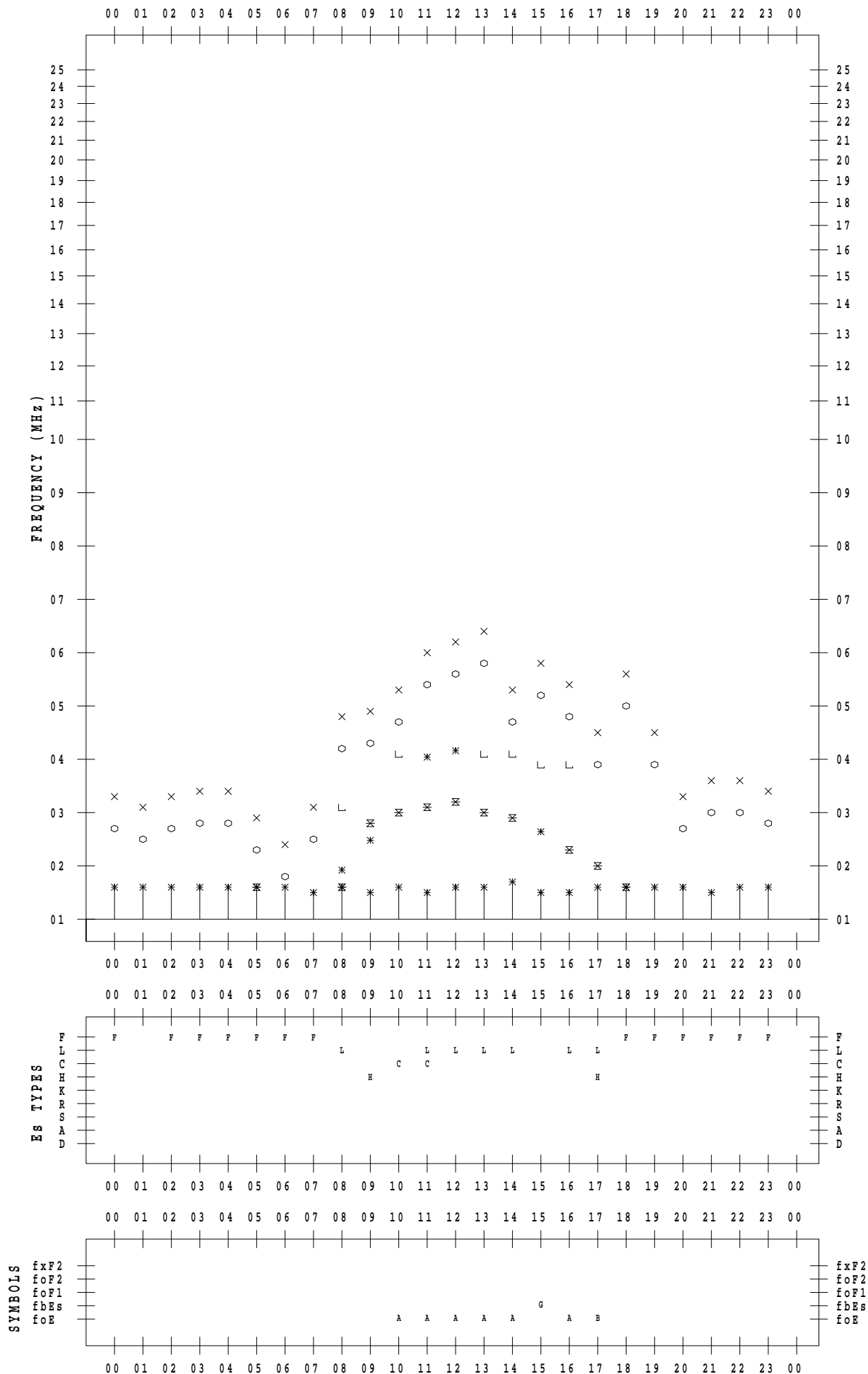
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 4

135 ° E MEAN TIME



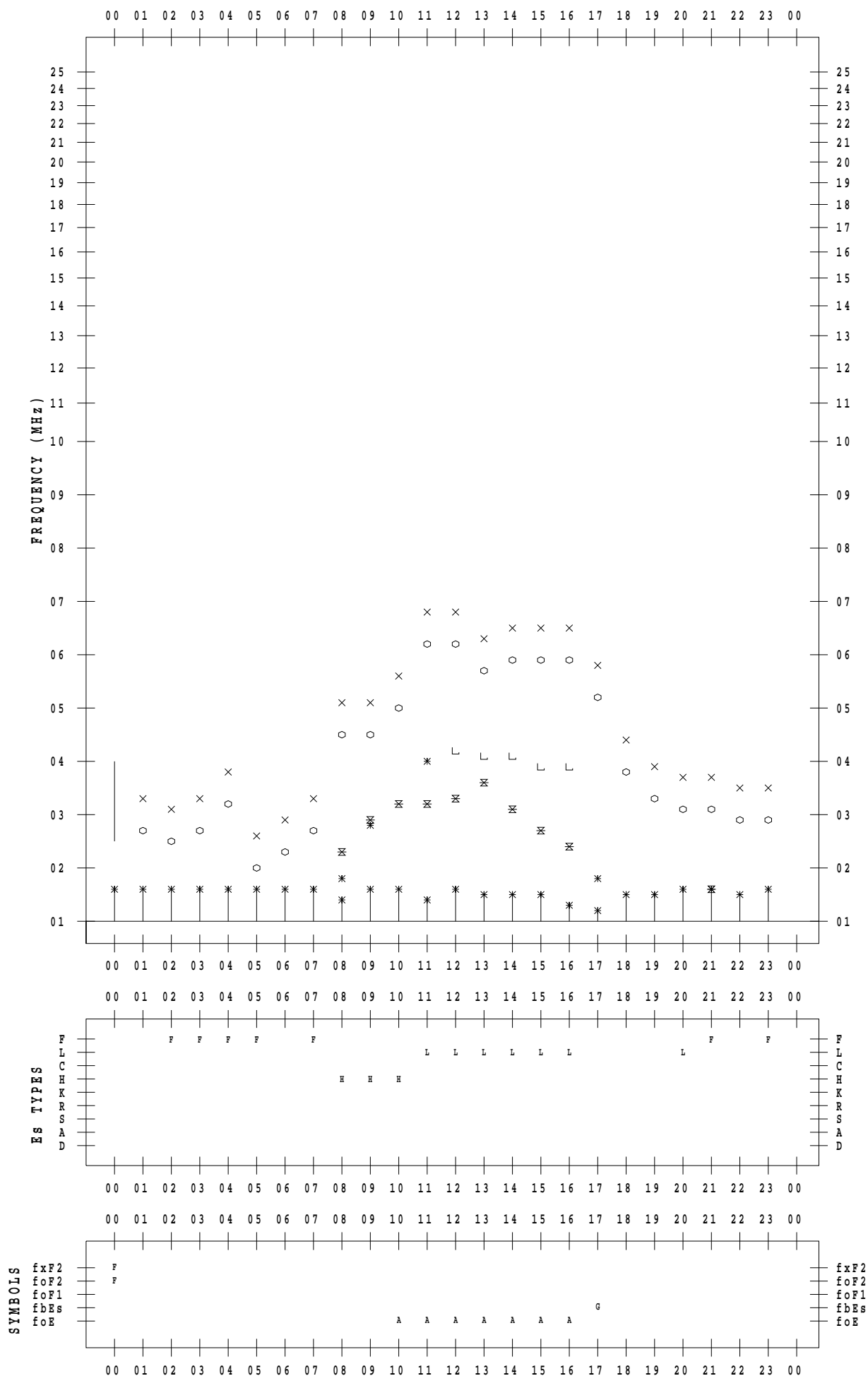
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 5

135 ° E MEAN TIME



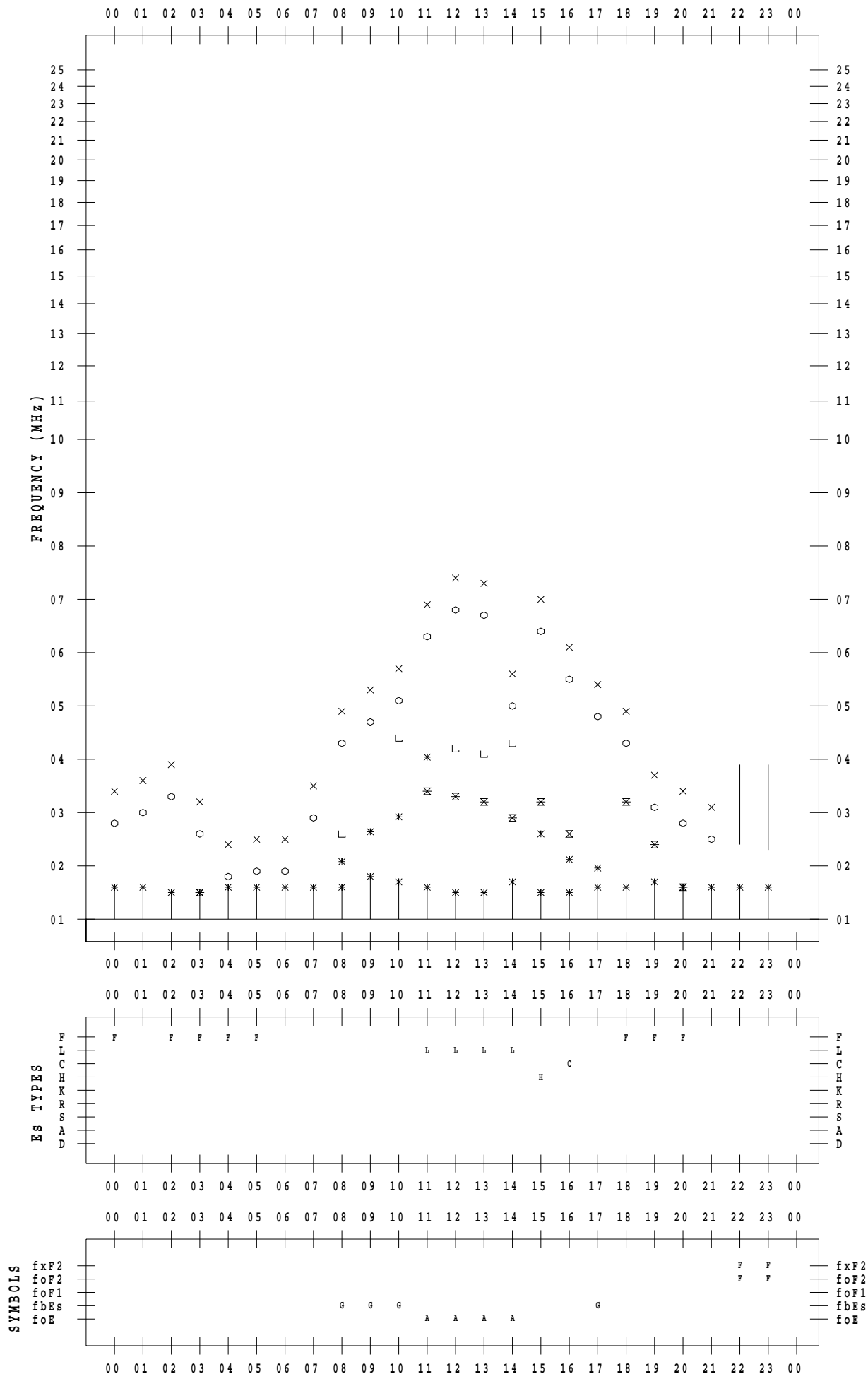
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 6

135 ° E MEAN TIME



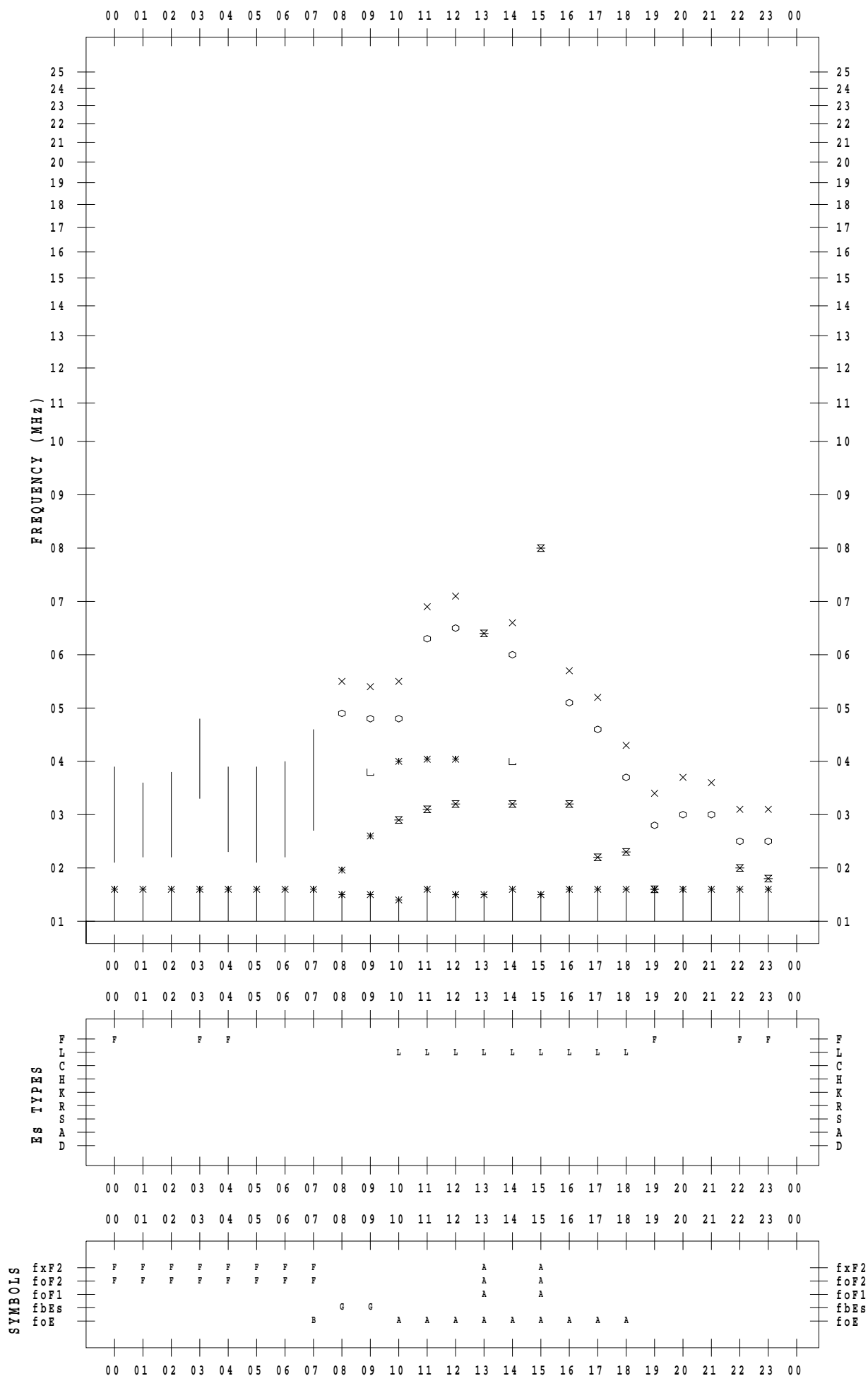
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 7

135 ° E MEAN TIME



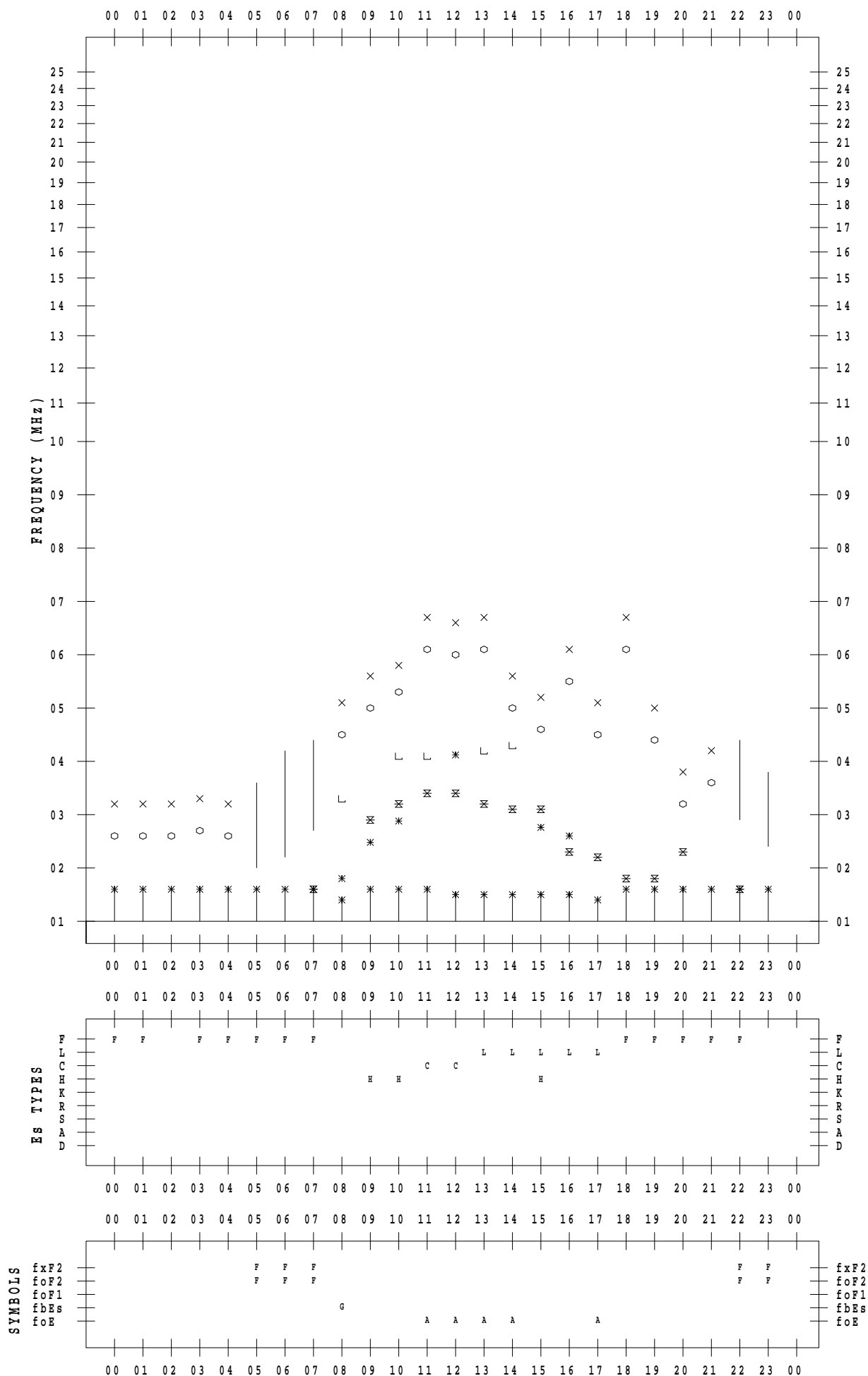
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 8

135 ° E MEAN TIME



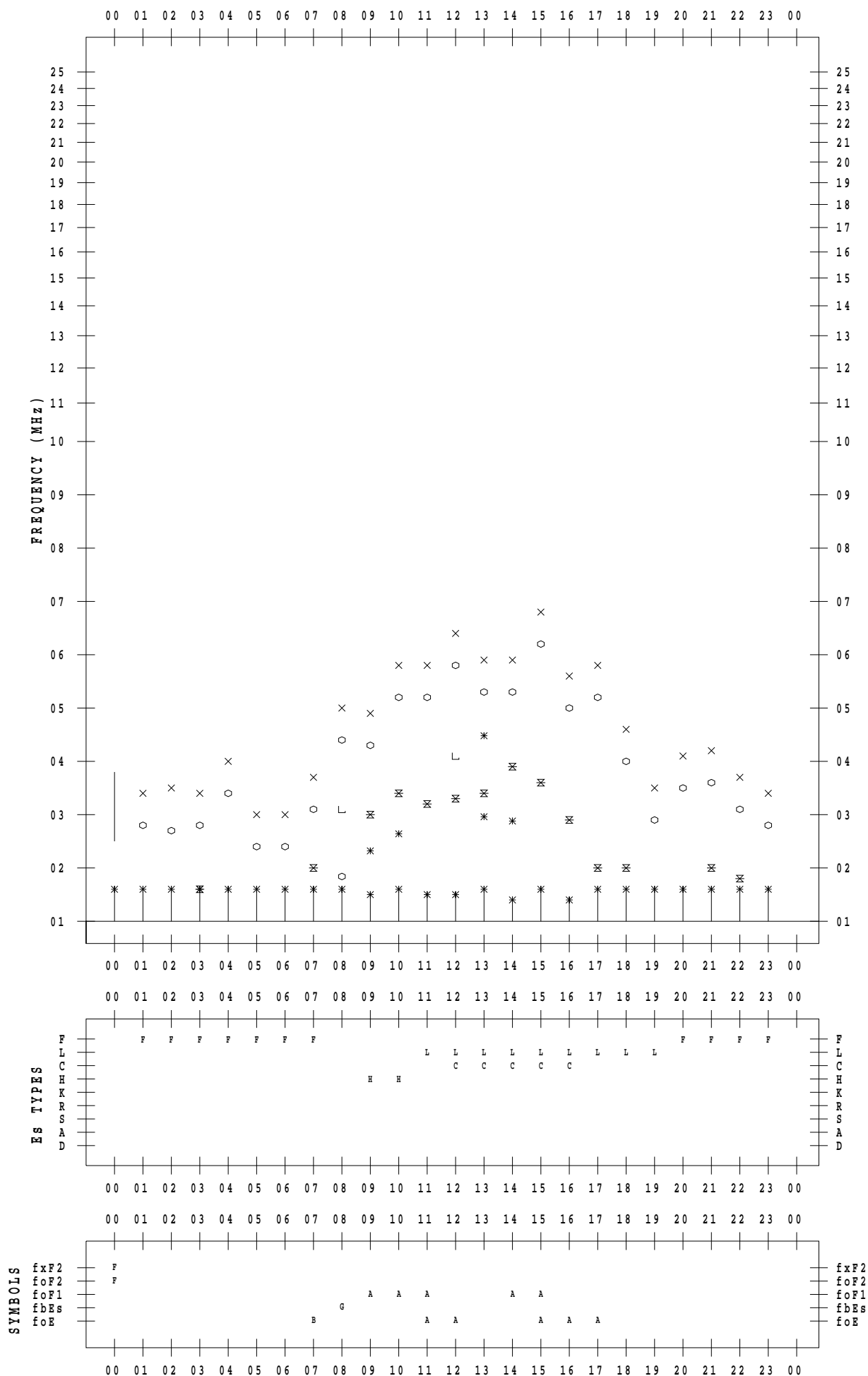
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 9

135 ° E MEAN TIME



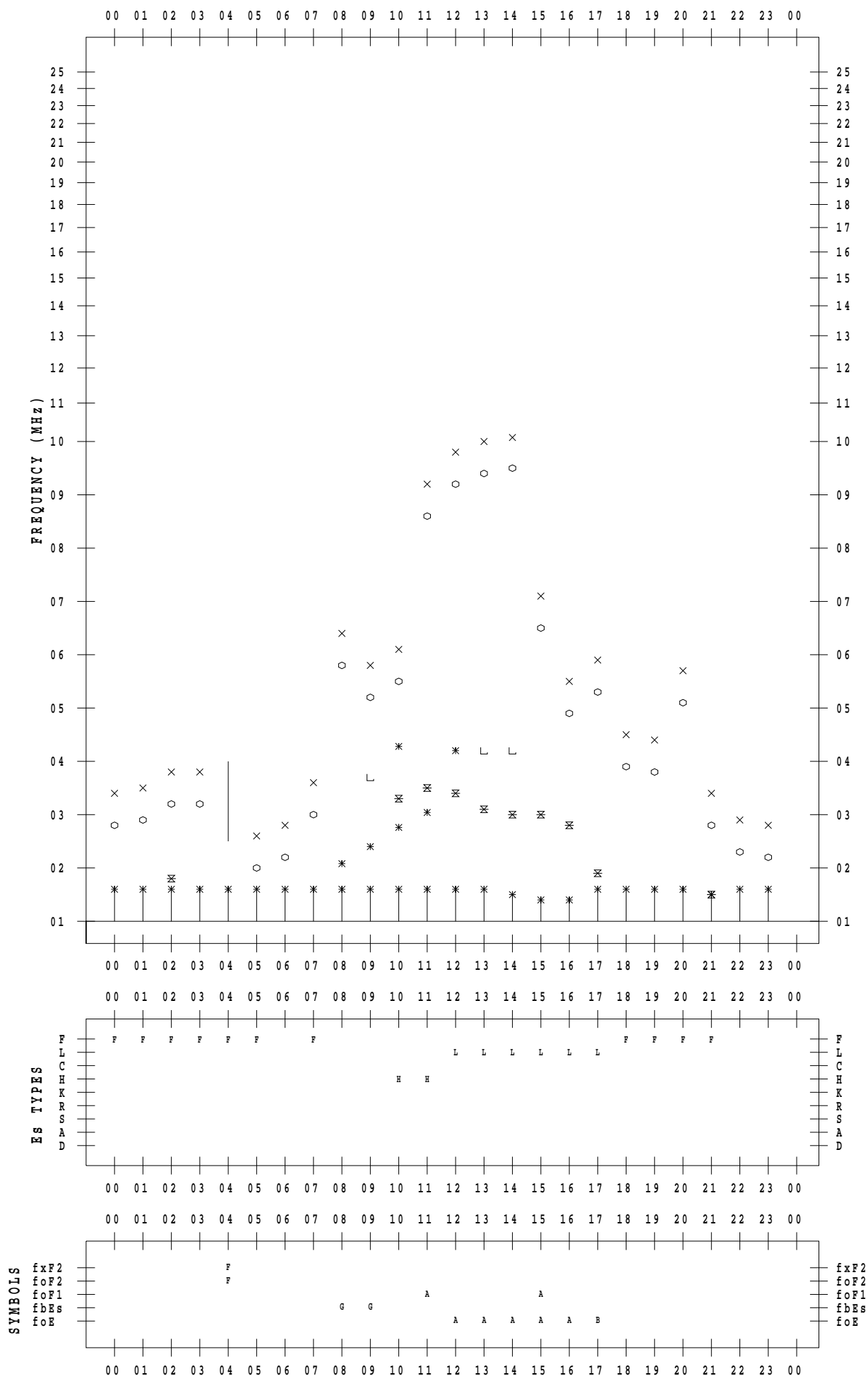
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 10

