F-831

IONOSPHERIC DATA IN JAPAN

FOR MARCH 2018
VOL. 70 NO. 3

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 Web ・・・・・・・・・・・・http://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

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

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replaced 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 atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km as-sociated 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. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	41	40	36	37	35	32	34	51	79	68	60	61	62	62	56	51	51	79	A	51	40	32	36	36
2	34	34	33	32	34	34	43	53	65	89	65	62	64	57	55	56	57	48	50	50	46	38	40	42
3	43	42	43	42	40	36	37	53	66	65	60	62	62	58	55	54	53	44	40	40	38	40	40	40
4	40	40	38	40	40	34	36	54	60	75	63	54	62	65	55	56	65	52	45	46	38	41	42	43
5	42	40	43	43	42	42	44	49	60	63	68	60	62	60	57	54	55	51	47	47	40	40	40	40
6	36	36	36	34	34	32	36	51	53	63	70	61	58	59	61	56	54	49	40	42	37	37	34	34
7	34	34	34	32	34	32	41	53	49	58	63	64	62	55	57	56	54	53	42	40	42	40	40	36
8	36	34	35	36	40	36	42	50	58	58	54	62	65	62	56	60	57	53	46	40	40	40	40	41
9	42	40	40	40	40	37	44	46	49	50	65	60	66	63	58	55	55	50	48	43	47	48	48	50
10	47	47	48	48	47	43	46	54	52	58	60	61	67	66	76	64	60	60	58	37	40	38	40	41
11		42	40	38	38	38	51	54	53	65	67	68	75	67	60	60	60	54	48	45	46	42	41	38
12	40	40	41	40	36	37	49	53	58	64	65	72	76	71	62	60	56	49	46	44	38	42	43	43
13	43	65	47	43	45	41	47	52	54	61	73	69	66	69	65	56	51	50	47	42	46	42	43	34
14	42	44	43	44	37	37	47	53	55	70		79	61	57	59	59	54	54	51	42	41	42	42	39
15	41	40	40	38	36	32	34	44	49	50	64	71	70	63	66		60	55	56	50	52	54	52	52
16	52	52	50	52	45	52	52	51	62	56	60	74	72	76	62	64	62	57	51	43	47	46	47	50
17	50	54	51	32	35	32	32	37	50	47	61	60	65	68	56	60	54	52	51	54	54	54	54	52
18	51	51	48	47	41	38	36	44	47	56	59	69	67	67	61	64	55	52	51	44	44	42	40	40
19	40	42	38	36	37	32	41	46	54	49	81	57	59	70	71	64	63	62	54	52	55	52	51	53
20	52	52	50	49	32	30	41	50	50	66	70	74	67	57	54	66	58	54	48	43	42	42	42	42
21	40	32	32	34	32	31	41	42	53	56	63	66	67	67	57	55	52	55	62	48	43	44	40	36
22	36	54	43	42	45	45	43	39	50	61	60	64	62	66	64	56	60	55	53	50	55	52	52	52
23	52	50	51	51	52	34	47	48	55	60	61	65	66	72	72	65	62	58	60	52	51	63	52	51
24	52	52	52	51	52	53	47	51	55	60	60	67	67	45	62	58	57	55	60	52	53	54	52	52
25	50	48	49	50	45	42	44	41	48	54	50	72	67	61	59	62	58	58	52	49	52	47	47	42
26	41	40	40	40	40	36	38	44	48	54	56	49	51	56	58	55	50	51	48	44	42	43	40	37
27	36	37	38	34	32	31	37	44	51	50	63	54	57	61	63	59	58	51	51	52	52	51	42	A
28	43	43	43	42	43	44	48	44	48	50	54	51	56	64	64	66	57	51	50	44	46	42	36	38
29	38	40	37	34	32	34	40	42	48	52	58	65	58	56	56	55	54	51	52	50	53	40	38	38
30	40	34	43	43	40	34	44	46	47	54	58	66	59	61	61	57	54	54	54	54	50	47	46	44
31	47	44	41	40	31	30	43	46	51	54	61	65	75	71	67	60	55	54	47	51	52	50	43	44
	00	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	31	30	31	31	31	31	30	31	31	30	31	31	31	31	30
MED	42	42	41	40	40	36	43	49	53	58	61	64	65	63	60	58	56	53	50	46	46	42	42	42
U Q	47	50	48	44	43	41	47	53	58	64	65	69	67	67	64	62	60	55	53	51	52	50	47	50
L Q	40	40	38	36	34	32	37	44	49	54	60	60	61	58	56	56	54	51	47	43	40	40	40	38

HOURLY VALUES OF fEs AT Wakkanai

MAR. 2018

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

DAY \ HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	35	25	26	G	24	G	G	29	35	44	34	30	52	35	28	35	49	55	91	34	11	G	G	G
2	G	G	G	G	G	G	120	31	44	40	90	39	41	30	35	33	32	31	32	33	34	21	G	G
3	G	G	G	G	G	G	92	28	49	91	36	39	31	36	35	34	23	29	G	30	G	G	G	G
4	G	G	G	G	G	G	G	71	33	39	34	106	46	35	28	34	30	26	28	32	28	24	G	G
5	G	G	G	G	G	G	11	114	34	34	28	51	35	82	36	32	26	27	35	28	G	G	G	G
6	G	G	G	G	G	G	11	28	43	37	38	33	45	33	29	34	36	153	32	25	25	27	24	G
7	G	G	G	G	G	G	G	29	38	39	34	29	34	45	35	27	32	G	11	G	G	G	G	G
8	G	G	G	G	G	G	11	22	34	36	53	45	30	40	33	34	32	G	26	26	G	G	G	G
9	G	G	G	G	G	G	20	28	36	39	52	40	92	34	28	35	32	48	11	G	G	G	G	G
10	G	G	G	G	G	G	11	48	34	39	41	38	31	36	34	34	29	G	19	G	G	G	G	G
11		G	G	G	G	G	34	29	35	42	42	42	39	113	36	33	29	28	28	25	G	G	G	G
12	G	G	G	G	G	G	114	29	34	39	39	34	36	36	28	34	31	38	G	G	G	G	G	G
13	G	G	G	G	G	11	44	29	34	39	43	55	46	53	34	34	29	27	27	G	G	G	G	G
14	G	G	G	G	G	G	43	32	38	40		40	39	34	34	35	31	24	24	G	G	G	G	G
15	G	G	G	G	G	G	25	32	38	41	39	42	34	35	36		23	G	11	G	G	G	G	G
16	24	G	G	G	G	G	11	70	36	41	40	59	30	33	34	34	32	G	G	G	G	28	G	G
17	G	G	G	G	G	G	26	32	33	35	39	39	37	34	32	32	G	G	G	G	G	G	G	G
18	G	G	G	G	G	G	28	34	29	33	40	36	48	41	28	34	N	G	G	G	G	G	28	G
19	G	24	G	G	27	G	G	29	32	43	42	43	39	41	33	34	30	G	G	G	G	G	G	G
20	G	G	G	G	G	G	26	32	32	41	46	48	44	39	38	34	40	36	34	34	28	G	G	G
21	G	G	G	G	G	120	22	43	30	40	45	33	35	40	29	38	31	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	29	31	40	29	45	39	36	38	34	34	G	G	G	G	G	G	G
23	G	G	G	G	11	G	27	30	33	38	42	42	40	34	34	35	32	G	G	G	G	G	G	G
24	G	G	G	G	G	G	29	34	33	41	32	59	143	34	35	34	24	G	G	G	G	G	G	G
25	G	G	G	G	G	G	44	33	34	34	44	49	42	30	35	34	30	28	24	G	G	27	G	G
26	G	G	G	G	G	G	28	25	57	41	43	41	40	40	28	34	29	G	G	26	G	G	36	G
27	G	G	G	G	G	G	11	G	144	34	38	29	33	35	35	31	32	35	G	G	G	31	G	49
28	24	G	G	25	G	G	41	34	45	33	146	46	40	44	33	26	32	G	G	G	G	G	G	G
29	G	G	G	G	G	G	35	31	33	40	40	40	48	44	46	29	32	G	G	G	G	G	G	27
30	G	25	28	G	G	G	45	35	35	42	41	30	41	G	39	29	24	G	G	G	G	G	G	G
31	G	G	G	G	G	G	32	38	44	42	40	48	45	43	40	36	46	G	32	G	G	24	26	29
	00	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	31	30	31	31	31	31	30	30	31	31	31	31	31	31	31
MED	G	G	G	G	G	G	26	31	34	40	40	41	40	36	34	34	31	G	11	G	G	G	G	G
U Q	G	G	G	G	G	G	41	34	38	41	43	48	45	41	36	34	32	29	28	26	G	G	G	G
L Q	G	G	G	G	G	G	11	29	33	37	38	36	35	34	29	33	29	G	G	G	G	G	G	G

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Wakkanai

MAR. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	15	14	14	14	14	14	14	14	14	15	14	15	14	14	14	14	14	14	15	16
2	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
3	14	14	14	14	15	14	15	14	14	14	14	14	14	16	14	14	14	14	14	14	15	15	14	14
4	14	14	14	14	14	15	14	14	14	14	14	17	14	14	14	14	14	16	14	14	14	14	14	14
5	14	16	14	14	14	14	14	14	14	14	16	14	16	15	15	14	14	14	14	14	15	15	15	15
6	14	15	14	15	14	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14	14	14	14
7	15	15	15	15	14	14	14	14	14	14	14	15	14	14	14	15	14	15	14	14	14	14	14	14
8	14	14	14	14	14	14	14	14	14	14	14	15	14	15	14	14	14	18	15	14	14	14	14	14
9	14	14	14	14	14	14	15	14	14	14	14	15	15	14	15	14	14	18	14	14	14	14	14	14
10	14	14	14	14	14	14	14	15	14	14	14	14	14	14	15	14	14	20	14	14	14	14	14	14
11		14	14	15	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14
12	14	14	14	14	14	14	15	14	14	14	14	14	14	15	14	14	14	18	14	14	14	14	14	14
13	14	14	14	14	14	14	16	14	14	14	15	15	15	14	15	14	14	18	15	14	14	14	14	14
14	17	15	14	14	14	14	15	14	14	14		14	15	15	14	14	14	18	14	14	15	15	15	15
15	14	14	14	14	14	14	15	14	14	14	14	15	16	15	14		14	17	14	14	14	14	14	14
16	15	14	14	14	14	14	16	15	14	14	14	15	15	15	15	14	14	17	14	14	14	14	14	14
17	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14	18	14	14	14	14	14	14
18	14	14	14	14	14	14	14	17	14	14	15	18	15	15	20	14	14	18	14	14	14	14	14	14
19	14	14	14	14	14	14	17	14	14	14	14	15	18	14	14	14	14	17	14	14	14	15	14	14
20	14	14	14	14	14	14	18	16	14	14	14	14	15	15	14	14	14	15	14	14	14	14	14	14
21	14	15	14	14	14	14	16	14	14	14	14	14	15	15	14	14	14	20	14	14	14	14	14	15
22	14	14	14	14	14	15	18	14	15	14	16	14	14	14	14	14	14	14	14	14	14	14	14	14
23	15	14	14	14	14	14	14	14	14	14	14	15	15	15	14	14	14	20	14	14	14	14	15	14
24	14	14	14	14	14	14	17	14	15	14	14	14	15	15	15	14	14	14	14	14	14	14	14	14
25	14	14	15	14	14	14	17	14	14	15	17	16	15	15	14	14	14	15	14	14	15	15	14	18
26	14	15	14	14	14	14	18	14	15	14	14	15	16	15	15	14	14	20	17	15	14	14	14	14
27	14	14	15	14	14	15	17	14	14	14	15	15	15	14	14	18	14	14	14	14	14	14	14	14
28	14	14	15	14	14	14	14	14	15	14	15	20	16	16	15	14	14	18	14	14	14	14	14	14
29	14	14	14	15	18	14	15	14	15	14	15	15	16	14	14	14	14	20	15	14	14	14	14	16
30	15	14	14	14	15	15	16	14	14	14	15	20	17	34	14	14	14	21	14	14	14	14	14	14
31	15	14	14	14	14	14	15	14	14	14	15	15	15	16	15	14	14	15	14	14	14	14	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	30	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	15	14	14	14	14	15	15	15	14	14	14	17	14	14	14	14	14	14
U Q	14	14	14	14	14	14	16	14	14	14	15	15	15	15	15	14	14	18	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

MAR. 2018

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	31	34	34	34	34	31	39	66	59	64	64	64	64	62	57	56	51	51	46	49	45	A	A	28
2	32	A	58	A	28	A	34	59	66	66	64	69	67	64	57	51	56	59	47	A	42	43	A	A
3	31	A	A	37	36	31	39	58	69	77	74	65	56	62	57	54	56	53	37	A	A	36	A	A
4	30	36	34	32	26	32	37	59	59	67	A	74	A	A	64	57	55	55	47	A	A	41	30	32
5	A	32	32	32	N	30	41	59						68		A	54	56	44	45	46	A	34	A
6	32	30	27	28	28	27	32	49	51	64	A	69	72	64	57	59	59	55	45	38	A	34	A	A
7	A	31	31	31	31	34	38	N	51	51	A	70	63	64	58	51	56	A	50	50	A	39	36	32
8	32	34	34	34	34	30	38	53	59	60	56	51	58	71	62	79	101	111	A	A	A	A	A	35
9	37	36	34	32	34	31	36	48	58	64	56	67	61	63										
10																		58	51	44	38	39	34	36
11	38	36	36	32	34	34	42	54																
12										58	62	69	75	80	68	55	56	56	51	42	26	A	A	A
13	38	39	39	32	38	34	43	52	63	61	61	70	75	81	65	56	57	54	57	42	A	36	36	38
14	38	38	39	39	39	30	35	48	54	66	68	77	74	65	60	55	55	53	56	54	32	38	37	37
15	36	32	31	31	30	30	38	58	66	69	59	65	61	78	68	63	59	58	58	52	39	39	42	41
16	39	36	38	39	38	32	39	50	59	62	57	56	77	91	82	130	63	67	64	44	30	36	32	36
17	36	38	37	40	36	37	43	54	58	72	64	76	61	71	69	60	54	54	51	A	44	46	44	A
18	39	38	36	30	26	26	36	52	65	66	62	59	76	82	82	73	57	65	58	52	36	A	A	A
19	36	32	27	27	32	26		53	58	53	85	95	84	64	77	77	69	67	54	48	43	A	44	42
20	A	34	41	39	30	N	39	52	64	75	88	81	80	73	65	58	65	65	54	N	A	32	32	32
21	34	32	32	32	30	26	41	51	54	55	59	61	75	88	74	58	58	65	51	A	A	A	A	30
22	37	34	34	34	37	31	44	54	59	53	61	64	68	82	81	65	52	55	A	64	37	A	36	34
23	37	42	36	36	38	30	42	54	54	54	78	68	72	81	88	84	78	76	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
25												C	C	C	C									
26											69	86	70	68	79		62	55	65	55	44	39	44	A
27	36	39	39	38	31	30	39	47	54	54	54	64	65	62	72	73	60	58	55	C	C	C	32	37
28	37	37	37	32	C	C	C	48	52	C	C	68	62	73	85	68	62	67	64	54	46	44	37	36
29	36	34	32	34	27	26		49	51	62	57	56	57	60	62	60	58	58	71	71	51	32	30	30
30	30	32	32	34	28	30	39	48	51	53	56	65	82	76	72	68	63	67	67	66	52	41	38	31
31	36	35	28	32		N	41	49	54	57	61	77	90	81	82	67	58	57	54	51	A	37	37	37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	25	25	23	22	23	25	24	24	22	26	25	26	25	24	26	26	24	18	16	17	18	18
MED	36	34	34	32	32	30	39	52	58	62	62	68	70	71	68	60	58	58	54	50	42	39	36	36
U Q	37	37	37	36	36	32	41	56	61	66	68	74	75	81	80	70	62	65	58	54	45	41	38	37
L Q	32	32	32	32	28	30	37	49	54	54	57	64	61	64	61	56	56	55	48	44	36	36	32	32

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fEs AT Kokubunji

MAR. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	27	42	32	29	43	42	43	31	43	43	41	G	33	24	89	55	G
2	G	40	29	32	26	28	G	31	31	31	37	43	34	32	43	42	36	34	35	59	57	43	48	39
3	32	42	31	G	G	G	G	30	45	36	40	36	35	36	151	37	31	22	42	73	49	36	41	55
4	27	G	28	G	G	G	G	29	36	36	92	48	61	68	49	42	46	47	34	40	53	29	40	27
5	55	G	G	G	G	G	G	29						39		29	28	28	41	34	58	58	32	45
6	G	G	29	G	G	G	34	32	36	43	61	57	33	33	44	30	38	41	38	36	59	40	59	34
7	38	G	G	G	G	G	11	31	37	43	70	45	44	38	31	34	29	96	56	48	34	G	G	G
8	24	G	G	G	G	G	11	28	31	34	48	37	33	38	42	71	57	113	81	112	80	44	43	53
9	G	G	G	G	G	G	G	25	31	28	39	38	G	34										
10																		20	G	26	G	G	G	G
11	G	G	G	G	G	G	G	21																
12										33	42	37	37	33	31	29	32	G	11	G	26	47	40	40
13	G	G	G	G	G	G	23	29	35	40	42	42	31	42	33	33	32	G	27	55	45	29	G	G
14	G	G	G	G	11	G	11	29	37	42	46	51	51	40	52	37	39	30	G	45	34	41	28	29
15	G	G	G	G	G	G	23	49	32	35	43	34	45	52	43	33	31	G	G	G	G	G	G	G
16	G	G	G	27	G	G	G	29	33	35	43	42	33	40	43	79	34	G	25	G	G	G	G	G
17	G	G	G	G	G	G	G	23	29	42	37	35	36	41	42	34	26	28	28	34	36	G	29	35
18	34	24	G	G	G	G	26	31	31	42	48	47	38	37	36	40	34	26	G	29	57	32	49	33
19	29	26	27	28	20	G		31	32	46	49	51	40	52	37	44	47	33	G	G	27	46	39	32
20	41	G	27	G	G	25	27	34	34	37	49	42	34	43	46	33	33	29	34	24	35	G	G	G
21	G	25	G	25	G	24	G	29	33	42	42	37	35	38	29	42	36	65	48	60	35	58	45	G
22	G	G	G	G	G	G	26	35	44	55	50	46	36	36	36	42	35	34	80	21	31	27	G	G
23	G	G	G	G	33	G	11	35	42	48	56	52	44	42	32	37	49	40	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
25												C	C	C	C									
26											43	53	31	59	71		42	42	41	33	29	G	34	29
27	28	29	G	G	G	G	40	45	33	36	46	59	33	34	26	28	35	31	G	C	C	C	31	G
28	27	G	27	27	C	C	C	37	42	C	C	38	40	G	39	40	33	31	G	G	26	33	G	G
29	G	G	G	G	G	G		33	34	31	29	G	40	G	38	29	26	29	G	G	11	G	G	G
30	G	G	G	G	G	G	38	34	39	35	43	45	39	31	31	G	26	G	G	G	29	30	G	G
31	G	G	G	G		G	31	34	34	33	32	53	38	34	38	38	33	23	G	25	33	G	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	26	26	26	26	24	25	23	26	24	24	25	26	26	27	25	25	26	27	26	25	25	25	26	26
MED	G	G	G	G	G	G	11	31	34	36	43	43	36	38	38	37	34	30	26	33	34	30	30	12
U Q	28	G	27	G	G	G	26	34	38	42	49	51	40	42	43	42	39	41	41	46	51	43	41	34
L Q	G	G	G	G	G	G	G	29	32	33	39	37	33	34	31	31	31	22	G	G	26	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

MAR. 2018

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	14	14	13	13	13	14	13	17	13	14	14	20	20	17	17	14	13	13	15	13	13	13	13	13
2	14	13	13	13	14	14	13	13	13	13	17	15	14	14	14	14	17	13	13	13	13	13	13	13
3	13	13	13	14	13	14	13	13	13	13	14	14	14	14	13	13	13	14	13	13	13	13	13	13
4	13	13	13	14	13	14	13	13	13	14	14	15	18	17	14	13	14	13	13	14	14	14	13	14
5	13	14	17	14	18	15	13	13						20		22	18	14	13	13	14	13	14	13
6	15	13	13	15	18	15	14	14	14	15	17	18	22	20	20	20	23	14	13	14	13	14	13	14
7	14	14	15	14	15	15	15	14	13	20	22	21	23	20	21	13	30	18	20	15	17	14	15	14
8	17	14	14	15	14	14	13	14	14	15	18	17	20	21	24	15	15	17	13	18	13	13	18	15
9	14	15	17	13	14	14	13	18	13	14	17	43	39	23										
10																		21	14	17	15	14	17	17
11	15	15	14	18	17	18	17	21																
12										18	20	20	22	22	20	21	15	21	14	14	17	14	13	15
13	15	17	15	18	14	14	17	13	14	15	15	22	43	21	18	18	14	21	13	13	14	14	14	14
14	14	13	15	14	14	17	17	21	14	14	21	21	22	22	20	17	14	14	18	14	14	14	14	14
15	14	14	15	14	14	17	15	17	14	18	18	21	23	17	14	14	17	21	14	14	14	17	15	14
16	13	14	18	14	17	15	17	14	13	17	21	21	20	21	20	14	13	20	15	15	18	14	22	18
17	15	14	15	14	21	15	17	22	14	14	21	20	20	15	17	14	17	14	13	13	14	17	14	13
18	14	17	17	17	15	20	15	20	13	17	20	29	20	22	21	18	14	21	17	14	14	13	13	14
19	14	14	14	13	13	18		17	14	17	17	22	22	21	17	17	13	14	15	14	14	13	13	14
20	14	14	14	13	18	17	13	14	13	17	21	21	23	21	18	15	15	14	13	17	14	17	13	15
21	14	13	15	14	14	14	17	14	15	17	17	21	21	21	18	14	15	17	14	13	14	14	13	14
22	14	14	14	13	14	15	15	14	14	14	21	18	22	22	21	17	14	13	14	13	14	15	14	13
23	14	13	14	14	14	17	18	13	14	17	18	21	21	20	20	15	14	14	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
25												C	C	C	C									
26											22	23	24	20	21		14	17	14	14	14	14	14	15
27	15	14	14	20	14	14	20	13	14	20	21	20	18	18	42	14	14	13	20	C	C	C	13	13
28	14	13	13	14	C	C	C	14	17	C	C	22	21	42	17	17	15	13	17	17	18	13	14	14
29	14	17	17	14	15	14		14	15	18	38	22	42	40	17	15	20	22	21	18	20	14	17	14
30	15	14	17	14	17	14	20	13	14	18	21	25	22	23	40	30	18	24	14	14	15	14	14	15
31	17	14	18	14		17	14	15	14	20	18	21	23	22	21	21	13	13	14	17	14	22	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	26	26	26	26	24	25	23	26	24	24	25	26	26	27	25	25	26	27	26	25	25	25	26	26
MED	14	14	14	14	14	15	15	14	14	17	18	21	22	21	20	15	14	14	14	14	14	14	14	14
U Q	15	14	17	14	17	17	17	17	14	18	21	22	23	22	21	18	17	21	15	16	15	14	15	15
L Q	14	13	14	14	14	14	13	13	13	14	17	20	20	18	17	14	14	13	13	13	14	13	13	13

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

MAR. 2018

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	34	31	31	31	31	169	34	50	51	53	64	62	67	65	72	58	58	54	50	A	A	41	A	A
2	A	A	A	A	30	28	28	54	55	55	64	A	67	68	66	54	57	54	55	A	A	34	A	A
3	A	A	B	31	31	29	29	48	44	65	72	72	71	80	77	63	41	56	51	38	36	A	A	A
4	A	31	30	A	31	28	29	N	53	60	72	74	71	68	68	65	63	A	A	A	A	A	A	A
5	B	A	A	N	32	B	B	N	51	55	56	56	70	80	72	72	72	45	51	43	A	A	A	34
6	A	A	34	31	34	31	B	43	50	54	60	70	80	67	67	70	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	A	65	66	B	C	64	B	A	B	54	50	44	40	40	34
8	34	31	30	30	32	31	N	48	52	54	56	56	61	71	69	68	71	67	61	47	32	34	34	B
9	34	32	34	34	34	49	N	42	51	61	77	64	56	52	189	55	56	55	54	50	A	A	36	A
10	36	34	34	34	36	30	26	50	53	65	66	54	61	70	81	86	76	60	51	50	45	23	40	32
11	35	36	34	34	29	34	34	51	54	54	56	67	90	90	80	72	60	29	67	71	50	34	A	A
12	31	49	49	32	41	N	B	45	50	62	64	65	49	88	74	60	68	58	60	52	34	A	A	N
13	34	32	32	49	31	A	26	51	60	64	62	62	76	80	71	68	59	58	63	54	A	A	34	34
14	36	34	34	34	38	N	B	47	54	54	65	62	65	67	62	56	56	55	54	54	43	A	36	34
15	34	32	34	34	31	29	30	54	72	77	56	67	A	84	83	A	A	A	56	52	40		32	30
16		28	30	32	30		30	47	54	66	66	57	78	108	104	80	72	76	77	54	32	37	38	34
17	A	32	31	33	31	31	29	50	67	77	65	63	67	72	80	67	54	56	57	52	47	42	35	43
18	41	40	32	34	30	B	28	44	60	76	74	64	83	110	111	96	81	72	76	72	47	30	26	31
19	32	30	31	30	34	A	A	46	50	54	63	94	90	A	81	86	76	66	74	51	37	38		37
20	34	40	35	34	28	A	29	46	49	88	82	66	80	90	86	71	66	67	64	43	34	A	30	28
21	N	31	30	49	N	B	N	54	55	50	57	61	74	91	86	64	58	65	77	N	43	A	A	A
22	31	49	49	28	30	26	30	52	58	65	48	48	69	86	82	71	59	56	67	74	50	29	29	31
23	30	32	31	30	28	B	26	54	54	55	61	56	75	82	91	104	105	85	86	67	54	42	36	40
24	37	37	34	36	37	38	38	48	51	65	60	72	76	75	185	72	67	67	56	52	50	A	34	32
25	34	32	31	32	32	26	32	54	60	55	56	71	75	85	87	75	66	67	77	55	28	52	34	A
26	37	37	32	36	34	34	29	53	54	55	67	85	90	88	90	80	68	60	70	49	43	37	38	38
27	44	42	38	40	30	28	34	42	48	54	54	60	68	72	76	66	65	71	54	53	53	40	36	36
28	36	32	34	34	32	30	29	50	54	54	54	58	70	86	100	90	76	77	78	78	66	47	39	36
29	34	26	28	28	26	N	32	48	54	60	63	56	62	72	78	76	70	65	80	84	54		49	N
30	B	26	28	28	26	B	31	42	51	54	58	65	78	85	88	90	74	70	72	73	52	A	32	34
31	32	32	32	34	28	N	30	48	52	55	63	76	90	90	97	87	70	68	67	50	40	32	32	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	21	26	27	27	29	17	22	28	30	30	31	30	29	29	31	29	28	27	29	26	24	17	21	19
MED	34	32	32	34	31	30	30	48	54	55	63	64	71	80	81	71	66	65	63	52	44	37	35	34
U Q	36	37	34	34	34	34	32	51	55	65	66	70	79	88	90	83	72	68	75	67	50	41	38	36
L Q	33	31	31	31	30	28	29	46	51	54	56	58	67	70	72	64	58	56	54	50	36	33	32	32

HOURLY VALUES OF fEs AT Yamagawa

MAR. 2018

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	29	G	G	26	G	G	G	49	30	38	48	44	53	51	50	45	47	39	36	38	52	39	46	34
2	48	40	41	39	G	G	G	25	40	38	50	63	41	44	52	54	58	45	32	34	46	54	72	34
3	39	26	B	G	G	G	G	24	46	50	78	50	44	47	51	39	40	40	G	27	33	67	70	59
4	54	G	28	45	26	G	G	29	38	44	46	55	43	44	37	40	50	77	71	66	59	40	46	58
5	B	37	54	G	G	B	B	28	40	50	42	44	48	38	32	32	46	45	34	38	35	56	49	29
6	45	48	39	30	30	27	B	22	50	41	44	38	37	40	39	53	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	50	36	52	B	C	46	B	137	B	30	30	G	G	G	G
8	G	26	G	G	G	G	G	45	31	49	36	45	35	44	37	39	29	37	38	22	25	G	29	B
9	G	28	G	G	G	G	G	41	29	33	40	42	44	44	39	41	55	45	43	57	53	48	40	41
10	G	G	G	G	G	G	G	26	32	150	36	47	41	46	54	52	40	32	35	25	32	29	27	G
11	G	G	G	G	G	G	G	11	29	40	43	45	39	37	30	29	33	46	11	11	23	27	39	25
12	G	G	G	G	11	28	B	34	35	36	41	41	45	47	40	38	38	33	30	23	23	25	38	G
13	26	G	G	G	G	30	G	27	33	43	44	55	46	46	55	40	55	33	25	28	26	39	G	41
14	31	G	G	G	G	27	B	43	34	37	46	46	49	45	31	36	35	24	G	G	40	39	38	30
15	30	G	25	G	G	G	G	29	40	44	47	48	63	61	59	78	92	60	26	29	37	G	G	G
16		G	G	G	G		G	25	30	35	38	41	45	44	41	39	38	51	33	25	G	29	24	G
17	38	G	G	G	G	G	G	27	32	38	40	42	45	41	37	35	46	36	G	G	G	G	G	29
18	28	G	G	G	G	B	G	30	31	47	44	41	70	46	44	34	28	29	32	20	43	G	G	30
19	24	30	29	26	36	32	34	32	36	35	46	57	62	78	46	90	42	32	28	24	G	G	G	G
20	34	32	G	G	G	45	25	32	34	36	38	41	40	38	46	41	36	33	23	23	24	28	G	G
21	G	G	G	G	G	B	G	28	32	41	49	49	50	46	43	145	43	46	38	37	29	29	27	40
22	28	G	G	25	G	G	G	30	31	43	44	47	45	38	33	45	34	41	31	24	34	24	G	G
23	G	G	G	G	G	B	G	40	38	47	56	49	52	63	59	45	46	34	25	G	23	24	G	30
24	26	G	G	G	G	G	G	27	87	39	43	38	41	42	41	36	28	34	33	54	G	39	G	G
25	G	G	28	G	G	G	G	30	30	45	53	35	41	33	35	40	29	31	28	38	90	48	29	46
26	41	28	31	G	G	G	G	30	33	43	43	48	38	40	35	44	45	45	36	27	G	23	G	30
27	G	G	G	38	32	G	G	32	35	34	35	35	46	40	30	30	30	36	26	G	G	G	27	30
28	40	G	29	26	G	33	23	32	33	43	36	45	48	39	40	45	39	42	28	G	30	32	26	G
29	G	G	G	G	G	G	G	32	32	36	37	50	46	40	45	44	43	32	41	33	11	G	G	G
30	B	G	G	G	11	B	G	44	32	35	45	48	42	51	40	40	40	32	28	G	25	39	G	G
31	G	G	G	G	G	G	G	32	39	42	47	45	45	50	55	40	38	32	G	24	G	G	34	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	29	30	30	24	26	30	30	31	31	31	30	30	31	30	30	29	30	30	30	30	30	29
MED	26	G	G	G	G	G	G	30	33	41	44	45	45	44	41	40	40	36	30	25	26	28	26	29
U Q	38	26	28	25	G	27	G	32	38	45	47	49	48	47	50	45	46	45	35	34	37	39	38	34
L Q	G	G	G	G	G	G	G	27	31	36	38	41	41	40	37	38	35	32	25	20	G	G	G	G

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Yamagawa

MAR. 2018

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	14	15	15	17	15	15	15	15	14	15	15	16	20	18	20	15	14	14	14	14	14	14	15	15
2	15	15	14	14	15	15	15	17	15	14	18	21	18	21	17	17	15	15	14	14	14	15	16	14
3	14	15	B	16	14	15	14	16	15	14	14	18	18	17	17	17	15	15	18	14	15	14	14	14
4	14	15	14	14	15	14	20	14	14	15	16	18	18	20	18	17	15	14	15	17	14	14	15	15
5	B	20	17	23	21	B	B	17	14	15	29	22	17	18	16	18	16	15	14	14	14	14	15	14
6	14	15	14	14	14	15	B	18	14	15	16	17	16	18	18	17	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	26	23	18	B	C	18	B	14	B	14	15	15	15	14	15
8	15	14	17	14	14	15	15	18	14	15	17	17	20	21	20	18	20	14	14	15	15	18	14	B
9	15	14	21	15	15	14	15	15	14	15	17	17	18	18	21	18	16	15	14	15	15	15	14	14
10	17	14	14	15	15	14	15	17	14	15	15	17	20	22	18	15	15	15	15	17	14	14	14	15
11	15	14	15	16	15	15	14	17	14	14	15	20	20	20	22	17	15	14	18	14	14	15	14	15
12	23	23	15	15	14	15	B	18	14	14	15	15	17	20	18	18	16	14	14	15	15	15	14	15
13	14	15	16	18	15	14	15	15	14	14	18	21	21	21	22	21	17	14	17	14	15	15	17	15
14	14	14	15	16	14	14	B	15	14	14	17	21	21	21	21	18	17	17	17	15	15	14	14	14
15	15	15	15	15	14	14	20	14	14	15	18	17	27	20	17	16	17	14	18	14	14	26	17	14
16		15	14	15	18		15	18	14	15	18	18	18	21	20	18	17	14	14	15	14	14	16	14
17	14	15	14	18	14	16	15	14	14	15	16	17	21	20	22	20	16	15	17	18	15	14	15	15
18	14	14	20	14	16	B	14	18	14	15	17	18	20	18	18	20	17	15	14	15	15	20	18	14
19	14	15	15	14	14	14	15	14	14	15	18	17	21	21	22	21	16	14	14	15	14	14	32	15
20	14	15	15	15	15	14	14	16	14	15	18	18	20	15	20	16	15	15	18	14	15	14	71	15
21	17	14	16	15	15	B	14	14	14	15	14	21	16	18	17	15	14	14	14	14	14	14	14	15
22	14	15	15	14	14	14	14	17	14	15	15	17	17	20	20	17	17	14	15	14	14	15	15	15
23	15	15	14	15	15	B	17	17	14	14	15	16	16	15	18	17	14	15	15	17	14	14	22	17
24	15	15	14	15	14	14	15	16	15	15	17	18	23	18	22	17	15	14	14	14	14	14	15	15
25	17	14	14	14	14	15	15	16	14	15	16	18	18	20	21	17	15	14	15	14	14	15	15	15
26	15	14	14	14	15	15	14	14	14	17	18	18	23	22	20	16	15	16	14	14	14	15	15	18
27	15	15	14	14	15	14	14	15	14	15	17	18	21	20	20	21	17	15	15	15	14	15	14	14
28	14	15	14	14	15	15	20	15	14	14	18	20	20	23	21	20	16	14	14	15	14	15	15	15
29	15	15	17	15	14	15	17	15	15	15	17	20	20	21	18	21	15	15	14	14	18	66	15	66
30	B	15	14	15	15	B	14	14	14	15	15	20	23	23	22	20	18	15	15	15	15	15	14	15
31	14	14	15	15	14	15	15	15	14	15	17	21	18	22	20	21	16	15	18	14	15	15	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	29	30	30	24	26	30	30	31	31	31	30	30	31	30	30	29	30	30	30	30	30	29
MED	15	15	15	15	15	15	15	16	14	15	17	18	20	20	20	18	16	15	14	14	14	15	15	15
U Q	15	15	15	15	15	15	15	17	14	15	18	20	21	21	21	20	17	15	17	15	15	15	16	15
L Q	14	14	14	14	14	14	14	15	14	14	15	17	18	18	18	17	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

MAR. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	32	A	A	A	32	31	36	49	54	66	68	72	81	91	91	84	61	55	34	31	A	A	A
2	A	A	A	30	29	A	29	50	51	56	58	46	80	102	104	86	64	66	60	26	A	A	A	32
3	28	29	49	30	30	31	N	46	50	49	A	85	120	111	116	106	97	74	58	44	33	34	A	A
4	A	A	A	30	28	B	25	48	54	54	74	91	97	91	108	102	94	66	60	53	47	A	A	A
5	A	A	A	B	B	B	26	48	52	51	61	74	82	95	91	90	91	71	64	A	40	A	N	34
6	31	31	30	30	32	32	A	53	48	52	56	69	82	91	90	81	80	80	76	51	43	36	26	A
7	25	30	30	A	A	32	A	49	48	52	66	70	78	87	75	86	78	72	67	64	53	42	41	36
8	34	34	32	34	44	34	N	48	46	52	57	64	71	85	82	79	87	86	80	64	46	34	34	A
9	31	32	A	32	35	N	B	40	50	60	71	67	70	71	65	60	57	63	67	63	52	26	31	32
10	32	32	32	31	34	N	N	50	54	58	64	76	62	72	90	105	90	67	54	54	51	43	34	A
11	30	34	34	34	34	32	31	45	55	55	62	72	86	96	91	90	86	91	96	88	71	47	34	34
12	32	31	34	32	50	B	B	44	51	60	71	72	81	91	78	74	84	77	72	63	33	B	A	A
13	A	A	49	A	A	A	A	48	55	56	67	75	75	90	101	100	104	101	87	63	34	28		A
14	A	A	A	A	35	A	A	47	43	55	67	75	78	78	73	65	58	57	60	58	46	29	A	A
15	32	34	32	32	31	30	30	51	67	70	A	62	76	91	98	97	72	70	72	75	51	34	31	31
16	34	32	31	30	32	32	B	42	58	66	75	75	86	116	115	117	111	122	115	104	81	51	51	51
17	34	36	34	32	32	29	32	51	65	83	72	72	83	80	88	78	68	60	70	66	39	40	36	28
18	36	39	38	34	31	49	49	44	58	79	86	87	118	144	142	137	127	124	122	110	72	38	41	42
19	38	40	40	47	A	A	A	46	60	58	A	102	96	A	86	102	90	90	91	71	A	A	40	35
20	34	32	A	A	A	B	A	44	66	101	90	81	97	131	135	125	125	107	98	71	A		A	A
21	41	38	36	37	28	N	N	48	52	61	61	61	78	97	107	104	89	90	95	84	52	A	A	A
22	A	A	32	34	34	26	26	48	54	58	54	51	70	82	86	81	74	76	86	75	38	32	A	31
23	32	32	30	30	30	N	117	44	54	58	50	57	71	90	102	122	147	152	147	108	85	70	34	31
24	31	32	34	32	31	34	34	48	51	63	64	65	78	84	91	90	80	81	75	50	51	A	N	30
25	32	32	31	31	30	N	26	53	54	60	66	66	77	96	108	87	81	91	96	76	59	46	A	A
26	A	A	30	31	38	A	A	44	50	64	67	86	98	107	101	99	86	78	75	58	48	42	37	38
27	37	37	34	40	B	B	26	31	49	56	60	67	67	85	91	82	84	90	82	59	54	34	32	34
28	34	32	30	34	32	N	N	42	51	62	60	62	76	97	117	121	120	127	141	130	117	81	61	52
29	51	53	42	42	34	34	31	46	54	64	61	61	72	92	105	107	102	111	110	103	67	32	B	49
30	30	29	31	34	B	B	N	42	47	56	56	72	82	98	112	110	98	100	106	82	54	42	36	40
31	34	34	32	32	N	B	N	48	50	57	68	84	98	100	105	101	102	96	90	52	34	32	32	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	23	24	24	25	22	13	14	31	31	31	28	31	31	30	31	31	31	31	31	30	28	22	17	19
MED	32	32	32	32	32	32	30	47	52	58	65	72	78	91	98	97	87	81	80	64	51	37	34	34
U Q	34	35	35	34	34	34	32	48	55	63	69	76	86	98	108	106	102	100	96	82	56	43	40	40
L Q	31	32	31	30	30	30	26	44	50	55	60	64	72	85	88	82	80	70	67	54	39	32	32	31

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

MAR. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	58	31	34	32	34	24	36	34	49	36	45	47	52	61	57	51	48	40	30	36	37	86	56	56
2	32	39	36	28	27	41	G	24	31	40	46	58	52	62	60	70	56	50	46	29	49	48	39	24
3	40	24	G	G	G	G	G	23	41	58	96	115	52	46	46	35	43	40	29	40	26	32	131	58
4	86	69	50	27	36	B	G	24	39	49	54	48	92	96	61	56	69	46	38	38	36	109	69	54
5	56	40	39	B	B	B	26	49	28	34	43	43	45	47	36	38	43	42	39	50	33	25	28	G
6	G	G	G	G	G	G	28	53	31	53	44	52	45	44	33	38	39	42	35	28	11	35	G	59
7	26	70	G	49	60	33	44	25	40	37	49	47	49	61	50	48	50	53	37	29	28	G	G	G
8	27	24	27	G	G	G	G	38	40	43	46	46	48	37	38	77	44	35	31	25	35	G	G	28
9	G	30	40	G	G	G	B	24	46	37	42	57	46	44	44	47	50	45	N	27	25	G	25	G
10	G	32	G	G	21	G	G	26	33	37	44	46	46	50	50	37	39	32	35	25	25	29	G	35
11	G	117	G	G	G	G	G	40	29	34	36	43	39	44	45	31	40	31	G	24	48	G	G	G
12	G	G	G	G	11	B	B	G	34	40	47	44	47	49	52	44	49	41	31	48	19	B	26	28
13	35	30	G	26	35	37	28	26	36	44	36	40	49	48	48	45	48	40	46	32	28	G		34
14	91	92	65	59	46	32	26	40	43	36	39	48	50	60	48	45	41	45	39	35	24	G	27	32
15	26	26	G	G	G	G	G	25	39	49	61	45	43	48	46	41	40	40	32	24	40	27	G	G
16	29	24	24	G	G	G	B	24	33	44	44	36	37	80	45	46	45	34	39	31	25	35	25	G
17	G	G	26	G	G	26	G	28	35	40	41	42	48	40	45	43	38	33	33	23	G	G	G	G
18	G	29	28	26	G	G	24	26	31	41	37	38	48	46	44	40	38	31	26	26	50	27	30	28
19	26	28	35	27	40	32	28	30	39	45	69	55	67	81	78	97	56	54	32	49	58	48	G	G
20	G	G	88	45	60	B	136	40	43	41	41	43	46	46	39	38	41	38	49	38	56	G	28	29
21	G	G	G	G	G	G	G	27	32	35	45	50	50	64	31	32	38	32	27	24	G	34	27	26
22	36	70	24	G	G	G	G	48	53	42	46	48	47	50	43	41	36	41	32	32	30	26	35	G
23	G	G	G	G	G	G	132	28	146	44	52	56	54	48	50	50	45	38	31	23	26	11	G	G
24	27	26	35	G	G	G	115	30	41	38	37	47	47	46	39	43	37	44	54	54	G	86	G	G
25	G	G	G	G	G	G	G	39	36	44	38	47	46	46	37	37	34	31	33	26	24	34	72	46
26	56	48	41	25	34	31	38	26	35	40	46	45	45	39	44	28	32	32	55	24	26	26	117	G
27	G	G	G	G	B	B	24	29	35	38	42	46	39	40	32	64	63	40	29	11	G	G	27	G
28	G	G	26	G	25	G	G	111	41	86	46	51	62	46	47	46	92	43	33	29	32	30	25	35
29	G	G	G	G	G	G	G	32	38	39	38	47	48	48	47	41	38	149	31	26	53	G	B	27
30	G	G	G	G	B	B	G	28	32	40	45	48	49	50	46	48	46	46	38	26	26	G	G	25
31	G	G	G	G	11	B	G	70	38	44	46	46	46	49	45	41	35	36	39	34	23	G	G	150
	00	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	28	24	28	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	29	31
MED	G	26	24	G	G	G	G	28	38	40	45	47	48	48	45	43	43	40	33	29	26	26	25	26
U Q	35	39	35	26	34	28	28	40	41	44	46	50	50	60	50	48	49	45	39	36	37	34	32	35
L Q	G	G	G	G	G	G	G	25	33	37	41	44	46	46	39	38	38	34	31	25	24	G	G	G

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Okinawa

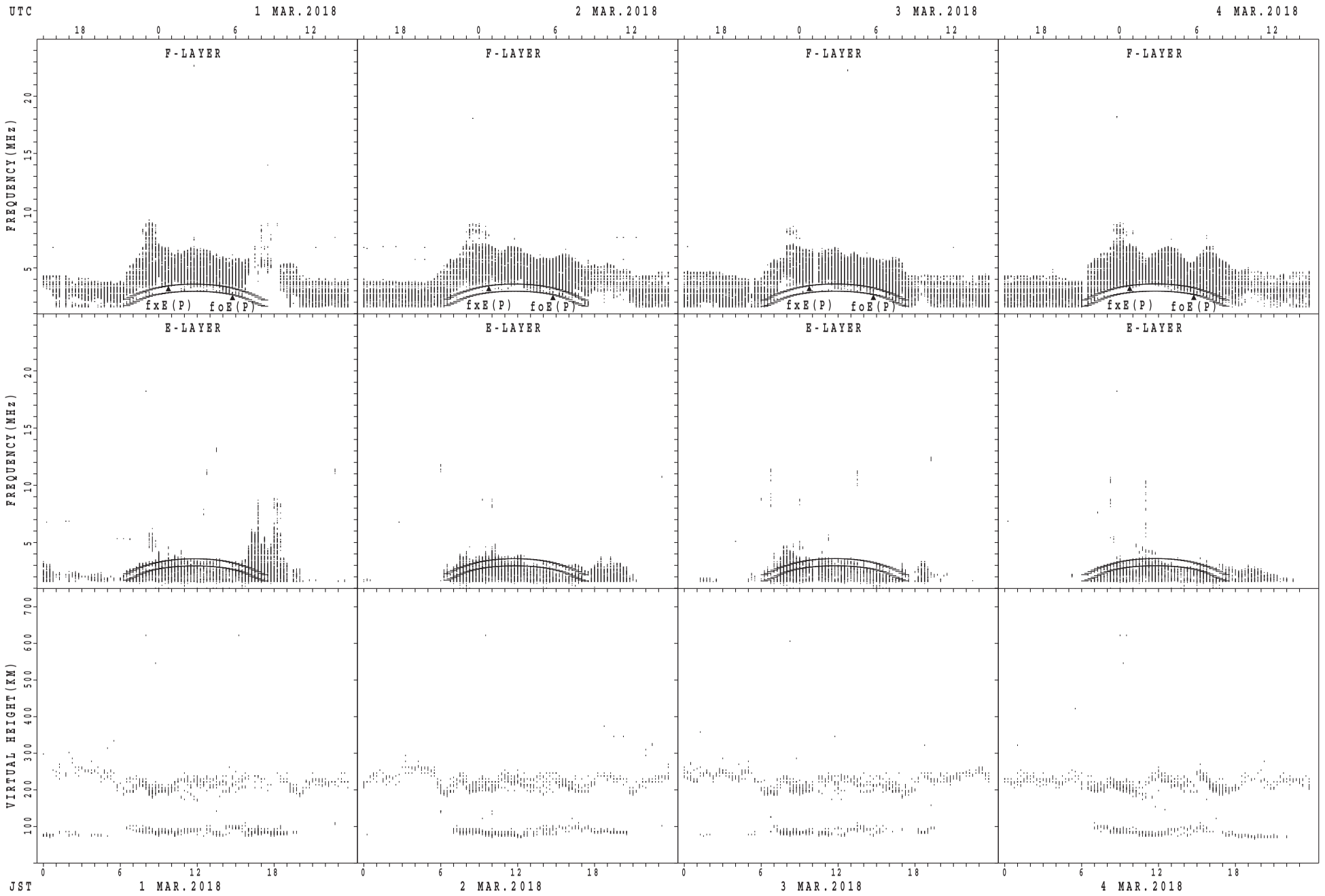
MAR. 2018

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

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

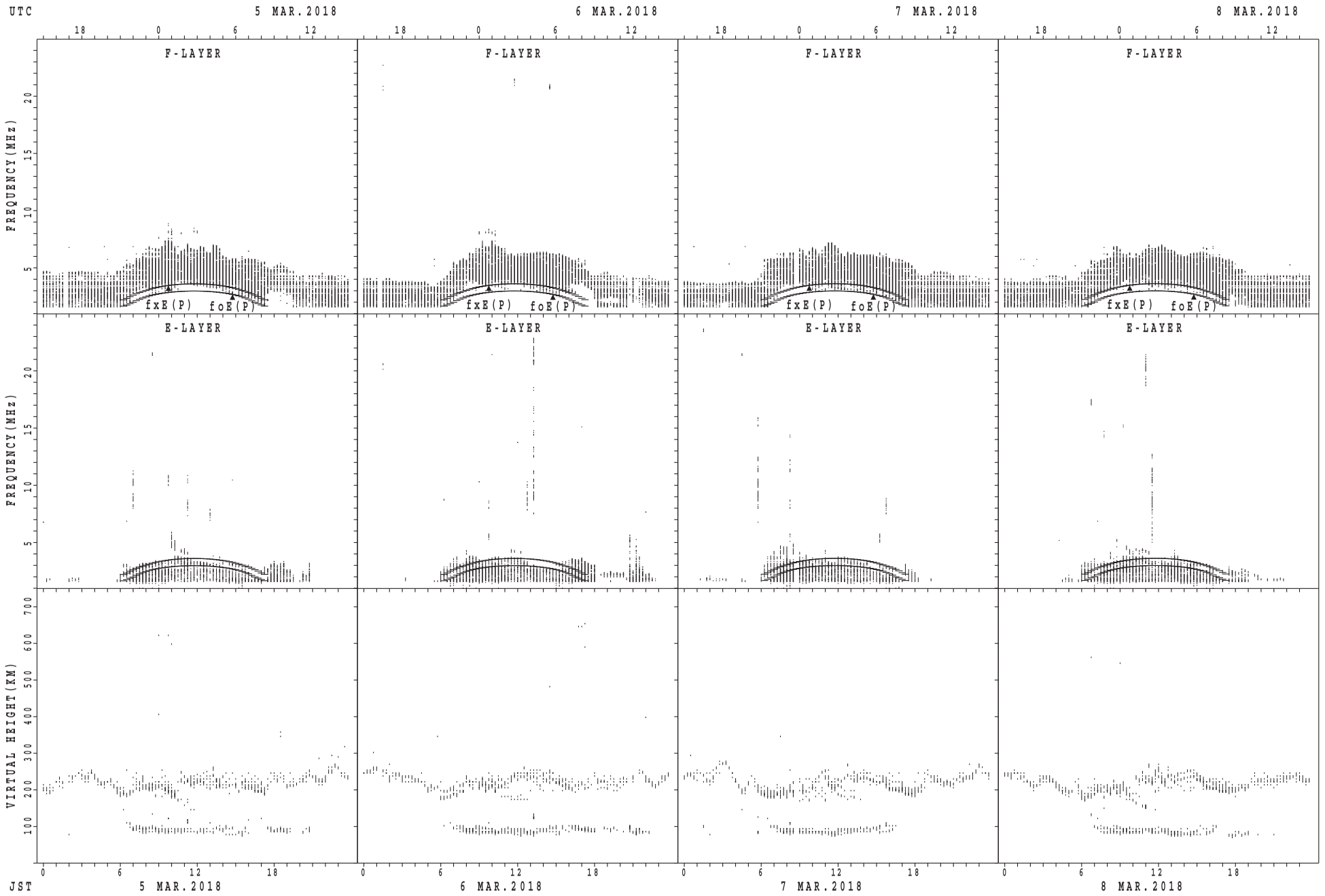
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

SUMMARY PLOTS AT Wakkanai



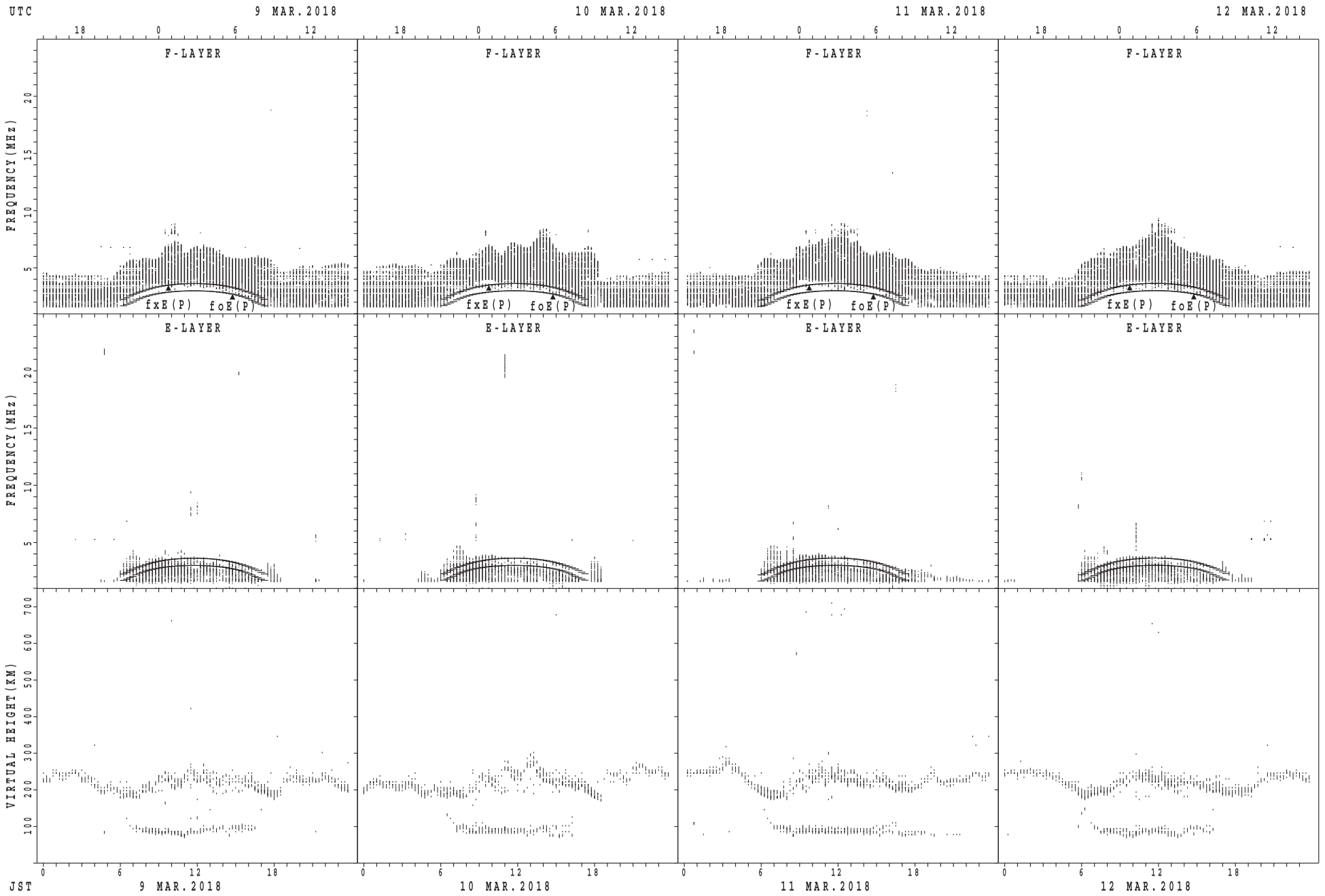
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



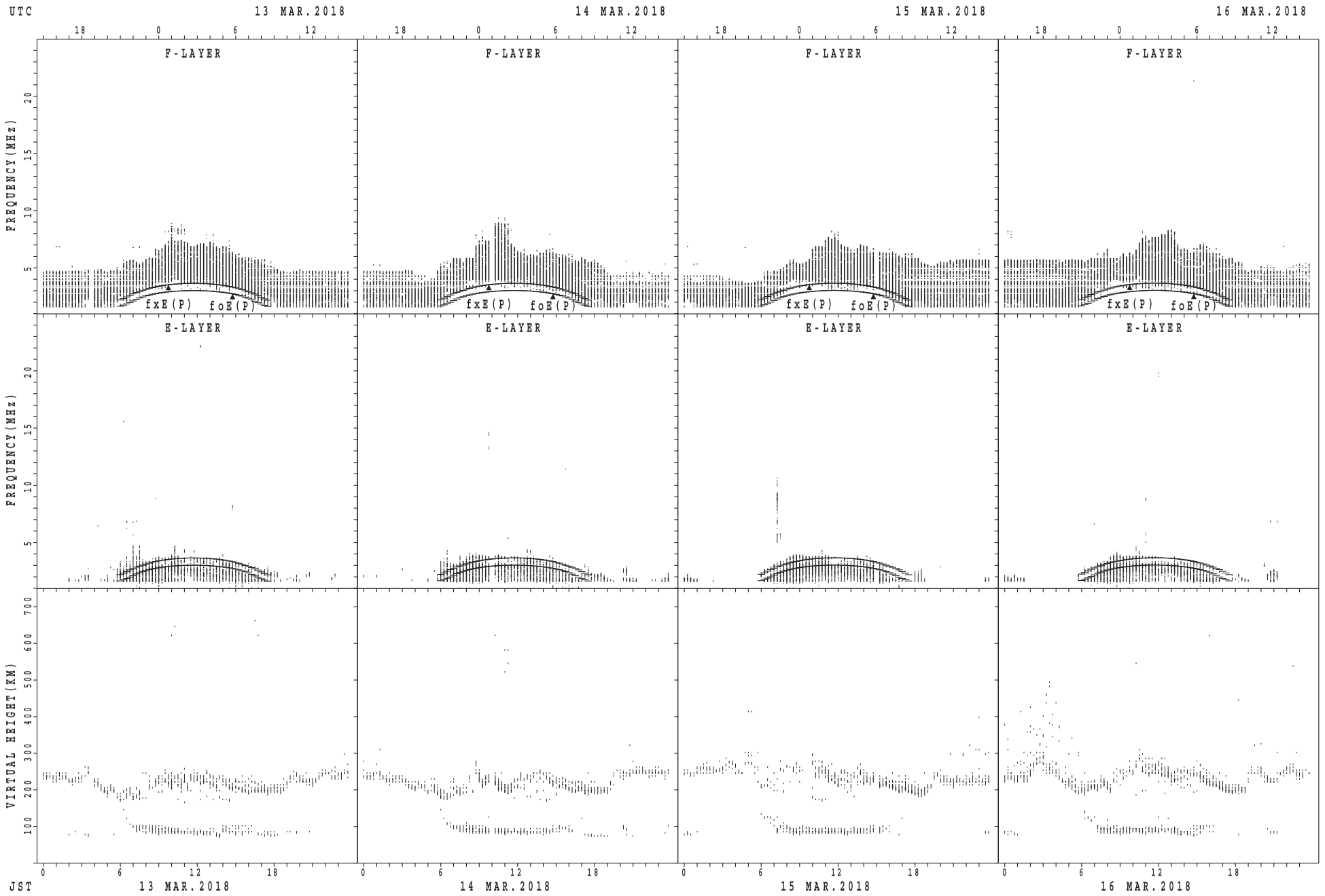
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



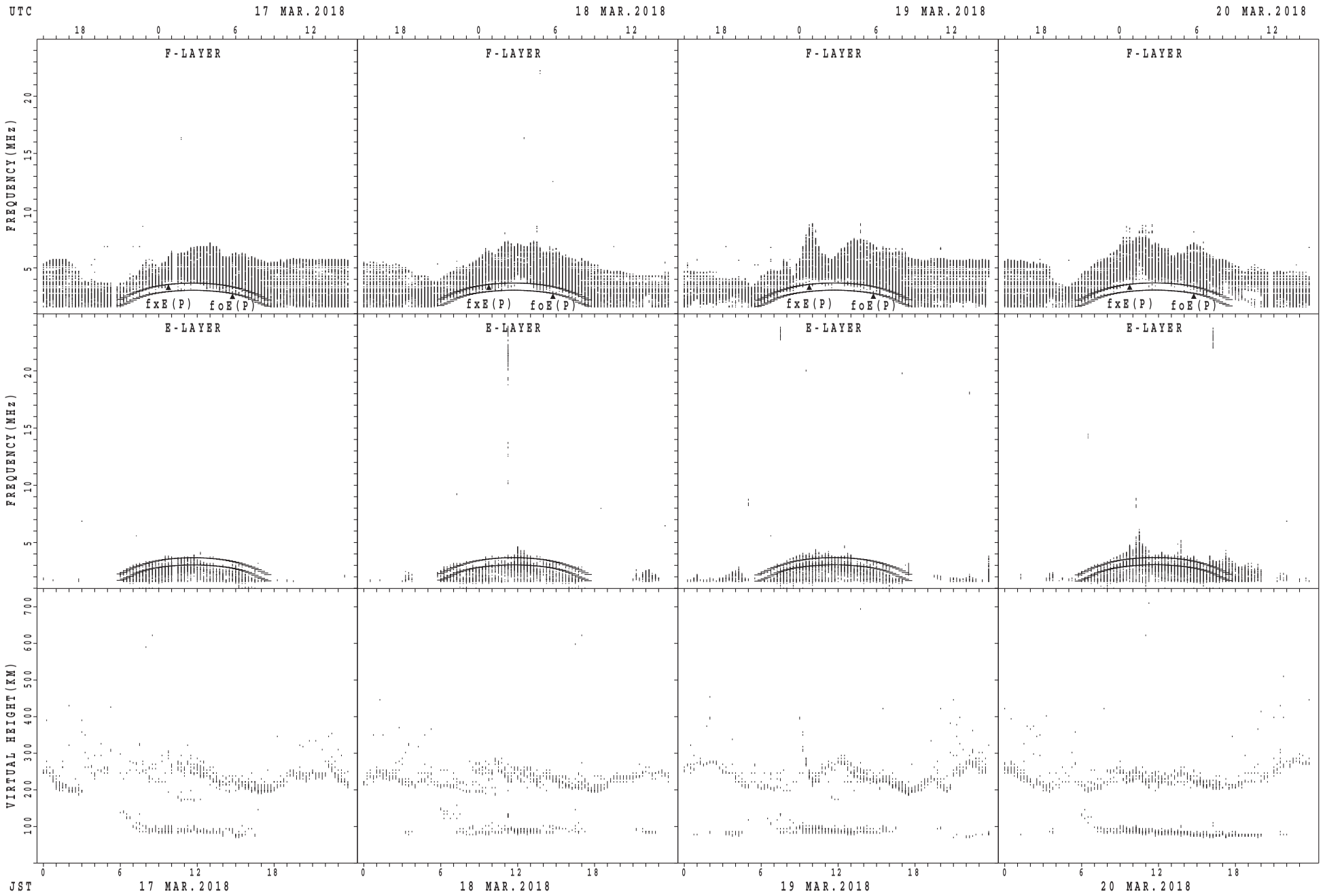
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



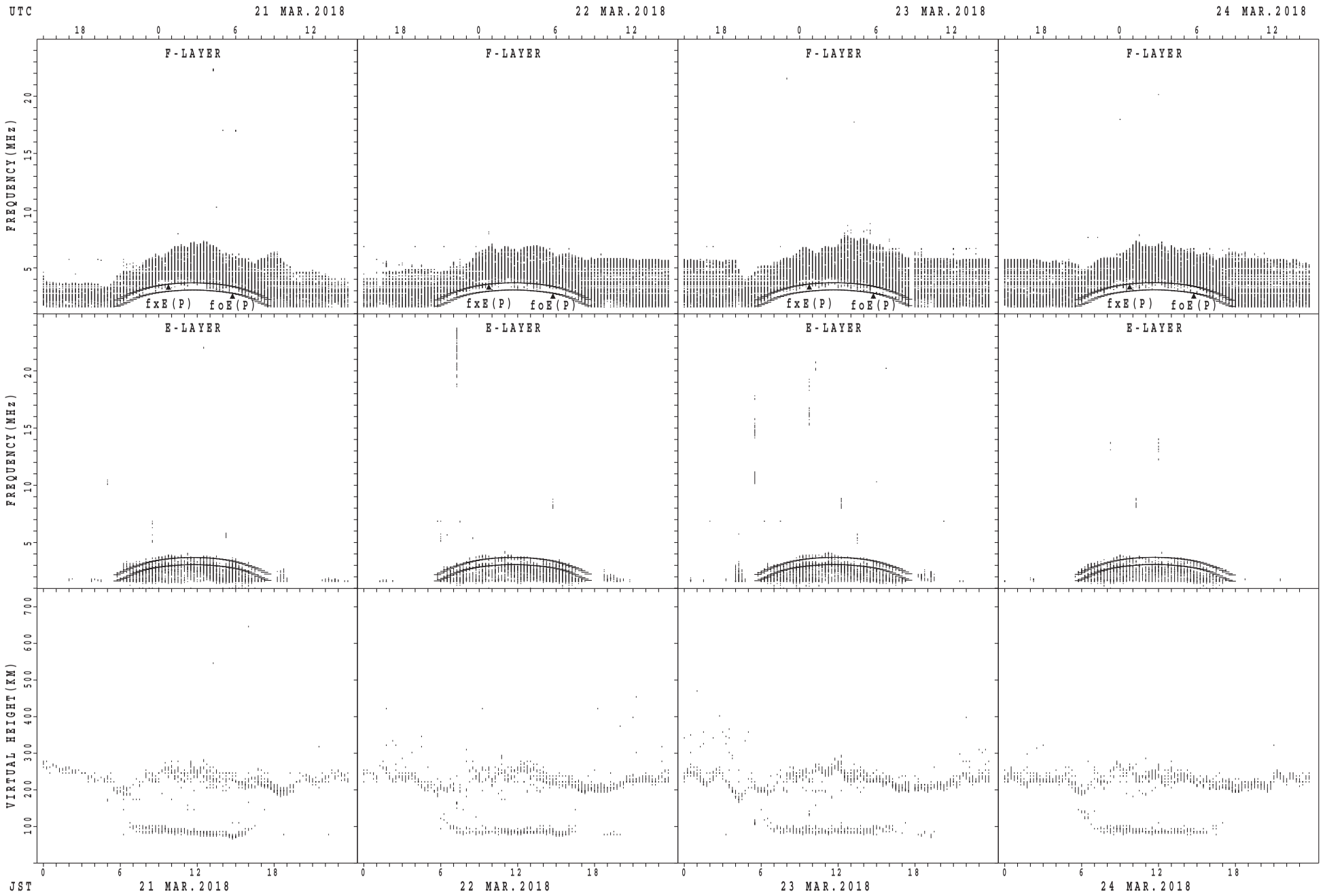
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



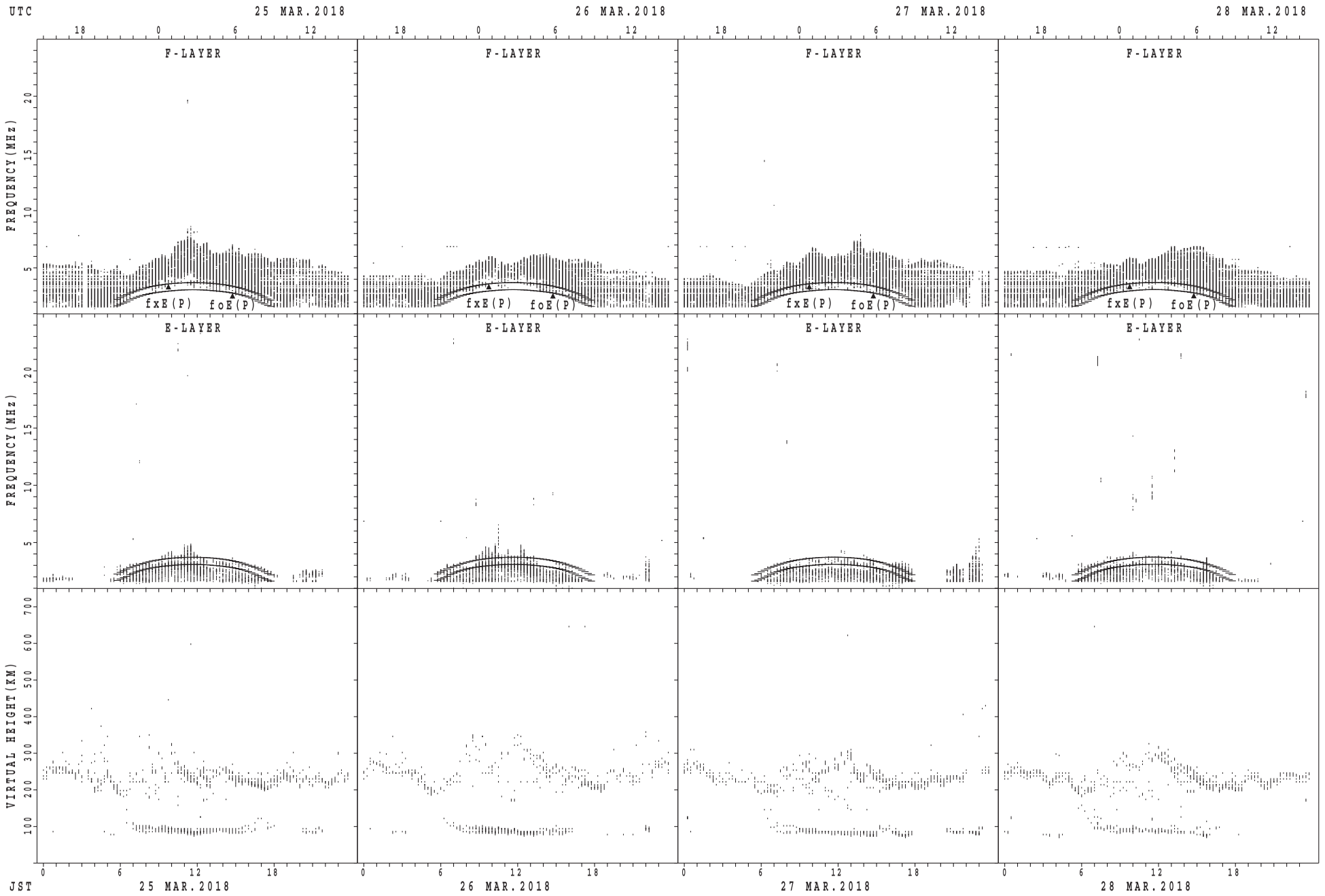
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



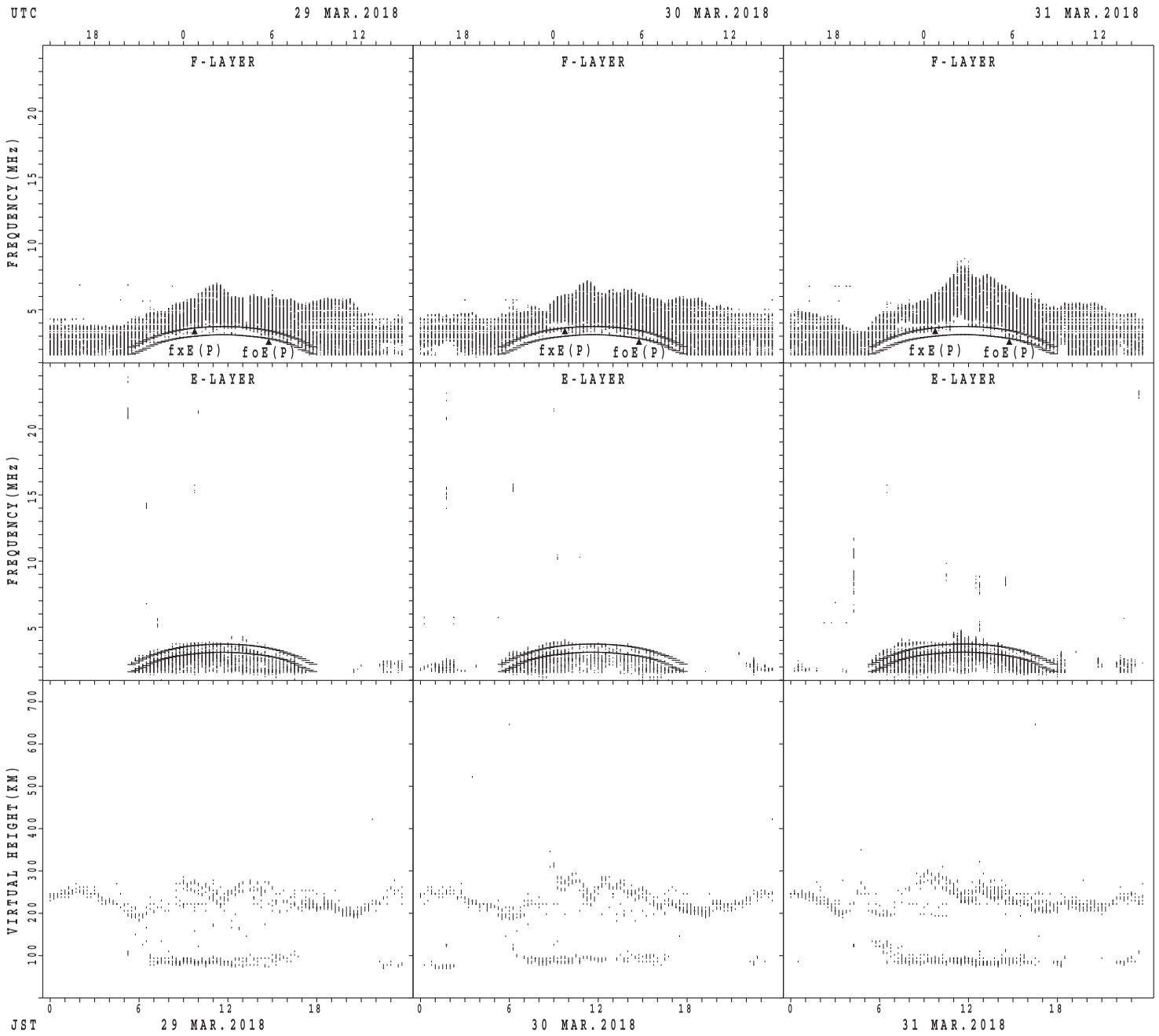
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



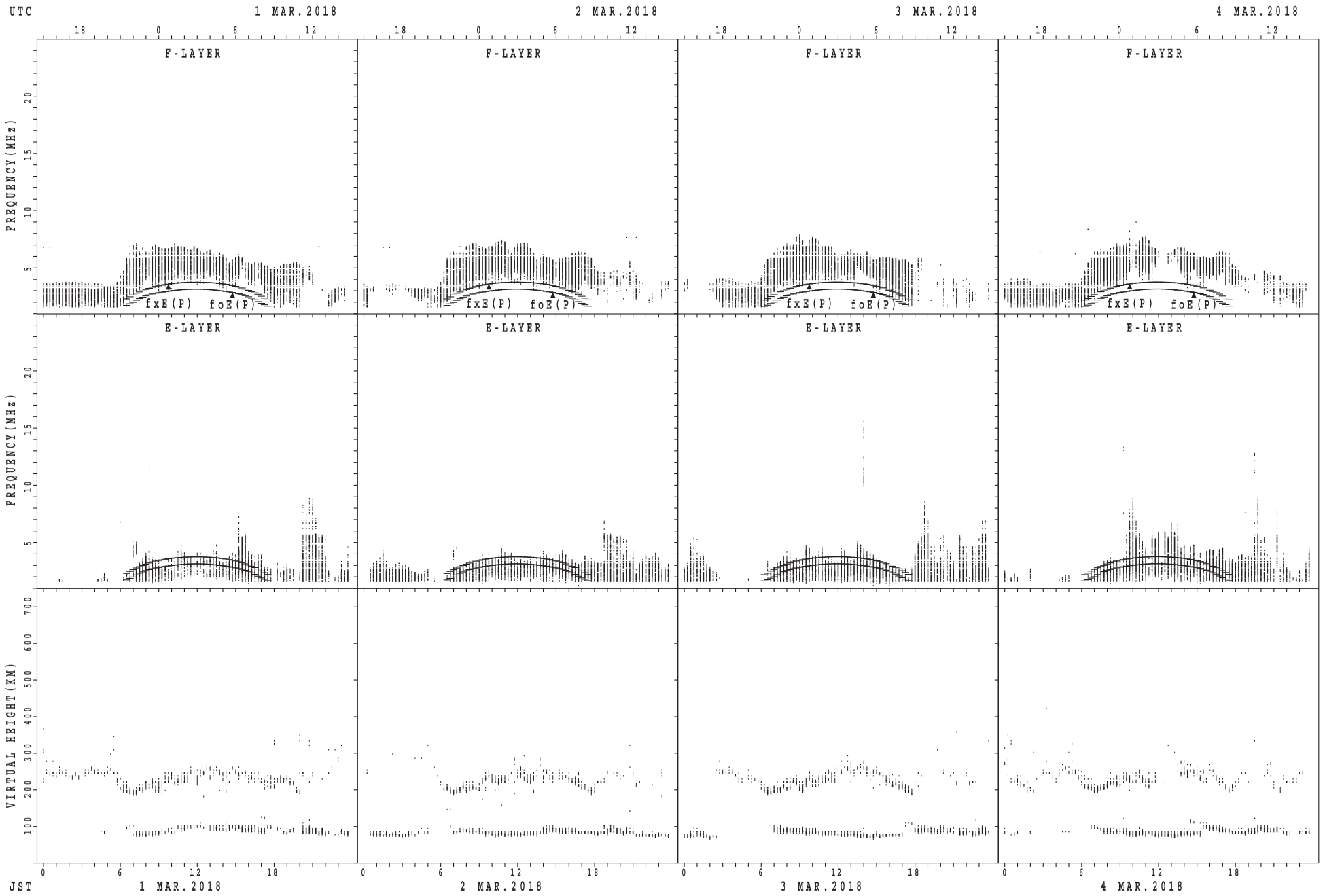
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



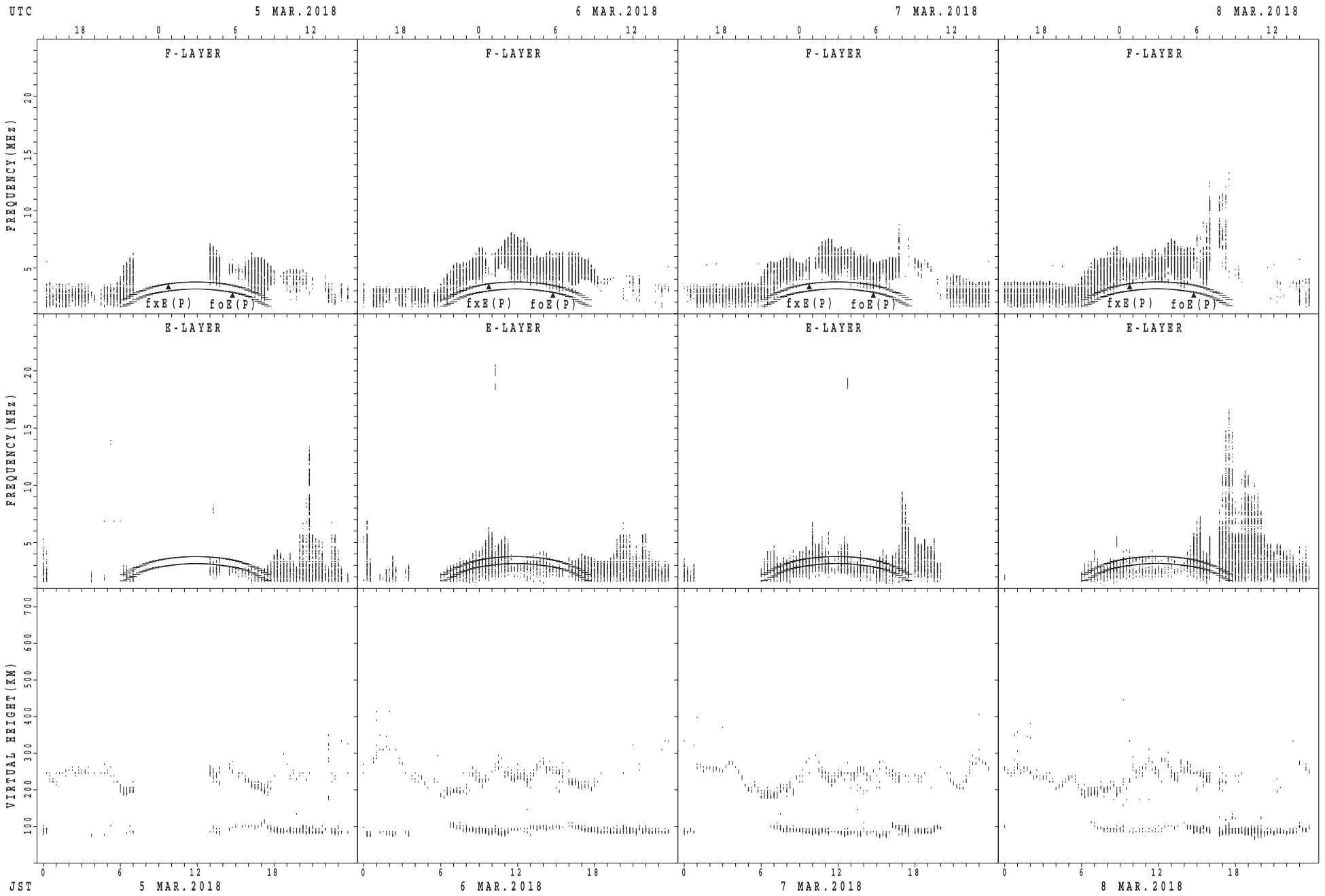
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



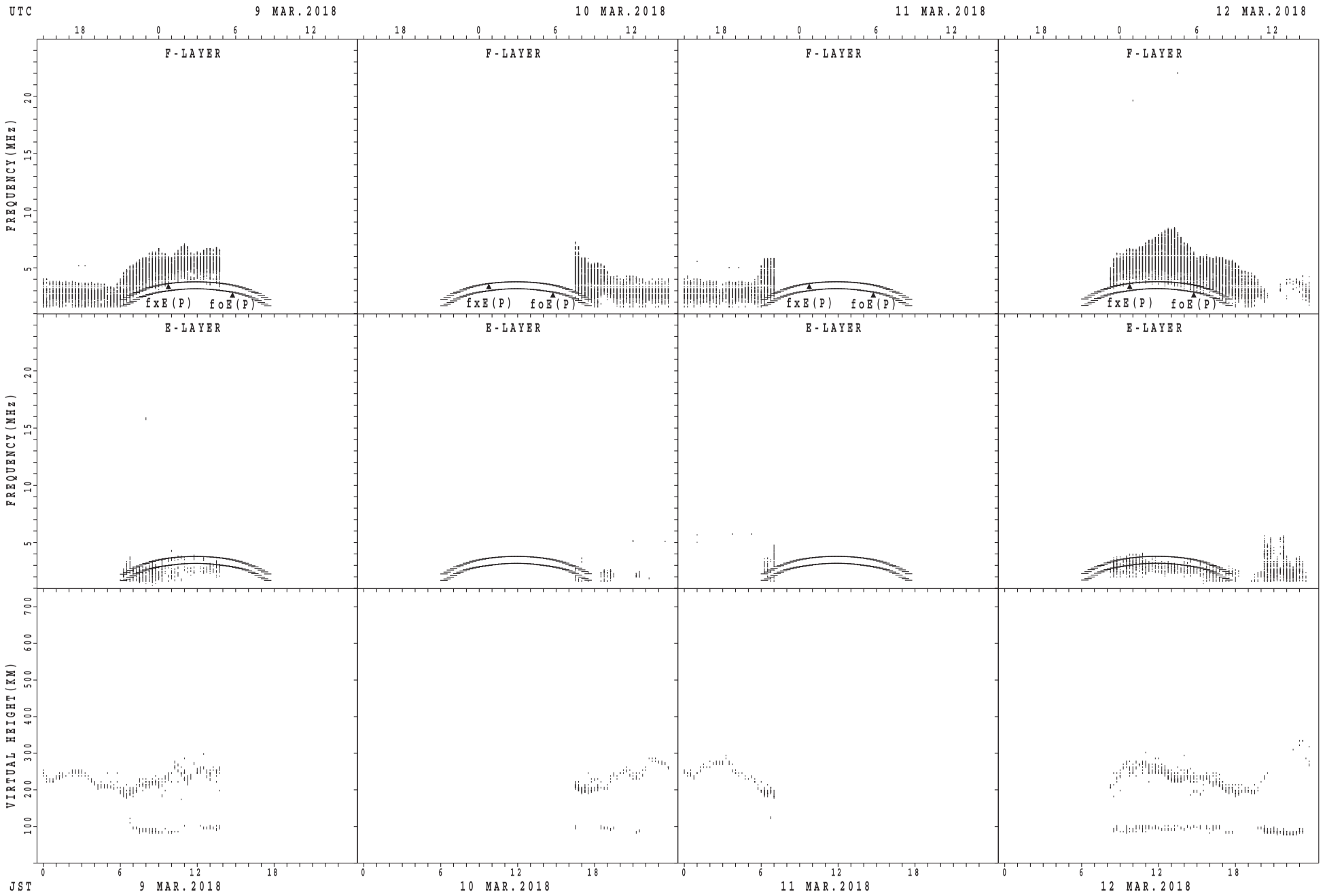
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



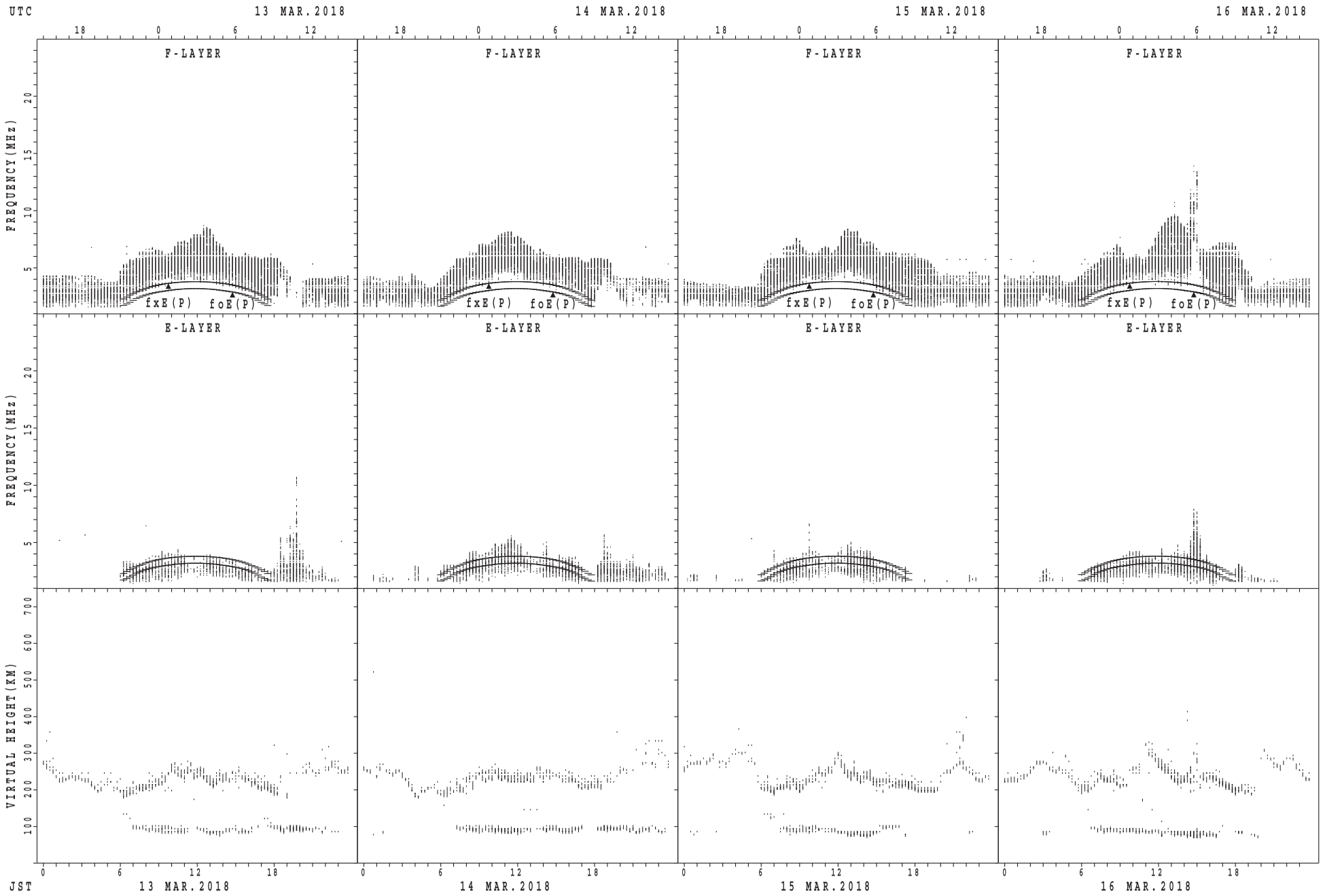
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



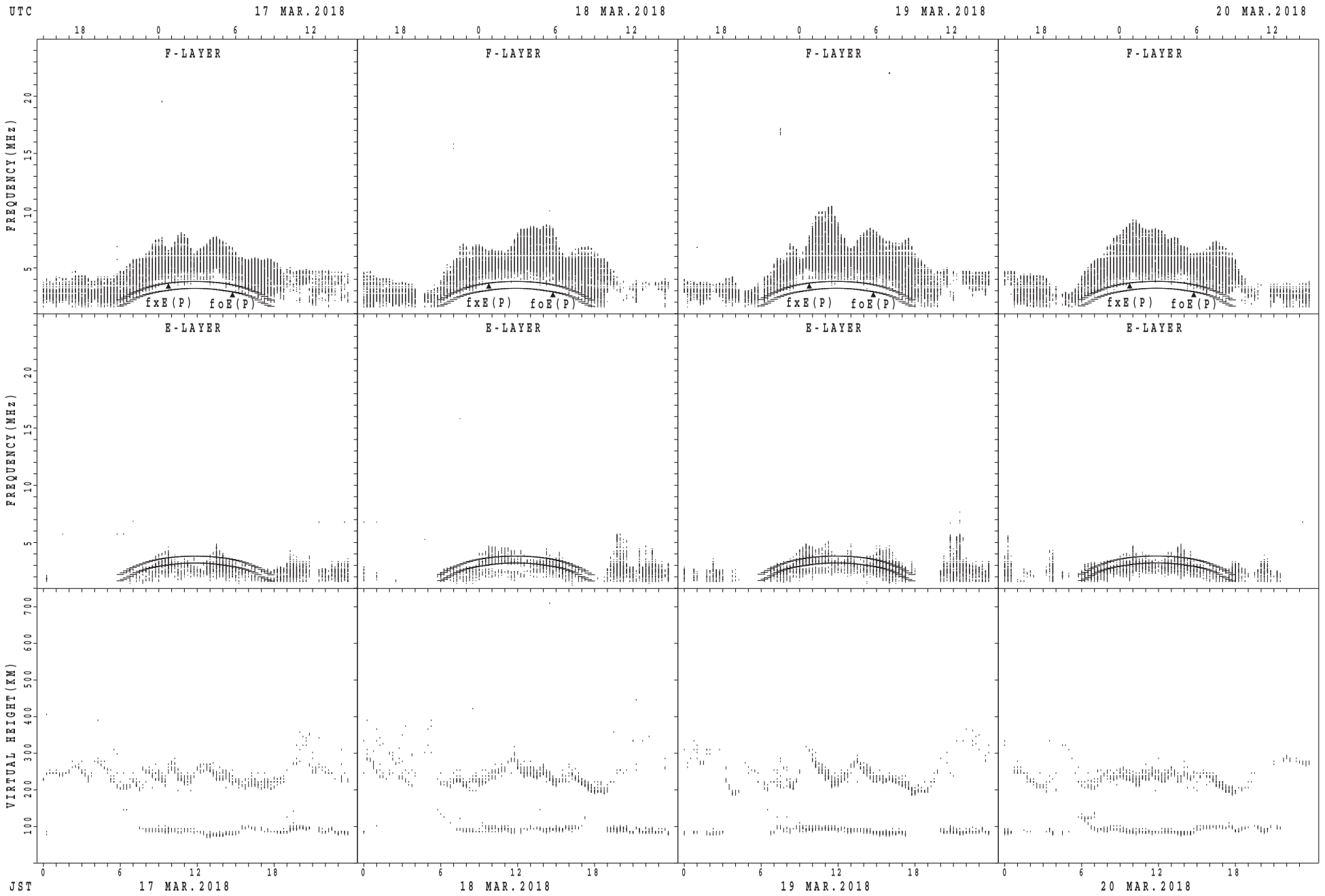
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



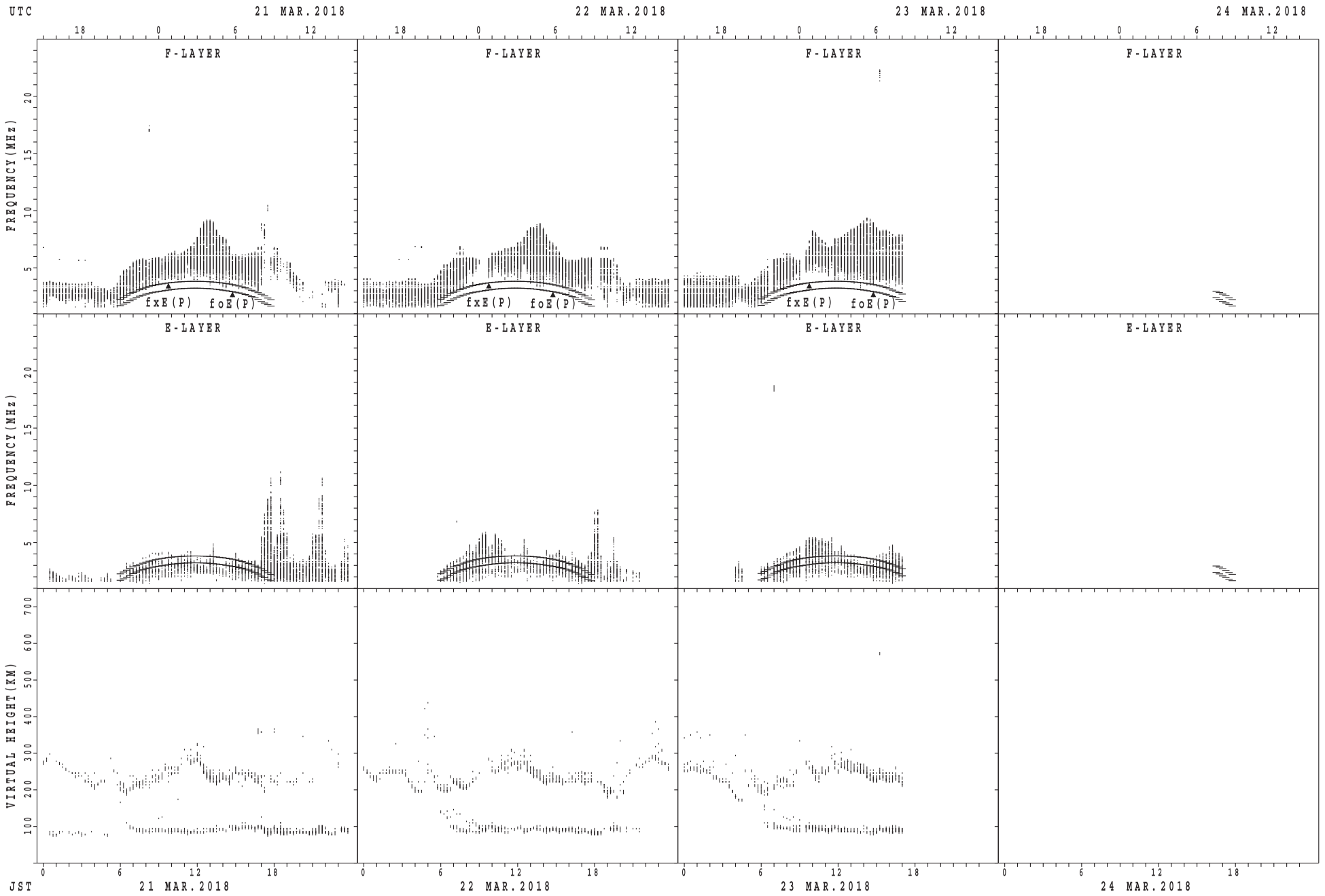
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



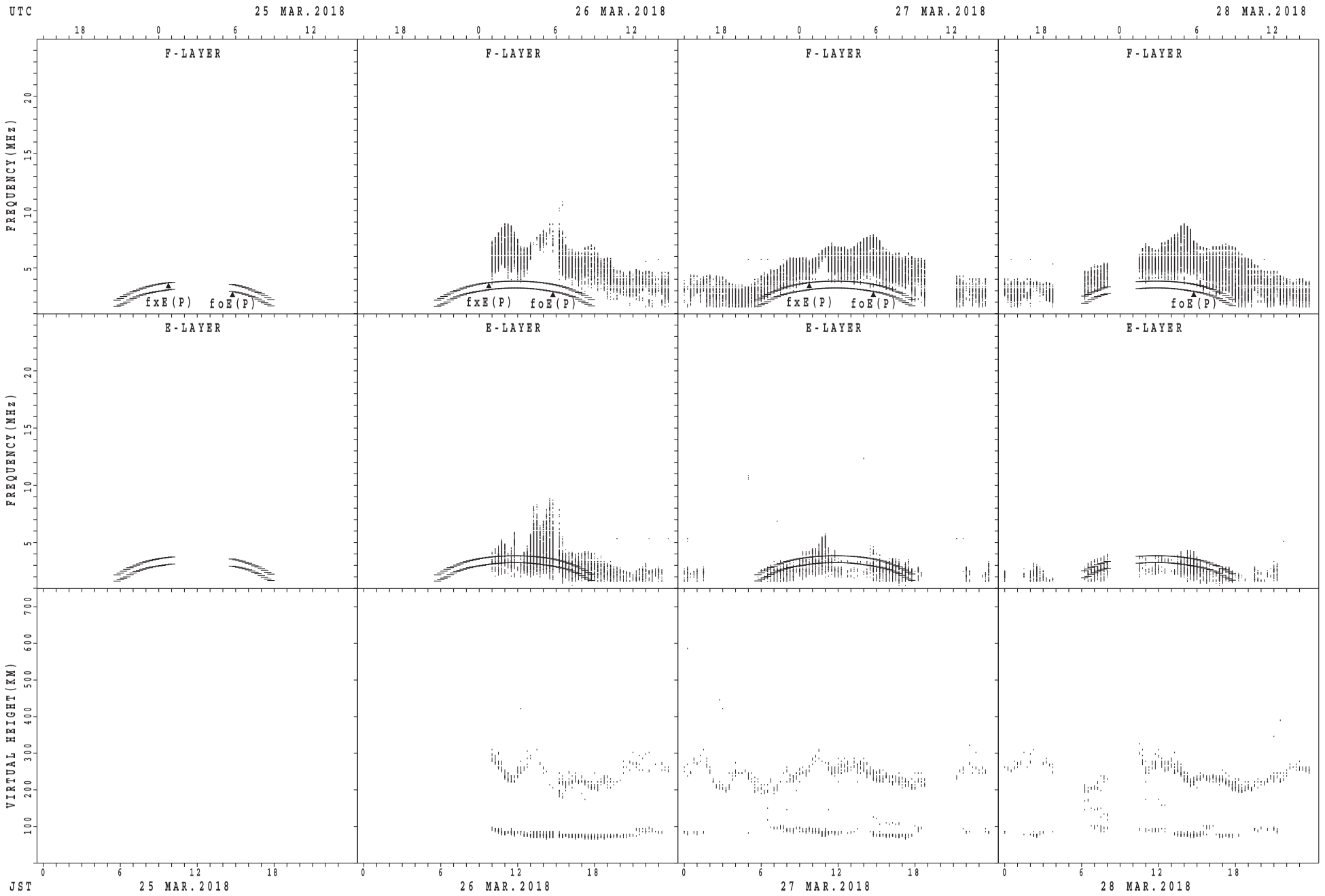
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



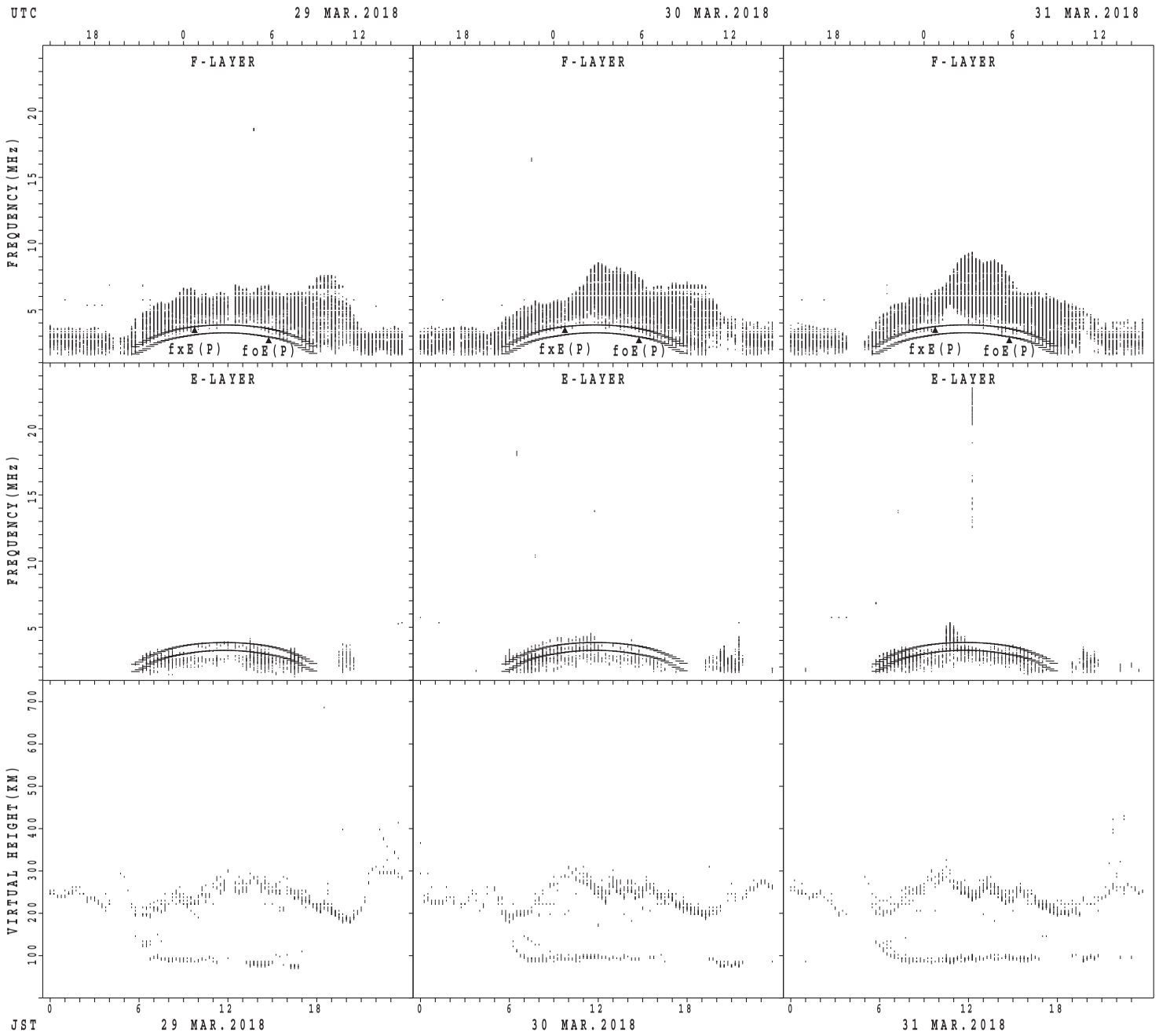
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



