

IONOSPHERIC DATA IN JAPAN

FOR January 2021

VOL. 73 NO. 1

CONTENTS

Preface

Introduction 1

A. Ionosphere

A1. Automatic Scaling

Hourly Values at Wakkanai ($foF2$, fEs and $fmin$) 4

Hourly Values at Kokubunji ($foF2$, fEs and $fmin$) 7

Hourly Values at Yamagawa ($foF2$, fEs and $fmin$) 10

Hourly Values at Okinawa ($foF2$, fEs and $fmin$) 13

Summary Plots at Wakkanai 16

Summary Plots at Kokubunji 24

Summary Plots at Yamagawa 32

Summary Plots at Okinawa 40

Monthly Medians $h'F$ and $h'Es$ 48

Monthly Medians Plot of $foF2$ 50

A2. Manual Scaling

Hourly Values at Wakkanai 51

Hourly Values at Kokubunji 65

Hourly Values at Yamagawa 79

Hourly Values at Okinawa 93

f -plot at Wakkanai 108

f -plot at Kokubunji 139

f -plot at Yamagawa 170

f -plot at Okinawa 201

« 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. 2021

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	33	35	31	30	34	35	A	34	49	55	64	67	51	49	53	53	42	30	A	24	A	29	A	30
2	A	32	31	32	37	38	32	35	55	64	58	68	61	47	55	56	40	35	34	30	25	32	49	39
3	38	35	31	31	31	30	29	33	46	58	56	62	47	49	60	54	42	32	31	31	25	31	31	32
4	32	31	30	33	31	34	24	34	48	48	53	63	53	53	50	45	40	A	23	22	24	A	29	26
5	27	31	32	32	31	27	24	30	41	53	61	61	52	54	53	45	42	32	26	A	A	29	30	30
6	31	31	31	30	29	24	N 23	30	49	55	48	60	56	55	51	53	48	37	31	33	25	25	33	33
7	33	33	31	31	38	34	N	35	45	47	47	62	52	50	54	49	41	40	35	30	31	31	27	33
8	35	34	30	32	36	33	24	38	43	55	50	55	52	52	61	49	46	31	32	35	35	39	41	43
9	52	53	44	45	40	36	34	37	45	C	C	57	51	55	52	51	38	37	32	36	32	A	A	A
10	A	35	A	30	A	31	23	A	52	60	51	51	53	A	61	47	41	A	25	A	A	35	A	33
11	32	31	31	31	27	30	25	35	49	51	67	56	59	59	60	51	47	48	33	38	31	33	33	34
12	33	35	36	35	33	31		29	37	A	54	61	62	55	48	48	45	A	A	A	39	41	44	56
13	51	47	51	47	54	41	37	47	46	52	A	56	51	51	52	48	39	32	36	40	40	43	45	41
14	39	37	35	32	35	39	38	43	43	49	55	53	55	49	50	51	39	30	33	37	30	31	33	36
15	34	41	37	33	32	30	30	31	40	50	54	62	51	47	50	46	39	A	31	A	A	A	A	31
16	A	35	33	30	30	25	25	33	45	55	59	57	56	58	55	49	39	A	A	A	A	29	31	30
17	A	26	30	30	25	23	A	35	46	48	56	57	53	54	51	48	45	A	A	A	A	31	33	30
18	32	34	34	31	29	24	24	33	60	51	67	57	53	50	50	51	43	33	25	37	A	29	35	34
19	35	34	38	31	25	25	32	35	55	54	56	57	63	59	55	55	43	35	30	32	31	33	31	31
20	35	31	31	30	25	25	N 23	35	55	54	60	55	61	62	52	48	N 38	A	A	A	A	A	38	34
21	33	31	33	33	32	33	30	38	N 66	64	56	65	N 61	57	54	55	48	32	33	33	34	33	36	37
22	35	31	33	32	25	24	N 23	33	43	47	55	57	59	57	47	45	40	36	35	40	37	A	32	33
23	32	33	31	30	31	33	30	37	54	59	65	62	57	49	53	51	40	34	32	32	35	35	37	35
24	34	36	38	35	37	37	37	38	45	67	66	68	58	53	54	61	53	39	32	37	34	31	31	35
25	32	34	35	35	33	31	32	41	52	62	70	63	60	62	54	57	N 49	32	29	33	32	33	33	34
26	33	A	30	31	30	31	25	38	54	66	85	77	64	57	55	62	61	37	36	A	A	A	33	32
27	31	31	32	31	33	30	A	40	51	62	61	57	74	61	61	72	57	43	45	A	35	33	32	35
28	35	38	37	38	37	34	33	42	53	55	65	65	65	64	65	56	50	A	A	A	A	35	36	35
29	35	39	37	34	31	31	25	37	52	60	60	52	55	55	63	57	50	33	A	31	29	35	39	43
30	35	35	39	41	38	34	32	43	51	62	59	60	56	59	52	47	51	34	25	34	36	A	41	41
31	37	39	37	36	33	30	24	38	50	51	62	58	62	54	55	58	49	38	27	32	31	34	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	27	30	30	31	30	31	26	30	31	29	29	31	31	30	31	31	31	23	24	21	21	24	27	30
MED	34	34	33	32	32	31	27	35	49	55	59	60	56	54	54	51	43	34	32	33	32	33	33	34
U Q	35	36	37	35	36	34	32	38	53	61	64	63	61	58	55	56	49	37	33	37	35	35	38	36
L Q	32	31	31	31	30	27	24	33	45	51	54	57	52	50	51	48	40	32	28	31	29	31	31	32

HOURLY VALUES OF fEs AT Wakkanai

JAN. 2021

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	29		G	G	24	40	33	27	46	37	27	27	53	27	G	43	31	34	33	G	26	G	41	34
2	46	29	G	G	G	41	G	31	28	48	92	30	48	116	34	G	11	26	28	28	29	27	40	G
3	G	G	G	G	G	25	40	26	48	33	33	90	33	36	36	31	26	91	G	G	140	26	G	G
4	G	G	133	G	G	11	24	G	39	70	47	35	36	69	35	32	28	60	G	G		39	29	26
5	G	G	G	G	G	25		G	34	28	29	G	28	27	38	25	G	26	G	41	33	G	28	G
6	G	G	G	G	G	G	24	G	40	28	36	108	39	39	36	35	G	G	G	G	G	G	G	32
7	G		26	28	G	G	40	25	26	33	32	35	54	39	40	42	36	29	28	G	G	G	G	G
8	G	G	G	G	G	11	G	23	35	49	38	39	38	38	37	23	26	G	G	G		11	26	G
9	G	G	G	G	G	G	34	36	49	C	C	43	50	52	39	G	G	G		30	28	48	56	58
10	71	59	90	32	39	33	39	46	40	39	42	64	50	79	G	56	G	54	30	70	47	48	41	G
11	G	27	25	26	31	G		38	48	40	48	54	58	81	34	25	G	48	G	28	G	G	33	28
12	G	34	30	G	G	24		29	G	60	45	40	38	G	33	48	112	54	57	60	36	36	33	
13	27	G	31	39	34	28	24	59	109		69	39	35	32	32	23	43	G	26	27	28	70	41	39
14	36	28	G	G	25	26	29	34	44	36	47	38	36	35	36	G	31		31	G	G	G	36	40
15	G	29	31	G	G	25	G	G	65	44	55	58	45	50	37	37	34	40	30	40	66	35	58	39
16	41	33	29	30	G	G	71	35	34	50	54	36	33	38	33	25	33	33	125	69	84	28	G	G
17	33	27	G	G	G	G	29	32	28	31	35	35	36	47	39	G	43	58	105	104	41	34	32	27
18	30	G	G	G	G	G	28	26	48	34	34		35	91	37	34	39	28	G	11	30	G	G	G
19	G	G	G	G	G	G	G	27	28	52	37	G	39	40	27	34	40	39	G	G	G	24	G	G
20	G	G	G	G	G	140	G		33	31	35	35	34	G	43	29	40	34	131	109	60	39	26	G
21	G	G	G	G	108	32	G	24	29	60	35	58	35	84	33	30	26	G		G	G	28	32	35
22	28	G	G	28	28	G	G	29	47	46	38	37	36	36	38	48	G	G		33	G	41	25	28
23	33	33	G	G	G	G	G	49	56	40	38	31	34	35	32	31	46	G	G	G	33	G	30	G
24	G	G	G	G	G	G	G	41	50	39	51	32	59	35	27	33	G	11	G	G	41	G	G	G
25	G	G	G	G	G	26	G	11	55	32	33	G		35	42	47	38	G	G	G	G	G	G	G
26	28	32	G	G	34	G	G	11	32	47	30	43	40	31	46	149	G	31	111	60	57	56	34	30
27	29	G	24	G	85	24	46	31	36	53	34	48	44	42	43	126	43	59		69	26	35	26	24
28	32	25	G	G	G	G	31	44	G	49	50	49	49	28	36	44	39	78	58	36	33	27	26	29
29	G	G	G	G	G	G	24	27	48	82	46	34	38	35	G	52	46	35	41	29	G	28	36	32
30	G	G	G	G	G	11	G	35	32	49	28	29	29	28	29	38	35	31	G	30	92	58	30	30
31	G	G	G	G	G	G	26	54	48	G	G	28	29	49	37	38	G	40	G	G	G	31	G	27
	00	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	31	31	28	30	31	29	30	30	30	31	31	31	31	30	27	31	30	31	31	30
MED	G	G	G	G	G	G	24	29	40	40	38	38	38	38	36	34	31	32	26	28	30	28	29	26
U Q	30	28	25	G	25	26	30	36	48	49	47	49	45	50	38	44	40	48	41	41	47	39	36	32
L Q	G	G	G	G	G	G	G	24	32	32	34	31	35	32	32	25	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

JAN. 2021

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	17	15	15	14	16	16	16	16	16	16	17	15	16	15	16	15	16	16	16	16	15	15	16	15	
2	16	16	16	15	17	15	14	16	15	16	16	17	17	17	17	15	14	15	16	15	17	16	15	14	
3	14	14	16	14	15	16	15	16	15	16	15	13	16	15	14	16	16	5	16	16	16	16	15	16	
4	15	14	16	16	16	16	16	17	16	15	15	15	17	15	15	15	15	15		15		16	16	16	
5	16	16	14	15	17	16		16	16	15	16	15	21	17	15	16	15	15	16	15	16	17	17	15	
6	15	14	14	15	14	15	16	14	15	15	16	17	17	15	14	15	15	14	15	14	18	14	16	16	
7	15	16	16	15	14	15	18	16	15	15	16	14	13	12	14	14	15	15	16	14	14	14	14	14	
8	16	14	16	15	16	15	14	15	16	15	14	16	16	14	13	14	15	15	14	14	14	16	16	14	
9	15	16	15	14	16	15	14	14	17	C	C		17	17	17	17	15	17	16	16	15	15	15	16	17
10	16	16	16	15	16	16	15	15	16	15	15	15	17	16	15	16	15	14	15	15	15	15	15	16	
11	16	16	15	15	16	17		14	15	14	15	15	18	15	16	15	17	14	15	15	15	14	15	15	
12	14	16	15	16	15	17	16	15	16	15	15	14	15	16	16	15	16	15	17	15	17	17	16	16	
13	16	15	16	15	15	16	17	16		7	17	15	15	15	14	15	14	14	16	16	16	15	16	16	
14	15	15	16	15	16	16	16	17	15	16	16	16	15	15	15	15	16	16	16	15	16	14	15	16	
15	16	16	16	15	14	16	16	15	15	14	15	13	13	15	15	15	17	15	15	15	15	16	15	15	
16	16	15	17	15	15	14	14	14	15	14	13	13	15	13	16	16	15	16	15	16	16	16	15	16	
17	15	16	15	15	14	15	16	16	15	13	14	14	15	17	17	15	14	15	16	14	16	15	16	17	
18	17	17	17	15	14	14	16	16	15	14	13	14	11	13	16	16	14	15	15	16	16	17	16	16	
19	16	15	14	14	14	17	16	16	15	15	13	15	15	14	15	15	14	15	14	16	15	16	16	14	
20	16	16	15	14	15	60	17	16	15	15	16	12	14	14	14	15	15	15	17	15	15	15	16	15	
21	14	15	14	57	16	15	14	16	14	14	15	13	13	15	16	14	16	16	16	15	14	15	16	16	
22	16	16	16	16	15	14	16	15	15	14	13	12	13	14	13	15	18	16	16	16	15	15	16	16	
23	16	16	16	16	15	14	14	15	16	13	14	16	17	14	16	16	15	17	15	16	15	16	16	16	
24	16	14	16	14	15	14	14	14	15	14	17	16	17	17	16	16	14	16	14	16	16	15	15	16	
25	16	16	15	15	15	16	15	15	14	16	16	15	17	15	15	15	15	16	15	14	14	15	16	16	
26	16	16	16	15	15	15	16	16	15	15	17	15	15	16	16	16	14	15	15	16	15	16	16	15	
27	16	15	15	14	16	16	15	17	15	14	17	15	16	16	15	10	15	15	17	16	17	15	16	17	
28	16	16	16	15	16	15	16	15	15	15	17	15	17	15	15	15	15	17	16	15	16	15	16	17	
29	16	16	114	14	14	14	16	15	15	16	15	16	17	15	16	15	15	16	15	16	16	16	15	16	
30	16	14	14	14	16	16	14	15	16	15	16	15	17	16	15	15	16	16	15	16	10	17	16	15	
31	16	14	14	14	15	14	16	15	15	16	16	16	16	17	17	14	15	14	20	17	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	29	31	31	30	30	31	31	31	31	31	31	31	30	31	30	31	31	31	
MED	16	16	16	15	15	15	16	15	15	15	15	15	16	15	15	15	15	15	16	15	16	15	16	16	
U Q	16	16	16	15	16	16	16	16	16	16	16	16	17	16	16	16	16	16	16	16	16	16	16	16	
L Q	15	15	15	14	15	15	14	15	15	14	15	14	15	14	15	15	15	15	15	15	15	15	15	15	

HOURLY VALUES OF fof2 AT Kokubunji

JAN. 2021

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	31	32	32	35	A	N 22	N 23	45	55	52	65	72	81	69	63	52	51	51	37	23	25	30	32	30
2	29	33	33	31	26	23	25	41	52	49	63	65	61	62	51	51	59	53	32	34	31	24	31	29
3	31	25	25	23	N 23	N 23	A	39	51	57	61	61	56	56	50	59	A	36	A	33	31	31	25	27
4	31	31	25	23	25	N 23	N 23	38	50	57	68	62	57	55	51	49	45	A	A	25	A	A	A	26
5	26	29	25	24	25	25	25	38	47	44	51	71	62	57	53	55	47	35	33	A	A	A	A	A
6	A	A	24	26	25			35	43	52	63	65	49	60	57	48	51	44	N 25	24	N 24	23	25	29
7	30	30	26	29	36		N 23	33	47	59	65	58	57	53	50	61	49	36	A	32	23	24	25	25
8	27	31	27	27	31	27	25	39	45	43	60	A	A	53	53	58	48	A	A	A	A	A	32	29
9	31	31	26	33	33	32	34	37	C	C	C	57	49	49	52	54	53	A	A	A	A	A	47	A
10	A	A	A	A	25	23	N 23	A	A	36	48	58	47	56	57	57	43	A	33	32	A	A	A	A
11	A	A	A	A	25	25	26	41	55	53	66	61	53	59	64	59	47	37	A	33	32	22	27	33
12	27	25	29	32	33	24		A	56	63	78	67	82	69	62	52	47	43	A	40		27	34	35
13	34	37	39	35	36	32	25	41	50	52	55	63	59	55	55	53	49	31	33	39	35	34	37	37
14	34	37	40	37	35	38	38	37	42	45	50	50	53	55	54	50	45	34	25	35	31	23	29	26
15	24	25	29	33	A	27	25	39	N 45	44	52	61	54	54	49	52	48	29	A	35	A	A	A	A
16	30	30	30	31	25	24	28	41	47	47	50	66	66	55	59	59	43	A	A	A	A	A	A	A
17	A	A	A	26	N 24	26	27	A	A	50	58	61	53	54	51	52	45	40	40	A	A	A	A	A
18	25	A	A	25	23	23	N 23	37	43	49	55	63	65	51	51	50	49	38	34	A	A	A	25	31
19	33	32	30	30	25	24	24	41	50	50	67	63	55	52	55	51	48	A	A	A	30	33	33	33
20	32	33	37	30	23	N 23	A	38	51	51	59	58	60	59	63	52	45	37	23	29	34	33	32	31
21	31	25	30	26	30	25	25	42	49	60	64	66	53	53	63	58	50	36	A	A	30	27	30	33
22	32	30	32	24	N 24	18		38	49	50	61	58	57	54	55	46	46	36	37	41	43	34	33	33
23	33	31	29	A	27	A	A	44	54	53	66	57	63	56	55	49	46	32	35	N 35	33	27	33	32
24	32	30	30	31	33	25	25	49	51	53	64	71	67	56	56	54	61	45	A	A	33	32	A	32
25	30	27	A	31	24	N 23	A	49	57	51		75	65	62	69	53	62	A	A	A	A	A	A	37
26	34	30	30	30	29	25	24	47	52	63	C	C	C	C	C	C	C	62	33	A	37	34	31	28
27	30	30	31	32	35	24	25	49	53	66	C	C	C	C	C	C	C	52	29	C	C	C	A	29
28	30	31	A	28	32	31	A	45	58	54	64	91	63	62	61	62	C	C	A	A	A	A	34	35
29	30	29	30	29	26	29	25	50	N 60	55	71	C	C	C	C	C	C	44	25	28	34	31	29	30
30	29	28	30	34	35	23	N 24	41	50	56	53	57	61	57	56	50	46	49	29	27	33	31	32	30
31	27	29	27	30	31	30	25	44	57	53	57	64	59	57	56	58	57	52	31	28	N 30	25	25	26
	00	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	26	25	28	29	28	23	28	28	30	27	27	27	28	28	28	26	23	17	18	18	19	22	25
MED	30	30	30	30	26	24	25	41	50	52	61	63	59	56	55	52	48	38	33	32	32	30	32	30
U Q	32	31	31	32	33	27	25	44	54	56	65	66	63	59	60	58	51	49	34	35	34	33	33	33
L Q	29	29	26	26	25	23	24	38	47	49	55	58	53	54	51	50	46	36	27	28	30	24	27	28

HOURLY VALUES OF fEs AT Kokubunji

JAN. 2021

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	29	G	G	G	29	G	G	G	137	42	35	55	36	36	34	31	27	33	31	G	G	G	G	G	
2	28	G	G	G	G		G	G	31	33	43	G	34	42	29	31	28	G	G	G	G		G	G	
3	107	G	G		G	G		41	33	29	33	34	32	38	35	40	40	53	40	44	G	28	26	G	G
4	G	G	G	G	G	11	G	G	26	34	35	34	36	36	35	35	33	32	35	38	28	27	31	29	G
5	55	G	G	G	G	G	G	G		43	34	40	41	32	31	46			G	G	32	40	29	27	40
6	38	43	30	G	G			28	70	35	40	39	34	34	35	32	31	43	G	G	G				G
7	G	G	G	G	11		G	G	34	38	34	30	29	G	35	38	32	G				G	24		G
8	G	G	G	G	G	G	G	G	35	38	45	84	78	43	34	37	40	49	36	66	53	45	31	36	
9	G	G	G	G	G	G	11	G	C	C	C	41	38	36	53	39	40	61	41	62	69	40	56	60	
10	61	70	105	35	28		28	56	59	84		63	150	33	32	27	31	57	47	41	60	70	40	33	
11	57	85	40	34	28	G	G	G	37	53	56	42	40	41	40	27	G	29	33	G	26		G	G	
12	G	G	G	G	G	G		33	38	37	31	38	35	43	48	43	25	G	43	34		G		G	
13	G	G	27	G	G	11	G	G	47	49	40	G	34	34	32	36	28	G	G	27	29		G	G	
14	G	G	30	29	24	G	G	G	22	36	41	34	34	G	36	30	37	33	G		G		G	G	
15	G	G	G	25	24	G	G	G	179	40	45	47	41	42	45	41	56	34	35	G	33	34	41	30	
16	G	G	G	G	G	G	G		23	30	31	36	38	37	34	40	38	40	41	43	78	39	65	33	33
17	31	31	28	G	G	G	G		60	57	43		37	37	33	40	32	34	36	31	39	79	70	32	31
18	34	31	26	G	G		G		28	45	40	59	56	38	50	49	52	49	61	40	35	40	34	26	G
19		G	G	G	G	G		28	50	33	35	33	G	29	41	50	46	38	40	84	30	32	G	G	
20	G	G	G	G	G	G		27	29	31	41	47	42	38	35	37	32	31	34			G	G	G	G
21	G	G	G	G	G	G	G	G	31	42	40	55	N	40	35	50	39	36	33	36	29	G	G	G	G
22	G	G	G		G			26	29	37	37	130	37	38	36	33	29	25	22	22	G	G	G	G	G
23	G	G	27	35	32	46	40	33	29	42	43	48	35	G	33	N	40	26	29	27	29	G	G	31	
24	31	G	G	G	G		G		37	28	33	41	41	31	34	29	35	31	33	77	54	33	60	70	32
25	G	33	33	G	G	G		57	32	37	41		45	47	51	55	57	70	53	78	32	60	70	41	G
26	G	G	G	G	G	G	G		28	29	45	C	C	C	C	C	C	C	G	G	31	G	G	G	
27	G	G	G	G	G		G	G	33	39									G	C	C	C	C		G
28	G	G	33	27	28	32	26	26	69	43	34	31	36	37	45	38	C	C							33
29	26	G	G	G	G	G	G	G	33	28	60		C	C	C	C	C		G	G	G	G	G	G	G
30	G		G		23		G	G	40	G	G		31	36	31	31	36	30	G	G	G	G	G	G	G
31	G	G	G	G	G	G	G	G	31	34	33	37	G	39	42	37	31	G		28	25		G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	31	29	31	22	27	31	30	30	25	28	27	28	28	26	26	30	29	29	28	24	29	30	
MED	G	G	G	G	G	G	G	23	36	38	40	40	36	36	36	37	32	34	33	31	29	30	G	G	
U Q	31	G	27	13	23	G	11	29	47	42	44	47	38	40	43	40	40	43	43	39	39	48	32	31	
L Q	G	G	G	G	G	G	G	G	31	34	34	33	34	33	33	32	30	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Kokubunji

JAN. 2021

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

HOURLY VALUES OF fof2 AT Yamagawa

JAN. 2021

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	A	A	A	37	33	B	B	33	57	54	63	70	85	116	103	86	59	63	46	A	37	35	A	33					
2		B	32	35	33	37	N	25	B	23	33	58	53	58	92	67	57	76	54	56	55	A	34	32	33	B	25	B	32
3	B	31	32	33	32	B	A	B	B	30	51	50	75	66	67	A	A	54	47	A	34	34	36	26	33	26			
4	32	32	B	34	33	B	B	B	B	24	24	48	53	64	72	60	62	57	56	52	41	31	B	B	31	31	32	33	
5	28	B	33	33	N	B	B	B	B	31	47	44	51	57	73	71	58	54	52	44	34	34	A	A	A	A	B	25	
6	B	24	27	27	27	33	A	A	B	31	45	48	64	75	60	67	56	A	49	51	35	A	30	31	B	25	25		
7	30	32	33	36	29	B	B	23	32	45	53	56	82	72	59	57	55	62	48	36	34	B	33	35	B	35	33		
8	B	34	33	35	B	B	33	34	34	46	47	50	55	55	64	54	51	57	52	A	A	A	A	A	A	A	A		
9	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	
10	A	A	A	A	33	B	B	B	33	53	51	A	A	A	A	A	63	67	59	45	A	A	A	A	A	A	B		
11		A	33	A	A	A	A	34	49	A	A	A	A	A	A	61	65	57	49	39	37	A	35	B	24	B	32		
12	27	31	A	33	A	B	B	23	32	B	68	81	79	74	70	72	56	53	48	37	A	37	34	B	29	A			
13	33	A	33	34	39	36	B	28	31	48	52	51	65	64	57	53	52	53	44	33	35	38	35	35	34				
14	32	33	37	38	43	34	32	32	47	44	45	50	53	57	59	57	57	A	A	A	A	A	A	A	A	31			
15	32	25	27	31	32	B	B	B	26	48	43	50	71	55	59	57	51	49	48	35	26	36	33	A	33				
16	33	31	31	A	32	B	B	25	30	48	46	51	55	67	53	61	59	58	47	33	B	N	34	32	27	B	32		
17	27	31	32	31	33	31	A	A	45	49	55	A	59	58	54	54	50	53	39	A	A	29	B	27	B	27			
18	A	A	A	32	B	B	A	A	46	53	53	55	69	66	59	53	54	37	A	A	A	A	A	A	A	A			
19	32	32	31	31	B	N	A	A	57	51	53	57	63	55	57	54	57	48	37	34	35	A	A	A	A	35			
20	33	35	42	34	B	B	B	31	50	51	54	63	63	75	61	55	49	51	A	A	A	A	A	A	A	32			
21	34	33	A	35	B	33	B	28	32	52	55	63	67	51	58	60	66	58	53	38	B	A	A	27	B	33			
22	34	31	31	31	B	B	B	29	31	50	50	54	57	60	60	59	54	48	49	A	33	37	37	A	A	A			
23	32	A	A	33	A	31	N	24	31	60	58	57	65	63	68	54	50	50	48	35	34	34	A	33	B	28			
24	34	33	33	33	37	B	B	27	51	50	52	60	70	71	55	57	67	58	40	A	A	A	A	37	32	34			
25	32	33	31	32	A	B	B	31	24	27	60	56	54	61	69	64	62	57	57	57	A	A	A	A	A	38			
26	36	33	32	32	37	B	B	25	34	55	54	67	82	65	61	64	73	59	63	49	34	38	41	A	38	34			
27	31	33	B	A	33	B	B	24	34	59	57	56	84	81	63	57	67	71	65	49	35	37	41	A	A				
28	A	A	32	32	35	33	A	A	53	57	53	73	68	57	61	71	57	55	43	A	A	36	39	33					
29	31	31	31	33	33	B	31	31	37	65	54	59	62	62	56	59	65	60	56	44	A	36	33	B	32	B	26		
30	31	31	33	33	36	B	B	34	53	53	47	59	57	62	55	54	46	54	50	31	32	35	34	26					
31	31	B	30	30	32	B	N	25	33	N	61	57	57	66	74	85	63	53	51	66	A	A	A	A	B	26	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	23	23	24	26	25	18	13	26	29	29	29	28	29	29	29	30	31	29	22	17	19	19	16	24					
MED	32	32	33	33	33	31	24	32	51	53	55	65	64	62	59	56	57	51	37	34	35	34	32	32					
U Q	33	33	33	34	35	33	29	33	57	54	61	72	69	67	61	65	59	55	43	34	37	36	34	33					
L Q	31	31	31	32	31	26	23	31	47	49	51	57	59	57	55	54	50	48	34	32	32	31	27	27					

HOURLY VALUES OF fEs AT Yamagawa

JAN. 2021

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	44	48	41	G	G	B	B	G	G		37	50	41	49	61	42	42	41	44		46	23	G	39	G
2	G	B	G	G	G	28	B	G		35	40	44	44	45	44	41	34	37	38	60	29	G	G	B	B
3	B	G	G	G	B	28	B	B		34	35	40	42	42	63	94	92	146	115	25	G	G	B	G	G
4	G	G	B	G	B	B	B	B		24	33	45	47	43	44	41	41	50	28	G	B	B	G	G	
5	G	B	G	G	B	B	B	B	G		36	41	45	47	55	70	60	36	33	G	G			B	
6	B	G	G	G	34	29	39	B	G		36	37	49	50	60	45	61	52	40	34	33	G	G	B	G
7	G	G	G	G	22	B	B	G	G		36	43	48	101	36	39	42	34	G	G	G	B	G	B	G
8	B	G	G	G	B	B	G	G	G		39	44	42	36	39	39	40	32	60	71	46	50	43	60	41
9	C	C	C	C	C	C	C	C	C			40	45	76	55	76	46	56	37	G	G				
10	46	50	44	47	G	B	B	B	G		46	61	84	77	44	54	45	44	45	92	56	45	36	38	B
11	G	39	G	59	40	57	55		35	60	71	108	92	94	47	41	41		G	G	G		B	B	G
12	G	G	23	G	43	B	B	G	B		39	42	43	46	69	43	56	32	41	33	40	G	G	B	44
13	43	43	32	32	G	22	B	G		48	45	40	36	42	39	40	35	31	G	G		33	34	G	G
14	G	G	G	G	G	11	G	G		29	39	35	41	56	53	46	38	40	53	49	61	58	41	54	G
15	29	G	G	G	G	B	B	B		48	47	46	46	40	46	39	42	40	46	23	G		G	35	G
16	G	G	G	71	G	B	B	G	G		32	32	43	44	45	56	48	47	35	32	B	G		G	B
17	G	G	G	G	G	G	41	40	35	33	43	71	49	44	38	35	51	50	29	35	G	B	B	B	
18	32	39	46	G	B	G	B		G		35	36	42	44	41	61	64	46	72	78	89	107	80	83	32
19	28	G	47	G	B	G		39	G		44	45	37	38	38	44	43	46	39	30	G	G	44	54	G
20	G	G	G	G	B	B	B	G		28	34	44	44	56	45	49	54	55	60	54	44	40	44	41	G
21	G	G	41	36	B	B	B	G	G		56	44	49	49	45	46	49	45	38	32	B	33	41	G	B
22	G	G	G	G	B	B	B	G		31	33	46	45	43	41	41	36	33	31	83	G	G	G	56	41
23	28	66	41	G	G	G	G	G	G		34	45	56	46	38	46	48	44	38	G	G	G	58	G	B
24	G	G	37	G	G	B	B	G		28	34	40	44	44	45	40	36	34	41	33	40	33	G	G	G
25	G	G	G	G	39	B	B	G		29	35	35	45	46	49	49	46	43	46	110	32	35	56	69	33
26	G	G	G	G	G	B	B	G		32	40	48	64	49	42	42	36	40	46	32	27	G	33	G	G
27	G	G	B	54	G	B	B	G		48	31	39	45	44	45	46	42	40	42	50	G	30	58	40	40
28	40	25	G	G	G	G	40	30	32	33	43	42	45	50	50	89	44	50	40	92	40	32	G	G	
29	G	G	G	G	G	B	G	G	G		34	40	48	41	46	40	50	44	36	35	47	G	G	G	G
30	G	G	G	G	G	B	B	G		40	41	35	41	49	45	44	44	51	32	11	G	G	G	G	G
31	G	B	G	G	B	G	G	G	G		33	36	37	39	45	38	35	32	36	88	70	53	38	B	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	27	28	30	20	12	10	24	29	30	31	31	31	31	31	31	31	31	30	28	29	28	23	22	
MED	G	G	G	G	G	6	16	G	28	36	43	45	46	45	44	43	43	40	32	32	30	34	38	G	
U Q	28	25	34	G	28	28	40	G	34	40	45	48	49	53	49	50	47	46	54	46	40	44	54	33	
L Q	G	G	G	G	G	G	G	G	G	34	39	42	43	42	40	38	36	35	11	G	G	G	G	G	

HOURLY VALUES OF fmin AT Yamagawa

JAN. 2021

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	14	15	26	B	B	15	26	26	23	17	17	19	18	17	19	14	16	15	15	16	15	15	16	
2	16	B	15	15	14	14	B	14	26	15	15	15	20	19	24	18	22	16	14	15	15	14	15	B	B	15
3	B	15	15	16	B	15	B	B	B	14	17	15	15	18	15	17	17	15	14	14	16	15	16	B	15	66
4	21	15	B	21	B	B	B	B	16	16	16	14	19	19	15	17	16	14	15	16	B	B	15	16	16	
5	71	B	15	16	14	B	B	B	B	14	22	17	16	17	18	17	21	20	15	15	15	14	16	15	15	B
6	B	15	23	15	14	15	15	B	15	15	16	17	21	16	17	17	19	16	15	16	15	17	14	B	21	
7	18	14	15	16	15	B	B	14	15	15	16	15	17	19	18	16	17	16	15	27	27	B	27	B	27	
8	B	27	27	26	B	B	26	26	26	26	21	24	21	22	21	23	26	15	24	24	22	24	22	22	23	
9	C	C	C	C	C	C	C	C	C	C	26	23	21	22	17	20	13	16	16	27	23	24	23	23	B	
10	23	23	24	24	27	B	B	B	26	23	21	21	22	20	18	19	18	20	15	15	15	26	21	B	23	
11	211	25	22	24	25	24	23	66	26	23	24	19	19	22	20	19	18	15	16	15	15	B	B	15	24	
12	15	15	16	17	15	B	B	20	15	B	15	18	17	16	18	18	17	16	15	16	15	15	23	B	15	
13	16	15	16	16	16	15	B	14	27	14	15	16	14	18	17	17	16	16	23	17	15	15	16	15	15	
14	15	15	14	14	15	15	16	15	15	16	17	17	15	17	19	17	15	16	15	17	16	15	15	15	16	
15	16	14	14	15	15	B	B	16	15	15	16	16	21	19	20	15	16	17	15	15	15	15	16	15	15	
16	16	15	15	15	15	B	B	15	16	15	16	17	17	19	21	18	17	16	15	15	B	16	15	B	17	
17	16	14	15	15	15	15	15	15	16	16	17	17	21	18	20	17	14	16	16	16	16	B	B	B	15	
18	15	15	15	15	B	16	B	24	26	16	15	15	21	18	18	19	14	15	15	15	11	14	15	15	15	
19	17	16	14	15	B	15	14	15	15	15	14	15	15	15	17	18	18	15	15	15	15	16	18	15	15	
20	15	14	23	15	B	B	B	14	15	17	16	17	18	19	18	19	15	13	15	16	16	16	15	17	B	
21	15	16	15	15	B	B	B	16	15	14	17	19	19	19	19	18	19	15	15	15	B	15	15	15	B	
22	16	71	15	15	B	B	B	16	15	17	14	15	16	21	19	15	16	16	15	15	16	15	16	16	B	
23	16	17	15	16	15	15	66	15	15	17	14	19	23	21	20	15	15	15	15	16	15	15	16	15	15	
24	14	14	15	15	15	B	B	15	15	15	14	13	21	18	19	17	15	14	15	15	16	16	18	26	26	
25	15	15	15	16	15	B	B	15	15	17	16	17	17	17	19	18	17	16	13	16	15	15	16	15	15	
26	16	15	15	15	16	B	B	14	15	15	16	15	19	18	21	18	15	16	15	15	16	15	16	15	15	
27	14	15	B	15	26	B	B	17	15	15	16	16	16	18	14	19	19	15	15	15	14	16	15	15	15	
28	15	15	15	15	15	15	14	16	16	16	15	18	20	18	19	22	18	15	15	17	15	15	16	17	17	
29	26	18	14	23	15	B	B	15	14	15	17	17	18	18	21	20	16	15	15	16	15	15	15	B	B	
30	15	15	15	15	25	B	B	66	26	17	16	19	18	18	19	16	17	15	14	15	16	15	15	15	15	
31	15	B	16	16	B	15	14	15	15	16	17	18	20	20	16	17	17	15	15	17	15	15	B	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	27	28	28	30	23	19	18	28	29	30	31	31	31	31	31	31	31	31	31	31	31	30	29	27	26	
MED	16	15	15	15	15	15	15	15	15	16	16	18	19	18	18	17	16	15	15	15	15	15	15	15	16	
U Q	17	16	16	16	16	16	16	20	19	17	17	19	20	21	19	19	17	16	16	16	16	16	16	16	21	
L Q	15	15	15	15	15	15	14	15	15	16	15	17	18	17	17	16	15	15	15	15	15	15	15	15	15	

HOURLY VALUES OF fof2 AT Okinawa

JAN. 2021

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	29	30	33	31	32	A	A	26	53	71	96	98	112	132	139	97	102	69	47	41	49	59	35	33
2	B 32	31	34	37	43	N 24	25	27	51	66	75	87	117	99	105	82	57	69	50	40	A	34	N 23	N 22
3	N 22	N 23	N 25	24	31	B	B	N 25	51	69	77	74	83	96	61	54	54	55	A	A	39	37	N 24	27
4	N 25	27	29	25	N 23	A	B	N 24	50	63	81	71	78	89	87	A	A	51	35	31	35	33	N 24	25
5	29	26	25	27	A	A	A	N 24	46	52	54	65	65	79	71	58	49	50	37	32	34	33	27	24
6	25	25	A	30	25	A	A	A	50	55	60	80	73	54	A	65	63	55	A	37	32	41	27	N 23
7	24	29	31	44	A	B	A	25	53	57	68	73	82	69	62	71	65	55	37	34	A	41	49	32
8	30	30	32	31	35	23	B 23	31	49	48	50	58	71	78	102	79	70	60	A	A	26	A	24	A
9	A	25	26	31	N 47	A	B	A	C	C	C	A	58	63	59	61	58	59	48	A	A	A	A	A
10	A	32	34	A	A	A	A	A	57	52	A	A	A	68	71	54	71	51	41	A	A	A	A	A
11	29	A	33	A	A	A	A	25	49	A	A	A	73	78	A	85	88	77	51	A	44	33	A	A
12	26	27	25	32	34	A	A	26	45	67	80	66	71	91	79	76	64	50	42	A	39	41	32	25
13	29	A	A	A	36	A	B	25	50	B	B	B	B	B	B	B	55	51	36	B 30	33	38	32	30
14	30	25	30	27	39	N 25	A	A	50	53	50	52	60	55	58	63	74	53	42	A	A	A	A	A
15	A	30	27	31	33	B	B	N 24	48	49	50	54	59	64	60	56	47	51	46	A	B 27	A	32	35
16	38	N 24	N 23	A	N 23	25	B	N 23	45	55	55	A	69	77	70	80	68	59	N 47	A	29	33	33	26
17	30	30	30	30	33	A	A	25	52	52	55	56	56	76	90	61	58	64	A	A	33	B 25	A	A
18	25	26	26	A	A	34	A	N 27	52	62	55	58	61	81	72	54	58	58	44	A	A	A	A	A
19	34	32	30	B 23	N 24	N 22	B	N 24	61	54	A	65	61	63	63	59	63	58	49	A	40	34	35	33
20	31	32	36	N 23	N 23	N 23	B 23	32	54	56	56	56	79	93	80	83	61	56	47	A	31	42	45	31
21	24	32	33	33	33	30	29	27	59	71	70	73	73	82	96	97	94	85	52	35	32	36	38	34
22	31	26	N 24	B 22	N 22	A	A	25	47	56	55	57	61	61	66	67	55	54	43	30	35	40	31	A
23	25	30	29	25	25	23	N 23	N 24	61	61	57	72	88	71	60	57	53	53	45	A	34	A	31	30
24	31	32	26	33	A	A	A	A	55	54	61	A	65	83	77	81	78	87	70	A	51	53	51	38
25	33	35	33	A	29	A	A	N 25	60	76	70	68	60	71	61	69	61	61	56	37	39	42	A	A
26	35	A	34	33	31	B 23	B	30	53	62	71	91	61	71	87	96	87	73	75	48	39	42	39	A
27	32	33	25	26	28	N 24	B 22	31	55	60	67	93	86	73	65	84	74	68	64	46	41	47	31	27
28	32	A	32	35	37	A	B 24	28	56	59	61	63	64	60	A	68	68	63	63	57	45	45	A	37
29	35	37	38	36	36	34	28	37	61	62	53	81	67	59	61	76	59	55	53	36	32	36	26	N 23
30	N 25	29	30	28	36	A	B	26	50	55	53	55	64	61	61	58	51	46	52	39	31	39	37	A
31	A	30	29	28	31	27	N 25	31	51	63	67	91	120	123	118	95	61	62	77	43	34	35	32	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	27	27	29	25	25	13	9	26	30	28	26	25	29	30	27	29	30	31	27	16	25	24	23	20
MED	30	30	30	30	32	24	24	26	52	58	60	68	69	74	71	69	62	58	47	37	34	38	32	30
U Q	32	32	33	33	36	28	26	28	55	63	70	80	80	83	87	82	71	64	53	42	39	42	37	33
L Q	25	26	26	25	25	23	23	25	50	54	55	57	61	63	61	58	57	53	42	33	32	34	27	25

HOURLY VALUES OF fEs AT Okinawa

JAN. 2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	94	26	29	G	29	40	44	45	48	45	54	60	43	59	46	31	48	46	25	G
2	B	G	G	G	11	26	G	G	30	38	42	46	44	48	N	45	43	35	32	116	70	39	G	G
3	G	G	G	G	G	B	B	G	33	44	44	46	44	55	41	169	38	38	124	67	G	11	G	G
4	G	G	G	G	G	57	B	G	39	38	40	46	47	52	72	77	83	55	31	24	G	G	G	G
5	G	G	G	G	25	46	34	G	29	40	43	55	52	56	59	51	48	59	44	24	G	29	24	G
6	G	G	28	G	G	29	28	38	35	32	54	49	43	52	64	57	49	34	65	40	26	28	31	G
7	G	G	G	43	25	B	30	G	48	39	50	61	57	48	47	40	35	32	28	28	27	G	G	G
8	G	G	G	G	11	G	B	24	42	51	40	48	50	49	41	50	50	58	73	40	G	27	34	109
9	49	G	28	G	23	30	B	27	C	C	C	70	54	48	70	60	53	31	34	43	58	60	36	49
10	48	31	25	48	58	39	31	27	G	37	63	98	88	67	40	40	45	78	59	50	56	60	34	32
11	G	34	34	49	44	39	30	G	33	49	140	131	84	115	130	76	56	40	43	60	30	28	49	54
12	26	G	24	27	G	46	27	26	32	38	46	64	60	58	53	53	44	46	46	34	G	G	G	G
13	48	45	33	34	26	28	B	G	43	B	B	B	B	B	B	B	96	38	30	B	30	G	G	G
14	G	G	G	G	28	G	30	35	31	36	40	38	47	50	40	60	41	38	59	24	35	93	59	60
15	54	26	G	24	19	B	B	G	28	46	44	51	57	39	158	43	40	28	48	33	B	32	26	25
16	G	G	G	44	G	G	B	G	36	42	42	60	56	45	79	47	43	40	36	32	25	29	G	G
17	G	G	G	G	28	53	36	G	158	48	49	44	46	60	45	66	57	64	115	60	32	B	57	73
18	47	29	26	44	39	21	49	46	29	35	41	46	48	64	61	57	45	40	40	72	46	47	60	125
19	32	27	24	B	G	G	B	G	28	40	70	50	44	49	54	46	44	32	38	93	27	31	31	G
20	G	27	24	G	G	G	B	G	27	36	40	53	54	46	69	61	44	49	60	49	29	31	47	G
21	G	28	G	G	35	G	G	G	28	36	40	64	72	46	48	39	40	33	29	29	25	29	34	G
22	30	G	G	B	G	48	39	G	31	32	37	42	50	48	49	41	40	40	36	26	28	24	30	35
23		27	G	G	30	G	24	G	28	32	39	47	42	43	42	43	41	36	26	40	G	32	G	24
24		G	G	30	66	G	27	41	35	46	46	62	56	50	50	51	40	40	40	67	35	57	32	28
25	32	29	G	34	G	34	24	G	27	32	58	48	50	48	46	56	55	36	30	28	32	G	39	60
26		59	29	25	20	B	B	G	33	38	42	59	54	52	45	50	46	40	45	54	G	29	32	32
27	33	G	G	G	G	G	B	G	29	32	34	36	38	54	52	46	54	48	G	43	G	G	G	G
28	33	32	115	24	34	29	B	27	34	38	40	40	48	78	83	60	54	73	57	52	29	39	60	36
29	25	28	32	G	26	G	G	G	28	35	42	45	39	41	50	48	56	42	39	27	G	G	G	G
30	G	G	G	25	26	28	B	G	28	39	42	47	46	58	60	47	44	29	G	11	G	27	11	26
31	26	G	G	G	G	G	G	G	28	38	45	44	42	44	41	40	55	36	57	39	25	25	G	26
	00	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	31	30	29	31	27	18	31	30	29	29	30	30	30	29	30	31	31	31	30	30	30	31	31
MED	G	G	G	G	23	26	28	G	30	38	42	48	49	50	52	50	45	40	40	40	27	29	30	24
U Q	33	28	26	32	30	39	31	26	35	41	47	60	56	56	66	60	54	49	57	54	32	39	36	36
L Q	G	G	G	G	G	G	24	G	28	35	40	45	44	46	45	45	41	35	31	28	G	11	G	G

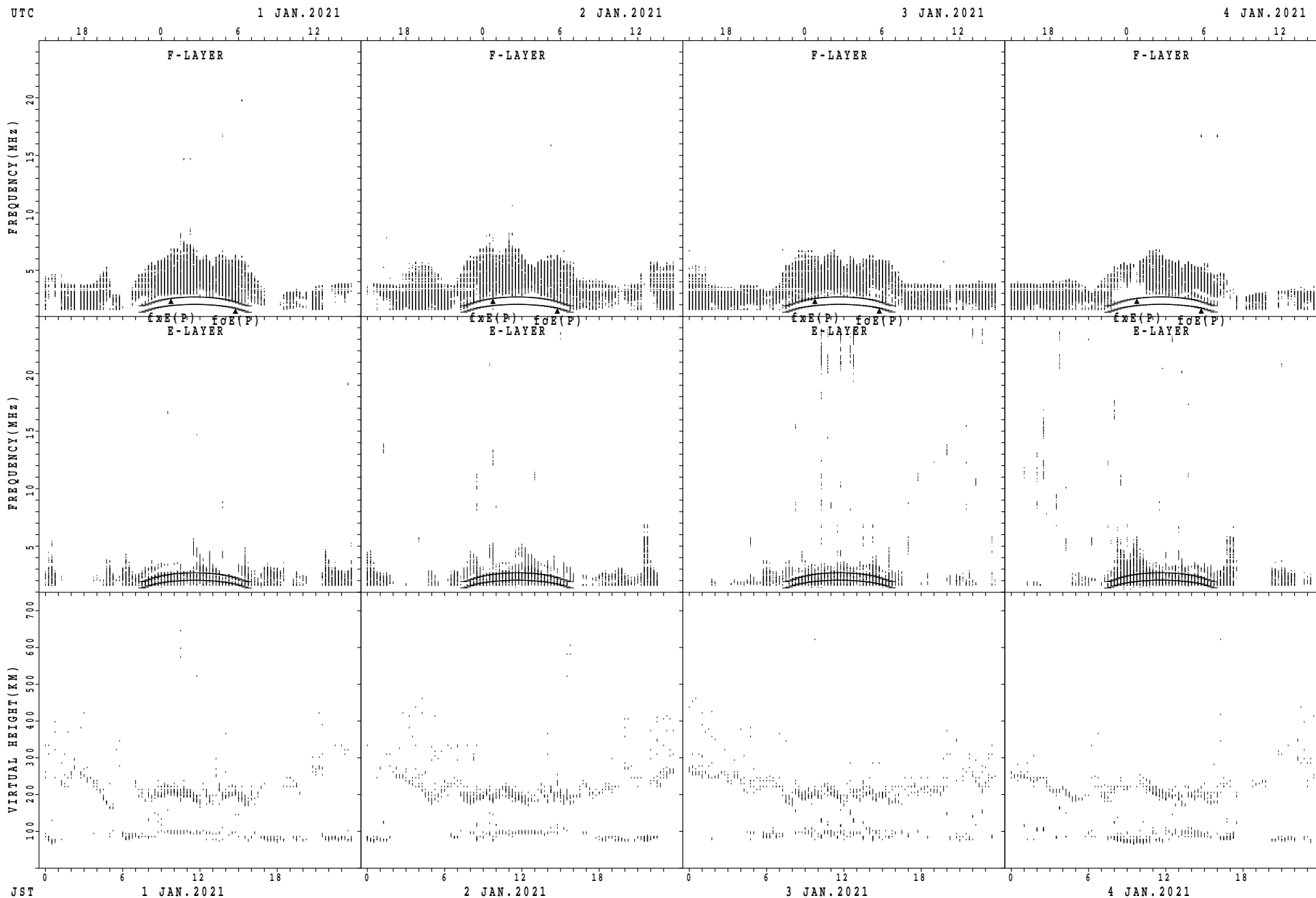
HOURLY VALUES OF fmin AT Okinawa

JAN. 2021

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

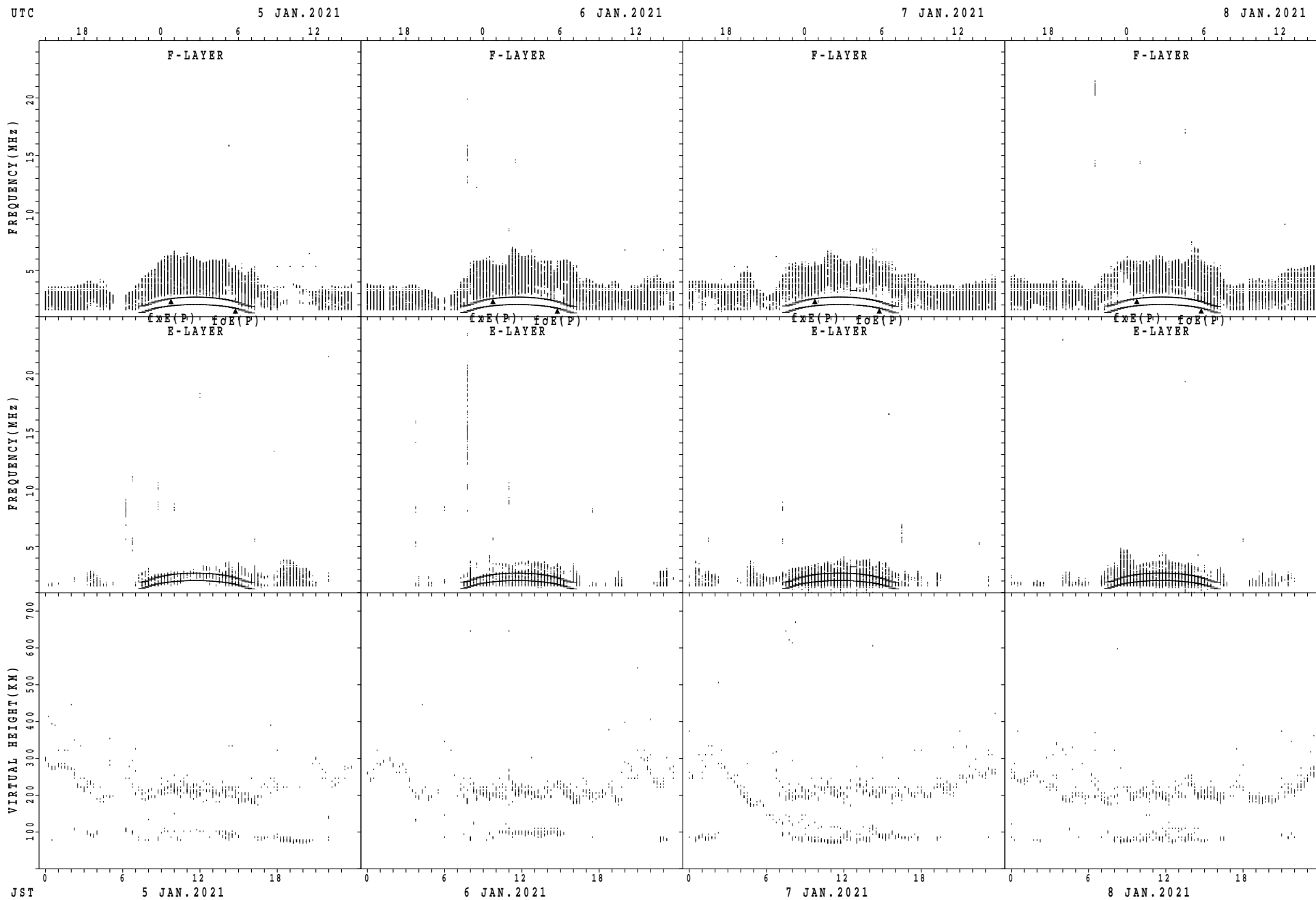
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	15	16	13	16	17	16	16	15	15	15	15	15	15	16	15	14	15	15	16	16	16	16
2	^B 15	14	15	14	14	14	16	14	15	15	15	15	16	16	15	14	15	15	16	5	15	16	15	14
3	14	14	15	15	17	^B 17	^B	14	16	15	15	15	15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

SUMMARY PLOTS AT Wakkanai



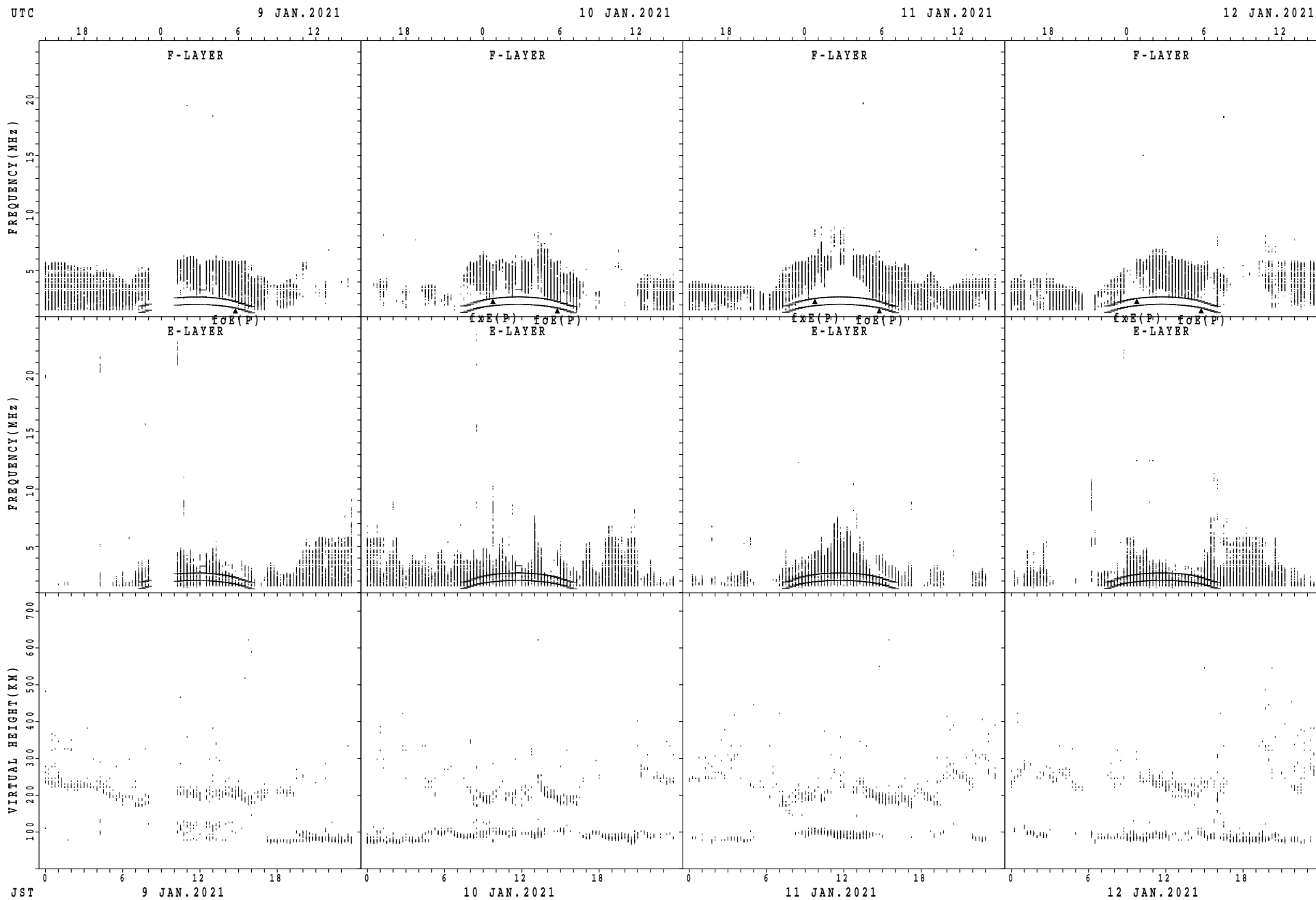
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



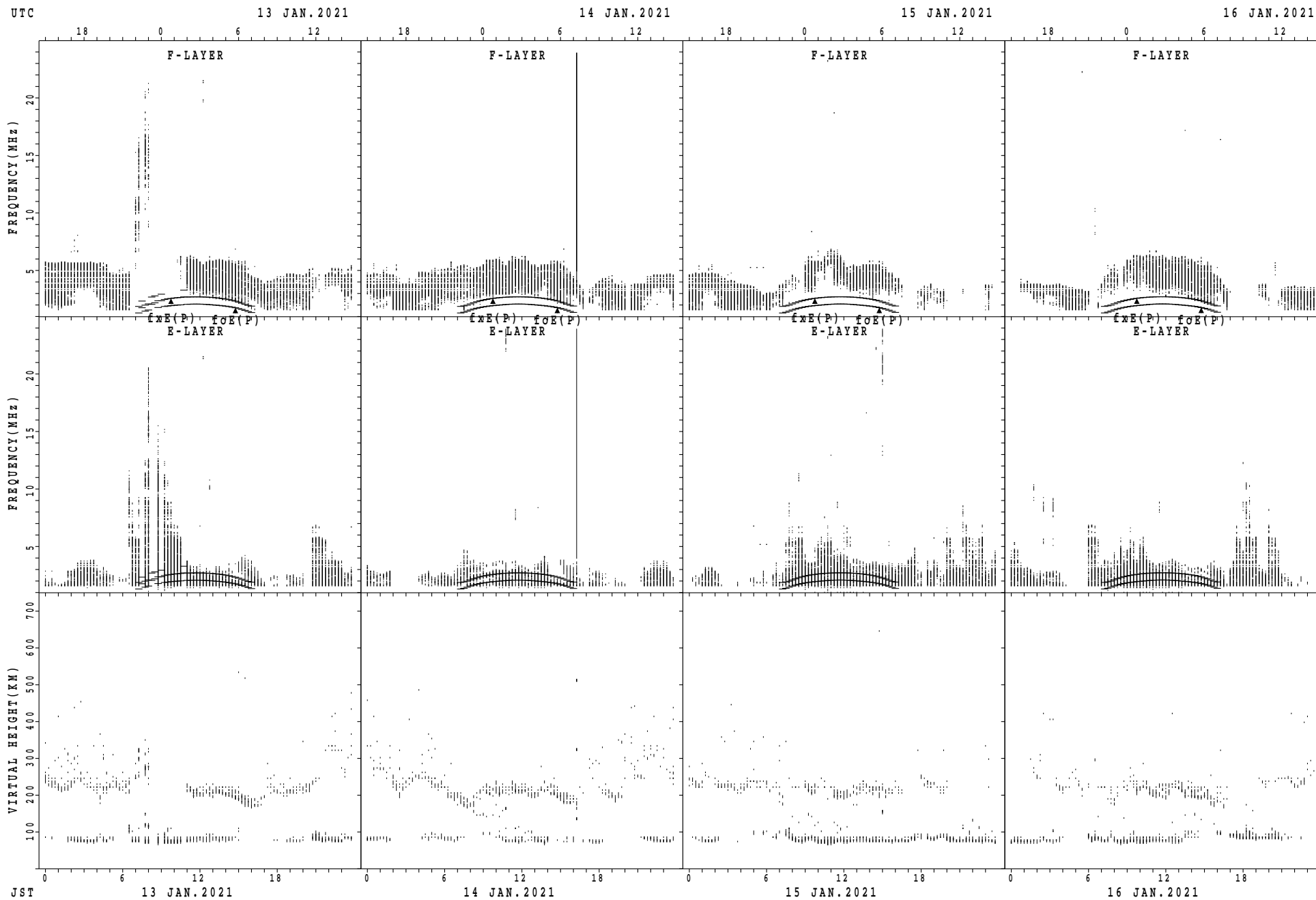
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



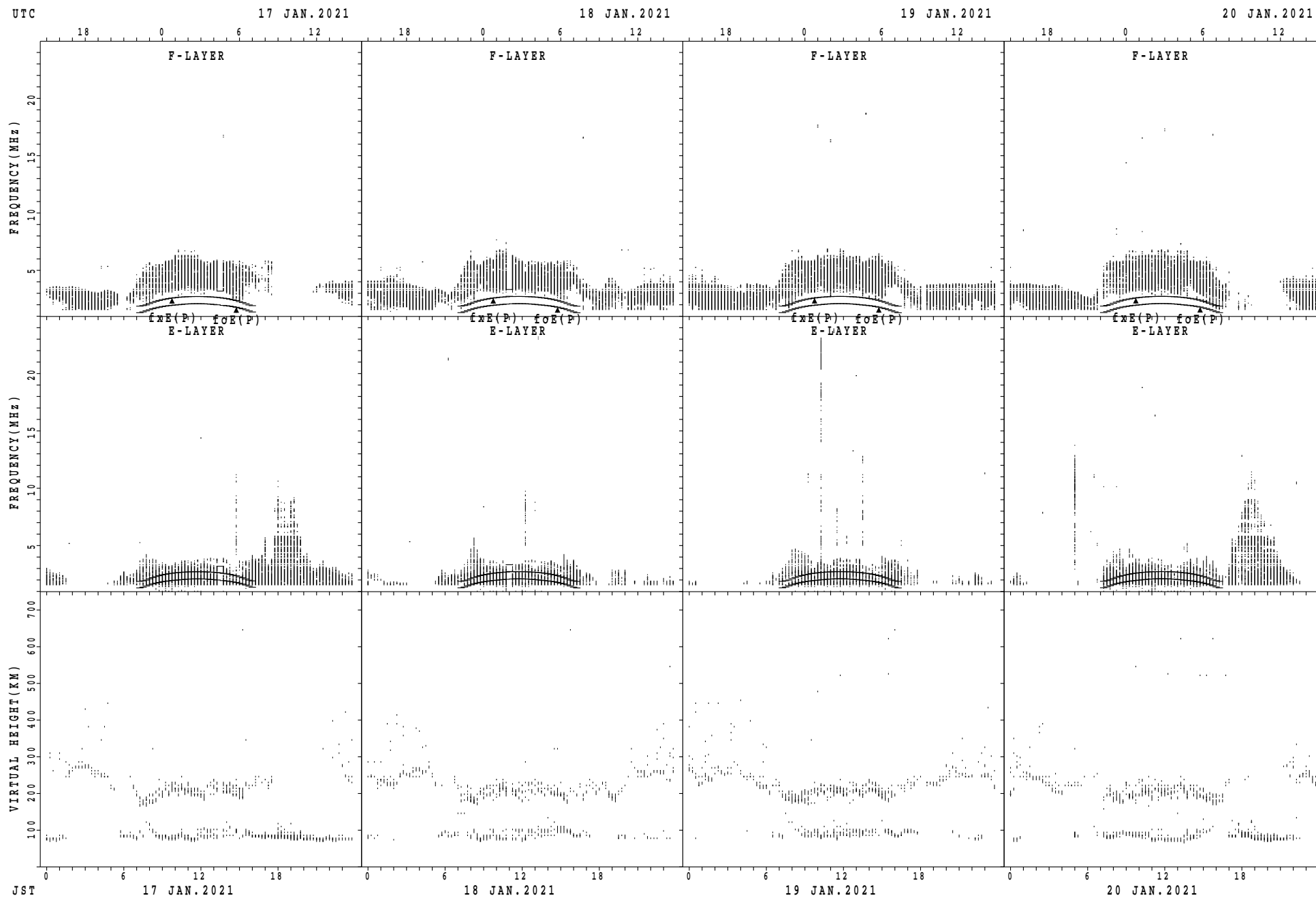
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



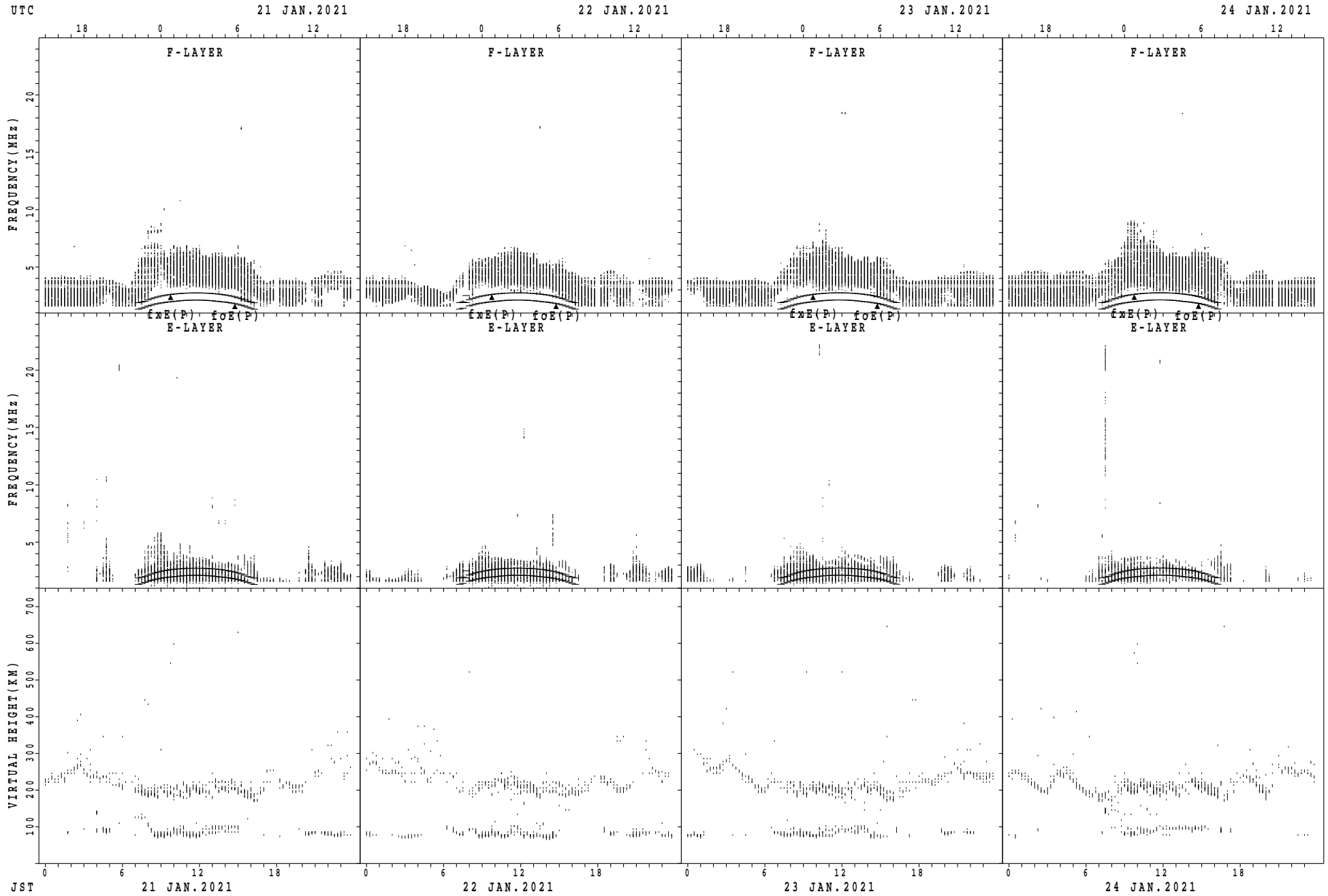
fxE(P); PREDICTED VALUE FOR fxE
 foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



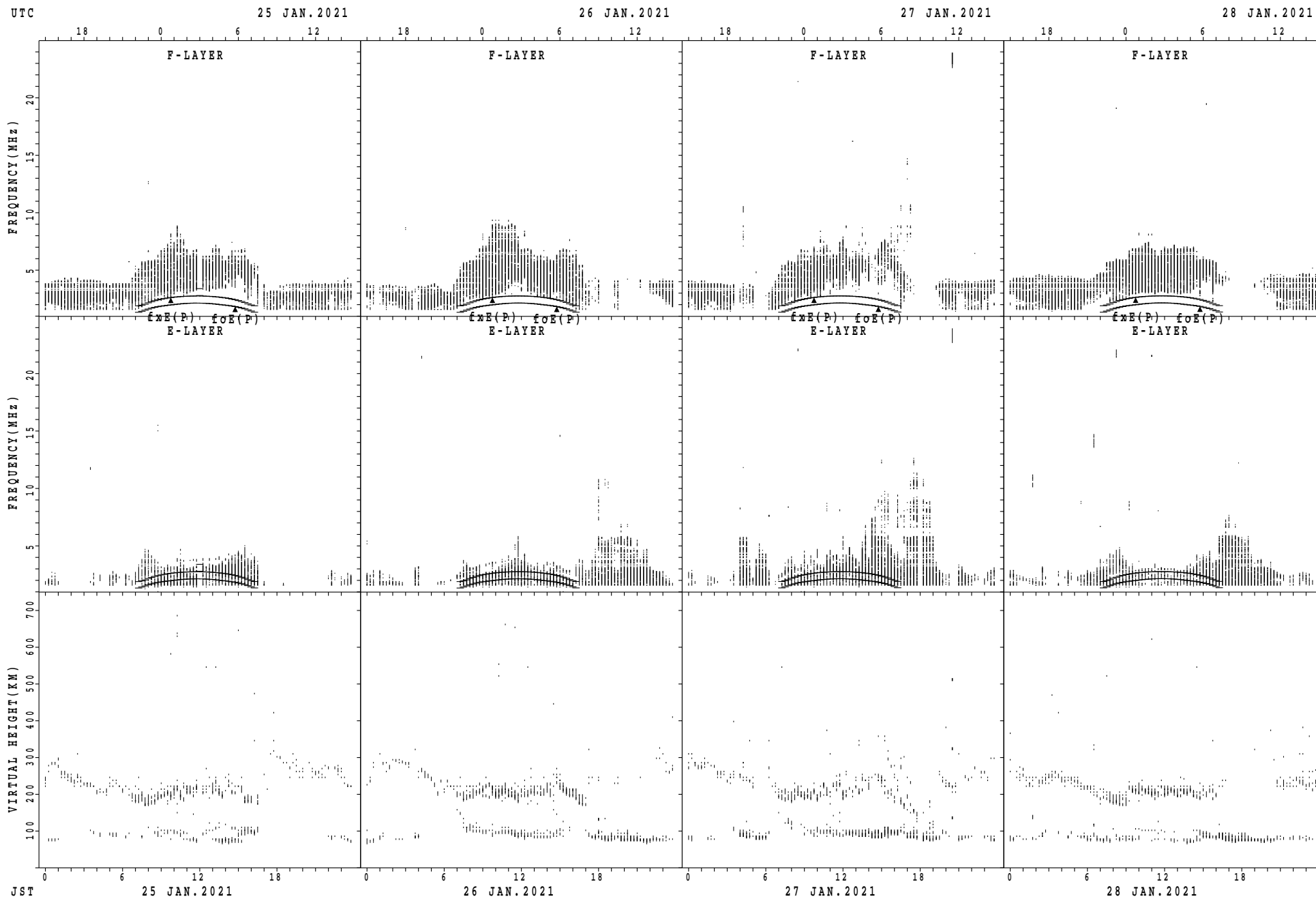
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



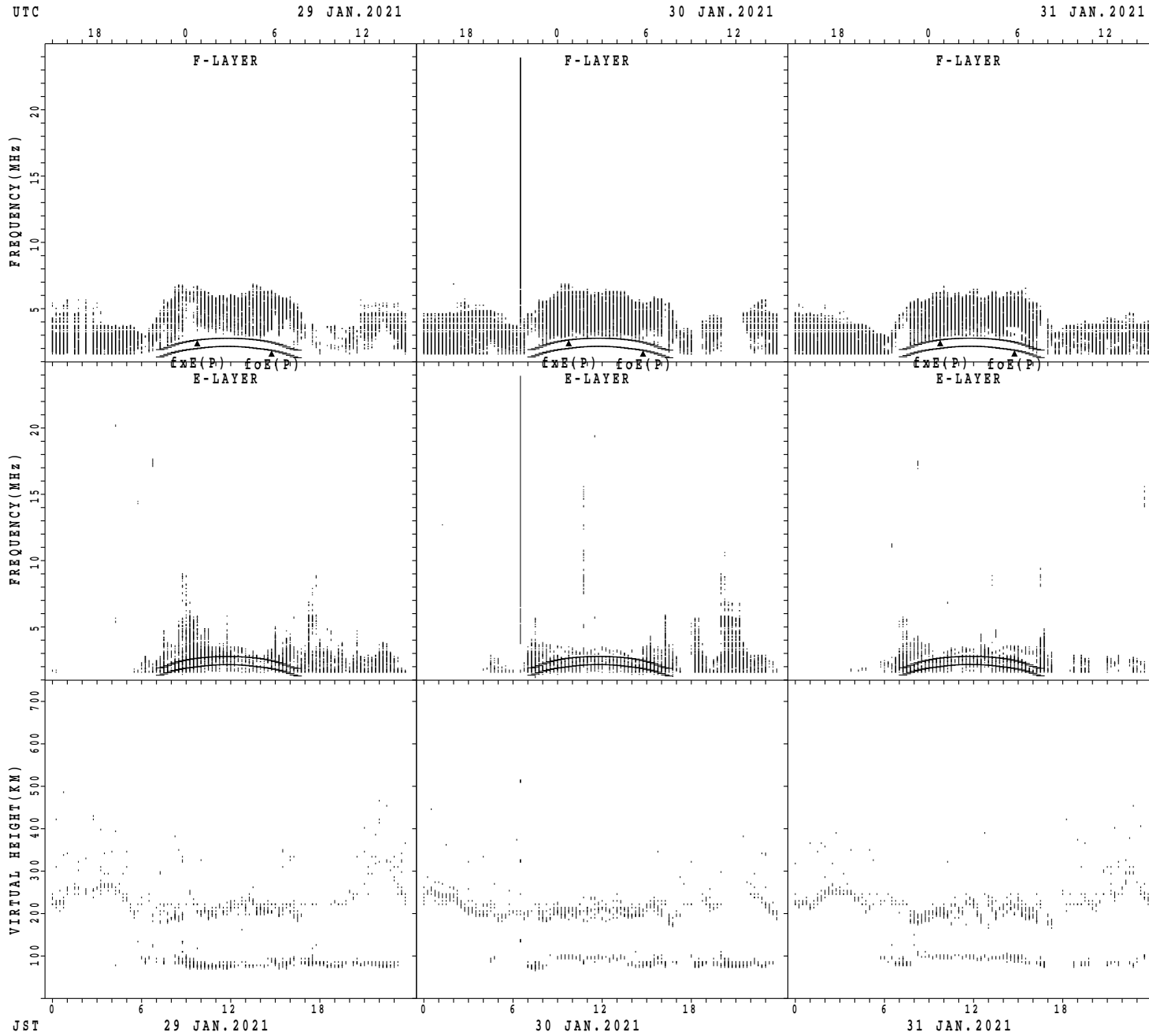
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



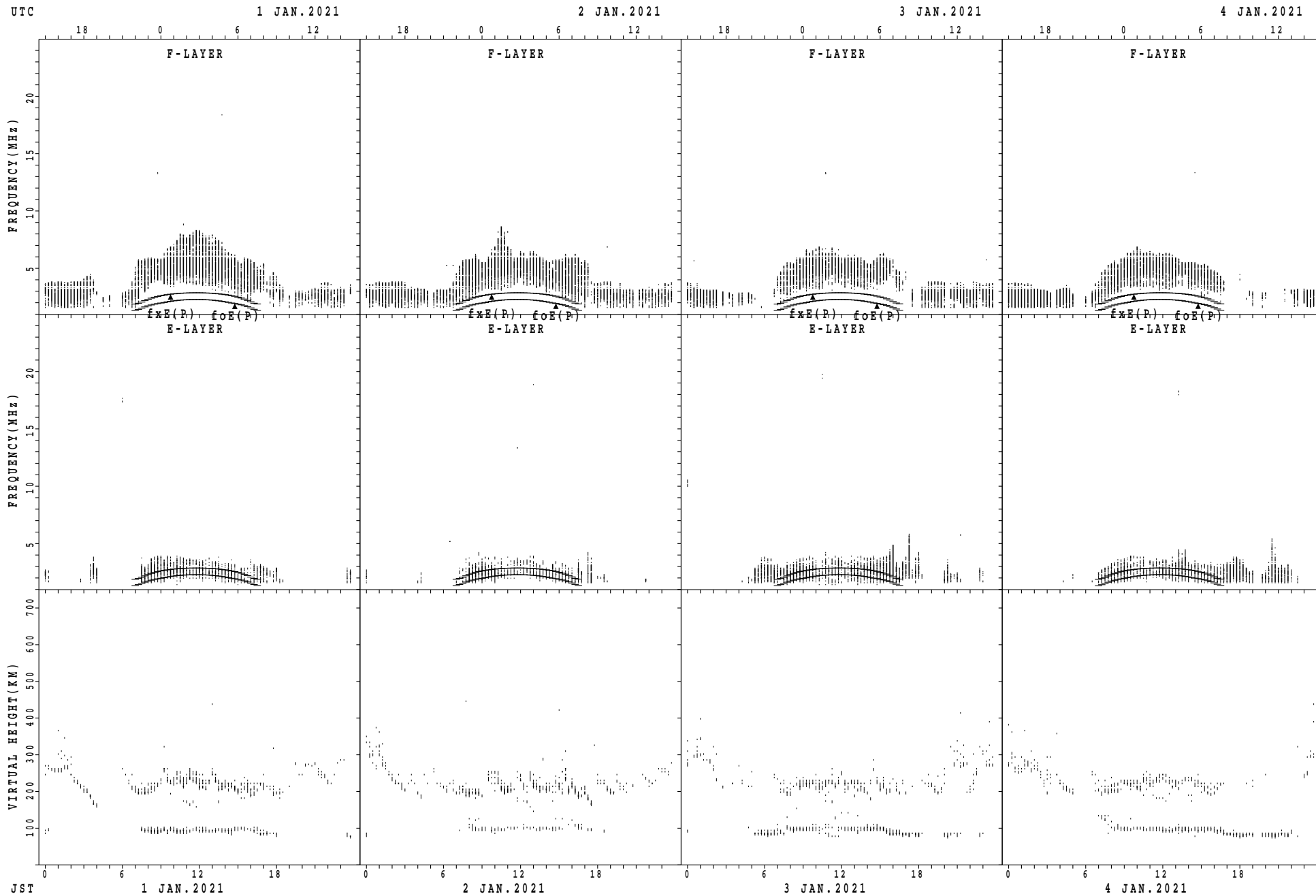
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



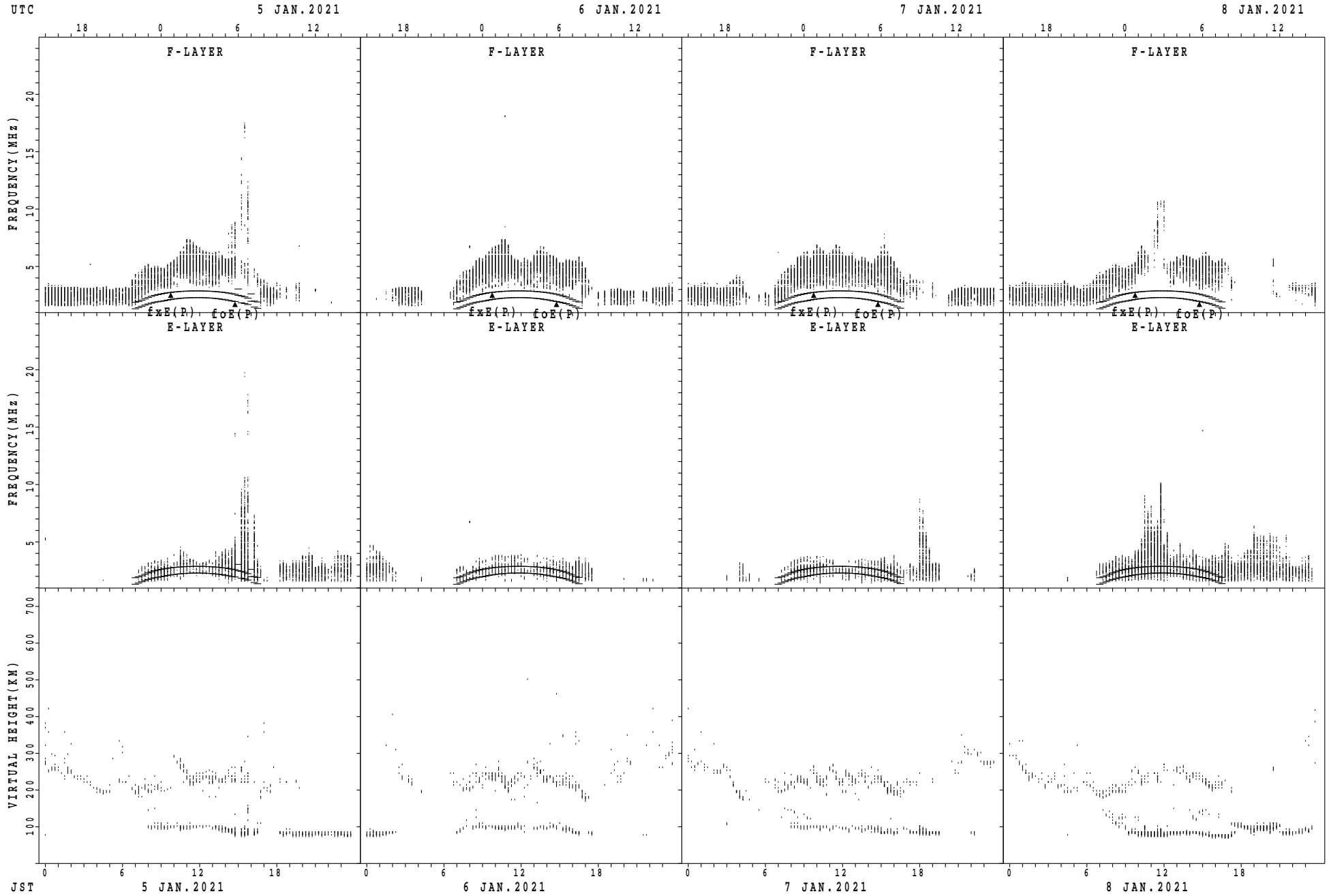
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



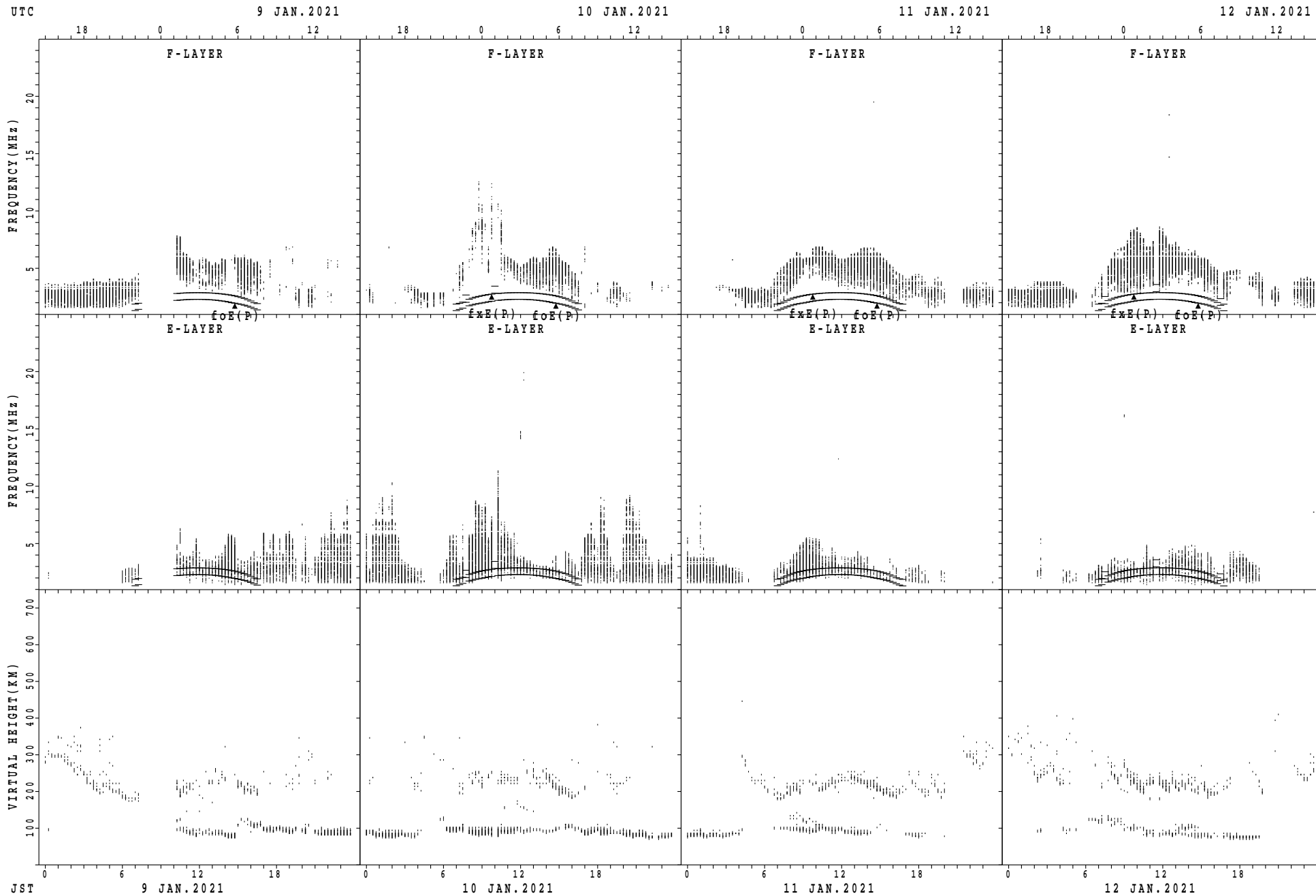
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



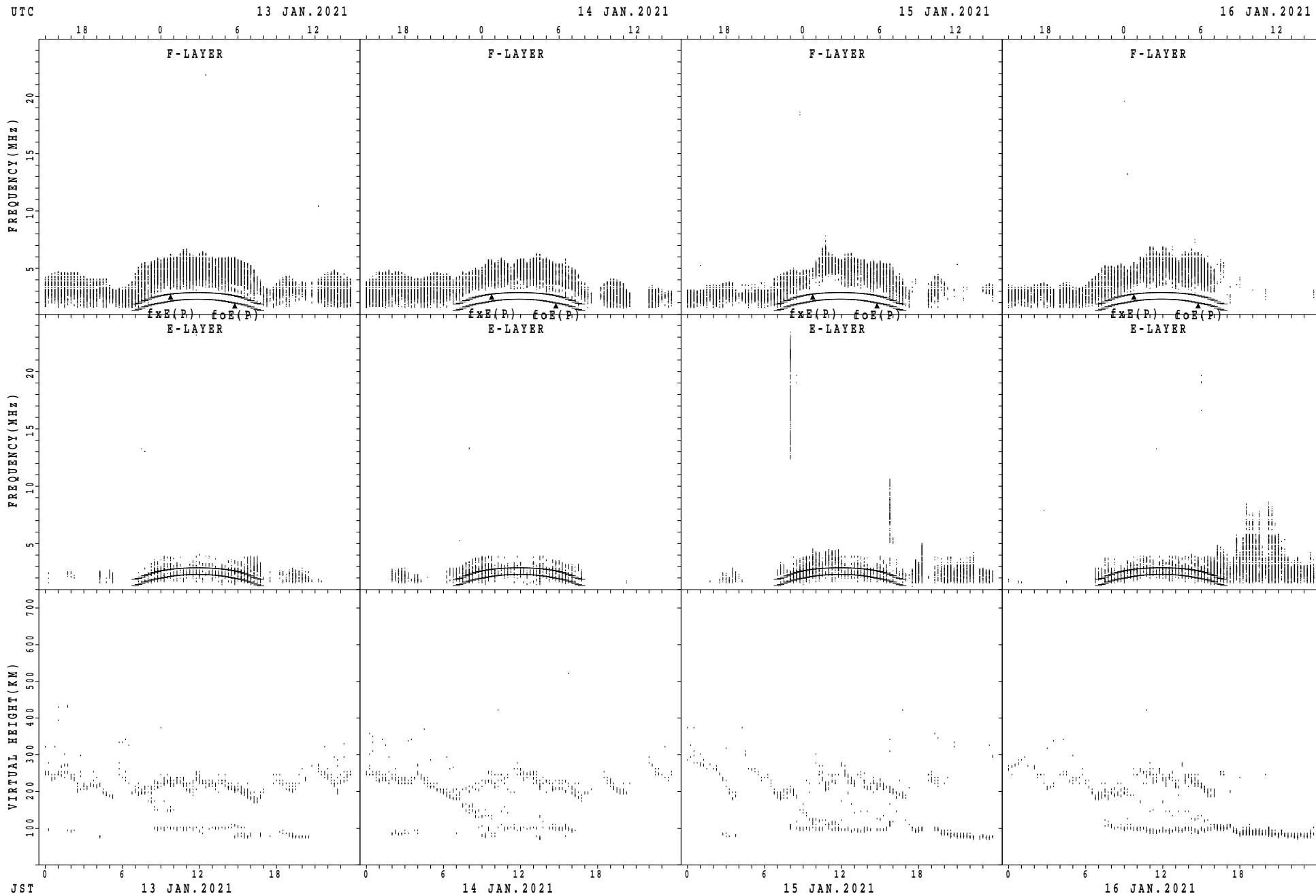
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



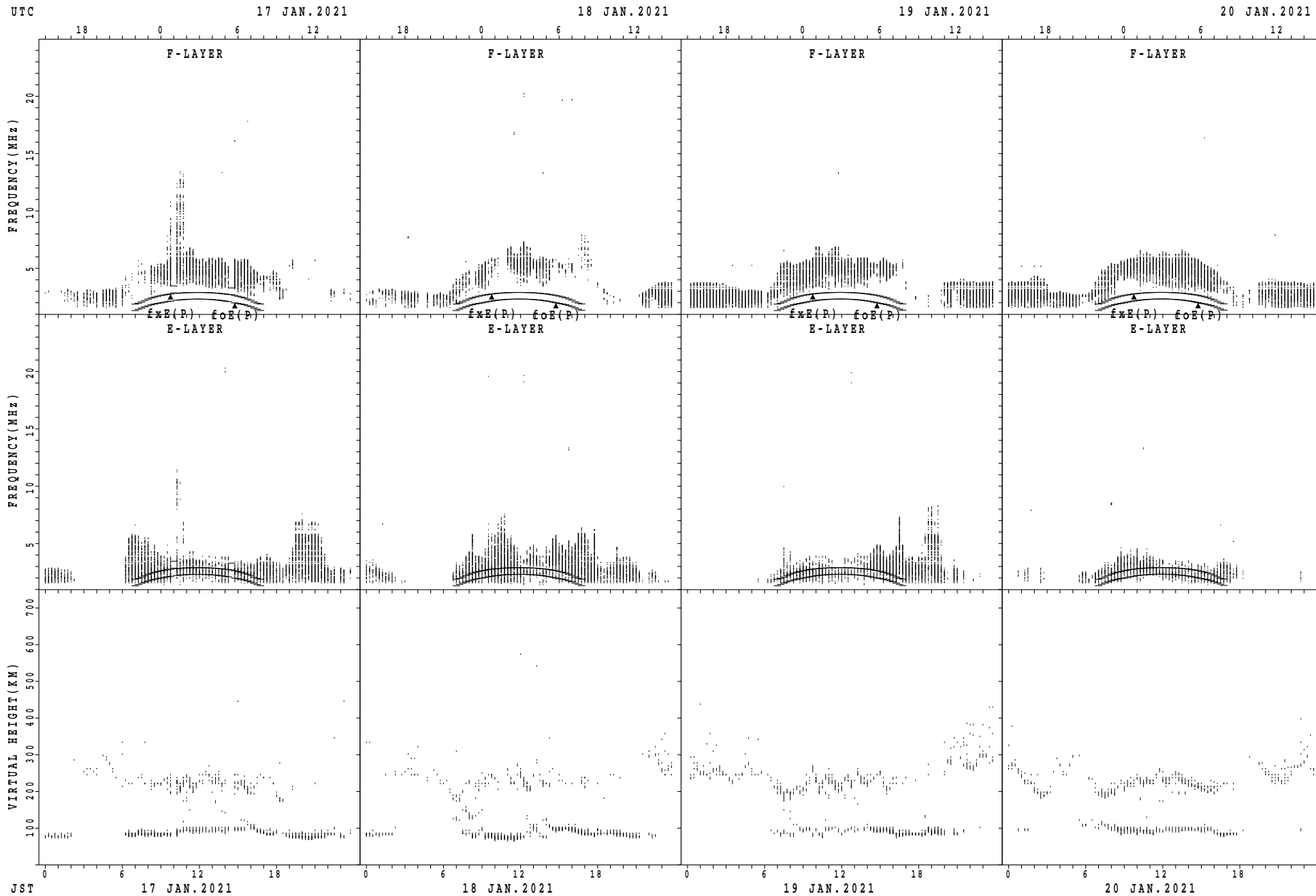
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



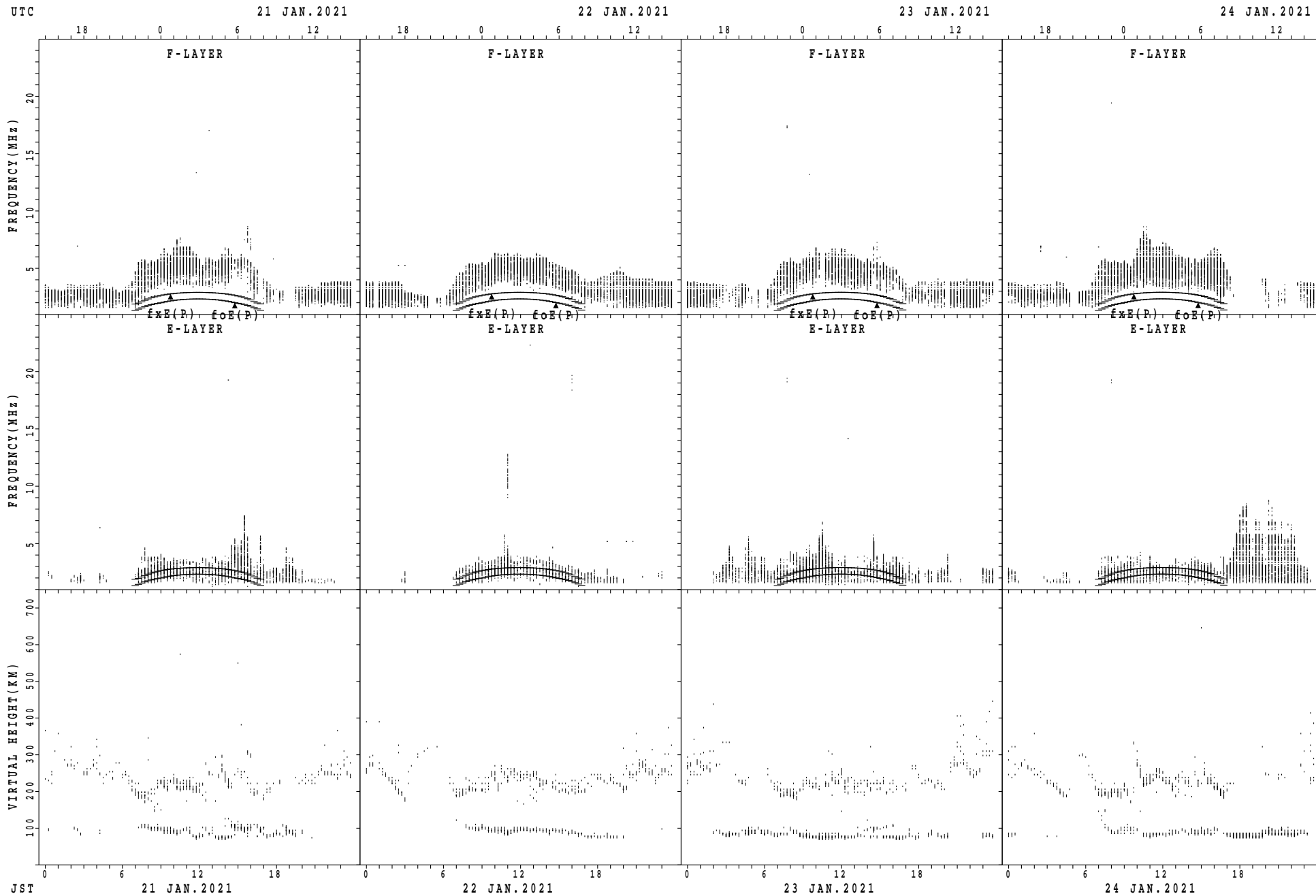
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



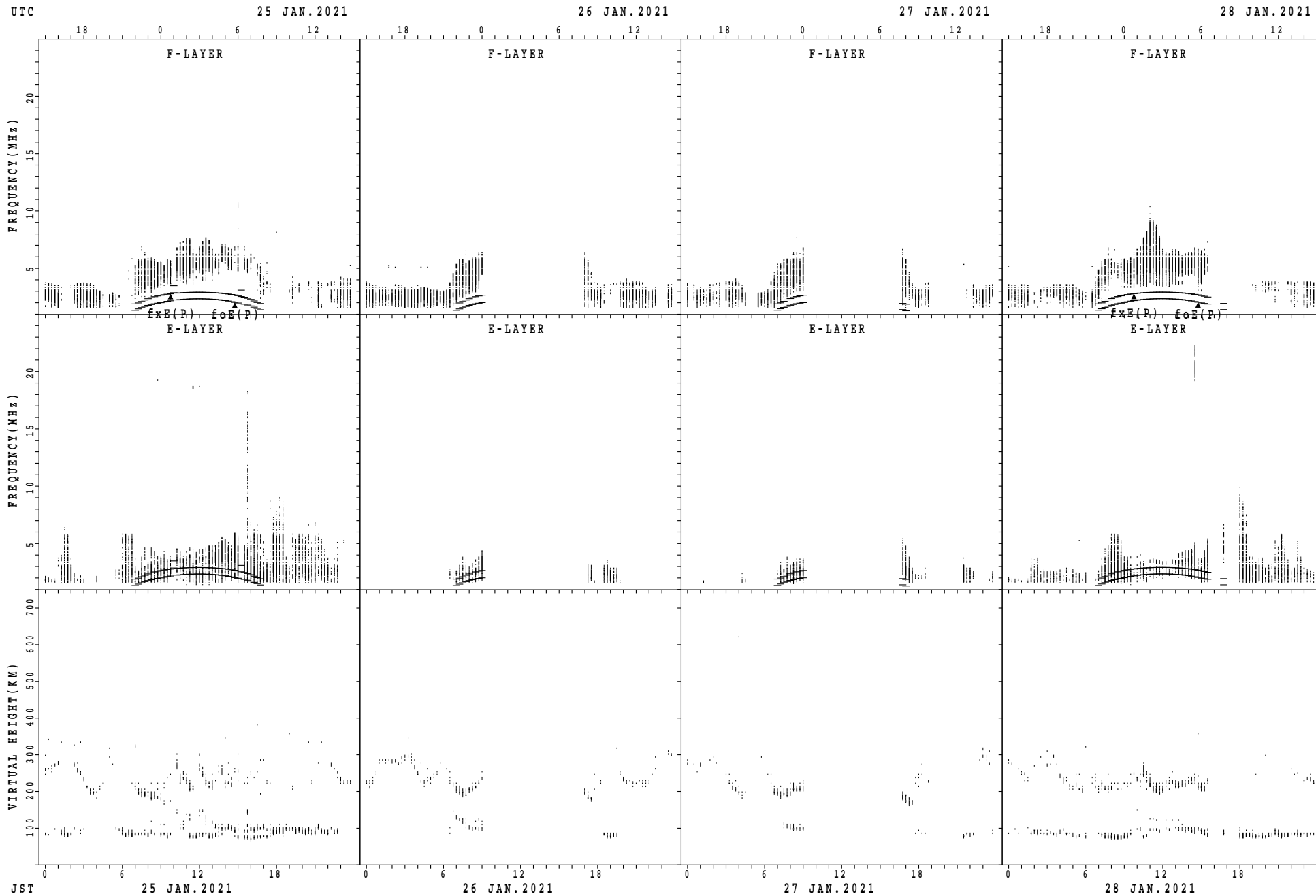
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