135 ° E MEAN TIME



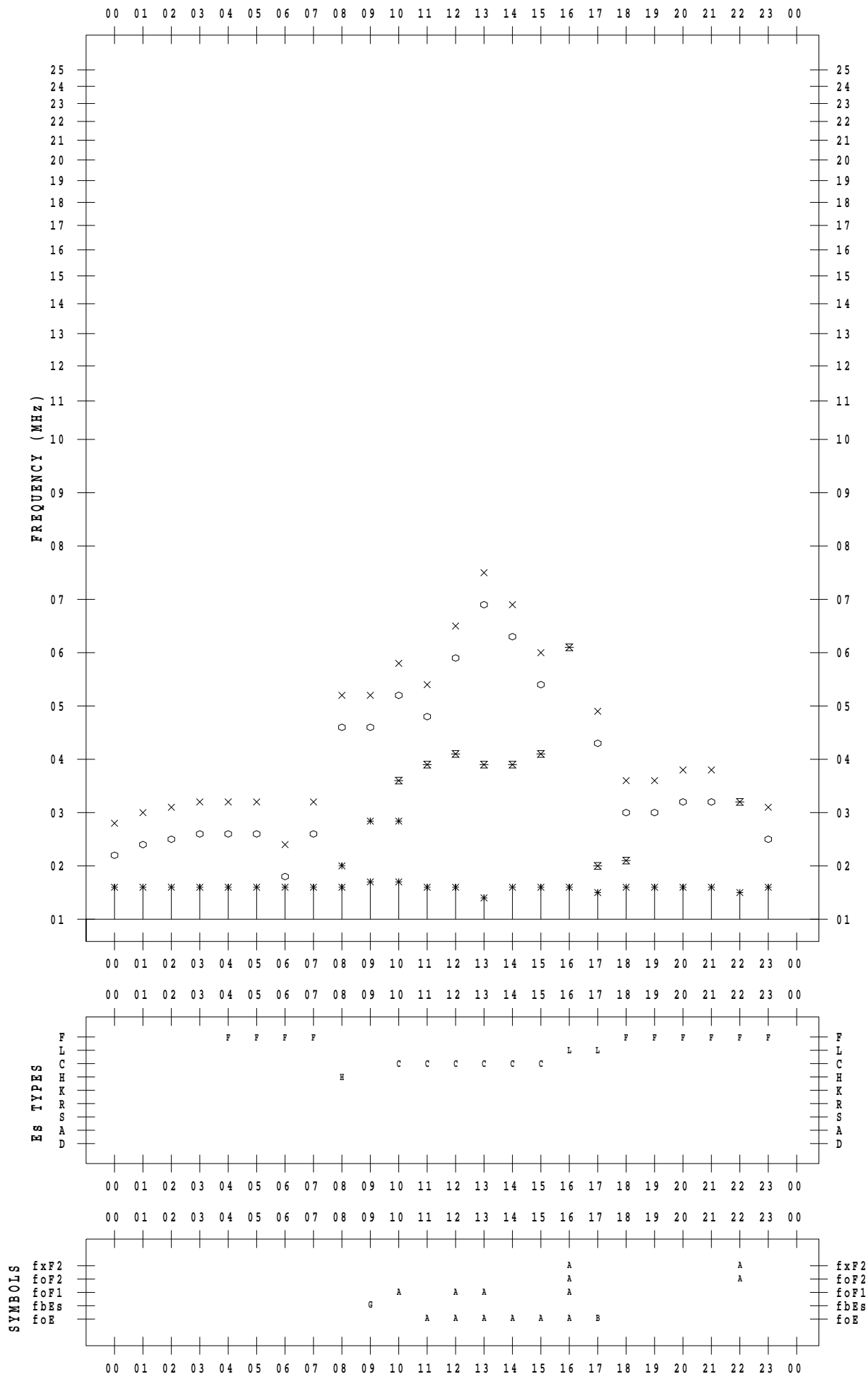
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 11

135 ° E MEAN TIME



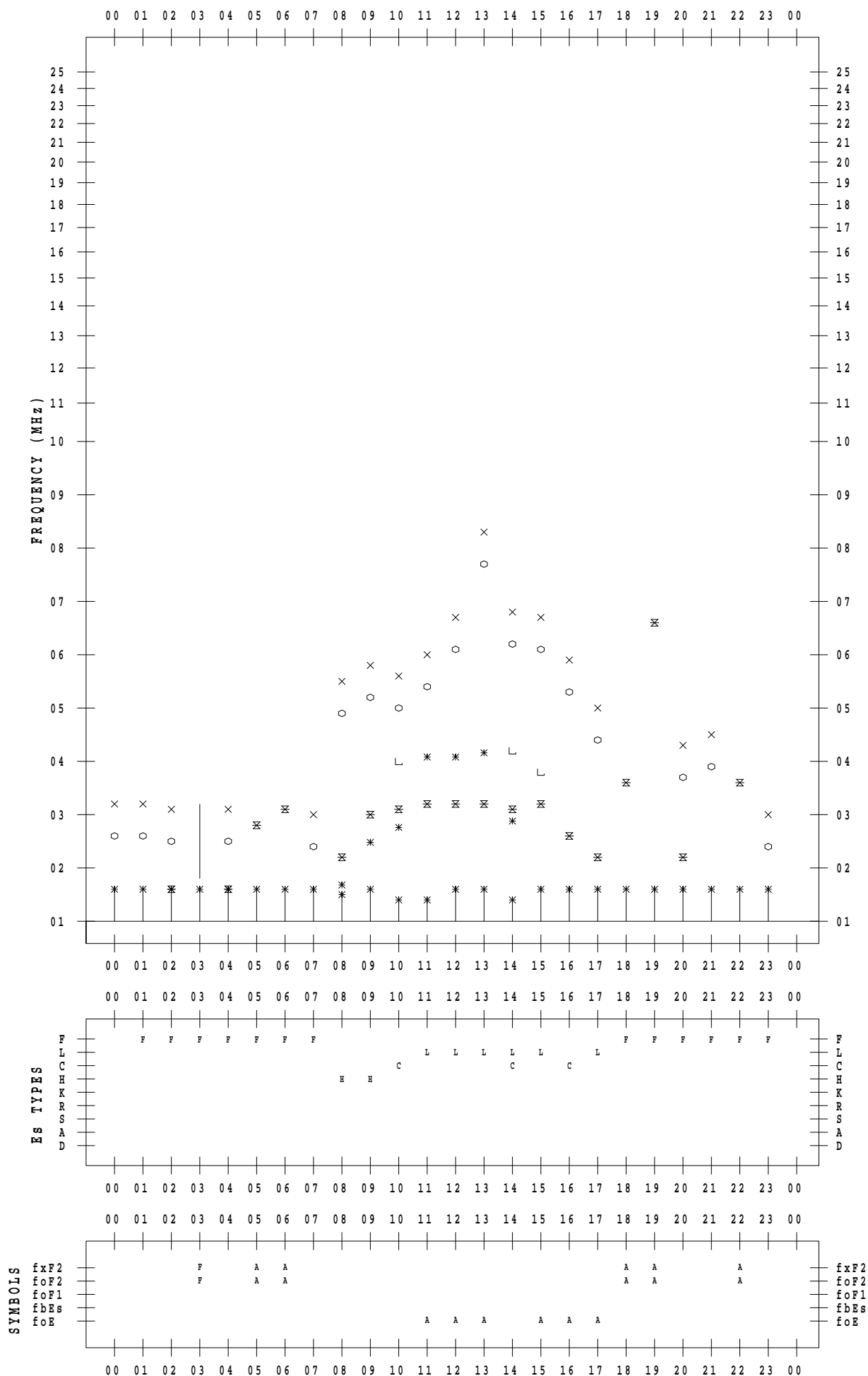
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 12

135 ° E MEAN TIME



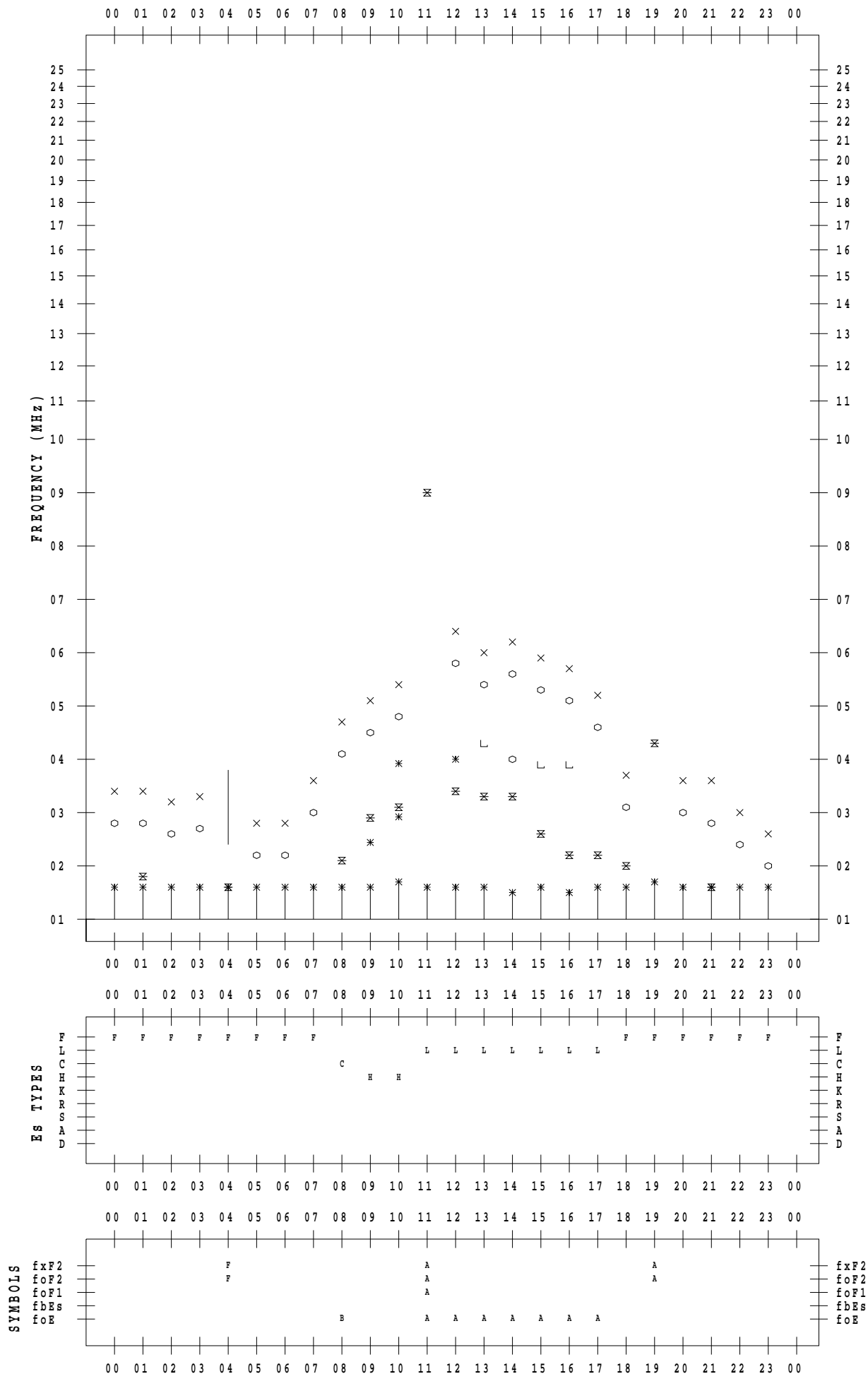
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 13

135 ° E MEAN TIME



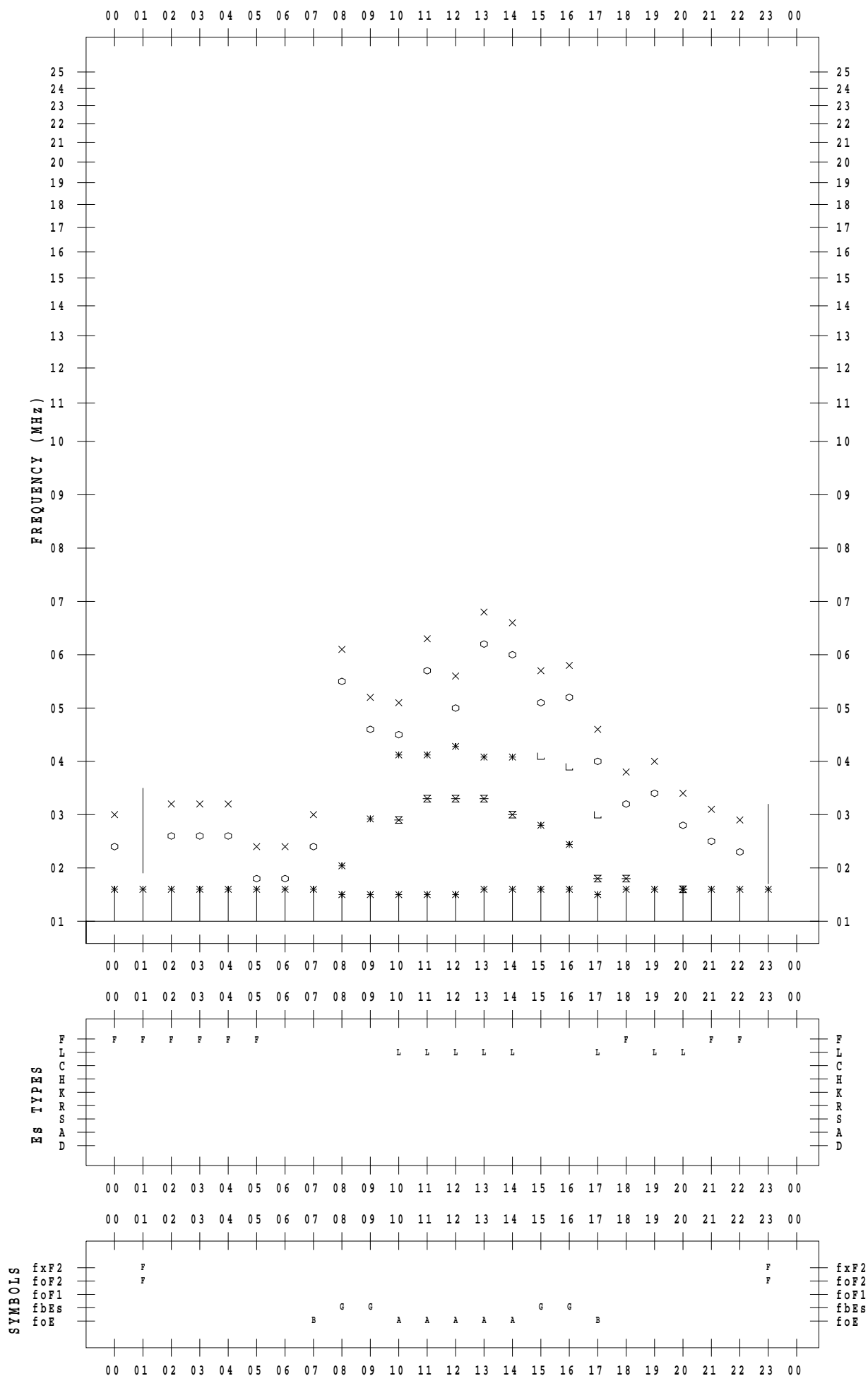
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 14

135 ° E MEAN TIME



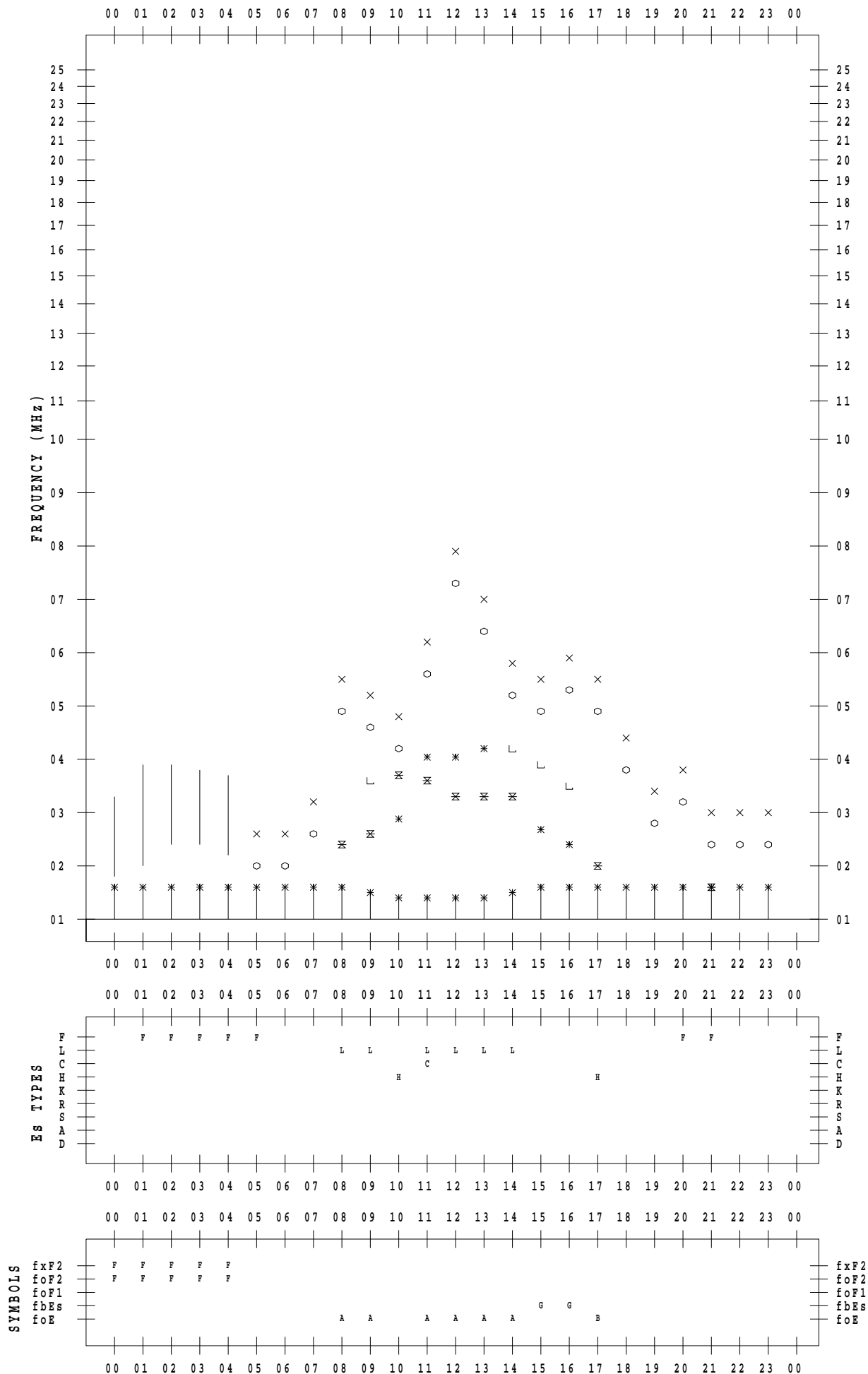
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 15

135 ° E MEAN TIME



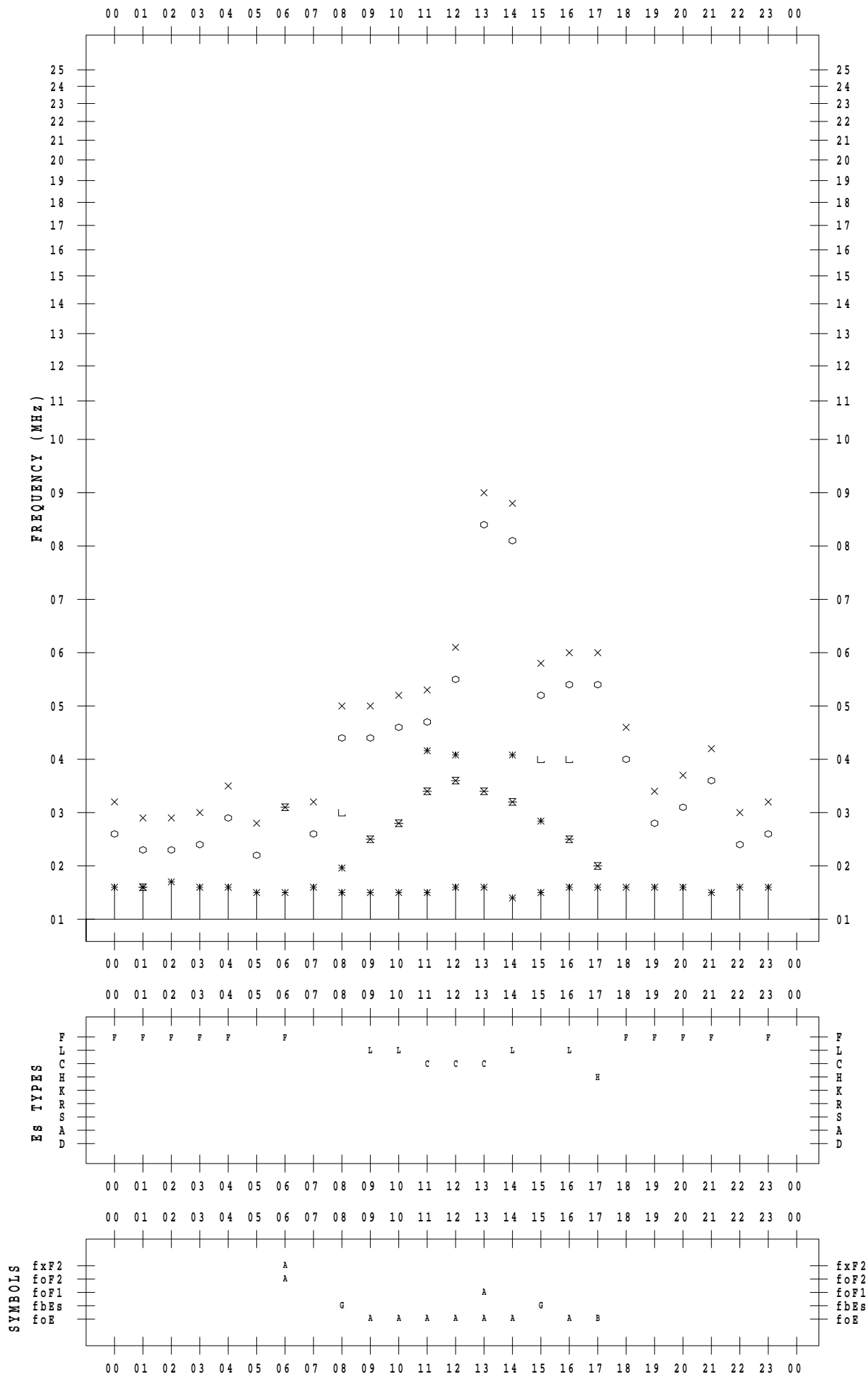
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 16

135 ° E MEAN TIME



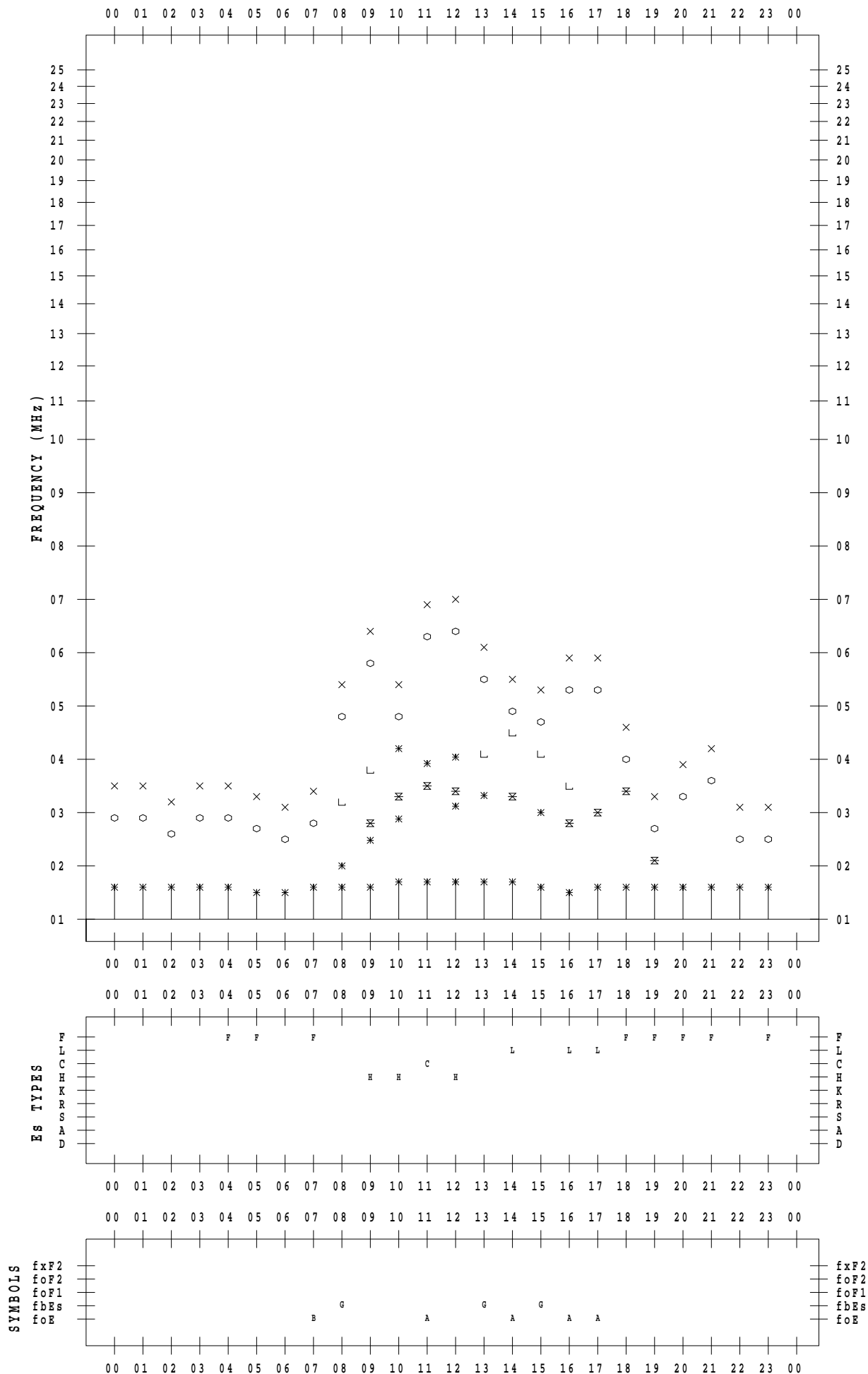
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 17

