F-841

IONOSPHERIC DATA IN JAPAN

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CONTENTS

Preface
Introduction ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 1
A. Ionosphere
A1. Automatic Scaling
Hourly Values at Wakkanai (*foF2, fEs* and *fmin*) ・・・・・・・・ 4
Hourly Values at Kokubunji (*foF2, fEs* and *fmin*) ・・・・・・・・ 7
Hourly Values at Yamagawa (*foF2, fEs* and *fmin*) ・・・・・・・・ 10
Hourly Values at Okinawa (*foF2, fEs* and *fmin*) ・・・・・・・・ 13
Summary Plots at Wakkanai ・・・・・・・・・・・・・・・・・・ 16
Summary Plots at Kokubunji ・・・・・・・・・・・・・・・・・・ 24
Summary Plots at Yamagawa ・・・・・・・・・・・・・・・・・・ 32
Summary Plots at Okinawa ・・・・・・・・・・・・・・・・・・・ 40
Monthly Medians *h'F* and *h'Es* ・・・・・・・・・・・・・・・・・ 48
Monthly Medians Plot of *foF2* ・・・・・・・・・・・・・・・・・ 50
A2. Manual Scaling
Hourly Values at Wakkanai ・・・・・・・・・・・・・・・・・・・ 51
Hourly Values at Kokubunji ・・・・・・・・・・・・・・・・・・・ 65
Hourly Values at Yamagawa ・・・・・・・・・・・・・・・・・・・ 79
Hourly Values at Okinawa ・・・・・・・・・・・・・・・・・・・・ 93
f-plot at Wakkanai ・・・・・・・・・・・・・・・・・・・・・・ 108
f-plot at Kokubunji ・・・・・・・・・・・・・・・・・・・・・・ 139
f-plot at Yamagawa ・・・・・・・・・・・・・・・・・・・・・・ 170
f-plot at Okinawa ・・・・・・・・・・・・・・・・・・・・・・・ 201

≪Real Time Ionograms on the 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

JAN. 2019

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	32	32	30	29	32	26	A	32	A	47	65	N	A	50	49	46	40	32	30	30	A	34	34	34
2	26			26	28	A	N	30	43	45	59	59	55	A	51	54	A	29	A	A	34	34	A	37
3	34	A	32	34	31	29	A	29		A	55	54	57	54	51	38	40	34	37	26	28	A	A	29
4	32	29	32	32	34	34	32	37		50	54	65	54	50	52	47	41	28	32	34	A	34	32	34
5	30	34	34	33	35	31	N	A	53	A	70	71	65	55	51	50	43	34	34	34	36	37	A	34
6	A	A	34	38	32	31	N	34	50	A	A	A	57	58	46	38	45	34	30	30	A	38	38	34
7	31	34	34	32	38	40	37	A	48	52	56	65	55	51	48	42	41	A	A	A	A	40	41	40
8	37	36	34	32	32	34	A	A	51	52	56	58	54	52	48	43	41	A	A	A	A	36	38	36
9	37		32	34	34	A	A	A	48	51	56	59	51	52	44	42	40	30	32	A	A	A	32	32
10	31	32	32	30	29	31	29	34	46	52	54	53	54	52	47	38	33	129	30	N	26	29	30	23
11	29	34	32	28	28	28	A	30	46	51	49	54	52	52	49	44	37	34	A	A	32	A	32	31
12	32	34	30	31	32	31	28	A	39	55	64	57	48	54	56	49	38	A	A	A	A	A	32	34
13	31	28	28	29	32	A	N	30	40	52	59	59	51	50	49	44	36	26	A	28	28	32	36	34
14	36	A	28	29	28	26	A	28	49	51	54	52	54	56	52	49	39	31	A	A	A	A	32	36
15	A	A	29	28	29	28	A	36	45	53	54	64	59	49	50	47	46	A	A	A	47	A	A	34
16	34	34	34	34	32	34	A	37	51	48	57	60	54	55	44	53	47	34	40	40	38	30	32	A
17	31	32	32	30	28	29	N	34	51	50	56	57	59	59	54	52	50	A	A	A	30	34	31	34
18	A	40	41	40	52	44	40	38	51	55	59	60	65	59	52	48	47	32	28	28	34	32	34	34
19	32		29	28	26	29		34	45		N	50	52	49	51	44	44	A	A	A	A	A	A	A
20	30	31	31	A	28	N	N	32	39	41	54	56	57	52	49	43	42	A	A	N	32		30	32
21	28	30	28	31	30	28	32	36	33	44	50	53	52	52	48	51	34	A	42	44	45	A	53	52
22	40	40	42	42	38	30	29	34	42	49	50	56	61	57	47	40	42	29	28	29	A	A	30	29
23	30	28	28	30	34	36	31	N	48	49	54	52	51	54	50	48	27	59	A	38	A	38	39	40
24	36	34	32	29	29	A	A	34	52	58	70	55	64	55	52	51	29	A	A	34	43	37	34	36
25	34	32	31	31	31	32	34	42	A	79	44	56	60	50	64		51	39	A	32	36	40	36	38
26	32	32	32	34	28	28	N	34	46	48	63	64	62	57	50	46	46	42	31	28	A	A	A	A
27	30	29	28	28	34	26	A	34	A	51	A	58	52	55	48	56	46	A	31	30	A	32	32	34
28	34	34	30	31	28	25	N	37	48	52	51	49	58	62	50	51	50	36		A	34	31	31	32
29	32	34	32	34	34	30	28	40	49	58	50	51	56	54	54	51	N	34	29	29	37	32	A	40
30	42	42	42	42	40	A	34	50	51	52	49	54	57	50	53	52	41	37	29	A	A	A	A	32
31	31	30	32	29	29	A	A	40	50	50	50	61	56	58	46	55	48	34	A	36	42	34	38	37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	24	30	30	31	24	11	25	26	27	28	29	30	30	31	30	29	21	15	17	17	19	23	28
MED	32	33	32	31	32	30	32	34	48	51	54	57	56	54	50	48	41	34	31	30	34	34	32	34
U Q	34	34	34	34	34	33	34	37	51	52	59	60	59	56	52	51	46	36	34	35	40	37	38	36
L Q	30	30	30	29	28	28	29	32	45	49	50	53	52	51	48	43	38	30	29	28	31	32	32	32

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HOURLY VALUES OF fEs AT Wakkanai

JAN. 2019

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	27	G	G	G	G	G	35	29	70	35	35	71	54	40	G	G	34	174	G	23	34	23	32	G
2	26			G	118	27	G	G	45	38	35	40	52	71	77	44	120	85	93	84	34	34	54	58
3	G	41	G	32	28	46	60	32		68	39	34	105	34	31	G	G	G	G	28	28	49	36	G
4	G	G	G	G	90	26	28	70		43	109	44	108	114	31	G	154	G	50	24	58	32	G	G
5	G	G	70	G	G	G	26	38	34	60	69	G	G	48	G	38	G	28	G	34	G	28	43	34
6	38	41	G	30	41	28	G	54	35	93	72	68	G	G	G	28	39	G	G	G	57	G	33	G
7	G	117	G	27	38	49	32	110	58	G	G	G	G	45	31	G	35	90	38	41	60	36	30	G
8	24	G	132	156	G	24	58	40	G	45	89	54	47	34	G	44	G	108	91	48	53	39	33	28
9	26		G	G	G	34	45	48	54	32	G	G	49	G	G	G	G	G	G	60	55	108	86	G
10	G	G	G	G	G	G	29	142	40	G	48	G	49	48	G	43	G	132	G	G	28	32	G	G
11	G	G	G	G	G	G	48	29	G	G	G	48	48	G	G	G	G	56	40	43	29	28	26	23
12	26	25	G	G	G	G	24	91	48	48	55	49	G	48	N	41	40	90	108	83	79	50	G	G
13	G	G	G	G	24	36	G	23	69	36	34	G	G	G	G	G	G	G	36	G	G	G	G	32
14	34	34	26	G	G	G	29	34	38	G	48	G	G	100	G	G	42	G	33	57	35	56	30	38
15	34	46	G	G	91	G	34	28	35	33	G	G	52	44	34	33	34	159	44	77	43	60	34	35
16	28	G	G	G	G	G	39	31	32	45	G	45	34	111	40	G	28	27	27	29	28	24	G	39
17	G	31	G	G	G	20	G	G	49	35	39	41	G	G	36	31	G	39	40	58	38	28	24	112
18	34	159	31	39	G	27	53	24	59	30	39	G	G	G	G	33	G	G	G	G	G	G	161	26
19	G		G	G	24	G		G	29		53	70	35	83	38	40	58	59	58	85	60	48	33	36
20	28	29	23	31	G	G	G	21	162	43	38	40	44	44	46	48	42	113	39	G	G		G	G
21	G	G	G	70	G	24	11	40	83	51	42	48	53	44	39	43	40	41	36	40	26	59	44	28
22	G	29	32	32	G	G	25	29	40	G	45	G	52	34	39	34	32	30	29	30	37	35	26	G
23	G	G	G	G	26	G	24	23	48	31	39	47	41	36	45	35	35	90	114	31	35	G	G	G
24	G	58	G	29	G	38	50	28	33	56	48	40	50	N	G	36	34	37	40	28	36	43	G	G
25	G	25	28	G	24	30	92	56	72	G	34	39	41	G	G		38	29	60	28	30	28	26	G
26	G	G	G	G	G	G	G	11	27	32	34	G	35	34	G	40	54	30	27	32	45	38	38	39
27	24	G	G	G	G	25	35	11	70	47	69	34	G	34	43	35	27	40	29	27	36	29	G	G
28	G	G	120	G	G	G	G	112	G	G	46	44	35	G	G	G	G	G		59	25	26	G	G
29	G	G	G	G	G	G	G	G	G	G	53	53	G	72	G	G	G	G	G	G	G	28	48	31
30	38	32	35	G	G	46	147	34	30	G	50	40	G	39	176	G	37	11	60	91	58	59	35	28
31	27	26	G	G	G	28	35	24	110	40	34	147	45	43	60	34	G	33	38	30	35	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	30	31	31	31	30	31	29	30	31	31	31	30	30	30	31	31	30	31	31	30	31	31
MED	G	13	G	G	G	20	29	29	40	35	39	40	41	40	16	33	34	33	37	31	35	32	30	G
U Q	27	33	26	29	24	28	45	48	64	45	53	48	50	48	39	40	40	90	50	58	53	48	36	34
L Q	G	G	G	G	G	G	G	23	31	G	34	G	G	G	G	G	G	G	G	24	28	26	G	G

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HOURLY VALUES OF fmin AT Wakkanai

JAN. 2019

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	14	14	16	14	14	14	15	15	14	14	15
2	14			14	14	15	15	15	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14
3	14	14	14	14	15	14	14	15		14	14	14	14	14	14	21	15	15	14	14	14	14	15	14
4	14	14	14	14	14	14	15	14		14	14	14	14	14	14	18	15	15	14	15	14	14	14	15
5	15	14	14	14	15	14	15	14	14	14	14	18	15	15	14	15	22	14	14	14	14	14	14	14
6	14	14	15	15	15	15	14	15	14	16	17	23	33	27	26	18	14	14	15	15	14	14	14	14
7	14	14	14	14	14	14	14	14	16	26	26	28	32	22	18	15	14	14	14	15	14	15	15	14
8	14	14	14	21	14	14	14	14	15	15	18	20	21	24	28	15	14	14	14	14	14	14	15	14
9	14		15	14	14	14	14	14	14	14	27	27	15	15	14	22	16	14	14	14	14	14	14	14
10	14	14	14	15	14	14	14	14	14	14	16	17	18	16	15	23	15	15	14	15	14	15	14	14
11	14	14	14	14	14	15	14	14	14	14	16	14	15	15	15	15	14	14	14	15	14	14	15	14
12	14	14	14	14	14	14	14	14	14	14	15	14	14	17	15	14	18	14	14	14	14	14	14	14
13	14	14	14	14	14	14	15	14	14	14	15	15	18	16	26	23	17	14	14	14	16	14	14	15
14	14	15	14	15	14	15	14	15	14	15	15	17	27	27	15	14	15	14	14	14	14	14	14	14
15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14
16	14	14	14	15	14	14	14	14	14	14	14	14	14	15	27	21	15	17	14	15	14	15	14	14
17	14	14	14	14	14	15	14	14	16	14	14	14	14	14	14	14	18	14	14	14	14	15	14	14
18	14	15	14	14	14	14	14	15	14	14	14	14	14	14	14	14	15	14	15	14	14	14	14	14
19	15		14	14	14	15		14	14		14	14	14	14	14	14	14	14	15	14	14	14	14	14
20	14	14	14	14	14	15	15	14	16	14	14	14	15	14	14	14	15	14	14	15	14		14	14
21	15	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14	15	14	15	14	14	14
22	14	14	14	14	15	14	14	15	14	15	24	15	16	15	14	14	14	15	14	14	14	14	14	14
23	14	14	14	14	14	14	14	14	18	14	14	14	15	14	14	14	14	14	14	14	14	14	14	15
24	14	14	14	14	14	14	14	14	14	14	14	15	16	15	14	14	14	14	14	15	14	14	14	14
25	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14		14	14	15	14	14	14	14	14
26	14	14	14	14	14	14	15	14	14	14	14	14	15	14	14	14	14	14	14	15	14	14	14	14
27	14	14	14	14	14	14	14	15	14	14	15	14	14	14	15	14	18	14	14	14	14	15	15	14
28	14	14	15	14	14	14	14	14	14	15	15	20	17	29	15	23	14	14		14	14	14	16	15
29	14	14	14	14	14	14	14	14	15	15	20	22	21	18	15	23	20	15	22	14	14	14	14	14
30	14	14	14	14	14	14	14	14	14	15	15	15	17	18	15	14	20	14	14	14	14	14	14	14
31	14	14	14	15	15	14	15	14	14	14	14	15	14	15	14	14	18	15	14	14	14	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	28	30	31	31	31	30	31	29	30	31	31	31	31	31	30	31	31	30	31	31	30	31	31
MED	14	14	14	14	14	14	14	14	14	14	14	14	15	15	14	14	15	14	14	14	14	14	14	14
U Q	14	14	14	14	14	15	14	14	14	15	16	17	17	17	15	18	17	14	14	15	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

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Kokubunji

JAN. 2019

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	32	34		N	N	26	N	37	50	56	56	61	51	50	46	52	49	34	32	A	A	A	A	A
2	34	A			N	N	A	33	44	46	61	59	56	59	51	46	42	34	A	A	A	A	A	28
3	A	A	21	26	30	A	A	A	47	A	48	49	56	56	54	47	38	27	36	27	36	48	A	A
4	A	A	28	A	A	N	27	42	47	46	51	54	50	54	48	46	42	36	27	31	32	32	32	32
5	28	27	23	27	N	25	27	38	53	62	76	69	68	71	57	47	45	38	34	38	27	34	34	27
6	23	48	48	26	A	N	A	A	A	A	69	60	59	51	54	N	36	36	34	38	26	A	27	23
7	27	27	27	28	25	A	A	30	53	50	63	83	68	A	50	47	39	A	A	A	44	A	A	A
8	A	A	27	58	A	A	23	32	47	57	61	62	54	50	55	44	44	34	60	A	A	A	A	34
9	34	36	34	27		N	A	36	49	54	57	51	52	54	52	46	39	35	23	A	30	A	A	A
10	A	A	A	A	28	N	N	36	48	51	47	55	54	52	56	48	42	24	28	A	A	A	A	A
11	A	A	30	26	N	N	A	A	46	51	C	C	C	C	C	C	C	C	A	A	A	A	A	A
12	A	A	23	30	26	N	27	N	45	46	51	64	56	58	54	52	41	26	27	28	32	A	A	A
13	A	A	38					A	A	45	A	64	73	53	51	49	42	30	A	34	A	A	A	A
14	30	28	27	28	A	34	A	36	44	44	A	64	63	58	60	52	45	34	A	36	34	32	34	
15	28	30	28	34	N	N	26	38	49	47	51	58	66	56	58	49	46	35	28	45	A	A	A	28
16	A	A	27		27		N	35	49	51	51	64	57	52	54	42	49	40	36	48	N	A		27
17	32	30	34	31	32	26	27	43	54	48	50	56	52	56	55	50	49	41	30	30	32	A	25	20
18	A	A	A	26	31	31	26	41	52	51	51	57	69	54	46	52	46	36		30	28	28	23	32
19	36	35	34	31	27	N		36	45	51	48		45	56	54	54	45	39	27		27	32	30	27
20	27	27	27	30	A	26	N	42	43	45	44	55	62	57	44	46	47	A	A	A	A	34	27	21
21	30		N	N	26	N	A	38	49	48	50	54	52	51	41	49	47	A	21	A	A	A	A	A
22	28	31	28	27	26	26	A	38	42	43	54	54	48	51	51	51	43	A	A	32	34	A	A	A
23	26	26	23	N	A	A	27	36	50	49	51	49	51	50	57	53	N	34	31	36	34	25	A	A
24	31	30	23	27	A	A	A	A	54	53	53	72	56	53	54	50	47	42	37	A	37	36	28	27
25	31	26	28	28	27	27	48	54	49	48	53	51	58	55	60	65	51	39	52	30	34	32	32	34
26	30	32	31	30	30	32	27	43	52	A	58	63	57	67	54	49	44	39	39	38	A	A	A	30
27	31	30	27	26	26			44	51	52	52	64	52	59	59	48	46	41	A	A	A	34	32	31
28	31	A	A	N	26	N	N	43	49	59	57	56	55	61	51	56	45	45	32	28	A	A	A	A
29	A	30	31	58	27	26	27	51	37	53	56	56	49	51	58	55	45	40	32	34	A	34	27	A
30	27	30	26	A	26	21	N	39	54	54	58	51	55	53	56	59	54	43	A	41	39	25	A	
31	26	30	30	26	26	48	N	38	48	51	51	50	56	49	64	A	A	40	32	A	A	36	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	21	19	25	21	17	12	11	25	29	28	28	29	30	29	30	28	28	26	21	18	16	14	12	15
MED	30	30	28	28	27	26	27	38	49	51	52	57	56	54	54	49	45	36	32	34	33	33	29	28
U Q	31	32	31	30	29	31	27	42	51	53	57	64	59	57	57	52	47	40	36	38	35	34	32	32
L Q	27	27	26	26	26	26	26	36	45	46	51	54	52	51	51	47	42	34	27	30	29	32	27	27

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HOURLY VALUES OF fEs AT Kokubunji

JAN. 2019

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	33	40	40	61	42	G	35	42	34	28	G	58	46	40	49	36
2	38	27			G	G	22	29	35	110	43	42	51	39	35	34	30	G	86	117	60	38	33	G
3	27	34	G	G	G	29	56	59	47	81	39	G	48	35	G	32	30	G	G	G	11	61	42	31
4	39	51	G	29	120	26	G	44	56	51	40	40	135	146	136	G	G	11	G	G	34	G	G	G
5	G	G	G	G	G	G	G	25	33	43	42	39	G	G	G	G	G	G	G	G	G	G	G	G
6	G	G	29	26	39	G	24	45	107	59	53	39	G	39	G	38	27	34	29	29	G	59	G	29
7	27	G	G	G	26	28	43	40	37	41	36	39	39	68	51	31	29	114	151	60	47	40	59	43
8	43	41	29	36	55	41	G	36	32	48	37	G	G	G	41	42	40	G	34	104	70	61	57	26
9	26	G	G	G		G	90	28	29	41	53	G	G	G	G	G	G	37	G	52	G	38	37	36
10	40	36	31	29	G	33	29	38	42	48	40	G	39	G	G	G	42	29	27	28	42	55	40	33
11	33	70	26	26	G	G	35	50	91	39	C	C	C	C	C	C	C	C	43	57	60	71	55	41
12	40	38	29	G	G	G	G	G	33	35	41	37	38	42	57	37	29	G	G	G	41	40	41	44
13	40	33	31					55	58	55	55	41	39	41	39	39	G	G	40	G	46	53	40	52
14	28	23	G	G	30	40	31	29	43	69	57	40	54	39	38	37	70	93	27	G	60	G	G	
15	G	40	G	11	G	G	G	G	29	33	42	41	40	G	G	31	57	G	36	40	40	37	29	31
16	34	28	G		G		G	33	29	G	G	56	39	38	G	48	31	26	33	29	28	29		G
17	G	G	G	G	G	G	G	G	49	33	G	G	G	38	39	34	31	25	G	G	G	32	28	32
18	40	37	37	G	G	36	G	G	31	G	G	36	38	G	36	37	40	G		G	G	G	24	G
19	G	G	G	G	G	G		G	43	G	G	G	40	41	40	G	G	34	G		G	G	G	G
20	G	G	G	G	37	29	G	29	41	34	G	G	G	37	45	41	56	77	75	40	35	32	24	G
21	G		G	G	G	G	24	G	52	37	35	G	37	43	46	42	39	63	26	34	38	53	33	38
22	G	G	G	G	34	26	60	23	G	39	147	43	37	G	G	G	37	69	36	29	26	45	36	27
23	G	G	G	24	33	28	51	53	35	34	42	40	39	38	35	G	33	32	G	G	G	G	42	35
24	29	G	G	G	28	33	57	72	57	G	38	G	G	G	39	38	48	G	27	59	G	28	G	G
25	G	G	G	G	G	G	G	G	50	39	41	G	G	37	42	40	36	11	61	G	34	33	G	G
26	G	G	G	G	27	G	G	31	30	61	37	G	38	37	35	34	31	33	26	29	80	48	41	29
27	G	G	G	G	G			G	32	39	49	40	45	38	40	40	81	35	95	111	41	32	34	29
28	G	43	35	26	G	G	G	25	29	33	G	48	42	37	G	G	110	G	G	33	55	51	59	59
29	29	G	25	G	24	G	G	34	40	42	35	37	G	G	G	G	37	G	G	G	39	24	G	27
30	G	G	G	28	G	G	29	40	G	35	35	37	37	37	137	44	39	32	31	27	G	G	28	
31	G	G	G	G	G	G	G	G	32	G	36	G	49	43	73	84	82	37	71	70	50	40	59	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	28	29	28	28	31	31	31	30	30	30	30	30	30	30	30	30	30	31	31	30	29
MED	G	G	G	G	G	G	G	29	35	39	40	37	38	37	37	36	35	27	27	29	38	38	34	29
U Q	34	36	27	25	29	28	33	40	49	48	42	40	42	39	42	40	42	35	40	57	47	51	42	37
L Q	G	G	G	G	G	G	G	G	31	33	35	G	G	G	G	G	29	G	G	G	G	24	G	G

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HOURLY VALUES OF fmin AT Kokubunji

JAN. 2019

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		18	18	14	17	14	14	14	20	20	14	15	13	15	13	15	15	14	13	13	13	14
2	14	17			14	14	15	14	13	14	14	17	15	20	14	14	13	14	13	14	14	13	13	14
3	18	15	14	14	14	14	14	13	14	13	14	15	14	13	13	13	14	20	21	22	14	14	13	14
4	14	15	13	14	15	14	15	14	13	14	15	15	17	20	20	31	22	14	21	14	13	14	17	14
5	18	20	18	17	21	14	14	17	13	14	14	20	20	14	13	17	20	14	17	14	14	17	15	18
6	18	21	14	18	14	18	14	13	13	17	17	15	20	20	18	20	17	15	14	14	20	15	22	18
7	17	17	14	14	14	14	13	13	14	18	22	26	25	23	21	18	13	15	15	14	14	14	14	20
8	17	14	17	14	14	13	18	14	17	17	20	21	21	22	18	15	14	17	14	13	13	15	15	18
9	15	17	14	14		14	13	17	14	15	20	21	20	18	20	23	22	15	18	17	18	14	14	14
10	14	14	13	13	17	14	15	18	14	14	13	14	17	14	13	14	21	15	15	14	14	13	14	14
11	14	14	13	13	17	14	13	13	13	14	C	C	C	C	C	C	C	C	15	13	13	14	14	13
12	14	14	13	18	13	14	17	14	13	13	14	15	20	15	14	14	14	15	18	17	14	14	13	14
13	15	14	18					14	13	14	13	14	14	14	13	14	20	21	17	20	13	15	14	13
14	15	14	20	18	15	18	13	14	15	14	17	20	20	14	14	13	13	14	18	14	14	14	14	
15	15	15	13	13	14	14	15	13	14	14	15	18	17	22	20	15	14	18	14	14	14	17	15	15
16	13	15	14		13		17	14	17	14	13	14	15	15	13	15	15	15	14	14	17	13		17
17	23	21	17	14	13	18	14	14	13	17	14	15	18	14	17	13	21	14	14	17	14	13	14	15
18	15	14	14	17	13	17	15	14	13	14	17	14	17	13	17	14	14	14		18	13	20	18	13
19	14	14	13	14	14	14		17	24	14	14	13	13	15	18	13	20	14	20		14	18	17	18
20	14	20	17	15	13	14	18	13	14	14	15	20	18	15	17	14	13	14	14	13	14	13	15	14
21	18		17	14	14	15	17	14	17	14	17	23	20	17	20	15	18	14	14	13	13	13	13	14
22	15	20	14	13	14	14	13	17	14	14	17	22	30	22	20	14	13	13	13	13	13	14	14	15
23	17	14	14	13	13	14	14	13	14	15	17	14	17	17	15	14	14	14	17	18	14	17	14	13
24	13	18	18	15	14	13	14	14	13	13	15	17	18	15	21	23	14	17	14	14	14	14	18	14
25	13	14	14	14	14	17	15	15	14	14	18	18	17	14	18	13	17	15	17	15	14	14	14	14
26	14	14	14	15	15	13	13	13	13	14	21	20	18	14	14	14	15	13	14	13	13	14	14	13
27	14	14	15	14	20			14	14	14	14	14	17	13	13	14	13	14	13	13	14	14	14	14
28	15	14	14	17	15	13	15	14	13	15	17	18	17	18	17	17	22	18	18	15	14	13	14	14
29	17	18	14	18	14	15	22	14	17	20	37	20	23	21	17	17	17	17	21	14	14	13	18	17
30	18	13	14	13	13	14	13	17	15	18	17	20	18	18	14	13	20	17	15	15	18	14	15	
31	18	13	14	15	14	14	17	15	14	15	18	17	18	18	14	14	13	13	13	14	14	14	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	28	29	28	28	31	31	31	30	30	30	30	30	30	30	30	30	30	31	31	30	29
MED	15	14	14	14	14	14	15	14	14	14	17	18	18	15	17	14	14	15	15	14	14	14	14	14
U Q	17	17	17	17	15	14	17	15	14	15	18	20	20	20	18	17	20	17	18	15	14	15	15	16
L Q	14	14	14	14	13	14	13	13	13	14	14	15	17	14	14	14	13	14	14	14	13	13	14	14

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

JAN. 2019

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	31	A	N	A	A	A		47	54	63	78	61	50	53	59	53	42	A	A	A	28	30	A
2	A	A	A	A	A	B	B		46	A	54	58	65	46	50	A	A	A	N	N	A	A	A	A
3	N	A	A	29	A	A	A	A	A	51	A	A	60	58	58	54	50	40	A	A	40	34	B	149
4	29	28	26	25	28	N	B	30	45	44	47	A	54	51	52	47	51	49	34	49	32	34	B	A
5	B	34	32	32	29	26	26	32	44	54	80	79	60	67	52	48	131	53	22	A	28	B	A	A
6	29	A	30	30	B	49	A	A	A	A	A	70	69	54	50	51	A	38	A	A	36	A	A	B
7	30	29	28	32	A	B	A	A	51	50	67	71	189	78	60	51	45	44	A	34	44	31	A	A
8	A	A	30	32	30	A	49	A	37	44	64	60	72	58	52	51	48	A	A	32	36	32	A	A
9	A	26	26	25	N	B	N	29	53	54	54	54	68	58	56	153	51	42	A	A	A	A	A	A
10	A	A	A	28	31	28	B	28	50	52	48	56	58	62	63	58	51	43	A	A	36	A	A	A
11	A	A	28	30	29	A	A	A	A	51	A	60	189	50	46	42	52	43	A	A	40	A	A	A
12	A	A	A	30	28	A	A	A	47	47	45	53	58	61	63	52	A	45	A	A	34	30	A	A
13	A	25	28	B	B	A	B	A	A	51	54	51	60	71	51	50	50	41	32	30	37	A	A	A
14	A	A	A	28	29	N	A	28	28	46	51	50	56	70	54	53	49	42	28	30	37	40	32	A
15		28	N	N	28	59	B	28	50	54	48	55	78	189	59	56	32	44	N	37	A	A	N	B
16	25	28	A	30	31	B	B	26	28	N	54	51	54	54	57	54	49	48	36	37	47	28	B	N
17	29	29	A	26	28	25	N	32	43	47	45	48	56	66	56	54	57	48	N	28	A	A	A	N
18	N	N	N	N	28	28	B	28	44	52	62	A	63	64	149	A	51	44	36	29	29	A	28	28
19		N	28	26	29	28	28	31	45	50	50	56	56	50	63	59	54	46	46	29	N	29	27	31
20	28	26	28	26	29	26		49	28	51	51	58	64	68	51	51	44	50	A	A	A	A	B	32
21	49	N	25	29	29	26	N	29	44	46	51	66	58	56	54	54	46	A	A	A	A	A	A	A
22	A	25	26	26	28	26	B	26	42	46	50	58	77	67	53	54	54	42	34	A	A	A	25	B
23	59	29	26	A	A	N	A	A	48	54	53	52	51	51	50	70	51	39	A	40	38	35	B	N
24	30	31	31	28	26	26	A	A	51	A	62	62	65	61	55	47	46	55	43	41	34	41	28	B
25	30	29	29	29	26	N	N	34	51	45	58	58	62	55	63	56	65	52	N	49	30	34	37	28
26	29	28	28	29	32	A	A	A	51	50	52	56	60	66	60	A	A	53	A	A	A	A	A	A
27	A	29	28	29	28	26	B	49	54	65	72	59	52	57	54	62	50	45	45	34	A	A	37	
28	N	26	28	26	N	N	B	32	54	54	63	64	60	54	44	60	49	49	A	A	34	49	30	30
29	28	28	A	28	A		26	29	51	53	57	55	57	47	58	64	51	44	44	28	A	28	28	26
30	N	28	B	28	A	28	N	30	45	54	58	52	54	56	48	A	71	47	A	A	A	37	49	N
31	N	26	26	29	28	28	28	30	51	54	50	50	A	A	59	68	51	48	41	A	36	38	36	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	13	20	19	25	20	14	5	19	27	27	28	28	30	30	31	27	27	28	12	15	18	16	12	7
MED	29	28	28	29	28	27	28	30	47	51	54	57	60	58	54	54	51	44	36	34	36	34	30	30
U Q	30	29	29	30	29	28	38	32	51	54	62	61	65	66	59	59	53	48	43	40	38	37	36	32
L Q	28	26	26	26	28	26	26	28	44	47	50	52	56	54	51	51	49	42	33	29	34	29	28	28

HOURLY VALUES OF fEs AT Yamagawa

JAN. 2019

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	32	34	59	40	28		34	42	54	64	40	45	40	51	36	34	110	83	41	25	G	33
2	32	46	47	44	26	B	B		40	58	90	40	51	50	69	60	66	41	20	G	35	45	39	39
3	G	27	27	31	28	35	35	59	73	83	145	65	67	40	48	40	32	34	34	32	G	G	B	G
4	G	G	G	G	G	G	B	G	49	41	45	61	41	59	37	71	G	G	34	G	G	G	B	26
5	B	G	28	G	G	G	G	G	29	G	46	44	37	49	36	38	36	40	26	34	25	B	48	41
6	35	38	G	G	B	G	19	44	56	109	92	92	61	52	48	40	108	50	40	54	35	40	40	B
7	G	G	28	G	27	B	43	69	51	57	48	62	52	50	46	50	46	G	40	32	39	G	60	55
8	39	34	27	G	24	35	G	58	33	38	50	41	50	53	51	49	63	94	41	58	41	28	91	41
9	35	32	32	26	27	B	G	55	44	35	36	38	39	43	G	G	32	28	69	47	113	70	58	43
10	41	32	28	G	G	20	B	G	31	47	G	37	37	43	G	G	37	34	36	37	36	54	46	36
11	41	35	30	G	G	71	25	50	109	43	68	43	39	45	58	40	35	G	29	32	53	72	55	58
12	43	38	34	29	G	24	28	39	50	43	G	36	43	41	43	36	60	35	31	36	26	47	41	36
13	38	26	26	B	B	29	B	46	57	49	43	52	54	G	42	50	46	34	G	28	56	41	40	28
14	24	33	27	G	G	G	27	G	45	36	37	39	48	53	47	52	39	31	G	G	G	G	G	45
15		G	G	G	26	32	B	G	29	139	36	45	45	43	45	38	39	35	29	25	31	35	G	B
16	G	G	39	28	G	B	B	G	34	47	40	G	G	44	41	G	G	29	G	G	11	30	B	G
17	G	28	48	33	26	G	G	19	27	32	G	40	40	40	41	36	G	G	40	G	35	49	33	G
18	G	24	G	G	G	24	B	G	G	33	36	61	62	40	G	58	91	29	29	24	G	29	G	G
19	G	G	G	G	G	G	G	G	G	G	35	44	42	39	37	36	G	29	11	33	G	G	G	G
20	G	G	G	G	26	29	G	G	30	32	39	41	50	41	44	41	48	57	56	40	47	29	B	G
21	G	G	G	G	G	G	G	G	28	34	41	45	56	46	44	40	50	77	69	92	54	35	46	34
22	45	G	G	G	G	G	B	G	47	37	35	37	44	G	36	G	32	29	35	36	35	41	G	B
23	G	25	23	31	31	36	48	27	G	36	37	46	45	45	46	40	42	71	28	28	G	G	B	G
24	G	G	36	G	G	G	40	70	38	57	42	41	G	46	40	36	45	69	25	25	G	28	34	B
25	G	G	G	G	G	G	G	G	G	G	G	43	45	46	42	40	36	33	30	G	G	G	28	27
26	27	G	G	G	G	29	36	53	34	34	37	38	37	44	G	64	54	35	50	60	41	60	36	40
27	26	G	G	G	G	G	B	G	28	34	36	G	70	44	40	38	34	31	11	28	59	38	43	G
28	G	G	G	G	G	G	B	G	32	34	37	38	42	38	G	42	36	G	39	39	35	28	G	32
29	G	G	35	30	34		G	29	36	48	47	45	48	45	G	38	41	30	28	32	28	28	G	G
30	G	G	B	G	30	G	27	G	29	40	36	39	44	57	47	91	58	41	43	45	26	G	G	G
31	G	G	G	G	G	G	G	24	32	40	39	39	72	57	43	40	G	G	35	34	27	58	57	33
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	30	30	29	26	21	29	31	31	31	31	31	31	31	31	31	31	31	31	31	30	26	27
MED	G	G	26	G	G	G	19	G	34	40	39	41	45	45	42	40	39	34	34	32	35	30	38	32
U Q	35	32	32	28	26	29	31	48	47	48	47	46	52	50	46	50	50	41	40	40	41	45	46	40
L Q	G	G	G	G	G	G	G	G	29	34	36	38	40	41	36	36	32	29	26	25	G	G	G	G

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Yamagawa

JAN. 2019

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	17	17	15	17	14	15	15		14	15	15	15	18	15	16	17	15	14	14	14	14	14	15	14
2	15	14	14	14	15	B	B		15	14	15	16	16	18	16	17	14	14	15	15	14	14	14	15
3	22	18	16	15	17	18	15	14	14	15	18	15	16	17	15	15	14	14	14	14	17	14	B	15
4	15	14	14	14	15	14	B	14	14	15	14	16	15	17	16	17	17	17	15	14	15	17	B	17
5	B	17	14	14	14	14	15	14	20	14	15	17	17	15	16	15	15	14	15	15	15	B	14	14
6	15	15	15	15	B	17	66	15	14	14	15	15	15	15	16	16	18	14	14	14	14	14	14	B
7	14	14	15	14	17	B	15	14	14	17	20	22	20	22	18	17	15	20	15	14	14	14	15	14
8	15	15	18	16	14	15	14	15	14	15	18	17	22	15	15	15	14	15	14	14	15	14	15	14
9	15	14	15	15	15	B	15	14	14	14	15	15	14	17	15	15	15	15	14	14	14	18	14	15
10	15	15	15	15	15	17	B	20	17	14	16	15	14	15	15	15	16	14	14	14	15	15	14	14
11	14	14	15	14	14	59	14	14	14	15	15	14	17	15	18	18	17	17	14	15	14	15	14	15
12	14	14	14	14	14	15	15	14	14	15	15	15	17	17	18	18	15	14	14	15	14	14	14	15
13	15	14	15	B	B	14	B	14	14	14	14	14	16	15	17	15	16	15	14	14	14	14	14	14
14	15	15	17	14	15	16	15	14	14	15	15	15	17	15	15	15	15	15	14	21	30	17	15	15
15		14	14	15	15	15	B	18	14	14	15	15	15	18	15	16	15	15	15	15	15	15	15	B
16	14	15	14	14	15	B	B	18	14	15	15	14	17	17	18	18	15	15	15	14	14	15	B	17
17	14	14	14	14	14	15	15	14	17	15	15	15	15	16	16	16	15	17	15	15	14	14	15	17
18	15	14	15	15	16	14	B	20	16	14	15	17	17	17	18	15	15	15	15	15	17	14	15	20
19	23	15	16	15	14	14	14	14	21	14	15	15	18	16	18	15	15	15	14	14	20	17	15	14
20	15	16	14	15	14	14	66	14	14	15	15	17	17	20	18	14	15	14	14	15	15	15	B	17
21	15	14	15	14	15	15	15	16	14	14	16	15	18	17	16	16	15	14	15	14	14	15	14	14
22	14	14	14	14	14	14	B	15	14	15	15	17	16	17	17	17	15	17	15	14	15	14	16	B
23	15	15	15	15	14	14	15	14	15	15	16	18	20	16	15	15	16	15	14	14	16	14	B	17
24	16	15	15	18	18	14	14	14	15	14	14	15	20	20	17	15	15	14	15	15	15	14	15	B
25	15	17	15	14	14	15	16	15	20	15	16	18	18	17	16	15	15	14	14	15	15	15	15	15
26	18	15	15	15	15	14	14	16	14	14	14	15	16	20	18	15	15	14	14	14	14	14	16	15
27	15	15	15	22	15	15	B	15	15	15	14	15	20	20	18	15	14	17	14	14	15	14	15	14
28	18	15	17	15	18	14	B	14	14	14	16	16	16	15	17	18	17	17	14	15	14	15	17	15
29	14	14	14	14	14		15	14	14	16	17	16	15	18	20	17	18	15	15	15	15	17	18	14
30	15	15	B	14	14	15	14	15	14	14	15	16	15	15	16	15	15	16	15	15	17	17	24	14
31	18	15	15	15	15	14	14	14	14	14	14	16	20	18	17	17	15	15	15	14	15	14	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	30	30	29	26	21	29	31	31	31	31	31	31	31	31	31	31	31	31	31	30	26	27
MED	15	15	15	15	15	15	15	14	14	15	15	15	17	17	16	15	15	15	14	14	15	14	15	15
U Q	15	15	15	15	15	15	15	15	15	15	16	17	18	18	18	17	16	16	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	14	15	15	15	15	16	15	15	14	14	14	14	14	14	14

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Okinawa

JAN. 2019

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	A	A	A	A	A	A	A	47	54	72	90	76	72	A	90	65	55	A	A	29	32	28	31
2	34	42	44	A	A	A	A	A	49	51	51	A	61	57	54	51	50	47	A	A	A	32	N	N
3	49	A	30	N	59	A	B	N	50	55	69	A	A	A	A	82	67	47	A	A	39	40	39	32
4	32	34	29	29	31		B	26	51	53	54	A	A	A	58	60	56	65	48	A	A	38	31	B
5	28	29	29	29	N	N	49	30	47	54	76	78	A	90	91	58	59	64		34	25	A	A	A
6	30	A	A	A	A	A	A	42	A	A	A	78	A	90	A	71	140	51	37	46	A	A	30	49
7	28	29	30	32	30	B	B	34	53	44	A	75	120	111	87	64	54	A	44	40	39	A	A	A
8	A	26	N	N	28	A	N	28	50	54	69	83	85	70	61	61	53	44	A	A	A	A	20	B
9	B	B	B	B	B	B	B	25	31	50	54	169	71	91	84	81	54	51	A	A	A	30	29	A
10	28	28	26	N	30	N	B	N	48	51	48	B	B	104	104	94	71	54	A	A	38	42	A	A
11	A	N	28	30	N	A	B	N	47	46	A	64	67	72	78	65	52	49	A	A	A	A	A	A
12	A	A	A	A	N	A	A	A	36	54	56	52	66	75	62	55	51	34	28	N	A	A	A	N
13	22	25	23	24	23	A	B	N	A	54	70	A	A	87	91	89	A	A	A	A	A	A	A	34
14	30	N	26	26	26	N	B	N	44	47	59	61	71	179	91	70	58	45	34	28	A	A	A	A
15	B	22	N	A	A	A	A	A	44	54	58	51	76	100	86	71	52	54	54	59	A	N	B	N
16	59	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	65	54	45	A	23	A	26	A	A
22	A	N	A	A	A	A	B	26	50	47	60	86	115	100	78	77	60	54	42	A	A	A	29	28
23	30	26	28	26	N	26	A	A	39	35	57	50	54	61	56	58	72	39	33	A	A	50	A	B
24	28	32	28	59	28	N	N	59	51	159	62	62	66	64	54	54	54	57	48	A	A	42	A	B
25	B	28	39	26	29	N	B		53	50	51	72	64	50	70	77	67	58	51	39	A	A	A	28
26	B	30	28	B	26	N	N	30	52	65	62	60	64	72	67	71	A	55	51	A	34	34	30	28
27	59	26	30	30	25	N	B	A	50	68	65	56	62	54	72	84	70	58	A	51	A	A	A	A
28	A	N	A	A	N	N	N	30	50	52	44	66	71	64	66	72	82	71	29	A	A	A	31	24
29	25	26	A	26	26	26	28	30	48	51	A	72	66	58	71	70	67	54	54	35	A	A	34	29
30	29	26	26	N	30	29	A	N	40	50	54	69	64	56	59	56	57	68	39	A	A	37	31	A
31	N	N	N	N	N	26	N	30	47	64	61	55	64	58	65	70	80	54	A	37	37	54	34	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	15	15	15	11	13	4	2	12	23	24	21	20	19	23	22	26	24	24	14	10	7	12	12	9
MED	30	28	28	29	28	26	38	30	48	52	59	68	66	72	70	70	58	54	43	38	37	38	30	29
U Q	34	30	30	30	30	27	49	32	50	54	67	78	76	91	86	77	68	57	51	46	39	42	32	33
L Q	28	26	26	26	26	26	28	27	44	50	54	58	64	58	61	60	54	47	34	34	29	32	29	28

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

JAN. 2019

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	27	35	68	45	32	34	46	46	48	44	50	45	56	58	75	67	49	28	59	36	G	G	27	26
2	23	26	46	47	34	38	57	58	30	40	144	115	56	49	46	44	45	40	78	31	38	G	G	G
3	G	34	32	G	G	29	B	35	54	52	58	82	127	94	96	59	52	41	57	44	38	34	25	G
4	G	G	G	G	G		B	G	117	46	154	104	128	74	44	46	39	35	32	46	38	35	G	B
5	25	G	G	G	G	G	G	G	28	G	42	41	68	52	43	48	45	41		38	35	33	60	60
6	43	34	45	69	45	60	33	35	156	115	92	116	86	56	116	103	40	G	36	54	107	45	26	G
7	G	G	G	G	34	B	B	27	32	54	102	53	58	55	49	73	52	60	33	35	27	30	70	35
8	34	G	G	27	G	38	G	G	31	34	39	48	46	42	46	46	44	57	94	59	54	90	39	B
9	B	B	B	B	B	B	B	G	38	43	45	46	G	39	40	39	38	42	63	164	158	57	85	48
10	G	G	G	G	G	G	B	23	34	38	40	B	B	40	45	40	53	48	35	34	27	26	26	115
11	46	26	G	39	23	31	B	G	73	60	104	48	46	46	49	61	40	28	89	173	127	113	112	49
12	35	57	45	45	G	152	48	58	43	93	51	43	42	42	42	38	41	40	25	58	59	54	46	28
13	G	G	G	G	G	29	B	G	108	44	49	93	70	56	55	66	78	127	61	89	108	92	92	47
14	23	G	G	G	G	G	B	G	27	58	38	44	86	47	51	46	37	32	25	24	39	48	39	32
15	B	38	G	39	57	54	59	59	35	38	38	46	44	53	44	45	70	50	23	30	50	24	B	G
16	G	B	B	B	B	B	B	B	B	B	B	B	G	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	44	41	58	95	60	125	57	58	58
22	54	58	75	58	46	26	B	G	39	56	40	37	G	42	93	43	38	35	41	92	71	38	G	G
23	30	G	G	G	G	22	56	48	45	42	41	60	63	47	50	53	58	45	45	74	56	31	25	B
24	G	G	G	G	G	25	G	G	30	36	44	50	50	42	40	G	34	35	35	36	32	32	32	B
25	B	G	G	G	G	G	B		36	38	36	G	38	41	41	41	40	32	30	36	36	57	38	G
26	B	G	G	B	G	G	G	G	53	34	38	167	78	38	G	53	60	36	40	30	G	G	G	G
27	G	G	G	115	G	G	B	130	G	G	36	44	46	46	43	40	36	36	54	24	70	32	94	54
28	31	G	136	25	G	G	G	39	50	42	38	39	43	39	46	40	36	33	34	34	31	41	29	G
29	G	G	45	G	G	G	G	G	31	43	70	40	47	44	46	G	38	35	25	27	34	30	29	G
30	G	G	G	G	25	24	55	G	35	40	44	44	40	55	47	57	45	40	34	32	35	24	25	34
31	G	G	G	G	G	G	G	G	30	38	42	54	43	47	45	44	43	45	59	33	32	34	G	166
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	24	23	24	22	14	24	25	25	25	24	25	25	25	26	26	26	25	26	26	26	25	22
MED	12	G	G	G	G	24	17	G	36	42	44	47	47	47	46	46	42	40	40	36	38	34	29	30
U Q	31	30	45	45	28	34	55	42	51	53	64	71	69	55	50	57	52	45	60	59	70	54	59	49
L Q	G	G	G	G	G	G	G	G	30	38	38	43	42	42	43	40	38	35	32	32	32	30	25	G

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Okinawa

JAN. 2019

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	15	14	14	15	14	14	14	14	15	15	14	14	14	14	14	15	15	14	14
2	15	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14	16	14
3	14	15	14	15	16	15	B	15	14	15	15	16	15	17	14	14	14	14	14	14	14	14	14	14
4	14	14	14	14	14		B	15	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	B
5	14	14	14	14	14	17	14	14	14	14	14	15	14	14	15	14	14	14		14	14	14	15	14
6	14	14	14	14	14	14	15	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	16
7	14	15	14	14	14	B	B	14	14	14	17	14	14	14	14	14	14	14	14	14	14	14	14	14
8	14	15	14	14	14	14	15	14	17	14	14	15	15	14	14	14	14	14	15	14	15	14	15	B
9	B	B	B	B	B	B	B	16	14	14	14	14	14	15	14	14	15	14	14	14	14	15	14	14
10	14	15	15	15	14	15	B	14	14	14	14	B	B	14	14	14	14	15	14	14	14	14	14	14
11	14	14	15	14	15	14	B	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
12	14	14	14	14	15	14	14	14	14	14	14	14	14	14	15	14	14	14	15	14	14	15	14	14
13	14	15	14	14	14	15	B	15	14	14	14	14	14	14	14	14	14	14	14	14	14	15	15	14
14	15	14	14	14	14	15	B	14	14	14	14	14	14	15	14	14	14	14	15	15	14	14	14	14
15	B	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	B	14
16	14	B	B	B	B	B	B	B	B	B	B	B	201	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B	B
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	14	14	14	14	14	14	14	14
22	15	14	14	14	14	14	B	15	14	14	15	14	14	15	14	14	14	14	14	14	14	14	14	14
23	14	14	15	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14	14	14	14	14	B
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25	B	14	15	14	14	14	B		15	14	14	14	14	14	14	14	14	14	15	14	14	14	14	14
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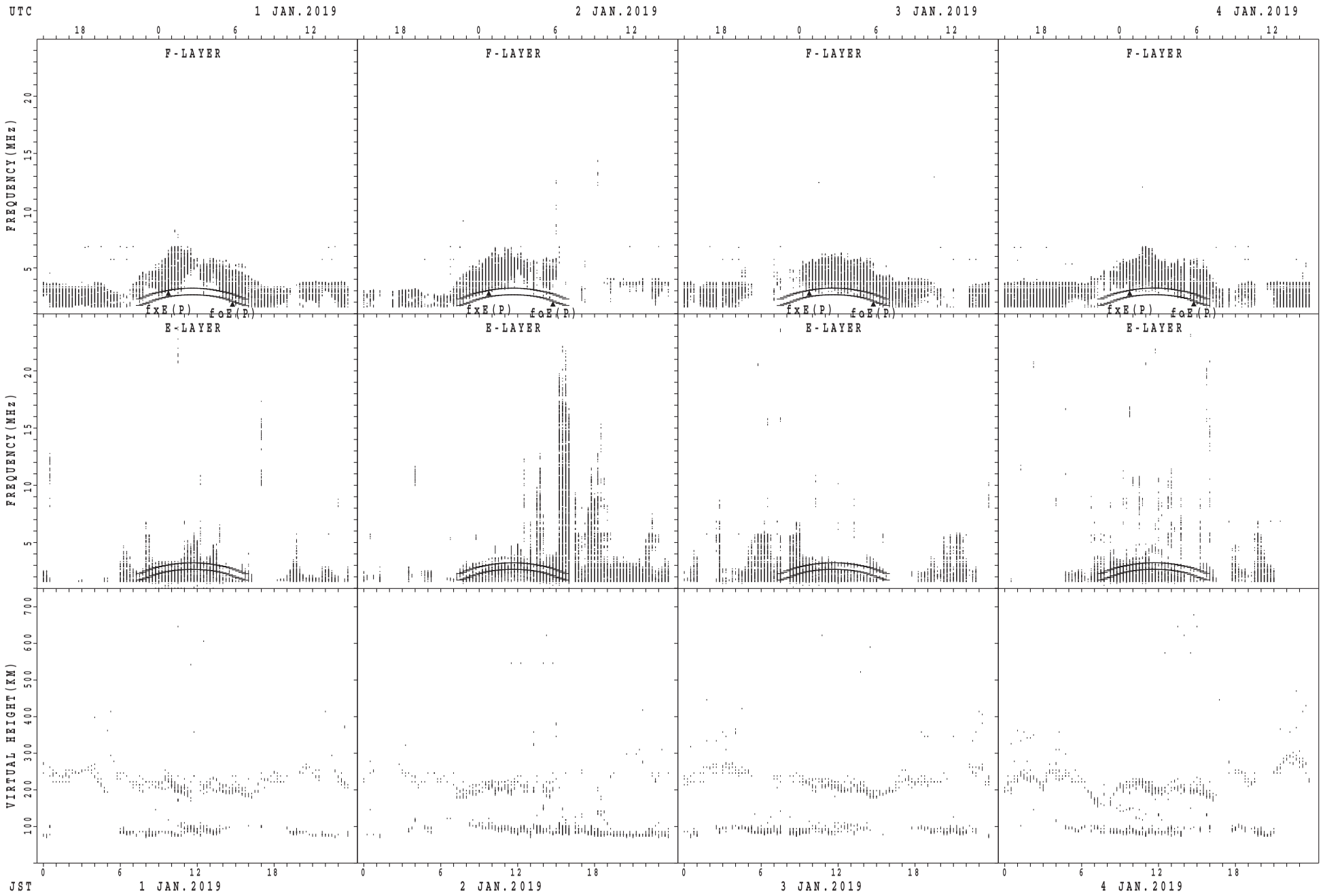
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	24	23	24	22	14	24	25	25	25	24	25	25	25	26	26	26	25	26	26	26	25	22
MED	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
U Q	15	15	15	14	14	15	15	15	14	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14
L 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

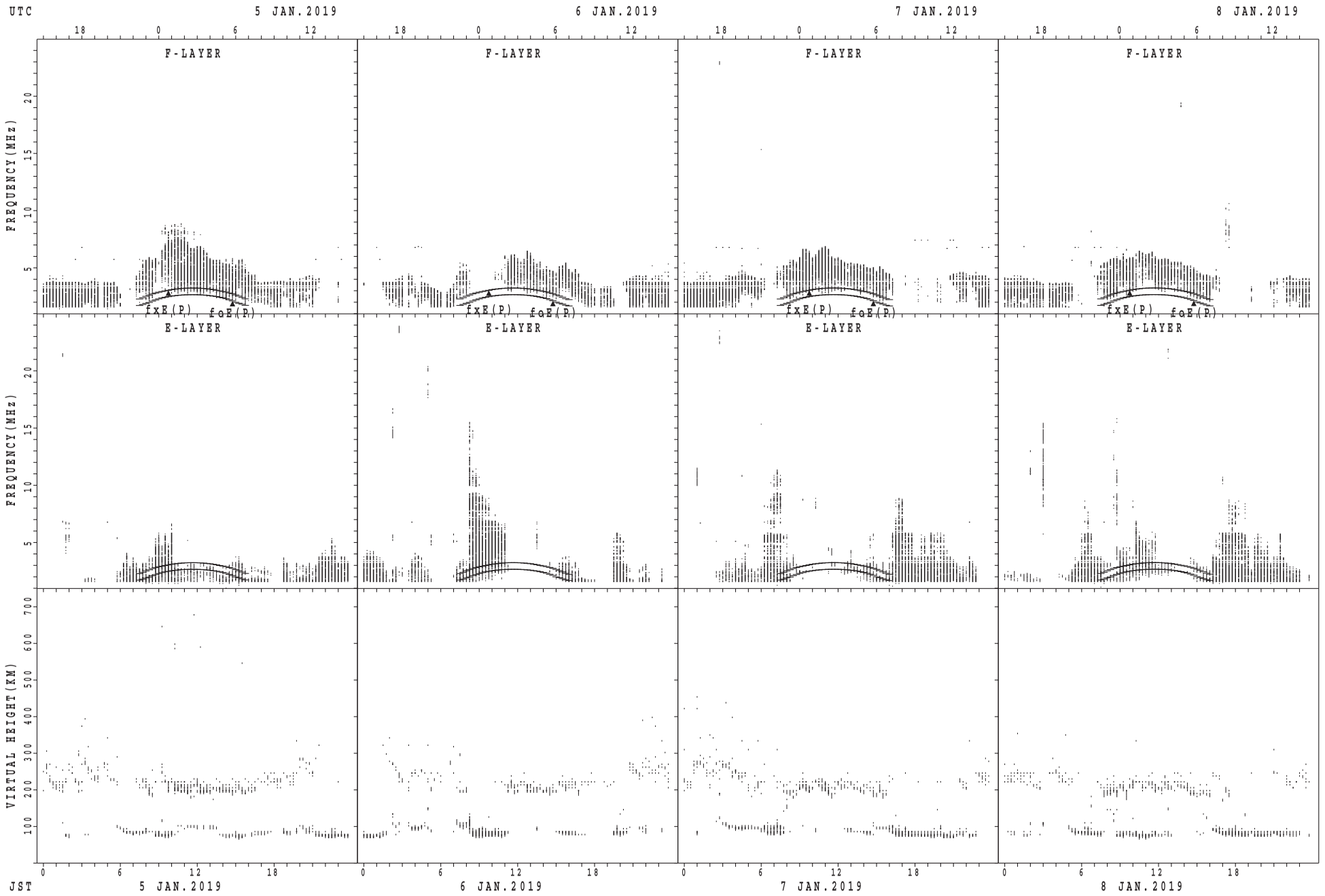
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

SUMMARY PLOTS AT Wakkanai



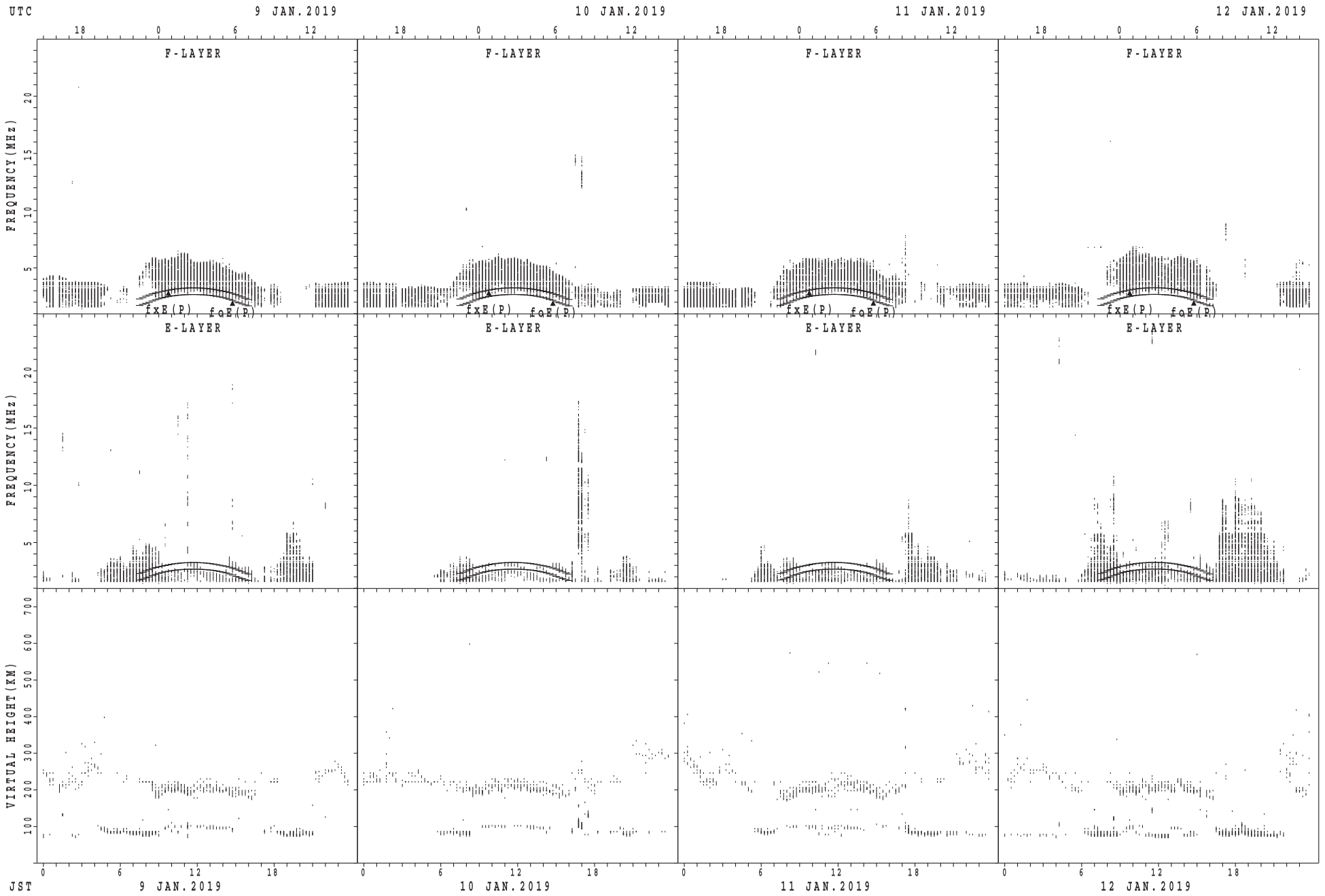
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



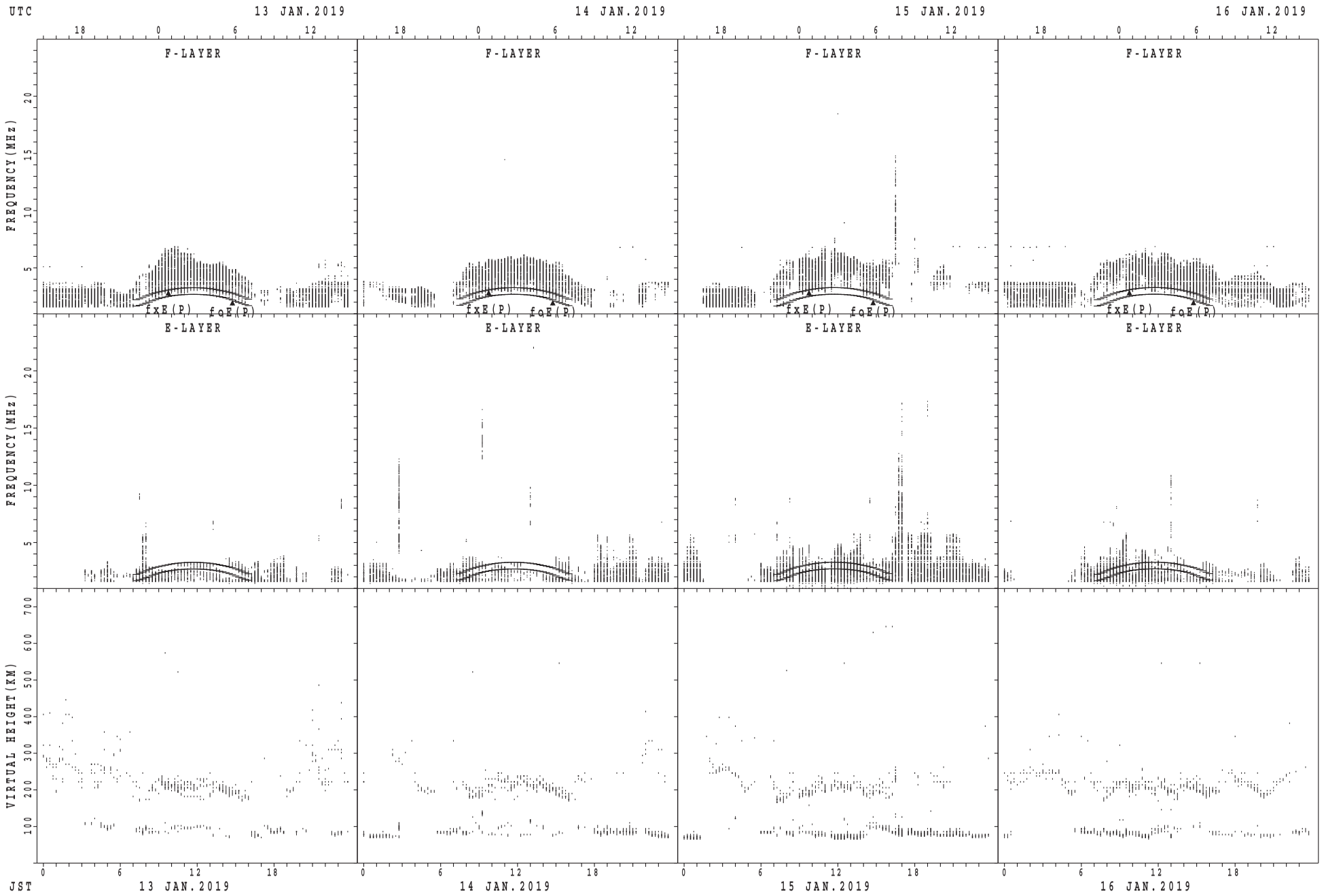
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



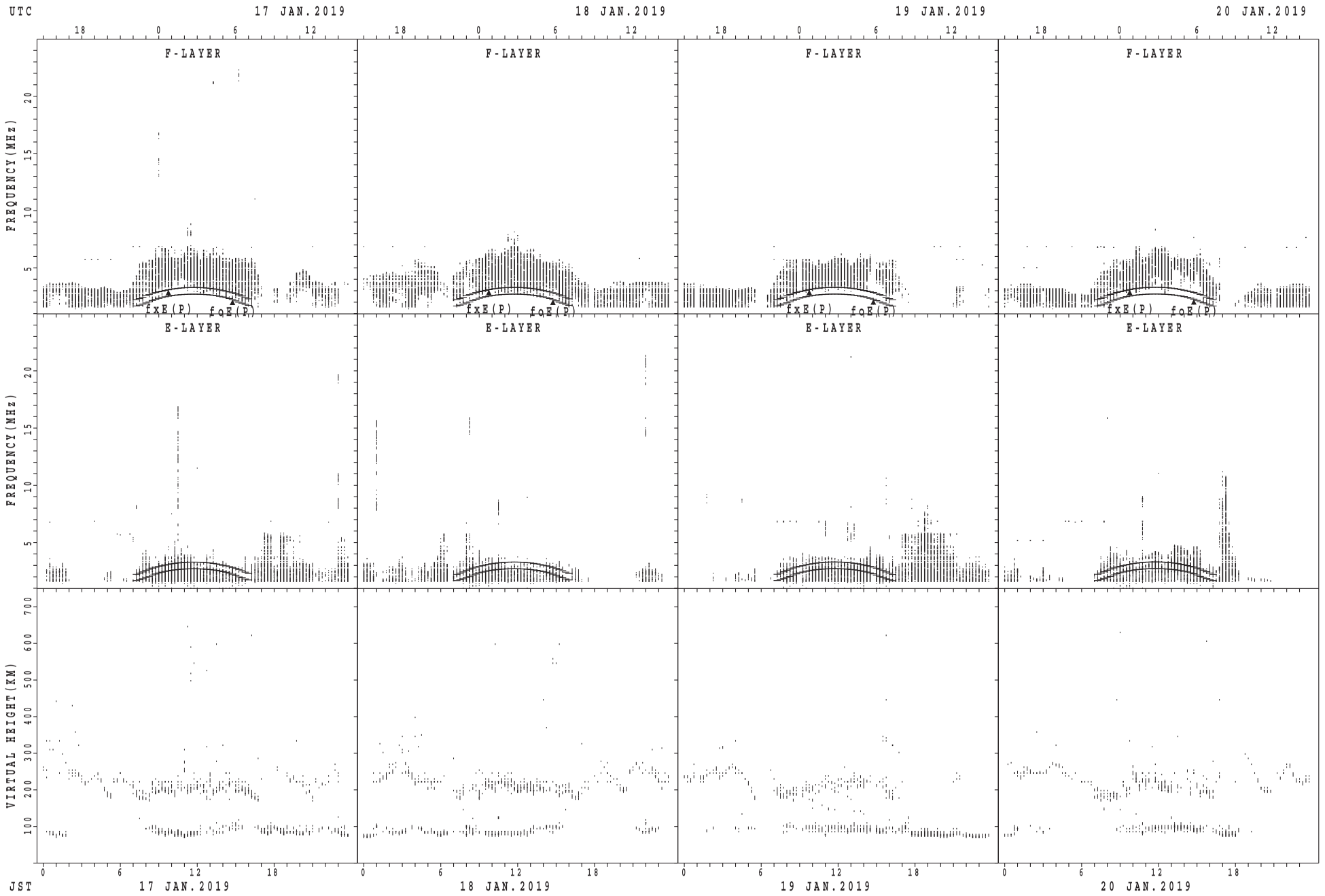
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



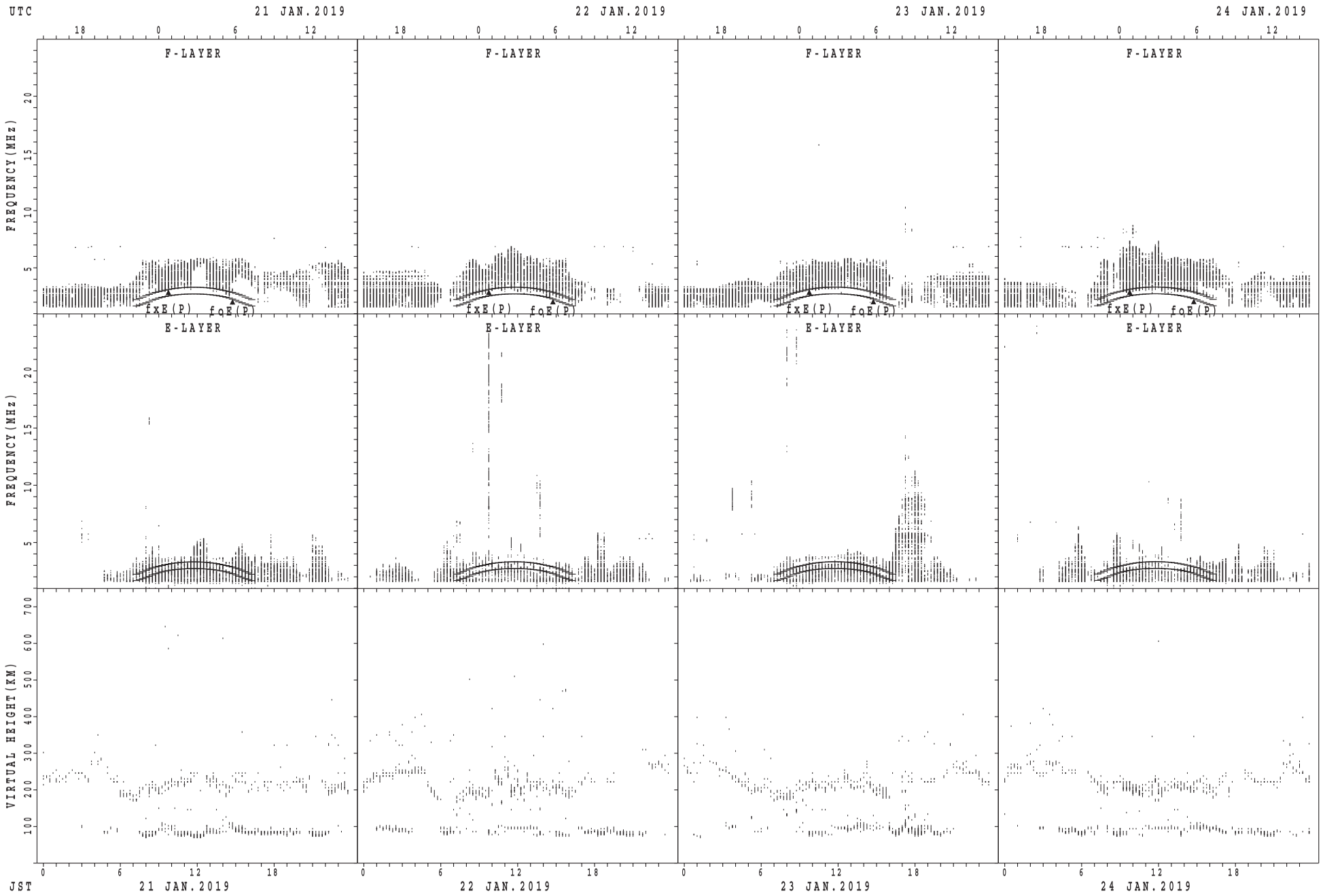
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



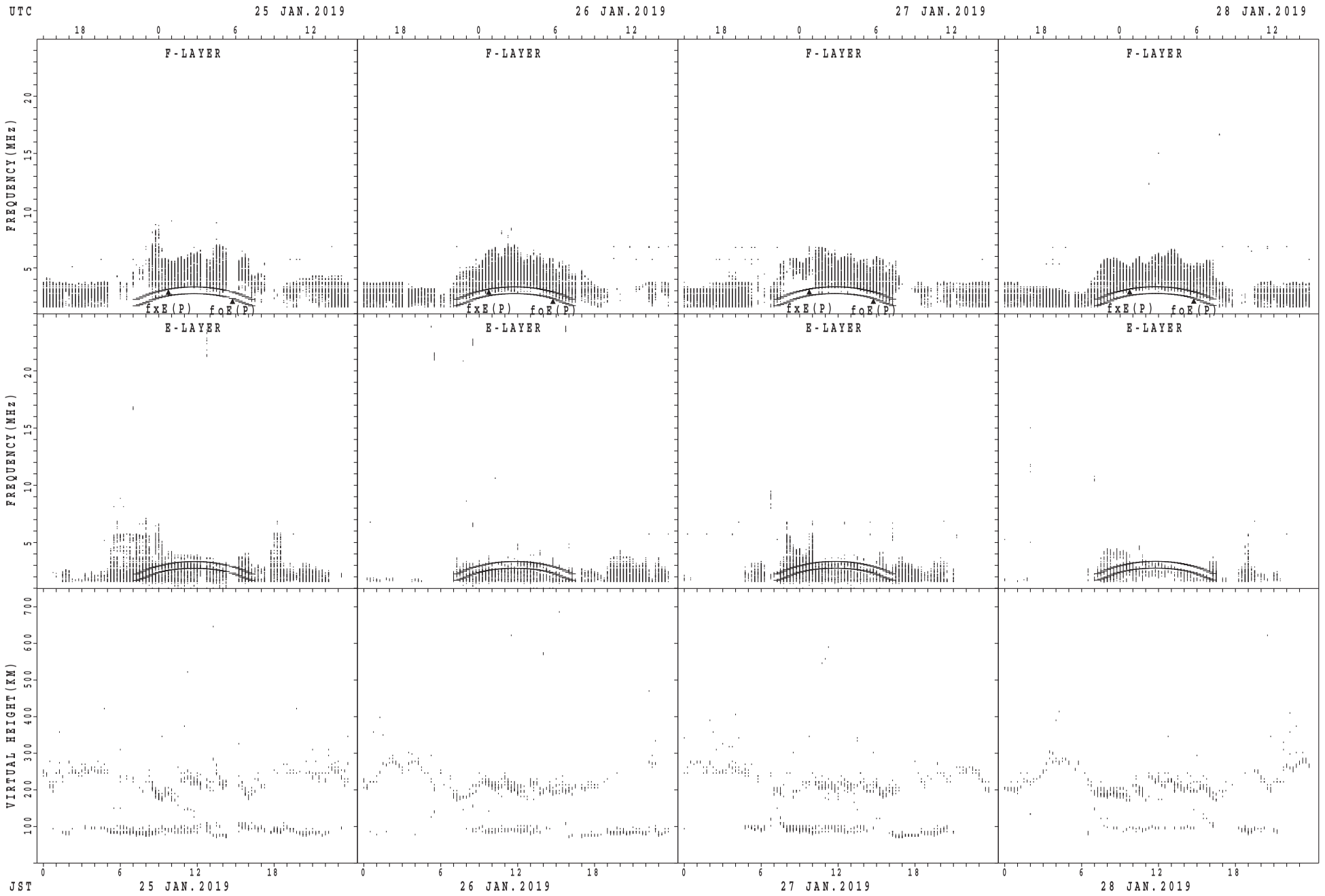
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



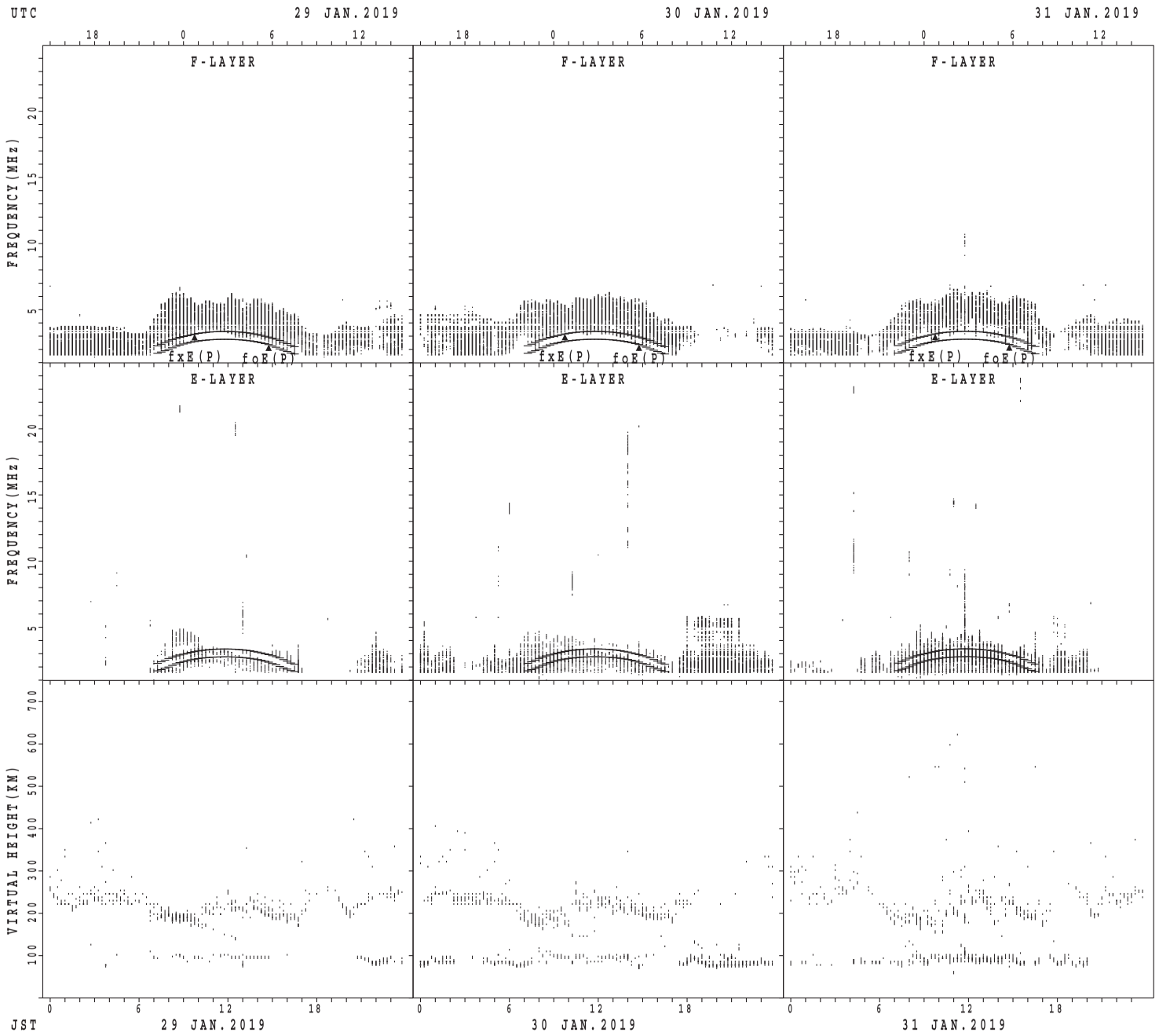
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



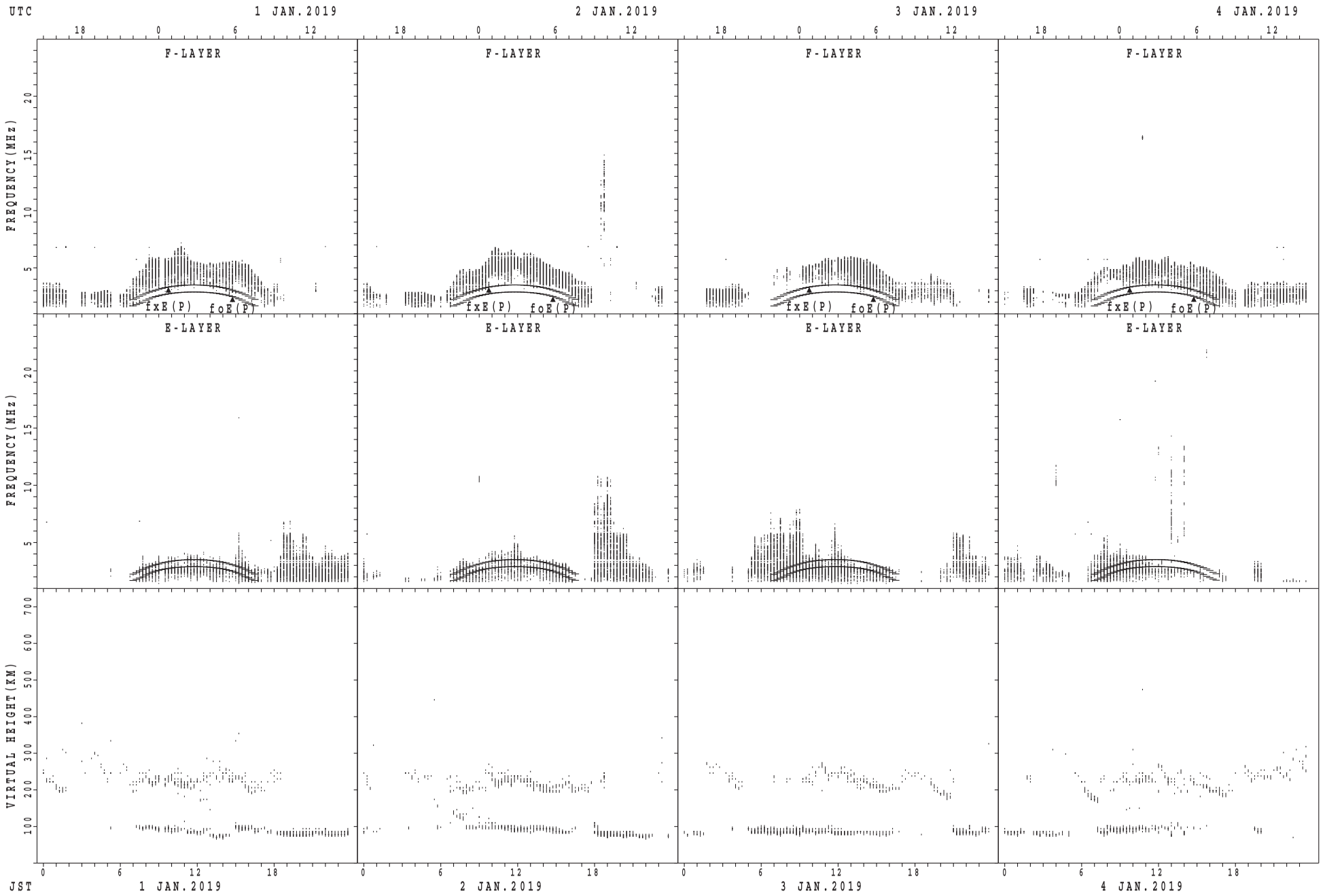
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



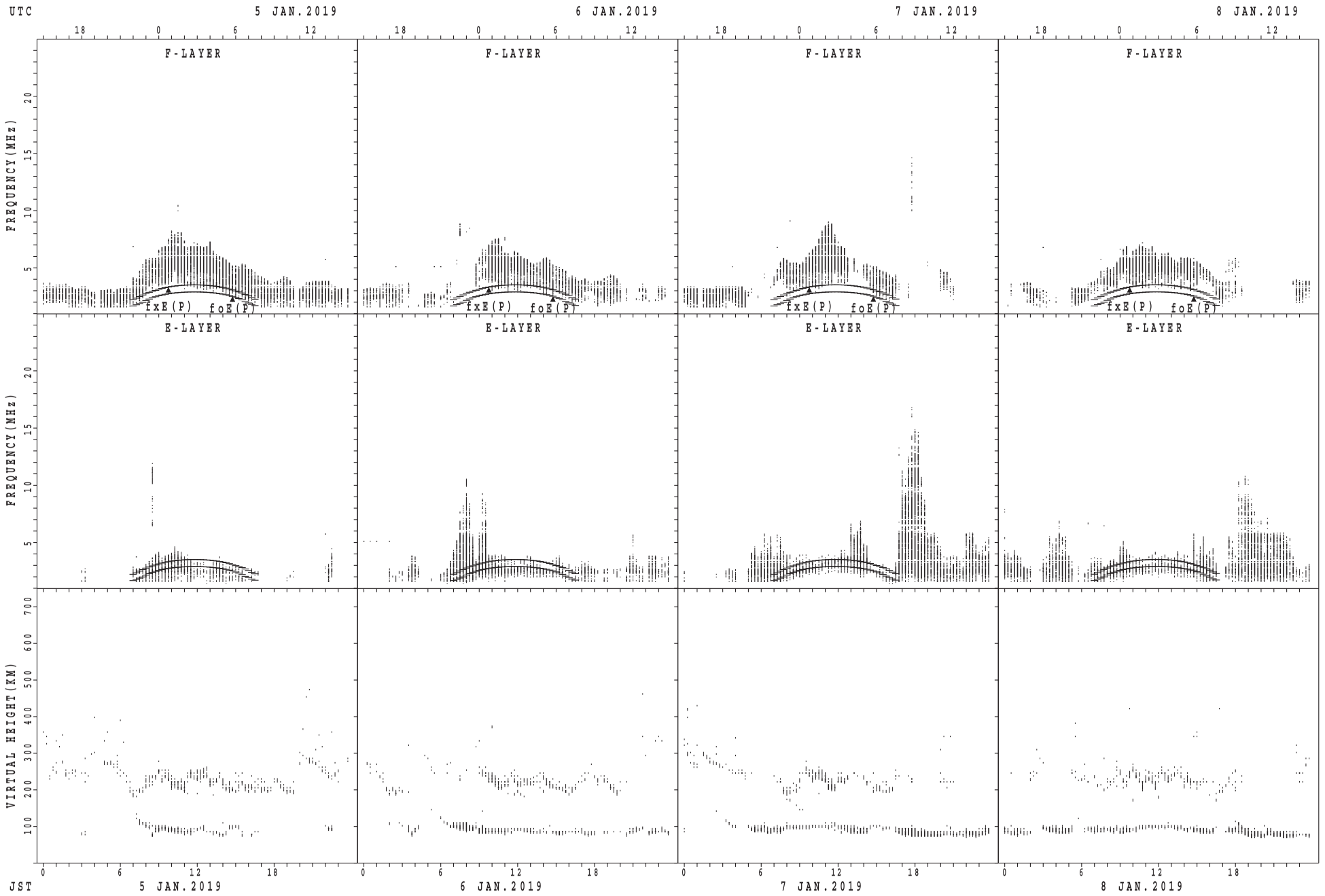
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



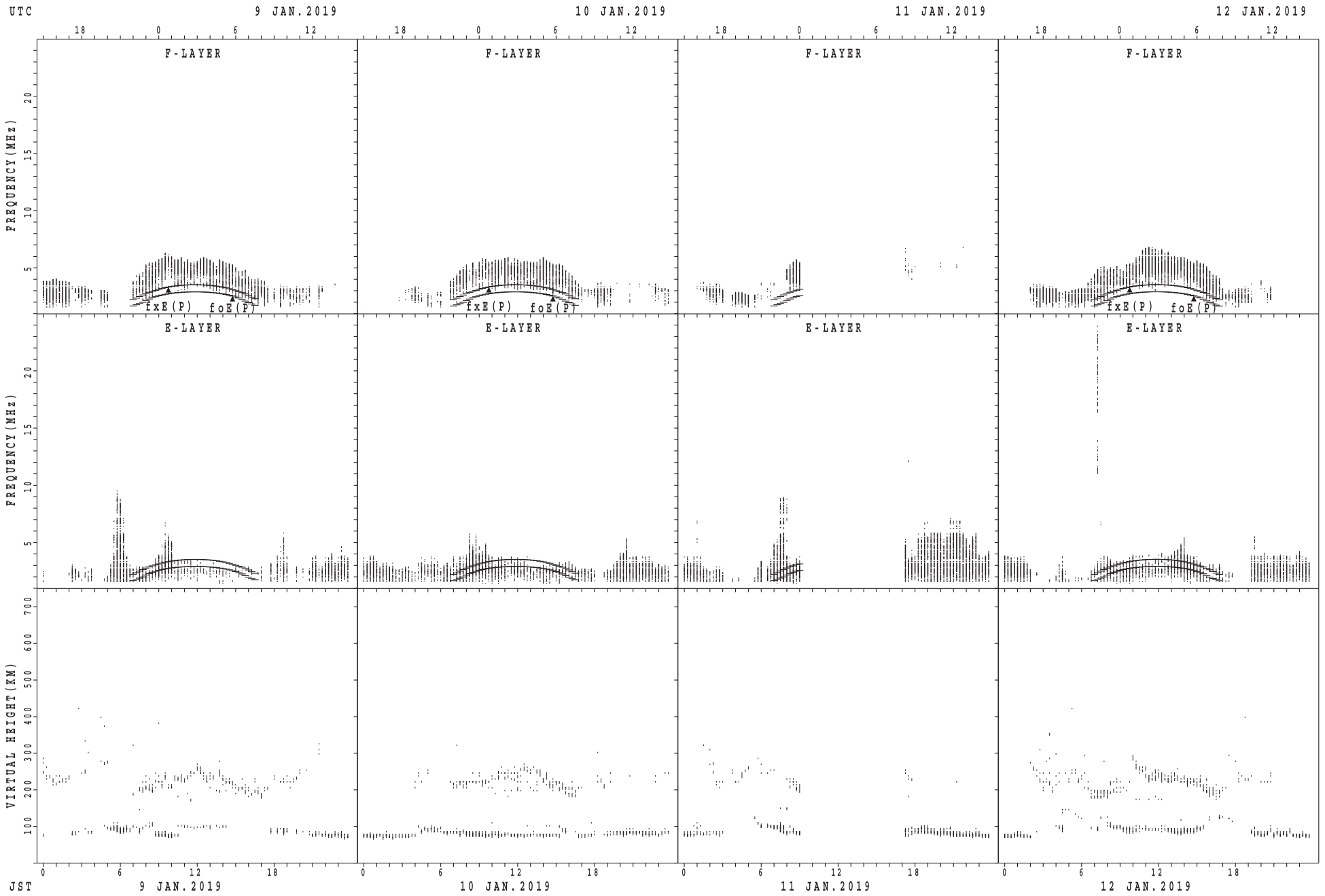
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



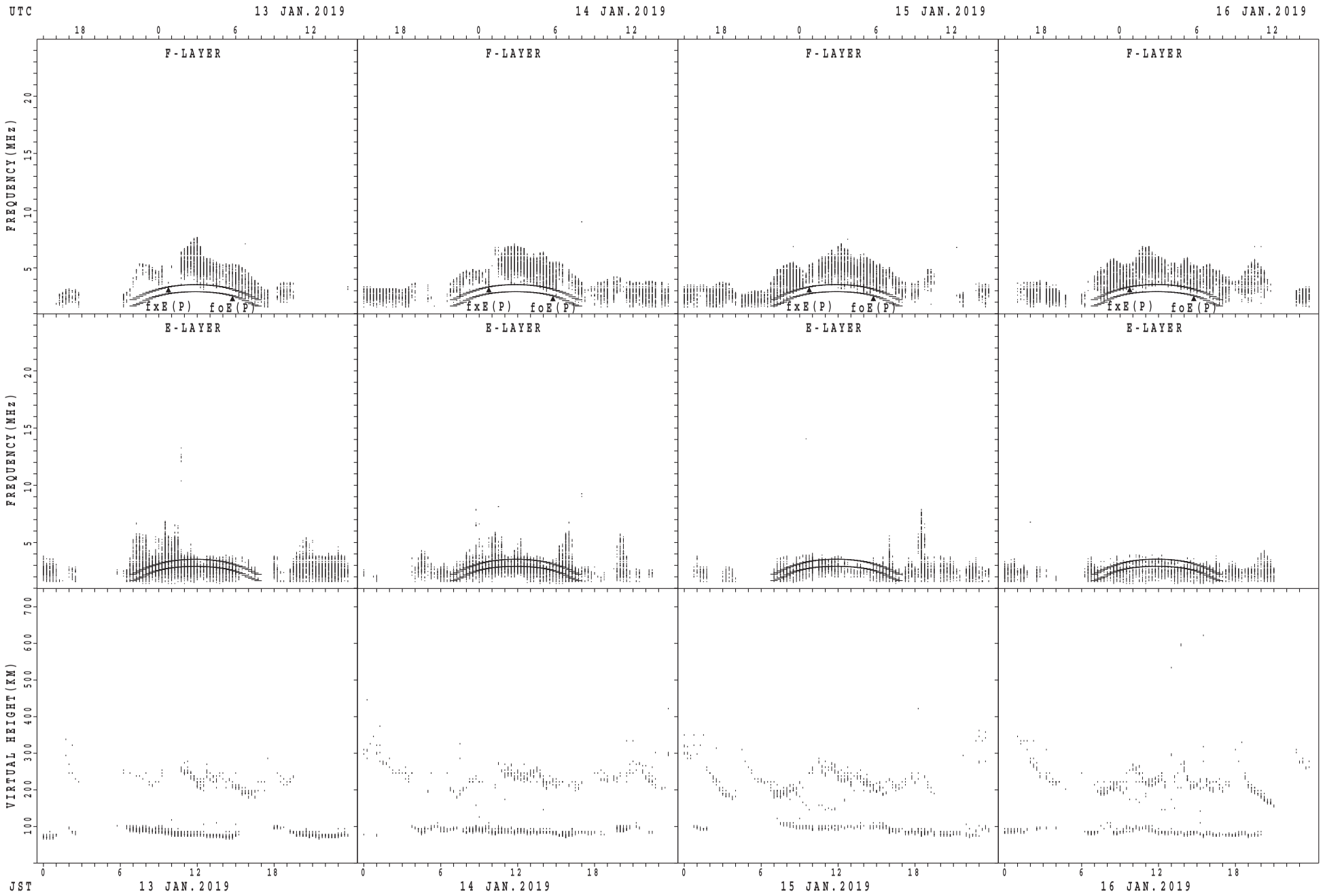
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



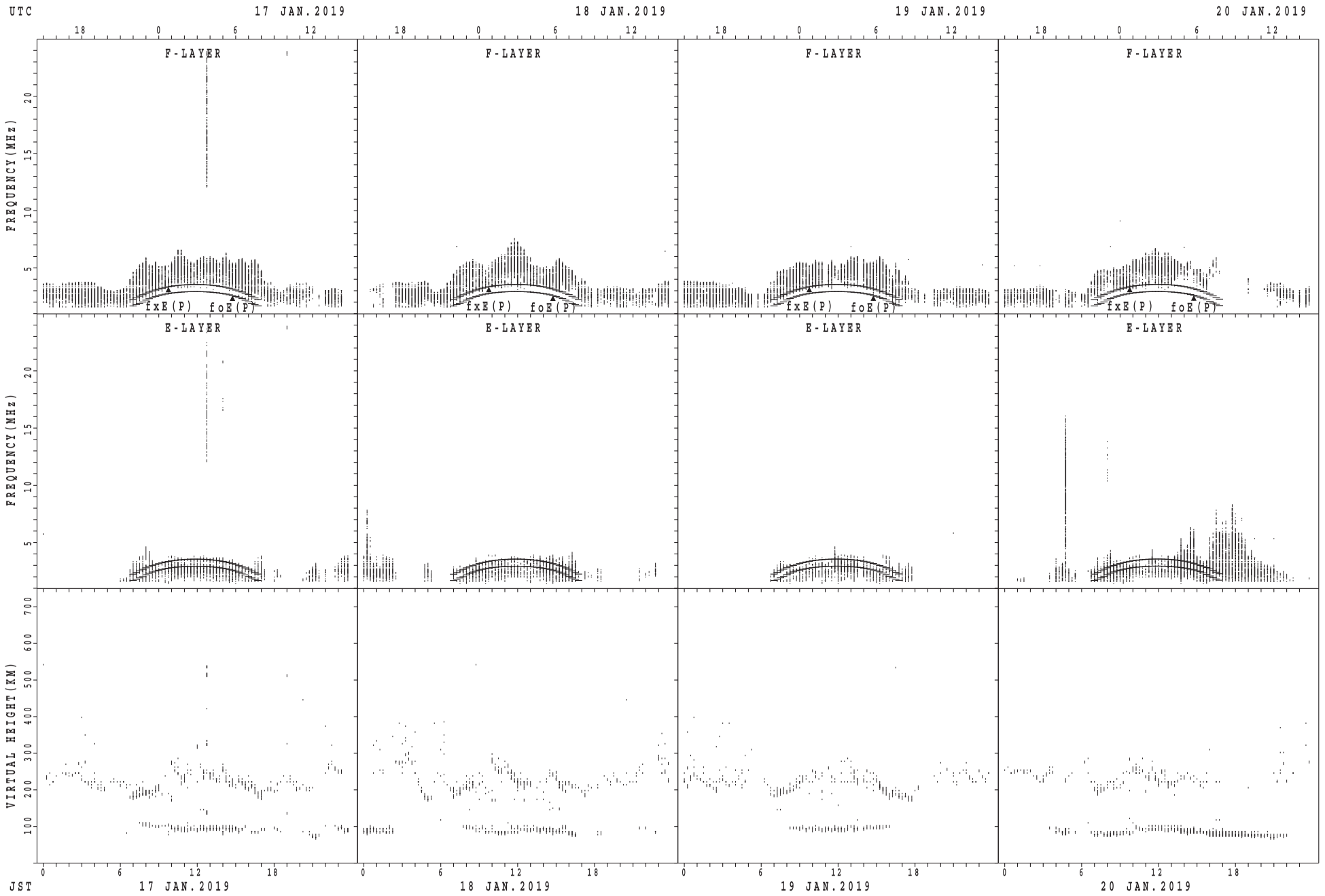
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



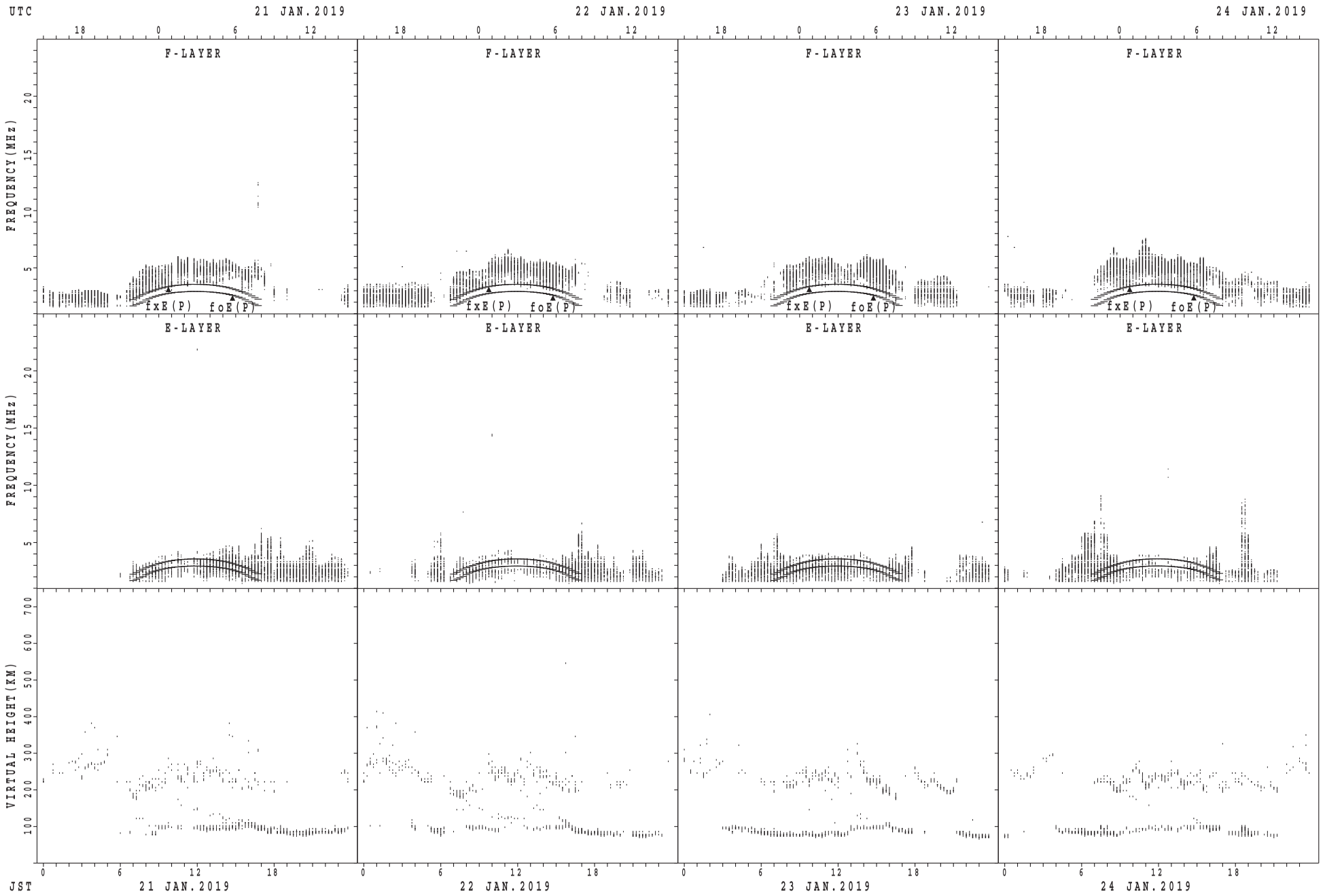
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



