

IONOSPHERIC DATA IN JAPAN

FOR March 2020

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

a. Characteristics of Ionosphere

$foF2$	Ordinary wave critical frequency for the F2 layer
fEs	Highest frequency of the Es layer whether it may be ordinary or extraordinary
$fmin$	Lowest frequency which shows vertical iono-spheric reflections
$h'Es$ $h'F$	Minimum virtual height on the ordinary wave for the Es and F layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

- A Impossible measurement because of the presence of a lower thin layer, for example **Es** (for $foF2$).
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of very small ionization density of the layer (for fEs).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of problems occurring in the 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 $foF2$, fEs and $fmin$ were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

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

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

fxl	Top frequency of spread F trace
$foF2$ $foF1$ foE $foEs$	Ordinary wave critical frequency for the F2 , F1 , E , and Es (including particle type E) layers, respectively
$fbEs$	Blanketing frequency of the Es layer, e.g. the lowest ordinary wave frequency visible through Es
$fmin$	Lowest frequency that shows vertical ionospheric reflections
$M(3000)F2$ $M(3000)F1$	Maximum usable frequency factor for a path of 3000 km for transmission by the F2 and F1 layers, respectively
$h'F2$ $h'F$ $h'E$ $h'Es$	Minimum virtual height on the ordinary wave for the F2 , whole F , E and Es layers, respectively
Types of Es	See below b. (iii)

b. Symbols

(i) Descriptive Letters

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

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

(ii) Qualifying Letters

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

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

extraordinary component.

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

(iii) Description of Types of *Es*

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

The types are:

- f** An *Es* trace which shows no appreciable increase of height with frequency.
- l** A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.
- c** An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
- h** An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
- q** An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
- r** An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
- a** An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
- s** A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
- d** A weak diffuse trace at heights below 95 km 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

MAR. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	34	32	31	33	32	33	43	55	45	49	64	A	55	55	57	55	55	37	37	34	33	37	A
2	35	A	A	33	31	30	33	46	48	48	53	49	55	55	53	56	53	49	33	32	33	29	A	31
3	31	31	29	29	26	29	33	47	48	48	47	49	58	59	61	51	56	50	35	31	32	28	30	31
4	32	31	31	32	32	31	35	45	52	53	52	52	64	63	58	57	53	51	33	27	32	27	A	32
5	A	A	A	29	29	26	33	45	47	55	52	62	66	54	60	54	59	49	37	26	30	31	27	31
6	31	29	29	29	31	31	33	41	44	54	45	47	53	53	57	49	47	49	38	32	29	29	31	31
7	31	31	31	31	31	30	35	44	50	55	50	53	60	59	49	47	54	48	37	33	35	27	26	31
8	32	31	31	31	32	31	33	47	56	55	52	69	57	53	57	49	53	49	42	33	35	33	33	33
9	33	33	34	33	33	33	39	N 45	50	55	52	59	55	55	59	55	49	56	45	43	36	30	32	34
10	34	33	34	33	32	35	33	46	48	53	53	59	59	59	54	53	49	56	45	38	35	33	34	35
11	35	35	37	37	35	32	38	44	47	47	51	60	63	63	55	51	52	50	36	31	32	32	33	33
12	32	28	31	30	30	31	35	42	48	53	49	53	54	54	57	56	59	46	40	32	30	30	32	32
13	31	31	31	31	27	26	35	46	52	59	55	64	52	58	52	50	51	50	45	33	35	33	33	35
14	34	35	35	32	33	32	45	47	48	50	52	58	57	56	53	58	49	51	44	38	37	35	36	36
15	35	35	35	35	35	32	40	51	47	45	48	62	58	58	55	53	49	46	40	39	38	39	37	39
16	41	38	37	38	39	32	40	44	49	48	52	58	59	61	56	52	49	45	42	39	39	39	41	41
17	39	38	36	35	33	31	38	46	48	46	56	57	51	55	53	51	49	45	39	41	43	40	38	38
18	38	37	39	40	39	35	39	43	49	57	54	57	59	51	53	57	49	43	45	42	41	41	38	39
19	35	35	42	44	46	43	43	44	45	51	49	66	60	55	58	55	55	51	42	43	46	43	42	39
20	36	35	37	37	39	35	40	47	53	53	63	58	59	59	55	A 49	47	47	40	44	41	40	41	42
21	39	37	37	38	42	34	37	42	41	55	65	55	61	57	57	A	46	44	55	55	50	53	49	48
22	41	43	43	43	41	36	43	49	53	51	50	60	62	59	61	58	49	41	34	39	35	A	33	33
23	33	29	33	33	34	34	48	46	52	56	62	63	60	60	59	59	51	45	40	39	35	33	36	34
24	35	34	35	34	32	31	43	58	64	55	66	64	58	65	63	66	58	49	45	41	39	37	36	36
25	37	37	37	36	36	31	37	43	45	52	58	60	70	70	69	58	53	50	44	44	43	40	41	41
26	41	40	39	38	34	35	37	43	47	48	55	69	58	62	57	55	51	46	48	49	44	43	42	39
27	35	36	34	35	33	34	37	43	50	53	58	59	67	60	56	52	54	49	52	50	40	36	37	35
28	33		34	32	32	31	41	45	47	57	58	55	55	59	59	56	48	48	42	42	44	37	41	41
29	41	41	39	37	32	31	43	44	53	54	58	63	59	60	61	52	49	51	49	49	46	40	38	38
30	36	34	33	33	34	26	34	40	48	51	54	55	55	58	56	52	52	49	43	50	51	49	38	37
31	41	38	41	45	37	35	38	47	43	42	54	54	67	63	76	64	50	46	50	51	52	53	53	49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	31	31	31	30	29	30
MED	35	35	35	33	33	32	37	45	48	53	53	59	59	59	57	54	51	49	42	39	37	36	37	36
U Q	38	37	37	37	36	34	40	47	52	55	58	63	61	60	59	57	54	50	45	44	43	40	41	39
L Q	33	31	31	31	32	31	34	43	47	48	50	55	55	55	55	51	49	46	37	33	34	31	33	33

HOURLY VALUES OF fEs AT Wakkanai

MAR. 2020

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

$\frac{H}{D}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	26	G	G	G	G	G	G	29	36	34		52	78	52	43	36	59	62	G	G	G	G	59	71
2	58	104	83	28	26	26	G	48	46	39	37	41	G	40	70	34	G	29	G	25	25	G	59	G
3	G	G	G	G	G	G	71	G	34	37	37	45	39	41	35	G	G	28	32	G	G	G	28	G
4	G	G	G	G	28	G	G	48	94	40	36	44	44	39	41	39	33	G	28	G	26	G	34	32
5	34	32	32	G	G	G	G	48	37	43	40	38	50	45	G	G	32	26	29	G	G	G	G	26
6	G	G	G	G	G	G	G	32	38	48	43	38	40	38	G	36	36	32	33	29	G	G	G	G
7	G	G	G	G	G	G	11	48	94	44	41	G	38	G	36	G	G	G	28	G	G	G	G	G
8	G	G	G	G	G	G	G	36	38	40	93	46	42	G	36	G	G	G	24	G	G	G	G	G
9	G	G	G	G	G	G	11	33	38	40	41	47	G	91	43	39	34	29	G	22	21	G	G	G
10	G	G	G	G	G	G	34	40	38	37	115	41	41	116	G	35	32	32	25	28	G	G	26	32
11	27	G	G	G	G	G	28	34	38	44	39	40	G	38	41	38	34	G	G	G	G	G	G	G
12	G	G	G	G	G	11	34	29	148	38		38	38	G	39	36	34	G	11	G	G	G	G	G
13	G	G	G	G	G	G	38	59	39	40	44	41	40	38	36	34	G	30	11	G	G	G	G	G
14	G	28	G	G	G	G	48	34	38	40	38	70	38	39	37	34	32	28	31	G	G	G	G	G
15	32	92	26	G		G	41	34	37	58	48	44	39	44	37	G	32	32	G	G	G	G	G	G
16	G	G	G	G	G	G	39	34	37	40	37	G	G	46	116	34	G	G	G	G	G	G	G	G
17	G	G	G	G	G	G	28	34	38	40	G	92	G	G	41	G	40	27	G	G	G	G	G	G
18	G	G	G	G	G	G	G	132	39	41		G	G	G	38	37	35	31	G	G	G	G	G	G
19	G	G	G	G	G	G	24	32	38	40	43	43	117	41	G	35	32	36	G	G	G	G	G	G
20	G	G	G	G	G	G	27	34	37	40	60	46	43	40	38	35	31	28	28	G	G	G	G	
21	G	G	G	G	G	20	25	36	39	41	115	125	41	42	37	68	115	G	39	36	28	25	G	G
22	G	39	28	G	G	G	26	32	38	G	39	43	41	39	43	38	32	28	G	24	27	46	G	G
23	G	G	G	G	G	G	28	32	34	38	54	G	96	G	37	35	32	G	G	G	G	G	G	G
24	G	G	G	G	G	G	29	31	35	39	50	45	40	42	39	G	37	30	32	23	G	G	G	G
25	G	G	G	G	11	G	34	104	34	37	G	40	G	83	G	G	32	G	23	32	29	G	G	G
26	G	G	G	G	G	G	32	38	43	42	40	38	G	44	G	G	G	32	G	G	G	G	G	G
27	G	G	G	G	G	G	40	45	G	G	G	71	44	G	G	35	34	31	36	30	G	G	G	G
28	G		G	G	G	G	31	35	36	40	G	G	G	44	G	G	G	G	G	G	G	G	G	G
29	G	G	G	G	G	G	31	35	36	37	46	44	90	38	41	G	33	G	G	24	G	G	G	G
30	G	G	G	G	G	G	33	37	G	G	G	G	G	G	38	G	33	29	29	26	G	G	G	G
31	G	G	G	G	G	G	29	34	35	G	43	G	43	G	38	G	34	28	G	G	33	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	30	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	30	31	30
MED	G	G	G	G	G	G	28	34	38	40	40	41	40	39	37	34	32	28	11	G	G	G	G	G
U Q	G	G	G	G	G	G	34	45	39	41	47	46	43	44	41	36	34	30	29	24	G	G	G	G
L Q	G	G	G	G	G	G	11	32	36	37	36	38	G	G	G	G	31	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAR. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	14	15	14	16	15	15	16	15	15	14	14	15	16	14	17	16	15	14	14	15	15
2	15	16	15	16	16	16	16	16	15	15	15	15	15	15	13	14	15	15	16	16	16	17	17	16
3	16	15	16	15	14	16	14	15	16	15	15	15	15	14	15	16	14	15	16	16	14	15	16	15
4	14	15	14	14	16	15	14	15	15	14	15	15	15	13	15	15	16	16	16	16	15	15	16	16
5	15	17	16	15	16	15	15	15	14	14	14	15	15	15	16	14	15	15	16	16	16	14	15	16
6	14	15	16	16	16	15	17	15	16	13	15	15	15	14	16	15	15	16	16	15	14	15	14	16
7	15	14	14	14	15	15	14	14	13	14	15	14	15	14	14	16	14	19	15	16	14	14	14	14
8	14	14	14	15	16	14	14	15	15	14	16	17	14	16	13	15	15	16	17	14	15	14	15	15
9	14	15	15	15	14	14	17	15	16	14	14	14	14	13	15	14	16	14	14	15	16	14	15	16
10	15	15	15	16	14	15	14	14	16	13	14	14	14	5	16	14	15	16	16	15	16	16	16	16
11	15	15	15	16	16	17	15	15	14	14	13	14	14	15	14	14	16	13	16	15	15	16	15	16
12	14	15	15	16	15	14	15	17	15	13	14	14	15	14	13	15	15	15	15	14	15	15	16	16
13	14	15	15	14	15	15	16	14	16	13	14	13	13	14	15	14	14	15	14	15	14	16	16	16
14	16	16	16	15	16	14	16	14	14	15	15	14	15	15	14	16	15	15	16	16	16	15	15	15
15	16	16	16	16	16	14	17	16	13	15	13	15	14	14	15	16	15	14	14	14	14	15	16	14
16	16	15	16	16	14	14	17	16	13	14	14	14	14	15	14	14	15	14	14	14	14	14	14	14
17	14	14	14	14	16	14	16	16	16	14	14	15	16	15	15	14	15	16	14	14	14	14	14	15
18	16	14	14	14	14	17	16	15	15	16	16	14	15	14	15	13	15	18	14	14	14	14	14	15
19	15	14	15	14	14	14	16	15	14	14	14	14	14	15	15	16	16	15	14	15	14	14	14	14
20	14	14	14	14	14	14	15	16	13	13	15	14	15	15	14	13	14	15	16	15	15	14	14	16
21	14	14	14	16	15	15	16	16	14	14	14	14	14	14	14	13	16	15	15	15	15	16	15	17
22	16	15	15	16	16	14	15	16	13	15	14	14	14	15	14	14	14	15	14	14	16	15	17	14
23	14	15	16	15	16	14	15	16	15	14	14	14	15	14	14	15	16	18	15	16	14	16	14	14
24	15	17	14	15	14	15	14	16	16	14	13	14	16	15	15	14	15	15	16	16	16	15	14	14
25	15	15	15	14	14	14	14	15	15	17	15	15	15	16	15	16	17	18	14	16	16	16	16	15
26	14	14	14	14	14	15	14	16	15	14	14	15	15	15	15	14	15	16	14	14	16	14	15	14
27	14	14	14	79	14	14	14	16	16	15	15	16	16	16	15	11	15	14	16	16	16	15	14	14
28	14	14	14	17	15	16	17	15	15	15	15	15	15	16	14	15	15	15	16	15	14	17	15	15
29	14	14	14	15	15	14	15	17	16	15	13	15	14	14	15	16	16	15	16	15	15	14	14	14
30	14	14	15	14	14	15	15	15	16	14	15	14	14	16	15	14	16	15	14	15	14	14	14	14
31	15	14	14	15	15	14	14	16	16	14	14	15	14	17	15	16	13	15	14	14	16	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	14	15	15	15	14	14	14	15	15	15	14	15	15	15	15	15	15	15	15
U Q	15	15	16	16	16	15	16	16	16	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
L Q	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14

HOURLY VALUES OF fof2 AT Kokubunji

MAR. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	31	31	A	A	31	24	29	45	45	54	56	54	55	60	58	62	58	47	39	32	30	30	30	33		
2	32	31	30	29	25	25	31	43	46	50	54	53	62	73	65	54	49	48	N	39	30	32	30	25	30	
3	29	29	A	25	25	N	23	30	42	51	51	54	54	61	54	65	59	53	61	41	27	26	29	30	30	
4	32	32	31	31	31	32	32	44	49	52	58	54	59	61	58	60	64	54	37	25	30	31	28	30		
5	31	29	25	N	27	N	24	30	47	50	45	51	61	69	68	67	61	53	59	37	31	27	30	30	29	
6	27	A	25	30	33		26	42	43	50	50	50	54	71	58	55	49	47	48	31	30	N	A	A		
7	30	29	A	26	28	26	31	42	48	50	51	57	64	63	49	52	50	54	47	35	35	39	34	29		
8	30	31	30	29	31	N	23	33	43	44	58	59	58	50	65	63	52	49	47	49	36	35	35	33	33	
9	33	32	30	33	36	26	34	42	52	49	53	55	64	66	52	57	57	57	64	49	24	A	29	31		
10	31	31	27	25	29	N	23	33	43	47	51	50	54	61	72	60	55	62	55	55	39	A	29	31	30	
11	29	27	29	28	30	24	33	43	50	50	59	53	60	66	57	57	56	50	42	31	N	24	29	30	29	
12	30	29	25	24	25	N	23	33	44	48	59	49	53	74	69	55	56	49	54	47	31	23	27	31	30	
13	31	30	25	30	25	24	36	43	N	50	47	55	48	68	63	63	47	45	54	45	35	29	32	31	31	
14	32	31	30	32	27	26	38	48	51	51	55	61	53	A	60	52	59	51	46	33	32	35	33	31		
15	33	31	31	32	35	23	34	43	49	48	A	57	61	65	60	52	52	50	39	37	36	35	34	34		
16	33	32	33	34	25	23	34	45	49	49	53	58	58	61	58	52	51	52	46	39	35	39	39	38		
17	37	37	37	36	32	30	38	47	54	51	50	61	53	58	54	50	49	47	43	44	39	41	40	36		
18	35	35	35	34	35	25	39	47	47	53	65	68	65	57	57	51	50	53	55	45	37	33	33	31		
19	29	26	29	31	33	23	35	44	48	50	51	72	58	62	64	65	58	51	41	A	A	35	35	37		
20	35	34	33	33	27	25	39	51	52	55	59	65	79	63	56	55	49	48	46	41	40	34	34	31		
21	31	A	30	A	31	N	24	38	45	45	51	61	80	A	62	65	55	51	47	47	49	A	31	33	32	
22	33	31	31	32	29	25	39	46	48	51	51	61	65	61	62	59	50	49	39	32		32	32	30		
23	30	29	29	26	25	25	39	44	54	62	66	63	76	69	65	51	53	51	41	41	35	31	31	33		
24	32	30	31	31	N	N	29	25	41	45	57	61	61	59	76	77	78	70	61	54	50	41	34	32	32	33
25	33	34	33	40	31	22	36	46	49	50	52	69	74	85	79	75	64	53	46	33	34	35	33	34		
26	34	34	32	37	31	25	38	43	47	49	55	63	74	63	61	55	54	58	57	50	35	32	31	29		
27	32	32	33	36	33	34	43	44	48	50	54	62	67	79	77	57	54	63	67	48	37	34	A	A		
28	33	32	32	31	27	23	37	47	49	56	56	59	65	59	A	62	56	52	45	47	39	39	38	36		
29	36	36	33	29	25	N	24	36	46	49	57	58	56	65	76	62	59	57	61	55	63	47	41	38	32	
30	32	33	31	30	26	25	39	45	51	57	55	73	66	61	54	59	56	57	49	A	43	42	35	30		
31	30	29	30	29	23	24	40	47	46	51	61	55	70	84	88	86	63	47	43	49	55	37	33	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	29	28	29	31	30	31	31	31	31	30	31	30	30	30	31	31	31	31	29	28	30	29	29		
MED	32	31	30	31	29	24	36	44	49	51	55	58	64	64	60	56	53	52	46	37	35	32	33	31		
U Q	33	32	32	33	31	25	39	46	51	55	59	63	69	71	65	60	58	55	49	46	38	35	34	33		
L Q	30	29	29	28	25	23	33	43	47	50	51	54	59	61	57	52	50	48	41	31	30	30	30	30		

HOURLY VALUES OF fEs AT Kokubunji

MAR. 2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	28	27	G	G	G	31	G	42	166	40	G	G	G	40	G	G	G	G	G	G	G	G
2	G	G	G	24	G	G	G	45	G		G	G	G	G	G	35	G	G		G	G		G	G
3	G	G	26		G	G	G	35	36	G	40	G	G	40	38	G	42	27	33	26	G	25	G	G
4	G	G	G	G	G	G	G	G	39	37	G	40	G	G	38	36	42	G	34	G	G	G	23	
5	G	G	G	G	G	G	G	48	37	G	39	G	46	49	53	38	G	29	11	25	11	G		G
6	G	29	G	26	G		G	33	36	G	48	G	49	47	50	44	36	28	11	G	24	23	28	28
7	G	27	27	G	G	G	G	40	39	39		G	G	G	G	G	G	29	11	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	42	40	G	G	G	G	G	28	26		G	G	G	G
9	G	G	G	G	G	G	G		39	41	G	G	51				34	G	G	47		38	G	G
10	G	G	G	G	G	G	G	34	38	37	39	40	G	47	50	42	41	37	11	33	27	G	G	G
11	G	G	G	G	20		G	36	40	41	G	G	40	39	G	G	G	G	11	G	G	G	G	
12	G	G	G	G	G		11	45	43	38	G	G	39	47		50	41	G	29	28	G	G	G	34
13	G	G	G	G		G	G	40	56	40	G	G	G	40	48	36	G	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	31	42	40	G	G	40	40	G	55	G	28	11	G	G	G	G	G
15	G	G	G	G	11		27	34	70	37	52	G	40	39	G	40	G	G	11	G	G	G	G	G
16	28	G	G	G	G		G	34	41	49	40	G	G	G	G	G	G	G	11	G	G	G	G	G
17	G	G	G	G	G		23	33	G	G	40	G	G	G	G	G	37	31	30	G	G	G	G	G
18	G	G	G	G	G		25	34	G	G	N	G	N	G	G	G	G	G	G	G	G	G	G	G
19	G	G	G	G	11		29	34	39	44	48	G	G	G	G	41	36	32	34	40	40	G	G	G
20	G	G	G	G	G		G	32	39	42	N	G	G		39	G	G	G	G	G	G	G	G	G
21	G	26	G	35	G	G	G	31	G	G	G	G	60	G	G	G	34	31	G	26	G	34	G	31
22	29	G	G	G	G		G	31	39	48	G	G	47	45	G	42	37	G	29	G	24	31	G	36
23	G	G	G	G	G		25	32	G	G	G	G	52	39	G	36	G	G	G	G	G	G	G	G
24	G	G	G	G	G		G	36	35	G	39	G	G	G	G	37	G	G	G	G	G	G	27	G
25	G	G	G	G	34		32	34	G	G	G	G	G	G	39	39	37	32	11	25	25	G	31	27
26	26	G	G	G	24	30	32	37	G	51	43	G	50	G	G	G	35	35	35	31	24	29	32	G
27	G	G	G	G	G		28	45	G	107	42	43	G	42	56	40	G	G	G	34	26	G	34	33
28	G	G	G	G	G		33	46	G	G	G	G	44	41	59	G	G	29	31	G	G	G	G	G
29	G	G	G	G	G		31	38	42	G	G	G	G	G	G	40	36	29	G	27	32	G	G	G
30	G	G	G	G	G		29	36	41	45	52	G	G	G	G	G	G	G	G	69	G	26	G	G
31	G	G	G	G	G		29	35	G	G	G	G	G	G	46	G	G	G	26	24	G	G	32	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	25	31	31	31	30	29	31	30	31	31	31	31	31	31	31	31	30	30	29
MED	G	G	G	G	G	G	G	34	37	37	G	G	G	G	G	36	G	G	11	G	G	G	G	G
U Q	G	G	G	G	G	G	28	38	40	42	42	G	44	40	39	40	36	29	27	27	24	G	G	G
L Q	G	G	G	G	G	G	G	32	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

MAR. 2020

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

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

HOURLY VALUES OF fof2 AT Yamagawa

MAR. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	32	31	30	32	25	N 25	43	45	52	56	59	54	60	61	70	59	60	53	37	31	31	32	31
2	34	34	33	30	31	32	B 24	41	51	50	61	60	71	61	60	71	53	55	61	41	32	32	28	34
3	32	30	31	29	A	N 26	N 24	41	53	57	57	61	66	58	67	61	76	61	N 57	36	35	35	36	34
4	35	36	33	33	37	32	N 27	41	53	52	63	67	65	64	69	64	72	61	N 53	36	33	33	35	34
5	31	33	30	31	33	31	N 25	46	51	53	57	65	67	81	81	63	57	67	48	37	34	31	34	27
6	31	31	32	37	38	23	B 23	42	45	50	59	62	56	70	74	62	62	55	51	55	37	34	34	34
7	34	34	33	33	35	33	N 23	42	58	55	57	58	62	68	69	59	54	55	54	50	43	39	38	32
8	27	31	33	31	38	N 26	B 23	41	49	53	58	66	55	69	76	59	57	50	50	55	43	34	35	34
9	34	35	32	34	38	31	A	42	50	49	52	61	65	74	75	64	63	61	61	52	32	31	32	30
10	32	34	35	34	35	30	N 26	43	48	55	55	63	70	81	73	72	63	67	64	49	33	B 30	31	N 31
11	32	31	31	32	33	24	B 24	45	50	57	61	61	70	74	76	76	59	56	53	39	33	N 25	31	31
12	32	32	31	31	33	31	24	46	51	51	55	58	64	73	65	55	61	54	53	50	35	N 30	A	33
13	33	33	32	33	34	N 25	N 29	44	49	52	56	63	69	82	83	56	55	54	50	46	35	A	A	38
14	A	35	35	35	33	34	N 25	47	48	57	57	A	66	76	71	61	57	56	56	45	36	35	37	35
15	34	34	33	34	34	B 23	N 24	45	52	52	52	56	68	69	82	57	53	55	51	35	39	36	36	37
16	35	33	33	35	N 27	B 24	N 25	45	54	57	57	61	62	66	63	59	59	55	50	39	40	40	39	39
17	39	39	36	35	33	33	32	47	56	55	53	55	80	72	74	56	56	51	55	49	42	40	39	39
18	38	38	39	38	38	26	N 25	43	50	61	63	71	71	67	60	54	57	67	69	47	39	33	33	34
19	33	32	34	31	31	B	N 23	46	50	54	56	69	79	71	82	75	62	53	49	40	44	41	B 42	41
20	39	38	39	39	34	31	30	48	55	53	61	73	89	94	84	77	61	54	57	49	41	37	34	33
21	34	33	32	32	34	N 23	N 29	45	49	55	60	86	82	86	83	71	57	54	55	52	41	33	A	A
22	31	31	30	32	34	N 30	28	46	51	51	56	63	78	77	80	65	57	54	51	41	37	A	31	35
23	34	33	33	33	35	N 24	N 29	48	55	59	63	77	81	77	70	61	59	55	54	49	38	B 26	31	31
24	33	32	32	34	35	N 27	30	42	57	61	64	74	85	91	97	83	73	64	57	43	39	B 26	B 32	35
25	37	33	30	36	32	B 24	27	43	49	51	55	67	79	87	96	90	73	58	52	42	40	38	A	36
26	37	A	A	33	32	B 27	31	45	51	56	57	67	87	95	85	73	70	72	77	61	47	N 33	B 37	36
27	34	33	33	35	37	33	33	45	50	56	58	61	83	91	99	75	69	74	83	58	48	39	39	39
28	39	36	35	37	32	30	32	48	52	58	66	71	78	87	81	75	58	51	55	50	51	43	40	37
29	38	38	34	35	33	N 24	31	46	55	60	62	62	79	93	89	76	84	85	86	77	68	A	A	33
30	B 33	35	35	31	34	32	35	46	57	61	62	71	79	85	82	83	72	63	63	60	50	48	37	33
31	33	32	31	35	39	N 29	34	46	57	56	59	66	70	88	97	103	69	58	55	59	62	49	32	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	31	30	30	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	28	26	29
MED	34	33	33	33	34	28	26	45	51	55	57	63	70	76	76	65	59	56	55	49	39	34	34	34
U Q	35	35	34	35	35	31	30	46	55	57	61	69	79	87	83	75	69	63	61	52	43	39	37	36
L Q	32	32	31	31	33	24	24	42	49	52	56	61	65	69	69	59	57	54	51	40	35	31	32	32

HOURLY VALUES OF fEs AT Yamagawa

MAR. 2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	G	G	G	G	G	G	G	28	52	38	G	G	46	45	39	38	G	36	28	28	G	26	G	G	
2	G	28	26	G	G	B		33	34	40	38	G	42	40	40	40	35	31	24	40	G	G	G	G	
3	G	G	G	G	29	G	G	35	34	41	42	43	40	44	45	42	35	44	28	G	G	G	G	G	
4	G	G	G	G	G	G	G	38	G	43	44	45	48	48	47	42	41	37	28	G	G	G	G	G	
5	G	G	G	G	G	G		34	45	50	41	40	45	45	49	49	52	41	G	G	G	G	G	G	
6	G	32	32	G	11	G	B	30	37	40	43	G	49	44	43	37	35	G	G		11	G	G	G	G
7	G	G	G	G	G	33	G	28	36	42	43	44	53	44	45	42	35	45	25	G	G	G	G	G	
8	G	G	G	G	G	11	B	40	49	G	46	40	47	G	42	56	48	34	G	G		19	G	G	G
9	G	G	G	G	G	30	116	42	35	42	43	44	45	53	43	44	44	38	27	48	G	G	G	G	
10	G	G	G	G	G	G	G	42	56	38	39	44	44	44	54	41	55	45	29	11	G	B	G	G	
11	G	G	G	G	11	G	B	112	34	39	45	53	48	53	50	40	35	G	48	24	G	G	G	G	
12	G	G	G	G	G	30	G	35	G	44	44	108	51	44	48	47	40	41	29	22	G	G	32	33	
13	G	G	G	G	G	G	G	40	34	45	47	49	45	49	61	46	G	G	26	24	35	27	28	G	
14	24	G	G	G	24	106	G	28	33	40	54	71	53	41	60	54	54	44	39	24	G	G	G	G	
15	G	G	G	G	11	B	G	40	37	41	49	45	48	52	56	56	42	G	G	G	G	G	G	G	
16	G	G	G	G	G	B	G	31	40	43	48	55	45	44		G	G	G		G	G	G	G	G	
17	G	G		G	G	G	G	46	G	40	45	47	45	N	45	44	41	36	G	G		G	G	G	
18	G	G	G	G	11	G	G	28	35	39	42	45	G	47	45	G	36	31	G	22	G	G	G	G	
19	G	G	G	G	G	B	G	29	32	40	42	G	45	45	54	60	49	40	31	G	G	G	B	G	
20		G	G	G	G	G	G	30	40	44	43	42	44	44	47	50	44	32	G	11	G	G	G	G	
21	G	G	G	G	G	G	G	28	34	39	41	43	44	44	43	40	37	32	35	G	25	G	177	45	
22	G	G	G	G	G	G	G	28	38	43	43	45	50	48	50	67	41	37	31	G	G	34	32	29	
23	G	G	28	G	G	G	G	144	37	45	42	40	43	50	44	G	39	G	34	26	G	B	G	G	
24	G	G	G	G	35	G	G	39	32	40	45	49	45	43	G	39	G	34	G	G	24	B	B	G	
25	G	G	G	G	33	B	G	44	G	G	40	40	48	41	48	40	39	36	G	G	28	92	110	34	
26	36	59	48	33	26	B	26	33	39	48	48	46	41	42	46	54	65	65	55	34	26	G	B	G	
27	G	G	G	G	G	G	G	43	G	G	G	G	G	46	44	38	G	G	27	11	G	G	G	G	
28	G		G	G	G	G	G	34	G	G	40	G	41	G	40	38	G	33	27	G	G	G	G	30	
29	G	G	G	G	G	G	G	35	38	40	G	G	G	44	G	44	G	33	G	G	26	49	48	28	
30	B	G	G	G	24	G	G	44	35	40	G	62	47	44	G	38	36	33	G	G	G	50	G	G	
31	G	G	G	G	11	G	G	41	40	42	49	53	49	53	51	54	49	46	38	33	G	44	G	24	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	31	30	31	31	26	27	31	31	31	31	31	31	30	31	31	31	31	31	31	31	28	28	31	
MED	G	G	G	G	G	G	G	35	35	40	43	44	45	44	45	42	39	34	27	G	G	G	G	G	
U Q	G	G	G	G	11	G	G	42	39	43	45	49	48	48	50	52	44	40	31	24	19	13	G	G	
L Q	G	G	G	G	G	G	G	30	32	39	40	40	43	43	43	38	35	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Yamagawa

MAR. 2020

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

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

HOURLY VALUES OF foF2 AT Okinawa

MAR. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	31	31	29	29	N 27	B 23	N 24	37	48	B	B	B	55	55	65	65	67	59	60	43	A	25	A	30
2	31	33	32	29	29	29	23	39	46	B	B	B	B	B	B	B	B	75	55	49	31	26	31	33
3	31	32	32	30	27	B 23	B 23	36	56	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	60	59	53	39	30	N 23	N 24	N 29
12	29	29	30	29	35	25	B	39	44	B	B	B	B	B	B	B	56	57	56	51	36	N	N 25	29
13	30	29	29	32	32	N 23	B 22	43	45	50	51	60	79	83	79	59	49	53	54	B	B	B	B	
14	B	B	B	B	B	B	B	B	B	129	B	61	59	79	90	B	B	B	B	55	48	42	A	36
15	33	32	31	33	25	N 23	B	39	46	51	54	67	72	87	87	71	59	50	52	39	33	33	31	B 26
16	31	32	30	A	N 22	B	N	40	54	56	56	56	63	72	73	63	58	53	51	40	40	39	37	38
17	35	35	34	33	31	27	25	42	47	50	56	66	87	95	81	65	50	56	56	45	37	37	A	36
18	33	30	30	33	24	B	N	39	53	62	67	79	82	68	59	55	63	77	73	46	35	37	33	31
19	31	30	25	30	30	B	B	43	55	54	58	73	84	87	91	86	60	55	51	44	42	B 43	39	35
20	35	34	A	35	33	25	24	48	49	53	58	80	95	121	115	121	108	92	93	63	43	38	33	34
21	30	26	29	31	39	B 22	B	40	48	51	52	84	102	93	105	102	101	81	80	57	36	31	N 31	31
22	A	29	31	33	34	N 23	N 23	45	48	54	60	70	93	93	78	71	A	57	54	47	32	30	30	A
23	A	A	25	26	33	B	B	41	49	58	66	80	88	101	95	86	66	57	61	58	A	A	25	24
24	25	29	29	31	31	B	B	38	53	66	65	77	95	103	109	88	89	93	61	43	30	A	24	N 25
25	N 26	30	29	35	A	A		39	44	53	55	64	82	96	111	114	102	70	57	46	37	A	A	A
26	32	A	A	34	A	A	N 23	43	49	58	63	73	85	101	112	101	102	108	95	53	39	29	B 27	30
27	30	30	33	B 28	26	B	N 25	39	44	56	62	63	85	109	117	92	81	88	87	65	52	40	34	36
28	36	33	31	B 33	B 23	B	N 24	43	50	56	67	77	90	99	103	84	66	61	65	64	52	52	29	31
29	31	31	28	29	B	B	B 23	45	55	63	66	68	89	107	115	122	136	138	139	128	109	65	45	35
30	33	32	32	31	29	23	32	43	49	58	69	68	77	93	101	107	99	92	96	72	51	39	36	32
31	33	32	31	36	A	B	N 24	44	55	58	57	69	75	93	112	108	97	80	69	69	69	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	21	18	11	13	22	22	19	18	19	20	20	20	19	20	22	22	22	20	17	17	19
MED	31	31	30	31	30	23	24	40	49	56	59	69	84	93	98	86	66	66	60	50	38	37	31	31
U Q	33	32	31	33	33	25	24	43	53	58	66	77	89	101	111	107	100	88	80	63	49	41	35	35
L Q	30	29	29	29	26	23	23	39	46	53	56	64	76	85	80	65	59	57	54	44	34	29	26	29

HOURLY VALUES OF fEs AT Okinawa

MAR. 2020

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

$\frac{H}{D}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	B	G	26	34	B	B	B	G	45	44	38	51	54	59	G	41	23	26	G
2	G	G	G	24	G	G	G	33	46	B	B	B	B	B	B	B	B	37	30	45	11	G	G	G
3	G	G	G	G	G	B	B	25	34	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	G	G	G	11	G	26	G	G
12	G	G	G	G	G	B	B	25	34	B	B	B	B	B	B	B	54	52	39	G	30	G	G	G
13	G	G	G	G	G	G	B	26	150	40	52	47	52	47	G	44	G	G	G	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	G	B	48	50	54	47	B	B	B	B	G	G	34	45	34
15	G	G	24	G	11	G	B	26	34	38	45	49	53	41	G	G	G	G	G	G	G	G	G	B
16	G	G	G	56	G	B	G	28	36	41	46	49	54	G	40	43	G	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	26	G	43	G	G	46	42	G	44	44	G	32	29	28	G	32	G
18	G	G	G	G	G	B	G	26	32	40	G	G	48	45	G	44	42	47	56	23	G	G	G	G
19	G	G	G	G	32	B	B	28	34	40	45	53	46	G	49	45	40	36	29	G	G	B	G	G
20	G	G	G	G	27	G	G	28	36	42	48	48	45	47	46	41	38	39	34	22	26	23	G	G
21	G	G	G	G	11	B	B	70	34	40	38	43	44	G	47	G	38	37	G	24	G	G	G	G
22	35	G	G	G	G	G	G	26	34	116	52	47	46	72	49	64	114	39	G	11	G	G	G	40
23	38	46	G	G	G	B	B	178	32	48	65	43	54	44	45	44	42	43	37	45	69	72	G	G
24	G	G	G	G	31	B	B	G	38	44	49	53	50	44	72	71	57	38	35	29	26	48	G	G
25	G	G	G	G	29	B		29	39	G	G	G	46	50	50	49	42	G	G	11	G	33	40	36
26	32	25	38	G	57	25	G	34	36	44	43	53	57	52	49	G	40	G	28	48	34	29	B	G
27	G	G	G	B	26	B	G	146	37	G	39	43	44	43	G	G	G	G	G	11	24	24	G	G
28	G	G	G	B	B	B	G	32	33	G	G	G	47	46	G	42	44	39	G	G	G	11	G	G
29	G	G	G	G	B	B	B	28	38	50	39	G	44	45	45	44	43	38	G	30	31	48	29	28
30	32	G	G	G	G	G	G	32	G	39	50	48	50	G	56	G	G	35	G	25	32	G	26	29
31	G	G	G	G	33	B	G	31	37	G	44	50	48	51	50	42	G	40	31	28	11	36	26	35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	22	22	20	20	9	12	22	22	19	18	19	20	20	20	19	21	22	22	22	22	21	21	21
MED	G	G	G	G	G	G	G	28	34	40	44	47	48	45	46	43	40	37	14	16	11	23	G	G
U Q	G	G	G	G	28	13	G	32	37	44	49	49	51	48	49	44	44	39	34	29	30	33	26	28
L Q	G	G	G	G	G	G	G	26	34	G	38	G	45	41	G	G	G	G	G	G	G	G	G	G

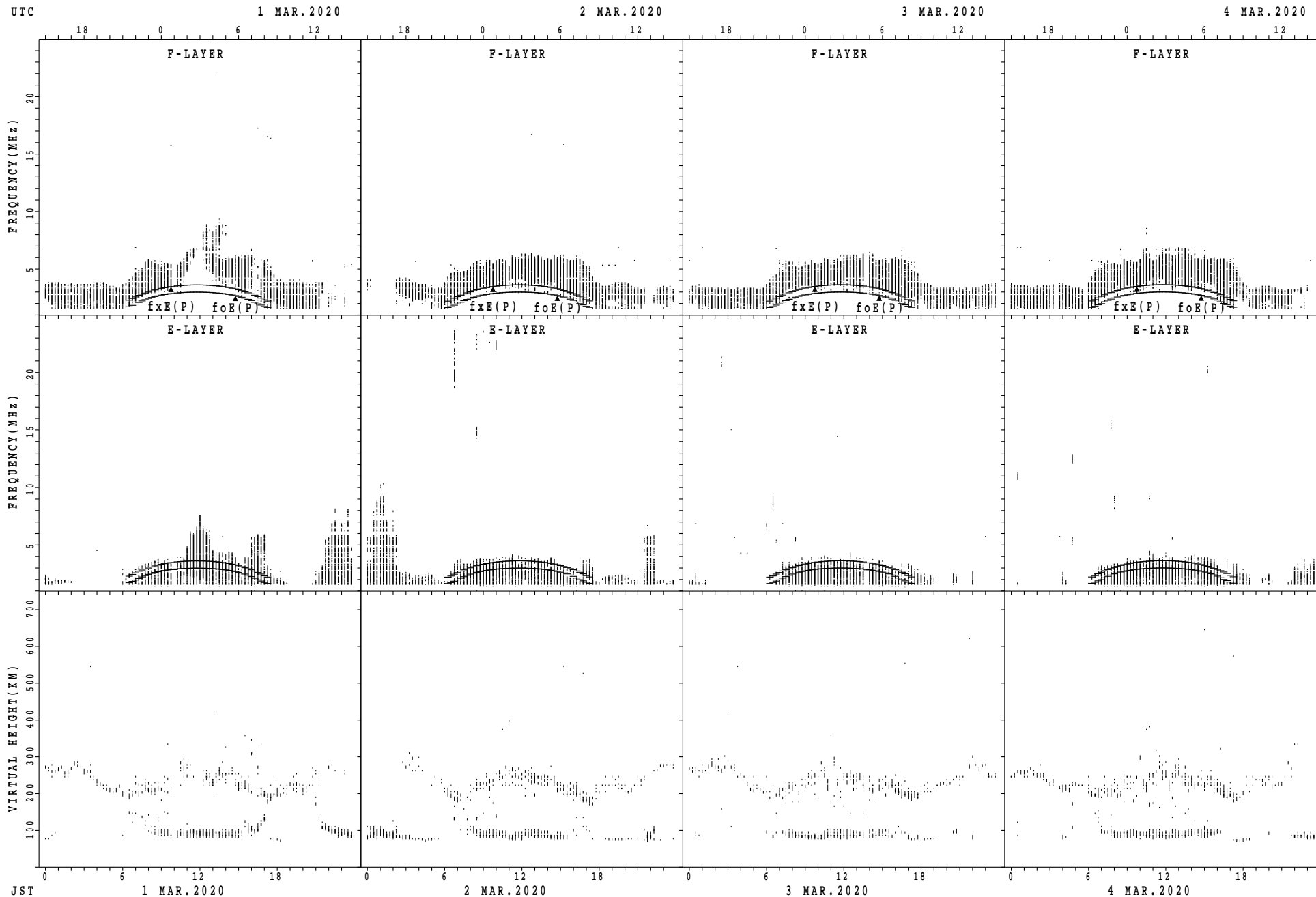
HOURLY VALUES OF fmin AT Okinawa

MAR. 2020

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

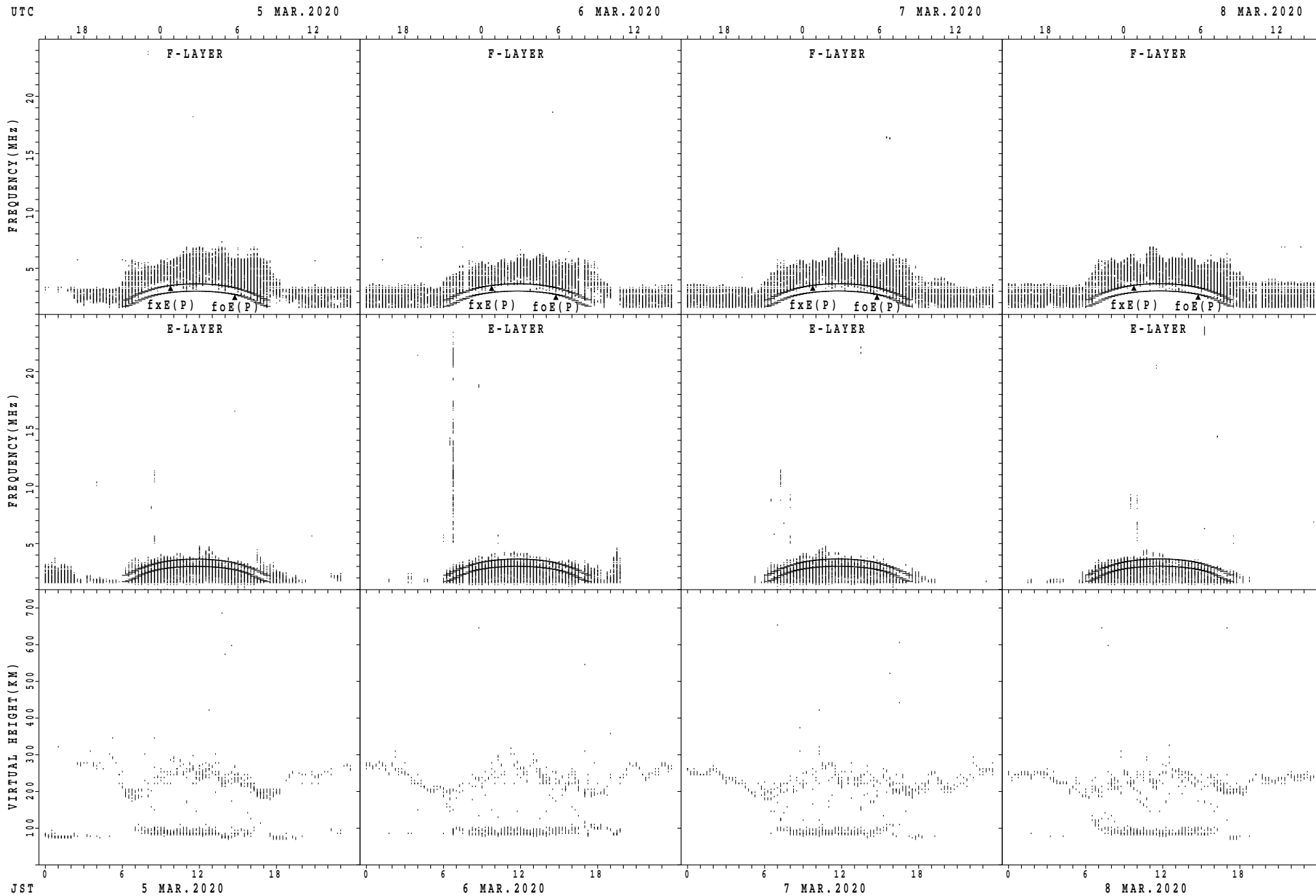
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	15	14	15	B	15	16	15	B	B	B	16	16	17	15	13	12	17	15	14	15	15	15
2	15	14	16	16	15	15	17	15	15	B	B	B	B	B	B	B	B	14	15	15	14	17	15	15
3	15	16	14	14	15	B	B	17	15	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	16	15	15	14	15	15	18	15
12	15	14	14	15	15	14	B	16	16	B	B	B	B	B	B	B	14	14	14	17	15	14	15	15
13	15	15	15	15	14	235	B	15	15	15	18	19	16	18	16	17	15	15	15	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	133	B	15	17	16	16	B	B	B	B	14	14	15	15	16
15	15	15	16	16	14	14	B	16	15	15	15	14	17	17	17	16	15	15	18	14	15	14	14	B
16	15	14	15	17	15	B	15	14	16	14	15	17	16	17	17	18	15	14	14	15	15	15	14	14
17	14	15	14	15	16	15	15	17	16	15	15	17	16	17	16	17	15	14	15	15	15	15	15	15
18	15	15	15	14	14	B	15	15	15	15	15	15	16	17	16	15	15	15	14	15	16	16	15	15
19	14	14	14	14	15	B	B	15	15	15	15	17	16	16	16	15	15	13	15	15	15	B	16	15
20	15	18	15	15	15	16	14	15	16	15	16	16	17	18	17	16	15	15	16	16	15	16	14	14
21	14	15	15	14	14	B	B	15	15	15	16	18	17	15	19	17	15	15	15	15	16	18	15	15
22	15	16	16	16	16	15	16	15	16	16	17	17	17	17	20	16	17	14	15	14	15	15	15	15
23	15	16	14	15	16	53	B	14	14	13	14	15	18	17	19	15	15	15	16	15	15	15	14	14
24	14	15	15	17	17	B	B	15	16	14	13	15	16	17	14	16	13	13	16	16	16	16	15	15
25	14	15	14	14	14	B	15	16	16	15	15	16	16	14	15	15	15	15	15	14	14	16	15	15
26	15	16	15	16	15	16	15	16	16	15	14	16	15	15	16	16	14	15	14	15	16	16	B	15
27	15	16	18	B	16	B	15	15	15	15	15	15	15	18	17	17	15	15	14	15	16	16	15	15
28	15	15	14	B	B	B	15	16	16	16	14	16	17	17	13	14	14	15	13	17	14	14	15	14
29	15	18	18	14	B	B	B	16	16	14	16	17	17	16	15	17	14	14	15	15	15	15	16	15
30	16	14	15	14	14	14	14	15	15	15	15	15	15	17	17	17	16	15	15	15	16	15	16	16
31	14	14	14	14	14	B	14	16	16	15	15	16	15	16	15	15	16	13	15	16	14	14	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	22	22	20	20	12	12	22	22	19	18	19	20	20	20	19	21	22	22	22	22	22	22	21
MED	15	15	15	15	15	15	15	15	16	15	15	16	16	17	16	16	15	15	15	15	15	15	15	15
U Q	15	16	15	16	15	16	15	16	16	15	16	17	17	17	17	17	15	15	15	15	16	16	15	15
L Q	14	14	14	14	14	14	14	15	15	15	15	15	16	16	15	15	14	14	14	15	14	15	15	15

SUMMARY PLOTS AT Wakkanai



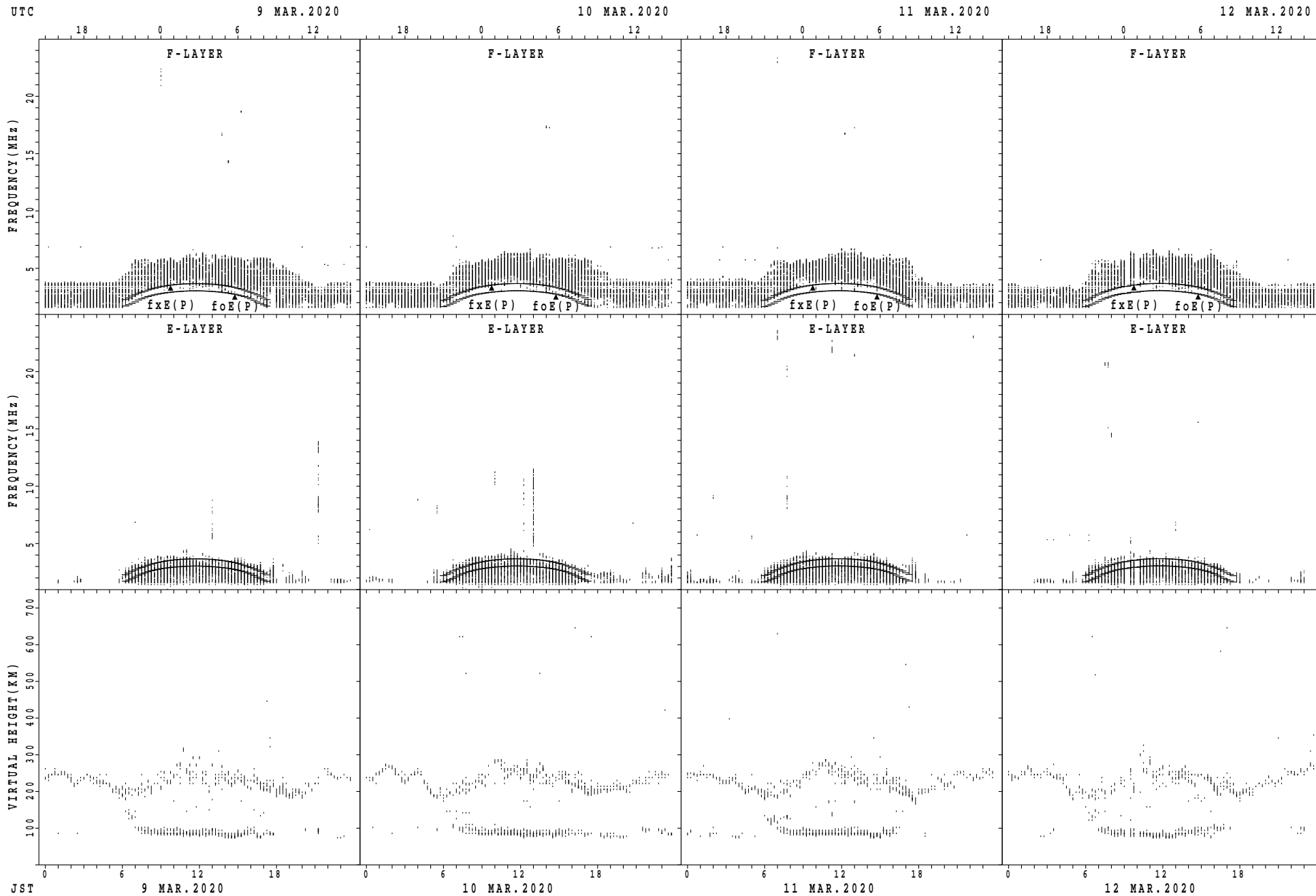
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



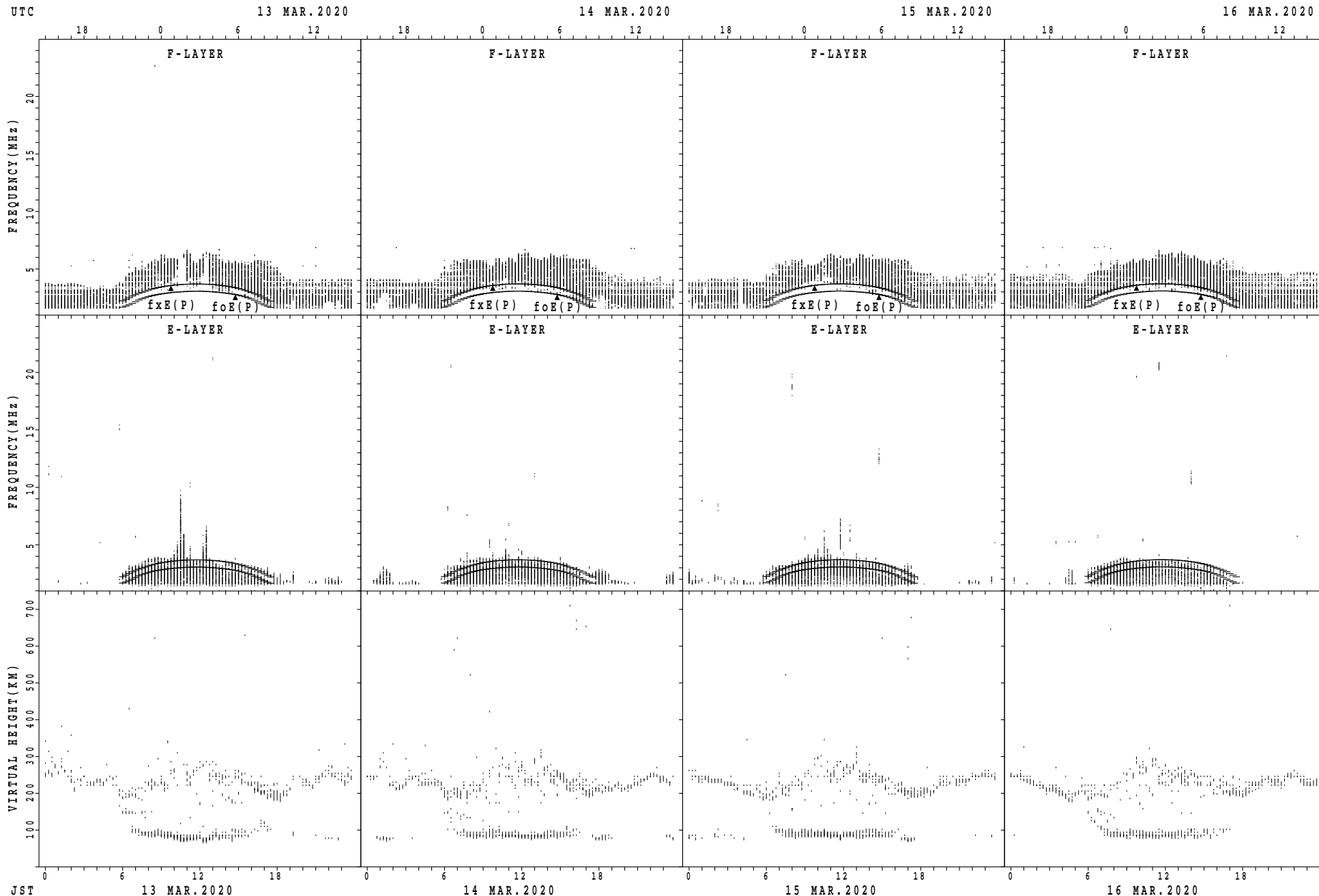
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



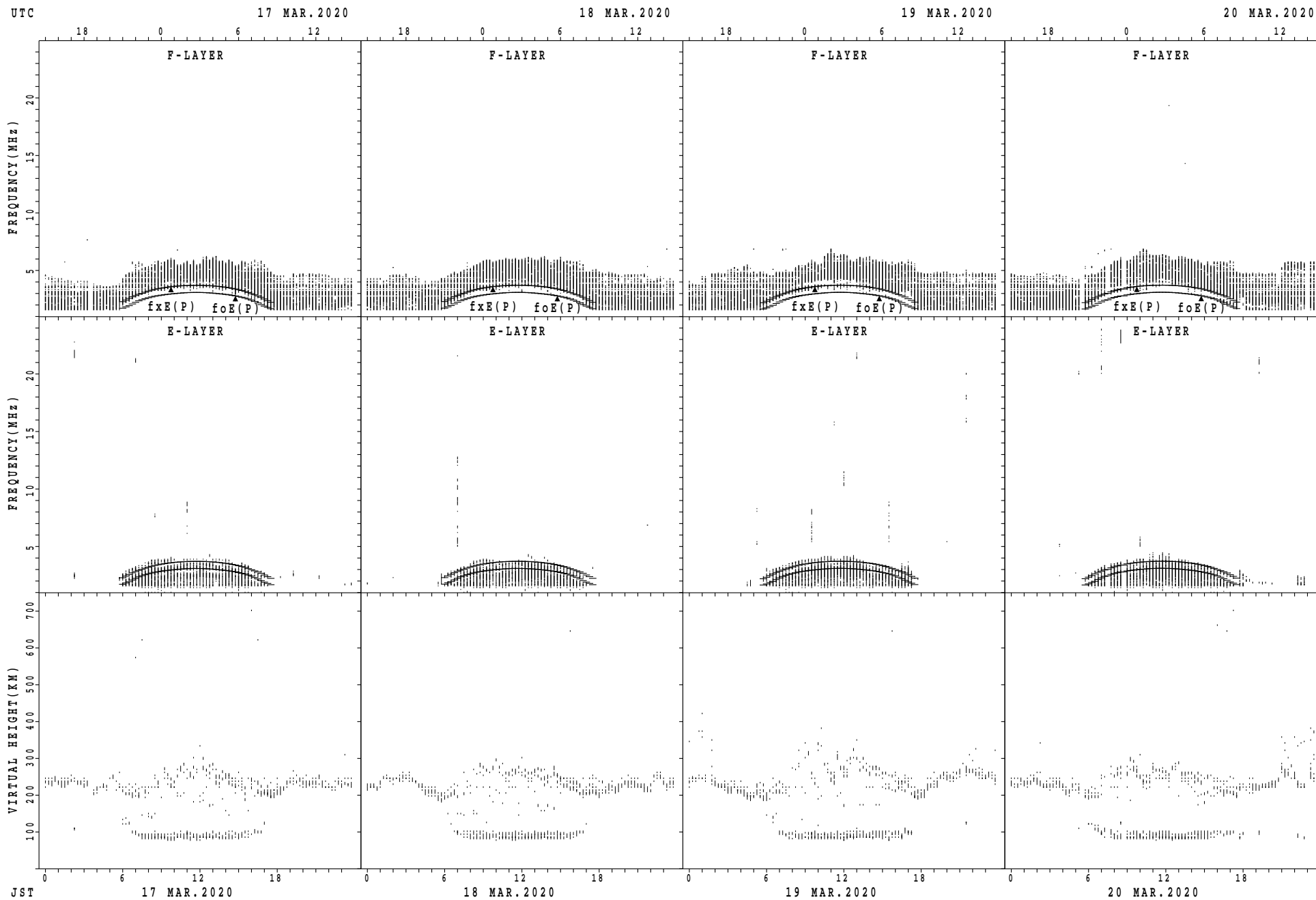
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



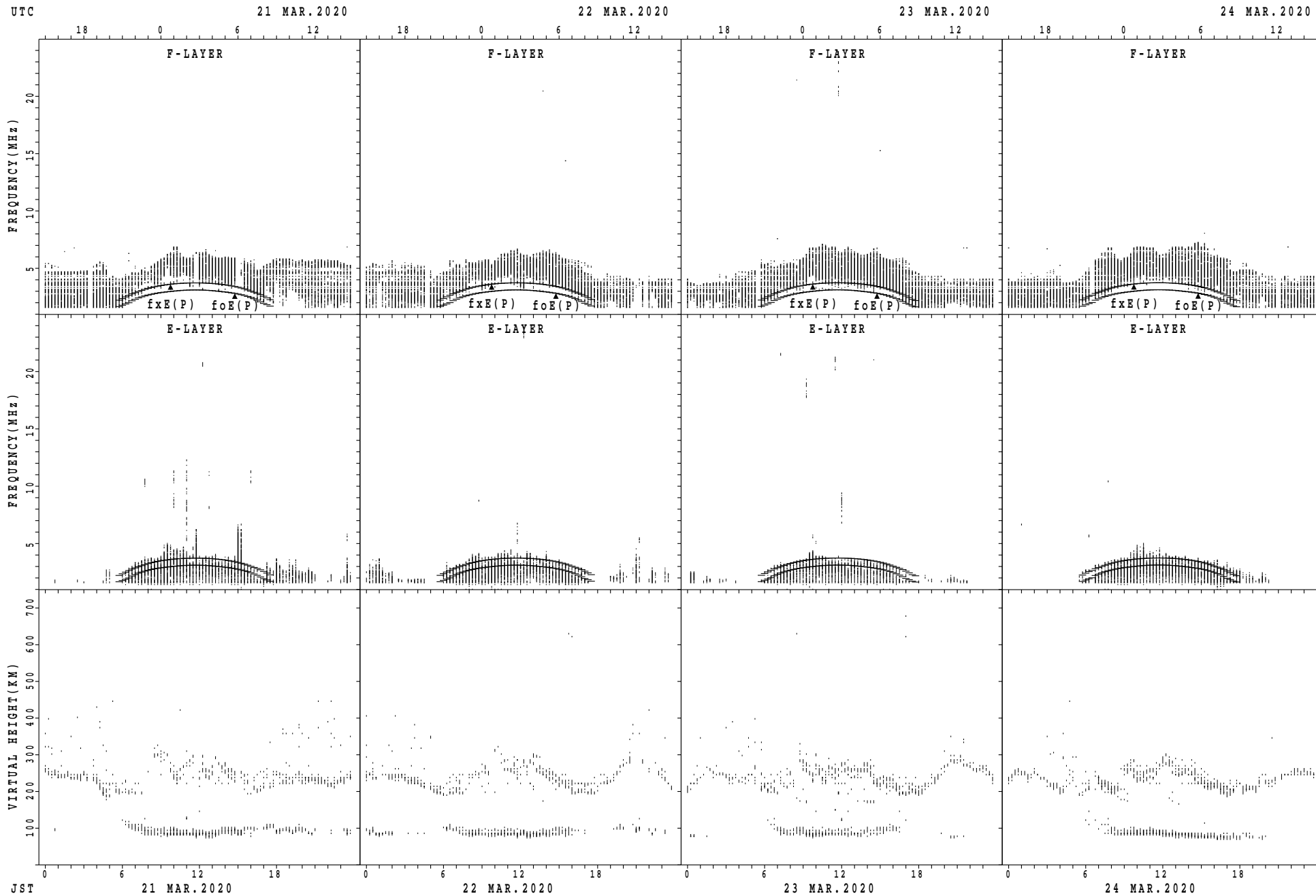
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



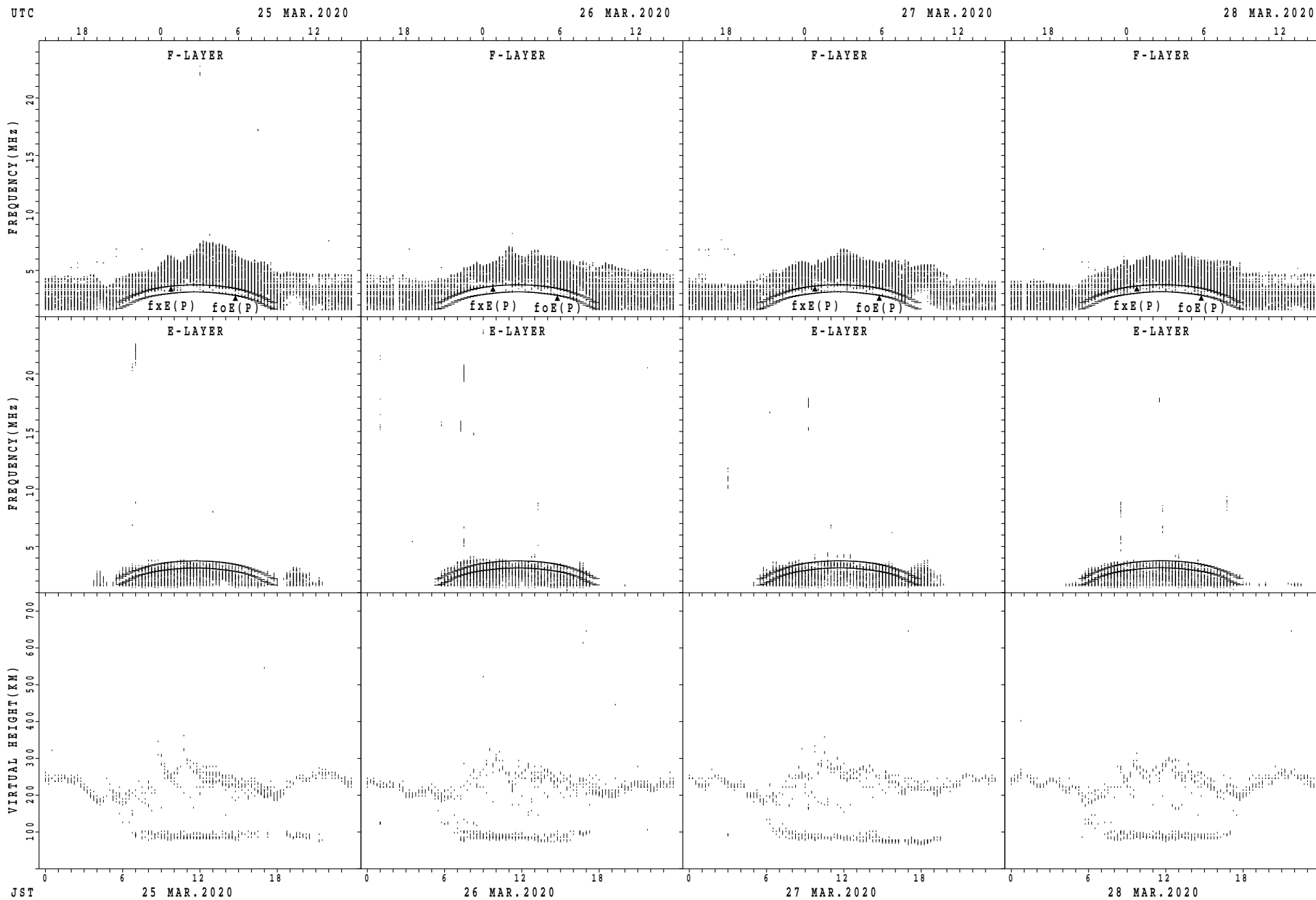
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



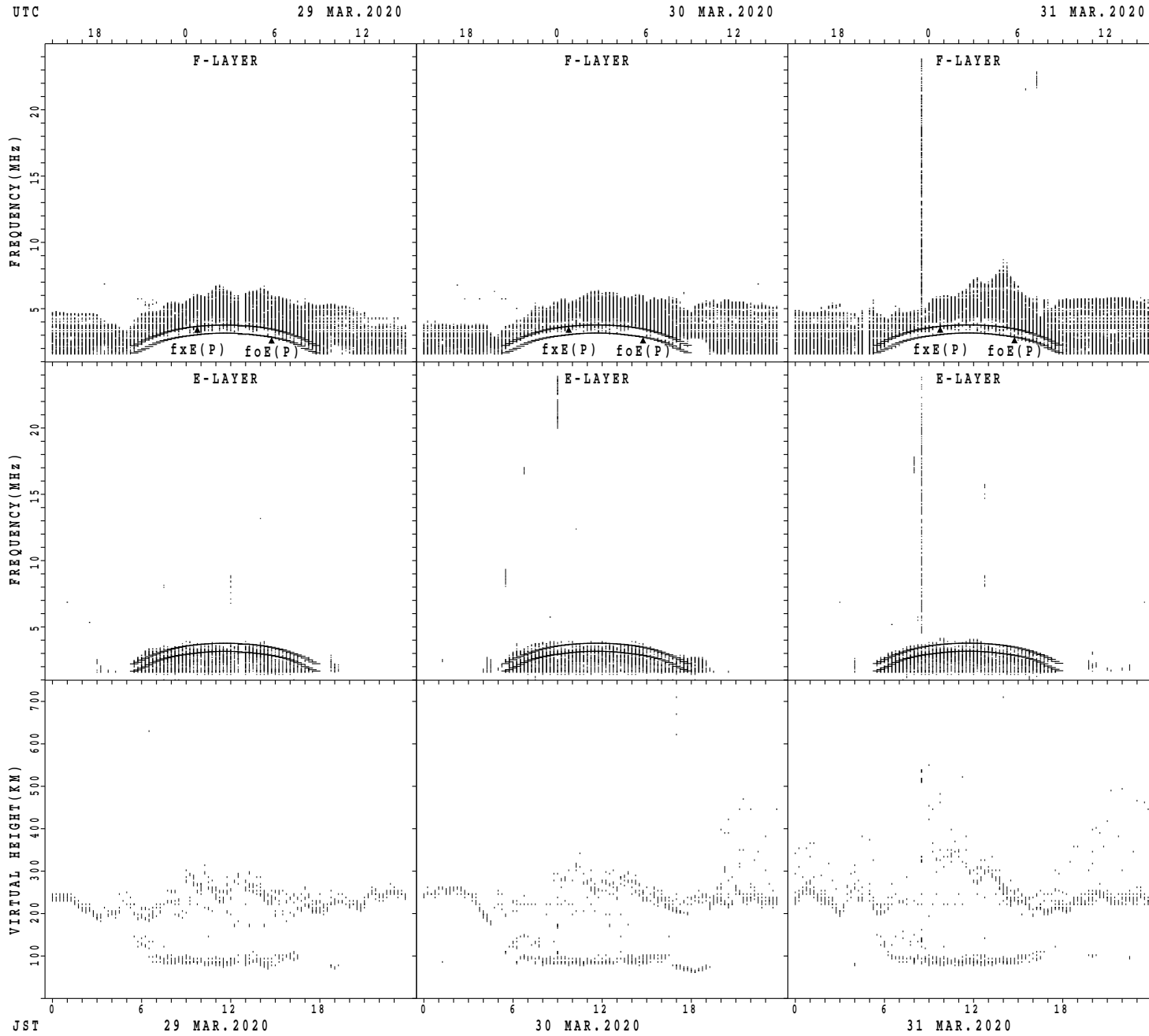
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



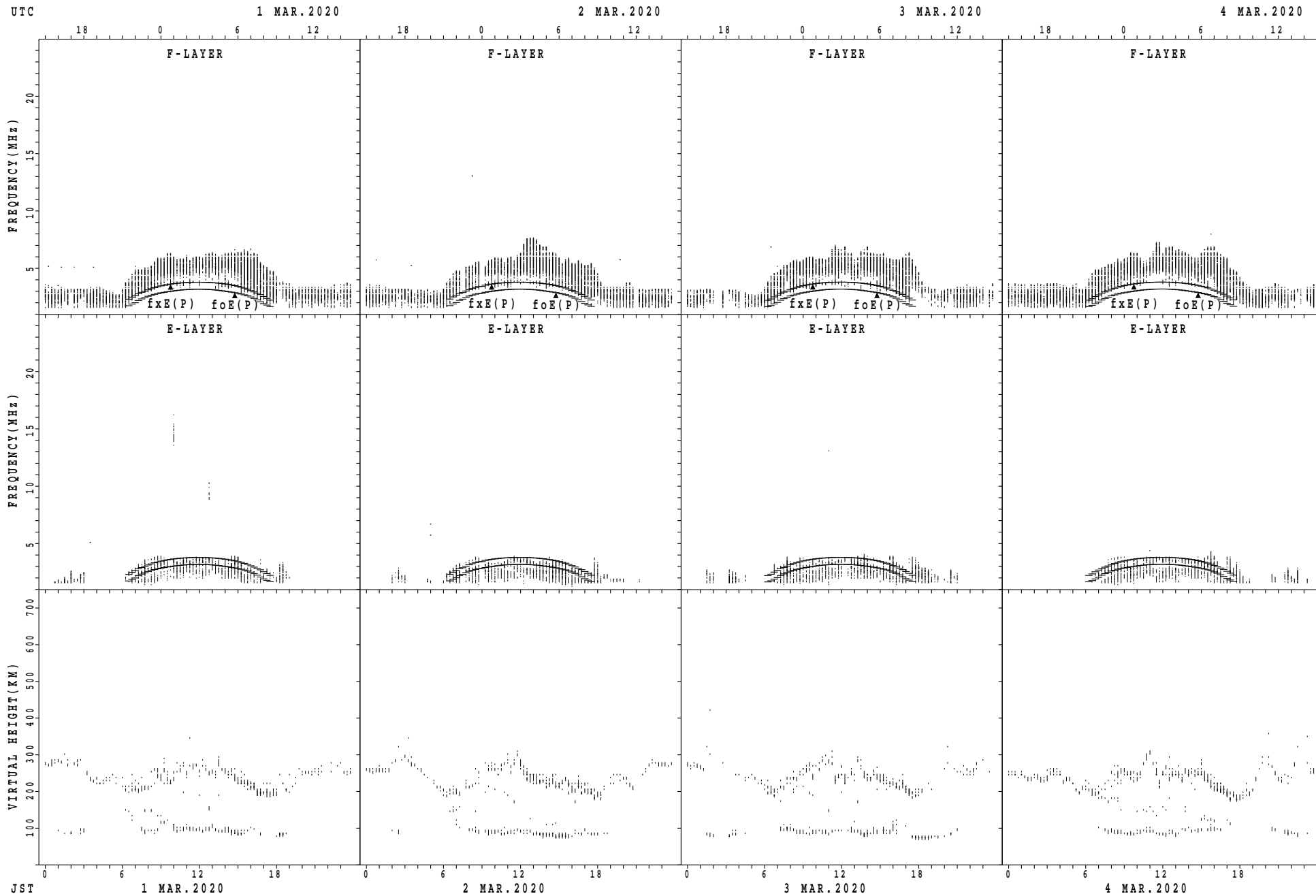
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



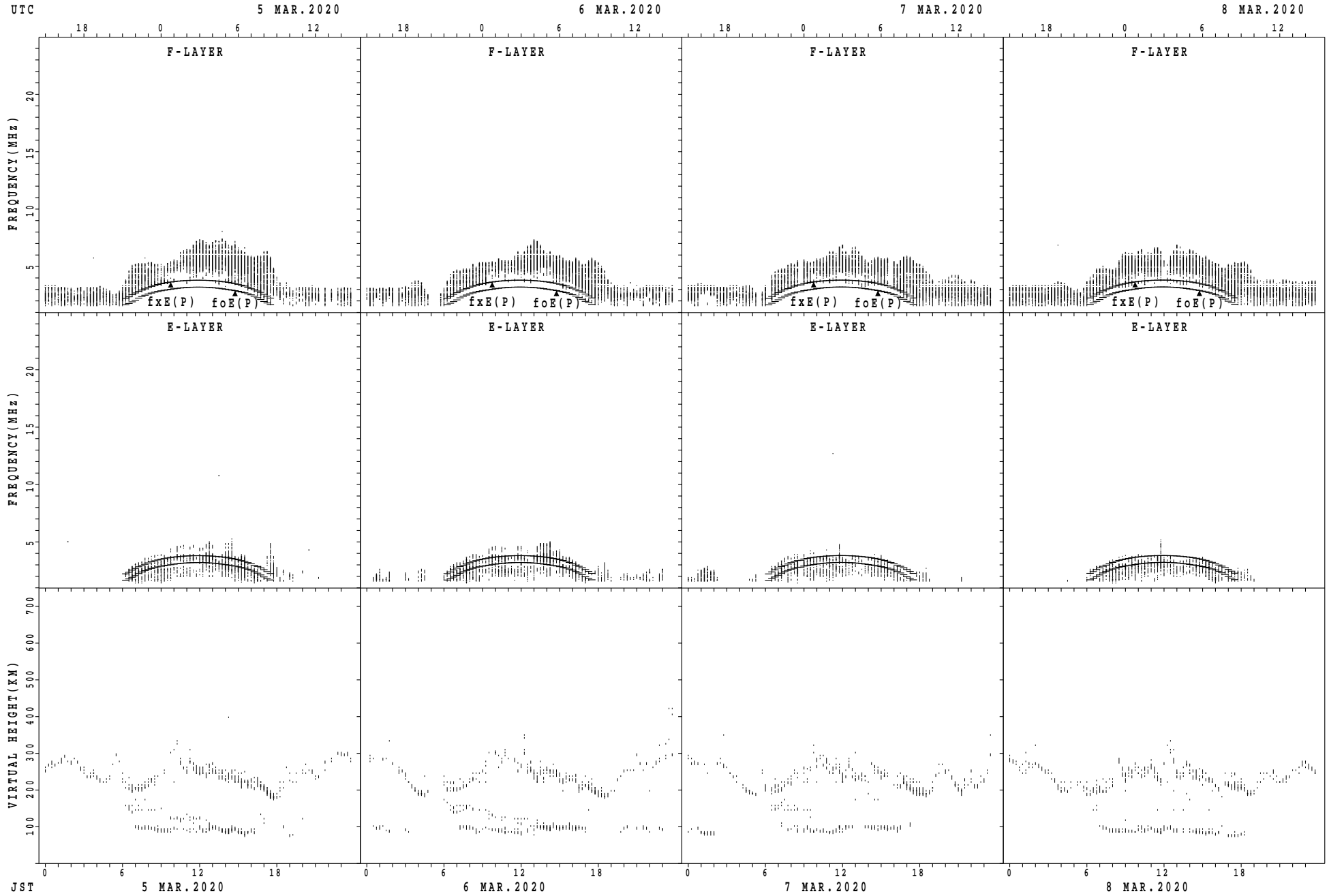
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



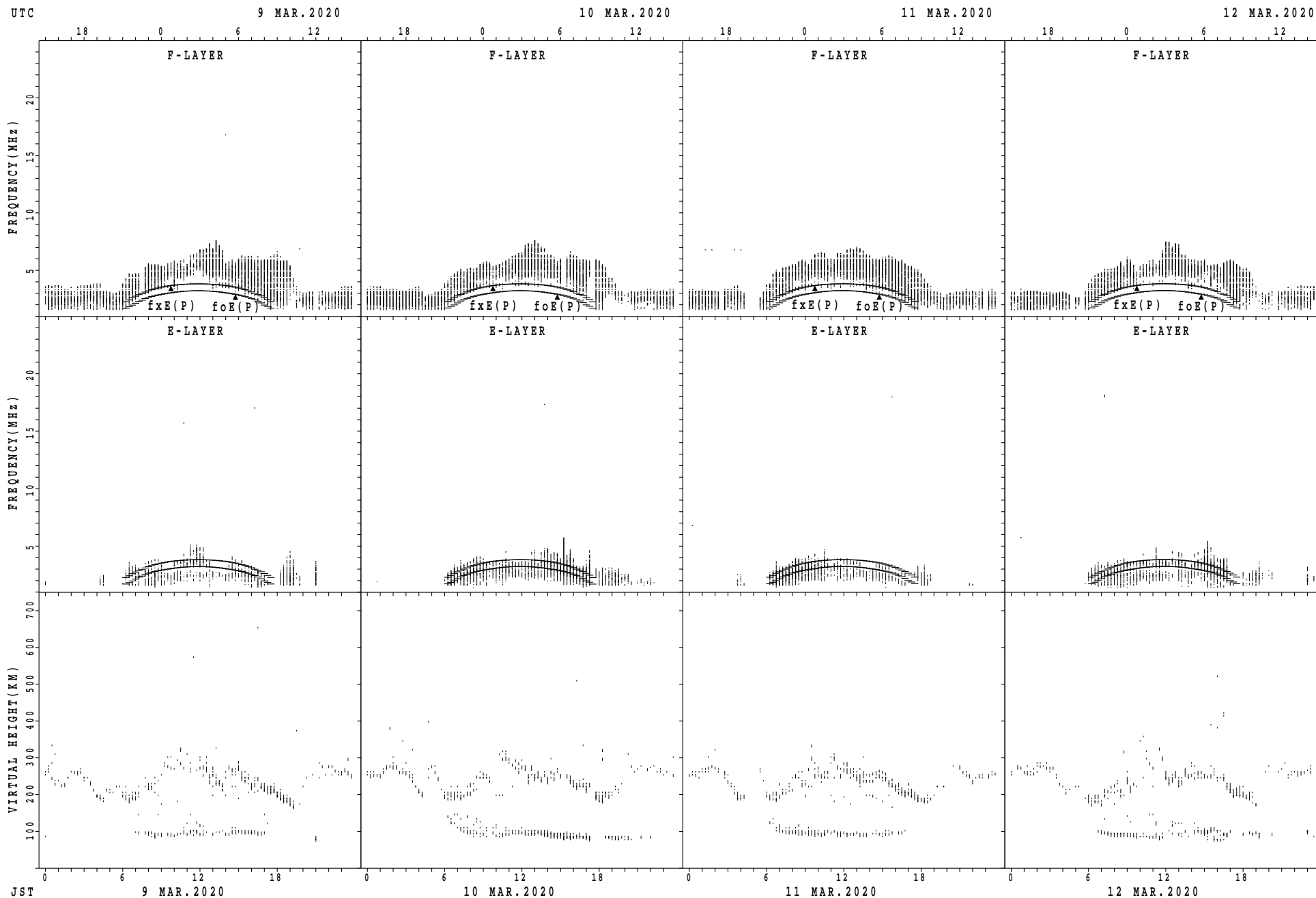
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



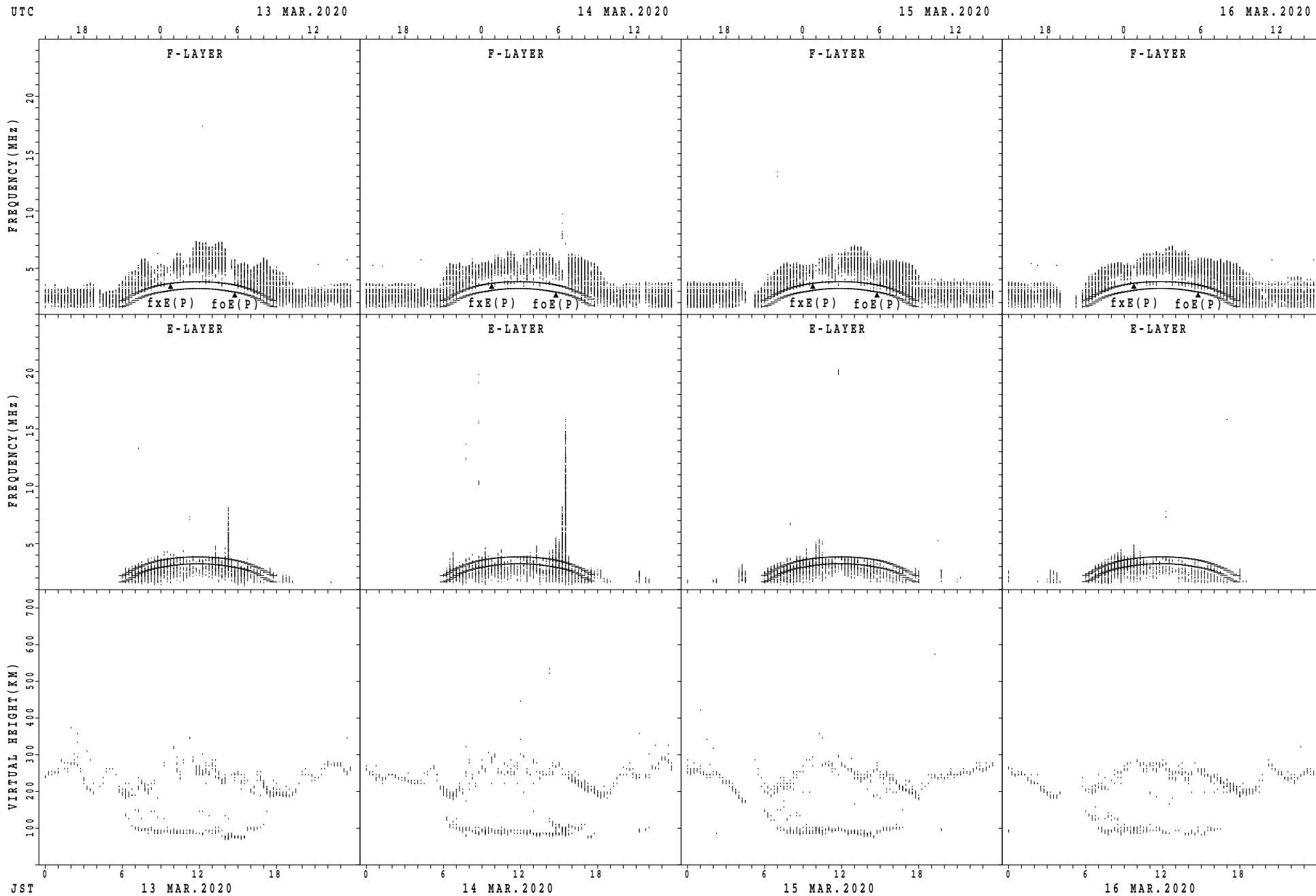
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



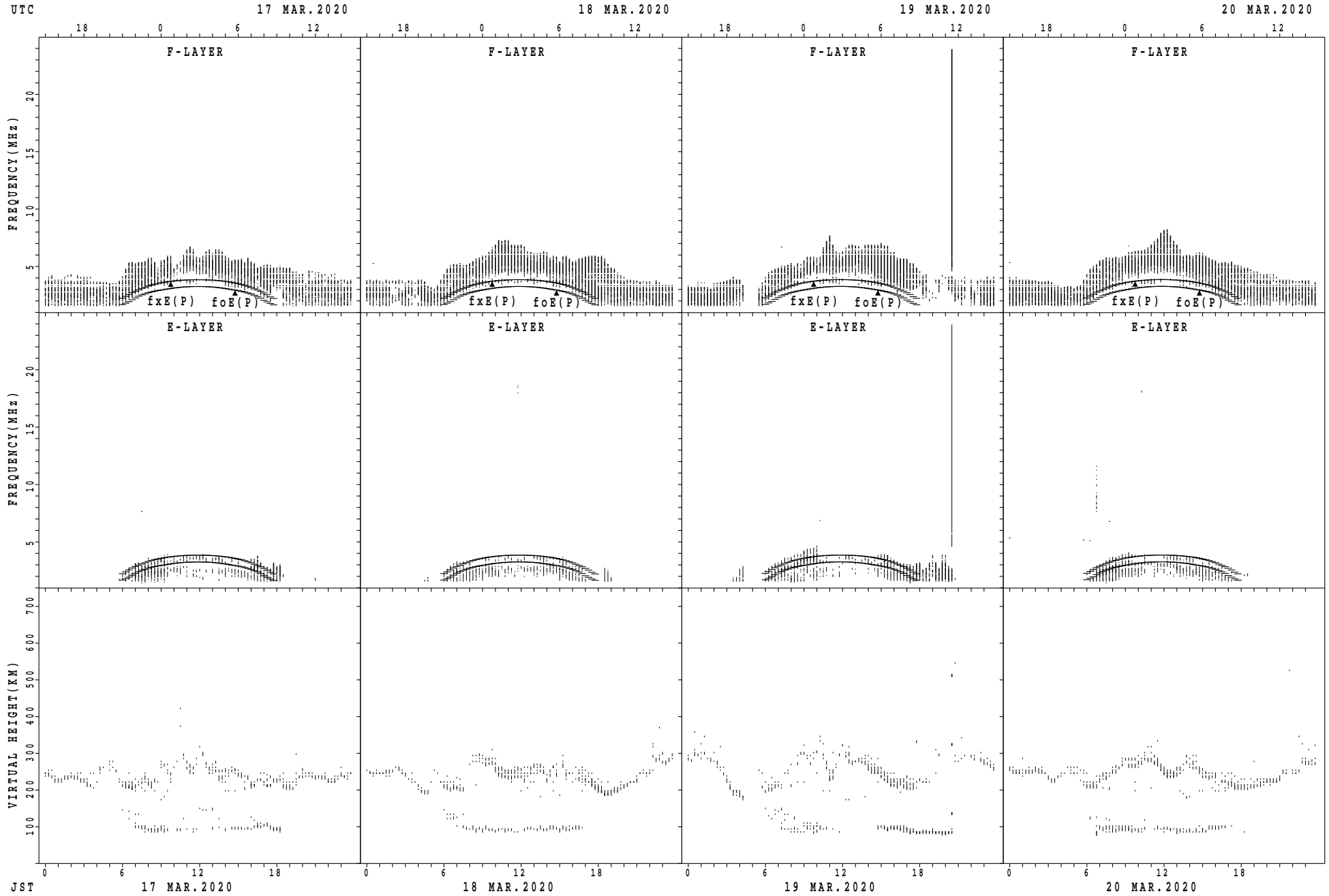
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



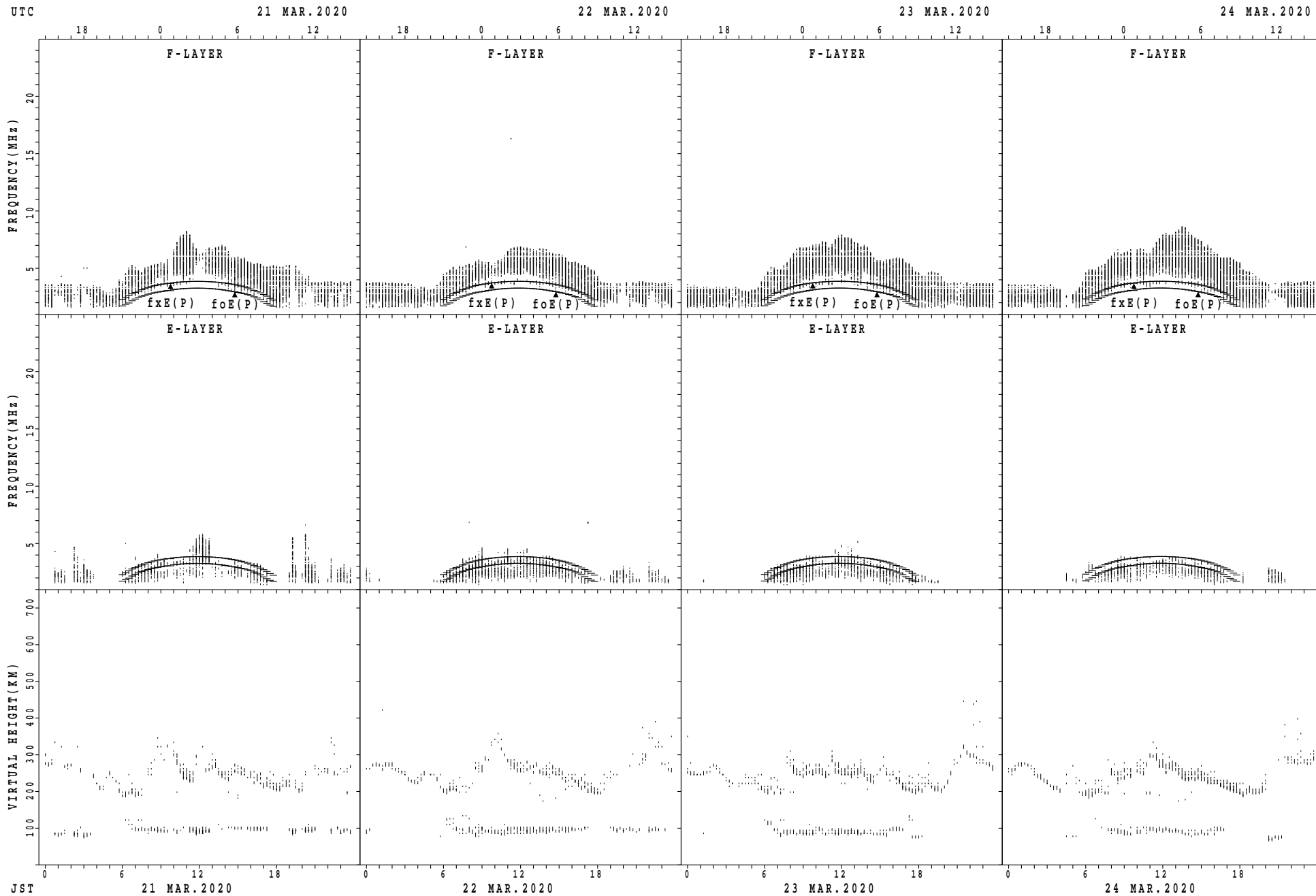
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