135 ° E MEAN TIME



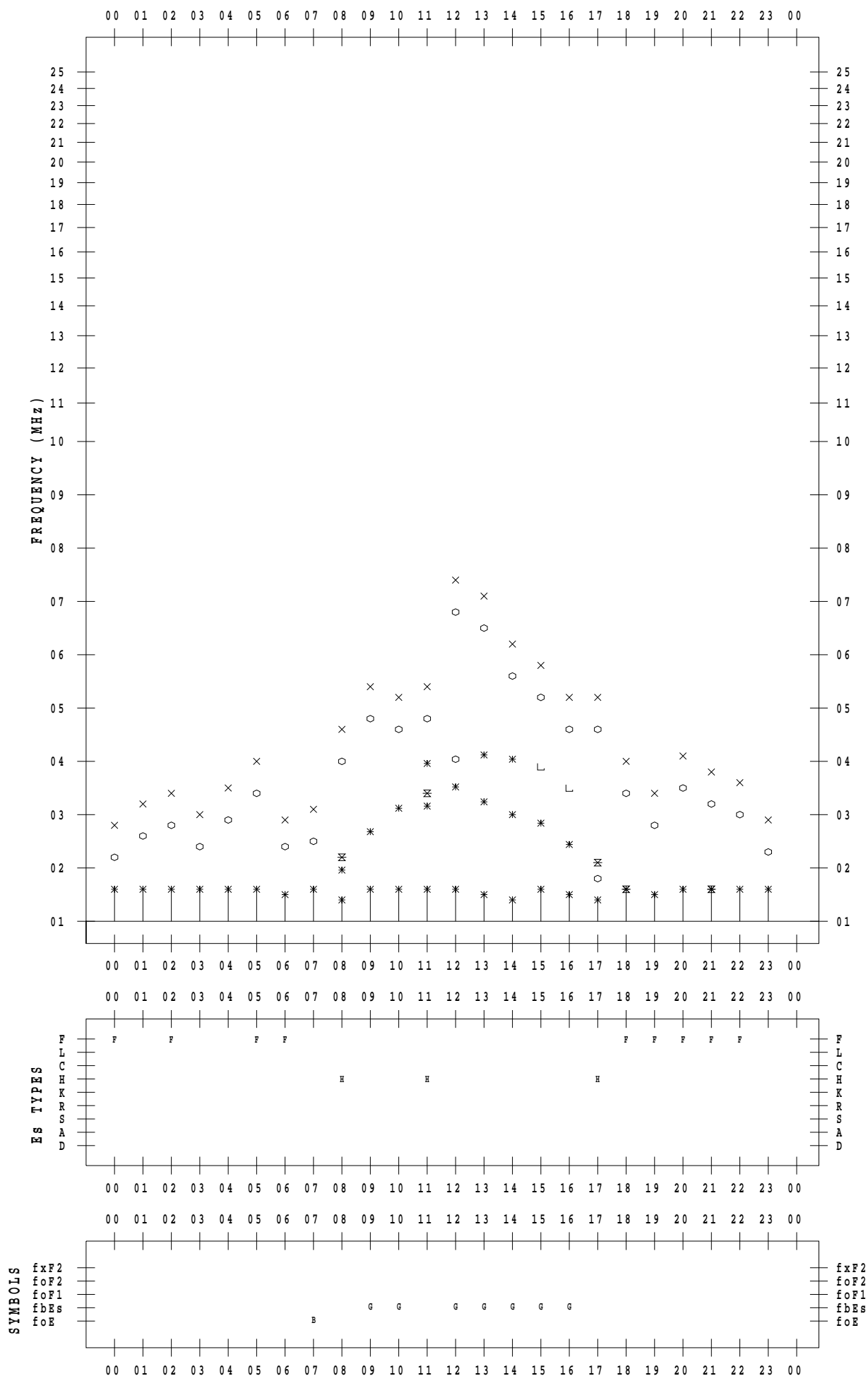
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 18

135 ° E MEAN TIME



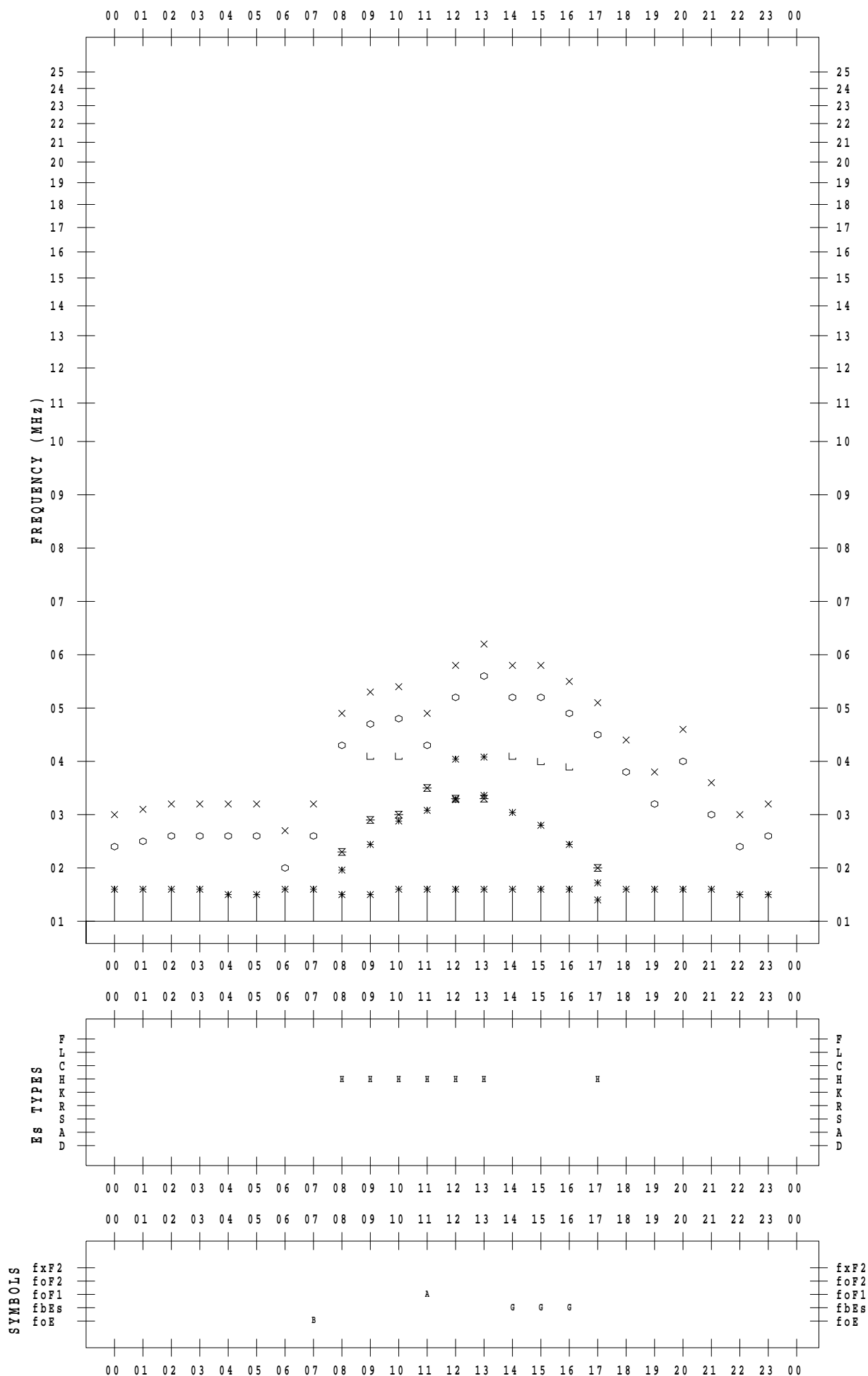
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 19

135 ° E MEAN TIME



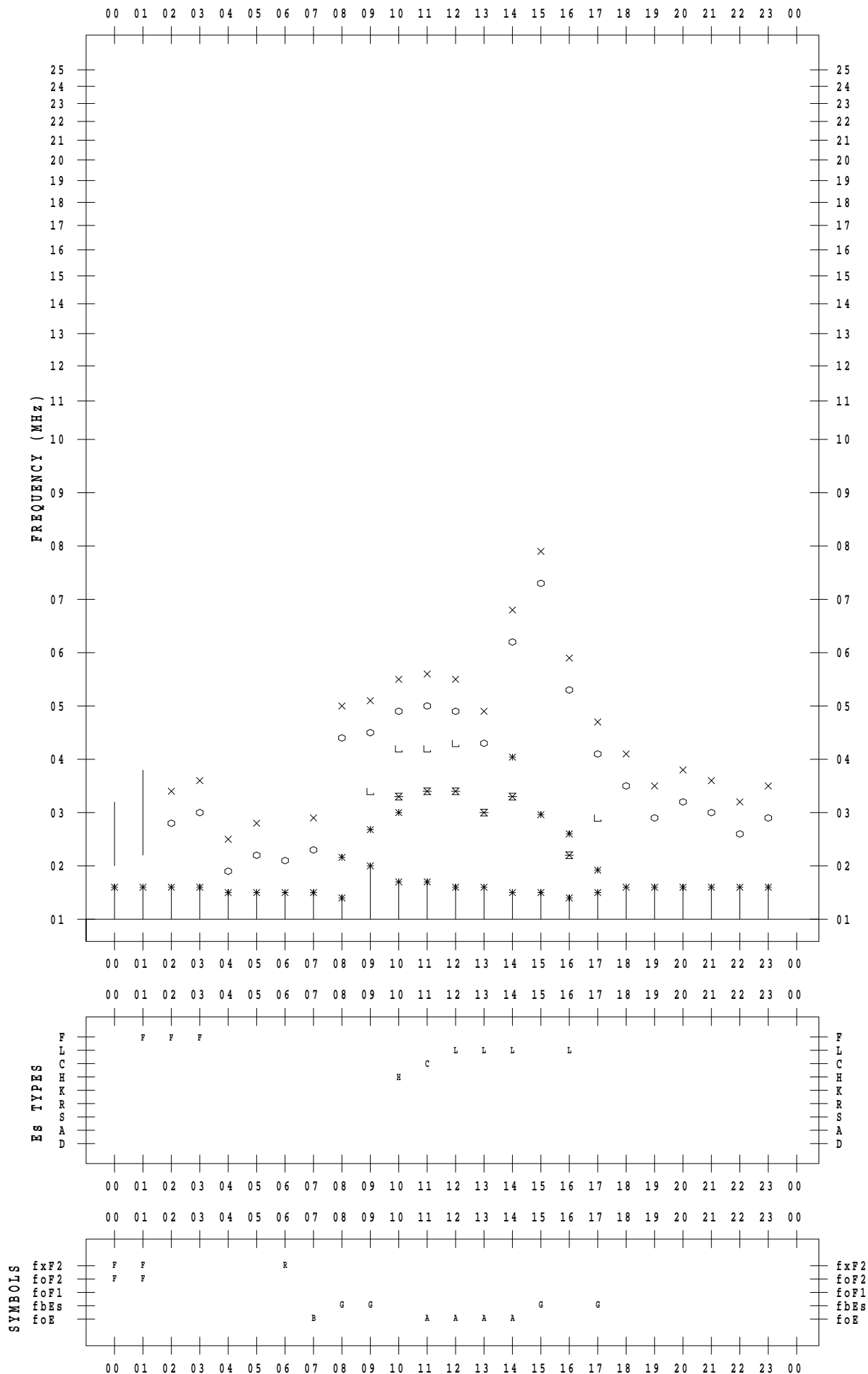
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 20

135 ° E MEAN TIME



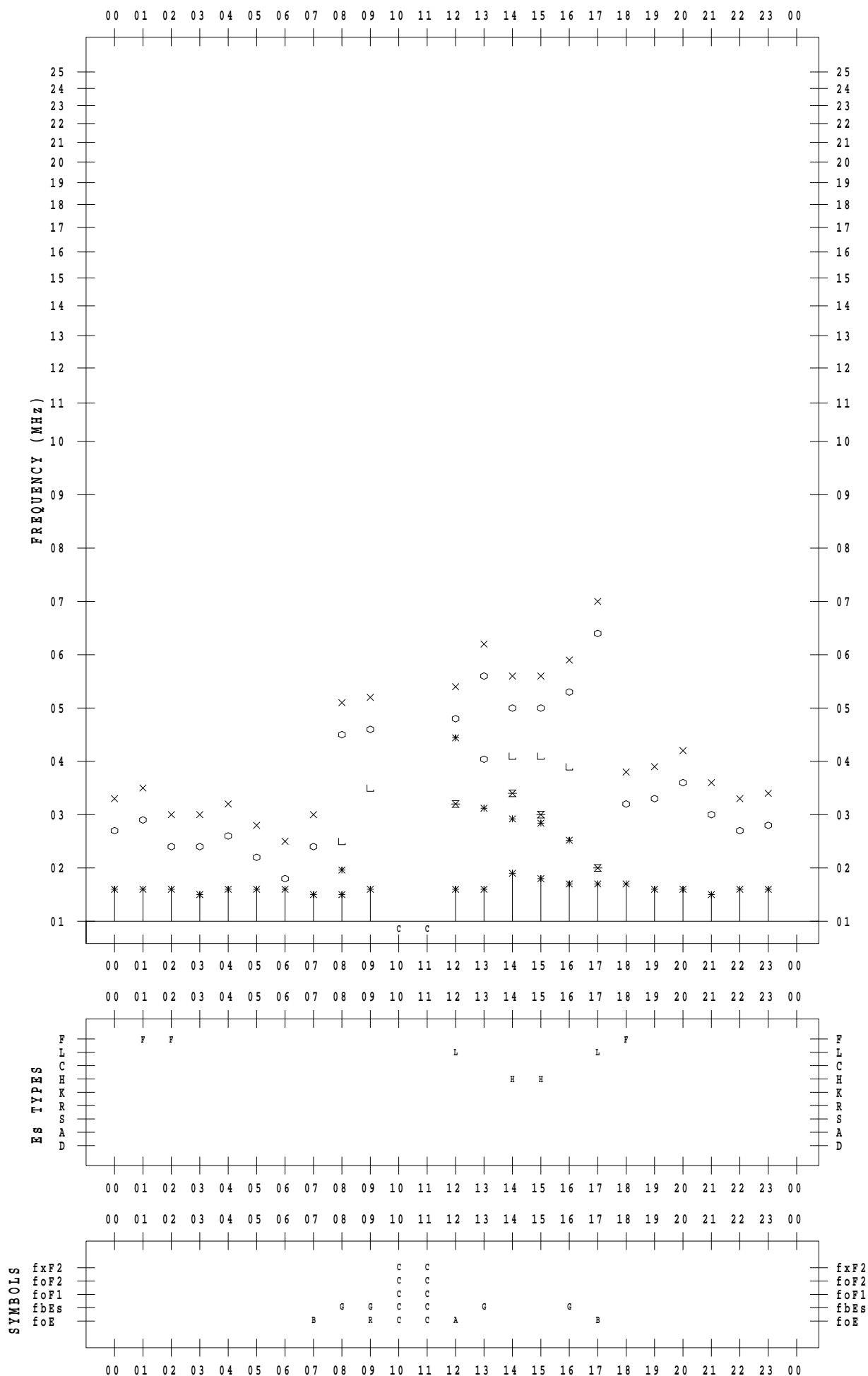
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 21

135 ° E MEAN TIME



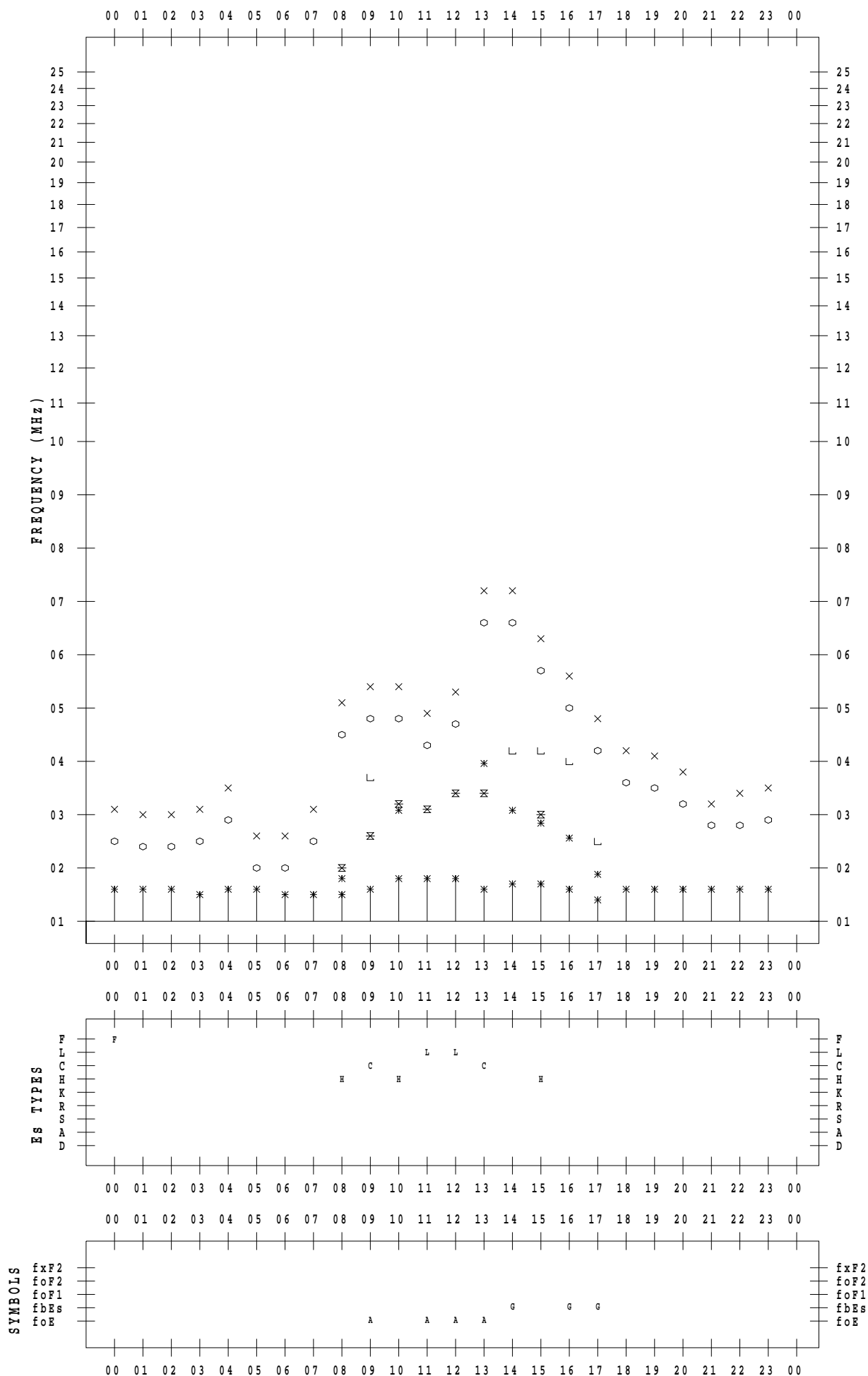
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 22

135 ° E MEAN TIME



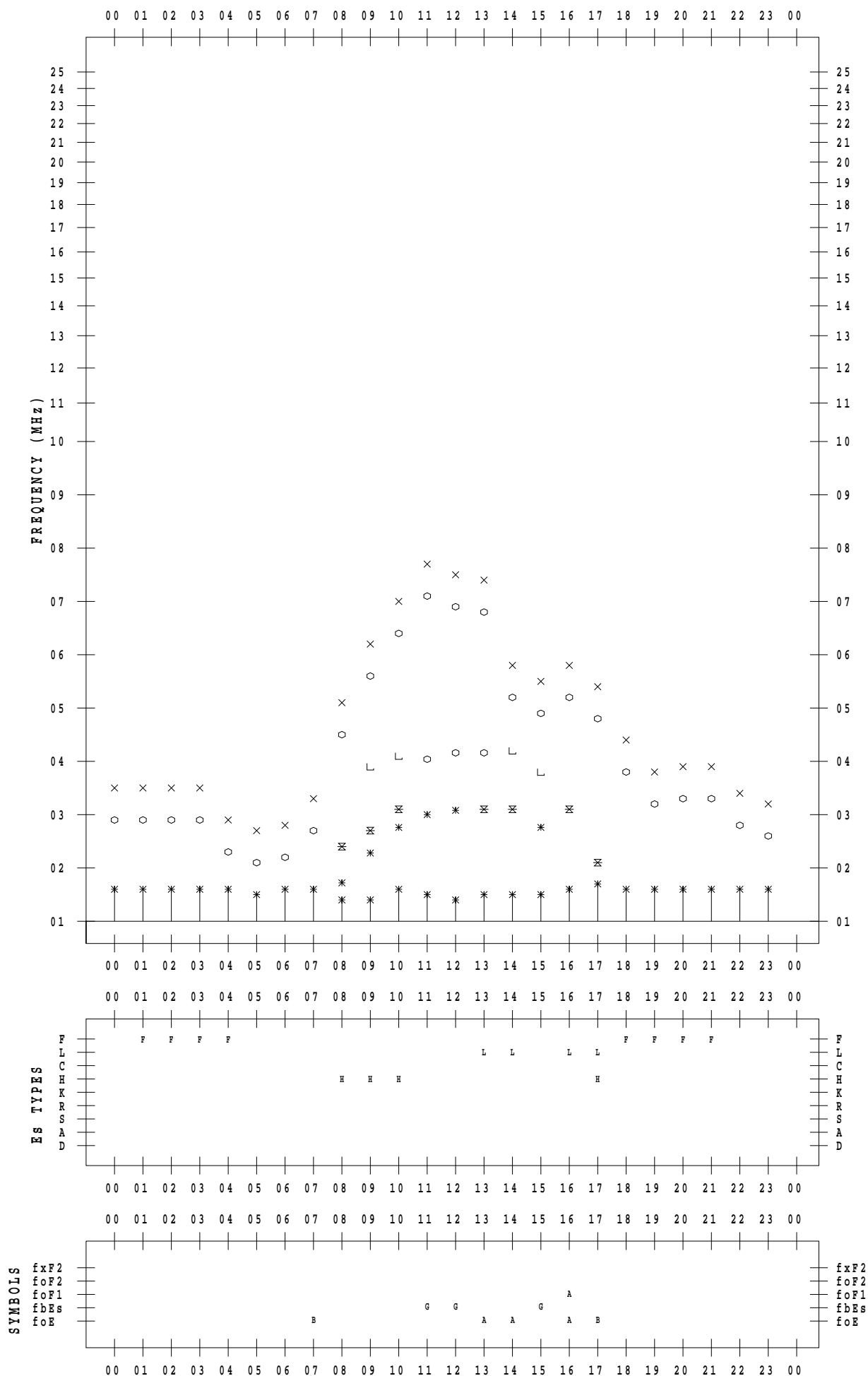
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 23

135 ° E MEAN TIME



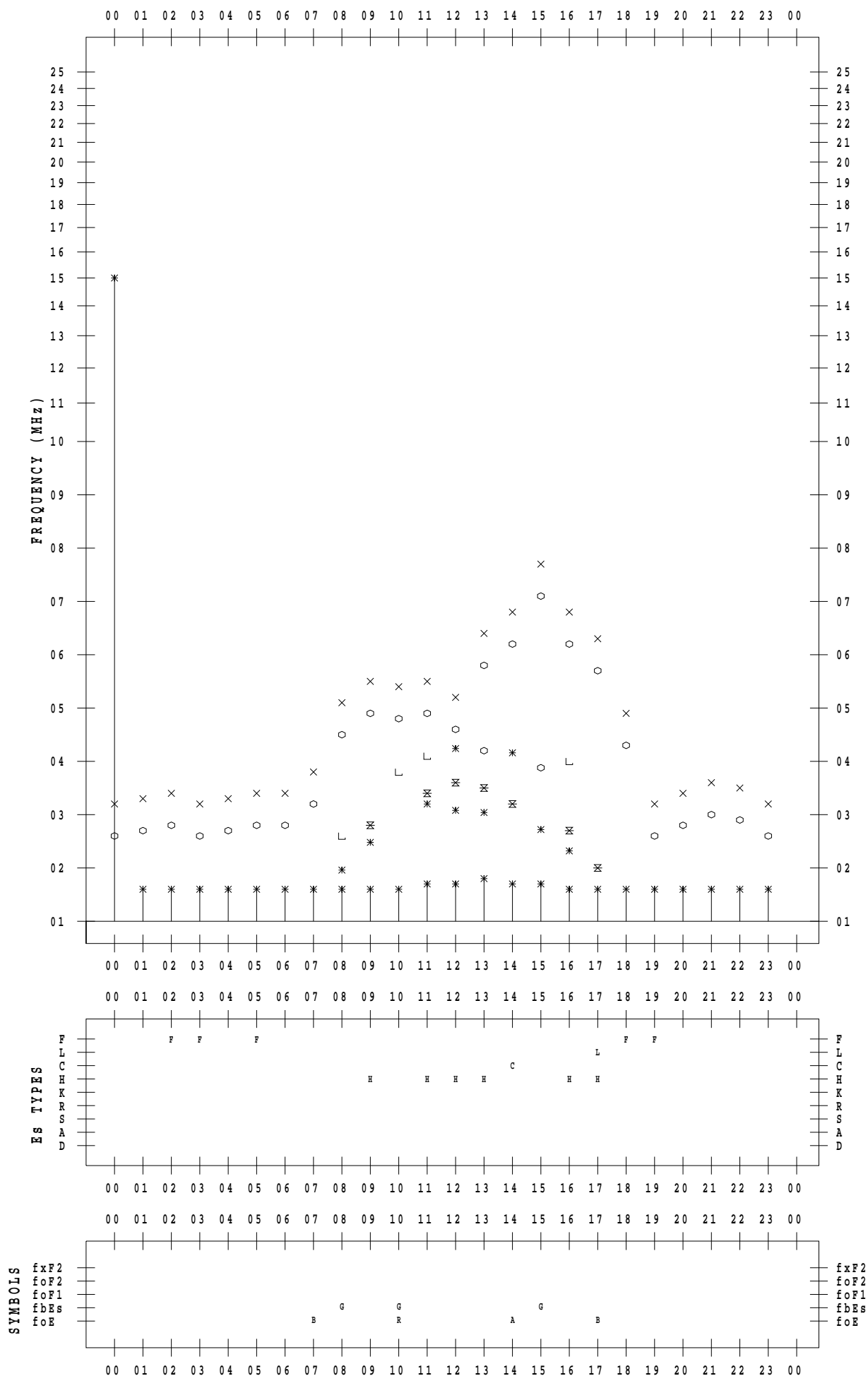
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 24