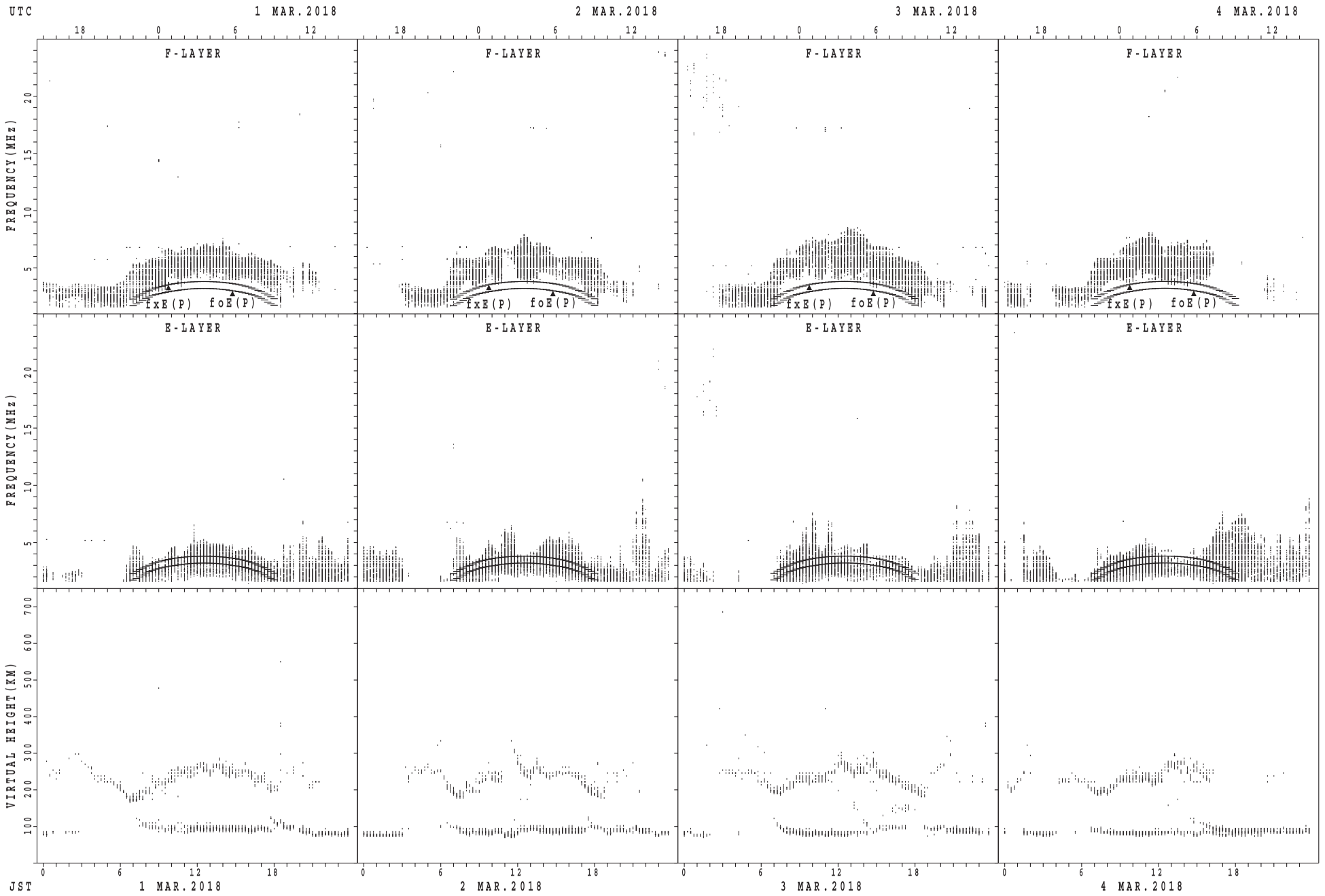
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



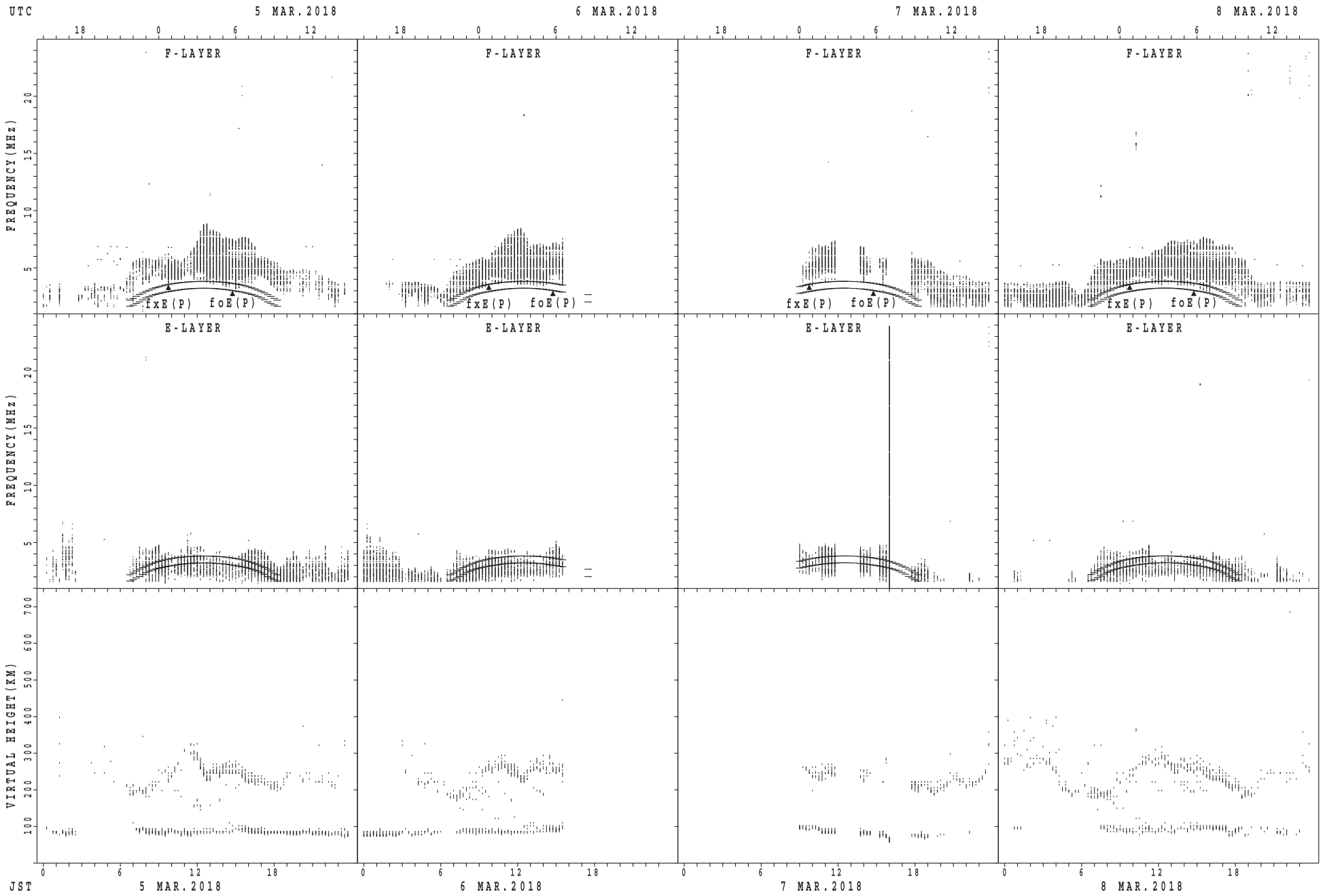
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



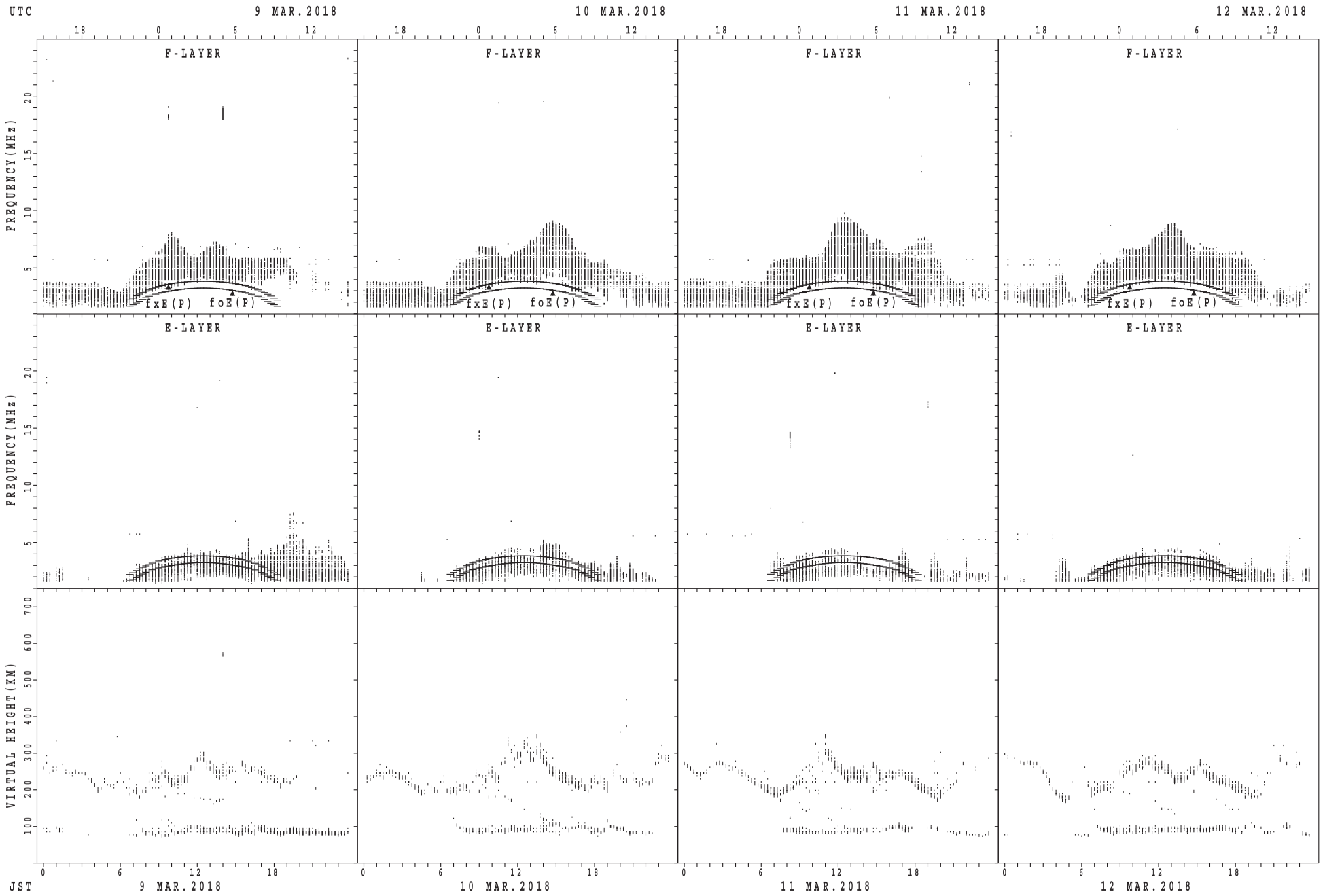
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



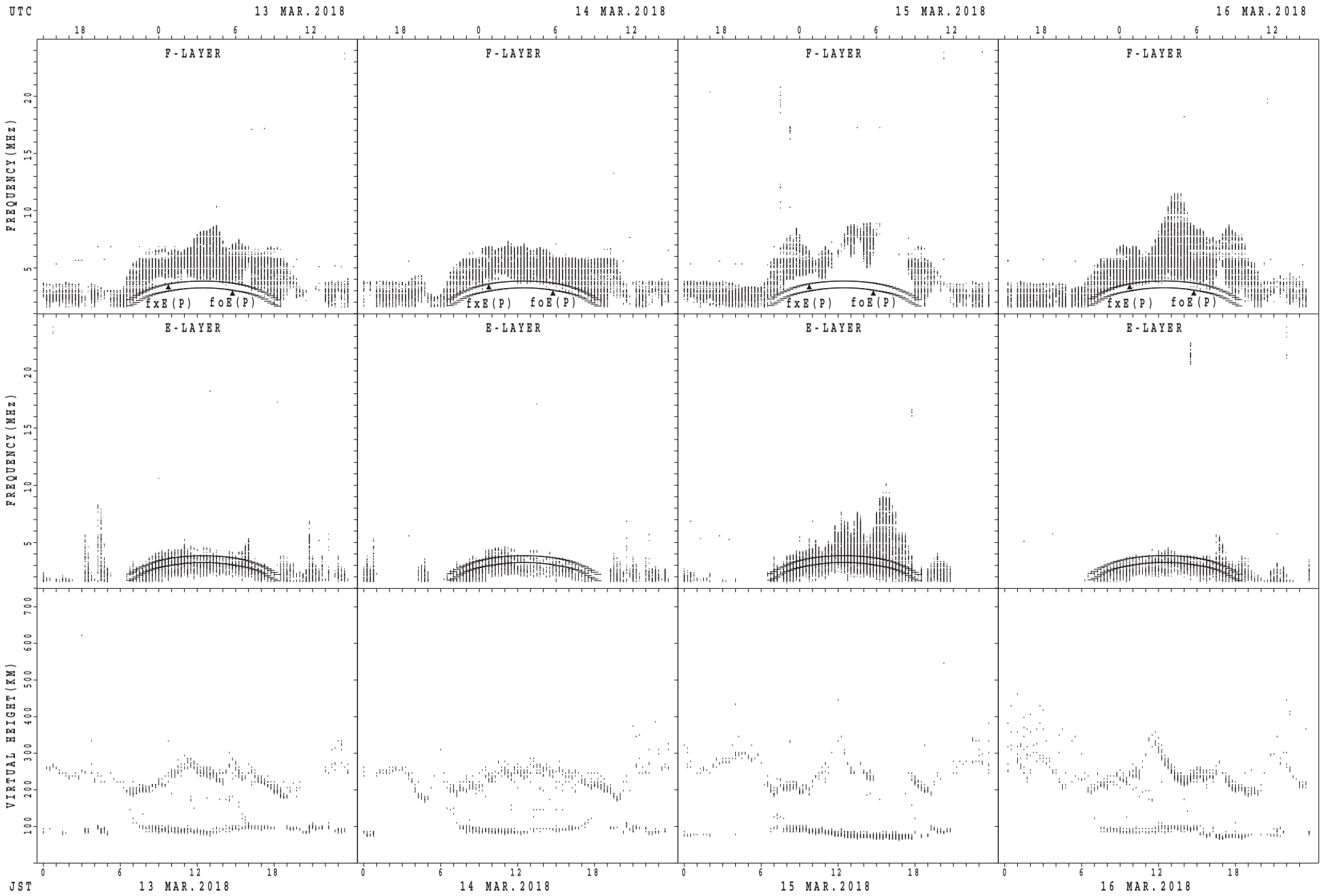
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

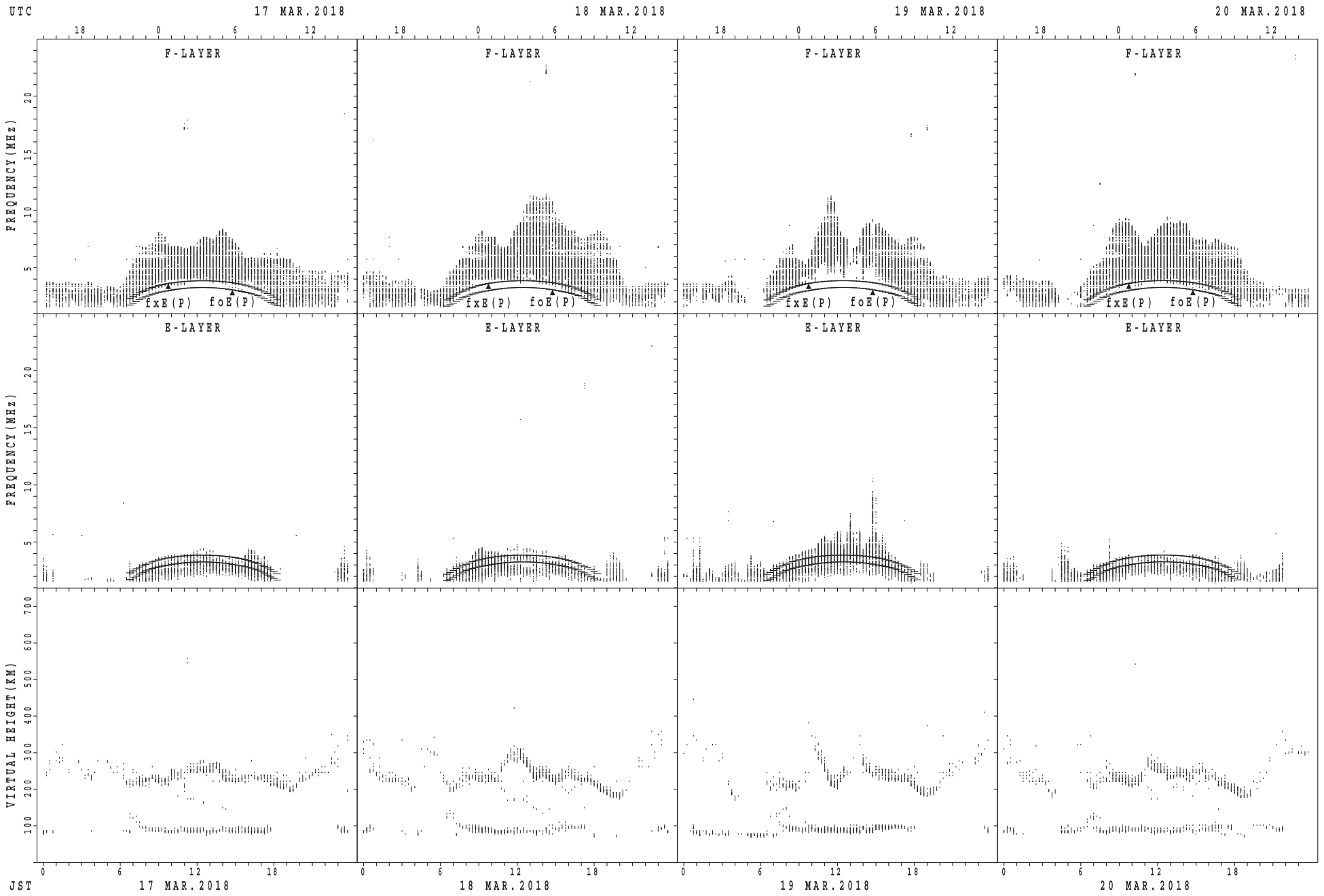


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

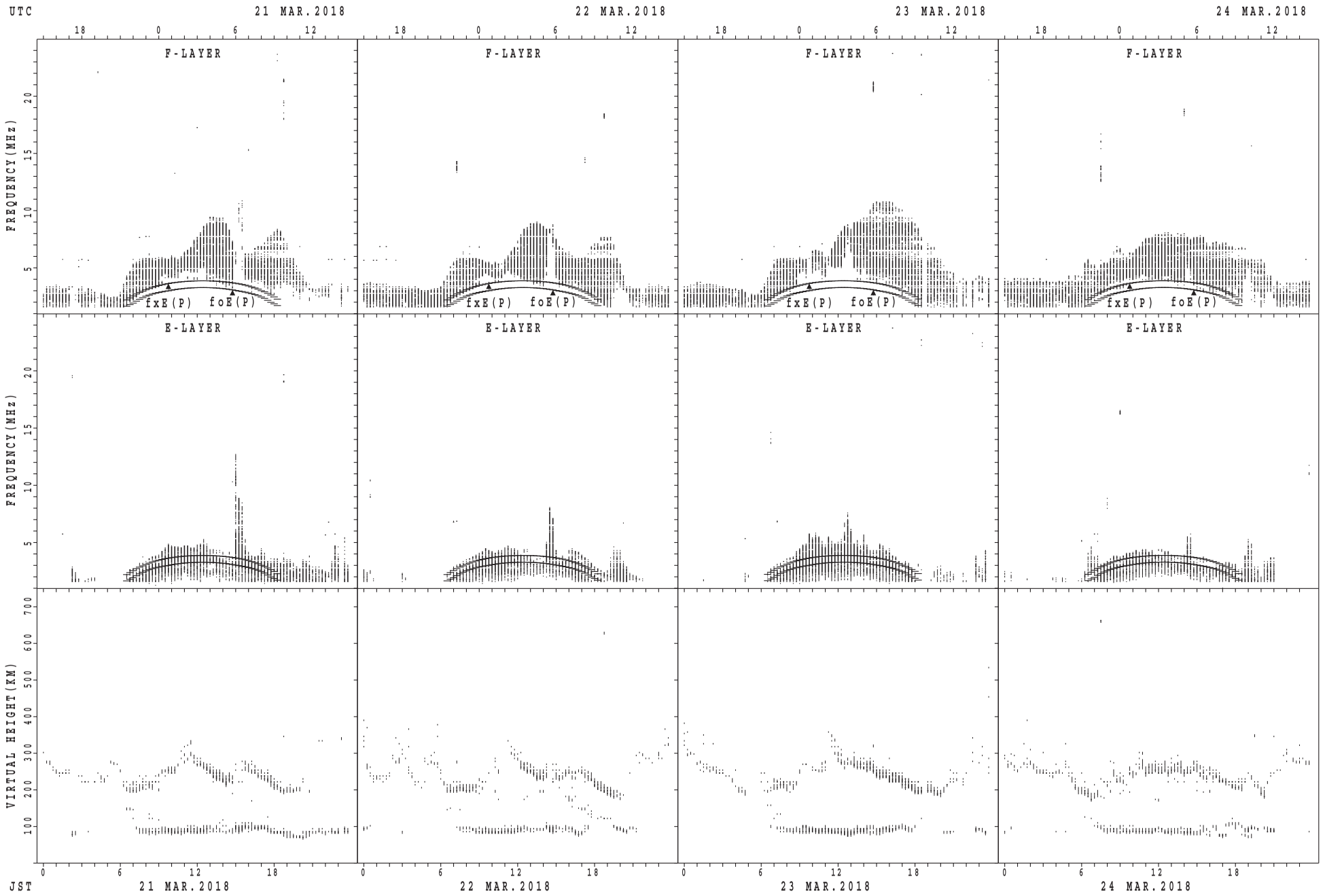
SUMMARY PLOTS AT Yamagawa



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

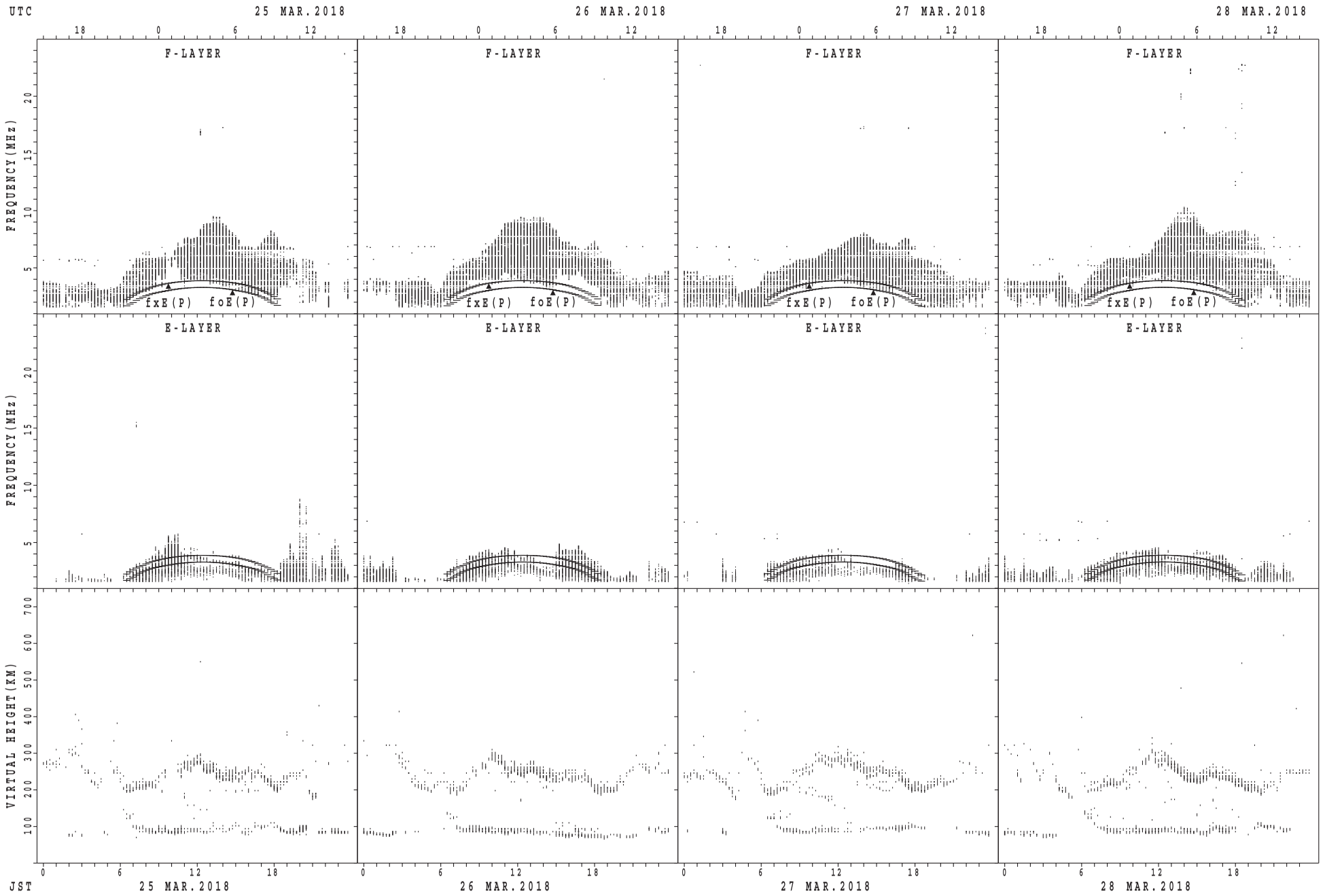

SUMMARY PLOTS AT Yamagawa
UTC
17 MAR.2018
18 MAR.2018
19 MAR.2018
20 MAR.2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



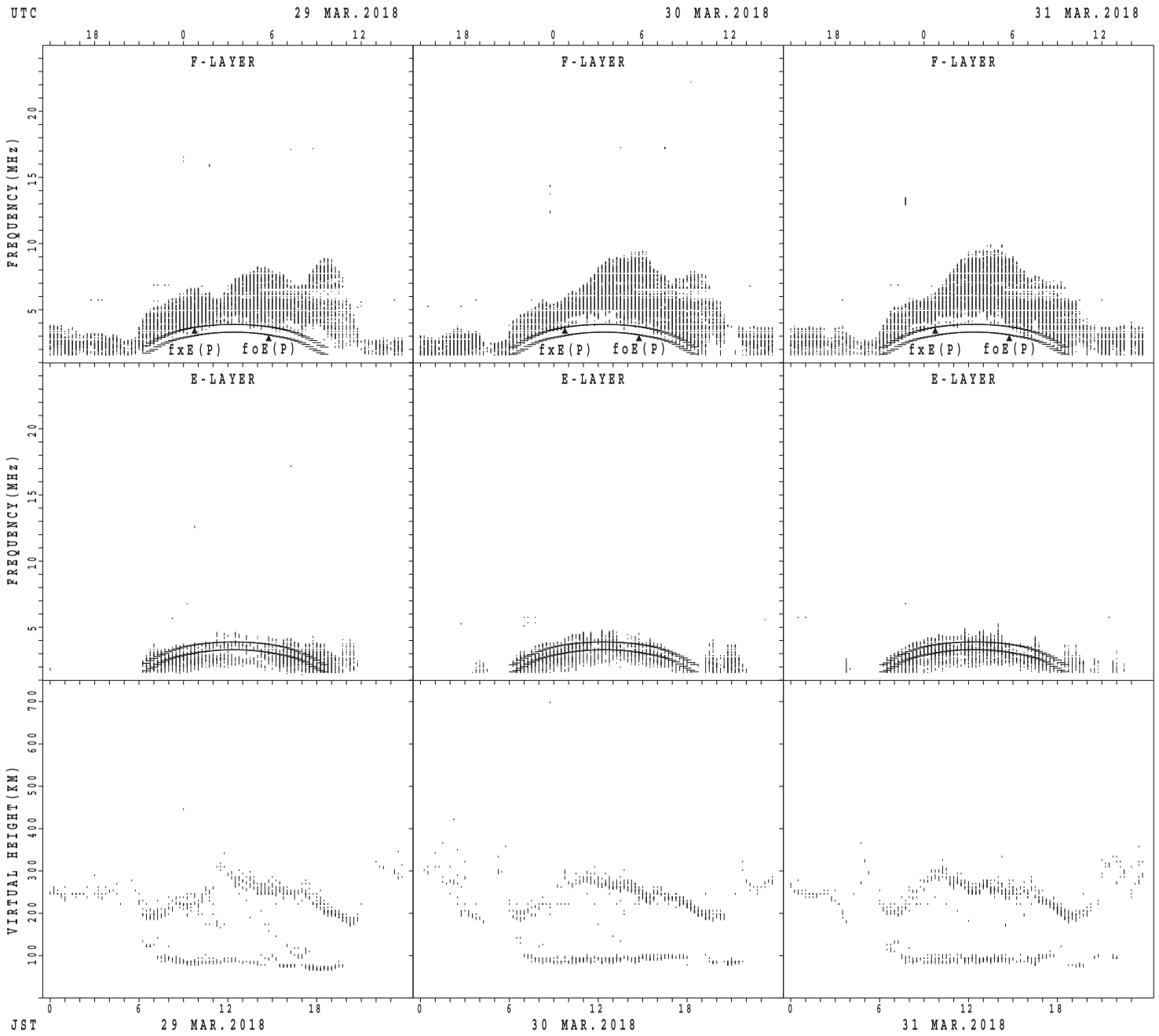
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



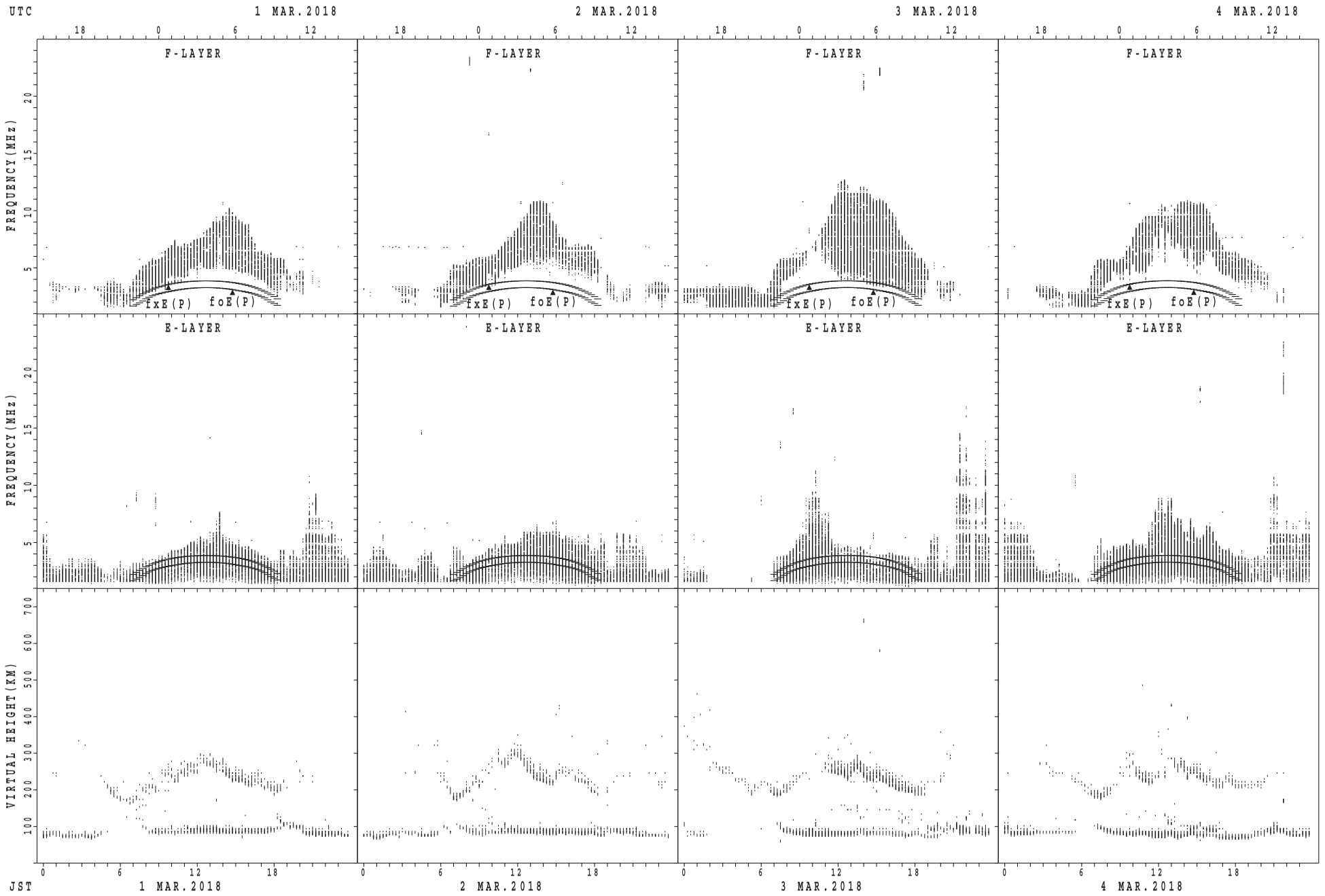
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



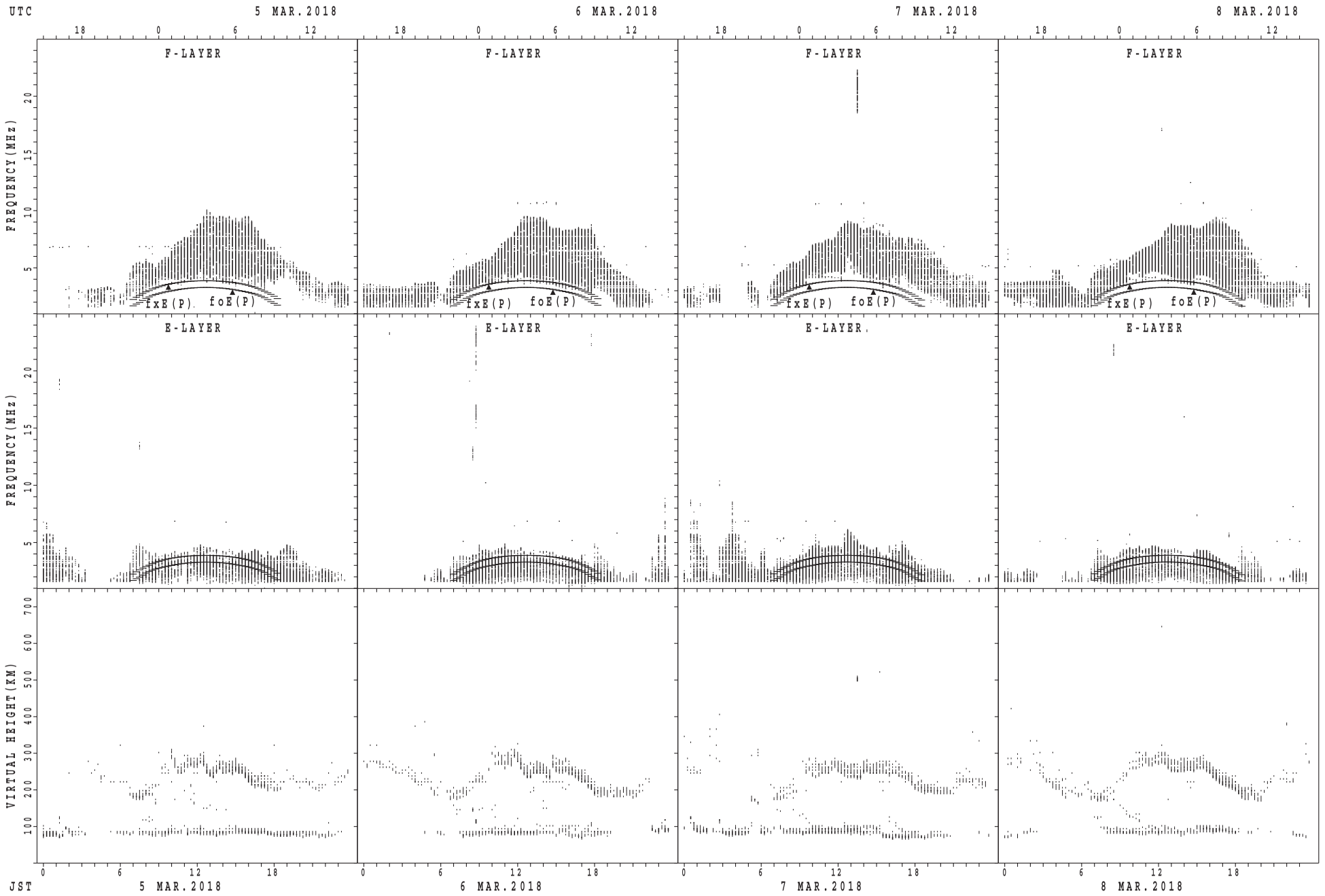
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



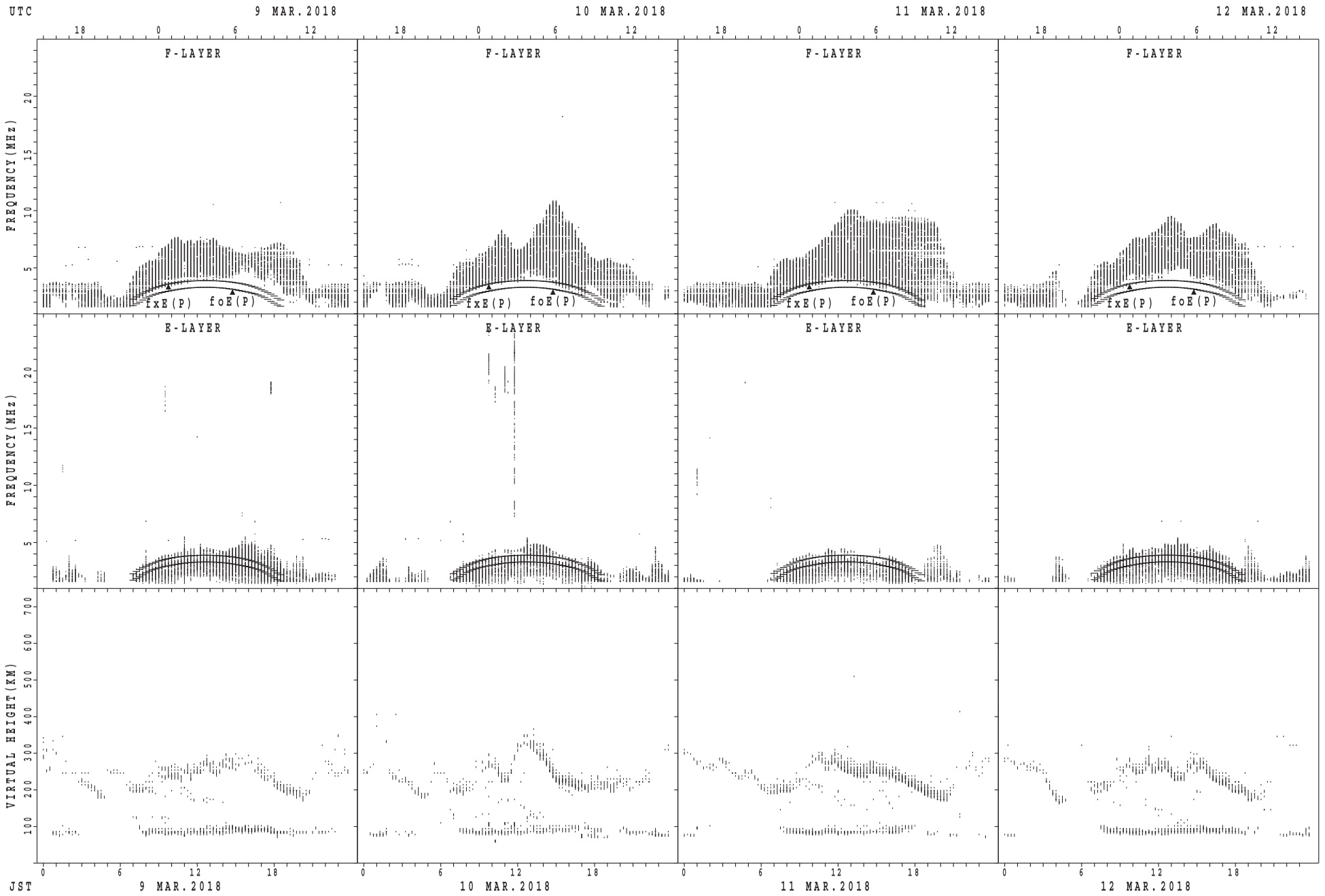
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



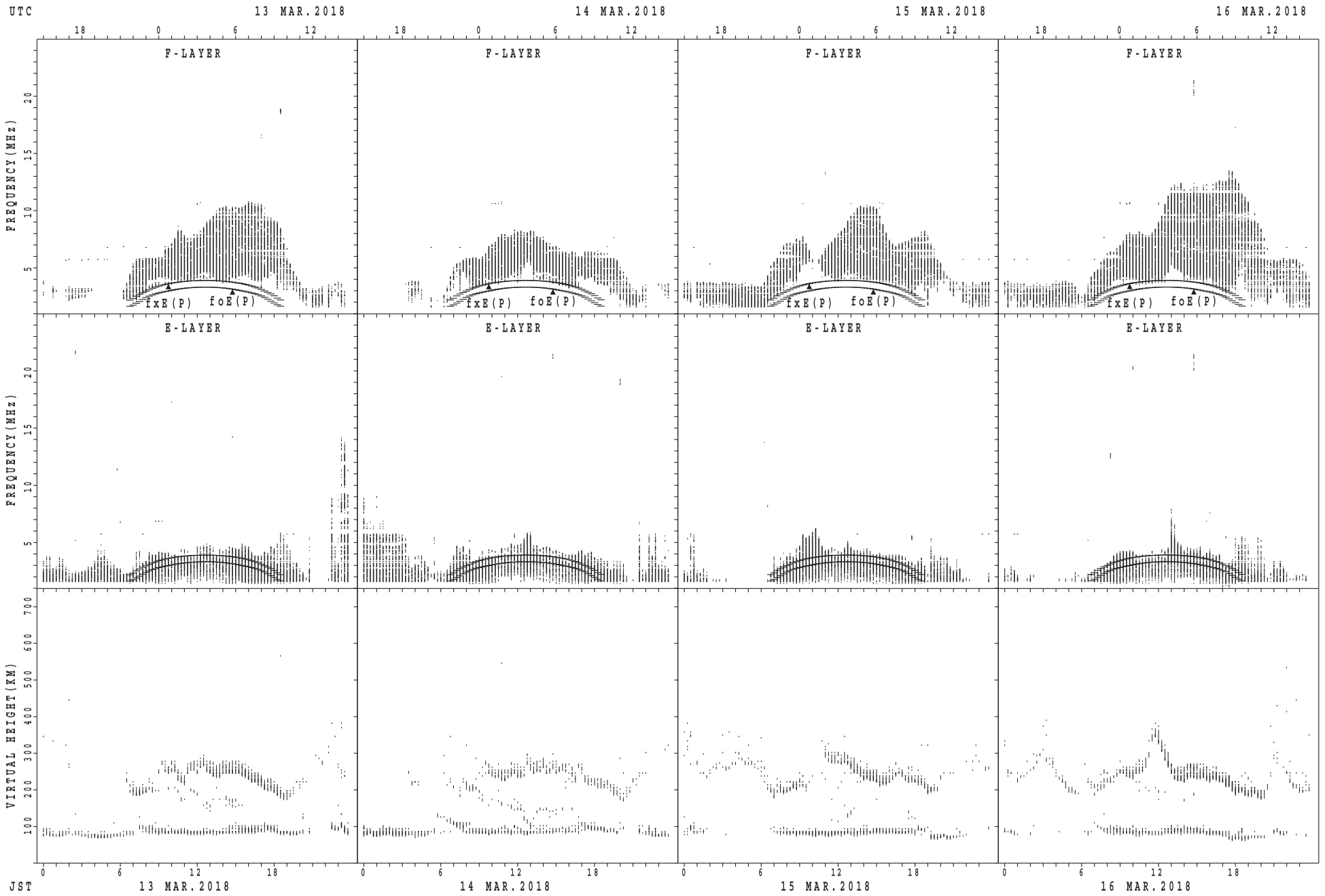
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



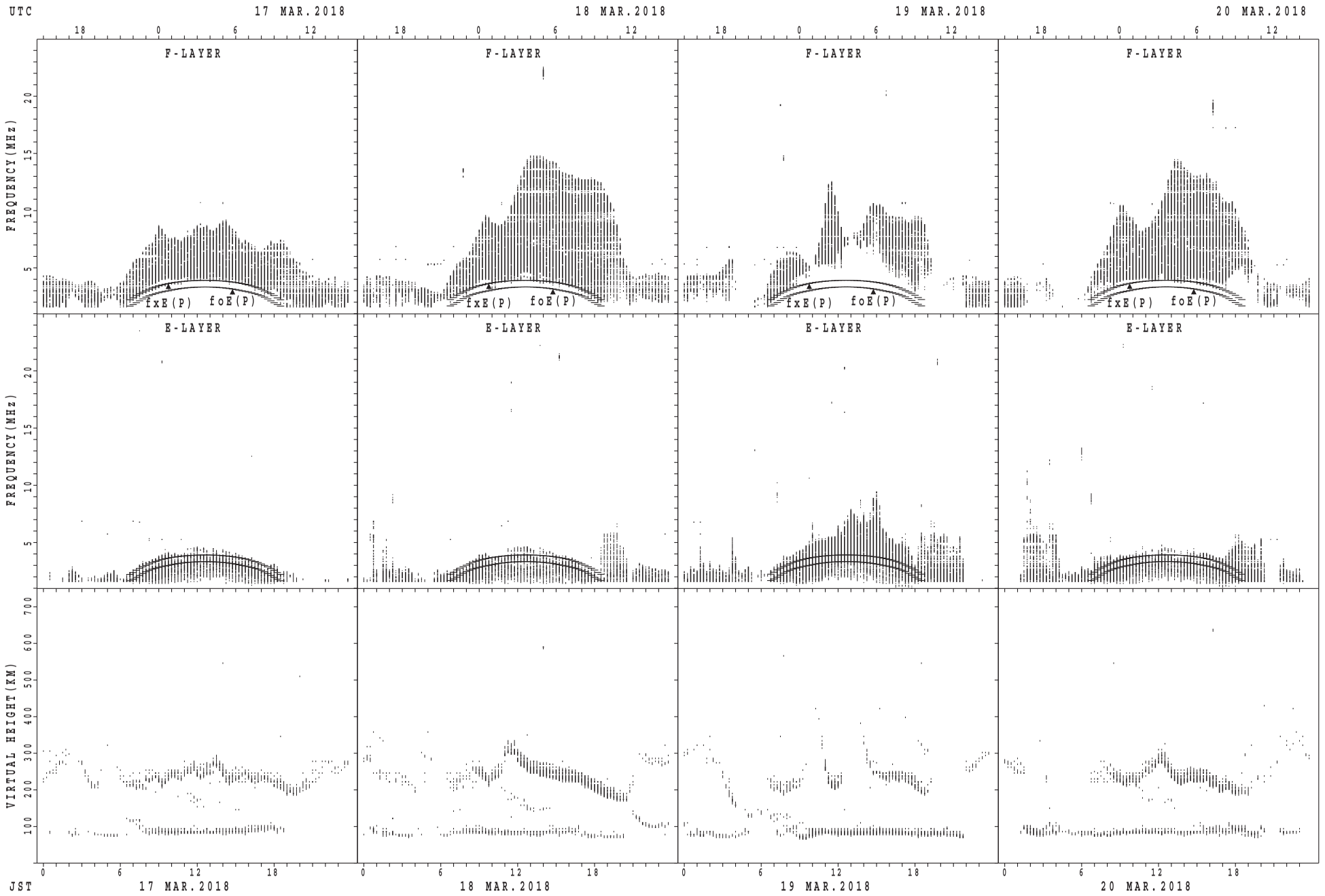
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



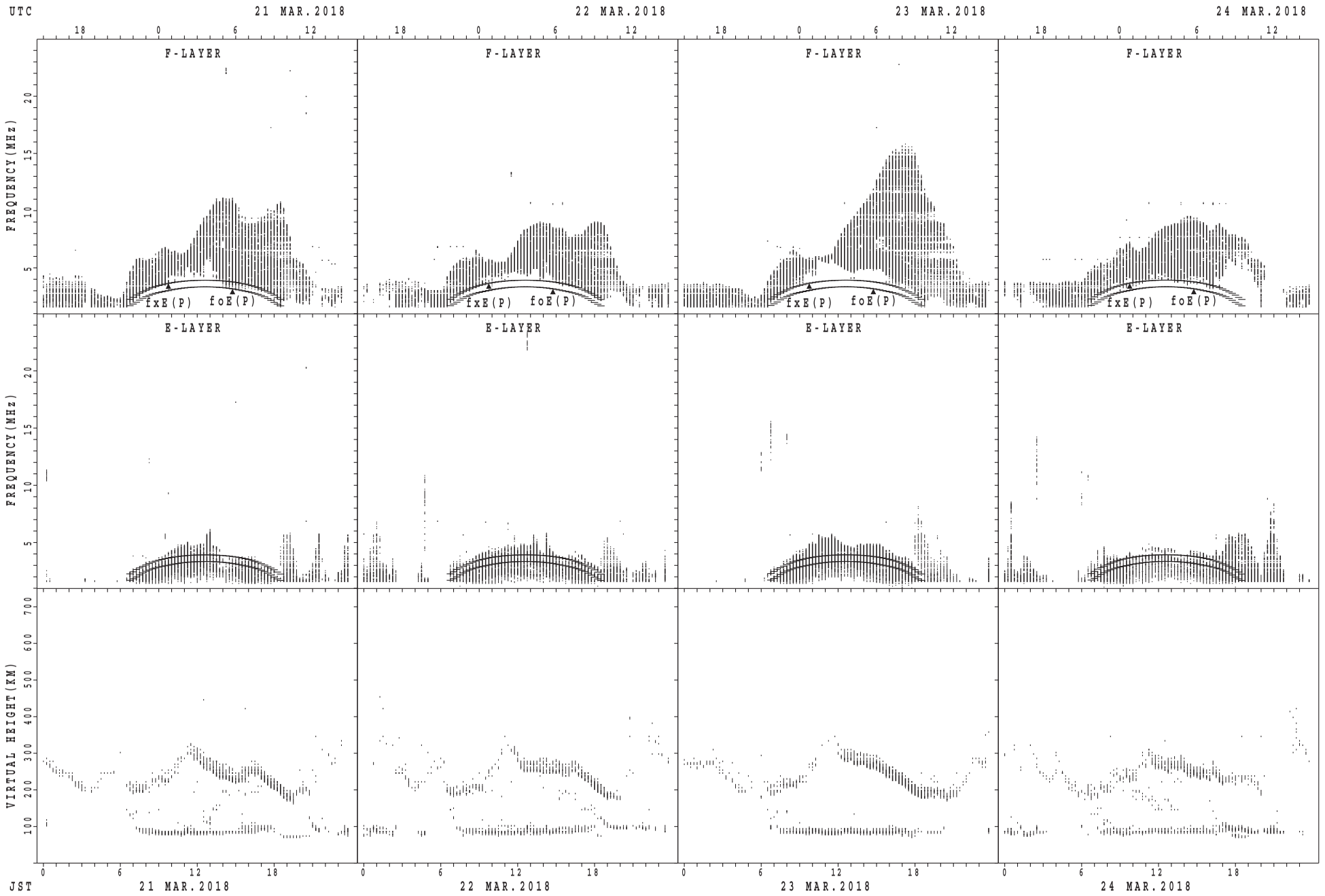
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



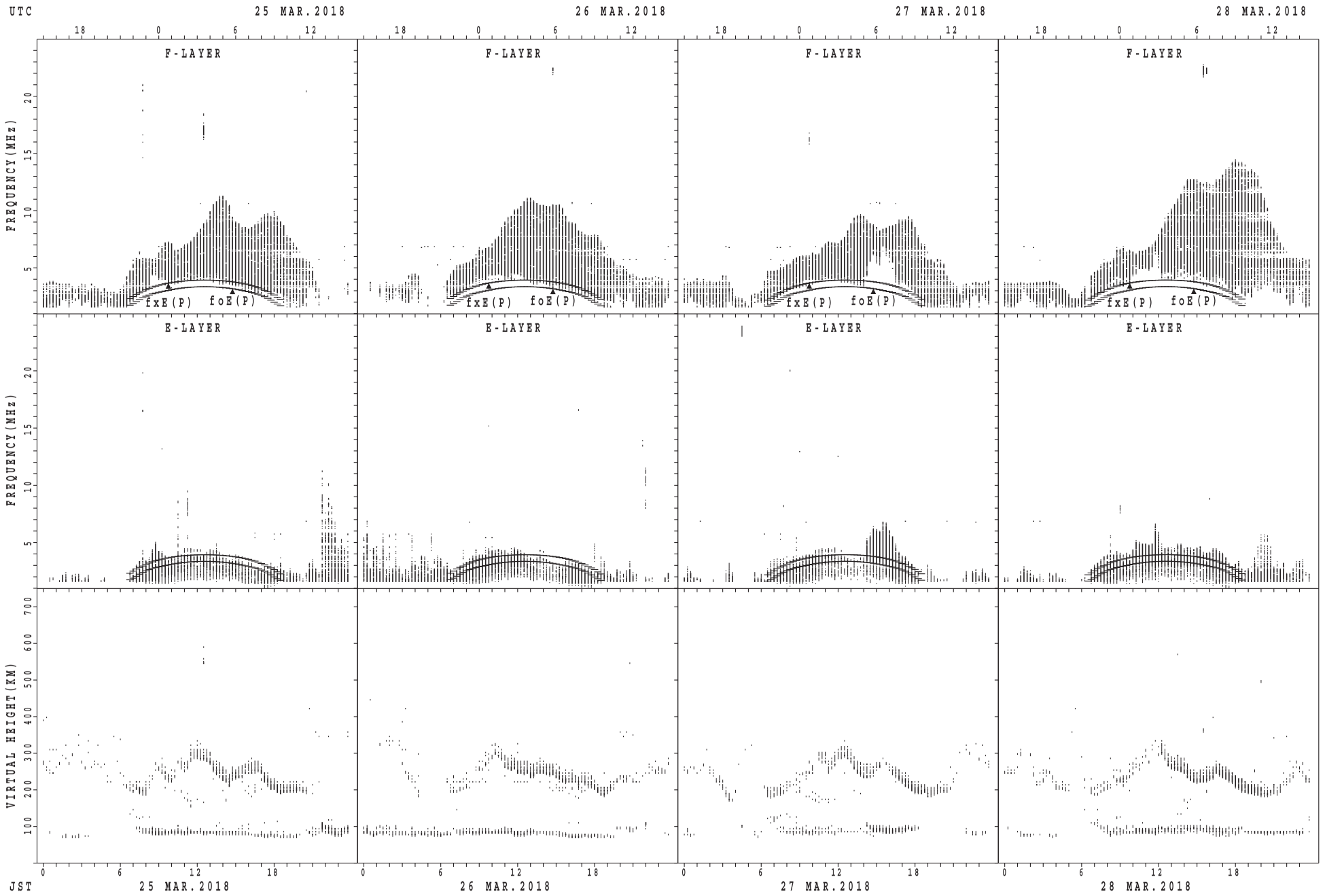
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



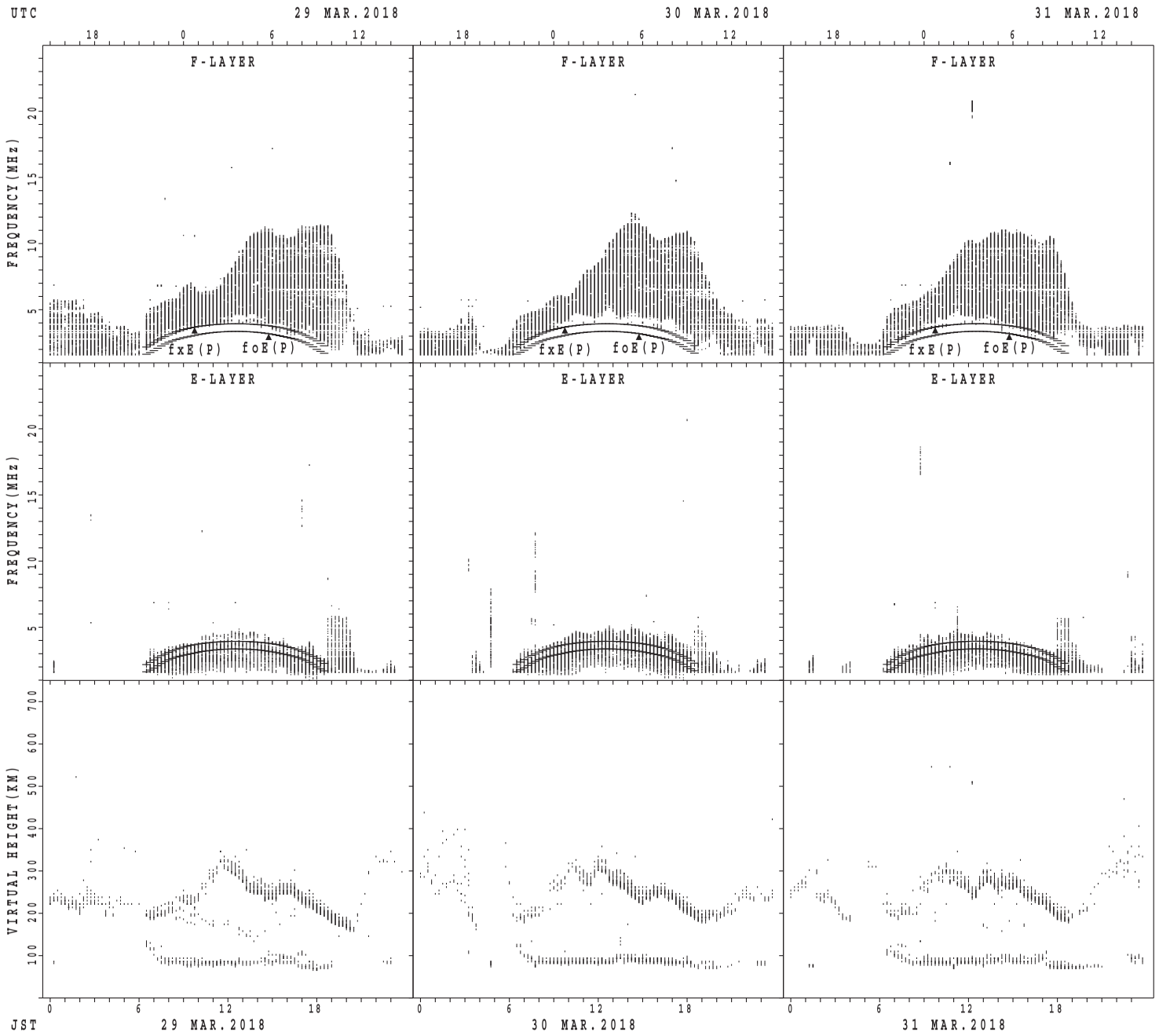
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

MAR.2018 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	5	14	22	23	25	21	17	8	3	1						
MED								234	218	233	239	248	246	256	248	243	240	210						
U Q								117	233	248	258	256	263	271	258	259	242	105						
L Q								117	208	214	222	240	232	237	239	240	232	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	3	3	2	1	2	1	20	29	31	31	30	31	31	30	31	30	29	14	12	10	4	7	4	3
MED	87	83	78	81	82	175	142	113	95	91	92	89	91	90	89	94	95	89	83	86	85	89	89	85
U Q	91	85	81	40	83	87	155	137	113	101	103	101	153	113	91	95	107	107	91	89	92	95	92	89
L Q	81	77	75	40	81	87	137	101	89	89	89	87	89	83	85	89	89	83	81	81	78	87	88	83

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	6	14	13	21	21	22	20	12	7	10	2	1				
MED								200	222	236	266	236	252	249	248	238	250	226	234	224				
U Q								100	238	248	289	268	264	262	259	262	256	234	236	112				
L Q								100	212	232	243	231	239	234	236	228	226	218	232	112				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	6	7	5	3	3	9	26	24	24	25	25	25	25	25	24	26	22	14	18	21	16	15	13
MED	87	82	83	83	93	89	139	107	95	95	91	89	95	89	91	92	95	95	90	91	93	89	87	89
U Q	89	87	87	86	185	89	170	131	107	96	96	97	102	98	98	99	99	113	91	97	97	92	95	89
L Q	85	81	81	79	81	81	128	97	90	89	87	84	87	82	81	87	89	89	89	87	89	87	87	87

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									3	10	20	18	28	28	29	22	18	8	8	3				
MED									212	234	256	259	272	254	248	248	253	246	226	224				
U Q									258	252	263	286	288	267	265	266	262	259	239	240				
L Q									210	226	238	246	250	246	234	236	236	236	217	216				

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	16	9	9	8	4	7	3	29	30	31	31	31	30	30	31	30	30	29	25	23	21	20	17	16
MED	87	83	81	85	131	89	89	125	101	101	95	89	94	97	95	95	95	95	89	87	95	89	87	87
U Q	89	90	84	87	176	179	157	140	113	113	95	95	163	159	113	107	105	100	99	97	99	97	91	91
L Q	81	80	80	82	85	81	79	117	89	91	89	87	89	89	91	89	89	89	83	79	89	86	83	82

MONTHLY MEDIANS OF h'F AND h'Es

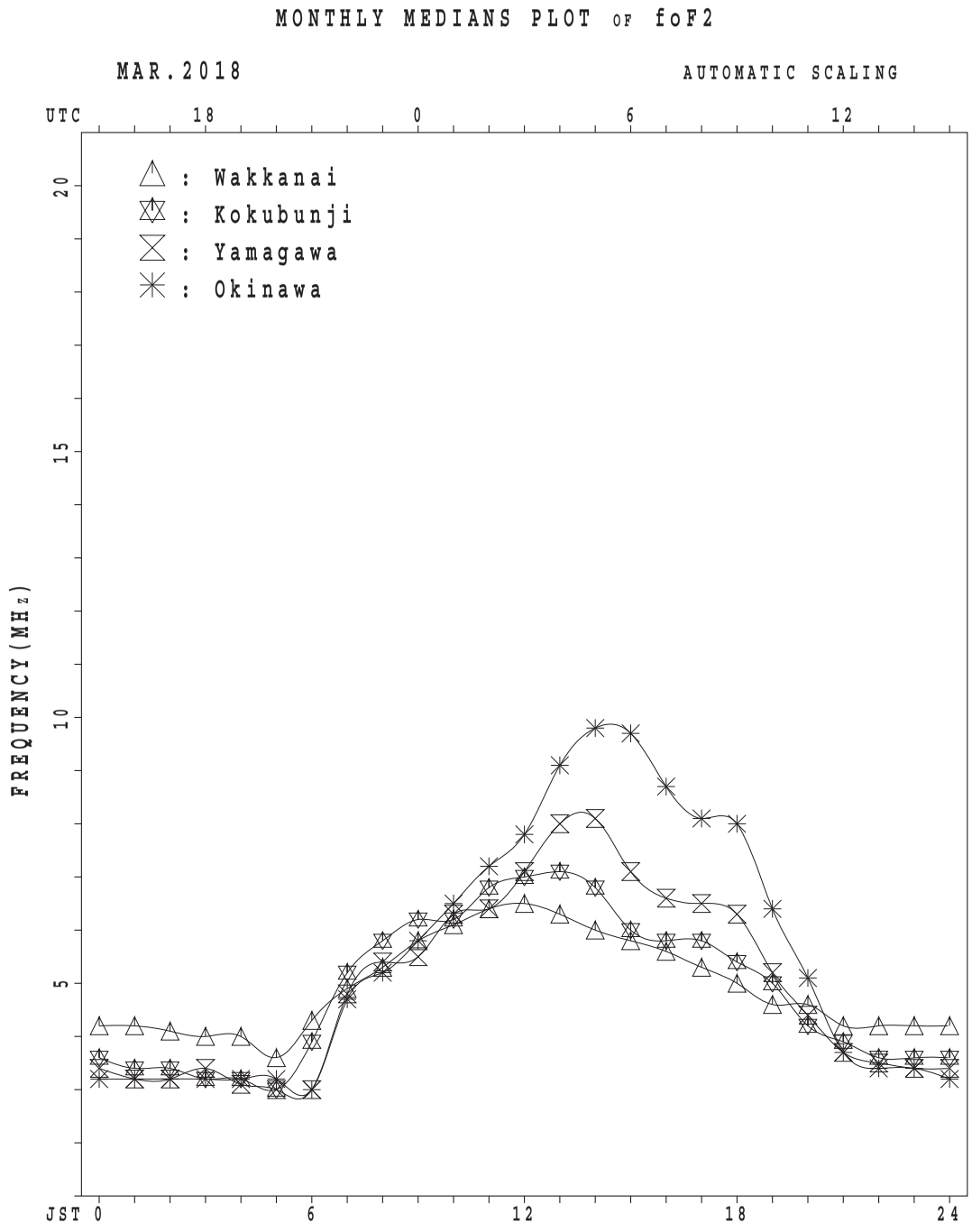
MAR.2018 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	10	19	23	30	29	30	29	28	25	23	13	5	1		
MED									244	244	248	264	275	254	246	238	238	232	214	204	202	218		
U Q									296	280	272	280	296	267	254	251	248	240	224	217	215	109		
L Q									208	222	238	254	252	244	238	224	226	223	200	199	200	109		

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	15	19	16	10	11	8	13	28	31	31	31	31	31	31	31	31	31	31	29	30	26	17	17	18
MED	89	87	88	85	83	86	91	120	107	95	95	95	101	113	101	95	95	101	87	87	89	89	87	84
U Q	97	97	91	89	95	94	135	135	125	119	101	113	163	161	155	107	107	109	95	91	99	101	96	93
L Q	81	81	83	81	81	82	86	110	89	89	89	89	89	93	95	89	89	87	83	81	83	84	83	83


MONTHLY MEDIANS PLOT OF foF2
MAR.2018
AUTOMATIC SCALING
UTC
18
0
6
12
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 45	X 45	X 43	X 43	X 41	X 39														X 55	X 46	X 40	X 40	X 41
2	X 41	X 41	X 41	X 39	X 40	X 40														X 55	X 51	X 45	X 45	X 45
3	X 48	X 48	X 48	X 45	X 42	X 41														X 45	X 44	X 45	X 43	X 45
4	X 44	X 44	X 44	X 44	X 44	X 41														X 52	X 47	X 46	X 45	X 49
5	X 50	X 45	X 48	X 48	X 48	X 46														X 52	X 46	X 46	X 46	X 44
6	X 43	X 43	X 42	X 40	X 38															X 48	X 43	X 42	X 43	X 40
7	X 39	X 39	X 39	X 38	X 41															X 47	X 49	X 45	X 45	X 43
8	X 43	X 43	X 44	X 44	X 46															X 45	X 46	X 46	X 46	X 46
9	X 46	X 47	X 46	X 46	X 46															X 47	X 53	X 53	X 53	X 54
10	X 52	X 52	X 54	X 53	X 52															X 43	X 45	X 44	X 47	X 47
11	X 48	X 48	X 48	X 46	X 43															X 51	X 52	X 49	X 47	X 46
12	X 45	X 45	X 45	X 45	X 43															X 49	X 44	X 47	X 49	X 48
13	X 49	X 50	X 51	X 50	X 51															X 49	X 51	X 51	X 49	X 51
14	X 51	X 48	X 49	X 50	X 47															X 47	X 47	X 47	X 47	X 47
15	X 46	X 45	X 45	X 44	X 43															X 55	X 57	X 57	X 58	70
16	59	71	58	58	57	57	58													X 47	X 52	X 51	X 51	X 54
17	X 52	X 58	X 55	42	X 41															X 58	X 59	X 57	X 58	X 58
18	X 56	X 54	X 51	X 51	X 45	43														X 49	X 48	X 46	X 46	X 44
19	55	54	53	X 42	X 42															X 56	76	58	58	58
20	58	X 55	56	56	X 37															X 46	52	51	52	48
21	X 41	X 38	X 38	X 38	X 38															X 54	X 47	X 48	X 46	X 45
22	X 43	52	54	57	53	53														X 62	59	59	60	X 58
23	58	58	58	58	58	43														X 66	X 63	X 63	70	X 60
24	X 59	58	58	56	X 57															X 65	X 65	X 59	X 59	X 56
25	X 55	X 54	X 54	X 50	X 49	50														X 62	X 59	X 54	X 53	X 46
26	X 45	X 45	X 45	X 44	X 44															X 49	X 49	X 47	X 46	X 44
27	X 42	X 42	X 45	X 41	X 38															X 57	X 58	X 55	X 51	X 49
28	X 49	X 50	X 48	C	C															X 50	X 51	X 46	X 43	X 45
29	X 45	X 45	X 42	X 42	X 39																X 60	X 50	X 47	X 44
30	X 45	X 47	X 47	X 47	X 46																X 55	X 51	X 51	X 48
31	X 51	X 48	46	45	X 36																X 57	X 55	X 50	X 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	31	31	31	30	30	10	1													28	31	31	31	31
MED	X 48	X 48	X 48	X 45	X 44	43	58													X 50	X 51	X 49	X 47	X 47
U Q	52	54	54	50	X 48	50														X 56	X 58	X 55	X 53	X 54
L Q	X 44	X 45	X 44	X 42	X 41	X 41														X 47	X 47	X 46	X 46	X 45

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	380	L	L			A					
2									L	388	400	416	L	L	L	L	L							
3									L	L	L	404	L	400	L	L								
4									L	384	L	404	404	404	388	L	L							
5								L	L	L	L	L	L	404	404	L	L							
6										L	408	L	416	L	400	L								
7										L	L	L	L	L	L	368	L							
8									L	L			412	L	384	L	L							
9									364	L	L	L	420	L	L	L								
10									348	384	408	L	420	424	L	308	L							
11										L	372	416	404	420	L	372	L							
12									L	388	412	432	428	L	400	L	L							
13									L	L	L	420	432	L	L	L								
14								L		L	424	424	L	400	L	372	L							
15									L	L	L	L	L	412	388	L	L							
16								L	L	420	416	416	420	416	396	L	L							
17									L	412	412	L	L	412	L	L								
18						L				L	404	424	416	404	392	L	L							
19								L	L	404	404	404	L	424	L	L	L							
20									L	L	420	420	L	L	L	L	L							
21									372	L	L	L	L	408	L	372								
22								L		L	416	416	416	416	400	380								
23									396	L	L	412	L	L	416	L	L							
24								360	L	L	404	420	432	432	L	L								
25									L	L	428	396	420	412	L	L	L							
26								L	L	L	408	L	412	404	396	L	328							
27							L	L	L	L	L	336	428	416	L	L	L							
28										L	404	408	416	416	L	L		L						
29								L	L	412	L	L	L	L	L	396								
30									L	404	432	420	416	420	416	396	L							
31						L		360	L	404	424	420	L	L	416	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	4	10	18	19	17	20	13	8	1							
MED								360	368	404	410	416	416	412	400	372	328							
U Q									384	412	420	420	424	418	410	388								
L Q									356	388	404	404	414	404	390	370								

MAR. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B 212	200	212	296	296	296	296	296	276	264	224	A	A					
2							B 228	220	A	288	396	U A 276	288	288	256	216	A	A						
3							A 208	208	204	276	300	292	296	280	256	228	A	A						
4							188	208	248	268	268	288	304	292	288	260	224	176	A					
5							B 204	252	268	288	300	300	292	292	256	216	188	A						
6						B	B 212	A	280	300	280	296	296	288	256	220	A	A						
7						B	B 172	256	268	296	296	312	304	284	268	240	196	A						
8						B	B 204	260	A	304	312	304	304	288	272	240	192	A						
9						B	A 196	252	268	288	296	296	296	296	276	232	200	B						
10						A	208	212	268	300	272	308	316	304	296	260	220	R 188	A					
11						B	196	212	256	284	296	296	288	280	296	260	236	188	A					
12						B	B 216	268	284	296	312	312	300	300	268	228	192	B						
13						B	A 212	268	A	A	316	312	296	288	264	232	188	196						
14						B	236	232	260	296	284	284	304	308	292	280	240	184	A					
15						B	244	208	260	284	284	312	312	292	292	272	244	180	B					
16						B	180	208	244	272	280	300	284	304	292	272	244	176	A					
17						B	244	208	240	276	296	296	A	296	284	264	232	184	A					
18						B	192	204	252	280	276	284	A	U R 208	288	260	236	188	B					
19						A	B 216	244	284	292	296	272	A	292	268	240	188	B						
20						A	256	232	248	272	288	288	316	304	296	268	A	A	A					
21						A	188	220	264	284	284	276	304	288	288	268	236	184	B					
22						B	200	236	256	280	292	260	312	A	296	280	232	180	B					
23						B	192	228	272	288	304	304	280	320	A	264	244	180	B					
24						B	208	212	256	276	272	A	A	324	A	256	256	200	B					
25						B	188	240	248	292	292	304	320	296	288	272	228	188	B					
26						B	196	220	252	288	288	304	308	308	272	268	228	184	B					
27						B	164	212	244	A	296	308	A	308	276	268	260	A	A					
28						B	200	220	264	284	296	312	284	292	288	264	244	196	B					
29						B	212	232	256	284	A	332	304	304	292	284	252	184	A	B				
30						B	184	244	276	296	296	316	316	324	300	272	236	196	A	B				
31						B	188	240	268	292	320	308	308	324	A	272	244	180	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							20	31	30	27	29	30	27	29	28	31	30	25	1					
MED							196	212	256	284	292	300	304	296	288	268	236	188	196					
U Q							210	228	264	288	296	312	312	306	294	272	244	192						
L Q							188	208	248	272	284	296	292	292	288	260	228	182						

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	26	26	22	29	21	E B 16	29	28	42	34	G	G	G	G	J A 27	50	51	J A 60	34	E B 16	20	E B 16	18
2	21	30	E B 16	E B 16	E B 16	E B 16	E B 16	31	J A 38	J A 33	J A 81	41	41	G	G	G	25	J A 23	32	32	33	20	18	E B 16
3	E B 16	E B 16	J A 21	E B 16	E B 16	21	21	27	J A 47	J A 32	39	J A 31	32	37	G	G	G	J A 21	J A 19	29	21	23	E B 16	E B 16
4	E B 16	E B 16	19	19	20	E B 16	G	J A 21	32	J A 33	J A 27	J A 97	G 25	34	G 21	J A 28	24	J A 23	J A 23	31	30	25	20	E B 16
5	E B 16	E B 16	21	20	20	E B 16	E B 16	J A 110	J A 27	34	G	G	38	J A 78	G	28	28	28	35	J A 21	22	23	21	24
6	20	E B 16	20	20	20	E B 16	E B 16	22	J A 40	J A 32	J A 51	34	34	34	G	28	28	37	32	24	24	28	27	20
7	20	18	22	19	E B 16	E B 16	E B 16	J A 22	38	38	J A 32	33	38	G	34	G	G	27	20	20	E B 16	E B 16	E B 16	E B 16
8	E B 16	20	E B 16	E B 16	E B 16	E B 16	E B 16	24	29	J A 61	38	38	36	J A 37	32	28	25	J A 23	26	27	24	22	20	20
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	23	30	40	36	38	34	J A 62	G	G	31	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
10	E B 16	57	E B 16	E B 16	E B 16	J A 23	G	25	34	34	33	J A 43	G	G	G	29	29	G	G 18	E B 16	E B 16	E B 16	E B 16	E B 16
11	19	19	E B 16	20	E B 16	E B 16	G	J A 39	G	35	34	34	33	J A 55	J A 28	G 22	26	J A 20	28	26	23	23	20	18
12	18	18	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	J A 49	36	43	J A 61	34	J A 48	30	G 20	G	E B 16	E B 16	E B 16	E B 16	E B 16	J A 77
13	E B 16	E B 16	26	24	23	E B 16	20	24	G	J A 31	J A 40	35	G 32	34	34	28	28	27	27	21	19	E B 16	E B 16	E B 16
14	23	23	E B 16	E B 16	21	E B 16	G	G 28	38	39	34	39	39	38	34	G	G	24	24	22	E B 16	22	E B 16	19
15	22	20	E B 16	E B 16	20	E B 16	G	25	30	J A 50	39	J A 48	J A 56	J A 38	G 24	28	25	G	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16
16	22	23	E B 16	20	E B 16	E B 16	G	24	J A 33	36	32	J A 83	35	35	33	G 27	G	G	20	19	E B 16	26	E B 16	E B 16
17	21	E B 16	E B 16	20	E B 15	E B 16	26	23	28	J A 49	38	32	J A 31	34	32	34	G	21	19	19	E B 16	E B 16	E B 16	E B 16
18	20	68	E B 16	22	22	E B 16	27	25	28	32	32	J A 34	49	J A 40	G	J A 27	G	32	E B 16	22	E B 16	25	26	21
19	E B 16	24	22	27	28	24	E B 16	23	29	J A 52	35	35	32	J A 34	34	G 22	25	G	E B 16	E B 16	J A 27	21	21	20
20	E B 16	19	E B 16	E B 16	23	24	G 25	25	J A 33	33	38	J A 41	J A 42	42	38	34	J A 33	36	34	34	33	26	24	22
21	E B 16	J A 23	J A 25	E B 16	20	E B 16	J A 23	24	30	33	34	33	32	33	33	J A 33	27	20	E B 16	E B 16	E B 16	E B 16	20	20
22	21	19	E B 16	J A 49	E B 16	E B 16	J A 83	28	G	32	33	J A 52	39	37	J A 49	34	J A 27	28	E B 16	28	J A 21	20	E B 16	E B 16
23	20	20	22	20	E B 16	E B 16	26	24	G	34	35	J A 39	34	34	J A 29	G 20	J A 25	22	E B 15	24	E B 16	22	22	E B 16
24	18	E B 16	22	E B 16	E B 16	E B 16	G	26	28	35	36	J A 62	38	33	36	G	G	G	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16
25	24	23	23	E B 16	E B 16	E B 16	24	26	29	G 34	36	J A 48	45	G	36	28	26	22	24	21	24	26	E B 16	E B 16
26	21	21	23	25	27	E B 16	33	26	J A 50	34	36	J A 37	44	J A 39	G	34	32	J A 21	E B 16	25	23	27	40	E B 16
27	E B 16	E B 17	E B 16	E B 16	33	E B 16	19	J A 46	28	36	32	34	33	36	35	32	32	J A 35	J A 34	E B 16	E B 16	J A 23	E B 16	54
28	24	22	J A 31	C	C	E B 16	21	26	31	32	35	J A 32	33	J A 37	33	30	G	G	E B 16	21	21	E B 16	E B 16	E B 16
29	E B 16	22	E B 16	E B 16	E B 16	E B 16	G	28	30	39	40	J A 33	34	36	34	34	J A 51	21	21	E B 15	E B 16	27	23	26
30	26	26	28	26	21	E B 16	23	G	J A 31	34	34	G	35	35	33	G	26	G	20	E B 16	E B 16	E B 16	24	20
31	24	22	19	E B 16	E B 15	E B 16	J A 25	31	35	35	34	40	44	J A 50	J A 32	G 23	J A 27	24	J A 26	E B 16	E B 16	24	26	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	20	20	19	18	E B 16	E B 16	24	26	30	34	35	37	35	35	32	28	26	22	20	21	E B 16	22	E B 16	E B 16
U Q	22	23	22	20	21	16	G	28	34	J A 39	38	J A 43	41	J A 38	34	30	28	27	27	26	23	25	22	20
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G 28	33	33	33	32	G 34	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	25	29	G 29	G	G	G	G	G 26	G 20	31	A A 60	17	E B 16	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 21	25	29	32	G 30	28	G	G	G	G 21	22	24	21	25	18	E B 16	E B 16
3	E B 16	E B 16	16	E B 16	E B 16	E B 16	E B 16	G 18	24	27	30	G 30	30	31	G	G	G	20	E B 16	18	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	16	E B 16	G	G 20	25	28	G 26	33	G 21	34	G 21	28	23	G 16	16	19	16	E B 16	16	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 16	27	G 25	G	G	30	32	G	G 25	24	G 16	20	E B 16	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	28	G 24	30	32	30	G 30	G	G 26	26	29	22	16	E B 16	E B 17	E B 17	E B 16
7	E B 16	16	16	E B 16	E B 16	E B 16	E B 16	21	35	28	G 29	G 29	G 30	G	29	G	G	G 18	16	E B 16	E B 16	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G 25	28	32	36	34	31	31	G 27	G 22	G 17	17	16	E B 16	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	26	28	30	G 29	30	32	G	G	25	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	23	28	G 29	31	32	G	G	G	27	24	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 20	G	32	31	31	30	33	G 28	G 20	G 24	G 17	20	15	15	15	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G 28	31	G 31	G 31	31	G 27	28	G 19	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	G	30	31	G 30	G 32	30	31	G 26	G 23	G 19	G 18	E B 16	E B 16	E B 16	E B 16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 21	27	G 30	30	31	32	G 31	31	G	G	G 17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	22	29	29	29	34	32	31	G 23	G 23	G 23	G	E B 15	E B 16	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 16	G	21	28	31	30	32	32	32	31	G 24	G	G	E B 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	16	E B 15	E B 16	G 18	G 19	25	28	G 28	G 29	28	G 16	30	G 26	G	G 18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
18	16	E B 16	E B 16	E B 16	16	E B 16	G 17	24	G 24	G 27	31	31	34	32	G	G 25	G	19	E B 16	E B 16	E B 16	E B 16	18	E B 16
19	E B 16	E B 16	E B 16	E B 16	E B 16	20	E B 16	G 21	26	31	30	30	30	33	30	G 20	G 21	G	E B 16	E B 16	E B 16	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 20	G 23	28	30	34	34	34	32	G 30	G 27	27	27	20	17	E B 16	E B 16	E B 16	E B 16
21	E B 16	16	E B 16	E B 16	E B 16	E B 16	G 18	22	28	32	32	32	32	31	G 28	27	25	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	24	G	31	31	33	35	33	32	G 28	G 22	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	23	G	31	31	33	33	G 31	29	G 18	G 23	19	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	24	28	30	29	35	35	G 32	29	G	G	G	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 17	G 22	26	G 28	35	33	33	G	G 29	G 27	24	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 19	24	27	33	33	31	32	32	G	G 27	24	G 18	E B 16	E B 16	E B 16	E B 16	16	E B 16
27	E B 16	E B 17	E B 16	E B 16	E B 16	E B 16	17	23	27	30	30	G 26	30	32	30	27	G 24	20	E B 16	E B 16	E B 16	19	E B 16	21
28	E B 16	E B 16	E B 16	C	C	E B 16	G 19	26	28	31	33	32	30	34	31	27	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	25	29	32	32	G 32	32	32	31	30	G 25	20	E B 16	E B 15	E B 16	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	21	G	29	32	32	G	34	34	30	G	G 23	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	23	28	33	32	G 31	36	34	G 31	31	G 20	25	21	18	E B 16	E B 16	E B 16	E B 16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	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	E B 16	E B 16	E B 16	E B 16	G 18	22	27	30	31	G	G	G	G	G 27	G 24	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	23	28	31	32	33	33	32	31	G	G	20	18	16	E B 16	E B 16	E B 16	E B 16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 21	G	G 28	30	G 30	30	G 31	G 29	G 25	G 23	G 18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

MAR. 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

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

MAR. 2018 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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	306	310	322	314	324	320	351	383	372	378	385	365	371	381	367	348	374	350	A	334	370	341	341	325
2	339	323	323	315	314	314	373	382	378	378	390	359	363	373	369	360	375	357	346	359	345	376	319	319
3	294	299	319	305	320	319	359	395	381	396	364	367	371	352	360	367	371	385	347	339	316	330	329	306
4	313	328	311	311	324	324	348	369	362	391	373	381	351	363	369	335	374	363	342	331	330	344	357	338
5	332	326	318	318	318	325	354	354	377	357	395	334	349	361	363	368	362	372	342	360	338	327	328	302
6	285	263	307	322	336	346	373	394	370	360	379	368	343	343	362	349	381	376	332	353	336	348	340	334
7	340	336	341	306	334	332	369	392	394	363	375	351	372	346	358	367	373	369	366	318	331	339	309	296
8	319	320	338	324	344	349	387	390	366	382	346	349	359	351	344	357	364	365	346	349	322	335	325	325
9	330	328	319	335	335	347	366	389	393	371	369	352	355	363	361	357	357	355	353	323	325	323	321	353
10	351	334	331	332	338	356	363	394	379	360	378	333	336	316	336	342	346	360	370	301	322	314	311	308
11	313	314	305	300	308	331	372	400	380	357	351	360	353	350	362	352	365	351	343	309	324	327	324	316
12	323	330	317	321	323	342	391	391	383	363	345	336	352	371	364	360	368	378	358	369	327	328	313	326
13	323	318	329	325	327	338	372	396	365	356	368	360	356	369	369	371	377	359	350	323	334	324	328	317
14	320	331	329	335	346	344	382	365	331	358	340	376	378	371	356	363	373	373	360	355	Y 331	316	325	326
15	326	319	312	319	318	231	350	364	341	353	328	352	367	349	367	355	354	354	361	331	314	316	309	F 303
16	F 289	F 296	F 262	F 265	F 319	F 307	F 348	368	378	349	342	330	335	357	353	347	361	350	350	308	311	317	309	308
17	311	316	343	F 284	327	302	314	330	356	311	349	354	342	349	348	351	379	359	334	301	304	311	290	295
18	305	313	327	296	321	F 289	354	367	346	338	360	348	345	345	348	352	360	350	353	324	318	324	306	319
19	F 309	F 296	F 288	319	304	361	371	352	352	291	352	340	316	336	349	354	351	360	329	298	F 326	F 280	F 273	F 309
20	F 290	297	F 291	F 324	357	329	358	349	345	337	349	362	363	361	337	351	368	363	342	328	F 329	F 279	F 296	F 279
21	306	311	314	319	325	347	384	375	358	347	332	358	348	348	347	353	360	362	368	336	323	339	305	330
22	322	F 327	F 327	F 289	F 300	F 300	368	388	380	360	364	355	341	359	363	359	359	377	348	348	F 320	F 329	F 318	289
23	F 324	F 322	F 317	F 309	F 347	F 302	379	378	367	346	345	341	321	346	350	347	352	365	348	340	321	322	F 307	298
24	303	F 310	F 314	F 319	315	319	357	358	351	340	359	362	355	360	350	355	361	348	351	325	330	309	315	334
25	317	303	304	325	320	F 294	401	341	332	296	319	342	361	370	332	350	342	358	336	302	335	345	331	329
26	318	310	307	322	308	362	364	360	326	329	335	339	322	329	344	354	348	343	342	312	311	321	295	272
27	284	284	316	341	331	342	353	369	378	342	371	V 348	351	313	352	344	360	362	341	331	325	320	293	320
28	321	311	330	C	C	331	382	387	362	344	355	332	324	352	346	354	368	362	348	313	333	332	317	307
29	323	323	294	310	338	333	381	392	361	348	363	358	361	338	328	353	343	345	342	330	342	338	323	311
30	335	316	316	333	321	336	393	362	368	323	339	341	348	347	344	354	342	354	346	343	322	342	316	326
31	330	321	F 311	F 337	310	310	380	348	364	340	331	339	345	334	342	362	352	358	343	321	331	341	315	319
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31
MED	319	316	317	319	324	331	369	375	366	353	355	352	351	351	352	354	361	360	346	330	326	327	316	317
U Q	326	326	327	325	335	344	381	391	378	363	371	360	361	363	363	360	373	365	353	343	333	339	325	326
L Q	306	310	307	309	318	F 310	354	360	352	340	342	340	342	345	344	350	352	354	342	313	321	317	307	303

MAR. 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	422	L	L			A					
2									L	408	393	376	L	L	L	L	L							
3									L	L	L	394	L	392	L	L								
4									L	405	L	410	402	396	396	L	L							
5								L	L	L	L	L	L	396	393	L	L							
6										L	387	L	406	L	369	L								
7										L	L	L	L	L	L	385	L							
8									L	L			400	L	407	L	L							
9									421	L	L	L	385	L	L	L								
10									416	406	381	L	387	368	L	428	L							
11										L	410	363	394	378	L	389	L							
12									L	406	396	378	379	L	392	L	L							
13									L	L	L	390	378	L	L	L								
14								L		L	386	386	L	408	L	397	L							
15									L	L	L	L	L	384	404	L	L							
16								L	L	378	378	370	364	365	381	L	L							
17									L	364	380	L	L	377	L	L								
18						L				L	382	363	375	385	397	L	L							
19								L	L	348	387	400	L	354	L	L	L							
20									L	L	391	392	L	L	L	L	L							
21									379	L	L	L	L	374	L	395								
22								L		L	380	383	398	383	382	414								
23									380	L	L	407	L	L	371	L	L							
24								374	L	L	410	395	384	384	L	L								
25									L	L	360	385	362	385	L	L	L							
26								L	L	L	368	L	386	392	362	L	376							
27							L	L	L	L	L	462	398	369	L	L	L							
28										L	378	398	380	350	L	L		L						
29								L	L	368	L	L	L	L	L	381								
30									L	371	345	371	409	368	368	378	L							
31						L		413	L	380	376	394	L	L	361	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	4	10	18	19	17	20	13	8	1							
MED								394	398	379	382	390	386	384	382	392	376							
U Q									418	406	391	398	399	392	396	406								
L Q									380	368	378	376	378	368	368	383								

MAR. 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

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									228	214	220	240	234	234	246	246			A					
2									224	218	218	250	242	232	246	246	232							
3									238	206	210	242	230	244	244	244								
4									236	224	224	232	254	244	236	270	222							
5								226	226	228	206	238	248	234	244	234	244							
6										228	228	228	254	252	252	242								
7										238	226	248	224	252	258	246	230							
8									212	212			264	246	248	248	238							
9									216	242	234	234	246	246	246	234								
10									216	238	226	282	252	294	250	230	236							
11										246	246	234	248	248	234	258	234							
12									216	242	264	246	228	228	238	238	236							
13									236	242	228	236	246	238	238	226								
14								226		246	250	218	230	242	242	242	220							
15									268	270	296	256	232	246	236	236	236							
16								236	224	266	264	264	266	244	256	256	238							
17									260	352	268	260	270	256	242	242								
18						246				262	248	254	256	264	264	236	236							
19								236	244	392	234	274	290	276	254	240	238							
20									254	274	254	240	234	242	272	240	240							
21									254	254	264	252	252	258	252	242								
22								216		246	234	248	260	254	254	240								
23									250	256	256	256	274	252	252	252	244							
24								258	244	270	262	262	262	262	250	236								
25									296	316	322	270	244	234	282	246	246							
26								246	300	298	266	290	332	292	280	268	252							
27							252	234	238	282	246	274	276	300	248	254	230							
28										290	258	292	314	270	262	246		228						
29								228	250	278	260	254	246	270	282	278								
30									254	316	286	266	270	256	260	258	244							
31						258		244	258	286	290	260	246	266	254	238	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						2	1	10	24	31	30	30	31	31	31	31	20	1						
MED						252	252	235	241	254	249	253	252	252	250	242	237	228						
U Q								244	254	282	264	264	266	264	258	252	243							
L Q								226	225	238	228	240	242	242	244	238	233							

MAR. 2018 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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	252	252	260	260	242	222	218	188	196	184	182	184	188	200	194	220	220	A	228	204	238	238	228
2	224	240	240	248	260	260	208	218	204	188	192	188	180	200	200	208	206	212	220	236	222	208	228	232
3	Q 246	Q 230	250	Q 252	236	260	226	206	212	190	180	180	186	190	200	208	228	208	232	246	246	242	250	252
4	240	224	248	242	226	230	238	222	200	200	190	178	174	210	198	192	214	216	220	234	248	216	232	222
5	214	222	236	250	244	224	206	214	204	194	194	176	188	208	198	198	204	220	234	222	230	244	242	Q 258
6	Q 252	Q 264	240	234	234	206	206	212	222	192	198	194	190	188	198	200	226	226	242	228	228	226	240	226
7	234	240	230	260	228	222	214	200	200	190	190	184	192	192	196	202	202	224	210	254	230	218	246	264
8	242	242	220	234	220	202	202	214	186	192	196	242	198	198	194	208	208	224	208	224	236	230	236	236
9	234	246	246	234	224	216	210	200	190	190	190	190	190	202	196	196	230	212	198	234	234	234	246	240
10	202	228	222	228	208	208	212	208	196	196	202	196	198	198	202	200	200	234	208	224	240	240	262	262
11	256	256	256	264	240	232	206	194	194	222	184	198	198	202	210	196	210	222	214	248	236	236	236	250
12	250	250	258	248	238	220	200	208	194	194	194	194	198	198	192	206	206	206	216	206	228	242	248	248
13	244	238	240	240	232	196	196	192	192	198	198	182	184	194	186	198	214	224	214	222	232	228	254	250
14	250	250	228	234	216	210	204	192	212	192	192	192	190	182	186	192	200	222	216	208	248	248	252	252
15	252	252	264	262	264	Q 272	242	236	200	200	192	192	212	202	194	204	214	216	216	216	240	240	240	240
16	Q 240	Q 242	Q 244	Q 280	Q 244	Q 224	228	212	198	198	198	198	198	210	202	202	212	224	212	230	262	232	268	248
17	248	210	208	204	244	Q 258	290	232	222	200	196	186	174	216	200	196	226	216	240	244	252	252	Q 246	Q 234
18	234	246	240	Q 224	214	210	240	242	208	198	198	192	198	192	192	196	204	224	222	222	238	238	258	252
19	266	272	272	250	Q 236	212	230	E A 206	200	224	214	196	194	206	206	202	218	218	240	230	236	Q 248	Q 266	Q 266
20	Q 244	244	Q 224	216	216	228	236	242	204	202	202	202	194	200	202	204	204	210	214	244	238	Q 254	272	Q 272
21	272	270	260	248	234	234	214	214	190	206	192	192	192	198	198	198	230	238	216	214	228	228	240	250
22	240	240	240	238	Q 238	220	224	198	198	222	198	188	198	206	200	200	228	220	214	208	228	Q 228	Q 230	230
23	Q 244	Q 246	Q 226	Q 240	Q 184	Q 204	218	228	200	212	204	204	192	204	196	208	214	230	230	210	220	232	246	Q 230
24	Q 230	Q 240	Q 228	228	240	236	214	214	202	202	192	192	204	204	198	210	220	228	228	218	222	238	232	232
25	254	262	262	242	Q 208	Q 238	206	230	206	194	194	198	198	204	196	214	214	224	238	244	220	220	222	240
26	256	272	260	260	246	210	210	204	206	230	200	194	194	194	194	198	198	240	222	240	240	234	Q 262	262
27	Q 256	Q 256	246	236	222	214	190	190	204	210	198	198	188	208	212	202	202	222	228	226	226	226	256	262
28	248	268	252	C	C	246	202	220	216	202	202	186	186	192	210	202	224	212	216	246	228	224	242	230
29	242	258	258	242	218	228	208	196	200	210	202	192	190	170	198	212	242	242	234	244	222	222	222	262
30	246	246	246	246	218	230	212	224	204	212	202	208	192	210	200	204	206	244	222	214	226	226	236	258
31	250	248	Q 224	Q 208	208	218	218	206	220	198	198	212	190	196	190	196	204	226	226	228	226	226	240	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	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31
MED	246	246	244	242	233	224	212	212	200	198	196	192	192	200	198	202	214	222	220	228	230	232	242	248
U Q	252	256	256	250	240	236	226	222	206	210	200	198	198	206	200	206	224	226	230	244	240	240	254	258
L Q	240	240	228	234	218	210	206	200	196	194	192	186	188	192	194	196	204	216	214	218	226	226	236	232

MAR. 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	102	100	94	104	104	104	104	104	112	100	A	A					
2							B	102	110	A	108	102	102	102	104	106	110	A	A					
3							A	110	110	106	104	104	104	108	108	108	108	A	A					
4							100	124	118	118	106	106	106	106	106	104	112	100	A					
5							B	114	114	114	112	108	108	108	108	102	102	114	A					
6						B	B	118	A	118	118	108	108	100	104	108	108	A	A					
7						B	B	100	110	110	108	108	108	108	108	108	106	124	A					
8						B	B	104	104	A	104	112	100	100	104	104	104	110	A					
9						B	A	110	110	110	110	110	110	110	110	110	110	128	B					
10						A	B	144	104	110	110	104	110	110	110	110	106	106	100	A				
11						B		96	104	104	104	104	104	104	104	104	104	110	110	A				
12						B	B	90	108	108	108	108	108	108	100	100	106	128	B					
13						B	A	112	112	A	A	112	110	100	106	98	102	88	96					
14						B	E B	112	120	104	104	104	104	104	110	110	110	110	104	A				
15						B		132	108	108	108	108	108	108	108	108	108	108	118	B				
16						B	E B	136	94	108	108	106	106	106	106	106	106	96	104	A				
17						B	E B	118	102	102	102	102	108	A	106	106	102	94	E A	116	A				
18						B		130	100	98	98	104	104	A	100	108	108	108	E A	118	B				
19						A	B	104	104	104	104	104	104	A	104	104	118	108	B					
20						A		130	114	114	104	104	104	102	102	102	110	A	A	A				
21						92	E A	134	118	108	108	108	108	108	108	102	102	102	94	B				
22						B		116	116	110	102	102	102	102	A	112	108	108	106	B				
23						B		120	110	100	106	106	106	106	106	A	98	106	106	B				
24						B		128	114	104	92	102	102	A	102	A	102	102	116	B				
25						B		130	118	112	112	112	104	104	104	104	104	112	108	B				
26						B		124	90	104	112	104	104	104	104	104	96	106	110	B				
27						B		110	106	106	A	118	118	A	118	112	94	114	A	A				
28						B	B	128	128	114	120	108	108	106	106	106	108	96	96	B				
29						B		126	116	98	110	A	116	112	98	110	110	110	120	A	B			
30						B		124	110	112	112	112	112	112	98	104	104	102	102	A	B			
31						B		134	106	96	96	112	106	106	106	A	106	106	92	A	B			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	20	31	30	27	29	31	27	29	28	31	30	25	1					
MED						92	126	110	108	108	106	106	106	106	106	106	106	107	96					
U Q							131	116	110	112	109	108	108	108	108	108	110	117						
L Q							117	102	104	104	104	104	104	102	104	102	102	101						

MAR. 2018 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	94	94	94	94	94	88	B	104	98	94	94	G	G	G	G	114	100	100	100	98	B	98	B	98
2	96	88	B	B	B	B	B	108	102	98	140	92	92	G	G	G	128	104	102	102	100	98	98	B
3	B	B	94	B	B	90	90	104	98	98	98	94	106	106	G	G	G	106	104	98	88	100	B	B
4	B	B	88	94	216	B	G	114	102	102	94	90	90	108	90	110	116	94	92	82	82	82	82	B
5	B	B	86	86	94	B	B	100	100	100	G	G	194	112	G	96	120	120	104	104	88	94	98	98
6	102	B	100	100	100	B	B	126	108	104	98	98	98	88	G	126	102	104	104	104	100	100	100	100
7	92	92	86	90	B	B	B	110	100	100	100	100	104	G	104	G	G	114	84	84	B	B	B	B
8	B	94	B	B	B	B	B	158	124	92	100	152	118	94	134	88	110	94	86	92	92	92	84	84
9	B	B	B	B	B	B	88	132	116	94	94	94	94	94	G	G	106	G	B	B	B	B	B	B
10	B	90	B	B	B	90	G	136	120	108	96	102	G	G	G	102	102	G	86	B	B	B	B	B
11	100	100	B	88	B	B	G	94	G	100	102	102	96	96	92	92	174	88	88	88	88	88	88	88
12	88	88	B	B	B	B	B	G	G	88	164	106	90	156	84	174	100	G	B	B	B	B	B	84
13	B	B	84	88	88	B	96	148	G	96	96	96	102	96	100	118	90	84	92	92	92	B	B	B
14	92	92	B	B	100	B	G	106	106	98	98	98	98	98	162	G	G	90	92	92	B	86	B	96
15	96	96	B	B	96	B	G	126	104	104	104	104	80	92	92	116	148	G	B	B	B	B	B	B
16	90	96	B	94	B	B	G	128	104	104	102	82	120	100	94	94	G	G	84	84	B	90	B	B
17	114	B	B	90	B	B	138	120	120	98	98	98	100	100	92	196	G	72	78	78	B	B	B	B
18	96	96	B	96	96	B	146	126	118	102	102	102	198	100	G	102	G	96	B	102	B	102	96	96
19	B	90	90	90	90	96	B	128	118	108	98	98	98	98	98	92	96	G	B	B	104	90	90	90
20	B	90	B	B	90	98	136	136	92	100	100	96	96	96	96	92	92	92	94	92	92	102	90	88
21	B	88	96	B	92	B	84	122	134	106	94	94	94	94	86	86	126	132	B	B	B	B	84	84
22	90	90	B	100	B	B	100	106	G	104	102	94	94	94	102	90	106	126	B	86	86	94	B	B
23	94	98	98	98	B	B	144	132	G	98	98	104	104	96	96	88	104	116	B	90	B	90	90	B
24	82	B	100	B	B	B	G	134	134	110	100	88	98	98	98	G	G	G	B	B	B	B	B	B
25	98	98	98	B	B	B	112	136	116	100	100	100	98	G	98	106	156	122	104	104	104	92	B	B
26	92	92	92	94	92	B	82	132	94	102	102	102	96	96	G	100	100	90	B	90	90	90	102	B
27	B	B	B	B	102	B	158	92	140	102	144	162	90	136	92	92	110	84	94	B	B	94	B	94
28	94	94	94	C	C	B	146	136	138	120	104	104	104	112	108	118	G	G	B	82	82	B	B	B
29	B	92	B	B	B	B	G	136	136	98	98	98	96	146	102	102	102	122	84	B	B	90	90	90
30	90	90	90	90	100	B	140	G	102	102	102	G	160	148	166	G	166	G	88	B	B	B	98	92
31	92	98	92	B	B	B	130	122	112	112	124	100	100	90	90	90	94	94	94	B	B	96	96	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	19	22	16	15	14	5	15	29	26	31	30	28	29	26	22	24	23	22	20	20	14	20	15	15
MED	94	92	93	94	95	90	130	126	110	100	100	98	98	98	97	101	106	98	92	92	91	93	90	92
U Q	96	96	97	96	100	97	144	135	120	104	102	102	104	108	102	115	126	116	101	100	100	98	98	96
L Q	90	90	89	90	92	89	90	107	102	98	98	94	94	94	92	92	100	90	86	85	88	90	88	88