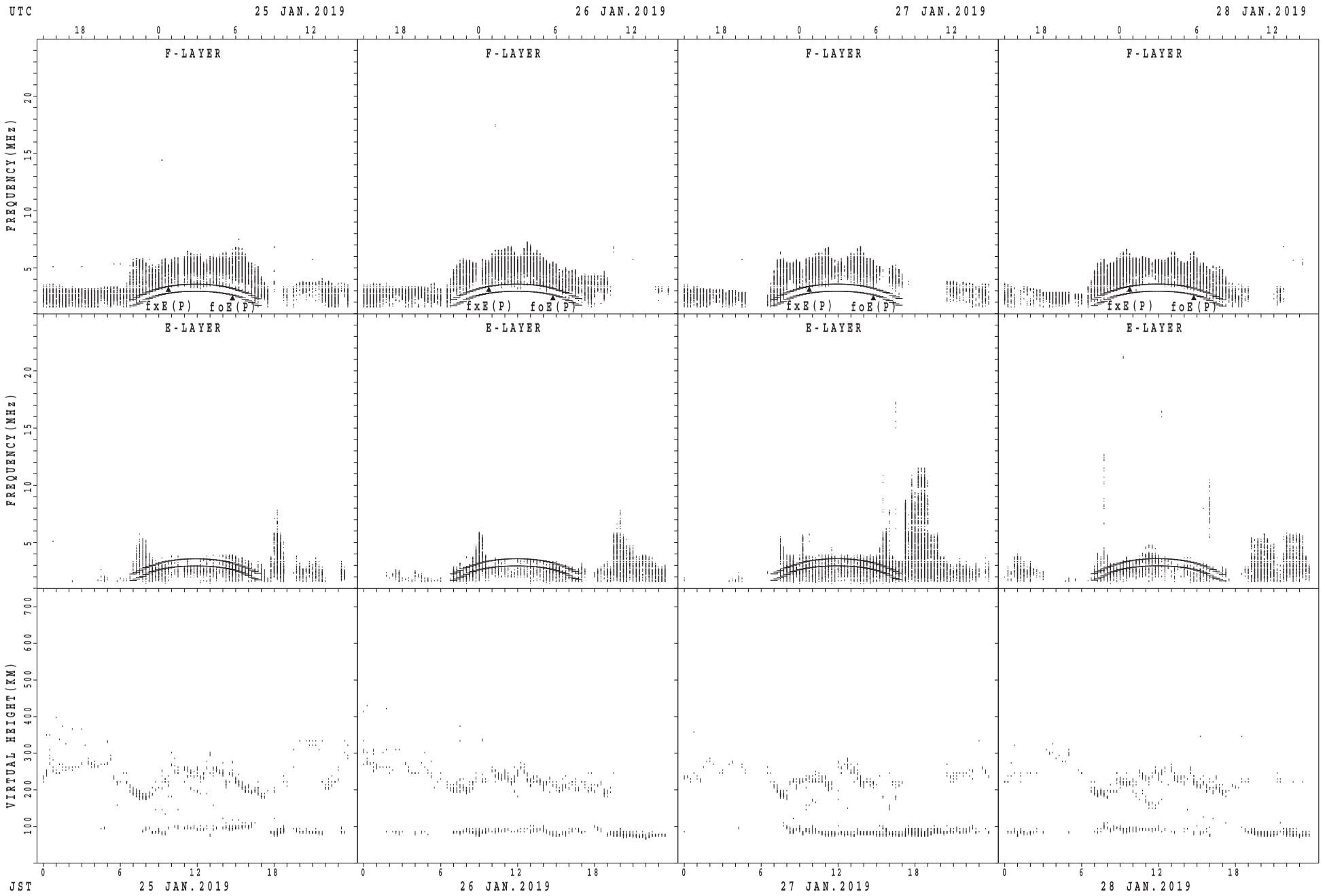
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



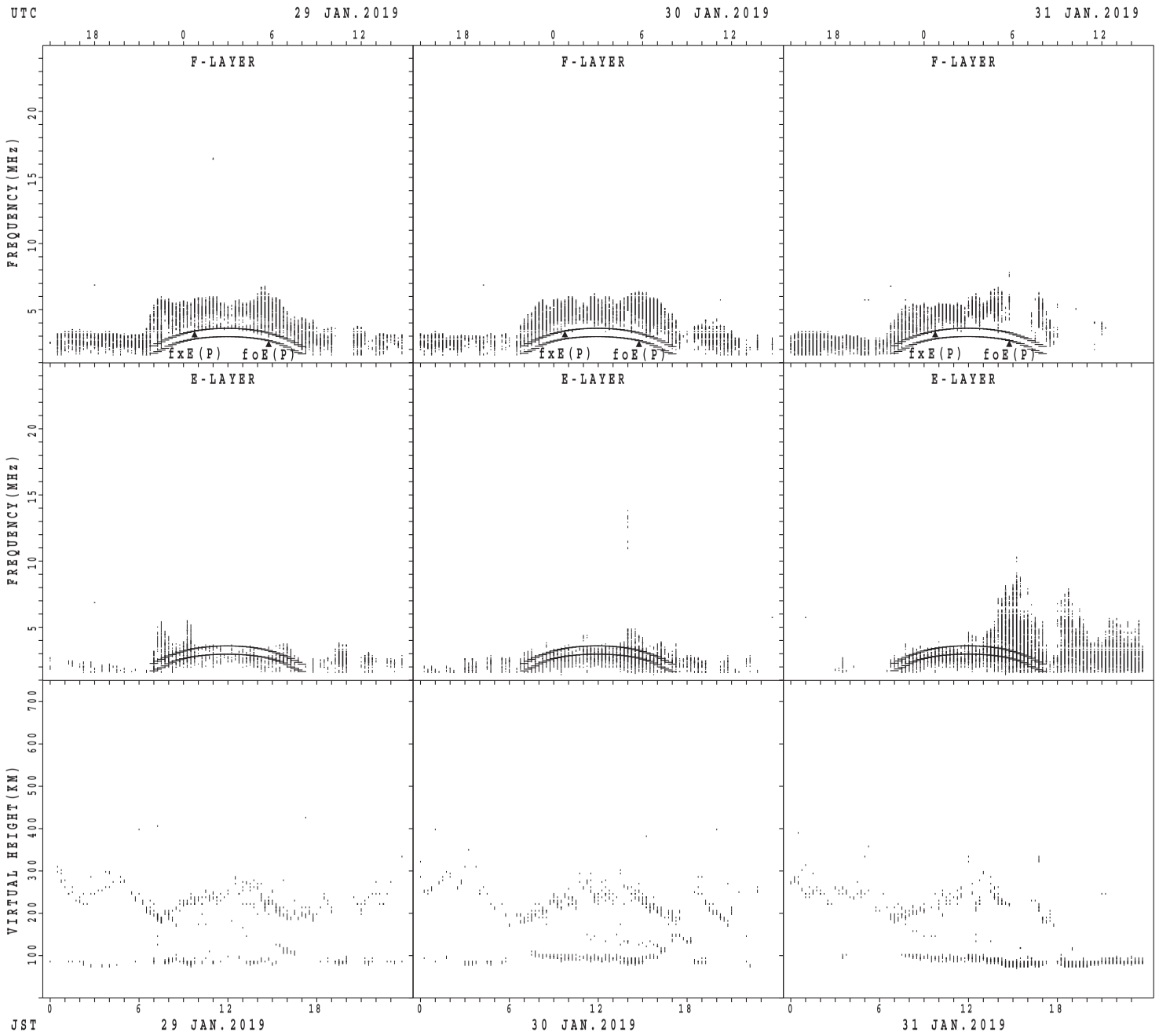
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



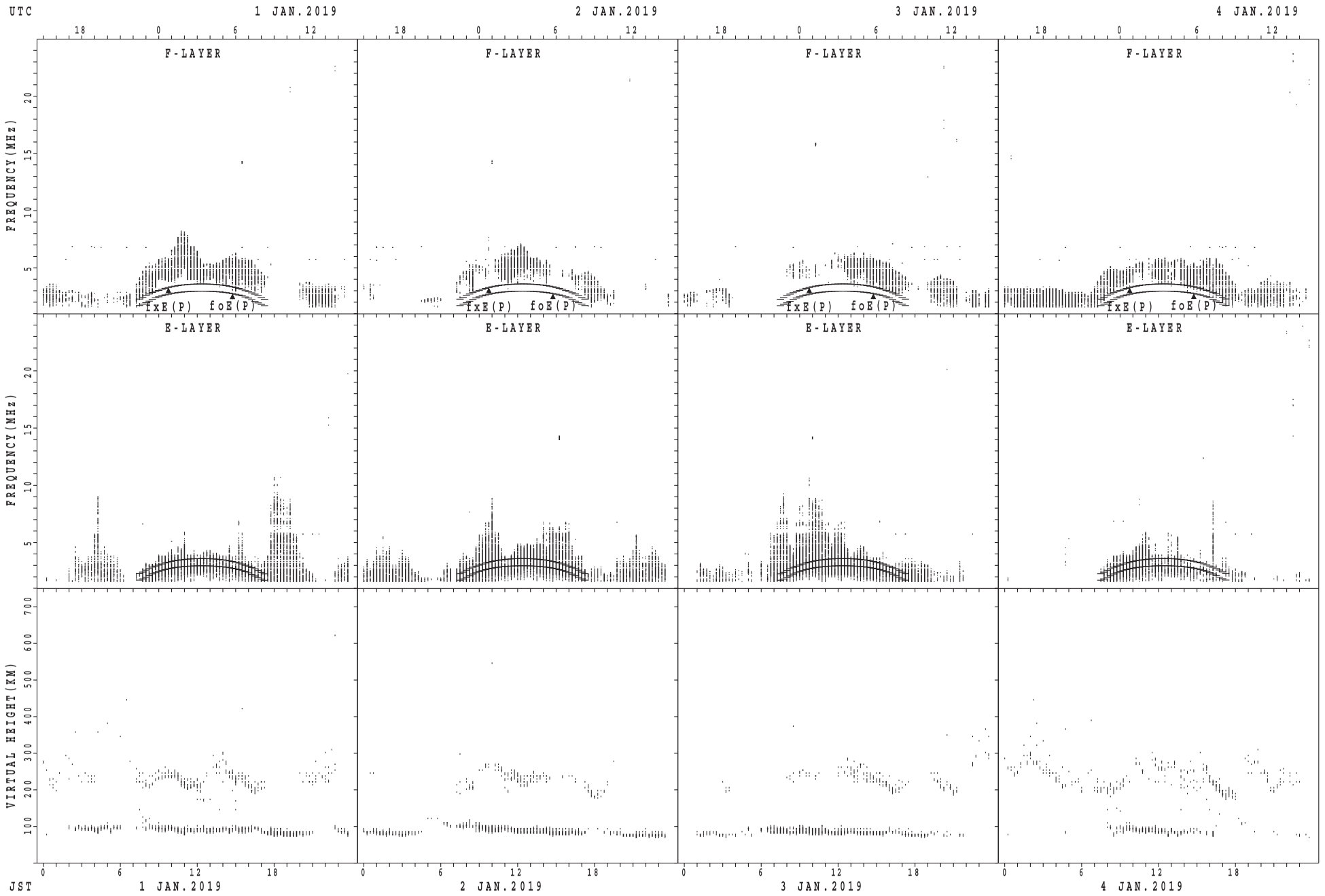
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



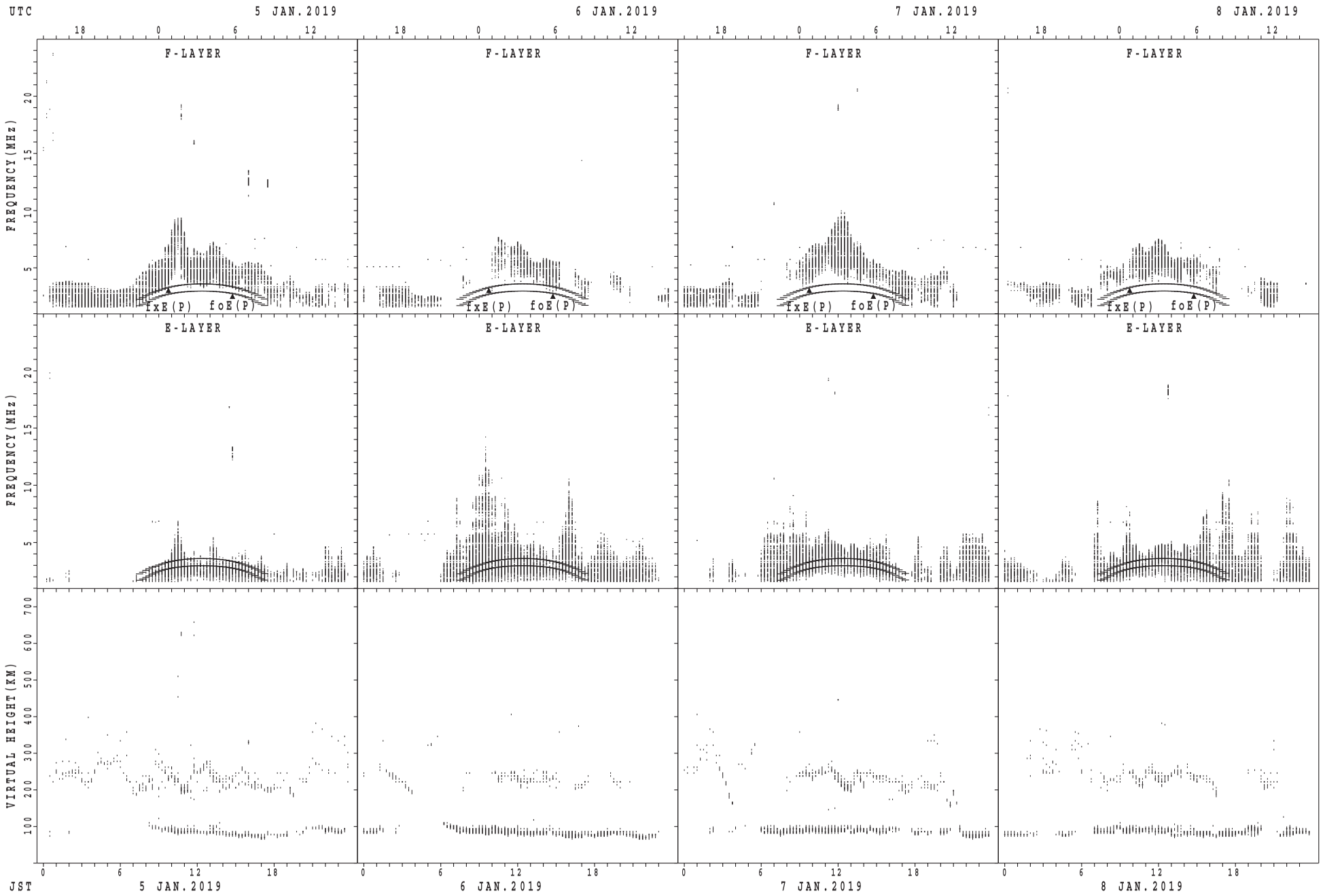
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



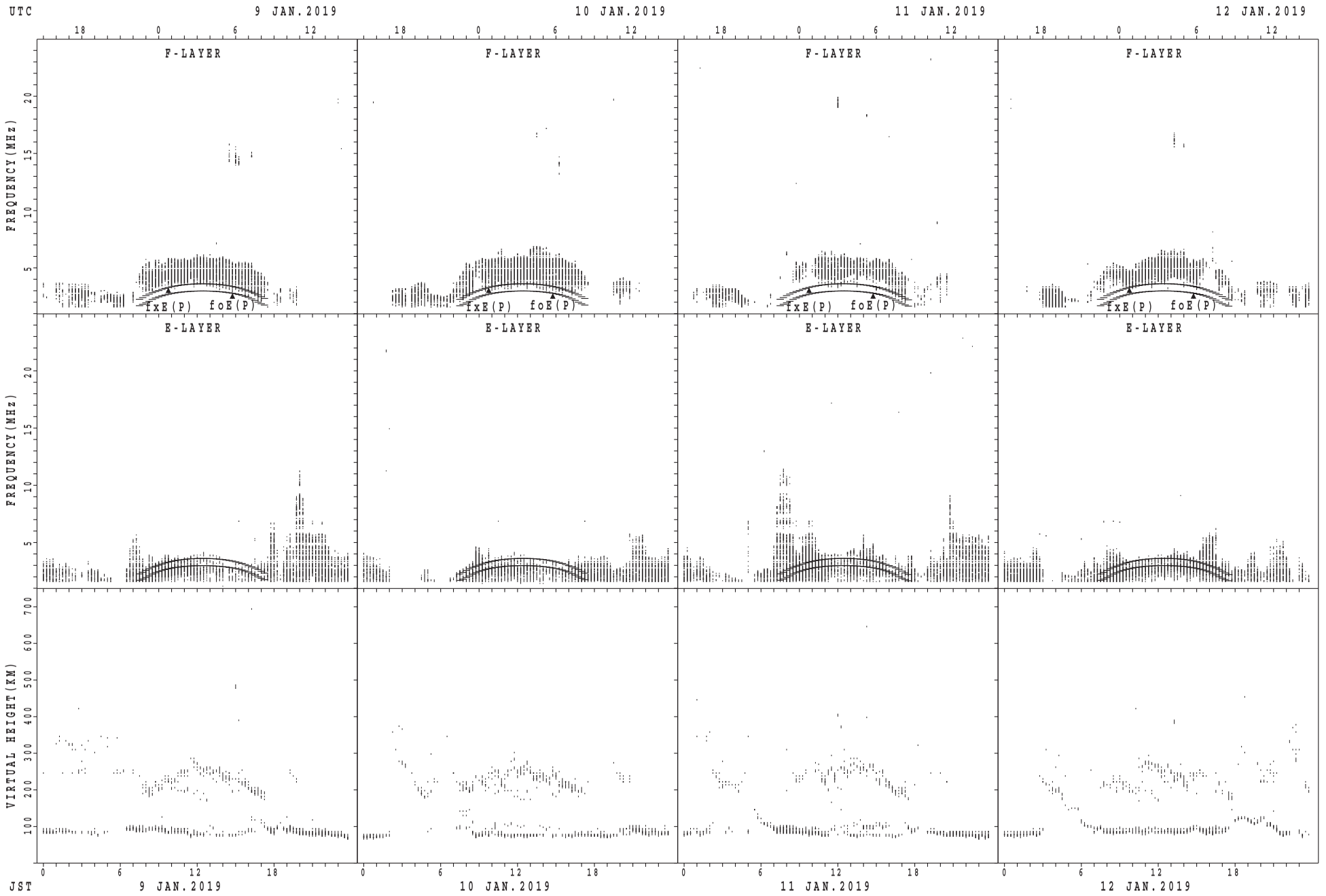
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



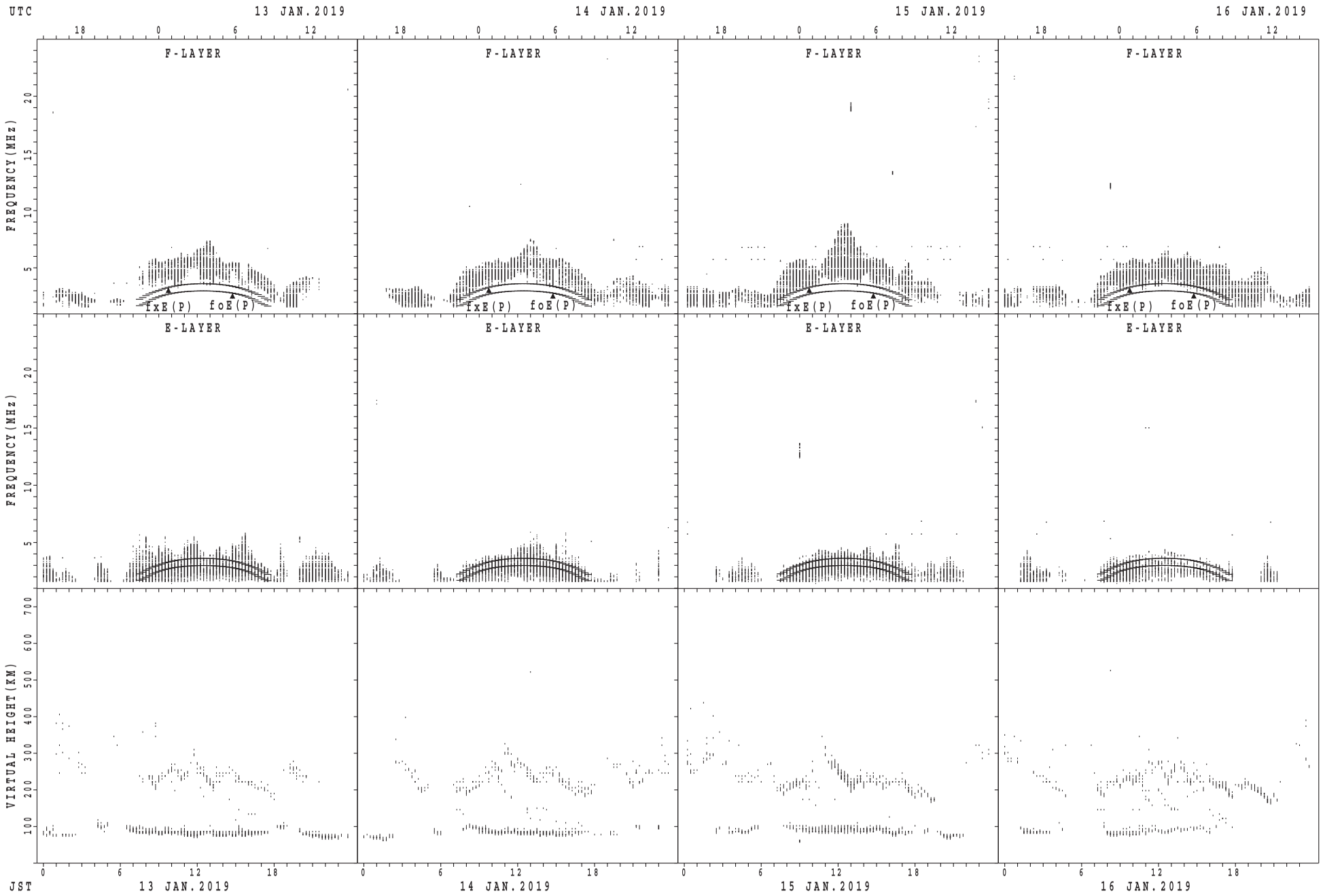
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



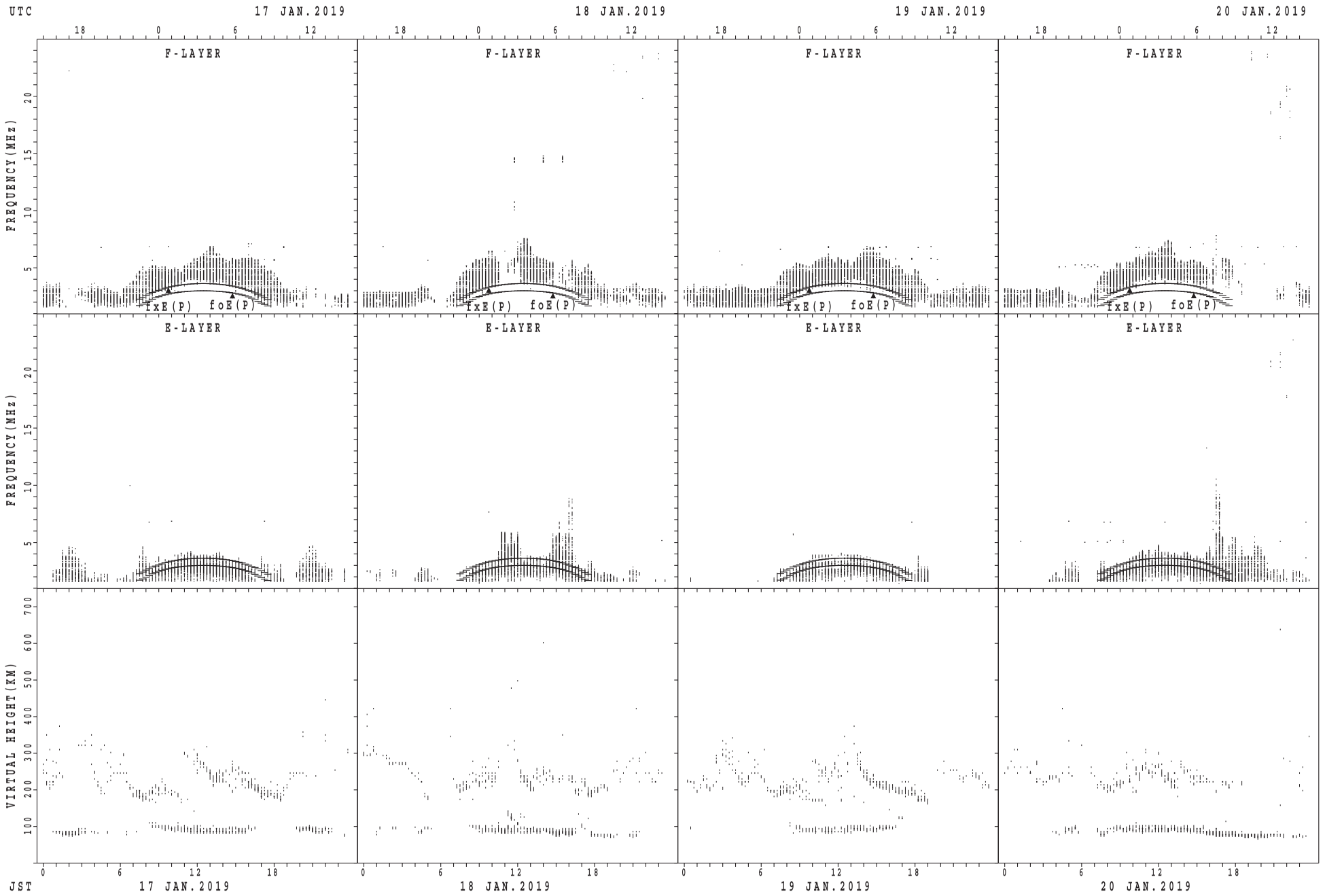
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



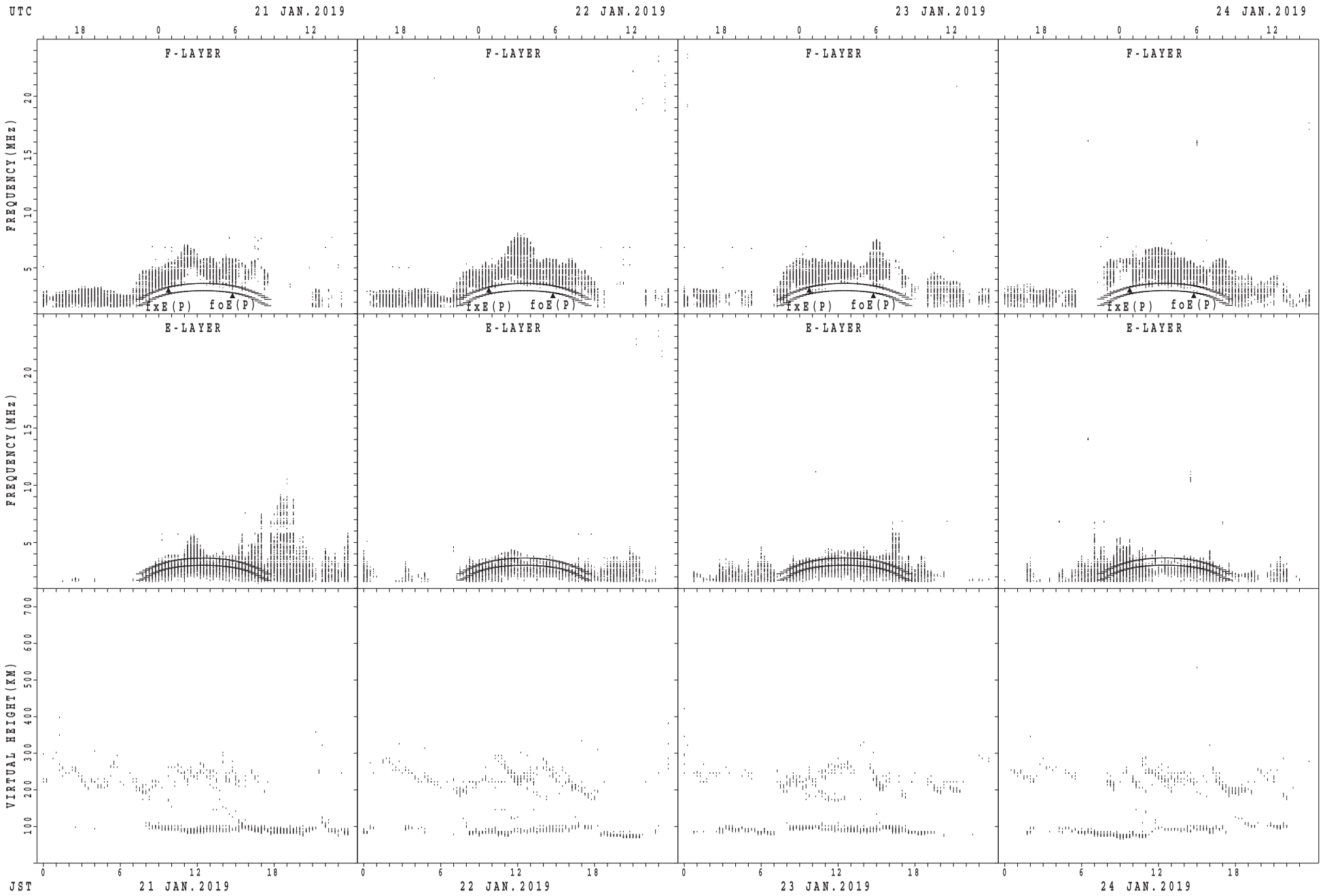
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



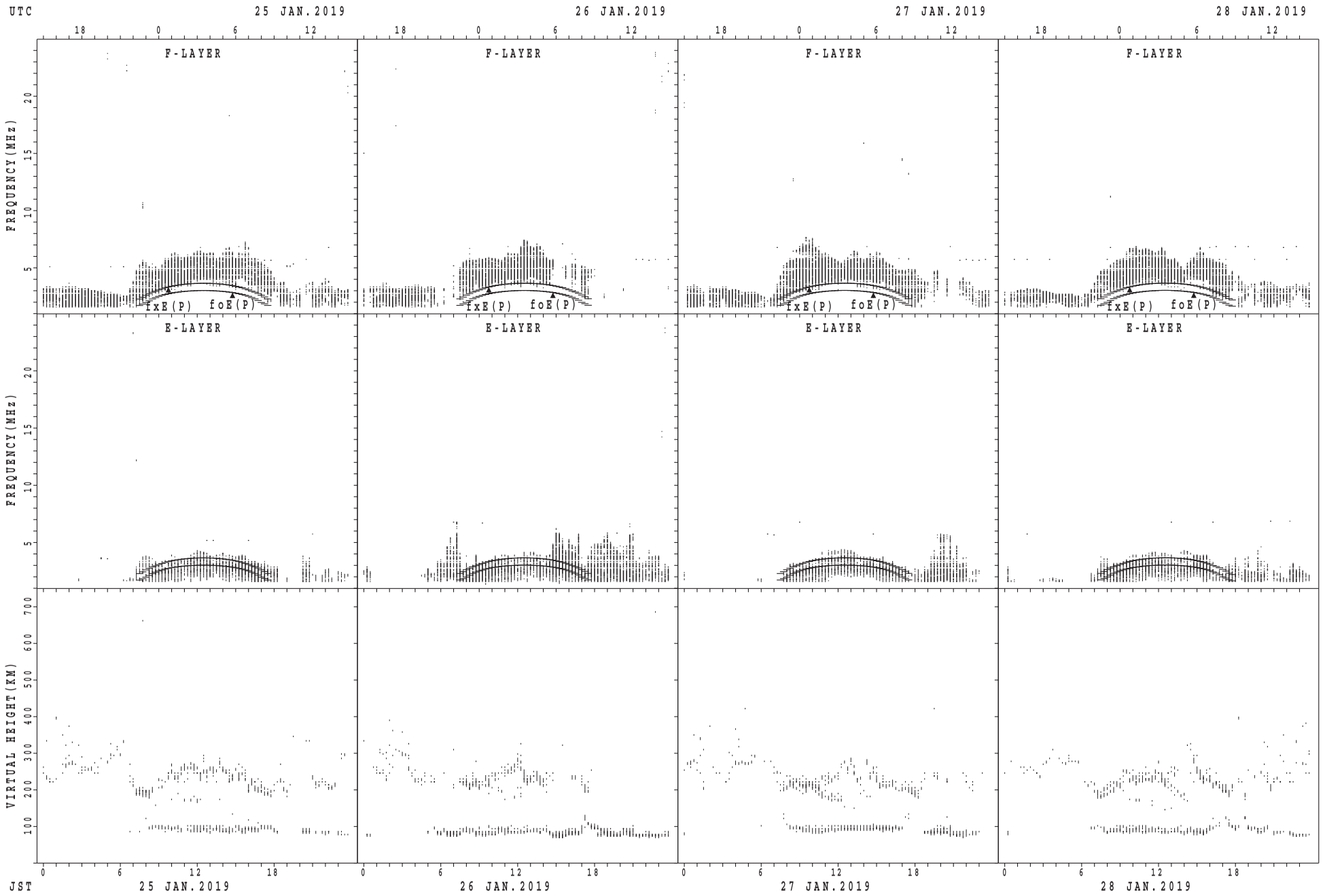
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



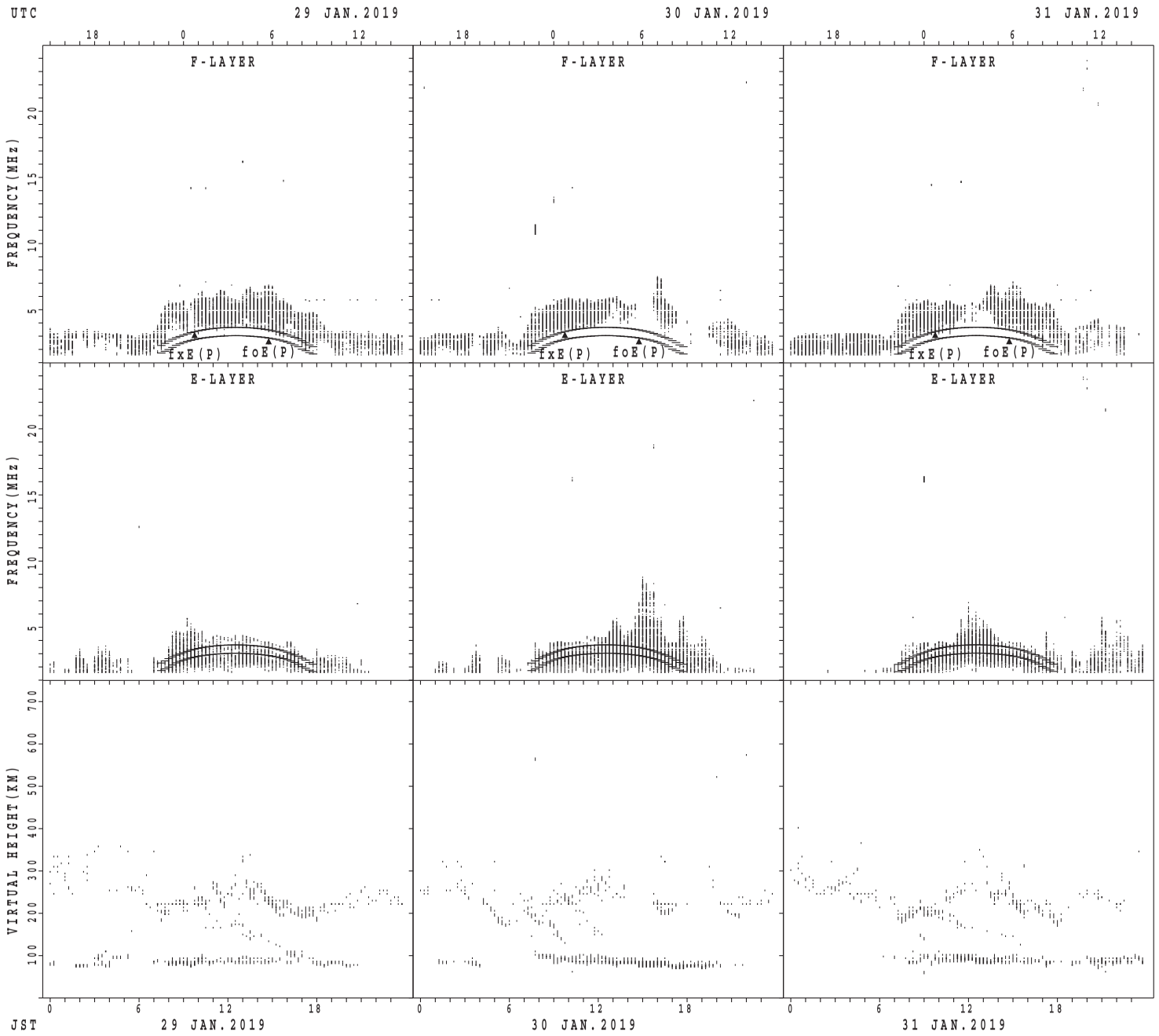
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



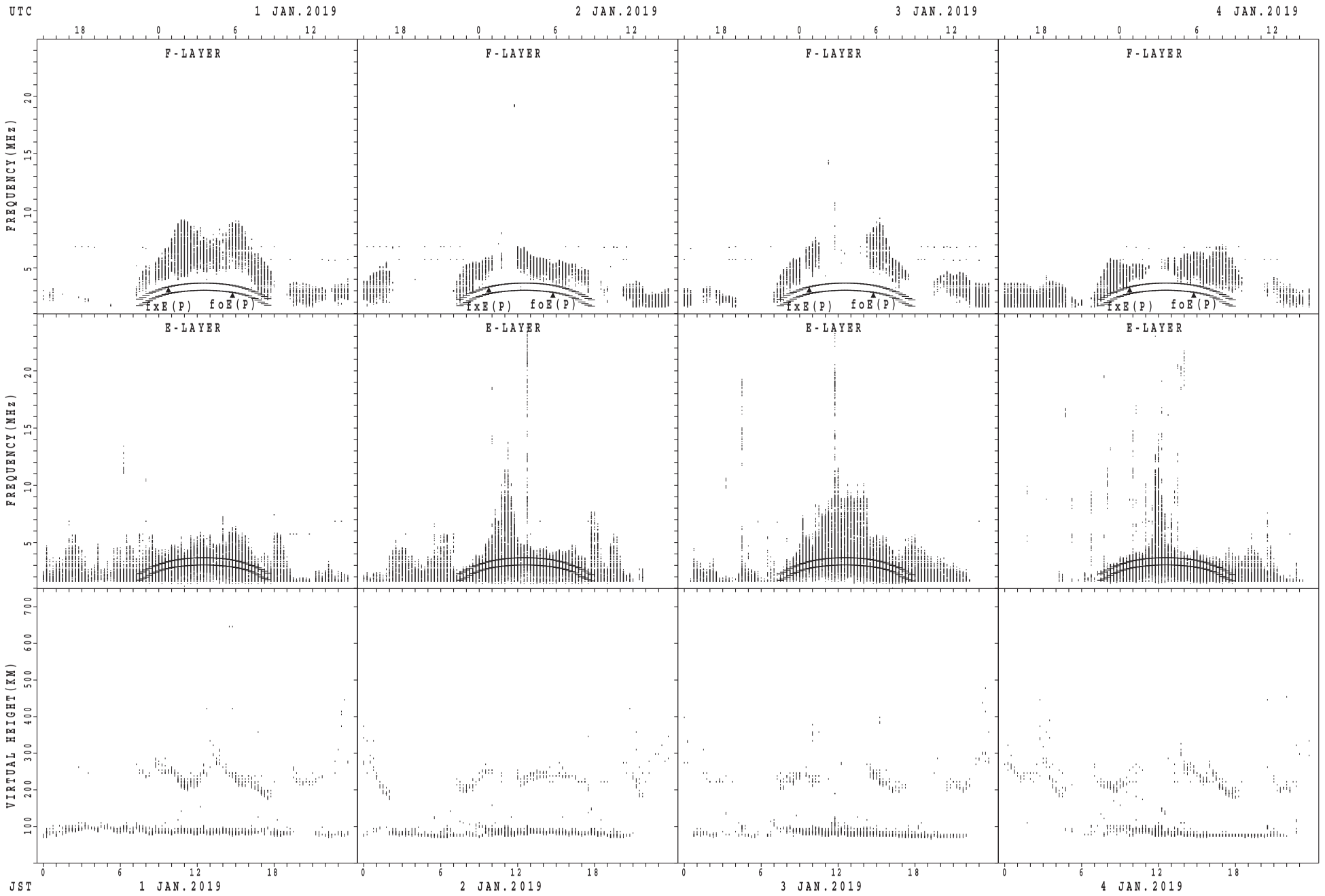
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



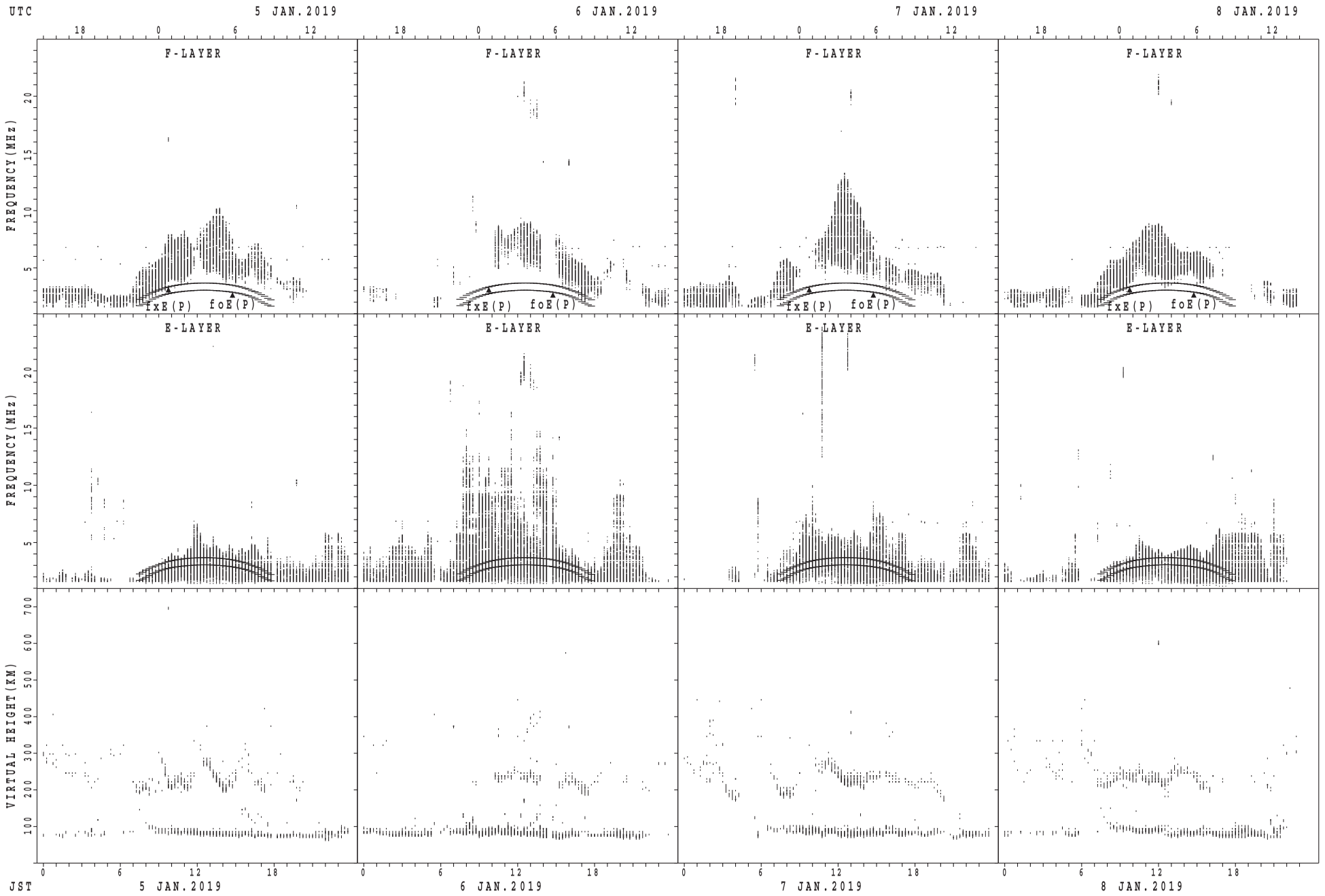
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



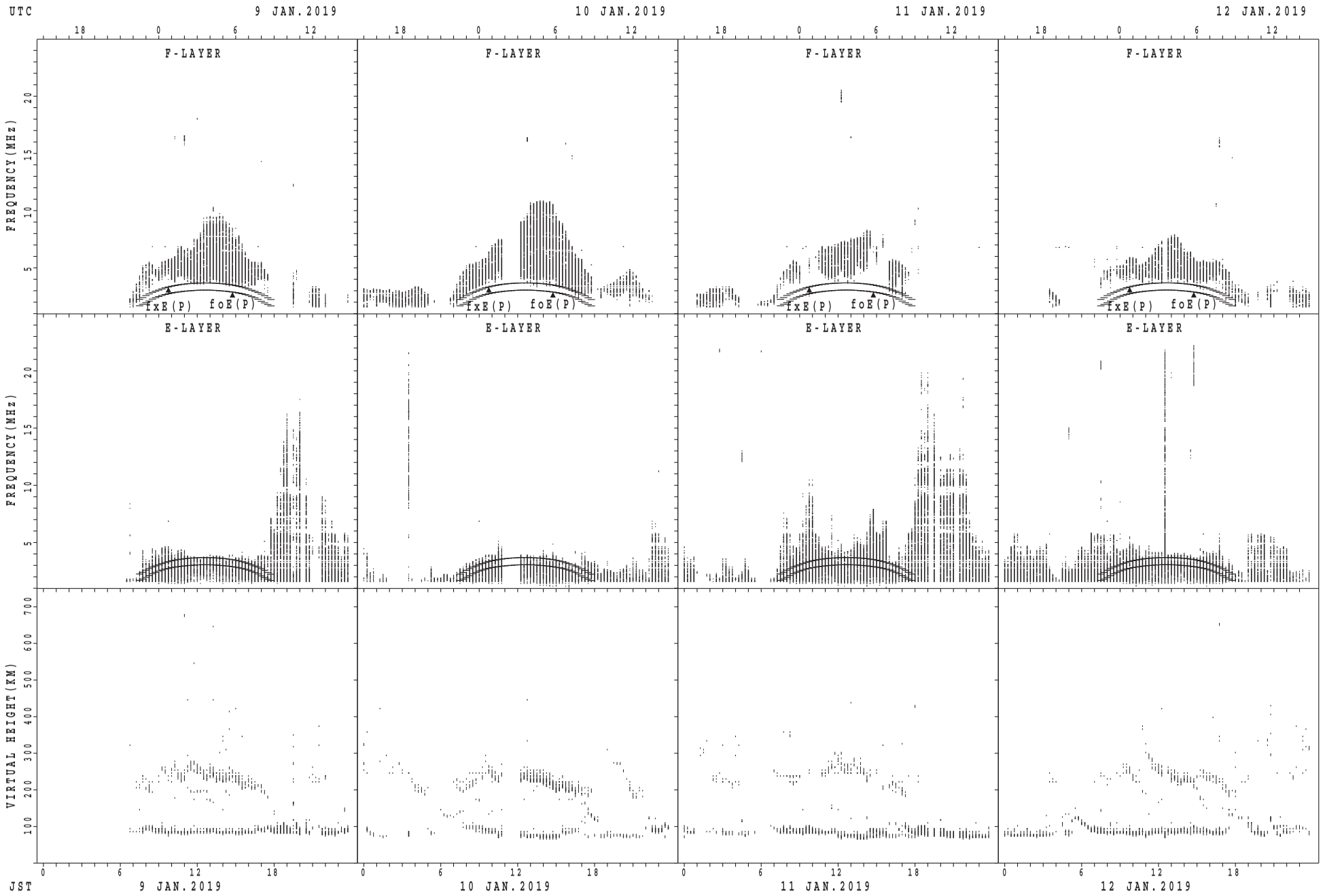
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



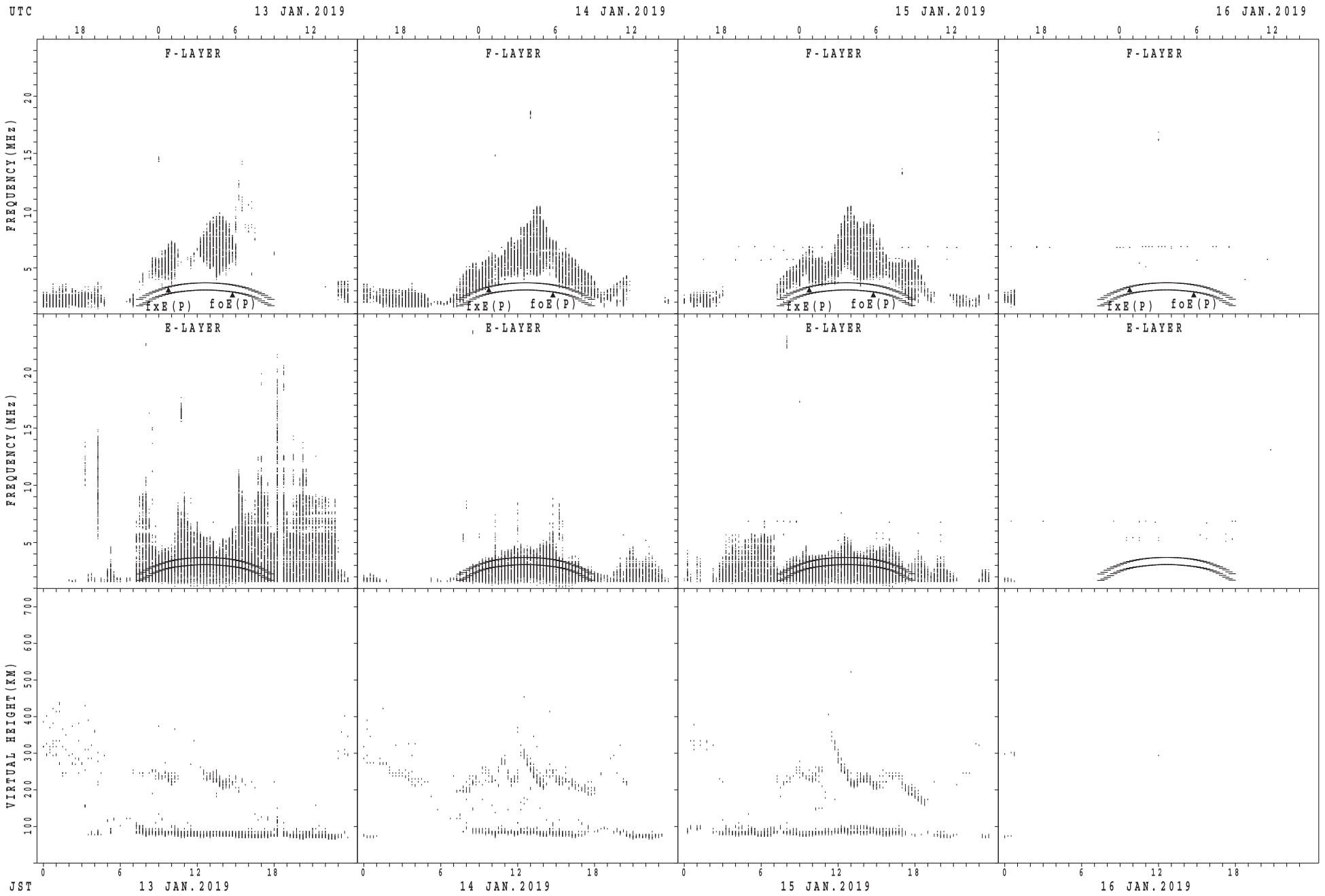
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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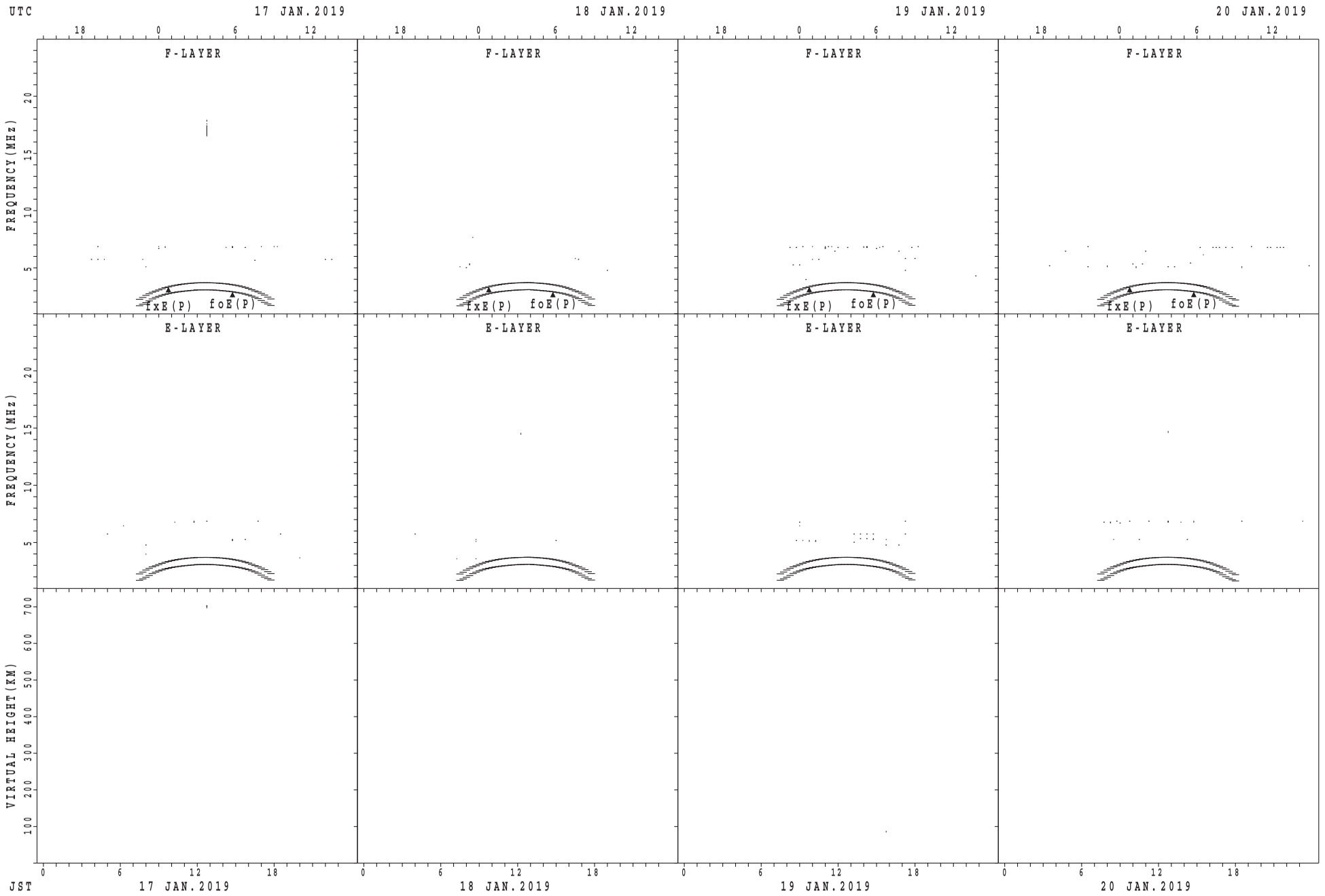
SUMMARY PLOTS AT Okinawa



fxE(P); PREDICTED VALUE FOR fxE
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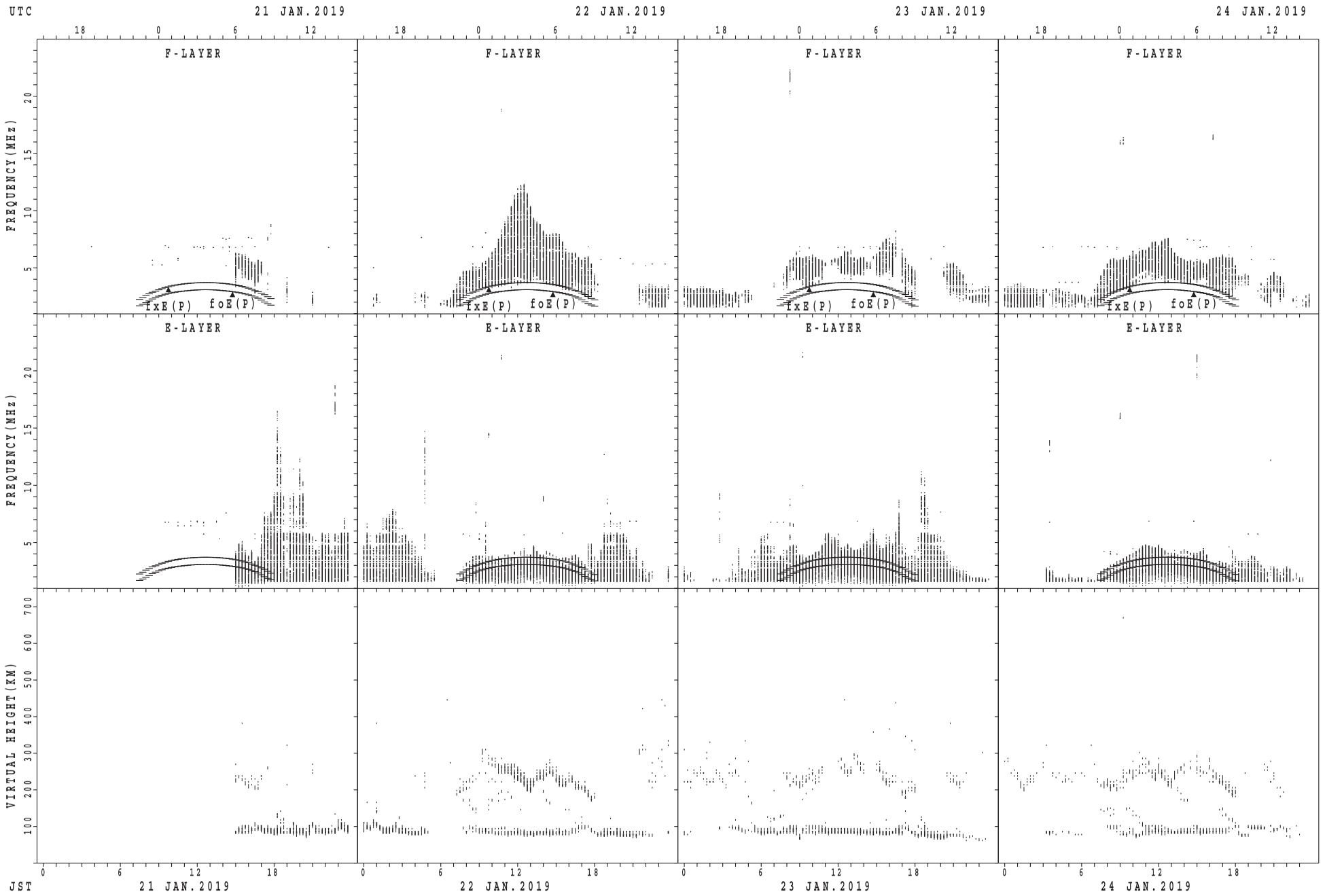
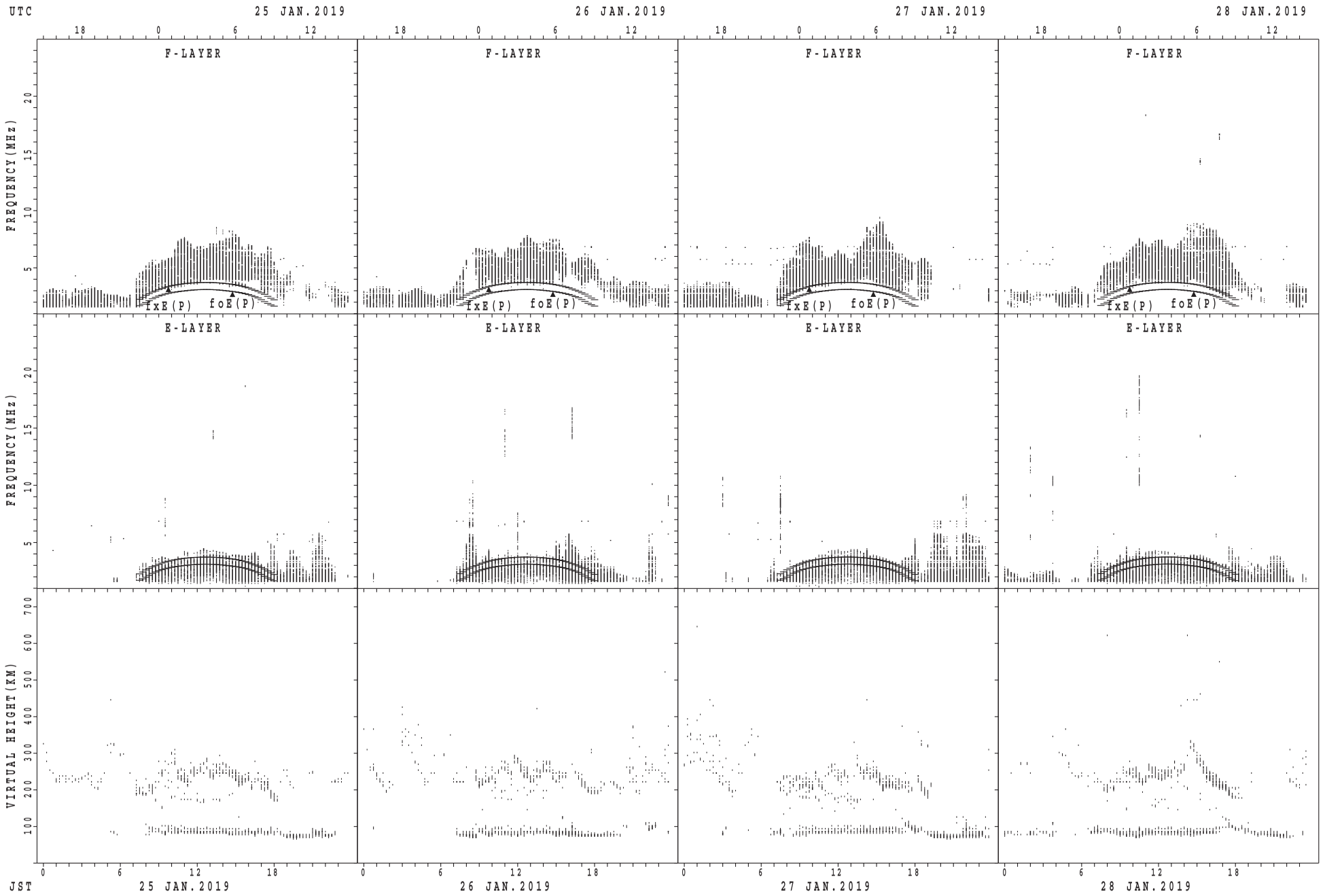
SUMMARY PLOTS AT Okinawa



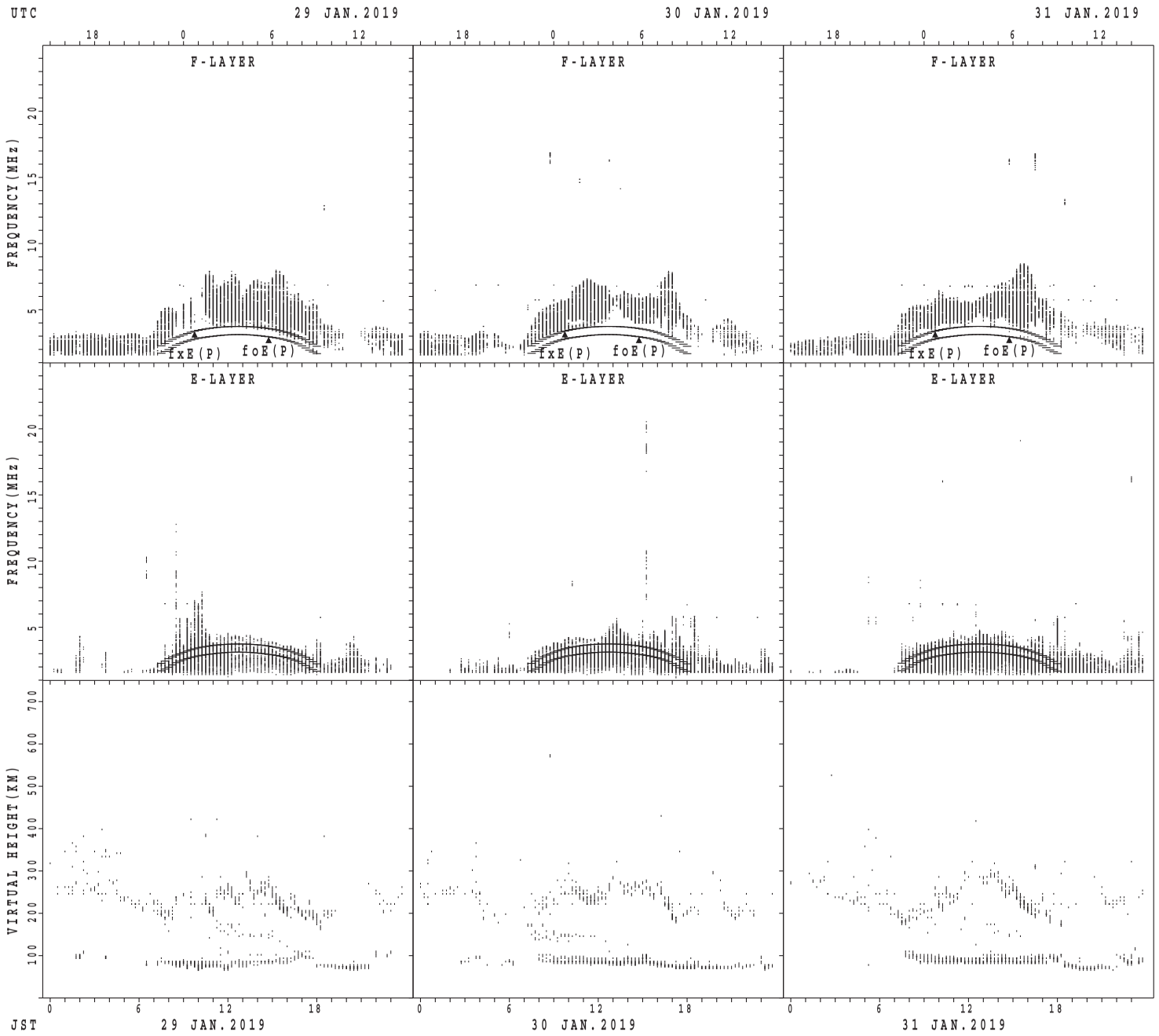
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

JAN.2019 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										3	6	11	11	5	1	3		1						
MED										196	221	216	228	234	220	238		232						
U Q										200	226	226	240	254	110	386		116						
L Q										190	214	212	214	230	110	222		116						

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14	9	9	10	16	21	25	25	21	26	21	20	22	15	18	19	21	22	25	26	25	20	15
MED	80	85	89	95	105	92	89	89	97	89	122	101	134	95	103	98	97	95	88	89	85	87	86	83
U Q	83	97	108	107	121	97	96	98	126	150	167	166	171	119	149	125	137	128	95	98	87	90	89	95
L Q	77	79	81	89	97	89	87	87	85	85	93	80	89	87	95	89	89	85	83	83	81	81	81	79

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											5	4		4	4				1					
MED											242	232		232	241				194					
U Q											250	242		235	259				97					
L Q											223	214		224	230				97					

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	13	9	8	11	11	13	21	29	26	24	18	21	20	20	21	25	17	19	19	21	24	22	20
MED	87	83	89	87	95	93	93	91	103	95	92	114	95	94	95	91	95	93	89	83	83	81	82	82
U Q	89	91	95	97	97	103	102	105	122	115	143	167	159	125	110	105	109	118	101	89	88	88	87	89
L Q	75	79	77	86	83	89	89	88	90	87	88	85	86	87	87	84	85	85	83	81	79	79	77	79

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	8	5			7	6	4							
MED										226	239	232			248	233	220							
U Q										113	245	252			250	236	279							
L Q										113	227	201			226	232	212							

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	17	9	12	12	11	14	27	28	27	29	29	29	25	27	26	25	26	25	22	22	17	17
MED	85	85	87	89	88	92	93	91	97	95	95	95	95	95	95	91	89	89	91	87	89	86	85	83
U Q	89	89	89	92	93	99	117	95	115	104	101	119	155	161	100	107	95	111	105	94	91	95	95	88
L Q	80	78	81	84	82	89	85	89	87	88	91	87	89	88	87	83	83	82	83	81	83	81	79	77

MONTHLY MEDIANS OF h'F AND h'Es

JAN.2019 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	2	10					14	9	3					1	
MED									206	234	242					235	232	216					296	
U Q									103	234	258					240	246	218					148	
L Q									103	234	218					230	216	190					148	

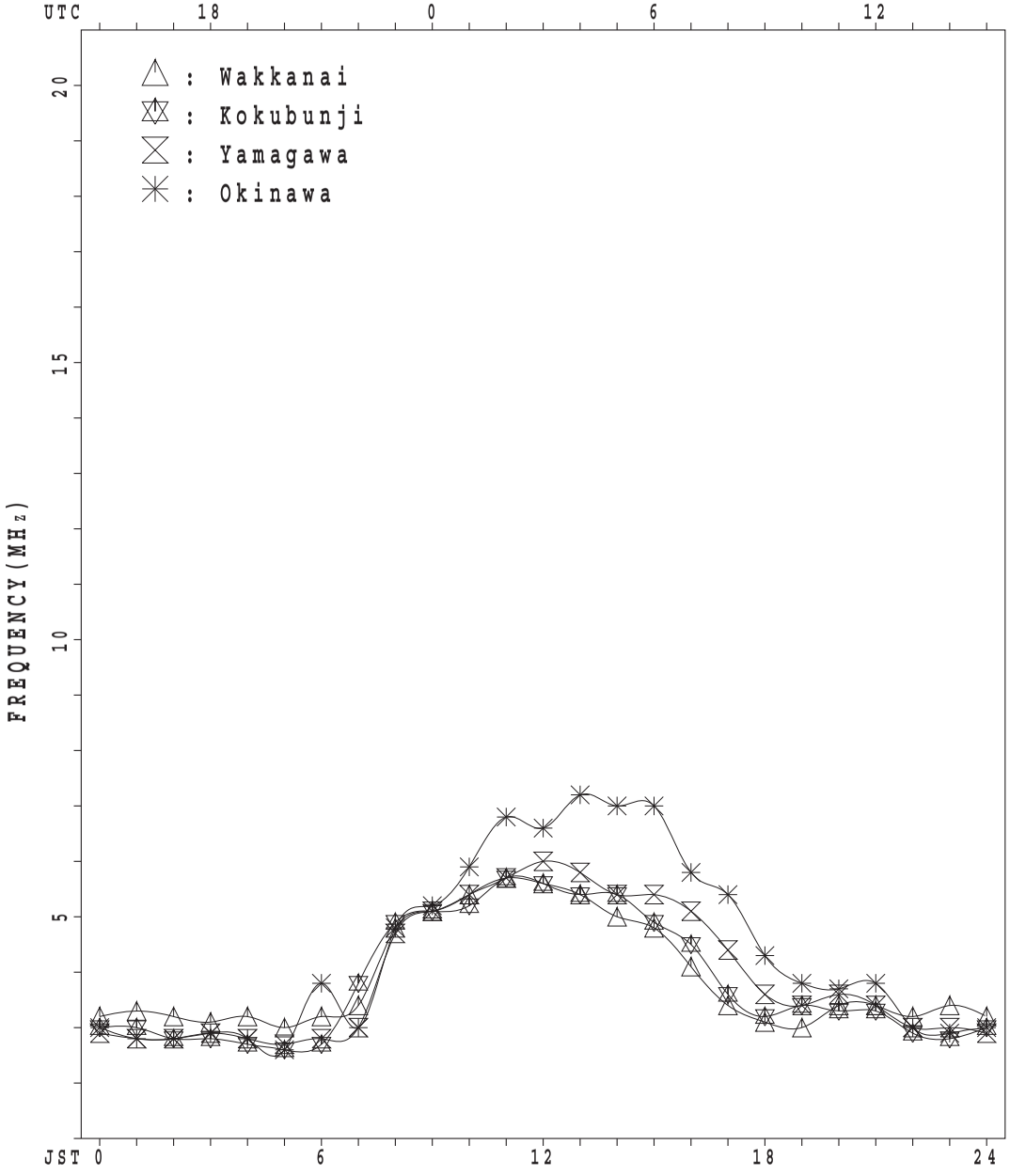
h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	8	8	10	8	13	7	10	24	23	25	23	22	25	24	24	26	25	25	26	24	23	20	13
MED	81	95	89	87	96	89	89	91	101	89	91	93	98	89	93	89	89	95	89	90	83	83	85	91
U Q	89	105	98	89	113	92	95	107	131	143	119	101	107	98	101	95	101	110	98	97	87	97	93	103
L Q	75	88	85	83	92	82	85	89	88	89	86	87	87	85	85	83	85	81	81	79	76	75	78	86

MONTHLY MEDIANS PLOT OF foF2

JAN.2019

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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 37	X 37	X 33	X 34	38	32	X 29												X 34	X 34	X 38	X 39	X 39	X 39
2	X 31	X 31	X 30	X 31	X 31	X 28	X 26												A	X 41	X 41	X 40	X 40	X 40
3	X 38	X 37	X 38	X 37	X 36	X 37	A												X 42	X 41	X 33	X 33	X 33	38
4	X 37	44	X 37	40	X 40	X 39	X 34												X 36	X 40	X 38	X 39	X 36	46
5	49	X 38	X 37	X 37	X 38	38	28												X 40	X 42	X 42	X 41	X 41	X 38
6	X 37	X 38	X 38	X 44	X 34	X 35	X 29												X 34	X 34	X 37	X 44	43	46
7	56	X 38	47	42	X 43	X 44	X 41												X 40	X 41	X 41	X 46	X 45	X 45
8	X 41		X 40	X 37	X 37	X 37	X 31												A	A	X 37	X 41	X 43	X 40
9	X 40	X 44	X 40	X 39	X 37	X 33	X 33												X 37	A	A	X 36	X 35	X 37
10	X 38	X 37	X 36	X 34	X 34	X 35													X 35	X 30	X 31	X 33	X 35	X 35
11	38	X 37	39	34	X 33	34													X 37	X 37	X 37	X 35	38	X 36
12	X 37	38	X 35	X 35	X 37	X 35													A	A	A	38	47	39
13	39	34	X 31	36	39		30												X 34	X 33	33	38	44	46
14	46	39	X 32	X 34	X 32	X 31													X 31	A	X 32	X 34	38	44
15	X 37	X 34	X 33	X 38	X 33	X 31													X 39	X 33	X 51	X 35	X 36	X 39
16	X 40	X 37	X 39	X 39	X 37	X 40	33												X 44	X 44	X 44	X 34	X 34	X 38
17	X 37	X 37	X 38	X 35	X 32	X 32													X 32	X 41	X 47	X 38	X 37	X 39
18	X 41	X 46	X 45	X 43	X 45	54													X 31	X 35	X 41	X 38	X 38	X 38
19	X 36	C	X 34	X 33	X 32	X 33													A	A	A	X 35	X 35	X 35
20	X 35	X 36	X 36	X 34	X 32	X 29													X 29	X 29	X 38	X 31	X 34	X 37
21	X 35	X 34	X 34	X 35	X 35	X 33	37												X 46	X 47	X 52	X 52	X 56	X 52
22	X 45	48	48	48	49	45													X 35	X 32	X 32	X 32	X 34	X 35
23	X 35	X 33	X 33	X 39	39	41	37												X 39	X 43	X 42	47	48	X 45
24	46	X 37	38	X 35	38	X 32													X 36	X 40	X 46	X 41	44	46
25	46	38	X 37	X 38	X 38	X 37													X 33	X 37	X 42	X 45	X 40	47
26	X 40	X 36	40	40	X 34	X 32													X 36	X 33	X 33	X 35	X 37	X 37
27	X 35	X 33	X 33	40	49	38													X 36	X 35	X 39	X 37	X 37	X 41
28	X 39	X 39	X 37	X 35	33	X 31													X 32	X 32	X 37	X 37	X 36	X 37
29	X 37	X 39	40	38	38	38	34												X 32	X 32	X 41	X 37	39	48
30	52	55	46	54	54	46	45	58											X 40	X 32	X 36	X 38	X 34	38
31	38	X 35	38	38	38	X 31													X 34	X 38	X 46	X 37	X 44	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	31	29	31	31	31	30	14	1											27	26	28	31	31	31
MED	X 38	X 37	X 37	X 37	X 37	X 35	33	58											X 36	X 36	X 38	X 38	X 38	X 39
U Q	41	39	40	40	39	38	37												X 39	X 41	X 42	X 41	43	45
L Q	X 37	X 36	X 34	X 35	X 33	X 32	X 29												X 33	X 33	X 36	X 35	X 35	X 37

JAN. 2019 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	30	30	26	27	F 28	F 22	22	29	41	46	63	60	48	48	47	42	38	30	27	27	31	32	32	32
2	24	24	23	24	24	21	19	28	41	46	58	60	53	50	48	44	A	26	A	34	34	33	33	33
3	31	30	31	30	29	30	A	26	42	45	51	52	54	52	50	38	38	33	35	34	26	26	26	F 26
4	30	F 27	30	F 28	33	32	27	35	41	48	52	63	52	48	50	46	39	26	29	33	31	32	30	F 30
5	F 32	32	32	31	32	F 28	F 19	31	52	49	70	72	64	52	49	49	40	32	33	34	35	34	34	31
6	30	31	31	37	28	28	22	31	46	55	50	54	52	55	48	43	42	33	27	27	30	37	F 31	F 30
7	F 28	F 29	F 30	F 25	36	37	34	37	44	56	55	64	54	49	46	41	37	37	33	34	34	39	38	37
8	34	F 33	33	30	30	30	24	32	48	49	54	54	52	50	47	40	38	32	A	A	30	34	36	33
9	33	37	33	32	30	26	26	26	47	49	53	58	49	50	45	40	38	28	30	A	A	29	28	30
10	32	30	29	27	27	28	26	31	43	50	50	52	52	49	46	40	34	30	28	23	24	26	28	28
11	F 26	30	F 26	F 22	23	F 23	A	28	43	48	54	52	51	51	48	42	39	32	30	30	30	28	F 27	29
12	30	F 28	28	28	30	28	26	28	44	53	61	56	52	51	54	48	36	A	A	A	A	F 26	F 28	F 26
13	F 24	F 24	24	F 26	F 21	F 21	F 16	26	38	51	58	57	50	48	47	42	34	25	27	26	F 22	F 26	F 31	F 31
14	F 27	F 26	25	27	25	24	A	24	44	48	52	52	53	54	50	46	37	29	24	A	25	27	F 27	F 32
15	30	27	26	F 22	26	24	20	33	44	52	52	60	57	53	47	45	44	A	32	26	44	28	29	32
16	33	30	32	32	30	33	F 21	34	47	51	56	56	52	53	45	51	45	32	37	37	37	27	27	31
17	30	30	31	28	25	25	23	32	48	57	54	56	56	56	49	50	47	30	25	34	40	31	30	32
18	34	39	38	36	38	F 37	37	33	47	54	58	58	63	57	50	46	44	31	24	28	34	31	31	31
19	29	C	27	26	25	26	19	30	44	48	44	48	53	46	48	43	44	30	A	A	A	28	28	28
20	28	29	29	27	25	22	19	28	43	42	54	56	61	48	46	56	38	A	22	22	31	25	27	30
21	28	26	27	28	28	26	F 25	35	44	46	47	50	51	49	46	50	46	38	39	40	45	45	49	45
22	38	F 34	F 36	F 31	F 31	F 27	25	30	41	46	40	52	59	53	46	46	40	34	28	25	25	25	27	28
23	28	26	26	32	F 29	F 31	F 27	33	44	48	52	49	50	52	46	45	39	31	32	36	35	F 33	F 36	38
24	F 31	30	F 27	28	F 24	25	A	32	50	58	66	52	62	53	50	50	49	39	29	33	39	34	F 31	F 31
25	F 32	F 27	30	31	31	30	32	40	43	66	50	54	59	48	62	B	46	41	26	30	35	38	33	F 32
26	33	29	F 29	F 27	27	25	21	33	42	46	60	63	59	55	48	44	44	42	29	26	26	28	30	30
27	28	26	26	F 23	F 30	F 21	A	32	48	48	53	57	51	53	48	55	46	29	29	28	32	30	30	34
28	32	32	30	28	F 23	24	21	36	53	50	50	48	X R 58	60	48	50	50	34	25	25	30	30	29	30
29	30	32	F 28	F 28	F 28	F 26	F 22	36	54	56	49	49	56	52	53	48	42	33	25	25	34	30	F 30	F 32
30	F 32	F 32	F 30	F 30	F 28	F 30	F 30	F 46	50	50	44	53	54	55	51	50	39	37	33	26	29	31	27	F 25
31	F 25	28	F 25	F 26	F 23	24	26	37	47	47	46	59	54	58	45	54	46	31	27	31	39	30	37	35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	26	31	31	31	31	31	31	31	31	30	30	28	27	26	28	31	31	31
MED	30	30	29	28	28	26	24	32	44	49	53	56	53	52	48	46	40	32	29	29	32	30	30	31
U Q	32	32	31	31	30	30	26	35	48	53	58	59	58	54	50	50	45	34	32	34	35	33	33	32
L Q	28	27	26	F 26	25	24	21	28	43	47	50	52	52	49	46	42	38	30	26	26	30	27	28	30

JAN. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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										
2											L	L					A							
3											L	L	L	324	L									
4											L	L	L	L	L									
5								A			L	L	L	L	L									
6													L	L										
7											L	L	L											
8											348		L											
9											L	L	L	L										
10												272	276	L	L									
11							A			L	L	L	L	L	L									
12											L	L	L	L	L			A						
13										L	L	272	L	L										
14							A			L	L	L	L	L	L									
15										L	L	L	L	L				A						
16									L		L		L	L										
17								L		L	L	L	L	L										
18										L		L	L	L	L	L								
19										L			L		L	L								
20											L	L						A						
21												L		L	L									
22												L	L	L										
23									L		L	L	L	L										
24							A			L	L	L	L			L								
25									A	L	L		L		L	B								
26									L	L	L	L	L	L	240									
27							A					L	L		L	L								
28									L	L	L	L	L	L	L	L								
29								L	L	L	L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31									L	L		L		L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	2	1	1	1									
MED											348	272	276	324	240									
U Q																								
L Q																								

JAN. 2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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								A	A	220	232	244	244	236	A	204	A	B						
								B	192	256	264	260	A	248	236	A	A	A						
2								B	196	244	252	232	272	268	224	200	B	B						
3								B	212	216	256	260	264	260	228	204	A	B						
4								B	212	A	276	276	268	256	224	236	A	B						
5								228	A	A	A	A	B	328	B	A	A	B						
6								B	176	228	B	B	264	A	264	A	A	A						
7								B	212	A	264	A	A	A	B	212	208	A						
8								B	A	236	268	268	268	256	236	180	176	172						
9							B	A	A	224	252	256	264	260	232	196	184	A						
10							B	B	204	244	260	272	268	252	248	224	A	A						
11							B	A	A	232	264	280	268	268	268	208	208	A						
12							B	B	204	232	244	272	276	252	260	212	200	180						
13							B	A	200	204	260	276	276	276	248	204	164	A						
14							B	A	A	236	252	268	A	A	252	208	A	A						
15							B	A	A	A	244	276	260	252	240	224	180	A						
16							B	192	252	236	252	288	264	268	244	224	B	A						
17							220	A	264	232	244	268	268	248	228	220	188	B						
18							B	A	208	224	256	256	272	260	260	208	188	A						
19							B	A	188	248	248	256	280	264	248	196	A	A						
20							B	A	A	232	260	268	A	264	236	220	A	A						
21							B	A	216	240	256	256	268	252	252	220	172	A						
22							B	A	196	232	256	264	272	272	260	236	A	A						
23							B	A	172	A	252	264	264	264	256	224	A	A						
24							B	A	204	228	256	272	272	260	252	B	A	A						
25							B	A	200	244	264	276	296	272	240	220	A	A						
26							B	A	A	228	228	288	288	264	252	224	184	A						
27							B	B	216	244	260	272	272	272	248	228	A	B						
28							B	A	204	252	276	276	276	276	248	240	A	B						
29							B	A	208	252	276	288	288	260	260	240	200	B						
30							B	B	232	260	276	292	300	304	A	252	204	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	22	26	29	28	26	28	27	27	13	2						
MED							220	210	204	234	256	270	270	262	248	220	188	176						
U Q									212	244	264	276	276	270	256	224	202							
L Q									196	228	252	260	264	254	236	204	178							

JAN. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	JA 31	34	EB 15	19	EB 15	32	JA 27	JA 21	JA 62	28	JA 39	JA 64	JA 46	JA 32	JA 25	G	JA 49	EB 16	EB 16	22	JA 31	24	JA 23	JA 25
2	28	JA 22	JA 21	20	JA 25	28	EB 17	20	23	JA 26	JA 31	JA 33	JA 44	63	JA 29	JA 38	JA 162	30	JA 88	JA 32	JA 32	34	JA 47	30
3	26	JA 40	EB 16	38	JA 44	JA 40	JA 52	JA 31	JA 51	JA 63	JA 33	JA 49	JA 64	G	G	G	EB 16	EB 16	JA 22	JA 31	JA 25	JA 34	JA 34	25
4	EB 16	EB 16	EB 16	EB 16	JA 107	27	JA 22	JA 79	30	30	30	JA 78	JA 57	JA 108	JA 55	G	JA 247	EB 16	JA 43	26	JA 50	JA 26	EB 15	EB 16
5	EB 16	EB 16	JA 83	JA 26	19	EB 16	JA 20	JA 31	JA 27	JA 53	JA 62	JA 61	G 22	G 24	JA 26	JA 33	JA 22	JA 26	JA 20	JA 29	JA 26	JA 21	JA 37	JA 32
6	JA 33	JA 33	28	JA 25	JA 38	32	EB 16	JA 61	JA 28	JA 83	JA 64	JA 61	EB 29	EB 28	EB 25	29	JA 35	JA 26	26	EB 16	JA 53	28	32	EB 16
7	EB 16	119	EB 16	27	38	JA 51	40	JA 107	JA 50	G	EB 28	EB 28	G	JA 38	JA 30	26	JA 41	JA 83	39	JA 41	JA 53	JA 31	JA 25	24
8	24	26	26	57	23	26	JA 37	40	G	45	JA 42	JA 49	JA 51	64	EB 30	25	G 23	60	JA 83	JA 50	JA 51	JA 31	JA 27	31
9	JA 27	19	26	19	EB 16	JA 27	JA 44	JA 42	JA 51	32	JA 61	29	G	27	G	20	G	G	32	59	JA 52	36	20	21
10	EB 16	20	EB 15	31	EB 16	EB 16	JA 21	JA 28	JA 32	G	G	G	G	G	G	24	19	JA 133	22	25	JA 27	JA 30	22	JA 25
11	EB 16	EB 16	EB 16	22	22	22	JA 47	JA 22	G	JA 25	G 25	G	JA 61	28	JA 26	G	JA 20	JA 20	JA 38	JA 38	JA 26	JA 21	JA 21	23
12	JA 25	26	JA 26	23	28	23	24	JA 51	JA 46	JA 26	JA 53	JA 50	JA 57	G	33	JA 25	G	JA 87	JA 73	JA 65	JA 76	JA 45	JA 20	20
13	EB 16	EB 16	JA 51	EB 16	26	36	23	23	JA 61	28	28	G	JA 51	JA 55	G	G	JA 25	JA 25	JA 30	JA 23	32	22	EB 16	JA 26
14	JA 49	JA 65	JA 48	JA 49	22	22	28	JA 25	JA 31	28	JA 33	32	JA 56	JA 100	EB 17	G	G	JA 24	JA 25	JA 51	JA 33	JA 51	33	JA 52
15	JA 31	JA 49	EB 16	EB 16	JA 119	19	JA 28	29	35	JA 31	30	30	JA 46	JA 55	JA 32	27	33	JA 107	46	JA 88	JA 38	JA 60	JA 29	JA 32
16	JA 30	JA 26	JA 23	JA 23	EB 16	EB 16	JA 32	35	JA 25	47	31	JA 40	35	JA 109	30	29	JA 30	JA 23	JA 26	JA 26	JA 23	JA 34	23	JA 32
17	28	JA 31	29	EB 16	EB 16	20	20	JA 51	JA 32	JA 35	JA 41	JA 35	32	JA 29	28	JA 29	EB 16	JA 32	JA 37	JA 51	JA 32	32	35	JA 50
18	35	33	JA 24	JA 34	JA 23	JA 25	JA 51	30	JA 52	JA 52	JA 57	JA 43	JA 51	29	27	37	JA 29	EB 14	EB 14	EB 16	EB 15	26	34	27
19	EB 16	C	EB 16	20	24	24	20	20	32	31	31	30	30	JA 54	29	JA 33	JA 27	JA 54	48	JA 84	JA 53	JA 53	JA 51	JA 51
20	JA 31	29	24	JA 33	23	23	JA 25	21	24	25	29	32	35	36	JA 41	49	24	JA 79	JA 35	20	20	20	20	EB 16
21	EB 16	EB 16	22	JA 92	EB 16	26	24	23	JA 51	JA 31	30	35	53	36	31	JA 37	JA 33	JA 37	38	JA 31	JA 31	JA 51	JA 42	JA 23
22	22	JA 25	34	JA 27	24	21	JA 21	JA 27	G	28	G	30	31	31	30	JA 35	JA 35	31	30	JA 23	JA 31	35	28	EB 15
23	22	26	JA 23	24	JA 20	20	JA 20	24	G	29	31	33	33	35	34	27	JA 28	JA 83	JA 84	29	34	24	22	22
24	EB 16	JA 86	28	JA 24	EB 16	JA 34	JA 46	JA 27	34	JA 50	30	32	G	29	29	28	JA 28	JA 29	JA 35	JA 21	JA 48	JA 37	JA 21	28
25	23	JA 20	JA 20	20	23	JA 27	JA 51	JA 52	JA 65	G	JA 27	32	33	32	30	B	37	JA 22	JA 51	JA 27	JA 27	JA 27	28	21
26	21	22	23	18	20	EB 15	EB 16	JA 38	G	29	30	34	G	G	G	26	JA 27	JA 27	JA 27	JA 25	JA 43	JA 33	JA 33	JA 33
27	25	22	EB 16	EB 16	EB 16	30	JA 27	20	JA 62	JA 41	59	G	G	34	28	28	JA 21	JA 33	29	JA 25	JA 32	29	26	EB 15
28	20	EB 15	23	EB 16	21	EB 16	22	EB 16	G	G	G	G	G	32	28	26	22	EB 16	24	JA 62	JA 21	JA 25	EB 16	EB 16
29	EB 16	EB 16	EB 16	EB 16	EB 16	22	25	JA 31	G	G	G	G	33	JA 66	28	G 21	G 21	EB 15	EB 16	EB 16	EB 16	27	JA 40	JA 26
30	JA 32	31	JA 36	26	JA 23	JA 51	JA 31	JA 27	JA 25	JA 28	29	32	32	31	JA 31	G	22	EB 16	JA 52	JA 52	JA 38	JA 53	JA 32	33
31	28	26	26	20	EB 15	28	35	25	JA 104	JA 38	33	34	JA 54	JA 37	40	34	32	28	JA 37	JA 27	37	24	EB 16	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	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	24	26	23	23	22	25	JA 25	JA 28	JA 32	29	31	32	33	32	28	26	JA 27	JA 27	JA 35	JA 29	JA 32	31	27	25
U Q	JA 30	JA 33	28	JA 27	JA 25	30	JA 37	JA 40	JA 51	JA 41	JA 41	JA 43	JA 51	JA 55	31	JA 33	JA 33	JA 54	JA 46	JA 51	JA 48	JA 36	JA 34	JA 32
L Q	EB 16	EB 19	EB 16	EB 18	EB 16	EB 20	21	23	G 23	G 26	G	G 29	G	G 28	G 25	G	22	G	25	23	JA 26	25	21	EB 20

JAN. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 17	E B 15	E B 16	E B 15	16	E B 16	E B 17	22	25	24	28	38	28	25	G	E B 16	E B 16	E B 16	E B 16	E B 17	E B 16	17	E B 17
2	E B 16	16	E B 16	E B 16	E B 16	E B 16	E B 17	E B 17	22	G 26	29	30	37	G 25	25	E B 25	A A 162	E B 16	A A 88	18	16	23	17	17
3	E B 17	E A 22	E B 16	E B 16	E B 16	16	A A 52	17	23	26	29	28	G 27	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	16	24	26	29	29	29	G 25	24	G	17	E B 16	E B 17	E B 17	E A 25	E B 16	E B 15	E B 16
5	E B 16	E B 16	16	E B 16	E B 16	E B 16	E B 16	E A 18	22	24	28	G 26	G 20	G 24	24	G 21	19	E B 17	E B 16	18	E B 16	E B 16	25	18
6	17	20	E B 16	E B 16	16	E B 16	E B 16	E B 16	26	32	E B 35	35	E B 29	E B 28	E B 25	E B 22	E B 25	E B 16	E B 16	E B 16	16	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	17	16	E B 16	23	24	G	E B 28	E B 28	G	31	G 26	23	22	E B 16	23	16	E B 16	19	16	E B 16
8	E B 16	E B 16	E B 16	E B 14	E B 16	E B 16	16	20	G	29	28	40	29	34	E B 30	24	G 20	21	A A 83	A A 50	20	E B 16	16	E B 16
9	16	E B 16	E B 16	E B 17	E B 16	18	16	20	25	G 23	G 27	G 27	G	G 26	G	20	G	G	E B 16	A A 59	A A 52	17	E B 16	E B 16
10	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	20	18	21	G	G	G	G	G	G	23	G 16	16	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	16	E B 16	E B 16	A A 47	E B 16	G	G 22	G 25	G	G 27	27	G 25	G	18	18	16	17	16	16	E B 16	E B 16
12	E B 16	16	E B 16	E B 16	E B 16	E B 16	E B 17	19	23	25	27	G 27	27	G	28	23	G	A A 87	A A 73	A A 65	A A 76	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	E B 16	21	24	27	G	28	26	G	G	G 18	G 15	20	E B 16	E B 16	E B 16	E B 16	E B 16
14	E B 17	18	E B 17	E B 16	E B 16	E B 16	A A 28	17	23	24	27	29	29	29	E B 17	G	G	16	16	A A 51	E B 16	16	E B 16	17
15	23	21	E B 16	E B 16	E B 16	E B 16	16	17	26	24	26	27	30	30	26	26	18	A A 107	21	17	18	18	18	18
16	17	E B 17	E B 17	E B 17	E B 16	E B 16	17	17	18	20	G 24	29	28	28	28	G 21	G 18	E B 18	E B 16	E B 16	16	E B 16	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 16	G 21	G 22	28	G 29	28	27	26	23	E B 16	17	16	16	E B 16	E B 16	E B 16	E B 17
18	16	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	20	G 24	24	26	28	G 27	27	24	22	G 17	E B 14	E B 14	E B 16	E B 15	E B 16	E B 16	E B 16
19	E B 16	C	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	24	30	28	G 27	29	27	22	19	E B 16	A A 48	A A 84	A A 53	A E 16	E B 18	E B 18
20	E B 16	16	E B 16	16	E B 16	E B 16	E B 16	E B 16	22	G 24	27	32	33	34	30	25	18	A A 79	E B 16	E B 15	E B 15	E B 16	E B 16	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	E B 16	24	26	29	30	39	29	29	G 19	26	20	20	20	16	16	16	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	G	25	G	29	29	29	28	22	22	E B 16	E B 16	E B 16	16	16	E B 16	E B 15
23	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	28	30	31	31	31	31	25	25	E B 16	22	E B 16	17	E B 17	E B 16	E B 16
24	E B 16	E B 16	E B 16	16	E B 16	16	A A 46	21	20	24	29	29	G	28	28	26	26	22	17	16	E B 16	16	E B 16	E B 17
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	18	G 19	G	G 25	30	30	28	27	B	24	18	16	E B 16	16	16	16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	G	26	28	28	G	G	G	24	17	18	16	16	16	16	16	17
27	E B 17	E B 17	E B 16	E B 16	E B 16	E B 17	A A 27	E B 16	42	36	36	G	G	32	28	25	G 18	21	E B 17	E B 16	16	16	E B 16	E B 15
28	E B 16	E B 15	E B 13	E B 16	E B 16	E B 17	E B 16	E B 17	G	G	G	G	G	30	26	23	20	E B 16	16	E B 17	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	E B 16	16	G	G	G	G	30	30	27	G 18	G 18	E B 15	E B 16	E B 16	E B 16	E B 17	16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	16	16	20	G 16	26	G 26	G 29	32	30	28	G	20	E B 16	17	17	17	17	E B 17	E B 17
31	E B 17	E B 17	E B 17	E B 17	E B 15	17	17	16	G 22	G 26	29	30	35	31	30	26	G 17	17	17	15	17	E B 17	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	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	E B 17	23	26	27	G	28	28	26	22	18	16	16	16	16	E B 16	E B 16	E B 16
U Q	16	E 17	E B 16	E B 16	E B 16	16	A A 17	18	G	26	29	30	30	30	28	24	22	18	20	A A 18	17	17	16	17
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	22	24	G 27	28	G	G	25	G	17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

JAN. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	15	15	15	15	15	16	17	17	16	11	10	16	16	16	15	16	16	16	16	17	17	17	17
2	16	16	16	15	16	16	17	17	16	16	16	16	16	16	16	16	16	17	16	16	16	16	16	16
3	16	16	16	14	16	16	16	16	14	16	16	17	12	16	16	15	16	16	16	15	15	15	15	15
4	16	16	16	16	17	16	15	16	16	15	16	16	17	16	16	16	16	16	17	17	15	15	15	16
5	16	16	16	16	16	16	16	16	16	18	16	15	16	16	13	16	16	17	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	19	18	24	29	28	25	17	17	16	16	16	16	16	16	16
7	16	16	16	16	15	16	16	16	16	16	28	28	24	24	16	16	13	16	16	16	16	16	16	16
8	16	16	16	16	16	16	15	15	16	16	17	17	22	24	30	16	16	16	16	16	17	16	16	16
9	16	16	16	15	16	16	16	16	17	15	17	16	17	16	15	16	12	16	16	16	16	16	16	15
10	16	16	15	16	16	16	16	16	16	16	18	16	16	15	16	16	16	16	16	16	17	16	16	16
11	16	16	16	16	16	16	16	16	16	16	17	17	16	16	16	16	16	16	16	16	16	16	16	16
12	16	16	16	16	15	15	16	16	16	14	16	16	16	18	18	15	15	15	15	15	16	16	16	16
13	16	16	16	16	16	16	16	16	16	16	15	16	17	17	16	15	16	14	16	15	16	16	16	16
14	17	16	17	17	16	16	16	16	16	16	16	17	17	17	17	14	14	16	15	15	16	16	16	16
15	16	16	16	16	16	16	15	16	16	15	12	13	12	13	14	15	15	16	15	15	16	16	16	16
16	16	16	16	16	16	16	16	16	16	14	14	12	12	16	15	15	15	17	16	16	16	16	16	16
17	16	16	16	16	16	16	15	16	16	12	14	16	16	16	15	14	16	16	16	16	16	16	16	17
18	16	16	16	16	16	16	16	17	16	14	14	16	16	16	15	16	16	14	14	16	15	16	16	16
19	16	C	16	16	16	17	16	16	16	15	16	16	12	16	12	16	16	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	13	13	16	16	16	15	14	11	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	15	11	12	16	14	14	13	14	14	13	16	16	16	16	16	16	16
22	16	16	16	15	17	16	16	16	15	16	16	16	17	17	15	12	12	15	16	16	15	15	15	15
23	16	16	16	16	16	16	16	16	15	16	13	15	16	15	15	14	16	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	14	12	14	14	16	16	16	15	15	16	16	16	16	16	16	17
25	16	15	15	16	16	16	16	16	12	10	10	13	11	15	14	B	16	16	16	16	16	16	16	16
26	15	15	15	15	15	15	16	17	13	16	13	15	16	12	10	13	16	15	15	16	16	15	16	16
27	16	16	16	16	16	16	16	16	16	16	12	14	14	11	16	16	14	16	17	15	15	15	15	15
28	15	15	13	16	16	16	16	16	16	16	16	18	16	21	16	16	16	16	12	17	16	15	16	16
29	16	16	16	16	16	16	16	14	16	15	16	19	20	15	15	15	15	15	16	16	16	16	16	16
30	16	15	15	15	17	16	16	16	14	16	17	18	17	17	15	15	15	16	16	16	16	16	16	16
31	16	16	16	16	15	15	16	16	16	16	16	16	16	16	16	16	16	16	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	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	17	17	17	16	16	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	15	14	14	15	16	15	15	15	15	16	16	16	16	16	16	16