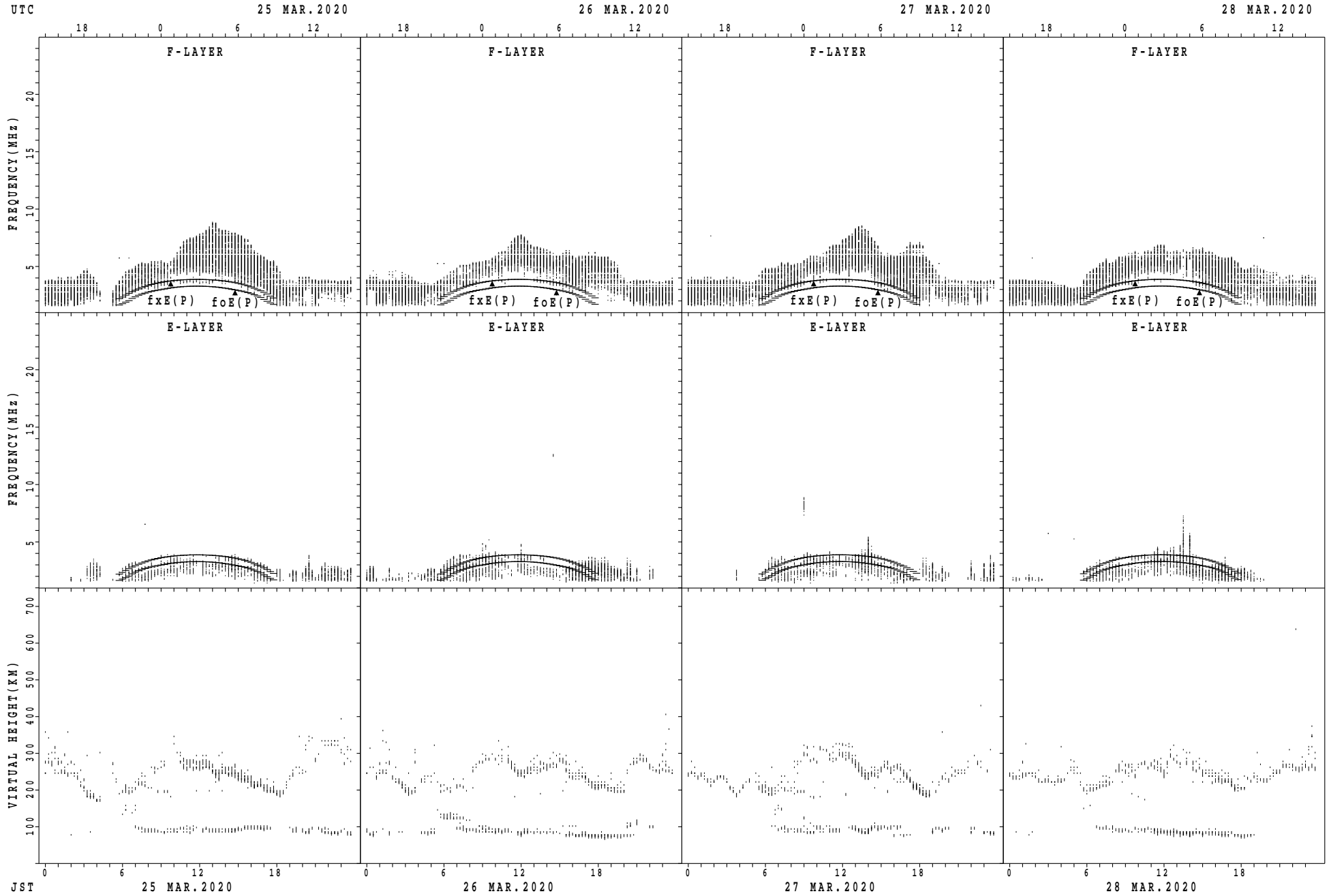
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



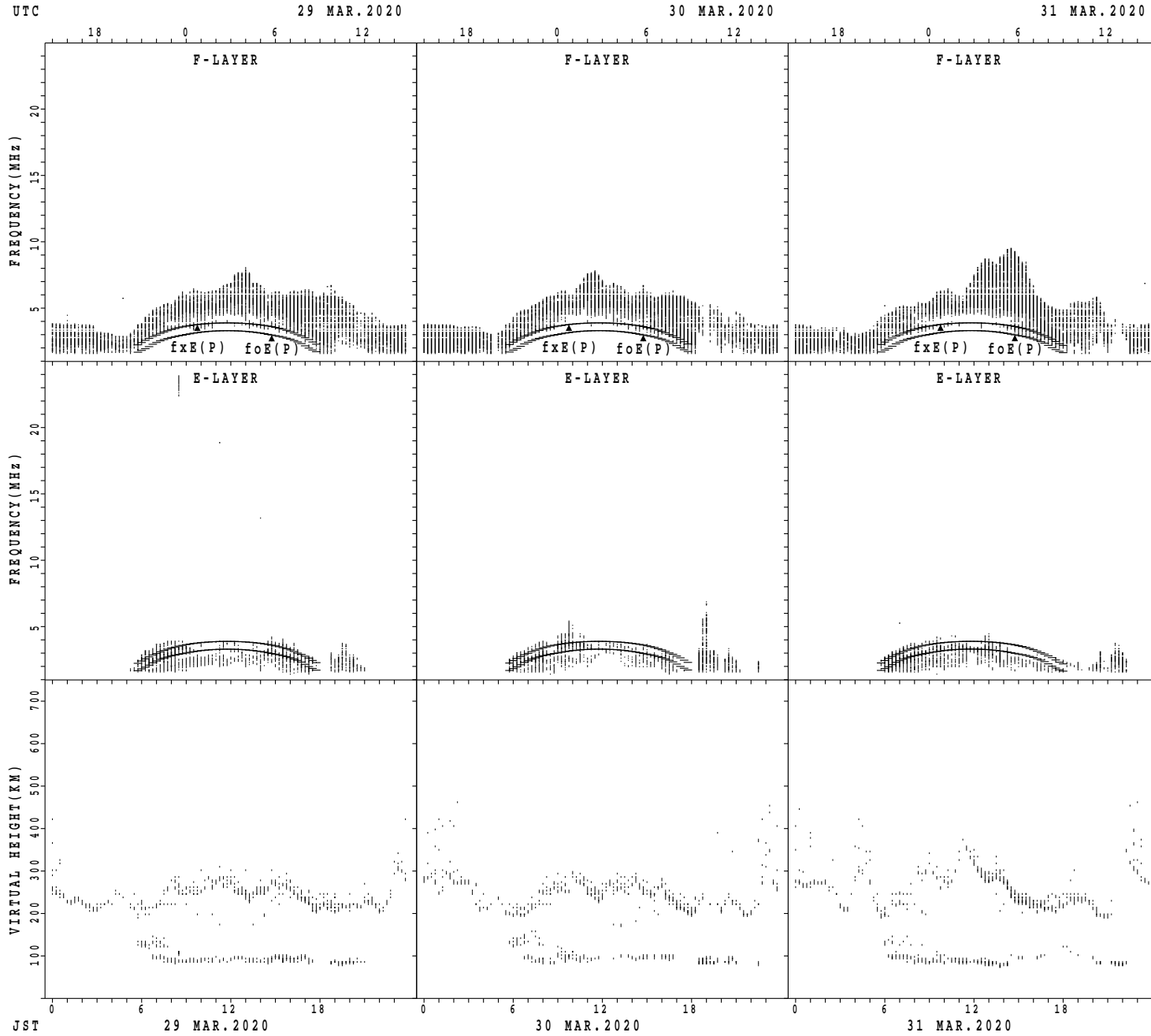
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



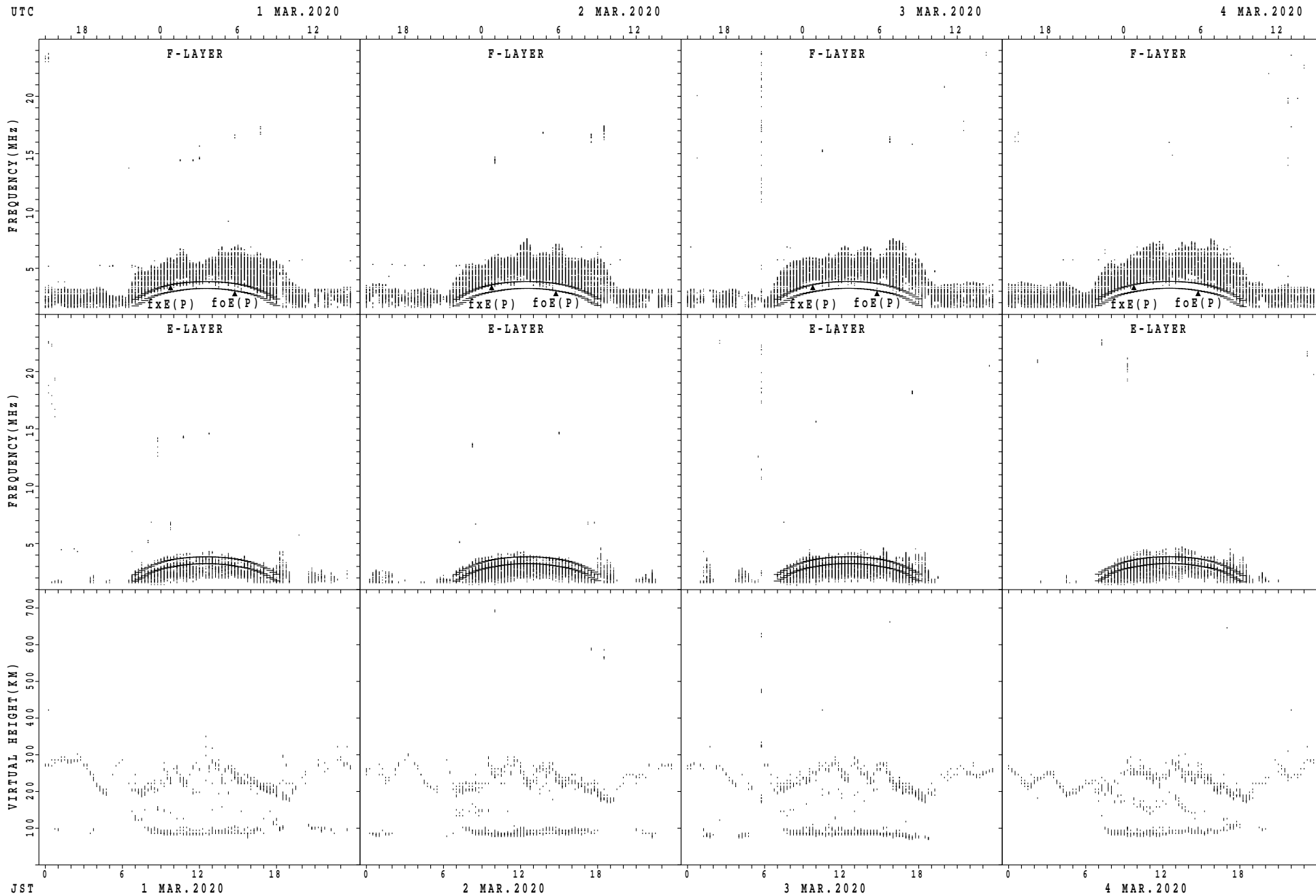
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



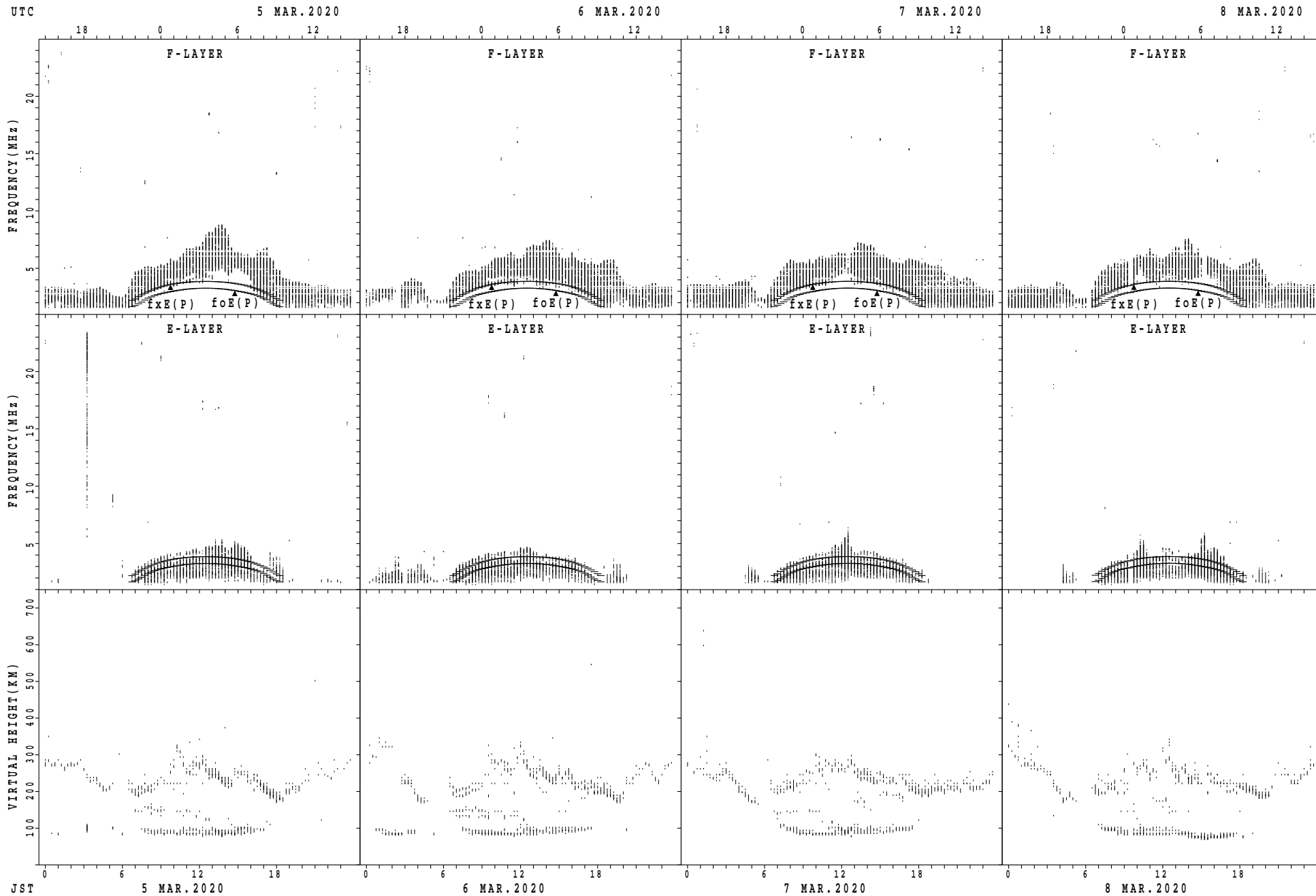
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



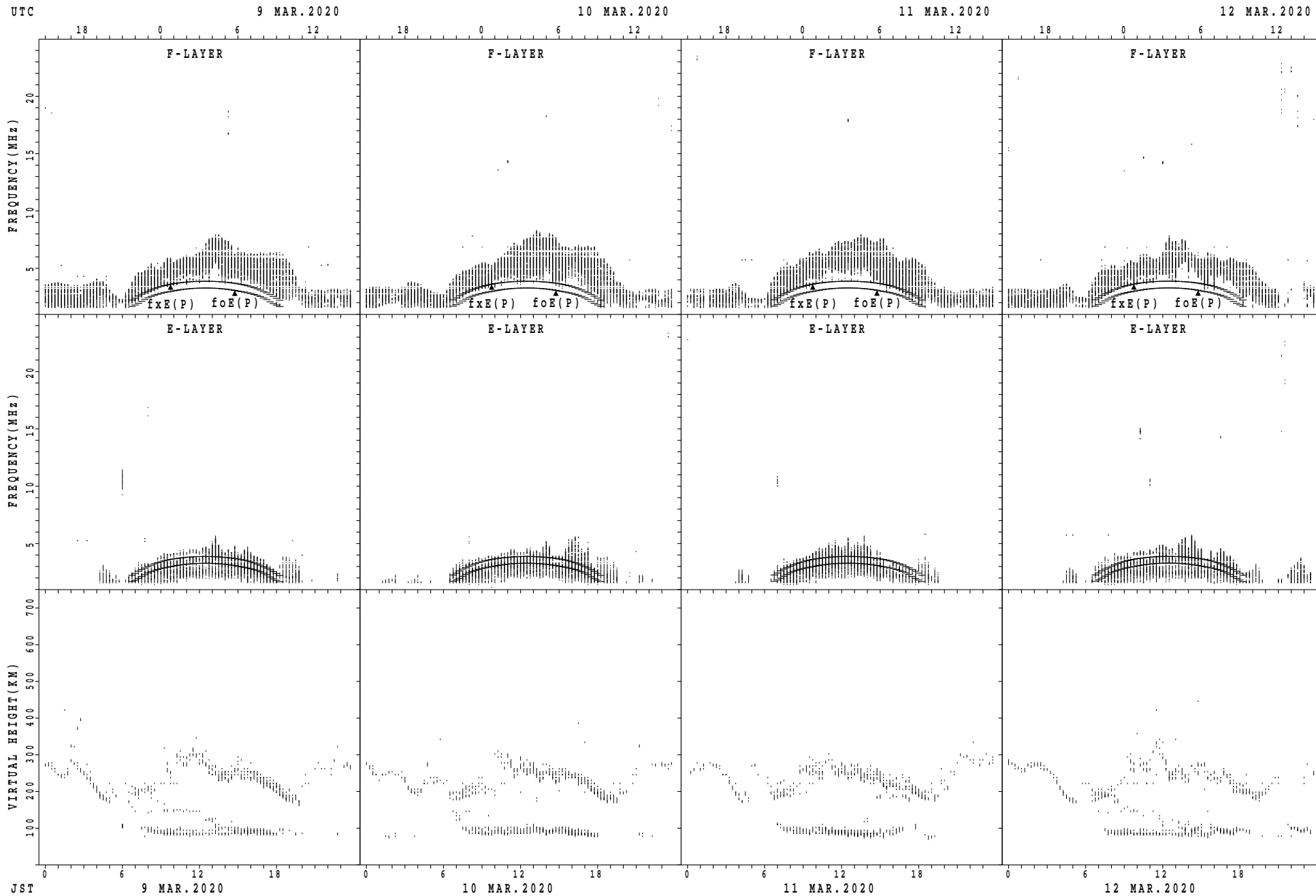
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



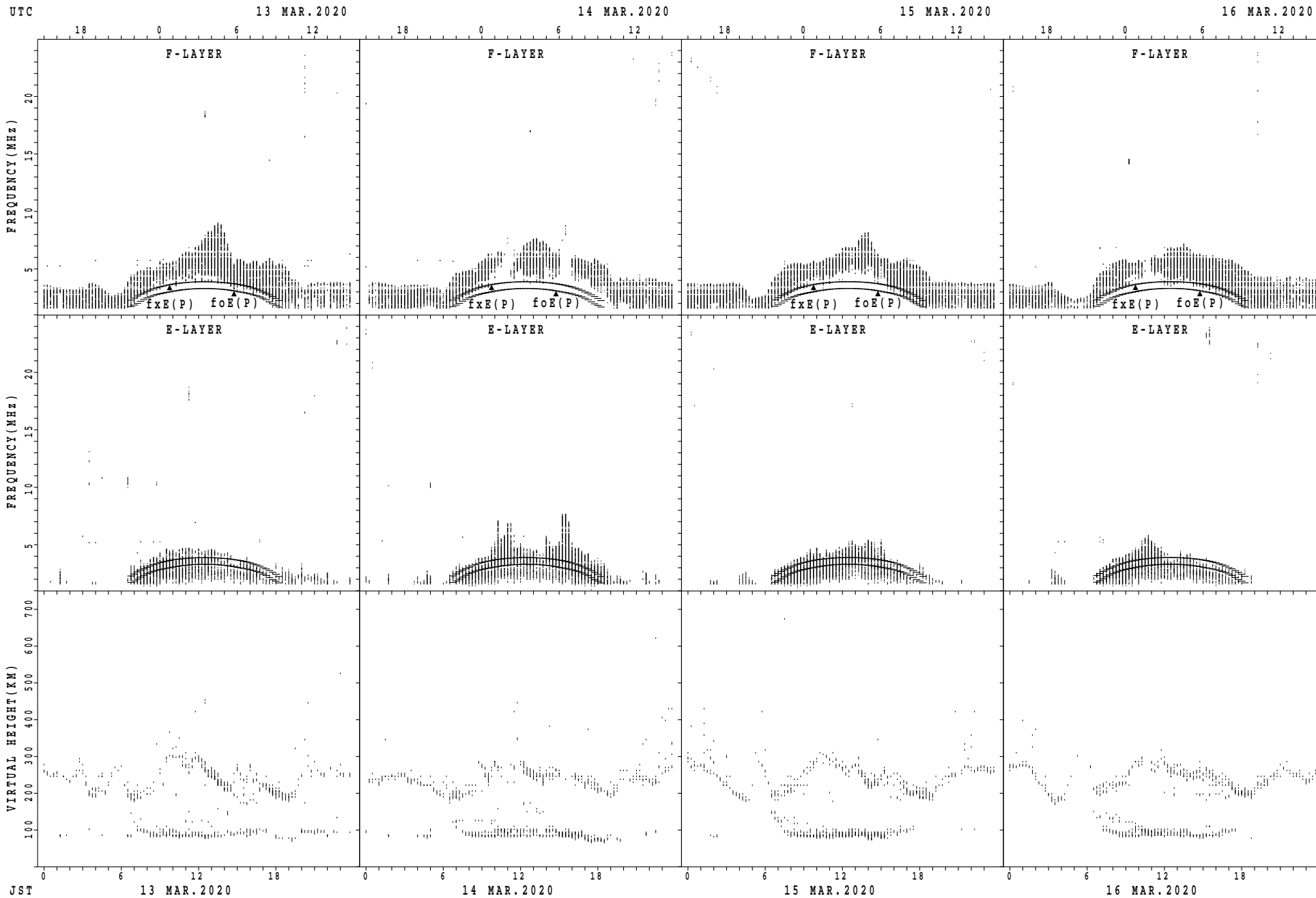
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



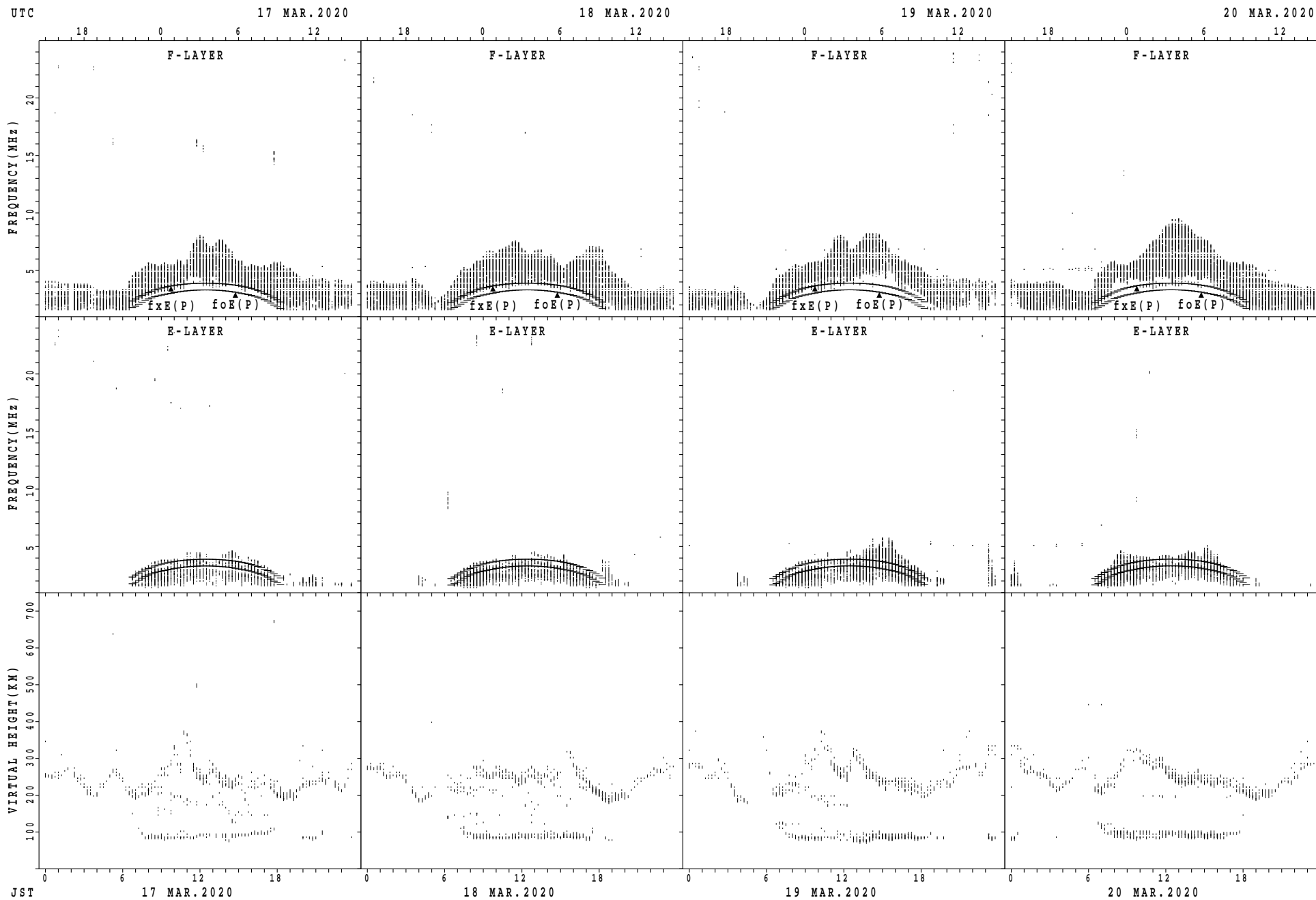
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



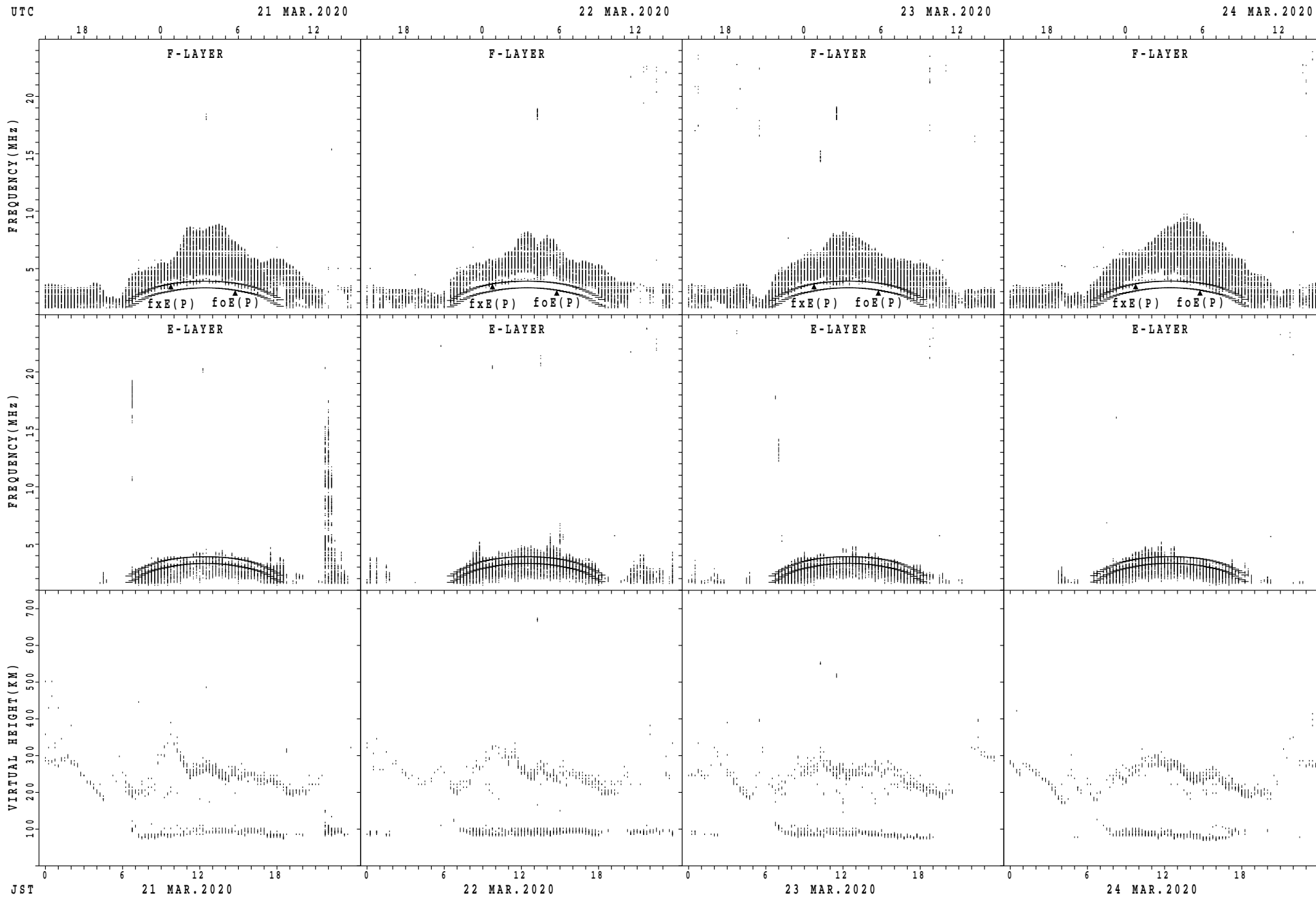
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



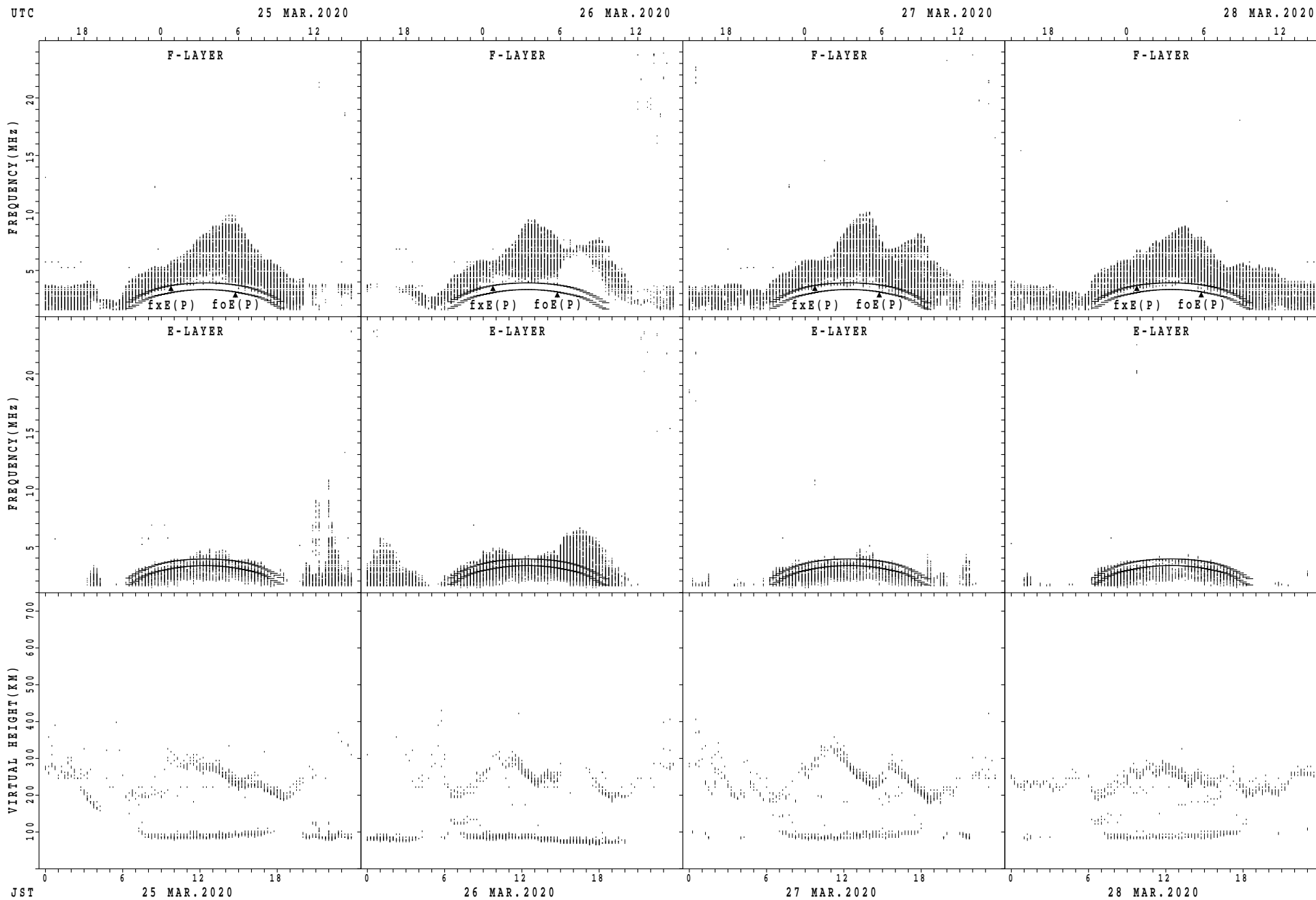
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



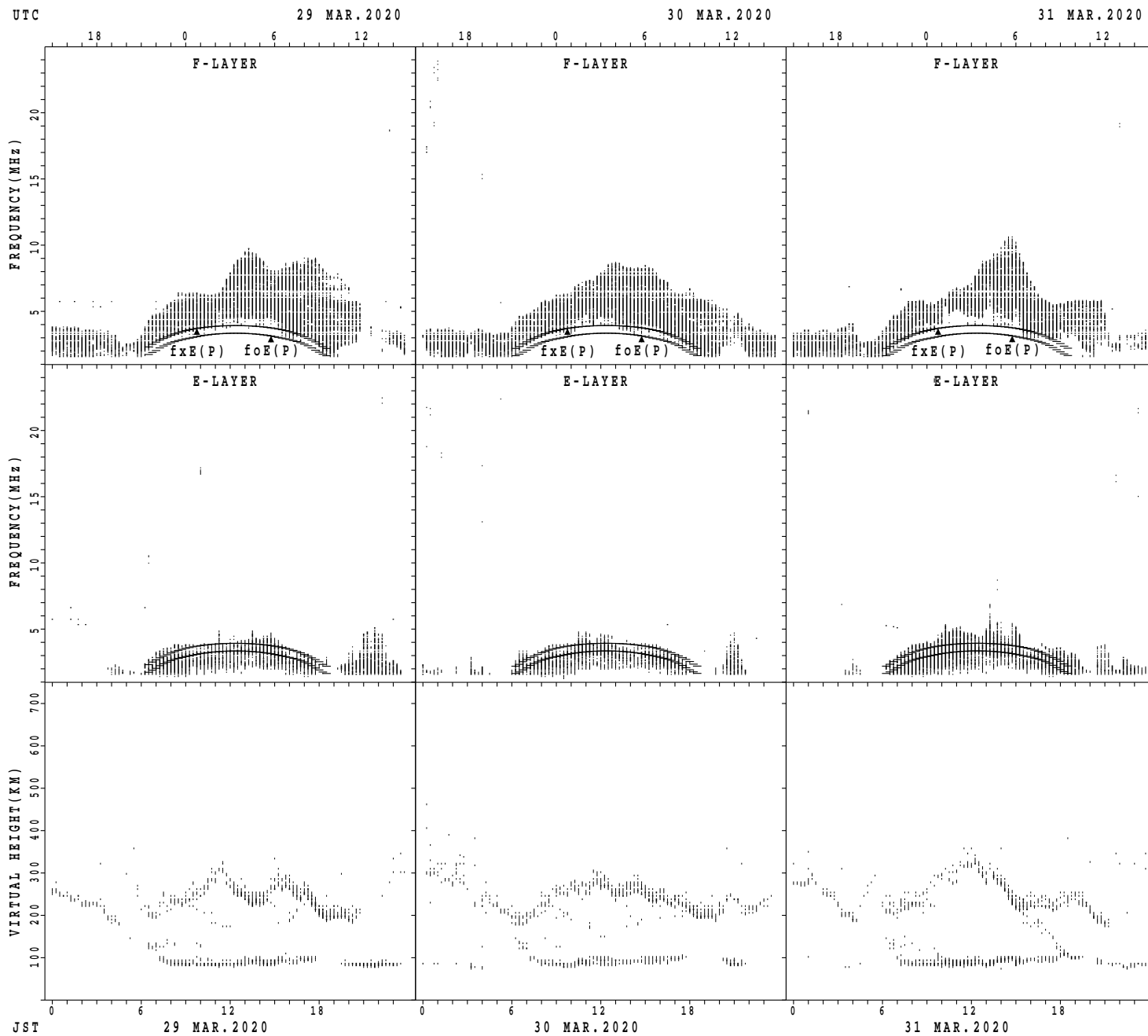
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



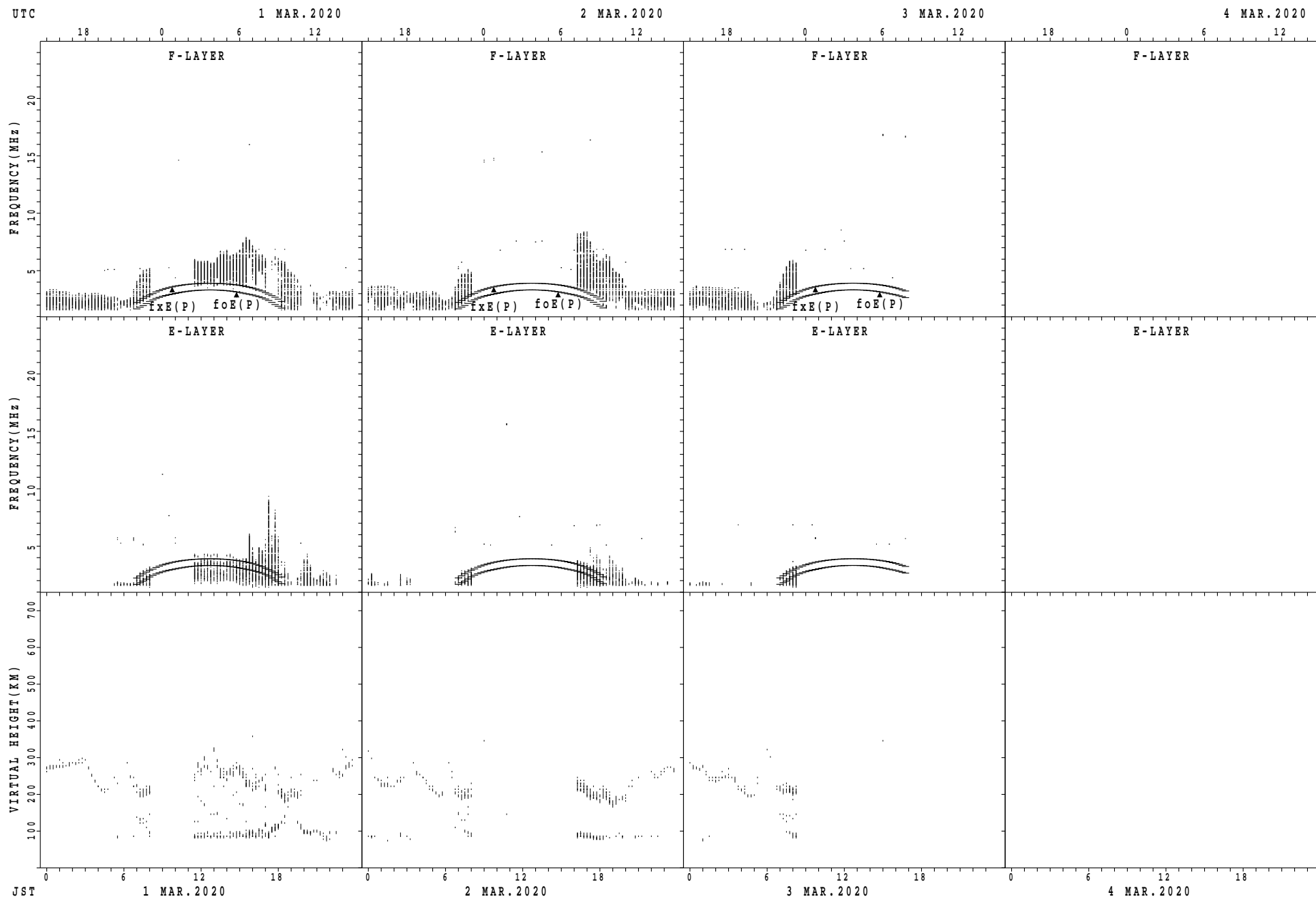
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



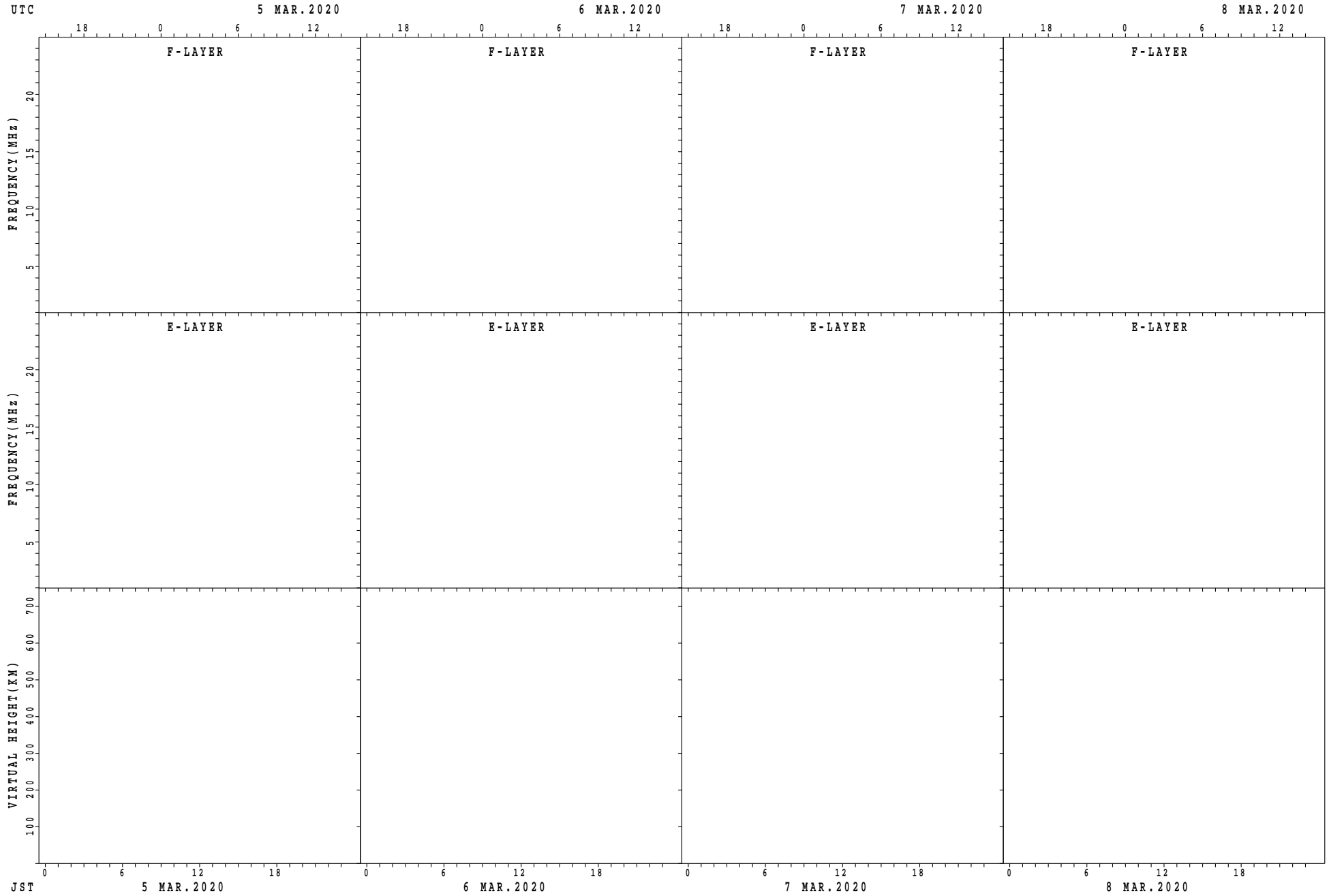
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



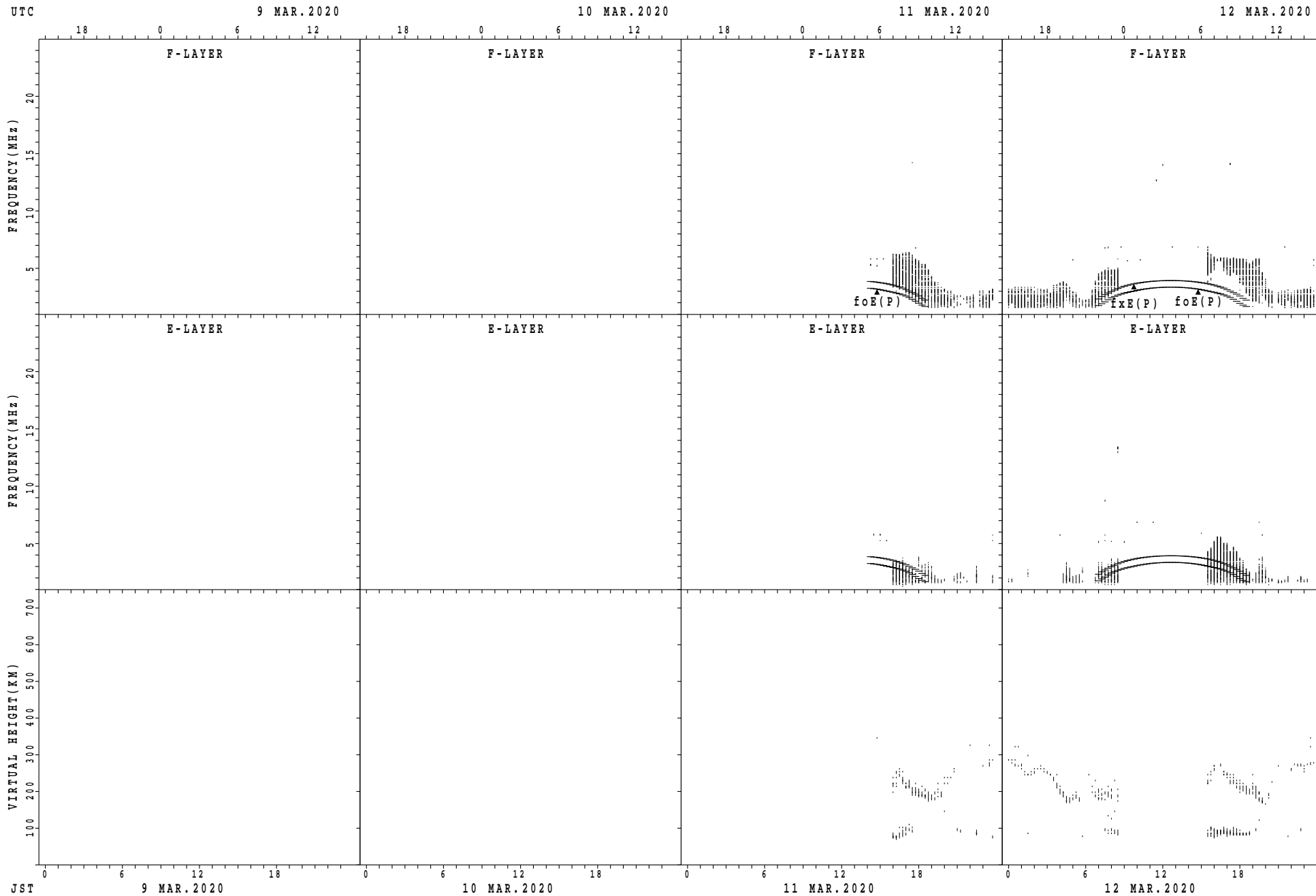
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



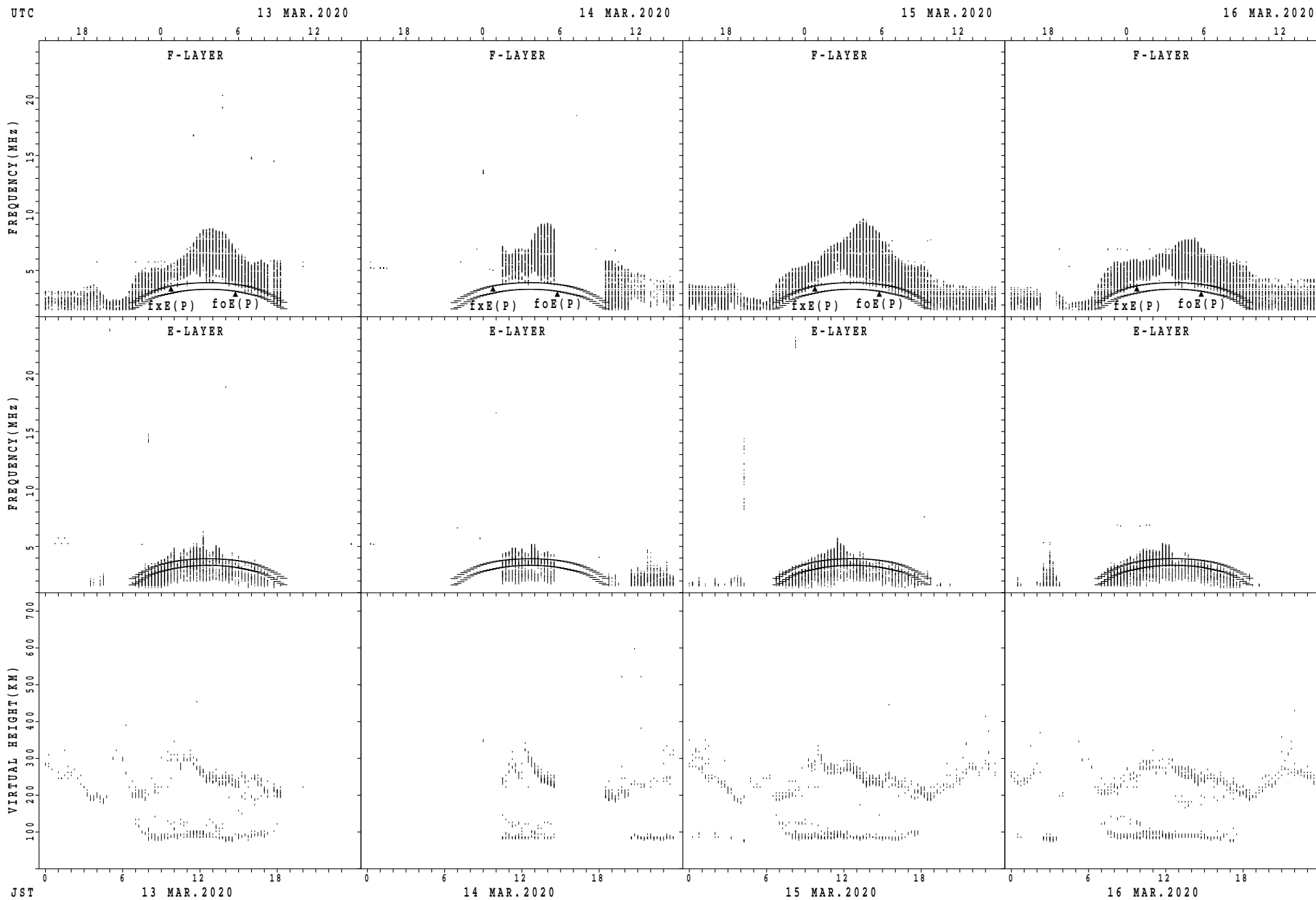
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



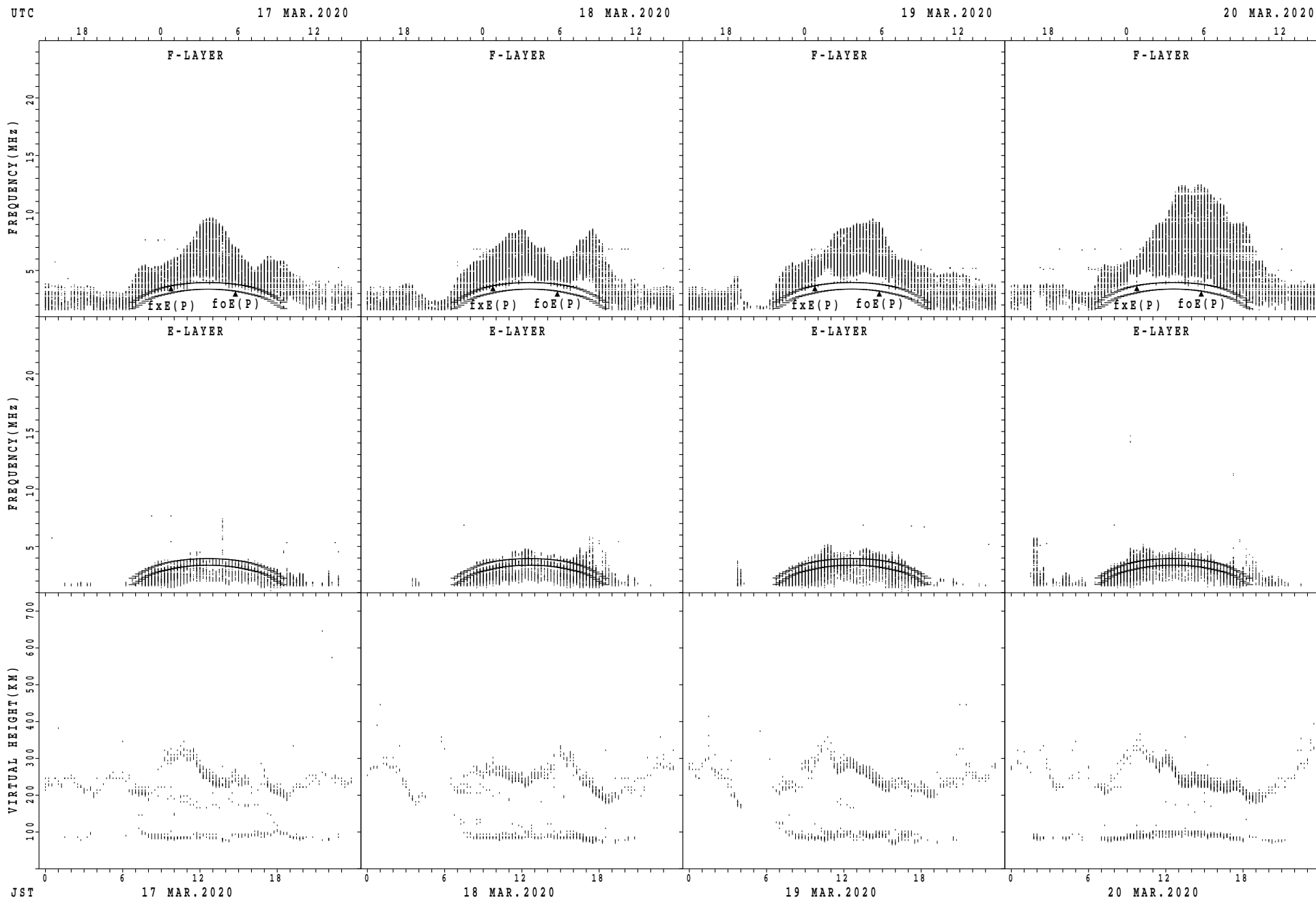
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



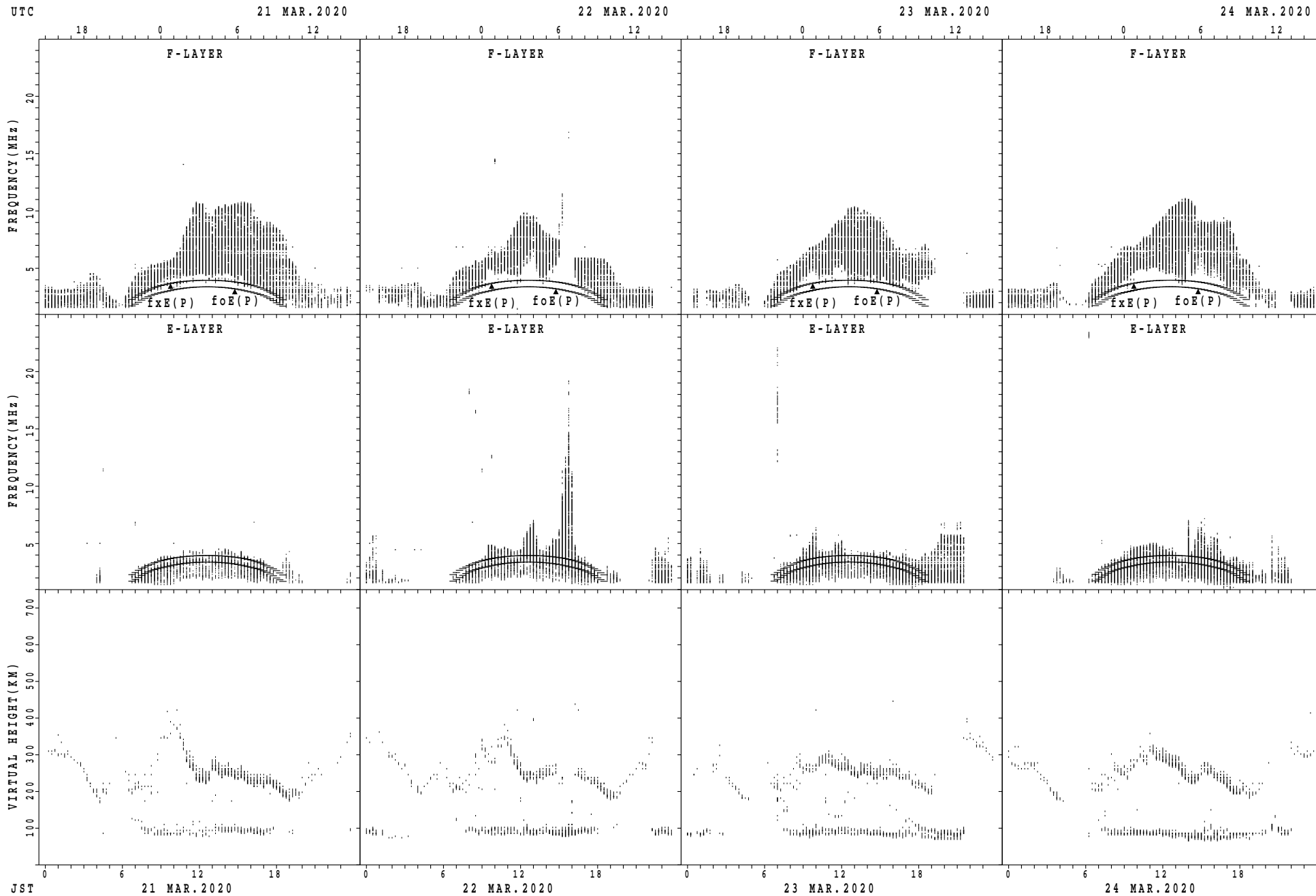
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



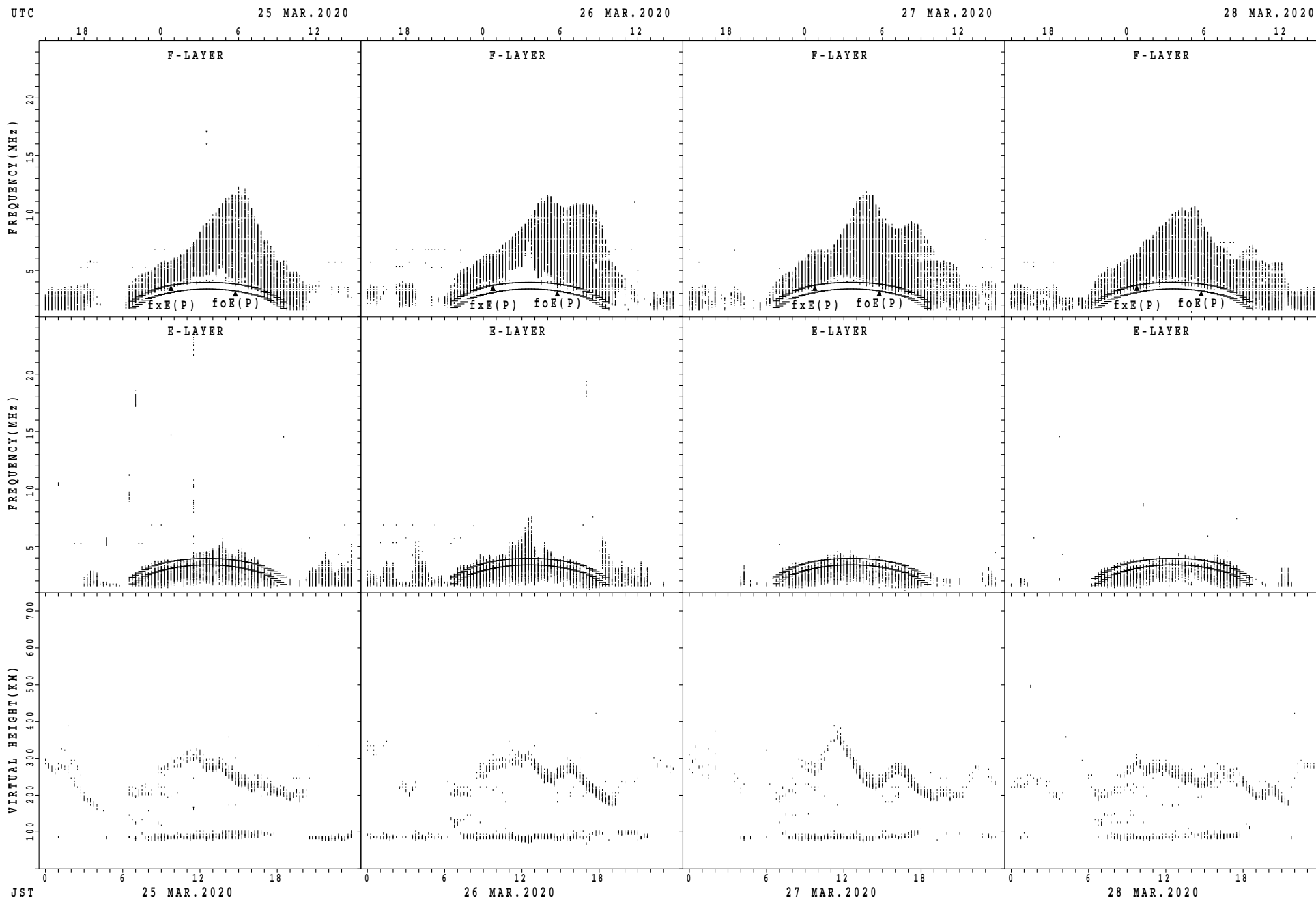
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



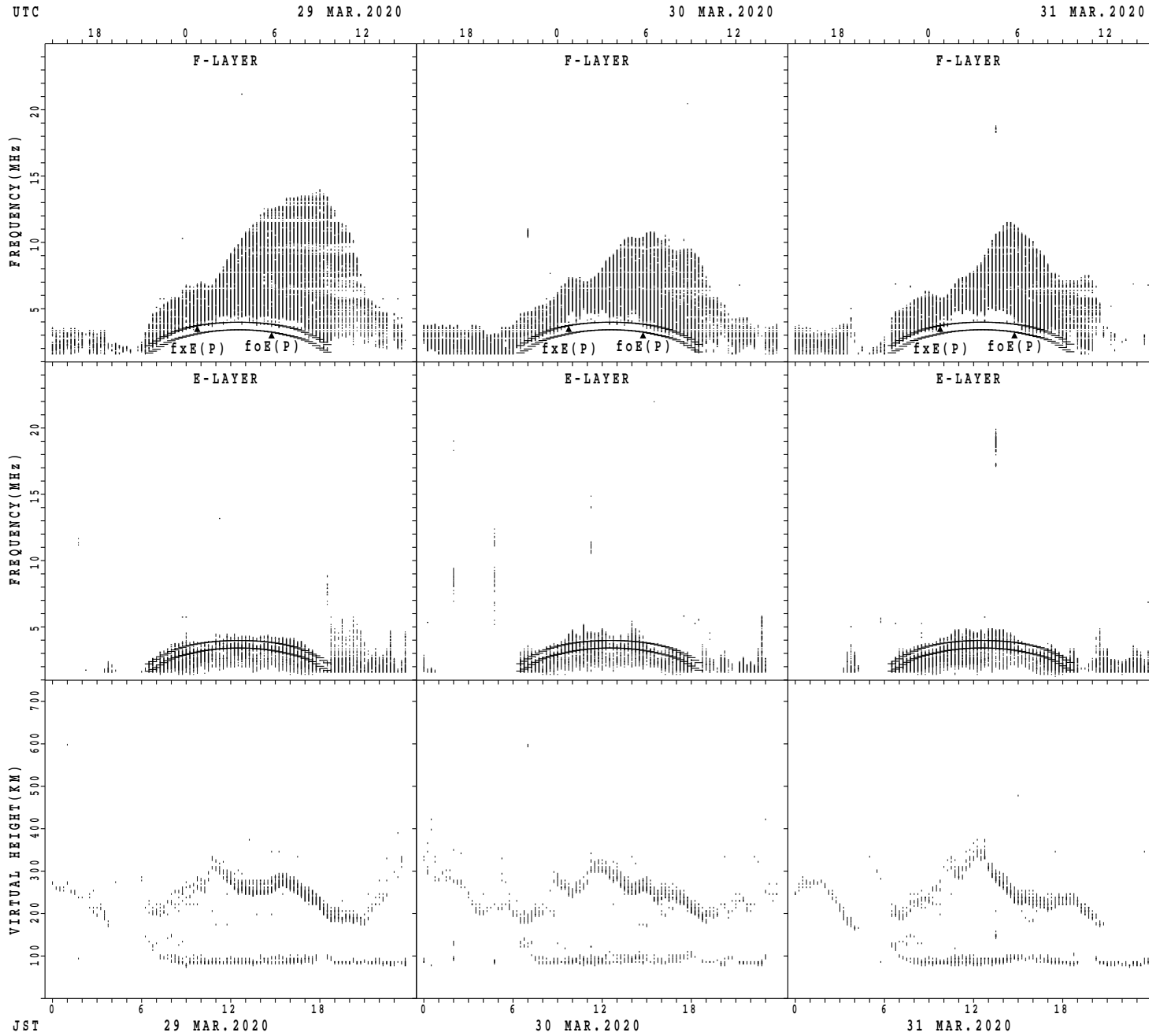
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es
 MAR. 2020 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	1							3								
MED								248	218							240								
U Q								124	109							250								
L Q								124	109							232								

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	18	16	20	18	12	28	31	31	31	31	31	31	31	31	31	31	27	21	22	18	18	15	16
MED	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	96	98	98	98	98
U Q	98	98	98	98	98	98	134	100	100	98	100	100	100	100	100	100	100	98	98	98	98	98	98	98
L Q	96	96	97	96	96	97	97	98	98	98	98	98	98	98	98	98	98	98	98	96	96	96	96	98

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							5	7		2					
MED									274							250	240		221					
U Q									137							285	258		222					
L Q									137							244	232		220					

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	8	7	10	6	5	5	13	31	31	31	31	30	28	26	29	29	31	27	19	20	16	16	12	9
MED	98	98	98	98	98	98	131	98	100	100	98	98	98	98	98	98	98	98	98	98	98	98	98	98
U Q	98	98	98	98	135	98	149	100	102	100	100	100	99	98	98	100	100	98	98	98	98	98	98	99
L Q	97	98	96	96	92	98	112	98	98	98	98	96	96	96	96	96	98	98	98	97	98	97	97	97

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																	12	7	6					
MED																	251	256	218					
U Q																	262	266	220					
L Q																	242	232	214					

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	9	13	13	10	16	14	9	31	31	31	31	31	31	31	31	31	31	31	28	24	19	18	16	12
MED	98	98	98	96	98	98	96	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98
U Q	98	98	98	98	98	98	97	98	102	102	100	98	98	98	98	100	100	100	98	98	98	98	98	98
L Q	98	96	96	96	97	96	95	98	98	96	98	98	96	96	96	96	96	98	98	94	96	96	97	96

MONTHLY MEDIANS OF h'F AND h'Es
 MAR. 2020 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										5							6	11	7	3	2	1		
MED									268								231	234	214	212	217	210		
U Q									326								242	238	220	224	218	105		
L Q									250								220	220	206	208	216	105		

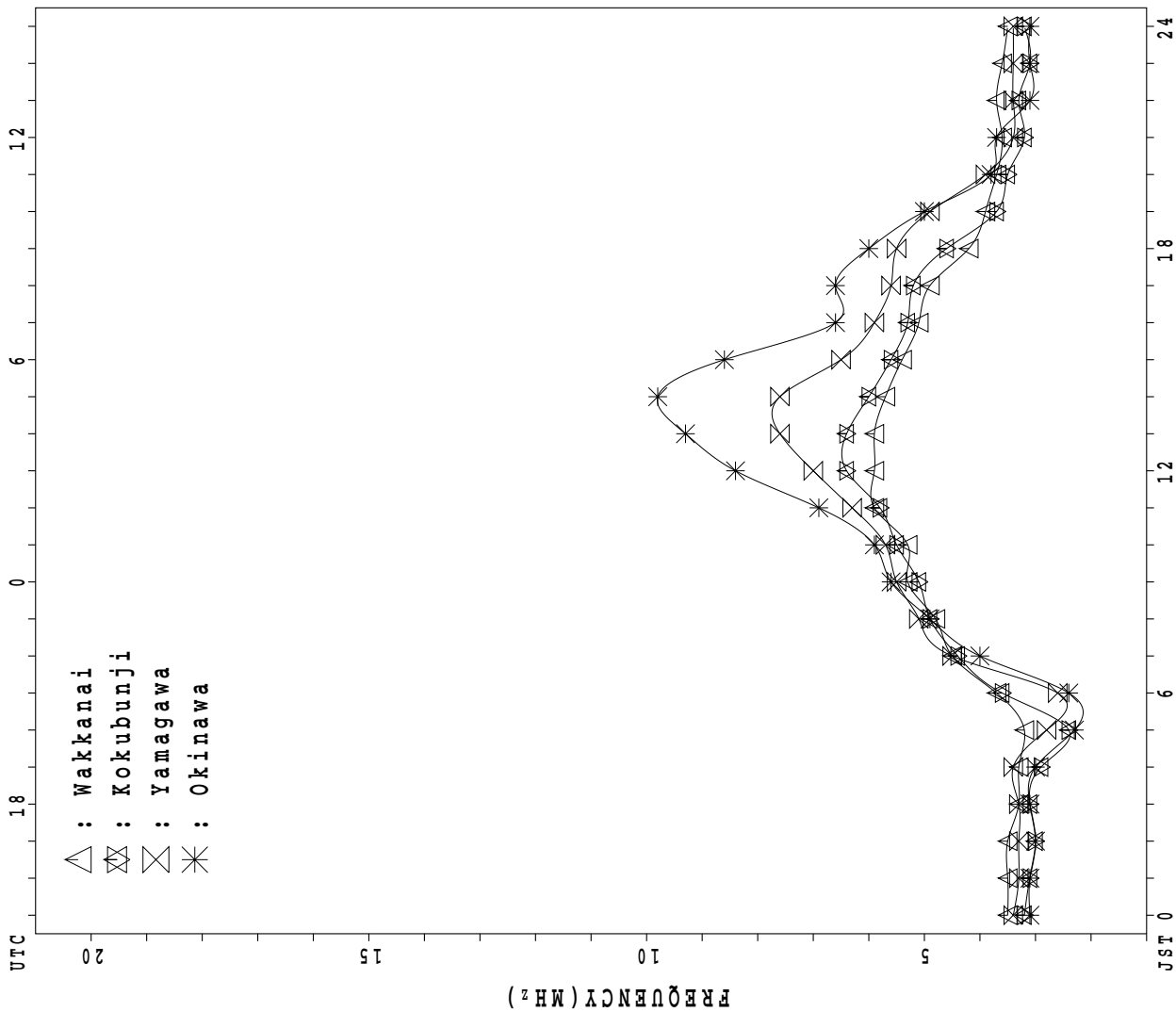
h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	6	7	8	9	6	4	22	22	18	18	19	20	20	20	19	21	22	21	15	14	16	14	11
MED	97	98	98	98	98	97	98	98	98	98	98	98	98	98	97	98	98	98	98	98	98	98	98	98
U Q	98	98	98	98	170	98	98	131	102	98	98	98	98	98	98	100	100	98	98	98	98	98	98	98
L Q	96	96	94	94	97	96	97	98	98	96	96	96	96	96	94	96	96	96	98	96	98	97	96	98

MONTHLY MEDIANS PLOT OF fOF2

MAR. 2020

AUTOMATIC SCALING



- △ : Wakkanai
- : Kokubunji
- ◇ : Yamagawa
- * : Okinawa

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

MAR. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

MAR. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								L	L	L	L	L	A		L	L	A								
2										L	L	L	L	392	L	L									
3								L	L		L	L	L	L	L	L	L								
4										376	L	L	L	L	L	L	L								
5										L	L	L	L	416	392		L	L	L						
6								L	L	L	L	L	L	L	396	360	L								
7								L	L	L	L	L	L	L	L	L	L								
8									L	L	L	L	L	L	L	360	L								
9									364	L	L	L	L	L	L	L	L								
10								L	L	L	L	L	L	L	L	L	L								
11										L	L	L	L	396		L	L	L							
12										L	L	L	L	L	408		L	L							
13									392	L	L	L	L	404	L	376	L								
14									L	380	392	L	L	L	396		L	L							
15								L	L	L	L	L	L	L	384		L	L							
16									L	L	L	L	L	L	416	268	L	L							
17									L	L	404	L	412	L	L	L	L								
18									L	404	L	L	L	412	L	L	L								
19								L	L	L	424	L	L	L	L	L	L								
20								L	372	L	H	L	L	L	404	376	L								
21								L		L	400	L	L	L	L	272	L								
22								L	L	L	L	L	L	L	404	L	L								
23								L	L	392	L	L	L	L	L	L	L								
24								L	L	L	416	416	L	416	412	388	L								
25									352	L	432	420	L	424	408	L	L								
26									L	404	432	L	L	L	408	384	L								
27									L	L	416	L	416	416	416	L	L	L							
28									L	404	404	L	L	L	L	L	L	L							
29									L	404	L	L	L	L	408	L	L								
30									L	L	L	L	L	L	416	408	L	L							
31								L	L	L	L	L	L	L	L	388	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	8	11	6	3	11	14	9	1								
MED									368	398	416	416	416	416	408	376	308								
U Q									382	404	424	420	416	416	408	386									
L Q									358	378	404	416	412	400	396	316									

MAR. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B 172	232	256	276	292	288	288	272	A 244	220		A 228							
2							B 196	240	272	292	220	308	272		A 204	A 164			B						
3							196	204	244	276	288	292	292	292	272	256	208	184		B					
4							B 212	260	284	288	296	296	288	276	256	212			B	B					
5						184	A 188	252	292	296	288	308	300	276	248	208	188			A					
6						B 188	A 244	272	256	296	308	288	288	252	252	232				A					
7						B 192	B 228	264	284	300	304	304	276	252	240	184				A					
8						B 208	B 196	248	296	296	308	312	304	288	252	200	200			B					
9						B 204	B 240	272	312	312	292	292	276	272	248	180				B					
10						B 192	B 252	276	296	296	276	300	292	264	228	192				A					
11						B 192	B 196	244	276	280	264	308	308	308	256	228	184			A					
12						B 208	B 260	288	296	296	308	292	292	264	224	180				B					
13						B 188	B 204	248	264	260	300	308	296	276	264	216	168			B					
14						B 176	B 220	228	272	288	272	292	292	292	256	236	192			A					
15						B 236	B 268	276	264	292	316	300	280	252	228	200				B					
16						B 176	B 216	244	288	288		A 296	292	284	284	236				A					
17						B 204	B 204	240	268	284	292	292	292	280	260	228	180			B					
18						B 220	B 212	236	276	288	304	304	300	288	260	228	176			B					
19						B 172	B 220	244	280	296	296	304	300	U R 284	272	240			A	B					
20						B 192	B 208	256	276	280	316	316	304	304	276	236	196			A					
21						A 196	B 196	256	280	288	288	276	272	288	268	240	184			A					
22						B 176	B 240	264	304	304	308	284	312	304	268	232	208			B					
23						B 192	B 228	252	260	268	320	308	292	292	272	236	172			B					
24						B 228	B 248	292	300	316		A 316	A 304		288	256	252	232		A					
25						B 216	B 228	280	292	292	316	304	304	276	276	236	192			A					
26						B 240	B 240	272	284	320		A 316	304	304	272	236	220			B					
27						B 168	B 244	288	300	316	316	308	308	292	260	236	208			A					
28						B 232	B 244	284	284	308	316	316	312	296	272	232	208			A	A				
29						B 188	B 240	268	312	296	304	320	320	288	276	240	184			A	A				
30						196	B 176	224	268	284	304	304	292	304	304	268	248	212		A	A				
31						B 188	B 244	268	284	308	308	308	300	276	276	236	208			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						2	20	31	31	31	31	29	30	30	30	30	31	27	1						
MED					190	192	212	252	280	292	300	306	300	288	264	236	192	228							
U Q						206	228	268	288	300	310	308	304	292	272	240	208								
L Q						176	196	244	272	284	292	292	292	276	256	224	180								

MAR. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 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	25	21	21	E B 16	20	E B 16	38	22	28	30	30	43	J A 70	J A 51	36	28	J A 51	J A 56	G 22	19	20	31	J A 53	J A 65	
2	34	92	59	28	26	26	22	J A 50	28	32	34	40	34	32	J A 69	J A 27	24	20	24	25	25	22	59	21	
3	J A 19	22	20	E B 16	E B 16	21	G	22	35	38	J A 33	33	34	34	30	29	25	J A 25	J A 27	J A 24	E B 16	E B 16	31	19	
4	E B 15	27	E B 16	E B 16	E B 28	E B 16	E B 16	22	J A 101	36	34	35	34	35	35	J A 40	J A 29	J A 20	E B 26	J A 18	J A 18	26	20	32	34
5	34	33	J A 32	21	J A 23	20	J A 20	22	36	34	35	32	J A 44	37	30	30	25	J A 19	J A 28	J A 23	26	19	22	25	
6	E B 16	25	21	21	23	E B 16	J A 63	24	28	33	36	37	35	34	32	29	27	J A 32	J A 26	J A 27	E B 16	E B 16	E B 16	E B 16	
7	E B 16	E B 16	E B 16	E B 16	E B 16	J A 32	E B 16	23	J A 99	36	34	34	34	33	32	28	26	J A 52	J A 27	J A 27	20	16	E B 16	E B 16	
8	J A 19	85	19	26	J A 26	E B 16	J A 34	28	30	J A 50	J A 86	36	34	G	31	28	24	J A 30	26	20	22	E B 16	E B 16	21	
9	E B 16	20	24	20	E B 16	E B 16	J A 25	25	31	32	33	37	J A 34	84	31	J A 35	26	21	E B 16	20	24	20	E B 16	26	
10	23	20	20	J A 31	J A 94	18	18	24	32	33	J A 106	J A 34	J A 37	J A 109	34	J A 29	26	J A 26	25	28	22	23	J A 26	25	
11	J A 32	21	21	22	22	J A 61	23	J A 28	J A 31	J A 37	39	39	35	J A 32	40	38	J A 27	G	20	20	18	E B 19	26	26	
12	E B 16	E B 16	20	25	20	19	E B 17	J A 29	32	34	36	32	J A 34	J A 95	51	30	26	22	22	16	E B 16	20	21	29	
13	E B 16	23	E B 16	19	18	E B 16	J A 25	J A 80	32	33	42	33	31	J A 34	31	27	24	22	E B 16	20	E B 16	21	23	22	
14	26	27	20	19	20	E B 16	G	27	32	34	36	J A 36	J A 38	J A 119	31	29	26	26	29	25	22	E B 16	E B 16	21	
15	J A 28	23	26	20	22	E B 16	J A 52	26	J A 31	33	44	J A 37	39	36	37	29	26	J A 29	J A 16	E B 16	16	19	20	E B 16	
16	22	18	20	20	E B 16	E B 16	18	27	30	34	34	J A 30	33	31	32	G	G	J A 17	J A 16	E B 16	E B 16	E B 16	E B 16	E B 16	
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	28	34	31	33	33	J A 86	32	33	33	30	25	20	E B 16	E B 16	E B 16	E B 32	E B 16	20	
18	21	E B 16	E B 16	E B 16	E B 16	E B 16	J A 24	124	28	33	33	34	33	33	34	26	28	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	
19	32	E B 16	E B 16	E B 16	E B 16	E B 16	19	26	29	33	35	36	37	34	29	G	J A 31	J A 24	J A 47	E B 16	J A 25	E B 16	E B 16	E B 16	
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	J A 28	30	34	J A 57	J A 44	43	40	33	G	J A 30	J A 23	J A 25	J A 22	19	E B 15	E B 16	24	
21	E B 16	20	20	J A 22	20	21	J A 27	28	33	34	38	J A 122	J A 34	J A 34	J A 31	J A 62	G	21	39	J A 38	28	25	19	19	
22	J A 26	39	27	21	J A 27	E B 16	26	J A 31	J A 31	51	34	36	33	40	39	30	24	J A 21	J A 14	E B 23	26	J A 41	E B 25	E B 16	
23	E B 16	18	20	25	20	E B 16	G	25	28	30	34	38	35	35	31	28	G	20	E B 16	J A 21	E B 16	21	18	16	
24	E B 16	J A 61	E B 16	26	E B 16	E B 16	J A 22	26	30	38	45	40	J A 35	J A 34	J A 39	35	J A 31	J A 24	J A 26	J A 26	23	18	E B 16	E B 16	
25	E B 16	E B 16	19	E B 16	E B 16	E B 16	28	27	28	33	J A 32	J A 37	J A 32	J A 75	J A 53	19	G	G	G	23	31	28	21	E B 16	19
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	32	31	35	J A 51	42	J A 32	39	36	36	J A 28	J A 26	J A 27	J A 16	E B 16	22	E B 16	E B 16	E B 16	
27	E B 16	E B 16	E B 16	E B 19	E B 16	E B 16	21	27	G	31	35	33	32	35	33	35	J A 32	J A 27	J A 35	J A 29	J A 28	20	E B 16	E B 16	
28	E B 16	C E 16	E B 16	33	19	J A 20	30	29	31	32	32	33	34	37	32	J A 29	J A 30	J A 26	J A 27	J A 20	20	32	32	22	
29	E B 16	E B 16	E B 16	26	18	E B 16	24	28	30	34	34	35	J A 82	37	J A 39	27	28	23	20	24	18	E B 16	E B 16	E B 16	
30	21	E B 16	E B 16	E B 16	E B 16	E B 16	G	25	30	33	33	35	37	34	36	G	30	J A 26	J A 22	J A 29	J A 25	E B 15	E B 16	E B 16	
31	E B 16	E B 16	E B 16	E B 17	31	E B 16	22	26	31	32	36	36	36	33	30	G	27	27	22	E B 16	E B 16	J A 26	20	21	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	20	19	20	19	E B 16	23	27	31	33	35	36	34	35	33	29	26	J A 22	23	22	20	19	E B 16	19	
U Q	25	25	21	25	23	19	28	J A 29	32	36	J A 39	38	37	J A 40	37	G	G	J A 27	27	25	25	21	25	24	
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	25	29	33	34	33	34	33	31	28	25	20	E B 16	E B 18	E B 16	E B 16	E B 16	E B 16	

MAR. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E 16	E 17	E 16	E 16	E 16	E 16	E 16	21	27	29	29	35	E 50	A 34	A 34	28	A 51	21	E 16	E 16	E 16	E 16	30	18
2	E 20	A 92	A 20	E 16	E 16	E 16	E 16	23	27	30	32	32	34	30	30	24	22	19	E 16	E 16	E 16	E 16	E 16	E 16
3	E 16	E 16	E 16	E 16	E 16	E 16		G 20	G 24	G 28	G 28	31	32	32	28	27	24	G 18	E 16	E 16	E 16	E 16	E 16	E 16
4	E 15	E 16	E 16	E 16	E 16	E 16	E 16	G 20	G 26	G 26	31	33	32	31	31	30	25	E 20	E 16	E 16	E 16	E 16	E 16	E 16
5	19	18	E 16	E 16	E 16	E 16	E 16	21	G 24	30	31	30	G 31	G 32	G 27	26	22	G 18	E 16	E 16	E 16	E 16	E 16	E 16
6	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	27	31	32	34	34	31	31	26	G 25	G 21	E 21	E 16	E 16	E 16	E 16	E 16
7	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	28	32	31	32	32	31	31	27	G 23	19	E 17	E 16	E 16	E 16	E 16	E 16
8	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	28	32	31	36	32		G 29	27	21	G 19	E 16	E 16	E 16	E 16	E 16	E 16
9	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	28	31	G 31	37	33	30	30	27	G 25	G 18	E 16	E 16	E 16	E 16	E 16	E 16
10	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 22	29	29	30	33	31	30	30	26	G 22	G 18	E 16	E 16	E 16	E 16	E 16	E 16
11	16	E 16	E 16	E 16	E 16	E 16	E 16	24	28	29	29	32	33	G 29	G 29	27	G 22		E 16	E 16	E 16	E 16	E 16	E 16
12	E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	24	29	32	34	32	32	30	33	28	25	19	E 16	E 16	E 16	E 16	E 16
13	E 16	E 17	E 16	E 16	E 16	E 16	E 16	G 19	24	28	30	34	30	29	30	30	27	24	22	E 16	E 16	E 16	E 16	E 16
14	E 16	E 16	E 16	E 16	E 16	E 16	E 16		24	26	31	32	34	36	32	30	27	G 23	20	20	E 17	E 16	E 16	E 16
15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 18	G 24	G 27	29	31	36	35	G 29	G 28	24	G 24	G 19	E 16	E 16	E 16	E 16	E 16
16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G 17	25	27	29	33	29	30	30	30		G 17	G 17	E 16	E 16	E 16	E 16	E 16
17	E 16	E 16	E 16	E 16	E 16	E 15	E 18	G 24	30	31	32	32	32	32	31	28	G 22	G 19	E 16	E 16	E 16	E 16	E 16	E 16
18	E 16	E 16	E 16	E 16	E 16	E 16	E 20	G 24	28	31	31	32	32	31	27	25	G 22	G 16	E 16	E 16	E 16	E 16	E 16	E 16
19	E 16	E 16	E 16	E 16	E 16	E 16	E 18	G 22	23	30	32	32	33	32	28	27	G 22	G 20	E 16	E 16	E 16	E 16	E 16	E 16
20	E 16	E 16	E 16	E 16	E 16	E 16	E G	25	26	31	31	32	32	32	31		G 23	G 17	G 17	E 17	E 16	E 16	E 16	E 16
21	E 16	E 17	E 17	E 17	E 17	E 17	E 16	G 22	27	29	33	34	32	30	28	21	G 20	G 17	G 22	E 16	E 16	E 16	E 16	E 16
22	E 16	18	16	E 16	E 17	E 16	E 16	G 24	G 28	G 28	31	35	33	G 30	G 30	26	G 23	G 19	G 14	E 18	E 16	E 17	E 17	E 16
23	E 16	E 16	E 16	E 16	E 16	E 16	E G	25	26	28	32	G 32	31	31	29	27	G 19	G 16	E 16	E 16	E 16	E 16	E 16	E 16
24	E 16	E 16	E 16	E 16	E 16	E 16	E 20	G 24	G 28	30	30	33	30	33	29	26	G 25	G 20	G 18	E 16	E 16	E 16	E 16	E 16
25	E 16	E 16	E 16	E 16	E 16	E 16	E 22	G 26	G 28	30	30	32	30	32	31	19	G 17	G 17	G 17	E 17	E 16	E 16	E 16	E 16
26	E 16	E 16	E 16	E 16	E 16	E 16	E 23	G 30	G 30	33	32	G 32	G 32	34	31	26	G 26	G 22	G 16	E 16	E 16	E 16	E 16	E 16
27	E 16	E 16	E 16	E 16	E 16	E 16	E 19	G 26	G 26	32	31	G 30	G 34	G 31	26	25	G 19	G 19	G 18	E 16	E 16	E 16	E 16	E 16
28	E 16	C 16	E 16	E 16	E 16	E 16	E 22	G 27	G 28	29	30	G 30	G 30	G 30	32	27	G 24	G 19	G 16	E 16	E 16	E 16	E 16	E 16
29	E 16	E 16	E 16	E 16	E 16	E 16	E 22	G 27	G 28	32	32	34	34	32	31	27	G 26	G 22	G 16	E 16	E 16	E 16	E 16	E 16
30	E 16	E 16	E 16	E 16	E 16	E 16	E 22	G 28	G 30	32	33	35	32	34		28	G 24	G 21	G 18	E 16	E 16	E 15	E 16	E 16
31	E 16	E 16	E 16	E 17	E 16	E 16	E 20	G 21	G 28	30	33	32	32	32	29	27	G 24	G 20	G 16	E 16	E 16	E 17	E 16	E 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 18	G 24		30	31	32	32	31	30	27	G 24	G 19	E 16	E 16	E 16	E 16	E 16	E 16
U Q	E 16	E 16	E 16	E 16	E 16	E 16	E 22	G 25	G 28	31	32	34	33	32	31	27	G 21	G 17	E 16	E 16	E 16	E 16	E 16	E 16
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 22	G 27	G 29	31	32	G 31	G 30	G 29	G 26	22	G 19	G 16	E 16	E 16	E 16	E 16	E 16	E 16

MAR. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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

MAR. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	321	311	319	313	336	356	364	367	381	370	340	361	229	378	351	369	A	383	340	339	348	318	319	315
2	320	A	315	295 ^F	328	327	337	397	377	355	330	347	361	354	367	371	366	383	351	318	348	324	326	324
3	320	320	304	311	318	370	352	387	382	380	374	327	361	367	377	361	364	384	357	328	328	339	316	311
4	325	326	326	326	355	335	356	390	367	365	346	347	355	335	374	374	369	380	377	345	332	336	338	320
5	321	321	321	316	316	296	351	390	395	356	323	340	368	346	370	358	356	384	366	320	327	328	328	323
6	323	315	315	298	359	370	352	381	370	379	347	311	340	326	366	388	335	386	378	339	310	311	320	306
7	306	306	338	319	328	367	379	387	360	393	378	328	361	385	358	355	359	382	347	320	345	328	316	325
8	323	317	324	324	333	341	353	395	376	358	370	379	352	345	363	367	360	371	358	334	315	326	326	330
9	337	323	321	335	333	348	373	381	364	346	362	349	322	334	367	333	333	364	348	374	350	327	319	313
10	336	324	324	324	327	364	364	380	375	363	346	342	351	351	363	339	358	377	363	356	354	337	328	313
11	320	306	338	335	335	336	386	386	373	357	349	356	341	365	358	333	371	391	345	346	346	328	322	323
12	323	327	324	340	332	371	381	400	384	367	358	325	363	343	366	344	392	357	342	358	340	320	320	320
13	300	304	327	329	347	322	381	382	332	374	356	372	331	365	374	351	354	357	367	360	346	324	324	296
14	317	317	339	329	329	310	390	374	381	360	333	333	330	341	352	365	364	358	367	333	332	333	326	316
15	339	330	351	325	370	356	371	371	368	375	341	367	355	336	371	359	371	392	345	346	328	320	320	330
16	331	331	332	325	364	349	375	380	373	369	349	337	343	351	352	358	369	368	366	332	320	322	316	324
17	326	332	328	329	353	293	362	373	376	323	386	370	298	345	356	357	362	347	329	322	317	319	339	326
18	336	325	329	308	324	345	375	366	345	348	349	362	346	349	349	361	362	361	359	339	323	323	332	328
19	331	316 ^F	312	336	320	333	371	364	325	329	309	358	346	313	353	360	340	360	350	315	302	307	296	310 ^F
20	315 ^F	320 ^F	292 ^F	312 ^F	339 ^F	324 ^F	378	359	365	334	343	344	360	342	358	352	367	356	342	324	325	298	287 ^F	305 ^F
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	30	30	27	28	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	29	30	30
MED	322	318	324	325	333	340	373	377	368	356	347	347	346	346	356	358	361	368	354	333	328	322	320	319
U Q	328	326	329	335	355	356	385	387	376	367	357	356	359	354	366	362	366	383	366	345	340	328	328	324
L Q	317	312	318	312	326	329	356	365	358	341	333	333	330	339	351	352	356	357	344	322	315	314	312	310

MAR. 2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	L	A		L	L	A							
2										L	L	L		378	L	L								
3								L	L		L			392	L	L	411							
4									L	419	L	L			L	L	L							
5										406	L	L			L	L	L							
6										L	L	L	L		L	L	L							
7								L	L	L	L	L	L		L	L	L							
8									L	L	L	L	L		L	L	380							
9										L	L	L	L		L	L	L							
10								L	L	L	L			L	L	L	L							
11										L	L	L	L		L	L	L							
12										L	L	L	L		L	L	L							
13										L	L	L	L		L	L	L							
14										L	L	L	L		L	L	L							
15								L	L	L	L	L	L		L	L	L							
16										L	L	L	L		L	L	L							
17										L	L	L	L		L	L	L							
18										L	L	L	L		L	L	L							
19								L	L	L	L	L	L		L	L	L							
20								L	L	L	L	L	L		L	L	L							
21										L	L	L	L		L	L	L							
22								L	L	L	L	L	L		L	L	L							
23								L	L	L	L	L	L		L	L	L							
24								L	L	L	L	L	L		L	L	L							
25										L	L	L	L		L	L	L							
26										L	L	L	L		L	L	L							
27										L	L	L	L		L	L	L							
28										L	L	L	L		L	L	L							
29										L	L	L	L		L	L	L							
30										L	L	L	L		L	L	L							
31								L	L	L	L	L	L		L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	8	11	7	3	11	15	9	1							
MED									397	382	382	384	404	382	382	386	411							
U Q									404	400	395	392	405	395	389	400								
L Q									396	377	369	372	375	376	375	378								