IONOSPHERIC DATA STATION Wakkanai

MAR. 2018 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	F5	F1	F2	F1	F1	F2		L2	L2	L3	L2					L1	C3	L8	L8	F5		F1		F1
2	F1	F1						C1	C3	L3	HL11	LC21	LC21				C2	L3	L3	F5	F3	F1	F1	
3			F1			F1	L1	C1	C4	C3	C1	C2	C1	C1				L3	L1	F5	F1	F1		
4			F1	F1	F1			L2	L2	L2	C2	C2	CL22	LC21	LC11	LC11	C1	L1	L2	F3	F3	F2	F3	
5			F1	F1	F1			LC12	L2	C2			C1	C1		C1	C2	C2	L4	F1	F1	F2	F1	F1
6	F1		F1	F1	F1			F2	L2	L1	C2	C2	C2	L2		CL11	C2	L4	L4	F1	F1	F2	F1	F1
7	F1	F1	F2	F1				C2	C2	C2	C2	C1	C2		C2			C2	C1	F1				
8		F1						H2	C2	C2	C1	HL21	C1	LC21	CL21	LC21	CC21	LC11	L1	F1	F1	F1	F1	F1
9							L1	C1	C2	C2	LC11	LC21	LC21	LC11			L2							
10		F1				L1		CL11	C2	C2	C2	C1				C2	C2		L1					
11	F2	F1		F2				F2		C2	C2	C2	C2	LC11	L2	LC21	H2	L2	L2	F2	F2	F2	F2	F1
12	F2	F1								LC12	HL12	C2	LC21	HL11	LC11	C2	L2							F1
13			F1	F2	F1		L1	C2		L2	L1	L2	CL11	C2	C1	C2	LC11	C2	L2	F2	F1			
14	F1	F1			F1			LC11	LC22	C2	C2	C2	L2	C1	H1			L1	L1	F2		F2		F1
15	F2	F1			F1			C2	C2	LC12	C1	LC11	LC11	C2	LC11	C1	HL11							
16	F2	F2		F1				C2	C2	C2	C2	C2	C1	L1	LC11	LC21			L1	F1		F2		
17	F1			F1			C2	C2	C2	C2	C1	C1	L1	C2	L2	L2		LC11	L1	F1				
18	F1	F1		F1	F1		H2	HL21	CL12	LC21	C2	C2	L2	L2		C2		L1		F1		F1	F4	F2
19		F2	F2	F2	F2	L2		C2	C2	C2	C2	C2	C2	C2	C2	LC21	L2				F1	F2	F2	F1
20		F1			L1	L1	L1	C2	C2	C2	C4	C2	C2	L2	L2	LC31	L3	L3	L4	F3	F2	F1	F1	F1
21		F1	F1		F1		LC11	C2	C2	C2	C2	C2	L2	LC11	C2	C2	C2	C2					F2	F2
22	F1	F1		F1			L1	LC21		C2	C2	C2	LC21	L2	C2	C2	C2	C2		F1	F1	F1		
23	F1	F1	F1	F1			C2	C1		LC21	C2	C2	C2	LC11	L2	L2	CL21	CL21		FF11		F1	F1	
24	F1		F1					C1	C2	C2	C1	C1	L1	C1	L1									
25	F2	F1	F1				C1	C2	C1	C1	C2	C2	L1		L1	C2	H1	C2	L1	F1	F1	F1		
26	F1	F1	F1	F2	F1		L1	CL11	LC11	C2	C2	C1	C2	C2		C2	C1	LC11		F1	F1	F1	F2	
27					F1		C1	LC11	C1	LC11	HL11	HL11	L1	HL11	LC11	LC11	C1	L2	L1			L5		F5
28	F2	F1	F1				C2	C1	C1	C2	C3	C1	C1	C2	C2	C2				F1	F1			
29		F1						CL21	CL21	L2	L2	L1	L2	HL12	LC11	C1	LC21	C1	L1			F1	F1	F2
30	F1	F2	F2	F1	F1		HL11		LL21	C3	C2		H1	H1	H1		HL11		L1				F1	F1
31	F1	F1	F1				C2	C2	C2	C2	C2	C3	C2	C2	L3	LC21	C2	C1	L3			F1	F2	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. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	32	32	33	32	30	38	66	61	64	63	64	62	61	56	57	51	51	46	50	51	F	23	28
2	30	30	31	30	27	27	34	59	64	65	66	69	68	63	56	52	56	60	47	41	42	F	32	33
3	34	33	F	35	35	34	40	58	68	74	71	65	55	61	57	53	56	52	43	A	38	36	35	35
4	F	36	36	30	32	32	36	59	61	66	72	72	60	59	62	57	54	61	46	39	37	39	32	31
5	30	32	32	32	32	31	39	59	C	C	C	C	C	67	C	C	61	56	43	44	46	38	39	31
6	32	28	27	27	26	26	31	48	52	63	60	70	71	62	57	59	60	54	46	38	38	38	32	31
7	30	F	30	30	30	32	38	51	56	50	55	68	63	63	56	52	56	A	55	A	37	40	36	32
8	F	F	F	33	34	29	36	54	60	61	56	56	58	71	62	63	64	A	53	A	A	A	35	F
9	36	36	34	32	32	30	36	48	57	61	55	66	59	62	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	58	51	44	39	40	36	37
11	38	36	36	36	35	34	48	60	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	58	62	68	75	80	68	56	56	55	50	42	34	32	36	35
13	37	39	39	40	39	34	44	52	60	61	60	69	74	78	63	56	57	53	57	41	28	34	36	37
14	38	38	39	38	41	30	38	47	56	65	67	76	73	64	60	55	54	52	56	52	36	38	37	36
15	36	34	31	30	29	28	40	58	64	69	60	64	66	78	68	63	61	58	58	52	42	41	42	42
16	40	40	41	40	39	34	40	49	60	63	57	57	77	91	81	64	62	70	67	44	33	37	37	38
17	37	37	37	F	F	36	41	52	58	70	64	76	60	71	69	59	53	53	52	46	44	44	44	41
18	41	F	36	32	23	F	36	51	63	66	61	59	75	82	81	69	58	63	61	52	36	34	34	34
19	34	33	32	32	32	25	36	49	59	58	84	92	84	63	77	75	68	68	60	47	44	42	42	42
20	42	41	40	38	28	23	38	52	64	74	89	79	79	70	64	59	64	66	52	33	32	33	33	34
21	34	33	32	32	30	25	40	50	54	54	59	60	74	87	72	57	58	63	63	54	34	33	35	35
22	35	35	34	34	36	30	45	54	59	52	60	62	68	82	80	64	52	54	A	65	40	35	36	F
23	F	34	F	F	F	F	44	53	59	52	78	66	70	79	87	82	77	75	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	69	85	70	68	79	A	62	61	64	56	44	44	43	42
27	41	39	39	38	30	30	38	45	52	55	53	62	64	62	71	72	60	57	55	C	C	C	40	38
28	37	36	36	34	C	C	C	46	48	C	C	67	61	71	84	66	62	66	63	57	46	44	38	35
29	35	34	32	32	28	25	41	48	50	61	57	56	58	61	62	62	58	59	70	70	57	33	29	F
30	F	F	30	32	31	29	40	48	50	52	55	67	81	75	73	68	64	66	67	65	52	42	39	38
31	37	34	33	32	23	22	40	49	54	56	60	76	88	81	81	67	58	58	53	51	44	38	37	37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	22	23	24	23	23	25	26	24	24	25	26	26	27	25	24	26	25	25	22	24	22	26	23
MED	36	34	34	32	32	30	39	52	59	61	60	67	69	70	68	60	58	58	55	48	40	38	36	35
U Q	38	37	37	36	35	32	40	58	61	66	68	72	75	79	80	66	62	64	62	54	44	41	39	38
L Q	34	33	32	32	28	26	36	48	54	56	57	62	61	62	61	56	56	54	48	42	36	34	34	33

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	L	U L 428	L	L	A	A							
2									L	L	U L 424	A	U L 420	U L 420	U L 412									
3									L	L	420	432	U L 428	L	A	L	L							
4									L	L	A	420	A	A	A	L								
5									C	C	C	C	C	U L 424	C	C	A							
6										396	A	A	U L 452	L	U L 432	L								
7									L	L	A	424	U L 420	L	L		L	A						
8										L	U L 448	U L 444	U L 432	408	L	A	A	A						
9									L	L	U L 452	U L 420	U L 416	L	C	C	C	C						
10							C	C	C	C	C	C	C	C	C	C	C							
11									C	C	C	C	C	C	C	C	C	C						
12							C	C	C	L	U L 428	U L 452	440	428	L	L	L							
13									L	L	U L 444	452	444	U L 420	L	L								
14									L	L	A	A	U L 456	U L 428	L	L	L							
15									L		L	L	U L 464	U L 432	L	L								
16									L	L	U L 444	U L 444	U L 444	A	L	A	L							
17									L	L	L	432	L	L	L	L								
18										A	A	A	436	U L 428	L	L								
19									L		A	L	L	L	L	L	L							
20									L	L	A	U L 440	436	L	L		L							
21										L	U L 428	U L 500	440	U L 424	U L 424	L	L							
22										A	A	U L 440	U L 428	432	U L 428	L								
23									A	U L 476	A	A	440	432	420	A								
24							C	C	C	C	C	C	C	C	C	C	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	U L 436	444	L	A	A	A								
27								A	L	L	U L 424	A	U L 436	A	432	L	A							
28							C		L	C	C	U L 428	U L 452	U L 448	U L 420	L	L							
29									L	U L 412	U L 432	U L 444	U L 432	436	U L 432	L	L							
30									L	U L 436	436	436	436	U L 452	U L 428	L	L	L						
31									L	U L 416	428	A	424	U L 444	428	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										5	13	16	22	15	10									
MED										U L 416	U L 432	U L 440	U L 436	U L 428	U L 428									
U Q										U L 456	U L 444	U L 444	U L 444	U L 436	U L 432									
L Q										404	426	430	U L 428	U L 424	U L 420									

MAR. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	UR 204	A	R	R	A	A	A	A	A	A	B						
2							B	UR 208	UR 260	R	A	A	U 340	UR 316	A	A	A	A						
3							B	A	A	A	A	A	A	A	A	A	A	UA 180						
4							B	UR 236	A	A	A	A	A	A	A	A	A	B						
5							B	UR 216	C	C	C	C	C	UR 324	C	C	A	R						
6							B	A	A	A	A	A	R	A	A	R	A	A						
7							B	A	A	A	A	A	A	A	R	A	A	A						
8							B	UR 216	A	A	R	UR 332	R	R	A	A	A	B						
9							B	UR 220	UR 276	A	R	R	R	332	C	C	C	C						
10							C	C	C	C	C	C	C	C	C	C	C	UR 196						
11							B	UR 220	C	C	C	C	C	C	C	C	C	C						
12							C	C	C	A	A	A	R	A	R	U 288	UR 256	UA 180						
13							B	UA 224	A	A	A	A	U 336	A	A	U 292	UR 260	UA 196						
14							B	220	A	A	A	A	A	A	A	U 300	A	UR 208						
15							B	UR 252	A	A	A	A	A	A	A	A	UR 260	UR 200						
16							B	UR 228	UR 260	A	A	A	R	UA 332	A	A	UR 252	B						
17								A	UA 256	A	A	A	R	A	A	A	UR 252	UR 204	204					
18							B	UR 204	A	A	A	A	A	A	U 344	R	A	UR 200						
19							B	UR 244	A	A	A	A	A	A	A	A	A	B						
20							B	A	A	A	A	A	A	A	A	A	UA 256	UR 212						
21							B	UR 220	UA 280	A	A	A	U 332	A	R	A	A	UA 204						
22							B	A	A	A	A	A	A	A	A	A	A	A						
23							B	236	A	A	A	A	A	A	U 308	R	A	A						
24							C	C	C	C	C	C	C	C	C	C	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	A	A	A	A	A	A	A	A						
27							B	UA 224	UA 264	UR 324	A	A	332	UR 316	R	A	A	A						
28							C	232	A	C	C	A	R	R	A	A	UR 256	A						
29							B	A	A	A	R	A	R	R	A	UR 312	UR 256	UR 208						
30							B	A	A	A	A	A	A	UR 356	U 336	UR 316	UR 264	R						
31							B	A	A	A	A	A	A	A	U 320	A	UR 268	200						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								17	6	1		1	4	6	4	5	10	12	1					
MED								UR 220	U 262	UR 324		UR 332	U 334	UR 328	U R 328	U R 300	U R 256	U R 200	204					
U Q								U R 234	U 276				U R 338	U 332	U R 340	U R 314	U R 260	U R 206						
L Q								U R 216	U 260				332	U R 316	U R 314	U R 290	U R 256	U A 196						

MAR. 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

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	J A 28	E B 16	E B 16	19	19	20	18	G	J A 39	G	G	J A 45	38	39	35	J A 40	J A 43	J A 37	J A 24	J A 28	J A 26	J A 88	J A 44	22
2	J A 30	J A 41	J A 30	J A 30	J A 23	J A 28	20	J A 28	G	G	J G 31	J A 43	G 28	G	J A 46	J A 38	J A 36	J A 30	J A 35	J A 54	J A 53	J A 38	J A 43	J A 40
3	J A 28	J A 41	J A 30	20	E B 16	20	E B 16	J A 25	J A 40	J A 31	J A 39	J A 39	36	39	J A 43	J A 33	J A 25	23	J A 39	J A 73	J A 46	J A 49	J A 53	J A 50
4	J A 24	22	J A 34	E B 15	19	23	E B 15	G	J A J A 32	J A 31	J A 101	J A 48	J A J A 55	J A 63	J A 46	36	J A 40	J A 41	J A 29	J A 34	J A 65	J A 25	J A 41	J A 24
5	J A 51	E B 16	E B 16	E B 15	22	22	22	G	C	C	C	C	C	G	C	C	29	G	J A 35	J A 31	J A 84	J A 52	J A 42	J A 53
6	J A 66	20	J A 24	J A 21	J A 31	E B 16	E B 16	26	J A 34	J A 39	J A 57	J A 52	G	36	38	G	31	J A 37	J A 32	J A 32	J A 53	J A 40	J A 64	J A 31
7	J A 37	J A 24	E B 15	E B 14	E B 15	E B 15	E B 14	J A 27	J A 35	J A 40	J A 64	J A 53	J A 44	J A 37	G	32	31	J A 90	J A 51	J A 45	J A 31	E B 16	J A 30	E B 15
8	J A 28	E B 16	E B 15	E B 15	E B 14	E B 15	E B 16	G	30	34	G	G	G	G	36	J A 67	J A 51	J A 64	J A 55	J A 109	J A 84	J A 42	J A 51	J A 47
9	E B 16	E B 16	E B 15	E B 14	E B 16	E B 15	E B 16	G	G	33	G	G	G	37	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	G	E B 16	J A 23	22	E B 15	E B 16	E B 15
11	E B 14	E B 15	E B 15	E B 14	E B 18	E B 15	E B 16	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	34	36	J A 40	G	36	G	G	G	21	J A 23	E B 15	J A 24	J A 53	J A 36	J A 36
13	E B 16	E B 15	E B 15	E B 15	E B 16	E B 15	E B 16	26	32	34	36	J A 37	G	42	35	G	G	22	J A 22	J A 34	J A 51	J A 28	J A 25	20
14	E B 16	E B 16	19	22	E B 16	20	E B 16	25	31	J A 38	J A 42	J A 48	J A 50	37	J A 48	G	J A 36	G	E B 14	J A 50	J A 37	J A 41	J A 24	J A 25
15	20	J A 22	E B 16	21	21	E B 16	E B 16	G	32	36	J A 38	40	J A 43	J A 50	J A 38	36	G	G	E B 16	20	E B 16	E B 15	E B 16	20
16	E B 16	E B 16	E B 16	J A 26	J A 24	20	E B 15	26	J A 31	36	J A 39	36	G 32	38	J A 38	J A 75	J A 33	21	J A 20	22	20	J A 22	E B 15	E B 15
17	22	E B 16	E B 16	E B 15	E B 15	E B 14	E B 15	24	29	35	36	35	G	J A 37	J A 38	J A 30	G	G	G 18	J A 28	J A 34	E B 16	J A 24	J A 32
18	J A 37	J A 26	20	E B 15	E B 15	E B 15	19	25	29	35	J A 43	J A 43	35	35	37	J A 39	28	G	E B 15	J A 26	J A 53	J A 27	J A 42	J A 31
19	J A 31	J A 24	J A 22	J A 24	J A 22	E B 16	E B 15	G	30	39	J A 43	J A 62	J A 41	J A 47	33	J A 48	J A 45	J A 28	J A 20	20	J A 29	J A 41	J A 41	J A 30
20	J A 43	22	J A 23	22	J A 25	J A 21	J A 23	28	31	J A 39	J A 43	J A 40	J A 37	J A 39	J A 41	34	30	G	J A 27	J A 22	J A 29	J A 24	E B 15	E B 15
21	E B 15	J A 24	24	J A 21	20	24	19	26	32	37	J A 37	J A 39	38	J A 38	G	J A 37	J A 32	J A 30	J A 51	J A 54	J A 30	J A 54	J A 51	J A 30
22	J A 22	E B 16	E B 16	E B 16	E B 16	E B 15	21	28	37	J A 49	J A 45	39	J A 38	J A 37	J A 38	J A 38	J A 30	J A 28	J A 77	21	J A 31	28	E B 16	E B 15
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	30	35	42	J A 51	J A 49	J A 41	J A 39	G 28	J A 36	J A 47	J A 36	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	37	J A 47	J A 41	J A 53	J A 68	J A 83	J A 38	J A 36	J A 37	J A 31	J A 26	23	J A 30	J A 26
27	J A 23	J A 24	E B 15	E B 15	E B 15	E B 15	20	26	31	G	J A 42	J A 54	39	38	G	36	32	28	J A 27	C	C	C	J A 29	E B 15
28	J A 23	J A 21	J A 23	J A 24	C	C	C	30	35	C	C	J A 39	G	G	J A 39	J A 35	G	J A 26	J A 25	23	J A 23	J A 36	E B 15	E B 15
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	27	30	34	G	35	G	G	J A 34	J A 28	G	G	23	21	E B 15	E B 15	E B 15	E B 16
30	24	E B 16	E B 16	E B 15	E B 16	E B 14	20	28	32	36	38	37	36	G	G	G	G	G	E B 15	E B 15	J A 29	J A 30	J A 22	E B 15
31	E B 16	20	E B 16	20	E B 15	E B 15	23	29	32	34	37	J A 47	J A 41	39	G	33	G	24	E B 15	J A 21	J A 30	J A 22	22	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	26	26	26	26	25	25	25	26	24	24	25	26	26	27	25	25	26	27	26	25	25	25	26	26
MED	J A 23	18	E B 16	E B 16	E B 16	E B 16	E B 16	26	32	35	J A 38	J A 40	36	37	37	J A 36	30	24	J A 24	J A 28	J A 30	J A 28	J A 30	24
U Q	J A 30	J A 24	J A 23	J A 21	J A 22	20	20	28	J A 34	J A 38	J A 43	J A 48	J A 41	J A 39	J A 40	J A 38	J A 36	J A 36	J A 35	J A 40	J A 52	J A 42	J A 42	J A 31
L Q	E B 16	E B 16	E B 16	E B 15	E B 16	E B 15	E B 16	G	30	34	G 36	37	G	G 35	G	G	G	G	E B 18	21	25	E B 22	E B 16	E B 15

MAR. 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	G	G	36	33	34	32	32	34	31	E B 16	20	E B 16	27	17	E B 16
2	E B 16	E B 16	E B 16	20	E B 16	E B 16	E B 16	G 17	G	G	G 26	36	G 25	G	32	32	26	23	22	19	22	23	20	20
3	20	20	20	E B 16	E B 16	E B 16	E B 16	22	26	30	34	36	33	34	38	29	23	21	33	A A 73	20	18	E B 16	22
4	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	G	27	28	41	33	46	42	36	32	36	34	24	30	22	E B 16	19	E B 16
5	20	E B 16	E B 16	E B 15	18	E B 16	E B 16	G	C	C	C	C	C	G	C	C	28	G	32	26	21	22	22	E B 16
6	16	E B 16	17	E B 16	E B 16	E B 16	E B 16	22	28	35	40	41	G	35	36	G	29	32	29	27	22	20	23	20
7	18	E B 15	E B 15	E B 14	E B 15	E B 15	E B 14	21	28	34	44	34	34	33	G	30	30	A A 90	45	A A 45	18	E B 16	E B 16	E B 15
8	E B 16	E B 16	E B 15	E B 15	E B 14	E B 15	E B 16	G	28	29	G	G	G	G	33	41	45	A A 64	30	A A 109	A A 84	A A 42	28	E B 16
9	E B 16	E B 16	E B 15	E B 14	E B 16	E B 15	E B 16	G	G	32	G	G	G	35	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	G	E B 16	19	E B 16	E B 15	E B 16	E B 15
11	E B 14	E B 15	E B 15	E B 14	E B 18	E B 15	E B 16	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	34	33	36	G	32	G	G	G	20	E B 15	E B 15	E B 15	21	23	23
13	E B 16	E B 15	E B 15	E B 15	E B 16	E B 15	E B 16	23	29	32	32	34	G	36	33	G	G	21	18	18	20	17	E B 16	E B 16
14	E B 16	E B 16	E B 16	16	E B 16	E B 16	E B 16	24	29	31	36	40	36	37	34	G	28	G	E B 14	21	20	18	E B 16	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	30	32	34	36	37	36	30	29	G	G	E B 16	E B 16	E B 16	E B 15	E B 16	16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	24	G 24	32	34	34	G 28	36	30	47	G 22	20	18	E B 16	E B 16	E B 16	E B 15	E B 15
17	E B 15	E B 16	E B 16	E B 15	E B 15	E B 14	E B 15	23	27	32	32	32	G	28	32	29	G	G	G 17	21	16	E B 16	20	22
18	18	E B 15	E B 15	E B 15	E B 15	E B 15	17	23	27	34	38	38	34	33	G 31	29	26	G	E B 15	20	20	20	21	21
19	18	E B 16	18	E B 15	E B 16	E B 16	E B 15	G	28	37	39	34	34	35	32	31	28	22	E B 15	E B 16	20	21	21	E B 16
20	24	E B 15	E B 16	E B 16	19	E B 16	19	26	28	31	37	35	34	34	34	31	28	G	24	18	24	18	E B 15	E B 15
21	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	18	26	30	35	35	36	36	34	G	32	28	24	36	34	19	23	E B 16	E B 16
22	E B 15	E B 16	E B 16	E B 16	E B 16	E B 15	19	26	35	39	41	37	36	35	32	30	27	24	A A 77	E B 16	23	18	E B 16	E B 15
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	27	34	40	46	44	36	34	G 25	30	27	27	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	35	38	36	45	47	A A 83	32	32	27	22	20	18	E B 16	E B 16
27	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	19	25	29	G	38	49	36	37	G	33	30	25	19	C	C	C	20	E B 15
28	E B 16	E B 16	E B 15	E B 16	C	C	C	28	34	C	C	33	G	G	32	27	G	22	E B 16	E B 17	16	E B 16	E B 15	E B 15
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	29	32	G	34	G	G	33	G 22	G	G	E B 15	E B 17	E B 15	E B 15	E B 15	E B 16
30	E B 17	E B 16	E B 16	E B 15	E B 16	E B 14	18	26	30	34	35	36	35	G	G	G	G	G	E B 15	E B 15	E B 15	19	E B 15	E B 15
31	E B 16	E B 16	E B 16	E B 15	E B 15	E B 15	22	27	31	32	34	44	34	34	G	31	G	22	E B 15	16	25	18	E B 16	E B 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	26	26	26	26	25	25	25	26	24	24	25	26	26	27	25	25	26	27	26	25	25	25	26	26
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	28	32	35	36	34	34	32	30	27	22	18	19	20	18	E B 16	E B 16
U Q	17	E B 16	E B 16	E B 16	E B 16	E B 16	18	26	30	34	38	38	36	36	34	32	29	27	29	26	22	21	20	16
L Q	E B 16	E B 16	E B 15	E B 15	E B 16	E B 15	E B 16	G	27	30	G 32	34	G	G 28	G	G	G	G	E B 15	E B 16	E B 16	E B 16	E B 16	E B 15

MAR. 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

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

MAR. 2018 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	310	318	312	325	325	323	358	394	376	392	374	373	376	363	383	351	372	356	343	339	353	F	341	328
2	337	306	322	344	332	329	362	404	393	370	374	384	356	386	378	343	362	379	363	319	346	F	330	325
3	328	318	F	332	337	331	355	395	385	395	375	373	345	362	359	359	367	380	385	A	282	325	337	304
4	F	341	359	335	332	329	358	394	385	381	377	384	374	340	368	358	354	374	364	338	312	348	367	330
5	318	339	335	333	319	320	385	392	C	C	C	C	C	347	C	C	366	380	353	331	342	325	370	320
6	337	299	314	324	342	385	386	395	369	373	346	359	361	361	343	351	372	380	362	333	343	327	329	326
7	305	F	330	333	311	366	393	406	390	376	354	367	363	374	368	335	361	A	369	A	328	351	328	285
8	F	F	F	335	360	313	399	408	409	398	358	343	361	367	341	363	356	A	364	A	A	A	326	F
9	315	326	329	330	361	356	379	400	379	382	356	378	370	365	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	380	347	352	312	329	304	306
11	328	326	314	308	330	340	357	391	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	361	350	337	353	355	347	351	377	383	370	361	358	326	313	300
13	311	320	319	342	344	333	367	394	395	383	355	356	351	373	366	356	367	371	374	381	323	314	294	300
14	321	326	327	329	384	364	374	378	367	356	368	359	366	392	379	361	357	373	354	368	332	317	303	303
15	313	318	312	326	313	333	353	394	396	405	375	354	319	358	352	373	357	364	355	354	318	307	307	322
16	335	327	317	305	308	311	369	365	376	389	361	313	328	348	368	360	351	354	379	359	292	309	296	326
17	319	316	320	F	F	316	375	363	354	374	337	363	342	343	359	374	376	363	350	318	300	300	320	331
18	315	F	319	287	351	F	362	361	376	381	371	348	336	342	347	368	331	365	355	363	336	317	310	322
19	315	296	304	311	395	335	376	340	353	335	297	348	348	326	335	355	365	371	360	326	307	320	304	282
20	317	316	331	360	392	325	371	358	354	352	359	352	364	353	368	348	352	380	385	350	328	321	306	316
21	310	311	332	334	345	311	383	383	366	375	359	308	318	353	364	365	363	367	363	352	347	315	311	311
22	314	326	329	325	350	313	368	378	385	396	360	351	346	349	371	379	349	359	A	368	369	299	289	F
23	F	314	F	F	F	F	384	375	365	323	346	355	342	339	333	348	357	355	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	315	339	354	340	353	A	360	366	366	340	310	301	300	315
27	321	308	313	370	312	309	400	391	360	354	352	355	346	331	346	372	369	355	356	C	C	C	317	313
28	321	292	307	320	C	C	C	387	386	C	C	366	331	338	358	357	351	359	356	345	335	328	309	313
29	328	346	321	338	347	330	392	394	382	392	380	360	321	356	352	334	341	350	349	365	385	326	294	F
30	F	F	319	337	358	325	401	394	373	348	341	333	351	331	336	338	348	355	352	367	356	331	320	302
31	317	336	333	348	342	323	372	369	367	364	342	330	344	328	347	360	345	369	368	342	344	325	304	314
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	22	23	24	23	23	25	26	24	24	25	26	26	27	25	24	26	25	25	22	24	22	26	23
MED	318	318	320	332	342	329	374	392	376	376	358	355	350	353	358	358	358	367	362	351	334	323	310	314
U Q	328	326	330	338	358	335	386	394	386	390	372	366	361	363	368	364	367	380	368	363	346	327	328	325
L Q	314	311	314	324	325	316	362	375	366	358	346	343	342	340	346	350	351	358	354	338	312	314	304	303

MAR. 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	L	UL403	L	L	A	A							
2									L	L	UL412	A	UL418	UL407	UL396									
3									L	L	413	401	UL415	L	A	L	L							
4									L	L	A	412	A	A	A	L								
5									C	C	C	C	C	UL402	C	C	A							
6										416	A	A	UL382	L	UL385	L								
7									L	L	A	403	UL419	L	L		L	A						
8										L	UL397	UL405	UL445	430	L	A	A	A						
9									L	L	UL412	UL443	UL417	L	C	C	C	C						
10							C	C	C	C	C	C	C	C	C	C	C							
11									C	C	C	C	C	C	C	C	C	C						
12							C	C	C	L	UL396	UL386	378	392	L	L	L							
13									L	L	UL407	390	411	UL430	L	L								
14									L	L	A	A	UL396	UL394	L	L	L							
15									L		L	L	UL377	UL394	L	L								
16									L	L	UL403	UL389	UL382	A	L	A	L							
17									L	L	L	394	L	L	L	L								
18										A	A	A	421	UL406	L	L								
19									L		A	L	L	L	L	L	L							
20									L	L	A	UL398	394	L	L		L							
21										L	UL397	UL359	423	UL390	UL393	L	L							
22										A	A	UL402	UL416	371	UL383	L								
23									A	UL380	A	A	384	384	393	A								
24							C	C	C	C	C	C	C	C	C	C	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	UL393	385	L	A	A	A								
27								A	L	L	UL418	A	UL392	A	396	L	A							
28							C		L	C	C	UL410	UL389	UL385	UL389	L	L							
29									L	UL409	UL408	UL408	UL447	414	UL390	L	L							
30									L	UL377	398	408	409	UL388	UL397	L	L	L						
31									L	UL401	395	A	421	UL400	390	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										5	13	16	22	15	10									
MED										UL401	UL403	UL402	UL410	UL394	UL392									
U Q										412	UL412	UL408	419	407	UL396									
L Q										UL378	UL396	UL390	UL389	388	UL389									

MAR. 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

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										228	244	250	236	242	246	268	220							
2									220	210	232	226	244	230	240									
3									230	222	222	228	264	262	260	260	238							
4									230	228	230	224	236	260	248	252								
5									C	C	C	C	C	242	C	C	236							
6										240	254	250	238	244	280	262								
7									216	238	256	240	240	240	256		264	A						
8										226	262	264	250	244	260	248	244	A						
9									236	228	266	238	250	232	C	C	C	C						
10							C	C	C	C	C	C	C	C	C	C	C							
11									C	C	C	C	C	C	C	C	C	C						
12							C	C	C	240	254	274	256	240	236	248	244							
13									220	234	254	248	246	226	240	248								
14									240	256	236	238	238	230	232	250	256							
15									228		240	260	292	244	240	238								
16									234	224	252	320	272	242	230	234	242							
17									252	244	264	232	258	258	240	234								
18										232	232	256	266	248	246	232								
19									260		286	242	232	270	258	236	252							
20									258	246	232	242	240	246	248		252							
21										248	254	304	288	244	236	258	256							
22										228	258	264	266	250	230	230								
23									232	328	254	246	260	256	256	238								
24							C	C	C	C	C	C	C	C	C	C	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	286	242	242	268	252	A								
27								214	260	246	278	256	262	258	256	232	238							
28							C		250	C	C	264	302	264	242	234	238							
29									246	238	232	268	272	254	282	264	262							
30									240	280	292	280	252	266	262	246	258	250						
31									258	254	274	274	252	260	250	238	262							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	18	22	25	26	26	27	25	21	16	1						
MED								214	238	238	254	250	252	246	248	246	248	250						
U Q									252	246	265	264	266	260	257	255	257							
L Q									230	228	234	240	240	242	240	234	238							

MAR. 2018 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	222	E B 228	E B 232	228	E B 242	E B 236	212	194	202	190	186	188	188	188	188	A	A	220	204	222	198	196	208	E B 260
2	E B 236	E B 280	E B 254	E A 252	E B 252	E B 266	214	194	188	180	168	A	190	190	190	204	220	212	188	216	218	E A 238	212	210
3	E A 242	E A 282	E A 262	E B 232	232	E B 222	210	200	194	190	180	188	186	210	A	202	198	212	208	A	E A 302	E A 228	226	E A 262
4	E B 252	220	200	E B 232	224	E B 244	206	200	198	200	A	186	A	A	A	208	228	214	196	E A 256	E A 262	206	206	214
5	E A 276	212	E B 242	E B 238	E A 238	E B 234	204	198	C	C	C	C	C	186	C	C	A	202	220	E A 254	220	228	210	E B 242
6	E B 240	E B 274	E A 288	E B 254	222	210	190	194	198	194	A	A	190	202	202	208	208	214	208	E A 256	E A 244	E A 238	E A 266	E A 258
7	E A 284	E B 264	E B 254	E B 248	E B 252	202	194	188	188	190	A	180	176	190	194	192	204	A	224	A	E A 250	216	E B 218	E B 266
8	E B 250	E B 254	E B 248	E B 224	200	E B 216	198	196	204	182	168	170	172	188	196	A	A	A	210	A	A	A	E A 290	E B 266
9	E B 240	E B 226	230	E B 230	214	202	190	190	200	198	178	178	178	190	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	196	200	198	224	218	E B 238	E B 268
11	E B 240	230	E B 252	E B 256	E B 242	218	198	186	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	196	178	188	188	188	188	192	196	214	198	198	192	E A 242	E A 268	E A 284
13	E B 264	234	222	228	206	204	204	192	192	190	190	186	184	178	188	186	218	206	200	194	E A 258	E A 248	E B 248	E B 248
14	E B 248	232	E B 242	232	194	194	192	192	196	188	A	A	180	192	198	188	194	210	210	206	220	E A 244	E B 256	E B 264
15	E B 250	E B 258	E B 270	E B 260	E B 288	E B 270	210	196	206	204	198	192	188	192	196	196	198	214	208	204	210	E B 244	E B 256	224
16	224	220	E B 234	E B 260	E B 242	E B 234	204	214	206	196	190	178	174	A	190	A	198	212	200	198	E B 274	E B 260	E B 254	E B 250
17	224	230	E B 232	E B 244	E B 238	E B 246	206	208	202	206	180	188	186	186	206	200	204	210	208	212	E B 268	E B 250	E A 248	E A 232
18	230	E B 248	224	226	216	E B 288	212	212	212	A	A	A	186	176	198	202	204	218	200	196	216	E A 266	E A 276	E A 278
19	E A 260	E B 276	E A 276	E B 252	194	E B 230	206	212	210	E A 230	A	216	204	200	214	200	222	222	196	196	E A 246	E A 238	E A 282	E B 278
20	E A 278	E B 246	224	208	214	E B 266	212	210	210	202	A	186	190	198	198	200	200	212	190	194	E A 272	E A 264	E B 266	E B 268
21	E B 268	E B 266	E B 250	230	206	220	210	206	206	202	194	186	166	178	200	200	206	218	210	212	210	E A 280	E B 276	E B 254
22	E B 254	228	E B 234	E B 236	206	218	204	218	208	A	A	206	194	216	196	196	200	218	A	188	188	E B 244	E B 258	E B 276
23	E B 252	E B 248	E B 244	214	186	202	204	204	A	214	A	A	208	204	192	A	214	218	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	204	206	208	A	A	A	224	220	208	210	210	E A 250	E B 250	E B 254
27	E B 252	E B 246	E B 248	204	216	226	196	A	194	196	196	A	208	A	200	194	A	218	206	C	C	C	E A 250	E B 240
28	E B 250	E B 258	E B 258	E B 246	C	C	C	202	200	C	C	182	180	168	180	190	192	212	208	198	206	220	E B 232	E B 248
29	E B 246	E B 232	E B 242	E B 224	210	E B 242	198	202	202	198	188	186	176	174	182	206	206	210	216	206	188	202	E B 272	E B 280
30	E B 242	222	226	212	214	E B 240	186	194	192	204	198	198	186	186	190	204	220	206	214	198	194	E A 234	228	E B 262
31	E B 248	E B 238	E B 238	212	194	E B 270	208	208	210	200	200	A	196	186	184	200	200	220	202	202	218	E A 216	E B 254	E B 254
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	25	25	25	25	23	22	16	19	25	23	22	20	22	25	25	22	24	24	26	26
MED	E B 249	E B 242	E B 242	E B 232	208	E B 230	204	200	202	196	189	186	186	188	195	200	204	214	208	200	U 206	E A 238	E 252	E B 259
U Q	E A 254	E B 258	E B 254	E B 248	E B 240	E B 245	210	208	206	202	197	192	192	198	198	203	218	218	210	212	E A 254	E A 249	E A 266	E B 268
L Q	240	228	232	224	206	213	197	194	194	190	179	182	179	186	188	193	198	210	200	198	208	219	228	E 248

MAR. 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	110	A	110	112	A	A	A	112	A	A	B						
2							B	118	116	108	A	A	108	108	A	A	A	A						
3							B	A	A	A	A	A	A	A	A	A	A	108						
4							B	110	A	A	A	A	A	A	A	108	A	B						
5							B	110	C	C	C	C	C	106	C	C	114	112						
6							B	A	A	A	A	A	108	108	A	108	A	A						
7							B	A	A	A	A	A	A	A	108	112	112	A						
8							B	112	110	A	110	110	110	110	110	A	A	B						
9							B	110	108	108	108	108	108	108	C	C	C	C						
10							C	C	C	C	C	C	C	C	C	C	C	110						
11							B	108	C	C	C	C	C	C	C	C	C	C						
12							C	C	C	112	A	A	112	A	112	112	112	112						
13							B	112	114	A	A	A	114	A	A	108	108	108						
14							B	108	110	A	A	A	A	A	A	110	A	110						
15							B	116	108	A	A	A	A	A	A	A	108	108						
16							B	116	112	A	A	A	108	114	A	A	108	B						
17								110	112	108	A	A	110	A	A	A	110	114	100					
18							B	116	110	110	A	A	A	A	126	A	A	118						
19							B	118	114	110	A	A	A	A	A	A	A	B						
20							B	116	116	A	A	A	A	A	A	A	116	114						
21							B	112	112	110	A	A	112	A	114	A	A	116						
22							B	116	112	108	A	A	A	A	A	A	A	A						
23							B	108	114	114	A	A	A	A	114	A	A	A						
24							C	C	C	C	C	C	C	C	C	C	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	A	A	A	A	A	A	A	A						
27							B	110	114	112	A	A	112	106	108	106	A	A						
28							C	108	110	C	C	A	108	112	A	A	110	A						
29							B	110	108	110	110	110	110	110	A	110	110	110						
30							B	108	108	108	A	A	A	110	110	110	108	108						
31							B	108	108	108	108	A	A	A	112	A	112	112						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								23	19	14	5	3	12	10	10	9	12	14	1					
MED								110	112	110	110	110	110	109	112	110	110	111	100					
U Q								116	114	110	111	110	112	110	114	111	112	114						
L Q								108	108	108	108	108	108	108	110	108	108	108						

MAR. 2018 h'E (KM)

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 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

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	100	B	B	96	90	90	90	G	90	G	G	100	102	102	114	100	100	100	100	92	100	94	88	88
2	102	90	84	84	84	92	116	94	G	G	90	88	84	G	92	100	98	96	92	92	94	94	84	84
3	84	88	80	80	B	84	B	106	96	96	94	94	90	90	84	84	84	112	102	100	96	96	90	90
4	96	90	96	B	94	100	B	G	96	96	88	88	84	84	84	114	102	102	100	96	96	94	96	98
5	96	B	B	B	86	86	86	G	C	C	C	C	C	G	C	C	124	G	98	98	96	96	96	96
6	102	100	94	88	86	B	B	102	106	100	96	94	G	126	102	G	112	102	100	100	98	98	96	96
7	96	100	B	B	B	B	B	100	100	98	94	92	90	90	G	122	112	96	96	96	102	B	104	B
8	96	B	B	B	B	B	B	G	120	100	G	G	G	G	118	100	100	96	96	94	94	94	94	98
9	B	B	B	B	B	B	B	G	G	108	G	G	G	146	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	G	B	104	102	B	B	B
11	B	B	B	B	B	B	B	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	110	100	98	G	102	G	G	G	132	94	B	100	92	92	92
13	B	B	B	B	B	B	B	146	122	100	100	98	G	98	94	G	G	138	112	104	104	104	100	98
14	B	B	90	90	B	86	B	142	114	100	100	100	96	132	98	G	98	G	B	106	104	102	98	96
15	92	92	B	90	90	B	B	G	126	104	98	98	98	90	88	90	G	G	B	86	B	B	B	86
16	B	B	B	86	86	86	B	136	94	100	96	96	96	160	94	86	86	98	92	88	84	84	B	B
17	104	B	B	B	B	B	B	130	124	112	100	94	G	84	84	90	G	G	90	92	102	B	92	94
18	94	112	94	B	B	B	130	134	132	118	106	102	98	96	98	98	98	G	B	94	100	94	92	92
19	92	92	92	92	100	B	B	G	128	116	98	96	100	100	98	96	92	92	90	90	92	92	92	92
20	92	90	90	90	90	90	120	118	116	102	90	92	88	96	92	98	138	G	102	98	102	108	B	B
21	B	88	88	84	84	86	144	150	146	122	98	98	146	98	G	106	104	116	94	94	92	92	92	112
22	100	B	B	B	B	B	128	128	122	112	96	94	98	96	96	96	94	94	94	94	98	98	B	B
23	B	B	B	B	B	B	B	140	118	118	100	100	100	100	100	100	98	96	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	96	96	92	88	86	86	82	82	80	78	78	78	88	90
27	92	92	B	B	B	B	132	134	130	G	94	94	142	138	G	112	114	110	98	C	C	C	98	B
28	92	92	92	86	C	C	C	140	124	C	C	98	G	G	90	86	G	90	86	84	94	94	B	B
29	B	B	B	B	B	B	128	132	124	114	G	108	G	G	88	88	G	G	80	72	B	B	B	B
30	130	B	B	B	B	B	122	128	126	116	104	100	98	G	G	G	G	G	B	B	96	84	122	B
31	B	92	B	92	B	B	120	120	116	116	112	100	98	96	G	100	G	144	B	112	98	100	100	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	13	10	12	10	9	11	18	22	21	21	24	18	21	19	20	18	18	20	23	23	20	19	17
MED	96	92	91	89	88	86	122	131	121	108	98	97	98	98	94	98	99	99	95	94	98	94	94	94
U Q	101	96	94	91	90	91	130	140	126	116	100	100	100	114	98	100	112	112	100	100	102	98	98	98
L Q	92	90	88	85	86	86	116	118	106	100	94	94	90	90	88	89	94	96	91	90	94	92	92	90

MAR. 2018 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAR. 2018 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3			F2	F2	F2	L1		L3			L2	L2	L1	C1	L2	L2	L4	F2	F4	F2	F5	F4	F2
2	F1	F2	F2	F3	F2	F2	C1	L1			L2	L3	L2		L2	L2	L3	L3	F6	F5	F4	F7	F6	F6
3	F3	F4	F3	F2		F1		L6	L3	L2	L2	L2	L2	L2	L2	L3	L3	CL12	F6	F5	F5	F4	F3	F5
4	F2	F3	F1		F1	F2			L3	L2	L2	L2	L3	L3	L2	CL22	L3	L4	F9	F6	F4	F2	F4	F2
5	F4				F2	F1	L2										C2		F6	F7	F5	F6	F4	F3
6	F2	F2	F4	F2	F1			L2	L2	L2	L2	L3		C1	L1		C1	L3	F5	F4	F5	F3	F4	F4
7	F3	F1						L2	L3	L3	L2	L2	L2	L2		CL12	C1	L4	F5	F6	F2		F1	
8	F2								C2	L1					C1	L3	L3	L5	F4	F4	FF43	F5	F6	F4
9										C2				H1										
10																				F3	F1			
11																								
12										C2	L2	L2		L1				C1	F1		F1	F3	F6	F5
13								H2	C2	L2	L2	L2		L2	L2			H2	F2	F3	F5	F3	F2	F2
14			F3	F2		F1		H1	C2	L2	L2	L2	L2	CL11	L2		L2			F3	F2	F3	F2	F2
15	F2	F2		F1	F1				C1	L2	L2	L2	L2	L2	L2	L2				F2				F2
16				F2	F1	F1		HL12	L2	L2	L2	L2	L2	HL12	L2	L5	L2	L2	F2	F3	F3	F2		
17	F1							C1	C2	C1	L1	L2		L3	L2	L1			F2	F3	F4		F2	F4
18	F2	F2	F1				C2	C2	C2	CL22	L2	L2	L2	L2	L2	L2	L2			F2	F3	F2	F4	F2
19	F5	F3	F3	F2	F1				C2	C2	L2	L2	L2	L2	L2	L3	L3	L3	F2	F1	F3	F4	F2	F2
20	F5	F2	F3	F1	F3	F2	C2	C3	C3	L2	L2	L1	L2	L2	L2	L2	C2		F5	F1	F5	F2		
21		F2	F4	F3	F1	F2	H2	H1	H2	C1	L1	L1	HL12	L1		L2	L2	C4	F4	F4	F3	F5	F3	F1
22	F2						C2	C2	C2	C3	L2	L2	L2	L2	L1	L2	L2	L2	F5	F1	F2	F3		
23								H2	C2	C2	L2	L2	L2	L2	L2	L2	L3	L4						
24																								
25																								
26											L2	L2	L2	L2	L3	L4	L3	L4	F3	F2	F3	F2	F2	F3
27	F2	F3					C2	C3	C2		L2	L3	HL12	H1		CL12	CL13	CL23	F3				F3	
28	F3	F2	F4	F2				H3	C2			L2			L2	L3		L2	F2	F1	F1	F2		
29							C2	C2	C2	C2		C1			L2	L1			F2	F1				
30	F1						C1	C2	C2	C1	L2	L2	L1								F1	F4	F1	
31		F1		F1			C2	C2	C1	C1	C2	L2	L2	L2		L2		HL11		F3	F3	F1	F2	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. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 fxI (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

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	X 39	X 38	X 37	X 37	X 38	X 35														X 51	X 54	X 52	A	X 32
2	X 34	X 37	A	X 37	X 35	X 32														X 44	X 40	X 39	A	X 39
3	40	X 33	38	X 36	X 36	X 33	38													X 44	X 42	X 43	A	A
4	A	38	38	X 33	X 36	X 34														A	X 48	X 43	A	A
5	X 29	X 33	X 33	X 34	X 38	X 39														X 50	X 52	X 49	X 43	X 37
6	X 37	X 37	X 37	X 37	X 38	39											C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C			C	C		C	C	C		X 61	X 51	X 46	X 46	X 40
8	X 39	40	40	40	40	X 35														X 54	X 39	X 41	X 41	X 39
9	X 40	X 40	X 38	X 38	X 39	X 34		X 47												X 62	O X 50	X 41	X 41	X 41
10	X 42	X 41	X 41	X 39	X 41	X 36															X 52	X 48	X 45	X 40
11	X 42	X 42	X 42	X 42	X 41	X 41															X 57	X 42	X 40	X 38
12	X 38	X 38	X 38	X 38	X 46	X 30														X 59	X 41	X 32	X 33	X 35
13	X 38	X 38	X 38	X 37	39	X 32														X 57	X 41	X 37	X 39	41
14	X 42	X 41	X 41	X 38	X 44	X 32														X 68	X 48	40	41	42
15	42	X 41	42	42	X 36	X 35															X 45	X 39	X 39	44
16	42	44	40	40	38	X 33	37														X 46	X 43	X 44	X 46
17	X 40	X 39	X 39	X 39	X 36	X 37															X 54	X 52	X 50	X 48
18	X 46	X 47	X 45	X 42	X 36	X 32															X 52	X 36	X 38	X 37
19	X 38	39	X 37	X 37	X 38	A															X 46	X 46	X 46	X 44
20	X 45	X 45	X 43	X 38	X 33	X 28														X 50	X 41	X 37	X 36	X 36
21	X 36	X 37	X 37	X 36	X 32	X 28														X 76	X 50	X 36	X 38	X 38
22	39	X 37	X 37	36	X 36	X 31															X 55	X 36	X 38	X 38
23	X 35	40	X 36	X 35	X 34	X 26															X 59	X 48	X 42	X 42
24	X 42	X 42	X 41	X 41	X 41	X 44															X 62	X 41	X 40	X 40
25	X 40	X 38	X 37	39	41	X 33															X 61	X 60	X 38	X 40
26	X 42	X 41	X 38	43	45	40															X 50	X 45	X 48	X 46
27	X 50	X 48	X 44	X 44	39	36	40														X 53	X 44	X 43	X 42
28	X 42	X 41	X 40	X 40	48	X 38															X 76	X 56	X 47	X 44
29	X 42	X 38	X 36	X 34	X 32	X 29															X 66	X 30	X 30	X 30
30	X 31	34	37	X 31	X 31	32															X 59	X 40	X 41	X 40
31	X 39	X 40	X 38	X 38	X 32	X 29															X 46	X 38	41	X 42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	30	29	3	1												12	30	30	26	28
MED	X 40	X 40	X 38	X 38	X 38	X 33	38	X 47												X 56	X 50	X 42	X 41	X 40
U Q	X 42	X 41	X 41	X 40	X 41	X 36	40													X 62	X 55	X 46	X 44	X 42
L Q	X 38	X 38	X 37	X 36	X 36	X 32	37													X 50	X 46	X 38	X 38	X 38

MAR. 2018 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	32	31	31	32	29	34	50	50	58	62	62	61	64	67	61	57	52	49	45	48	46	A	26
2	28	31	A	31	29	26	26	56	54	56	63	61	66	69	64	56	56	60	56	38	34	33	A	33
3	F	27	F	30	30	27	F	50	59	63	71	71	70	80	76	64	62	56	51	38	36	37	A	A
4	A	F	F	27	30	28	28	50	59	62	67	73	71	66	68	65	65	A	A	A	42	37	A	A
5	23	27	27	28	31	33	36	57	56	55	55	55	70	79	72	71	71	60	50	44	46	43	37	31
6	31	31	31	31	32	F	21	41	49	55	60	72	80	67	67	68	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	64	65	C	C	64	C	C	C	61	55	45	40	40	34
8	33	F	F	F	F	28	22	44	52	54	55	55	61	70	68	67	70	66	61	47	33	35	35	33
9	34	34	32	32	33	28	24	41	51	60	77	64	57	65	65	54	57	56	63	56	44	35	35	35
10	36	35	34	32	35	30	26	43	52	63	64	53	60	69	80	86	75	61	49	49	46	42	39	34
11	36	36	36	36	35	35	35	52	53	56	55	65	90	90	78	72	61	60	68	72	51	36	34	32
12	32	32	32	33	40	24	23	44	49	60	62	63	75	88	74	60	63	59	60	53	35	26	27	29
13	32	32	32	31	F	26	26	50	60	61	60	62	74	79	69	68	62	61	62	50	33	31	33	F
14	36	35	35	32	38	26	22	46	58	60	65	66	64	61	62	56	56	54	54	62	42	F	F	F
15	F	35	F	F	30	29	29	56	72	75	57	64	63	83	84	74	A	59	62	59	39	33	33	F
16	F	F	F	F	F	27	F	46	57	65	65	57	79	108	102	82	71	76	76	58	40	37	39	40
17	34	33	33	33	30	30	30	49	66	76	64	63	68	72	80	68	55	58	57	58	48	46	44	42
18	40	41	39	36	30	26	25	45	60	76	74	64	84	110	110	100	78	72	75	72	46	30	32	31
19	32	F	31	31	32	A	A	46	61	54	63	94	92	65	80	86	76	66	74	58	40	40	40	38
20	39	39	37	34	27	22	27	48	61	88	83	66	80	90	87	68	66	67	64	44	35	31	30	30
21	30	31	31	30	26	22	25	48	57	56	56	60	73	92	93	63	59	66	77	70	44	30	32	32
22	F	31	31	F	30	25	28	50	57	53	48	53	69	85	83	70	58	56	67	72	49	30	32	32
23	29	F	30	29	28	20	27	49	56	54	61	57	74	83	90	103	105	97	87	70	53	42	36	38
24	36	36	35	35	35	37	41	47	50	62	60	71	76	74	74	72	67	68	62	59	56	35	35	34
25	34	32	30	F	F	27	31	47	61	57	56	71	73	86	87	74	66	66	76	63	55	54	32	34
26	35	35	32	F	F	F	26	47	50	57	68	84	90	88	90	79	68	60	69	55	44	39	42	40
27	44	42	38	38	F	F	F	42	46	52	53	59	64	71	75	67	64	70	60	52	47	38	37	36
28	36	35	34	34	F	32	27	44	53	54	54	58	69	85	98	90	75	75	78	78	70	50	41	38
29	36	32	30	28	26	24	32	48	52	59	62	55	62	73	79	75	68	64	80	84	60	24	24	24
30	25	F	F	25	25	F	29	42	49	51	58	64	77	86	88	92	75	69	70	73	53	34	35	34
31	33	34	32	32	26	22	30	48	52	54	61	76	89	92	93	88	72	70	66	57	40	32	F	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	25	24	23	24	23	25	26	30	30	30	31	31	30	30	31	30	28	28	29	29	30	29	24	25
MED	34	34	32	32	30	27	27	48	55	58	62	64	72	80	79	70	66	62	63	58	44	36	35	34
U Q	36	35	35	34	33	30	30	50	59	62	65	71	79	88	88	82	72	68	74	70	49	41	39	37
L Q	32	32	31	30	28	24	25	44	51	54	56	58	64	69	68	65	60	59	58	50	40	32	32	32

MAR. 2018 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	A	U L 432	U L 432	U L 444	U L 436	L	A							
2										A	U L 408	A	U L 428	432	A	A	A	A						
3										A	A	L	432	432		408	A	A						
4										A	L	U L 436	428	U L 448	L	L	A	A	A					
5											L	U L 444	424	U L 440	U L 440	L	A	A						
6										L	A	U L 428	436	U L 436	424	A	C	C	C					
7							C	C	C	C	U L 416	L	C	C	U L 428	C	C	C						
8										U L 396	U L 408	436	440	420	U L 424	L	L	L						
9										L	424	440	U L 440	440	428	L	A	A						
10								L		L	L	U L 444	U L 444	U L 424	A	A	A							
11									L			444	424	U L 444	U L 432	U L 424	L							
12									L	L	U L 432	U L 428	U L 428	L	U L 428	U L 420	L	L						
13											U L 444	448	448	432	U L 436	420	A	L						
14										U L 384	L	U L 428	444	428	U L 428	L	L	L						
15												L	A		L	A	A	A						
16										L	L	U L 444	U L 456	424	U L 416	U L 428	L	A						
17									L	L	L	U L 440	436	U L 436	U L 420	L								
18									L	A	U L 428	U L 432	U L 464	432	436		L							
19							A				U L 464	A		A	U L 452	L	L							
20									L	L	L	L	U L 444	U L 444	U L 444	L	L							
21											A	A	432	U L 432	U L 432	A	L	L						
22										L	U L 436	428	428	432	U L 428	L	388	A						
23										A	A	U L 456	A	A	U L 432	U L 432	L	L						
24										U L 412	U L 412	U L 436	U L 448	U L 444	U L 444	L	U L 392			A				
25											A	U L 428	U L 428	U L 456	U L 440	U L 420	L	L						
26										L	U L 448	U L 444	436	U L 452	U L 440	U L 428	A							
27										L	U L 440	440	440	L	428	L	L	L						
28										L	L	440	U L 444	U L 444	U L 436	A	A	A						
29										L	L	L	444	440	436	428	A	L						
30										L	424	U L 440	440	444	U L 436	U L 428	L	L						
31										L	428	428	436	432	432	U L 436	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										3	14	23	27	25	26	11	2							
MED										U L 396	U L 428	U L 440	436	U L 436	U L 432	U L 428	390							
U Q										U L 412	U L 440	U L 444	U L 444	U L 444	U L 436	U L 428								
L Q										U L 384	U L 416	U L 428	428	432	U L 428	420								

MAR. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B B	U R 248	A	A	A	A	A	A	A	A	A	B					
2								B B	A	A	A	A	A	A	A	A	A	A	B					
3								B B	A	A	A	A	A	U A 360	316	A	284	236	B					
4								B B	A	A	A	A	A	U R 336	R	A	A	A	B					
5								B A	A	A	A	A	A	U A 332	A	U R 312	A	A	B					
6								B B	240	288	U A 308	A	A	A	A	A	C	C	C					
7								C C	C	C	A	A	C	C	U A 320	C	C	C	B					
8								B B	U A 228	U R 296	308	A	U R 352	A	A	A	U R 288	A	B					
9								B	U R 244	U R 292	A	A	U R 348	A	U R 340	A	A	A	B					
10								B U R 176	U R 248	A	A	A	A	336	A	A	A	A	B	B				
11								B U R 172	U R 232	276	304	A	A	A	320	U R 304	U R 280	A	B	B				
12								B U A 180	U A 244	A	A	A	A	A	R	U R 316	300	U A 248	B					
13								B U R 200	U R 264	A	A	A	A	U R 340	R	R	U A 280	U A 244	B					
14								B B	U A 260	A	A	A	R	U R 336	A	U A 308	U R 284	U R 244	B					
15								B U R 216	U A 252	A	A	A	A	A	A	A	A	A	B	B				
16								B B	A	A	A	A	A	A	A	A	A	A	B	B				
17								B U R 208	U R 272	A	A	A	A	A	U R 320	U R 308	A	A	B	B				
18								B U A 176	248	A	A	A	A	U R 324	U A 316	U A 296	U R 284	U R 244	B	B				
19								B A	U A 260	U A 284	A	A	A	A	A	A	A	A	B	B				
20								B B	A	A	R	R	R	A	A	A	U R 288	A	B					
21								B B	256	A	A	A	A	A	A	A	A	A	B					
22								B U A 180	U A 252	A	A	A	A	336	316	A	U A 284	252	B	B				
23								B A	252	U A 288	A	A	A	A	A	A	A	U R 252	U R 180	B				
24								B U A 192	A	A	A	A	A	A	A	A	A	A	B	B				
25								B U A 184	A	A	A	A	A	A	A	A	U R 292	U R 248	B	B				
26								B U R 228	A	A	A	A	R	R	U A 320	U A 304	A	A	B	B				
27								B U A 180	U A 236	U A 268	A	A	R	A	U R 320	R	A	A	B	B				
28								B U A 196	U A 260	U A 284	A	A	A	A	U R 328	U A 308	U A 304	A	B	B				
29								B U A 208	U A 252	A	A	U R 328	340	R	R	340	A	U A 244	B	B				
30								B 188	U A 264	A	A	A	A	A	R	A	A	U R 252	B	B				
31								B U A 204	U A 264	A	A	A	A	A	A	U R 312	A	U R 248	U R 196	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								16	21	8	3	1	3	8	10	10	11	11	2					
MED								U A 190	U A 252	U 286	308	U R 328	U R 348	U 336	U 320	U 308	U R 284	U R 248	U R 188					
U Q								U R 206	U A 260	U R 290	U A 308		U R 352	U R 338	U R 320	U R 312	U 292	U R 252						
L Q								U A 180	U 244	U A 280	304		340	U 334	316	U A 304	U 284	U A 244						

MAR. 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

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	JA 27	24	JA 24	JA 24	EB 15	EB 16	EB 16	EB 16	G	30	JA 42	JA 40	JA 57	JA 48	JA 45	JA 40	JA 42	32	JA 32	JA 33	JA 46	JA 43	JA 50	JA 33
2	JA 42	JA 36	JA 38	JA 38	EB 16	JA 21	22	JA 22	JA 34	JA 35	JA 48	JA 60	37	JA 43	JA 46	JA 50	JA 56	JA 40	JA 30	34	JA 48	JA 73	JA 82	JA 32
3	JA 40	JA 25	JA 21	EB 15	JA 21	EB 16	EB 16	18	JA 44	JA 47	JA 72	JA 48	JA 43	40	JA 47	39	35	33	20	JA 23	JA 30	JA 63	JA 79	JA 61
4	JA 53	EB 16	JA 32	JA 40	JA 22	20	EB 16	28	JA 34	JA 39	JA 41	JA 52	JA 39	G	G	37	JA 47	JA 73	JA 65	JA 60	JA 70	JA 39	JA 52	JA 84
5	19	JA 34	JA 50	EB 16	EB 15	EB 16	EB 18	JA 25	JA 34	JA 46	JA 38	JA 40	JA 43	37	35	G	JA 41	JA 40	JA 28	JA 31	JA 31	JA 39	JA 46	JA 31
6	JA 50	JA 48	JA 36	JA 28	JA 26	JA 26	22	22	31	32	37	37	36	37	JA 37	JA 49	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	37	JA 46	C	C	37	C	C	C	JA 30	JA 28	23	EB 15	EB 15	20
8	EB 16	JA 23	EB 15	EB 15	EB 16	EB 16	EB 16	EB 16	27	G	36	38	G	39	37	38	G	JA 32	JA 38	23	JA 21	EB 16	BJ 25	JA 22
9	JA 32	JA 31	EB 16	21	EB 16	EB 16	EB 16	21	G	G	35	JA 38	G	JA 42	G	JA 37	JA 50	JA 39	JA 39	JA 55	JA 51	JA 44	JA 45	JA 43
10	23	EB 16	EB 16	EB 15	EB 16	EB 16	EB 15	G	G	31	34	38	JA 40	40	JA 48	JA 48	35	29	JA 30	JA 23	JA 26	JA 25	24	EB 15
11	EB 16	EB 16	EB 16	EB 16	EB 16	EB 16	EB 16	G	G	34	36	38	37	38	G	G	G	JA 40	20	EB 15	22	JA 26	JA 33	25
12	24	22	EB 16	EB 16	EB 16	EB 16	22	G	28	32	36	JA 39	JA 42	40	G	G	35	29	22	22	22	JA 28	JA 32	22
13	JA 25	24	20	JA 33	JA 23	JA 26	EB 15	G	G	JA 40	JA 39	JA 50	34	G	G	G	JA 49	28	19	JA 23	JA 21	JA 44	22	JA 40
14	JA 30	36	EB 16	EB 16	18	EB 15	EB 16	23	33	30	JA 40	JA 41	G	G	37	34	G	G	EB 16	EB 16	EB 16	BJ 46	JA 44	JA 29
15	JA 30	22	JA 24	20	20	20	EB 17	G	31	JA 39	JA 40	JA 42	JA 60	JA 59	JA 53	JA 72	JA 89	JA 62	25	JA 24	JA 30	EB 16	EB 16	EB 16
16	EB 16	JA 24	EB 16	EB 16	23	EB 16	EB 16	20	28	32	34	JA 38	JA 44	JA 41	JA 38	35	JA 35	JA 48	JA 32	JA 23	21	JA 23	JA 31	EB 16
17	JA 33	23	EB 16	22	EB 16	20	EB 16	G	G	32	36	36	JA 42	JA 40	G	G	JA 42	JA 34	JA 21	EB 16	21	EB 16	EB 16	JA 26
18	JA 26	EB 16	22	JA 20	24	EB 15	JA 20	24	29	JA 41	JA 40	38	JA 76	G	37	34	G	G	JA 30	21	21	EB 16	EB 16	JA 30
19	22	JA 30	JA 28	JA 22	20	JA 33	JA 30	JA 29	31	34	JA 40	JA 53	JA 57	JA 72	JA 43	JA 84	JA 37	JA 33	JA 22	JA 20	21	EB 16	EB 16	EB 16
20	JA 28	JA 40	EB 16	EB 15	EB 16	BJ 46	JA 22	JA 26	JA 29	32	G	G	G	G	37	34	G	31	20	21	22	JA 23	EB 15	EB 15
21	EB 15	EB 15	23	21	22	EB 16	EB 16	23	29	35	JA 45	JA 43	JA 44	39	38	JA 146	JA 39	JA 45	JA 35	JA 33	JA 26	JA 37	JA 24	JA 48
22	JA 22	20	EB 16	24	EB 16	EB 16	EB 16	23	31	36	JA 40	40	JA 42	39	36	JA 43	G	34	24	22	JA 29	23	EB 15	EB 15
23	EB 15	EB 16	EB 16	EB 16	EB 16	EB 16	EB 16	25	31	JA 41	JA 49	JA 48	JA 48	65	JA 55	JA 44	JA 44	G	G	21	JA 21	24	22	JA 25
24	JA 22	EB 16	EB 16	EB 16	23	20	EB 16	22	30	33	JA 40	JA 41	36	JA 40	JA 39	34	G	JA 33	JA 28	JA 51	JA 21	JA 48	EB 16	EB 16
25	EB 16	21	JA 23	22	19	22	21	24	30	JA 40	JA 51	JA 39	36	36	37	JA 36	G	G	24	JA 34	JA 90	20	JA 26	JA 44
26	JA 40	JA 23	JA 27	EB 16	23	20	20	G	32	JA 41	JA 38	JA 43	G	G	36	JA 44	JA 40	JA 40	JA 33	JA 24	22	23	EB 16	BJ 29
27	JA 26	EB 16	EB 16	JA 34	EB 16	EB 16	EB 15	25	28	33	36	36	G	JA 37	G	G	31	JA 33	JA 23	21	EB 16	EB 15	BJ 23	JA 28
28	JA 34	19	JA 26	25	JA 24	EB 15	EB 16	27	30	36	36	JA 40	JA 45	JA 39	G	38	36	JA 36	25	22	JA 28	JA 27	JA 22	EB 16
29	21	EB 16	EB 16	EB 16	EB 16	EB 16	EB 16	26	30	33	35	G	41	G	G	37	37	32	JA 42	JA 28	JA 22	EB 16	EB 16	EB 16
30	EB 16	EB 16	EB 15	20	EB 16	EB 15	21	24	31	34	38	JA 44	JA 38	JA 47	G	34	31	G	22	EB 15	JA 20	JA 32	25	EB 16
31	EB 16	EB 15	EB 15	EB 15	EB 15	EB 14	EB 14	26	32	36	JA 43	JA 39	JA 45	JA 47	JA 54	G	JA 33	G	G	24	23	EB 16	BJ 31	EB 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	31	31	30	30	31	30	29	29	30	30	30	30	30	30
MED	JA 24	22	EB 16	20	EB 16	EB 16	EB 16	22	30	34	JA 38	JA 40	JA 40	39	37	37	35	JA 33	JA 25	JA 23	JA 22	JA 24	JA 24	JA 25
U Q	JA 32	JA 25	JA 24	JA 24	22	JA 20	20	25	31	JA 39	JA 41	JA 44	JA 44	JA 42	JA 43	JA 44	JA 42	JA 40	JA 32	JA 31	JA 30	JA 39	JA 33	JA 32
L Q	EB 16	EB 16	EB 16	EB 16	EB 16	EB 16	EB 16	G	G 28	32	36	38	G 36	G 36	G	G 34	G	G 28	21	21	21	EB 16	EB 16	EB 16

MAR. 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

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	19	E B 16	E B 15	E B 16	E B 15	E B 16	E B 16	E B 16	G	29	35	35	36	36	38	34	34	30	28	28	27	22	A A 50	22
2	19	25	A A 38	18	E B 16	17	E B 16	17	26	32	32	42	35	34	39	37	36	28	20	25	24	E B 15	A A 82	22
3	18	22	20	E B 15	E B 16	E B 16	E B 16	18	34	35	35	35	35	39	41	34	32	31	18	18	18	22	A A 79	A A 61
4	A A 53	E B 16	E B 16	21	E B 16	E B 16	E B 16	27	27	34	33	32	33	G	G	34	36	A A 73	A A 65	A A 60	31	19	A A 52	A A 84
5	E B 16	22	24	E B 16	E B 15	E B 16	E B 18	18	28	39	34	34	34	36	34	G	36	35	23	28	28	22	22	E B 15
6	20	23	18	18	19	E B 16	E B 16	E B 16	29	29	34	34	34	34	34	41	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	33	38	C	C	34	C	C	C	19	19	E B 16	E B 15	E B 15	E B 16
8	E B 16	E B 16	E B 15	E B 15	E B 16	E B 16	E B 16	E B 16	25	G	35	36	G	36	35	33	G	24	21	19	E B 16	E B 16	17	18
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	G	G	32	34	G	34	G	32	43	33	25	25	33	20	20	28
10	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	G	G	29	32	35	35	37	44	41	33	26	21	18	18	19	20	E B 15
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	32	34	36	36	36	G	G	G	31	18	E B 15	E B 16	E B 16	27	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	G	26	30	33	33	35	38	G	G	33	26	20	16	E B 16	E B 16	E B 16	E B 16
13	E B 16	16	E B 16	E B 16	E B 16	19	E B 15	G	G	30	34	36	33	G	G	G	38	27	18	17	17	17	E B 16	16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	22	27	29	33	37	G	G	36	33	G	G	E B 16	E B 16	E B 16	16	E B 16	E B 16
15	16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	G	28	29	36	36	53	42	37	60	A A 89	39	20	20	23	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 16	E B 16	19	25	30	31	35	35	35	33	31	28	39	22	E B 16	E B 16	E B 16	E B 16	E B 16
17	16	E B 16	E B 16	16	E B 16	E B 15	E B 16	G	G	28	34	34	36	35	G	G	29	26	18	E B 16	E B 16	E B 16	E B 16	E B 16
18	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	16	21	27	36	36	34	35	G	36	32	G	G	20	E B 15	E B 16	E B 16	E B 16	18
19	E B 16	E B 16	18	E B 16	E B 16	A A 33	A A 30	22	27	32	36	48	46	44	35	34	28	25	18	E B 16	E B 16	E B 16	E B 16	E B 16
20	E B 16	18	E B 16	E B 15	E B 16	E B 16	16	23	25	30	G	G	G	G	34	32	G	26	17	E B 15	E B 16	18	E B 15	E B 15
21	E B 15	E B 15	E B 15	E B 16	E B 16	E B 16	E B 16	22	28	32	39	40	38	37	34	48	30	28	24	20	20	17	E B 15	21
22	E B 16	16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	34	35	35	35	36	34	35	G	34	21	E B 16	25	E B 15	E B 15	E B 15
23	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	29	32	46	35	42	59	35	33	30	G	G	E B 16	E B 16	E B 15	E B 15	E B 15
24	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	21	27	30	32	36	34	34	34	31	G	25	23	45	E B 16	21	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 15	16	E B 16	23	28	36	41	39	36	35	35	35	G	G	20	28	E B 15	E B 15	17	25
26	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 16	G	29	34	33	36	G	G	34	34	34	33	27	16	16	E B 16	E B 16	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	22	27	30	33	34	G	34	G	G	30	24	17	16	E B 16	E B 15	17	E B 15
28	20	E B 15	17	17	E B 15	E B 15	E B 16	24	29	34	34	36	36	34	G	36	34	32	21	E B 16	24	21	18	E B 16
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	32	G	39	G	G	36	35	28	30	22	E B 15	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	16	23	30	33	35	37	35	37	G	32	31	G	20	E B 15	E B 16	18	E B 16	E B 16
31	E B 16	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	24	29	34	37	37	37	36	36	G	29	G	G	16	E B 16	E B 16	E B 15	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	31	31	30	30	31	30	29	29	30	30	30	30	30	30
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	32	34	35	35	35	34	33	30	27	20	16	E B 16	E B 16	E B 16	E B 16
U Q	16	16	16	16	E B 16	16	16	22	28	34	35	37	36	37	36	35	34	32	23	22	23	19	20	18
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 25	29	33	34	G 33	G 34	G	G 31	G	G 24	18	E B 16	E B 16	E B 16	E B 16	E B 16

MAR. 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

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

MAR. 2018 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	326	334	316	320	339	336	386	413	384	369	382	361	351	355	358	352	374	374	376	335	261	373	A	342
2	336	329	A	329	324	338	338	387	391	373	374	350	338	365	366	359	360	374	381	362	335	320	A	329
3	F	339	F	329	326	314	F	391	408	386	373	361	316	334	325	360	370	382	374	362	325	342	A	A
4	A	F	F	325	335	355	345	396	417	363	357	357	359	324	332	349	375	A	A	A	376	349	A	A
5	324	363	334	322	356	280	283	371	411	382	374	325	324	350	344	348	369	365	385	334	352	347	348	326
6	302	299	342	286	349	F	375	405	404	361	358	337	360	335	336	357	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	361	361	C	C	371	C	C	C	369	362	349	334	334	334
8	308	F	F	F	F	405	349	401	397	389	383	359	353	347	340	337	361	363	376	394	325	324	337	317
9	310	283	339	342	375	351	347	367	369	359	379	381	338	349	360	338	356	357	367	379	374	306	310	320
10	331	325	316	336	358	352	351	373	371	357	359	338	332	319	316	340	371	368	360	348	341	323	347	290
11	308	326	313	314	318	330	342	376	387	361	354	306	335	346	355	346	350	356	365	363	371	327	326	322
12	319	299	301	334	398	416	299	380	389	370	362	339	341	348	360	347	368	365	373	381	369	296	329	320
13	314	318	336	337	F	331	326	381	383	382	375	355	351	355	360	354	357	362	380	380	365	286	302	F
14	321	329	300	330	383	386	338	397	372	380	370	366	356	357	354	346	354	356	356	364	388	F	F	F
15	F	322	F	F	292	304	311	369	401	407	385	350	317	347	350	350	A	345	350	371	363	308	308	F
16	F	F	F	F	F	341	F	382	368	371	364	307	295	353	365	340	340	346	381	371	328	290	326	355
17	334	304	318	321	330	317	321	349	365	376	364	371	344	341	358	357	354	361	364	358	322	310	319	293
18	288	289	326	341	357	298	346	370	363	379	366	320	299	335	341	328	317	327	364	374	B 372	296	316	300
19	303	F	306	308	409	A	A	352	382	372	273	321	378	355	324	349	351	352	359	356	308	309	295	283
20	312	314	331	334	382	303	318	365	329	358	378	325	345	333	345	341	351	366	380	369	329	304	292	297
21	303	324	329	333	348	337	337	386	372	368	360	340	336	342	361	367	345	352	359	374	361	305	291	239
22	F	340	317	F	323	301	321	375	385	377	359	330	326	340	355	355	370	350	358	378	396	302	293	299
23	280	F	312	326	340	374	351	369	392	376	342	335	323	323	326	344	345	353	362	345	372	321	326	313
24	317	318	319	329	317	339	362	412	373	387	361	360	346	353	354	350	352	356	366	359	370	350	284	297
25	312	299	290	F	F	292	323	398	388	355	319	344	333	334	362	350	339	345	375	351	331	363	313	310
26	315	315	289	F	F	F	341	381	369	331	312	328	338	339	348	359	361	359	366	356	339	299	304	315
27	327	333	319	347	F	F	F	400	392	361	364	345	342	335	348	354	358	369	373	355	324	315	304	310
28	319	310	316	329	F	357	344	368	375	380	353	351	325	323	348	360	335	335	338	344	344	343	326	320
29	309	349	325	344	312	318	343	412	380	380	384	351	329	331	345	343	347	339	358	373	399	294	298	301
30	295	F	F	377	368	F	347	396	375	362	354	334	322	326	329	356	337	339	355	362	375	315	306	300
31	315	325	329	340	360	321	344	387	357	344	328	321	334	325	330	339	331	346	368	376	349	287	F	310
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	23	24	23	25	26	30	30	30	31	31	30	30	31	30	28	28	29	29	30	29	24	25
MED	314	323	318	330	348	336	342	382	382	372	362	344	337	340	348	350	354	356	366	362	350	315	312	310
U Q	322	331	329	338	368	354	347	397	392	380	374	359	346	350	360	356	364	365	376	374	372	338	326	321
L Q	306	307	312	324	324	309	323	370	371	361	354	328	325	333	336	343	345	346	359	356	329	300	300	298

MAR. 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	A	UL 407	UL 410	UL 382	UL 368	L	A							
2										A	UL 417	A	UL 434	400	A	A	A	A						
3										A	A	L	415	413		402	A	A						
4										A	L	UL 400	433	UL 415	L	L	A	A	A					
5											L	UL 404	441	UL 386	UL 386	L	A	A						
6										L	A	UL 417	401	UL 401	405	A	C	C	C					
7							C	C	C	C	UL 393	L	C	C	UL 397	C	C	C						
8										UL 430	UL 433	407	395	416	UL 412	L	L	L						
9										L	394	401	UL 409	423	403	L	A	A						
10								L		L	L	UL 411	UL 413	UL 405	A	A	A							
11									L			401	421	UL 380	UL 385	UL 383	L							
12									L	L	UL 384	UL 405	UL 413	L	UL 413	UL 419	L	L						
13											UL 389	387	404	427	UL 392	395	A	L						
14										UL 445	L	UL 440	407	423	UL 406	L	L	L						
15												L	A		L	A	A	A						
16										L	L	UL 397	UL 384	414	UL 421	UL 389	L	A						
17									L	L	L	UL 413	417	UL 417	UL 416	L								
18									L	A	UL 391	UL 424	UL 393	422	378		L							
19							A				UL 341	A		A	UL 375	L	L							
20									L	L	L	L	UL 401	UL 381	UL 377	L	L							
21											A	A	415	UL 419	UL 381	A	L	L						
22										L	UL 426	431	431	401	UL 398	L	468	A						
23										A	A	UL 381	A	A	UL 403	UL 373	L	L						
24										UL 396	UL 442	UL 418	UL 404	UL 395	UL 391	L	UL 399			A				
25											A	UL 438	UL 438	UL 374	UL 392	UL 390	L	L						
26										L	UL 386	UL 391	419	UL 405	UL 385	UL 380	A							
27										L	UL 396	413	415	L	391	L	L	L						
28										L	L	415	UL 412	UL 407	UL 383	A	A	A						
29										L	L	L	401	422	409	399	A	L						
30										L	398	UL 419	431	408	UL 397	UL 402	L	L						
31										L	398	400	402	417	409	UL 375	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										3	14	23	27	25	26	11	2							
MED										UL 430	UL 395	UL 407	413	UL 408	UL 394	UL 390	434							
U Q										UL 445	UL 417	UL 418	421	418	UL 406	UL 402								
L Q										UL 396	UL 389	UL 400	402	UL 398	UL 385	UL 380								

MAR. 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

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										234	232	254	254	252	250	250	250							
2										230	230	254	272	242	256	246	254	226						
3										232	232	234	266	260		260	236	218						
4										226	242	242	244	268	274	262	230	A		A				
5											250	314	302	246	246	246	236	226						
6										236	250	260	246	254	262	256	C	C		C				
7							C	C	C	C	240	256	C	C	244	C	C	C						
8										244	244	276	276	266	266	266	246	246						
9										246	230	228	272	262	252	268	250	250						
10								232		252	250	300	296	286	286	258	236							
11									220			304	264	244	242	252	252							
12									228	262	252	268	266	262	242	268	248	248						
13											248	264	264	244	232	256	252	248						
14										224	234	248	246	246	246	270	258	258						
15												272	E A 312		258	E A 252	A	244						
16										244	244	296	308	250	234	238	246	246						
17									246	238	238	238	252	252	252	244								
18									258	242	238	272	282	260	254		254							
19							A				336	256		256	282	260	252							
20									276	250	232	262	260	240	238	250	248							
21											258	276	276	260	242	254	266	266						
22										242	278	322	292	260	242	248	248	248						
23										248	248	266	280	266	264	246	242	240						
24										240	242	242	254	256	252	254	254			E A 246				
25											E A 272	272	280	248	246	242	262	260						
26										272	294	264	248	254	244	232	234							
27										256	266	272	284	284	258	256	256	254						
28										254	254	262	266	266	236	232	248	244						
29										244	234	252	290	274	260	256	256	260						
30										268	268	282	282	272	268	254	254	254						
31										280	280	280	270	270	270	254	254	254						
	00	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	23	29	31	29	29	30	29	27	19		1				
MED								232	246	244	246	264	271	260	252	254	250	248		E A 246				
U Q									267	254	262	276	283	266	262	259	254	254						
L Q									224	236	236	254	257	249	242	246	246	244						

MAR. 2018 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 254	E B 232	E B 250	E B 250	228	214	208	186	186	186	A	184	184	184	222	220	A	220	202	224	E A 234	194	A	E A 302
2	E A 272	E A 306	A	E A 248	E B 238	E A 246	E B 238	198	196	A	182	A	182	172	A	A	A	A	194	210	E A 236	E B 236	A	E A 232
3	E A 294	E A 282	E A 256	E B 240	E B 234	E B 234	206	200	206	A	A	200	194	212	256	196	A	A	200	196	E A 256	E A 236	A	A
4	A	216	224	E A 280	232	218	216	206	202	A	184	184	170	170	176	206	A	A	A	A	210	210	A	A
5	230	E A 248	E A 322	E B 234	220	230	222	198	196	216	180	180	180	208	188	206	A	A	206	222	222	218	218	E B 216
6	E A 320	E A 320	234	E A 256	E A 236	210	210	188	188	180	A	180	180	182	188	A	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	196	220	C	C	188	C	C	C	200	200	200	E B 220	206	216
8	E B 262	E B 262	E B 252	E B 262	E B 242	184	218	192	192	176	176	192	192	190	190	208	196	206	204	194	226	E B 228	220	E A 262
9	E B 252	E B 252	E B 238	E B 238	210	208	218	200	196	192	182	192	182	178	174	192	A	A	214	212	210	E A 260	E A 274	E A 294
10	240	E B 240	E B 240	E B 232	210	210	210	192	202	202	194	186	178	194	A	A	A	208	208	208	208	224	224	E B 260
11	E B 262	E B 234	E B 242	E B 252	E B 252	236	210	200	192	212	224	186	186	196	204	186	186	236	218	188	188	202	E A 302	E B 252
12	E B 264	E B 264	E B 264	E B 248	200	184	E B 240	200	186	186	186	178	178	218	190	190	216	202	202	192	192	E B 250	E B 258	E B 258
13	E B 258	E A 248	234	234	234	E A 256	212	200	200	214	196	196	180	176	176	172	A	200	198	194	194	E B 296	E B 240	E B 270
14	234	E B 234	E B 240	E B 250	200	180	E B 260	200	200	182	176	176	176	174	190	206	200	186	206	206	186	E A 290	232	E B 258
15	E A 268	E B 238	E B 238	E B 264	E B 266	E B 272	258	194	206	202	202	202	A	244	224	A	A	A	224	208	206	E B 240	E B 246	E B 262
16	E B 238	E B 266	E B 232	E B 264	E B 232	210	206	206	206	188	188	186	178	178	178	192	192	A	204	194	194	E B 266	E B 252	212
17	E B 228	E B 266	E B 236	E B 240	E B 240	E B 254	E B 244	212	212	204	192	192	192	184	180	196	204	224	218	210	218	226	226	E B 264
18	E B 276	E B 236	228	218	206	E B 248	E B 248	204	216	A	206	192	186	172	184	216	190	214	214	200	190	E B 240	E B 248	E A 300
19	E B 280	E B 292	E A 274	E B 256	176	A	A	204	204	204	212	A	212	A	200	208	208	224	216	194	206	224	E B 250	E B 276
20	E B 258	E A 246	226	224	200	E B 286	E A 244	208	208	208	204	194	188	180	180	194	202	202	202	192	212	E A 270	E B 278	E B 284
21	E B 278	E B 250	E B 250	226	218	E B 238	232	210	206	204	A	A	212	206	202	A	206	210	210	206	198	222	E B 252	E A 414
22	E B 268	232	228	E B 272	212	232	232	204	202	190	184	182	188	196	194	210	190	A	212	202	186	E B 236	E B 256	E B 276
23	E B 300	E B 248	E B 248	E B 244	208	186	214	208	208	A	A	200	A	A	200	196	206	204	204	204	192	210	218	268
24	E B 260	E B 248	E B 256	E B 244	E B 244	234	204	196	210	196	190	180	180	180	198	194	192	210	210	A	198	208	E B 276	E B 272
25	E B 268	E B 258	E B 286	E B 250	212	E B 244	220	212	212	216	A	198	194	200	200	200	200	206	206	220	220	188	E A 262	E A 300
26	E B 270	E B 248	E A 282	E B 264	214	206	206	206	206	206	188	200	194	188	202	200	A	214	210	198	208	222	E B 246	E B 260
27	240	E B 238	E B 234	212	174	E B 260	220	204	204	194	192	192	180	176	176	200	200	208	206	206	206	210	E A 256	248
28	E A 264	E B 238	E A 242	232	224	190	216	212	212	206	190	190	190	188	184	A	A	A	216	206	196	196	E A 242	E A 242
29	E B 240	226	E B 234	E B 232	E B 232	E B 232	212	194	194	188	188	182	198	174	172	200	A	200	218	206	194	194	E B 292	E B 292
30	E B 286	E B 284	E B 238	210	204	E B 282	210	200	200	196	196	184	180	190	188	182	200	200	206	206	194	226	E B 256	E B 256
31	E B 256	E B 238	E B 238	230	202	E B 270	220	208	208	208	206	204	200	194	194	190	200	214	214	202	202	E B 260	E B 260	E B 238
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	30	29	29	30	30	25	25	28	28	28	29	24	17	20	29	28	30	30	26	28
MED	E B 262	E B 248	E B 240	E B 244	210	U 208	214	200	203	202	190	191	185	186	190	198	200	208	206	205	201	U 210	E B 251	E B 262
U Q	E B 274	E B 264	E 254	E B 256	E B 234	E B 251	E B 235	206	208	207	199	197	193	196	200	206	205	214	214	208	212	E B 240	E B 260	E A 280
L Q	246	E B 238	234	232	206	209	210	198	196	188	184	183	180	177	180	192	192	202	203	195	194	210	232	E 250

MAR. 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	B	114	114	108	106	A	A	A	A	A	108	B					
2							B	B	A	A	A	A	108	A	A	A	A	108	B					
3							B	B	A	A	A	A	A	108	108	108	108	110	B					
4							B	B	A	A	A	A	A	110	108	108	108	A	B					
5							B	A	A	A	A	A	A	108	108	108	A	A	B					
6							B	B	108	108	112	112	112	112	A	A	C	C	C					
7							C	C	C	C	A	A	C	C	110	C	C	C	B					
8							B	B	112	110	110	110	110	110	110	110	110	A	B					
9							B		110	110	A	A	110	A	110	A	A	A	B					
10							B	112	112	114	108	106	A	106	116	118	118	118	B	B				
11							B	128	112	112	110	110	110	114	114	112	112	A	B	B				
12							B	126	112	112	112	A	A	112	112	112	112	118	B					
13							B	118	112	A	A	A	A	112	112	112	112	112	B					
14							B	B	114	A	A	A	114	112	110	108	108	112	B					
15							B	114	114	A	A	A	A	A	A	A	A	A	B	B				
16							B	B	114	A	114	A	A	A	A	A	A	A	B	B				
17							B	112	112	112	A	A	A	A	112	112	A	A	B	B				
18							B	112	112	A	A	A	A	112	112	112	112	112	B	B				
19							B	A	112	112	A	A	A	A	A	A	A	A	B	B				
20							B	B	A	112	112	110	110	110	A	A	110	110	B					
21							B	B	110	110	A	A	A	A	110	A	110	A	B					
22							B	110	110	110	A	A	A	108	108	108	108	108	B	B				
23							B	118	118	110	110	110	A	A	A	A	A	110	110	B				
24							B	110	110	A	A	A	A	A	A	A	110	A	B	B				
25							B	110	110	A	A	A	A	108	108	108	108	108	B	B				
26							B	116	116	A	A	A	112	112	112	112	A	A	B	B				
27							B	112	112	112	112	A	112	112	112	112	112	A	B	B				
28							B	114	112	110	110	A	A	A	110	110	112	A	B	B				
29							B	130	124	114	114	110	108	108	108	108	108	108	B	B				
30							B	104	114	114	108	A	A	A	114	A	A	114	B	B				
31							B	114	108	108	A	A	A	A	A	108	A	108	108	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								17	25	18	13	8	10	17	21	18	17	15	2					
MED								114	112	112	110	110	110	110	110	110	110	110	109					
U Q								118	114	112	112	110	112	112	112	112	112	112						
L Q								111	110	110	109	108	110	108	108	108	108	108						

MAR. 2018 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	92	92	92	92	B	B	B	B	G	120	114	114	102	102	100	100	100	126	126	108	102	94	94	94
2	94	92	92	92	B	92	104	104	96	96	96	84	112	104	102	102	102	102	102	100	100	100	94	88
3	92	92	80	B	92	B	B	118	96	96	88	88	88	156	120	112	134	144	136	108	108	100	100	94
4	94	B	94	88	88	88	B	92	92	92	92	92	92	G	G	108	108	98	98	98	98	98	98	98
5	98	94	94	B	B	B	B	102	102	94	94	94	94	156	114	G	104	104	104	94	94	94	90	90
6	90	90	90	90	90	90	90	92	150	150	114	114	114	114	104	102	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	102	94	C	C	110	C	C	C	88	88	88	B	B	88
8	B	94	B	B	B	B	B	B	126	G	126	120	G	112	110	116	G	108	100	92	92	B	92	92
9	92	92	B	92	B	B	B	92	G	G	104	98	G	98	G	98	98	98	98	98	98	96	96	88
10	94	B	B	B	B	B	B	G	G	112	112	112	104	128	126	122	114	114	104	104	104	98	96	B
11	B	B	B	B	B	B	B	G	G	148	138	124	112	140	G	G	G	106	152	B	100	100	92	86
12	86	86	B	B	B	B	86	G	110	110	108	104	98	116	G	G	140	148	148	104	104	98	98	98
13	98	98	98	106	106	94	B	G	G	98	98	98	94	G	G	G	112	132	132	102	102	102	94	94
14	94	94	B	B	94	B	B	132	122	102	98	98	G	G	130	134	G	G	B	B	B	106	102	96
15	96	80	80	80	80	80	B	G	114	102	102	100	92	90	86	84	84	84	84	84	92	B	B	B
16	B	94	B	B	94	B	B	114	122	96	100	96	100	100	100	100	92	82	82	82	82	94	94	B
17	94	94	B	94	B	94	B	G	G	110	100	100	100	94	G	G	94	94	98	B	96	B	B	96
18	96	B	88	88	88	B	134	132	124	100	100	100	98	G	142	132	G	G	80	80	78	B	B	94
19	94	94	88	88	88	88	88	88	124	122	110	104	98	94	98	100	100	100	100	100	100	B	B	B
20	98	98	B	B	B	98	98	126	96	110	G	G	G	G	104	104	G	112	106	104	104	104	B	B
21	B	B	92	92	92	B	B	120	130	124	100	100	100	100	110	104	116	106	98	98	88	88	88	88
22	90	90	B	88	B	B	B	128	128	116	100	100	100	144	132	114	G	142	136	118	106	104	B	B
23	B	B	B	B	B	B	B	122	112	116	110	110	94	92	92	92	92	G	G	92	92	92	82	92
24	92	B	B	B	92	92	B	134	128	104	104	98	96	96	96	96	G	90	100	100	100	100	B	B
25	B	94	88	88	88	88	88	130	116	102	102	102	100	110	110	116	G	G	112	104	98	86	86	86
26	90	90	90	B	90	90	90	G	112	102	98	98	G	G	124	120	112	112	112	90	90	82	B	94
27	94	B	B	94	B	B	B	124	124	116	108	98	G	112	G	G	110	104	104	104	B	B	98	98
28	94	94	94	88	88	B	B	120	132	126	118	102	102	102	G	120	158	90	130	84	104	104	104	B
29	96	B	B	B	B	B	B	116	116	112	112	G	132	G	G	146	134	124	78	78	78	B	B	B
30	B	B	B	84	B	B	84	144	134	128	114	102	102	102	G	102	100	G	100	B	98	98	98	B
31	B	B	B	B	B	B	B	112	118	116	104	100	98	98	98	G	98	G	G	88	88	B	94	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	19	14	16	14	11	9	21	24	28	30	29	24	23	21	23	21	23	27	26	28	21	20	19
MED	94	94	91	89	90	90	90	120	120	110	103	100	100	102	110	104	104	106	102	98	98	98	94	94
U Q	96	94	94	92	92	94	101	129	127	118	112	104	102	116	122	120	115	124	126	104	102	101	98	96
L Q	92	90	88	88	88	88	87	103	111	101	100	98	95	98	99	100	98	98	98	88	91	94	92	88

IONOSPHERIC DATA STATION Yamagawa

MAR. 2018 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	F5	F1	F2	F2						C2	C3	C2	L2	L2	L2	L3	L3	C3	C7	F6	F8	F4	F7	F9
2	F7	F8	F7	F6		F2	L3	L2	L6	L4	L3	L3	C1	L2	L3	L4	L4	L4	L4	F7	F5	F3	F4	F6
3	F5	F4	F2		F2			C2	L4	L5	L3	L3	L2	HL11	C3	C1	C3	C2	H2	F5	F4	F8	F8	F8
4	F9		F2	F5	F2	F3		L3	L4	L3	L3	L3	L2			CL22	C3	L7	L8	F6	F3	F4	F4	F6
5	F2	F4	F2					L2	L3	L3	L2	L2	L2	H1	C1		L5	L6	L5	F9	F8	F4	F4	F2
6	F4	F6	F5	F2	F4	F4	L2	L1	H3	H2	C2	C2	C2	C2	L1	L3								
7											L2	L2			CL22				L2	F3	F2			F2
8		F2							C2		C2	C2		C2	C2	C2		L2	L3	L1	L1		F3	F2
9	F2	F2		F2				L1			L1	L2		L1		L2	L4	L4	L5	F3	F4	F7	F5	F8
10	F1									C3	C1	C1	L2	C1	C2	C2	C2	C2	L3	L3	F6	F4	F8	
11										H2	H2	C1	C2	H1				L4	H2		F2	F2	F5	F2
12	F1	F1					L2		C1	C2	C1	L2	L2	CL11			HL12	HL12	HL22	L3	F1	F3	F2	F3
13	F2	F4	F2	F1	F1	F4				L3	L2	L3	L2				C3	C2	C2	F3	F3	F3	F3	F2
14	F4	F2			F1			C2	C2	L2	L3	L3			C1	C1						F3	F2	F2
15	F4	F2	F2	F1	F2	F1			C2	L3	L3	L3	L4	L3	L4	L6	L6	L6	L6	L3	F7			
16		F2			F1			C2	C2	L1	L1	L2	L1	L1	L1	L2	L3	L7	L2	L3	F3	F3	F3	
17	F5	F1		F1		F2				C1	L2	L2	L2	L3			L3	L3	L1		F1			F4
18	F2		F2	F1	F1		C2	C2	C2	L3	L3	L3	L2		H1	H1			L2	L1	F1			F4
19	F2	F4	F5	F2	F1	F4	L6	L4	C2	C2	L2	L4	L3	L3	L3	L3	L2	L2	L3	L3	F1			
20	F4	F4				F4	L4	C4	L3	C2					L2	L2		C2	L1	L1	F1	F4		
21			F2	F1	F3			C2	CL22	C2	L5	L2	L2	L1	C1	L3	C3	L4	L3	L5	F4	F5	F3	F5
22	F2	F1		F2				C2	C2	C3	L2	L2	L2	H1	C1	C2		H2	H5	C2	F7	F3		
23								C2	C2	C1	C4	C2	L3	L3	L2	L2	L3			L1	F2	F1	F2	F4
24	F2				F2	F2		C3	C3	L2	L2	L2	L2	L2	L2	L2		L3	L3	L4	F2	F4		
25		F1	F4	F2	F2	F2	L1	C2	C2	L2	L3	L2	L1	C1	C2	C2			C2	L7	F5	F2	F2	F6
26	F2	F4	F9		F3	F3	L2		C2	L3	L2	L3			C1	C2	CL24	CL34	CL33	L3	F3	F2		F2
27	F2			F3				C2	C2	C2	C2	L2		C2			C1	L2	L3	L1			F3	F3
28	F5	F1	F4	F4	F3			C3	C1	C2	C2	L4	L2	L2		CL11	H2	L4	CL22	L2	F4	F2	F4	
29	F1							C3	C2	C2	C1		H1			H1	CL12	C2	L5	L4	L1			
30				F1			L1	H3	C2	C2	C2	L2	L2	L2		L2	L2		L1		F2	F4	F1	
31								C3	C2	C2	L2	L1	L1	L2	L2		L2			L2	F2		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. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	X 38	X 34	X 35	X 35	X 39	X 37														X 49	X 52	X 37	X 33
2	X 33	X 35	X 35	X 36	X 34	A	X 34														X 39	X 38	X 38	X 40
3	35	35	36	37	X 35	X 36	X 28														X 41	42	44	X 36
4	X 36	A	38	36	36	X 31	32														X 53	A	X 38	A
5	47	42	X 34	X 32	X 33	X 34	X 32														X 50	X 45	X 39	X 38
6	X 38	X 36	X 36	X 34	X 38	39	X 30														X 48	X 42	X 33	X 32
7	36	38	X 34	36	A	40	25														X 60	X 48	X 47	X 43
8	X 39	X 38	46	41	53	X 36	X 28														X 52	X 39	X 42	X 38
9	X 39	X 39	X 38	X 38	X 39	X 28	X 27														X 58	X 34	X 37	X 38
10	X 38	X 38	X 38	X 38	X 40	X 31	X 29														X 56	X 48	X 40	A
11	X 38	X 40	X 40	X 40	X 40	X 37	X 36														X 76	X 53	X 39	X 39
12	X 38	X 37	X 37	X 38	X 48	X 23	X 24														X 40	X 29	X 30	X 32
13	X 32	X 33	X 34	X 35	X 34	X 33	X 28														X 39	X 34	X 35	40
14	A	A	X 36	X 38	X 41	X 24	X 24														X 52	X 37	X 37	X 37
15	39	42	X 38	X 38	38	36	37														X 57	X 42	X 40	X 39
16	X 40	X 38	X 36	X 34	40	X 39	X 27														X 87	X 65	X 61	X 55
17	X 41	X 42	X 40	X 39	X 38	X 35	X 38														X 54	X 46	X 42	X 42
18	X 42	X 44	X 44	X 40	X 38	36	X 30														X 77	X 45	X 47	X 47
19	X 44	45	X 45	X 51	X 40	A	X 26														A	X 44	X 45	X 43
20	X 40	45	X 39	X 41	A	X 24	X 26														A	X 39	X 38	X 37
21	X 45	X 44	X 43	X 43	X 32	X 27	X 26														X 58	X 41	X 34	X 35
22	X 36	38	43	41	X 40	32	32														X 45	X 37	X 36	38
23	39	39	X 36	X 36	X 35	X 28															X 94	X 72	X 41	X 38
24	X 37	X 39	X 38	X 38	X 37	40															X 58	X 37	X 34	35
25	40	39	38	X 36	36	X 34															X 68	X 53	X 36	38
26	39	X 38	X 36	X 36	X 44	X 25															X 54	X 48	X 43	X 44
27	X 44	X 42	X 40	X 44	X 28	X 27															X 57	X 39	X 38	X 39
28	X 40	X 38	X 36	40	X 37	28															X 123	X 87	X 68	X 64
29	X 62	X 60	X 58	50	X 39	X 37															X 72	X 33	X 29	X 30
30	X 32	38	39	46	X 30	X 21	31														X 61	X 48	X 45	X 44
31	X 39	X 40	X 40	X 40	X 31	X 26															X 40	X 38	X 38	X 40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	31	29	29	23														29	30	31	29
MED	X 39	X 39	X 38	X 38	X 38	X 33	X 29														X 56	X 42	X 38	X 38
U Q	X 40	X 42	X 40	41	X 40	X 36	X 32														X 64	X 48	X 43	X 42
L Q	X 36	38	X 36	X 36	X 34	X 27	X 26														X 48	X 38	X 36	X 36

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	32	28	29	29	33	31	36	48	53	64	66	70	82	90	91	J R 84	60	56	45	43	46	31	27
2	27	29	29	30	28	A	28	48	50	56	57	69	80	101	104	J R 90	63	64	61	40	33	32	32	34
3	F 27	F 26	F 29	F 28	29	30	22	45	55	58	66	84	117	115	116	106	97	73	59	45	35	F 32	F 32	R 30
4	29	A	F 30	F 28	F 27	25	F 24	47	53	53	72	91	97	J R 101	108	R 102	95	66	60	54	48	A	32	A
5	F 32	F	28	26	27	28	26	48	51	50	60	72	81	94	90	88	90	71	62	52	44	39	33	32
6	32	30	30	28	32	F 30	24	39	46	52	56	69	82	90	90	81	79	79	75	51	42	36	27	26
7	F 27	F 30	28	F 27	A	F 32	17	36	46	51	66	69	77	86	75	J R 84	H 78	72	68	63	54	V 42	41	37
8	33	34	F 33	F 33	F 39	30	22	41	45	52	57	63	70	84	82	80	87	87	79	R 64	J R 46	33	36	32
9	33	33	32	31	33	22	21	39	49	59	70	68	69	70	64	60	57	62	68	62	52	28	31	32
10	32	32	32	32	34	25	23	42	51	58	66	75	62	72	90	105	88	68	53	55	50	42	34	A
11	32	34	34	34	34	31	30	44	54	55	62	72	87	96	91	88	88	90	99	90	70	H 45	33	33
12	32	31	31	32	42	17	18	43	50	58	71	71	80	92	77	73	82	76	72	63	34	23	24	26
13	26	27	28	29	28	27	22	47	55	56	66	73	74	89	J R 100	J R 101	J R 104	J R 102	87	R 59	33	28	29	F 31
14	A	A	30	32	35	18	18	45	55	54	66	75	78	79	73	64	57	58	59	59	46	31	31	31
15	F 32	F 33	32	32	F 30	F 29	F 28	50	68	70	56	62	74	90	98	97	71	68	72	76	51	36	34	33
16	34	32	30	28	F 34	33	21	41	58	66	75	75	86	116	116	116	R 117	J R 123	124	104	R 81	59	V 55	49
17	35	36	34	33	32	29	32	50	63	82	71	72	82	78	88	76	67	60	68	65	48	40	37	36
18	36	38	38	34	32	F 25	24	44	58	79	84	88	118	145	146	138	128	125	122	109	71	39	41	41
19	38	F 38	39	45	34	A	20	45	60	56	52	102	94	71	85	J R 102	90	90	92	70	A	39	39	37
20	34	F 36	33	35	A	18	20	44	65	100	89	80	97	132	135	126	124	107	98	68	A	33	32	31
21	39	38	37	39	26	21	20	48	52	59	60	59	78	96	107	104	J R 89	90	96	84	52	35	28	29
22	30	F 31	F 35	34	34	F 26	F 23	47	57	58	51	51	69	82	85	80	73	75	86	76	39	31	30	31
23	32	F 31	30	30	29	22	21	44	56	58	54	56	70	89	102	122	147	J R 156	R 151	110	88	66	35	32
24	31	33	32	32	31	F 33	33	47	50	63	64	64	78	83	90	89	80	80	75	67	52	31	28	F 29
25	F 32	F 31	31	30	F 28	28	24	48	53	59	66	66	76	95	108	88	81	90	95	75	62	47	30	F 30
26	F 30	32	30	30	38	19	22	44	49	60	67	86	97	107	100	101	86	78	74	58	48	42	37	38
27	38	36	34	38	22	21	26	42	48	55	58	66	67	84	90	78	82	88	82	60	51	33	32	33
28	34	32	30	F 31	31	F 22	23	42	51	62	59	61	74	96	117	124	R 120	127	142	134	117	80	62	58
29	56	54	52	F 37	33	31	30	47	53	62	59	60	73	92	104	106	R 100	110	108	101	66	27	23	24
30	26	F 28	F 31	F	24	J B 15	F 23	42	46	56	55	72	82	100	113	108	98	101	106	81	55	44	39	38
31	33	34	34	34	25	20	24	46	48	58	67	84	98	99	104	104	101	96	89	52	34	32	32	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	31	30	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	30	31	29
MED	32	32	31	32	31	26	23	44	52	58	64	71	78	92	98	97	88	80	79	64	50	36	32	32
U Q	34	35	34	34	34	30	26	47	56	62	67	75	87	100	108	106	100	101	98	81	58	42	37	36
L Q	30	31	30	29	28	21	21	42	49	55	57	64	73	83	88	81	79	68	68	55	42	32	30	30