135 ° E MEAN TIME



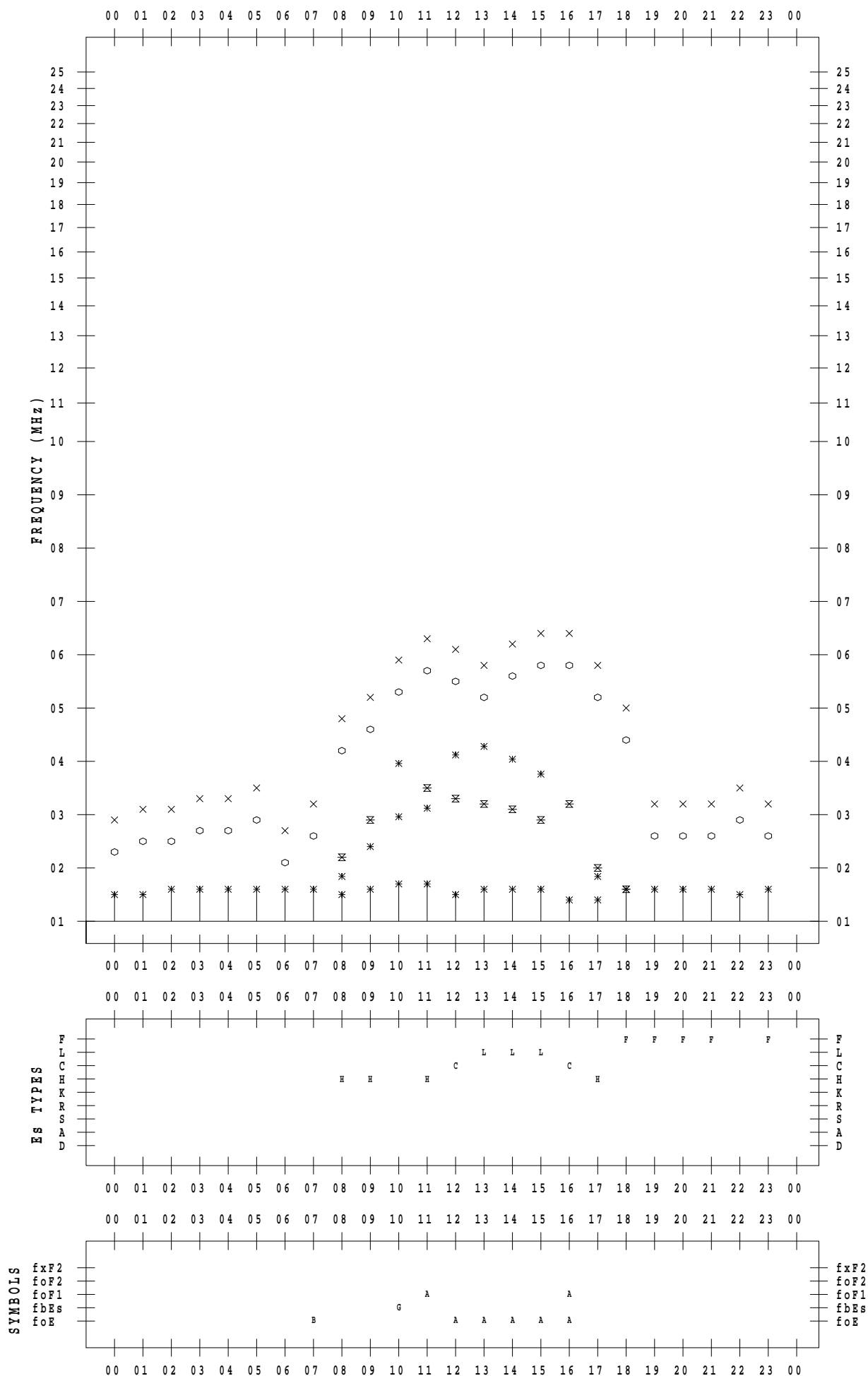
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 25

135 ° E MEAN TIME



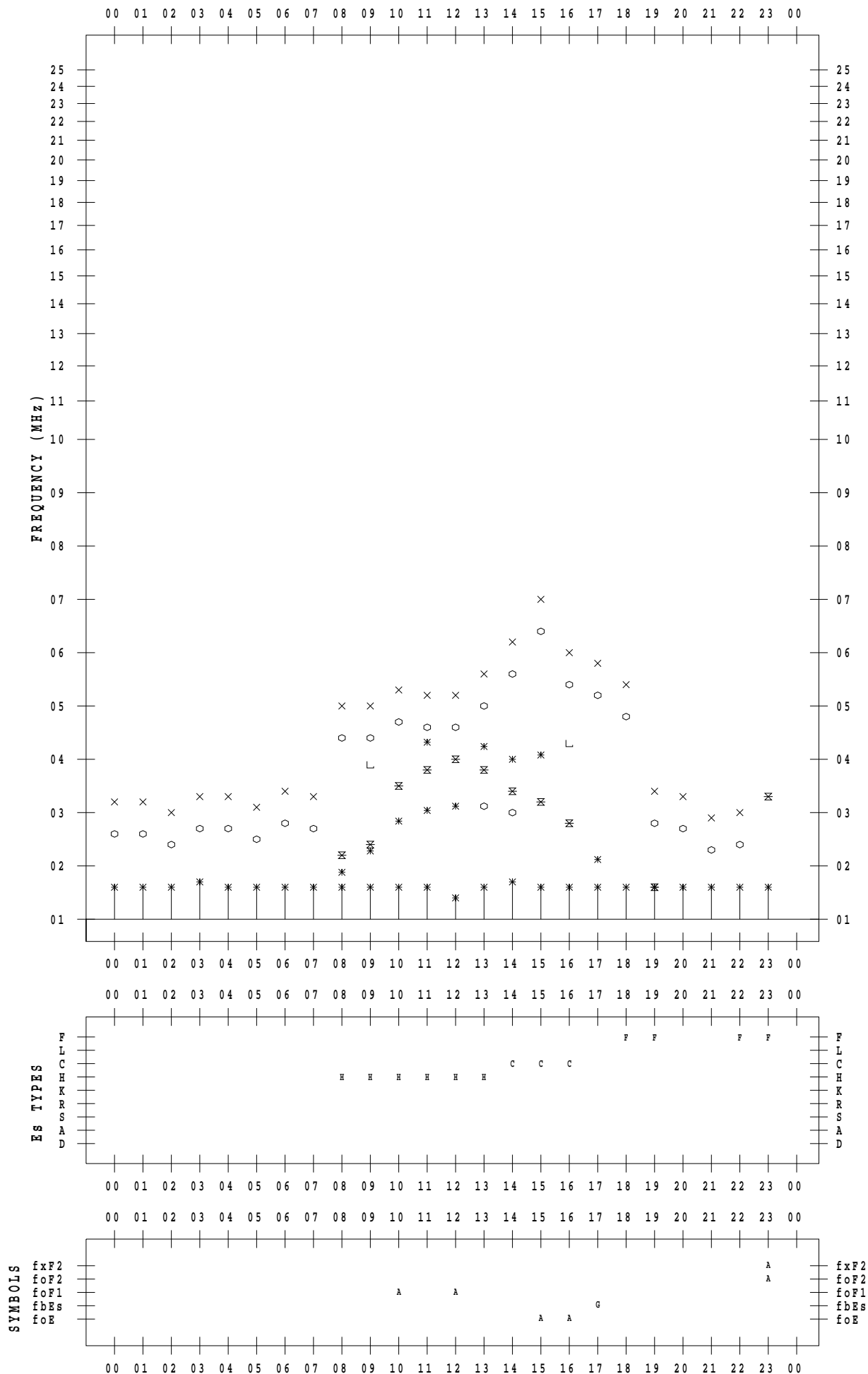
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 26

135 ° E MEAN TIME



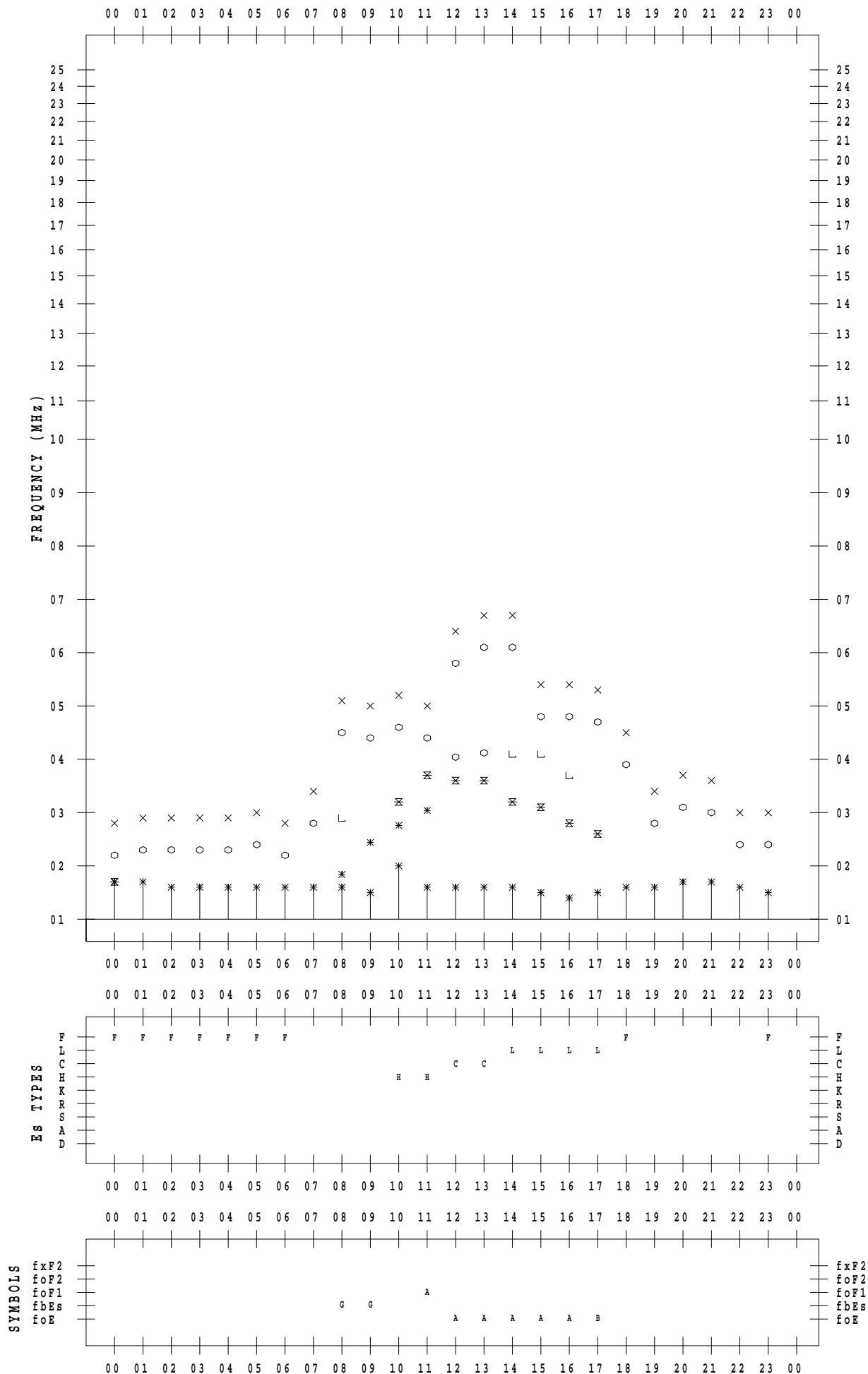
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 27

135 ° E MEAN TIME



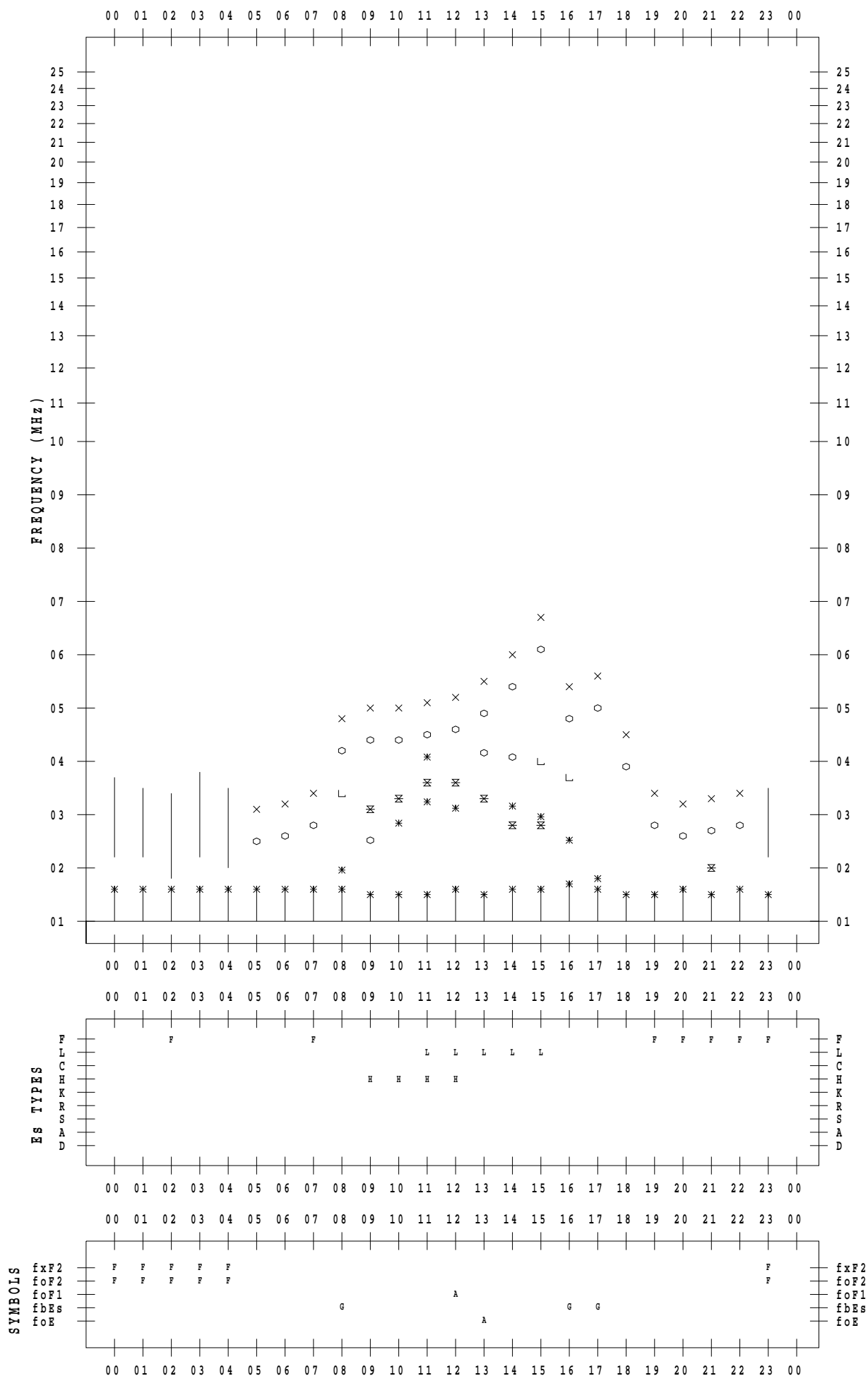
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 28

135 ° E MEAN TIME



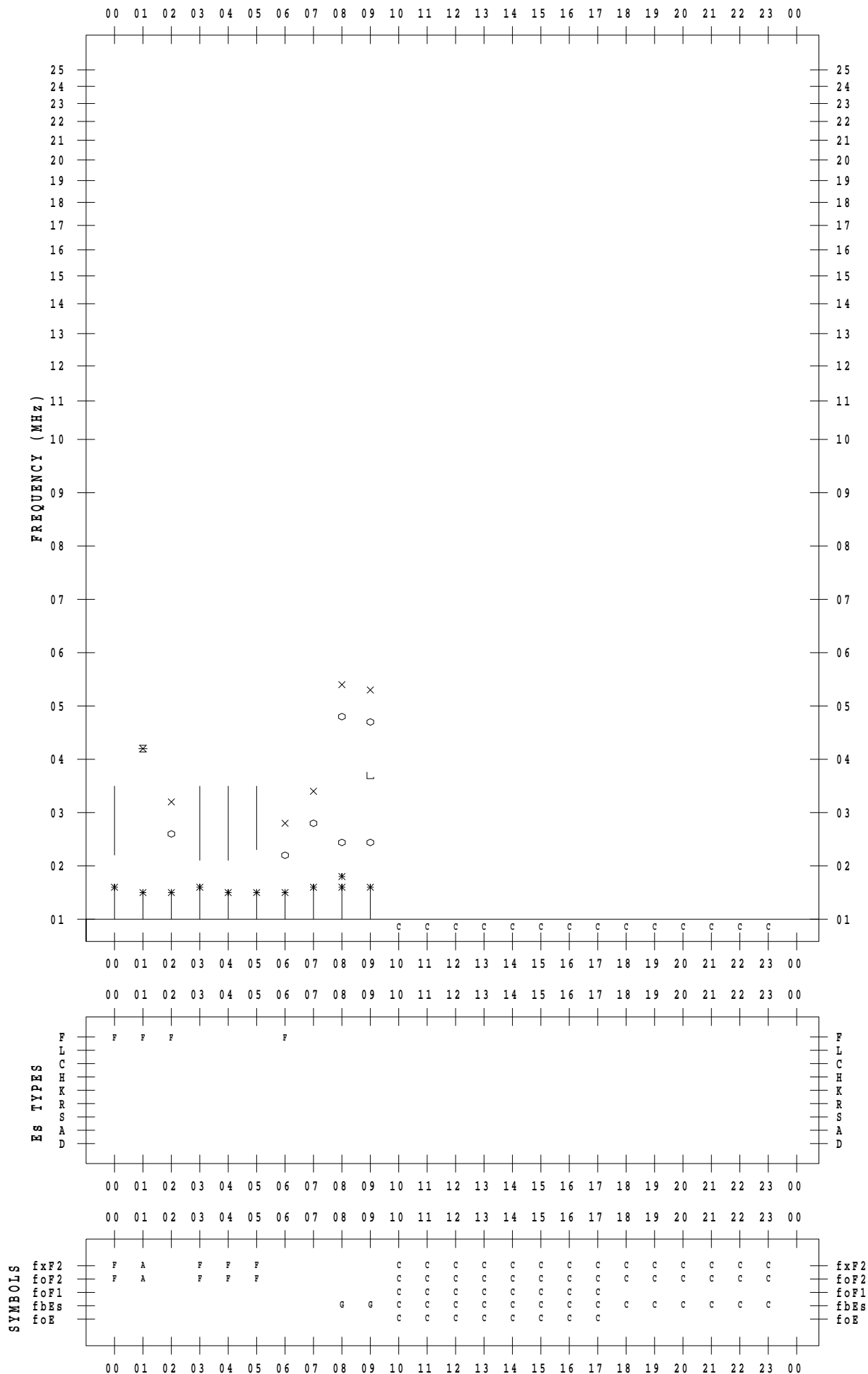
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 29

135 ° E MEAN TIME



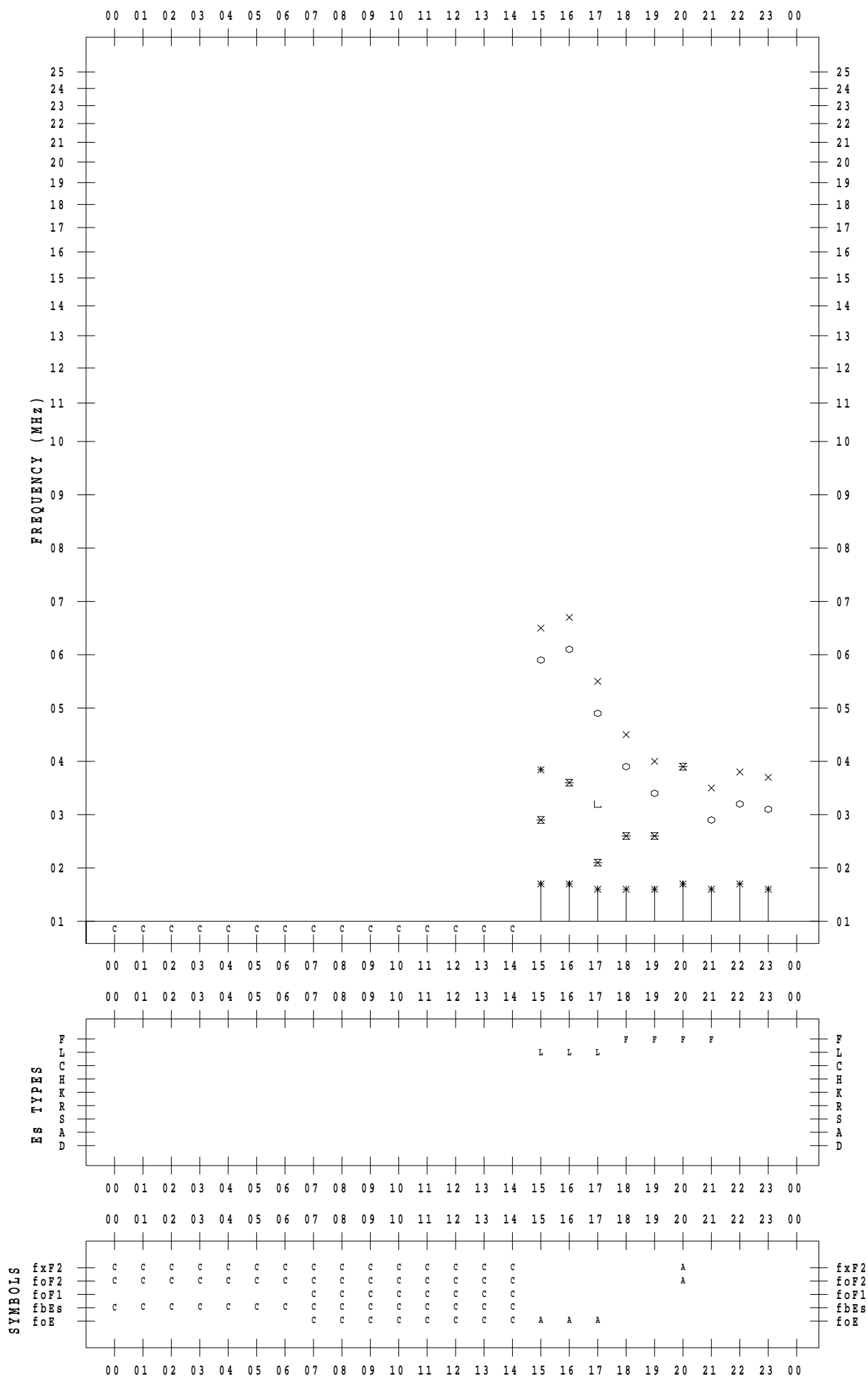
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 1 / 31

135 ° E MEAN TIME



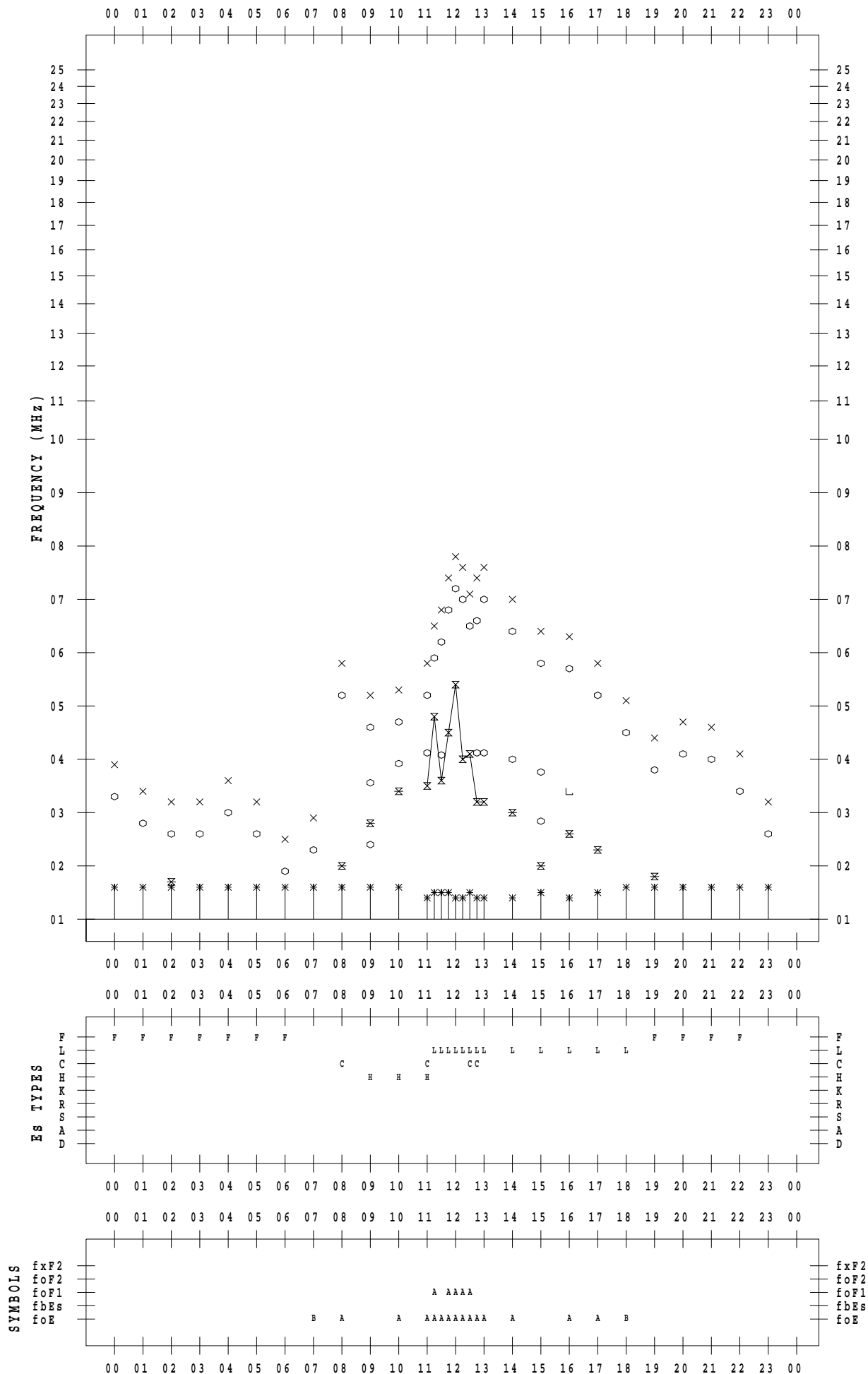
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 1

135 ° E MEAN TIME



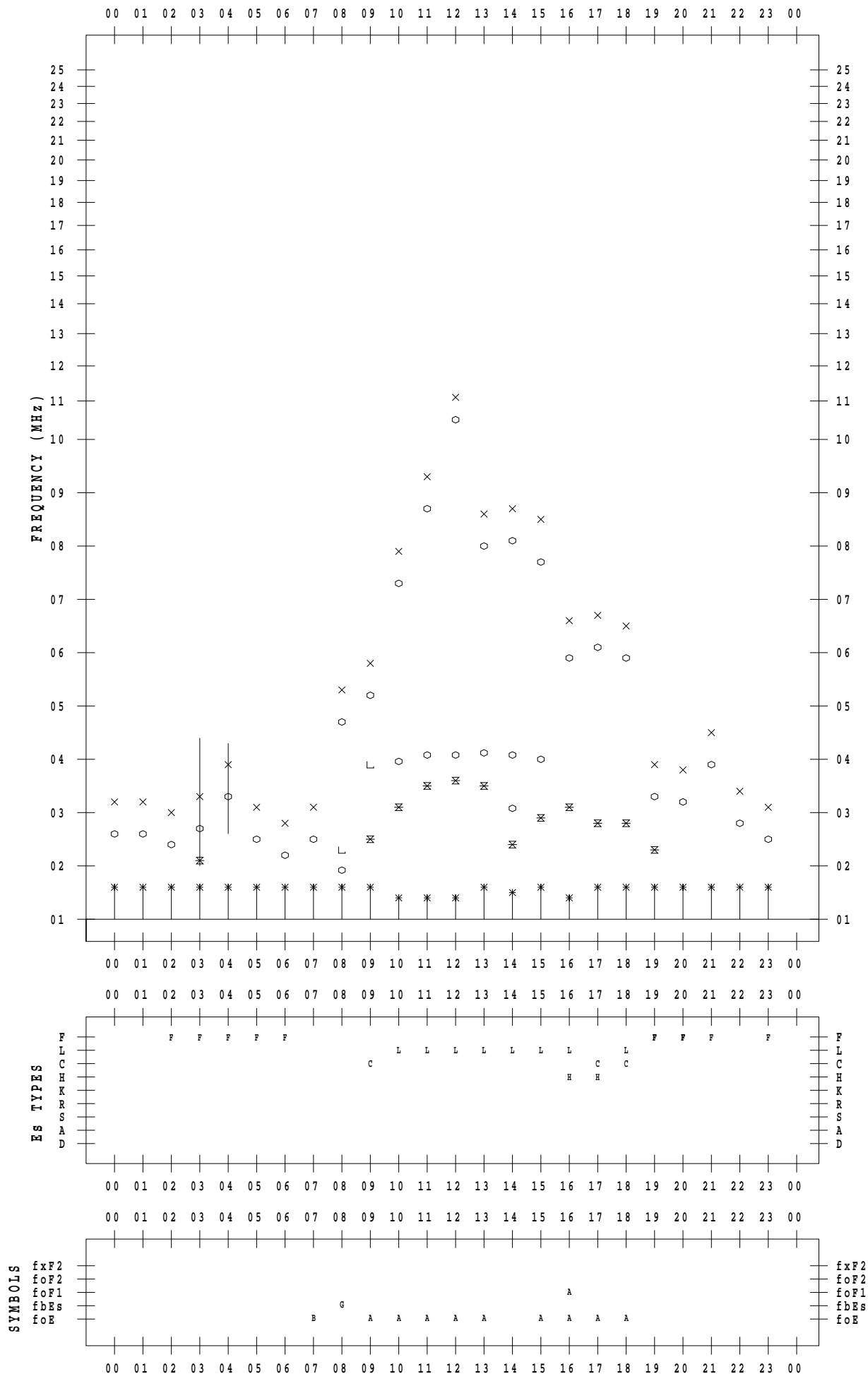
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 2