MAR. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								228	228	236	300	268	A	240	254	234	A								
2									226	242	268	272	254	254	242	232	232								
3								214	228	240	238	276	268	248	234	236	226								
4									248	286	254	264	270	244	236	236									
5									256	312	260	252	260	238	248	234	214								
6								220	216	234	248	334	256	300	252	228	246								
7								214	242	228	248	282	234	236	256	230	230								
8									238	262	246	246	274	266	250	252	238								
9									238	256	244	278	312	292	248	252	238								
10								220	218	238	282	270	258	250	242	264	234								
11									232	264	272	262	254	242	248	240									
12									244	254	284	264	258	252	266	226									
13									296	244	260	254	284	264	258	262	248								
14									224	250	310	266	276	284	274	256	238								
15								252	228	248	302	246	264	308	260	250	238								
16									238	256	274	292	274	274	276	252	252	218							
17									246	264	244	264	352	278	264	264	244								
18									256	282	288	262	278	278	254	252	236								
19							210		296	332	362	256	274	318	278	262	258								
20								246	256	278	274	286	266	290	266	258	254								
21							234		310	258	296	260	266	276	254										
22								226	248	244	276	332	288	264	296	262	240	230							
23								258	244	282	278	270	274	260	274	238	242								
24								246	226	270	256	256	298	266	272	240	240								
25									246	308	264	314	272	260	250	242	244								
26									254	280	318	254	264	260	270	262	250								
27									246	250	282	282	262	266	286	292	254	254							
28									260	250	276	276	290	282	268	258	256	232							
29									252	302	272	262	260	278	268	250	250								
30									288	294	308	300	276	260	282	268	260								
31								250	230	396	318	344	298	326	266	256	246	230							
	00	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	11	26	31	31	31	30	31	31	31	29	5							
MED							226	246	243	256	274	272	267	266	260	252	240	230							
U Q							234	250	254	282	302	286	276	284	272	262	250	243							
L Q							210	220	228	244	256	260	262	260	250	240	235	216							

MAR. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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	272	270	264	260	236	212	208	198	218	190	196	248	A	216	222	210	A	210	212	226	212	258	A	A	228
2	A	A	268	262	262	230	214	204	192	196	200	200	200	200	196	200	194	198	210	246	222	246	232	270	
3	266	254	266	268	240	208	232	196	190	184	164	190	186	198	198	186	212	208	200	214	238	230	272	260	
4	238	254	254	232	206	230	216	212	216	196	194	214	186	188	220	208	202	214	196	230	230	230	280	254	
5	264	276	276	272	266	288	242	196	210	228	204	188	194	204	204	202	198	198	202	246	246	246	256	256	
6	268	280	276	250 ^Q	232	212	212	176	180	196	194	202	210	196	212	184	198	214	214	222	222	258	238	268	
7	260	244	264	228	224	192	196	176	202	202	202	204	204	190	190	172	200	208	210	240	210	222	E B	252	
8	252	252	252	256	230	210	206	206	206	204	190	186	200	206	186	196	188	220	208	234	234	234	248	248	
9	242	246	228	236	228	216	210	210	194	194	194	202	202	194	194	174	198	230	210	198	198	224	260	242	
10	242	252	264	246	252	210	200	166	196	196	196	212	180	202	208	194	204	214	212	202	214	E B	218	250	
11	250	250	250	230	216	214	198	202	214	194	186	192	202	186	198	194	194	214	206	216	218	240	240	252	
12	252	252	242	256	248	198	198	202	218	196	196	188	188	200	200	194	216	234	198	212	226	226	260	260	
13	256 ^Q	256 ^Q	238 ^Q	248	248	246 ^Q	204	210	210	208	208	186	192	196	196	196	218	218	204	220	234	250	252 ^Q	240 ^Q	
14	250 ^Q	250 ^Q	220	230	232	226 ^Q	212	212	180	190	184	212	226	208	214	198	204	220	212	216	216	228	256	248	
15	248	248	244	232	208	196	202	204	200	198	198	198	188	176	192	192	202	202	218	212	232	242	246	260	
16	246	246	226	214	204	206	206	216	202	202	204	198	192	192	196	198	198	192	216	234	260	238	266	240	
17	244	244	244	236	222	238	228	228	206	198	204	178	196	188	194	206	196	226	236	236	234	234	232	232	
18	222	238	250	250	240	214	212	220	208	214	200	200	188	204	202	198	202	226	210	232	238	238	228	246	
19	246	246	244	226	226	216	190	234	198	206	208	208	190	200	194	194	194	228	214	240	254	272	276	246	
20	240	234 ^Q	236 ^Q	224 ^Q	232	234	210	204	212	206	232	202	198	198	204	202	202	244	218	240	232	270	252	252	
21	252 ^Q	244 ^Q	244 ^Q	256 ^Q	232	188 ^Q	190	216	204	196	214	196	196	200	198	250	224	242	242	236	230	234	226	228	
22	248	248	256	244	236	228	212	208	196	206	200	200	208	216	208	196	196	220	228	240	276 ^Q	310	256	256	
23	214	248	256	248	258	246	238	196	196	196	210	204	198	196	192	198	222	218	220	240	250	276 ^Q	270	270	
24	230	252	258	226 ^Q	196	236	232	208	198	198	200	200	196	196	188	194	200	208	234	214	230	250	252	256	
25	254	248	248	220 ^Q	192	220	196	214	184	190	228	190	196	208	192	202	192	212	212	224	246	246	262	248	
26	236	236	236	204	214	230	212	232	208	200	188	188	188	174	190	200	212	236	232	214	226	240	228	228	
27	252	232	254	232	240	198 ^Q	198	208	194	206	200	182	178	204	202	198	212	208	226	222	228	238	250	260	
28	252	C	238	246	228	222	210	220	206	208	198	190	194	192	200	218	200	184	222	248	248	268	258	252	
29	246	240	216	202	204	246	218	218	218	208	202	190	194	192	196	204	206	252	234	234	228	228	244	256	
30	244	262	260	244	198	250	228	246	218	218	208	204	200	222	188	230	216	230	234	246	232 ^Q	248 ^Q	244 ^Q	232 ^Q	
31	232 ^Q	262 ^Q	240 ^Q	208	260 ^Q	244 ^Q	232	206	202	196	208	200	194	194	212	218	198	198	230	238	238 ^Q	242 ^Q	242 ^Q	250 ^Q	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	31	31	31	31	31	31	31	31	31	31	30	31	31	31	30	31	31	31	31	31	30	31	
MED	248	248	250	236	232	220	210	208	202	198	200	200	195	198	198	198	201	214	214	232	232	240	251	252	
U Q	252	254	260	250	240	236	218	216	210	206	208	204	200	204	204	204	212	228	228	240	238	250	260	256	
L Q	242	244	238	226	214	210	200	202	196	196	194	190	188	192	192	194	198	208	210	216	222	230	238	242	

MAR. 2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B											A							
								112	106	106	98	98	104	104	104	104	104		86						
2							B								A	A		106	104						
								88	106	106	106	106	106	106						B					
3								92	92	108	102	94	102	102	102	112	112	104							
							B												B						
4								104	108	108	108	108	108	108	108	108	108								
							A													A					
5						90		118	108	108	108	100	100	102	102	102	104	122							
						B		A												A					
6							B	116	114	114	114	114	114	110	110	100	110	108							
							B	B												A					
7								108	108	108	108	108	108	108	102	102	102	102							
							B													B					
8							B	94	114	106	106	106	106	106	106	106	106	116							
							B	B												B					
9								108	108	108	108	108	108	108	102	104	116	100							
							B	B												A					
10								106	106	106	106	106	106	106	106	106	106	102							
							B													A					
11							B	100	120	120	108	108	108	108	108	108	114	122							
							B	B												B					
12								114	104	100	96	96	96	102	102	100	100	112							
							B	B												B					
13								102	102	90	90	90	92	96	96	98	108	108							
							B													A					
14							B	94	108	108	98	94	94	94	104	104	104	104							
							B	B												B					
15								116	116	102	102	102	112	114	100	100	100	78							
							B	B				A							A						
16								100	100	104	104		106	104	104	104	102			B					
							B													B					
17							B	132	112	112	104	104	104	104	106	104	104	104	114						
							B													B					
18							B	100	100	100	100	100	100	100	100	100	100	112							
							B	B											A						
19								108	104	100	100	100	100	100	100	100	104			B					
							B													A					
20							B	108	100	100	100	100	100	100	102	102	102	104							
							A													A					
21								124	98	106	106	106	102	102	100	100	100	102	104						
							B													B					
22							B	112	104	104	108	98	104	102	102	102	102	108	108						
							B													B					
23							B	106	104	102	102	102	102	102	102	102	102	104							
							B	A					A	A						A					
24								98	98	104	104	104			104	104	104	84							
							B													A					
25							B	126	106	106	106	106	106	106	106	106	106	100							
							B					A								B					
26							B	126	102	114	98	98		98	100	100	96	96	110						
							B													A					
27							B	106	96	96	106	106	98	102	102	102	98	98	92						
							B													A					
28							B	100	102	94	102	102	102	102	96	104	104	104	100			84			
							B													A					
29							B	146	112	112	110	98	98	98	98	98	98	104	96			88			
							B													A					
30						88		104	104	104	104	104	104	96	94	94	106	94							
						B														B					
31							B	118	122	102	102	102	102	102	102	102	102	108							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT						2	17	31	31	31	31	29	30	30	30	30	31	27	1	2					
MED						89	106	106	106	104	104	102	102	102	102	102	104	104	86	86					
U Q							125	112	108	108	106	106	106	106	104	104	106	110							
L Q							100	100	102	102	98	100	100	100	100	100	102	100							

MAR. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2020 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	92	108	102	B	98	B	88	156	138	138	156	128	108	108	106	110	124	144	86	90	144	162	118	108
2	100	116	108	96	88	90	94	94	148	144	150	96	116	106	98	98	128	114	92	90	90	90	100	90
3	90	94	98	B	B	100	G	146	104	98	90	138	150	150	148	162	144	94	84	84	B	B	96	100
4	B	86	B	B	90	B	B	148	100	104	138	170	154	154	154	120	106	B	92	86	98	98	96	96
5	100	94	94	96	92	88	82	150	106	144	142	132	112	116	104	158	140	122	86	86	86	86	100	100
6	B	92	98	98	98	B	96	160	146	150	156	136	120	130	148	104	154	126	118	106	B	B	B	B
7	B	B	B	B	B	86	B	152	106	118	130	158	170	130	146	140	112	94	94	94	94	B	B	B
8	110	128	104	92	92	B	100	126	144	134	98	154	132	G	150	152	136	96	88	88	88	B	B	118
9	B	96	96	98	B	B	110	140	150	124	108	150	144	98	160	98	142	140	B	98	98	98	B	92
10	102	96	96	96	104	96	90	136	132	142	112	112	100	94	160	98	136	96	94	94	94	94	102	102
11	102	92	96	96	96	96	132	136	136	102	102	102	166	106	100	90	100	G	94	92	86	B	92	92
12	B	B	92	100	92	96	B	98	132	122	114	108	108	88	94	128	112	134	108	B	B	122	116	106
13	B	96	B	96	96	B	80	100	128	138	100	94	94	94	136	114	132	126	B	108	B	104	94	94
14	94	94	94	94	94	B	G	138	140	124	108	164	174	102	102	136	118	92	92	98	92	B	B	104
15	100	92	92	92	92	B	96	148	100	116	110	98	98	100	106	150	122	84	B	B	B	102	102	B
16	96	90	90	90	B	B	146	146	124	116	100	100	160	142	142	G	G	104	B	B	B	B	B	B
17	B	B	B	B	B	B	154	148	148	136	128	104	102	162	168	136	154	128	B	B	B	108	B	110
18	102	B	B	B	B	B	154	108	158	138	110	172	152	164	164	106	102	G	B	B	B	B	B	B
19	94	B	B	B	B	B	152	144	130	124	106	106	106	106	116	98	106	108	B	102	B	B	B	B
20	B	B	B	B	B	B	G	120	116	108	98	120	110	106	128	G	90	112	108	108	108	B	B	104
21	B	104	94	90	102	102	102	112	110	110	108	124	96	98	104	104	G	146	104	104	104	104	104	104
22	102	102	102	102	102	B	116	100	106	102	108	108	98	98	98	104	104	100	B	110	110	104	98	B
23	B	96	96	96	96	B	G	116	136	96	96	96	96	116	142	110	G	132	B	96	B	88	86	B
24	B	86	B	86	B	B	132	138	118	108	100	106	106	96	94	94	94	92	92	92	92	90	B	B
25	B	B	96	B	B	B	152	150	130	168	106	102	108	108	108	96	G	G	90	96	102	92	B	88
26	B	B	B	B	B	B	138	132	122	122	104	98	96	158	94	92	112	112	B	B	84	B	B	B
27	B	B	B	84	B	B	144	156	G	134	98	90	106	158	158	108	90	102	88	88	88	88	B	B
28	B	C	B	98	94	94	142	132	132	112	132	120	104	96	154	98	98	100	90	90	90	90	90	90
29	B	B	B	108	92	B	138	140	142	160	160	128	98	104	106	98	176	180	88	84	84	B	B	B
30	90	B	B	B	B	G	132	142	134	134	134	110	110	168	G	168	160	86	86	86	B	B	B	B
31	B	B	B	B	86	B	140	156	136	134	110	110	102	148	102	110	116	140	B	B	112	102	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	18	17	19	18	9	24	31	30	31	31	31	31	30	30	29	27	27	20	24	20	18	15	18
MED	100	95	96	96	94	96	132	140	132	124	108	110	108	107	122	108	118	112	92	93	93	98	100	101
U Q	102	102	100	98	98	98	143	148	140	138	132	136	144	148	150	136	140	132	94	100	103	104	102	104
L Q	94	92	94	92	92	89	96	120	116	110	100	102	100	98	102	98	104	96	88	88	88	90	94	92

MAR. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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

MAR. 2020 TYPES OF Es
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2020 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

MAR. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2020 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	31	31	30	30	30	27	28	44	46	54	55	56	56	59	59	61	59	48	40	33	32	30	30	32
2	32	32	30	28	26	26	30	44	48	52	54	54	62	72	64	55	50	49	41	30	32	30	28	28
3	28	28	26	26	26	24	30	42	51	52	54	55	62	56	63	58	54	61	42	30	29	30	31	31
4	32	32	32	32	31	31	31	44	49	54	58	55	59	61	58	60	64	54	40	27	30	32	30	30
5	31	30	28	28	28	25	30	48	50	47	51	61	68	67	67	62	54	59	38	32	29	31	28	28
6	28	26	26	29	32	19	28	42	44	49	49	50	57	70	58	56	50	48	48	32	30	30	30	30
7	30	30	28	28	30	28	30	42	48	52	53	58	64	63	51	52	50	55	48	36	36	39	34	28
8	28	30	F	30	30	24	32	44	44	57	59	58	52	66	62	53	49	48	49	38	35	35	33	32
9	33	32	31	33	36	28	34	42	52	50	54	56	64	65	53	56	57	57	63	50	27	27	29	31
10	31	31	F	F	F	F	32	45	47	51	50	56	61	72	61	56	61	56	56	40	26	28	31	30
11	30	30	F	30	28	20	34	44	50	53	60	55	60	66	59	57	56	50	44	29	26	28	31	31
12	30	28	26	26	26	20	34	45	49	59	50	56	71	69	57	56	52	56	47	32	26	29	31	32
13	32	30	29	F	28	24	36	43	52	48	55	55	69	63	62	49	46	54	46	37	30	31	32	32
14	33	31	31	31	30	28	40	42	50	52	60	60	54	56	60	53	58	52	47	34	32	35	33	F
15	F	33	33	32	34	22	35	44	49	48	50	58	60	66	60	54	53	50	40	38	37	37	36	36
16	34	33	33	34	28	23	35	46	50	48	53	58	58	61	58	54	52	52	47	40	36	39	40	39
17	39	38	38	37	33	30	38	48	52	51	50	60	54	58	55	51	50	48	46	44	41	41	40	38
18	36	35	35	35	36	28	40	48	48	55	65	68	65	58	56	52	51	54	55	46	38	34	33	31
19	28	F	F	31	32	22	36	44	46	50	53	72	60	63	66	65	58	52	42	A	38	37	36	36
20	36	35	33	32	28	27	40	50	53	56	60	65	77	64	56	58	50	48	47	42	40	36	33	32
21	31	30	29	30	30	24	40	46	46	51	63	77	61	62	66	56	52	48	48	49	42	F	35	35
22	34	34	32	32	30	27	42	46	50	53	51	60	66	61	62	59	52	49	40	34	33	34	F	30
23	30	28	27	27	27	25	40	46	55	64	66	64	74	69	64	52	54	51	42	43	37	34	32	32
24	32	31	31	31	28	24	42	46	57	61	61	61	74	78	77	70	61	55	50	42	35	32	32	F
25	F	F	F	F	30	F	37	46	49	52	54	69	73	83	78	73	64	54	46	37	37	36	F	F
26	F	F	F	F	F	F	38	44	47	51	56	63	72	63	60	56	55	58	58	51	35	32	F	30
27	F	34	F	37	33	35	44	46	46	50	56	62	69	79	76	58	55	63	67	48	38	35	35	35
28	34	32	32	32	28	26	40	48	50	56	56	60	63	60	60	60	56	53	46	46	42	40	39	38
29	38	37	34	30	26	25	37	47	50	57	59	58	66	74	63	59	58	61	56	61	48	42	38	31
30	32	F	30	30	28	25	39	46	52	56	57	71	66	62	56	60	56	57	51	50	44	44	37	F
31	F	31	29	29	24	24	41	47	46	52	60	57	70	83	86	84	62	48	45	50	54	38	34	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	26	27	24	27	29	28	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	28	26
MED	32	31	30	30	30	25	36	45	49	52	55	58	64	64	60	56	54	53	47	39	35	34	33	32
U Q	34	33	32	32	32	28	40	46	51	56	60	63	69	70	64	60	58	56	50	46	38	37	36	35
L Q	30	30	28	29	28	24	32	44	47	50	53	56	60	61	58	54	51	49	42	33	30	30	31	30

MAR. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1												LU	LU	LU	LU	L	L	L							
2											L	L	U	L	L	L	L								
3								L	L	L	L	U	L	L	L	L									
4								L	L		A	U	U	U	A										
5										384	L	U	U	A	A	U	L	L	L						
6										A	A	U	U	A	A	A	A	A	L						
7										L	L	U	L	U	U	U	L	L	L						
8									L	L	U	U	U	U	L	L	L								
9								L		L	U	L	A	U	L	L	L	L							
10										A	U	U	L	A	A										
11										L	U	L	U	U	U	L	L	L							
12								L	L	A	U	U	U	U	U	L	A	A							
13										U	L	U	L	U	U	U	L	L							
14									L	U	U	U	U	U	L	A	A	L							
15										U	L	U	U	U	L	L	L	L							
16									L	L	U	U	U	U	L	L	L	L							
17								L	L	U	U	U	L	A	L	L	A								
18									L	U	U	U	U	U	U	L	L	L							
19										U	L	U	U	U	U	U	L	L							
20										L	U	L	U	U	U	L	L	L	L						
21										U	L	U	L	A	U	L	U	L							
22										U	L	U	L	U	U	L	L	L							
23								L	L	L	U	U	U	U	L	L	L	L							
24									L	L	U	L	U	U	L	L	L	L							
25									L	L	U	L	U	U	U	L	L	L							
26									L	L	U	L	U	A	U	L	L	L							
27										U	L	U	U	U	L	L	L	L							
28										U	L	U	U	U	L	L	L	L							
29										L	L	U	U	U	L	L	L	L							
30										L	U	U	U	U	L	L	L	L							
31										U	L	U	U	U	L	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									1	13	26	30	26	26	19	11			1						
MED									U	L	U	L	U	L	U	L	U	L							
U Q									368	408	424	428	432	428	420	392			232						
L Q									U	L	U	L	U	L	U	L	U	L							
									404	416	424	424	420	420	420	384									

MAR. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1								B	U	A	A	A	A	A	U	A	A	U	A	U	R					
2								U	A	A	A	A	R	U	A	A	A	U	R	U	R					
3								U	R	A	U	A	U	A	A	A	R	U	A	U	A					
4								U	R	U	R	R	A	U	A	A	U	A	A	U	R					
5								U	A	U	A	A	A	A	A	A	A	A	A	B						
6								U	A	U	A	A	A	U	A	A	A	A	A	B						
7								U	A	U	A	U	A	A	U	A	U	R	U	A	U	R				
8								U	A	U	A	U	A	A	U	A	U	R	U	A	U	R				
9								U	R	U	A	U	A	A	U	A	U	A	A	U	R					
10								U	A	U	A	A	A	A	A	A	A	A	A	A						
11								U	R	A	A	A	R	U	R	R	U	R	U	R	U	R				
12								U	R	U	A	U	A	A	A	A	A	A	A	B						
13								U	A	U	A	A	A	U	A	A	U	R	U	R	U	R				
14								U	R	U	A	U	R	A	A	U	A	A	A	U	R					
15								B	U	A	A	A	A	A	U	R	U	R	U	R	U	R			B	
16								B	U	A	A	A	A	A	U	R	R	U	R	U	R					
17								B	U	A	U	A	U	A	A	U	A	U	R	U	A	A	B			
18								B	U	A	A	U	A	R	U	A	A	R	U	R	U	R			B	
19								B	U	A	U	A	A	A	A	R	A	A	A	B						
20								B	U	A	A	A	A	A	A	U	R	U	R	U	R				B	
21								B	A	A	A	A	A	A	A	U	R	U	R	A	R				B	
22								B	A	A	A	A	A	A	A	A	R	U	R	B	B					
23								B	A	U	R	A	A	A	A	A	U	R	U	R	U	R				
24								B	U	R	A	A	A	A	U	R	R	A	U	R	U	R			B	
25								B	U	A	U	R	A	A	A	R	A	A	A	B	B					
26								B	U	A	A	A	A	A	U	R	U	R	R	A	B	B				
27								B	U	A	U	R	A	A	A	R	A	A	U	R	U	R			B	
28								B	U	A	U	R	A	A	A	A	A	U	R	U	R					
29								B	U	A	U	A	A	R	U	A	R	U	R	U	A	A	B			
30								B	U	A	U	A	A	A	R	R	R	U	R	A	U	R			B	
31								A	U	R	A	A	A	A	A	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								27	21	11	7	6	9	9	13	15	18	19	1							
MED								U	A	U	A	U	A	U	A	U	R	U	R	U	R	U	R			
U Q								212	268	300	320	336	332	328	312	292	256	208	244							
L Q								U	R	U	R	U	A	U	R	U	R	U	R	U	R					
								232	276	308	328	344	342	346	322	296	260	212								
								U	A	U	A	U	A	U	A	U	A	U	R							
								200	256	288	316	328	322	316	308	284	252	200								

MAR. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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

MAR. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	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	G	E	B	E	B	E	B	E	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MED	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	G	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	G	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	G	E	B	E	B	E	B	E	B

MAR. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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

MAR. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

$\begin{matrix} H \\ D \end{matrix}$	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	328	315	327	309	348	332	339	391	356	370	381	378	360	362	362	370	379	389	364	339	323	310	306	329	
2	333	316	323	320	327	339	358	385	369	358	353	350	351	363	382	380	382	377	381	331	328	356	321	329	
3	322	322	314	331	331	337	358	378	373	363	349	344	356	371	385	374	376	377	394	336	320	329	329	308	
4	320	325	329	329	320	361	362	392	357	355	364	317	354	358	358	365	375	395	375	348	282	351	334	316	
5	332	310	312	344	341	345	349	394	383	362	334	350	358	343	358	361	370	374	376	348	336	326	317	302	
6	297	315	320	333	387	358	355	399	376	360	335	357	335	356	352	375	360	366	384	348	327	315	312	313	
7	313	313	319	F	321	354	383	375	387	380	362	351	369	387	370	349	374	366	376	363	349	316	365	359	351
8	305	317	F	326	396	360	375	377	360	382	374	355	337	380	357	362	362	368	358	344	318	346	320	312	
9	321	334	329	F	F	F	F	409	378	355	354	318	345	344	357	340	367	367	367	386	320	321	320	335	
10	313	316	F	F	F	F	403	389	386	374	322	347	339	338	357	349	381	361	362	390	310	332	313	318	
11	325	318	F	346	387	328	367	380	369	370	362	344	342	366	354	365	378	372	366	364	315	327	322	322	
12	320	330	319	F	364	372	386	377	365	394	327	353	360	375	355	351	378	369	371	390	322	307	324	317	
13	325	324	300	F	377	325	379	369	400	357	324	340	345	339	374	372	359	382	370	362	325	332	307	310	
14	315	342	342	351	329	318	370	369	343	347	324	371	325	344	365	342	367	373	384	339	316	328	314	F	
15	F	311	299	347	401	323	372	378	385	364	324	349	342	363	361	372	366	384	364	324	320	324	311	317	
16	319	324	339	389	376	316	357	367	374	353	355	347	351	375	360	364	357	370	367	349	302	321	320	311	
17	321	332	335	342	325	321	364	372	390	359	362	364	316	354	364	361	377	350	353	343	313	331	333	333	
18	321	333	327	331	351	333	354	373	349	353	356	363	365	357	374	319	353	352	364	350	347	319	324	300	
19	296	F	F	342	389	319	363	373	355	337	322	361	312	336	344	364	385	376	350	A	306	298	311	307	
20	303	326	324	330	341	324	351	364	354	334	341	335	357	355	343	362	365	357	350	349	343	329	321	288	
21	303	321	330	326	348	336	378	393	352	324	312	357	319	345	367	353	357	355	356	347	359	F	301	302	
22	311	308	309	325	352	334	355	390	360	362	330	336	347	348	352	360	365	371	363	331	312	306	F	300	
23	301	314	303	377	377	372	379	359	344	347	345	343	353	341	365	354	360	366	351	346	340	296	294	298	
24	315	311	327	337	371	339	393	369	355	366	358	321	331	328	348	355	363	373	375	357	339	316	303	F	
25	F	F	F	F	F	F	404	386	376	361	352	320	337	331	346	344	363	375	382	380	326	310	298	F	
26	F	F	F	F	F	F	399	395	361	343	344	338	363	343	360	335	354	353	354	351	355	322	F	281	
27	F	317	F	340	366	328	383	387	369	340	346	331	308	328	348	351	332	353	361	359	342	320	301	307	
28	314	330	331	332	314	330	366	388	359	363	342	348	368	343	338	368	366	349	345	335	329	302	315	270	
29	316	338	345	344	338	354	379	373	351	370	361	343	344	358	349	333	337	348	325	345	335	329	356	300	
30	294	F	299	300	357	376	391	369	349	361	340	351	358	348	329	359	345	373	337	340	348	335	331	F	
31	F	310	328	349	287	303	383	375	337	318	337	307	298	315	314	356	370	363	333	331	354	353	313	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	26	27	24	27	29	28	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	28	26	
MED	316	318	326	332	354	335	372	378	361	359	344	347	345	348	357	361	366	370	364	348	323	325	318	310	
U Q	321	330	330	344	377	359	383	390	376	364	356	357	358	363	364	368	376	376	375	351	340	332	324	318	
L Q	305	314	313	326	334	324	358	372	354	347	327	337	331	343	348	351	359	357	353	339	315	315	311	300	

MAR. 2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	U	L	U	L	L	L						
2											L	L	U	L	L	L	L							
3								L	L	L	L	L	U	L	L	L								
4								L	L		A	U	L	U	L	A								
5										436	409	413	432			407								
6										L	U	L	U	L	A	U	L	L	L					
7										A	A	U	L	A	A	A	A	A	L					
8										L	L	U	L	U	L	U	L	L	L					
9								L		L	L	U	L	A	U	L	L	L	L					
10										L	A	U	L	U	L	A	A	L						
11										L	U	L	L	U	L	U	L	L	L					
12								L	L	A	U	L	U	L	U	L	L	A	A					
13										U	L	U	L	L	U	L	U	L	L					
14									L	U	L	U	L	U	L	A	A	L						
15										U	L	U	L	U	L	L	U	L	L					
16										L	L	U	L	U	L	U	L	L	L	L				
17								L	L	U	L	U	L	U	L	A	L	L	A					
18									L	401	397	429	422	425	440			L	L	L				
19										404	380	401	408	407	411	398								
20										L	U	L	U	L	U	L	L	L	L					
21										U	L	U	L	A	U	L	U	L	L					
22										415	406	404	401	396	383	376			L					
23								L	L	A	U	L	U	L	U	L	L	L	L					
24									L	L	L	U	L	U	L	L	L	L						
25										L	L	U	L	U	L	U	L	L	L					
26										L	L	U	L	A	U	L	U	L	L	L				
27										U	L	U	L	U	L	A	L	L	L					
28										408	404	416	391	391			L	L						
29										L	L	U	L	U	L	U	L	L	L	L				
30										L	L	U	L	U	L	U	L	L	L	L				
31										L	U	L	U	L	U	L	L	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	13	26	30	26	26	19	11			1					
MED									U	L	U	L	U	L	U	L	U	L	425					
U Q									415	405	402	402	405	405	399	398								
L Q									U	L	U	L	U	L	U	L	U	L						
									408	412	413	415	411	409	409									
									400	397	400	399	396	392	384									

MAR. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2020 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											236	236	246	256	256	230	226	226						
2										252	262	278	278	234	222	222	222							
3								228	248	250	272	280	254	240	240	234								
4								218	248	252	236	302	260	256	248	248								
5										264	306	254	254	250	236	240	240							
6										244	292	284	264	242	242	230	236	236						
7										248	264	258	232	232	266	240	250							
8									214	226	244	264		240	250	248								
9								196		256	262	308	272	260	262	282	236							
10										246	306	282	270	248	232	250	240							
11										244	244	282	268	248	238	242	226							
12								210	228	236	342	270	246	238	252	242	244							
13										268	318	262	256	274	236	256		220						
14										284	280	288	258	300	286	248	274	230						
15										270	318	272	270	250	246	244	244							
16										242	264	282	266	266	240	238	252	252	240					
17								238	234	268	268	268	316	256	256	256	212							
18										270	278	256	238	238	254	236	264	250	248					
19										300	306	244	318	286	264	246								
20										258	278	268	280	248	248	268	242	242	242					
21										254	302	302	252	276	276	242	260	254						
22										258	304	282	264	264	250	250	250							
23								250	274	246	250	250	246	250	238	260	256							
24										256	242	256	298	272	272	246	246	234						
25										252	262	330	268	266	254	254	236	224						
26										266	276	284	284	246	258	258	284	244	246					
27										296	276	284	292	268	240	258	266	252						
28										254	254	262	246	276	276	250	250							
29										274	246	248	276	276	250	250	274	276	242					
30										270	264	290	258	242	254	266	254	268	234					
31										316	282	330	328	286	278	238	230	242						
	00	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	16	30	31	31	30	31	31	31	26	11						
MED								223	255	260	276	270	265	254	248	248	243	242						
U Q								238	270	276	304	282	276	268	258	258	250	246						
L Q								210	245	246	256	258	246	248	238	240	230	234						

MAR. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2020 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B				A				A								
2									118	118	118		112	112	110		108	108						
3									114	116	114	112	108	108	108		A							
4									112	112	112	112	112	112	114	114	114	114	122					
5									122	120	114	108	108	108	108	108	108	108	114					
6									114	114	114	114	114		A	A	A	A	B					
7									106	108	114	114	114	108	108									
8									108	108	108	108	108	108	110	110	114	114	114					
9									114	114	114	114		A										
10									116	114	108	108	114	114	114	108	108		108					
11									108	108	110	110	110		A	A	A	A	A	A				
12									120	120	116		A											
13									114	114	112	110	110	110	110	110	116							
14									116	110	106	106	108	106	108	112	112	112						
15									112	112	112	112	112	114	116		A							
16									118	118	118	110		A	A	110	110	112	112	112				
17									116	116	118		A	A	A	A	110	110	110	110				
18									114	114	114		A											
19									110	110	110	112	108	110	108	108	110	110	110					
20									112	112		A												
21									114	116	112	112	114	108	108		A							
22									116	116	116		A											
23									112	112		A												
24									114	114	114		A	A	110	110	110	108	108					
25									110	110	110	112	108	110	108	108	110	110	110					
26									112	112		A												
27									116	116	116		A											
28									112	112		A												
29									110	110		A												
30									114	114	114		A	A	112	112		114						
31									116	116	116		A											
									118	118	118		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	30	31	27	18	17	17	22	22	23	21	21	1					
MED							116	113	112	112	112	112	112	111	110	112	110	110	110					
U Q							116	116	116	112	114	114	114	112	114	112	114							
L Q							110	110	110	108	108	108	108	108	110	108	109							

MAR. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2020 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	102	102	102	98	B	B	142	130	124	118	106	114	114	150	94	112	G	86	94	B	B	110	B	
2	B	B	102	102	B	96	B	150	144	136	130	G	136	132	124	88	G	G	88	88	88	88	B	B	
3	B	B	88	88	86	B	B	G	112	136	144	138	128	126	116	G	116	132	86	86	86	92	B	92	
4	B	B	B	B	B	B	B	G	G	G	126	150	152	142	134	128	120	G	B	B	B	96	96	96	
5	86	B	B	B	B	B	B	152	130	140	130	130	128	102	102	96	98	110	B	86	110	B	B	B	
6	112	110	94	94	B	B	B	148	144	132	124	124	120	110	100	100	100	100	100	B	100	100	96	94	
7	92	92	92	B	B	B	B	150	150	136	128	128	136	156	G	G	144	G	B	B	B	B	B	B	
8	B	B	B	B	B	B	B	144	144	126	110	106	136	134	G	154	G	84	84	84	B	B	B	B	
9	90	B	B	B	B	B	B	G	152	152	142	136	120	122	128	116	104	140	B	B	B	88	B	B	
10	B	108	B	B	B	B	B	134	134	116	112	116	104	104	100	100	98	96	96	96	96	96	96	92	B
11	B	B	B	92	88	B	B	G	110	118	108	G	G	G	G	G	G	G	B	B	B	B	106	B	
12	B	B	B	B	B	B	B	G	156	138	128	138	110	108	120	110	110	132	94	98	98	B	96	104	
13	88	B	B	B	B	B	B	138	136	116	116	114	134	130	86	86	G	G	B	98	98	B	B	B	
14	B	B	B	B	B	B	B	G	142	G	108	100	96	148	170	114	116	G	102	90	B	100	100	98	
15	96	B	94	92	90	B	140	130	132	116	102	102	104	100	G	G	G	G	88	B	106	100	B	B	
16	96	B	B	B	B	B	158	158	128	118	102	102	98	G	G	G	G	G	B	B	B	B	B	B	
17	B	B	B	B	B	B	144	132	136	144	140	110	136	144	130	148	124	108	102	B	B	102	B	B	
18	B	B	B	B	B	B	132	124	124	122	158	G	146	146	104	G	G	G	B	B	B	B	B	B	
19	B	B	B	B	B	B	136	136	128	114	108	108	108	108	G	110	104	104	96	96	96	B	96	B	
20	B	B	B	B	B	B	134	134	128	104	100	108	102	102	G	G	G	G	102	98	B	98	B	B	
21	B	92	B	92	90	B	B	122	122	106	106	112	96	102	G	G	G	G	B	100	100	100	100	100	
22	98	98	B	B	B	96	124	124	124	106	112	102	102	102	102	G	G	G	B	104	104	104	102	102	
23	B	B	B	B	B	B	116	116	G	116	106	106	98	134	126	G	G	G	84	84	92	B	B	B	
24	B	B	B	B	B	92	B	G	132	116	104	104	102	G	G	110	G	G	B	B	B	86	86	B	
25	B	B	86	B	B	B	134	142	G	116	104	104	104	G	G	98	96	96	104	B	104	104	104	96	96
26	96	B	94	92	92	92	130	130	114	106	96	96	88	G	G	G	96	92	88	88	88	106	106	B	
27	B	B	B	B	B	B	128	136	G	118	104	104	G	104	98	100	G	G	100	100	100	B	98	98	
28	92	92	92	B	B	92	128	142	132	G	G	100	100	100	88	90	G	90	86	86	86	B	B	B	
29	B	B	B	B	B	86	130	130	126	110	108	G	146	G	G	146	100	100	100	96	96	96	B	B	
30	B	B	B	B	B	B	126	126	126	122	106	106	G	G	G	G	106	G	B	96	110	94	B	B	
31	B	B	B	B	B	B	112	G	120	120	106	104	98	94	G	G	G	G	114	108	98	98	92	B	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	10	7	9	8	6	6	15	23	27	28	30	27	28	24	18	18	17	14	18	21	19	18	15	9	
MED	94	98	94	92	90	92	130	136	130	118	109	106	109	112	110	105	104	104	95	96	98	98	96	98	
U Q	96	108	98	98	92	96	136	144	142	134	128	124	135	134	128	116	116	110	100	99	104	100	102	101	
L Q	90	92	90	92	88	92	126	130	124	116	106	104	101	102	100	96	99	96	86	87	92	94	96	95	

MAR. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F3	F4	F4	F2			H1	H2	C2	C1	L1	C2	C2	H1	L3	C1		L1	F1			F1	
2			F2	F2		F2		H2	H2	CL21	C2		H1	C1	CL12	L3			F3	F3	F2	F2		
3			F2	F2	F2				C2	C1	H1	H1	C1	C1	C2		C3	C2	F3	F2	F2	F2		F2
4											C1	H1	H1	H1	H1	C1	C2					F1	F2	F2
5	F1							H2	H2	H2	H1	H1	CL21	L2	L2	L2	L2	C2		F1	F1			
6	F2	F3	F2	F2				H3	H2	H2	C2	C2	C2	C2	L3	L2	L2	L1	F1		F2	F2	F5	F3
7	F2	F2	F2					H2	H2	H1	H2	H2	C1	H1			H1							
8								H2	H1	C1	C1	L1	H1	H2		H1		L2	F2	F1				
9	F2								H2	H1	H1	H2	H2	H1	C1	C1	L2	H2				F3		
10		F2						H2	H2	C2	C2	C1	L2	L2	L2	L2	L3	L2	F1	F3	F3	F2	F2	
11				F1	F1				C2	C2	L1												F2	
12									H1	H2	C1	H1	C2	C2	C2	C2	CL21	CL21	F2	F1	F2		F1	F3
13	F2							C2	H2	C2	C2	C2	H1	C1	L2	L2				F1	F1			
14									H1		C1	L2	L2	HL11	HL11	CL22	C2		F1	F1		F1	F1	F1
15	F2		F2	F1	F1			H2	H2	C2	C1	L1	L1	L1	L1				L1		F1	F2		
16	F2							H1	H2	H2	C2	L1	L1	L1										
17								H1	H2	H1	H1	H1	C1	H1	H1	H1	C1	C2	L3			F2		
18								H2	C2	C2	C1	H1	H1	H1	L1									
19								H1	H2	H2	C2	L1	C1	C1	C1		C1	L2	L3	F3	F6	F6		F1
20								H1	H1	C2	L1	L1	C1	L2	L2				L1	F1		F1		
21		F3		F2	F1				C2	C1	L2	L2	C2	L2	L2		L2			F1	F2	F2	F5	F4
22	F2	F2			F1			C2	C2	C2	L3	L1	L2	L2	L2	L2		L1		F1	F6	F2	F2	F2
23								C1	C2		C2	L1	L1	L2	C1	C1			L2	F2	F2			
24					F2				H1	C1	L1	L1	L1				C1					F2	F1	
25			F2					C2	H1		C1	L2	L2	L1		L1	L2	L2	F2		F2	F2	F2	F2
26	F2		F2	F1	F1	F3		C2	H2	C1	L1	L1	L1	L2			L2	L2	L3	F3	F5	F2	F2	
27								C2	H1		C1	L1	L1		L1	L2	L2		L1	F1	F2		F2	F2
28	F2	F2	F2			F1		H2	H1	C1			L2	L2	L1	L3	L2		L1	L3	F2	F1		
29					F1			H2	H3	H3	C1	C1		H1		H1	L3	L3	L1	F3	F3	F2	F3	
30						C3		C2	C2	C2	L2	L1					L1			F4	F3	F3		
31						C3			C1	C1	L1	L2	L2	L2					C2	F1	F1	F1	F4	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAR. 2020 TYPES OF Es
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2020 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	X 38	X 36	X 34	X 33	X 35	X 30														X 43	X 34	X 34	X 35	X 36	
2	X 37	X 37	X 36	X 34	X 33	X 34	X 28														X 46	X 34	X 35	X 34	X 34
3	X 34	X 34	X 32	X 33	X 31	X 30															X 40	X 38	X 38	X 40	X 40
4	X 38	X 40	X 38	X 36	X 40	X 36															X 40	X 36	X 36	X 37	X 36
5	X 36	X 36	X 34	X 34	X 35	X 32															X 42	X 39	X 38	X 36	X 34
6	X 34	X 34	X 34	X 38	X 41	X 24													X 55	X 60	X 42	X 37	X 37	X 37	X 36
7	X 38	X 37	X 37	X 36	X 40	X 36	X 26														X 54	X 48	X 43	X 43	X 35
8	X 32	X 33	X 38	X 33	X 42	X 29	X 25														X 60	X 47	X 38	X 41	X 37
9	X 37	X 38	X 36	X 37	X 42	X 33	X 26														X 57	X 34	X 33	X 33	X 34
10	X 36	X 36	X 36	X 36	X 38	X 32	X 29														X 52	X 38	X 31	X 34	X 34
11	X 37	X 35	X 32	X 33	X 36	X 25	X 25														X 43	X 36	X 31	X 32	X 35
12	X 34	X 34	X 33	X 33	X 36	X 32	X 26														X 53	X 38	X 32	X 33	X 36
13	X 36	X 36	X 34	X 34	X 37	X 29	X 29														X 50	X 39	X 40	X 40	X 41
14	A	X 40	X 38	X 37	X 37	X 36	X 32														X 48	X 42	X 41	X 48	X 40
15	40	42	39	37	37	25	28														X 42	X 42	X 40	X 40	X 39
16	X 38	X 38	X 35	X 40	X 31	X 26	X 28														X 45	X 46	X 44	X 44	X 45
17	X 44	X 43	X 39	X 40	X 36	X 34	X 34														X 54	X 47	X 46	X 45	X 44
18	X 42	X 42	X 40	X 42	X 41	X 30	X 30														X 52	X 44	X 38	X 36	X 36
19	X 36	X 35	X 36	X 32	X 32	X 29	X 24														X 46	X 49	X 45	X 47	X 44
20	45	44	42	42	37	33	32														X 55	X 46	X 42	X 38	X 37
21	38	39	34	34	38	25	30														X 58	X 46	X 36	X 34	X 39
22	39	35	35	34	34	32	31														X 46	X 41	X 40	X 40	X 37
23	X 37	X 36	X 33	X 34	X 37	X 28	X 28														X 53	X 43	X 32	X 34	X 34
24	X 36	X 36	X 37	X 38	X 38	X 31	X 32														X 48	X 45	X 34	X 35	X 39
25	41	41	41	46	40	24	31														X 46	X 45	X 41	X 46	X 40
26	42	X 38	46	38	36	34	38														X 65	X 50	X 37	X 38	X 38
27	42	39	41	39	41	38	34														X 64	X 52	X 44	X 44	X 43
28	X 43	X 41	X 40	X 39	X 34	X 33	X 36														X 56	X 56	X 48	X 43	X 43
29	X 42	X 41	X 40	X 37	X 34	X 27	X 34														X 79	X 69	A	X 38	X 39
30	38	40	40	36	36	34	40														X 66	X 57	X 53	X 43	X 38
31	X 36	X 37	X 36	X 39	X 41	X 29	X 36														X 63	X 67	X 53	X 33	X 36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	31	31	31	31	31	26													1	31	31	30	31	31
MED	X 38	X 37	X 36	X 36	X 37	X 31	X 30													X 55	X 52	X 44	X 38	X 38	X 37
U Q	41	40	40	39	40	34	34														58	48	43	43	40
L Q	X 36	X 36	X 34	X 34	X 35	X 28	X 28														X 46	X 38	X 35	X 34	X 36

MAR. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2020 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

$\begin{matrix} H \\ D \end{matrix}$	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	32	30	28	27	29	24	22	42	44	49	52	59	51	57	60	66	58	58	52	37	28	28	29	30	
2	31	31	30	28	27	28	22	38	49	48	57	57	64	58	60	67	55	53	59	40	28	29	28	28	
3	28	28	26	27	25	24	20	38	51	54	54	58	63	57	65	58	72	60	54	34	32	32	34	34	
4	32	34	32	30	34	30	25	39	50	50	60	68	66	V	62	64	63	69	59	50	34	30	30	31	30
5	30	30	28	28	29	26	22	42	48	48	52	62	65	78	79	60	56	62	46	36	33	32	30	28	
6	28	28	28	32	35	18	18	38	44	47	55	58	54	66	70	58	60	52	49	54	36	31	31	30	
7	32	31	31	30	34	30	20	39	53	51	54	55	59	66	65	58	51	52	52	48	42	37	37	29	
8	26	27	F	27	36	23	19	40	48	48	56	62	55	64	71	55	54	47	48	54	41	32	35	31	
9	31	32	30	31	36	27	20	40	47	47	51	57	61	72	70	63	59	59	60	51	28	27	27	28	
10	30	30	30	30	32	26	23	40	45	50	51	60	66	75	71	66	62	64	61	46	32	25	28	28	
11	31	29	26	27	30	19	19	44	47	54	60	60	68	71	72	72	59	53	51	37	30	25	26	29	
12	28	28	27	27	30	26	20	42	48	47	52	56	61	69	62	53	56	53	52	47	32	26	27	30	
13	30	30	28	28	31	23	23	41	47	52	53	61	65	79	77	54	50	51	50	44	33	34	34	35	
14	A	34	32	31	31	30	26	42	45	54	56	A	62	71	68	61	56	52	54	42	36	35	F	F	
15	F	F	F	31	31	19	22	42	49	50	52	56	64	67	77	55	50	53	48	36	36	34	34	33	
16	32	F	29	34	25	20	22	42	50	54	52	56	60	64	62	58	57	54	48	39	40	38	38	39	
17	38	37	33	34	30	28	28	44	52	50	52	56	76	68	68	54	51	51	53	48	41	40	39	38	
18	36	36	34	36	35	24	24	41	48	60	61	67	65	62	59	50	55	63	66	46	38	32	30	30	
19	30	29	30	26	26	23	18	42	49	50	54	66	76	68	78	73	61	52	49	40	43	39	41	38	
20	F	F	36	36	31	27	26	45	55	51	58	72	86	91	82	73	60	52	52	49	40	36	32	31	
21	F	F	28	28	32	19	24	41	48	51	58	81	82	82	81	67	55	52	54	52	40	30	28	F	
22	F	29	29	28	28	26	25	43	49	49	52	61	73	72	75	62	53	52	49	40	35	34	F	31	
23	31	30	27	28	31	22	22	45	51	58	61	72	78	72	66	59	55	52	50	47	37	26	28	28	
24	30	30	31	32	32	25	26	39	54	61	61	70	81	87	94	80	69	61	54	42	39	28	29	F	
25	F	F	F	F	F	18	25	40	47	48	56	63	76	84	93	87	68	58	51	40	39	35	F	34	
26	F	32	F	F	F	F	F	42	49	55	55	64	82	90	82	68	66	69	74	59	44	31	32	32	
27	F	F	F	F	F	F	28	42	46	56	56	62	78	92	97	70	66	71	77	58	46	38	38	37	
28	37	35	34	33	28	27	30	46	51	58	63	69	74	82	78	71	56	49	53	50	50	42	37	37	
29	36	35	34	31	28	21	28	44	54	59	59	59	75	92	86	76	80	83	82	72	63	A	32	30	
30	F	F	F	F	30	28	34	42	54	58	60	68	75	82	79	80	70	61	62	60	51	47	37	32	
31	30	31	30	33	35	22	30	44	54	52	56	63	68	84	94	97	69	53	52	57	61	47	27	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	22	24	25	27	28	29	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	30	28	28	
MED	31	30	30	30	31	24	23	42	49	51	56	62	66	72	72	63	58	53	52	46	38	32	32	30	
U Q	32	33	32	32	33	27	26	43	51	55	59	67	76	82	81	72	66	61	59	52	42	37	36	34	
L Q	30	29	28	28	28	22	20	40	47	49	52	58	62	66	65	58	55	52	50	40	32	29	28	30	

MAR. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										L	U L	U L	U L		L	L	L								
2											U L	U L	416	420	428	408	U L	L	L						
3										L	L	424	428	440	428	412		A	A						
4								L	L	U L	U L	432	436	428	A	U L									
5										L	L	420	424	A	A	A	L	L							
6										U L	U L	412	420	432	428	412	404	364						L	
7									L	412	428	428	424	U L	U L	U L	L	L							
8									L	L	428	432	416	L	A		A	L							
9										U L	U L	428	428	420	A	432	408	L							
10									L	U L	U L	452	432	424	420	424	420	U L	A						
11									L	U L	U L	432	440	428	428	428	420	L	L						
12									A	U L	U L	424	424	A	428	A	U L	A							
13								L	U L	U L	396	428	428	452	428	U L	U L	U L							
14								L	408	428		A	A	A	A	A	A	A	A						
15									L	U L	U L	436	432	428	444	A	U L	L	L						
16										L	A	A		424	428	436	412	L	L						
17									L	U L	U L	432	420	436	432	420	A	A	L						
18								L	400	420	428	432	424	428			L	L	L						
19									U L	U L	416	428	436	424	448	428	A	A							
20								L	U L	U L	432	412	428	420	436	424	420	L	L						
21									L	420	432	440	432	432	412		L	L							
22								L	L	424	428	428	424	408	420	412	U L	L							
23								L	L	U L	U L	428	420	436	436	436	L	L							
24								L	L	424	436	432	424	432	408	U L	L	L							
25									L	428	428	436	428	420	428	U L	L								
26									A	432	428	436	432	432		A	A	A							
27									U L	U L	416	416	424	436	444	432	416	U L	L						
28									L	420	428	432	432	436	416		L								
29									L	U L	U L	432	440	440	436	440	420	404	L						
30								L	L	428	448		436	436	412	408		L	L						
31									L	U L	U L	436		436	A	436	404	376							
	00	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	28	28	27	23	22	9								
MED										U L	412	428	428	432	428	428	412	404							
U Q										U L	416	432	432	436	436	420	410								
L Q										400	420	424	426	424	424	408	372								

MAR. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	B	U	A	U	A	A	U	R	U	A	A	R	U	R	U	A	B	
									220	264	300		336	336			280	228							
2								B	U	A	U	A	U	A	U	R	U	R	A	U	R	U	R		
									216	268	304	316		340	340			280	228	176					
3							B	U	R	U	A	U	A	A	A		U	A	A	A	B				
								176	220	272	304	320			328			284							
4							B	U	R	U	R	U	A	U	A	U	R	U	A	A	B				
								164	224	276	300	324	344	332	312	304		272							
5							B	B	U	A	U	A	U	A	A	A	A	U	R	B					
									216	272	308	320	328						240						
6							B	B	U	A	U	A	A	A	A	A	R	U	A	U	R				
									224	276	296						280	236							
7							B	U	A	U	A	U	A	A	U	R	A	A	U	A	U	A			
									244	272	316	320			328				236	164					
8							U	R	U	A	U	R	A	U	A	U	A	A	A	B					
								188	248	280	312		332	324	312					164					
9							B	U	A	U	A	U	A	U	R	A	A	A	B	B					
									276	284	316	328	340		356										
10							B	U	A	U	A	U	A	A	A	A	A	A	B	B					
									236	276	304														
11							B	U	A	A	A	A	A	U	U	R	U	R	U	R	B				
									260						328	312	280	236							
12							B	U	A	U	A	U	A	U	A	A	U	A	A	A	B				
									232	292	308	328	340			300									
13							B	U	R	A	U	A	A	U	U	U	U	R	B						
									260	304	328				336	304	276	240							
14							B	U	A	A	A	A	A	A	A	A	A	A	A	A					
									252																
15							B	U	A	A	A	A	A	A	A	A	U	R	U	R	B				
									276								284	244							
16							U	R	U	A	A	A	A	U	U	R	U	R	U	R	B				
								228	236						332	308	276	236	180						
17							B	U	A	U	A	U	A	U	A	A	U	A	U	R	B				
									236	284	308	320		328	320	304	284	228	188						
18							B	U	R	R	A	A	A	R	A	A	U	R	B						
									272	320							248								
19							B	U	R	A	A	U	R	A	A	A	A	A	B						
									268			344													
20							B	U	A	A	A	A	A	A	A	A	U	R	U	R	B				
									272								244	184							
21							B	U	R	A	A	A	A	A	A	A	U	R	B						
									272								252								
22							B	U	A	A	A	A	A	A	A	A	A	A	B						
									272																
23							B	U	A	A	U	R	U	A	A	A	A	A	B	B					
											340	368													
24							B	U	A	A	A	A	U	R	U	R	U	R	A	B					
									264					348	328	316	296								
25							B	U	R	R	A	A	A	A	A	A	A	A	B						
									272	316															
26							U	A	U	A	A	A	A	A	A	A	A	A	B						
								184	268																
27							U	A	U	A	A	A	A	A	U	R	U	R	U	R	B				
								208	264	296					308	288	240								
28							U	A	U	A	U	R	R	R	U	R	U	R	U	R					
								192	252		312	336			312	284			200						
29							U	A	U	A	U	R	R	A	U	R	U	R	U	R					
								268		336	364			368		292	292	184							
30							U	A	U	A	A	A	U	A	U	A	A	A	U	A					
								172					348	332	332				172						
31							U	A	U	A	A	A	A	A	A	A	U	R	U	A	B				
								192	260								284	248							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								9	27	15	15	12	9	7	13	9	15	16	9						
MED								U	A	U	A	U	A	U	A	U	R	U	R	U	R	U	R	U	R
								188	252	276	308	326	340	332	328	308	284	240	180						
U Q								U	A	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
								200	268	292	312	332	346	340	338	312	284	246	186						
L Q								U	R	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
								174	232	272	304	320	334	328	324	304	280	236	168						

MAR. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E B 16	21	18	E B 16	20	E B 16	18	21	28	30	35	38	G	39	34	G	G	30	21	21	J A 21	22	21	21	
2	J A 20	J A 24	J A 25	20	J A 26	E B 16	J A 28	21	28	32	34	36	38	G	G	J A 38	G	G	G	21	E B 16	21	21	E B 16	
3	E B 16	19	22	E B 16	J A 27	21	E B 16	G	28	32	34	36	37	38	38	J A 38	33	J A 40	J A 22	21	E B 16	E B 16	E B 16	E B 16	
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	36	39	G	35	40	35	34	31	21	E B 16	24	20	20	E B 16	
5	E B 16	J A 23	E B 16	E B 16	E B 16	E B 16	E B 16	21	27	33	35	38	38	42	42	J A 50	34	G	E B 16	20	E B 16	E B 16	20	20	
6	E B 16	J A 27	J A 28	E B 15	E B 21	E B 16	19	23	31	34	36	37	41	40	36	G	33	G	E B 18	E B 16	E B 15	E B 16	E B 16	E B 16	
7	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	E B 15	21	29	32	36	38	J A 48	38	G	35	30	29	20	16	E B 16	E B 16	E B 15	E B 16	
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 25	G	31	G	39	38	40	39	37	J A 50	J A 43	J A 26	21	24	20	16	15	E B 16	
9	E B 16	E B 17	20	E B 16	E B 16	E B 17	15	24	28	36	36	37	39	44	G	J A 44	J A 40	J A 33	J A 24	23	20	20	16	23	
10	E B 16	E B 16	23	E B 16	20	20	E B 16	22	30	32	36	38	38	J A 42	J A 48	J A 37	J A 51	J A 40	J A 25	16	J A 26	J A 24	23	E B 16	
11	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	15	20	G	33	37	50	44	50	40	G	G	G	E B 16	24	E B 16	15	15	E B 16	
12	E B 16	E B 16	E B 16	J A 24	E B 15	E B 16	E B 15	21	27	36	36	40	44	38	42	J A 41	33	J A 36	J A 25	22	21	20	28	J A 27	
13	21	20	20	E B 16	E B 16	E B 16	16	21	G	37	40	41	38	42	38	33	G	28	J A 22	21	J A 32	26	22	22	
14	26	E B 16	E B 16	E B 17	J A 22	J A 22	E B 16	22	29	35	46	65	50	41	54	49	49	40	34	25	23	E B 16	20	20	
15	E B 16	E B 16	22	E B 16	E B 16	J A 28	E B 16	22	32	34	44	38	43	48	50	J A 50	G	G	E B 17	22	E B 16	E B 16	E B 16	E B 16	
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	15	G	32	35	41	52	42	38	38	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	
17	E B 16	E B 16	E B 16	E B 20	E B 15	E B 15	16	21	29	32	34	36	38	37	39	38	36	28	G	E B 16	25	23	E B 16	20	
18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	16	22	G	G	35	35	36	G	38	34	J A 30	G	E B 18	22	E B 16	E B 16	E B 16	E B 16	
19	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	16	22	G	33	35	36	G	J A 40	J A 50	J A 56	J A 46	J A 35	J A 27	22	E B 16	E B 16	E B 16	E B 16	
20	J A 24	J A 18	E B 16	18	20	E B 16	E B 16	24	J A 36	J A 41	36	37	37	42	43	51	40	G	G	E B 16	16	16	16	16	
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	15	22	G	33	35	37	39	38	37	35	31	G	J A 30	16	24	22	17	J A 39	
22	22	22	22	E B 16	E B 16	E B 14	16	22	31	36	36	39	J A 50	J A 50	J A 46	J A 44	J A 40	J A 36	J A 26	21	21	28	28	J A 28	
23	24	21	J A 28	E B 20	E B 16	J A 28	E B 16	21	33	36	35	G	J A 42	J A 44	J A 40	38	J A 36	J A 26	J A 29	26	E B 16	24	16	E B 16	
24	E B 16	E B 16	18	E B 16	E B 16	E B 22	16	24	31	35	38	45	J A 44	J A 40	G	J A 35	J A 27	J A 32	J A 24	E B 16	23	E B 16	E B 16	E B 16	
25	E B 17	E B 16	E B 16	E B 15	E B 16	E B 15	15	23	G	G	35	39	J A 47	J A 40	J A 42	38	32	29	E B 16	16	25	28	86	J A 36	
26	J A 31	J A 52	J A 45	J A 34	J A 25	20	J A 22	26	31	40	J A 43	J A 41	J A 38	J A 37	J A 44	J A 49	J A 61	J A 65	J A 54	J A 33	J A 23	20	E B 17	E B 17	
27	E B 16	21	20	E B 16	22	21	19	24	29	32	34	35	J A 40	J A 41	J A 42	G	G	G	G	E B 20	17	21	25	23	J A 21
28	21	J A 25	20	19	21	E B 15	20	26	29	33	34	G	G	G	34	G	G	G	G	20	E B 15	20	20	J A 30	
29	E B 16	E B 16	18	E B 16	E B 15	E B 16	18	28	30	34	G	G	38	38	G	J A 43	G	G	G	E B 15	23	46	45	24	
30	24	22	22	22	22	E B 16	E B 16	26	30	33	36	J A 57	42	38	36	J A 38	32	G	22	22	22	47	E B 15	E B 16	
31	E B 16	E B 15	E B 16	E B 16	E B 15	E B 15	16	24	33	35	44	45	J A 43	J A 47	J A 47	49	G	33	J A 33	J A 28	21	22	21	24	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E B 16	E B 16	18	E B 16	E B 16	E B 16	E B 16	22	29	33	36	38	39	40	39	J A 38	32	28	21	21	21	20	E B 17	E B 16	
U Q	21	J A 21	22	18	21	20	18	24	31	35	38	41	J A 43	J A 42	J A 43	J A 49	J A 40	J A 33	J A 25	22	23	24	22	23	
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	16	21	G	32	35	36	38	38	G	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	

MAR. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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

MAR. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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

MAR. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	316	302	299	315	361	337	322	362	376	358	366	382	369	347	332	371	353	381	357	340	332	311	330	317
2	310	322	316	306	323	367	322	379	377	367	355	358	361	364	369	379	363	375	397	393	336	333	318	317
3	323	329	330	335	359	377	324	354	375	365	369	347	359	325	356	348	374	375	392	362	312	323	325	325
4	321	345	337	327	361	359	337	371	376	357	359	352	363	345	363	352	389	382	387	361	330	317	332	302
5	307	323	321	319	348	350	334	385	392	373	348	362	336	342	366	358	358	374	376	345	319	310	344	336
6	309	310	311	338	393	415	300	395	390	347	361	369	320	352	357	349	386	374	356	367	356	306	322	332
7	310	317	345	320	371	397	323	378	375	372	341	357	358	355	370	364	372	366	367	345	333	338	353	353
8	290	291	F	350	374	406	320	387	374	362	360	386	330	363	369	394	372	376	345	362	381	311	331	320
9	319	313	297	329	358	373	353	375	374	340	325	343	339	351	357	340	364	362	370	376	343	320	326	317
10	329	327	320	337	383	336	357	395	396	375	330	340	333	343	334	357	348	363	377	364	359	305	318	311
11	315	320	322	348	391	358	345	363	362	349	348	337	344	342	359	359	366	359	379	368	351	315	305	293
12	312	314	319	304	364	420	365	389	371	357	309	366	333	358	358	347	354	345	369	368	360	328	329	311
13	319	315	337	292	394	367	346	398	377	362	330	346	325	341	382	345	346	364	377	371	326	309	309	307
14	A	330	319	328	335	349	337	378	390	346	341	A	349	357	357	346	367	373	362	348	315	301	F	F
15	F	F	F	330	368	365	334	383	376	362	345	351	349	333	378	368	355	383	381	356	323	315	312	311
16	310	F	316	381	390	323	317	374	373	374	363	362	342	355	354	360	363	370	379	340	315	309	317	325
17	310	321	305	351	338	320	332	377	385	348	321	300	347	335	366	373	357	356	373	349	320	327	316	324
18	302	298	324	330	367	379	326	347	331	352	344	350	371	360	345	375	334	347	376	352	374	326	318	311
19	312	282	319	327	394	299	327	371	374	335	336	323	336	318	344	366	360	360	369	338	314	310	280	296
20	F	F	307	337	343	317	308	369	360	321	335	323	335	349	350	342	353	352	362	359	351	326	291	302
21	F	F	296	341	375	359	319	371	348	334	299	333	329	336	347	354	350	353	371	360	360	351	297	F
22	F	321	285	312	345	342	348	373	363	337	325	339	335	345	360	361	348	363	368	354	320	319	F	309
23	313	317	331	322	364	379	340	374	336	349	342	337	337	344	346	360	348	362	373	349	370	308	289	308
24	302	304	309	356	394	321	331	358	353	363	349	322	319	323	346	348	331	365	386	355	358	295	309	F
25	F	F	F	F	352	326	398	362	352	336	330	330	320	341	352	354	372	383	351	332	326	F	300	
26	F	325	F	F	F	F	F	383	367	372	335	327	329	348	332	316	327	337	368	380	379	324	318	309
27	F	F	F	F	F	F	346	381	346	366	334	305	304	332	343	346	324	340	370	356	347	313	321	328
28	320	343	339	347	342	325	333	387	357	360	356	331	327	338	335	365	374	334	346	338	347	331	308	313
29	311	311	328	338	374	330	336	382	355	362	361	345	324	342	351	309	317	306	350	348	362	A	347	311
30	F	F	F	F	336	354	356	391	358	352	339	344	334	343	322	341	345	356	352	345	344	337	342	328
31	302	318	327	360	387	305	344	370	368	363	336	327	289	314	319	355	347	349	352	329	353	389	297	298
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	25	27	28	29	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	30	28	28
MED	312	318	319	330	366	354	334	378	373	358	341	344	335	343	354	355	354	363	370	355	344	318	318	311
U Q	319	324	329	347	385	375	345	387	376	365	356	357	349	352	363	365	366	374	379	364	359	327	330	324
L Q	309	310	308	320	346	328	323	371	358	348	334	330	329	335	343	346	347	352	362	345	323	310	308	308

MAR. 2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										L	U L	U L	U L		L	L	L								
2											U L	U L	411	408	400	407	L	L							
3										L	L	405	413	403	390	388	A	A							
4								L	L	U L	U L	393	421	429	A	U L	456	396							
5										L	L	390	408	A	A	A	L	L							
6										U L	U L	381	406	400	398	415	424	418							
7									L	L	407	400	402	419	U L	U L	L	L							
8									L	L	401	423	413	A	L	A	A	L							
9										U L	U L	386	395	413	367	399	L								
10									L	U L	U L	369	385	426	426	397	394	A							
11									L	U L	U L	371	395	411	408	412	413	L	L						
12									A	U L	U L	411	398	390	A	417	417	A							
13								L	U L	U L	400	378	379	373	411	U L	U L	U L							
14								L			385	389	A	A	A		A	A	A						
15										L	U L	U L	389	395	416	401	A	U L	L	L					
16										L	A	A	415	419	401	398		L	L						
17									L	U L	U L	407	443	426	427	419	A	A	L						
18								L		383	414	403	396	440	405		L	L	L						
19									U L	U L	392	408	402	414	400	428	A	A							
20								L	U L	U L	369	414	401	430	402	413	392	L	L						
21									L		392	403	396	415	407	404		L	L						
22								L	L		395	410	417	420	436	393	382	U L	L						
23								L	L	U L	U L	393	409	414	403	395	L	L							
24								L	L		390	380	410	416	410	413	U L	L	L						
25									L		401	406	412	420	415	383	U L	L							
26									A		390	437	426	U L	407	405	A	A	A						
27								U L	U L	U L	404	404	412	397	406	406	417	U L	L						
28								L			404	396	415	416	399	391	L								
29								L	U L	U L	391	403	422	U L	423	405	408	391	L						
30								L	L		397	418		401	401	395	391	L	L						
31									L	U L	U L	390	A	371	A	383	398	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										6	25	28	28	27	23	22	9								
MED										U L	388	392	401	413	411	405	398	396							
U Q										U L	400	406	406	419	420	415	413	418							
L Q										U L	383	388	395	405	403	399	394	386							

MAR. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2020 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										272	266	230	252	284	258	240	240								
2											250	274	258	236	240	228	242	220							
3										260	252	256	248	272	246	264	226	216							
4									228	260	260	238	238	260	252	248	222								
5										248	272	258	274	244	230	250	248	226							
6											264	264	304	246	240	258	226	224							
7										246	278	264	264	264	240	240	240	252							
8										256	252	238	302	240	234	218	230	230							
9											318	278	278	252	246	260	246								
10										252	316	280	274	262	262	240	240								
11										260	260	280	260	252	240	240	232	230							
12										246	338	264	294	244	234	280	246	246							
13									224	260	302	284	294	250		284	274								
14									236	268	270	A	282	244		244	244	218							
15										260	276	276	268	276	224	240	260	232							
16										246	260	268	284	258	258	246	232	244							
17										264	322	342	250	266	240	240	248	262							
18									296	260	260	256	242	248	248	262	286	256							
19										296	290	292	264	304	256	234	238								
20									244	322	304	282	268	242	242	236	244	250							
21										294	326	258	258	258	246	246	254	254							
22										254	276	312	284	264	252	250	236	264	248						
23										266	266	268	274	270	256	256	256	256							
24										256	234	262	278	276	276	242	228	250	232						
25										262	288	270	268	268	252	226	226								
26										248	298	288	268	236	248	256	E A E A 306 274								
27										262	284	326	298	258	232	244	264	246							
28										244	244	266	266	258	242	226	234								
29										246	246	282	276	248	236	272	272	260							
30									260	260	266	266		248	254	254	248	248	240						
31										254	300	284	320	286	286	232	234								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									9	28	31	30	30	31	29	31	31	21	1						
MED									254	260	272	274	268	256	246	244	244	245	240						
U Q									263	265	302	282	282	266	253	256	256	253							
L Q									232	248	260	264	260	246	240	236	234	228							

MAR. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2020 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 254	B 280	E 280	B 272	E 216	B 198	E 250	B 206	E 206	B 214	E 206	B 206	E 188	B 202	E 192	B 212	E 186	B 208	E 190	B 182	E 210	B 276	E 248	B 266	
2	E 250	B 244	E 254	B 268	E 262	B 208	E 196	B 196	E 206	B 198	E 208	B 200	E 200	B 186	E 186	B 180	E 188	B 184	E 198	B 182	E 208	B 228	E 244	B 246	
3	E 264	B 264	E 258	B 240	E 230	B 204	E 254	B 202	E 218	B 214	E 202	B 196	E 196	B 196	E 196	B 196	A	A	E 192	B 194	E 234	B 242	E 242	B 240	
4	E 268	B 224	E 224	B 242	E 214	B 202	E 214	B 202	E 176	B 176	E 208	B 208	E 204	B 192	A	E 182	B 186	E 198	B 196	E 196	B 202	E 244	B 230	E 254	
5	E 272	B 264	E 264	B 260	E 222	B 204	E 270	B 198	E 210	B 194	E 206	B 198	E 208	B 208	A	A	E 198	B 188	E 186	B 196	E 204	B 246	E 224	B 224	
6	E 286	B 282	E 270	B 218	E 188	B 186	E 320	B 196	E 200	B 208	E 214	B 214	E 206	B 206	E 200	B 176	E 176	B 176	E 196	B 194	E 192	B 232	E 258	B 234	
7	E 264	B 258	E 228	B 248	E 206	B 178	E 288	B 198	E 214	B 200	E 200	B 200	E 200	B 190	E 162	B 190	E 184	B 208	E 206	B 202	E 202	B 198	E 204	B 202	
8	E 308	B 252	E 262	B 250	E 198	B 188	E 292	B 192	E 202	B 202	E 216	B 198	E 198	B 206	E 214	B 214	A	A	E 194	B 212	E 196	B 254	E 216	B 228	
9	E 262	B 230	E 274	B 238	E 210	B 190	E 198	B 192	E 200	B 200	E 196	B 194	E 194	B 208	E 208	B 204	E 218	B 206	E 190	B 192	E 230	B 254	E 268	B 268	
10	E 254	B 218	E 240	B 224	E 196	B 232	E 222	B 192	E 192	B 198	E 190	B 198	E 194	B 194	E 192	B 196	A	E 216	B 198	E 194	B 194	E 234	B 254	E 266	
11	E 248	B 248	E 274	B 232	E 190	B 248	E 260	B 194	E 192	B 192	E 204	B 226	E 200	B 200	E 190	B 186	E 192	B 192	E 190	B 190	E 206	B 250	E 272	B 272	
12	E 272	B 254	E 262	B 252	E 212	B 178	E 178	B 186	E 186	B 186	A	E 198	B 220	A	E 204	B 198	E 196	B 196	A	E 202	B 192	E 192	B 214	E 298	B 284
13	E 258	B 240	E 232	B 248	E 196	B 210	E 242	B 192	E 182	B 196	E 212	B 250	A	E 202	B 214	E 198	B 196	E 214	B 200	E 188	B 202	E 270	B 270	E 250	
14	A	E 222	B 230	E 238	E 228	B 206	E 194	B 194	E 194	B 196	E 184	A	A	A	E 234	A	A	A	E 208	B 192	E 214	B 234	E 222	B 240	
15	E 280	B 276	E 248	B 216	E 194	B 234	E 244	B 192	E 208	B 202	E 200	B 188	E 190	B 188	A	E 186	B 186	E 200	B 198	E 190	B 232	E 246	B 258	E 264	
16	E 266	B 270	E 242	B 202	E 194	B 254	E 262	B 206	E 214	B 210	A	E 204	B 192	E 218	B 188	E 188	B 188	E 188	B 206	E 196	B 212	E 240	B 244	E 228	
17	E 244	B 244	E 254	B 228	E 204	B 244	E 236	B 200	E 206	B 206	E 182	B 184	E 184	B 194	E 196	A	A	E 208	B 206	E 204	B 216	E 220	B 228	E 212	
18	E 256	B 266	E 260	B 234	E 192	B 202	E 246	B 206	E 210	B 198	E 198	B 188	E 188	B 174	E 184	B 200	E 192	B 196	E 202	B 192	E 198	B 216	E 242	B 256	
19	E 266	B 258	E 250	B 246	E 192	B 292	E 292	B 212	E 218	B 214	E 200	B 198	E 196	B 194	E 182	A	A	E 200	B 200	E 202	B 216	E 256	B 242	E 260	
20	E 282	B 264	E 254	B 234	E 222	B 252	E 254	B 208	E 210	B 210	E 190	B 190	E 190	B 190	E 200	B 202	E 190	B 190	E 214	B 196	E 198	B 220	E 226	B 276	
21	E 284	B 276	E 280	B 236	E 206	B 244	E 226	B 190	E 202	B 196	E 196	B 196	E 196	B 196	E 186	B 186	E 190	B 200	E 214	B 208	E 206	B 210	E 268	B 302	
22	E 264	B 264	E 264	B 238	E 226	B 228	E 228	B 210	E 210	B 200	E 200	B 200	E 200	B 188	E 188	B 198	E 200	B 206	E 208	B 202	E 226	B 288	E 316	B 256	
23	E 244	B 244	E 272	B 246	E 212	B 202	E 252	B 210	E 212	B 216	E 216	B 188	E 208	B 208	E 208	B 190	E 200	B 214	E 212	B 206	E 196	B 236	E 288	B 290	
24	E 272	B 260	E 250	B 212	E 178	B 226	E 228	B 194	E 190	B 194	E 206	B 206	E 186	B 186	E 186	B 184	E 184	B 196	E 196	B 196	E 192	B 262	E 270	B 260	
25	E 262	B 248	E 248	B 206	E 180	B 204	E 220	B 198	E 198	B 206	E 182	B 194	E 192	B 192	E 196	B 196	E 196	B 206	E 206	B 202	E 230	B 240	E 254	B 278	
26	E 278	B 260	E 250	B 250	E 204	B 256	E 222	B 198	E 208	A	E 232	B 188	E 188	B 188	E 188	A	A	A	E 206	B 190	E 190	B 216	E 246	B 246	
27	E 268	B 270	E 224	B 218	E 202	B 202	E 218	B 188	E 204	B 188	E 184	B 182	E 180	B 176	E 188	B 188	E 186	B 188	E 206	B 194	E 208	B 224	E 240	B 248	
28	E 244	B 226	E 226	B 220	E 220	B 242	E 232	B 202	E 208	B 202	E 202	B 202	E 192	B 182	E 182	B 184	E 184	B 190	E 216	B 206	E 206	B 208	E 252	B 254	
29	E 254	B 240	E 228	B 228	E 200	B 256	E 220	B 198	E 222	B 214	E 198	B 198	E 180	B 182	E 192	B 192	E 192	B 194	E 208	B 206	E 198	B 284	E 270	B 270	
30	E 286	B 272	E 264	B 264	E 218	B 218	E 192	B 190	E 204	B 200	E 194	B 190	E 274	B 206	E 198	B 182	E 182	B 204	E 200	B 200	E 200	B 220	E 212	B 212	
31	E 256	B 268	E 254	B 226	E 200	B 248	E 224	B 210	E 212	B 202	E 202	A	E 240	A	E 208	B 220	E 174	B 220	E 220	B 226	E 216	B 186	E 292	B 292	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	31	31	31	31	31	31	31	31	29	30	28	28	27	27	25	24	27	31	31	31	30	31	31	
MED	E 264	B 258	E 254	B 238	E 203	B 198	E 232	B 198	E 206	B 200	E 200	B 198	E 196	B 192	E 192	B 190	E 189	B 200	E 206	B 196	E 202	B 234	E 248	B 256	
U Q	E 272	B 268	E 264	B 248	E 218	B 244	E 254	B 206	E 210	B 209	E 206	B 204	E 202	B 202	E 208	B 198	E 196	B 208	E 208	B 202	E 214	B 246	E 270	B 270	
L Q	E 254	B 244	E 240	B 224	E 194	B 202	E 220	B 192	E 198	B 196	E 196	B 190	E 189	B 188	E 186	B 185	E 185	B 190	E 198	B 192	E 196	B 220	E 230	B 240	

MAR. 2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2020 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	B												B					
2								B	110	112	108	108	108	106	106	110	110	108							
3							B									A		A	B						
4							B	108	104	108	110	110	110	108		110			B						
5							B	B	116	108	108	108	108	106	106	106	106	110							
6							B	B	114	112	112	112	114	112	112	112	112	112							
7							B	B	112	112	110	110	110	110	110	110	110	112							
8								B	110	102	102	112		A	112	114	114	114	114	114					
9								B	120	120	108	108	108	108	108				108						
10								B	108	108	112	110	110	110	112		A	A	B	B					
11								B	112	112	110	112	112	112											
12								B	114	114	114		A	A	A	116	116	108	108						
13								B	112	112	110	110	110	108	108	108	108		A	B					
14								B	112	112	112	110	110	110	110	110	110	110							
15								B	110	110	110		A	A	A		A	A	A	A					
16								B	112	114	112	112		A	A	A	108	108							
17								B	112	114	112	112		A	A	A									
18								B	126	118	118	120		A	A	A	114	110	110	110	120				
19								B	120	108	108	110	110	108	110	110	114	112	124						
20								B	110	114	110	112	112	116	116	116		A	B						
21								B	116	120	114	114	112		A	A	A	A	A	B					
22								B	116		116	118		A	A	A	A	A	118	120					
23								B	120	116	108	108	114	114	114		A	A	B	B					
24								B	118	118	122		A	A											
25								B	110	114	114	118	118	120		A	A	A	B	B					
26								B	110	114	114		A	A	114	108	110	110		A	B				
27								B	112	110	110		A	A	A	A	A	A	B						
28								B	112	112	110		A	A	A										
29								B	120	126	114	114	112	114		114	118	112	120						
30								B	120	120	110	110	110		A		108	120	120						
31								B	124	118	118	112		A	112	112	112		A	112	112				
								B	112	112	112		A	A	A	A	A	106	106						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								10	31	30	29	22	18	19	20	14	18	19	9						
MED								120	112	112	110	110	111	112	110	110	110	112	120						
U Q								122	118	114	114	112	112	114	114	114	112	112	120						
L Q								112	110	110	110	110	110	108	108	110	108	110	113						

MAR. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2020 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	96	94	B	94	B	94	132	138	146	132	120	G	142	120	G	G	120	120	92	110	106	106	106
2	100	92	92	90	92	B	92	134	132	144	142	134	124	G	G	100	G	G	G	96	B	94	92	B
3	B	92	92	B	86	88	B	G	138	138	136	136	128	128	156	88	174	86	86	86	B	B	B	B
4	B	B	B	B	B	B	B	G	G	G	138	146	G	154	138	134	126	118	114	B	104	104	104	B
5	B	94	B	B	B	B	B	146	138	130	132	130	130	120	116	116	112	G	B	86	B	B	108	108
6	B	100	92	B	92	B	150	150	134	140	140	132	124	116	110	G	126	G	B	B	B	B	B	B
7	B	B	B	B	B	B	B	136	130	134	130	114	98	108	G	124	124	152	144	B	B	B	B	B
8	B	B	B	B	B	B	86	G	160	G	128	116	154	140	144	82	82	82	142	90	90	B	B	B
9	B	B	90	B	B	B	B	132	152	152	142	136	128	118	G	104	98	98	98	98	98	96	B	96
10	B	B	90	B	88	88	B	118	126	134	134	128	120	120	102	100	96	96	96	B	96	96	94	B
11	B	B	B	B	B	B	B	120	G	112	110	100	98	100	122	G	G	G	B	82	B	B	B	B
12	B	B	B	82	B	B	B	142	142	142	140	128	116	116	106	108	120	100	100	100	100	90	102	102
13	100	100	100	B	B	B	B	116	G	114	118	118	118	116	144	166	G	166	92	84	98	98	96	96
14	96	B	B	B	94	94	B	116	138	114	116	96	98	98	110	100	98	96	86	86	86	B	94	94
15	B	B	92	B	B	94	B	124	124	120	112	110	98	98	98	98	G	G	B	90	B	B	B	B
16	B	B	B	B	B	B	B	G	126	126	118	96	96	98	154	G	G	G	G	B	B	B	B	B
17	B	B	B	90	B	B	B	134	140	142	142	132	118	152	160	148	148	138	G	B	92	90	B	90
18	B	B	B	B	B	B	B	132	G	G	122	124	124	G	116	110	106	G	B	92	B	B	B	B
19	B	B	B	B	B	B	B	120	G	118	112	136	G	98	92	92	92	94	94	94	B	B	B	B
20	96	96	B	96	96	B	B	118	118	104	110	110	100	100	100	100	100	G	G	B	B	B	B	B
21	B	B	B	B	B	B	B	102	G	108	108	108	116	116	116	100	100	G	92	B	92	92	94	94
22	94	94	94	B	B	B	B	116	116	116	116	102	102	94	94	94	94	100	100	100	100	102	104	106
23	106	94	96	94	B	98	B	114	122	108	108	G	178	106	96	96	96	98	86	84	B	84	B	B
24	B	B	86	B	B	86	B	120	164	112	110	96	96	96	G	88	84	96	106	B	106	B	B	B
25	B	B	B	B	B	B	B	124	G	G	112	96	96	98	98	102	102	100	B	B	98	98	98	98
26	90	90	90	88	94	94	94	124	124	114	94	94	94	94	92	82	86	84	84	84	84	84	86	B
27	B	94	94	B	88	88	B	142	154	138	120	110	100	98	98	G	G	G	116	B	100	98	98	98
28	94	94	94	94	94	B	94	128	134	118	154	G	G	G	98	G	G	G	G	114	B	106	102	110
29	B	B	98	B	B	B	92	120	120	120	G	G	102	102	G	102	G	G	G	B	102	98	98	98
30	98	94	98	98	90	B	126	130	126	122	100	152	152	152	108	102	G	146	130	98	98	B	B	B
31	B	B	B	B	B	B	138	128	124	104	92	92	92	94	94	96	G	150	126	110	110	100	100	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	13	16	8	11	8	7	27	24	27	30	28	27	28	26	25	21	18	19	19	18	18	15	14
MED	96	94	93	92	92	91	94	124	133	124	121	115	116	107	110	100	100	99	100	92	98	98	98	98
U Q	100	96	95	95	94	94	94	134	139	138	136	131	124	120	138	109	122	120	120	100	102	100	104	106
L Q	94	93	91	89	88	88	92	118	125	114	112	100	98	98	98	95	95	96	92	86	92	92	94	96

MAR. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F4	F1		F3		L1	HL21	H2	H1	H1	C2		H1	C1			C2	C2	F1	F1	F2	F2	F1	
2	F2	F2	F3	F1	F1		F1	H2	H2	H2	H1	H2	C1			L2				F1		F1	F4		
3		F1	F2		F3	F1			H2	H2	H2	H2	C1	C1	H1	L2	HL13	L3	L3	F1					
4											H1	H2		H1	H1	H2	H2	C2	C1		F1	F2	F2		
5		F2						H2	H2	H2	H1	H1	H1	C2	C2	C2	C2				F1		F1	F1	
6		F2	F2		F1		H1	H2	H3	H2	H2	H2	C1	C1	C2		C2								
7							H2	H2	H2	H2	C2	C2	L2	C1			C1	C1	H2	H2					
8						F1		H2			C2	C1	H2	H1	HL12	L6	L3	L5	H2	F1	F1				
9			F2				H2	H2	H2	H1	H1	H2	C3			L2	L4	L3	L3	F3	F1	F1		F1	
10			F2		F2	F1		H2	H2	H1	H2	C2	C1	C1	L3	L2	L4	L6	L3		F2	F1	F1		
11							C2		C1	C2	L2	L2	L2	C2	CL22					F1					
12				F2			H3	H2	H2	H2	C2	C1	C2	C1	C2	C3	C3	L3	L3	F1	F1	F1	F6	F4	
13	F1	F1	F1				C2		C2	C2	C3	C3	C2	C2	H1		H1	L2	F1	F2	F2	F3	F1		
14	F4				F2	F3	C2	H2	C2	C2	L3	L2	L2	L6	L3	L5	L3	L4	F1	F2		F1	F2		
15			F2		F2		C3	C3	C2	C2	C2	L2	L2	L4	L4					F1					
16							C2	C2	C4	L4	L4	L2	L1	H1											
17				F2			H1	H2	H1	H2	H1	C1	H1	H1	H1	H1	H1				F3	F2		F1	
18							H2			C1	C1	C1		C2	C1	C1	L2			F1					
19							C3		C2	C1	C1		L2	L2	L4	L4	L2	L4	F2						
20	F2	F2		F2	F1		C3	C3	L3	C1	C1	L2	L2	L2	L3	L2									
21							H2		C2	C1	C1	C2	C1	C1	L1	L2		L4		F1	F1	F5	F2		
22	F2	F1	F1				C2	C2	C2	C2	L2	L1	L2	L2	L1	L2	L3	L4	F1	F1	F5	F6	F8		
23	F2	F2	F3	F2		F1	C3	C2	C3	C2		H1	C2	L2	L2	L3	L2	L3	F3		F2				
24			F2		F2		C1	H1	C2	C2	L3	L1	L2		L2	L2	L2	L2		F1					
25							C2			C2	L1	L1	L2	L1	L1	L2	L3			F3	F3	F3	F2		
26	F8	F5	F3	F3	F2	F1	F4	C3	C2	C2	L2	L1	L2	L2	L3	L5	L9	L9	L8	F6	F3	F1			
27		F2	F1		F1	F1		H2	H2	H1	C1	C1	L2	L1	L1			L2		F1	F4	F2	F1		
28	F2	F3	F1	F1	F1		F1	C3	C1	C1	H1				L1				F1		F1	F1	F1		
29			F1				F2	C2	C2	C2			L2	L2		L2				F2	F8	F7	F3		
30	F2	F2	F1	F1	F4		H1	C1	C1	C1	L2	HL11	H1	H1	L2	L2		H1	F1	F1	F4				
31							H2	C3	C2	L2	L3	L3	L3	L3	L1	L3		H2	C4	F8	F2	F3	F1	F2	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																									
MED																									
U Q																									
L Q																									

MAR. 2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2020 f_{XI} (0.1MHz)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 37	X 35	X 33	X 32	X 34	X 30	X 26			C	C	C									A	X 34	X 34	X 35
2	X 36	X 38	X 37	X 33	X 33	X 34	X 27			C	C	C	C	C	C	C	C				X 37	X 34	X 37	X 37
3	X 36	X 38	X 37	X 35	X 34	X 27	X 24			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					X 36	X 31	X 32	X 33
12	X 34	X 35	X 35	X 34	X 40	X 32	X 24			C	C	C	C	C	C	C					X 41	X 32	X 32	X 34
13	X 34	X 35	X 34	X 36	X 36	X 24	X 26													C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C						C	C	C	C	X 54	X 50	X 44	X 44
15	42	42	38	39	32	27	25														41	39	38	36
16	X 37	X 38	X 34	X 37	X 28	X 24	X 25														X 47	X 44	X 44	X 44
17	X 43	X 40	X 39	X 39	X 36	X 33	X 32														X 45	X 45	X 43	X 42
18	X 38	X 37	X 37	X 39	X 32	X 26	X 25														X 44	X 43	X 38	X 37
19	38	38	X 37	X 35	X 35	X 19	X 22														X 50	X 48	X 46	X 42
20	X 41	X 40	X 39	X 42	X 39	X 33	X 32														X 52	X 44	X 39	X 37
21	X 34	X 33	X 33	X 39	X 45	X 26	X 23														X 45	X 38	X 36	X 36
22	38	35	36	37	39	30															X 37	X 36	X 35	X 35
23	X 33	X 33	X 32	X 33	X 37	X 21															A	A	X 32	X 31
24	X 33	X 34	X 33	X 34	X 32	X 18															X 36	X 33	X 32	X 32
25	33	37	38	40	28	19															X 43	X 39	A 35	X 35
26	40	35	38	40	30	29															X 45	X 34	X 32	X 35
27	X 34	X 39	X 38	X 35	X 32	X 24															X 60	X 49	X 41	X 42
28	X 42	X 38	X 36	X 38	X 30	X 28															X 58	X 58	X 37	X 37
29	X 38	X 37	X 36	X 35	X 27	X 23															X 110	X 69	X 52	X 40
30	X 40	X 38	X 36	X 35	X 34	X 29	39														X 58	X 47	X 42	X 38
31	X 40	X 38	X 36	X 41	X 33	X 25															X 74	X 38	X 30	X 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	22	22	22	22	22	22	13														20	21	21	22
MED	X 38	X 38	X 36	X 36	X 34	X 26	X 25														X 45	X 39	X 37	X 36
U Q	X 40	X 38	X 38	X 39	X 36	X 30	X 30														X 56	X 48	X 42	X 40
L Q	X 34	X 35	X 34	X 35	X 32	X 24	X 24														X 41	X 34	X 32	X 35

MAR. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2020 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	29	27	26	28	24	20	36	48	C	C	C	53	54	62	65	67	58	59	44	A	28	28	29
2	30	32	31	27	27	28	21	38	46	C	C	C	C	C	C	C	C	78	59	50	31	28	31	31
3	30	32	31	29	28	21	18	36	54	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	58	59	53	39	30	25	26	27
12	28	29	29	28	34	25	18	40	45	C	C	C	C	C	C	C	56	57	57	52	C	26	26	28
13	28	29	28	30	30	18	20	41	44	47	53	61	78	82	78	60	50	52	55	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	60	60	78	87	C	C	C	C	54	48	44	38	38
15	F ₃₃	F ₃₂	32	33	26	21	19	38	47	50	54	67	72	88	86	71	59	50	51	39	35	33	F ₃₁	F ₂₉
16	31	32	28	31	22	18	19	39	52	53	54	58	62	70	72	63	58	53	50	42	41	38	38	38
17	37	34	33	33	30	27	26	42	48	50	58	68	86	92	80	65	48	54	55	46	39	39	37	36
18	32	31	31	32	26	20	19	40	50	61	67	78	81	67	60	55	62	75	72	48	38	37	32	31
19	F ₃₀	F ₃₀	31	29	J ₂₉	B ₁₃	J ₁₆	B ₄₀	52	54	59	72	82	87	89	82	59	54	50	44	44	42	40	36
20	35	34	33	36	33	27	26	48	49	53	61	81	92	118	118	119	106	J ₈₉	R ₉₀	63	46	38	33	31
21	28	27	27	33	39	20	17	39	46	50	56	82	102	95	102	102	102	J ₈₄	R ₈₁	56	39	32	30	30
22	F ₃₁	29	30	31	33	24	22	43	47	52	61	70	92	92	77	70	A	56	55	47	31	30	F ₂₈	F ₂₈
23	27	27	26	27	J ₃₁	B ₁₅	17	40	49	58	66	76	88	100	96	88	69	58	59	57	A	A	26	25
24	27	28	27	28	26	J ₁₂	B ₁₉	38	51	65	66	76	90	102	106	88	87	88	58	42	30	27	26	26
25	F ₂₄	F ₂₈	F ₂₇	34	22	J ₁₃	B ₁₈	38	45	52	56	63	79	94	108	117	99	70	56	47	37	33	A	29
26	F ₂₉	F ₂₉	32	34	24	F ₂₂	23	43	48	58	63	71	84	98	110	103	102	102	91	53	39	28	R ₂₆	29
27	28	F ₂₇	F ₂₈	29	26	18	20	38	46	57	64	65	82	106	113	92	82	86	81	66	54	43	35	36
28	36	32	30	32	24	22	25	44	49	56	67	76	88	98	100	84	66	60	62	64	52	52	31	31
29	32	31	30	29	21	17	22	44	53	63	67	68	88	103	116	123	130	134	136	120	104	63	45	34
30	34	32	30	29	28	23	F ₃₁	44	49	59	69	66	77	91	99	102	97	90	91	70	52	41	36	32
31	34	32	30	35	27	19	26	45	53	58	54	68	74	91	109	108	96	80	71	68	68	32	24	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	22	22	22	22	22	22	22	22	22	18	18	19	20	20	20	19	20	22	22	22	20	21	21	22
MED	30	30	30	30	28	20	20	40	48	55	61	68	82	92	98	88	68	65	59	51	39	33	31	30
U Q	33	32	31	33	30	24	23	43	51	58	66	76	88	99	108	103	98	86	81	63	50	42	36	34
L Q	28	29	28	29	J ₂₆	B ₁₈	18	38	46	52	56	65	76	84	79	65	58	56	55	44	35	28	26	28

MAR. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										C	C	C	428	L	448	L	404	L						
2								180		C	C	C	C	C	C	C	C							
3										C	C	C	C	C	C	C	C	C	C	C				
4									C	C	C	C	C	C	C	C	C	C	C	C				
5									C	C	C	C	C	C	C	C	C	C	C	C				
6									C	C	C	C	C	C	C	C	C	C	C	C				
7									C	C	C	C	C	C	C	C	C	C	C	C				
8									C	C	C	C	C	C	C	C	C	C	C	C				
9									C	C	C	C	C	C	C	C	C	C	C	C				
10									C	C	C	C	C	C	C	C	C	C	C	C				
11									C	C	C	C	C	C	C	C	L	L						
12										C	C	C	C	C	C	C	A	A						
13									284	U	L	428	428	A	440	428	424	384	L	L	C			
14									C	C	C	C	424	432	A	424	C	C	C	C				
15										L	428	424	432	428	432	424	392	L	L					
16									L	U	L	404	424	428	A	432	436	416	400	L	L	L		
17										U	L	408	424	432	408	428	432	416	L	L				
18									L	L	412	424	420	432	432	432	436	412	L					
19									L	408	428	428	436	428	432	416	404	L	L					
20									L	L	404	412	420	436	428	432	424	404	360					
21										U	L	408	416	416	436	440	424	420	400	360				
22										408	424	424	424	A	436	A	A	L						
23									L	L	232	400	424	420	A	432	432	416	408	L				
24									L	408	432	432	432	424	A	436	408	368	L					
25									L	408	432	432	432	428	424	420	408	L						
26										420	436	436	432	440	440	428	416	372						
27										L	420	424	436	432	436	428	432	412	372	L				
28										L	412	420	432	436	428	440	416	412	L	L	L			
29									L	L	404	436	436	432	432	436	436	404	388	L				
30									L	L	412	436	436	440	436	432	436	416	380	L				
31									L	L	U	L	440	440	444	444	440	428	404	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	1	16	18	19	17	18	19	18	17	8						
MED							206	284	408	426	428	432	432	432	424	404	370							
U Q										412	432	436	436	440	436	432	412	376						
L Q										L	404	424	424	432	428	428	416	400	360					