MAR. 2018 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L 428	L 436	L 440	L 444	436	420	L 396	L						
2									L	L	L	436	428	444	U A 436	A	392	A						
3										A	A	L 456	448	428	428	416	L 400							
4											A	444	A	A	A	A	A							
5											436	432	432	428	436	L 420	404	L						
6								L			U L 428	432	440	440	436	420	L 408	L						
7											L 432	444	436	A	440	428	L 412	A						
8									304		L 432	440	436	436	436	424	L 408	L						
9										L 404	L 412	L 444	444	436	L 432	420	U L 416	L						
10									L	L	U L 432	428	L 444	A	L 448	L 428	L 396	L						
11								184	U L 304	U L 352	U L 440	436	436	440	444	L 436	L 412	L						
12										L	L 436	L 440	444	L 432	L 436	436	L 404	L						
13									L	L	440	440	440	440		L 432	404	L						
14									L	L	L 444	L 444	424	A	L 444	L 420	L	A						
15										A	A	444	440	448	440	L		L						
16									L	L	L 428	L 444	L 460	436	L 428	L 436	L 408	L						
17									L	L 416	U L 436	L 464	428	L 444	L 436	L	L	L						
18									L	L	L 428	U L 496	L 472	L 444	432	L 440	L 412	L						
19									L		A	A	A	A	A	A	A	A						
20										L	U L 440	U L 472	U L 452	L 448	L 448	L 448								
21										L	L 436	U L 444	436	A	L 448	424	L 408	L 376						
22									L 344	L	U L 424	U L 444	440	440	436	L 432	404							
23										L	A	A	A	440	444	432	416	L						
24								L	L	L	L 436	L 432	440	U L 456	440	428	L							
25										U L 424	L 432	432	448	L 444	U L 440	L 432	L 424	L						
26									L	U L 408	U L 428	L 456	448	448	L 452	L 448	L 404	U L 348						
27										U L 400	L 428	L 448	L 456	452	L 436	A	A	L						
28										L	U L 432	U L 464	L 440	440	436	L 436	L 420	L						
29									L	L 424	L 440	L 452	448	444	448	432	412	L	L					
30										U L 420	U L 436	432	448	432	L 424	432	416	L 388						
31										L 428	420	428	420	432	436	440	416	L 380						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	3	9	25	29	28	25	28	25	23	4						
MED								184	L 304	U L 416	L 432	L 444	440	440	436	432	L 408	L 378						
U Q									L 344	L 424	U L 436	L 450	448	L 444	L 444	L 436	416	L 384						
L Q									304	U L 402	L 428	434	436	436	436	422	404	L 362						

MAR. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	244	292	308	328	A	A	A	A	A	A	A	A				
2								B	244	292	312	A	A	A	A	A	A	A	A	A				
3								B	A	A	A	A	A	332	328	312	292	244	180	A				
4								B	A	A	A	A	A	A	A	316	284	A	A	A				
5								A	248	284	A	B	328	A	336	312	A	A	A	A				
6								B	228	276	308	316	328	328	316	308	280	A	A	A				
7								B	220	264	316	328	336	328	320	304	A	A	A	B				
8								168	244	280	300	328	328	328	328	320	288	A	A	B				
9								168	260	292	312	328	328	A	A	A	A	A	A	A				
10								188	232	276	304	332	A	344	324	312	288	244	A	B				
11								B	224	268	304	320	320	A	A	312	292	248	A	B				
12								B	A	292	308	308	A	344	A	A	A	268	A	B				
13								188	240	284	312	A	A	332	320	A	A	A	168	A				
14								B	248	A	320	336	356	A	344	316	292	248	A	A				
15								188	A	A	A	A	A	340	A	A	A	A	A	A				
16								176	252	U A 284	308	320	U A 316	A	A	340	A	A	A	A				
17								A	212	U A 280	296	A	A	320	A	300	288	248	172	B				
18								A	236	A	308	316	A	344	324	A	A	A	A	A				
19								220	228	272	A	A	A	U A 324	U A 324	U A 304	A	A	A	A				
20								A	A	A	A	A	336	332	324	312	U A 284	A	A	A				
21								200	248	284	312	320	328	340	332	316	A	256	A	B				
22							B	200	244	292	308	316	A	A	A	A	292	256	188	A				
23							B	212	256	U A 292	A	A	A	A	A	A	A	A	A	B				
24							B	184	256	A	320	336	336	340	A	A	280	248	A	A				
25							B	172	256	A	A	A	328	324	332	320	288	252	A	A				
26							B	200	A	A	A	A	A	A	336	308	284	248	184	B				
27							B	A	248	284	296	300	324	348	324	312	284	252	A	B				
28							B	200	256	288	312	A	A	A	A	A	U A 296	A	A	A				
29							B	212	A	292	320	316	324	340	324	312	A	A	A	B				
30							B	172	256	292	A	316	A	A	A	A	A	A	A	A				
31							B	200	264	292	308	328	A	A	A	A	288	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								17	24	22	21	18	14	17	16	18	16	12	5					
MED								188	246	284	308	320	328	332	324	312	288	248	180					
U Q								200	256	292	312	328	336	342	332	316	292	254	186					
L Q								174	234	280	306	316	324	328	324	308	284	248	170					

MAR. 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

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	J A 62	J A 30	J A 30	J A 31	J A 33	J A 19	19	E B 16	28	J A 40	38	41	J A 46	J A 54	J A 54	J A 46	J A 41	J A 34	J A 25	J A 39	J A 50	J A 80	J A 49	J A 49
2	J A 27	J A 41	J A 32	J A 23	J A 24	J A 38	J A 16	J A 24	G 24	32	40	J A 52	J A 46	J A 62	J A 54	J A 68	J A 49	J A 48	J A 42	J A 26	J A 46	J A 49	J A 36	J A 18
3	J A 41	J A 22	J A 15	E B 16	E B 16	E B 16	E B 16	J A 17	J A 35	J A 52	J A 89	J A 88	J A 65	J A 60	39	34	36	33	J A 24	J A 35	J A 22	J A 26	J A 226	J A 178
4	J A 86	J A 64	J A 50	J A 26	J A 20	J A 21	E B 16	J A 18	J A 33	J A 42	J A 48	J A 51	J A 90	J A 90	J A 58	J A 51	J A 63	J A 40	J A 32	J A 32	J A 35	J A 122	J A 63	J A 51
5	J A 63	J A 38	J A 40	J A 25	20	E B 16	J A 20	J A 19	27	33	36	37	J A 41	38	38	36	J A 36	J A 38	J A 32	J A 43	J A 32	J A 21	J A 24	J A 21
6	E B 16	E B 16	E B 16	E B 16	E B 16	J A 20	J A 22	J A 16	30	J A 50	37	J A 46	39	38	38	35	34	J A 36	J A 30	J A 21	18	E B 16	21	J A 60
7	J A 25	J A 83	21	J A 50	J A 62	J A 33	J A 42	J A 20	26	33	J A 42	41	42	J A 54	J A 43	J A 41	J A 33	J A 48	J A 30	J A 26	J A 29	18	E B 16	J A 18
8	J A 20	J A 20	J A 25	E B 16	E B 16	E B 16	E B 16	19	G 36	40	40	41	38	35	39	37	28	J A 24	J A 19	20	19	20	J A 22
9	E B 16	J A 27	J A 39	J A 18	E B 16	E B 16	E B 16	20	J A 41	32	35	J A 52	36	J A 40	J A 43	J A 40	J A 45	J A 38	J A 38	J A 21	J A 19	20	J A 19	E B 16
10	18	J A 26	J A 21	J A 18	J A 16	E B 16	E B 16	G	26	30	34	G	36	46	43	38	32	27	J A 28	J A 18	J A 18	J A 24	J A 16	J A 30
11	J A 16	20	E B 16	20	E B 16	E B 16	E B 16	G	G 32	34	38	36	36	36	36	36	34	30	J A 26	J A 17	J A 16	J A 18	E B 16	J A 16
12	J A 16	18	E B 16	E B 16	E B 16	E B 16	E B 16	20	J A 29	33	40	36	40	44	J A 45	G	J A 42	35	J A 26	J A 19	20	J A 16	J A 20	J A 21
13	J A 30	J A 28	J A 21	J A 20	J A 31	J A 38	J A 22	J A 20	29	36	J A 35	J A 34	J A 37	42	35	40	J A 42	33	J A 39	J A 26	J A 24	18	E B 16	J A 28
14	J A 107	J A 64	J A 64	J A 53	50	J A 27	J A 20	J A 34	J A 37	J A 30	J A 62	38	G	J A 55	41	38	35	J A 42	J A 32	J A 30	J A 18	22	J A 22	J A 34
15	J A 19	J A 21	18	J A 18	E B 16	E B 16	E B 16	20	J A 38	J A 44	J A 55	J A 39	38	42	J A 43	38	35	32	26	J A 18	J A 35	28	J A 16	E B 16
16	J A 22	J A 17	J A 17	E B 16	19	18	20	20	G 38	J A 38	J A 38	36	36	J A 79	J A 40	J A 41	J A 40	27	J A 33	J A 26	J A 20	J A 30	J A 21	J A 16
17	J A 16	E B 16	J A 25	J A 16	J A 16	J A 19	19	21	28	34	36	J A 36	34	G 28	38	35	32	27	26	J A 20	J A 17	19	18	E B 16
18	J A 16	J A 32	J A 27	J A 24	J A 19	J A 16	J A 22	20	28	J A 36	34	G	J A 41	40	39	35	32	27	J A 26	J A 24	J A 26	J A 22	J A 24	J A 22
19	J A 21	J A 32	J A 32	J A 22	J A 18	J A 25	J A 21	G	31	38	J A 62	J A 49	J A 60	J A 74	J A 72	J A 90	J A 49	J A 46	J A 27	J A 47	J A 52	J A 42	E B 16	J A 18
20	E B 16	J A 23	J A 87	J A 50	J A 57	J A 20	J A 25	J A 34	J A 41	J A 34	J A 39	J A 40	J A 42	G	36	35	35	31	J A 42	J A 32	J A 48	E B 16	J A 22	J A 23
21	E B 16	E B 16	E B 16	E B 16	19	17	E B 16	G 28	32	39	43	40	J A 58	G 28	G 26	J A 39	G	J A 22	J A 18	J A 17	J A 27	J A 22	J A 20
22	J A 46	J A 66	J A 18	E B 16	19	J A 17	E B 16	22	28	35	37	40	39	45	36	38	G	34	24	J A 25	J A 24	J A 20	J A 29	J A 17
23	E B 16	E B 16	E B 16	19	E B 16	E B 16	E B 16	G	30	36	J A 46	J A 50	J A 48	J A 42	J A 46	J A 44	J A 39	J A 32	J A 24	J A 18	J A 20	J A 21	17	E B 16
24	J A 22	J A 22	J A 29	J A 18	18	E B 16	E B 16	24	J A 38	33	G	G	39	G	36	36	33	J A 39	J A 47	J A 49	E B 16	J A 81	E B 16	J A 19
25	E B 16	18	J A 19	18	E B 16	E B 18	J A E B 16	22	30	38	31	34	37	37	G 30	35	G	G 21	J A 31	J A 19	J A 18	J A 33	J A 84	J A 42
26	J A 52	J A 52	J A 42	J A 29	J A 28	J A 27	31	G 18	28	J A 34	J A 38	39	J A 39	35	38	G 24	G 25	G 22	J A 54	J A 18	J A 20	J A 20	J A 18	E B 16
27	J A 17	21	19	E B 16	E B 16	E B 16	J A 18	22	28	32	35	35	35	36	36	J A 57	J A 58	34	J A 22	E B 14	19	19	J A 20	J A 16
28	J A 16	J A 17	J A 22	20	J A 19	19	E B 16	25	34	35	39	J A 45	J A 56	J A 41	40	40	38	35	25	J A 24	J A 26	J A 24	J A 19	J A 31
29	J A 18	E B 16	E B 16	E B 16	E B 16	18	E B 16	27	J A 32	34	G 28	G 30	G 30	G 28	40	36	32	31	J A 26	J A 21	E B 16	17	19	J A 21
30	E B 16	E B 16	E B 16	E B 16	19	17	E B 16	22	29	33	39	41	J A 42	J A 44	J A 42	J A 51	J A 43	J A 41	J A 32	J A 20	J A 22	20	19	J A 20
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	29	32	37	38	40	39	39	38	J A 38	32	28	J A 32	J A 29	J A 17	J A 17	E B 16	J A 51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 18	J A 22	J A 21	J A 18	18	17	E B 16	20	29	34	38	40	39	42	39	38	36	33	J A 28	J A 24	J A 20	J A 21	J A 20	J A 21
U Q	J A 30	J A 32	J A 32	J A 24	J A 20	J A 20	J A 20	22	J A 33	J A 38	J A 40	J A 45	J A 42	J A 54	J A 43	J A 41	J A 42	38	J A 32	30	29	28	24	J A 31
L Q	E B 16	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	33	35	36	36	37	36	35	32	28	J A 25	J A 19	J A 18	18	E B 16	E B 16

MAR. 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A A 62	E B 16	19	16	20	E B 16	E B 16	E B 16	28	G 18	36	40	40	41	40	38	35	30	22	26	29	22	27	E B 16
2	E B 16	18	20	E B 16	E B 16	A A 38	E B 16	E B 16	G 20	32	40	37	42	40	44	45	37	32	37	20	18	18	E B 16	E B 16
3	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	30	41	44	34	37	G 27	38	34	35	32	G 16	31	E B 16	18	E B 16	E B 16
4	E B 16	A A 64	19	E B 16	E B 16	E B 14	E B 16	16	30	38	45	34	45	62	52	44	54	35	29	24	28	A A 122	E B 16	A A 51
5	E B 16	26	E B 16	E B 16	E B 16	E B 16	E B 16	18	G 21	30	35	36	35	36	37	34	33	30	28	42	E B 16	E B 16	18	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	E B 16	29	G 22	36	40	37	37	37	34	30	30	25	19	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	A A 62	E B 16	16	E B 16	26	31	40	38	40	49	40	36	31	42	28	E B 16	E B 16	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	G	35	38	38	40	36	34	38	33	26	22	E B 16	E B 16	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	G 19	30	34	G 25	35	35	34	35	38	32	28	18	17	E B 16	E B 16	E B 16
10	E B 16	21	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	30	34	G	34	42	41	35	31	26	26	E B 16	E B 16	E B 16	E B 16	A A 30
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	31	34	36	35	35	35	35	32	30	18	E B 16	E B 16	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	33	39	34	39	41	40	G	35	32	20	E B 16	E B 16	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	20	20	E B 16	E B 16	28	35	34	33	34	42	34	38	33	29	36	24	21	E B 16	E B 16	E B 16
14	A A 107	A A 64	E B 16	E B 16	E B 16	E B 16	E B 16	26	30	29	33	37	G	46	40	37	32	37	30	26	E B 14	E B 14	E B 16	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 15	27	39	48	38	38	39	34	37	35	30	25	18	33	18	E B 16	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	G	35	35	34	35	41	35	G 28	34	25	24	20	E B 16	26	18	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	32	33	34	34	G 28	38	34	32	26	24	E B 16	E B 16	E B 16	E B 16	E B 16
18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	33	32	G	34	40	38	34	31	26	20	20	E B 16	21	21	18
19	E B 16	E B 16	E B 16	E B 16	E B 16	A A 25	E B 16	G	29	31	42	45	56	64	60	53	44	40	23	20	A A 52	20	E B 16	E B 16
20	E B 16	E B 16	E B 16	E B 16	A A 57	E B 16	E B 16	25	31	33	33	34	36	G	35	34	34	30	40	31	A A 48	E B 16	21	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	27	31	37	41	37	52	G 24	G 23	30	G	20	E B 16	E B 16	20	E B 16	E B 16
22	E B 16	19	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	34	34	38	38	40	35	37	G	33	24	23	22	E B 16	18	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	29	33	42	47	45	38	41	41	34	30	21	E B 16	E B 16	E B 16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	33	G	G	39	G	35	34	32	31	41	44	E B 16	20	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	36	31	33	36	35	G 28	G 35	G	G 18	22	16	E B 16	20	E B 16	21
26	E B 16	17	E B 16	E B 16	E B 16	E B 16	20	G 16	28	32	36	36	37	34	36	G 23	G 23	G 20	G 16	E B 16	18	E B 16	E B 16	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	31	33	34	34	36	34	53	54	31	20	E B 14	E B 14	E B 16	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	30	32	37	43	36	36	39	38	35	32	25	21	23	21	E B 16	22
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	32	G 26	G 28	G 28	G 28	39	36	32	29	21	E B 16	E B 16	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	32	35	40	42	40	36	36	35	29	22	18	E B 16	E B 16	E B 16	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	31	34	36	38	38	38	38	33	30	28	23	19	E B 16	E B 16	E B 16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	28	32	35	36	37	38	37	35	33	30	24	19	E B 16	E B 16	E B 16	E B 16
U Q	E B 16	16	E B 16	E B 16	16	E B 16	E B 16	22	29	34	39	38	40	41	40	38	35	32	28	24	21	20	16	16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 26	31	33	G 34	35	G 35	35	34	31	26	21	E B 16	E B 16	E B 16	E B 16	E B 16

MAR. 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

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

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 348	323	322	337	382	430	389	380	335	361	360	332	310	335	345	JR 323	374	375	371	335	370	384	319
2	317	321	323	327	342	A 339	413	388	379	346	330	306	318	340	JR 308	342	367	406	374	337	331	334	367
3	F 311	F 292	F 306	F 330	331	369	366	392	388	369	338	328	322	315	339	343	358	374	378	356	347	F 291	F 365	R 315
4	343	A	F 314	F 331	F 345	357	F 385	399	404	350	338	358	319	JR 285	299	R 326	330	349	349	366	382	A	289	A
5	F 322	F	325	311	349	364	357	404	413	333	337	326	317	351	336	331	363	371	366	361	362	364	351	351
6	315	315	318	336	351	F 352	399	413	393	367	328	335	319	332	333	334	341	358	396	371	362	380	342	356
7	F 326	F 327	308	F 331	A	F 386	442	390	381	357	363	347	344	354	337	JR 298	H 296	338	358	369	371	V 323	340	346
8	331	316	F 323	F 325	F 352	362	402	393	403	356	354	337	322	328	325	319	331	349	359	R 339	JR 304	327	348	328
9	287	315	330	353	370	333	344	374	372	365	362	337	348	339	340	347	336	348	365	373	380	339	331	334
10	313	342	328	338	393	353	341	384	379	343	324	363	307	289	309	349	347	362	368	343	341	355	340	A
11	296	317	322	315	335	319	367	376	392	360	328	325	328	340	340	328	336	344	324	351	371	H 274	305	328
12	318	321	315	340	422	B 345	329	383	398	347	342	321	328	350	336	328	343	366	360	390	374	312	308	308
13	297	314	330	325	345	387	336	387	389	358	344	368	332	331	JR 310	JR 306	JR 331	JR 336	377	R 389	378	308	300	F 325
14	A	A 319	327	383	361	329	383	391	362	362	361	349	329	317	353	345	346	365	354	390	332	319	326
15	F 320	F 310	328	319	F 319	F 317	F 343	384	385	376	375	324	314	332	341	352	326	337	347	364	340	337	312	310
16	294	352	324	308	F 336	373	302	371	359	345	352	311	292	336	344	331	R 317	JR 330	352	336	R 353	289	V 312	359
17	308	312	321	317	352	305	334	368	368	371	355	331	344	344	346	340	360	347	364	371	357	330	309	314
18	302	335	340	350	384	F 298	333	373	348	347	350	298	306	325	322	334	334	344	362	376	376	324	302	311
19	304	F 295	313	346	443	A	301	359	380	384	307	338	380	338	302	JR 338	340	344	360	382	A	309	311	293
20	309	F 319	325	343	A	311	317	345	335	365	367	331	306	339	331	329	348	325	370	353	A	303	302	298
21	284	297	314	346	360	347	327	381	381	368	367	318	309	326	347	342	JR 298	335	364	378	340	338	312	314
22	306	F 288	F 296	334	362	F 340	F 327	401	395	396	368	304	325	333	340	334	342	340	369	391	370	320	297	289
23	318	F 329	319	319	355	372	331	367	373	375	350	316	307	316	312	320	328	JR 333	R 353	343	350	319	323	307
24	300	311	317	331	323	F 360	358	416	388	363	361	326	332	324	337	341	333	359	364	368	354	366	295	F 286
25	F 285	F 309	319	313	F 310	334	327	373	377	346	365	347	311	324	357	336	323	330	367	357	349	370	293	F 323
26	F 317	310	304	328	392	384	A 315	381	379	345	310	316	333	344	336	337	335	347	364	364	333	327	317	319
27	321	324	327	376	362	311	345	404	382	378	358	330	316	318	344	337	328	353	376	375	360	313	296	303
28	321	317	310	F 330	366	F 364	330	385	380	372	361	325	297	325	333	332	R 306	321	335	348	366	347	319	315
29	317	327	332	F 326	366	342	338	383	390	376	368	334	306	319	328	326	R 319	332	366	388	403	341	306	309
30	308	F 317	F 288	F	414	B	F 316	402	378	357	325	325	304	319	326	340	335	338	351	381	361	344	322	322
31	331	322	342	352	411	314	335	390	363	346	328	317	335	313	313	318	338	358	391	392	331	298	287	301
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	31	30	29	28	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	30	31	29
MED	313	317	321	330	355	352	336	384	381	362	352	330	319	328	336	334	335	346	364	369	360	328	312	315
U Q	320	326	327	340	384	366	358	399	391	372	362	338	332	339	340	341	342	358	370	378	372	344	334	328
L Q	301	F 310	314	322	340	326	327	374	377	347	337	321	307	318	322	326	R 326	336	358	354	340	312	302	308

MAR. 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L 390	A 383	L 425	A 371	A 367	369	A 372	L						
2									L	L	L 397		A 388		A 395	A	A 395	A						
3										A	A	L 398	405	417	394	400	L 378							
4											A 396		A	A	A	A	A							
5											384	417	427	449	396	L 384	380	L						
6								L			U L 394	A	428	404	379	391	L 375	L						
7											A	388	A 399	A	A 392	393	L 378	A						
8									449		L 384	393	405	420	404	398	L 377	L						
9										L 391	L 408	L 400	422	425	L 413	381	A 368	L						
10									L	L	U L 399	422	L 417	A	A	L 367	L 393	L						
11								470	U L 415	U L 430	U L 373	392	413	423	377	L 381	L 371	L						
12										L	L 379	L 413	410	A	A	395	A 377	L						
13									L	L	381	414	436	A	L	385	371	L						
14									L	L	L 399	L 418	445	A	A 369	L 382	L	A						
15										A	A	412	412	A 390	399	L		L						
16									L	L	L 384	L 391	L 395	A	L 432	L 372	L 378	L						
17									L	L 391	U L 382	L 388	442	L 398	L 370	L	L	L						
18									L	L	L 400	U L 369	L 408	L 372	397	L 366	L 382	L						
19									L		A	A	A	A	A	A	A	A						
20										L	U L 383	U L 373	U L 406	L 420	L 396	L 370								
21										L	L 392	A 388	417	A	L 389	393	L 384	L 366						
22									L 419	L	U L 410	U L 418	428	400	L 408	L 374	441							
23										L	A	A	A	409	A	A	366	L						
24								L	L	L	L 401	L 430	389	U L 373	387	391	L							
25										U L 383	L 395	429	416	L 409	U L 391	L 378	L 370	L						
26									L	U L 391	U L 406	L 393	398	389	L 362	L 376	L 384	U L 391						
27										U L 400	L 398	L 407	L 414	387	L 391	A	A	L						
28										L	U L 400	A	L 428	402	386	L 378	L 382	L						
29									L	L 391	L 398	L 409	416	437	393	384	380	L	L					
30										U L 377	U L 404	391	A 384	429	L 436	385	365	L 380						
31										L 378	408	414	437	445	390	376	366	L 374						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	3	9	24	27	27	22	25	24	23	4						
MED								470	L 419	U L 391	L 396	398	416	406	392	382	L 378	L 377						
U Q									449	U L 396	U L 400	414	428	423	L 398	391	L 382	L 386						
L Q									U L 415	U L 380	L 384	391	405	389	382	L 375	371	L 370						

MAR. 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

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											246	250	260	276	264	238	222	224						
2									210	226	274	276	304	258	238	232	252	228						
3										230	262	268	254	250	246	242	222							
4											278	234	240	268	266	252	238							
5											296	264	272	246	258	260	232	220						
6								188			290	268	288	244	252	262	254	232						
7											248	258	264	246	260	260	252	246						
8									184		266	286	280	266	266	268	256	226						
9										250	242	242	256	262	272	266	284	248						
10									212	254	272	234	322	324	294	234	224	224						
11								202	210	232	286	266	276	254	246	254	246	236						
12										264	262	270	270	246	242	266	248	226						
13									208	252	262	228	256	260	254	254	244	226						
14									214	224	252	238	250	266	276	256	260	252						
15										224	234	302	286	270	238	234		252						
16									236	264	244	272	342	258	234	242	236	234						
17									238	230	248	250	248	254	248	236	242	242						
18									258	254	242	308	288	256	250	244	240	228						
19									222		E A 288	268	220	E A 296	308	248	242	242						
20										230	232	260	284	244	228	236								
21										242	246	302	294	268	244	230	250	242						
22									202	212	254	358	290	266	254	258	250							
23										230	260	312	312	294	282	266	246	228						
24								200	226	238	234	274	272	272	266	250	238							
25										270	236	262	298	284	240	242	256	252						
26									216	266	300	272	254	246	256	244	232	230						
27										238	256	284	300	286	248	256	262	228						
28										234	254	300	304	270	258	228	240	246						
29									218	238	242	286	314	284	256	244	258	236	216					
30										270	310	284	318	280	262	236	250	242						
31										278	290	290	260	280	264	270	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	14	24	31	31	31	31	31	31	29	26	1					
MED								200	215	238	255	270	280	266	256	248	246	233	216					
U Q								202	226	259	278	286	300	280	266	260	253	242						
L Q								188	210	230	244	258	256	254	246	236	238	228						

MAR. 2018 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 286	232 288	E A 272 A 280	256 250	E A 248 242	206 A	180 Q 220	168 186	206 190	190 224	210 A 244	E A 236 202	190 A	E A 266 232	E A 258 A	A A	A E A 240	216 A	202 194	200 194	A 244 238	196 222	E A 236 232	244 206
2	268	300 Q	252 Q	248 Q	230	206	210	194	210	A	A	168	190	208	220	204	A	212	198	214	212	288	Q 202	248
3	226	A	272 A	256	238	228	214	190	198	218 A	A	174	A	A	A	A	A	220	210	204	210	A	248	A
4	Q 258	A 242	242	298	232	218	216	186	192	176	196	190	166	172	212	218	212	218	212	A 236	198	194	202	222
5	254	266	254	244	226	Q 224	186	160	196	228	200	E A 248	174	188	224	206	202	208	200	182	188	186	208	220
6	280	242	Q 280	Q 266	A	Q 192	E B 206	188	192	184	A	210	E A 228	A	E A 236	210	216	A	216	196	196	194	220	218
7	238	240	Q 256	Q 242	206	188	186	190	172	230	A 236	208	214	178	174	216	A 222	206	210	186	178	218	220	254
8	Q 284	260	248	220	204	250	240	206	206	H 186	192	194	172	168	172	222	E A 262	230	222	196	186	214	262	240
9	Q 252	A 248	240	220	194	194	232	208	190	184	194	166	172	A	A	226	200	208	208	210	222	194	224	A
10	284	270	258	280	238	238	204	146	170	194	206	196	180	166	196	222	230	230	216	192	180	200	260	244
11	270	260	260	246	184	E B 320	310	202	210	218	E A 242	172	200	A	A	186	A 240	220	208	184	188	232	306	306
12	302	284	252	246	E A 252	A 220	266	200	198	196	186	170	178	A	170	220	A 228	220	206	180	200	264	276	Q 238
13	A	A	272	246	188	276	316	204	198	188	172	192	162	A	E A 248	218	204	A	218	212	180	202	226	246
14	Q 268	Q 256	244	262	Q 256	Q 268	Q 244	190	204	A	A	184	200	A 222	184	230	234	234	232	200	216	218	250	268
15	274	226	244	286	242	198	294	200	208	208	212	186	184	E A 246	172	228	218	216	200	192	184	A 266	246	200
16	214	252	262	262	208	288	234	222	210	200	188	200	164	168	234	214	208	212	220	200	200	220	258	250
17	266	230	224	220	196	276	242	210	218	210	H 192	190	172	A 244	224	218	208	208	208	194	176	214	278	274
18	284	288	280	236	166	A	E B 328	206	202	224	A	A	A	A	A	A	A	A	216	198	A	256	252	274
19	276	Q 256	240	236	A	338	328	220	216	208	194	176	194	166	180	216	228	208	200	188	A	254	300	308
20	278	248	240	210	204	244	286	202	200	200	206	E A 236	186	A	192	186	196	202	214	184	202	232	274	276
21	280	Q 306	Q 250	Q 244	198	240	258	196	188	206	202	192	198	210	198	240	192	244	214	190	182	232	A 302	Q 298
22	Q 266	Q 264	264	242	216	230	268	198	214	208	A	A	A	214	E A 266	A	224	226	196	190	186	192	216	276
23	274	260	274	236	248	204	190	174	204	202	192	172	226	246	208	196	216	228	226	220	192	214	310	Q 312
24	Q 266	Q 260	266	Q 264	Q 260	222	244	202	202	218	196	176	H 168	180	178	218	198	208	214	200	206	190	314	A 310
25	276	272	280	254	192	216	E A 386	202	194	188	200	180	186	180	236	216	196	180	214	194	226	214	250	250
26	254	246	250	210	208	296	234	194	204	196	184	174	H 158	200	194	A	A	220	204	194	202	210	288	282
27	250	264	270	Q 226	212	Q 202	272	202	212	220	208	E A 282	182	196	224	A	218	234	220	204	192	192	202	252
28	226	226	206	234	230	224	210	198	204	194	182	182	178	154	218	212	200	228	208	194	174	210	310	314
29	290	Q 256	Q 274	Q 234	162	B	Q 248	192	206	202	206	246	E A 254	206	178	204	238	212	212	188	184	202	246	236
30	244	266	236	218	188	302	248	204	206	212	202	200	192	184	224	176	204	218	198	188	200	260	Q 294	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	31	29	28	31	31	31	29	25	29	27	23	26	24	26	27	31	31	29	30	31	29
MED	268	260	255	244	210	225	238	198	204	202	198	186	182	190	202	216	213	218	210	194	196	214	250	252
U Q	280	268	272	256	240	272	272	204	208	218	207	205	198	A 222	E A 224	221	A 228	228	216	200	208	232	288	279
L Q	253	244	244	234	195	206	210	190	194	192	192	175	172	172	180	205	202	208	202	188	184	196	224	239

MAR. 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B 106	104	104	104		A	A	A	A	A	A	A	A				
2								B 108	108	102	A		A	A	A	A	A	A	A	A				
3								B	A	A	A	A	A	110	104	104	104	110	110	A				
4								B	A	A	A	A	A	A	A	106	102	A	A	A				
5								A 118	118	A	B	108	A	108	104	A	A	A	A					
6								B 120	104	98	98	98	98	98	100	100	A	A	A					
7								B 100	100	100	100	100	108	104	102	A	A	A	B					
8								130	104	104	104	100	100	100	100	100	100	A	A	B				
9								136	118	108	100	106	106	A	A	A	A	A	A	A				
10								126	100	100	100	100	A	102	102	102	104	104	A	B				
11								B 100	100	100	100	104	100	A	A	100	100	100	A	B				
12								B	A	102	98	98	A	100	A	A	A	104	A	B				
13								124	100	100	100	A	A	100	100	A	A	A	102	A				
14								B 102	A	102	104	100	A	102	102	102	102	A	A					
15								120	A	A	A	A	A	106	A	A	A	A	A	A				
16								E B 156	100	100	100	100	102	A	A	116	A	A	A	A				
17								A	102	104	98	A	A	102	A	102	102	106	102	B				
18								A 102	A	102	100	A	100	100	A	A	A	A	A	A				
19								124	100	100	A	A	A	102	104	106	A	A	A	A				
20								A	A	A	A	A	104	102	104	102	102	A	A	A				
21								124	108	100	100	98	98	102	110	106	A	104	A	B				
22							B	136	102	100	100	106	A	A	A	A	106	106	114	A				
23							B	128	106	108	A	A	A	A	A	A	A	A	A	B				
24							B	122	110	A	98	98	98	100	A	A	104	100	A	A				
25							B	126	108	A	A	A	108	100	110	104	102	104	A	A				
26							B	124	A	A	A	A	A	A	98	102	106	108	106	B				
27							B	A	104	104	104	104	104	104	106	102	98	98	A	B				
28							B	110	102	102	100	A	A	A	A	A	100	A	A	A				
29							B	120	A	100	104	104	104	108	102	102	A	A	A	B				
30							B	106	104	100	A	100	A	A	A	A	A	A	A	A				
31							B	112	110	104	104	100	A	A	A	A	106	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								17	24	22	21	18	14	17	16	18	16	12	5					
MED								124	104	102	100	100	101	102	103	102	102	104	106					
U Q								129	108	104	103	104	104	105	105	104	104	106	112					
L Q								120	101	100	100	100	100	100	100	102	100	101	102					

MAR. 2018 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	92	90	90	86	100	90	92	B	164	96	112	114	108	108	104	100	102	102	102	118	108	94	88	96
2	88	84	92	92	92	92	96	104	98	164	116	110	98	98	98	102	98	98	106	98	98	94	90	86
3	108	88	92	B	B	B	B	116	102	100	100	100	90	90	126	146	140	124	88	110	102	104	124	136
4	112	96	96	120	96	94	B	104	100	96	92	92	98	124	116	114	106	106	84	84	96	112	94	88
5	108	88	94	94	90	B	90	90	92	112	106	106	106	154	144	110	100	100	92	92	92	90	88	84
6	B	B	B	B	B	110	92	98	168	90	138	114	110	104	158	140	104	102	96	96	82	B	100	98
7	102	102	96	96	106	102	96	96	164	130	110	104	106	106	108	108	86	104	102	104	84	84	B	96
8	84	84	98	B	B	B	B	162	G	160	126	112	108	116	126	110	104	102	96	96	98	98	96	90
9	B	90	94	84	B	B	B	182	84	136	114	86	110	110	110	104	104	104	100	98	94	96	96	B
10	96	92	92	92	88	B	B	G	142	128	170	G	106	140	128	126	128	132	102	102	98	96	96	90
11	90	90	B	90	B	B	B	G	G	166	136	118	110	106	154	152	148	186	112	92	92	88	B	88
12	82	84	B	B	B	B	B	168	102	156	98	102	138	128	124	G	106	132	98	96	96	94	88	90
13	98	94	94	88	88	88	92	92	114	108	108	92	92	160	120	164	110	110	104	94	92	92	B	104
14	100	96	100	92	92	92	132	118	118	98	98	160	G	118	144	142	150	116	108	100	100	100	92	90
15	92	92	82	82	B	B	B	98	98	96	96	90	162	140	100	182	178	140	118	104	80	80	82	B
16	94	92	90	B	92	92	94	178	G	100	100	106	110	106	106	100	94	96	82	82	82	98	88	88
17	88	B	94	88	88	88	88	126	114	108	108	102	100	88	164	148	182	164	104	100	86	94	94	B
18	82	108	90	88	88	88	92	138	194	106	106	G	90	144	174	142	152	126	82	80	80	144	116	114
19	114	96	88	86	86	136	138	G	122	110	94	98	98	96	96	94	94	94	94	94	92	92	B	84
20	B	96	96	94	114	96	90	90	90	90	100	102	102	G	110	110	180	98	108	96	108	B	92	100
21	B	B	B	B	88	88	B	G	158	146	118	110	124	120	94	90	114	G	104	82	82	114	94	90
22	102	96	90	B	98	92	B	150	140	118	114	114	104	100	126	168	G	154	144	114	106	106	106	100
23	B	B	B	96	B	B	B	G	136	126	106	96	96	104	104	100	100	100	96	92	92	98	84	B
24	98	96	90	90	98	B	B	126	126	102	G	G	156	G	100	104	168	122	104	100	B	100	B	94
25	B	90	90	86	B	86	B	148	120	100	96	122	116	108	94	148	G	88	88	82	82	90	102	94
26	94	94	94	92	92	90	90	96	146	96	96	96	92	122	146	90	84	84	82	84	102	100	100	B
27	94	90	92	B	B	B	86	128	126	116	110	106	108	156	138	108	102	102	102	B	98	104	96	100
28	92	90	88	88	84	96	B	144	126	124	110	100	104	104	160	134	104	100	118	94	94	94	94	94
29	110	B	B	B	B	84	B	128	120	106	92	88	92	94	130	156	164	114	102	84	B	98	142	94
30	B	B	B	B	88	88	B	126	146	122	106	102	100	98	104	100	100	98	98	98	84	82	92	92
31	B	B	B	B	B	B	B	112	114	114	108	106	104	98	156	104	170	112	86	82	84	84	B	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	23	20	19	19	14	25	28	31	30	28	30	29	31	30	29	30	31	30	29	29	25	26
MED	94	92	92	90	92	92	92	126	121	110	107	103	105	108	124	110	106	104	102	96	92	96	94	94
U Q	102	96	94	93	98	96	96	146	144	128	114	111	110	126	144	146	151	124	104	100	98	100	100	100
L Q	90	90	90	87	88	88	90	98	102	100	98	97	98	99	104	102	100	100	92	84	84	91	89	90

IONOSPHERIC DATA STATION Okinawa

MAR. 2018 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FQ 41	FQ 11	FQ 41	FQ 41	FF 14	F 1	F 1		H 1	L 1	C 2	C 2	CQ 21	CHQ 21	CQ 21	CQ 21	CQ 21	CQ 21	CHQ 41	C 7	F 6	F 4	FQ 31	FQ 41
2	F 6	F 6	FQ 31	FQ 31	F 2	F 9	F 2	C 1	L 1	HL 11	C 1	C 2	LQ 21	LQ 21	LQ 21	CQ 31	LQ 41	LQ 31	CLQ 62	LQ 11	F 6	FQ 41	F 4	F 1
3	FF 11	F 2	F 1					C 1	CQ 31	CQ 61	CQ 41	CQ 21	LHQ 11	LHQ 11	C 2	H 1	H 2	CL 22	LH 11	CL 81	FF 21	FF 61	FQ 11	FFQ 15
4	FQ 71	FQ 41	FQ 31	FFQ 12	FQ 51	F 3		C 1	C 2	L 2	L 3	L 2	LQ 31	CL 41	CL 23	C 4	C 5	CL 46	LQ 41	LQ 31	FQ 31	FFQ 22	F 4	FQ 51
5	FFQ 12	FQ 21	FQ 11	FQ 11	F 1		F 2	L 1	L 2	CL 11	C 1	C 1	CL 21	HC 11	HL 11	CH 11	C 1	C 5	L 6	L 9	FQ 11	F 1	F 2	FQ 11
6						F 1	F 3	L 1	HL 12	LH 22	H 2	C 2	C 1	C 1	HC 11	HC 11	C 1	CL 22	L 2	L 3	F 1		F 1	FQ 21
7	FQ 21	FQ 31	F 1	F 2	FQ 21	FQ 21	FQ 21	L 1	H 1	H 1	C 2	C 2	C 2	C 2	C 2	C 1	L 3	CL 43	CL 62	CL 12	F 1	F 1		F 3
8	F 3	F 1	F 1					H 1		H 2	C 2	C 2	C 1	C 1	C 1	C 2	C 1	C 1	L 4	L 3	F 1	F 1	F 1	F 1
9		F 1	F 2	F 1				H 1	L 1	HL 11	C 1	LC 11	CL 11	C 1	CQ 11	CQ 11	CQ 31	CQ 31	CQ 51	L 3	F 2	F 1	F 3	
10	F 1	F 7	F 1	F 1	F 1				H 1	C 1	HC 11		C 1	H 2	C 2	C 1	C 1	HL 11	CL 21	CL 11	F 1	F 3	F 2	F 8
11	F 5	F 4		F 1						H 1	H 1	CL 11	C 1	C 1	HC 11	H 1	H 1	H 1	C 1	L 2	F 2	F 1		F 1
12	F 1	F 1						H 2	CQ 31	H 1	L 2	C 1	HC 11	CL 11	C 2		CHQ 11	H 2	LQ 21	L 1	F 1	FF 21	F 4	F 4
13	FF 25	FQ 41	FQ 21	FQ 21	FQ 41	FQ 31	FQ 21	L 2	C 2	C 2	C 1	L 1	L 1	HC 11	CL 11	HCQ 11	CHQ 11	CQ 11	C 6	L 6	F 3	F 1		FQ 21
14	FQ 51	FQ 41	FQ 31	FQ 21	FQ 21	F 2	FF 11	C 7	C 2	L 2	L 1	H 1		C 2	H 1	H 1	H 1	C 3	C 2	L 3	F 2	F 1	F 2	F 5
15	FFQ 21	F 2	F 1	F 1				L 1	LQ 21	LQ 41	L 5	L 2	HL 12	HC 11	L 1	HL 11	HL 11	HL 21	CL 23	L 2	F 3	F 5	F 1	
16	F 2	F 3	F 1		F 1	F 1	F 1	H 1		C 3	C 3	C 1	C 1	CQ 21	C 1	L 1	L 2	L 2	L 5	L 5	F 3	F 4	F 1	F 1
17	F 1		F 2	F 1	F 1	F 1	F 1	CL 11	C 2	C 1	C 1	C 1	C 1	L 1	HL 11	HC 11	H 1	HC 11	C 3	L 3	F 1	F 1	F 1	
18	F 1	FF 22	F 2	F 4	F 3	F 1	FQ 21	HL 11	H 1	C 2	C 1		L 1	H 1	H 1	HL 11	HC 11	C 1	L 1	L 1	F 1	FF 11	F 3	FF 41
19	FF 42	FF 22	FF 22	F 3	FQ 11	FF 13	F 3		C 2	CL 12	LC 23	L 2	L 3	L 4	L 3	L 4	L 5	L 8	L 7	L 3	FQ 61	FQ 61		F 1
20		F 1	FQ 31	FQ 31	FF 14	F 3	F 4	L 4	L 5	L 2	C 1	C 1	C 1		CL 11	C 1	HC 12	C 2	CL 83	L 4	FFF 82		F 9	F 2
21					F 1	F 1			H 1	H 1	C 1	C 1	CL 11	C 3	L 1	L 1	C 1		C 1	L 1	F 2	FF 52	FF 22	F 3
22	FF 13	F 3	F 2		F 1	F 1		H 1	H 1	C 1	C 1	CL 21	C 1	C 1	CL 11	HL 11		H 1	HL 21	C 5	F 2	F 1	F 3	F 2
23				F 1					H 1	CQ 11	CQ 31	L 4	L 2	C 1	C 2	C 3	C 3	C 2	L 3	L 1	F 3	F 1	F 1	
24	F 4	FF 21	F 4	F 2	F 1			C 2	CQ 21	C 2			H 1		C 1	C 2	HC 11	C 2	C 8	CL 81		F 4		F 1
25		F 1	F 1	F 1		F 1		HL 11	C 2	C 3	L 1	CL 11	C 1	C 1	L 1	HL 11		L 1	LC 11	L 1	F 1	F 2	FQ 21	F 6
26	FQ 21	FQ 31	F 2	F 2	FQ 31	FQ 21	L 7	L 1	HL 11	L 1	LQ 11	C 1	L 2	CL 11	H 1	L 1	L 1	L 2	L 1	L 1	FF 31	F 3	F 1	
27	F 2	F 2	F 1				L 2	C 2	C 1	C 1	C 1	C 1	C 1	H 1	H 1	C 3	C 7	C 2	C 3		F 1	F 1	F 2	F 1
28	FQ 11	FQ 11	F 4	F 1	F 2	F 1		H 2	C 2	C 2	C 1	C 3	CQ 11	CQ 11	HC 11	HC 12	C 1	C 3	CL 22	L 3	F 5	F 5	F 5	F 7
29	F 2					F 1		C 3	CQ 11	C 1	L 1	L 1	L 1	L 1	HC 11	HC 11	HC 11	CL 11	CL 13	LQ 11		F 1	F 1	F 3
30					F 1	F 1		C 2	H 1	C 1	C 1	C 1	C 1	L 1	C 1	C 1	C 3	CLQ 31	L 3	L 6	F 3	F 1	F 1	F 3
31								C 3	C 2	C 1	C 2	C 1	C 1	C 1	HC 11	C 1	H 1	C 1	L 3	L 6	F 2	F 1		F 3
	00	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. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

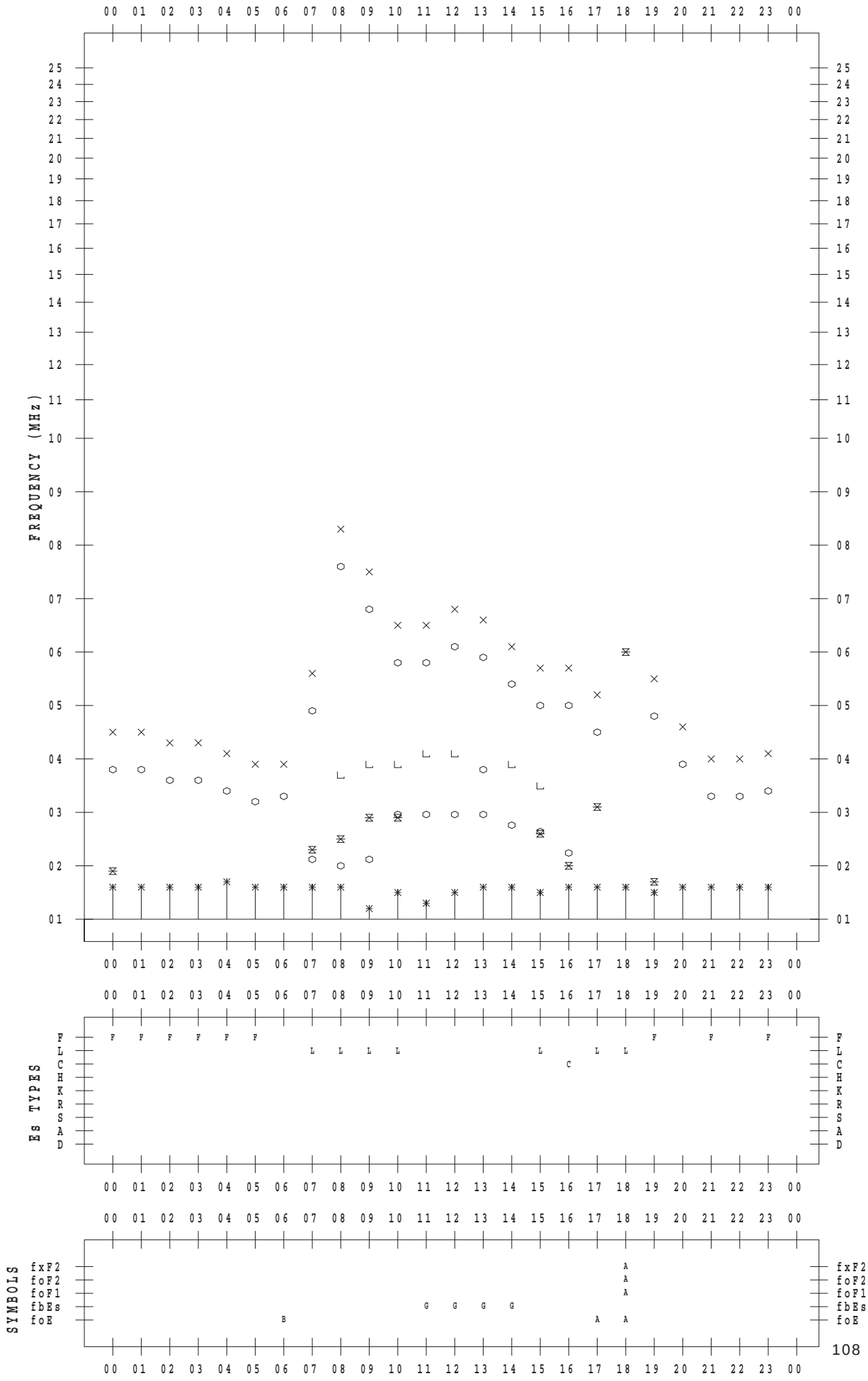
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 1

135 °E MEAN TIME



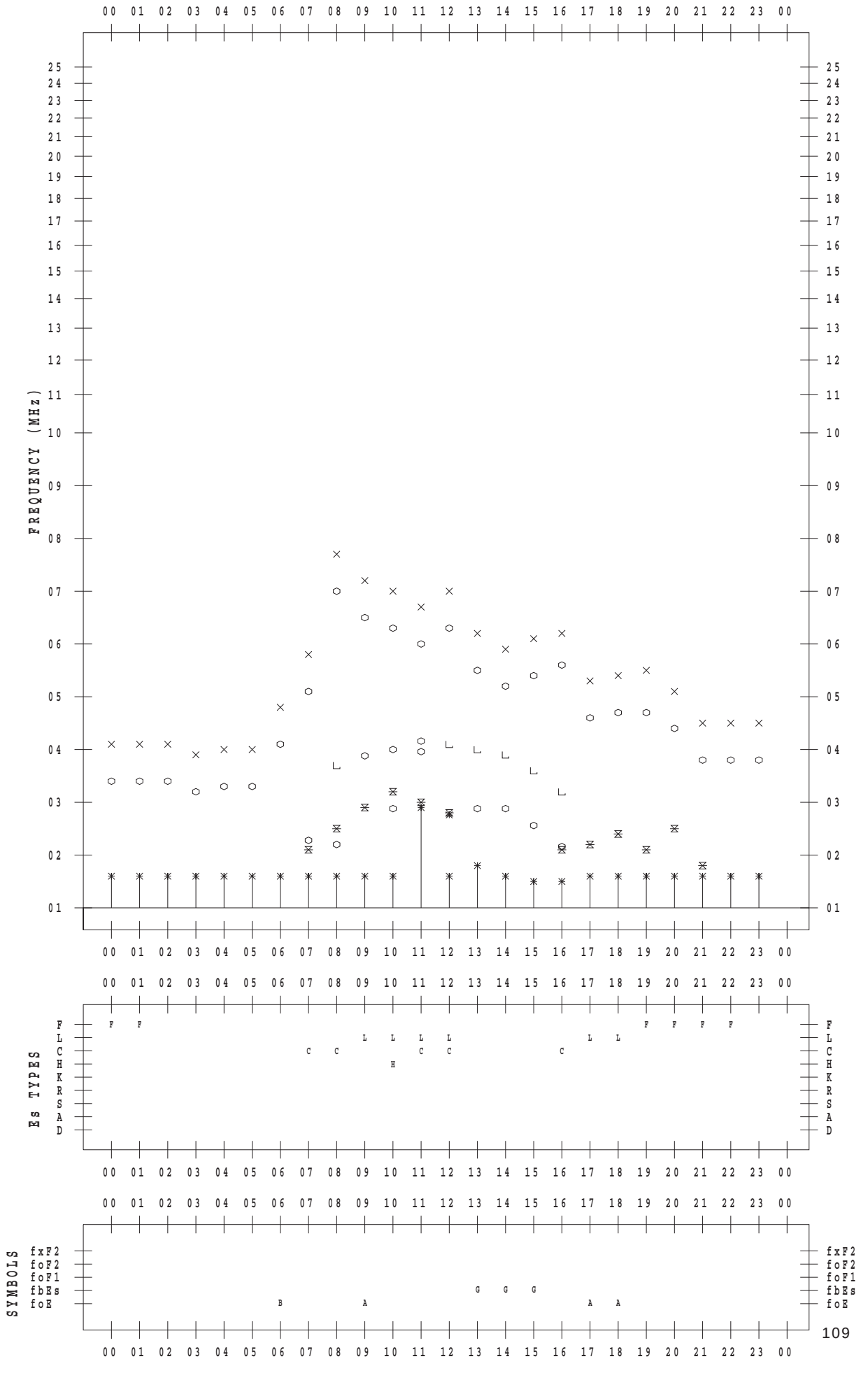
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 2

135 °E MEAN TIME



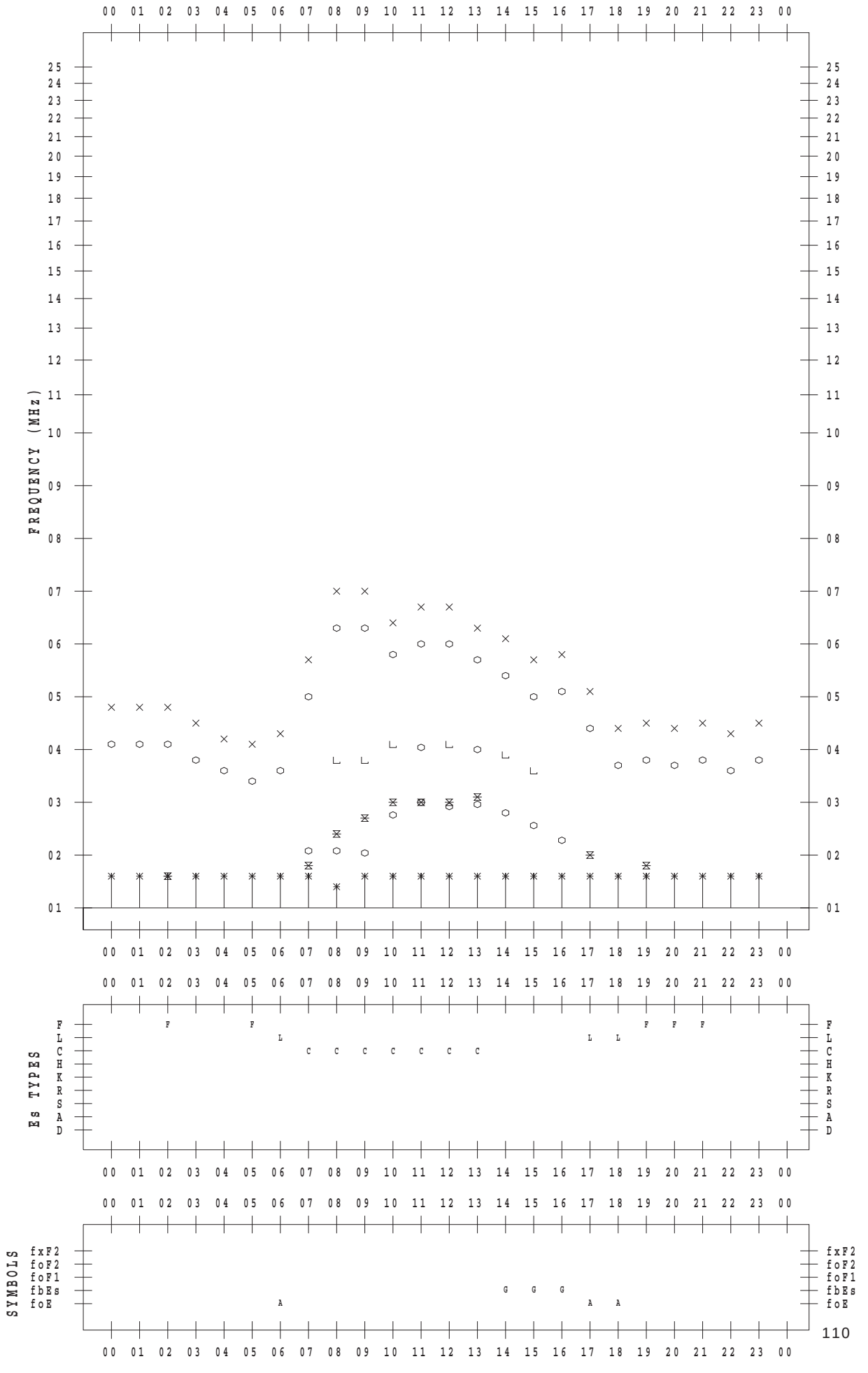
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 3

135 °E MEAN TIME



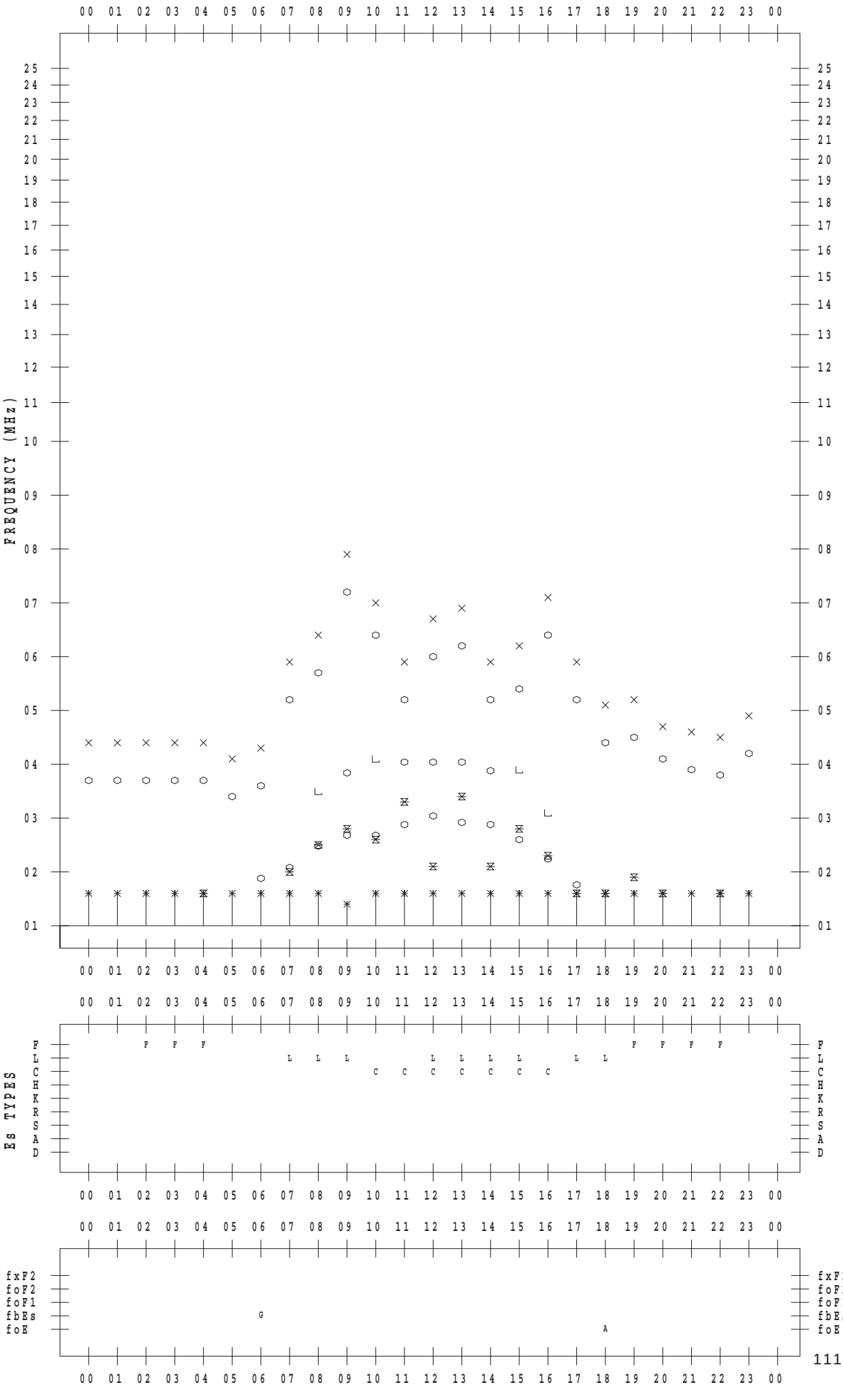
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 4

135 °E MEAN TIME



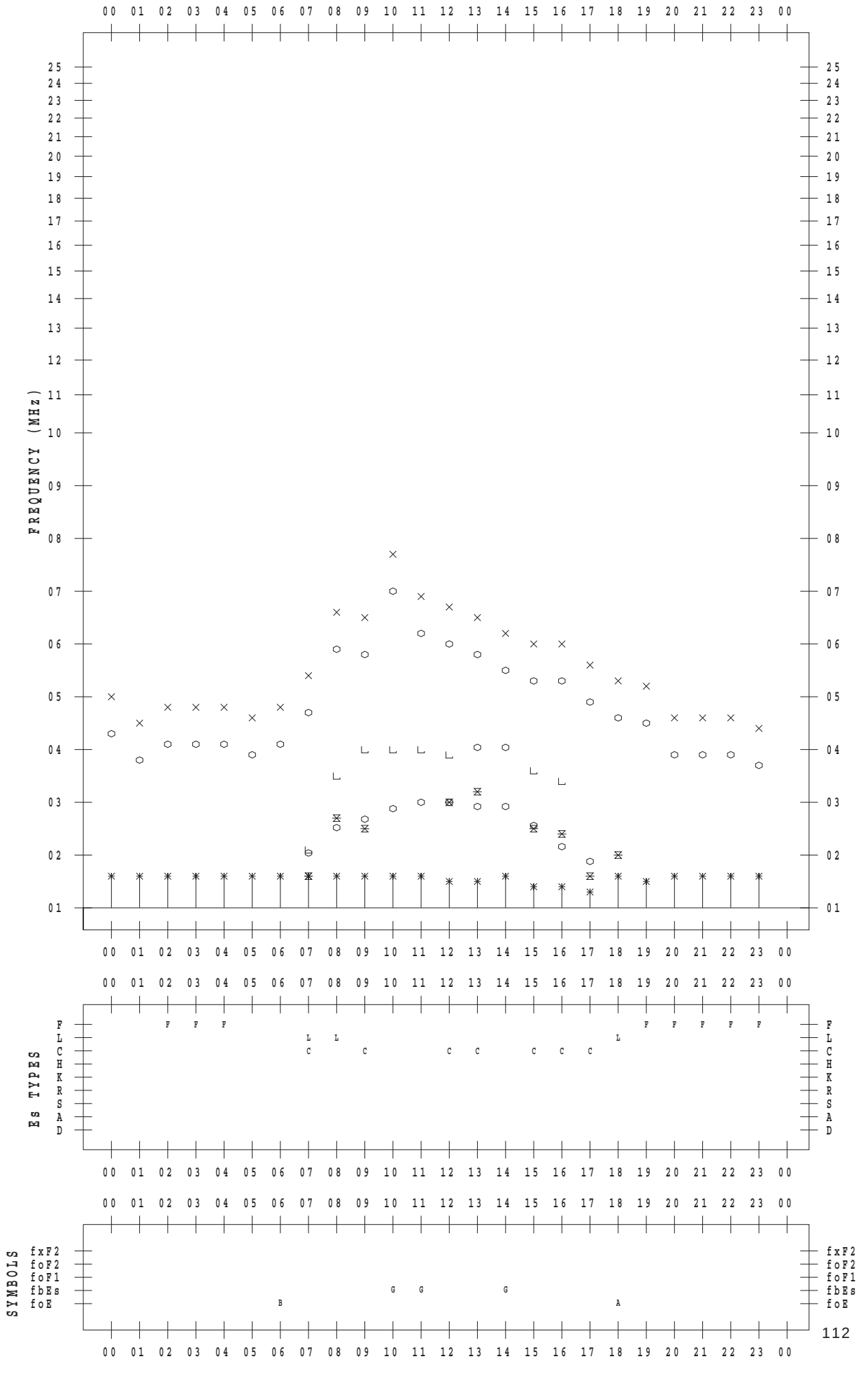
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 5

135 °E MEAN TIME



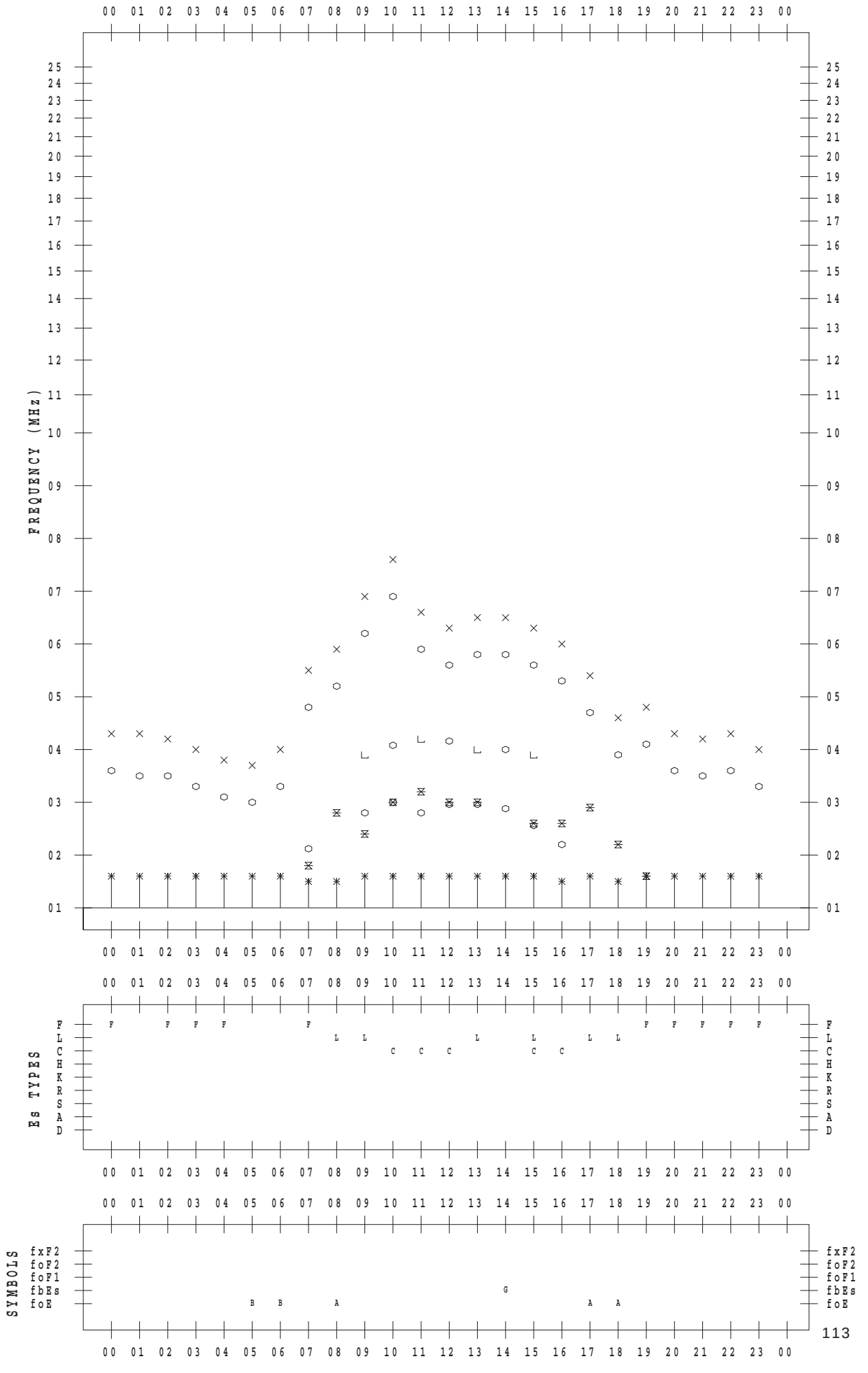
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 6

135 °E MEAN TIME



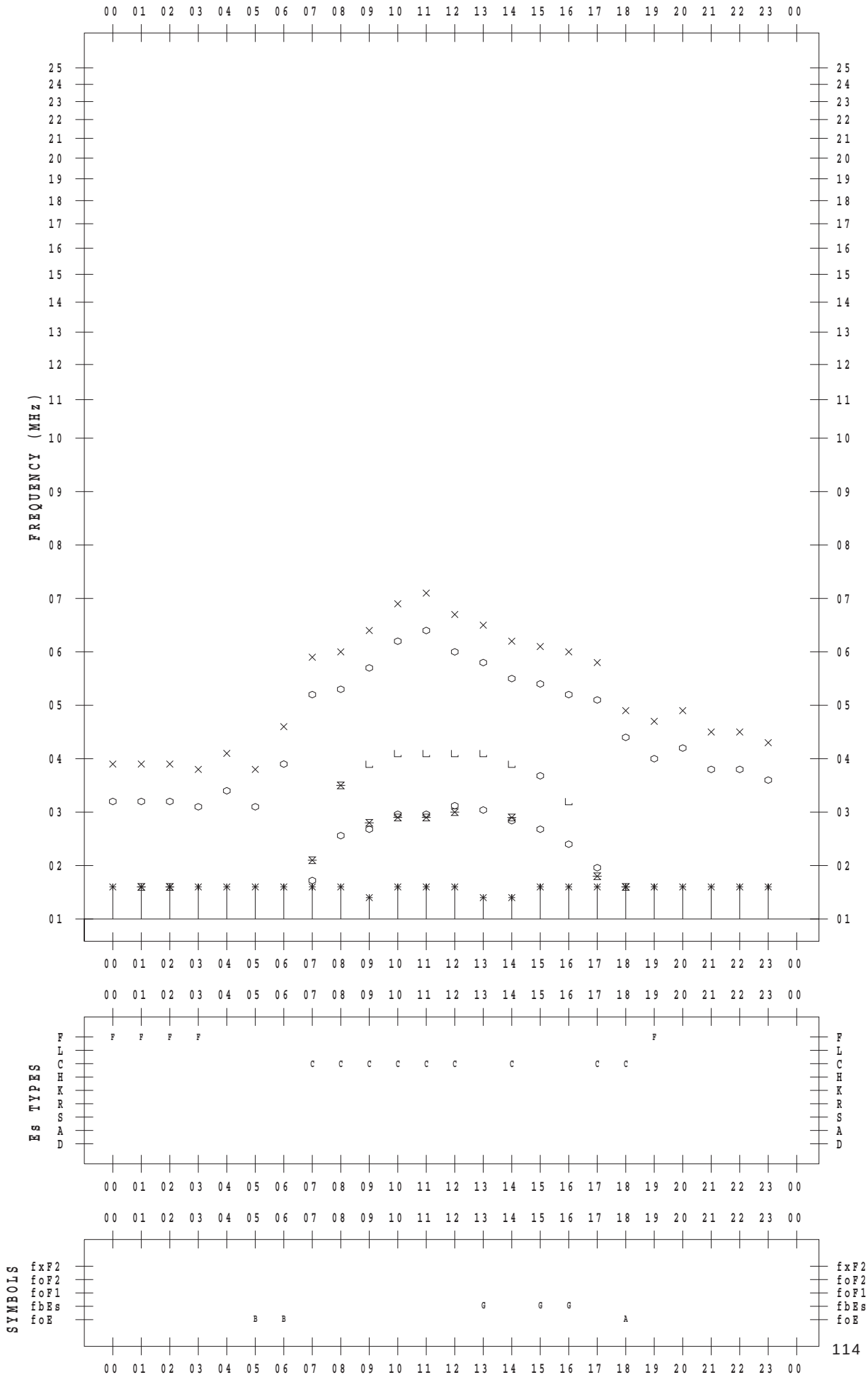
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 7

135 °E MEAN TIME



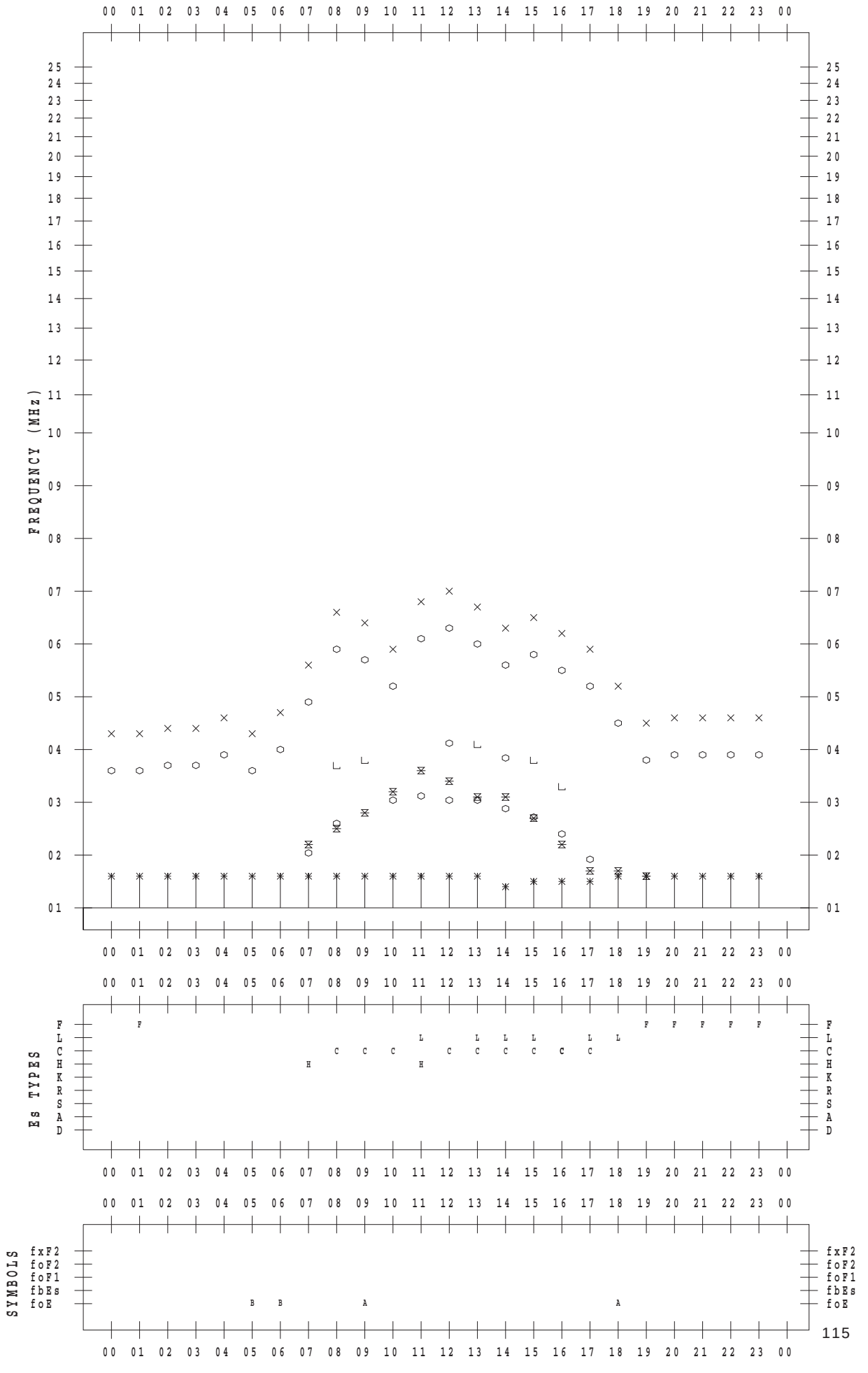
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 8

135 °E MEAN TIME



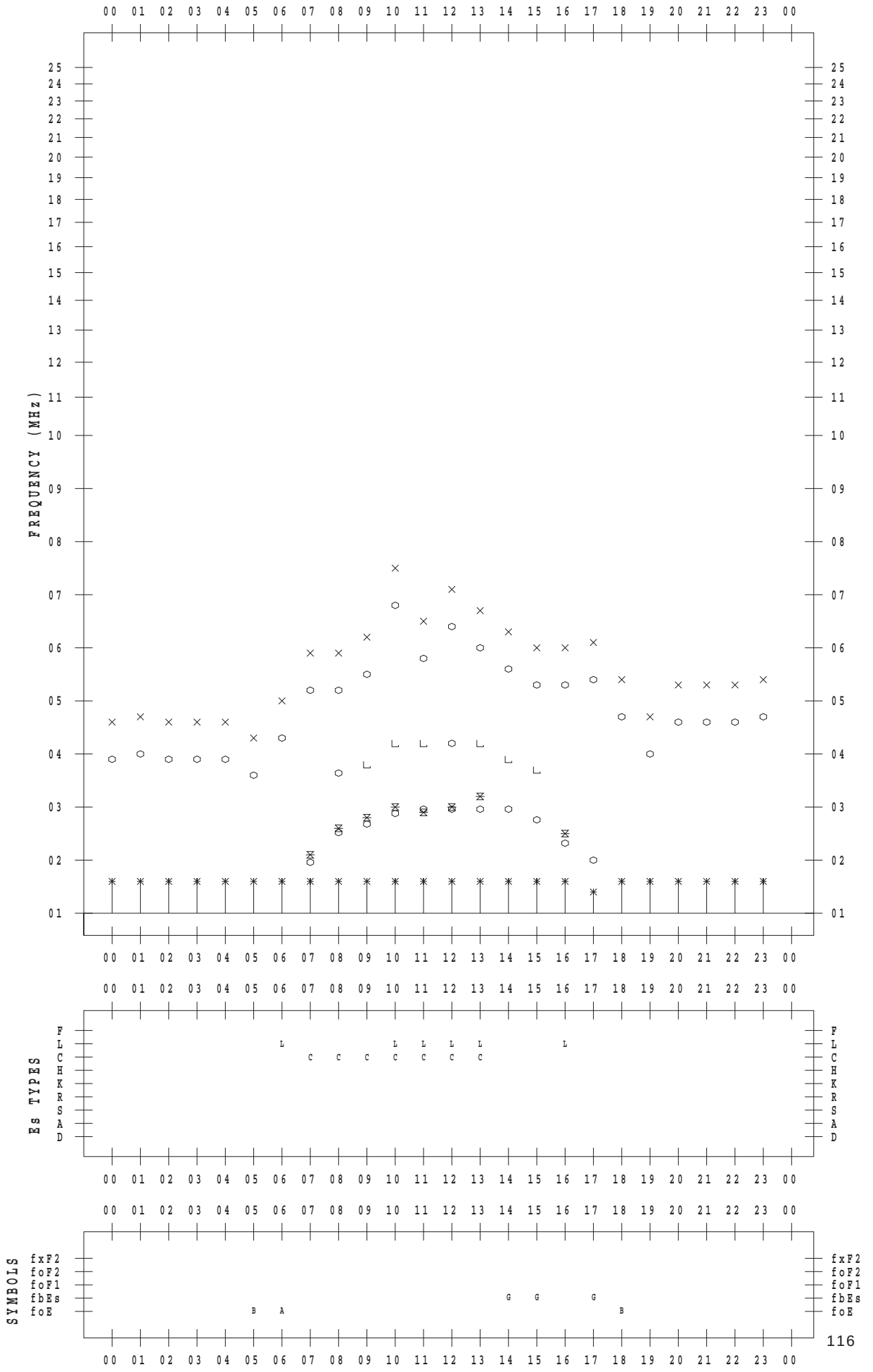
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/ 9

135 °E MEAN TIME



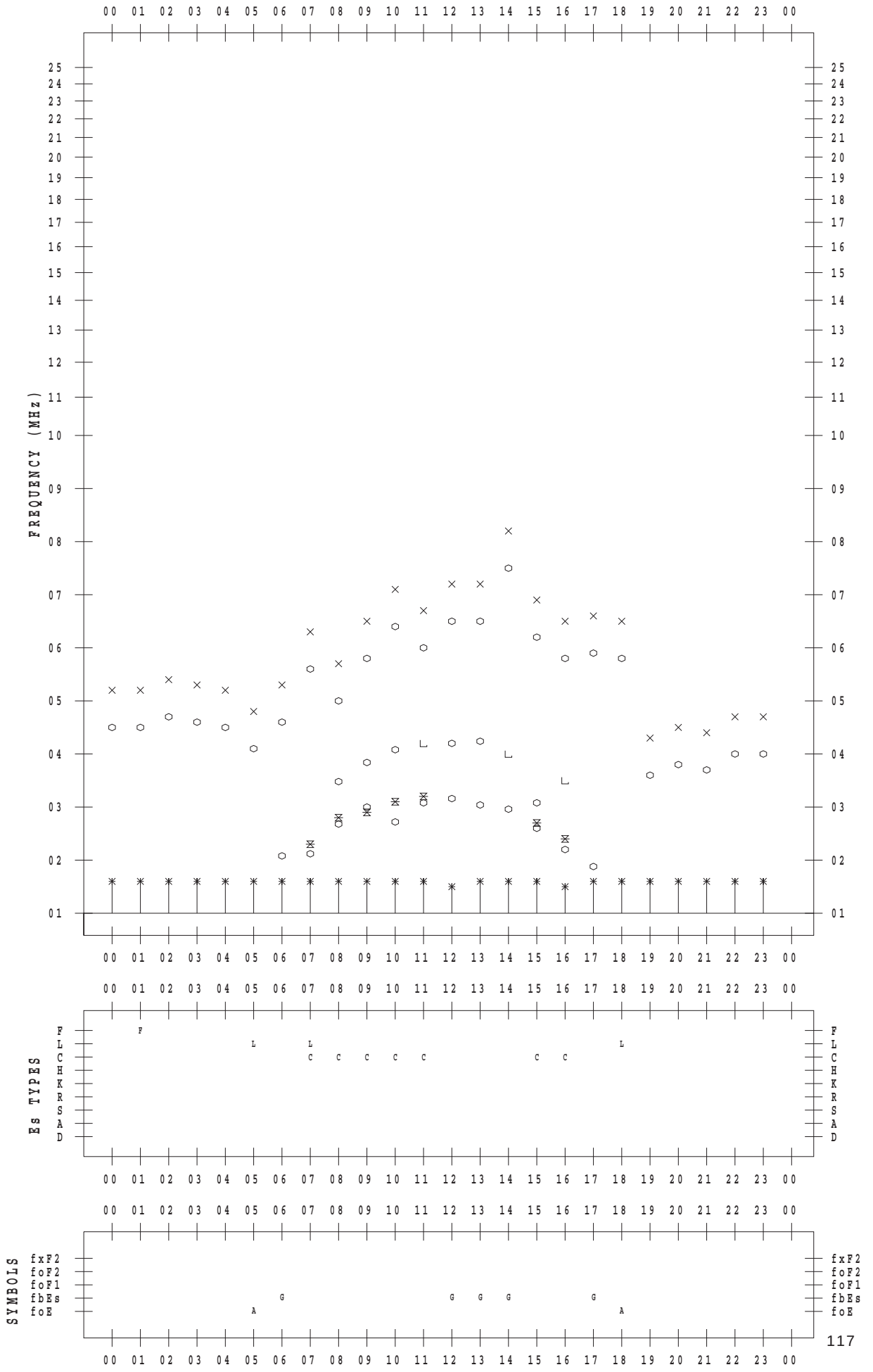
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/10

135 °E MEAN TIME



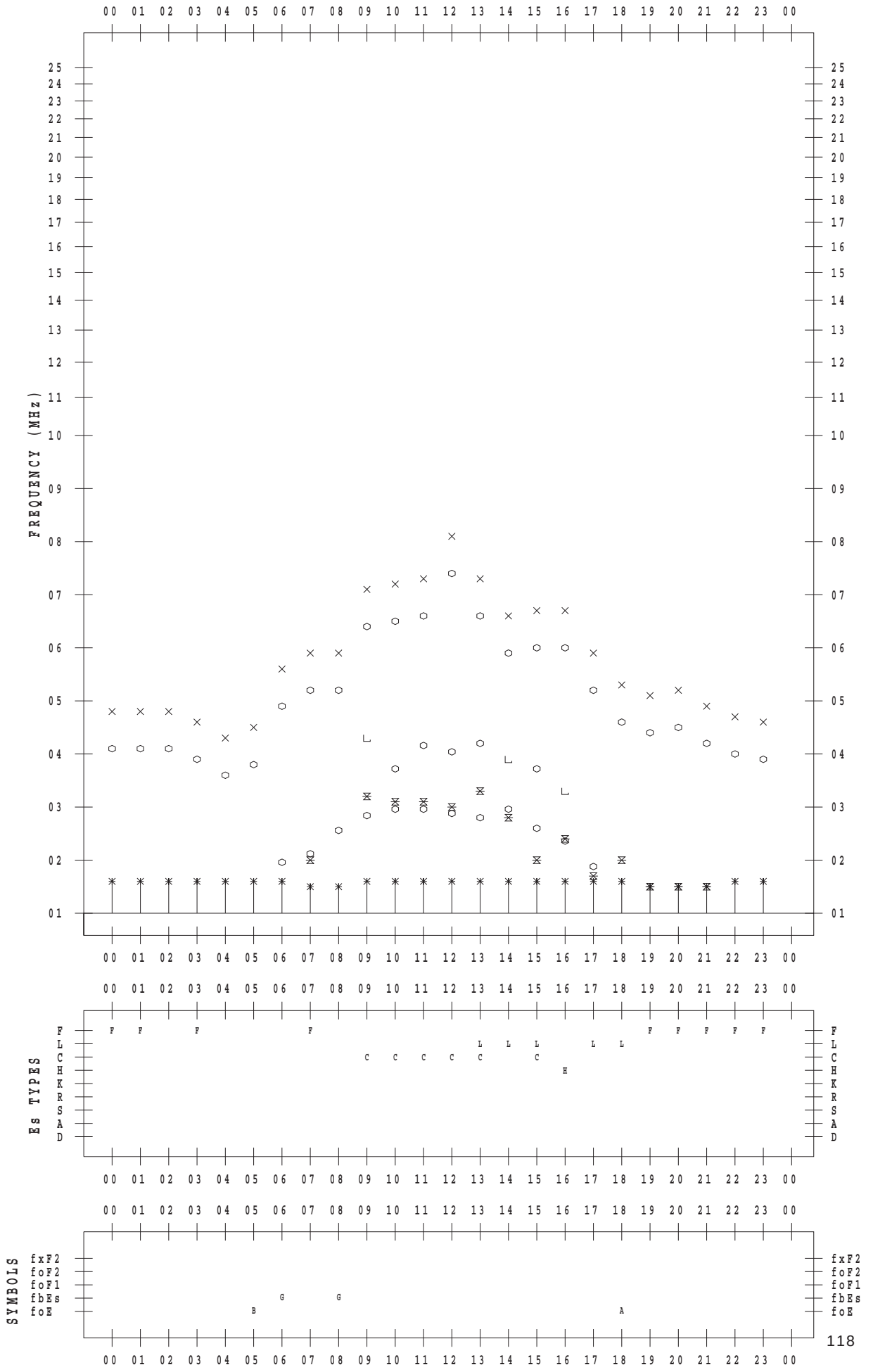
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/11

135 °E MEAN TIME



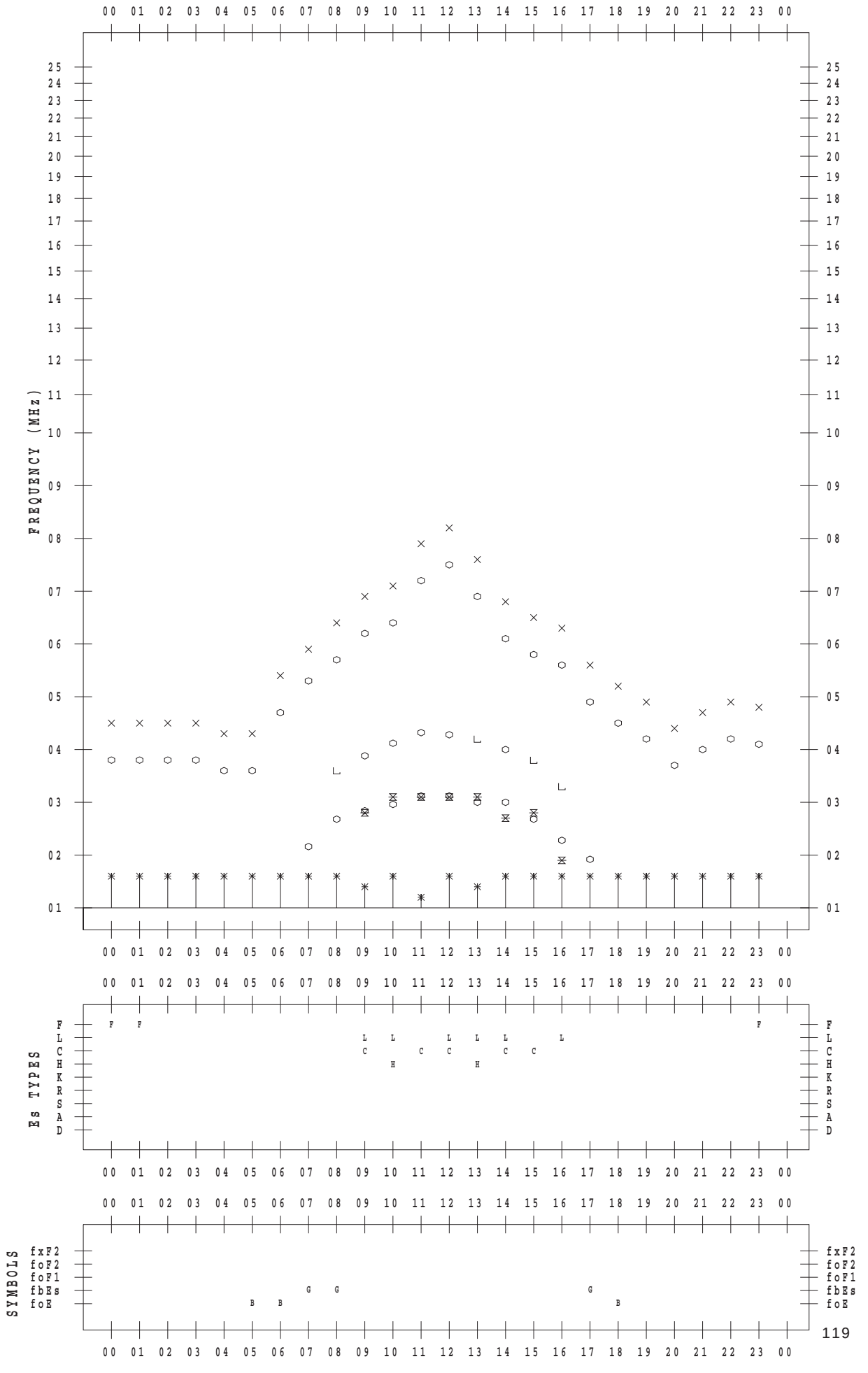
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/12

135 °E MEAN TIME



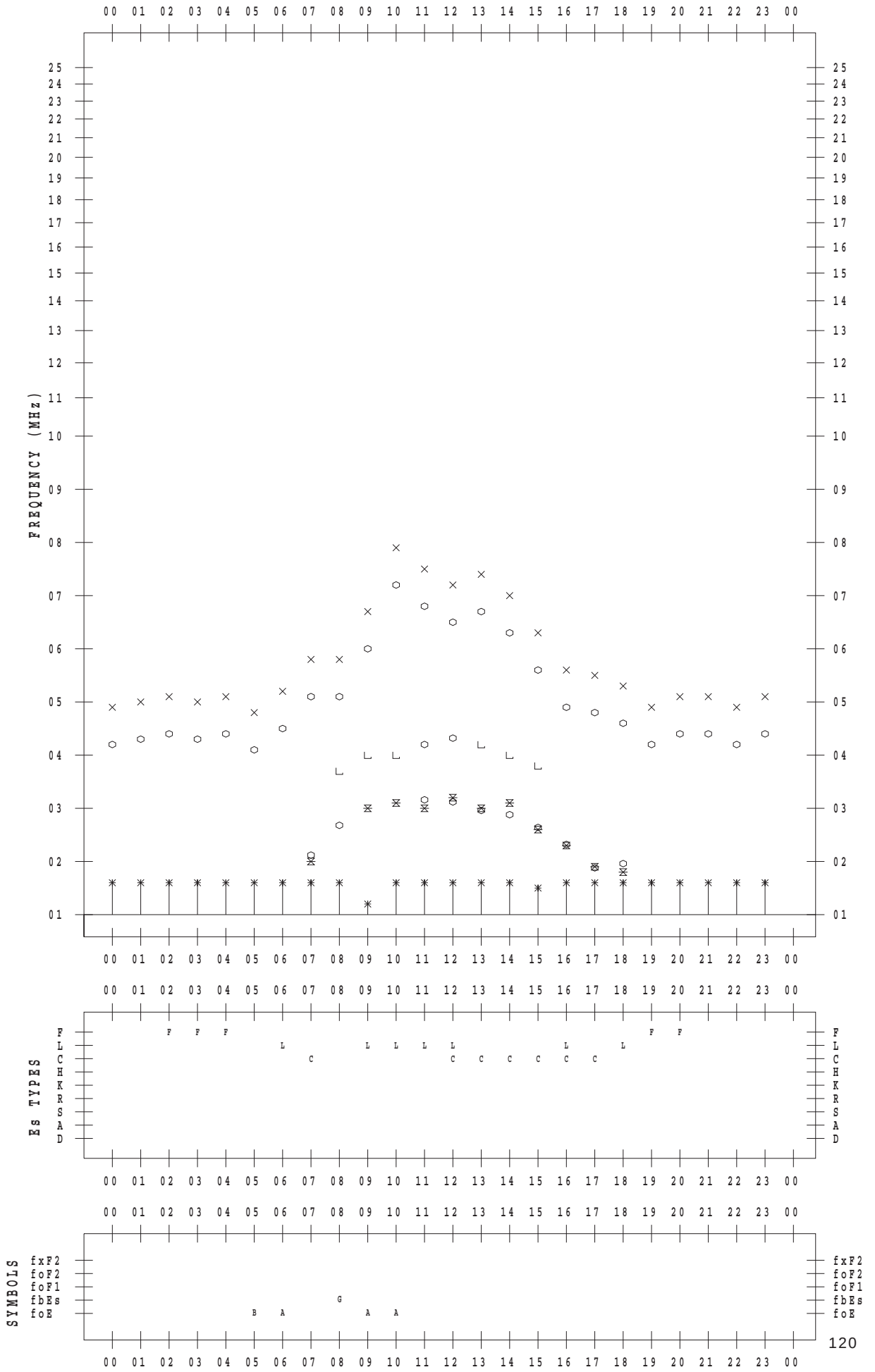
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/13

135 °E MEAN TIME



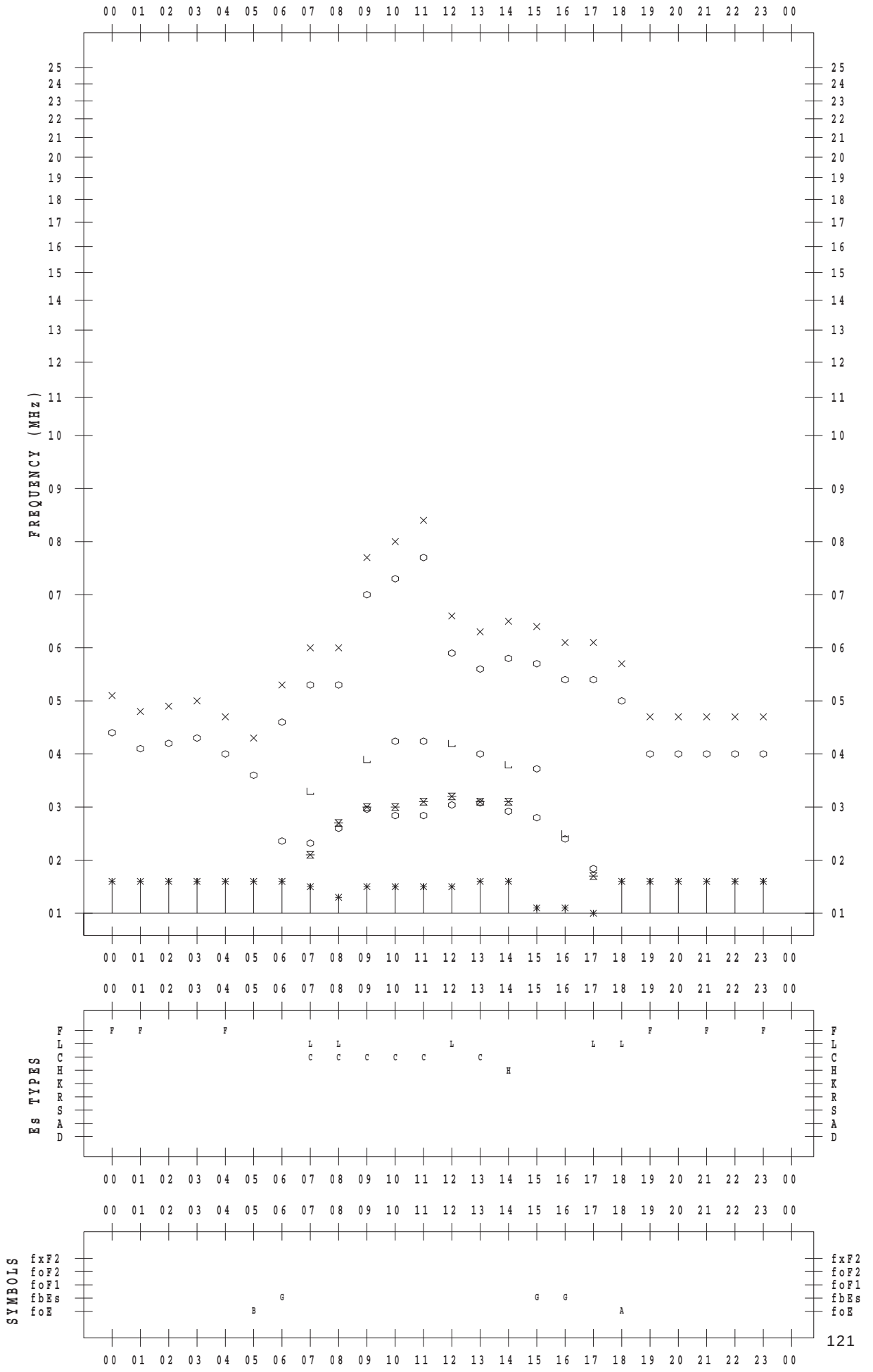
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/14

135 °E MEAN TIME



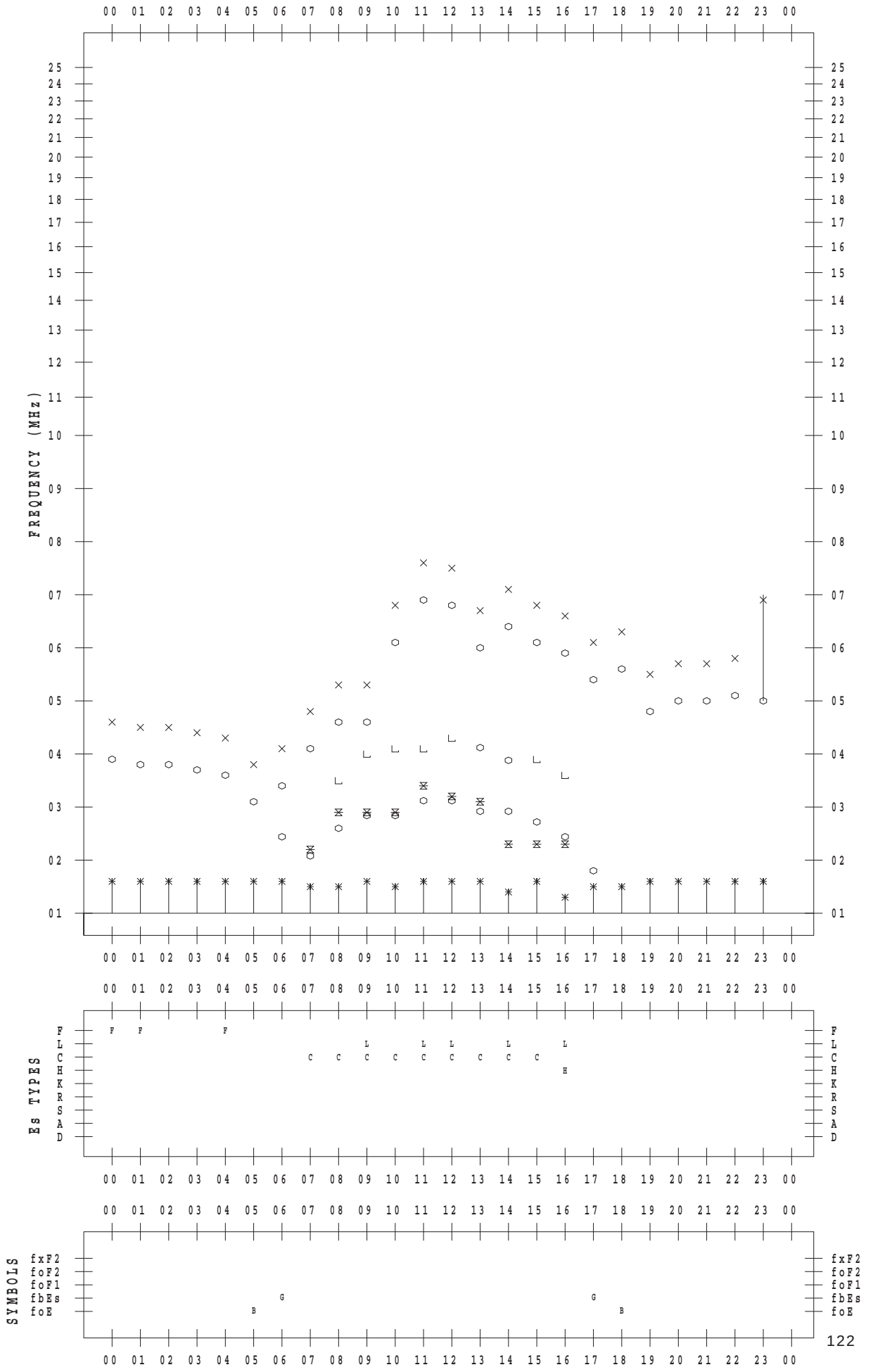
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/15