JAN. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	326	327	313	305	F 309	F 388	348	376	374	357	373	395	382	382	390	380	371	344	334	334	309	336	321	321
2	369	345	310	309	359	333	373	363	396	377	382	363	371	387	392	379	A	334	A	344	327	321	339	333
3	338	309	275	281	283	326	A	365	388	372	374	371	376	362	384	388	371	315	350	366	352	321	322	F 268
4	318	F 313	331	F 323	271	338	377	408	422	370	366	375	398	376	382	369	372	348	322	351	316	331	271	F 275
5	F 253	322	283	318	336	F 277	F 293	309	374	346	359	383	355	387	371	347	374	338	358	346	306	310	313	332
6	331	306	306	329	359	359	351	358	366	377	361	395	378	372	307	304	372	341	345	346	318	272	F 279	F 294
7	F 326	F 269	F 295	F 321	315	367	350	368	386	366	346	384	374	391	398	370	367	365	347	359	339	325	354	294
8	328	288	342	325	324	361	354	329	387	376	382	383	380	382	391	386	371	339	A	A	300	311	333	320
9	320	349	339	316	311	313	358	358	386	398	387	381	370	381	389	396	388	332	347	A	A	313	331	305
10	295	328	320	336	329	352	370	372	393	375	374	374	392	390	377	372	365	358	380	383	379	313	281	287
11	F 260	282	F 321	F 320	306	F 347	A	371	401	377	375	387	370	370	388	389	322	362	345	364	353	323	F 289	278
12	301	F 308	352	321	324	372	365	410	363	379	377	358	372	380	381	359	399	A	A	A	A	F 298	F 273	F 370
13	F 269	F 274	269	F 301	F 346	F 346	F 376	374	418	358	361	379	367	372	395	411	379	325	356	363	F 347	F 300	F 310	F 272
14	F 302	F 288	313	318	339	356	A	351	410	394	368	378	370	379	374	411	395	371	334	A	324	305	F 294	F 325
15	299	333	297	F 308	296	340	318	378	417	414	357	384	370	382	388	369	388	A	340	350	349	377	299	295
16	317	321	305	305	321	361	F 409	362	402	383	380	382	373	394	353	369	386	346	323	363	392	370	305	320
17	310	310	321	327	338	384	342	358	403	357	389	355	368	382	358	372	371	376	329	333	375	397	324	345
18	331	331	319	296	327	F 334	339	382	412	367	369	358	385	375	379	379	378	317	338	346	363	294	298	302
19	318	C	330	309	287	375	344	369	380	370	398	376	359	364	387	391	368	354	A	A	A	343	343	325
20	326	349	307	322	297	341	382	393	389	357	354	356	370	391	330	388	395	A	367	318	366	336	309	332
21	331	333	319	311	290	316	F 382	388	388	388	362	374	366	381	360	358	392	328	383	365	327	344	366	340
22	305	F 304	F 305	F 311	F 286	F 324	398	376	370	380	393	297	387	360	365	395	399	361	371	336	336	320	293	279
23	287	346	318	293	F 322	F 337	F 362	377	406	376	378	389	381	366	367	399	396	364	228	343	347	F 285	F 297	300
24	F 345	301	F 289	346	F 320	303	A	338	378	355	383	377	399	352	373	355	366	364	317	319	377	354	F 301	F 297
25	F 299	F 314	309	298	294	311	344	369	361	405	394	347	371	335	373	B	383	355	352	325	314	322	292	F 281
26	322	308	F 307	F 298	298	336	334	368	400	365	372	331	394	382	378	384	385	367	361	341	343	317	292	296
27	313	297	297	F 330	F 288	F 306	A	406	399	402	362	364	371	385	371	368	345	349	332	338	319	314	315	321
28	368	361	335	326	F 276	285	347	366	401	399	355	371	X R 355	369	378	356	356	378	336	337	345	345	306	287
29	287	301	F 288	F 288	F 288	F 306	F 346	360	365	414	391	392	344	371	352	404	388	327	333	333	383	323	F 308	F 311
30	F 307	F 307	F 323	F 323	F 346	F 323	F 332	F 393	395	396	394	346	382	367	340	394	364	355	384	322	369	329	301	F 291
31	F 309	323	F 322	F 289	F 269	302	337	398	404	382	388	385	357	357	326	343	374	392	329	334	337	315	284	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	26	31	31	31	31	31	31	31	31	30	30	28	27	26	28	31	31	31
MED	317	312	313	316	311	337	350	369	393	377	374	376	371	379	377	379	374	352	345	344	344	321	305	300
U Q	328	331	322	323	329	359	373	382	403	394	387	384	382	382	388	391	388	364	358	359	364	336	322	325
L Q	299	301	297	301	F 288	313	342	360	378	366	362	358	368	367	360	368	368	336	332	334	322	311	292	287

JAN. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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										
2											L	L					A							
3											L	L	L	425	L									
4											L	L	L	L	L									
5								A			L	L	L	L	L									
6													L	L										
7											L	L	L											
8											399		L											
9											L	L	L	L										
10												544	532	L	L									
11							A			L	L	L	L	L	L									
12											L	L	L	L	L			A						
13										L	L	550	L	L										
14							A			L	L	L	L	L	L									
15										L	L	L	L	L				A						
16									L		L		L	L										
17								L		L	L	L	L	L										
18										L		L	L	L	L	L								
19										L			L		L	L								
20											L	L						A						
21												L		L	L									
22												L	L	L										
23									L		L	L	L	L										
24							A			L	L	L	L			L								
25									A	L	L		L		L	B								
26									L	L	L	L	L	L	532									
27							A					L	L		L	L								
28									L	L	L	L	L	L	L	L								
29								L	L	L	L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31									L	L		L		L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	2	1	1	1									
MED											399	547	532	425	532									
U Q																								
L Q																								

JAN. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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											232	220		238										
2											232	232					A							
3											228	228	228	228	218									
4											244	220	220	234	228									
5								312			232	224	244	216	214									
6													214	222										
7											228	222	238											
8											238		228											
9											228	224	228	232										
10												234	230	220	220									
11							A			224	224	224	228	244	228									
12											228	234	220	220	234			A						
13										254	234	230	232	238										
14							A			222	234	238	238	238	234									
15										204	220	220	228	222				A						
16									196		228		232	226										
17								238		220	226	276	232	232										
18										212		236	220	230	230	224								
19										214			234		242	230								
20											262	242						A						
21												236		232	240									
22												312	238	230										
23									206		236	222	236	236										
24							A			246	214	234	222			248								
25									238	198	210		252		242	B								
26									208	224	224	254	216	230	222									
27							A					228	228		228	228								
28									208	208	234	202	260	246	238	278								
29								236	216	216	202	212	278	242	242	230								
30									194	214	206	268	246	230	246	222								
31									202	220		222		252	290	244								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	8	14	23	26	26	23	17	8								
MED								238	207	218	228	229	231	232	234	230								
U Q								312	212	224	234	236	238	238	242	246								
L Q								236	199	212	224	222	228	226	225	226								

JAN. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	242	242	Q 234	Q 254	240	194	230	208	208	222	200	206	208	190	216	216	212	226	226	230	246	246	258	240
2	218	224	E B 260	230	230	238	226	198	204	208	208	204	212	214	206	214	A	200	A	218	248	254	238	Q 226
3	Q 232	244	232	Q 262	Q 248	210	A	214	200	214	202	200	200	198	198	196	220	244	228	214	226	268	268	Q 258
4	Q 210	Q 224	Q 232	Q 208	Q 248	228	222	184	180	220	202	208	196	180	202	216	204	206	238	228	242	256	290	Q 272
5	202	Q 212	Q 240	220	238	Q 246	206	A	226	204	202	202	200	190	168	220	222	244	244	238	276	252	A	220
6	236	246	274	248	216	224	212	214	214	200	230	218	194	196	210	208	208	214	232	228	262	262	Q 262	Q 260
7	220	Q 276	Q 210	Q 252	246	208	208	208	198	226	186	204	196	216	218	208	222	198	228	216	230	244	200	Q 248
8	248	Q 248	238	224	258	208	218	210	212	216	198	218	194	228	224	204	214	214	A	A	E A 270	254	230	240
9	248	222	232	Q 224	Q 262	266	212	202	206	198	204	198	190	200	218	208	200	210	226	A	A	246	246	Q 266
10	226	Q 226	248	214	214	220	216	200	202	200	210	190	182	196	196	212	208	202	190	218	218	274	278	294
11	Q 260	Q 242	Q 218	Q 244	228	Q 206	A	208	188	192	192	196	190	198	196	202	218	218	232	214	218	242	Q 280	Q 248
12	Q 238	258	236	Q 250	236	216	200	200	200	222	202	186	186	200	204	212	196	A	A	A	A	292	Q 248	Q 198
13	Q 284	Q 204	258	Q 226	Q 226	E B 246	222	202	200	214	198	192	192	192	216	198	200	210	212	204	238	Q 276	Q 220	294
14	Q 218	246	290	252	214	200	A	196	208	198	198	208	188	202	210	202	188	216	216	A	234	272	Q 282	228
15	228	258	E B 246	Q 256	234	200	244	208	200	176	194	196	196	184	200	218	202	A	208	208	204	188	262	256
16	226	230	254	254	246	206	196	216	176	220	190	228	188	188	214	222	206	234	246	230	200	210	236	244
17	254	268	248	234	244	190	238	200	194	194	196	184	188	188	220	216	218	202	226	238	212	192	206	238
18	210	236	258	Q 262	218	Q 206	206	210	200	188	228	202	196	206	206	198	218	208	214	236	212	258	258	Q 222
19	238	C	238	238	254	212	190	220	198	184	212	222	196	230	210	202	202	192	A	A	A	228	216	270
20	222	232	252	252	258	222	210	200	194	186	184	202	228	214	254	224	202	A	202	254	208	208	262	222
21	222	222	242	242	266	242	192	192	192	212	224	194	220	194	196	228	198	202	202	202	224	224	214	214
22	214	Q 232	Q 232	Q 240	Q 260	Q 214	194	194	206	214	172	184	194	196	214	214	202	208	208	208	190	234	286	Q 266
23	Q 252	218	E B 244	Q 254	234	Q 202	202	194	178	222	206	202	198	218	218	200	200	210	A	214	236	Q 276	262	Q 244
24	220	264	274	230	Q 260	232	A	232	208	200	206	194	206	242	216	216	216	214	240	252	210	210	Q 272	Q 232
25	Q 250	238	Q 262	Q 246	256	254	224	198	A	198	184	242	236	220	220	B	194	216	200	244	250	Q 242	242	Q 258
26	220	230	278	Q 250	264	228	222	198	182	182	200	200	200	186	186	220	210	228	216	208	204	244	268	A
27	248	252	262	Q 240	Q 250	Q 222	A	200	210	204	218	196	202	216	194	212	220	192	236	206	232	266	256	246
28	206	206	226	246	Q 278	E B 258	230	214	200	188	172	172	190	216	200	204	204	204	212	212	240	196	244	Q 254
29	248	Q 210	Q 222	Q 236	Q 240	240	220	202	202	186	174	174	186	198	208	204	204	182	200	E B 232	212	212	246	258
30	Q 260	Q 248	248	Q 240	Q 230	240	214	198	206	172	172	178	222	194	200	202	206	200	210	210	252	222	276	Q 292
31	Q 246	Q 256	244	Q 244	Q 250	262	214	204	194	194	214	206	260	202	202	202	206	186	238	238	232	232	Q 232	Q 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	31	30	31	31	31	31	26	30	30	31	31	31	31	31	31	30	30	28	26	26	28	31	30	30
MED	232	237	243	Q 244	246	219	214	202	200	200	200	200	196	198	208	210	206	209	221	218	230	244	257	Q 247
U Q	Q 248	248	258	Q 252	258	240	222	210	206	214	208	206	206	216	216	216	216	216	232	236	244	262	268	Q 260
L Q	220	224	Q 232	230	230	206	206	198	194	188	190	192	190	192	200	202	202	201	208	210	212	222	236	232

JAN. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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								A	A						A		A	B						
									100	100	100	100	100	100	102	110								
2								B					A			A	A	A						
									112	118	120	120		100	100									
3								B									B	B						
									106	112	112	112	112	116	116	106								
4								B									A	B						
									104	108	108	114	108	108	112	112								
5								B		A				G			A	B						
									112		112	114	114		106	92								
6								E B	A	A	A	A	B		B	A	A	B						
								118						186										
7								B			B	B		A			A	A						
									110	110			108		100	116								
8								B		A		A	A	A	B			A						
									132		108					106	118							
9								B	A					G				A						
									102	110	102	110			110	106	90	98						
10							B	A	A									A						
									100	114	120	112	110	110	110	110	98							
11							B	B										A						
									106	102	114	106	106	106	108	124	118							
12							B	A	A									A						
									118	118	106	106	106	106	102	102	126							
13							B	B																
									108	108	110	110	110	102	102	98	90	90						
14							B	A							G			A						
									100	100	102	102	98	92		92	92							
15							B	A	A				A	A			A	A						
										106	106	106			106	106								
16							B	A	A	A								A						
											106	94	108	108	108	122	122							
17							B										B	A						
								94	108	108	108	108	108	106	106	108								
18								A										B						
							108		108	108	108	108	108	108	108	108	108							
19							B	A										A						
									130	118	118	118	118	116	116	100	120							
20							B	A									A	A						
									114	104	104	110	110	110	110	110								
21							B	A	A				A				A	A						
										110	112	102		108	108	108								
22							B	A										A						
									116	116	112	112	112	112	112	112	96							
23							B	A									A	A						
									106	106	106	106	118	118	108	108								
24							B	A		A							A	A						
									108		108	108	108	110	110	110								
25							B	A								B	A	A						
									102	102	102	100	100	110	100									
26							B	A									A	A						
									110	110	110	110	110	94	94	104								
27							B	A	A									A						
										104	104	114	102	102	112	98	94							
28							B	B									A	B						
									104	104	104	110	110	110	110	118								
29							B	A									A	B						
									92	112	98	98	98	98	110	110								
30							B	A										B						
									110	110	110	98	106	106	106	96	94							
31							B	B							A			A						
									110	110	104	106	120	120		120	120							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	22	26	29	28	26	26	27	28	14	2						
MED							108	106	108	108	108	108	108	108	108	108	103	94						
U Q									112	110	112	112	112	110	110	111	120							
L Q									106	104	104	102	106	102	102	103	94							

JAN. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	92	92	B	82	B	106	98	98	94	126	90	98	98	98	98	G	102	B	B	102	94	94	94	94
2	96	90	90	92	106	102	B	116	136	136	116	116	98	98	102	100	108	102	98	98	98	92	92	92
3	92	92	B	104	118	104	104	102	102	100	130	112	100	G	G	G	B	B	108	108	104	104	104	104
4	B	B	B	B	124	106	102	102	102	156	140	94	96	96	108	G	104	B	104	104	104	98	B	B
5	B	B	80	90	90	B	108	98	102	98	98	94	106	104	84	82	90	94	94	96	106	98	90	96
6	96	94	94	94	108	108	B	92	112	96	96	96	B	B	B	96	96	94	94	B	94	110	104	B
7	B	90	B	120	108	108	106	104	152	G	B	B	G	98	90	98	106	98	90	90	98	84	92	94
8	92	92	92	100	98	102	102	94	G	92	92	88	88	88	B	88	96	98	110	98	98	98	98	98
9	86	92	92	92	B	102	98	98	92	92	92	106	G	G	G	124	G	G	108	96	96	96	96	96
10	B	88	B	96	B	B	96	96	94	G	G	G	G	G	G	162	82	120	84	96	102	102	84	94
11	B	B	B	94	92	94	102	96	G	116	108	G	86	136	138	G	104	104	96	96	96	94	94	86
12	86	86	86	86	86	86	98	100	98	126	98	88	88	G	88	88	G	96	96	98	98	98	98	98
13	B	B	100	B	122	112	112	112	102	162	146	G	86	86	G	G	82	88	96	100	100	100	B	96
14	96	84	90	90	82	94	100	100	96	102	88	150	84	110	B	G	G	110	98	98	98	98	98	94
15	88	88	B	B	128	116	104	98	98	102	92	92	92	84	84	114	100	104	96	96	94	94	94	94
16	94	94	94	92	B	B	94	98	98	96	114	84	114	80	164	140	90	90	90	90	90	90	90	94
17	94	94	94	B	B	94	94	108	94	94	94	90	94	128	114	108	B	102	110	104	102	102	112	104
18	90	90	100	100	104	104	98	98	102	120	96	106	92	144	120	110	96	B	B	B	B	102	102	102
19	B	C	B	102	100	102	100	100	120	162	162	146	130	106	140	104	104	104	94	98	90	94	94	88
20	88	106	106	98	104	112	90	96	152	136	126	136	110	128	118	102	102	94	94	94	94	82	86	B
21	B	B	108	108	B	98	108	100	92	96	152	92	92	98	112	106	96	100	96	96	96	96	96	100
22	100	110	106	106	106	106	98	100	G	136	G	120	136	136	136	90	90	104	104	104	98	98	98	B
23	94	86	86	118	106	106	98	100	G	148	148	134	146	122	116	130	112	112	102	102	92	92	92	92
24	B	100	100	100	B	100	102	94	108	100	142	114	G	144	112	112	106	106	100	100	100	92	92	92
25	92	100	100	108	106	106	100	100	100	G	100	154	134	134	82	B	116	106	106	106	98	98	96	96
26	96	92	92	92	90	B	B	92	G	152	140	110	G	G	G	148	86	92	92	100	100	100	100	100
27	100	96	B	B	B	102	102	102	104	102	102	G	G	164	142	128	90	90	90	90	98	98	98	B
28	98	B	98	B	94	B	94	B	G	G	G	G	G	156	136	152	110	B	104	104	104	100	B	B
29	B	B	B	B	B	100	100	104	G	G	G	G	146	86	124	102	112	B	B	B	B	106	98	98
30	98	98	98	98	98	98	98	90	116	118	118	94	134	96	104	G	152	B	96	110	98	98	98	98
31	88	88	90	90	B	94	94	94	94	104	152	140	106	104	104	104	94	96	96	96	96	96	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	23	21	24	21	26	28	30	24	26	26	24	23	25	23	23	26	23	28	28	29	31	27	24
MED	94	92	94	97	104	102	100	99	102	110	111	106	98	104	112	106	101	100	96	98	98	98	96	96
U Q	96	96	100	103	108	106	102	102	110	136	140	127	130	135	136	128	106	104	104	103	100	100	98	98
L Q	89	88	90	92	93	98	98	96	95	98	96	93	92	96	98	98	90	94	94	96	95	94	92	94

JAN. 2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2019 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	F3	F1		F1		F1	F3	L2	L3	CL11	LC11	LC12	C2	C2	C2		L1			F1	F2	F2	F3	F1
2	F1	F2	F1	F1	F1	F2		C1	C1	C2	C2	C2	L2	C1	L2	L3	L4	LQ11	FQ61	FQ41	FQ31	FQ31	FQ21	F2
3	F1	F2		F2	F1	F3	F8	L4	L2	L2	C2	C2	LC11						F1	F1	F1	F2	F2	F1
4					F1	FQ11	F1	L1	L1	HL11	HL11	LC21	LC21	LC21	C2		C1		F1	F1	F5	F2		
5			L1	F1	F1		F1	L5	LC11	L2	L2	LC11	LC11	C1	LC21	L2	L1	L1	F1	F2	F1	F2	F4	F2
6	F3	F3	FQ11	F2	F2	FF11		LC11	L2	L4	L2	L1				L1	L1	L1	F1		F3	F1	F2	
7		F1		F1	F2	F2	FQ11	LQ41	H1					L2	L1	L1	L2	LQ41	FQ21	F2	FQ21	FQ41	F1	F2
8	F1	F1	F2	F1	F1	F1	F4	L5		L2	LC11	L2	L1	L1		L1	LC11	L5	FQ32	FQ41	FQ41	FQ31	FQ21	FQ11
9	F2	F1	F1	F1		F4	F3	L4	L3	LC21	LC11	CL11		C1		C2			F1	F5	FQ41	FQ21	F1	F1
10		F1		F1			L3	L3	L3							H1	L1	F2	F1	F1	F1	F1	F1	F1
11				F1	F1	F1	L5	L1		CL11	L1		LC11	C1	C1		L2	L2	F4	F3	F1	F2	F2	F2
12	F2	F1	F1	F2	F2	F1	L1	LQ31	L2	C2	LC11	LC11	LC11		L1	LC11		L5	F5	F5	F6	F3	F1	F1
13			F1		F1	F2	L1	L1	LC11	CL11	CL11		LC11	LC11			LC11	L2	F3	FF11	F1	F1		F2
14	F1	F2	F2	F1	F1	F1	L4	L1	L2	C1	LC11	H1	LC11	CL11				LL11	F2	F3	FQ21	FQ21	FQ11	FQ21
15	F4	F3			F1	F1	L2	L2	L3	LC11	LC11	LC21	L3	L2	LC11	C2	L1	L5	F4	F3	F3	F3	FQ31	FQ31
16	FQ21	F1	F1	F1			L1	L3	L2	L3	CL21	L2	C2	LC11	H1	H2	L1	L1	F1	F2	F2	F2	F1	F2
17	FQ11	F2	F1			F1	L1	C1	C2	LC31	LC21	LC21	LC11	CL21	C2	C2		L3	F2	F3	F3	F1	F1	F2
18	F3	FF11	F2	F2	F2	F1	L5	L2	CL31	C1	LC11	CL11	LC11	HL11	CL11	C2	LC11					F1	F2	FQ11
19				F1	F2	L1	L1	L1	C2	H1	C2	C2	C2	LH21	HL21	C3	LC11	L1	FQ41	FQ41	FQ41	FQ21	FQ11	F2
20	F1	F2	F2	F2	F1	F1	L1	L1	H1	H1	C2	C1	C2	C2	C3	C3	L1	L5	F2	F1	F1	F1	F1	
21			F1	F1		F2	L1	L1	L4	LC21	C2	LC21	L4	LC21	C2	C2	L3	L4	F3	F3	F2	F4	F2	F1
22	F1	F2	F2	F2	F1	F1	L1	L1		C1		C1	C1	C1	C1	LC11	LC11	L1	F1	F1	F2	F3	F2	
23	F1	F1	F1	F1	F1	F1	L1	L1		H2	H1	C1	C1	C2	C2	C2	L5	L2	FF51	F2	F3	F2	F1	F1
24		F1	F1	F2		F3	L4	L2	LC11	L2	C1	C1		C1	C2	C1	L2	L2	F3	F2	F2	F2	F1	F1
25	F1	F1	F2	F1	F2	F2	L4	L2	L4		LC11	HL11	C2	CL21	LC21		L4	L3	F2	FQ11	FQ31	FQ21	F2	F1
26	F1	F1	F1	F1	F1			L1		H1	CL11	C1				C1	LL11	L2	F2	F2	F3	FQ21	FQ31	FQ31
27	FQ11	F1				F2	L7	L1	L4	C4	L4			H1	C1	C2	LC11	L4	F2	F2	F3	F2	F1	
28	F1		F1		F1		L1							H1	C1	H1	L1		F1	F3	F1	F1		
29						F1	L1	L4					H1	L1	C1	C1	L1					F1	F2	F1
30	F2	F2	F2	F1	F1	F3	L3	L4	C2	C1	C1	C1	C1	C2	C2		H1		F3	FQ21	FQ31	FQ21	FQ21	FQ21
31	F1	F2	FF11	F1		F3	F2	L1	LC21	C2	CL21	CL11	LC12	LC22	LC21	LC21	LC11	L2	FQ21	FQ21	FQ11	F1		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JAN. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	39	X 36	X 28	X 28	X 27	33	X 27												X 39	X 39	X 37	X 37	A	X 34
2	X 37	X 27	X 28	X 28	X 31	X 28	X 25									X 50			X 38	A	A	X 37	X 35	X 34
3	X 29	X 28	X 32	X 32	38	32	X 31	X 46	X 51										X 42	X 46	X 44	X 36	A	X 30
4	X 32	35	X 31	32	X 28	X 28	X 33											X 42	X 32	X 37	X 37	X 38	X 37	X 36
5	X 36	40	39	X 32	34	33	34												X 40	X 43	X 33	X 37	42	X 35
6	X 32	X 35	X 38	X 36	X 31	X 28	X 26	A											X 41	X 44	X 37	X 33	X 34	38
7	X 34	36	X 32	X 33	36	36	A												A	X 42	X 50	39	A	X 33
8	36	X 38	40	36	36	34	X 32												X 41	A	A	40	40	45
9	X 40	42	40	36	X 32	33	A	X 41										X 41	X 36	X 37	X 35	X 36	X 37	X 36
10	A	A	X 32	X 31	X 34	33	X 28											X 36	X 36	X 36	A	X 36	X 36	36
11	X 32	39	40	32	X 27	X 27	A				C	C	C	C	C	C	C	C	A	X 40	A	A	A	X 33
12	A	A	39	39	34	32	33											X 35	X 33	X 36	X 41	35	38	39
13	X 32	X 28	X 32	X 29	X 26	X 25	X 25											X 37	A	X 40	X 33	A	A	
14	X 34	X 33	X 32	X 33	X 37	X 26	A											X 40	X 38	X 41	X 43	39	39	X 36
15	40	38	X 35	X 36	X 28	X 28	X 29	X 44											X 39	X 49	X 33	X 30	X 29	39
16	34	39	X 31	41	X 32	X 27	X 28												X 43	X 54	X 52	X 30	X 27	X 32
17	X 36	X 36	X 36	40	38	X 31	X 30											X 50	X 36	X 35	X 38	X 34	32	35
18	34	X 33	39	39	40	39	35											X 43	X 36	X 36	X 37	X 34	X 33	X 37
19	42	X 39	X 38	40	X 32	X 28	X 27					C							X 34	X 31	X 33	X 36	X 34	X 32
20	X 32	X 32	X 34	X 36	X 32	X 31	X 26										X 53	A	A	X 42	X 32	X 38	X 35	X 32
21	X 34	X 30	X 28	32	X 30	30	X 27	X 44										X 52	X 37	X 35	X 32	X 32	X 32	X 32
22	38	40	39	39	39	39	A	X 44										A	A	X 37	X 40	X 32	X 32	X 32
23	X 31	X 30	33	33	32	32	A											X 40	X 38	X 42	X 46	X 36	X 33	X 36
24	X 36	X 36	X 34	X 33	X 32	X 31	A											X 48	X 43	X 50	X 44	X 43	X 34	X 33
25	38	38	X 34	X 33	35	36	X 33											X 46	A	X 34	X 38	39	43	X 37
26	39	X 36	X 36	X 32	X 35	X 36	X 34											X 46	X 47	X 43	A	A	A	X 34
27	X 34	X 35	X 32	X 32	X 31	X 29	X 25											X 48	A	A	X 41	X 39	X 38	X 36
28	X 38	X 34	X 34	X 31	X 29	X 30	X 28											X 52	X 37	X 38	A	40	X 33	O X 31
29	X 31	38	X 34	X 33	X 32	X 32	X 32												X 39	X 39	X 36	X 38	X 32	X 34
30	X 33	X 34	X 31	X 32	X 31	X 32	X 32												X 36	X 44	X 44	X 36	X 31	X 32
31	X 32	X 34	X 34	X 31	X 32	32												X 64	A	A	X 39	X 41	X 37	X 37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	31	31	31	23	5	1							1	1	16	23	27	25	28	25	30
MED	X 34	X 36	X 34	X 33	X 32	X 32	X 29	X 44	X 51							X 50	X 53	X 44	X 38	X 40	X 38	X 36	X 34	X 34
U Q	38	38	38	36	35	33	33	X 45										X 49	X 41	X 43	X 44	39	38	36
L Q	X 32	X 33	X 32	X 32	X 31	X 28	X 27	X 42										X 40	X 36	X 36	X 34	X 34	X 32	X 32

JAN. 2019 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JAN. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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			L	L								
2												L		L										
3											L	408	404	A	L	L								
4											UL 448	L	L	L										
5										A			L	L	L									
6									A	L		L	L	L	L									
7											L	376	388	A										
8									L	A	UL 396		L	UL 408	A									
9												L	UL 404	L	L	L								
10										L	L	UL 400	L	L	L									
11											C	C	C	C	C	C	C	C						
12											UL 416	396	388	A	A									
13											UL 404	404	404	UL 388	L									A
14											UL 412	392	UL 396	UL 392										
15											L	A	L	L										
16											400	404	392	UL 420	UL 376	UL 320								
17										L	UL 404	L	UL 464	L	UL 400									
18										L	380	UL 436	L	A 396										
19											L	C		UL 412	L	L								
20											UL 400	404		L										
21									UL 268	A	UL 404	L	UL 416	A	A									
22											A	UL 392	A	UL 416	L									
23											L	L	L	UL 412	A	L								
24											L	L	L	L	L									
25											UL 412	L	UL 408	UL 444	A									
26										A	412	UL 416	UL 408	416	L									
27											L	L	UL 456	L										
28										L	L			UL 416										
29										L	L	UL 412	L	UL 412	L	A								
30									L	L	UL 400	A	L	A	A	A								
31											L		448	UL 416		A								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1		13	12	13	13	2	1								
MED									UL 268		UL 404	404	UL 404	UL 412	UL 388	UL 320								
U Q											UL 412	UL 410	UL 432	UL 416										
L Q											400	394	394	UL 402										

JAN. 2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	228	U R 272	A	R	A	288	A	A	A	B						
2								B	A	A	A	A	A	A	A		A	B						
3										A	A	R	A	U A 292	A	A	A	B						
4								B	U R 292	U A 268	U R 328	A	U A 300	276	R	U R 244	B							
5								B	A	A	A	A	A	272	260	U R 224	U R 172	B						
6									A	A	A	R	U R 312	A	U R 276	A	A	B						
7								A	A	300	300	A	A	A	A	A	B	B						
8								B	A	A	A	320	A	A	A	A	A	B						
9									228	U R 276	A	U R 312	U R 300	U R 288	U R 272	R	B							
10								B	220	A	U A 284	U R 300	U R 308	U R 292	U R 268	A	192							
11								B	A	A	C	C	C	C	C	C	C	C						
12								B	A	A	A	288	U R 296	A	A	A	R							
13								B	A	A	A	A	A	A	A	A	B							A
14								B	A	A	A	A	A	U A 288	U R 304	A	A							
15									216	268	A	340	A	A	U R 276	A	A	B						
16								B	A	U R 260	U R 280	304	U R 308	U R 292	U A 264	R	A	B						
17								B	U A 220	U R 268	U R 292	A	U A 304	A	A	A	U A 188							
18								B	U A 204	A	U R 288	A	R	296	A	U A 232	A							
19								B	204	248	284	C	A	U A 288	A	U R 248	R	B						
20								B	A	U R 260	A	A	308	U R 312	A	A								
21									U R 232	U A 276	304	320	332	U A 292	A	A	A							
22									220	260	A	A	A	U A 288	U R 276	A	A							
23								B	A	U A 284	A	316	328	300	A	A	A							
24								B	A	U R 276	U R 280	304	U A 296	U A 280	U A 280	A	A							
25								B	U R 204	248	U A 300	336	R	R 288	A	A	A							
26								B	U R 232	A	A	U R 308	R	U R 308	U A 280	A	212							
27								B	A	264	R	316	U R 308	U A 300	A	A	A							
28								B	U R 240	U R 284	U R 292	364	368	R	U A 276	A	U R 224							
29								B	A	A	R	A	R	R	U R 308	U A 252	A	B						
30								B	U R 256	U A 276	A	U R 336	A	U A 328	A	A 268	A	B						
31							B	B	U R 240	268	A	A	A	A	A	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									15	18	11	14	13	19	12	6	5							
MED									U 228	U 268	U R 292	316	U 308	U 292	U R 276	U 246	U 192							
U Q									U R 240	U R 276	U 300	336	320	U 300	U 280	A 252	218							
L Q									216	260	U R 284	304	U 300	288	U 270	U 232	U 180							

JAN. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	E B 16	E B 16	E B 15	E B 16	E B 16	20	E B 16	J A 21	27	J A 43	J A 37	G	J A 37	33	35	J A 37	J A 32	J A 30	J A 29	J A 55	J A 44	J A 40	J A 46	J A 34
2	J A 33	J A 23	19	25	22	19	J A 28	22	28	32	J A 40	J A 40	J A 46	J A 36	J A 35	J A 30	J A 26	E B 16	J A 37	J A 113	J A 66	J A 34	J A 32	J A 25
3	J A 26	J A 33	J A 24	E B 16	J A 25	J A 23	J A 51	J A 64	J A 48	J A 74	J A 36	G	J A 54	35	34	J A 30	J A 32	J A 25	J A 25	J A 29	E B 16	J A 56	J A 38	J A 34
4	J A 37	J A 48	E B 16	J A 28	J A 25	J A 22	E B 16	22	J A 51	32	J A 34	34	33	32	G	G	E B 16	E B 15	20	E B 16	J A 31	21	J A 24	J A 25
5	J A 24	E B 16	E B 15	J A E 23	B 16	E B 15	E B 15	19	J A 32	J A 42	J A 38	J A 33	34	32	J A 32	G	G	J A 24	E B 16	21	E B 16	E B 15	J A 26	E B 16
6	E B 15	E B 16	J A 23	J A 21	J A 37	E B 15	J A 20	J A 42	J A 102	J A 56	J A 52	J A 34	G	J A 35	G	J A 35	J A 27	J A 35	J A 24	J A 25	J A 28	J A 54	J A 34	J A 34
7	J A 25	23	E B 16	J A 24	J A 23	J A 26	J A 42	J A 47	J A 36	37	35	36	J A 39	J A 62	J A 47	27	J A 26	J A 110	J A 167	J A 54	J A 46	J A 42	J A 54	J A 46
8	J A 78	J A 40	J A 26	J A 32	J A 52	J A 52	J A 22	J A 36	25	J A 45	J A 35	G	34	34	J A 37	J A 46	J A 40	J A 27	J A 52	J A 106	J A 78	J A 64	J A 55	J A 33
9	J A 24	E B 16	J A 25	J A 23	J A 22	23	J A 90	J A 27	26	J A 38	J A 51	G	G	G	G	G	E B 15	E B 15	22	J A 51	25	J A 34	J A 32	J A 33
10	J A 36	J A 34	J A 27	J A 26	24	J A 36	J A 30	J A 36	26	J A 49	32	J G 30	J A 35	J A 28	J G 26	29	24	J A 24	J A 26	J A 25	J A 45	J A 53	J A 36	J A 34
11	J A 34	J A 66	J A 24	J A 28	24	22	J A 32	J A 45	J A 38	J A 35	C	C	C	C	C	C	C	C	J A 41	J A 64	J A 54	J A 75	J A 54	J A 39
12	J A 38	J A 38	J A 31	22	J A 25	20	21	E B 16	27	J A 35	J A 36	33	G	J A 38	J A 54	J A 35	G	J A 25	22	20	J A 50	J A 50	J A 47	J A 44
13	J A 36	J A 29	J A 28	J A 22	J A E 16	B 16	24	J A 50	J A 54	J A 55	J A 52	J A 38	J A 37	J A 38	J A 41	J A 34	E B 16	E B 17	J A 38	E B 16	J A 48	J A 50	J A 40	J A 51
14	J A 34	J A 23	E B 16	E B 15	J A 34	J A 37	J A 26	J A 24	J A 39	J A 35	J A 52	J A 36	J A 50	34	G	J A 36	J A 64	J A 27	J A 33	J A 33	J A 53	J A 32	22	23
15	J A 23	J A 48	J A 24	J A E 16	B 16	E B 16	E B 16	E B 16	28	34	37	36	34	32	G	28	J A 51	J A 23	J A 33	J A 36	J A 49	J A 33	J A 28	J A 33
16	J A 36	J A 23	22	J A 26	J A 21	E B 15	E B 15	B J A 28	24	G	G	34	G	G	30	G	25	J A 23	J A 30	J A 28	J A 27	E B 16	E B 17	E B 16
17	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	21	J A 22	25	G	G	J A 35	34	33	J A 34	J A 32	23	J A 22	J A 23	22	23	J A 30	J A 35	J A 29
18	J A 36	J A 35	J A 36	E B 16	E B 16	E B 15	E B 16	E B 17	24	31	G	J A 34	G	34	J A 32	30	J A 38	J A 29	23	22	E B 16	E B 16	J A 23	J A 30
19	E B 16	E B 16	E B 16	E B E 16	B 16	E B 16	E B 16	E B 16	24	28	G	C	J A 39	36	32	G	G	E B 16	E B 15	22	E B 16	E B 15	E B 15	E B 16
20	J A 16	22	E B 14	J A 22	J A 32	J A 26	21	J A 25	J A 39	30	33	34	33	G	J A 41	J A 34	J A 51	J A 72	J A 77	J A 39	J A 31	J A 34	J A 23	E B 16
21	E B 16	E B 14	E B 15	E B 14	E B 15	E B 15	J A 21	E B 16	G	32	34	37	38	38	J A 41	J A 39	J A 35	J A 60	J A 28	J A 33	J A 33	J A 50	J A 30	J A 33
22	J A 21	E B 16	E B 16	E B 16	J A 34	26	J A 62	23	28	32	36	38	37	34	35	30	J A 34	J A 64	J A 33	J A 32	J A 23	J A 46	J A 40	J A 26
23	J A 23	E B 16	E B 15	J A 24	J A 28	J A 27	J A 45	J A 49	J A 32	34	J A 41	36	37	34	36	29	J A 30	J A 29	J A 31	E B 16	E B 15	E B 16	J A 40	J A 36
24	J A 26	E B 16	J A E 23	B 15	J A 23	J A 33	J A 54	J A 67	J A 52	G	G	36	34	34	32	32	J A 44	J A 25	J A 24	J A 65	22	J A 23	J A 27	22
25	22	E B 16	E B 16	E B 16	19	22	21	22	24	30	34	37	G	J G 23	34	32	J A 32	E B 15	J A 62	J A 23	J A 33	27	22	J A 29
26	19	E B 16	J A 22	J A 23	J A 26	22	20	J A 29	G	J A 54	J A 35	G	G	G	32	J A 34	24	J A 31	J A 21	J A 29	J A 82	J A 50	J A 36	J A 25
27	J A 25	E B 16	E B 16	24	J A 21	21	E B 16	E B 16	J A 29	33	J A 37	35	J A 35	36	J A 37	J A 38	J A 44	J A 30	J A 91	J A 108	J A 52	J A 31	J A 33	J A 33
28	J A 22	J A 46	J A 31	J A 28	20	J A 22	21	J A 23	G	G	G	42	42	G	34	28	G	E B 16	J A 21	J A 31	J A 52	J A 52	J A 53	J A 54
29	J A 26	E B 16	J A 22	J A 24	24	22	E B 16	J A 29	J A 38	J A 41	G	J A 38	G	G	G	32	J A 33	E B 18	E B 15	J A 25	J A 36	J A 29	J A 26	J A 24
30	J A 24	J A 22	22	J A 26	J A 25	J A 23	22	E B 16	G	34	J A 36	37	J A 36	37	35	38	33	J A 26	J A 30	J A 24	E B 16	J A 27	J A 28	20
31	19	E B 15	E B 16	20	J A 22	E B 16	18	G	G	32	J A 41	37	J A 50	J A 48	J A 67	J A 79	J A 77	J A 35	J A 54	J A 76	J A 50	J A 40	J A 53	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	30	29	30	30	30	30	30	30	31	31	31	31	31	31
MED	J A 24	22	22	J A 22	J A 23	22	21	J A 23	28	34	J A 36	35	34	34	34	32	J A 31	J A 25	J A 29	J A 29	J A 33	J A 34	J A 33	J A 33
U Q	J A 34	J A 34	J A 24	J A 25	J A 25	J A 26	J A 30	J A 36	J A 38	J A 42	J A 38	37	J A 38	J A 36	J A 37	J A 35	38	30	38	54	50	50	40	34
L Q	E B 19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 24	31	G 32	G 33	G	G	G 30	G 28	23	E B 18	22	22	E B 23	E B 27	26	24

JAN. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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 15	E B 16	E B 16	E B 16	E B 16	E B 16	25	G 24	29	G	32	32	28	24	19	18	E B 16	22	23	22	A A 46	22
2	E B 16	E B 16	E B 15	17	E B 16	E B 16	E B 16	20	25	28	33	33	40	30	28	26	21	E B 16	26	A A 113	A A 66	21	21	E B 16
3	E B 16	19	E B 15	E B 16	E B 15	16	18	32	39	37	31	G	33	32	28	24	19	E B 16	19	19	E B 16	E B 16	A A 38	E B 16
4	16	18	E B 16	18	17	E B 16	E B 16	E B 16	G 22	30	G 28	32	31	32	G	G	E B 16	E B 15	16	E B 16	E B 17	E B 16	E B 16	E B 16
5	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	E B 15	18	21	31	29	30	30	31	G 23	G	G	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16
6	E B 15	E B 16	E B 14	E B 16	18	E B 15	E B 15	A A 42	A A 102	26	29	22	G	29	G	23	22	18	17	18	19	20	E B 15	E B 15
7	E B 16	E B 16	E B 16	E B 16	16	20	A A 42	21	24	34	33	32	32	A A 62	37	24	21	23	A A 167	27	24	E B 16	A A 54	23
8	23	E B 16	E B 16	E B 15	17	E B 15	E B 15	22	23	33	28	G	32	31	32	31	24	18	22	A A 106	A A 78	19	24	18
9	16	E B 16	E B 16	E B 16	E B 16	E B 17	A A 90	17	24	G 21	35	G	G	G	G	G	E B 15	E B 15	E B 16	E B 16	E B 16	22	22	22
10	A A 36	A A 34	22	20	16	E B 16	E B 16	21	24	29	31	G 23	G 24	G 23	G 23	25	22	E B 16	E B 16	E B 16	A A 45	23	22	21
11	20	18	E B 16	E B 16	16	E B 15	A A 32	23	24	26	C	C	C	C	C	C	C	C	A A 41	22	A A 54	A A 75	A A 54	20
12	A A 38	A A 38	E B 16	16	E B 16	E B 15	E B 16	E B 16	23	27	28	31	G	34	34	30	G	19	E B 16	E B 16	20	20	17	19
13	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	29	41	33	34	34	32	30	29	27	E B 16	E B 17	A A 38	E B 16	23	A A 50	A A 40	A A 51
14	E B 16	E B 16	E B 16	E B 15	E B 16	E B 17	A A 26	20	28	28	36	30	32	31	G	24	24	E B 15	17	E B 16	20	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	E B 16	E B 16	25	31	34	36	33	31	G	27	32	17	19	23	23	E B 16	E B 15	E B 16
16	20	17	E B 15	E B 16	E B 15	E B 15	E B 15	23	22	G	G	32	G	G	29	G	23	17	18	17	16	E B 16	E B 17	E B 16
17	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	E B 15	E B 16	24	G	G	30	33	31	30	26	22	E B 16	E B 16	16	E B 16	18	E B 16	E B 16
18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 17	24	27	G	32	G	33	29	29	21	E B 16	16	E B 16	E B 16	E B 16	E B 17	E B 17
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	G	C	32	33	30	G	G	E B 16	E B 15	E B 16	E B 16	E B 15	E B 15	E B 16
20	E B 14	E B 16	E B 14	E B 16	16	E B 15	E B 16	18	23	29	31	34	32	G 35	29	27	A A 72	A A 77	27	20	19	E B 16	E B 16
21	E B 16	E B 14	E B 15	E B 14	E B 15	E B 15	E B 16	E B 16	G	31	33	36	37	35	36	34	30	37	18	20	20	23	19	18
22	16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 62	E B 17	26	31	34	35	36	32	32	28	22	A A 64	A A 33	18	18	E B 16	19	E B 16
23	E B 16	E B 16	E B 15	16	18	18	A A 45	22	24	30	31	33	35	32	33	27	23	22	E B 15	E B 16	E B 15	E B 16	19	20
24	16	E B 16	E B 16	E B 15	E B 16	22	A A 54	26	24	G	G	33	32	32	30	30	35	18	E B 16	23	E B 16	19	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	E B 16	23	28	34	36	G	G 20	33	28	27	E B 15	A A 62	16	18	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 15	E B 15	E B 15	E B 16	E B 16	21	G	44	30	G	G	G	31	26	23	22	E B 15	19	A A 82	A A 50	A A 36	20
27	E B 15	E B 16	E B 16	E B 16	E B 16	18	E B 16	E B 16	22	31	24	33	G 21	35	32	28	28	23	A A 91	A A 108	20	18	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	E B 17	G	G	G	41	38	G 32	28	G	E B 16	E B 16	19	A A 52	18	E B 16	20
29	19	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	25	23	28	G	32	G	G	G	30	28	E B 18	E B 15	E B 16	18	16	E B 16	17
30	E B 16	E B 16	E B 16	E B 16	E B 15	17	E B 16	E B 16	G	32	31	37	31	36	34	33	30	20	23	19	E B 16	E B 16	E B 16	E B 16
31	E B 16	E B 15	E B 16	E B 15	E B 15	E B 16	16	G	G	30	33	35	34	35	32	A A 79	28	28	A A 54	A A 76	E B 16	20	23	19
	00	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	30	29	30	30	30	30	30	30	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	18	24	29	30	32	32	31	30	27	22	18	17	18	19	18	E B 17	E B 16
U Q	16	16	E B 16	16	16	16	A A 18	22	25	31	33	34	33	33	32	29	27	22	A A 33	23	A A 23	21	A A 23	20
L Q	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	E B 16	E B 16	G 22	G 26	G	G	G	G	G	G 24	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

JAN. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	15	16	16	16	16	16	16	14	15	18	16	16	14	15	14	15	16	16	16	16	15	17
2	16	16	15	16	16	16	16	16	14	15	16	15	16	15	15	13	14	16	16	16	16	16	16	16
3	16	15	15	16	15	14	15	16	16	14	15	14	16	13	15	15	15	16	16	16	16	16	16	16
4	15	15	16	14	15	16	16	16	16	16	15	15	16	17	18	16	16	15	16	16	16	16	16	16
5	16	16	15	16	16	15	15	16	13	15	14	14	15	15	16	14	14	16	16	16	16	15	16	16
6	15	16	14	16	16	15	15	15	15	15	14	16	18	16	16	19	15	15	15	15	16	15	15	15
7	16	16	16	16	15	16	16	16	14	17	20	20	21	21	20	16	14	16	16	17	16	16	16	16
8	16	16	16	15	15	15	15	15	15	15	16	18	16	18	17	15	16	16	15	15	16	16	16	16
9	16	16	16	16	16	17	16	16	15	16	18	18	15	17	16	15	15	15	16	16	16	16	15	16
10	16	16	16	15	16	16	16	16	16	16	14	16	16	15	14	15	15	16	16	16	16	16	16	16
11	17	16	16	16	16	15	16	16	15	15	C	C	C	C	C	C	C	C	16	17	16	16	16	16
12	16	16	16	16	16	14	16	16	15	14	15	16	17	14	16	16	14	15	16	16	15	16	16	16
13	16	16	16	16	16	16	16	16	15	15	15	15	14	16	16	15	16	17	17	16	16	16	16	16
14	16	16	16	15	16	17	16	16	15	16	14	17	17	13	16	14	16	15	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	14	16	15	18	13	16	17	14	16	13	16	15	16	16	15	16
16	16	16	15	16	15	15	15	15	13	16	13	14	14	16	13	12	14	16	15	15	16	16	17	16
17	16	16	15	16	16	16	15	16	14	14	15	14	16	16	13	15	14	16	16	16	16	16	16	15
18	16	16	16	16	16	15	16	17	13	15	16	14	15	13	12	14	15	16	16	16	16	16	17	17
19	16	16	16	16	16	16	16	16	14	14	16	C	14	16	15	15	13	16	15	16	16	15	15	16
20	14	16	14	16	16	15	16	16	15	14	15	17	18	16	13	15	14	16	16	16	17	16	16	16
21	16	14	15	14	15	15	16	16	16	14	17	20	18	16	18	14	15	15	16	16	16	16	16	15
22	16	16	16	16	16	16	16	17	16	16	16	18	16	19	16	14	13	12	16	15	16	16	16	16
23	16	16	15	15	15	15	16	15	14	14	14	13	14	16	17	16	14	16	15	16	15	16	16	16
24	16	16	16	15	16	15	16	16	16	12	12	15	16	15	20	15	15	14	16	16	16	15	16	16
25	16	16	16	16	16	16	16	16	13	14	15	15	17	14	17	14	14	15	15	16	15	16	16	16
26	16	16	15	15	16	16	16	15	14	14	16	18	15	14	15	13	12	15	15	15	16	17	15	15
27	15	16	16	16	16	18	16	16	16	15	15	15	16	16	14	14	14	15	16	16	17	16	16	16
28	16	16	16	16	16	16	16	17	16	16	15	14	16	18	16	16	15	16	16	15	16	16	16	16
29	16	16	16	16	16	15	16	15	16	16	18	18	20	19	16	15	15	18	15	16	15	16	16	16
30	16	16	15	16	15	16	16	16	15	17	13	18	15	18	15	14	14	16	15	15	16	16	16	16
31	15	15	16	15	15	16	16	16	15	14	14	14	15	17	14	16	16	15	16	16	16	16	16	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	30	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	15	15	15	16	16	16	16	15	14	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	18	17	17	17	15	15	16	16	16	16	16	16	16
L Q	16	16	15	15	15	15	16	16	14	14	14	14	15	15	14	14	14	15	15	15	16	16	16	16

JAN. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	F	346	344	330	329	F	334	377	352	378	371	376	376	366	381	367	382	359	334	358	368	333	A	336
2	350	385	334	359	328	355	366	390	371	377	389	376	386	383	401	390	380	369	361	A	A	332	334	322
3	336	324	306	324	F	F	344	389	404	395	367	375	373	369	375	398	400	339	340	346	374	338	A	292
4	291	F	370	F	361	317	370	403	402	385	338	378	341	370	376	376	379	376	354	323	319	333	326	309
5	284	F	F	349	F	F	F	397	375	360	365	388	365	373	379	380	376	358	358	374	308	299	F	304
6	342	348	382	378	392	329	331	A	A	335	365	371	396	381	353	400	375	338	344	367	393	318	308	F
7	304	F	313	323	F	F	A	375	389	380	366	363	360	A	375	398	404	352	A	358	359	F	A	330
8	F	348	F	F	F	F	348	383	385	362	345	374	355	378	386	371	418	354	347	A	A	F	F	F
9	309	F	F	F	299	F	A	387	377	377	395	394	356	364	373	385	402	394	354	380	331	338	338	346
10	A	A	328	340	366	F	336	381	388	375	378	361	365	360	362	374	403	353	326	336	A	325	329	F
11	312	F	F	F	383	335	A	377	372	378	C	C	C	C	C	C	C	C	A	344	A	A	A	353
12	A	A	F	F	F	F	F	390	394	380	326	361	368	375	375	392	398	389	334	353	390	F	F	F
13	361	326	337	359	348	314	380	379	395	367	333	361	384	376	376	396	412	360	A	367	398	A	A	A
14	320	309	332	355	405	348	A	388	406	370	335	367	362	355	388	370	391	359	334	349	356	F	F	350
15	F	F	303	393	409	362	374	394	413	389	370	361	365	395	364	404	380	367	349	384	402	335	309	F
16	F	F	300	F	358	306	355	392	381	391	364	381	382	319	347	359	394	386	315	376	410	460	314	332
17	325	339	340	F	F	343	373	414	422	399	327	365	325	376	367	346	364	396	364	343	372	395	F	F
18	F	336	F	F	F	F	F	392	388	380	354	355	387	370	351	368	389	379	340	359	358	334	341	290
19	F	350	344	F	359	308	360	383	397	382	351	C	355	365	361	363	425	374	384	317	328	352	316	348
20	326	342	353	360	331	341	326	375	406	366	364	364	388	393	366	364	318	A	A	390	331	364	355	327
21	366	325	337	F	323	F	361	403	397	386	364	348	351	375	385	395	385	391	380	373	336	379	341	316
22	F	F	F	F	F	F	A	397	406	357	373	365	338	353	375	359	385	A	A	354	374	319	345	347
23	338	325	F	F	F	F	A	378	361	365	377	371	393	380	372	371	408	367	340	333	343	380	310	307
24	332	331	355	342	320	364	A	384	372	387	361	392	370	363	402	379	385	370	352	381	319	395	355	325
25	F	F	330	316	F	F	341	396	428	357	355	325	377	332	370	377	387	390	A	377	313	F	F	305
26	F	305	312	315	325	341	333	387	397	374	358	371	351	388	389	384	376	354	367	408	A	A	A	303
27	327	332	331	331	334	334	321	372	377	381	369	377	344	359	380	384	369	368	A	A	346	355	337	322
28	356	336	351	329	315	316	351	394	390	383	395	386	376	352	373	355	370	369	359	355	A	F	326	307
29	356	F	344	340	332	331	353	397	402	388	371	368	376	351	338	365	415	366	354	353	326	356	346	331
30	332	319	307	335	330	367	413	385	372	386	367	360	359	378	357	372	384	397	319	328	387	371	321	318
31	321	309	326	343	355	F	365	383	392	400	388	362	317	327	377	A	352	398	A	A	321	352	338	312
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	19	23	19	21	17	21	30	30	31	30	29	30	29	30	29	30	28	23	27	25	22	19	24
MED	330	332	334	340	334	335	353	388	391	380	365	368	365	370	375	376	385	368	349	358	356	345	334	322
U Q	346	346	344	359	364	352	368	394	402	386	371	376	377	378	380	391	402	388	359	376	380	371	341	334
L Q	316	324	313	329	326	316	335	381	377	367	354	361	355	357	364	366	376	358	334	344	327	333	316	307

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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			L	L								
2												L		L										
3											L	420	410	A	L	L								
4											UL 360	L	L	L										
5										A			L	L	L									
6									A	L		L	L	L	L									
7											L	437	431	A										
8									L	A	UL 414		L	UL 399	A									
9												L	UL 403	L	L	L								
10										L	L	UL 403	L	L	L									
11											C	C	C	C	C	C	C	C						
12											UL 380	437	422	A	A									
13											UL 392	402	385	UL 414	L									A
14											UL 380	414	UL 413	UL 416										
15											L	A	L	L										
16											395	388	427	UL 394	UL 408	UL 421								
17										L	UL 396	L	UL 344	L	UL 376									
18										L	417	UL 374	L	A 422										
19											L	C		UL 380	L	L								
20											UL 390	410		L										
21									UL 473	A	UL 407	L	UL 395	A	A									
22											A	UL 409	A	UL 389	L									
23											L	L	L	UL 408	A	L								
24											L	L	L	L	L									
25											UL 376	L	UL 396	UL 370	A									
26										A	381	UL 394	UL 423	376	L									
27											L	L	UL 396	L										
28										L	L			UL 387										
29										L	L	UL 417	L	UL 394	L	A								
30									L	L	UL 408	A	L	A	A	A								
31											L		394	UL 398		A								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1		13	12	13	13	2	1								
MED									UL 473		UL 392	410	UL 403	UL 394	UL 392	UL 421								
U Q											UL 408	418	422	UL 411										
L Q											UL 380	398	394	UL 384										

JAN. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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										242	246	228			240	246								
2												244		232										
3											262	248	248	248	246	232								
4											288	246	266	244										
5										254			238	226	242									
6									A	266		222	216	236	242									
7											242	226	226	A										
8									238	250	254		244	244	224									
9												242	262	246	246	230								
10										246	244	240	250	252	230									
11											C	C	C	C	C	C	C	C						
12											286	254	240	228	228									
13											302	246	228	238	244									A
14											308	250	238	244										
15											262	250	244	232										
16											260	224	222	292	262	224								
17										222	284	232	326	248	258									
18										236	282	290	228	230										
19											252	C		252	248	248								
20											260	238		238										
21									212	236	266	268	268	248	232									
22											254	248	240	268	254									
23											240	250	236	252	256	236								
24											256	224	258	246	226									
25											268	260	246	290	248									
26										E A 230	252	240	252	224	218									
27											234	234	278	260										
28										238	220			260										
29										236	236	240	246	266	278	238								
30									234	248	242	268	244	236	262	234								
31											232		328	296		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									3	12	26	25	25	28	20	8								
MED									234	240	255	244	244	246	245	235								
U Q									238	249	268	250	260	256	255	242								
L Q									212	236	242	233	237	236	231	231								

JAN. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	E B 238	210	212	E B 264	E B 254	222	224	204	208	196	196	184	202	194	204	202	202	192	216	210	E A 246	E A 280	A	E A 286
2	214	216	E B 246	E A 258	218	222	E B 242	202	200	200	226	212	214	202	198	192	204	200	E A 234	A	A	204	E A 236	230
3	E B 238	E A 298	E B 240	E B 244	206	E A 254	E A 236	212	212	216	194	186	178	A	200	196	200	208	228	226	192	194	A	E B 338
4	E A 296	E A 326	224	E A 262	E A 240	E B 272	212	182	190	200	212	198	198	192	202	200	202	196	204	228	220	E B 238	E B 226	E B 250
5	E B 268	E B 232	214	212	E B 258	E B 252	228	194	210	A	206	202	202	194	180	200	212	202	210	192	E B 256	E B 262	222	218
6	E B 248	E B 232	196	194	202	E B 262	E B 262	A	A	200	220	192	190	180	188	204	200	210	218	218	198	E A 246	E B 252	E B 298
7	E B 268	E B 246	E B 274	E B 246	220	E B 236	A	214	196	208	200	178	184	A	224	204	204	226	A	226	220	196	A	E A 326
8	E A 266	E B 234	E A 232	E B 252	E A 236	E B 266	208	210	174	A	186	220	188	178	A	212	196	196	222	A	A	E A 232	E A 272	220
9	226	216	214	E B 234	E B 252	E B 270	A	190	206	206	202	188	190	202	208	188	196	190	212	206	220	E A 276	E A 266	222
10	A	A	E A 290	E A 262	206	224	E B 252	202	214	206	196	182	184	196	200	202	198	194	E B 246	202	A	E A 274	E A 270	218
11	E A 280	E A 262	E B 256	188	212	E B 248	A	224	202	190	C	C	C	C	C	C	C	C	A	E A 230	A	A	A	E A 246
12	A	A	E B 238	198	196	214	216	192	188	198	178	182	182	A	A	214	192	188	E B 244	216	198	208	E A 286	214
13	E A 260	E B 246	E B 240	210	E B 252	E B 280	234	216	212	202	206	198	198	192	198	198	188	190	A	202	212	A	A	A
14	E B 264	E B 266	E B 246	222	198	E B 240	A	194	196	204	220	188	184	200	218	210	194	194	228	220	206	E B 240	224	200
15	E B 280	E B 270	E B 244	194	180	E B 252	214	194	192	200	212	A	204	196	214	204	216	206	214	208	206	E B 238	E B 266	E B 258
16	E A 306	E A 268	E B 268	222	208	E B 230	224	198	196	196	180	192	174	178	186	172	200	204	E A 238	208	184	164	E B 302	E B 262
17	242	216	222	222	208	194	212	188	192	184	176	170	204	214	202	202	204	188	192	206	200	188	E B 236	E B 236
18	E B 254	E A 244	E B 262	E B 242	E B 232	180	220	186	206	188	180	198	188	192	180	232	206	202	210	200	212	204	E B 220	E B 280
19	218	224	210	E B 220	208	E B 240	E B 238	194	192	204	200	C	188	194	198	202	186	186	188	E B 234	E B 230	222	E B 226	E B 232
20	230	E B 236	E B 236	220	E A 240	224	E B 256	200	194	198	200	196	216	200	216	212	E A 228	A	A	202	E A 264	210	218	E B 246
21	214	E B 230	E B 236	226	E B 254	E B 274	214	186	186	A	196	206	206	A	A	210	216	208	190	200	E A 276	202	E A 234	E A 266
22	210	E B 218	E B 252	E B 254	230	206	A	194	196	194	A	212	A	188	204	224	210	A	A	212	214	E B 238	E A 266	E B 258
23	E B 240	E B 238	E B 234	E A 246	E A 260	220	A	206	212	208	210	194	196	196	A	206	194	198	230	206	208	200	E A 294	E A 276
24	E B 252	E B 236	224	E B 256	E B 280	E A 274	A	206	214	198	184	188	202	200	200	210	218	196	220	210	202	196	216	240
25	222	E B 236	E B 244	E B 262	E B 252	E B 256	214	192	180	194	218	212	196	190	A	224	198	186	A	206	E A 270	E B 252	200	212
26	E B 258	E B 248	E B 246	E B 270	232	E B 242	216	198	200	A	186	182	180	182	196	200	202	224	196	188	A	A	A	E A 300
27	218	224	E B 254	230	E B 260	E B 240	E B 274	210	182	218	170	204	178	218	214	200	214	204	A	A	E A 236	214	222	E B 246
28	206	E B 254	E B 234	E B 250	E B 288	E B 270	224	200	194	192	190	232	232	192	222	214	200	192	202	218	A	232	E B 242	E A 288
29	E A 282	E B 260	226	222	236	E B 252	218	206	190	172	178	174	174	186	206	A	200	196	192	206	232	206	228	228
30	E B 262	E B 244	E B 268	E B 258	E B 244	214	188	184	188	212	184	A	188	A	A	A	204	192	E A 288	E A 240	204	194	E B 228	E B 268
31	240	E B 242	E B 234	224	222	E B 240	192	194	182	204	190	202	184	198	226	A	208	192	A	A	E B 246	222	E A 274	E A 266
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	31	31	31	24	30	30	27	29	27	29	25	24	27	30	28	23	27	25	28	25	30
MED	E 248	E B 238	E B 238	E 234	U 214	E B 240	218	198	196	200	196	194	190	194	202	204	202	196	210	207	207	U 206	E 236	E 248
U Q	E A 267	E 257	E B 252	E B 256	E B 252	E B 262	E B 237	206	206	206	208	204	202	200	214	212	208	204	E 230	220	E A 241	E 239	E A 268	E A 276
L Q	224	227	224	220	208	222	214	192	190	194	184	184	184	189	198	200	198	192	202	202	203	201	223	228

JAN. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	110	A	112	A	114	A	A	A	B						
2								B	116	122	124	A	A	A	A		A	B						
3										A	A	114	A	116	A	A	A	B						
4								B	126	128	128	120	114	116	116	112	B							
5								B	A	A	A	A	112	110	112	108	110	B						
6									A	A	A	112	118	A	110	A	A	B						
7								A	A	116	116	A	A	A	A	A	B	B						
8								B	A	A	A	114	A	A	A	A	A	B						
9									114	116	A	110	110	110	112	114	B							
10								B	106	A	108	110	110	108	112	A	112							
11								B	A	A	C	C	C	C	C	C	C	C						
12								B	112	A	A	112	110	A	A	A	112							
13								B	A	A	A	A	A	A	A	A	B							A
14								B	A	A	A	A	A	118	114	A	A							
15									108	114	114	114	114	112	112	112	A	B						
16								B	114	110	108	108	108	106	112	110	108	B						
17								B	108	108	108	A	108	110	A	A	110							
18								B	108	108	108	A	112	112	A	110	A							
19								B	112	110	110	C	A	110	110	110	110	B						
20								B	A	112	112	112	110	112	A	A								
21									114	114	112	110	108	110	110	110	114							
22									112	108	108	108	108	108	108	108	108							
23								B	A	114	A	110	106	100	100	114	A							
24								B	A	108	108	110	112	110	110	110	A							
25								B	116	106	108	108	110	112	112	118	A							
26								B	116	A	A	112	108	114	114	A	110							
27								B	A	110	110	112	108	110	A	A	A							
28								B	114	116	112	110	110	110	110	110	112							
29								B	A	A	110	A	110	110	110	110	110	B						
30								B	112	112	A	112	A	114	116	116	116	B						
31							B	B	108	114	118	118	A	A	A	A	B							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									18	20	18	21	20	23	18	15	12							
MED									112	112	110	112	110	110	112	110	110							
U Q									114	115	114	113	112	114	112	114	112							
L Q									108	109	108	110	108	110	110	110	110							

JAN. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 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	B	B	B	B	B	106	B	100	140	104	102	G	90	138	84	100	102	100	94	88	88	88	88	88
2	86	96	102	102	112	102	102	138	120	122	118	98	94	98	88	96	90	B	98	88	88	84	84	84
3	86	86	102	B	102	100	96	96	96	94	94	G	98	148	98	88	86	86	86	86	B	88	88	92
4	88	88	B	90	88	88	B	92	92	146	102	132	150	144	G	G	B	B	82	B	92	92	88	84
5	94	B	B	86	B	B	B	130	104	102	102	98	124	140	88	G	G	88	B	96	B	B	96	B
6	B	B	100	106	96	B	134	108	104	100	94	94	G	96	G	96	90	92	86	86	94	94	94	92
7	90	98	B	130	112	106	100	98	100	150	150	102	104	96	96	108	98	92	90	88	88	90	90	88
8	92	86	86	94	94	94	106	102	102	100	100	G	108	102	102	102	96	104	100	90	80	86	84	88
9	80	B	92	88	92	106	94	100	142	84	84	G	G	G	G	G	B	B	84	90	96	88	88	86
10	86	82	80	80	80	96	96	90	146	88	124	84	84	86	84	100	142	82	84	82	88	88	88	84
11	84	90	90	90	92	136	114	108	94	92	C	C	C	C	C	C	C	C	92	96	94	92	84	84
12	82	82	80	98	110	136	122	B	118	100	98	146	G	96	92	96	G	124	120	106	88	88	86	84
13	82	82	92	84	B	B	104	100	100	96	86	86	86	84	84	84	B	B	106	B	88	88	86	84
14	84	86	B	B	100	98	100	100	92	100	94	94	94	146	G	90	86	90	90	90	100	122	104	96
15	104	104	102	B	B	B	B	B	160	152	132	142	126	126	G	118	94	94	94	92	90	84	82	80
16	92	92	98	102	102	B	B	88	110	G	G	148	G	G	142	G	132	86	86	84	84	B	B	B
17	B	B	B	B	B	B	84	94	140	G	G	96	140	122	104	104	132	92	92	94	94	90	84	96
18	94	94	94	B	B	B	B	B	134	112	G	92	G	148	96	144	84	102	96	92	B	B	96	96
19	B	B	B	B	B	B	B	B	146	166	G	C	104	122	118	G	G	B	B	104	B	B	B	B
20	98	100	B	100	94	92	92	94	92	158	116	118	136	G	98	96	92	92	88	86	84	80	80	B
21	B	B	B	B	B	B	92	B	G	160	158	156	144	124	124	114	120	100	98	94	92	90	90	90
22	94	B	B	B	102	102	92	92	158	148	122	120	120	150	140	134	118	96	92	92	84	82	82	82
23	88	B	B	106	98	98	96	88	88	146	86	136	152	138	122	118	106	102	96	B	B	B	88	84
24	82	B	98	B	104	100	94	86	86	G	G	154	150	146	130	112	102	100	94	94	86	80	80	120
25	118	B	B	B	106	100	96	94	146	142	162	142	G	84	118	112	104	B	88	92	92	92	90	116
26	96	B	94	94	94	92	92	92	G	92	92	G	G	G	154	86	152	94	98	92	90	86	84	84
27	86	B	B	104	102	108	B	B	106	150	98	140	90	142	88	114	96	90	92	92	94	92	92	90
28	92	88	88	88	94	92	92	92	G	G	G	166	160	G	150	122	G	B	108	100	88	88	88	84
29	90	B	88	86	86	86	B	90	92	92	G	92	G	G	G	130	118	B	B	90	90	100	100	100
30	94	94	92	92	90	90	88	B	G	152	102	152	94	160	138	130	130	140	138	100	B	98	92	86
31	120	B	B	116	106	B	106	G	G	148	118	132	104	108	96	88	88	88	88	88	88	88	88	88
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	16	17	20	23	21	22	23	26	27	23	24	22	24	24	25	23	22	28	28	25	26	29	27
MED	90	89	92	94	98	100	96	94	105	112	102	126	106	125	100	104	102	93	92	92	88	88	88	88
U Q	94	95	99	103	104	106	104	100	140	150	122	144	140	145	127	118	120	100	98	94	93	92	91	92
L Q	86	86	88	88	92	92	92	92	94	96	94	95	94	97	90	96	90	90	88	88	88	86	84	84

JAN. 2019 h'Es (KM)

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IONOSPHERIC DATA STATION Kokubunji

JAN. 2019 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						F1		L1	H2	L2	L2		L3	HL22	L3	L2	L2	L2	F3	F6	F5	F5	F4	F4
2	F3	F1	F1	F4	F1	F2	F3	C2	C3	C1	C2	L1	L3	L3	L2	L3	L4		F6	F6	F7	F3	F2	F1
3	F2	F2	F1		F1	F2	F5	L3	L3	L4	L2		L2	HL21	L2	L2	L2	L1	F2	F1		F2	F5	F4
4	F2	F4		F3	F2	F3		L1	L2	HL22	L3	CL22	HL22	H1					F1		F2	F1	F2	F1
5	F2			F1				C2	L2	L3	L3	L2	C2	H1	L2			L1		F1			F2	
6			F1	F2	F3		F2	L7	L4	L2	L2	L2		L2		L2	L1	L2	F2	F2	F1	F1	F2	F2
7	F2	F1		F1	F2	F3	F3	L3	L2	H1	H1	L2	L2	L2	L3	L2	L2	L3	F4	F5	F6	F2	F3	F2
8	F3	F2	F2	F2	F3	F3	F2	L3	L3	L3	L2		L1	L2	L2	L3	L3	L1	F5	F4	F3	F3	F3	F2
9	F1		F2	F2	F2	F2	F5	L2	H2	L2	L2								F1	F2	F1	F4	F2	F3
10	F4	F4	F3	F2	F2	F2	F4	L2	H2	L2	CL22	L2	L2	L2	L2	L1	H1	L3	F2	F2	F6	F3	F6	F3
11	F2	F2	F2	F1	F1	F1	F7	C5	L3	L2									F6	F5	F6	F5	F6	F3
12	F5	F3	F2	F1	F1	F1	F2		C2	L2	L2	H1		L3	L3	L3		F2	F1	F1	F4	F4	F3	F5
13	F4	F3	F2	F2			F1	L5	L4	L3	L3	L2	L2	L2	L2	L2			F6		F4	F6	F4	F3
14	F2	F1			F2	F3	F5	L2	L3	L2	L3	L2	L2	HL12		L3	L2	L1	F1	F1	F3	F2	F1	F1
15	F1	F1	F1						H2	H1	C1	H1	C1	C1		C1	L3	L2	F2	F4	F5	F2	F2	F2
16	F5	F3	F2	F3	F1			L5	C2			H1			HL22		L2	L3	F2	F3	F1			
17							F2	L1	H1			L2	H1	C1	L2	L3	C1	F1	F1	F1	F1	F5	F1	F3
18	F2	F3	F2						H2	C2		L2		H2	L2	HL22	L4	F1	F2	F1			F1	F2
19									H2	H2			L2	C2	C1					F1				
20	F1	F2		F2	F3	F2	F1	L3	L2	H1	C1	C1	C1		L4	L3	L4	F5	F5	F6	F4	F4	F2	
21							F2			H2	H2	H2	H2	C2	C2	C2	C3	F5	F4	F3	F3	F4	F4	F3
22	F1				F2	F1	F7	L1	H2	H2	C1	C3	C2	H2	H2	C3	C2	F7	F8	F4	F3	F3	F2	F2
23	F1			F2	F4	F5	F8	L5	L3	HL14	L3	HL12	HL12	H1	C1	C1	L1	L3	F3				F3	F5
24	F3		F1		F3	F5	F6	L4	L2			H1	H1	H1	C1	C2	L3	F2	F2	F3	F2	F2	F1	F1
25	F1				F1	F4	F1	L1	HL22	H2	H1	H1		L1	C1	C2	L3		F6	F1	F3	F3	F1	F1
26	F1		F2	F2	F3	F2	F3	L5		L4	L2				H1	L2	HL12	F3	F2	F2	F5	F6	F4	F3
27	F2			F1	F2	F1			L2	HL22	L2	HL12	L2	HL12	L2	CL22	L3	F4	F5	F5	F5	F3	F2	F2
28	F3	F2	F2	F1	F1	F2	F2	L1				H2	H2		H1	C1			F1	F3	F5	F4	F2	F4
29	F2		F1	F2	F2	F2		L3	L2	L1		L1				H2	C3			F1	F3	F1	F2	F2
30	F2	F2	F2	F3	F2	F3	F2			H2	L2	H1	L1	H1	CL13	CL22	C3	H2	F3	F4		F2	F2	F1
31	F1			F2	F2		L1			H2	C1	CL12	L2	LC21	L3	L4	L4	L4	F5	F4	F3	F3	F4	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JAN. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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 33	X 37	X 30	X 30	X 24	30	32													A	X 39	39	40	37
2	40	X 39	X 37	A	X 24	X 24	X 24											X 48	X 45	X 31	X 36	A	X 36	A
3	X 30	X 31	X 31	X 33	X 24	A	A												X 37	X 40	X 45	X 40	X 31	X 30
4	X 33	X 33	37	37	X 32	X 28	33												X 38	X 33	X 38	X 42	X 39	X 32
5	X 36	X 36	44	40	36	36	33	X 38											X 41	X 44	X 33	X 33	40	38
6	38	X 34	X 35	X 35	X 28	X 28	X 25												X 39	X 48	X 41	X 34	A	X 33
7	X 33	36	36	40	X 26	X 26	A												X 44	X 44	X 47	X 36	A	A
8	X 38	X 37	42	X 37	38	X 34	36		X 54										X 38	X 38	46	40	39	39
9	X 36	42	38	40	37	34	34													X 37	A	A	A	A
10	A	X 31	X 31	34	X 36	X 32	X 26												X 33	X 37	X 43	X 40	40	X 32
11	A	X 32	X 31	X 34	X 32	O X 30	A												X 32	X 35	X 45	A	A	A
12	A	A	X 33	38	41	X 24	X 24		X 53										X 32	A	X 39	X 39	41	38
13	38	36	34	31	X 23	X 28	X 23											X 46		X 35	X 42	X 41	A	A
14	X 34	X 35	X 34	X 32	41	X 28	X 29													X 36	X 43	X 45	X 36	35
15	38	40	36	34	34	34	X 27													X 42	X 32	X 32	X 29	X 29
16	36	36	X 33	X 33	X 36	X 26	X 22													X 45	X 52	X 32	X 26	X 28
17	37	38	40	37	36	36	31													X 34	X 34	X 39	X 28	X 28
18	X 29	X 29	X 29	X 29	X 30	X 30	X 22													X 35	X 35	X 37	X 33	X 33
19	X 35	X 36	X 33	38	36	X 30	X 32													X 34	X 31	X 35	X 35	X 37
20	X 32	X 32	X 32	X 32	X 32	34	X 24											X 62		X 35	A	X 32	X 34	X 36
21	39	X 26	X 30	X 34	X 34	33	X 28														X 36	X 30	A	X 30
22	X 31	X 31	X 30	X 30	X 32	X 31	X 25													A	X 37	X 34	X 32	X 31
23	35	X 32	X 32	X 32	X 32	X 31	A	X 31												X 45	X 46	X 42	X 31	X 34
24	X 36	X 37	X 37	X 34	X 32	X 32	X 30													X 47	X 42	X 45	X 32	X 30
25	X 36	X 34	X 34	X 34	X 32	X 30	X 26													X 35	X 36	X 40	X 44	X 32
26	36	38	X 34	38	X 38	X 34															X 31	X 32	X 32	X 33
27	X 31	36	36	37	34	X 30														X 43	X 49	X 38	X 42	X 32
28	X 32	X 32	X 32	X 32	X 30	X 27		X 37												X 38	X 39	X 34	39	39
29	39	39	39	38	36	33	33	X 34												X 36	X 37	X 34	X 32	X 32
30	X 32	X 32	X 32	X 32	X 32	X 32														A	X 44	X 42	X 35	X 31
31	X 30	X 32	X 32	X 32	35	X 32														X 37	X 42	X 43	X 42	X 37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	31	30	31	30	22	4	2									3	10	25	29	28	25	26
MED	X 36	X 36	X 34	X 34	X 32	X 30	X 28	X 36	X 54									X 48	X 38	X 37	X 39	X 38	X 35	X 32
U Q	38	37	37	37	36	33	32	X 38										X 62	X 41	X 44	X 44	X 40	40	37
L Q	X 32	X 32	X 32	X 32	X 30	X 28	X 24	X 32										X 46	X 33	X 35	X 36	X 34	X 32	X 31

JAN. 2019 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	27	31	24	23	18	F	F	26	47	53	61	76	58	49	53	59	54	42	A	A	33	F	F	F
2	F	33	31	A	18	17	18	26	46	48	A	59	66	57	50	47	44	42	39	25	30	A	30	A
3	24	25	25	27	18	A	A	25	A	50	54	46	58	57	58	52	48	39	31	34	39	34	25	23
4	27	27	F	F	26	22	F	28	44	44	47	A	54	51	52	47	58	49	32	27	32	35	33	26
5	30	30	F	F	F	F	F	32	44	54	79	79	61	67	58	48	52	48	35	37	27	27	F	F
6	F	28	29	29	22	22	19	A	42	53	61	69	68	52	55	53	A	38	33	42	35	28	A	27
7	27	F	F	F	20	20	A	34	47	54	66	70	89	78	60	50	43	45	38	38	41	30	A	A
8	32	31	F	31	F	28	F	A	48	46	62	59	72	57	51	56	48	A	32	32	F	F	F	F
9	30	F	F	F	F	F	F	28	48	52	54	54	57	57	56	50	50	41	26	31	A	A	A	A
10	A	25	25	F	30	26	20	26	49	52	54	56	58	61	61	58	51	42	27	30	37	34	F	26
11	A	26	25	28	26	24	A	27	A	50	50	60	54	54	55	54	54	42	26	29	39	A	A	A
12	A	A	27	F	F	18	18	30	47	47	45	54	58	62	62	52	56	44	26	A	33	33	F	F
13	F	F	F	F	17	22	17	28	48	50	50	56	62	69	50	50	49	40	30	29	36	35	A	A
14	27	29	28	26	F	22	23	27	46	47	50	50	55	69	54	52	50	41	28	30	37	39	30	F
15	F	F	F	F	F	F	21	27	46	51	47	54	78	78	60	56	46	44	37	36	26	26	23	23
16	F	F	27	27	30	19	16	25	41	49	54	48	52	53	57	52	48	48	35	39	46	26	20	22
17	F	F	F	F	F	F	F	32	43	46	44	48	54	65	57	53	58	51	41	28	28	33	22	22
18	23	23	23	23	24	24	16	26	44	51	59	A	61	64	55	48	51	42	36	29	29	31	27	27
19	29	30	27	F	F	24	26	30	46	49	49	54	54	48	61	61	52	46	46	28	25	29	29	30
20	26	26	26	26	26	F	18	28	42	48	48	56	63	67	50	48	41	56	40	29	A	26	28	30
21	F	20	24	28	28	F	22	28	44	46	50	65	57	56	56	54	46	48	44	A	30	24	A	24
22	25	25	24	24	26	25	19	26	45	46	48	60	77	66	54	53	56	44	33	A	30	28	26	25
23	F	26	26	26	26	25	A	25	48	56	56	52	52	52	49	70	51	44	31	39	39	35	25	28
24	30	31	31	28	26	26	24	A	52	54	59	59	65	60	54	46	47	54	43	41	36	39	26	24
25	30	28	28	28	26	24	20	35	49	45	59	57	60	59	61	58	64	51	38	29	30	33	38	26
26	F	F	28	F	31	28	28	36	58	56	56	57	60	66	59	52	50	47	45	A	25	26	26	27
27	25	F	F	F	F	24	22	25	50	66	72	60	52	58	54	62	50	44	46	36	43	32	36	26
28	26	26	26	26	24	21	21	31	46	55	64	63	61	53	47	60	55	50	40	32	33	28	F	F
29	F	F	F	F	F	F	F	28	52	54	58	54	56	57	57	64	51	43	42	30	30	28	26	26
30	26	26	26	26	26	26	22	28	45	50	57	51	53	55	48	58	71	48	38	A	38	36	28	25
31	24	26	26	26	F	26	26	30	50	54	48	50	50	50	59	67	51	48	42	31	36	37	36	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	18	21	21	17	20	22	20	28	29	31	30	29	31	31	31	31	30	30	30	25	28	26	19	20
MED	27	26	26	26	26	24	20	28	46	50	54	56	58	57	55	53	51	44	36	31	33	32	27	26
U Q	30	30	28	28	26	26	22	30	48	54	59	60	63	66	59	58	54	48	41	36	38	35	30	27
L Q	25	26	25	26	21	22	18	26	44	47	49	53	54	53	52	50	48	42	31	29	30	28	25	24

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	U L 400	U L 400	L	U L 432	U L 416	L			A					
2											A	L	A	A	L	A								
3									A				U L 412	U L 412	L	L								
4												A	U L 416	U L 416	L									
5										L	A		L	U L 420	L	L	L							
6								A	A	L	U L 376	U L 412	U L 412	L	U L 428	L	A							
7									A		L	A	A	A	A									
8								A			U L 400	L	A	A	A	A	A	A						
9											L	L	U L 412	U L 412	U L 400	L								
10										A	L	L	U L 424	412	U L 408	L	A							
11									A	L	L	L	U L 440	L	A	L								
12												U L 412	400	U L 412		L								
13									A	A	L	U L 404	A	404	L	A								
14										L	U L 400	408	U L 408	U L 408	U L 404	L								
15											U L 452	392	U L 412	U L 420		L								
16											L	U L 404	U L 420	A	400	L	A							
17										L		U L 440	U L 420	408	L	L	L							
18											L	A	A	L	L	A	L							
19									L	L	L	U L 408	U L 408	U L 416	400	L								
20											U L 412	404	A	U L 408	U L 404	L								
21									L		U L 396	U L 396	U L 420	U L 428	U L 400	A				A				
22										U L 340		U L 408	416	408	412	L	L							
23										L	A	U L 424	U L 420	U L 416	U L 416									
24								A			L	U L 416	U L 432	412	L		A							
25											L	L	L	416	U L 408	L								
26										L	L	U L 412	U L 420	L	L	A	A			A				
27										L	L	424	420	420	L	L	L							
28										L	L	L	L	L	U L 436	L	L							
29										L	U L 404	U L 432	L	444	L	A								
30								L		L	A	L	L	L	L	U L 396								
31									L			U L 436	U L 432	U L 432	U L 428	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	8	18	19	21	14	2								
MED										U L 340	U L 400	U L 410	U L 420	U L 416	U L 408	388								
U Q											U L 408	U L 424	U L 420	U L 420	U L 416									
L Q											U L 398	U L 404	U L 412	410	400									

JAN. 2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	A	A	A	A	A	A	U A 296	280	A	B	B				
2									B	A	A	A	U R 316	A	A	A	A	A						
3									B	A	A	A	A	A	A	A	A	U R 252	A					
4									B	U A 200	U A 260	A	A	A	A	U R 308	A	U A 236	R					
5										U A 176	U A 240	A	A	A	A	U R 304	U R 272	A	A					
6									A	A	A	A	A	A	A	A	U R 280	A	A					
7									A	A	A	A	A	A	A	A	A	A	B					
8									A		A	A	A	A	A	A	A	A	A					
9									A	A	A	U R 304	U R 316	R	R	U R 296	R	U R 252	A	A				
10									B	U A 188	A	U A 284	U R 316	U R 324	R	U R 292	U R 276	A	A					
11									A	A	A	A	U A 308	U A 316	A	A	U A 264	A	B					
12									B		A	U R 288	U R 308	U R 308	A	A	R	A	A					
13									B	A	A	A	A	U R 312	A	A	A	A	B					
14									B	U A 192	A	U R 296	R	A	A	U A 296	A	U A 240	U R 192	B				
15									B	212	260	296	A	A	A	A	A	A	A	A				
16									B	U A 228	240	292	292	U A 312	296	A	U R 284	232	B	B				
17									B	U R 200	U R 248	U R 284	R	324	U R 324	A	U A 268	U R 232	U R 172	B				
18									B	U A 204	256	U R 280	A	U A 296	U A 308	U R 280	A	A	B	B				
19									B	U R 180	U R 244	U R 276	292	312	A	296	U R 276	U R 244	A	B				
20									B	U A 192	U A 244	A	A	A	A	A	A	A	B					
21									B	U R 204	252	284	U A 312	A	U R 328	308	U A 268	A	A	B	A			
22									B	U R 208	A	U A 280	308	U A 308	U A 324	U R 296	U A 292	U R 268	A	B				
23										U R 192	A	U R 308	U R 324	A	A	A	276	A	A	B				
24									B	A	A	A	A	A	U R 312	A	A	A	U A 196	B				
25									B	196	U A 256	284	U R 304	312	304	304	U A 276	A	A	B				
26								B	A	U R 224	A	A	U R 316	R	U R 304	U A 292	A	A	A	B	A			
27								B	U R 188	A	U R 272	R	U R 308	U R 316	U R 320	A	A	A	U A 208	B				
28								B		A	A	R	U R 316	U R 308	U R 300	U R 312	A	A	188	B				
29								B		A	U R 264	U R 296	U R 304	U R 328	U R 312	U A 296	A	A	A	B				
30								B	U R 196	U R 220	U R 272	292	A	U A 332	A	A	A	A	A	B				
31								B	B	U R 208	U A 264	A	U R 332	A	U A 388	A	A	U A 248	U R 220	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	17	14	15	16	13	13	14	12	9	6						
MED								U R 192	U 200	U 256	U R 288	U R 310	U 312	U R 312	U 296	U 276	U R 244	U 194						
U Q									U R 210	U R 264	U R 296	U R 316	U 324	U R 324	U R 304	U 280	U R 252	U 208						
L Q									U A 192	U 244	U 284	306	U 308	304	U 296	U A 270	U 234	188						

JAN. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	23	20	J A 26	J A 30	J A 64	J A 44	J A 30	J A 25	J A 32	J A 37	J A 43	J A 63	J A 38	J A 38	34	31	J A 33	J A 29	J A 112	J A 85	J A 53	J A 24	22	J A 41
2	J A 34	J A 43	J A 51	J A 43	J A 25	22	21	J A 24	J A 36	J A 56	J A 88	G	J A 49	J A 47	J A 64	J A 55	J A 64	J A 36	J A 22	J A 22	J A 35	J A 41	J A 39	J A 39
3	25	J A 25	J A 25	J A 31	J A 31	J A 31	J A 31	J A 54	J A 66	J A 79	J A 86	J A 55	J A 62	J A 40	J A 48	J A 43	G	J A 31	J A 31	J A 31	J A 31	22	J A 24	E B 17
4	E B 17	E B 16	E B 16	E B 16	E B 16	J A 20	J A 23	E B 17	28	34	41	J A 55	J A 43	J A 55	G	30	27	G	22	E B 16	E B 16	19	E B 16	J A 21
5	22	J A 54	J A 24	E B 16	E B 16	E B 16	E B 16	E B 15	22	28	J A 46	J A 41	33	J A 48	G	G	J A 38	J A 36	J A 23	J A 30	24	J A 24	J A 49	J A 40
6	J A 40	J A 41	23	20	E B 16	19	19	J A 43	J A 52	J A 104	J A 90	J A 90	J A 72	J A 52	J A 44	J A 34	J A 107	J A 51	J A 38	J A 55	J A 32	J A 43	J A 52	J A 48
7	E B 16	E B 15	J A 31	E B 17	J A 32	J A 24	J A 40	J A 66	J A 51	J A 54	J A 43	J A 58	J A 47	J A 45	J A 42	J A 52	J A 44	20	J A 50	J A 33	J A 51	J A 26	J A 60	J A 52
8	J A 44	J A 33	J A 34	J A 24	J A 28	J A 33	E B 16	J A 56	J A 34	34	J A 47	J A 38	J A 48	J A 49	J A 50	J A 47	J A 62	J A 90	J A 37	J A 54	J A 48	J A 34	110	J A 40
9	J A 33	J A 30	J A 29	J A 21	J A 27	J A 23	E B 16	J A 52	25	30	G	G	G	G	G	G 24	G 24	23	J A 63	J A 44	120	68	72	J A 42
10	J A 41	J A 41	J A 38	E B 16	20	20	E B 16	24	25	J A 42	32	J G 30	G	J G 29	G 24	G 20	J A 34	J A 32	J A 35	J A 35	J A 33	52	52	J A 34
11	J A 39	J A 33	J A 31	21	24	J A 81	J A 21	J A 49	J A 67	J A 44	J A 64	36	35	38	J A 54	33	30	23	J A 34	J A 29	J A 54	J A 79	J A 54	J A 54
12	J A 43	J A 44	J A 34	J A 32	E B 16	B J A 19	J A 24	J A 36	J A 51	J A 38	G	G	G	J A 38	J A 40	G	J A 58	J A 32	J A 28	J A 33	J A 25	J A 43	J A 44	J A 40
13	J A 32	J A 22	J A 22	E B 17	J A 26	J A 26	E B 16	J A 45	J A 52	J A 44	J A 40	J A 50	J A 51	G	J A 42	J A 50	J A 48	J A 30	E B 16	J A 32	J A 54	J A 45	J A 38	J A 25
14	J A 33	J A 40	J A 26	J A 26	E B 16	E B 16	J A 23	21	26	J A 35	G	G	J A 45	J A 52	35	J A 49	35	G	22	J A 23	J A 25	J A 24	J A 27	J A 66
15	E B 16	E B 16	E B 16	J A 28	J A 24	J A 32	J A 24	20	26	32	34	38	J A 41	J A 43	J A 40	J A 33	J A 41	J A 38	J A 31	J A 23	J A 34	J A 32	23	E B 16
16	J A 23	J A 30	J A 41	J A 27	J A 22	E B E 15	E B 15	21	J A 30	29	34	37	36	37	34	G	28	24	E B E 15	E B E 15	E B E 15	E B E 15	E B E 15	E B 15
17	E B 15	J A 25	J A 50	J A 31	J A 25	J A 20	21	23	G	G	G	G	36	G	J A 42	G	G	G	E B 16	E B 15	J A 32	J A 46	33	23
18	J A 24	23	26	E B 16	20	J A 20	E B 15	E B 15	25	29	G	J A 67	J A 63	G	34	J A 55	J A 90	23	J A 25	J A 22	22	J A 31	E B 16	E B 18
19	E B 17	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	34	37	34	32	32	26	22	E B 16	22	E B 16	E B 16	E B 15	E B 15
20	E B 15	E B 15	E B 15	E B 15	J A 23	J A 25	20	E B 16	22	28	33	36	J A 49	38	J A 41	J A 38	J A 46	J A 52	J A 52	J A 38	J A 44	J A 27	J A 27	J A 23
21	E B 16	E B 16	E B 16	20	20	E B 16	E B 15	19	G	29	35	37	J A 58	G	36	34	J A 52	J A 76	J A 71	J A 107	J A 52	J A 35	J A 48	J A 32
22	J A 45	24	E B 17	J A 25	20	20	E B 15	E B 16	24	J A 33	32	36	38	G	G	32	G	24	23	J A 32	J A 34	J A 39	J A 26	E B 16
23	E B 16	J A 23	23	J A 27	J A 27	J A 35	J A 42	J A 24	G	J A 33	37	G	J A 36	J A 41	J A 44	34	J A 44	J A 42	J A 22	J A 24	J A 23	E B 17	25	20
24	20	E B 16	J A E B 33	E B 16	21	23	J A 40	J A 65	J A 36	J A 51	J A 41	35	35	G	35	32	J A 40	24	J A 23	J A 24	22	J A 28	J A 28	21
25	E B 16	E B 16	E B 16	19	E B 16	E B 17	19	21	G	29	36	36	38	36	36	34	31	26	J A E 29	B 16	E B 16	23	J A 26	J A 25
26	J A 24	E B 16	E B 16	E B 16	E B 16	J A 27	J A 33	J A 53	G	J A 32	34	G	G	37	34	J A 63	J A 51	J A 41	J A 46	J A 53	J A 37	J A 53	J A 36	J A 36
27	J A 26	E B 16	E B 16	E B 17	E B 16	E B 16	J A 24	G	22	G	G	G	G	G	J A 38	31	J A 32	24	22	J A 29	J A 53	J A 40	J A 43	J A 33
28	J A 25	E B 15	E B 16	J A 26	22	E B 17	E B 16	J A 22	J A 28	J A 32	G	G	37	35	G	J A 38	31	25	J A 38	J A 39	J A 33	J A 23	23	J A 30
29	24	20	J A 32	J A 32	J A 38	J A E 34	B 16	J A 26	J A 35	J A 49	J A 49	G	37	G	37	32	34	27	J A 23	J A 27	J A 30	J A 27	22	E B 16
30	E B 16	J A 22	J A 24	22	J A 28	20	19	G	25	G	34	35	38	J A 52	J A 44	J A 86	J A 55	J A 40	J A 41	J A 42	26	22	22	E B 17
31	E B 16	E B 15	E B 15	22	E B 16	20	22	23	J A 30	34	36	G	J A 71	J A 54	J A 42	33	30	G	E B 15	J A 34	J A 32	J A 54	J A 54	J A 34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	24	22	J A 24	21	22	J A 20	20	23	26	J A 33	35	36	38	38	37	33	J A 35	27	J A 28	J A 31	J A 32	J A 31	J A 28	J A 30
U Q	J A 33	J A 33	J A 32	J A 27	J A 27	J A 27	J A 24	J A 45	J A 36	J A 44	J A 43	J A 41	J A 49	J A 47	J A 42	J A 47	J A 51	J A 38	J A 38	J A 39	J A 48	J A 43	J A 49	J A 40
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	E B 16	G	G 22	29	G	G	G 35	G	G 34	G 31	30	23	E B 22	23	24	23	23	E B 18

JAN. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	E B 16	E B 16	E B 16	E B 16	18	E B 16	E B 16	E B 16	23	28	30	33	30	30	33	30	21	20	A A 112	A A 85	E B 16	E B 16	E B 16	E B 16
2	20	22	23	A A 43	17	17	17	17	30	32	A A 88	G	36	38	34	36	29	30	E B 16	E B 17	18	A A 41	18	A A 39
3	E B 16	E B 17	E B 16	E B 16	E B 16	A A 31	A A 31	21	A A 66	29	42	36	34	30	30	30	G	18	20	20	E B 15	E B 15	E B 17	E B 17
4	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	25	34	35	A A 55	33	33	G	28	25	G	17	E B 16	E B 16	E B 16	E B 16	16
5	17	E B 17	E B 17	E B 16	E B 16	E B 16	E B 16	E B 15	22	27	34	34	32	30	G	G	26	25	17	24	E B 16	E B 16	E B 16	19
6	18	E B 17	E B 17	E B 16	E B 16	E B 17	E B 17	A A 43	32	29	31	32	35	32	32	G 25	A A 107	23	26	21	E B 16	20	A A 52	19
7	E B 16	E B 15	E B 16	E B 17	E B 16	E B 16	A A 40	22	38	30	34	39	39	42	37	33	24	19	20	20	20	E B 15	A A 60	A A 52
8	25	21	E B 15	E B 16	E B 16	17	E B 16	A A 56	22	29	31	31	38	39	42	32	26	A A 90	21	E B 16	E B 16	E B 16	E B 17	22
9	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	25	G	G	G	G	G	G 23	G 23	18	17	20	A A 120	A A 68	A A 72	A A 42
10	A A 41	22	20	E B 16	E B 16	E B 16	E B 16	E B 16	23	32	30	G 24	G	G 22	G 22	G 19	28	19	22	22	E B 16	E B 16	21	22
11	A A 39	E B 16	E B 16	E B 16	E B 16	E B 16	A A 21	22	A A 67	26	31	34	33	37	40	29	26	20	18	17	18	A A 79	A A 54	A A 54
12	A A 43	A A 44	22	E B 16	E B 16	E B 16	E B 16	26	24	23	G	G	G	32	32	G	39	25	20	A A 33	E B 16	E B 16	18	16
13	E B 16	E B 16	E B 16	E B 17	16	18	E B 16	23	41	33	28	34	41	G	32	32	30	24	E B 16	E B 16	E B 16	24	A A 38	A A 25
14	20	25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	24	27	G	G	31	33	34	28	26	G	16	E B 16	18	E B 16	E B 16	20
15	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	E B 16	24	30	33	35	34	33	34	29	23	20	20	E B 15	E B 15	22	E B 16	E B 16
16	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 15	E B 16	G 18	27	32	34	34	37	34	G	27	22	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
17	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	34	G	30	G	G	G	E B 16	E B 15	21	25	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 15	E B 15	22	27	G	A A 67	46	G	32	36	28	20	18	E B 16	E B 16	18	E B 16	E B 18
19	E B 17	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	33	34	32	32	30	26	20	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15
20	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	E B 16	E B 16	20	26	31	33	39	33	33	29	32	34	33	17	A A 44	E B 16	E B 16	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	G	28	33	37	34	G	35	30	30	31	36	A A 107	22	E B 15	A A 48	17
22	23	E B 17	E B 17	E B 16	E B 16	E B 16	E B 15	E B 16	23	25	30	35	35	G	G	30	G	20	E B 16	A A 32	22	20	E B 16	E B 16
23	E B 16	E B 16	E B 17	E B 16	16	E B 16	A A 42	E B 16	G	25	35	G	33	36	34	32	32	24	21	E B 16	E B 16	E B 17	E B 17	E B 17
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 65	22	31	29	32	33	G	33	30	34	22	18	E B 16	E B 16	20	16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	G	27	34	35	37	35	35	31	29	24	22	E B 16	E B 16	17	20	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	20	23	23	G	26	29	G	G	35	32	37	36	22	40	A A 53	20	20	22	22
27	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	E B 16	G	20	G	G	G	G	G	32	30	27	24	E B 16	24	22	17	21	E B 17
28	E B 16	E B 15	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	20	25	G	G	34	33	G	31	28	23	24	18	17	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	E B 16	18	26	G 23	G 23	G	36	G	34	31	31	23	17	18	19	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 17	E B 17	E B 17	E B 16	E B 16	G	24	G	33	34	36	36	33	34	36	29	27	A A 42	22	E B 17	E B 17	E B 17
31	E B 16	E B 15	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	32	32	G	34	G 33	33	32	28	G	E B 15	19	E B 15	19	E B 15	22
	00	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	E B 16	22	27	31	33	34	G	33	30	28	22	18	18	E B 16	E B 17	E B 17	E B 17
U Q	20	17	17	E B 16	16	17	16	22	25	30	33	35	36	35	34	32	31	24	22	A A 24	20	20	A A 21	A A 22
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	G 25	G	G	G 32	33	G 30	G 28	25	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

JAN. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	16	16	16	16	16	16	15	15	16	16	16	14	16	15	14	14	14	16	16	16	16	16
2	16	16	16	16	15	16	16	16	16	16	16	16	16	17	16	16	16	16	16	17	17	16	16	16
3	16	17	16	16	16	16	16	16	16	17	19	16	17	15	15	15	15	16	15	15	15	15	17	17
4	17	16	16	16	16	16	16	17	15	15	15	15	16	18	16	18	16	14	17	16	16	16	16	16
5	17	17	17	16	16	16	16	15	16	16	15	16	16	17	18	17	16	17	17	16	16	16	16	16
6	16	17	17	16	16	17	17	16	16	16	15	15	15	17	17	16	16	15	17	16	16	15	16	16
7	16	15	16	17	16	16	16	16	18	18	19	18	18	18	18	14	16	15	16	15	15	15	15	15
8	16	17	15	16	16	16	16	16	16	16	17	17	20	16	16	16	16	17	16	16	17	16	17	16
9	16	16	16	16	16	16	16	16	15	15	14	16	16	16	15	16	14	15	15	15	16	17	16	16
10	16	16	16	16	16	16	16	16	16	16	14	16	15	15	14	16	15	15	16	15	16	16	16	16
11	16	16	16	16	16	16	16	17	16	17	17	15	16	16	16	16	16	16	16	17	16	16	16	16
12	15	15	16	16	16	16	16	16	16	16	15	15	17	18	16	16	16	14	15	16	16	16	16	16
13	16	16	16	17	16	16	16	16	16	16	14	16	16	18	16	16	16	16	16	16	16	16	16	16
14	17	17	16	16	16	16	16	15	15	15	16	15	18	17	13	14	16	15	15	16	17	16	16	16
15	16	16	16	15	16	16	16	16	16	16	15	16	16	16	16	15	14	15	16	15	15	15	16	16
16	16	16	16	16	16	15	15	16	14	14	14	16	15	15	17	17	16	16	15	15	15	15	15	15
17	15	16	16	16	16	16	16	16	16	16	16	16	15	15	15	15	15	12	16	15	15	16	16	16
18	16	16	16	16	16	16	15	15	15	14	14	12	20	16	16	16	16	16	16	16	16	16	16	18
19	17	16	15	15	15	15	15	15	15	15	15	15	14	16	15	15	15	15	16	16	16	16	15	15
20	15	15	15	15	15	16	16	16	16	16	16	15	16	16	16	15	15	15	15	15	15	16	16	16
21	16	16	16	16	16	16	15	16	16	14	14	13	15	14	17	16	15	15	15	15	15	15	15	15
22	16	17	17	16	16	16	15	16	15	14	16	15	15	15	18	18	18	16	16	16	16	16	16	16
23	16	16	17	16	16	16	16	16	17	17	16	17	18	16	16	16	17	17	16	16	16	17	17	17
24	16	16	16	16	16	16	16	16	14	15	15	16	18	18	16	16	15	14	16	16	16	15	16	16
25	16	16	16	16	16	17	16	16	16	15	14	15	15	16	16	16	16	15	15	16	16	16	15	16
26	16	16	16	16	16	16	17	18	17	16	15	16	16	17	17	16	17	17	17	15	15	16	16	16
27	16	16	16	17	16	16	16	16	15	15	16	17	15	15	18	17	16	17	16	16	16	17	17	17
28	16	15	16	16	16	17	16	16	16	16	17	17	17	14	15	16	16	15	15	15	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	16	16	17	18	19	19	17	15	15	16	16	16	16	16
30	16	16	17	17	17	16	17	16	16	16	16	16	16	17	17	17	16	16	17	16	16	17	17	17
31	16	15	15	16	16	16	16	16	15	16	17	17	17	16	16	16	16	15	15	15	15	16	15	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	16	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	15	15	15	15	15	15	16	15	15	15	15	15	15	16	16	16