MAR. 2020 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B		C	C	C												
2								B	208		C	C	C	C	C	C	C	C	A	A	B			
3								B	216		C	C	C	C	C	C	C	C	C	C	C			
4								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
5								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
6								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
7								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
8								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
9								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
10								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
11								C	C	C	C	C	C	C	C	C		288	240	A	B			
12								B		C	C	C	C	C	C	C		284	252	A	B			
13								A	212	280	308	320	336	336		A	308	284	244	176	C			
14								C	C	C	C						C	C	C	C	B			
15								196	216	260	296	316	320	336	304	300	292	252	A	B				
16								A	244	284	312	328	332	328	332	324	276	236	172	B				
17								A	232	276	300	308	332	332	320	312	288	240	164	B				
18								B	216	268	304	324	328	324	320	308	276	A	172	B				
19								A	224	284	312	U A	U A	328	324	U A	312	280	A	A	B			
20								A	248	280	A	312	324	316	312	300	U A	A	A	A	B			
21								A	228	280	308	328	328	324	320	308	U A	A	184	B				
22							B	188	224	280	304	324	336	332	U A	316	300	284	A	A	B			
23							B	B	252	276	U A	A	324	A	A	A	284	244	188	A				
24							B	196	240	A	U A	308	A	A	A	A	A	A	A	A	A			
25							B	U A	A	A	308	324	332	320	A	A	284	256	188	B				
26							B	A	A	288	312	A	A	A	A	312	284	252	A	B				
27							B	B	236	276	A	A	U A	A	320	324	304	284	256	A	A			
28							B	A	216	284	308	324	336	336	320	U A	U A	296	276	A	A	B		
29							B	A	244	288	312	320	324	320	320	304	284	252	A	A				
30							B	A	228	284	U A	300	324	328	328	A	316	272	264	196	B			
31							B	A	A	284	312	324	332	328	316	U A	296	284	A	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	19	16	16	15	17	17	14	16	19	13	9					
MED								192	228	280	308	324	328	328	320	306	284	252	176					
U Q								196	240	284	312	328	334	332	324	312	284	254	188					
L Q								182	216	276	304	320	324	322	316	300	276	240	172					

MAR. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E 16	E 16	E 16	E 16	E 16	E 16	J 17	A 18		C	C	C	36	38	38	33	J 45	A 57	J 62	A 16	E 36	J 16	A 20	E 16
2	J 18	A 16	E 16	E 16	J 19	A 16	E 16	E 16	E 16	E 16		C	C	C	C	C	C	30	J 24	A 18	E 16	J 17	A 20	E 18
3	19	20	E 16	E 16	E 16	E 16	E 16	E 16		G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G 28	G		E 18	E 16	J 16	A 19	E 18
12	20	E 16	E 16	E 16	E 16	E 16	E 16	E 16		C	C	C	C	C	C	C	J 47	A 46	J 33	A 16	J 18	A 19	E 18	E 19
13	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		20	24	34	45	40	45	42	35	37	31	G	G	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	40	43	48	41		C	C	C	E 16	E 16	J 28	A 42	A 27
15	J 15	A 27	J 18	A 15	E 16	E 16	E 16	E 16		G	28	32	39	43	J 47	A 40	34	26	G 22	G	G	E 18	E 16	E 16
16	E 16	E 16	E 20	J 52	A 16	E 16	E 16	E 16		20	29	33	40	42	47	G	G	G	J 21	A 16	E 16	E 16	E 16	E 16
17	E 16	E 16	E 20	J 19	A 19	E 16	E 16	E 16		18	27	32	34	35	37	G	38	G	32	29	25	J 23	A 22	J 19
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G	28	33	36	36	40	40	37	37	36	40	21	19	16	20
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		22	28	33	38	J 51	A 40	37	J 44	A 39	35	29	23	18	20	E 16
20	E 16	E 16	E 53	J 22	A 26	J 17	A 19	A 22		J 30	A 36	A 44	A 43	39	39	46	35	J 33	A 33	J 27	A 16	J 20	A 18	E 18
21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		22	27	34	34	36	38	37	40	36	J 33	A 31	G	J 20	A 21	E 17
22	J 32	A 18	A 18	J 22	A 16	E 16	E 16	E 16		G	27	33	48	41	39	72	38	58	85	31	20	16	16	16
23	J 33	A 41	A 16	E 18	E 16	E 16	E 16	E 16		30	40	64	40	47	38	39	40	34	35	30	38	66	68	18
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		J 32	A 39	A 43	A 46	A 46	A 40	67	68	50	31	30	22	19	44	18
25	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		J 29	A 33	36	36	40	41	44	46	35	G	G	E 16	E 16	J 28	
26	J 26	A 19	A 41	J 16	A 50	A 20	A 18	A 26		29	37	39	J 51	A 51	A 54	A 43	35	33	28	20	19	J 31	A 32	E 19
27	E 16	E 16	E 16	E 18	J 33	A 16	20	20		30	34	34	J 42	A 39	37	37	35	G	G	20	E 16	J 17	A 18	
28	19	J 22	A 16	E 16	E 16	E 16	E 16	E 16		25	30	33	34	39	37	39	37	35	J 38	A 34	25	E 16	E 16	E 16
29	E 16	E 16	E 16	E 16	E 16	E 18	18	22		30	34	35	36	38	39	39	38	36	31	20	J 24	A 24	J 22	A 24
30	J 30	A 16	E 16	E 16	E 16	E 16	E 16	E 16		24	29	32	43	J 40	A 44	38	52	G	G	G	24	21	26	20
31	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		24	30	32	37	J 44	A 42	44	44	36	G	G	J 29	A 24	J 22	A 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	22	22	22	22	22	22	22	22	22	18	18	19	20	20	20	19	21	22	22	22	22	22	22	22
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		20	28	33	38	40	40	39	39	36	33	30	22	17	J 18	A 19
UQ	J 19	A 18	A 18	A 18	16	16	17	22		30	34	43	43	46	42	44	39	37	33	25	21	22	28	20
LQ	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16		G	27	33	35	36	38	38	37	33	G	G	G	E 18	E 16	E 16

MAR. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 18	26	C	C	C	35	37	37	32	36	28	25	E 16	A 36	A 16	E 16	E 16	E 16
2	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	C	C	C	C	C	C	C	C	28	20	E 16	E 16	E 16	E 16	E 16	E 16
3	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	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
5	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
6	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
7	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
8	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
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
10	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
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G 25	G	18	E 16	E 16	E 16	E 16	E 16	E 16
12	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	27	C	C	C	C	C	C	46	43	29	E 16	E 16	E 16	E 16	E 16	E 16
13	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	20	24	33	37	37	42	40	35	36	30	G	G	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	40	42	47	39	C	C	C	C	E 16	E 16	E 16	24	18	E 16
15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	26	32	36	42	40	37	34	24	21	G	E 16	E 16	E 16	E 16	E 16	E 16
16	E 16	E 16	E 16	E 20	E 16	E 16	E 16	E 16	20	28	32	37	39	45	G	G	G	G	18	E 16	E 16	E 16	E 16	E 16	E 16
17	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	18	27	32	33	34	36	G	G	G	G	32	28	24	E 16	E 16	E 16	E 16
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	28	32	35	35	40	38	36	36	34	29	20	E 16	E 16	E 16	E 16	E 16
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	28	32	36	38	37	36	40	37	32	28	21	E 16	E 16	E 16	E 16	E 16
20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	21	26	33	34	38	36	36	36	34	30	28	26	E 16	E 16	E 16	E 16	E 16
21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	27	33	33	35	37	36	37	34	31	28	G	E 16	E 16	E 16	E 16	E 16
22	E 16	E 16	E 16	E 17	E 16	E 16	E 16	E 16	G	26	32	40	39	36	58	36	54	85	31	20	E 16	E 16	E 16	E 16	E 16
23	24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	28	34	35	38	46	35	36	34	34	32	28	35	A 66	A 16	A 16	E 16
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	29	32	38	42	37	36	50	36	33	27	20	21	18	E 16	E 16	E 16
25	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	13	29	31	34	34	38	38	35	34	33	G	E 16	E 16	E 16	A 23	A 37
26	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	28	36	35	36	40	37	38	34	31	26	20	E 16	E 16	E 16	E 16	E 16
27	E 16	E 16	E 16	E 18	E 16	E 16	E 16	E 16	20	30	33	34	36	36	35	37	34	G	G	20	E 16	E 16	E 16	E 16	E 16
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	30	33	34	38	37	39	36	33	33	26	23	E 16	E 16	E 16	E 16	E 16
29	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	28	34	35	36	38	38	38	36	34	28	20	21	23	E 16	E 16	E 16
30	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	28	32	42	38	39	36	35	G	G	G	20	E 16	E 16	E 16	E 16	E 16
31	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	29	32	36	41	40	41	42	36	G	G	29	22	18	E 16	E 16	E 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	22	22	22	22	22	22	22	22	22	18	18	19	20	20	20	19	21	22	22	22	22	22	22	22	22
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	20	28	32	35	38	38	37	36	34	32	28	20	E 16	E 16	E 16	E 16	E 16
U Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	22	28	33	37	39	40	38	38	36	34	28	23	16	18	16	16	E 16
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	26	32	34	36	36	36	36	32	G	G	G	E 16	E 16	E 16	E 16	E 16

MAR. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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

MAR. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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	317	315	316	312	351	342	333	365	392		C	C	C	370	317	363	350	373	365	371	361	A	321	311	322
2	318	343	359	328	336	370	334	382	377		C	C	C	C	C	C	C	C	355	347	378	341	320	316	316
3	318	319	346	315	357	379	324	360	395		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	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
5	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
6	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
7	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
8	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
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
10	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
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	363	375	389	385	335	354	299	323
12	321	307	325	336	379	390	362	407	401		C	C	C	C	C	C	C	361	363	380	361	C	323	322	322
13	314	329	332	365	387	345	315	381	359	347	324	316	340	343	368	385	376	385	382		C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	349	354	340	353	C	C	C	C	357	339	339	338	321
15	^F 292	^F 316	331	359	384	374	344	397	372	351	330	339	322	328	352	357	367	370	378	360	340	337	^F 323	^F 302	
16	329	332	319	326	378	311	327	380	375	357	358	343	348	342	345	366	366	378	379	342	325	313	310	322	
17	324	345	338	355	367	339	324	381	382	340	331	302	329	354	362	373	366	353	377	358	340	324	320	334	
18	322	307	332	351	363	317	323	366	347	352	345	350	357	352	361	321	332	354	388	365	330	356	314	301	
19	^F 309	^F 305	319	338	431		B	B	366	382	348	329	307	319	323	338	370	375	370	370	357	315	331	307	319
20	315	313	306	331	369	319	326	370	346	327	303	307	311	350	326	330	339	338	374	354	328	328	323	297	
21	301	290	305	295	399	376	292	377	351	321	282	314	348	309	323	316	318	^J 328	^R 351	378	332	325	316	305	
22	^F 314	297	301	344	378	339	320	382	355	322	331	292	344	358	338	355	A	356	373	374	346	^A 301	^F 317	^F 285	
23	297	316	330	352	408		B	301	370	361	353	346	315	322	333	320	307	327	344	364	396	A	A	280	295
24	317	339	322	377	434		B	324	381	340	360	322	303	317	317	345	314	340	365	394	379	309	315	304	321
25	^F 327	^F 308	^F 353	413	444		B	325	390	375	362	341	326	311	317	328	327	348	361	380	371	362	337	A	317
26	^F 298	^F 330	^F 338	370	356	306	328	385	364	362	341	314	314	324	329	317	305	347	382	384	365	351	311	323	
27	330	346	^F 321	^F 377	386	399	335	390	353	345	334	284	295	333	351	330	312	334	370	361	357	367	312	314	
28	345	343	335	367	343	318	332	390	371	350	339	329	321	333	344	336	333	332	339	364	346	388	308	308	
29	311	322	346	347	379	321	330	386	375	369	344	304	323	335	322	311	322	330	352	353	369	379	308	303	
30	282	288	300	332	367	361	^F 352	401	369	342	353	327	303	316	327	332	337	330	361	375	350	320	359	323	
31	325	314	318	380	433	308	340	388	364	369	327	324	285	302	325	342	331	333	317	345	378	332	281	292	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	22	22	22	22	22	18	21	22	22	18	18	19	20	20	20	19	20	22	22	22	20	21	21	22	
MED	317	316	328	349	378	340	327	382	370	350	332	315	322	333	341	332	340	354	374	362	340	331	312	316	
U Q	324	332	338	367	399	374	334	390	377	360	344	329	346	342	352	357	366	365	380	378	360	352	321	322	
L Q	309	307	318	331	363	318	324	370	355	342	327	304	312	317	326	317	329	334	361	357	331	320	308	302	

MAR. 2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										C	C	C		L		L		L						
2								499			C	C	C	C	C	C	C							
3											C	C	C	C	C	C	C	C	C	C				
4									C	C	C	C	C	C	C	C	C	C	C	C				
5									C	C	C	C	C	C	C	C	C	C	C	C				
6									C	C	C	C	C	C	C	C	C	C	C	C				
7									C	C	C	C	C	C	C	C	C	C	C	C				
8									C	C	C	C	C	C	C	C	C	C	C	C				
9									C	C	C	C	C	C	C	C	C	C	C	C				
10									C	C	C	C	C	C	C	C	C	C	C	C				
11									C	C	C	C	C	C	C	C	C	L	L					
12											C	C	C	C	C	C	A	A						
13										U L			A					L	L	C				
14									C	C	C	C	U A	A	A	C	C	C	C					
15											L		A	U A				L	L					
16										U L		A	A				L	L	L					
17										U L							L	L						
18										L	L		U A					L						
19										L					A	A		L	L					
20										L	L													
21										U L														
22											A					A	A	L						
23										L	L			A				L						
24										L					A	L								
25											L													
26											L													
27											L													
28											L													
29											L													
30											L													
31											L													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	1	16	16	16	16	18	16	18	17	8						
MED								457	471	384	393	412	418	416	410	400	383	383						
U Q										L														
L Q											L													

MAR. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2020 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										C	C	C	260	330	254	270	228	226						
2								208		C	C	C	C	C	C	C	C							
3										C	C	C	C	C	C	C	C	C	C	C				
4									C	C	C	C	C	C	C	C	C	C	C	C				
5									C	C	C	C	C	C	C	C	C	C	C	C				
6									C	C	C	C	C	C	C	C	C	C	C	C				
7									C	C	C	C	C	C	C	C	C	C	C	C				
8									C	C	C	C	C	C	C	C	C	C	C	C				
9									C	C	C	C	C	C	C	C	C	C	C	C				
10									C	C	C	C	C	C	C	C	C	C	C	C				
11									C	C	C	C	C	C	C	C	236	226						
12										C	C	C	C	C	C	C	260	242						
13									206	286	322	306	270	248	244	234	240	222	212		C			
14									C	C	C	C	274	258	276	246		C	C	C	C			
15										276	320	274	282	264	242	234	242	230	216					
16									238	262	270	288	272	272	264	252	246	230	222					
17									286	302	308	278	242	238	240	246	264							
18									274	260	270	256	250	256	320	296	240							
19									234	286	302	312	284	276	258	230	234	230	226					
20									256	312	336	302	302	246	240	238	228	224						
21									314	394	296	240	276	260	246	232	226							
22									328	292	340	258	246	258	256	A	244							
23								220	240	262	270	296	276	254	256	258	266	250						
24									286	254	300	324	296	282	246	258	254	226						
25									268	286	304	306	282	272	244	226	230							
26									258	282	300	294	286	254	264	272	234							
27									282	276	354	336	274	240	240	272	252							
28									272	284	280	280	258	248	238	262	270	250						
29									240	248	272	318	284	262	258	268	272	246	228					
30									282	258	288	312	292	260	268	250	248	218						
31									242	248	300	300	342	320	278	238	234	224						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	9	18	18	19	20	20	20	19	20	21	7					
MED								214	240	274	289	300	281	273	255	246	246	230	222					
U Q								265	286	302	312	299	282	259	264	264	247	228						
L Q								236	260	272	288	265	255	245	238	234	226	216						

MAR. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2020 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	268	276	286	286	222	224	290	218	214		C	C	C	188	202	224	182	222	200	216	196	A	224	274	252			
2	274	232	218	262	248	212	252	144	208		C	C	C	C	C	C	C	C	210	196	174	184	240	252	260			
3	268	262	238	256	208	192	312	222	216		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
4	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			
5	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			
6	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			
7	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			
8	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			
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			
10	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			
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	200	192	202	194	226	224	298	264			
12	268	266	262	252	204	186	254	194	200		C	C	C	C	C	C	C	A	A	212	204	178	242	248	258			
13	278	250	250	218	198	270	286	208	162	214	210	218		A	224	172	222	194	204	206		C	C	C	C			
14	C	C	C	C	C	C	C	C	C	C	C	C	E A	A	A	A	C	C	C	C	202	204	226	230	230			
15	282	264	252	216	186	220	264	196	212	202	204		A E A	H	256	184	174	180	194	202	158	198	220	236	272	292		
16	252	230	276	226	190	350	286	214	222	216	236	234		A	190	184	196	200	196	212	206	230	250	256	254			
17	216	236	238	212	198	240	248	218	200	206	200	190	178	176	222	180	210	206	216	196	208	232	270	228				
18	248	284	270	226	186	288	308	222	218	214	200	198	212	182	180	200	220	220	208	194	210	206	246	272				
19	272	262	252	230	174		B	B	218	222	218	212	212	188	168	252	214	204	202	210	206	230	216	246	240			
20	272	264	288	244	210	246	268	216	202	208	190	246	194	178	198	196	180	210	214	188	200	224	248	286				
21	288	292	286	254	194	226	422	220	218	196	180	176	176	178	182	170	212	208	220	188	188	236	258	280				
22	292	278	278	244	206	230	270	220	210	214		A	248	176	166		A	A	228	224	194	210	248	290	334			
23	E A	370	262	256	230	198	B	E B	390	194	198	216	198	216	194	214	190	218	226	228	200	A	A	324	308			
24	280	258	262	224	182		B	E B	326	210	224	210	218	262	200	180	196	206	218	206	190	204	246	296	292			
25	294	274	244	194	168		B	E B	316	208	214	214	204	190	196	216	180	190	196	198	214	200	200	246	A	282		
26	294	258	236	208	226	274	268	210	214	228	208	190	218	198	196	186	198	218	204	186	192	226	304	260				
27	262	252	264	204	186	230	240	190	222	216	198	192	172	168	228	202	198	196	214	200	202	192	250	270				
28	218	218	232	212	204	284	252	204	220	222	206	234	182	214	190	182	194	206	238	200	208	192	236	274				
29	270	254	228	204	184	E B	362	258	214	212	210	196	182	194	190	208	192	E A	230	222	194	194	192	188	214	264		
30	284	282	276	242	210	206	204	192	204	194		A	206	200	202	184	182	210	212	216	194	204	220	206	250			
31	244	266	264	214	172	332	236	202	210	218	208	E A	E A	E A	A	248	262	240	224	198	214	232	226	194	E A	288	270	332
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	22	22	22	22	22	18	21	22	22	18	16	18	16	18	17	18	19	21	22	22	20	21	21	22				
MED	272	262	259	226	198	228	261	210	213	214	204	202	190	188	187	190	199	208	213	196	204	226	256	267				
U Q	284	274	276	244	208	E B	310	218	218	216	209	234	E A	206	202	218	200	212	218	216	200	210	244	282	286			
L Q	262	252	238	212	186	220	252	196	204	208	198	190	180	178	180	182	196	201	206	194	193	218	246	254				

MAR. 2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2020 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	C	C	C								E B	B				
2								B	100	C	C	C	100	100	104	104	104	118	122	A	A	B		
3								B	98	C	C	C	C	C	C	C	C	C	C	C	C			
4								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
5								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
6								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
7								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
8								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
9								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
10								C	C	C	C	C	C	C	C	C	C	C	C	C	C			
11								C	C	C	C	C	C	C	C	C		104	104	A	B			
12								B	102	C	C	C	C	C	C	C		104	104	A	B			
13								A	110	104	106	104	104	104	A	102	102	106	112		C			
14								C	C	C	C						C	C	C	C	B			
15																			A	B				
16								A	104	104	102	102	102	102	102	102	102	102	112		B			
17								A	98	100	100	100	102	102	102	102	102	102	106		B			
18								B	98	98	98	98	100	102	100	98	100		A	B				
19								A	104	108	104	104	102	102	102	102	106		A	A	B			
20								A	106	106	A	100	104	104	104	102		A	A	A	B			
21								A	102	102	102	102	102	102	106	106	104		A	106	B			
22							B	116	106	104	102	102	102	102	102	102	102		A	A	B			
23							B	B	108	104	102	A	102	A	A	A		112	108	118	A			
24							B	118	104	A	104	A	A	A	A	A	A	A	A	A	A			
25							B	114	A	A	104	104	100	100		A	A	100	104	110	B			
26							B	A	A	106	104	A	A	A	A		100	100	100	A	B			
27							B	B	102	100	A	A	A		100	100	100	100	102	A	A			
28							B	A	100	104	104	100	100	100	100	100	100		A	A	B			
29							B	A	100	102	102	100	100	102	106	102	102	102		A	A			
30							B	A	102	100	100	106	102	102	A	102	102	102	102		B			
31							B	A	A	102	102	102	102	102	102	102	102		A	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	19	16	16	15	17	17	14	16	19	13	9					
MED								117	102	104	102	102	102	102	102	102	102	104	108					
U Q								121	104	104	104	104	102	102	104	102	104	106	115					
L Q								115	100	101	102	100	100	100	100	101	100	102	106					

MAR. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2020 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	B	B	B	B	B	B	92	138	140		C	C	C	126	148	130	128	114	120	118	B	110	108	102	B		
2	96	B	B	94	B	B	B	B	166		C	C	C	C	C	C	C	96	94	94		B	96	96	96		
3	92	82	B	B	B	B	B	G	146		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	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		
5	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		
6	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		
7	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		
8	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		
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		
10	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		
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	88		G	120	B	B	102	102	B		
12	84	B	B	B	B	B	B	132	126		C	C	C	C	C	C	110	100	100	100	100	100	84	88	104		
13	B	B	B	B	B	B	B	180	138	160	116	120	116	130	130	160	166		G	G	C	C	C	C	C		
14	C	C	C	C	C	C	C	C	C	C	C	132	114	106	126		C	C	C	C	B	B	98	98	92		
15	100	108	96	94	B	B	B	G	124	130	114	108	106	112	112	92	90		G		B	B	B	B	B		
16	B	B	96	92	B	B	B	132	142	136	116	110	104		G	G	G	G		G	B	B	B	B	B		
17	B	B	88	98	98	B	B	142	152	162	156	130	120		G		G				92	94	94	98	B		
18	B	B	B	B	B	B	B	G	160	134	126	128	116	114	116	112	102	92	128	88	86	92	86	88	B		
19	B	B	B	B	B	B	B	124	166	128	116	108	110	112	106	100	104	100	98	84	92	92		88	B		
20	B	B	96	94	92	92	92	122	118	112	110	104	108	106	108	106	102	98	90	92	88	86	86	92	B		
21	B	B	B	B	B	B	B	178	138	110	118	116	114	116	108	108	106	100		G	94	92	B	B	B		
22	98	92	84	82	B	B	B	G	116	174	108	108	116	102	106	100	100	104	164		B	B	B	92	104		
23	94	94	B	94	B	B	B	B	152	104	112	154	128	106	98	96	156	122	116	104	102	96	84		B		
24	B	B	B	B	B	B	B	162	136	112	102	100	98	94	88	100	100	100	98	98	96	102	102		B		
25	B	B	B	B	B	B	144	92	160	132	118	118	106	102	102	106	106		G	G	B	B	96	94	94		
26	100	92	94	94	94	100	96	128	138	118	108	104	94	98	98	108	102	110	106	88	106	102	98	94	B		
27	B	B	B	B	94	90	92	132	174	186	128	102	100	106	156	162		G	G		150	100	96	96	B		
28	94	102	B	B	B	B	B	130	136	168	136	178	118	160	106	104	100	104	106		B	B	B	98	B		
29	B	B	B	B	B	148	144	128	144	128	120	112	148	104	104	106	100	104	110	98	96	96	96	94			
30	94	B	B	B	B	B	B	136	146	142	102	108	104	110	100		G	G	G		124	98	92	106	96	102	
31	B	B	B	B	B	B	B	134	134	130	118	106	106	106	104	104		G			102	100	96	108	94	94	94
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	9	6	6	8	4	4	6	16	22	18	18	19	20	18	19	16	17	16	18	13	14	17	17	13			
MED	94	93	95	94	94	96	94	132	141	131	116	110	112	106	106	106	102	101	112	96	96	96	96	94			
U Q	99	102	96	94	96	124	144	140	152	160	120	128	117	114	126	110	112	107	120	99	102	102	98	100			
L Q	93	92	88	93	93	91	92	128	136	118	110	106	105	104	102	100	100	99	100	90	92	93	90	93			

MAR. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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	H2	H2					C1	H1	H1	C1	C2	CH11	C5		F6	F2	FF22	
2	F1		F1						H1									L2	L3	L1		F1	F2	F1
3	F2	F1							H1															
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																	L3		C1			F2	F1	
12	F2						H1	C2									CL61	C3	C2	C1	F3	F2	F1	F1
13							HC11	HL11	H1	C1	C1	C2	H1	HL11	HL11	H1								
14											H1	C1	C3	C2								F2	F4	F2
15	F3	F1	F2	F1				CL11	H1	C1	C1	C2	CL11	C1	L1	L1		C1						
16			F2	FQ41			H1	H1	H1	C1	C1	C2					L1							
17			F2	F1	F1		H1	H1	H1	H1	HC11	C1			H1		H1	H2	C1	C1	F2	F1	F4	F1
18								HC11	H1	C1	C1	C1	C1	C1	C1	C1	C2	L2	CL12	L1	F1	F1	F1	
19							C2	H1	C1	C1	C1	C1	C1	C2	C1	C1	CL12	C3	L2	L1	F1	F1		F1
20			F4	F1	F2	F2	F1	CL22	CL23	C1	C1	C1	C1	C1	C1	C2	L2	L3	L1	F2	F1	F1	F1	
21							HC12	HC11	C1	C2	C1	C1	C1	C1	C1	C1	C1	C2		L1	F1			
22	F2	F1	F2	F1				C1	HC11	C2	CH11	C1	C5	C2	C5	CQ31	C3	HC11					F1	F3
23	F5	F4		F1				H1	C2	CC21	HC11	CC11	C1	L1	L2	HL11	CL21	C7	CL73	FF75	FF95	F1		
24							H1	H1	C1	C2	C2	L1	L1	L4	CL22	CL12	CL23	LL21	L1	F1	F3	F1		
25							H1	L1	HL11	HL11	CL11	C1	C1	C1	C1	C1	C1					F3	F8	F6
26	F5	F3	FQ21	F1	FQ31	F2	L1	C1	HL11	CL11	C1	C1	L2	LH11	L2	CL11	C1	C1	L1	F3	F4	F1	F2	
27					F3	F1	L1	H1	HL11	HH11	CL11	C1	C2	C2	HC11	HC11			HC11		F1	F1		F2
28	F1	F1					H4	HL11	HC11	HL11	HC11	C1	HC11	C1	C1	C2	C2	C1					F1	
29					F1	H1	C2	H1	CL11	C1	C1	HC11	C1	C1	C1	C2	C1	C2	L2	F4	F4	F3	F3	
30	F2						H2	HC11	HC11	C1	C1	C2	C1	C1	C1			C1	L1	F5	F1	F1	F2	
31							H2	HC11	H1	C1	C2	C1	C2	C2	C1			C1	C3	L2	F1	F3	F3	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAR. 2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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

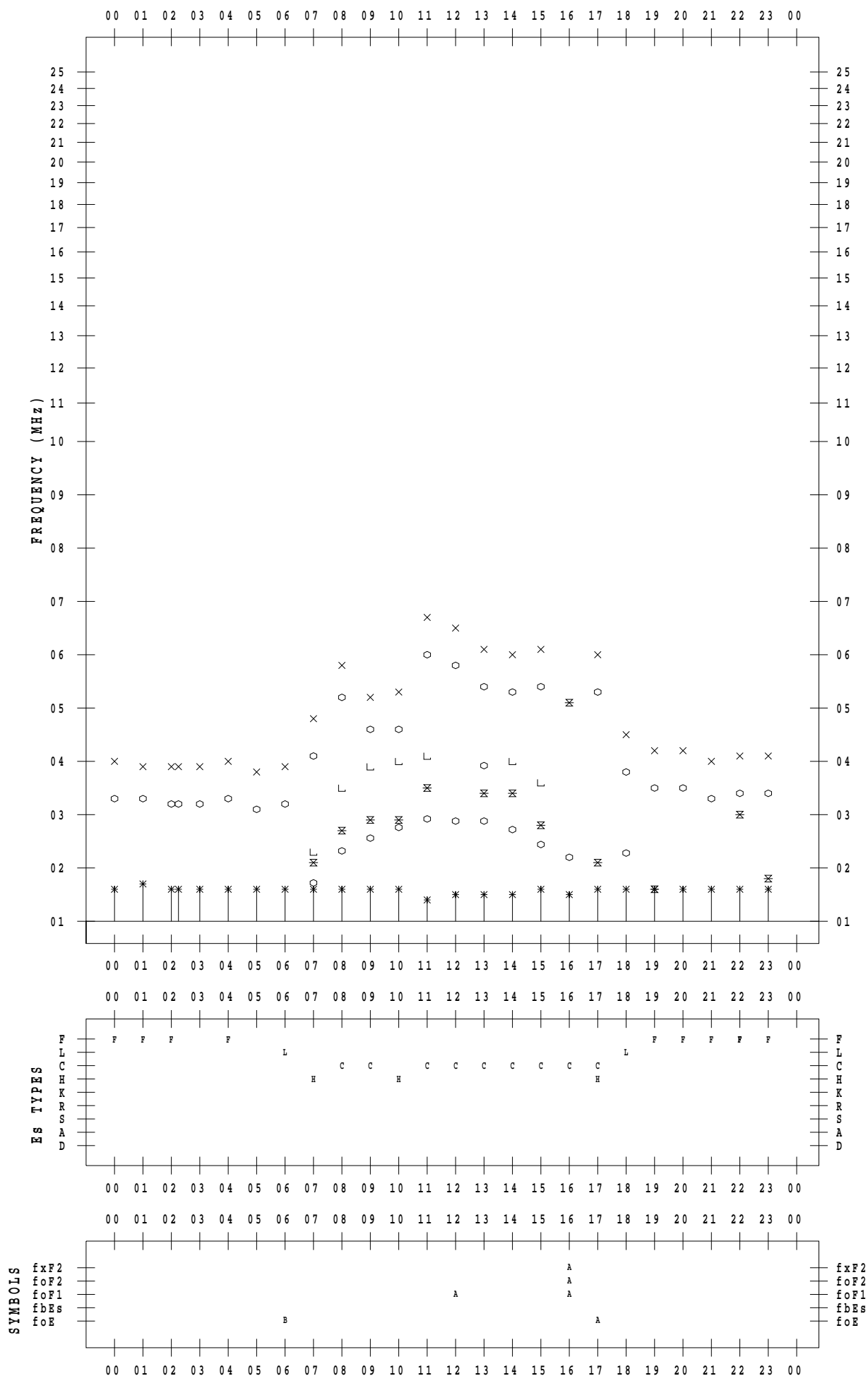
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 1

135 ° E MEAN TIME



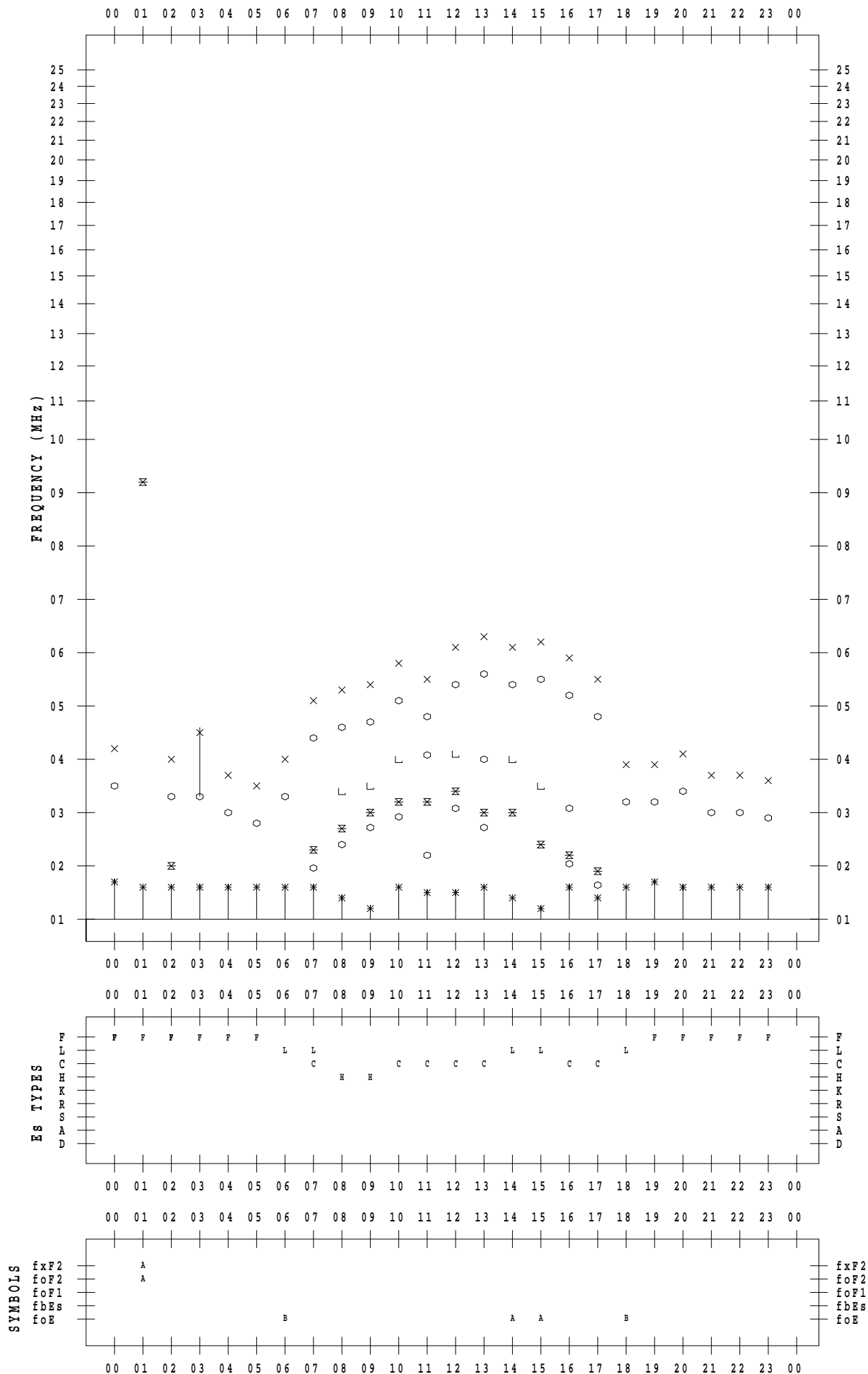
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 2

135 ° E MEAN TIME



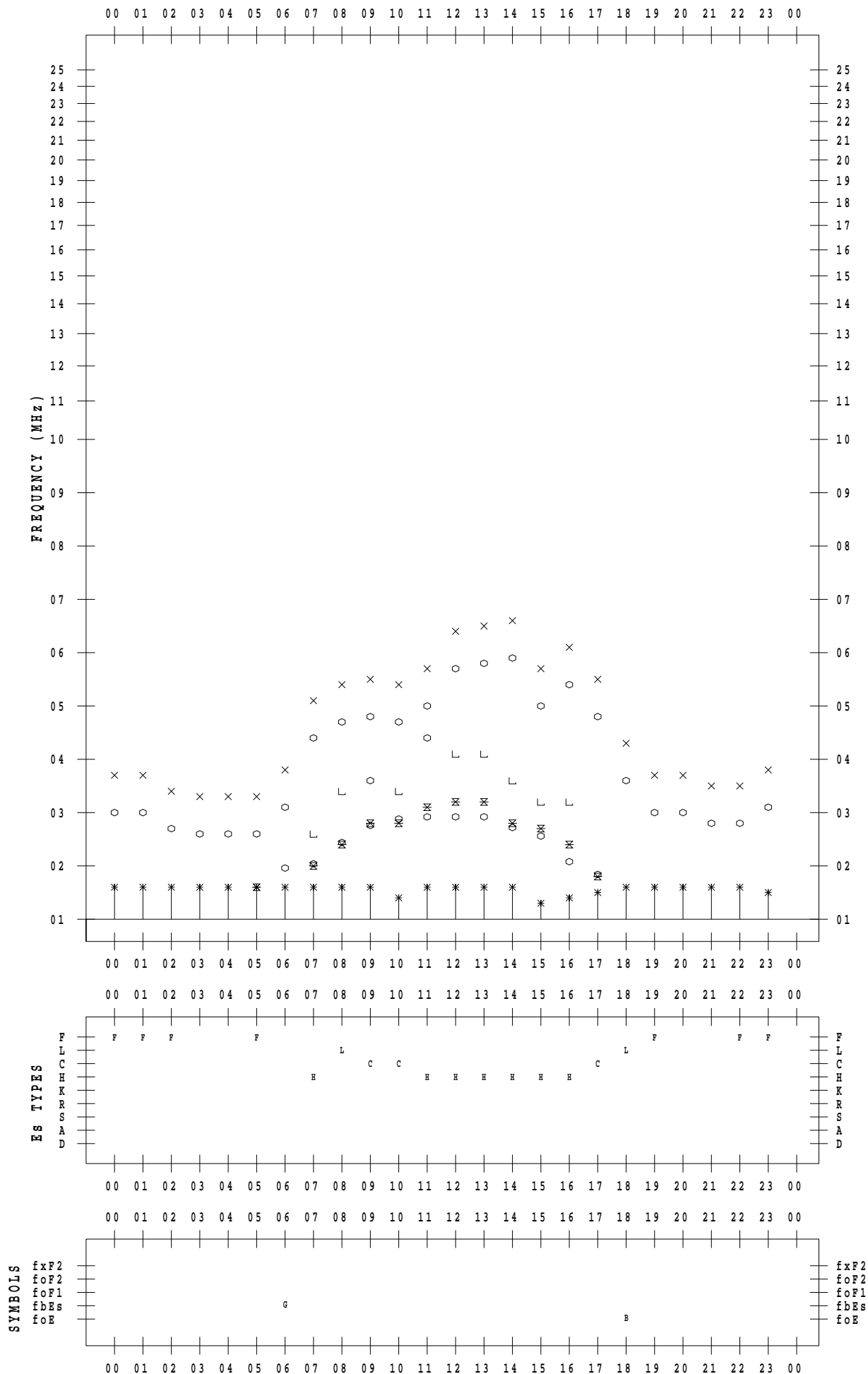
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 3

135 ° E MEAN TIME



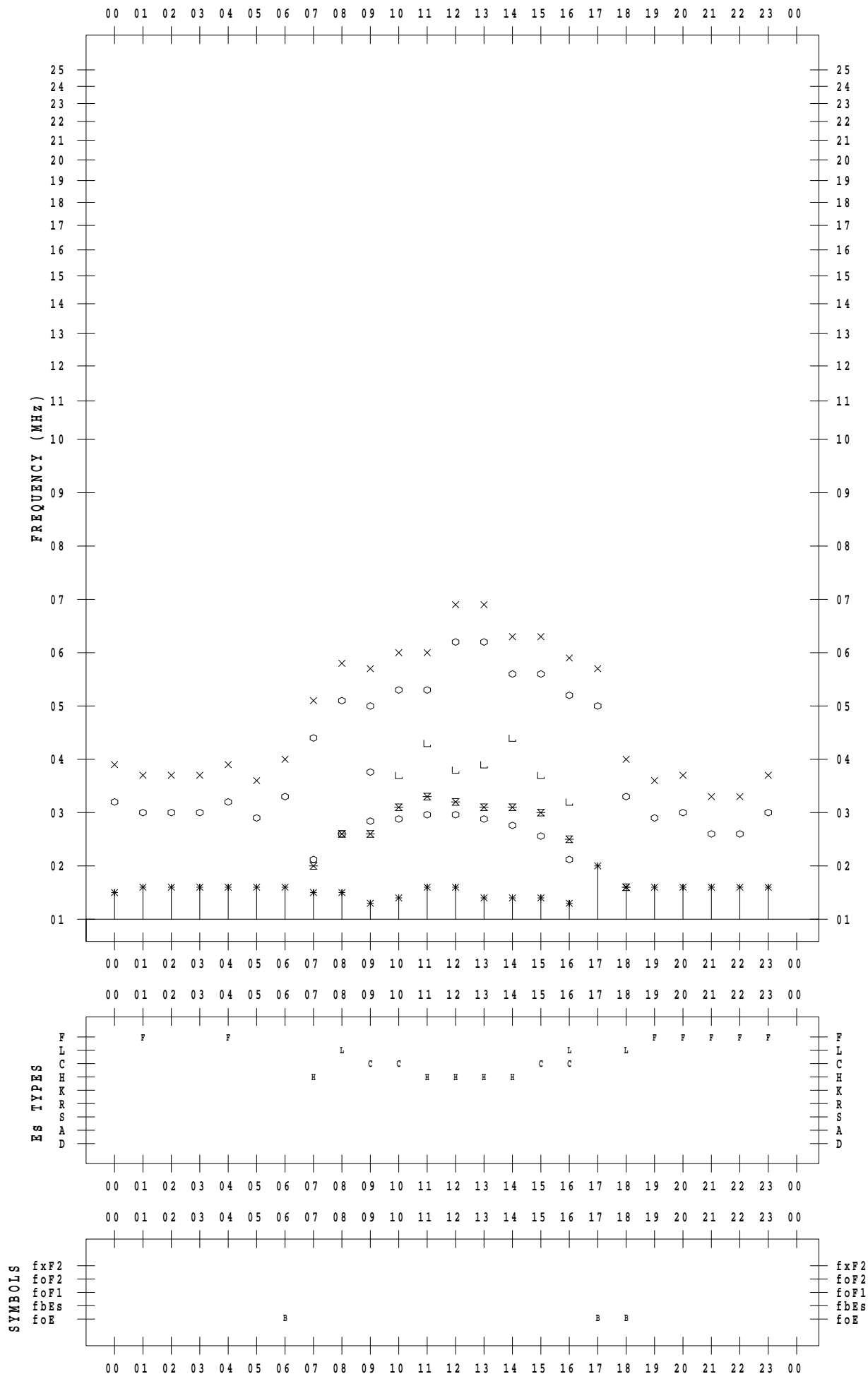
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 4

135 ° E MEAN TIME



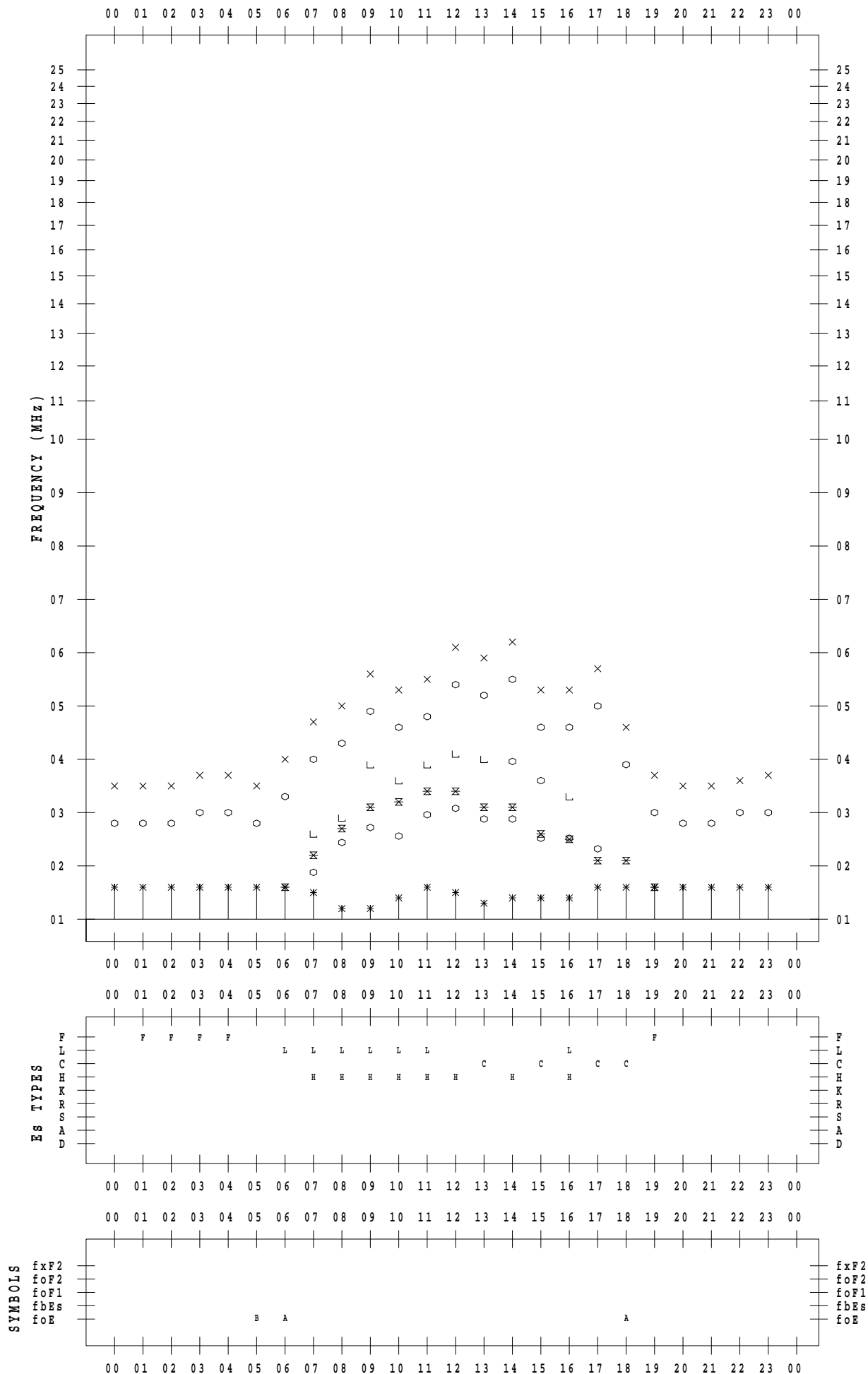
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 6

135 ° E MEAN TIME



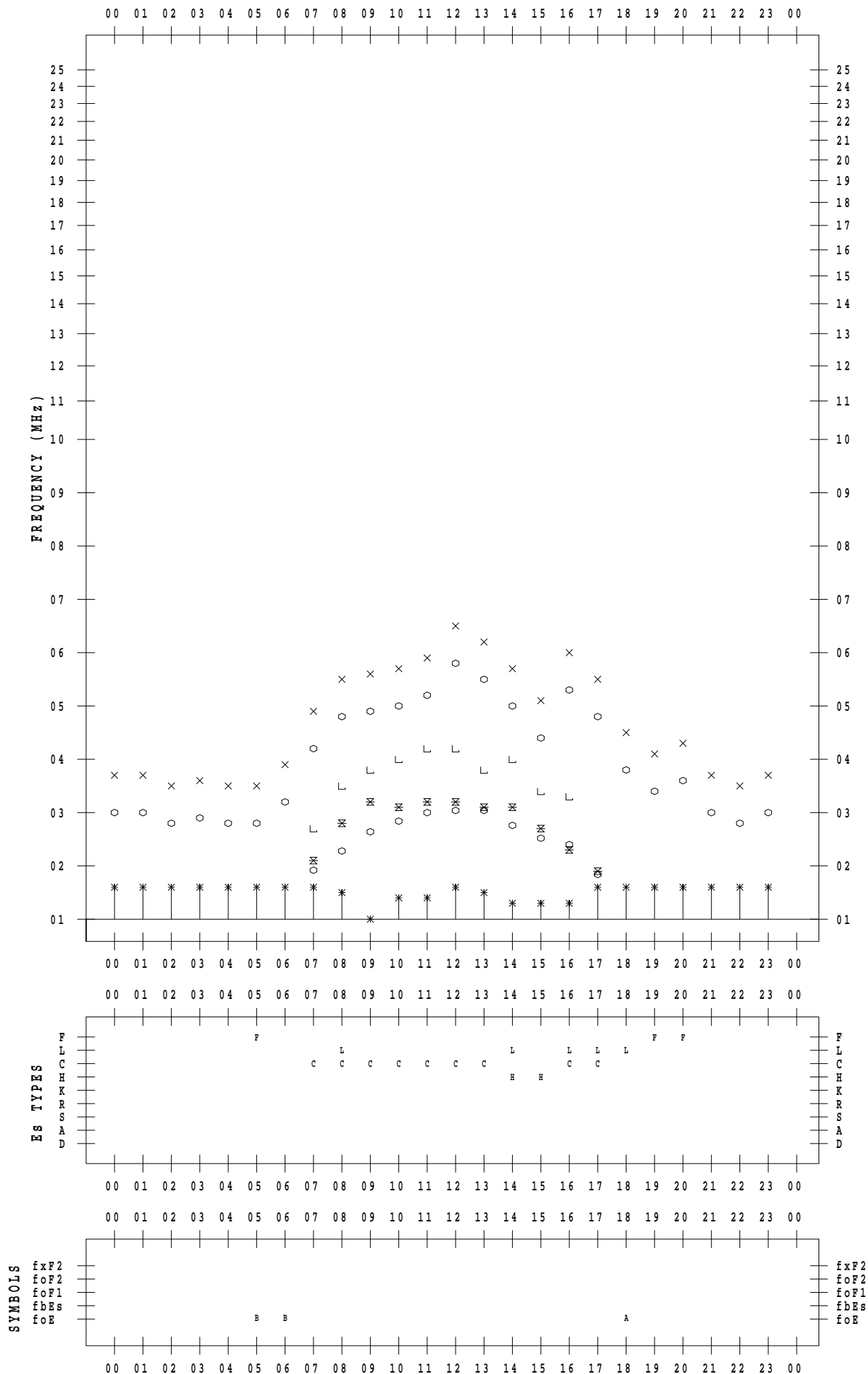
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 7

135 ° E MEAN TIME



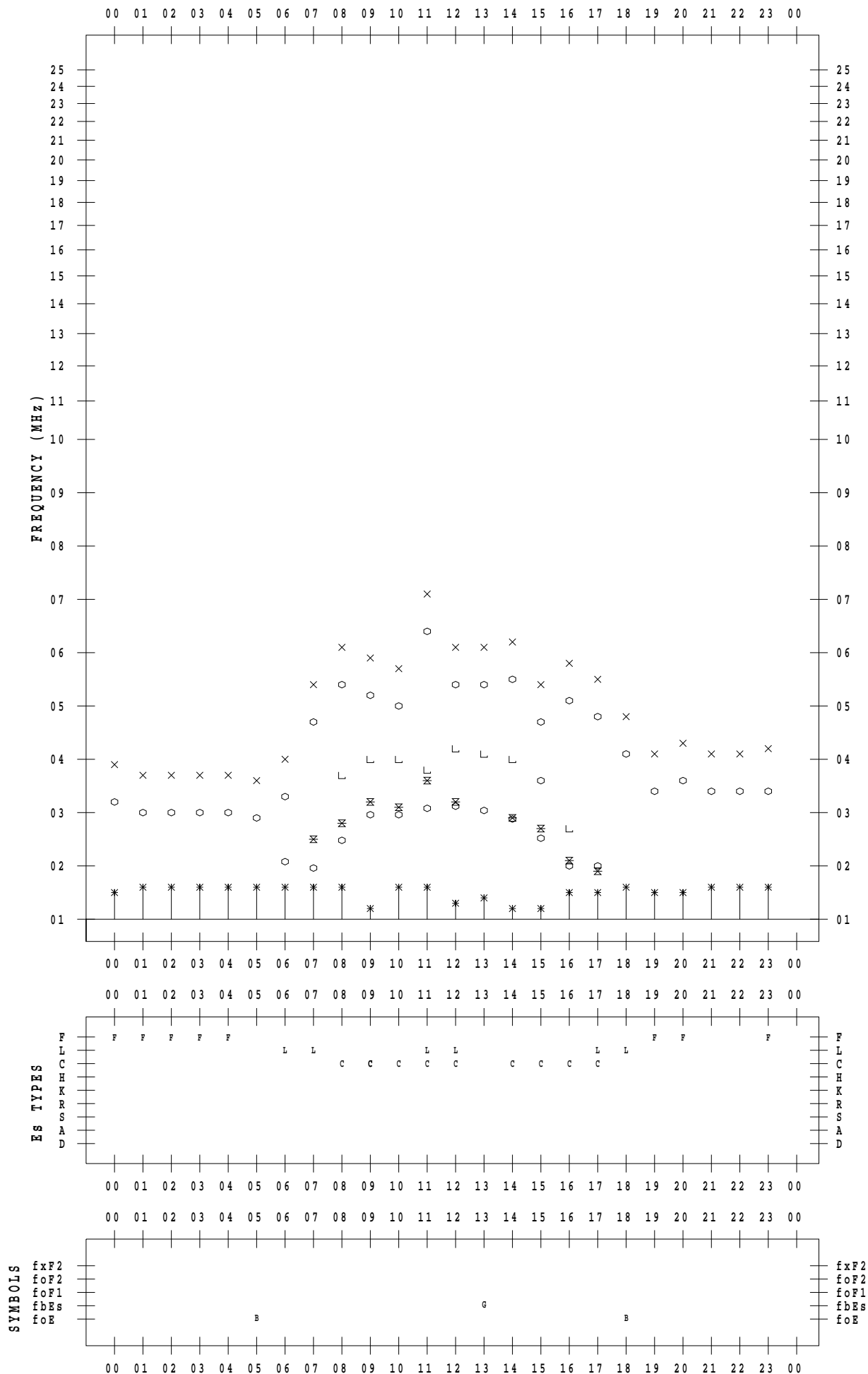
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 8

135 ° E MEAN TIME



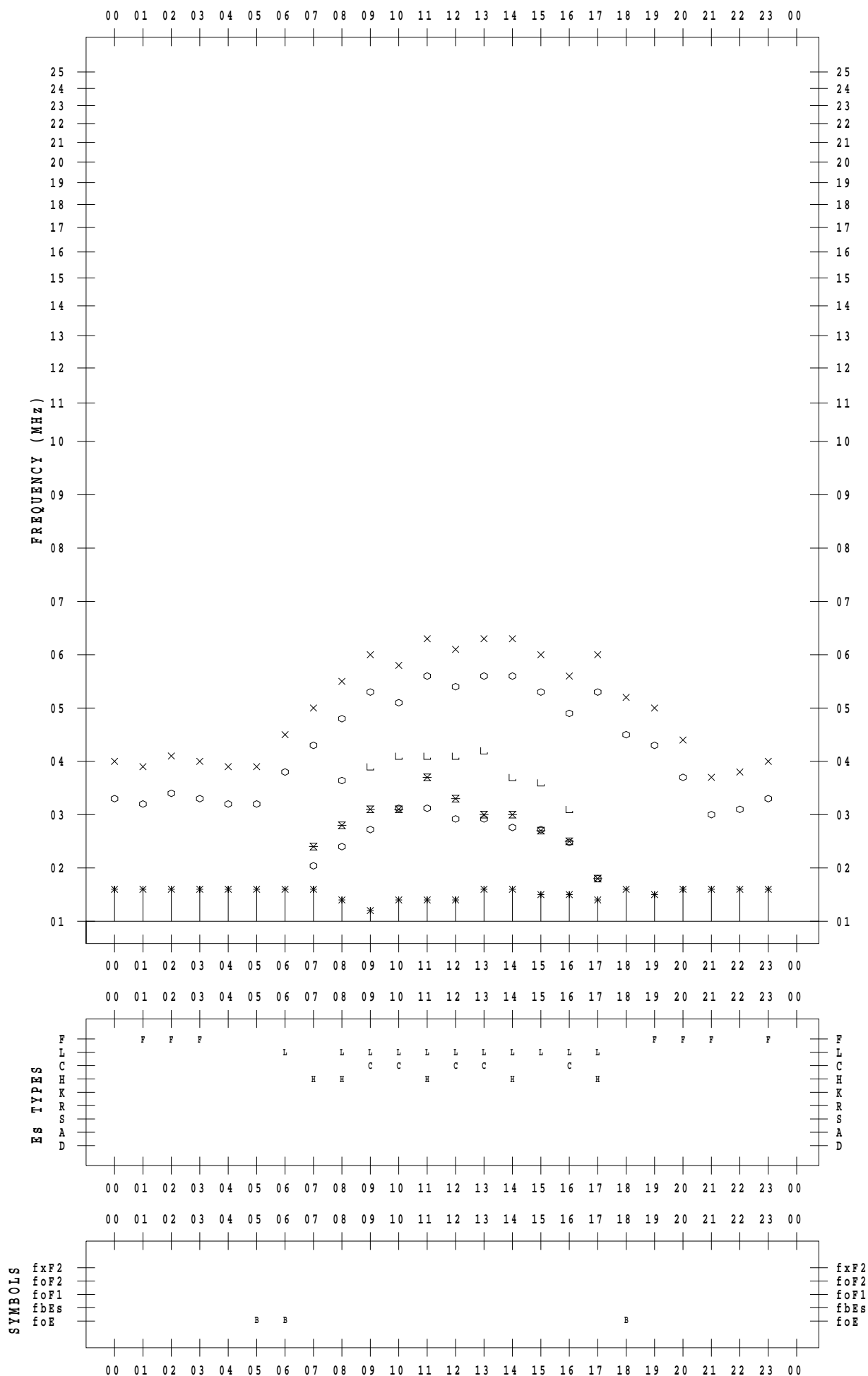
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 9

135 ° E MEAN TIME



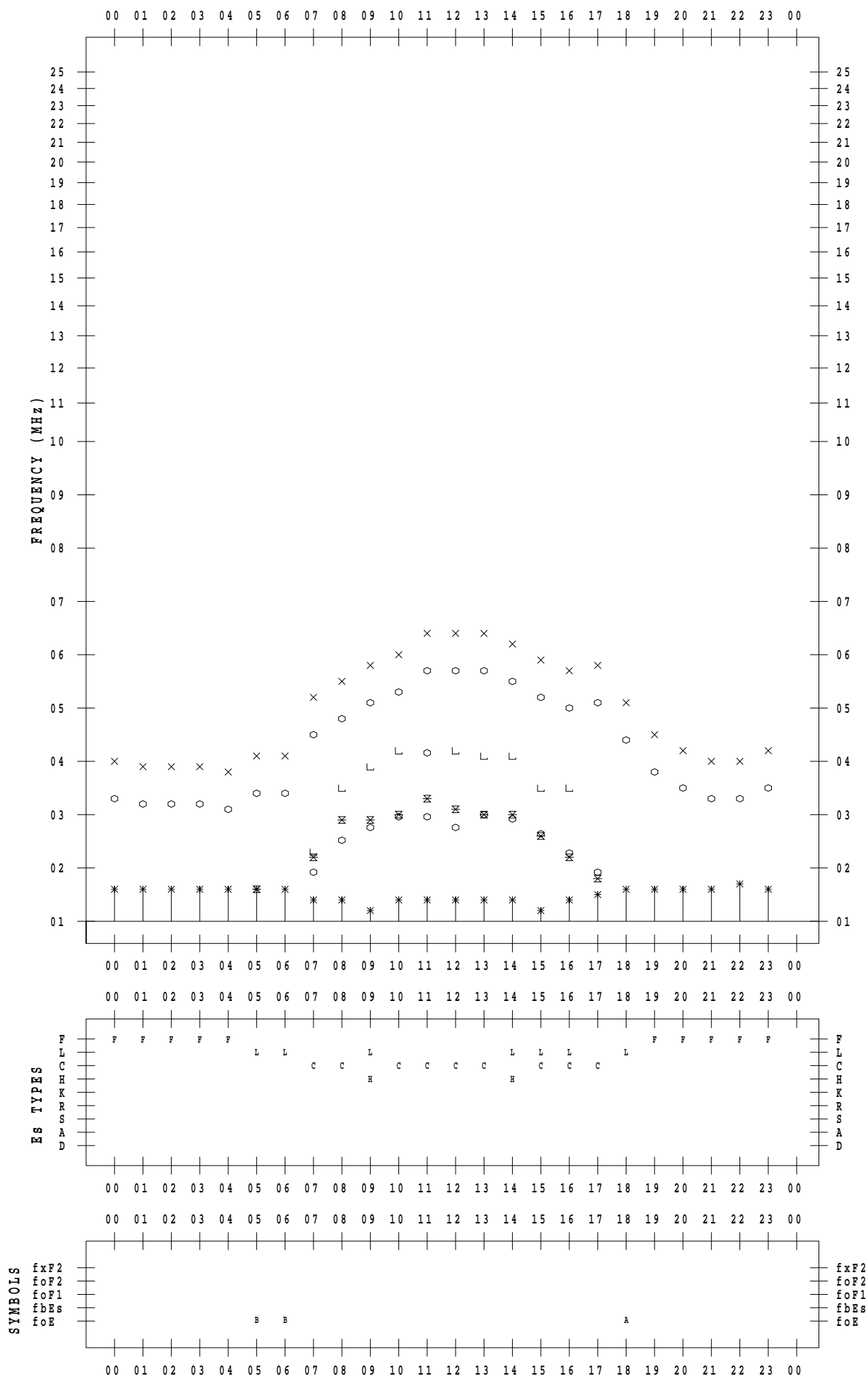
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 10

135 ° E MEAN TIME



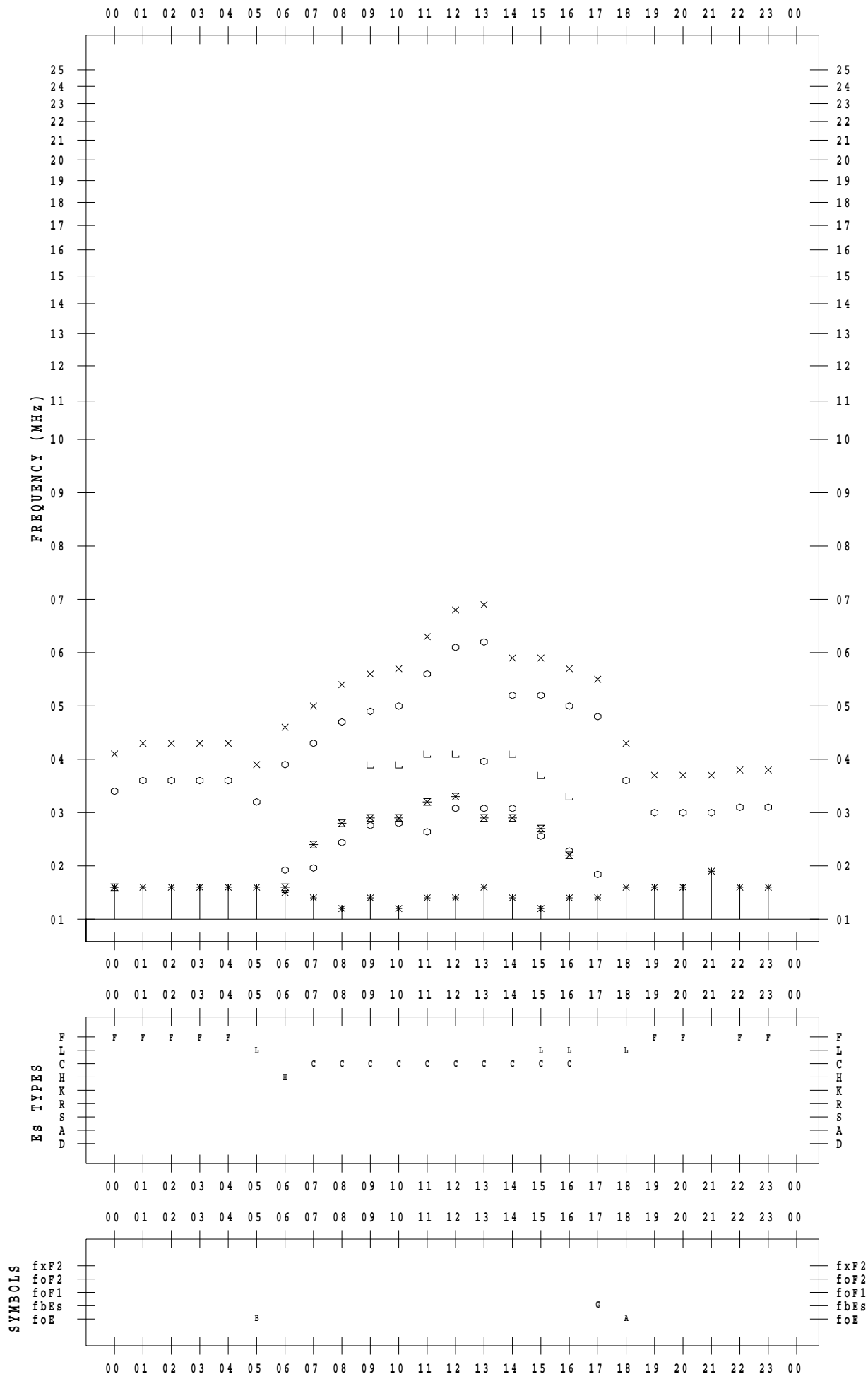
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 11

135 ° E MEAN TIME



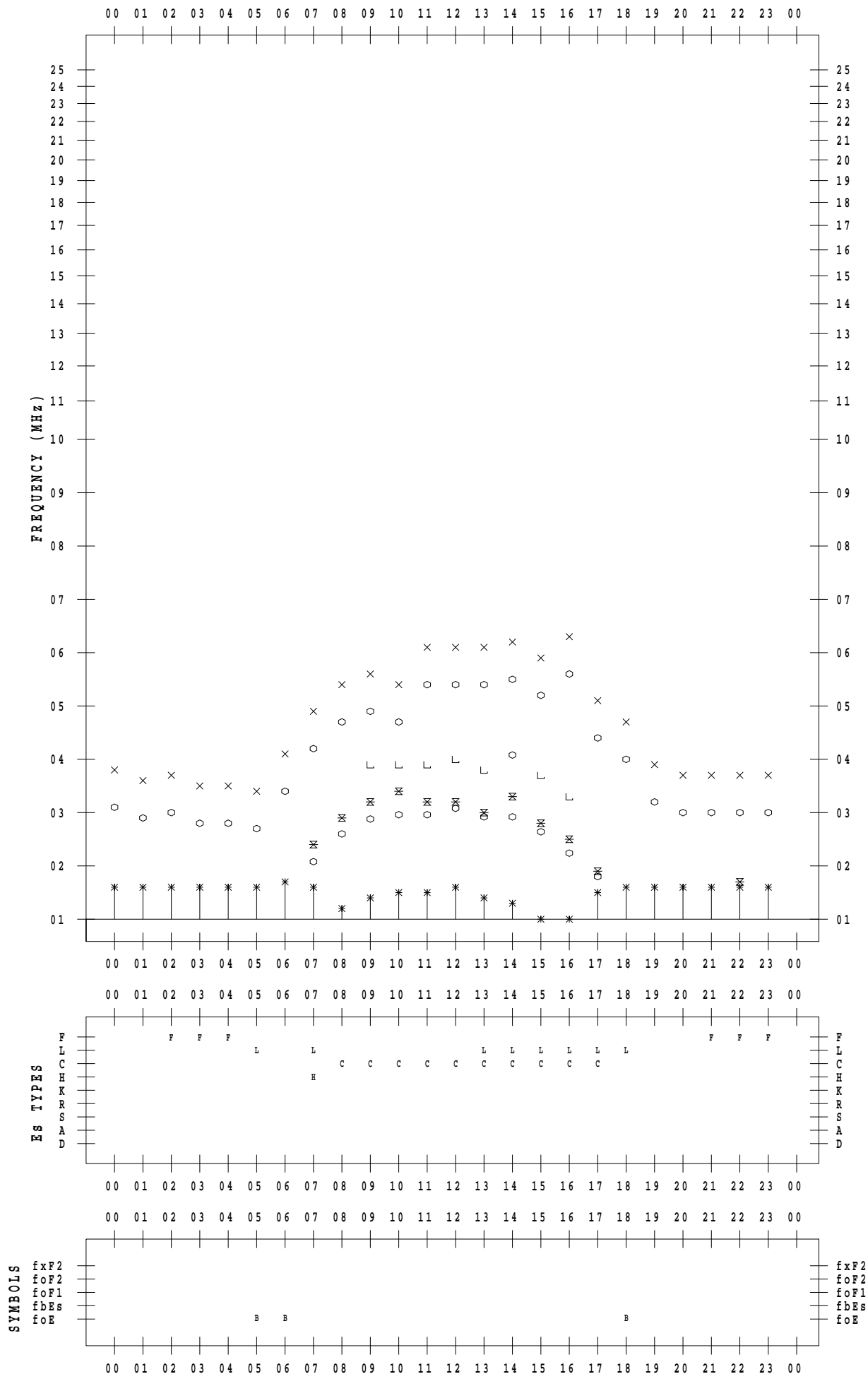
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 12

135 ° E MEAN TIME



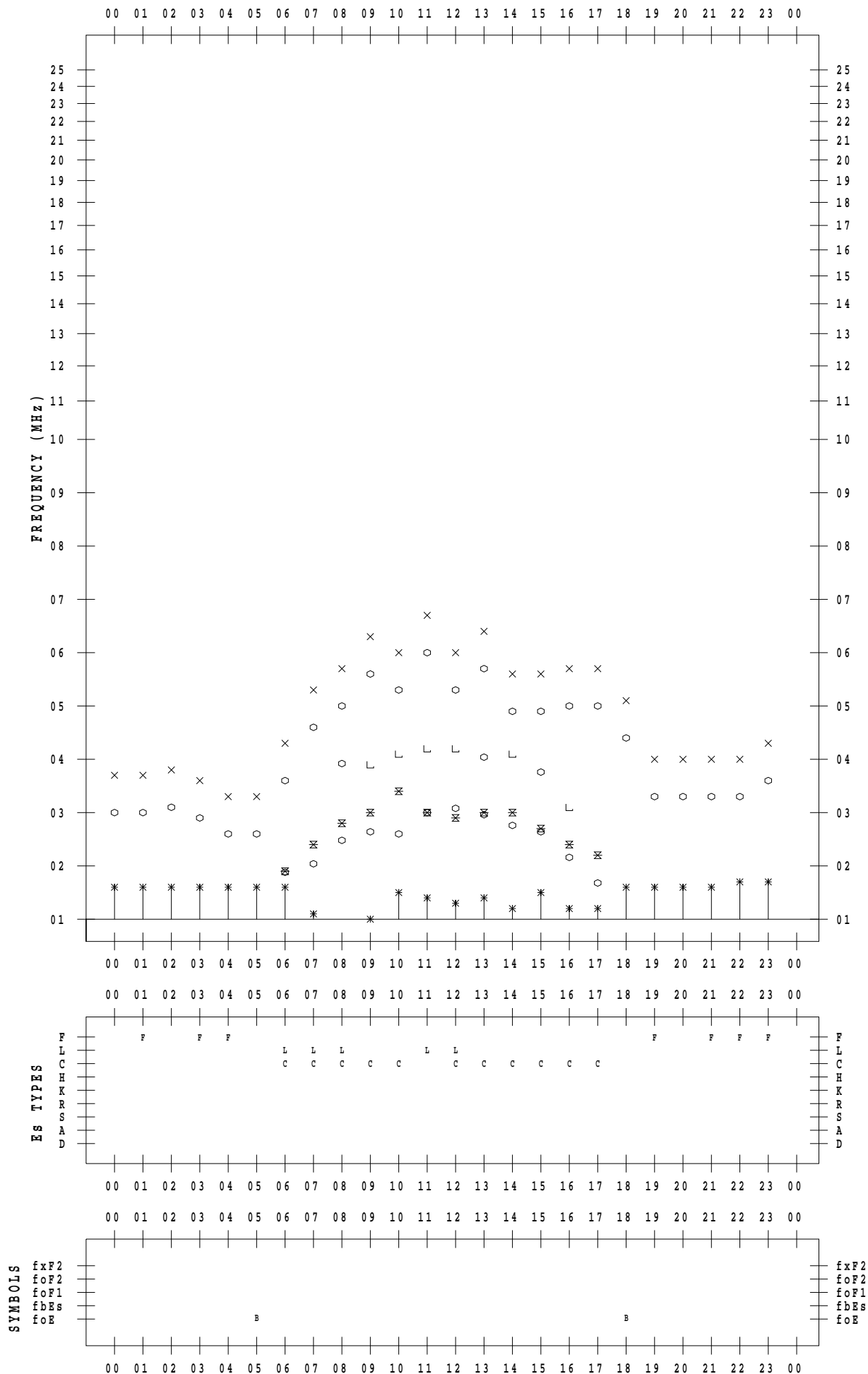
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 13

135 ° E MEAN TIME



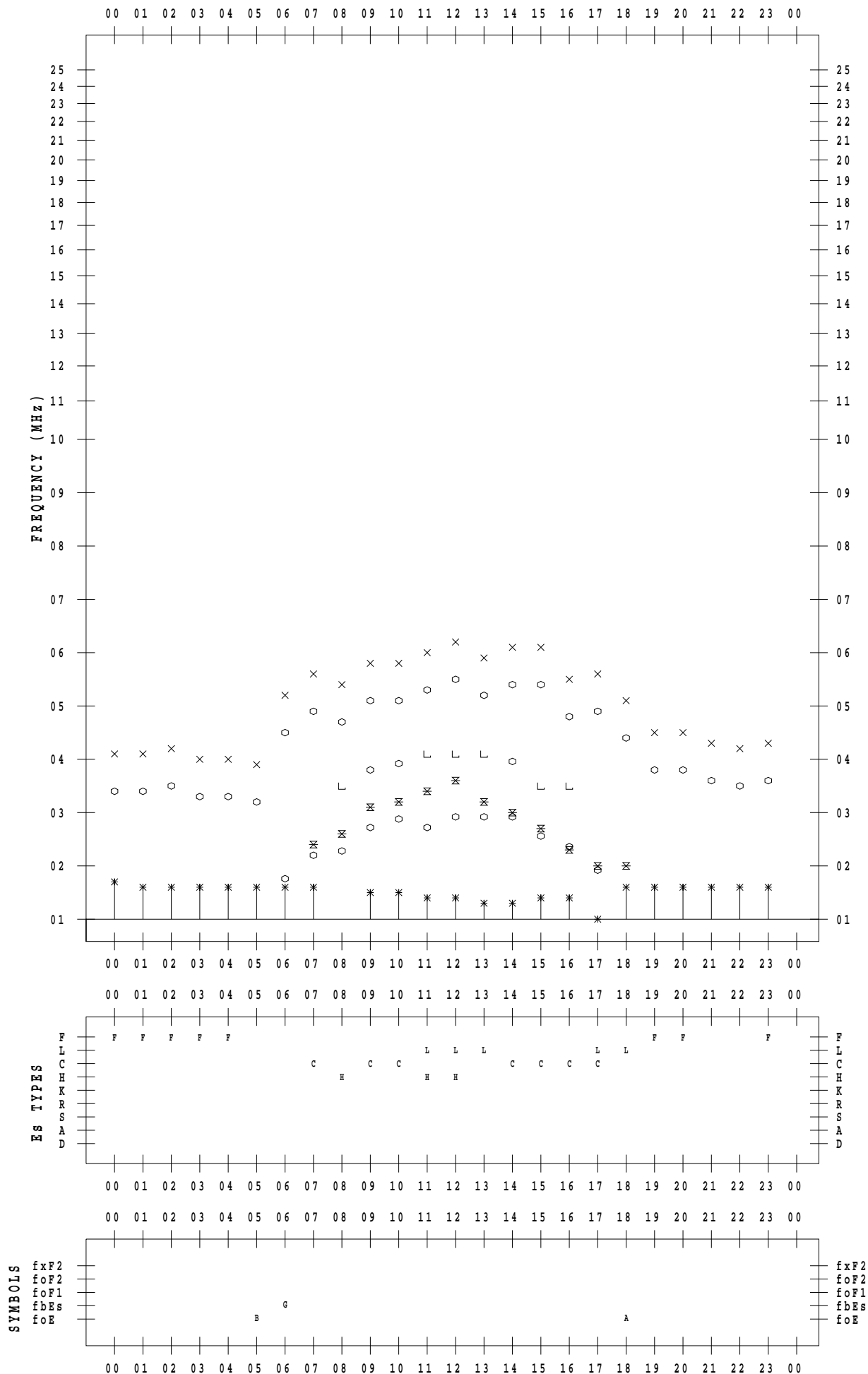
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 14

135 ° E MEAN TIME



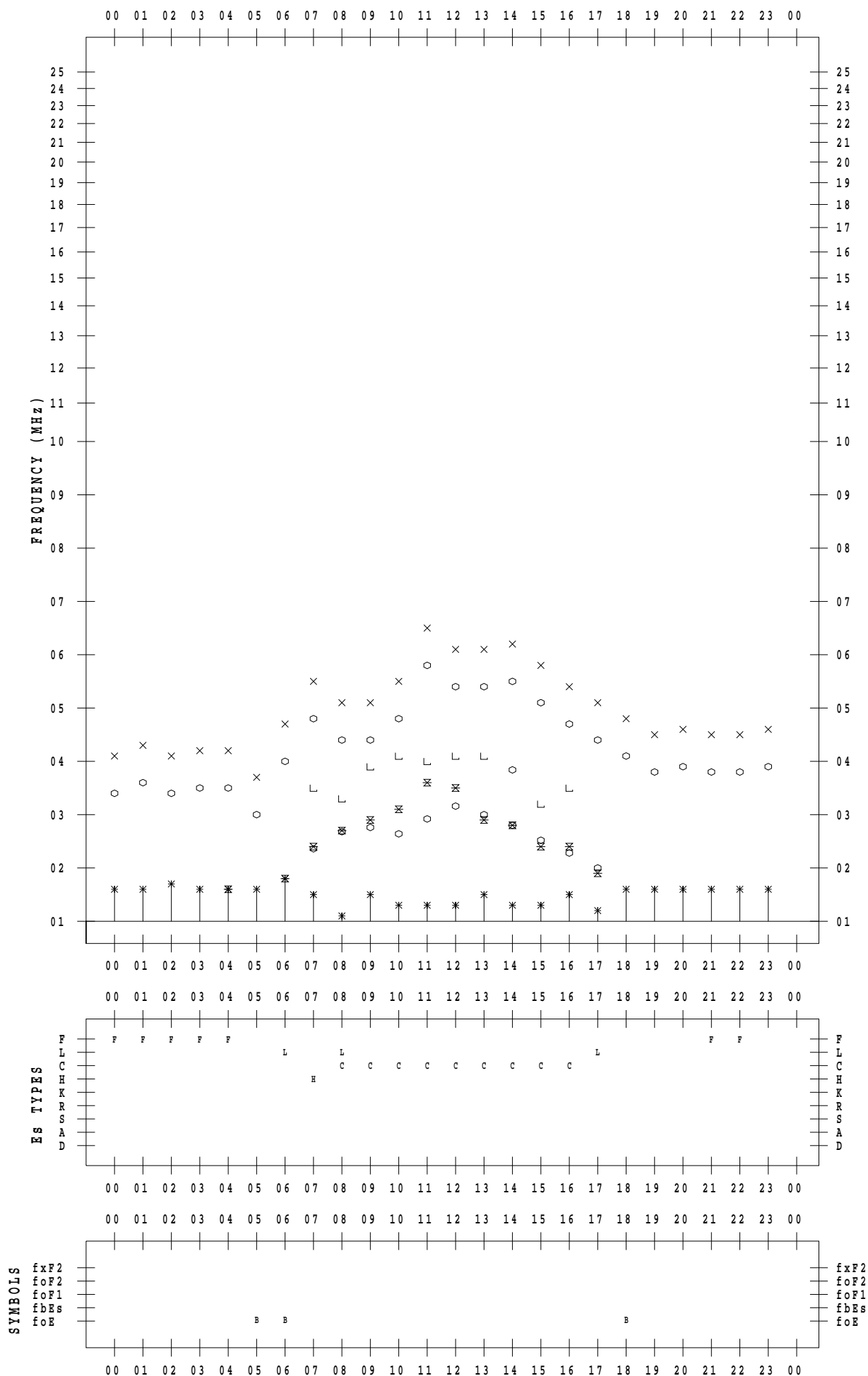
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 15

135 ° E MEAN TIME



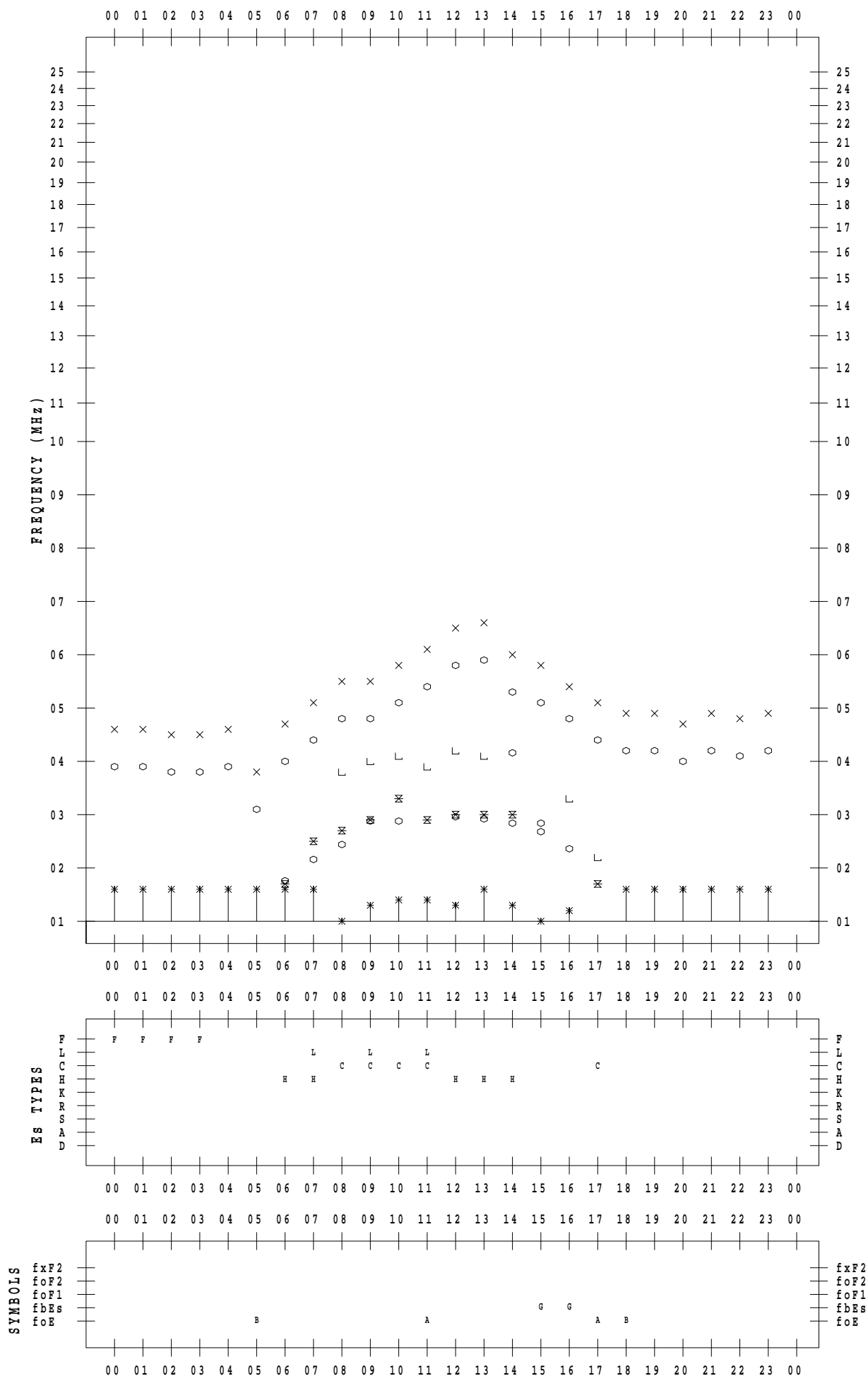
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 16

135 ° E MEAN TIME



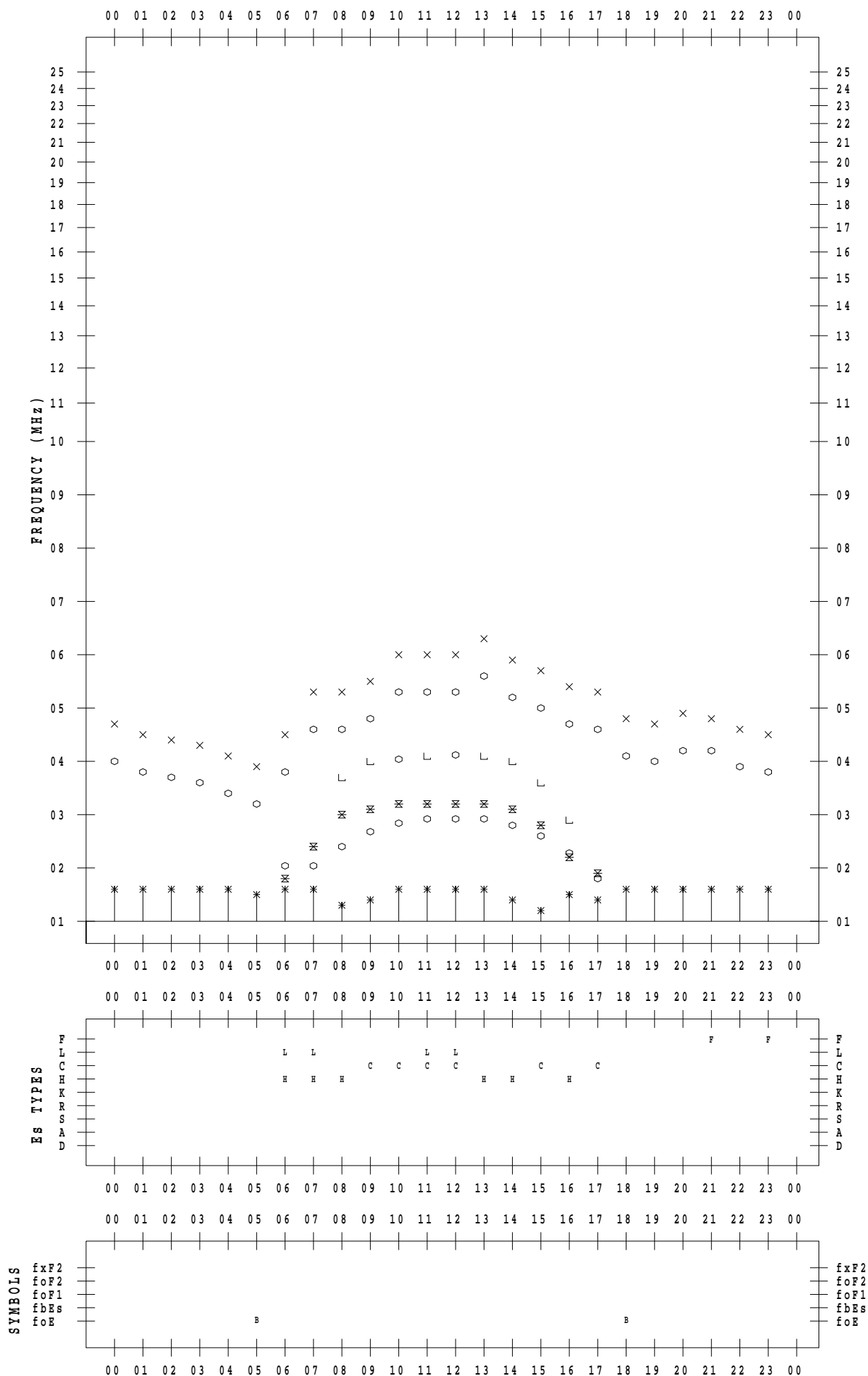
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 17

135 ° E MEAN TIME



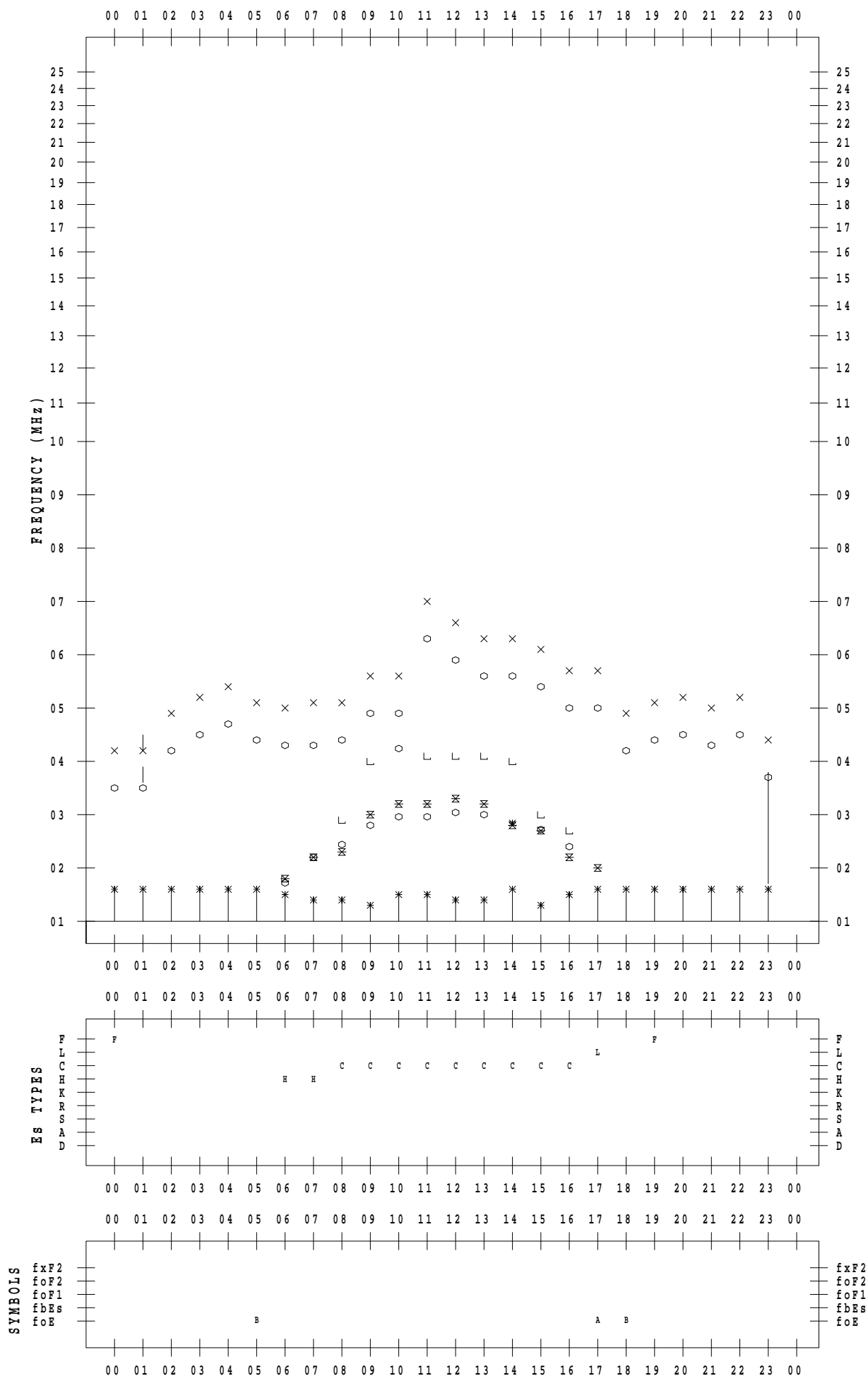
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 19