135 °E MEAN TIME



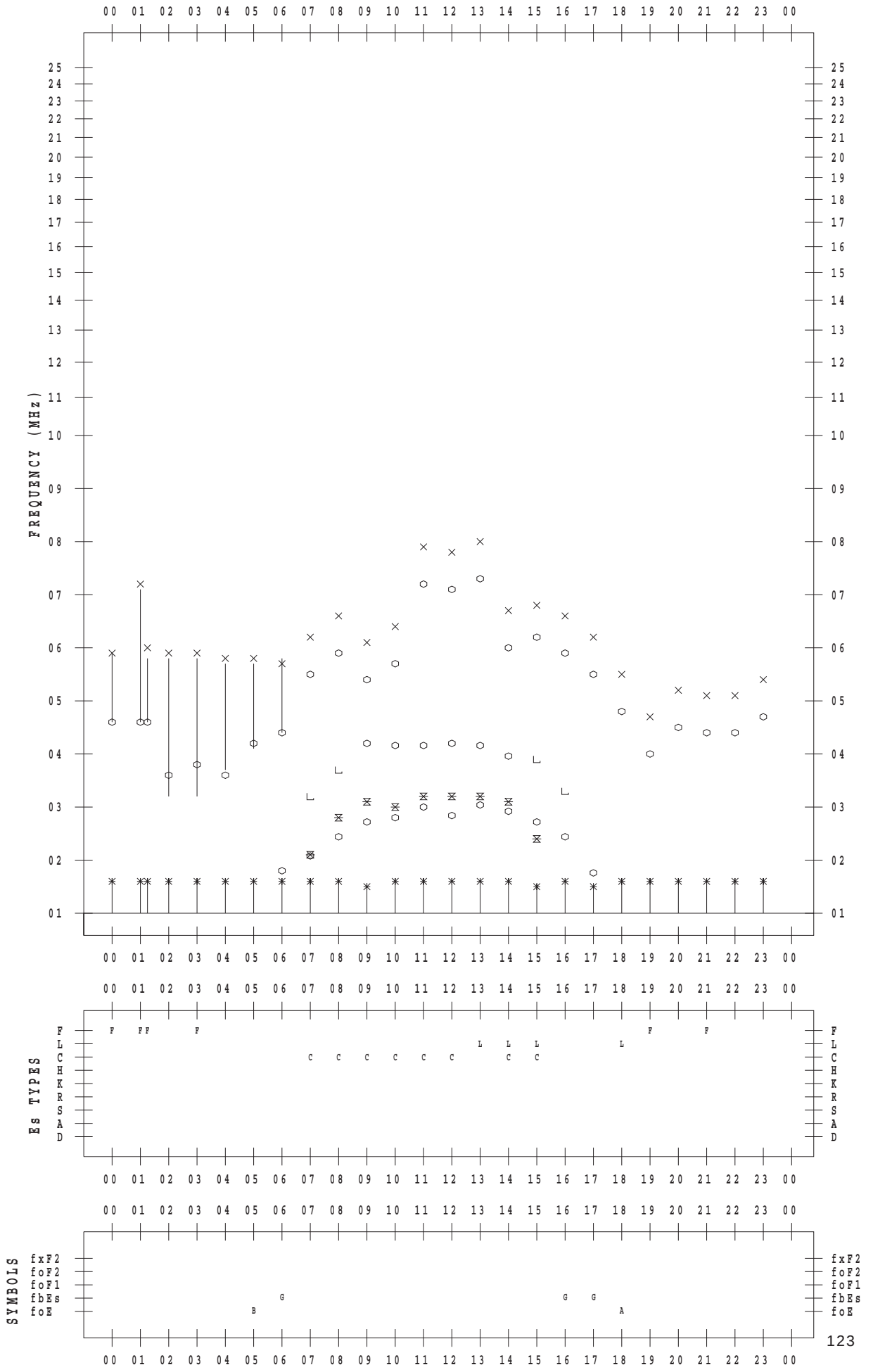
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/16

135 °E MEAN TIME



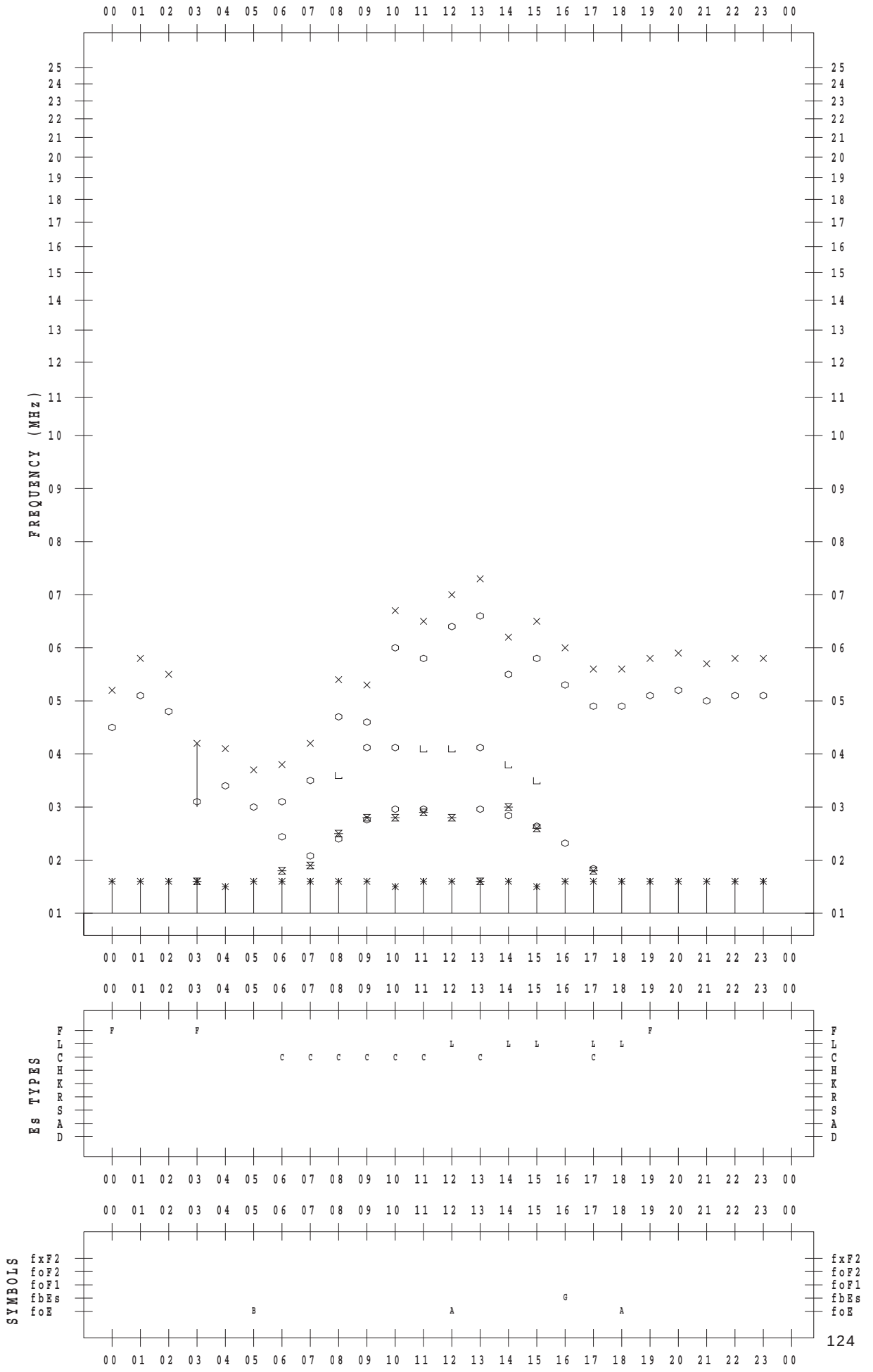
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/17

135 °E MEAN TIME



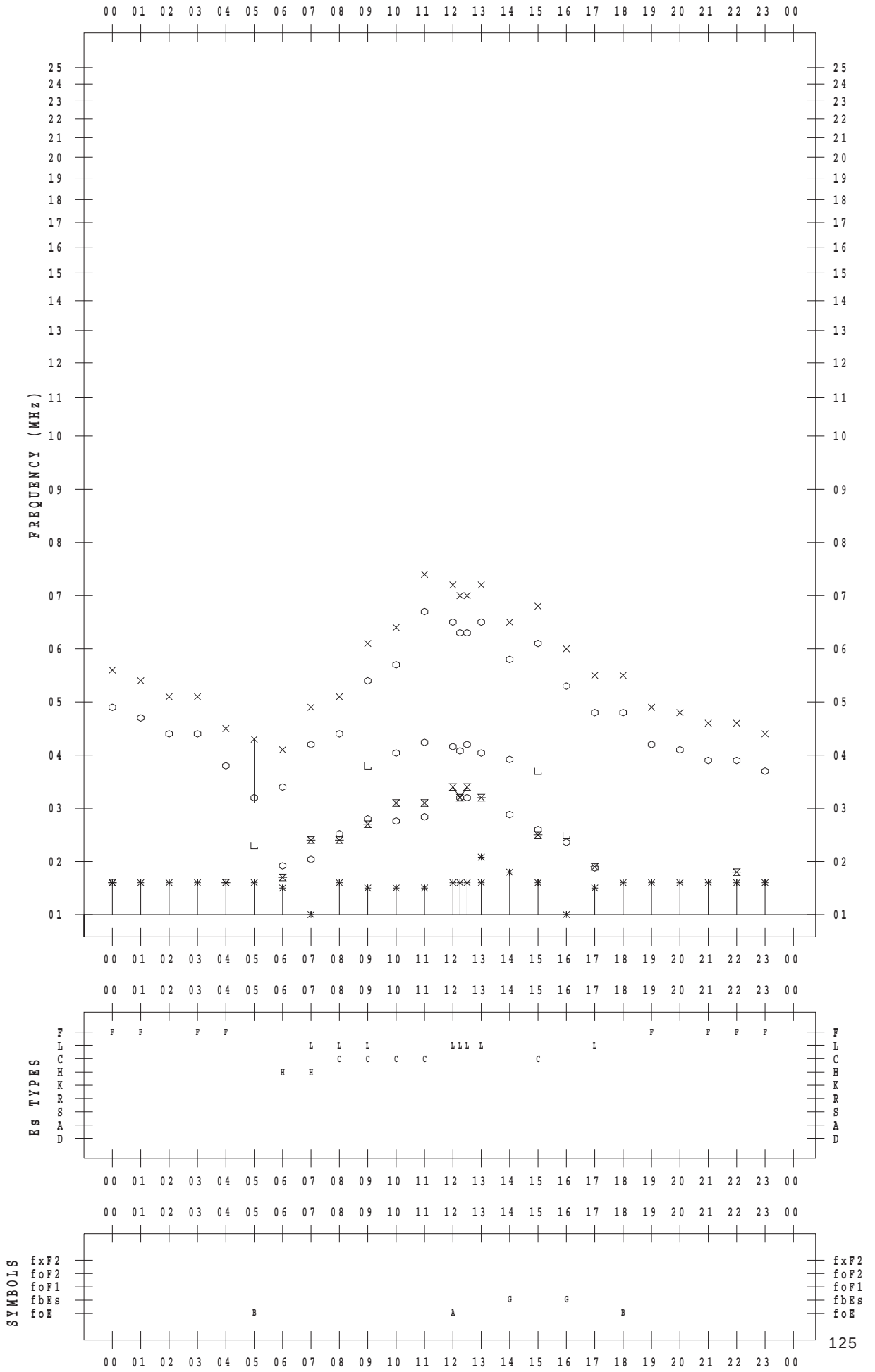
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/18

135 °E MEAN TIME



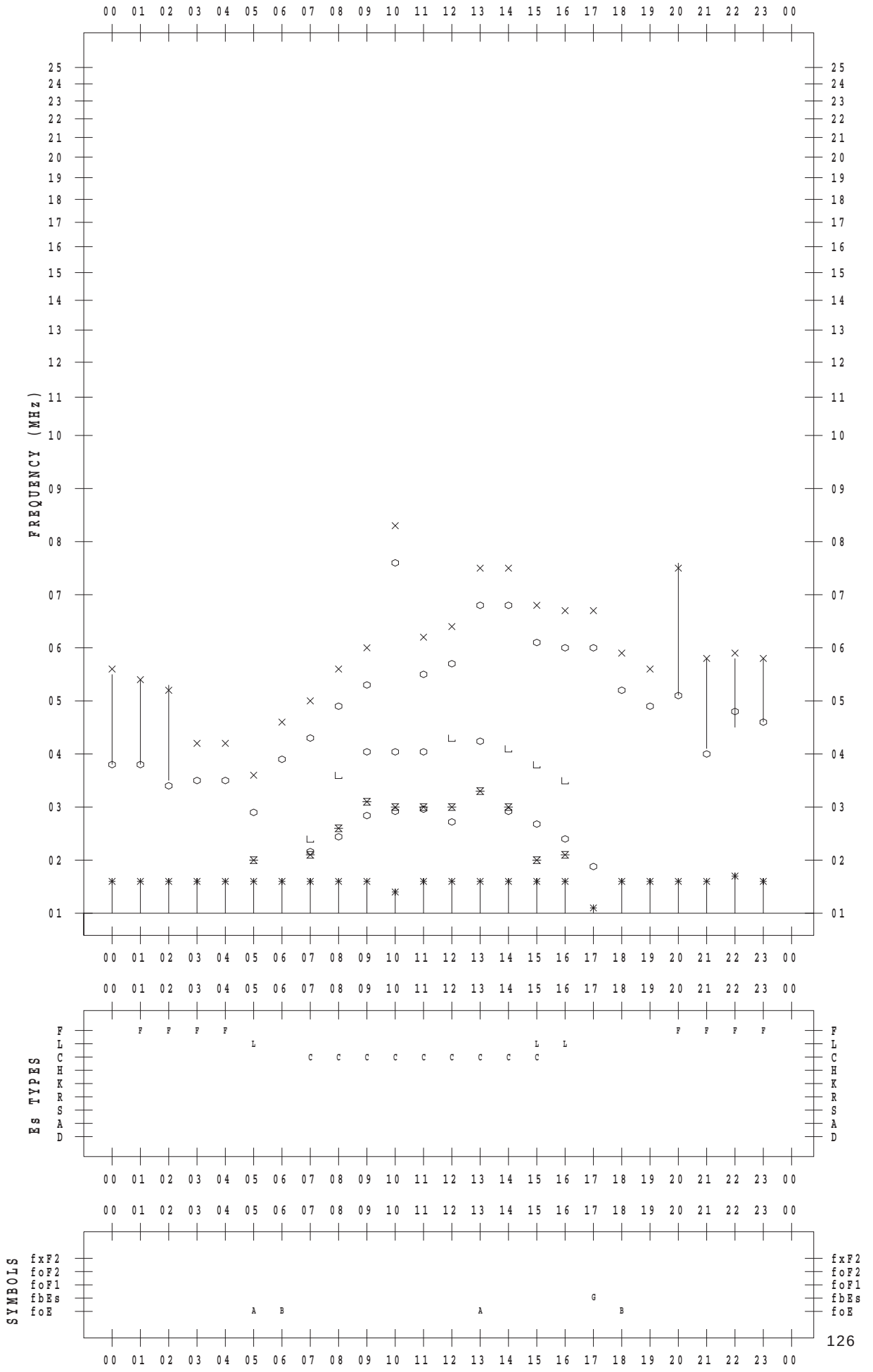
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/19

135 °E MEAN TIME



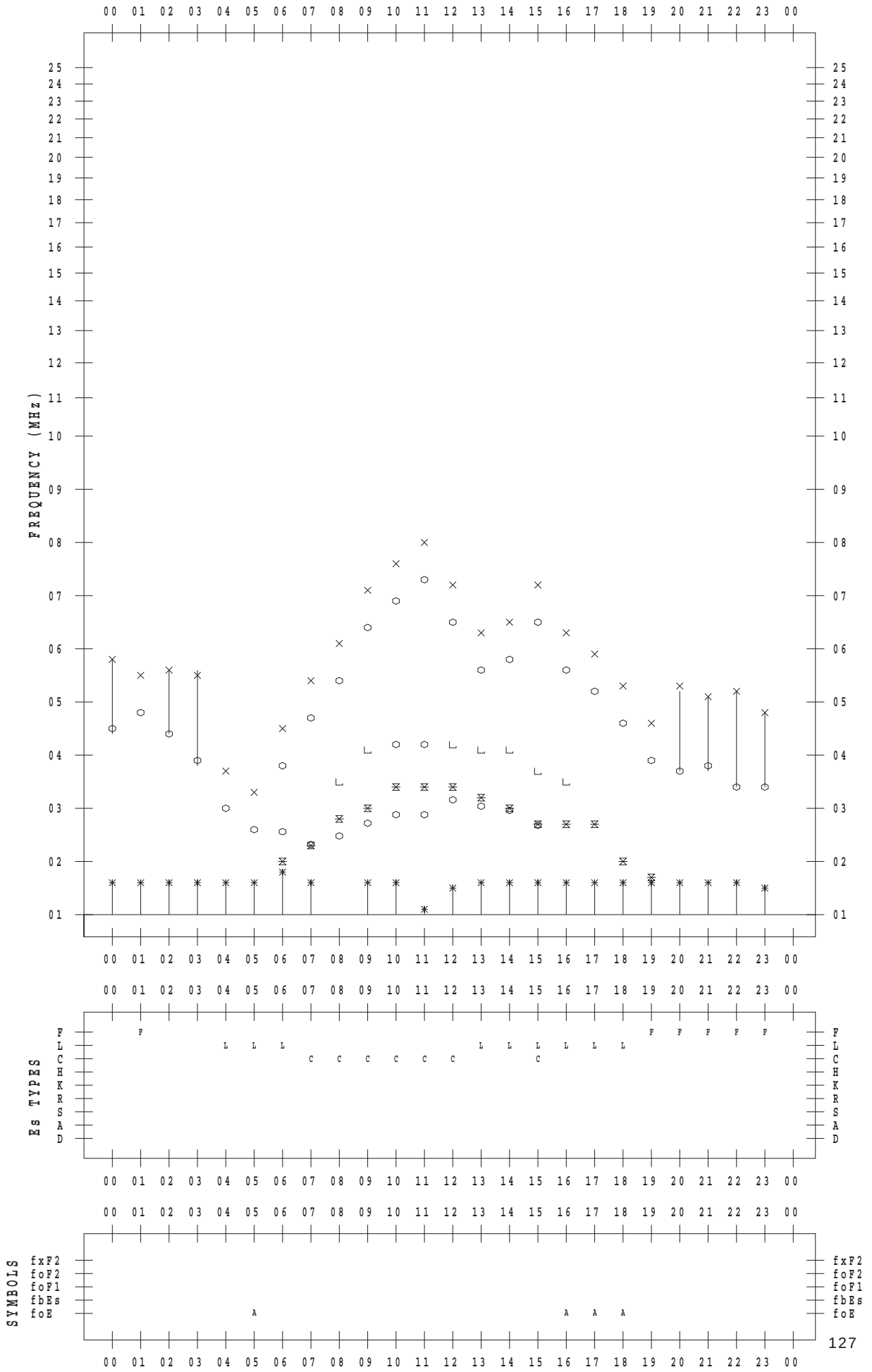
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/20

135 °E MEAN TIME



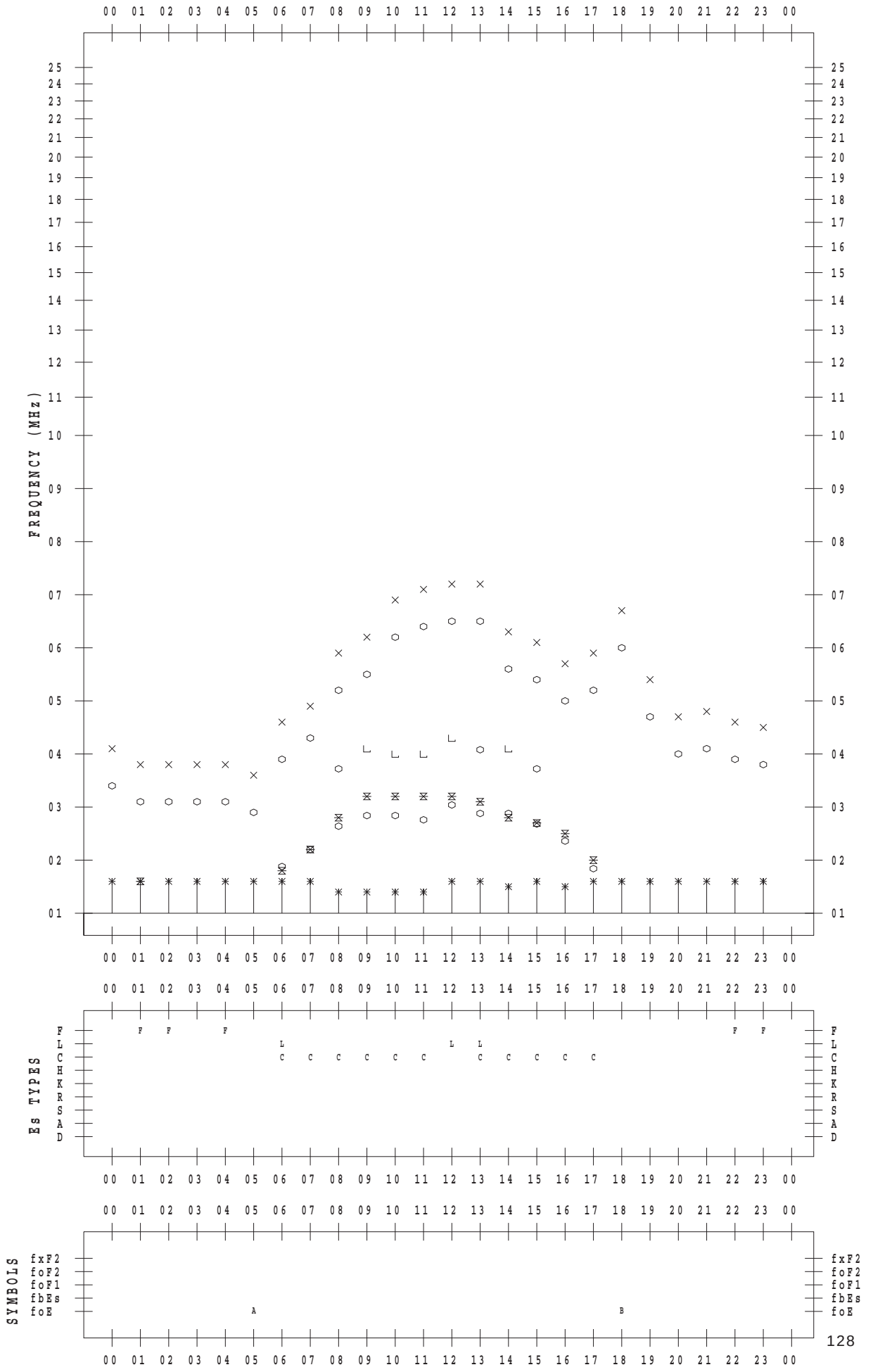
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/21

135 °E MEAN TIME



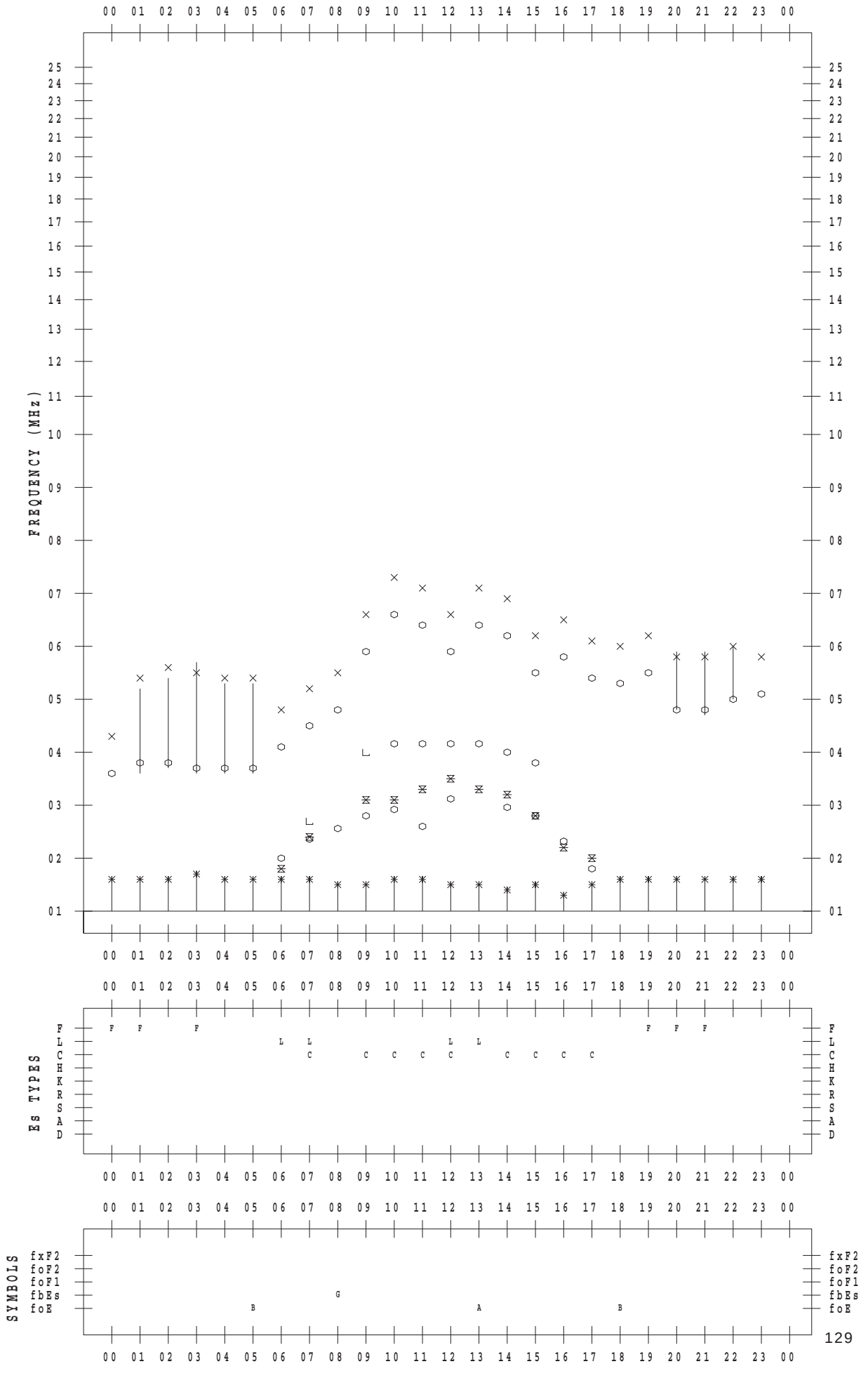
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/22

135 °E MEAN TIME



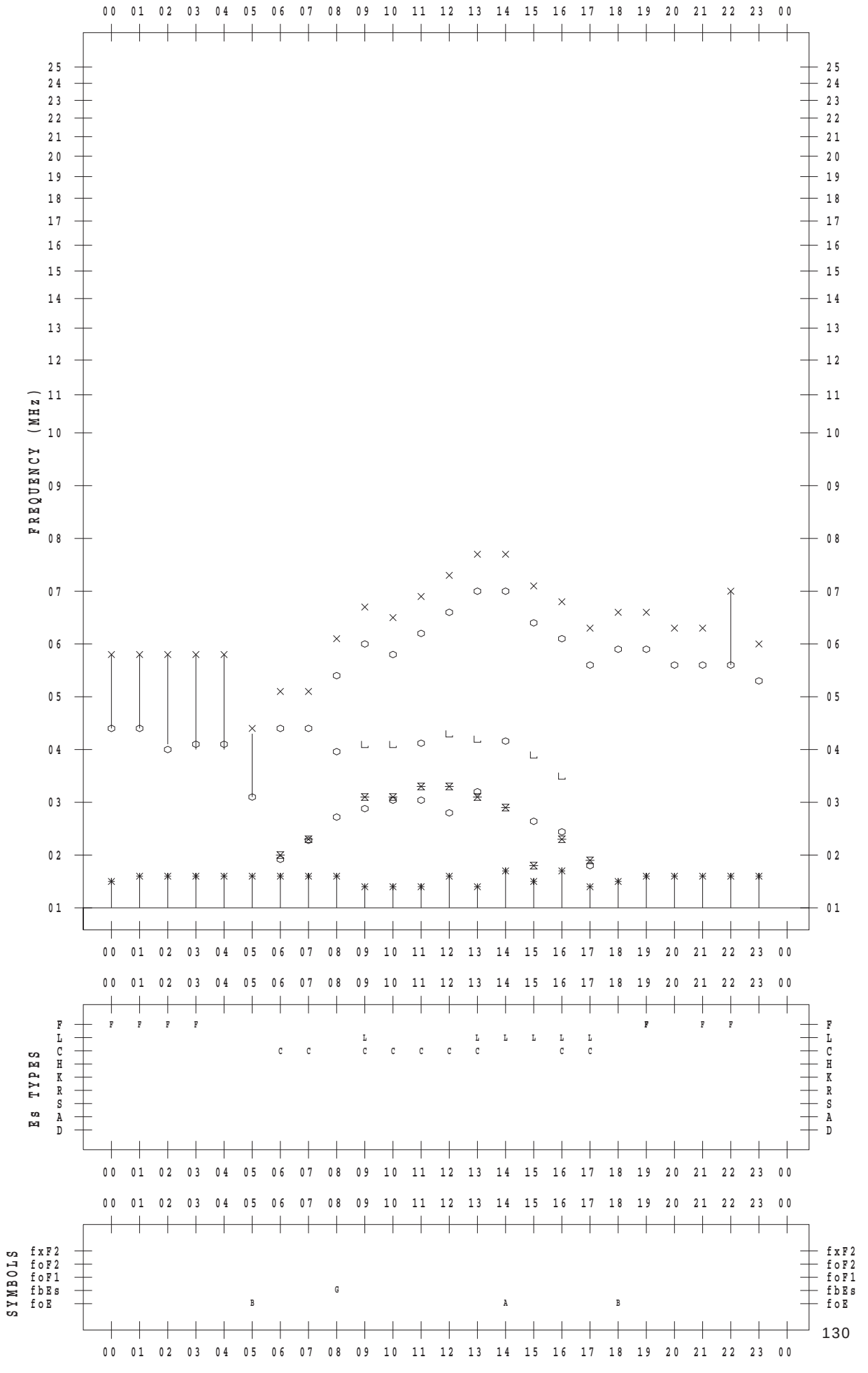
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/23

135 °E MEAN TIME



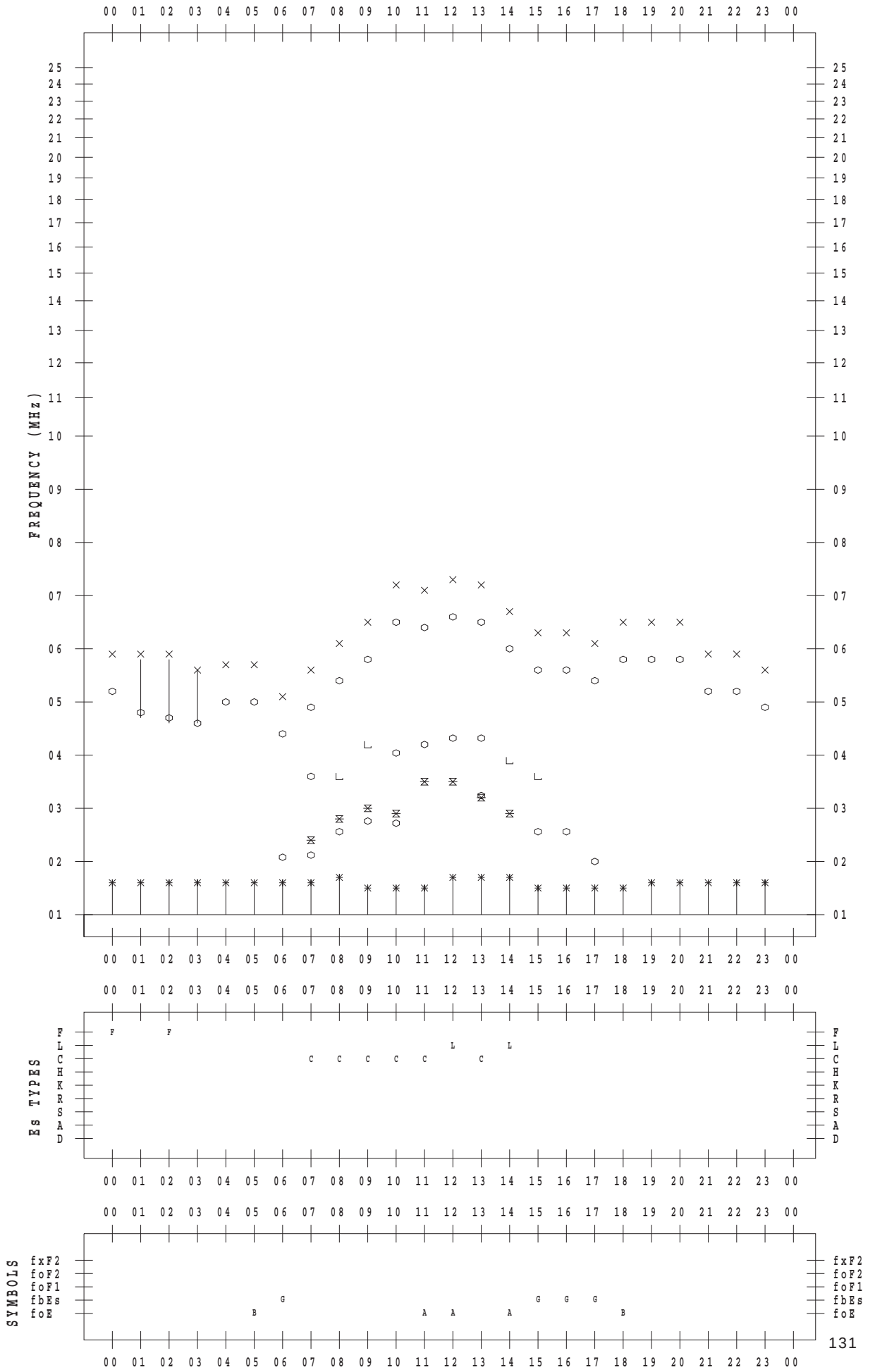
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/24

135 °E MEAN TIME



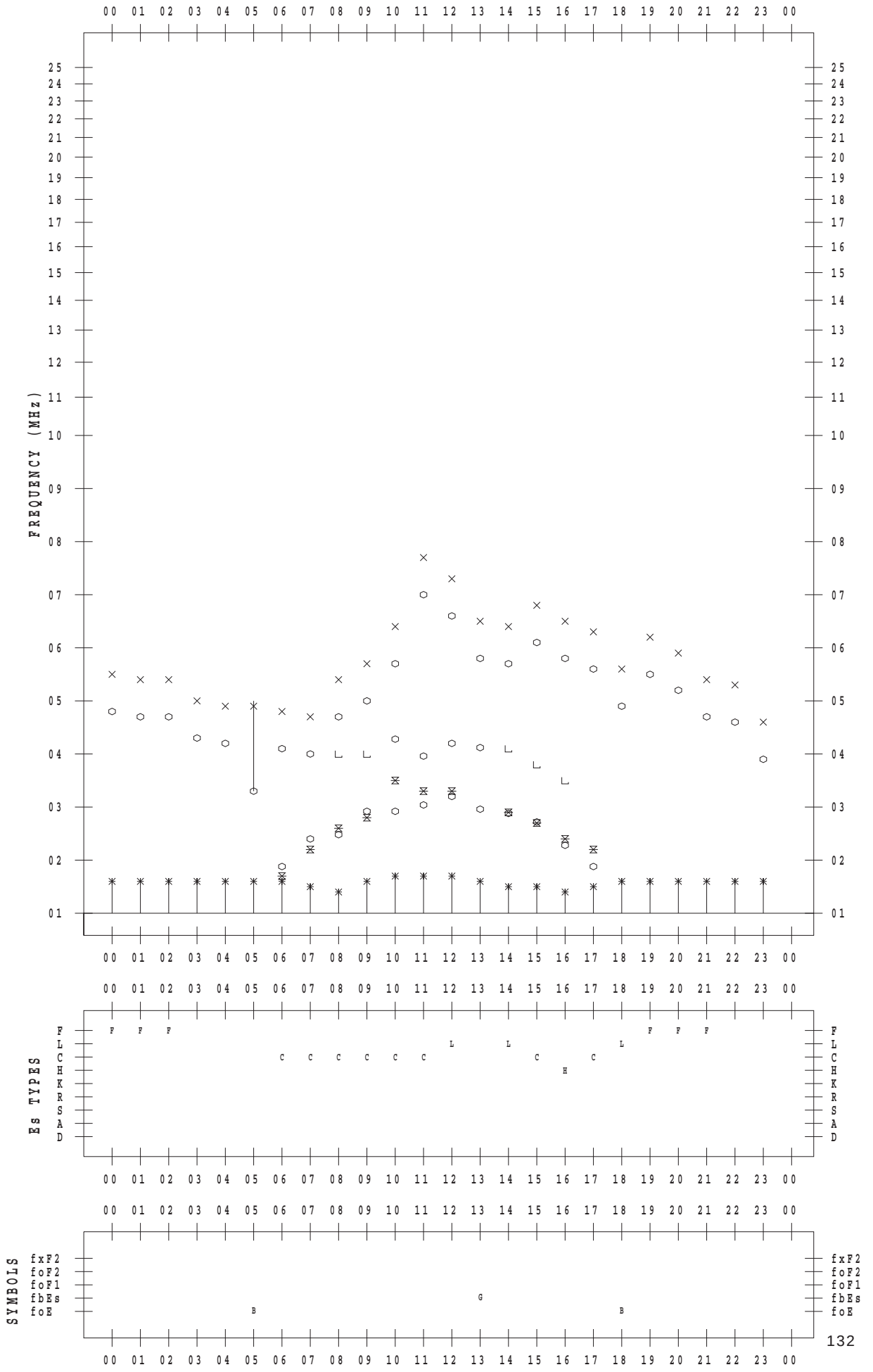
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/25

135 °E MEAN TIME



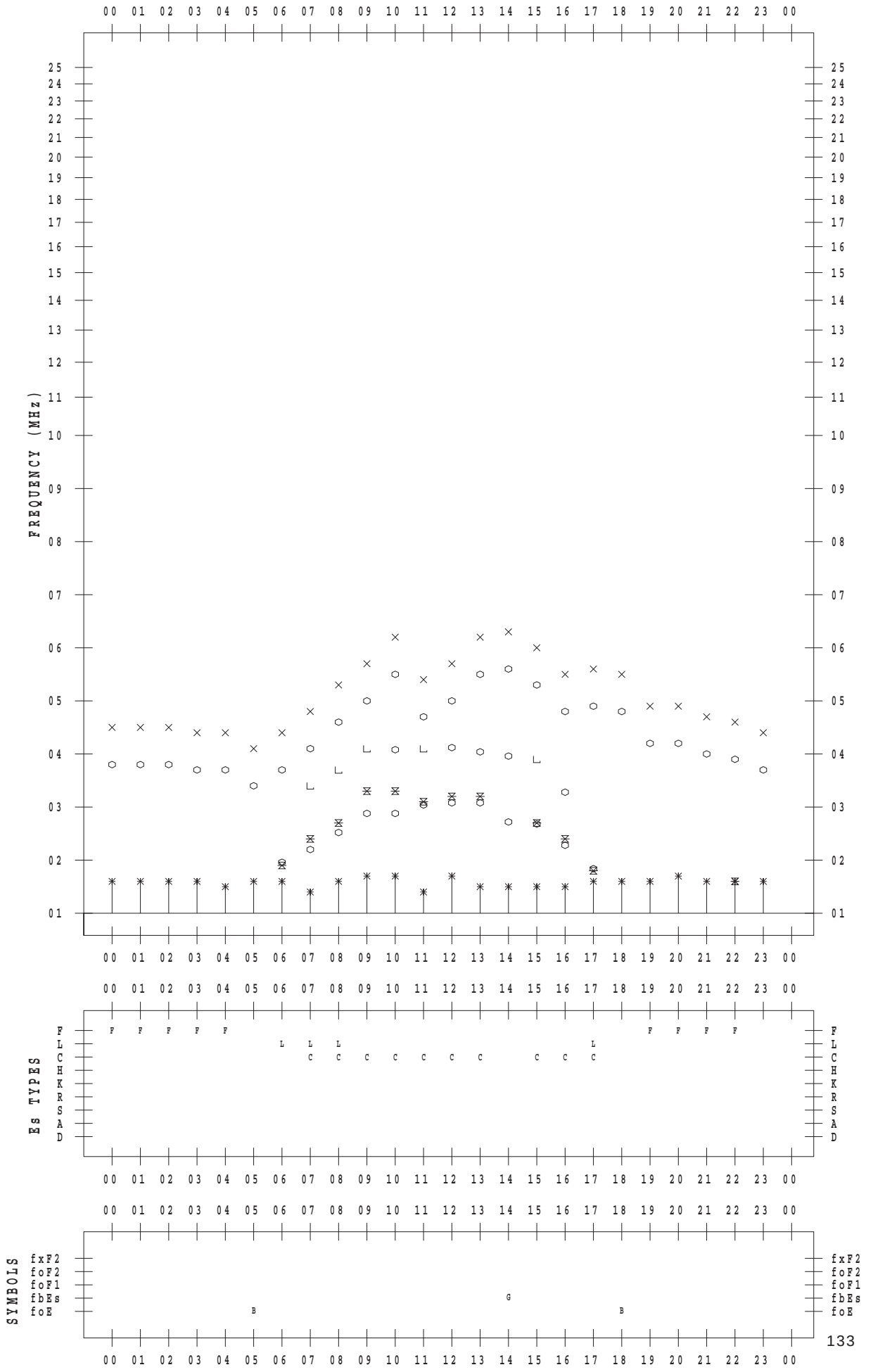
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/26

135 °E MEAN TIME



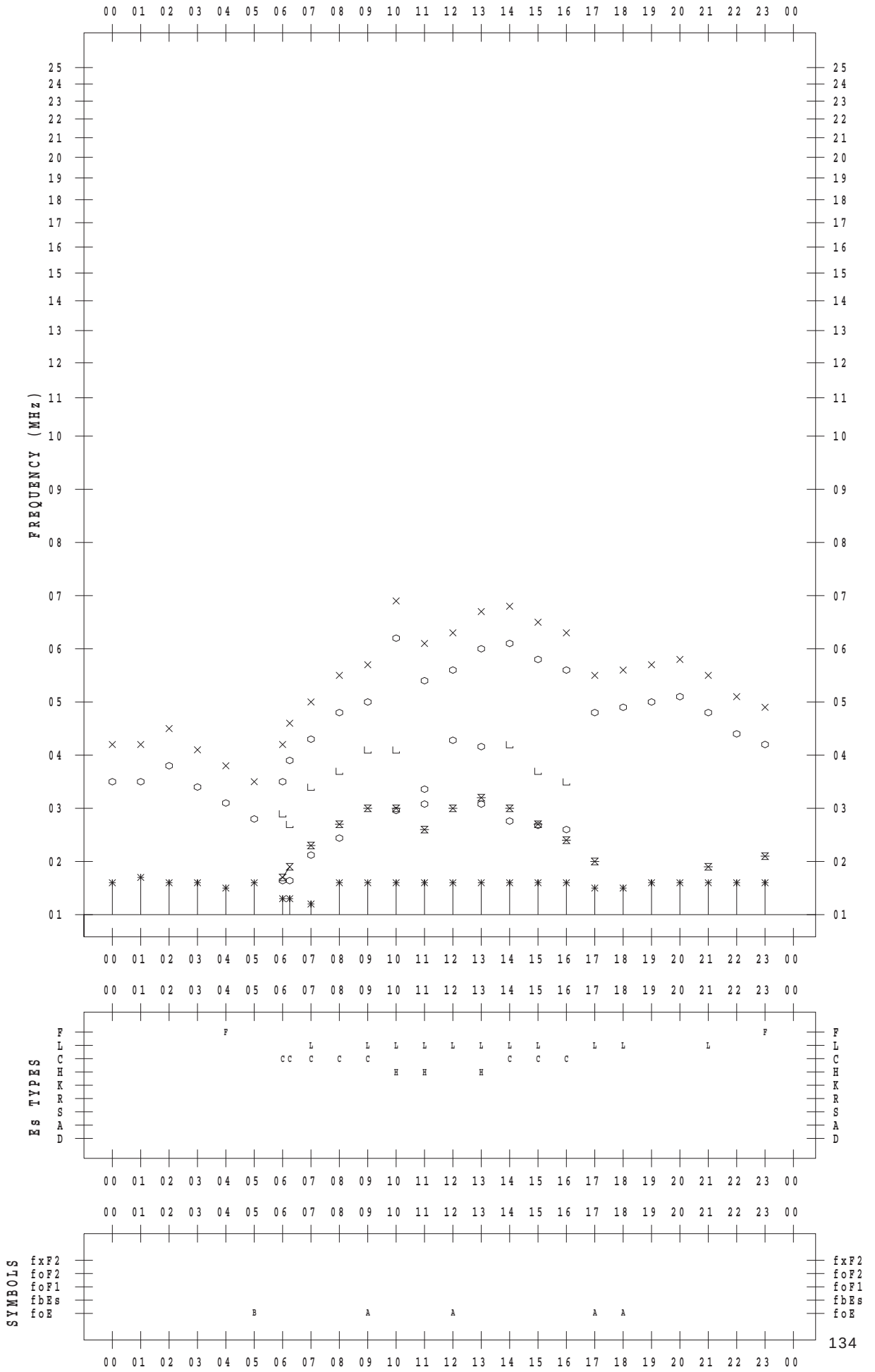
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/27

135 °E MEAN TIME



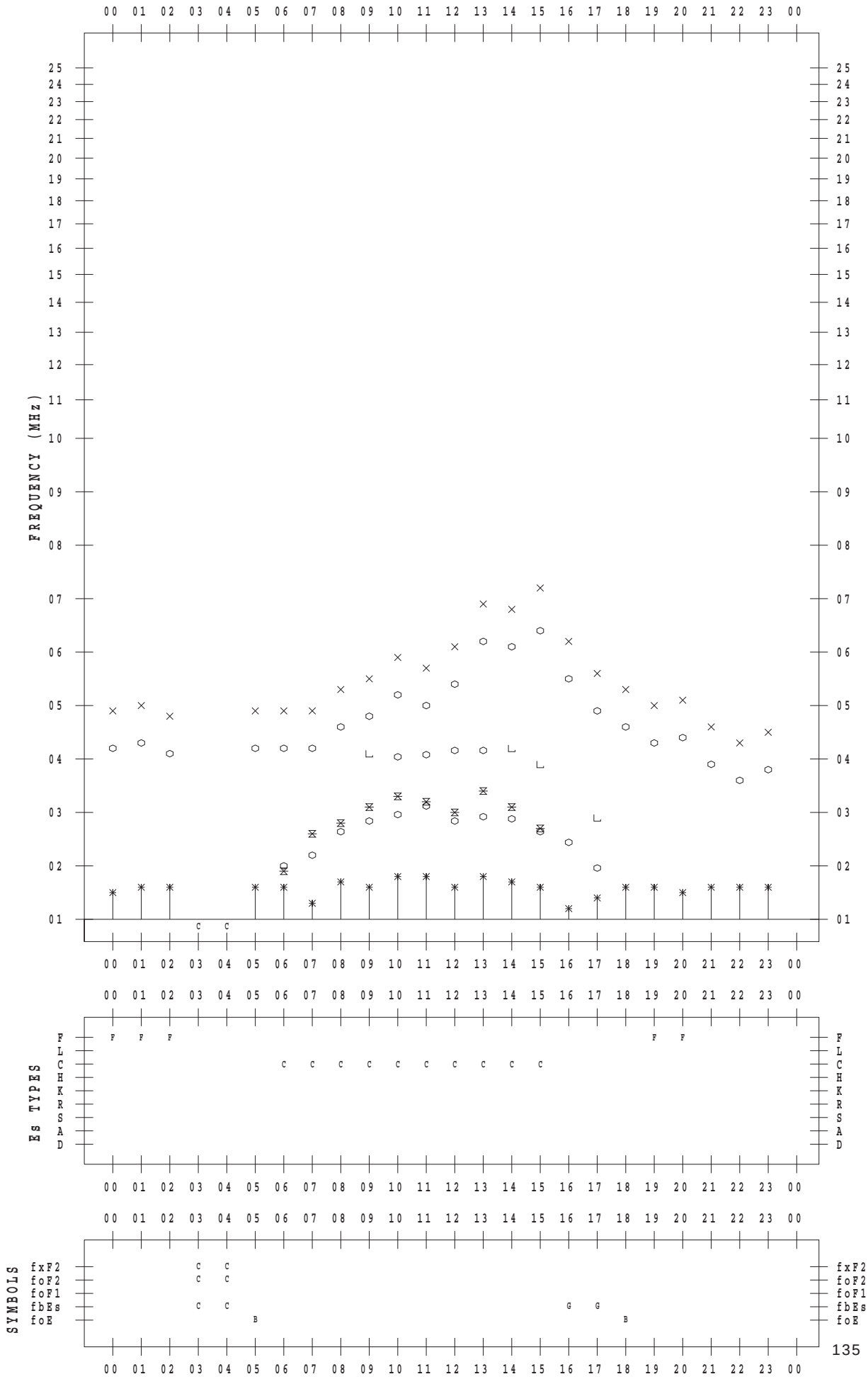
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/28

135 °E MEAN TIME



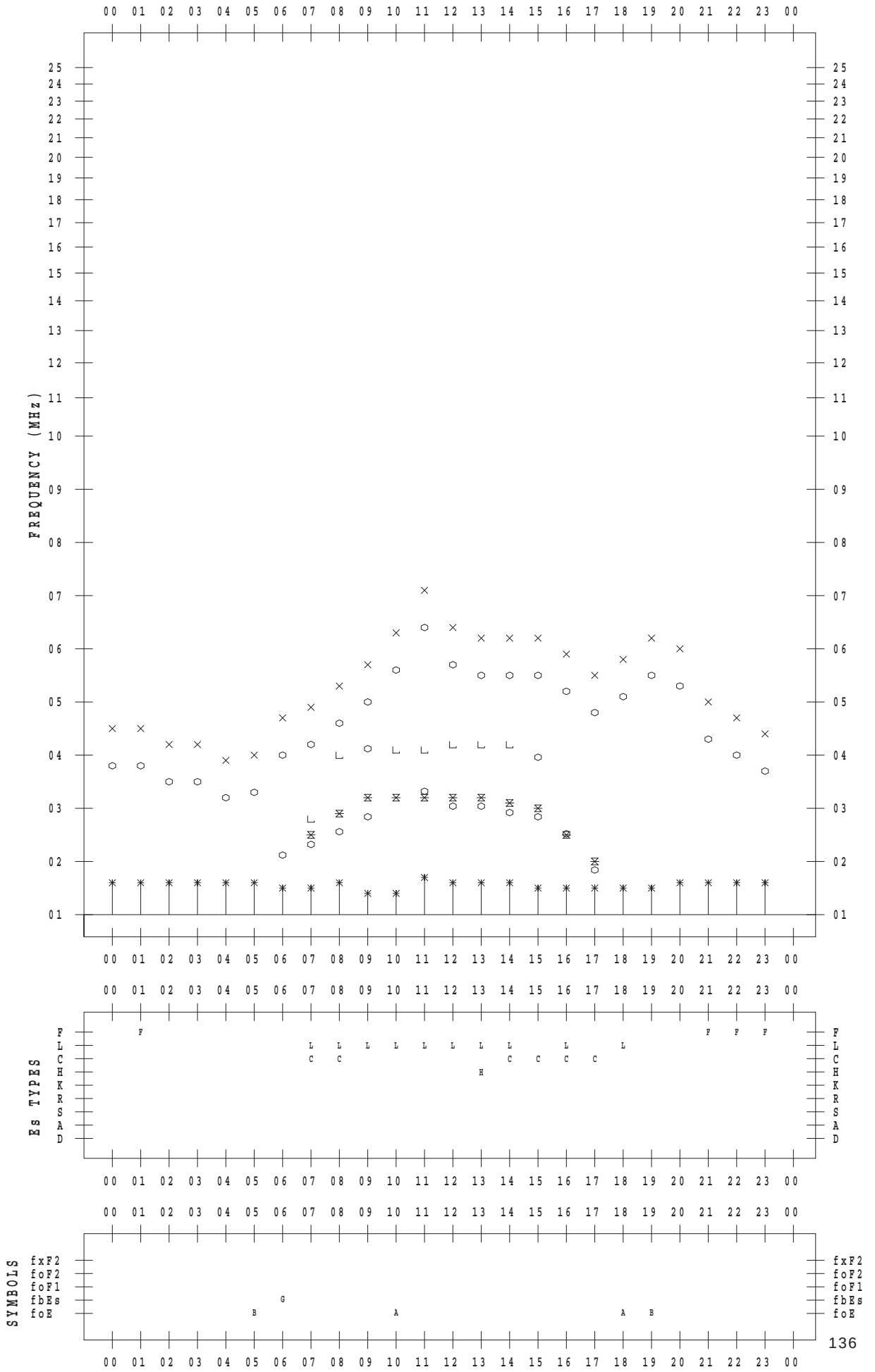
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/29

135 °E MEAN TIME



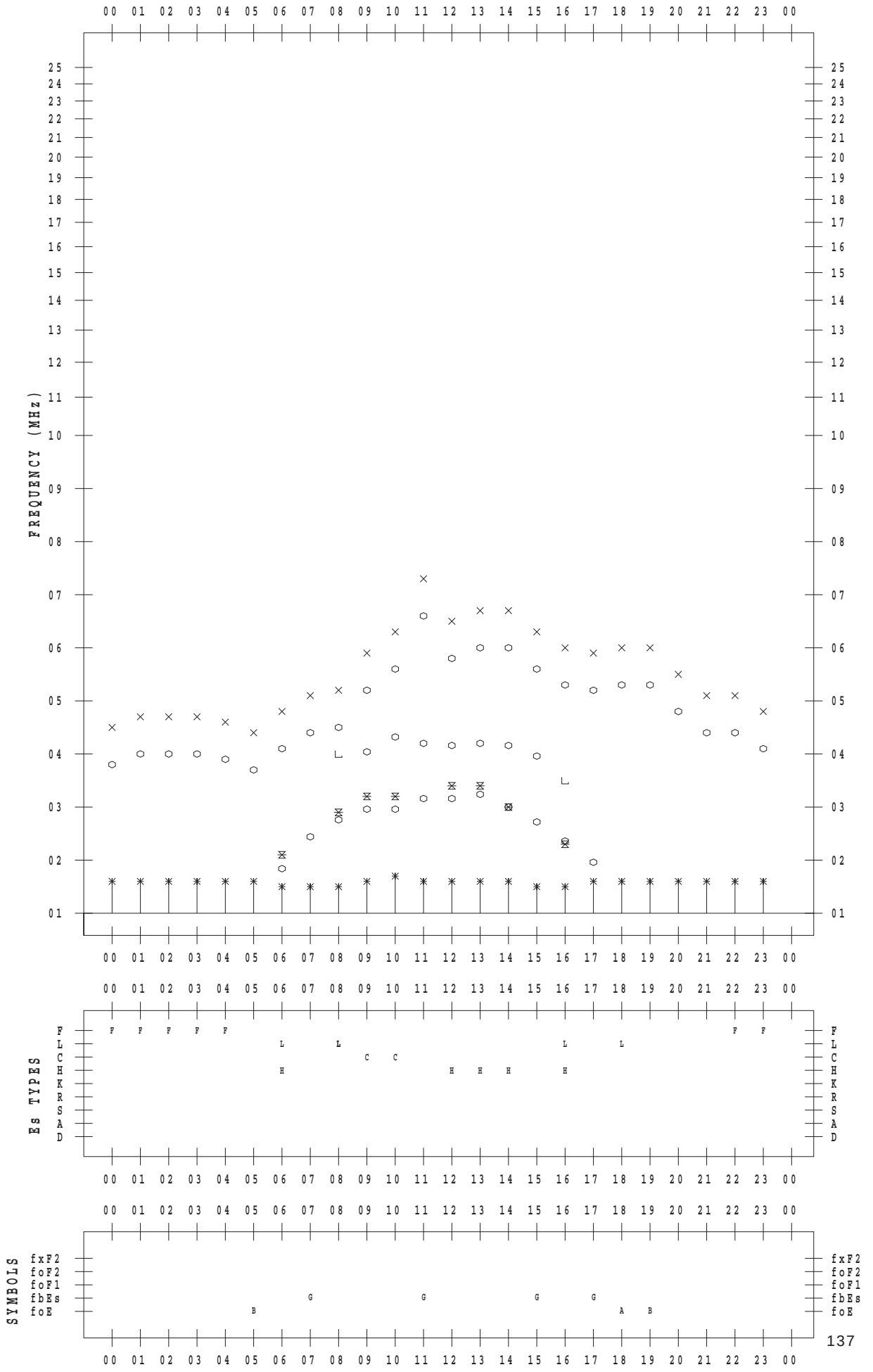
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/30

135 °E MEAN TIME



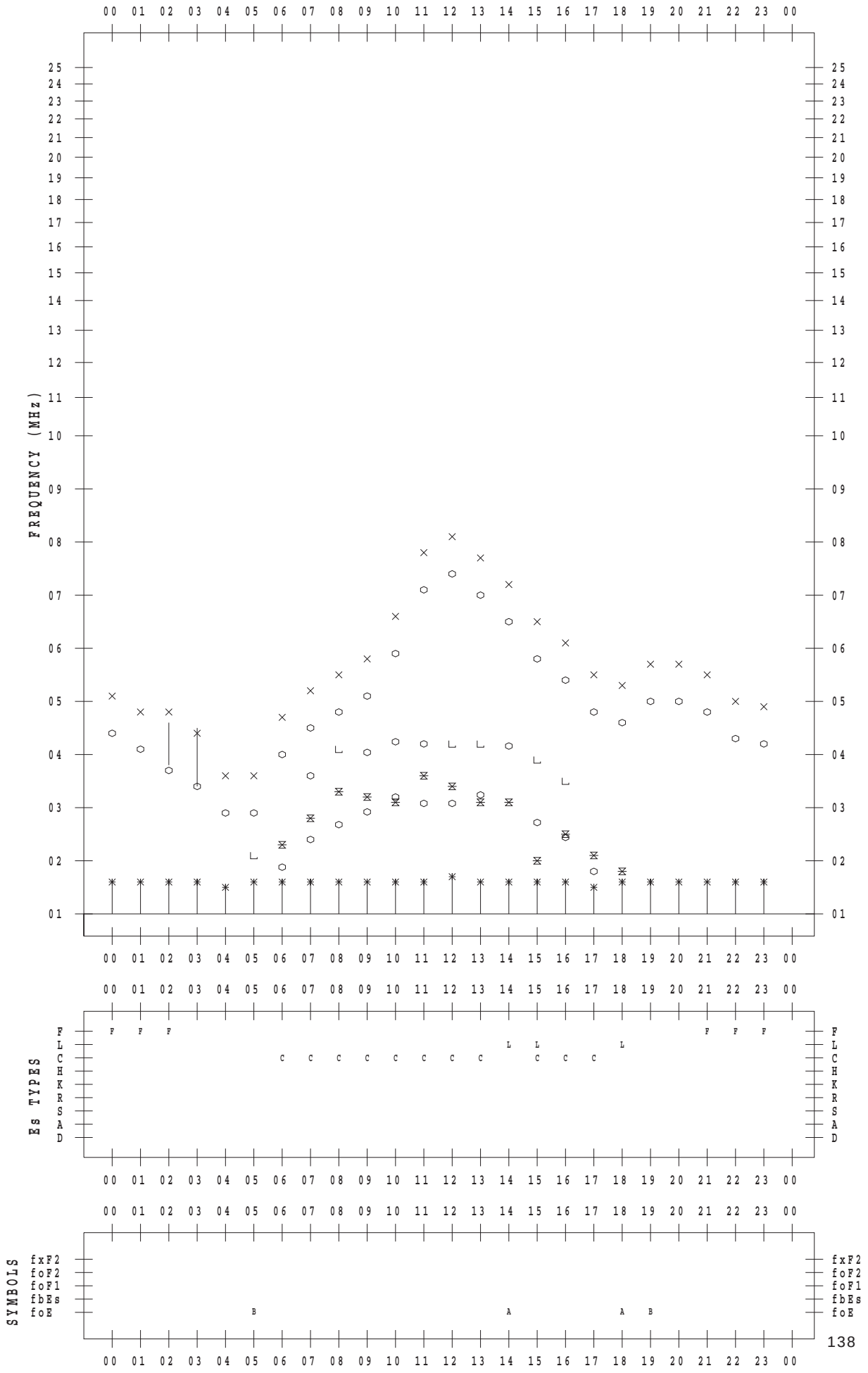
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 3/31

135 °E MEAN TIME



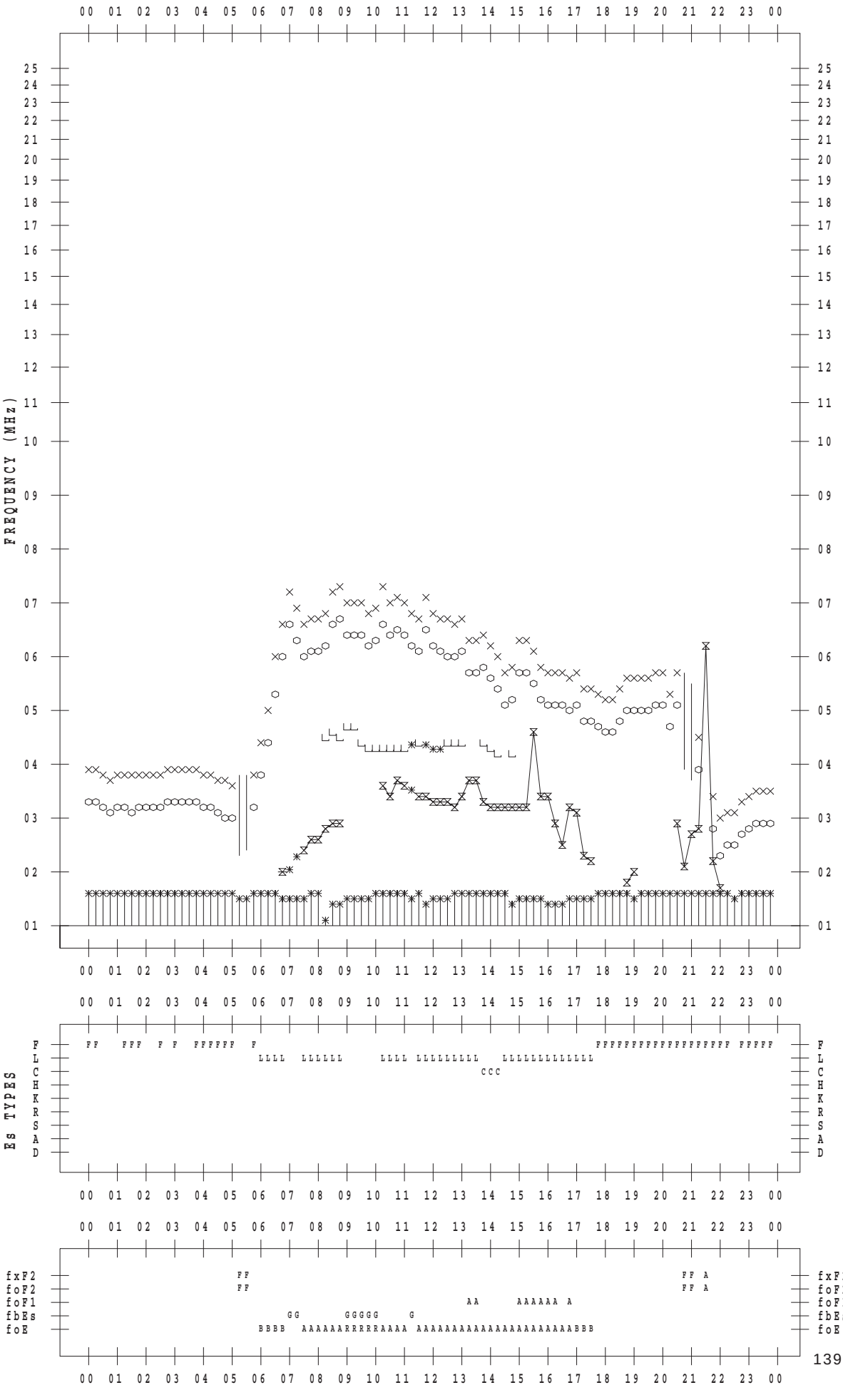
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 1

135 °E MEAN TIME



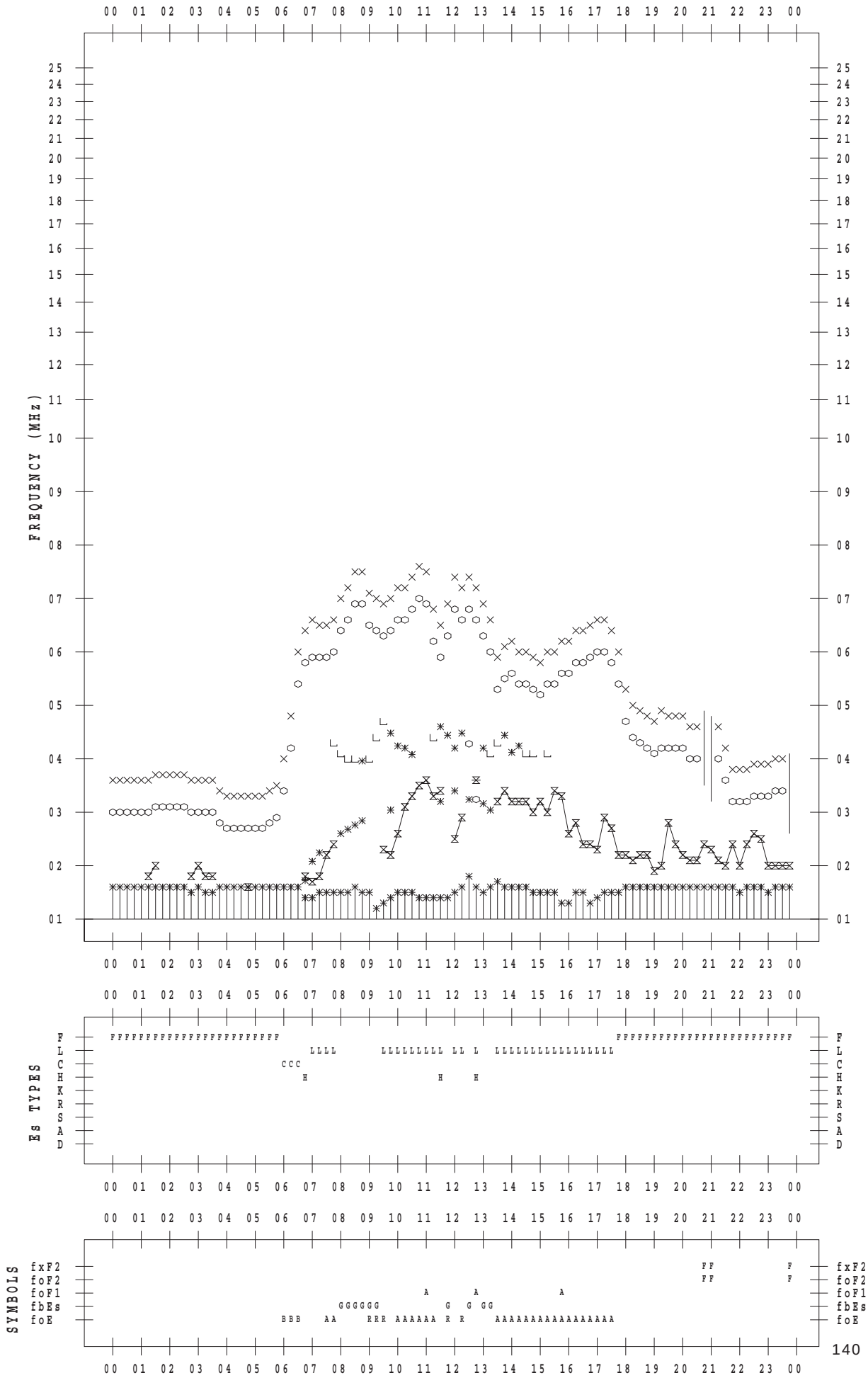
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 2

135 °E MEAN TIME



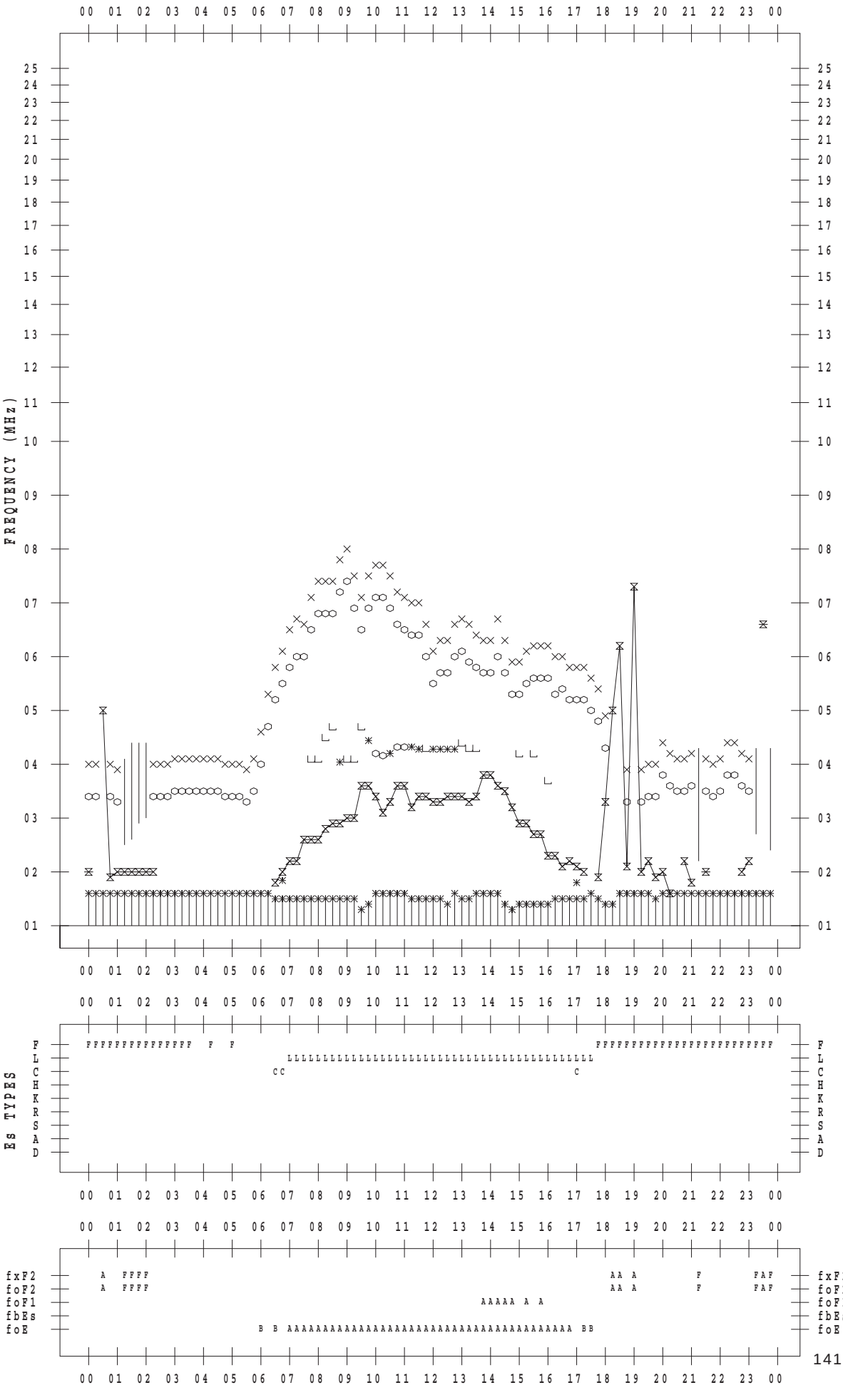
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 3

135 °E MEAN TIME



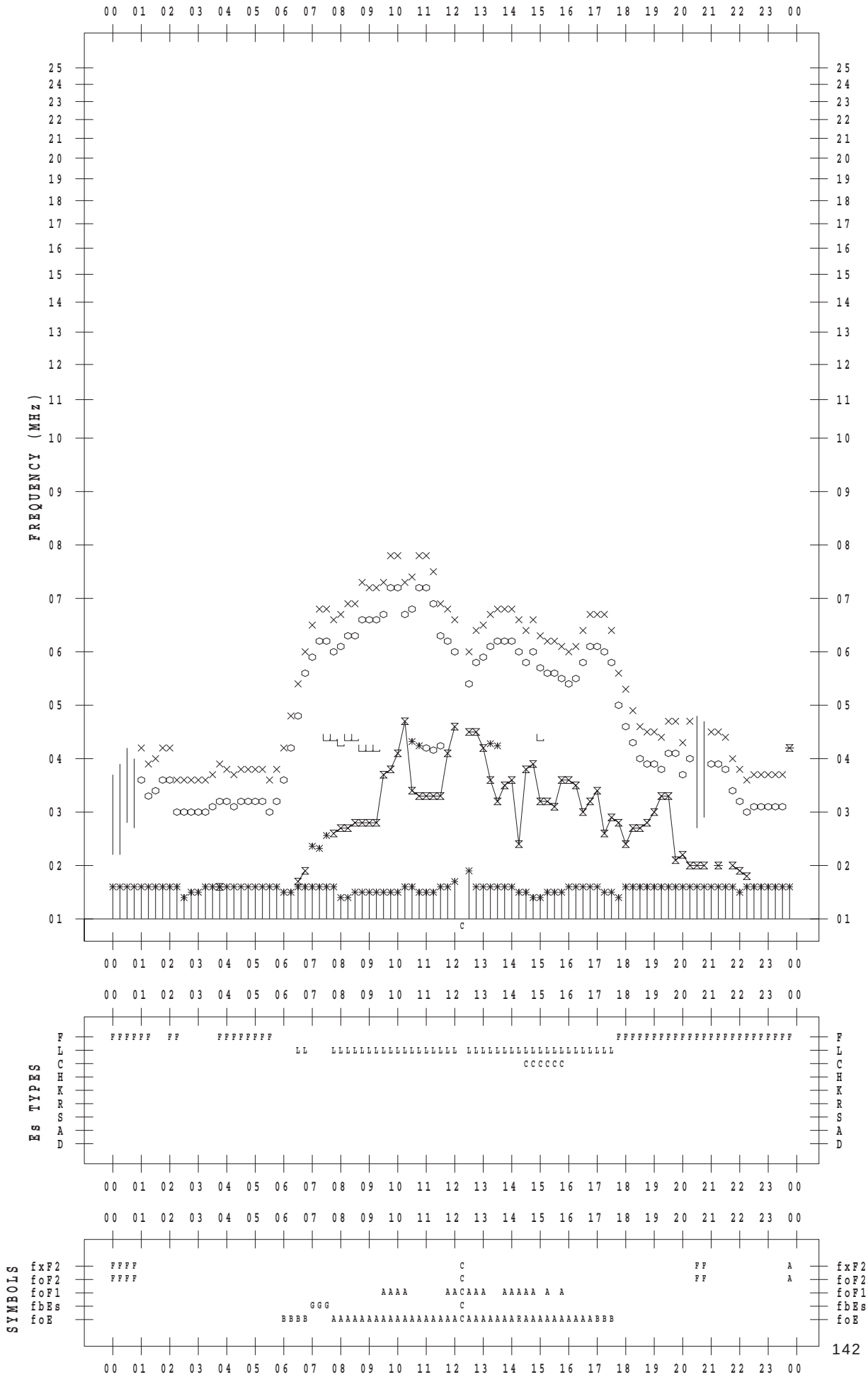
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 4

135 °E MEAN TIME



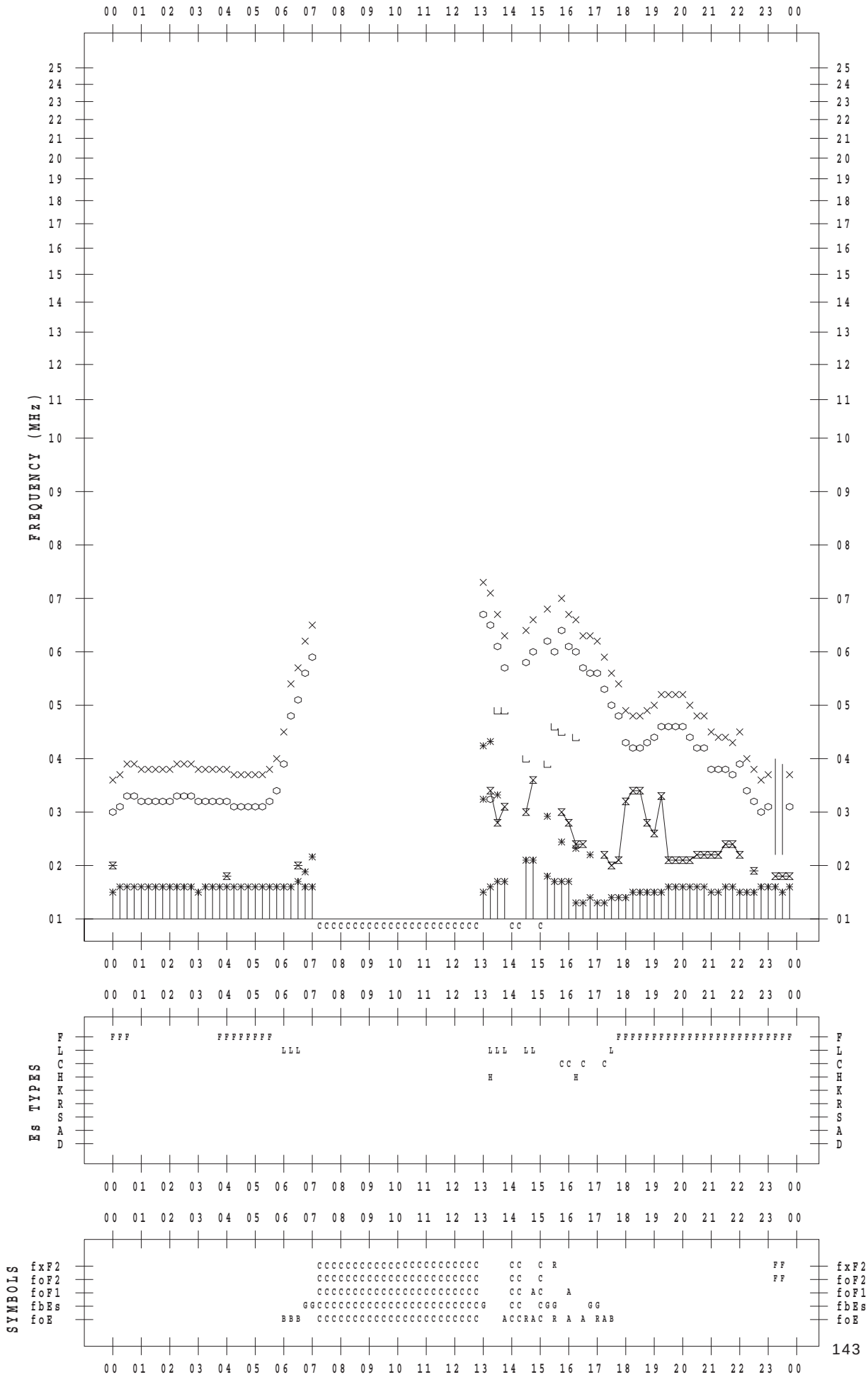
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 5

135 °E MEAN TIME



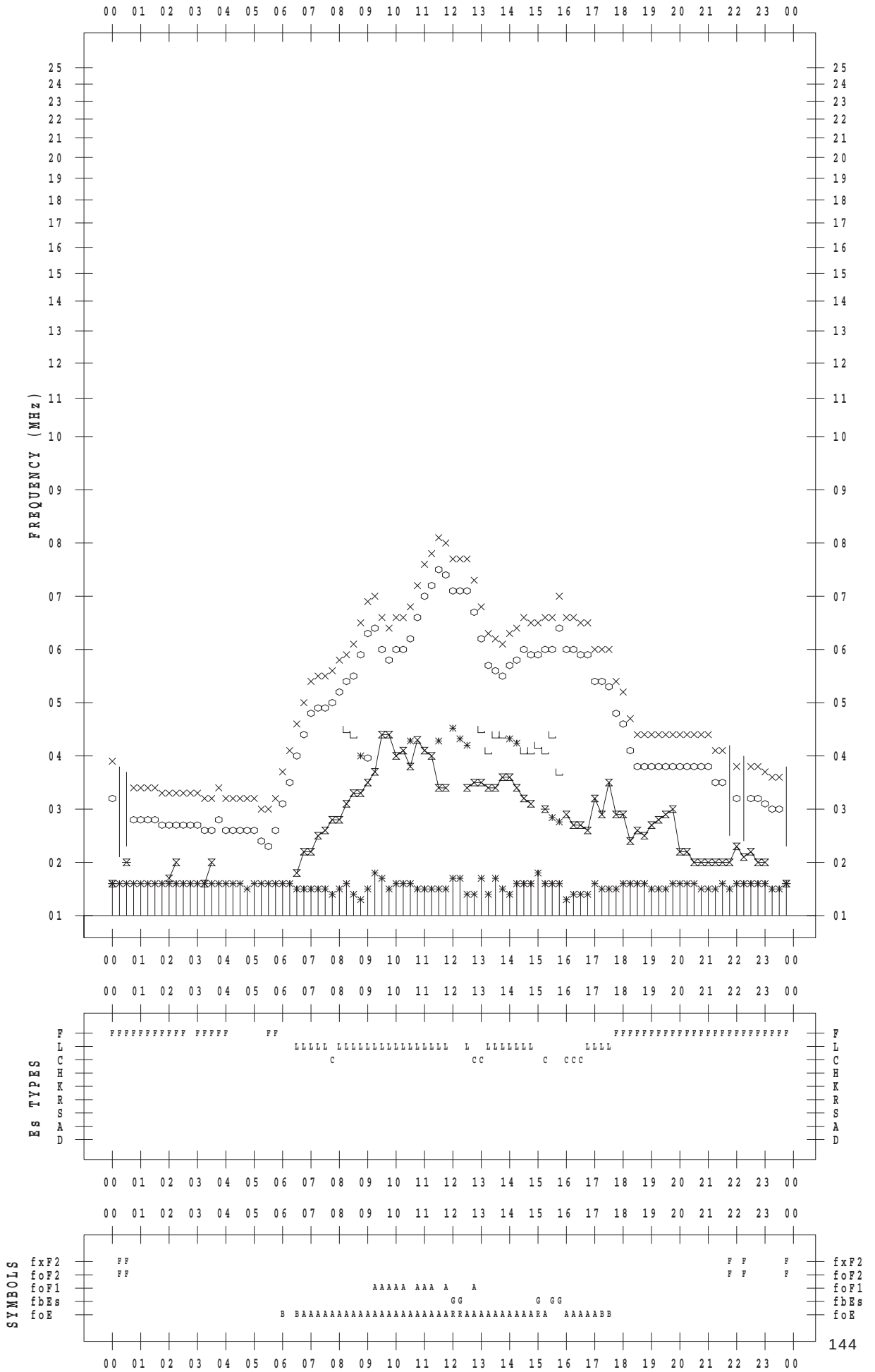
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 6

135 °E MEAN TIME



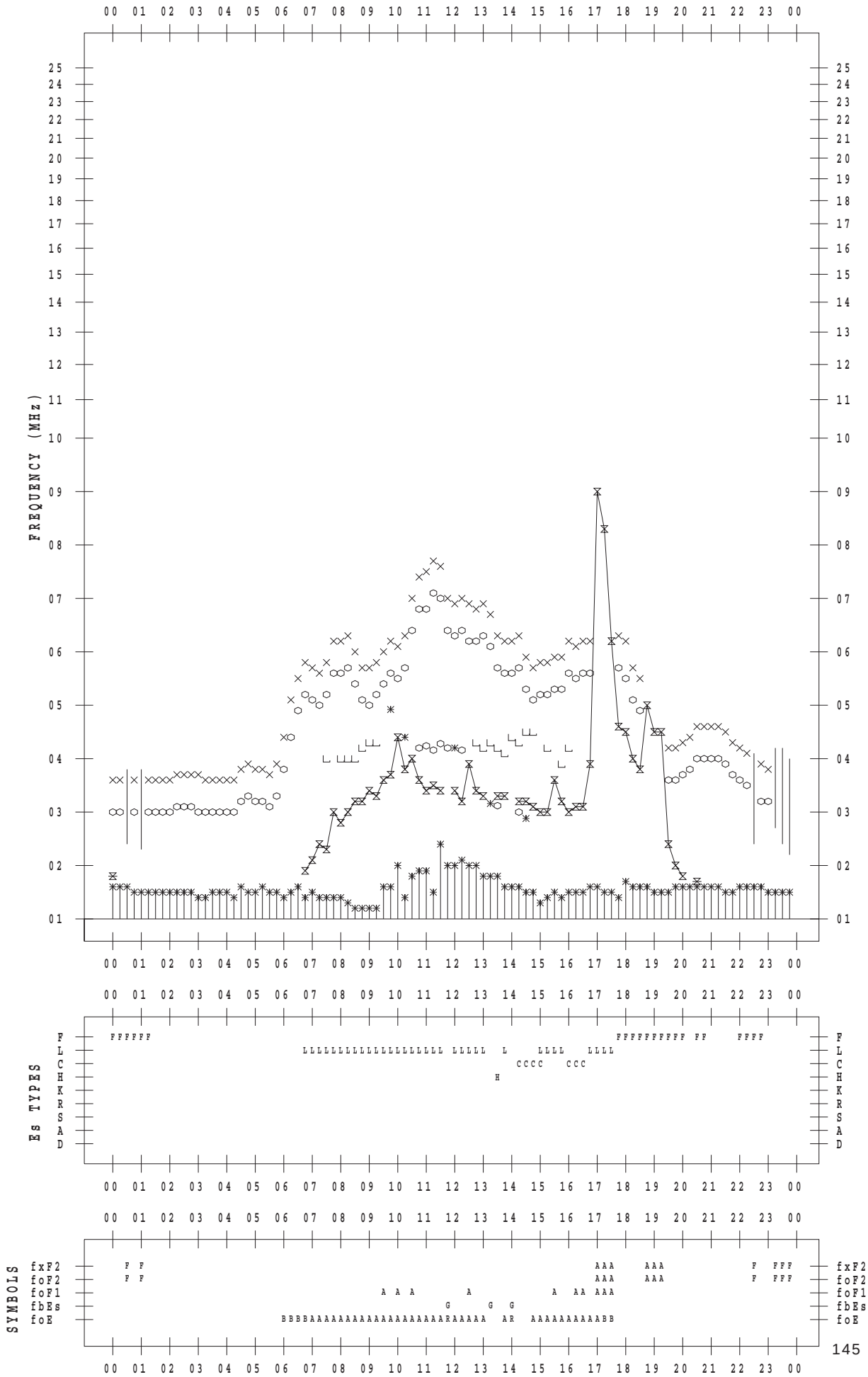
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 7

135 °E MEAN TIME



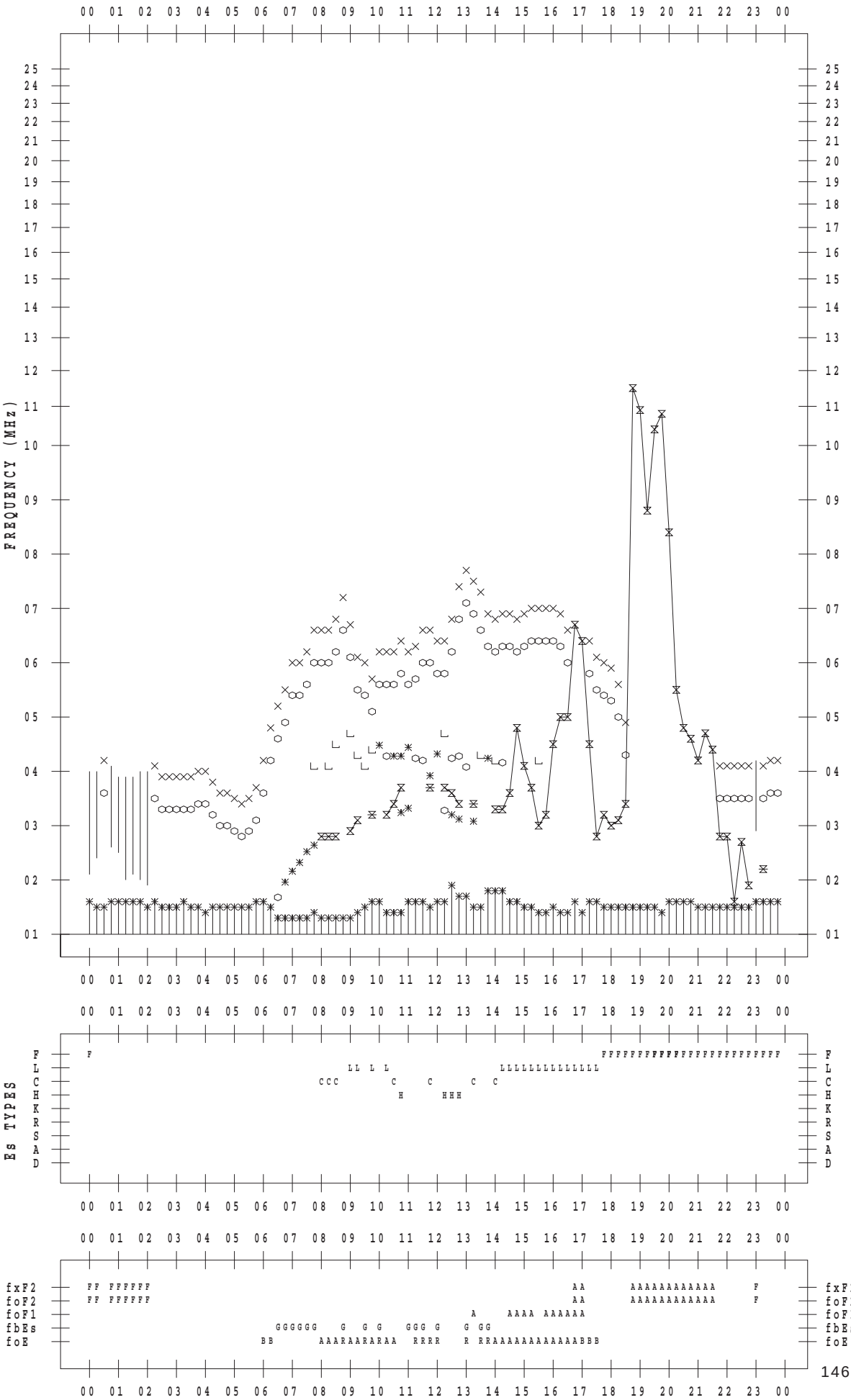
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 8

135 °E MEAN TIME



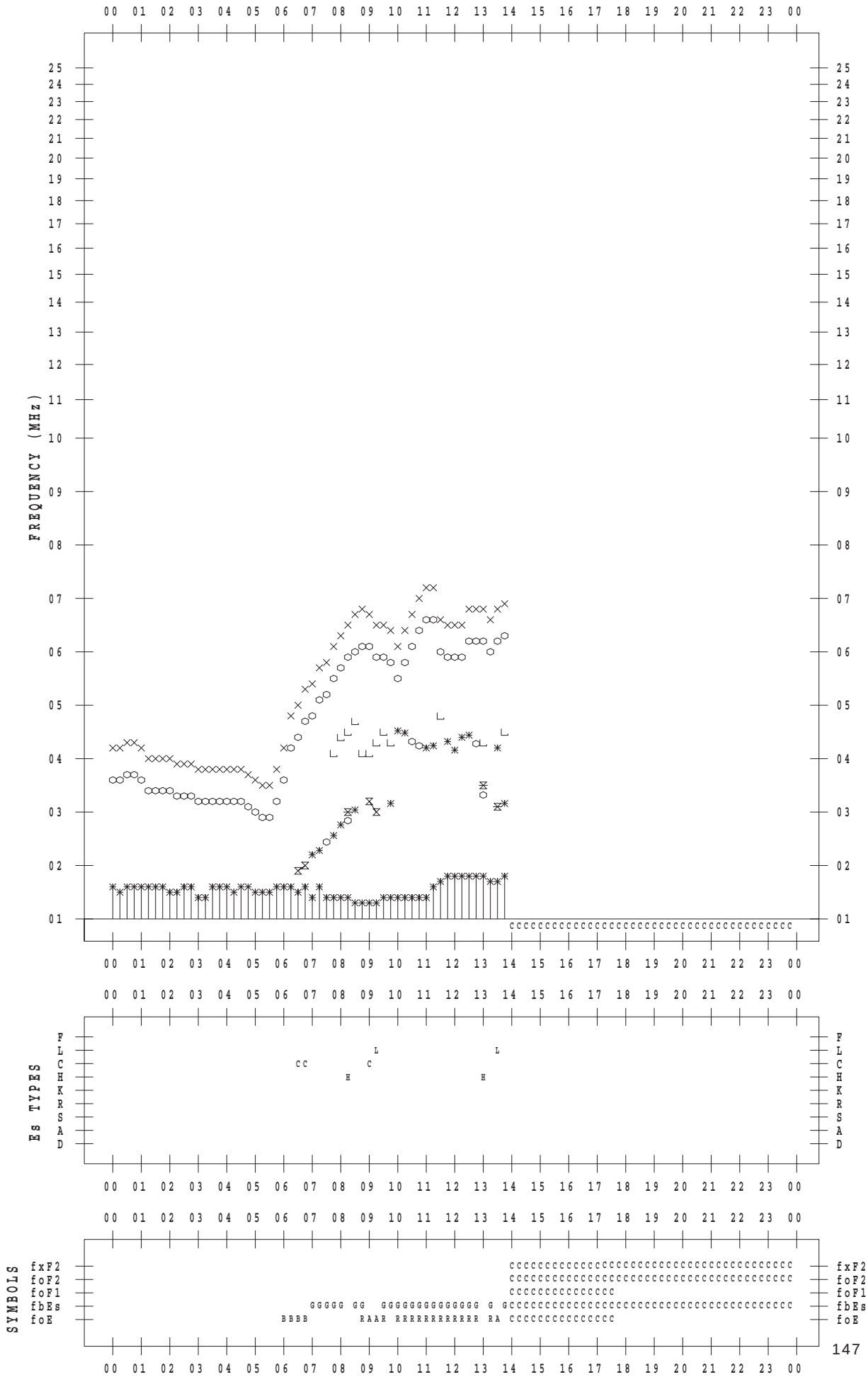
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/ 9

135 °E MEAN TIME



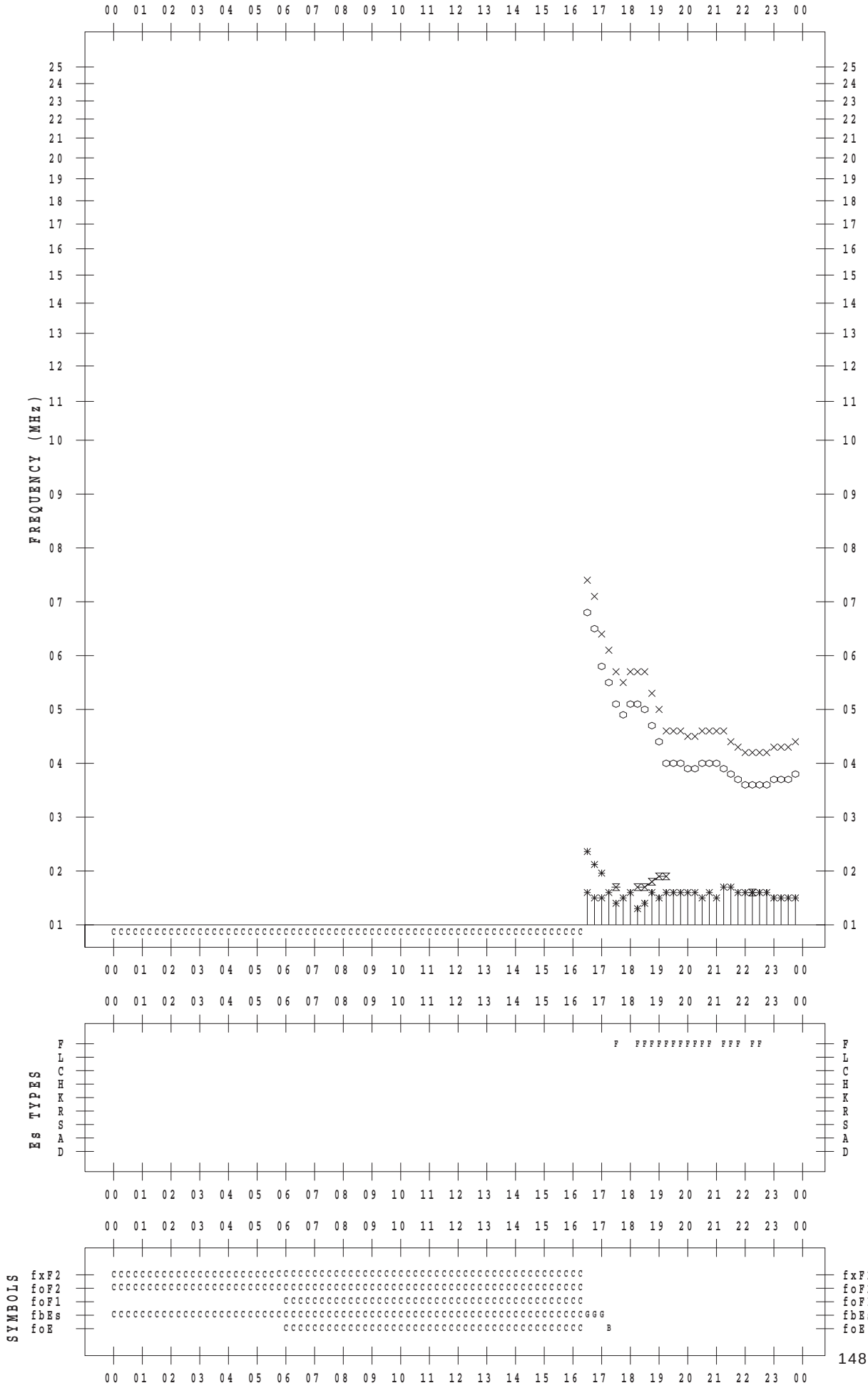
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/10

135 °E MEAN TIME



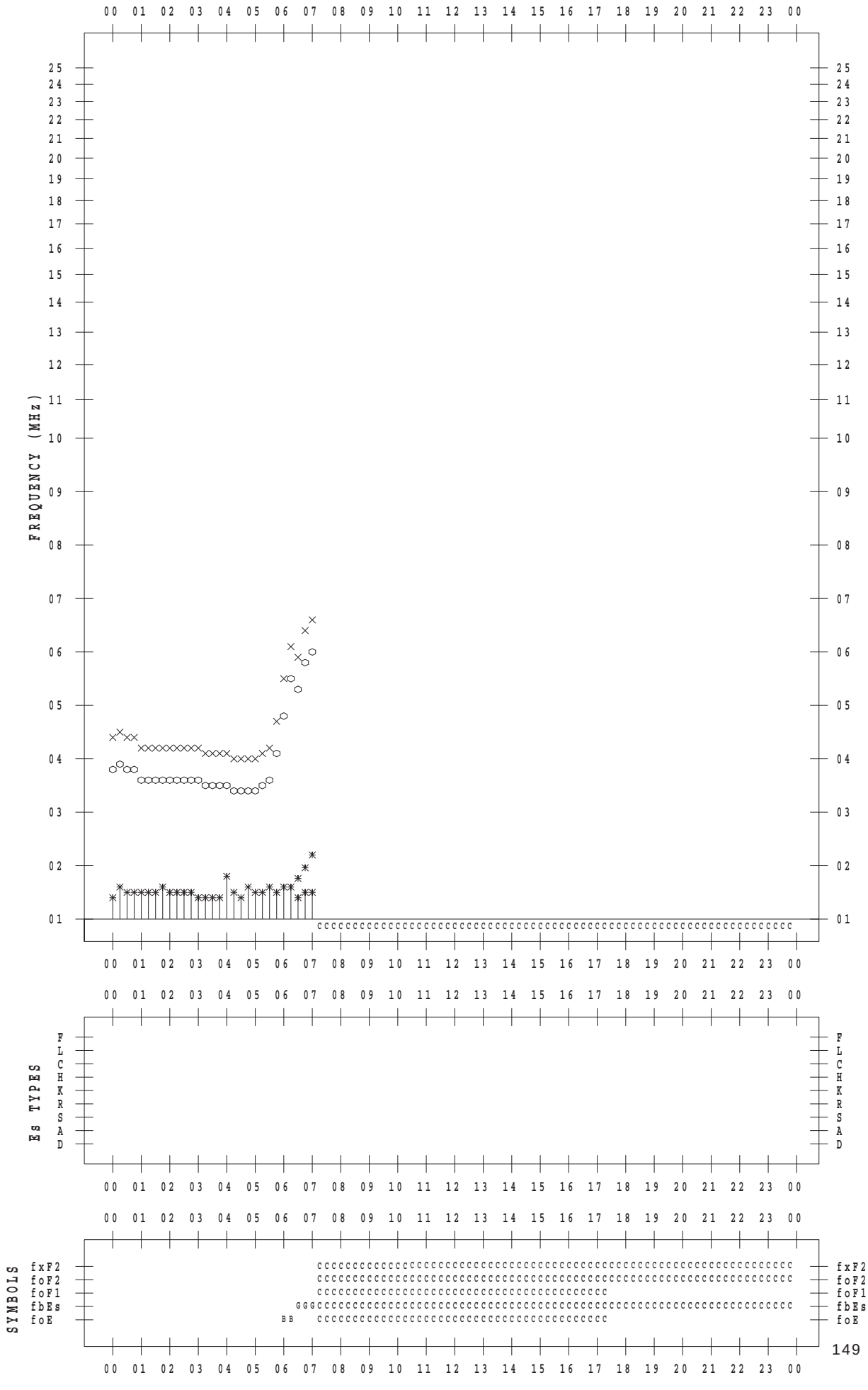
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/11