135 ° E MEAN TIME



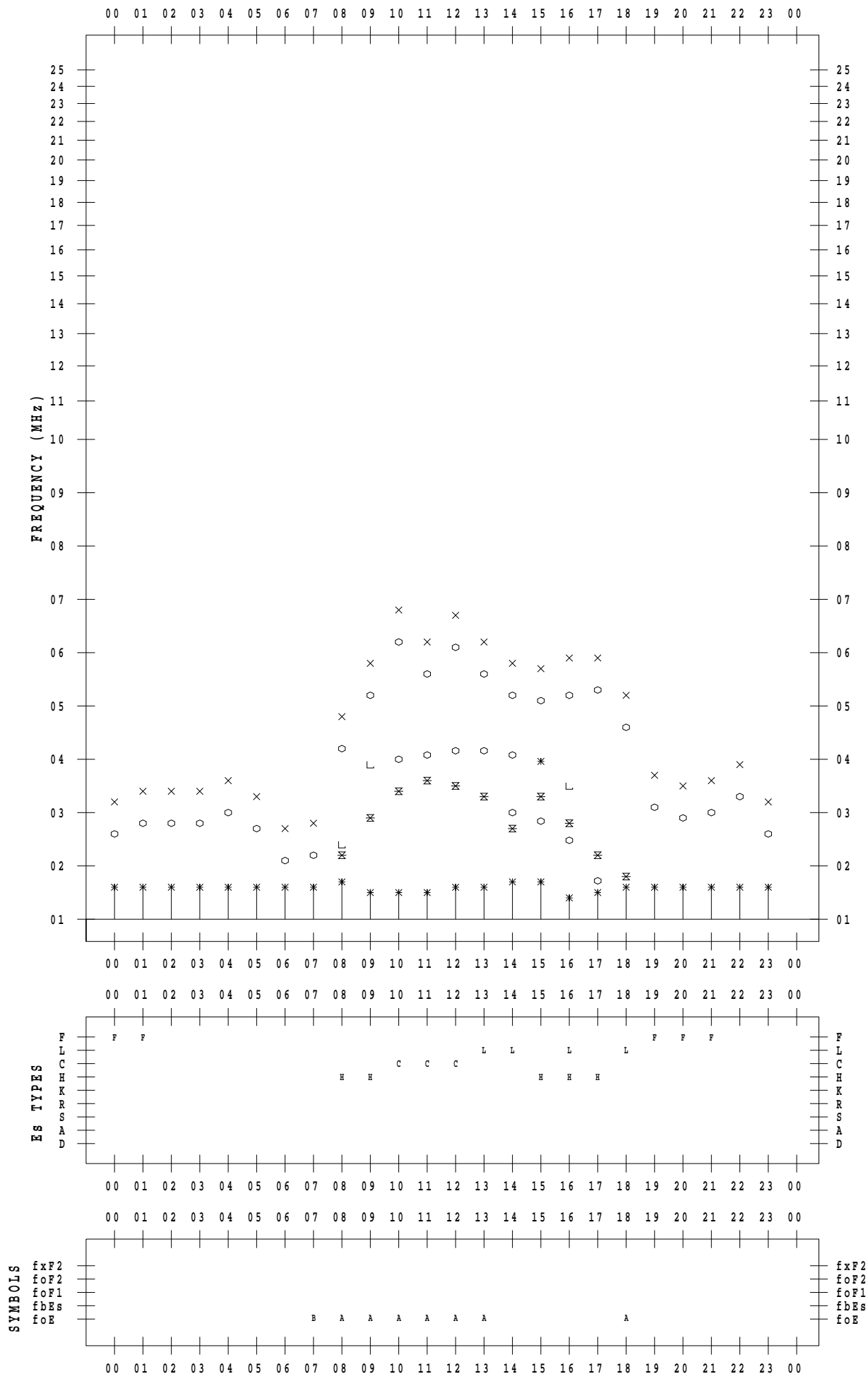
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 3

135 ° E MEAN TIME



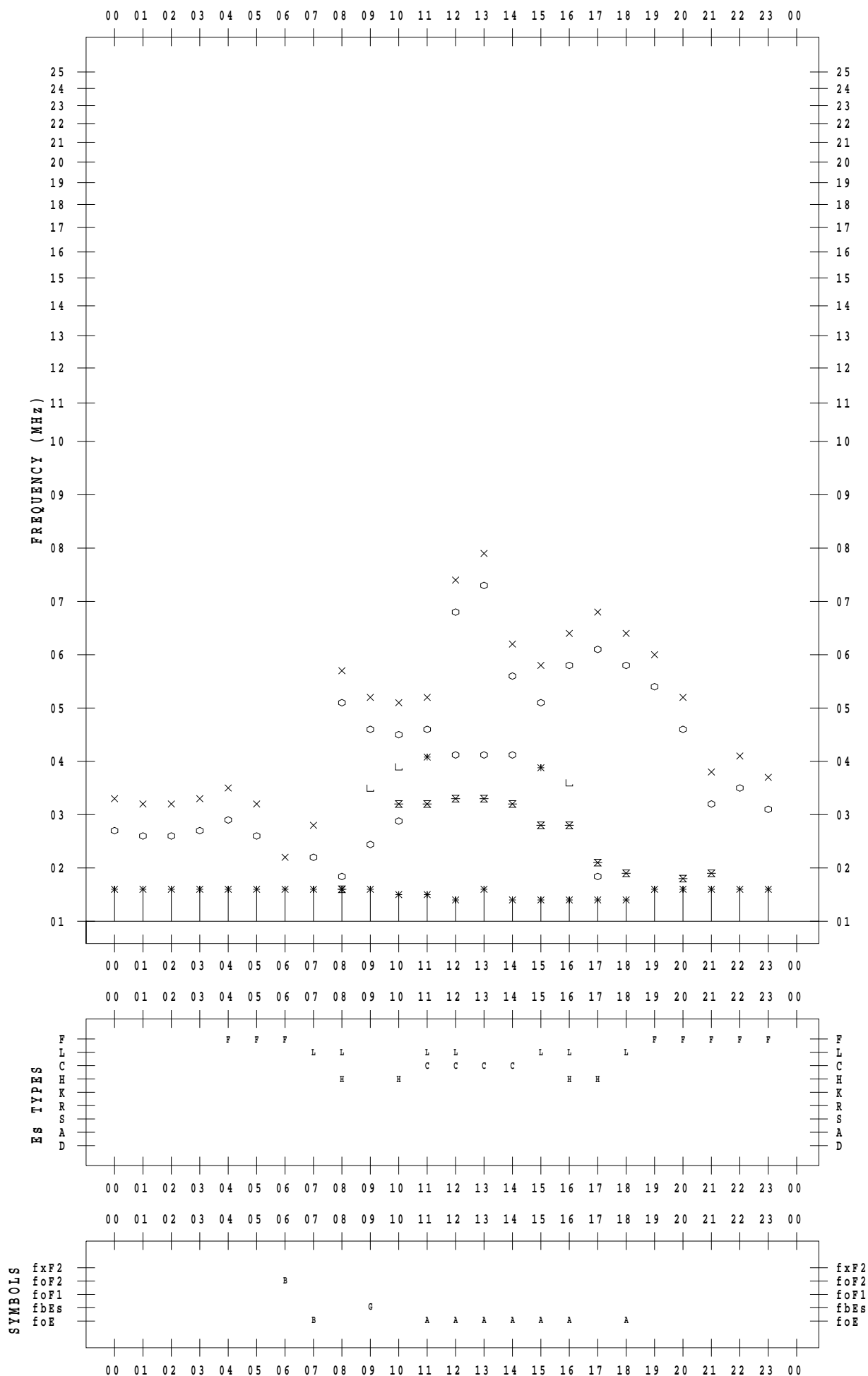
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 4

135 ° E MEAN TIME



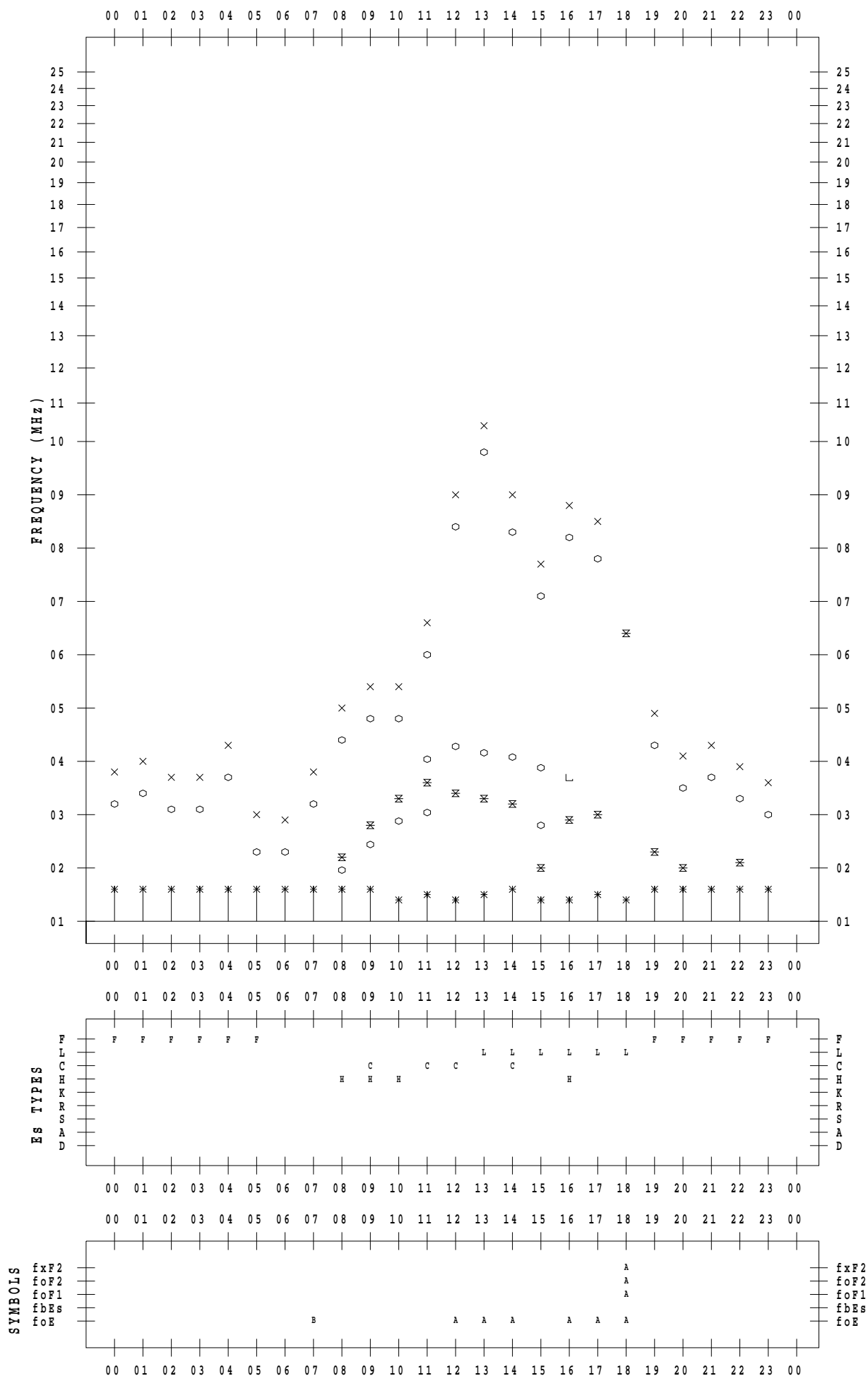
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 5

135 ° E MEAN TIME



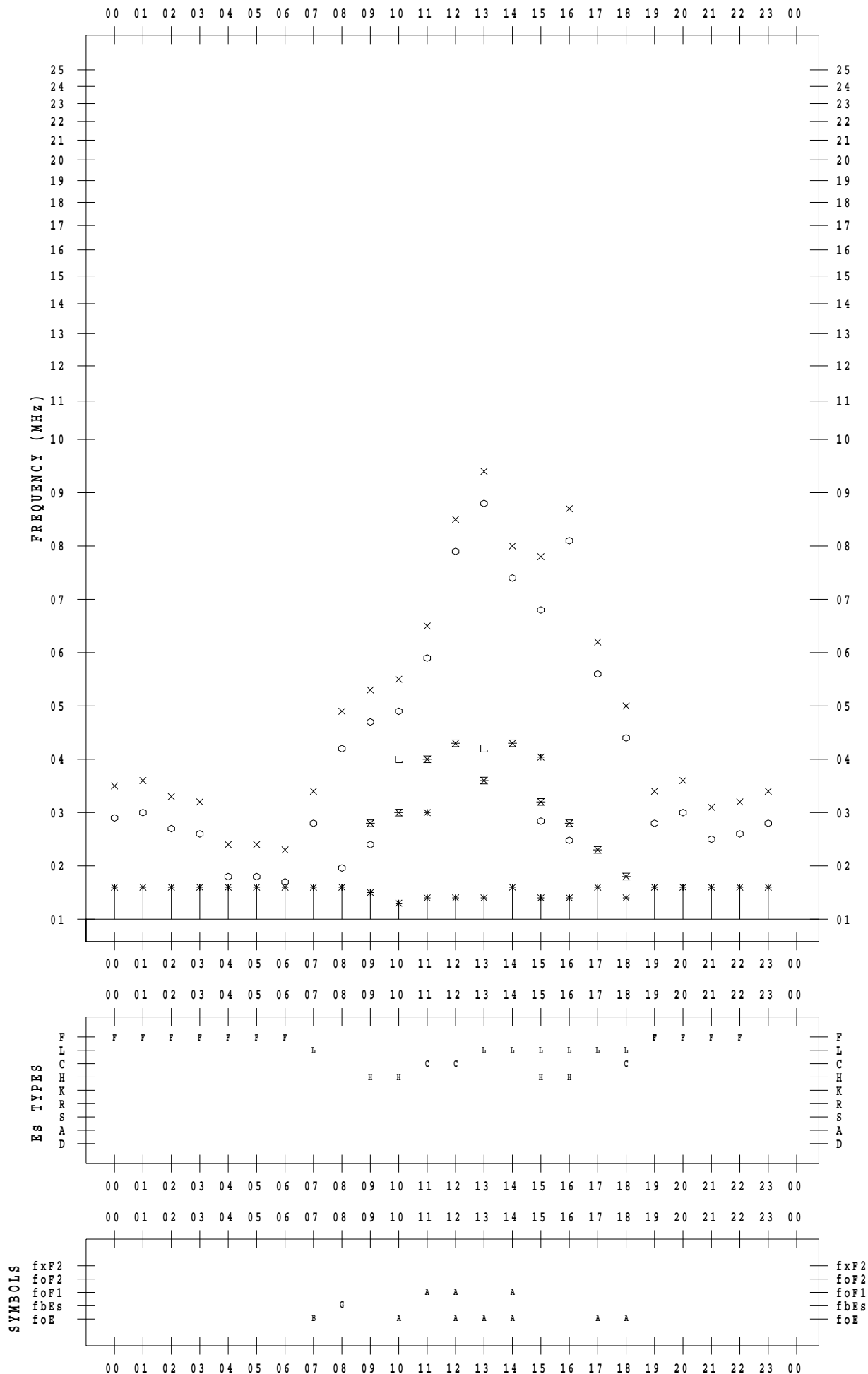
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 6

135 ° E MEAN TIME



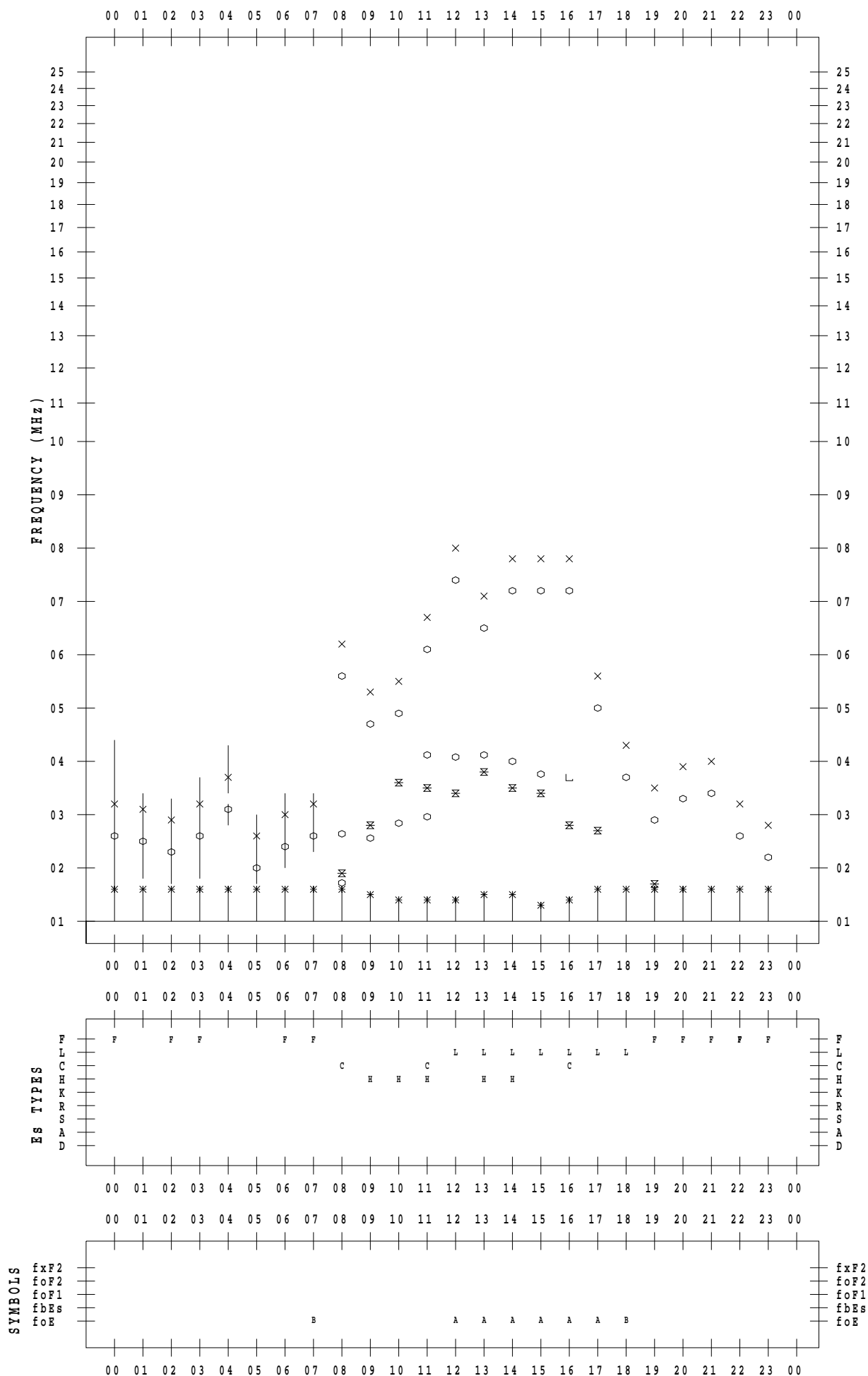
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 7

135 ° E MEAN TIME



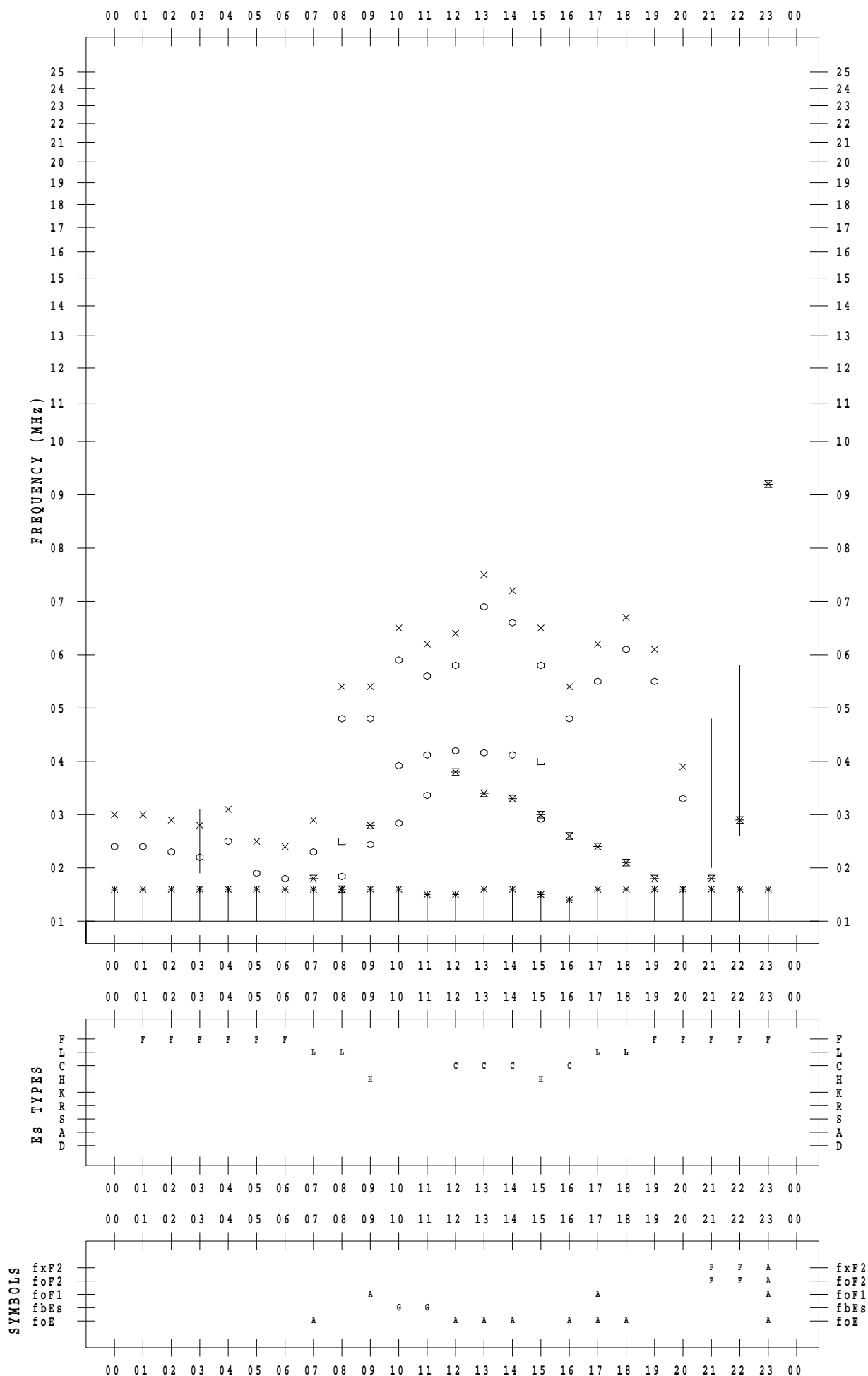
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 8

135 ° E MEAN TIME



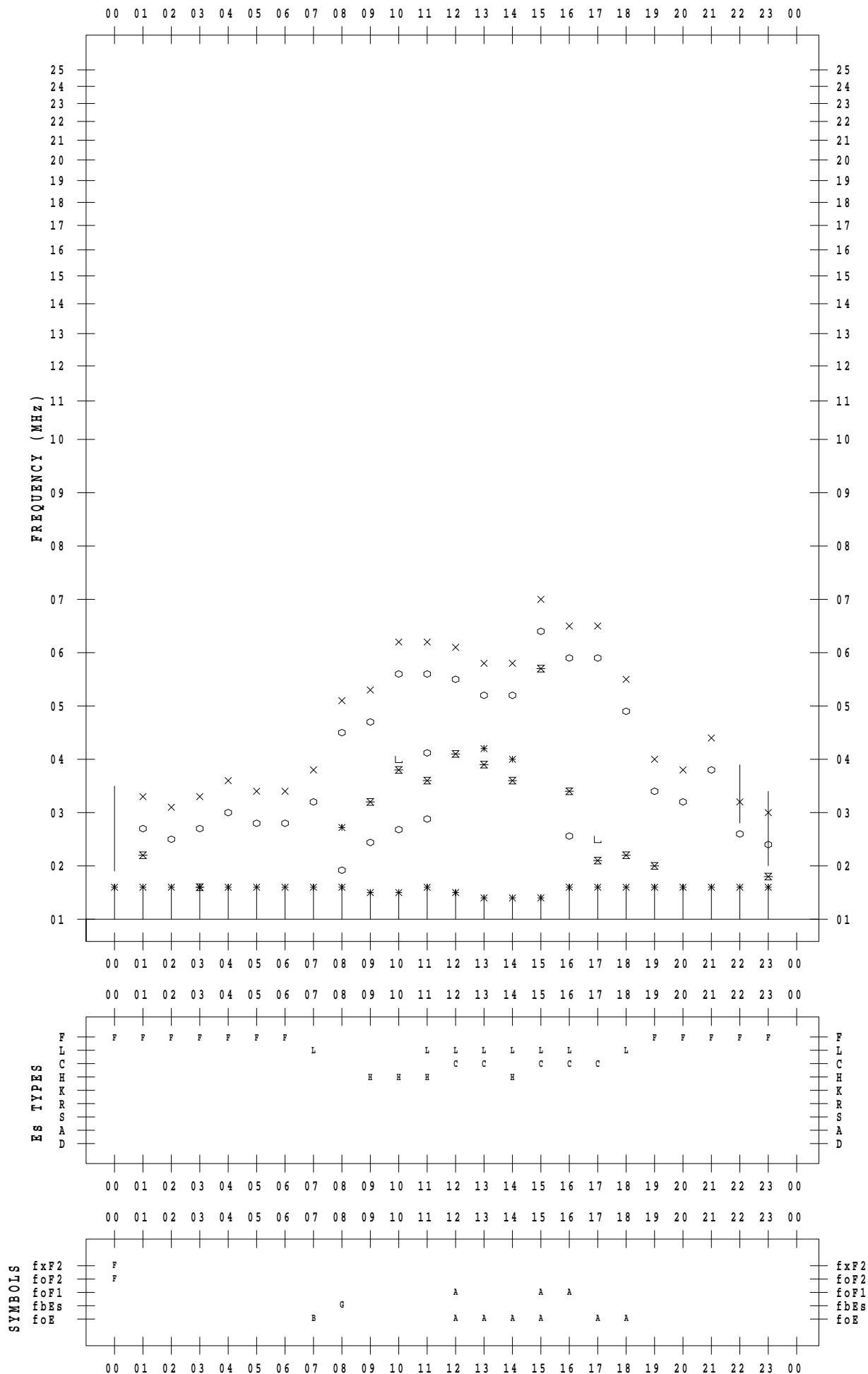
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 9