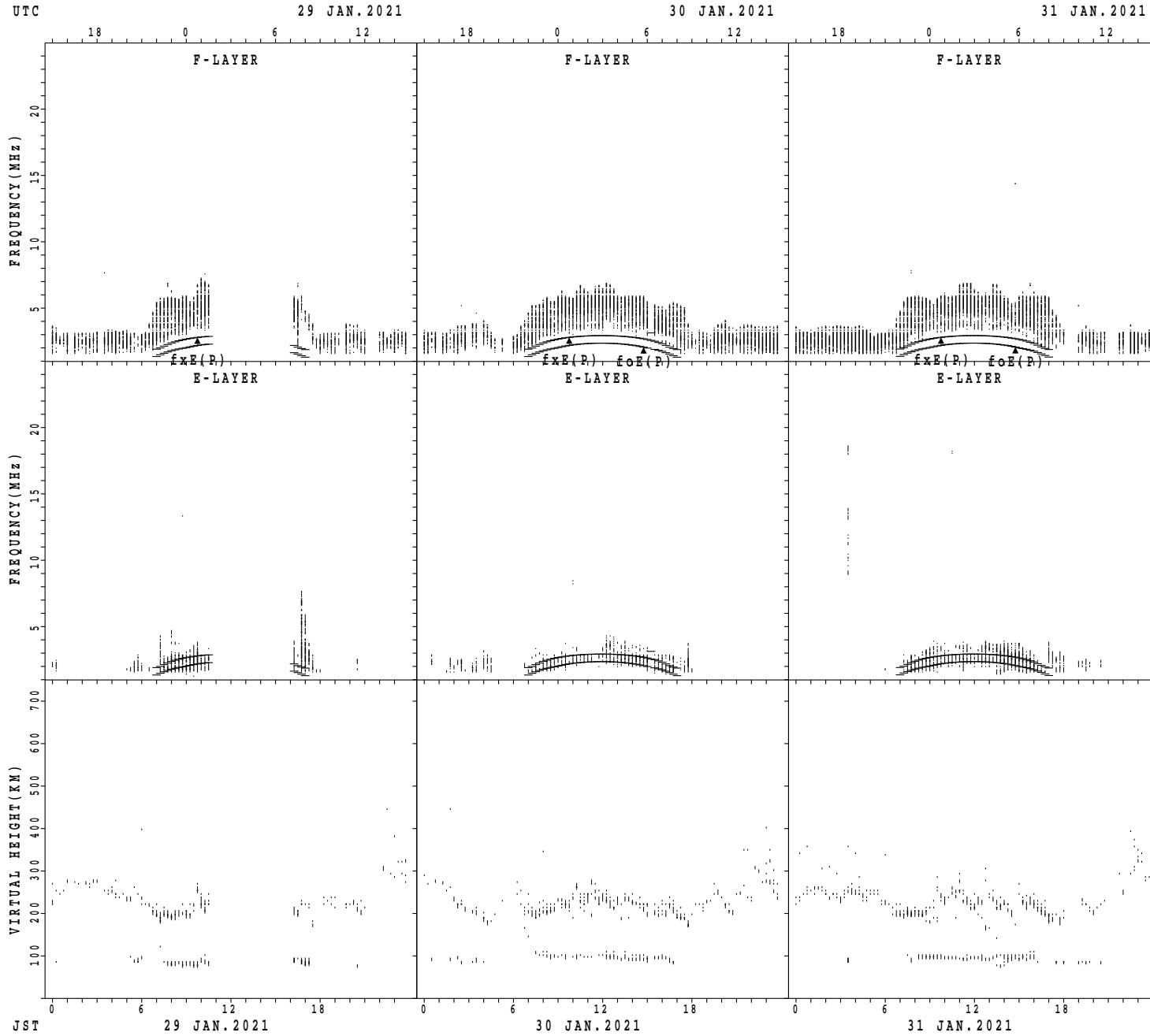
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



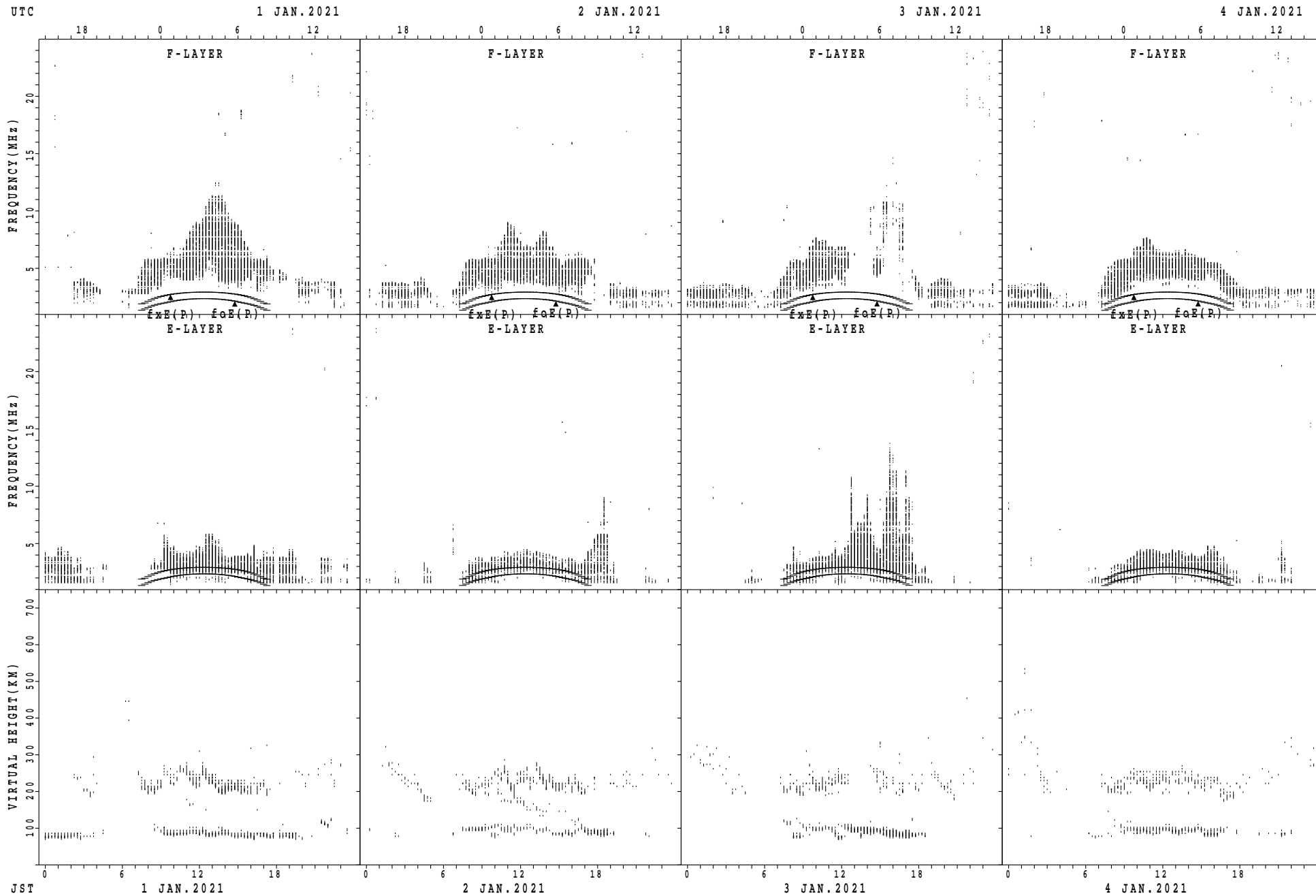
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



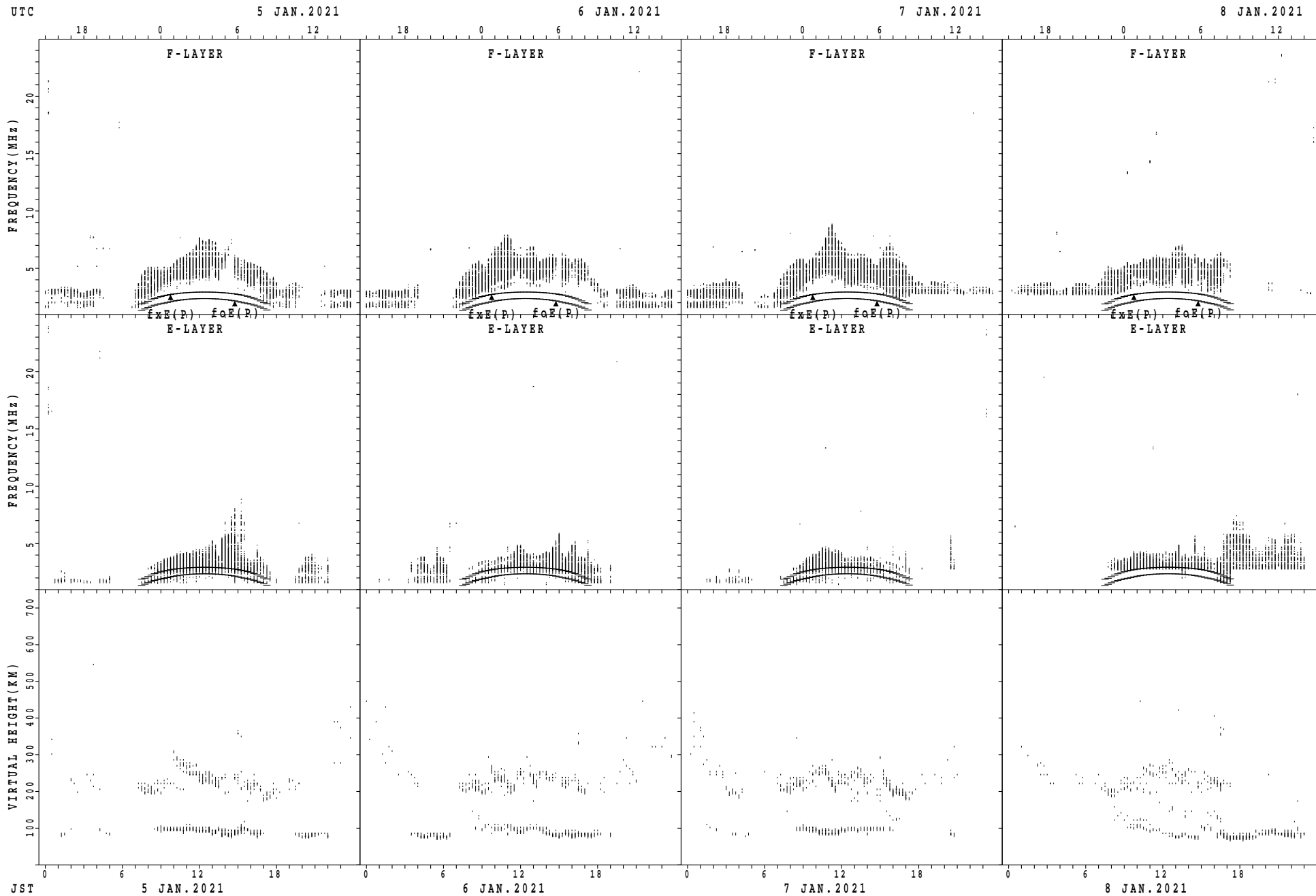
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



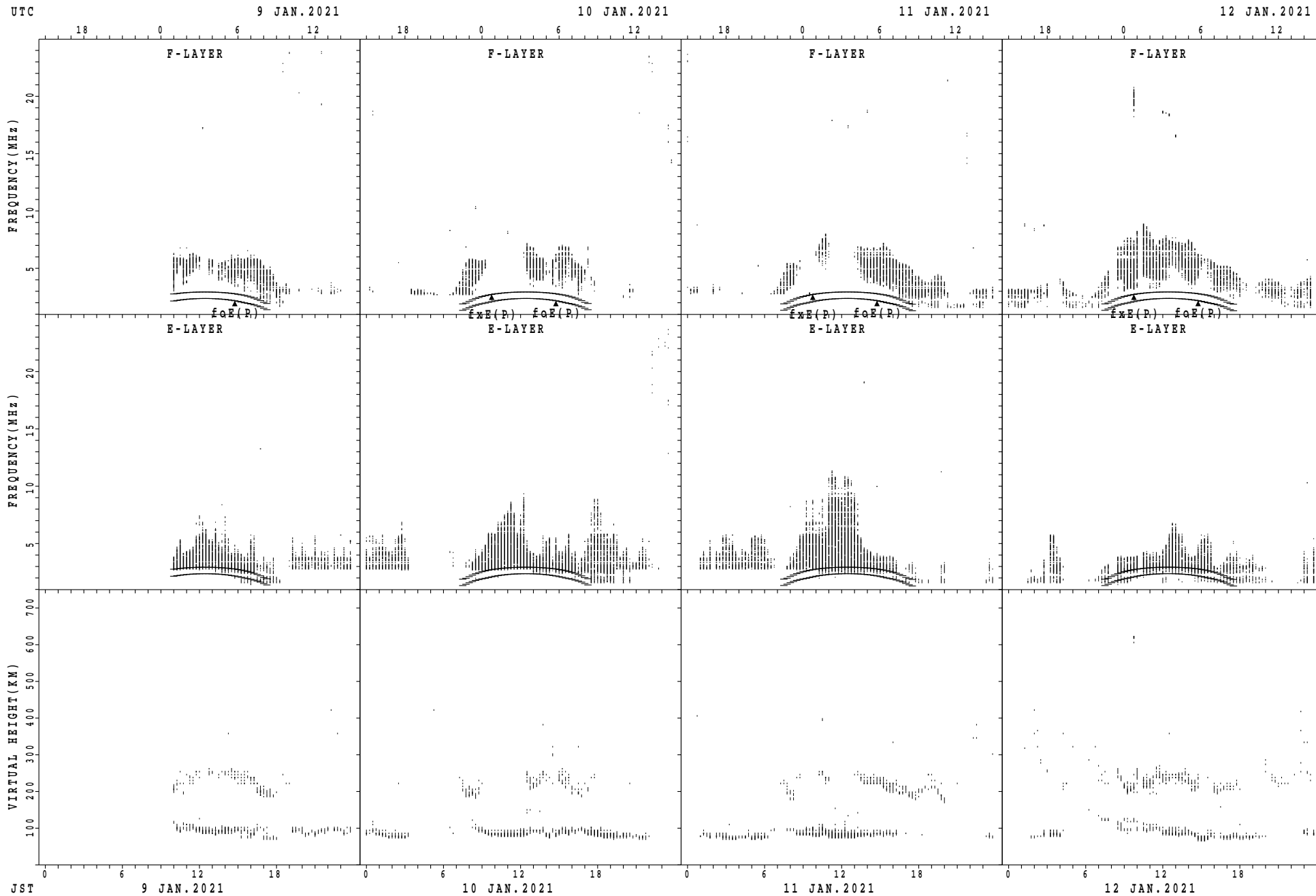
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



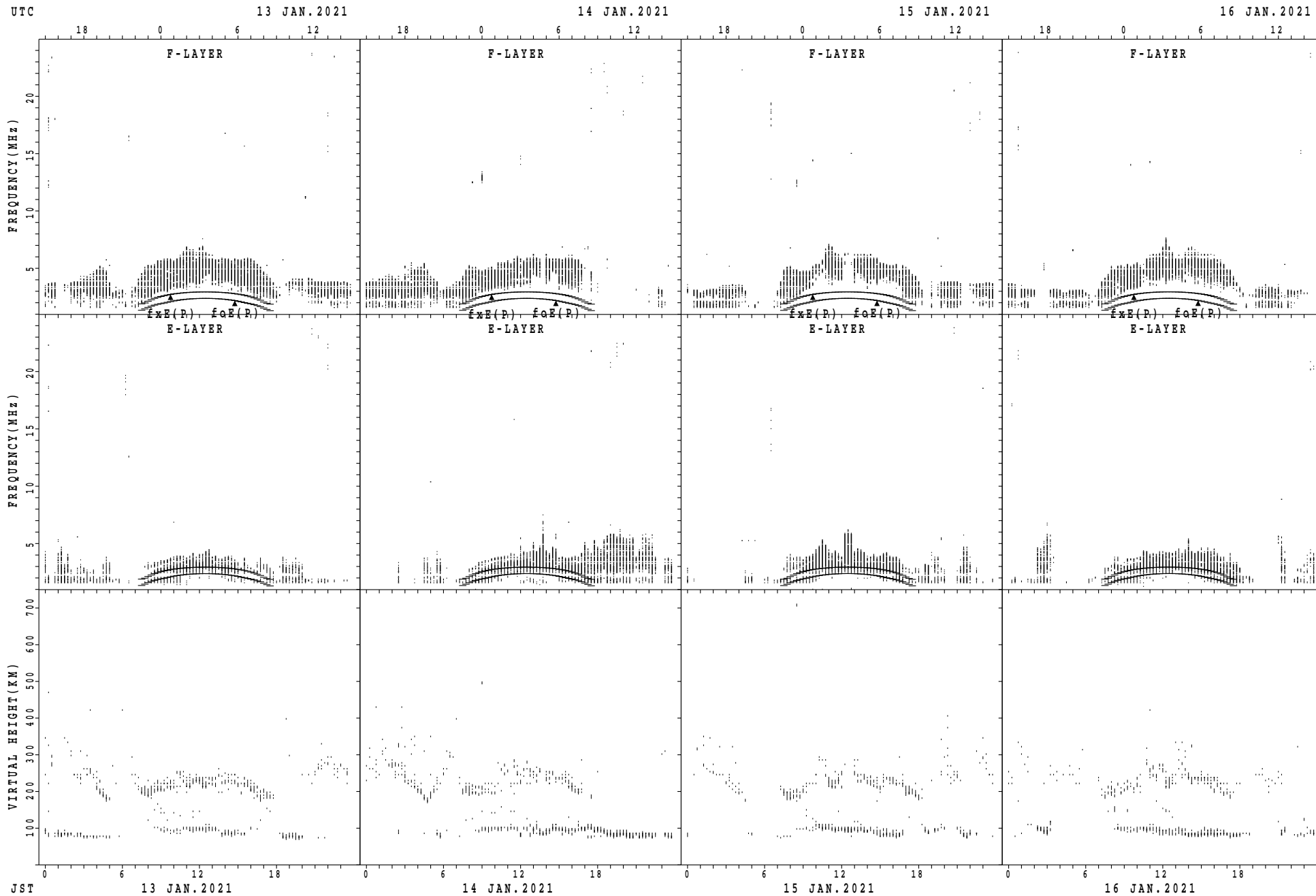
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



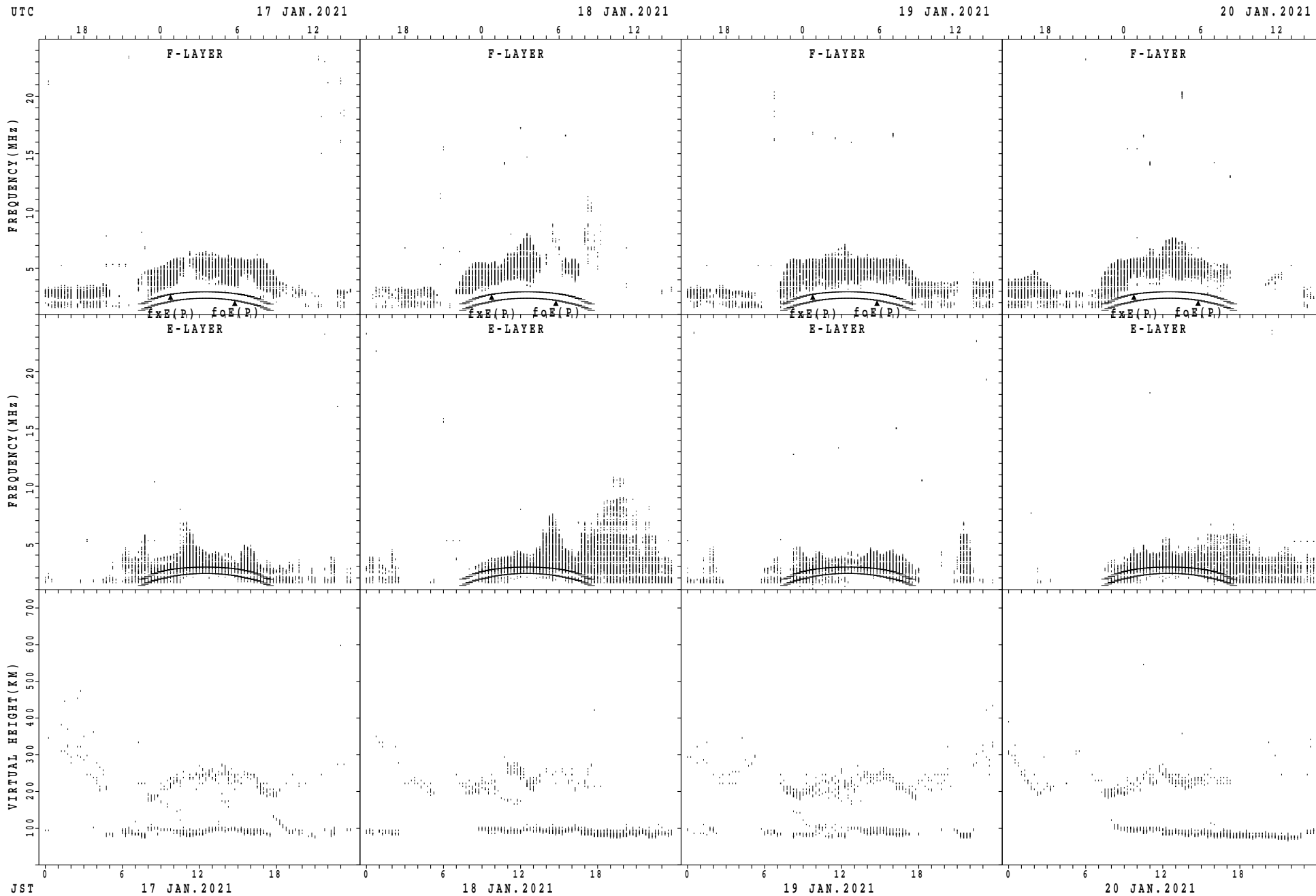
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



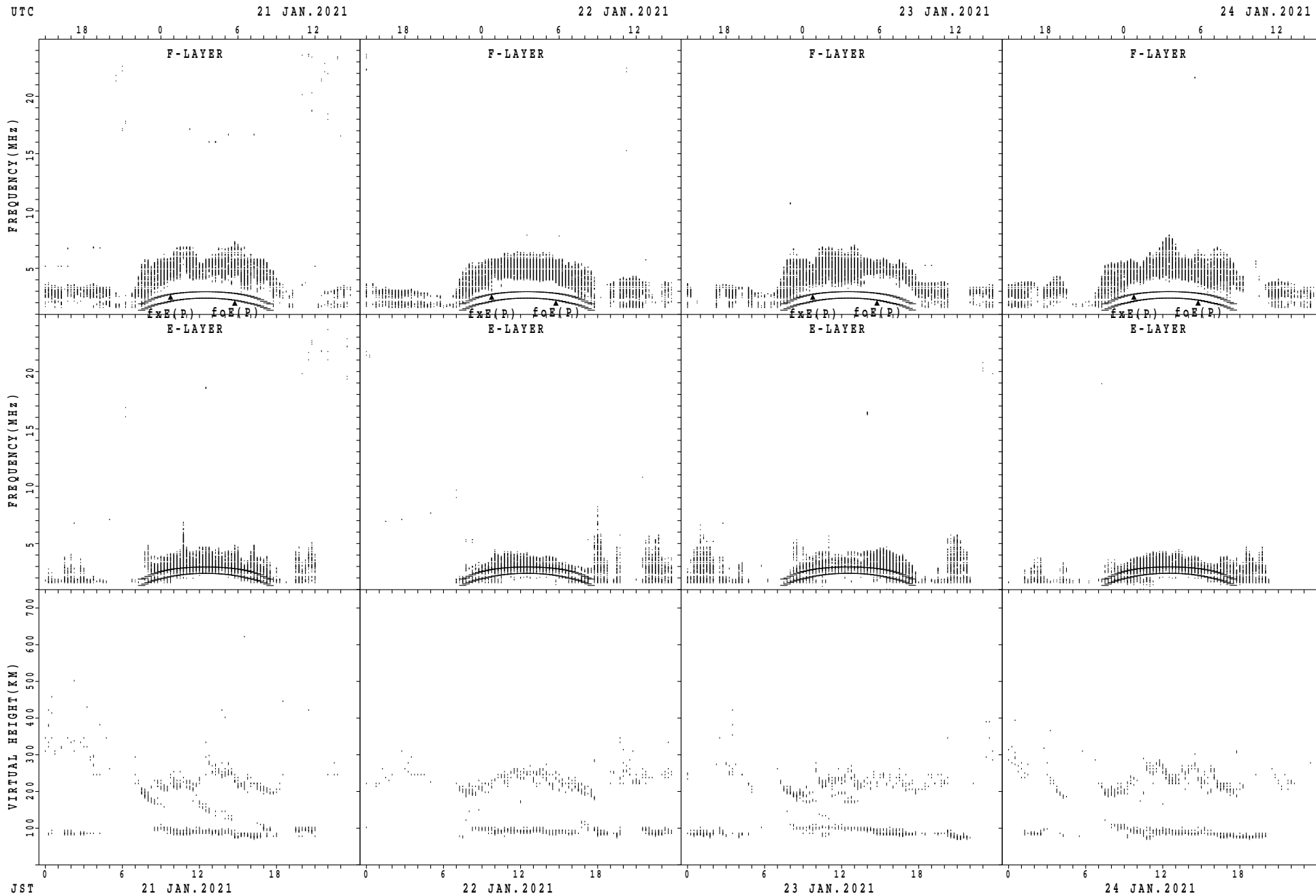
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



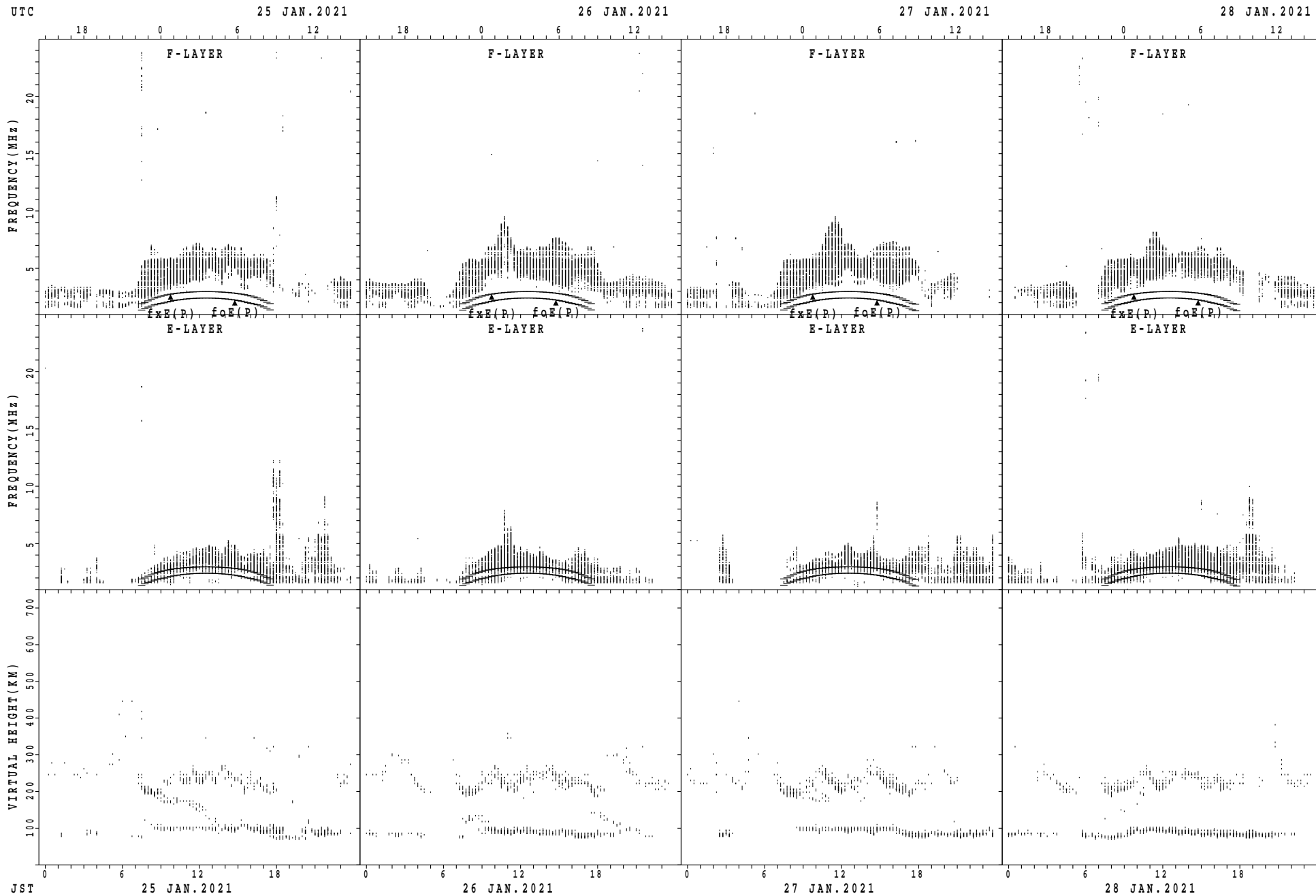
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



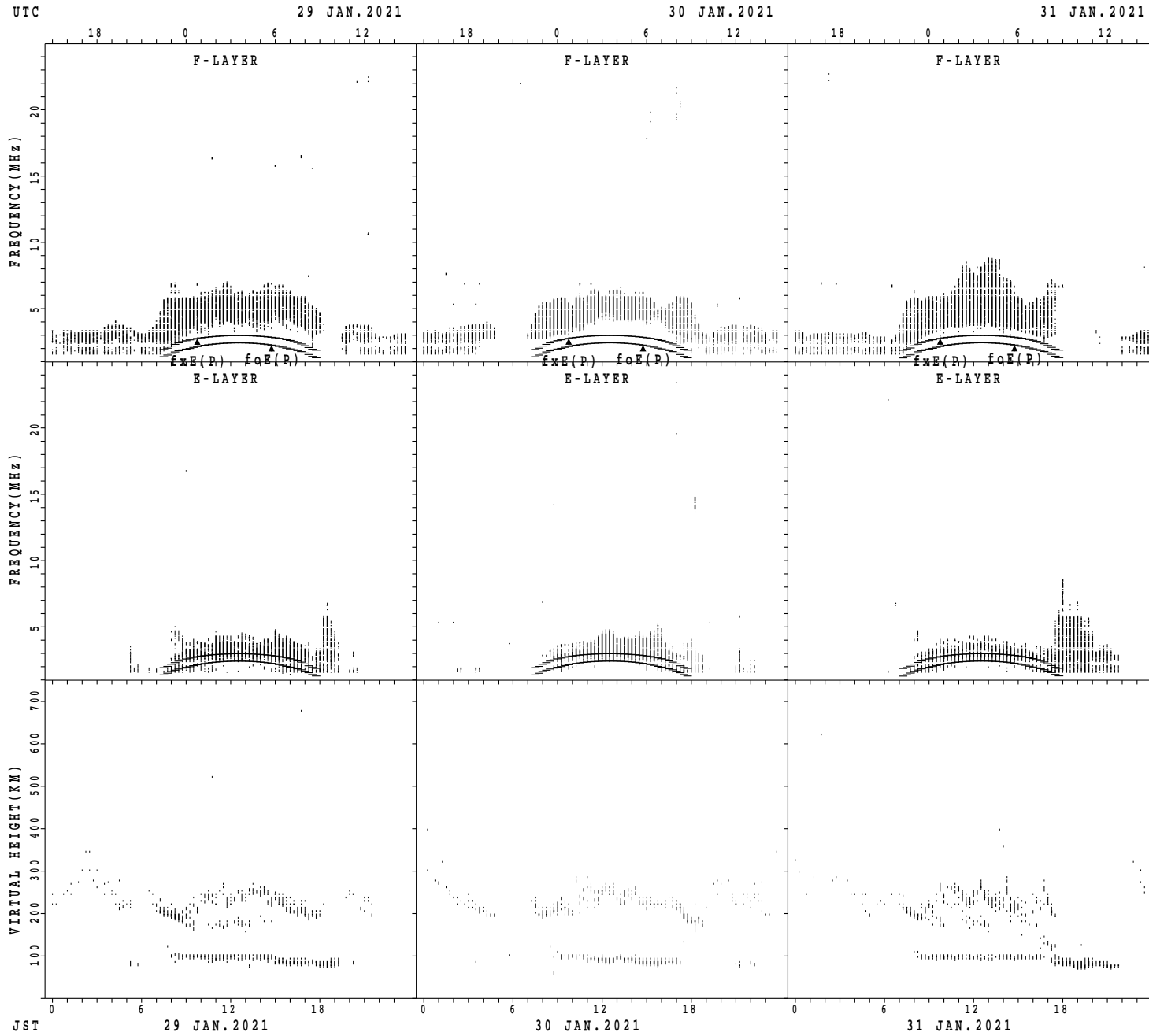
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



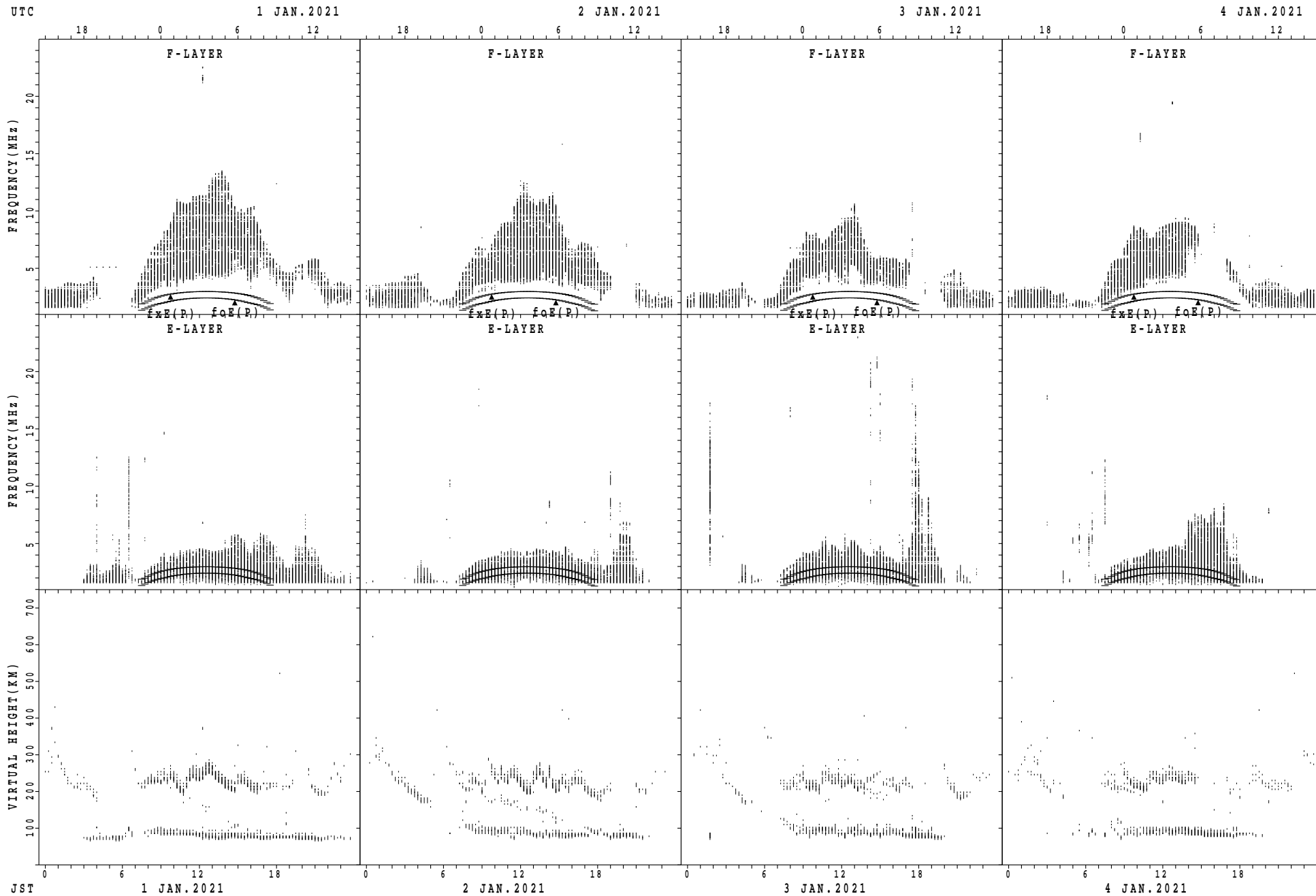
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



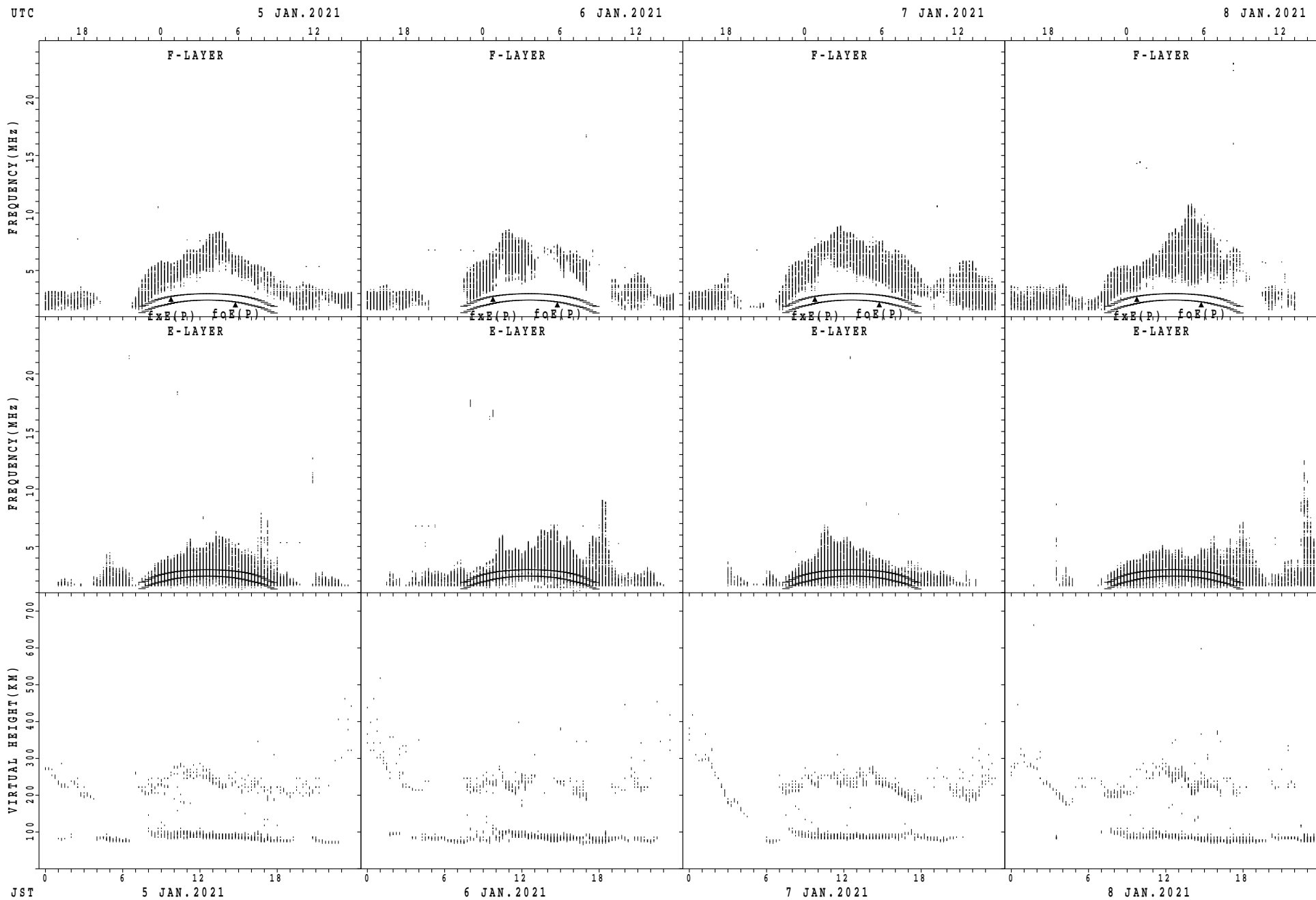
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



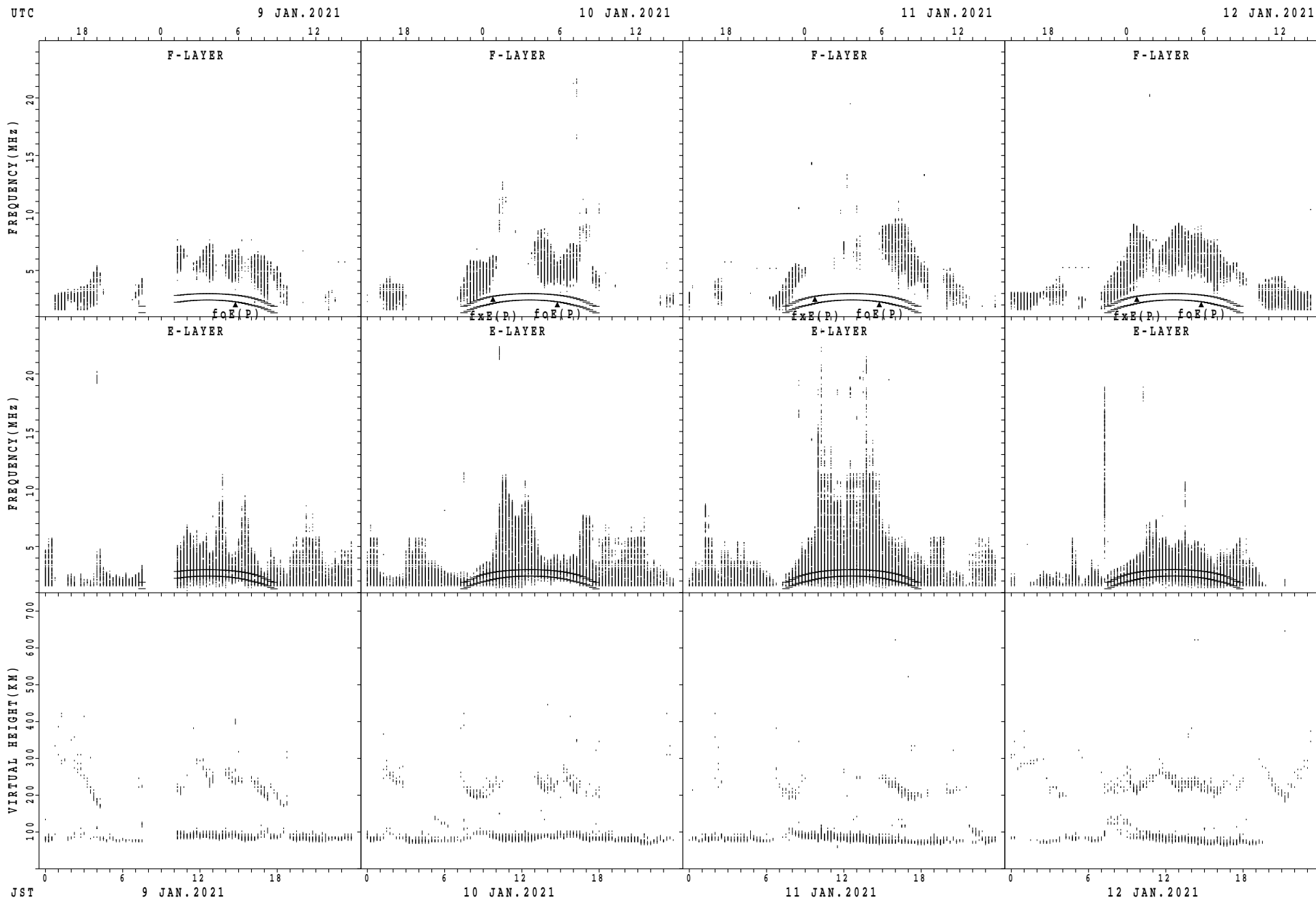
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



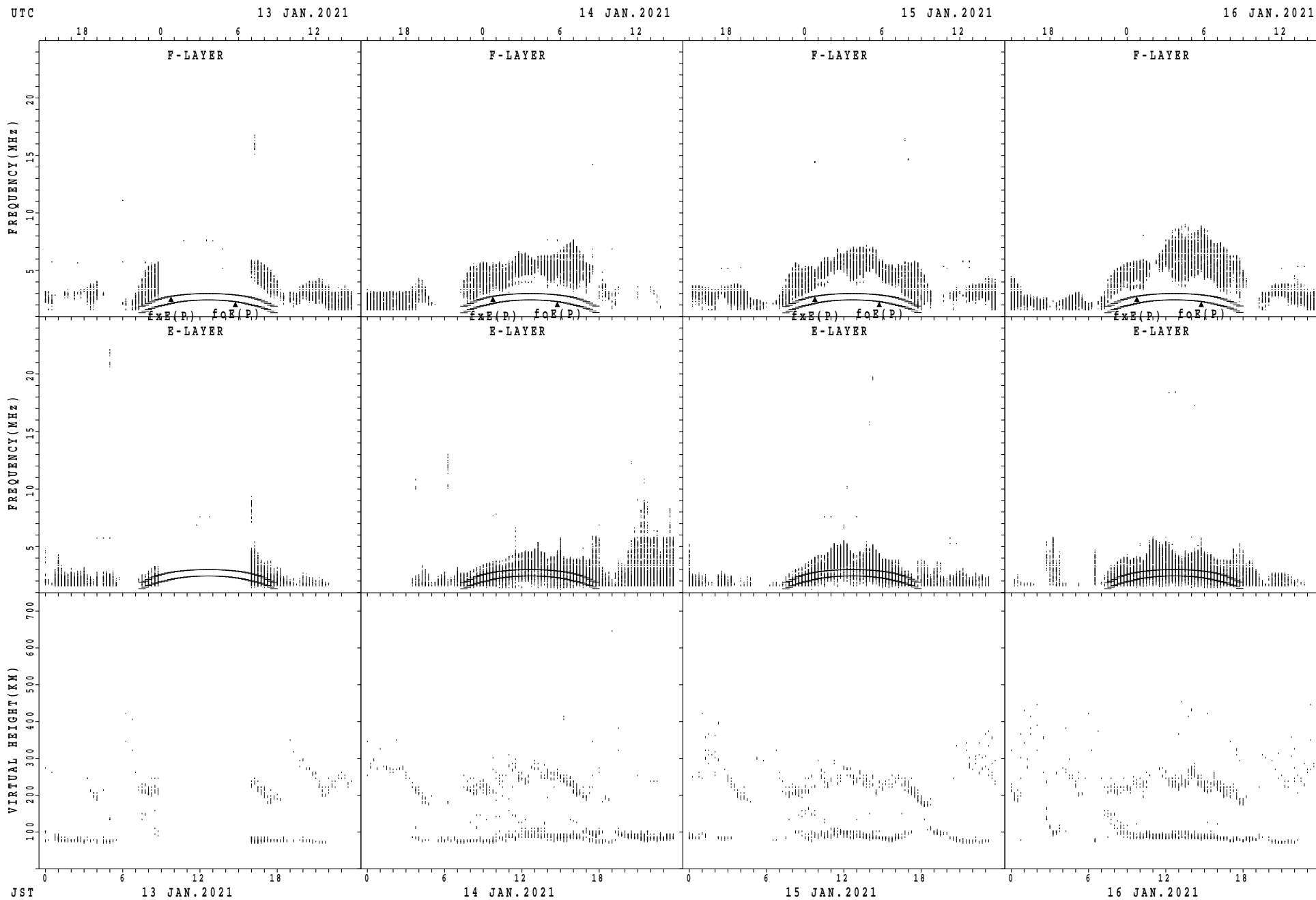
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



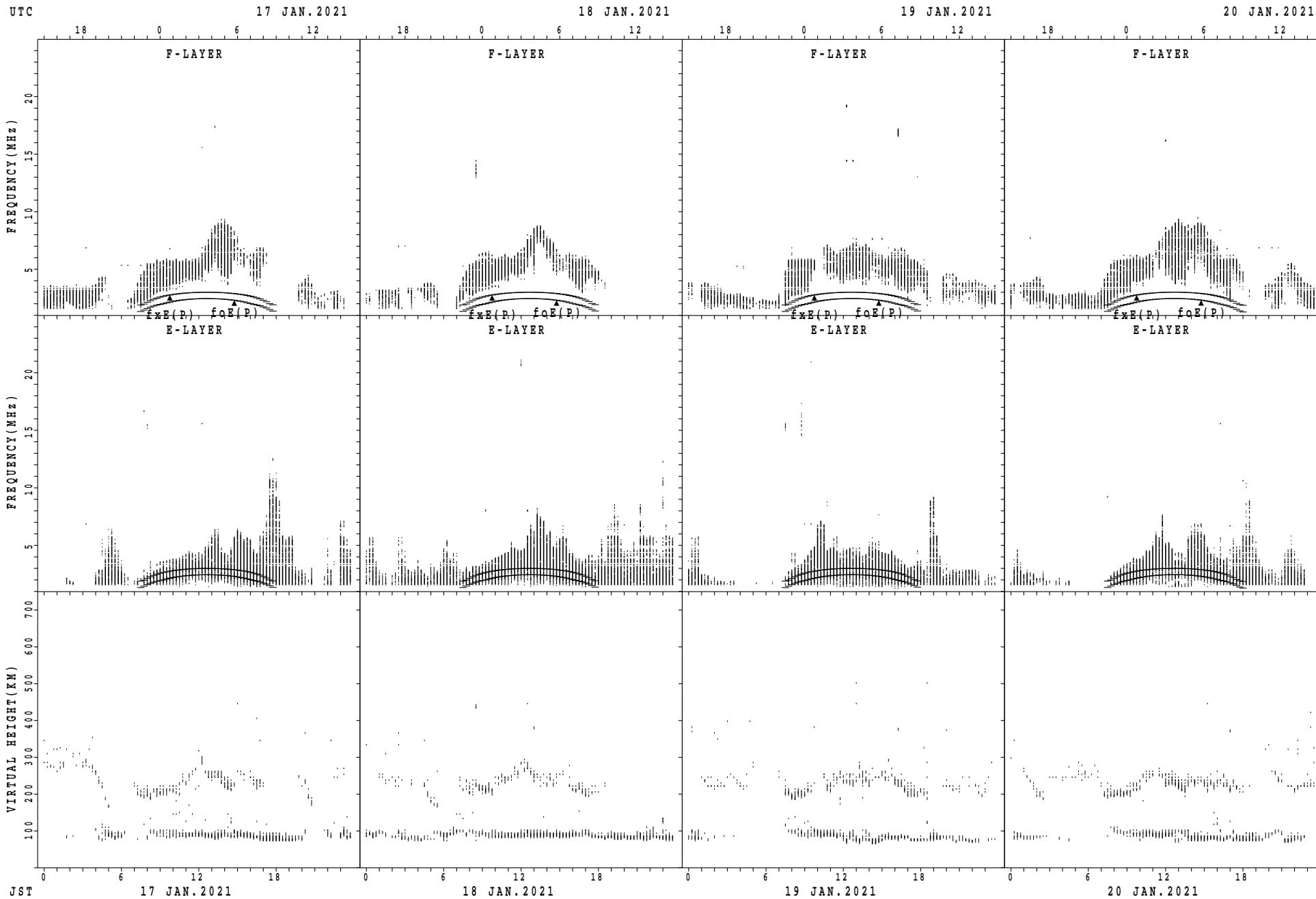
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



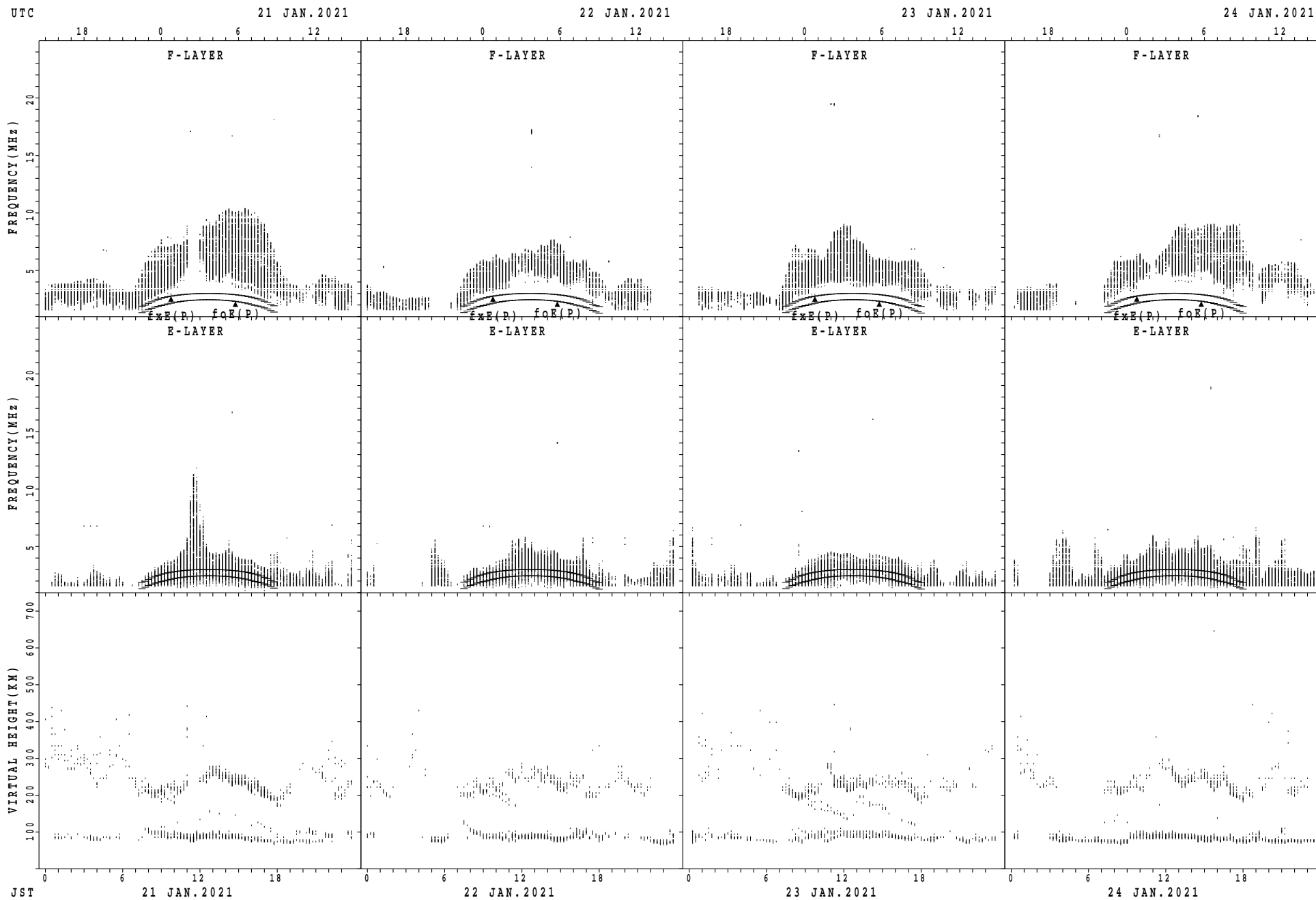
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



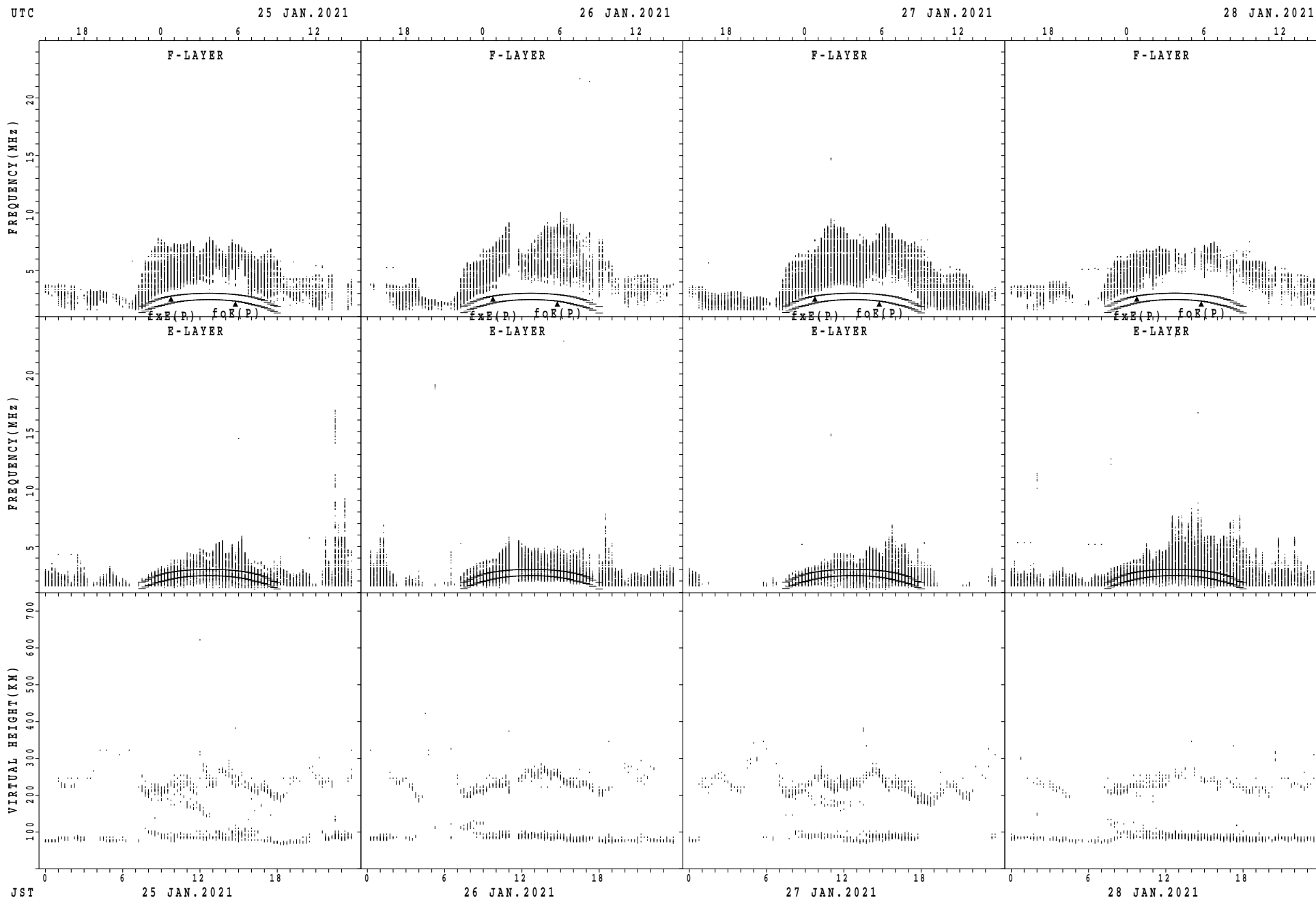
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



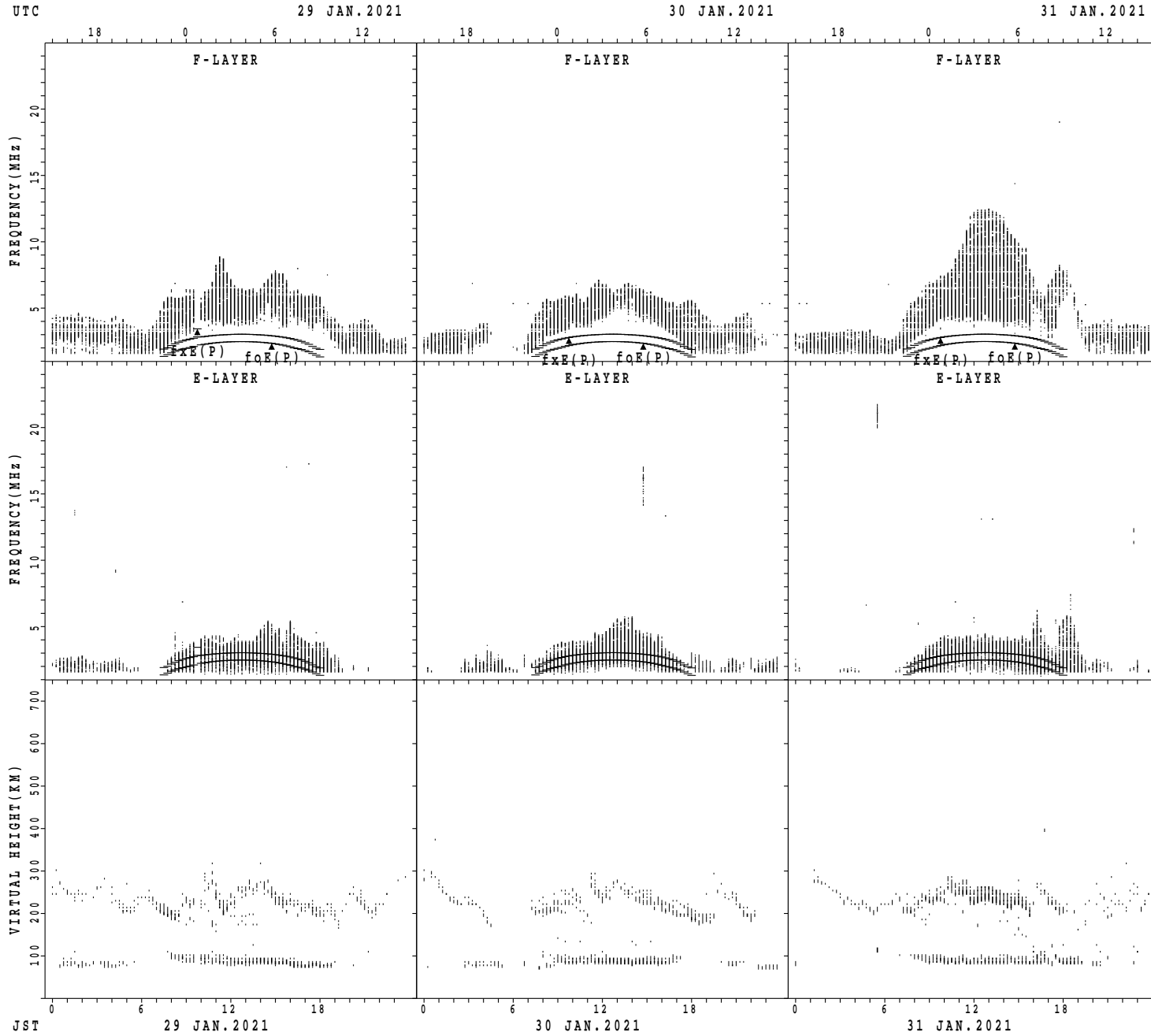
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es
 JAN. 2021 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	2	6	13	18	12	6	5	2	2								
MED								246	224	222	222	222	216	223	226	227	255								
U Q								123	248	242	233	230	223	234	232	236	264								
L Q								123	200	210	214	218	208	216	218	218	246								

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	26	24	22	22	25	22	22	30	31	30	30	31	31	31	31	31	27	28	26	25	24	27	30	27
MED	96	97	96	98	98	98	98	98	98	98	98	96	100	98	98	98	98	98	96	96	96	96	97	96
U Q	98	98	98	98	98	100	98	98	98	98	98	98	102	98	100	100	100	98	98	98	98	98	98	98
L Q	94	96	94	96	96	98	98	98	98	94	94	96	96	96	96	98	96	95	94	94	93	94	96	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	4	12	4		4	6	6	1	1						
MED									200	239	241	236		236	234	223	300	216						
U Q									100	242	246	260		253	240	228	150	108						
L Q									100	222	230	212		224	232	222	150	108						

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	16	15	14	13	13	13	19	30	30	26	28	28	28	28	28	26	26	28	23	25	21	16	14
MED	96	96	98	98	98	98	98	98	98	100	98	98	99	99	100	98	98	96	96	96	96	98	96	96
U Q	98	97	98	98	98	98	98	127	100	102	100	100	100	100	100	100	98	98	98	98	98	98	98	98
L Q	94	95	96	98	97	95	96	98	98	98	96	96	96	97	98	96	96	96	95	94	94	94	95	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	3	6	7			5	8	4	4						
MED									218	224	258	236			224	252	216	219						
U Q									218	236	268	258			252	262	245	231						
L Q									218	204	248	216			197	239	201	218						

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	14	16	22	16	17	15	15	24	30	31	31	31	31	31	31	31	30	28	26	26	24	26	20
MED	96	96	96	97	97	96	96	98	98	100	100	98	98	98	98	98	98	98	95	96	96	96	96	96
U Q	98	98	98	98	98	98	96	98	99	102	100	100	100	100	100	98	100	98	98	98	96	96	98	98
L Q	96	96	96	96	96	94	94	96	98	98	98	96	96	98	96	94	94	96	92	94	94	92	94	96

MONTHLY MEDIANS OF h'F AND h'Es
 JAN. 2021 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	8	14					18	16	9	2					
MED									234	227	229					233	233	216	213					
U Q									117	237	240					242	242	239	216					
L Q									117	215	224					226	221	202	210					

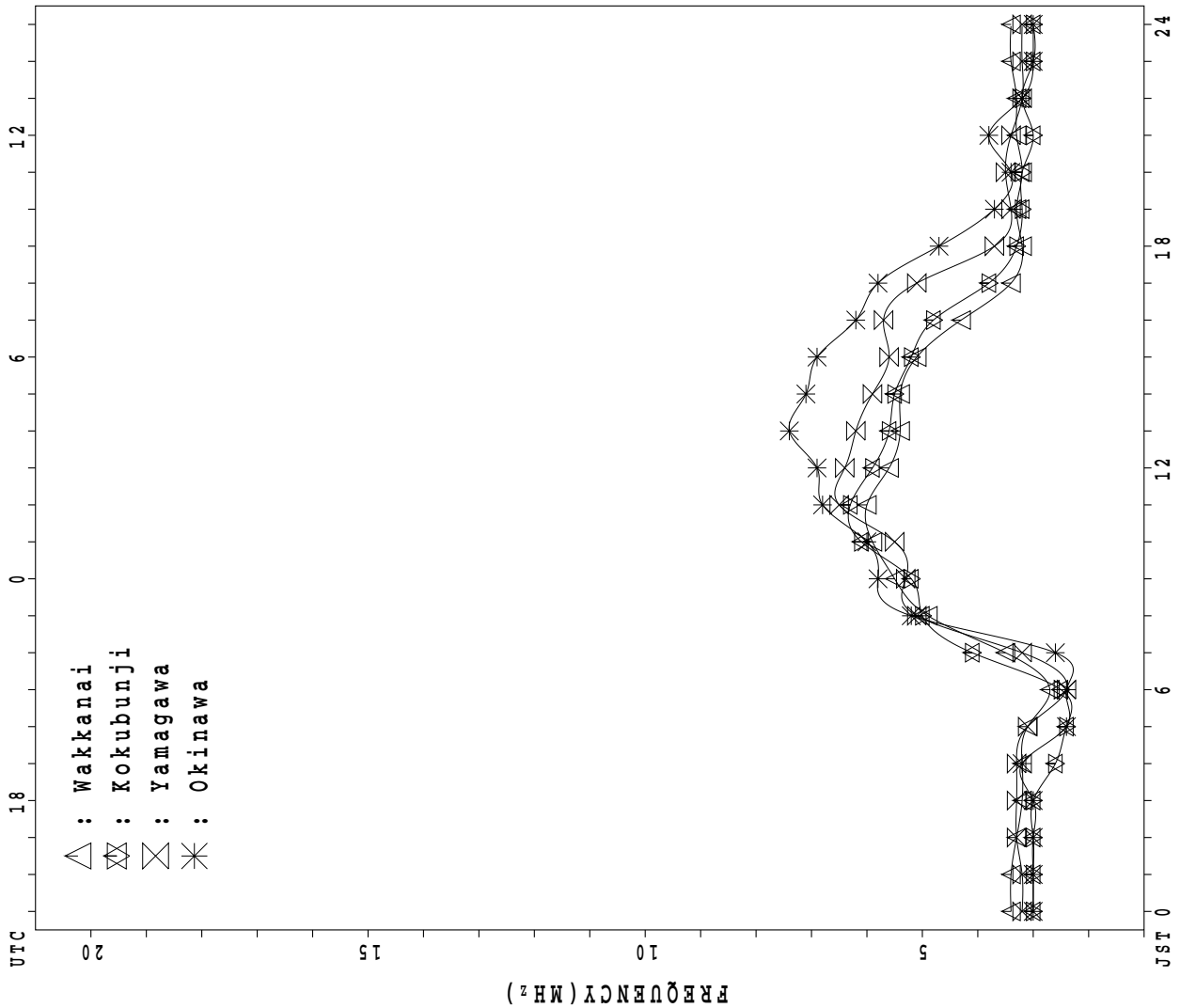
h'Es

	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	19	19	23	27	24	25	20	30	29	29	30	30	30	30	30	31	31	29	30	27	27	26	22
MED	96	98	98	98	98	96	96	98	98	98	98	98	96	96	96	96	98	96	96	95	96	96	96	95
U Q	98	98	98	98	98	98	97	98	100	101	98	98	98	98	98	98	98	98	98	98	98	98	98	98
L Q	94	96	96	94	96	94	94	97	98	98	96	96	96	94	94	94	92	92	93	90	94	94	92	92

MONTHLY MEDIANS PLOT OF fOF2

JAN. 2021

AUTOMATIC SCALING



UTC

18

0

6

12

18

24

JST

0

6

12

18

24

FREQUENCY (MHz)

20

15

10

5

0

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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	46	49	X	37	38	48	48	28											X	X	X	X	X	X	X
2	X	X	X	X	57	56	54	48											40	38	32	48	59	59	
3	57	57	X	X	38	38	33												X	X	X	X	48	39	X
4	X	X	X	X	X	X	X	X											X	X	X	X	37	33	X
5	37	37	39	40	40	32	28												X	X	X	X	X	X	X
6	X	X	X	X	X	X	X												X	X	X	X	47	40	X
7	44	44	X	X	X	X	X	X											X	X	X	X	X	X	X
8	54	47	X	X	X	42	34												X	X	X	X	51	52	X
9	59	59	58	56	56	53	43	45		C	C								X	X	X	A	X	X	X
10	X	36	46	43	X	X	X											X	X	X	X	X	53	38	X
11	X	X	X	X	X	X	X											X	X	X	X	X	X	X	X
12	53	41	X	X	X	X	34												X	X	X	X	89	82	X
13	61	61	89	69	68	50	50	56											X	X	X	X	49	52	X
14	56	52	50	X	50	54	54												X	X	X	X	48	48	X
15	56	49	48	X	39	33												X	X	X	X	39	37	X	
16	40	41	X	X	X	X	X												X	X	X	X	X	X	X
17	X	X	X	X	X	X	X												A	A	X	X	X	X	X
18	42	43	X	X	X	X	X												X	X	X	X	48	46	X
19	46	52	45	38	37	37	X	X											X	X	X	X	X	X	X
20	46	39	X	X	X	X	X												X	X	X	A	X	X	X
21	X	X	X	X	X	X				X									X	X	X	X	X	X	X
22	46	46	X	X	X	X													X	X	X	X	41	39	X
23	X	X	X	X	X	X				X									X	X	X	X	52	43	X
24	45	45	X	X	X	X													X	X	X	X	40	42	X
25	X	42	X	X	X	X													X	X	X	X	X	X	X
26	40	X	X	X	X	X													X	X	X	X	42	41	X
27	X	X	X	X	X	X													X	A	X	X	X	X	X
28	X	X	X	X	X	X													X	X	X	X	X	X	X
29	56	56	58	55	X	X													X	X	X	X	56	56	X
30	50	X	57	58	50	54													X	X	X	X	54	57	X
31	52	58	52	48	X	37													X	X	X	X	44	53	X
	00	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	14	4		1							4	5	29	30	30	30	31	31	
MED	44	44	40	39	39	38	35	44		67							52	41	39	40	38	40	44	43	
U Q	53	49	48	45	45	45	44	50									56	47	40	43	43	45	50	52	
L Q	X	X	X	X	X	X	X	X									X	X	X	X	X	X	X	X	X
	39	39	39	37	37	33	32	42									47	37	34	38	34	37	39	39	

JAN. 2021 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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	F 30	F 34	30	F 27	F 32	F 36	21	34	49	55	64	68	54	52	51	53	42	30	21	24	22	30	31	31
2	32	32	30	F 29	F 37	F 37	F 32	56	63	58	66	58	48	47	56	40	36	33	F 27	25	F 29	F 44	F 44	F 31
3	F 31	F 27	26	F 26	F 26	F 26	33	46	58	56	60	49	49	58	54	43	32	32	32	29	30		F 32	
4	32	32	32	33	32	34	26	33	48	48	53	61	53	52	50	46	40	29	21	23	23	29	F 26	26
5	F 24	F 25	F 26	F 30	F 28	25	21	28	43	54	60	60	53	53	54	46	V 45	32	29	30	28	28	29	29
6	32	30	30	30	28	F 21	18	30	47	55	49	60	56	55	52	54	48	37	30	33	25	27	F 34	33
7	F 29	F 33	32	39	35	E 29	G 34	46	47	48	60	50	55	54	48	41	41	34	29	31	28	30	F 30	
8	F 34	F 32	32	36	32	F 32	F 38	44	56	51	55	52	55	61	48	46	31	32	34	39	40	44	45	
9	F 47	F 43	40	35	36	38	46	C 56	C 52	54	52	52	38	38	32	36	29	A 31	32	36	29	A 32	F 32	35
10	29	F 27	F 25	30	22	27	52	59	53	52	56	64	61	46	42	32	27	24	31	31	31	F 33	F 31	
11	30	32	32	26	F 26	F 19	34	50	52	67	57	60	58	58	52	R 48	48	33	40	26	32	32	F 32	F 32
12	F 34	F 36	F 36	28	23	F 20	F 28	39	46	54	61	59	55	49	48	46	36	48	47		45	F 45	F 45	F 45
13	F 43	F 43	F 43	F 43	F 43	F 43	A 43	A 43	50	55	52	53	53	48	39	32	38	40	40	45	42	F 42	F 42	F 42
14	F 31	F 32	F 31	F 31	F 31	F 39	44	44	50	55	53	54	50	49	51	40	28	32	V 38	28	F 28	F 28	F 28	
15	F 37	F 38	34	32	26	22	30	38	49	52	61	53	47	50	46	38	24	28	30	27	26	32	30	
16	F 29	34	32	30	30	28	26	31	44	54	56	56	56	55	48	40	27	30	31	31	28	30	27	
17	27	27	29	26	24	25	27	34	46	49	56	56	54	53	52	48	44	40	A 25	A 31	34	33	F 33	F 33
18	F 32	F 36	F 30	26	26	24	31	59	52	62	57	52	50	51	51	44	34	27	37	24	30	F 30	F 30	
19	F 30	F 34	F 36	F 24	F 22	30	34	55	53	56	56	61	58	56	54	44	34	31	31	33	33	31	32	F 32
20	F 32	31	31	27	26	19	34	55	55	58	57	60	61	52	49	39	28	26	35	A 38	37			
21	35	35	35	37	34	32	27	38	64	60	56	63	59	56	54	56	49	32	34	34	31	34	37	38
22	F 30	F 30	29	24	24	20	32	44	48	54	58	59	56	47	46	41	36	35	40	37	32	F 34	F 32	
23	31	35	33	31	32	34	30	36	52	58	60	60	58	51	53	53	42	34	32	32	34	F 34	F 34	36
24	F 34	F 38	F 38	F 33	F 38	F 38	37	38	46	68	67	69	58	54	55	60	53	V 41	32	37	37	32	33	35
25	33	30	37	36	34	31	33	41	53	60	68	62	61	61	54	56	50	V 32	29	33	33	34	F 34	36
26	33	32	32	30	30	31	27	38	55	67	83	76	62	57	56	60	59	36	36	34	35	37	F 31	34
27	35	33	33	31	32	29	22	39	51	59	59	59	74	61	61	70	56	A 42	33	36	33	33	F 36	
28	36	38	38	38	38	F 33	F 30	41	52	56	64	64	65	64	64	56	50	41	32	32	37	37	F 37	F 37
29	F 30	F 30	F 25	F 37	F 53	F 59	F 59	52	55	55	61	57	50	33	27	29	27					F 27	F 27	
30	F 37	F 41	F 39	F 36	F 31	F 39	50	60	59	59	56	59	50	48	51	33	27	F 32	F 34	38	F 38	F 38	F 42	F 42
31	F 37	F 41	F 32	F 28	F 22	F 38	51	53	61	56	61	55	57	57	49	38	29	V 32	32	35	32	F 32	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	20	23	23	28	27	27	28	31	30	29	30	31	31	31	31	31	31	31	29	30	29	27	24	22
MED	32	34	32	31	32	30	26	34	50	55	57	59	56	55	54	52	44	34	32	32	31	32	33	33
U Q	34	36	35	34	34	34	30	38	53	59	61	61	60	58	57	56	49	38	33	36	34	37	36	36
L Q	30	32	30	29	28	26	22	32	46	51	54	56	53	52	51	48	40	32	28	30	26	29	31	31

JAN. 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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										
2									L	L	L	L	L	L	L										
3									L	L	L	L	L	L	L										
4											L	L	L		L	L									
5									340	L	L	L	L	L	L										
6										L		408	360		L										
7												L	L	L	L										
8											L	L		L	L										
9										C	C			L											
10												L	L		L	L									
11									L							L									
12										L	L	L	L	L	L										
13									A	A		L	L	L	L										
14									L	L		L	L	L	L	L									
15								L	L			L	L												
16											L	L	L	L	L										
17											L	L	L	L											
18										L	L		376		344										
19										L		L	L	L	L	L									
20										L	L			L											
21												L	L		L	L									
22								L		L	L		404	L	L	L									
23									L	L	L	L	L	L											
24											L	L	L	L	L	L									
25											L	L	L	L											
26										L	L	L	L	L	L										
27											L	L	L	368	L										
28										L		L	L	L	L										
29										L		L	L	L	L										
30									L		372	L	404	L	L	L									
31											L	L	L	L	L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									1		1	2	4	1	1										
MED									340		372	406	368	368	344										
U Q													390												
L Q													358												

JAN. 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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								224	192	232	248	260	272	264	188	200	A	A						
2								A	236	224	252	260	276	260	236	216	B	A						
3								200	180	248	248	268	260	276	244	220	A	A						
4								B	196	232	256	292	264	268	232		A	A						
5								B	224	232	252	260	280	252	216	196	B	208						
6								200	A	236	236	260	260	244	236	176	B	B						
7								212	244	232	252	256	256	256	232	204	A	B						
8								B	A	A	260	260	260	260	240	192	A	B						
9									C	C	264	264	264	264	240	216	188	B						
10								B	B	248	228	268	268	216	268	232	228	A						
11								B	172	196	196	256	268	268	248	212		B						
12								B	A	A	A	A	212	208	244	224	A	A						
13								B	A	A	A	A	280	276	260	244	216	B	B					
14								A	220	200	220	252	252	264	264	244	200	A	A					
15								B	A	A	232	A	A	268	268	276	A	A						
16								A	A	A	240	272	272	272	260	248	204	A						
17								B	A	204	232	260	284	284	268	248	224	A	A					
18								204	220	176	224	260	264	280	268	240	228	A	A					
19									196	236	260	280	280	260	248	220	A	A						
20								B	204	264	240	264	268	280	272	260	224	176	A					
21								A	176	212	276	276	276	276	248	224	A	A						
22								U A	A	196	244	264	300	276	276	240	220	U A	A					
23								B	A	216	252	256	280	280	280	240	232	196						
24								B	B	188	248	260	272	276	272	260	236	172	B					
25								A	228	204	240	268	280	280	280	260	236	A	B					
26								B	212	216	256	280	280	284	248	256	224	172	A					
27								A	192	176	240	256	272	288	264	244	280	188						
28								A	A	224	240	264	272	276	284	256	216	A	A					
29								B	A	216	268	A	296	284	284	264	244	220						
30								B	A	216	236	272	284	300	292	244	252	A	A					
31								B	A	228	256	272	288	292	272	272	232							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	12	25	27	26	30	31	31	31	28	8	1						
MED							204	208	204	236	260	272	276	268	244	220	182	208						
U Q							228	220	220	244	268	280	280	276	256	230	192							
L Q							U A	184	196	192	232	252	260	264	260	236	208	172						

JAN. 2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J A 28	E B 28	E B 16	E B 16	28	26	34	30	J A 29	J A 28	30	G 29	G	G	G	23	J A 25	J A 27	J A 28	J A 28	J A 27	J A 21	J A 19	J A 41	J A 31
2	46	29	26	19	J A 62	20	21	30	J A 23	J A 23	33	G 30	J A 29	J A 139	29	G	E B 16	J A 19	J A 25	J A 61	J A 27	J A 27	J A 51	J A 16	
3	E B 15	E B 16	B J A 25	19	20	24	51	26	J A 19	J A 31	52	J A 60	J A 83	28	29	J A 31	J A 25	J A 84	J A 16	J A 16	24	24	22	E B 16	
4	E B 16	J A 153	J A 149	E B 16	26	24	23	E B 16	J A 49	J A 63	J A 49	J A 52	J A 31	J A 61	27	J A 25	J A 22	J A 55	J A 16	J A 16	E B 16	J A 16	J A 34	J A 26	J A 31
5	J A 22	J A 28	E B 16	20	J A 30	E B 16	E B 16	22	26	28	29	G 29	J A 51	G 28	J A 31	29	E B 17	J A 41	J A 44	39	J A 26	J A 27	J A 47	J A 26	
6	E B 16	E B 16	20	31	J A 15	E B 21	J A 24	24	G J A 34	J A 33	30	G 31	32	33	28	J A 28	E B 16	E B 16	E B 16	E B 16	E B 16	16	25	21	32
7	J A 21	J A 26	28	26	22	E B 16	E B 16	29	26	26	31	29	32	33	34	J A 33	29	J A 20	30	16	E B 16	E B 16	E B 16	53	E B 16
8	21	E B 16	23	22	J A 21	22	16	23	J A 32	48	28	32	31	30	J A 33	23	24	E B 16	E B 16	E B 16	E B 16	16	27	27	E B 16
9	E B 16	J A 22	20	E B 16	28	E B 16	E B 16	16	26	C	C	38	29	47	30	G	G	E B 16	J A 23	J A 23	51	51	60	J A 53	
10	J A 64	J A 52	J A 51	J A 26	J A 31	J A 27	J A 31	J A 39	J A 39	31	J A 31	J A 55	J A 26	J A 66	27	J A 48	18	J A 50	J A 21	J A 63	J A 51	J A 41	J A 35	J A 16	
11	20	J A 22	25	25	J A 27	20	16	G	26	36	41	J A 47	J A 53	38	33	33	E B 16	E B 16	23	J A 21	E B 16	26	27	26	
12	E B 16	J A 29	J A 33	J A 41	J A 16	E B 16	E B 16	E B 16	J A 21	24	51	J A 42	J A 32	J A 35	28	J A 27	J A 48	J A 83	J A 57	J A 51	J A 52	J A 32	J A 28	J A 27	J A 27
13	31	20	33	J A 42	J A 31	28	24	53	J A 208	164	62	51	J A 36	J A 29	56	27	16	16	25	32	J A 31	66	47	J A 33	
14	J A 29	J A 24	J A 21	J A 26	J A 30	22	28	30	J A 30	53	30	30	J A 48	J A 53	40	J A 28	30	J A 27	J A 30	J A 25	J A 27	E B 16	J A 33	J A 38	
15	25	29	J A 27	J A 23	E B 16	24	J A 29	J A 27	J A 61	J A 47	49	60	68	49	31	31	48	36	29	J A 37	63	34	53	36	
16	J A 46	J A 35	J A 39	J A 28	J A 31	E B 16	J A 63	J A 30	J A 30	J A 47	J A 57	J A 48	J A 37	J A 60	26	J A 40	J A 25	J A 32	J A 51	J A 74	J A 80	J A 27	J A 24	J A 26	
17	J A 35	J A 30	E B 16	21	E B 15	20	J A 29	J A 29	J A 26	J A 31	J A 30	J A 50	J A 44	J A 62	31	J A 29	J A 37	J A 55	J A 108	J A 83	J A 47	J A 35	J A 29	J A 30	
18	J A 25	J A 30	21	25	E B 16	20	J A 23	J A 23	J A 26	J A 33	J A 37	J A 28	J A 28	31	29	27	J A 32	J A 21	20	16	E B 23	25	20	J A 20	
19	J A 21	J A 17	18	E B 16	18	19	22	28	J A 25	J A 27	J A 31	30	31	33	27	27	39	J A 33	27	25	E B 17	28	28	G	
20	J A 24	J A 27	20	20	J A 20	E B 170	16	27	30	26	29	28	32	36	J A 38	25	G	J A 54	J A 77	J A 126	J A 62	J A 42	J A 25	J A 24	
21	E B 16	J A 21	J A 24	J A 80	J A 23	J A 40	J A 51	24	J A 23	J A 51	28	31	J A 84	J A 82	27	J A 24	J A 26	J A 20	28	23	25	28	33	J A 34	
22	32	J A 21	26	J A 29	J A 29	E B 16	26	26	J A 29	J A 45	31	31	J A 34	J A 34	J A 34	26	G	J A 17	J A 19	J A 29	24	82	25	J A 32	
23	J A 51	J A 37	E B 16	E B 16	J A 122	E B 16	E B 16	E B 33	J A 63	J A 37	J A 28	31	31	25	J A 30	23	G	26	20	20	J A 26	E B 16	E B 16	E B 16	
24	J A 24	J A 16	E B 16	E B 24	J A 25	20	E B 16	E B 16	J A 24	J A 33	32	32	J A 32	J A 31	32	J A 27	J A 20	J A 25	E B 16	32	25	J A 26	J A 23	J A 26	
25	J A 25	J A 27	E B 16	E B 16	J A 21	25	23	21	22	26	29	32	34	35	35	40	J A 31	J A 20	25	16	E B 16	E B 16	E B 16	J A 26	J A 27
26	J A 27	J A 28	J A 29	J A 23	J A 31	E B 21	16	20	27	J A 27	31	35	34	33	29	26	20	J A 28	J A 52	J A 53	J A 53	J A 51	J A 37	J A 31	
27	32	J A 25	J A 24	J A 20	J A 83	24	41	19	J A 30	30	29	J A 41	J A 38	40	J A 40	J A 129	J A 39	J A 63	J A 86	J A 62	26	32	23	J A 75	
28	J A 29	J A 24	J A 27	J A 27	J A 27	22	31	J A 27	J A 22	J A 38	31	32	32	31	39	33	J A 31	J A 39	J A 33	J A 76	J A 52	J A 33	29	J A 27	
29	J A 24	J A 29	J A 206	E B 16	E B 16	E B 16	26	20	J A 25	J A 83	J A 51	J A 35	J A 47	J A 56	J A 31	J A 47	J A 42	J A 32	J A 43	J A 26	J A 32	J A 22	J A 33	J A 34	
30	J A 26	J A 16	E B 20	E B 16	22	24	E B 16	J A 30	J A 26	29	G	29	G	G	29	J A 38	J A 42	J A 32	J A 55	J A 25	J A 97	J A 63	J A 25	J A 25	
31	J A 27	E B 16	E B 16	E B 16	E B 23	E B 16	27	51	G	G	G	G	G	30	J A 30	J A 30	20	E B 16	E B 16	J A 28	29	32	J A 27	J A 30	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 25	J A 26	J A 24	J A 22	J A 25	J A 21	J A 23	J A 26	J A 26	J A 33	J A 31	J A 32	J A 32	J A 33	J A 30	J A 28	J A 25	J A 27	J A 27	J A 28	J A 26	J A 28	J A 27	J A 27	
U Q	31	29	28	26	30	24	29	30	30	47	41	47	44	53	33	38	33	50	51	53	47	35	37	32	
L Q	E B 21	E B 20	E B 18	E B 16	E B 20	E B 16	E B 16	21	24	28	30	30	31	31	28	25	G	E B 19	E B 20	E B 20	E B 21	E B 25	E B 25	E B 20	

JAN. 2021 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 16			G 24	G 27	G 28			G 22	G 19	G 18	G 16	E 16	B 16	E 16	B 18	E 17
2		E 17	B 17	E 17	B 17	E 17	B 17	E 17	B 17	G 18	G 20	G 22	G 28	G 28	G 26	G 26	G 16	E 16	B 16	E 16	B 16	E 16	B 16	E 17	E 16
3	E 15	B 16	E 16	B 16	E 17	B 17	E 17	B 17	E 17	B 17	G 21	G 18	G 24	G 25	G 26	G 28	G 28	G 20	E 16	B 16	E 16	B 16	E 16	B 16	E 16
4	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 22	G 25	G 24	G 28	G 28	G 29	G 25	G 24	E 18	B 18	E 16	B 16	E 16	B 16	E 16
5	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 23	G 26	G 28	G 28	G 29	G 26	G 26	G 19	E 17	B 16	E 16	B 16	E 20	B 16	E 16
6	E 16	B 16	E 16	B 16	E 16	B 15	E 15	B 17	E 17	B 17	G 26	G 26	G 28	G 29	G 29	G 30	G 26	G 21	E 16	B 16	E 16	B 16	E 16	B 16	E 18
7	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 24	G 26	G 28	G 26	G 28	G 32	G 28	G 22	E 19	B 17	E 17	B 17	E 16	B 16	E 16
8	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 24	G 32	G 26	G 28	G 28	G 27	G 24	G 20	E 17	B 16	E 16	B 16	E 16	B 16	E 16
9	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 25			C 34	C 29	C 29	C 28	G 19	E 16	B 16	E 18	B 18	E 18	A 51	E 18
10	E 19	B 16	E 16	B 16	E 16	B 16	E 16	B 18	E 20	B 20	G 29	G 27	G 29	G 29	G 26	G 38	G 26	G 22	E 17	B 19	E 16	B 17	E 16	B 16	E 16
11	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 24	G 29	G 40	G 39	G 46	G 36	G 25	G 24	E 16	B 16	E 16	B 16	E 16	B 16	E 16
12	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 17	B 17	G 19	G 26	G 26	G 26	G 26	G 24	G 23	G 17	E 17	B 17	E 26	B 22	E 20	B 18	E 18
13	E 17	B 17	E 18	B 20	E 16	B 16	E 16	B 16	E 20	B 20	A 89	A 164	A 22	G 27	G 28	G 28	G 25	G 21	E 16	B 16	E 16	B 16	E 16	B 16	E 18
14	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 18	G 22	G 30	G 30	G 29	G 27	G 24	G 18	E 19	B 19	E 16	B 16	E 16	B 16	E 16
15	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	G 17	G 27	G 28	G 28	G 28	G 32	G 27	G 24	E 22	B 18	E 16	B 16	E 17	B 17	E 16
16	E 18	B 18	E 16	B 16	E 16	B 16	E 16	B 16	E 18	B 23	G 23	G 27	G 26	G 28	G 27	G 27	G 25	G 21	E 21	B 22	E 22	B 17	E 17	B 17	E 16
17	E 16	B 16	E 16	B 16	E 15	B 15	E 16		A 17	B 23	G 23	G 25	G 28	G 28	G 28	G 28	G 24	G 27	E 21	B 108	E 83	A 17	E 17	B 17	E 17
18	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 19	G 24	G 28	G 27	G 28	G 29	G 28	G 24	G 30	E 18	B 16	E 16	B 16	E 16	B 16	E 16
19	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 20	G 25	G 26	G 29	G 29	G 30	G 26	G 26	G 29	E 16	B 16	E 16	B 16	E 16	B 16	E 16
20	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 19	G 23	G 23	G 26	G 26	G 30	G 29	G 27	G 22	G 18	E 16	B 16	E 16	A 62	E 19	B 16	E 16
21	E 16	B 16	E 16	B 16	E 17	B 17	E 18	B 16	E 16	G 21	G 28	G 28	G 29	G 29	G 31	G 25	G 23	E 18	E 16	B 16	E 16	B 16	E 16	B 16	E 16
22	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 19	G 23	G 26	G 29	G 29	G 28	G 28	G 25	G 22	G 16	E 16	B 16	E 20	B 16	E 16	B 16	E 17
23	E 17	B 17	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 24	G 16	G 26	G 27	G 29	G 25	G 26	G 22	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16
24	E 15	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 22	G 26	G 30	G 30	G 30	G 29	G 28	G 25	E 19	E 16	B 16	E 16	B 16	E 16	B 16	E 16
25	E 16	B 17	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 22	G 25	G 28	G 30	G 32	G 32	G 32	G 34	E 23	E 17	B 16	E 16	B 16	E 16	B 16	E 16
26	E 17	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 17	G 22	G 24	G 27	G 31	G 30	G 27	G 26	G 24	E 18	E 16	B 16	E 16	B 16	E 18	B 18	E 18
27	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	G 26	G 29	G 28	G 29	G 34	G 31	G 30	G 27	E 32	A 21	E 86	B 16	E 16	B 16	E 16	B 16
28	E 16	B 16	E 16	B 16	E 16	B 16	E 17	B 21	E 21	G 21	G 25	G 30	G 30	G 30	G 29	G 28	G 28	E 28	B 24	E 20	B 21	E 19	B 16	E 16	
29	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	G 23	G 27	G 39	G 30	G 30	G 30	G 28	G 25	E 33	E 22	B 16	E 16	B 16	E 16	B 16	E 18
30	E 17	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 19	G 20	G 28	G 28	G 28	G 28	G 27	G 23	G 20	E 17	E 16	B 16	E 16	B 18	E 19	B 16	E 16
31	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 22	E 20	G 25	G 26	G 28	G 28	G 27	G 25	G 22	E 16	E 16	B 16	E 16	B 16	E 16	B 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	30	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	30	31	
MED	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 23	G 26		G 28	G 28		G 26	G 23	E 18	B 17	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 19	E 24	G 27	G 28	G 30	G 30	G 30	G 28	G 25	E 22	E 18	B 16	E 16	B 16	E 17	B 17	E 16	B 17
L Q	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	E 20	G 25	G 26	G 28	G 28	G 27	G 25	G 22	E 16	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16

JAN. 2021 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

JAN.2021 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JAN.2021 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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		292	295	295	312	327	375	270	351	362	361	371	370	370	294	360	372	369	365	349	350	311	291	291	281	
2		321	323	296	F	F	308	F	349	390	383	368	370	394	377	365	369	359	335	365	368	F	308	F	F	
3		F	281	308	307	323	F	F	335	336	350	361	384	384	365	393	383	382	361	340	327	353	246	299	F	
4		288	291	291	328	308	370	358	358	377	377	337	383	394	393	379	376	373	372	341	340	302	282	281	314	
5		F	248	282	275	333	F	333	332	318	371	343	366	378	384	371	380	379	V	324	356	348	341	341	283	
6		310	311	306	305	371	414	F	340	340	334	370	369	332	368	384	369	338	381	334	333	333	290	290	F	
7		F	F	270	280	345	387	G	364	382	381	348	369	369	315	374	373	356	352	367	356	324	281	281	280	
8		F	310	310	326	364	348	F	347	400	377	349	358	396	348	335	371	371	328	328	365	340	336	332	280	
9		F	294	F	F	311	330	329	329	367	386	C	C	396	381	363	363	363	387	356	356	363	338	A	326	
10		316	F	F	292	291	364	240	338	381	394	385	376	334	334	376	398	382	368	350	326	296	301	F	301	
11		301	301	290	289	F	320	F	357	362	373	337	371	379	371	376	387	356	388	336	362	300	284	F	F	
12		F	283	307	280	272	314	264	328	328	334	348	358	379	365	364	364	364	353	326	323	F	294	F	F	
13		F	F	F	F	F	F	F	F	A	A	340	362	378	364	370	388	379	330	338	355	333	330	313	F	
14		F	F	F	312	306	282	F	352	360	372	338	349	343	371	370	369	383	379	320	319	325	338	F	F	
15		F	F	F	317	335	326	316	325	390	311	364	363	381	381	381	356	361	333	313	365	365	365	321	232	
16		F	302	302	334	315	326	325	362	374	395	366	366	365	364	364	377	377	373	326	329	336	335	312	335	
17		297	310	294	274	331	330	242	366	385	365	365	371	373	360	370	383	379	356	A	A	269	306	305		
18		F	278	307	296	305	304	353	353	389	371	348	369	368	359	358	357	377	360	344	398	363	287	F	F	
19		F	F	F	292	F	320	289	387	387	386	370	369	378	364	364	372	371	353	302	356	286	285	322	287	
20		F	308	308	308	308	307	307	373	372	362	355	355	369	355	354	365	362	362	244	349	A	318	317	F	
21		312	277	277	276	294	347	347	350	391	391	370	376	386	352	368	372	379	352	345	344	343	307	299	299	
22		F	299	F	293	320	287	266	348	360	379	358	357	357	380	379	379	378	364	357	332	352	340	308	297	
23		310	292	289	289	296	329	329	357	356	393	371	373	373	372	383	382	378	355	317	347	317	F	F	317	
24		F	309	307	344	325	309	326	364	374	383	357	350	351	393	390	349	349	375	372	V	322	312	312	285	
25		311	292	314	320	334	333	333	365	399	379	350	380	367	367	330	362	379	346	305	311	310	310	309	308	
26		352	293	293	293	294	317	375	355	370	360	366	365	365	366	353	336	356	341	343	332	325	324	300	279	
27		278	278	297	312	333	332	332	361	375	387	369	369	385	364	355	354	360	356	A	331	330	317	305	305	
28		286	315	315	314	302	301	335	386	382	334	350	362	375	373	360	375	374	371	338	314	314	314	314	312	
29		F	F	F	F	273	323	323	354	353	382	375	382	367	366	366	365	377	376	306	350	332	F	F	F	
30		F	296	F	F	F	F	F	350	396	392	366	366	375	358	369	378	346	371	371	338	310	F	F	F	
31		F	284	F	F	F	F	F	271	285	317	387	387	367	356	331	369	369	363	321	329	V	329	288	282	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		20	22	23	27	26	27	27	30	30	29	30	31	31	31	31	31	31	31	31	29	30	29	26	20	22
MED		300	296	297	308	308	326	332	359	380	366	366	370	373	366	366	372	371	356	336	346	324	304	305	306	
U Q		310	308	312	320	331	347	350	373	387	382	370	378	381	373	376	379	379	365	346	356	338	314	320	312	
L Q		287	291	291	292	294	314	307	350	362	359	349	362	367	359	356	362	361	340	322	329	305	287	287	287	

JAN. 2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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										
2									L	L	L	L	L	L	L										
3									L	L	L	L	L	L	L										
4											L	L	L		L	L									
5									417	L	L	L	L	L	L										
6										L		371	394		L										
7												L	L	L	L										
8											L	L		L	L										
9										C	C			L											
10												L	L		L	L									
11									L							L									
12										L	L	L	L	L	L										
13									A	A		L	L	L	L										
14									L	L		L	L	L	L	L									
15								L	L			L	L												
16											L	L	L	L	L										
17											L	L	L	L											
18										L	L		421		423										
19										L		L	L	L	L	L									
20										L	L			L											
21												L	L		L	L									
22								L		L	L		380	L	L	L									
23									L	L	L	L	L	L											
24											L	L	L	L	L	L									
25											L	L	L	L											
26										L	L	L	L	L	L										
27											L	L	L		L										
28										L		L	L	404	L	L									
29										L		L	L	L	L										
30									L			L		389	L	L	L								
31											L	L	L	L	L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									1		1	2	4	1	1										
MED									417		419	376	392	404	423										
U Q													408												
L Q													390												

JAN. 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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											234	218	206	222	222									
2									212	222	230	228	216	208	216									
3									214	222	222	236	218	224	232									
4											268	232	216		218	216								
5									234	252	234	236	226	228	228									
6									238			270	242	230										
7												230	230	304	230									
8											242	242		242	258									
9										C	C			210	232									
10												232	220		220	204								
11									222						222									
12										280	256	252	232	240	232									
13									A	A		234	230	230	230									
14									212	222		258	238	238	246	220								
15								230	302			218	218											
16											240	234	242	252	228									
17											236	228	218	242										
18									218	256		234	240	248										
19									214		236	230	230	236	224									
20									244	248			248											
21												222	222		228	222								
22								234		234	234	246	230	230	236									
23									228	208	216	240	224	234										
24											232	236	224	224	248	248								
25											246	228	224	236										
26									246	224	228	228	228	252										
27											210	222	212	252	242									
28									216		230	232	232	238										
29									220		220	240	240	234										
30									216		224	228	238	232	220	232								
31											232	232	242	246	314									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	8	14	19	27	28	26	24	7								
MED								232	219	222	234	232	227	233	232	222								
U Q								231	244	246	236	233	242	244	232									
L Q								213	218	224	228	218	230	225	216									