135 °E MEAN TIME



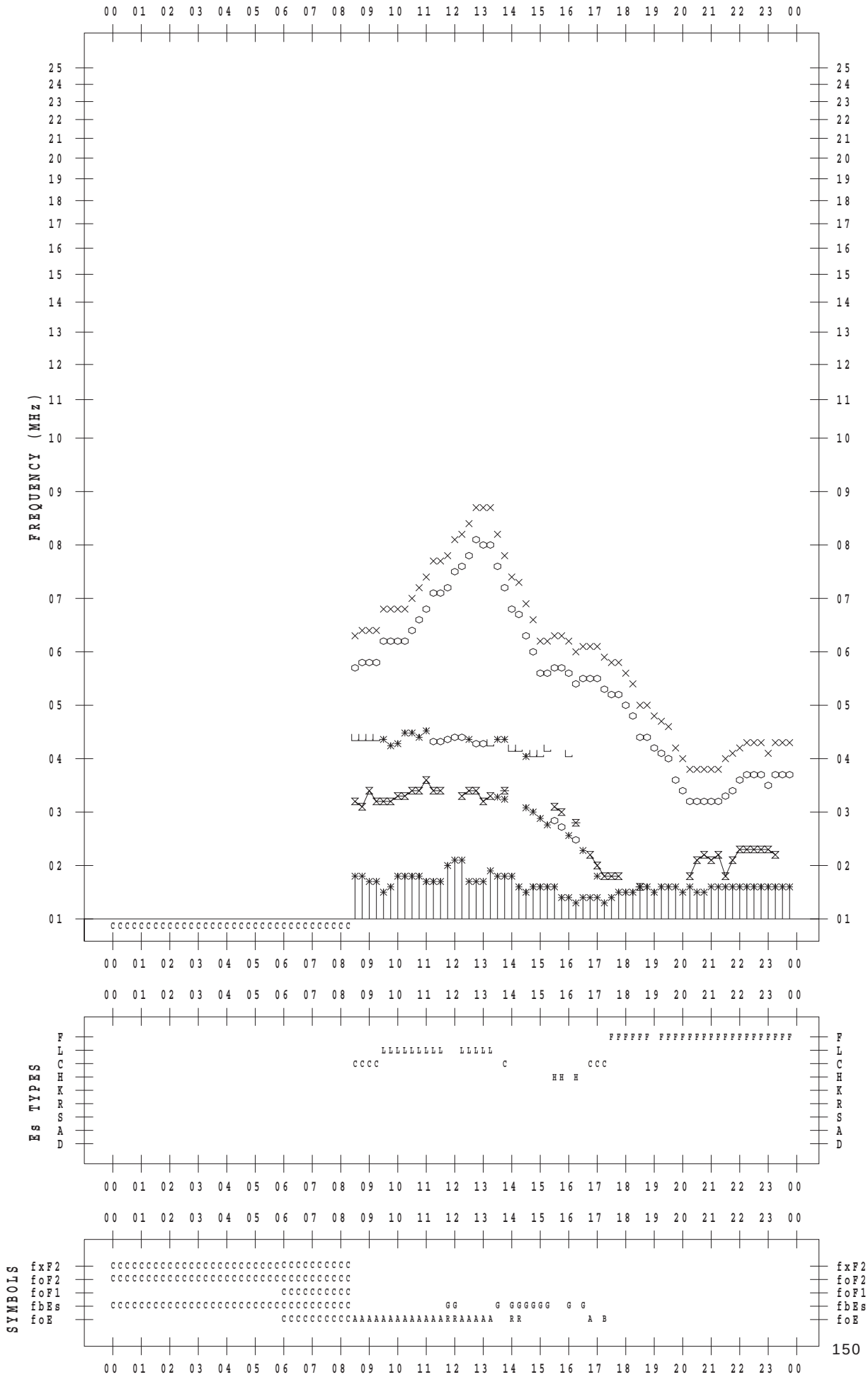
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/12

135 °E MEAN TIME



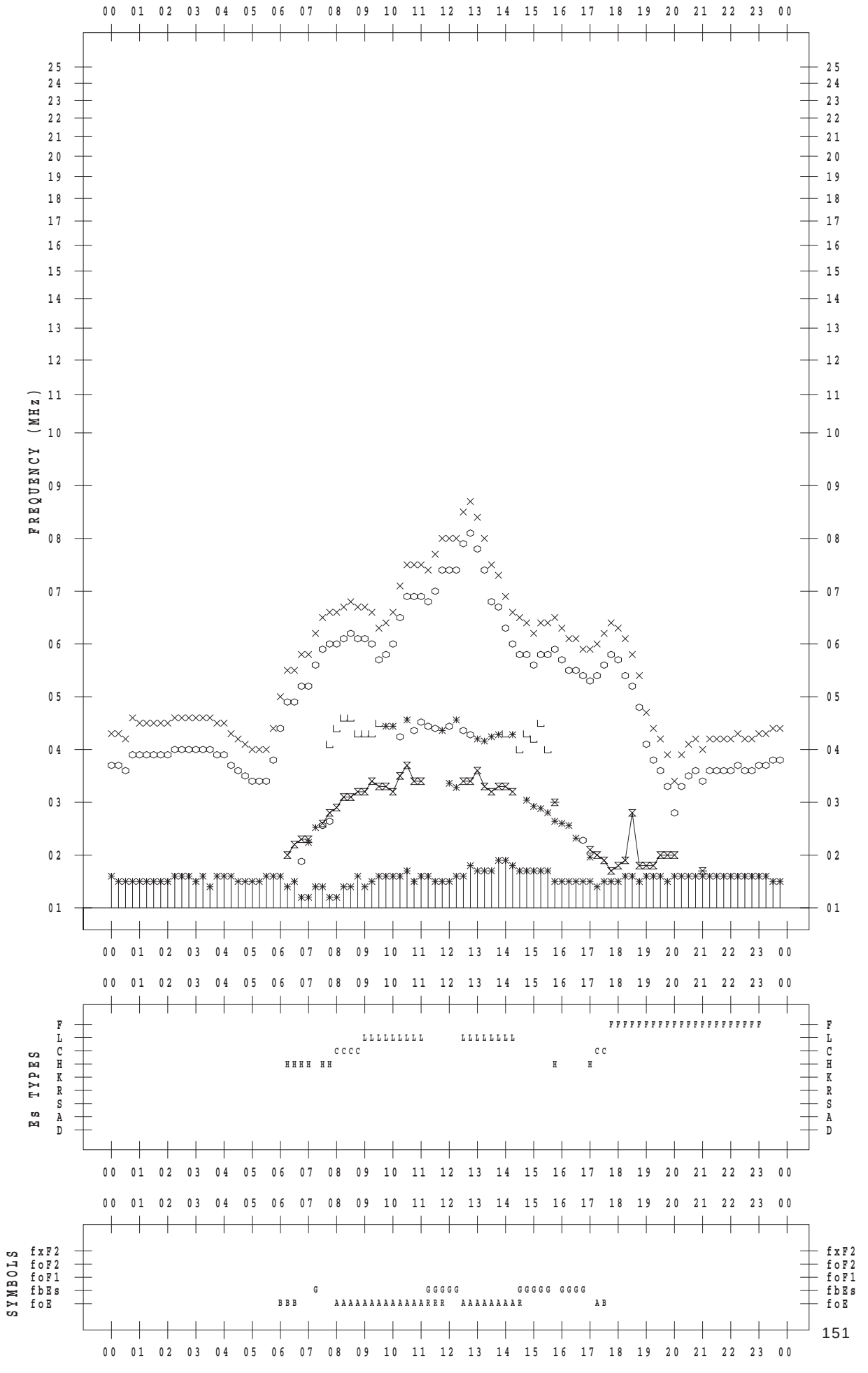
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/13

135 °E MEAN TIME



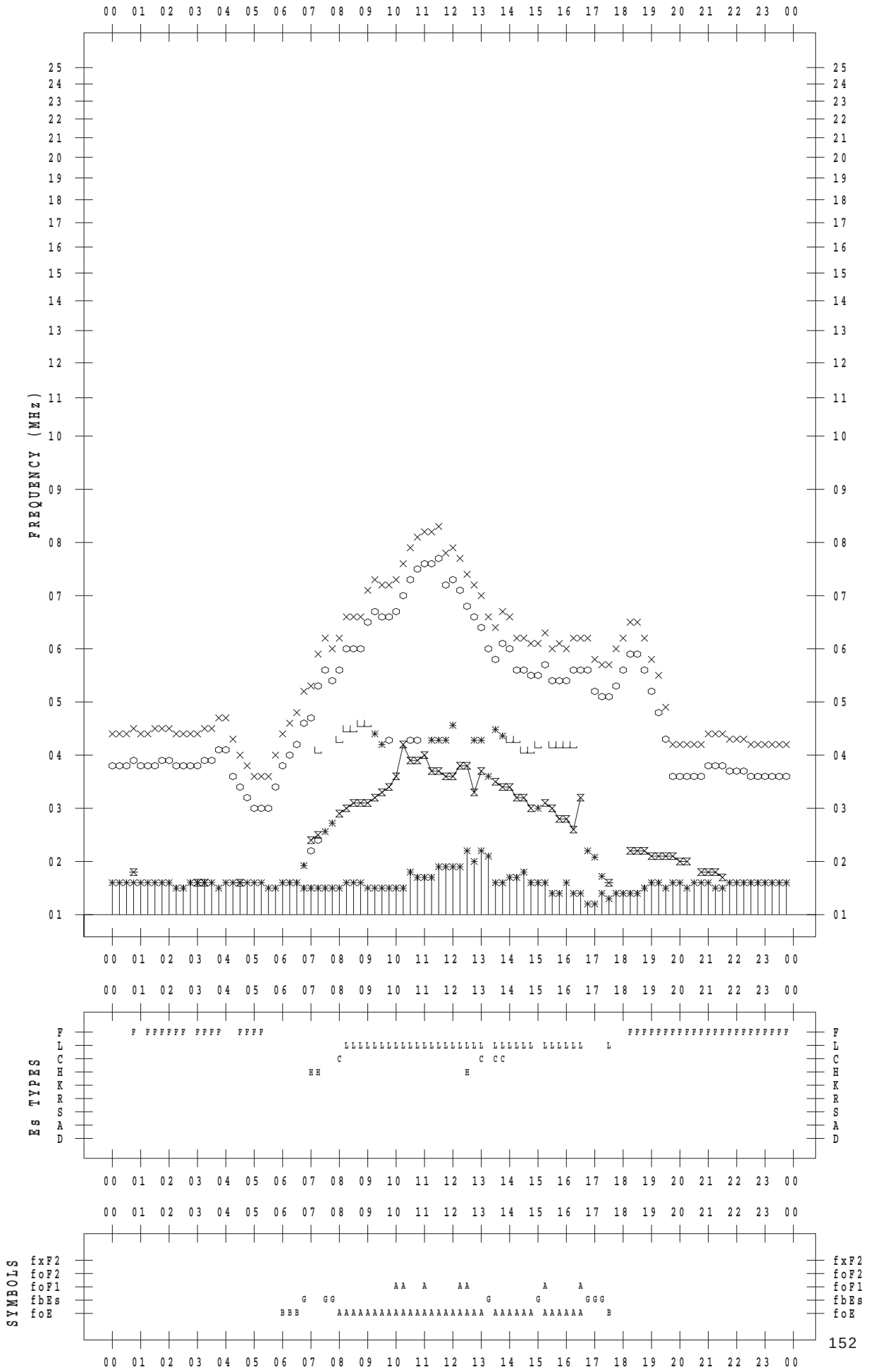
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/14

135 °E MEAN TIME



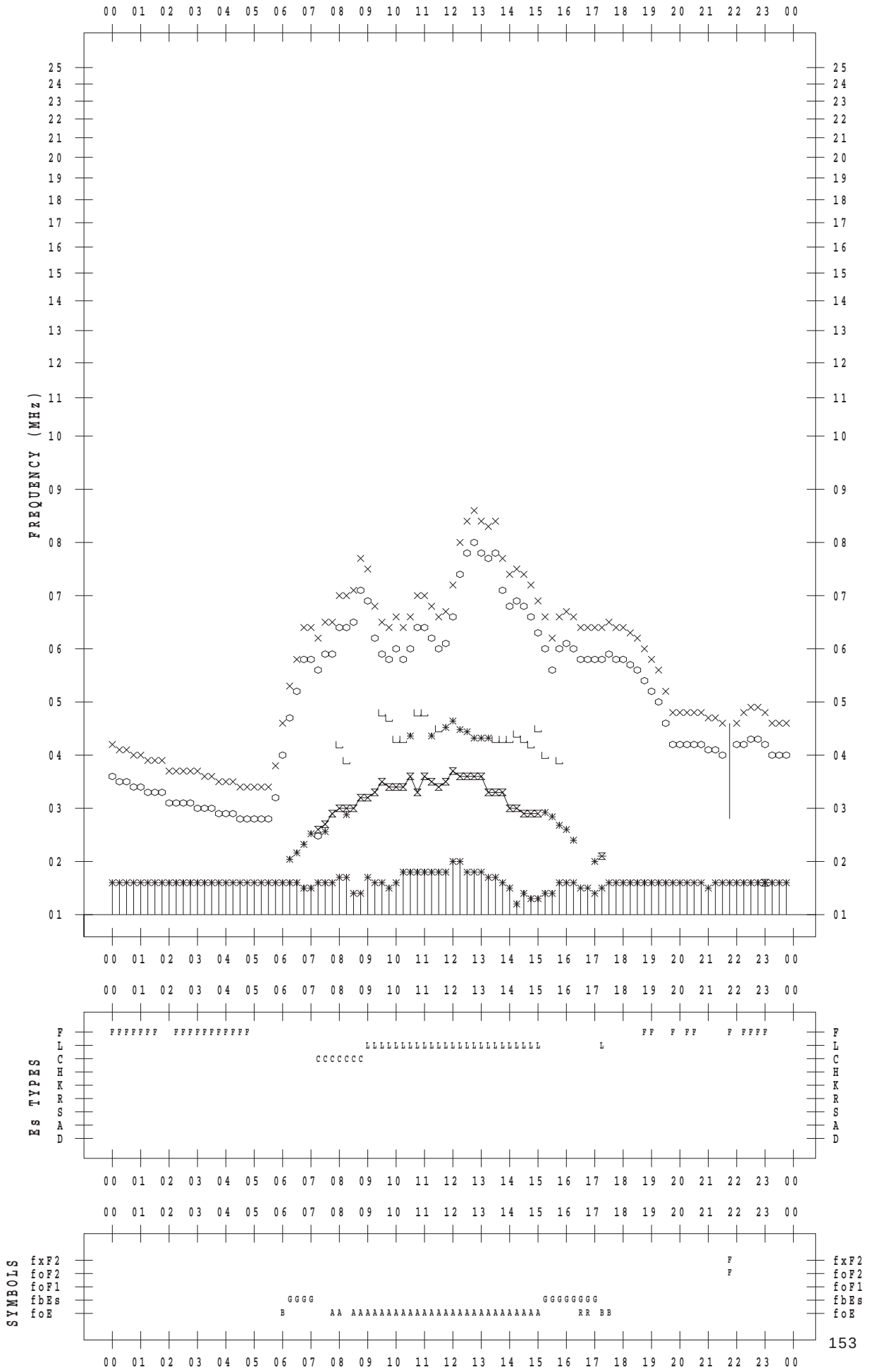
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/15

135 °E MEAN TIME



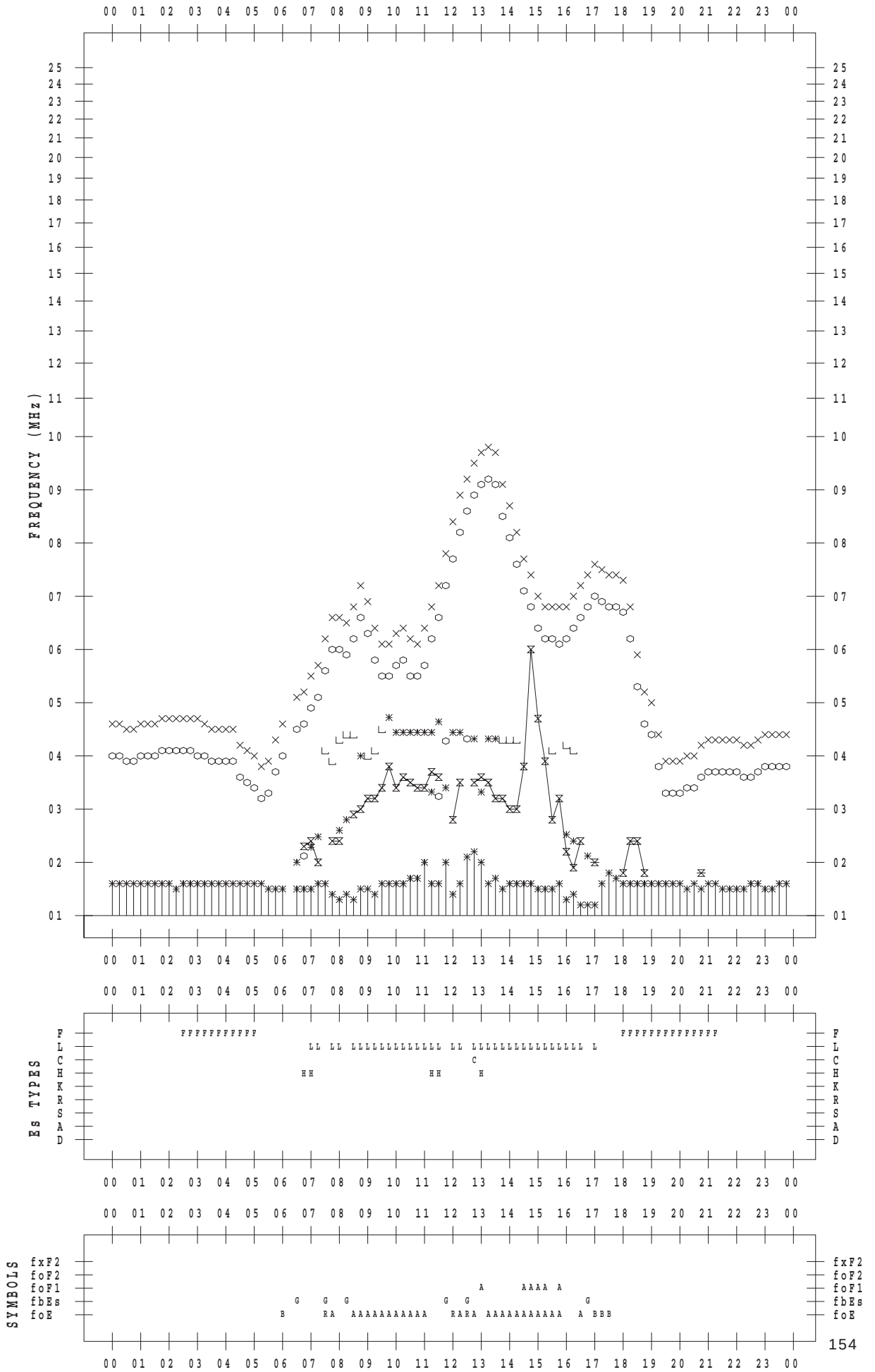
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/16

135 °E MEAN TIME



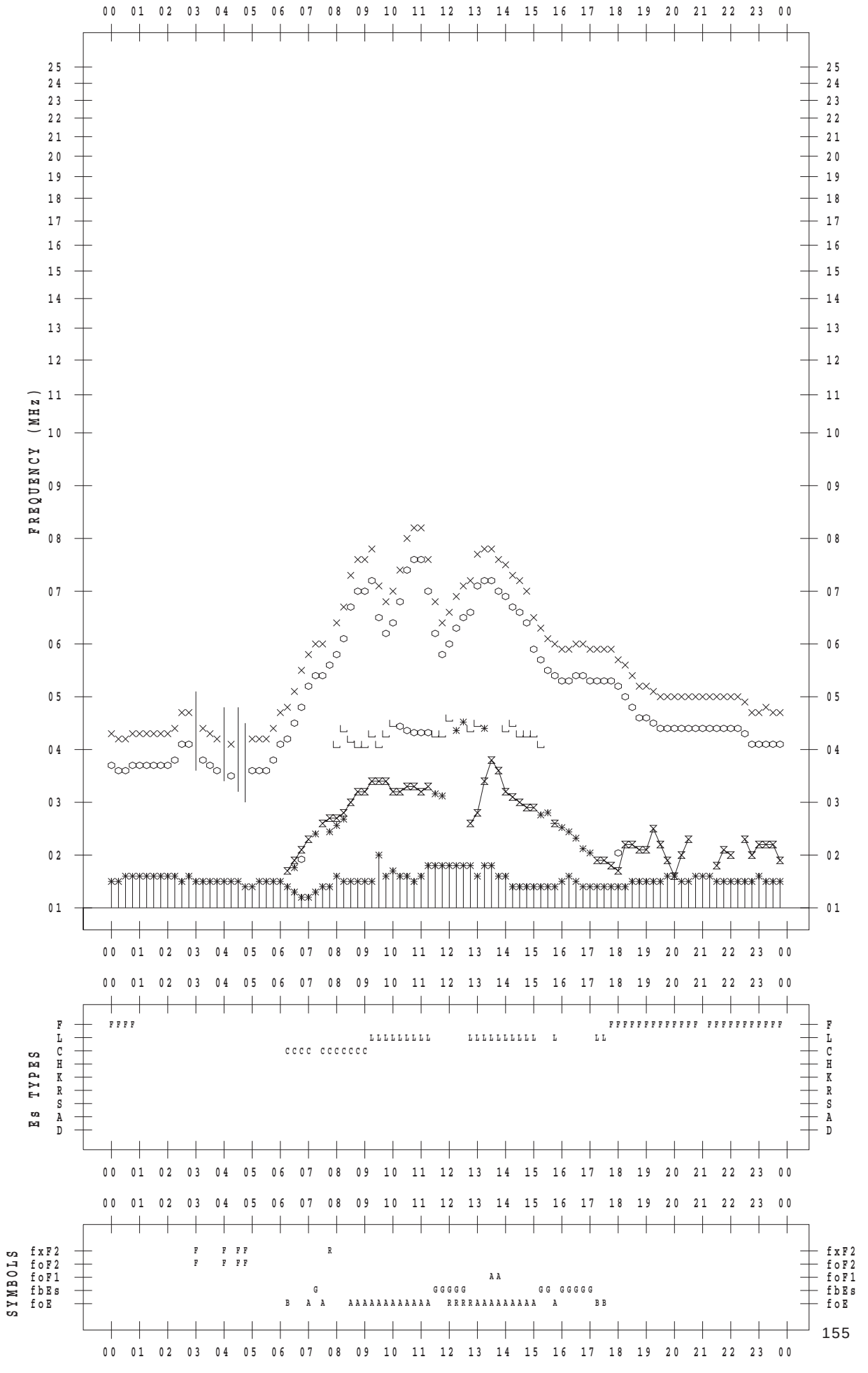
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/17

135 °E MEAN TIME



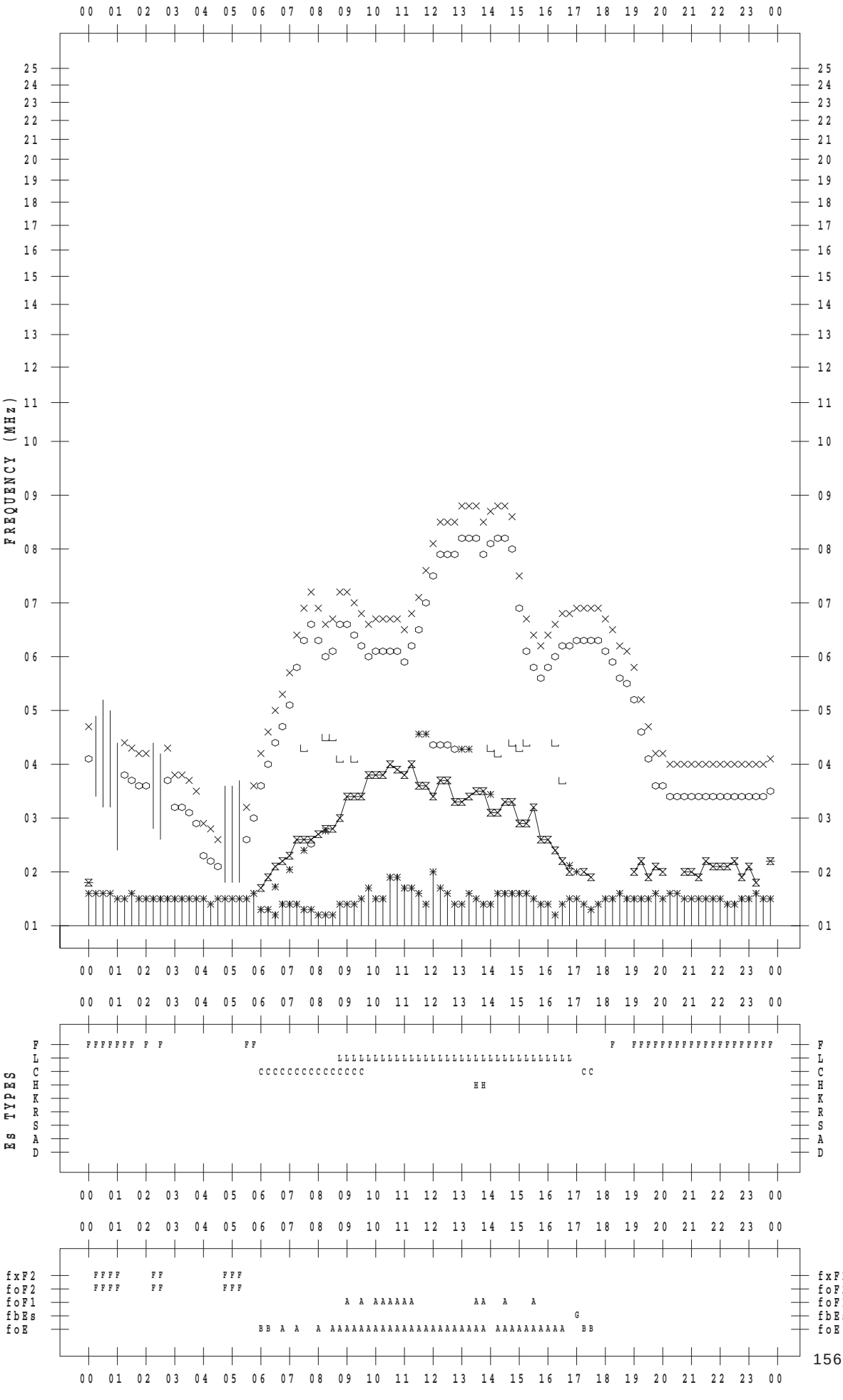
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/18

135 °E MEAN TIME



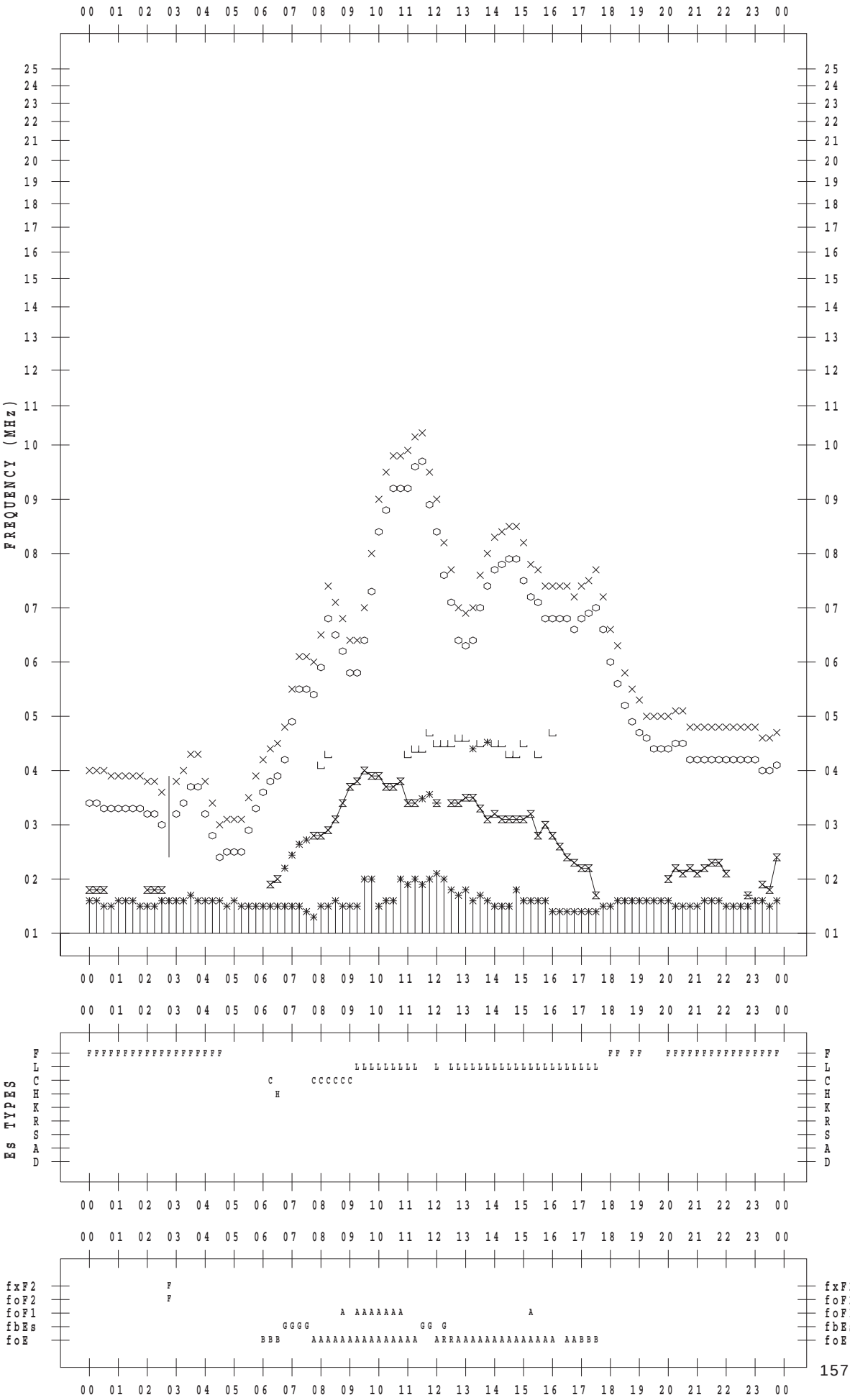
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/19

135 °E MEAN TIME



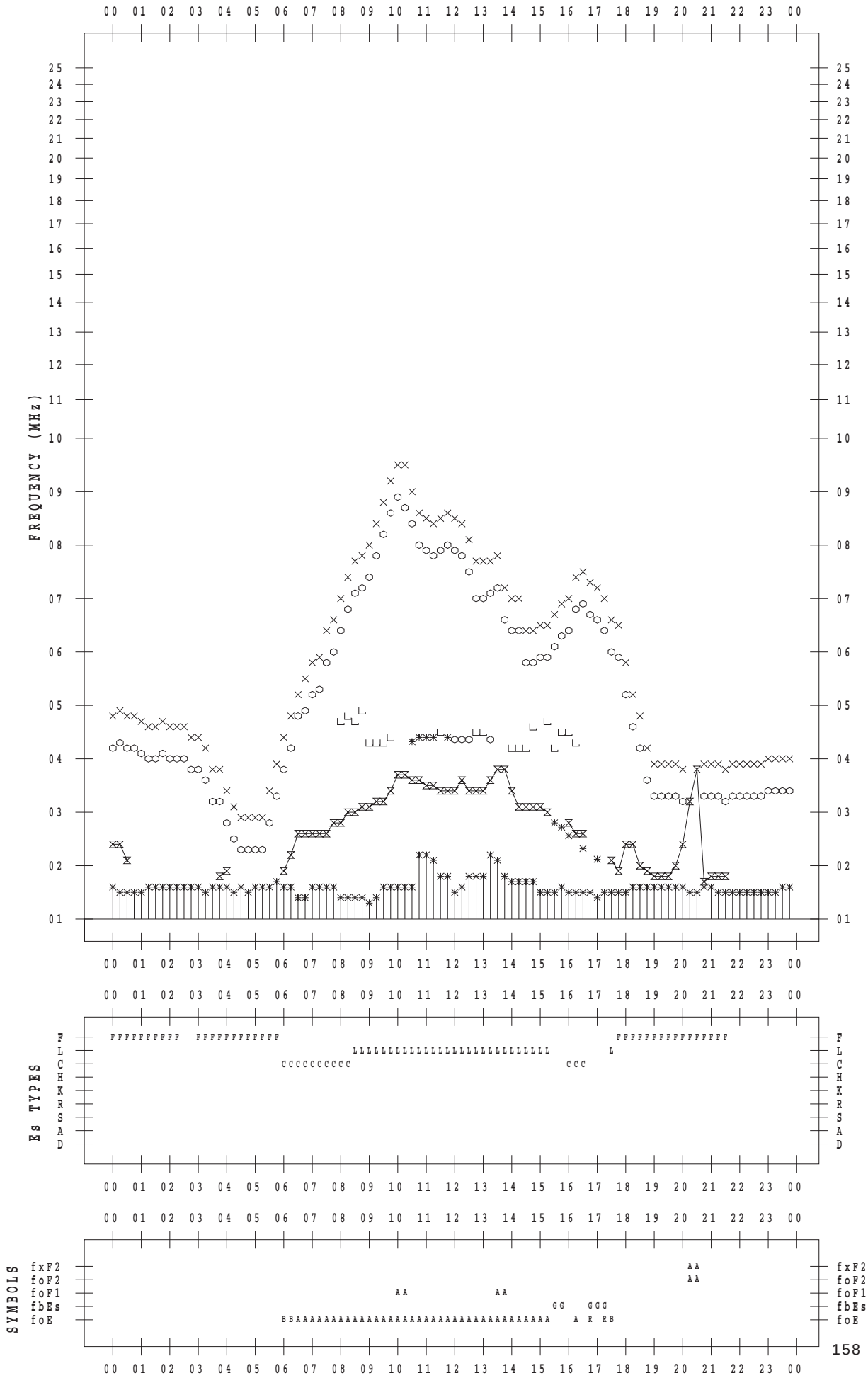
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/20

135 °E MEAN TIME



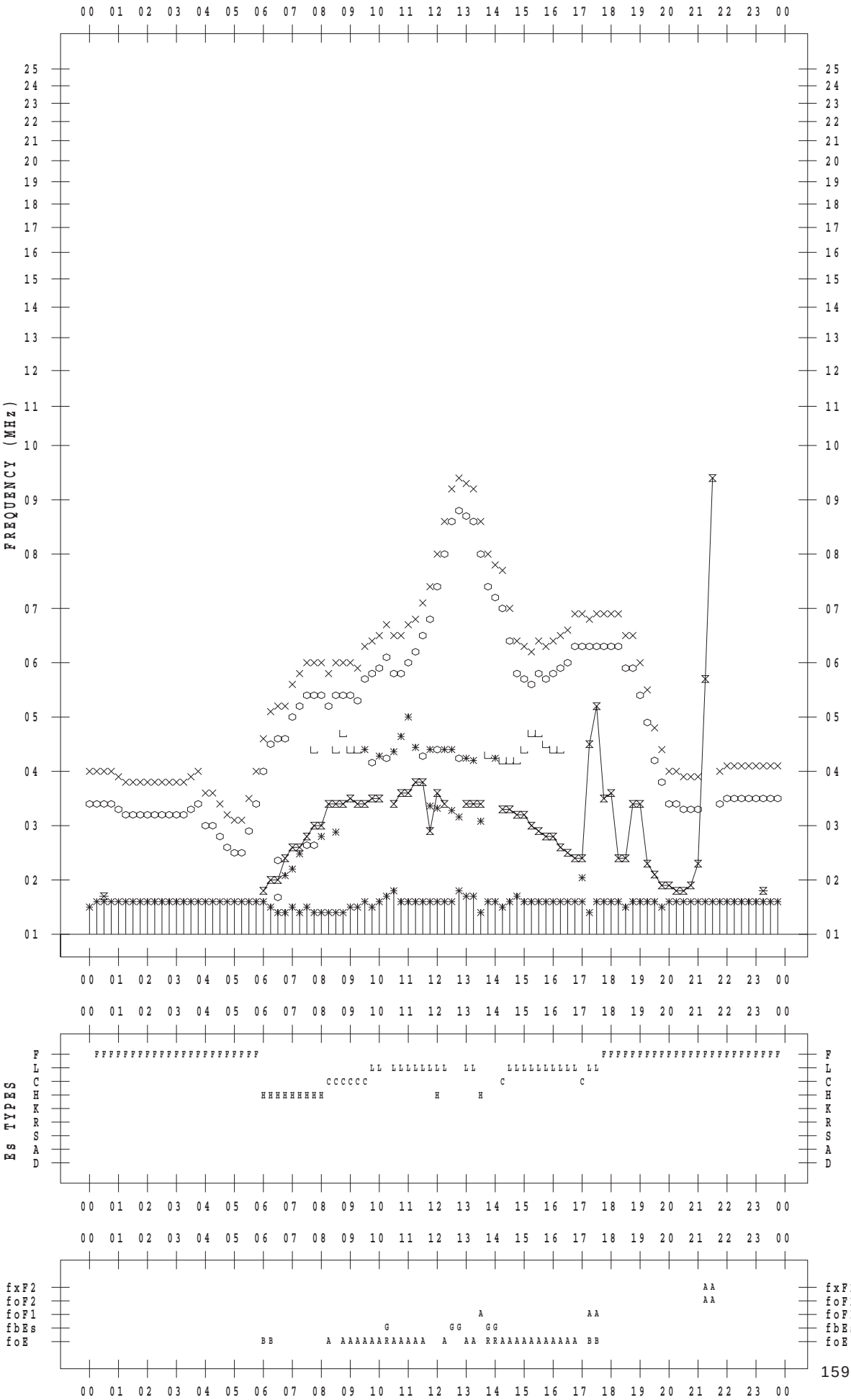
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/21

135 °E MEAN TIME



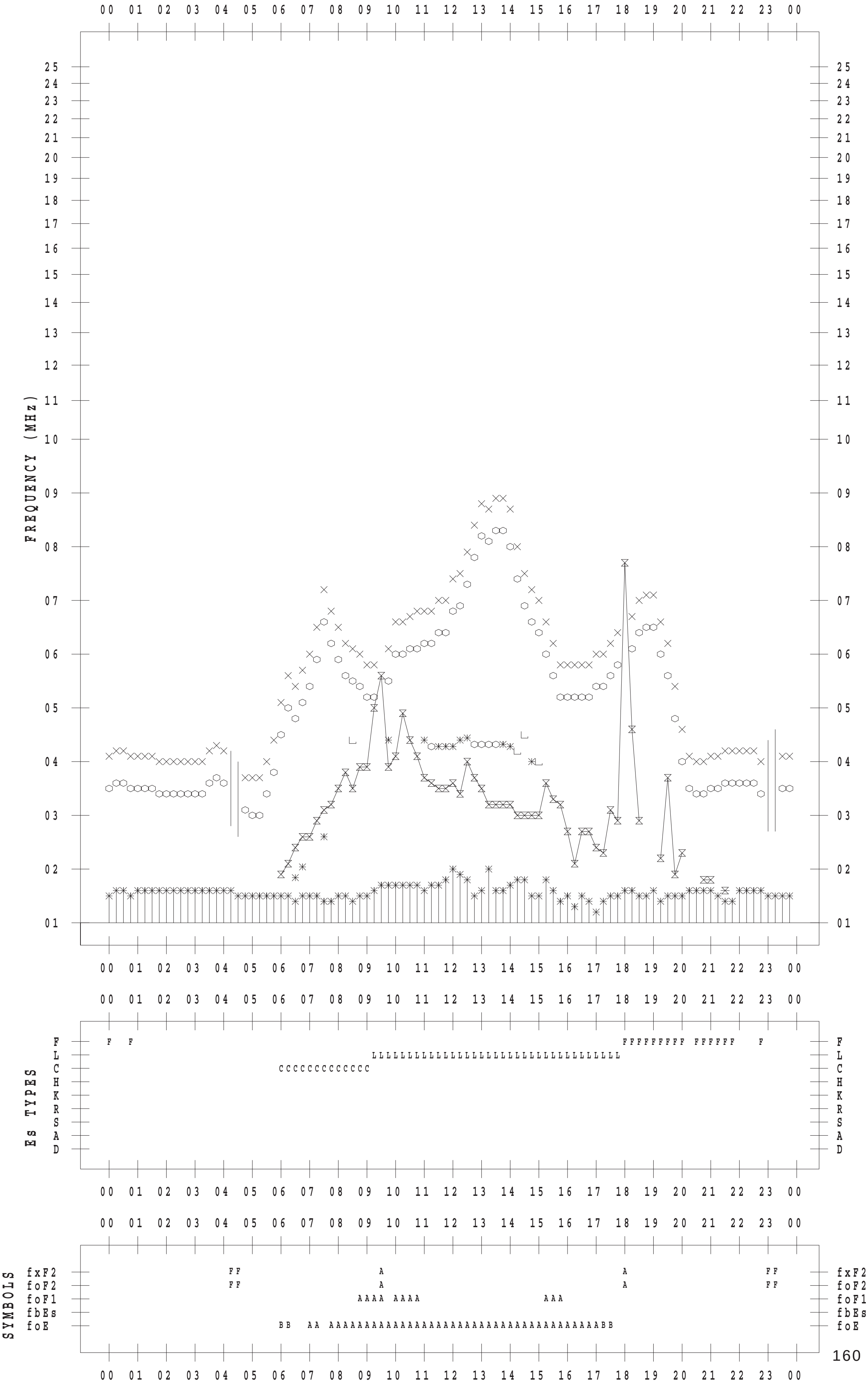
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/22

135 °E MEAN TIME



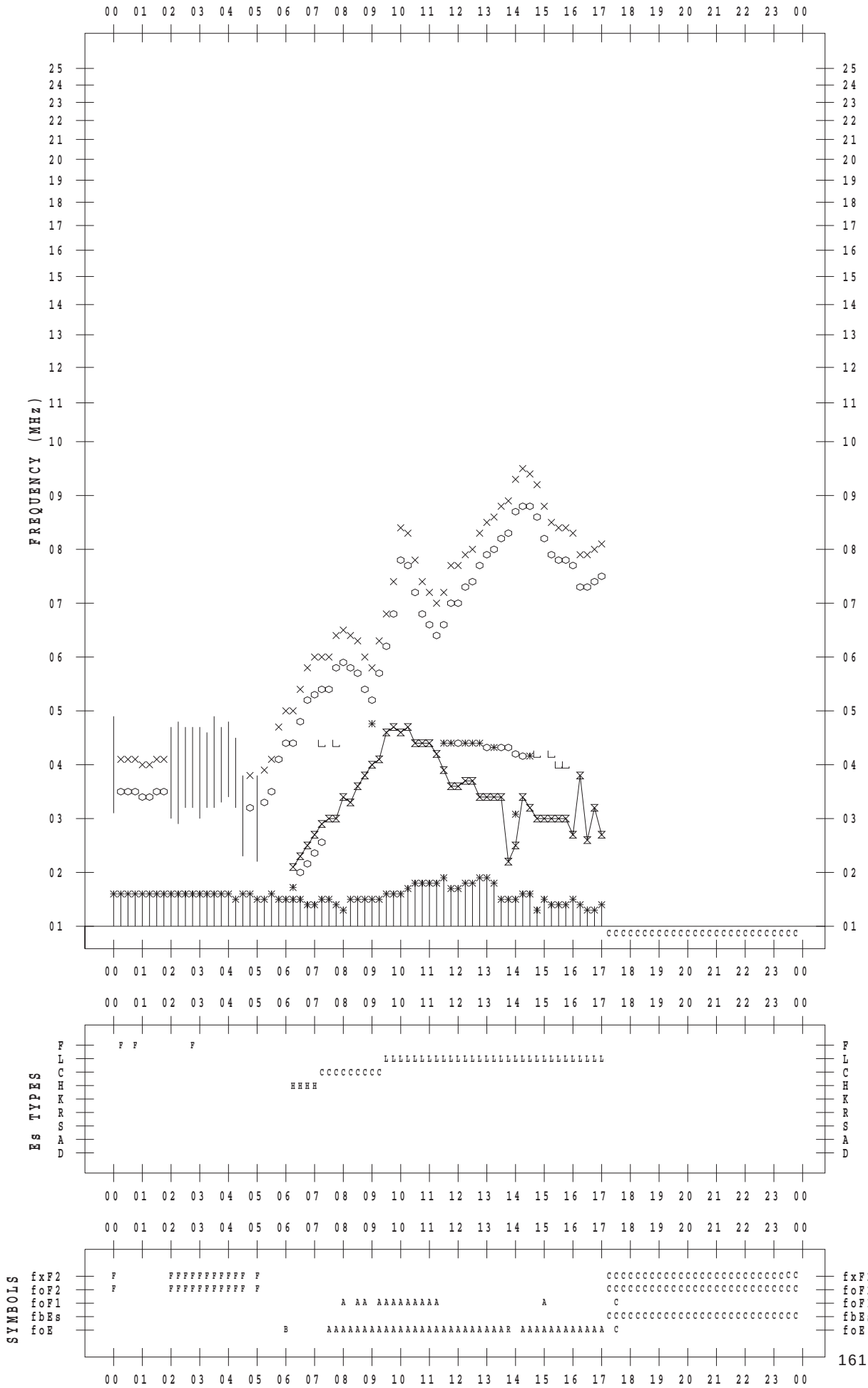
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/23

135 °E MEAN TIME



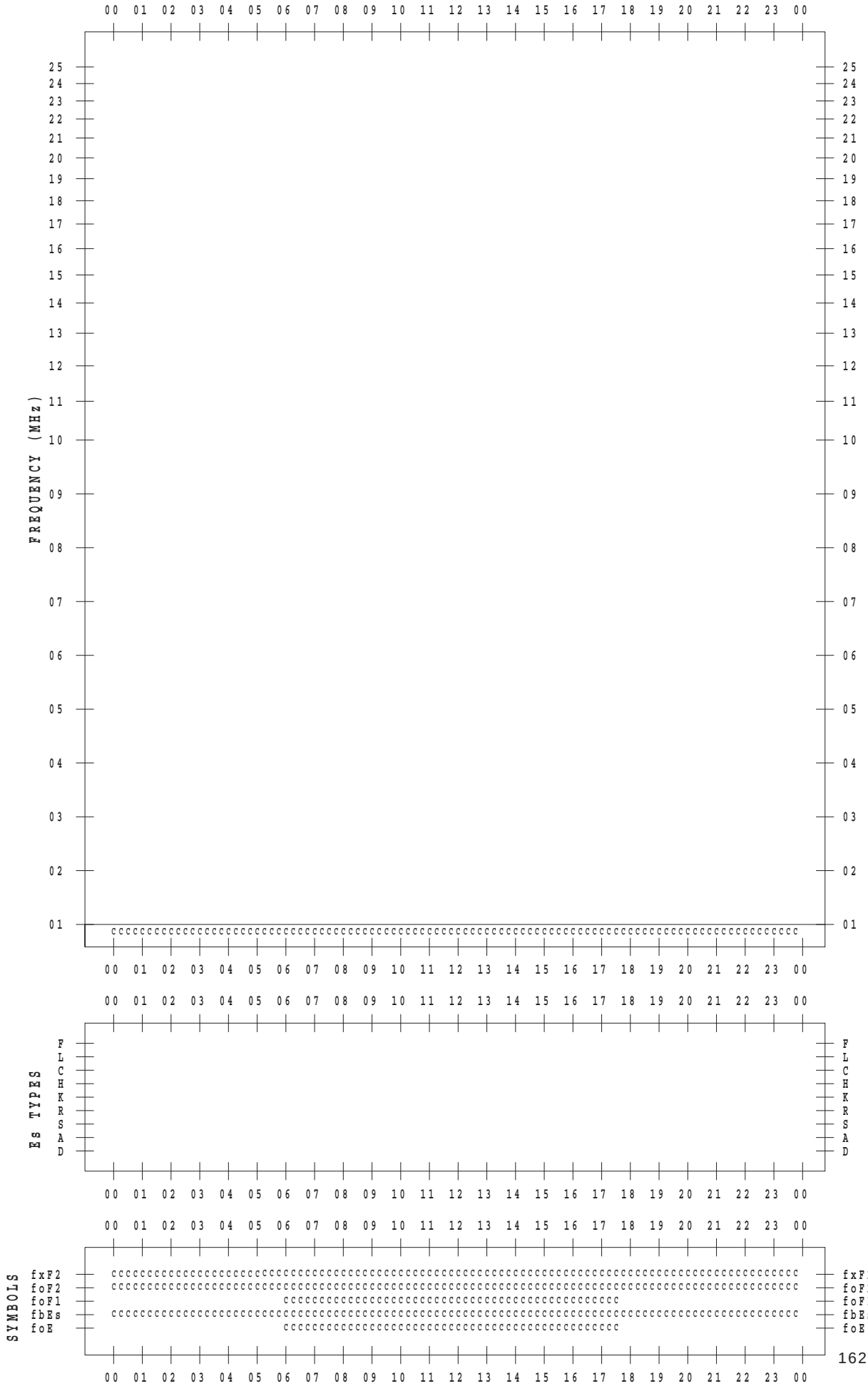
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/24

135 °E MEAN TIME



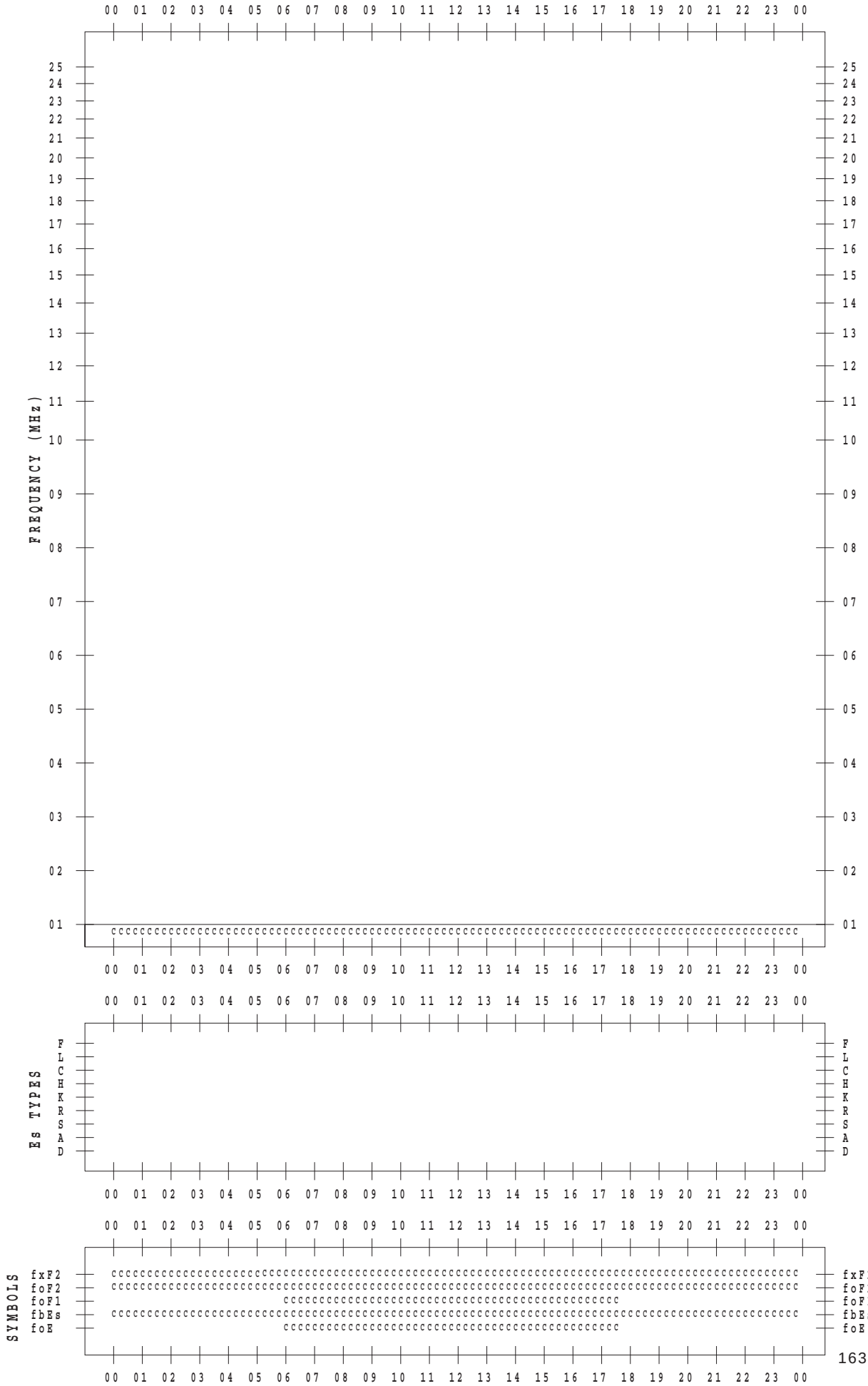
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/25

135 °E MEAN TIME



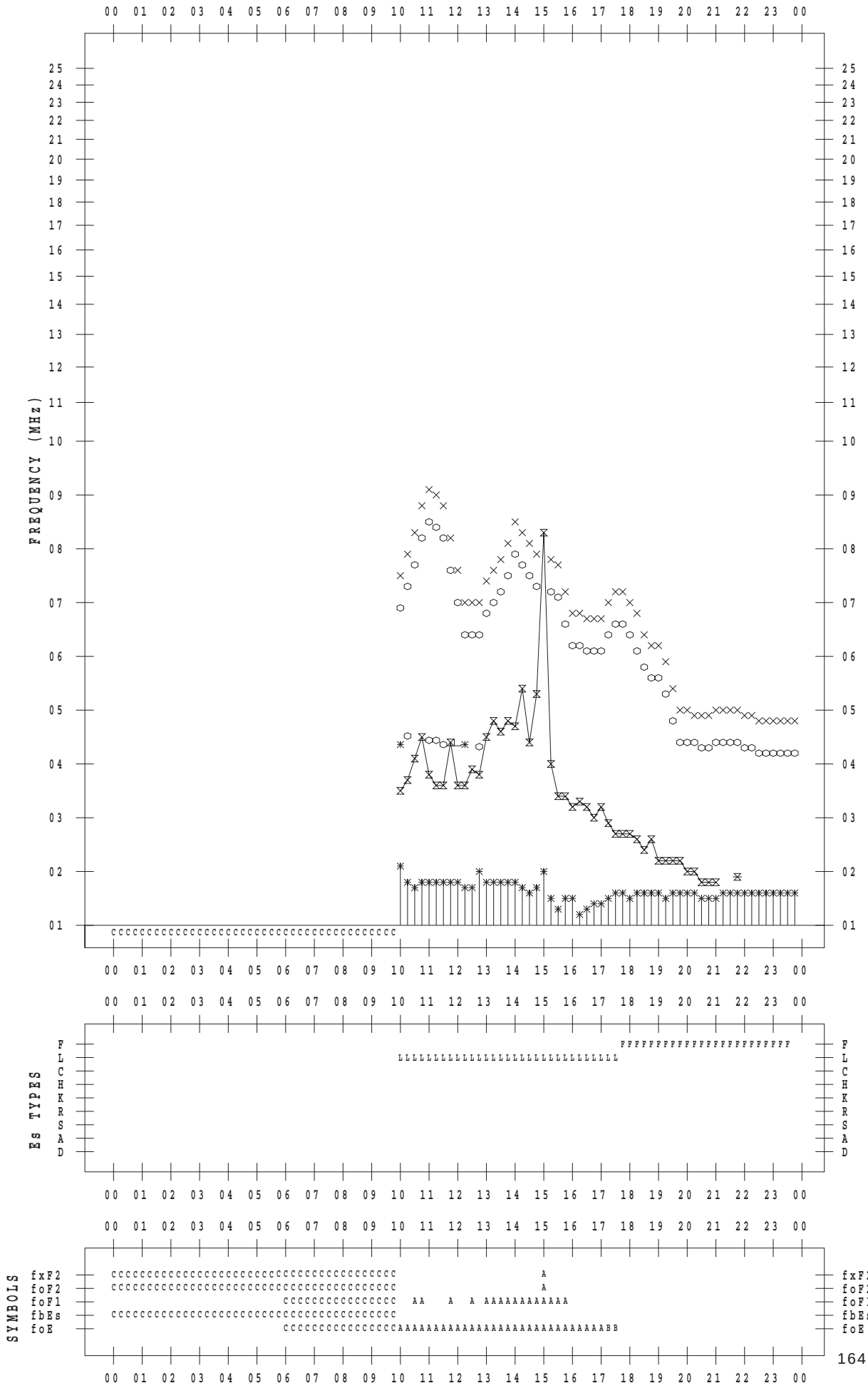
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/26

135 °E MEAN TIME



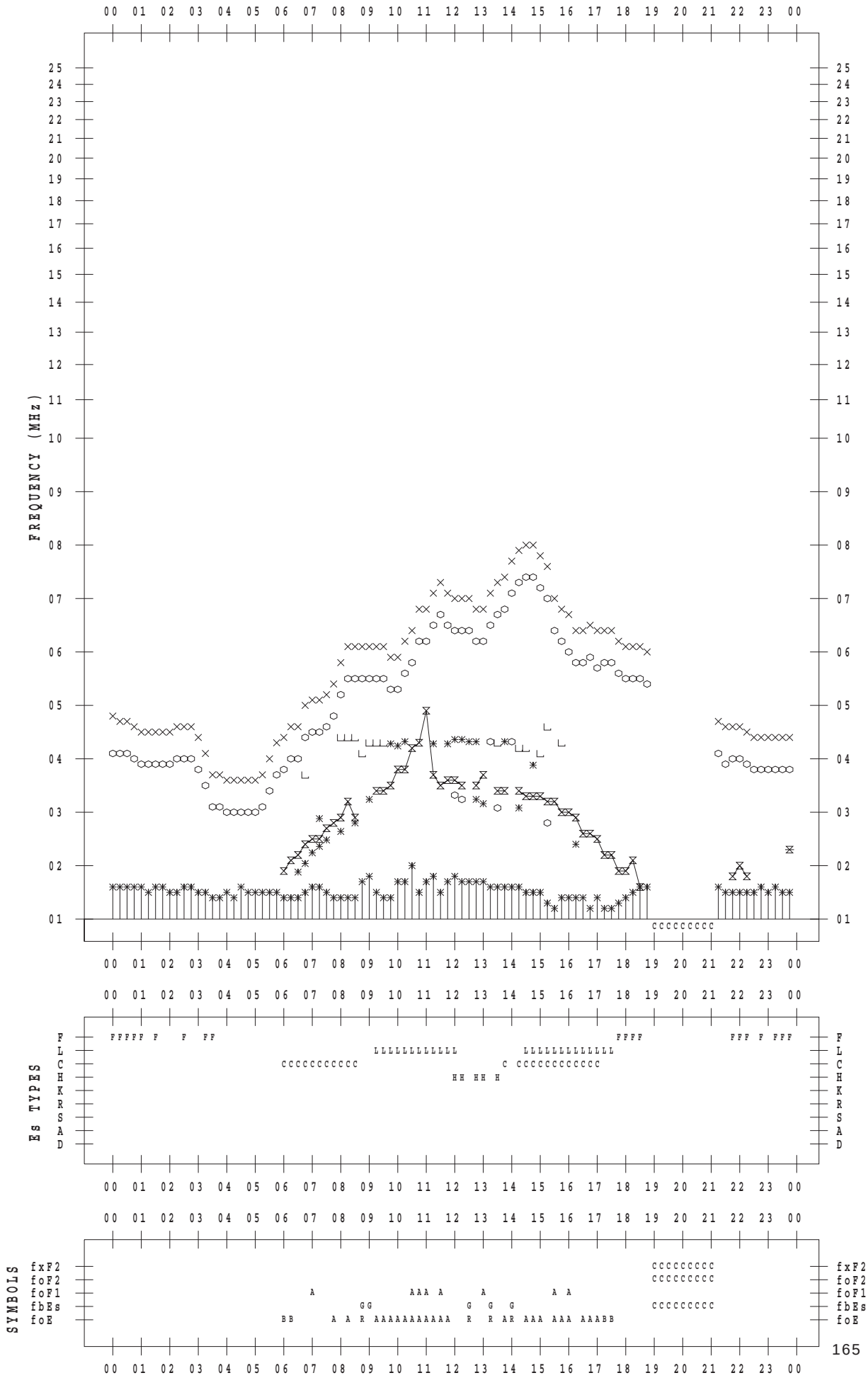
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/27

135 °E MEAN TIME



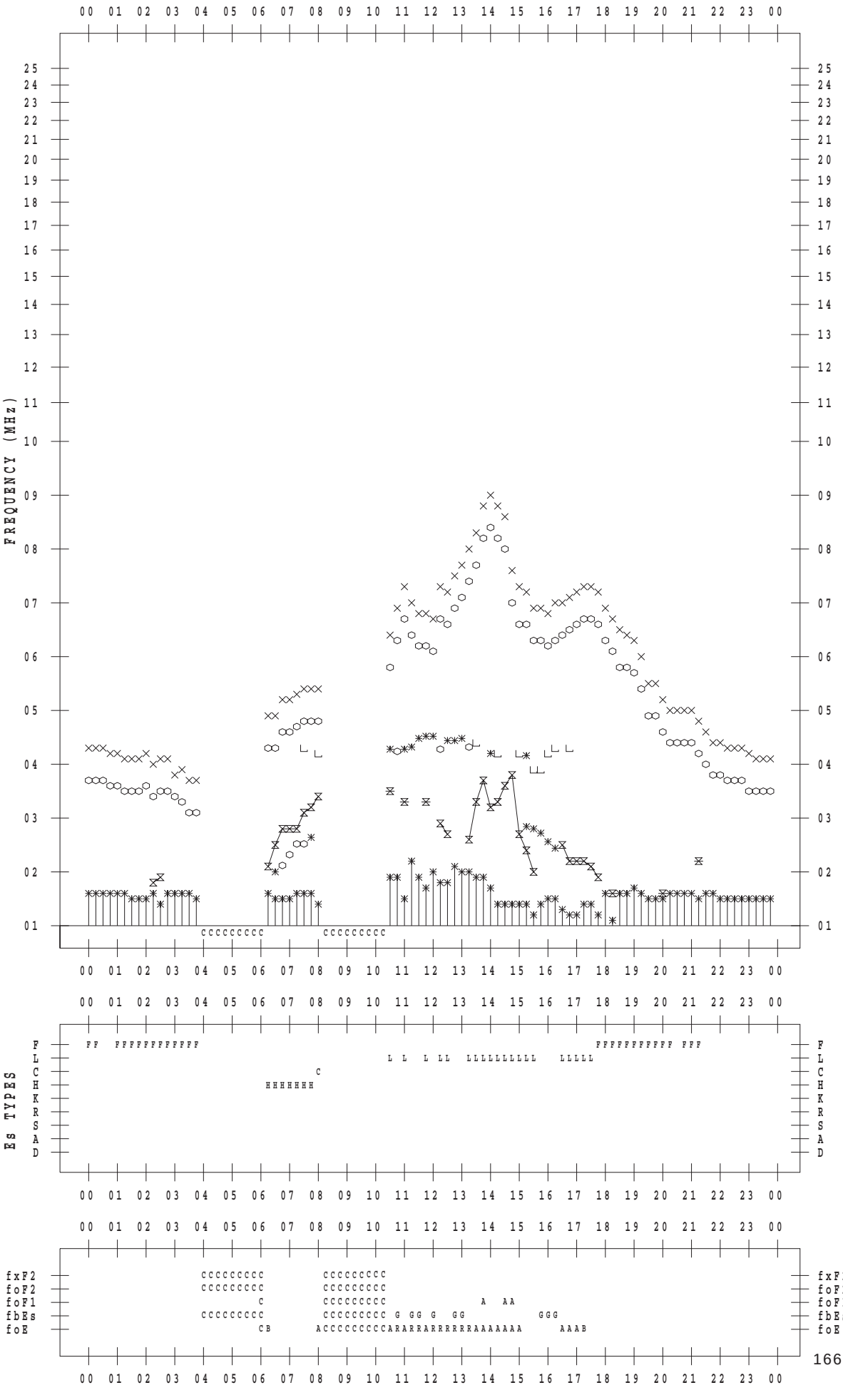
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/28

135 °E MEAN TIME



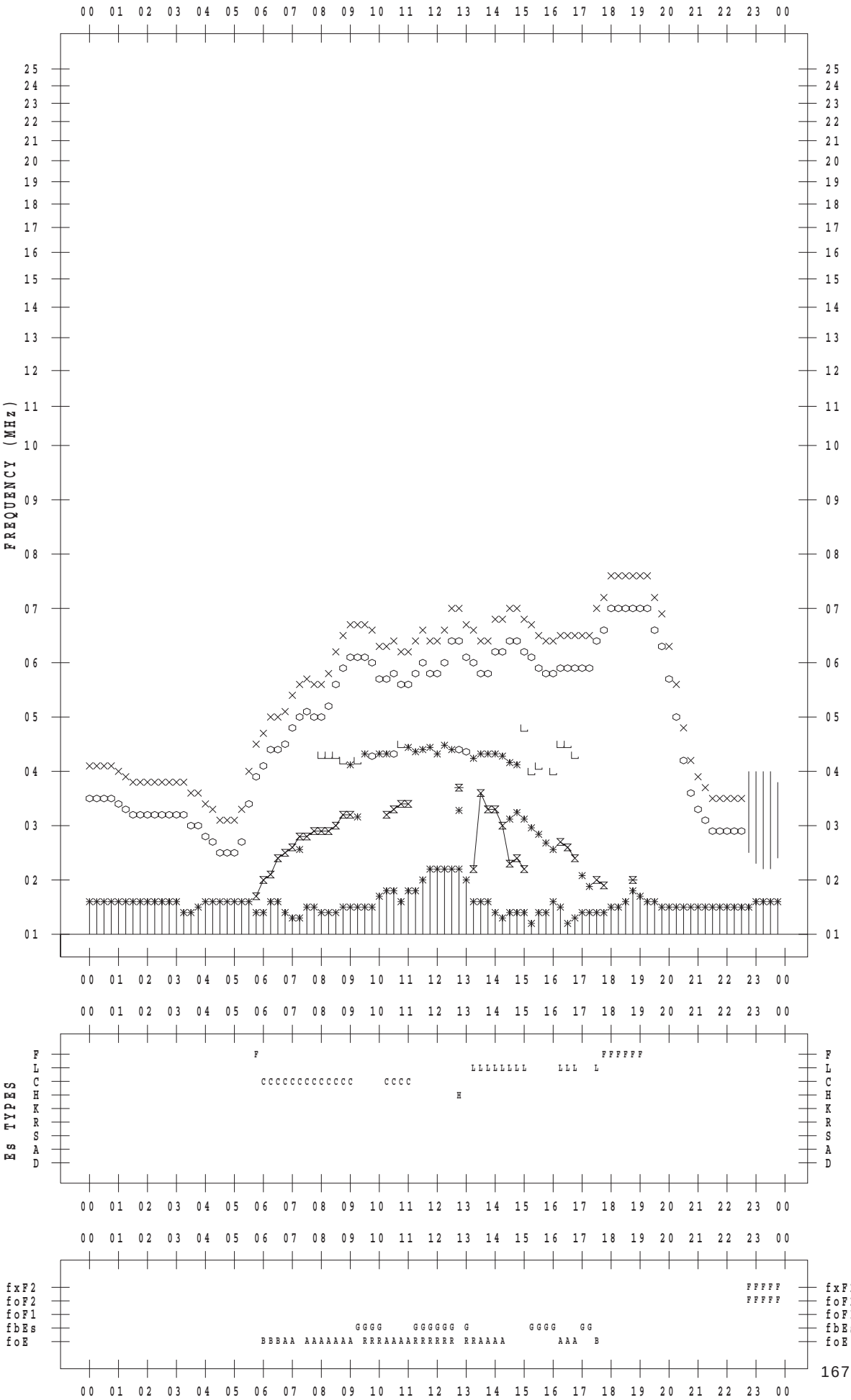
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/29

135 °E MEAN TIME



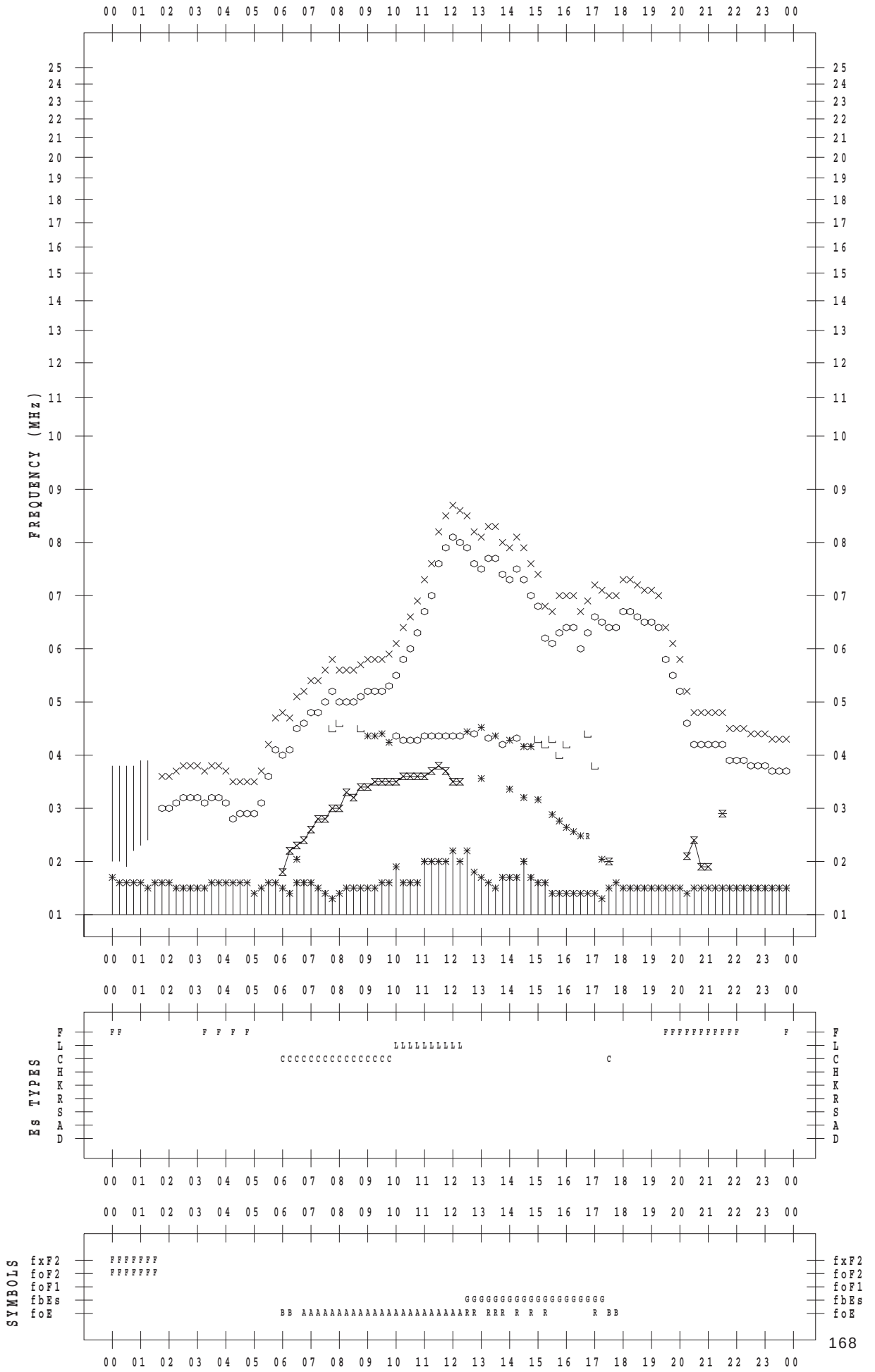
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/30

135 °E MEAN TIME



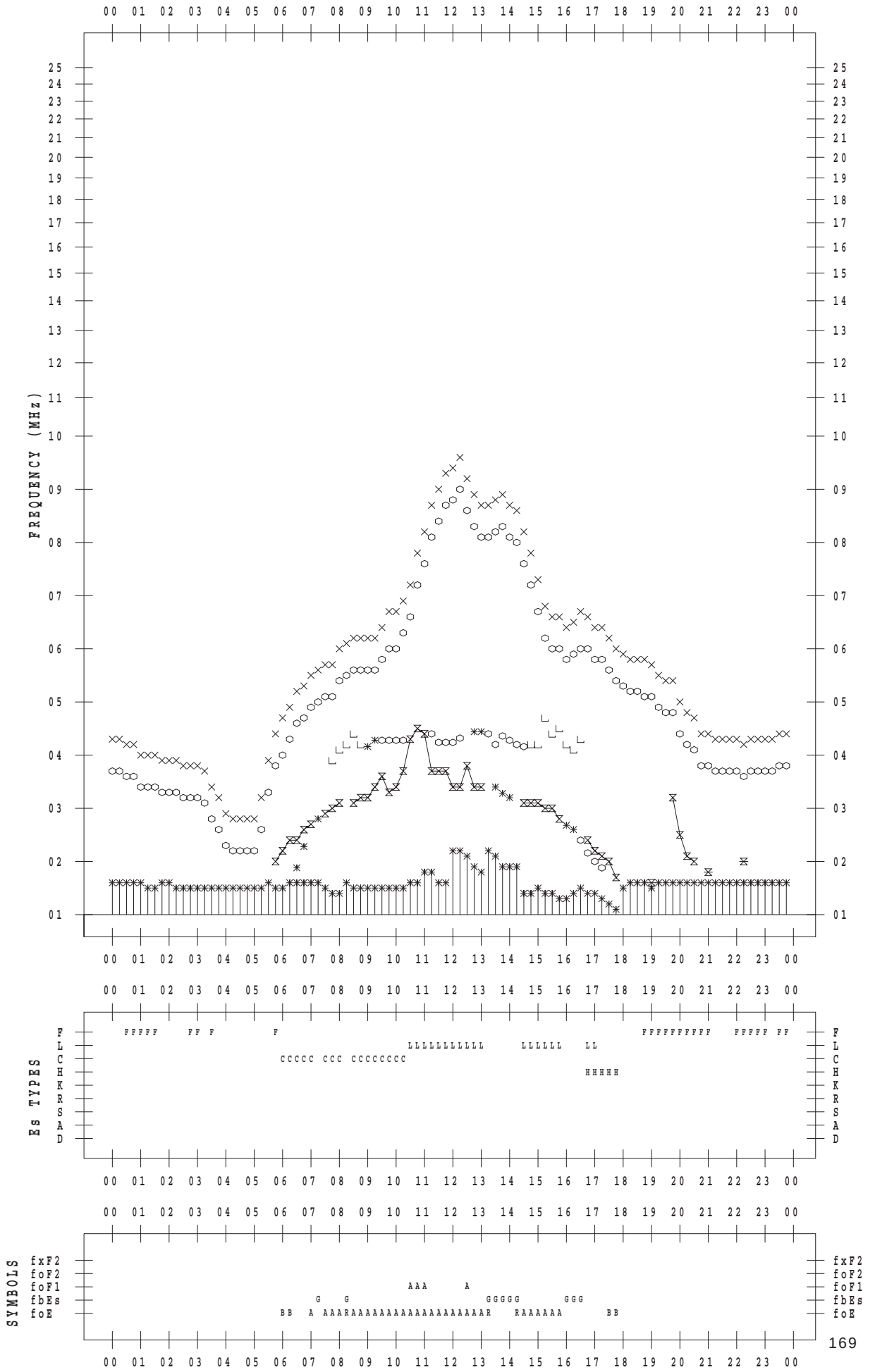
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 3/31

135 °E MEAN TIME



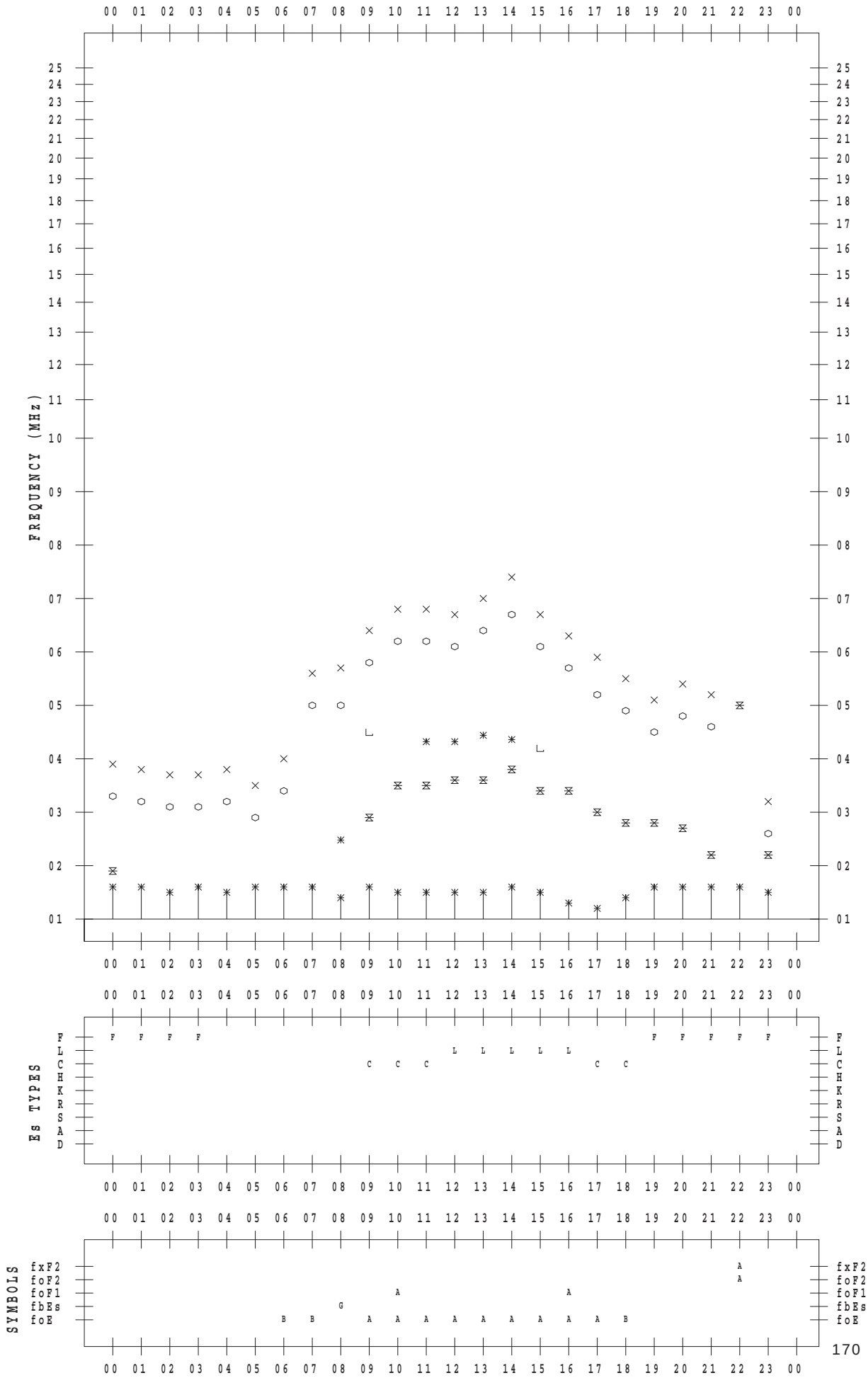
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 1

135 °E MEAN TIME



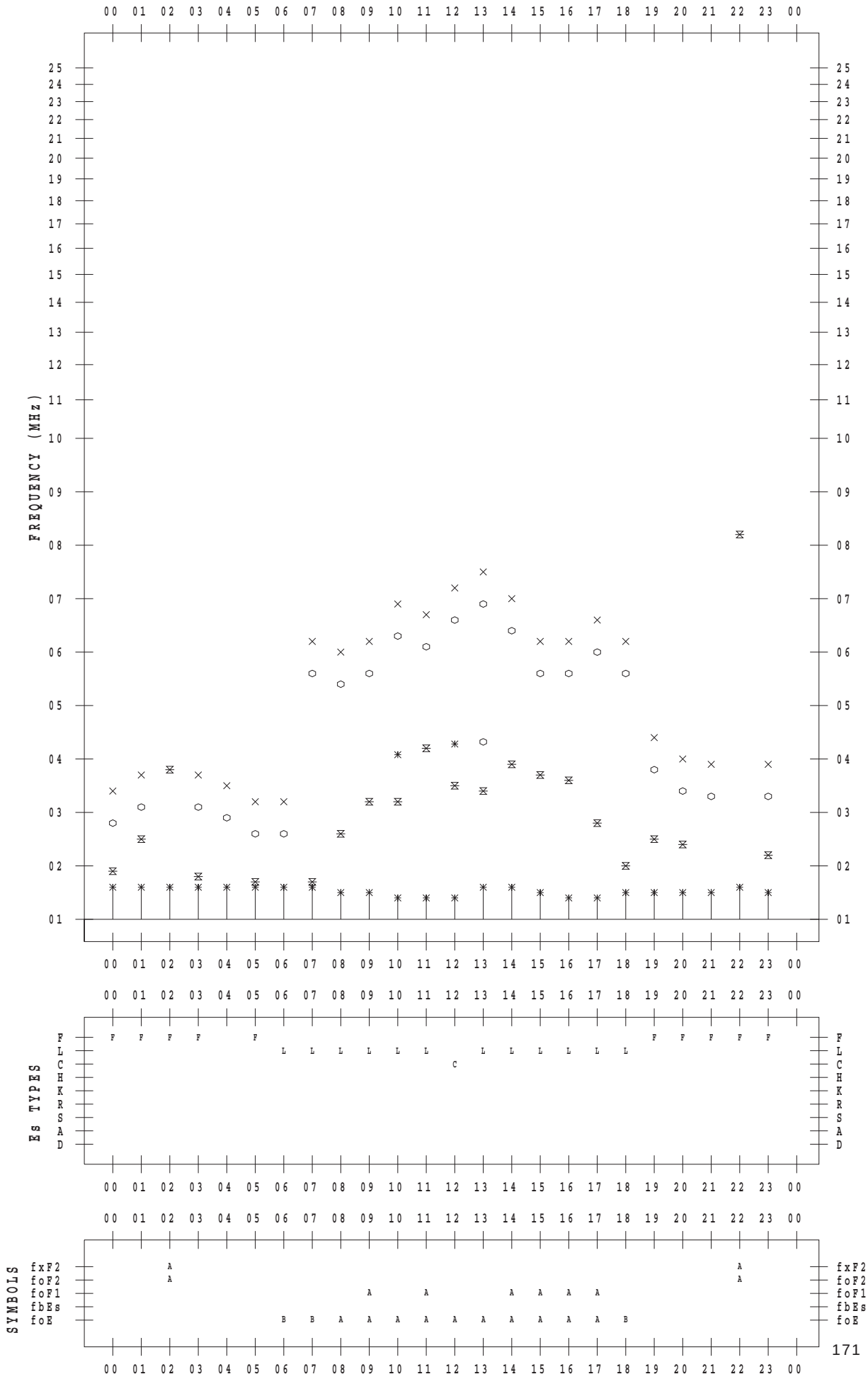
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 2

135 °E MEAN TIME



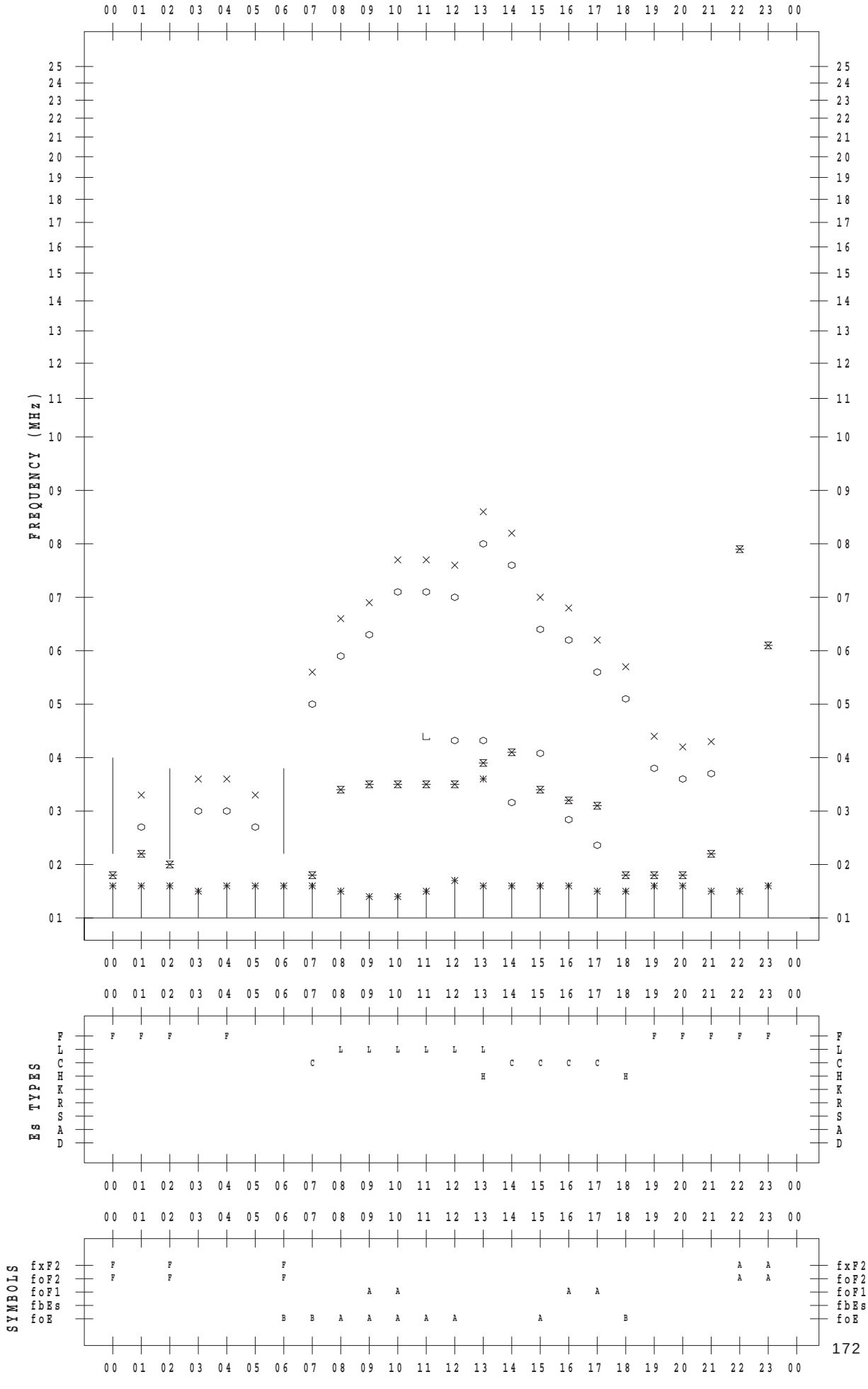
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 3

135 °E MEAN TIME



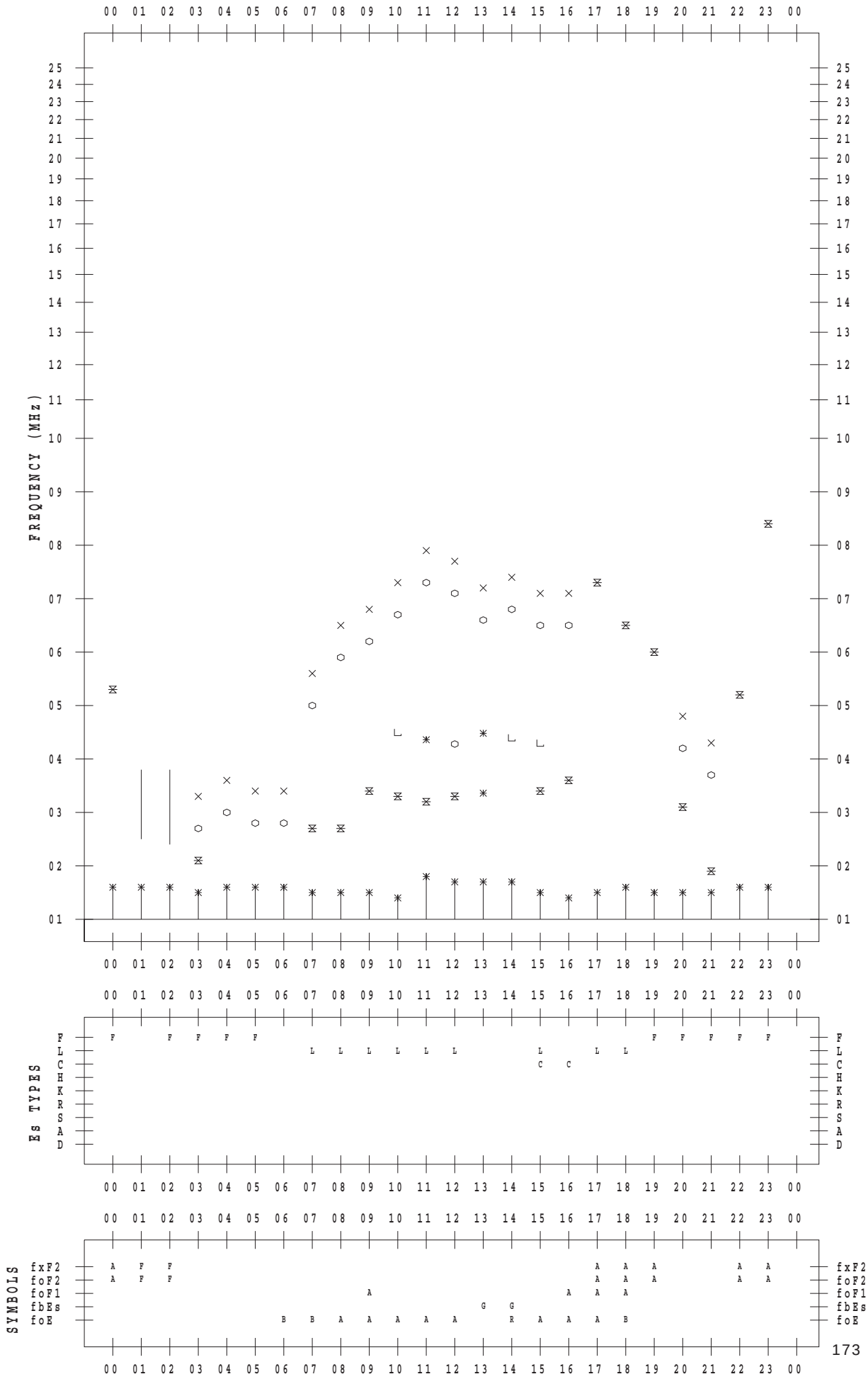
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 4

135 °E MEAN TIME



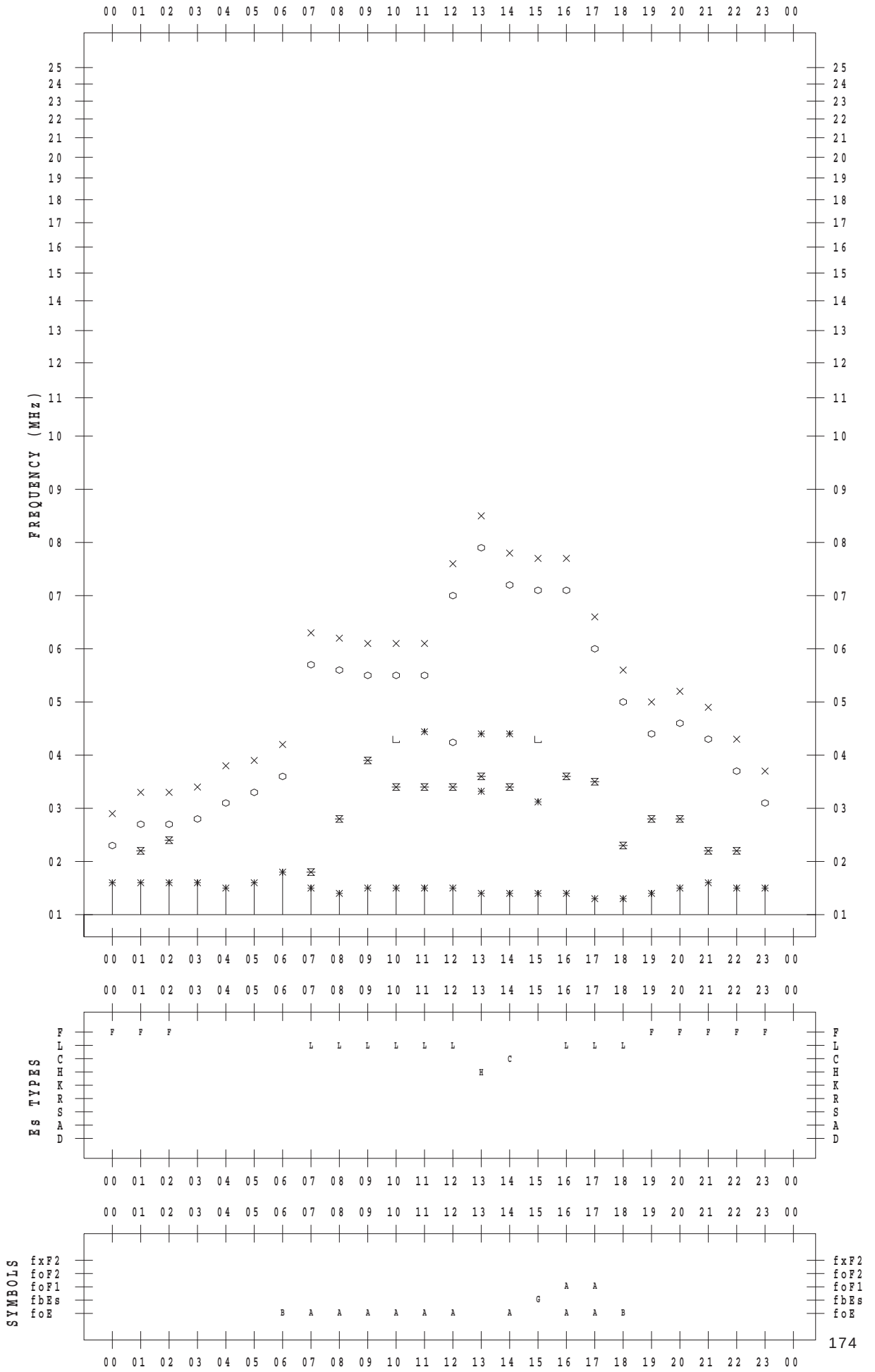
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 5

135 °E MEAN TIME



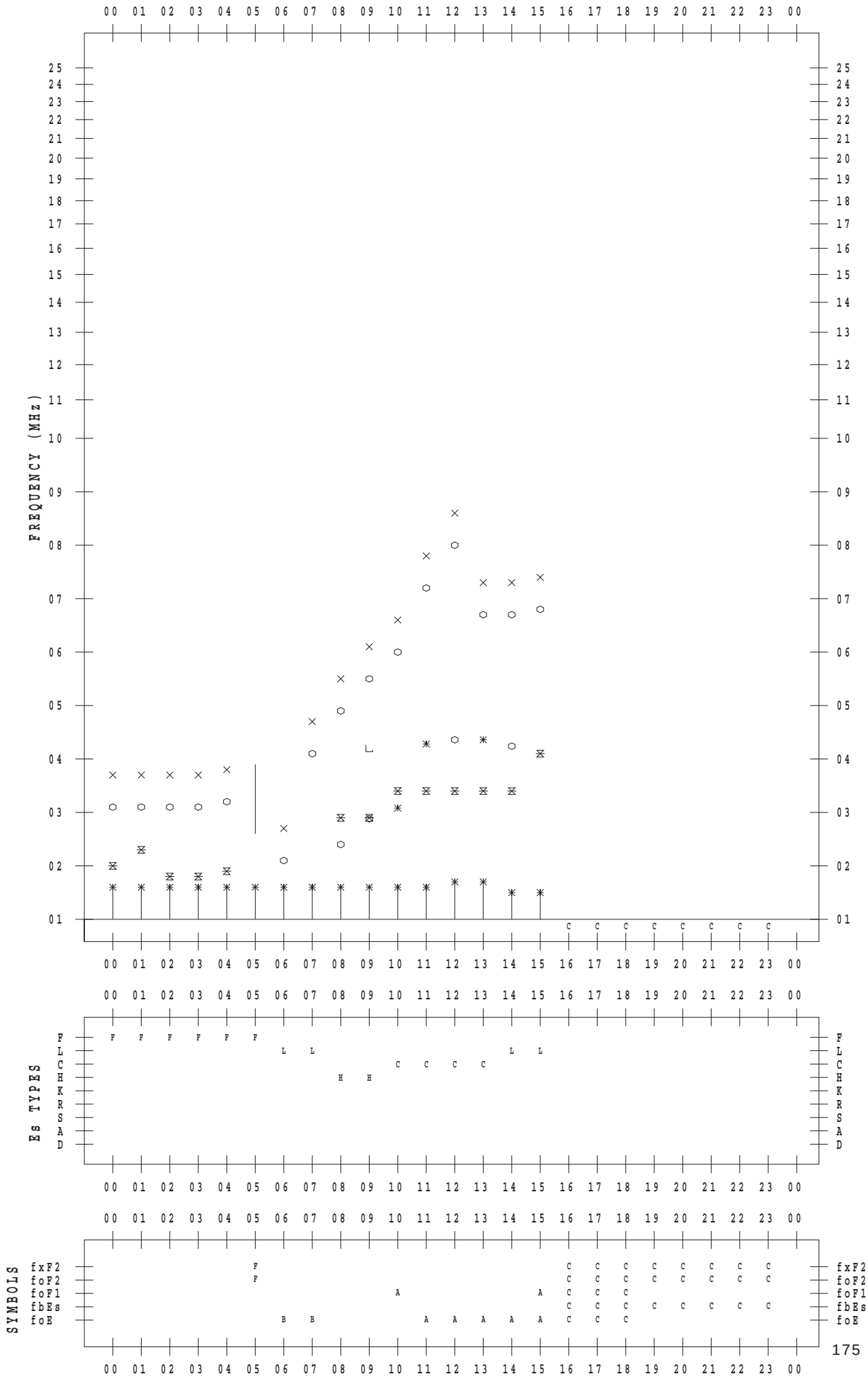
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 6

135 °E MEAN TIME



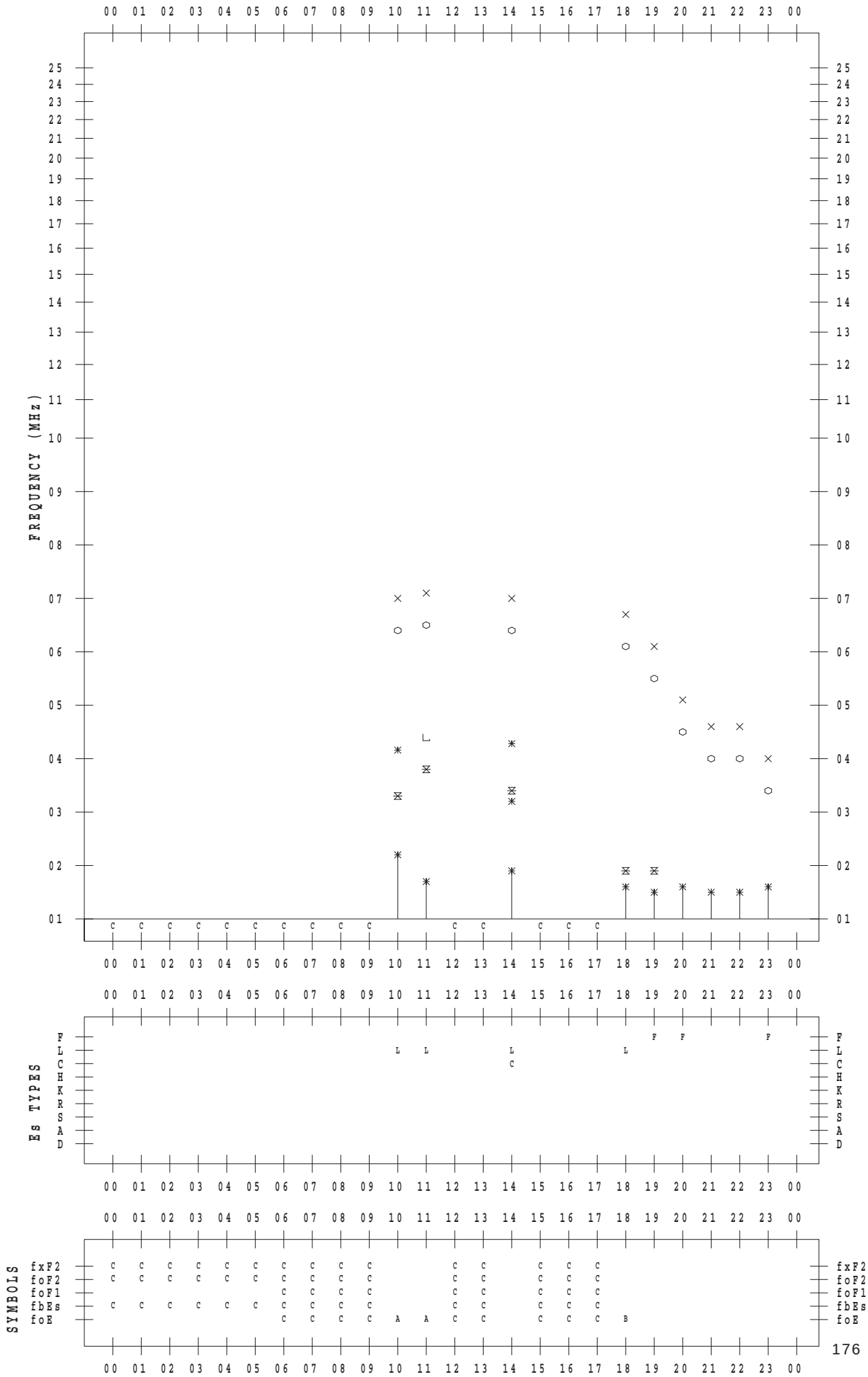
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 7