135 ° E MEAN TIME



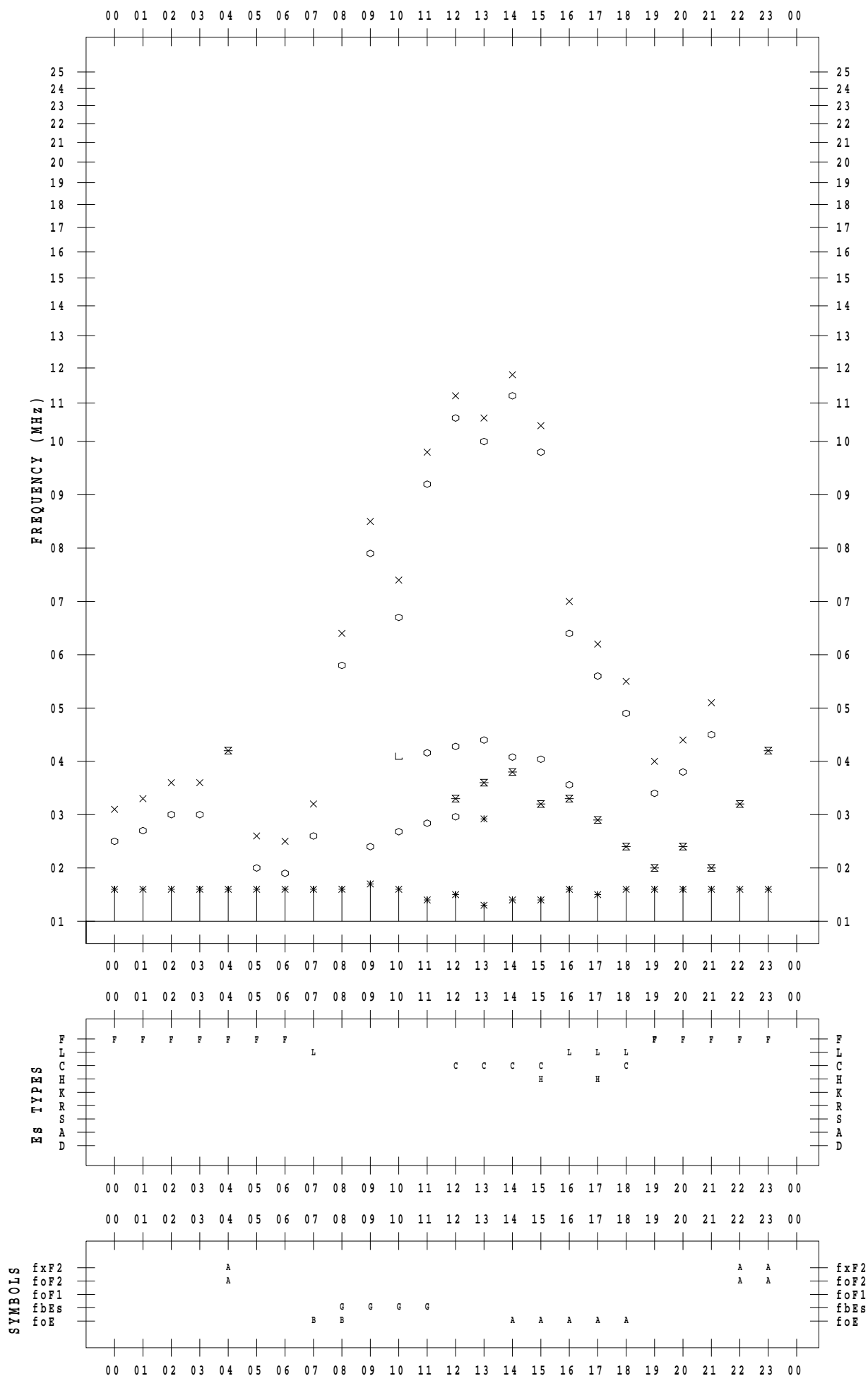
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 10

135 ° E MEAN TIME



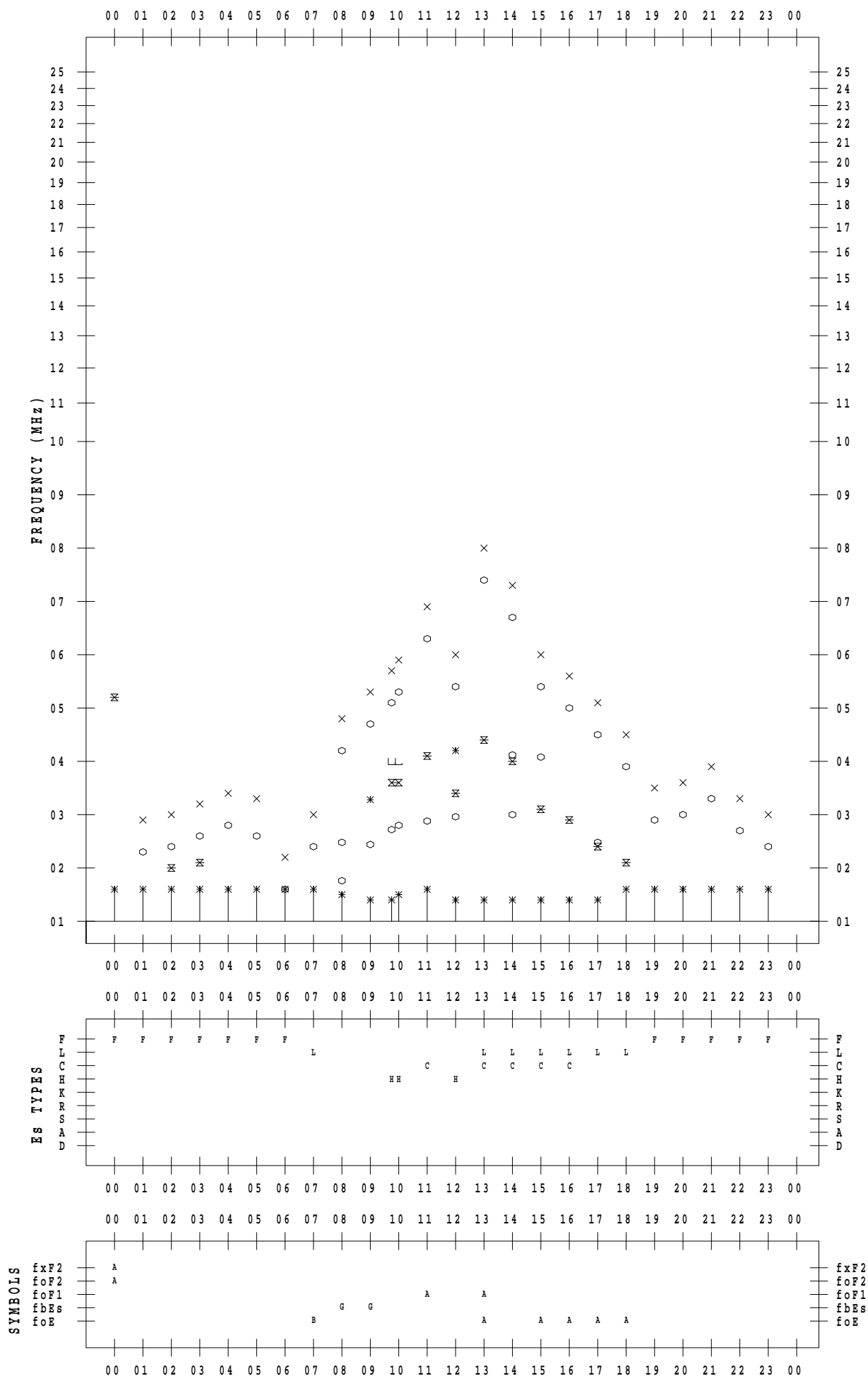
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 11

135 ° E MEAN TIME



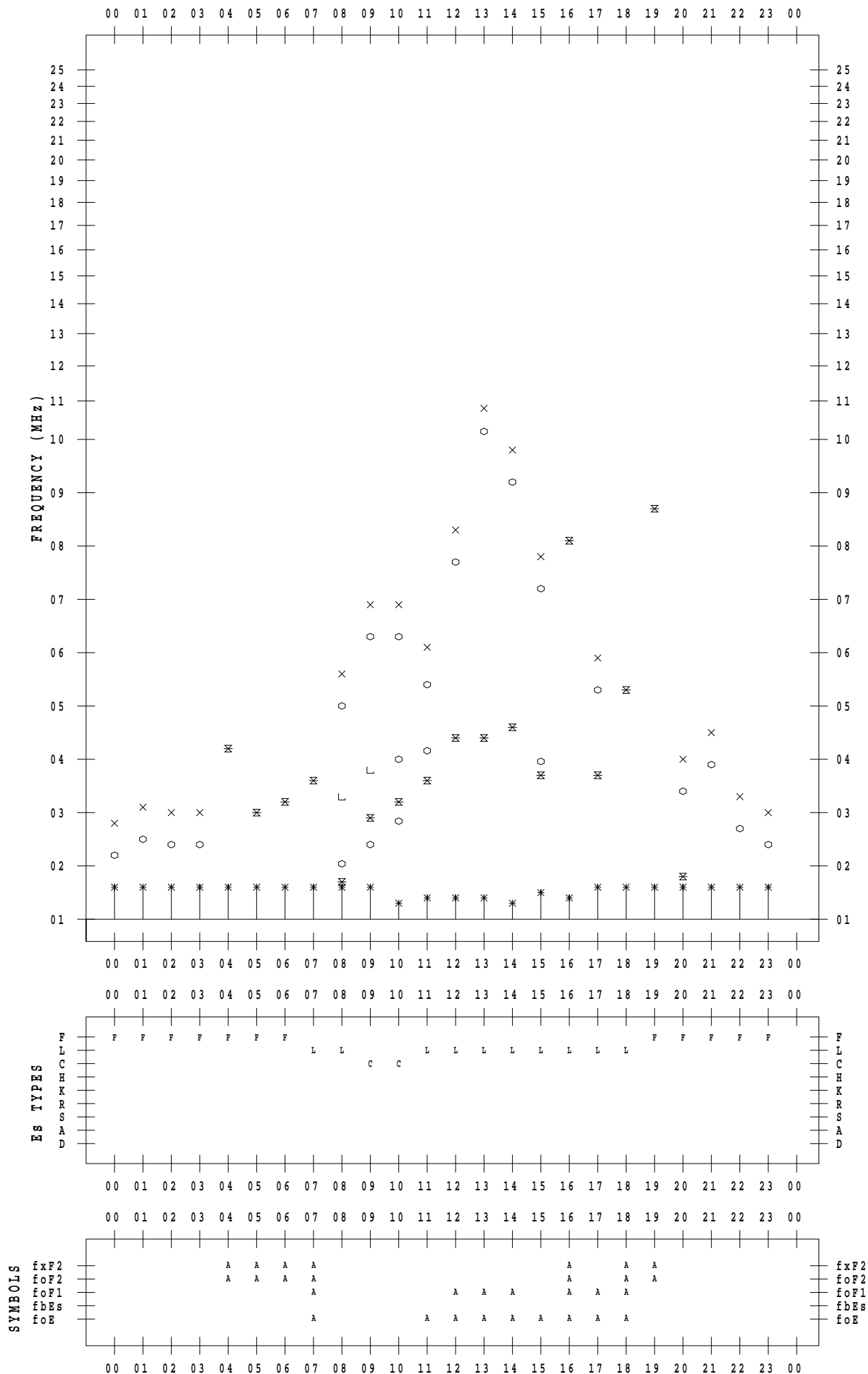
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 12

135 ° E MEAN TIME



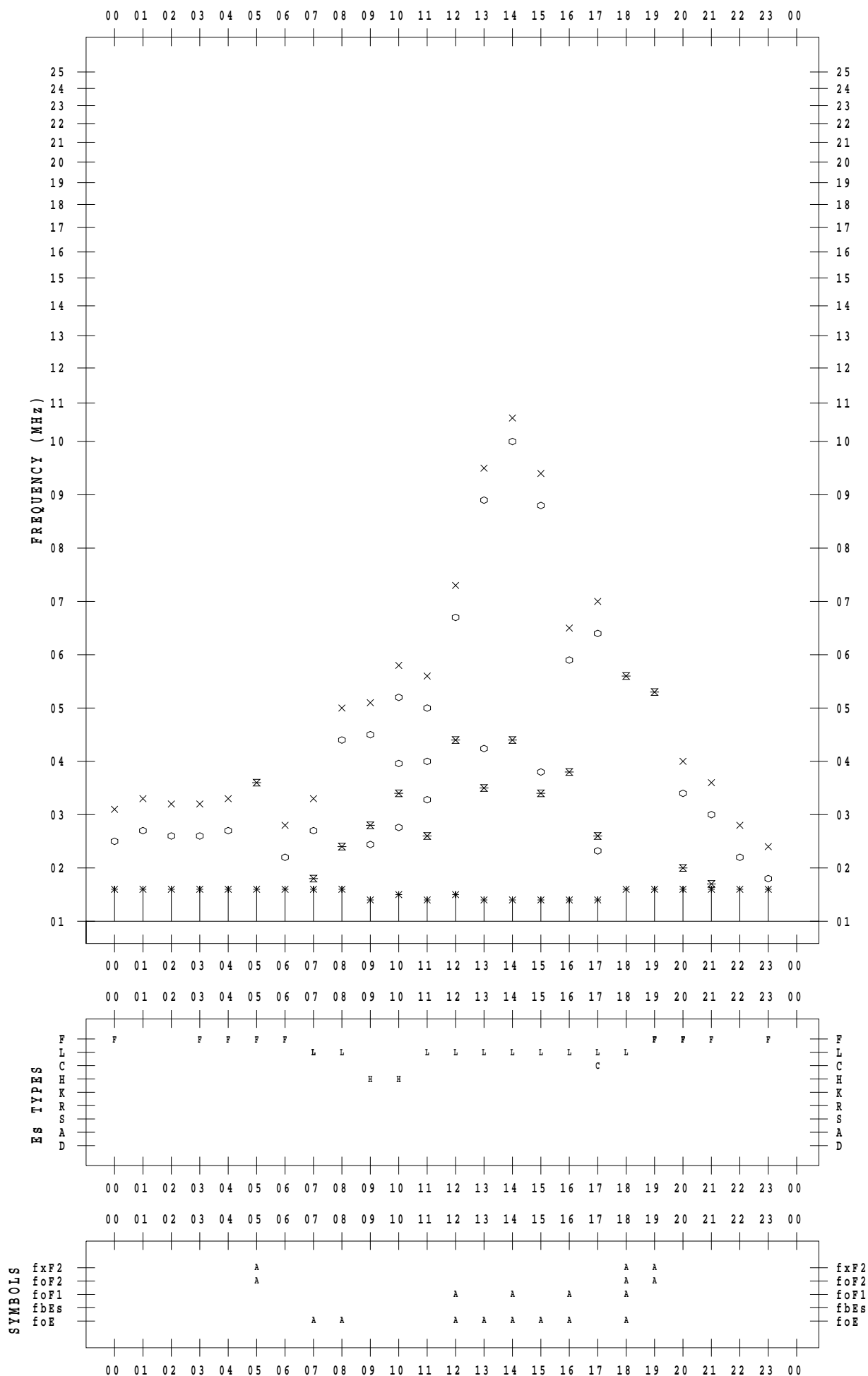
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 13

135 ° E MEAN TIME



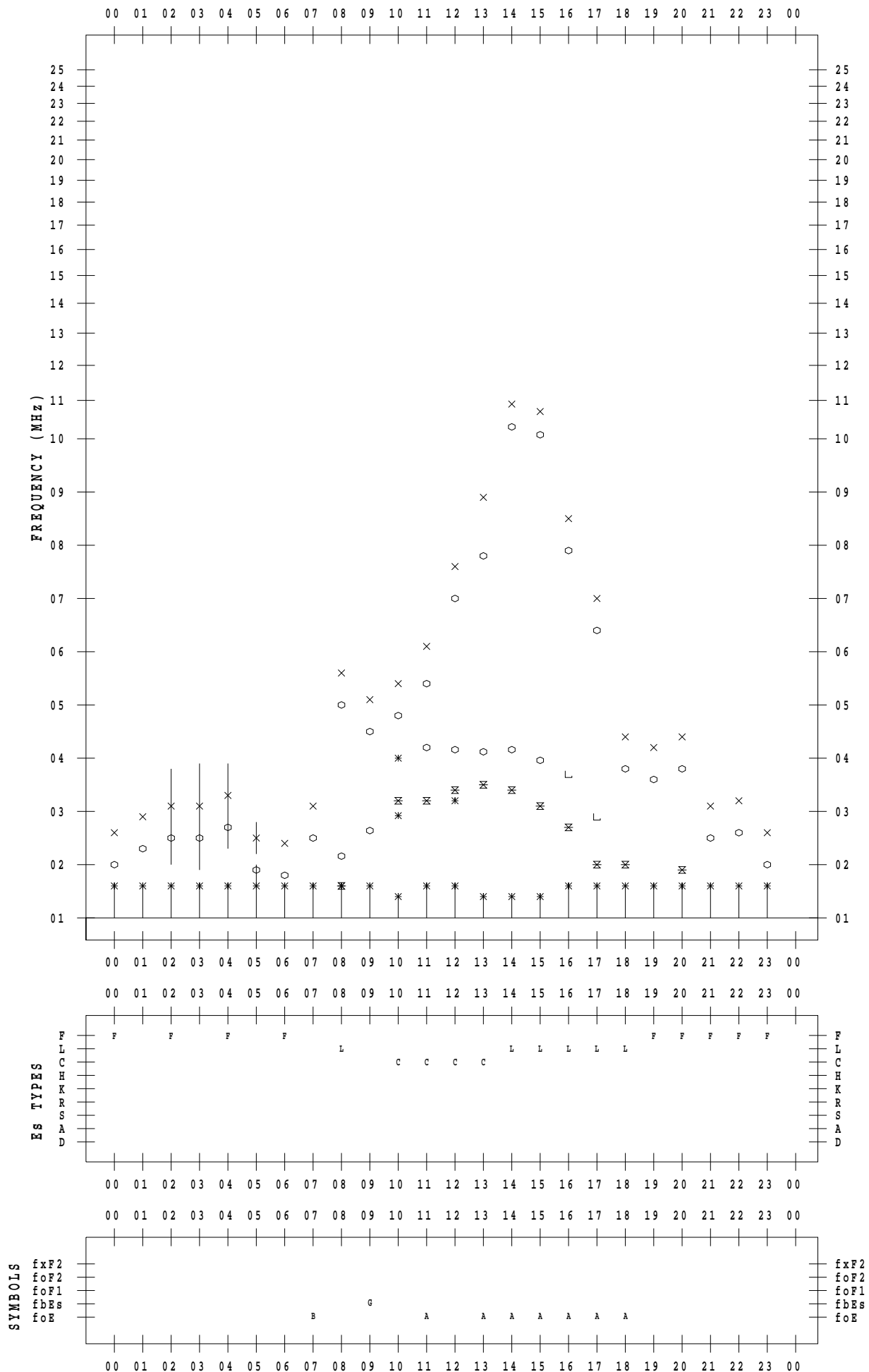
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 14

135 ° E MEAN TIME



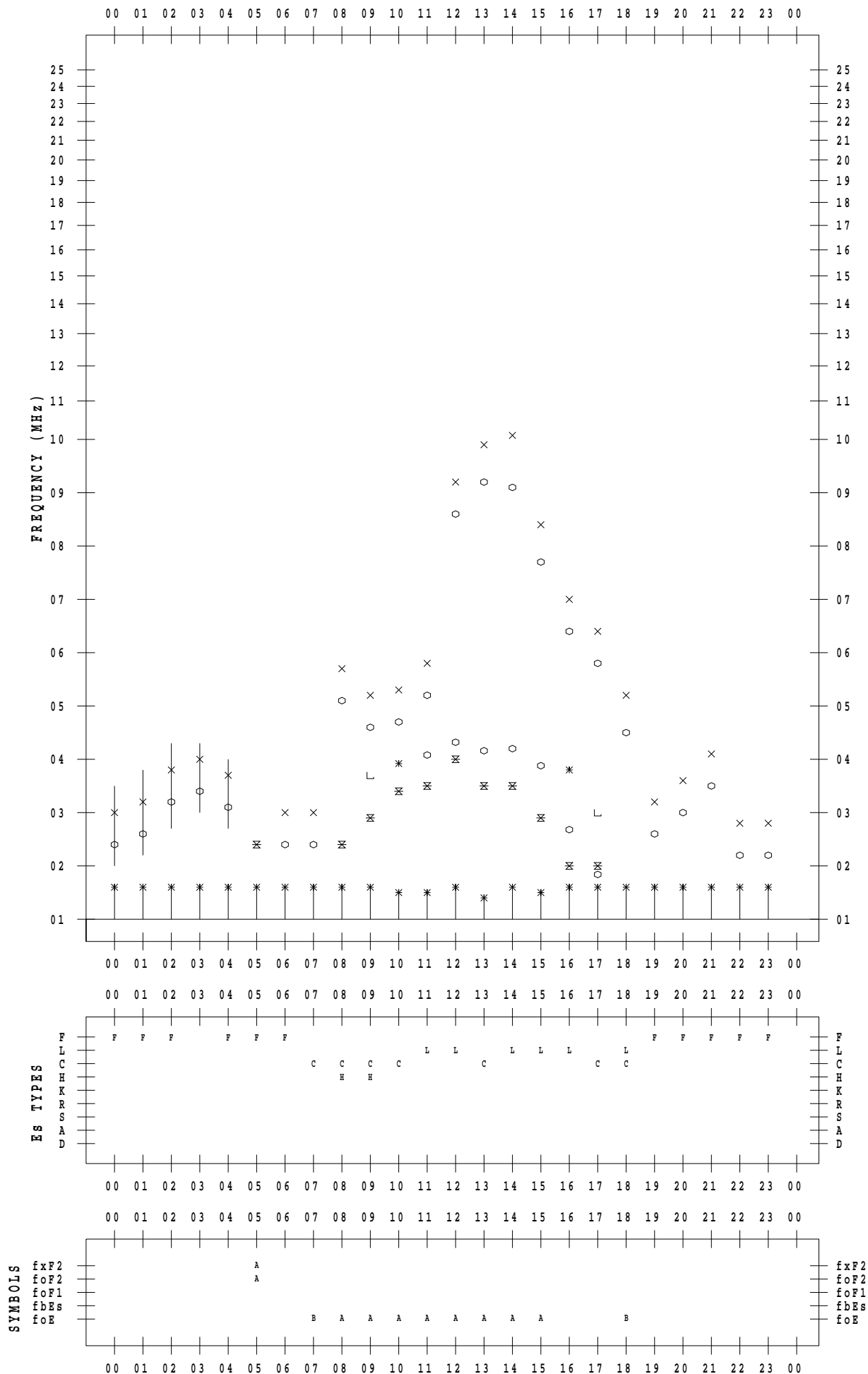
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 15

135 ° E MEAN TIME



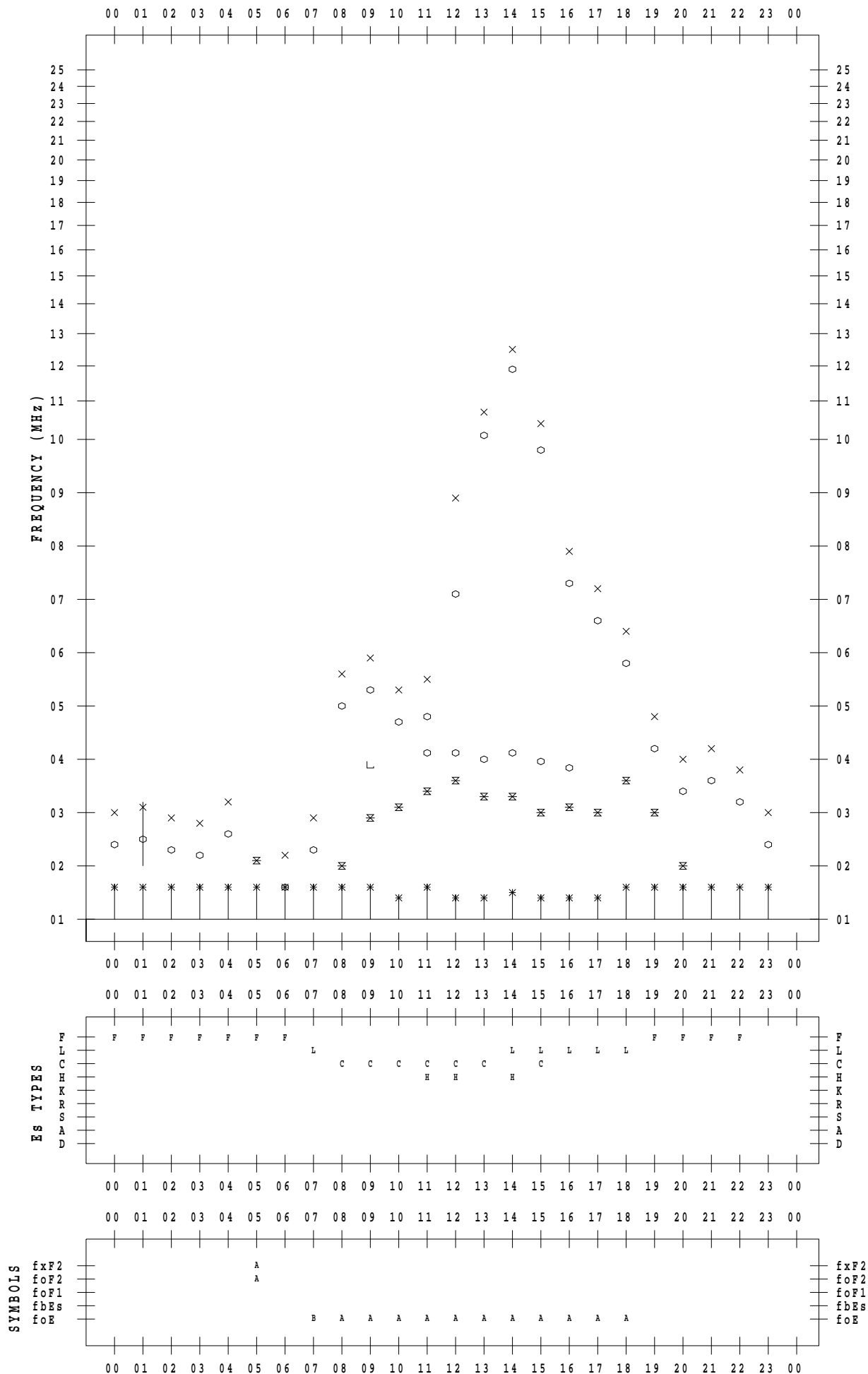
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 16