JAN. 2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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	280	240	258	254	230	182	274	236	212	222	210	204	180	190	194	198	214	214	244	242	240	266		296
2	270	268	260	240	250	192	218	202	194	186	200	200	200	180	200	214	202	228	214	210	250	250	216	266
3	266	248	274	234	248	208	208	242	186	198	198	180	192	198	216	218	198	226	216	228	266	278	266	232
4	258	258	248	218	234	212	206	216	212	228	194	222	198	210	196	196	208	196	258	226	240	290	290	230
5	278	278	264	216	196	196	218	196	200	216	216	206	206	200	202	214	212	222	226	226	226	294	250	266
6	266	288	288	282	200	200		220	240	214	220	198	198	198	238	238	202	222	216	224	204	256	266	244
7	268	270	282	258	216	190	170	222	214	216	218	206	196	230	218	210	222	222	222	222	224	238	260	260
8	260	246	250	234	200	204	190	204	198	216	196	196	214	200	222	218	218	242	226	200	200	222	208	254
9	242	242	228	228	224	206	186	202	204			216	194	198	236	228	202	226	204	216	228		234	
10	208	244	264	236	266	206	216	230	212	214	216	198	182	258	222	200	194	222	240		240	256	256	254
11	260	266	266	258	260	248	204	200	186	214	246	220	220	226	212	210	202	196	220	196	260	250	230	260
12	238	272	254	266	282	220	354	232	224	220	220	224	194	192	192	224	212	202	252	232	252	260	230	246
13	246	222	234	224	206	226	260	220			212	202	196	196	210	206	192	200	222	220	236	214	256	252
14	290	272	246	236	256	236	212	190	178	170	238	210	198	198	198	198	198	252	234	218	216	254	260	260
15	248	238	240	234	216	232	232	194	204	244	224	190	184	226	226	220	202	214	244	210	204	262		236
16		260	250	250	220	248	230	210	192	230	184	192	186	208	212	222	206	228	226	214	224	246	234	260
17	260	260	260	274	242	228		192	204	220	198	198	190	202	226	216	218	222				276	276	276
18	254	240	226	264	246	244	204	224	198	180	216	232	190	196	204	222	214	212	214	202	202	268	258	258
19	258	230	250	260	260	238	230	214	200	192	222	196	202	212	202	204	204	218	252	228	244	256	256	238
20	204	264	254	232	208	230	240	220	200	200	182	220	228	196	222	208	198	214		206		244	260	260
21	214	238	262	250	242	210	220	224	204	202	210	188	198	242	198	208	208	210	230	222	214	260	264	252
22	262	262	254	230	224	224	216	194	214	186	202	202	202	190	182	218	224	218	246	222	214	238	256	232
23	244	270	252	280	258	236	208	208	190	194	186	190	190	184	210	210	198	220	232	232	248	268	260	232
24	254	242	230	206	250	232	202	196	188	240	200	200	200	200	200	202	204	190	232	246	192	264	270	260
25	240	276	250	232	212	220	220	204	188	214	200	200	210	222	238	222	210	206	292	274	266	266	280	264
26	222	284	288	290	266	242	216	220	220	208	208	200	192	192	202	244	212	198	228	228	206	222	246	280
27	280	280	276	242	234	228	256	222	208	218	192	192	204	204	222	230	204	204		228	228	262	262	262
28	278	258	256	252	256	240	228	192	190	180	226	206	206	206	210	214	206	202	246	276	260	250	248	230
29	236	260	264	268	270	242	218	202	208	198	210	196	198	202	216	216	216	202	226	230	254	254	286	274
30	232	248	250	206	206	194	212	194	194	224	188	200	196	196	198	196	214	194	226	240	224	236	260	228
31	228	220	252	252	234	212	222	204	204	210	202	198	190	178	212	236	210	210	248	228	218	260	270	274
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	29	31	30	29	30	31	31	31	31	31	31	31	28	29	29	30	29	30
MED	256	260	254	242	234	224	217	208	202	214	209	200	198	200	210	214	206	214	229	226	228	256	260	259
U Q	266	270	264	260	256	236	230	222	212	220	218	206	202	210	222	222	214	222	245	231	249	266	266	264
L Q	238	242	250	232	216	206	207	196	192	196	198	196	190	196	200	206	202	202	222	215	214	246	247	238

JAN. 2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN.2021 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								118	104	104	108	110	110	106	100	100	A	A						
2								A	110	110	110	110	120	120	116		B	A						
3								102	102	108	108	108	106	106	106	106	A	A						
4								B	106	106	104	100	100	100	108		A	A						
5								B	A	108	108	104	104	104	104	104	B	104						
6								B	A	104	104	104	104	108	106	E B	B	B						
7								B	120	108	100	100	98	104	104	104	A	B						
8								B	A	A	104	104	104	104	104	92	A	B						
9									124	C	C	100	106	106	106	114	E B	B						
10							B	114	B	108	108	100	100	106	106	116		A						
11							B	B	92	104	112	112	112	104	104	100		B						
12							B	A	100	106	A	106	94	94	98	A	A	A						
13							B	A	A	A	A	108	108	108	108	108	B	B						
14							A	108	108	108	108	108	108	108	98	98	A	A						
15							B	A	A	98	A	A	98	98	100	A		A						
16							A	A	A	114	96	96	110	108	108	110	A							
17							B	A	124	106	106	106	106	106	106	106	A	A						
18							112	112	106	98	98	98	100	100	100	108	A	A						
19								108	108	110	102	102	112	112	106		A	A						
20							B	114	108	104	104	104	106	96	96	104	108	A						
21							A	92	132		106	106	96	106	106	106	A	A						
22							B	A	110	96	110	104	94	94	94	104	B	A						
23							B	A	102	102	102	102	102	102	102	96	96							
24							B	B	116	110	110	104	104	104	104	114	124	B						
25							104	A	110	106	96	96	96	96	96	96	A	B						
26							B	104	104	112	106	106	106	96	112	112	104	A						
27							A	B	112	106	106	106	106	106	106	106	106							
28							A	A	122	106	106	100	100	100	100	100	A	A						
29							B	A	106	106	A	98	94	102	96	94	90							
30							B	A	100	106	108	108	108	108	108	108	A	A						
31							B	A	134	112	112	112	112	112	112	112								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	8	24	27	26	30	31	31	31	27	7	1						
MED							108	110	108	106	106	104	104	104	104	106	105	104						
U Q								114	118	108	108	108	108	108	108	110	124							
L Q								103	104	104	104	100	100	100	100	100	96							

JAN.2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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	98	98	B	B	106	104	104	132	98	130	132	136	G	G	G	136	98	98	96	104	94	96	96	96	
2	96	96	98	98	98	108	108	108	102	102	112	140	110	102	136	G	B	104	94	100	90	96	102	B	
3	B	B	98	126	120	104	104	102	98	150	94	94	114	128	104	94	98	102	B	B	100	94	100	B	
4	B	124	114	B	106	96	96	B	96	96	96	96	134	94	112	104	98	98	B	B	B	98	98	98	
5	100	100	B	100	102	B	B	102	136	128	128	112	104	108	104	104	B	B	B	B	96	96	94	94	
6	B	B	102	102	B	98	144	144	98	92	120	120	120	116	116	112	B	B	B	B	B	92	94	94	
7	94	100	100	100	100	B	B	132	132	146	122	122	114	114	114	108	100	100	96	B	B	B	96	B	
8	96	B	96	96	96	114	B	100	100	100	146	128	114	108	108	108	94	B	B	B	B	102	102	B	
9	B	92	92	B	92	B	B	B	142	C	C	124	148	122	122	G	G	B	88	88	108	106	106	96	
10	96	106	96	96	96	112	116	112	106	116	116	98	102	102	126	122	116	102	112	104	104	104	104	B	
11	104	94	96	96	96	96	B	G	150	128	126	118	106	106	106	98	B	B	112	104	B	126	100	96	
12	B	118	102	118	B	B	B	102	100	100	100	100	106	122	108	108	116	102	102	102	102	102	92	92	
13	92	92	94	94	94	100	94	94	116	96	96	96	96	96	96	96	B	B	92	92	92	104	104	98	
14	98	98	98	108	100	100	100	92	92	104	166	166	88	98	98	86	86	96	90	90	94	B	96	96	
15	100	94	98	98	B	104	108	112	104	100	100	100	92	92	92	92	92	98	98	98	98	96	96	96	
16	96	96	96	96	96	B	110	98	98	86	96	92	92	92	92	92	114	110	102	102	102	94	96	102	
17	92	92	B	100	B	114	98	98	110	94	96	96	96	96	130	94	108	108	108	106	100	100	100	96	
18	96	96	88	94	B	98	108	108	92	94	94	106	112	166	128	122	108	108	106	B	98	100	94	94	
19	94	94	94	B	98	108	100	100	98	98	124	134	120	120	136	128	106	106	106	106	B	100	100	G	
20	90	90	90	94	94	100	B	102	124	132	124	116	152	128	100	128	G	108	106	108	102	100	88	88	
21	B	94	96	96	106	106	106	128	140	94	120	160	92	100	138	150	96	96	94	90	102	100	100	100	
22	100	100	96	92	92	B	100	96	100	100	146	152	100	94	86	154	G	102	102	102	98	98	100	94	
23	94	94	B	88	100	B	B	100	100	100	94	130	114	184	140	82	G	100	110	110	102	102	102	B	
24	96	B	B	96	96	104	B	B	104	98	146	146	114	114	114	114	114	94	B	100	100	100	100	94	
25	94	96	B	B	96	108	102	102	158	160	160	150	120	122	120	112	112	112	122	B	B	B	92	92	
26	82	92	92	92	100	100	B	154	124	112	140	106	106	106	154	138	126	114	108	102	102	102	100	96	
27	96	96	90	94	110	100	100	142	128	128	134	118	118	112	112	100	112	102	102	104	104	96	104	96	
28	94	92	92	92	98	102	94	94	124	94	94	140	138	134	86	102	102	102	102	94	100	100	88	90	
29	96	100	102	B	B	B	106	106	166	102	90	90	92	92	96	104	102	102	102	96	98	98	98	98	
30	98	B	96	B	106	106	B	92	92	166	G	124	G	G	128	94	100	100	110	94	110	102	102	90	
31	84	B	B	B	106	B	106	106	G	G	G	G	G	G	122	122	102	102	B	B	114	100	96	90	98
	00	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	24	23	25	22	20	27	30	29	28	30	28	29	30	29	22	25	25	24	24	27	31	24	
MED	96	96	96	96	98	104	104	102	104	100	120	119	111	108	113	104	102	102	102	102	100	100	100	96	
U Q	98	100	98	100	106	108	108	112	128	128	133	136	119	122	128	122	112	108	108	104	102	102	102	97	
L Q	94	93	93	94	96	100	100	98	98	96	96	100	98	97	100	95	98	99	96	95	98	96	94	94	

JAN. 2021 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2021 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		FQ11	F1	F2	CL11	LC11	CL21	C2	C1				C1	L3	L3	F2	F1	F2	F1	FF41	F2		
2	F2	F2	F1	F2	F1	F1	L2	C3	C1	C1	HL11	LC11	LC11	C3			L1	F2	F1	FQ21	FQ21	FQ21			
3			F2	F1	F1	F1	C2	LC22	HL22	LC11	LC11	CL21	CL11	C3	LC11	L1	L1			F1	F1	F1			
4		F1	F1		F1	F1	F1	LC21	LC31	LC21	LC11	CL21	LC12	C2	C3	C3	L3					F3	F2	F1	
5	F1	F1		F1	F1		LC11	CL22	C1	C1	C1	LC11	C2	C2	LC11		C1	F1	F4	F4	F4	F1	F1	F1	
6			F1	F1		F1	C1	L2	LC11	C2	C1	C1	C2	C3	C3							F1	F1	F3	
7	F2	F2	FQ21	F1	F1		H2	HL22	HL22	CL22	CL22	CL21	CL22	CL22	CL31	L3	L3	F2					F1		
8	FF11		F2	F1	FF11	F1	L1	L3	L4	HL11	C2	C2	C2	C2	CL21	L2						F1	F1		
9		F1	F1		F1			H2			C3	H2	CL32	CL22				F3	F3	F4	F4	F4	F5		
10	F5	F2	FF31	F2	F2	L2	L5	C6	CL21	C2	LC11	C1	C5	C1	C2	L1	L5	L3	F6	F6	F3	F2	F5		
11	F1	F1	F1	F1	F2	F1		H2	CL31	C4	C3	C3	C3	C3	L11			F1	F3			F1	F1	F1	
12		F1	F2	F1			L3	LH31	C3	L3	C2	C2	C2	C2	L3	CH11	L3	F4	FQ51	FQ31	FQ31	FQ21	FQ11		
13	F1	F1	F2	FQ32	FQ11	F2	L2	LQ32	LL33	LQ42	LQ31	LC21	LC11	LC11	LC11			F1	F1	F1	F1	FQ31	FQ41	FQ71	
14	FQ41	F2	F2	F1	F1	L2	LC11	LC11	LC11	H2	H1	LC11	LC11	C1	LC11	L2	L2	F2	F1	F1		F2	FQ31		
15	F1	F2	F2	F1		F1	L2	L2	LC2	L4	LQ21	LC11	LC11	LC21	LC21	L2	L2	F2	F3	F3	F3	F4	F3		
16	F4	FQ31	F2	F2	F1		F4	L4	L4	L4	L2	LC21	LC11	LC11	CL21	LC11	C3	L6	F5	F3	F3	FF21	F1		
17	F2	FQ11		F1		F1	L4	L4	LC11	LC11	LC11	LC11	LC11	LC11	C2	LC21	L4	F9	F8	FQ51	FQ41	FQ31	FQ31	FQ21	
18	FQ11	FF11	F2	F1		F1	LC11	LC11	LC11	LC22	LC22	CL22	CL22	HL11	C2	C3	L3	L4	F1		F2	F1	FQ21	FQ21	
19	FQ11	F1	F1		F1	F1	L1	LL11	LC11	LC22	C2	HL21	CL21	CL21	HL21	C2	L4	L4	FF11	FF11		F2	F2		
20	F1	F1	F1	F1	F1		LC21	CL11	HL21	C2	C2	HL21	CL11	LC21	CL21		L2	F4	F7	FQ61	FQ21	FQ21	FQ21	F1	
21		F1	F1	F1	F3	F3	L2	CL21	HL22	C2	HL21	LC22	LC11	H2	HL11	L1	L1	F1	F1	F1	F1	F4	F2		
22	FQ21	FQ21	FF11	FQ21	F1		C1	L3	LC22	LC21	HL21	HL12	LC21	LC32	C2		L1	F2	F3	FF11	FF2	FQ11	FF21		
23	FQ21	FQ21		F1	F1		L2	LC32	LC32	LC22	CL22	CL22	CL21	C2	L2		L1	F1	F1	F1	F1	F1			
24	F1			F1	F1	F1		LC11	LC21	HL21	HL21	C2	C2	LC11	L2	L1	LQ11		F1	F1	F1	F1	F1		
25	F1	F1			F1	F1	C1	L1	H1	H1	H1	H2	CL11	C2	CL22	C5	L3	LL11	FL21				F1	F2	
26	F3	FQ21	FQ11	F1	F2	F1		H2	C2	CL21	C2	C2	C2	HL11	HL11	C1	L1	FF21	FF31	FQ61	FQ41	FQ21	FQ21		
27	F2	F1	F1	FF11	FF31	F3	L3	H1	C2	C2	H2	C1	C2	C2	C3	C4	LQ31	FQ62	FQ21	F1	F3	FQ11	F1		
28	F3	F1	F1	FF11	F1	F1	L2	L3	CL11	LC11	LC11	H1	HL11	HL11	LC5	L3	LQ31	FQ21	FQ21	FQ21	FQ21	FF21	FF21	F1	
29	F1	F1	F1				L1	L1	H1	CL41	L2	LC11	LC11	LC11	LC11	C6	L3	F1	F2	F1	F2	F2	F2	FF21	
30	F1		F1		F1	F1	L2	LC21	HC11		C1			C1	L2	L3	LL11	F1	F2	FF22	FF31	FQ21	F3		
31	F1			F1		L1	LQ11							C1	C1	C2	C1		F1	F1	F2	F1	F1		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

JAN. 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 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	40	42	40	X	X	X														X	X	X	X	X	
2	40	X	X	X	X	X														X	X	X	X	X	
3	X	38	39	X	X	X														X	X	X	X	X	
4	38	38	X	X	X	X														X	X	X	X	X	
5	37	X	X	X	X	X	33													X	X	X	X	X	
6	A	X	X	X	X	X												X		X	X	X	X	X	
7	X	X	X	X	X	X														X	X	X	X	X	
8	X	X	X	X	X	X	37									X		X		A	A	X	39	40	
9	40	40	40	42	44	47	44		C	C	C								X	A	36	35	A	A	
10	X	A	40	38	35	32														X	X	X	X	39	
11	X	X	X	X	X	X														X	X	X	40	X	
12	X	X	41	44	44	30														X	C	39	40	46	
13	47	52	53	46	42	38	37													X	X	X	54	50	
14	45	50	X	50	41	50	47													X	X	X	X	X	
15	X	X	X	X	X	X														A	X	X	X	X	
16	X	X	X	X	40	33	38													A	X	X	A	X	
17	X	X	X	X	X	X														X	X	A	34	33	
18	33	33	33	36	32	27														X	X	X	X	38	
19	45	40	40	X	X	X														A	X	X	42	42	
20	42	40	43	39	31	28														X	X	X	X	X	
21	X	38	36	X	38	36														X	X	X	40	41	
22	40	40	37	36	26	25														X	X	X	44	40	
23	40	37	37	34	34	32	33													X	X	X	X	X	
24	X	X	X	X	40	29														A	X	40	40	42	
25	40	36	40	X	X	X					C									X	X	X	X	X	
26	X	X	X	X	X	X	33					C	C	C	C	C	C			X	X	X	X	X	
27	36	36	37	39	41	28						C	C	C	C	C	C			X	C	C	X	X	
28	X	X	X	X	X	X														C	O	X	X	X	
29	X	X	X	X	X	X	34					C	C	C	C	C				X	X	X	X	X	
30	36	34	36	39	40	32	32													X	X	X	X	X	
31	X	36	39	39	36	40	37	35	51											X	X	X	X	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	30	30	31	31	31	31	12	1								1		3	17	28	27	28	30	30	
MED	X	X	X	X	X	X		X								X		X	X	X	X	X	X	X	
U Q	40	39	40	39	40	34	39												X	X	X	X	X	X	
L Q	X	X	X	X	X	X														X	X	X	X	X	
	36	34	34	35	32	28	33													43	34	35	35	31	34

JAN. 2021 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 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

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	36	25	21	23	45	56	54	65	73	79	66	63	52	52	52	40	23	27	29	32	30
2	F	31	33	30	28	24	26	41	53	50	64	66	61	62	51	53	59	54	33	35	30	25	31	31
3	32	F	27	23	22	22	22	38	51	58	60	60	54	56	49	58	48	A	30	34	34	30	F	F
4	F	F	26	25	26	F	19	38	50	57	65	62	57	54	51	49	43	33	A	26	25	24	F	F
5	F	28	26	25	25	F	F	39	46	45	52	70	62	57	53	56	48	35	31	29	26	26	23	25
6	A	25	25	27	27	19	18	35	44	53	63	64	50	58	58	49	51	45	26	26	26	22	25	29
7	29	30	30	30	37	23	22	34	46	59	64	57	58	54	51	60	50	38	36	33	24	25	26	27
8	27	30	30	30	30	26	F	40	45	44	59	54	50	54	54	58	49	45	28	A	A	26	F	F
9	F	F	F	F	F	F	F	38	C	C	C	58	52	49	52	56	54	36	33	A	F	F	A	A
10	30	A	F	F	F	F	22	41	A	A	A	57	46	56	58	58	43	A	33	32	32	28	30	F
11	30	28	29	30	27	27	27	42	56	54	65	60	53	58	62	59	46	38	41	32	30	22	F	32
12	27	27	F	F	F	24	18	35	56	64	80	68	76	68	63	54	46	44	44	41	C	F	34	F
13	F	F	F	F	36	32	F	39	48	52	56	64	59	56	56	53	49	31	35	40	34	34	F	F
14	F	F	41	F	35	F	F	39	42	47	50	50	54	55	55	50	46	34	28	35	30	23	27	28
15	26	26	28	31	23	F	F	39	45	44	52	62	54	54	49	52	48	31	A	36	32	29	29	29
16	29	29	29	30	F	27	F	40	48	47	52	65	65	56	59	59	45	34	A	32	31	A	28	28
17	25	26	27	27	25	26	28	A	A	49	58	60	54	54	50	52	47	40	41	25	A	A	F	F
18	F	27	27	F	F	21	22	37	44	49	56	62	64	54	52	51	50	A	32	26	26	22	27	F
19	F	F	F	29	27	25	24	42	50	51	65	62	56	54	54	52	50	37	A	29	33	F	F	F
20	F	34	37	F	25	22	22	39	50	51	58	58	60	59	59	52	44	35	24	29	35	35	32	31
21	32	F	28	28	F	F	24	44	50	60	64	65	54	52	63	58	51	38	27	29	29	29	F	F
22	F	F	31	30	20	19	19	38	49	51	58	57	57	55	55	47	44	37	37	42	42	F	F	F
23	F	31	31	28	28	26	F	44	56	54	63	53	62	57	54	48	46	33	34	36	33	F	32	32
24	30	30	30	30	34	23	26	49	52	52	65	69	68	57	56	54	60	45	A	31	F	F	F	F
25	F	30	F	31	27	22	22	49	58	52	C	72	64	61	64	53	59	40	25	30	33	33	34	38
26	36	31	31	29	29	27	F	47	53	63	C	C	C	C	C	C	C	62	33	34	38	35	31	30
27	30	30	31	33	35	22	26	50	54	64	C	C	C	C	C	C	C	55	31	C	C	C	30	28
28	31	31	29	30	31	31	26	44	57	54	63	88	62	62	61	61	C	C	S	42	35	35	35	35
29	30	30	29	29	29	27	F	50	59	55	69	C	C	C	C	C	C	46	29	29	34	30	28	30
30	F	28	30	33	34	F	F	42	51	56	53	57	60	57	56	50	48	50	28	28	33	31	32	29
31	30	F	F	30	F	F	F	45	58	54	56	63	60	58	55	57	58	55	30	30	30	24	27	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	16	20	23	24	24	22	19	30	28	29	26	28	28	28	28	28	27	27	26	28	25	22	20	17
MED	30	30	29	30	28	24	22	40	50	53	62	62	58	56	55	53	48	38	32	32	32	28	30	30
U Q	30	30	31	30	32	27	26	44	56	56	65	66	62	58	59	58	51	46	36	35	34	31	32	32
L Q	28	28	27	28	25	22	22	38	47	50	56	58	54	54	52	52	46	35	28	29	28	24	27	28

JAN. 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 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 416	U L 416		L	L									
2												L	U L 412		L										
3												L	L	L			A	A	A						
4												L	L	L	L					A					
5												U L 416	U L 416	L											
6												L	L	U L 400	A	L									
7												L	U L 420	L	L										
8												U L 392	A	A	A	A				A					
9									C	C		U L 392	U L 392	L	U L 392	L									
10									A	A	A	A	A	U L 408	U L 408	L			A						
11										A	A			L	L	L									
12											L	L		L	A	A				A					
13											L	L		380	A	L	L								
14													L	400	A	L									
15											332		408	A	A	A									
16											400		420	A	A	A									
17									L		400	412	392		L	L									
18									A	A		U L 412		L	L										
19										L	A	400	412	A	A	A	A	A							
20											U L 388	U L 424		L		A	A								
21											A	U L 376	408	L	L	L									
22											L	408		L											
23													L	L											
24											L	416	L	L	L	L									
25												C	A			A	A								
26											A	C	C	C	C	C	C	C							
27												C	C	C	C	C	C								
28									A		A	L	L	A	A	L	C	C							
29											L	L	C	C	C	C	C								
30											L	L	L	L	L	L									
31											L	L		L	U L 400	L	U L 424								
	00	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	11	11	5		1									
MED										404	400	412	408	400		U L 424									
U Q											U L 410	U L 420	416	408											
L Q											U L 390	U L 400	400	396											

JAN. 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	B	A	A	U R	U R	U R	U R	U R	U R	U R	B	B						
2							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	B	B						
3							B	B	U R	A	U R	U R	U R	U R	U R	U R	U R	B	B						
4							B	B	U R	A	A	U R	U R	U R	U R	U R	U R	B	B						
5							B	B	U R	A	A	U R	U R	U R	U R	U R	U R	B	B						
6							B	B	U R	A	A	A	U R	U R	U R	U R	U R	B							
7							B	B	U R	A	A	U R	U R	U R	U R	U R	U R	B	B						
8							B	B	A	A	A	A	A	A	A	A	A	B							
9							B	B	C	C	C	A	A	A	A	A	A	B							
10							B	B	A	A	A	U R	U R	U R	U R	U R	U R	B	B						
11							B	B	A	A	A	U R	U R	U R	U R	U R	U R	B	B						
12							B	B	A	A	A	U R	U R	U R	U R	U R	U R	A	B						
13							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	B							
14							B	B	U R	A	A	U R	U R	U R	U R	U R	U R	B							
15							B	B	U R	A	A	A	U R	U R	U R	U R	U R	B							
16							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	B							
17							B	B	A	A	A	U R	U R	U R	U R	U R	U R	B							
18							B	B	U R	A	A	A	U R	U R	U R	U R	U R	B							
19							B	B	U R	A	A	U R	U R	U R	U R	U R	U R	B							
20							B	B	U R	A	A	A	U R	U R	U R	U R	U R	B							
21							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	B							
22							B	B	U R	A	A	A	U R	U R	U R	U R	U R	B							
23							B	B	U R	A	A	A	U R	U R	U R	U R	U R	B							
24							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	B							
25							B	B	A	A	C	C	C	C	C	C	C	B							
26							B	B	U R	A	C	C	C	C	C	C	C	B							
27							B	B	U R	A	C	C	C	C	C	C	C	B							
28							B	B	U R	A	A	A	A	A	A	A	C	C							
29							B	B	U R	U R	C	C	C	C	C	C	C	B							
30							B	B	U R	U R	A	A	R	A	U R	U R	B								
31							B	B	U R	U R	U R	U R	U R	U R	U R	U R	U R	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								6	22	17	15	15	21	16	12	11	9								
MED								U R	U R	U R	U R	U R	U R	U R	U R	U R	U R								
U Q								184	228	272	300	312	316	302	288	256	212								
L Q								192	236	284	308	320	324	310	294	272	222								
								U R	U R	U R	U R	U R	U R	U R	U R	U R	U R								
								176	216	266	288	300	308	300	280	248	198								

JAN. 2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 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 E B E B	22	20	20	E B	21	J A J A	G	G	G	G	G	G	G	32	G J A J A J A E B E B E B E B E B	29	31	25	16	16	16	15	16								
2	J A E B E B	23	16	16	15	16	22	E B	28	G	33	33	33	36	32	30	28	22	22	E B	16	20	E B E B E B E B	16	16							
3	E B E B E B E B	16	16	16	19	22	J A J A	G	G	G	G	G	G	J A J A J A J A J A E B J A	34	39	34	35	34	51	44	40	15	23	27	16	28					
4	E B E B E B E B	16	16	16	16	15	16	G	28	35	35	G	G	33	34	G J A J A J A J A J A J A J A J A J A J A	28	28	34	23	26	29	29	16	16							
5	E B E B E B E B	16	16	16	16	16	16	16	27	G	36	35	G	G	J A J A J A J A J A J A J A J A J A J A	40	76	101	23	26	30	43	32	28	38							
6	J A J A J A E B E B E B	35	38	24	15	15	15	23	24	J A	27	33	35	35	G	35	31	32	J A	28	26	23	16	21	21	20	E B	15				
7	E B E B E B	16	16	15	23	16	16	19	16	28	32	33	G	G	G	G	37	32	J A J A J A J A	24	84	32	22	16	24	16						
8	E B E B E B E B	16	16	16	16	20	21	16	17	28	30	43	80	48	42	35	J A J A J A J A J A J A J A J A J A J A	30	34	48	33	64	51	48	32	37						
9	E B E B E B E B	25	15	16	16	15	16	16	17	C	C	C	C	J A J A J A J A J A J A J A J A J A J A	35	32	35	48	34	36	54	38	63	30	39	54	65					
10	J A J A J A J A J A J A	65	68	109	32	33	25	J A J A J A J A J A J A J A J A J A J A	54	80	97	60	G	G	G	G	J A J A J A J A J A J A J A J A J A J A	32	52	48	44	54	66	36	30							
11	J A J A J A J A J A J A	52	80	39	29	27	23	16	23	32	48	50	G	G	J A J A J A J A J A J A J A J A J A J A	41	37	19	26	27	16	27	23	16	16							
12	E B E B E B E B	24	22	22	16	20	22	22	28	J A	31	31	31	G	G	J A J A J A J A J A J A J A J A J A J A	42	44	41	30	40	31	C	E B E B E B E B	16	16	16					
13	E B E B E B E B	16	15	30	16	20	16	16	17	G	G	G	G	G	35	31	30	23	J A J A J A J A J A J A J A J A J A J A	24	24	26	28	28	16	16	16					
14	E B E B E B E B	15	16	28	34	26	22	20	22	30	33	33	36	36	36	32	J A J A J A J A J A J A J A J A J A J A	33	30	16	15	15	15	28	15	15						
15	E B E B E B E B	16	16	22	25	25	15	16	17	27	34	38	41	36	36	34	34	J A J A J A J A J A J A J A J A J A J A	48	20	32	32	38	30	40	30						
16	E B E B E B E B	22	18	16	16	16	16	16	24	G	G	G	G	G	34	33	33	J A J A J A J A J A J A J A J A J A J A	35	34	50	75	45	65	35	35						
17	J A J A J A E B E B E B	27	27	27	16	16	15	24	63	54	40	83	G	37	34	35	32	J A J A J A J A J A J A J A J A J A J A	30	35	28	35	78	67	32	30						
18	J A J A J A E B E B E B E B	32	34	24	23	16	16	16	24	28	34	54	52	37	46	46	49	J A J A J A J A J A J A J A J A J A J A	44	54	48	33	40	31	25	20						
19	E B E B E B E B E B	16	20	15	16	16	16	21	27	J A	26	31	32	G	G	G	J A J A J A J A J A J A J A J A J A J A	35	44	41	34	48	88	28	36	16	16					
20	E B J A E B E B E B E B	16	25	16	16	15	15	23	24	J A J A J A J A	27	36	42	41	G	G	G	G	J A J A J A E B E B E B E B E B E B E B	30	30	16	16	16	16	16	16					
21	J A E B E B E B	25	22	22	22	22	22	E B E B	16	16	31	35	G	G	G	G	J A J A J A J A J A J A J A J A J A J A	37	45	35	35	28	35	28	22	22	E B	16				
22	E B E B E B E B	16	16	17	17	22	16	20	G	J A	28	36	33	49	G	J A J A J A	35	34	G	26	26	23	23	20	16	16	25					
23	E B E B E B E B E B	16	16	22	36	30	54	34	28	27	32	44	47	36	36	37	32	31	J A	36	22	27	25	27	23	16	28					
24	J A E B E B E B	26	24	22	21	21	20	16	G	G	G	G	G	G	G	G	G	G	J A J A J A J A J A J A J A J A J A J A	29	73	52	52	54	64	33						
25	J A J A J A E B E B E B E B	23	34	34	23	16	25	66	42	31	33	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 J A	40	40	46	51	54	58	59	87	27	64	69	43	28
26	E B E B E B E B E B E B	20	16	15	15	15	15	15	25	25	41	C	C	C	C	C	C	C	E B E B E B E B E B E B E B	16	16	33	20	E B	16	20	E B	16				
27	E B E B E B E B E B E B	16	19	16	16	15	15	15	G	J A	34	C	C	C	C	C	C	C	E B	16	23	C	C	C	J A E B	30	16					
28	E B E B E B E B E B E B	24	23	J A J A J A J A J A J A	26	32	22	G	J A	62	34	36	38	36	37	41	34	C	C	J A J A J A J A J A J A J A J A J A J A	67	39	34	53	33	28						
29	J A E B E B E B E B E B	27	20	16	16	20	20	24	22	G	G	35	C	C	C	C	C	C	J A E B E B E B E B E B E B E B	59	15	15	21	21	16	16						
30	E B E B E B E B E B E B	16	16	22	25	24	16	20	G	27	32	G	G	38	37	G	31	G	E B	15	21	21	20	E B	16	16	16	16				
31	E B E B E B E B E B E B	16	16	18	16	18	16	20	22	G	G	34	G	G	G	G	G	G	E B J A J A J A	15	23	22	22	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	30	30	27	28	28	28	28	28	27	30	31	30	29	30	31	31								
MED	20	18	18	E B	19	16	20	22	28	33	35	33	G	34	34	32	J A J A J A J A J A J A J A J A J A J A	30	28	28	28	27	28	20	16							
U Q	J A J A J A J A J A J A	27	24	24	23	22	22	23	25	30	35	42	40	36	36	37	36	36	35	48	35	42	39	32	30							
L Q	E B E B E B E B E B E B	16	16	16	16	16	16	16	17	25	30	32	G	G	G	G	G	G	E B	26	22	23	16	20	16	16	16					

JAN. 2021 foEs (0.1MHz)

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JAN.2021 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
2	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
3	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
6	A	A	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
7	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
8	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
9	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
10	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
11	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
12	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
13	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
15	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
17	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
18	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
19	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
20	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
22	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
23	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
24	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
27	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
28	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
29	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
31	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	30	27	28	28	28	28	28	27	30	31	30	29	30	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.2021 fbEs (0.1MHz)

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JAN.2021 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JAN.2021 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F	F	F	375	419	331	368	372	372	360	359	336	382	343	368	378	380	355	370	372	334	314	340	305	
2	F	295	355	365	383	356	373	371	398	374	345	378	374	367	392	372	349	376	356	373	349	366	351	328	
3	297	F	315	348	327	400	338	376	373	357	363	363	351	379	376	398	377	A	350	336	329	299	F	F	
4	F	F	331	306	306	F	345	373	366	373	375	379	363	385	369	376	387	390	A	353	340	321	F	F	
5	F	276	293	326	399	F	F	381	394	382	330	355	372	387	382	370	394	350	352	361	358	304	306	330	
6	A	318	300	334	338	389	337	372	386	332	362	382	374	347	364	365	359	404	349	317	316	316	276	297	
7	298	291	291	318	404	416	R	368	370	364	363	381	334	389	366	373	367	397	348	360	348	341	330	313	295
8	295	325	308	309	341	370	F	400	405	383	350	382	352	352	367	337	376	389	383	A	A	313	F	F	
9	F	F	F	F	F	F	F	374	C	C	C	383	383	370	349	354	394	374	350	A		F	A	A	
10	359	A	F	F	F	F	335	392	A	A	A	392	374	360	353	393	409	A	375	355	373	318	346	F	
11	329	301	320	322	306	322	358	380	376	385	373	353	378	355	394	395	394	336	368	328	382	299	F	318	
12	306	301	F	F	F	314	298	343	344	342	354	344	378	382	372	343	381	343	343	328	C	F	309	F	
13	F	F	F	F	351	373	F	371	370	354	352	378	384	375	375	401	401	367	326	379	326	322	F	F	
14	F	F	313	F	314	F	F	372	390	350	376	377	360	351	368	383	398	380	300	336	345	322	284	326	
15	304	316	332	354	344	F	F	397	379	368	338	377	329	408	381	374	406	384	A	344	356	324	324	324	
16	324	324	324	332	F	342	F	396	400	404	337	367	368	384	353	381	407	386	A	344	353	A	338	319	
17	312	325	321	337	334	314	373	A	A	375	370	372	363	370	384	352	372	359	407	364	A	A	F	F	
18	F	314	333	F	F	345	385	400	388	370	374	360	359	369	378	387	396	A	400	335	365	321	317	F	
19	F	F	F	312	340	309	332	377	406	384	362	369	382	315	383	352	378	379	A	315	294	F	F	F	
20	F	302	361	F	313	316	345	381	371	381	356	376	375	355	371	386	394	387	312	312	313	318	324	293	
21	296	F	314	315	F	F	320	372	390	375	362	379	404	370	372	346	393	370	344	344	344	344	F	F	
22	F	F	367	357	345	327	354	388	384	383	393	383	366	355	376	379	403	363	332	341	372	F	F	F	
23	F	296	297	309	309	332	F	384	396	379	384	354	356	389	383	371	371	379	341	337	365	F	322	318	
24	316	316	321	343	355	335	304	397	388	382	326	358	364	344	371	326	375	369	A	327	F	F	F	F	
25	F	290	F	326	381	321	321	377	397	377	C	362	340	391	382	365	371	395	319	294	317	313	307	347	
26	342	306	306	305	353	321	F	383	372	335	C	C	C	C	C	C	C	C	372	339	324	329	340	335	282
27	309	309	301	341	390	332	322	382	372	357	C	C	C	C	C	C	C	C	375	301	C	C	310	294	
28	331	332	326	322	329	352	331	373	395	373	355	381	395	385	362	376	C	C	S	306	336	307	308	308	321
29	338	313	326	326	326	346	F	389	398	408	378	C	C	C	C	C	C	C	388	349	325	352	340	321	300
30	F	317	341	368	394	F	F	377	381	350	358	373	364	388	377	387	370	360	360	334	302	330	327	294	
31	336	F	F	335	F	F	F	376	375	372	376	356	389	361	379	323	364	386	380	337	373	363	318	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	16	20	23	24	24	22	19	30	28	29	26	28	28	28	28	28	27	27	26	28	25	22	20	17	
MED	314	311	321	329	342	334	338	377	385	373	362	372	373	370	374	373	387	375	350	336	344	321	320	318	
U Q	334	318	332	346	382	356	368	388	396	382	375	379	382	384	382	384	397	386	368	350	362	330	331	325	
L Q	301	298	306	316	326	321	322	372	372	357	352	357	362	355	368	353	372	360	332	328	322	313	308	294	

JAN. 2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1											L	U L		L	L										
2											L	410	411		L										
3											L	L	L	L			A	A	A						
4											L	L	L	L	L					A					
5											U L	U L	L												
6											L	L		U L	A	L									
7											L	U L	L	L											
8											U L	A	A	A	A					A					
9								C	C		C	U L	L	U L	L										
10								A	A	A	A	A	U L	U L	L				A						
11										A	A		L	L	L										
12											L	L		L	A	A				A					
13									L	L	L			A	L	L									
14											495		L	A	L										
15											403	A	403	A	A	A									
16									L						L	A									
17								A	A		422	410	430		L	L									
18										L	A			A	A	A	A	A							
19											U L	U L		L		A	A								
20											A	U L		L	L	L									
21											L		L												
22											U L	L	L		L										
23											402			L	L										
24										L	412	L	L	L	L										
25											C	A				A	A								
26										A	C	C	C	C	C	C	C								
27											C	C	C	C	C	C									
28								A		A	L	L	A	A	L	C	C								
29										L	L	C	C	C	C	C									
30										L	L	L	L	L	L	L									
31										L	L		L	U L	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										1	8	11	11	5		1									
MED										382	408	410	417	420		U L									
U Q											420	421	430	452											
L Q											U L	U L	U L	U L											
											396	393	408	400											

JAN. 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 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											244	244	220	248	240									
2											242		240		228									
3											228	246	268	238			E A 238		A E A 326					
4											228	234	248	234	246				A					
5											290	244	236											
6											236	214		264	234	240								
7											240	270	236	236										
8											250	242	242	254	232				244					
9									C	C	C													
10									A	A	A								A					
11										210	224	224		248	250	234								
12											270	238	238	226	226	226			E A 230					
13									230	230	230		230	230	230	230								
14											244	244	250	250	230									
15											290	218	290	226	226	226								
16											226	258	252	230		250	218							
17									A	A		230	244		244	244								
18											260	228	252	252	232	220	214	214	A					
19											230	230		238		242	218							
20											244	244	238	250	236	236								
21											236	222	222											
22											238	238	246	258	240									
23													240	226										
24											226	278	232	244	244	244								
25												C	224	260			E A 258	242						
26											242	C	C	C	C	C	C	C						
27												C	C	C	C	C	C	C						
28											214		230	230	218	218	224	224	C	C				
29												218	232	C	C	C	C	C						
30											250	240	240	240	240	240	230							
31											230	240	268	234	242	242	280							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	3	9	25	24	25	23	21	12	4			3				
MED								210	226	230	238	239	240	240	236	229	222		E A 244					
U Q								230	255	244	244	248	250	244	241	240			E A 326					
L Q								214	225	230	227	230	232	229	225	216			E A 230					

JAN. 2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	B	A	A	108	108	108	108	108	108	114	B	B						
2							B	B	108	108	108	108	108	108	108	108	108	B	B						
3							B	B	108	114	114	114	114	114	A	A	A	B	B						
4							B	B	120	120	120	120	120	110	A	110	A	B	B						
5							B	B	110	112	112	112	112	112	A	A	A	B	B						
6							B	B	112	A	A	A	A	108	A	A	A		B						
7							B	B	114	114	114	114	114	112	112	A	A	B	B						
8							B	B	112	112	A	A	A	A	A				B						
9							B	B	C	C	C	A	A	A	A	112	112	B							
10							B	B	A	A	A	A	112	112	112	112	112	B	B						
11							B	B	112	112	112	112	112	A	A	112	B	B							
12							B	B	112	112	112	112	112	112	A	A	112	A	B						
13							B	B	112	112	112	112	112	112	112	104	B	B							
14							B	B	118	118	118	114	114	114	116	A	A	B							
15							B	B	122	122	124	114	114	114	114	114	114	B							
16							B	B	114	114	114	114	114	114	114	114	A	B							
17							B	B	A	A	A	114	114	114	112	112	A	B							
18							B	B	112	112	A	A	104	108	108	A	A	B							
19							B	B	108	112	112	112	110	110	110	A	A	B							
20							B	B	A	A	A	116	116	116	116	118	118	B							
21							B	B	118	118	118	110	110	110	108	108	108	B							
22							B	B	116	116	A	116	116	A	A	112	112								
23							B	B	112	112	A	A	114	110	110	A	A	B							
24							B	B	114	114	114	112	112	110	110	110	112	B							
25							B	B	A	112	C	112	112	A	112	A	A	B							
26							B	B	118	118	C	C	C	C	C	C	C	B							
27							B	B	A	C	C	C	C	C	C	C	C	B							
28							B	B	118	118	A	130	126	114	114	114	A	A	C	C					
29							B	B	114	108	108	C	C	C	C	C	C	B							
30							B	B	134	118	118	116	116	116	A	116	116	B							
31							B		116	112	112	108	108	108	108	116	116	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								6	25	23	20	20	25	22	18	15	12								
MED								117	114	112	113	112	112	112	112	112	112								
U Q								E B	130	118	118	116	114	114	114	114	115								
L Q								116	112	112	112	112	110	110	108	108	112								

JAN. 2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 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	100	B	B	88	88	88	B	100	100	100	G	G	G	G	152	G	96	96	94	B	B	B	B	B
2	92	92	B	B	B	B	92	B	162	162	162	150	146	134	148	128	100	100	B	100	B	B	B	B
3	B	B	B	B	108	90	90	96	G	124	G	G	144	144	106	106	92	92	88	B	88	88	B	88
4	B	B	B	B	B	B	B	G	134	114	114	G	G	112	108	G	102	94	92	92	92	92	92	B
5	B	B	B	B	B	B	B	B	138	G	112	112	G	G	108	94	88	94	100	92	92	92	92	92
6	92	92	92	B	B	B	92	92	128	100	100	100	100	G	104	106	98	98	98	B	98	86	86	B
7	B	B	B	B	B	B	138	B	138	138	138	G	G	G	G	98	98	98	98	98	98	B	98	B
8	B	B	B	B	98	98	B	B	128	128	90	90	90	90	90	90	82	82	102	102	102	102	98	98
9	98	B	B	B	B	B	B	B	C	C	C	98	98	98	88	114	114	100	100	100	100	100	100	100
10	98	94	88	88	88	148	132	104	96	96	96	96	G	G	G	G	120	96	106	104	100	90	90	90
11	90	90	90	90	90	90	B	102	126	126	126	G	G	106	98	G	B	98	84	B	84	84	B	B
12	84	84	102	B	102	102	128	122	122	122	122	G	G	122	104	96	G	94	88	88	C	B	B	B
13	B	B	88	B	88	B	B	B	G	G	146	158	G	152	134	110	100	100	100	88	88	88	B	B
14	B	B	88	96	96	96	96	96	150	138	138	138	120	118	114	104	104	B	B	B	B	100	B	B
15	B	B	100	92	92	B	B	B	154	144	126	118	118	130	142	128	128	128	100	104	104	104	92	92
16	92	84	B	B	B	B	B	114	G	G	168	G	G	156	136	130	106	106	98	98	98	92	92	92
17	92	84	84	B	B	B	96	90	90	90	90	G	150	150	150	120	108	94	94	94	90	90	90	90
18	90	90	90	90	B	B	B	126	126	140	78	80	150	116	116	102	102	102	102	102	96	88	88	88
19	B	90	B	B	B	B	96	96	130	148	148	G	G	G	114	102	102	96	96	96	96	96	B	B
20	B	100	B	B	B	B	110	110	126	104	98	98	G	G	G	G	G	92	92	B	B	B	B	B
21	100	100	100	100	100	100	B	B	152	144	G	G	G	G	130	128	120	106	106	106	102	90	90	B
22	B	B	B	B	90	B	92	G	114	104	128	96	G	96	96	G	146	82	82	82	82	B	B	94
23	B	B	94	94	92	92	92	92	150	150	90	90	154	G	130	100	108	114	108	98	98	98	B	84
24	92	92	92	92	92	92	B	G	G	G	G	G	G	G	G	G	G	92	92	92	92	92	92	92
25	92	92	92	92	B	102	98	96	192	110	C	132	132	82	114	114	114	114	106	106	102	102	102	108
26	104	B	B	B	B	B	B	B	134	126	124	C	C	C	C	C	C	C	B	B	86	86	B	B
27	B	86	B	B	B	B	B	G	G	98	C	C	C	C	C	C	C	C	B	C	C	C	C	B
28	90	90	90	90	90	90	90	G	90	158	150	124	118	118	98	98	C	C	82	82	82	82	90	90
29	90	90	B	B	90	94	94	94	G	G	156	G	C	C	C	C	C	C	B	B	92	92	B	B
30	B	B	92	92	92	B	152	G	152	146	G	G	118	108	G	102	G	B	102	88	98	B	B	B
31	B	B	98	B	98	B	114	120	G	G	154	G	G	G	118	150	150	B	92	92	92	B	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	16	16	16	13	17	13	17	17	23	23	22	15	14	17	23	21	22	25	28	22	26	21	17	14
MED	92	90	92	92	92	94	96	100	128	124	126	100	126	118	114	106	105	96	98	95	96	92	92	92
U Q	98	92	96	95	98	101	121	117	150	144	148	132	150	145	134	124	120	101	101	102	100	99	95	94
L Q	90	88	89	90	90	90	92	95	114	104	98	96	118	102	104	99	98	93	92	88	90	88	90	90

JAN. 2021 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2021 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2			F1	F1	F1		L1	L2	L2					H1		L1	L1	L1					
2	F2	F1					L1		H1		H1	H1	H1	H1	H1	H2	C2	L1	L2		F1			
3				F1	F2	F2	L1			C1			H1	H2	L1	L2	L4	L4	L5		F2	F2		F2
4									H2	C2	C1			C1	L2		L3	L4	L7	F4	F3	F2	F2	
5									H2		C1	C1			L3	L3	L2	L1	L1	F3	F3	F4	F2	F2
6	F5	F3	F2				L2	L2	C2	L2	L2	L1	L2		L1	L2	L3	L1	L2		F1	F2	F2	
7				F1			H1		H2	H2	H1					L3	L3	L1	L4	F3	F1		F2	
8				F1	F1				C2	C1	L2	L2	L2	L2	L2	L2	L3	L3	L6	F3	F3	F2	F3	F2
9	F2											L2	L2	L2	L2	C1	C2	L3	L4	F5	F4	F5	F8	F5
10	F3	F6	F4	F3	F2	F1	C1	L3	L3	L5	L5	L2					C2	L4	L2	F2	F4	F4	F4	F3
11	F4	F3	F3	F3	F2	F1		L1	C2	C2	C3			L1	L2			L1	F3		F1	F1		
12	F1	F1	F1		F1	F2	C2	C5	C2	C2	C1			C1	L1	L2		L2	L3	F3				
13			F3		F1						H1	H1		H1	H1	C1	L2	L1	F1	F1	F2	F2		
14			F3	F3	F2	F1	L1	L1	H2	H2	H1	H1	C1	C1	C1	L1	L2					L1		
15			F1	F3	F2				H2	H2	C2	C2	C1	H1	H2	C2	C2	C2	F5	F2	F3	F3	F6	F4
16	F2	F2						C1			H1			H1	H1	C2	L4	L3	F6	F4	F2	F5	F5	F5
17	F4	F3	F2				L2	L4	L4	L3	L3		H1	H1	H1	C1	L2	L4	F3	F3	F5	F5	F2	F3
18	F2	F2	F2	F1				C2	CL12	HL22	L3	L2	H2	C2	C3	L2	L5	L5	F4	F2	F4	F4	F2	F1
19		F1					L1	L1	H1	H1	H1				C2	L4	L4	L5	F5	F4	F2	F2		
20		F1					C4	C6	C2	L3	L3	L2						L5	F1					
21	F1	F1	F2	F3	F2	F1			H1	H2					HL12	C3	C3	L2	F2	F4	F2	F3	F2	
22				F1			L1		C2	L1	C1	L2		L2	L2		H1	L2	F3	F2	F2			F1
23			F2	F3	F2	F2	L2	L2	H1	HL12	L2	L2	HL12		C1	L1	CL22	CL12	F2	F2	F3	F1		F2
24	F2	F1	F1	F2	F2													L3	F7	F5	F2	F3	F5	F2
25	F2	F2	F2	F2		F2	L5	L3	L2	CL22		H1	H1	LC21	C2	CL43	CL32	CL32	F3	F2	F5	F3	F2	F1
26	F1							H2	C2	C2										F2	F1		F1	
27		F2								L2									F2				F2	
28	F1	F2	F2	F2	F2	F3	L2		L4	HL12	H2	C1	C1	C2	L1	L1			F3	F3	F2	F2	F3	F3
29	F4	F1		F1	F1	L2	L1				H1							L4			F1	F1		
30			F1	F3	F1		H1		H1	H1				C1	L2		L2		F1	F1	F1			
31			F1	F1	F1	F1	F1				H1		H1		C1	H1	H1		F3	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. 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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	A	A	X 38	X 42	X 36	C	32												X 52	X 46	X 44	X 40	X 40	X 36
2	X 36	X 36	X 38		X 40	X 30													A	X 38	X 36	X 38	X 32	X 33
3	X 32	X 37	X 35	X 34	X 31	X 29													X 39	X 39	X 43	X 32	X 35	X 31
4	40	37	37	37	X 27	30													X 37	X 34	X 36	X 33	X 33	X 34
5	X 31	X 35	X 35	X 30	X 32	X 27		X 32											X 40	X 37	X 36	X 29	X 31	X 29
6	32	36	36	X 32	X 37	X 26													X 38	X 32	36	38	33	29
7	X 32	38	38	41	39	24		X 35											X 39	X 39	X 38	X 37	X 40	X 35
8	X 34	X 36	X 36	X 38	X 38	40													A	A	X 38	A	A	A
9	C	C	C	C	C	C	C	C	C	C									X 37		O 41	X 36	40	41
10	A	40	A	A	C	C	O 34	X 61											A	X 39	X 38	O 38	C	C
11	X 34	X 36	42	A	42	A													X 45	X 42	X 39	X 30	X 32	X 33
12	X 34	37	X 33	X 37	X 43	X 29			C										X 43	X 39	X 43	X 39	X 34	X 43
13	41	X 36	41	38	53	44	36												X 35	X 40	X 43	X 41	X 39	X 39
14	X 39	47	52	57	59	46	36	41											X 40	A	A	X 41	38	34
15	38	36	39	40	X 36	X 26													X 39	X 32	43	43	40	39
16	X 36	35	32	A	32	34													X 36	X 31	X 36	X 39	X 30	X 37
17	35	37	39	38	38	X 32		X 34											X 46	X 36	X 35	X 31	X 30	X 33
18	40	40	36	X 35	X 33	X 35	C												A	A	A	40	A	X 31
19	39	37	37	X 32	X 30	X 28		O 39	X										X 42	X 41	X 40	X 40	46	46
20	42	X 40	51	X 37	X 32	X 29													X 38	A	X 40	X 50	X 42	X 40
21	39	40	40	40	X 36	36	30												X 45	X 30	X 38	X 37	X 31	X 37
22	X 38	X 35	X 33	X 32	X 32	X 30													X 39	X 38	X 42	X 47	X 42	X 40
23	38	37	38	39	39	X 32												X 55	X 42	X 41	X 39		X 35	X 35
24	39	X 38	X 36	X 36	X 44	X 27		X 35											X 47	X 35	X 36	X 42	X 37	X 36
25	X 36	X 36	X 36	X 36	X 34	X 32													A	X 34	X 40	X 42	X 42	X 43
26	X 41	X 39	X 37	X 38	X 42	X 28		X 38											X 57	X 40	X 44	X 46	X 45	X 40
27	X 36	X 36	X 34	X 38	X 39	X 28														X 39	X 44	X 45	X 32	X 32
28	A	X 34	X 37	X 37	X 40	X 35		X 38											X 49	A	X 45	X 47	X 44	X 38
29	X 35	X 36	X 35	X 35	X 38	X 36		X 42											X 49	X 32	X 40	X 40	X 34	X 32
30	X 33	X 34	X 36	X 38	X 40	X 36		C											X 56	X 34	X 38	X 39	X 39	X 34
31	X 34	X 32	X 33	X 33	X 33	X 32													A	A	A	A	X 31	X 34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	29	29	26	29	27	5	9	1								1		24	24	28	28	28	29
MED	X 36	X 36	X 37	X 37	X 38	X 30	34	X 38	X 61								X 55		X 41	X 38	X 40	X 40	X 36	X 35
U Q	39	38	38	38	40	35	36	40											46	40	43	42	40	40
L Q	X 34	X 36	X 35	X 35	X 32	X 28	31	X 34											X 38	X 34	X 37	X 37	X 32	X 33

JAN. 2021 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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	A	A	32	36	30	C	F	30	57	54	61	71	88	109	102	83	59	60	46	40	38	34	34	30	
2	30	30	32	32	34	24	22	30	58	55	58	88	70	64	V 76	54	57	56	A	32	30	32	26	27	
3	26	31	29	28	25	22	21	27	52	52	72	65	65	58	A	57	A	A	33	33	37	26	29	25	
4	F	F	F	F	21	F	21	23	49	56	64	70	61	61	58	56	50	40	31	28	30	27	27	28	
5	25	29	29	24	26	21	24	26	46	44	50	59	72	69	58	57	51	44	34	31	30	23	23	23	
6	F	F	F	26	31	20	A	26	44	48	64	75	58	65	57	58	52	52	32	26	F	F	F	23	
7	26	F	28	F	F	18	F	21	28	47	54	59	82	67	60	55	55	60	48	33	33	32	31	34	29
8	28	30	30	32	32	C	32	32	45	48	48	54	56	64	56	52	57	55	A	A	32	A	A	A	
9	C	C	C	C	C	C	C	C	C	C	57	53	55	56	54	55	58	49	31	34	35	30	F	F	
10	A	F	A	A	C	C	28	34	55	52	49	A	52	63	53	65	60	44	A	33	32	32	C	C	
11	30	30	F	A	F	A	34	30	50	50	61	76	67	68	63	64	58	49	39	36	33	24	26	27	
12	28	F	27	31	37	23	21	28	C	70	78	78	72	68	70	56	52	47	37	33	37	33	28	F	
13	F	30	F	32	F	F	F	28	48	52	52	64	64	59	55	53	54	43	29	34	37	35	33	33	
14	33	F	F	F	F	F	F	F	47	44	48	52	55	58	58	55	56	46	34	A	A	35	F	F	
15	F	F	F	F	30	20	22	24	47	43	49	67	57	56	57	51	50	48	33	26	F	F	F	F	
16	30	F	F	A	F	F	23	26	47	46	49	57	67	56	64	58	58	46	30	25	30	F	24	F	
17	F	F	F	F	F	26	30	28	44	48	54	59	60	60	57	54	54	54	40	30	29	25	24	27	
18	F	F	F	29	27	29	C	31	47	50	51	58	66	66	59	52	54	A	A	A	A	F	A	25	
19	F	F	F	26	24	22	19	33	58	50	54	57	59	53	58	53	57	49	36	35	34	34	F	F	
20	F	36	F	31	26	23	23	30	50	52	54	63	63	72	61	56	50	50	32	A	34	F	F	F	
21	F	F	F	F	30	F	F	27	54	56	61	67	50	60	62	66	59	52	39	23	32	31	25	31	
22	32	29	27	26	26	24	20	27	50	50	52	58	60	60	59	53	48	47	33	32	36	A	F	F	
23	F	F	F	F	26	24	28	59	59	59	66	62	62	67	55	54	49	47	36	35	33	29	29	F	
24	F	32	30	30	38	21	20	29	50	51	49	60	70	66	56	58	64	58	41	29	30	36	31	30	
25	30	30	30	30	28	26	23	27	58	57	55	62	68	64	64	58	58	59	A	28	34	36	36	37	
26	35	33	31	32	36	22	20	32	53	55	67	82	63	61	64	71	60	62	50	34	38	40	39	34	
27	30	30	28	32	33	22	22	34	59	56	58	82	80	62	57	68	70	66	48	33	38	39	26	26	
28	A	28	31	31	34	28	A	32	54	57	53	72	65	57	59	64	58	56	43	A	38	F	38	32	
29	29	30	28	29	32	30	26	36	64	55	59	60	62	57	60	63	59	55	43	26	34	34	28	26	
30	27	28	30	32	34	30	30	C	51	53	46	56	56	61	56	55	47	54	50	28	32	33	33	28	
31	28	26	27	27	27	26	24	33	60	59	59	69	72	87	V 70	56	52	65	A	A	A	A	25	28	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	16	16	16	20	22	21	23	28	29	30	31	30	31	31	30	31	30	29	25	25	26	21	21	21	
MED	30	30	30	30	30	23	23	28	50	52	55	64	63	61	58	56	57	50	36	32	34	33	28	28	
U Q	30	30	30	32	34	26	26	32	58	56	61	72	68	66	63	63	59	56	42	34	37	35	34	30	
L Q	28	29	28	28	26	22	21	27	47	50	50	58	58	58	56	54	52	47	32	28	32	28	26	26	

JAN. 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										L	L	U L	U L	U L	U L	L									
2											U L	424	428	428	408										
3											U L	408	420	436											
4											L	L	L	A	A	A	A	A							
5											U L	U L	U L	U L	A	L	A								
6							A				424	420	416	428		L	A								
7										L	L	A	412	412											
8											L	L	A	L	L	408									
9							C	C	C	C		U L	U L	U L	L	L	L	L	L						
10											A	A	A	A	L	A	L								
11											A	A		A	A	L	L	A							
12									C	A	L	L	L	A	L	A	L								
13												412	L	L	L	L	L								
14												L	L	A	A	L									
15											A	A	L		L	L	L								
16										L	L	L	L	L	A	L	L								
17										L	A	L	A	L		L	A								
18							C				L	U L	L	A	A			A							
19											L	L	U L	L	L	L									
20											U L	U L	A	L	L	L									
21										A	L	L	L	L	A	A									
22												L	L	U L	L	L									
23									L		424	L	432	420	A								A		
24											L	416	432	L	U L	L	U L								
25											L	L	L	A	A	A	A								
26											L	L	A	L	L	L	L								
27											L	420		L	U L	L	L								
28							A				L	L	L	L	L										
29											L	L	L	A	A	A	A								
30								C				U L	L	L	L	L									
31											L	U 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											4	15	13	10	6	1	1								
MED											U L	418	416	424	422	424	408	U L							
U Q											424	420	432	428	432										
L Q											U L	410	412	418	412	420									

JAN. 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	BE	CE	C		AUR	A	AUR	A	A	B								
2			196				B	B	A	A	304	U	AUR	A	AUR	A	B								
3							B	BU	RU	RU	RU	AUR	AUR	A	A	A	A								
4							B	BU	AUR	A	A	A	A	A	A	A	AUR	A							
5							B	U	AUR	AUR	A	A	A	A	A	A	A	B							
6							B	BU	AUR	AUR	RU	R	A	A	A	A	A	B							
7							B	U	A	A	A	A	AUR	AUR	RU	AUR	A								
8							E	CE	CE	CE	CE	CU	A	A	AE	CE	C	B							
9							C	C	C	CU	A	A	A	CE	CE	C	A	A	B		A				
10							B	E	C	A	A	A	A	A	A	A	A				432				
11							AE	CE	CE	CE	C	A	A	A	A	A	A	B							
12							B	B	CU	A	A	A	A	A	A	A	A								
13							B	BU	AUR	AUR	U	AUR	AUR	A	AUR	RU	R	B							
14							B	U	AUR	AUR	AUR	AUR	A	A	AUR	A	A	B							
15							B	BU	AUR	AUR	U	AUR	A	AUR	A	AUR	A								
16							B	BU	AUR	RU	A	A	A	A	A	A	A	B							
17							B	U	RU	RU	A	A	A	AUR	RU	R	A	B							
18							CE	CE	C	AUR	A	A	AUR	A	A	A	A	B							
19							B	U	R	AUR	U	RUR	U	R	A	A	A	B							
20							B	BU	RU	A	A	A	A	A	A	A	A								
21							B	BU	RU	A	A	A	A	A	A	A	A								
22							B	BU	AUR	A	A	A	AUR	RU	RU	RU	RU	A							
23							B	BU	RU	R	U	AUR	AUR	A	A	A	A						A		
24							B	U	RU	R	RU	R	A	A	AUR	R	A								
25							B	BU	R	AUR	U	RUR	U	AUR	AUR	A	A								
26							B	U	AUR	AUR	A	A	A	A	A	A	A								
27							B	BU	RU	R	AUR	U	A	A	A	A	A	A							
28							B	A	A	A	A	A	A	A	A	A	A								
29							B	U	RU	R	A	AUR	AUR	A	A	A	A								
30							B	CE	C	U	A	A	A	A	A	A	A								
31							B	BU	RU	RU	RU	U	RUR	RU	RU	RU	RU	RU							
	00	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						18	22	20	12	10	10	7	10	3	4			1				
MED			196						U	RU	U	AUR	U	U	U	RU	RU	RU	RU	A					
U Q									208	264	298	316	316	320	312	288	244	190		432					
L Q									U	RU	RU	U	RU	AUR	RU	RU	RU	RU							
									220	268	304	322	328	328	324	296	268	206							
									U	AUR	AUR	U	U	U	U	AUR	AUR	A							
									196	256	288	308	312	316	304	284	220	180							

JAN. 2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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 43	A 50	J 39	A 24	A 33	C 19	E 20	B 27	E 35	C 46	J 50	A 62	G 37	J 36	A 46	J 48	A 45	J 23	A 26	J 34	A 22			
2	J 29	A 16	B 16	B 22	E 16	B 16	20	E 16	J 39	A 38	33	36	G 38	36	G 32	35	J 55	A 25	E 16	B 16	22	22		
3	E 16	B 16	B 16	B 16	E 16	B 20	E 16	B 19	G 38	G 40	J 58	A 89	50	J 145	A 117	J 24	A 20	E 16	B 16	20	16	20	16	E 16
4	E 16	B 16	B 16	B 16	E 16	B 16	E 16	B 22	24	G 40	A 41	36	J 40	A 39	J 36	A 46	J 22	22	18	23	J 50	A 26	B 16	16
5	E 16	B 27	A 21	20	21	22	20	16	22	31	37	38	42	54	66	60	33	31	16	16	31	35	35	16
6	E 16	B 23	A 16	21	J 36	A 28	J 39	A 22	24	30	G 45	35	J 40	A 55	J 50	A 42	J 34	A 31	23	16	16	16	16	E 16
7	E 16	B 19	22	22	22	20	E 16	B 16	23	33	41	43	39	G 33	G 28	E 27	C 27	C 27	C 27	C 27	C 27	C 27	C 27	C 35
8	E 26	C 27	J 36	A 27	E 26	C 26	E 26	C 26	E 26	C 26	E 26	C 31	J 42	37	G 39	J 37	A 32	E 28	C 54	J 69	A 55	J 55	A 46	J 66
9	C	C	C	C	C	C	C	C	C	C	35	38	54	51	71	48	52	38	22	37	54	56	44	42
10	J 42	A 51	A 44	A 48	C 25	E 26	B 32	J 44	A 60	80	75	37	46	54	43	42	87	52	42	32	C	C		
11	E 27	C 27	J 36	A 54	A 40	A 52	A 54	A 32	34	54	64	103	86	104	48	40	42	29	30	29	16	16	23	16
12	E 21	B 16	J 30	A 37	A 42	A 15	B 15	23	C 32	35	39	41	64	39	51	33	39	32	32	31	16	17	39	E 16
13	J 48	A 49	A 28	J 30	E 26	A 24	19	E 16	28	32	34	34	36	35	34	G 40	A 37	25	23	J 43	A 30	J 30	39	26
14	E 16	B 16	B 16	B 16	E 30	A 48	24	23	23	29	33	35	39	48	41	34	34	47	47	63	54	54	56	28
15	J 34	A 21	21	E 15	B 16	33	22	20	24	30	39	39	36	38	G 40	A 37	25	23	J 43	A 30	J 30	39	26	
16	22	22	J 29	A 66	E 20	B 16	16	24	25	G 32	J 40	A 38	44	50	44	44	33	27	24	E 16	B 16	22	27	J 27
17	J 28	A 16	B 16	B 16	20	25	J 40	A 37	35	G 37	J 66	A 43	39	G 46	A 28	23	32	24	23	23	23	23	23	23
18	J 33	A 35	A 50	A 20	E 16	20	C 28	C 27	30	32	38	36	G 57	A 61	A 42	A 67	A 79	85	127	79	84	34	34	J 34
19	J 38	A 30	A 45	A 22	E 20	B 15	J 26	A 36	G 37	37	G 36	J 41	A 38	A 42	A 34	A 26	15	23	54	53	30	30	30	J 30
20	E 16	B 16	B 16	B 18	E 16	B 16	B 16	B 16	G 30	J 38	A 40	A 51	A 41	A 44	A 54	A 52	A 57	A 51	A 46	A 40	A 40	A 49	A 26	E 16
21	J 26	A 23	J 39	A 32	E 24	B 18	E 17	22	G 35	J 38	A 44	A 41	A 42	A 41	A 46	A 42	A 34	A 30	16	34	43	21	16	E 16
22	E 15	B 15	B 15	B 15	E 15	B 15	B 15	22	28	29	42	42	40	G 40	G 24	83	16	22	22	62	39	39	39	J 39
23	J 38	A 61	A 40	A 23	J 32	A 22	E 16	21	G 36	38	36	G 37	A 43	A 41	A 35	A 24	A 26	23	54	24	24	24	24	J 24
24	20	E 16	B 36	21	22	22	21	21	G 38	A 40	A 42	A 36	G 42	A 36	G 38	A 30	A 38	30	34	28	16	16	16	E 16
25	22	22	19	23	J 40	A 16	B 16	21	G 29	G 39	40	44	46	41	37	43	109	30	40	63	88	43	43	J 43
26	J 25	22	22	22	J 28	A 20	20	20	J 28	32	J 43	A 62	A 43	A 41	A 35	A 37	A 46	A 38	33	22	31	23	21	J 21
27	E 16	B 16	B 16	B 52	E 16	B 16	B 15	15	G 32	38	38	44	37	36	36	44	32	31	54	41	38	38	38	J 38
28	J 43	22	22	24	23	22	J 39	A 32	34	30	36	J 42	A 46	A 54	A 46	A 42	A 44	A 48	105	42	32	24	16	E 16
29	E 16	B 16	B 16	B 16	E 16	B 16	B 20	20	G 34	J 45	A 38	41	G 52	A 41	A 34	A 35	A 48	29	16	16	16	16	16	E 16
30	20	E 15	B 15	20	E 17	B 16	B 16	C 27	31	33	G 46	A 42	A 40	A 41	A 48	A 39	16	15	15	27	25	16	16	E 16
31	E 16	B 16	B 16	B 16	E 16	B 16	B 16	B 16	G 34	G 34	G 34	G 34	G 34	G 34	G 34	G 34	G 81	86	53	35	16	20	20	E 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	28	29	29	29	30	31	31	31	31	31	31	31	31	31	31	31	31	30	30
MED	21	20	22	22	20	20	E 19	20	23	30	36	38	J 40	A 41	A 40	A 40	A 41	A 36	A 32	A 32	30	32	25	22
UQ	J 33	A 27	A 36	A 27	A 29	A 23	J 24	A 25	28	32	40	42	43	46	46	50	44	44	51	46	42	50	44	34
LQ	E 16	B 16	B 16	B 16	E 16	B 16	B 16	B 16	G 18	G 32	G 35	G 36	G 36	G 34	G 32	G 33	29	24	24	23	22	22	16	E 16

JAN. 2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN.2021 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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
D	A	AA	A		E	B	C	E	B	E	B	E	C											
1	43	50	25	24	26		16	20	27	28	28		34	32		28	32	24	26	34	18	23	26	18
2	20	E	B	E	B	E	B	E	B	E	B	E	B											
3	16	16	16	16	16	16	16	16	16															
4	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
5	16	16	16	15	15	19	16	16	21	28	31	34	36	34	47	32	28	22	16	16	20	19	16	16
6	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
7	16	16	16	16	16	16	16	16	22	29	31	36	33											
8	E	C	E	C	E	C	E	C	E	C	E	C	E	C										
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C										
10	A	AA	E	CA	AA	A		C	E	B	E	B	E	C										
11	42	28	44	48		A	A		E	C	E	C												
12	E	B	E	B		E	B	E	B															
13	16	17	17	16	16	23	16	16	24	28	31	31	34	32	32									
14	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
15	16	15	15	15	16	16	18	16	21	29	37	36	34	36										
16	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
17	16	16	16	16	16	16	24	16	19	18														
18	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
19	16	16	16	16	16	16	15	15	18															
20	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
21	16	16	16	16	16	16	16	17	16															
22	15	15	15	15	15	15	15	15	15	24	28	31	34	32										
23	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										
25	16	16	16	16	16	16	16	16	16															
26	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
27	16	16	16	16	16	16	16	15	15															
28	A	A	E	B	E	B	E	B	E	B	E	B	E	B										
29	16	16	16	16	16	16	16	16	16															
30	E	B	E	B	E	B	E	B	E	B	E	B	E	B										
31	16	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	30	30	30	30	29	28	29	29	29	30	31	31	31	31	31	31	31	31	31	31	31	31	30	30
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
UQ	16	16	16	16	18	17	18	18	25	29	37	36	36	36	36	36	32	28	28	28	23	27	24	16
LQ	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
	16	16	16	16	16	16	16	16																

JAN.2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JAN. 2021 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		A	A	332	381	401	C	F	345	388	384	363	342	309	379	364	374	375	368	360	376	334	333	345	325	
2		312	309	321	344	352	410	331	342	368	347	347	363	350	306	V	364	376	355	374	A	354	355	345	335	320
3		330	296	298	343	356	428	312	350	369	362	397	359	374	382	A	377	A	A	375	308	356	340	336	327	
4		F	F	F	F	371	F	337	344	377	364	360	399	356	357	375	381	385	383	355	323	333	384	313	337	
5		292	295	365	333	346	387	306	341	388	381	345	345	360	377	382	388	399	383	358	355	357	299	329	306	
6		F	F	F	335	363	350	A	350	374	374	373	380	359	379	358	354	374	374	366	338	F	F	F	292	
7		308	F	360	F	F	333	334	339	345	367	332	361	371	360	370	316	384	396	328	328	344	353	320	332	
8		303	300	324	355	356	F	382	375	410	369	366	348	348	365	352	357	355	389	A	A	332	A	A	A	
9		C	C	C	C	C	C	C	C	C	C	C	403	348	370	365	357	359	363	393	385	387	325	333	F	F
10		A	F	A	A	C	C	313	328	392	368	361	A	339	367	373	358	388	405	A	375	368	370	C	C	
11		304	308	F	A	F	A	388	355	392	392	333	379	364	375	378	374	380	375	362	343	387	351	298	290	
12		322	F	307	335	350	328	339	321	C	356	338	370	358	372	370	372	374	376	362	324	328	353	343	F	
13		F	316	F	342	F	F	F	F	346	373	375	376	381	375	368	369	383	374	382	385	327	318	319	316	306
14		310	F	F	F	F	F	F	F	F	396	384	353	354	377	368	372	358	388	389	339	A	A	F	F	
15		F	F	F	F	383	345	384	364	416	386	380	378	351	347	365	387	361	377	394	318	F	F	F	F	
16		324	F	F	A	F	F	379	339	389	392	380	362	346	345	366	366	377	397	390	323	309	F	312	F	
17		F	F	F	F	F	399	359	383	416	383	364	351	356	371	359	357	357	382	366	342	365	332	302	321	
18		F	F	F	345	348	392	C	364	367	379	389	358	366	385	377	366	372	A	A	A	A	F	A	319	
19		F	F	F	385	331	292	335	315	382	397	373	378	352	393	358	365	372	397	353	338	338	326	F	F	
20		F	312	F	364	284	314	329	347	391	385	372	370	348	367	382	376	368	368	369	A	312	F	F	F	
21		F	F	F	F	315	F	F	347	404	389	387	362	393	363	335	376	372	386	381	355	327	374	327	340	
22		344	341	357	324	335	351	341	371	377	377	373	377	367	372	364	369	372	402	378	341	319	F	F	F	
23		F	F	F	F	F	381	330	338	394	399	345	360	368	387	368	312	348	385	348	343	347	A	352	291	
24		F	306	328	323	396	410	321	333	395	381	384	359	347	364	344	355	351	383	360	330	300	347	346	318	
25		328	328	332	332	331	324	286	323	386	396	356	360	372	373	374	360	348	376	A	287	293	274	306	324	
26		327	330	312	305	358	378	318	346	399	360	356	401	365	353	338	368	354	348	363	315	314	327	341	347	
27		330	330	335	309	366	301	313	347	394	368	348	373	387	384	343	351	359	382	391	322	326	382	325	325	
28		A	322	336	336	362	393	A	326	400	375	369	350	387	362	364	377	332	383	366	A	331	F	342	354	
29		343	322	322	313	345	368	328	359	395	388	362	363	377	353	337	363	384	383	390	338	326	344	351	307	
30		302	305	317	325	390	425	394	C	390	386	378	331	363	364	367	374	376	352	398	336	327	350	350	371	
31		285	324	315	319	319	380	360	348	405	373	362	349	344	334	305	V	356	336	360	A	A	A	A	321	294
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		16	16	16	20	22	21	23	28	29	30	31	30	31	31	30	31	30	29	25	25	26	21	21	21	
MED		317	314	326	335	354	378	334	346	391	380	364	362	363	367	364	366	372	383	366	338	330	344	329	321	
U Q		329	326	336	344	366	396	360	352	398	386	378	377	372	377	372	376	377	389	385	348	347	353	344	334	
L Q		304	306	316	324	335	330	318	338	377	368	353	351	350	360	357	357	355	374	359	323	319	330	314	306	

JAN. 2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										L	L	U L	U L	415	404	L									
2											U L	404	428	411											
3												L	L	A	A	A	A	A							
4											L	L	L	L	L	L									
5											U L	384	405	397	386	U L	A	L	A						
6							A				L	401	A	401	L	A									
7										L	L	A	394	L	L	387									
8											U L	412	398	417	L	L	E	C							
9							C	C	C	C		A	A	A	L	L	L								
10											A	A	A	L	A	L									
11										A	A		A	A	L	L	A								
12								C	A	L	L	L	A	L	A	L									
13											413	L	L	L	L	L									
14											L	L	A	A	L										
15											A	A	L		L	L	L								
16										L	L	409	431	L	A	L	L								
17										L	A	L	A	L	428	L	A								
18							C				L	428	438	U L	L	A	A		A						
19											L	L	U L	L	L	L									
20											U L	406	A	L	L	L									
21										A	L	443	L	388	A	A									
22											L	L	U L	376	400	L									
23								L			410	L	415	429	A								A		
24											L	428	413	U L	L	U L	L	U L							
25										L	L	L	425	A	A	A	A								
26										L	L	A	L	L	L	L									
27											L	417	L	U L	L	L	L								
28							A				L	410	L	L	L										
29										L	L	L	391	A	415	A	A								
30								C			U L	383	L	L	L	L									
31										L	U L	398	L	408	424	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											4	15	13	10	6	1	1								
MED											U L	401	410	413	412	403	387	U L							
U Q											407	425	426	417	415										
L Q											U L	391	404	398	388	400									

JAN. 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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										236	236	258	240	228	206	220									
2											274	232	240	240											
3											240	240	E A 254	A E A 248			A	A							
4											238	232	244	244	244	240									
5											306	258	238	238	234	234	210								
6							A				240	240	240	240	248	248									
7											240	268	248	240	252	252	304								
8												258	264	264	264	232	234								
9							C	C	C	C				E A 244	228	244	248	248	236						
10											E A 236	A E A 318	240	230	246										
11										E A 226	248		248	238	238	238	214								
12								C			222	252	242	242	242	240	228	228							
13												228	240	246	252	252	234								
14												244	254	246	244	260									
15											234	232	256	256	250	222	240								
16											240	240	240	256	256	240	252	224							
17											224	234	252	252	244	250	250	234							
18							C					234	256	248	E A E A 232	248	266		A						
19											244	244	262	230	254	254									
20												242	256	234	224	244									
21											220	232	232	234	264	264	230								
22												236	236	236	236	248									
23									214		260	244	244	226	236								A		
24											236	260	260	238	262	244	244								
25											216	246	246	236	236	248	248	238							
26											252	264	212	252	256	278	238								
27											264	236		234	272	250	236								
28							A				236	236	236	248	258										
29											220	244	234	234	238	264	244	224							
30								C				282	264	250	250	236									
31											236	236	248	238	238	238									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT										1	11	23	29	30	31	29	28	13							
MED										214	226	240	242	242	240	248	244	234							
U Q										240	260	250	256	250	256	250	237								
L Q										220	236	235	238	236	238	237	224								

JAN. 2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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	A	AE A	280	204	210	CE B	266	224	200	200	200	188	188	176	176	186	186	204	212	240	208	AE A	246	260	244				
2	E A	AE B	250	220	E B	246	246	208	208	204	194	202	182	182	210	210	210	200	A	AE B	208	E B	208	224					
3	E B	BE B	262	224	E B	224	176	276	220	216	204	204	190	210	A	A	A	A	A	E B	210	244	208	198	234	248			
4	E B	BE B	224	270	270	208	214	236	276	244	206	194	202	202	184	188	188	198	210	192	E B	219	219	216	216	282	246		
5	E B	BE B	266	266	210	210	208	218	298	226	210	198	198	198	198	198	200	A	A	E B	218	218	210	232	232	258			
6	E B	BE B	312	262	278	226	208	276	A	230	208	208	208	200	A	188	208	A	208	196	206	234	234	210	236	296			
7	E B	BE B	272	288	232	206	190	232	246	230	210	210	210	A	210	194	204	182	200	196	E C	222	260	260	232	286	288		
8	E C	E C	316	316	282	238	248	248	216	226	210	210	210	200	198	194	194	196	E C	232	220	A	AE C	284	A	A	A		
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E B	219	219	219	202	292	292	276	328
10	AE C	316	A	A	C	CE B	296	256	194	202	A	A	A	A	202	202	202	202	202	202	AE A	236	222	254	C	C			
11	E C	84	E C	286	AE C	A	212	212	190	A	A	A	A	A	206	194	A	A	E B	219	219	219	219	219	219	219	260		
12	E B	BE B	246	280	302	224	240	256	264	264	C	A	198	200	206	198	A	188	200	200	E A	270	252	202	228	252			
13	E B	BE B	242	242	242	230	208	192	240	222	200	200	208	182	194	176	188	188	188	188	188	230	230	236	252	228			
14	E B	BE B	228	234	248	232	202	186	236	236	196	196	196	192	194	A	A	202	210	198	E A	226	A	AE A	260	254	224		
15	E B	BE B	222	266	252	228	200	286	286	216	196	196	A	A	196	196	196	196	196	196	192	242	266	216	276	252			
16	E B	BE B	218	254	254	222	222	206	208	208	192	196	196	174	198	A	198	198	198	208	E B	238	220	220	254	276			
17	E B	BE B	276	266	266	258	218	194	210	210	186	180	A	204	204	176	182	A	198	194	284	194	220	272	276				
18	E B	BE B	280	274	256	226	218	198	C	CE C	200	200	194	184	184	200	A	A	220	A	A	A	AE A	308	AE B	290			
19	E B	BE B	272	254	246	210	214	272	362	276	204	192	192	192	186	194	202	202	218	190	220	E B	212	242	282	274			
20	E B	BE B	280	244	212	208	244	244	258	200	200	200	200	186	A	196	190	190	208	208	208	AE A	294	230	226	246			
21	E B	BE B	268	278	280	280	230	262	262	220	182	A	206	176	176	212	A	212	196	196	E B	256	206	236	228				
22	E B	BE B	216	216	226	246	228	228	254	218	210	210	210	200	198	188	188	188	188	192	214	214	214	210	218	218			
23	E B	BE B	220	230	240	240	258	200	252	234	192	180	186	190	190	186	A	204	204	204	204	E B	212	AE B	216	258			
24	E B	BE B	258	238	238	238	202	198	284	218	194	194	196	196	180	204	194	194	188	194	194	E A	282	268	212	212	240		
25	E B	BE B	248	242	242	242	242	262	276	234	204	186	186	192	202	A	A	A	A	202	AE A	338	272	310	252	216			
26	AE B	234	256	256	214	198	296	224	A	202	204	224	A	192	192	192	192	210	210	194	E B	228	260	224	206	208			
27	E B	BE B	236	220	230	234	220	288	278	216	200	200	184	184	200	196	196	190	190	196	196	E B	220	248	202	246	282		
28	AE A	258	240	240	214	204	A	232	200	204	176	178	188	204	204	212	192	192	192	A	AE A	242	270	228	216				
29	E B	BE B	216	234	262	262	232	202	218	214	196	186	194	186	186	A	A	A	204	196	E A	252	240	208	208	262			
30	E B	BE B	294	264	234	220	200	194	202	C	202	202	202	202	202	202	186	186	186	220	186	E B	204	226	210	210	198		
31	E B	BE B	256	256	256	256	246	198	212	212	202	192	192	202	184	176	188	194	194	224	A	A	A	AE B	248	256			
	00	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	29	27	29	27	27	29	29	27	27	27	25	24	22	24	25	29	25	25	28	28	28	29					
MED	E B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	218	200	200	198	192	192	195	194	195	199	198	195	E B	232	220	241	252				
U Q	276	268	268	242	236	256	278	233	208	204	208	200	199	201	204	201	210	204	209	248	260	244	266	275					
L Q	E B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	BE B	E B	212	210	222	226				

JAN. 2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1							B	B	E	C	E	C	A		A	A		A	A	B						
2				92			B	B		A	A							A	B							
3							B	B					A		A	A	A	A	A							
4							B	B				A	A	A	A	A	A	A		112						
5							B								A	A	A	A	B							
6							B	B					A		A	A	A	B								
7							B					A	A	A		A										
8							E	C	E	C	E	C	E	C		A	E	C	E	C	B					
9							C	C		C	C				A	E	C	E	C	A	A	B				
10								B		E	C				A	A		A	A		112					
11							A	E	C	E	C	E	C	E	C	A	A	A	A	A	B					
12							B	B		C					A	A	A	A	A							
13							B	B							A				B							
14							B								A	A			B							
15							B	B									A	A								
16							B	B					A	A	A	A	A	A	A	B						
17							B								A	A	A	A	B							
18							C	E	C	E	C	A			A	A	A	A	B							
19							B								A	A	A	A	B							
20							B	B				A	A	A	A	A	A	A	A							
21								B				A	A	A	A	A	A	A	A							
22							B	B				A	A													
23							B	B							A				A					A		
24							B					A	A	A	A				A							
25							B	B											A	A						
26							B					A	A	A	A	A	A	A	A							
27							B	B											A	A	A	A	A			
28							B					A	A	A	A	A	A	A	A							
29							B												A	A	A					
30							B	C	E	C					A	A	A	A	A	A						
31							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				1				1	21	24	24	16	13	14	9	10	6	4		1						
MED				92				E	C																	
U Q								216	112	110	111	112	110	110	110	112	112	116		112						
L Q									118	112	114	117	118	112	115	114	114	122								
									110	110	109	110	110	110	110	110	110	113								

JAN. 2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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	88	90	90	90	90	C	90	B	C	94	94	G	94	94	G	94	94	94	94	88	88	88	112	82	
2	84	B	B	84	B	B	112	B	G	108	108	138	148	G	148	130	122	98	84	92	B	B	82	82	
3	B	B	B	B	B	100	110	B	G	G	G	110	110	102	102	102	94	94	94	94	B	B	82	B	
4	B	B	B	B	B	B	B	88	136	G	94	102	102	102	102	102	94	142	90	90	90	94	94	B	
5	B	94	94	98	98	98	98	B	150	132	128	116	104	102	96	96	96	96	B	B	96	92	90	B	
6	B	86	B	92	92	92	80	80	144	118	G	G	106	120	98	90	90	90	90	90	90	B	B	B	
7	B	118	114	106	92	92	B	B	152	118	106	100	100	G	104	G	118	G	C	C	C	C	C	118	
8	C	C	106	C	C	C	C	C	C	C	130	130	112	G	90	92	118	C	84	84	84	88	88	88	88
9	C	C	C	C	C	C	C	C	C	C	C	132	116	106	98	98	98	98	98	86	98	98	102	102	
10	96	96	90	90	C	C	B	B	110	110	96	96	96	134	84	92	98	98	92	92	92	92	C	C	
11	C	C	104	88	88	82	88	106	106	100	100	94	94	92	92	92	92	92	92	92	B	B	92	B	
12	92	B	92	96	92	B	B	130	C	118	118	118	112	92	92	84	84	84	84	84	84	B	B	94	
13	94	94	94	94	88	88	90	B	164	148	148	144	144	114	98	G	G	G	98	96	90	90	90	B	
14	B	B	B	B	90	90	90	90	124	152	130	120	120	104	104	126	126	112	112	88	88	88	88	88	
15	88	104	104	B	B	96	96	88	146	144	118	116	122	122	G	92	92	144	116	110	110	96	96		
16	92	92	108	96	114	B	B	148	134	G	150	106	102	98	96	96	96	98	98	98	B	B	98	86	
17	96	B	B	B	96	86	94	94	98	G	134	90	92	98	G	G	98	98	130	94	94	90	90	90	
18	90	90	90	90	90	B	C	C	C	100	136	104	104	G	104	104	104	96	96	90	94	94	94	94	
19	94	94	94	94	94	B	B	B	B	G	108	114	G	G	154	100	100	100	100	96	B	96	96	102	
20	B	B	B	92	B	B	B	B	G	114	100	100	94	94	98	98	98	98	98	88	88	84	84	94	
21	94	94	94	94	94	94	B	94	G	152	104	104	104	104	124	90	90	100	90	B	104	104	86	B	
22	B	B	B	B	B	B	B	B	86	130	130	110	108	108	G	G	G	G	122	100	B	100	100	100	96
23	96	94	94	94	94	94	B	92	G	G	152	122	134	G	118	96	96	96	96	96	96	86	86	86	
24	80	B	86	94	94	94	94	126	G	G	G	100	100	100	100	G	G	94	92	88	88	106	106	B	
25	90	90	90	90	90	B	B	90	G	114	G	138	138	128	116	116	104	104	98	80	80	86	94	94	
26	94	94	94	94	94	94	136	84	120	120	114	98	98	98	98	98	98	92	92	92	92	92	82	82	
27	B	B	B	88	B	B	B	B	G	G	112	G	114	114	100	100	100	94	90	90	90	90	90	90	
28	90	90	90	90	90	90	90	90	90	146	112	108	108	108	108	104	94	94	94	94	88	88	88	B	
29	B	B	B	B	B	B	88	88	G	G	164	104	104	160	G	102	98	98	90	90	90	B	B	B	
30	90	B	B	90	B	B	B	C	C	150	150	G	102	102	102	100	100	100	B	B	B	100	94	B	
31	B	B	B	B	B	B	B	B	G	G	G	150	G	G	G	G	G	G	90	90	90	90	B	90	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	17	15	18	21	17	15	14	18	15	21	26	26	27	26	25	24	26	28	28	25	25	23	25	19	
MED	92	94	94	92	92	92	92	91	130	118	118	108	104	102	100	98	98	98	93	90	90	92	90	90	
U Q	94	94	104	94	94	94	96	106	146	145	136	118	112	120	104	102	100	100	98	94	96	96	95	96	
L Q	89	90	90	90	90	90	90	88	108	109	106	100	100	98	97	93	94	94	90	88	88	88	87	86	

JAN. 2021 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2021 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	F7	F6	F4	F2	F2		L1			L1	L2		L2	L3		L3	L3	L4	F4	F7	F3	F2	F4	F1	
2	F2			F2			L1		L2	L2	H1	HL12		H1	C2		CL22	L4	F9	F2			F2	F1	
3					F2		L1		L1			L2	CL22	L7	L4	L6	L7	L9	L2	L2			L1		
4							L2		HL21		L3	L3	L2	L2	L2	L2	L3	H2	F1	F1	F2	F2	F2	F2	
5		F2	F1	F1	F1	F2	L1		H1	C2	C2	C2	C2	L2	L5	L3	L3	L1			F3	F2	F2		
6		F2		F1	F6	F3	L8	L1	H1	C1			L3	C1	L2	L5	L5	L3	F3	F3	F1				
7		F1	F3	F3	F2	F2			H1	C1	L3	L3	L3		L1		C1							F1	
8			F1							H2	H2	C2	C2	L3	L3	L2	C2		L7	F6	F4	F2	F4	F3	
9											C2	C2	C2	L3	L3	L2	L2	L3	L1	F2	F2	F2	F2	F2	
10	F8	F4	F8	F4					C1	C5	L6	L5	L5	CL12	L3	L1	L1	L3	F5	F5	F4	F2			
11			F1	F9	F6	F9	L6	L1	L1	L6	L4	L4	L4	L5	L3	L3	L2	L1	F1	F1			F1		
12	F1		F2	F2	F4			C2		C2	C3	C2	C2	L4	L2	L3	L1	L2	F2	F2	F1			F2	
13	F2	F3	F3	F2	F4	L1			H1	H2	H2	H2	H2	C2	L2				F1	F2	F2	F1	F1		
14				F4	F3	L2	L2	C2	H2	H2	C2	C2	C2	L2	L2	C2	CL22	L4	F6	F7	F5	F3	F3	F1	
15	F2	F2	F1		F2	L2	L1	L2	H2	H2	C3	C3	C2	C2		L3	L3	H1	F1	F4	F4	F3	F2	F2	
16	F1	F2	F3	F6	F1			H2	H2		H1	L2	L3	L2	L3	L4	L4	L3	F4	F3			F2	F3	
17	F2				F1	F2	L4	L2			H2	L3	L4	L2			L8	L2	F2	F3	F3	F2	F2	F1	
18	F2	F3	F2	F1	F1				L1	H1	L2	L2			L7	L8	L2	L6	F9	F6	F6	F5	F4	F2	
19	F2	F1	F2	F1	F1	L3	L3		C3	C3				H1	L2	L3	L7	L2	F4		F2	F2	F3	F2	
20				F1					C1	L3	L2	L5	L2	L3	L3	L2	L4	L4	F4	F3	F2	F3	F2	F2	
21	F2	F2	F2	F2	F3	F1		L1		H2	L3	L2	L2	L3	CL22	L3	L4	L4	F8		F3	F3	F1		
22							L3	C1	H2	C2	C3	L3						C2	F4		F1	F2	F3	F3	
23	F2	F4	F3	F2	F4	F1		L1			H2	C2	C1		C4	L4	L8	L3	F3	F2	F2	F6	F3	F2	
24	F1		F3	F2	F3	F1	L2	C1				L2	L2	L3	L2			L3	F8	F3	F5	F2	F3		
25	F1	F1	F1	F2	F3			F2		C1		C3	H2	C2	C2	C2	L3	L8	F9	F5	F3	F3	F2	F2	
26	F2	F1	F2	F2	F2	F1	C1	L2	C2	C4	C4	L4	L2	L2	L3	L2	L2	L4	FF32	FF32	F2	F2	F2	F1	
27				F3							C1		C2	C2	L2	L2	L2	L2	L5	F2	F3	F5	F2	F4	
28	F5	F5	F1	F2	F2	F1	L3	L2	L3	H1	C2	L3	L2	L2	L3	L3	L4	L6	F4	F4	F4	F4	F2		
29						L2	L1				H2	L2	L2	L2	H1		L3	L6	F3	F4	F2				
30	F2			F1					H2	H2			L1	L1	L1	L3	L2	L2				L2	L2		
31												H1							F8	F9	F5	F5		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. 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN.2021 fxI (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 34	X 34	X 38	X 36	X 38	A	A													X 48	X 54	X 65	X 42	X 39
2	X 37	X 37	X 40	X 44	X 47	X 28														X 46	A	X 39	X 29	X 26
3	X 29	X 29	X 29	X 33	X 37	X 25	X 24													X 39	X 45	X 48	X 33	X 33
4	X 32	X 32	X 30	X 32	X 29	X 22	X 24													X 37	X 43	X 38	X 31	X 32
5	X 33	X 34	X 32	X 34	X 29	A	A													X 39	X 39	X 36	X 34	X 30
6	X 37	X 39	X 33	X 34	X 33	X 24	X 23													X 44	X 34	X 52	X 31	X 28
7	X 32	X 33	X 36	X 50	X 24	X 21	X 22													X 41	X 48	X 46	X 59	X 46
8	X 37	X 37	X 38	X 36	X 40	X 27	X 28													X 35	X 35	X 31	X 32	X 29
9	X 32	X 33	X 36	X 36	X 55	X 23	A		C	C	C									X 34	X 35	X 34	X 34	A
10	X 33	X 33	X 47	X 33	A	A	X 26													X 40	X 44	X 37	A	X 30
11	X 32	X 33	X 41	X 44	X 34	X 38	X 32													X 50	X 53	X 40	X 27	X 32
12	X 32	X 32	X 32	X 38	X 37	X 28	X 27													X 39	X 45	X 46	X 32	X 31
13	X 33	X 36	X 34	X 34	X 42	X 24	X 24			C	C	C	C	C	C	C				X 34	X 40	X 44	X 36	X 33
14	X 32	X 33	X 33	X 34	X 44	X 24	A													X 34	X 38	X 44	X 44	X 35
15	X 37	X 37	X 35	X 37	X 38	X 26	X 24													A	X 32	X 37	X 39	X 47
16	X 47	X 35	X 32	X 28	X 29	X 36	X 25													X 33	X 35	X 40	X 49	X 47
17	X 34	X 34	X 34	X 34	X 38	X 32	X 24													A	X 40	X 31	X 32	X 32
18	X 32	X 33	X 34	X 34	X 35	X 39	A													X 34	X 30	X 32	A	A
19	X 40	X 36	X 35	X 29	X 30	X 26	X 24													A	X 47	X 39	X 40	X 38
20	X 36	X 38	X 43	X 30	X 30	X 30	X 31													A	X 39	X 48	X 52	X 36
21	X 39	X 42	X 42	X 43	X 38	X 33	X 35	X 38												X 41	X 38	X 39	X 46	X 38
22	X 37	X 33	X 30	X 28	X 27	X 26	X 25	X 31												X 36	X 42	X 43	X 37	X 34
23	X 31	X 33	X 36	X 32	X 34	X 31	X 30													X 39	X 39	X 36	X 35	X 30
24	X 32	X 39	X 34	X 34	X 36	X 24	X 24													X 55	X 55	X 58	X 59	X 44
25	X 40	X 41	X 39	X 36	X 34	X 32	X 29													X 46	X 47	X 48	X 47	X 40
26	X 45	X 41	X 39	X 39	X 37	X 26	X 24													X 56	X 46	X 48	X 46	X 40
27	X 39	X 38	X 32	X 34	X 33	X 30	X 27													X 55	X 50	X 53	X 39	X 34
28	X 37	X 38	X 38	X 41	X 42	A	X 26													X 65	X 52	X 53	X 49	X 44
29	X 42	X 44	X 45	X 42	X 44	X 41	X 35													X 43	X 39	X 43	X 34	X 29
30	X 32	X 33	X 35	X 35	X 42	A	X 22													X 45	X 39	X 45	X 44	X 29
31	X 32	X 33	X 34	X 34	X 35	X 34	X 29													X 49	X 39	X 42	X 39	X 40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	26	25	2												27	30	31	29	29
MED	X 34	X 34	X 35	X 34	X 36	X 28	X 25	X 34												X 41	X 40	X 43	X 39	X 34
U Q	X 37	X 38	X 39	X 38	X 40	X 32	X 29													X 48	X 47	X 48	X 46	X 40
L Q	X 32	X 33	X 33	X 33	X 33	X 24	X 24													X 36	X 38	X 37	X 32	X 30

JAN.2021 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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		28	28	32	30	32	A	A	26	54	72	94	103	111	125	128	96	99	70	48	42	48	59	36	33	
2		31	31	34	38	41	22	18	26	50	63	75	86	113	106	102	H 88	59	68	51	40	A	33	23	20	
3		24	23	23	27	30	19	18	25	50	68	77	72	83	101	61	56	A	54	54	A	33	J 39	R 42	27	27
4		26	26	24	26	23	J 16	B 18	23	50	64	79	73	85	88	90	63	A	54	36	31	36	32	25	26	
5		27	28	26	28	23	A	A	24	46	53	52	63	65	77	70	58	50	49	37	33	33	30	28	24	
6		F 26	F 26	27	28	27	18	17	24	48	54	62	79	74	58	62	64	62	55	A	38	28	F 39	25	22	
7		F 24	27	30	44	18	J 15	B 16	26	50	56	68	73	79	67	62	71	64	55	39	35	R 42	40	F 48	F 35	
8		31	31	32	30	34	21	22	29	48	47	49	57	71	80	H 106	R 84	70	63	53	29	29	25	26	23	
9		F 23	F 24	F 26	30	F 45	J 17	B A	26	C	C	C	59	59	66	60	62	58	58	48	28	29	28	28	A	
10		27	27	F 32	27	A	A	20	24	56	53	57	A	62	70	73	56	69	A	40	34	38	31	A	24	
11		26	27	F 31	F 28	28	F 25	F 19	27	48	47	55	64	72	76	76	82	88	78	52	44	47	34	21	26	
12		26	26	26	32	31	22	21	27	46	68	78	64	71	87	76	73	68	50	44	33	39	40	26	25	
13		27	30	28	28	36	18	18	25	49	C	C	C	C	C	C	C	55	51	36	28	34	38	30	27	
14		26	27	27	28	38	18	A	23	49	54	52	52	61	55	59	63	72	52	44	28	32	38	38	29	
15		31	31	29	31	32	20	18	24	48	49	50	54	60	65	H 63	54	48	52	47	A	26	31	F 32	F 31	
16		F 38	F 23	F 20	F 20	F 18	F 23	F 18	22	45	52	54	50	68	H 80	H 77	J 83	R 70	59	46	27	29	34	F 26	F 26	
17		28	28	28	28	32	26	17	26	50	51	54	56	56	78	89	65	59	65	A	A	34	25	26	26	
18		26	27	28	28	29	33	A	25	50	61	54	58	62	81	72	59	58	57	44	28	24	26	A	A	
19		F 32	30	29	23	24	20	18	25	59	54	A	64	63	65	64	58	63	58	49	A	41	33	34	32	
20		30	32	37	24	24	24	25	31	52	55	56	58	78	88	80	82	63	57	47	A	33	42	46	30	
21		F 24	F 31	F 31	F 35	32	27	F 26	28	58	71	68	71	73	89	99	97	95	86	54	35	32	33	F 38	32	
22		31	27	24	22	21	20	19	25	46	56	58	57	61	61	68	68	55	53	42	30	36	37	31	28	
23		24	27	30	26	24	25	24	24	63	60	58	71	86	72	59	56	54	53	46	33	33	30	29	24	
24		26	F	27	28	30	18	18	25	54	54	60	51	65	83	R 82	84	J 84	R 86	72	49	49	52	53	38	
25		34	35	33	30	28	26	23	26	60	72	68	68	60	72	62	68	62	61	57	40	41	42	41	34	
26		F 35	35	33	33	31	20	18	29	52	63	70	87	61	74	88	97	88	R 79	75	50	40	42	40	34	
27		33	32	26	28	27	24	21	29	56	60	67	90	84	72	69	84	72	68	69	49	43	47	32	28	
28		31	32	32	35	36	A	20	28	55	58	62	62	63	62	61	67	66	62	62	59	46	47	43	38	
29		36	38	39	36	38	35	29	37	61	61	50	79	67	58	61	74	60	55	53	37	33	37	27	23	
30		26	27	29	29	36	A 16	J 16	26	50	52	54	54	64	60	61	58	52	47	52	39	33	39	38	23	
31		26	27	28	28	29	28	23	30	52	65	71	90	118	121	114	95	63	63	74	43	33	36	33	34	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		31	30	31	31	30	26	26	31	30	29	28	29	30	30	30	30	30	30	28	27	30	31	29	28	
MED		27	28	29	28	30	22	18	26	50	56	59	64	68	75	71	68	63	58	48	35	34	37	31	28	
U Q		31	31	32	31	34	25	22	28	55	64	69	76	79	87	88	84	70	65	54	42	41	42	38	32	
L Q		26	27	26	27	24	18	18	24	48	53	54	57	62	65	62	59	58	53	44	30	32	31	26	24	