JAN. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	341	396	360	341	386	F	F	340	378	390	367	396	398	334	326	362	385	397	A	A	348	F	F	F
2	F	352	340	A	313	356	362	364	391	379	A	359	384	384	382	387	392	361	380	349	323	A	389	A
3	297	349	349	386	349	A	A	379	A	381	378	372	375	357	371	370	398	403	330	341	365	374	329	329
4	291	308	F	F	323	369	F	368	407	392	356	A	376	342	379	366	368	388	386	326	321	373	302	355
5	334	339	F	F	F	F	F	342	365	329	348	370	351	358	377	358	359	392	375	344	357	295	F	F
6	F	338	334	353	342	304	350	A	372	345	337	368	373	387	376	369	A	376	324	360	376	368	A	334
7	321	F	F	F	313	313	A	348	391	369	362	341	363	366	370	364	390	374	373	371	352	399	A	A
8	328	331	F	326	F	326	F	A	396	383	375	353	375	379	354	386	401	A	358	355	F	F	F	F
9	350	F	F	F	F	F	F	347	391	391	381	380	357	358	368	366	390	413	373	325	A	A	A	A
10	A	346	346	F	364	406	364	354	390	382	377	362	368	362	362	371	373	404	317	332	327	343	F	350
11	A	301	306	347	373	319	A	376	A	384	350	382	325	353	369	378	379	397	391	334	331	A	A	A
12	A	A	352	F	F	358	345	391	395	390	350	337	357	352	388	351	382	387	358	A	353	361	F	F
13	F	F	F	F	384	350	336	340	381	373	368	371	359	379	380	388	392	407	384	302	336	365	A	A
14	336	336	352	337	F	357	394	341	409	387	362	339	350	340	346	357	385	390	365	312	328	364	333	F
15	F	F	F	F	F	F	356	353	381	365	361	317	348	376	402	385	395	356	387	397	321	371	326	327
16	F	F	333	379	361	341	338	353	399	402	383	371	348	387	357	352	359	364	338	350	388	397	337	314
17	F	F	F	F	F	F	F	380	407	394	373	349	347	366	359	344	393	344	385	341	342	296	389	319
18	319	319	321	321	360	459	302	345	372	372	382	A	350	398	368	368	373	355	373	377	358	336	308	317
19	352	362	389	F	F	356	339	358	377	391	343	370	379	368	364	374	378	378	379	405	308	328	334	319
20	321	321	330	343	350	F	316	356	402	379	350	364	353	390	348	365	423	380	428	281	A	321	344	357
21	F	324	305	335	334	F	360	353	398	350	352	374	377	358	344	388	349	384	418	A	403	309	A	314
22	335	340	341	341	321	321	405	369	386	356	346	342	352	360	365	371	362	384	406	A	375	348	348	316
23	F	325	330	330	351	363	A	349	376	375	386	368	355	358	308	387	368	403	336	350	369	370	297	317
24	324	341	346	319	334	334	313	A	371	369	378	363	367	368	374	379	317	373	376	367	314	365	392	295
25	325	358	296	290	314	328	313	382	414	362	349	361	363	369	357	334	408	383	376	372	316	341	367	318
26	F	F	282	F	343	355	330	329	377	385	377	368	356	360	371	377	337	371	387	A	337	386	319	322
27	316	F	F	F	F	297	317	333	361	370	381	386	387	327	327	372	366	378	375	325	364	327	365	343
28	325	326	327	318	304	294	343	406	385	372	353	371	367	353	272	334	366	383	360	347	326	366	F	F
29	F	F	F	F	F	F	F	335	373	370	372	355	345	331	332	378	376	369	376	354	350	332	353	358
30	313	332	333	333	320	381	394	363	376	362	390	371	371	372	342	348	378	392	388	A	328	358	349	347
31	310	314	339	334	F	335	346	365	361	403	397	393	342	328	348	373	372	353	358	325	322	336	348	330
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	21	21	17	20	22	20	28	29	31	30	29	31	31	31	31	30	30	30	25	28	26	19	20
MED	324	336	334	335	342	346	344	354	385	379	368	368	359	360	364	370	378	383	376	347	340	360	344	324
U Q	335	348	348	345	360	358	361	368	397	390	378	372	375	376	374	378	392	392	386	364	361	370	365	345
L Q	316	322	324	324	320	321	324	344	374	369	350	354	350	353	346	358	366	371	358	326	324	332	326	317

JAN. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	U L 394	U L 419	L	U L 422	U L 372	L			A					
2											A	L	A	A	L	A								
3									A				U L 405	U L 390	L	L								
4												A	U L 399	U L 395	L									
5										L	A		L	U L 391	L	L	L							
6								A	A	L	U L 395	U L 406	U L 388	L	U L 371	L	A							
7									A		L	A	A	A	A									
8								A			U L 385	L	A	A	A	A	A	A						
9											L	L	U L 422	U L 407	U L 391	L								
10										A	L	L	U L 388	384	U L 403	L	A							
11									A	L	L	L	U L 376	L	A	L								
12												U L 401	413	U L 410		L								
13									A	A	L	U L 404	A	405	L	A								
14										L	U L 387	417	U L 417	U L 404	U L 431	L								
15											U L 370	427	U L 378	U L 392		L								
16											L	U L 429	U L 407	A	393	L	A							
17										L		U L 388	U L 372	380	L	L	L							
18											L	A	A	L	L	A	L							
19									L	L	L	U L 394	U L 405	U L 411	405	L								
20											U L 398	406	A	U L 385	U L 411	L								
21									L		U L 392	U L 410	U L 397	U L 390	U L 424	A				A				
22										U L 406		U L 395	393	404	400	L	L							
23										L	A	U L 412	U L 404	U L 413	U L 407									
24								A			L	U L 405	U L 372	409	L		A							
25											L	L	L	406	U L 382	L								
26										L	L	U L 410	U L 404	L	L	A	A			A				
27										L	L	400	404	423	L	L	L							
28										L	L	L	L	L	U L 391	L	L							
29										L	U L 405	U L 400	L	409	L	A								
30								L		L	A	L	L	L	L	U L 450								
31									L			U L 405	U L 409	U L 409	U L 388	400								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	8	18	19	21	14	2								
MED										U L 406	U L 393	U L 406	U L 404	U L 405	U L 396	425								
U Q											U L 396	U L 412	U L 407	U L 410	U L 407									
L Q											U L 386	U L 400	U L 388	U L 390	U L 388									

JAN. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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										254	246	216	216	276	288	240			A					
2											A	250	236	232	248	E A 238								
3									A				238	254	254	254								
4												A	254	272	240									
5										276	246		254	246	232	250	250							
6								A	224	254	254	236	236	236	248	248	A							
7									236		236	244	228	212	226									
8								A			236	240	224	226	E A 256	222	216	A						
9											230	242	258	254	238	240								
10										236	236	252	252	252	244	246	214							
11									A	240	268	230	278	266	256	234								
12												282	264	256		262								
13									E A 258	232	264	240	246	228	248	234								
14										246	266	296	286	240	246	260								
15											268	304	254	224		230								
16											228	254	278	238	258	244	236							
17										208		296	278	232	240	258	220							
18											232	A	272	216	250	232	256							
19									214	234	278	246	246	246	240	226								
20											290	264	270	228	270	274								
21									208		272	248	230	240	278	230				A				
22										244		266	236	236	268	262	240							
23										234	228	248	266	254	308									
24								A			244	252	244	238	238		E A 262							
25											262	262	256	256	264	268								
26										230	242	244	260	238	240	228	E A 242			A				
27										232	220	220	248	270	288	234	240							
28										242	242	242	248	260	454	254	254							
29										222	234	266	252	320	266	230								
30								242		260	234	254	268	268	276	274								
31									216			240	300	320	250	246								
	00	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	16	24	27	31	31	29	27	11							
MED								242	218	238	243	248	254	246	250	244	238							
U Q									236	250	265	264	268	260	269	258	254							
L Q									214	232	234	240	238	232	240	232	220							

JAN. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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 B 238	200	220	220	220	E B 272	E B 272	220	218	218	202	202	178	160	208	208	216	204	A	A	202	202	E B 220	E B 244
2	E A 270	216	216	A	E A 378	E A 314	E A 288	202	204	212	A	200	A	A	198	A	218	218	186	186	E A 238	A	208	A
3	E B 270	E B 240	E B 254	208	E B 288	A	A	220	A	214	214	194	194	188	196	190	204	194	224	226	214	198	E B 238	E B 260
4	E B 262	E B 232	E B 270	E B 242	216	230	190	190	190	204	216	A	178	178	174	190	222	202	176	E B 236	E B 236	198	222	212
5	E B 232	E B 232	E B 232	218	E B 238	E B 240	E B 248	196	202	190	A	200	170	182	182	182	200	200	200	E A 230	218	E B 250	E B 242	E A 252
6	E B 240	E B 258	E B 232	210	196	E B 288	E B 286	A	A	200	200	198	202	194	178	194	A	194	E A 274	226	192	196	A	E A 268
7	E B 250	224	E B 254	E B 232	202	228	A	224	A	218	216	A	A	A	A	214	210	202	202	202	202	182	A	A
8	E A 274	E A 246	216	228	222	E A 240	228	A	206	208	208	188	A	A	A	A	A	A	224	208	206	202	E B 260	E A 288
9	E A 232	E B 268	E B 234	E B 246	E B 246	E B 252	E B 238	208	204	204	196	186	182	182	182	182	204	188	192	214	A	A	A	A
10	A	E A 272	E A 258	E B 256	208	190	E B 188	210	210	A	188	188	188	214	192	184	A	192	E A 296	E A 280	228	E B 230	210	E A 280
11	A	E B 278	E B 268	210	204	E B 274	A	E A 236	A	196	196	198	198	218	A	200	206	200	194	E A 242	E A 234	A	A	A
12	A	A	E A 262	208	200	E B 262	E B 318	226	212	206	196	196	176	190	214	196	216	196	E A 234	A	224	204	E A 256	E A 266
13	208	E B 262	E B 248	E B 236	E B 240	E A 294	E B 284	E A 262	A	A	194	204	A	174	186	A	206	196	182	226	222	222	A	A
14	E A 278	E A 284	E B 248	E B 248	210	208	188	208	202	200	192	192	190	190	180	180	206	196	194	E B 252	E A 248	208	226	E A 234
15	E B 254	E B 234	E B 286	E B 252	E B 230	202	202	220	208	208	202	186	188	198	216	202	194	206	202	188	220	E A 230	E B 236	E B 264
16	E B 284	E B 266	E A 266	202	200	186	E B 252	210	210	210	204	202	200	A	200	190	A	210	204	E B 204	196	190	190	E B 278
17	E B 234	220	E B 242	E B 250	E B 230	202	E B 236	186	186	178	192	192	192	186	212	H 170	192	192	192	E B 190	E A 230	222	212	E B 234
18	E B 258	E B 274	E B 264	E B 262	226	184	E B 262	218	212	212	202	A	A	194	194	A	212	206	192	192	208	E A 244	228	E B 246
19	E B 232	206	206	206	E B 234	220	E B 230	188	164	182	182	182	182	182	182	198	206	204	196	180	E B 238	E B 238	E B 234	E B 226
20	E B 236	E B 240	E B 240	212	222	224	E B 274	204	198	198	198	188	A	204	196	194	210	210	200	E A 308	A	E B 262	E B 248	204
21	210	E B 210	E B 210	214	214	E B 214	214	214	178	200	218	218	202	196	192	A	210	194	194	A	210	E B 248	A	E A 246
22	E A 308	E B 250	E B 258	E B 256	E B 230	220	204	204	204	172	208	208	210	198	192	206	198	198	184	A	222	E A 246	206	E B 266
23	E B 234	E B 234	E B 234	E B 238	228	228	A	228	208	196	A	196	196	196	194	216	216	200	228	218	200	200	E B 242	E B 262
24	E B 262	E B 232	214	E B 266	E B 256	242	E B 246	A	212	212	194	194	194	194	194	194	A	208	198	198	224	216	182	E B 274
25	E B 240	216	E B 242	E B 242	E B 242	E B 270	E B 270	206	198	198	210	210	214	202	224	200	198	198	198	196	E B 240	228	216	E B 248
26	E B 282	E B 248	222	E B 290	222	E B 238	E A 272	E B 232	220	188	182	188	188	200	206	A	A	204	218	A	E A 276	210	E A 272	E A 284
27	E B 266	E B 250	E B 250	E B 234	E B 258	E B 258	E B 258	E B 232	184	196	194	192	192	174	184	184	186	204	194	E A 244	214	E B 242	216	228
28	E B 226	E B 232	E B 236	E B 236	E B 274	E B 274	E B 240	194	194	186	182	170	202	202	194	204	220	208	196	210	226	214	E B 220	E B 234
29	E B 246	E B 248	E B 262	E B 264	234	E B 246	E B 244	222	212	174	178	178	190	178	214	A	214	204	194	200	218	218	210	E B 210
30	E B 228	E B 254	E B 246	E B 246	E B 246	206	192	192	182	168	A	184	210	210	206	206	220	206	188	A	E B 232	194	204	208
31	E B 258	E B 258	E B 228	E B 246	E B 240	E B 230	204	204	170	200	200	184	180	196	196	198	190	190	188	E A 248	E B 236	E B 230	214	E A 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	28	30	31	30	31	30	27	28	26	29	27	28	25	27	28	24	25	30	30	25	29	28	25	26
MED	E B 248	E B 243	E B 242	E B 237	U 216	E 234	E B 244	208	204	200	198	193	192	194	194	195	206	201	195	U 203	212	207	213	E 248
U Q	E 268	E B 258	E B 258	E B 250	E B 242	E B 262	E B 272	223	210	209	208	200	201	200	206	203	216	206	204	E A 239	E 235	E B 234	E B 240	E A 266
L Q	E B 233	232	228	214	214	214	204	203	190	189	192	187	182	182	185	187	199	196	192	197	209	201	210	234

JAN. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	120	120	A	A	A	A	120	120	A	B	B					
2								B	A	A	A	112	A	A	A	A	A							
3								B	A	A	A	A	A	A	A	A	112	A						
4								B	114	114	112	A	A	A	112	110	110	114						
5									114	112	A	A	A	A	112	112	A	A						
6								A	A	A	A	A	A	A	A	108	A	A						
7								A	A	A	A	A	A	A	A	A	A	B						
8								A		112	A	A	A	A	A	A	A	A						
9								A	118	124	114	114	110	112	112	108	110	A	A					
10								B	110	A	110	110	110	110	108	108	A	A						
11								A	A	A	A	108	110	110	110	110	110	B						
12								B		A	110	112	112	A	A	112	A	A						
13								B	A	A	A	A	A	108	A	A	A		B					
14								B	108	A	110	110	A	A	110	A	110	110	B					
15								B	108	108	112	112	112	A	A	A	A	A	A					
16								B	112	112	112	110	110	110	108	108	108	B	B					
17								B	108	108	108	108	108	108	A	108	108	108	B					
18								B	108	108	108	A	108	108	108	A	A	B						
19								B	110	110	110	110	110	112	112	112	112	122	B					
20								B	122	122	116	116	A	A	A	A	A		B					
21								B	116	116	116	116	A	116	116	116	A	A	B	A				
22								B	112	A	112	112	112	112	112	112	112	112	B					
23									110	A	110	110	A	A	A	110	A	A	B					
24								B	A	A	A	110	110	110	110	110	A	114	B					
25								B	114	114	114	114	114	110	110	110	110	110	B					
26							B	A	110	A	A	110	110	110	110	A	A	A	B	A				
27							B	108	110	110	112	112	112	112	A	A	A	112	B					
28							B		A	A	112	108	108	108	108	A	110	108	B					
29							B		A	124	124	114	114	114	116	116	116	114	B					
30							B	114	114	114	114	114	114	A	A	A	A	A	B					
31							B	B	114	122	122	122	A	126	A	118	118	118	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	20	17	20	22	17	17	17	18	13	11						
MED								111	112	114	112	112	110	110	110	110	110	112						
U Q									114	121	114	114	112	112	112	112	112	114						
L Q									110	110	110	110	110	109	109	108	110	110						

JAN. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	96	76	98	98	96	96	96	96	118	118	100	100	106	104	152	152	98	98	94	86	86	84	84	96
2	92	92	92	92	92	116	116	104	102	102	96	G	96	94	94	94	94	94	94	94	92	92	92	92
3	92	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	G	90	90	88	88	88	88	B
4	B	B	B	B	B	88	88	B	136	136	114	92	92	92	G	138	142	G	86	B	B	86	B	86
5	84	86	86	B	B	B	B	B	136	136	100	96	94	94	G	G	94	88	88	88	88	96	96	96
6	96	96	96	96	B	96	96	98	98	98	98	98	96	96	96	94	86	84	82	82	86	86	84	84
7	B	B	96	B	96	118	100	100	96	96	96	96	96	96	96	96	96	138	88	88	88	106	90	86
8	88	88	88	96	88	90	B	90	90	108	108	108	102	90	90	88	88	88	96	96	96	90	90	90
9	88	92	92	92	92	92	B	96	118	120	G	G	G	G	G	86	90	102	102	102	90	90	90	88
10	80	80	80	B	80	84	B	96	140	84	144	84	G	84	84	82	84	84	84	84	92	92	92	92
11	92	90	90	90	94	94	106	98	98	98	100	132	140	122	108	112	112	116	104	102	94	88	88	86
12	86	86	86	88	B	142	124	102	100	98	G	G	G	96	96	G	96	96	118	118	118	116	98	96
13	92	90	84	B	124	116	B	106	98	94	94	92	88	G	88	88	88	88	B	106	102	94	88	82
14	80	78	78	78	B	B	90	122	136	96	G	G	94	94	130	82	112	G	92	92	92	96	96	100
15	B	B	B	94	94	94	94	94	162	162	154	122	116	98	98	98	92	92	94	94	92	92	92	B
16	96	108	96	96	96	B	B	134	84	148	140	168	152	142	134	G	138	126	B	B	B	B	B	B
17	B	92	92	92	90	90	90	90	G	G	G	G	146	G	100	G	G	G	B	B	100	100	100	100
18	98	94	94	B	94	94	B	B	162	162	G	96	114	G	142	86	86	122	86	86	86	86	B	B
19	B	B	B	B	B	B	B	B	G	G	G	144	144	108	144	144	144	136	B	80	B	B	B	B
20	B	B	B	B	80	88	88	B	140	140	114	112	102	102	100	100	96	90	90	88	88	86	86	86
21	B	B	B	102	102	B	B	102	G	152	152	176	96	G	154	140	98	98	98	98	98	98	102	102
22	90	96	B	96	96	96	B	B	156	90	130	130	130	G	G	144	G	118	106	94	92	86	86	B
23	B	100	100	100	100	100	98	98	G	104	170	G	102	102	102	108	108	102	102	96	96	B	96	86
24	86	B	90	B	98	98	98	94	94	92	92	122	130	G	124	124	98	142	132	120	120	112	112	94
25	B	B	B	102	B	B	102	102	G	142	156	164	162	144	144	132	122	120	96	B	B	94	94	90
26	94	B	B	B	B	94	92	90	G	90	90	G	G	118	130	90	90	90	100	94	94	94	90	90
27	90	B	B	B	B	B	98	G	116	G	G	G	G	G	100	104	104	126	126	96	96	96	94	94
28	92	B	B	92	92	B	B	92	92	92	G	G	136	138	G	98	110	124	106	106	102	92	92	90
29	90	88	88	88	88	98	B	94	94	94	94	G	142	G	134	134	114	114	100	98	92	92	86	B
30	B	86	92	92	92	92	96	G	148	G	140	118	150	88	88	88	88	88	88	84	84	84	84	B
31	B	B	B	98	B	102	102	102	94	138	138	G	114	100	100	132	124	G	B	98	98	98	98	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	20	19	20	20	21	23	19	23	25	27	23	20	26	22	26	27	28	27	26	27	27	28	27	23
MED	91	90	91	93	94	94	96	98	102	102	108	110	110	97	100	98	97	98	95	94	92	92	92	90
U Q	93	94	95	97	96	100	102	102	138	138	140	131	140	108	134	132	112	122	102	98	98	96	96	96
L Q	87	86	87	91	90	90	90	94	94	94	96	96	96	94	96	88	90	90	88	88	88	87	88	86

JAN. 2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2019 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	F1	F1	F1	F2	F3	F2	L2	L2	C2	C2	L2	L3	L2	L3	H2	H2	L3	L3	L5	F6	F5	F2	F2	F2
2	F2	F5	F3	F4	F3	F3	F3	L3	L6	L4	L6		L4	L4	L4	L5	L4	L6	F1	F2	F3	F8	F2	F4
3	F1	F2	F2	F2	F2	F2	F2	L4	L4	L4	L4	L3	L3	L2	L2	L2		L2	F2	F2	F2	F2	F1	
4						F1	F1		H3	H3	C3	L6	L3	L2		C1	H1		F1			F1		F2
5	F2	F1	F1						H2	H2	L4	L4	L2	L2			L3	L4	L1	F2	F2	F2	F3	F3
6	F2	F2	F2	F1		F1	F1	L6	L6	L4	L3	L3	L5	L3	L2	L2	L5	L4	F4	F3	F1	F2	F2	F2
7			F2		F2	F1	F7	L5	L7	L4	L3	L4	L3	L3	L3	L3	L3	HL22	F3	F3	F2	F2	F4	F5
8	F4	F2	F2	F2	F2	F2		L6	L4	C2	L2	L3	L3	L2	L4	L3	L3	L6	F4	F2	F2	F2	F2	F2
9	F2	F2	F2	F2	F2	F2		L3	C2	C2						L2	L2	L2	L3	F4	F5	F7	F5	F3
10	F6	F3	F2		F1	F1		L1	H2	L6	H1	L3		L3	L1	L2	L2	L3	F3	F3	F3	F3	F2	F3
11	F5	F2	F2	F1	F2	F2	F4	L7	L8	L3	L3	HL13	H2	C2	C2	C2	C3	CL21	F3	F4	F6	F6	F8	F4
12	F3	F2	F2	F2		F2	F3	L8	L3	L2				L2	L3		L5	L4	F4	F7	F6	F3	F5	F3
13	F2	F2	F2		F3	F3		L7	L5	L6	L3	L3	L5		L3	L4	LC32	L5		L1	F3	F3	F5	F2
14	F2	F2	F2	F2			F2	C1	C2	L2			L3	L4	HL12	L3	C2		L1	F2	F2	F1	F1	F2
15				F2	F2	F1	F1	L2	H2	H3	H2	C2	C2	L2	L2	L2	L2	L3	L3	F2	F2	F2	F2	
16	F1	F1	F5	F3	F1			C1	L3	HL23	H2	H1	H2	H2	C1		H2	C2						
17		F3	F3	F2	F2	F2	F2	L1					H1		L2						F5	F2	F4	F1
18	F2	F2	F1		F2	F2			H2	H1		L6	C6		H1	L4	L4	C2	L4	F3	F2	F2		
19												H1	H1	C1	H1	H1	H2	C1		F1				
20					F4	F2	F2		H2	H2	C1	C1	L2	L2	L2	L3	L6	L6	L4	F4	F4	F3	F2	F2
21				F1	F1			L1		H2	H2	H1	L3		H2	H2	L3	L5	L5	F4	F5	F2	F6	F2
22	F6	F2		F3	F1	F1			H2	L3	H2	H2	H2			H1		C2	L2	F6	F5	F5	F1	
23		F2	F2	F5	F8	F4	F4	F4		L2	H2		L1	L2	L2	H1	L5	L4	L5	F3	F3		F1	F1
24	F1		F5		F3	F3	F6	L7	L4	L5	L2	CL12	C1		C1	C1	L2	HL23	H2	F3	F1	F3	F2	F1
25				F1			F1	F1		H2	H3	H2	H1	H2	H2	H2	C2	C2	L5			F3	F3	F2
26	F2					F5	L6	L6		L3	L2			C2	C1	L4	L6	L3	L5	F7	F6	F5	F5	F3
27	F2						L2		C2						L2	L2	L3	C2	C1	F4	F4	F2	F2	F1
28	F1			F1	F1			L1	L6	L3			H1	H1		L2	C2	C2	L4	F2	F3	F2	F1	F2
29	F2	F2	F2	F2	F2	F2		F3	L4	L2	L2		H1		C1	C1	C2	C2	L1	F3	F2	F1	F1	
30		F2	F2	F2	F2	F1	L1		H1		H2	C1	H1	L3	L4	L5	L5	L6	L8	F5	F2	F2	F2	
31				F1		F1	L3	L1	L1	H2	C1		L2	L3	L2	C1	C3			F4	F2	F2	F3	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JAN. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	X 33	X 33	X 32	X 27	X 23	26	28													X 39	X 40	X 37	X 34	X 33
2	X 34	X 48	X 48	A	A	A	A													X 35	X 34	X 37	X 28	X 28
3	X 30	X 30	X 34	X 27	25	A	X 23													X 39	X 44	X 44	45	39
4	X 35	X 37	36	39	50	X 27	X 24													A	X 37	X 43	X 37	X 30
5	X 31	X 33	X 33	X 34	X 29	X 25	28													X 40	X 40	A	A	O X 32
6	X 34	X 33	X 34	A	A	A	27													X 52	X 66	X 33	X 34	X 32
7	X 33	X 33	38	39	X 34	X 24	X 25													X 46	X 43	A	X 33	X 29
8	X 31	X 32	X 29	34	35	X 31	28													X 40	X 39	X 34	X 30	C
9	C	C	C	C	C	C	C													X 31	A	38	X 32	X 32
10	35	X 32	X 31	X 29	X 34	X 28	B					C	C							X 37	X 44	X 50	X 29	X 28
11	X 28	X 28	36	X 34	X 26	X 20	X 22													X 30	A	A	A	A
12	33	A	A	A	30	X 24	A													X 29	X 32	X 37	39	34
13	39	39	39	33	37	31	X 19													A	A	A	A	41
14	39	X 31	X 32	X 31	X 30	X 26	X 21													X 33	X 40	A	X 32	X 30
15	X 29	34	32	X 34	X 32	A	A													X 34	X 28	X 31	X 28	X 27
16	X 31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					X 42	X 33	33	33	X 31
22	X 29	X 29	X 27	X 29	X 32	X 26	X 21													A	A	X 35	X 36	X 32
23	X 32	X 32	X 33	X 31	X 30	X 31	X 23													A	X 51	X 54	X 37	X 34
24	X 35	X 38	X 34	X 32	X 33	X 31	X 28													X 44	X 40	X 48	X 31	X 27
25	X 30	X 32	X 32	X 31	X 33	28	X 26													X 47	X 38	X 39	X 41	X 33
26	X 32	X 36	X 33	32	34	31	28													X 40	X 40	X 38	42	37
27	44	43	39	38	X 29	X 25	X 25													X 57	X 40	X 34	X 34	36
28	X 32	X 31	X 32	X 30	32	34	34													X 36	X 36	X 37	X 36	X 35
29	X 31	34	38	36	35	33	X 32													X 40	X 34	X 36	X 39	X 35
30	X 34	X 32	X 31	X 31	X 33	X 32	X 26													X 36	X 40	X 43	X 36	X 30
31	X 28	X 29	X 30	X 31	X 31	36	31													X 43	X 43	X 45	X 40	X 37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	23	23	21	22	20	20													22	22	21	23	24
MED	X 32	X 33	X 33	X 32	X 32	X 28	X 26													X 40	X 40	X 37	X 34	X 32
U Q	34	X 36	36	34	34	31	28													X 43	X 43	X 44	39	35
L Q	X 30	X 31	X 32	X 30	X 30	X 26	X 23													X 35	X 36	X 34	X 32	X 30

JAN. 2019 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	27	27	26	21	17	F 19	F 19	22	46	54	71	88	77	J R 74	73	84	64	54	39	33	34	31	28	27
2	28	42	42	A	A	A	A	26	48	50	56	61	64	56	54	50	49	44	A	29	28	31	22	22
3	24	24	28	21	F 18	A	17	24	47	55	67	A	60	A	72	81	64	46	33	33	38	38	F 35	F 28
4	29	31	27	F 24	F 30	21	18	24	50	49	49	45	A	55	58	59	56	66	48	A	31	37	31	24
5	25	27	27	28	23	19	F 21	29	46	52	76	78	J R 79	86	92	57	59	61	42	34	34	A	A	26
6	28	27	28	A	A	A	F 19	A	45	A	73	78	78	77	68	70	54	49	38	46	60	27	28	26
7	27	27	F 28	F 30	28	18	19	33	54	46	61	75	119	116	88	67	52	44	44	40	V 37	A	27	23
8	25	26	23	F 24	F 26	25	F 20	26	48	53	68	82	84	67	60	60	50	46	30	34	33	28	24	C
9	C	C	C	C	C	C	C	24	48	46	52	60	70	91	H 92	74	53	50	A	25	A	F 28	26	26
10	F 26	26	25	23	28	22	B	24	46	50	65	C	C	J R 102	104	92	70	53	32	31	38	44	23	22
11	22	22	F 25	28	20	J B 14	J B 16	23	47	48	53	62	67	70	J R 76	63	52	48	A	24	A	A	A	A
12	F 25	A	A	A	F 19	18	A	A	44	47	54	52	64	73	62	51	51	48	31	23	26	31	F 27	F 21
13	F 20	F	F 22	F 20	F 19	F 17	J B 13	22	48	58	69	58	63	86	90	70	A	A	A	A	A	A	A	F 31
14	F 26	25	26	25	24	20	J B 15	24	43	47	58	60	70	89	90	69	56	45	34	27	34	A	26	24
15	23	F 24	F 23	28	26	A	A	22	43	54	58	48	76	99	85	69	52	51	53	28	22	25	22	21
16	25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	58	54	52	A	36	27	F 25	F 23	F 24
22	23	23	21	23	26	20	J B 15	25	42	46	59	84	114	99	78	76	60	52	41	A	A	29	30	26
23	26	26	27	25	24	25	17	24	46	57	56	50	53	56	54	58	71	61	44	A	45	48	31	28
24	29	32	28	26	27	25	21	26	50	53	60	61	64	63	52	53	54	57	48	38	34	42	25	21
25	24	26	26	25	27	F 22	20	27	48	48	55	72	H 64	67	H 68	76	66	59	51	41	32	33	34	26
26	26	30	27	F 20	F 20	F 23	F 18	28	52	63	61	59	64	71	62	67	50	54	50	34	34	32	26	22
27	F 23	F 25	F 27	F 27	23	19	19	22	49	67	64	56	61	50	71	82	72	H 58	A	51	U A 34	28	28	F 25
28	26	25	26	24	F 24	F 22	F 23	27	48	51	64	66	69	62	64	J R 86	83	71	45	30	30	31	30	29
29	25	F 24	F 25	F 25	F 23	F 26	26	28	47	50	57	66	64	57	66	70	62	52	48	34	28	30	33	29
30	28	26	25	25	27	26	20	24	44	49	54	67	64	55	58	54	58	73	40	30	34	37	30	24
31	22	23	24	25	25	F 26	F 21	28	46	49	58	54	49	57	64	70	78	53	A	37	37	39	34	31
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	22	23	21	22	20	20	23	25	24	25	23	23	24	25	26	25	25	19	22	22	21	23	24
MED	25	26	26	25	24	22	19	24	47	50	59	61	64	70	68	69	56	52	42	34	34	31	28	26
U Q	27	27	27	26	27	25	F 20	27	48	54	66	75	77	88	86	76	65	58	48	37	37	38	31	28
L Q	24	24	25	23	F 20	19	J B 17	24	46	48	56	56	64	57	61	58	52	48	34	29	30	28	25	22

JAN. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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										380	404	404	420	420	416	372	348	232						
2										L	A	A	416	L 416	L 400	U L 388	A		A					
3										L	A	A	A	A	408	392	352							
4										U L 320	U L 396		A	416	412	384	U L 380							
5										L	396	396	U L 456	424	408	A	A							
6								A		A	A	A	412	416	A	392	L							
7										A	A	428	A	A	416	L 408								
8										L	400	416	420	420	420	396								
9											U L 404	416	416	420	408	392	L		A					
10										L	400	C	C	416	404	392	348							
11										L	U L 416	408	416	412	408	A	U L 344		A					
12								A		L	400	404	412	408	400	400	A							
13										L	400	A	416	416	A	A	A	A	A					
14											396	404	428	412	416	388	L							
15										L	404	L 424	396	420	416	396	352	L 252						
16								C	C	C	C	C	C	C	C	C	C	C	C					
17								C	C	C	C	C	C	C	C	C	C	C	C					
18								C	C	C	C	C	C	C	C	C	C	C	C					
19								C	C	C	C	C	C	C	C	C	C	C	C					
20								C	C	C	C	C	C	C	C	C	C	C	C					
21								C	C	C	C	C	C	C	C	400	360		A					
22											404	416	412	420	412	396	U L 360							
23										L	408	A	424	424	412	396	A							
24											L 396	420	428	424	L 416	L 400	372							
25											U L 424	408	428	416	412	396	L	L						
26										A	404	424	420	424	428	408	A							
27										L 380	L	424	424	U L 416	420	408	L		A					
28											L 416	420	428	432	428	416	376							
29									L	U L 376	U L 420	420	428	L 428	428	L 400	L							
30										328	428	424	432	428	420	412	U L 388							
31									L	L	412	424	U L 436	432	416	408	L		A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										5	20	18	21	23	23	23	11	2						
MED										L 376	404	418	420	420	416	396	360	242						
U Q										380	L 414	424	428	424	420	408	U L 376							
L Q										324	400	408	416	416	408	392	348							

JAN. 2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	A	A	A	A	A	A	A	A	A	A	A					
2								B	A 248		A	A	A	A	A	A	A	A	A					
3								B	A	A	A	A	A	A	A	A	A	A	A					
4								B	196	276	300	A	A	A	A	A	A	A	A					
5								B	200	256		A	A	A	A	A	A	A	A					
6								A	A	A	A	A	A	A	A	A	A	184	A					
7								B	A	A	A	A	A	A	A	A	A	A	A					
8								B	196	256	A	A	A	A	A	A	A	A	A					
9								B	A	A	A	308	312	A	A	A	260	180	A					
10								B	192	236	A	C	C	A	A	A	232	176	A					
11								B	A	A	A	308	A	324	A	288	248	196	A					
12								A	A	A	A	A	A	A	A	A	A	A	B					
13								B	A	A	A	A	A	A	A	A	A	A	A					
14								B	204	252	284	300	A	A	A	A	240	196	A					
15								B	A	U A 256	A	304	316	A	304	A	A	A	B					
16								C	C	C	C	C	C	C	C	C	C	C	C					
17								C	C	C	C	C	C	C	C	C	C	C	C					
18								C	C	C	C	C	C	C	C	C	C	C	C					
19								C	C	C	C	C	C	C	C	C	C	C	C					
20								C	C	C	C	C	C	C	C	C	C	C	C					
21								C	C	C	C	C	C	C	C	284	A	204	A					
22								B	200	252	284	300	308	316	A	284	252	212	A					
23								B	A	A	292	308	316	316	A	A	A	A	B					
24								B	180	A	284	308	320	324	320	300	264	A	A					
25								B	184	248	288	296	320	312	296	288	A	A	B					
26								B	A	A	296	304	324	324	316	A	A	A	A					
27								B	192	252	288	304	328	316	U A 308	U A 284	A	212	A					
28								B	A	A	300	316	320	320	304	A	A	216	A					
29								B	A	A	A	316	316	308	308	284	264	A	B					
30								B	208	264	296	320	328	A	A	308	A	A	A					
31								B	220	A	A	A	336	A	A	A	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									11	11	10	13	12	9	7	8	7	9						
MED									196	252	290	308	320	316	308	286	252	196						
U Q									204	256	296	312	326	324	316	294	264	212						
L Q									192	248	284	302	316	314	304	284	240	182						

JAN. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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 26	J A 29	J A 49	J A 38	J A 27	J A 30	J A 47	J A 51	J A 42	J A 39	J A 44	J A 38	J A 50	J A 52	J A 70	J A 70	J A 50	J A 21	J A 53	J A 39	20	20	J A 22	J A 22
2	J A 19	J A 22	J A 29	J A 42	J A 29	J A 33	J A 51	J A 50	J A 26	J A 34	J A 52	J A 109	J A 50	J A 42	J A 41	J A 37	J A 38	J A 33	J A 72	J A 31	J A 36	J A 21	19	20
3	J A 22	J A 38	J A 27	J A 17	J A 18	J A 22	J A 32	J A 29	J A 31	J A 48	J A 54	J A 75	J A 103	J A 87	J A 91	J A 51	J A 48	J A 42	J A 53	J A 40	J A 36	J A 34	J A 32	E B 16
4	E B 16	E B 16	J A 20	E B 16	E B 16	J A 18	17	J A 17	24	J A 31	38	J A 43	J A 138	J A 70	J A 40	J A 46	J A 30	29	J A 26	J A 34	J A 33	J A 36	J A 20	J A 17
5	J A 27	20	20	J A 20	J A 17	19	E B 16	J A 17	G	29	36	35	J A 61	J A 41	J A 36	J A 43	J A 38	38	J A 34	31	J A 31	30	53	53
6	J A 39	J A 32	J A 42	J A 66	J A 47	J A 54	J A 31	J A 28	J A 158	J A 90	J A 88	J A 110	J A 80	J A 52	J A 118	J A 62	J A 34	22	J A 32	J A 41	J A 100	J A 40	19	19
7	J A 19	E B 16	E B 16	E B 16	E B 15	20	E B 16	J A 24	J A 24	J A 48	J A 79	J A 47	J A 53	J A 50	J A 41	J A 68	J A 51	J A 53	J A 29	J A 32	J A 21	J A 27	J A 63	J A 36
8	J A 30	E B 16	J A 17	J A 22	J A 18	J A 32	J A 20	E B 16	24	28	J A 34	J A 44	J A 39	36	J A 40	J A 40	J A 37	J A 50	J A 63	J A 53	J A 51	J A 84	J A 18	C
9	C	C	C	C	C	C	C	J A 16	J A 32	J A 33	J A 38	J A 42	G 30	J A 32	33	32	30	J A 36	J A 57	J A 167	J A 178	J A 50	J A 87	J A 41
10	J A 16	J A 21	J A 17	19	E B 16	20	J A 15	J A 16	26	31	34	C	C	J A 36	J A 39	J A 33	26	28	J A 29	J A 31	J A 22	J A 18	J A 22	J A 53
11	J A 42	J A 22	J A 18	J A 34	J A 16	J A 28	E B 16	J A 16	J A 66	J A 53	J A 100	J A 42	37	39	J A 42	J A 56	J A 33	24	J A 85	J A 200	J A 121	J A 102	J A 115	J A 47
12	J A 39	J A 36	J A 41	J A 41	J A 17	J A 28	J A 42	J A 52	J A 36	J A 38	J A 46	J A 41	J A 34	J A 36	J A 36	J A 32	37	J A 41	J A 24	J A 52	J A 52	J A 48	J A 40	J A 24
13	20	E B 16	20	18	20	J A 22	20	E B 16	J A 102	J A 35	J A 45	J A 88	J A 65	J A 52	J A 49	J A 60	J A 71	J A 102	J A 58	J A 72	J A 107	J A 86	J A 87	J A 22
14	J A 22	J A 17	E B 16	E B 16	E B 16	E B 16	17	J B 14	24	G	32	J A 38	J A 44	J A 42	J A 46	J A 41	28	23	J A 20	20	J A 33	J A 42	J A 38	J A 32
15	J A 18	J A 33	E B 16	J A 29	J A 51	J A 50	J A 54	J A 52	J A 31	J A 31	34	36	37	J A 48	J A 37	J A 39	J A 49	J A 30	J A 20	J A 17	J A 50	J A 20	E B 16	J A 19
16	J A 22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J A 39	J A 34	J A 53	J A 88	J A 26	J A 118	J A 51	J A 52	J A 51
22	J A 48	J A 53	J A 71	J A 52	J A 34	J A 20	18	E B 16	28	33	34	G	36	35	J A 34	32	30	28	J A 22	J A 86	J A 65	J A 32	J A 22	J A 24
23	J A 24	E B 16	20	18	J A 20	J A 18	J A 50	J A 41	J A 40	J A 38	36	J A 49	J A 51	J A 41	J A 40	J A 48	J A 52	J A 45	J A 38	J A 82	J A 53	J A 33	J A 21	J A 16
24	J A 18	E B 16	E B 16	18	20	J A 20	J A 16	18	23	29	36	J A 43	J A 44	J A 36	38	36	29	28	J A 28	J A 30	J A 26	J A 26	J A 26	J A 19
25	E B 16	E B 16	E B 16	E B 16	E B 16	19	E B 16	E B 16	22	31	G	37	36	37	37	34	33	J A 26	J A 26	J A 38	J A 33	J A 53	J A 35	J A 22
26	E B 18	E B 16	19	E B 16	E B 16	18	18	20	J A 50	28	G	G	35	35	G	J A 48	J A 54	J A 31	J A 33	J A 24	J A 16	21	J A 28	18
27	E B 16	E B 16	E B 16	20	E B 16	J A 18	19	J A 35	G	G	32	34	G	34	J A 37	33	30	29	J A 49	J A 20	J A 70	J A 29	J A 86	J A 52
28	J A 28	J A 24	J A 19	J A 19	J A 20	18	18	J A 32	26	J A 39	G 27	G	G	35	34	J A 34	31	27	J A 27	J A 32	J A 24	J A 35	J A 28	E B 16
29	J A 17	20	J A 39	E B 16	J A 27	18	18	J A 17	J A 26	J A 42	J A 63	J A 33	J A 30	37	34	34	30	28	J A 20	J A 22	J A 22	J A 24	J A 24	J A 18
30	18	E B 16	19	J A 16	J A 22	J A 19	J A 15	18	27	31	36	36	36	J A 48	J A 41	J A 52	J A 38	J A 38	J A 28	J A 27	J A 28	J A 18	J A 20	J A 32
31	20	17	19	17	19	E B 16	E B 16	E B 16	G	31	36	J A 56	G	J A 42	J A 39	33	J A 36	J A 40	J A 53	J A 26	J A 26	J A 28	J A 18	J A 38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	24	24	24	24	24	25	25	25	25	24	24	25	25	26	26	26	26	26	26	26	26	25
MED	J A 20	18	19	18	J A 18	J A 20	18	J A 18	J A 26	J A 33	36	J A 42	J A 38	J A 41	J A 39	J A 40	J A 35	30	J A 32	32	J A 34	32	27	J A 22
U Q	J A 28	J A 26	J A 28	J A 32	J A 24	J A 28	J A 32	J A 34	J A 38	J A 39	49	48	J A 52	J A 49	42	51	J A 48	41	J A 53	52	65	48	52	40
L Q	E B 18	E B 16	E B 16	E B 16	E B 16	18	E B 16	E B 16	24	30	34	36	G 34	36	36	34	30	28	J A 26	J A 26	J A 26	J A 24	J A 20	18

JAN. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	33	33	34	33	36	34	32	20	17	E B 16	E B 16	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	A A 42	A A 29	A A 33	A A 51	E B 16	21	G 18	39	48	35	38	36	33	33	29	A A 72	18	22	E B 16	E B 16	E B 16
3	E B 16	E B 16	E B 16	E B 16	E B 16	A A 22	E B 16	E B 16	28	32	39	A A 75	44	A A 87	37	30	27	25	23	17	20	20	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	G 22	34	33	A A 138	34	32	30	28	22	23	A A 34	28	20	E B 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	E B 16	G	29	34	34	41	32	31	35	34	29	25	E B 16	E B 16	A A 30	A A 53	19
6	E B 16	E B 16	E B 16	A A 66	A A 47	A A 54	E B 16	A A 28	33	A A 90	43	41	34	37	41	34	29	22	18	30	40	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	22	36	53	36	46	43	36	30	30	22	19	19	E B 16	A A 27	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	E B 16	23	28	30	33	36	34	36	35	34	39	22	E B 16	29	E B 16	E B 16	C
9	C	C	C	C	C	C	C	E B 16	22	28	31	G 25	G 28	32	32	32	28	28	A A 57	17	A A 178	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	E B 16	E B 16	25	30	33	C	C	34	32	30	26	27	28	E B 16	18	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	E B 16	E B 16	40	26	31	33	36	38	39	51	28	22	A A 85	19	A A 121	A A 102	A A 115	A A 47
12	20	A A 36	A A 41	A A 41	E B 16	E B 16	A A 42	A A 52	30	28	30	34	32	34	34	30	34	23	E B 16	E B 16	18	28	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	E B 16	29	34	31	43	35	38	43	45	A A 71	A A 102	A A 58	A A 72	A A 107	A A 86	A A 87	17
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	31	G 26	34	33	35	32	28	22	18	E B 16	E B 16	A A 42	20	20
15	E B 16	E B 16	E B 16	E B 16	21	A A 50	A A 54	E B 16	24	G 22	32	34	35	37	33	33	29	21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
16	E B 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	32	29	30	A A 88	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	E B 16	E B 16	26	32	34	G	35	34	33	32	30	27	20	A A 86	A A 65	24	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	E B 16	20	28	26	34	44	35	38	40	36	39	22	E B 16	A A 82	32	19	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	E B 16	22	29	35	41	40	34	37	35	29	27	26	29	24	E B 16	22	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	E B 16	22	31	G	36	36	36	36	34	31	23	E B 16	20	21	E B 16	22	E B 16
26	E B 18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	28	G	G	34	34	G	39	42	26	30	23	E B 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 16	E B 16	G	G	31	33	G	32	32	33	29	29	A A 49	E B 16	22	E B 16	17	20
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	27	G 20	G	G	34	33	32	30	25	25	16	19	21	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	E B 16	E B 16	20	27	34	G 25	G 23	37	34	34	30	26	E B 16	E B 16	18	19	20	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	E B 16	27	31	36	36	35	38	36	33	33	29	18	23	22	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	E B 16	G	31	34	34	G	36	38	32	29	24	A A 53	20	22	E B 16	E B 16	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	24	24	24	24	24	25	25	25	25	24	24	25	25	26	26	26	26	26	26	26	26	25
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	33	34	35	34	36	33	30	26	23	18	22	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	A A 16	E B 16	E B 16	28	31	34	38	36	38	37	35	33	29	A A 49	A A 23	A A 29	A A 24	20	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	22	G 26	31	G	G 33	34	32	32	29	22	E B 18	E B 16	E B 16	E B 16	E B 16	E B 16

JAN. 2019 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	16	16	16	14	14	16	16	14	15	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	16	14	15	16	16	16	14	16	15	16	14	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	16	18	16	16	14	15	15	15	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	16	16	14	14	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	16	16	17	15	15	14	16	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	16	14	16	14	14	14	16	14	14	16	16	16	16	16	16
7	16	16	16	16	15	16	16	16	14	14	14	14	14	13	13	13	14	14	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	15	16	14	17	14	14	13	14	14	16	16	16	16	16	C
9	C	C	C	C	C	C	C	16	16	16	15	15	16	16	15	16	16	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	16	14	C	C	14	13	12	12	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	15	15	15	13	13	14	14	14	15	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	16	14	14	14	15	16	15	14	14	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	15	14	14	12	14	14	14	15	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	15	13	15	15	15	14	12	14	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	16	15	14	14	14	14	14	12	16	16	16	16	16	16	16
16	16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	13	12	14	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	14	15	17	15	14	17	16	14	13	15	15	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	14	14	18	16	15	15	14	13	12	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	16	14	12	17	16	14	14	15	13	14	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	14	14	15	14	14	15	14	14	16	16	16	16	16	16	16
26	18	16	16	16	16	16	16	16	16	15	14	15	16	17	17	16	15	14	14	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	16	14	15	14	14	15	14	14	15	14	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	16	15	15	16	16	14	14	14	15	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	14	14	14	16	16	16	15	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	16	16	15	15	18	17	14	15	16	13	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	16	14	14	15	14	16	14	16	16	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	24	24	24	24	24	25	25	25	25	24	24	25	25	26	26	26	26	26	26	26	26	25
MED	16	16	16	16	16	16	16	16	16	16	14	15	14	15	15	14	14	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	15	16	16	16	15	15	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	15	14	14	14	14	14	14	14	14	16	16	16	16	16	16

JAN. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	313	359	392	382	331	F 316	F 312	334	371	360	347	371	356	H 278	320	368	375	399	379	314	349	343	370	320
2	340	343	416	A	A	A	A	358	399	375	378	374	369	367	367	351	373	373	A	352	346	335	369	309
3	319	322	398	362	F 368	A	388	356	372	372	383	A	352	A	333	348	394	390	369	331	344	355	F 362	F 299
4	314	323	327	F 298	F 391	413	326	338	381	386	360	384	A	365	356	364	337	374	384	A	310	381	394	320
5	329	334	361	332	388	348	F 314	363	382	328	365	377	H 247	315	377	357	339	379	400	344	396	A	A	289
6	324	348	333	A	A	A	F 341	A	344	A	351	363	336	354	366	346	371	389	344	335	369	366	353	318
7	310	333	F 356	F 345	420	306	309	356	403	384	339	314	326	348	341	333	375	365	378	342	V 395	A	309	326
8	317	333	344	F 328	F 330	373	F 314	350	368	361	363	359	361	354	349	376	406	400	369	352	357	366	303	C
9	C	C	C	C	C	C	C	342	395	368	357	372	325	302	H 302	318	367	403	A	345	A	F 341	364	323
10	F 329	346	339	355	382	388	B	354	368	361	359	C	C	J R 320	358	370	382	403	375	316	322	413	398	335
11	319	331	F 342	351	407	B	B	349	384	380	355	350	311	322	J R 324	353	382	401	A	323	A	A	A	A
12	F 314	A	A	A	F 391	348	A	A	386	368	377	327	345	350	371	382	369	391	387	356	299	392	F 323	F 338
13	F 348	F	F 306	F 375	F 372	F 382	B	331	369	370	380	371	348	323	371	349	A	A	A	A	A	A	A	F 317
14	F 322	317	333	346	364	386	B	352	383	350	383	336	314	317	360	361	377	383	399	309	330	A	366	328
15	288	F 304	F 319	387	409	A	A	373	371	351	367	372	322	377	338	387	364	377	394	402	371	371	346	312
16	319	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	366	382	373	A	377	362	F 349	F 333	F 335
22	318	302	332	321	352	419	B	345	387	333	340	323	351	362	340	352	350	374	389	A	A	332	320	323
23	340	324	362	368	356	416	321	335	370	390	361	363	353	357	369	344	343	391	394	A	340	345	309	310
24	311	341	352	316	355	358	350	324	367	354	368	335	350	385	367	356	350	364	381	367	322	359	364	302
25	319	343	322	346	373	F 305	317	374	355	359	331	372	H 334	359	H 328	350	368	369	398	356	303	346	356	346
26	311	341	373	F 288	F 328	F 343	F 331	351	363	386	375	351	345	371	336	346	350	374	395	350	371	360	315	387
27	F 304	F 303	F 313	F 345	333	338	312	341	359	381	388	368	370	357	335	329	339	H 323	A	384	U A 371	358	321	F 377
28	350	328	344	327	F 301	F 333	F 336	372	393	342	366	370	363	358	307	J R 238	344	338	387	379	349	338	339	356
29	324	F 326	F 319	F 314	F 329	F 352	350	366	398	351	341	376	351	339	311	352	367	396	401	382	314	327	344	347
30	323	332	339	340	362	406	416	371	368	364	332	367	357	350	352	345	328	409	389	355	335	375	359	338
31	343	316	324	352	365	F 330	F 359	365	392	404	388	378	351	346	338	342	372	367	A	378	331	349	354	325
	00	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	22	23	21	22	19	16	23	25	24	25	23	23	24	25	26	25	25	19	22	22	21	23	24
MED	319	332	339	345	364	352	328	352	372	366	363	368	350	352	341	352	368	379	387	352	345	355	353	324
U Q	329	341	361	358	388	388	350	365	390	380	378	372	356	360	366	364	376	398	395	377	369	368	364	338
L Q	314	322	F 324	324	F 333	F 333	F 314	341	368	352	349	350	326	322	330	345	347	371	378	335	322	342	321	314

JAN. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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										369	378	420	422	410	386	A 389	398	440						
2										L	A	A	409	L 408	L 405	U L 402	A		A					
3										L	A	A	A	A	399	385	401							
4										U L 451	U L 400		A	414	410	398	U L 376							
5										L	401	414	U L 367	385	376	A	A							
6								A		A	A	A	424	409	A	387	L							
7										A	A	389	A	A	397	L 385								
8										L	396	405	397	402	394	394								
9											U L 391	391	401	405	398	377	L		A					
10										L	384	C	C	395	401	388	414							
11										L	U L 388	417	391	385	A	A	U L 404		A					
12								A		L	383	436	413	396	394	408	A							
13										L	385	A	430	395	A	A	A	A	A					
14											397	434	410	446	393	376	L							
15										L	388	L 413	449	397	379	390	416	L 429						
16								C	C	C	C	C	C	C	C	C	C	C	C					
17								C	C	C	C	C	C	C	C	C	C	C	C					
18								C	C	C	C	C	C	C	C	C	C	C	C					
19								C	C	C	C	C	C	C	C	C	C	C	C					
20								C	C	C	C	C	C	C	C	C	C	C	C					
21								C	C	C	C	C	C	C	C	388	408		A					
22											387	387	408	400	422	386	U L 400							
23										L	400	A	416	410	A	A	A							
24											L 380	A	A 385	394	L 387	L 379	380							
25											U L 378	389	395	398	411	382	L	L						
26										A	395	386	406	398	400	A	A							
27										L 386	L	403	421	U L 429	381	385	L		A					
28											L 386	397	407	392	387	385	370							
29									L	U L 420	U L 383	419	436	L 416	390	L 389	L							
30										484	368	369	384	400	406	388	U L 401							
31									L	L	393	404	U L 410	405	409	384	L		A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										5	20	17	21	23	21	21	11	2						
MED										L 420	388	404	409	400	397	387	401	434						
U Q										468	396	418	422	410	406	390	408							
L Q										378	383	389	396	395	387	384	380							

JAN. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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										264	258	218	222	264	272	234	226	204						
2										244	244	244	242	244	244	264	240		A					
3										240	228	A	264	A	264	242	210							
4										222	264		A	260	266	250	278							
5										294	214	222	310	272	216	242	268							
6								A		A	260	226	246	244	232	232	234							
7										218	286	274	250	230	214	242								
8										258	240	232	228	242	256	238								
9											258	238	260	250	240	236	226		A					
10										260	246	C	C	242	232	210	208							
11										236	264	252	284	254	250	242	224		A					
12								A		244	240	316	264	246	238	236	242							
13										244	228	244	268	244	220	232	A	A	A					
14											236	278	238	268	220	234	220							
15										268	238	L 318	290	232	238	216	226	224						
16								C	C	C	C	C	C	C	C	C	C	C	C					
17								C	C	C	C	C	C	C	C	C	C	C	C					
18								C	C	C	C	C	C	C	C	C	C	C	C					
19								C	C	C	C	C	C	C	C	C	C	C	C					
20								C	C	C	C	C	C	C	C	C	C	C	C					
21								C	C	C	C	C	C	C	C	242	220		A					
22											278	266	242	216	242	240	238							
23										224	244	256	278	254	248	268	222							
24											246	260	260	226	258	266	274							
25											292	238	256	252	260	244	242	218						
26										220	244	274	272	234	266	236	A 260							
27										224	214	238	244	252	246	250	224		A					
28											250	236	244	250	270	292	246							
29									210	258	284	218	260	252	262	254	220							
30										236	304	248	252	278	268	264	270							
31									204	218	230	236	300	284	284	268	222		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									2	18	25	22	23	24	25	26	23	3						
MED									207	242	246	244	260	250	248	242	226	218						
U Q										258	264	266	272	257	265	254	246	224						
L Q										224	237	236	244	242	235	236	222	204						

JAN. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	260	224	210	208	296	324	358	276	220	206	202	196	176	178	212	A	214	196	184	208	212	212	218	262
2	260	230	182	A	A	A	A	224	208	208	A	A	194	214	210	200	A	218	A	220	E A 270	230	210	284
3	268	280	196	218	242	A	248	240	216	216	A	A	A	A	A 220	192	202	206	204	206	242	214	202	Q 268
4	256	244	226	Q 276	Q 202	190	308	234	218	178	206	192	A	194	172	186	206	214	186	A	E A 354	210	198	260
5	Q 276	254	236	240	216	284	286	218	216	218	206	192	E A 254	180	206	A	A	214	196	236	188	A	A	314
6	262	232	254	A	A	A	272	A	E A 236	A	A	A	182	A 206	A	208	222	206	206	260	210	180	192	254
7	272	240	Q 212	218	180	348	328	224	200	A	A	216	A	A	204	190	232	212	206	216	186	A	294	288
8	266	234	232	264	Q 224	224	Q 290	226	222	216	220	188	212	188	216	214	204	A 212	A 208	216	E A 256	208	288	C
9	C	C	C	C	C	C	C	234	204	202	196	192	186	182	196	214	206	208	A	252	A	Q 216	206	278
10	Q 262	234	244	246	208	194	B	226	216	220	214	C	C	216	200	174	190	204	E A 236	240	256	184	184	262
11	314	Q 282	244	214	184	B	B	232	A 232	210	208	194	210	E A 244	A	A	198	204	A	E A 290	A	A	A	A
12	E A 332	A	A	A	198	286	A	A	210	212	208	182	166	198	204	192	A	202	200	216	274	A 236	270	Q 262
13	Q 256	Q 252	Q 270	Q 234	Q 232	252	B	240	236	236	202	A	184	E A 230	A	A	A	A	A	A	A	A	A	240
14	262	266	244	238	214	220	B	214	206	192	210	196	194	170	214	224	214	216	190	258	244	A	230	E A 328
15	338	294	262	204	A 208	A	A	226	214	224	214	194	178	214	208	208	186	184	194	168	214	214	236	280
16	280	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	206	208	212	A	192	218	224	272	242
22	274	Q 288	286	282	228	192	B	214	212	212	216	186	196	208	188	202	200	214	182	A	A	E A 282	252	236
23	218	244	214	206	218	186	E B 352	E A 276	222	212	196	A	188	202	A	A	A	202	192	A	A 244	214	218	290
24	282	232	220	258	234	228	246	240	224	208	228	A	A	200	242	222	202	228	190	218	256	218	E A 252	302
25	266	232	232	232	208	302	300	206	202	236	194	224	206	220	206	212	226	204	186	218	E A 244	226	224	212
26	256	234	214	Q 328	Q 274	224	292	216	230	A	192	172	200	192	194	A	A	222	192	220	192	212	222	208
27	Q 244	Q 290	Q 270	Q 214	214	290	318	E B 250	202	194	202	196	174	176	224	204	208	220	A	186	A 200	206	256	E A 216
28	234	244	236	256	282	Q 262	242	222	208	196	194	172	170	206	200	190	232	218	194	186	228	250	226	206
29	230	248	256	Q 256	Q 268	232	216	210	170	174	A 216	188	164	212	180	212	208	202	190	184	E A 226	270	238	212
30	254	232	248	248	208	194	188	204	214	166	238	230	200	222	194	208	204	200	198	E A 220	A 262	196	216	230
31	254	292	280	226	218	Q 224	Q 232	190	178	206	200	200	174	200	228	212	204	230	A	196	248	226	208	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	25	23	23	21	22	19	16	23	25	22	21	18	20	23	21	20	20	25	19	22	22	21	23	24
MED	262	244	236	238	217	228	284	225	214	209	206	193	186	201	206	207	206	212	193	216	U 230	214	223	259
U Q	275	280	256	257	234	286	313	240	222	216	215	196	200	214	215	212	214	217	204	236	256	228	252	282
L Q	255	232	214	216	208	194	244	214	205	196	198	188	175	188	195	192	202	203	190	196	212	209	208	233

JAN. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	A	A	A	A	A	A	A	A	A	A	A					
2								B	A 110		A	A	A	A	A	A	A	A	A					
3								B	A	A	A	A	A	A	A	A	A	A	A					
4								B	110	116	116	A	A	A	A	A	A	A	A					
5								B	110	110	A	A	A	A	A	A	A	A	A					
6								A	A	A	A	A	A	A	A	A	A	104	A					
7								B	A	A	A	A	A	A	A	A	A	A	A					
8								B	108	108	A	A	A	A	A	A	A	A	A					
9								B	A	A	A	112	112	A	A	A	116	104	A					
10								B	110	108	A	C	C	A	A	A	102	124	A					
11								B	A	A	A	112	A	102	A	102	104	106	A					
12								A	A	A	A	A	A	A	A	A	A	A	B					
13								B	A	A	A	A	A	A	A	A	A	A	A					
14								B	110	100	100	102	A	A	A	A	104	110	A					
15								B	A	110	A	108	104	A	102	A	A	A	B					
16								C	C	C	C	C	C	C	C	C	C	C	C					
17								C	C	C	C	C	C	C	C	C	C	C	C					
18								C	C	C	C	C	C	C	C	C	C	C	C					
19								C	C	C	C	C	C	C	C	C	C	C	C					
20								C	C	C	C	C	C	C	C	C	C	C	C					
21								C	C	C	C	C	C	C	C	102	A	102	A					
22								B	98	104	106	104	102	102	A	102	102	102	A					
23								B	A	A	104	102	96	96	A	A	A	A	B					
24								B	104	A	104	104	104	104	102	102	102	A	A					
25								B	112	106	104	104	104	102	102	108	A	A	B					
26								B	A	A	102	102	102	102	102	A	A	A	A					
27								B	108	108	108	104	100	100	102	102	A	102	A					
28								B	A	A	108	102	102	102	100	A	A	106	A					
29								B	A	A	A	106	104	104	100	102	102	A	B					
30								B	108	104	104	104	102	A	A	102	A	A	A					
31								B	102	A	A	A	102	A	A	A	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									11	11	10	13	12	9	7	8	7	9						
MED									108	108	104	104	102	102	102	102	102	104						
U Q									110	110	108	107	104	103	102	102	104	108						
L Q									104	104	104	102	102	101	100	102	102	102						

JAN. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 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	84	90	102	108	102	106	100	100	98	102	100	100	102	96	98	96	100	100	96	96	100	96	94	90
2	90	102	96	94	98	90	90	86	108	114	108	98	98	98	98	98	96	94	96	90	88	88	88	92
3	92	92	90	92	88	88	88	112	104	102	98	96	96	96	98	98	94	94	92	90	86	88	82	B
4	B	B	92	B	B	92	172	92	142	106	126	106	106	94	96	92	92	92	92	90	90	94	84	86
5	86	86	90	92	92	92	B	92	G	182	104	104	96	96	94	96	142	94	88	86	86	84	92	96
6	96	96	94	94	94	92	92	102	98	98	98	98	96	96	96	88	90	138	94	90	88	86	86	86
7	86	B	B	B	B	96	B	100	100	104	104	104	100	100	100	98	98	90	92	92	92	78	88	88
8	88	B	94	92	92	92	98	B	138	138	106	104	102	106	100	100	100	96	96	102	94	100	80	C
9	C	C	C	C	C	C	C	88	104	106	104	96	96	100	150	174	124	106	98	98	98	98	98	96
10	100	80	80	104	B	96	158	138	148	172	150	C	C	100	88	88	160	174	134	90	86	86	100	102
11	104	100	100	92	96	96	B	106	102	102	100	98	148	124	118	102	116	114	96	118	120	90	90	90
12	90	90	92	92	92	98	126	102	98	98	96	84	98	102	102	106	156	96	146	130	92	106	106	104
13	106	B	84	94	86	126	114	B	94	96	96	94	92	92	92	92	92	88	108	92	86	86	86	86
14	86	86	B	B	B	B	142	134	138	G	158	100	98	98	94	94	146	118	102	102	94	88	88	86
15	84	102	B	92	98	94	94	98	94	94	176	146	120	116	114	102	100	100	88	88	88	84	B	90
16	84	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	124	112	106	98	98	98	110	98	118
22	120	108	104	104	94	94	98	B	160	158	186	G	164	152	98	174	152	120	98	98	96	90	90	84
23	92	B	98	108	112	102	98	128	98	86	118	102	100	100	98	98	94	100	90	90	86	88	80	80
24	80	B	B	100	94	94	94	92	144	148	136	112	110	128	178	164	170	144	116	110	106	102	102	90
25	B	B	B	B	B	94	B	B	140	160	G	182	170	164	170	144	118	104	92	84	84	94	88	94
26	B	B	90	B	B	108	104	98	88	160	G	G	160	140	G	90	94	92	92	86	88	108	114	106
27	B	B	B	102	B	96	98	92	G	G	174	146	G	112	108	174	160	124	104	92	88	88	112	96
28	92	92	92	96	96	96	94	96	174	98	90	G	G	164	158	100	152	130	110	112	92	92	90	B
29	90	84	108	B	104	104	92	98	98	94	88	90	86	164	156	166	126	108	88	88	84	84	116	116
30	90	B	96	96	102	96	96	94	152	154	152	146	152	98	104	104	94	92	90	86	86	86	84	94
31	86	116	108	104	104	B	B	B	G	156	154	98	G	106	112	146	104	112	104	88	84	82	82	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	21	14	18	18	17	22	19	20	22	23	23	21	21	25	24	26	26	26	26	26	26	26	25	23
MED	90	92	94	95	96	96	98	98	104	106	106	100	100	100	100	100	108	102	96	91	88	88	90	92
U Q	94	102	100	104	102	98	114	104	142	156	152	109	134	126	116	144	146	118	104	98	94	96	99	96
L Q	86	86	90	92	92	92	94	92	98	98	98	97	96	97	97	96	94	94	92	88	86	86	85	86

JAN. 2019 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

JAN. 2019 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F2	F2	F3	F1	F2	L2	LQ21	CQ31	CQ31	C2	C3	LQ21	LQ21	LQ41	LQ31	LQ11	F2	FQ31	F1	F1	F2	F1
2	F2	F1	F3	FQ51	F4	F4	F4	L3	C1	CL22	CQ41	LQ51	LQ21	L2	L3	L2	L5	L3	L5	F5	F3	F1	F1	F1
3	F1	F2	FQ21	FQ21	F2	F2	F1	CL11	C2	C2	C2	L5	LQ31	LQ51	LQ31	LQ21	LQ31	LQ31	LQ31	FQ41	FQ41	FQ21	FQ21	
4			F1			F1	F1	L1	HL21	C2	C2	C2	CQ41	LQ21	C2	L3	L4	L5	L5	F9	F9	F4	F2	F1
5	F2	F1	F1	F1	F2	F2		L1		H2	C1	C2	L3	L2	L2	LH21	HL34	LH22	L2	F4	F4	F4	F3	FF12
6	F2	F2	F4	F2	FQ31	FQ41	F1	C8	L4	L5	LQ41	L4	L3	L3	LQ31	LQ31	L2	H1	L4	F6	F6	F3	F1	F1
7	F1					F1		L3	L2	C2	C7	C3	C4	CL41	C2	L2	LH23	L3	L4	F3	F3	F1	FQ21	F1
8	F1		F1	F2	F1	F2	F2		H2	H1	C1	C2	C2	C1	C2	C4	C4	L6	L6	FF22	F4	FF21	F1	
9								L1	CQ11	CQ21	CQ21	L1	L1	L1	HL11	HL12	CL22	C3	L6	F6	F5	F1	F5	F3
10	F2	F1	F1	F1		F1	F3	H1	HL22	HC22	HL22			CL22	L2	L3	H1	HC21	HL42	F2	F5	F3	FF11	FQ21
11	FQ11	F1	F2	F2	F1	F3		C3	C5	C5	C2	LC21	HL11	CL12	CL13	CL71	CL11	CL11	L7	FQ51	FQ81	FQ81	FQ51	FQ31
12	FQ21	F9	FQ81	FQ51	F6	FF22	F6	C8	L3	LQ21	LQ21	LQ21	L1	C2	C2	C1	HC12	LH51	H1	F1	F4	F3	F2	F1
13	F1		F1	F1	F1	FF11	F1		L3	L3	L3	L6	L3	L4	L4	L4	L8	L6	CL88	F8	F9	F6	F5	F2
14	F2	F1					F1	H1	H1		H1	CH11	L2	L1	LH21	LQ31	HL12	CL11	C3	F1	F2	F3	F2	F1
15	F1	F1		FQ11	FQ31	FQ61	FQ51	LQ21	LH31	L2	HL11	H2	C1	C1	C2	C2	C2	C1	L1	F1	FQ21	FQ21		F1
16	F2																							
17																								
18																								
19																								
20																								
21																C2	C2	C5	L8	F1	F2	F1	FQ21	FQ21
22	FF33	FF11	F2	F5	F3	F1	F1		H2	H2	H1		H1	H1	L1	H1	H2	C2	L2	F4	FQ41	F4	F2	F1
23	F2		F1	F1	F1	F1	F3	CL17	L4	L3	C2	C3	C2	C2	C3	CQ21	LQ31	LQ31	L2	FQ21	FQ21	F1	F2	F2
24	F1			F1	F2	F2	F3	L1	H1	C1	H1	C2	C2	C1	H2	HC22	H1	HL21	C7	FF83	F7	F3	F3	F1
25						F1			HL11	H1		H1	H1	HC11	HC11	H2	C3	CQ21	L1	F3	F3	F1	F2	F1
26			F1			F1	F1	L1	L5	H1			H1	H1		L3	L5	L2	L9	F8	F1	F1	F1	F1
27				F1		F2	F1	L1			H1	H1		C1	C1	HC11	HC11	C2	C8	F1	F4	F3	FF23	F2
28	FQ11	FQ11	F1	F1	F1	F1	F1	L5	HL22	L4	L1			H1	H1	C1	HL12	H2	CL82	FF13	F2	F4	F3	
29	F1	F1	F2		F1	F1	F1	LL32	L2	L3	L3	L2	L2	HL11	H1	H1	C1	C3	L1	F3	F3	F2	F2	F1
30	F1		F1	F2	F1	F1	F1	L1	H2	H1	H2	H1	H1	L2	C2	C1	L4	L4	L5	F8	F3	F1	F2	F1
31	F1	F1	F1	F1	F1					HC21	HC21	LQ11		C1	CH11	H1	C1	C1	C7	F3	F6	F3	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																								

JAN. 2019 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

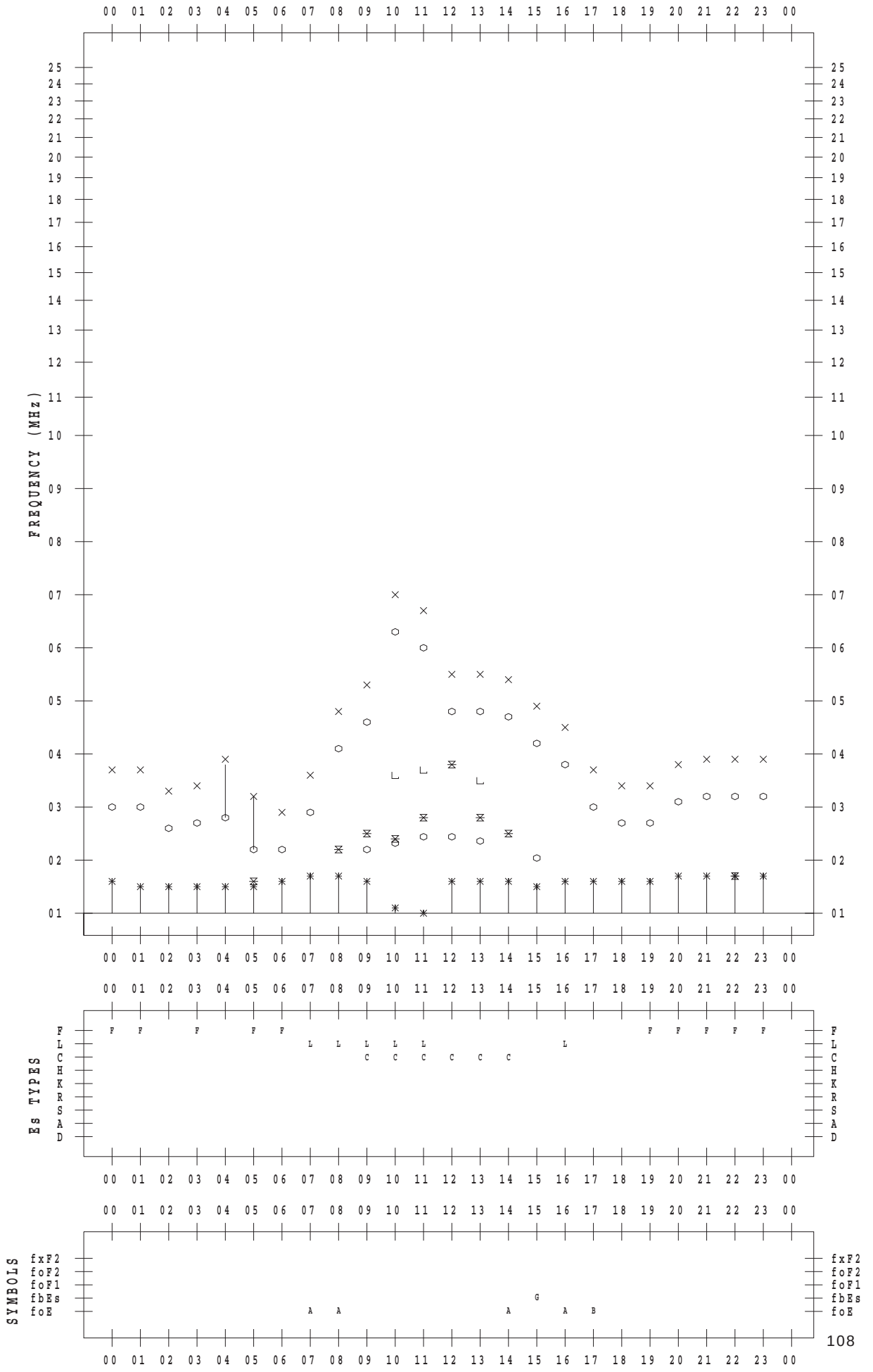
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 1

135 °E MEAN TIME



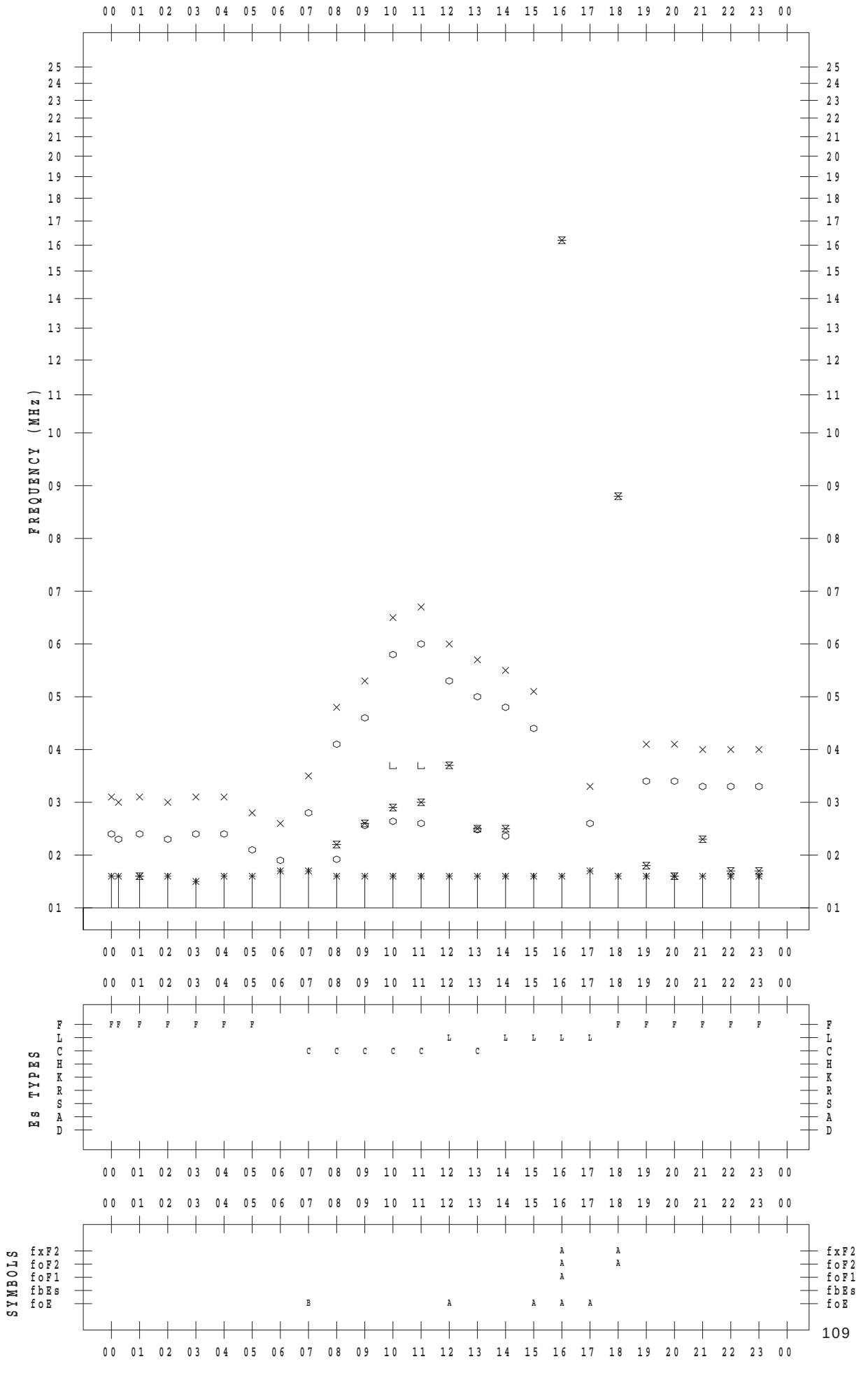
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 2

135 °E MEAN TIME



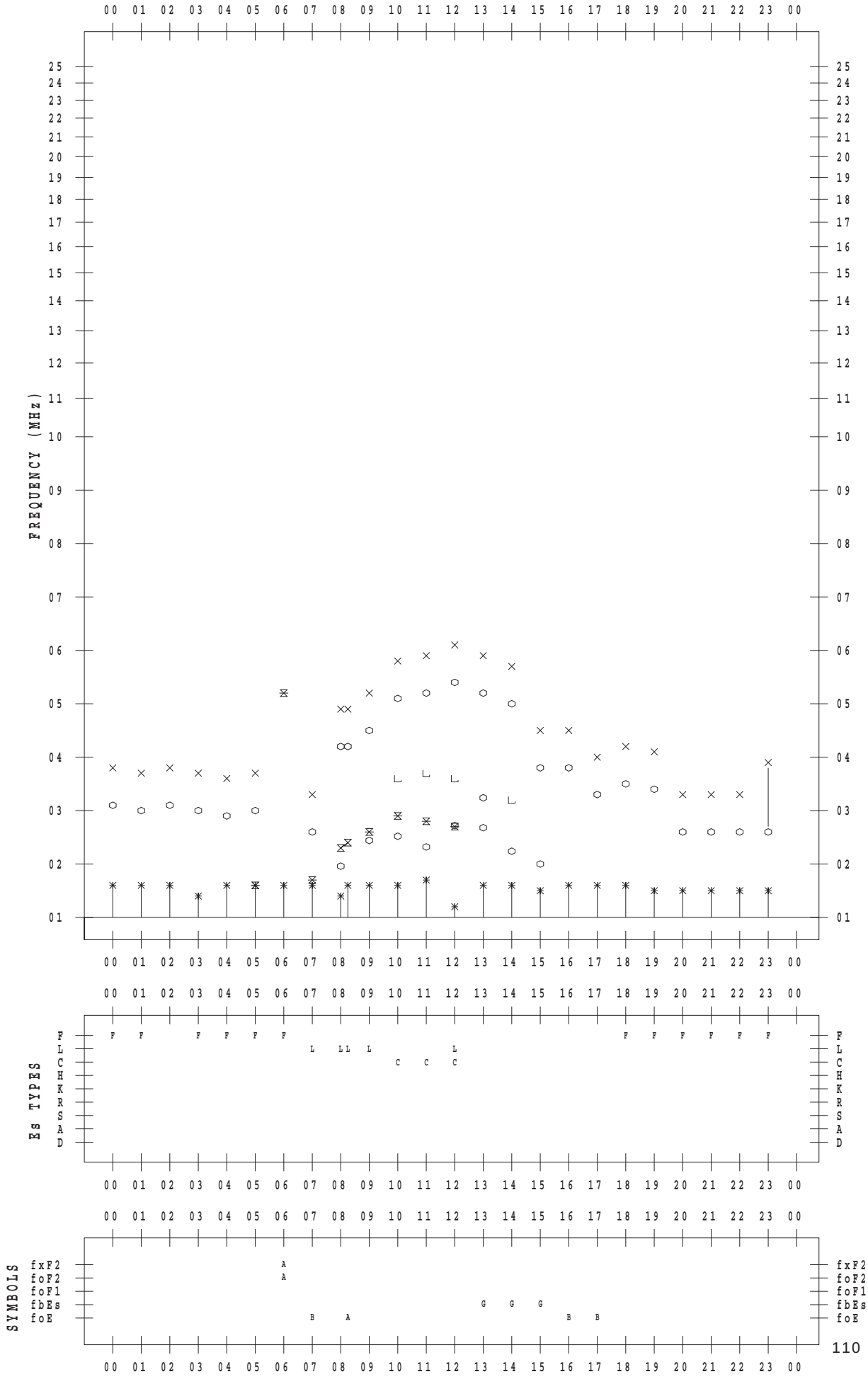
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 3

135 °E MEAN TIME



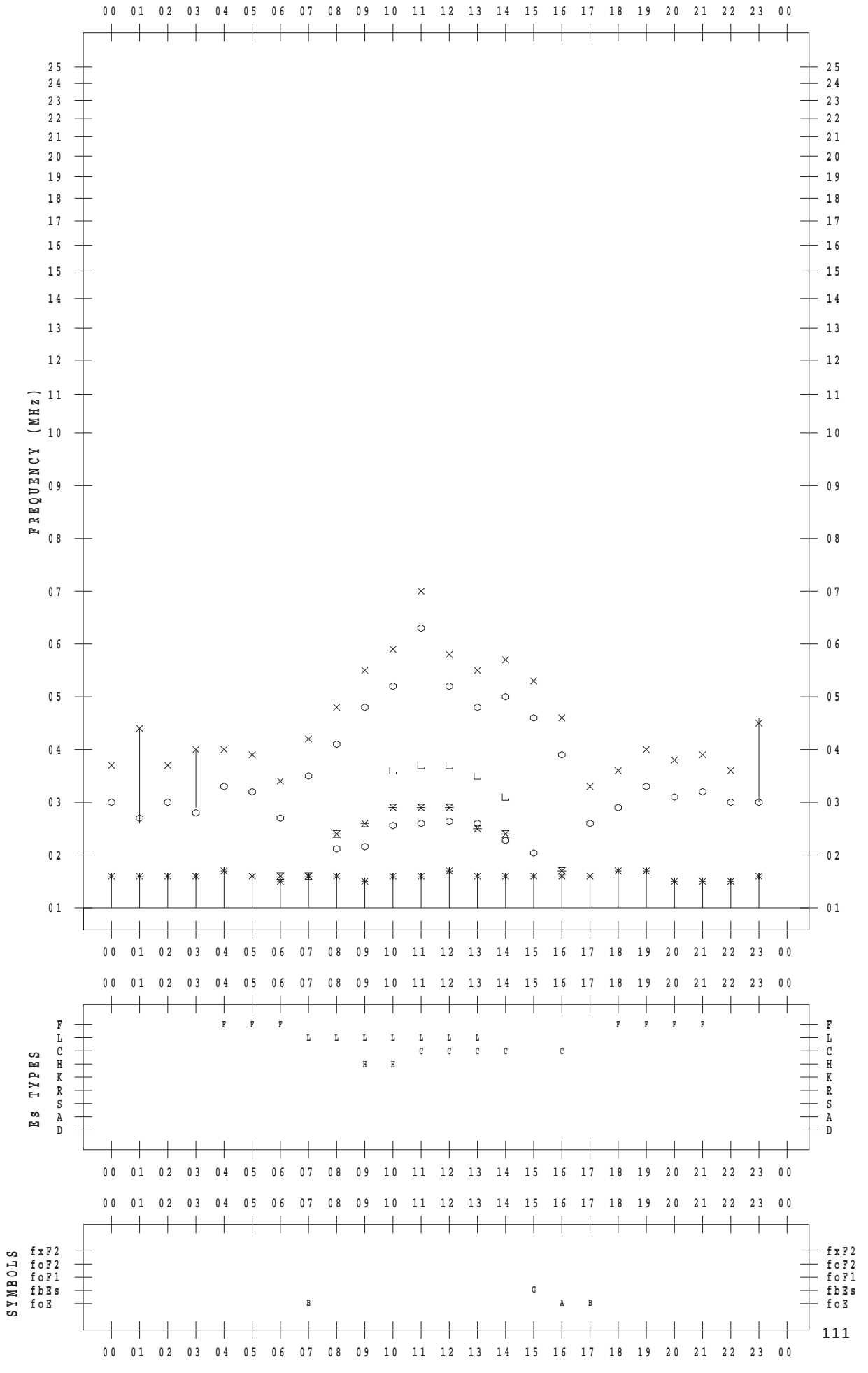
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 4

135 °E MEAN TIME



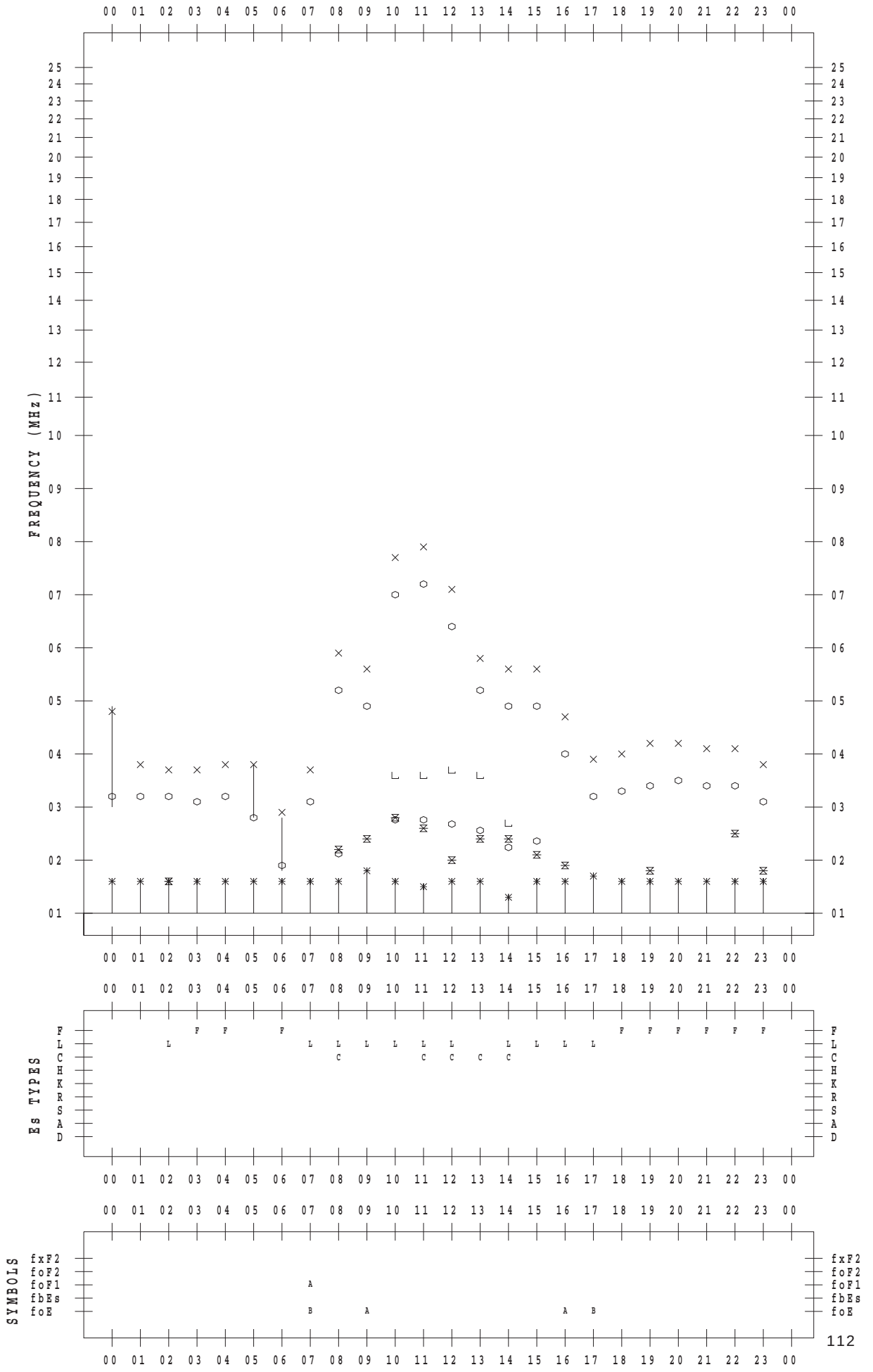
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 5

135 °E MEAN TIME



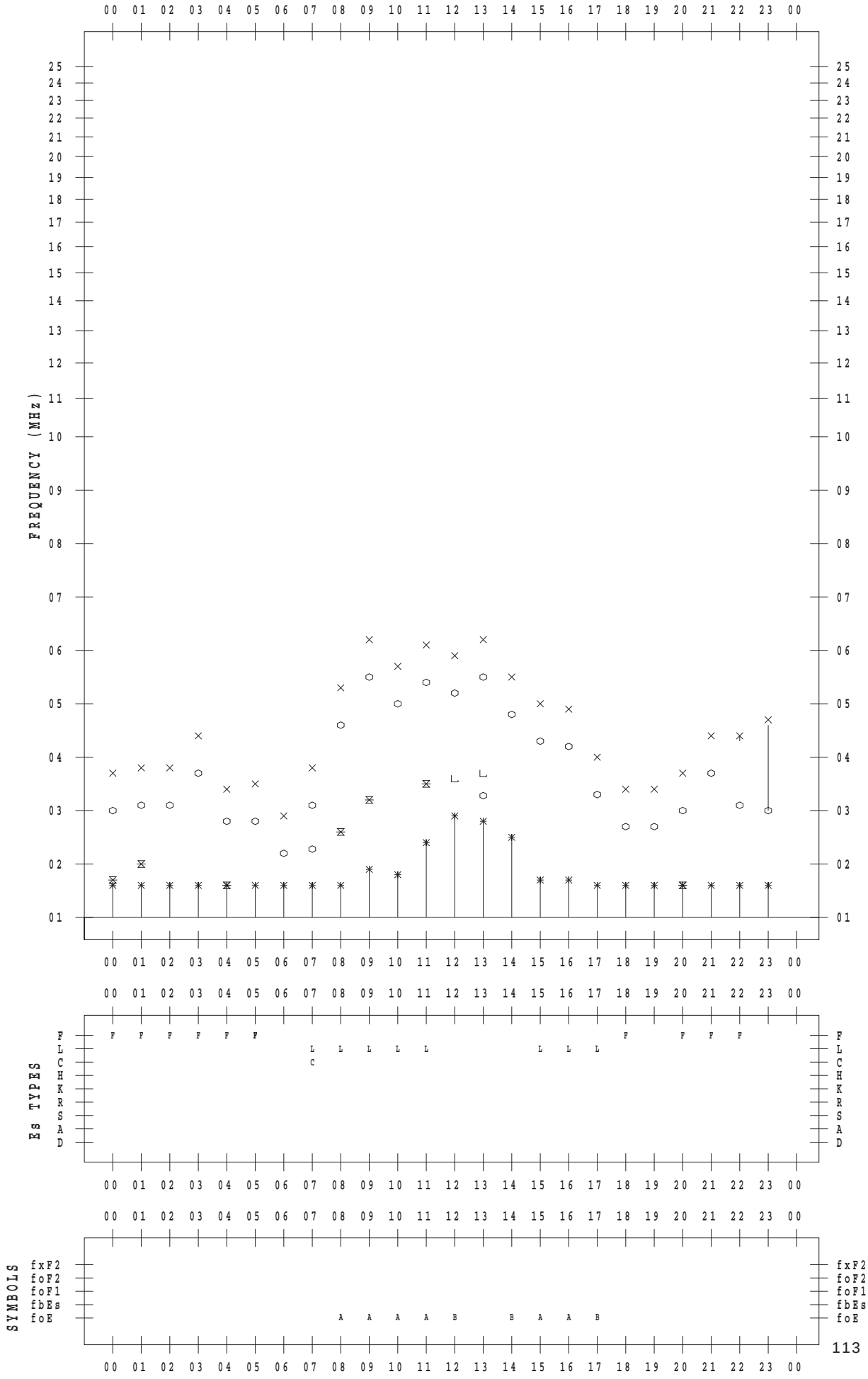
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 6

135 °E MEAN TIME



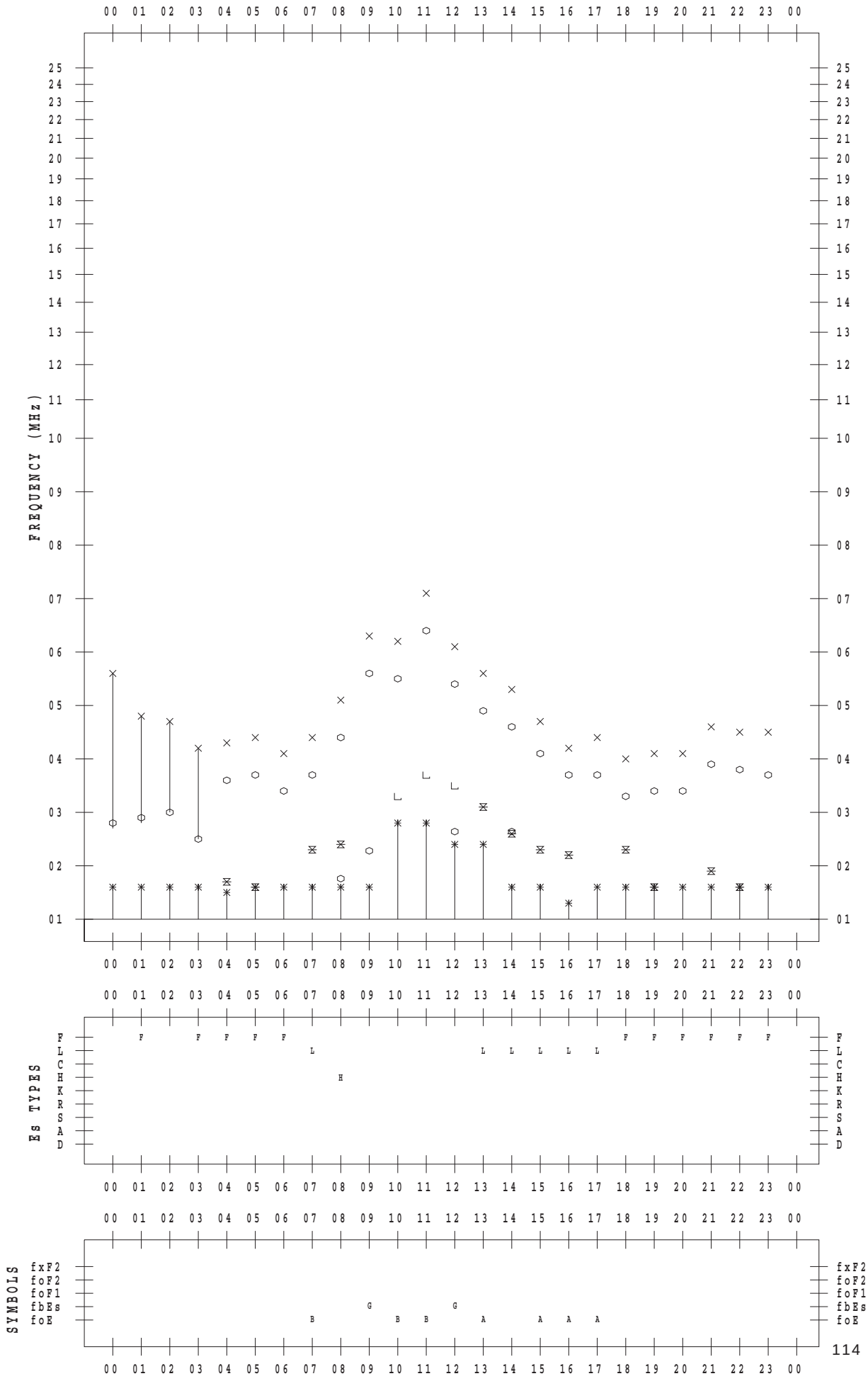
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 7

135 °E MEAN TIME



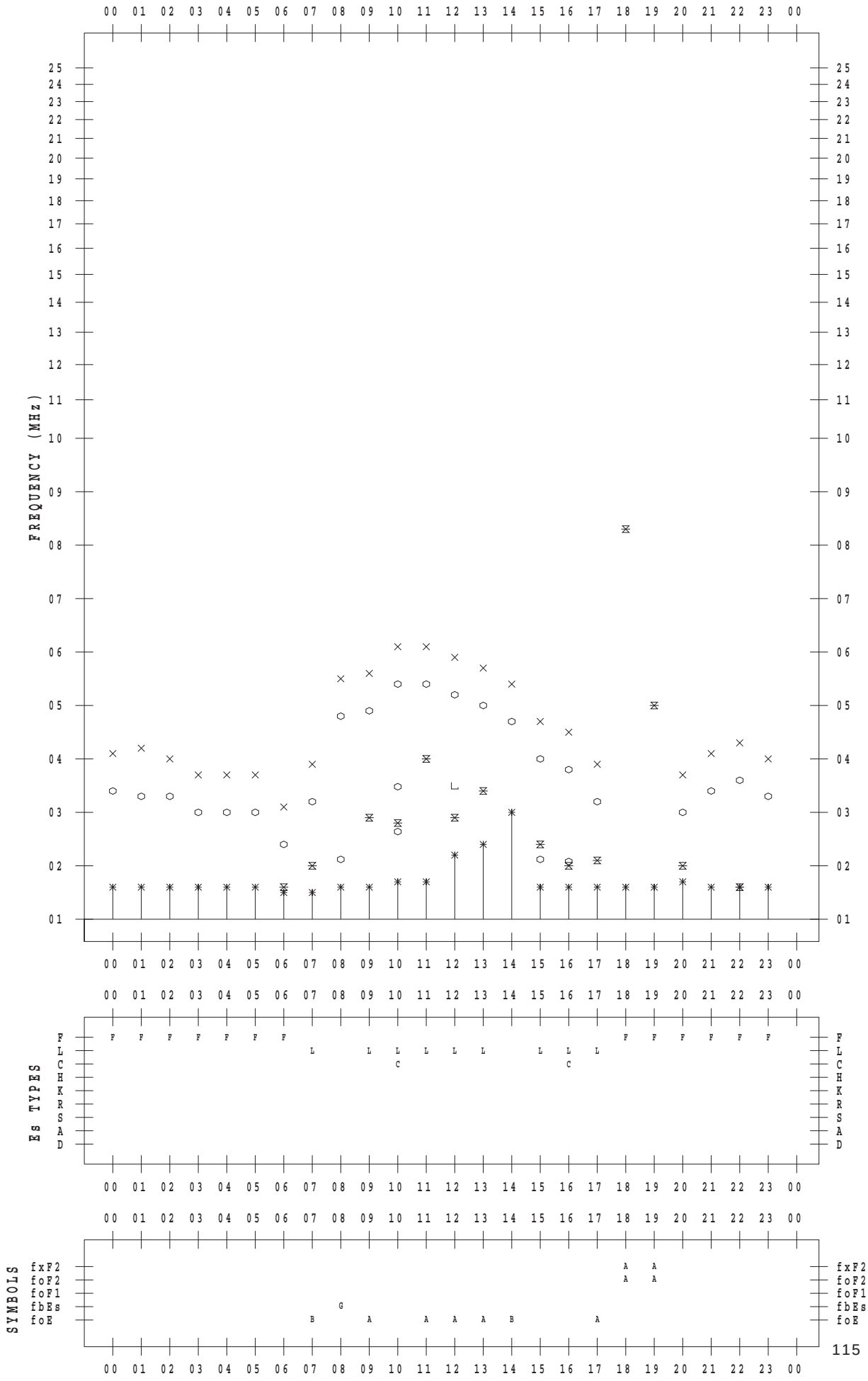
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 8