135 °E MEAN TIME



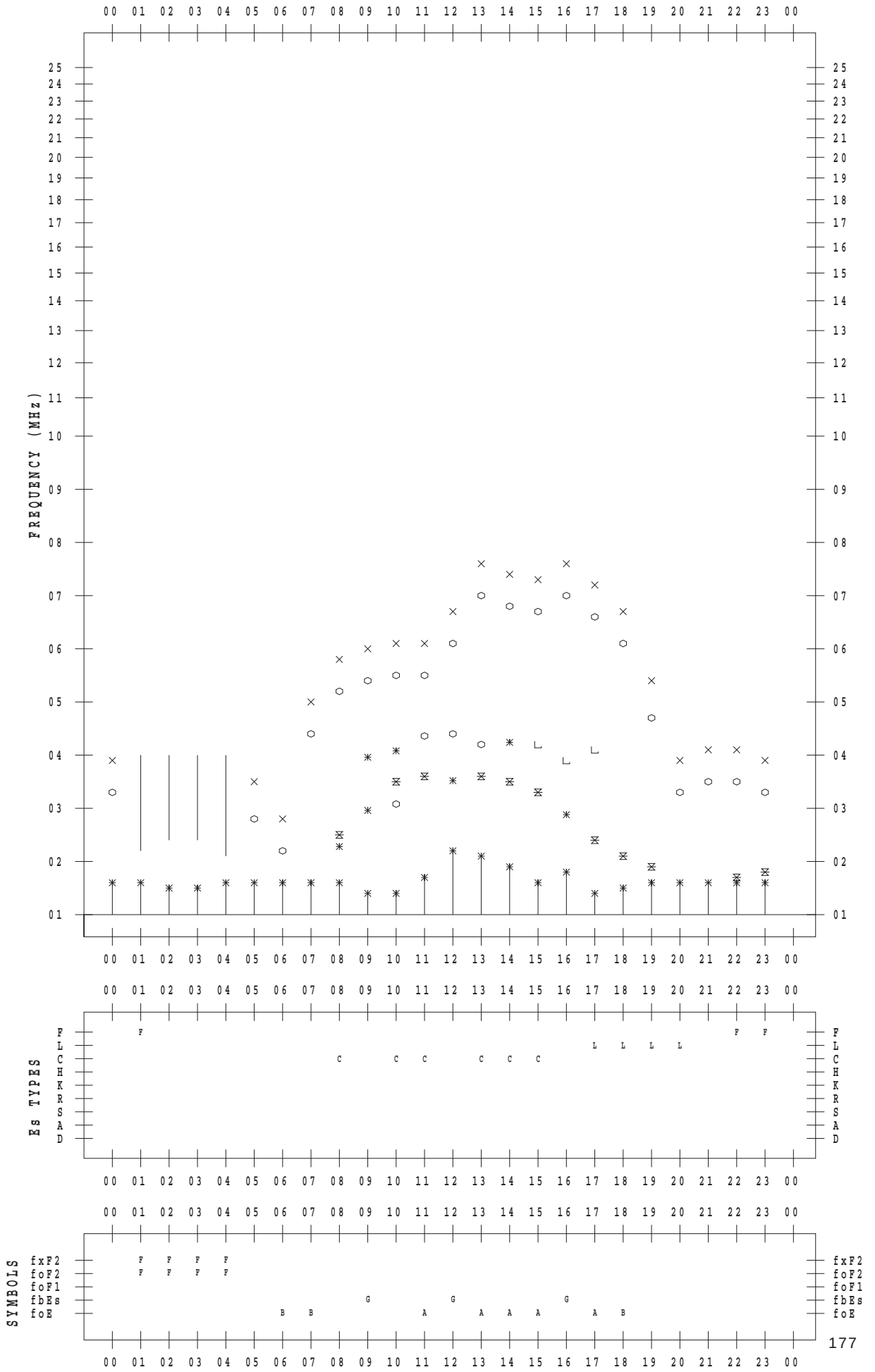
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 8

135 °E MEAN TIME



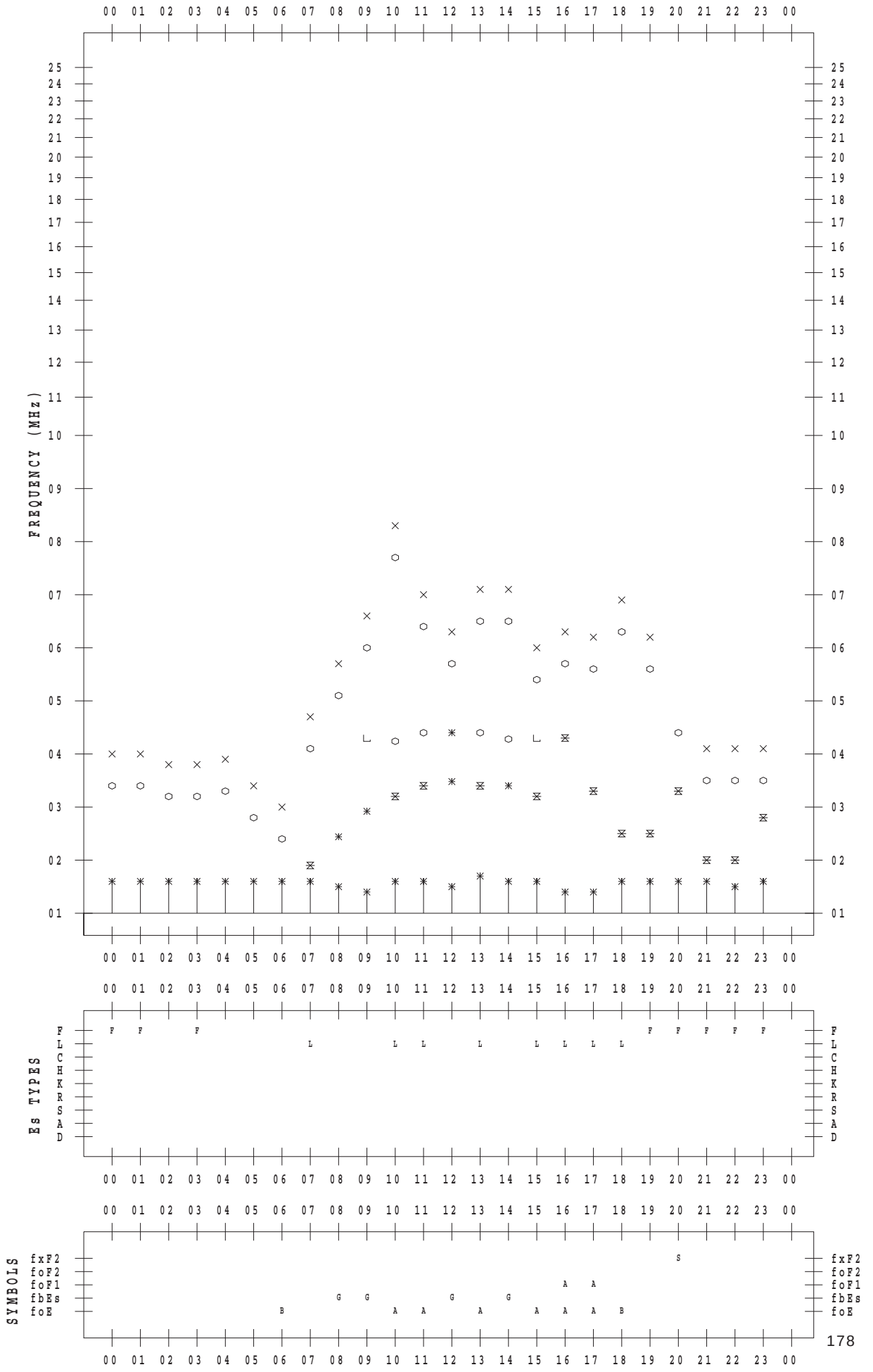
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/ 9

135 °E MEAN TIME



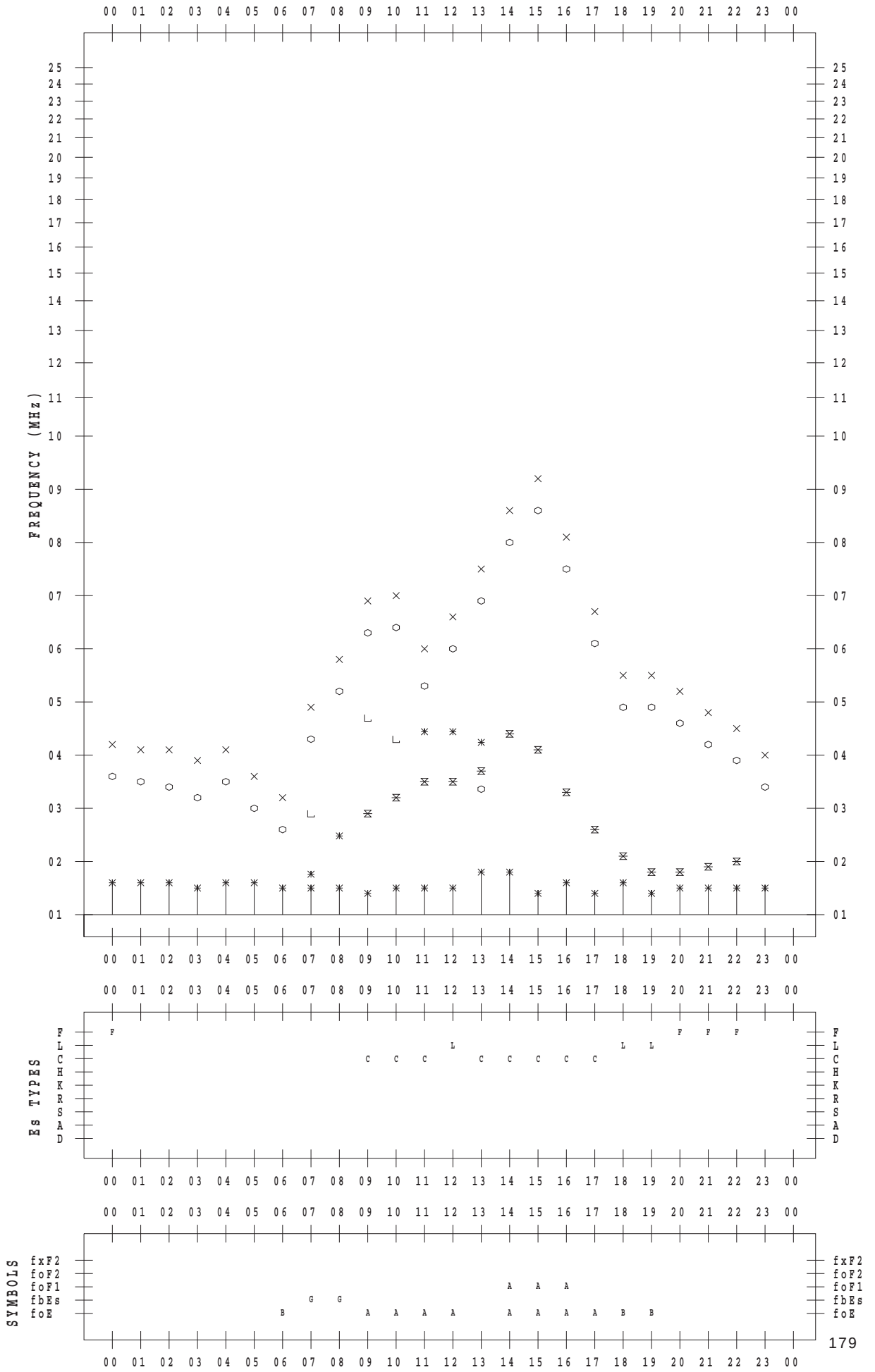
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/10

135 °E MEAN TIME



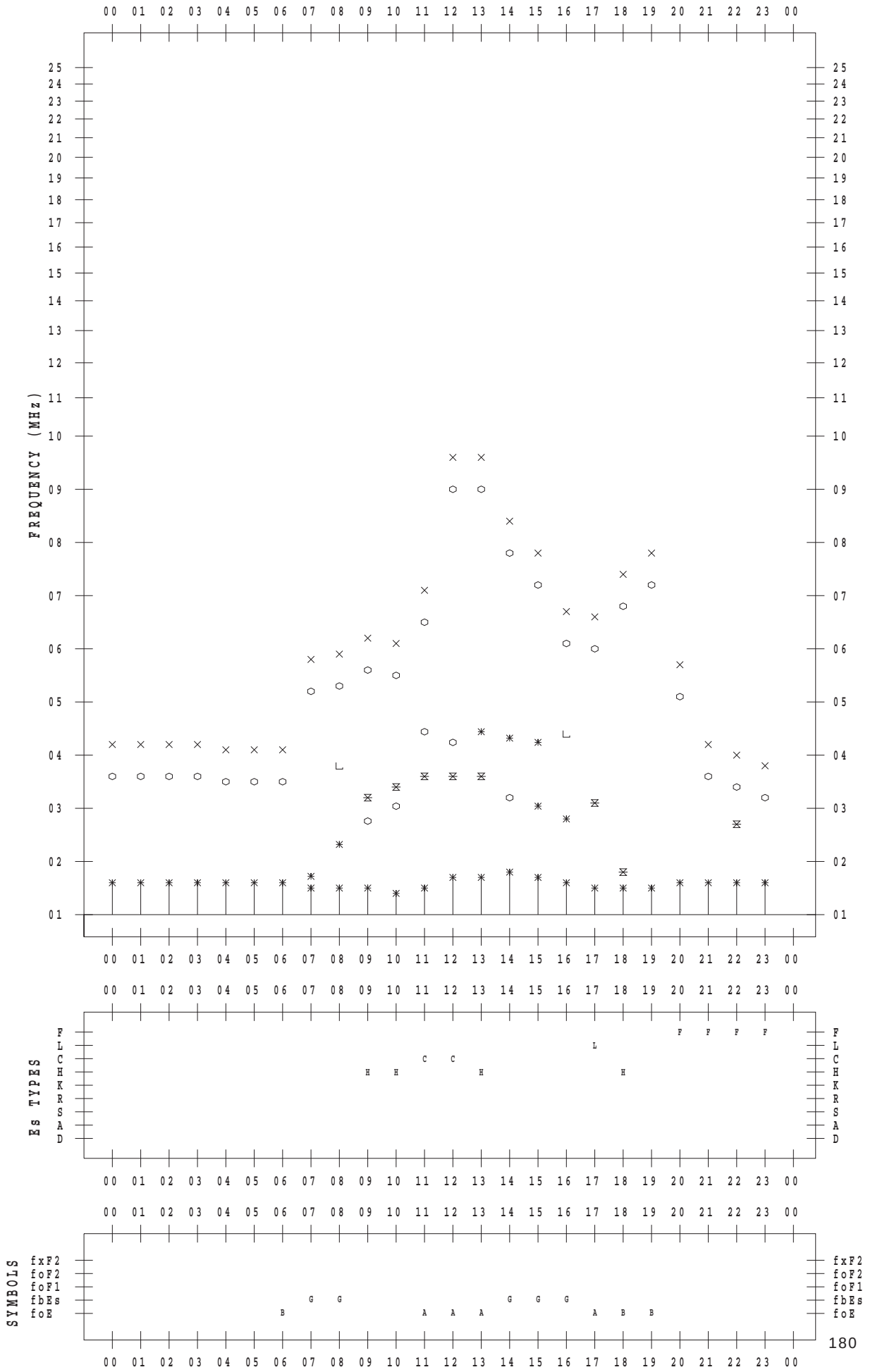
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/11

135 °E MEAN TIME



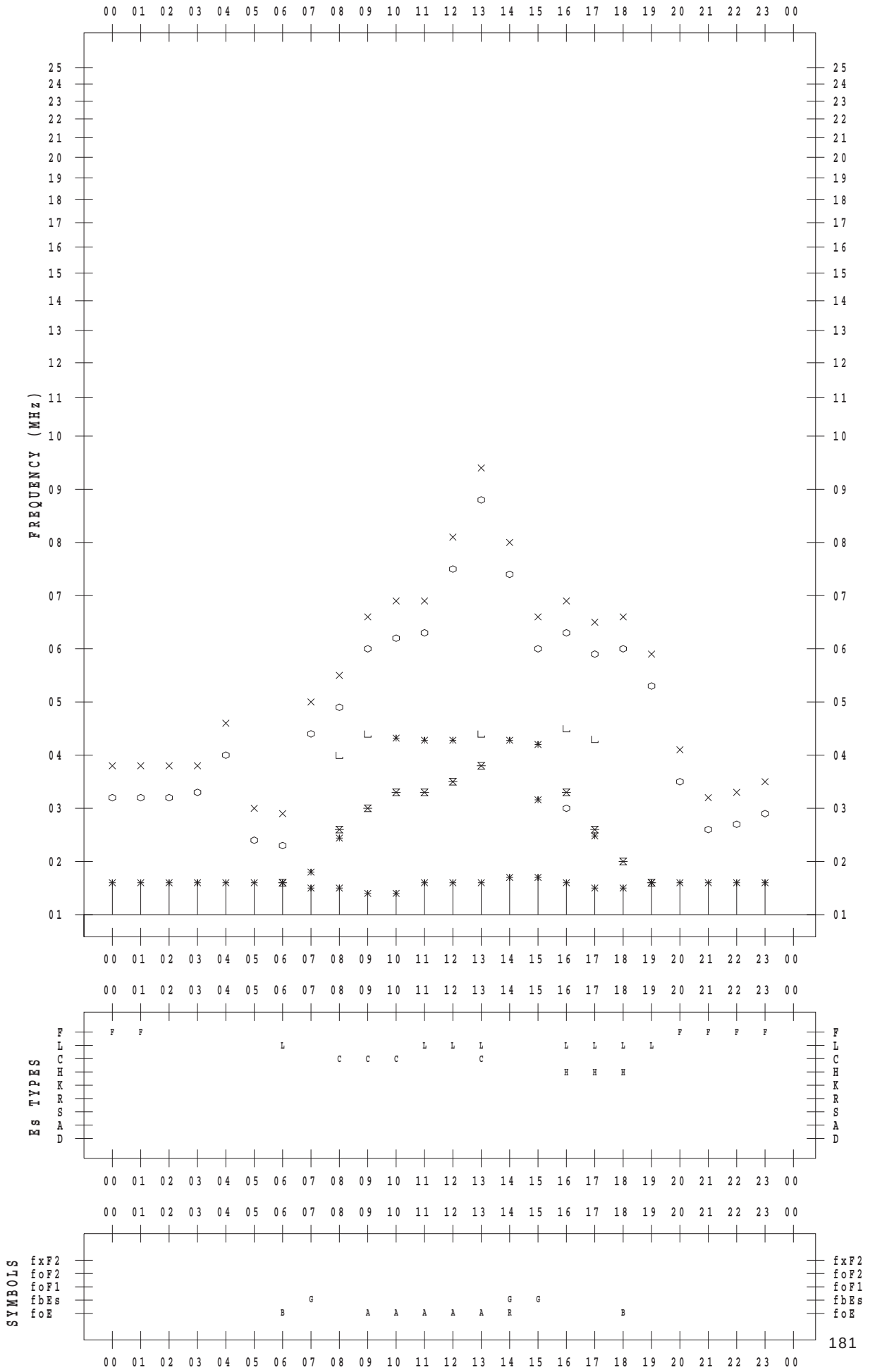
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/12

135 °E MEAN TIME



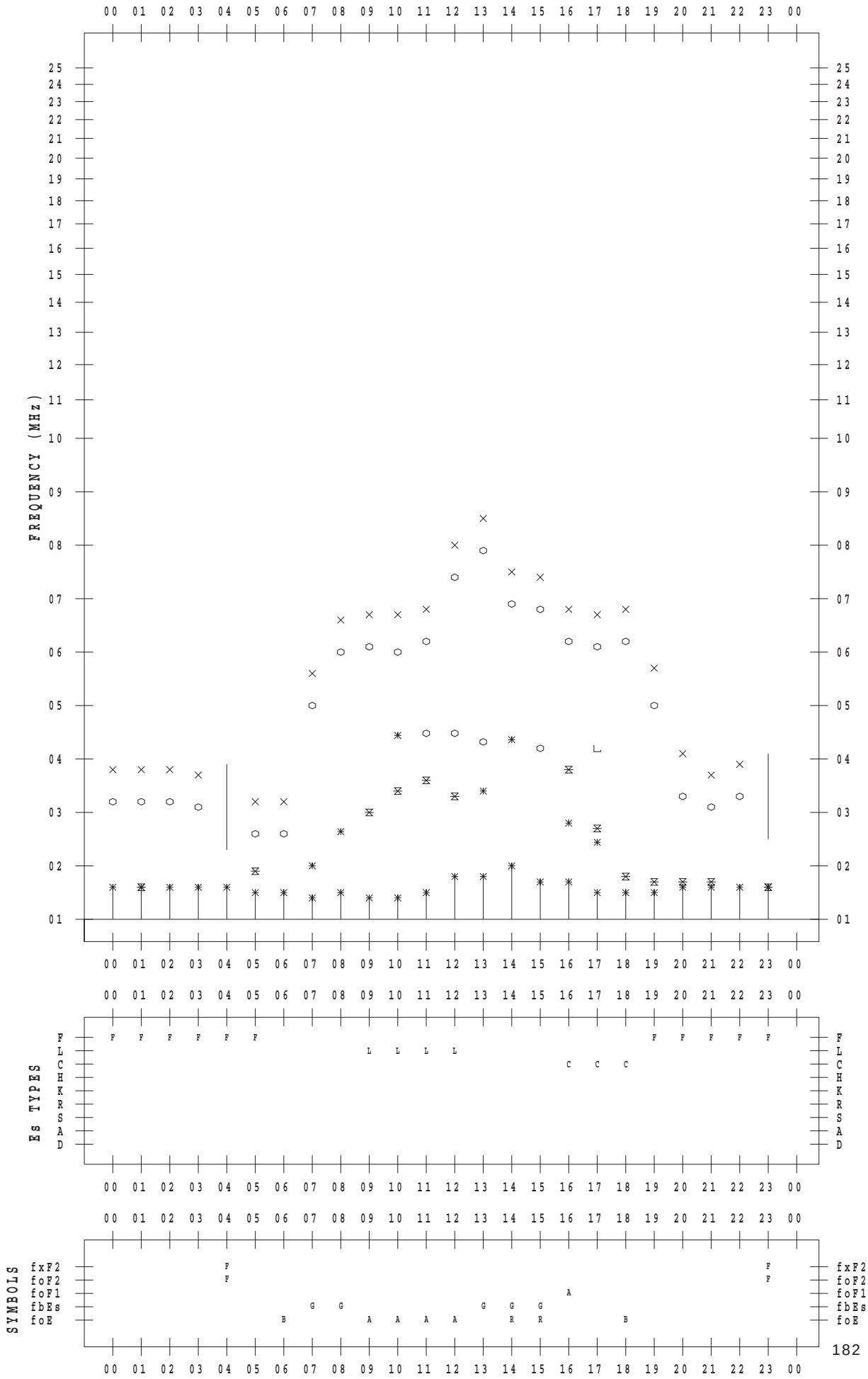
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/13

135 °E MEAN TIME



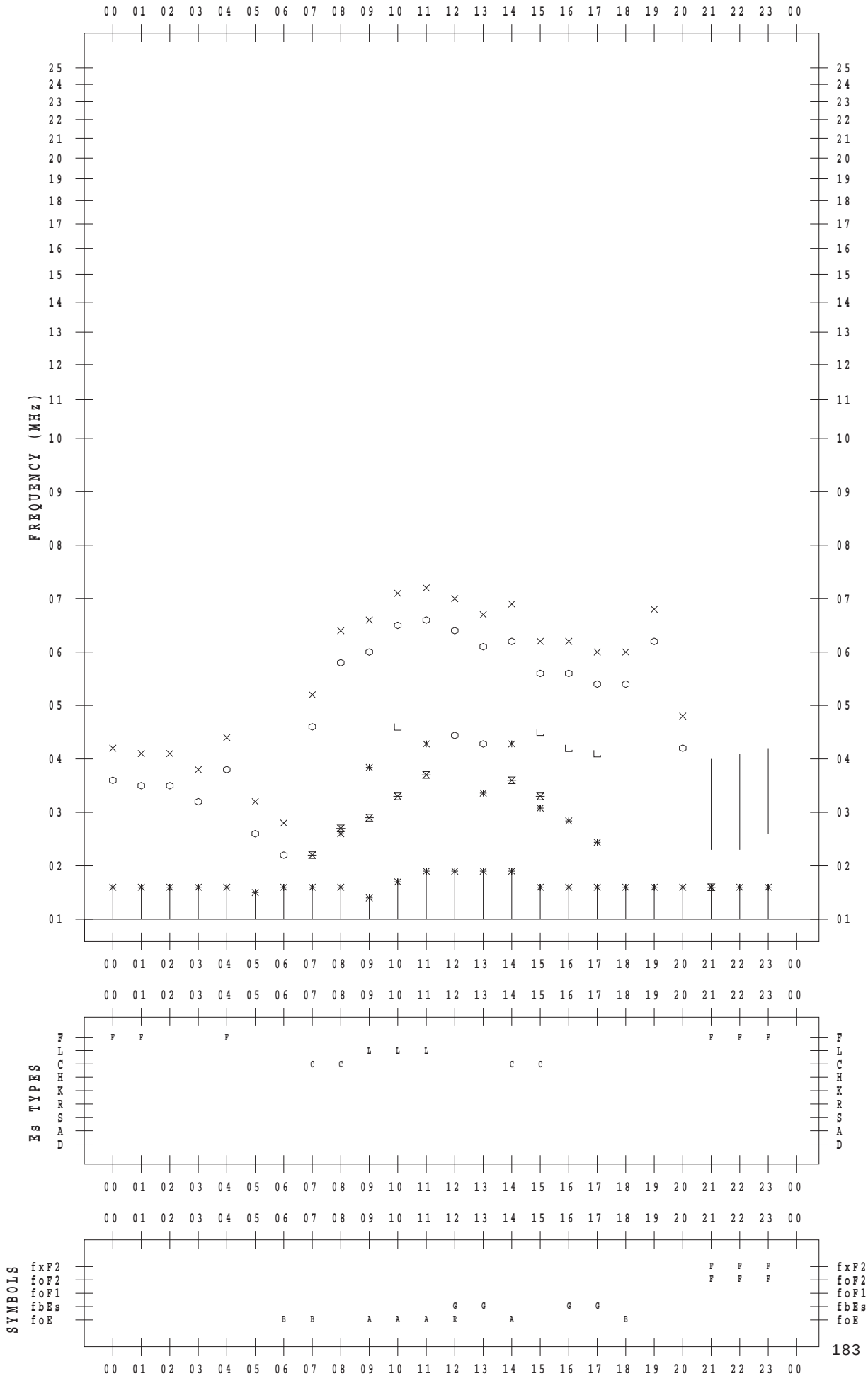
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/14

135 °E MEAN TIME



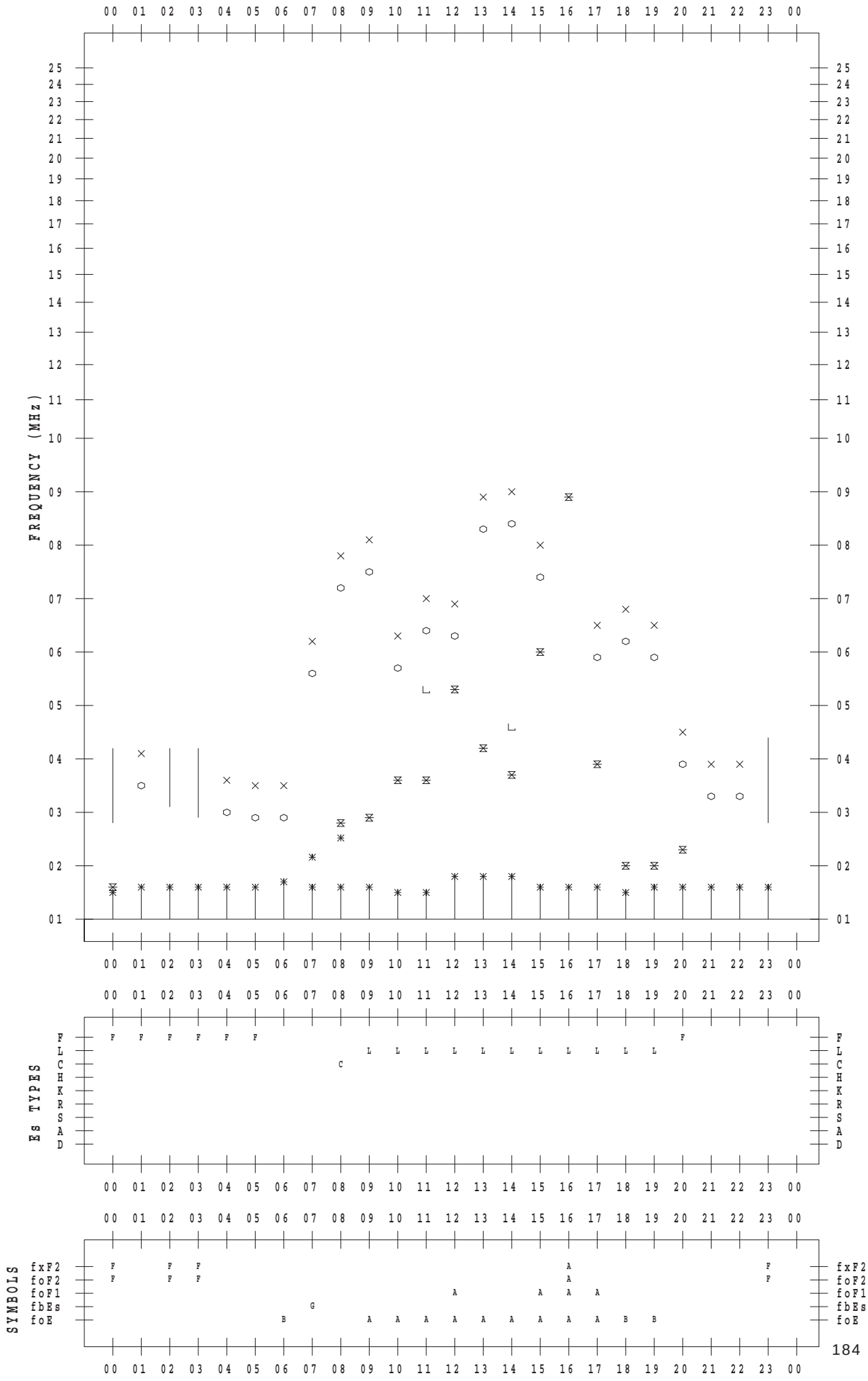
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/15

135 °E MEAN TIME



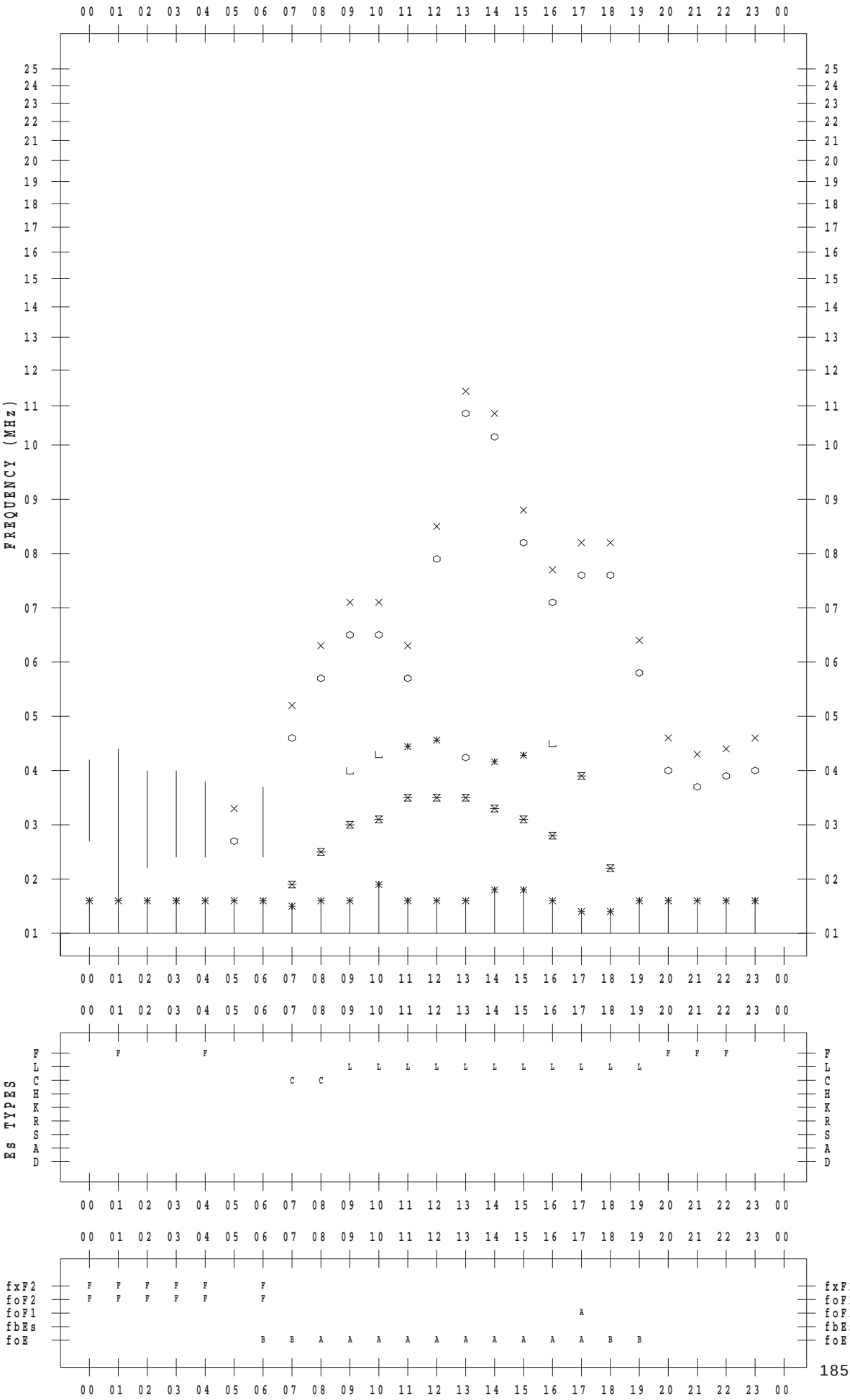
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/16

135 °E MEAN TIME



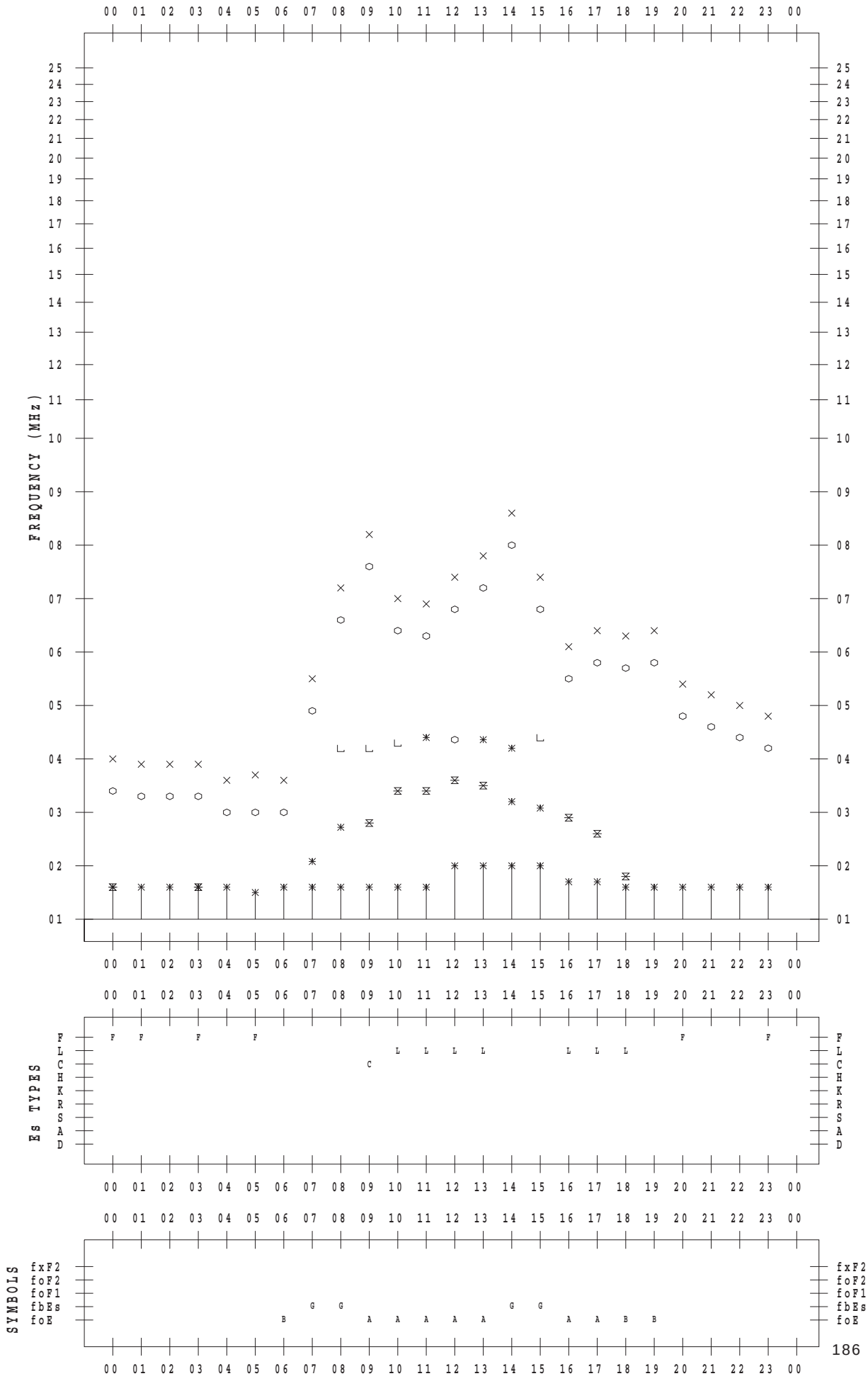
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/17

135 °E MEAN TIME



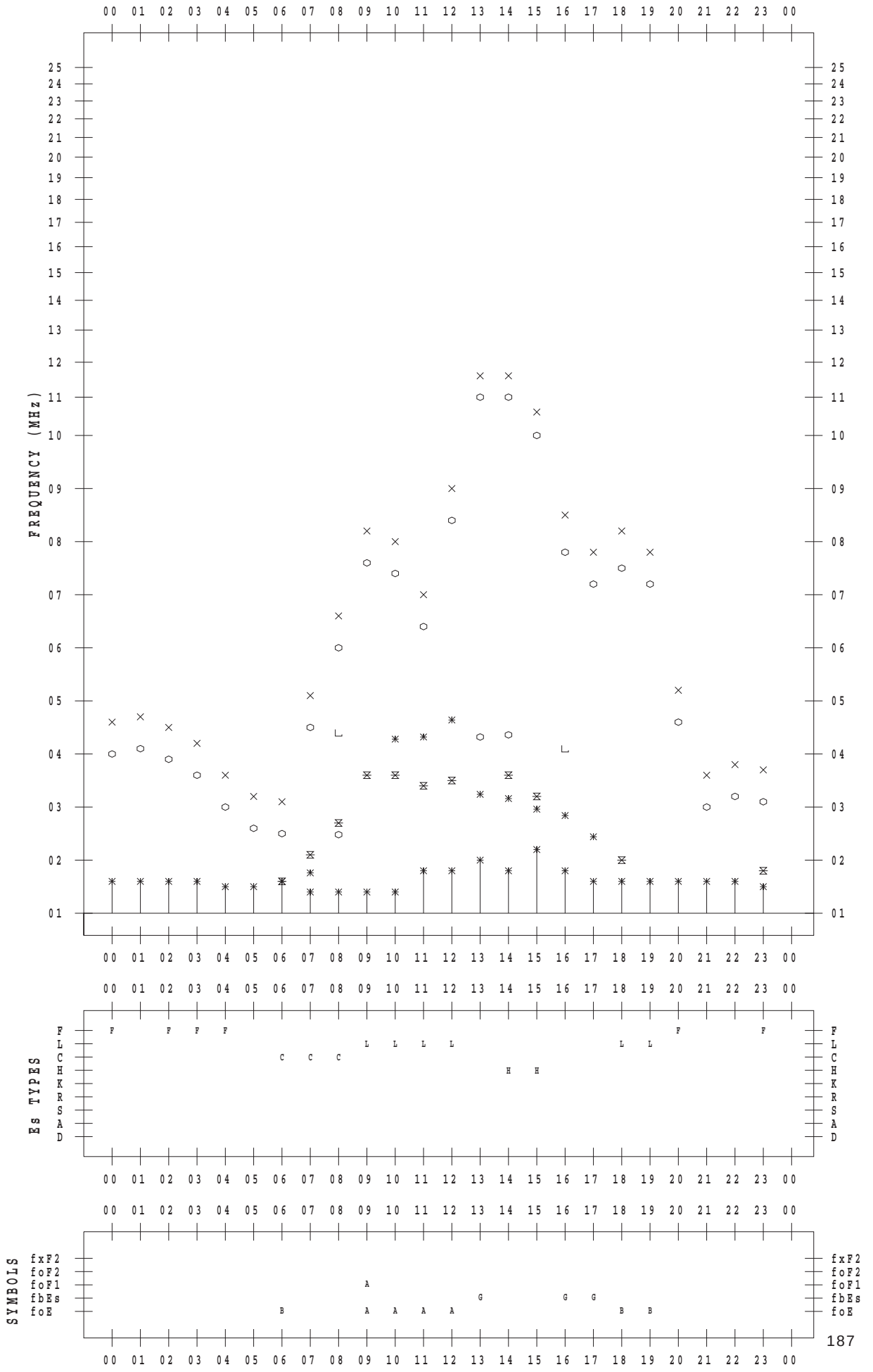
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/18

135 °E MEAN TIME



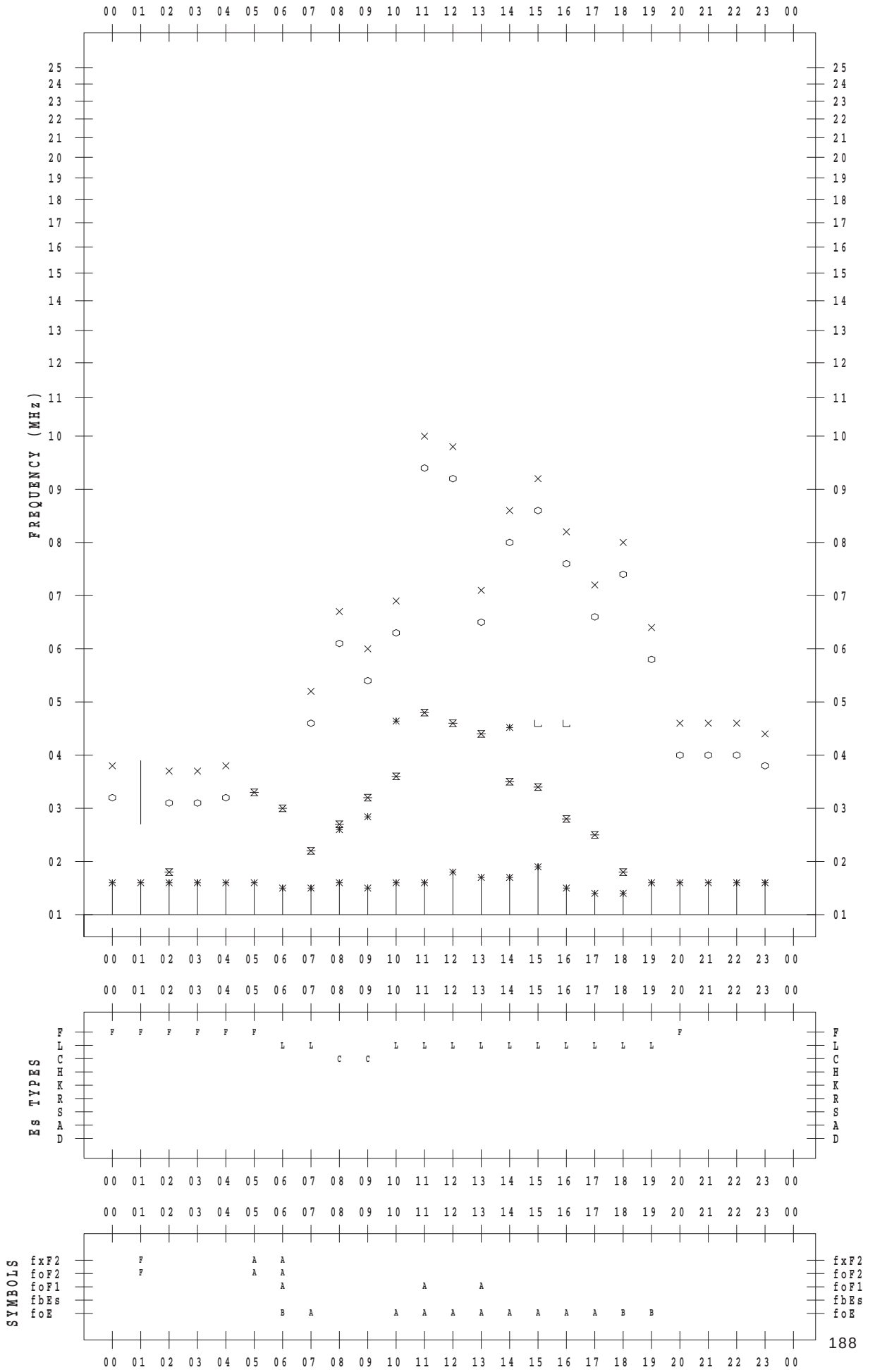
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/19

135 °E MEAN TIME



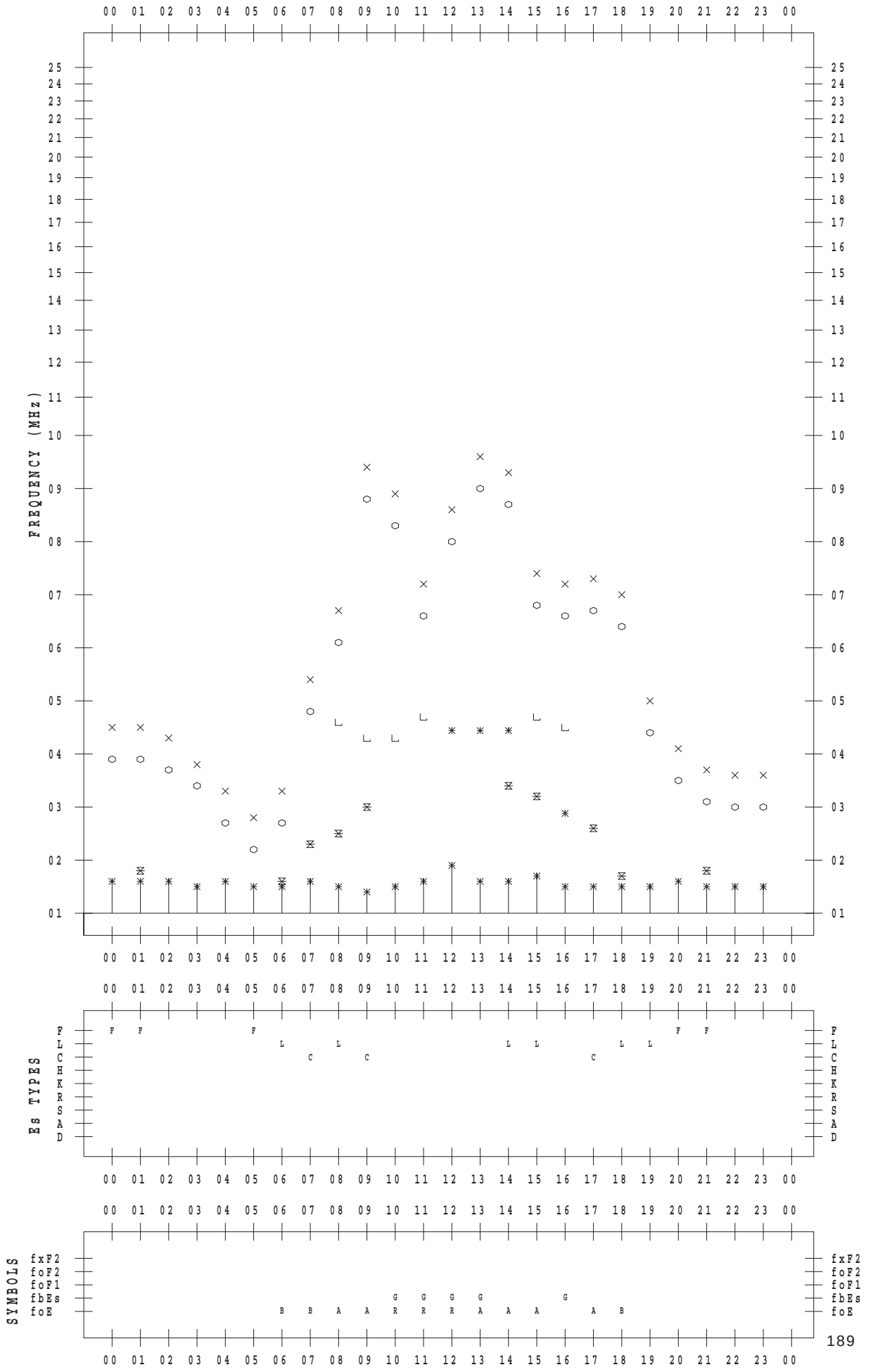
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/20

135 °E MEAN TIME



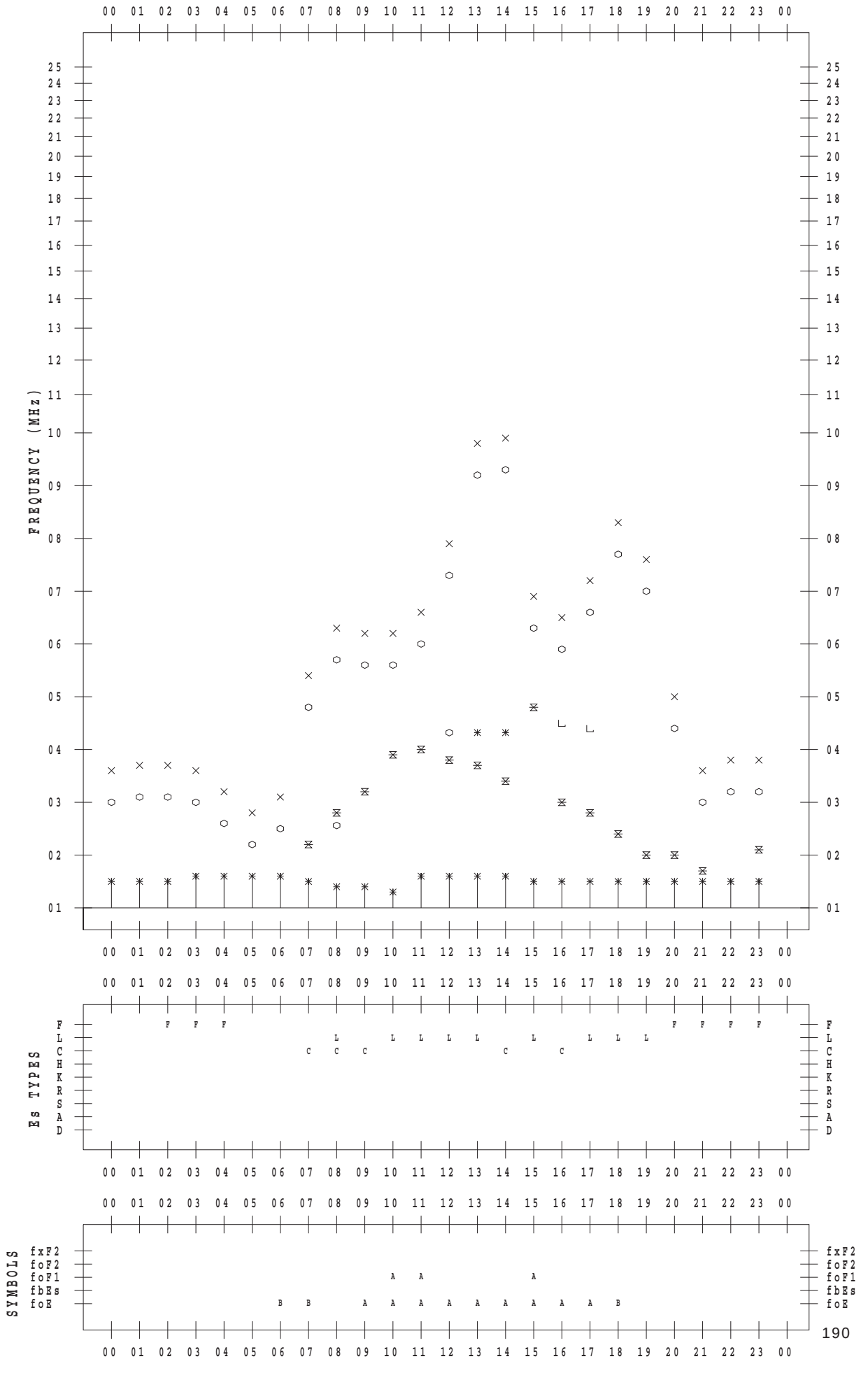
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/21

135 °E MEAN TIME



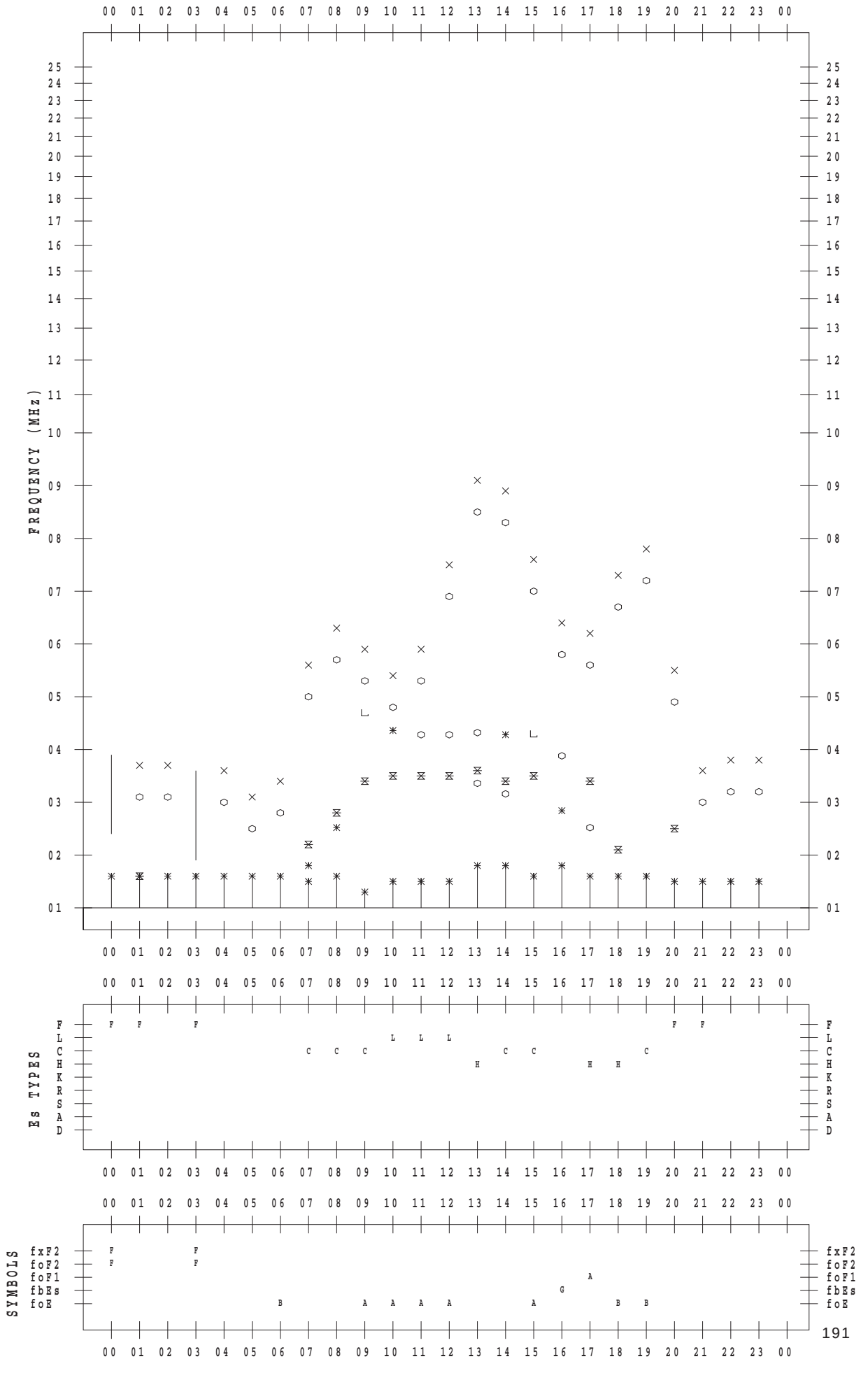
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/22

135 °E MEAN TIME



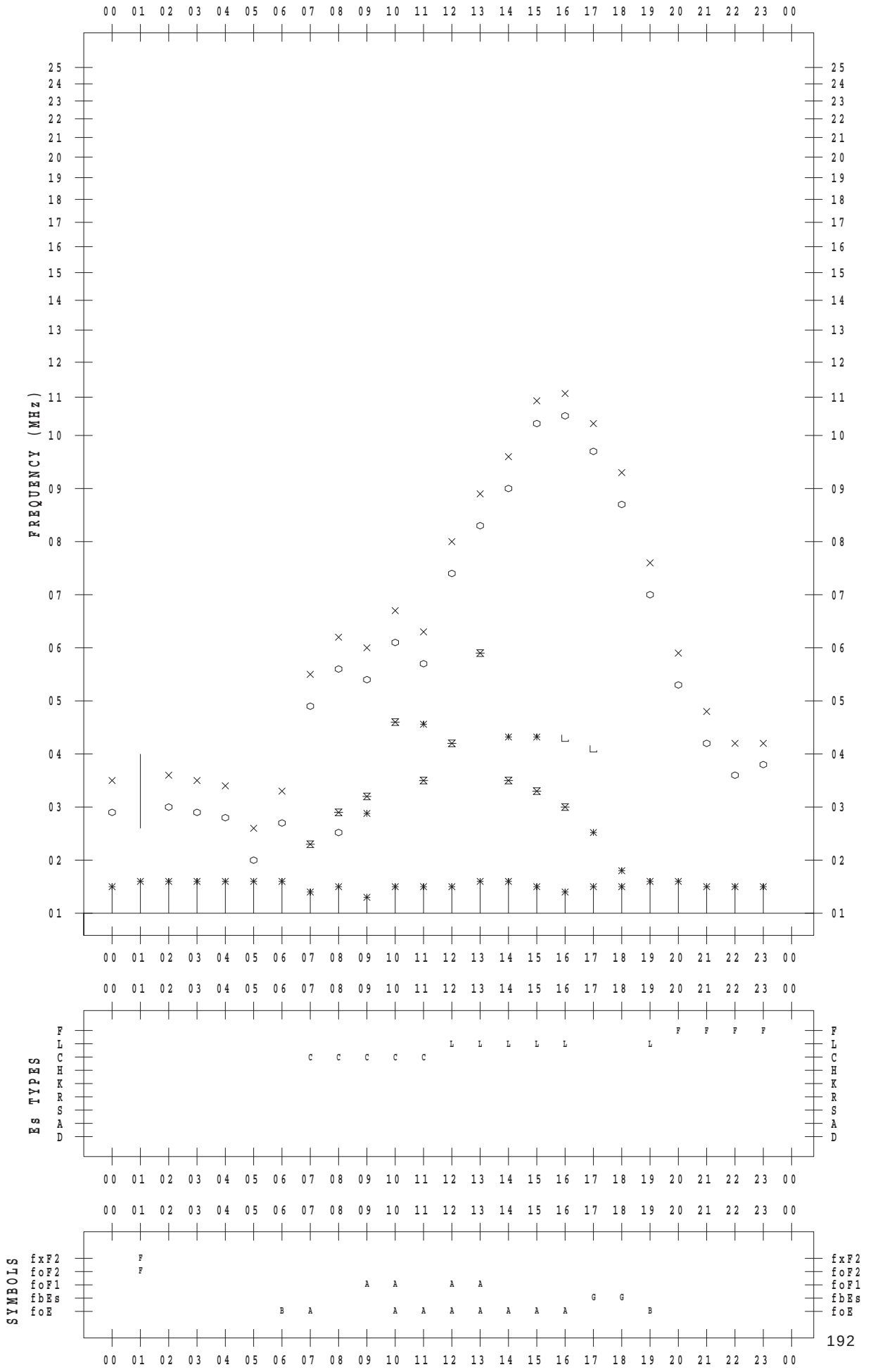
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/23

135 °E MEAN TIME



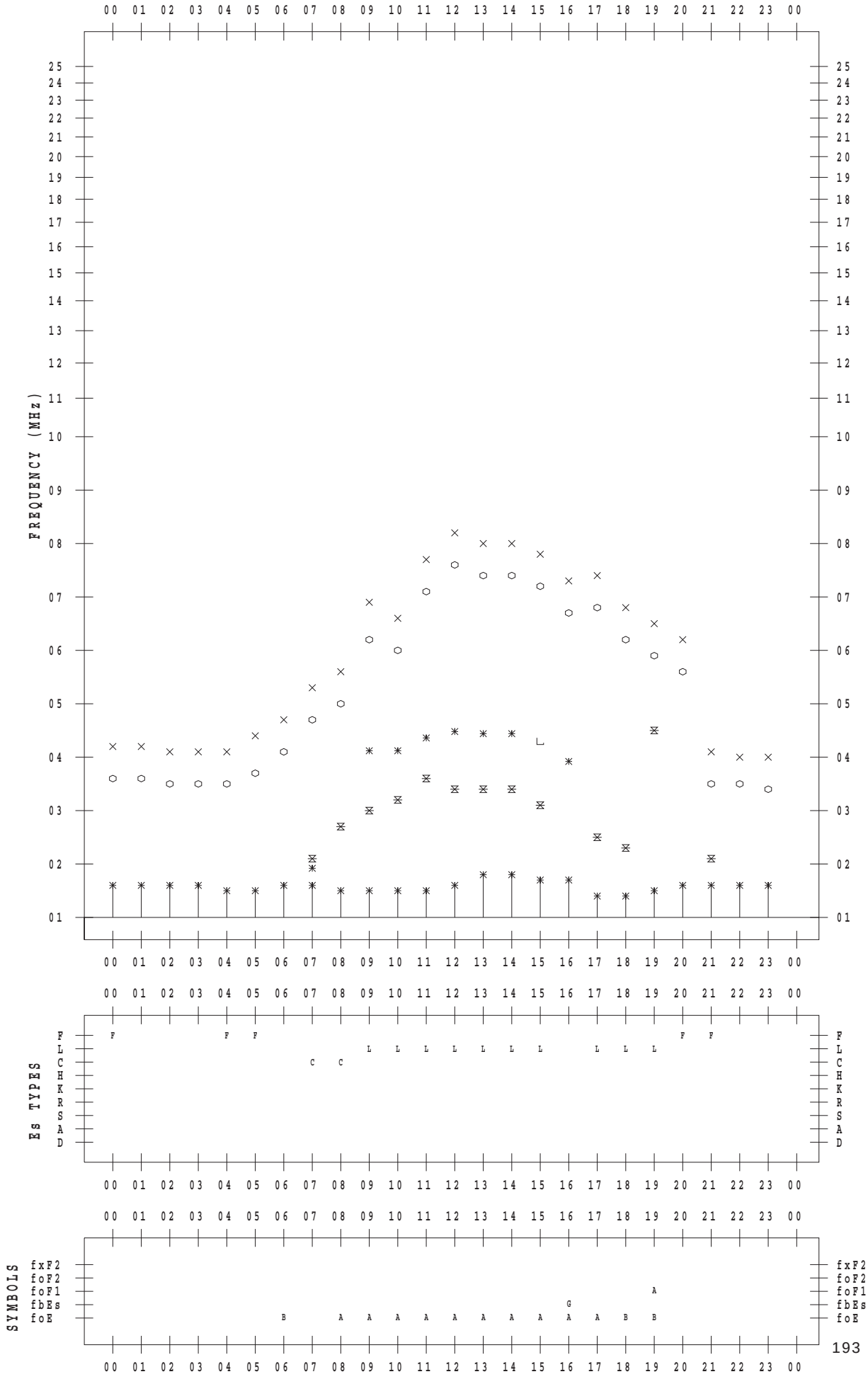
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/24

135 °E MEAN TIME



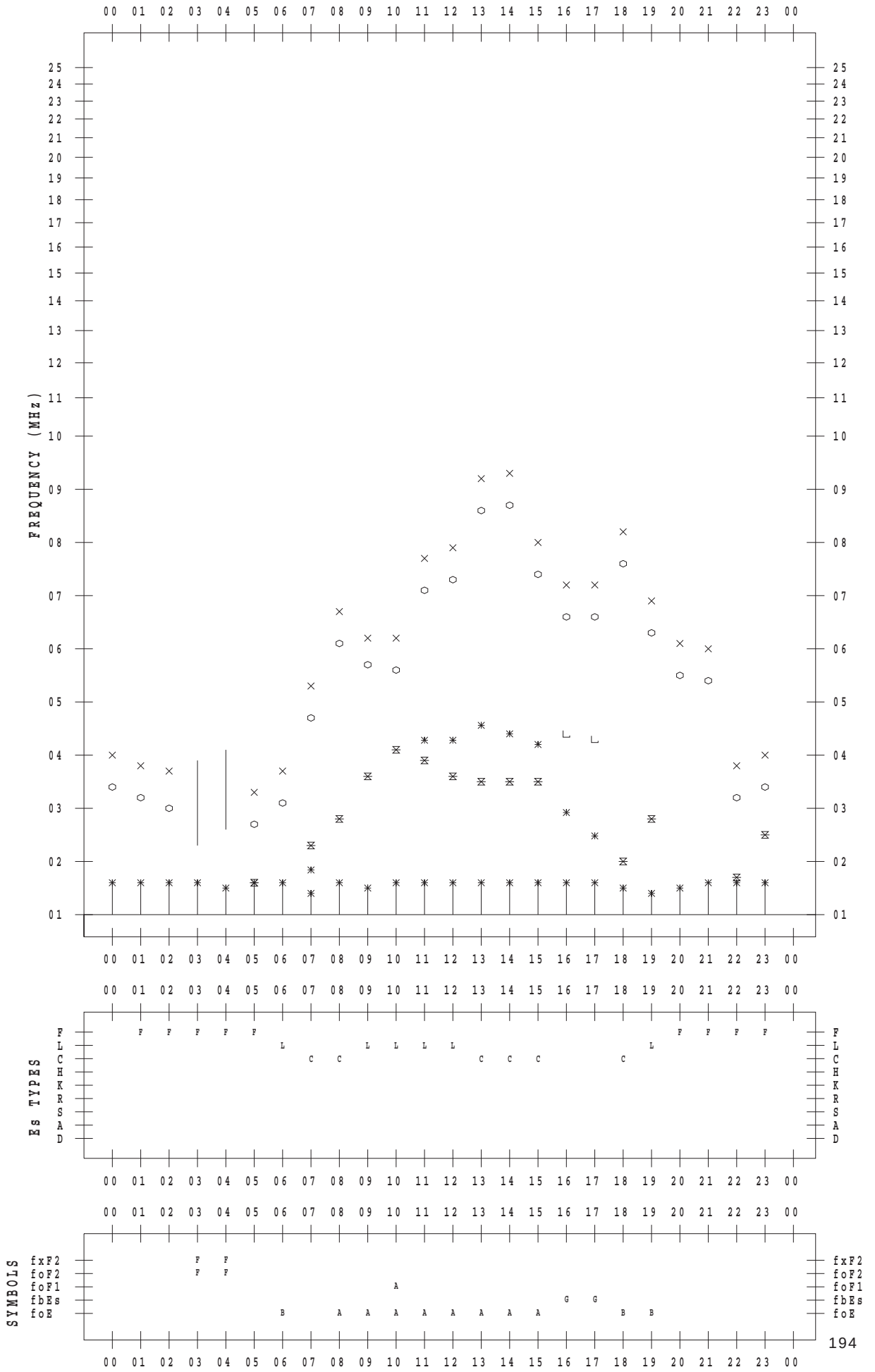
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/25

135 °E MEAN TIME



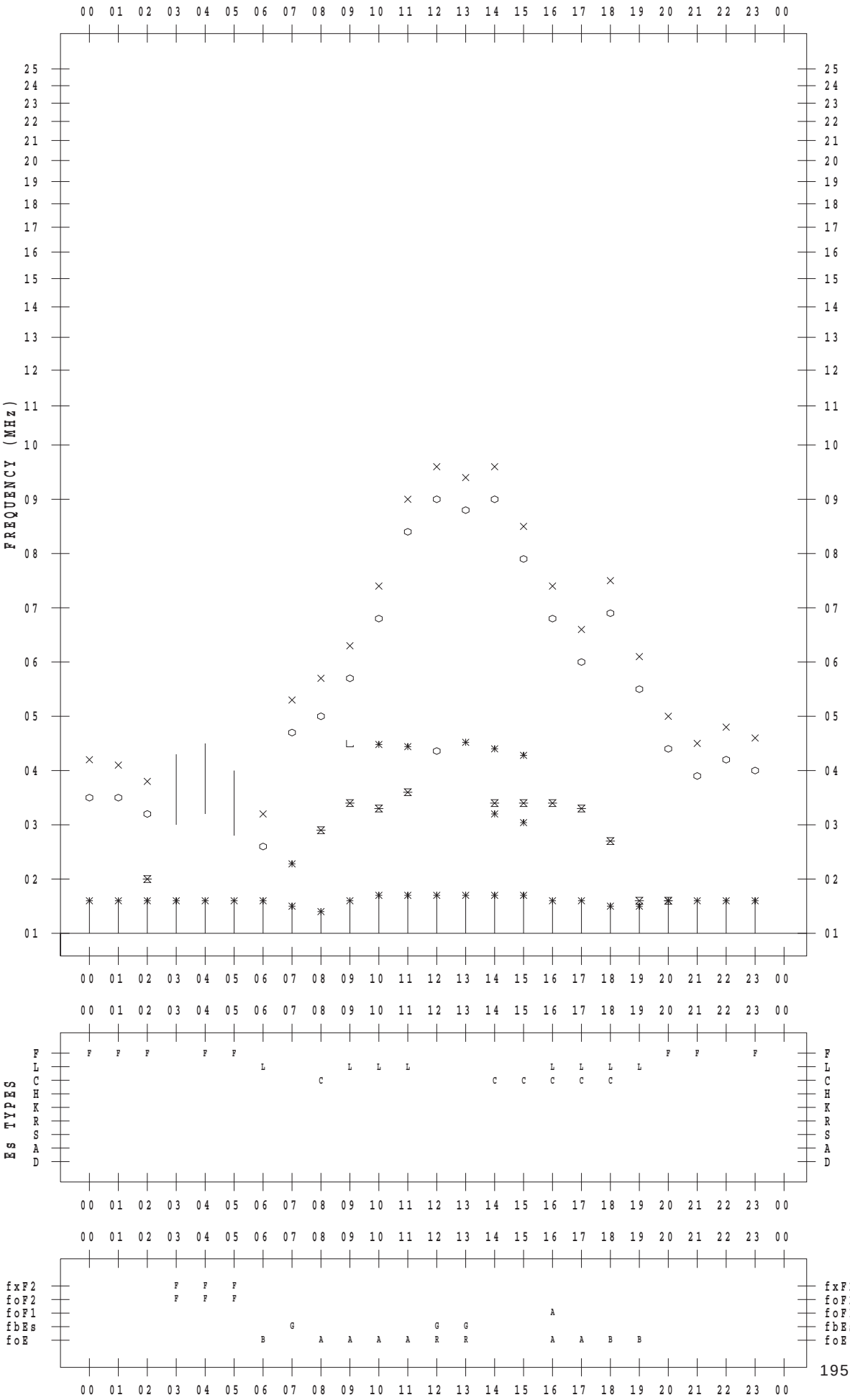
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/26

135 °E MEAN TIME



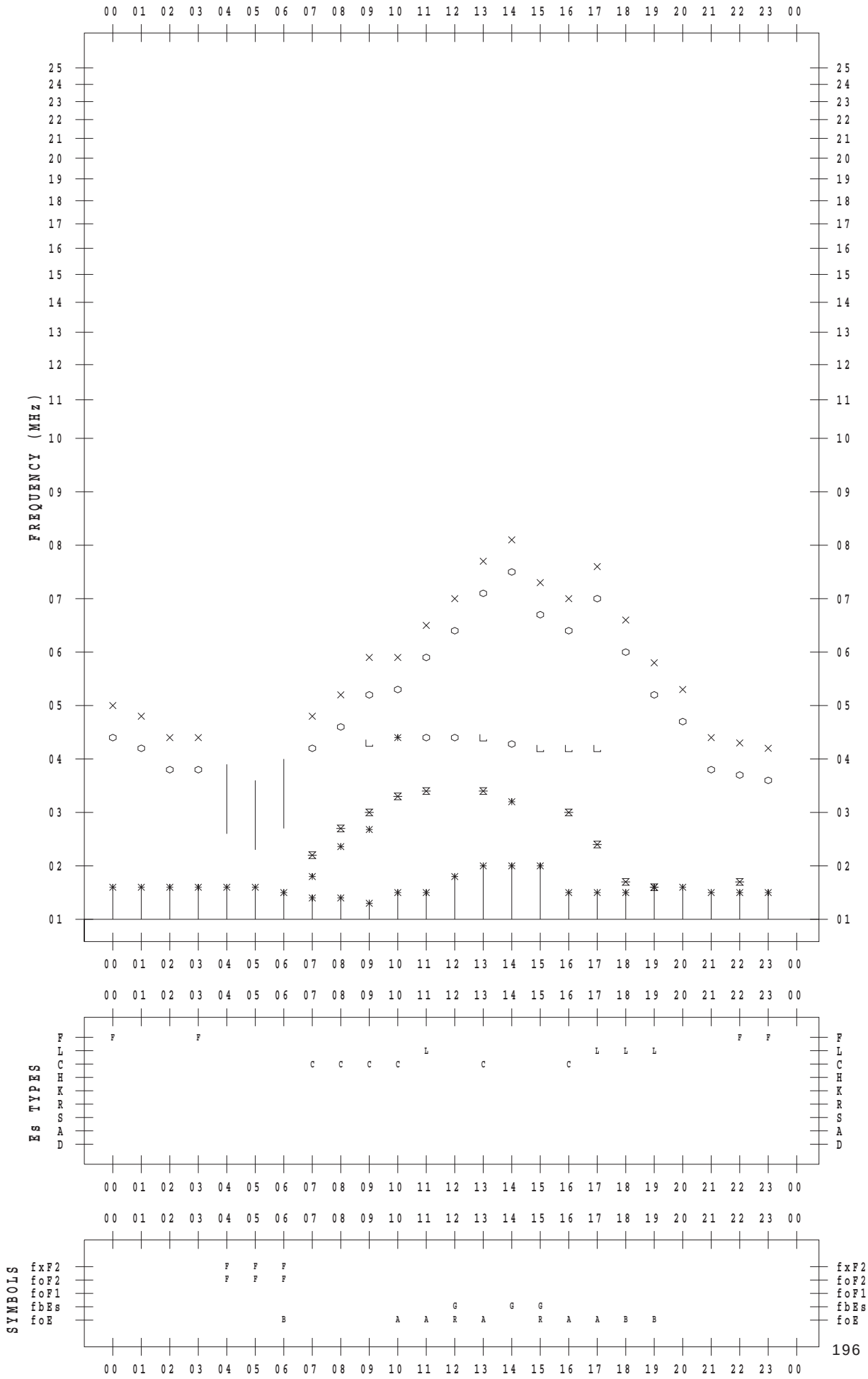
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/27

135 °E MEAN TIME



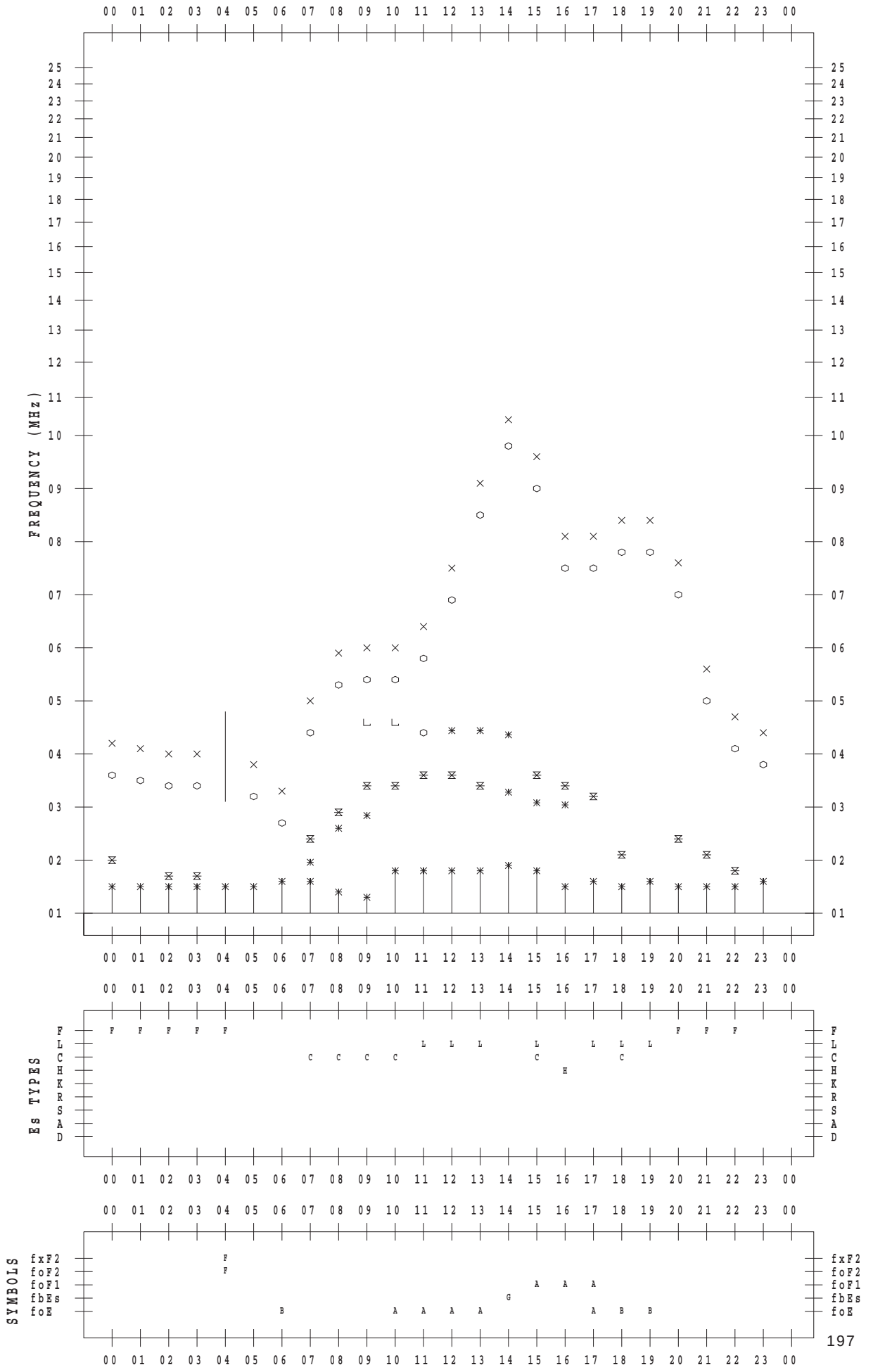
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/28

135 °E MEAN TIME



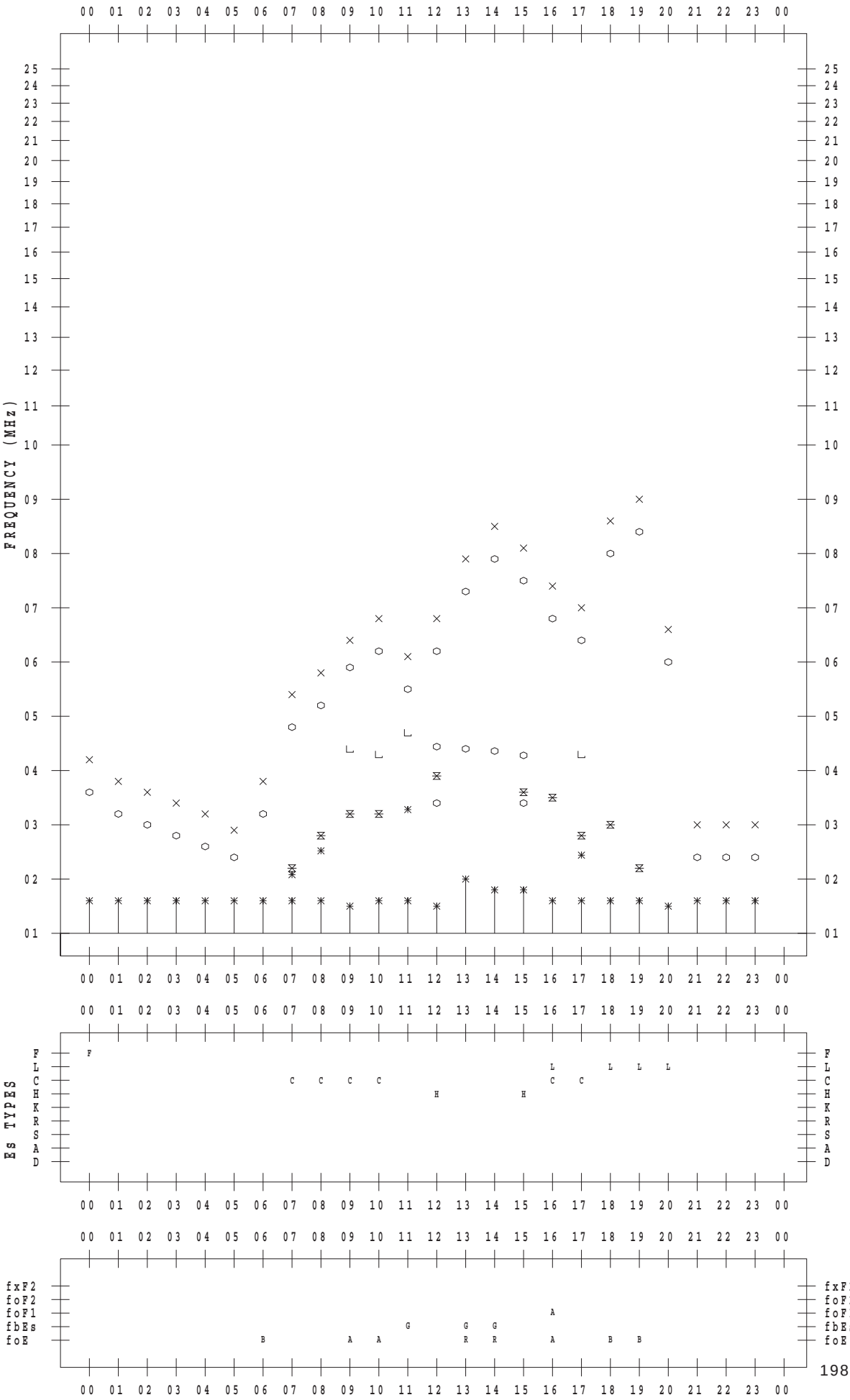
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/29

135 °E MEAN TIME



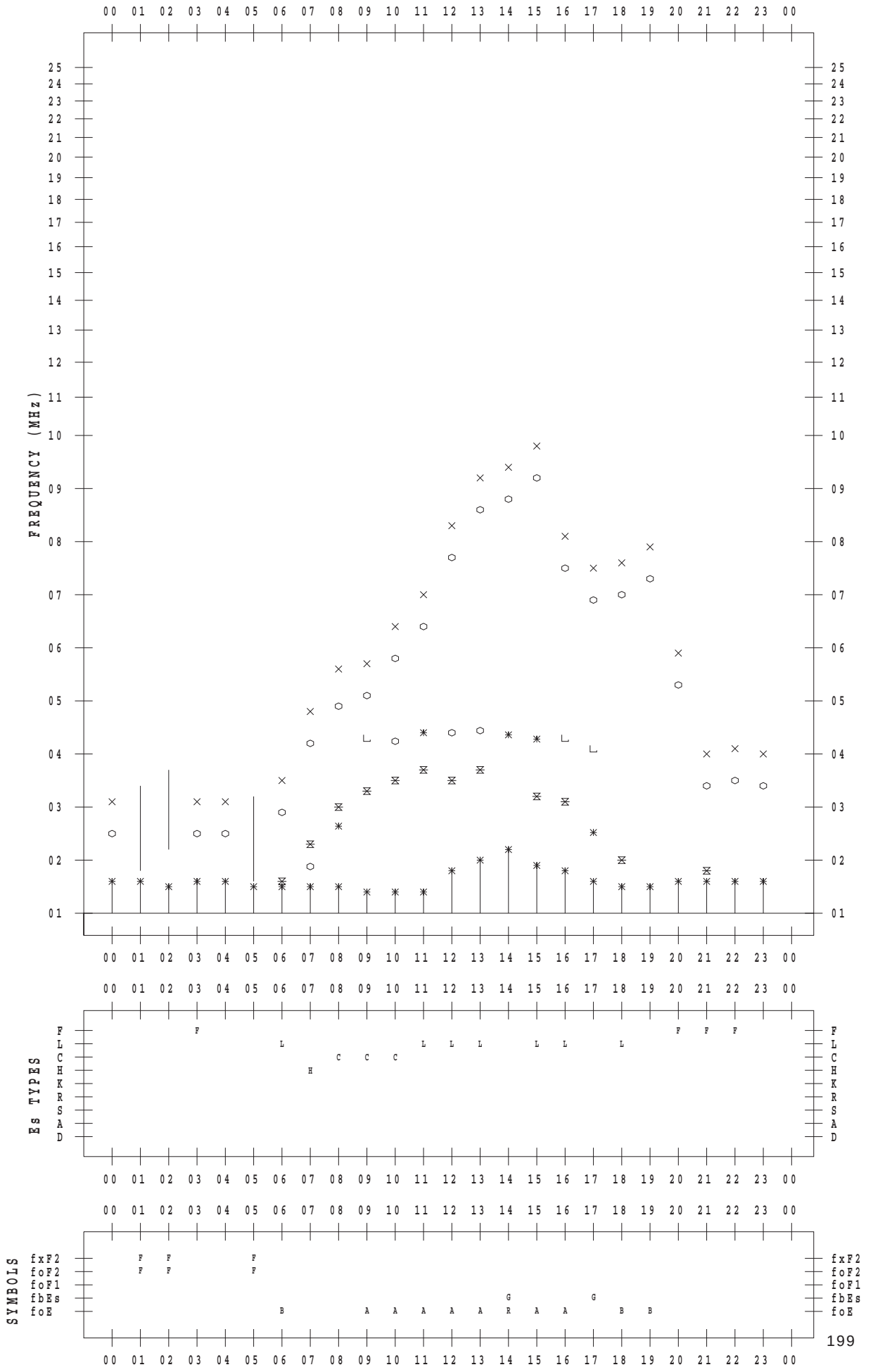
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/30

135 °E MEAN TIME



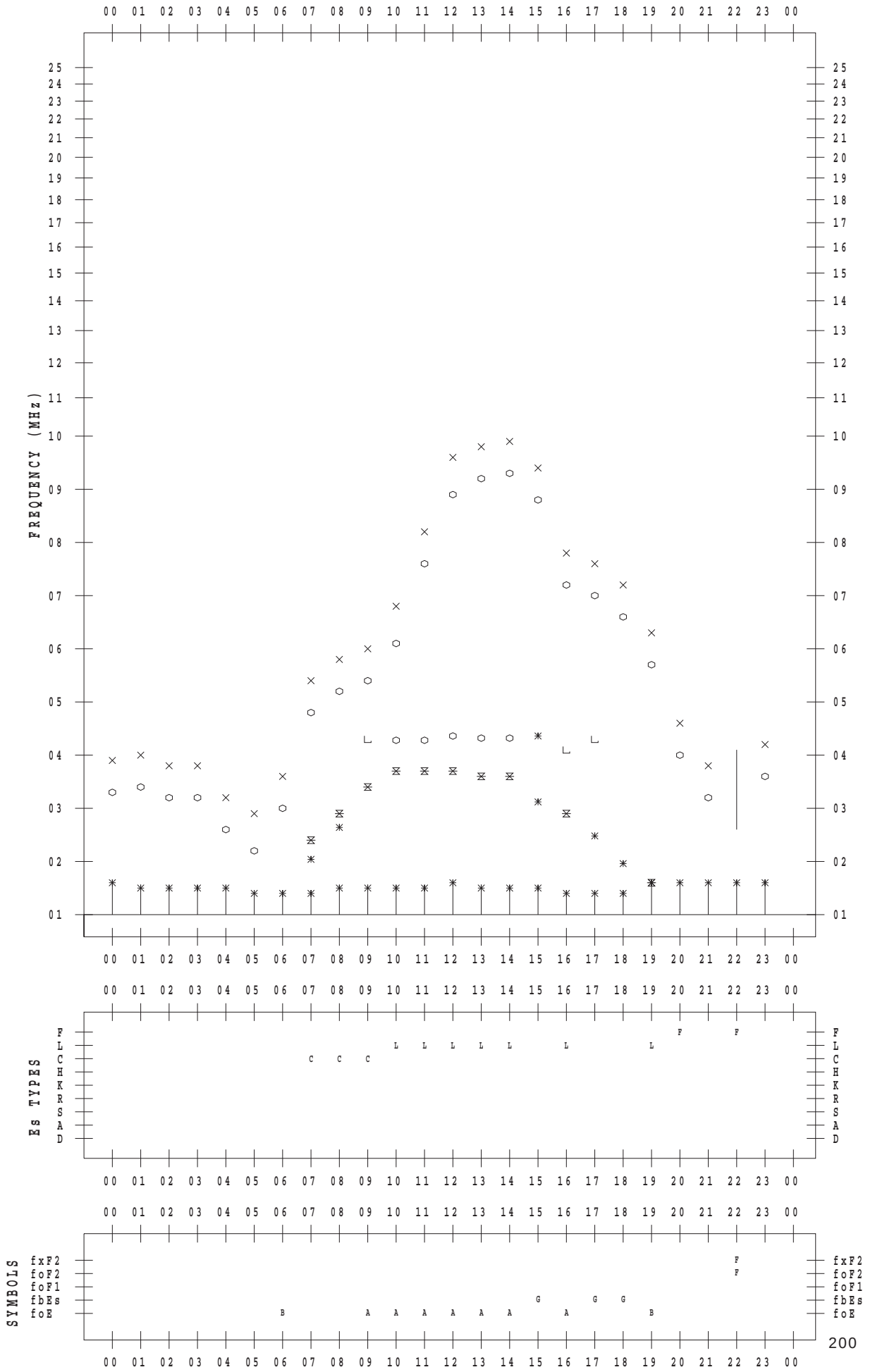
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 3/31

135 °E MEAN TIME



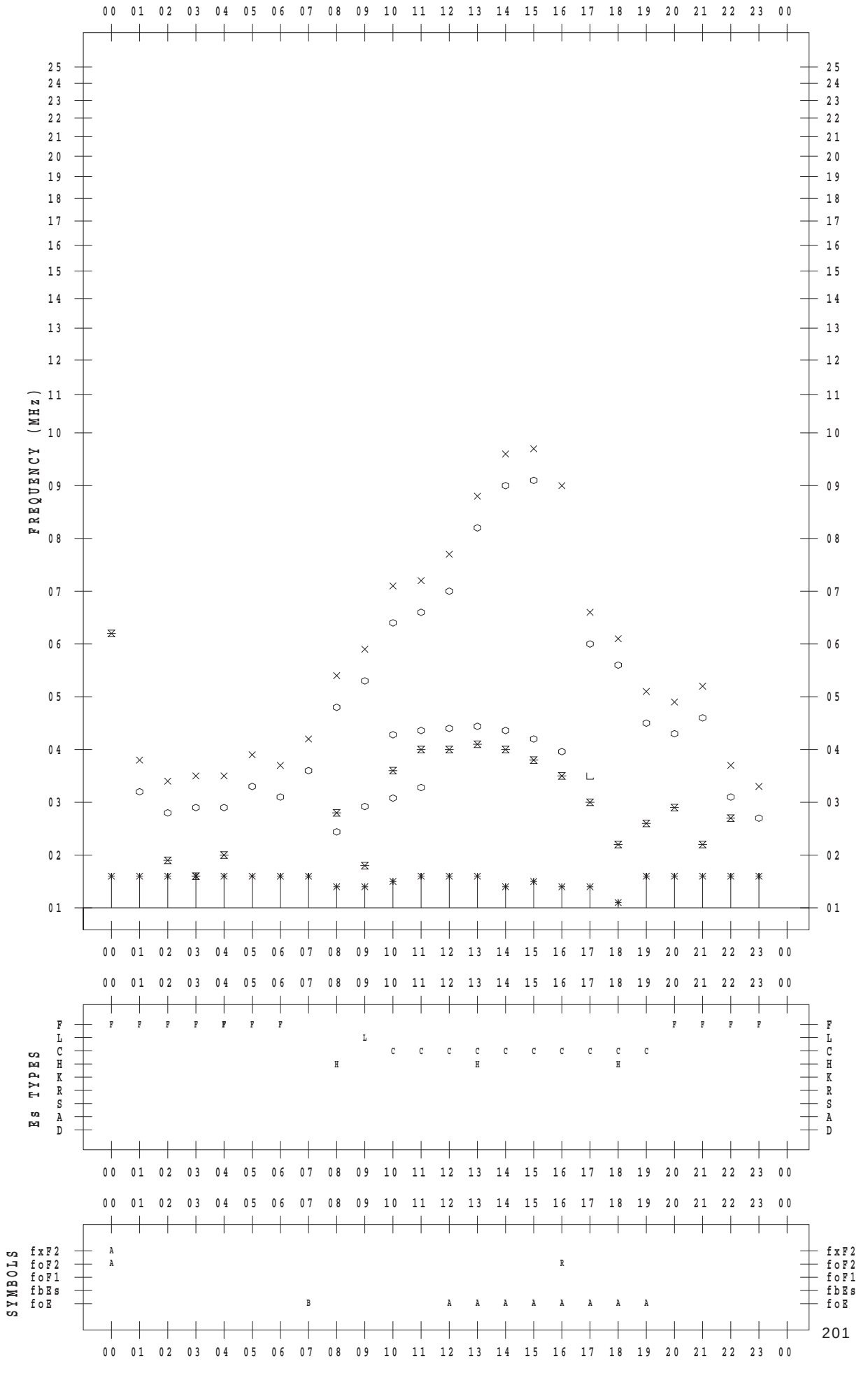
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 1

135 °E MEAN TIME



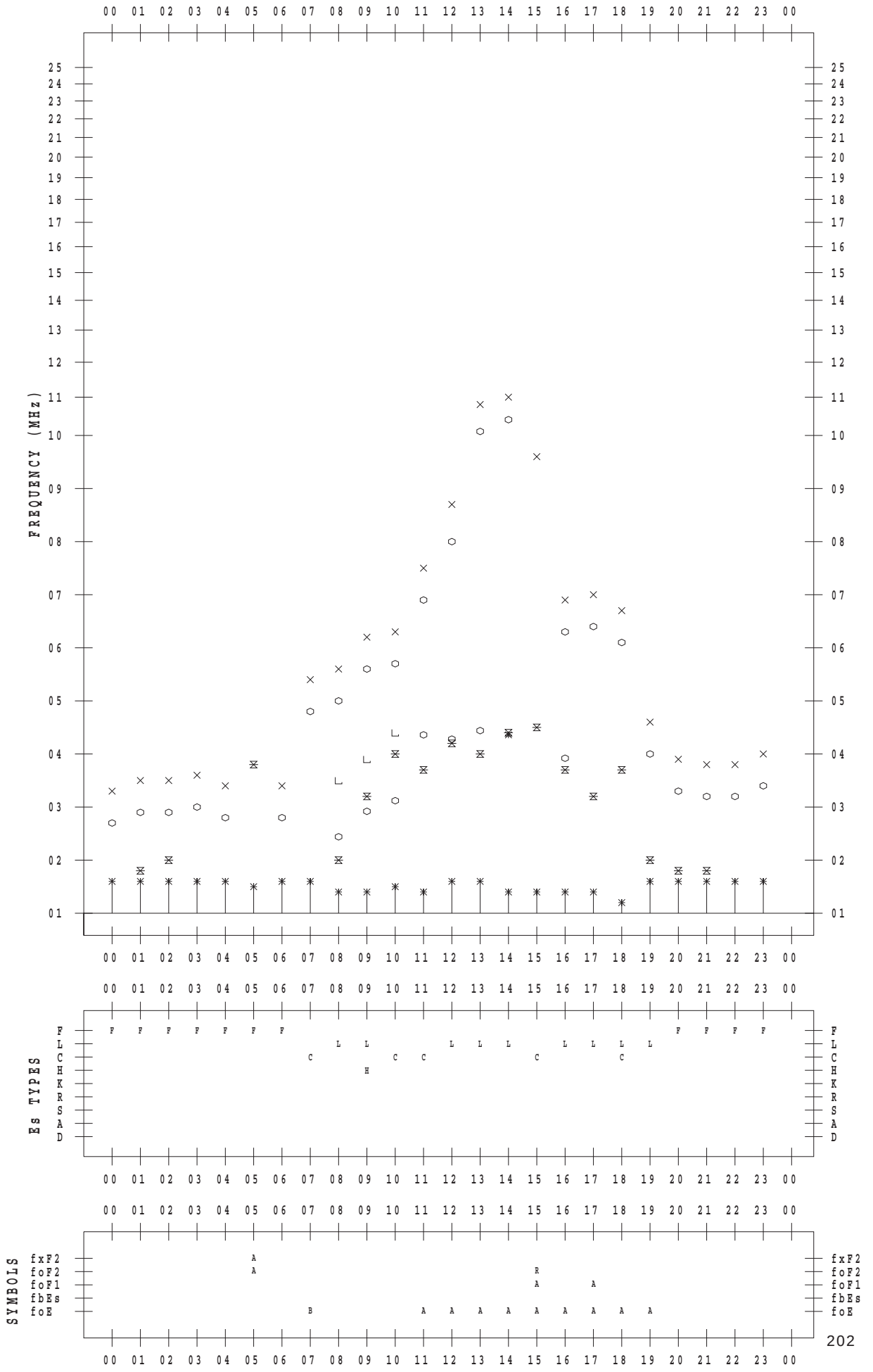
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 2

135 °E MEAN TIME



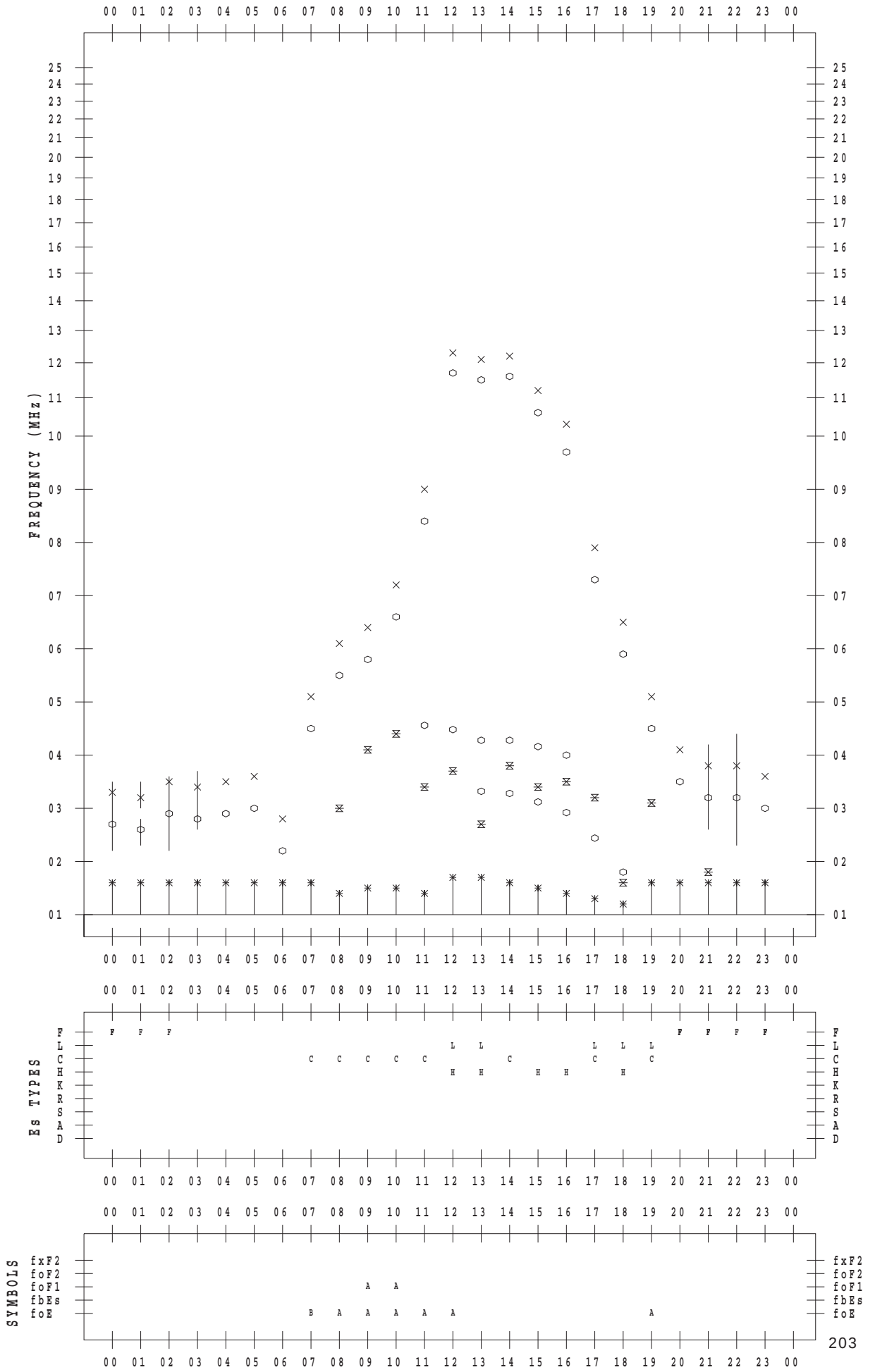
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 3