JAN. 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	416	424	440	444	420	400	372								
2										L	428	428	452	444	424										
3										L	420	420	436	A	U L	428	408			A					
4										L	412	428	432	432	A	A	A								
5										L U L	416	416	428	A	428	396		L	A						
6										L	404	424	436	L	A	A	A			A					
7										L	400	A	428	436	U L	408	404	L							
8										U L	400	424	424	424	424	400		L							
9									C	C	C	A	U L	432	428	400	396	364	U L						
10									U L		A	A	A	L	428	412	408	U L	A	A					
11											A	A	440	428	A	408		L	A	A					
12										L	L	L	A	A	420	408	336	L							
13										C	C	C	C	C	C	C	324	U L							
14										L U L	400	432	420	424	416	408	368	L							
15										L	408	A	A	432	428	408	368	U L							
16										L	412	A	A	424	428	400	376	L							
17									236		404	416	472	428	420	A	A	A		A					
18									228	L	412	424	432	U L	A	A		L							
19										L	A	424	432	U L	420	400	388	L							
20											L	A	A	436	A	412		L							
21										L	412	A	A	448	428	408		L							
22										L	420	424	436	440	436	416		L							
23									L	L	420	428	448	440	432			L							
24										L	420	424	432	440	432	416	392	L							
25									L	L	424	416	484	440	436			L							
26										L	424	A	440	452	444	428	388	L							
27										L	432	440	440	468	456	420		L		L					
28										L	424	428	444	436	444			A		A					
29									L	L	408	428	440	444	440	404		A							
30										U L	420	452	444	444	432	416	376	280	L						
31										L	424	432	440	436	428	416									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									3		24	21	24	25	25	22	11	1							
MED									236		416	424	438	436	428	408	372	280	L						
U Q									U L		422	428	442	444	434	416	388								
L Q									228		408	422	432	428	420	400	364								

JAN. 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	A	A	A	A	A						
2							J K 120	B	204	232	248	284	324	320	312	284		A	A	A					
3								B	204	260	300	312	328	320	316	296		A	A	A					
4								B	208	256	280	U A 300	308		A	312	U A 260	A	A	B					
5								B	184	248	308		A	A		A	A	A	A						
6								B	A	260	292	308	316	312	296	U A 276	A	A	A						
7								B	A	252		U A 312	U A 320	U A	A	A		268	188	A					
8								B	208	256	288	320		A	A	A	A	A	A						
9								B	C	C	C	U A 300	304	312	276		A		A	A					
10								B	176	236	280	U A 296	U A 308	U A	A	A	A	A	A	A					
11								B	212	256	288		A	A	A	A	A	A	A						
12								B	A	228	280	284		A	A	A	A	A	A						
13								B	184	C	C	C	C	C	C	C	C	A	A	A					
14								B	A	244	276	316	324	324	300		A	A	216	A					
15								B	176	236	276	304	320	324		A	A	A	B						
16								B	204	256	284	U A 300	U A 316	304	292		A	A	A	A					
17								B	184	256		A	A	A	A		292	U A 252	A	A					
18								B	A	276	288	284		U A 312	U A 308		A	A	208	A					
19								B	A	248	292	304	316		308		A	A	A	A					
20								B	U A 196	U A 260	A	292	316	320		A	A	A	A						
21								B	212	256	292	U A 300	U A	A	A	A	A	A	A						
22									192	272	292	308	316						228	A					
23								B	200	260	288		A	A		312	320	A	A	A					
24								B	200	272	292	308	312		A	A	A	A	A						
25								B	192	264	280	304	312	328	312	296	284	224	A						
26								B	192	240	284	308	316		A	A	A	A	A						
27								B	180	252	288	308	316	312	304	U A 284		A	A	B					
28								B	196	260	296	316	328		A	A	A	A	A						
29								B	204	252	292	U A 316	328		A	A	A	A	A						
30								B	196	260	296	308	332	U A 308	A	A	A	A	B						
31								B	204	A	A	A	A		A		A	276	204	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		23	27	24	24	20	14	13	6	6	6							
MED							J K 120		196	256	288	306	316	316	308	288	264	212							
U Q									204	260	292	310	324	324	314	296	276	224							
L Q									184	248	280	U A 300	314	312	298	284	256	204							

JAN. 2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E 16	B 16	B 16	B 15	J 24	A 32	J 52	A 22		J 23	A 33	J 43	A 45	J 47	A 41	J 50	A 63	J 37	A 54	J 44	A 32	J 47	A 53	J 18	A 24	
2	J 21	A 18	B 16	B 16	B 16	B 16	B 12	K 18		24	30	32	33	36	36	40	36	J 42	A 29	J 26	A 26	J 75	A 28	20	E 16	
3	E 16	B 16	B 30	B 16	B 18	J 14	A 18	B 16		27	35	39	36	37	48		G 42	A 29	J 32	A 120	A 64	J 16	A 18	18	E 16	
4	E 16	B 16	B 18	J 32	B 16	B 65	A 16	B 16		24	30	34	J 42	37	J 47	A 66	J 70	A 76	A 49	A 25	A 20	18	E 16	B 16	B 16	
5	E 16	B 15	A 19	B 16	J 19	A 43	A 27	A 17		J 22	A 33		G 49	A 48	A 49	A 57	A 38	A 41	A 37	A 40	A 18	A 16	A 24	A 20	A 19	
6	18	J 18	A 24	18	J 24	A 22	J 23	A 25		22	28	38	42	36	J 46	A 60	A 50	A 46	A 29	A 62	A 40	A 27	A 24	A 26	18	
7	E 16	B 16	B 20	E 16	B 17	B 19	J 24	A 17		23	32	48	56	53	44	40	33	27	25	21	25	22	16	16	16	
8	E 16	B 18	B 18	E 16	B 16	B 16	B 14	A 18		25	31	34	J 44	A 52	A 44	A 34	A 43	A 49	A 48	A 71	A 36	A 20	A 26	A 31	A 89	
9	56	E 16	B 24	J 20	A 18	A 28	A 21	A 23		C	C	C	J 62	A 48	A 44	A 62	A 70	A 48	A 24	A 28	A 39	A 52	A 61	A 31	A 42	
10	J 45	A 26	A 19	A 41	A 52	A 47	A 26	A 20		J 21	A 30	A 57	A 90	A 82	A 64	A 35	A 31	J 39	A 72	A 52	A 31	A 42	A 54	A 29	A 25	
11	J 17	A 32	A 32	A 50	A 52	A 36	A 25	A 18		25	44	152	133	63	85	125	72	48	33	37	53	36	22	48	52	
12	J 24	A 16	B 18	A 21	A 18	A 42	A 21	A 20		25	30	39	59	54	52	48	46	41	41	33	28	21	16	20	19	
13	J 50	A 39	A 27	A 29	A 21	A 26	A 19	A 16		23	C	C	C	C	C	C	C	51	39	32	21	33	21	21	16	
14	E 16	B 16	B 16	B 16	B 23	A 14	A 25	A 29		25	28	32	36	40	42	36	J 56	A 34	A 32	A 62	A 22	A 36	A 49	A 53	A 61	
15	J 52	A 21	A 16	B 18	A 19	E 16	A 20	A 16		23	31	37	44	J 51	A 37	J 45	A 36	A 33	A 23	E 16	A 26	A 22	A 31	A 20	20	
16	18	20	16	37	19	16	16	16		30	35	36	54	51	38	39	40	36	34	29	26	21	23	20	16	
17	E 16	B 16	B 16	B 16	B 23	A 79	A 33	A 20		21	31	33	36	J 39	A 54	A 39	J 60	A 50	A 62	A 110	A 59	A 24	A 16	A 53	A 66	
18	J 52	A 25	A 23	A 42	A 33	A 16	A 46	A 40		G	34	40	44	59	55	53	38	33	38	71	43	46	53	54		
19	J 29	A 24	A 20	A 16	A 18	A 18	E 16	B 16		24	33	J 63	A 43	A 38	A 48	A 49	A 39	A 39	A 25	A 32	A 97	A 32	A 25	A 26	22	
20	J 19	A 22	A 18	A 16	A 15	A 16	A 16	A 16		23	30	36	45	47	40	64	60	43	26	61	49	25	26	43	17	
21	E 16	B 23	A 19	A 18	A 29	A 24	A 16	A 18		G	J 32	A 34	A 70	A 65	A 39	A 42	A 36	A 33	A 27	A 23	A 26	A 20	A 26	A 37	20	
22	J 32	A 16	A 19	A 16	A 18	A 43	A 37	A 18		24	G	32	36	45	44	49	34	A 37	A 35	A 32	A 20	22	17	25	31	
23	J 62	A 22	A 19	A 16	A 24	A 19	A 19	A 16		20	G	33	34	39	37	34	37	J 34	A 30	A 19	A 34	18	26	16	18	
24	J 24	A 16	B 16	B 26	A 62	A 20	A 25	A 38		28	J 52	A 39	A 56	A 50	A 43	A 45	A 46	A 34	A 36	A 38	A 62	A 33	A 51	A 26	23	
25	J 26	A 24	A 19	A 32	A 18	A 33	A 18	A 16		G	G	30		43	40	39	J 50		G	A 29	A 26	A 26	A 20	A 36	64	
26	J 46	A 52	A 24	A 20	A 17	A 16	A 18	A 16		26	32	35	J 52	A 50	A 46	38	44	39	36	39	50	22	A 26	A 26	26	
27	J 29	A 22	A 16	B 16	B 16	B 16	B 18	A 17		G	G	35	34	35	47	40	A 53	A 43	A 16	A 16	A 16	A 19	A 16	A 16	16	
28	J 29	A 30	A 26	A 20	A 30	A 27	A 16	A 22		27	31	35	36	42	72	78	54	50	66	48	49	24	38	A 53	32	
29	J 22	A 25	A 26	A 19	A 20	A 17	A 20	A 16		G	36	G	36	36	44	44	50	36	34	24	A 16	A 18	A 16	A 16	16	
30	E 16	B 16	B 16	B 19	J 20	A 24	A 14	A 16		23	32	35	36	40	51	54	38	39	24	16	16	18	A 23	A 18	30	
31	J 26	A 16	B 16	B 20	J 16	A 16	A 16	A 16		G	J 30	A 38	37	36	37		G 42	A 50	A 30	A 51	A 37	A 20	A 21	A 16	21	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	31	31	30	29	29	30	30	30	30	30	31	31	31	31	31	31	31	31	31	
MED	J 22	A 18	A 19	A 18	A 19	A 20	A 19	A 17		23	31	35	42	44	44	45	44	39	33	34	31	22	24	25	21	
U Q	J 32	A 24	A 24	A 26	A 24	A 33	A 25	A 20		25	32	39	54	51	49	55	54	49	41	51	49	33	31	36	32	
L Q	E 16	B 16	B 16	B 16	B 17	B 16	B 16	B 16		G	21	28	33	36	38	39	39	J 34		A 29	A 26	A 24	20	19	18	16

JAN. 2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	A	A	A	A	E	B						26	18	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	A	A	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	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	E	B	E	B
5	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	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	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	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	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	E	B	E	B
11	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	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	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	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	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	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	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	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	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	E	B	E	B
21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	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	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	E	B	E	B
25	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	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	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	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	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	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	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	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	30	31	31	30	29	29	30	30	30	30	30	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
U Q	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
L Q	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B

JAN. 2021 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

JAN.2021 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

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

JAN.2021 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	301	301	342	355	394	A	A	332	361	353	346	311	328	333	349	332	353	355	353	342	301	379	330	339
2	298	294	323	350	401	401	320	339	364	399	352	343	354	314	336	326 ^H	343	369	384	391	A	370	370	336
3	302	299	324	358	384	422	317	334	362	363	369	358	351	335	355	359	374	367	A	331	330	R	341	332
4	332	322	322	361	373	B	300	311	359	346	361	334	310	333	336	369	A	372	379	329	334	360	363	296
5	312	320	347	391	410	A	A	332	364	375	344	355	343	356	365	368	379	385	359	331	332	341	347	302
6	295 ^F	296 ^F	326	354	358	429	296	325	361	358	347	366	326	329	353	369	377	392	A	344	305	349 ^F	373	280
7	275 ^F	300	323	414	454	B	B	339	368	348	364	329	350	334	317	324	362	378	393	310	335	362	353	311 ^F
8	294 ^F	298 ^F	305 ^F	332	399	352	327	353	397	388	356	352	321	320	330	327 ^H	373 ^R	363	400	382	327	350	369	300 ^F
9	301 ^F	290 ^F	302 ^F	312	410	B	A	330	C	C	C	392	319	328	358	351	344	387	390	402	322	343	335	A
10	331	305	313 ^F	343	A	A	322	332	386	374	391	A	340	347	340	311	370	A	390	345	383	348	A	303
11	303	294	329	307	348	312	340	349	383	389	354	359	345	353	344	342	335	347	371	297	340	339	316	335
12	308	302	314	369	382	296	353	339	354	324	366	367	345	369	359	371	329	354	357	297	305	366	331	318
13	311	284	316	322	400	441	313	327	374	C	C	C	C	C	C	C	373	386	399	294	312	324	360	323
14	322	305	321	322	385	427	A	332	373	373	350	335	354	345	346	353	377	395	390	318	321	323	327	327
15	332	329	335	357	387	320	323	332	373	378	348	375	351	356	351 ^H	384 ^R	361	367	396	A	321	301	303 ^F	307 ^F
16	350 ^F	313 ^F	295 ^F	387 ^F	358 ^F	345 ^F	360 ^F	341 ^F	383	388	377	332	355	330	296 ^H	343 ^{HJ}	352	377	406 ^R	345 ^A	306	326	354 ^F	^F
17	305	316	297	305	327	353	330	352	387	392	389	359	322	328	339	349	354	369	A	A	341	361	318	302 ^A
18	304	326	344	352	342	405	A	334	378	381	361	340	318	354	361	339	376	393	392	376	322	310	A	A
19	329 ^F	335	349	346	363	320	308	320	404	392	A	392	368	322	372	349	362	380	377	A	336	367	363	365
20	289	339	373	327	345	328	314	342	380	382	381	351	361	363	352	346	322	366	379	A	310	342	392	328
21	320 ^F	315 ^F	316 ^F	294 ^F	341	315	305	351	381	373	376	365	353	285	320	338	328	356	364	378	314	328	319 ^F	370
22	374	367	355	304	308	333	306	355	383	392	388	347	346	347	331	379	360	390	384	307	317	357	347	329
23	284	321	312	303	312	311	329	319	376	376	382	339	353	348	364	369	355	354	381	354	352	341	345	346
24	343	^F	354	351	421	328	316	368	380	382	384	343	335	348	309 ^R	305 ^J	300 ^R	353	347	342	322	318	352	329
25	310	341	337	341	323	306	312	323	384	383	372	353	316	364	335	366	366	360	375	305	295	305	337	369
26	353 ^F	320	328	334	384	303	293	332	382	361	365	382	359	330	330	337	334	334 ^R	338	326	299	326	318	324
27	323	353	327	336	362	302	285	339	375	367	352	361	363	348	310	341	361	363	328	345	313	350	310	345
28	293	324	334	354	390	A	317	336	371	375	370	369	370	361	337	362	384	352	358	337	370	313	353	336
29	316	325	328	311	326	354	334	355	390	364	383	361	367	349	332	360	362	377	378	394	320	344	329	322
30	313	321	338	346	393	A	B	341	379	364	357	315	365	351	358	364	385	376	363	377	317	326	401	307
31	303	308	321	339	362	368	374	345	355	371	323	318	339	333	348	344	346	341	380	389	319	388	331	331
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	30	23	24	31	30	29	28	29	30	30	30	30	30	30	28	27	30	30	29	28
MED	310	316	326	343	378	333	317	336	377	375	364	353	348	346	342	349	361	368	379	342	321	342	345	328
U Q	329	325	338	355	394	401	330	345	383	386	379	366	355	353	355	366	373	380	390	377	334	360	362	336
L Q	301	300	316	322	345	312	307	332	364	364	352	337	328	330	331	338	344	355	361	318	312	326	328	307

JAN. 2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	392	421	410	411	389	403	393								
2										L	374	410	376	412	A										
3										L	389	418	381	A	401	402	L		A						
4										L	390	412	413	409	A	A	A								
5										L	390	414	401	A	A	401	L	A							
6										L	387	A	409	A	A	A	A		A						
7										L	398	A	A	388	418	390	L								
8										U	396	398	412	A	386	369	L								
9								C	C	C	A	A	A	373	387	419	394	394							
10								U	L		A	A	A	L	384	404	405	A	A						
11											A	A	A	371	377	A	L	A	A						
12										L	L	A	A	A	A	L	386	410							
13										C	C	C	C	C	C	C	U	L							
14										L	U	L	U	L	A	A	L	L							
15											389	384	A	A	399	384	391								
16										L	397	A	A	379	A	399	405	L							
17											391	A	A	405	409	394	386	A	A		A				
18								438		L	406	425	369	392	384	A	A	L							
19								493		L	398	406	401	U	L	414	393	406	A						
20											L	A	A	390	A	388	L								
21										L	408	A	A	402	381	374	L								
22										L	391	422	401	392	383	379	L								
23									L	L	402	440	380	397	411	L	L								
24										L	395	428	411	389	389	383	391								
25									L	L	390	435	376	391	395	A	L								
26										L	382	A	A	379	382	379	L	A							
27										L	382	388	398	388	L	A	L	L							
28										L	385	402	393	404	386	A	A								
29									L	L	405	414	404	396	394	413	A								
30											U	L	U	L	A	L	L	L							
31										L	392	387	383	393	400	412	433								
											397	400	393	404	401	383									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									3		24	19	21	22	20	22	9	1							
MED									438		392	412	398	392	394	389	394	433							
U Q									493		398	422	410	404	402	401	411								
L Q									U	L	389	400	378	388	386	379	391								

JAN. 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	242	230	246	262	228	228	224								
2										216	248	238	232	240	230										
3										246	220	248	232	226	242	252	232		A						
4										260	226	234	240	246	238	226	A								
5										244	278	256	266	248	228	236	220	214							
6										254	244	232	254	260	260	238	218		A						
7										262	238	252	248	236	284	242	228								
8											264	258	274	258	220	238	228								
9									C	C	C	222	292	250	260	246	250								
10									214		226	A	264	252	236	L	270	230	A						
11											240	256	262	250	250	246	234	204	198						
12										278	232	236	260	232	234	228	218								
13										C	C	C	C	C	C	C	224								
14										242	262	296	258	282	264	252	224								
15											284	244	274	248	240	232	236								
16										234	246	E A	334	258	230	270	228	230							
17									212		226	244	334	250	238	250	260		A						
18									218	228	250	260	280	250	234	240	228								
19										212	A	224	244	252	234	260	244								
20											230	258	240	232	240	234	250								
21										224	232	238	238	272	256	246	226								
22										222	230	270	278	272	272	232	244								
23									220	216	224	276	238	234	246	248	246								
24										228	230	272	286	250	256	262	238								
25									216	220	236	246	326	236	264	244	234								
26										230	238	224	246	262	270	252	238								
27										230	254	232	236	242	272	252	234	218							
28										234	236	238	242	248	276	240	224								
29									212	246	230	256	238	262	290	242	230								
30											258	326	248	276	258	244	224	206							
31										244	244	260	236	248	238	240									
	00	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	22	28	29	30	30	30	29	28	4	1						
MED									215	234	238	247	251	250	248	242	230	210	198						
U Q									218	246	249	260	274	260	264	251	238	216							
L Q									212	224	230	235	240	240	236	235	224	205							

JAN. 2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	258	290	224	216	176	A	A	244	230	216	198	172	170	154	212	202	200	220	204	212	260	204	204	226		
2	284	294	252	222	194	174	320	238	222	204	188	178	208	186	A	220	212	222	190	198	A	206	202	266		
3	274	314	282	218	194	182	332	240	222	230	212	182	226	A	200	192	194	220	A	238	248	190	206	240		
4	240	276	240	206	216	B	E B	386	262	222	220	208	184	186	198	A	A	A	220	182	236	218	212	208	292	
5	280	244	230	196	188	A	A	242	216	220	208	198	188	A	A	188	196	A	192	188	204	220	214	280		
6	306	316	258	214	202	202	E B	390	272	224	220	230	A	188	A	A	A	204	A	198	218	226	222	330		
7	352	292	256	188	168	B	B	232	228	222	214	A	A	208	190	210	214	206	194	226	220	196	200	240		
8	256	288	262	234	196	208	236	216	212	218	210	188	186	184	A	A	220	230	198	186	240	232	204	264		
9	322	306	286	254	188	B	A	238	C	C	C	A	E A	268	214	172	204	204	214	196	188	240	210	236		
10	216	270	234	226	A	A	294	256	200	212	A	A	A	E A	234	206	194	A	A	E A	E A	E A	A	E A		
11	290	300	212	258	242	304	282	218	210	216	A	A	E A	E A	E A	A	E A	A	A	A	228	216	210	256	308	
12	282	282	266	216	198	332	238	234	226	230	A	A	A	A	A	200	186	214	202	E A	272	250	210	226	278	
13	260	260	266	252	192	184	344	240	218	C	C	C	C	C	C	C	188	212	184	278	258	244	208	254		
14	258	268	262	260	206	198	A	262	226	218	200	208	E A	242	A	206	176	A	206	188	194	244	226	212	280	
15	248	246	248	230	194	E B	E B	328	240	214	220	220	A	A	220	192	198	226	190	A	E A	286	280	258	254	
16	224	250	308	216	264	232	E B	264	246	220	228	210	A	A	214	198	202	200	210	184	E A	222	254	222	216	234
17	290	260	278	278	252	240	E B	330	216	194	214	208	188	196	228	234	A	A	208	A	A	224	190	256	266	
18	284	248	232	236	240	186	A	240	154	220	208	208	206	A	A	A	218	214	204	E A	210	262	260	A	A	
19	240	232	214	230	222	270	316	244	202	198	A	204	182	188	202	210	A	214	202	A	206	186	220	204		
20	280	250	196	238	228	236	246	220	210	212	204	A	A	216	A	220	188	224	194	A	268	232	194	224		
21	258	276	268	282	228	258	284	222	222	198	196	A	A	198	236	230	218	212	192	202	252	254	278	200		
22	204	220	212	286	288	276	302	218	214	214	214	190	212	196	194	220	198	214	202	236	244	214	224	230		
23	294	242	246	282	268	264	256	256	208	198	172	166	232	194	184	226	218	226	192	E A	278	222	240	228	228	
24	248	272	232	238	E A	212	294	330	204	232	218	218	202	206	202	222	240	208	222	194	E A	258	230	234	192	222
25	288	240	226	244	254	296	292	256	206	202	192	186	246	226	222	A	206	230	202	216	254	250	220	240		
26	234	E A	246	240	240	188	298	342	238	210	214	220	A	A	212	200	210	A	236	206	200	264	244	244	248	
27	272	222	248	230	212	282	326	234	214	192	188	184	180	188	E A	242	216	204	210	196	184	224	212	206	236	
28	310	262	236	220	198	A	288	234	224	220	208	192	210	188	220	A	A	A	234	206	204	198	234	218	222	
29	250	242	230	260	234	206	232	220	200	188	194	174	188	190	192	192	A	220	198	188	248	218	212	272		
30	280	264	238	224	198	A	B	234	210	222	216	200	206	A	E A	230	196	192	196	202	190	246	230	192	268	
31	284	282	266	242	222	212	218	218	212	220	204	188	186	174	190	220	230	236	210	172	244	194	224	228		
	00	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	23	24	31	30	29	25	19	22	22	21	23	22	28	27	27	30	31	29	29		
MED	274	264	246	234	206	238	290	238	214	218	208	188	197	198	201	207	204	217	196	204	243	217	216	244		
U Q	288	288	266	254	234	288	330	244	222	220	214	200	226	216	222	220	218	225	202	236	254	234	227	275		
L Q	248	246	230	218	194	202	260	220	210	208	197	182	186	188	191	194	196	211	192	190	222	206	205	228		

JAN. 2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	A	A	A	A							
2							B	B	114	106	102	102	102	106	106	106		A	A	A					
3							B	B	114	106	102	104	104	104	104	104		A	A	A					
4							B	B	118	104	104	104	104		A	100		A	A	B					
5							B	B	108	104	104		A	A		A	A	A	A	A					
6							B	A		104	104	106	102	102	102	102		A	A	A					
7							B	A		106		A	104	104		A	A			A					
8							B	B	108	106	102	104		A	A	A	A	A	A	A					
9							B	C	C	C		104	104	102	102		A		A	A					
10							B		112	108	100	102	102		A	A	A	A	A	A					
11							B		110	106	104		A	A	A	A	A	A	A	A					
12							B	A		102	102	102		A	A	A	A	A	A	A					
13							B		118			C	C	C	C	C	C	A	A	A					
14							B	A		104	104	104	106	106	104		A	A		A					
15							B		104	102	102	102	102	102		A	A	A	A	B					
16							B		116	112	104	104	102	100	100		A	A	A	A					
17							B		102	102			A	A	A		102	102		A	A				
18							B	A		106	102	102		A	102	104		A	A	106					
19							B		102	102	104	104		A	104		A	A	A	A					
20							B		110	106		102	102	104		A	A	A	A	A					
21							B		106	106	104	100		A	A	A	A	A	A	A					
22									110	104	102	102	102		A	A	A	A		A					
23							B		114	104	104		A	A		104	104		A	A	A	A			
24							B		110	102	102	102	102		A	A	A	A	A	A					
25							B		106	106	104	104	102	102	106	106	106	112		A					
26							B		120	102	102	102	96		A	A	A	A	A	A					
27							B		112	104	104	102	102	102	102	102		A	A	B					
28							B		122	102	106	104	104		A	A	A	A	A	A					
29							B		108	102	102	102	102		A	A	A	A	A	A					
30							B		108	102	102	102	102	102		A	A	A	A	B					
31							B		108		A	A	A	A		A		A	104	102					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									23	27	24	24	20	14	13	6	6	6							
MED									110	104	102	102	102	102	104	103	103	107							
U Q									114	106	104	104	104	104	104	106	106	112							
L Q									108	102	102	102	102	102	102	102	102	106							

JAN. 2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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	B	B	B	86	84	82	86	92	160	108	102	102	98	96	92	116	94	92	92	90	90	88	84	84	
2	84	86	B	B	B	B	B	112	160	110	110	130	152	158	142	138	100	116	100	94	96	92	86	B	
3	B	B	B	114	106	144	B	122	122	110	126	154	118	G	128	110	98	94	94	92	92	86	B		
4	B	B	94	116	B	92	B	96	164	148	140	106	112	112	108	102	100	98	100	98	94	B	B	B	
5	B	94	98	B	98	94	90	90	148	138	G	110	114	106	106	106	98	92	92	92	B	92	86	86	
6	86	118	106	102	96	96	96	90	160	168	124	112	112	104	102	102	100	104	94	94	94	94	90	108	
7	B	B	116	B	90	108	92	92	164	148	114	104	104	106	106	102	102	114	98	92	94	94	B	B	
8	B	116	112	B	B	B	104	112	148	162	140	122	118	102	102	94	94	92	94	88	94	94	96	94	
9	96	B	96	104	98	96	96	94	C	C	C	108	110	110	106	102	98	126	102	102	98	96	96	96	
10	100	94	98	92	92	92	94	94	130	120	104	100	102	98	150	102	110	100	100	98	92	94	84	90	
11	90	92	96	94	94	96	90	94	114	104	102	102	100	100	94	94	90	90	88	88	92	88	116	88	
12	92	B	92	88	96	96	94	94	136	132	114	108	104	104	102	88	88	88	90	86	86	B	88	88	
13	104	98	94	90	84	90	90	156	C	C	C	C	C	C	C	C	92	92	90	88	88	84	80	B	
14	B	B	B	B	94	94	90	88	138	140	144	148	128	122	144	104	132	118	112	B	84	104	102	98	98
15	96	96	B	96	90	B	88	90	144	166	130	120	114	134	118	96	96	162	B	110	100	92	86	86	
16	86	90	B	118	106	106	B	B	140	126	124	104	104	108	100	100	96	94	92	92	90	84	82	B	
17	B	B	98	B	114	116	100	94	136	156	150	132	104	104	144	110	102	98	96	94	92	B	104	102	
18	102	104	94	94	92	92	102	112	112	G	108	104	120	110	106	106	114	112	98	98	98	100	98	98	
19	100	92	90	98	98	96	B	B	138	136	110	110	108	92	108	104	98	138	92	96	96	90	84	88	
20	86	96	96	92	92	B	B	B	130	124	116	108	108	108	98	98	98	96	92	94	100	100	94	98	
21	B	98	96	96	100	94	94	94	G	124	126	104	102	108	104	134	126	124	108	86	86	108	104	82	
22	100	B	94	B	94	92	92	94	G	132	G	166	110	106	104	104	96	116	118	100	102	100	100	96	82
23	104	102	100	100	96	96	90	B	90	G	112	110	152	108	116	176	102	132	96	98	94	96	96	96	
24	96	B	B	96	96	94	92	92	140	88	110	104	106	104	102	96	96	102	90	102	92	118	92	90	
25	90	94	94	94	94	94	92	B	G	G	132	G	176	132	120	114	G	160	86	90	100	88	98	98	
26	96	96	96	96	94	B	94	B	130	128	120	108	108	104	100	98	94	92	92	92	88	92	92	92	
27	90	104	B	B	B	B	94	100	G	G	122	120	122	106	104	108	100	B	B	B	100	B	B	B	
28	96	98	96	94	90	92	88	88	134	138	124	114	112	104	100	102	102	98	94	94	96	96	98	94	
29	94	94	94	98	90	90	92	B	G	116	110	G	122	122	106	100	96	96	96	98	90	126	B	B	
30	B	B	B	92	92	92	88	B	148	146	130	138	120	104	100	102	102	162	B	B	96	94	90	84	
31	88	B	B	90	90	B	B	B	G	172	104	104	102	100	G	116	128	160	100	100	94	96	B	122	
	00	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	19	22	22	27	24	25	20	26	24	27	28	30	30	28	30	30	31	28	29	29	28	26	23	
MED	96	96	96	95	94	94	92	94	139	134	116	109	111	106	106	102	100	100	94	94	94	94	92	92	
U Q	100	102	98	98	98	96	95	95	148	148	130	121	120	112	112	110	108	124	100	98	97	100	98	98	
L Q	89	94	94	92	90	92	90	91	130	121	110	104	104	104	101	98	96	94	92	90	91	92	86	86	

JAN. 2021 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2021 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				F2	F3	F2	FQ11	F1	HCL11	C3	CH21	C1	L2	L1	L2	CL12	L3	L9	L8	FF52	F4	F6	F2	F1	
2	F1	F1					K1	C1	HC11	C3	C2	HC11	H1	HL12	H1	HL12	L3	CL34	L2	F9	F5	F3	F1		
3			F1		F1	F1	F1		C3	C4	C3	C2	H1	C2		CQ11	CQ11	L8	L8	F4	F2	F1	F1		
4			F1	F1		F1		L1	H2	H1	HC11	C2	C1	C2	C5	C6	C9	L8	L3	F2	F1				
5		F2	F2		F3	F5	F7	L1	H2	HC11		C2	C2	C3	CQ31	CQ31	L2	L4	L3	F3		F2	F3	F1	
6	F1	F1	F3	F1	F2	F3	F2	L3	HCL11	H1	C2	C2	C1	C3	C5	C5	C7	CL41	LL93	FF42	F3	F1	F3	F1	
7			F1		F1	F1	F3	L1	HC11	H2	CQ21	CQ41	CQ31	C2	C3	C3	L1	C2	L2	F2	F2	F1			
8		F1	F1				F1	C1	H1	H2	H2	C1	C1	C2	C2	L3	LQ31	LQ31	LQ41	FQ31	F1	F3	F4	F6	
9	F2		F2	F1	F3	F2	F9	L4				C4	C3	C1	C2	C2	L2	CL11	C5	F4	F2	F3	F3	F7	
10	F3	F3	F2	F6	F7	F6	FF33	L2	H1	C1	C3	C7	C5	L2	HC11	CH11	C2	L8	L5	F8	F6	F3	F5	F4	
11	F2	F5	F2	F2	FQ21	FQ21	F2	L1	C1	C3	C5	C3	C4	C3	LQ51	LQ31	L3	L5	L4	F5	F3	F2	FF12	F4	
12	F1		F1	F2	F2	F5	F3	F2	H2	H1	C2	C3	C3	C3	C3	L3	L3	L2	F3	F1		F1	F1	F1	
13	FF22	F2	F3	F4	F2	F3	F1		H1								LQ31	L2	L2	F1	F1	F1	F1		
14				F2	F1	F4	L5	HL23	HL22	HL11	H2	C1	C2	C2	HC11	C2	HL22	C3	CL22	F2	F3	F2	F2	F5	
15	F3	F2		F2	F3		F1	L1	H2	H2	H2	C3	C3	C1	C2	C2	L2	L2	L1	F8	F3	F2	F2	F3	
16	F1	F1		F1	F1	F1			H3	C3	C2	C4	C3	C2	C2	C3	L2	L4	L6	F4	F1	F5	F2		
17			F1		FF22	FF12	F2	L1	H1	H1	HC11	HC11	CH11	C2	HC21	C6	C5	L9	L8	F4	F3		F3	F3	
18	F2	F1	F2	F3	F4	F2	FF24	CL22	C2	C2	C2	C2	C2	CC23	C4	C2	C2	C3	C3	F5	F3	FQ21	FQ21	FQ21	
19	F3	F2	F1	F1	F1	F1			HC23	H2	C5	C2	C1	LC11	CL12	C4	L5	HL12	L7	F5	F3	F3	F4	F2	
20	F1	F2	F1	F1	F1				H1	C1	C1	C3	C2	C1	L4	L2	L2	L1	L3	F4	F3	F2	F6	F1	
21		F2	F1	F2	F3	F2	F2	L1		C1	C1	C3	C3	C2	C2	HL12	CL23	CL33	CL32	F3	F2	FF22	F2	F1	
22	F1		F1		F1	F3	F2	L1	H2		H1	C1	C1	C2	C1	L2	C2	C4	C2	FF11	F3	F1	F3	F3	
23	FF33	F2	F2	F1	F2	F2	F2		L1		C1	C1	HC11	C1	C1	HC11	C2	HL25	L2	F3	F1	F4	F2	F2	
24	F2			F3	F5	F2	F7	L7	HL23	LH21	C2	C2	C2	C2	C2	L3	L4	CL23	L3	FF54	FQ21	FF23	F4	F3	
25	F6	F4	F3	F3	F1	F4	F3				H1		H2	H1	C1	C2		HL21	L3	FF21	FF23	F1	F3	F5	
26	F3	F5	F2	F2	F1		FF11		H2	C1	C1	C3	C2	C2	C1	L2	L3	L3	L3	F3	F1	F2	F2	F3	
27	F2	F1					F1	L1	H1			C1	C1	C1	C2	C1	C2	C3				F1			
28	F3	F2	F3	F3	F5	F3	F2	L3	H4	H2	C1	C1	C2	C2	C3	C4	C4	L7	L3	F3	F3	F1	F2	F2	
29	F1	F2	F2	F1	F2	F2	F1			C1	C2		C1	C1	C2	C2	L2	L4	L5	F2	F1	F1			
30				F3	F3	F3	F1		H1	H1	H2	H1	C1	C3	C3	C2	C2	H1			F1	F1	F1	F1	
31	F1			F1	F1					HC11	C2	C3	C1	C1		CH11	C2	HCL12	LCL92	F3	F3	F3		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. 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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

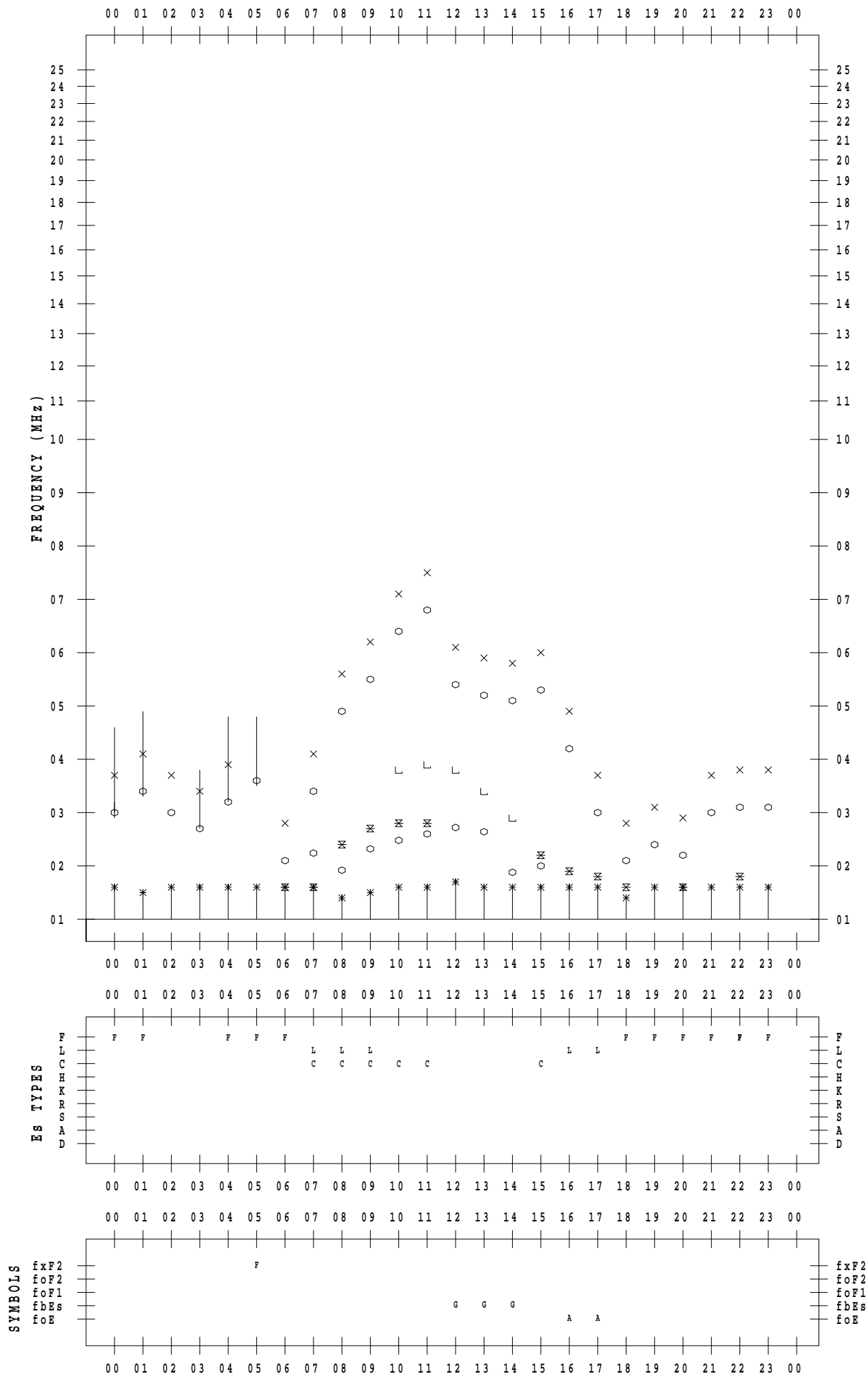
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 1

135 ° E MEAN TIME



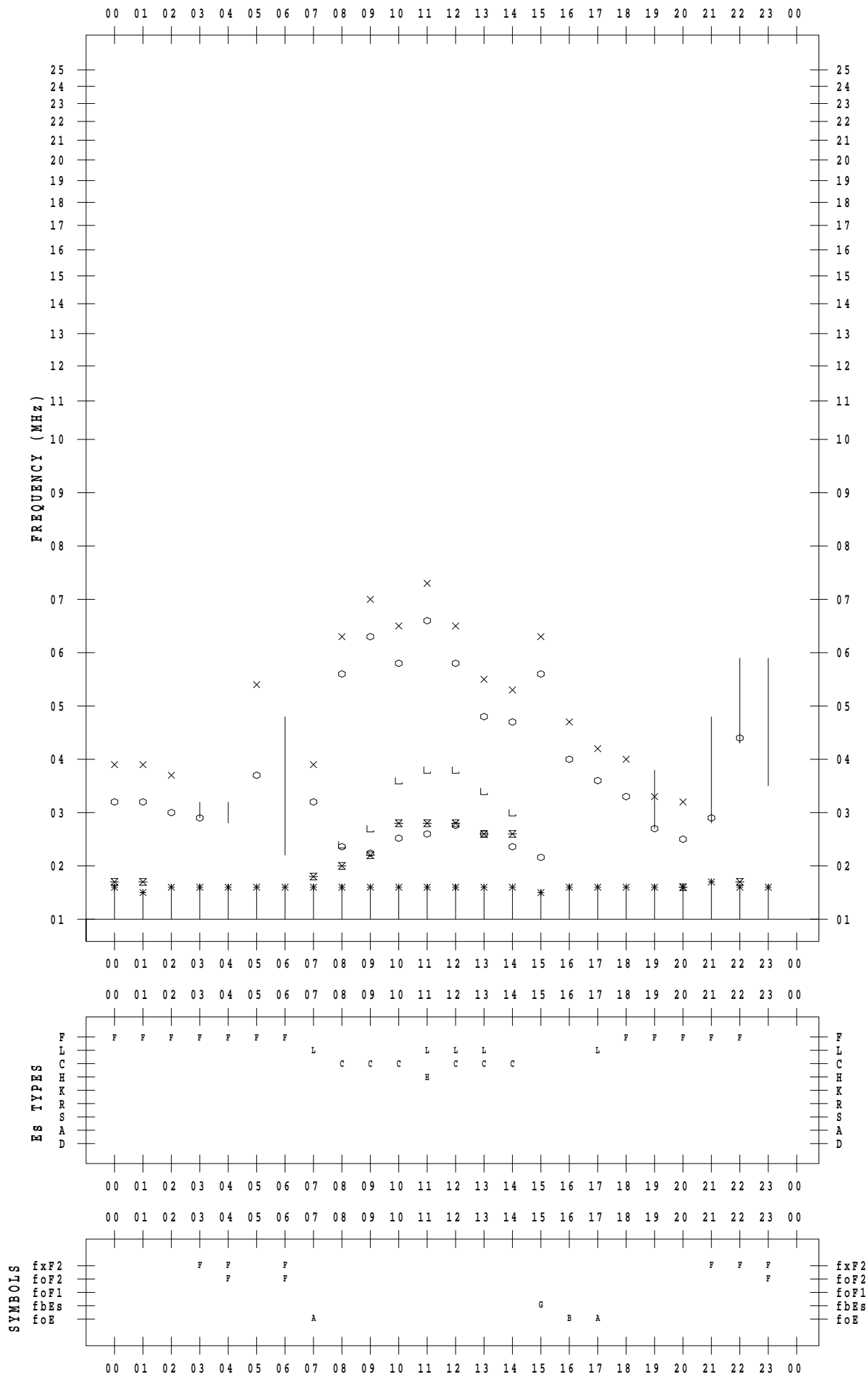
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 2

135 ° E MEAN TIME



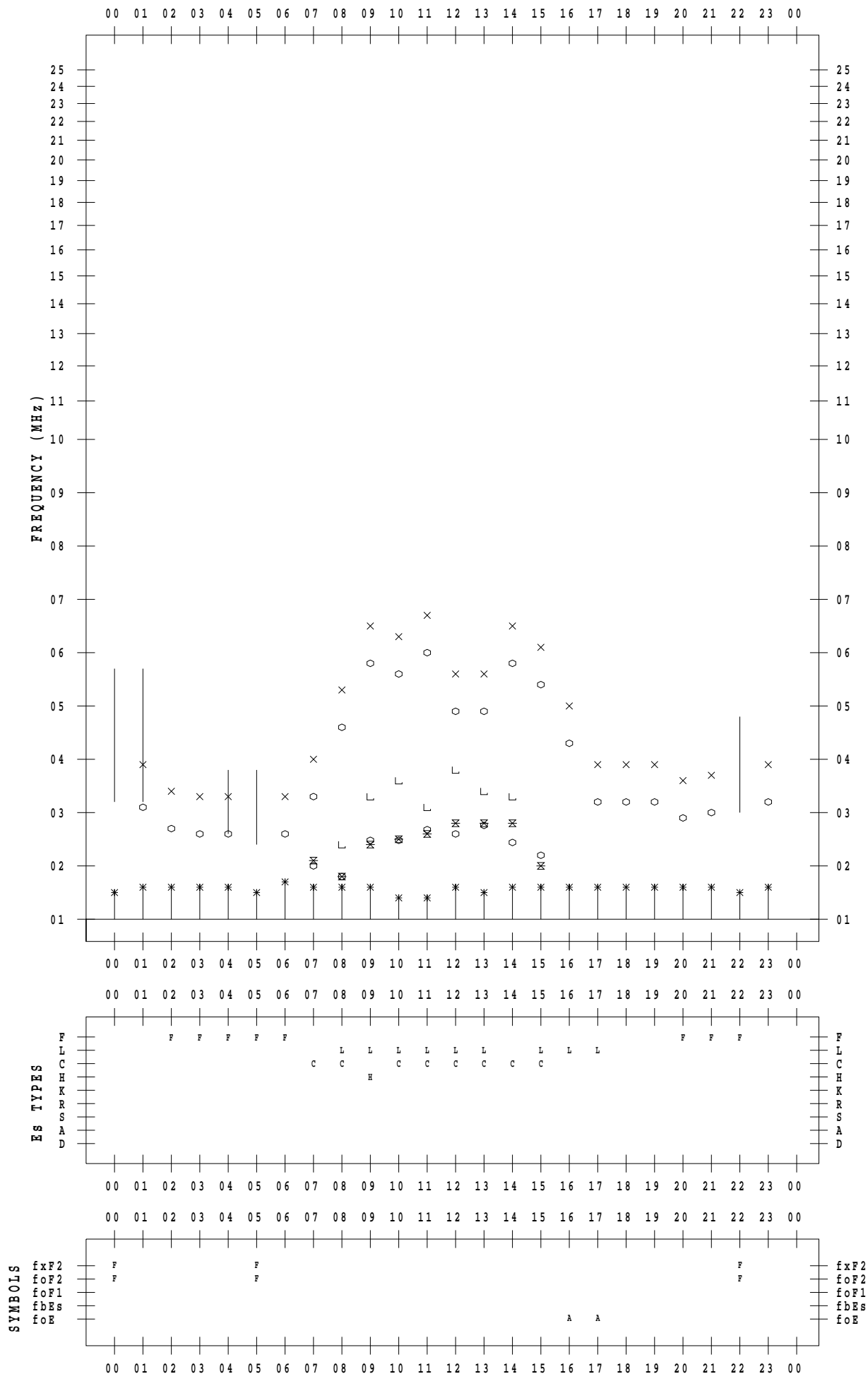
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/ 3

135 ° E MEAN TIME



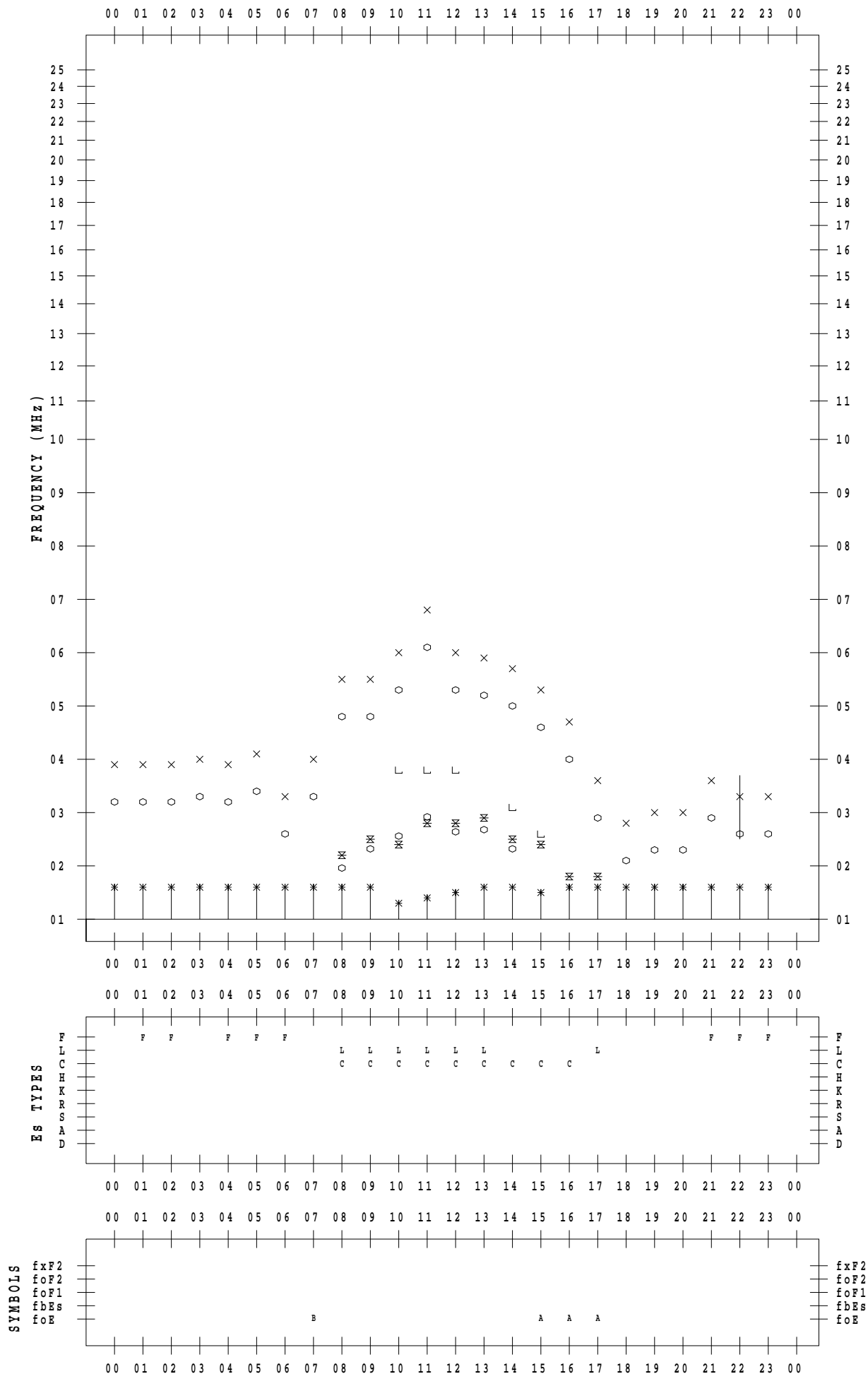
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/ 4

135 ° E MEAN TIME



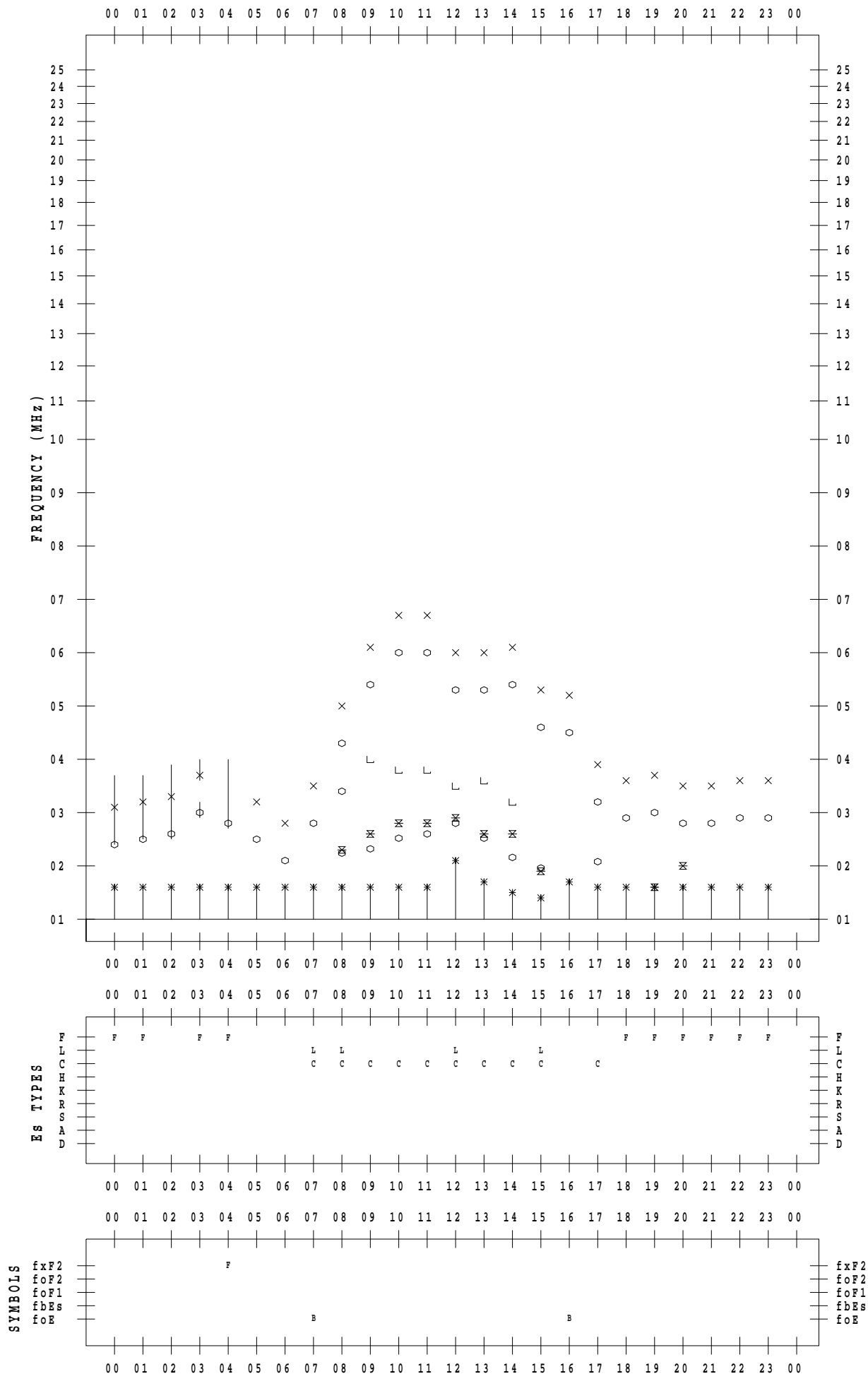
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/ 5

135 ° E MEAN TIME



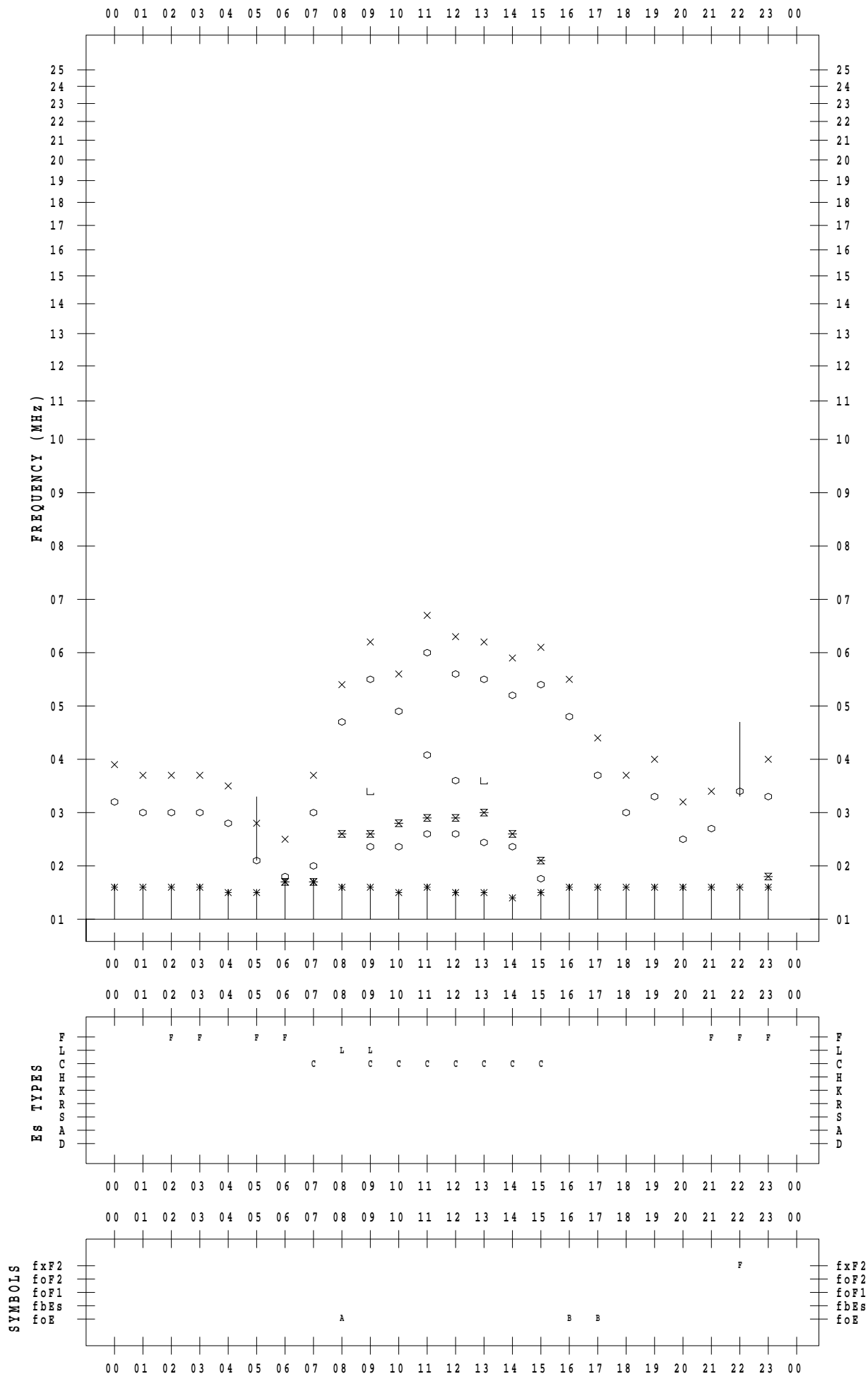
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 6

135 ° E MEAN TIME



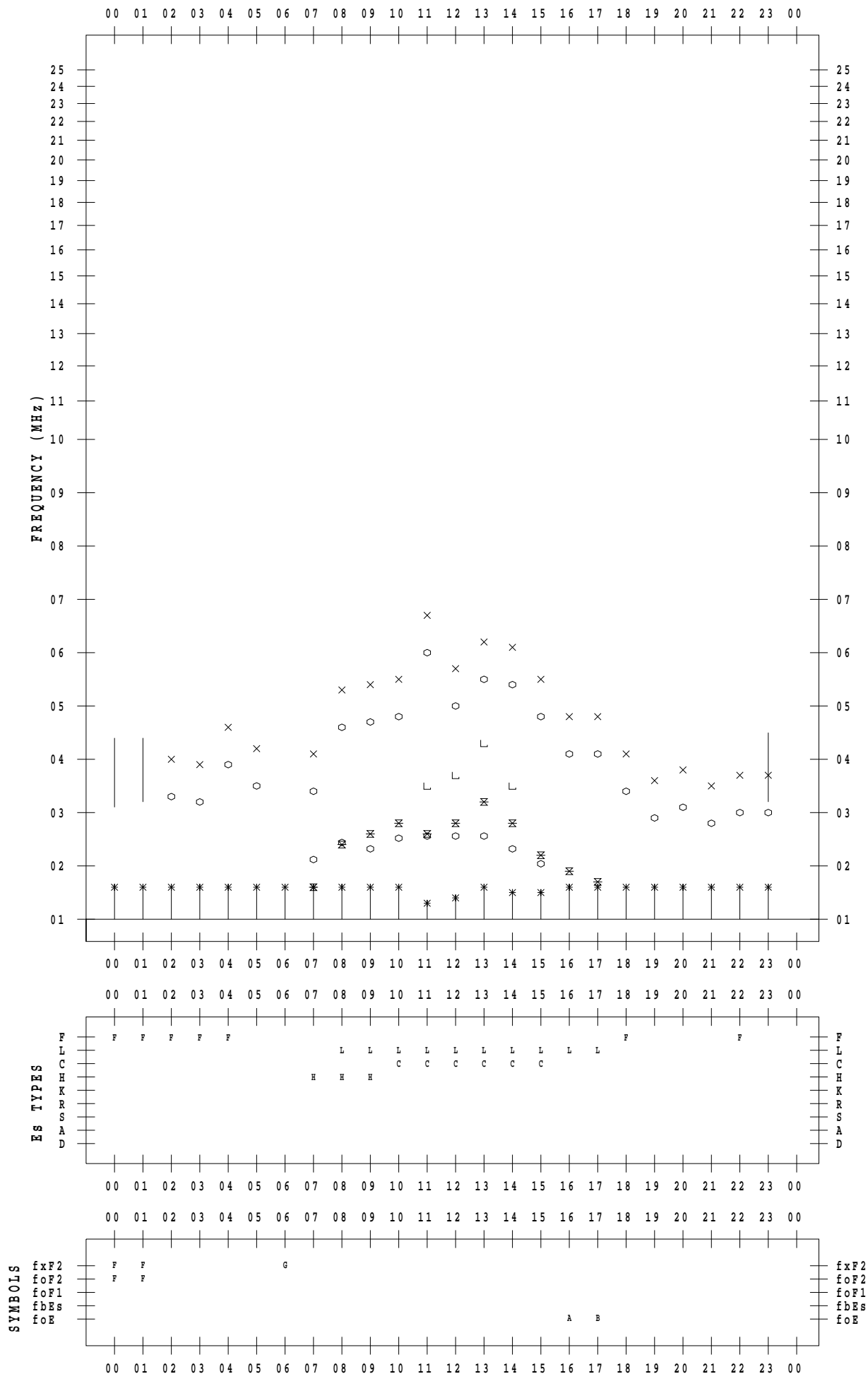
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 7

135 ° E MEAN TIME



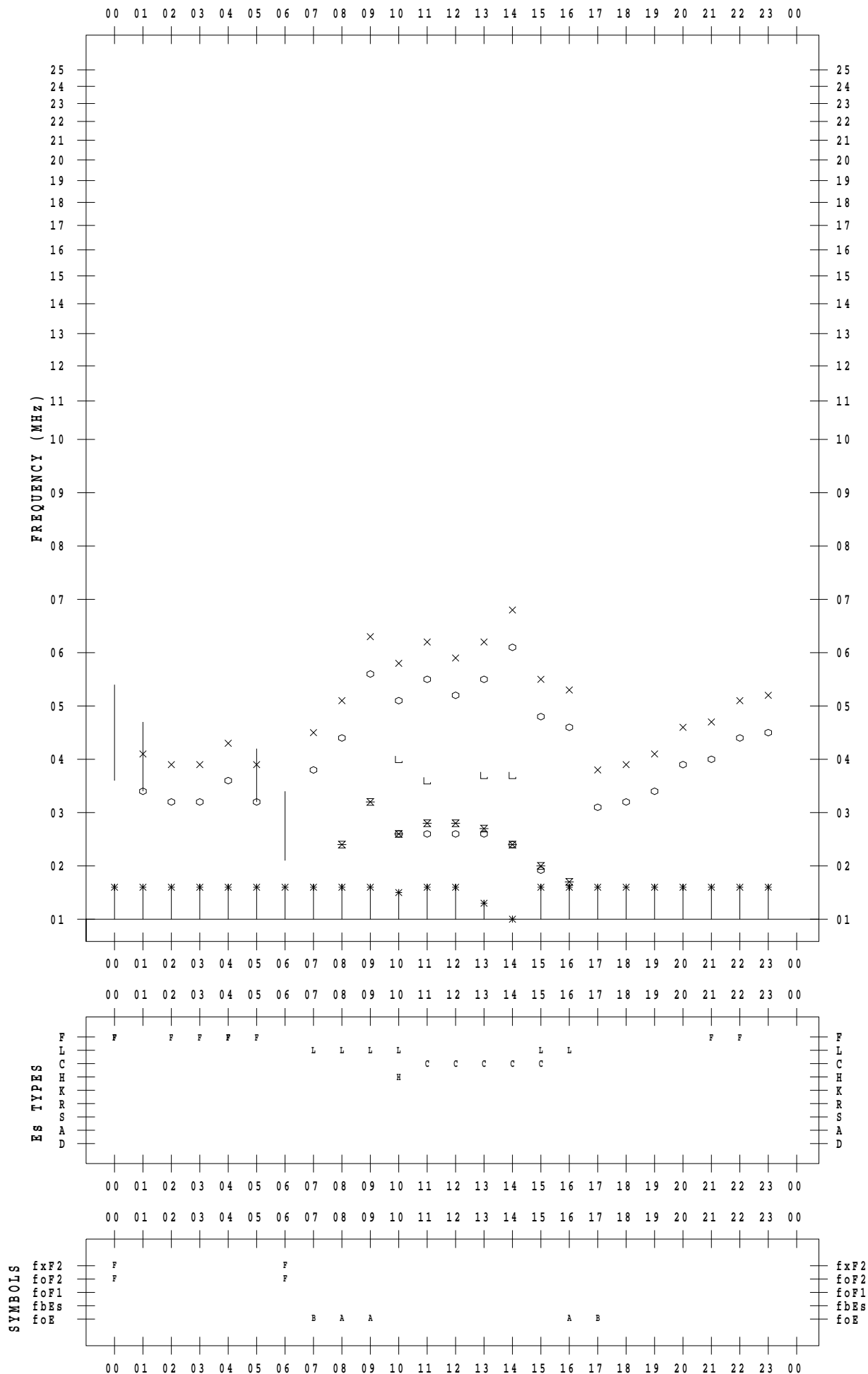
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/ 8

135 ° E MEAN TIME



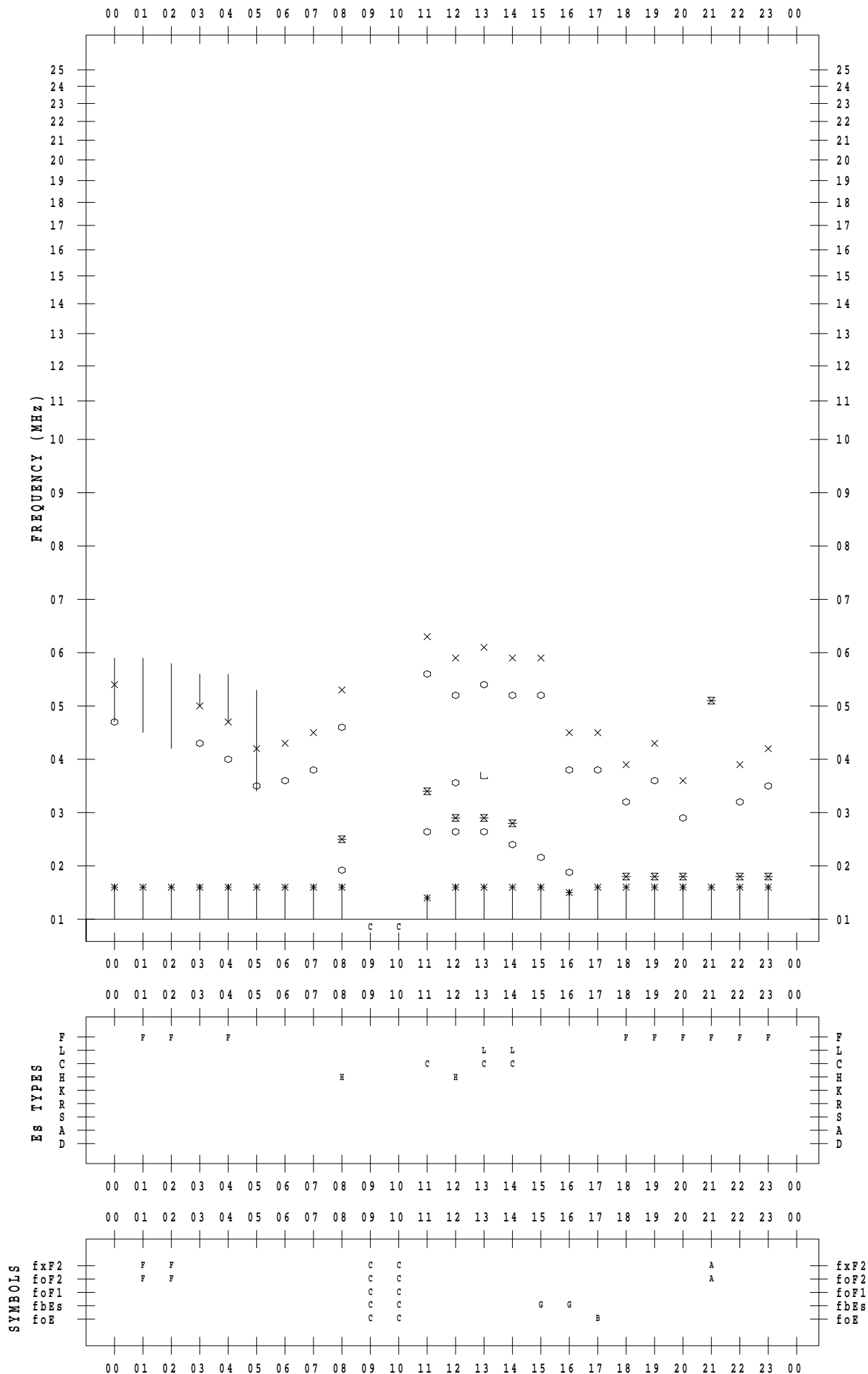
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 9

135 ° E MEAN TIME



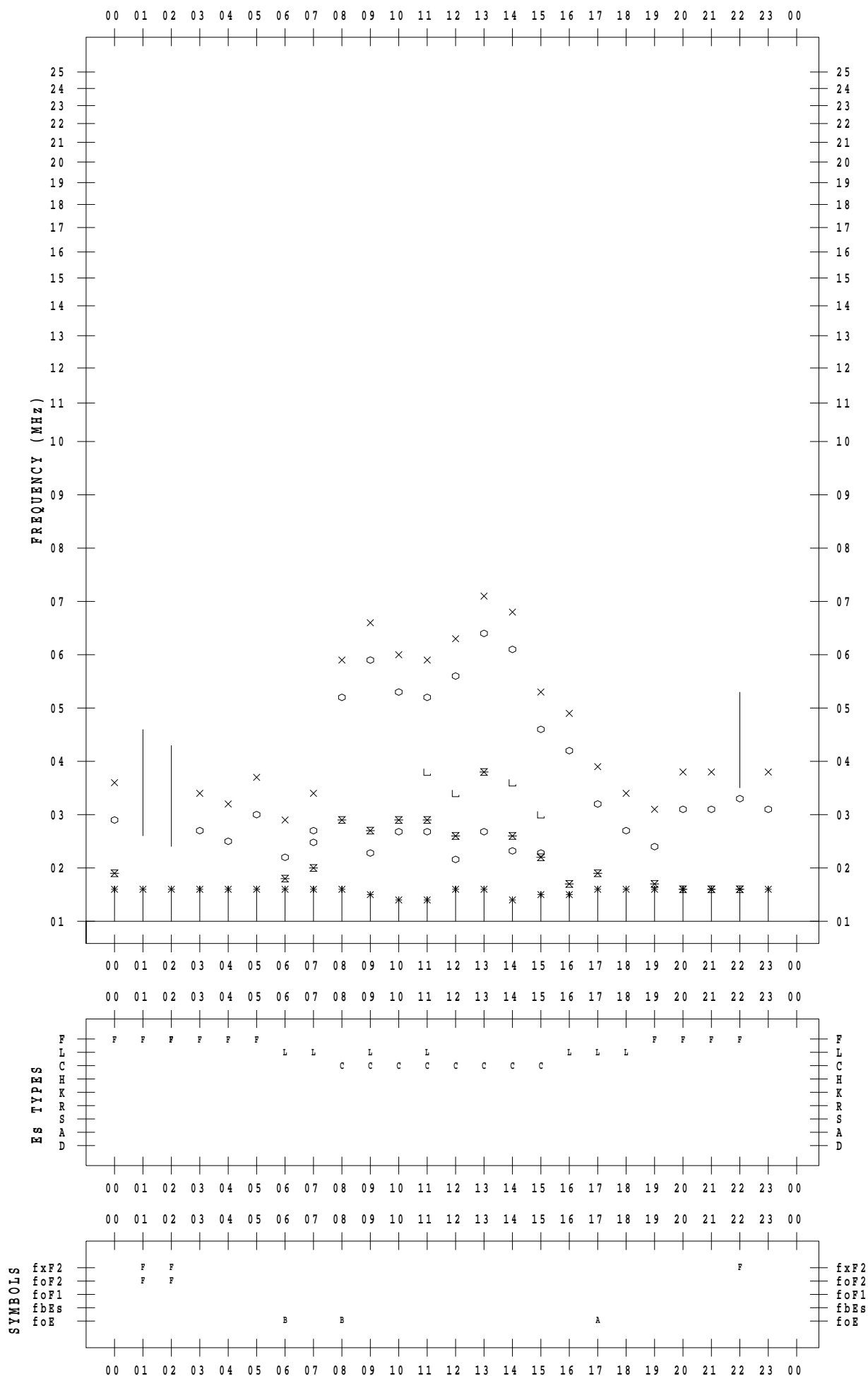
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/10

135 ° E MEAN TIME



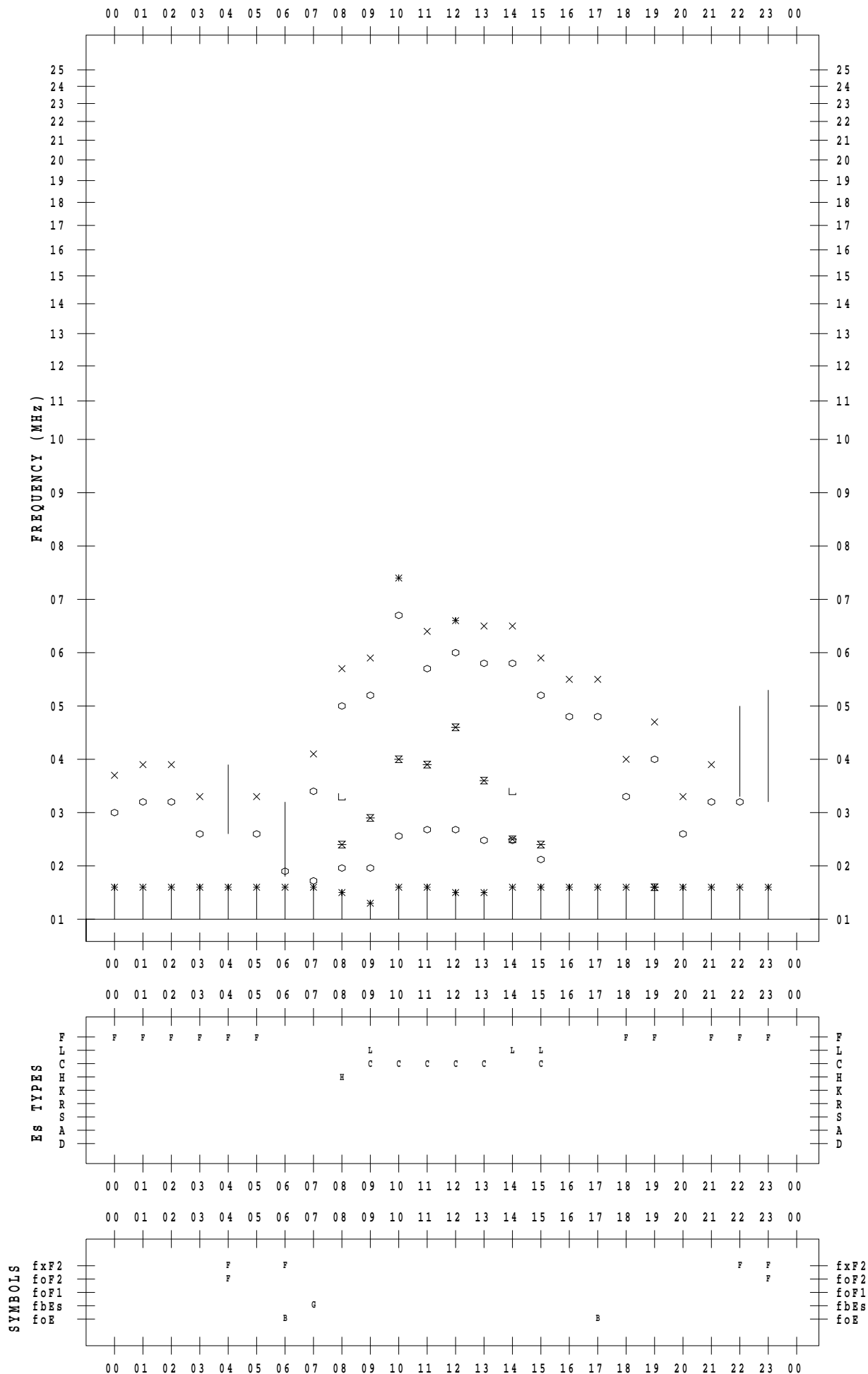
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/11

135 ° E MEAN TIME



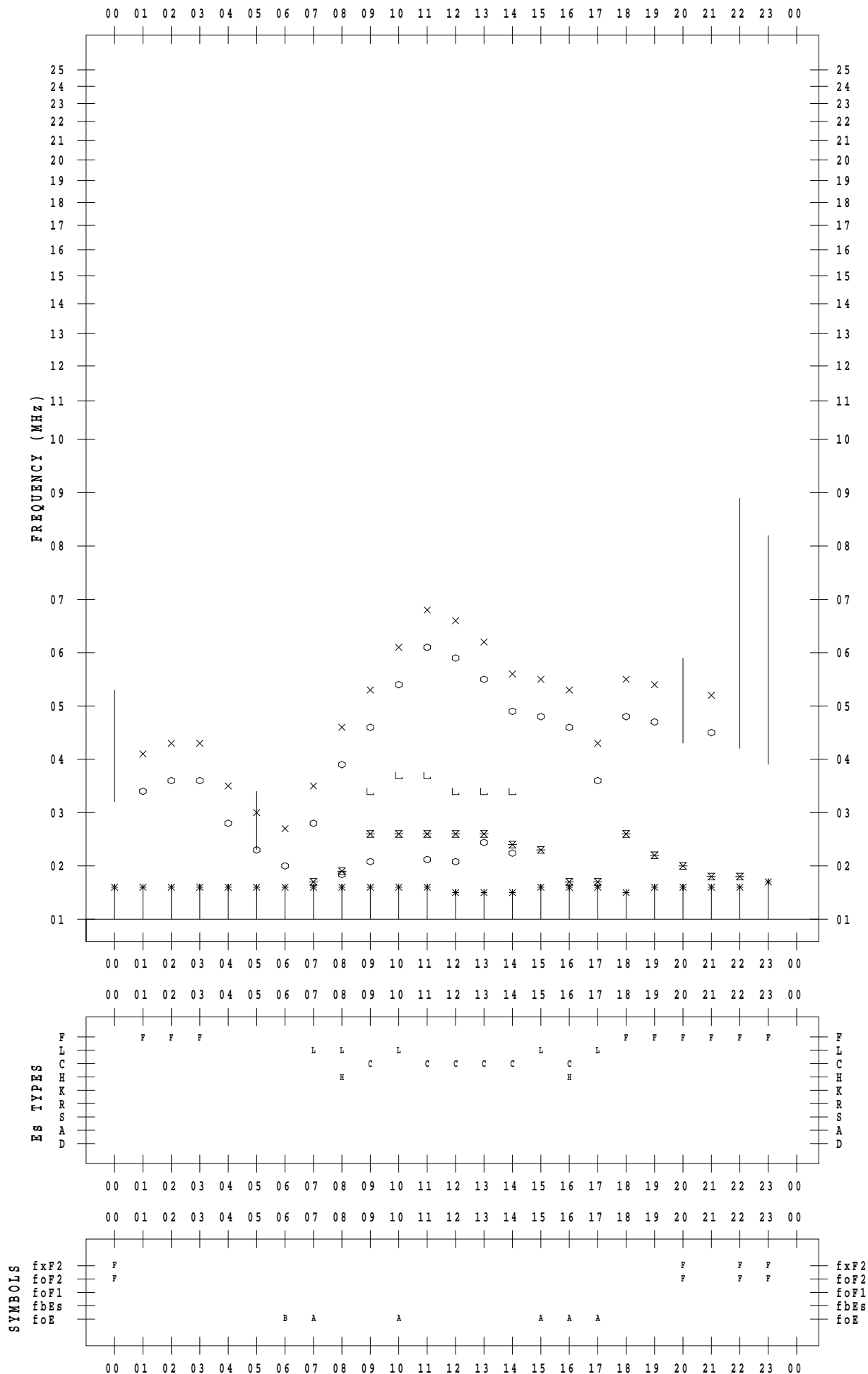
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 12

135 ° E MEAN TIME



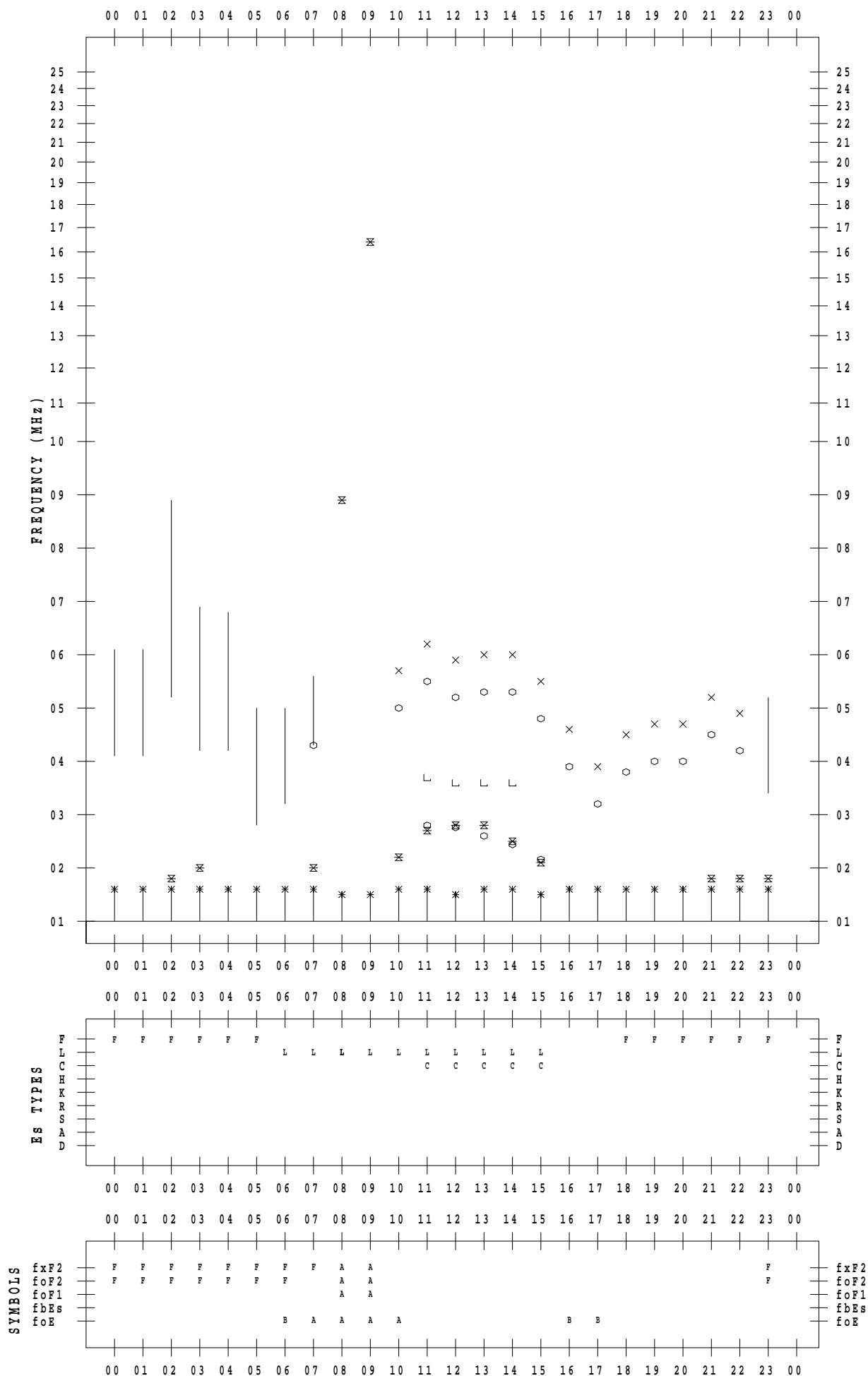
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/13

135 ° E MEAN TIME



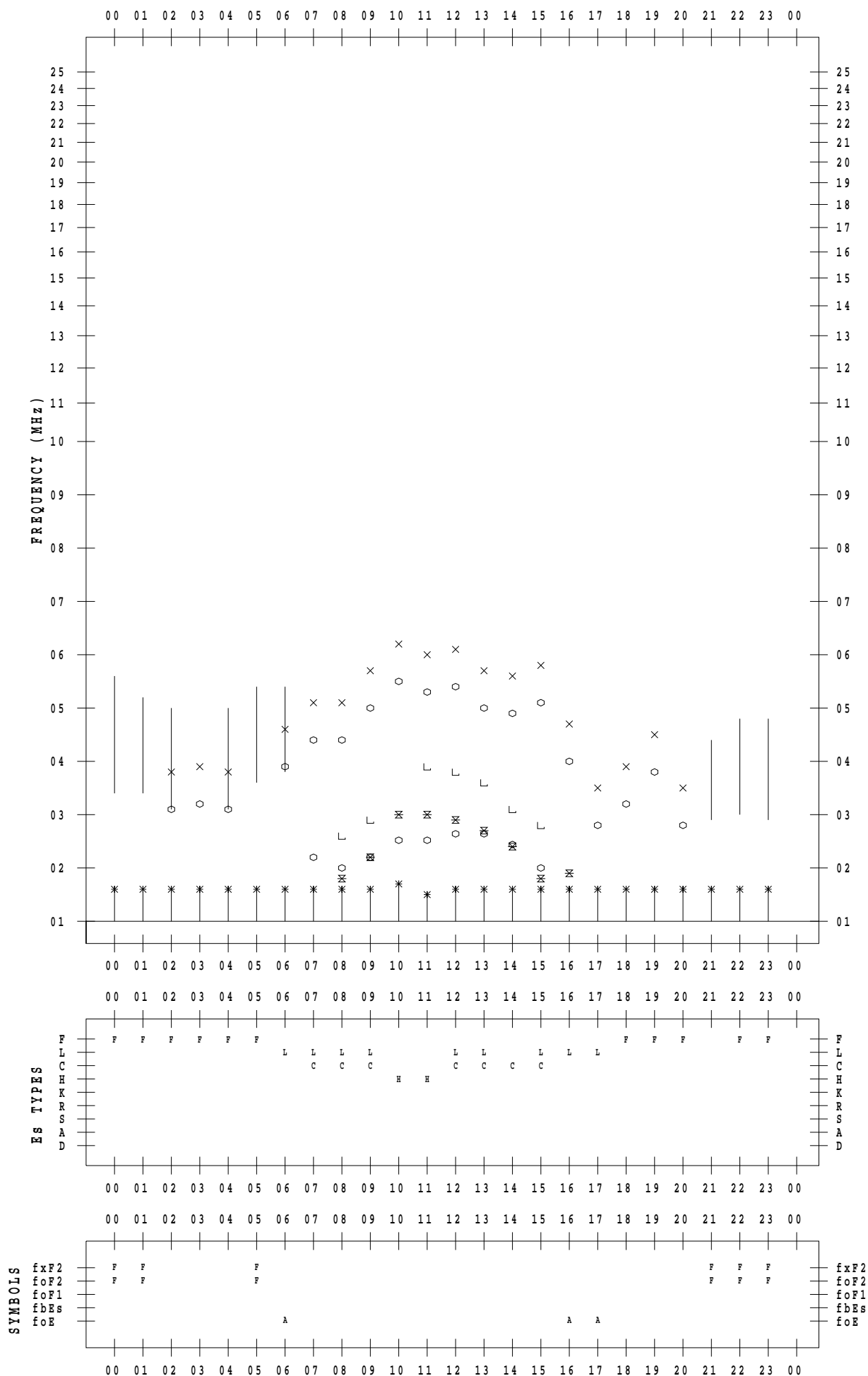
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/14

135 ° E MEAN TIME



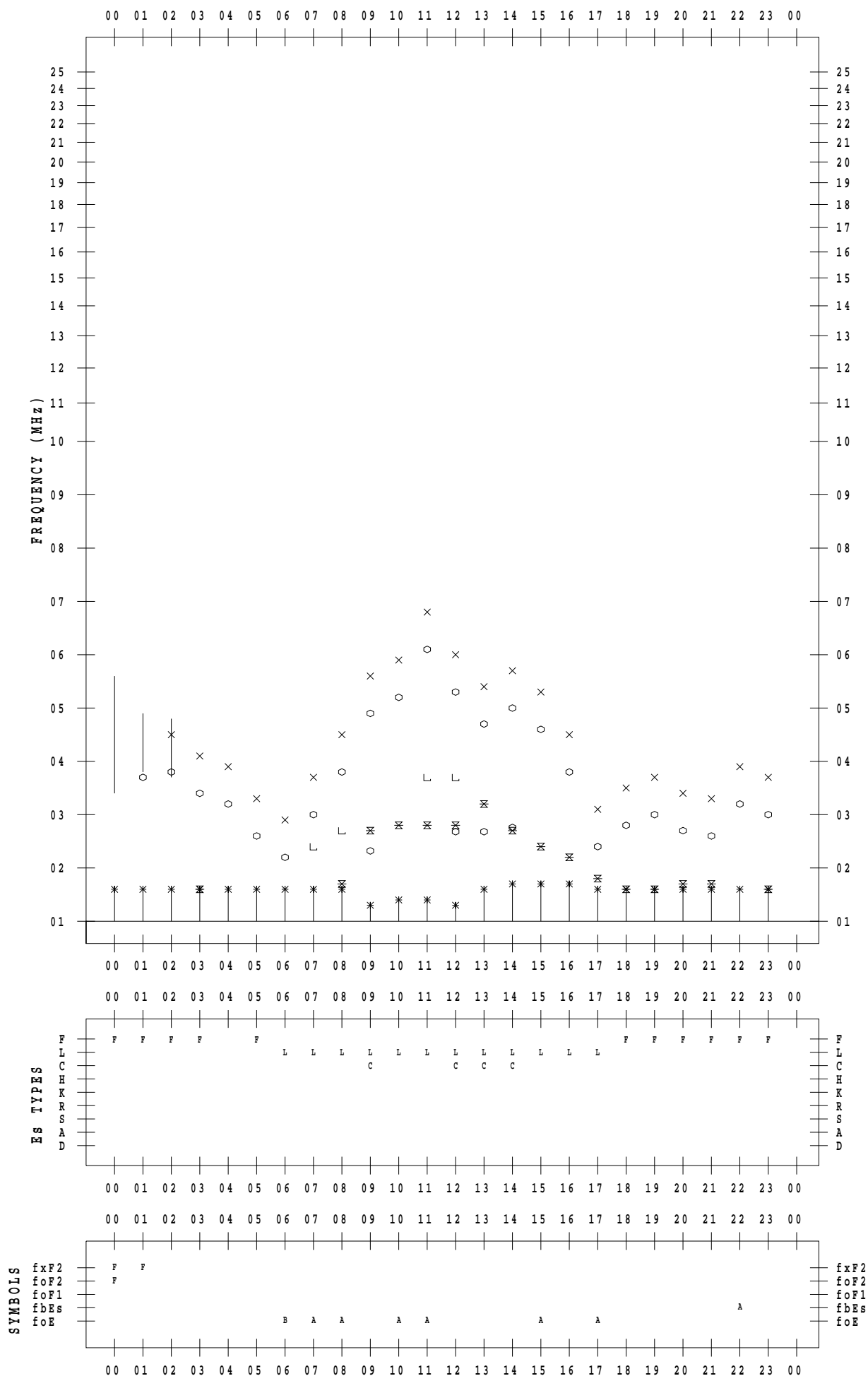
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/15

135 ° E MEAN TIME



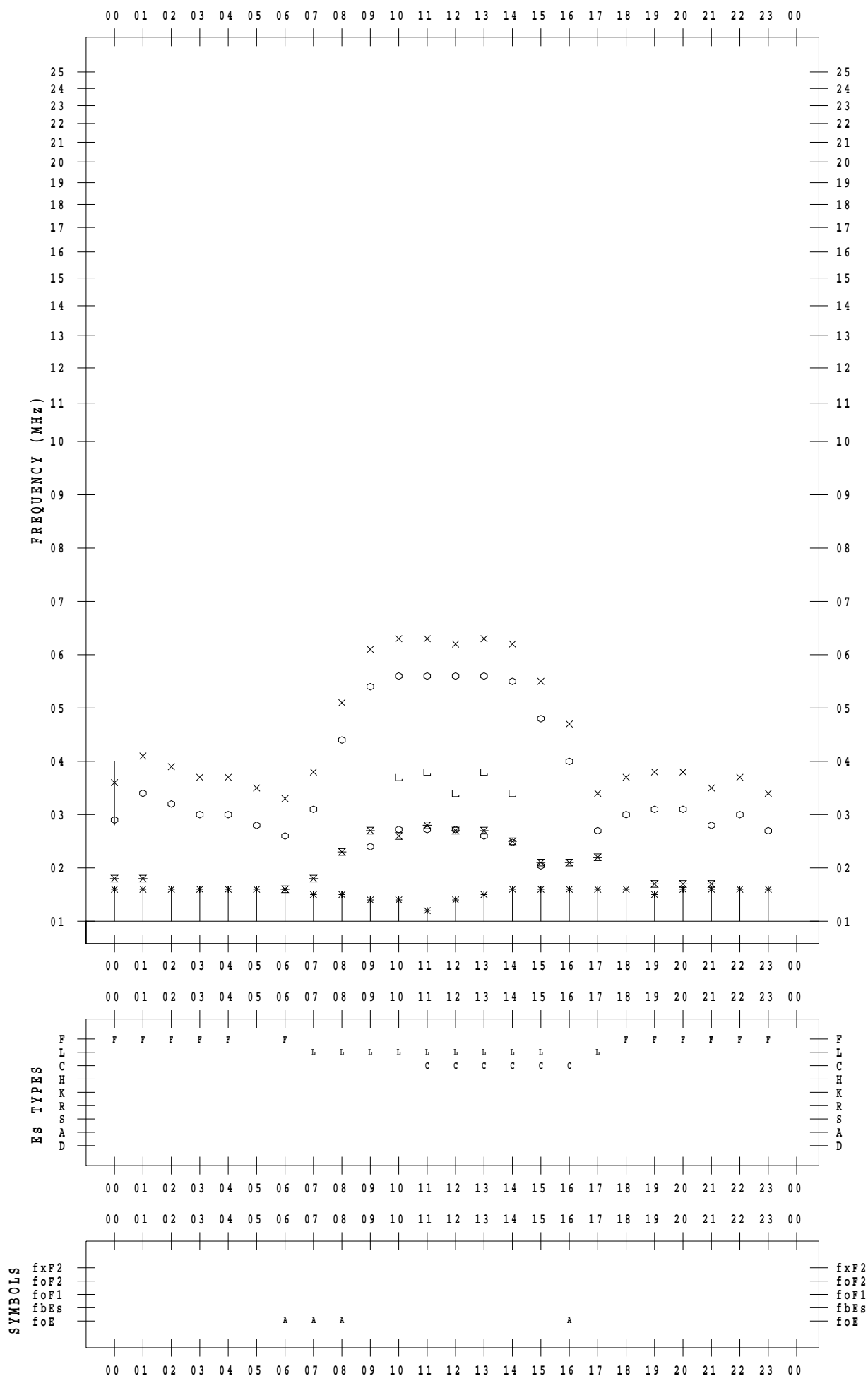
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/16

135 ° E MEAN TIME



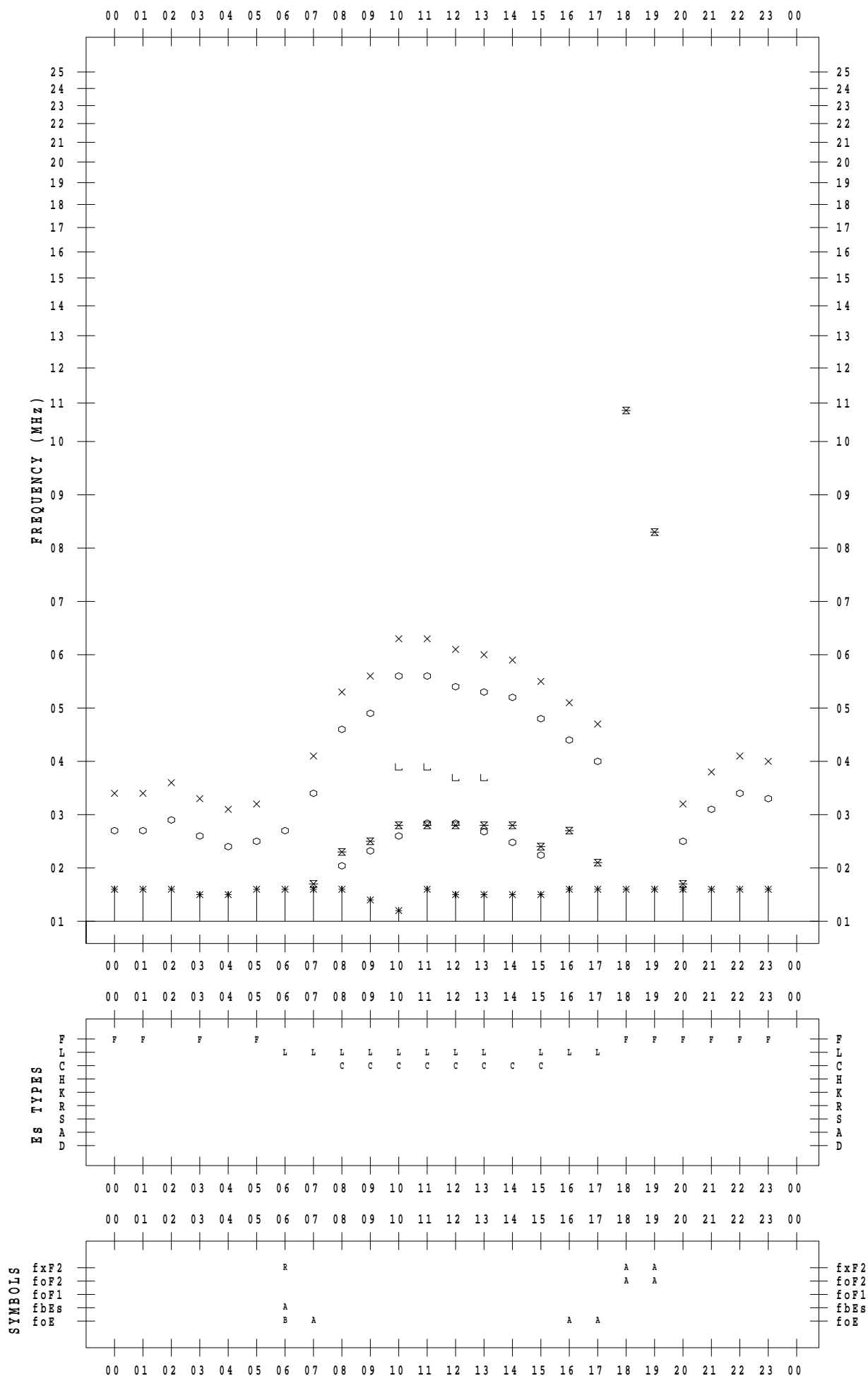
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/17