135 °E MEAN TIME



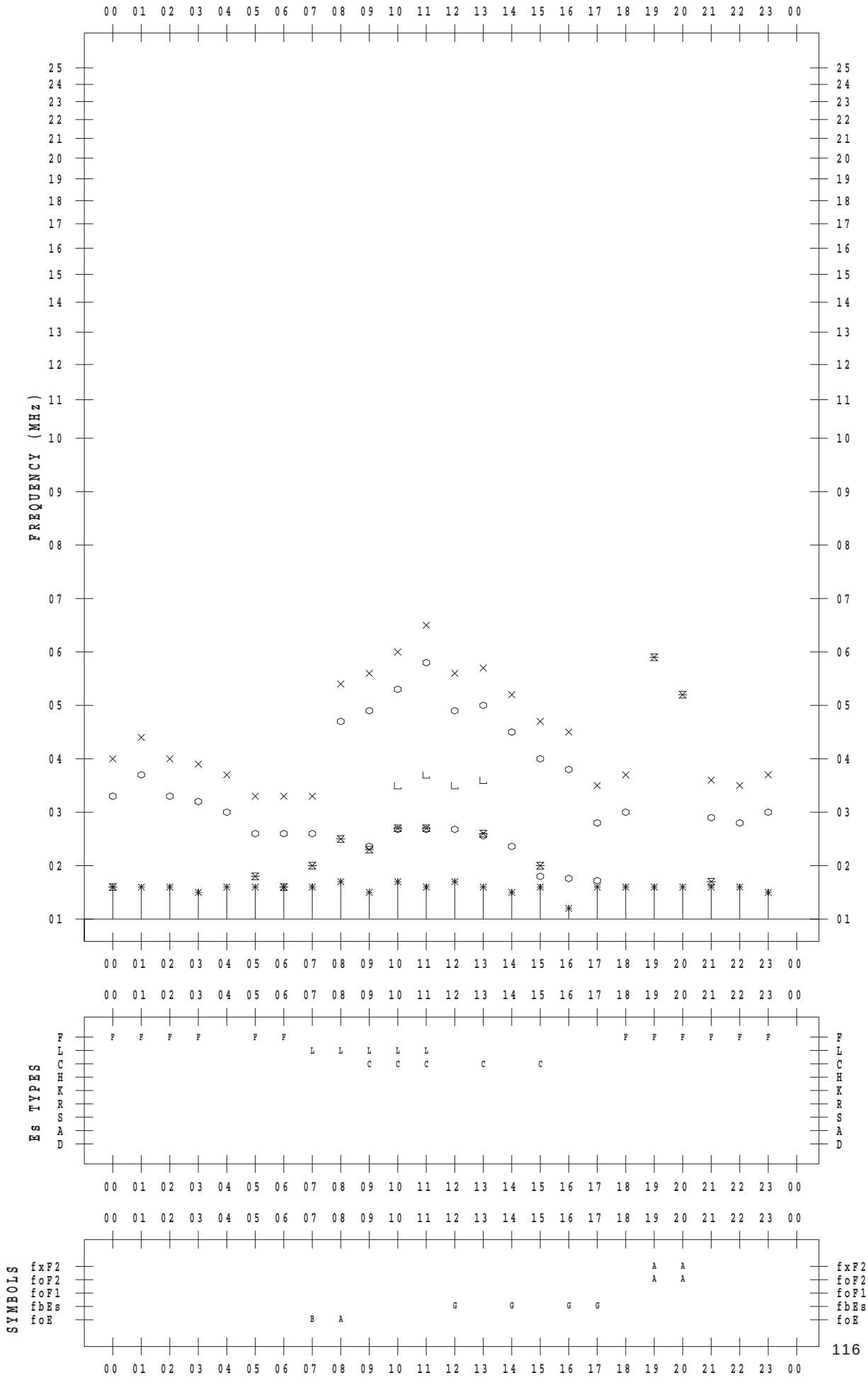
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/ 9

135 °E MEAN TIME



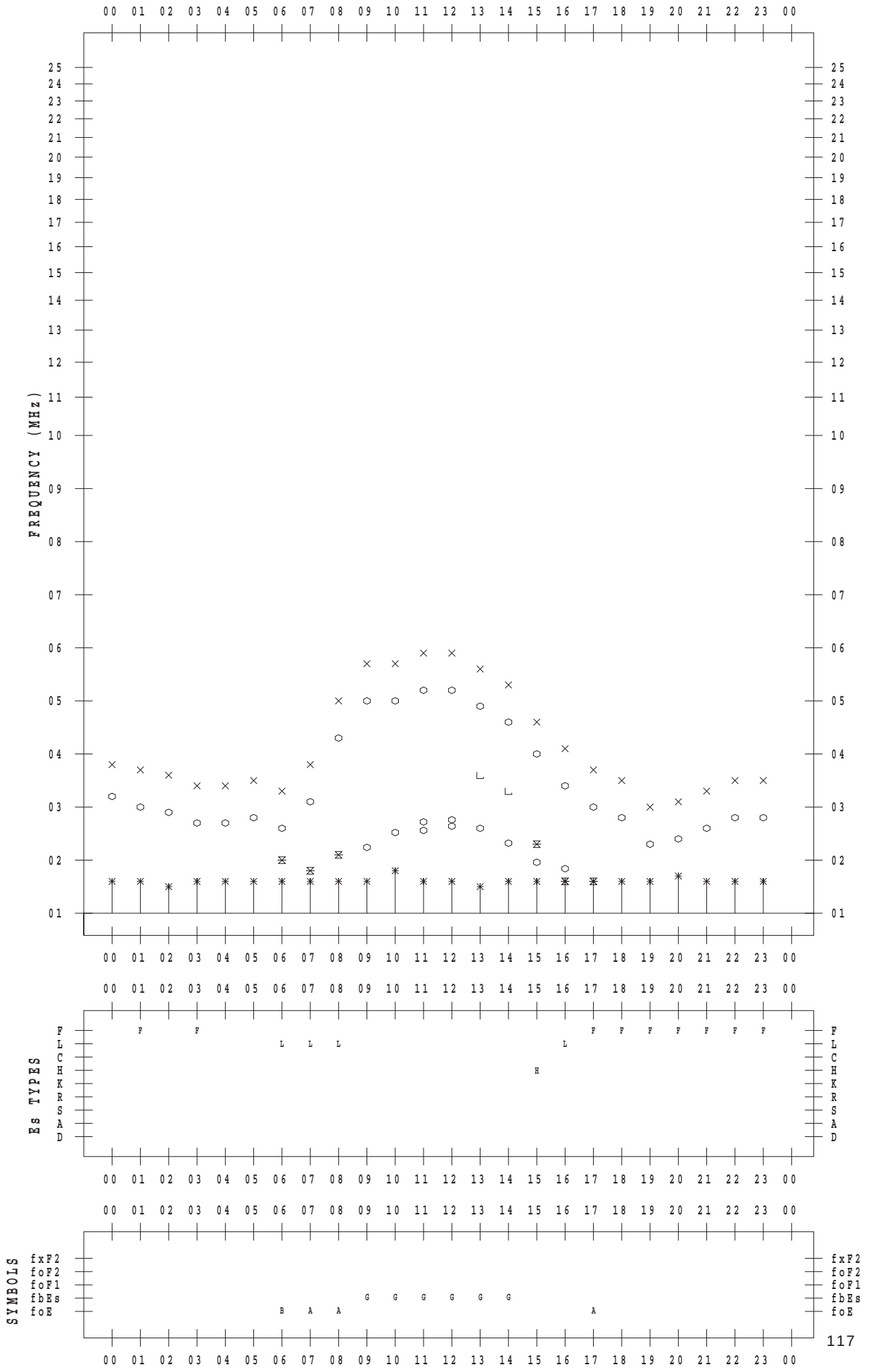
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/10

135 °E MEAN TIME



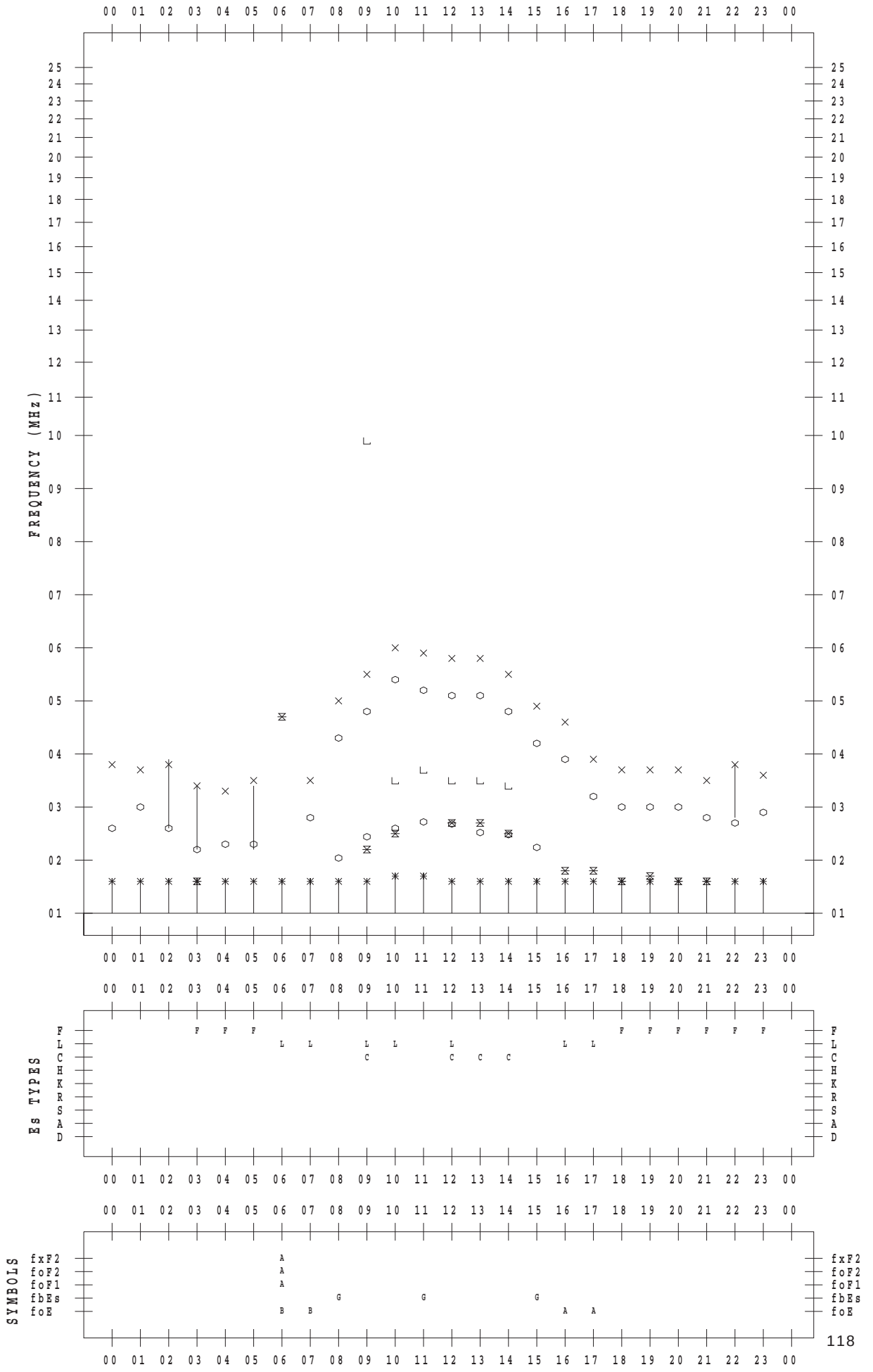
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/11

135 °E MEAN TIME



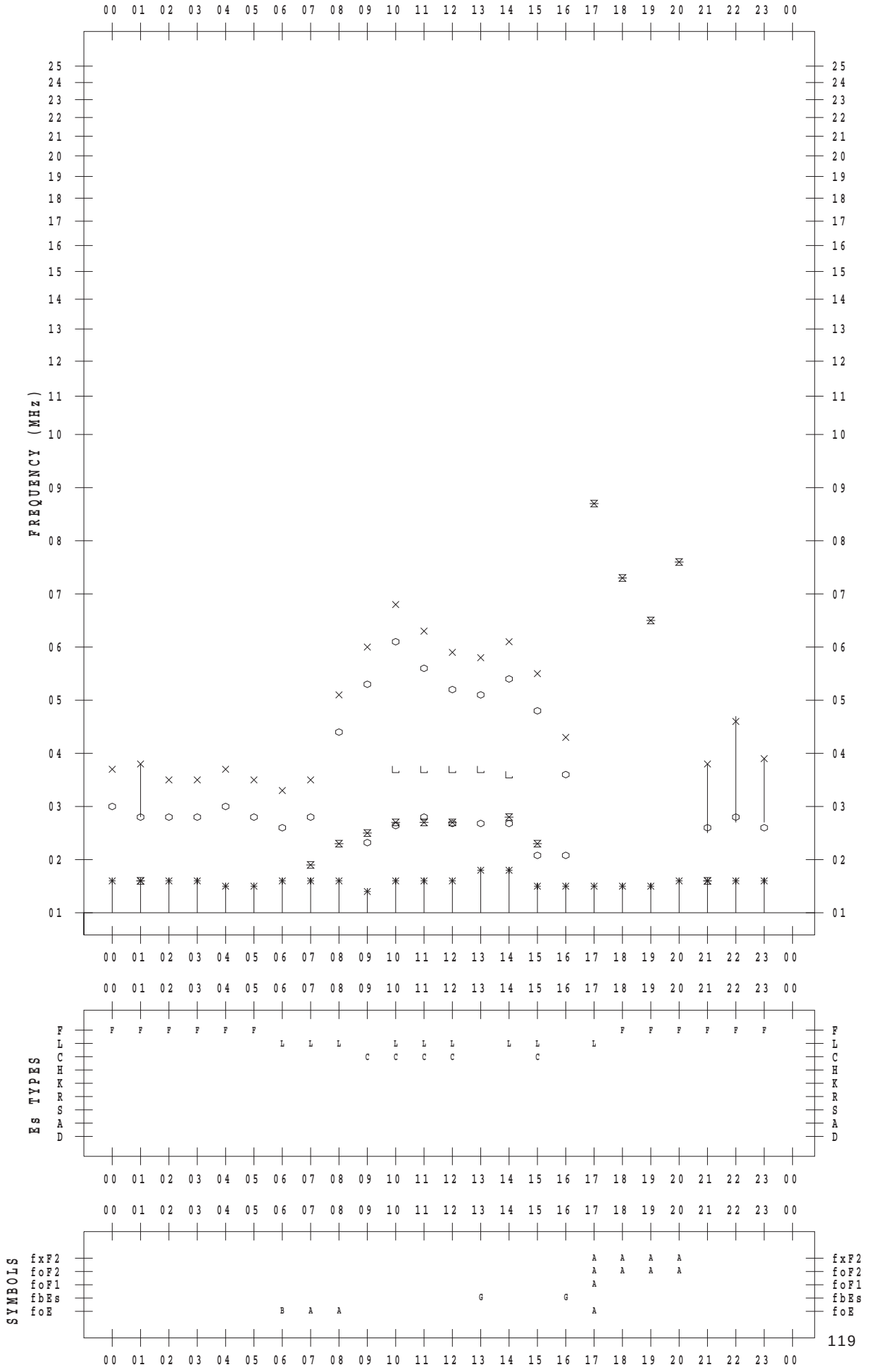
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/12

135 °E MEAN TIME



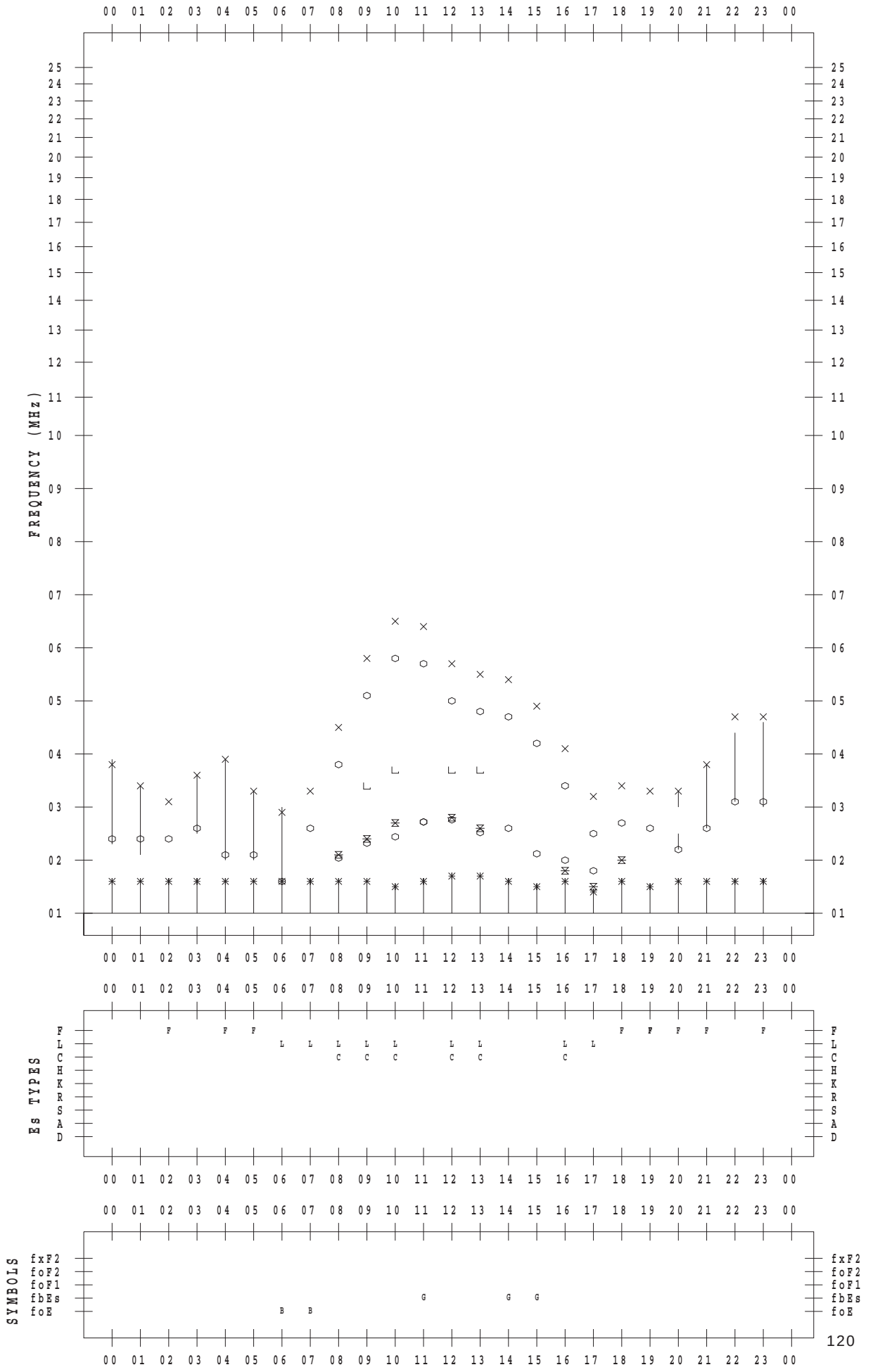
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/13

135 °E MEAN TIME



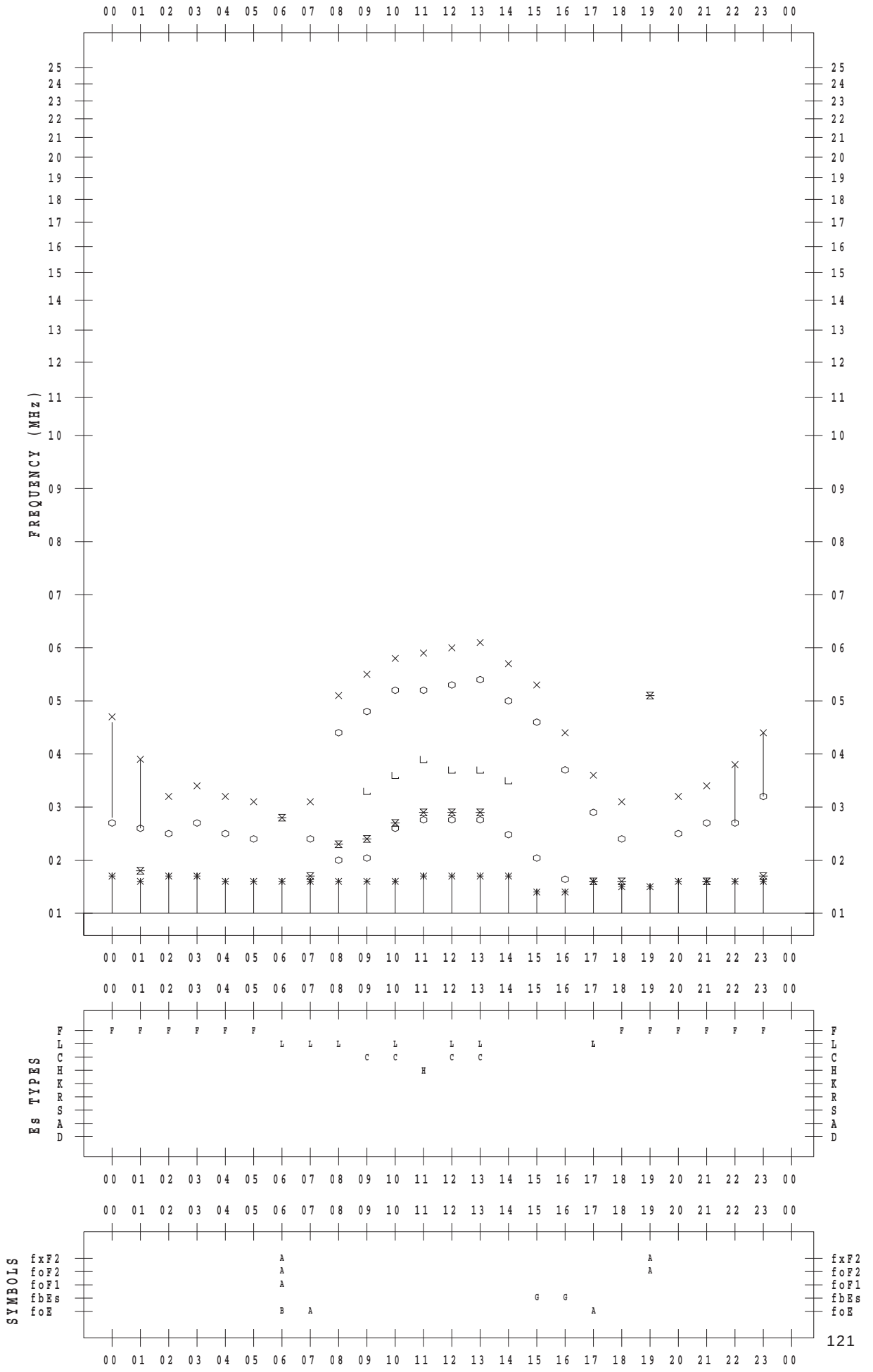
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/14

135 °E MEAN TIME



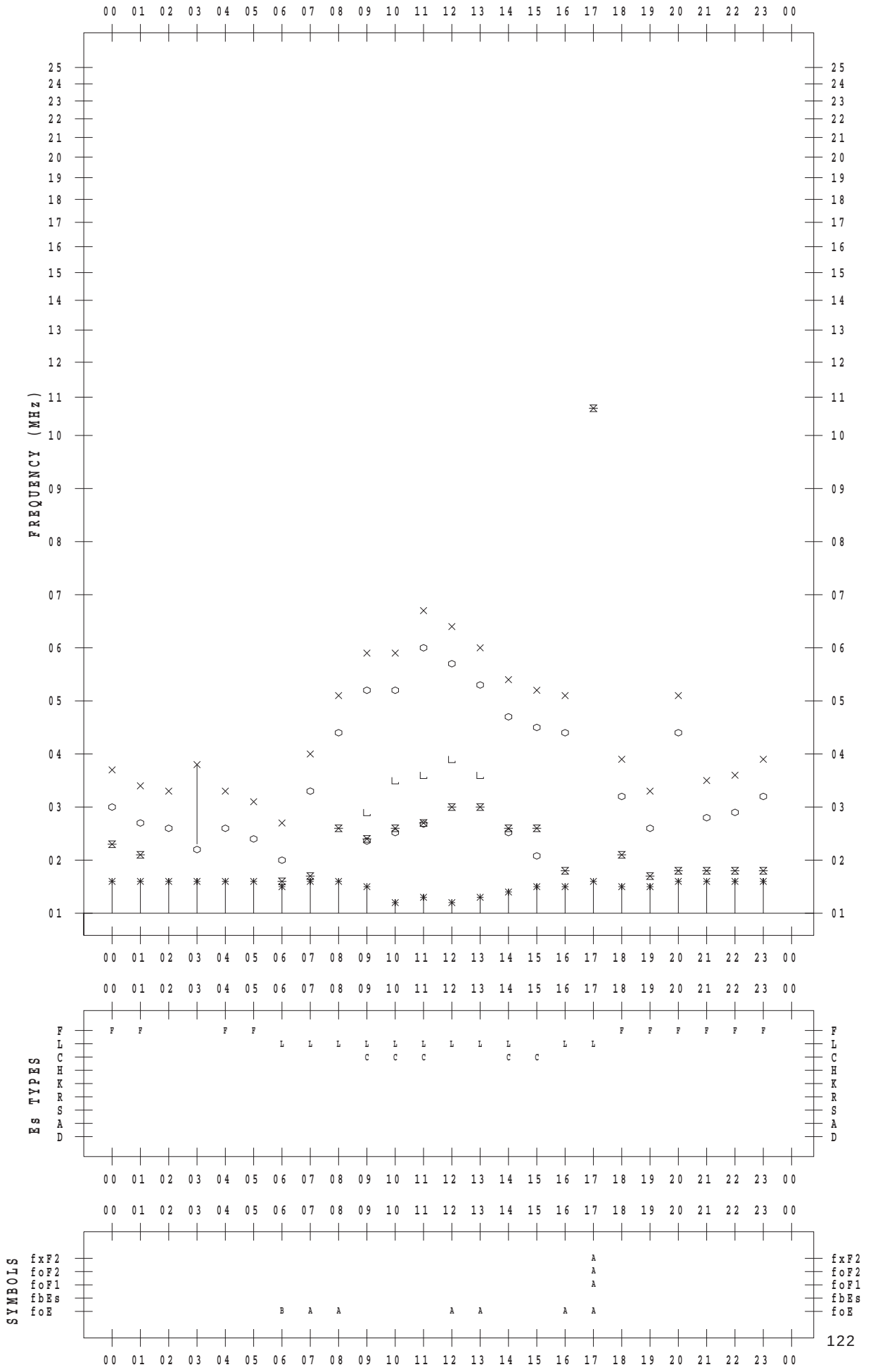
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/15

135 °E MEAN TIME



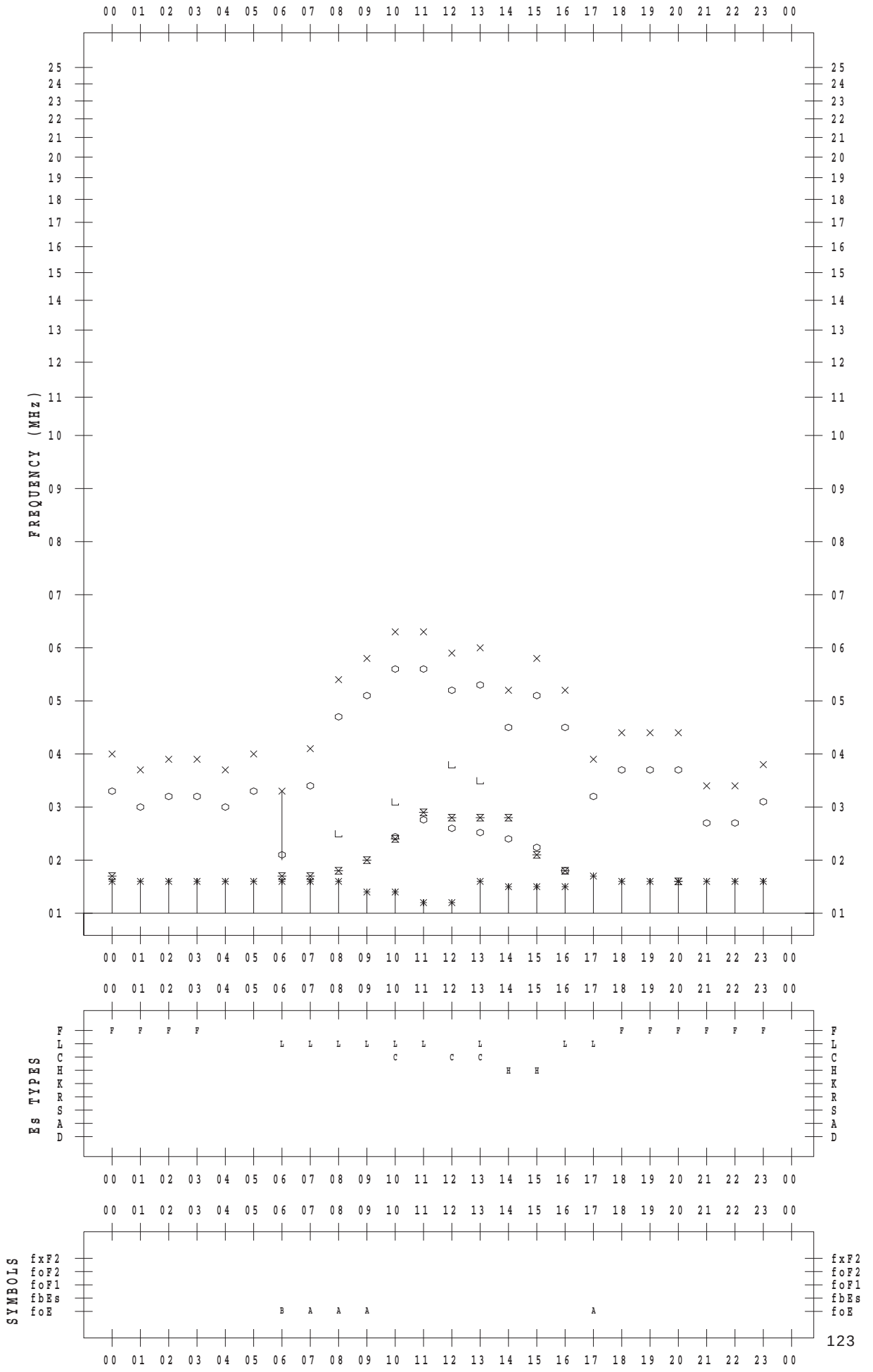
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/16

135 °E MEAN TIME



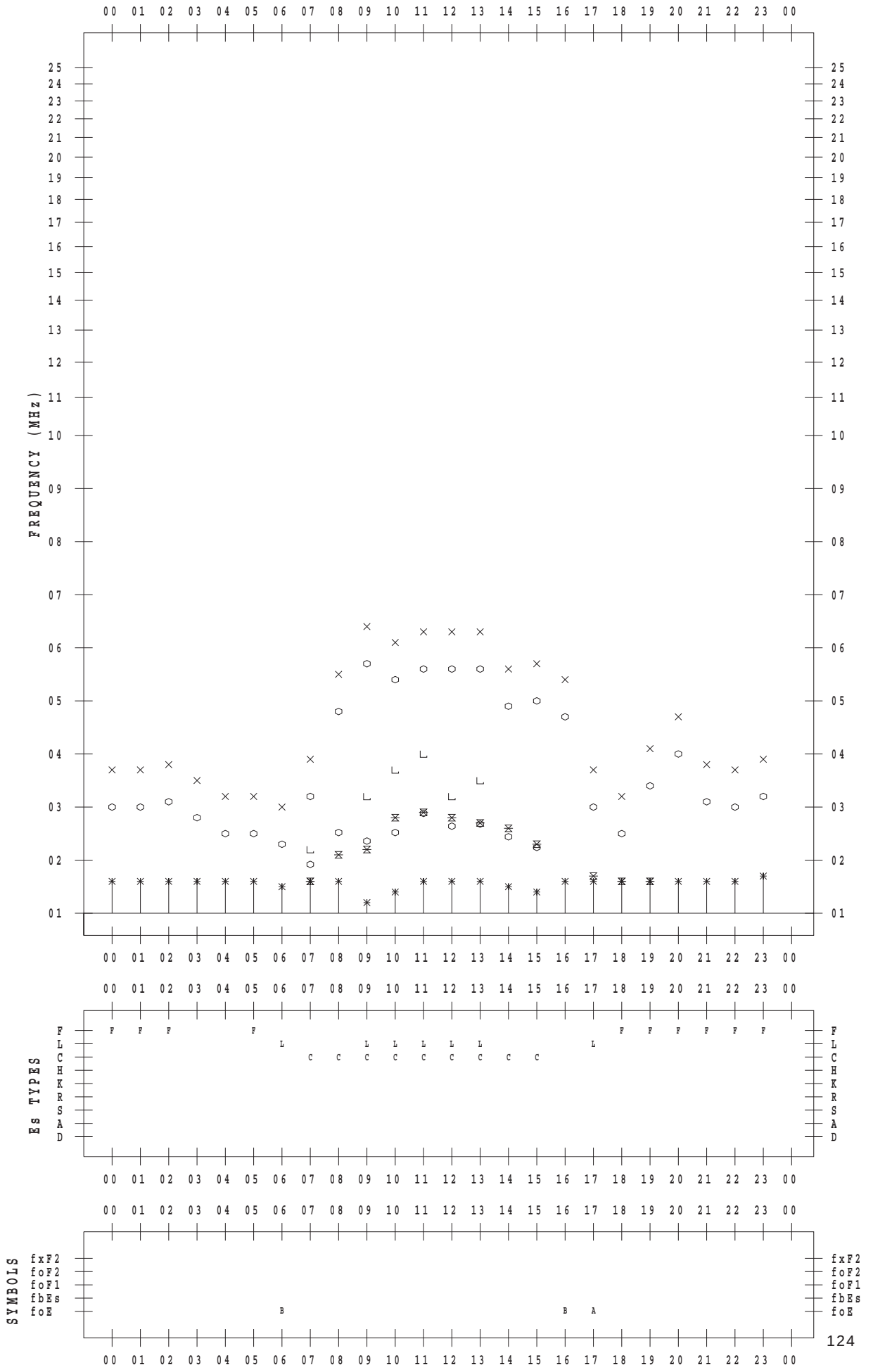
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/17

135 °E MEAN TIME



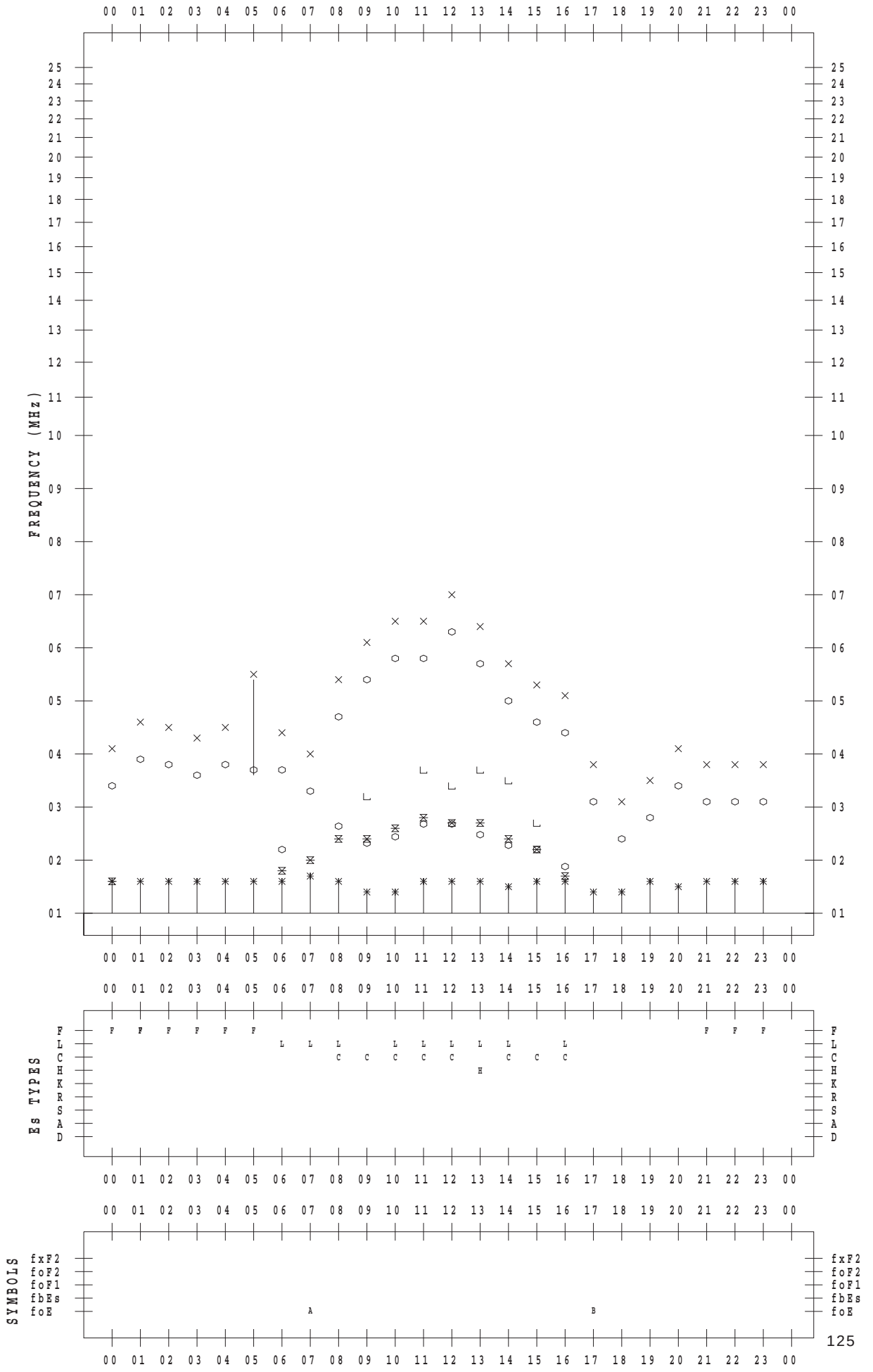
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/18

135 °E MEAN TIME



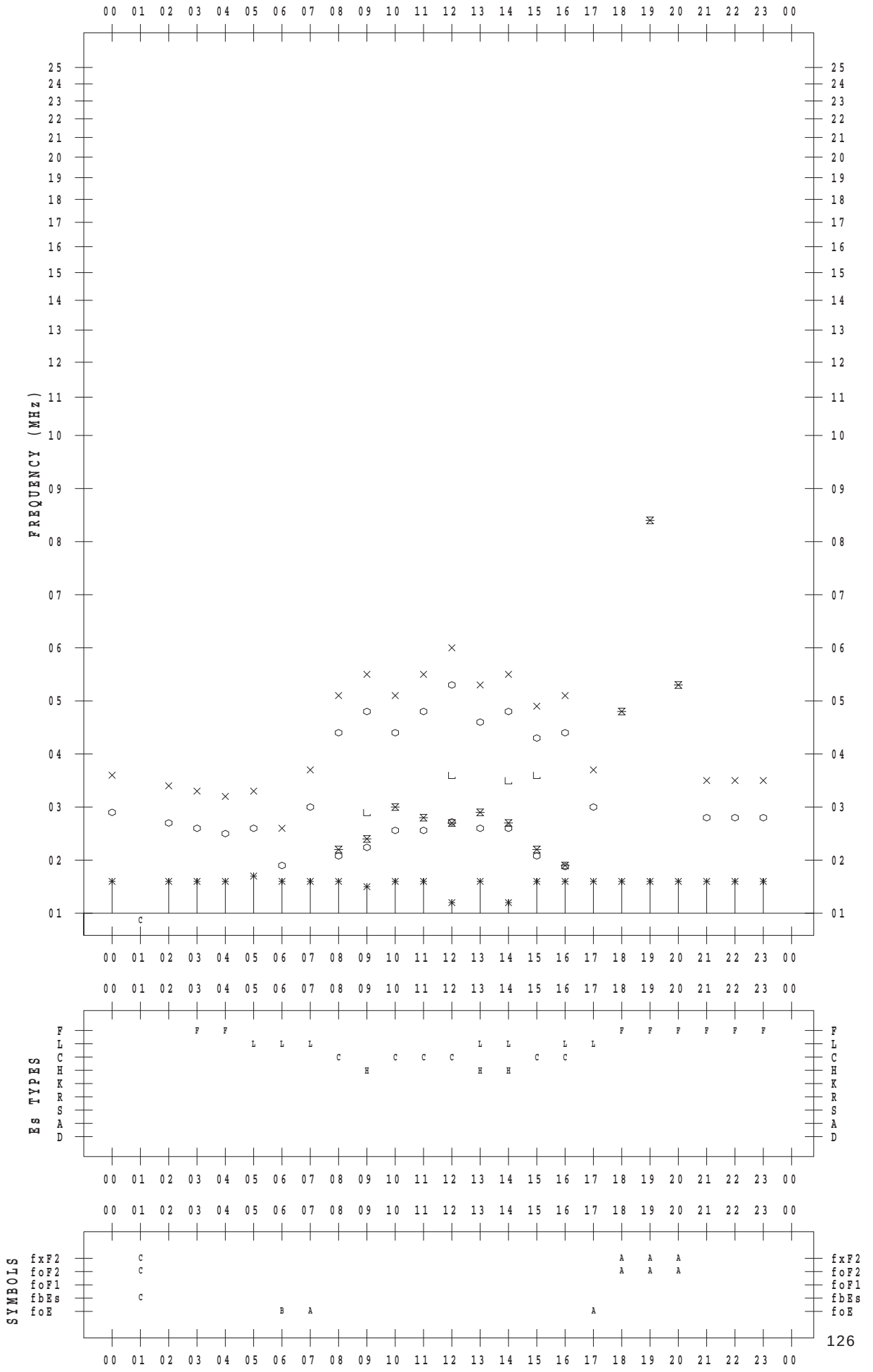
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/19

135 °E MEAN TIME



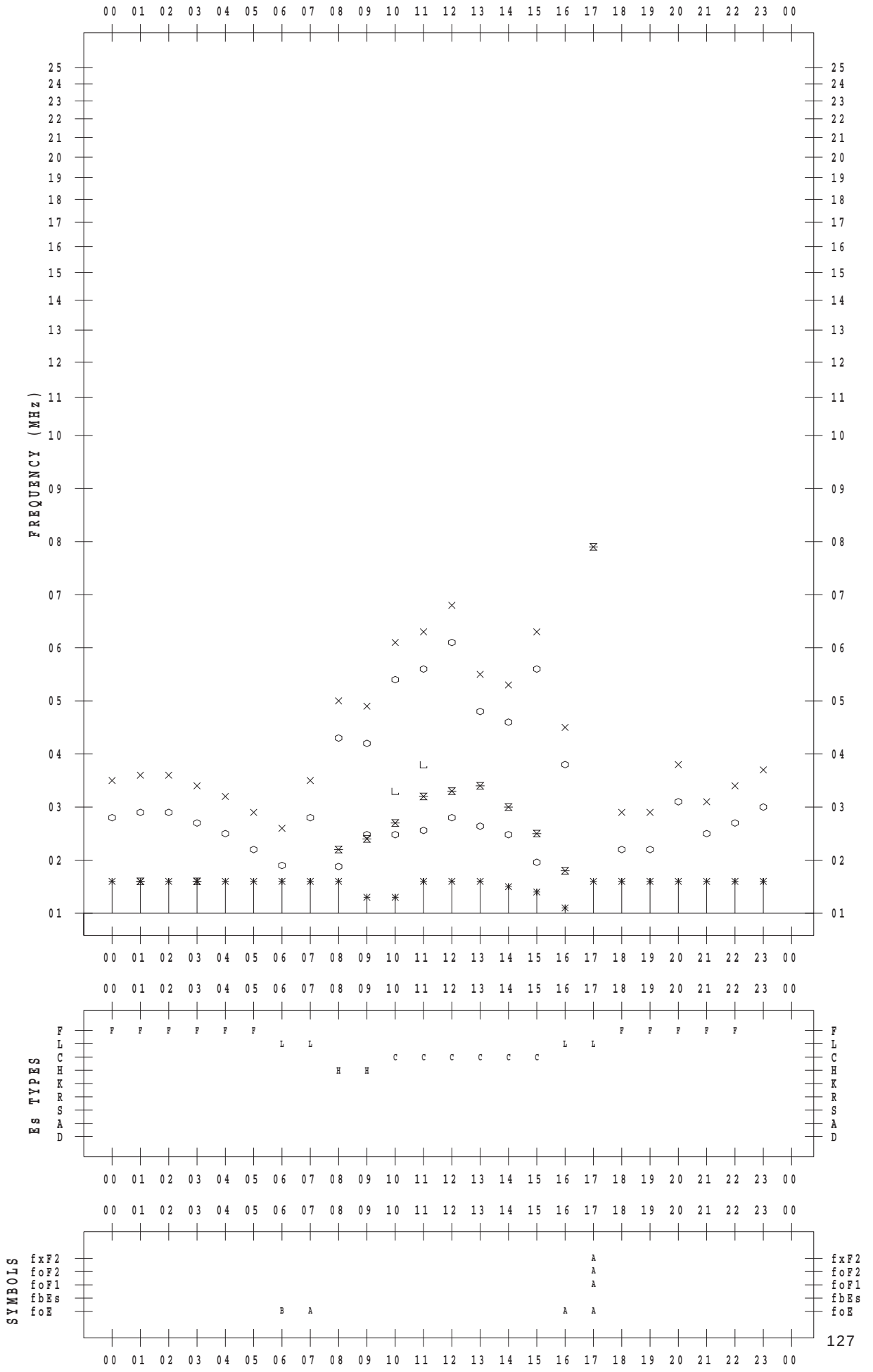
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/20

135 °E MEAN TIME



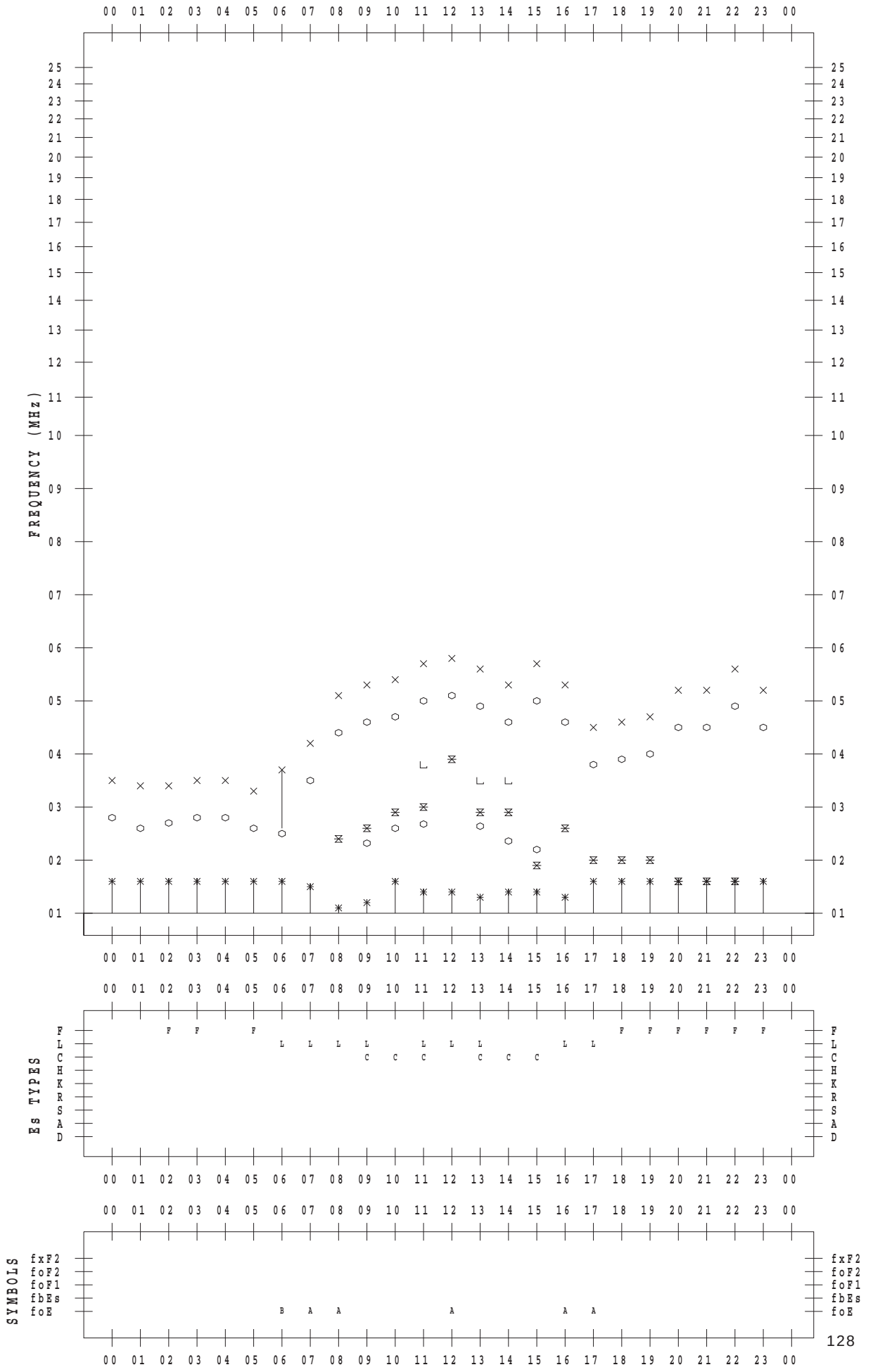
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/21

135 °E MEAN TIME



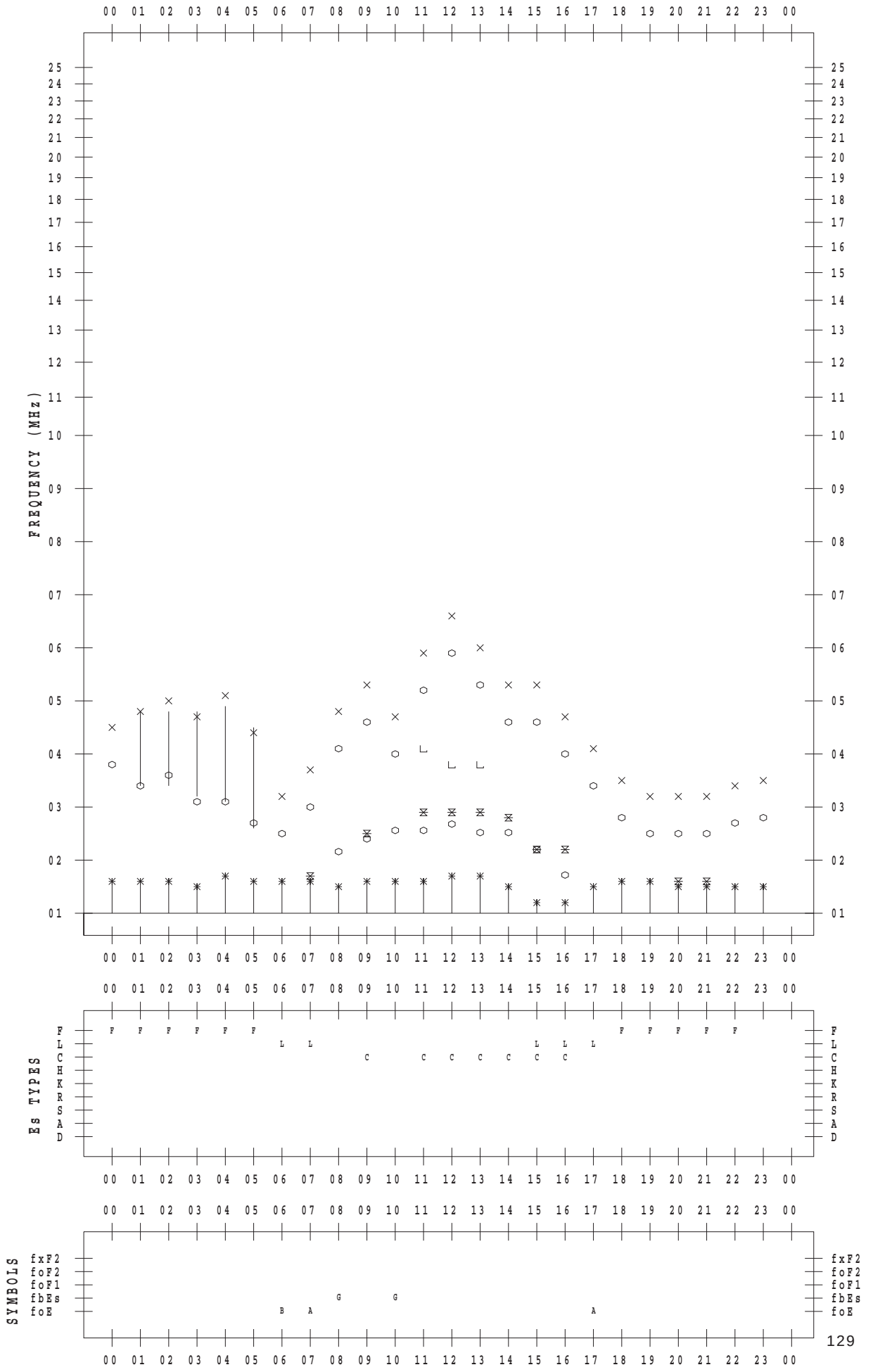
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/22

135 °E MEAN TIME



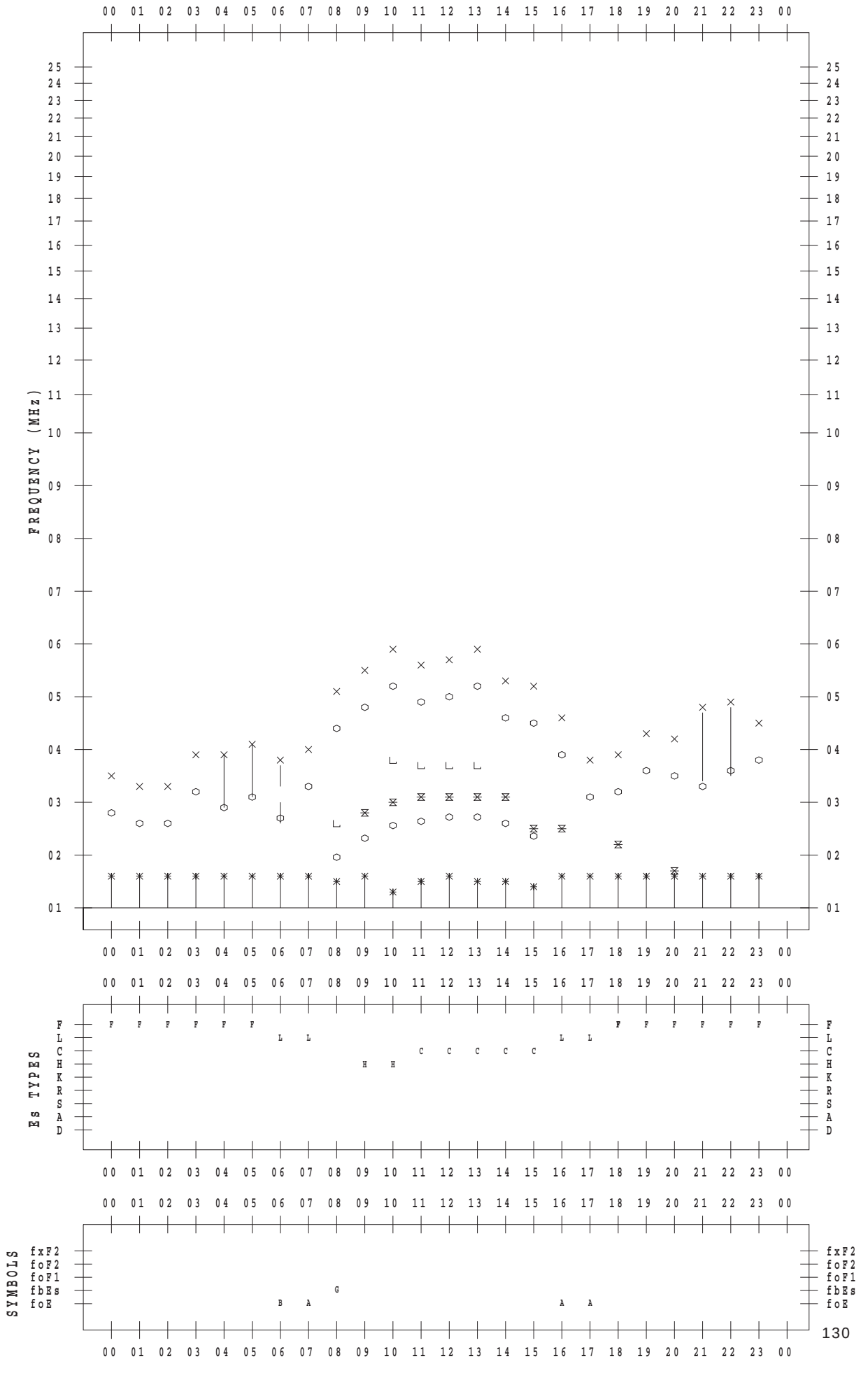
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/23

135 °E MEAN TIME



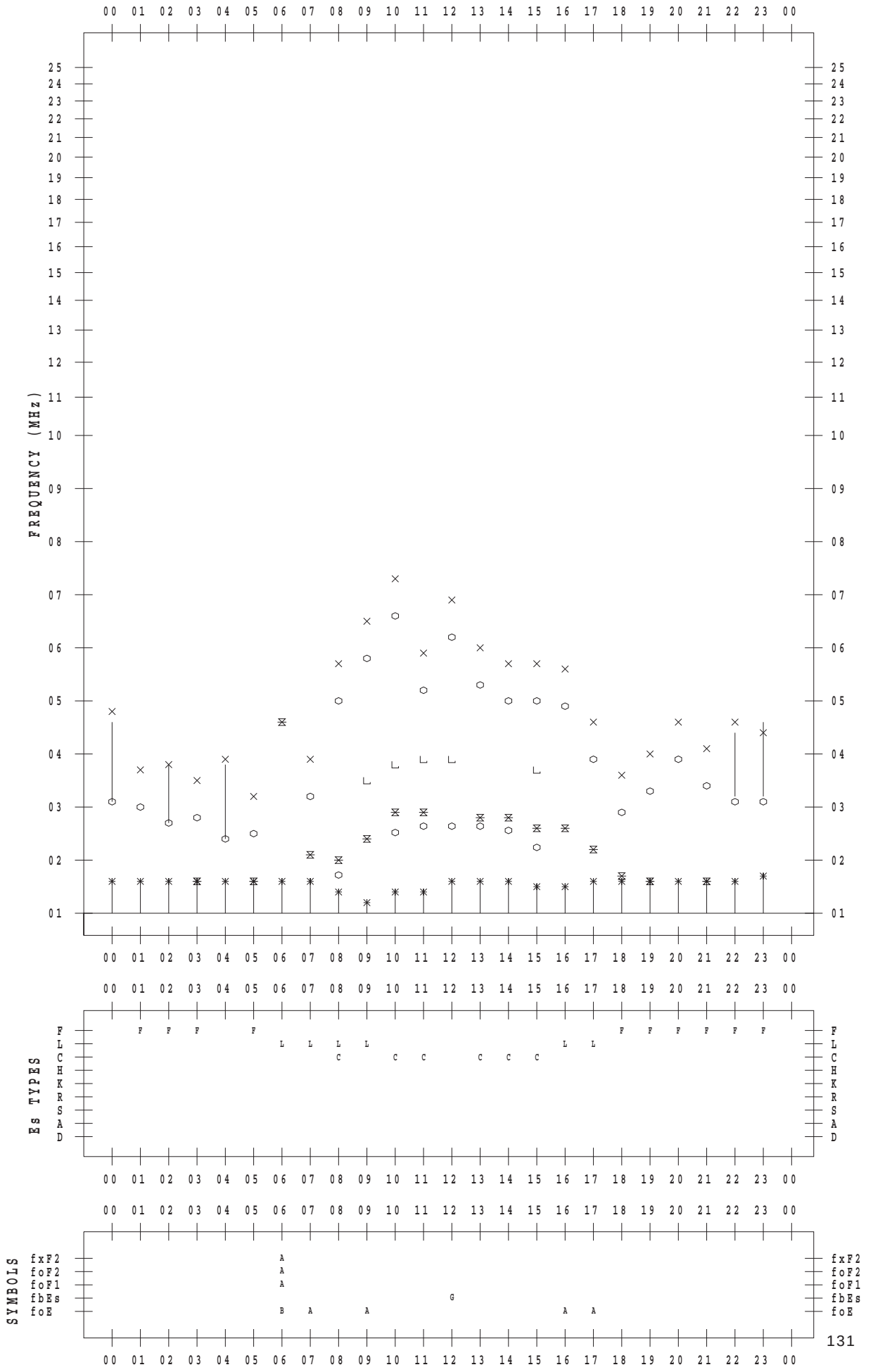
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/24

135 °E MEAN TIME



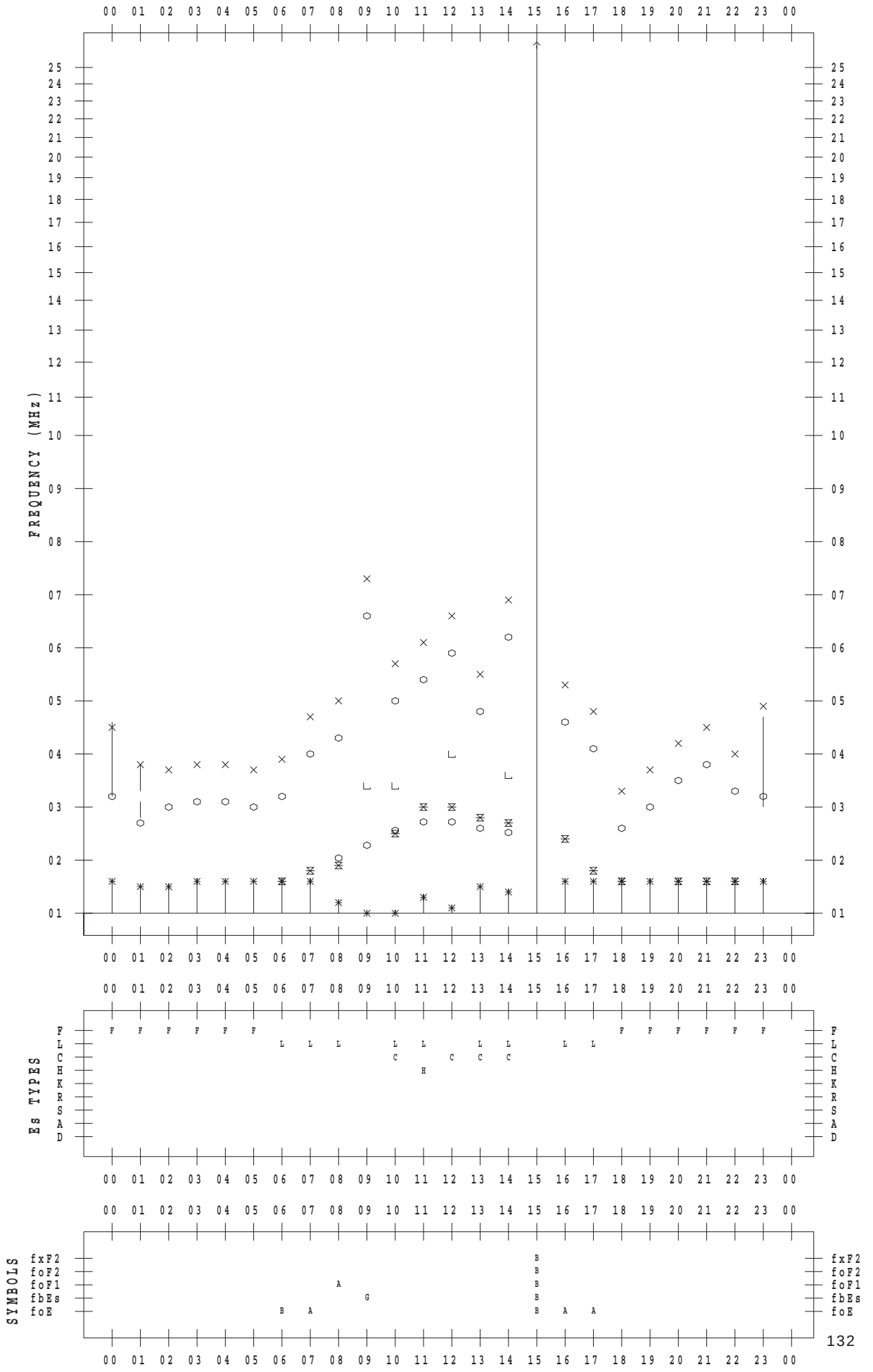
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/25

135 °E MEAN TIME



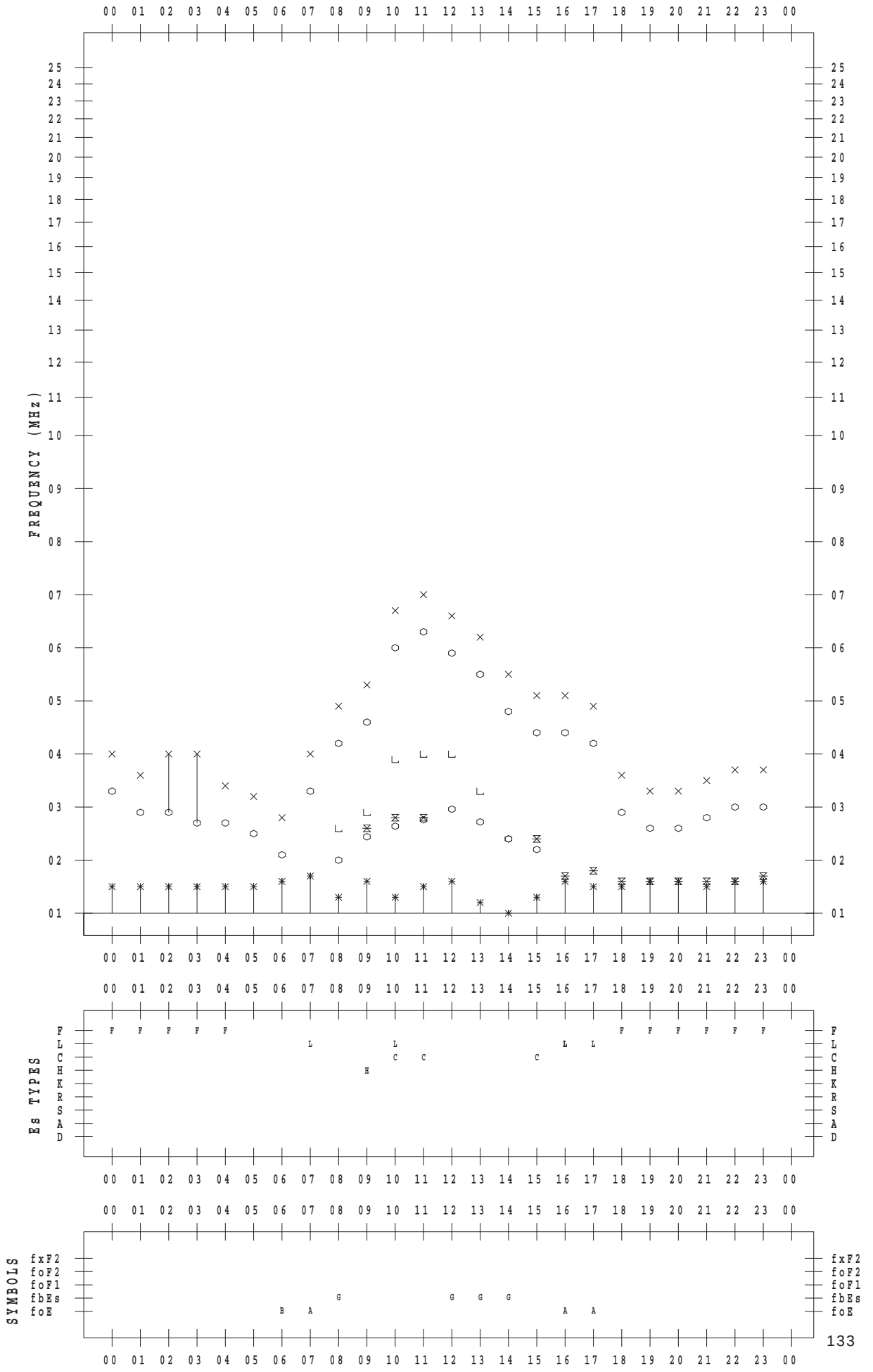
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/26

135 °E MEAN TIME



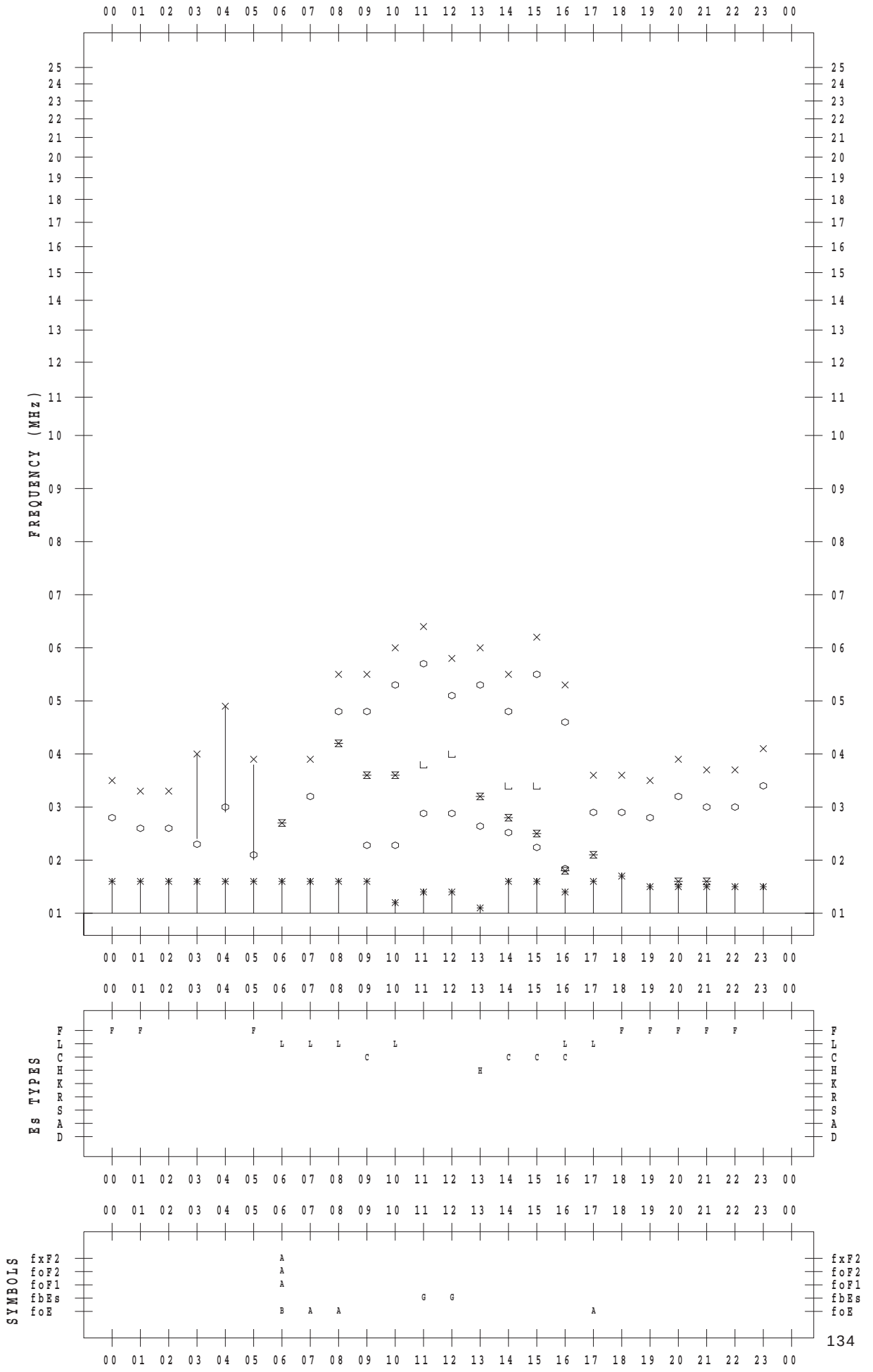
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/27

135 °E MEAN TIME



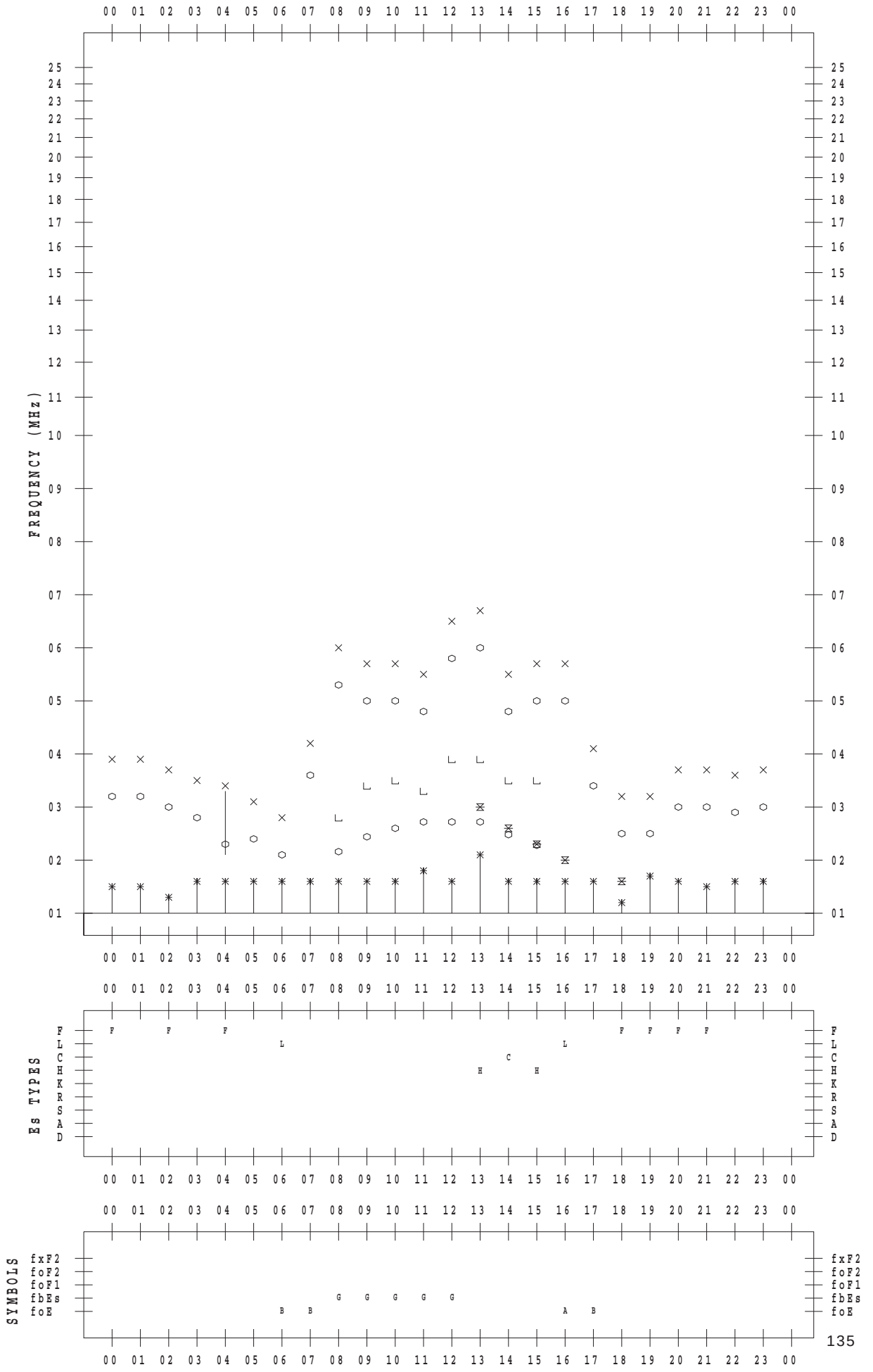
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/28

135 °E MEAN TIME



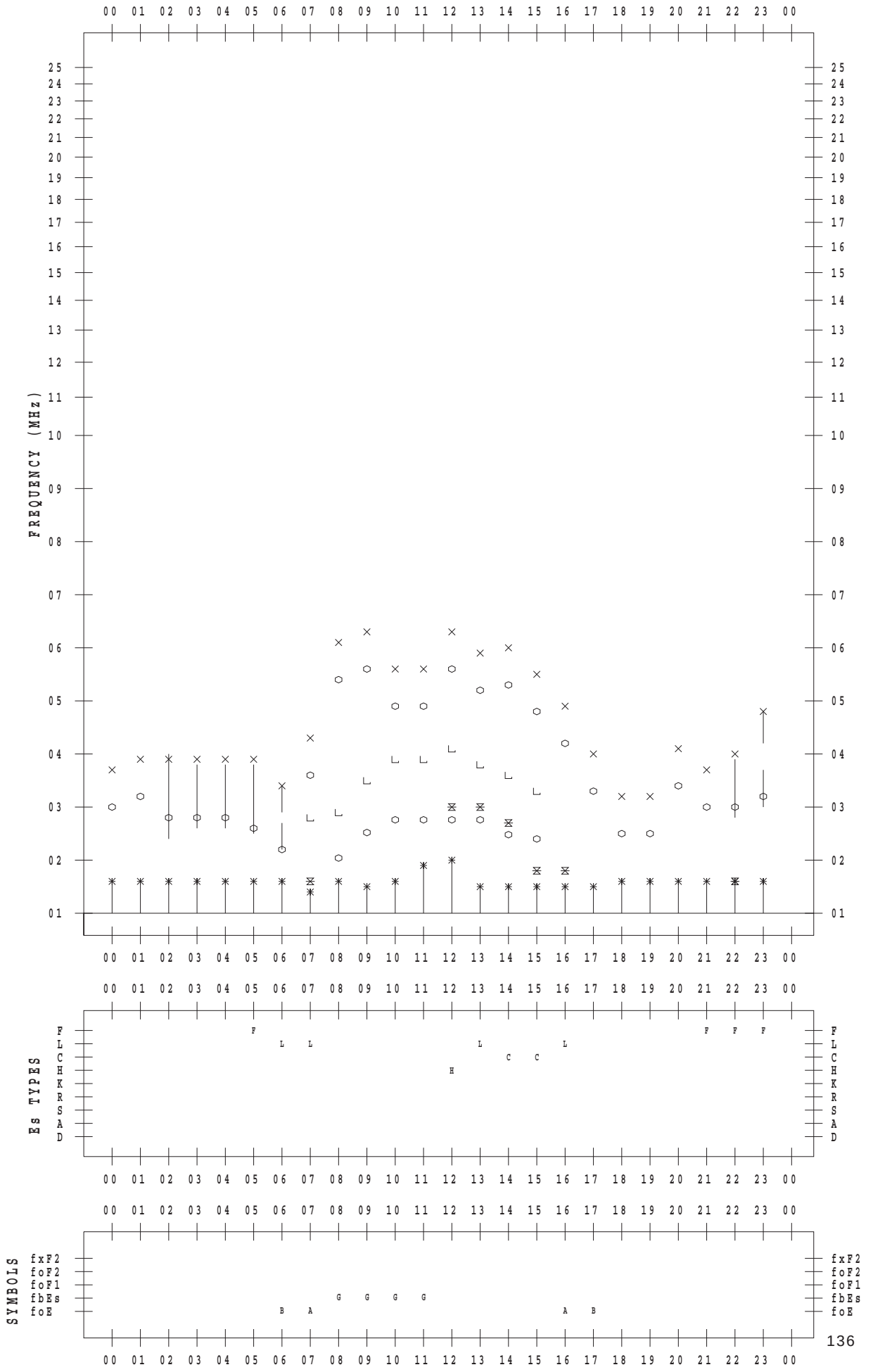
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/29

135 °E MEAN TIME



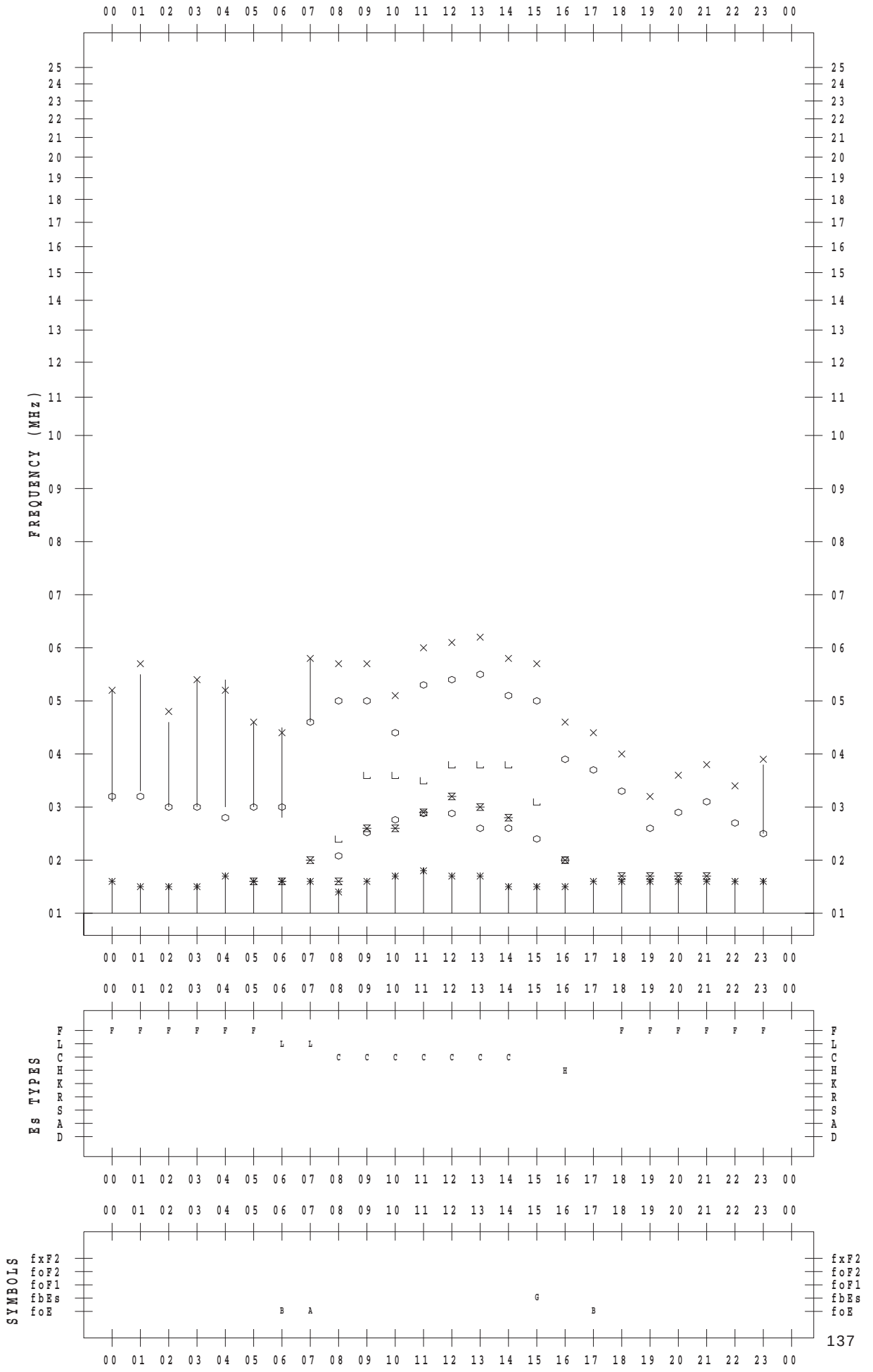
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/30

135 °E MEAN TIME



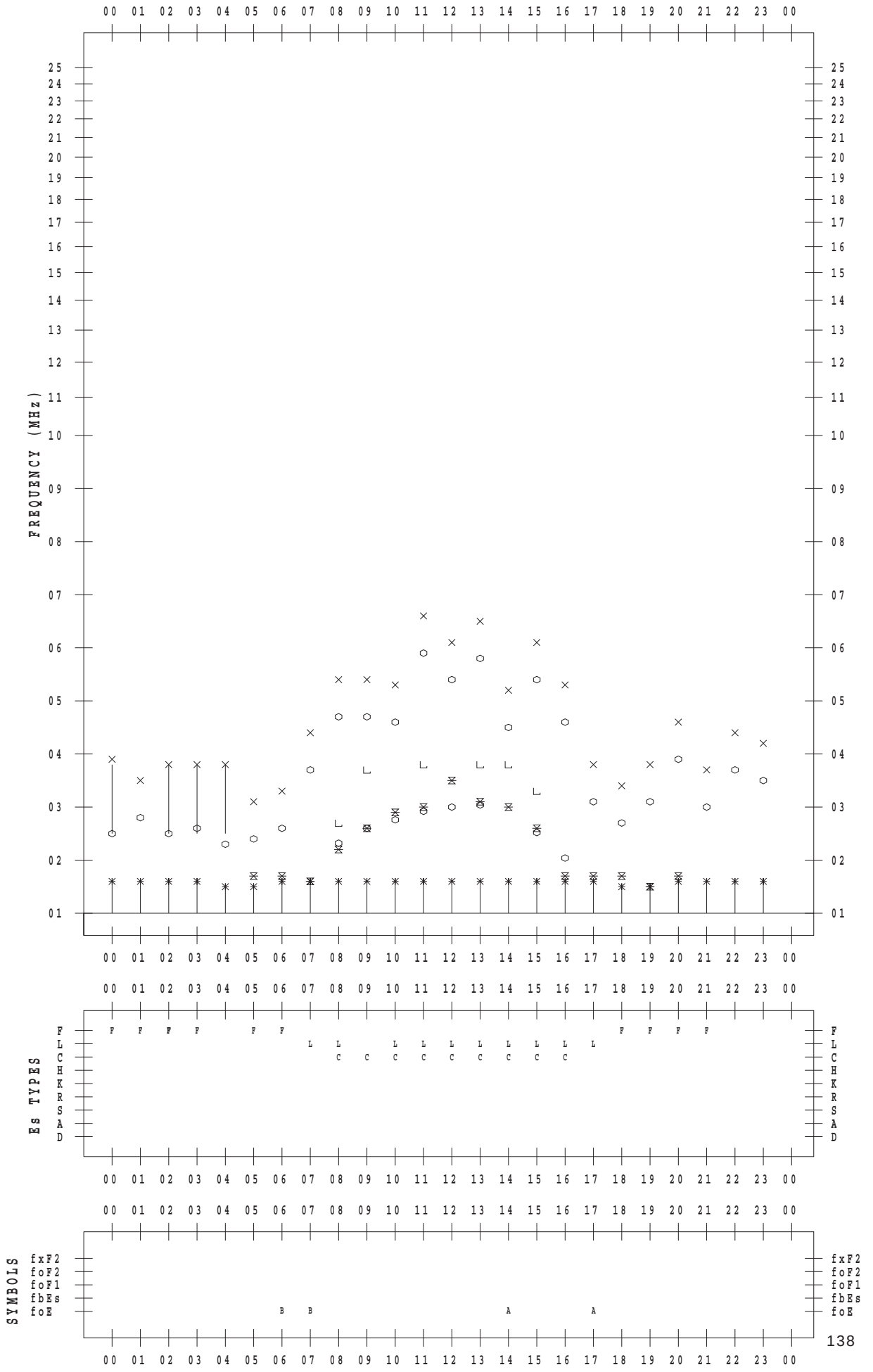
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 1/31

135 °E MEAN TIME



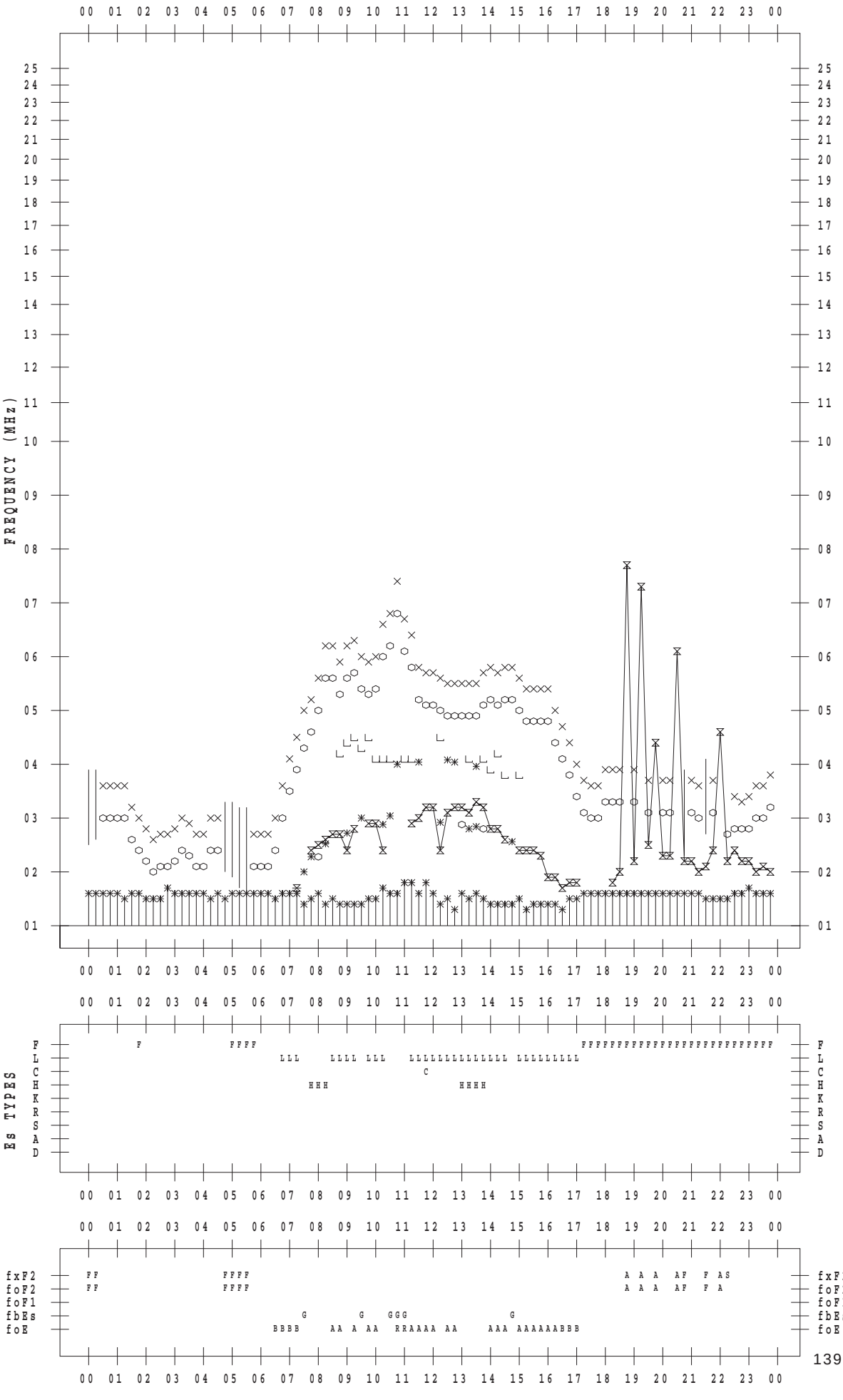
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 1

135 °E MEAN TIME



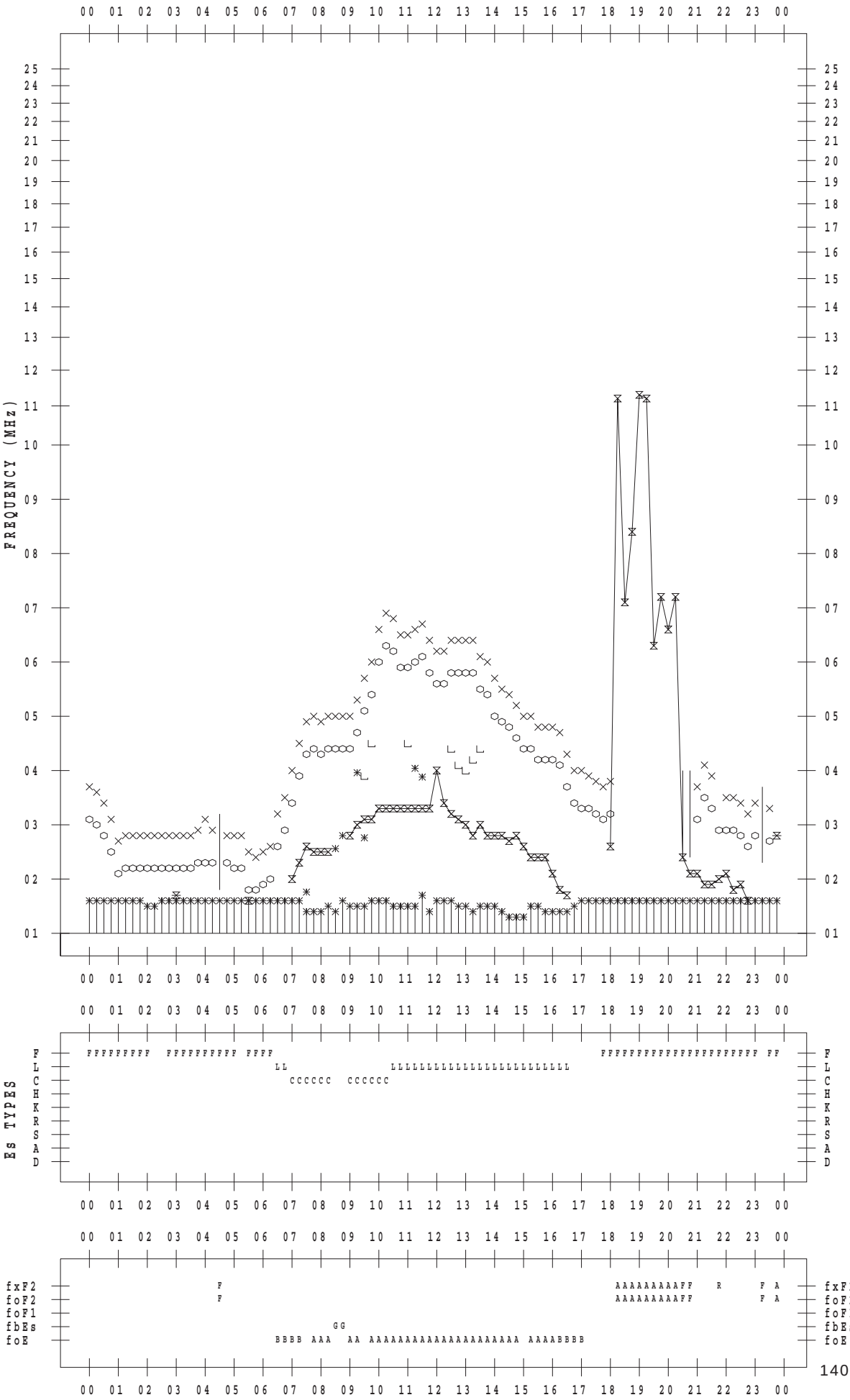
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 2

135 °E MEAN TIME



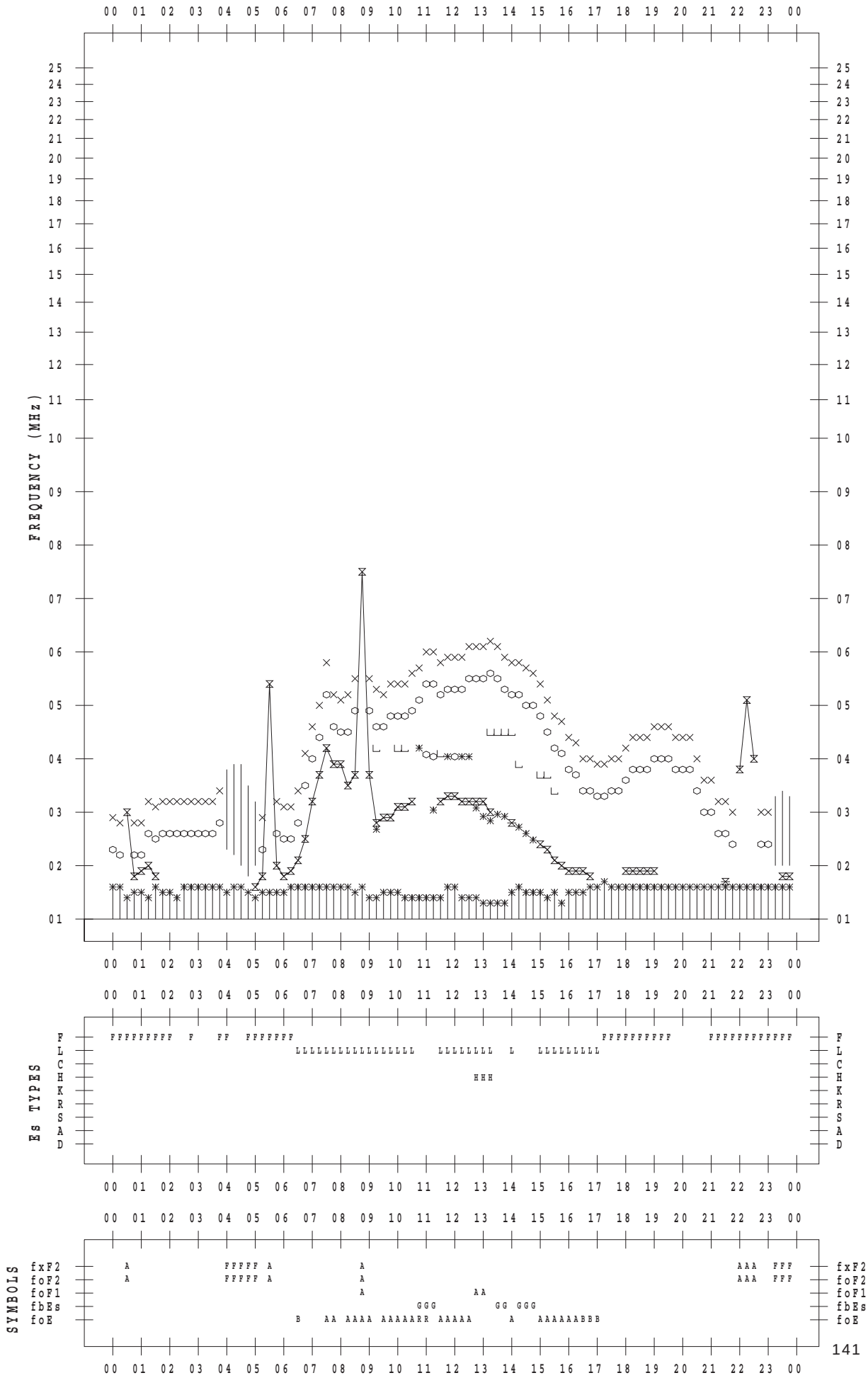
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 3