135 ° E MEAN TIME



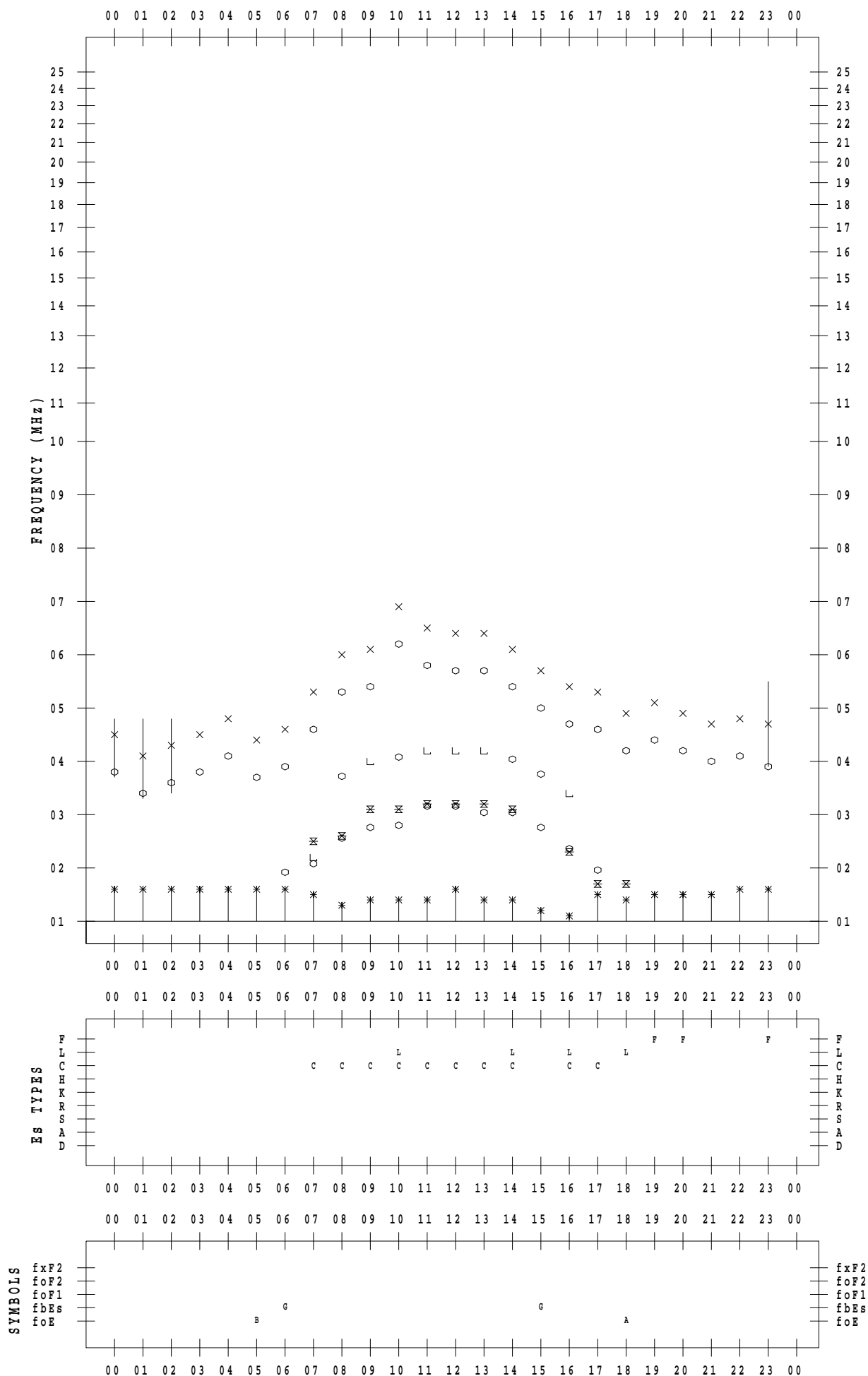
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 20

135 ° E MEAN TIME



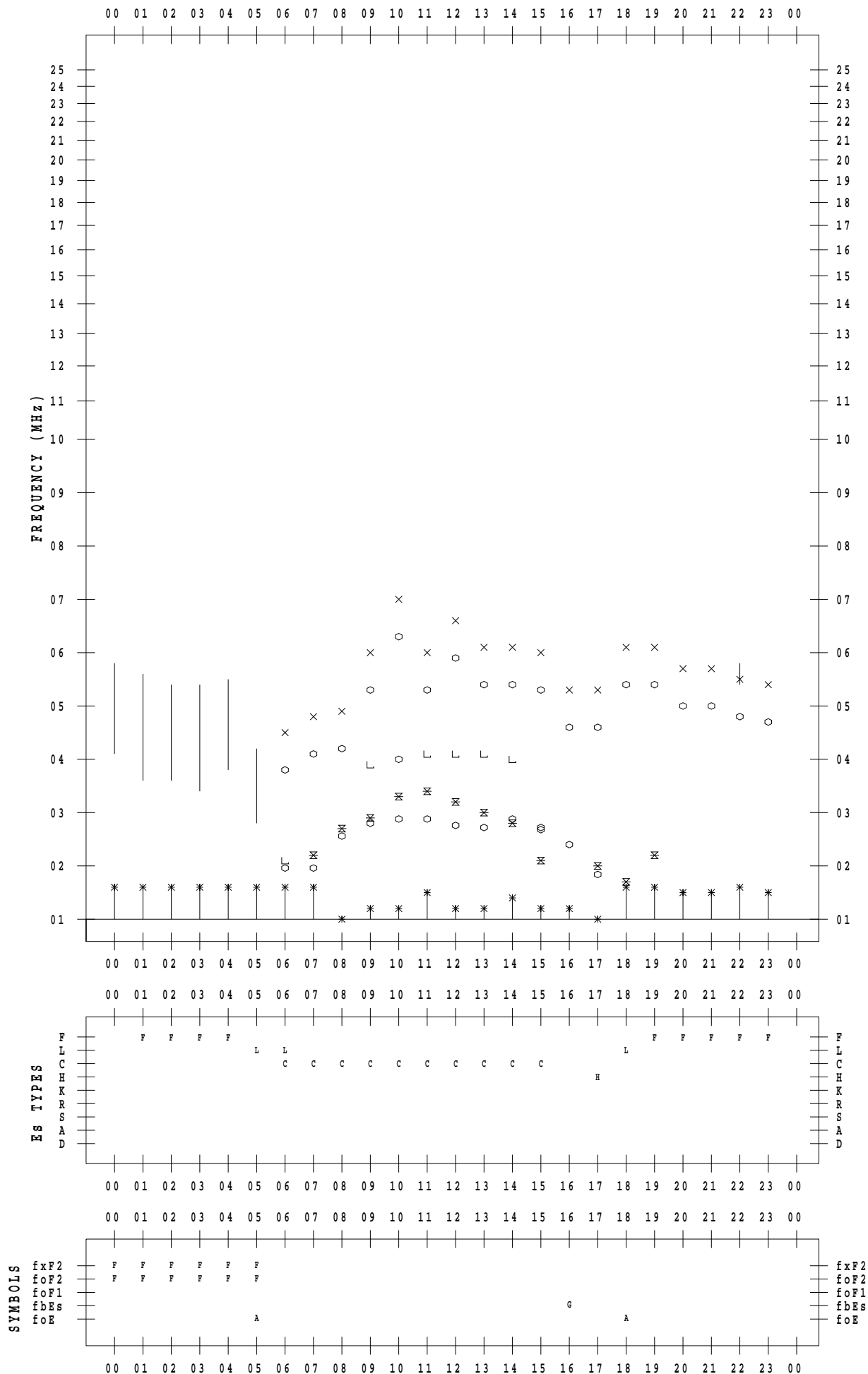
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 21

135 ° E MEAN TIME



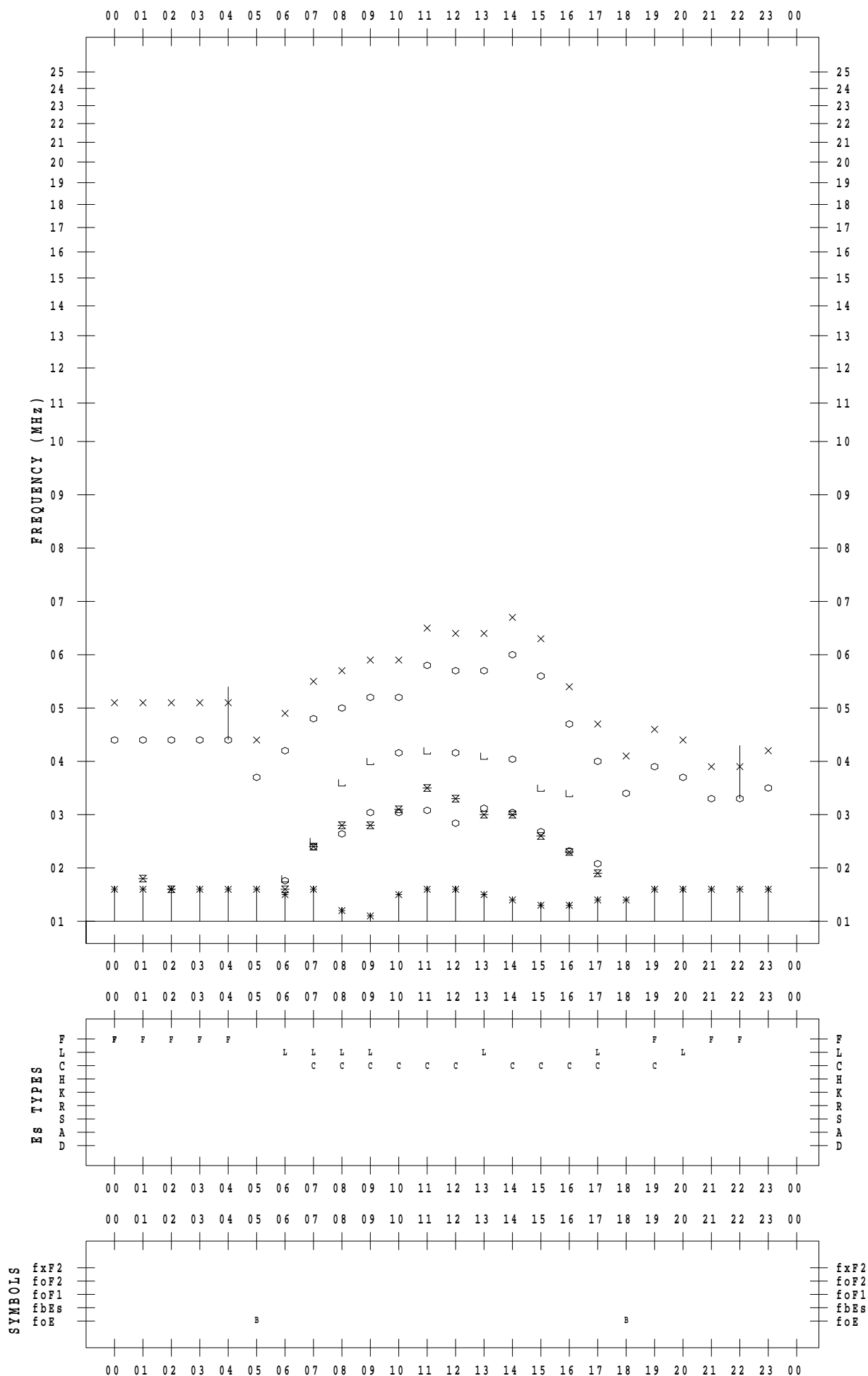
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 22

135 ° E MEAN TIME



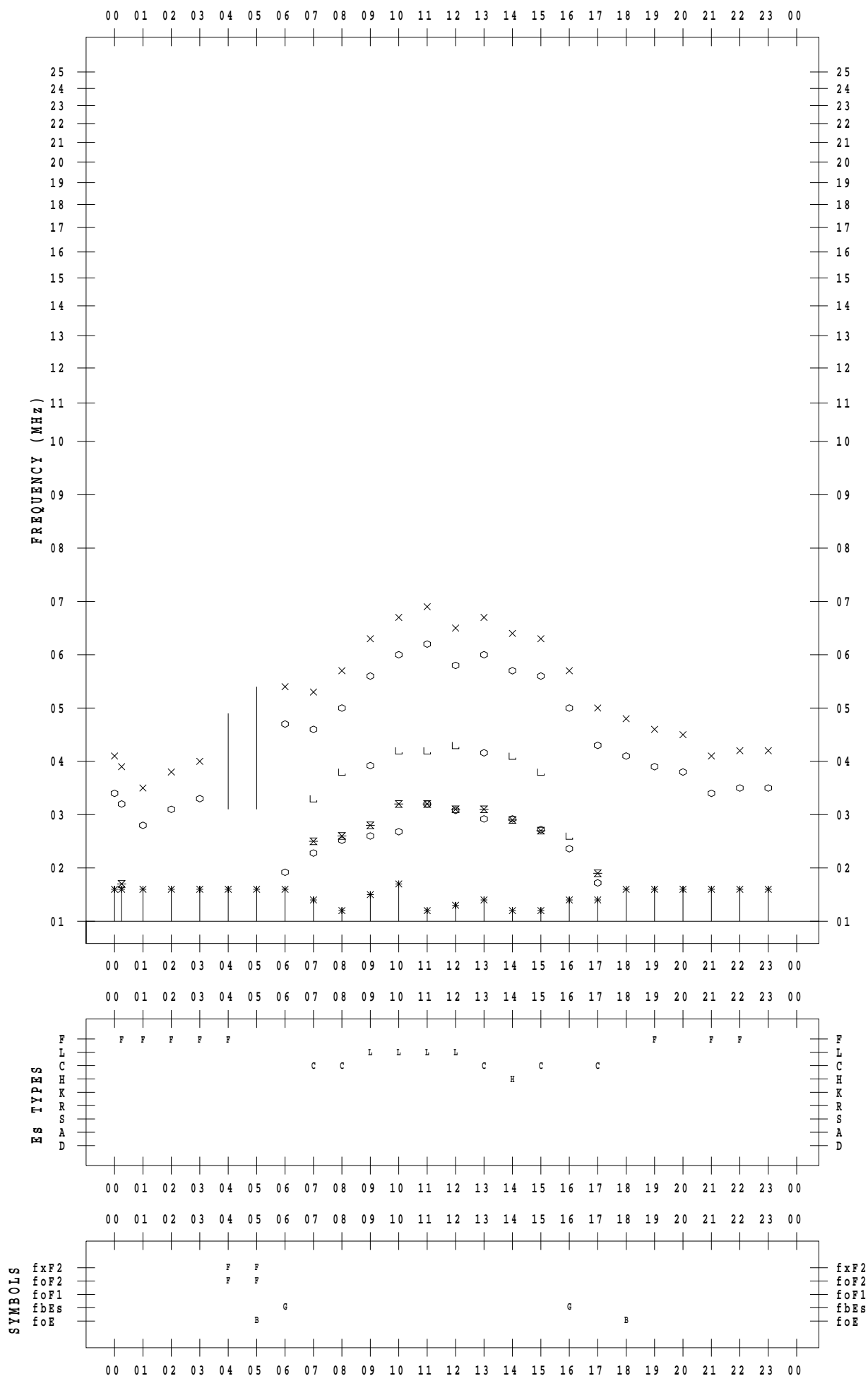
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 23

135 ° E MEAN TIME



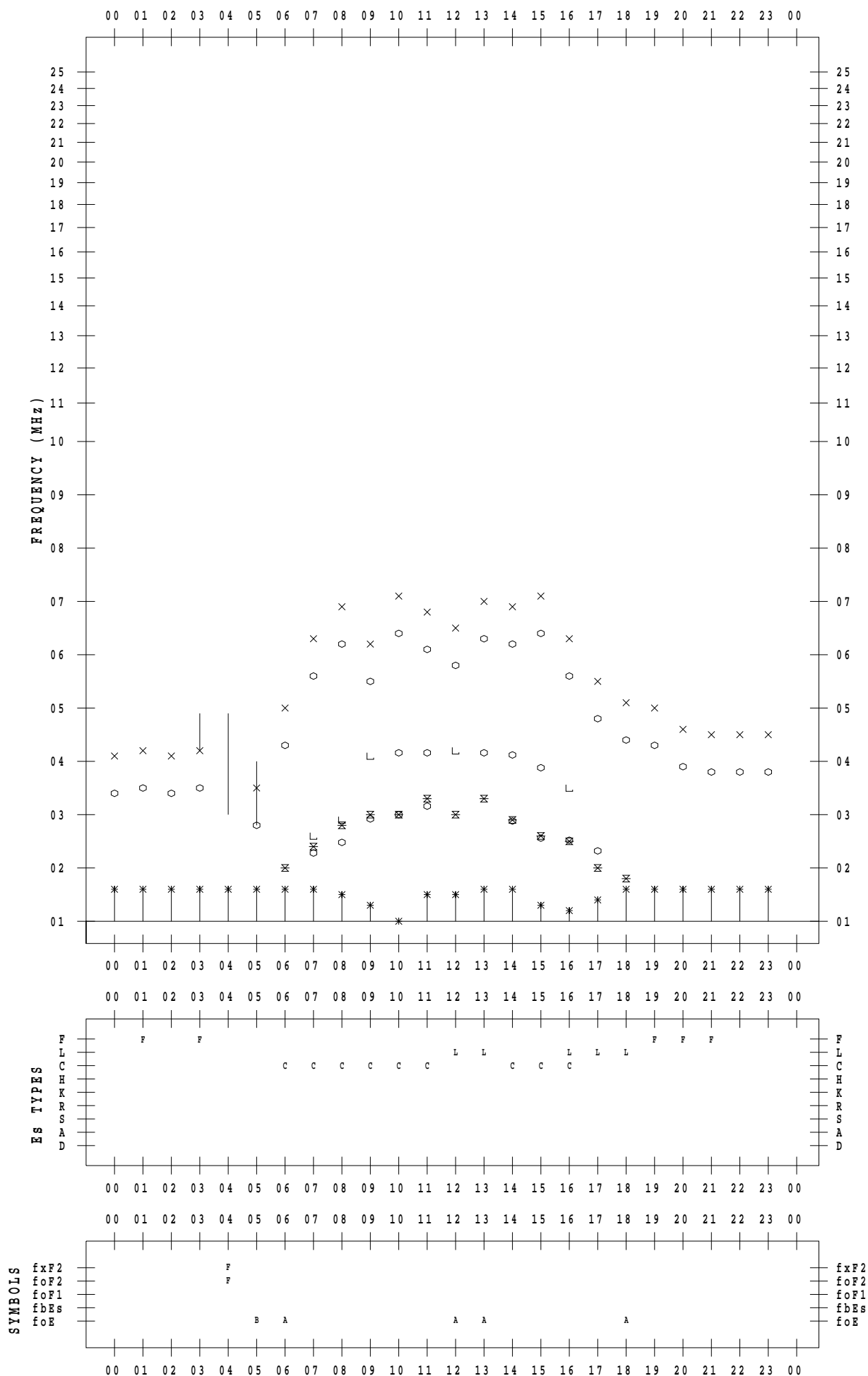
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 24

135 ° E MEAN TIME



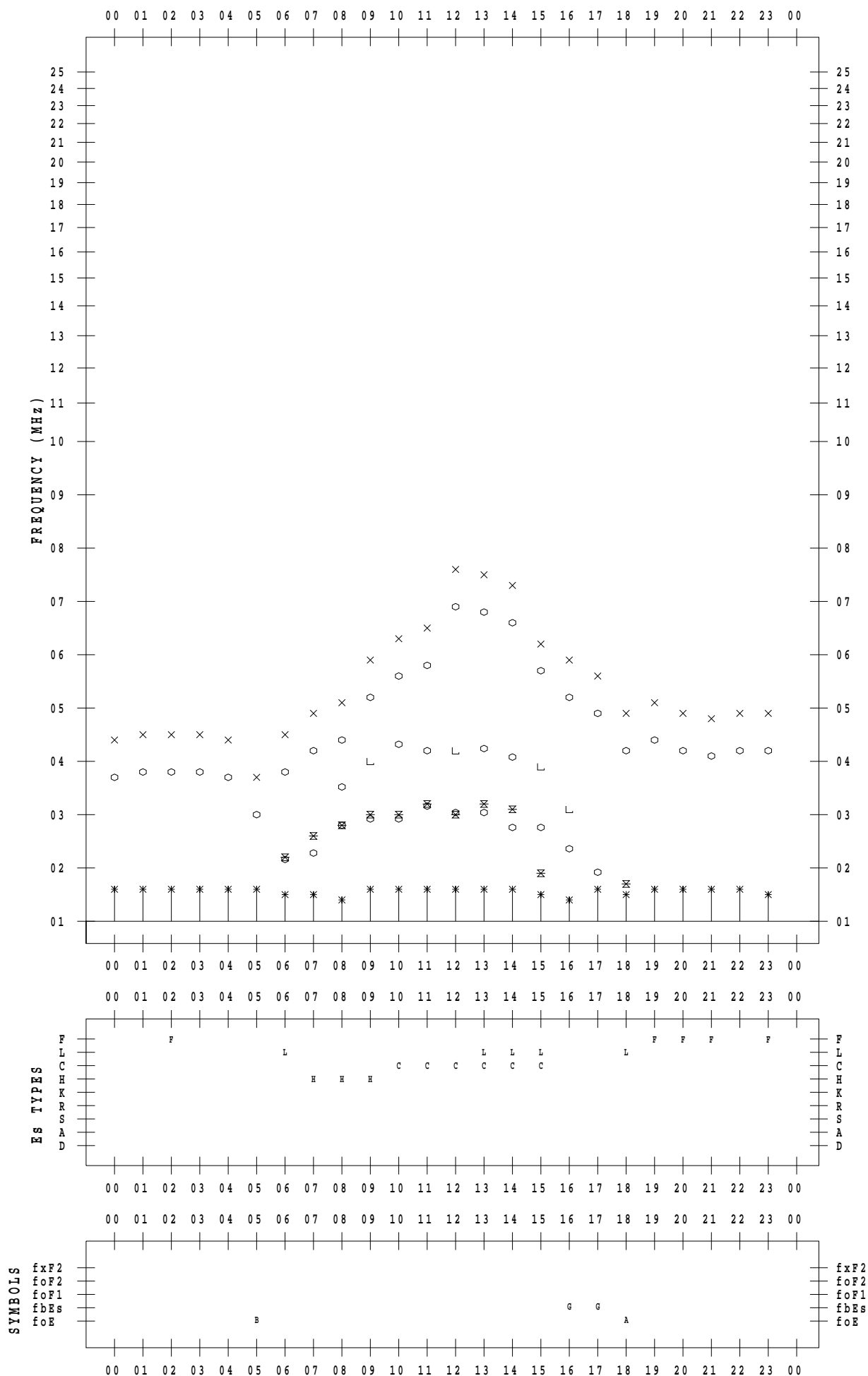
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 25

135 ° E MEAN TIME



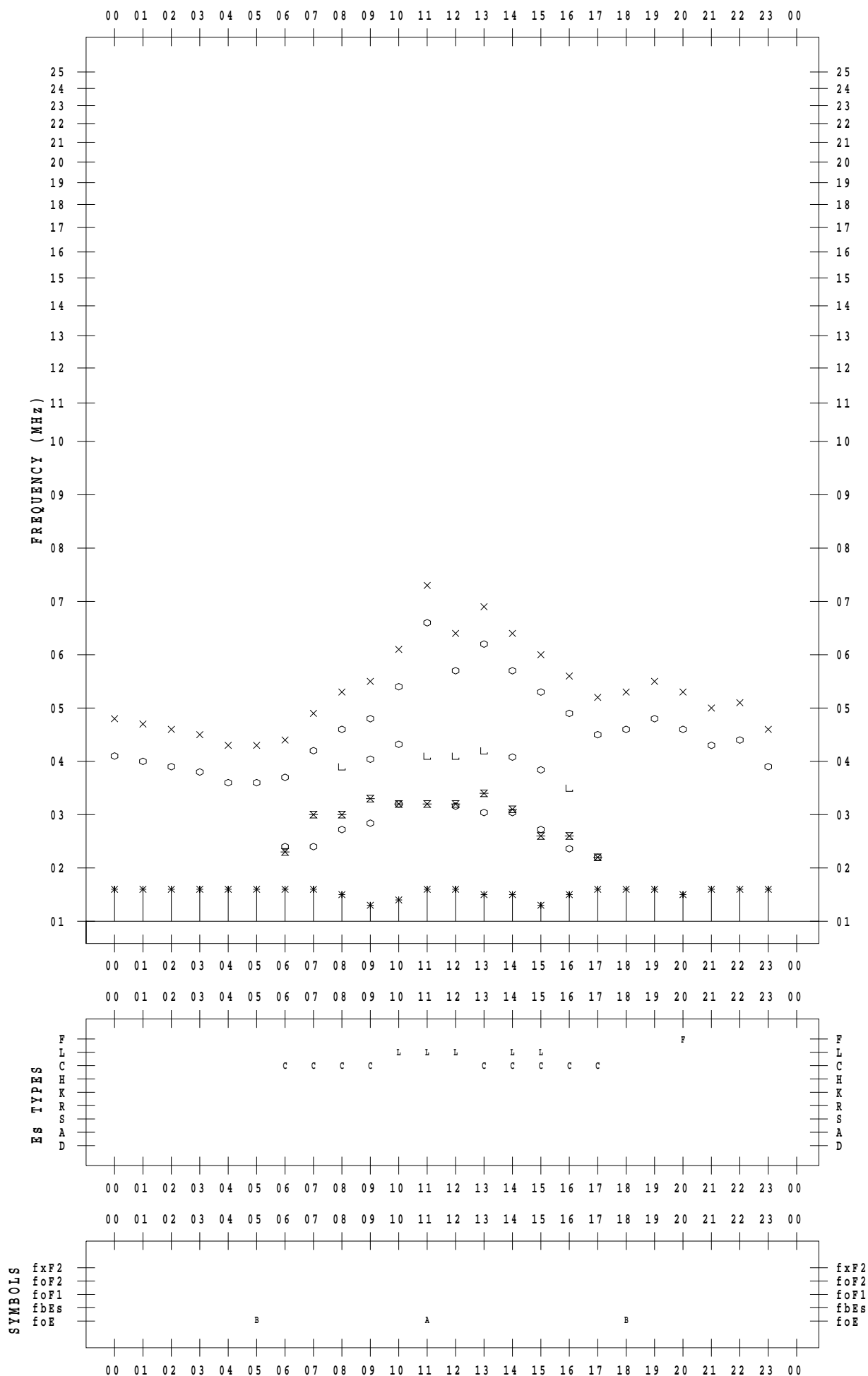
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 26

135 ° E MEAN TIME



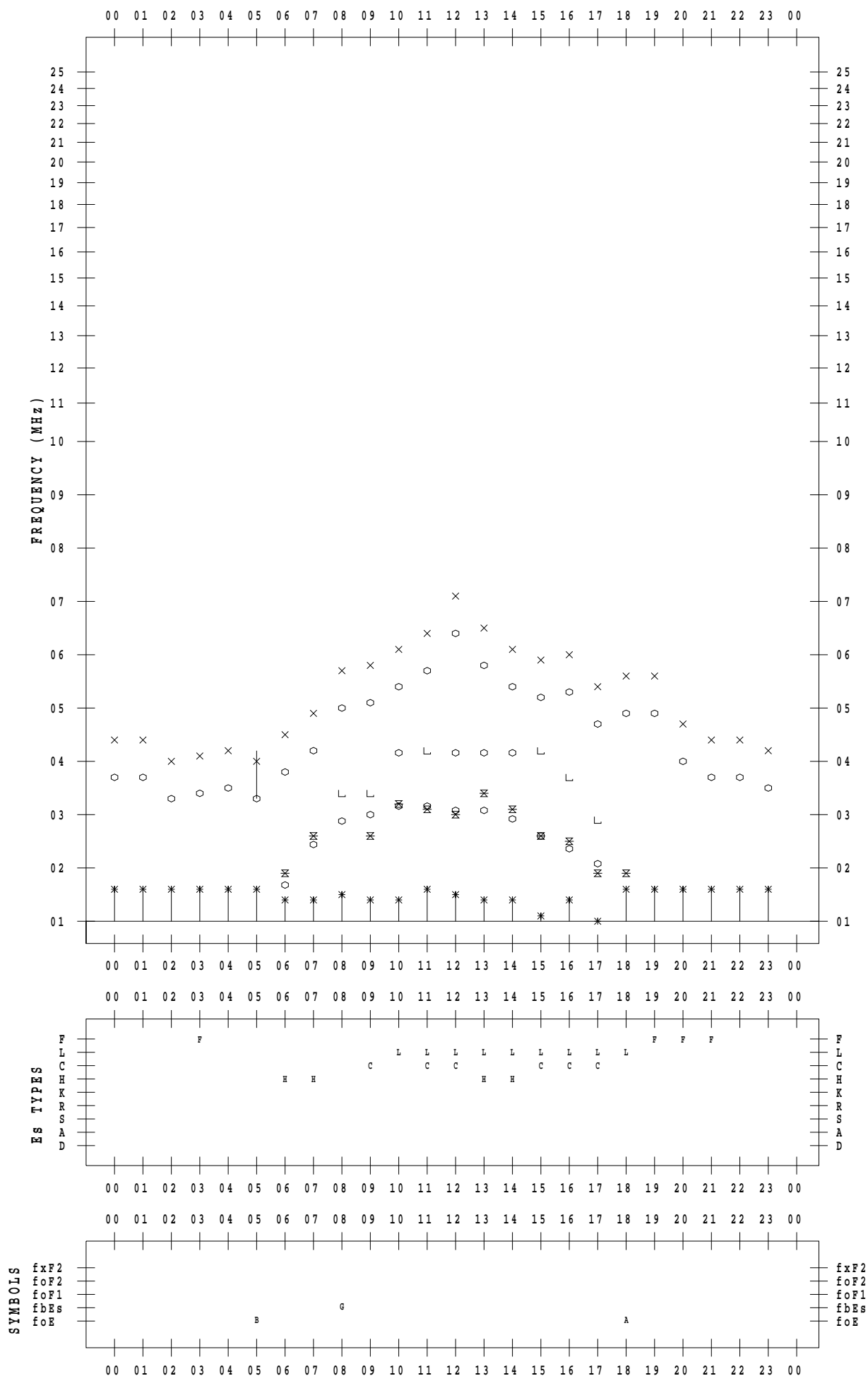
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 27

135 ° E MEAN TIME



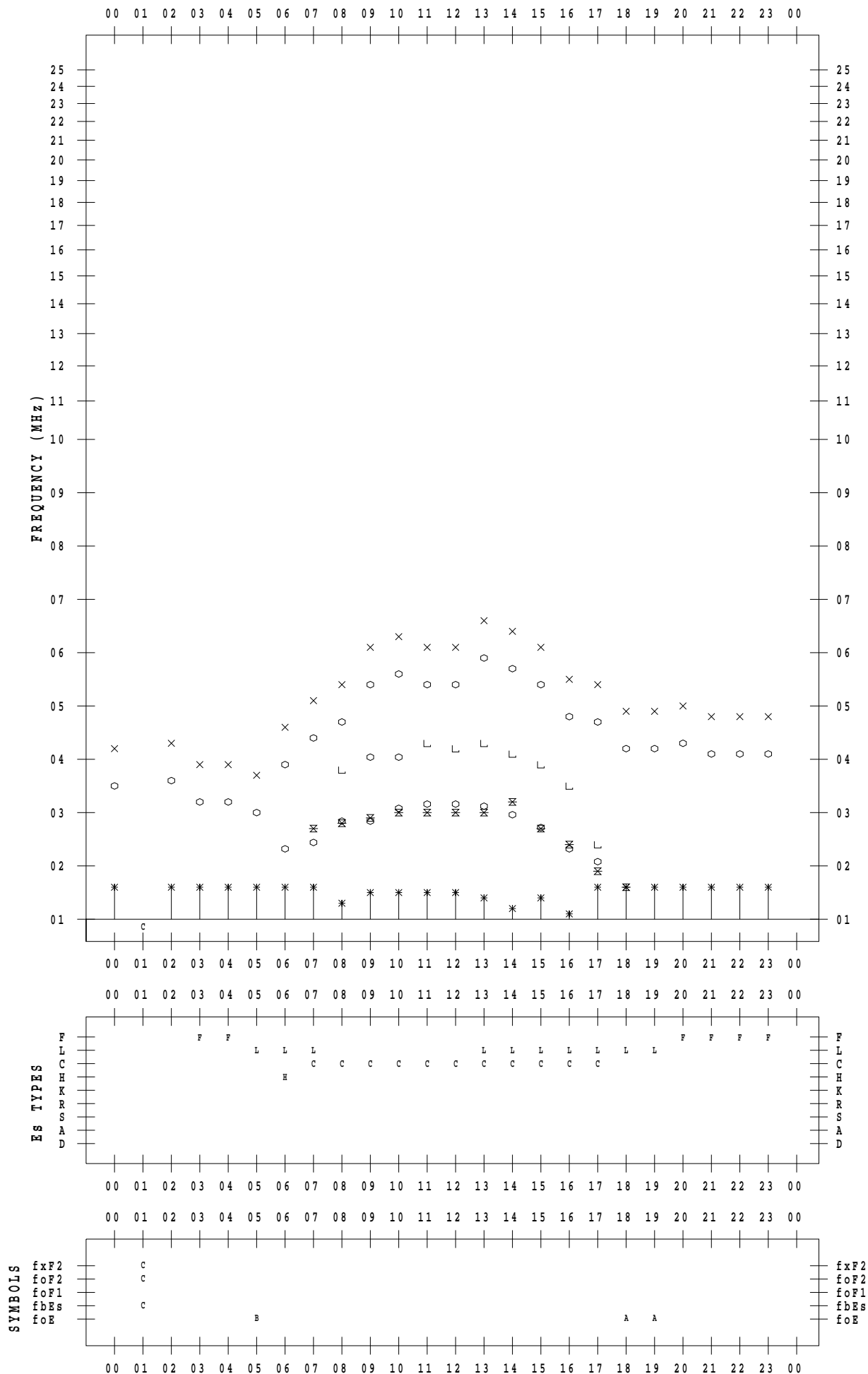
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 28

135 ° E MEAN TIME



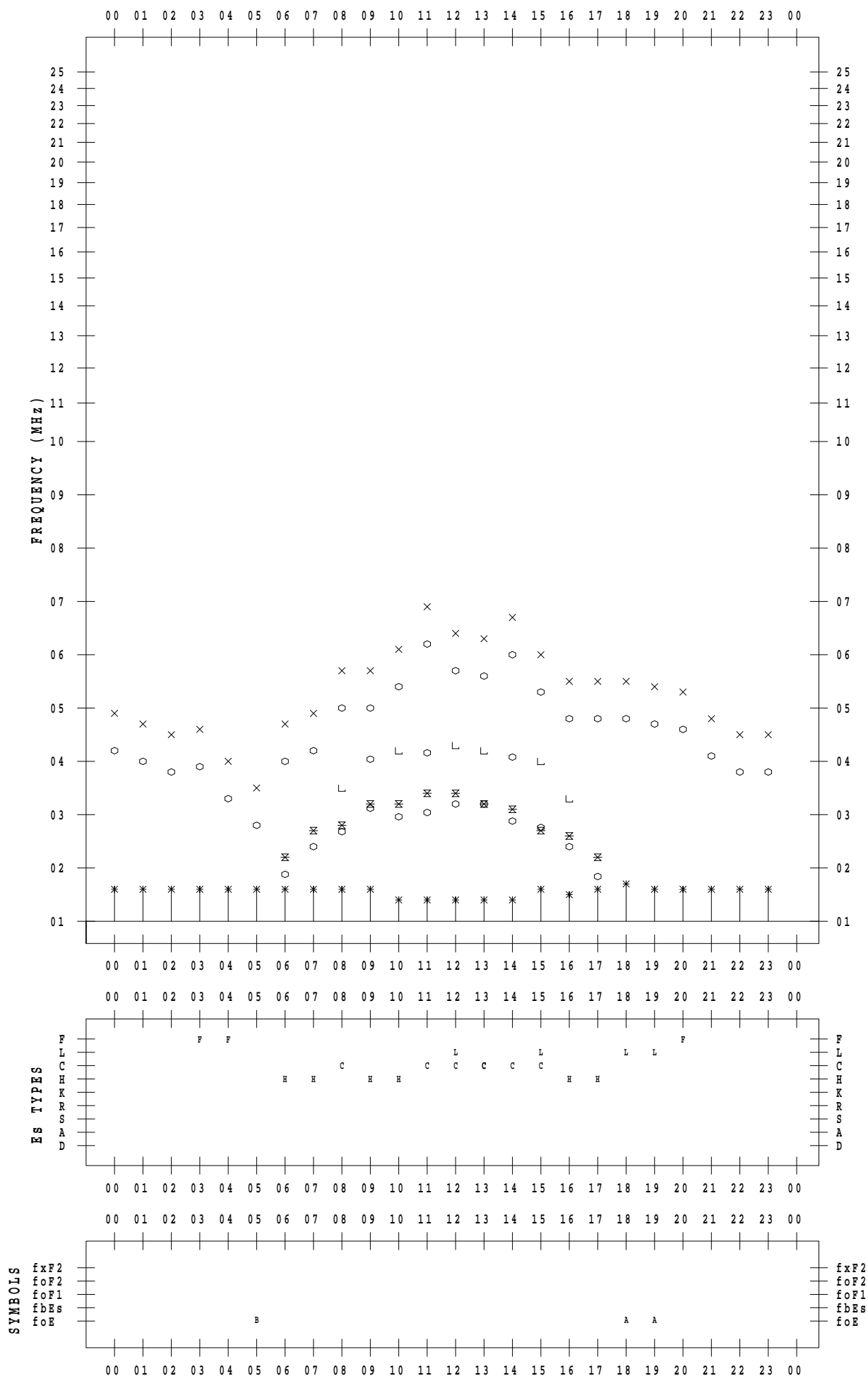
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 29

135 ° E MEAN TIME



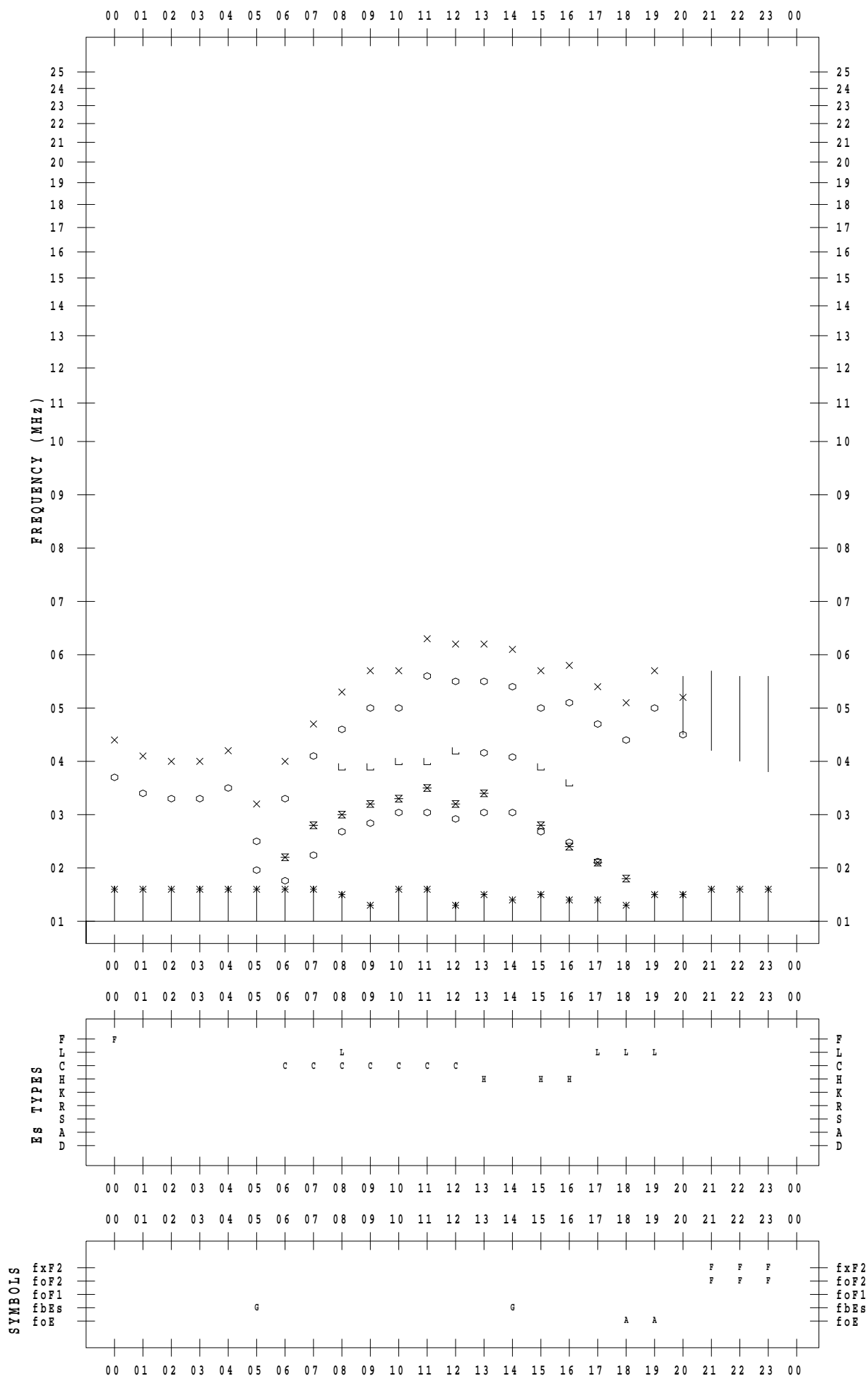
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 30

135 ° E MEAN TIME



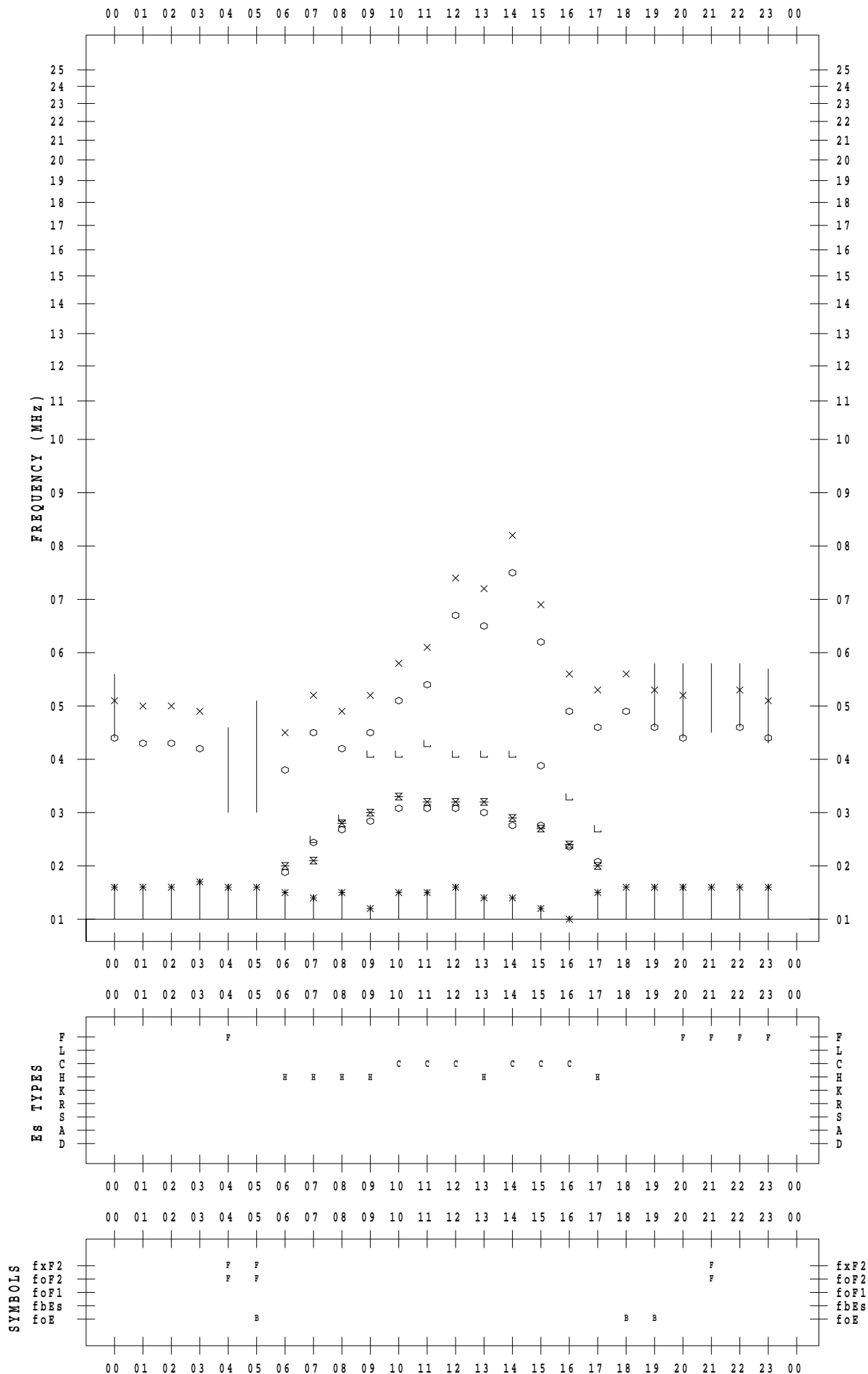
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 3 / 31

135 ° E MEAN TIME



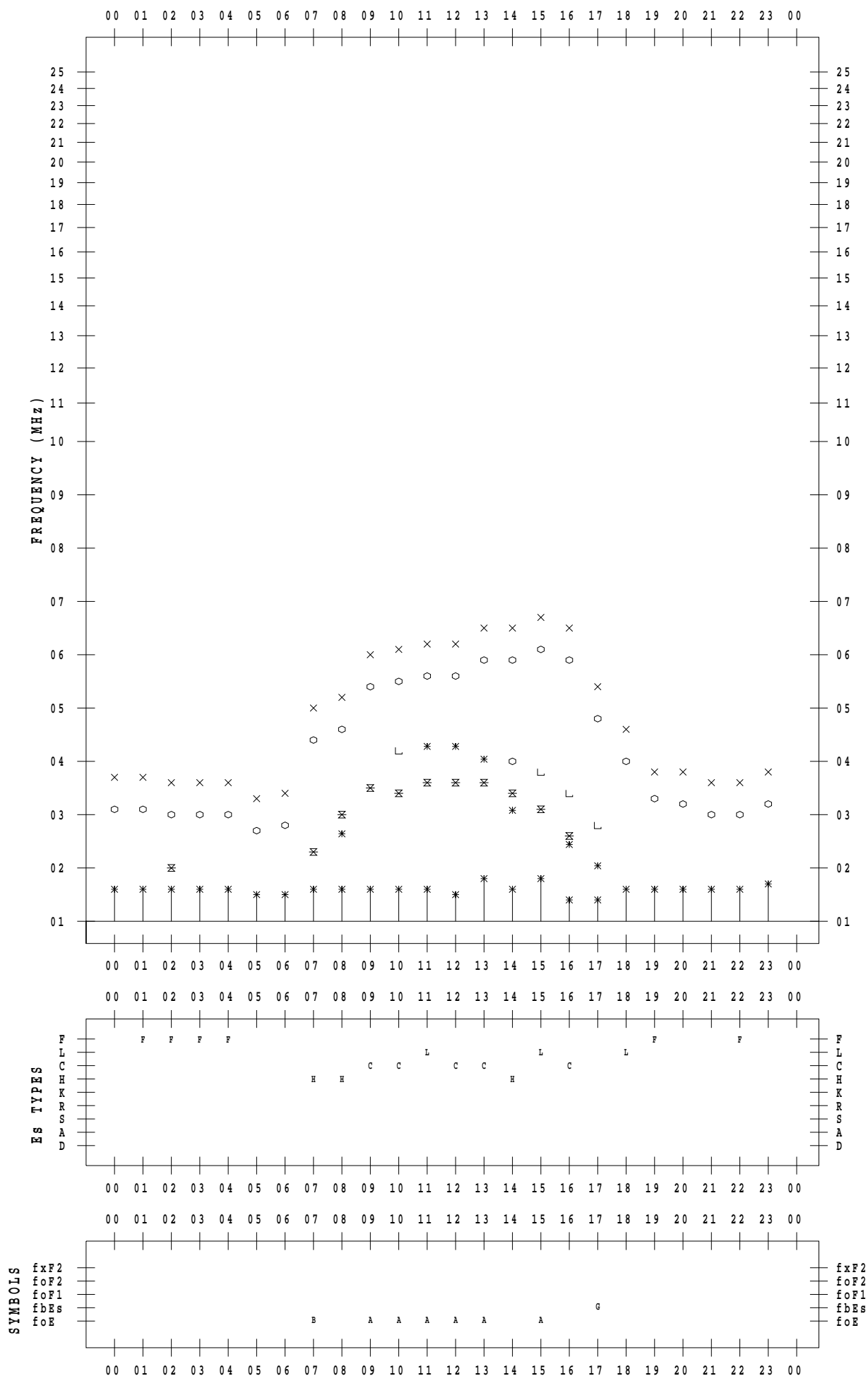
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 1

135 ° E MEAN TIME



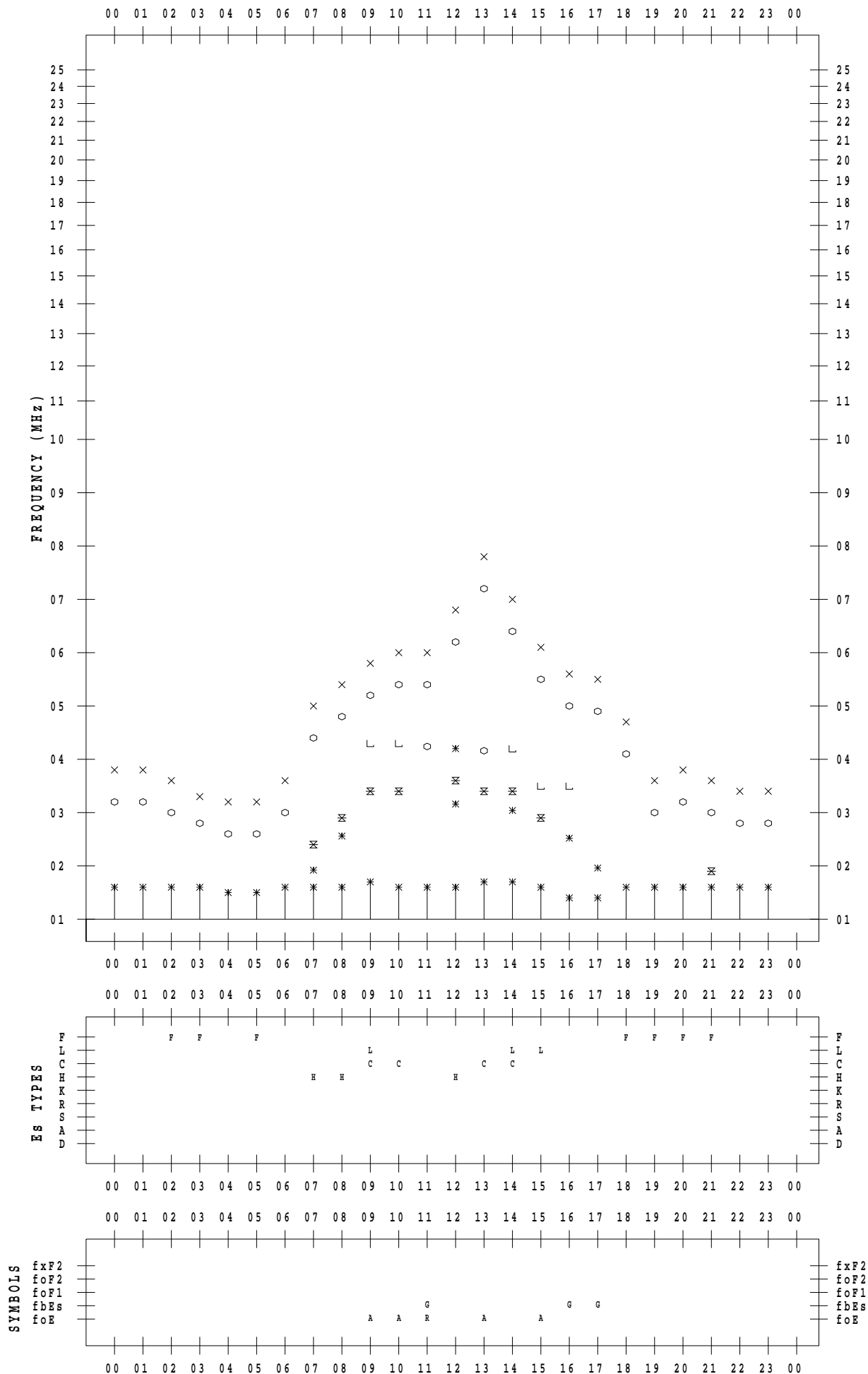
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 2

135 ° E MEAN TIME



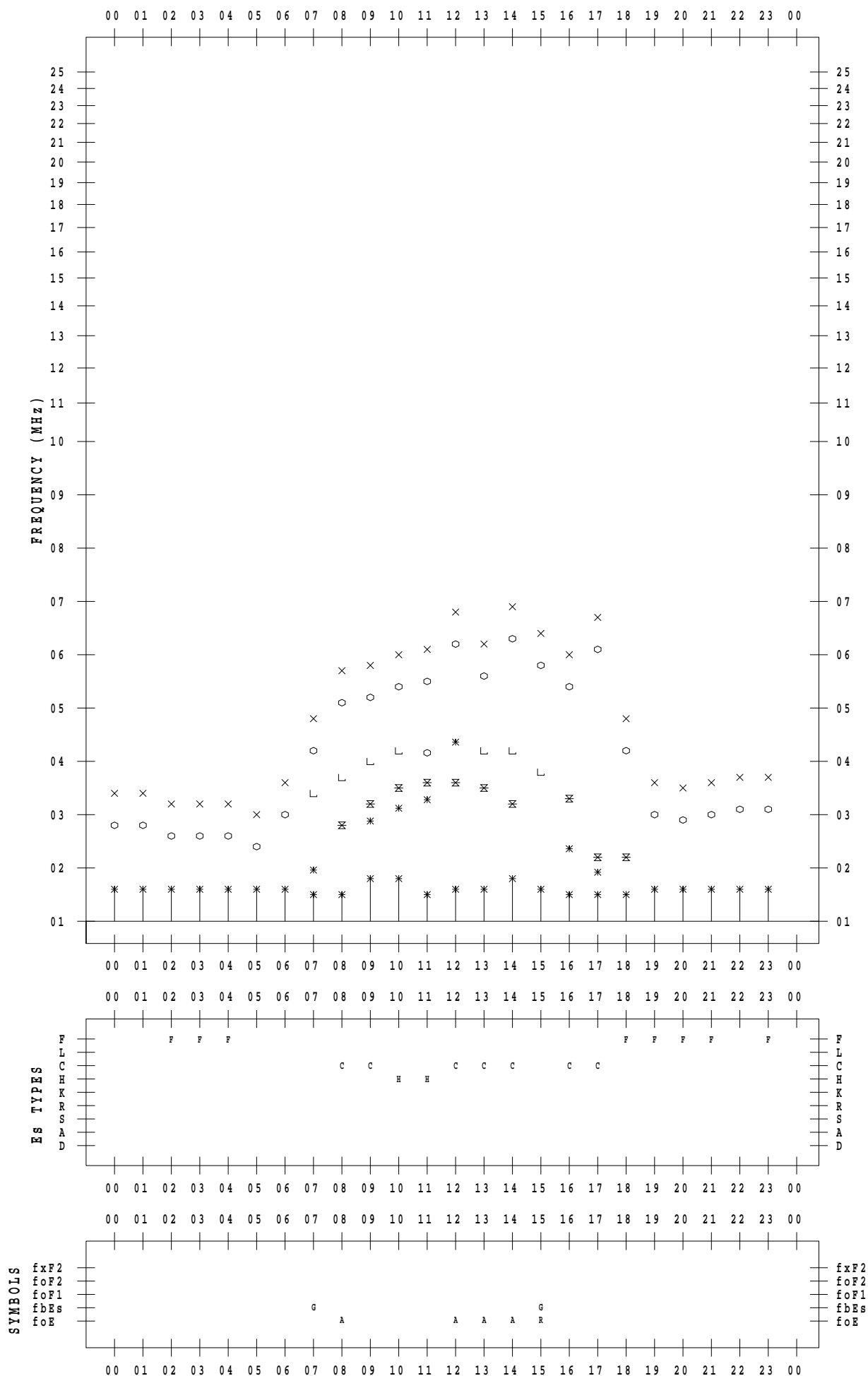
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 3

135 ° E MEAN TIME



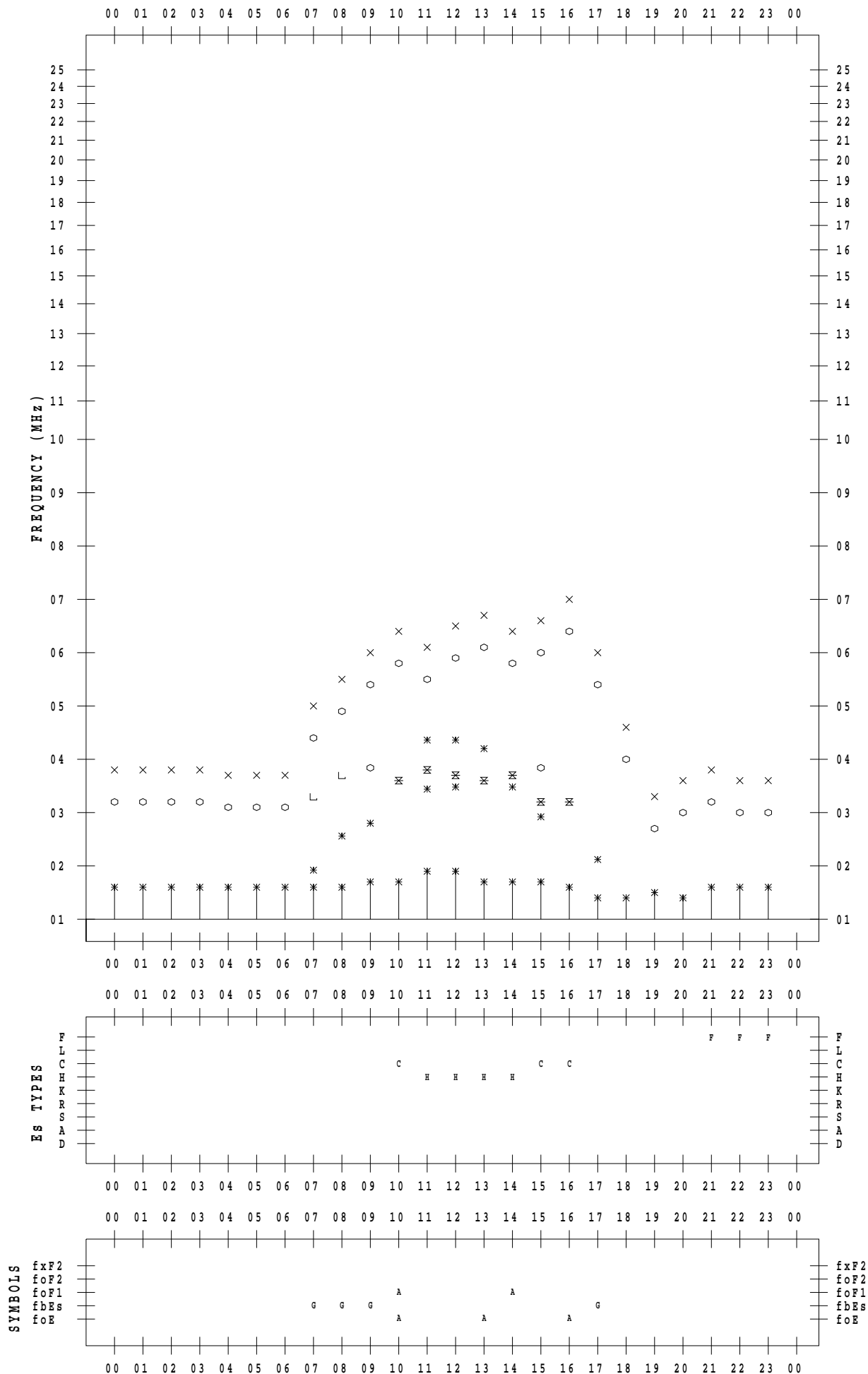
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 4

135 ° E MEAN TIME



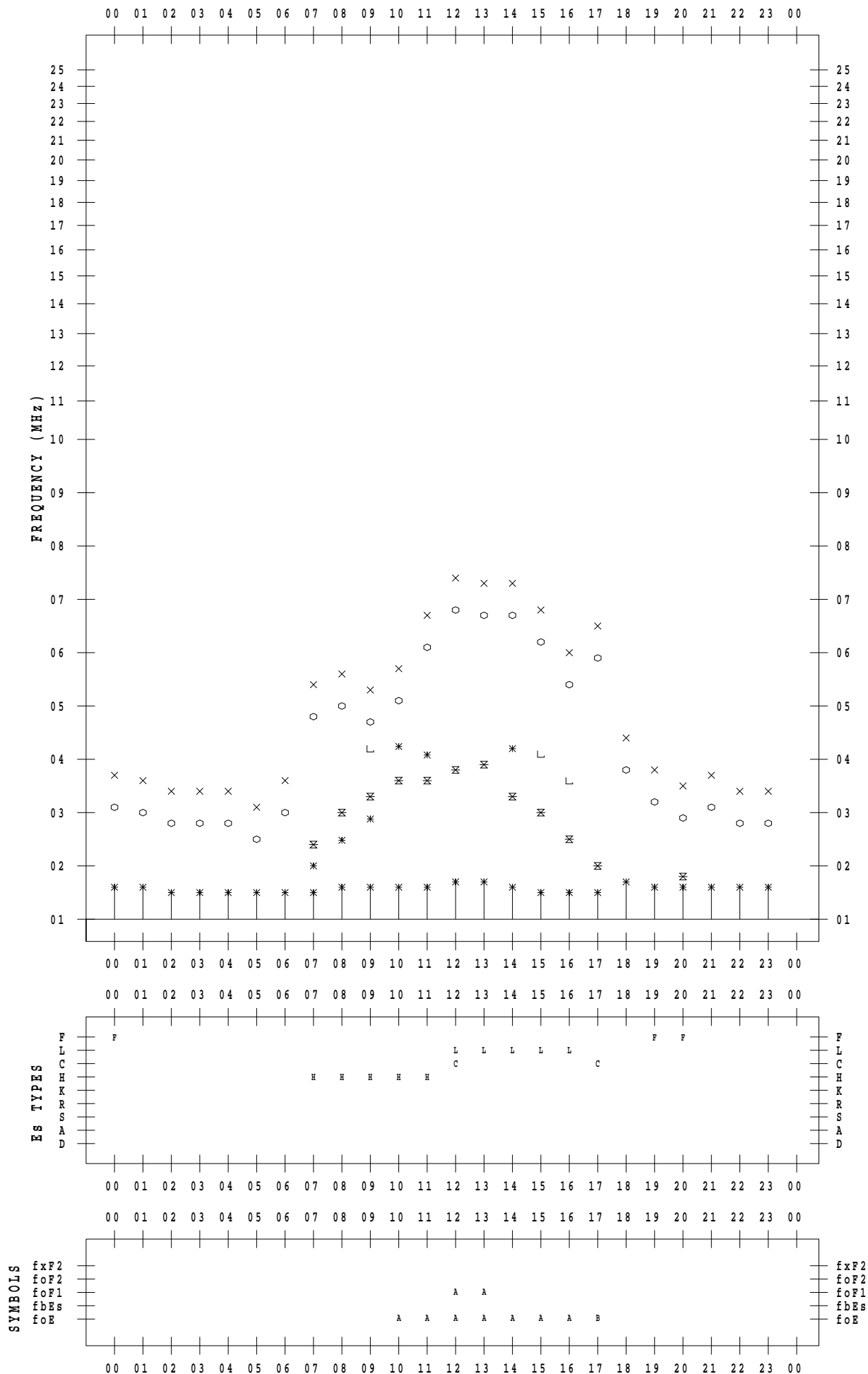
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 5

135 ° E MEAN TIME



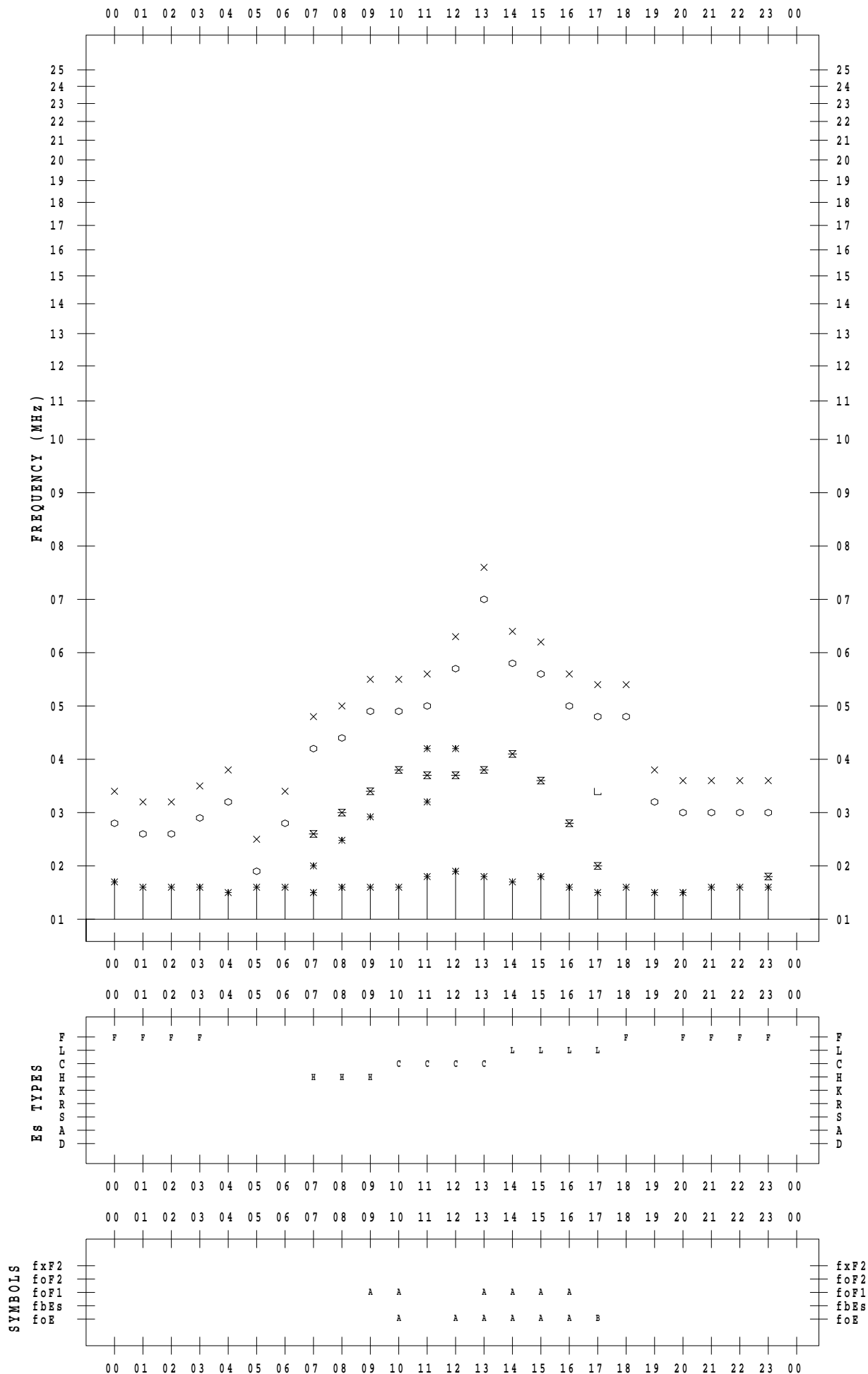
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 6

135 ° E MEAN TIME



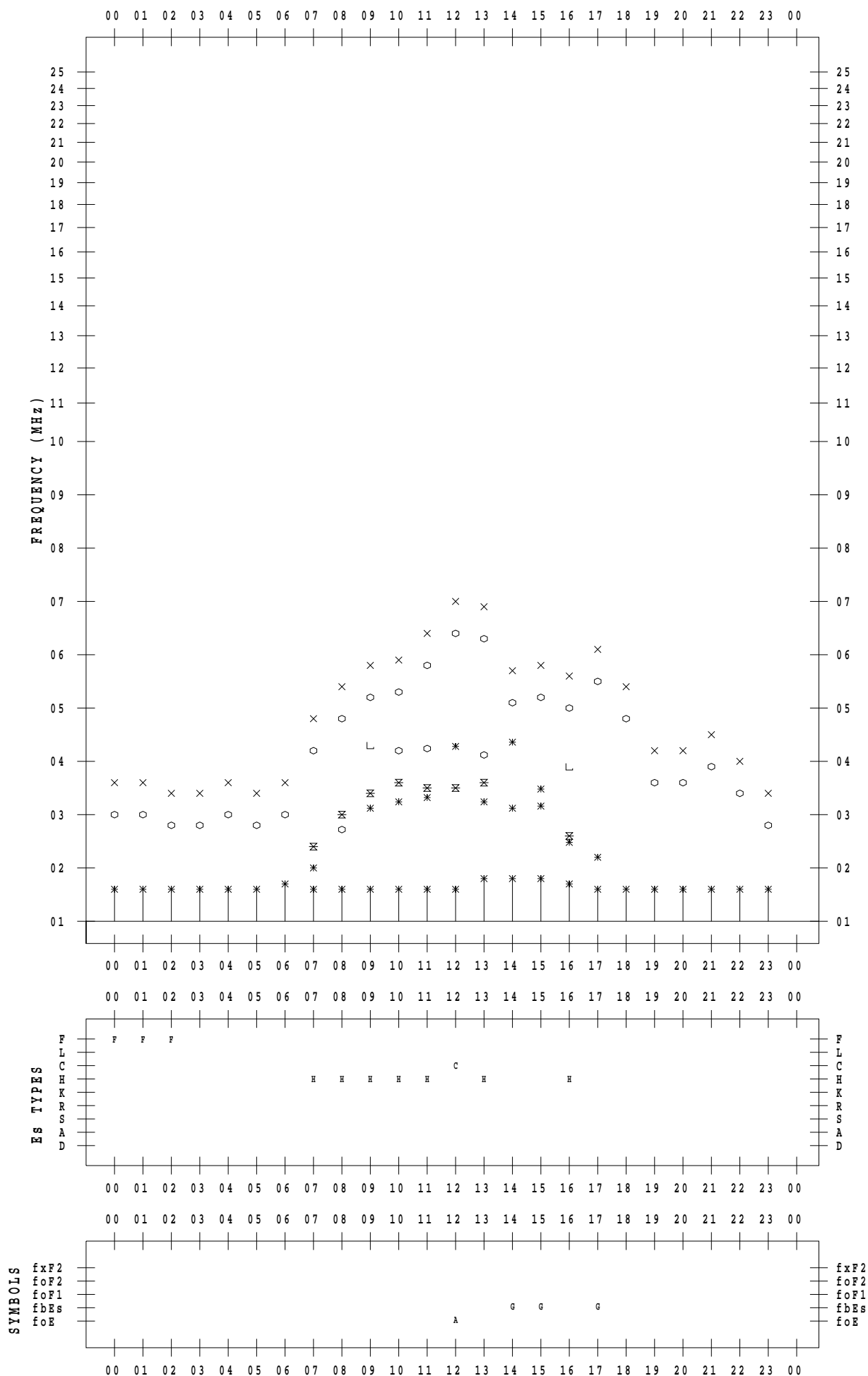
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 7

135 ° E MEAN TIME



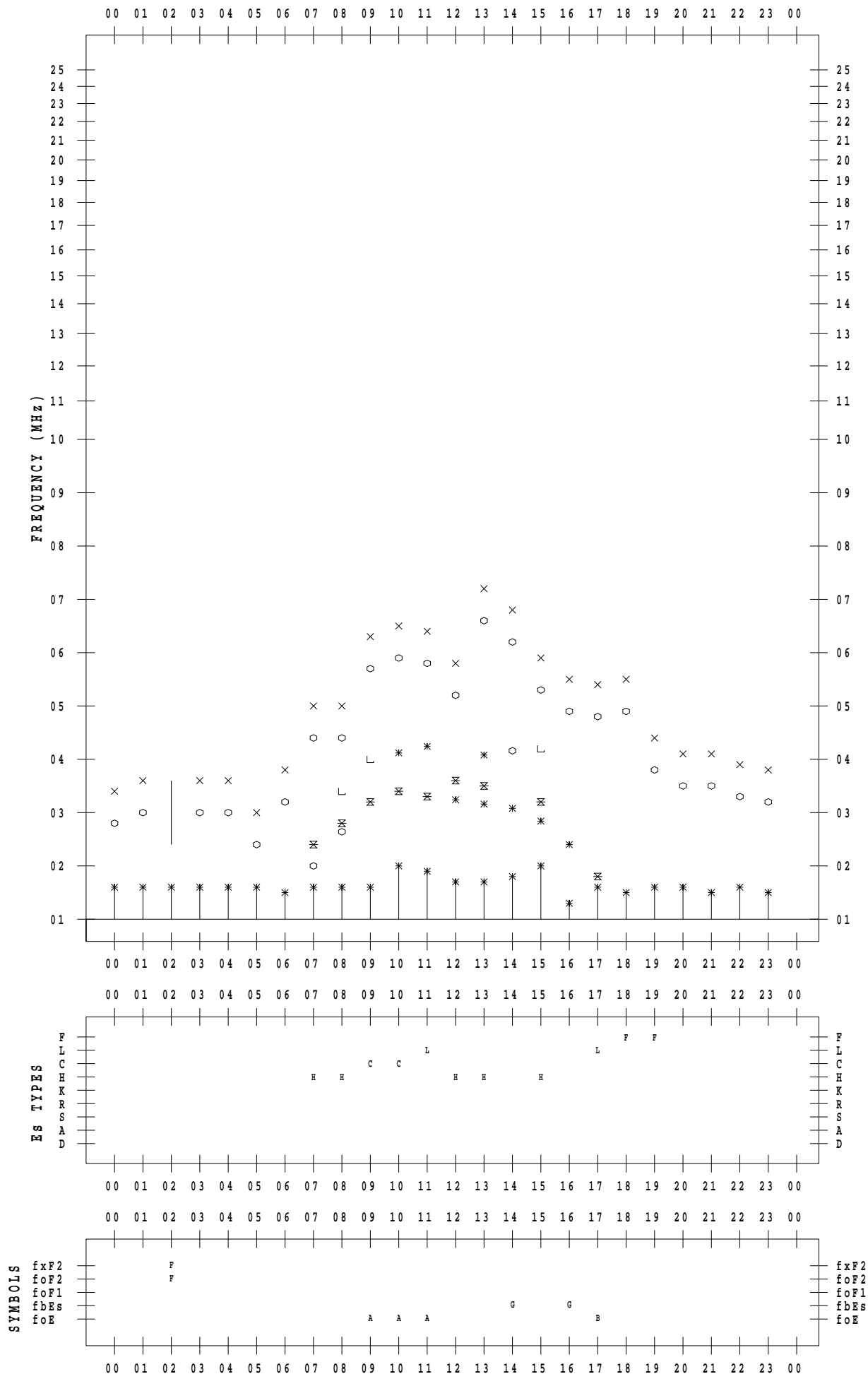
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 8

135 ° E MEAN TIME



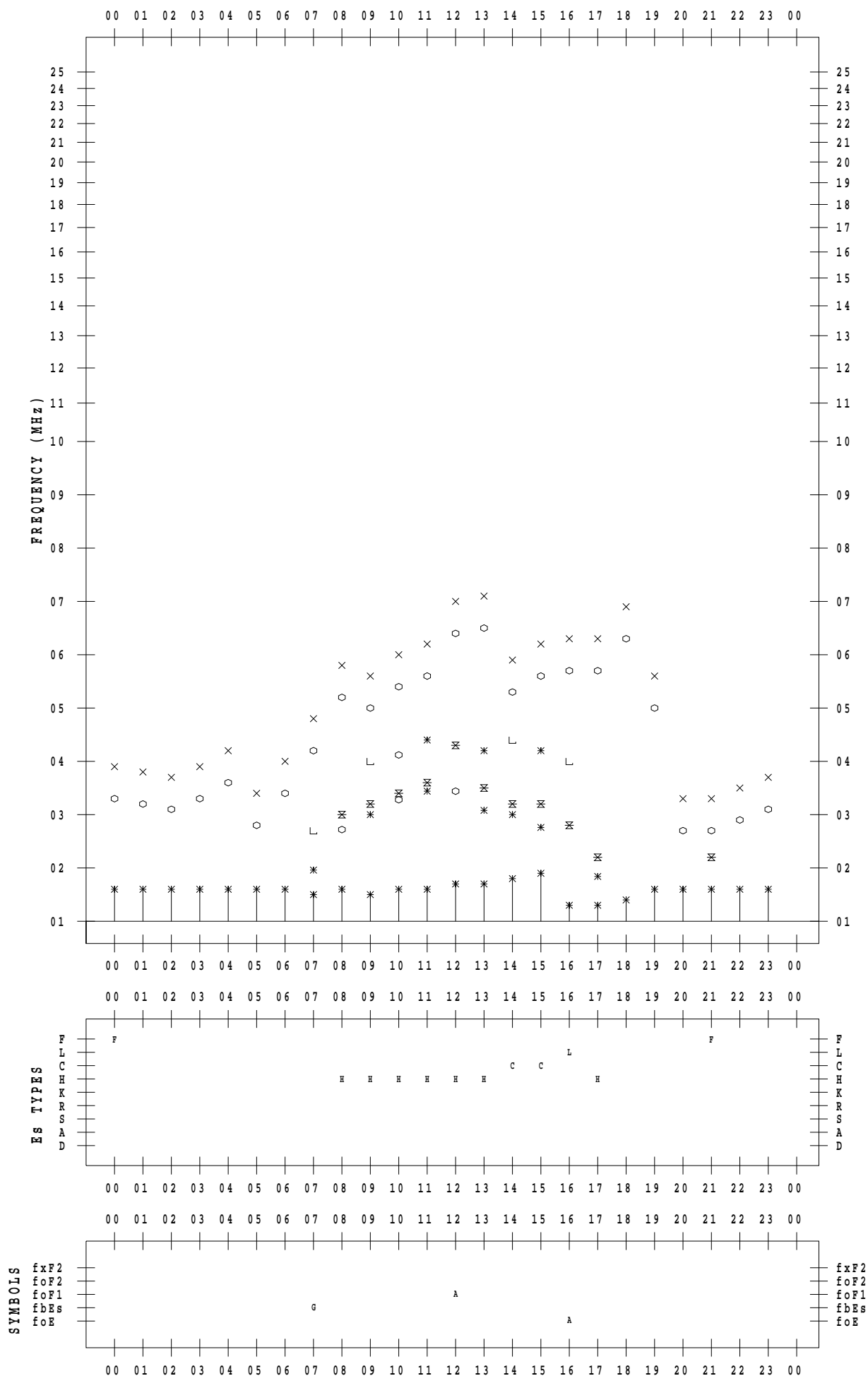
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 9

135 ° E MEAN TIME



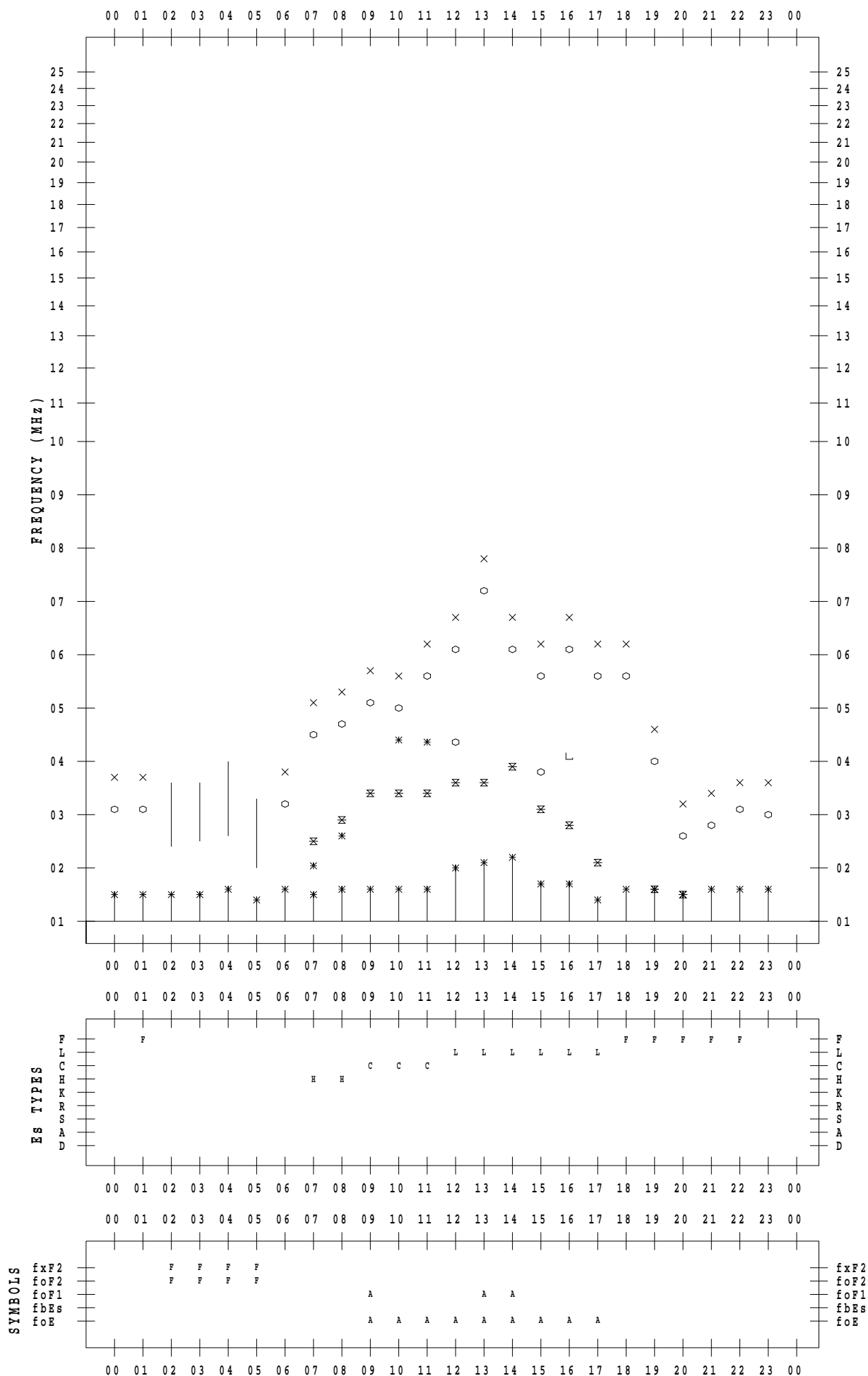
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 10

135 ° E MEAN TIME



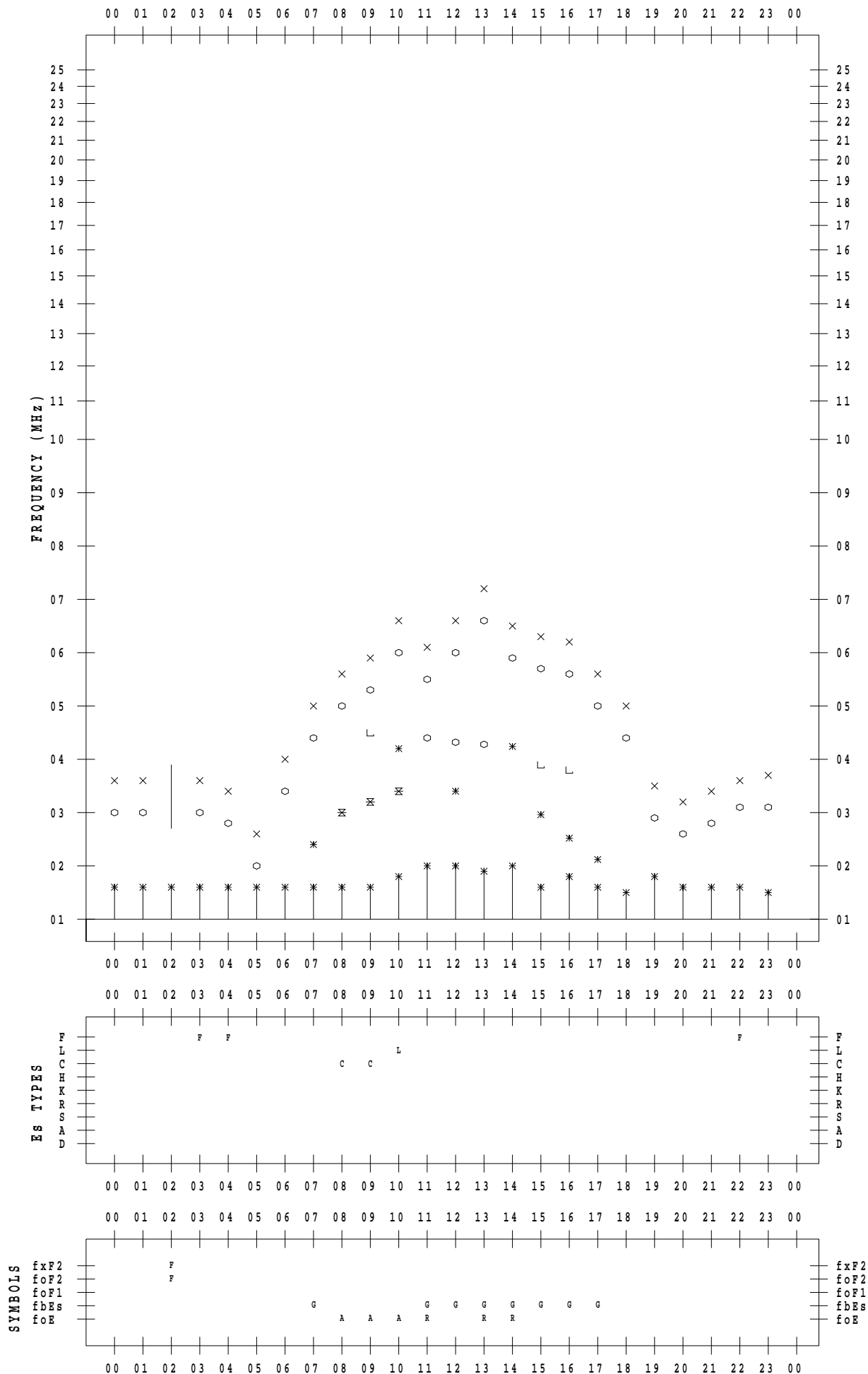
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 11

135 ° E MEAN TIME



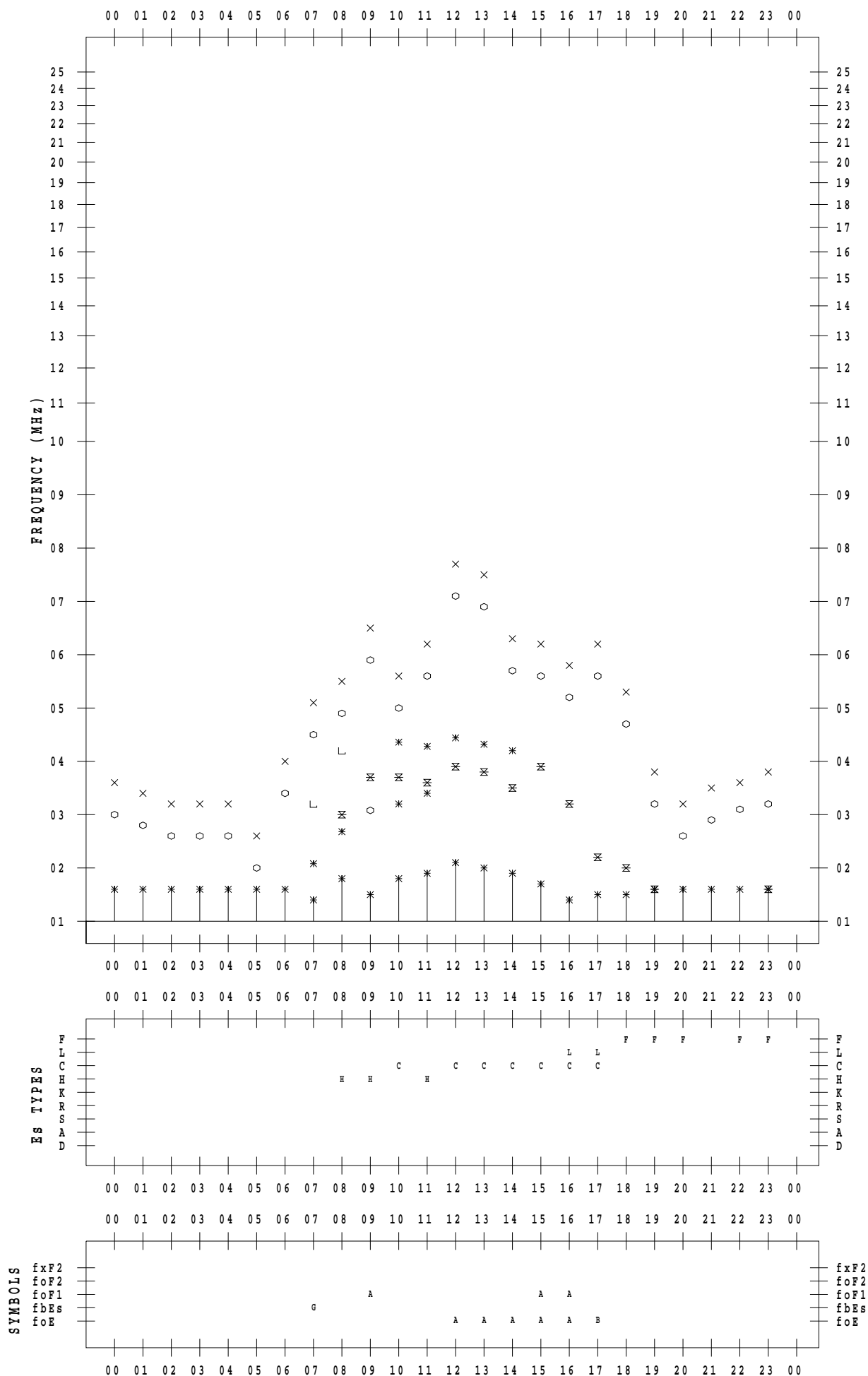
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 12

135 ° E MEAN TIME



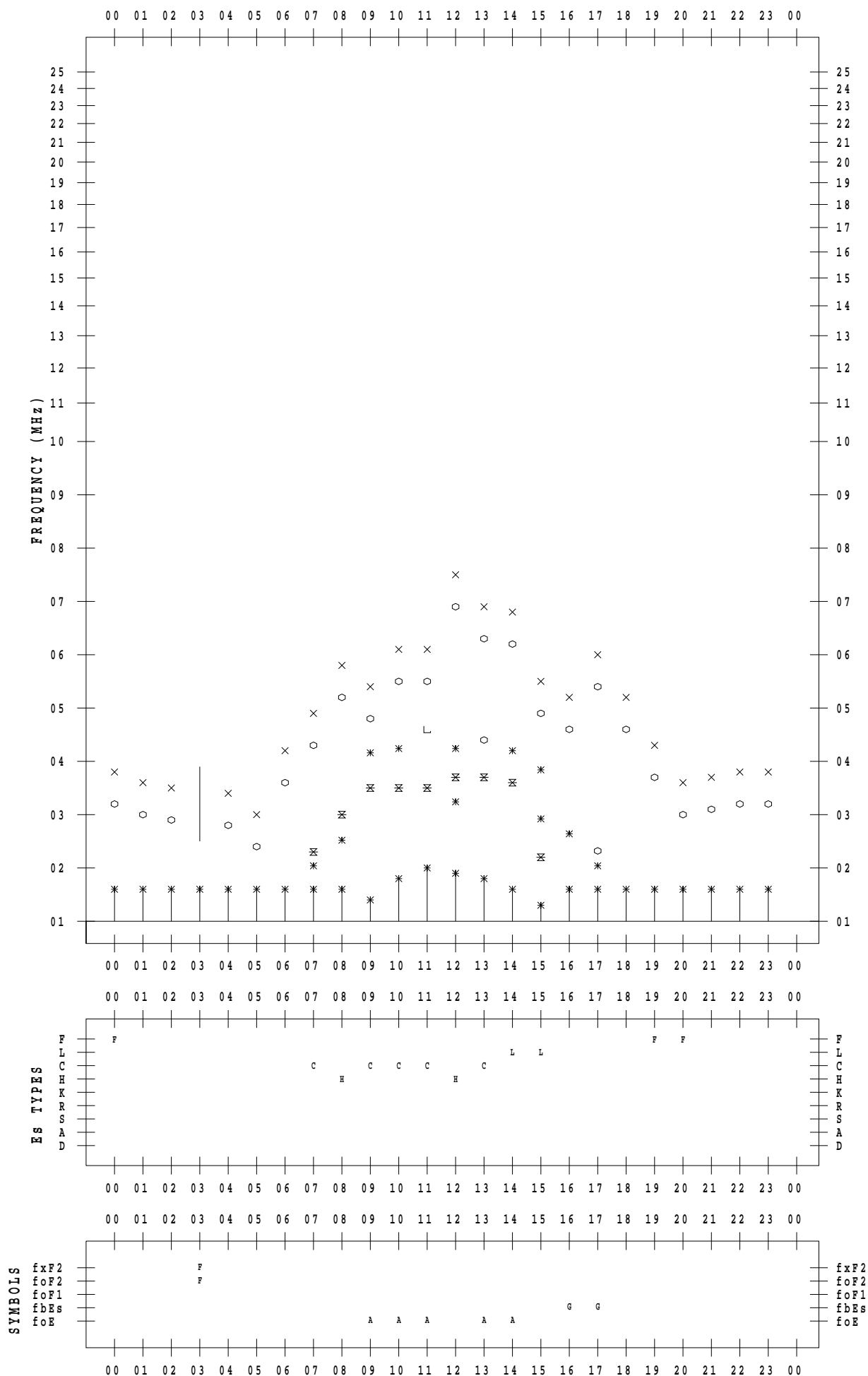
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 13