135 ° E MEAN TIME



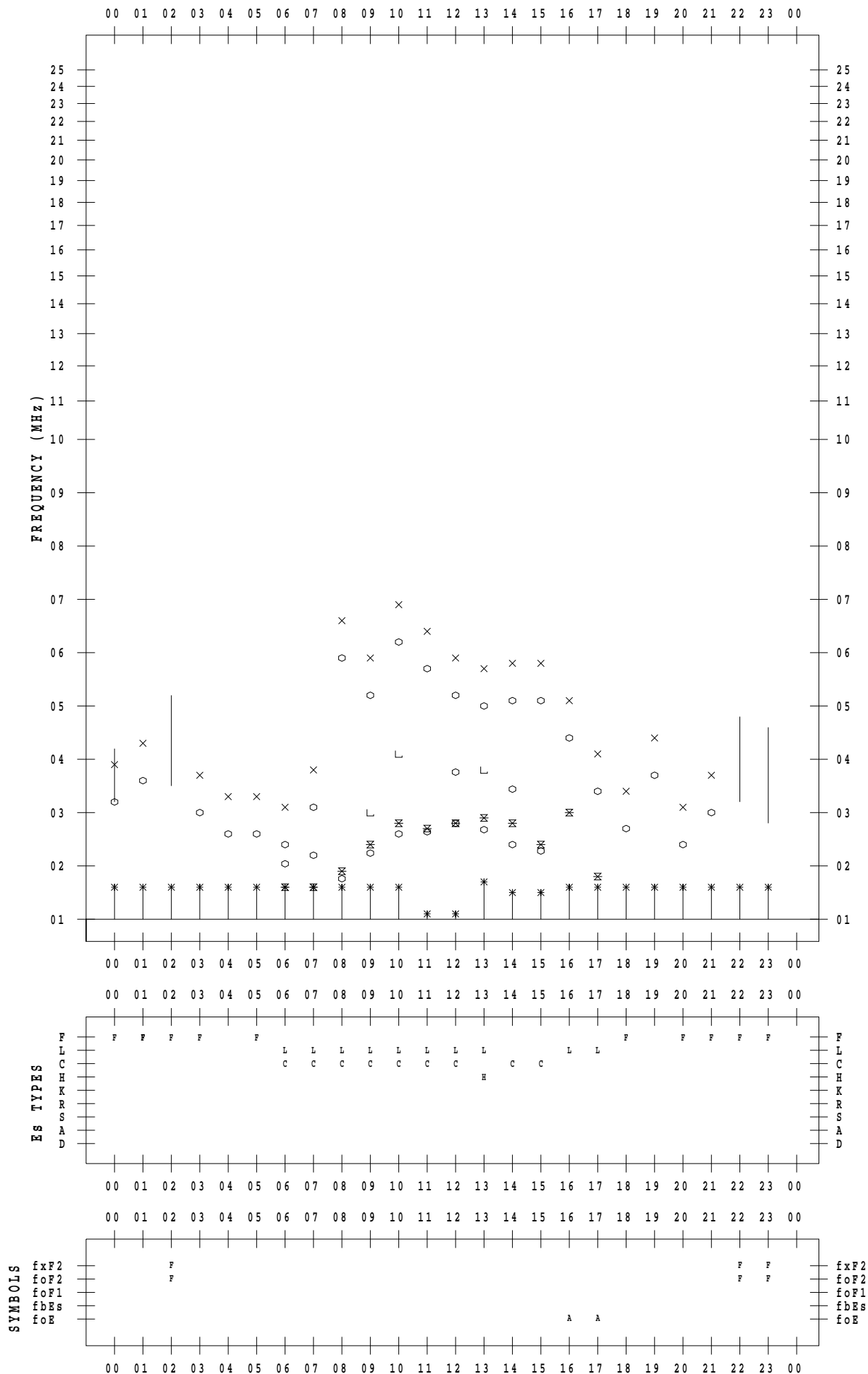
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/18

135 ° E MEAN TIME



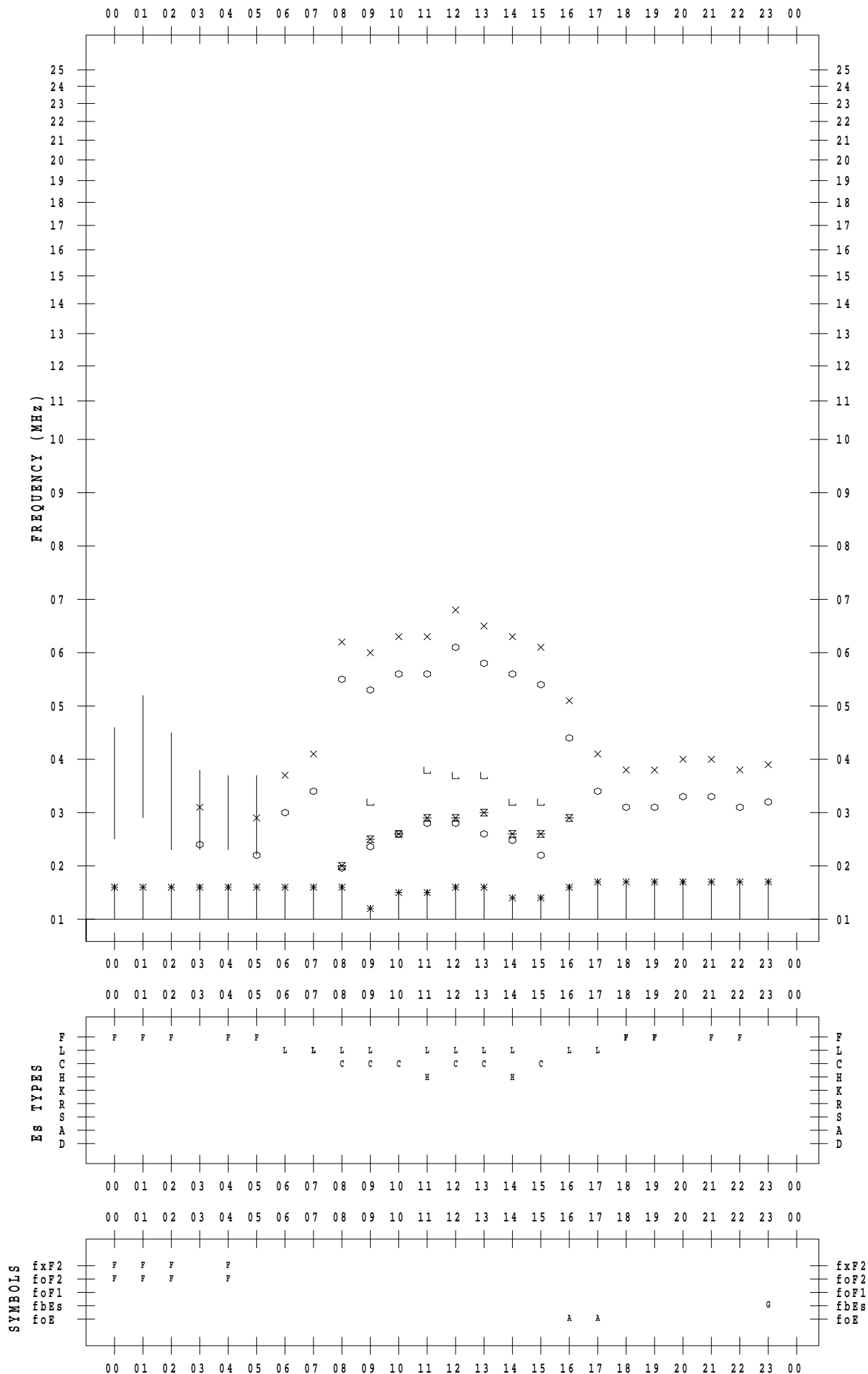
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/19

135 ° E MEAN TIME



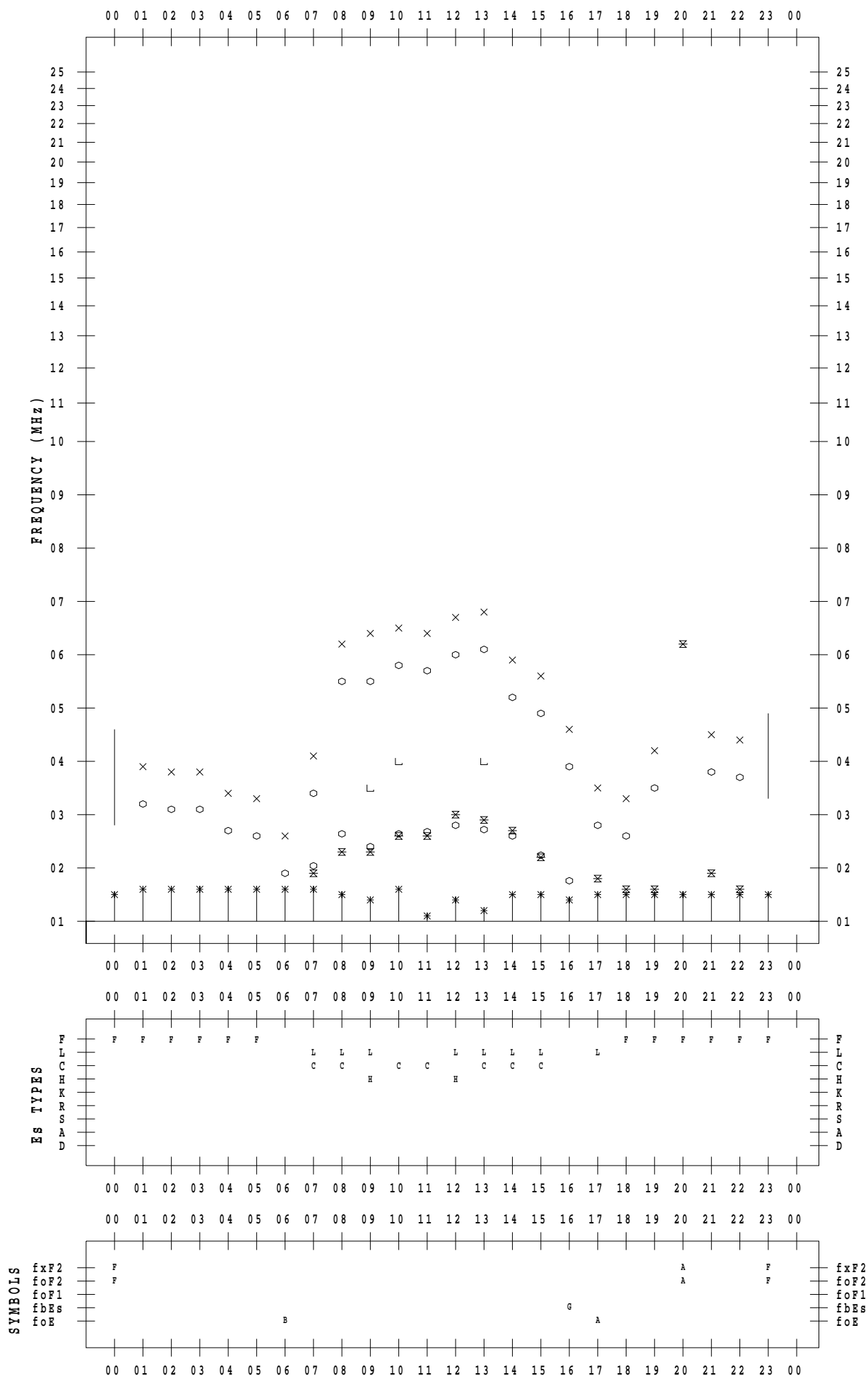
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 20

135 ° E MEAN TIME



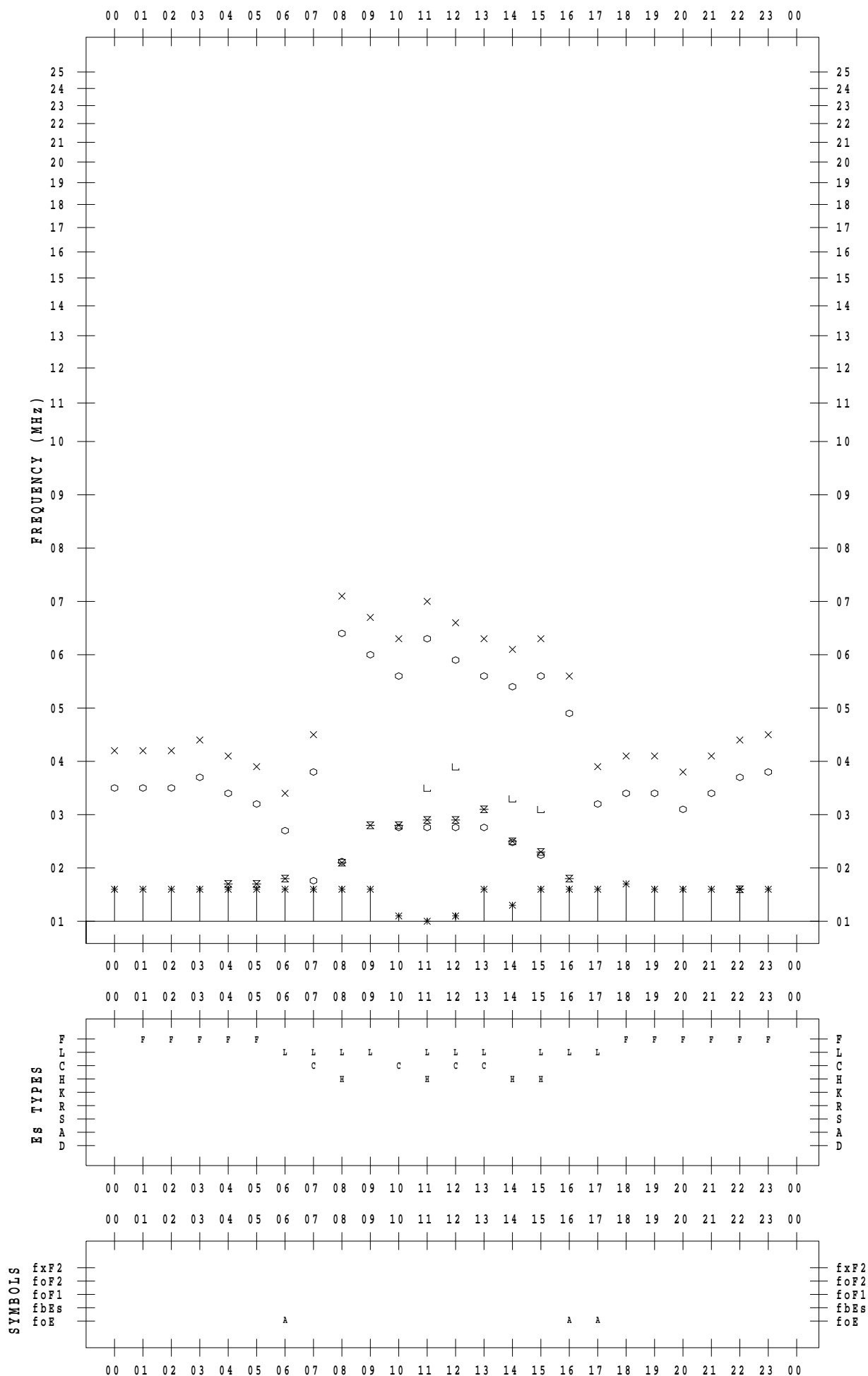
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/21

135 ° E MEAN TIME



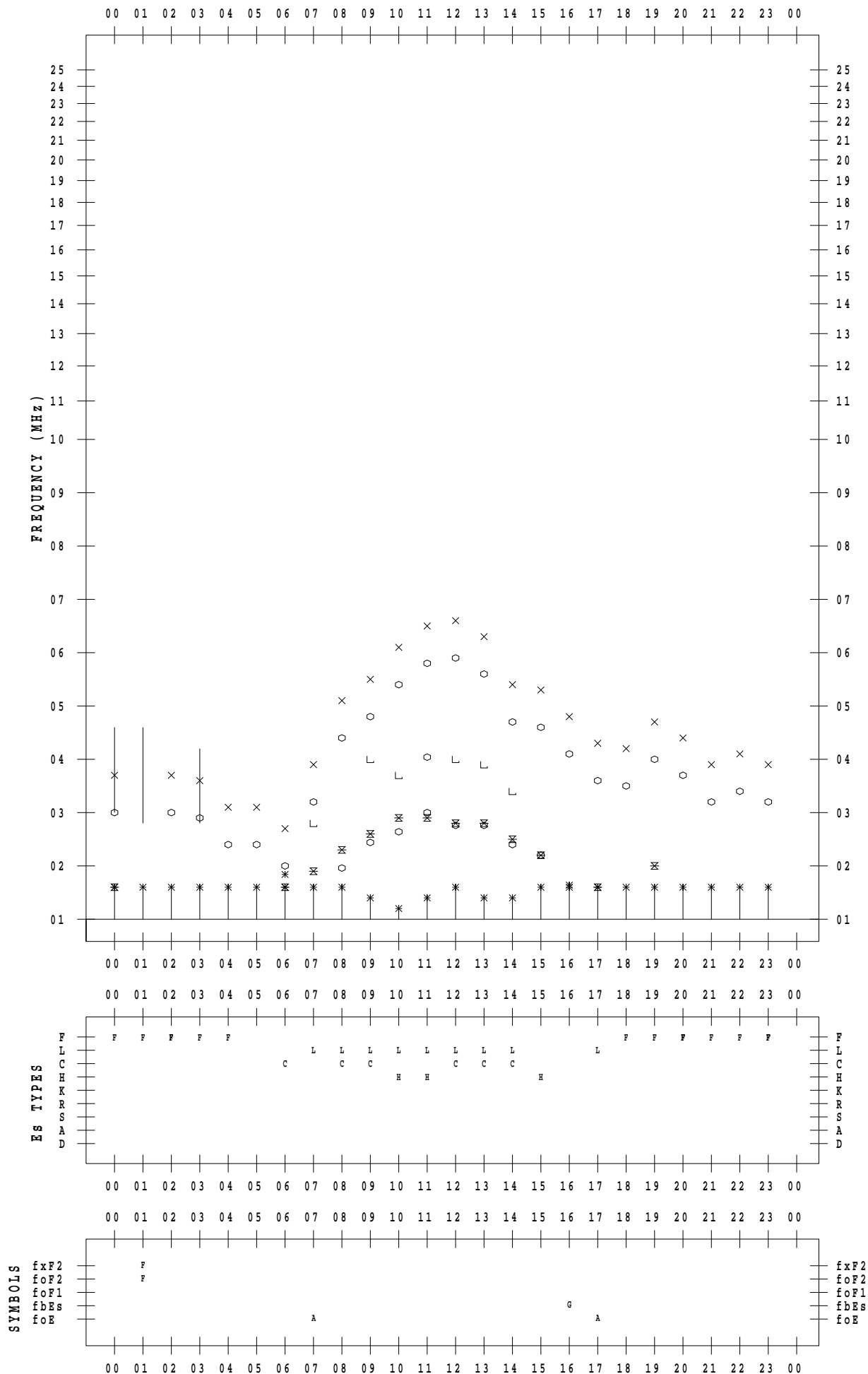
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/22

135 ° E MEAN TIME



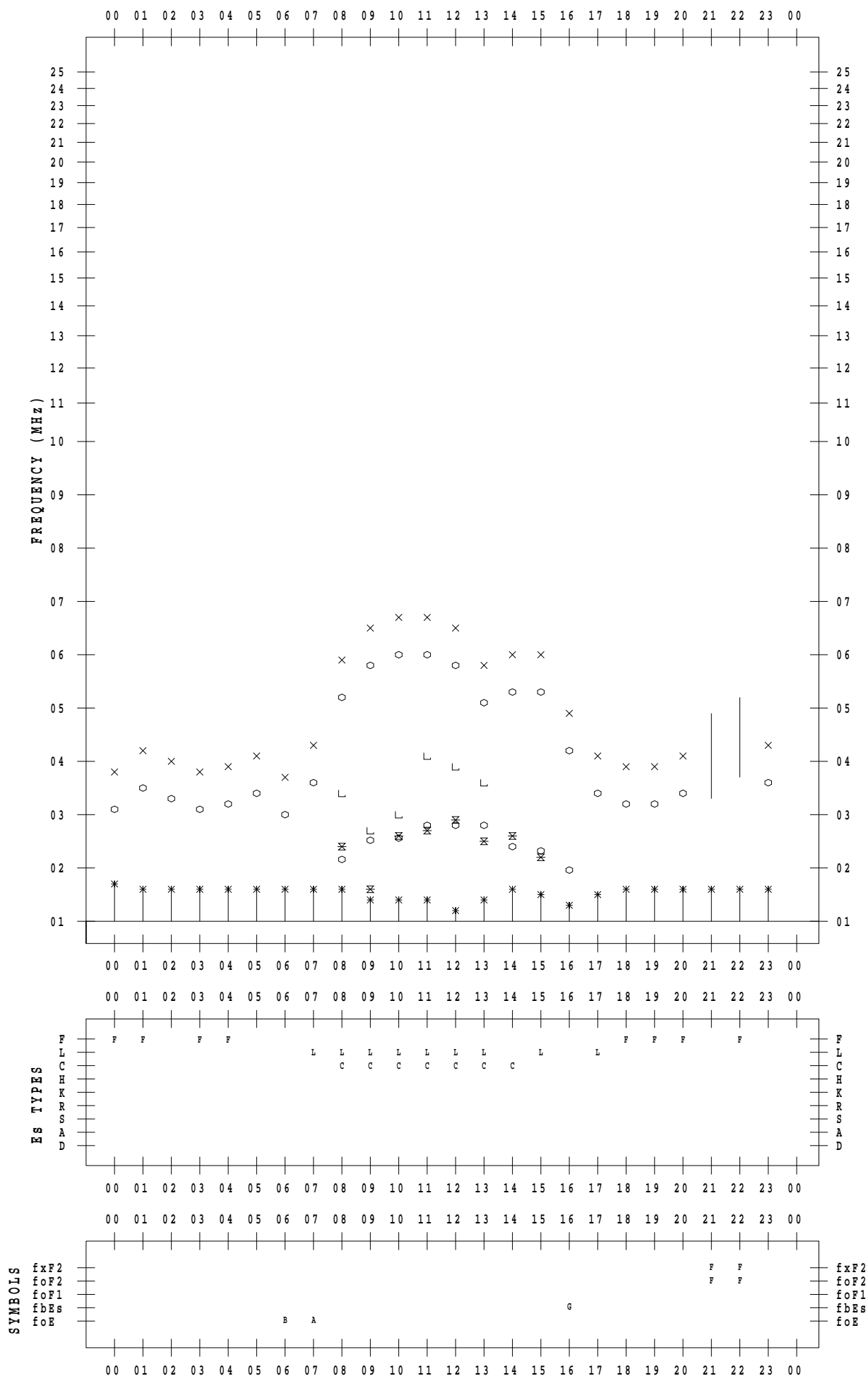
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/23

135 ° E MEAN TIME



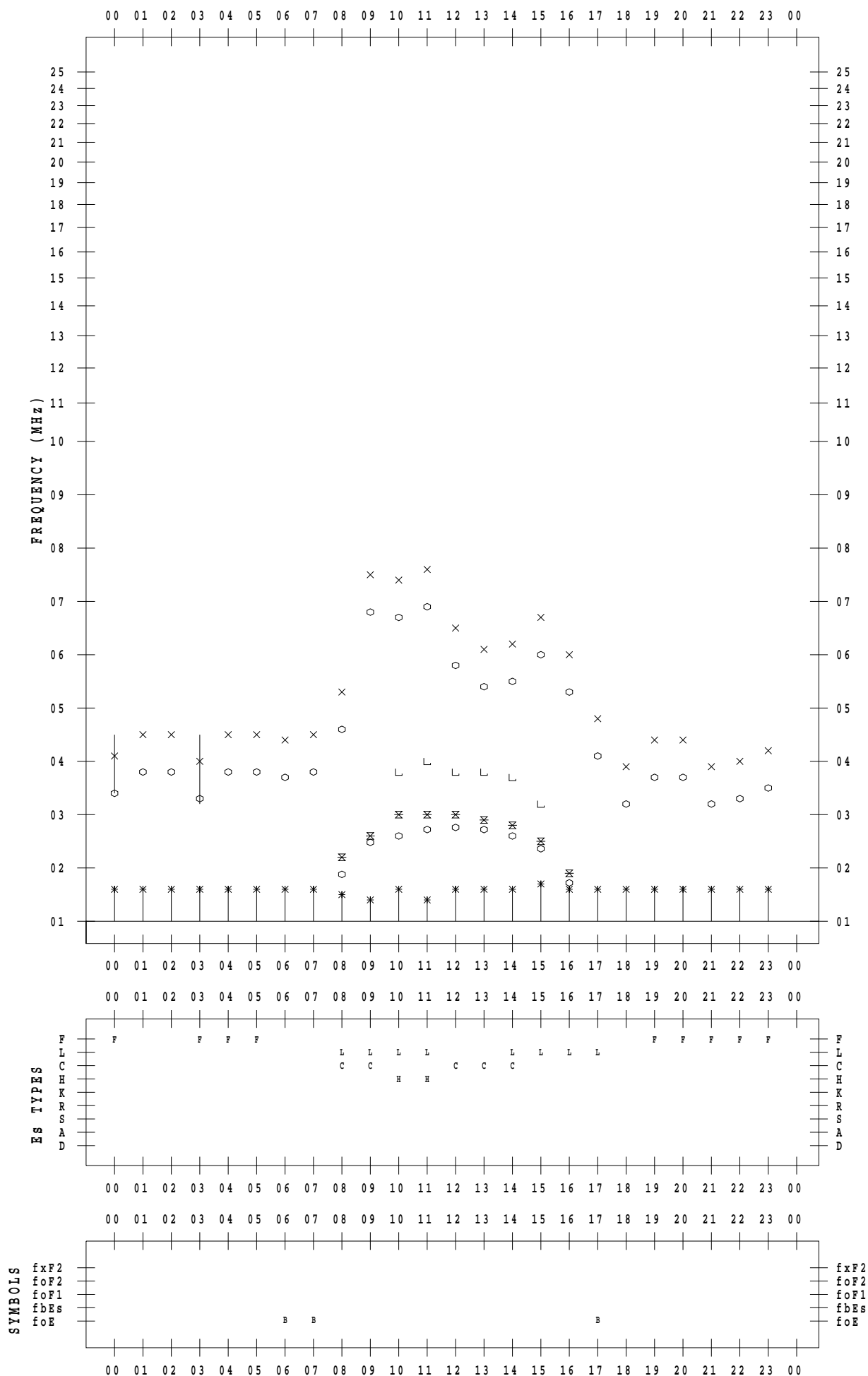
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/24

135 ° E MEAN TIME



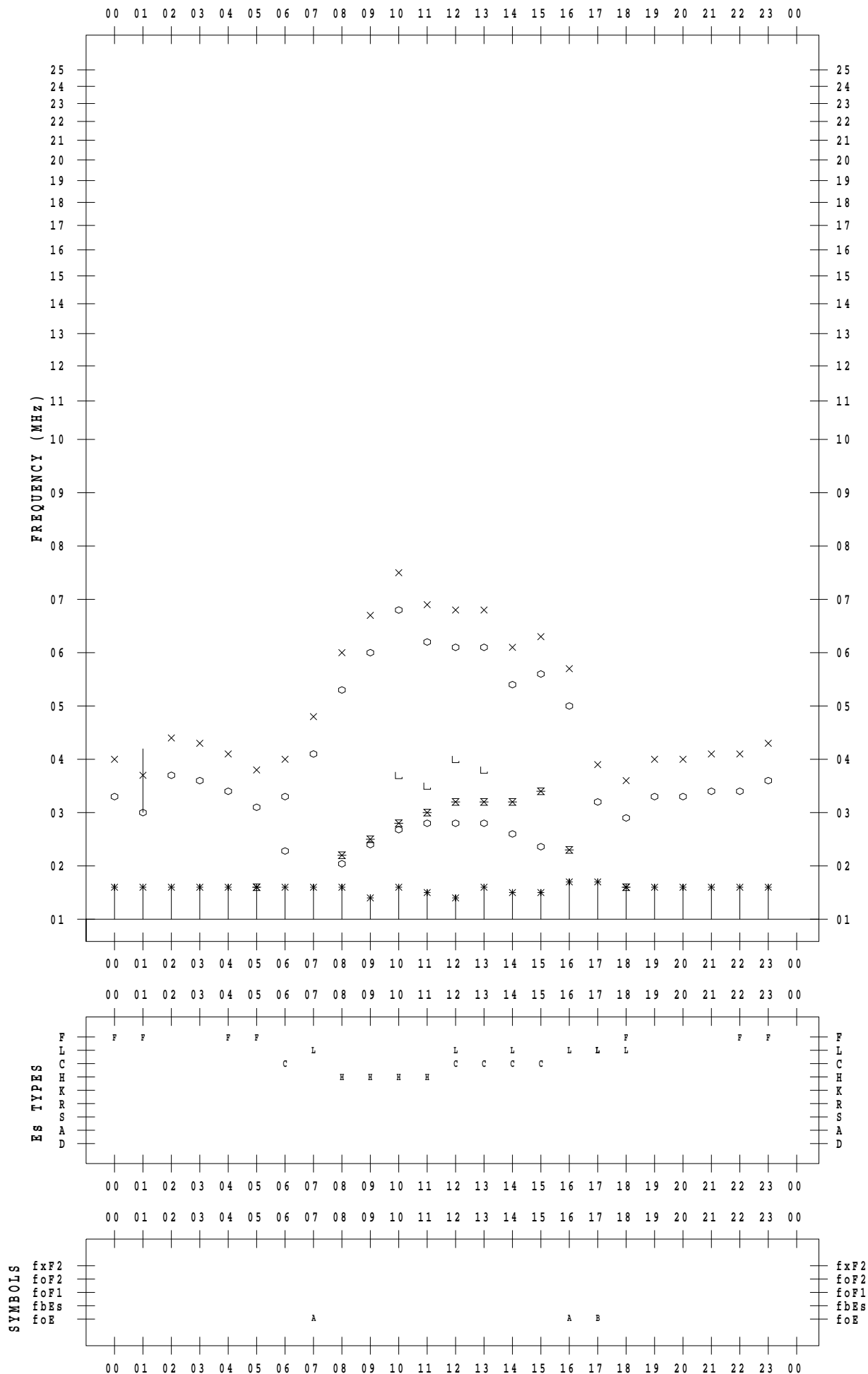
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 25

135 ° E MEAN TIME



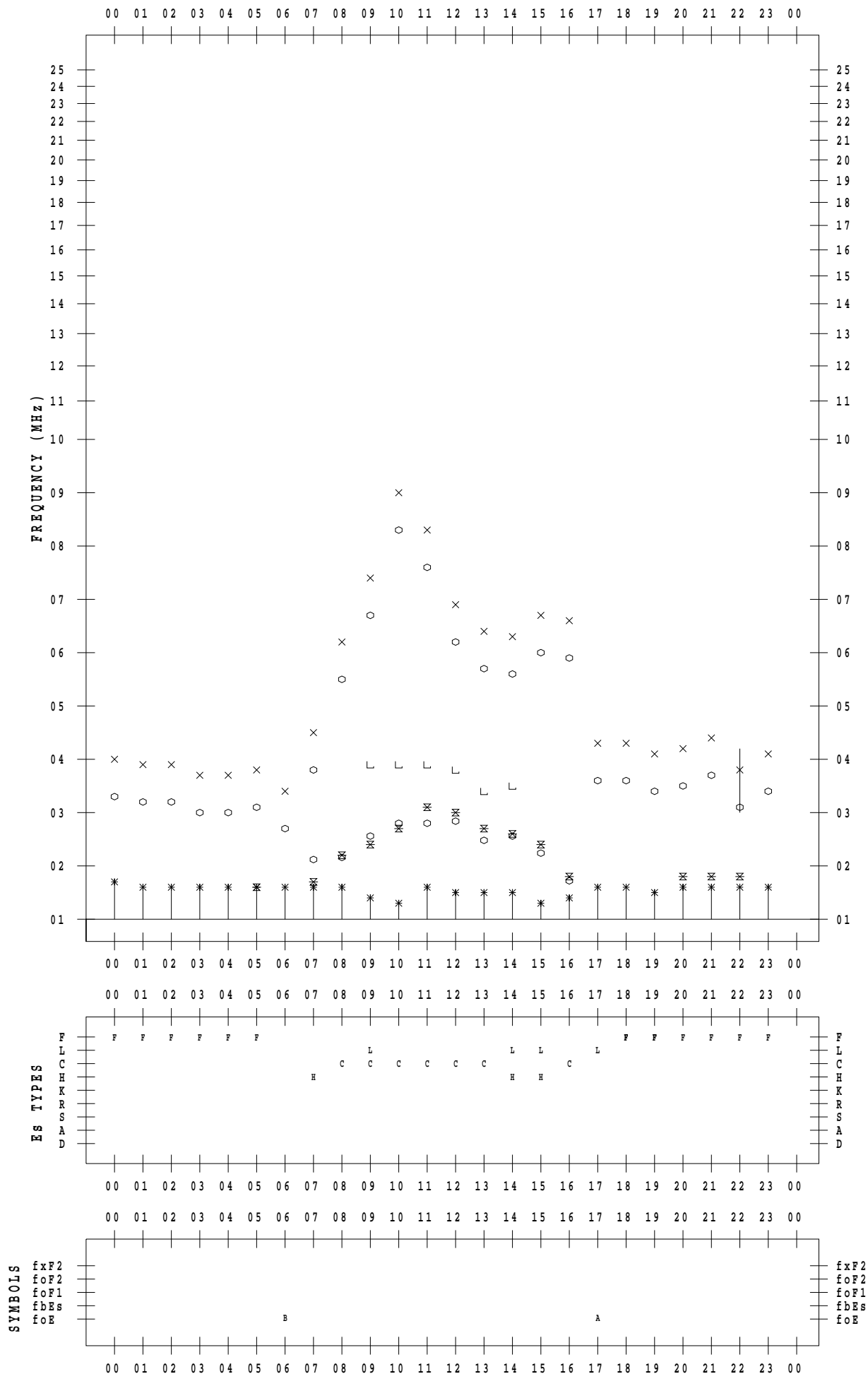
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/26

135 ° E MEAN TIME



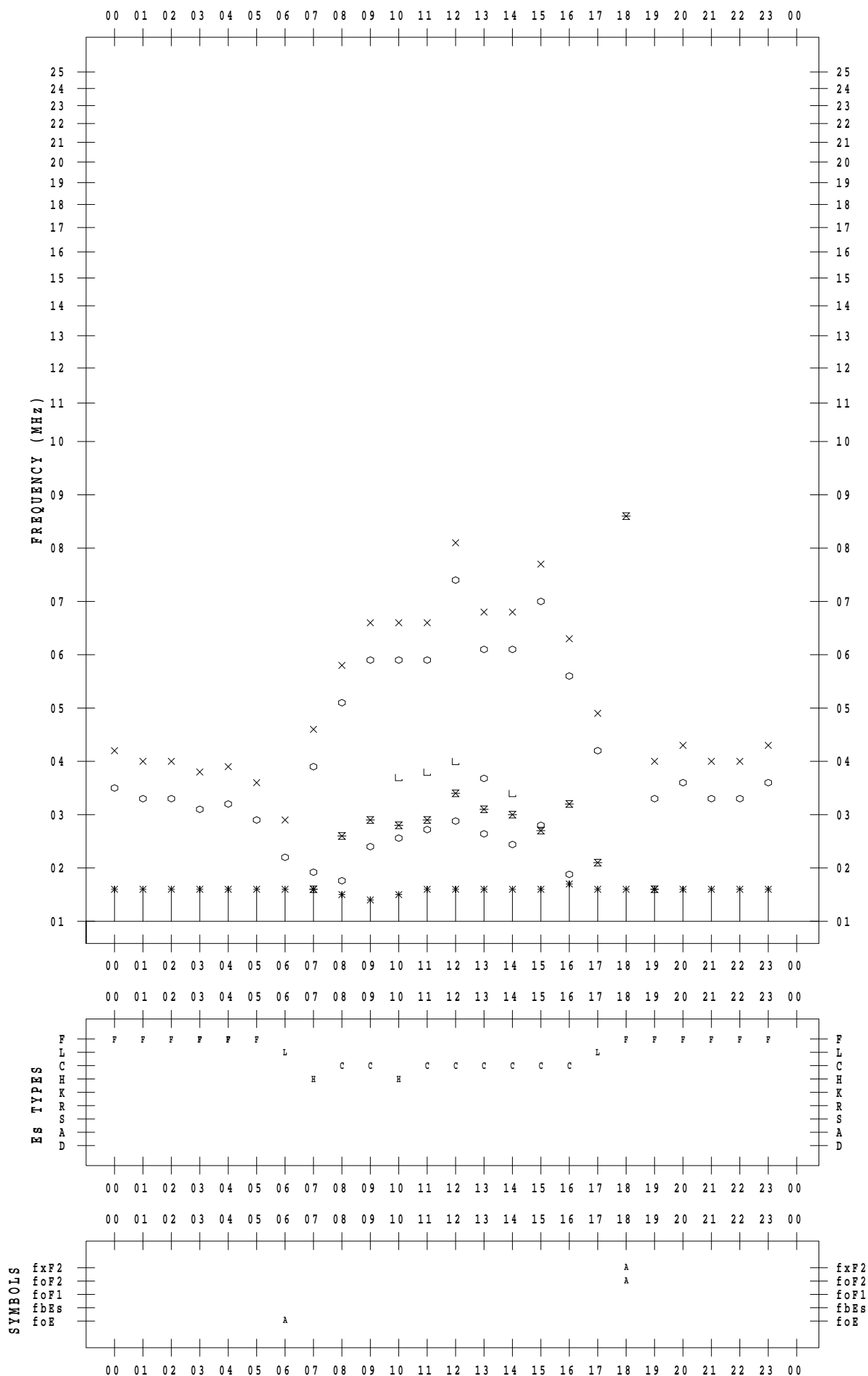
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/27

135 ° E MEAN TIME



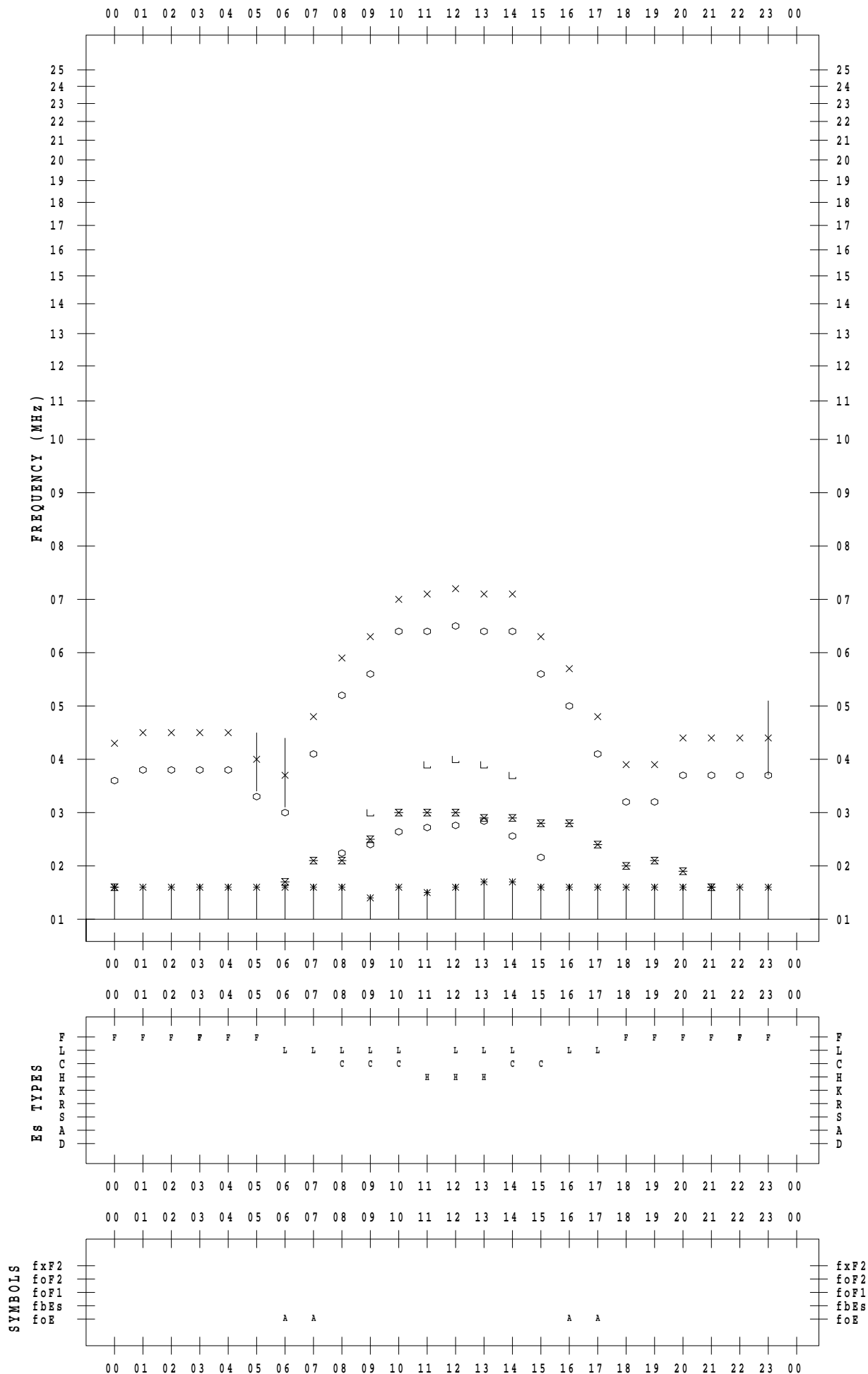
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 28

135 ° E MEAN TIME



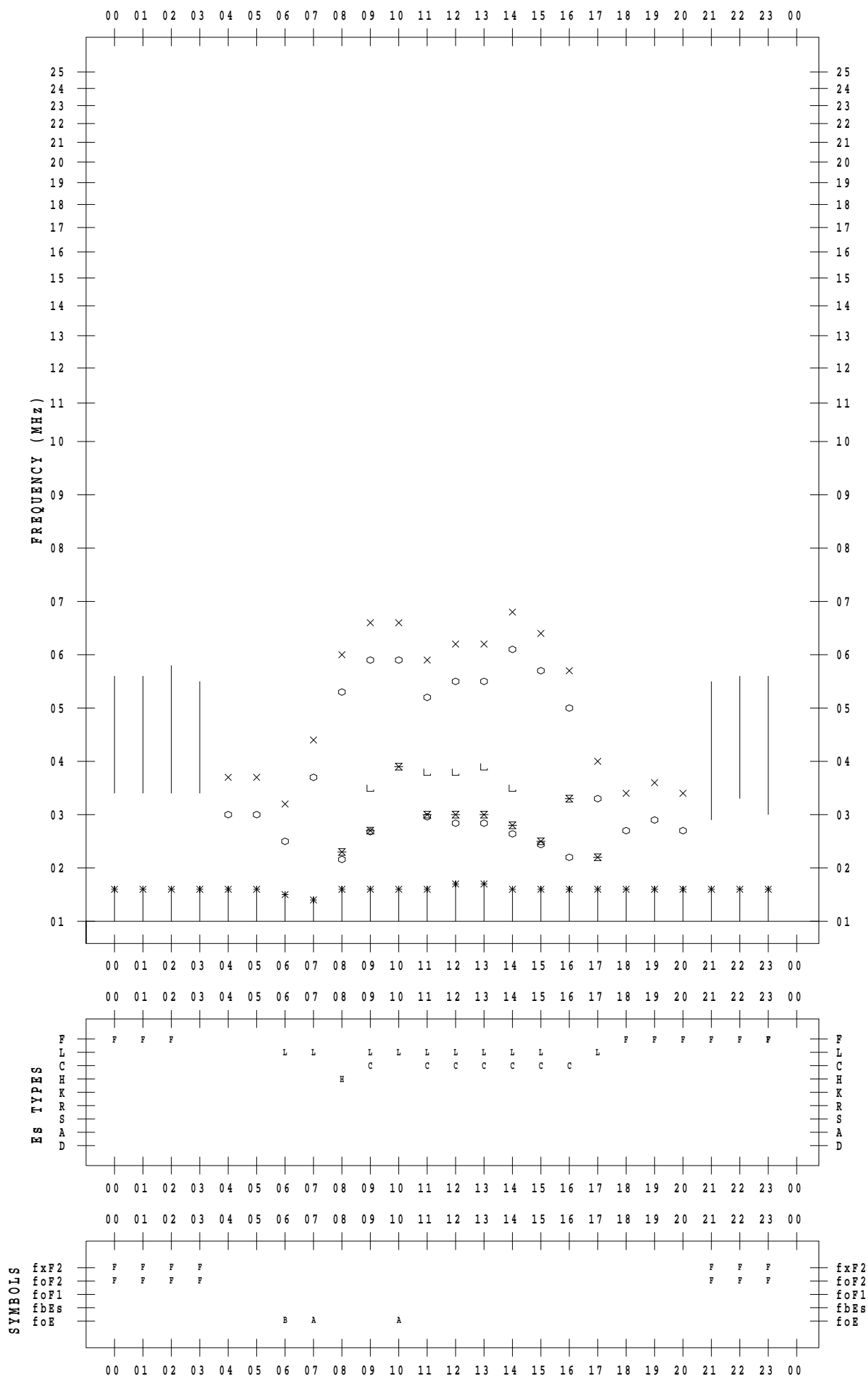
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/29

135 ° E MEAN TIME



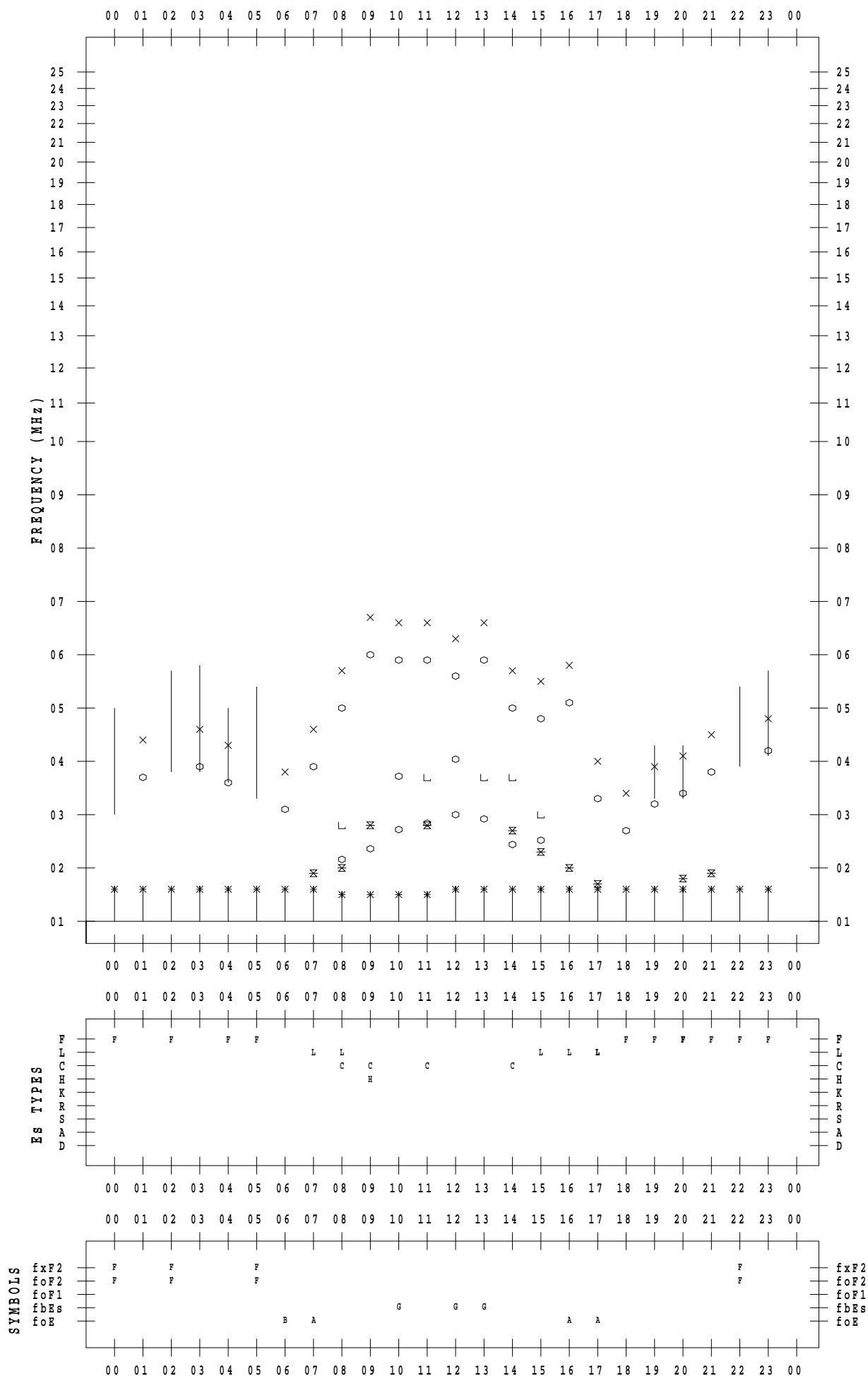
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 1/30

135 ° E MEAN TIME



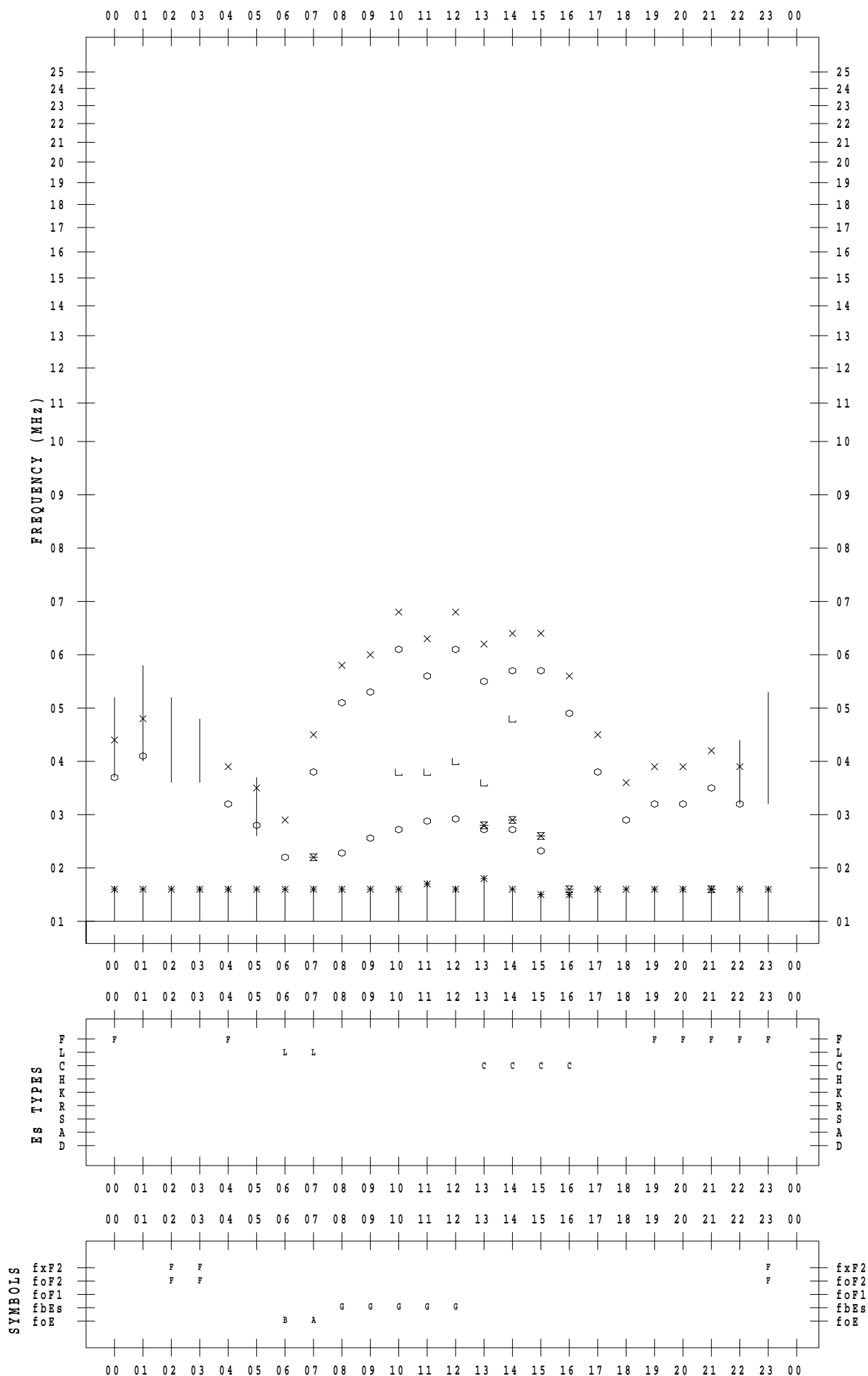
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021 / 1 / 31

135 ° E MEAN TIME



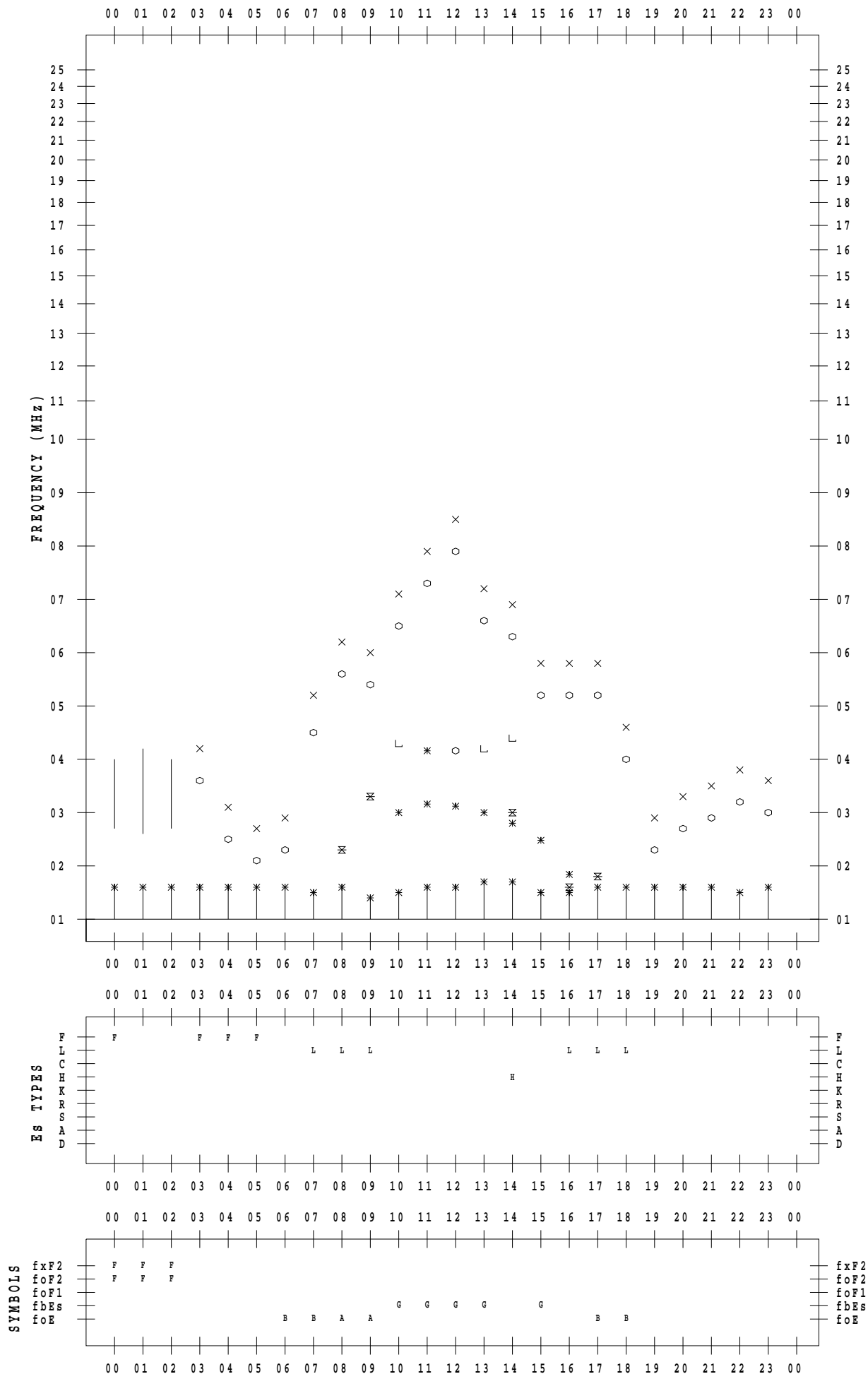
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/ 1

135 ° E MEAN TIME



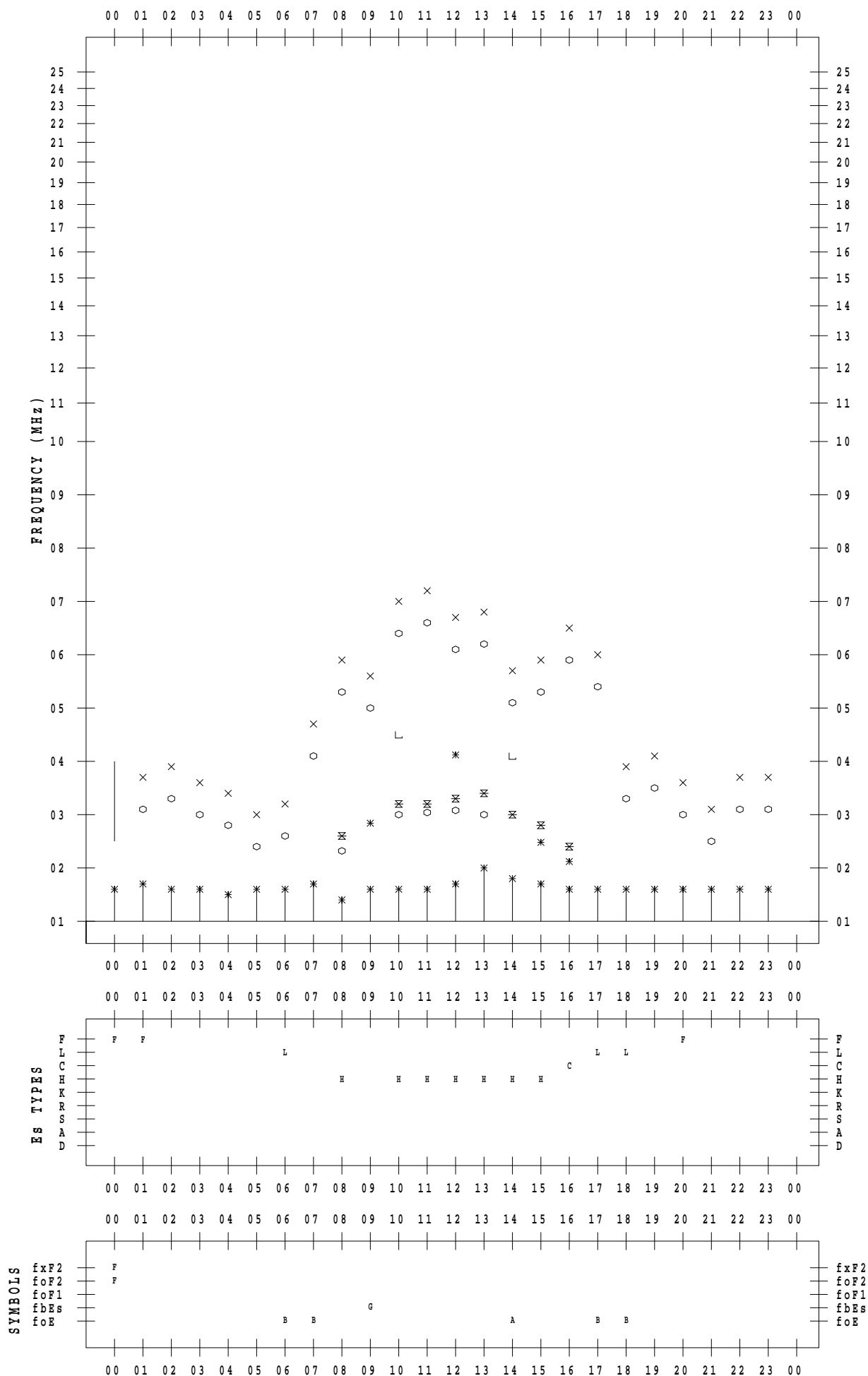
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/ 2

135 ° E MEAN TIME



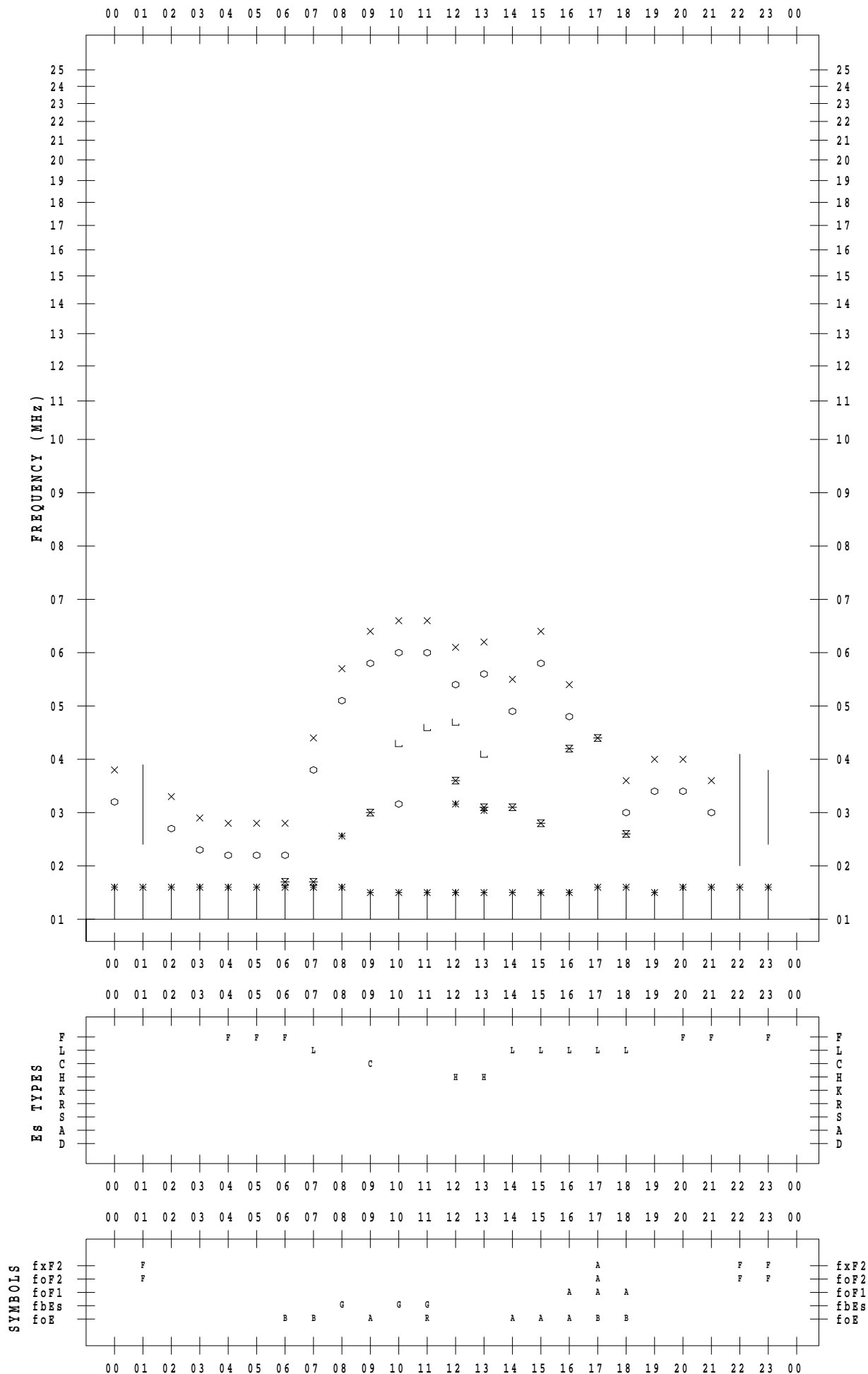
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/ 3

135 ° E MEAN TIME



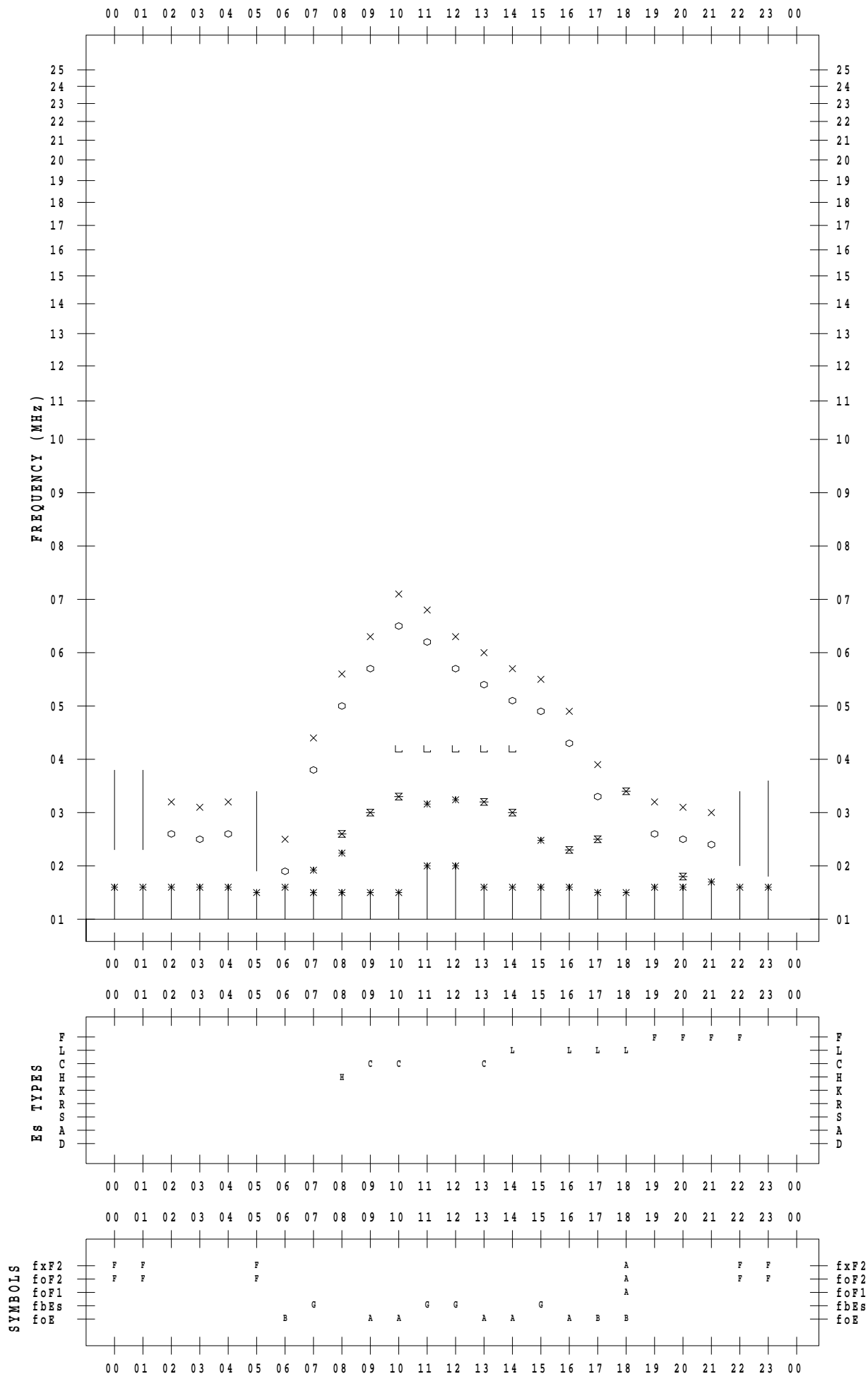
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021 / 1 / 4

135 ° E MEAN TIME



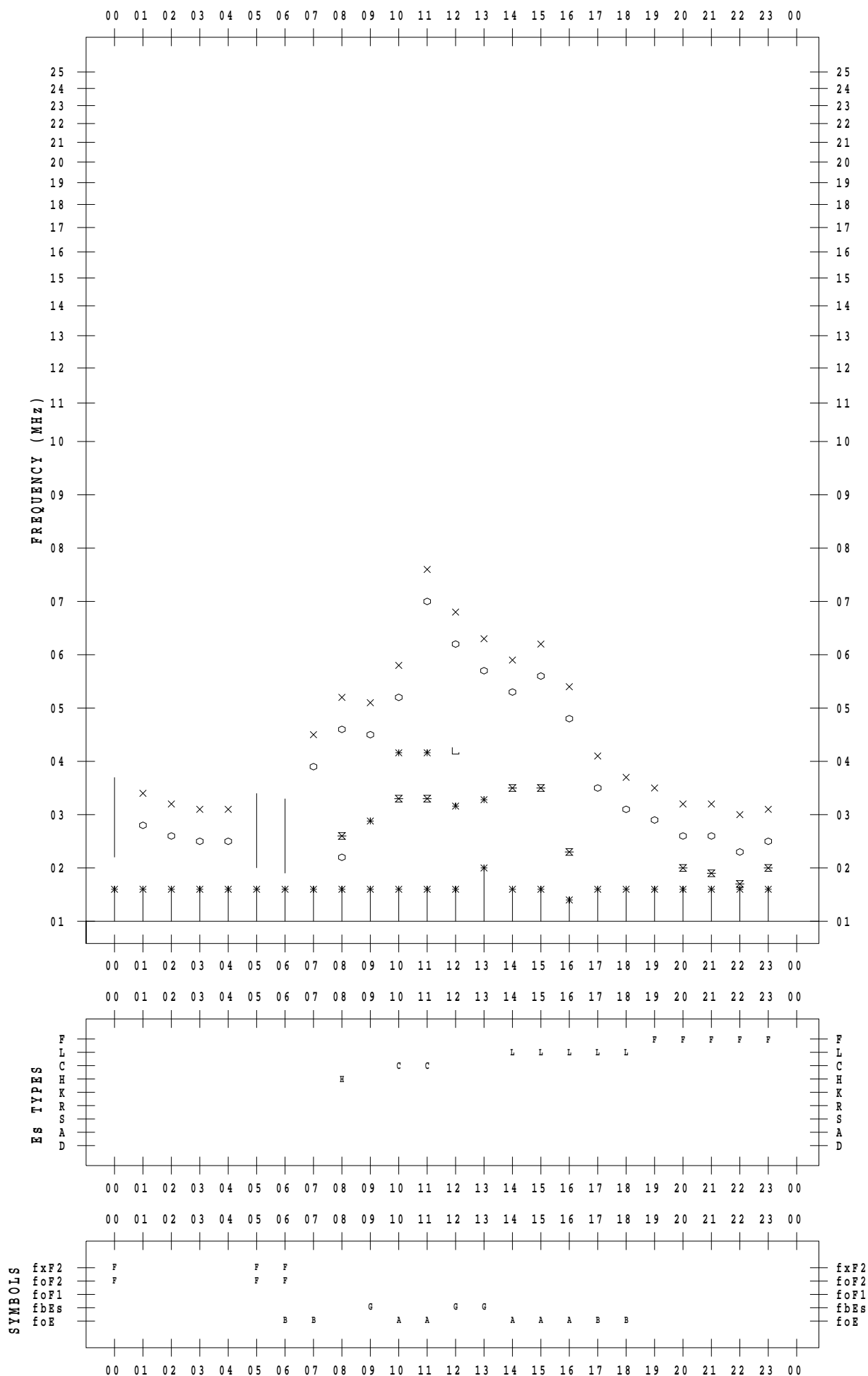
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/ 5

135 ° E MEAN TIME



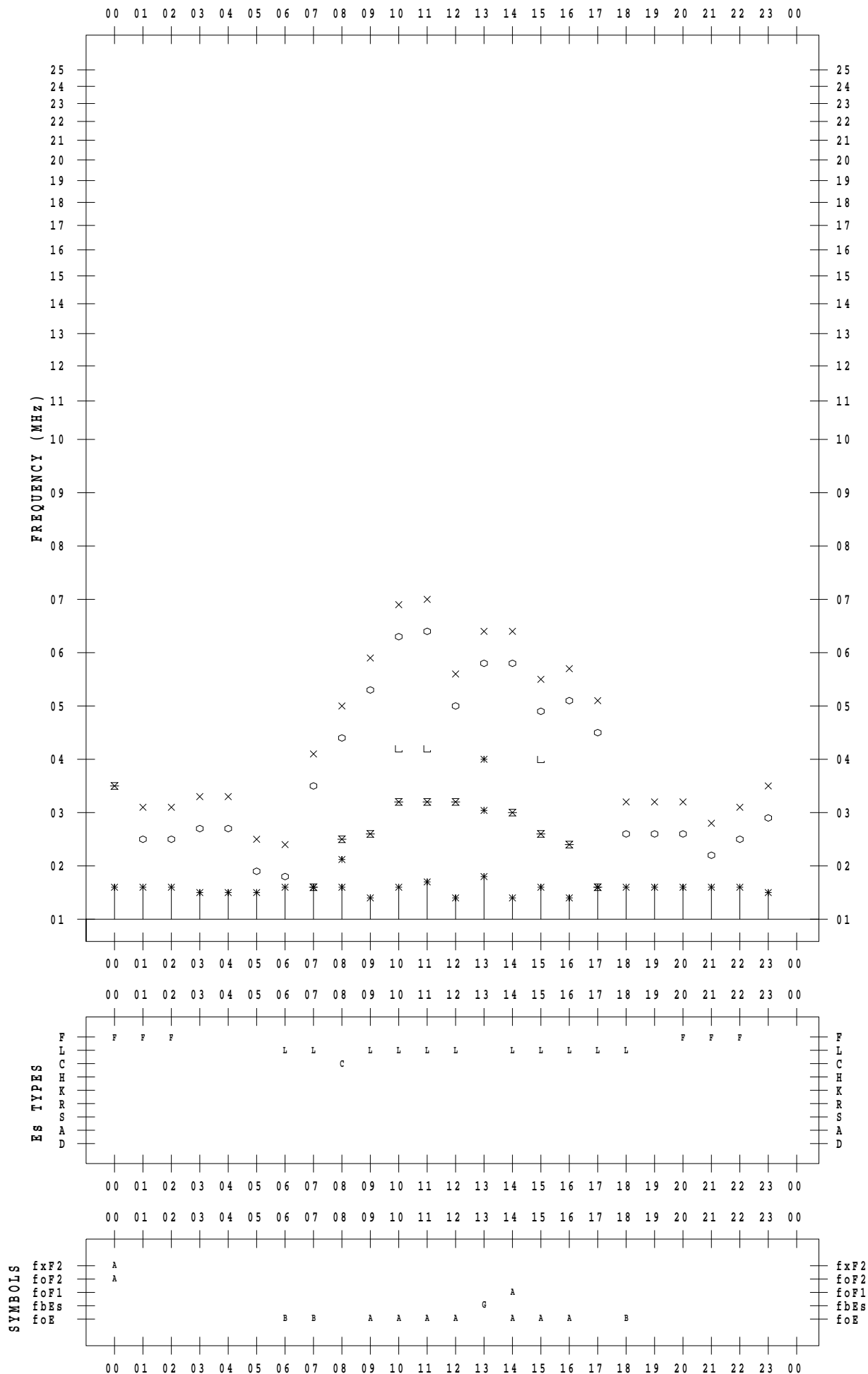
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/ 6

135 ° E MEAN TIME



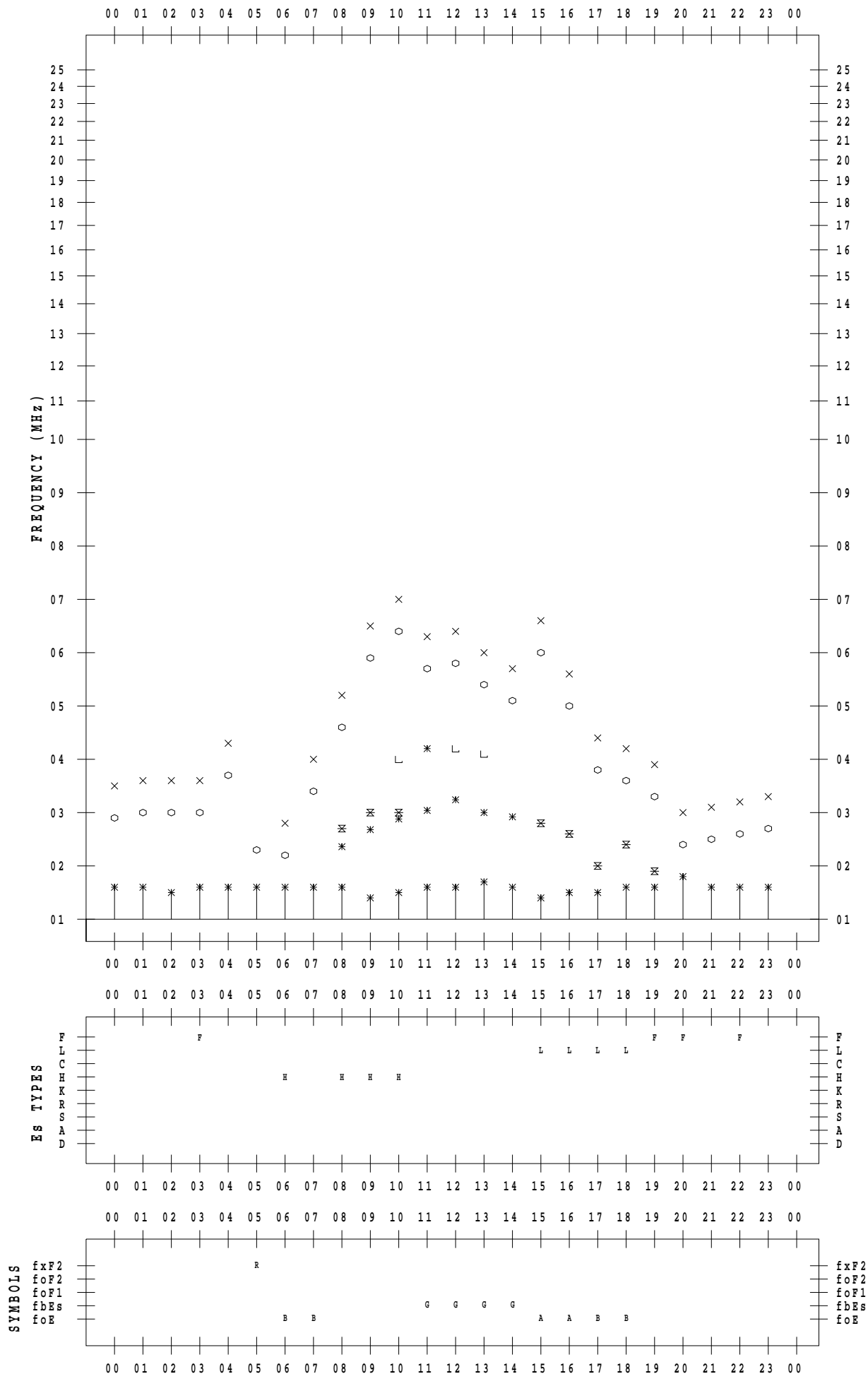
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/ 7

135 ° E MEAN TIME



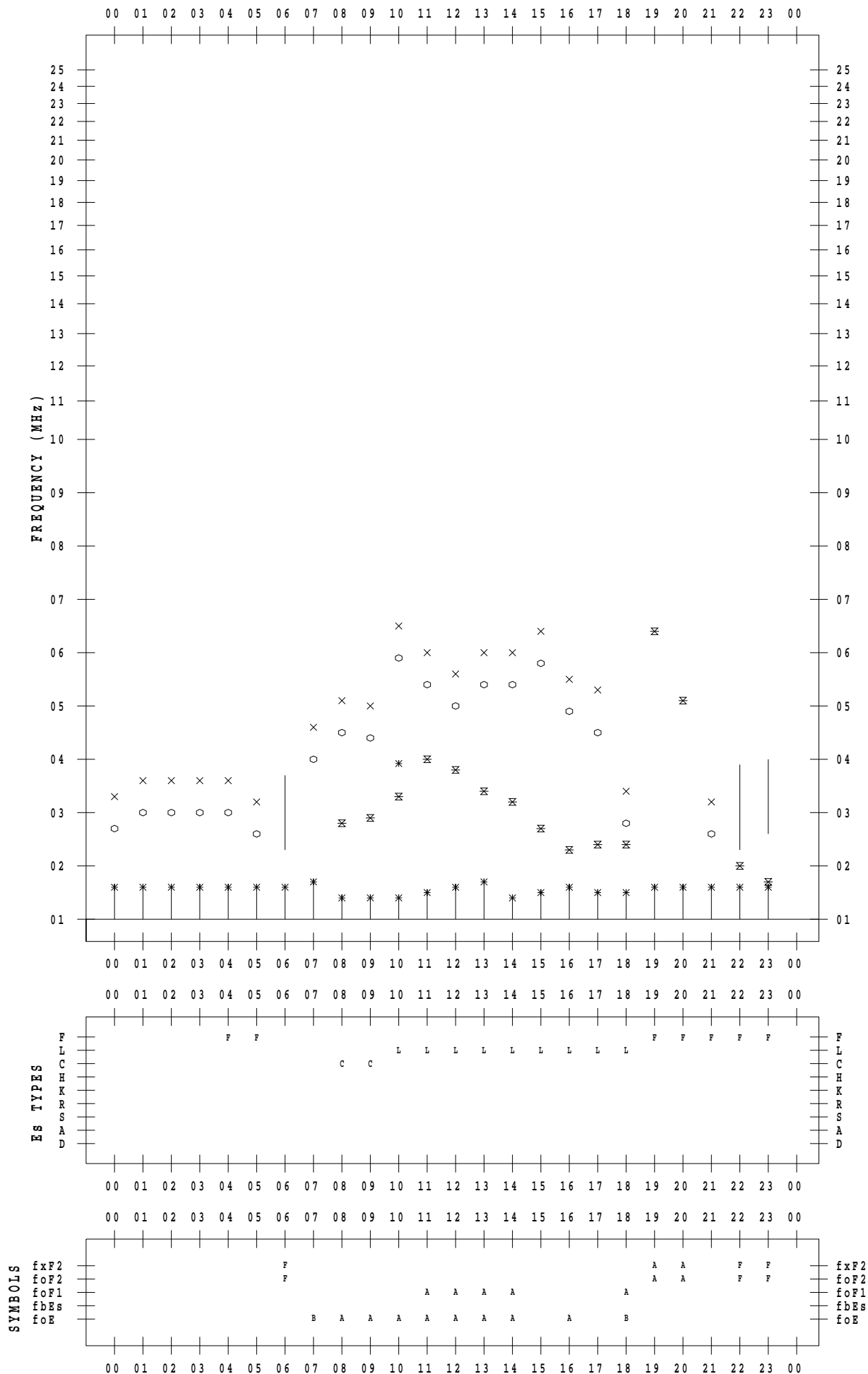
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021 / 1 / 8

135 ° E MEAN TIME



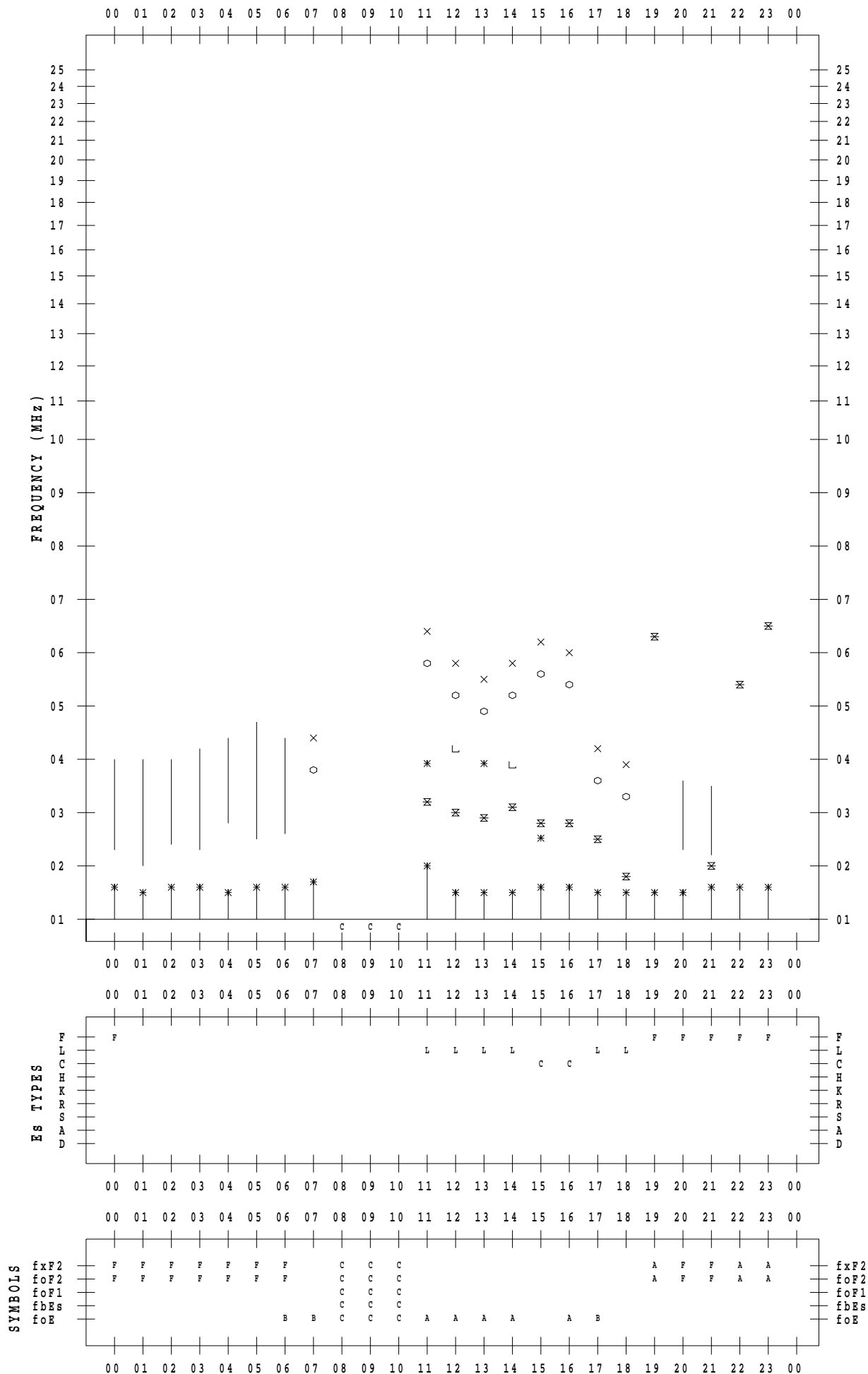
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021 / 1 / 9

135 ° E MEAN TIME



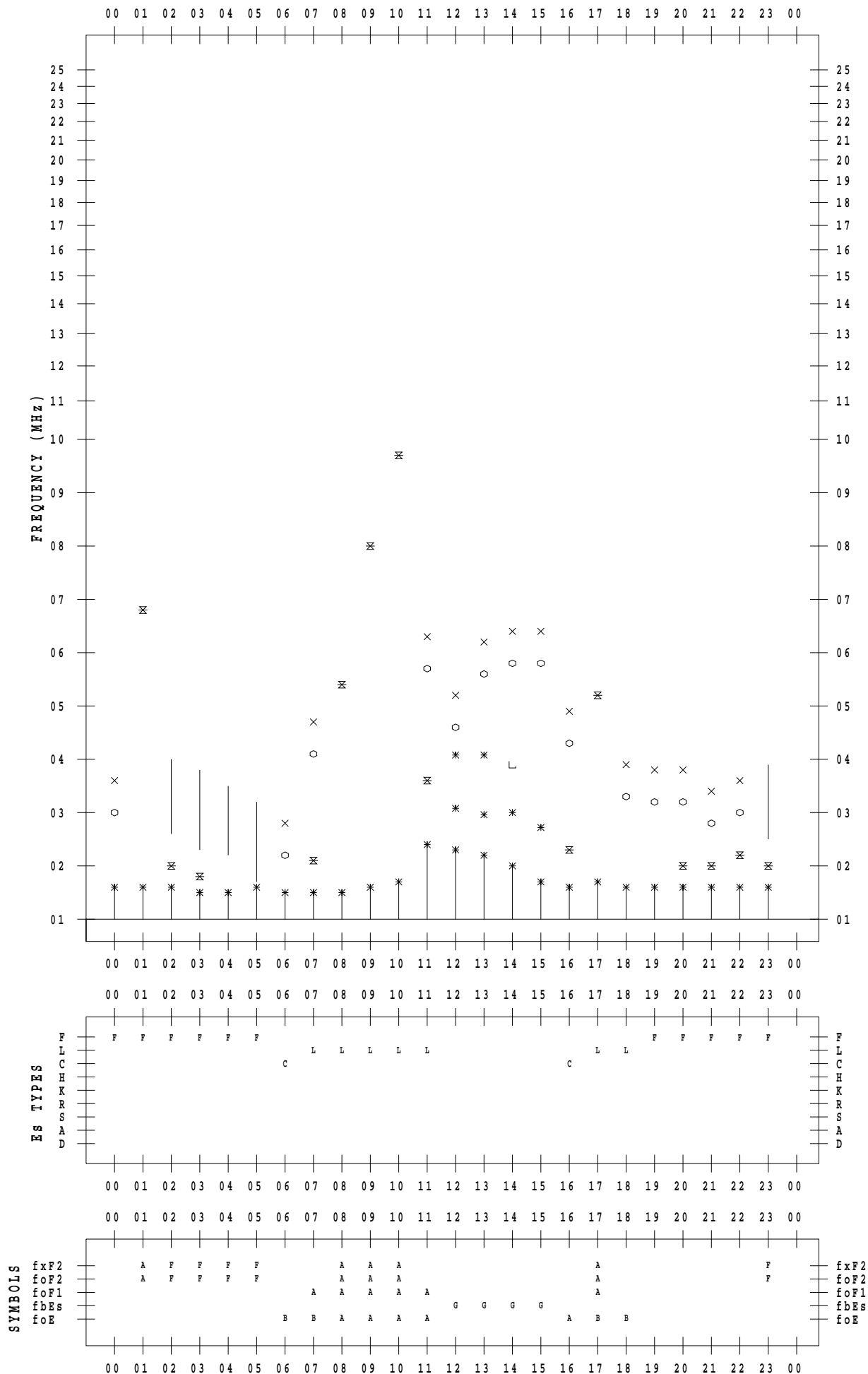
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/10

135 ° E MEAN TIME



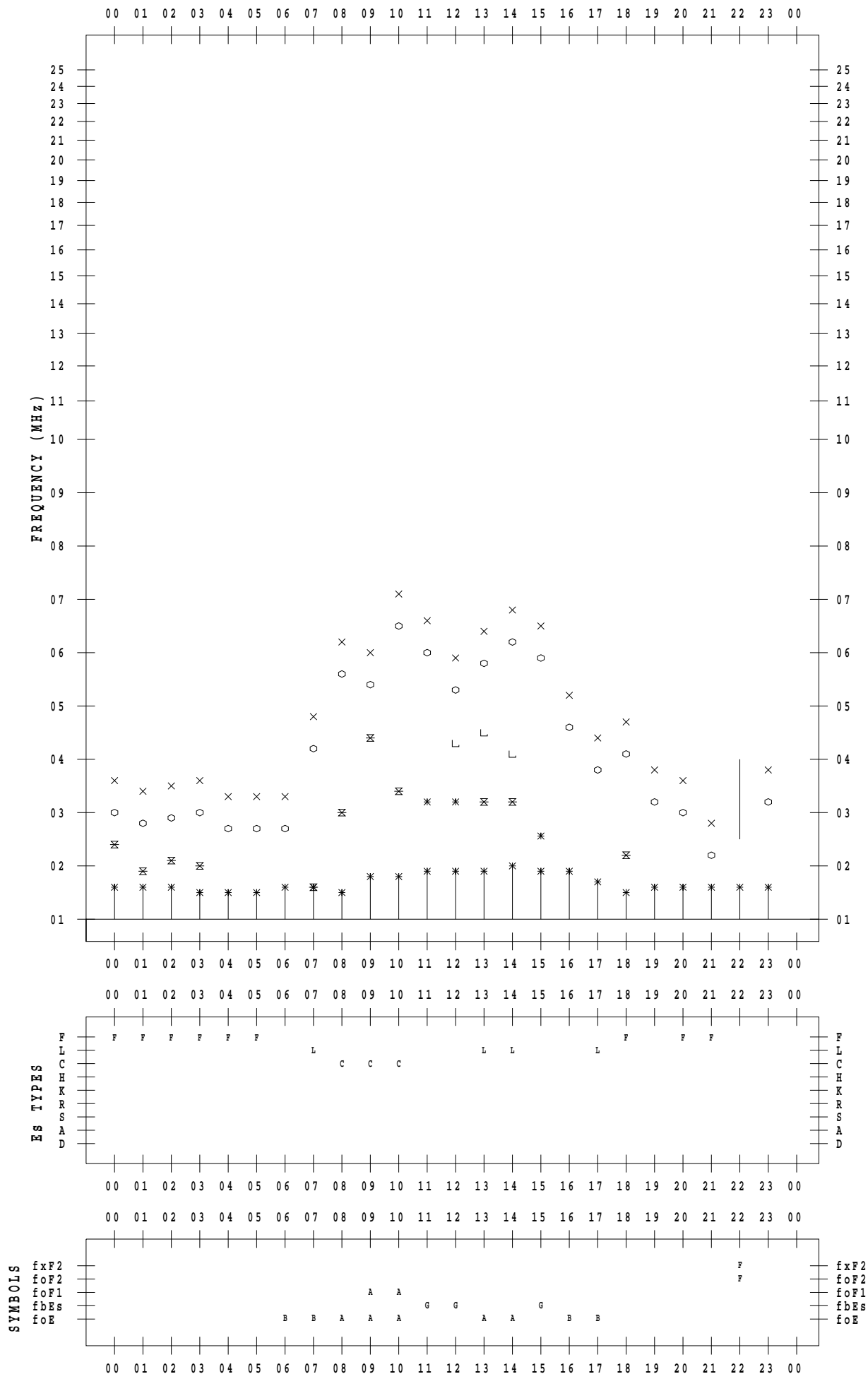
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/11

135 ° E MEAN TIME



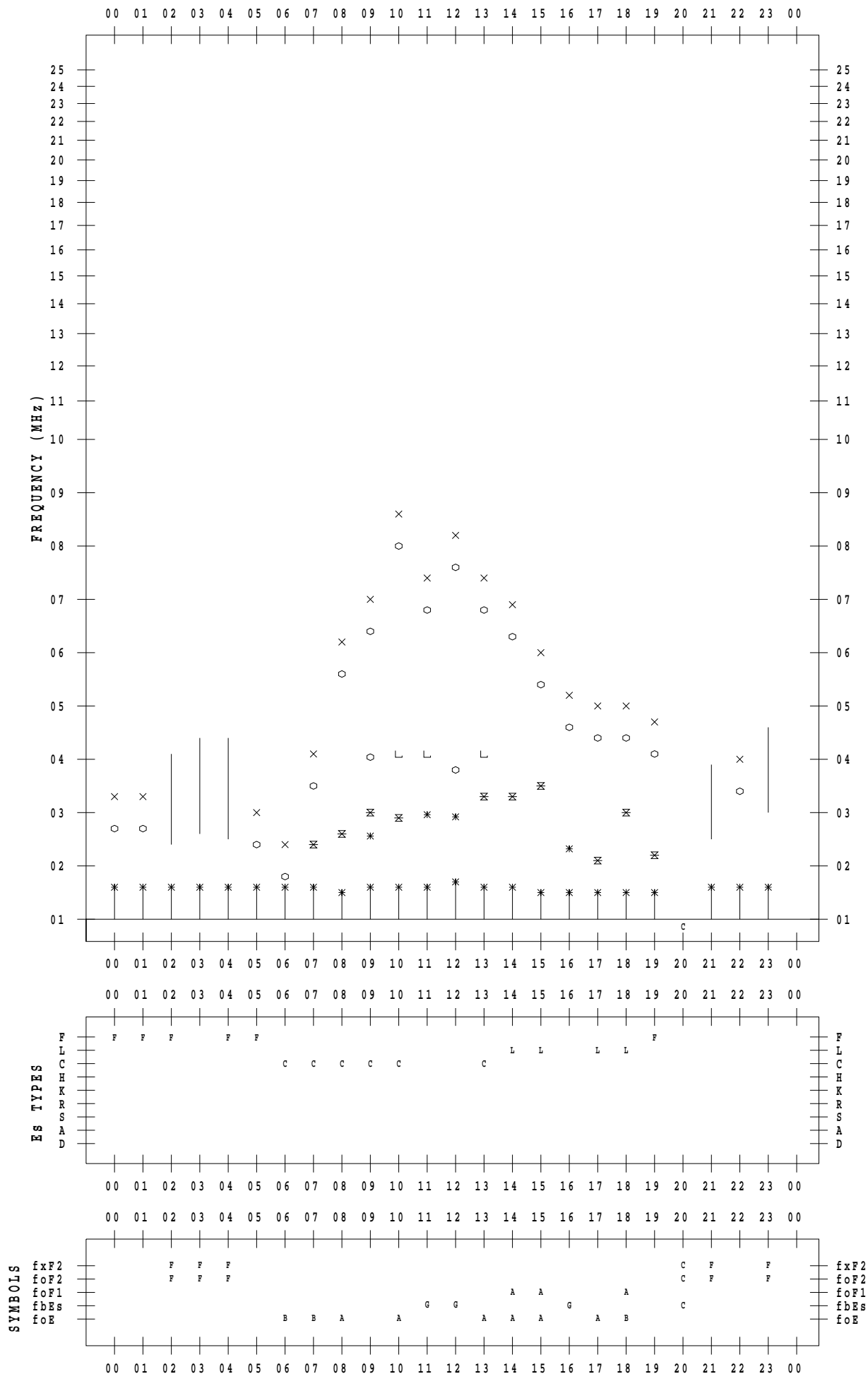
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/12