135 °E MEAN TIME



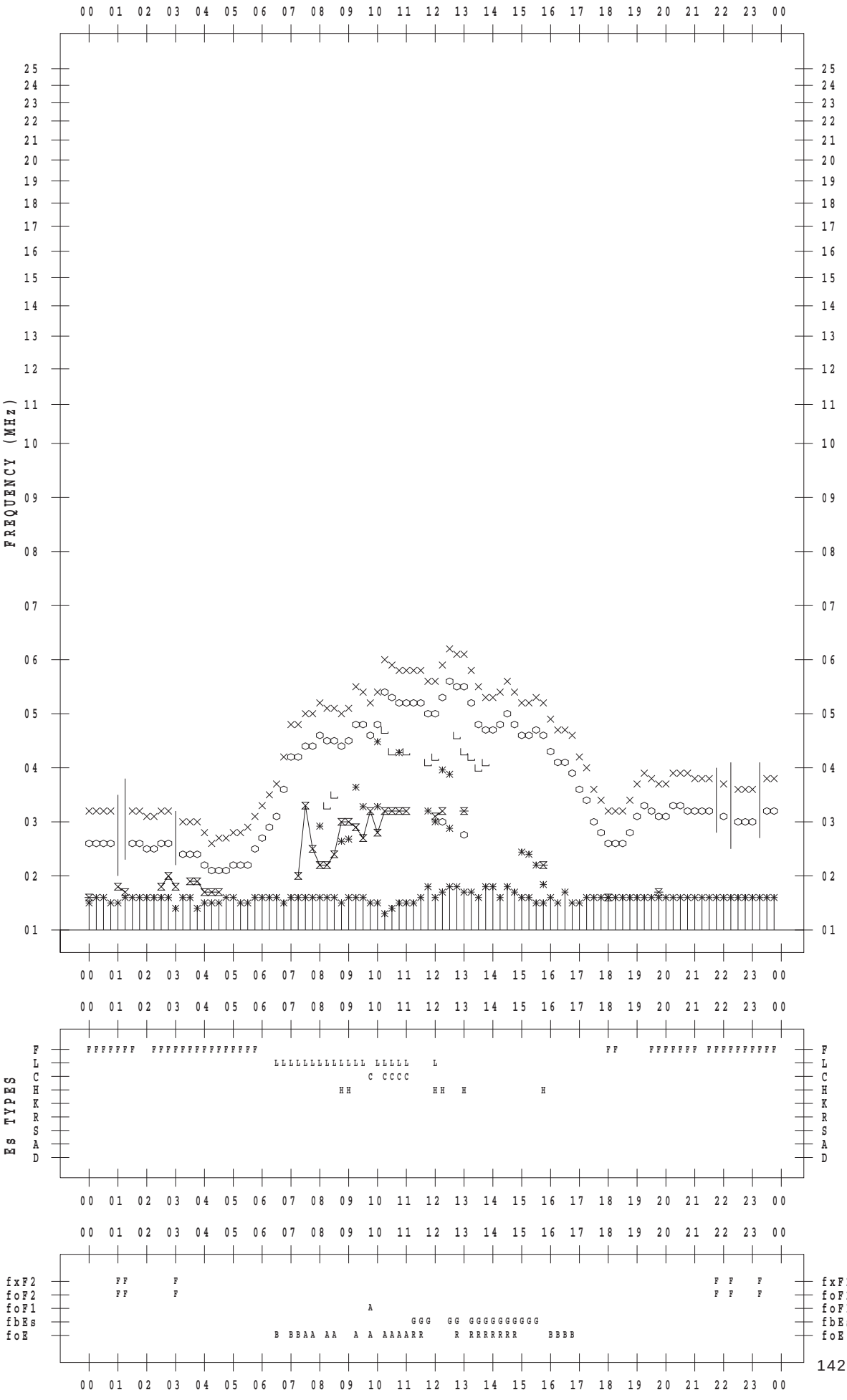
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 4

135 °E MEAN TIME



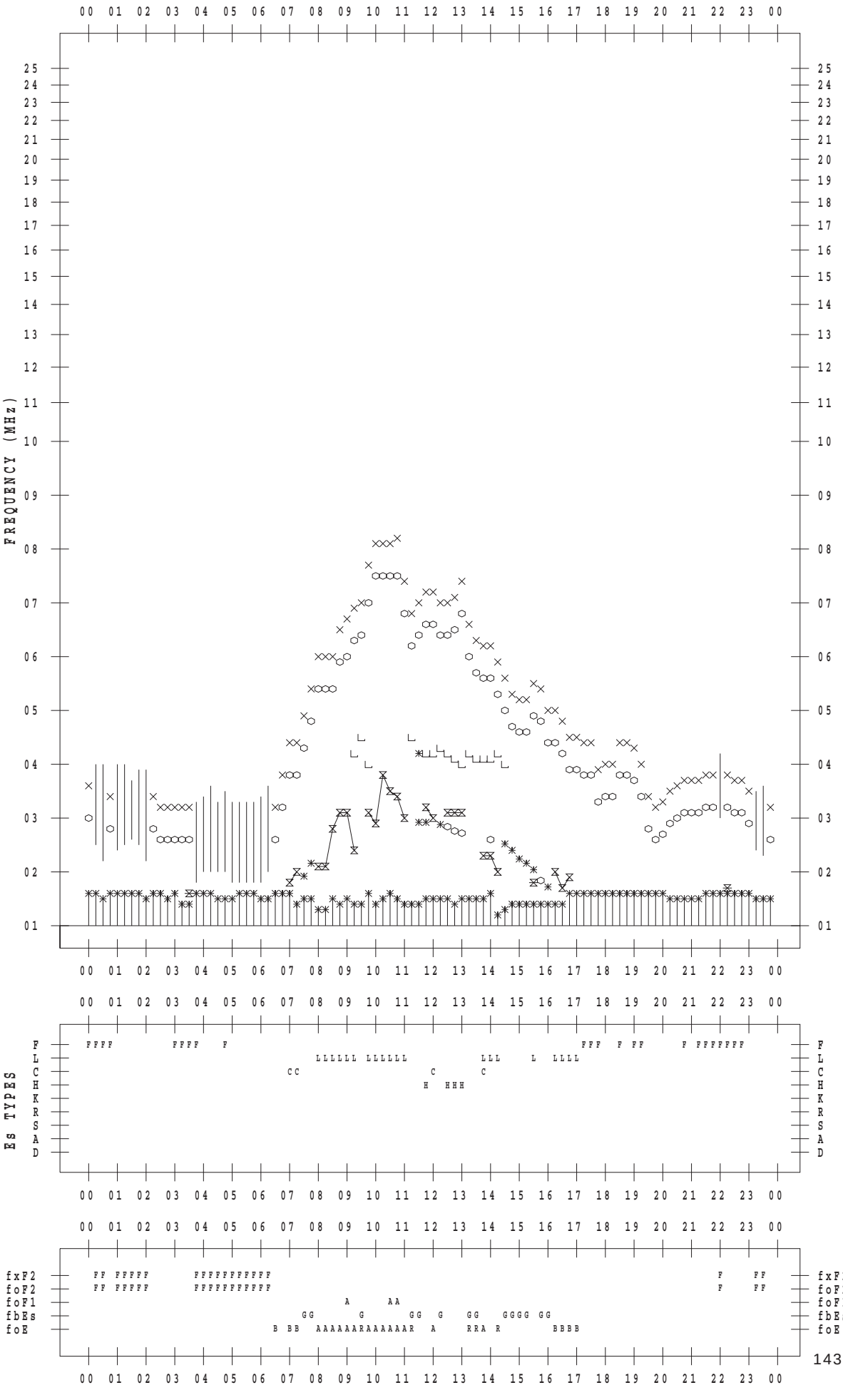
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 5

135 °E MEAN TIME



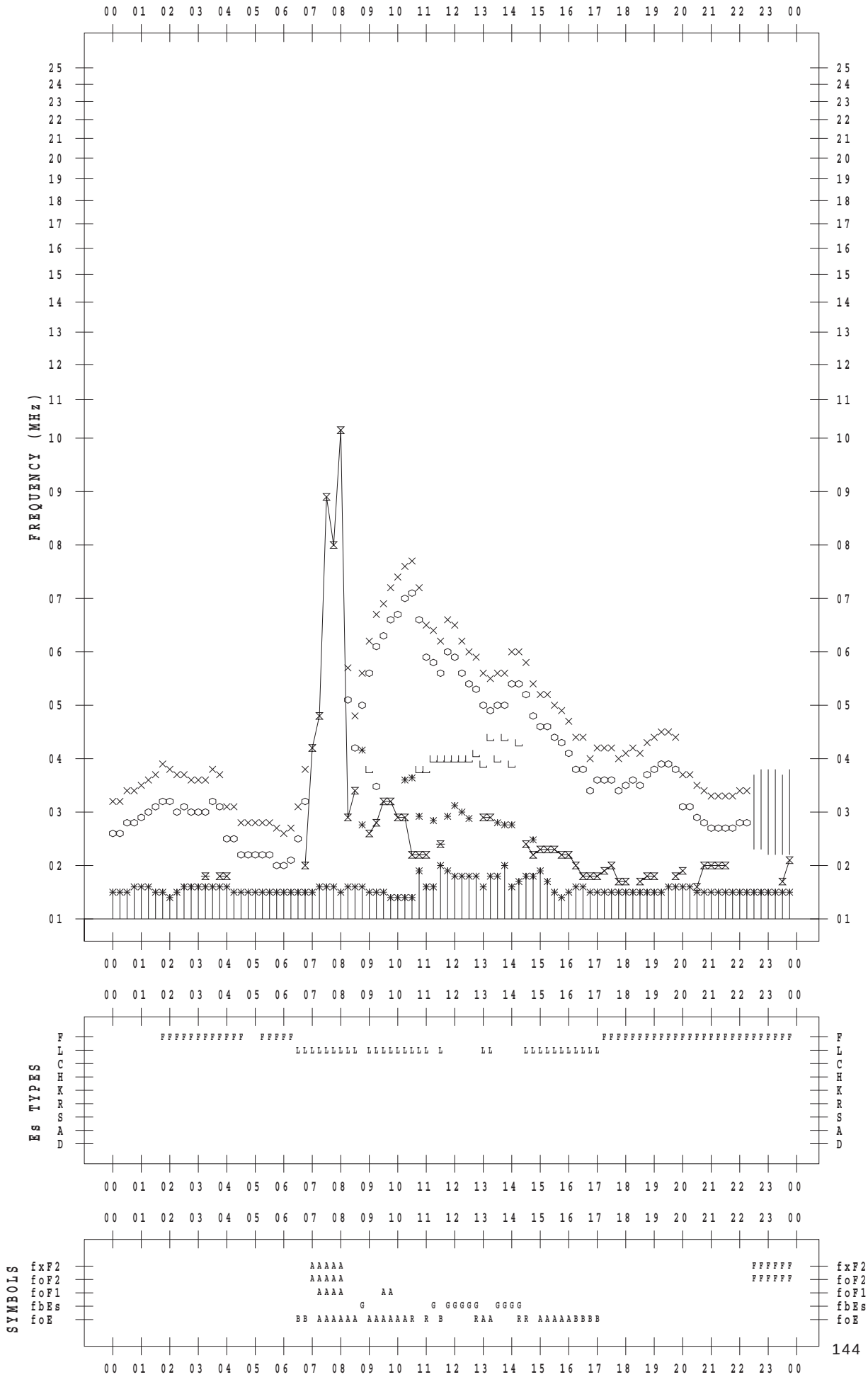
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 6

135 °E MEAN TIME



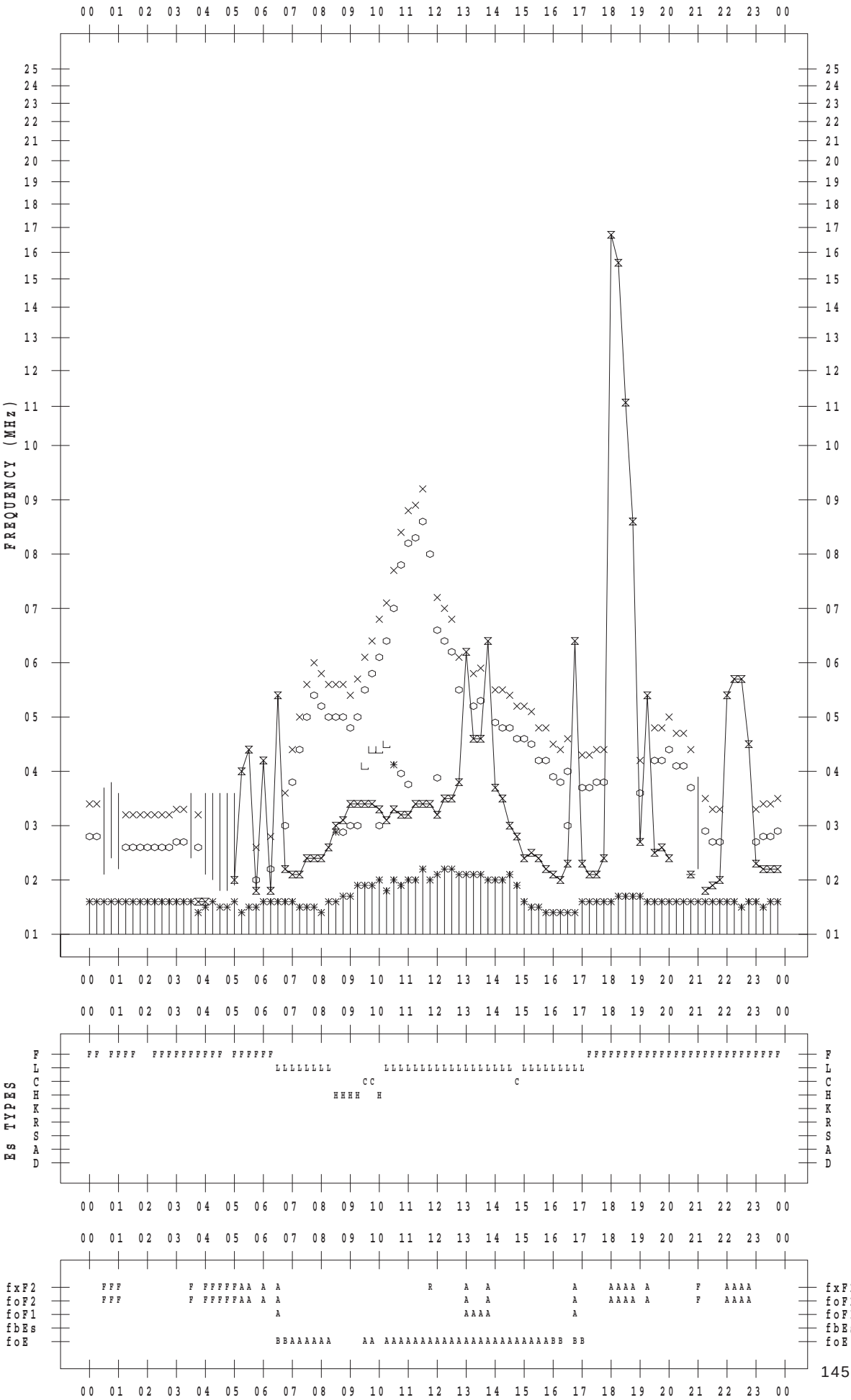
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 7

135 °E MEAN TIME



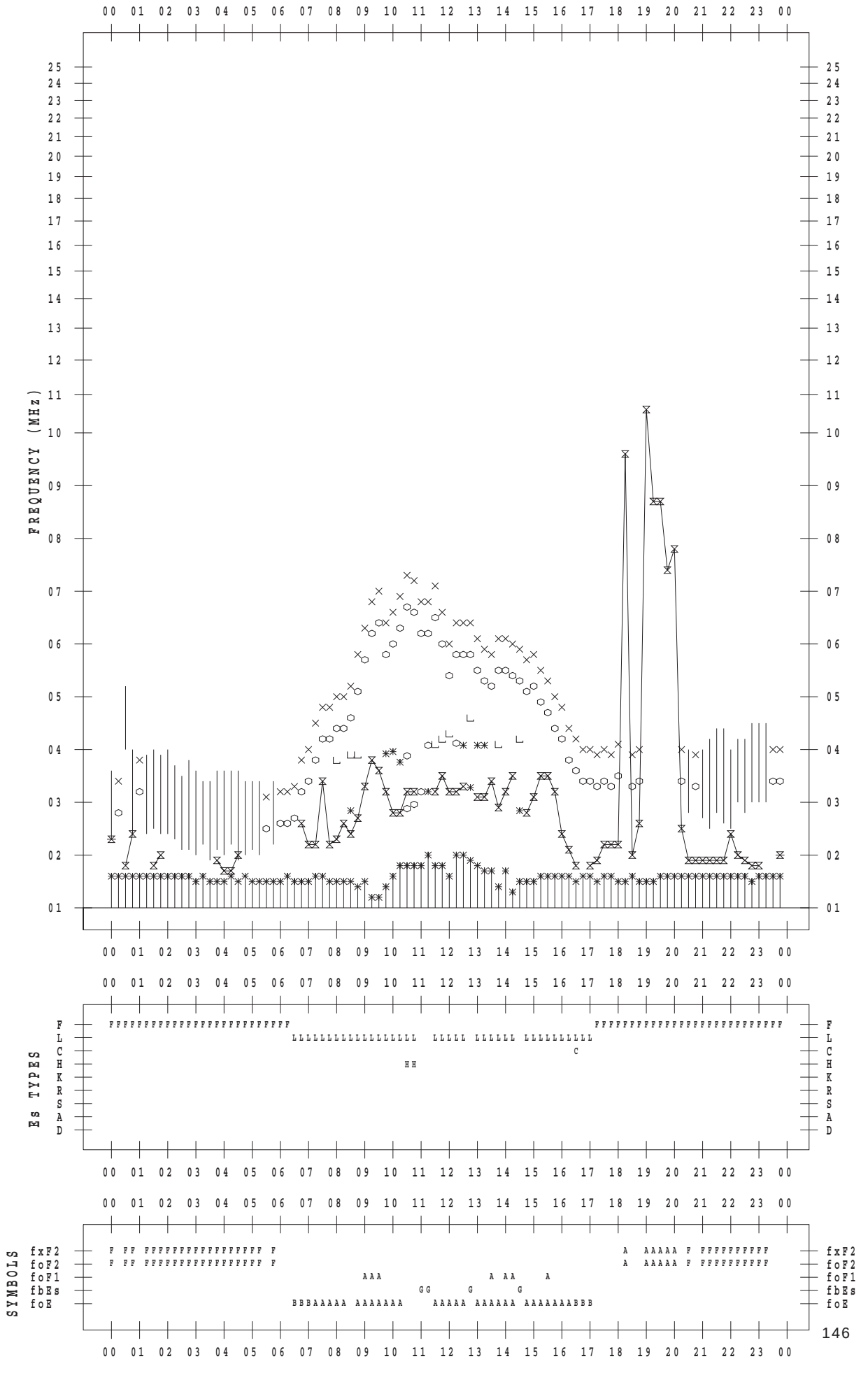
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 8

135 °E MEAN TIME



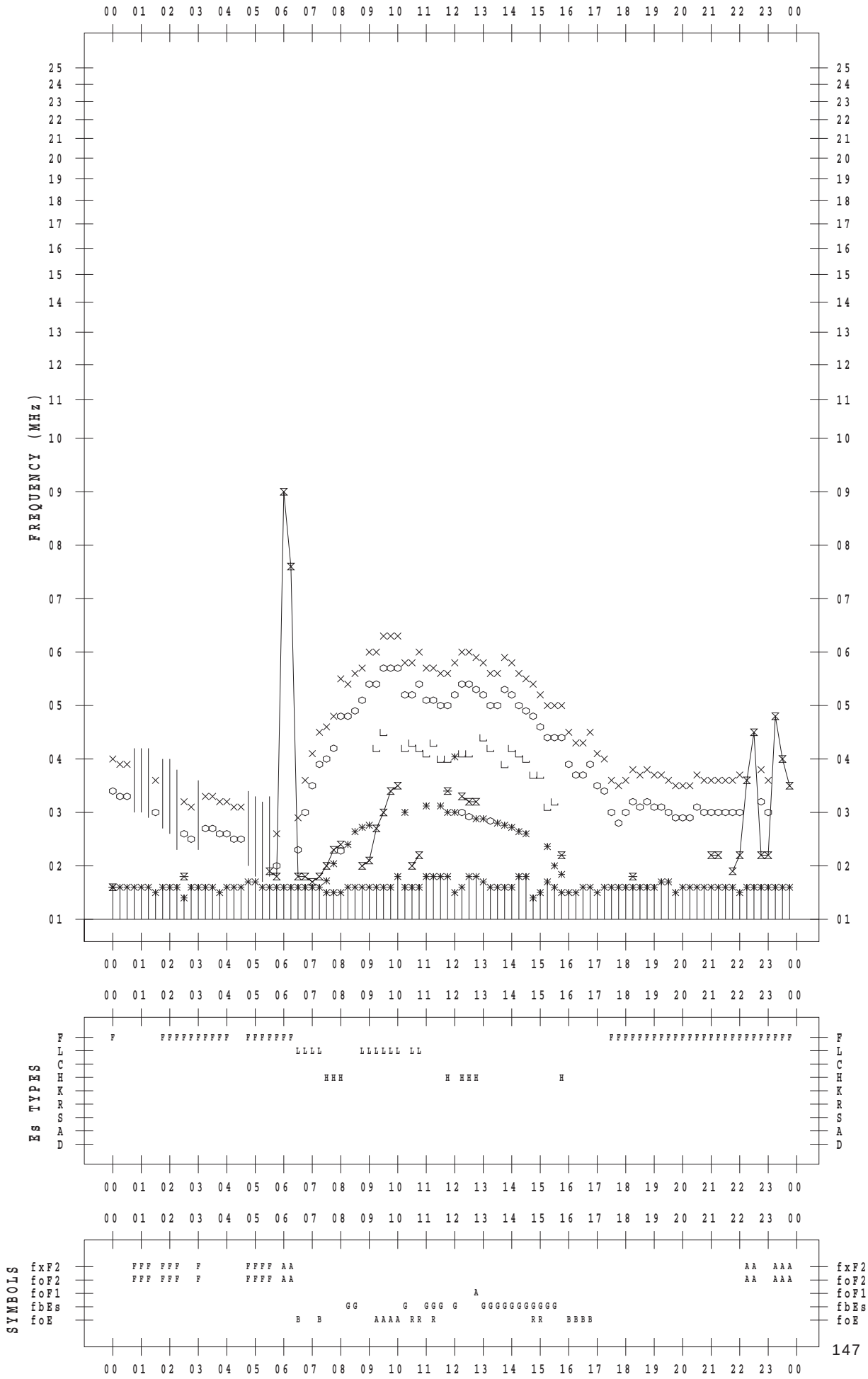
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/ 9

135 °E MEAN TIME



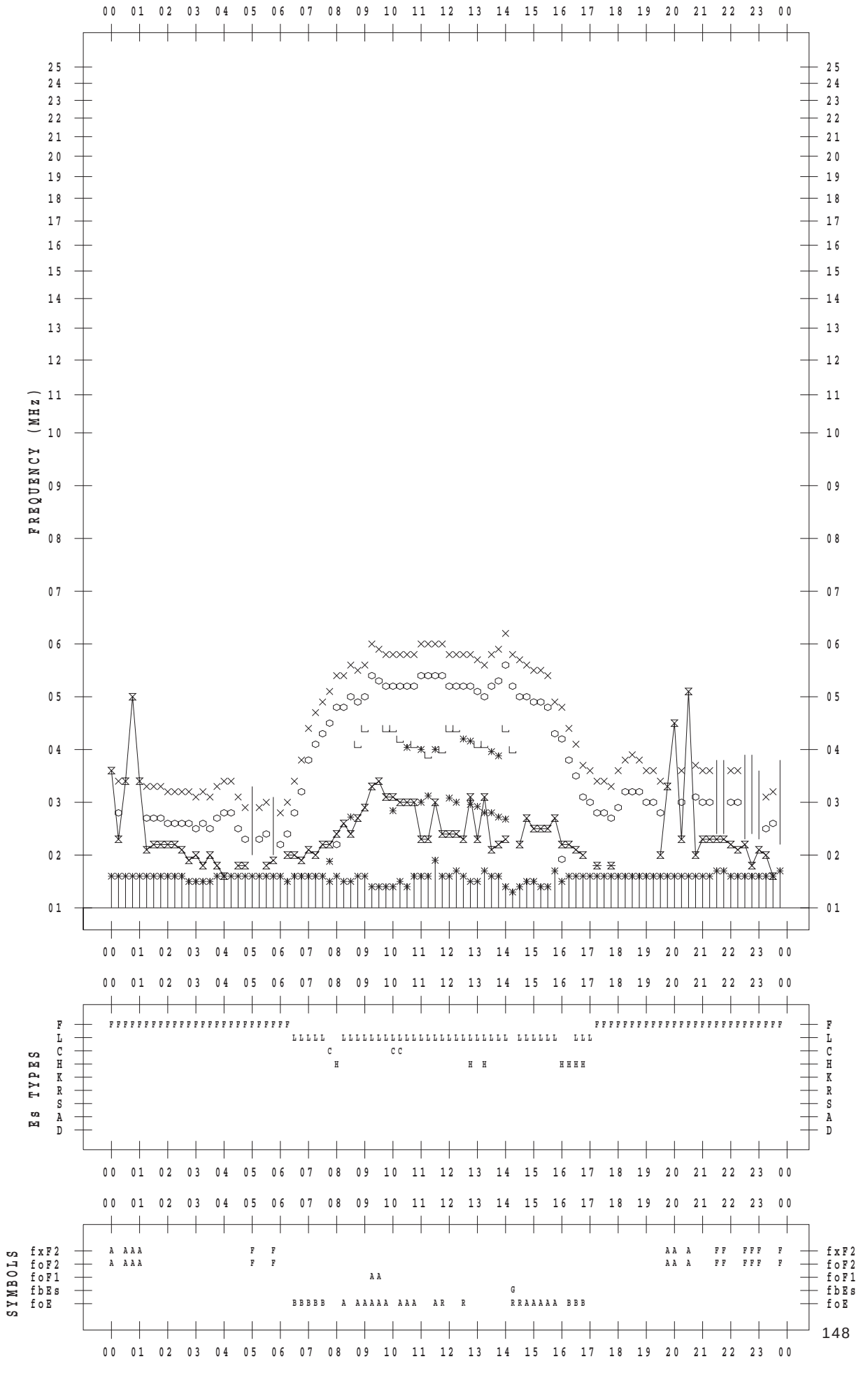
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/10

135 °E MEAN TIME



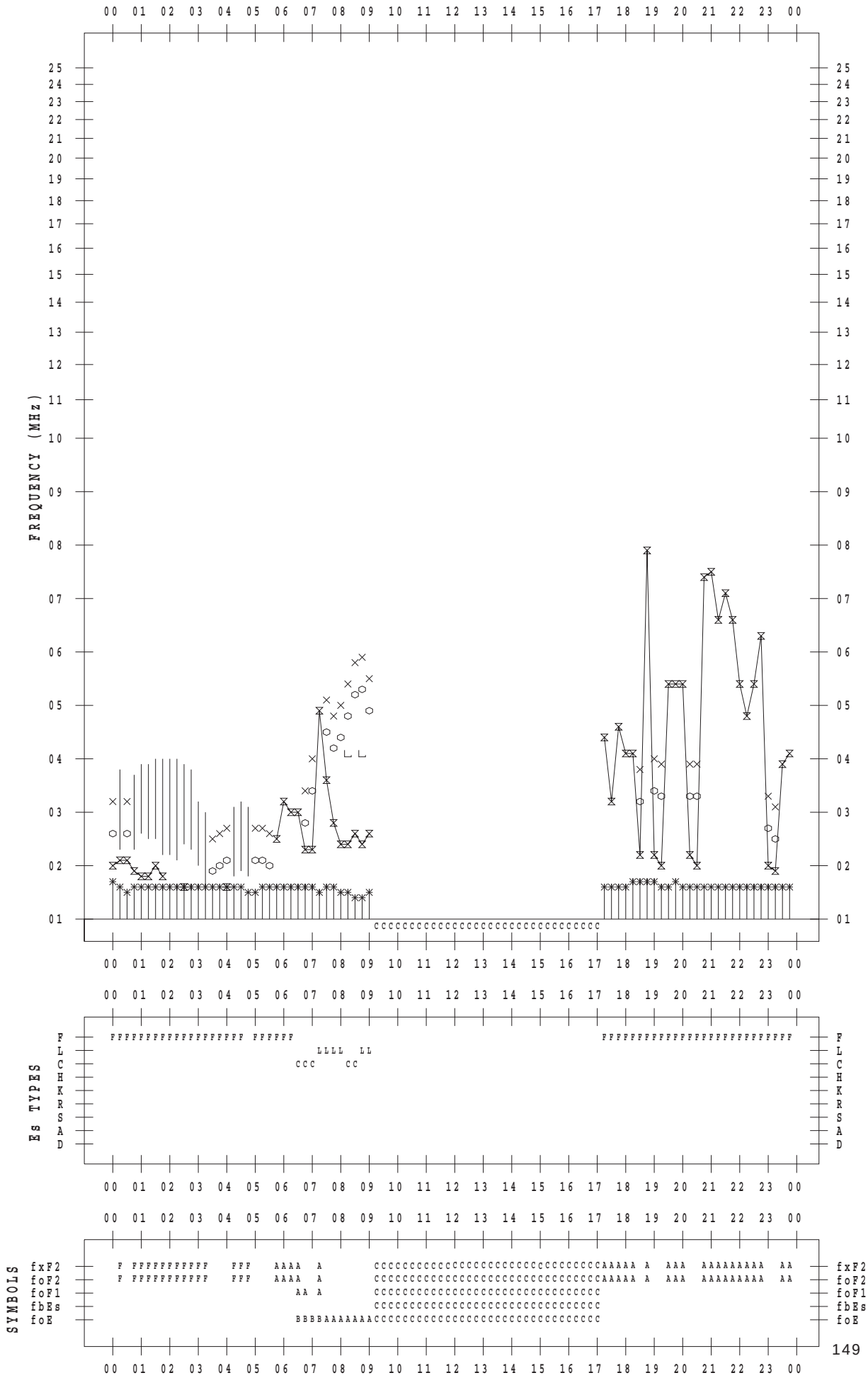
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/11

135 °E MEAN TIME



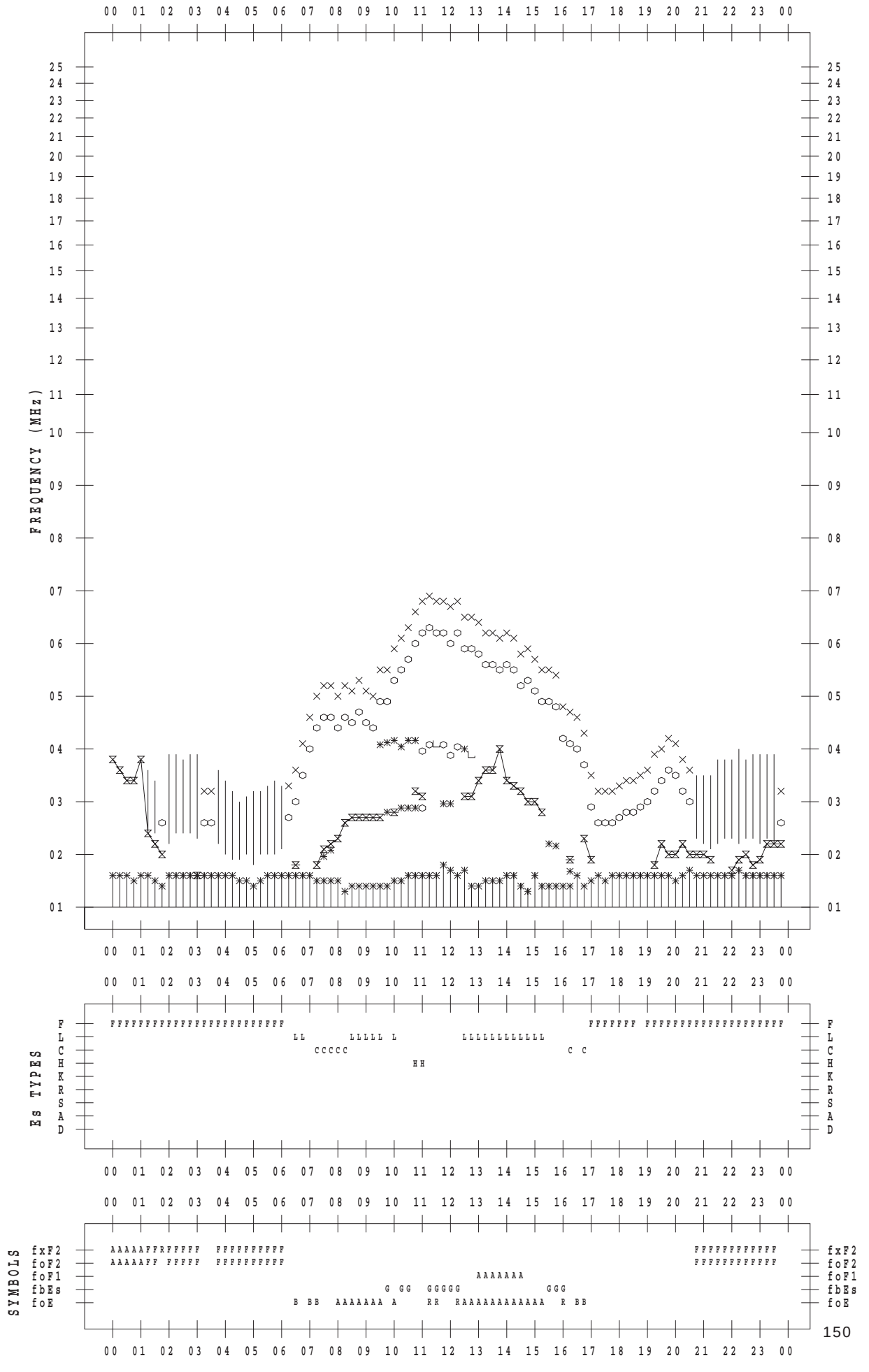
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/12

135 °E MEAN TIME



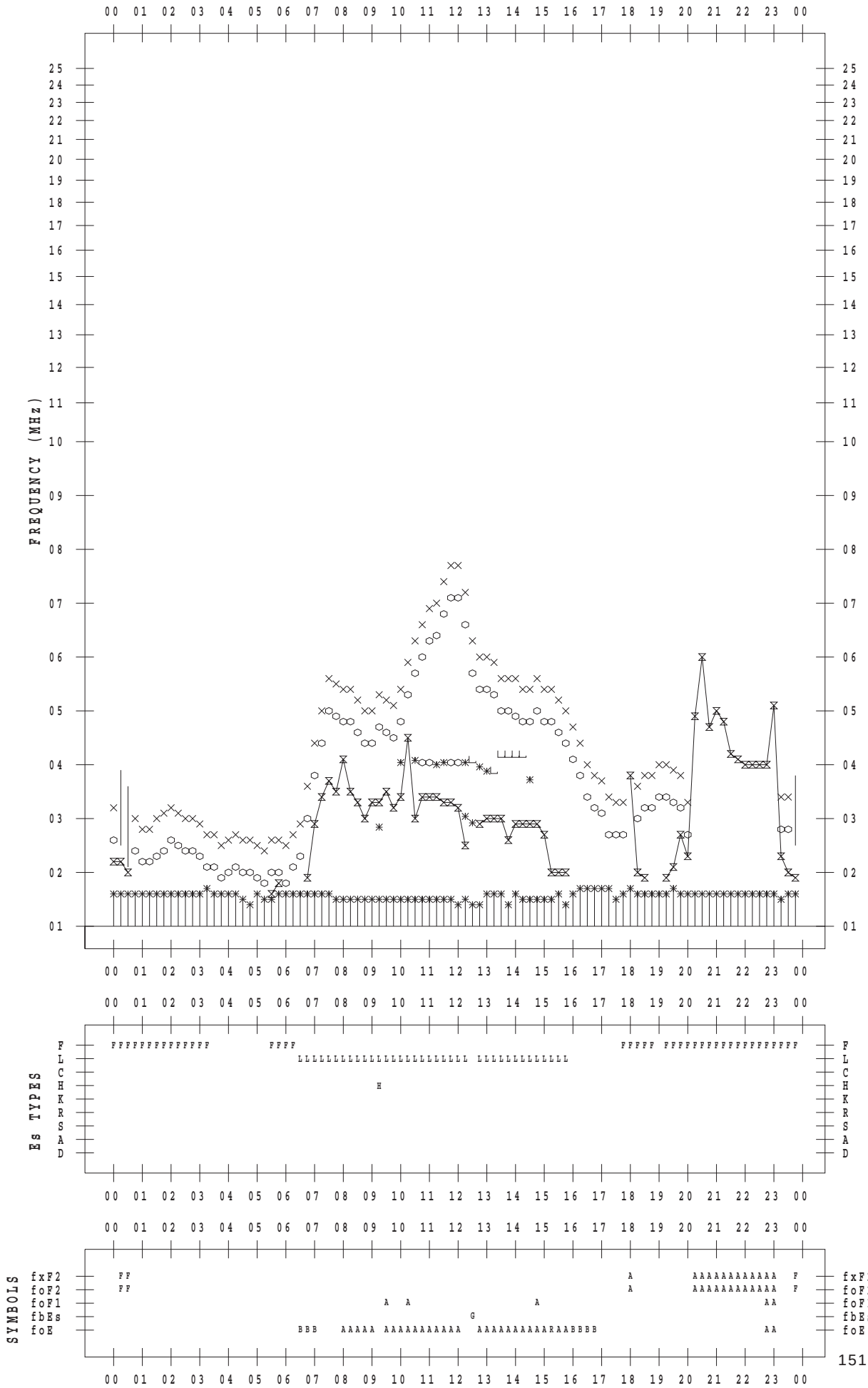
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/13

135 °E MEAN TIME



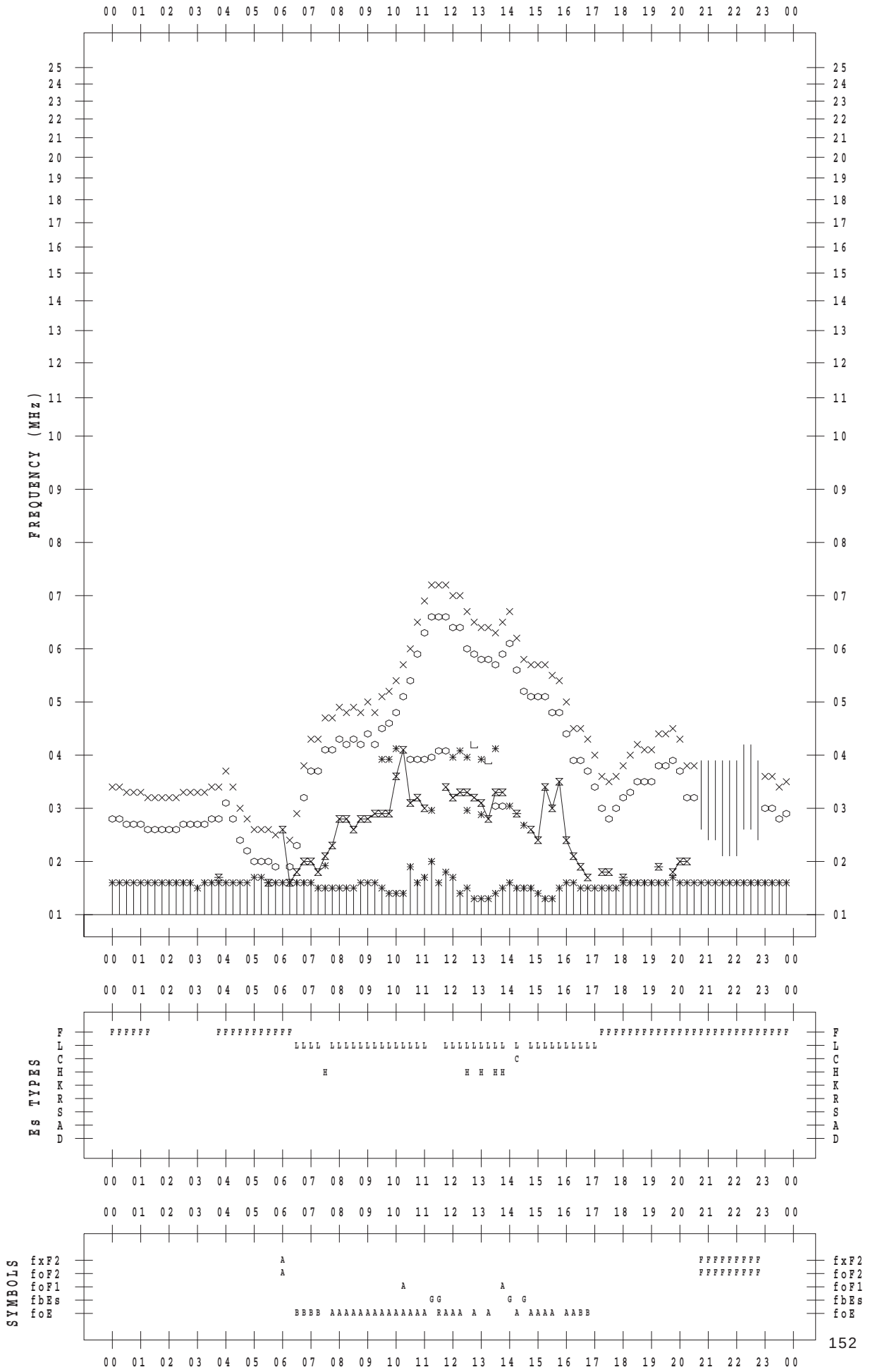
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/14

135 °E MEAN TIME



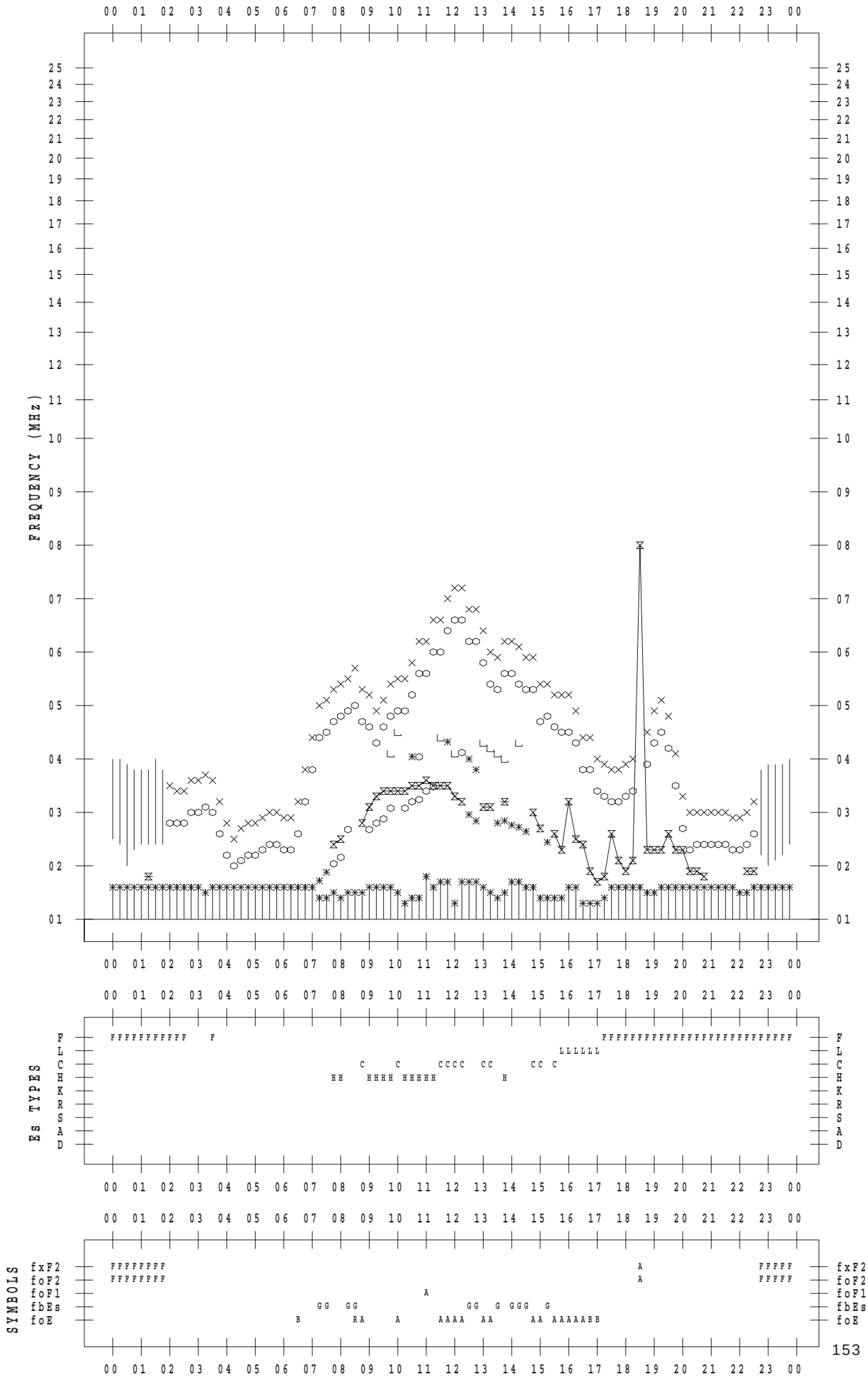
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/15

135 °E MEAN TIME



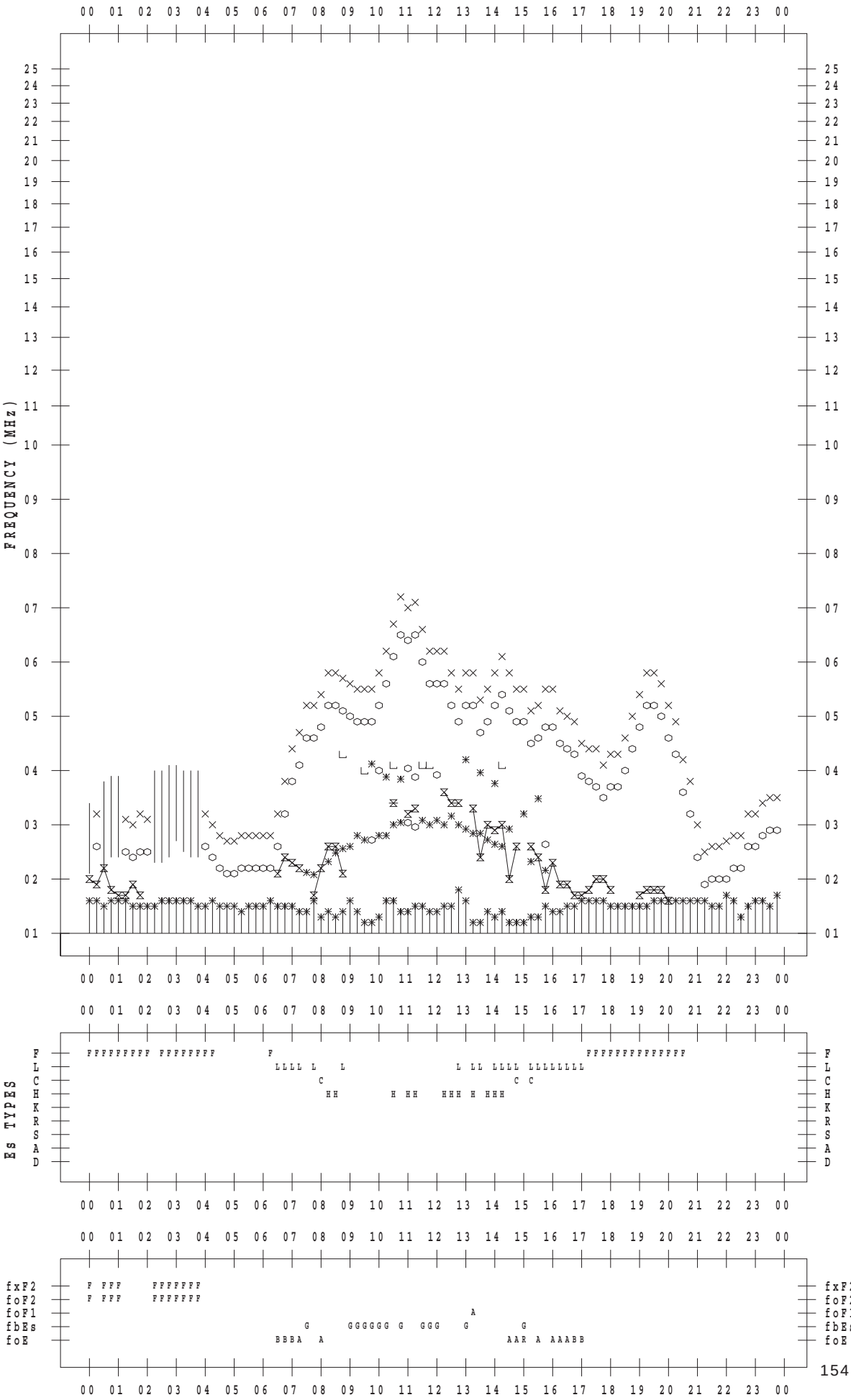
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/16

135 °E MEAN TIME



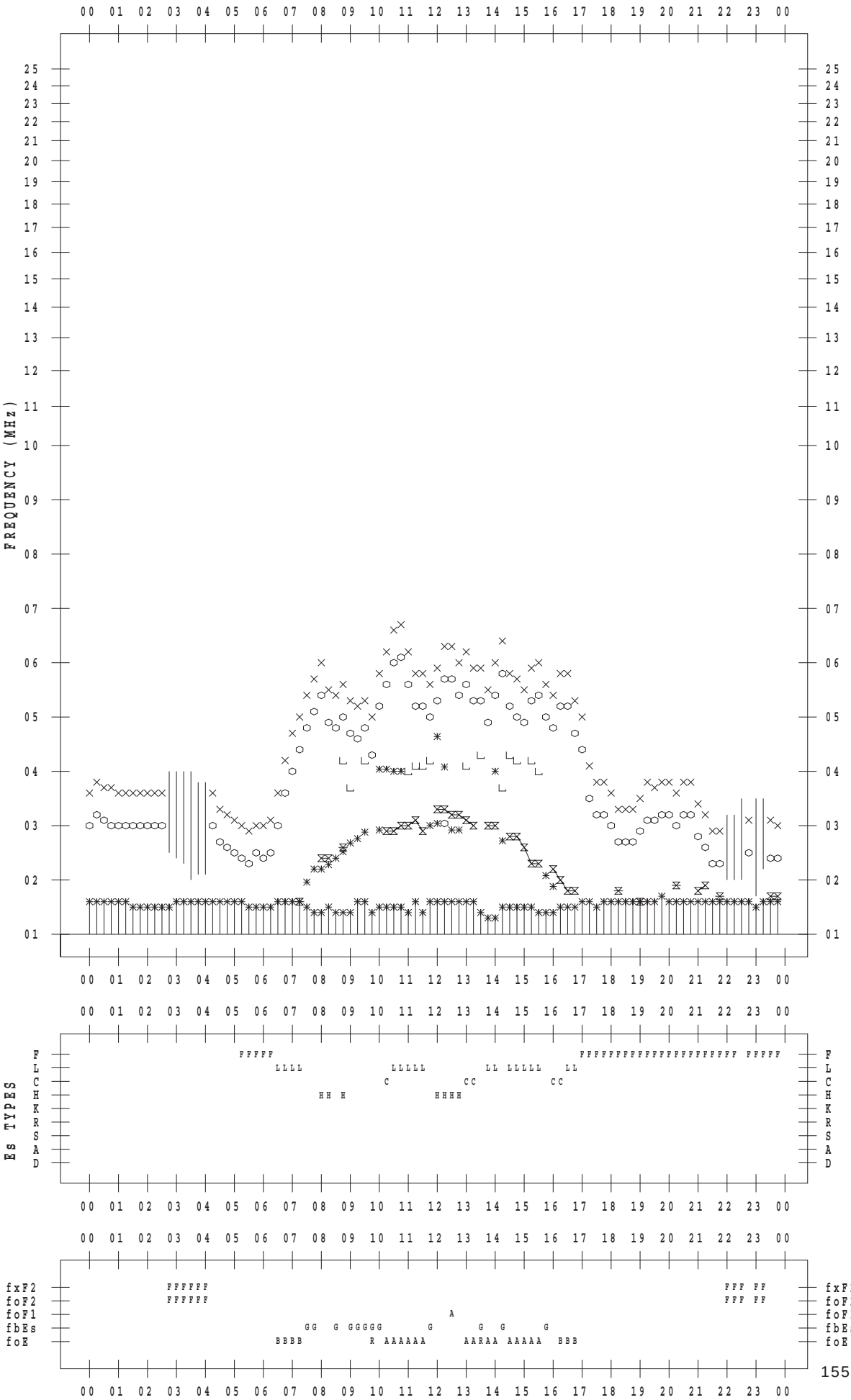
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/17

135 °E MEAN TIME



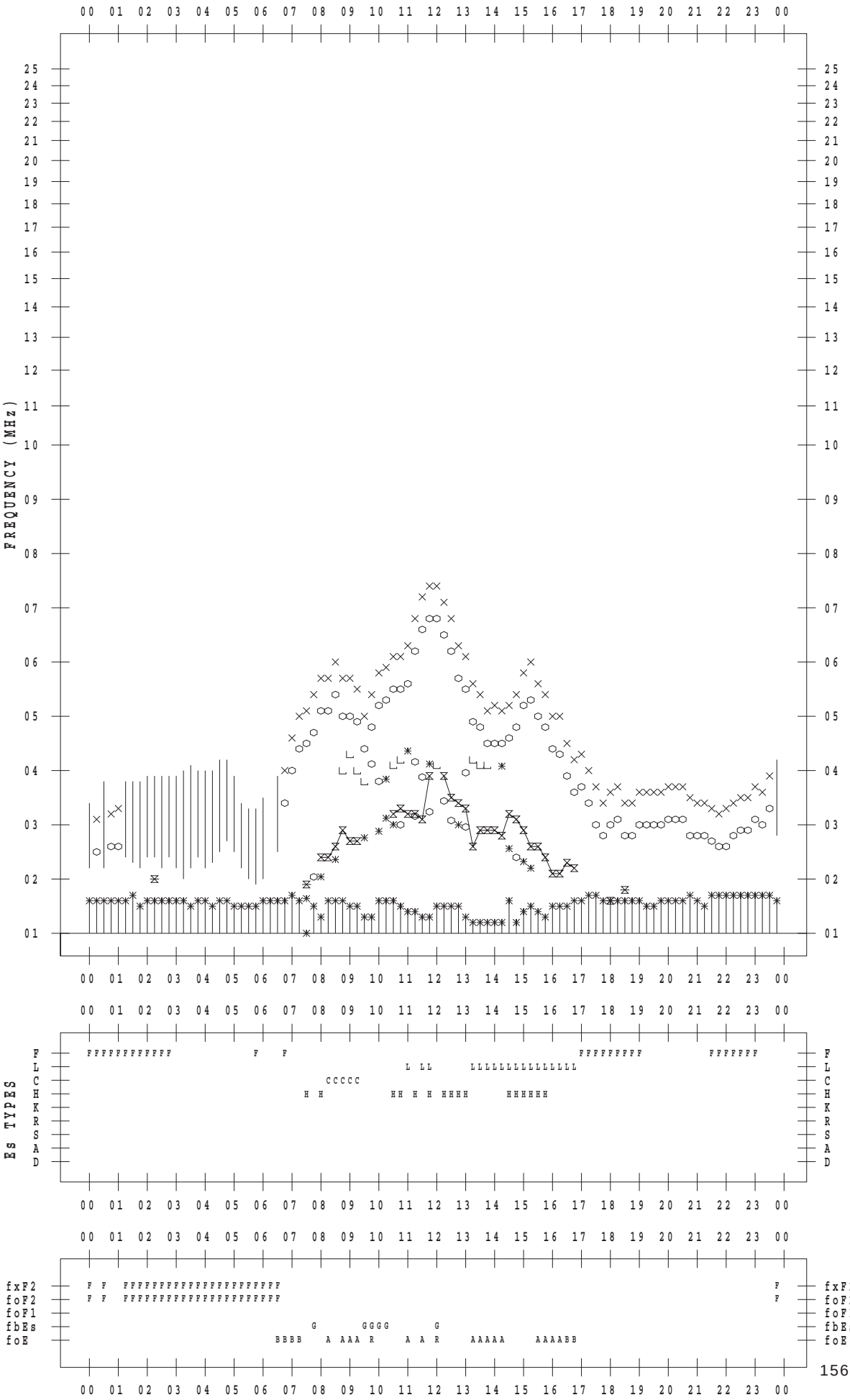
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/18

135 °E MEAN TIME



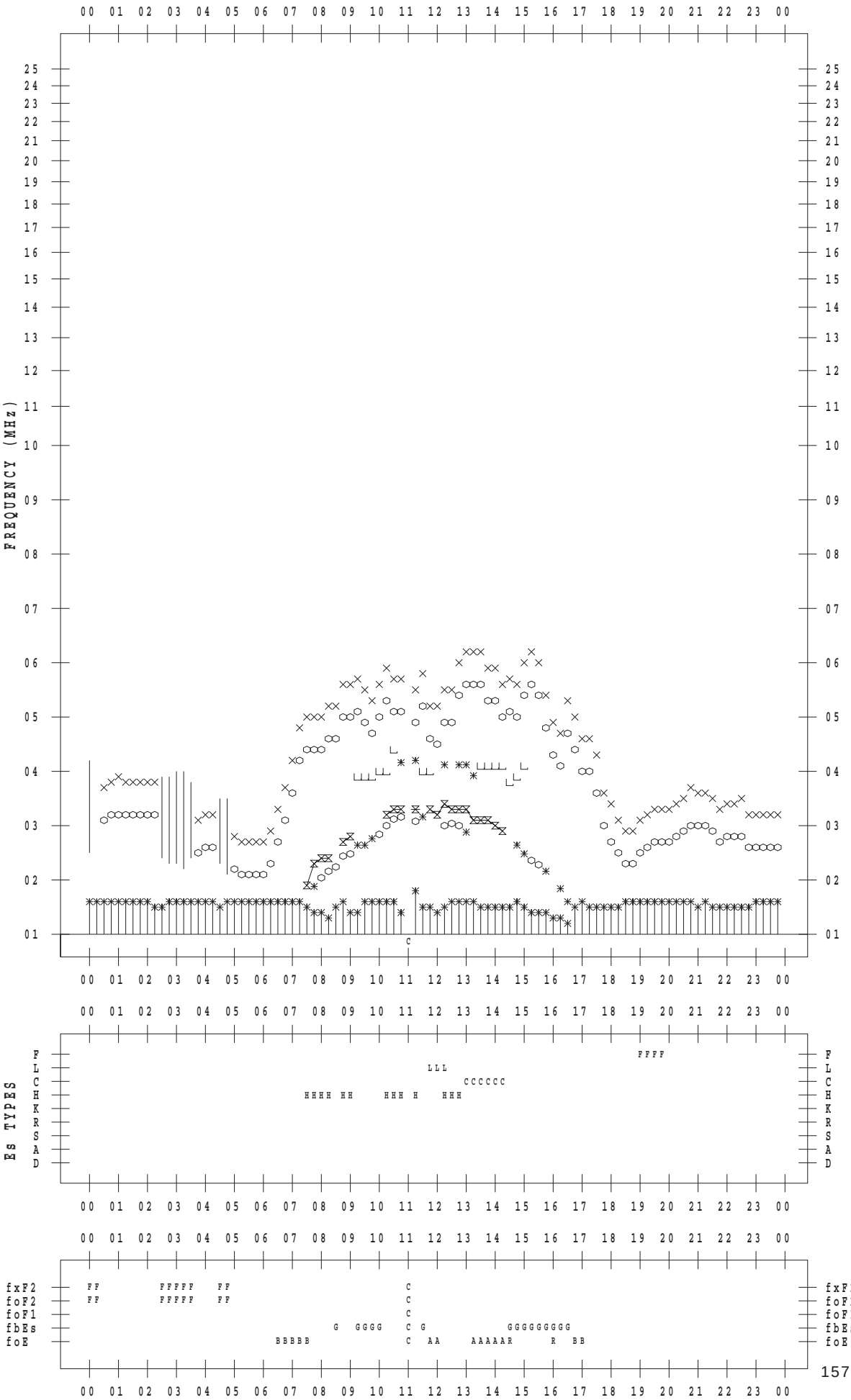
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/19

135 °E MEAN TIME



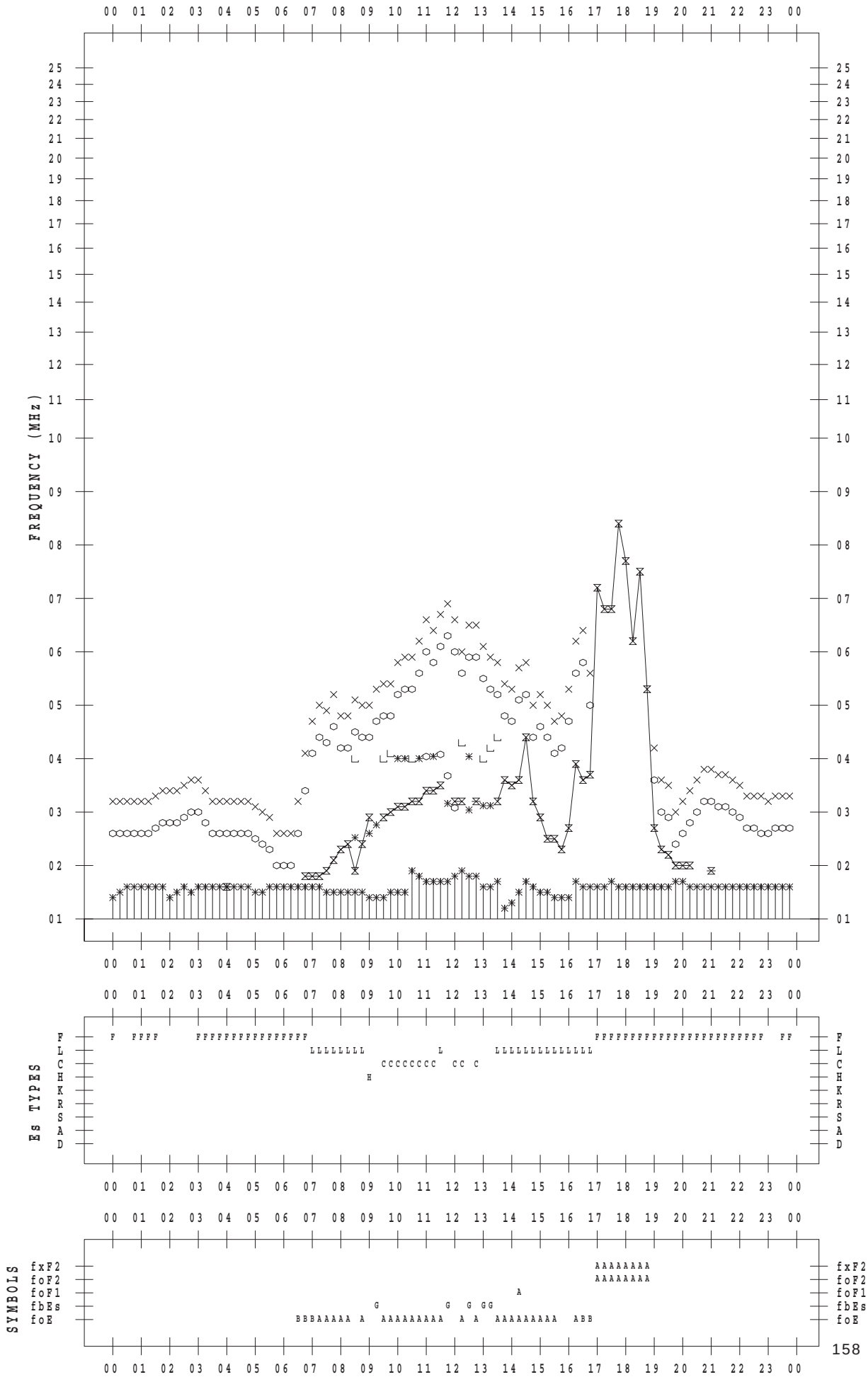
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/20

135 °E MEAN TIME



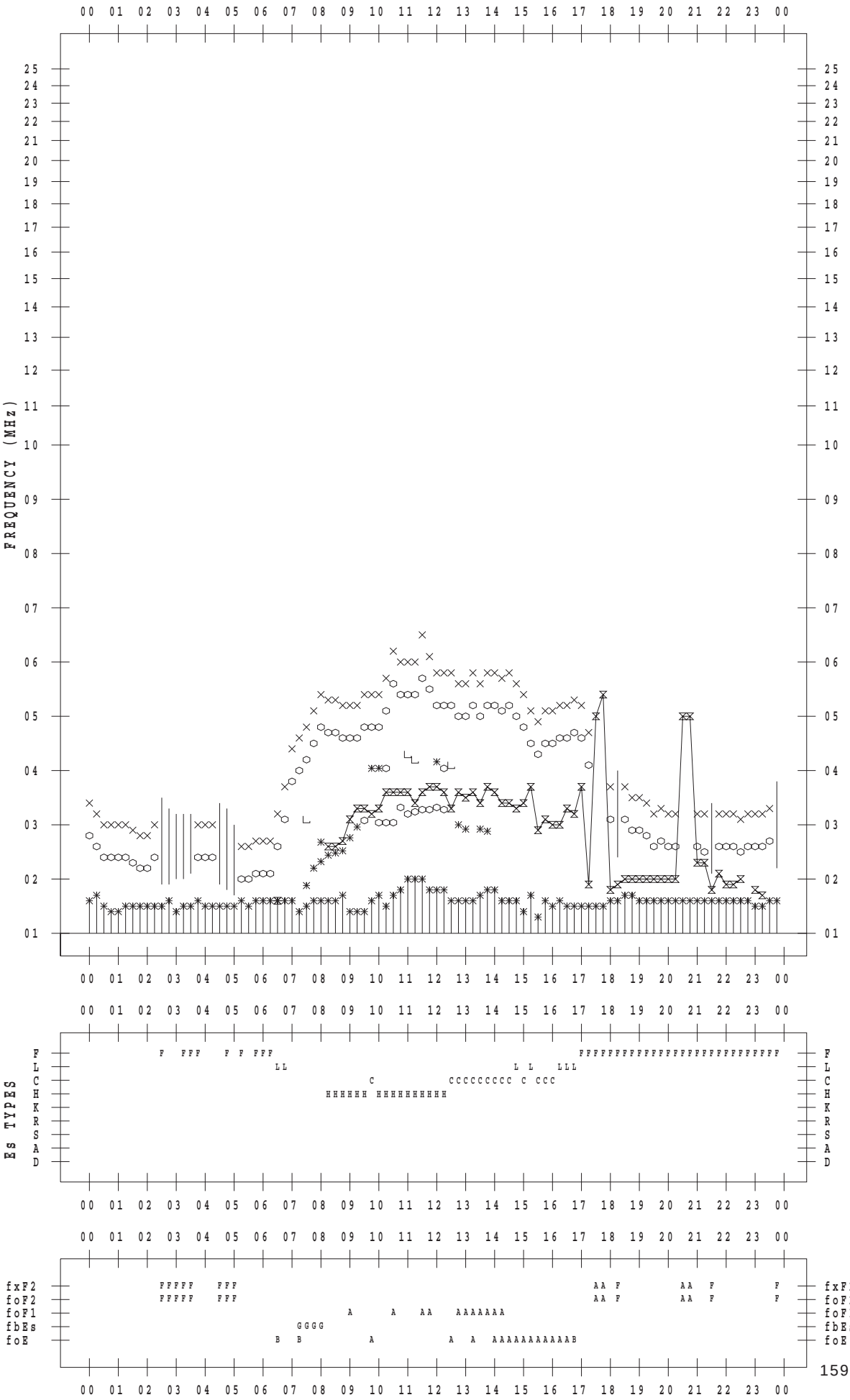
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/21

135 °E MEAN TIME



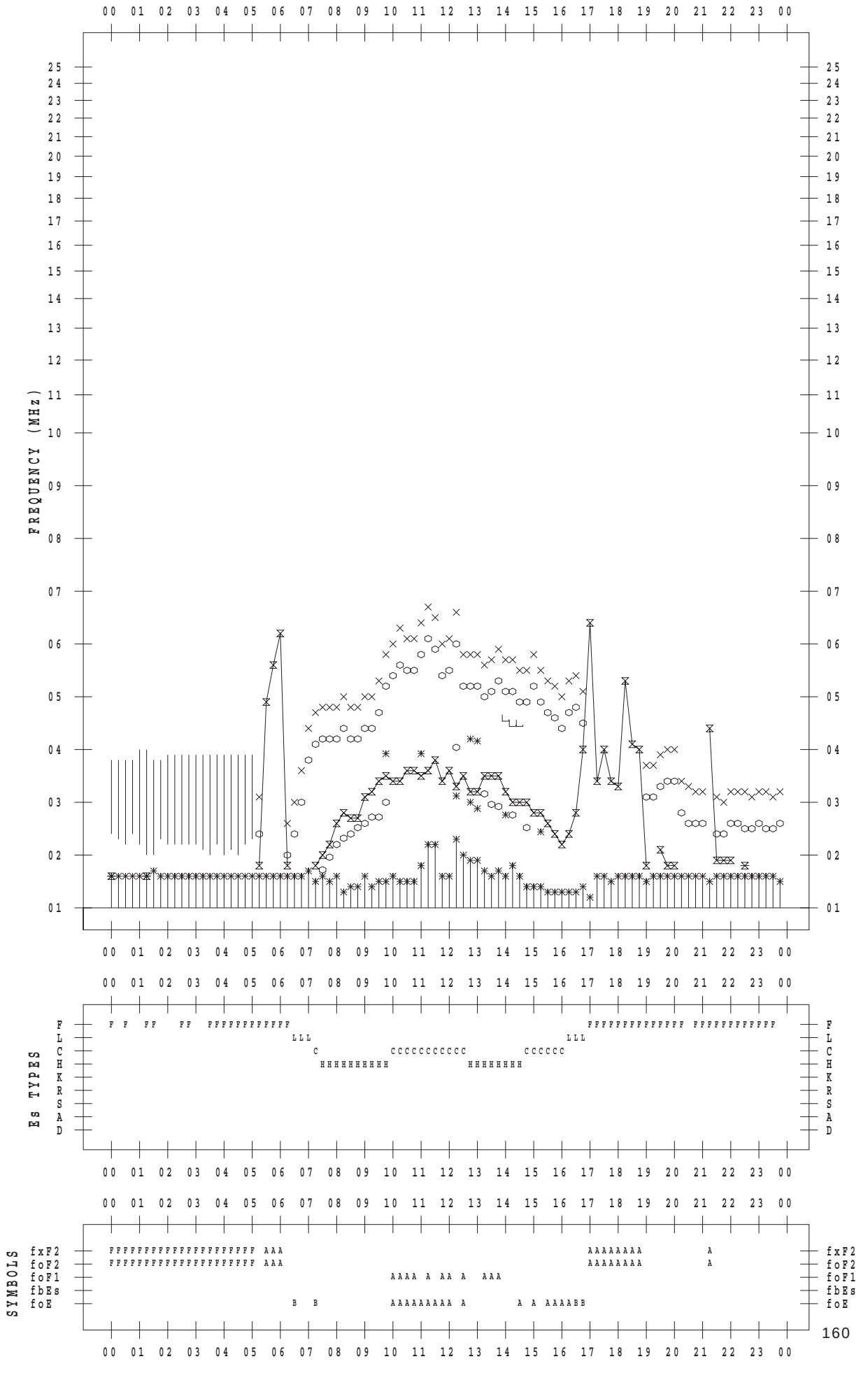
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/22

135 °E MEAN TIME



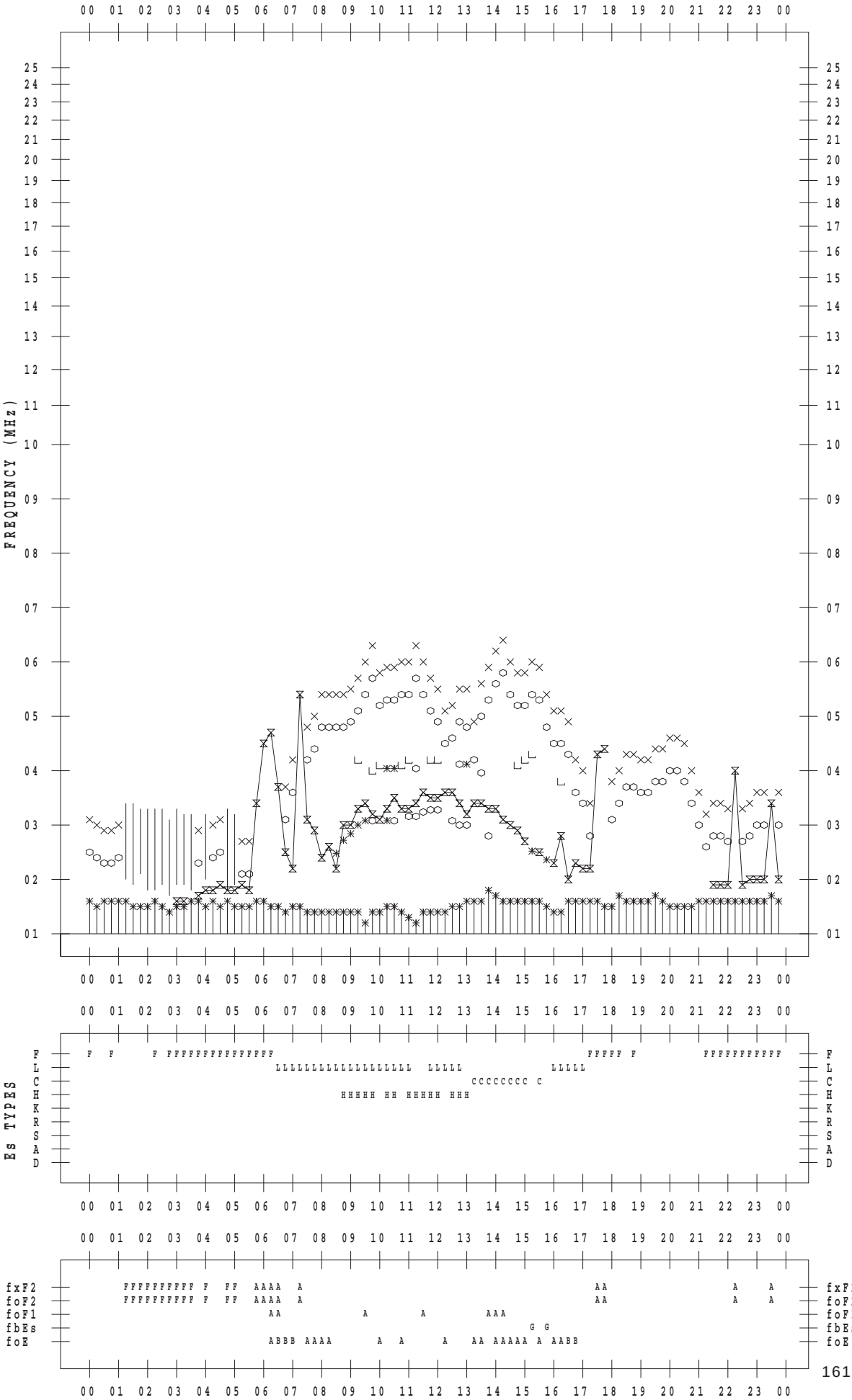
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/23

135 °E MEAN TIME



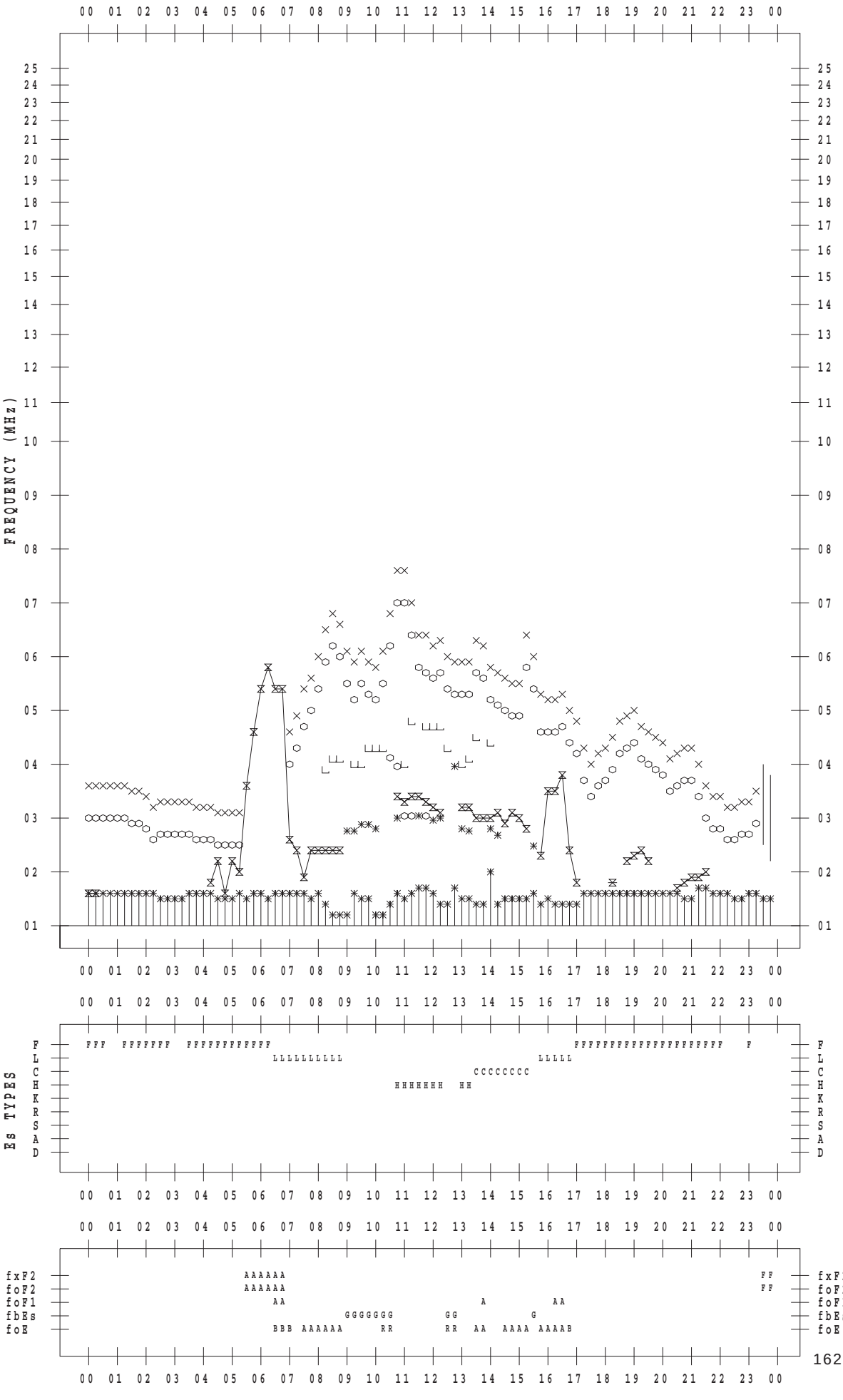
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/24

135 °E MEAN TIME



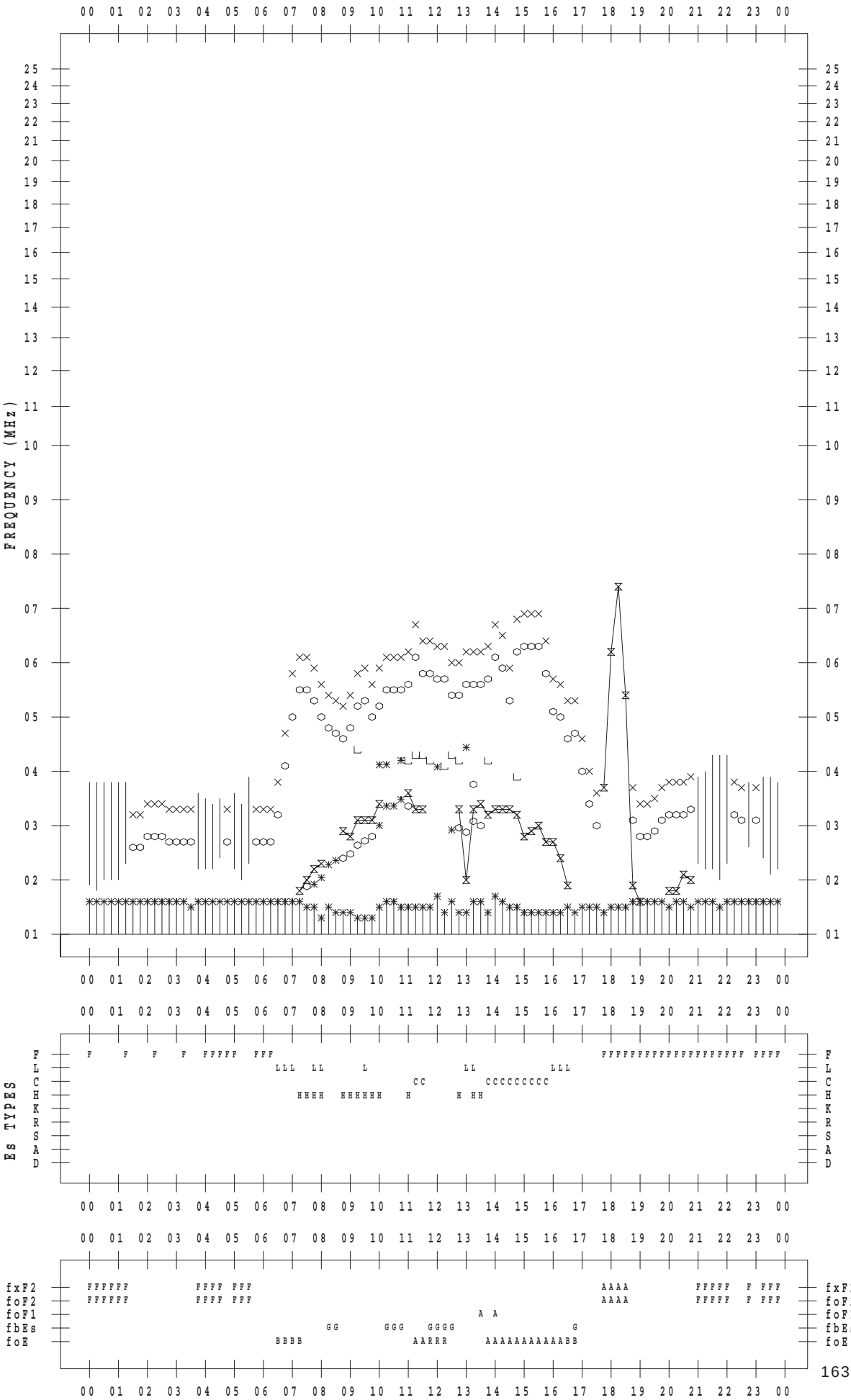
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/25

135 °E MEAN TIME



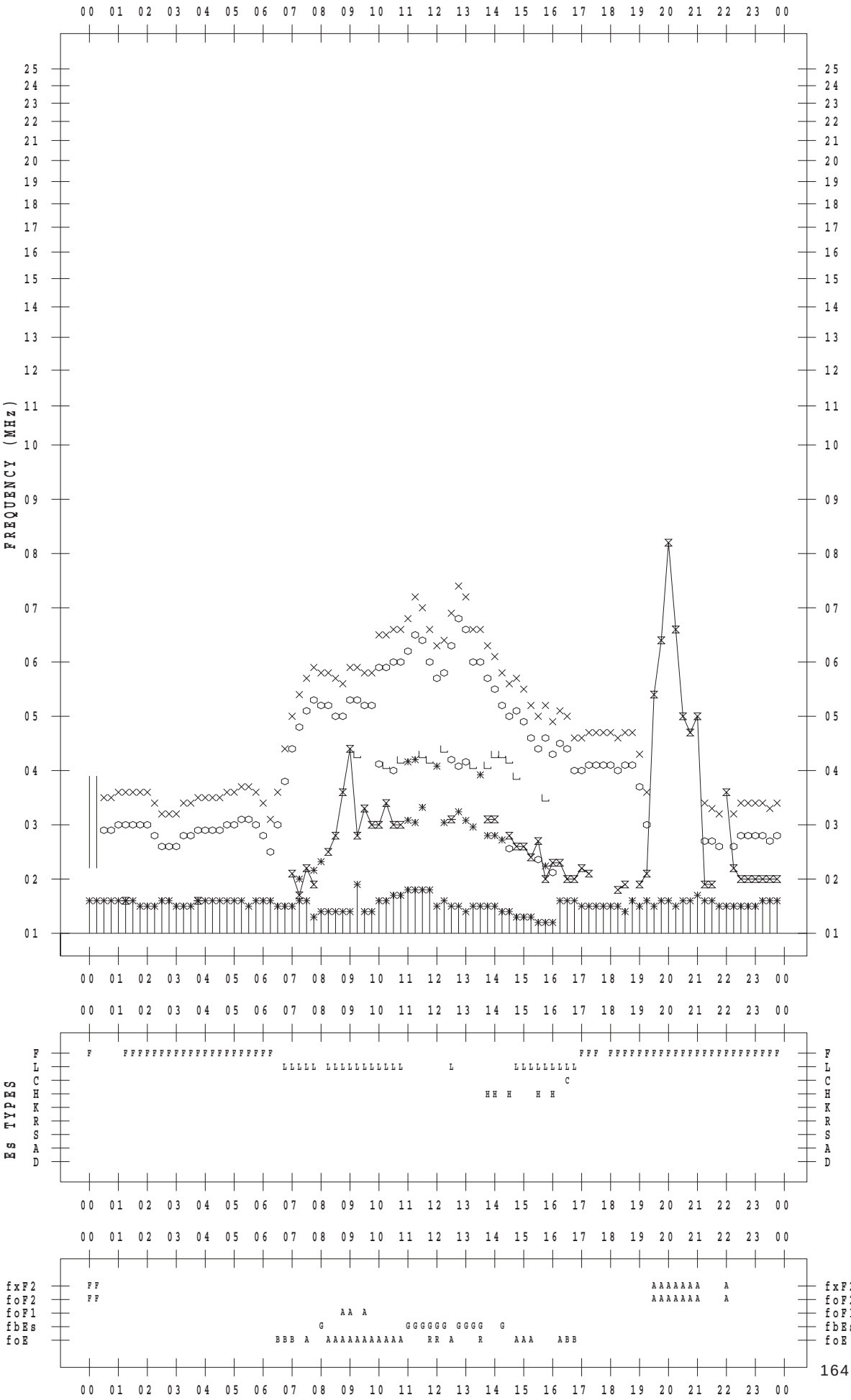
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/26

135 °E MEAN TIME



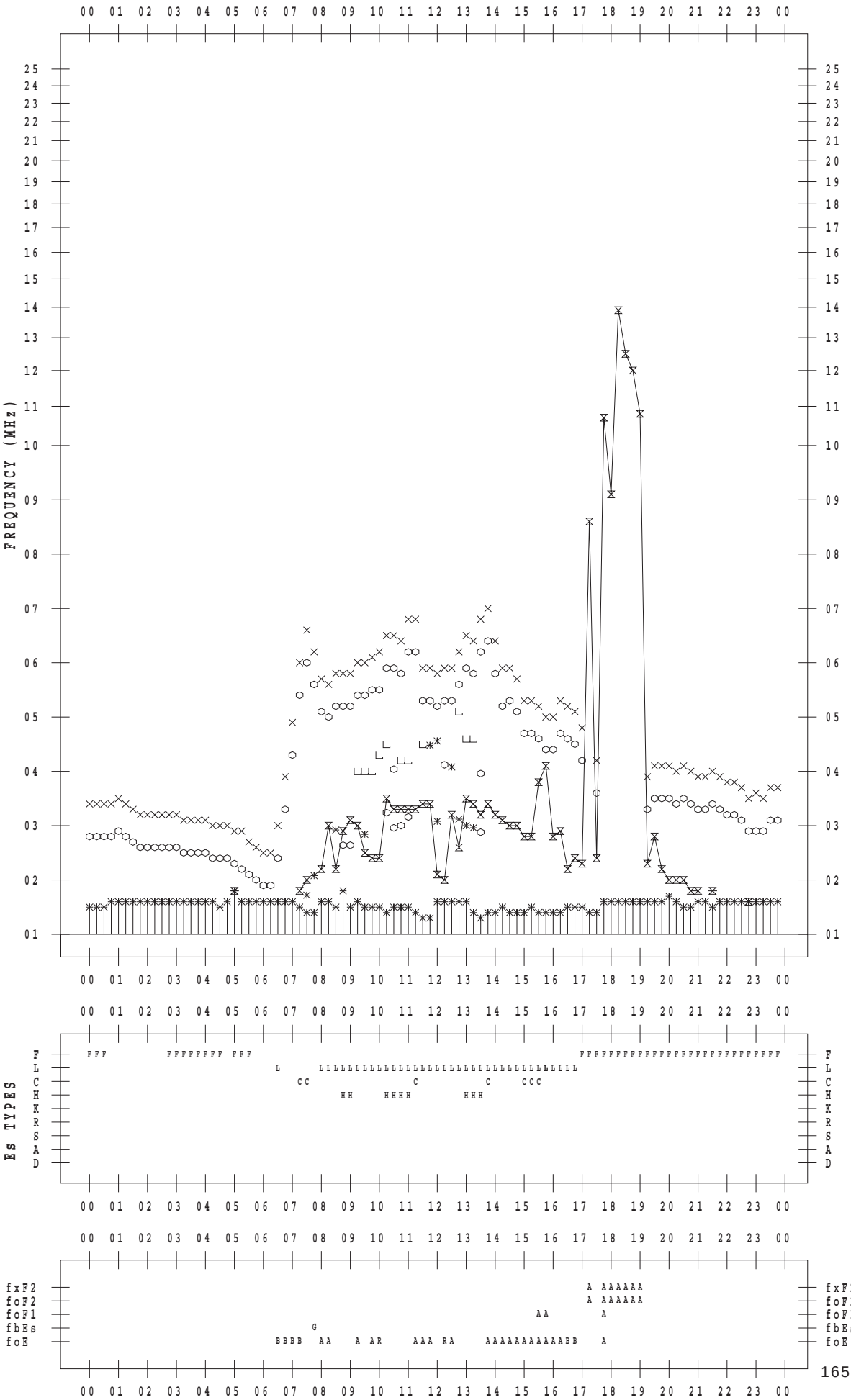
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/27

135 °E MEAN TIME



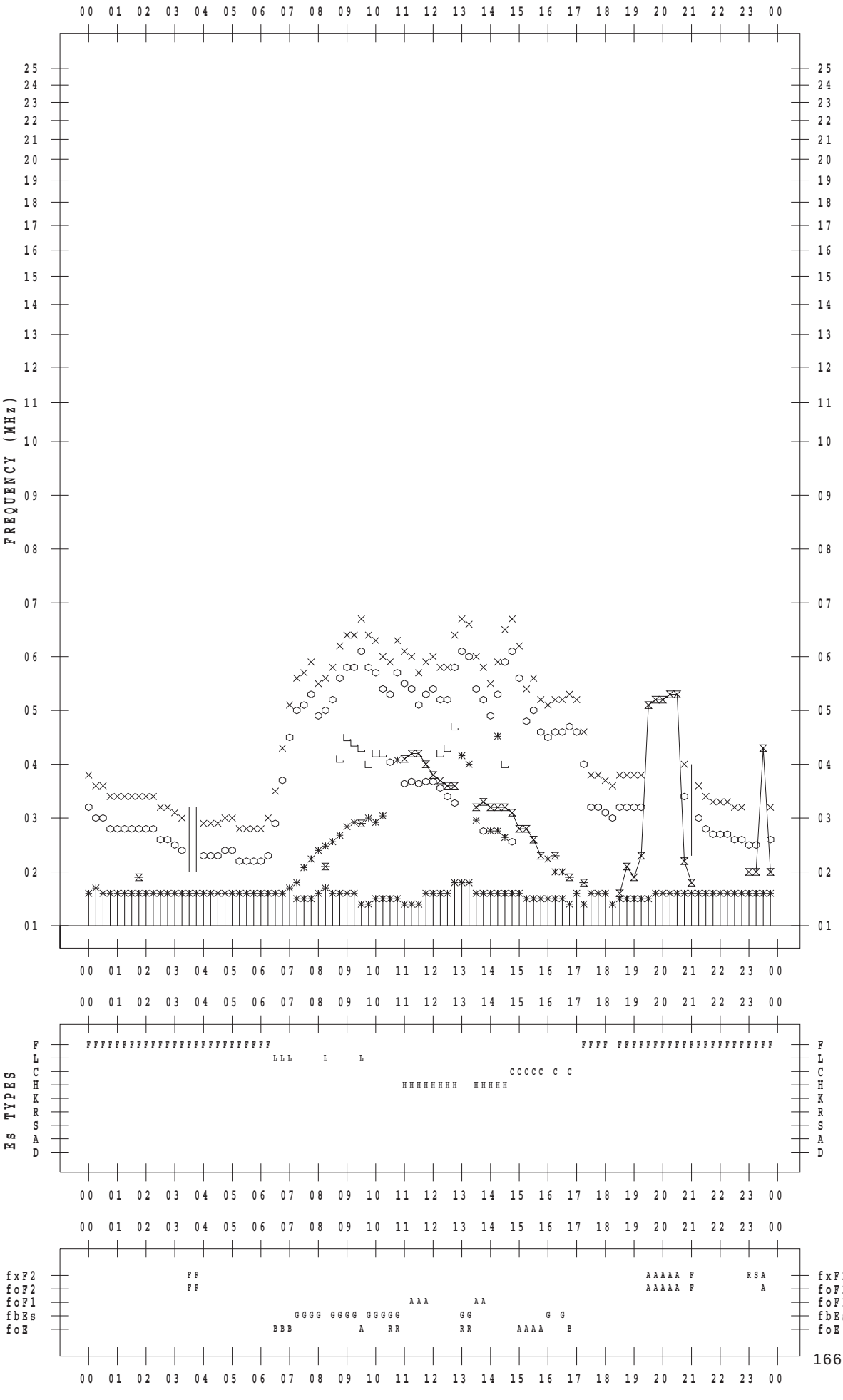
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/28

135 °E MEAN TIME



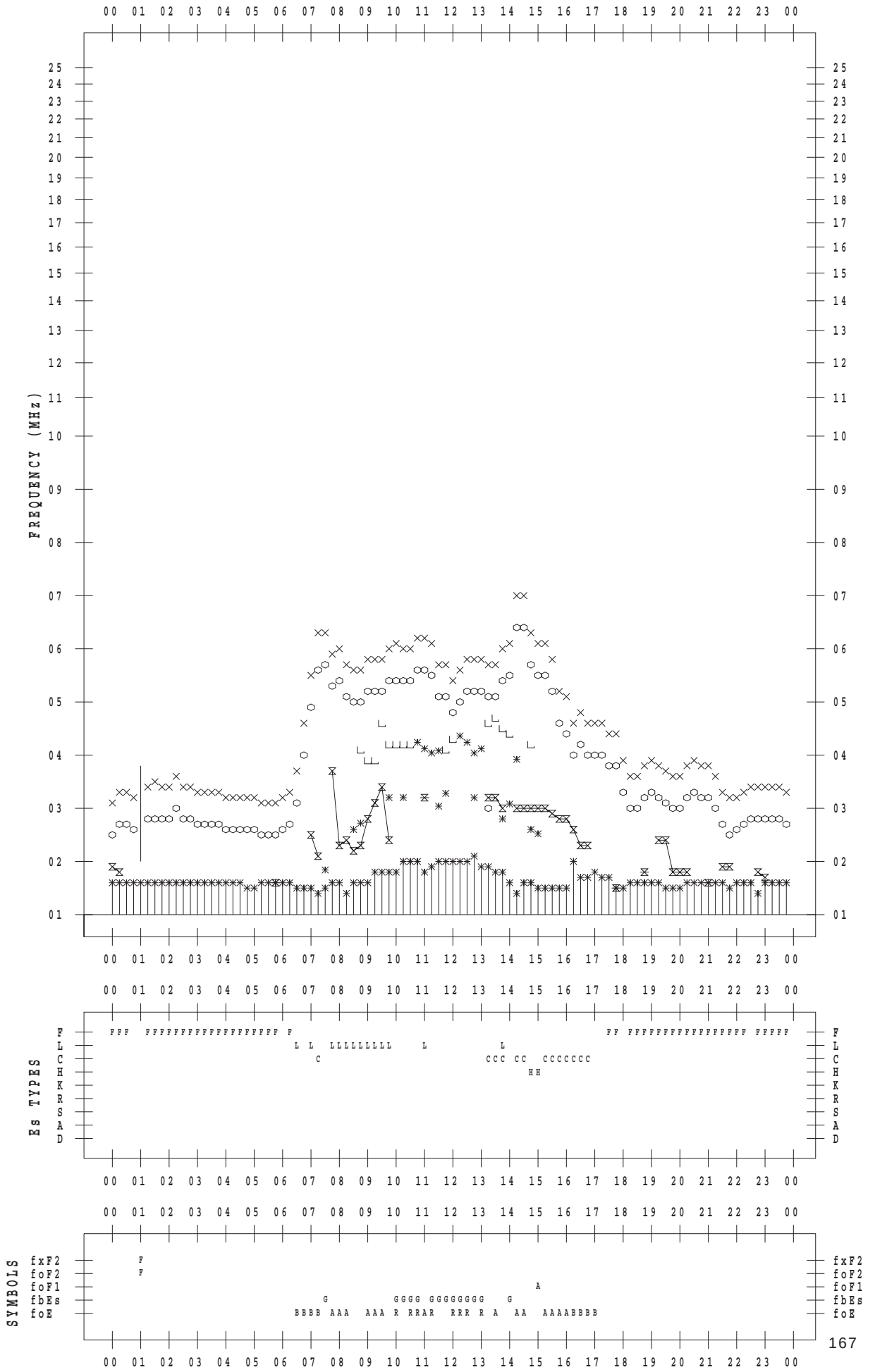
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/29

135 °E MEAN TIME



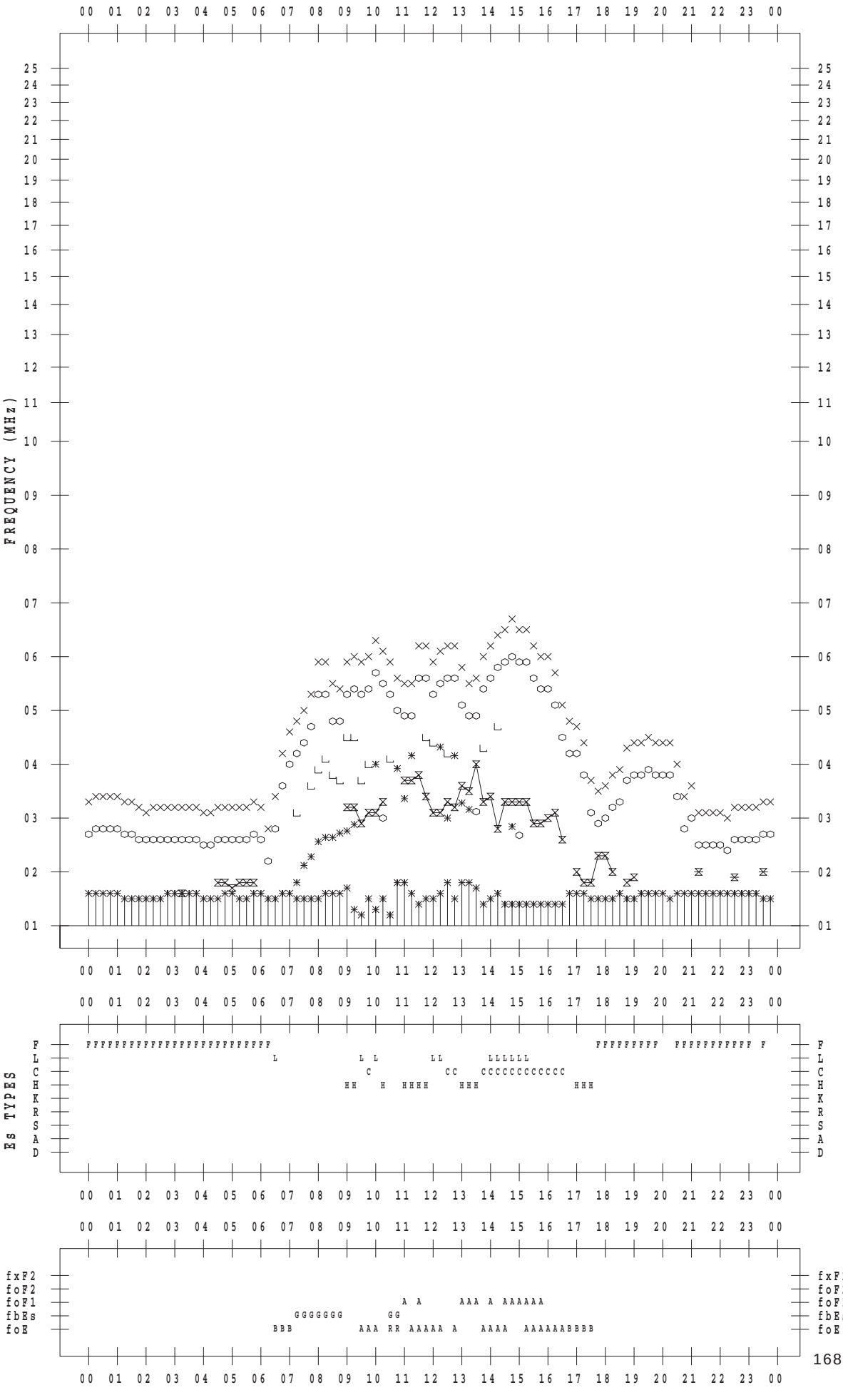
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/30