135 ° E MEAN TIME



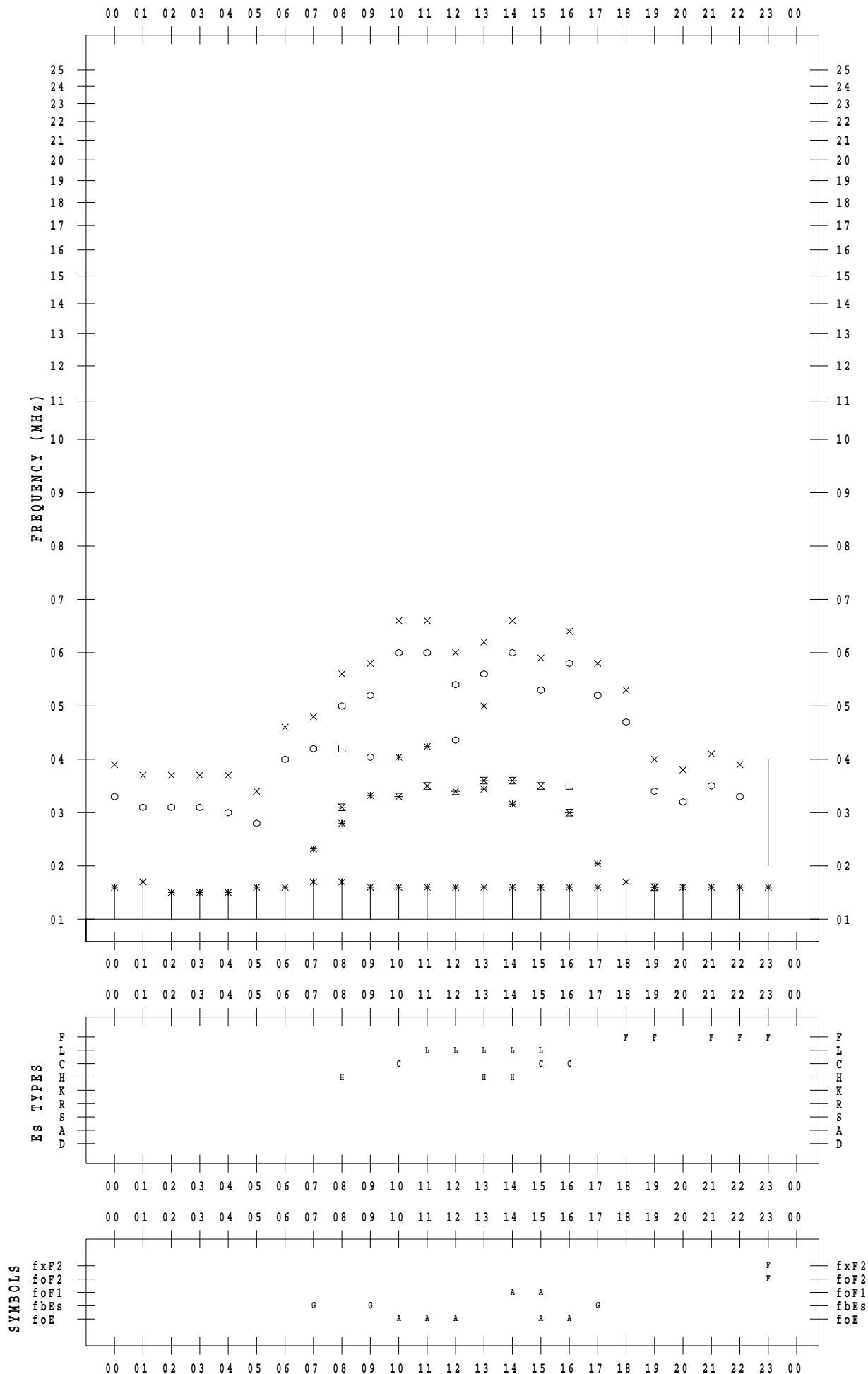
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 14

135 ° E MEAN TIME



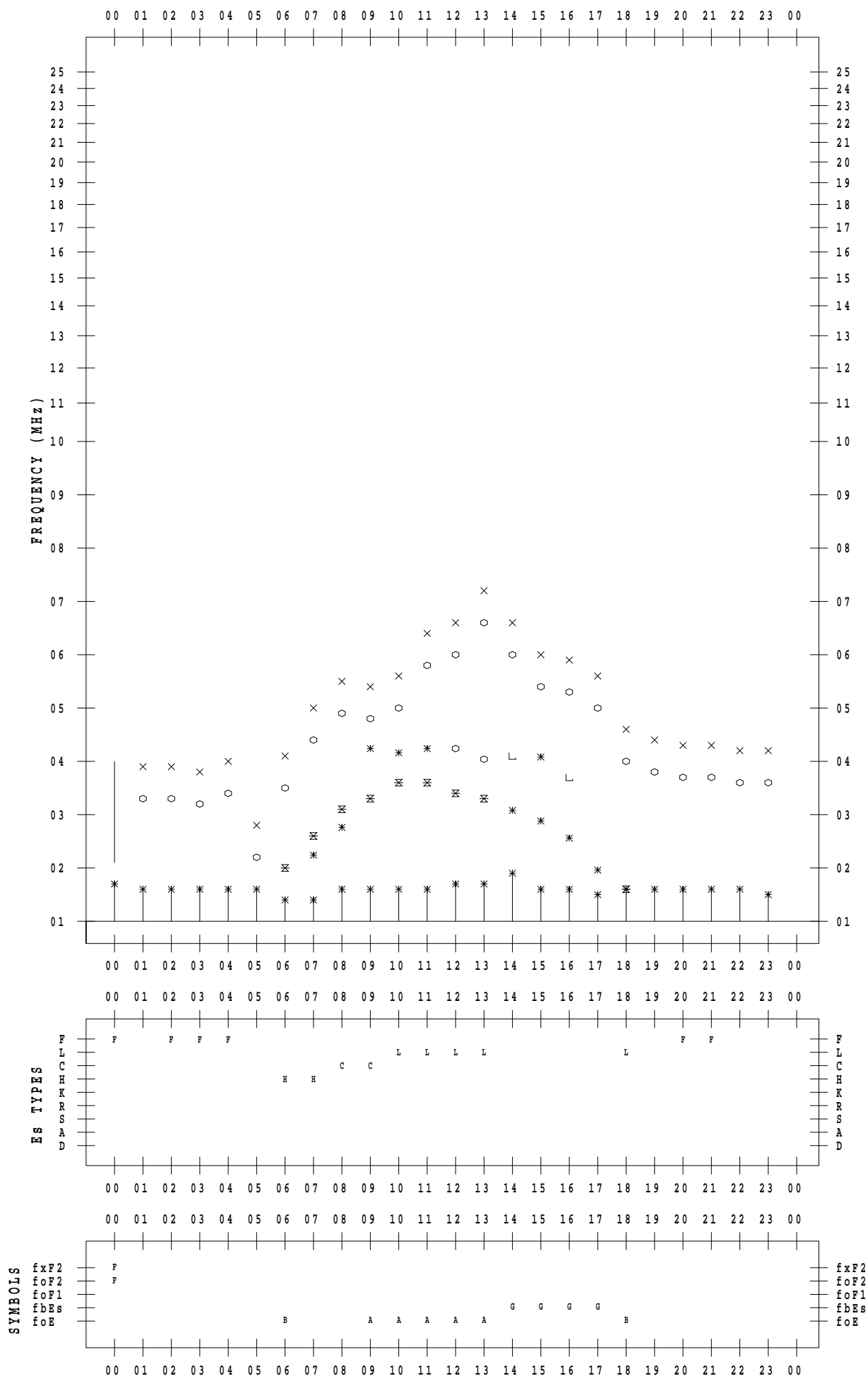
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 15

135 ° E MEAN TIME



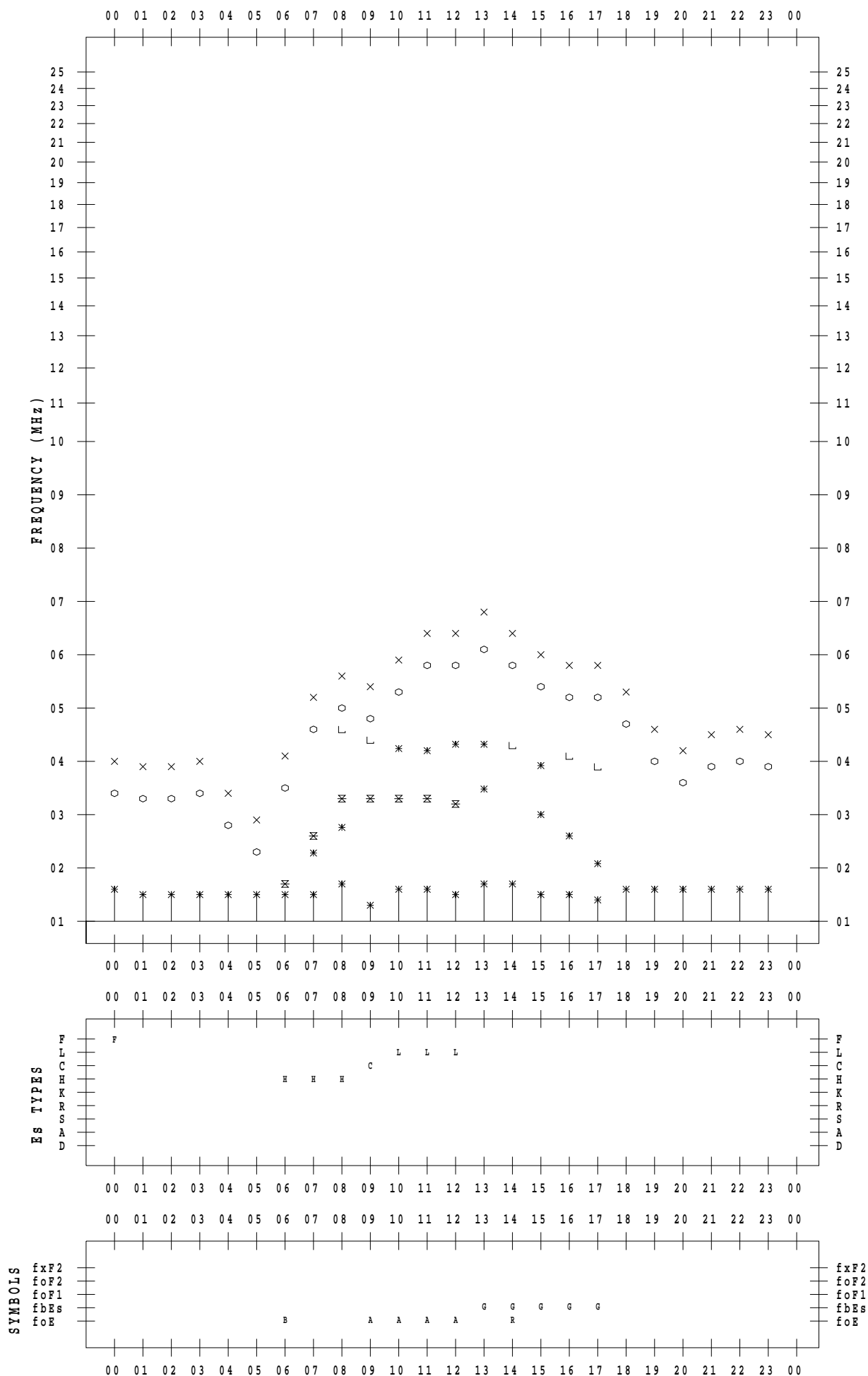
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 16

135 ° E MEAN TIME



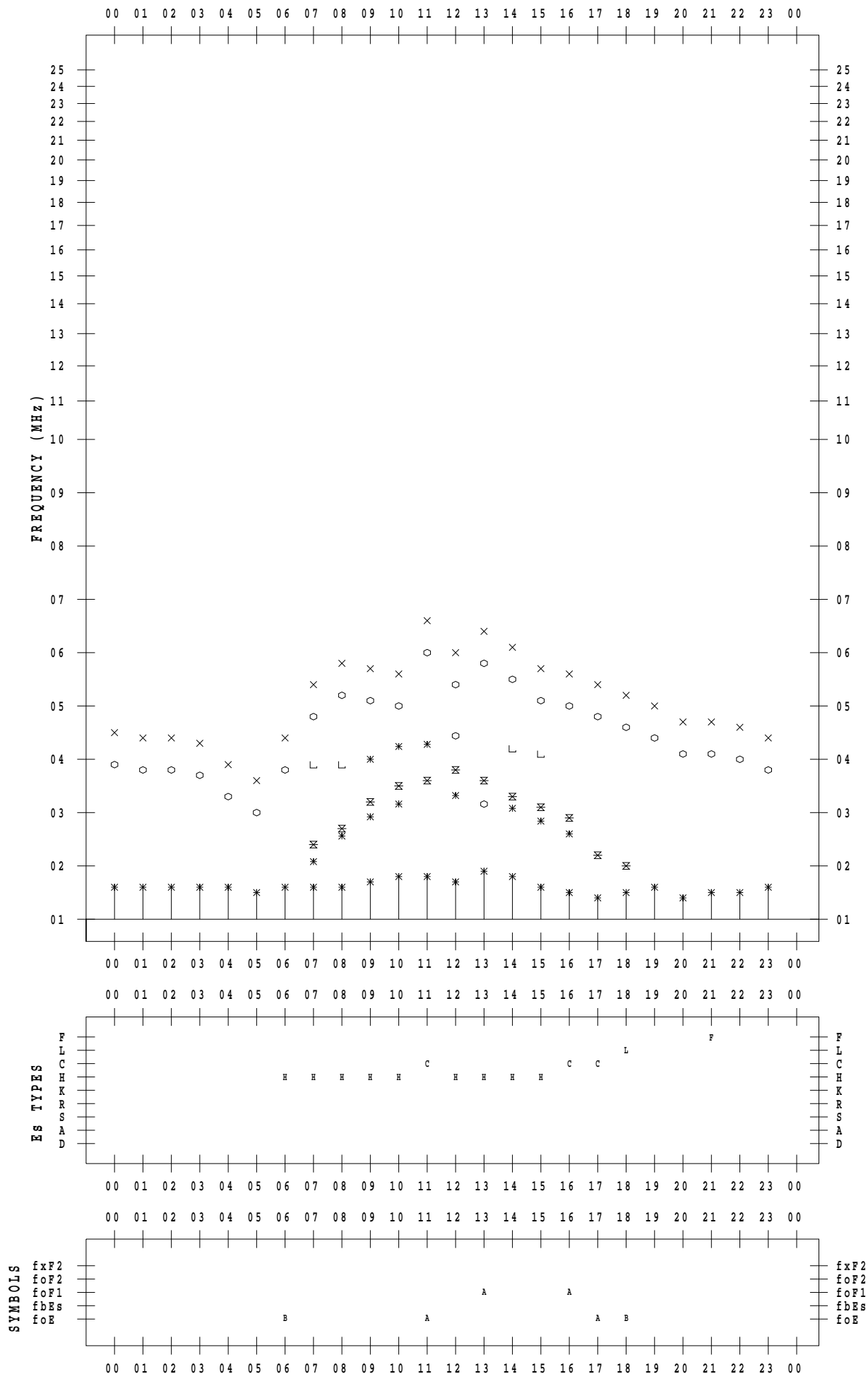
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 17

135 ° E MEAN TIME



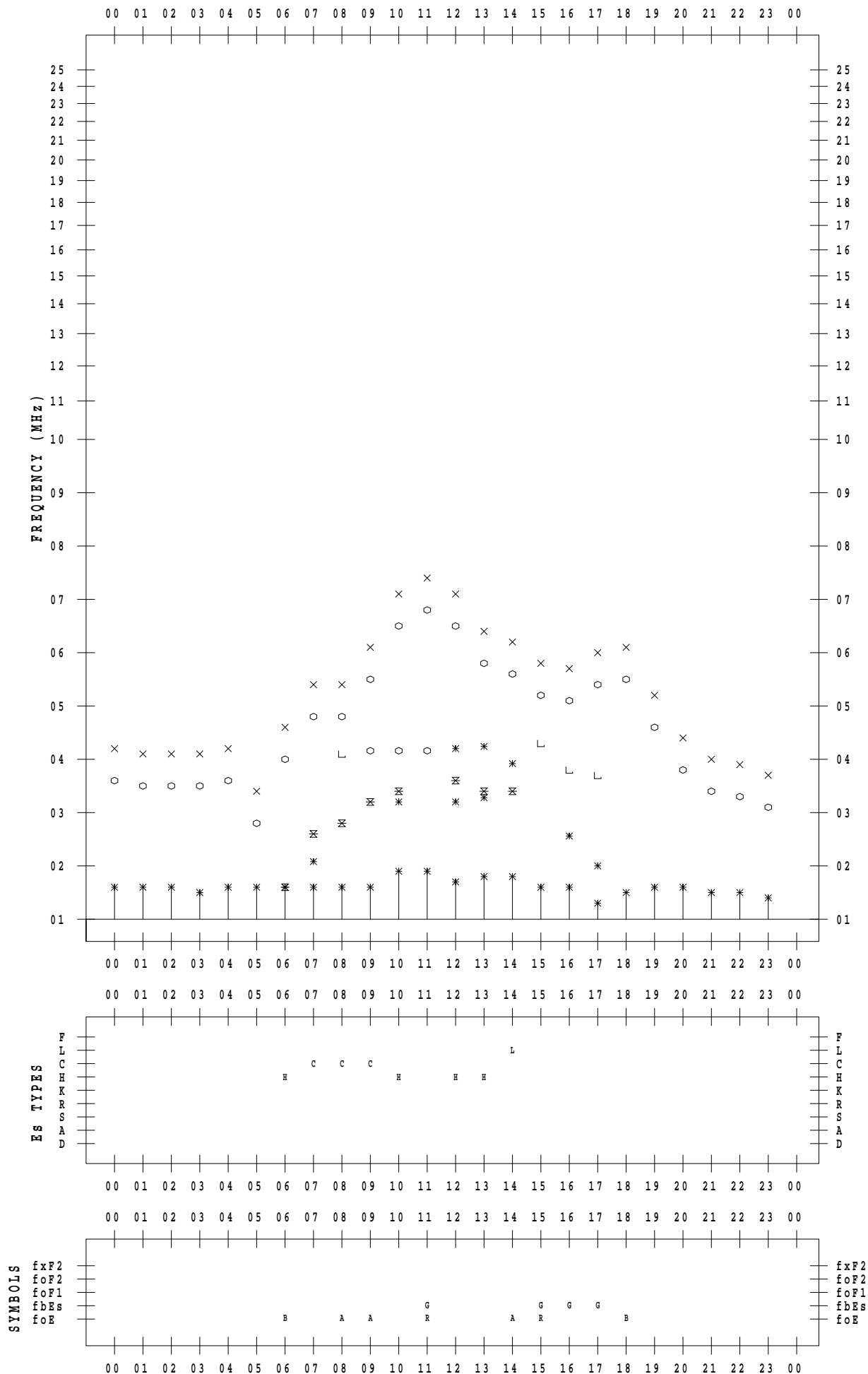
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 18

135 ° E MEAN TIME



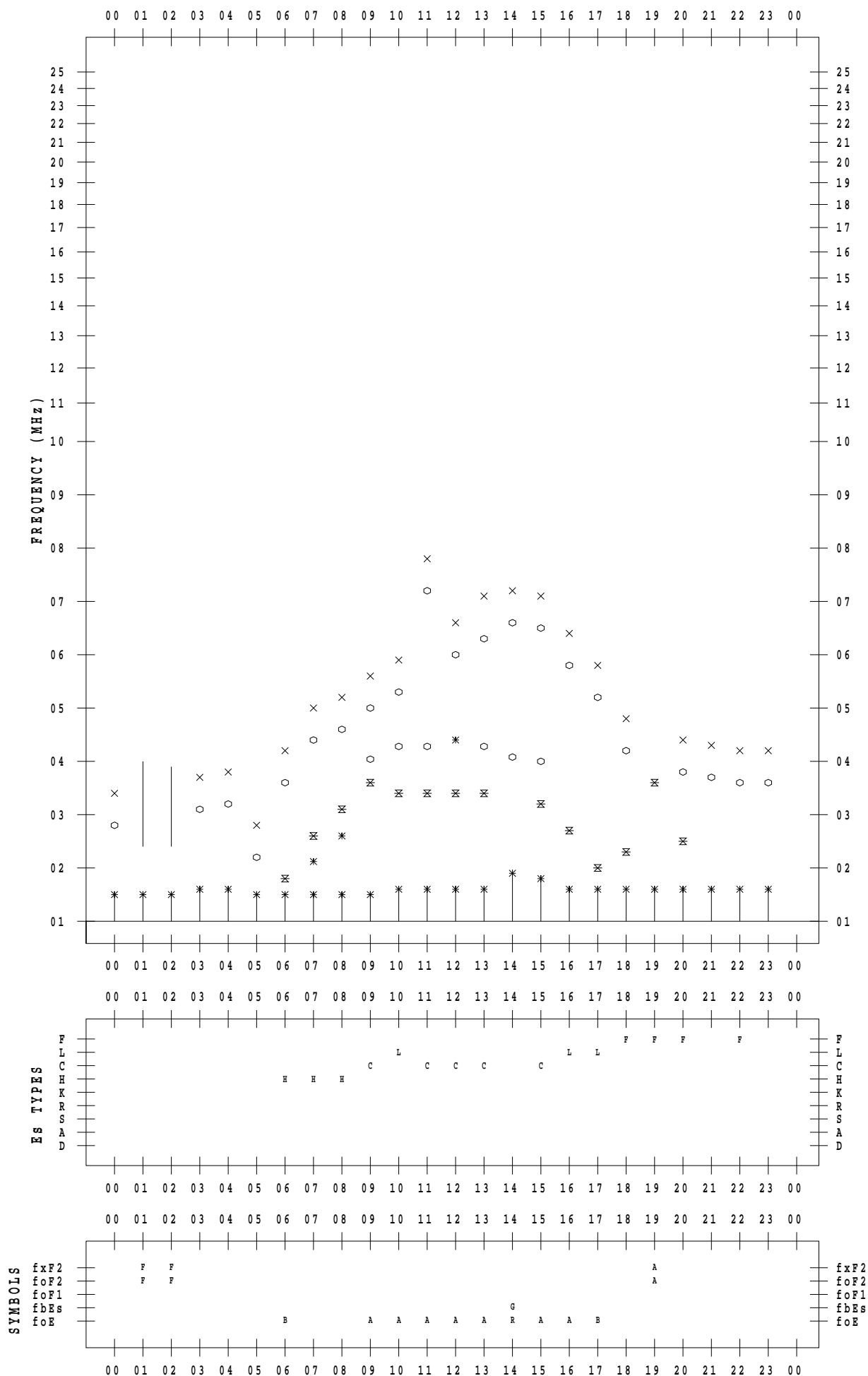
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 19

135 ° E MEAN TIME



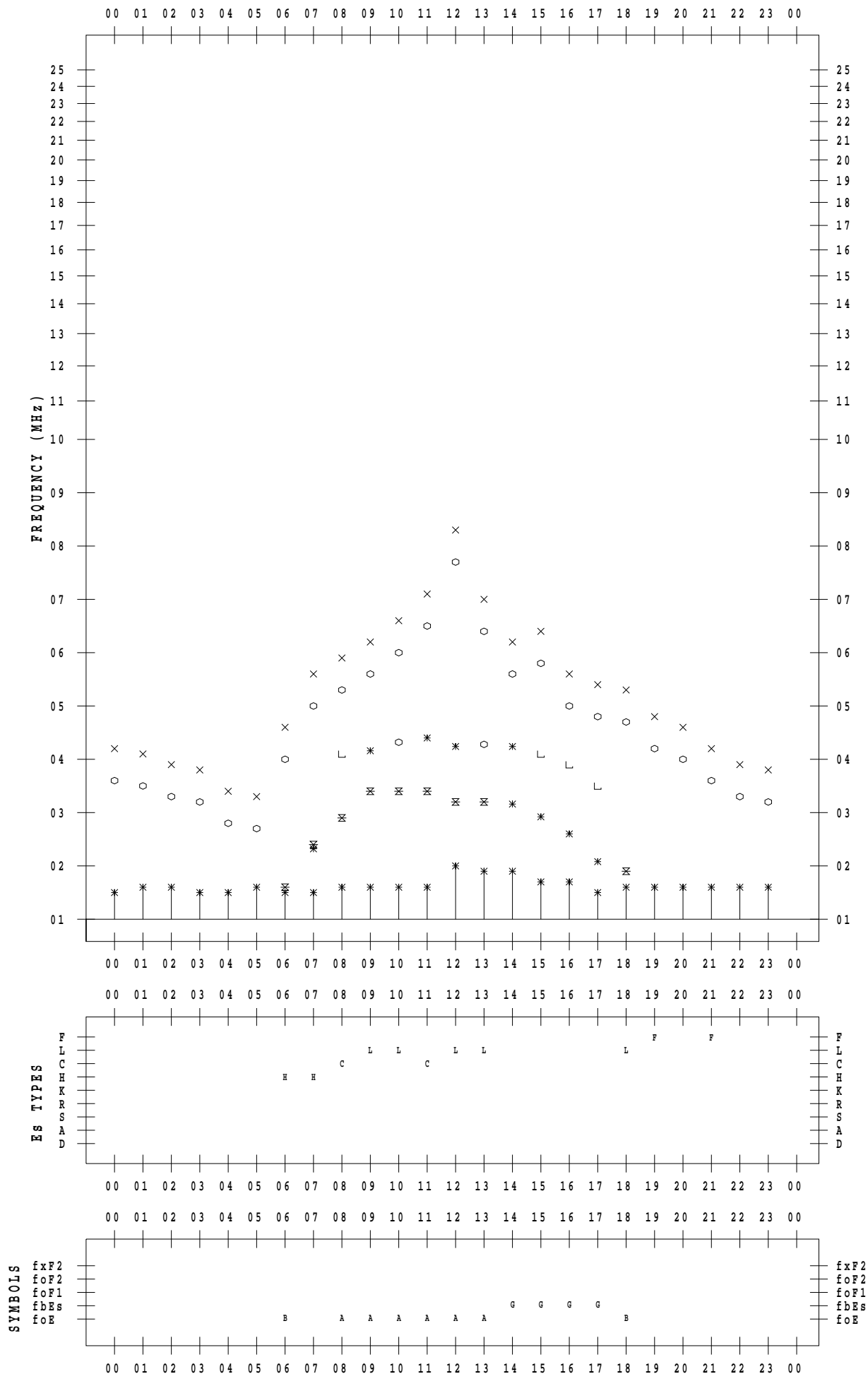
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 20

135 ° E MEAN TIME



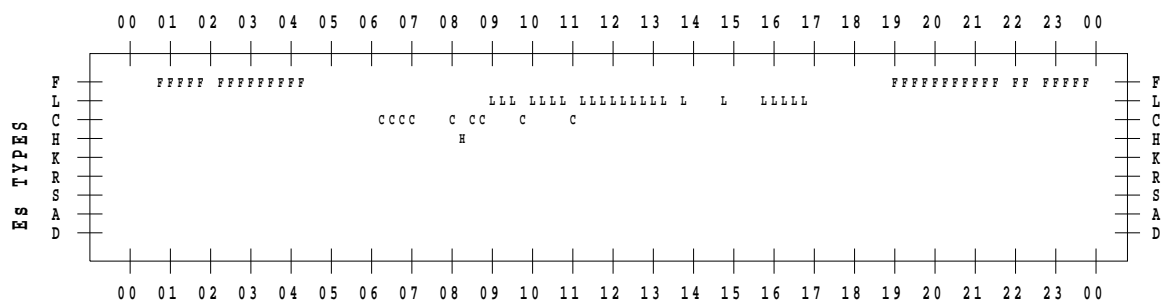
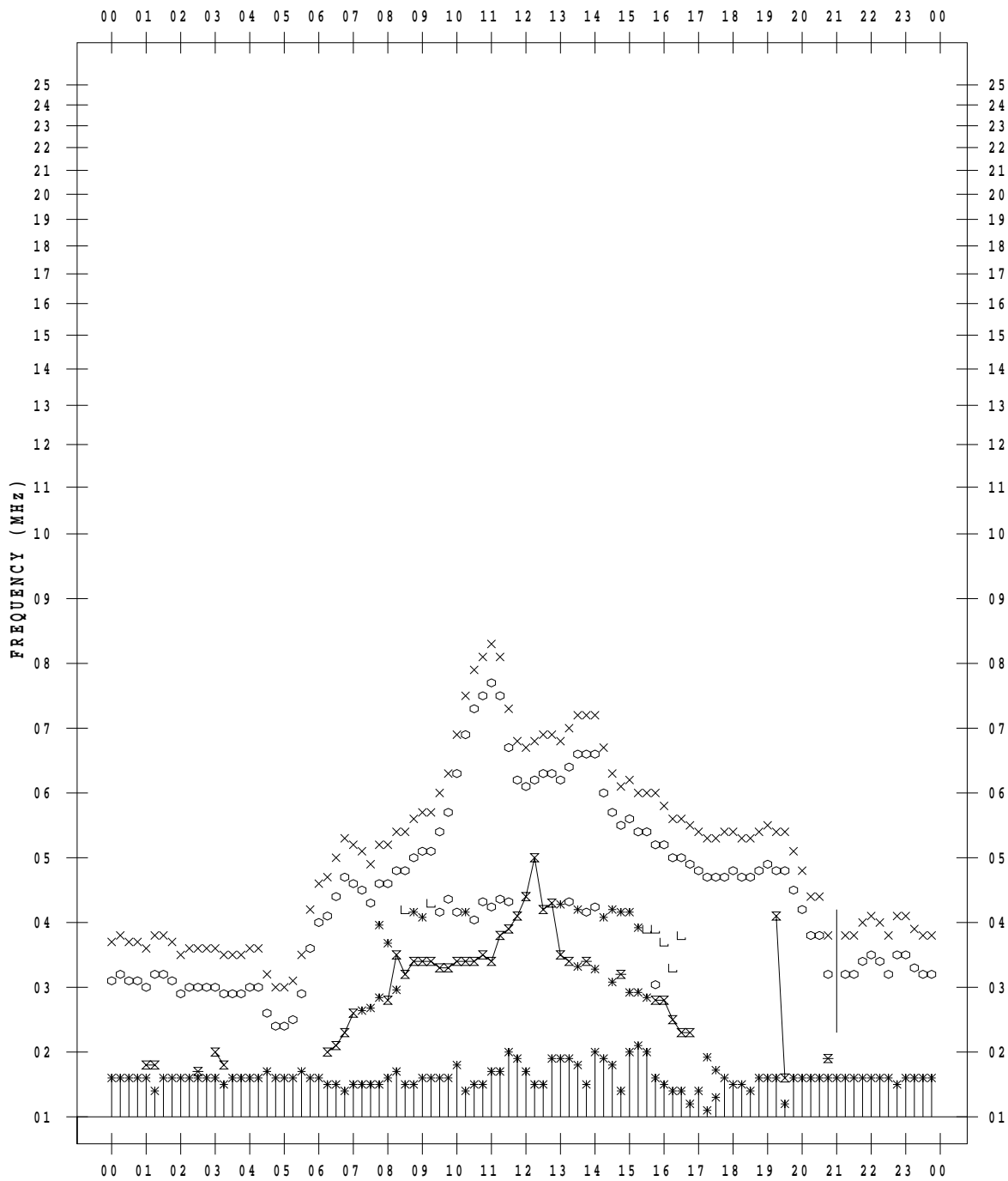
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 21

135 ° E MEAN TIME



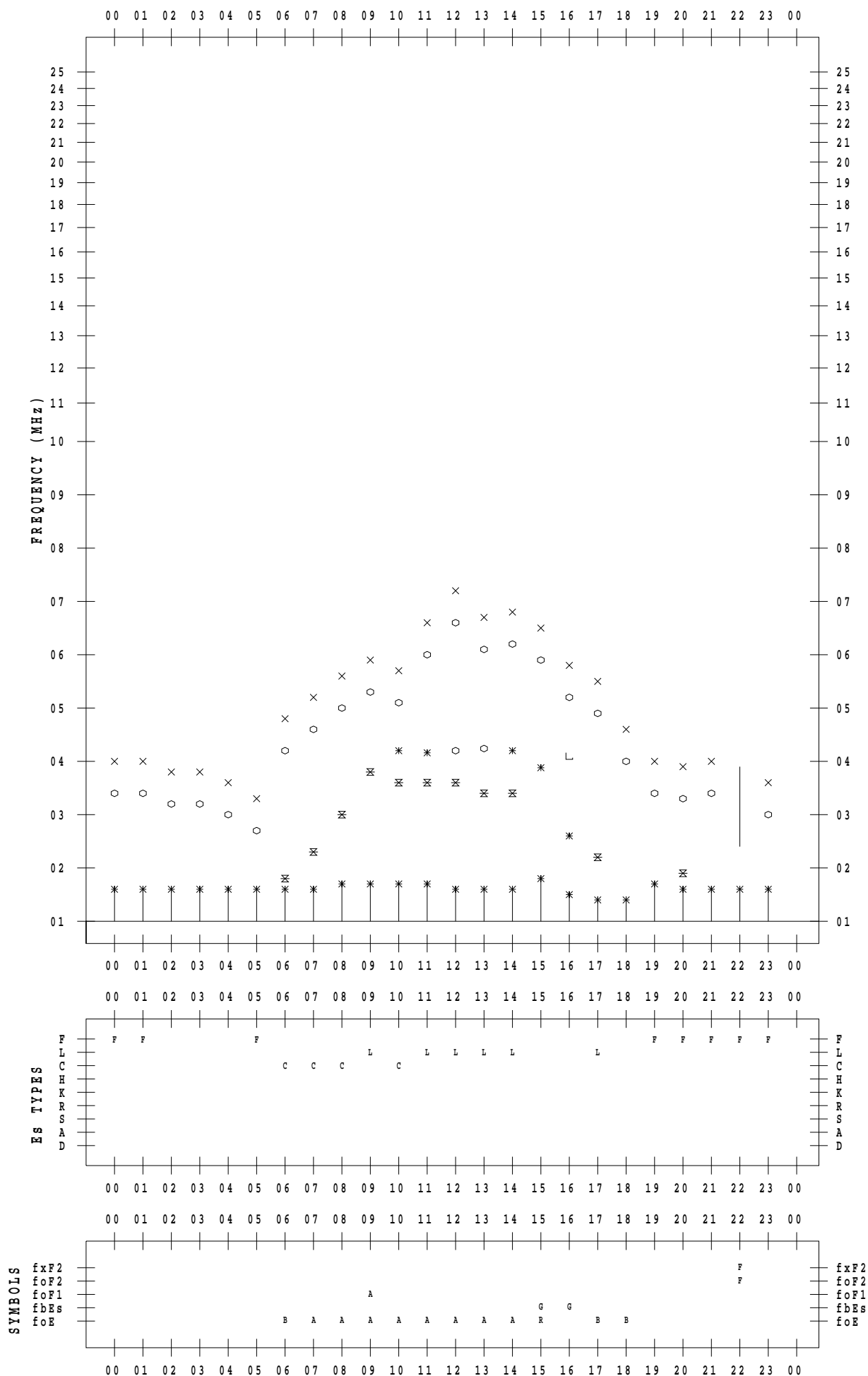
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 22

135 ° E MEAN TIME



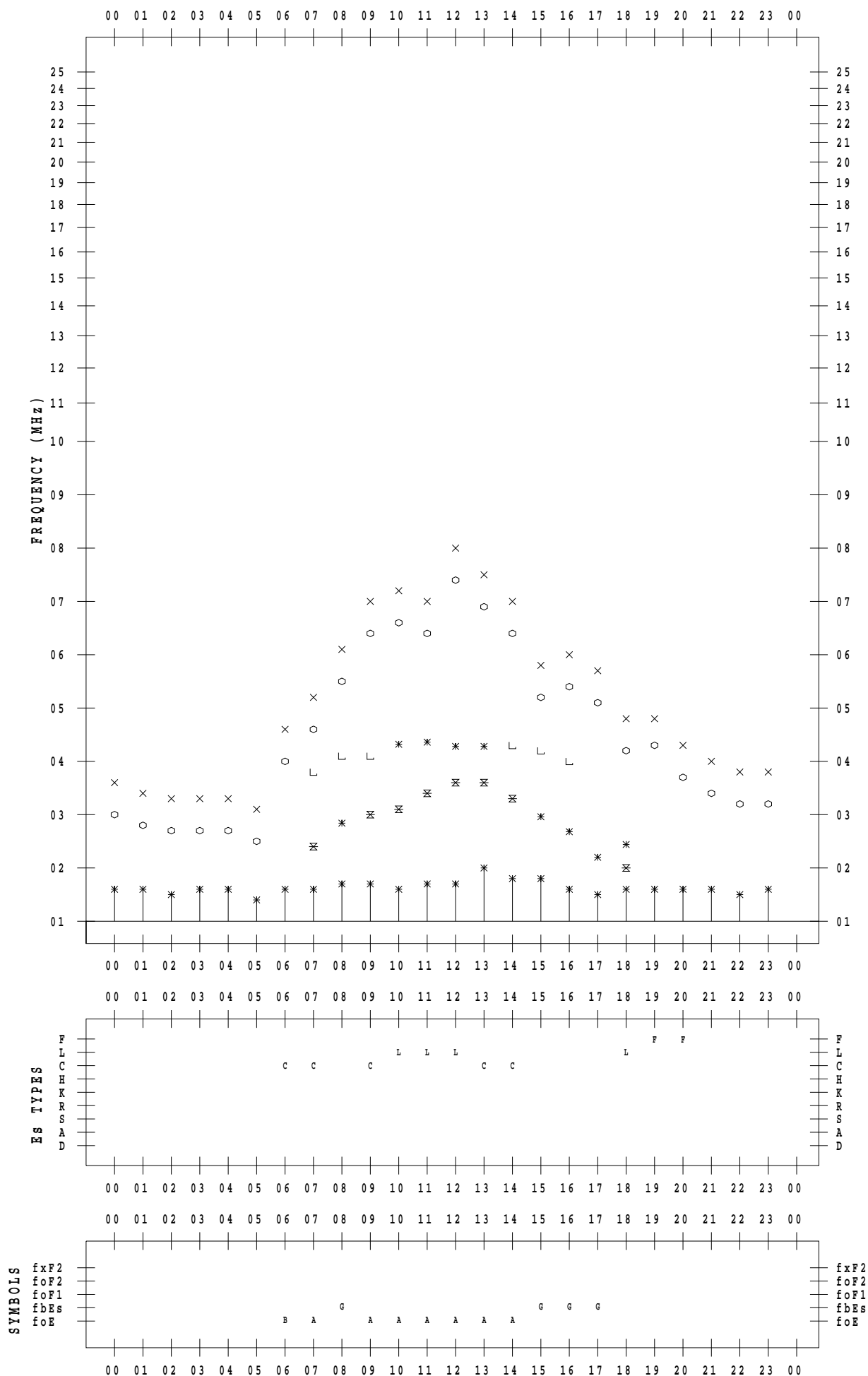
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 23

135 ° E MEAN TIME



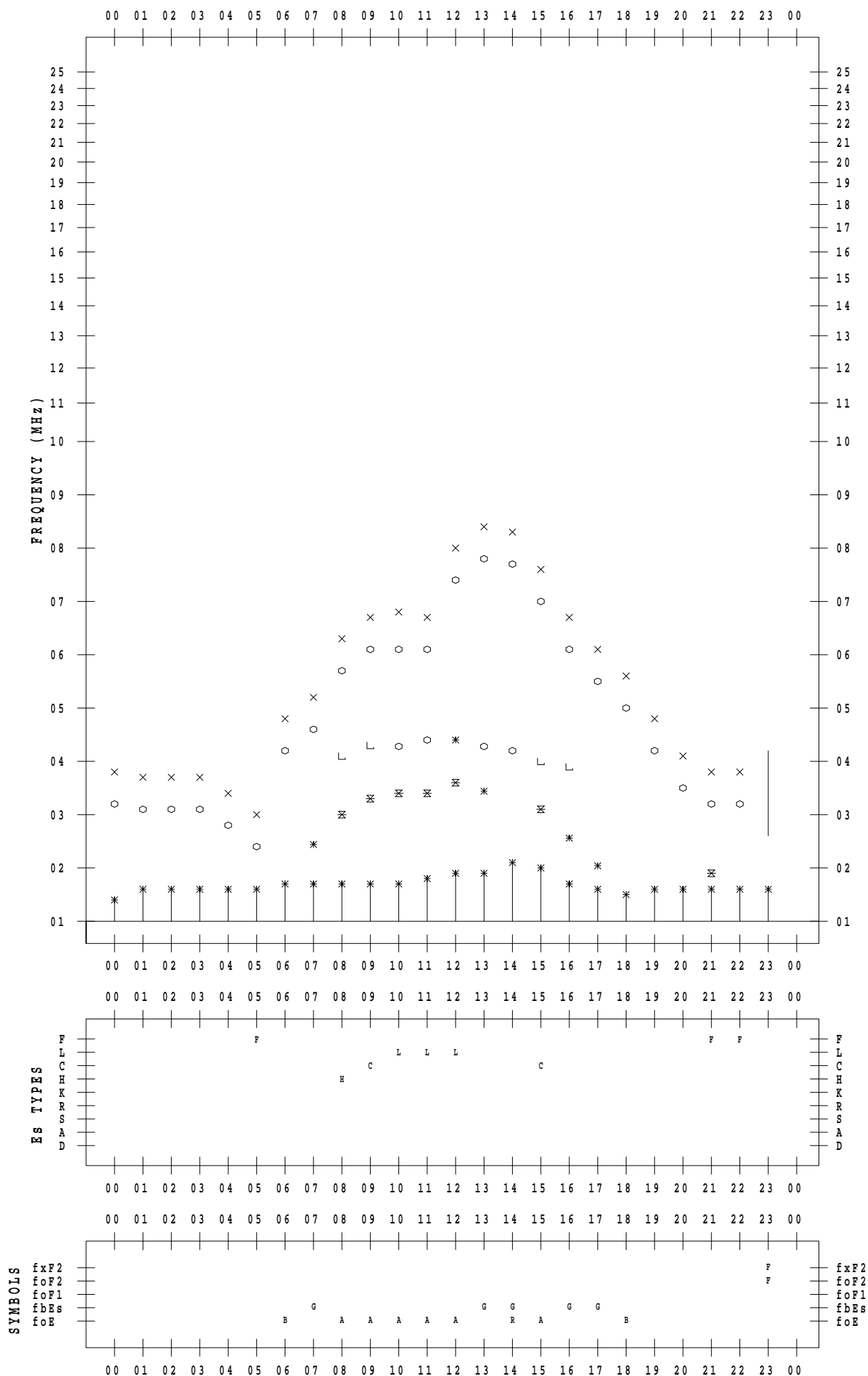
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 24

135 ° E MEAN TIME



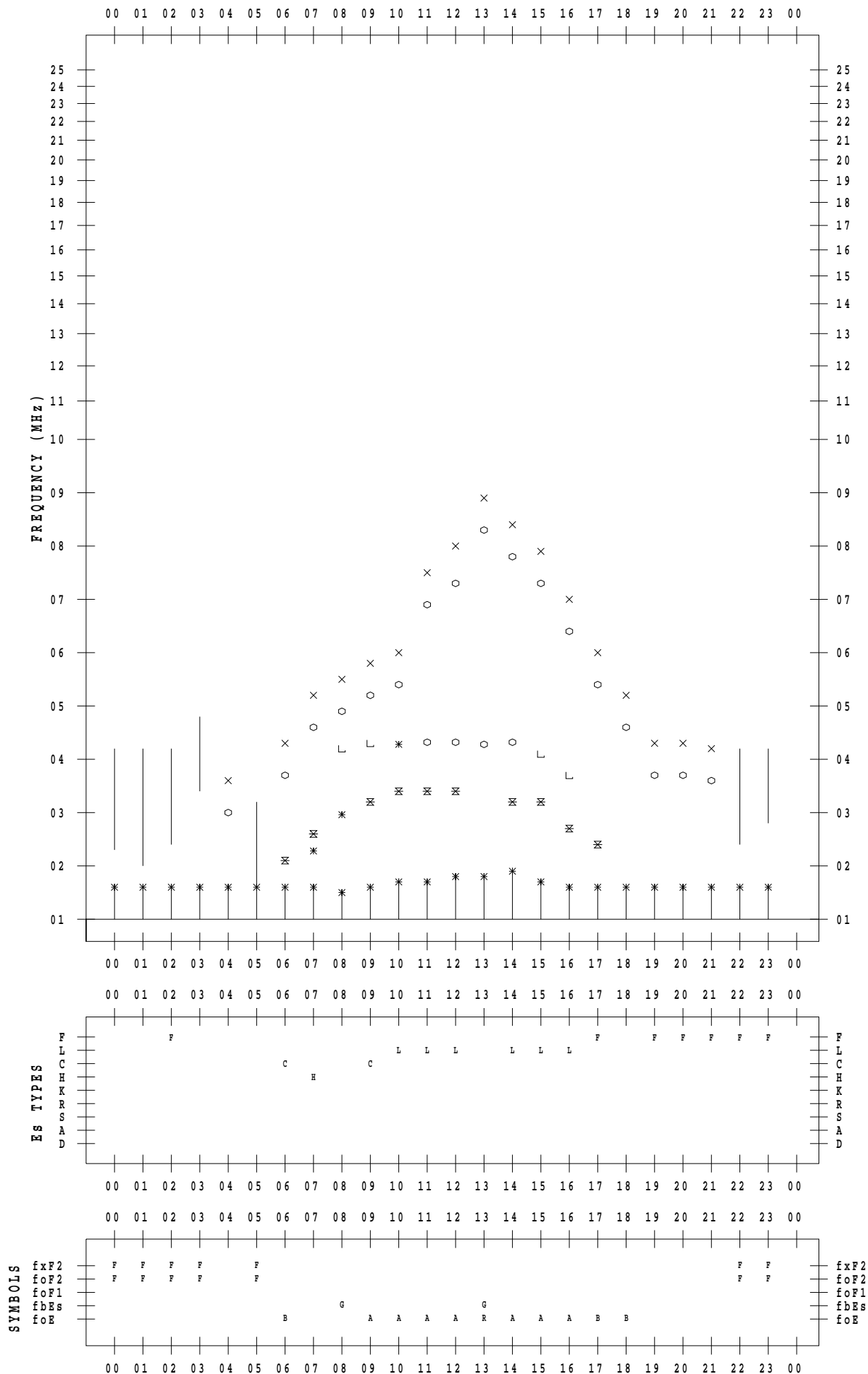
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 25

135 ° E MEAN TIME



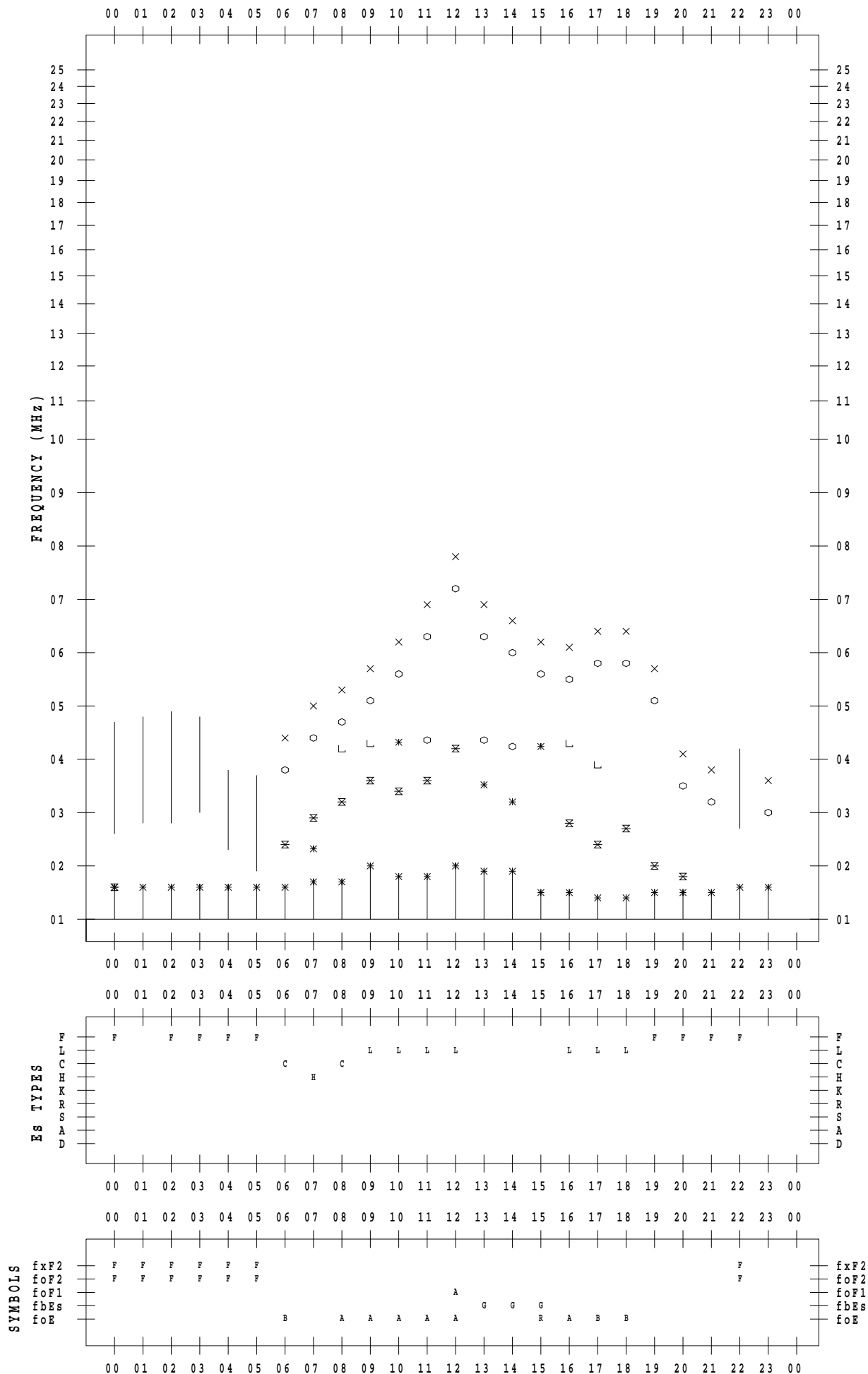
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 26

135 ° E MEAN TIME



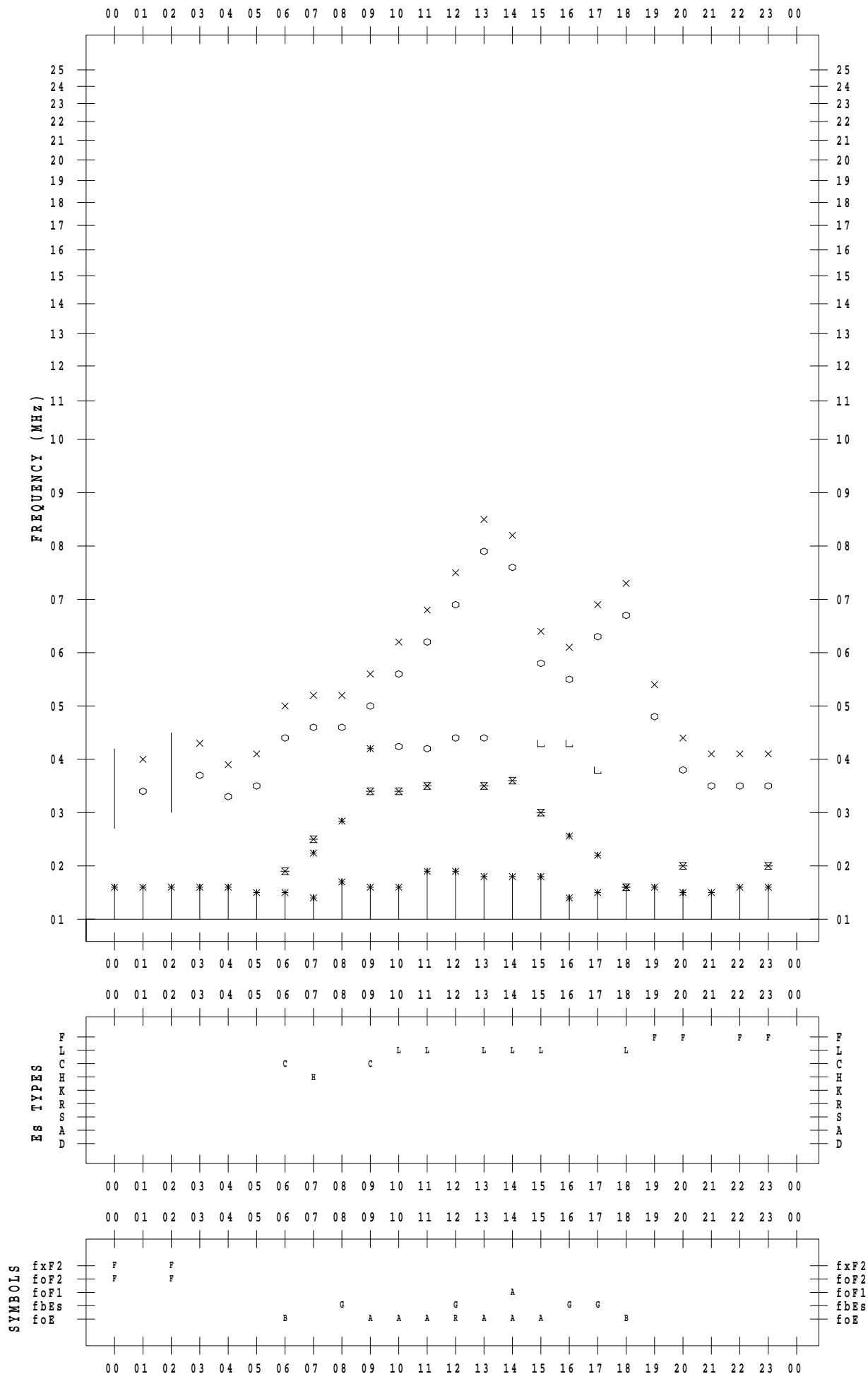
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 27

135 ° E MEAN TIME



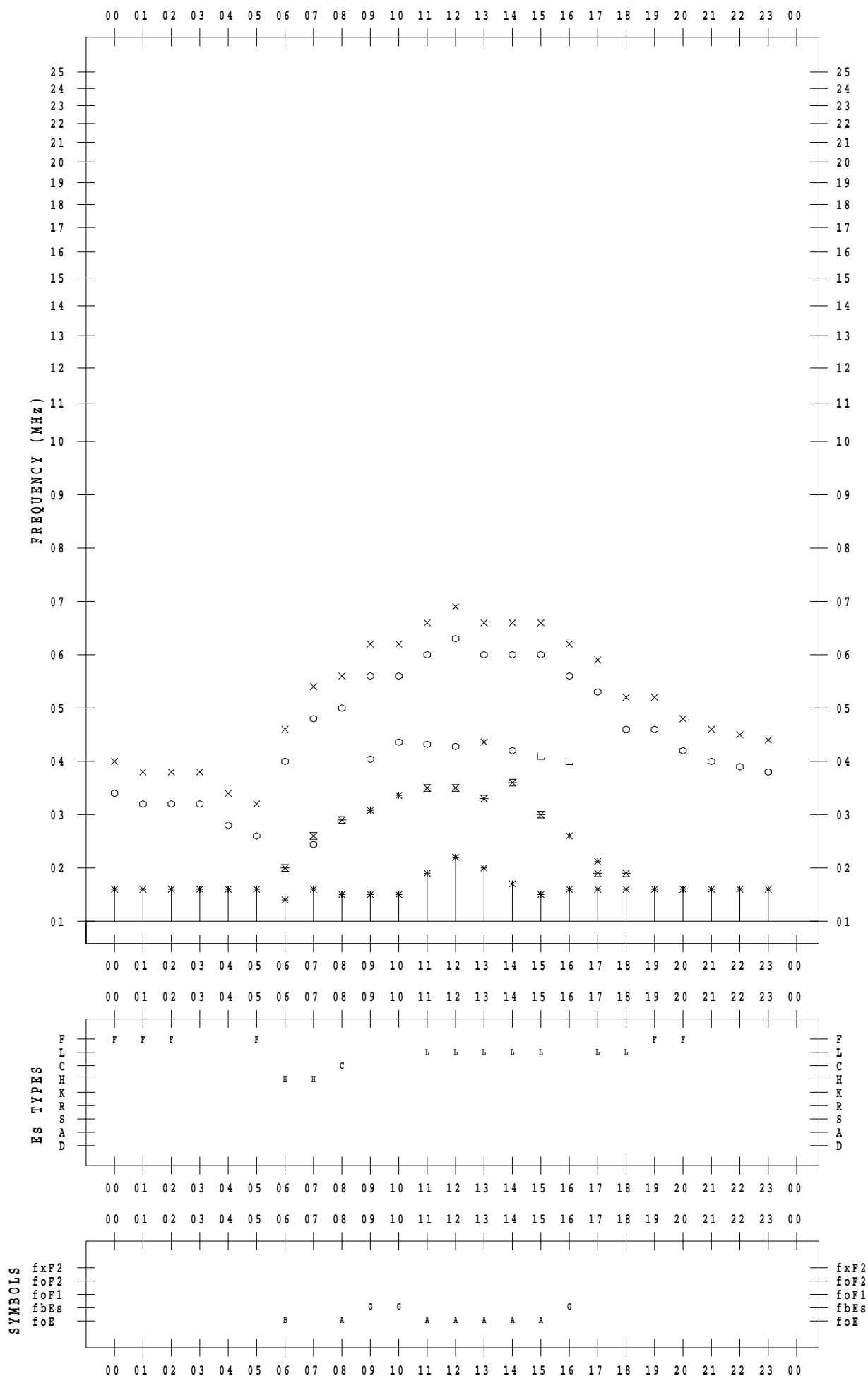
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 28

135 ° E MEAN TIME



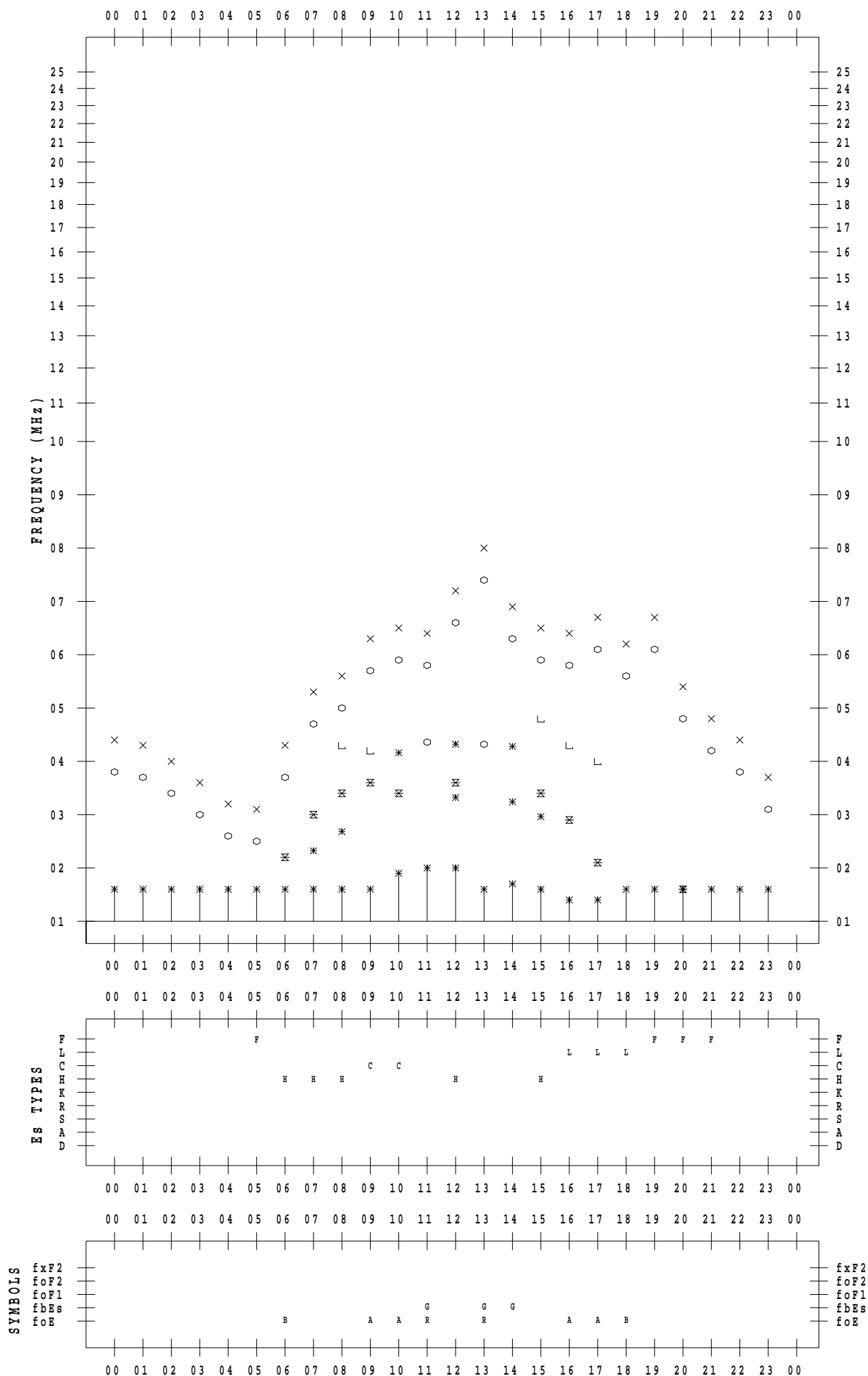
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 29

135 ° E MEAN TIME



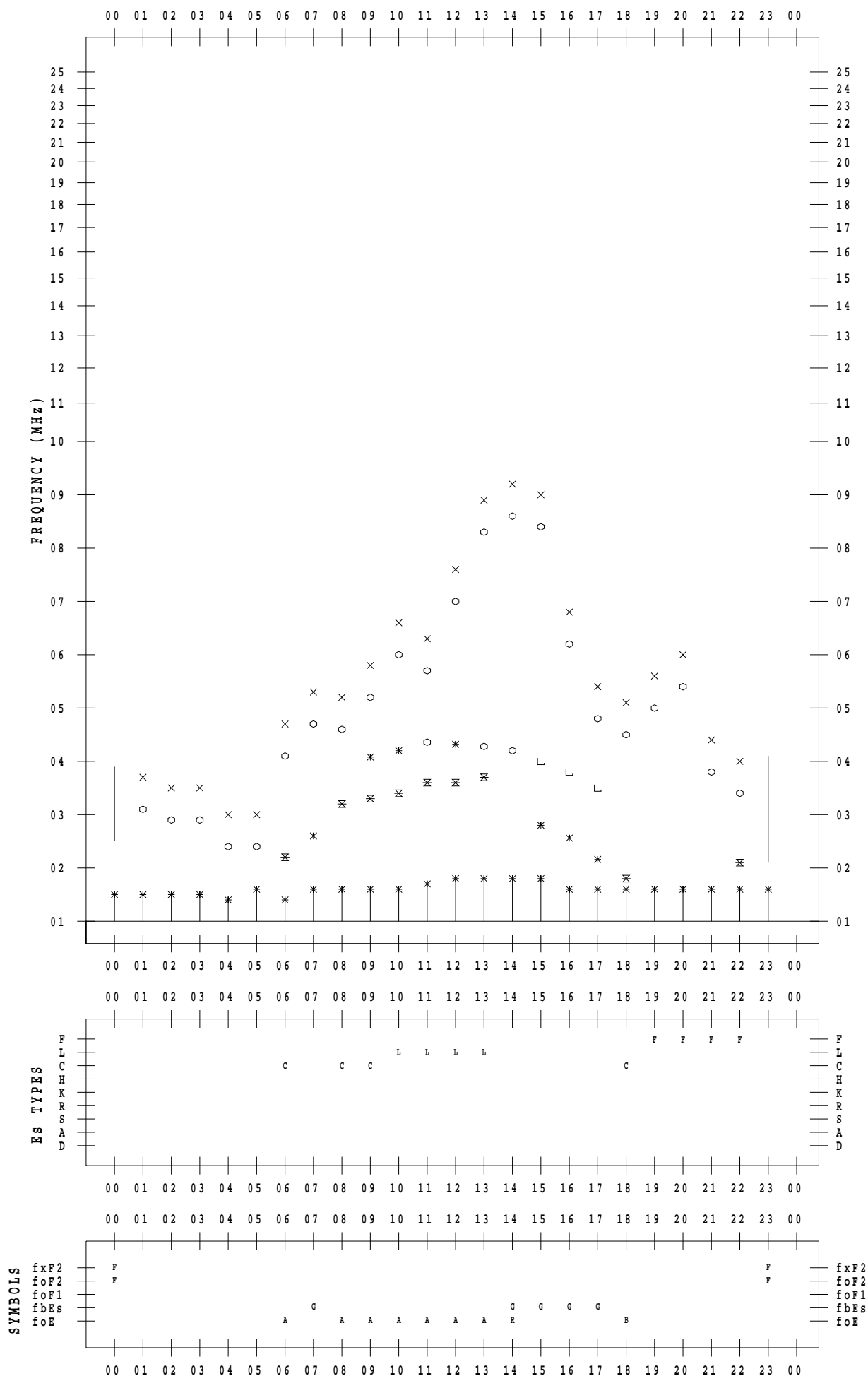
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 3 / 31

135 ° E MEAN TIME



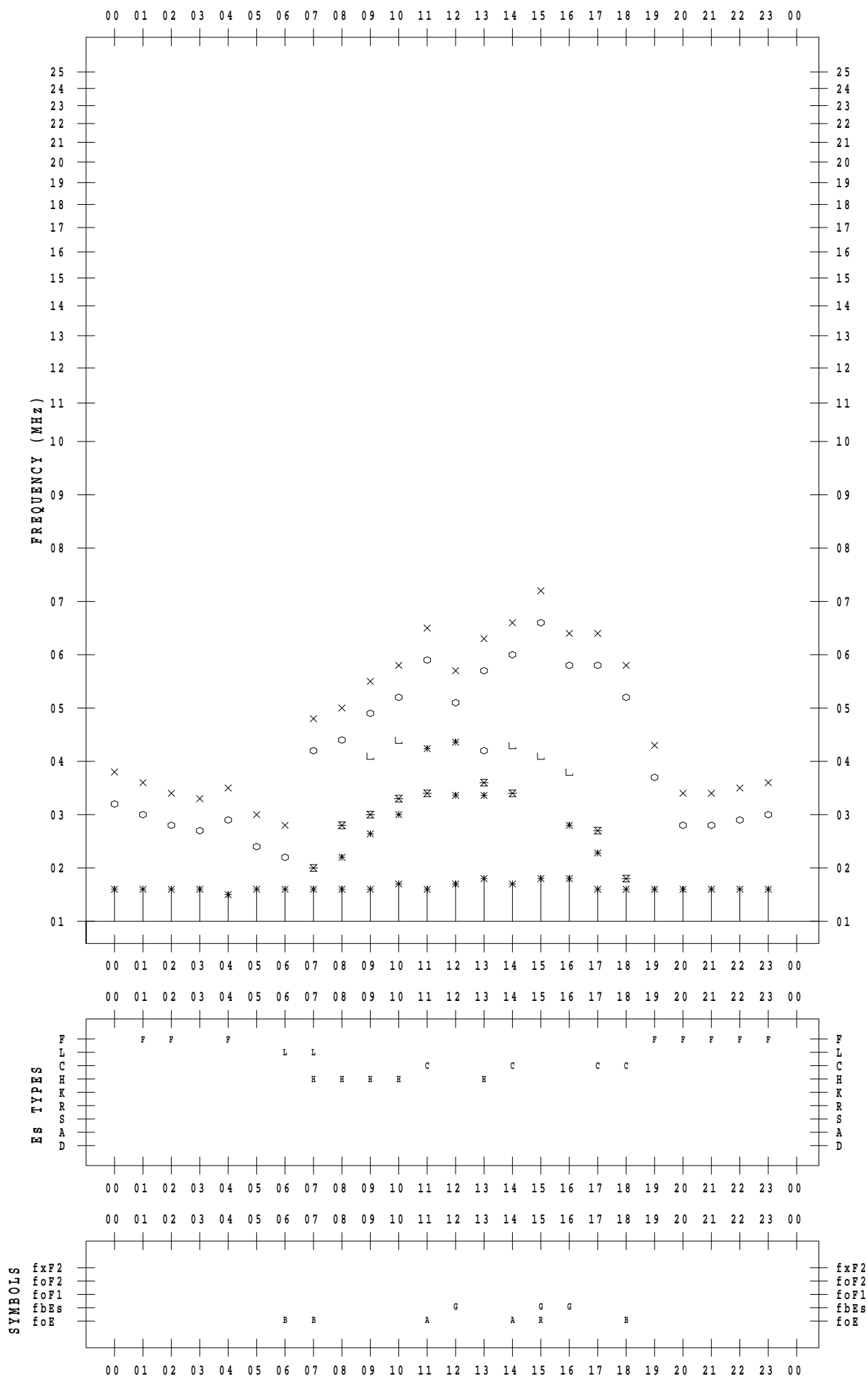
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 1

135 ° E MEAN TIME



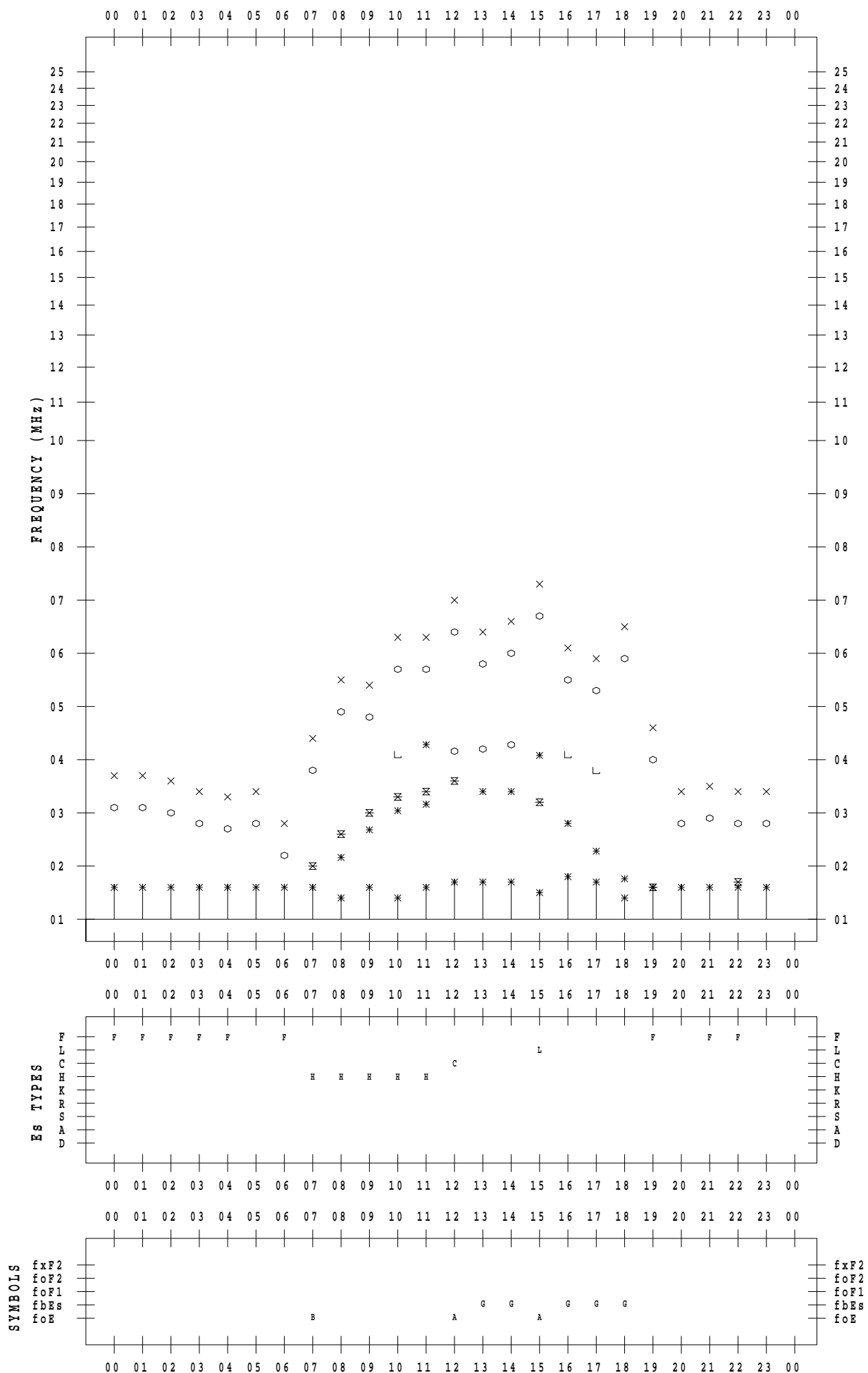
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 2

135 ° E MEAN TIME



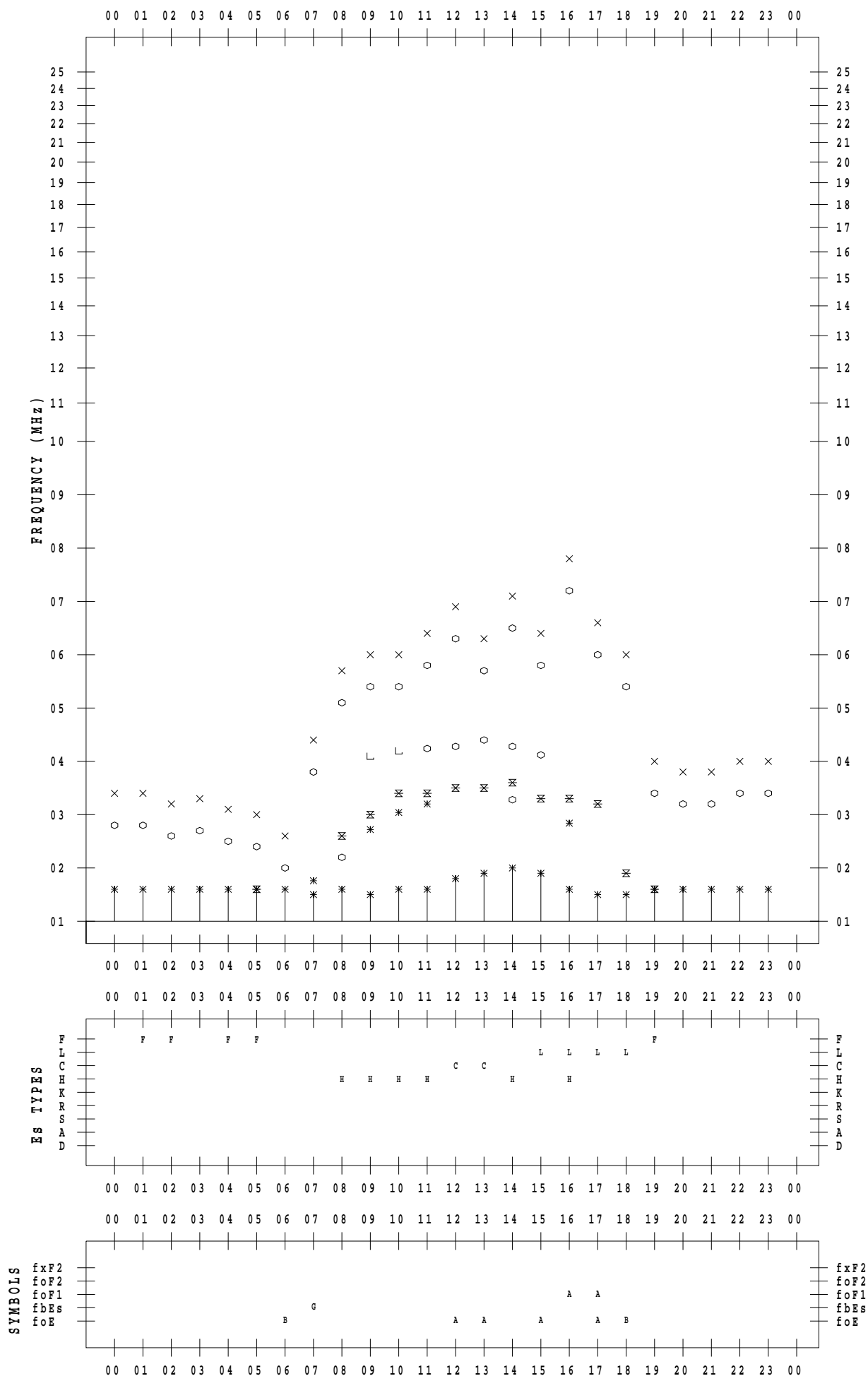
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 3

135 ° E MEAN TIME



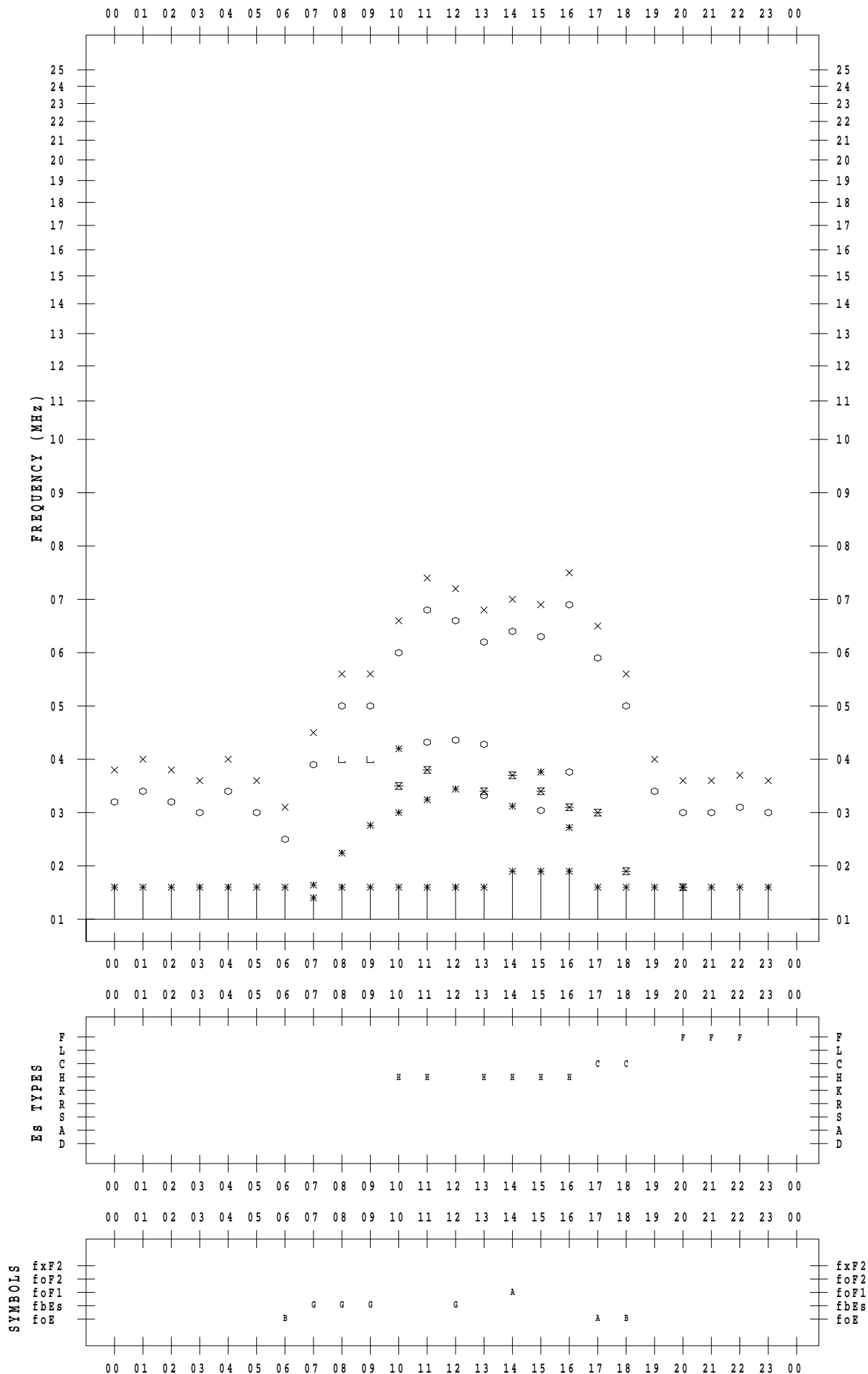
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 4

135 ° E MEAN TIME



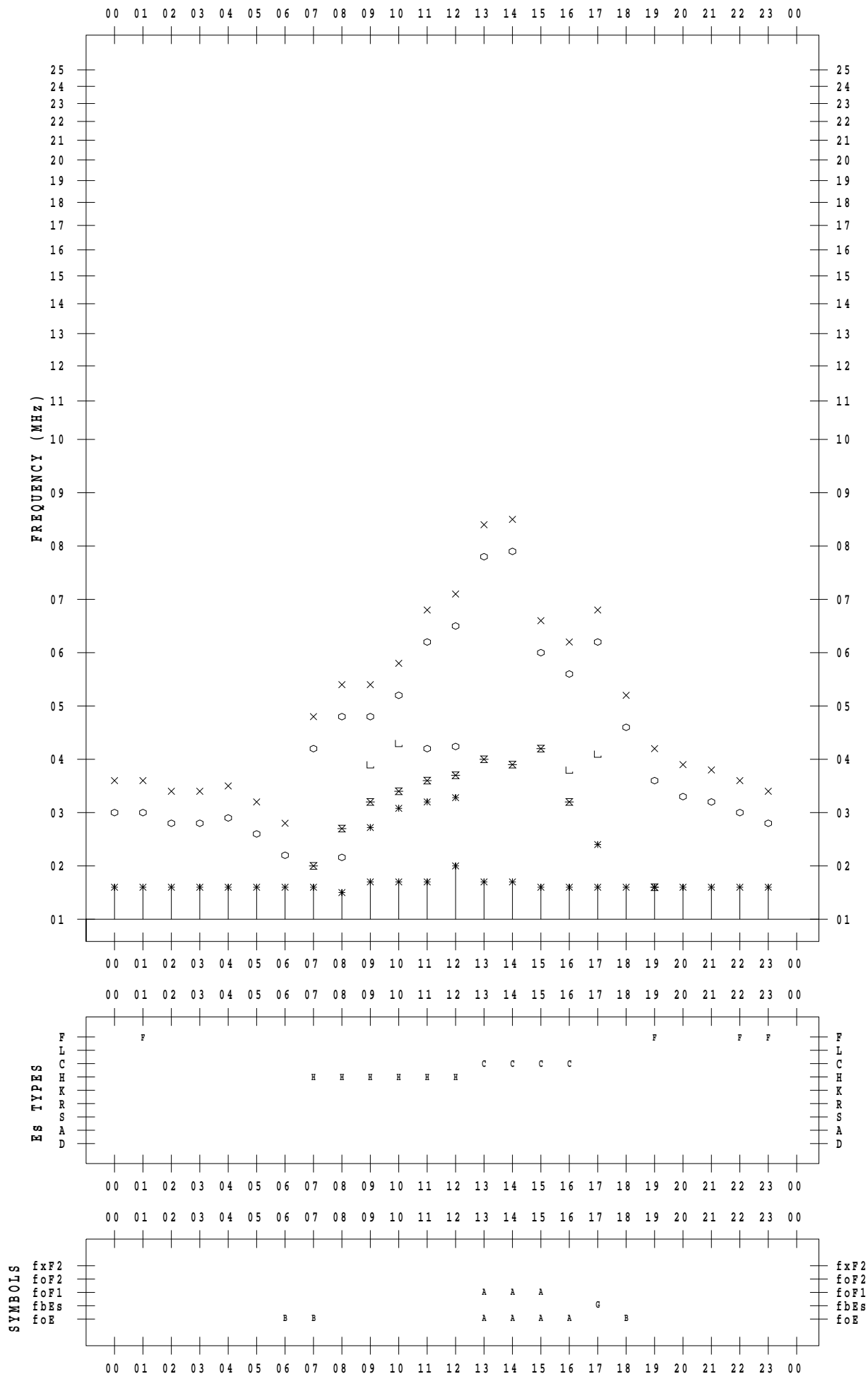
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 5

135 ° E MEAN TIME



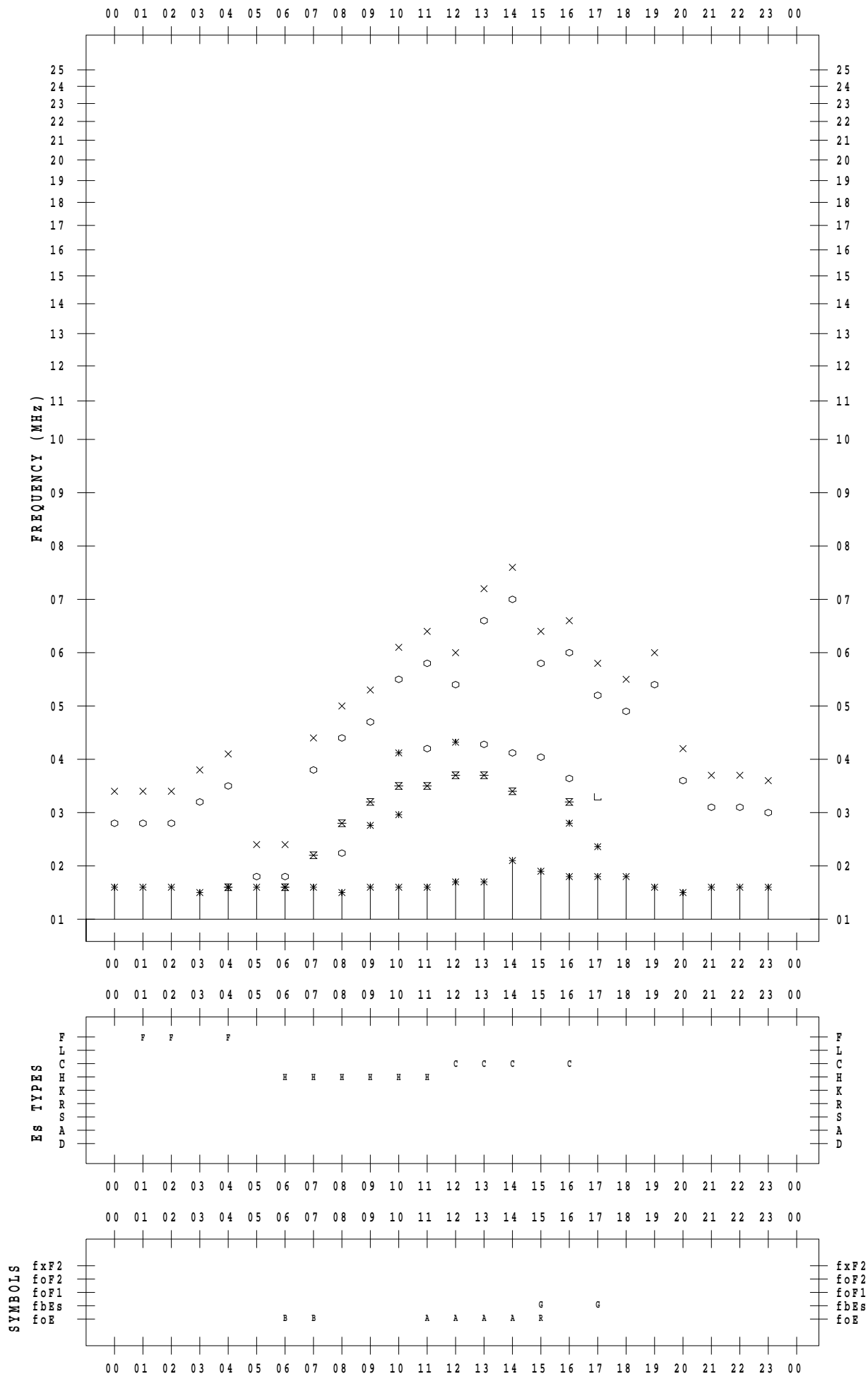
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 6

135 ° E MEAN TIME



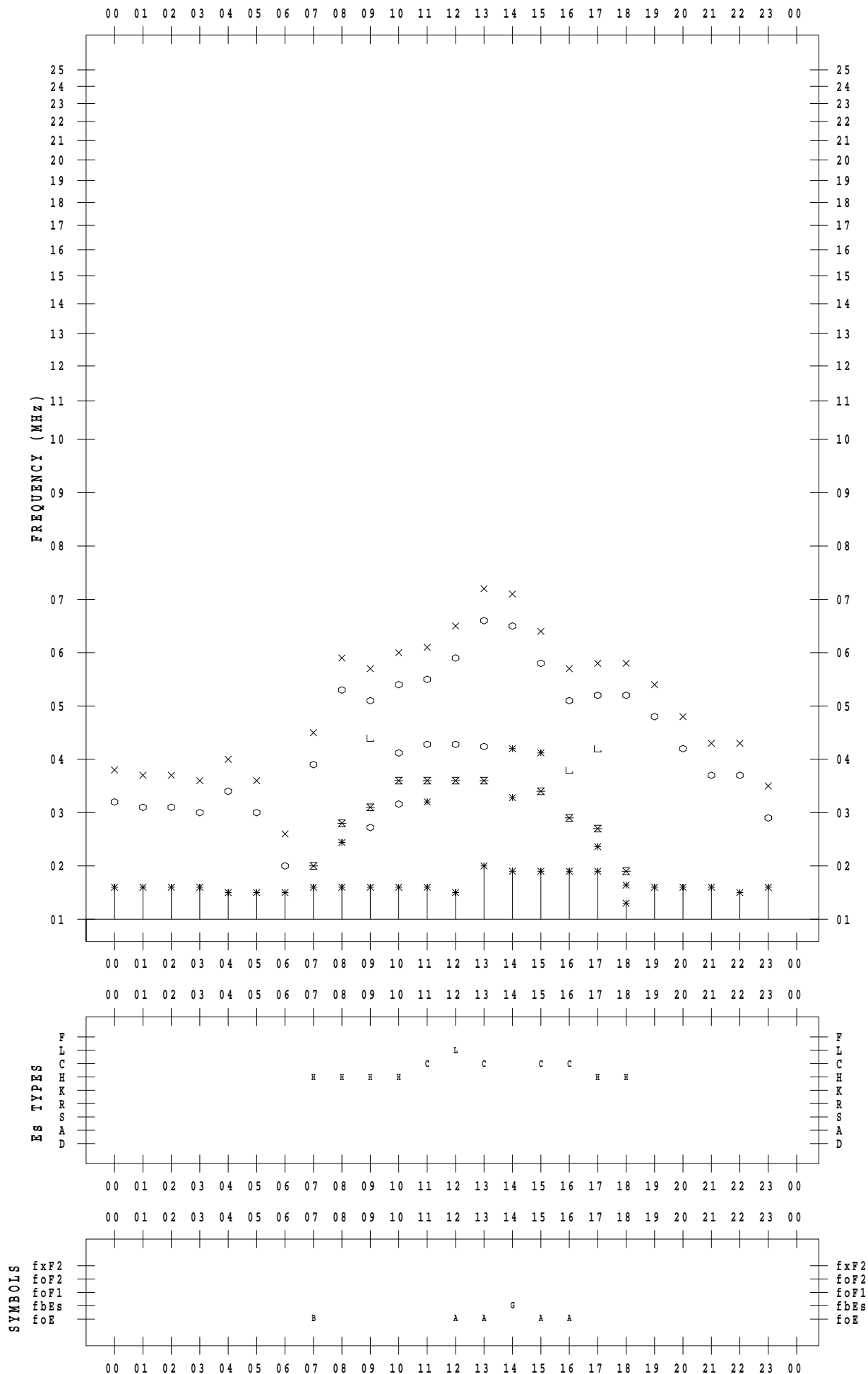
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 7

135 ° E MEAN TIME



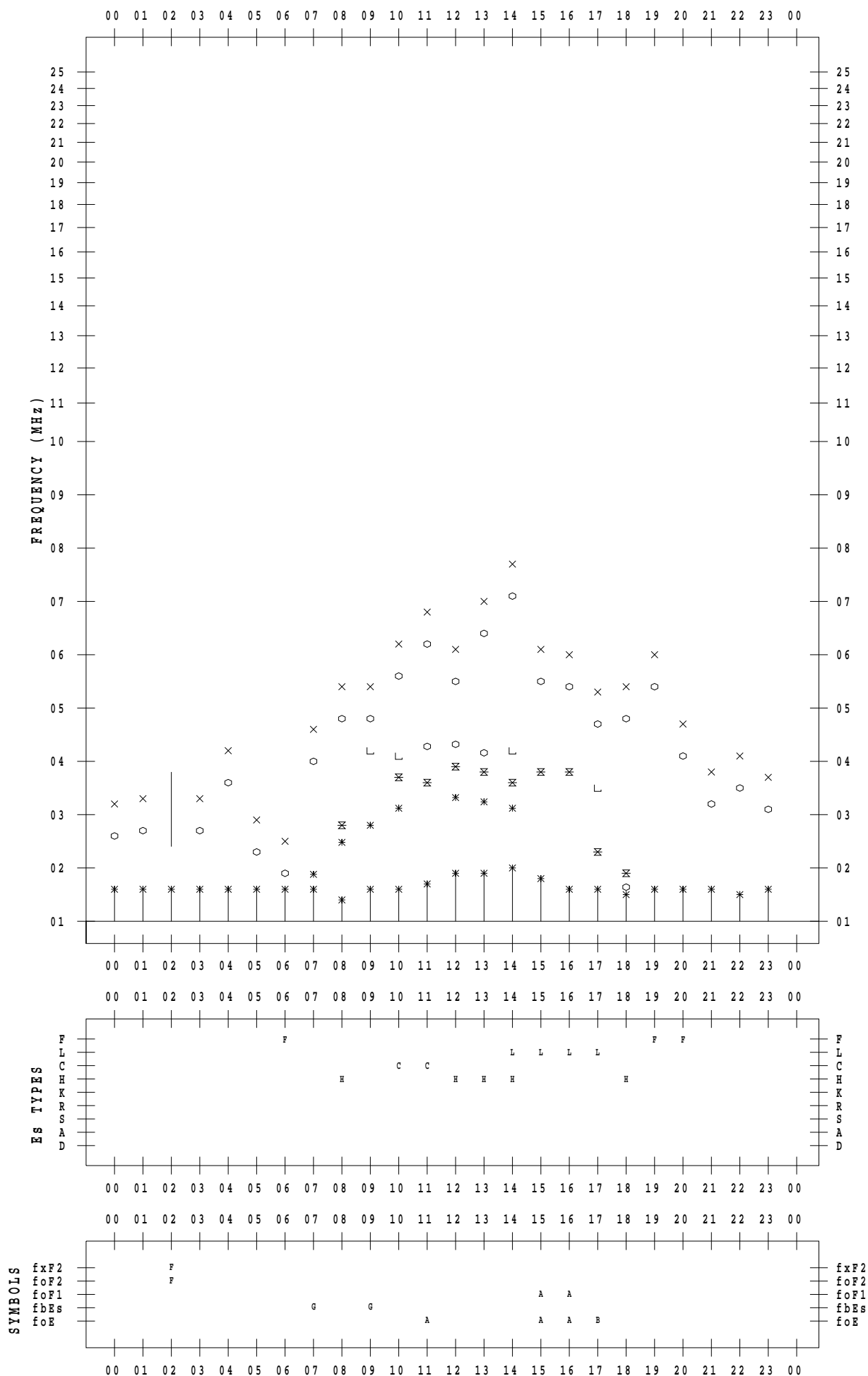
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 8