135 ° E MEAN TIME



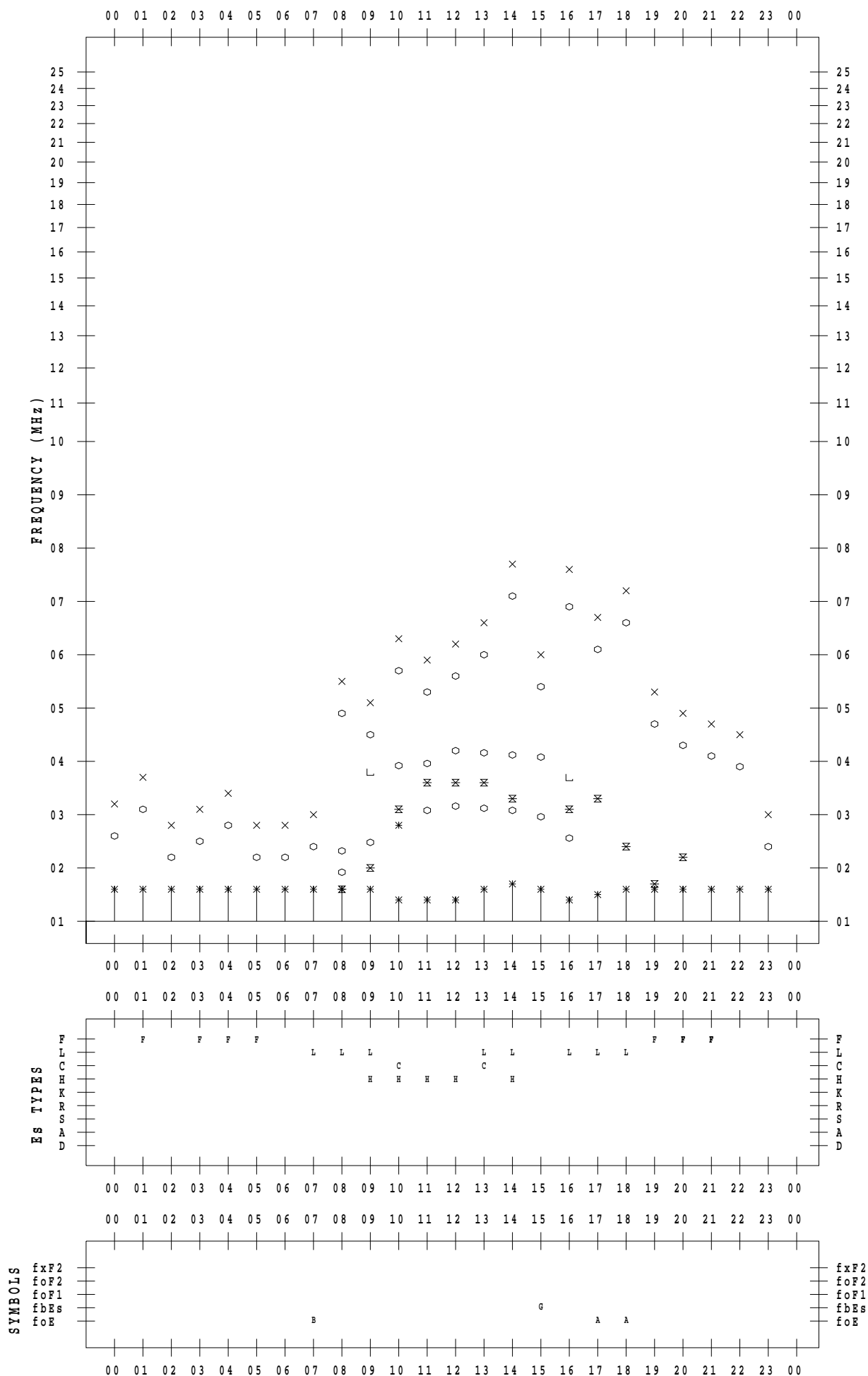
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 17

135 ° E MEAN TIME



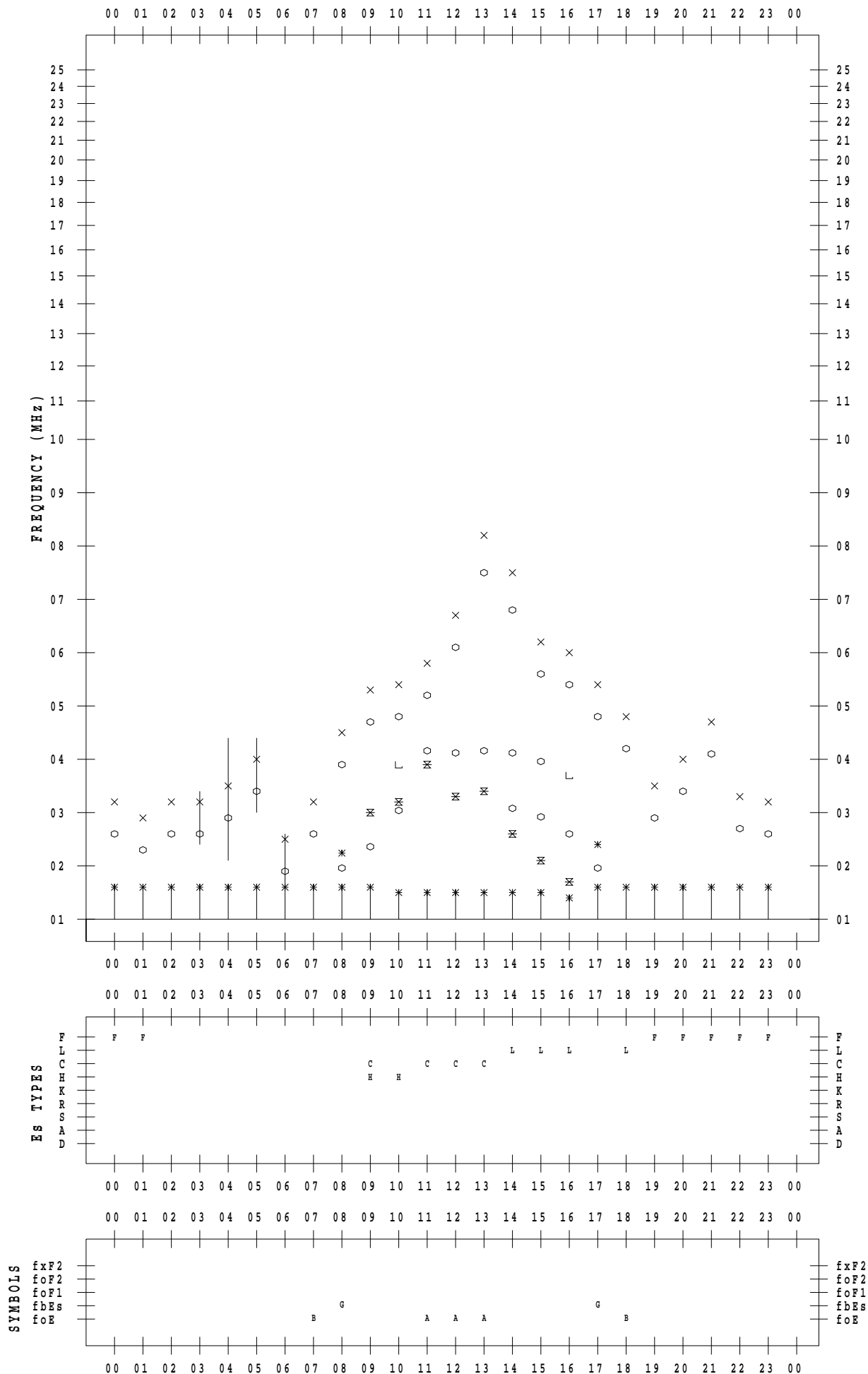
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 18

135 ° E MEAN TIME



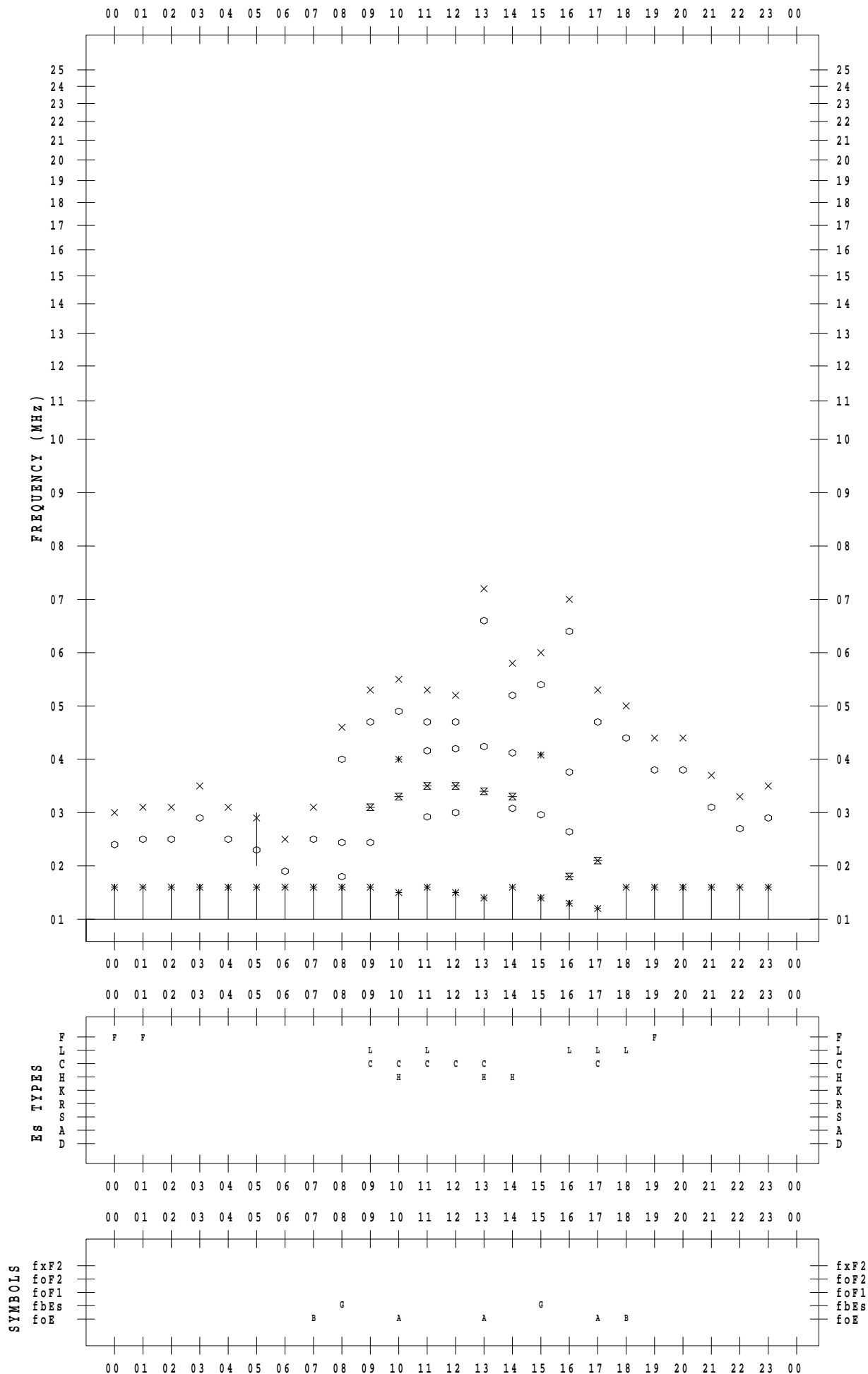
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 19

135 ° E MEAN TIME



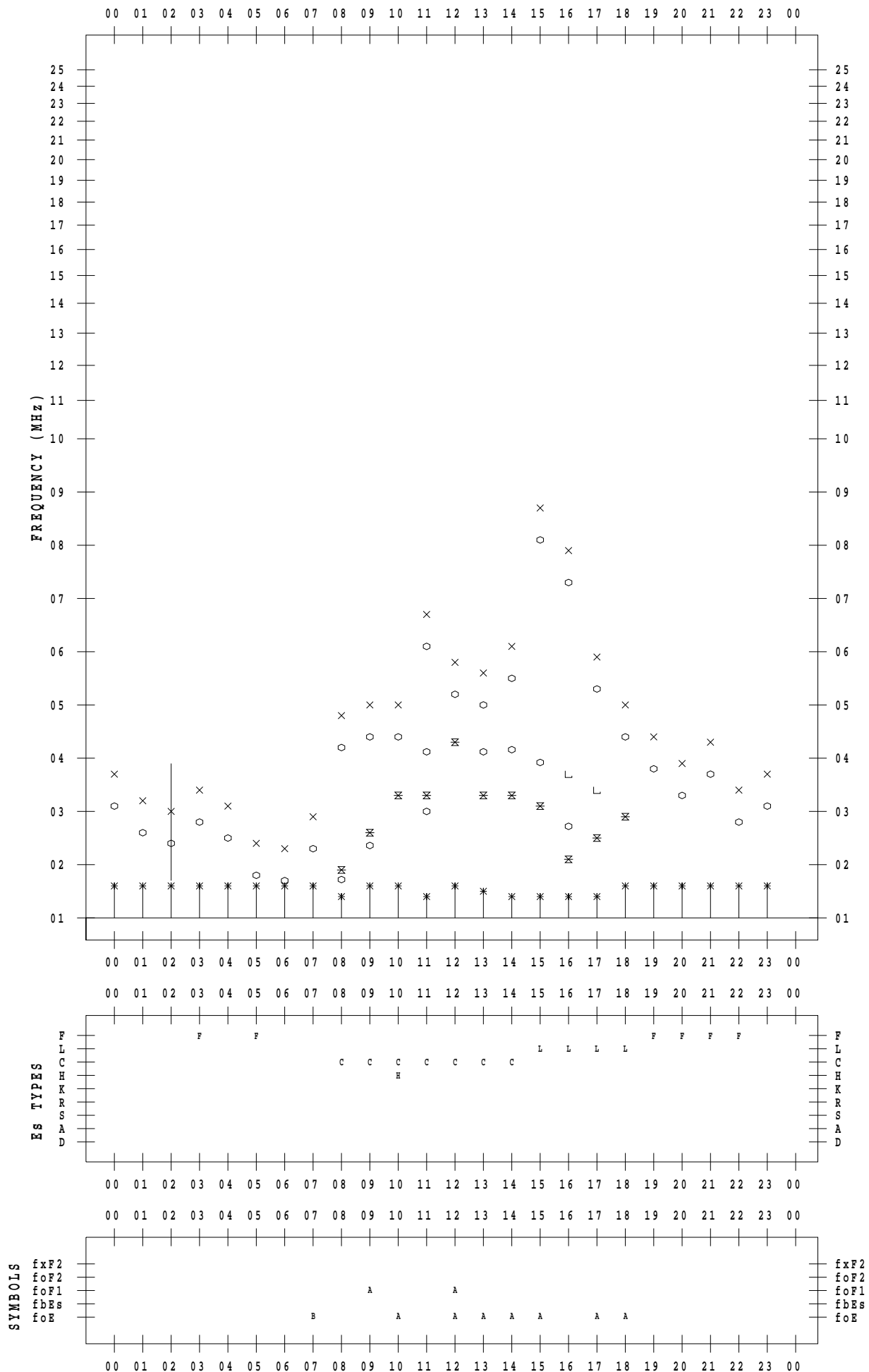
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 20

135 ° E MEAN TIME



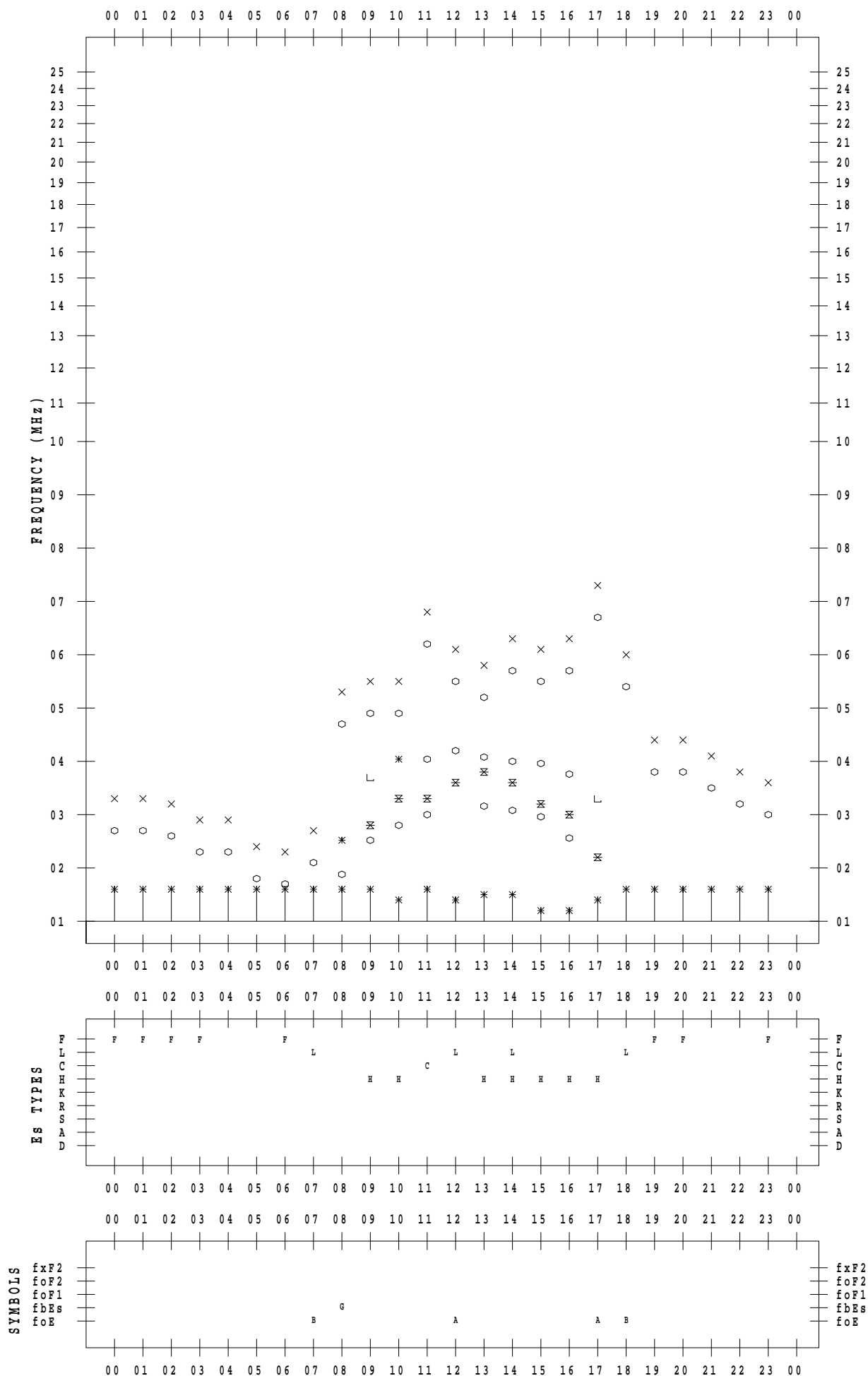
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 21

135 ° E MEAN TIME



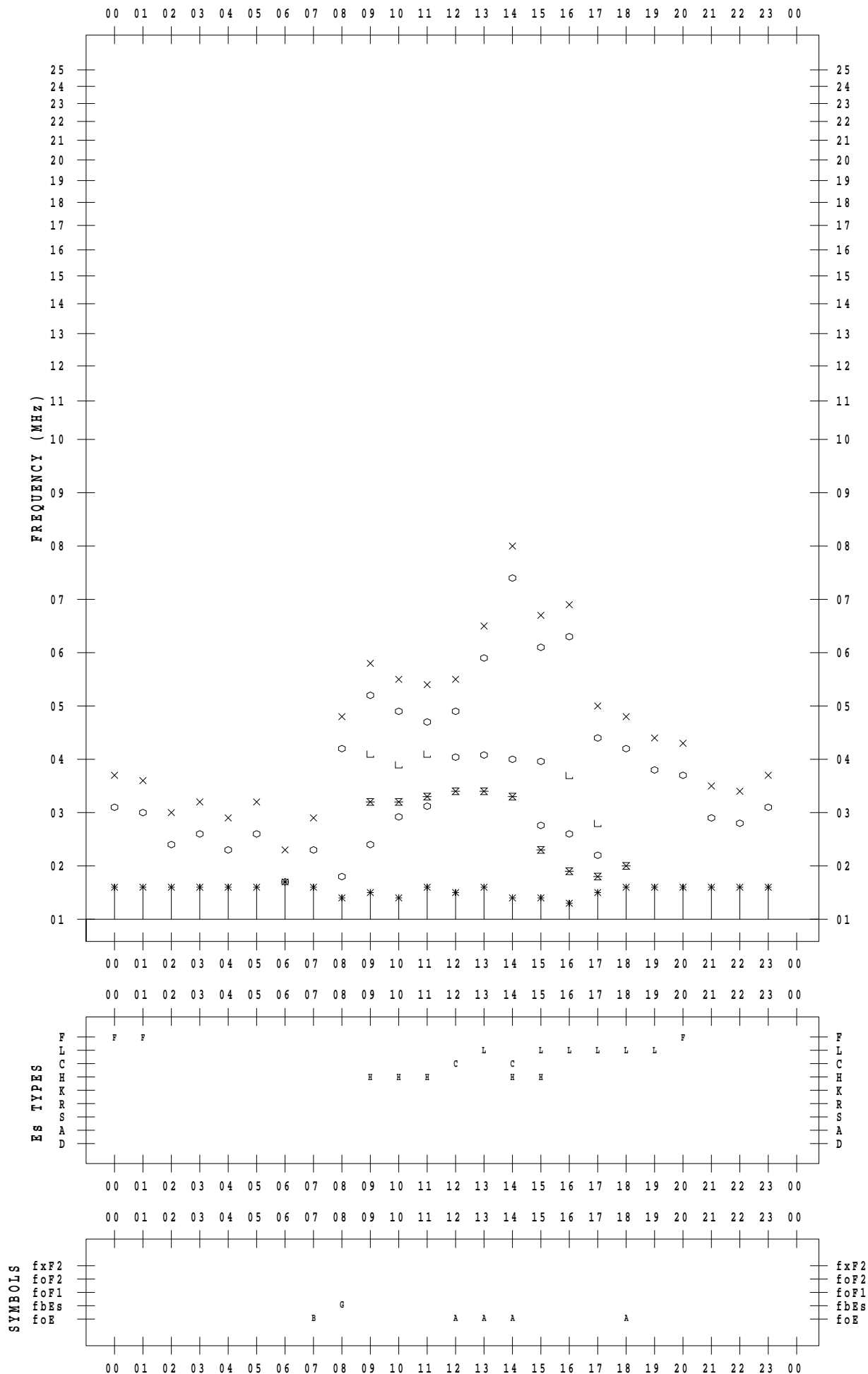
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 22

135 ° E MEAN TIME



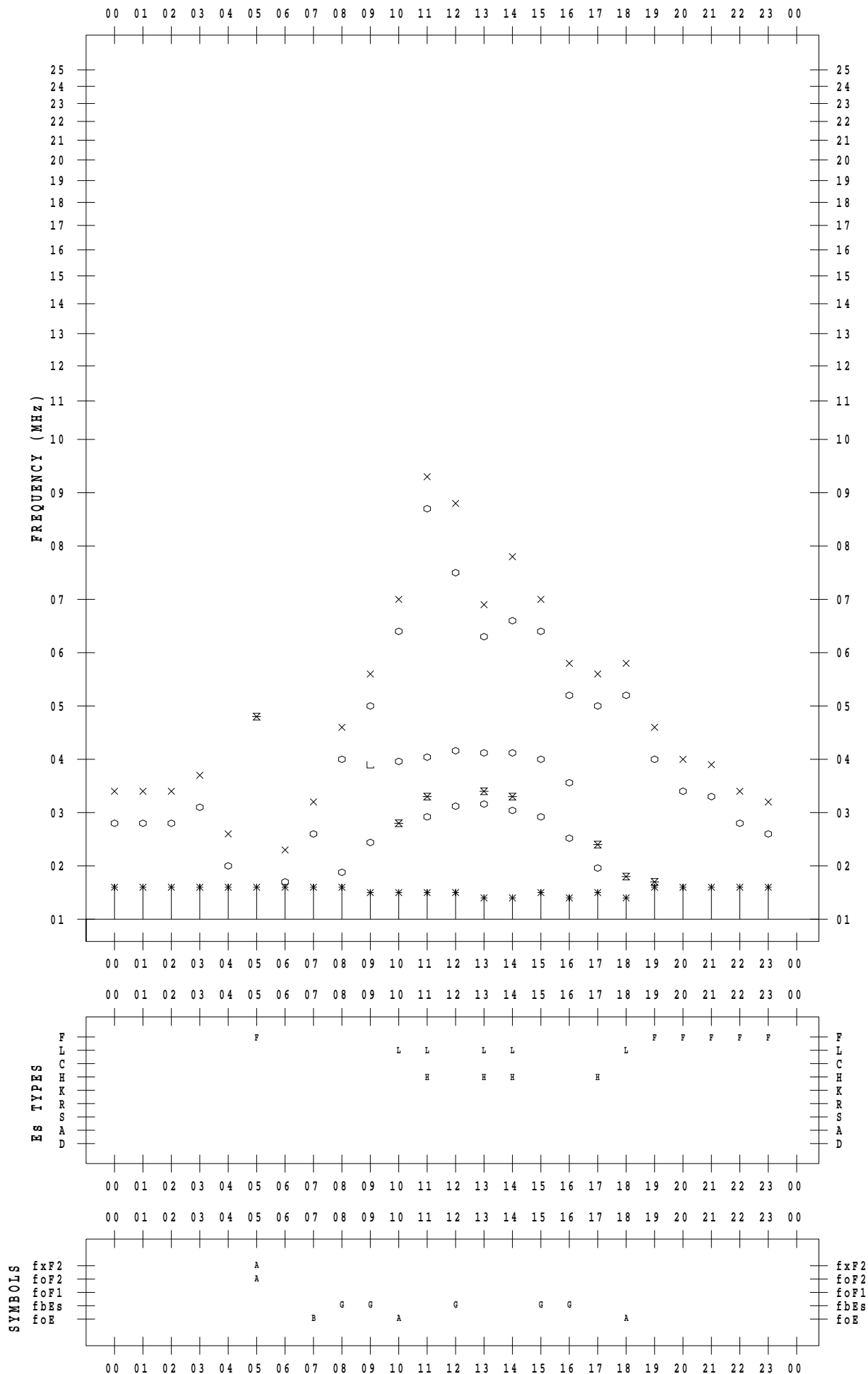
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 23