135 °E MEAN TIME



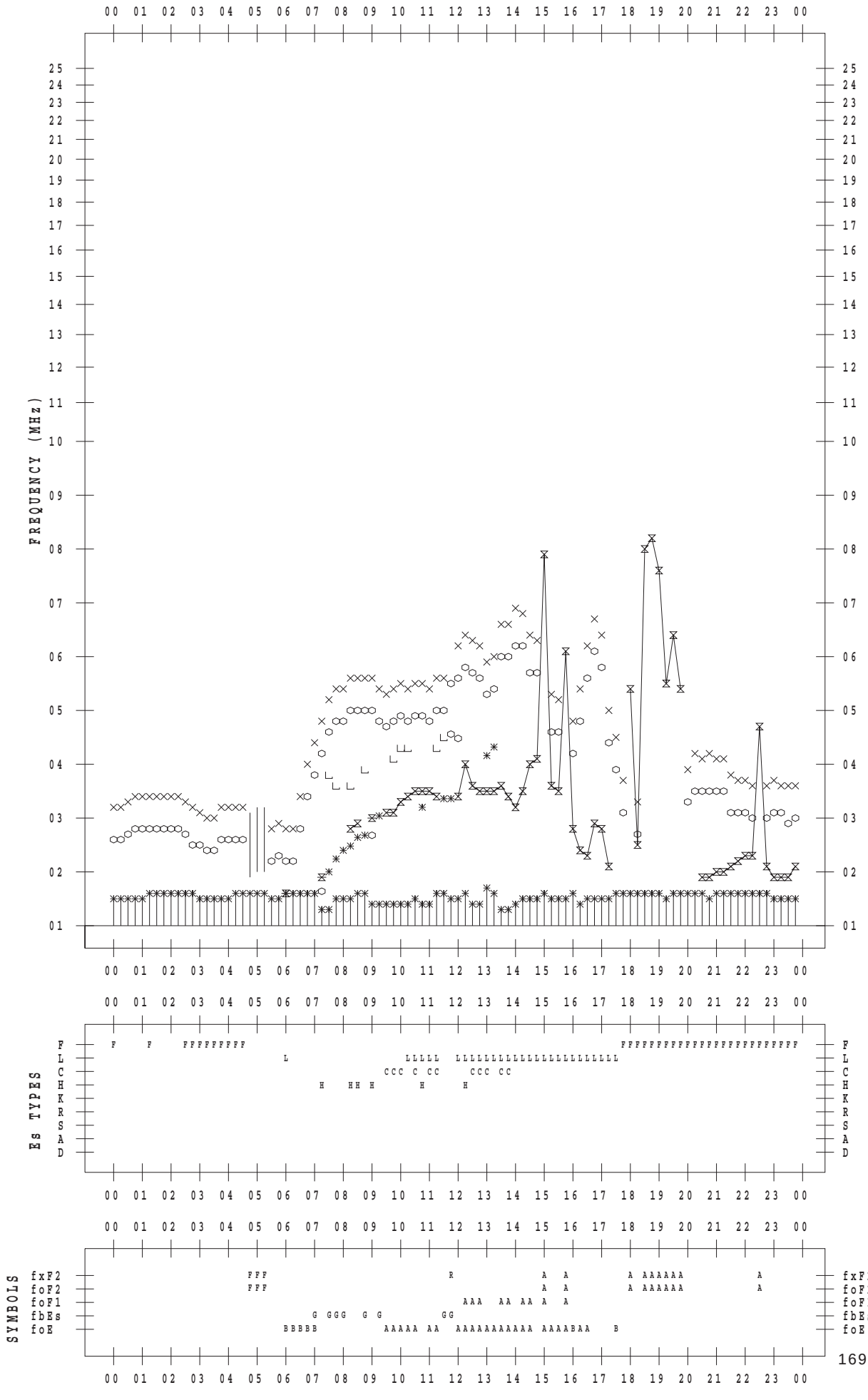
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 1/31

135 °E MEAN TIME



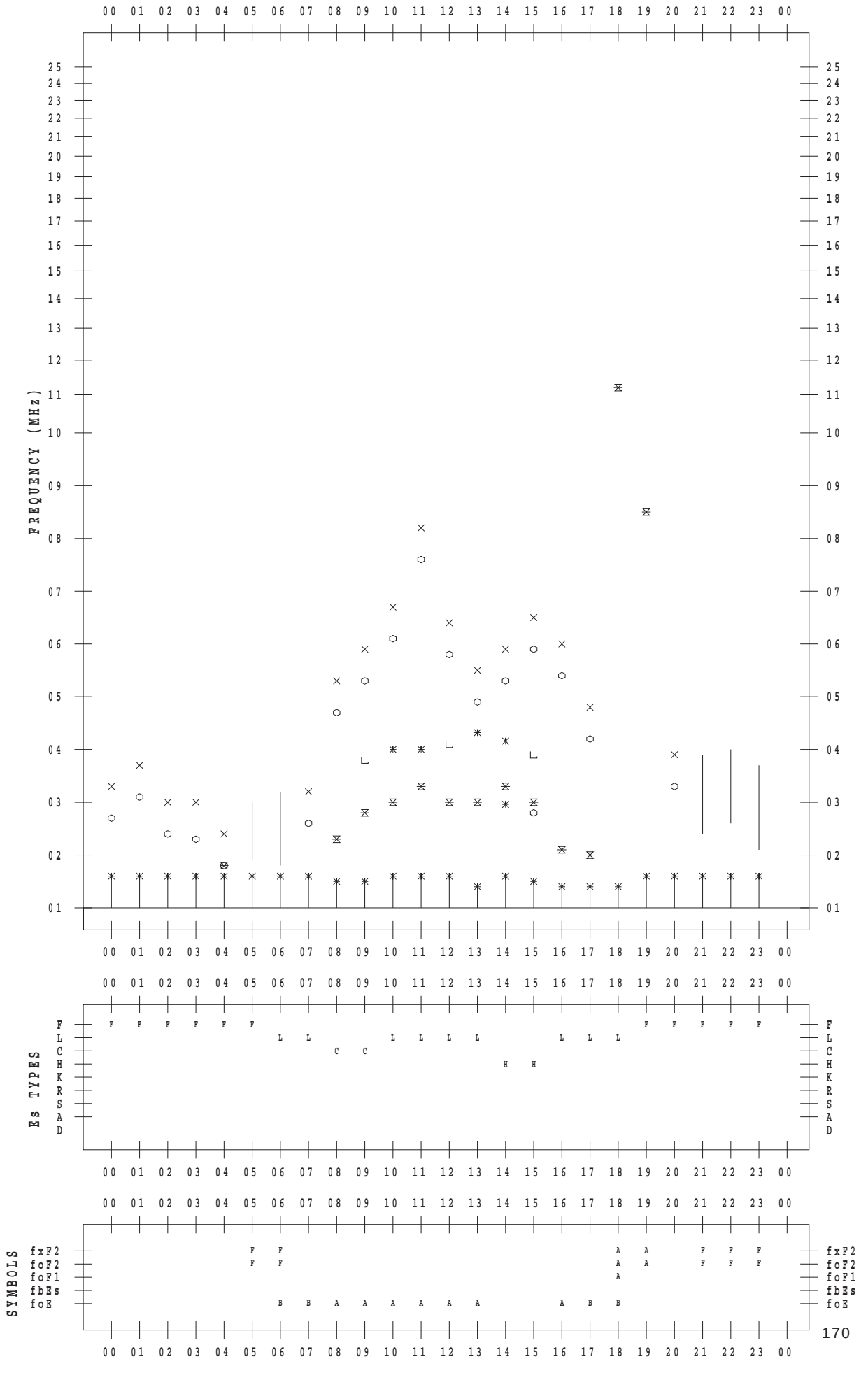
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 1

135 °E MEAN TIME



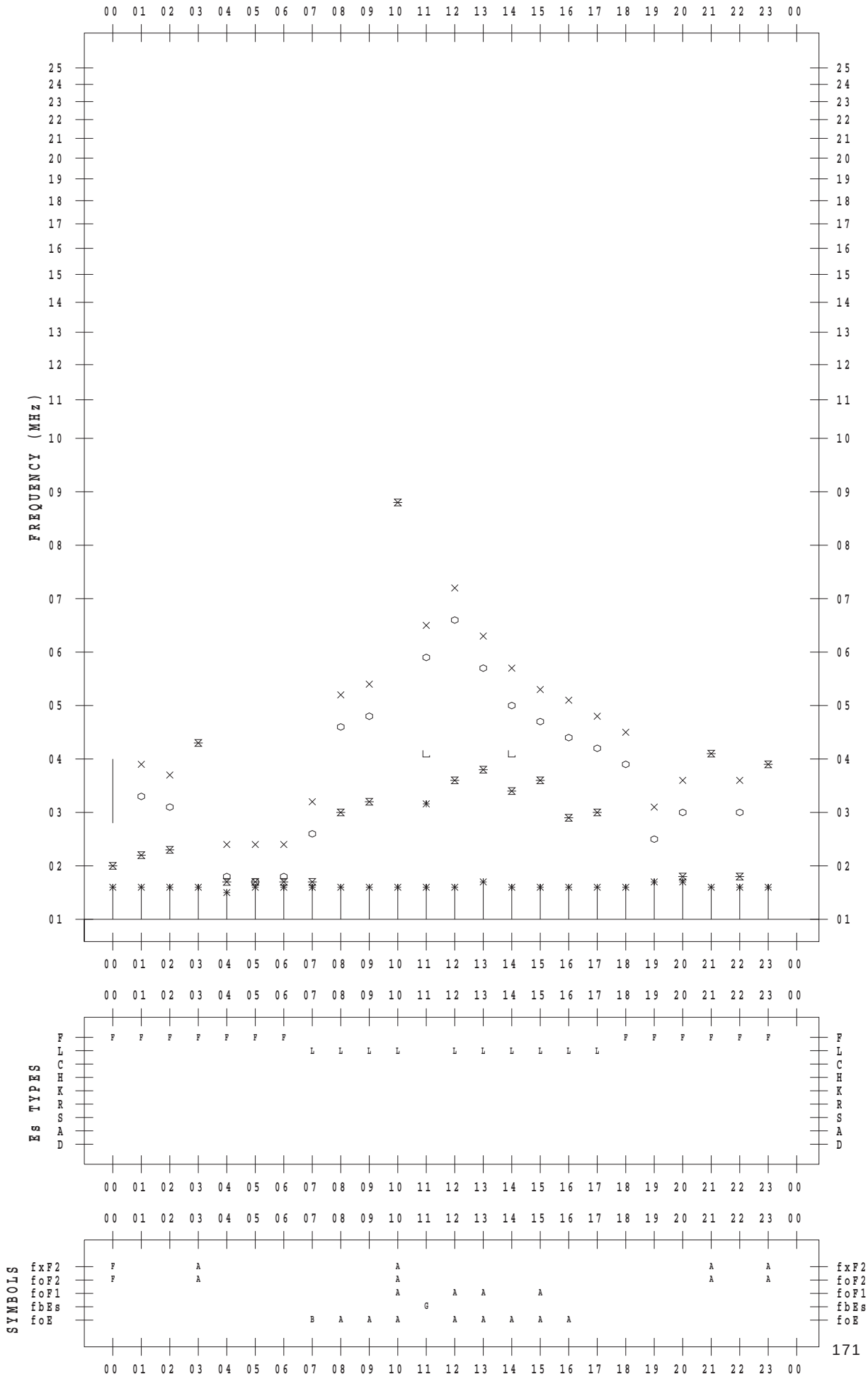
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 2

135 °E MEAN TIME



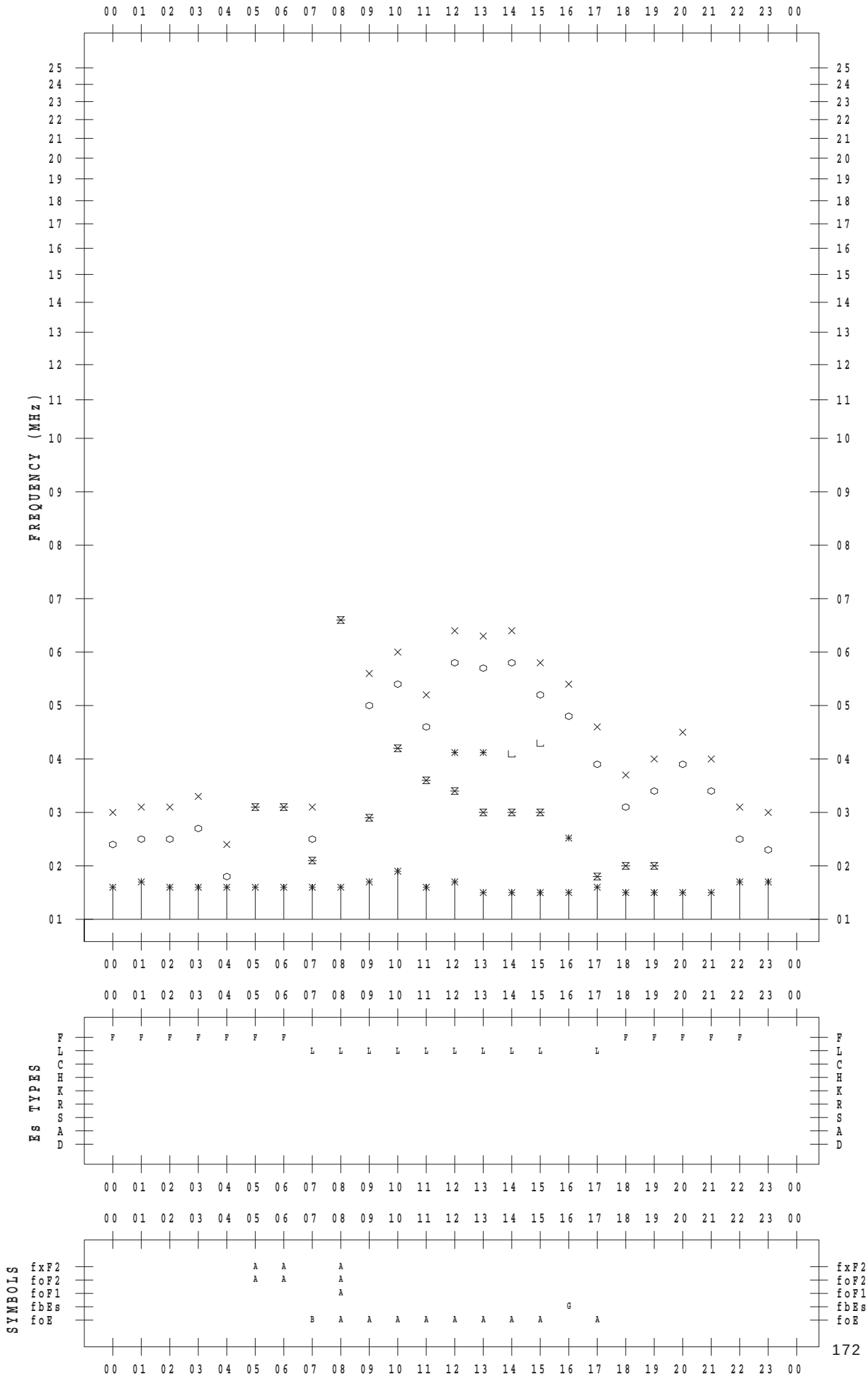
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 3

135 °E MEAN TIME



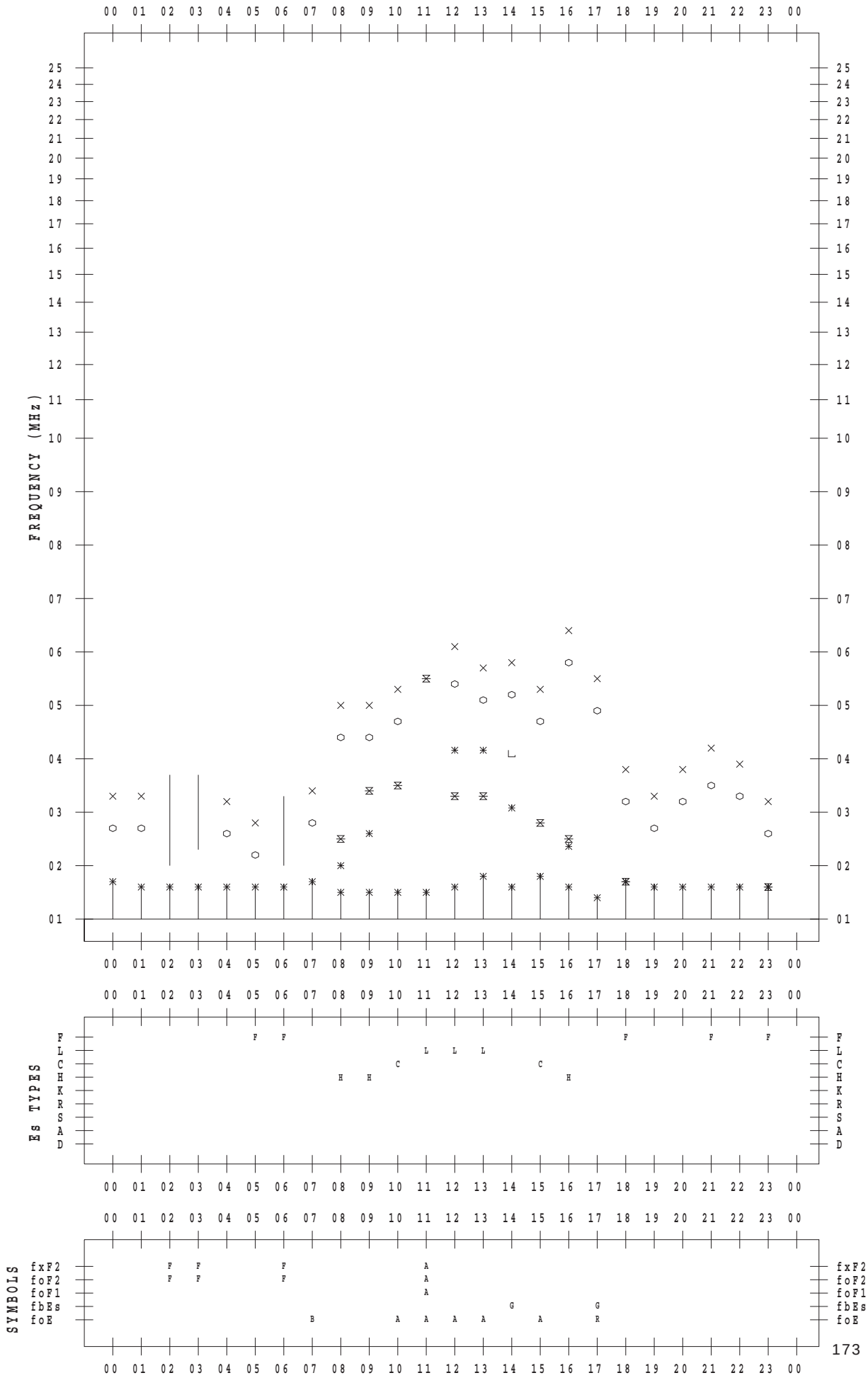
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 4

135 °E MEAN TIME



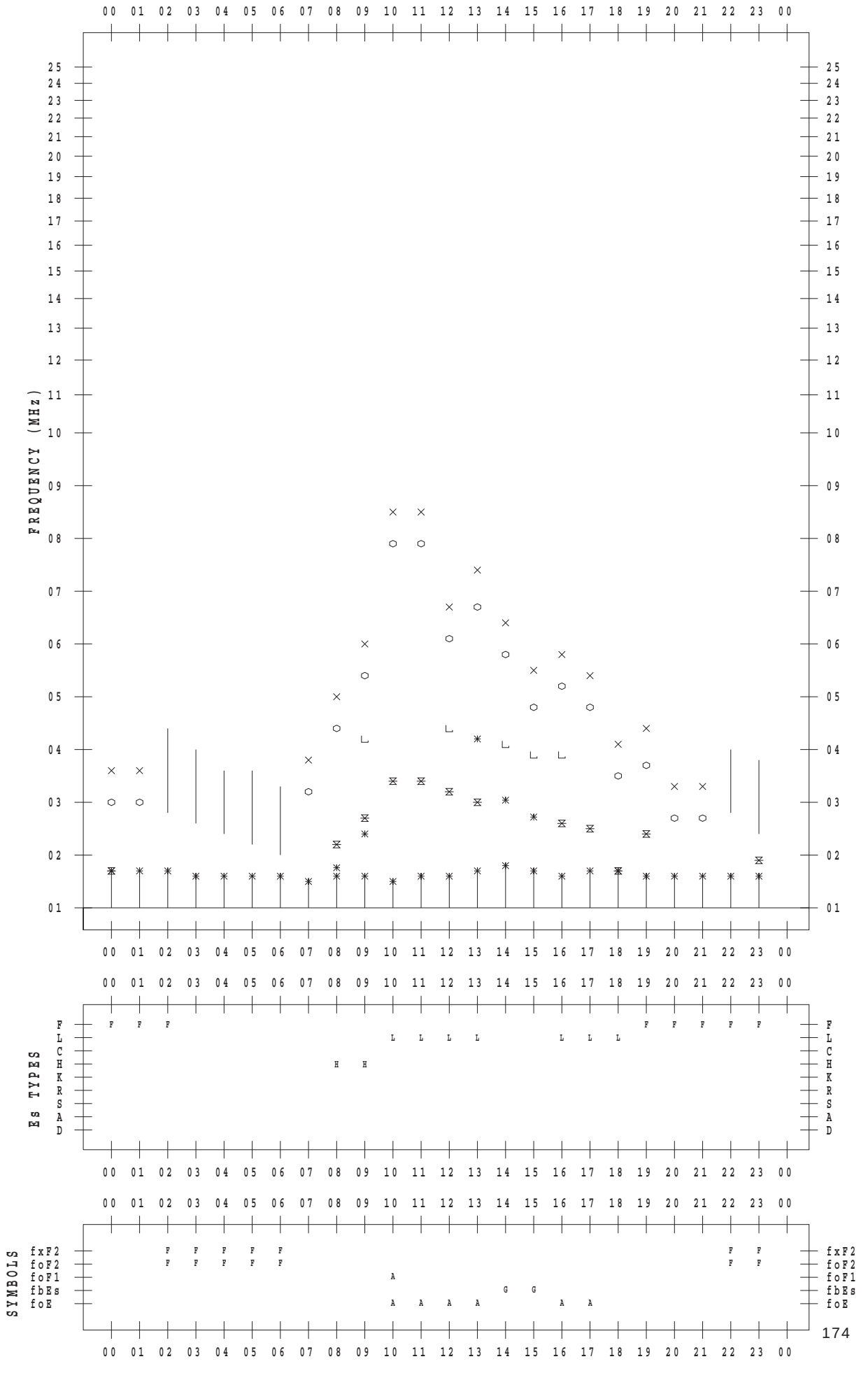
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 5

135 °E MEAN TIME



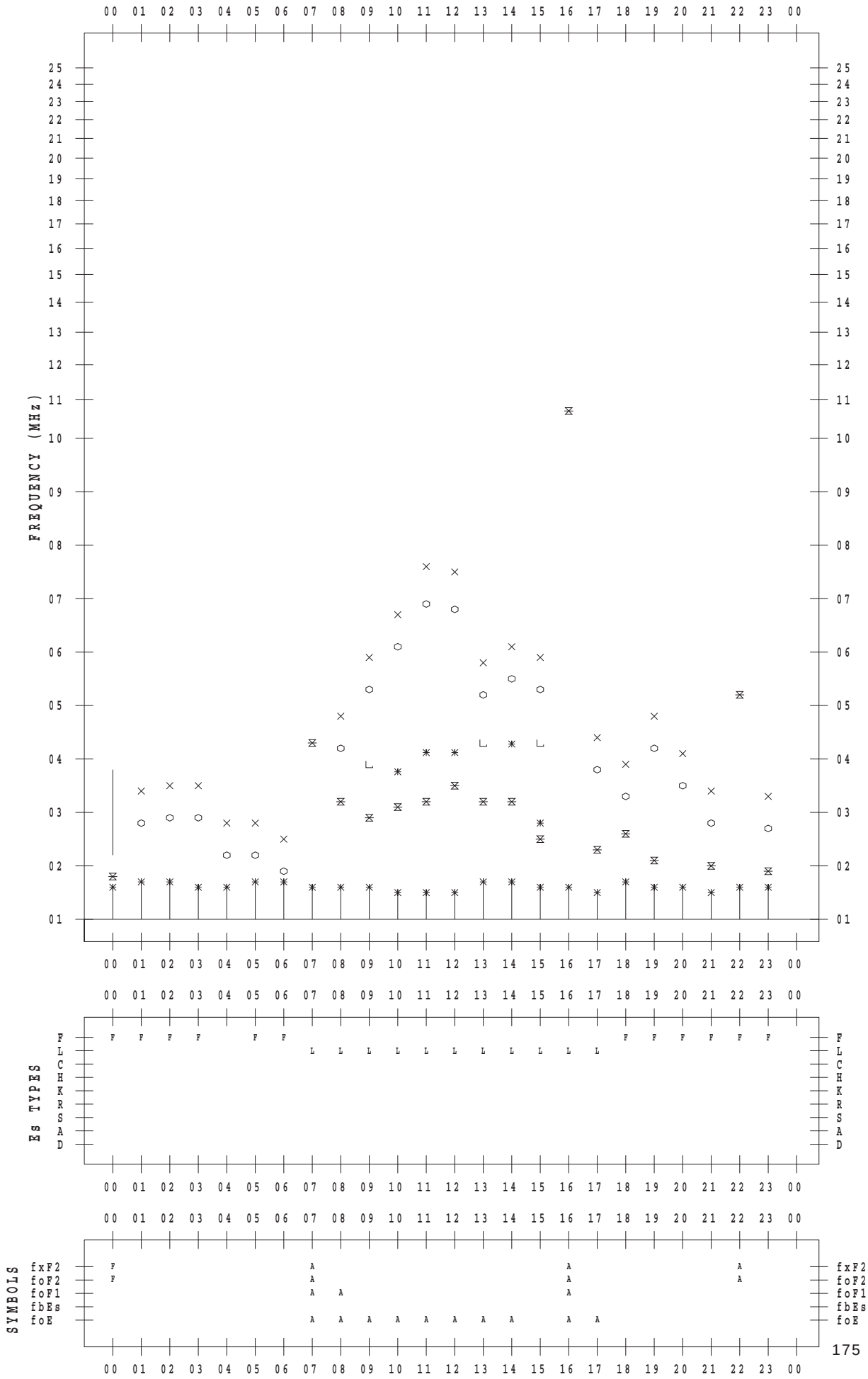
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 6

135 °E MEAN TIME



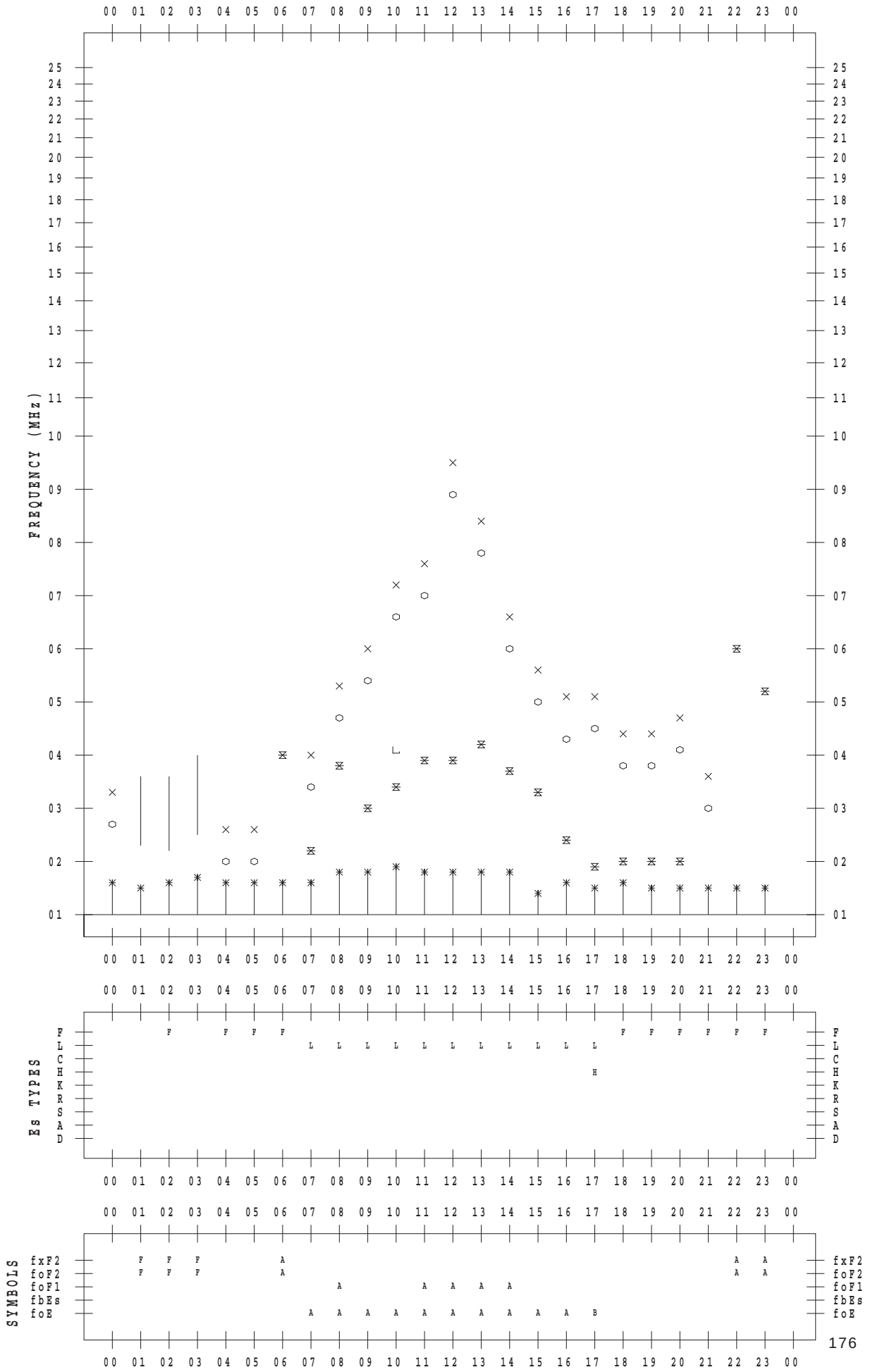
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 7

135 °E MEAN TIME



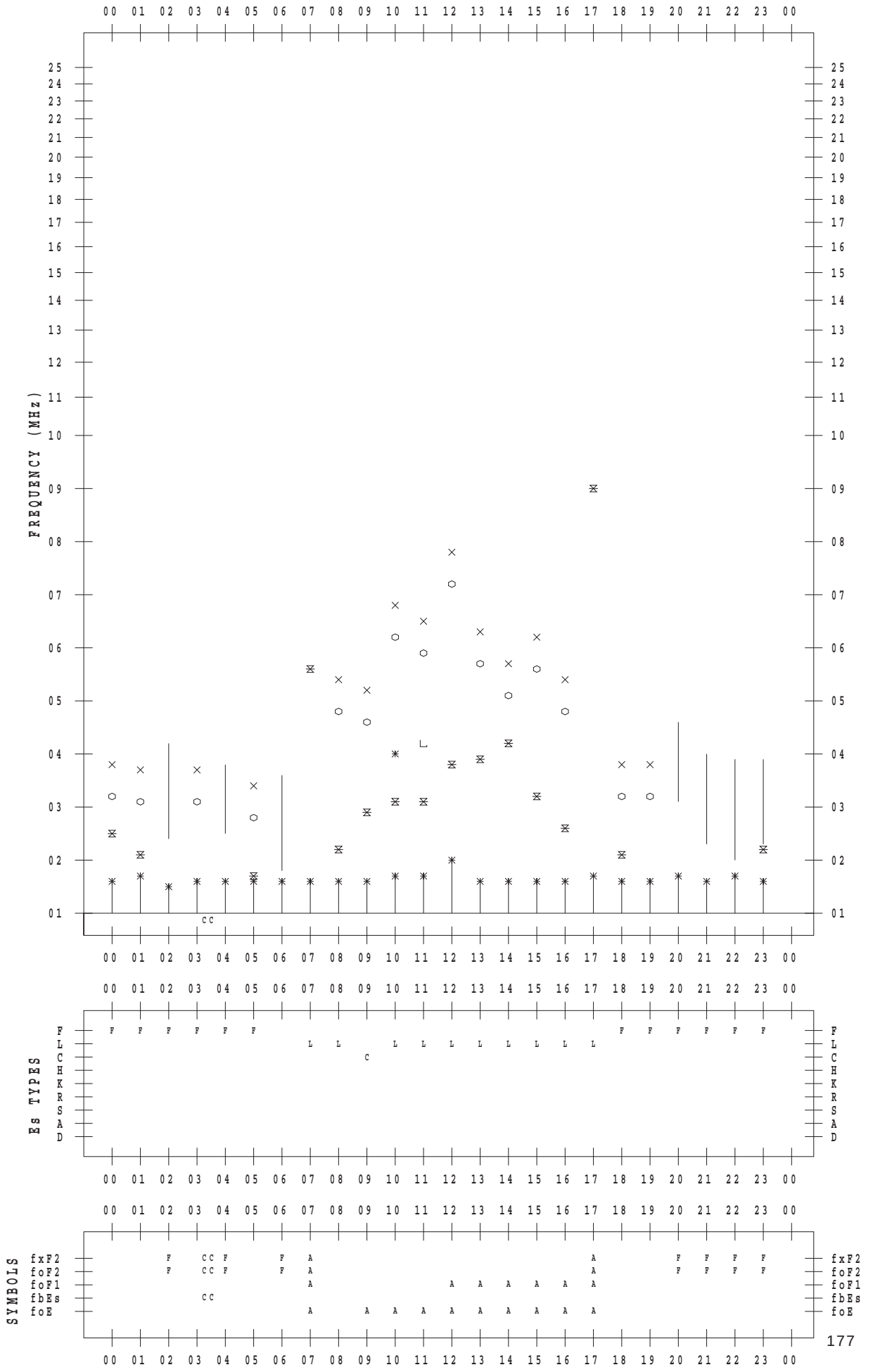
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 8

135 °E MEAN TIME



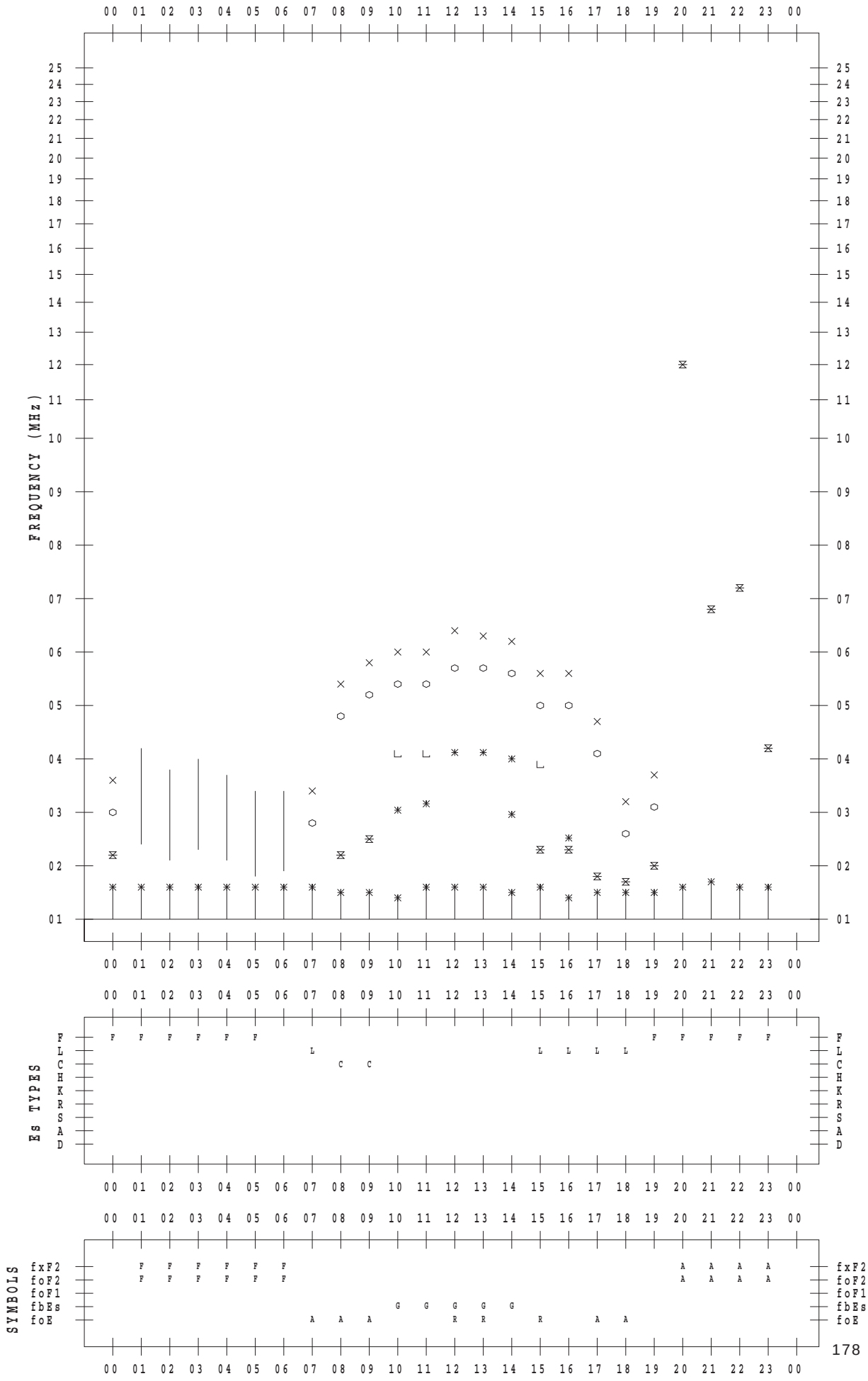
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/ 9

135 °E MEAN TIME



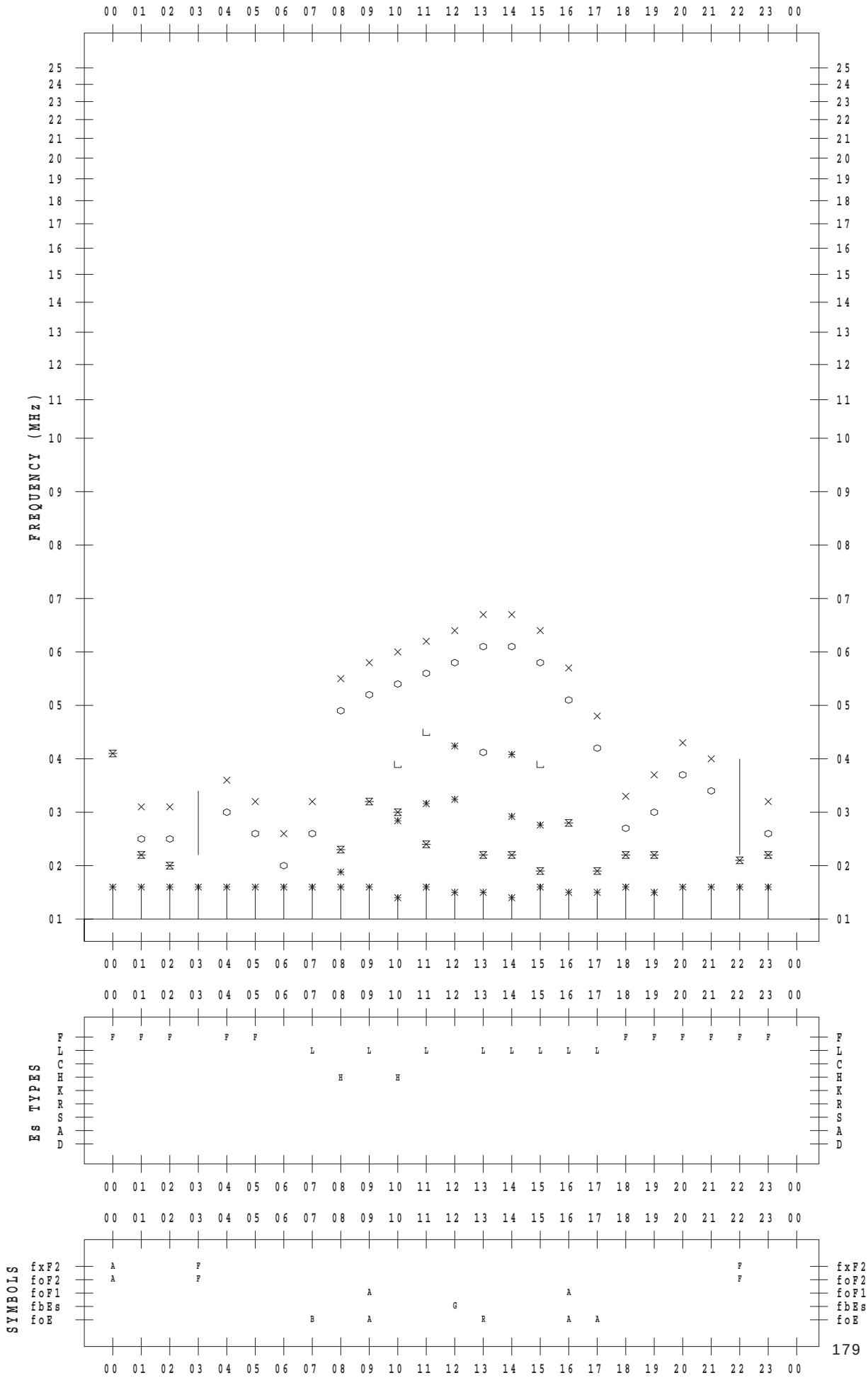
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/10

135 °E MEAN TIME



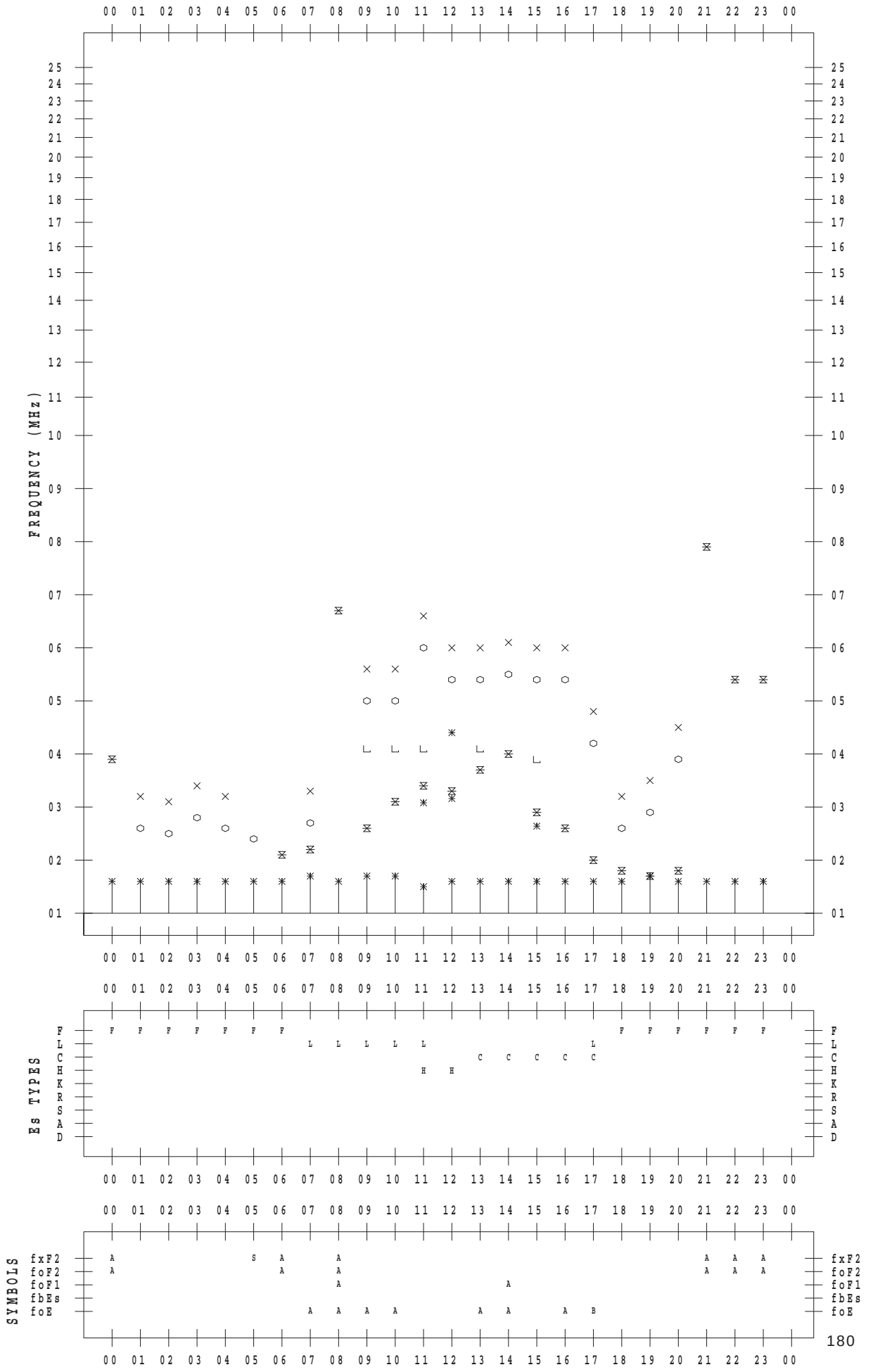
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/11

135 °E MEAN TIME



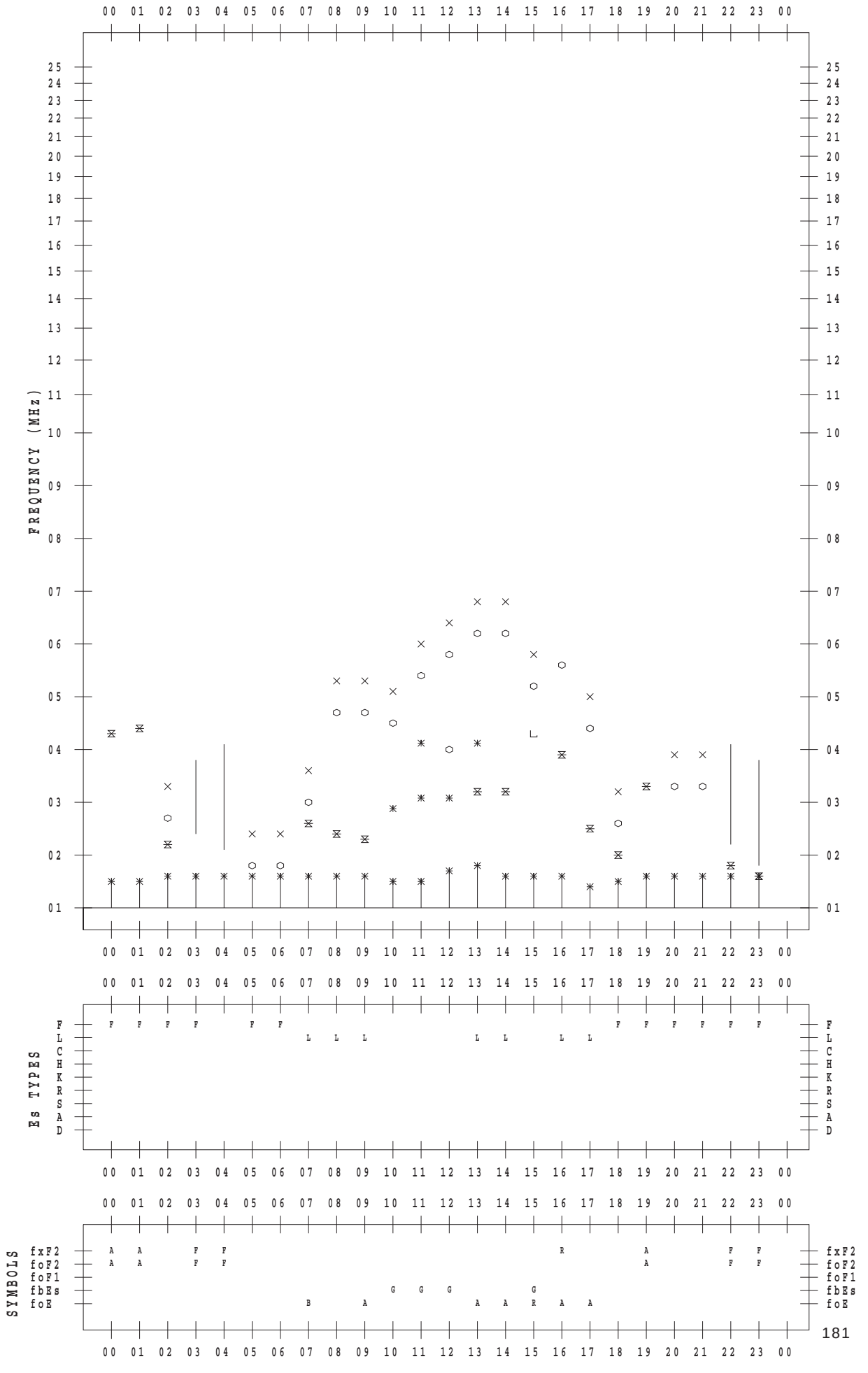
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/12

135 °E MEAN TIME



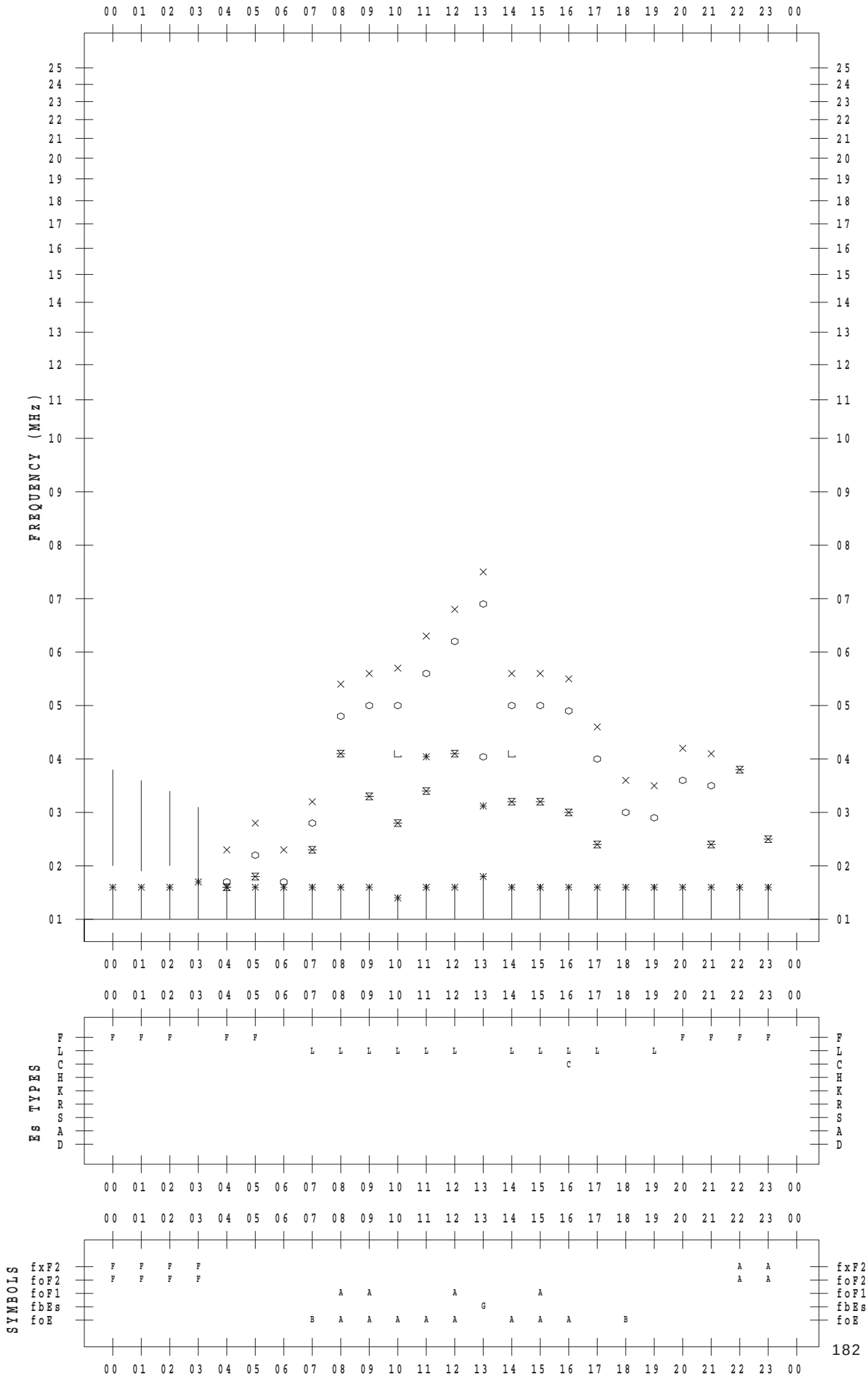
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/13

135 °E MEAN TIME



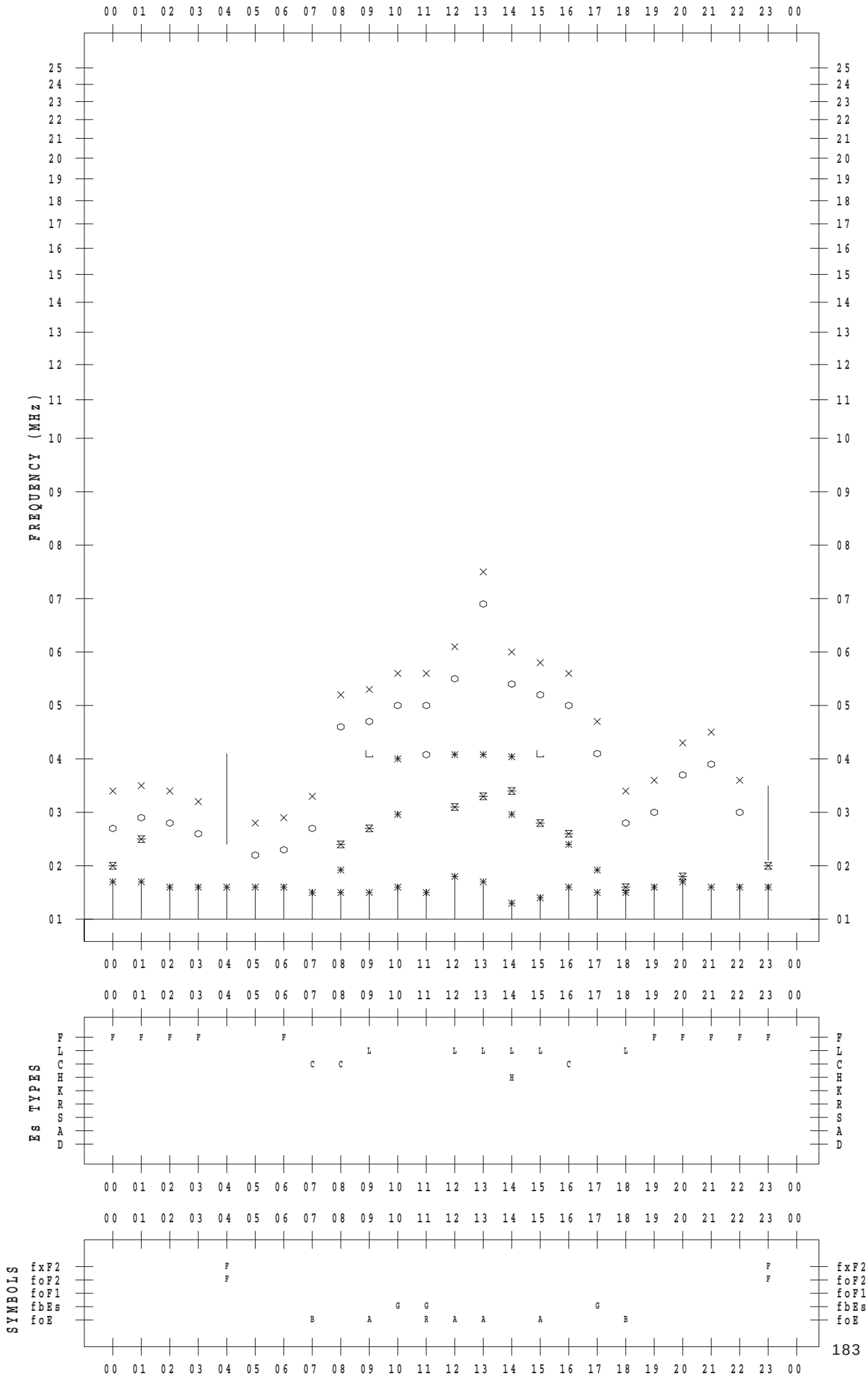
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/14

135 °E MEAN TIME



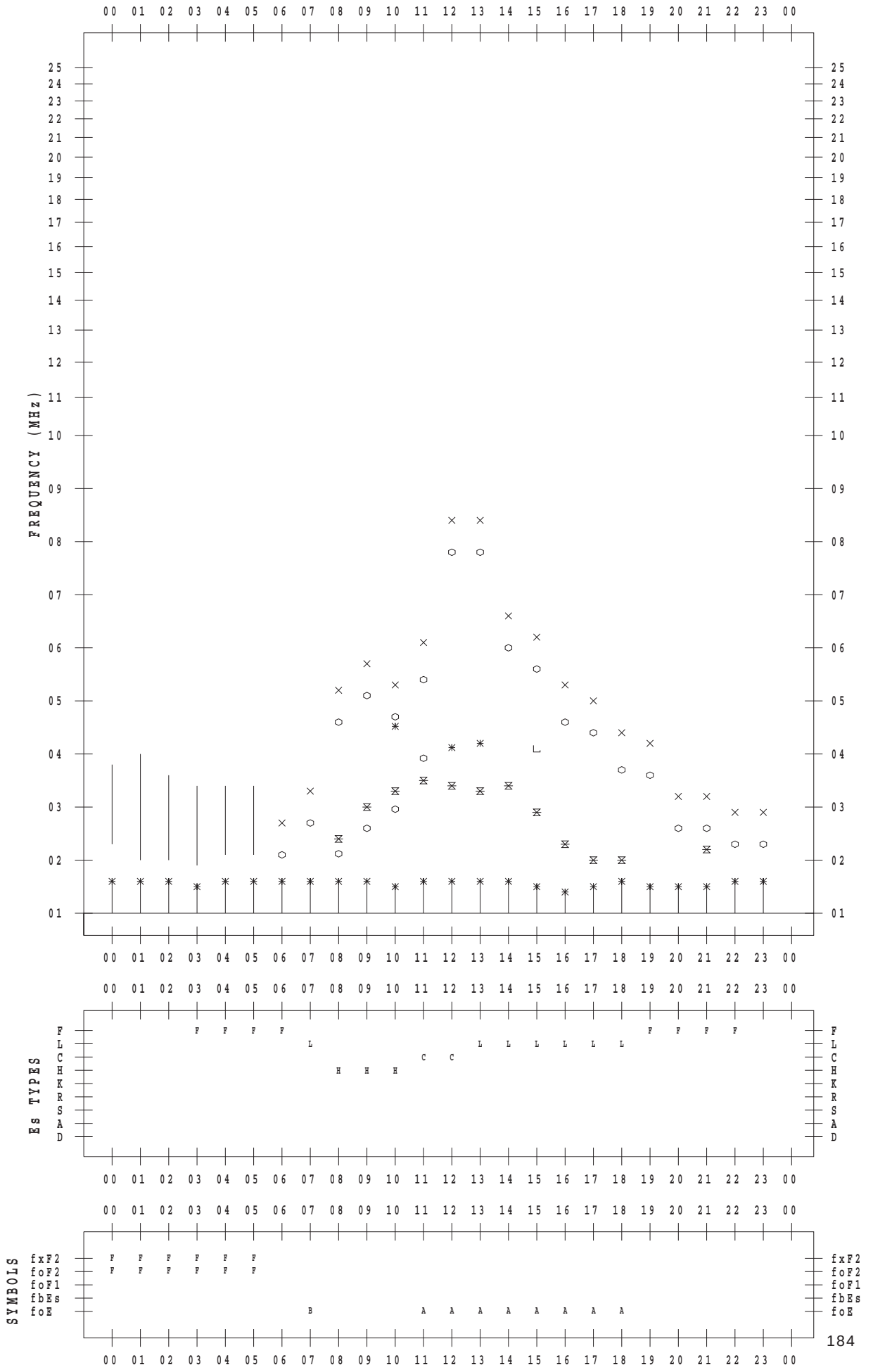
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/15

135 °E MEAN TIME



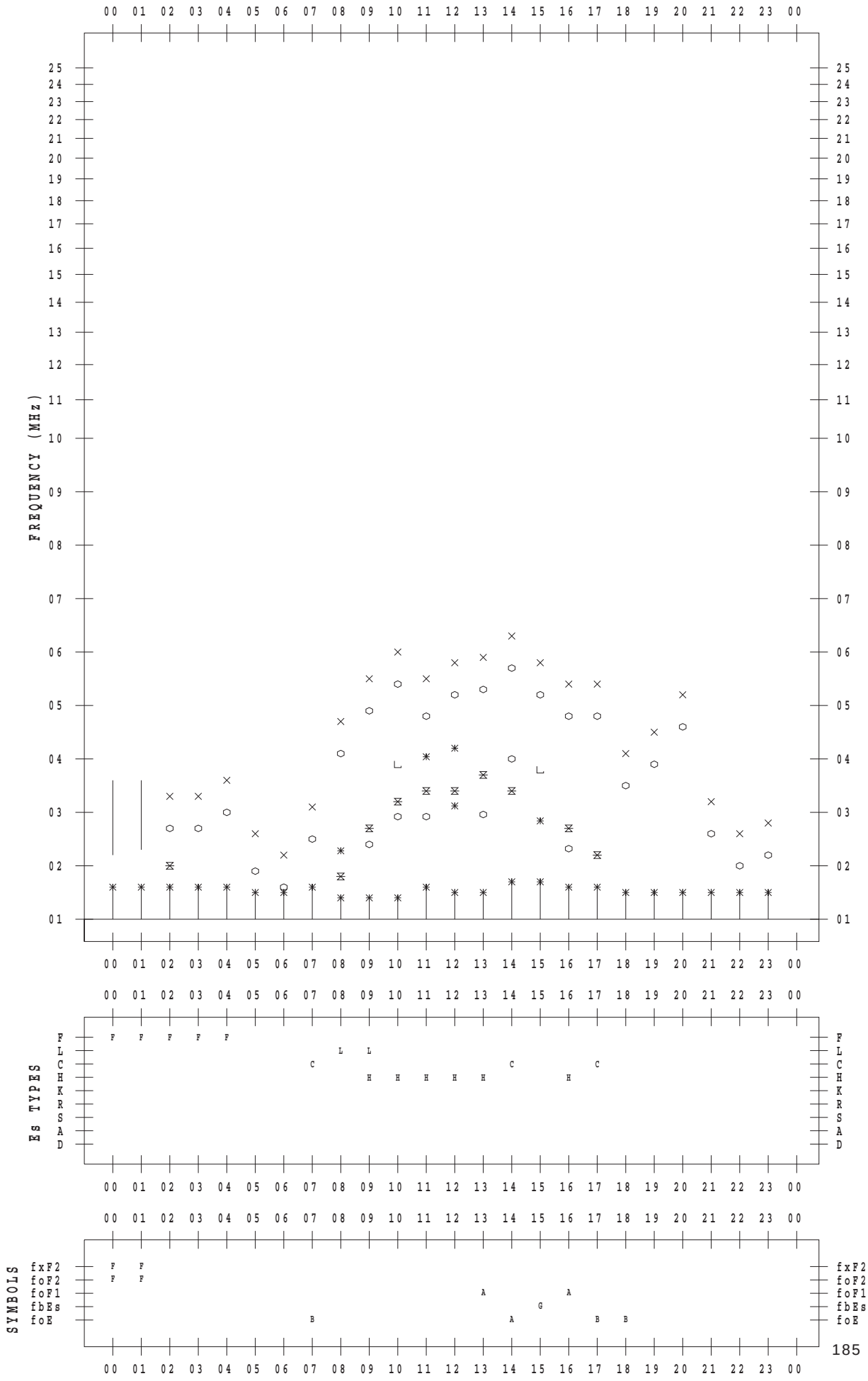
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/16

135 °E MEAN TIME



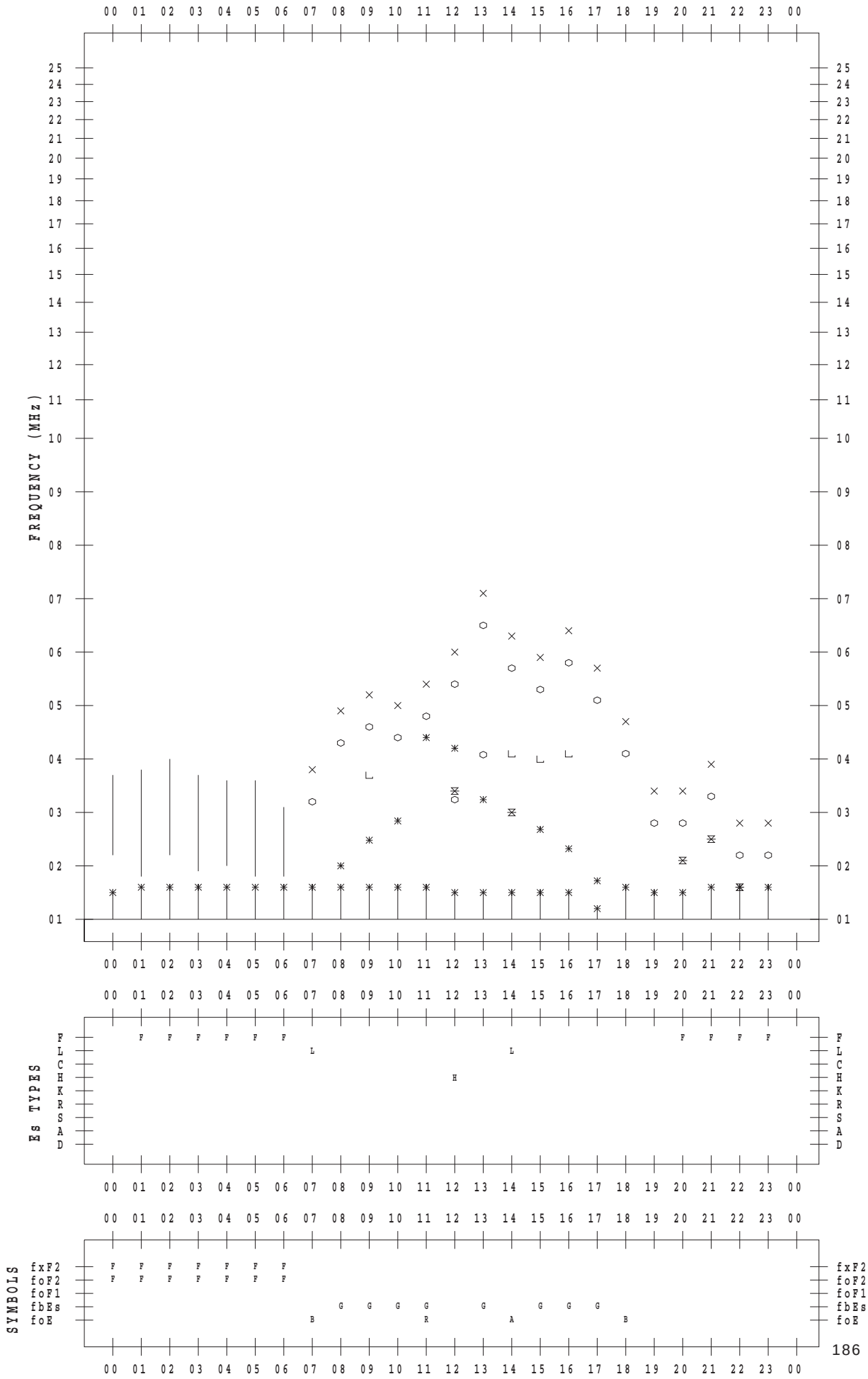
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/17

135 °E MEAN TIME



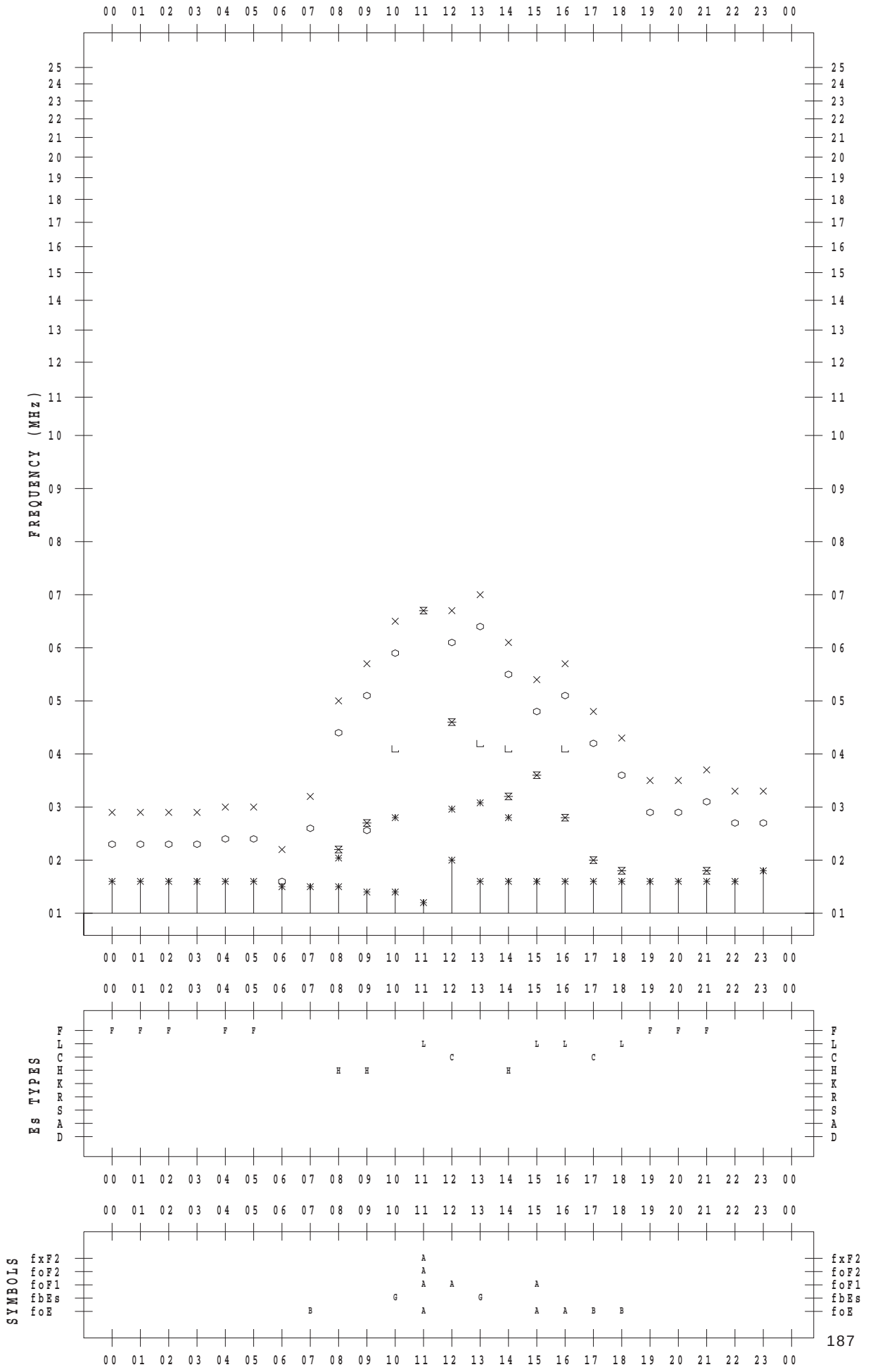
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/18

135 °E MEAN TIME



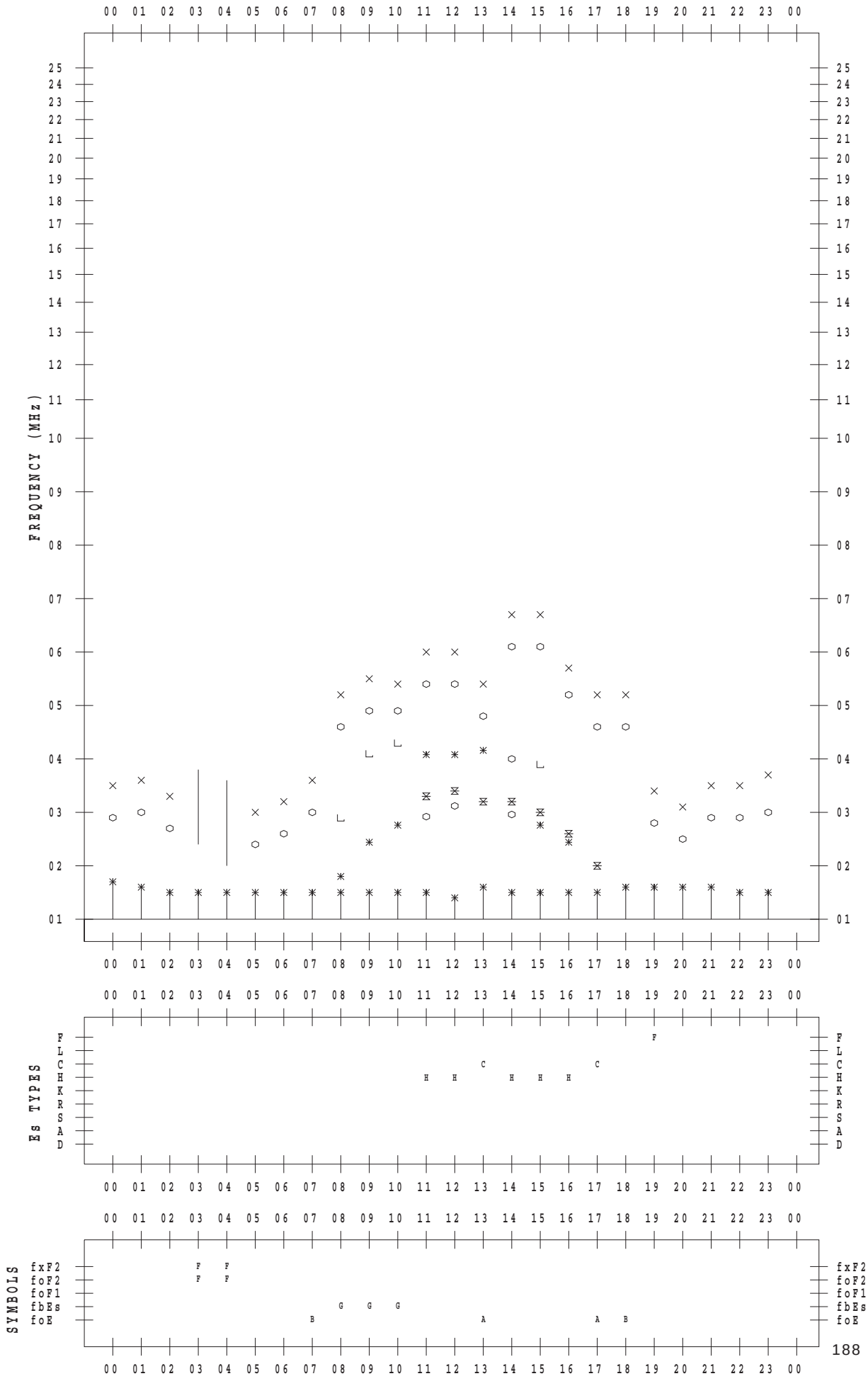
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/19

135 °E MEAN TIME



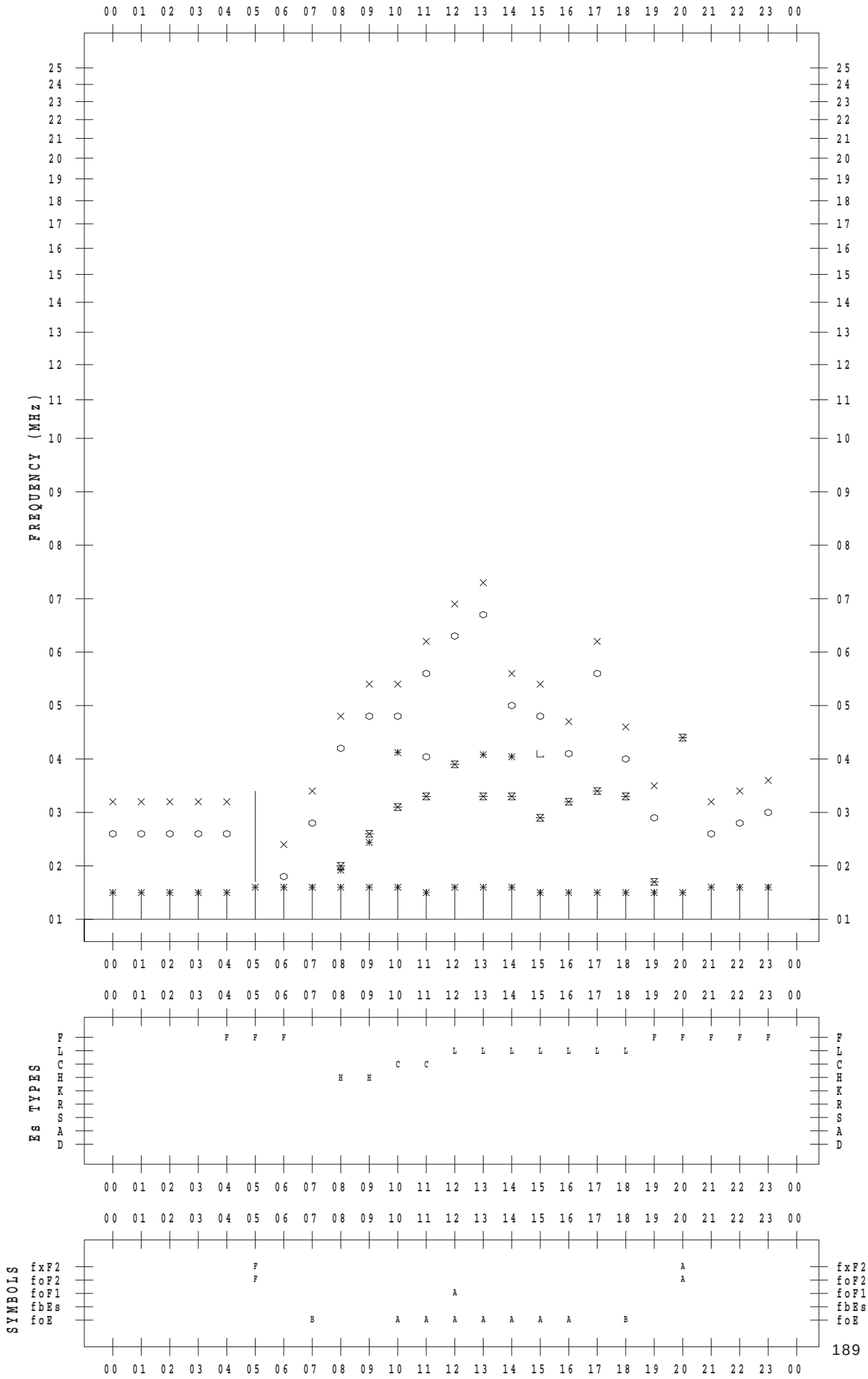
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/20

135 °E MEAN TIME



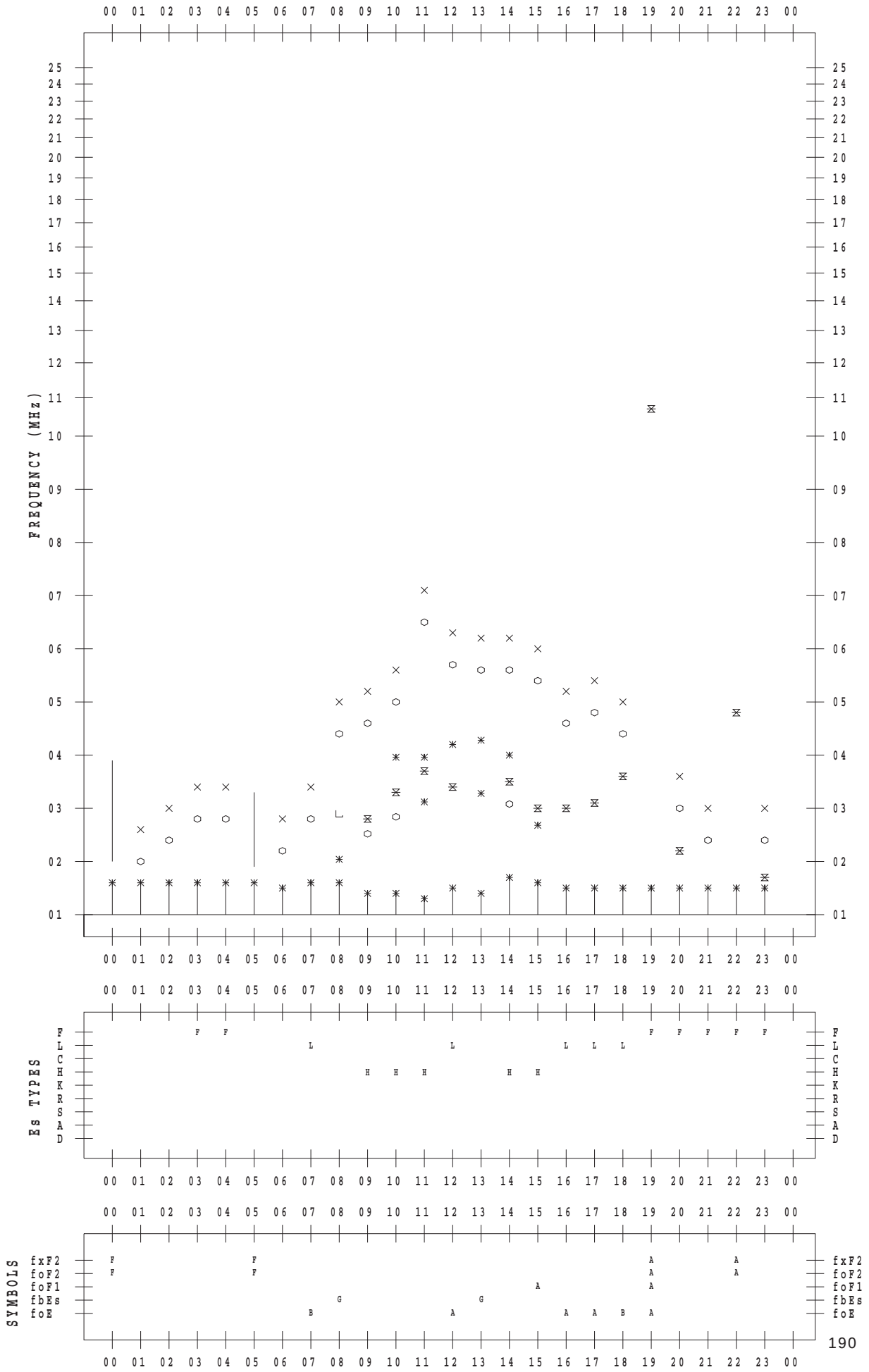
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/21

135 °E MEAN TIME



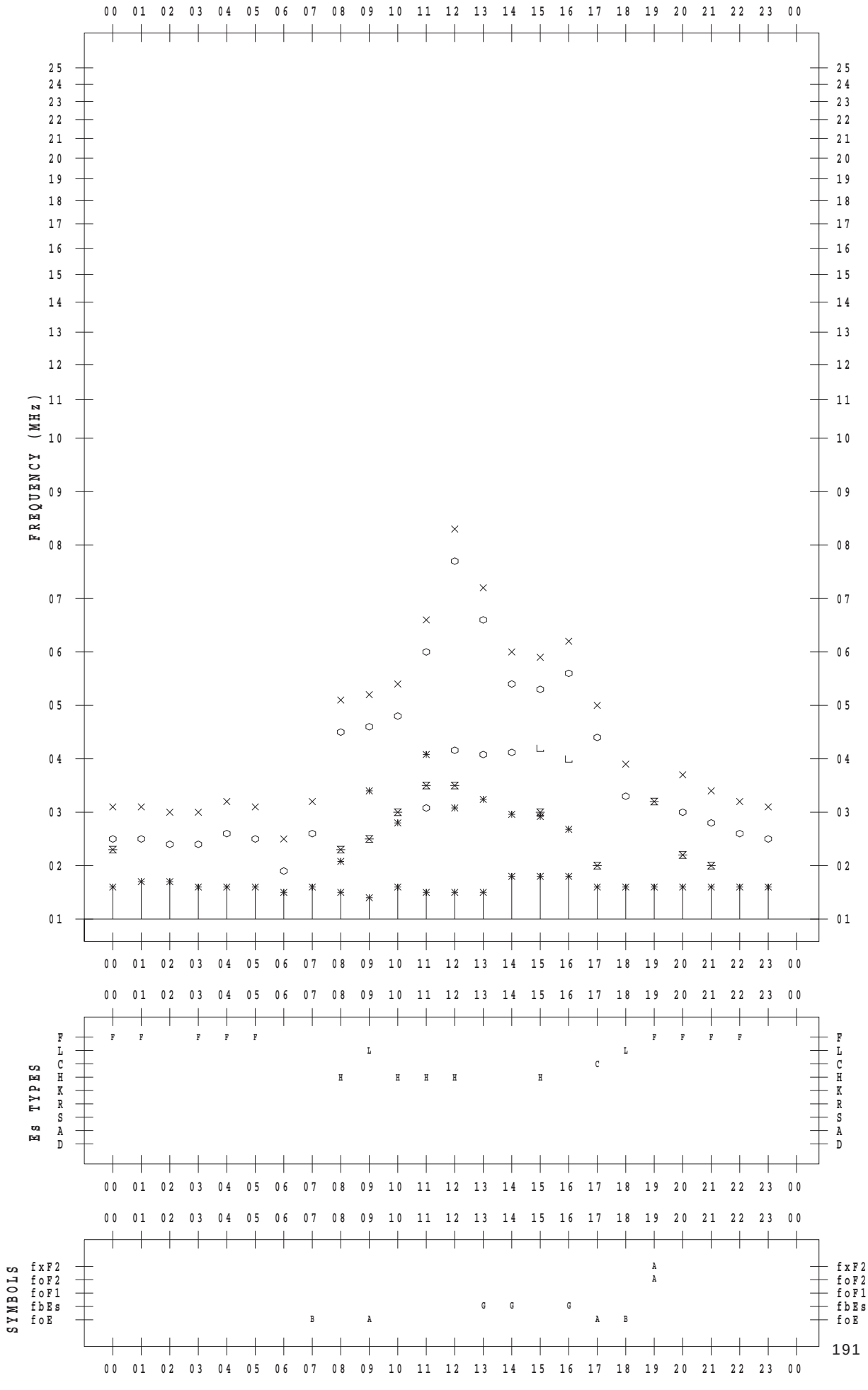
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/22

135 °E MEAN TIME



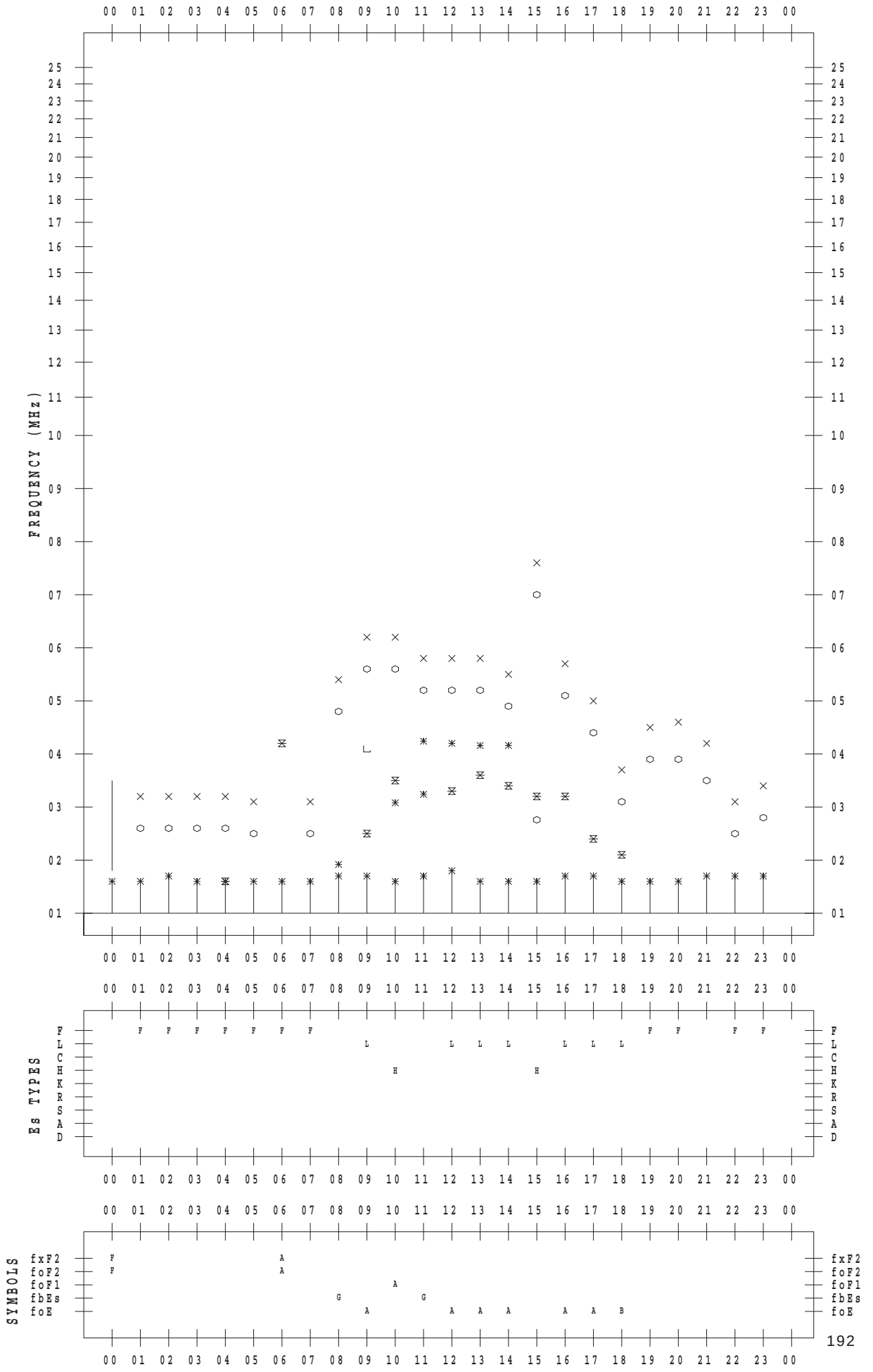
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/23

135 °E MEAN TIME



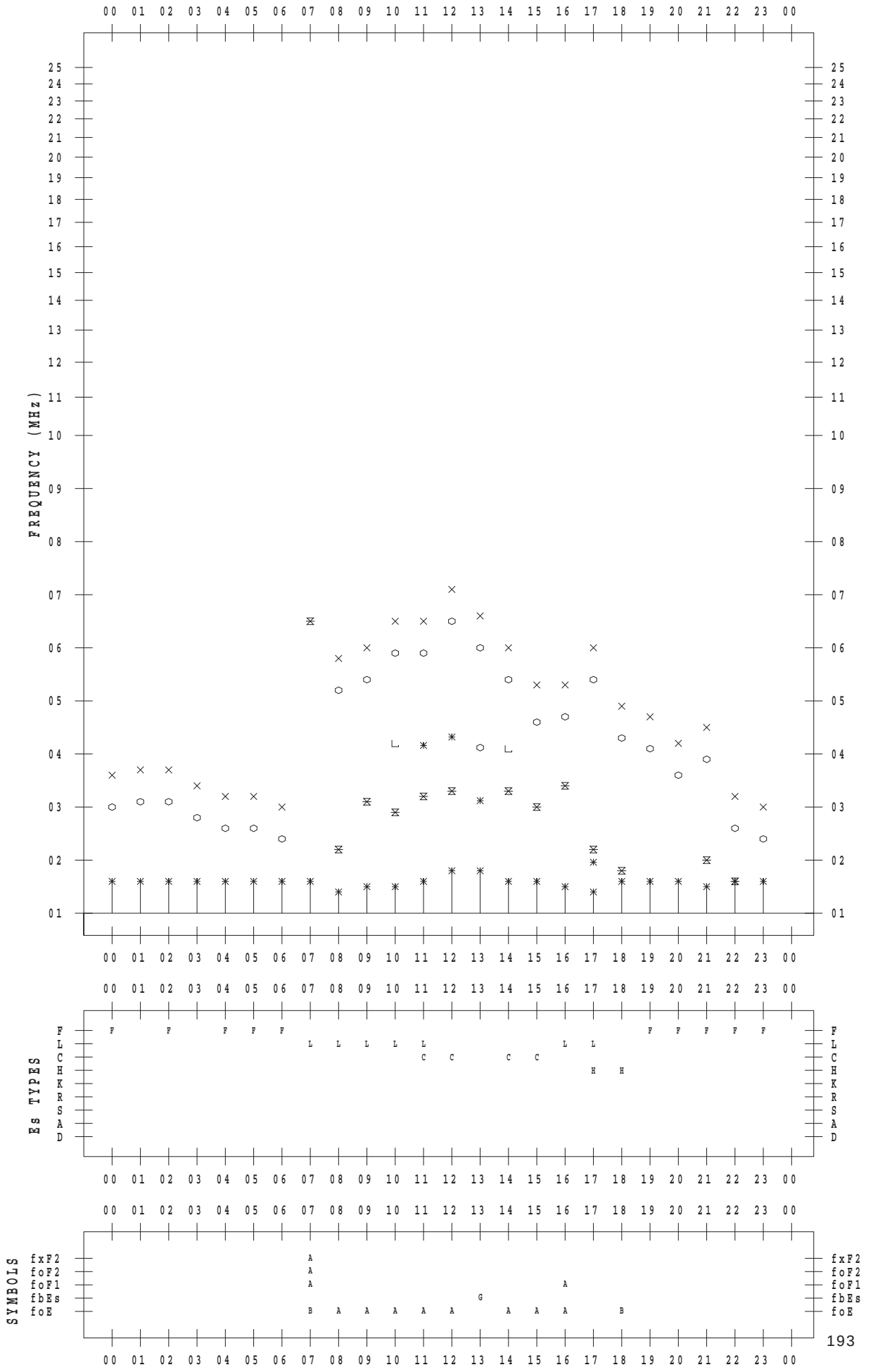
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/24

135 °E MEAN TIME



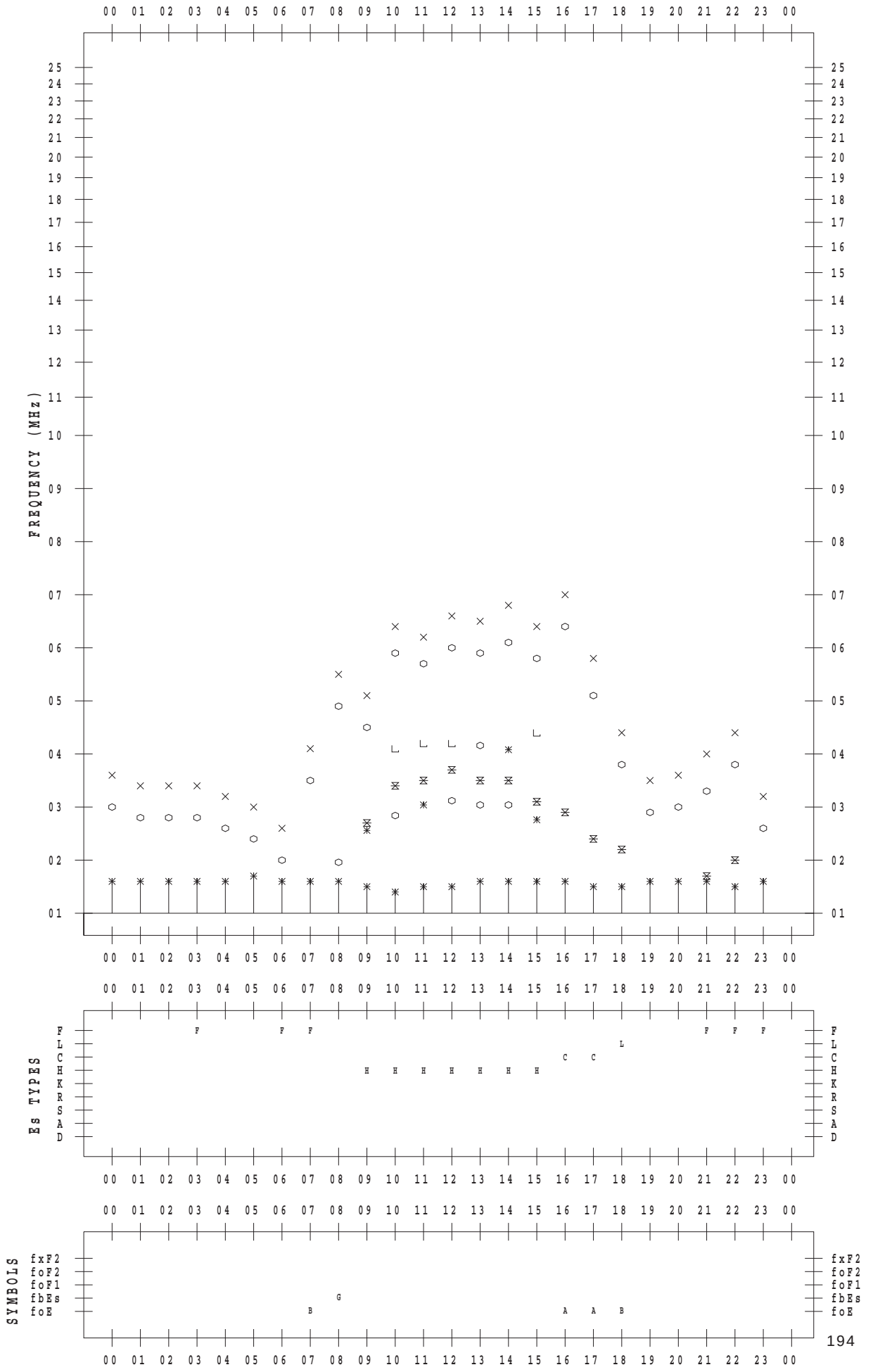
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/25