135 ° E MEAN TIME



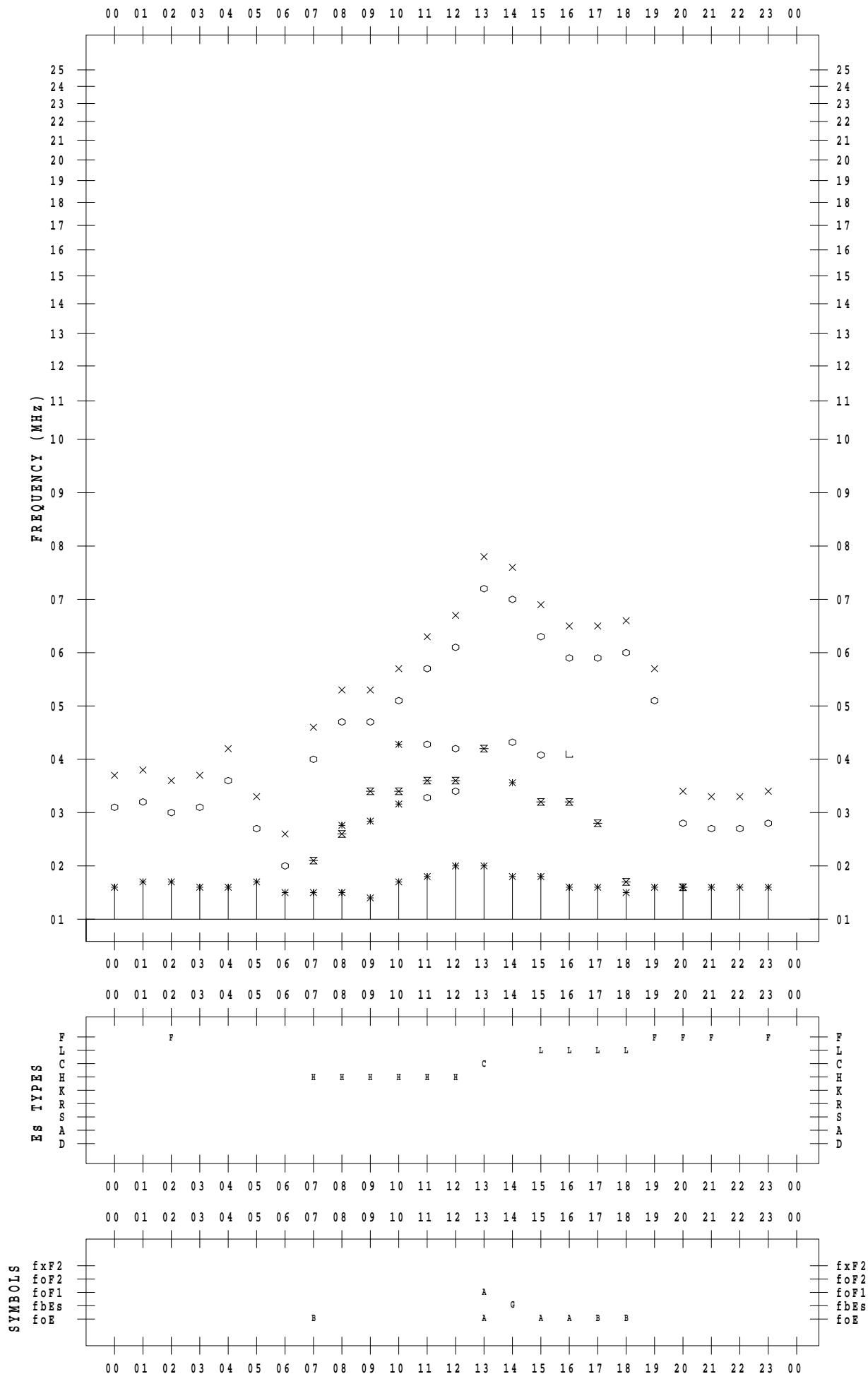
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 9

135 ° E MEAN TIME



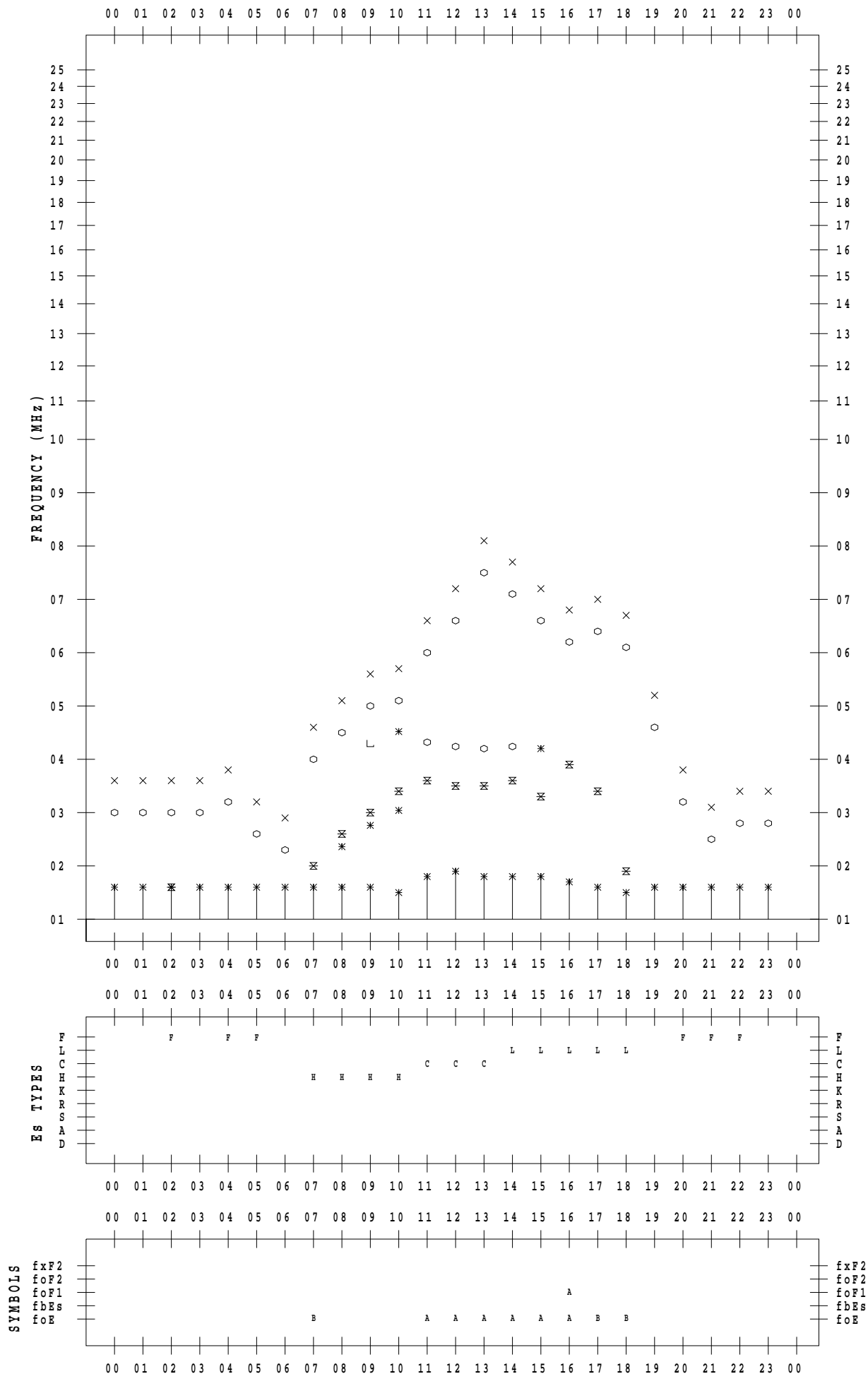
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 10

135 ° E MEAN TIME



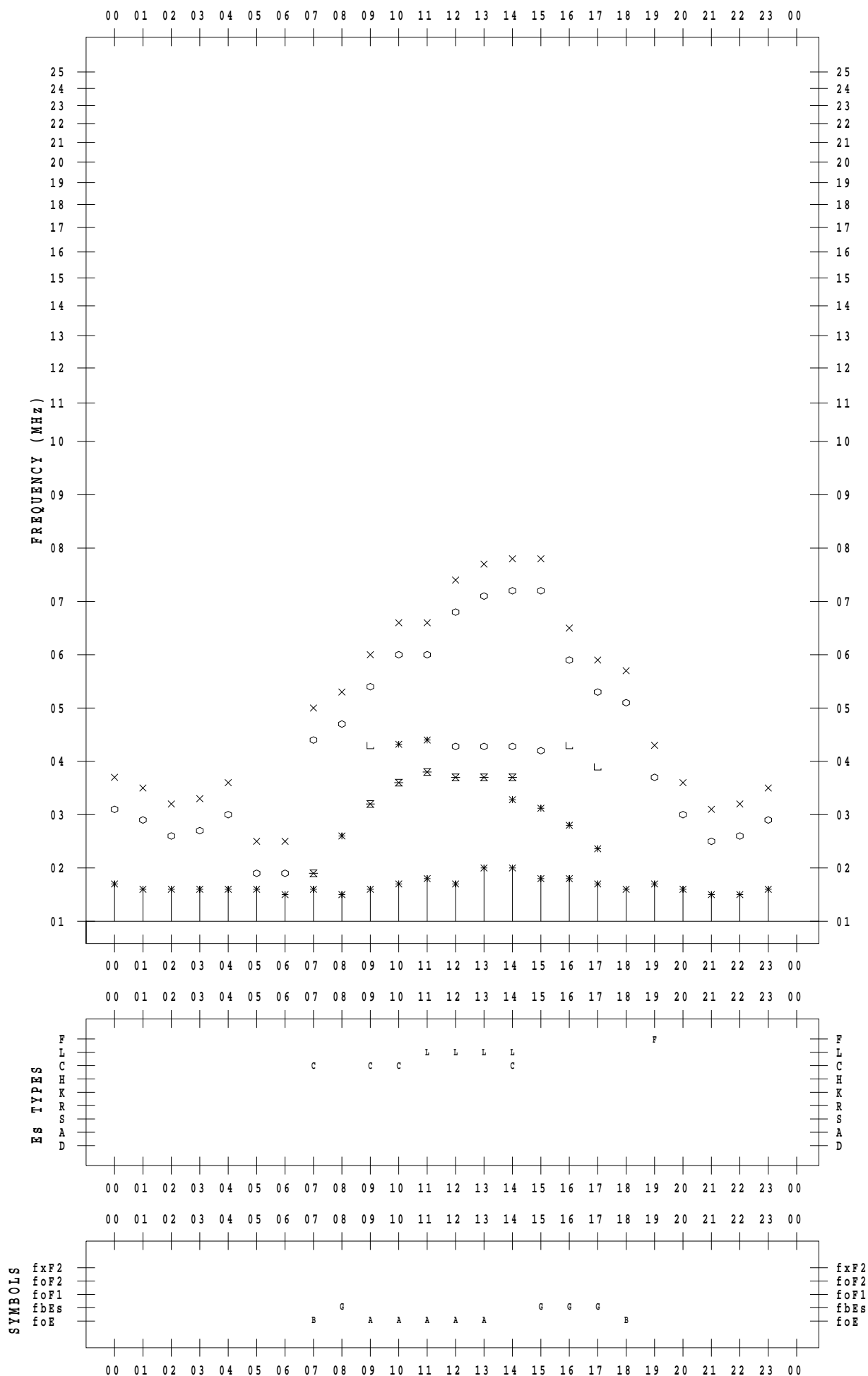
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 11

135 ° E MEAN TIME



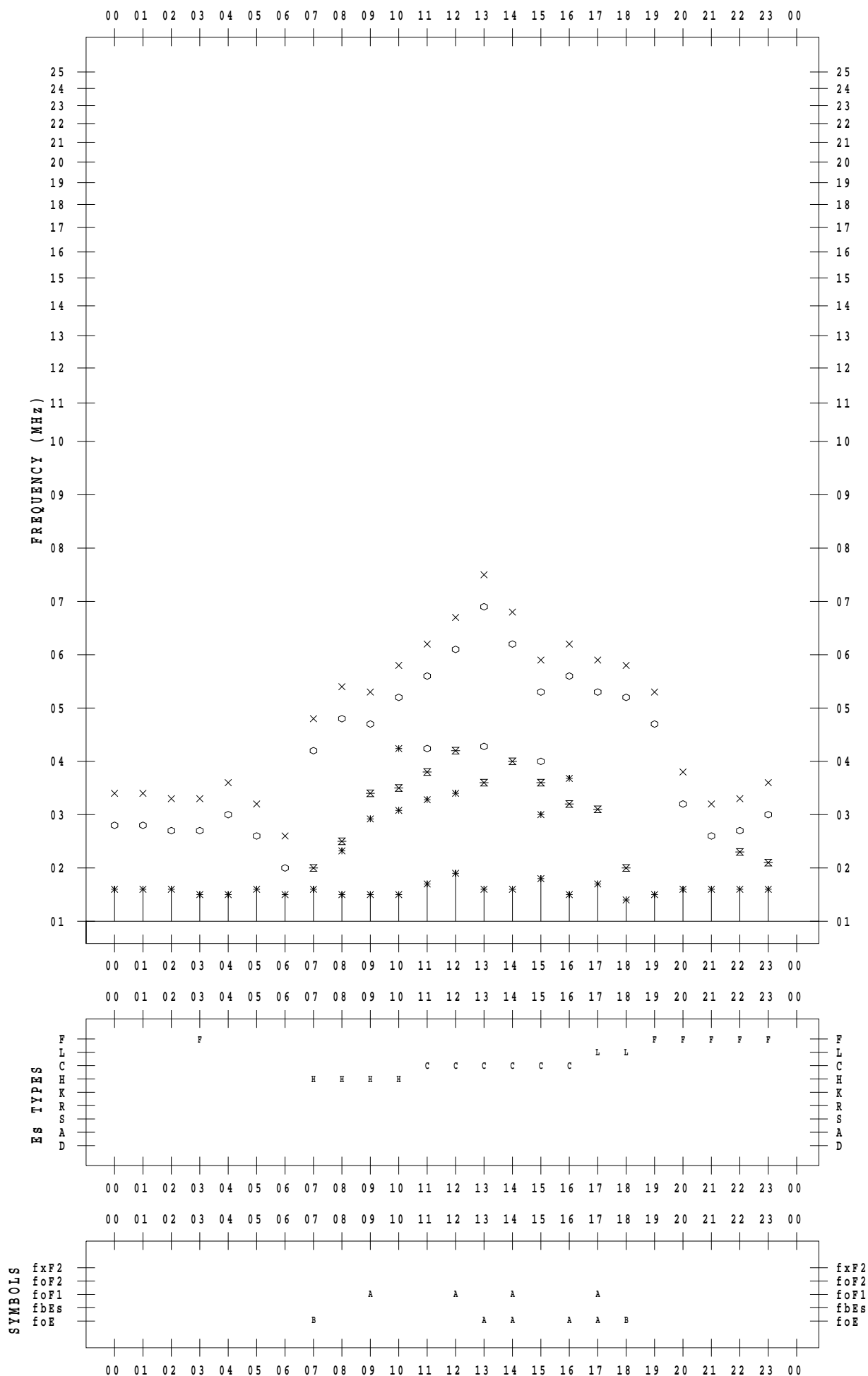
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 12

135 ° E MEAN TIME



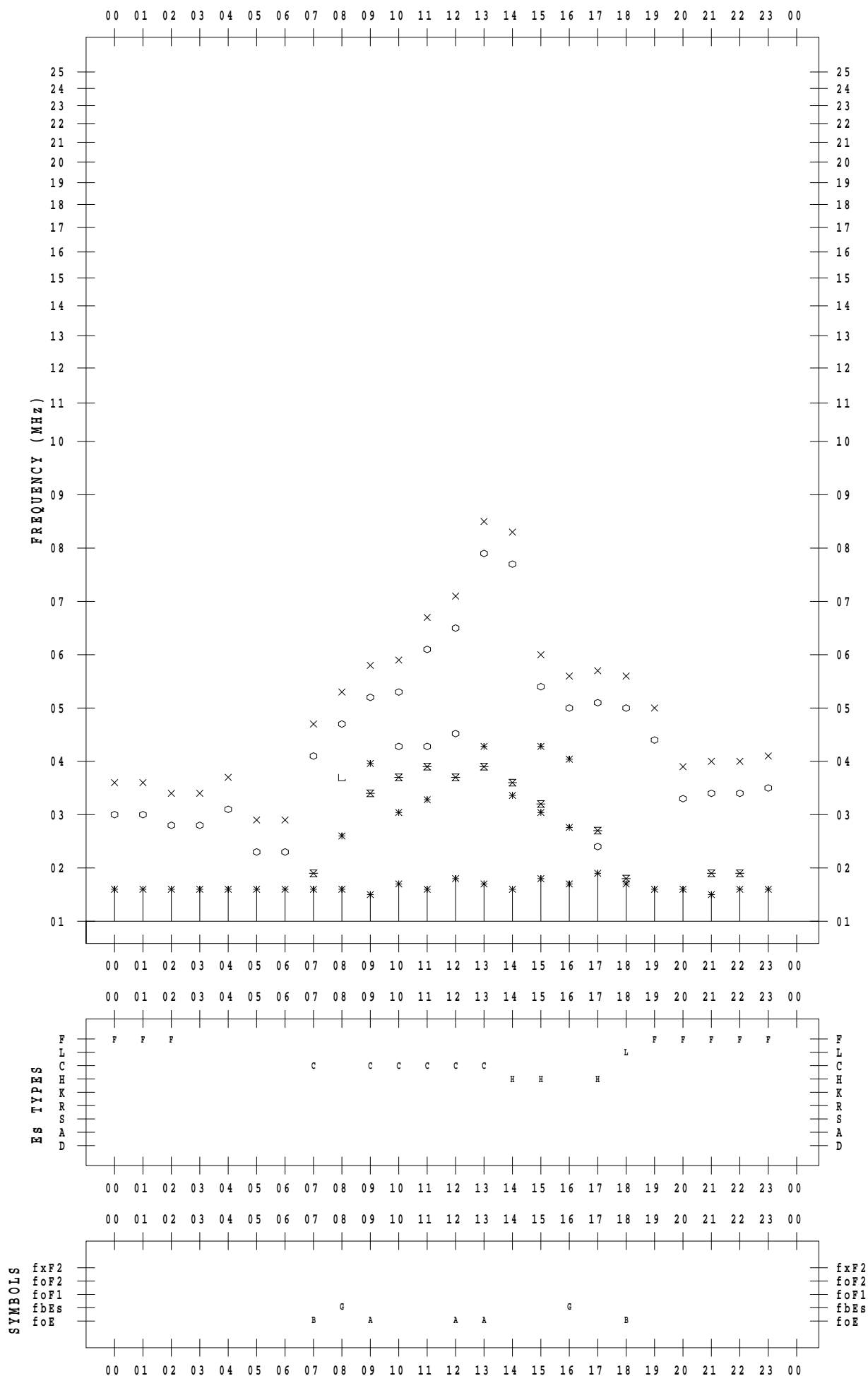
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 13

135 ° E MEAN TIME



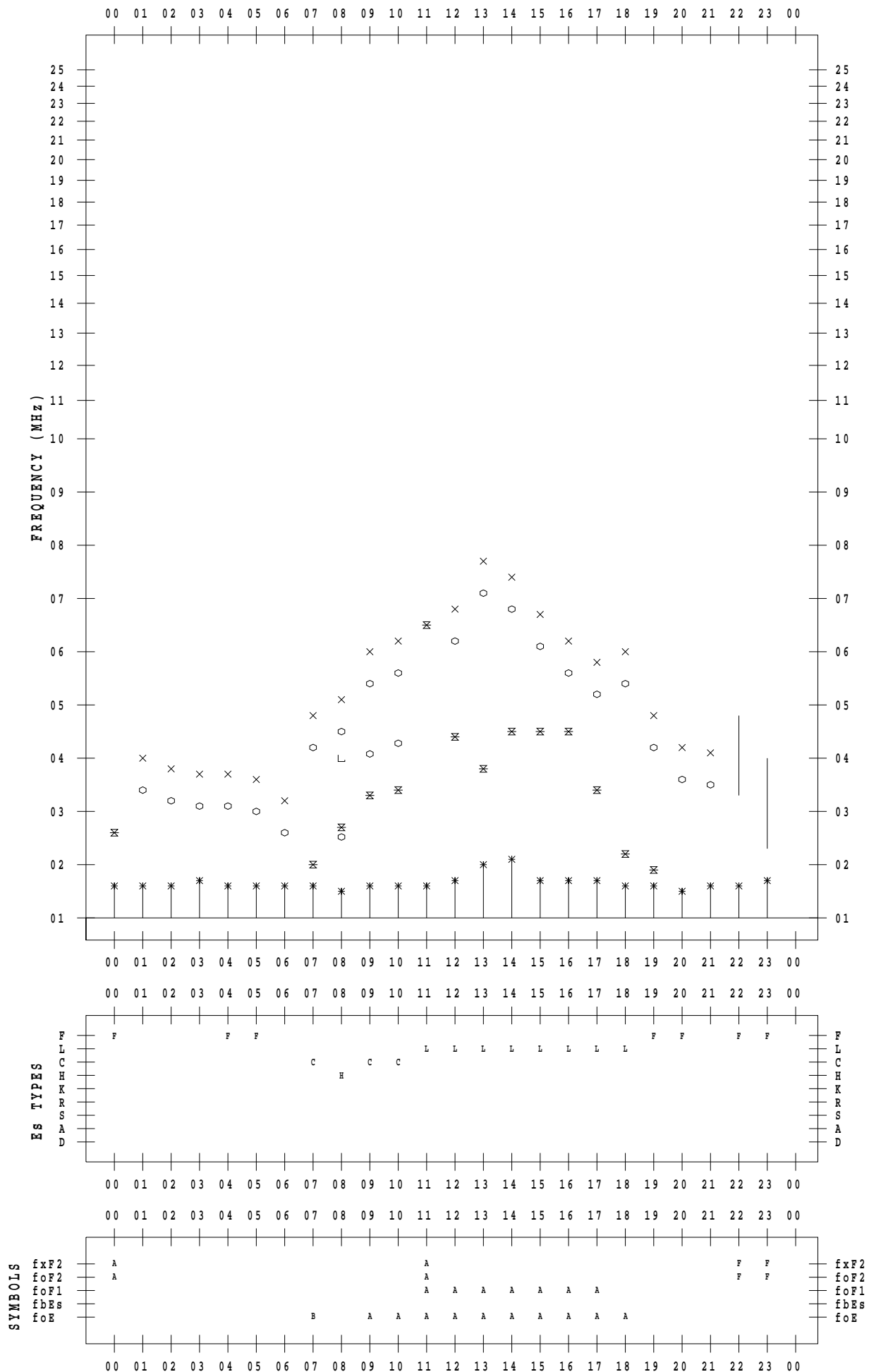
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 14

135 ° E MEAN TIME



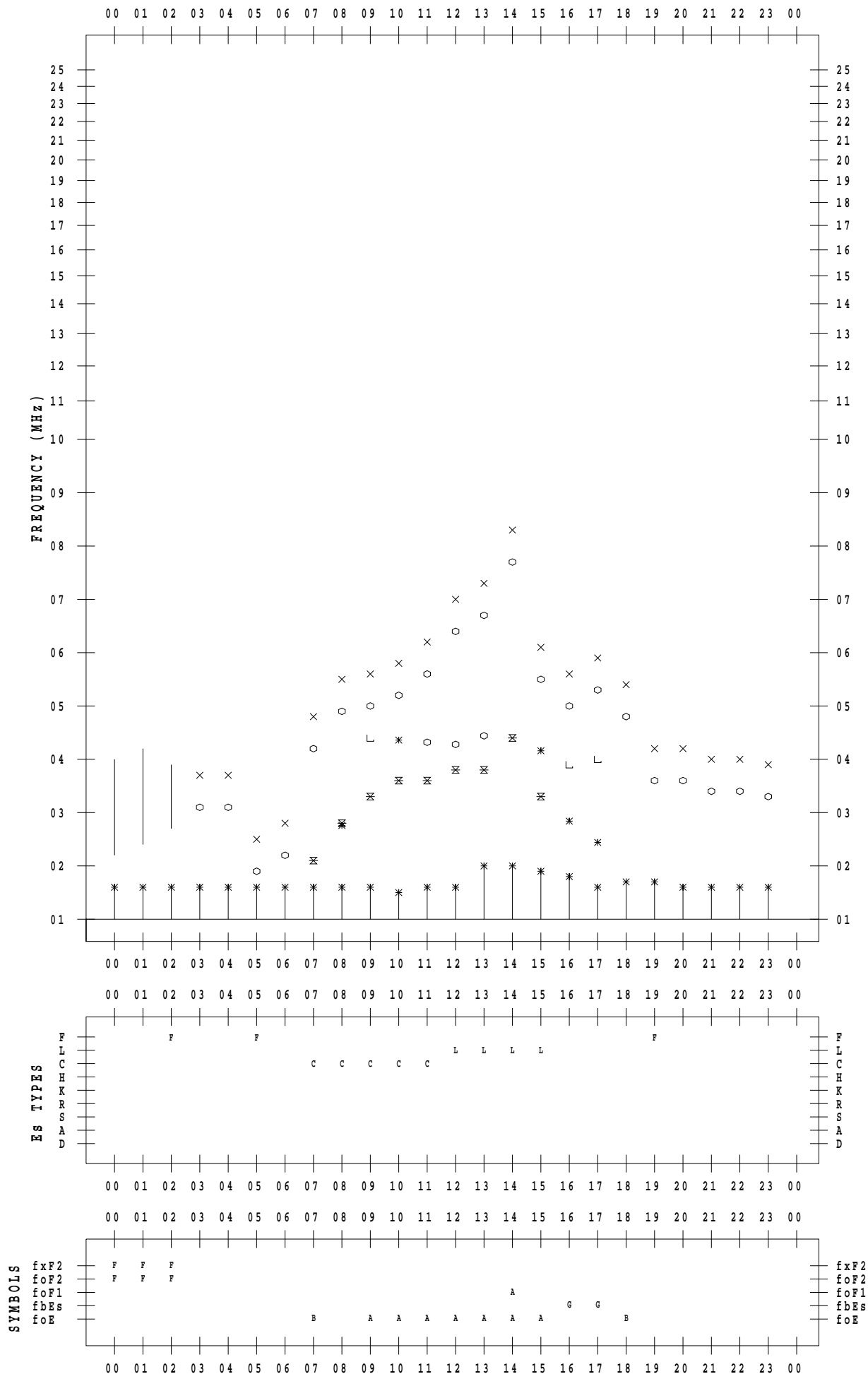
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 15

135 ° E MEAN TIME



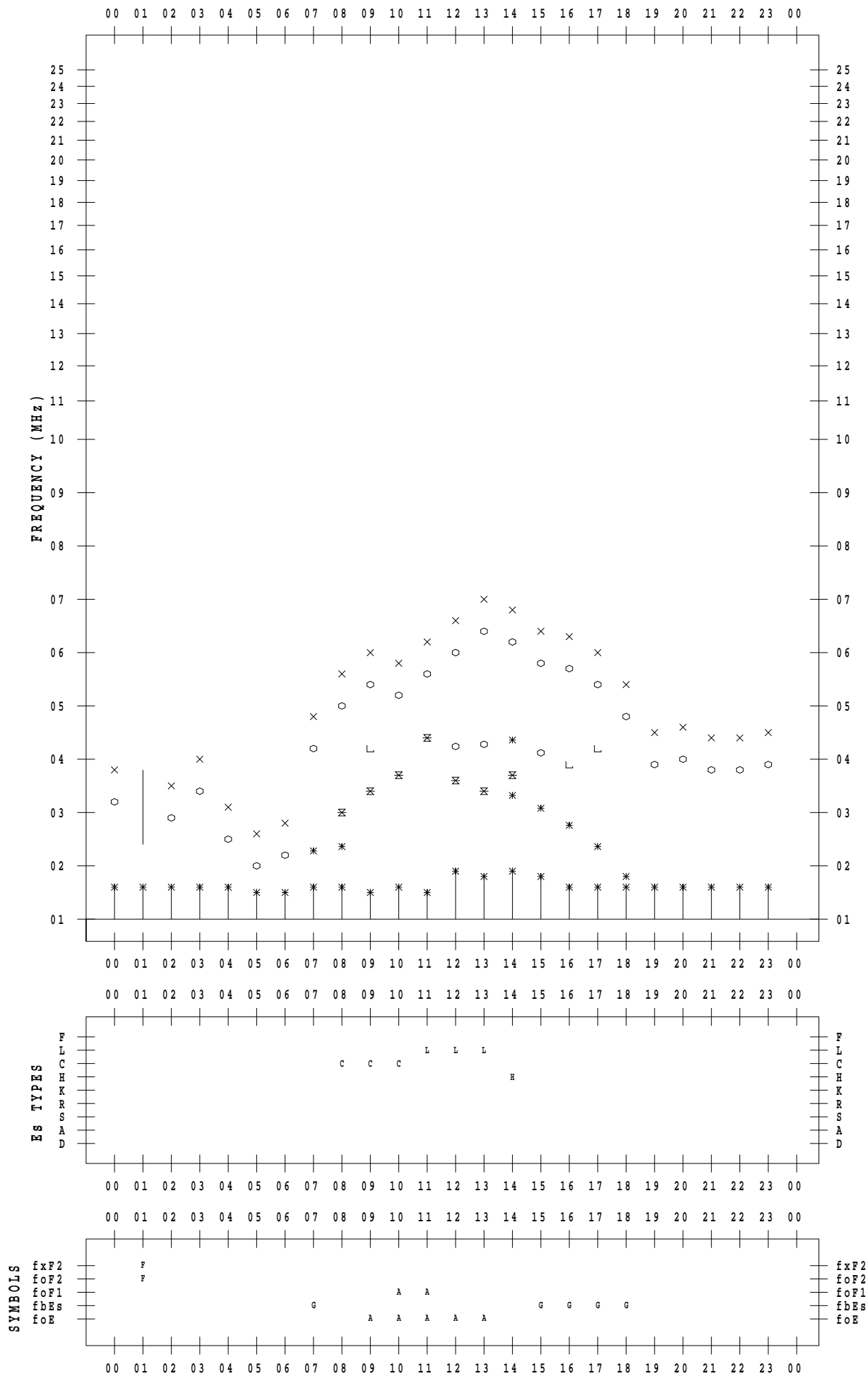
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 16

135 ° E MEAN TIME



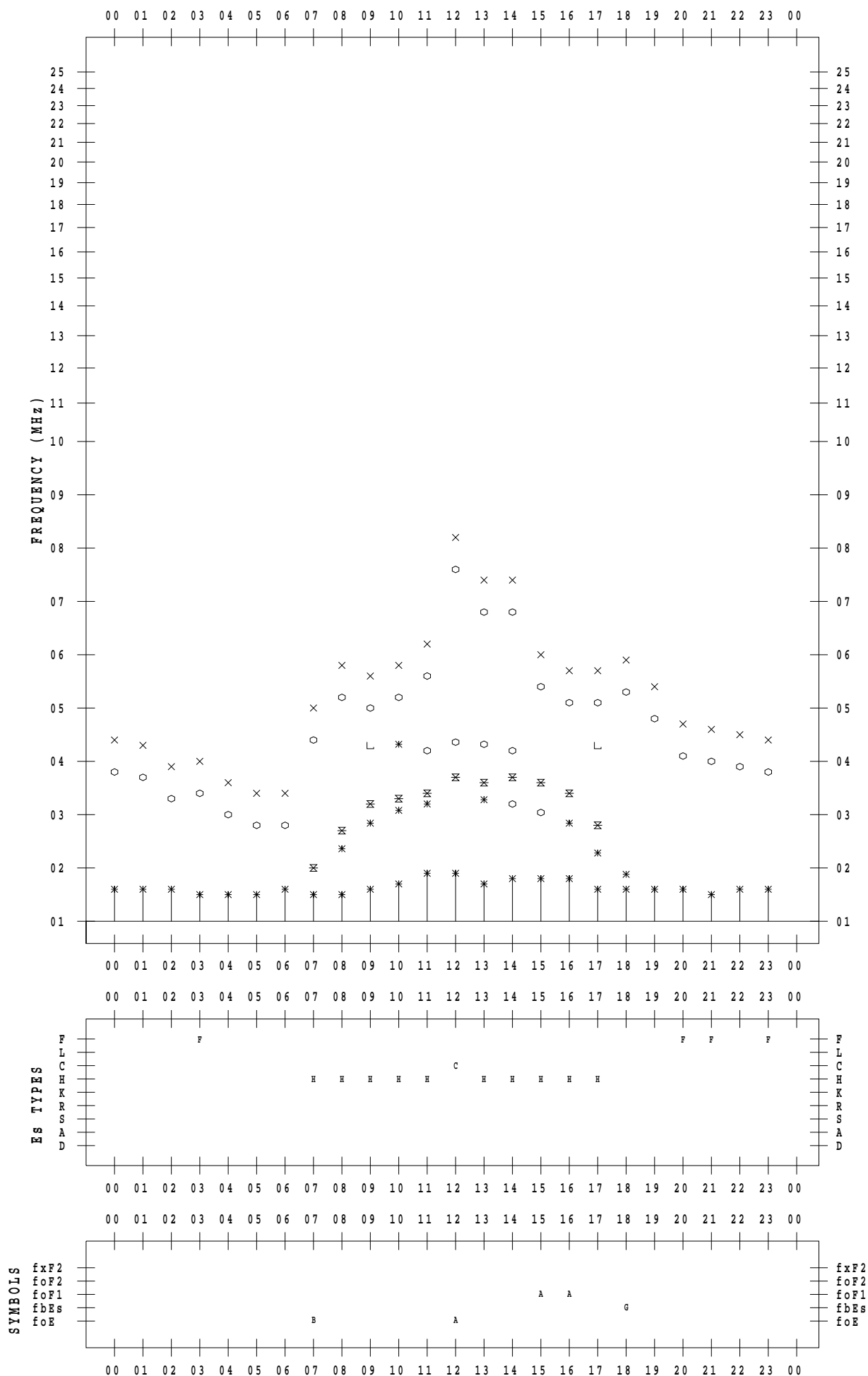
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 17

135 ° E MEAN TIME



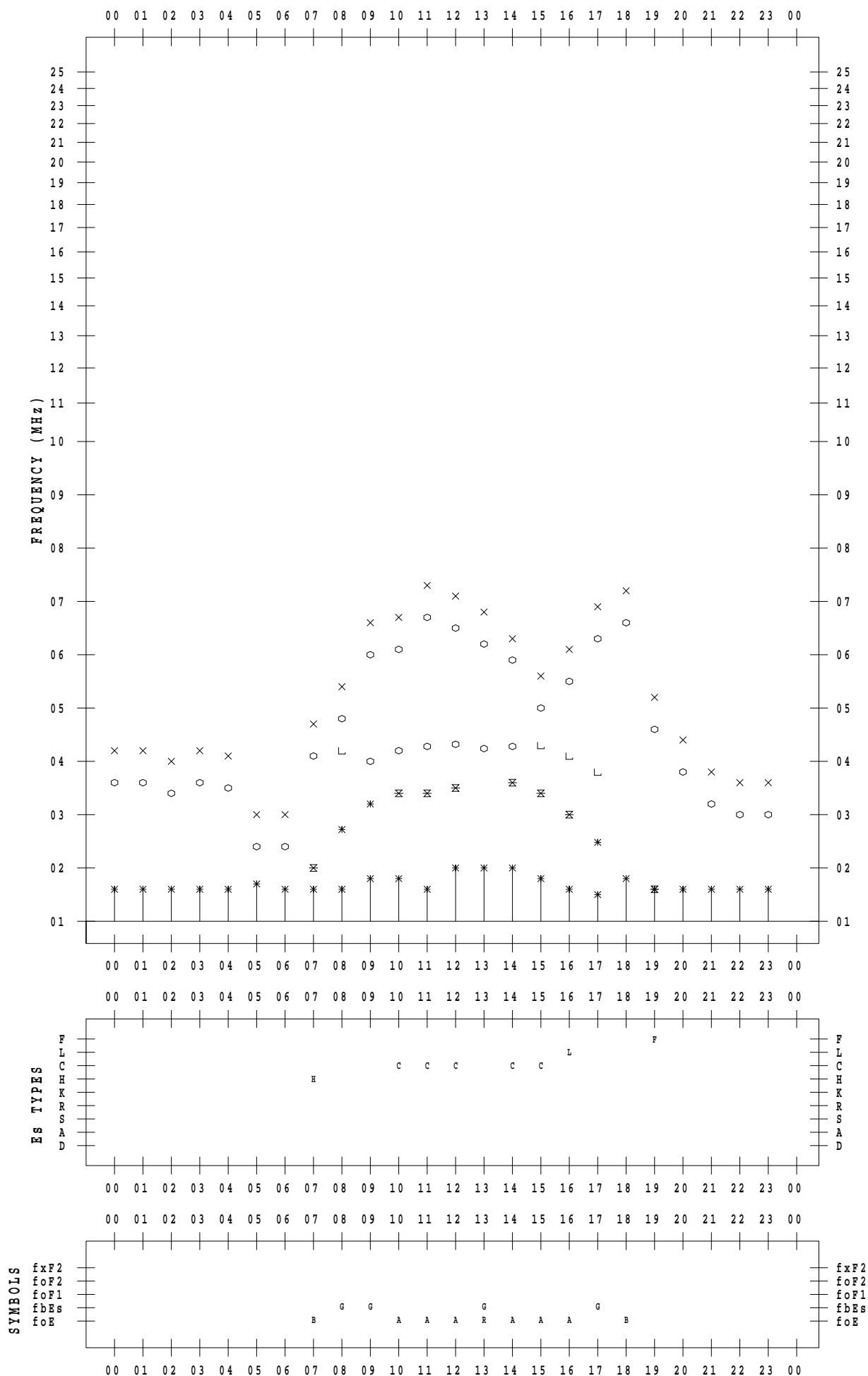
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 18

135 ° E MEAN TIME



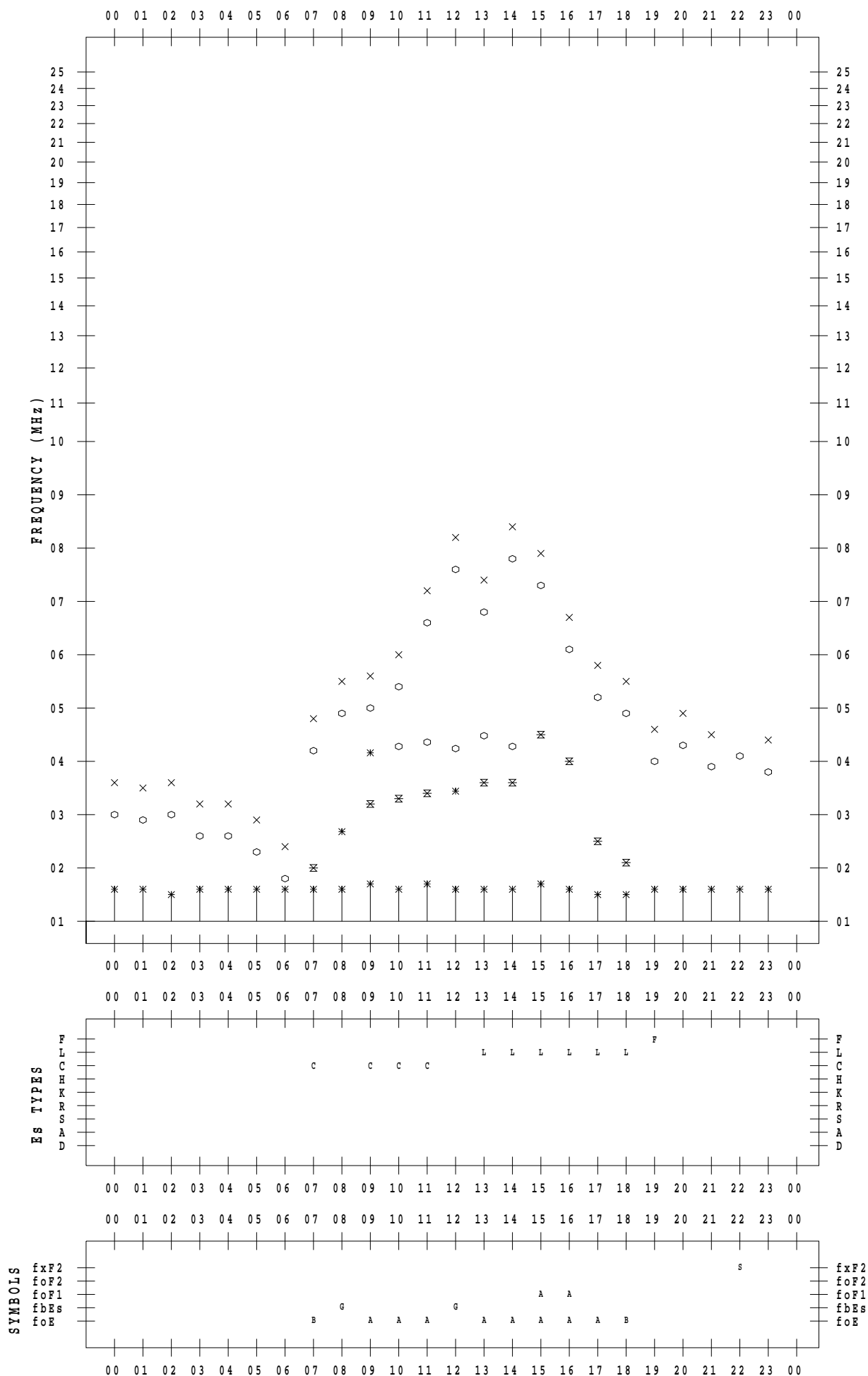
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 19

135 ° E MEAN TIME



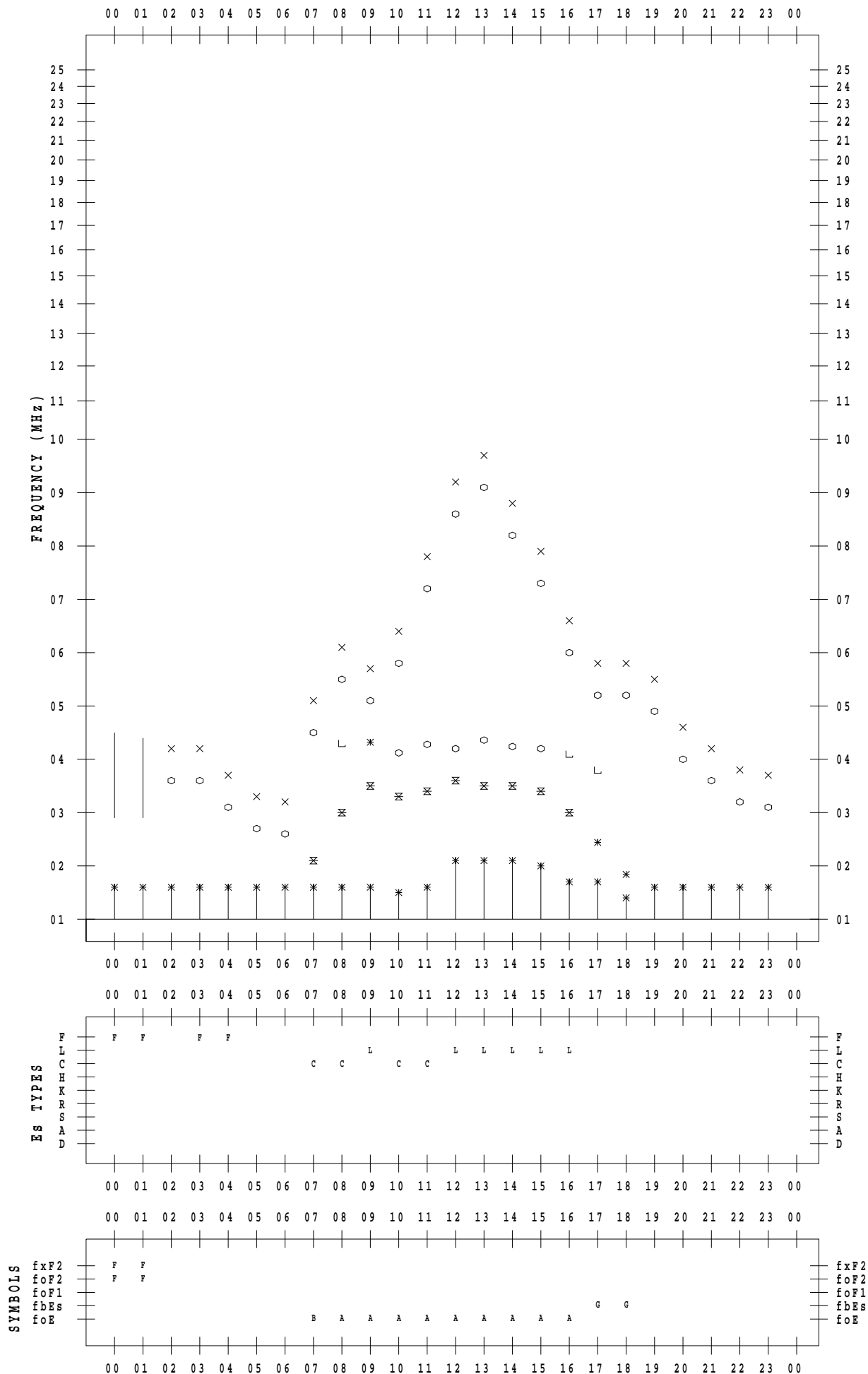
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 20

135 ° E MEAN TIME



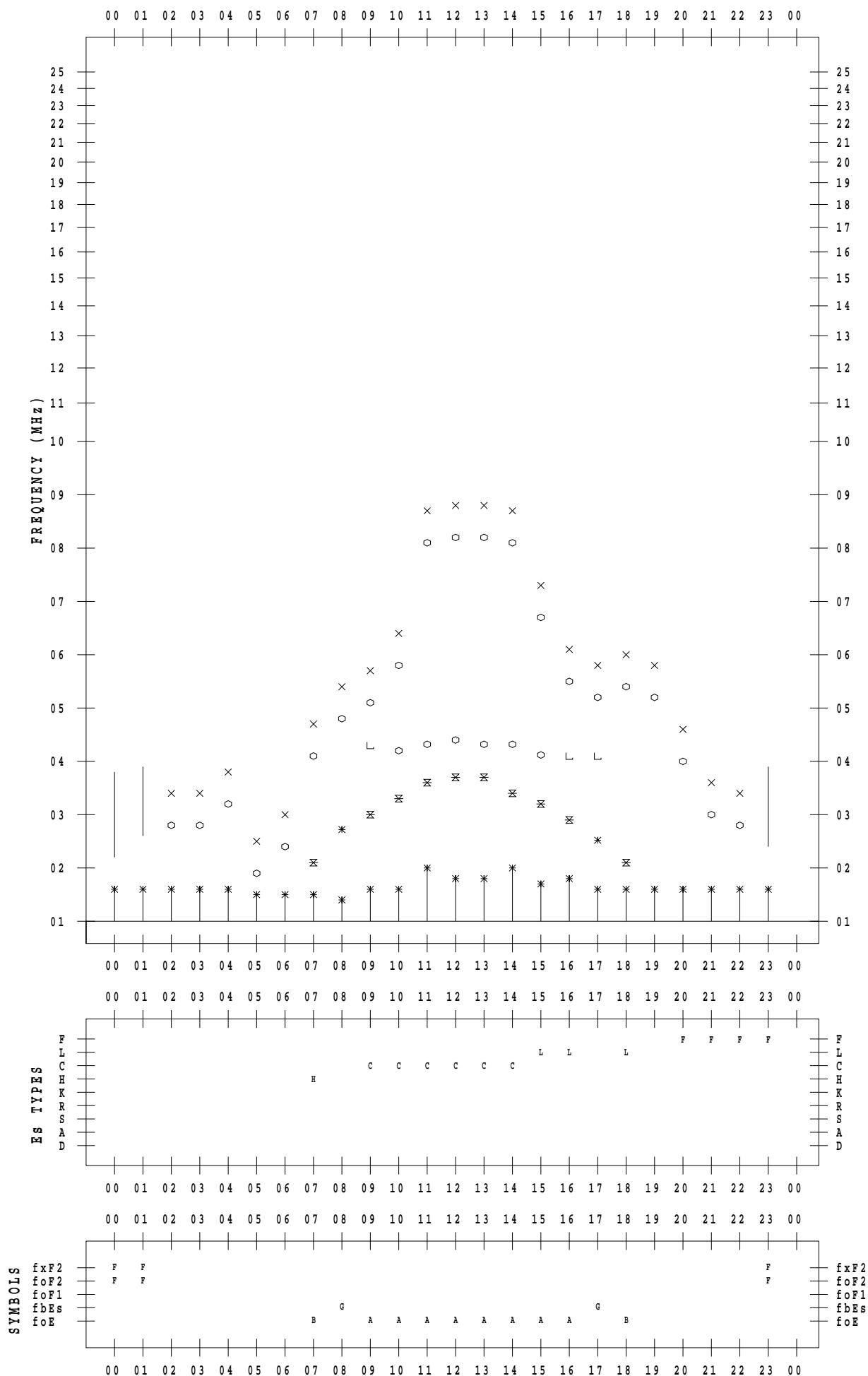
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 21

135 ° E MEAN TIME



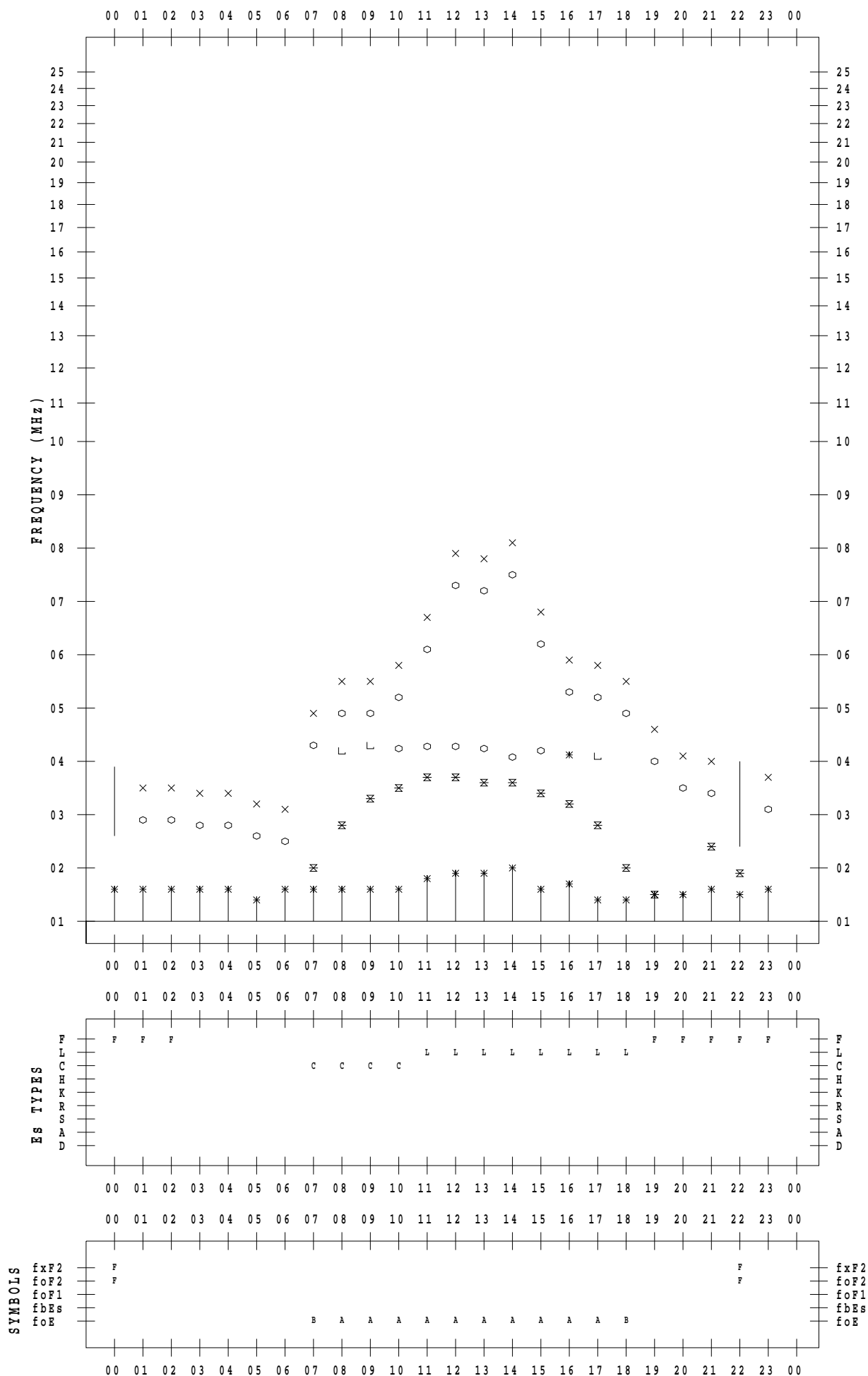
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 22

135 ° E MEAN TIME



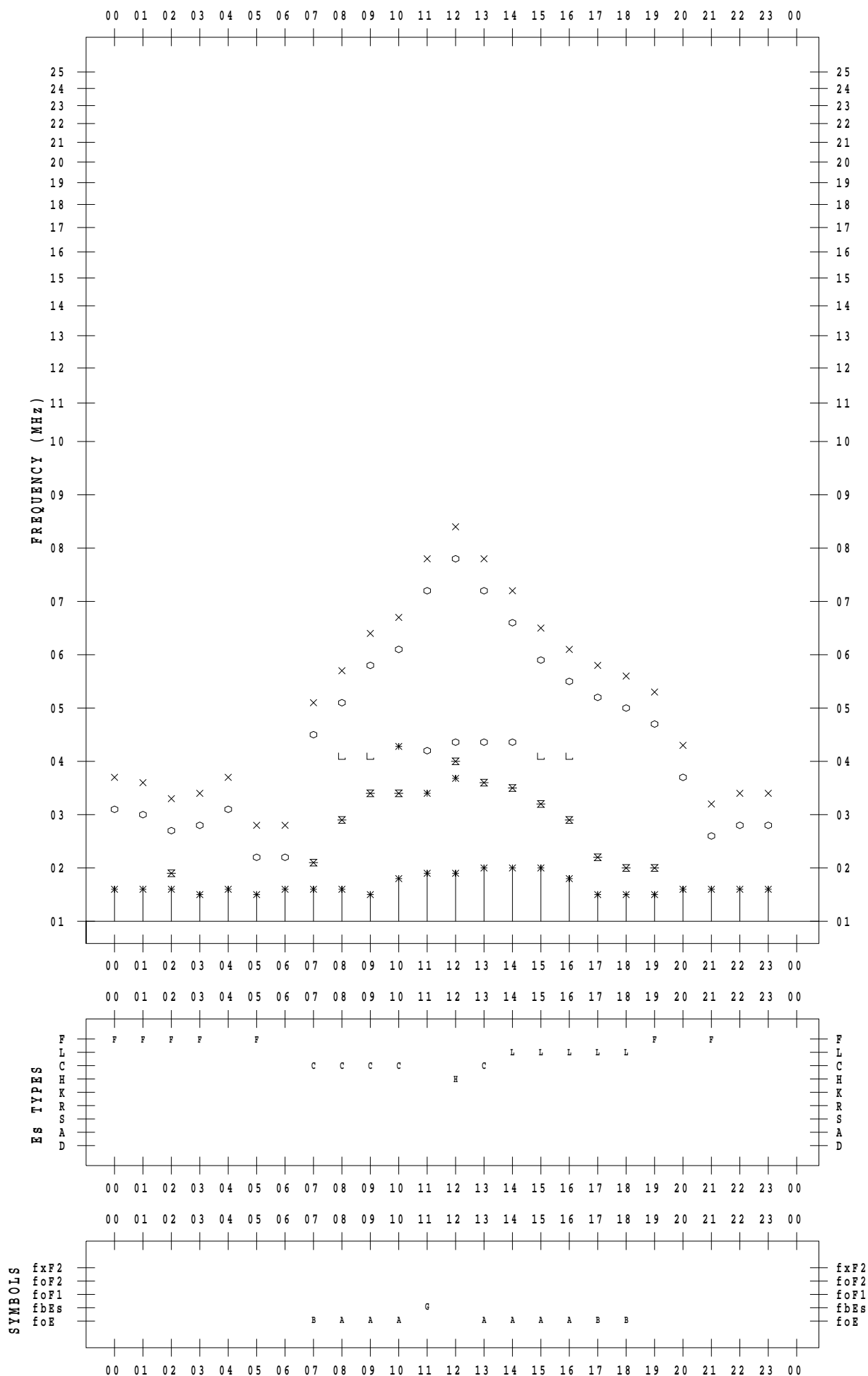
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 23

135 ° E MEAN TIME



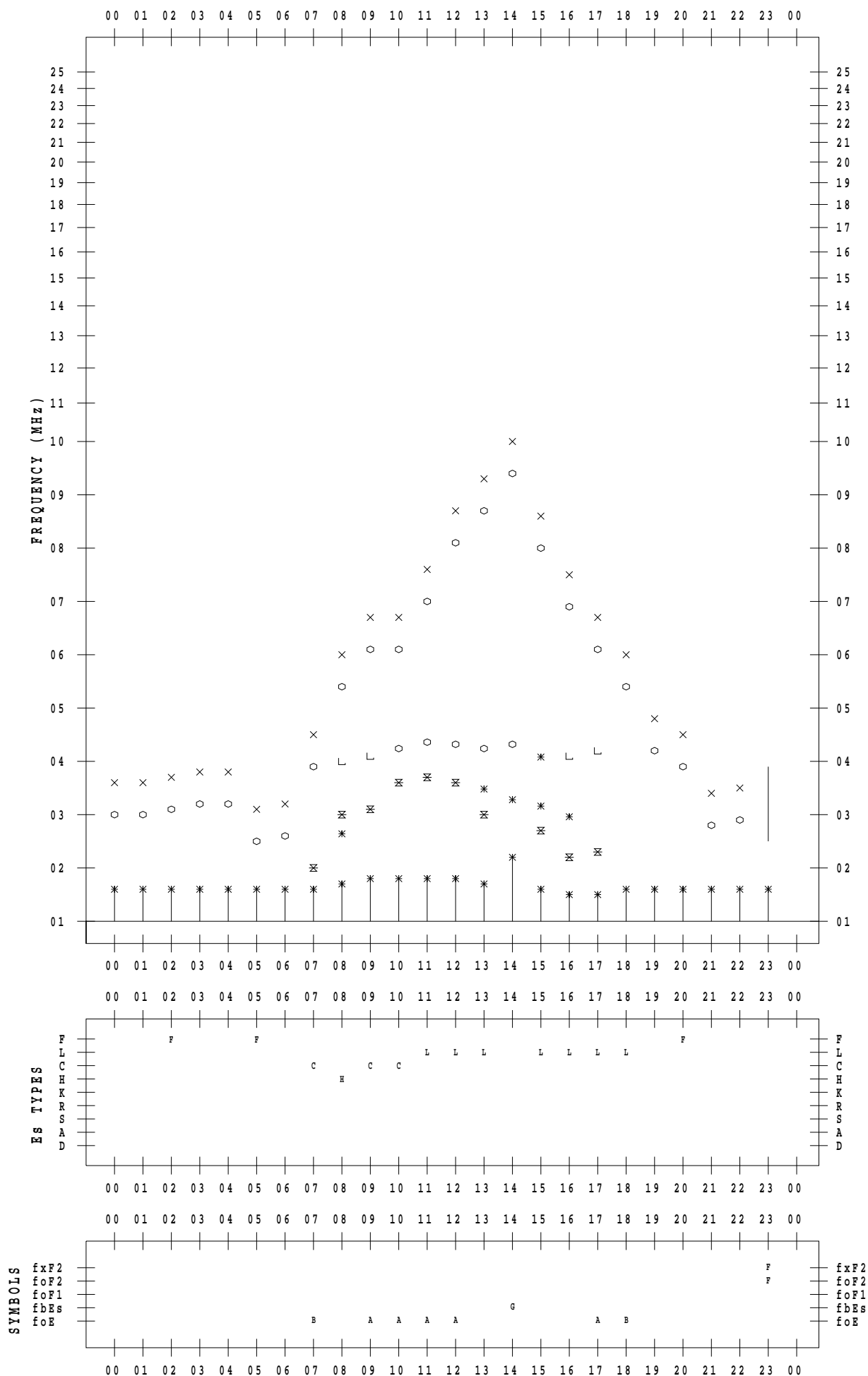
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 24

135 ° E MEAN TIME



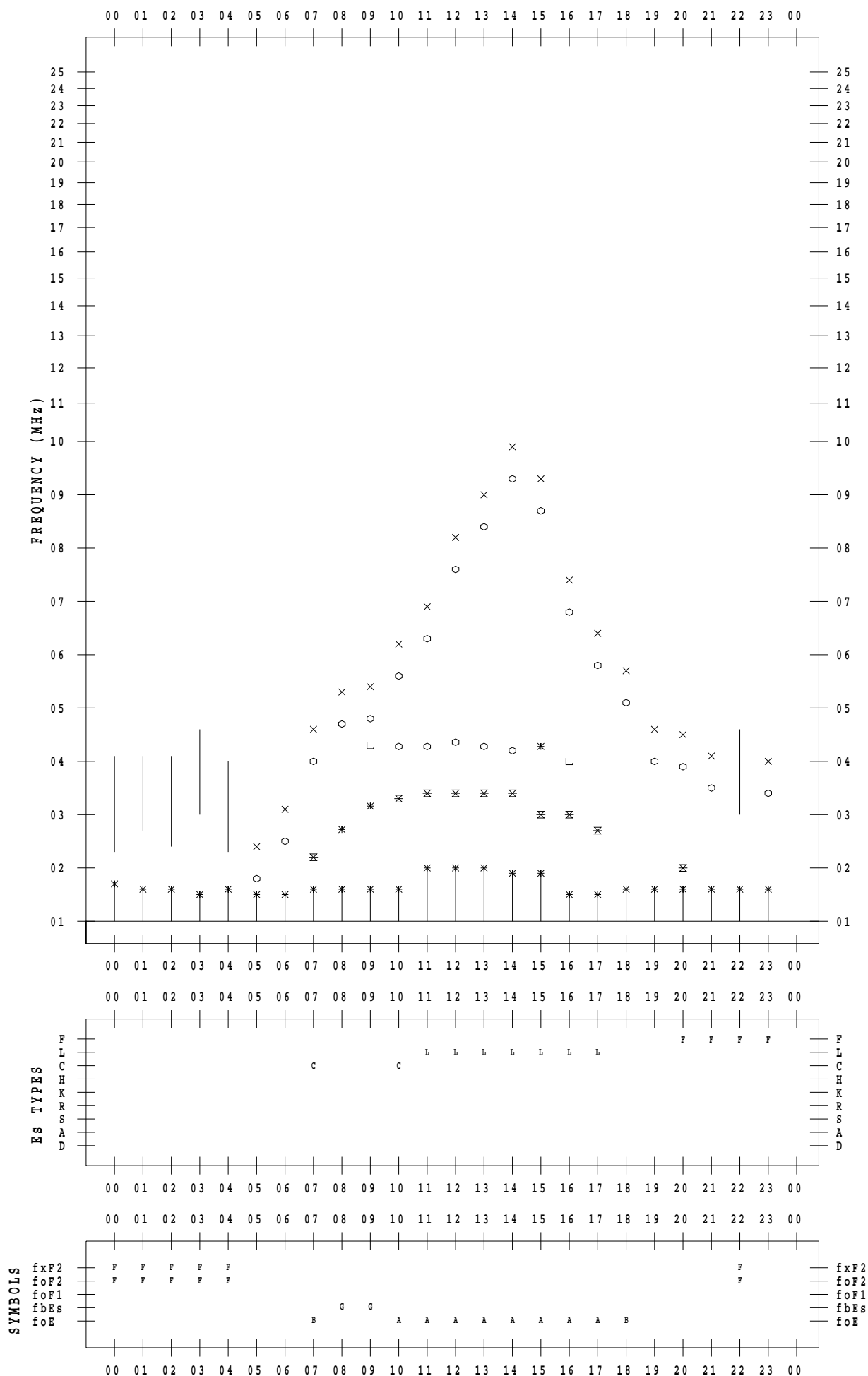
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 25

135 ° E MEAN TIME



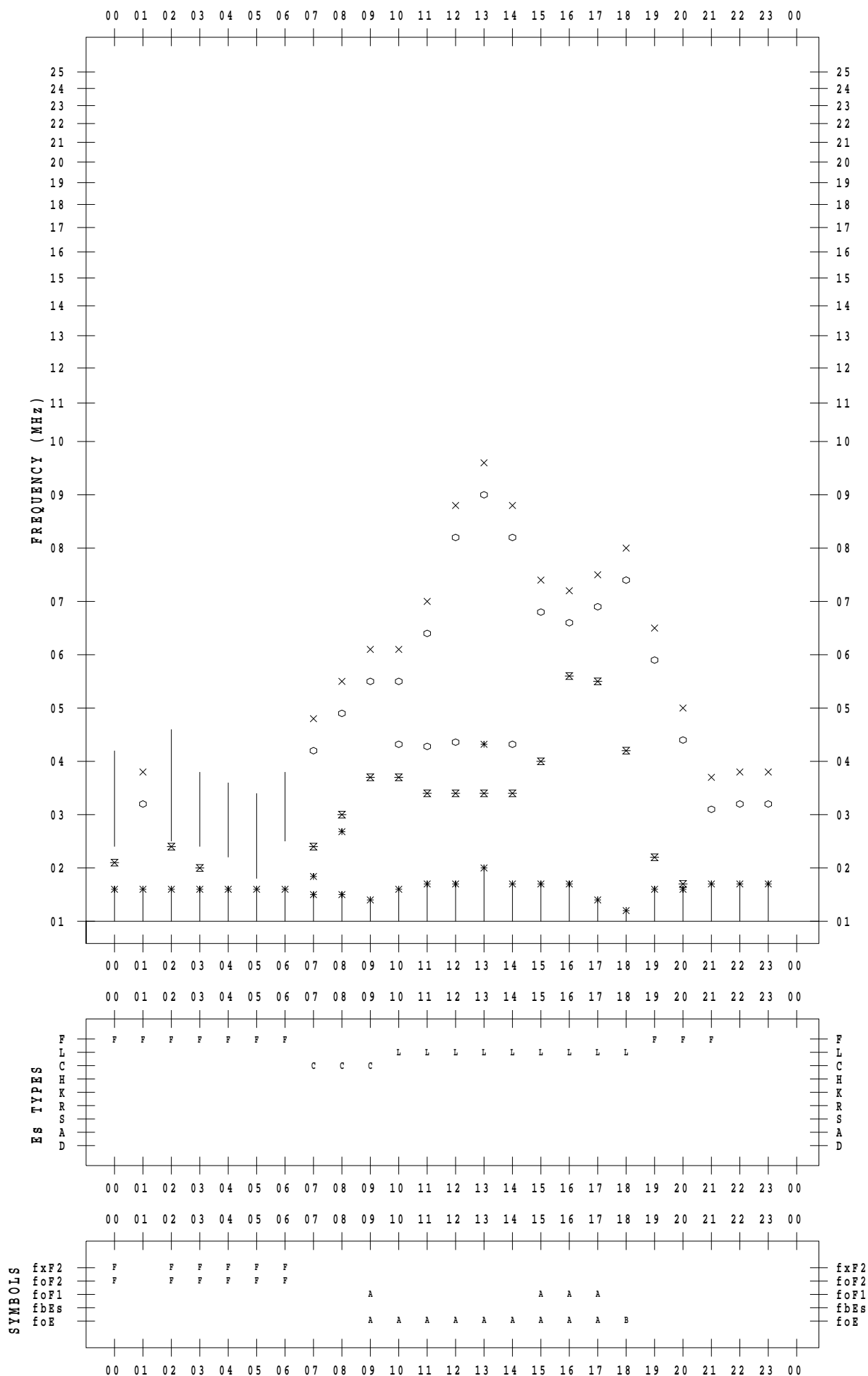
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 26

135 ° E MEAN TIME



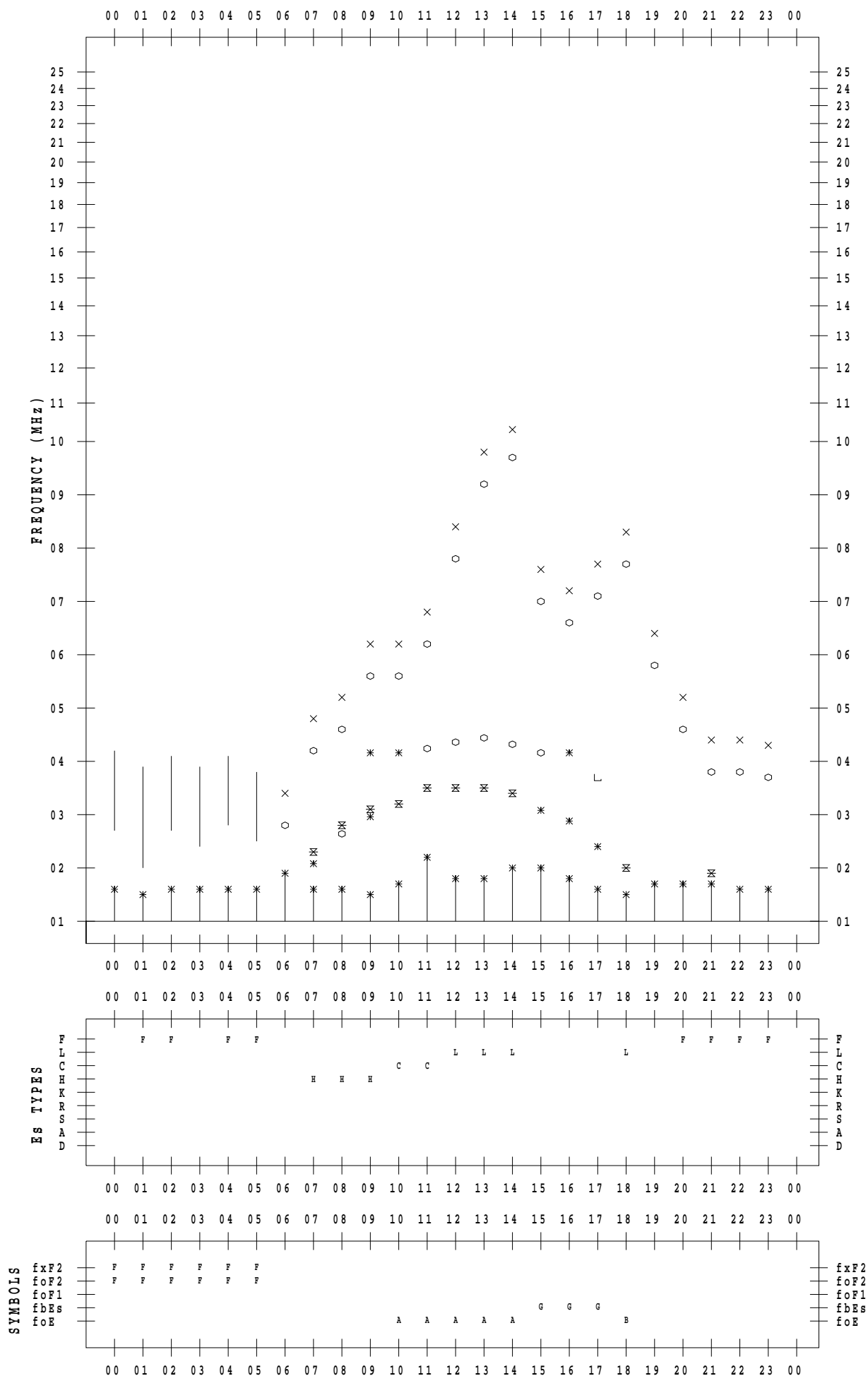
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 27

135 ° E MEAN TIME



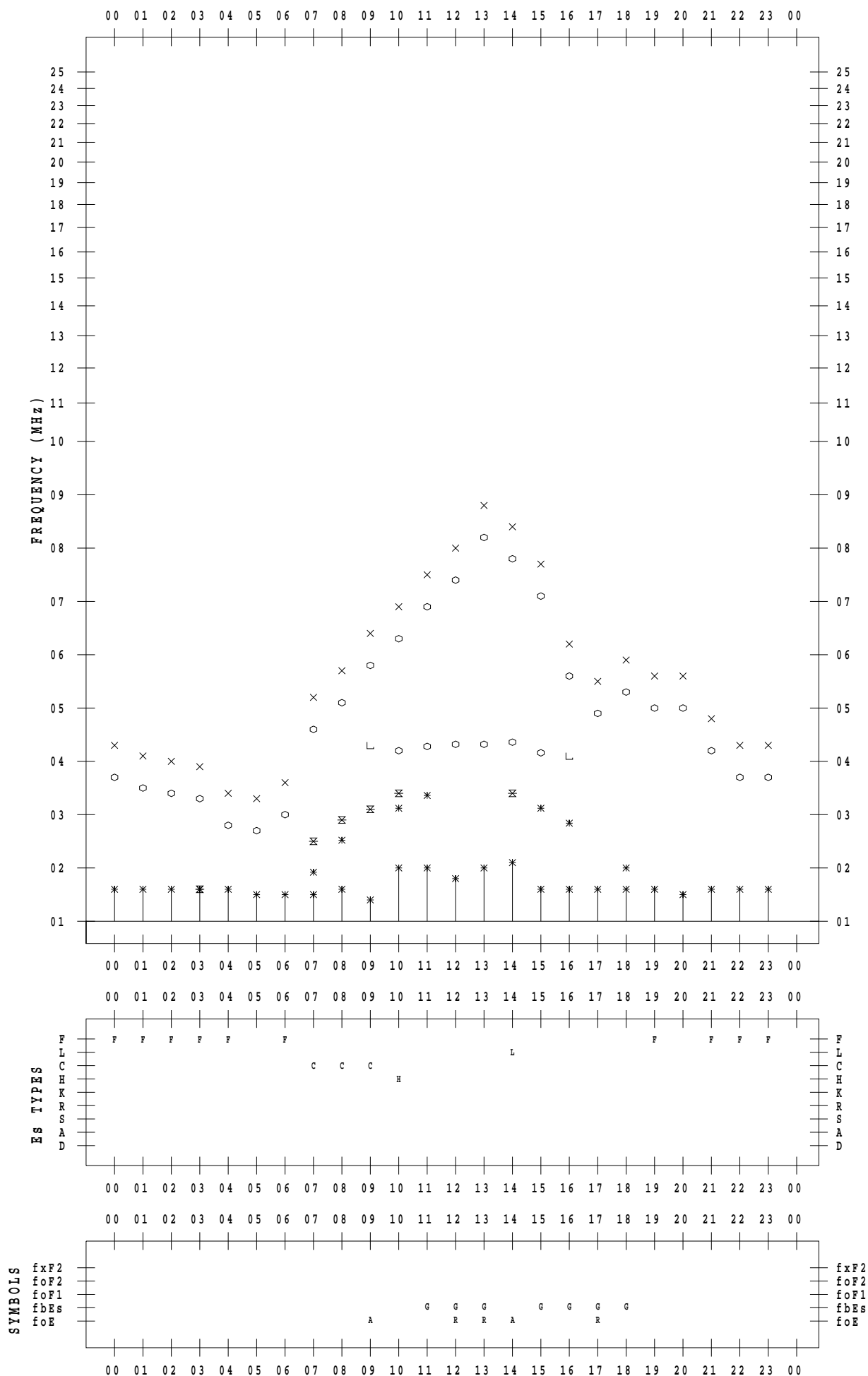
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 28

135 ° E MEAN TIME



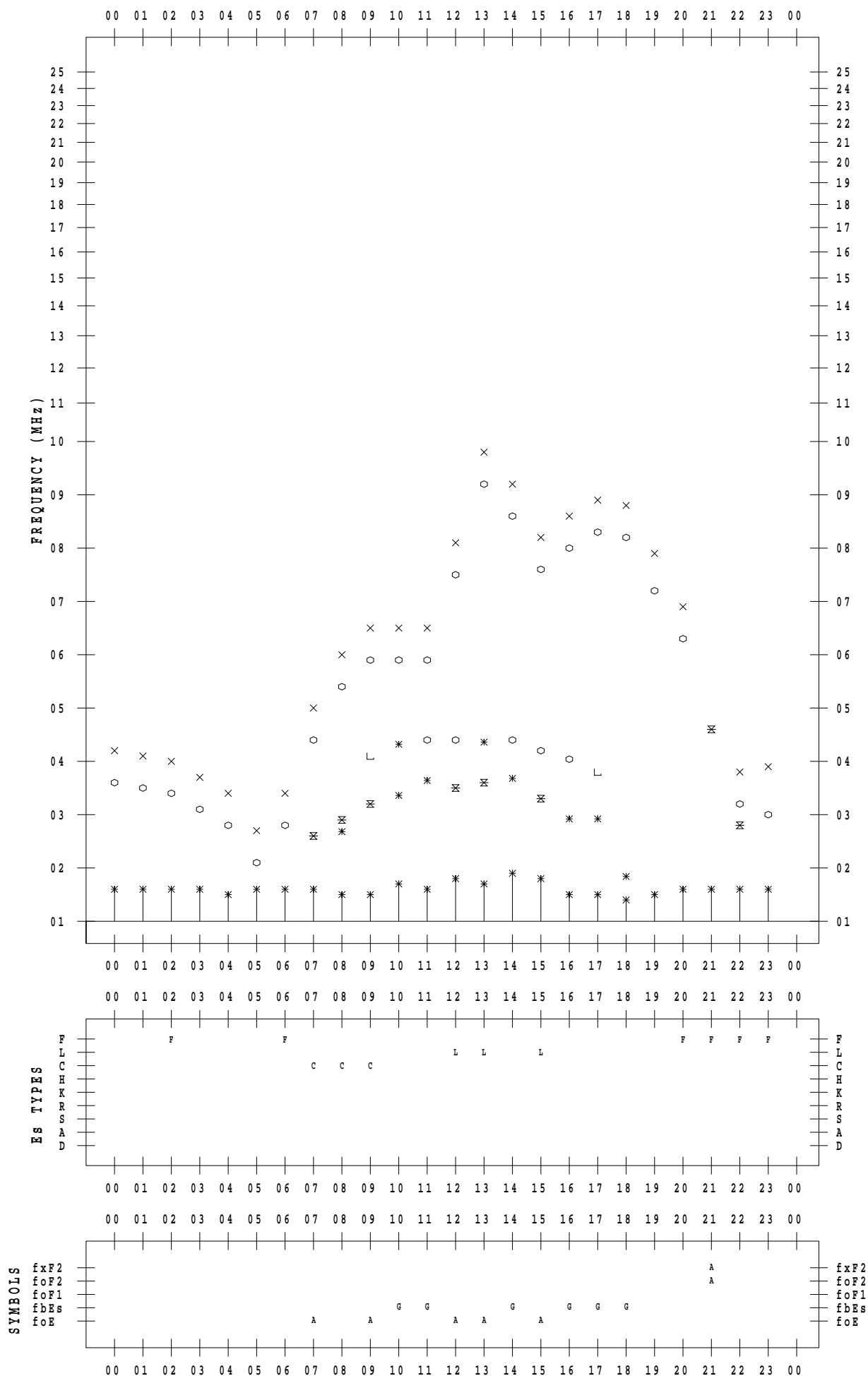
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 29

135 ° E MEAN TIME



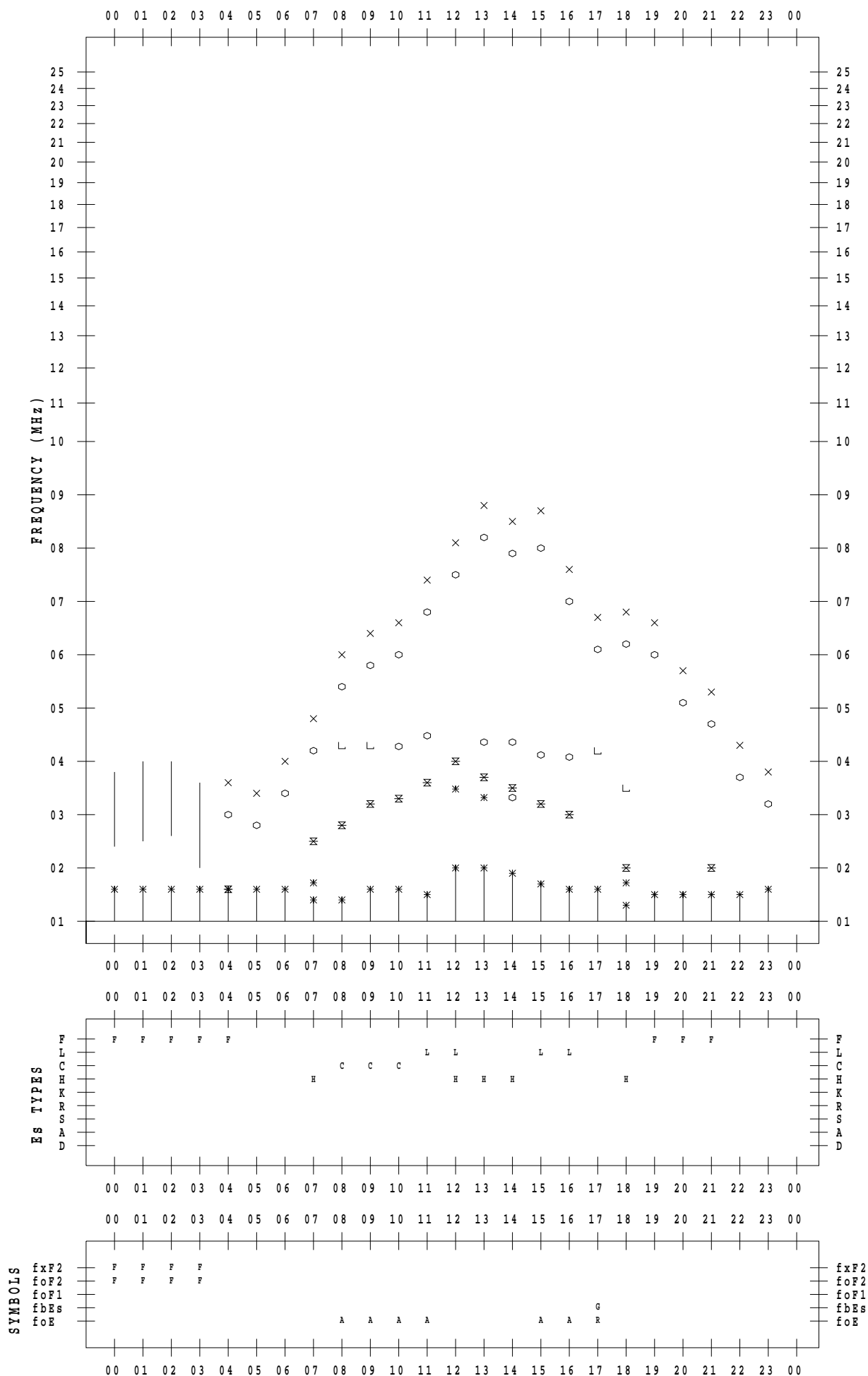
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 30

135 ° E MEAN TIME



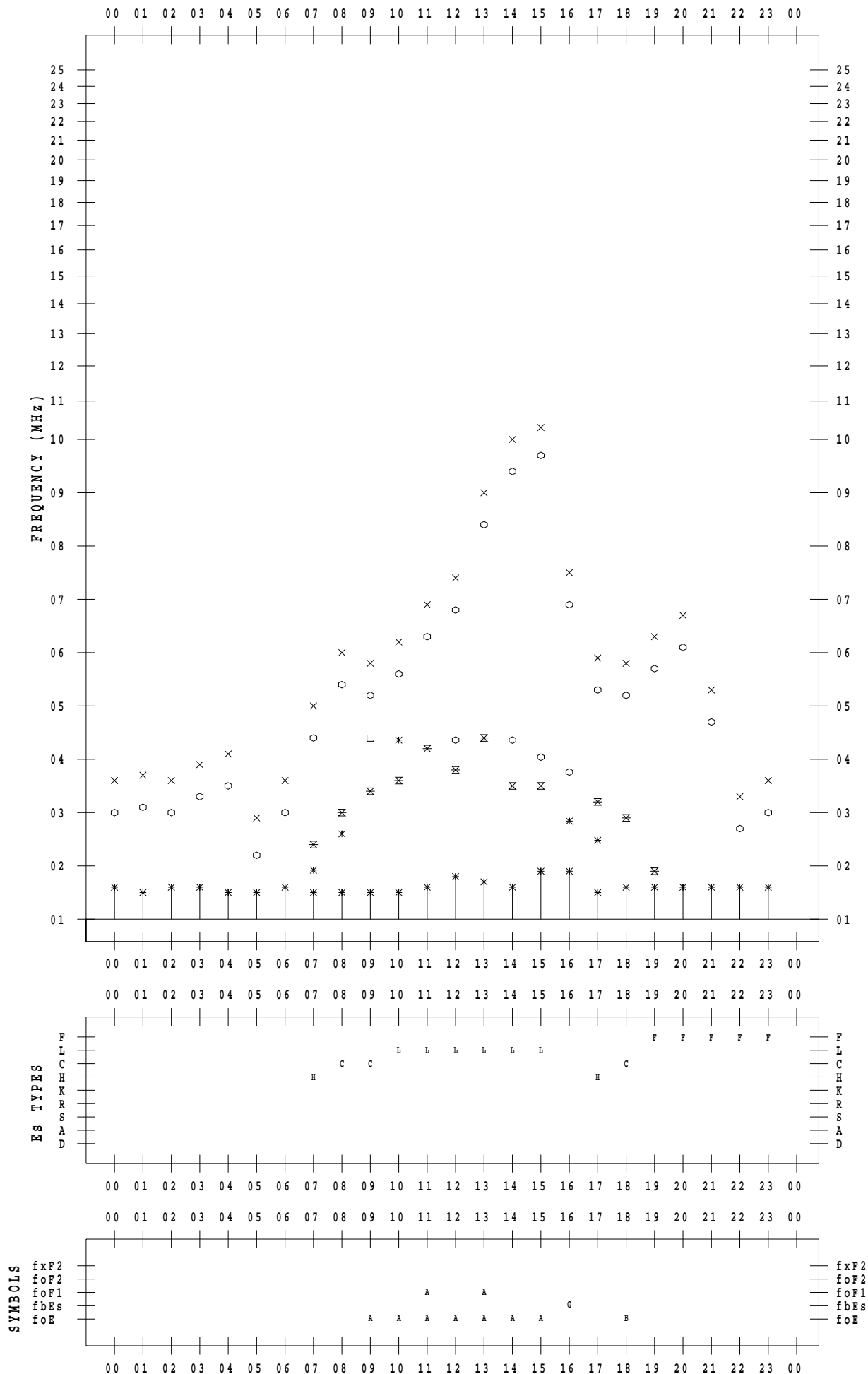
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 3 / 31

135 ° E MEAN TIME



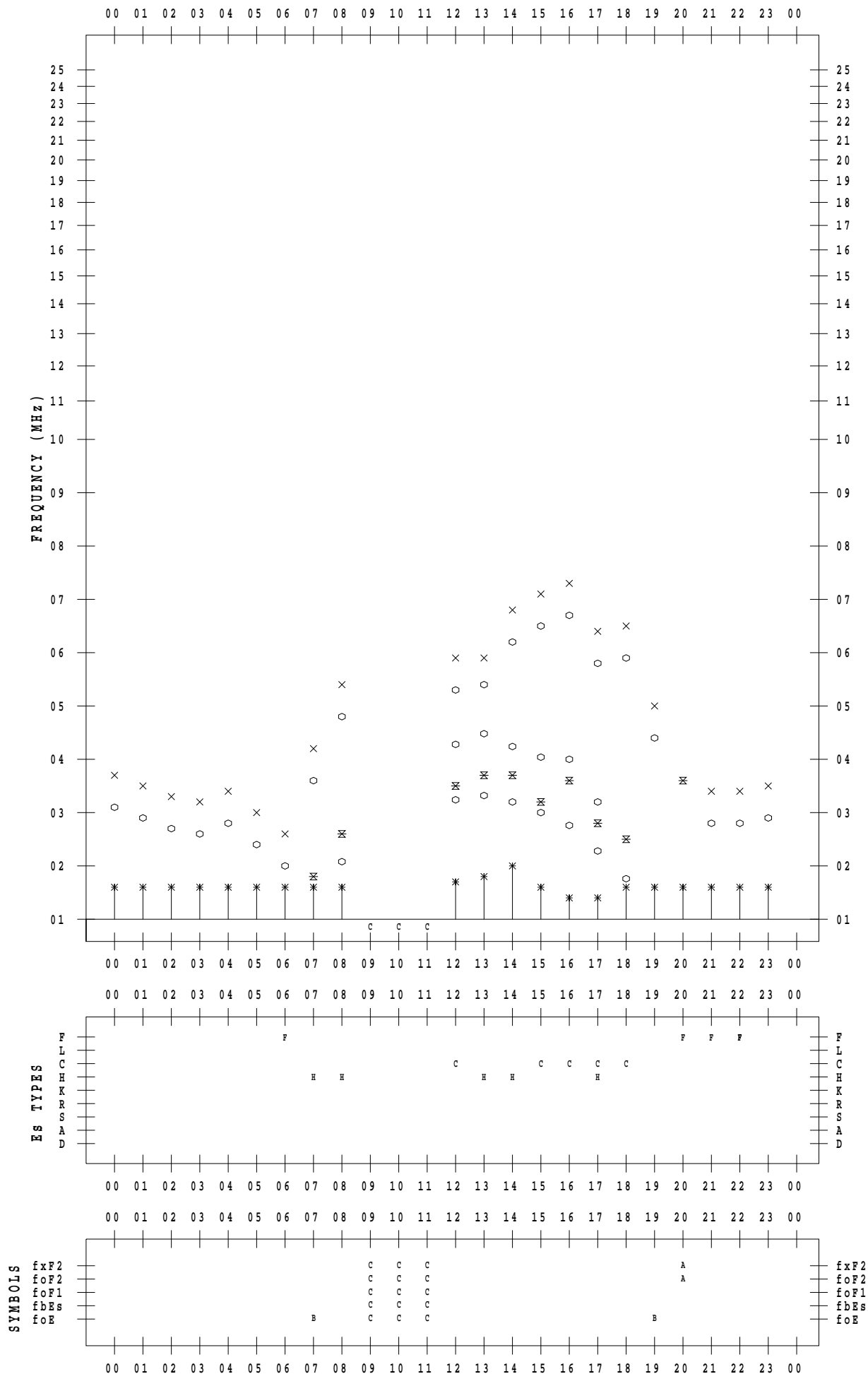
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 1