135 ° E MEAN TIME



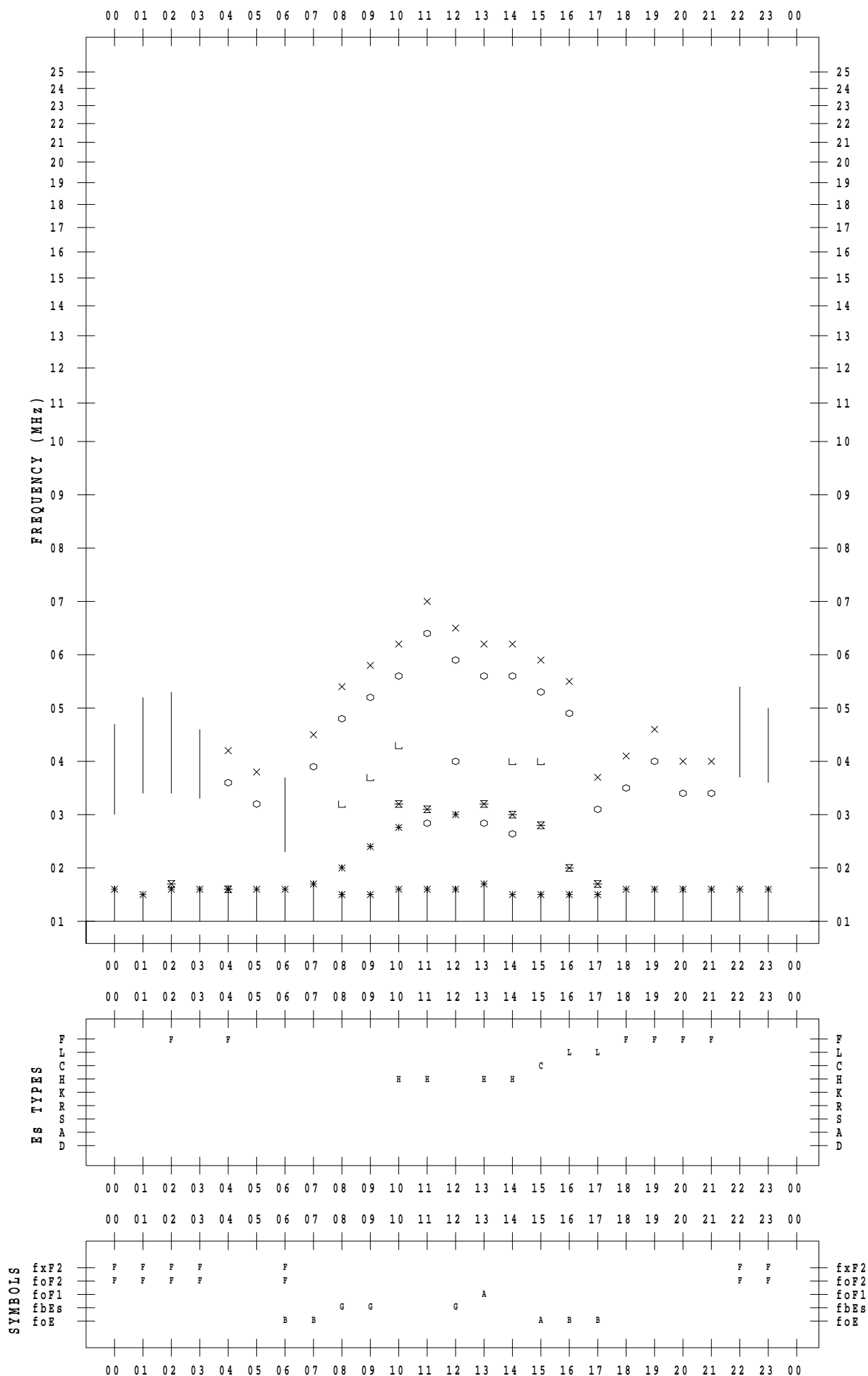
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/13

135 ° E MEAN TIME



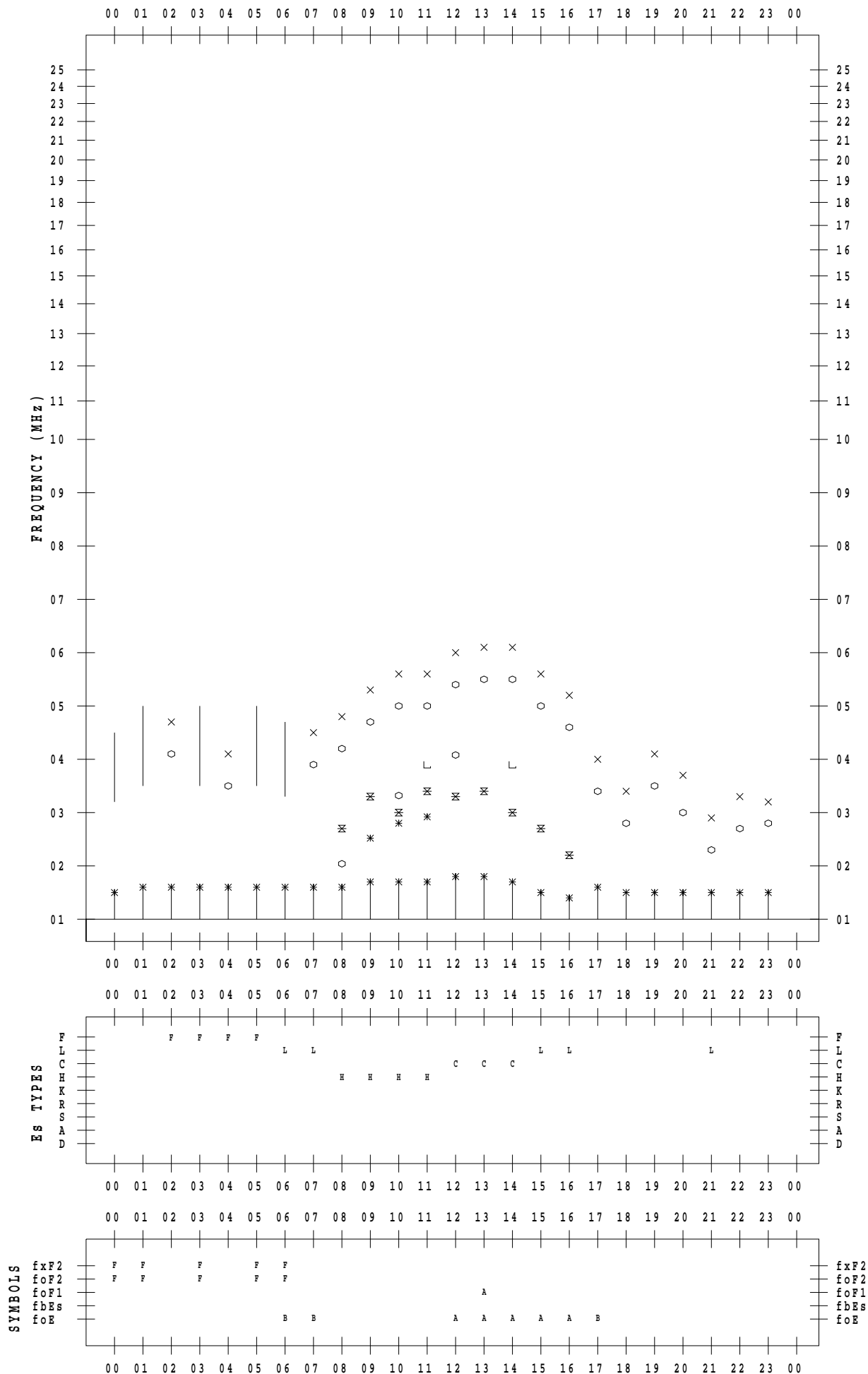
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/14

135 ° E MEAN TIME



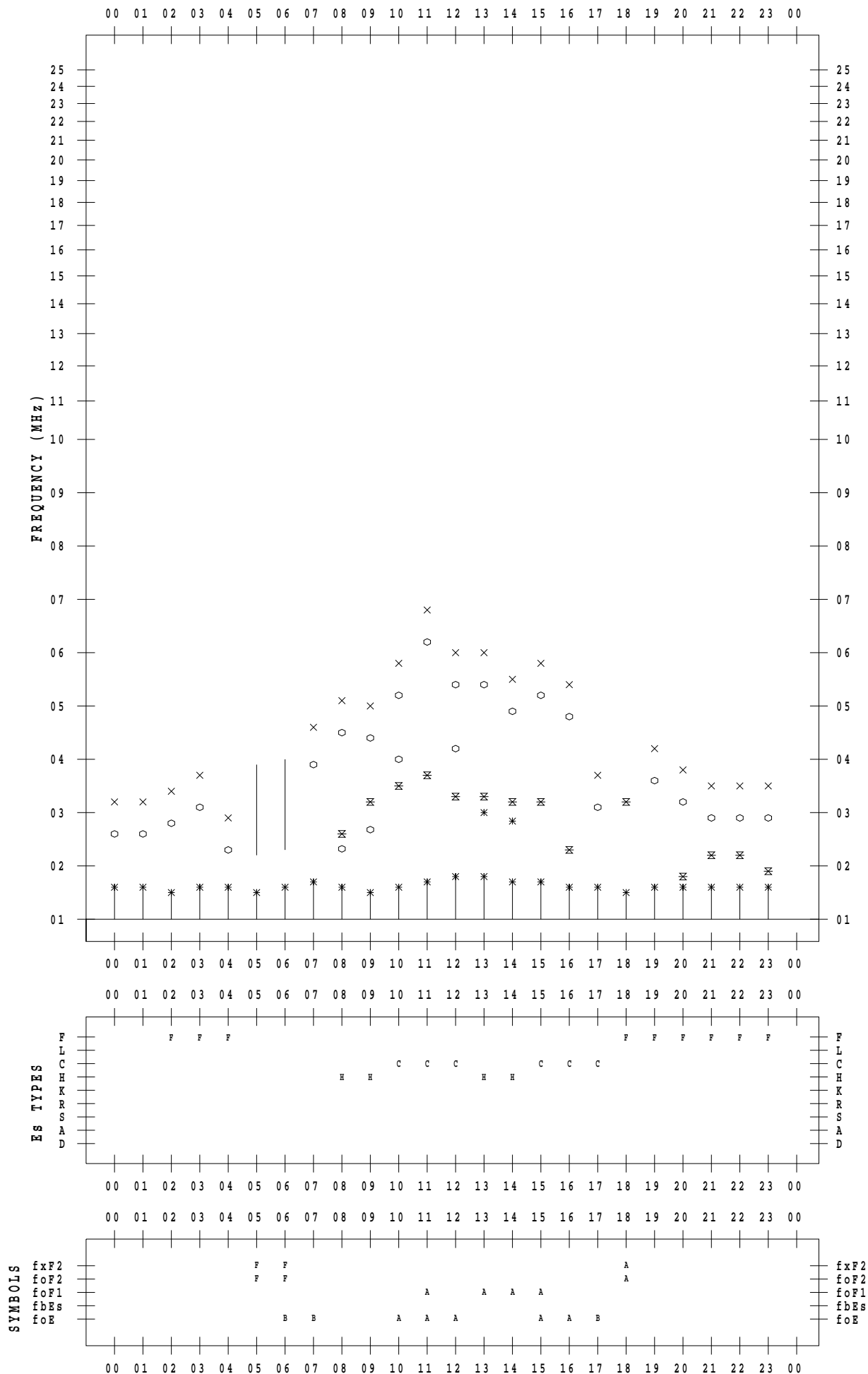
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021 / 1 / 15

135 ° E MEAN TIME



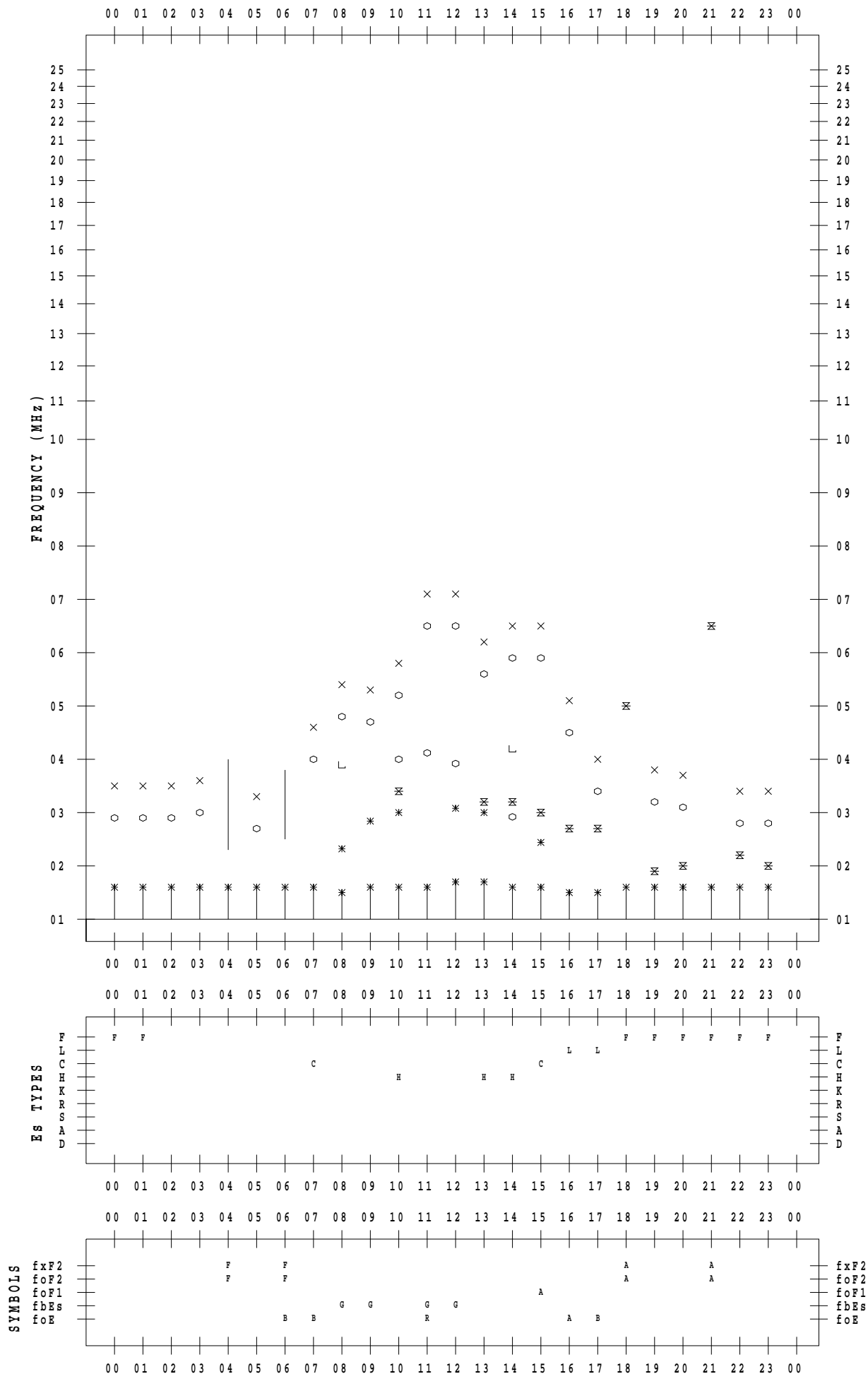
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/16

135 ° E MEAN TIME



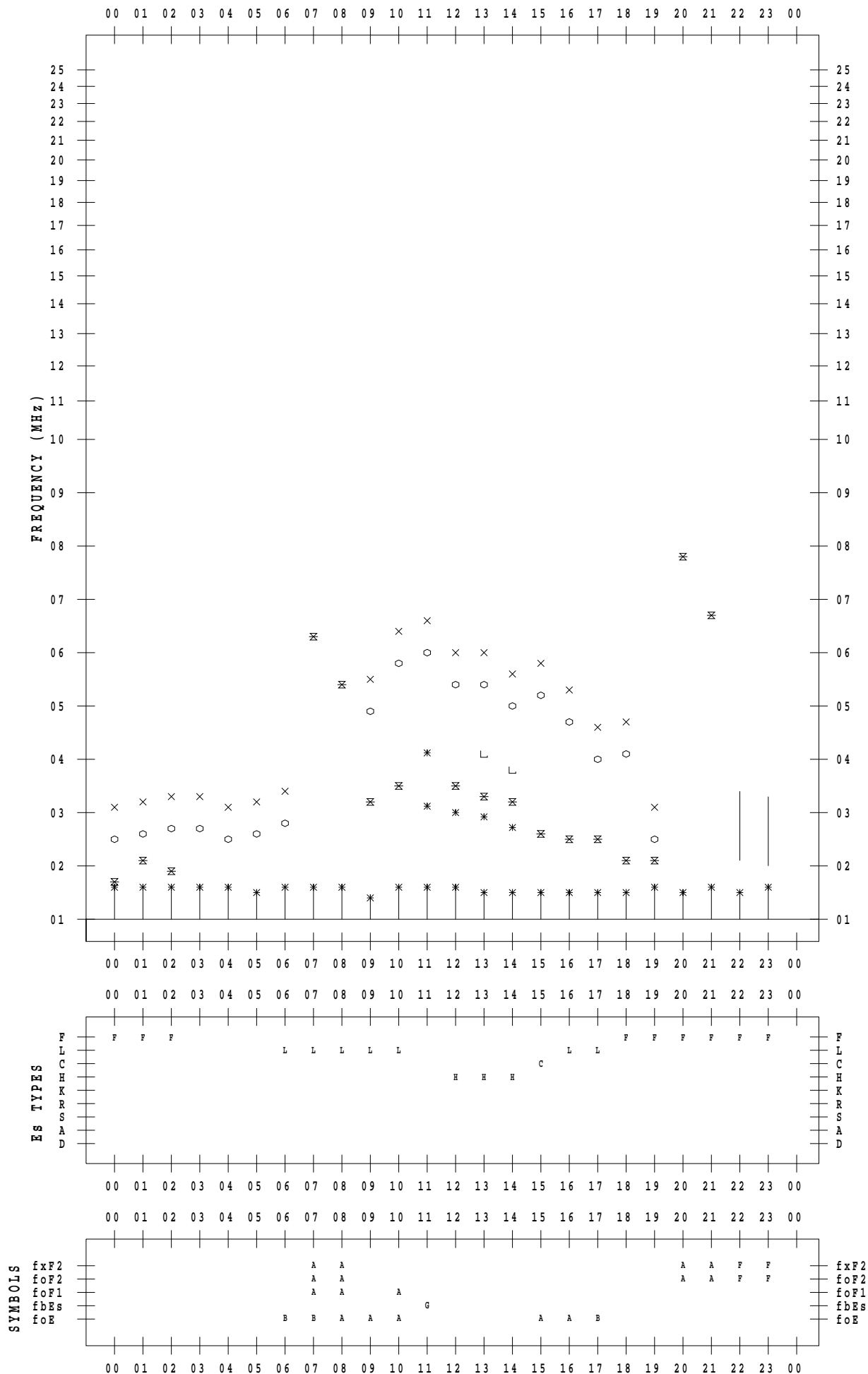
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/17

135 ° E MEAN TIME



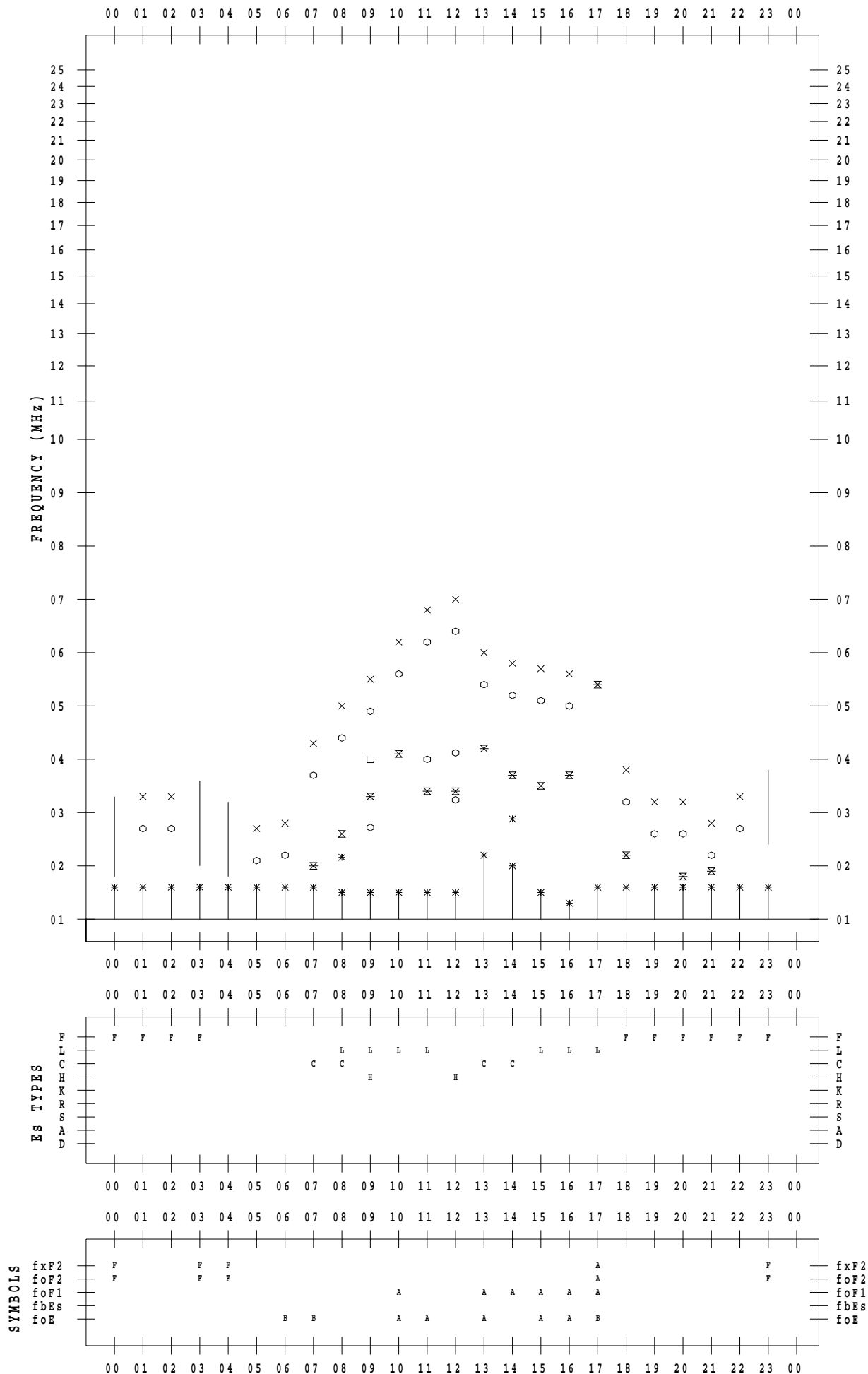
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/18

135 ° E MEAN TIME



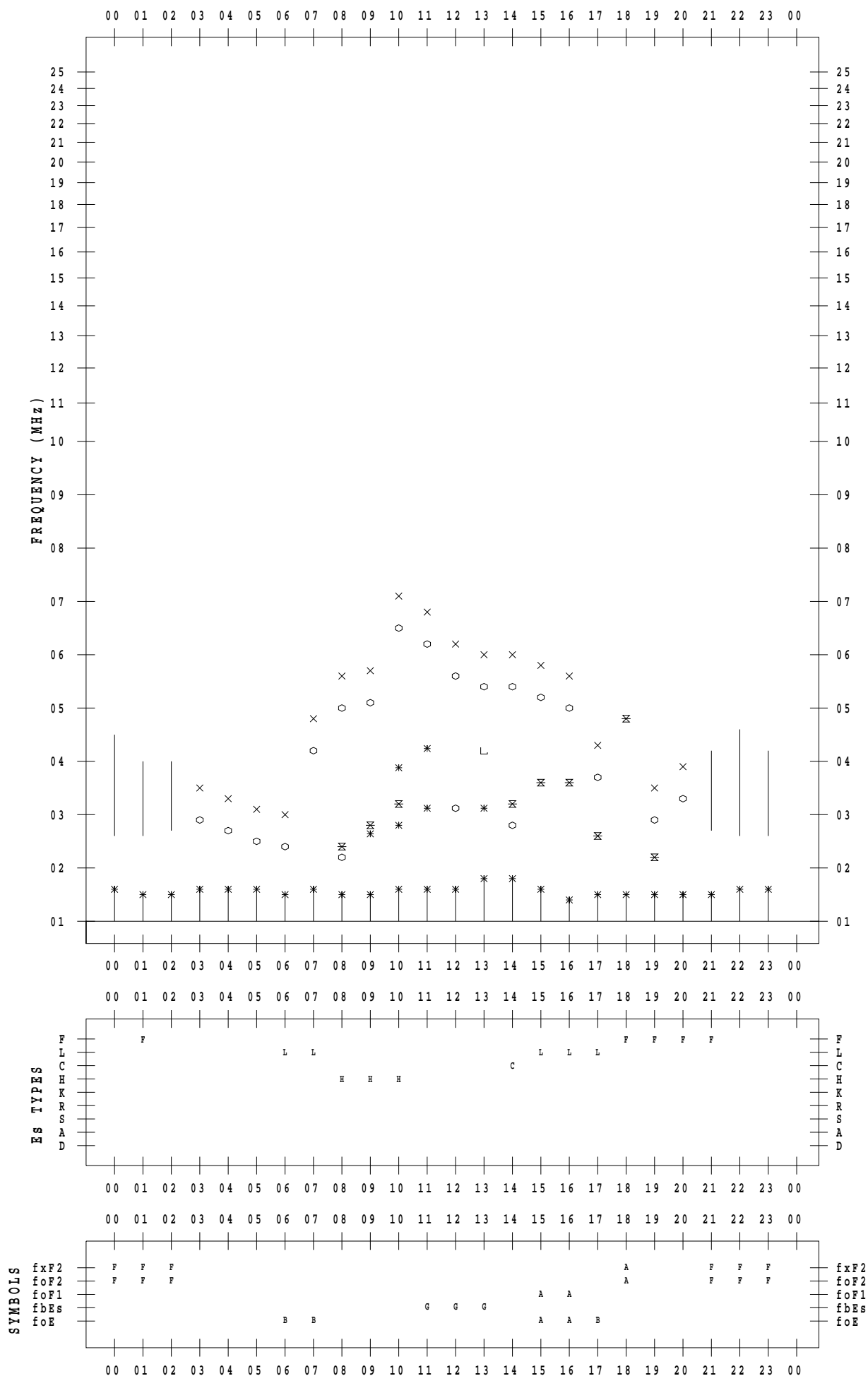
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/19

135 ° E MEAN TIME



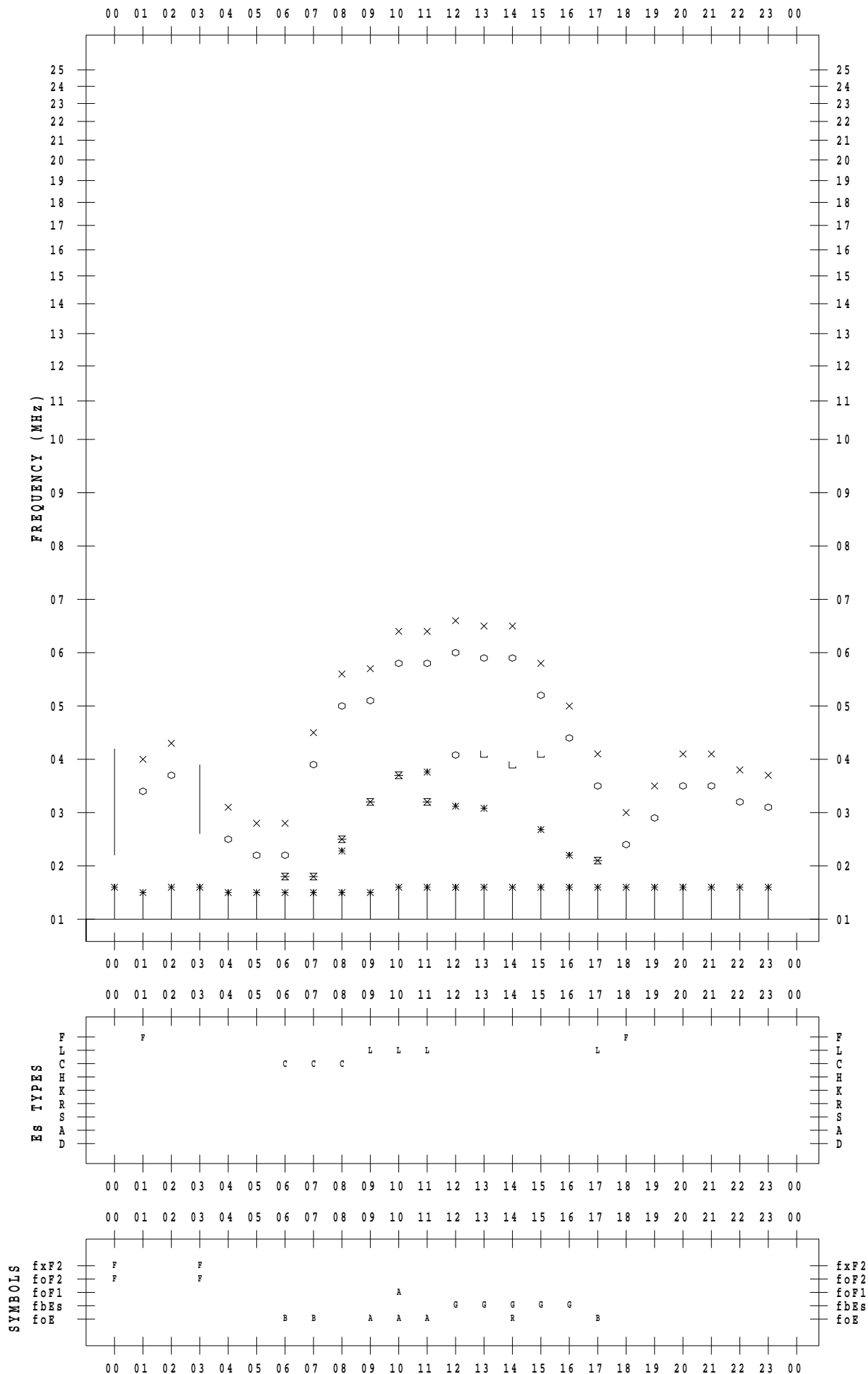
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/20

135 ° E MEAN TIME



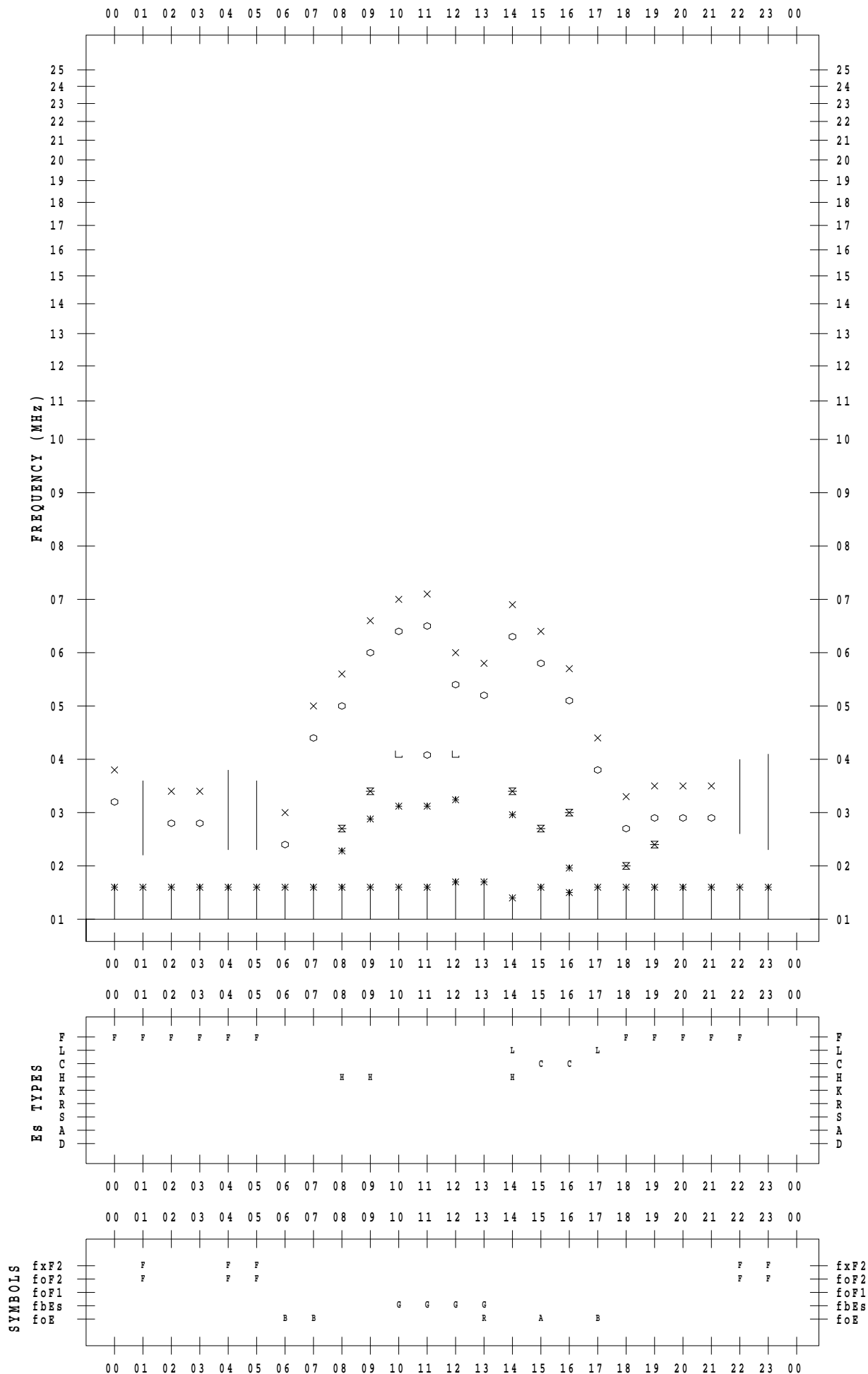
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/21

135 ° E MEAN TIME



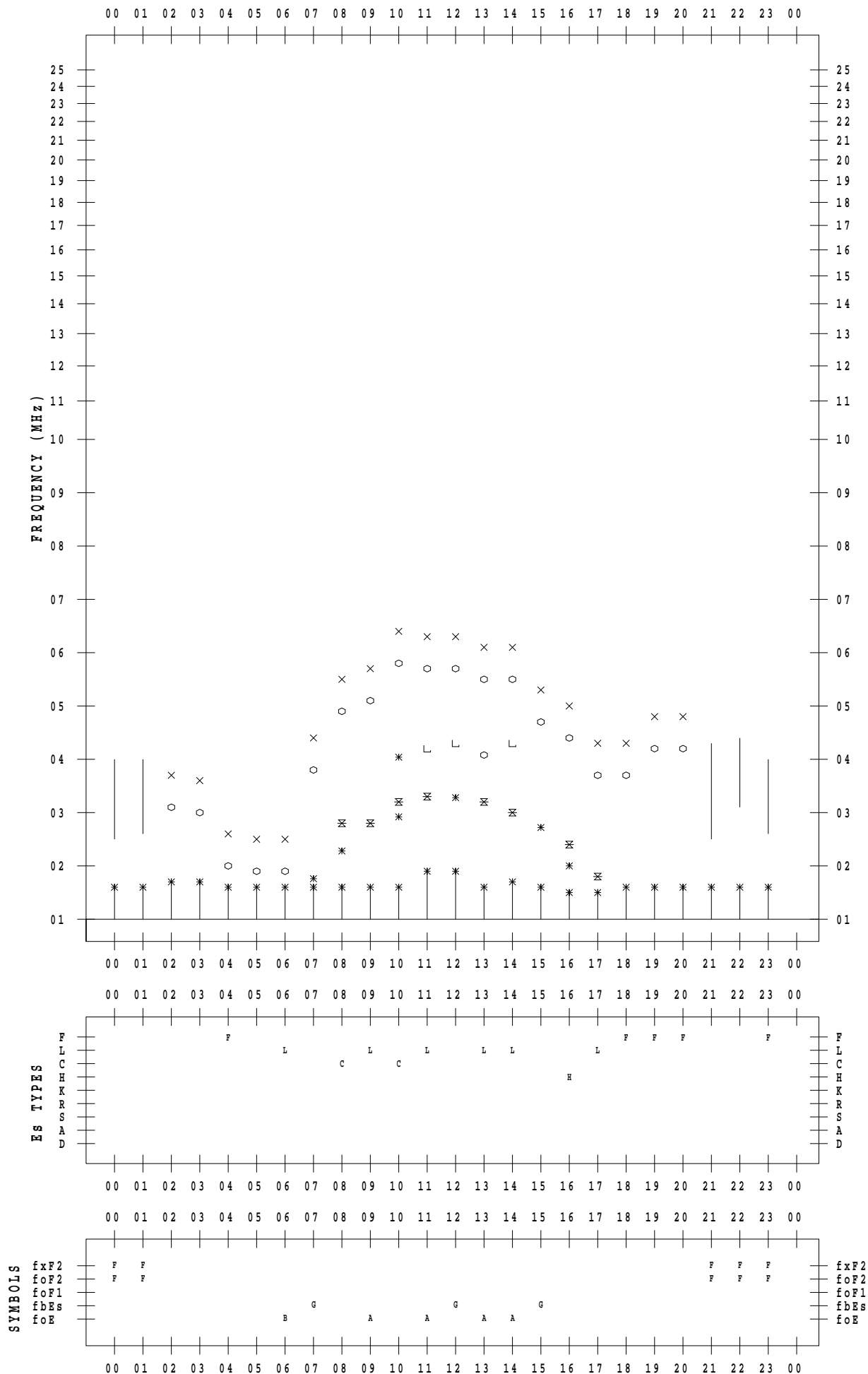
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/22

135 ° E MEAN TIME



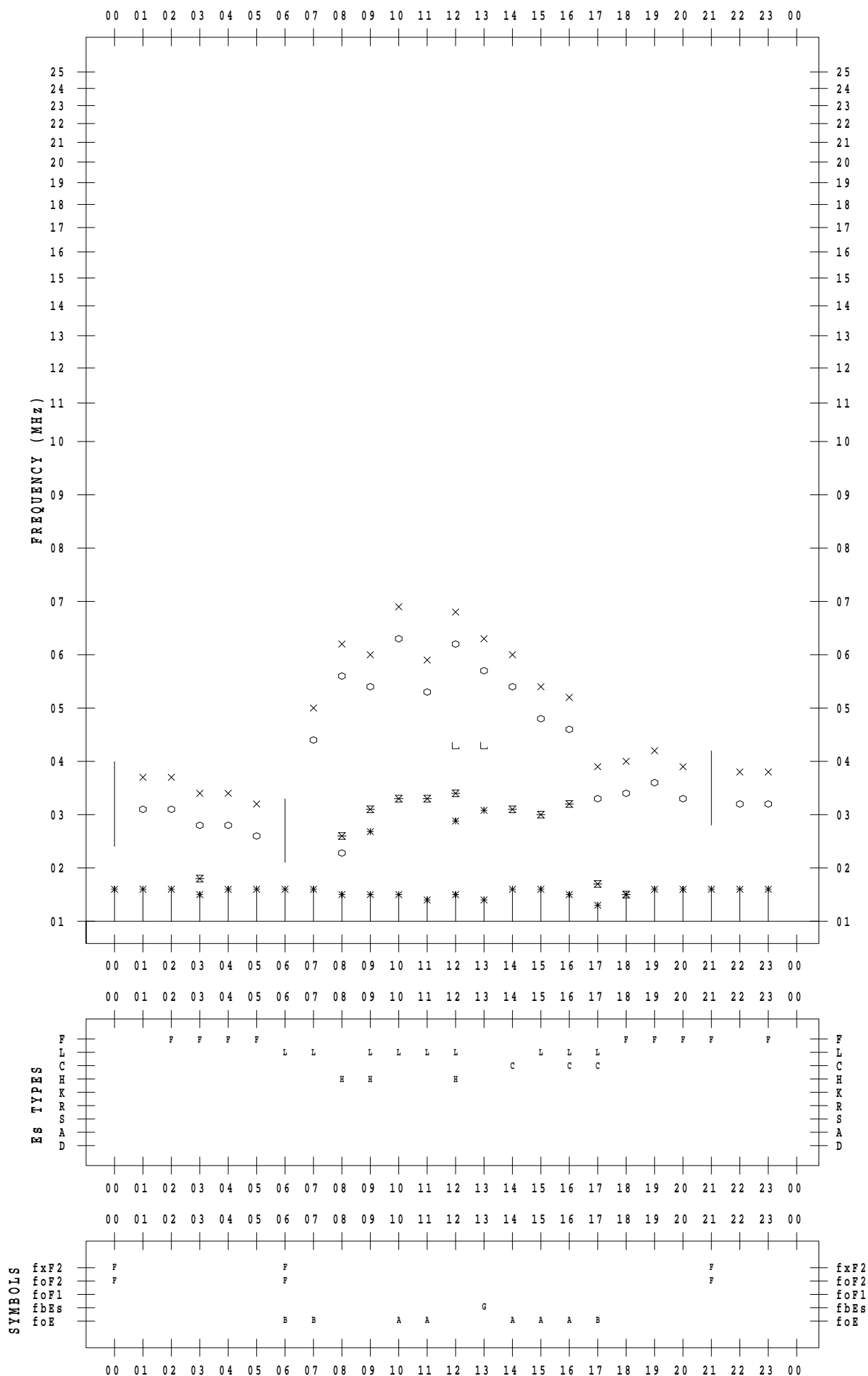
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/23

135 ° E MEAN TIME



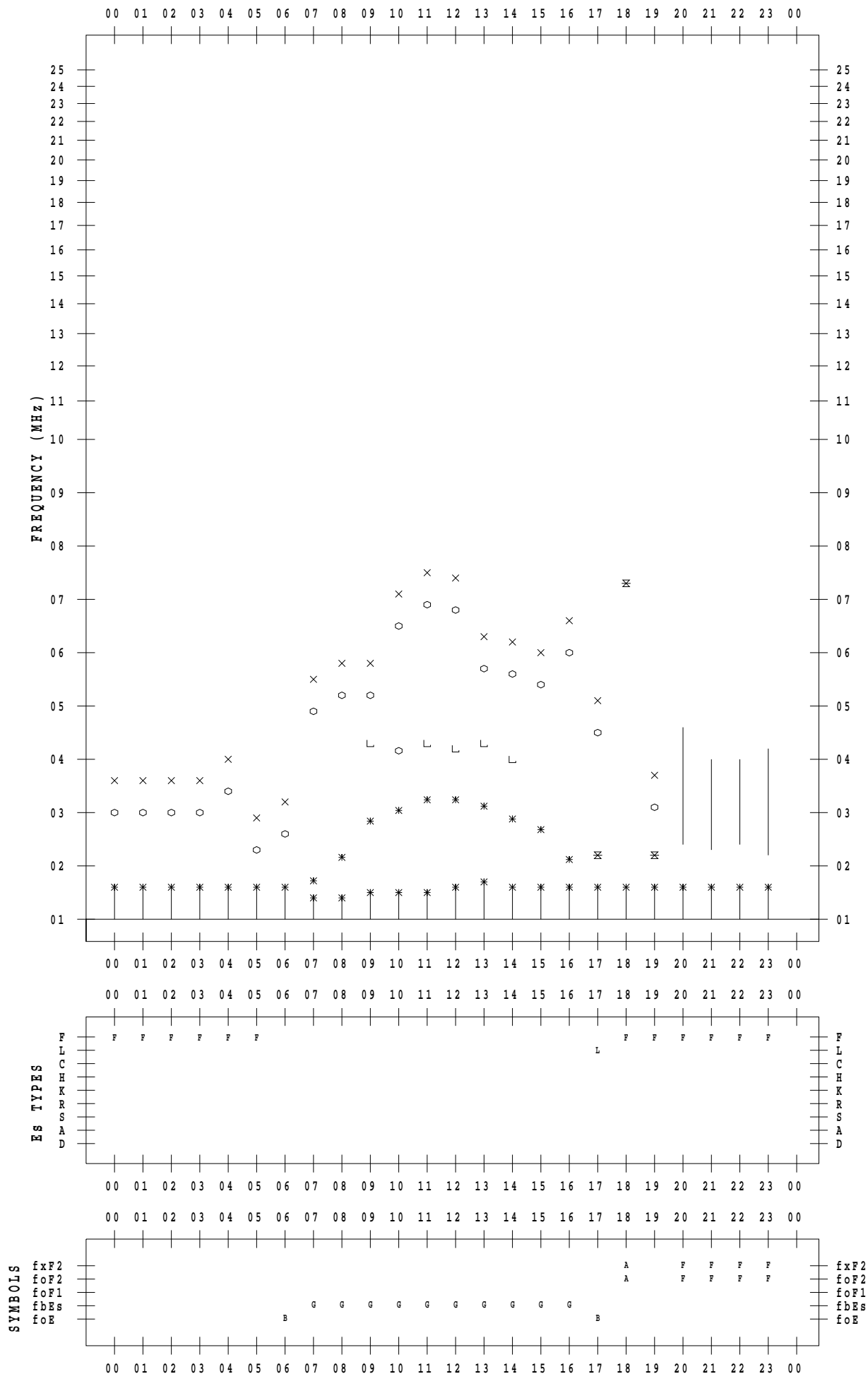
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/24

135 ° E MEAN TIME



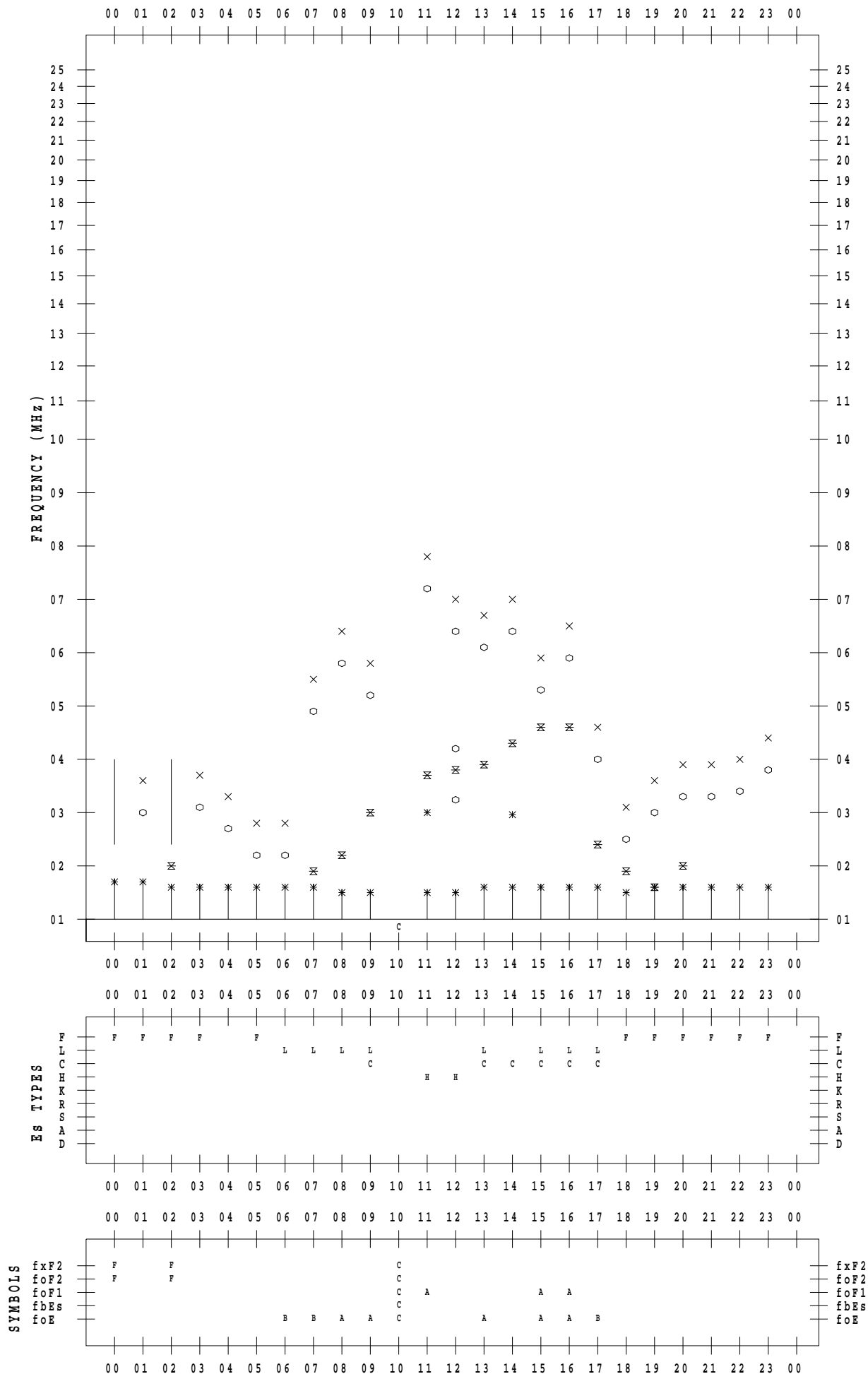
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/25

135 ° E MEAN TIME



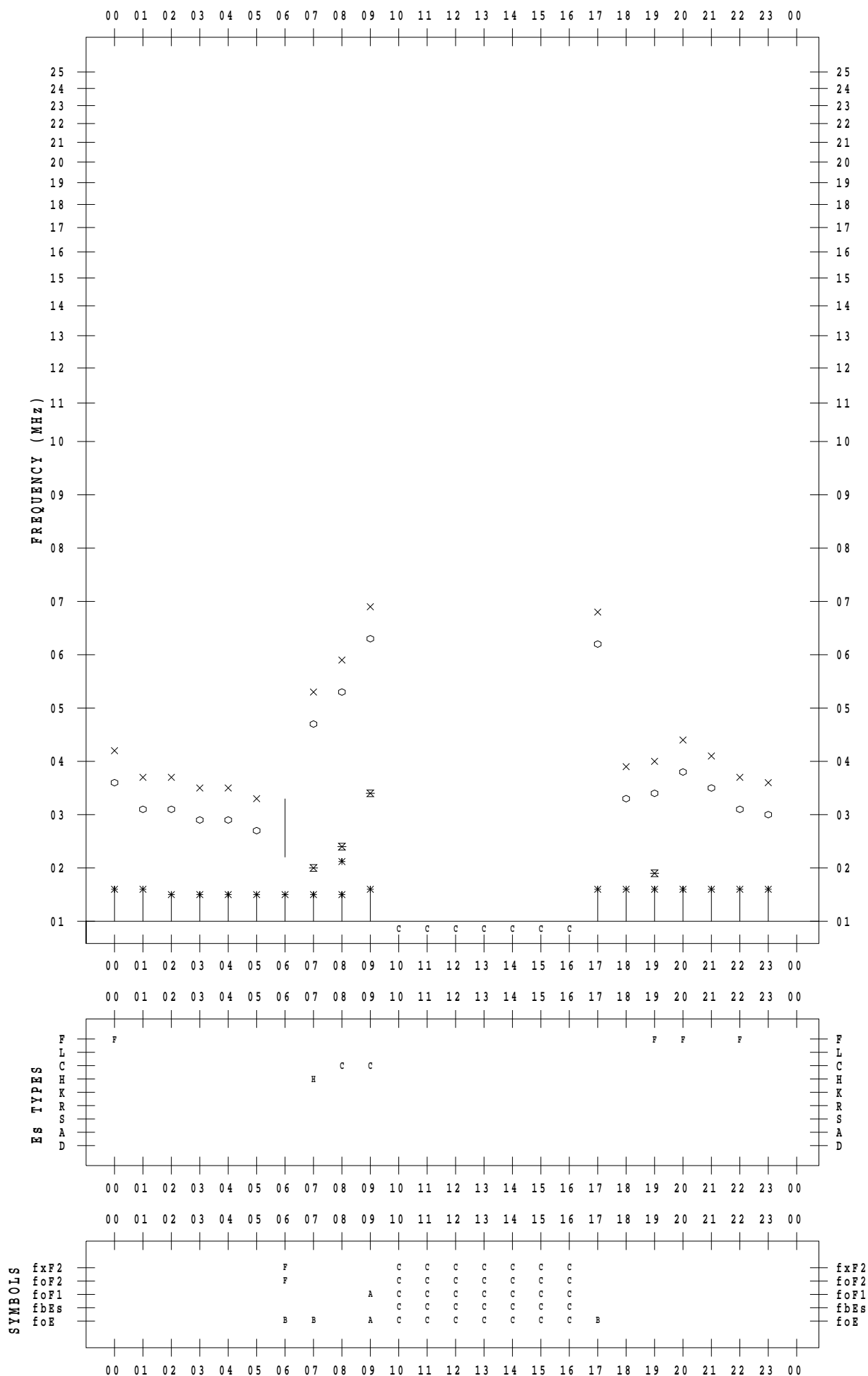
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/26

135 ° E MEAN TIME



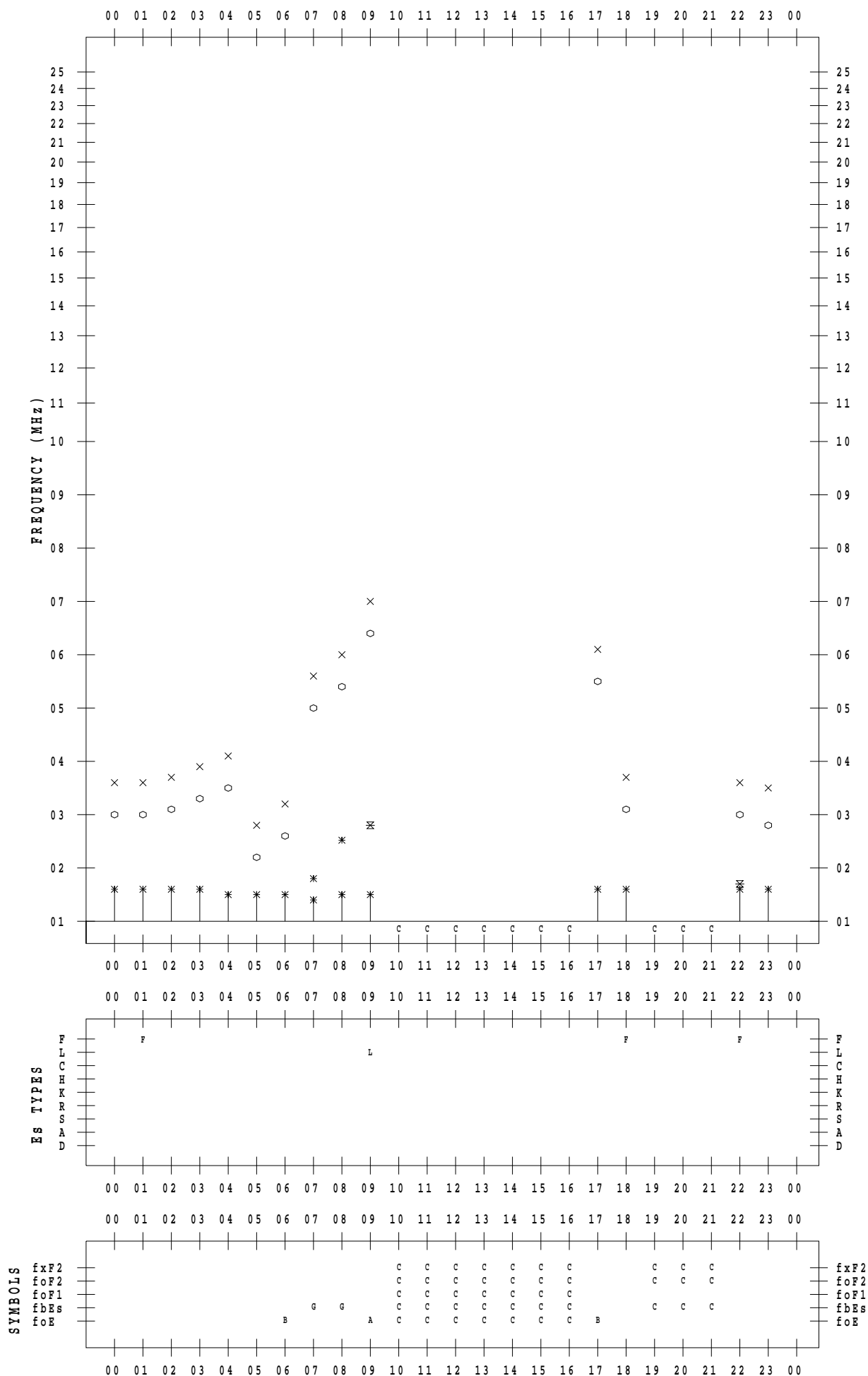
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/27

135 ° E MEAN TIME



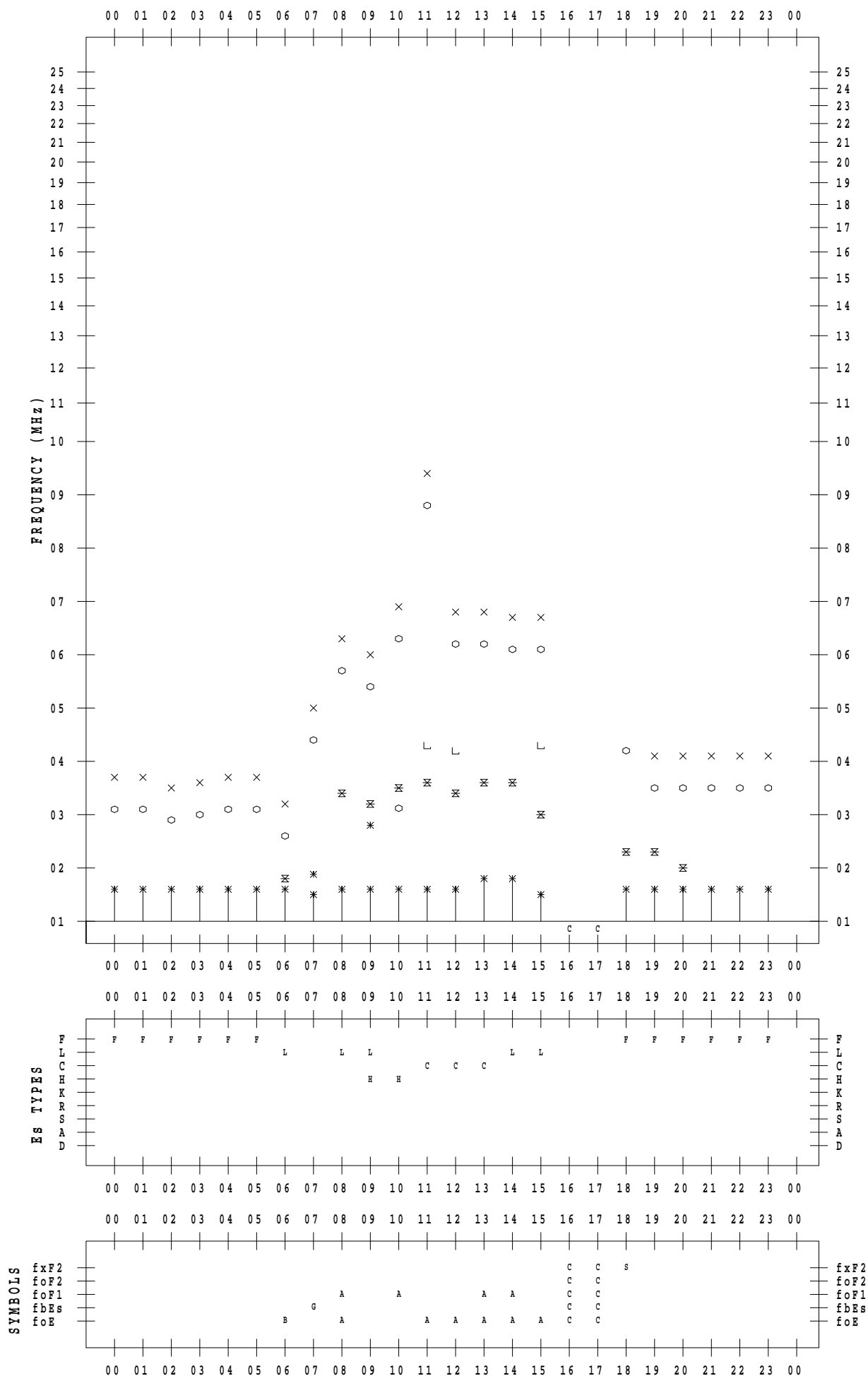
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/28

135 ° E MEAN TIME



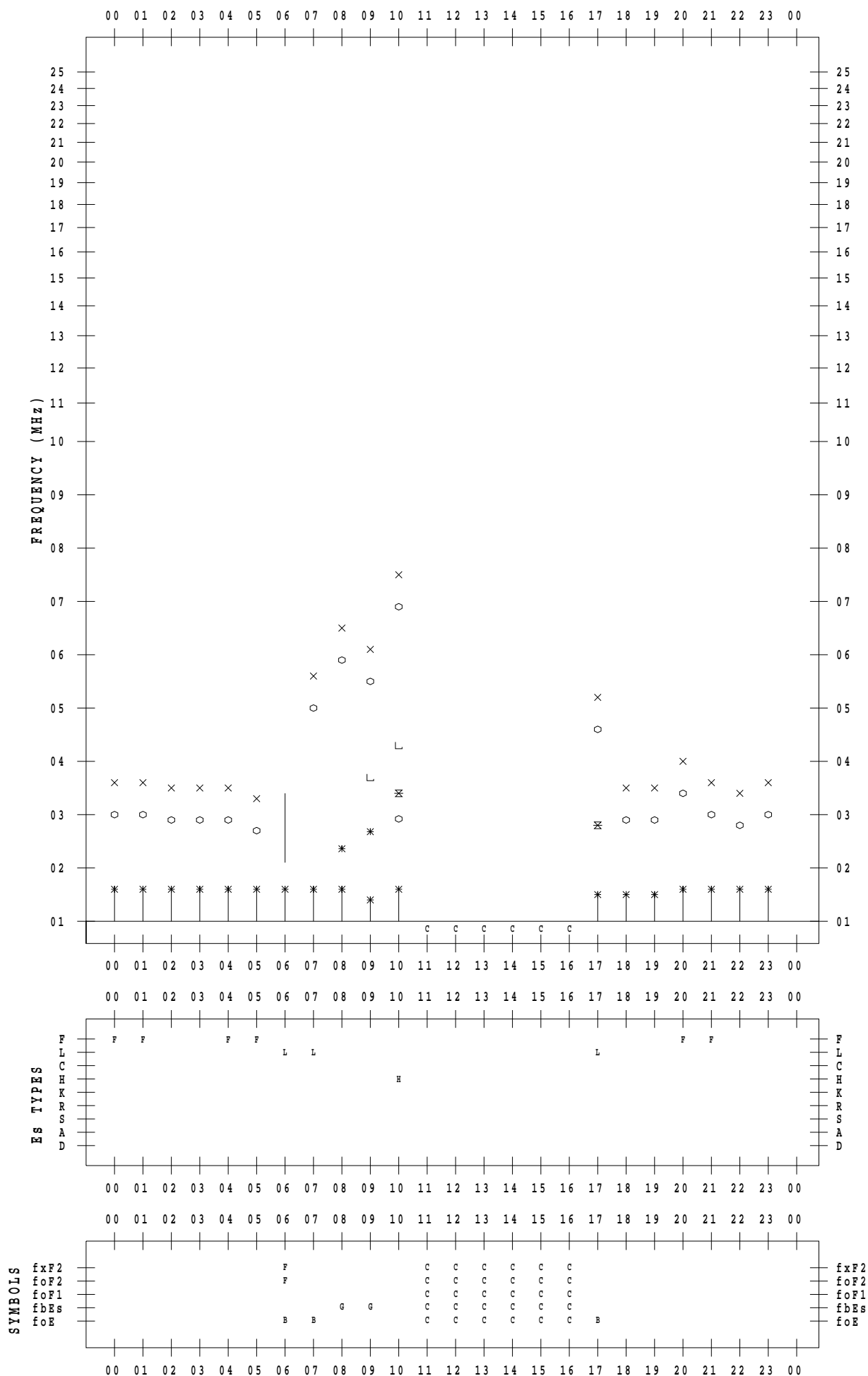
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/29

135 ° E MEAN TIME



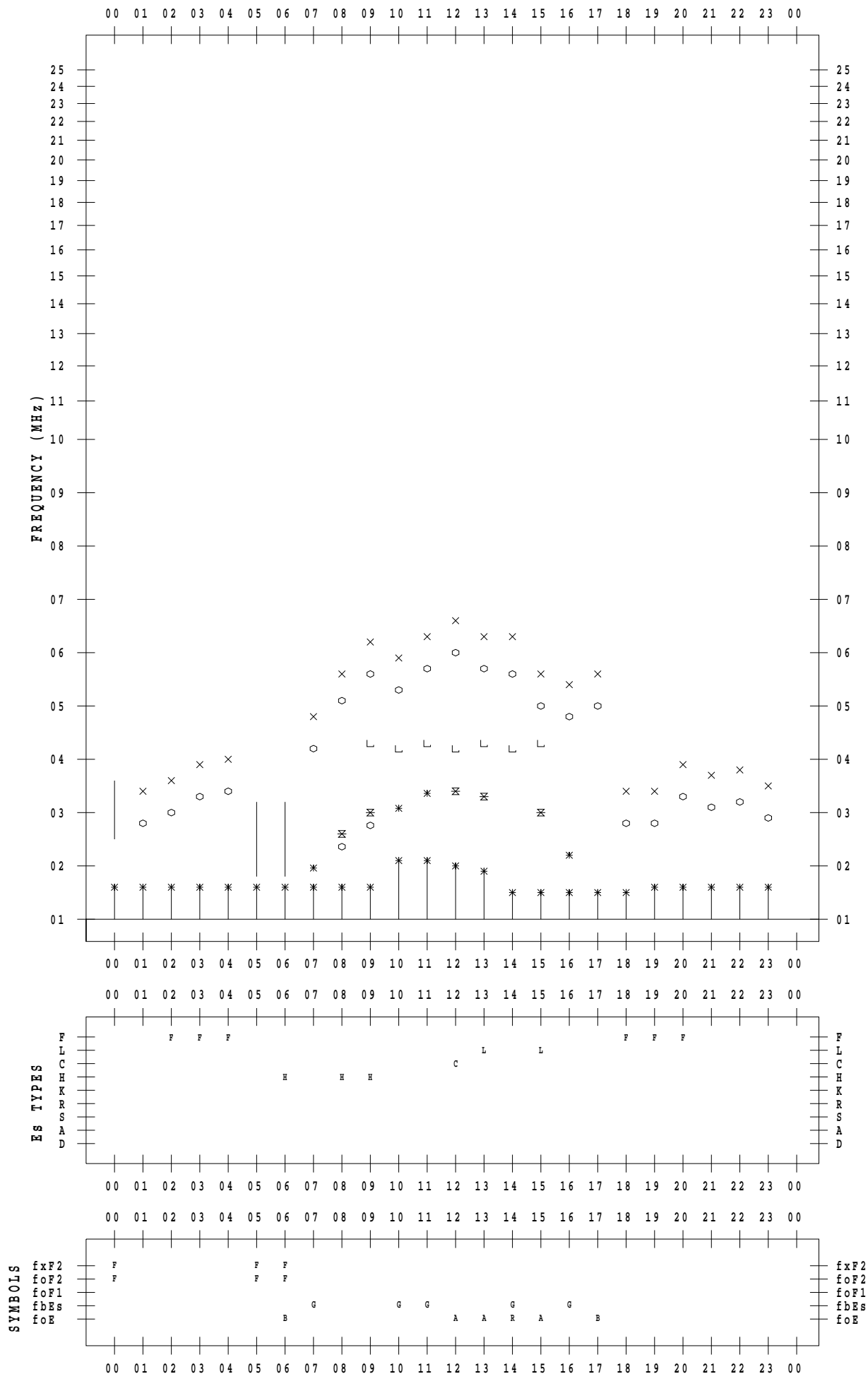
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/30

135 ° E MEAN TIME



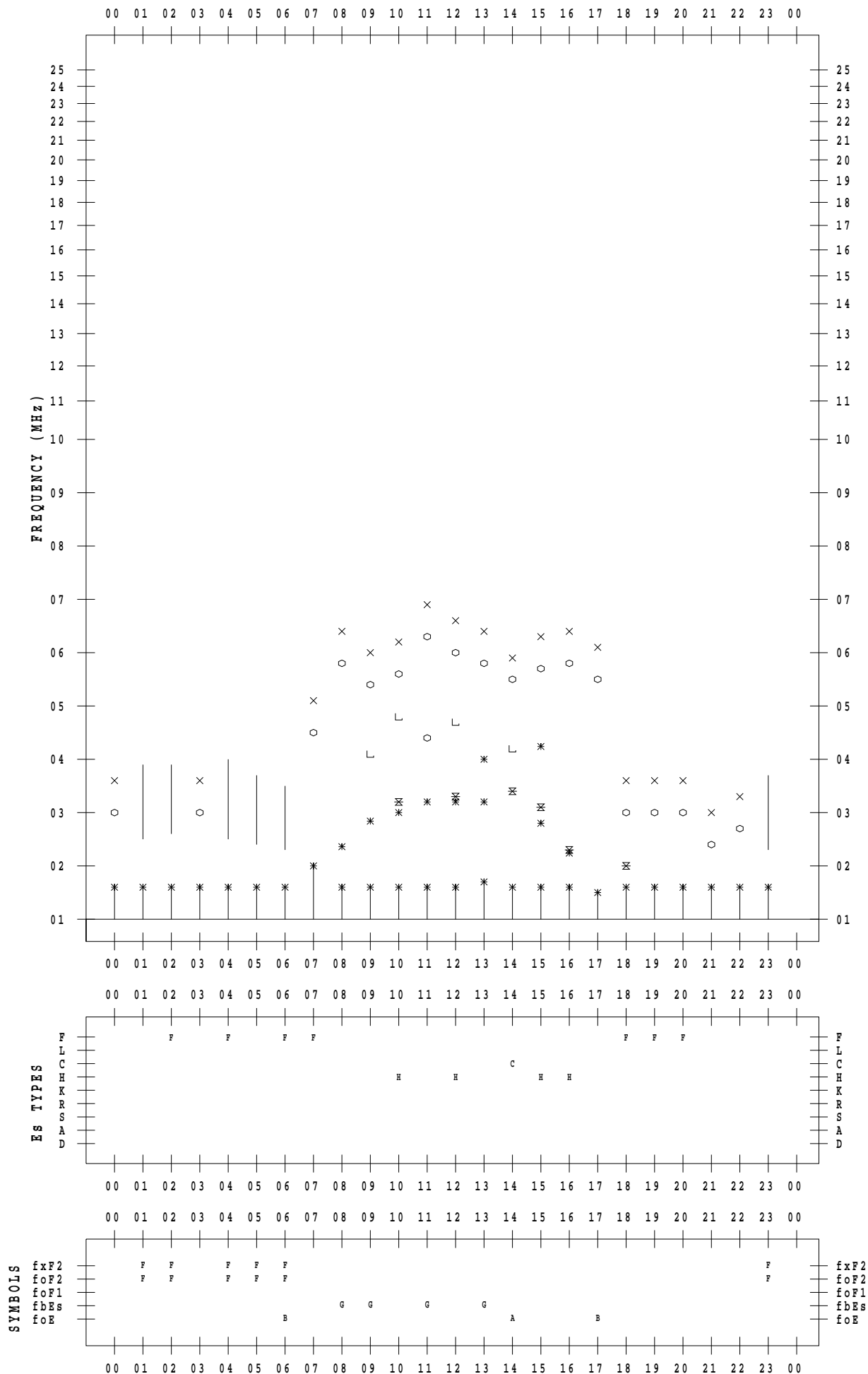
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 1/31

135 ° E MEAN TIME



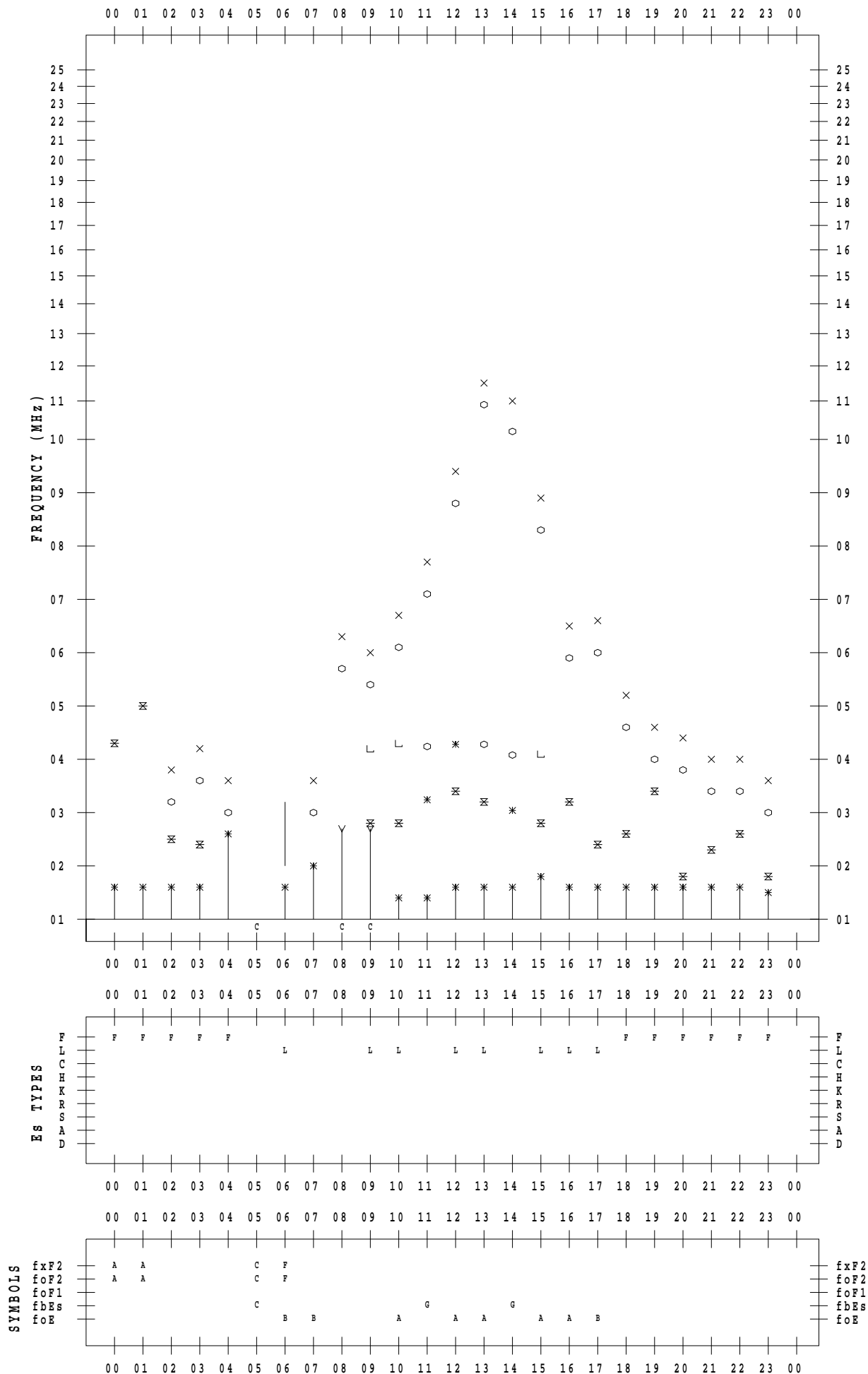
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/ 1

135 ° E MEAN TIME



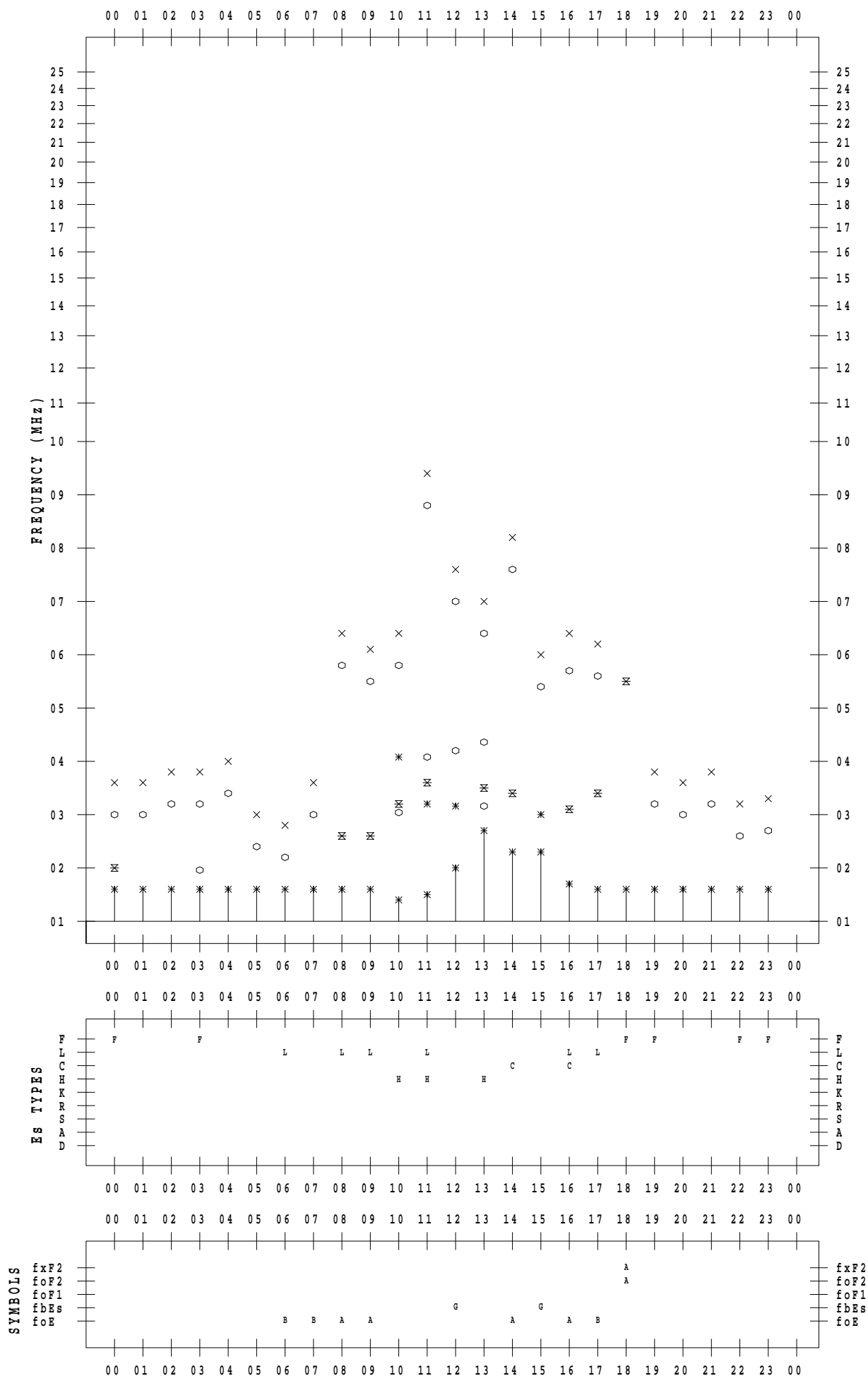
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 2

135 ° E MEAN TIME



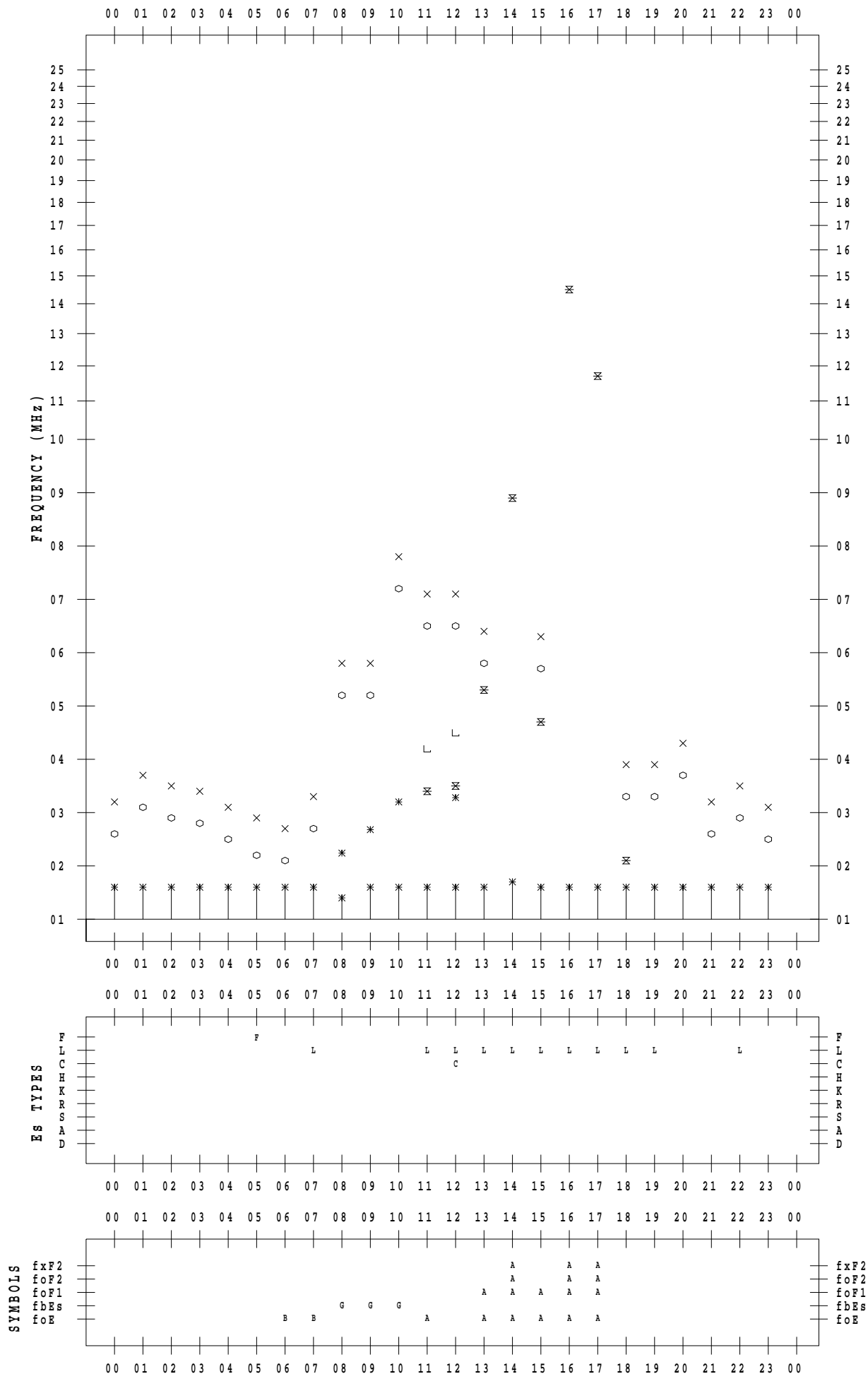
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 3

135 ° E MEAN TIME



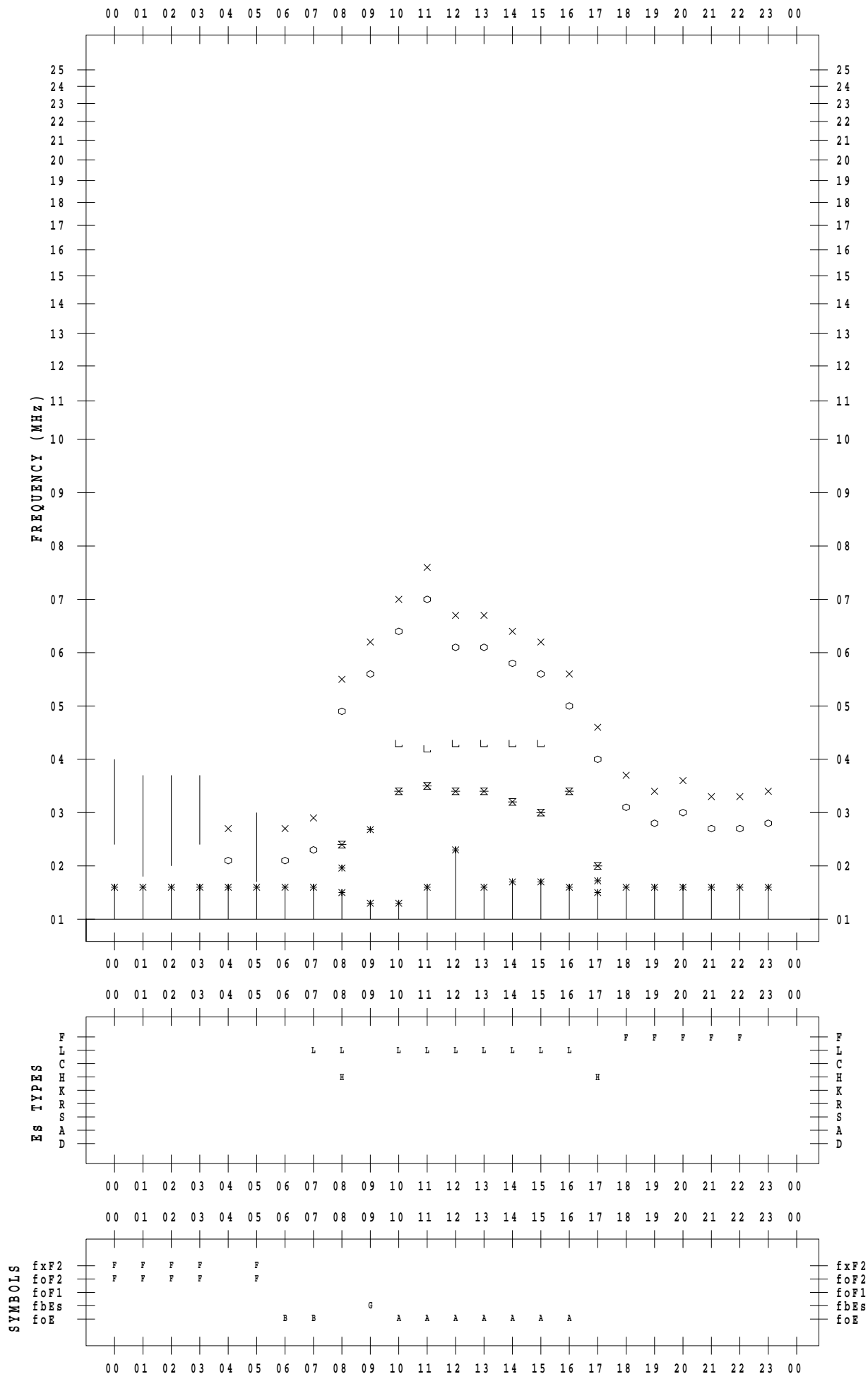
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 4

135 ° E MEAN TIME



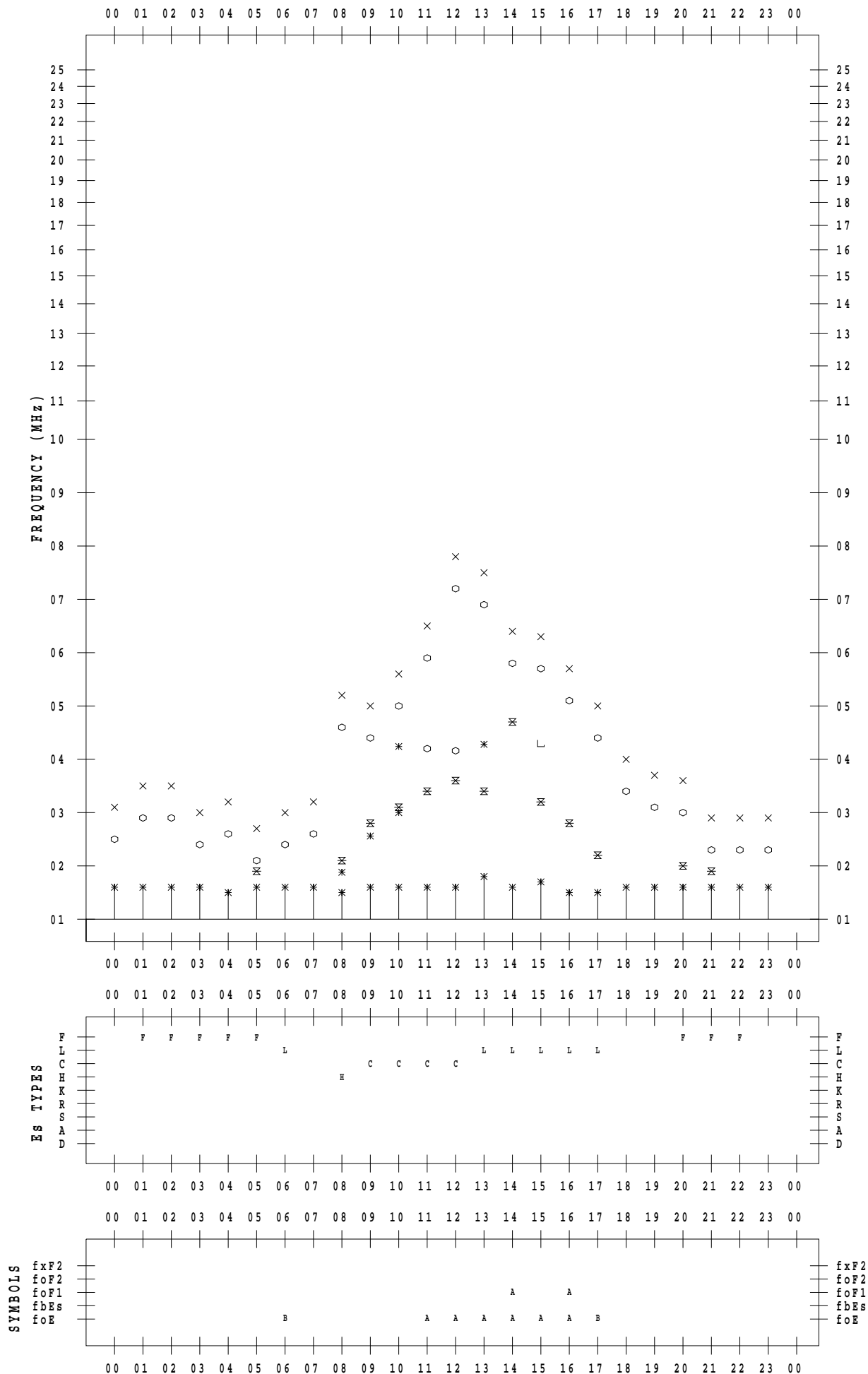
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/ 5

135 ° E MEAN TIME



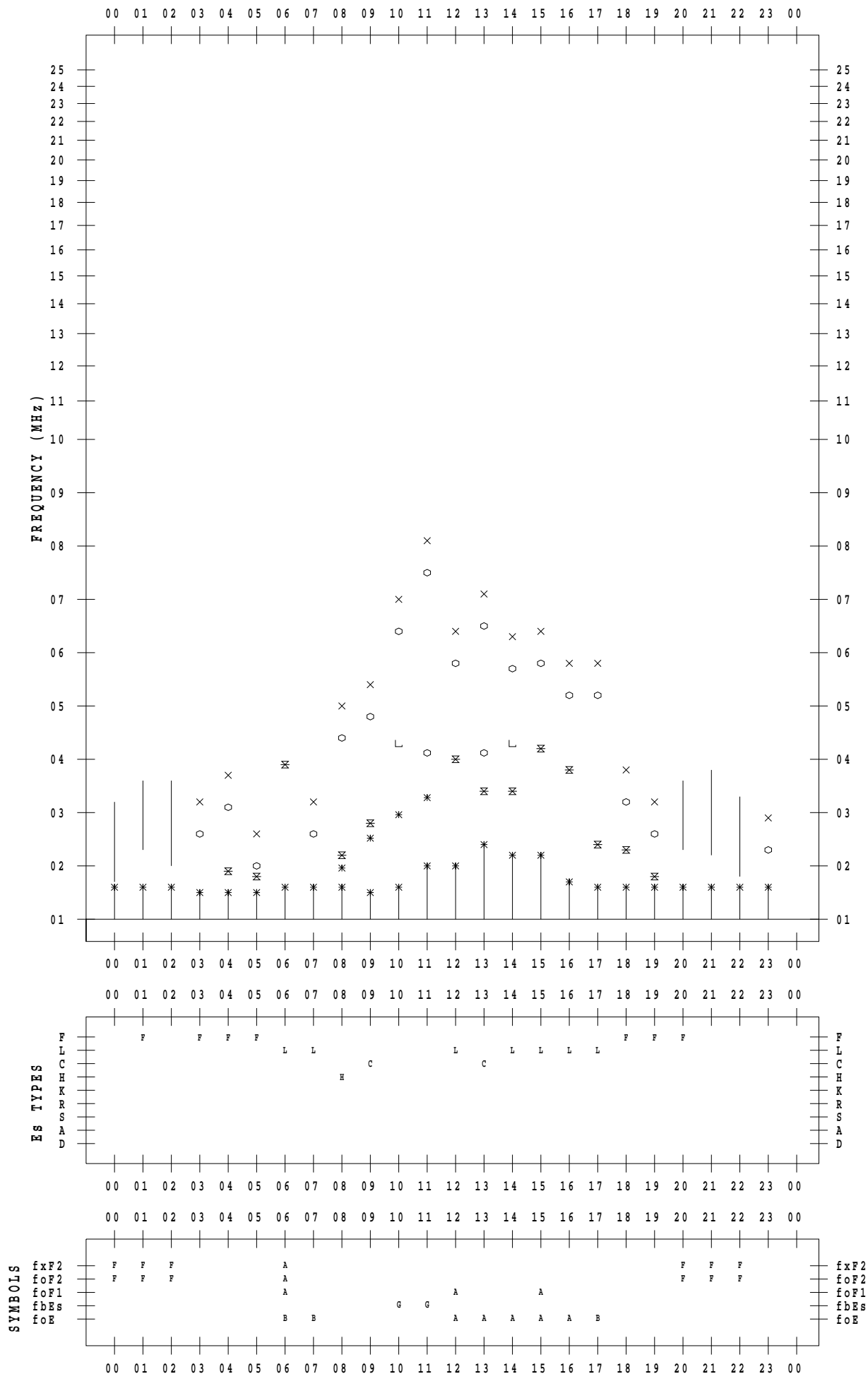
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/ 6

135 ° E MEAN TIME



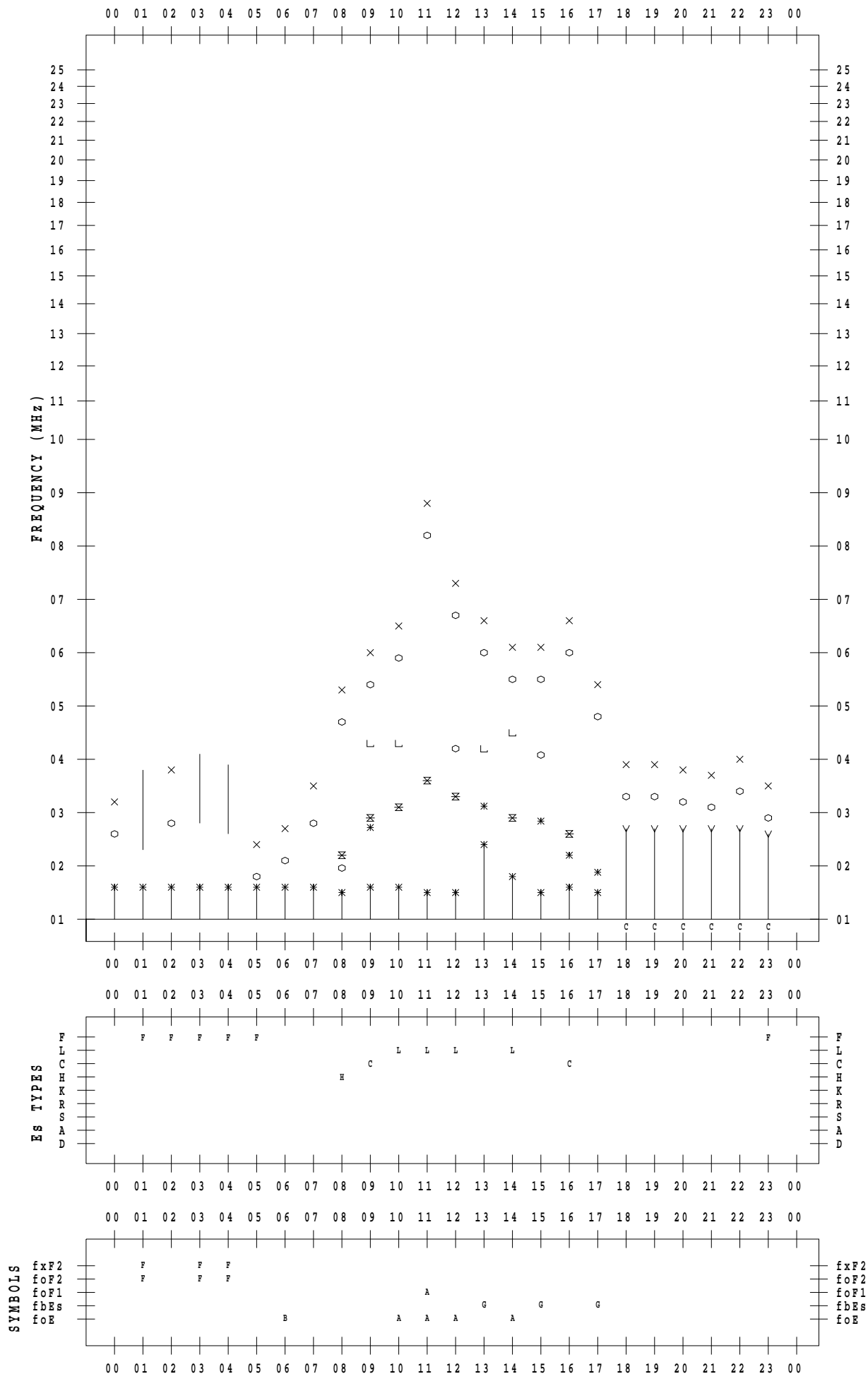
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/ 7

135 ° E MEAN TIME



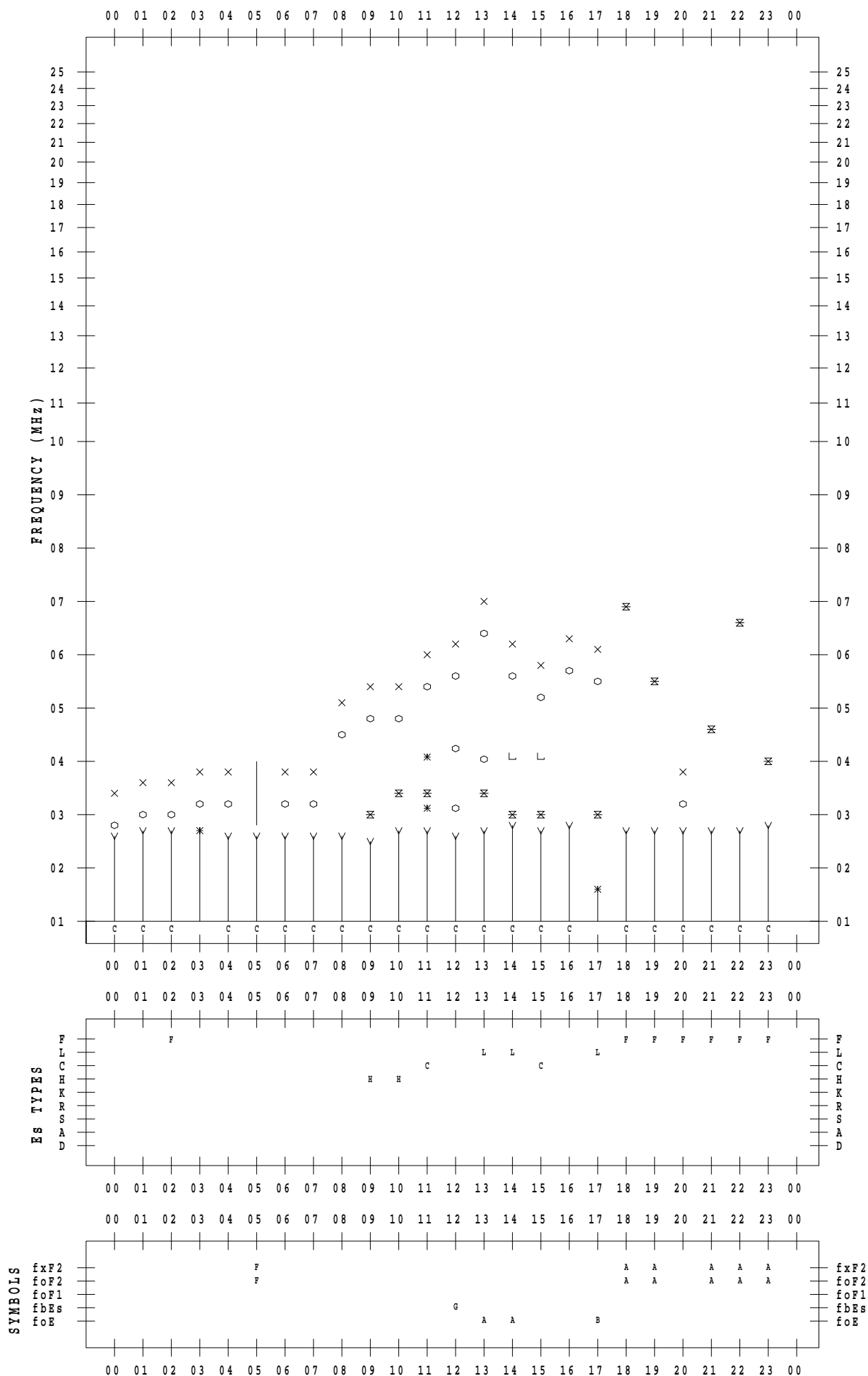
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 8