135 ° E MEAN TIME



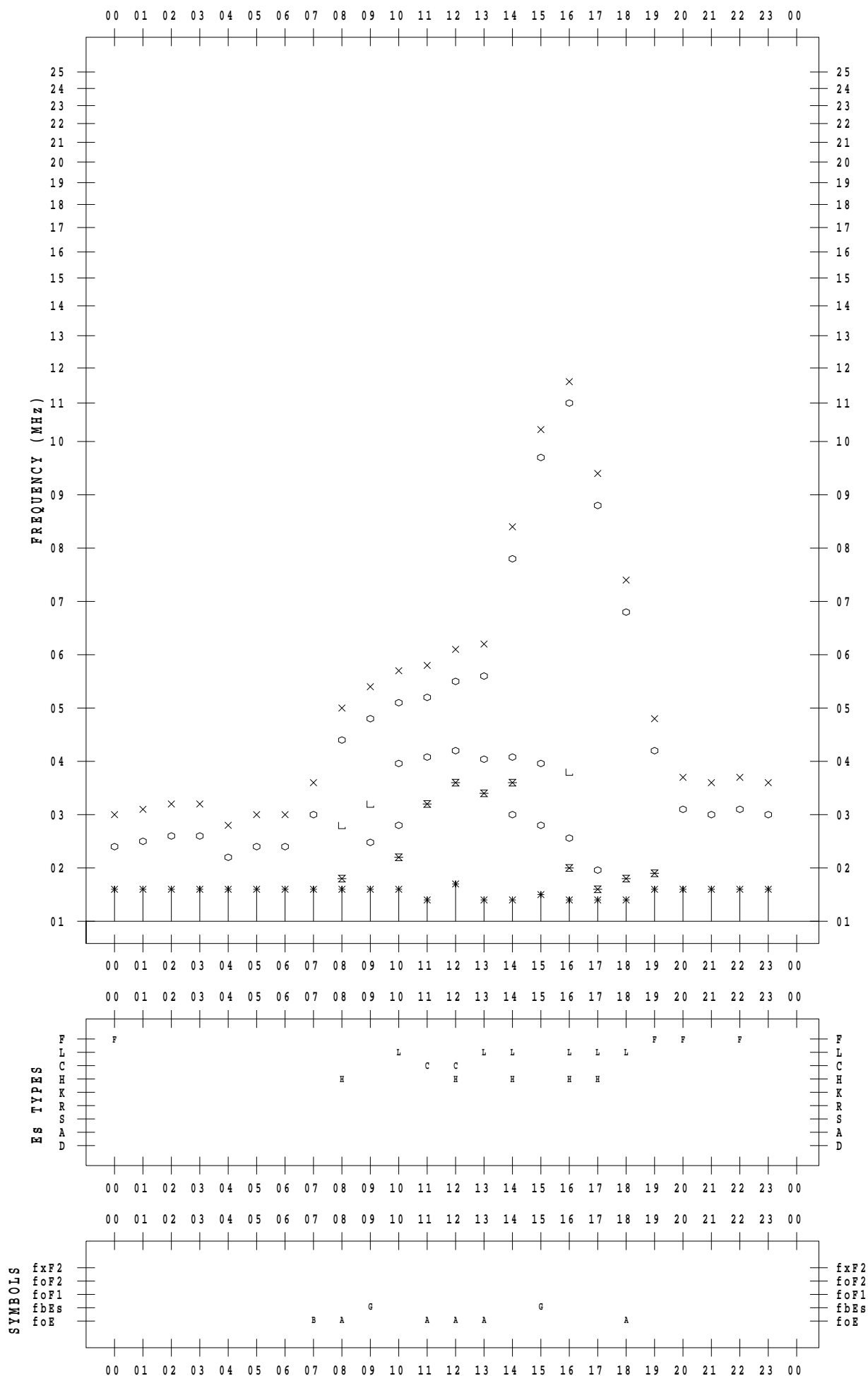
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 24

135 ° E MEAN TIME



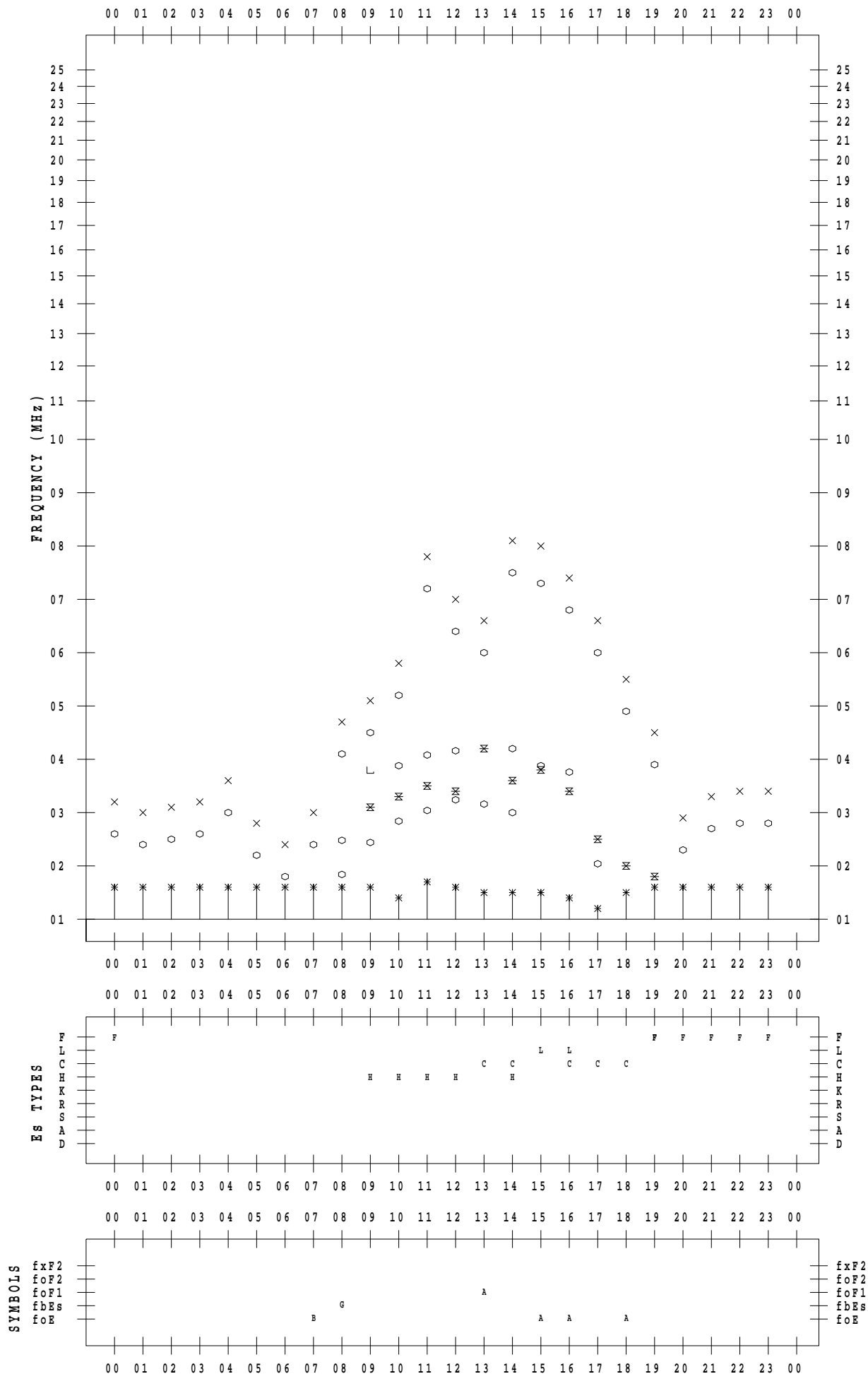
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 25

135 ° E MEAN TIME



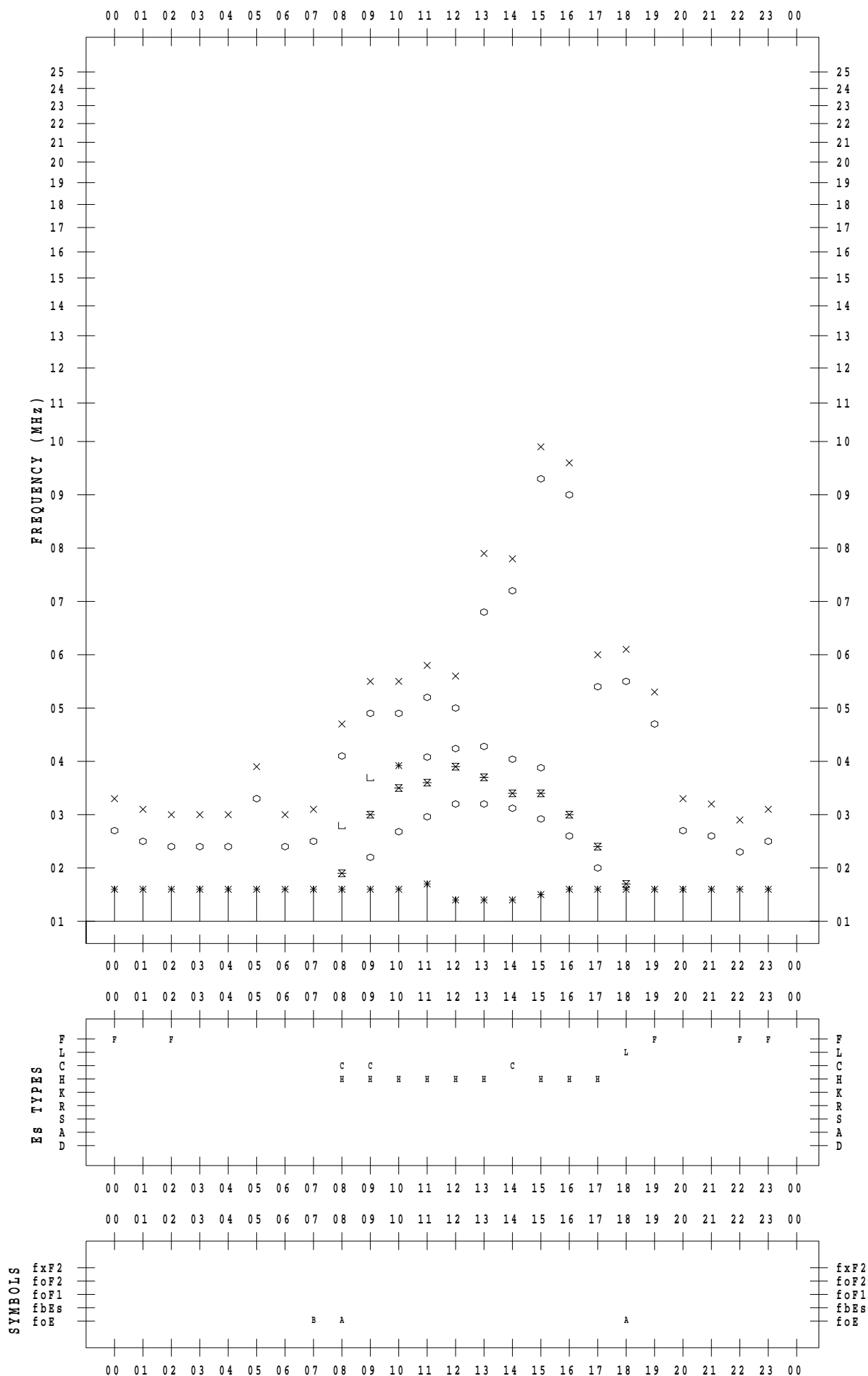
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 26

135 ° E MEAN TIME



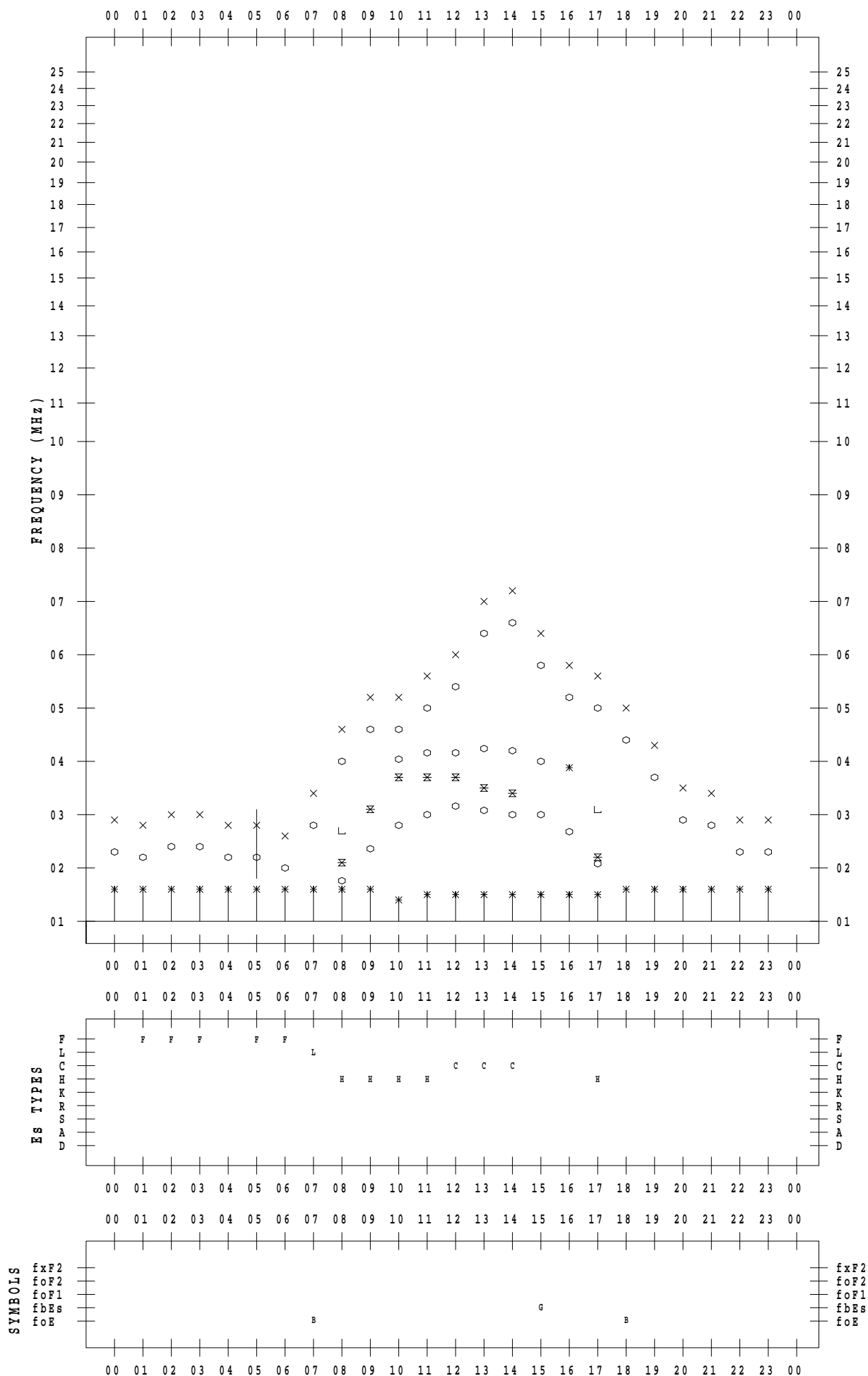
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 27

135 ° E MEAN TIME



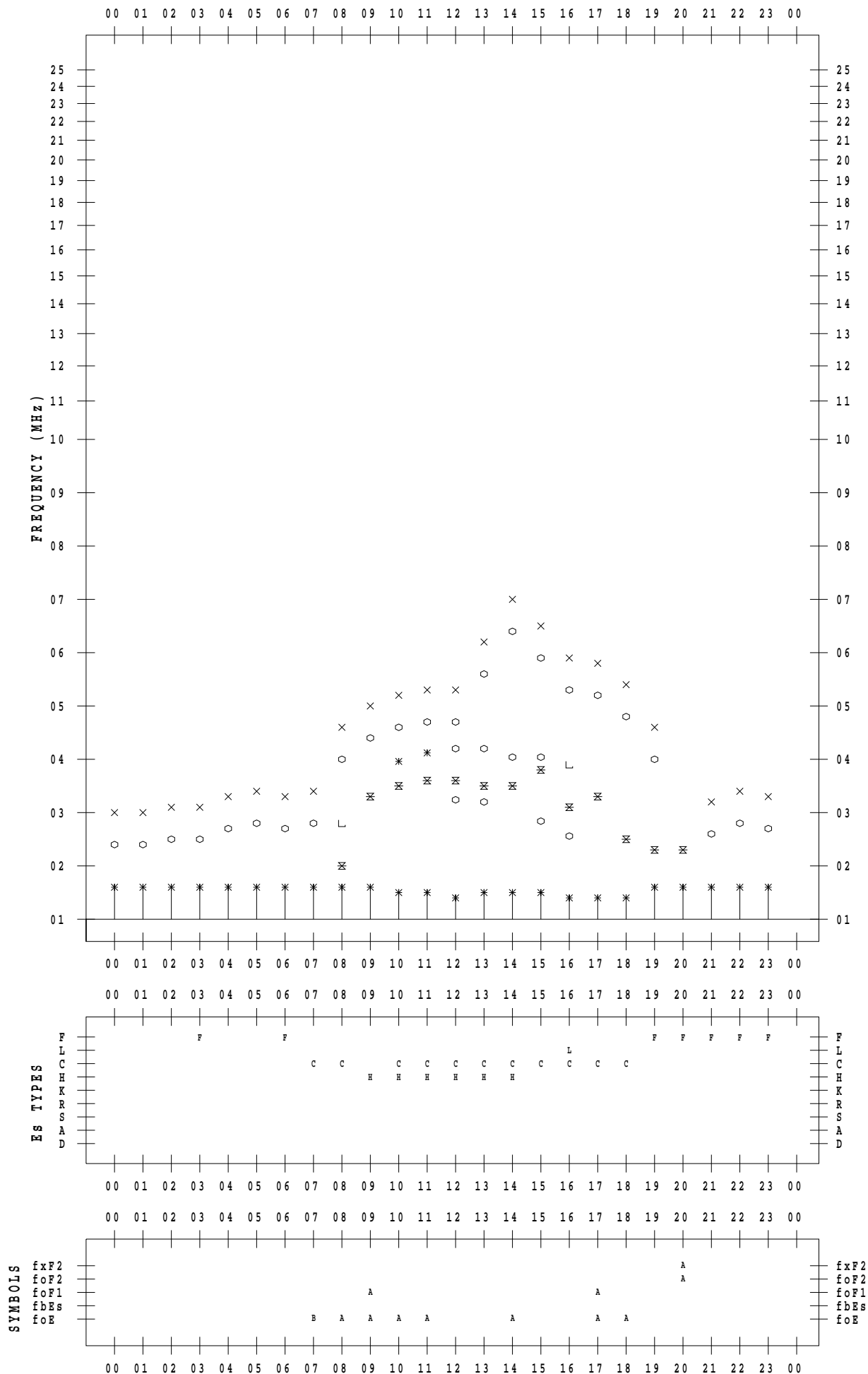
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 28

135 ° E MEAN TIME



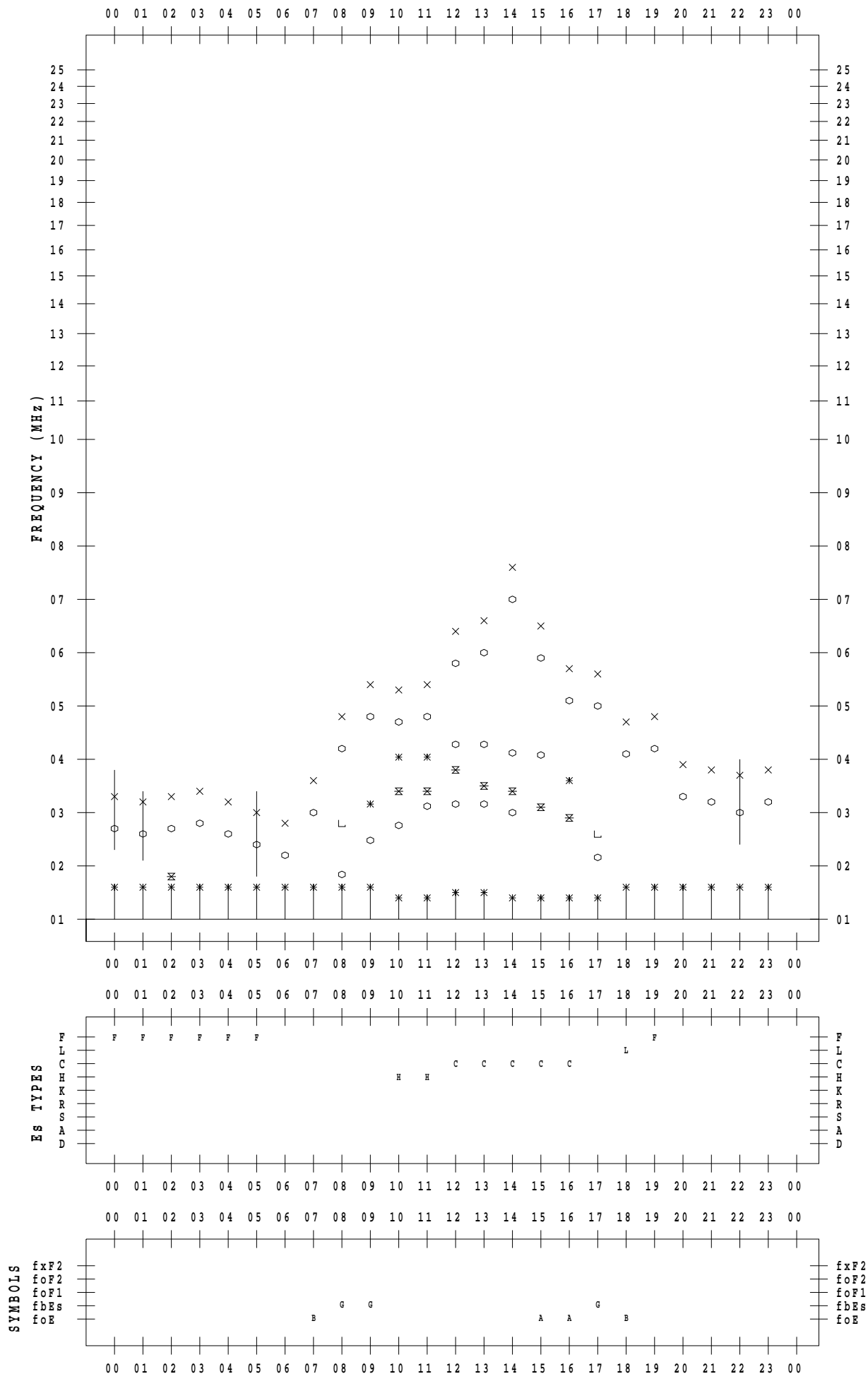
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 29

135 ° E MEAN TIME



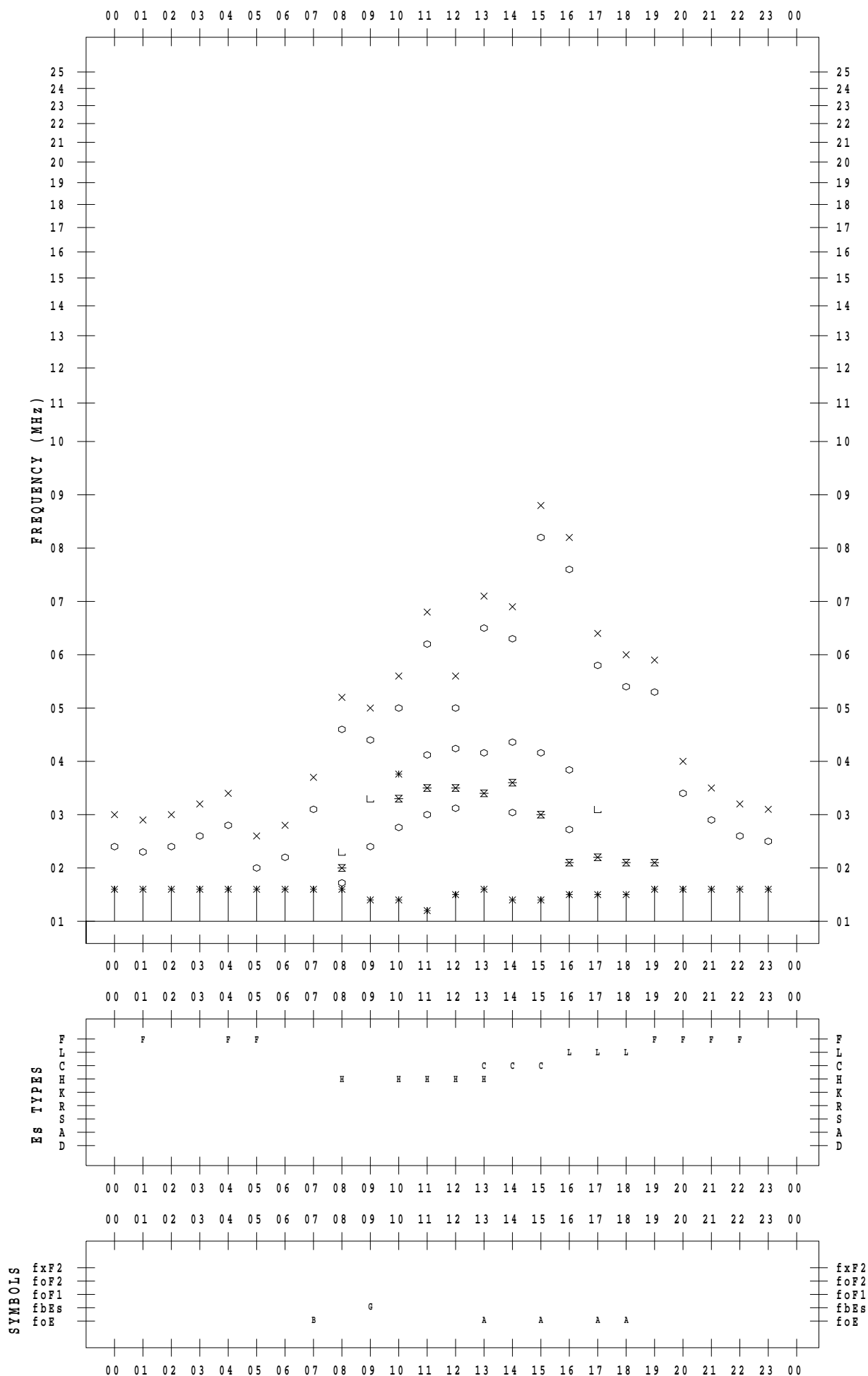
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 1 / 31

135 ° E MEAN TIME