135 ° E MEAN TIME



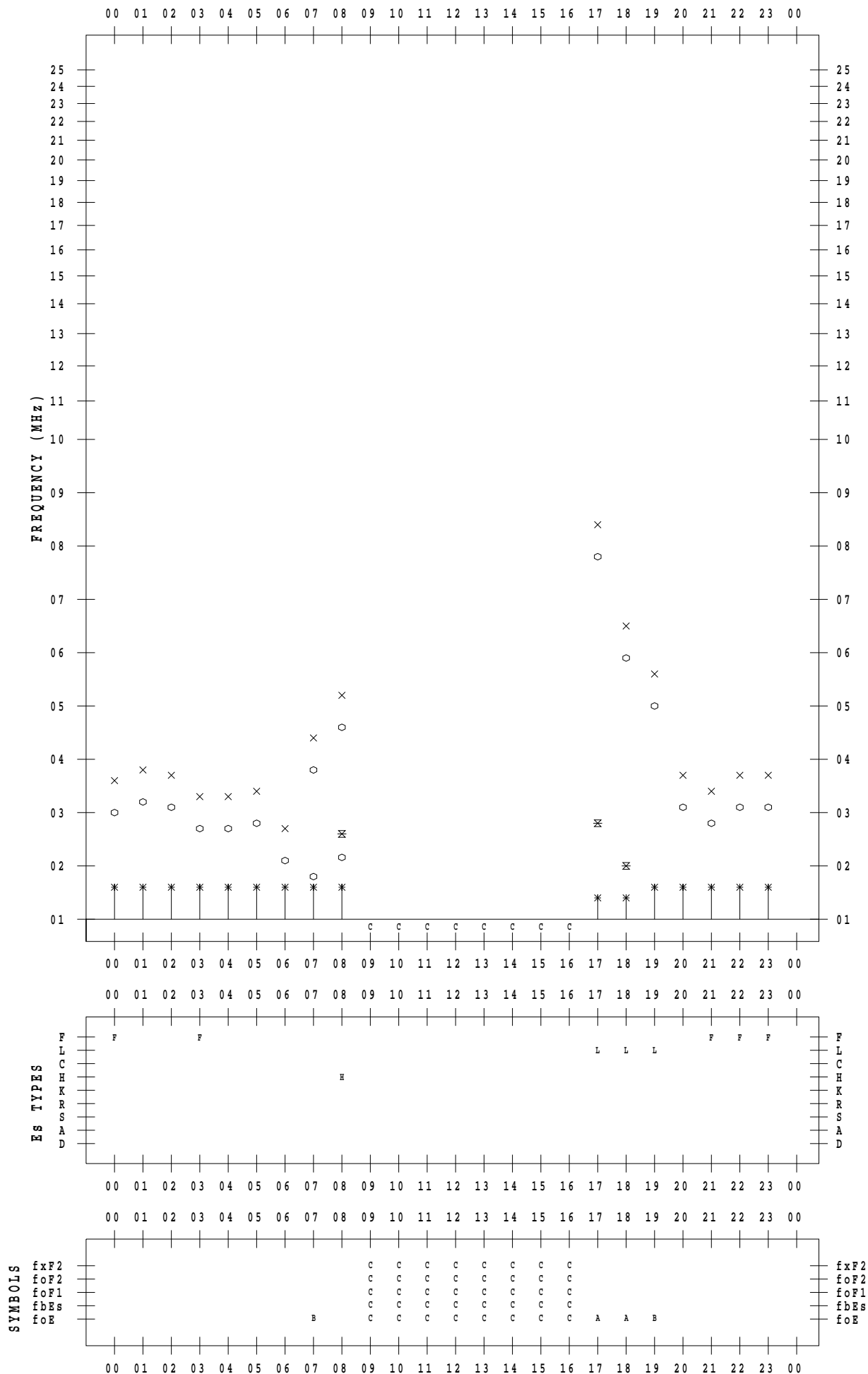
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 2

135 ° E MEAN TIME



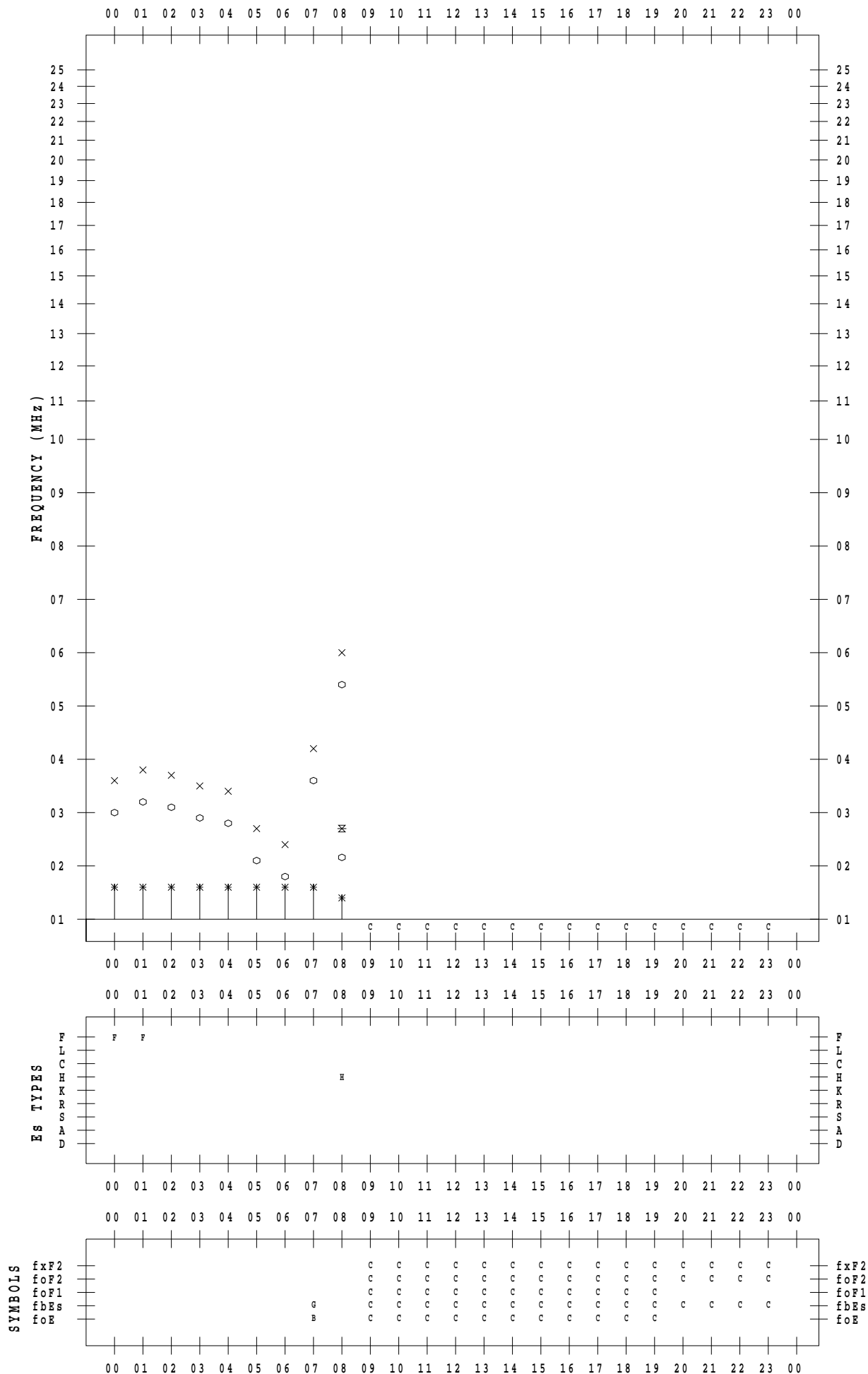
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 3

135 ° E MEAN TIME



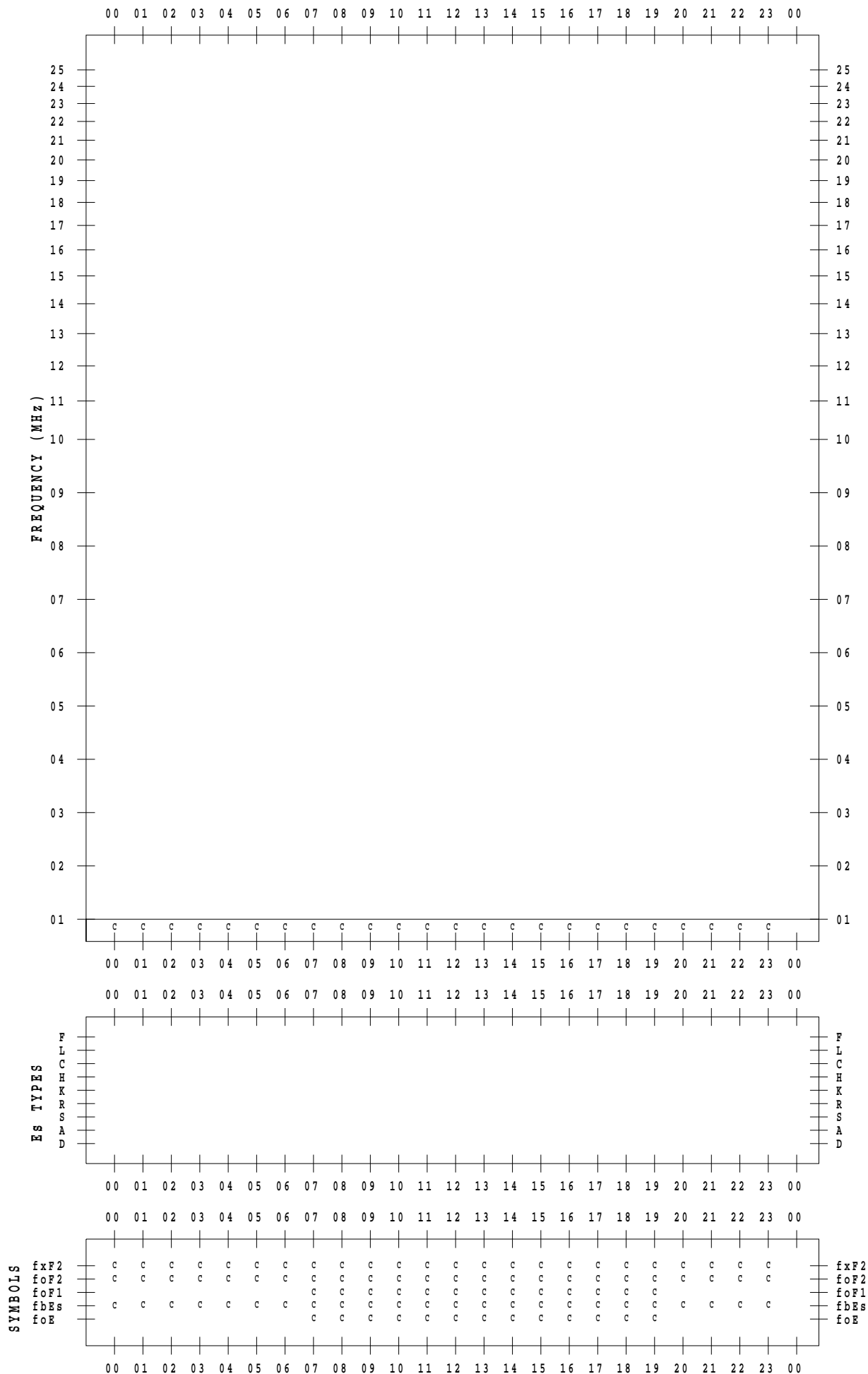
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 8

135 ° E MEAN TIME



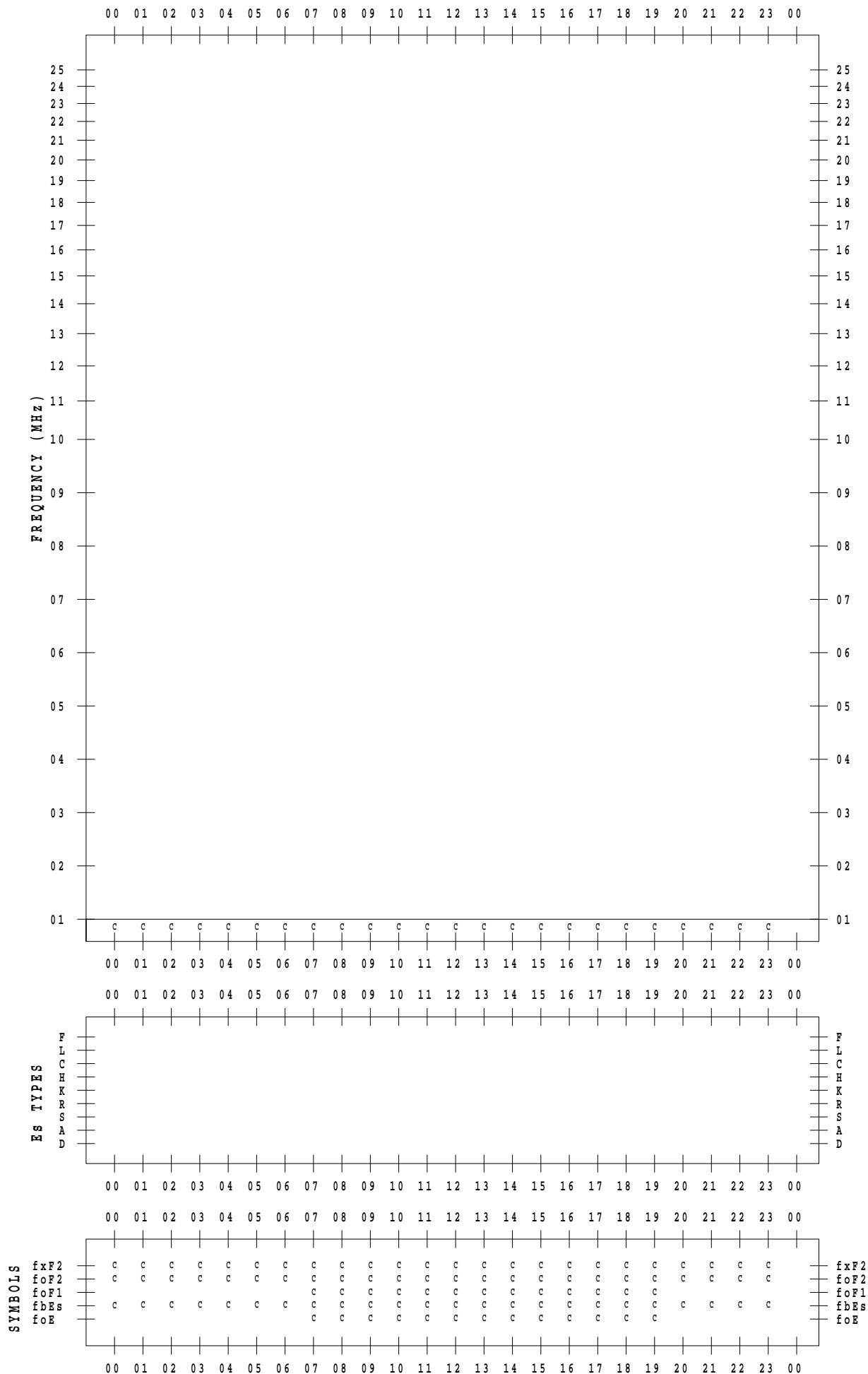
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 9

135 ° E MEAN TIME



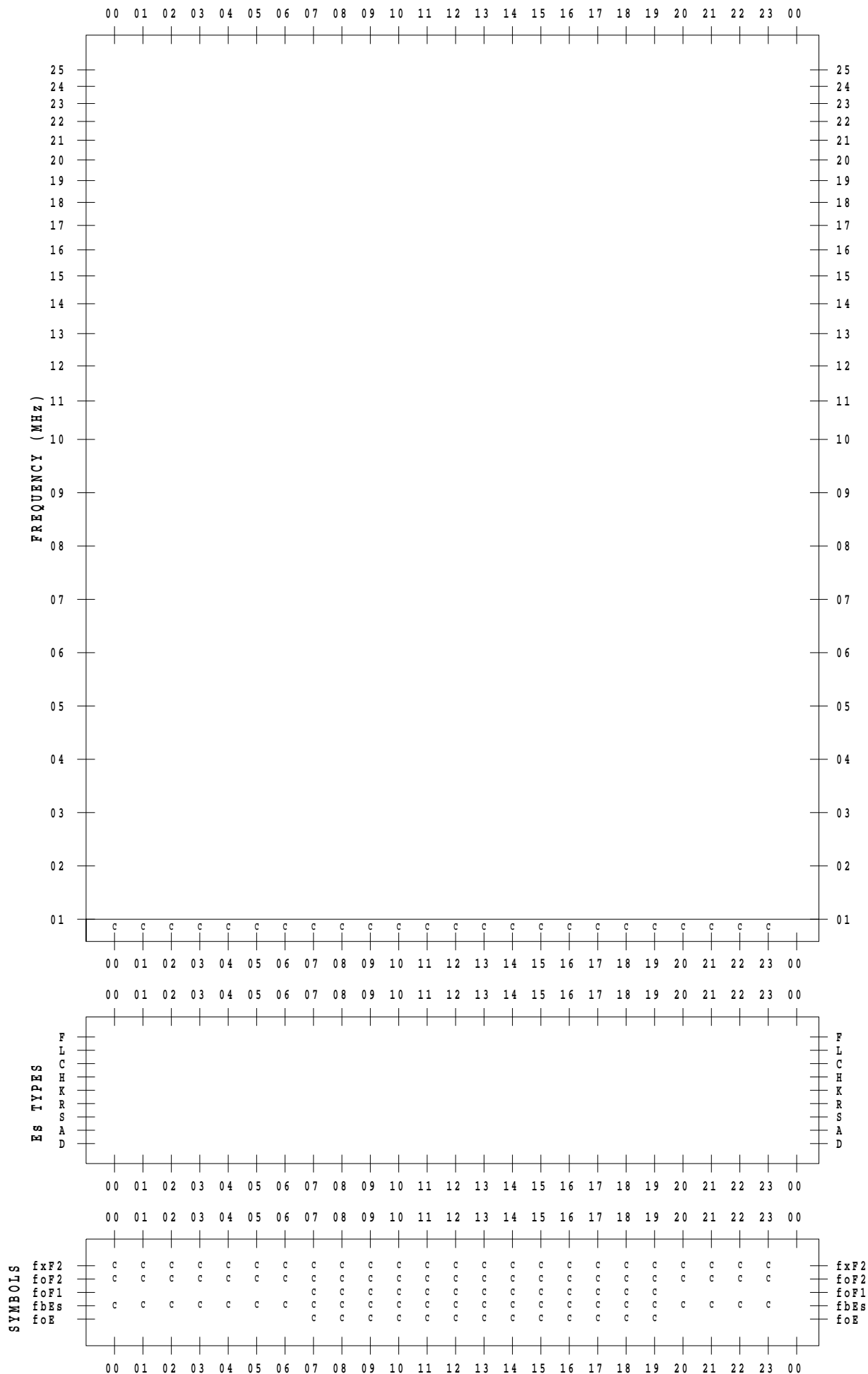
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 10

135 ° E MEAN TIME



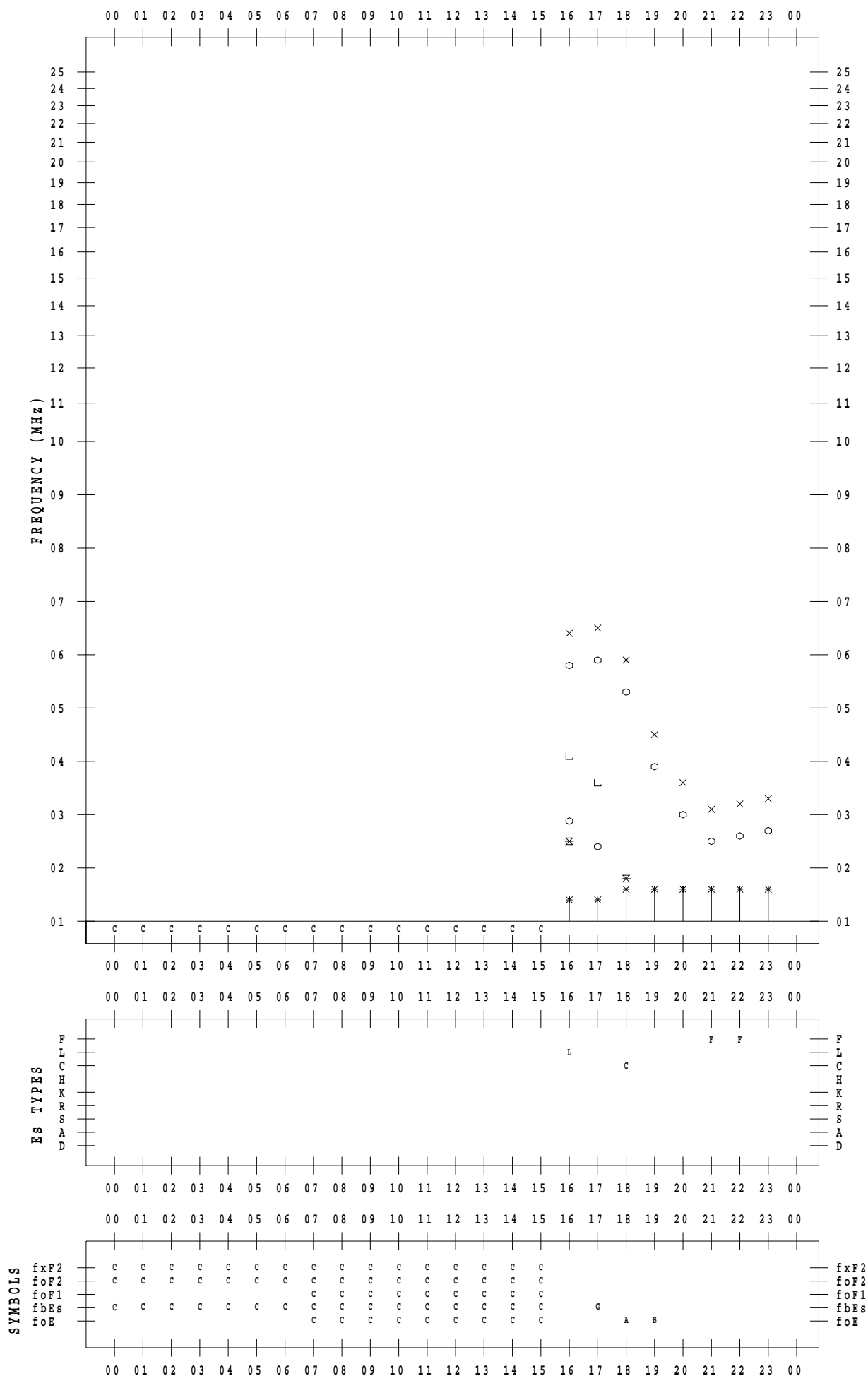
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 11

135 ° E MEAN TIME



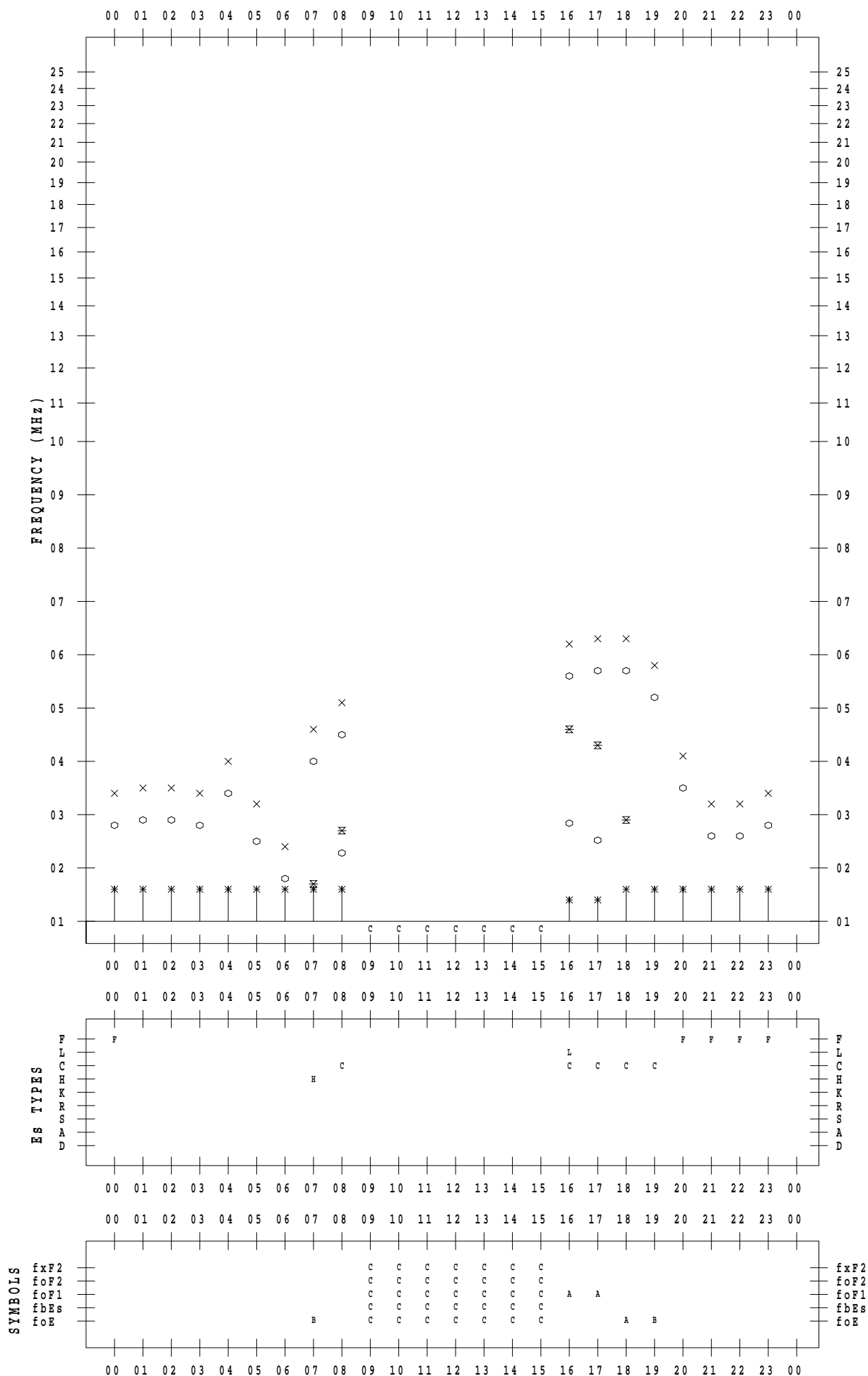
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 12

135 ° E MEAN TIME



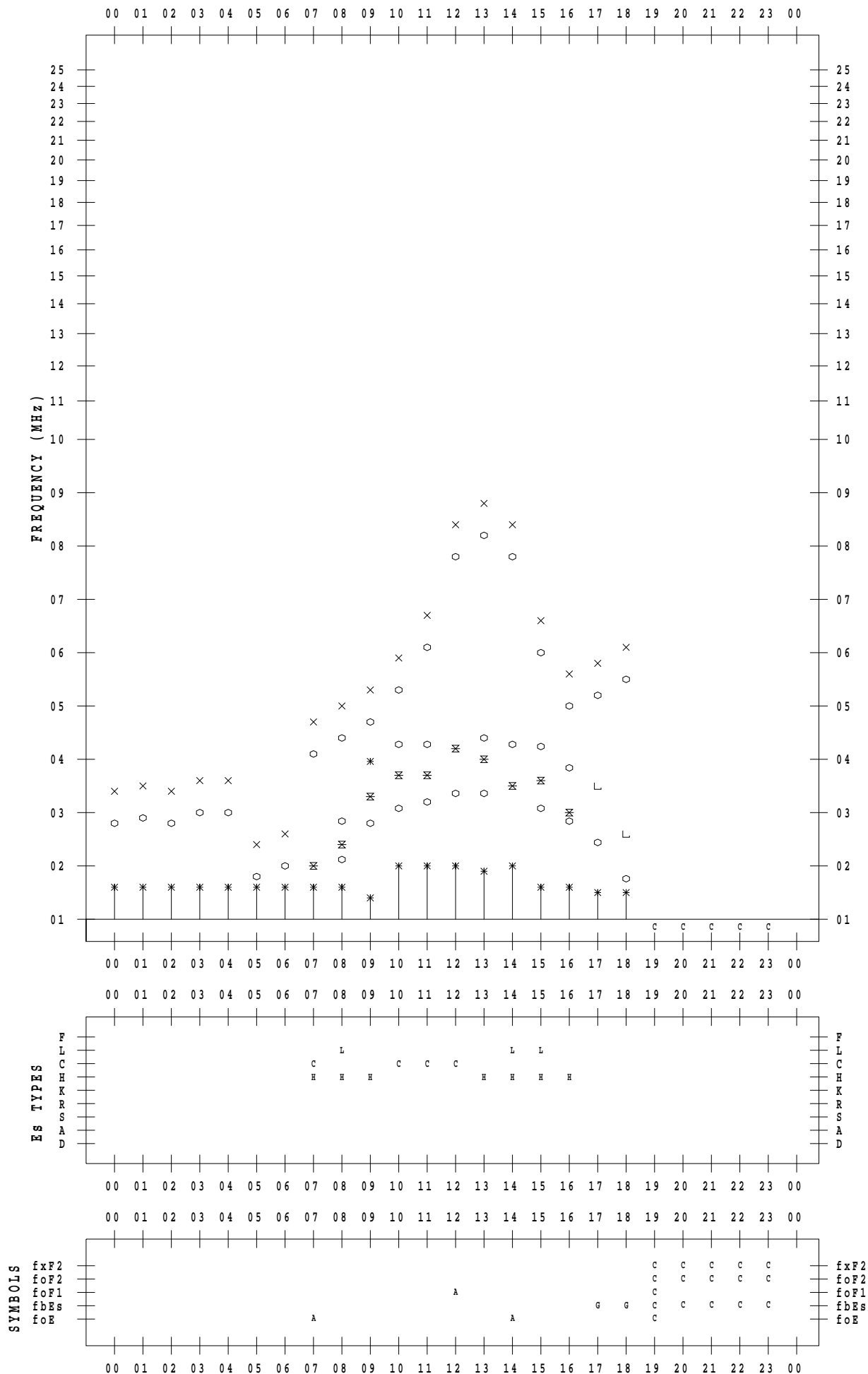
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 13

135 ° E MEAN TIME



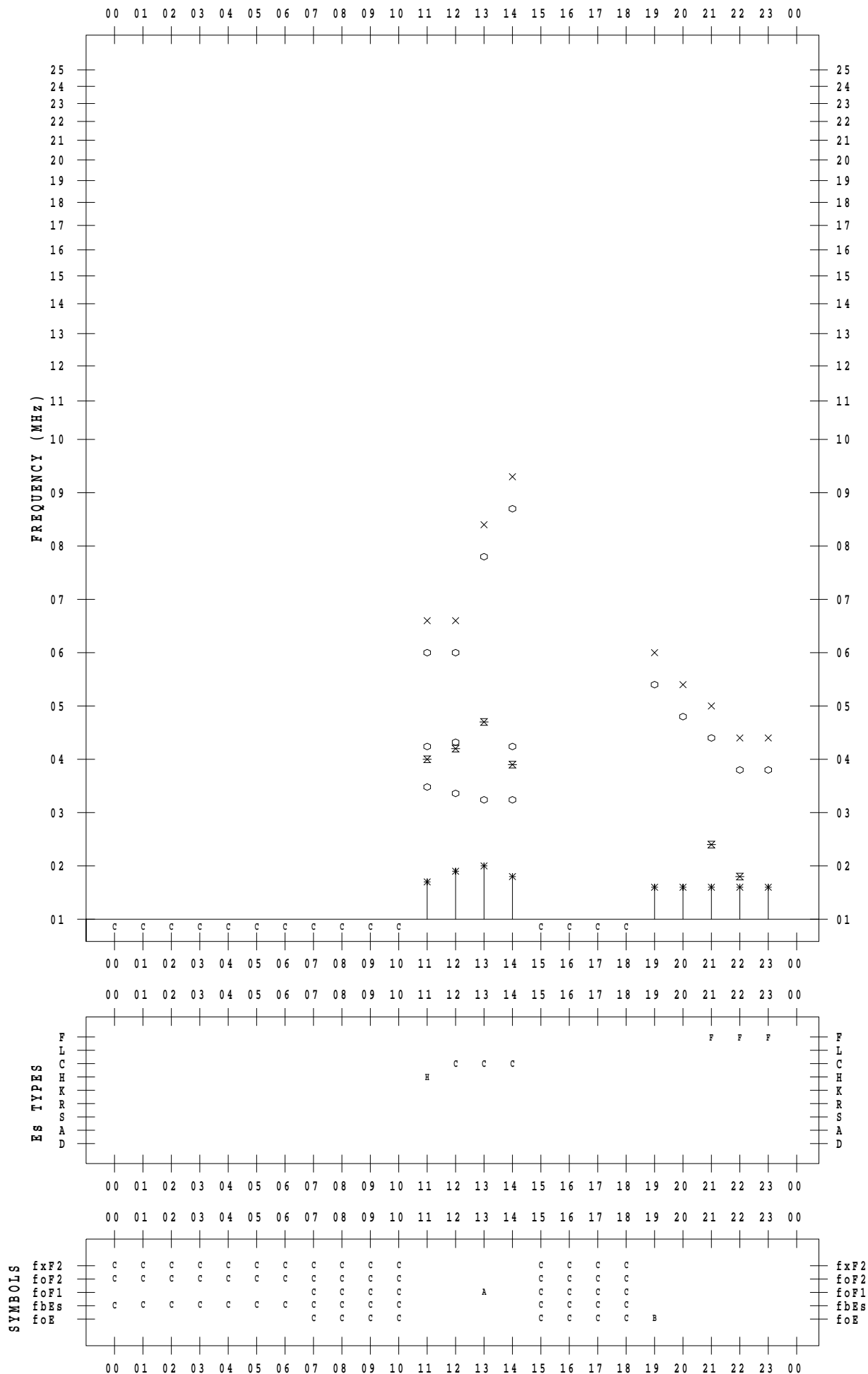
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 14

135 ° E MEAN TIME



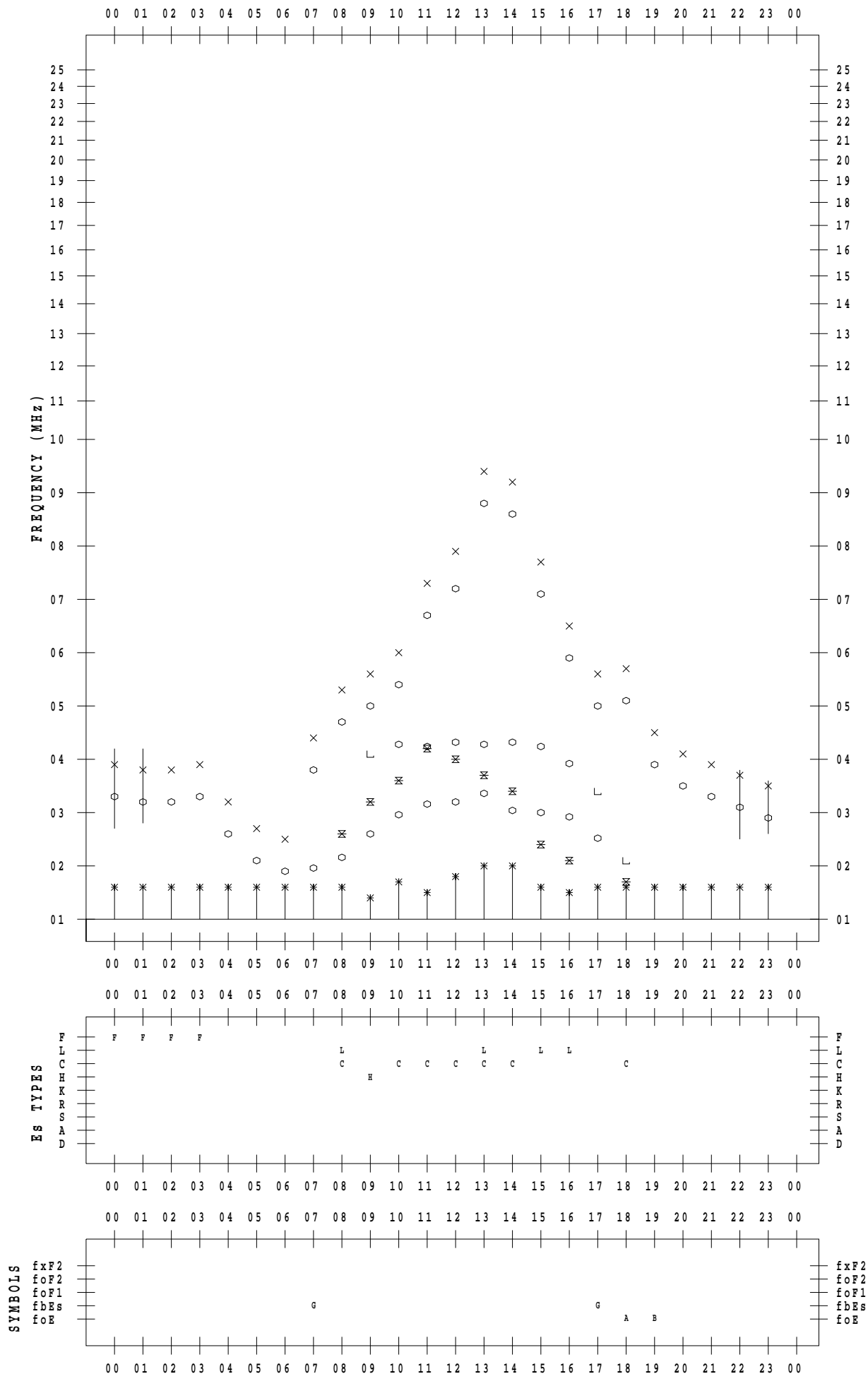
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 15

135 ° E MEAN TIME



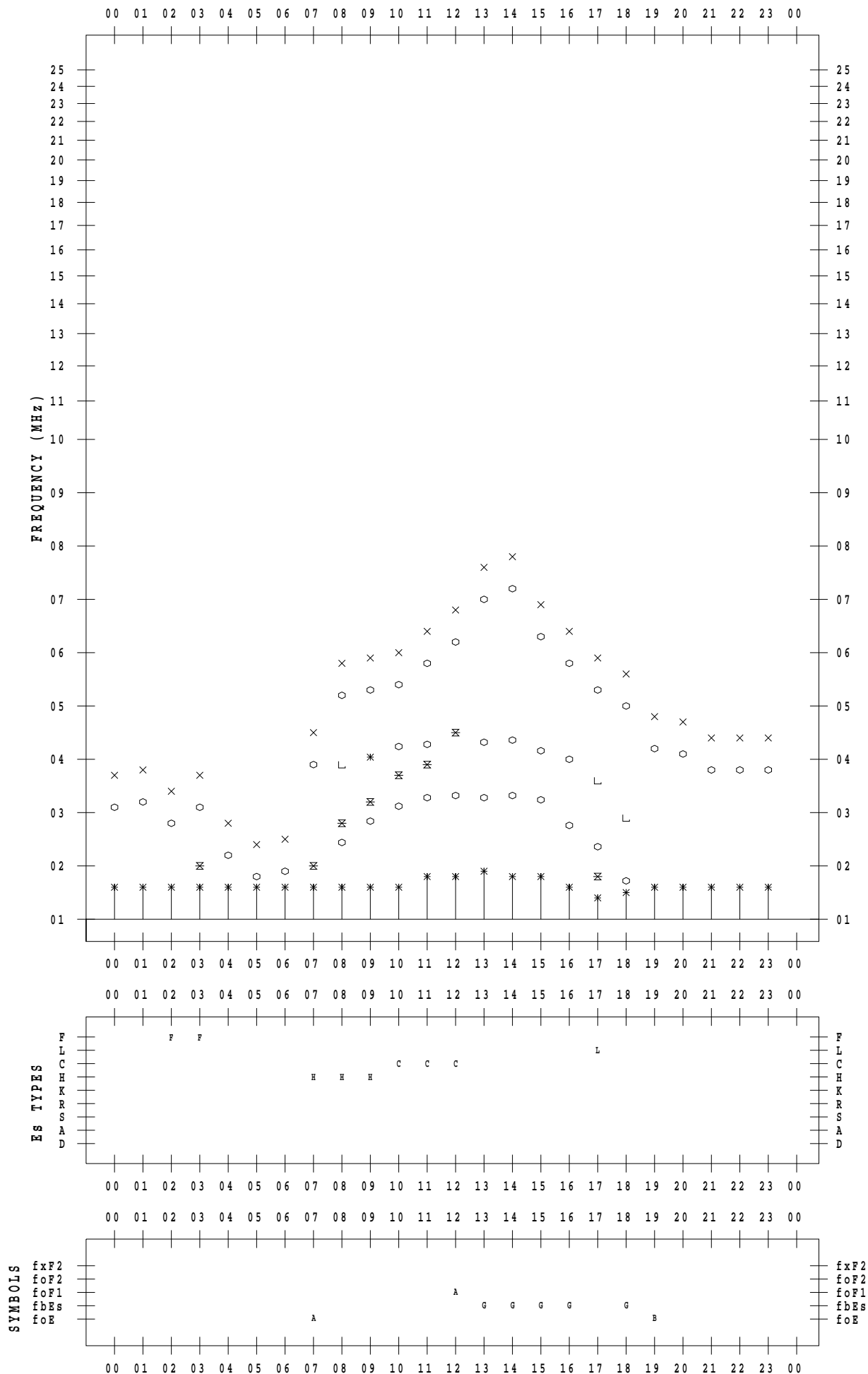
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 16

135 ° E MEAN TIME



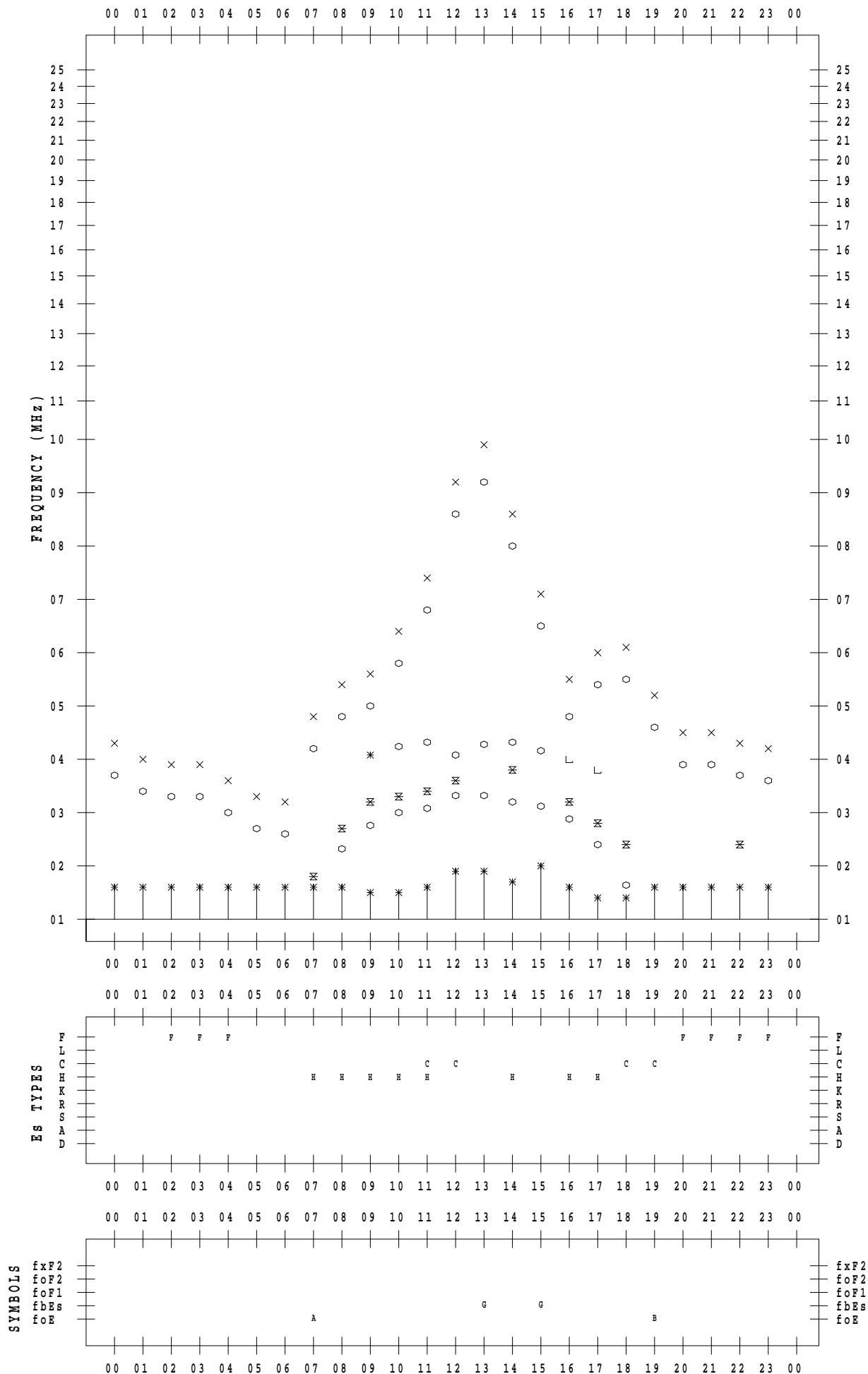
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 17

135 ° E MEAN TIME



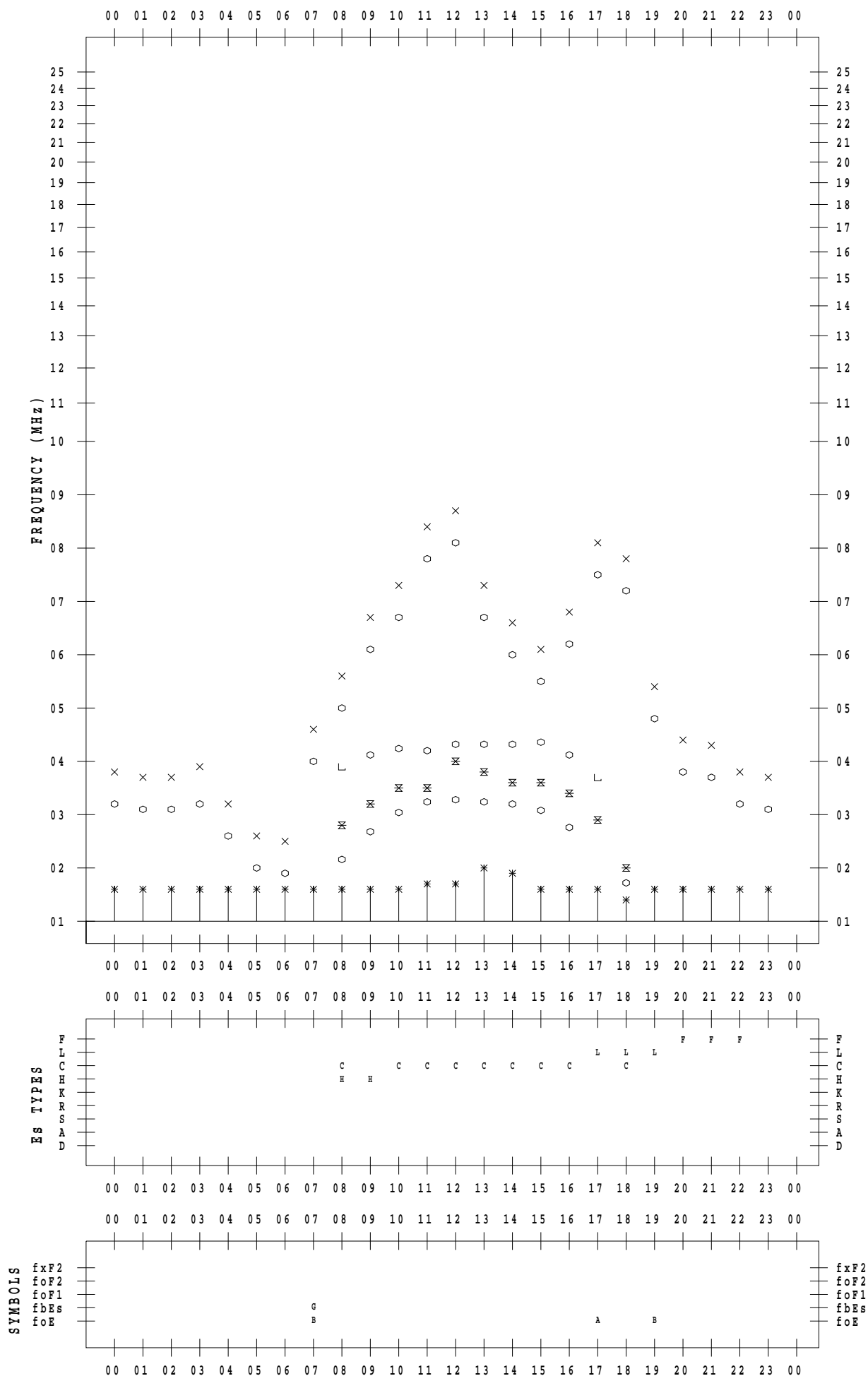
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 18

135 ° E MEAN TIME



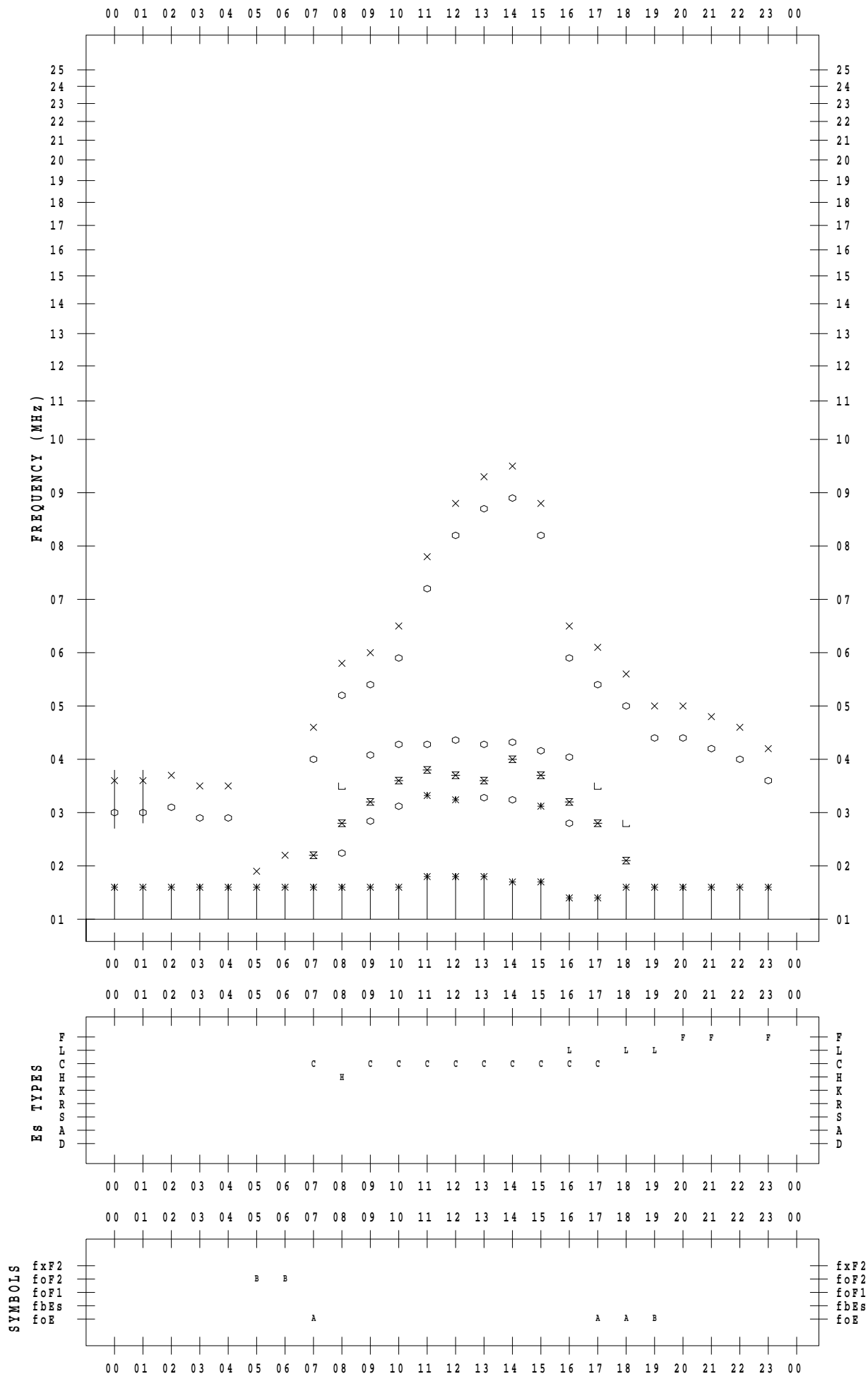
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 19

135 ° E MEAN TIME



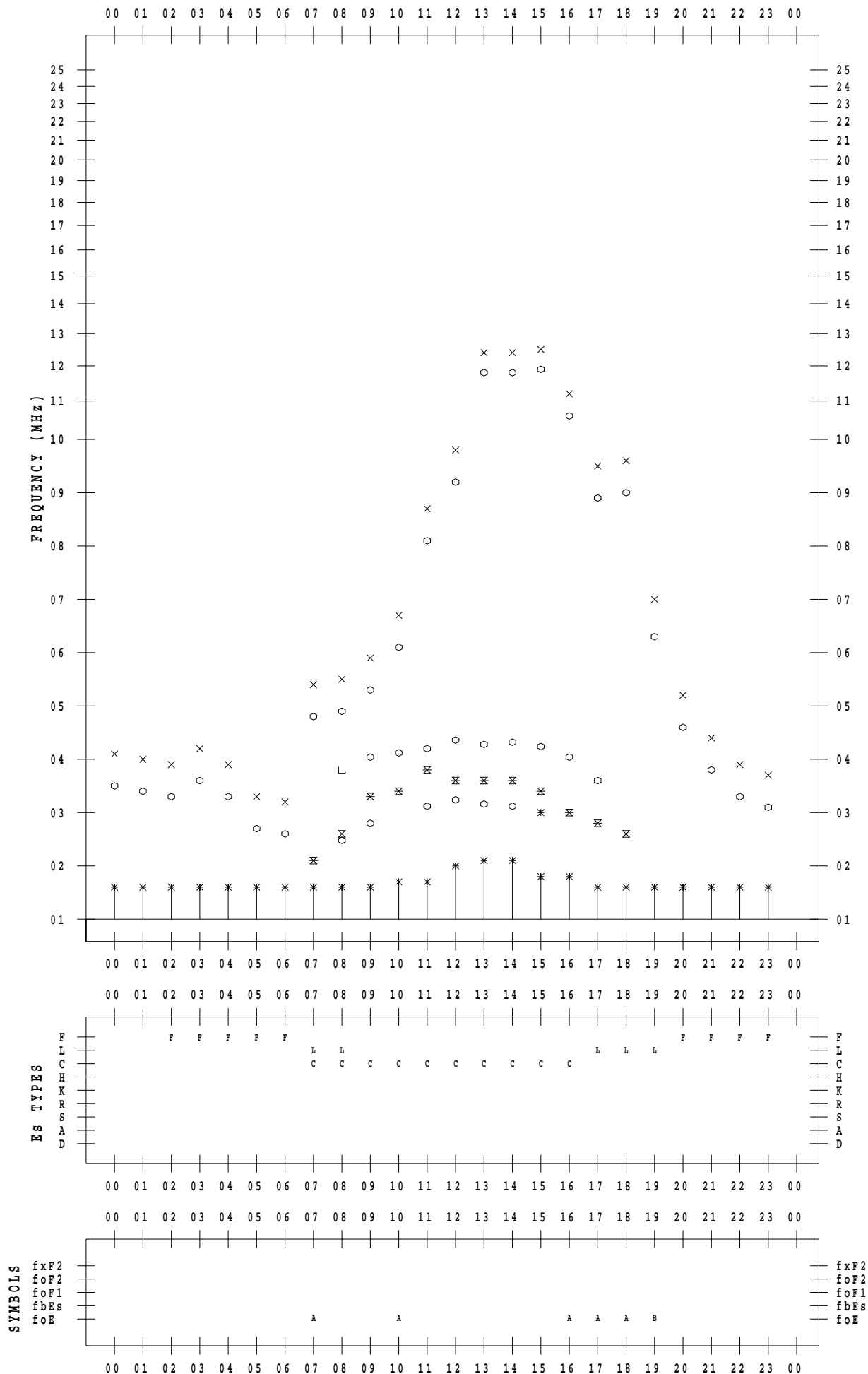
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 20

135 ° E MEAN TIME



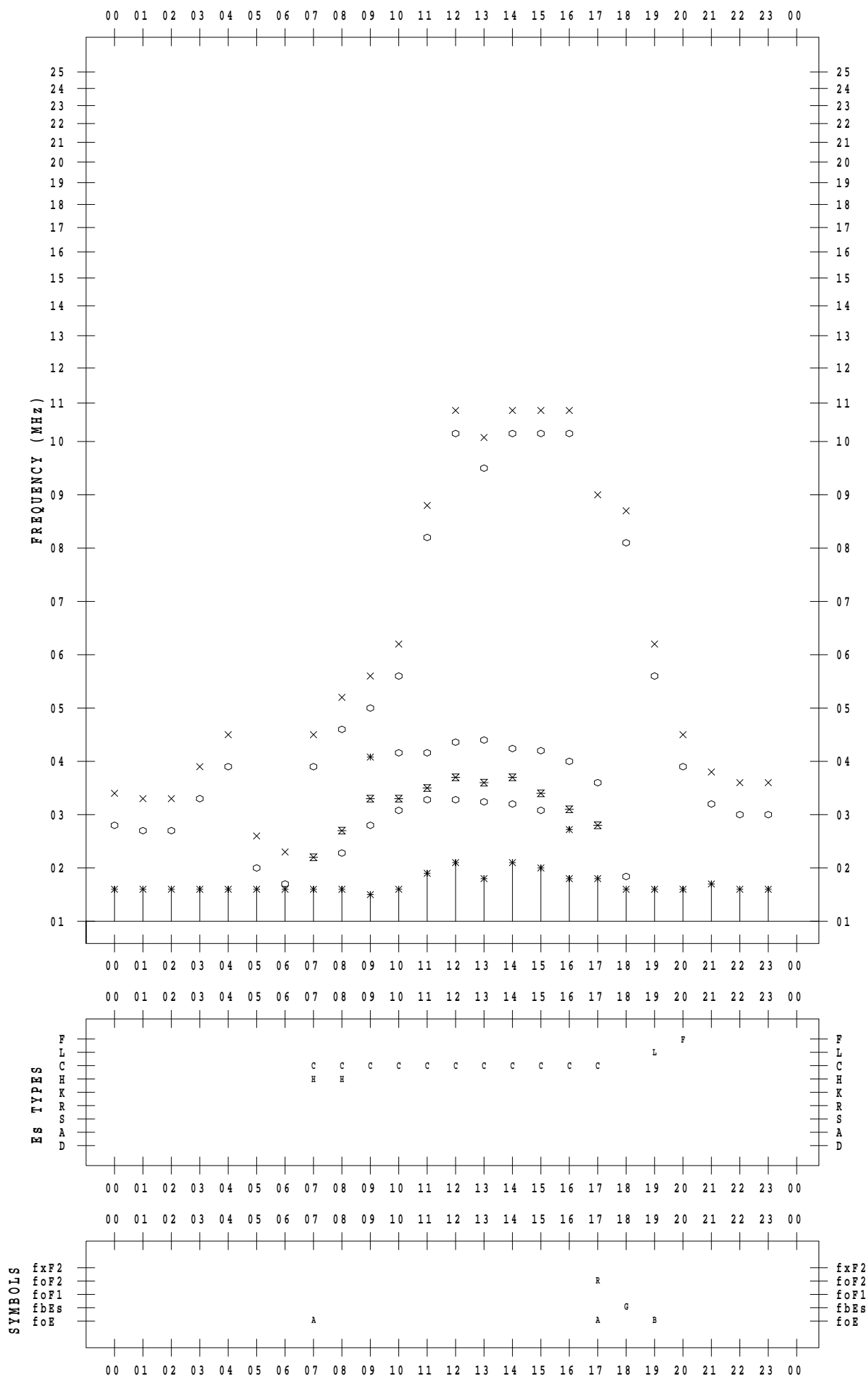
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 21

135 ° E MEAN TIME



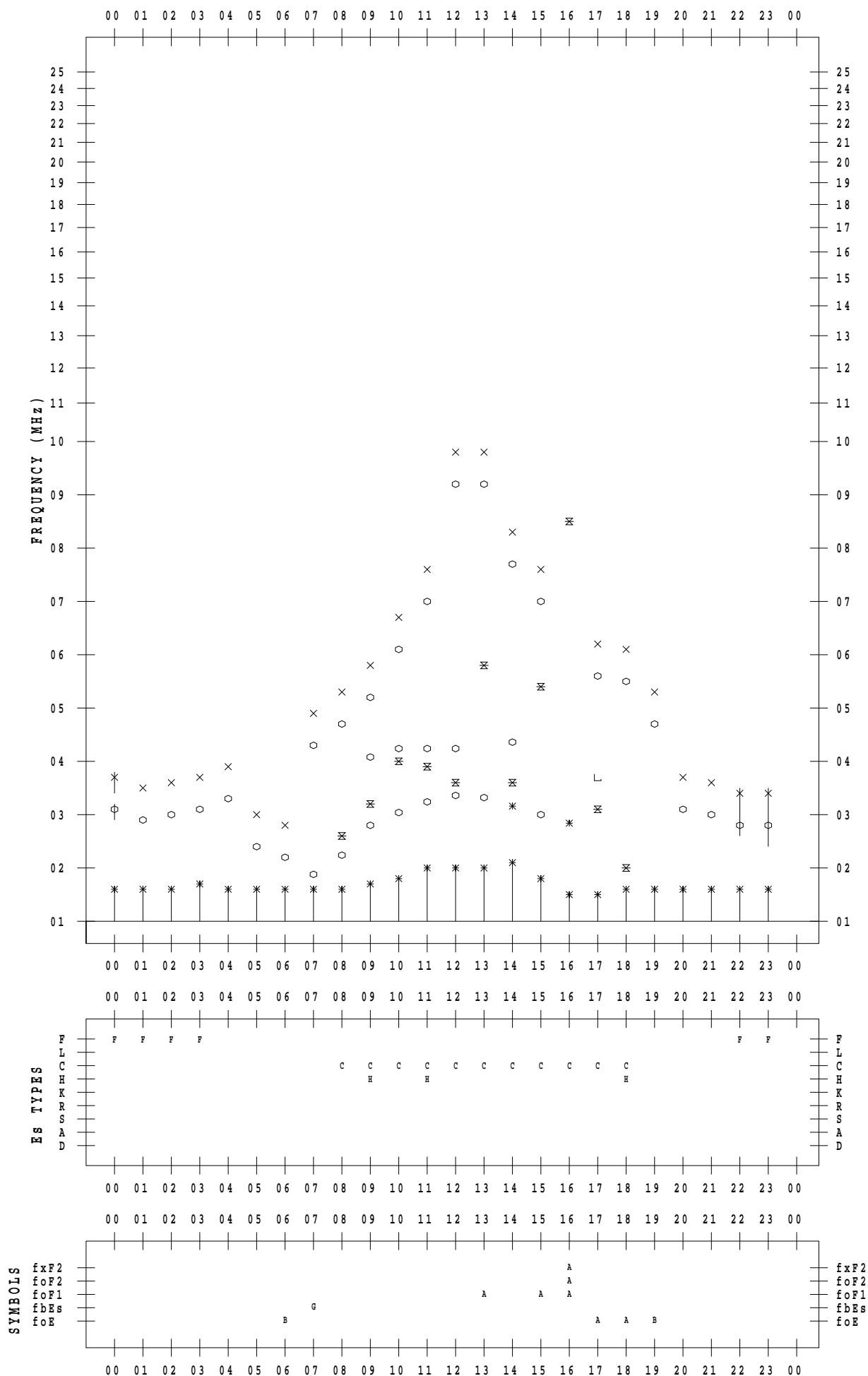
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 22

135 ° E MEAN TIME



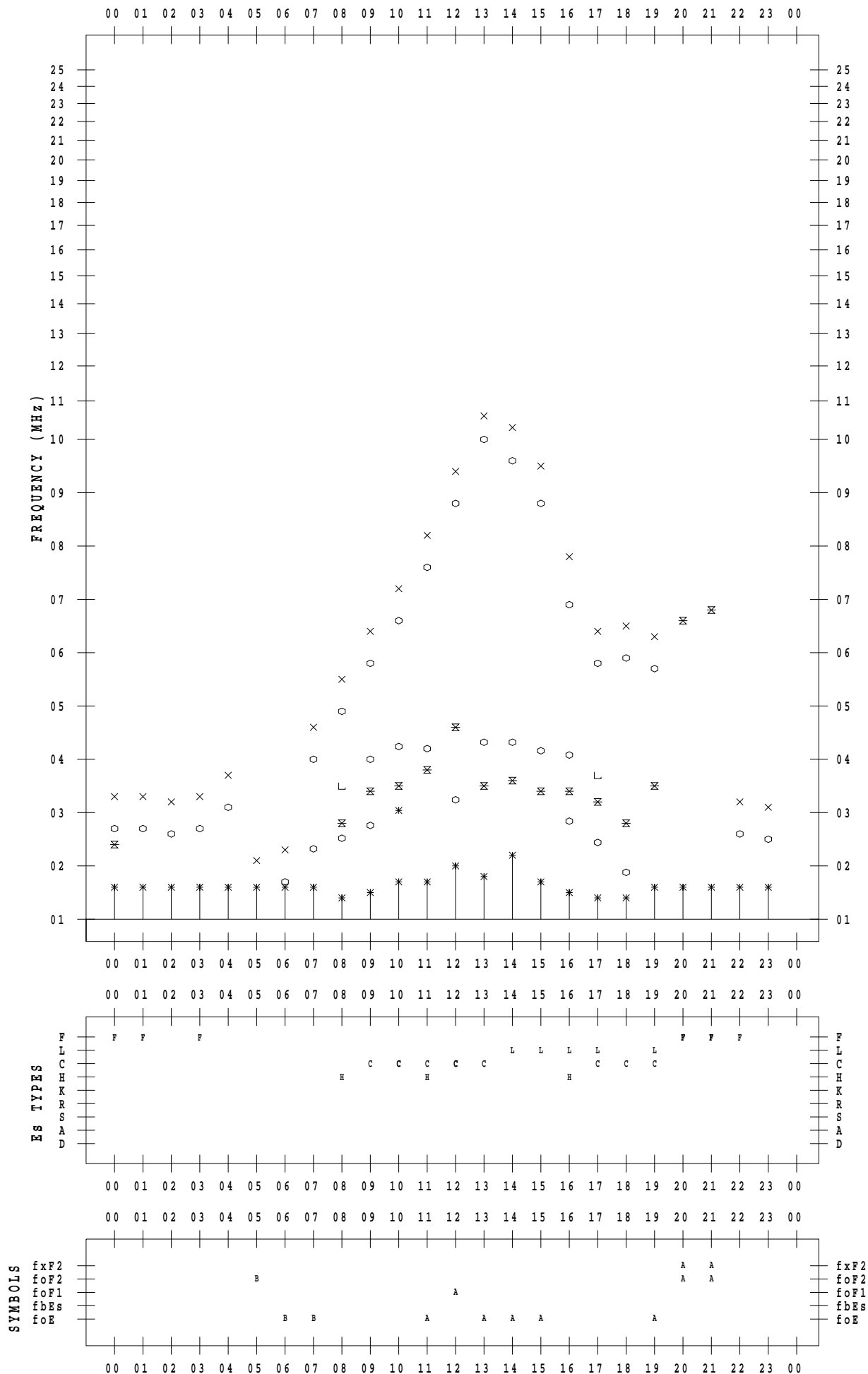
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 23

135 ° E MEAN TIME



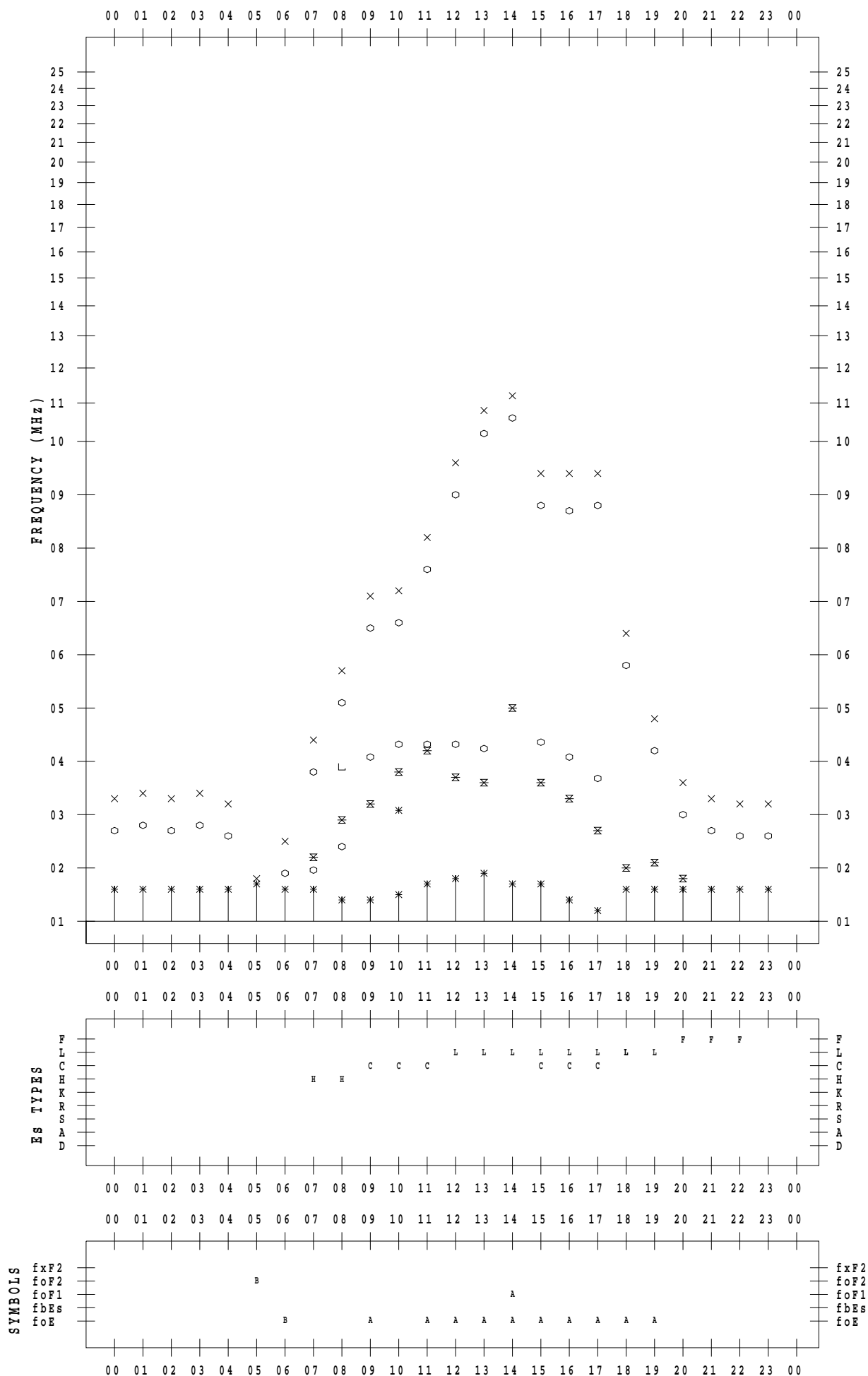
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 24

135 ° E MEAN TIME



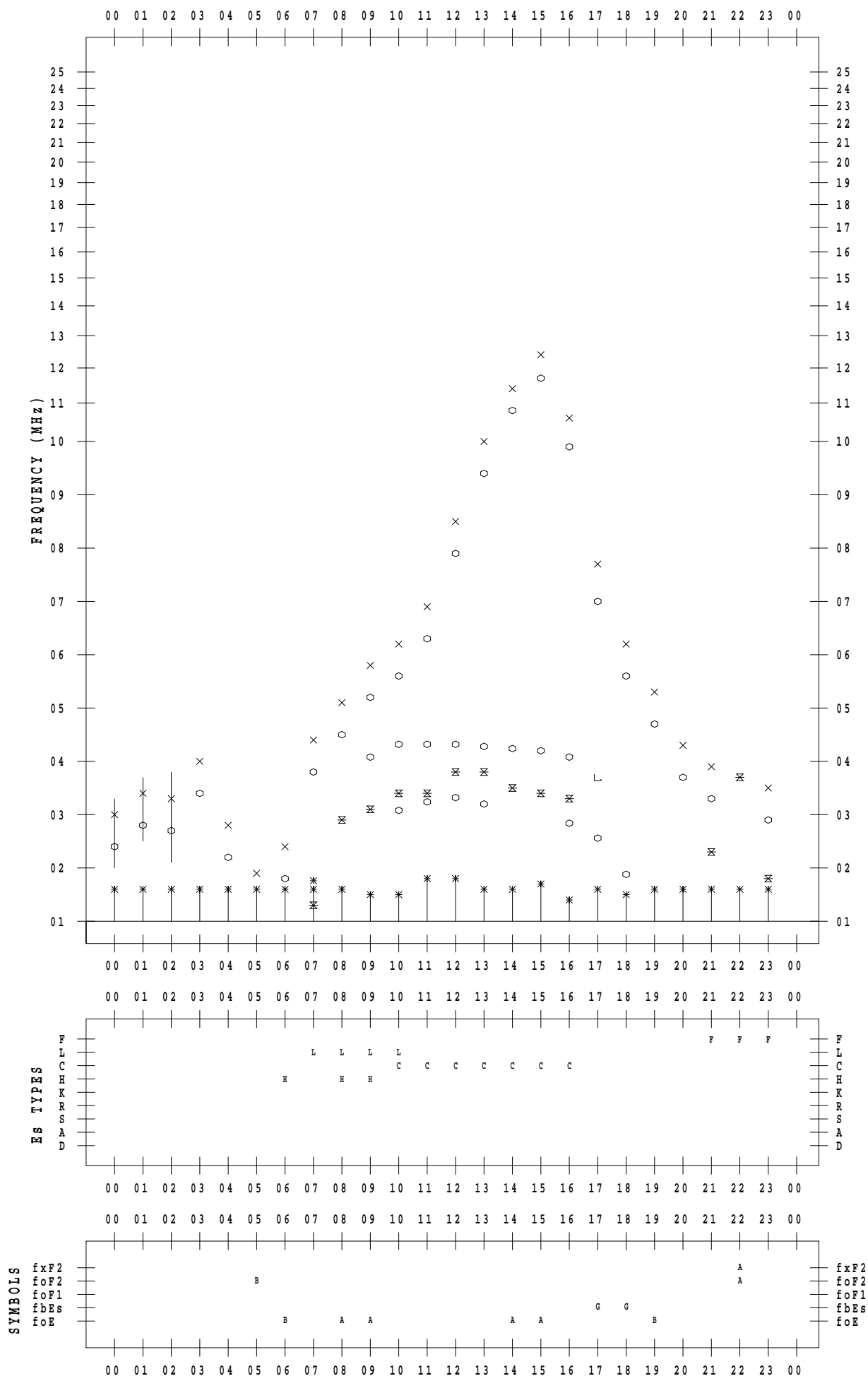
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 25

135 ° E MEAN TIME



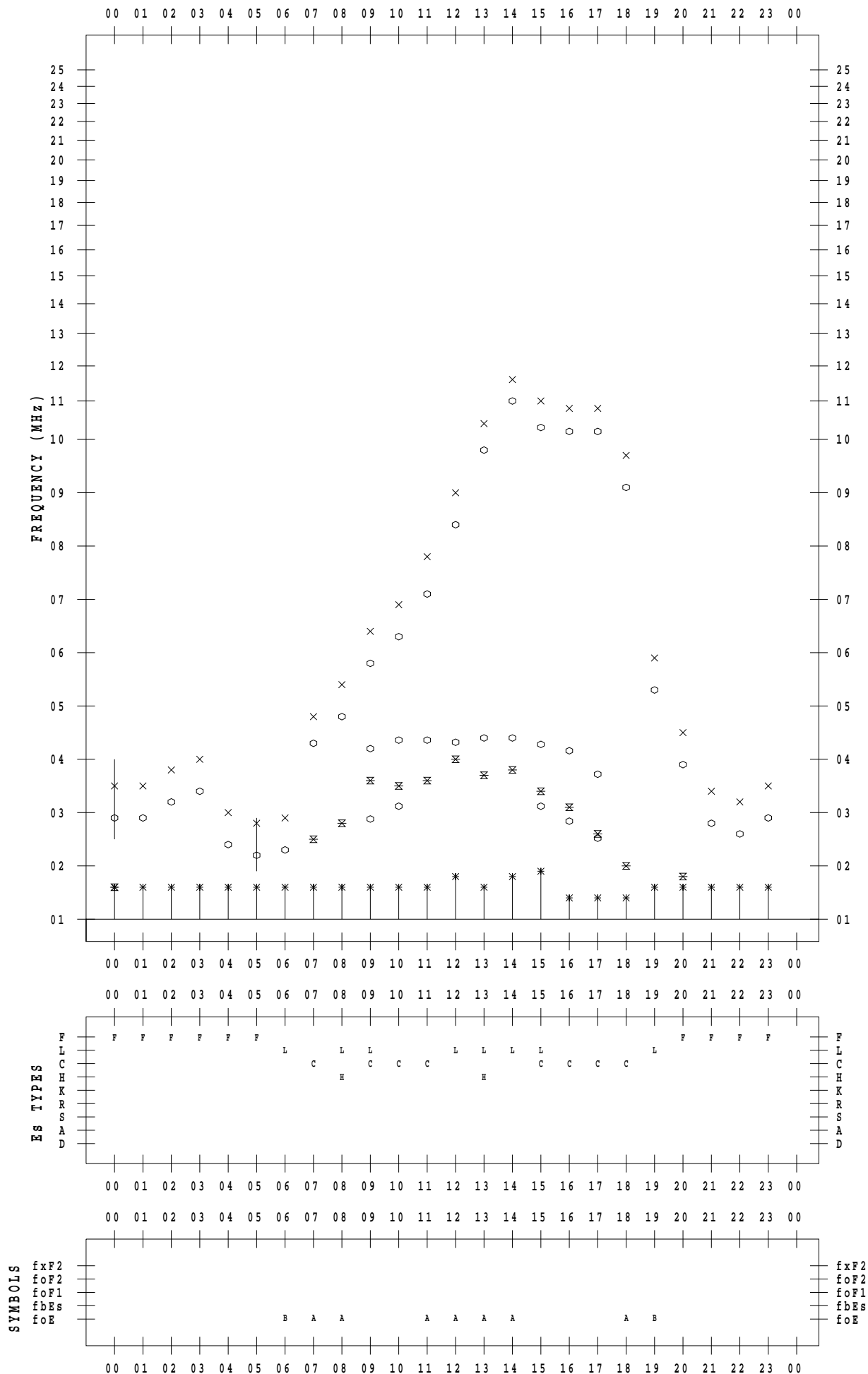
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 26

135 ° E MEAN TIME



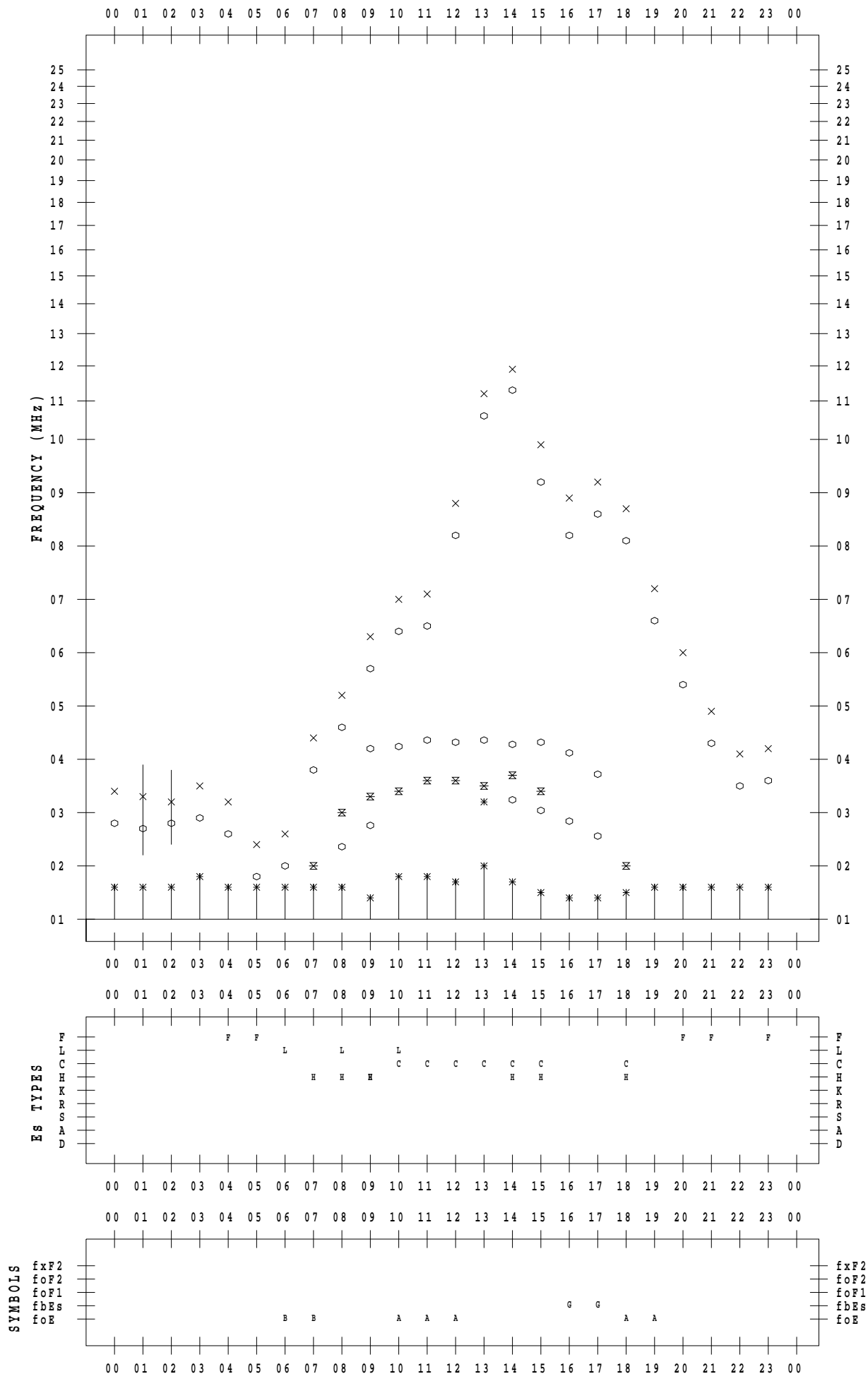
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 27

135 ° E MEAN TIME



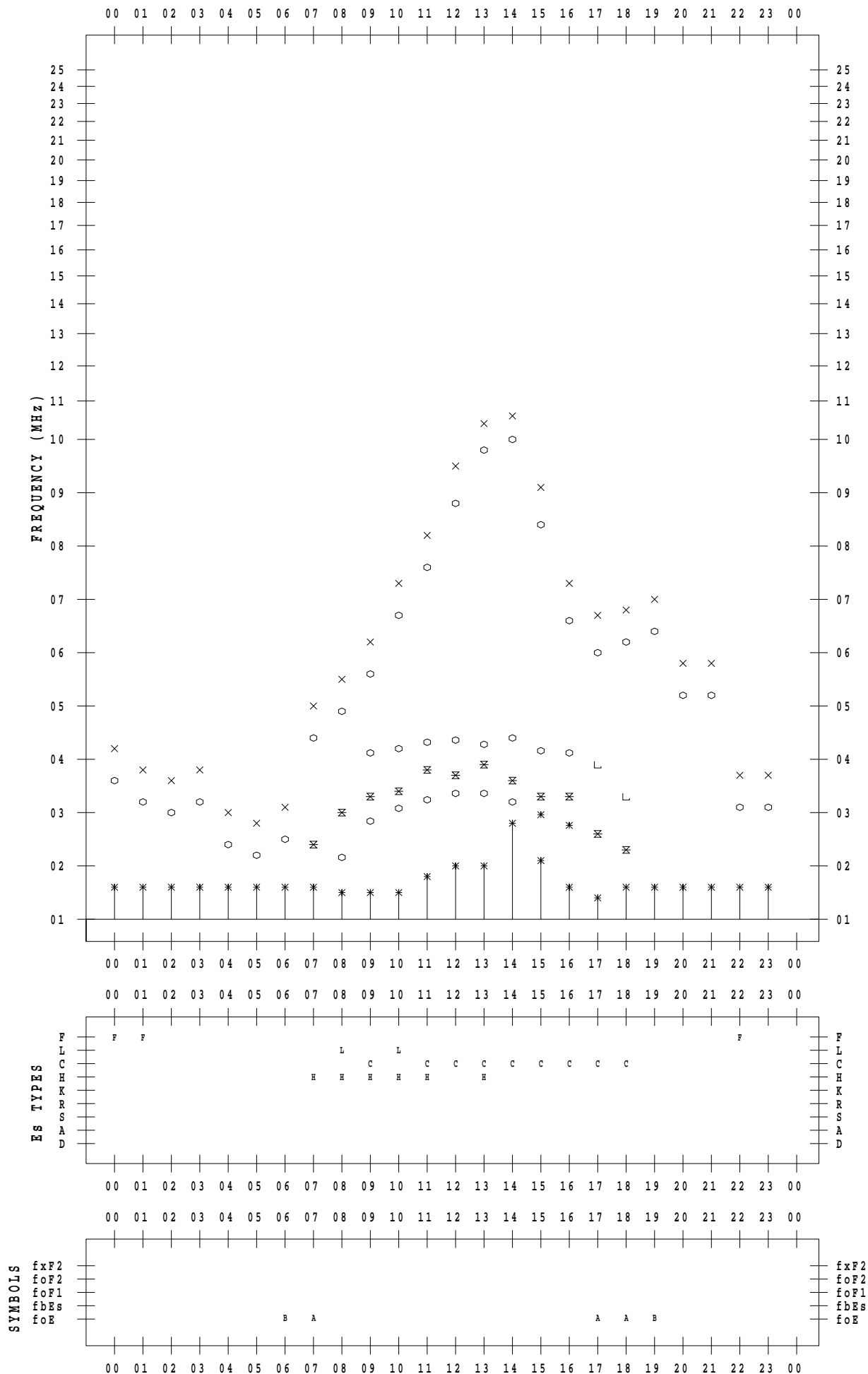
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 28

135 ° E MEAN TIME



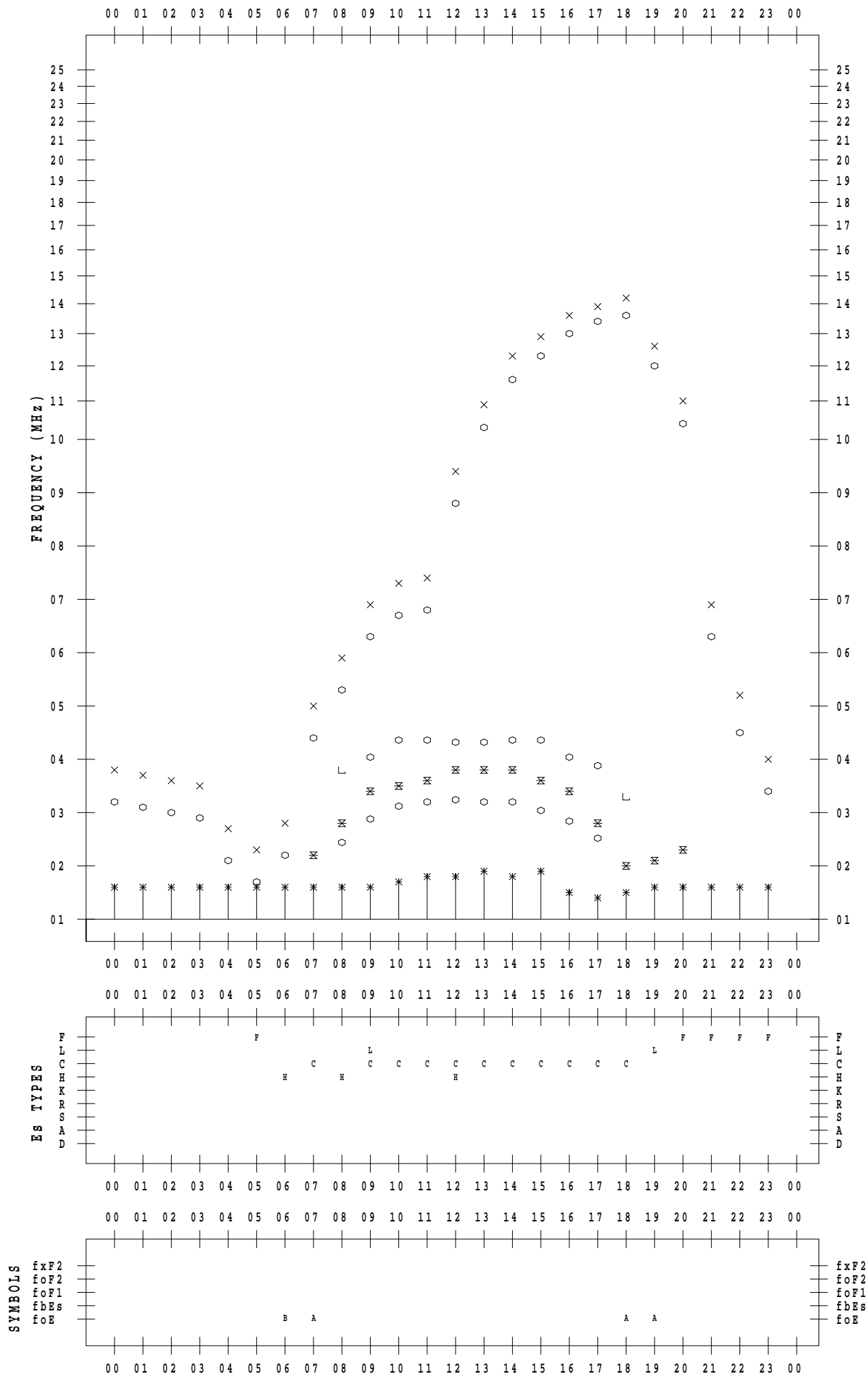
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 29

135 ° E MEAN TIME



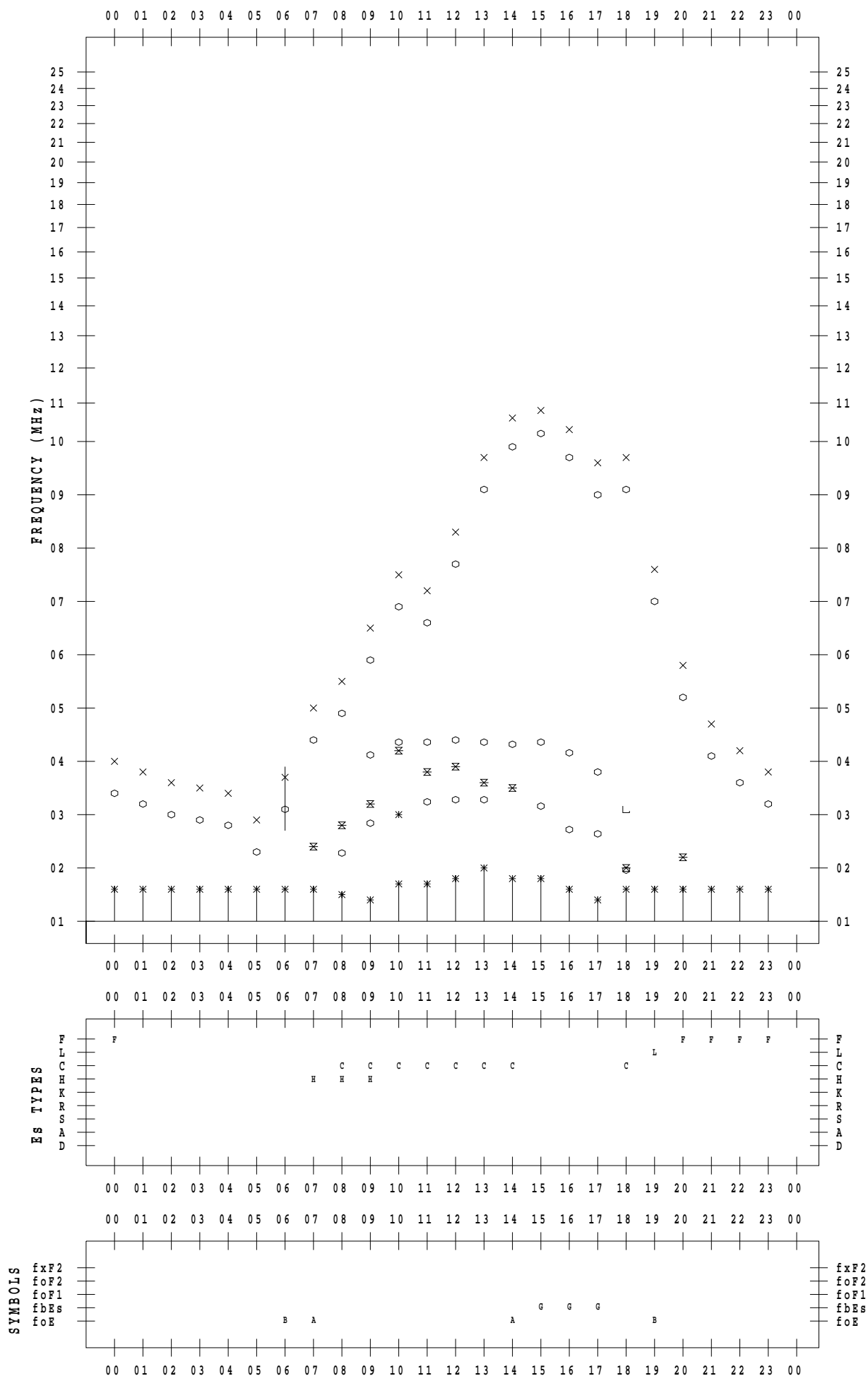
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 3 / 31

135 ° E MEAN TIME