135 ° E MEAN TIME



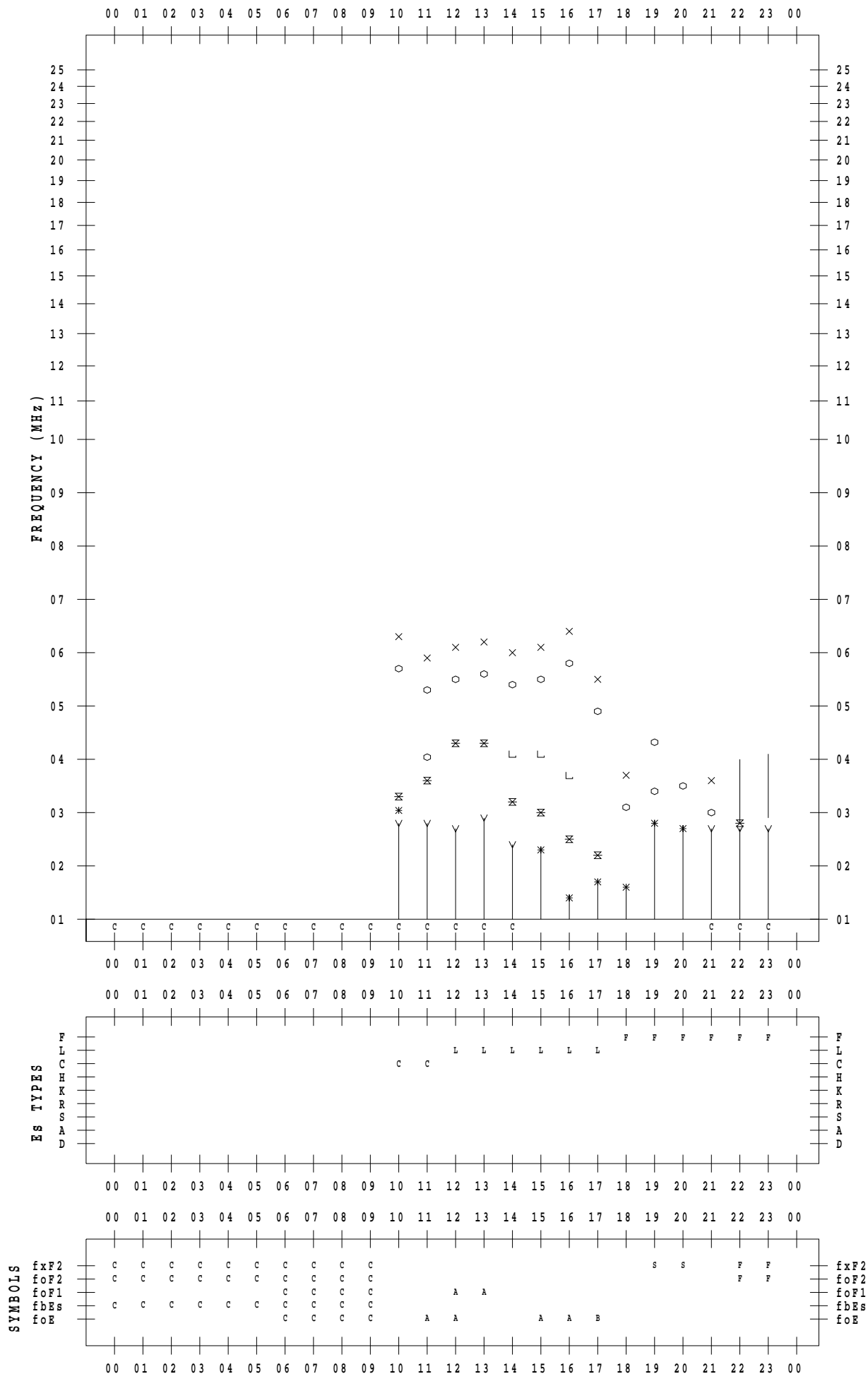
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 9

135 ° E MEAN TIME



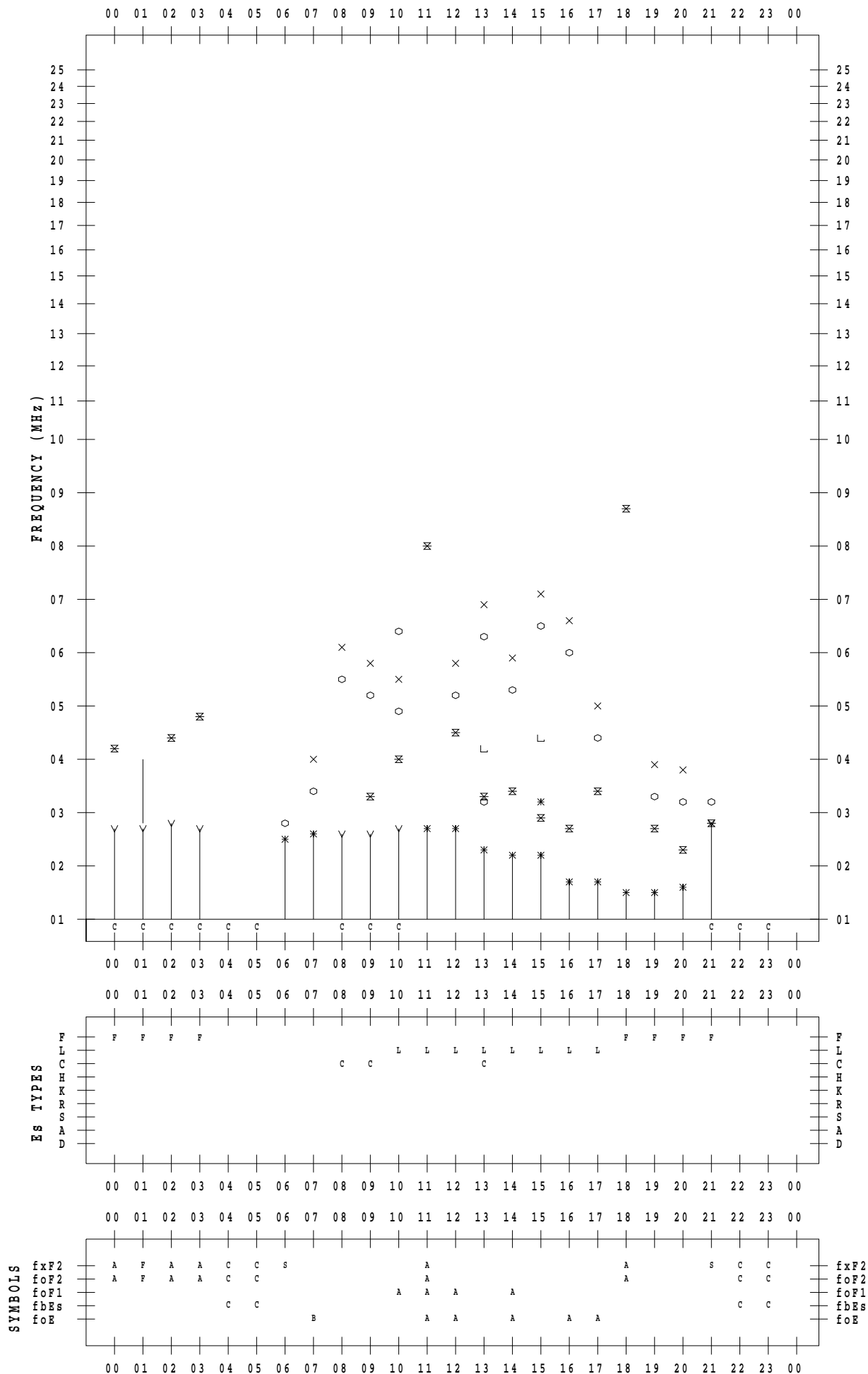
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/10

135 ° E MEAN TIME



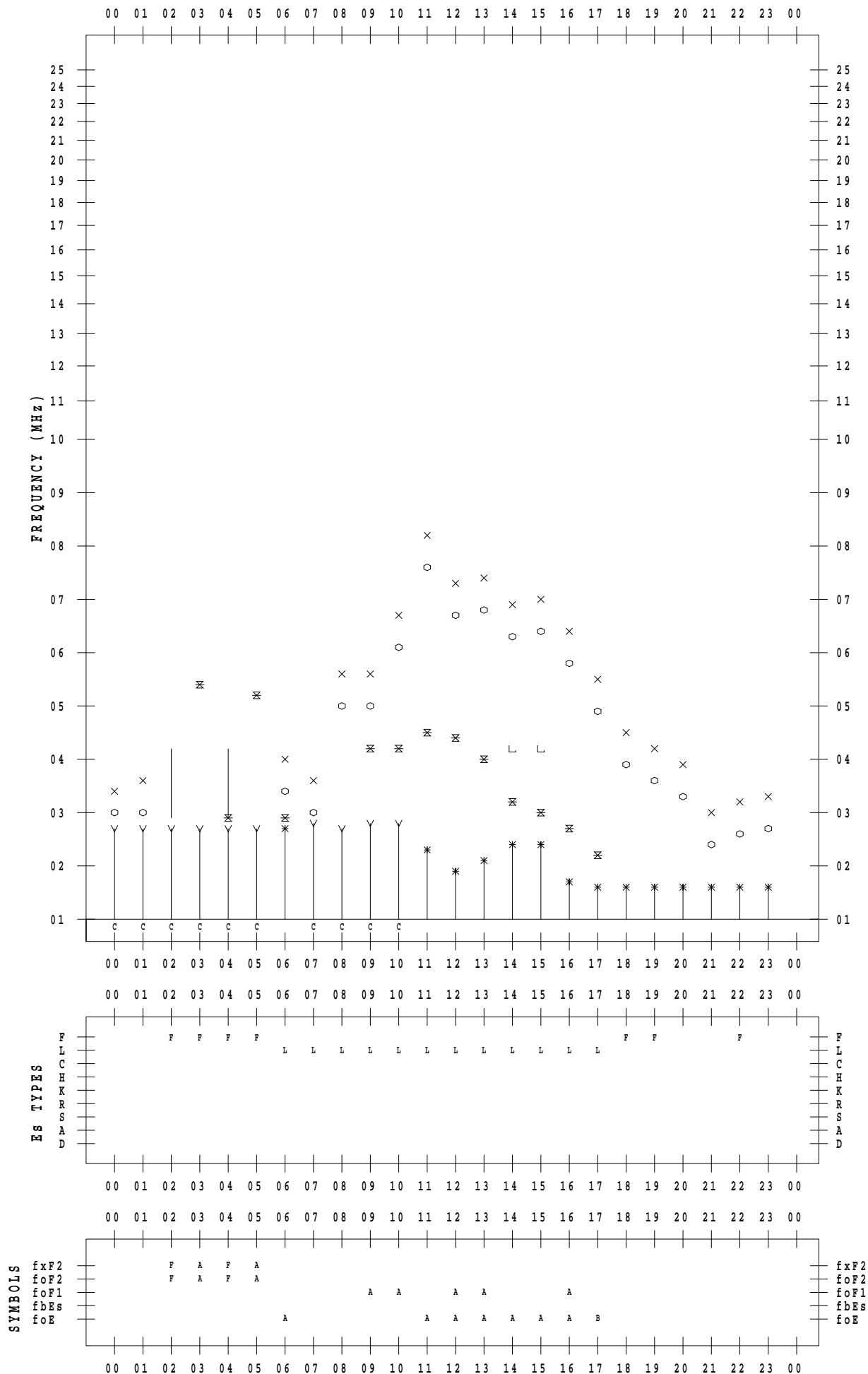
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/11

135 ° E MEAN TIME



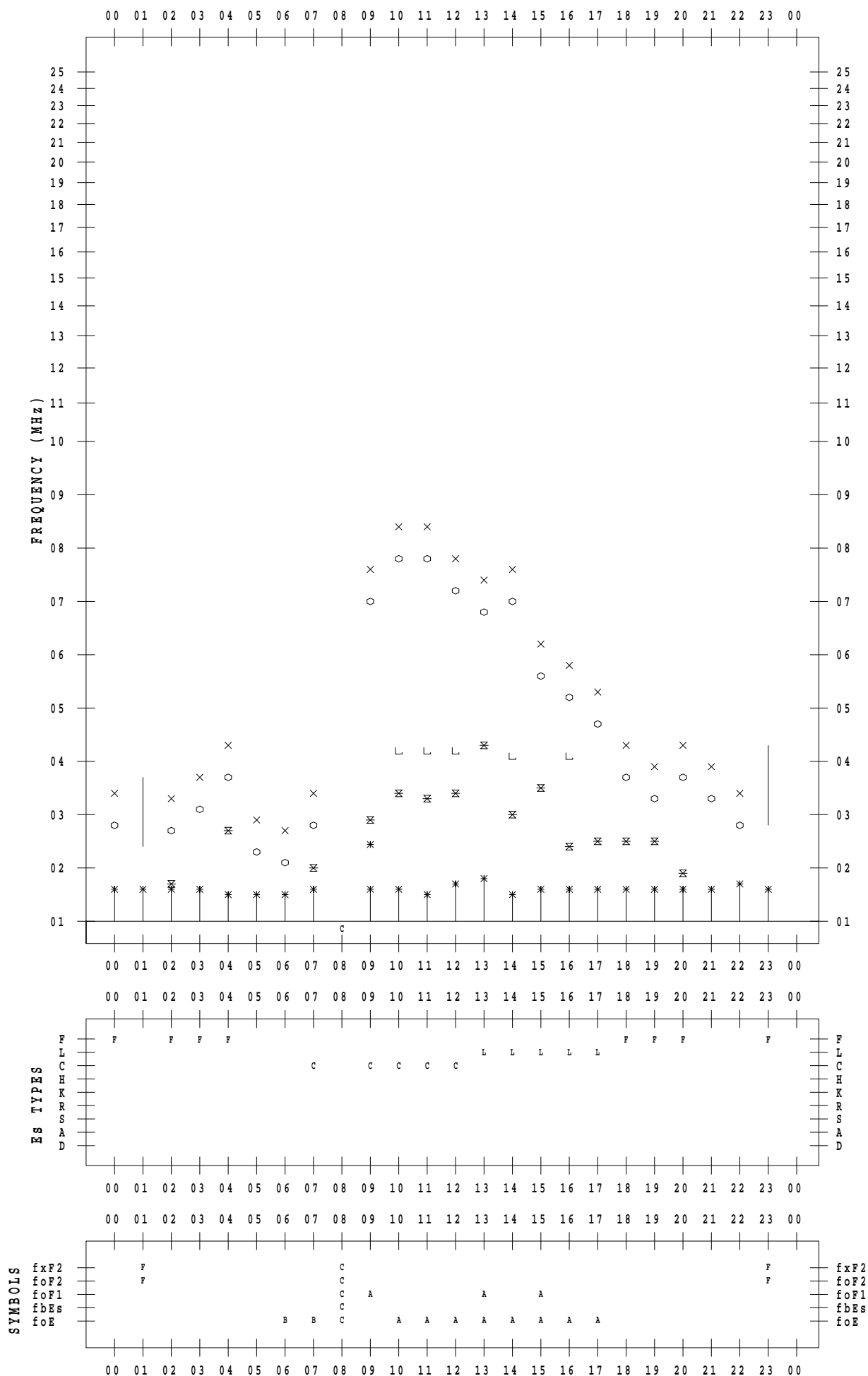
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 12

135 ° E MEAN TIME



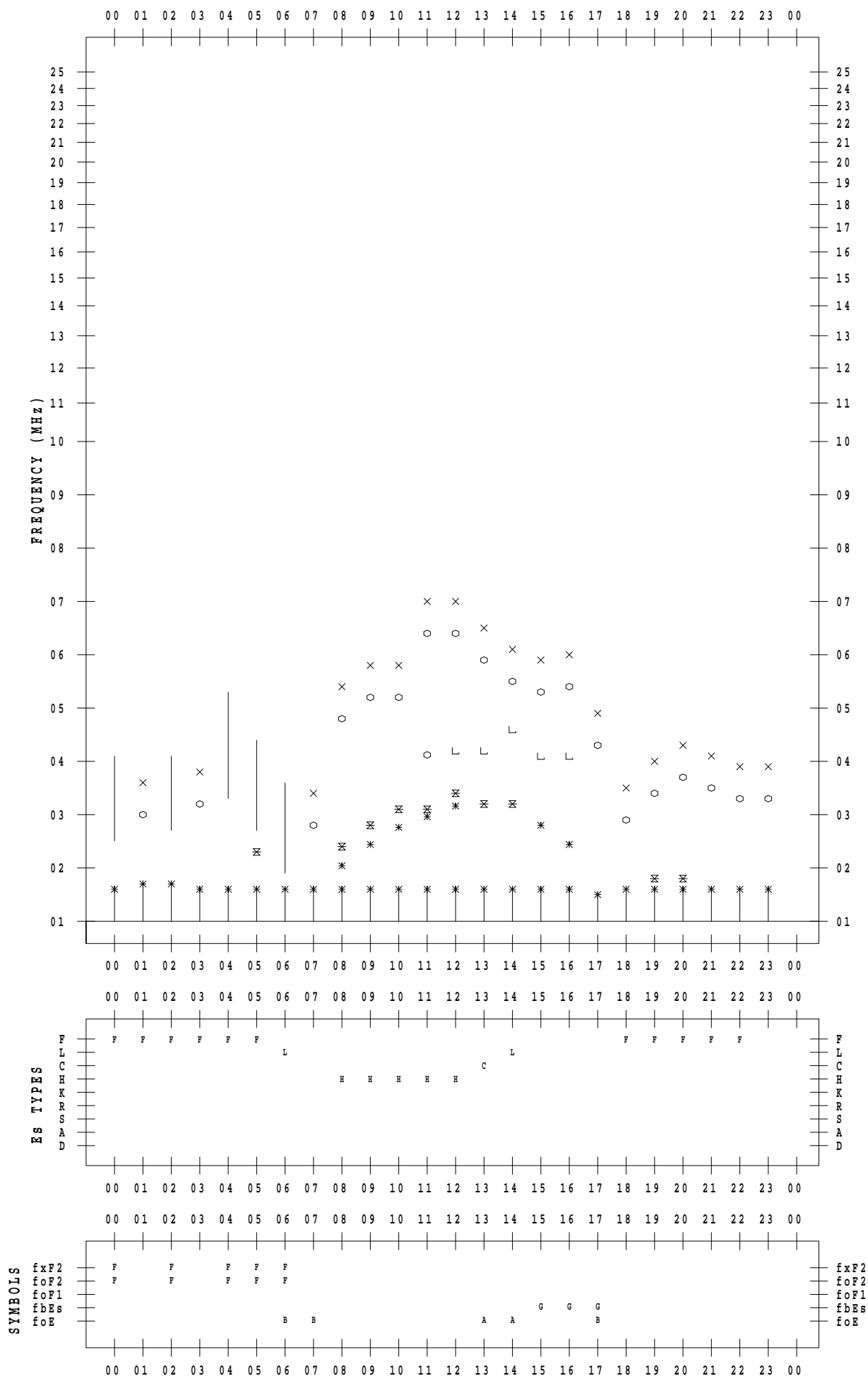
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/13

135 ° E MEAN TIME



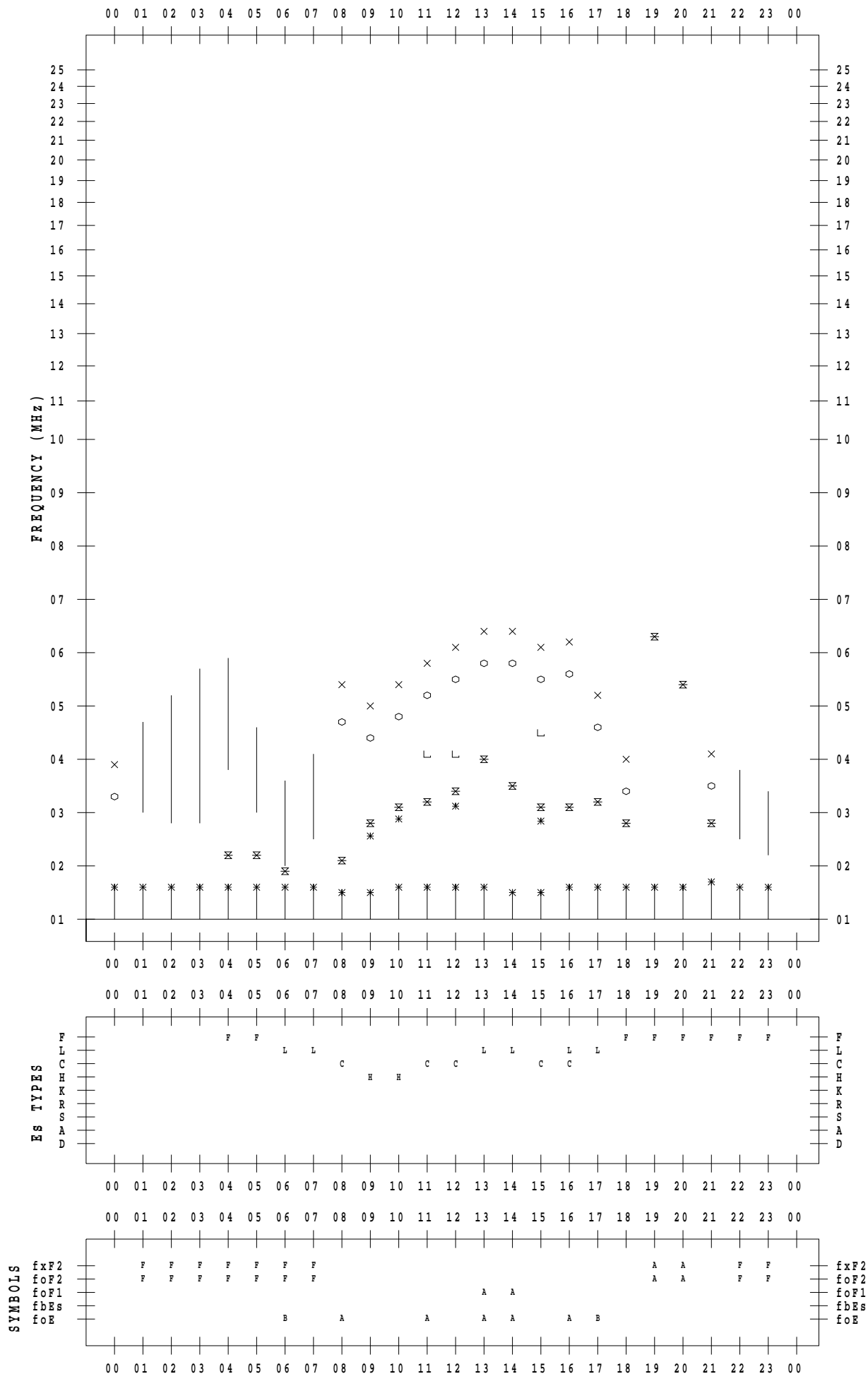
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/14

135 ° E MEAN TIME



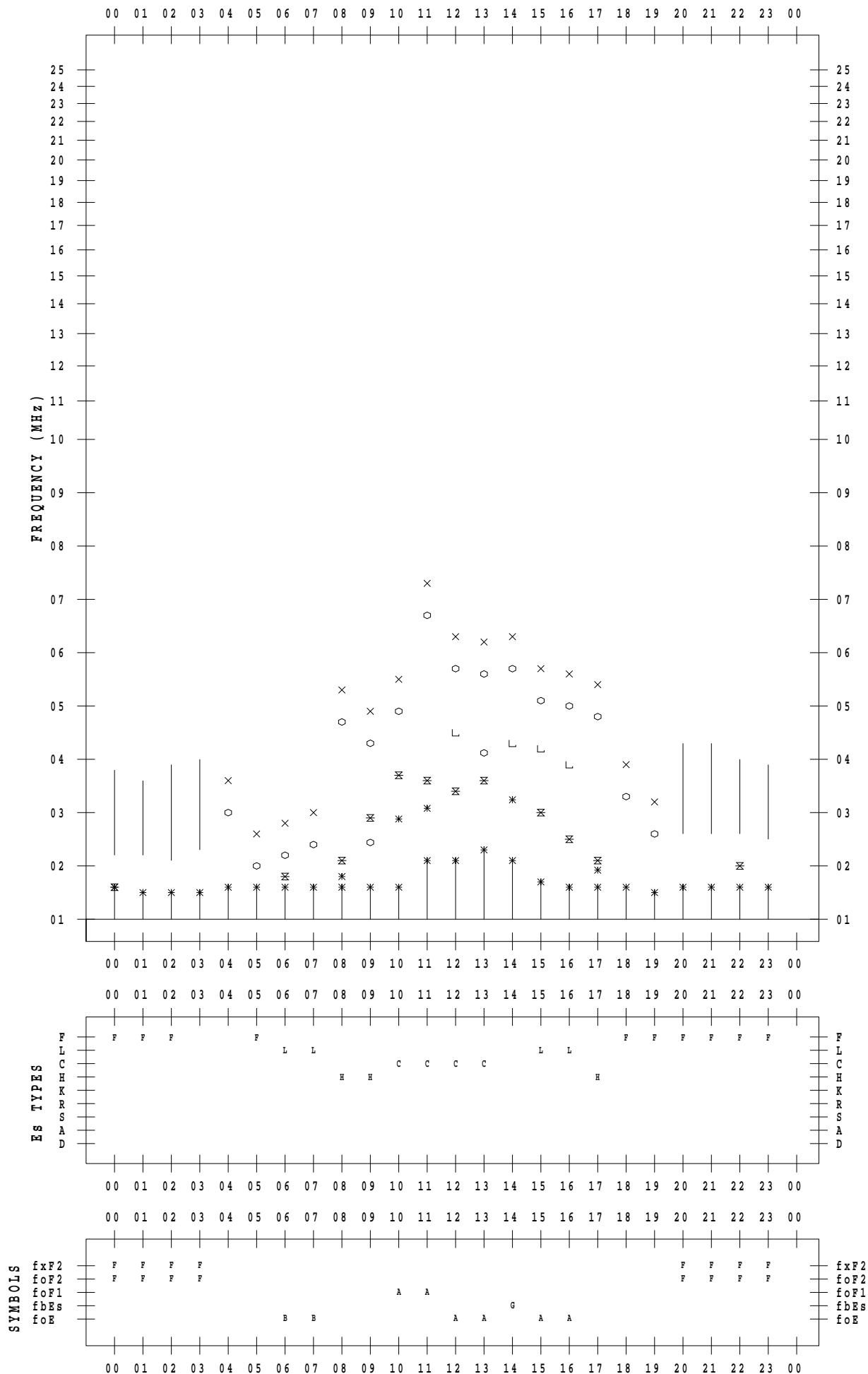
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 15

135 ° E MEAN TIME



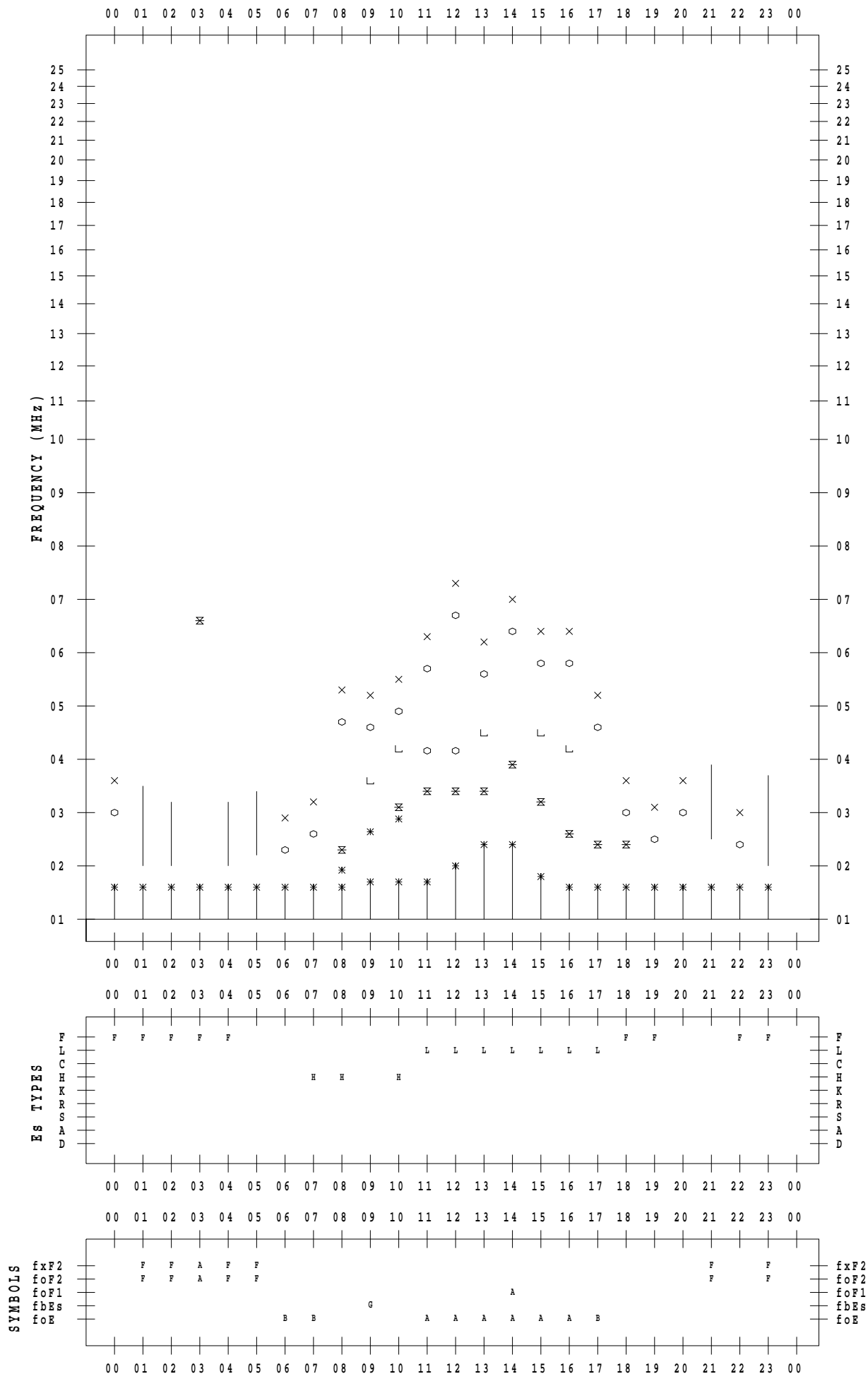
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/16

135 ° E MEAN TIME



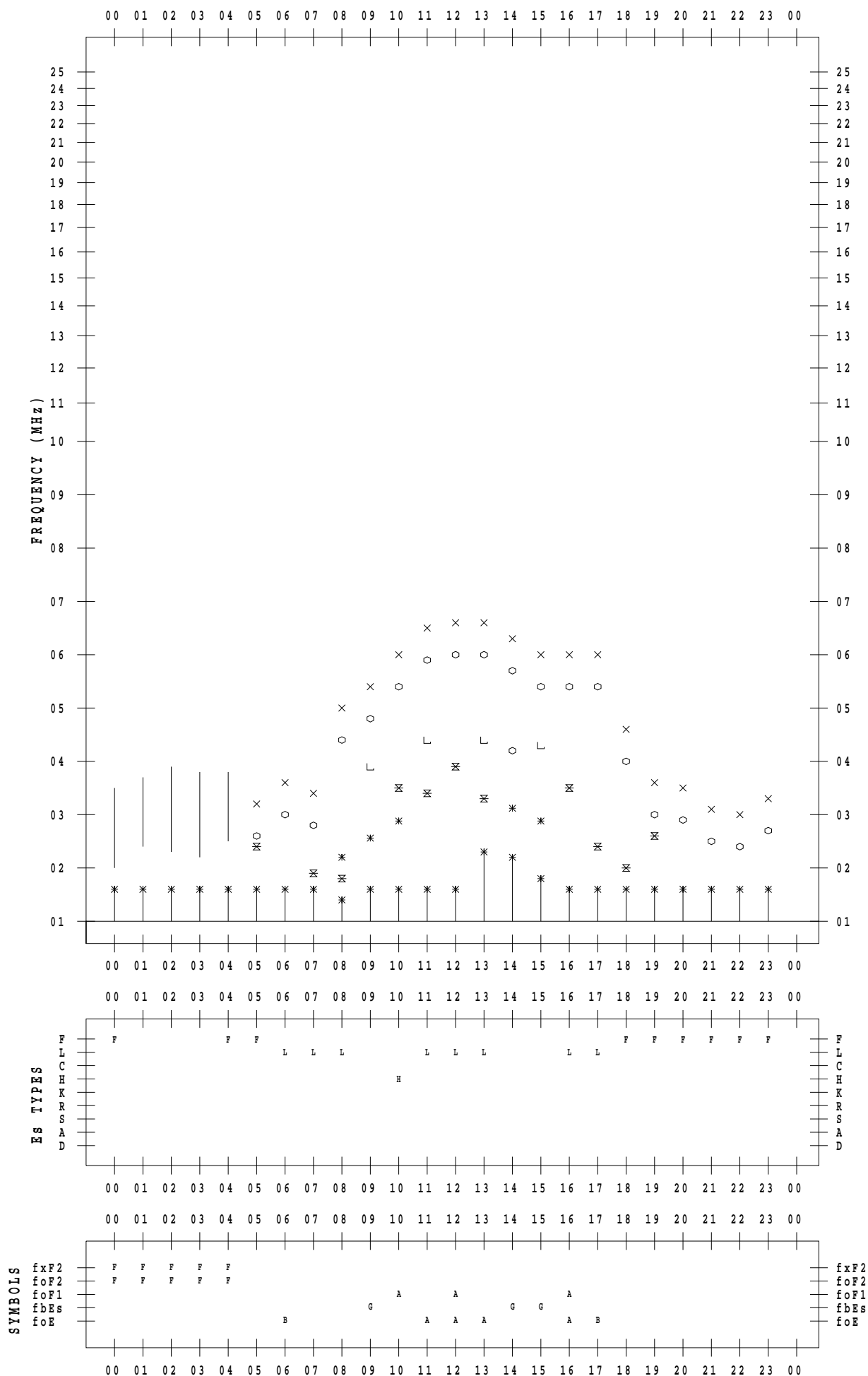
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/17

135 ° E MEAN TIME



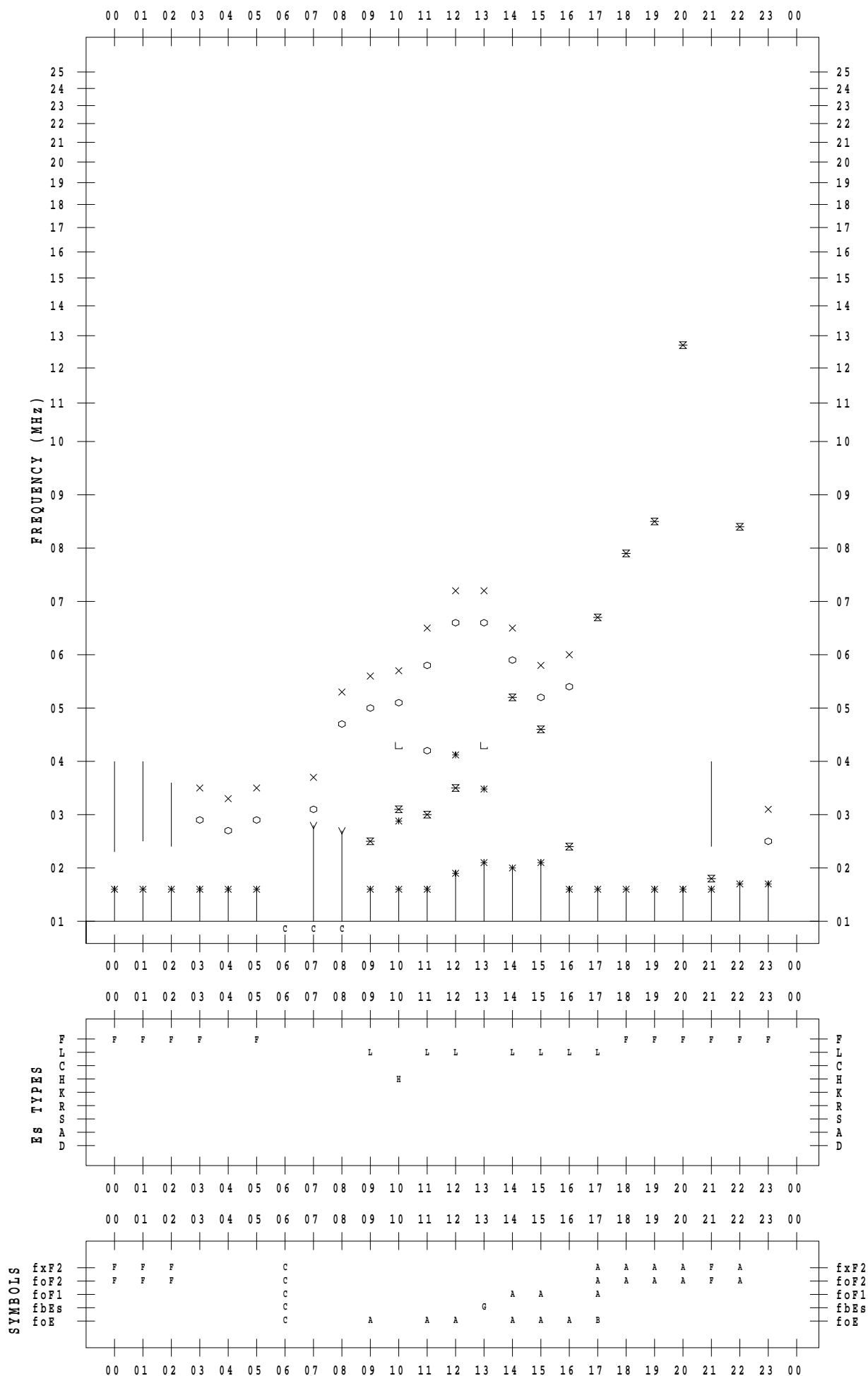
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 18

135 ° E MEAN TIME



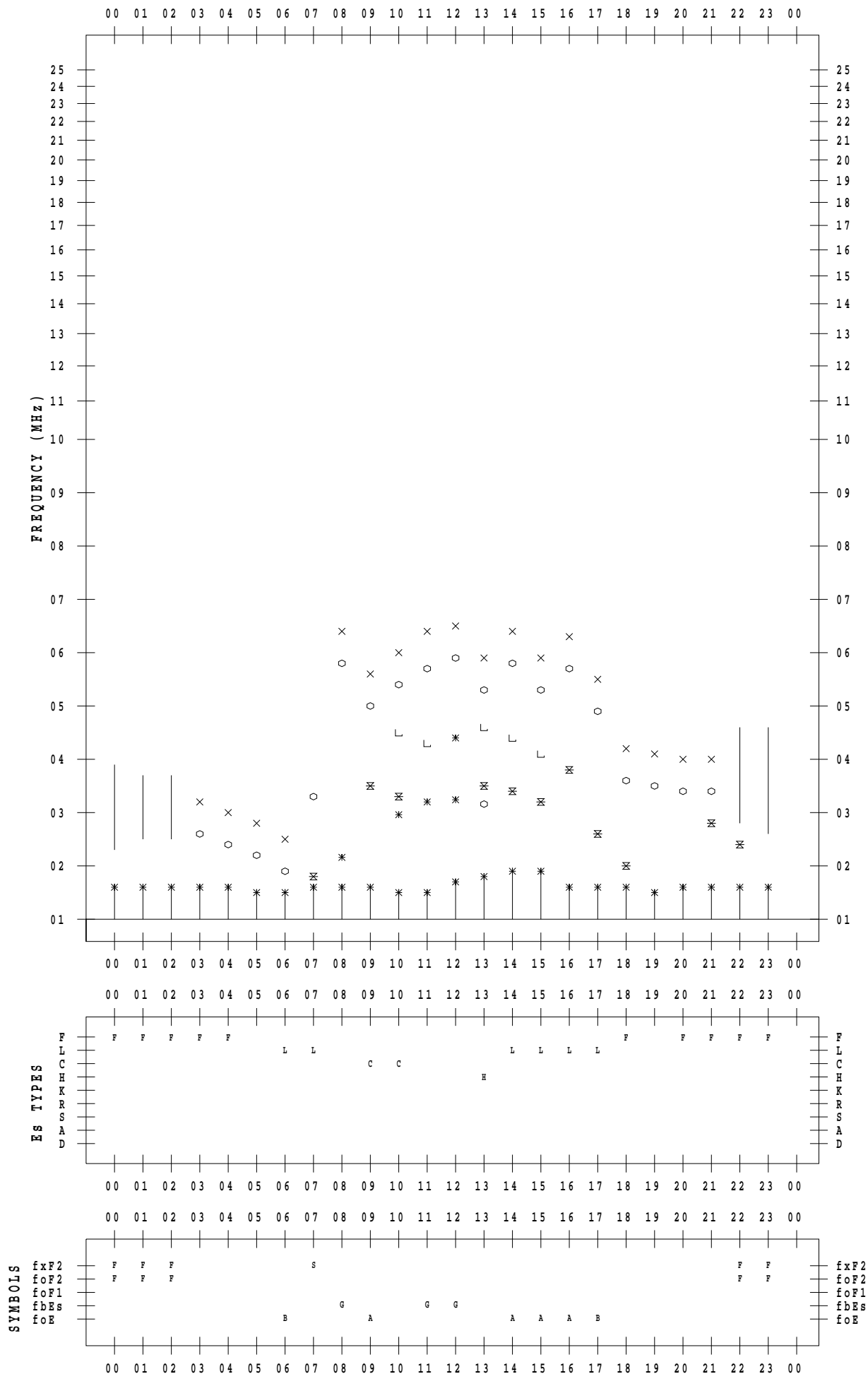
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/19

135 ° E MEAN TIME



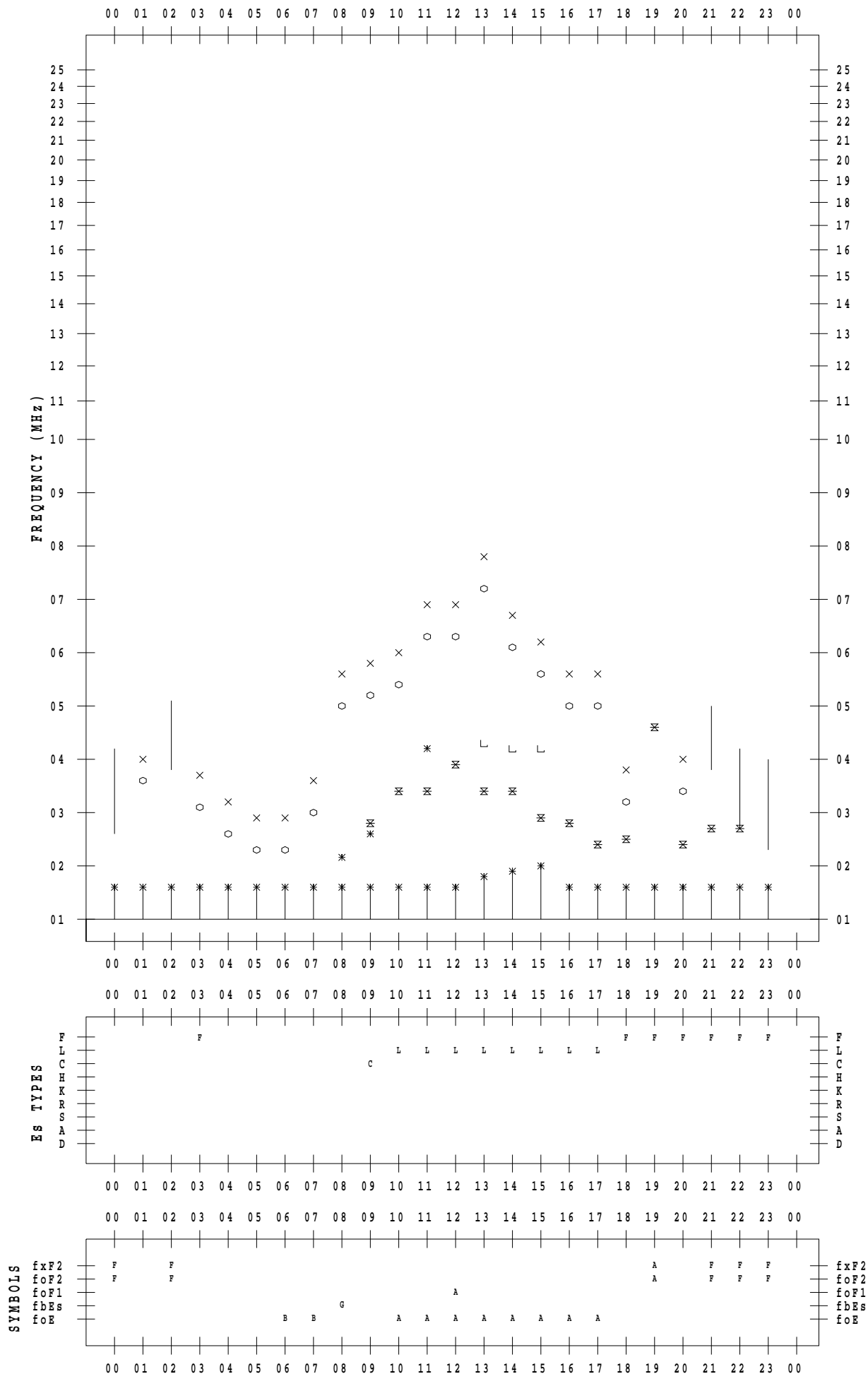
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/20

135 ° E MEAN TIME



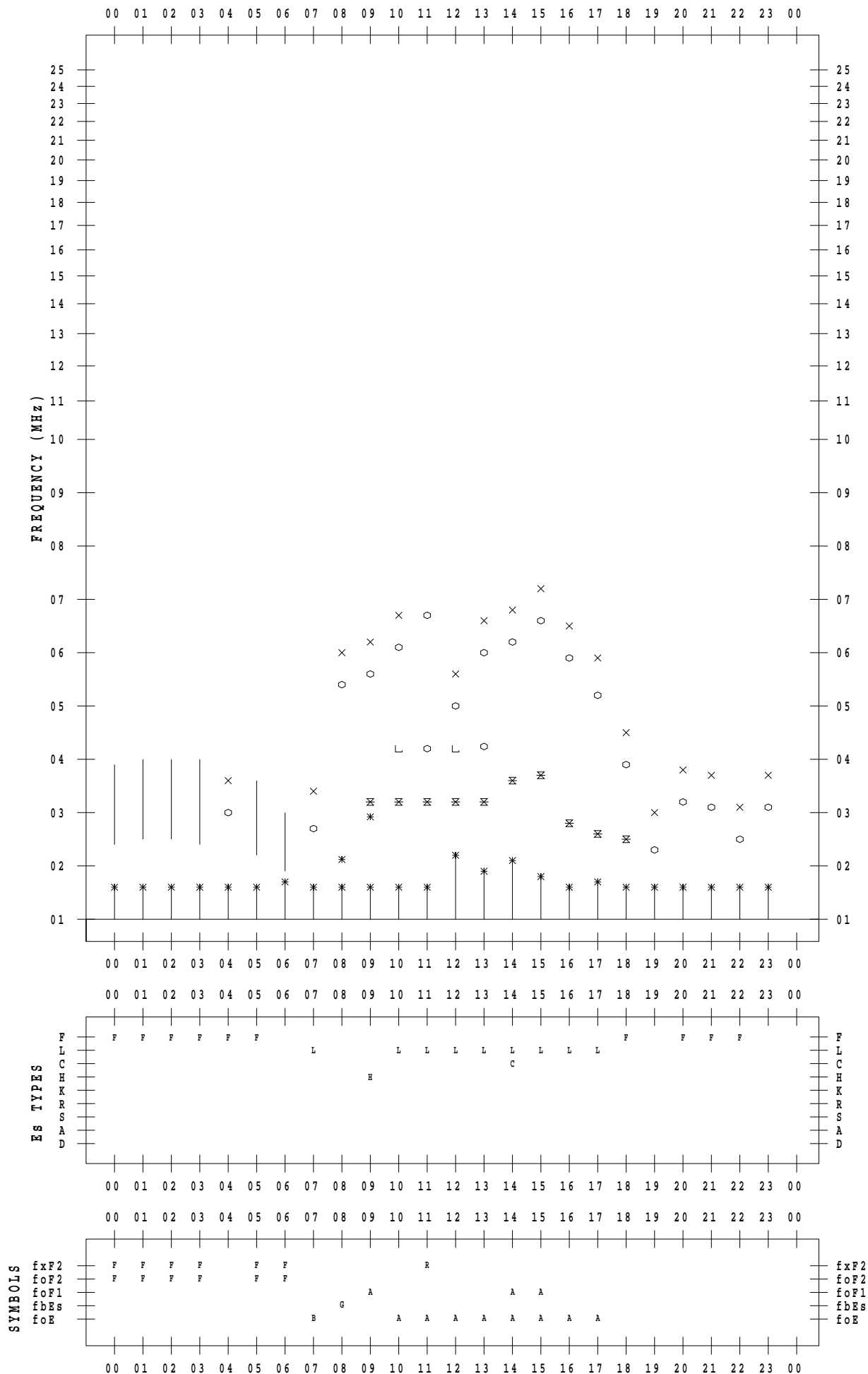
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/21

135 ° E MEAN TIME



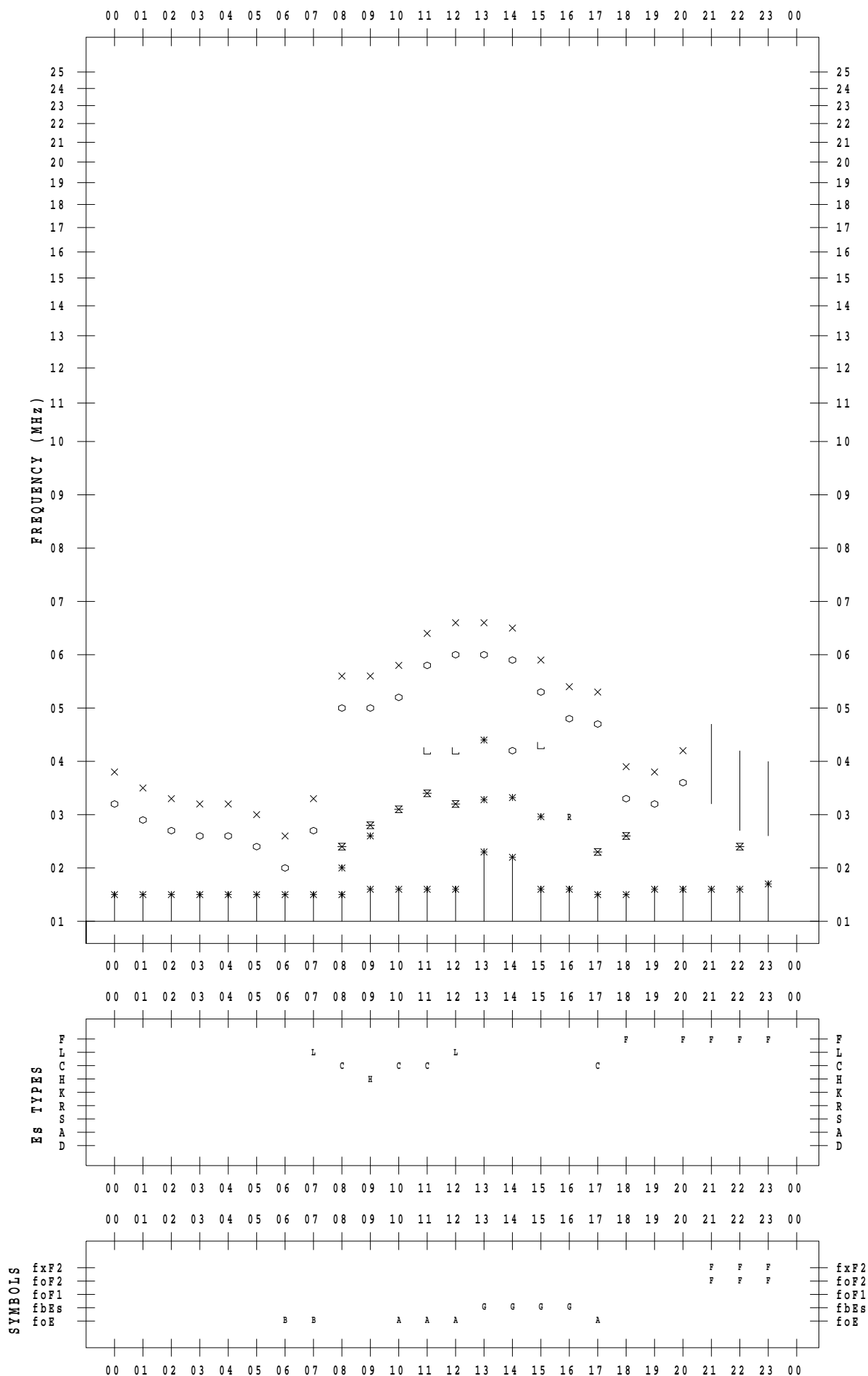
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 22

135 ° E MEAN TIME



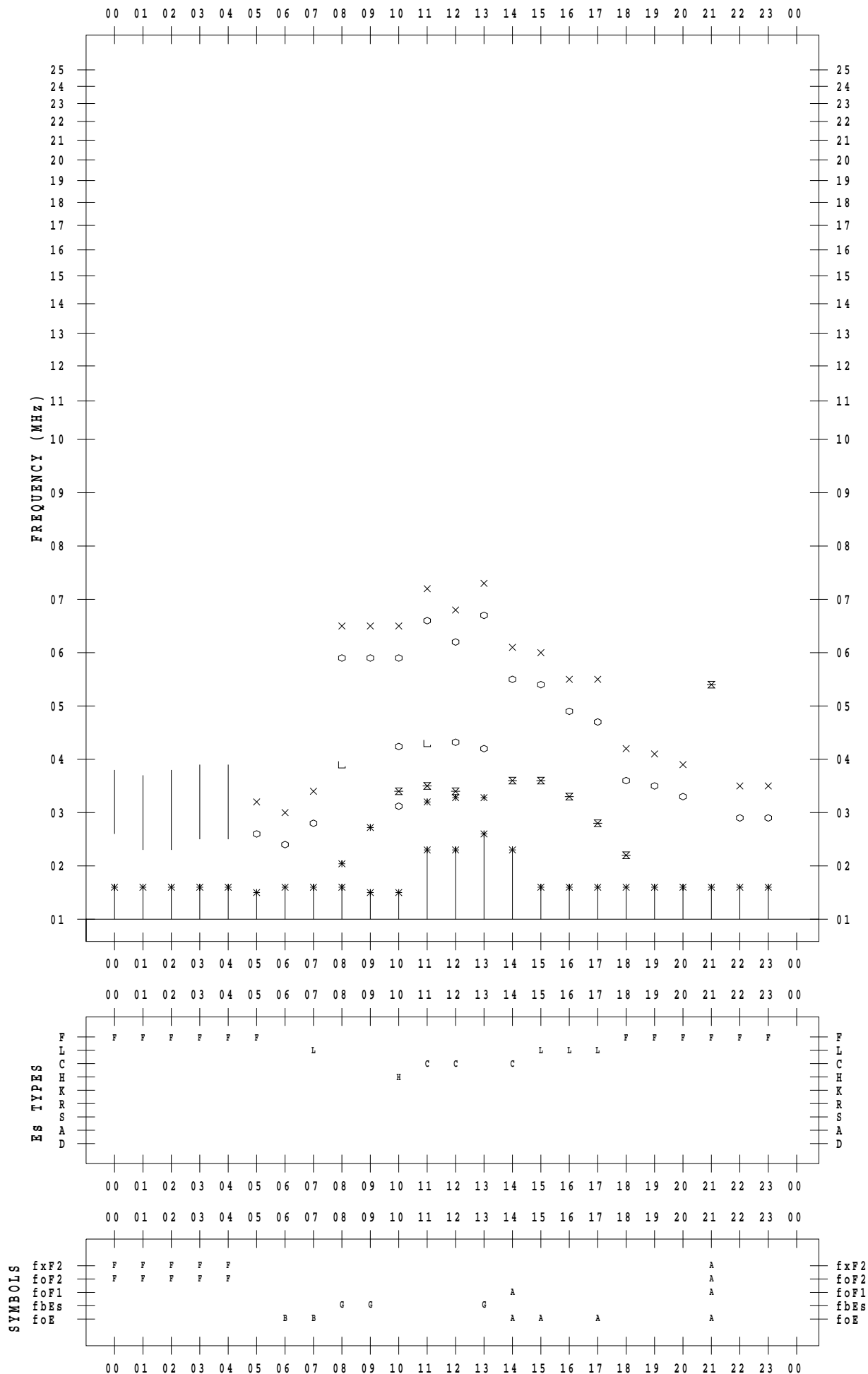
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/23

135 ° E MEAN TIME



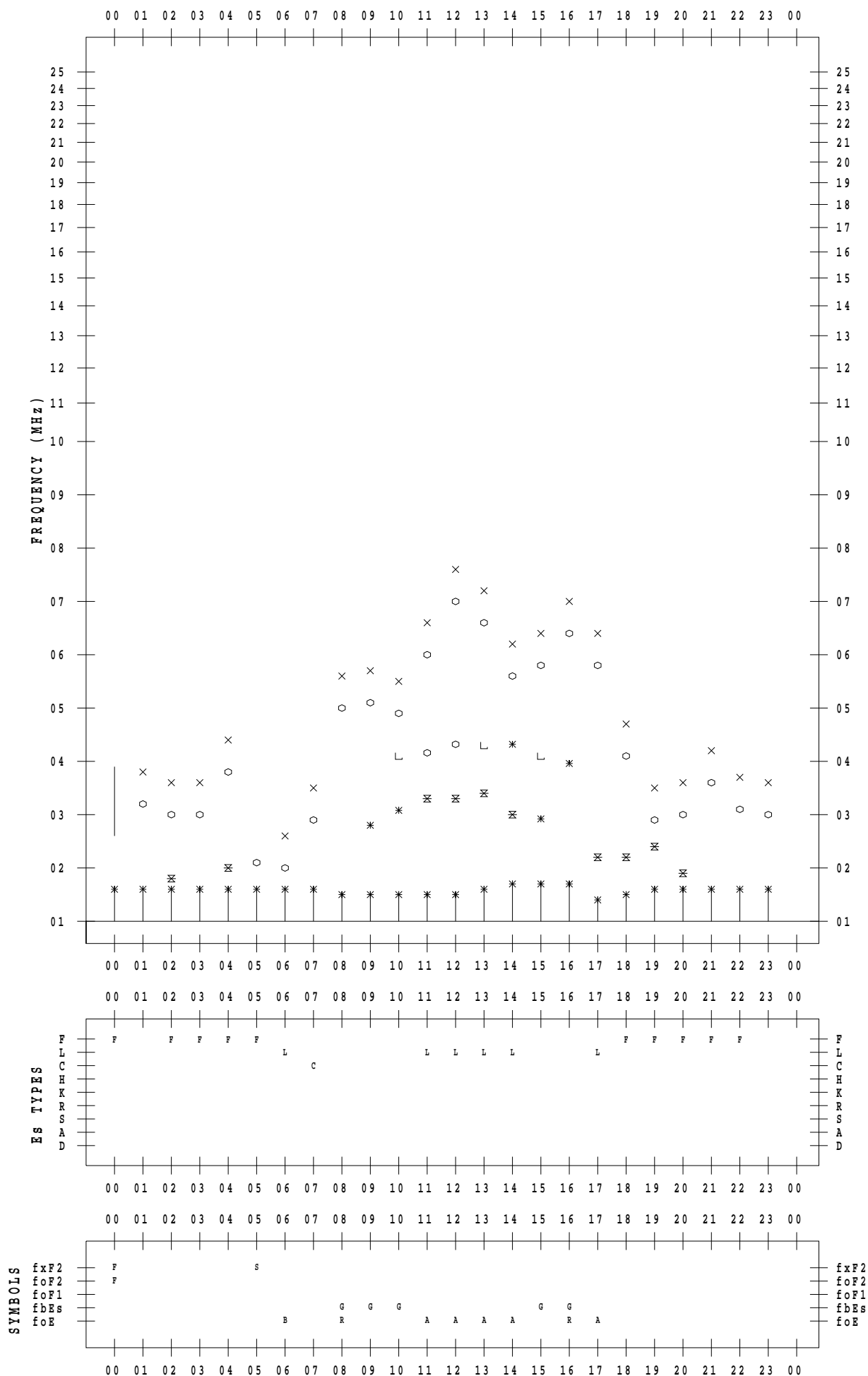
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/24

135 ° E MEAN TIME



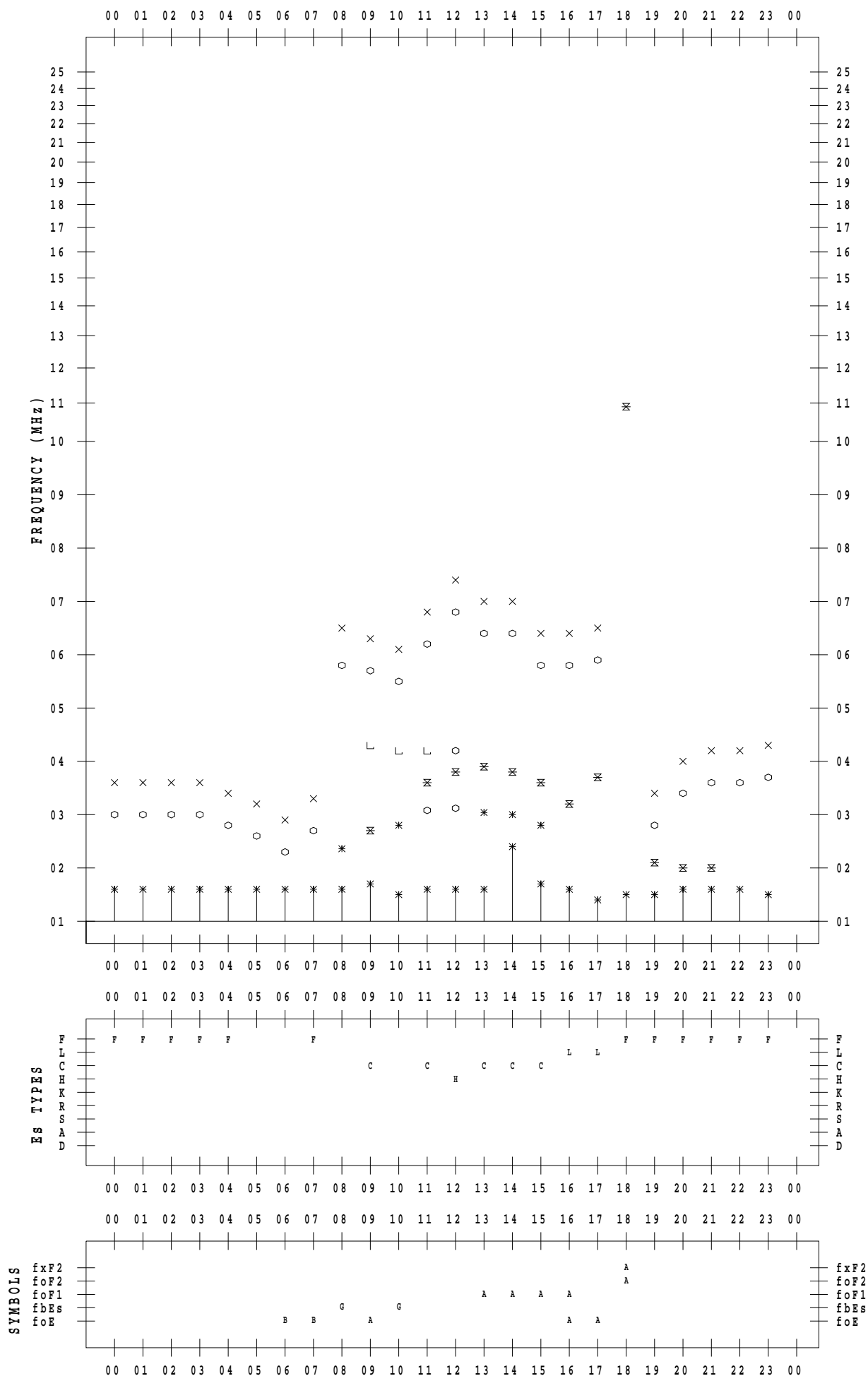
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 25

135 ° E MEAN TIME



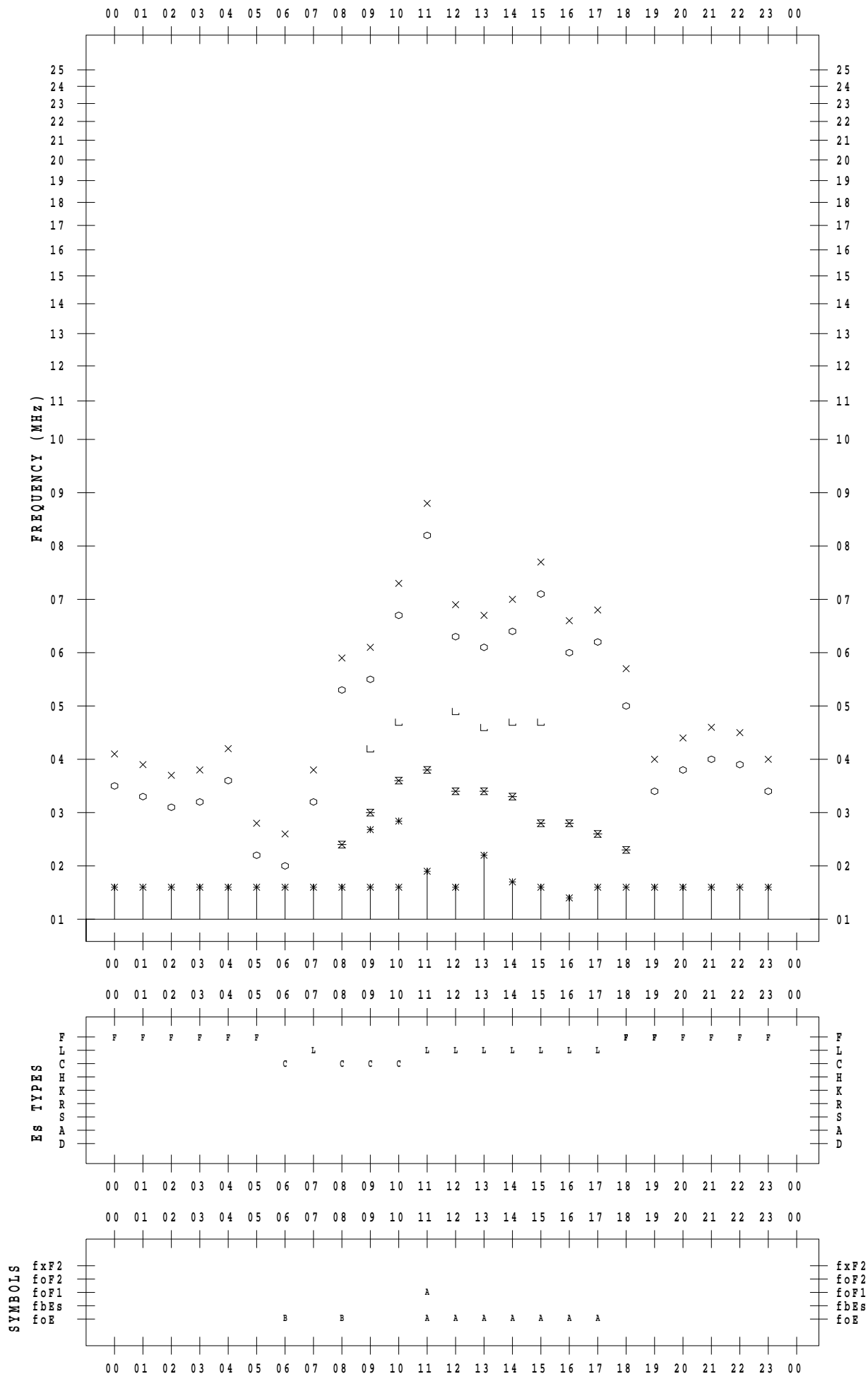
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/26

135 ° E MEAN TIME



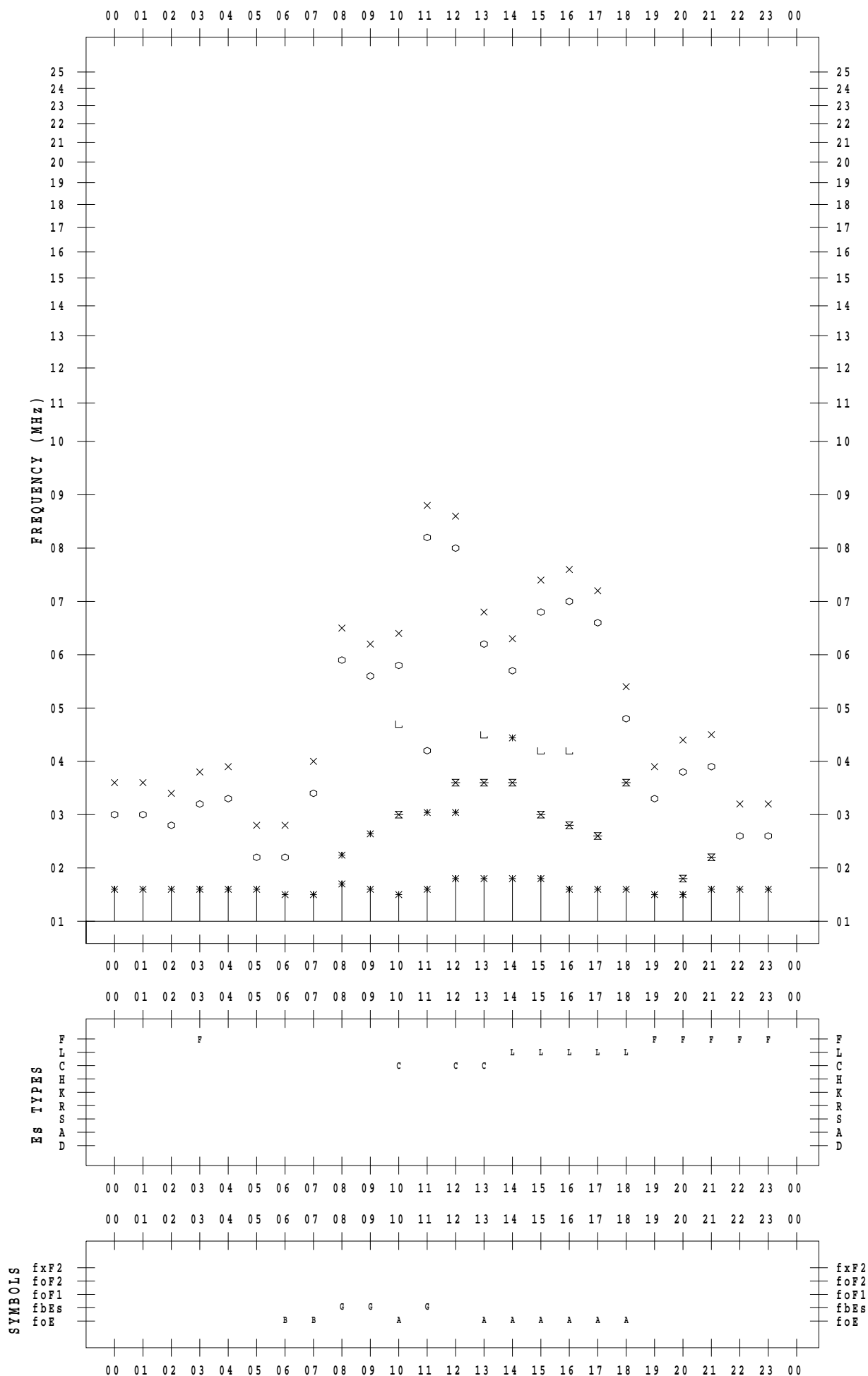
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/27

135 ° E MEAN TIME



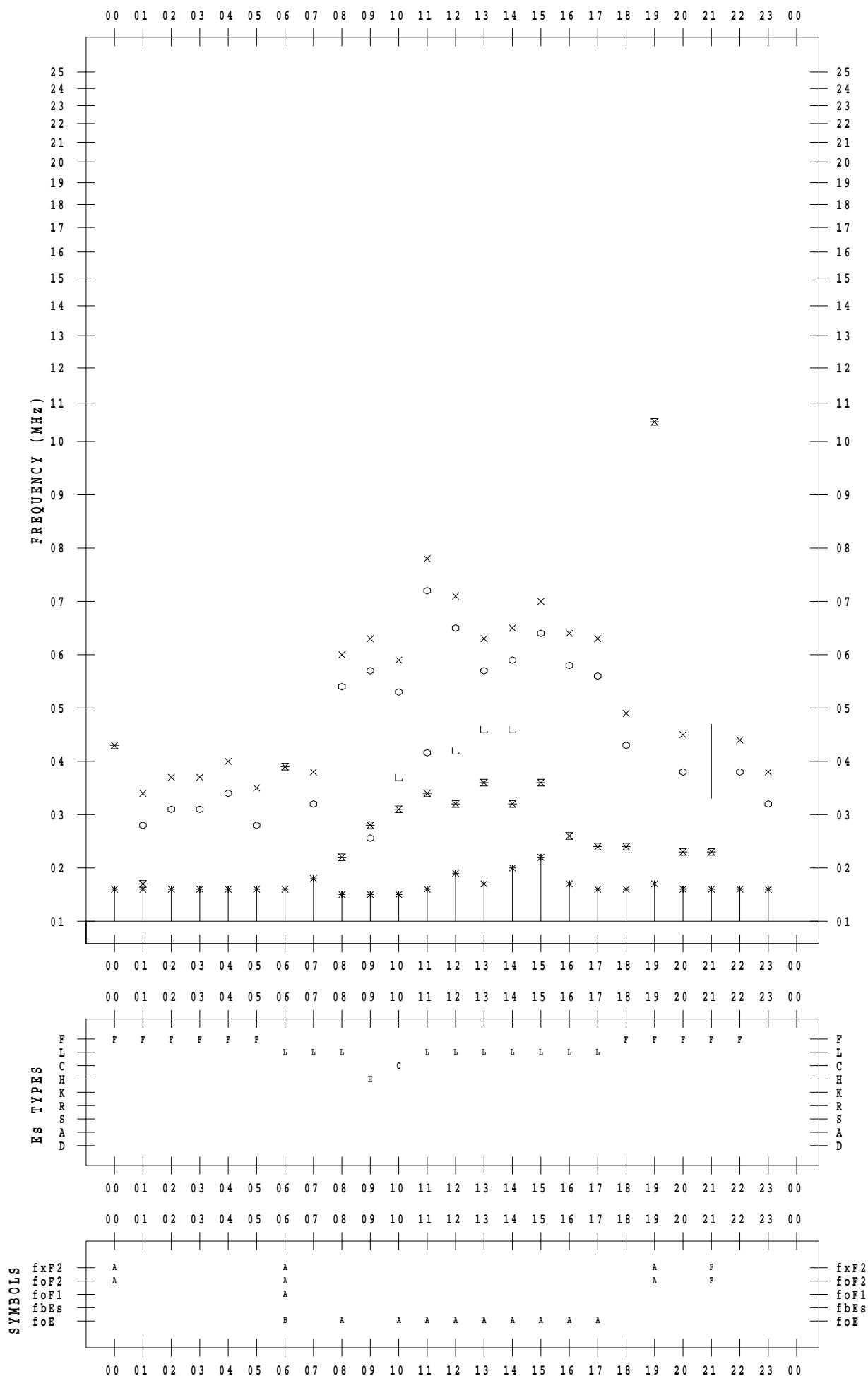
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/28

135 ° E MEAN TIME



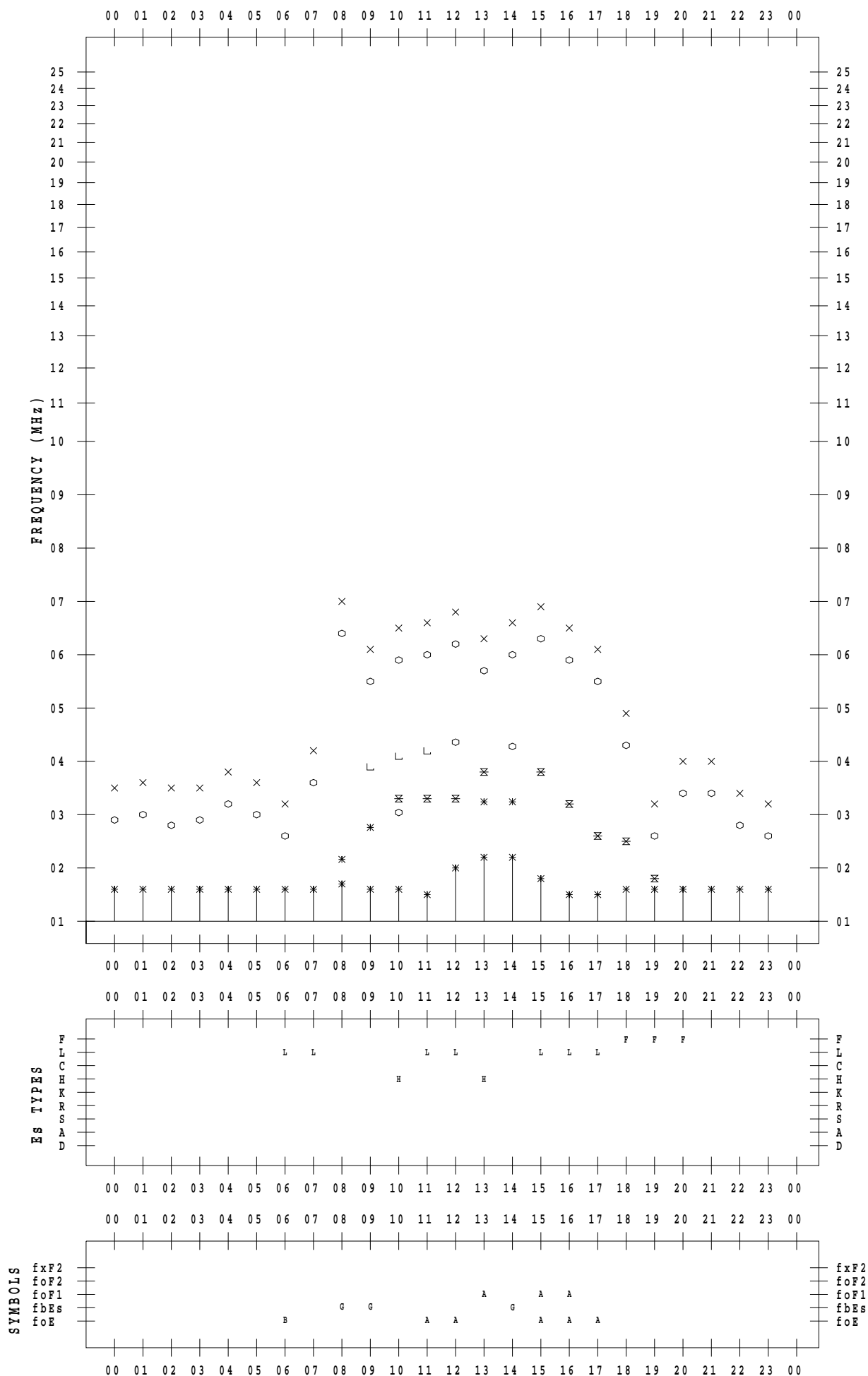
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021 / 1 / 29

135 ° E MEAN TIME



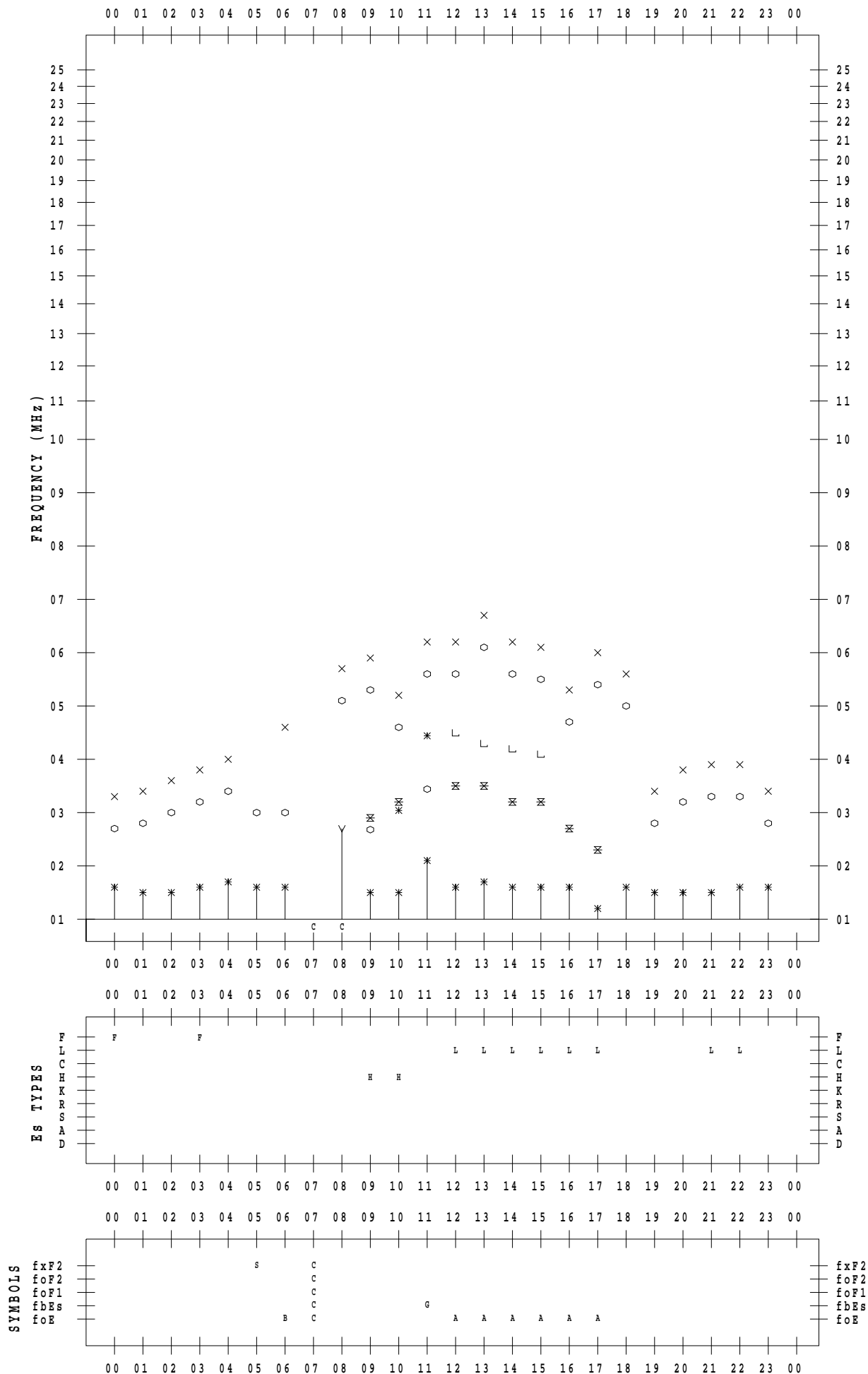
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/30

135 ° E MEAN TIME



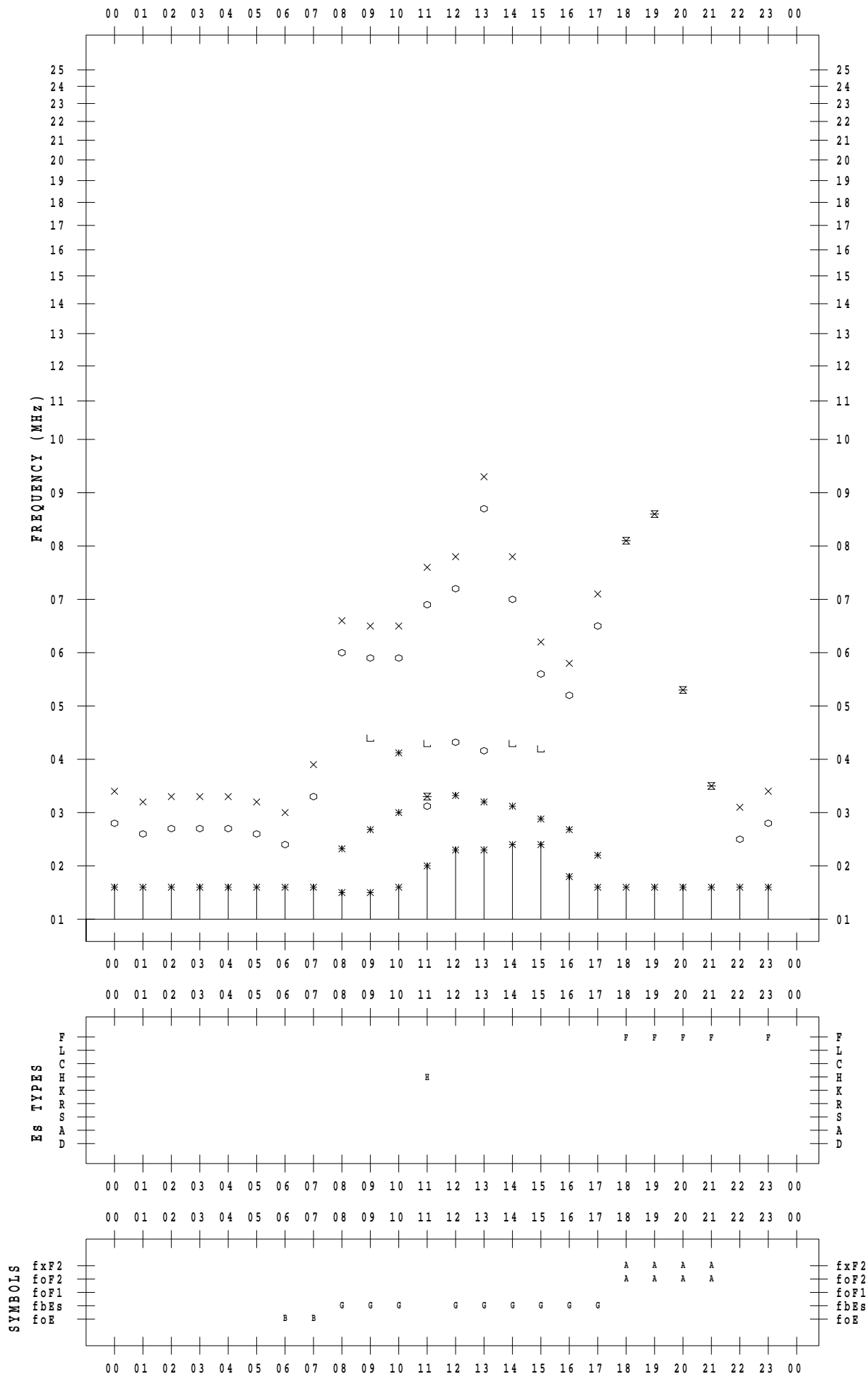
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 1/31

135 ° E MEAN TIME



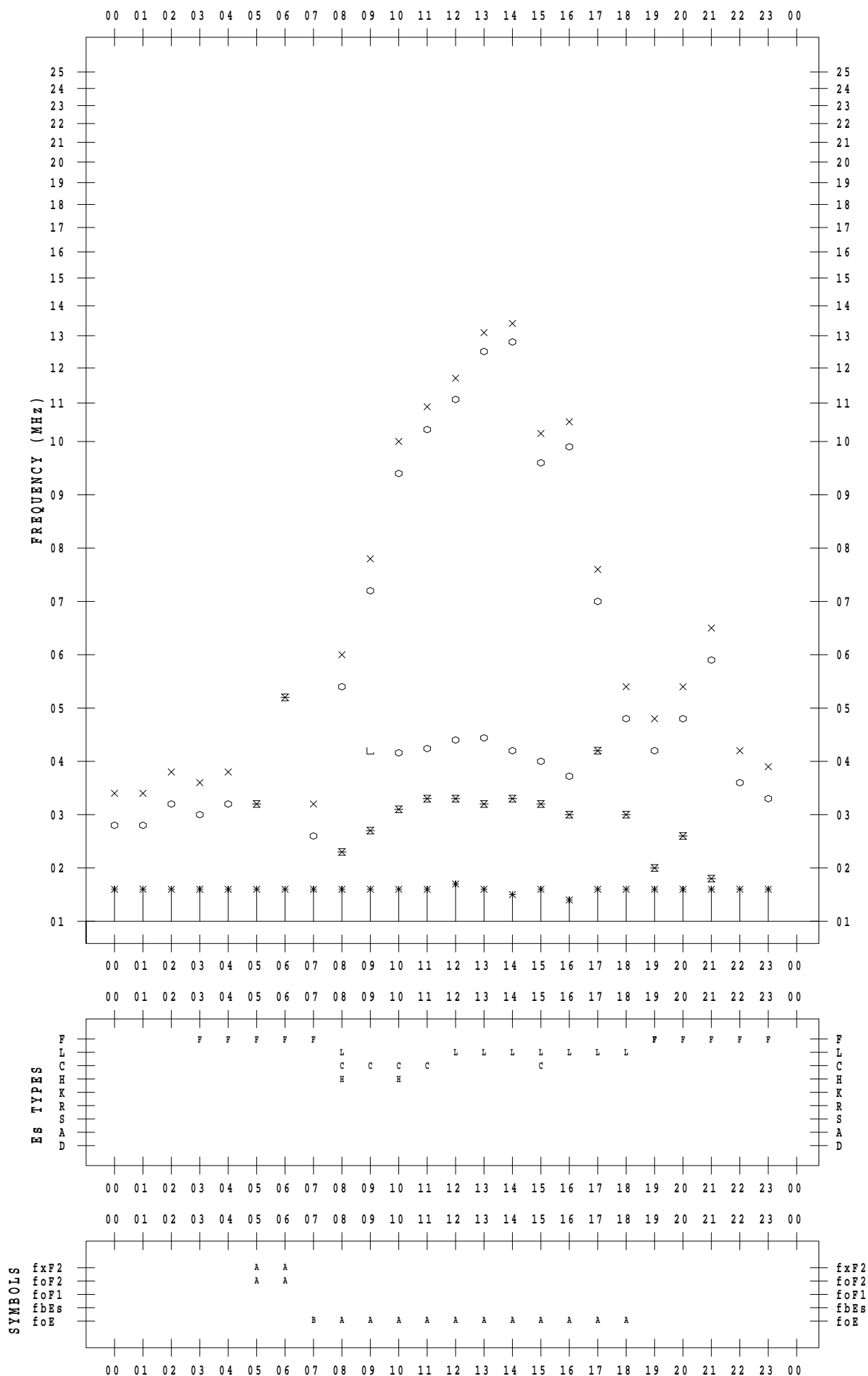
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 1

135 ° E MEAN TIME



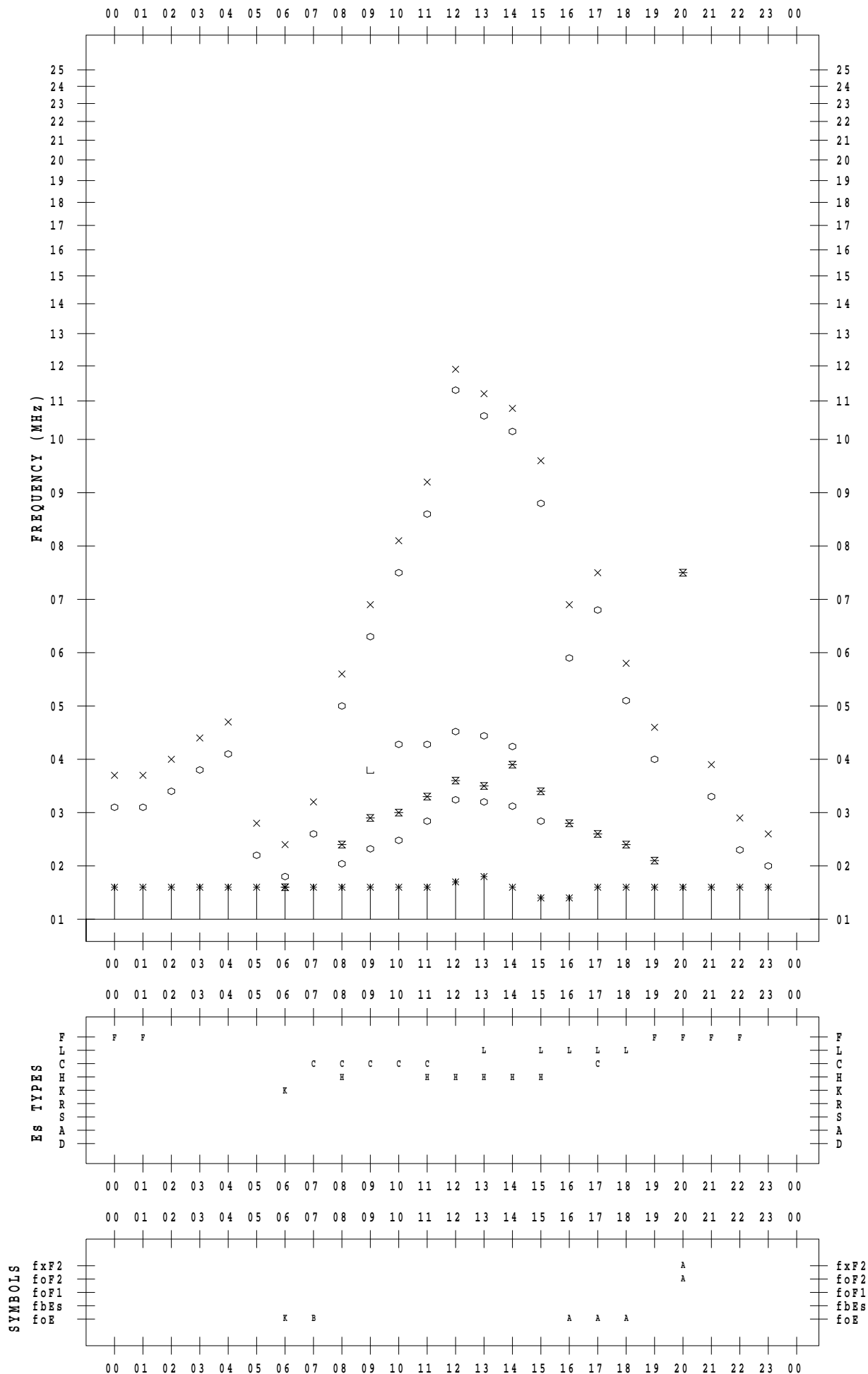
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 2

135 ° E MEAN TIME



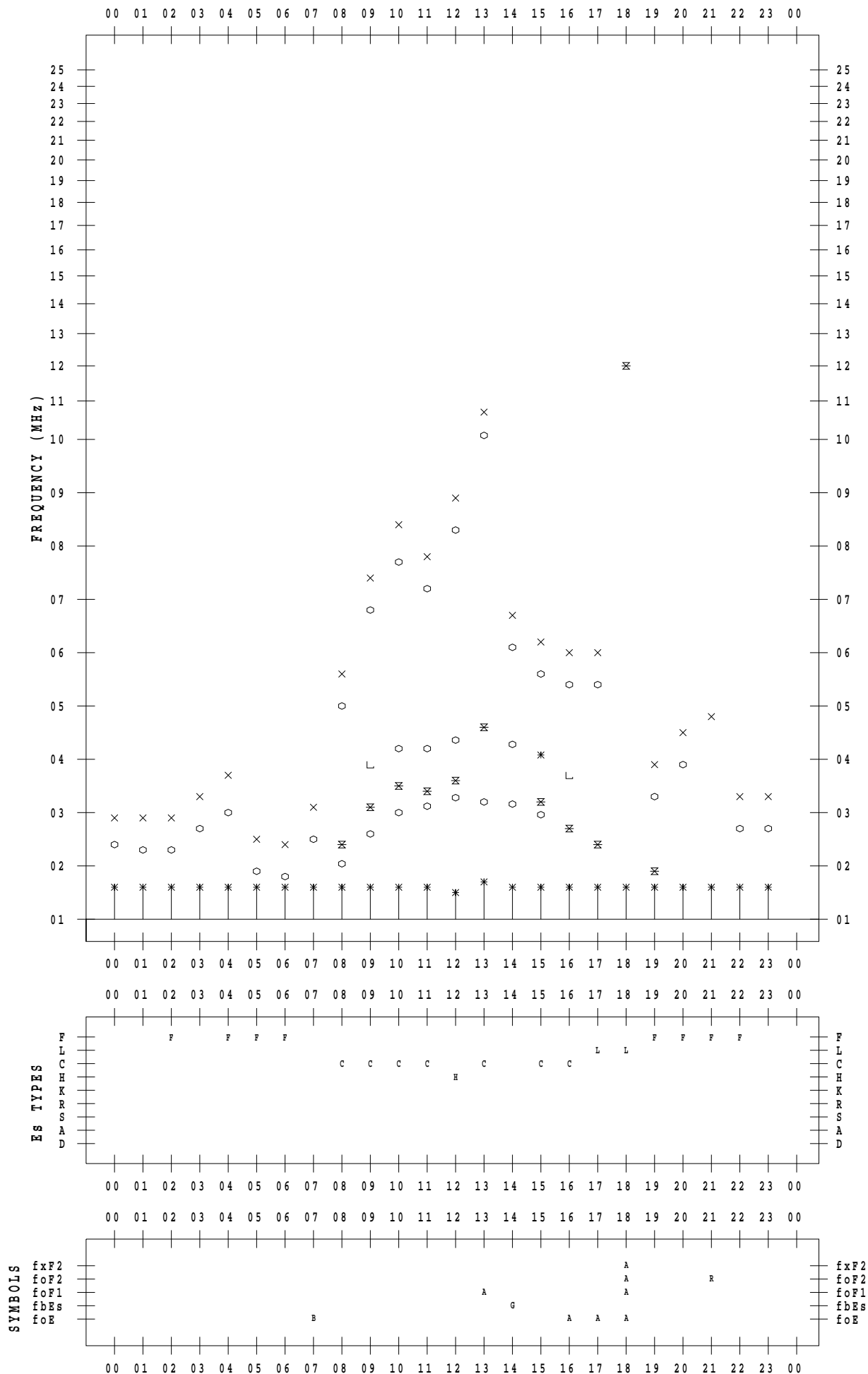
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 3