135 °E MEAN TIME



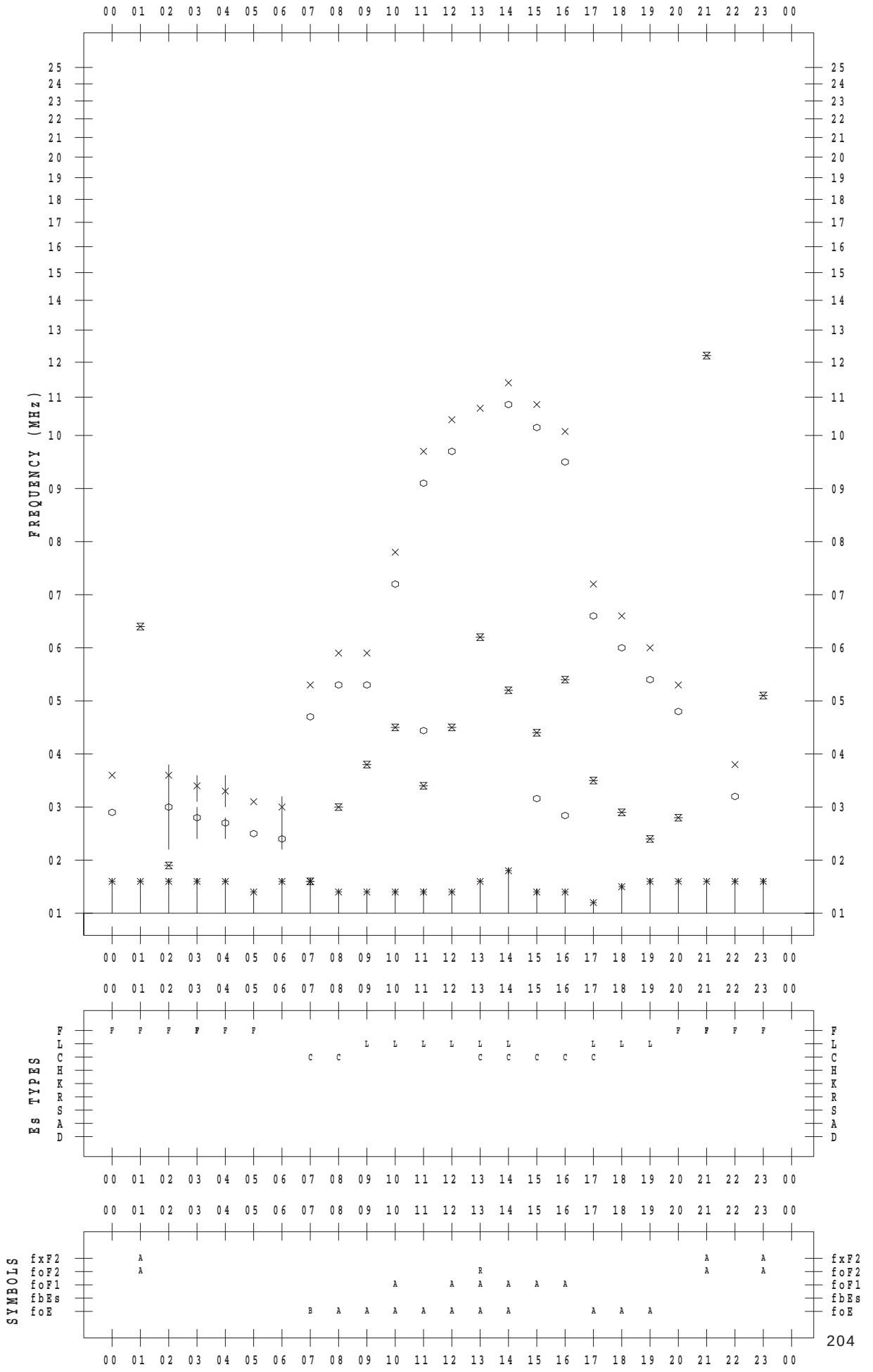
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 4

135 °E MEAN TIME



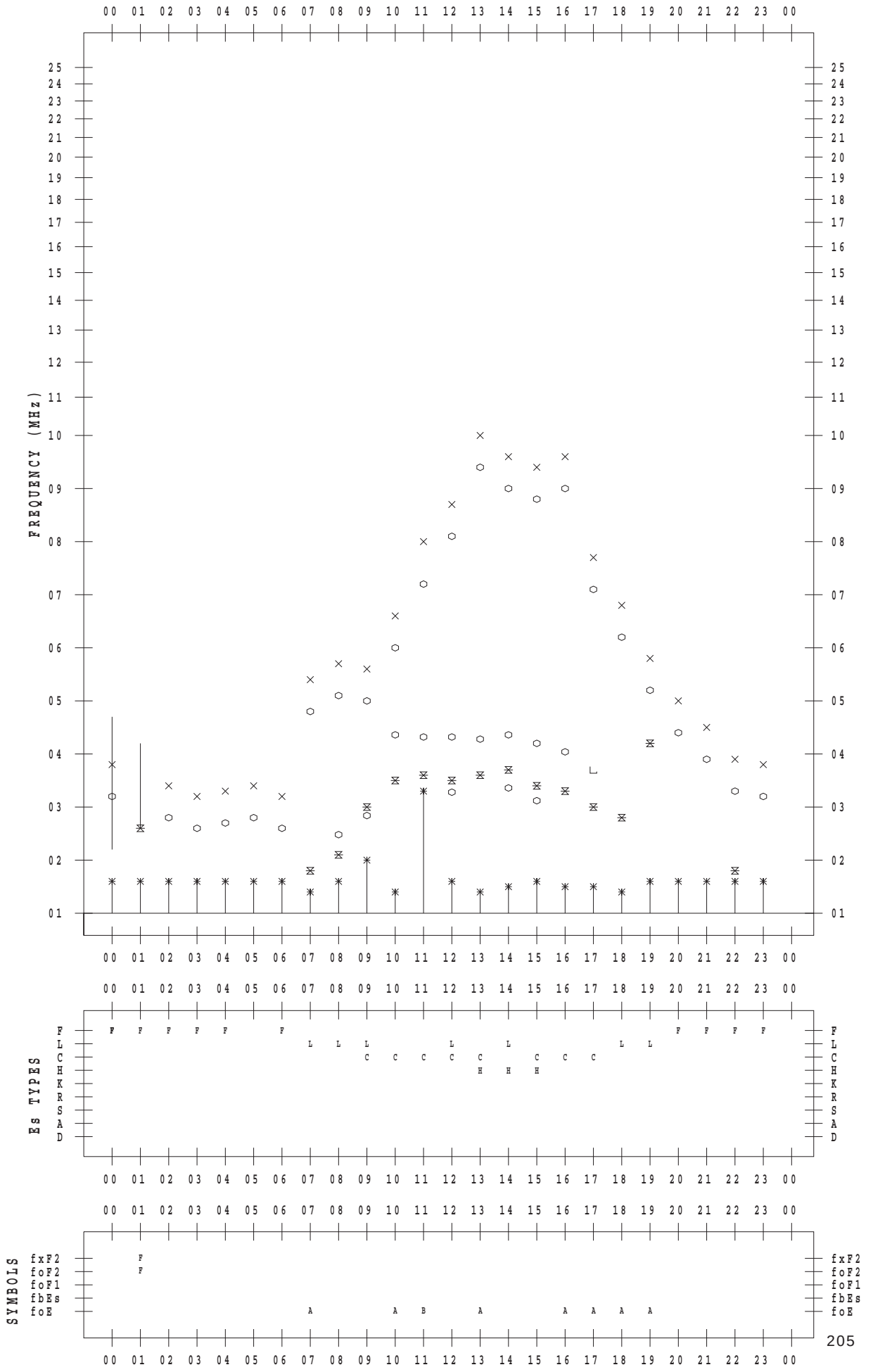
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 5

135 °E MEAN TIME



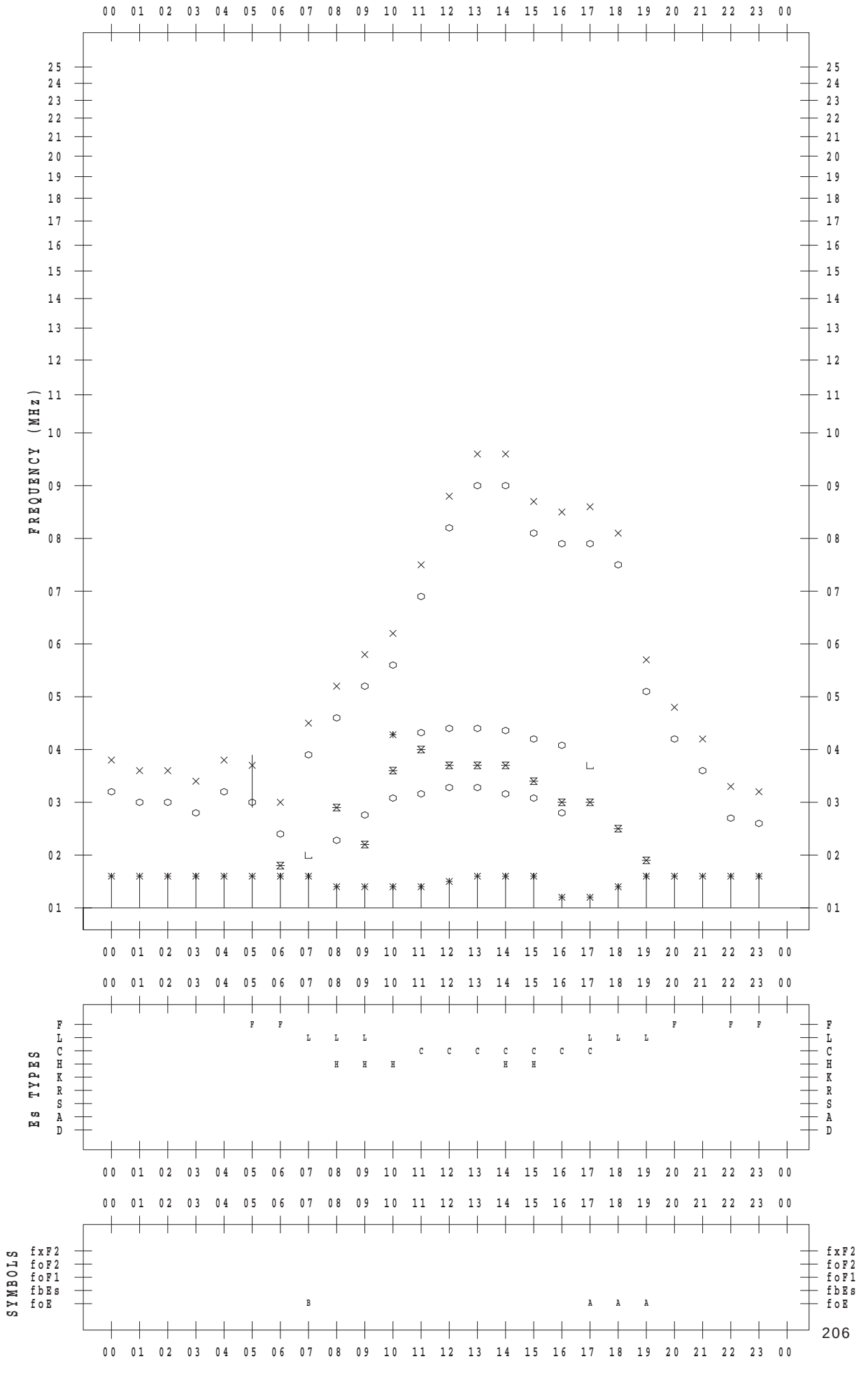
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 6

135 °E MEAN TIME



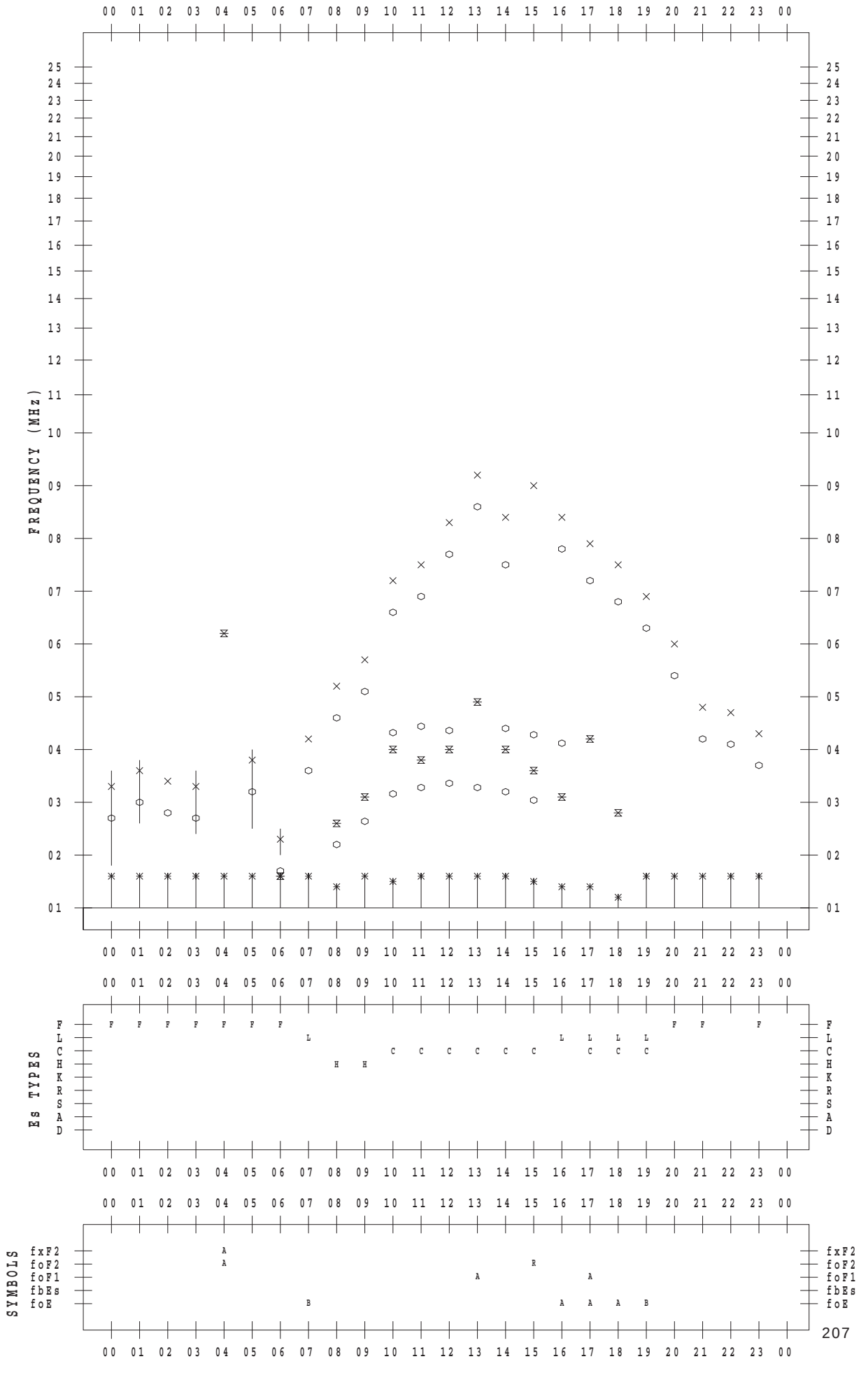
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 7

135 °E MEAN TIME



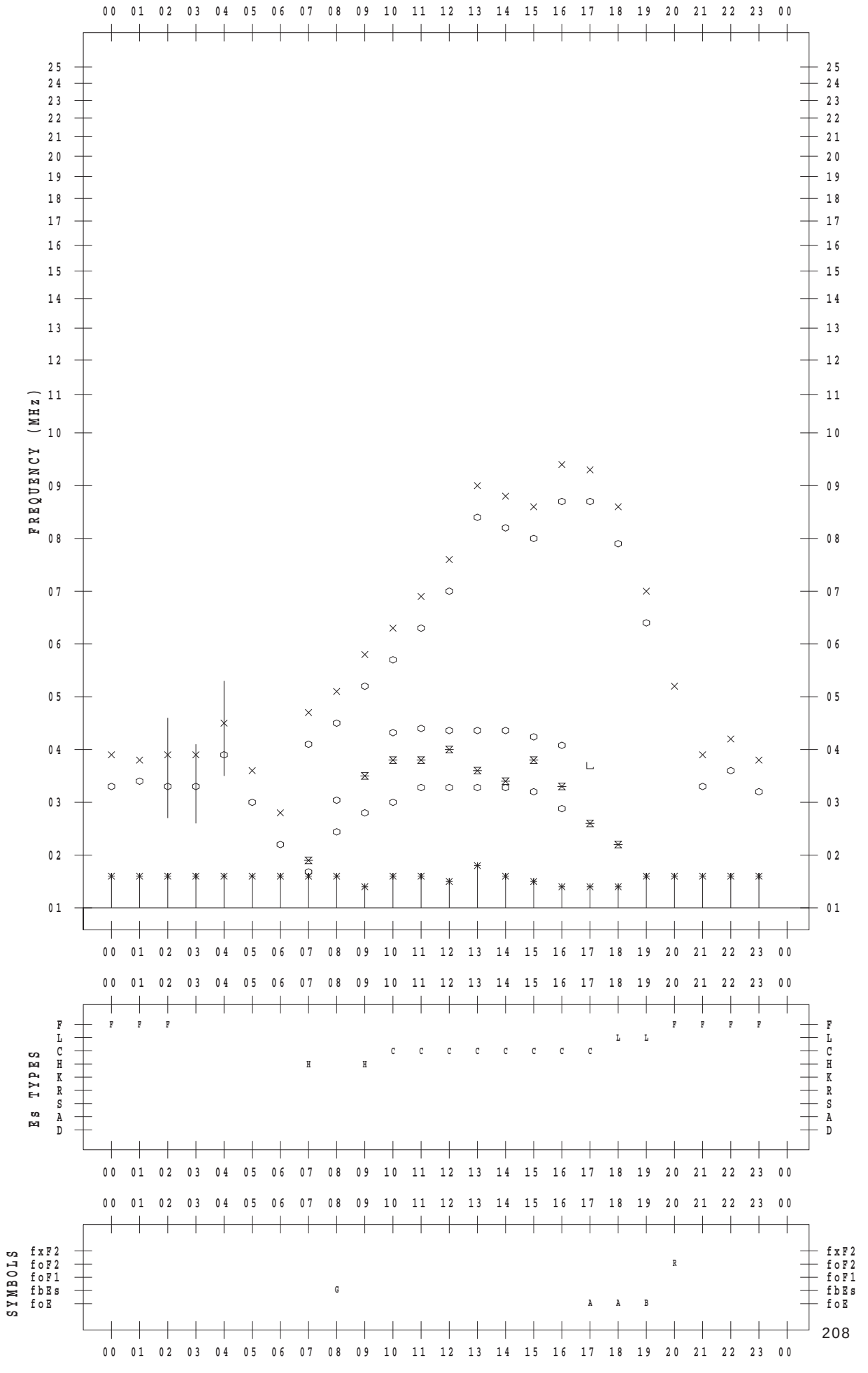
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 8

135 °E MEAN TIME



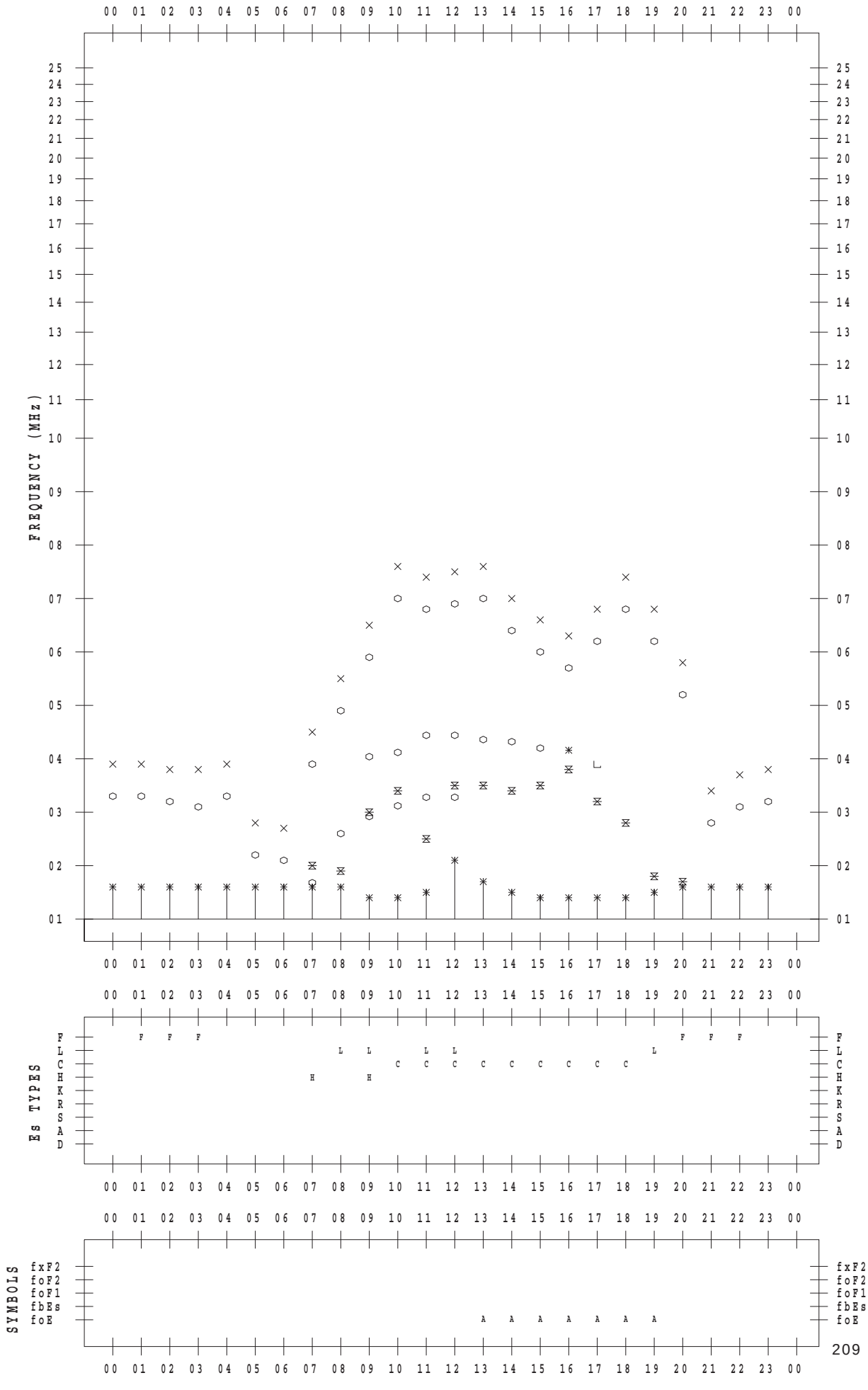
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/ 9

135 °E MEAN TIME



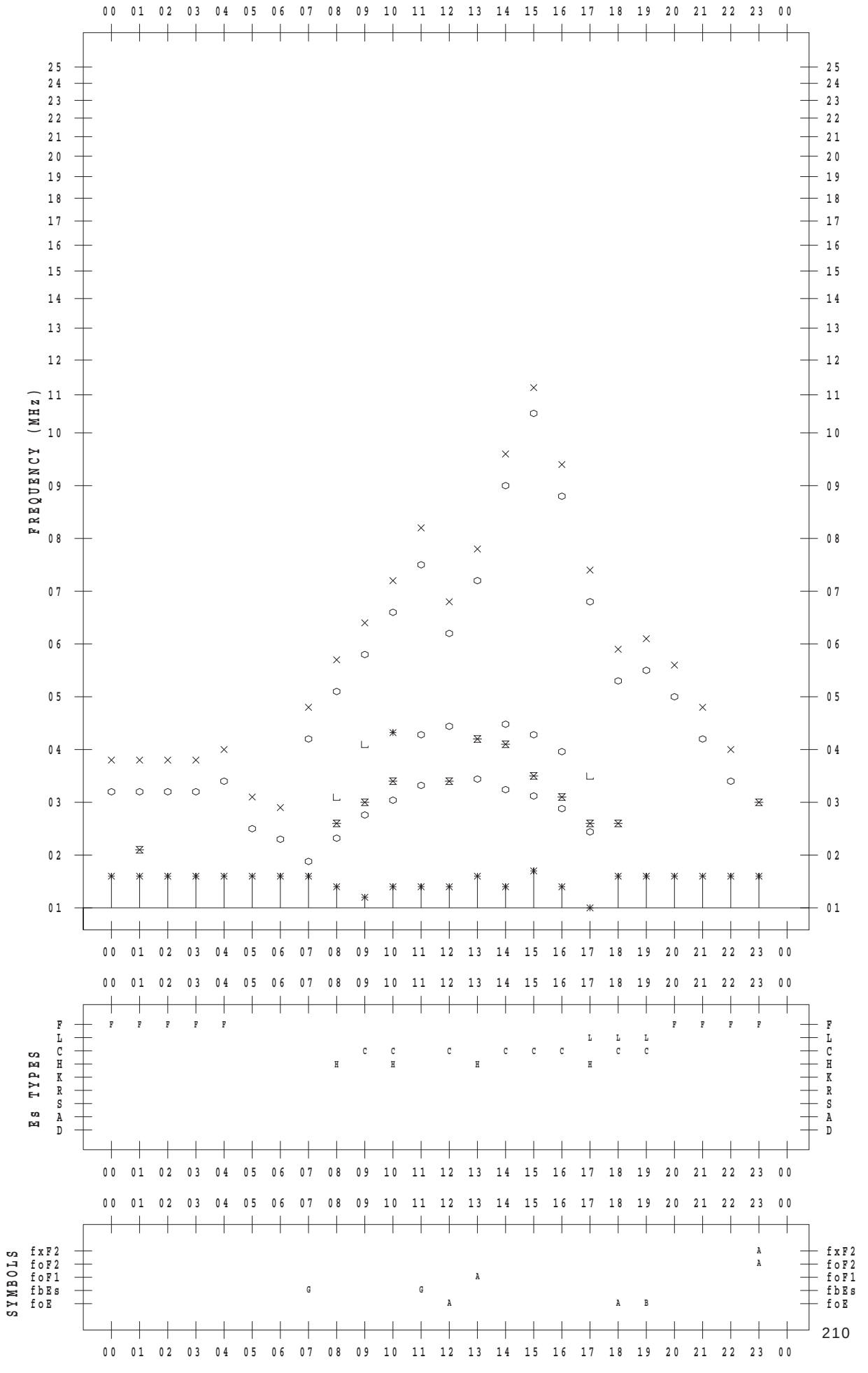
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/10

135 °E MEAN TIME



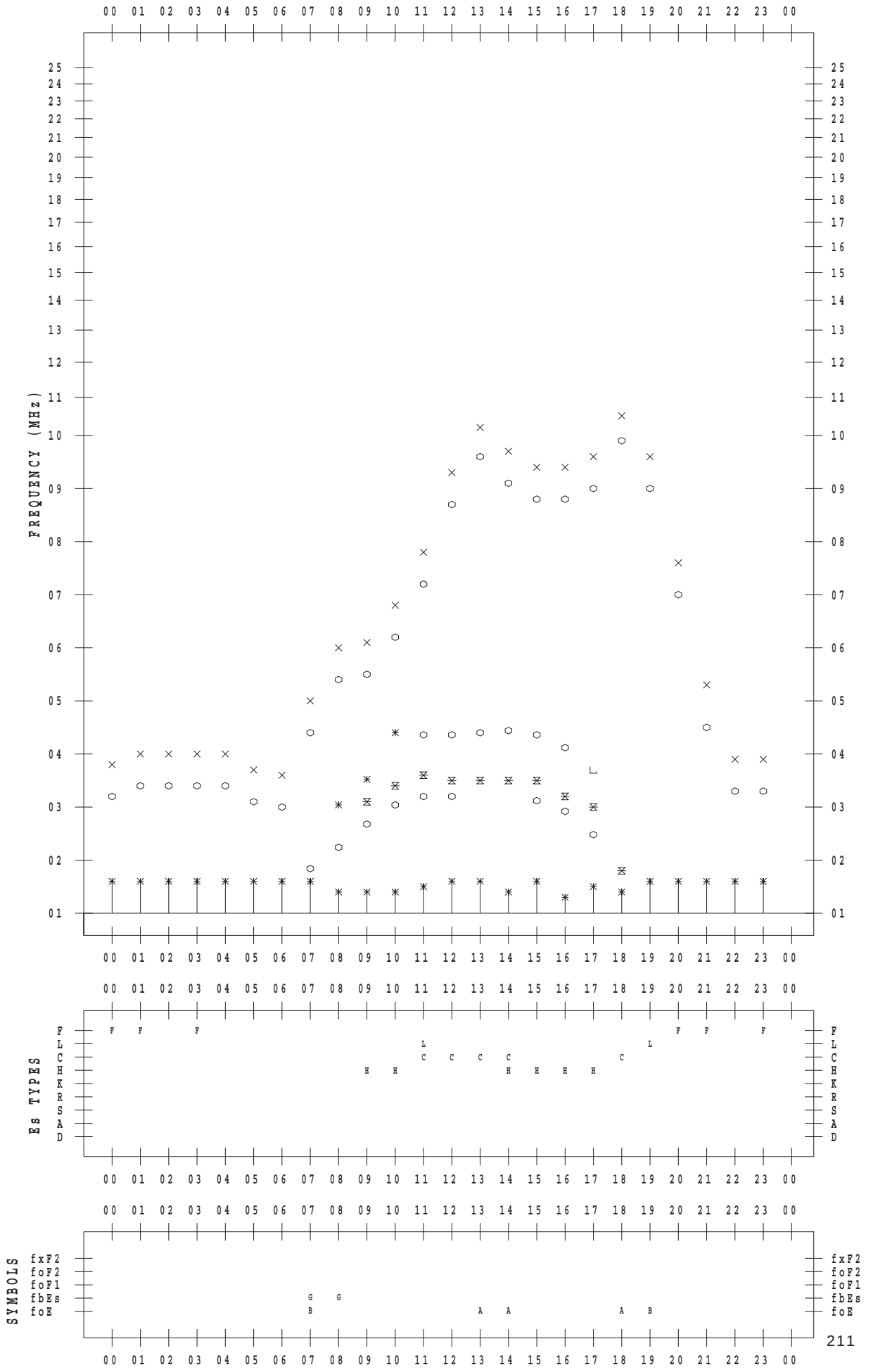
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/11

135 °E MEAN TIME



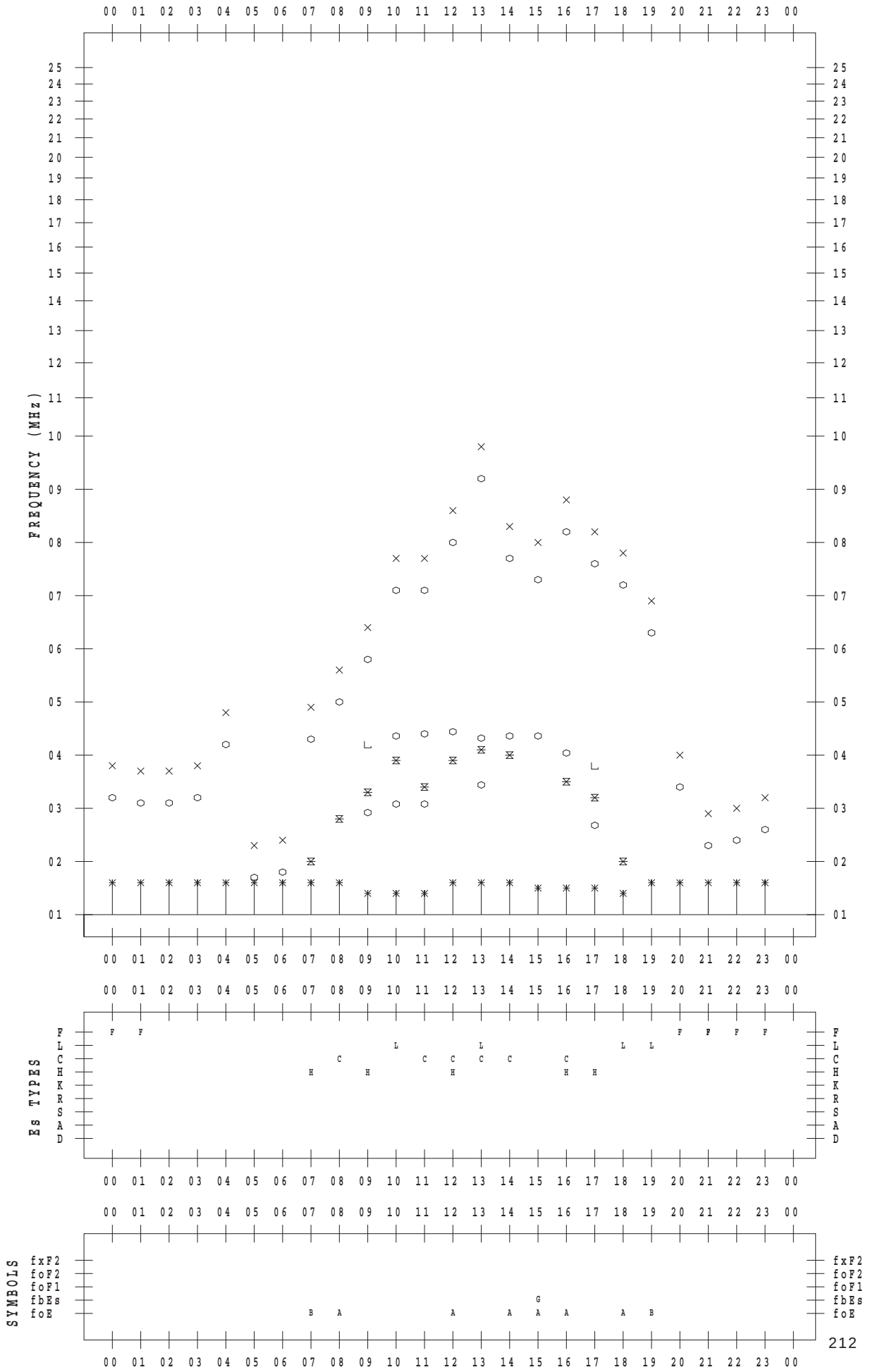
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/12

135 °E MEAN TIME



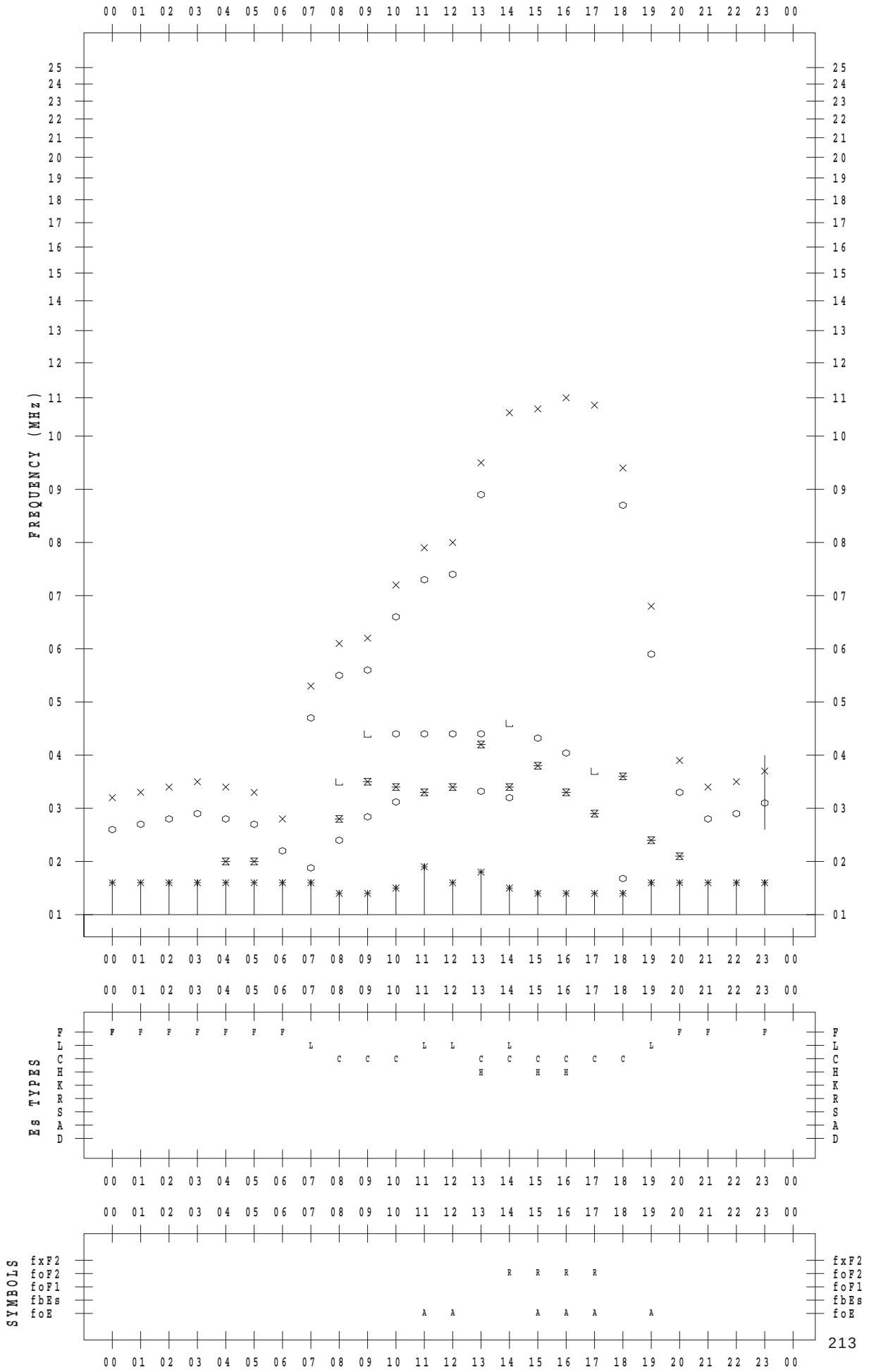
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/13

135 °E MEAN TIME



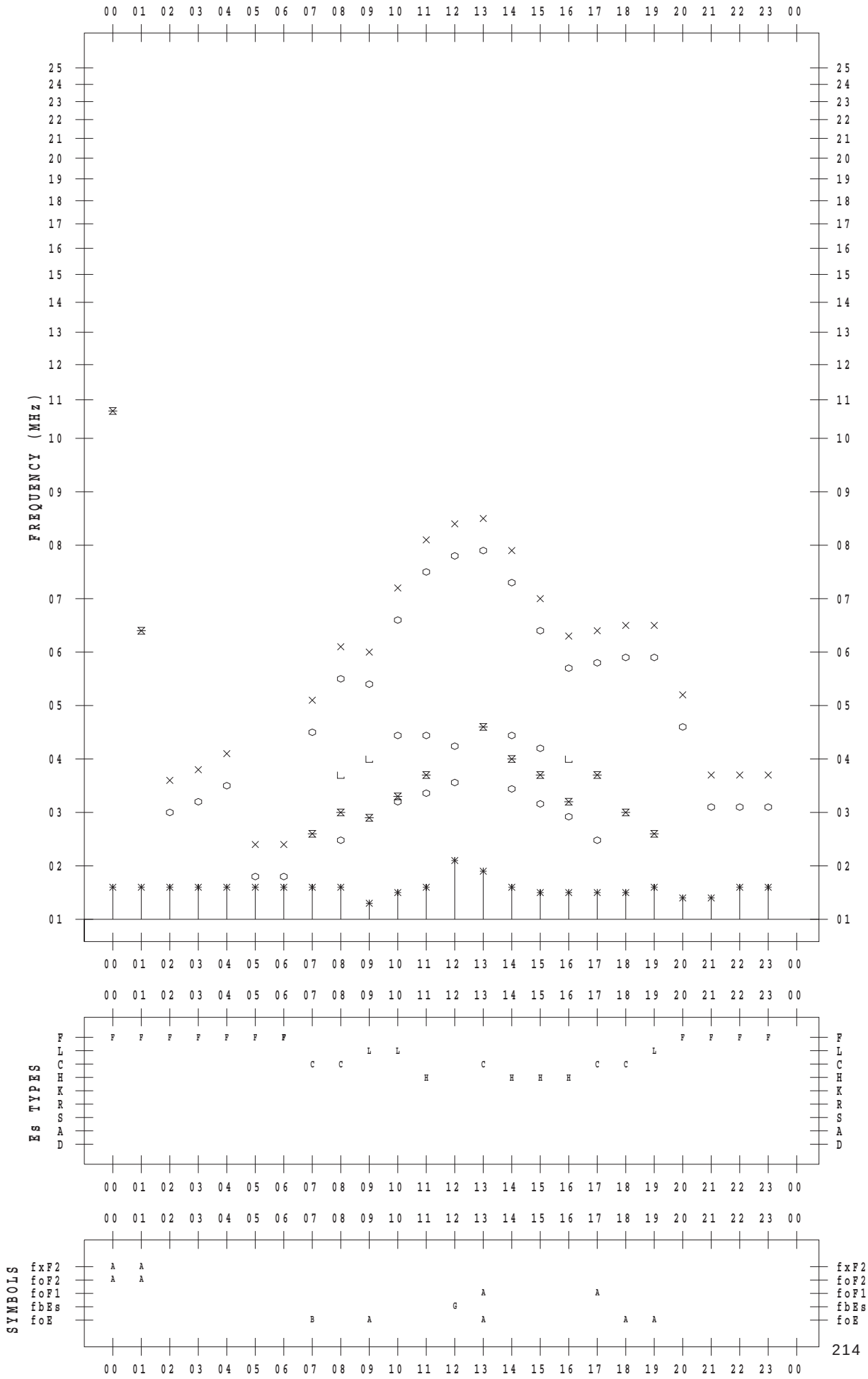
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/14

135 °E MEAN TIME



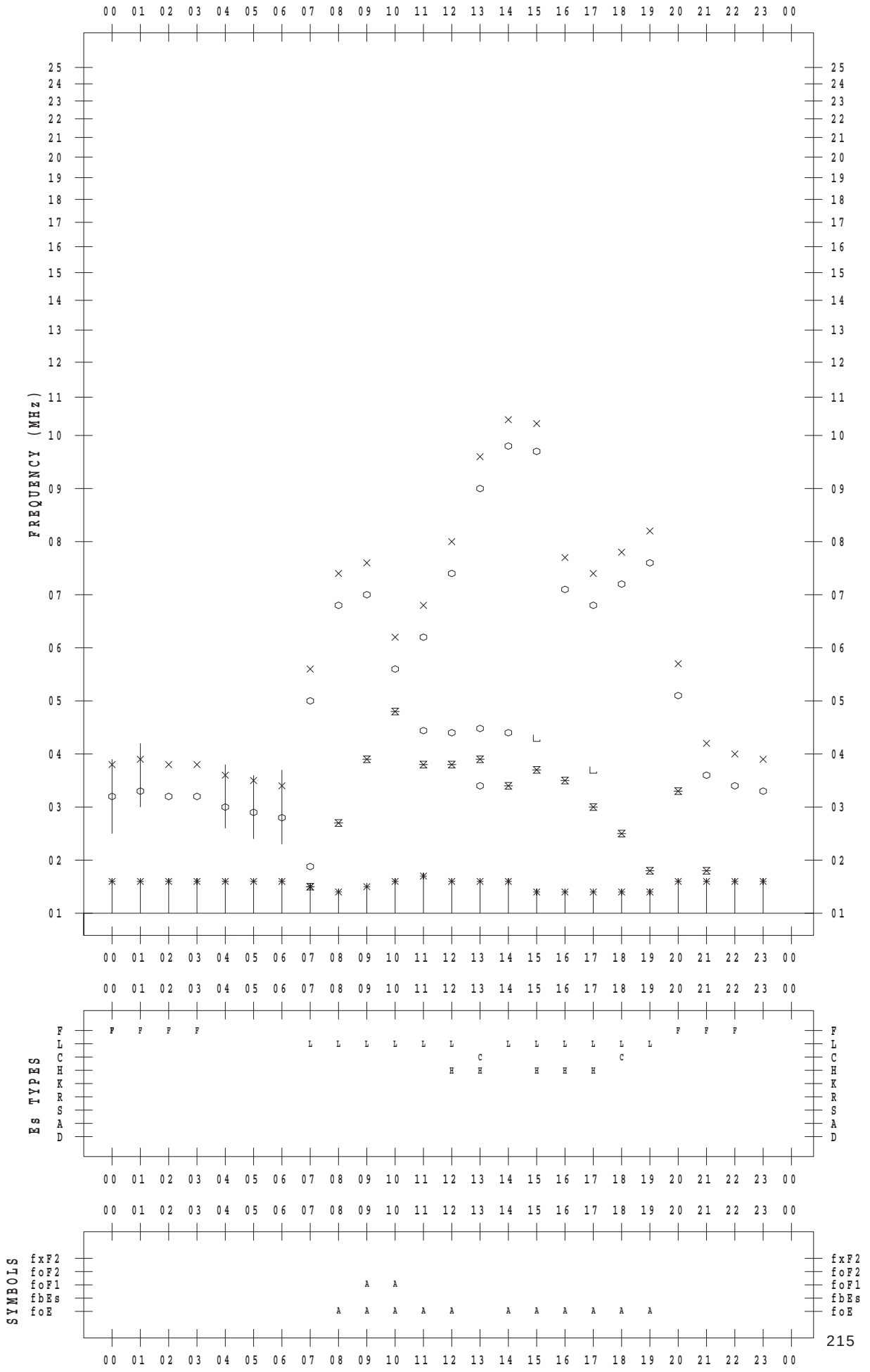
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/15

135 °E MEAN TIME



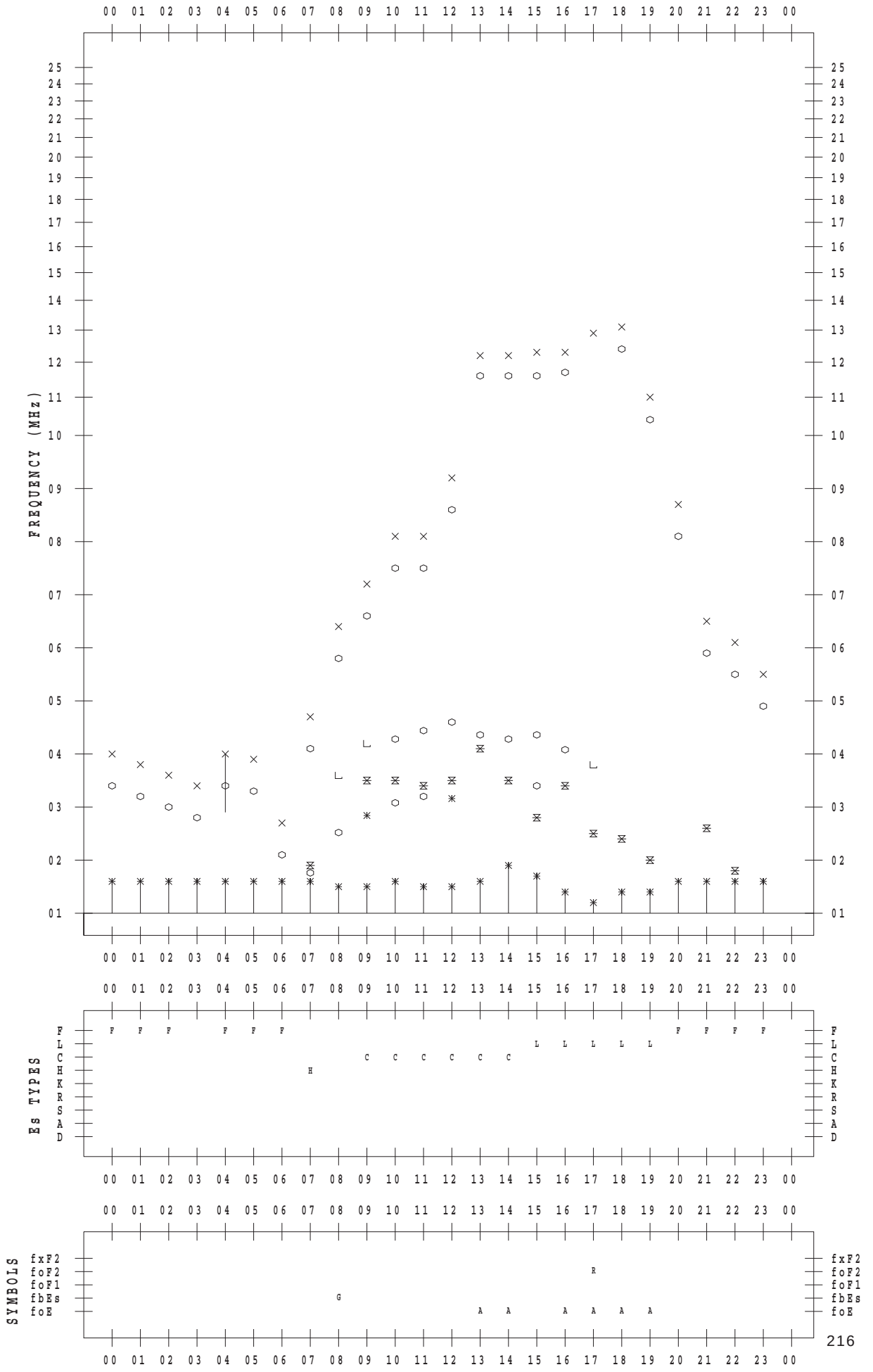
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/16

135 °E MEAN TIME



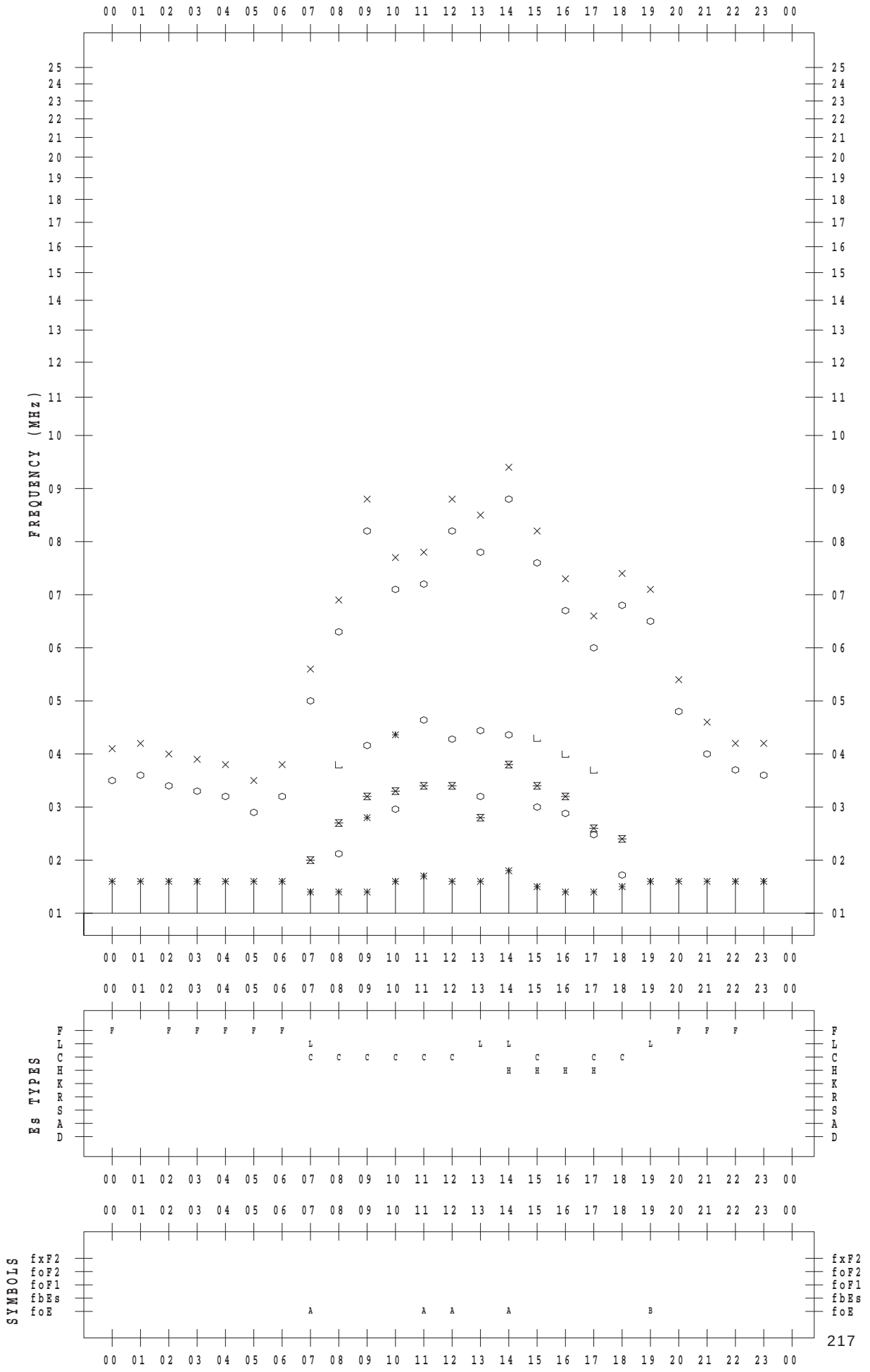
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/17

135 °E MEAN TIME



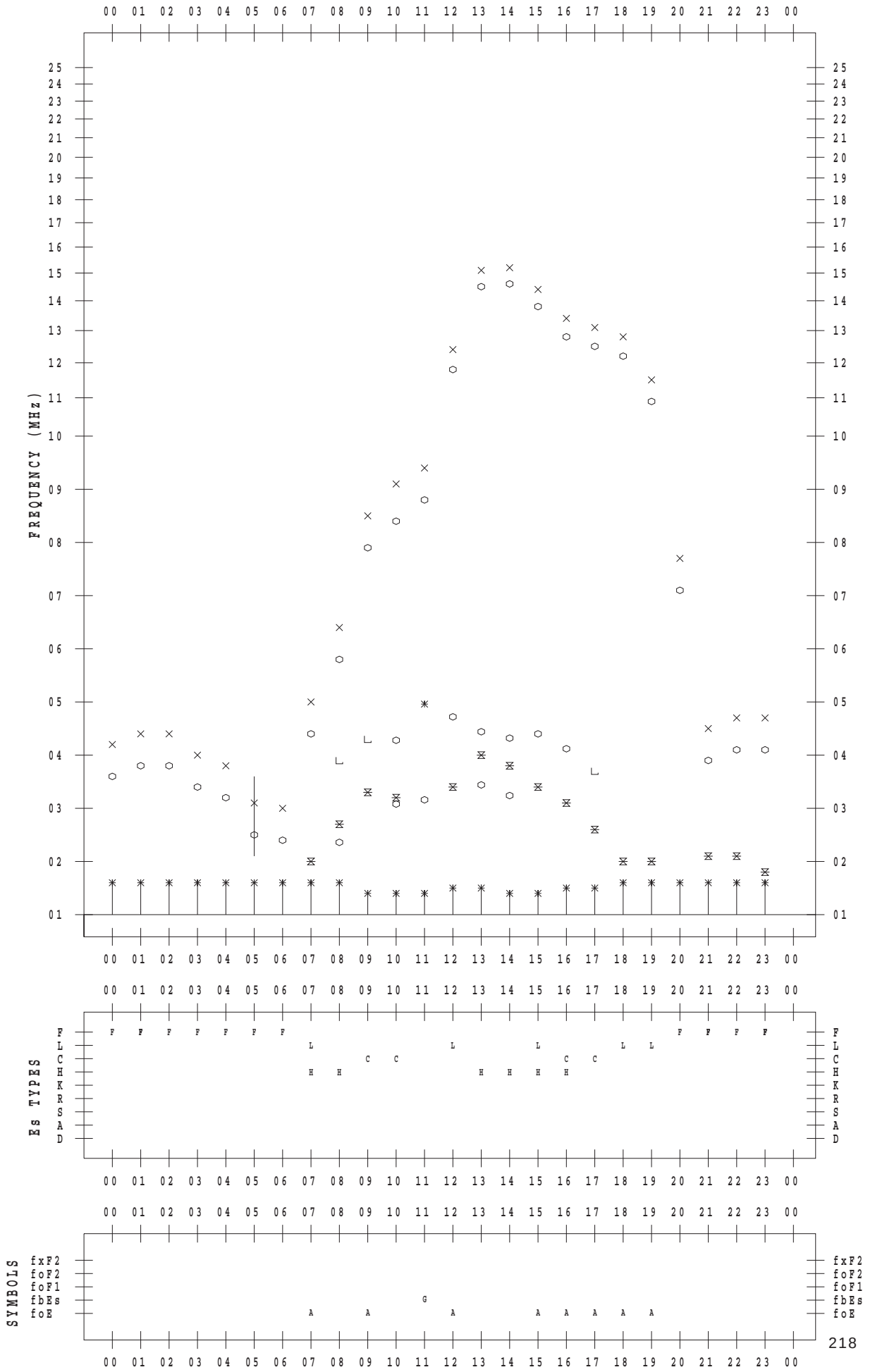
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/18

135 °E MEAN TIME



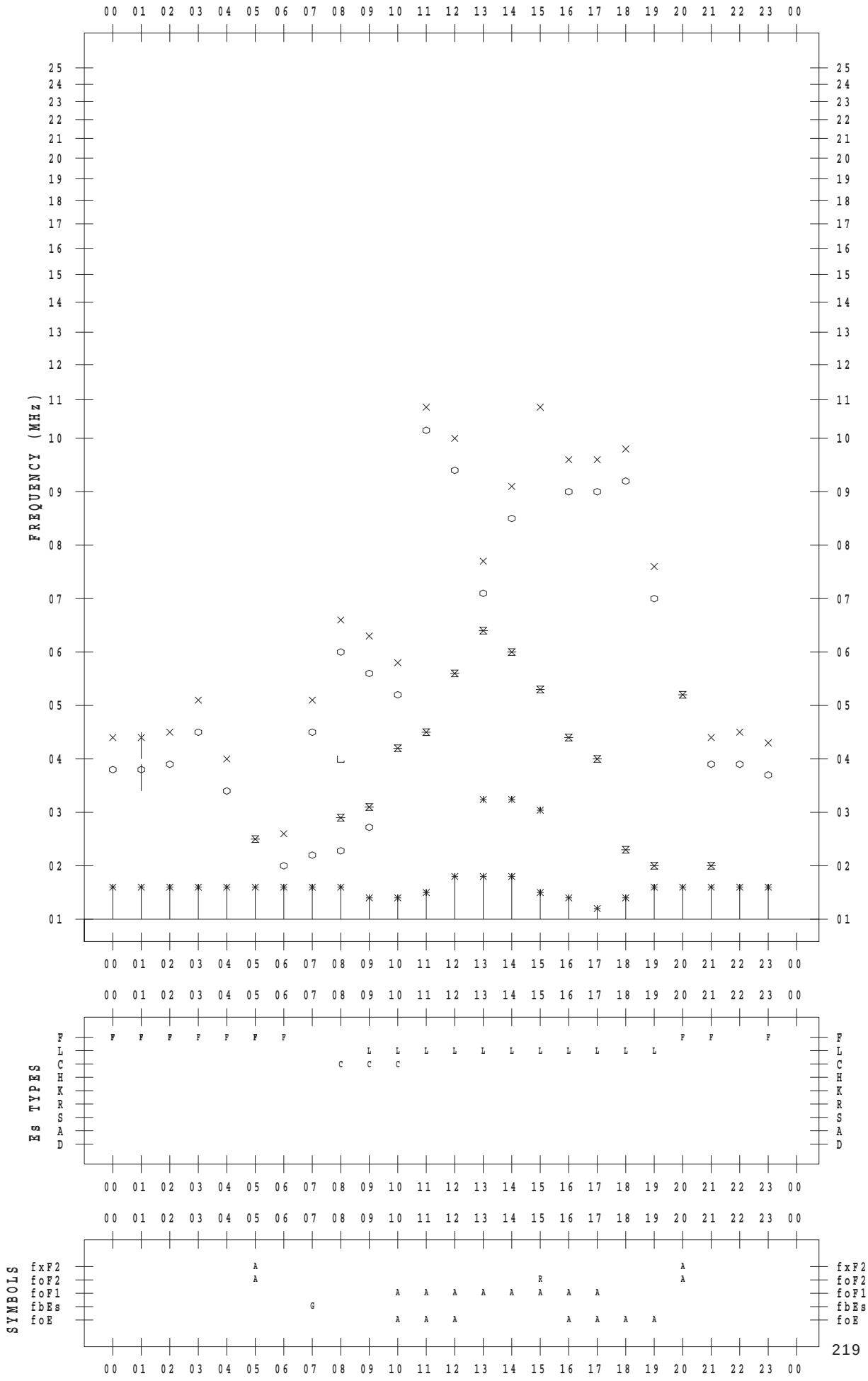
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/19

135 °E MEAN TIME



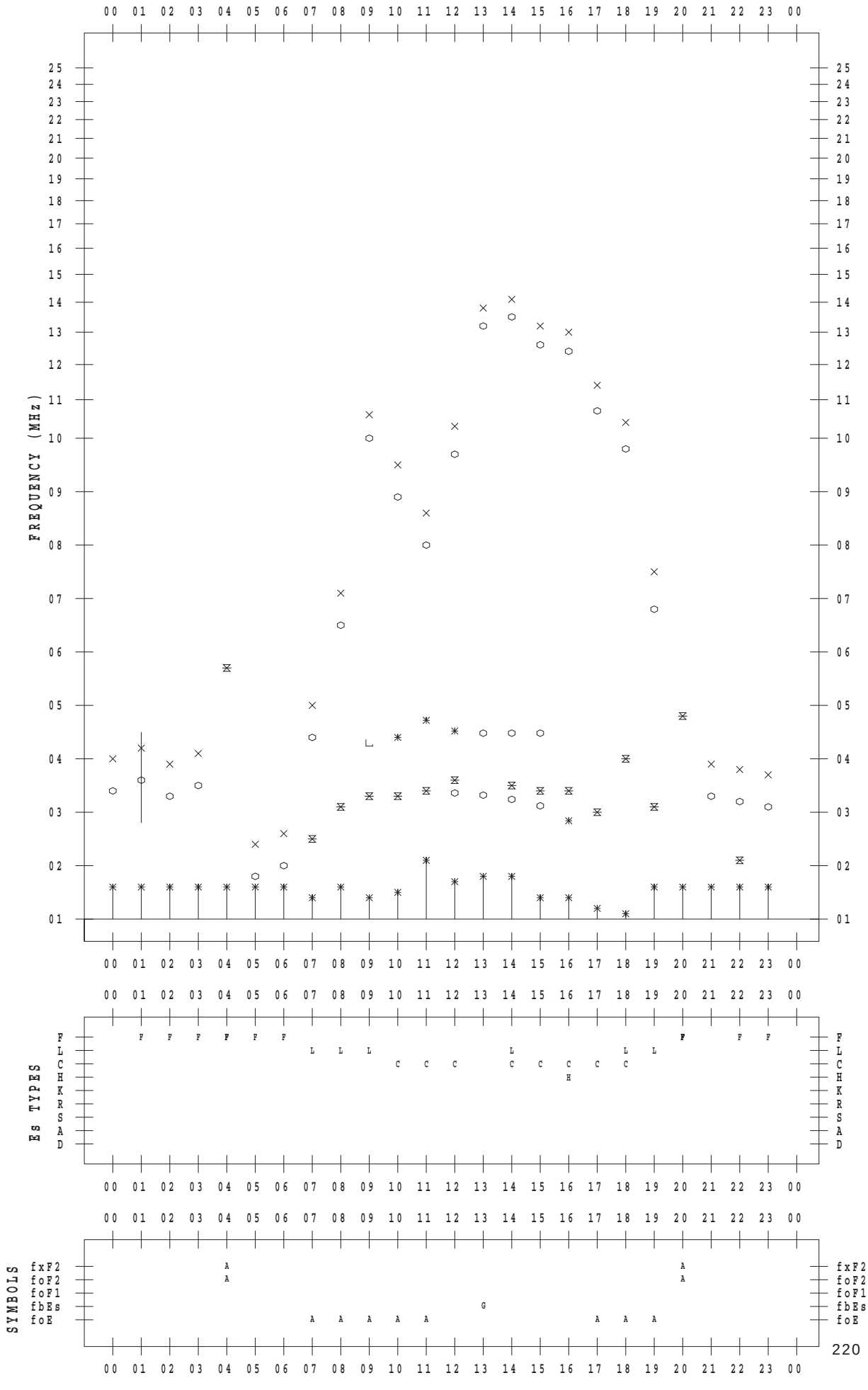
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/20

135 °E MEAN TIME



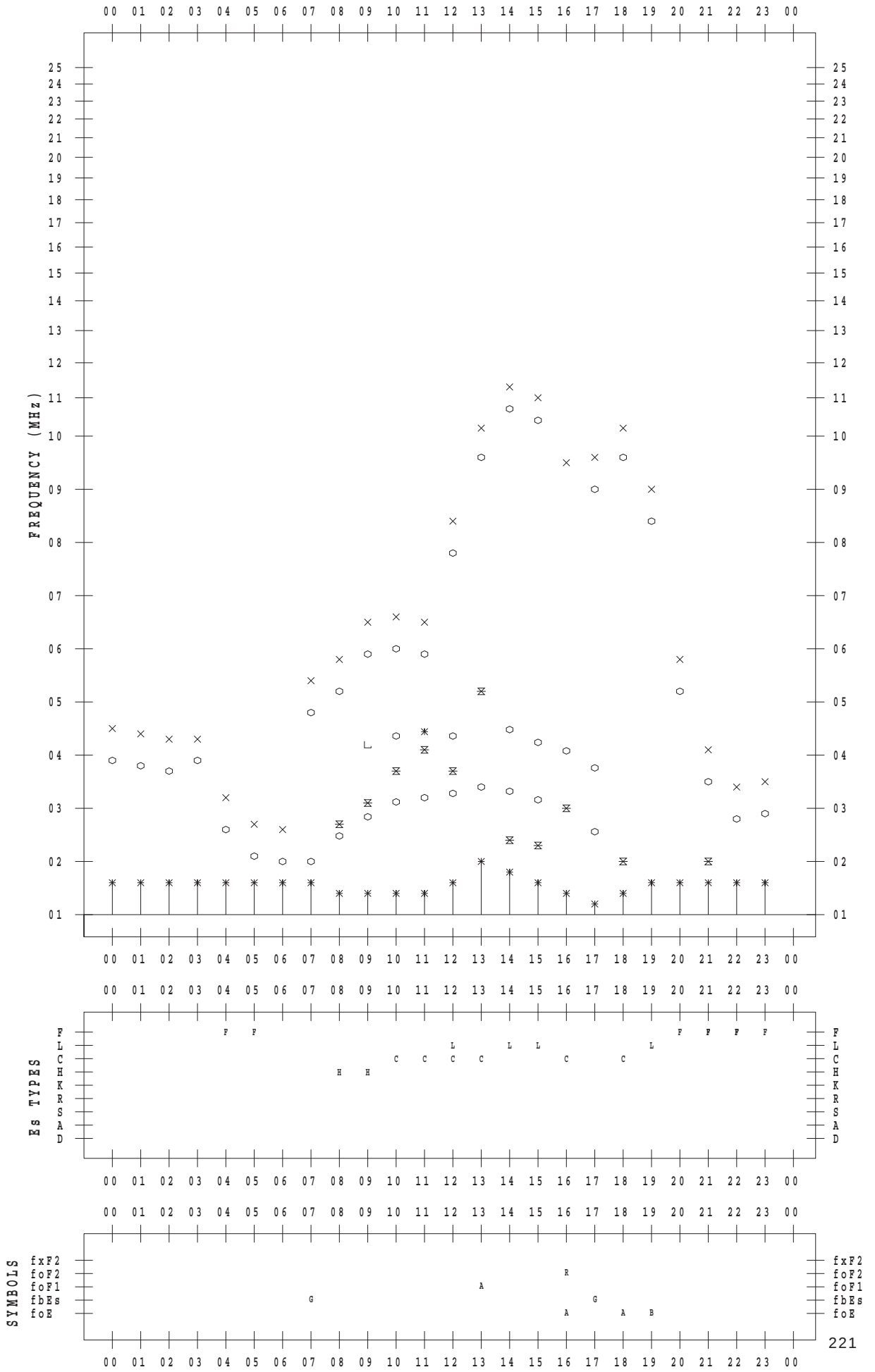
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/21

135 °E MEAN TIME



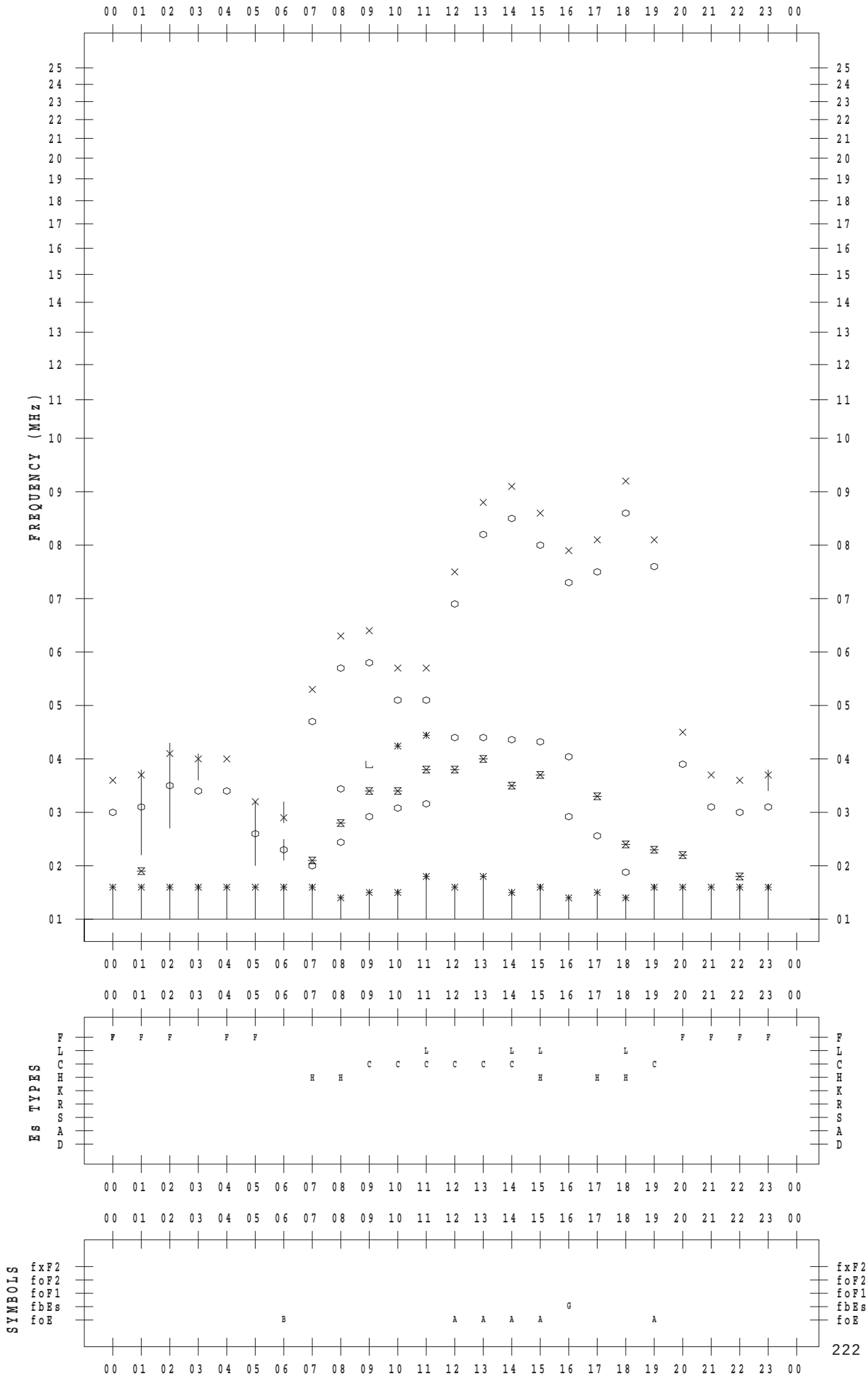
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/22

135 °E MEAN TIME



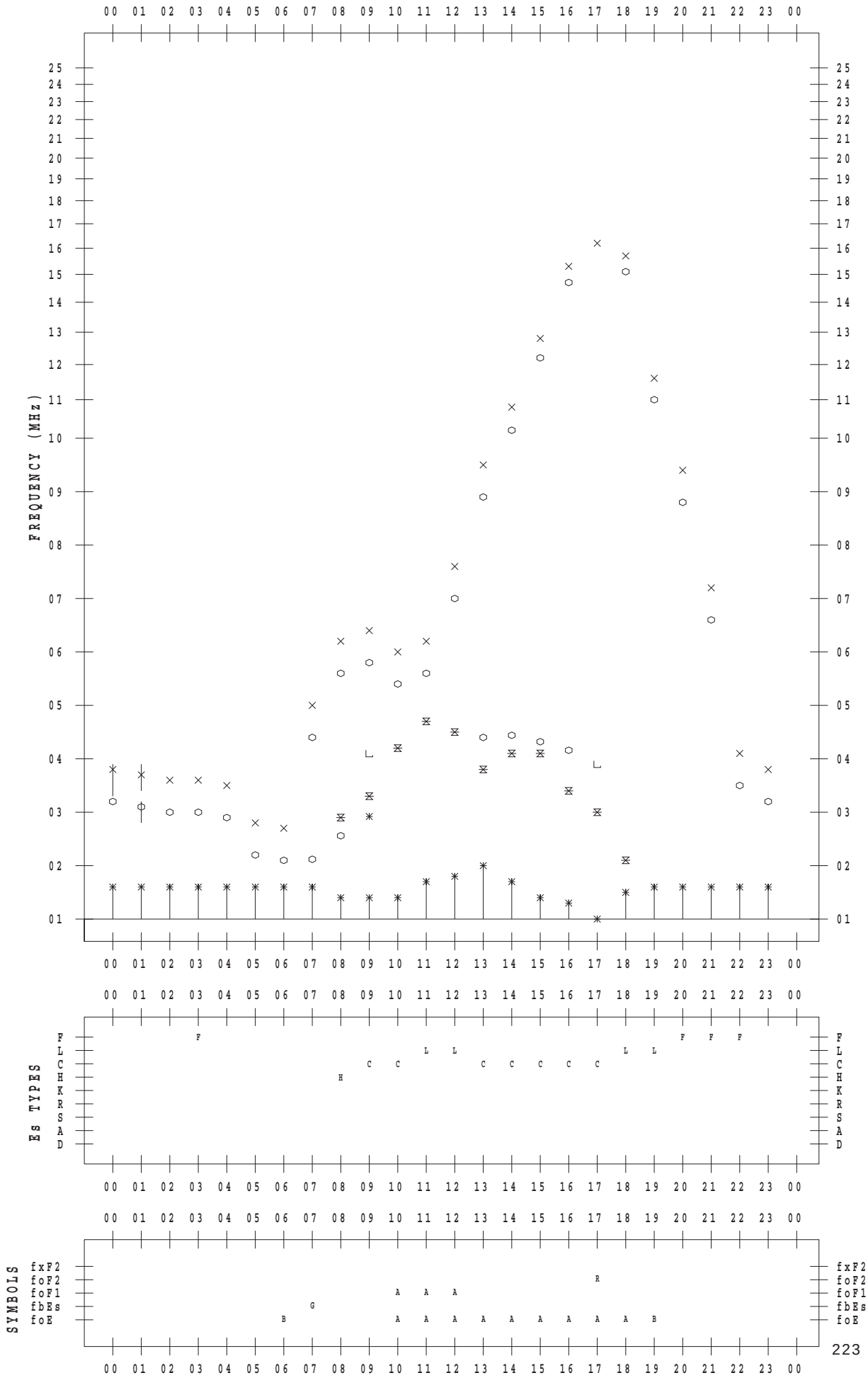
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/23

135 °E MEAN TIME



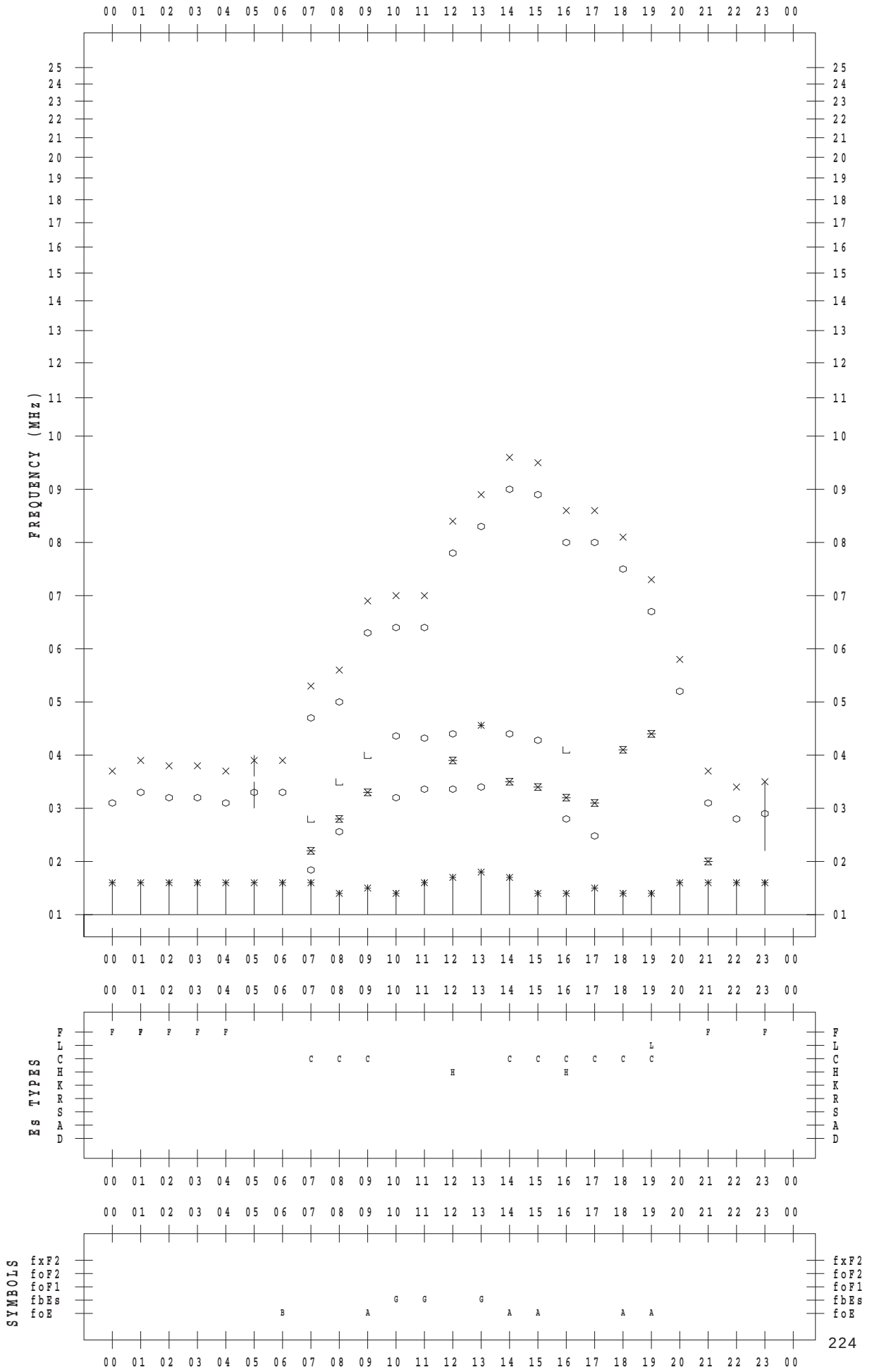
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/24

135 °E MEAN TIME



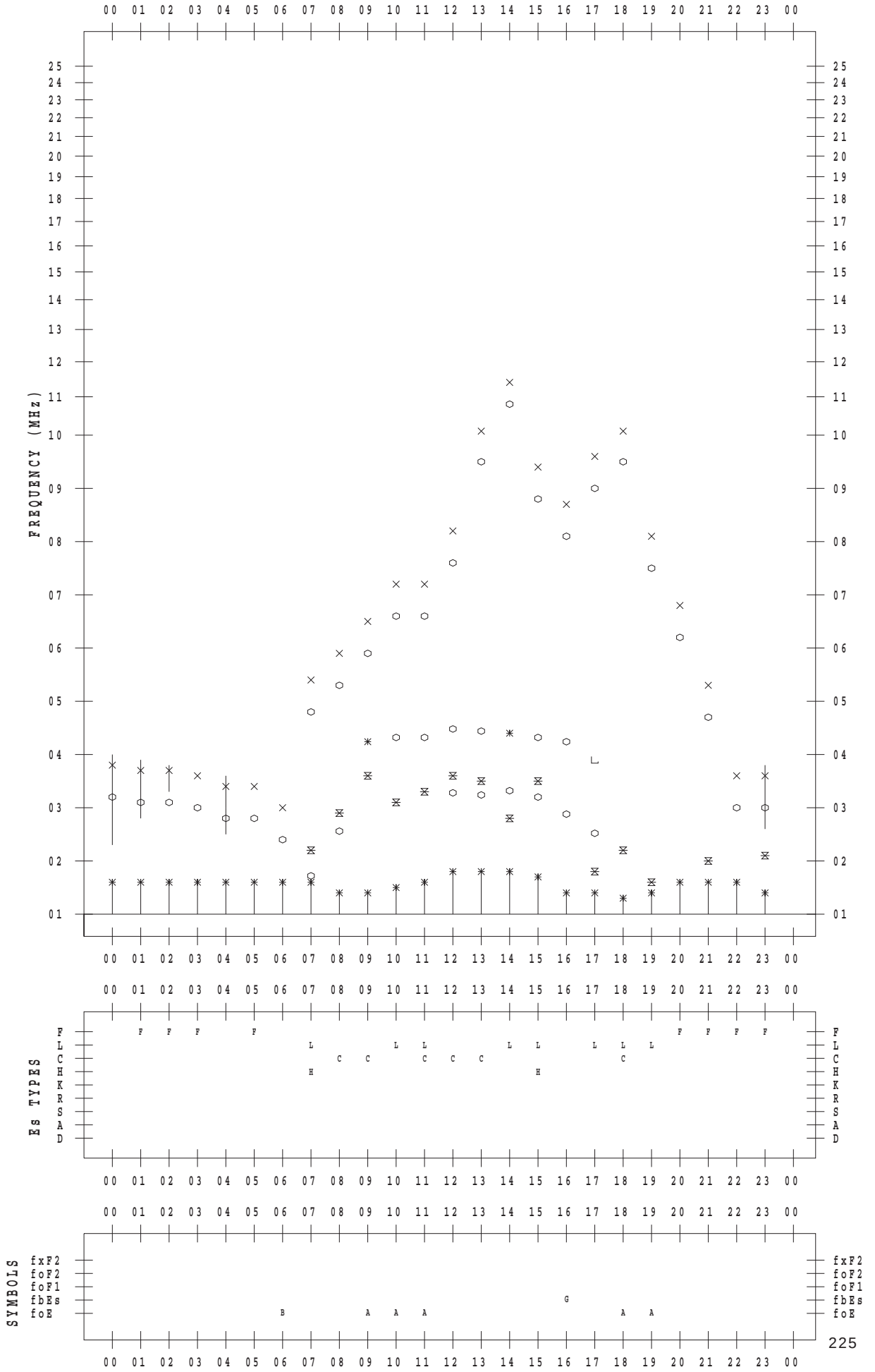
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/25

135 °E MEAN TIME



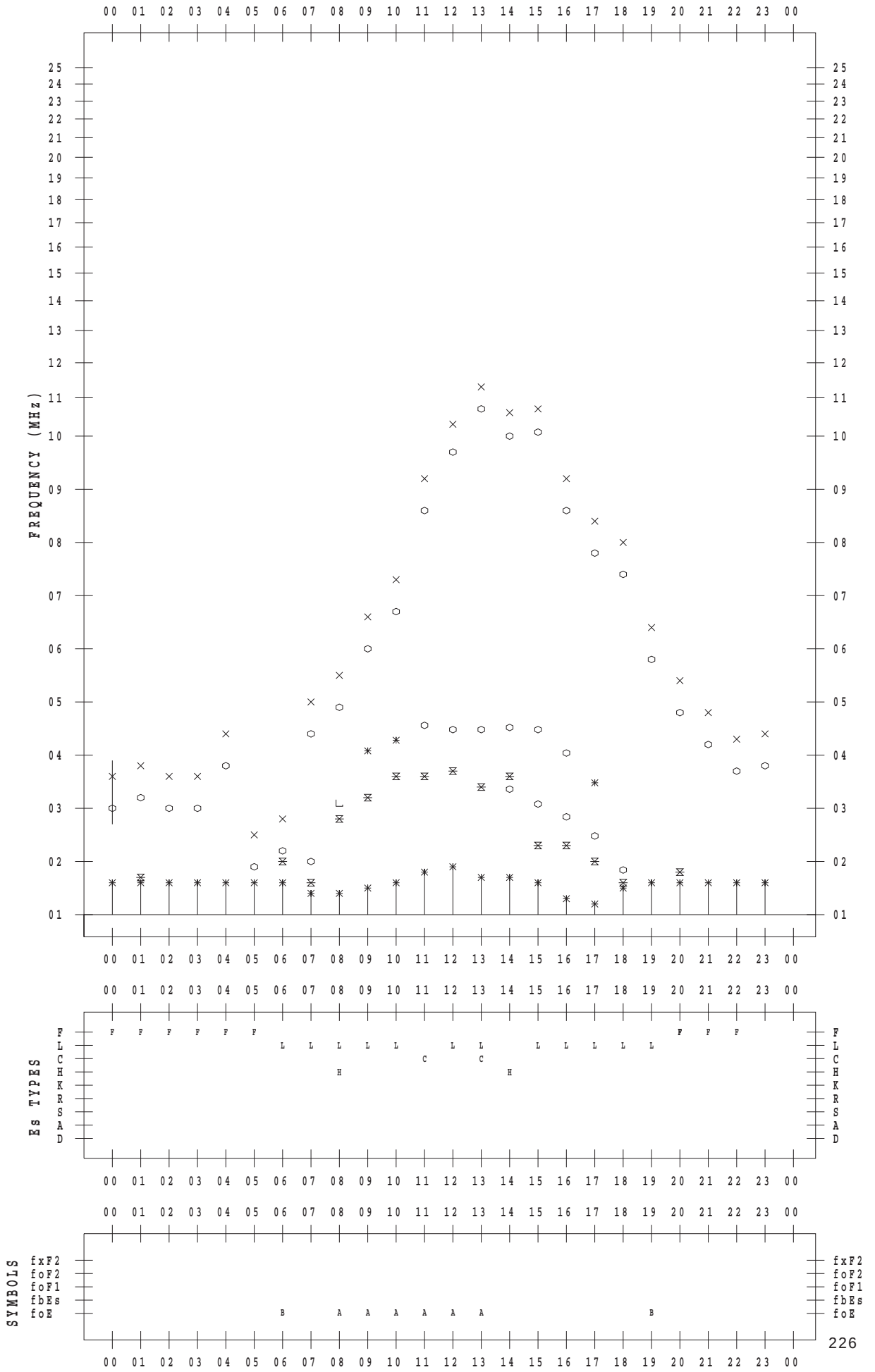
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/26

135 °E MEAN TIME



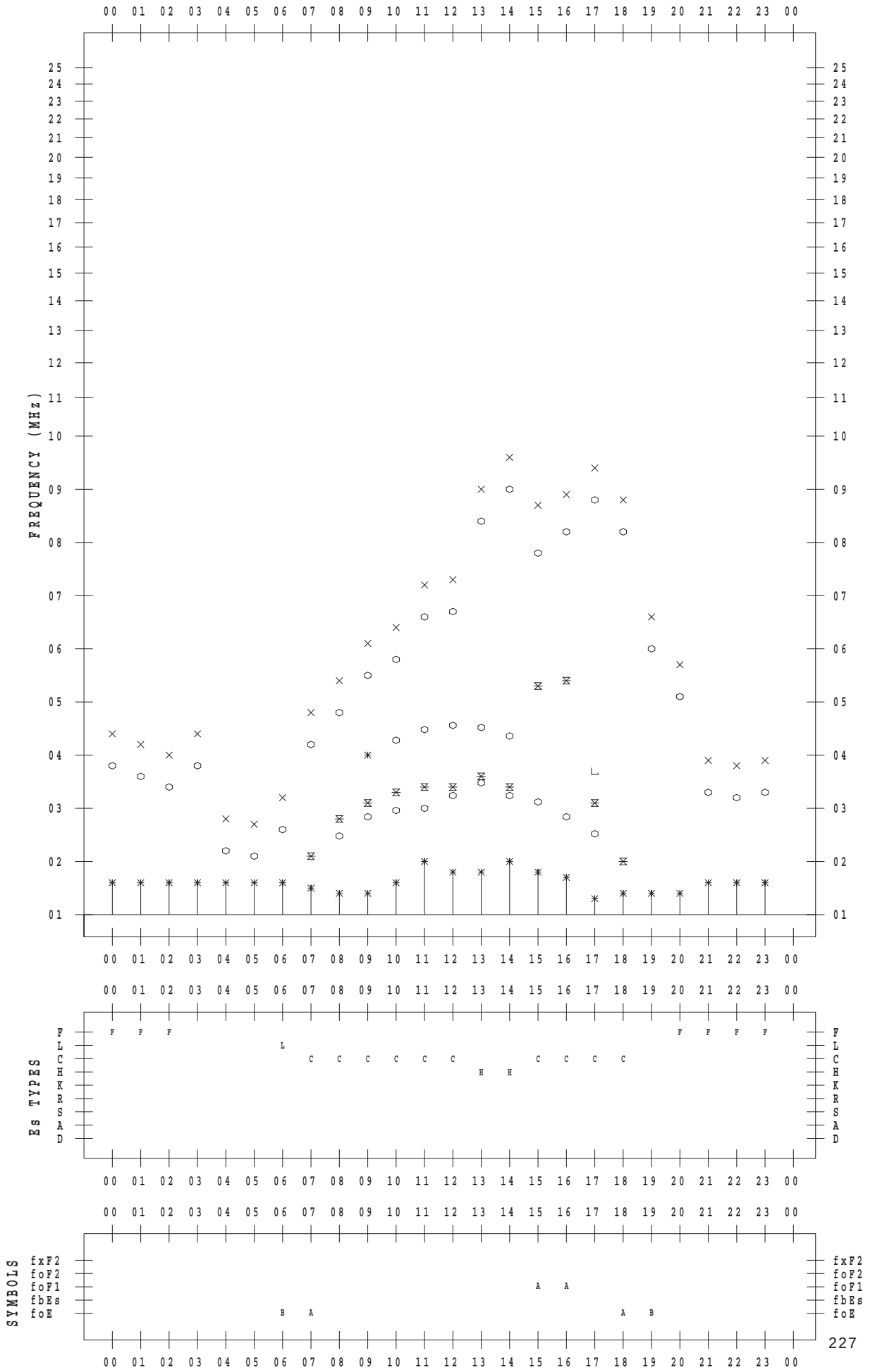
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/27

135 °E MEAN TIME



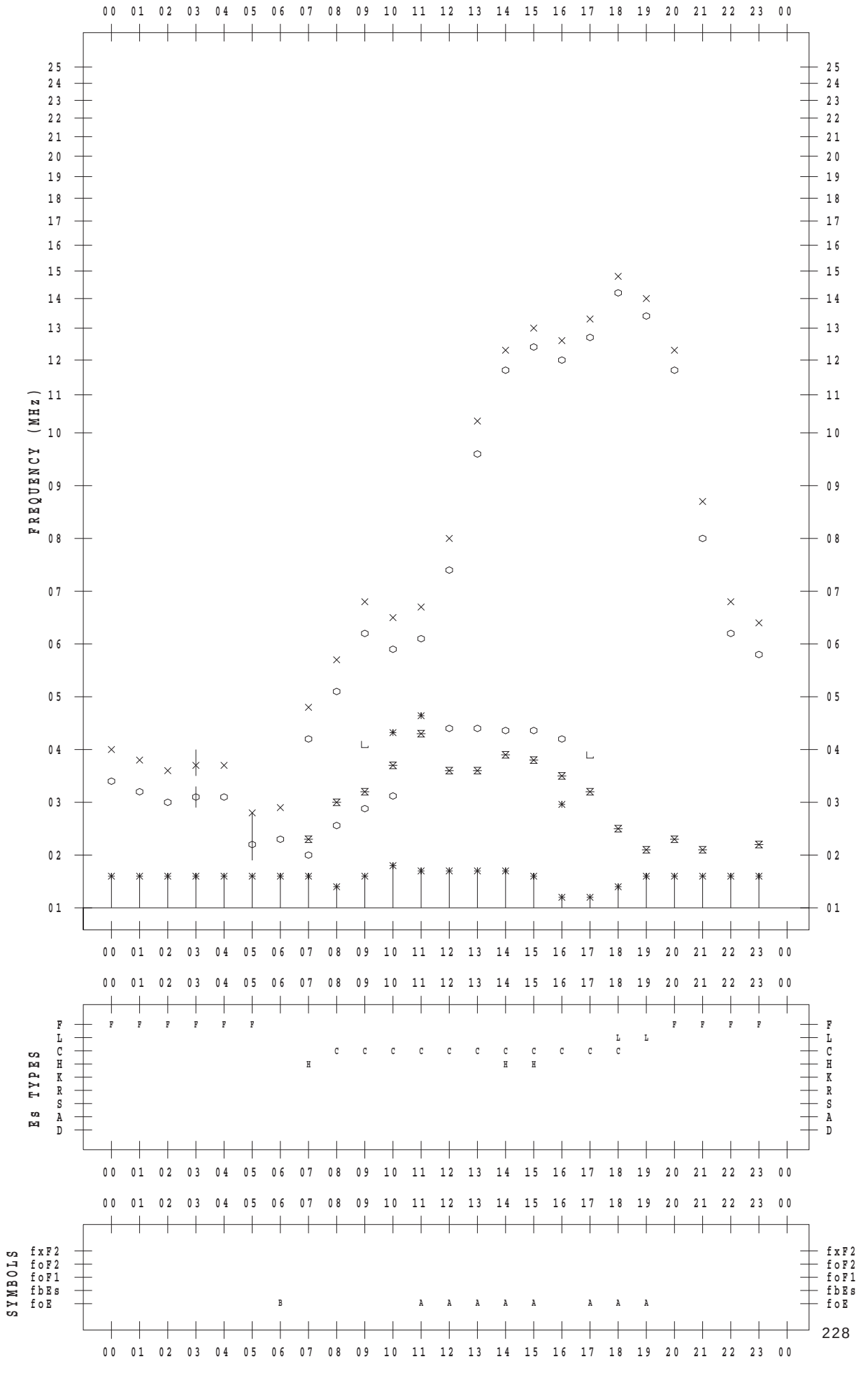
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/28

135 °E MEAN TIME



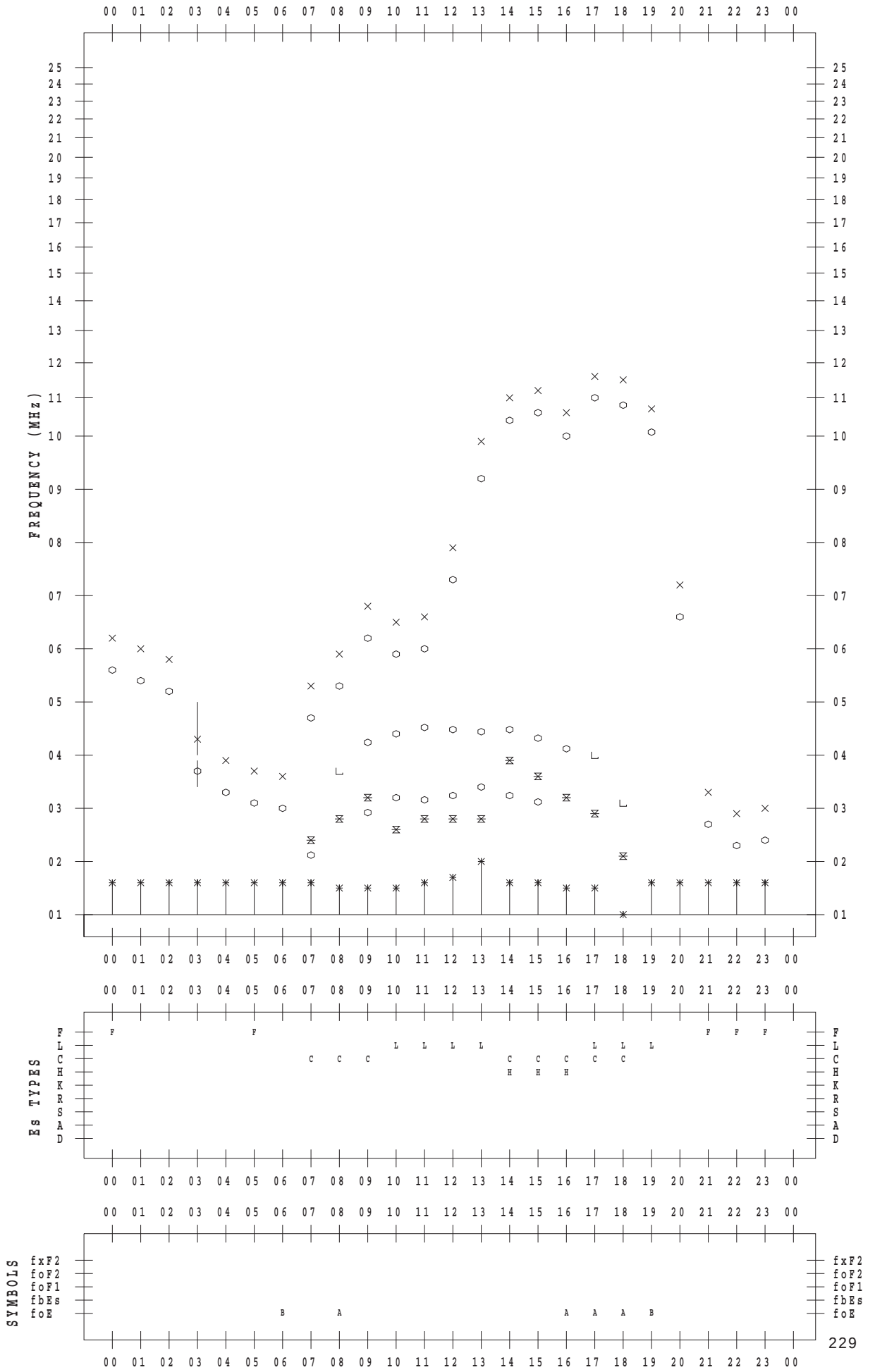
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/29

135 °E MEAN TIME



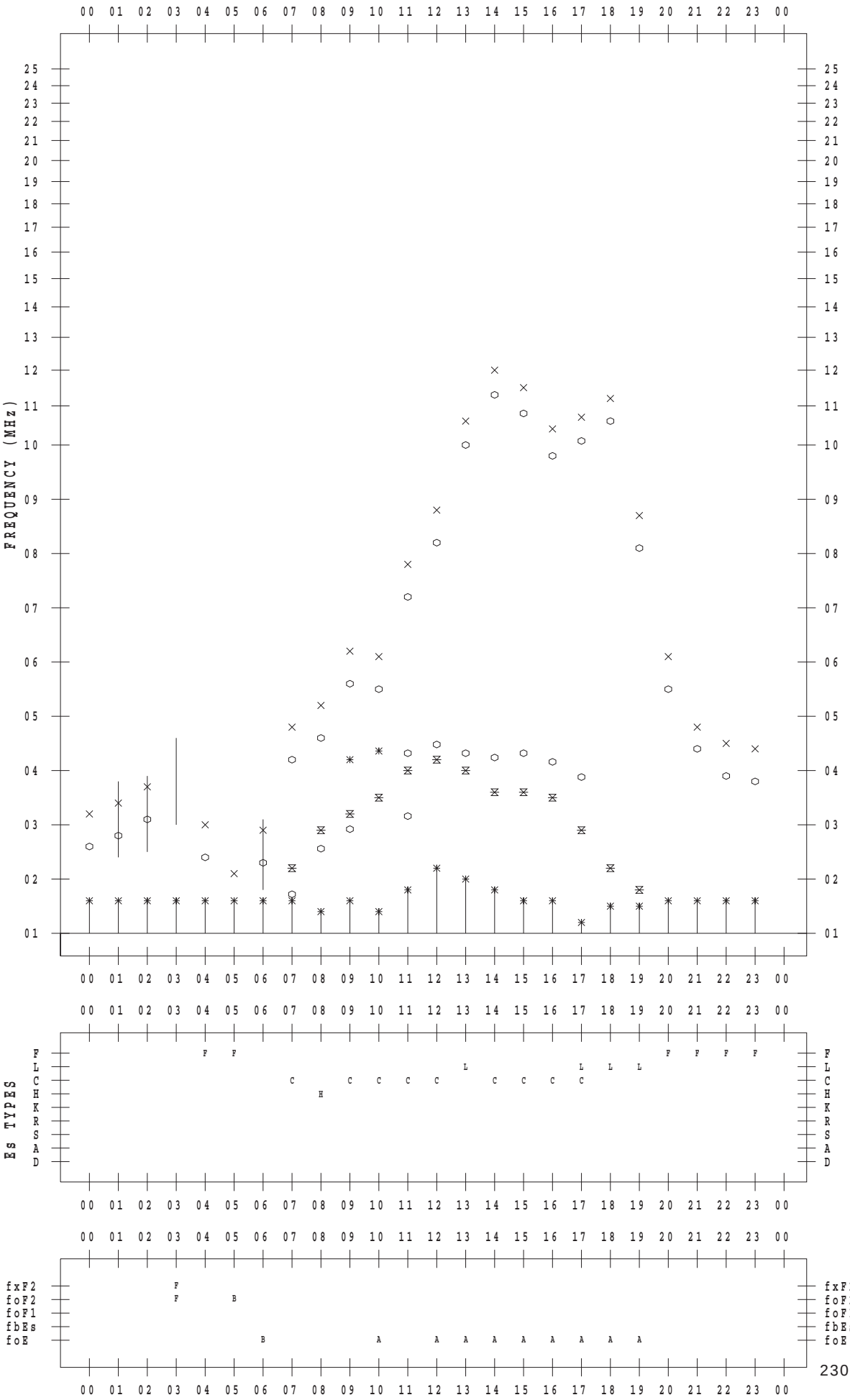
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 3/31

135 °E MEAN TIME