135 ° E MEAN TIME



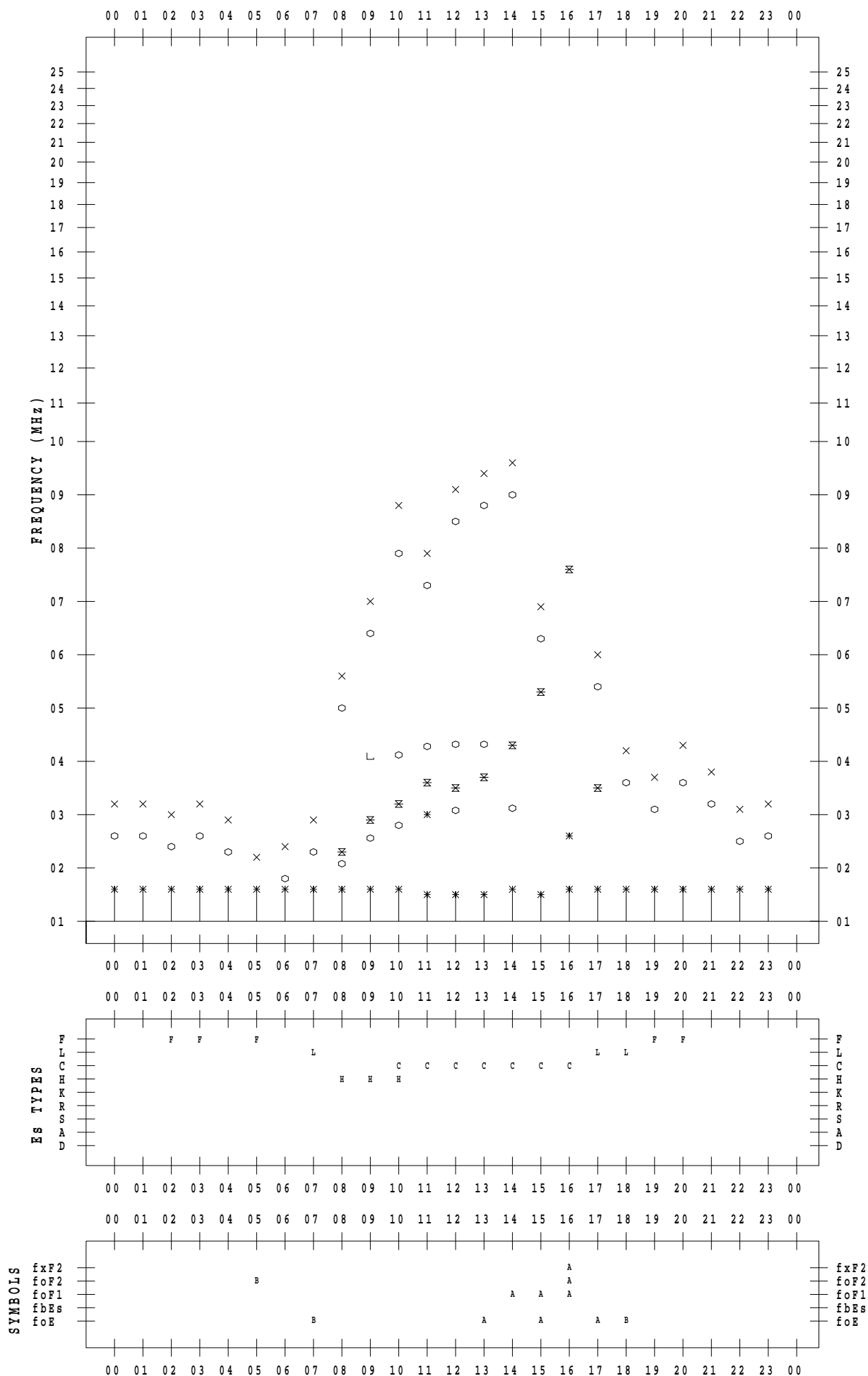
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021 / 1 / 4

135 ° E MEAN TIME



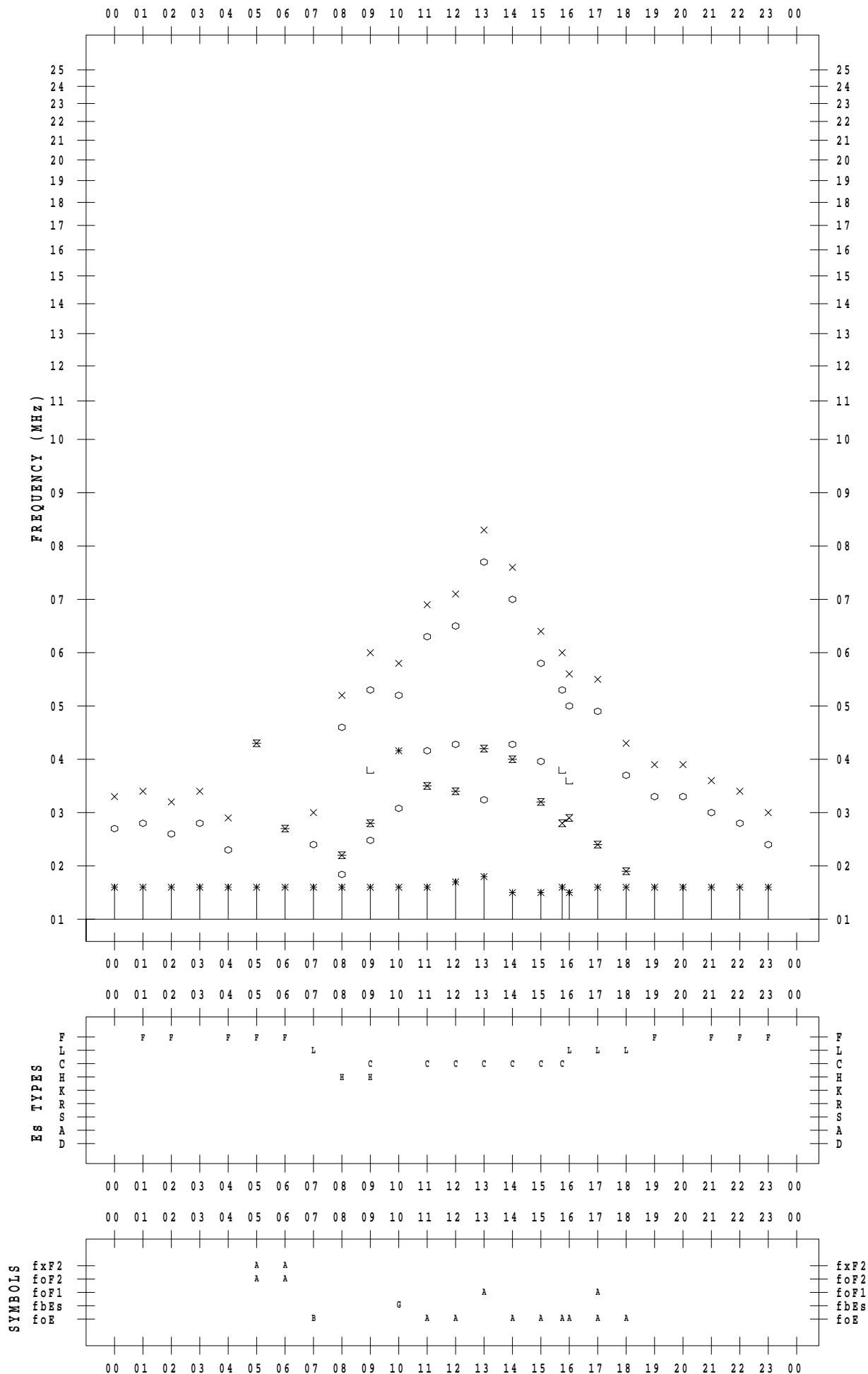
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 5

135 ° E MEAN TIME



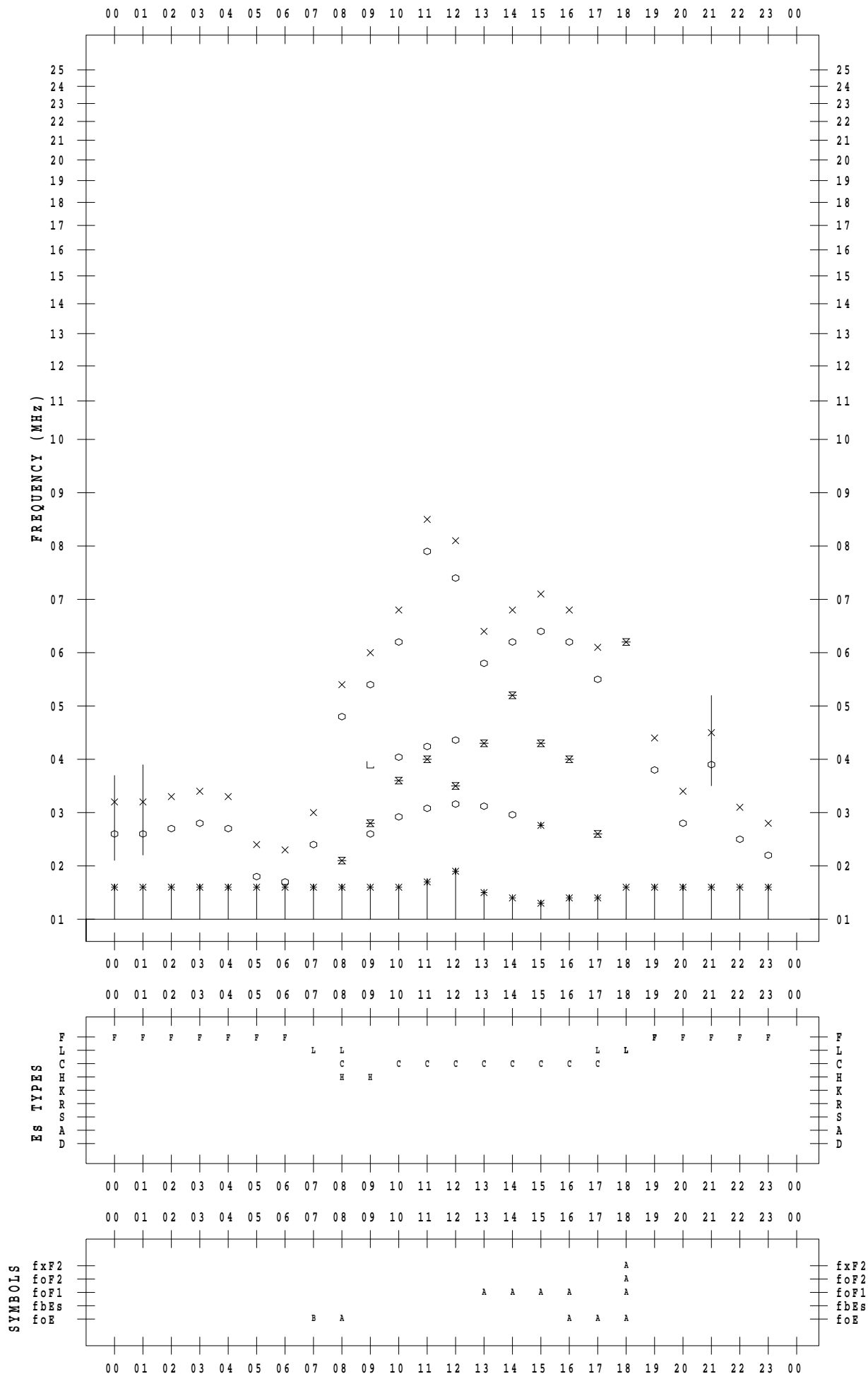
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 6

135 ° E MEAN TIME



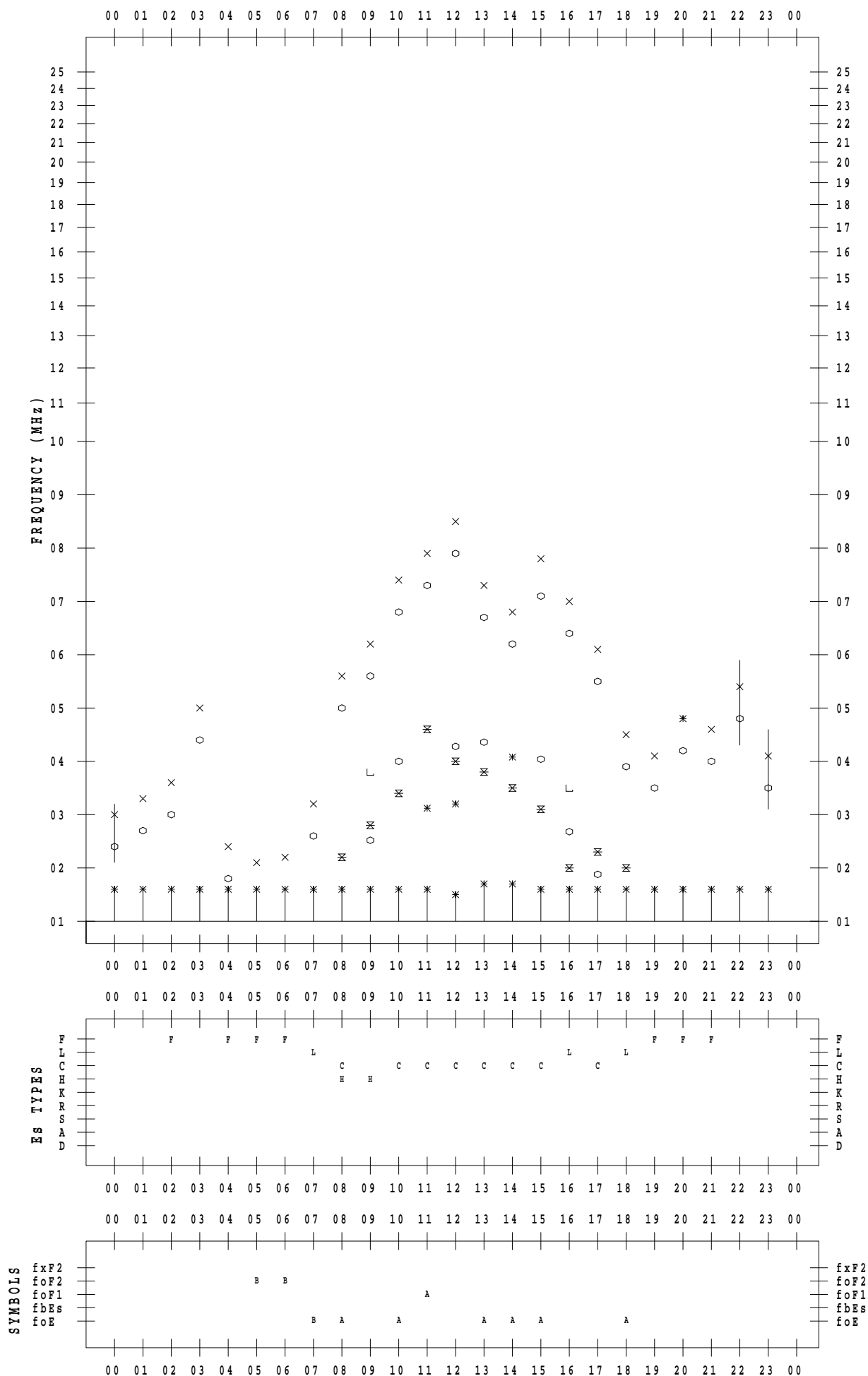
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 7

135 ° E MEAN TIME



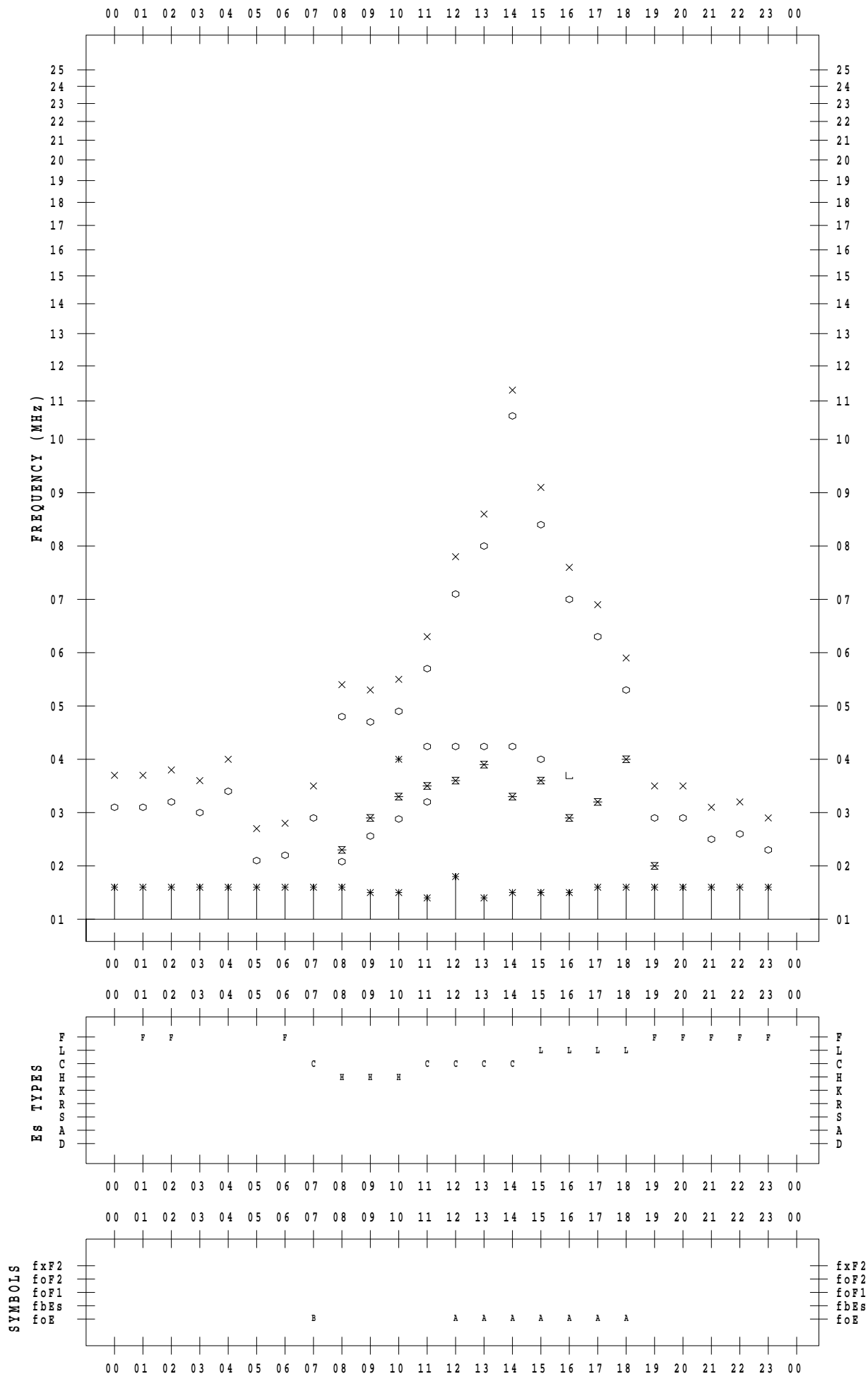
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/ 8

135 ° E MEAN TIME



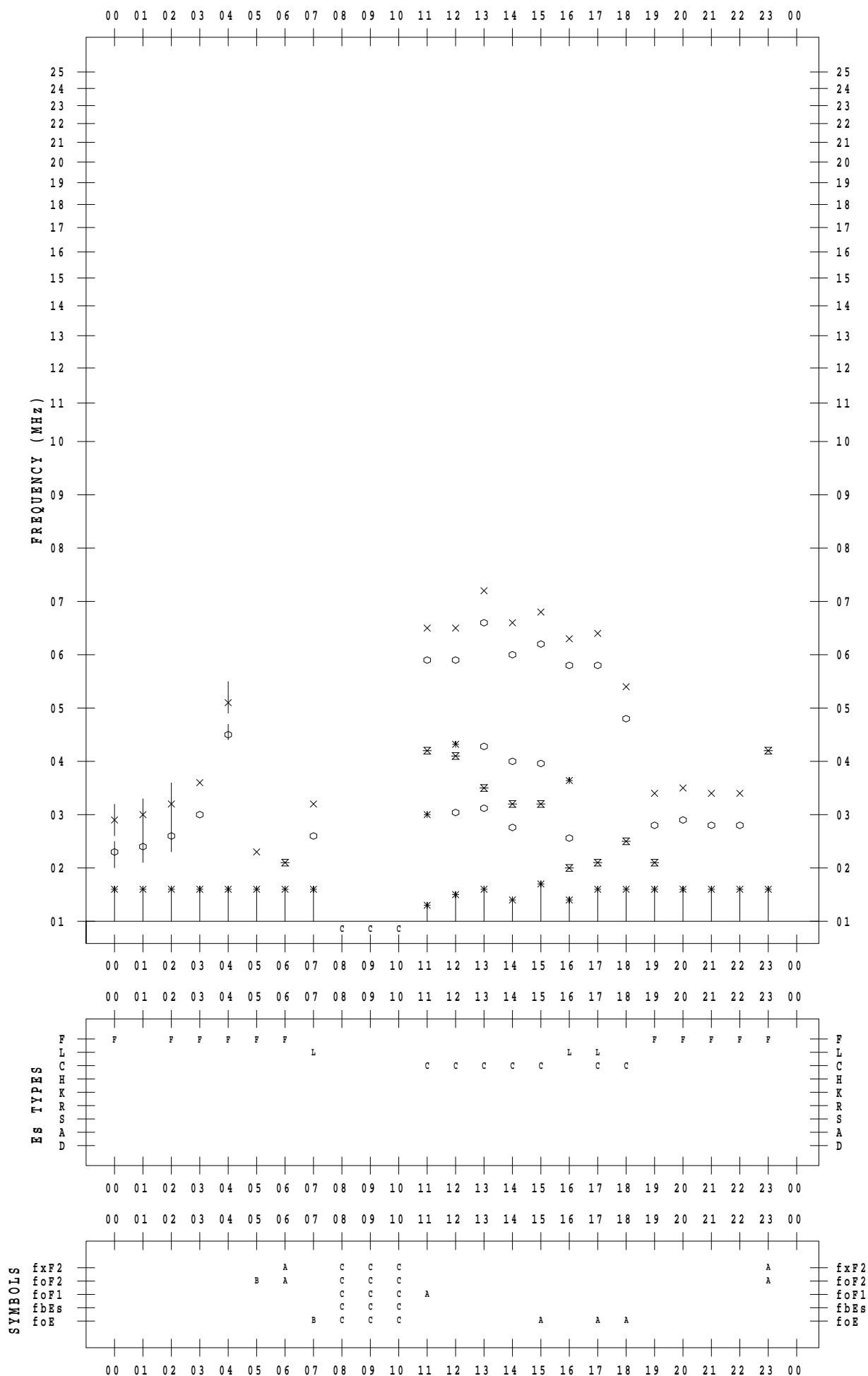
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021 / 1 / 9

135 ° E MEAN TIME



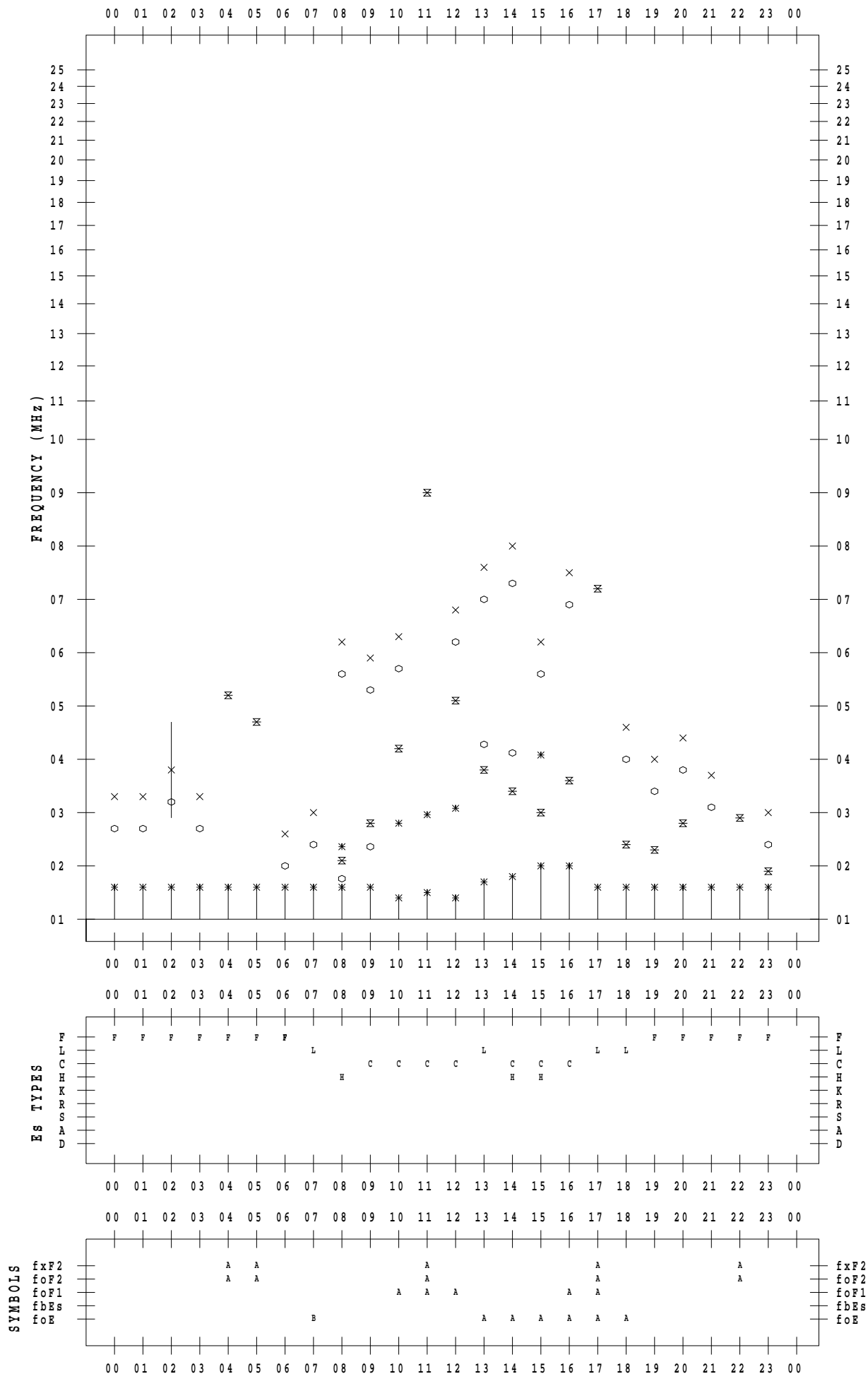
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/10

135 ° E MEAN TIME



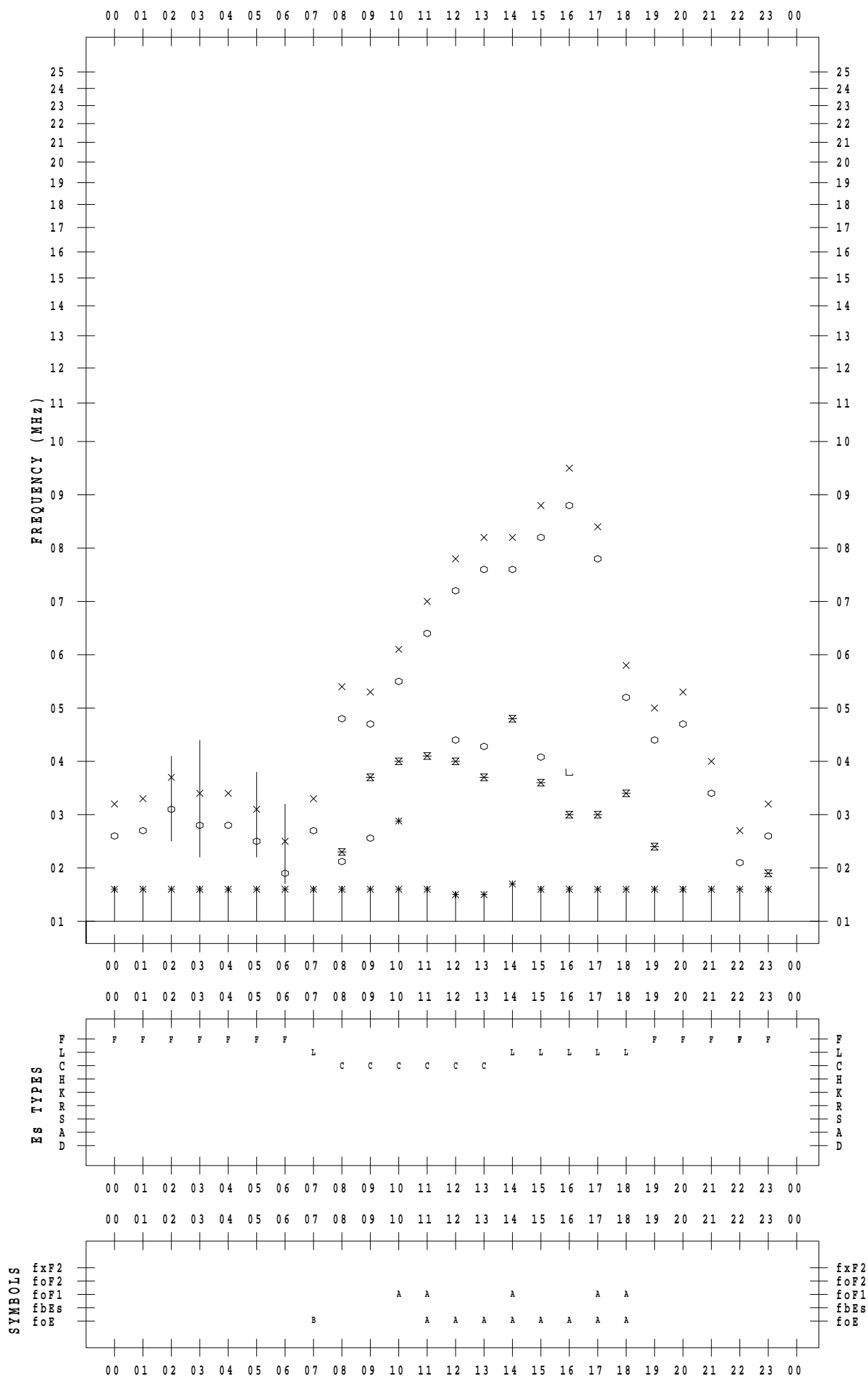
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/11

135 ° E MEAN TIME



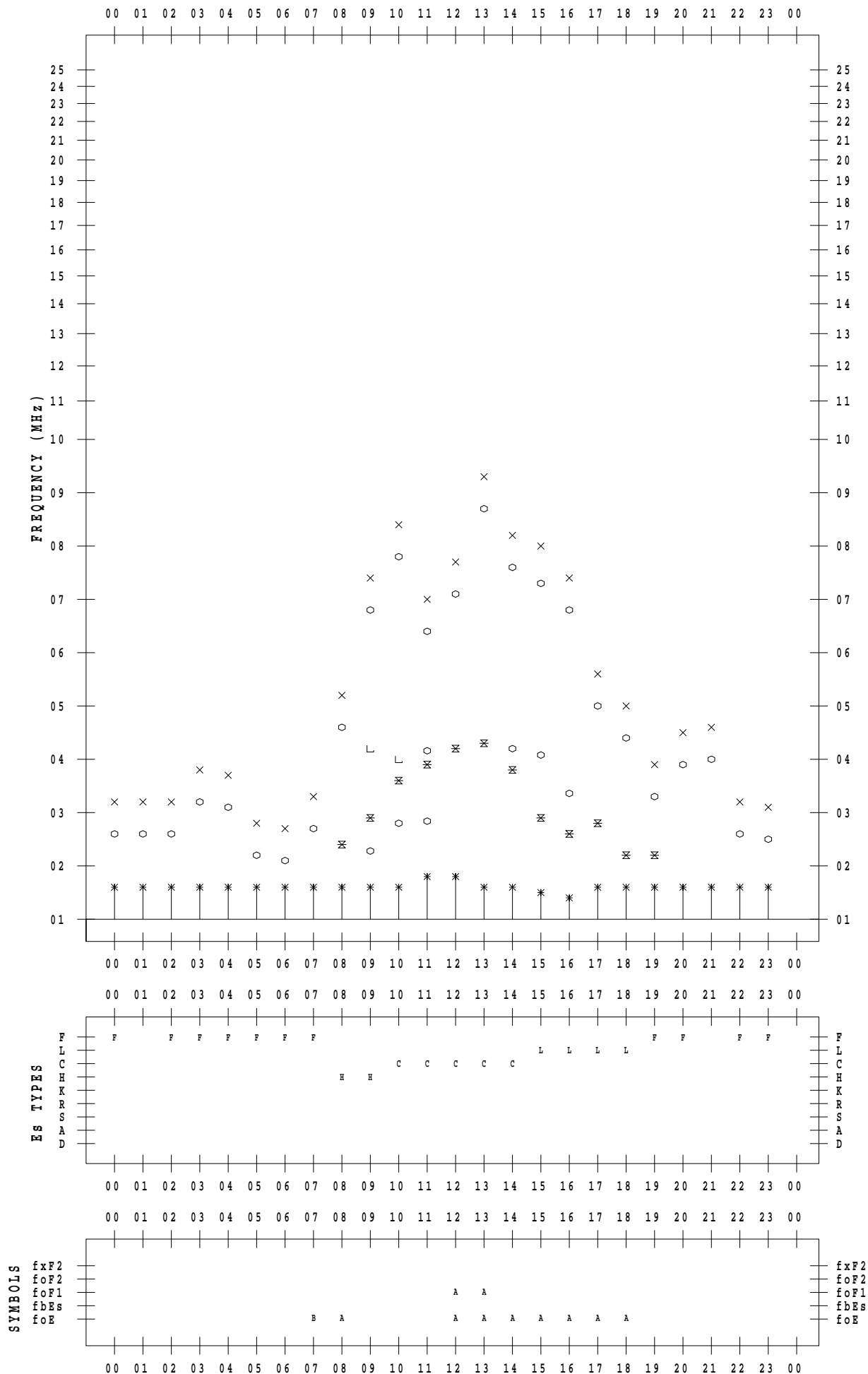
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/12

135 ° E MEAN TIME



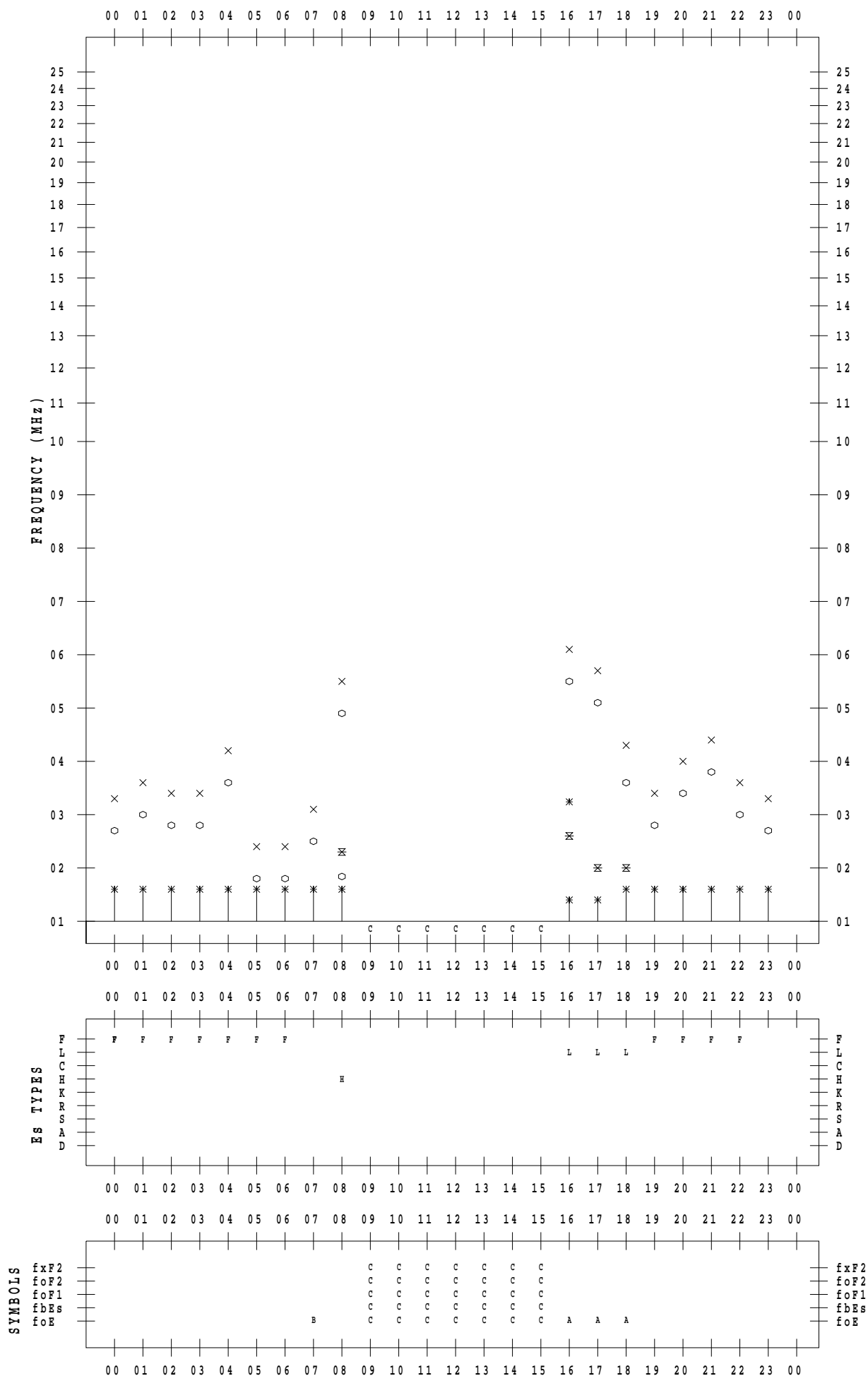
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/13

135 ° E MEAN TIME



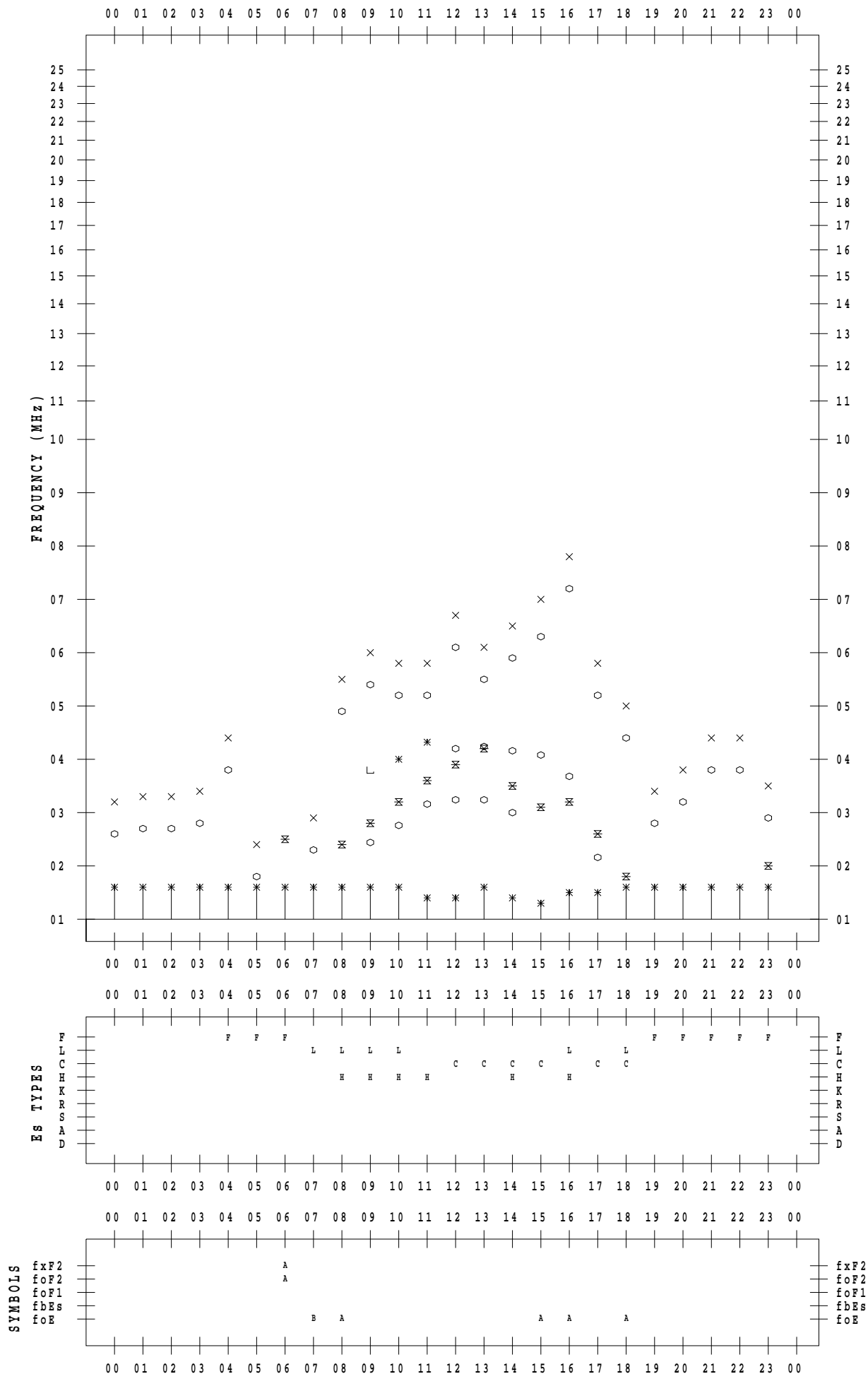
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/14

135 ° E MEAN TIME



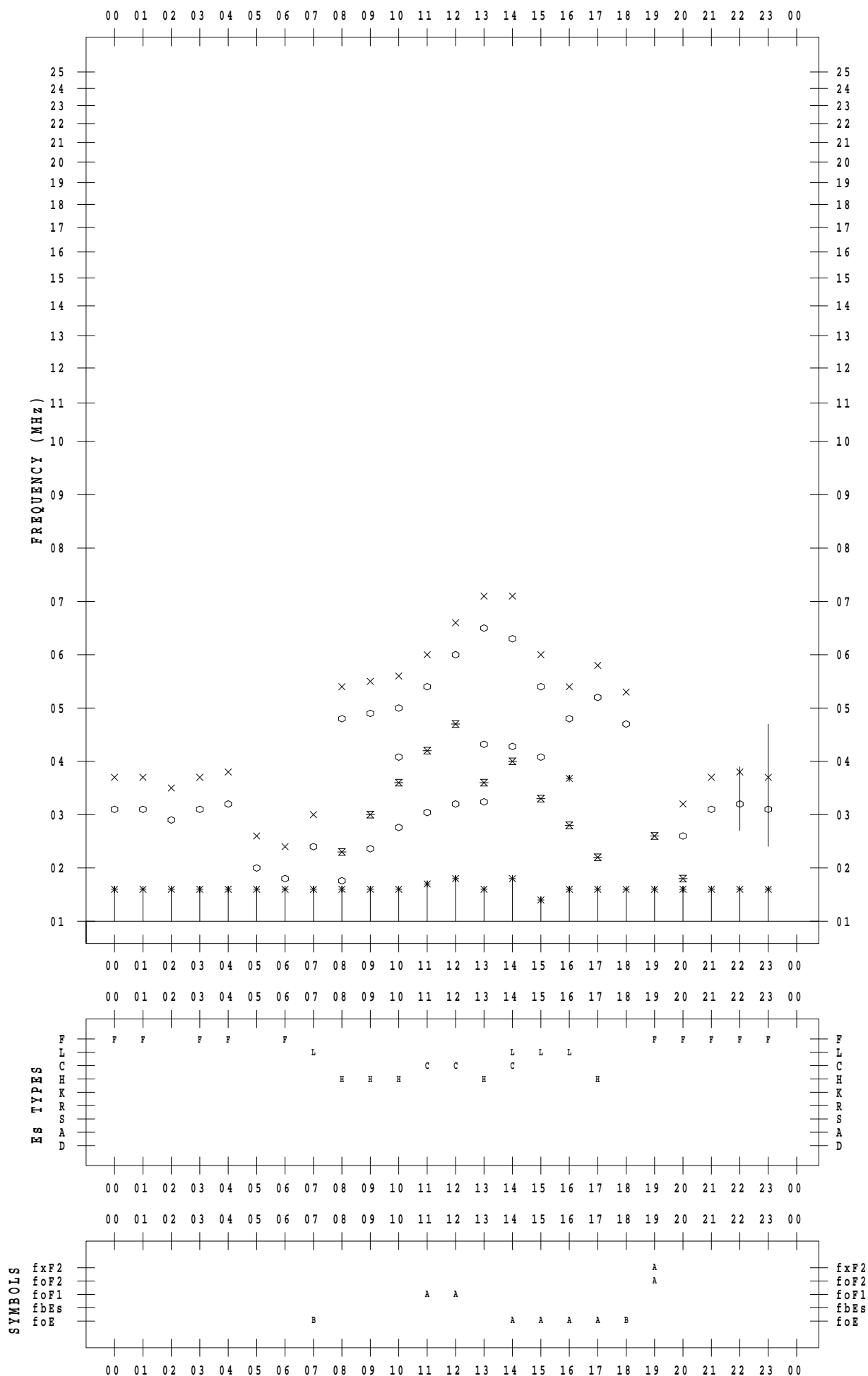
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/15

135 ° E MEAN TIME



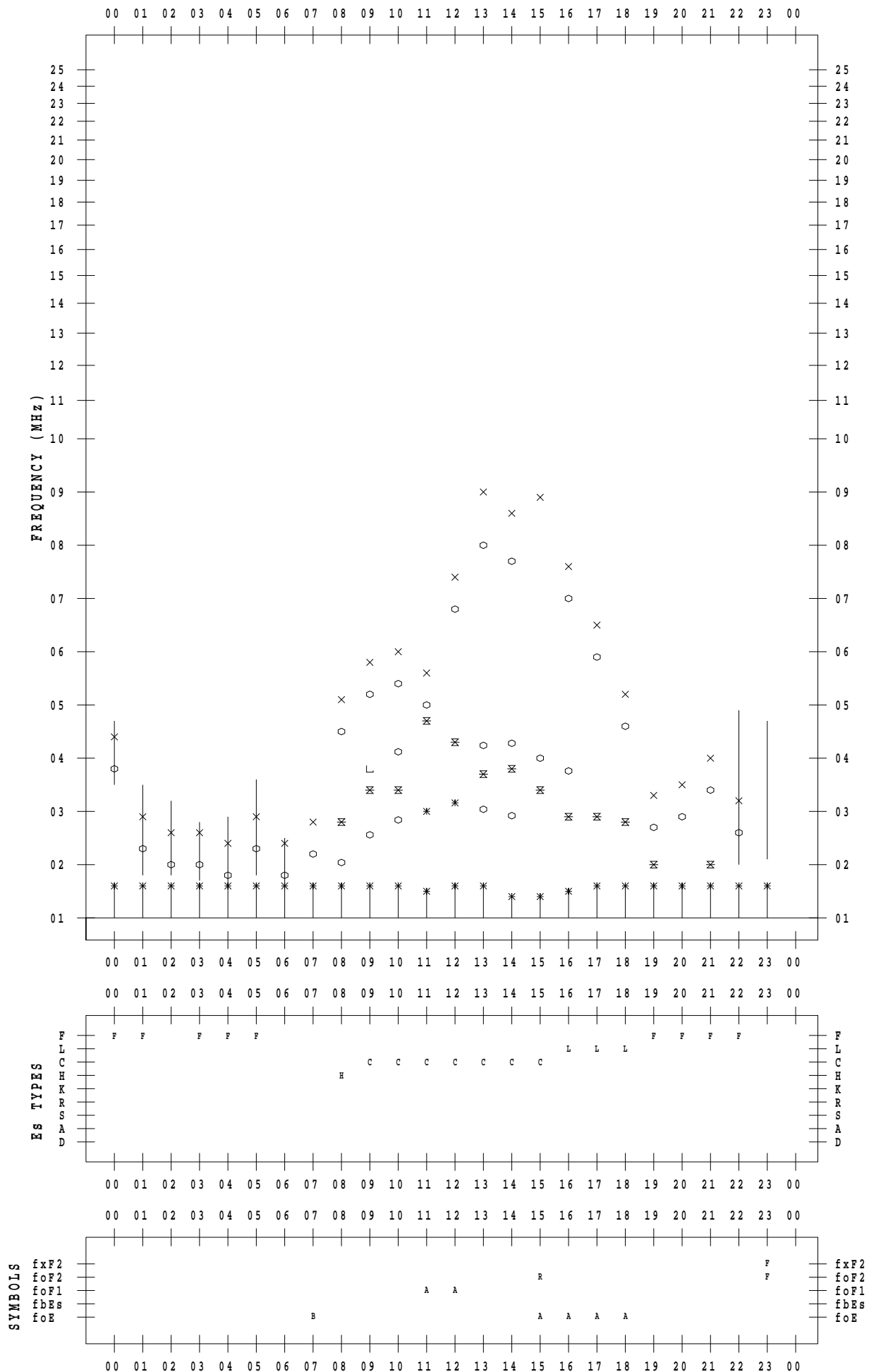
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/16

135 ° E MEAN TIME



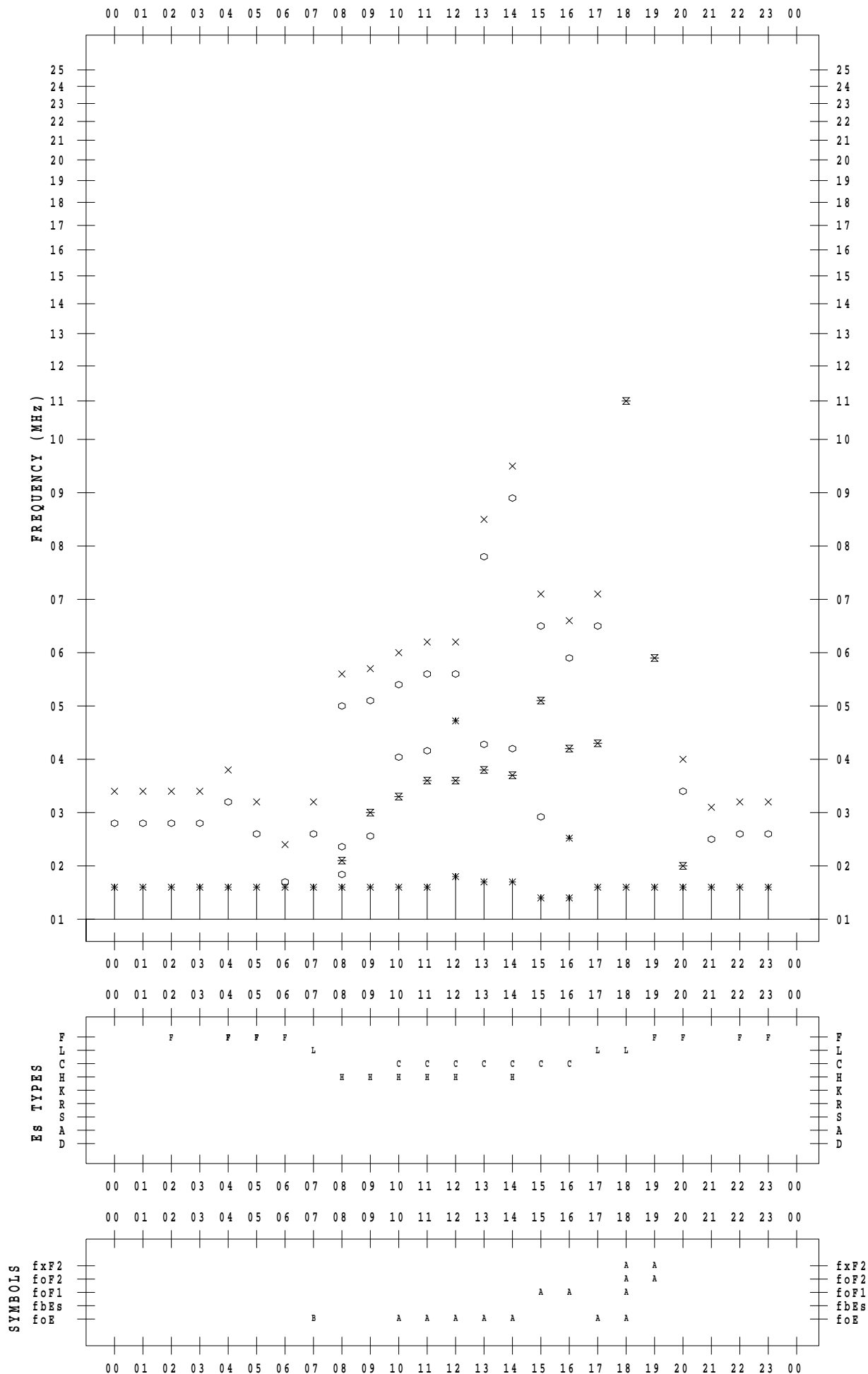
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/17

135 ° E MEAN TIME



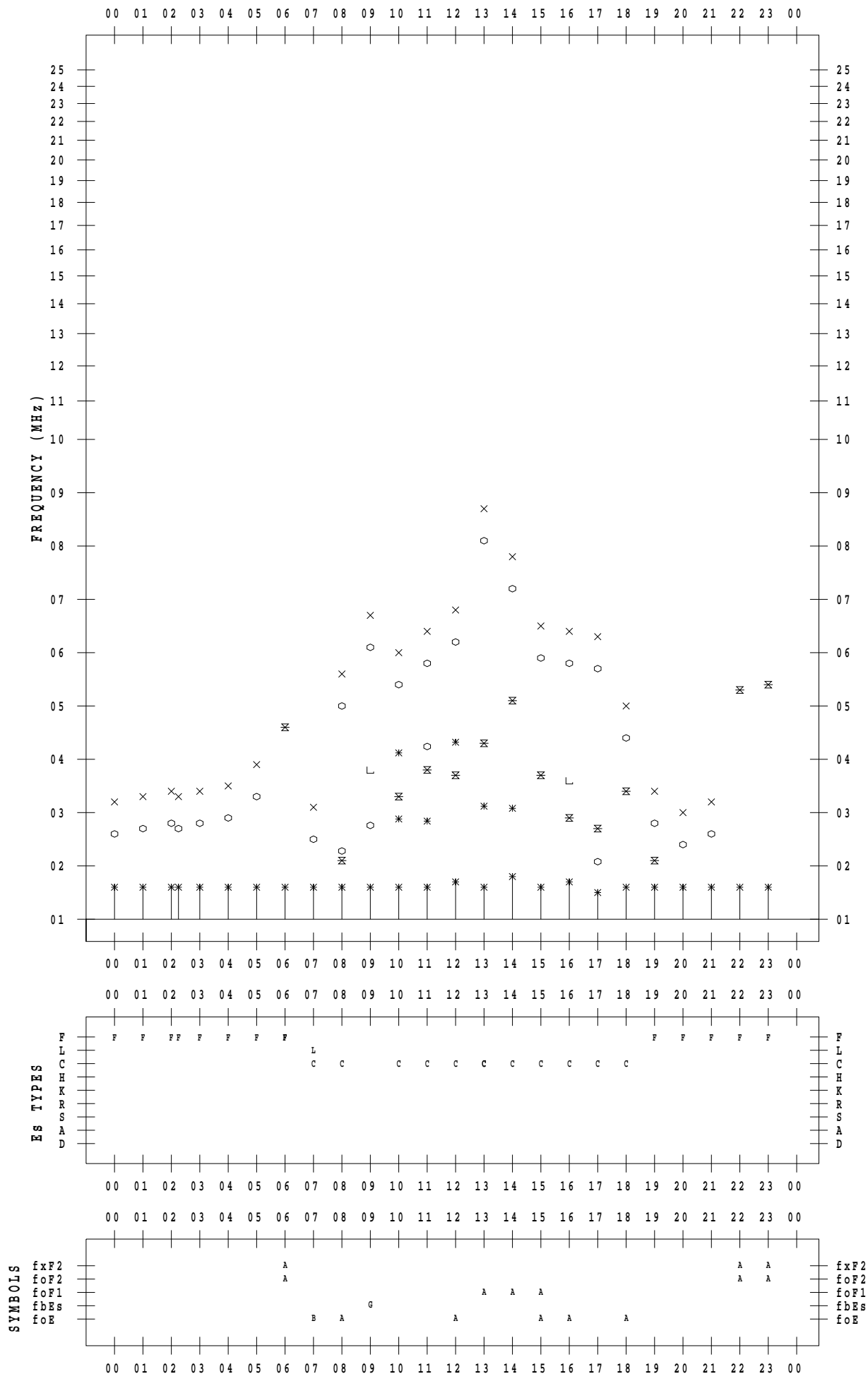
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/18

135 ° E MEAN TIME



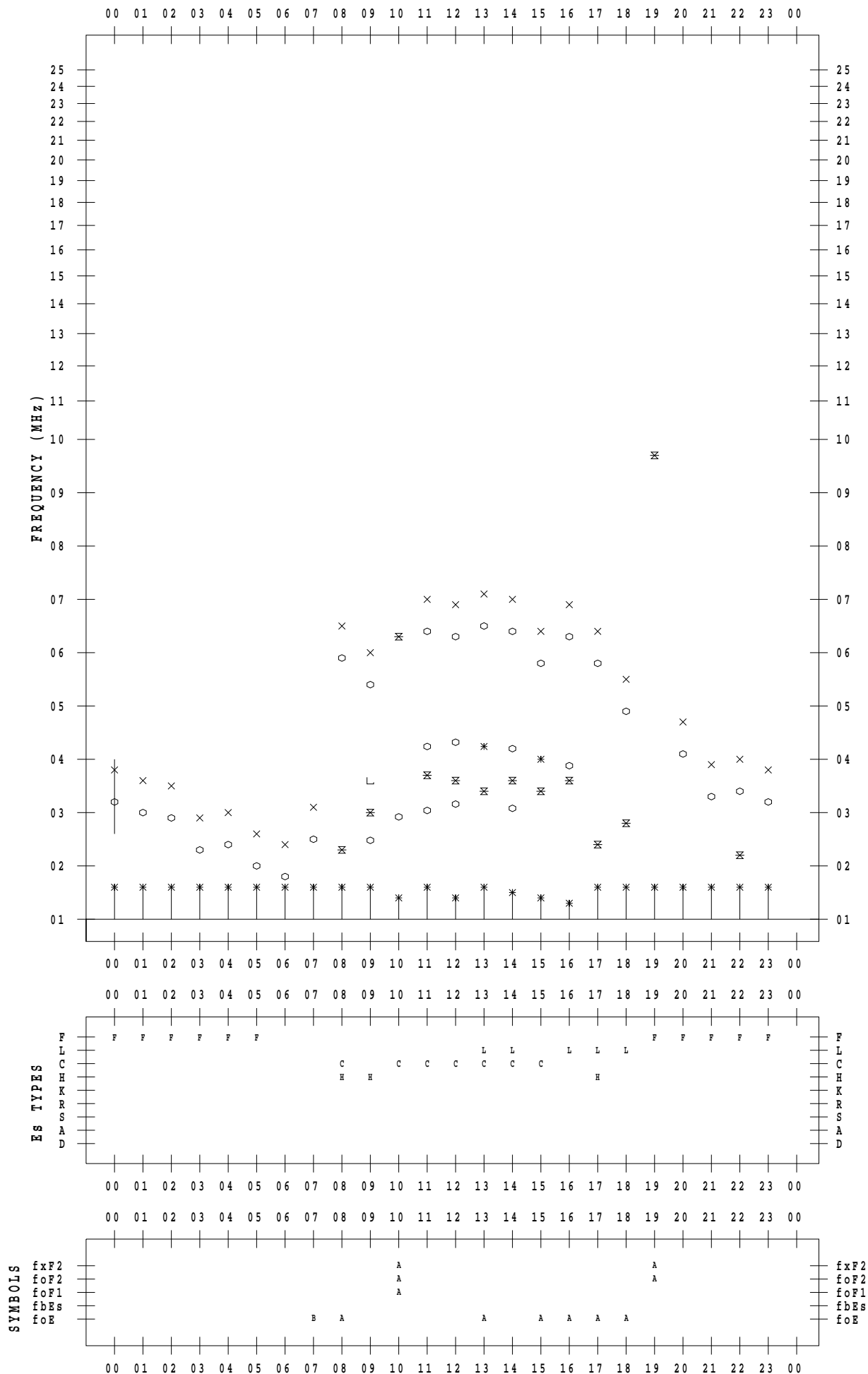
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/19

135 ° E MEAN TIME



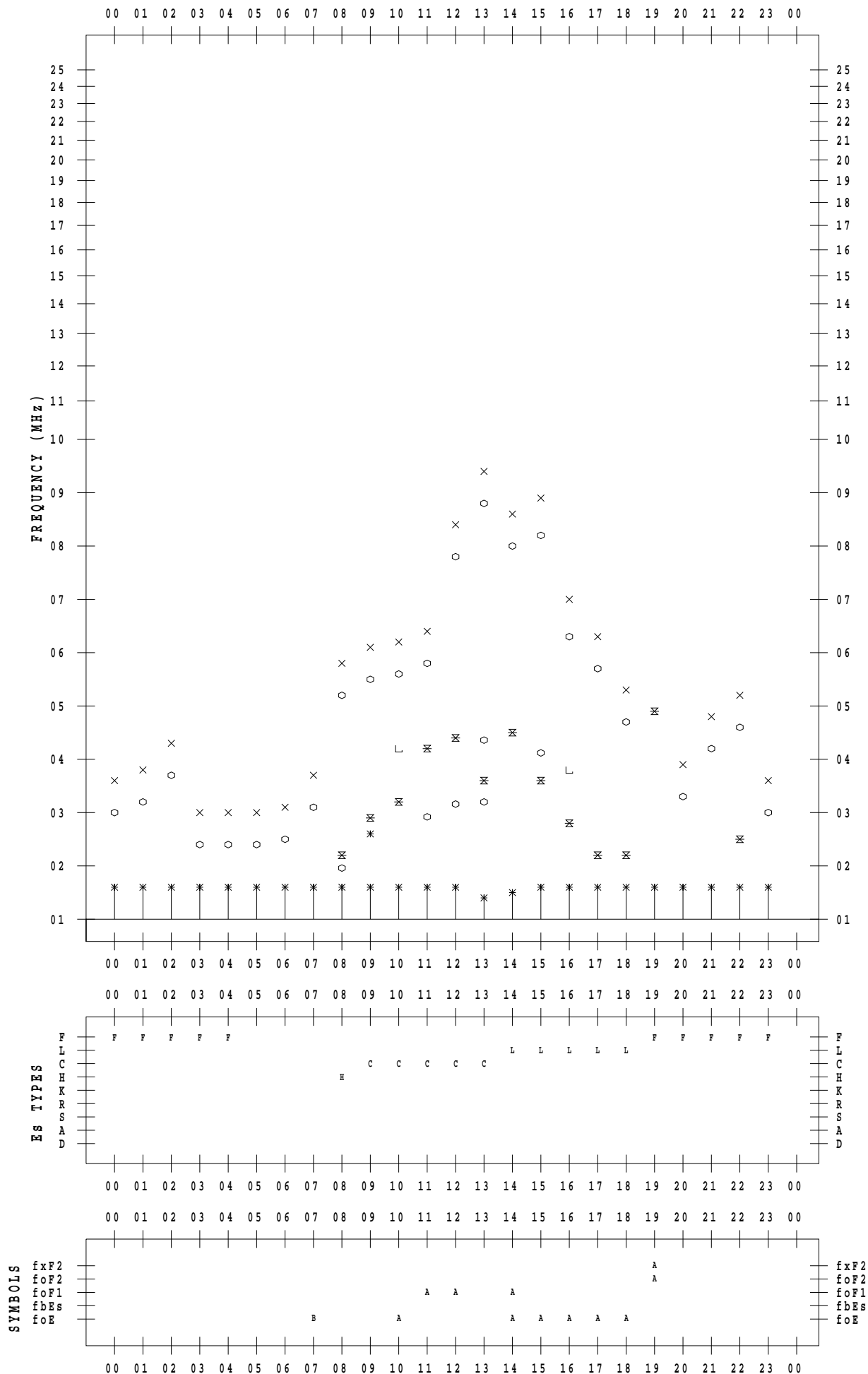
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/20

135 ° E MEAN TIME



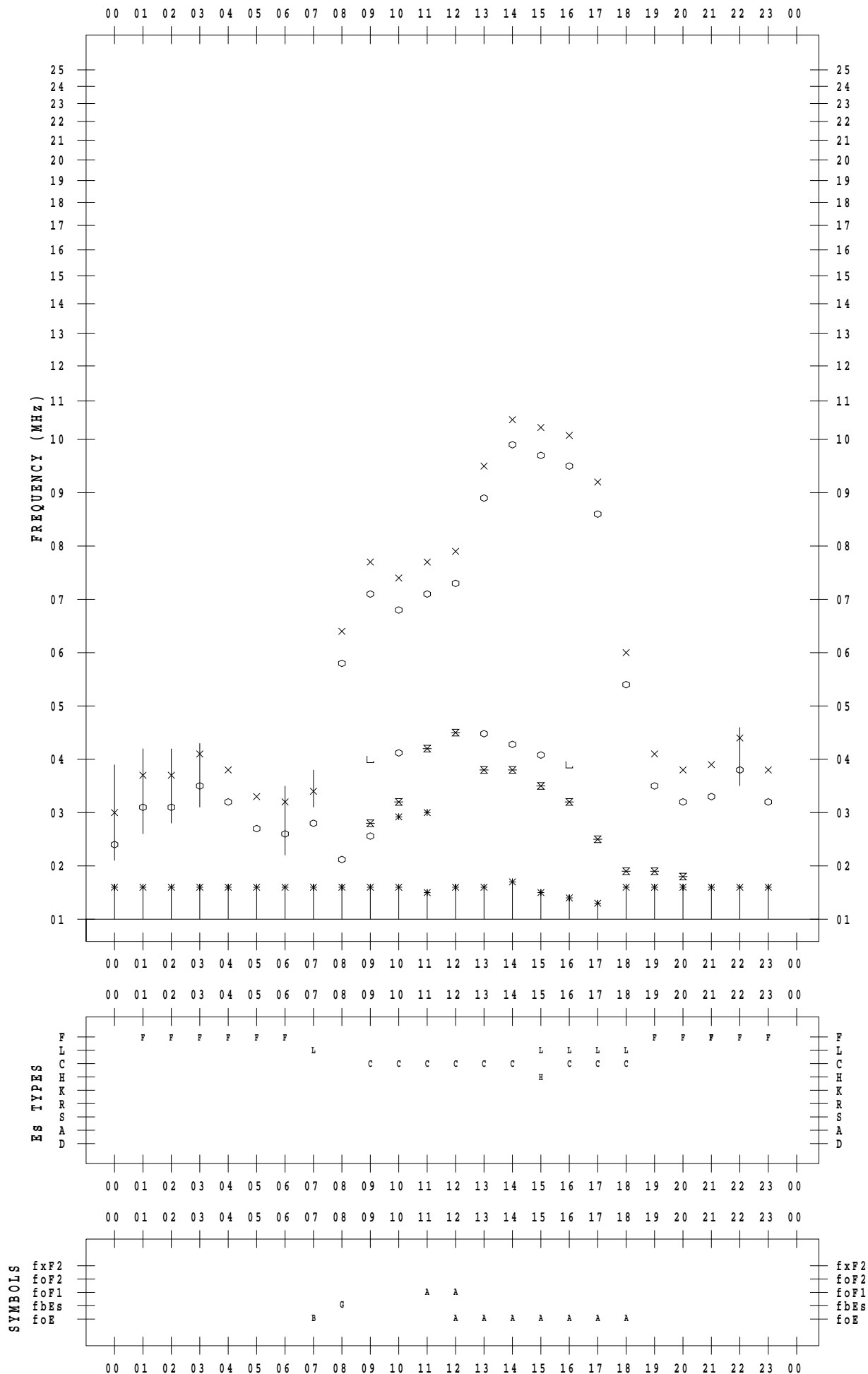
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/21

135 ° E MEAN TIME



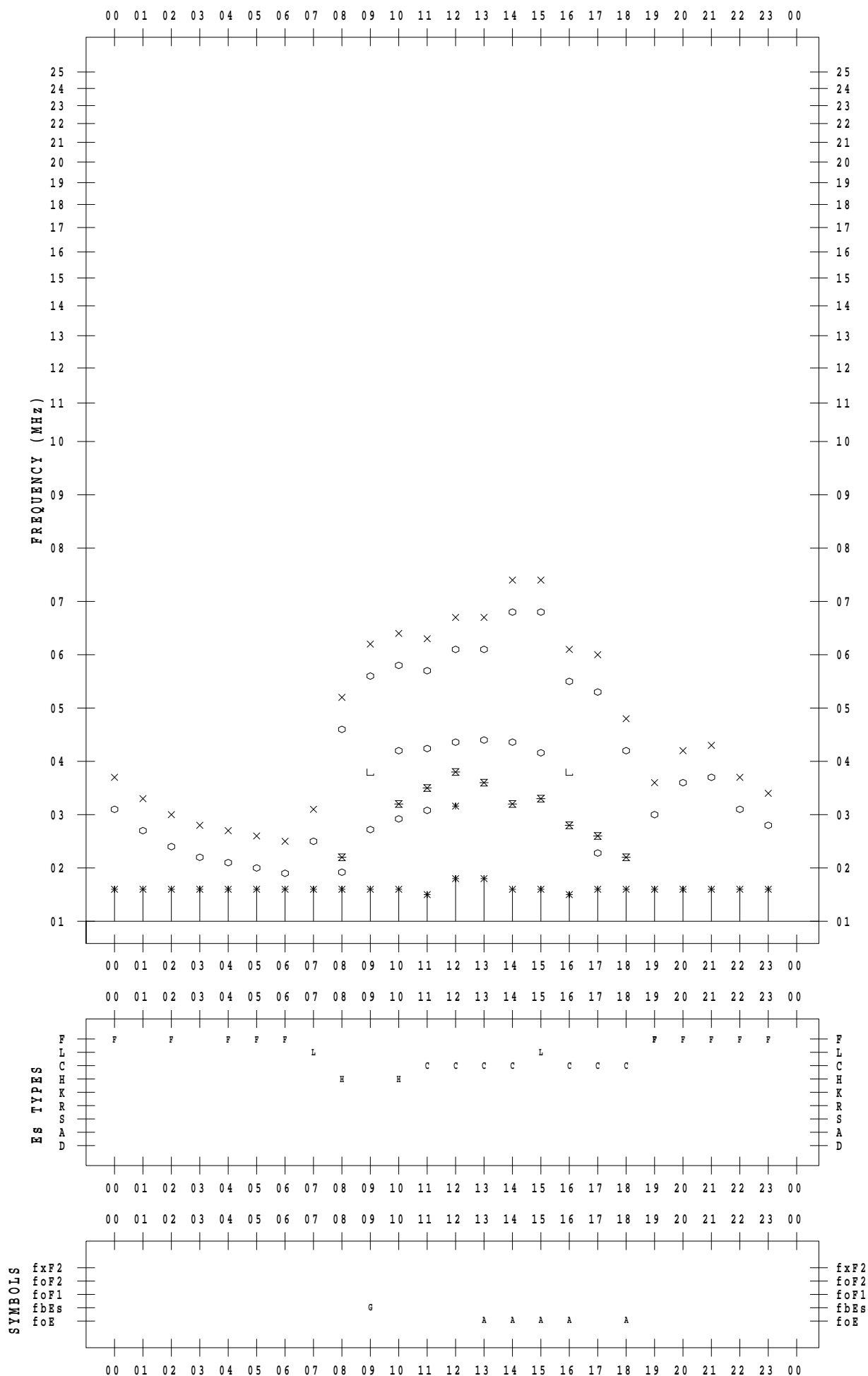
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/22

135 ° E MEAN TIME



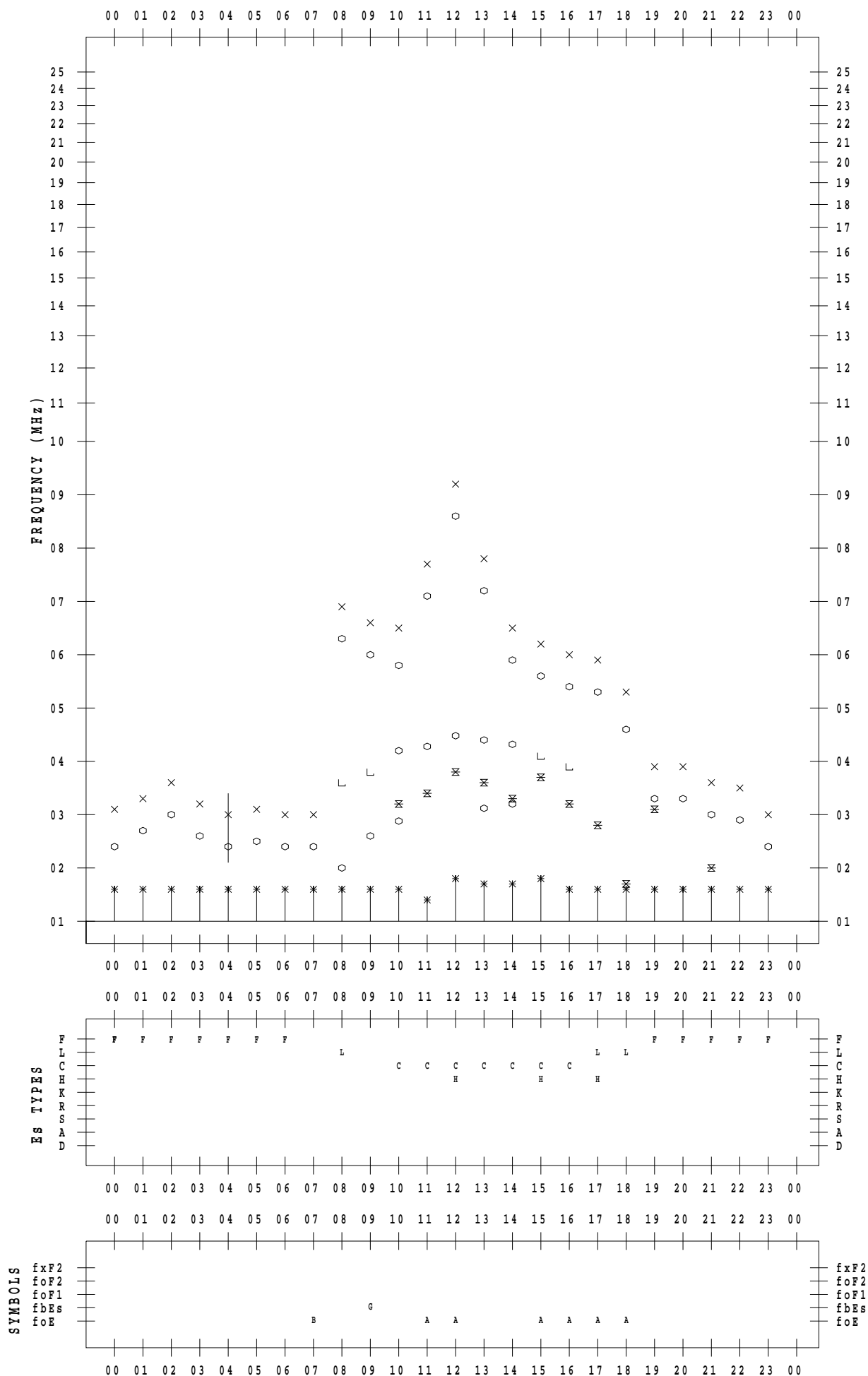
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/23

135 ° E MEAN TIME



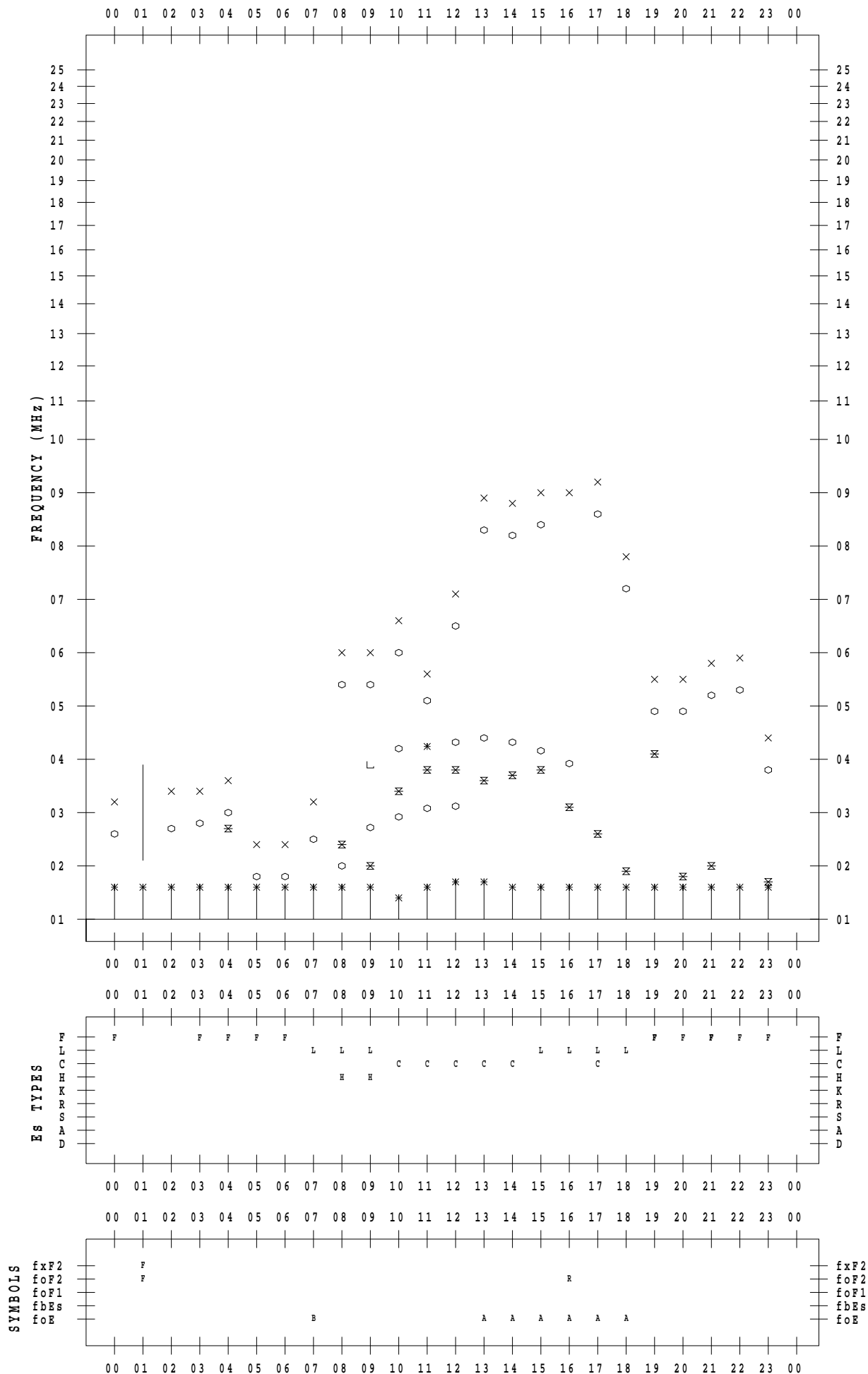
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/24

135 ° E MEAN TIME



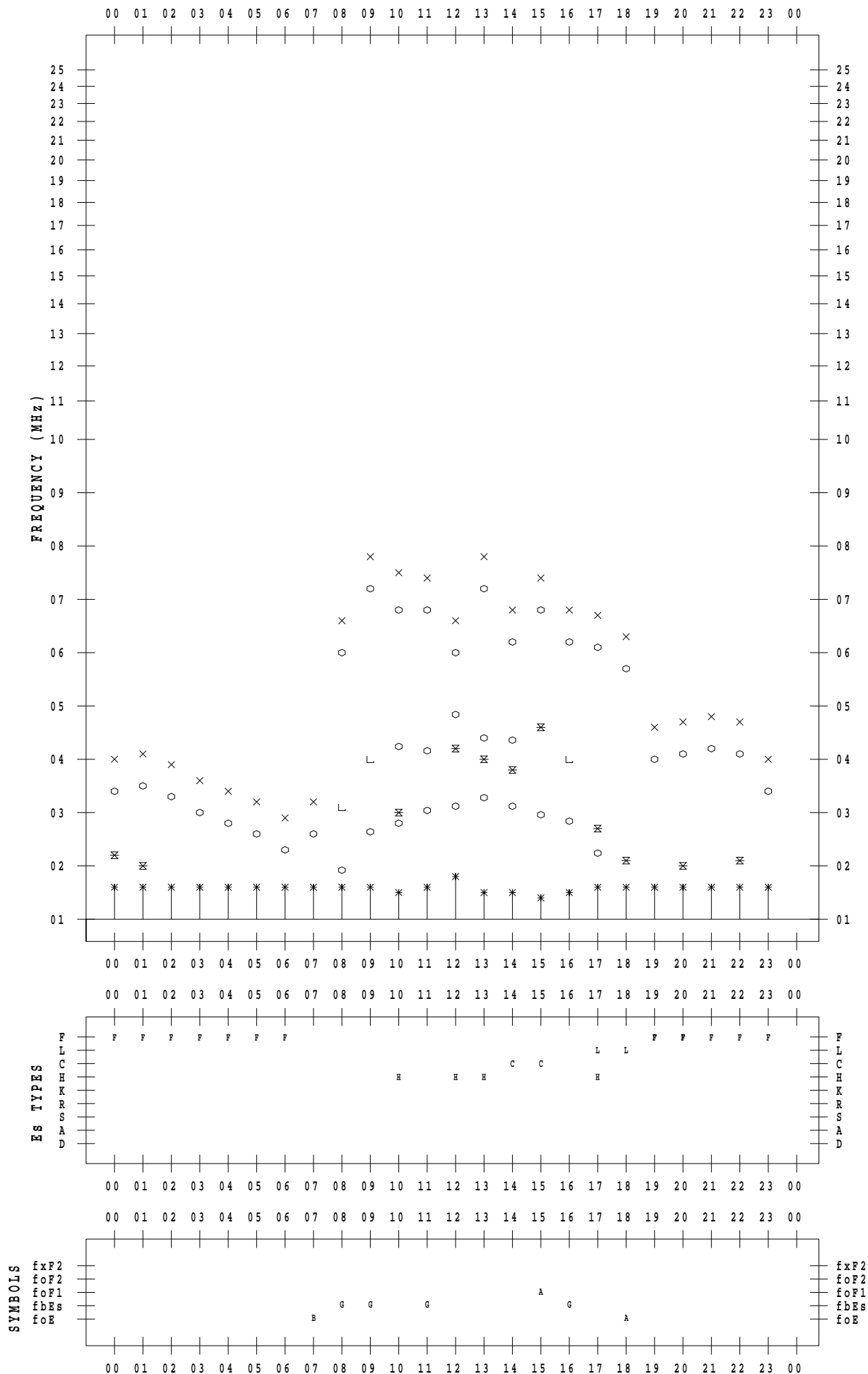
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/25

135 ° E MEAN TIME



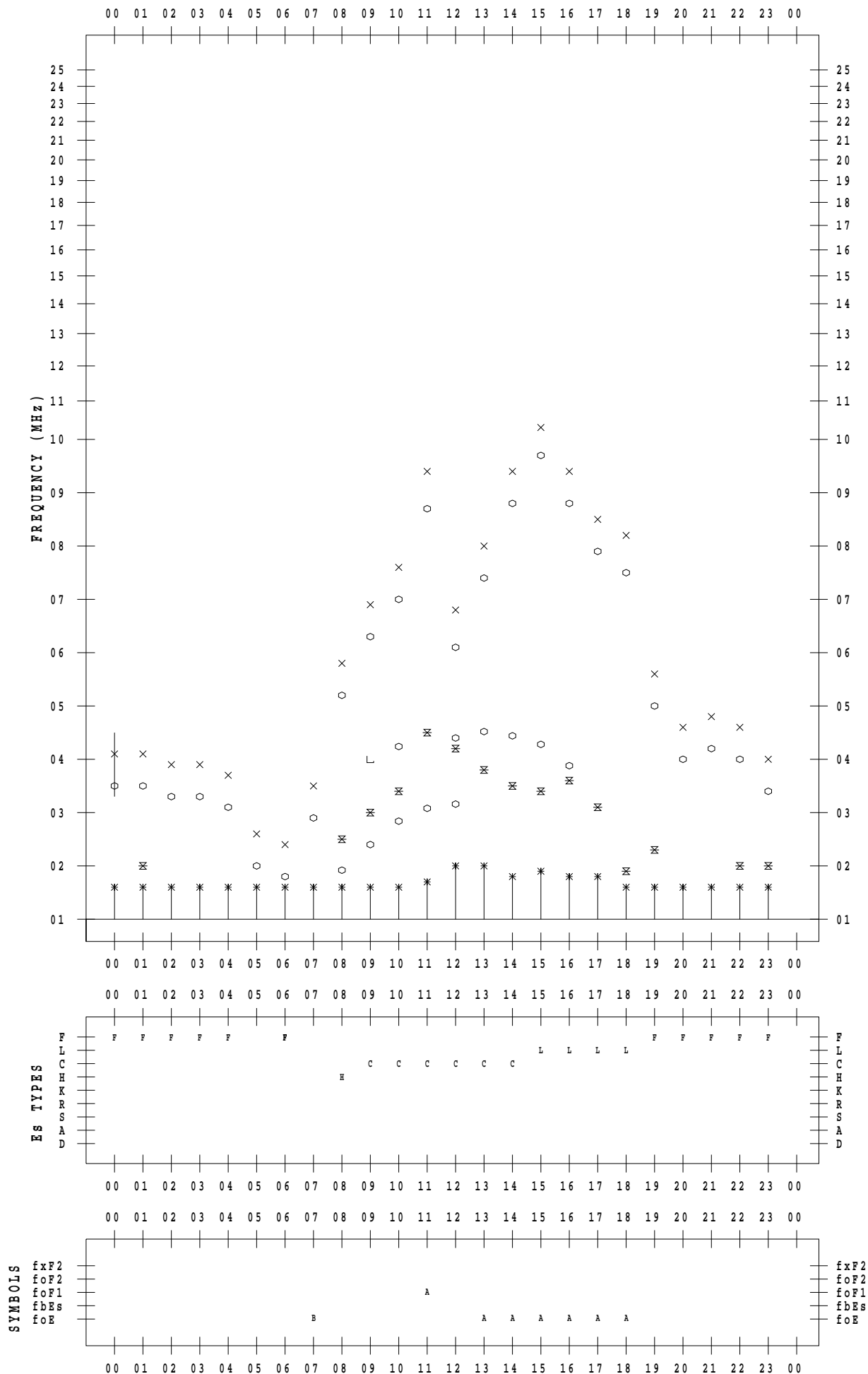
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/26

135 ° E MEAN TIME



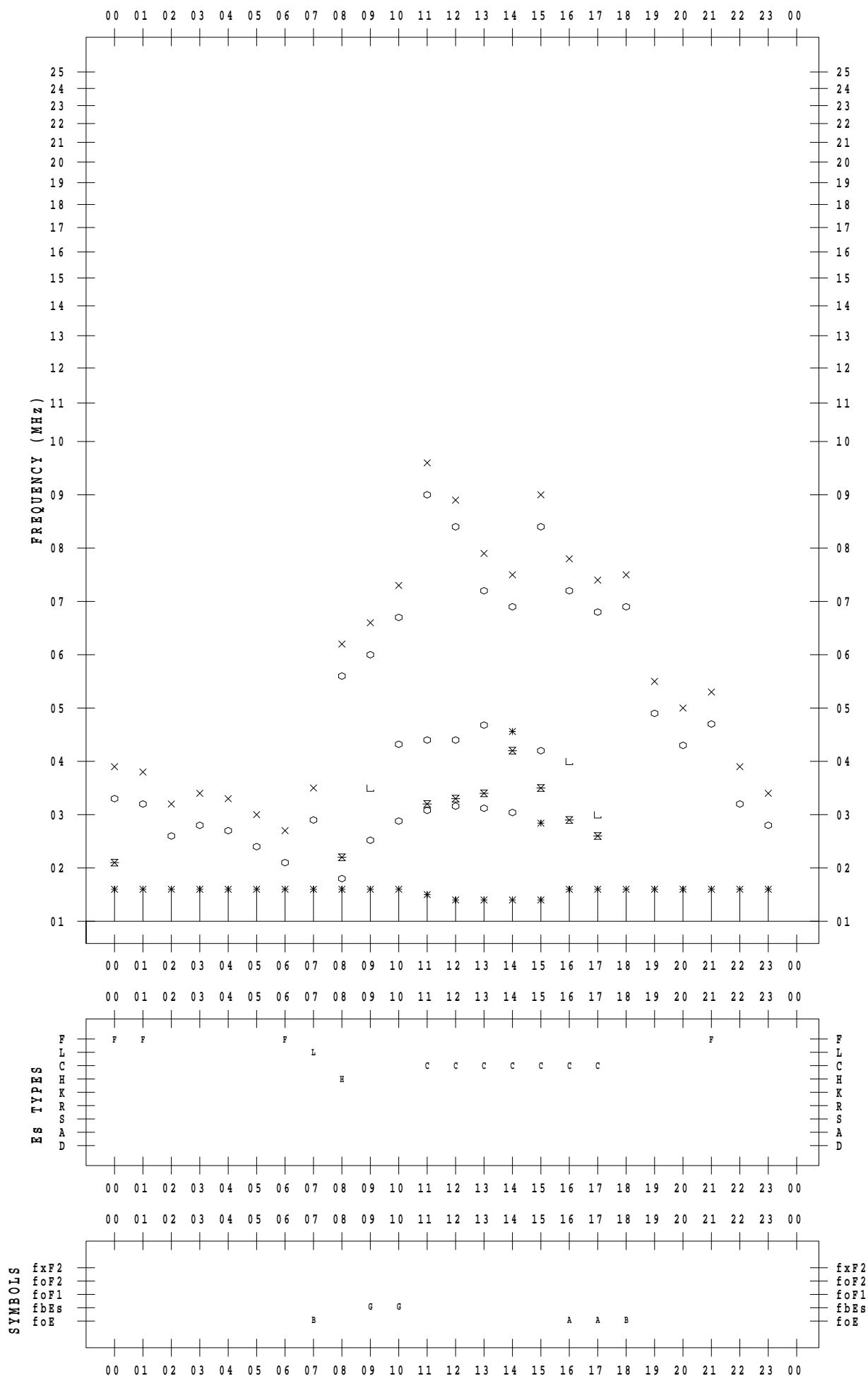
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/27

135 ° E MEAN TIME



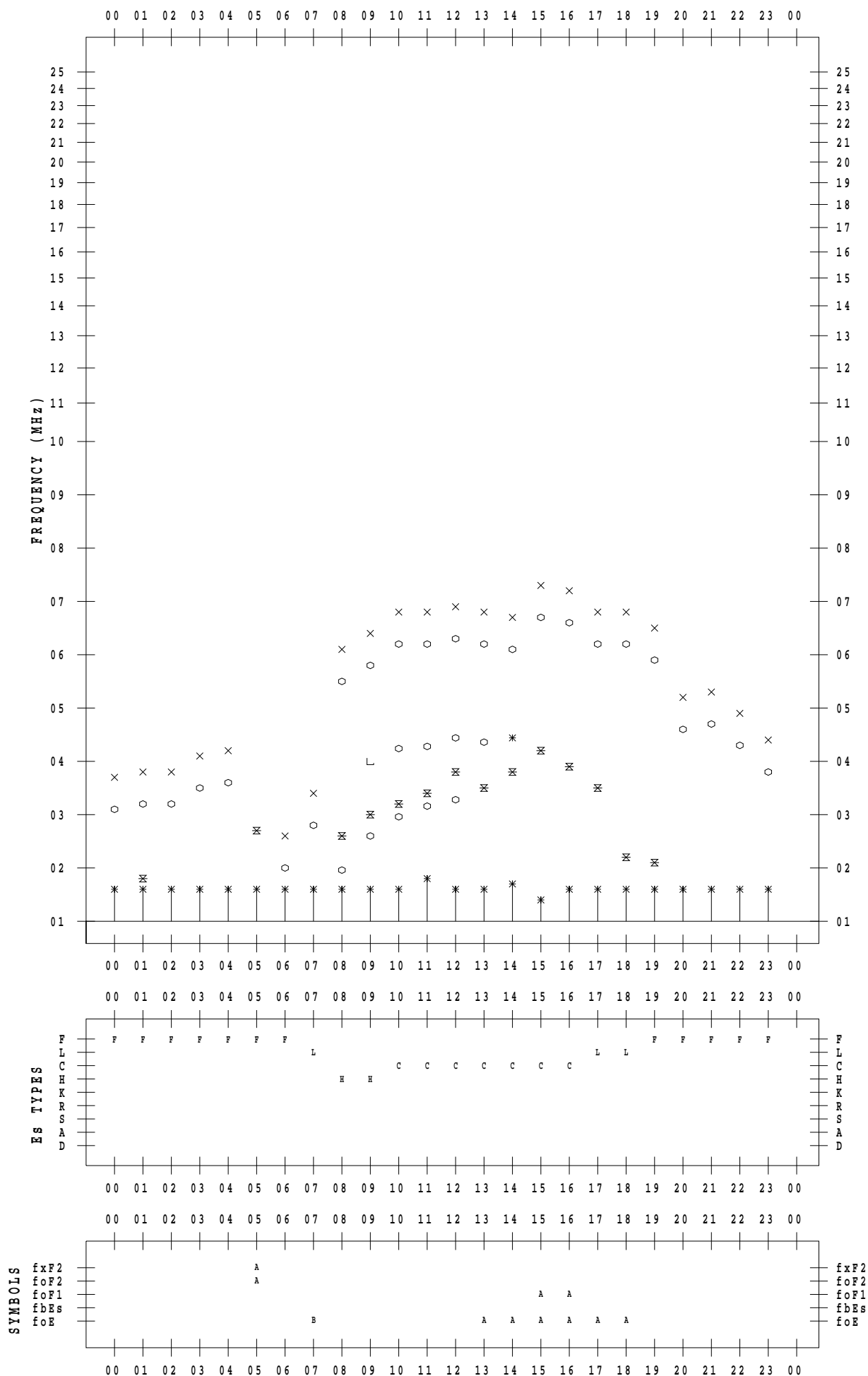
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/28

135 ° E MEAN TIME



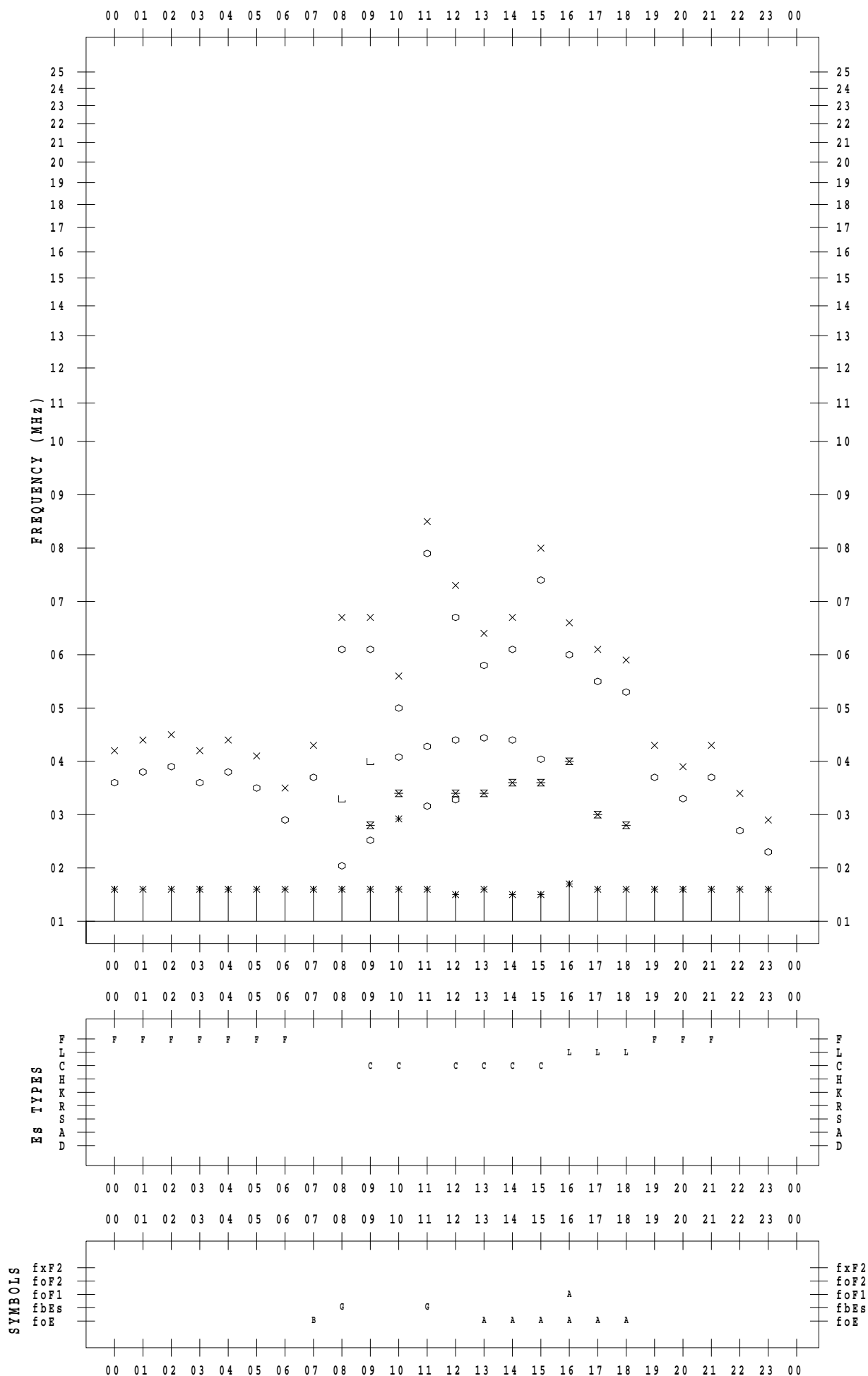
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/29

135 ° E MEAN TIME



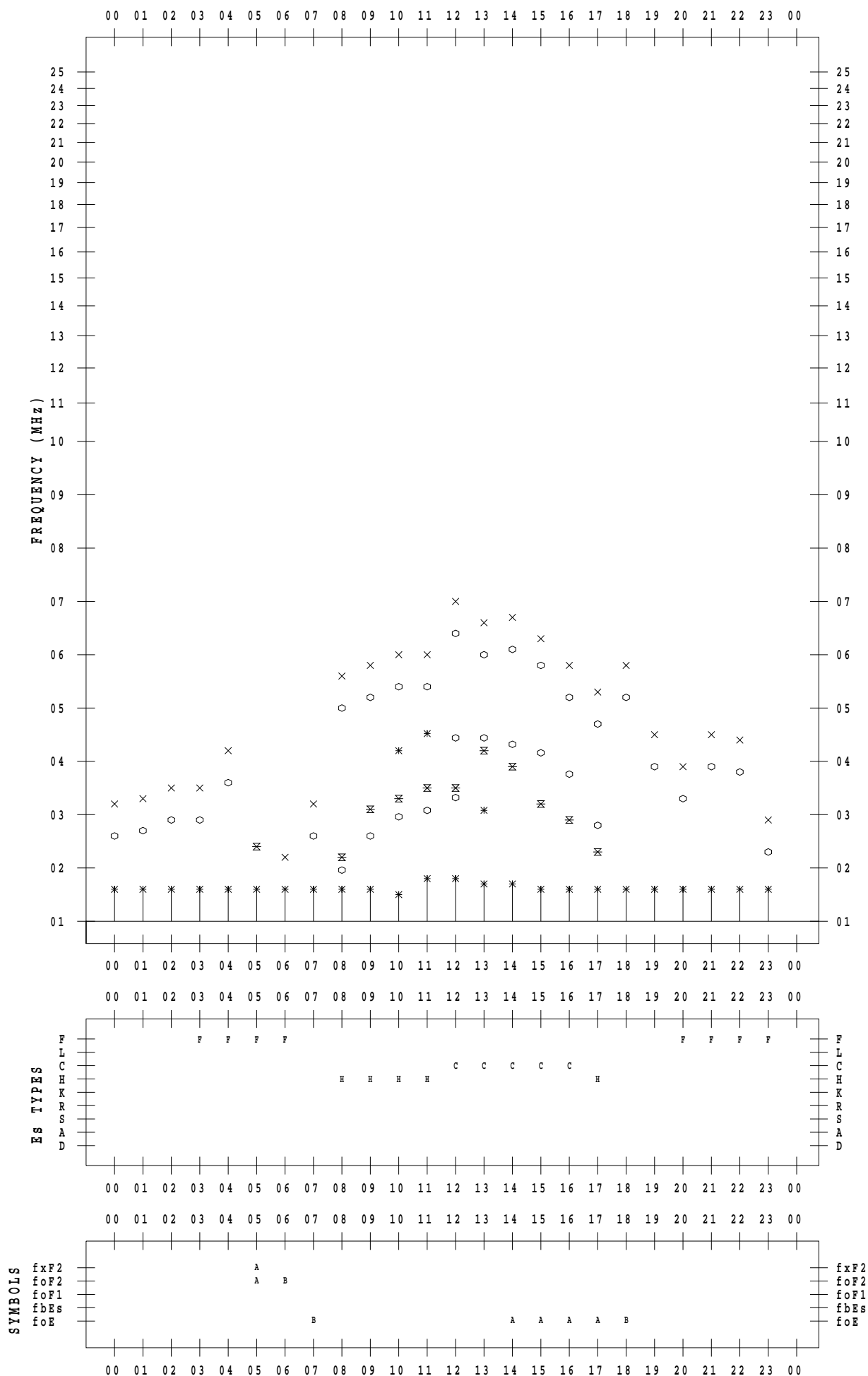
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 1/31

135 ° E MEAN TIME