135 °E MEAN TIME



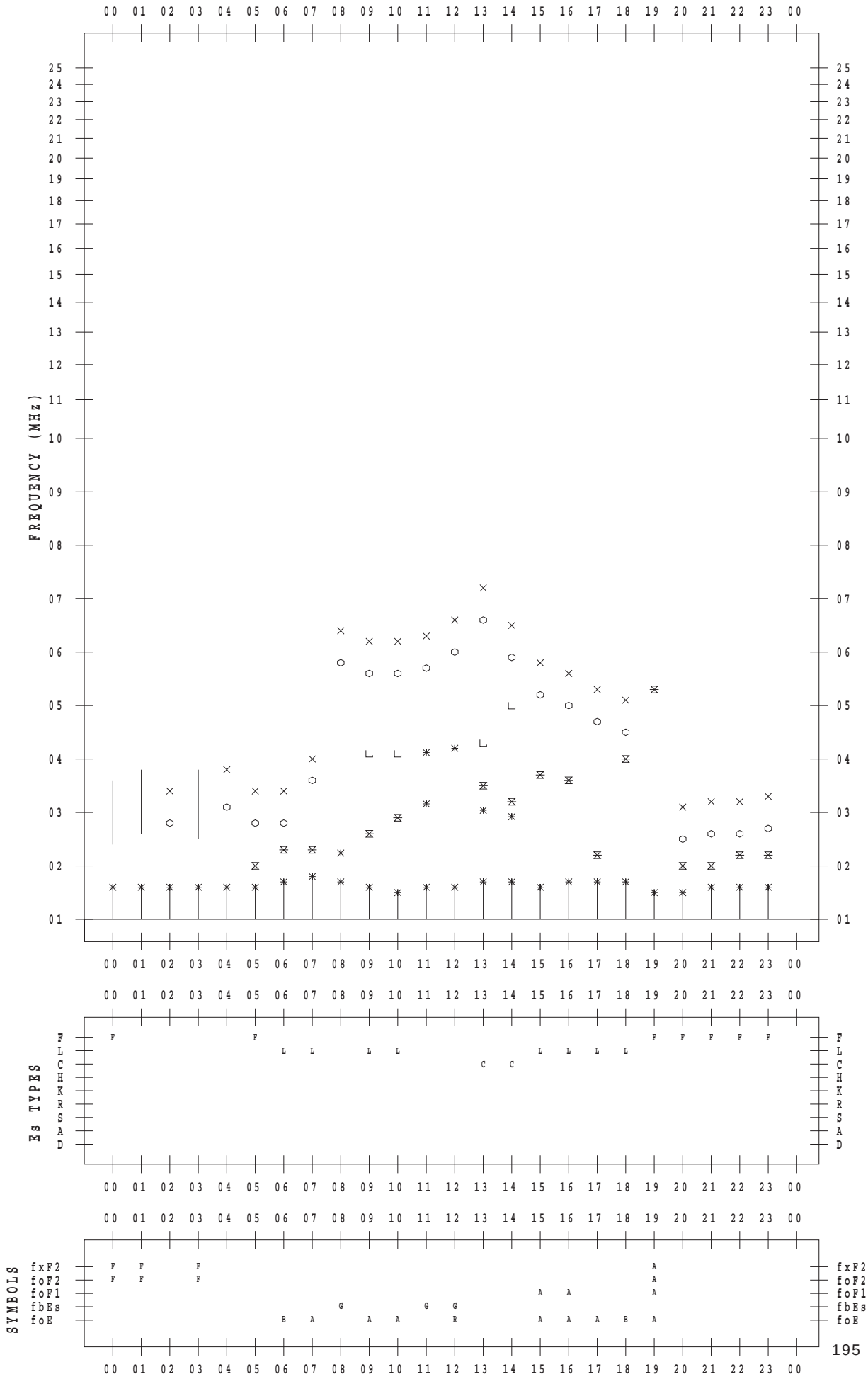
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/26

135 °E MEAN TIME



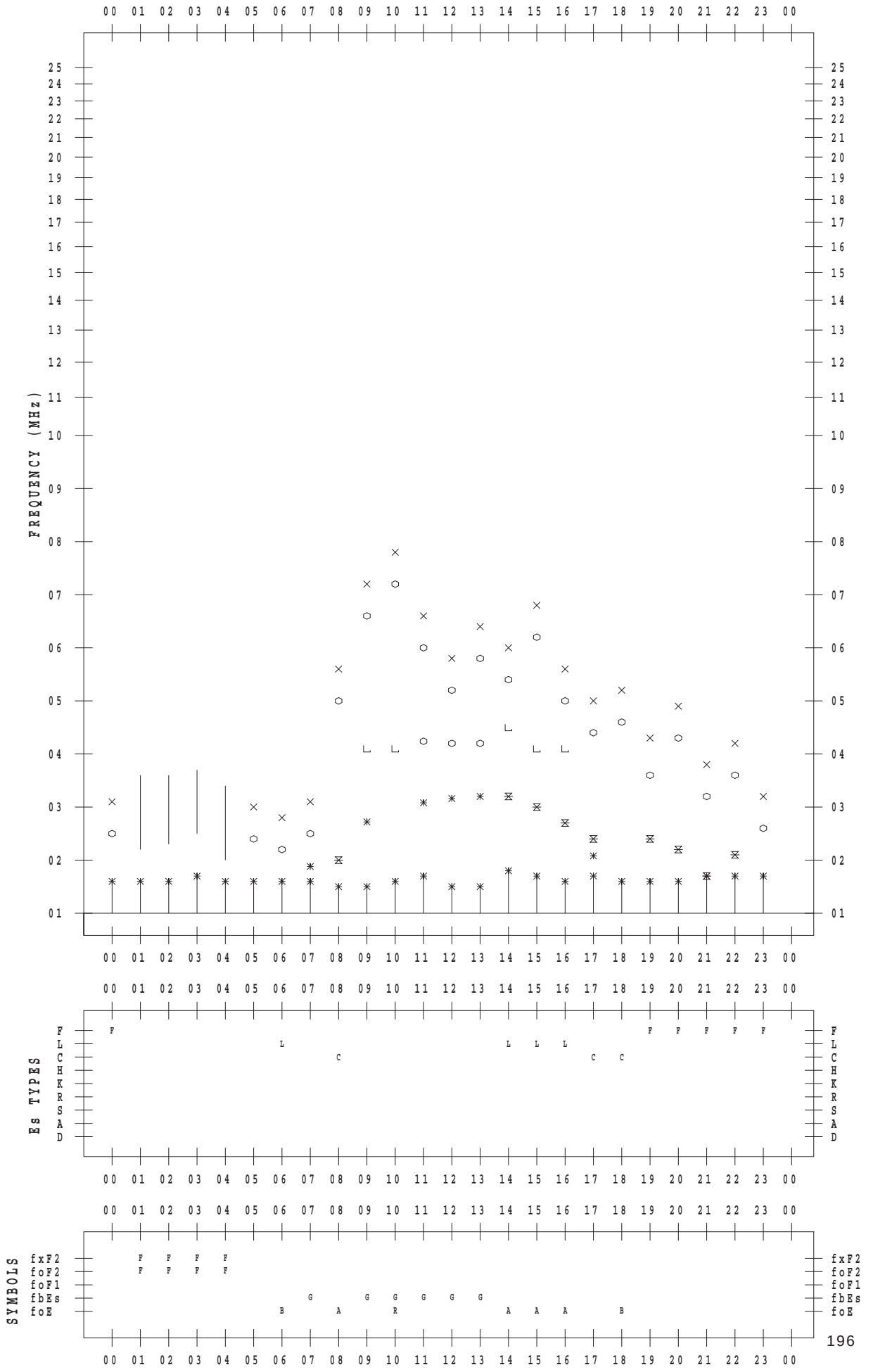
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/27

135 °E MEAN TIME



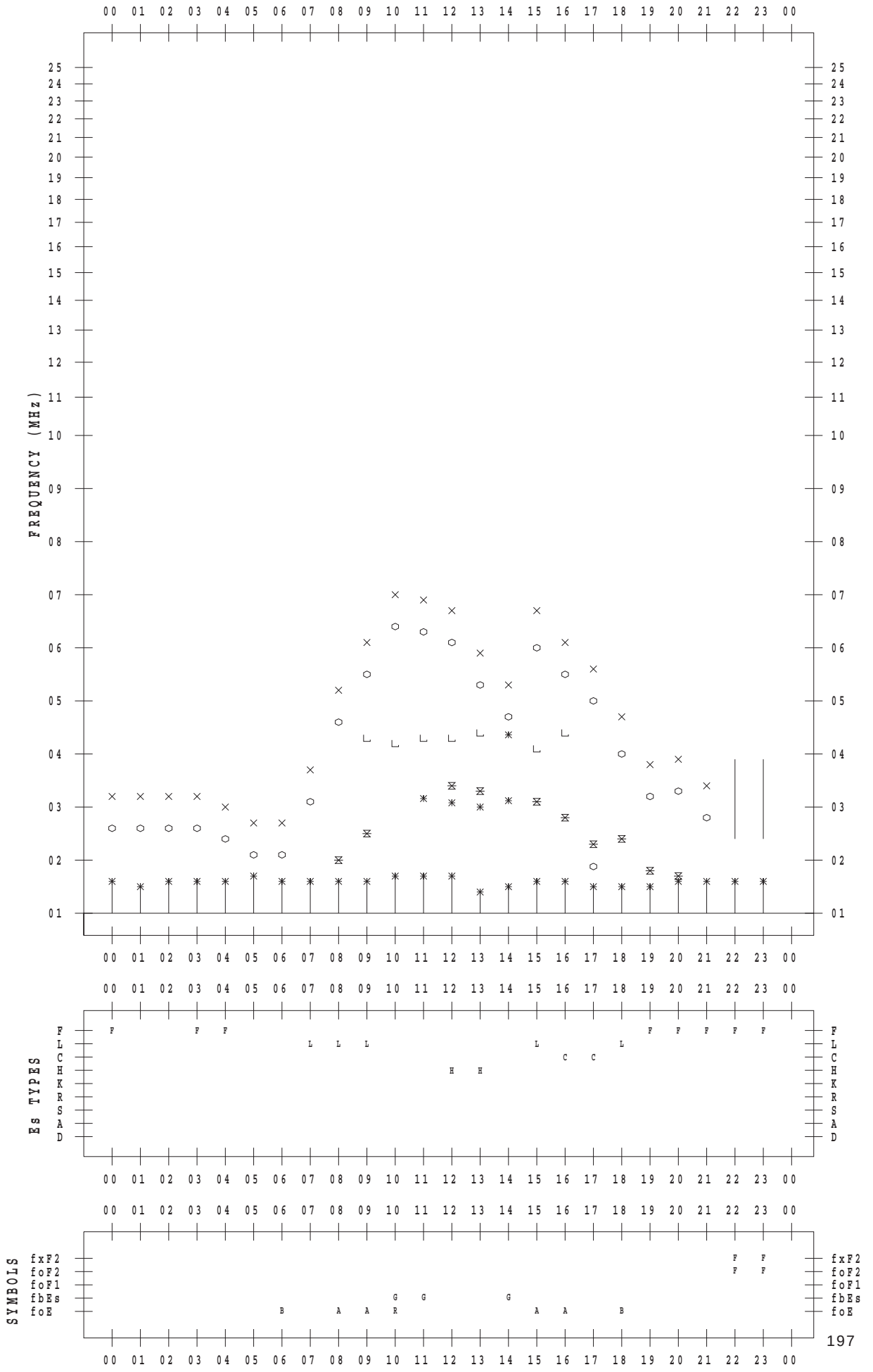
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/28

135 °E MEAN TIME



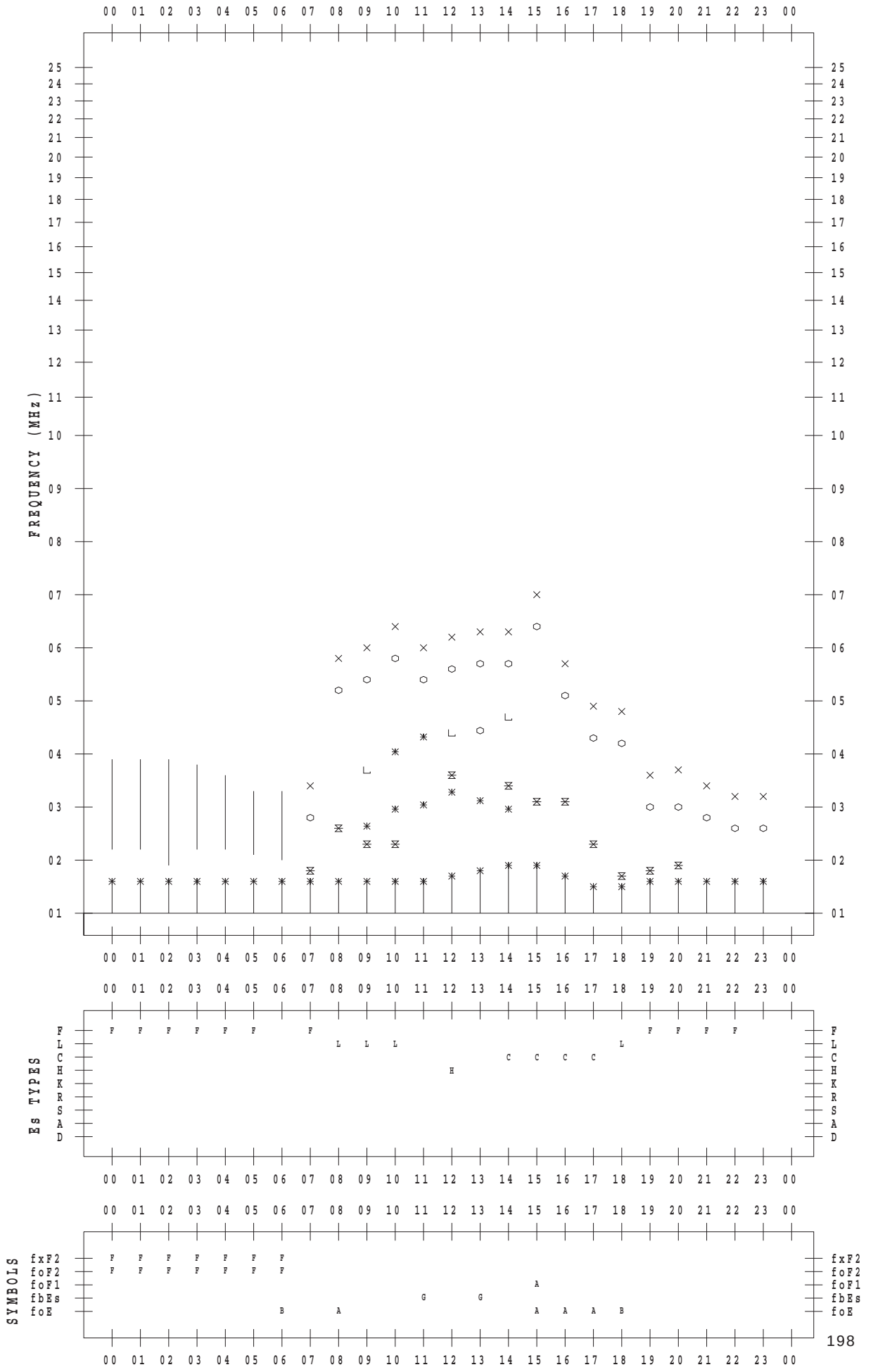
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/29

135 °E MEAN TIME



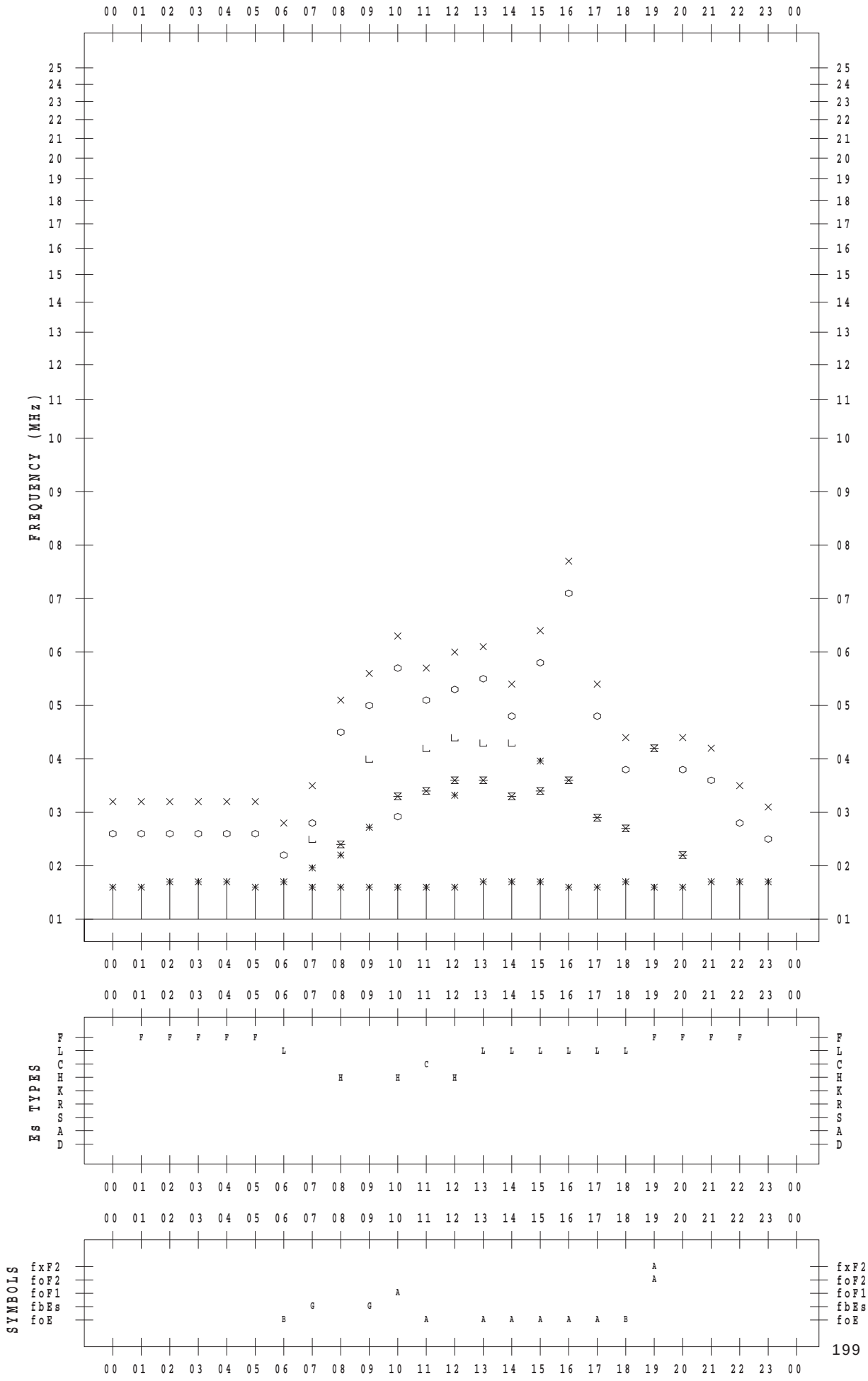
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/30

135 °E MEAN TIME



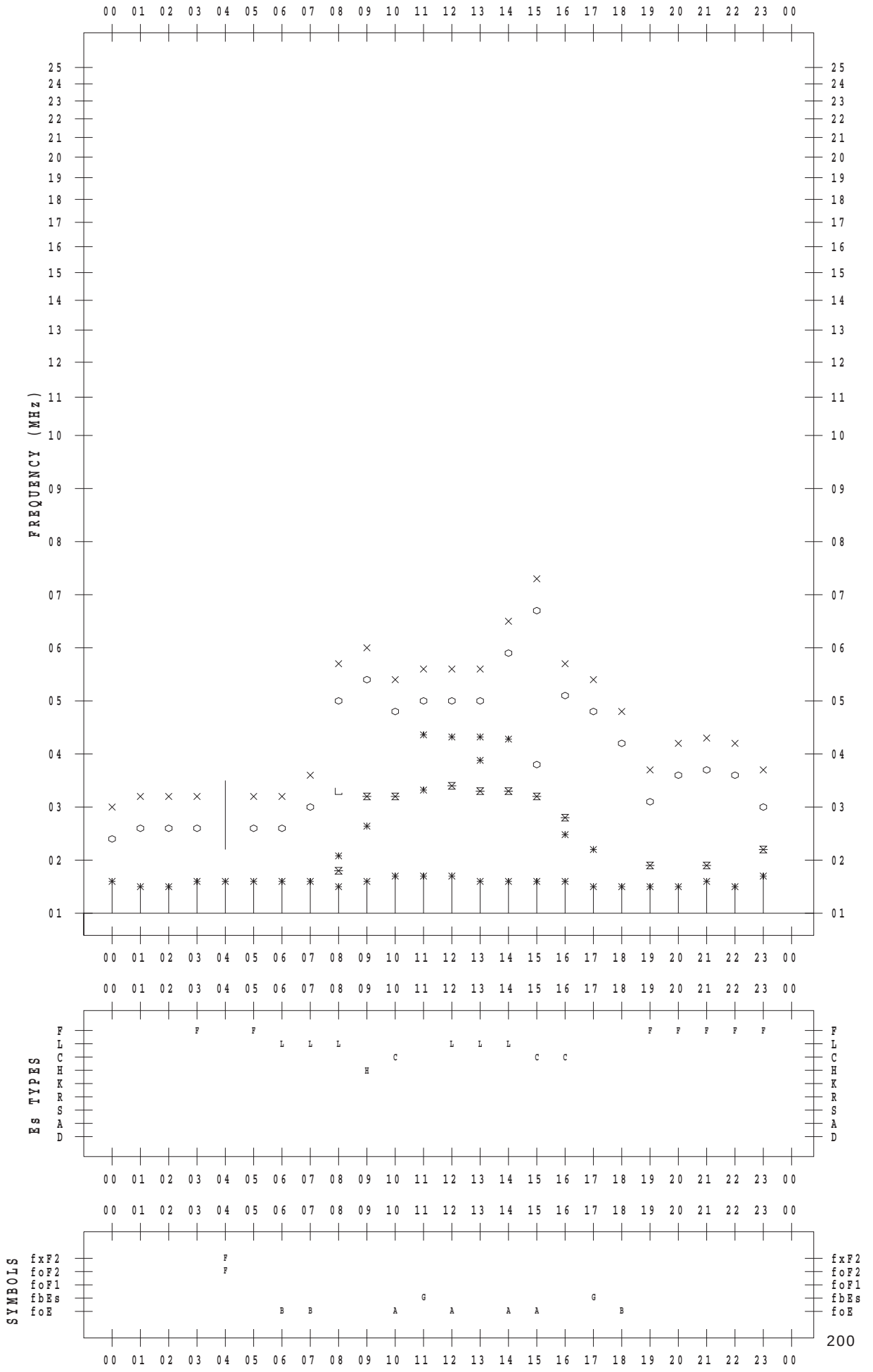
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 1/31

135 °E MEAN TIME



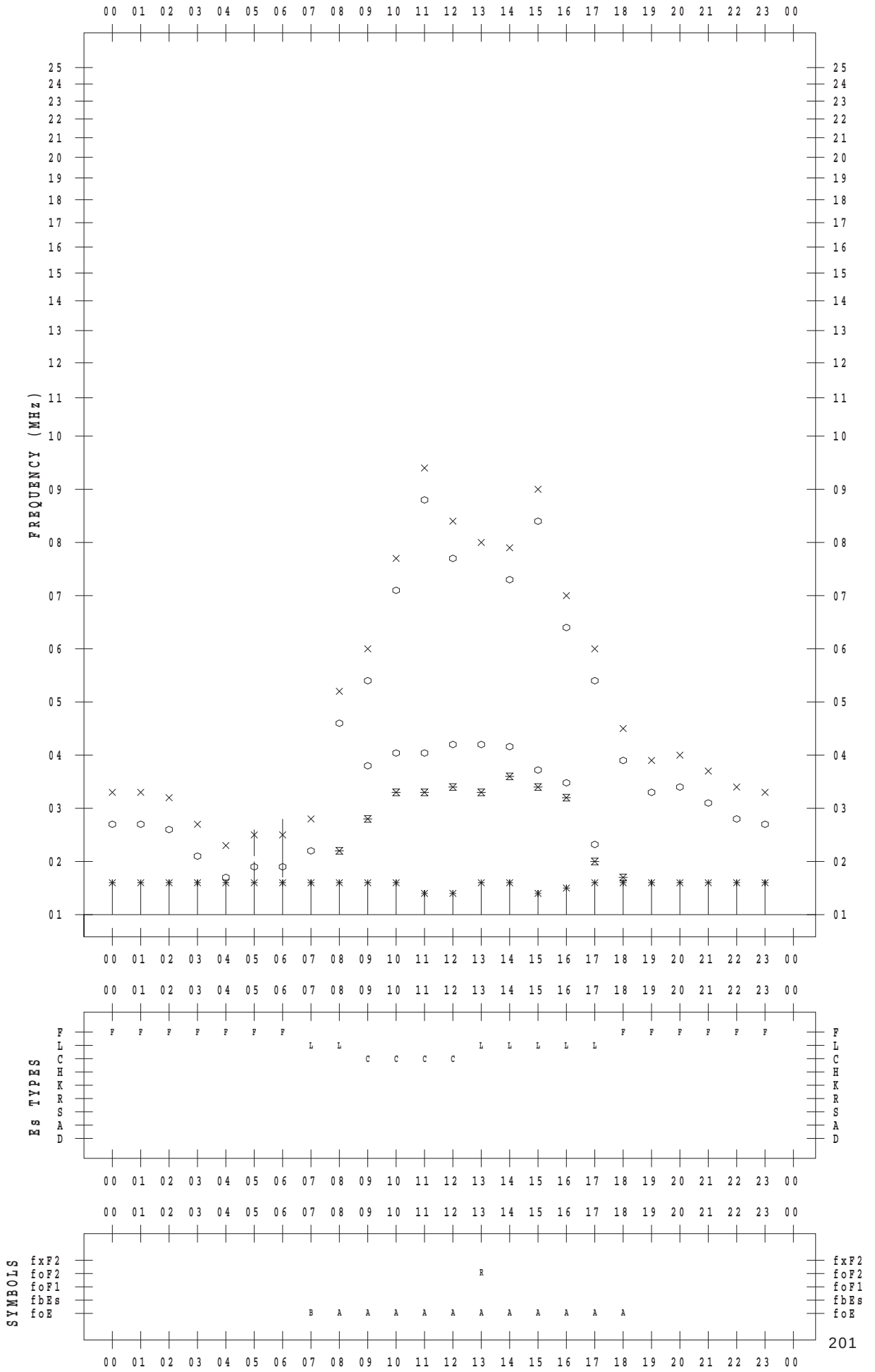
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 1

135 °E MEAN TIME



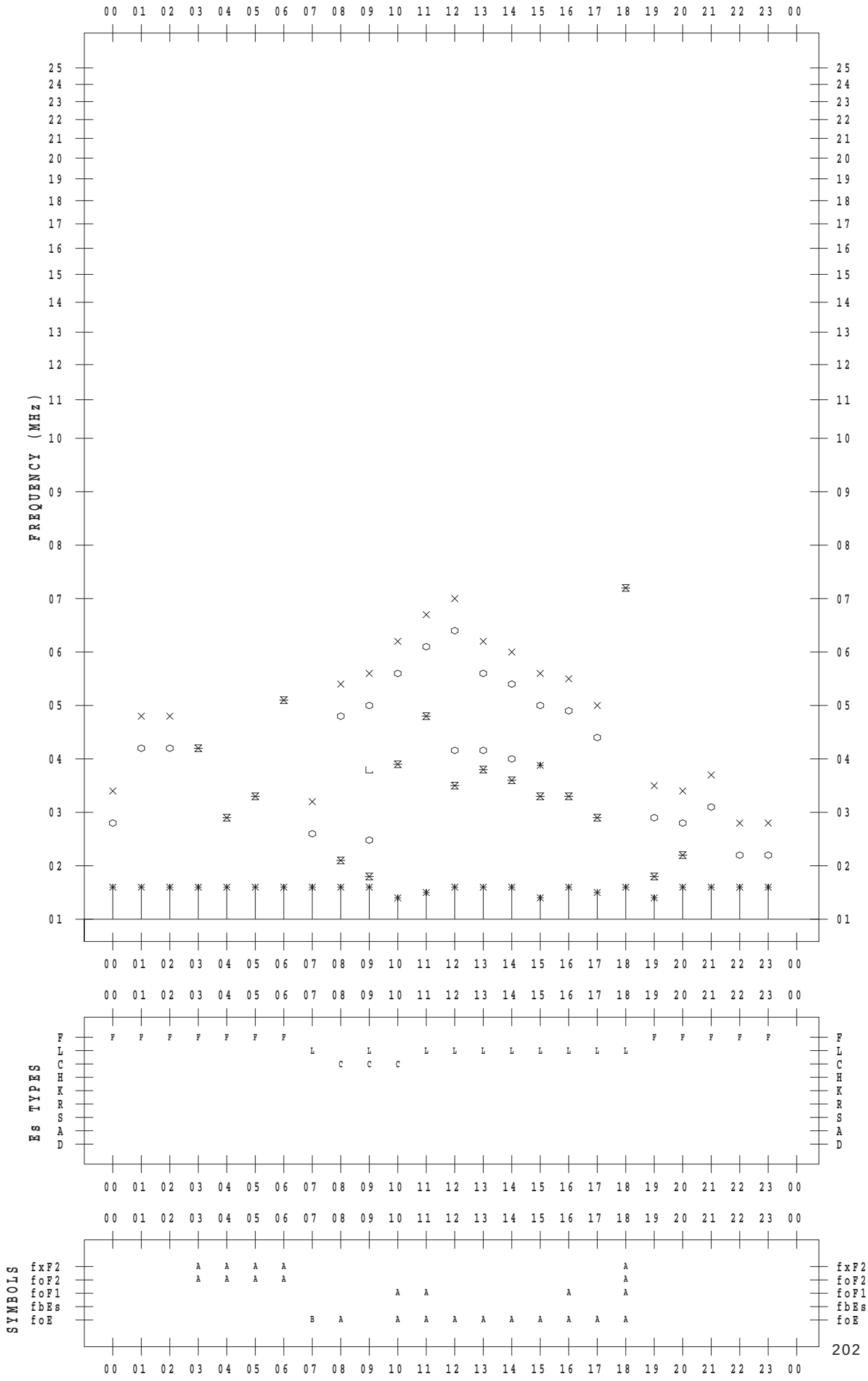
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 2

135 °E MEAN TIME



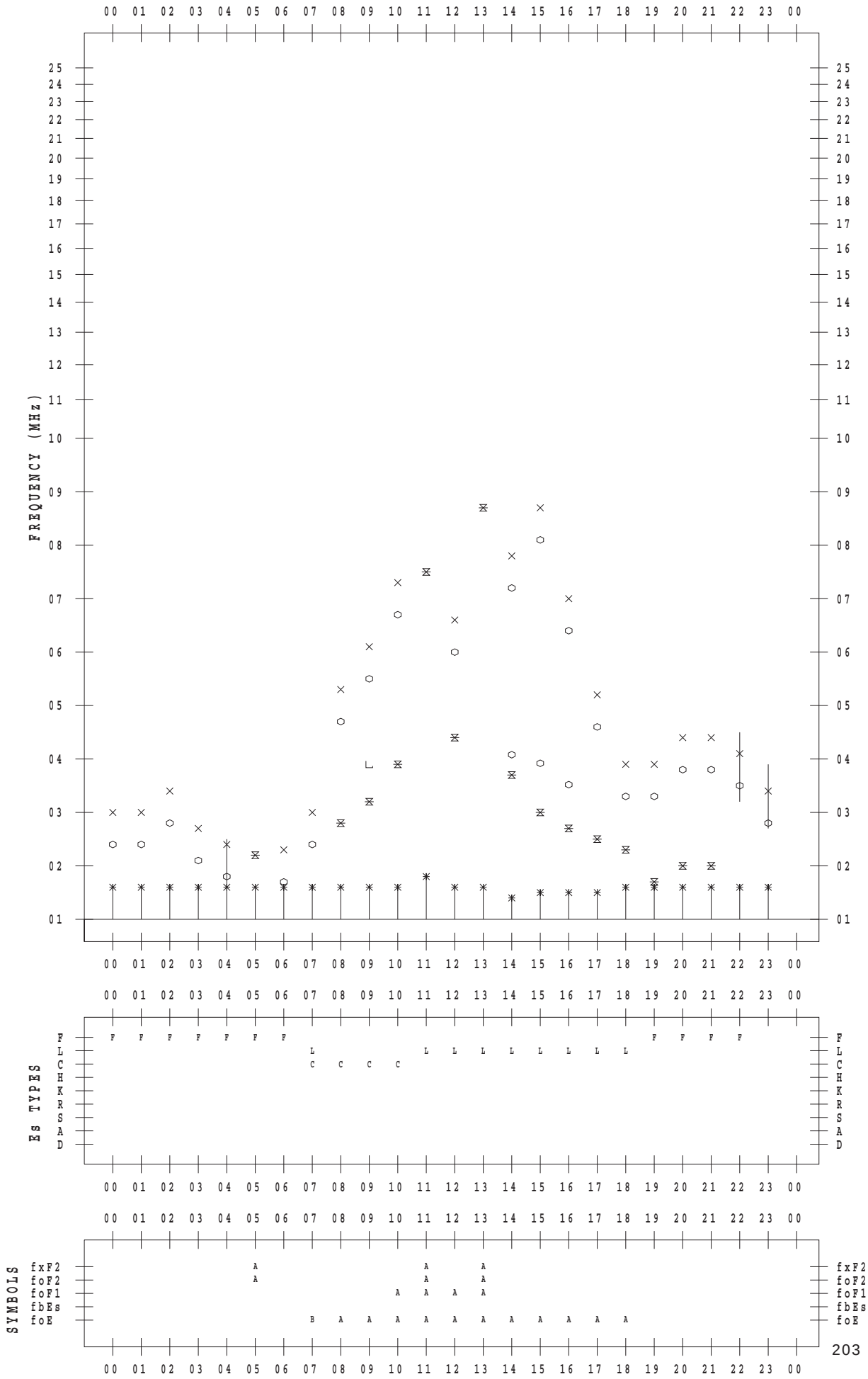
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 3

135 °E MEAN TIME



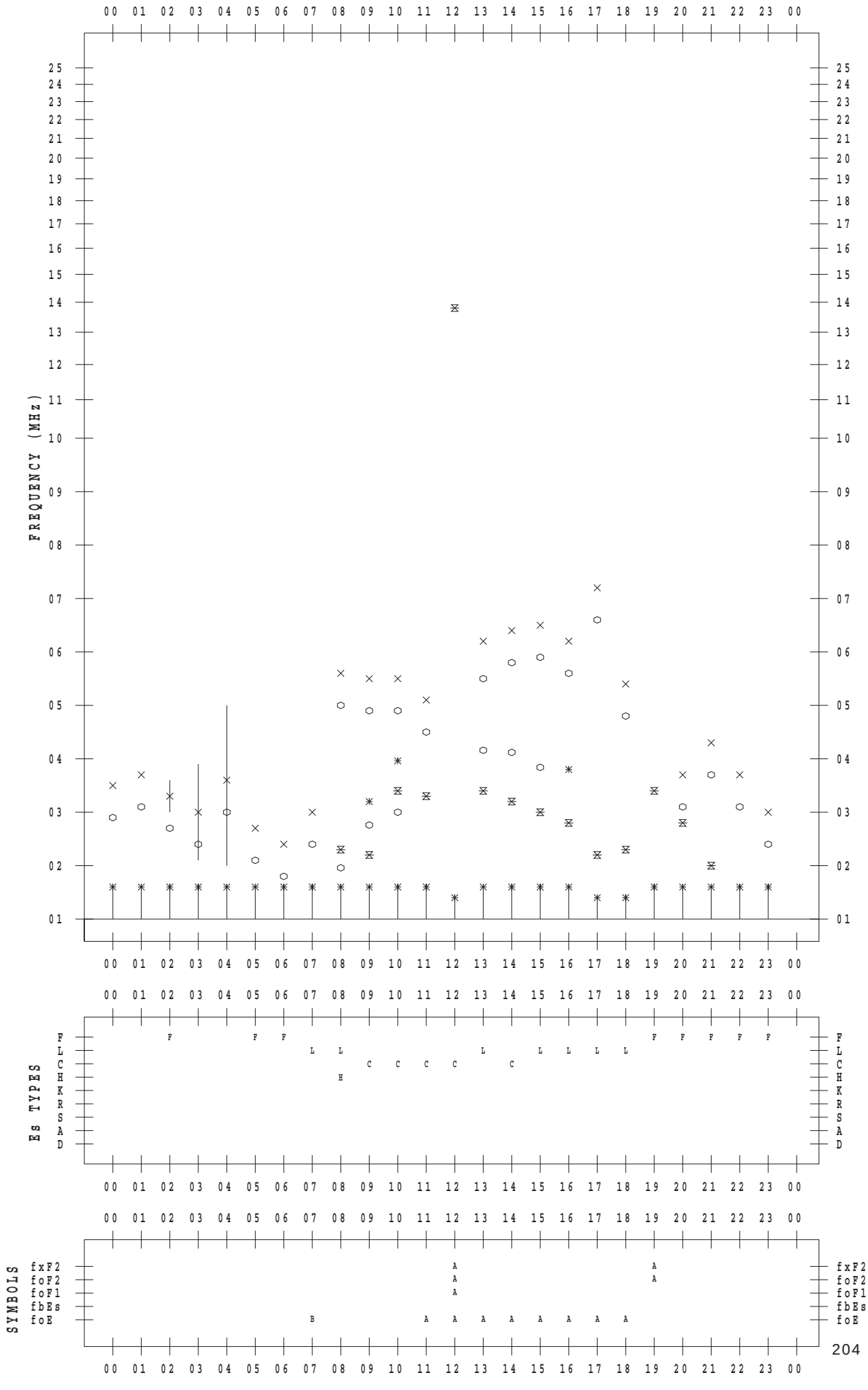
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 4

135 °E MEAN TIME



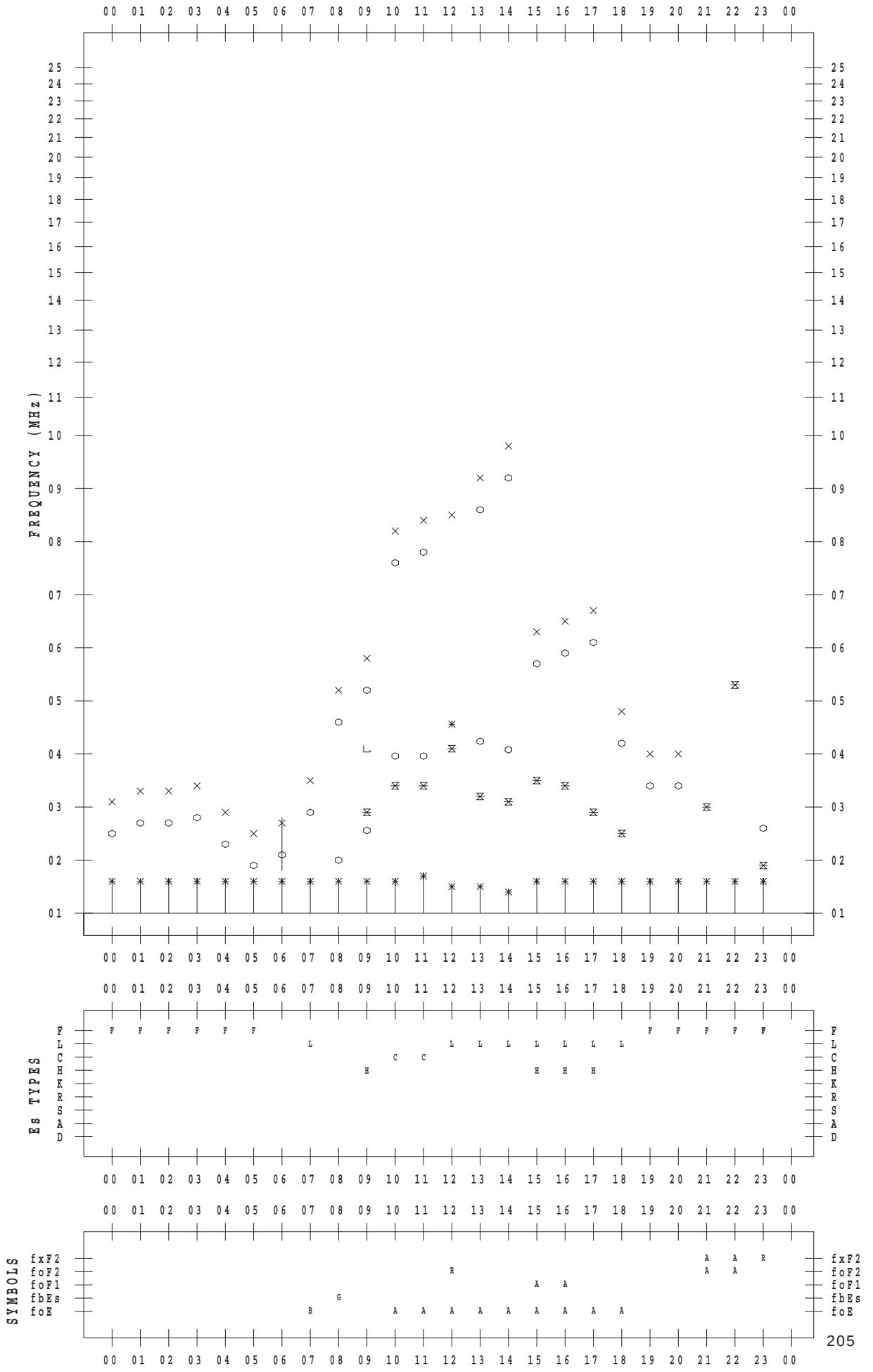
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 5

135 °E MEAN TIME



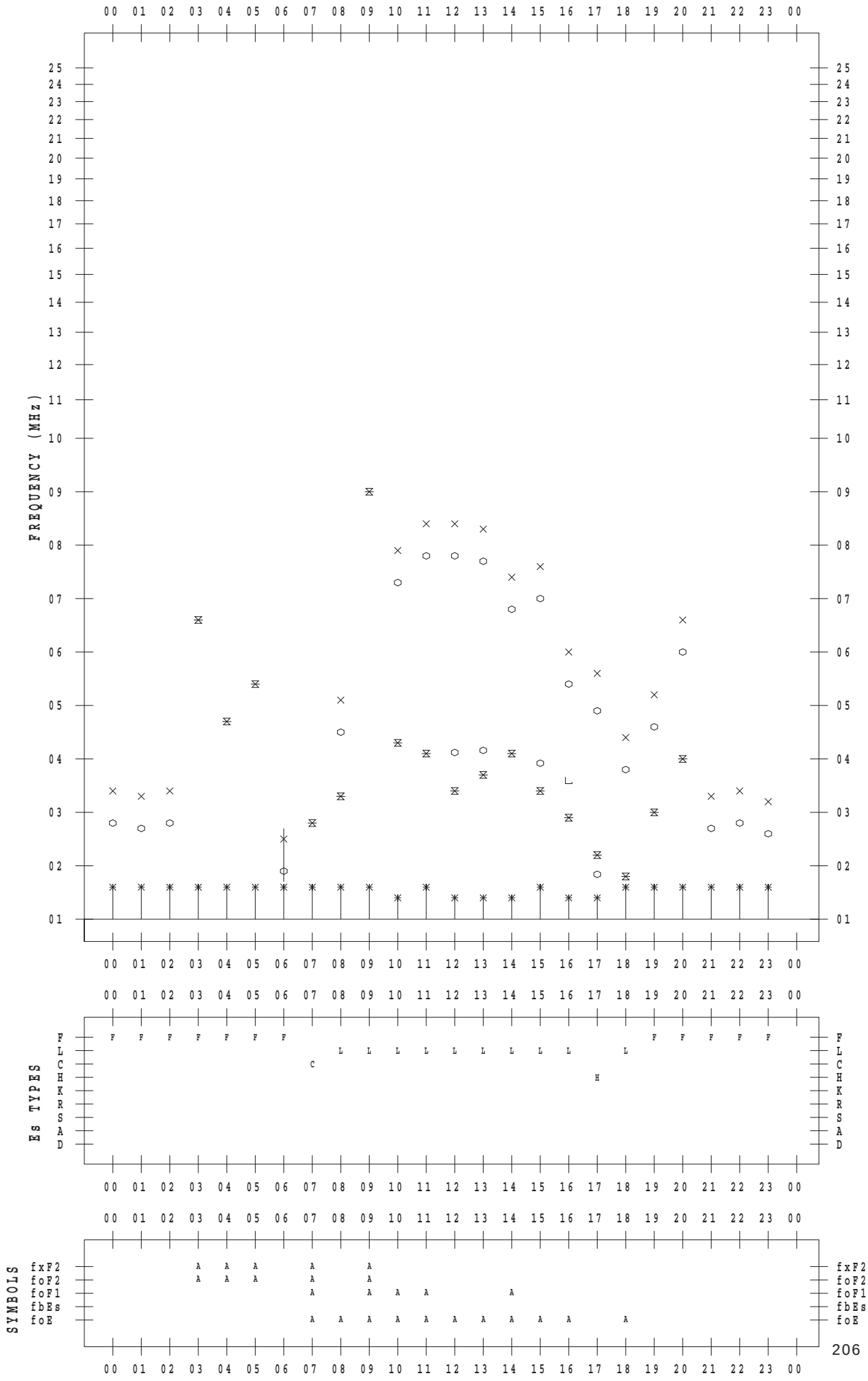
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 6

135 °E MEAN TIME



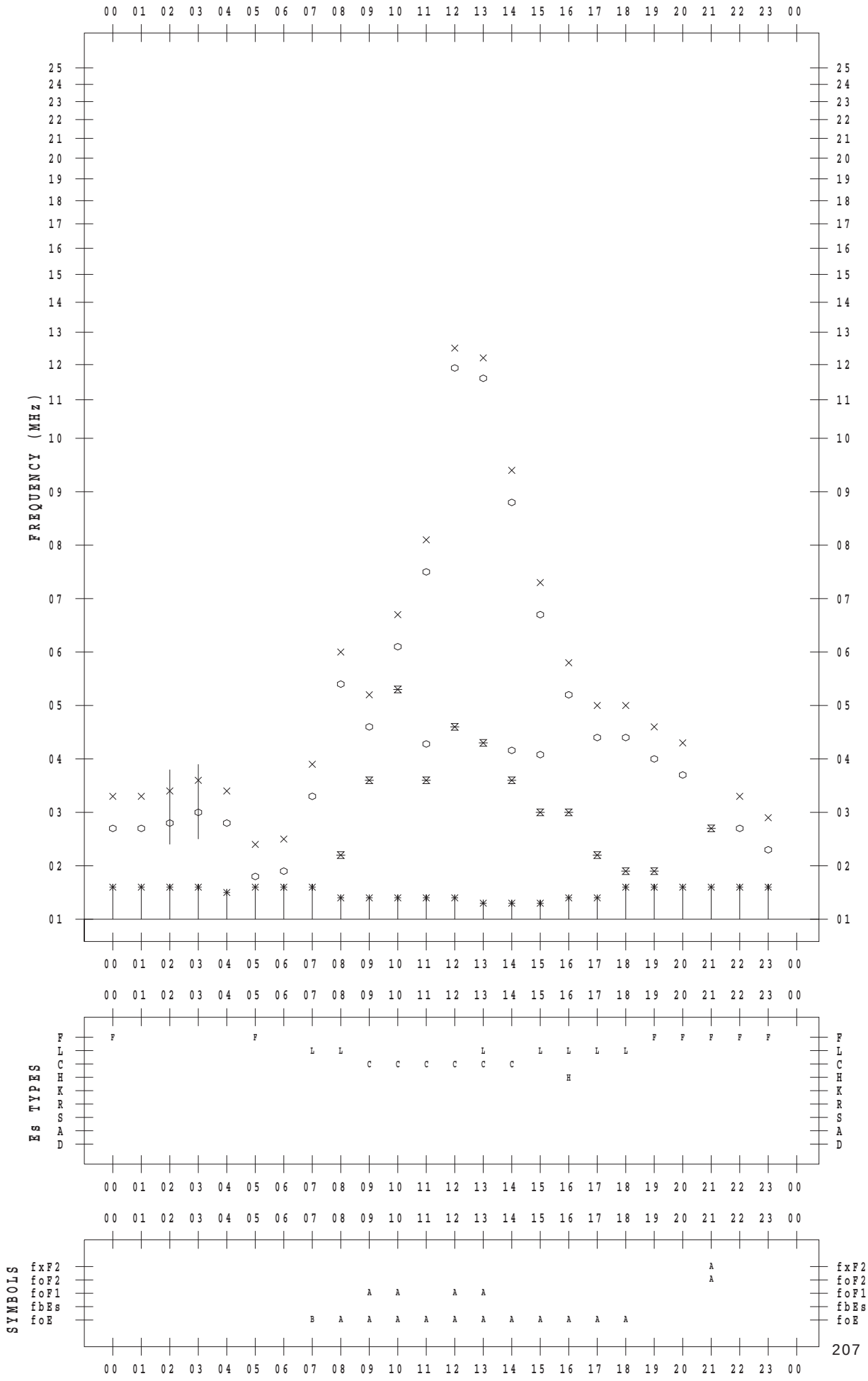
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 7

135 °E MEAN TIME



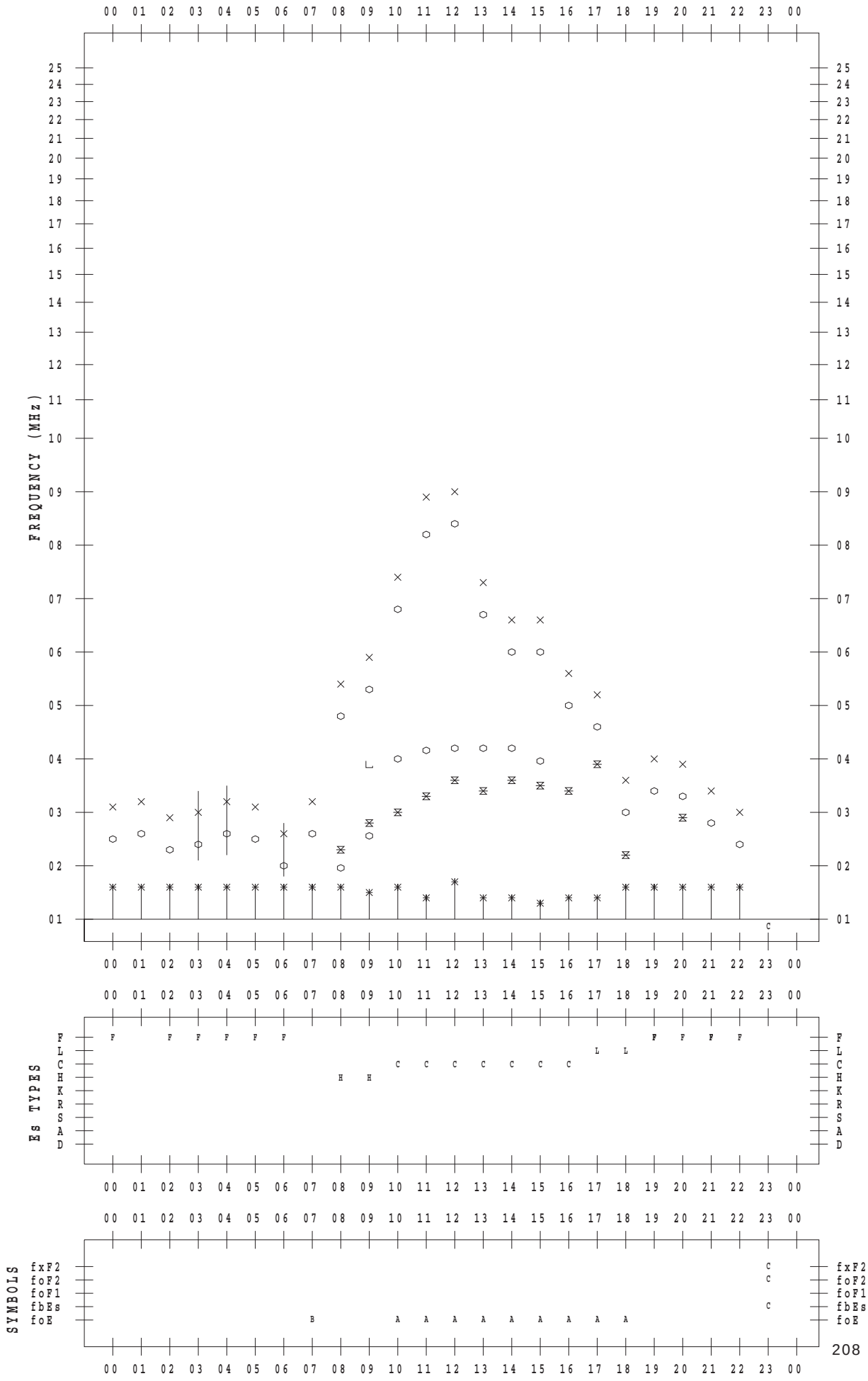
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 8

135 °E MEAN TIME



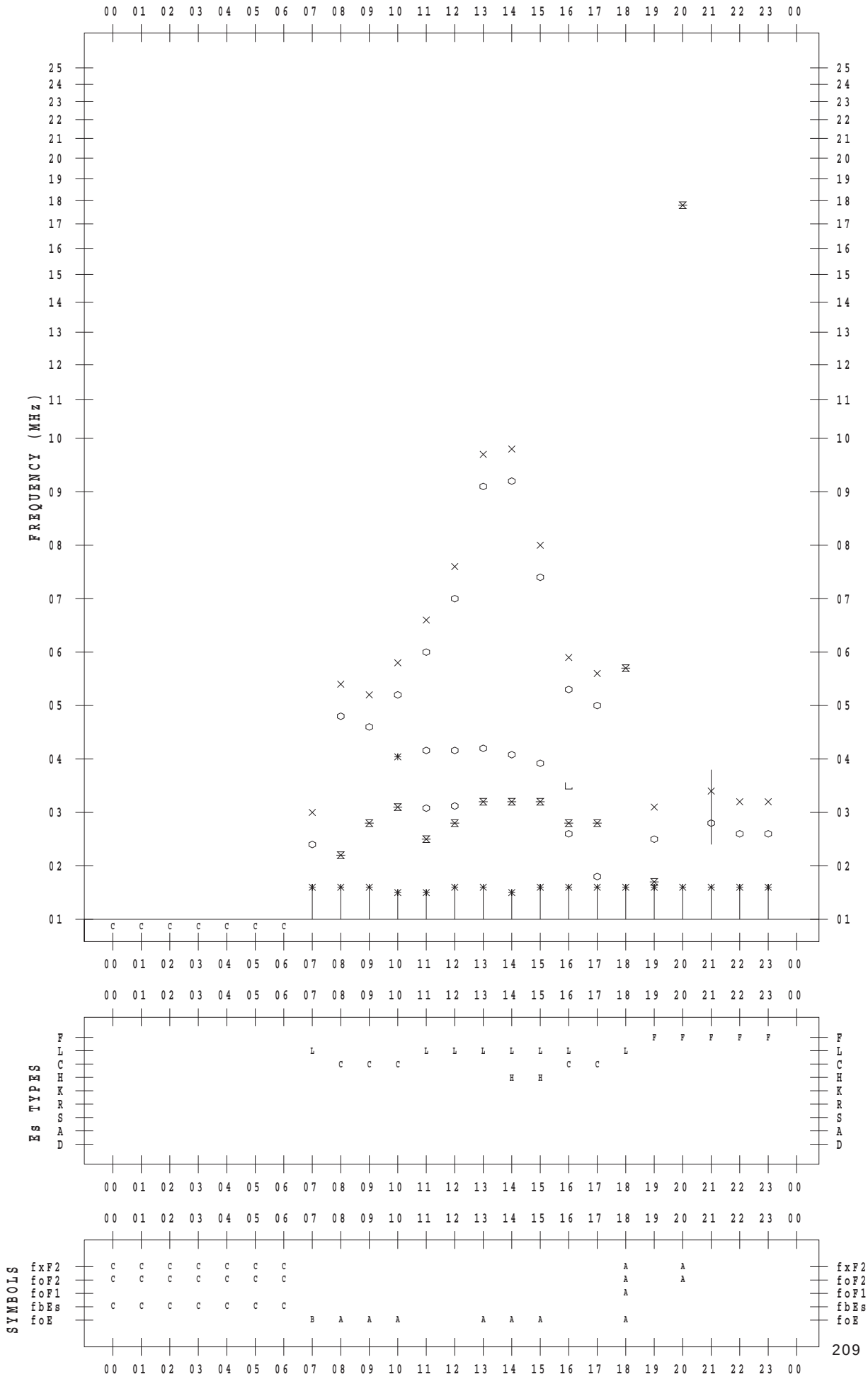
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/ 9

135 °E MEAN TIME



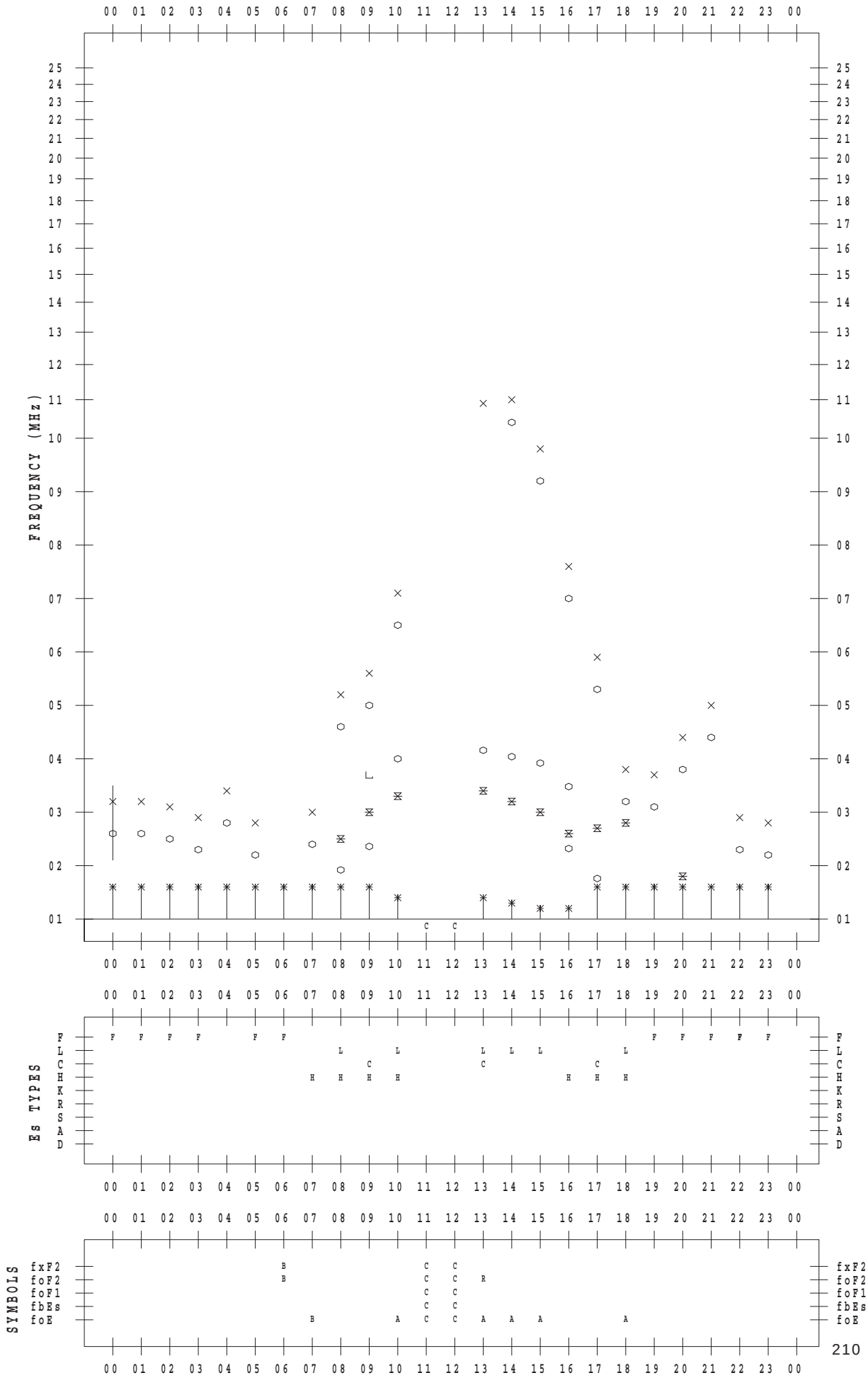
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/10

135 °E MEAN TIME



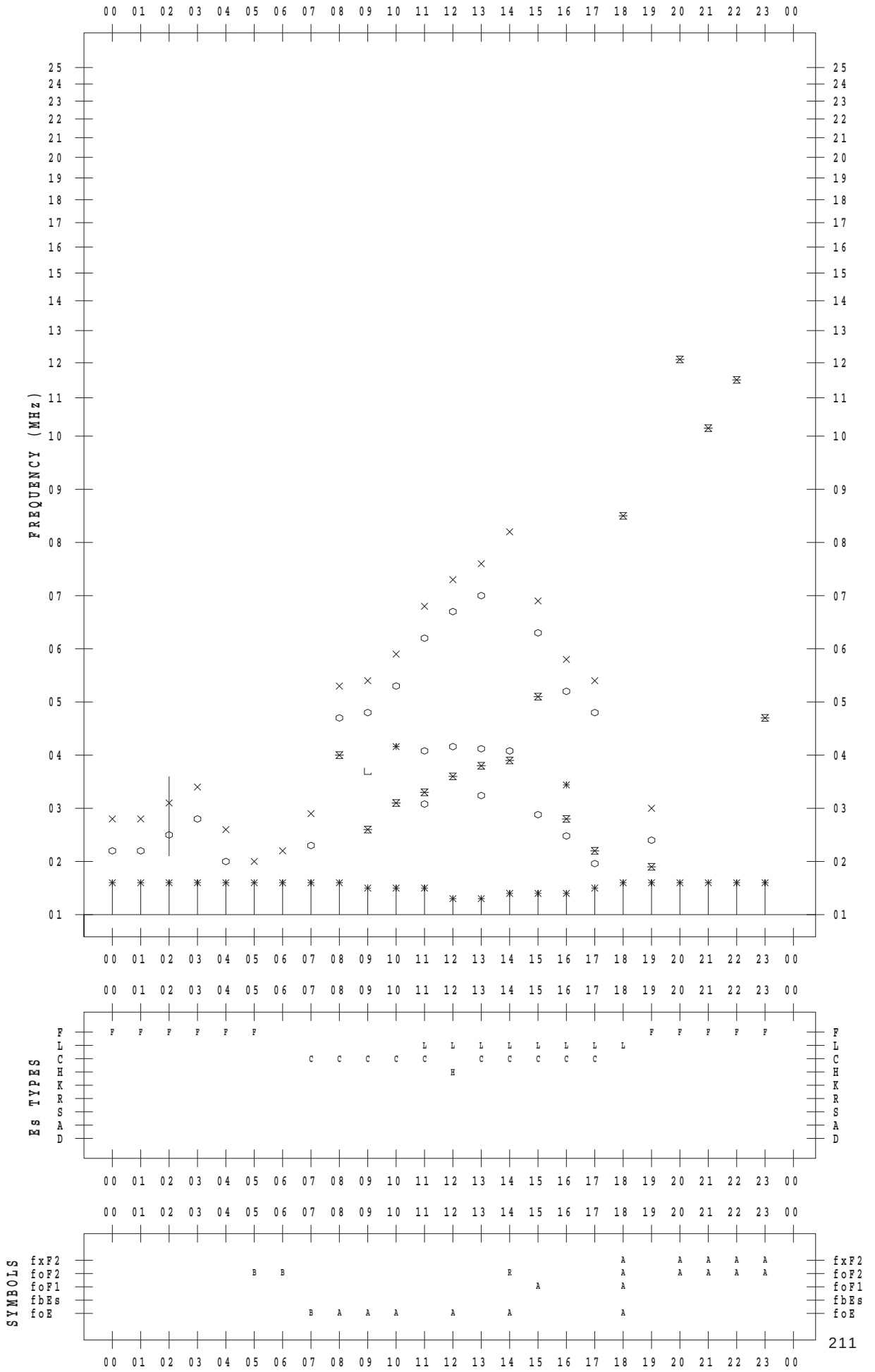
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/11

135 °E MEAN TIME



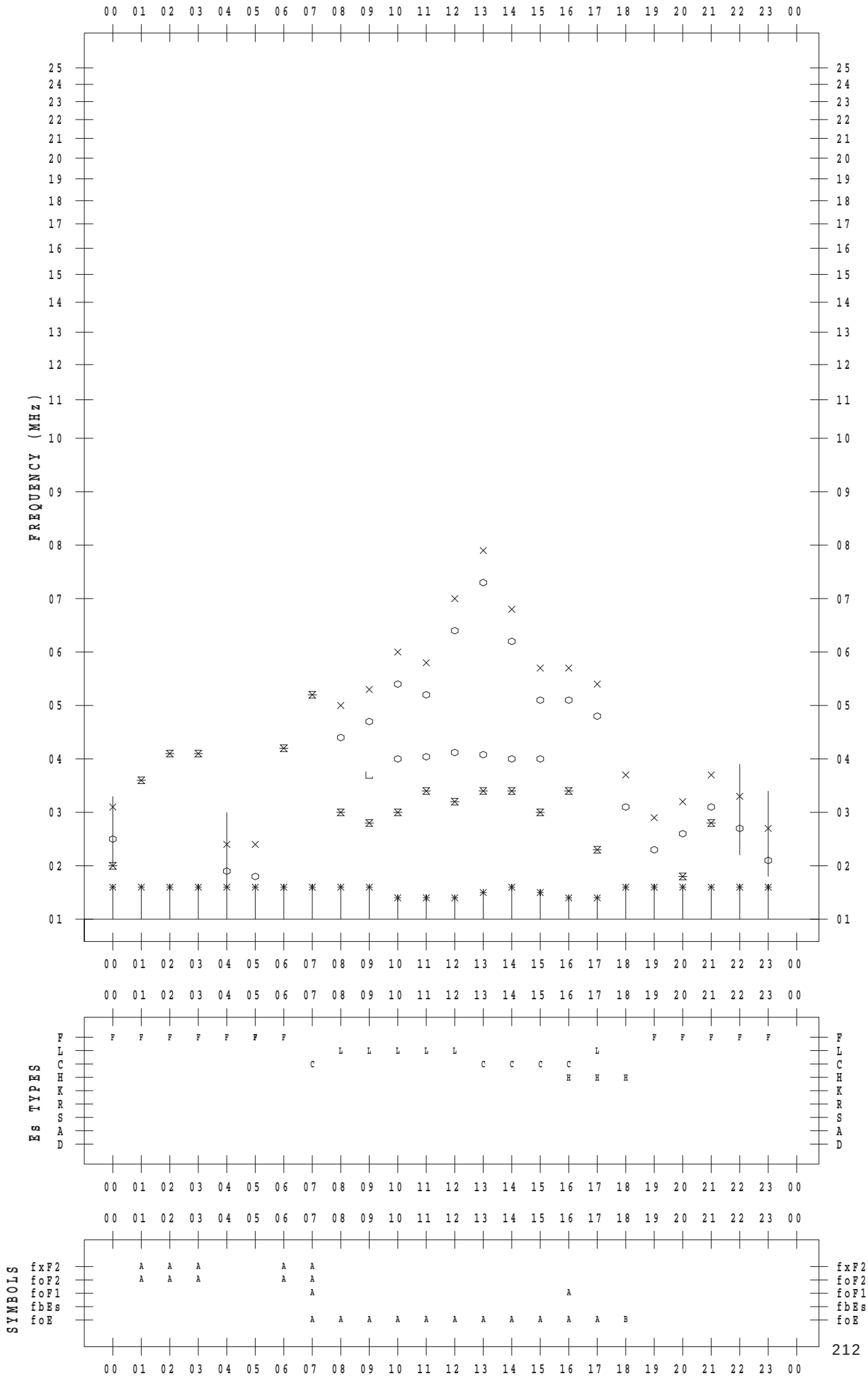
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/12

135 °E MEAN TIME



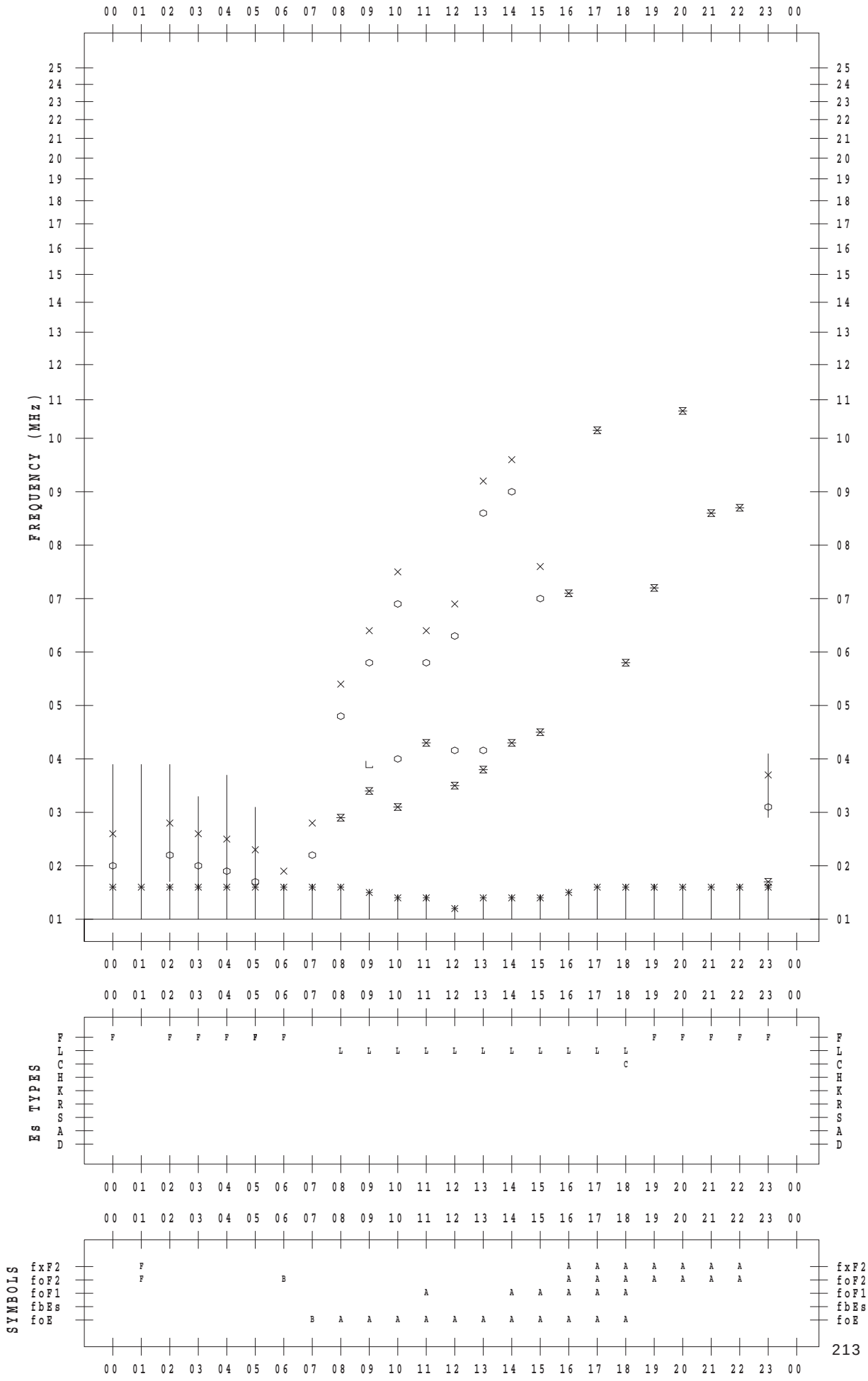
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/13

135 °E MEAN TIME



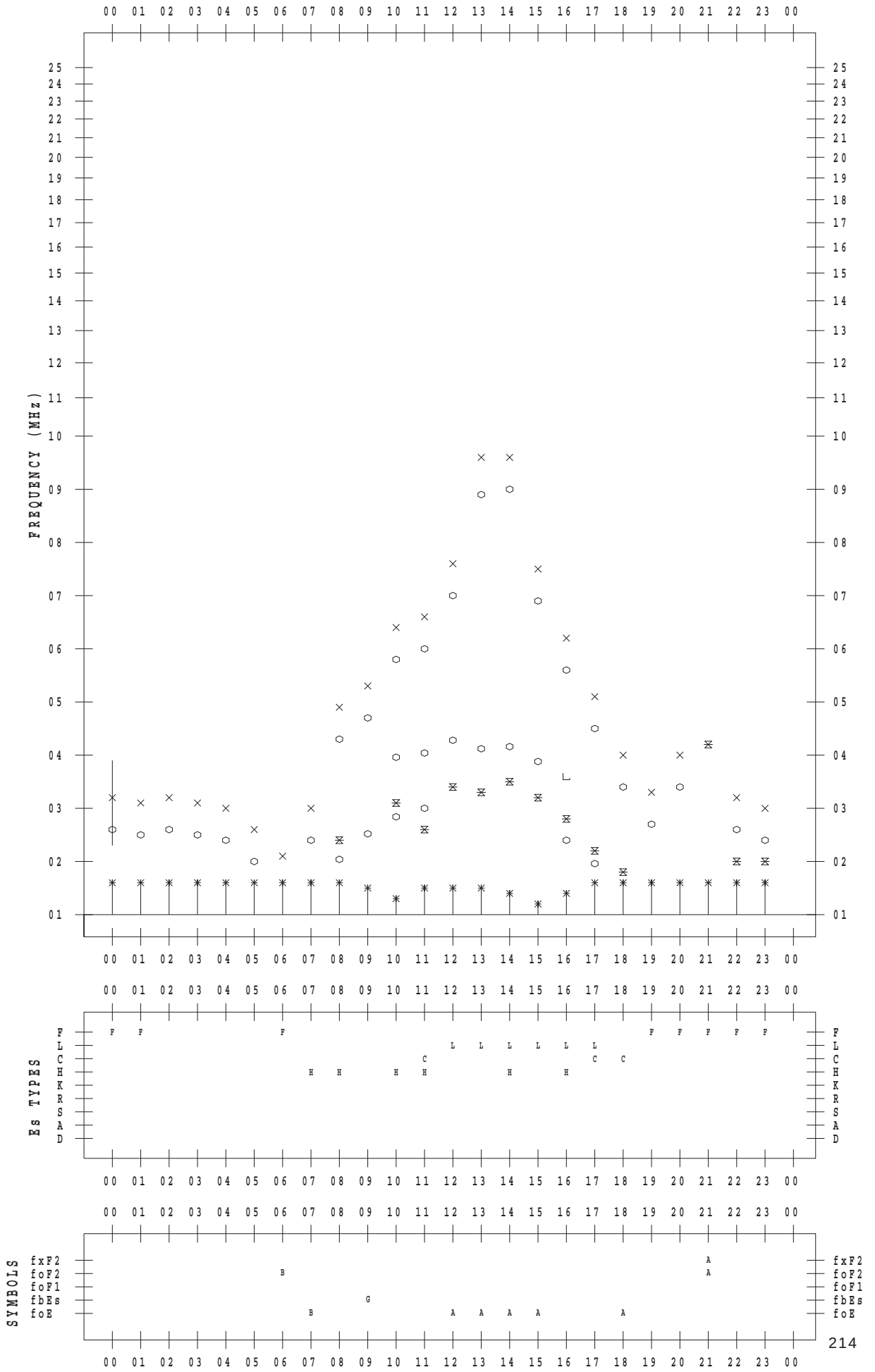
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/14

135 °E MEAN TIME



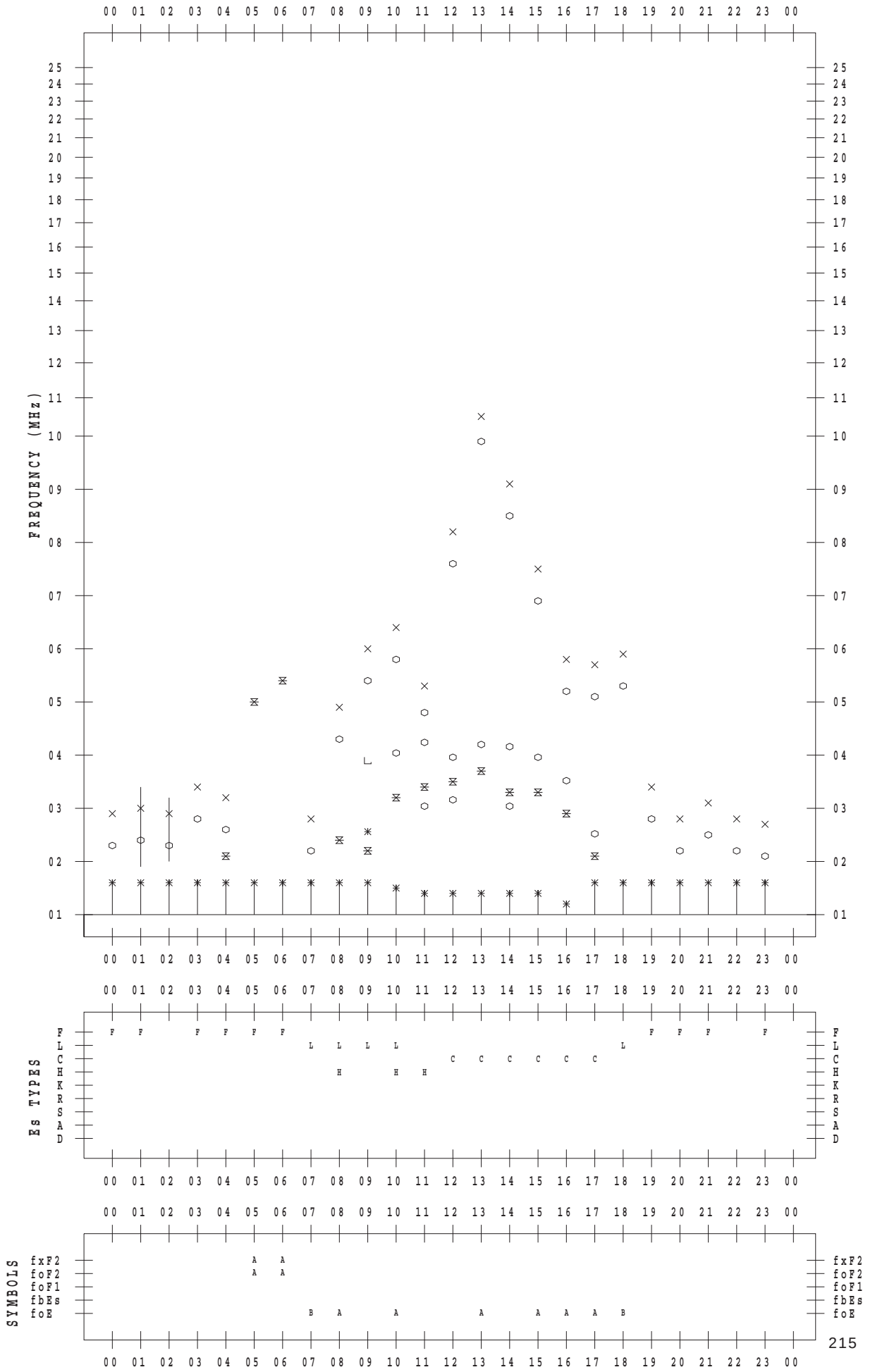
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/15

135 °E MEAN TIME



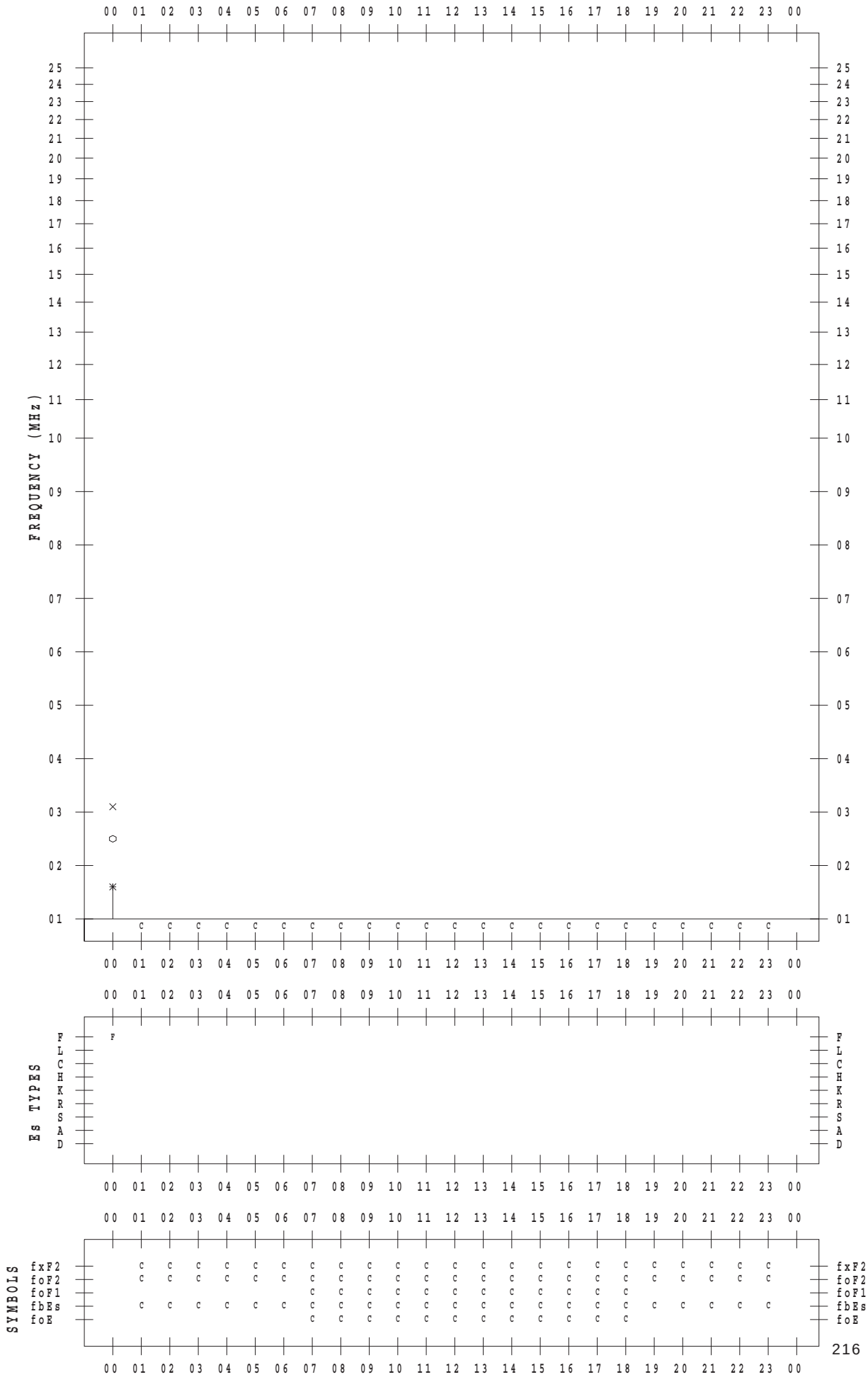
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/16

135 °E MEAN TIME



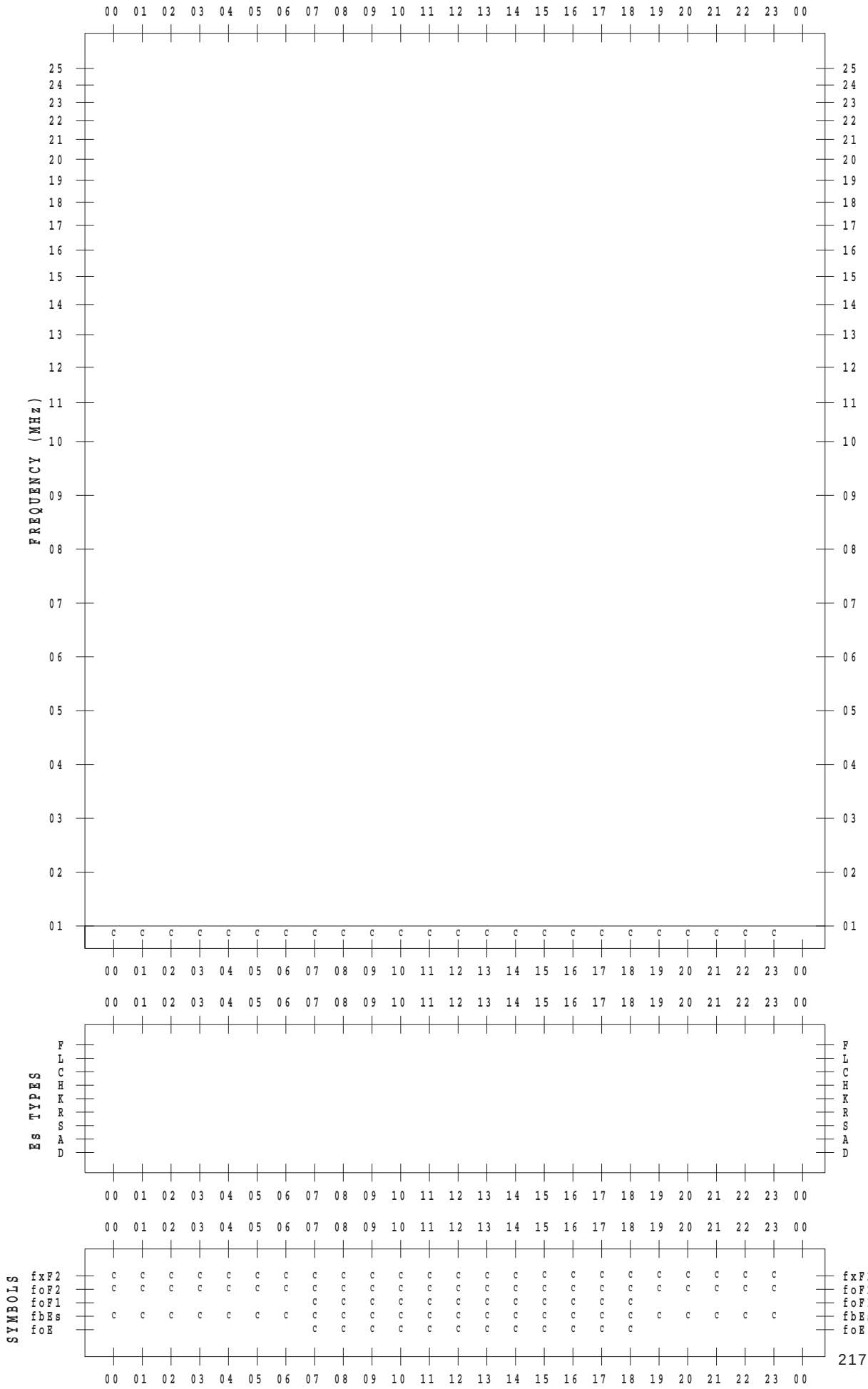
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/17

135 °E MEAN TIME



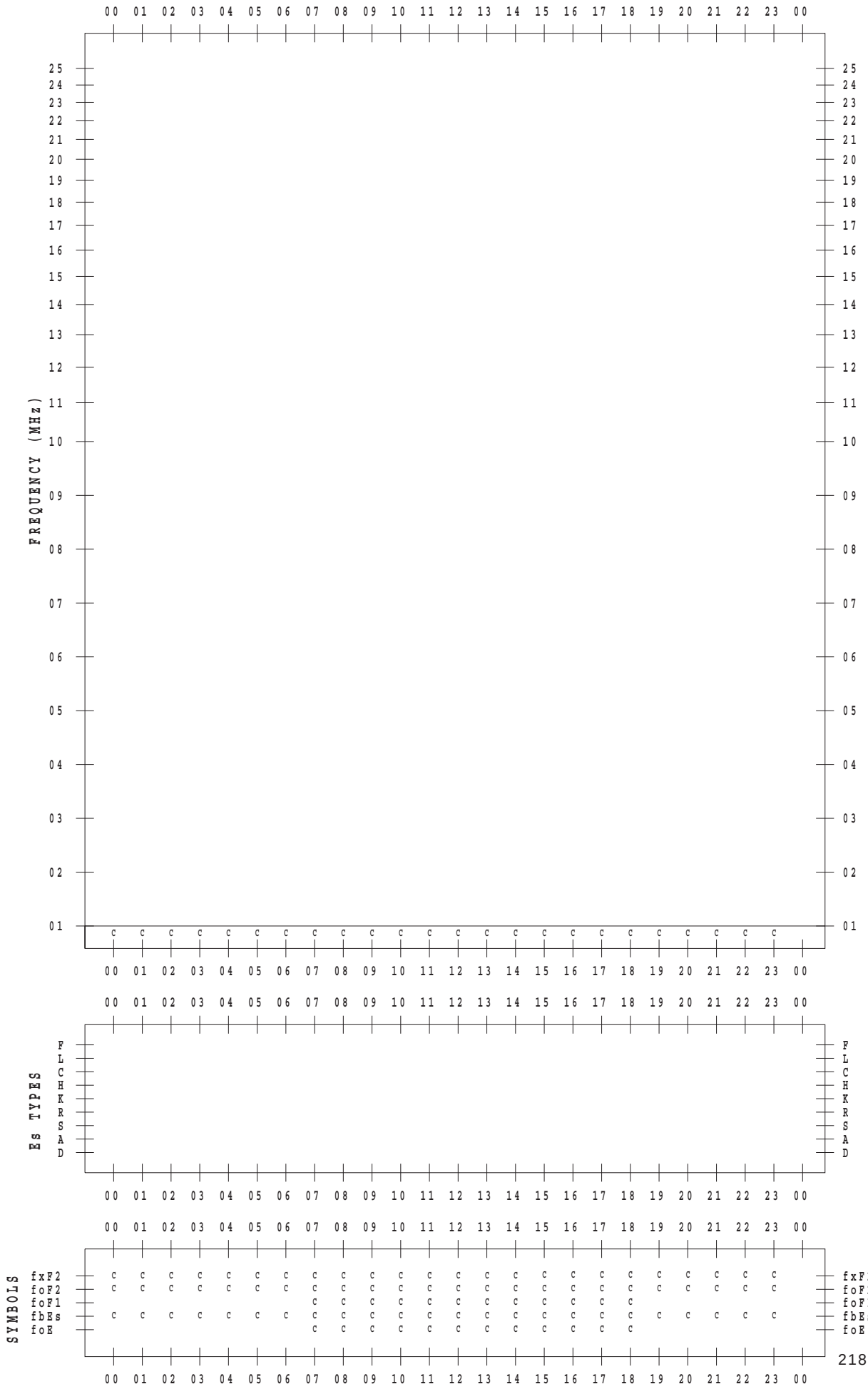
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/18

135 °E MEAN TIME



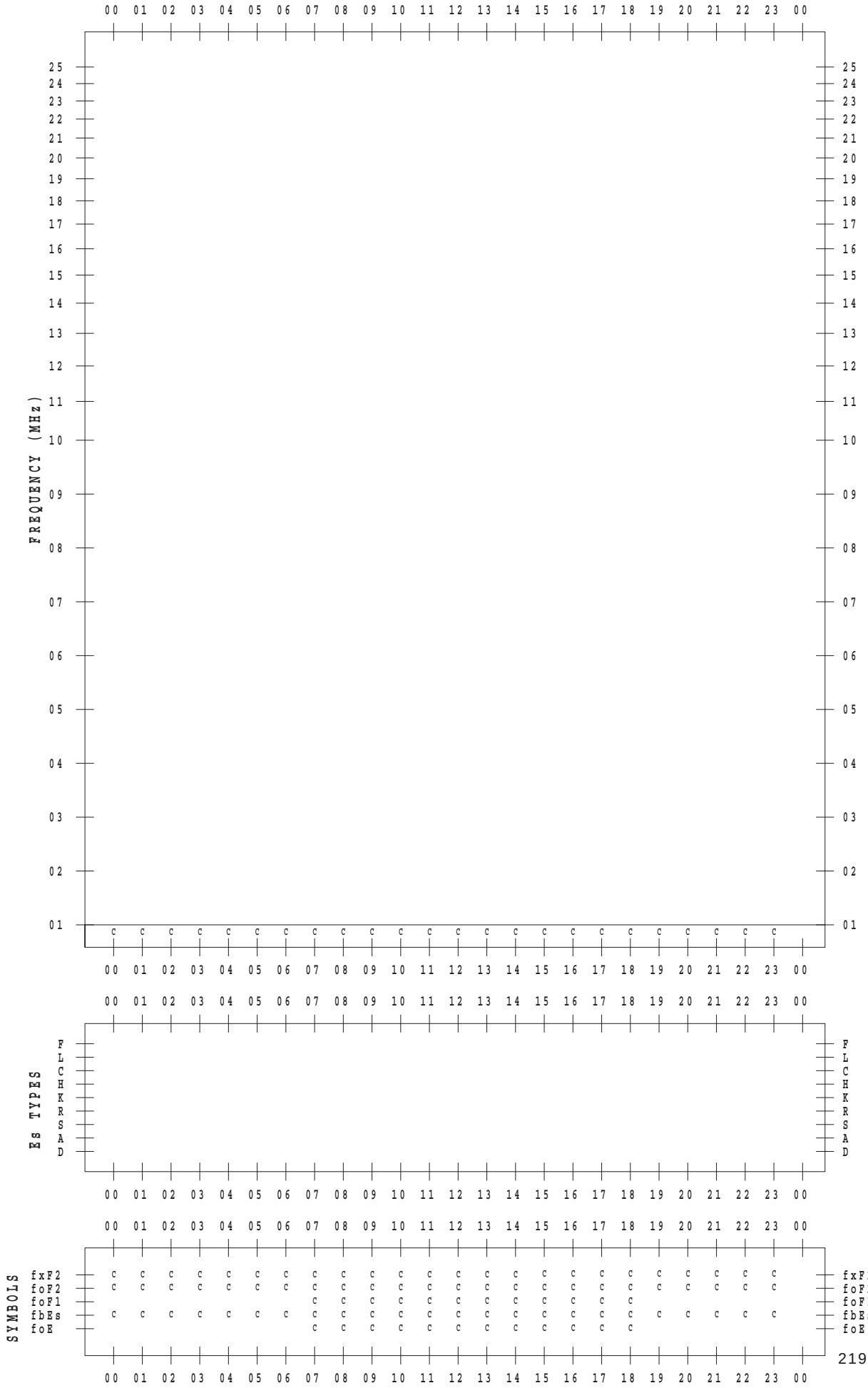
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/19

135 °E MEAN TIME



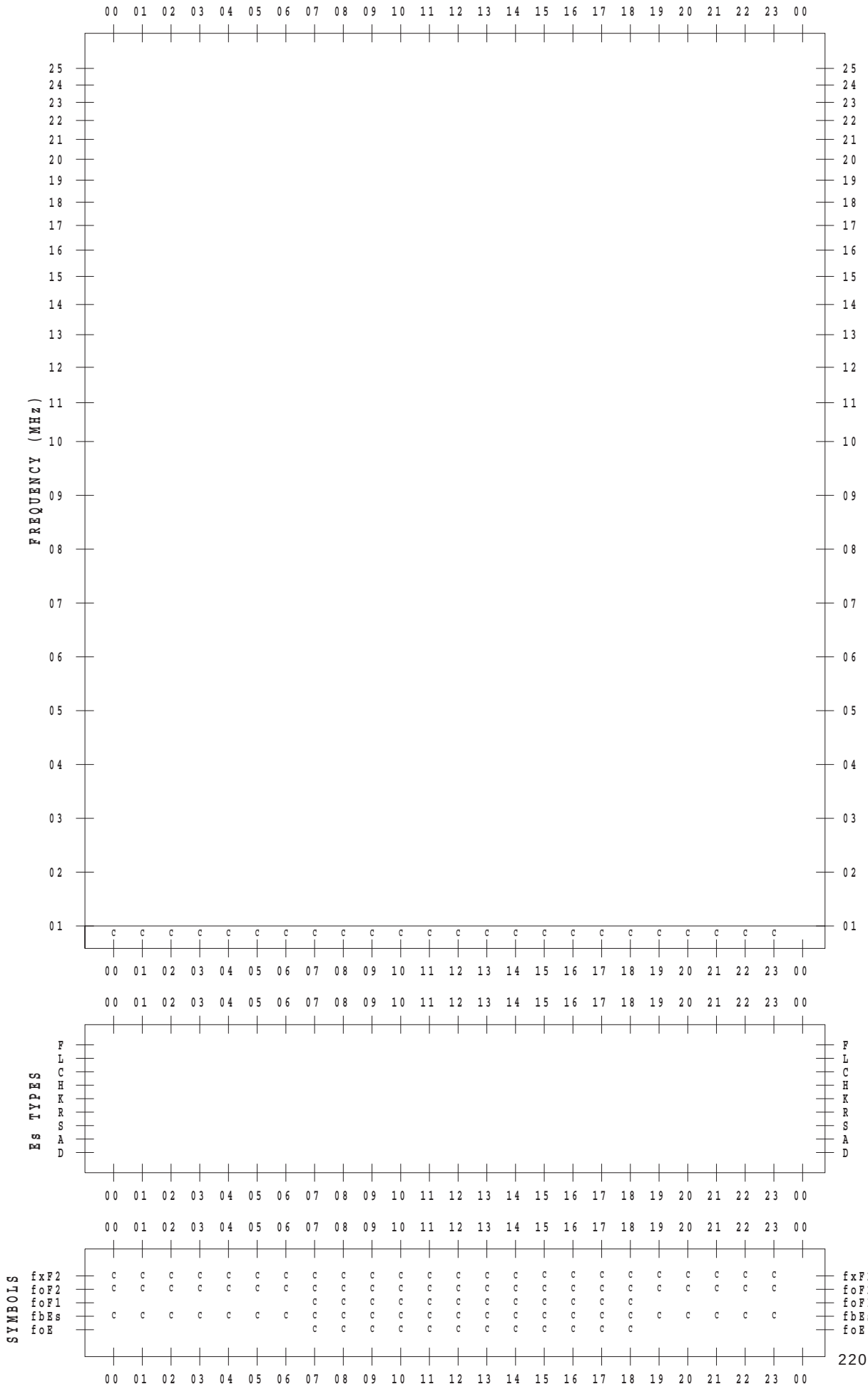
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/20

135 °E MEAN TIME



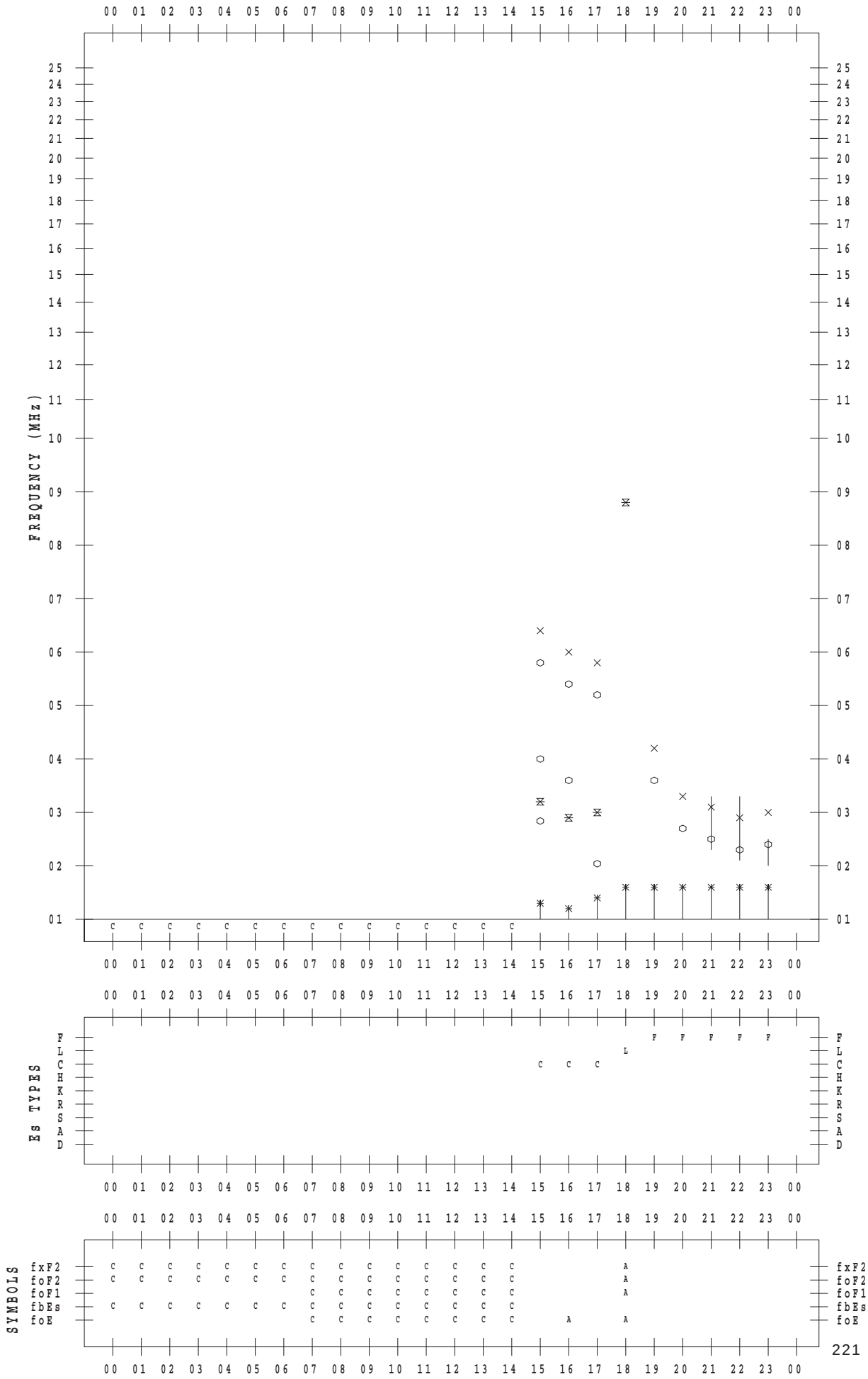
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/21

135 °E MEAN TIME



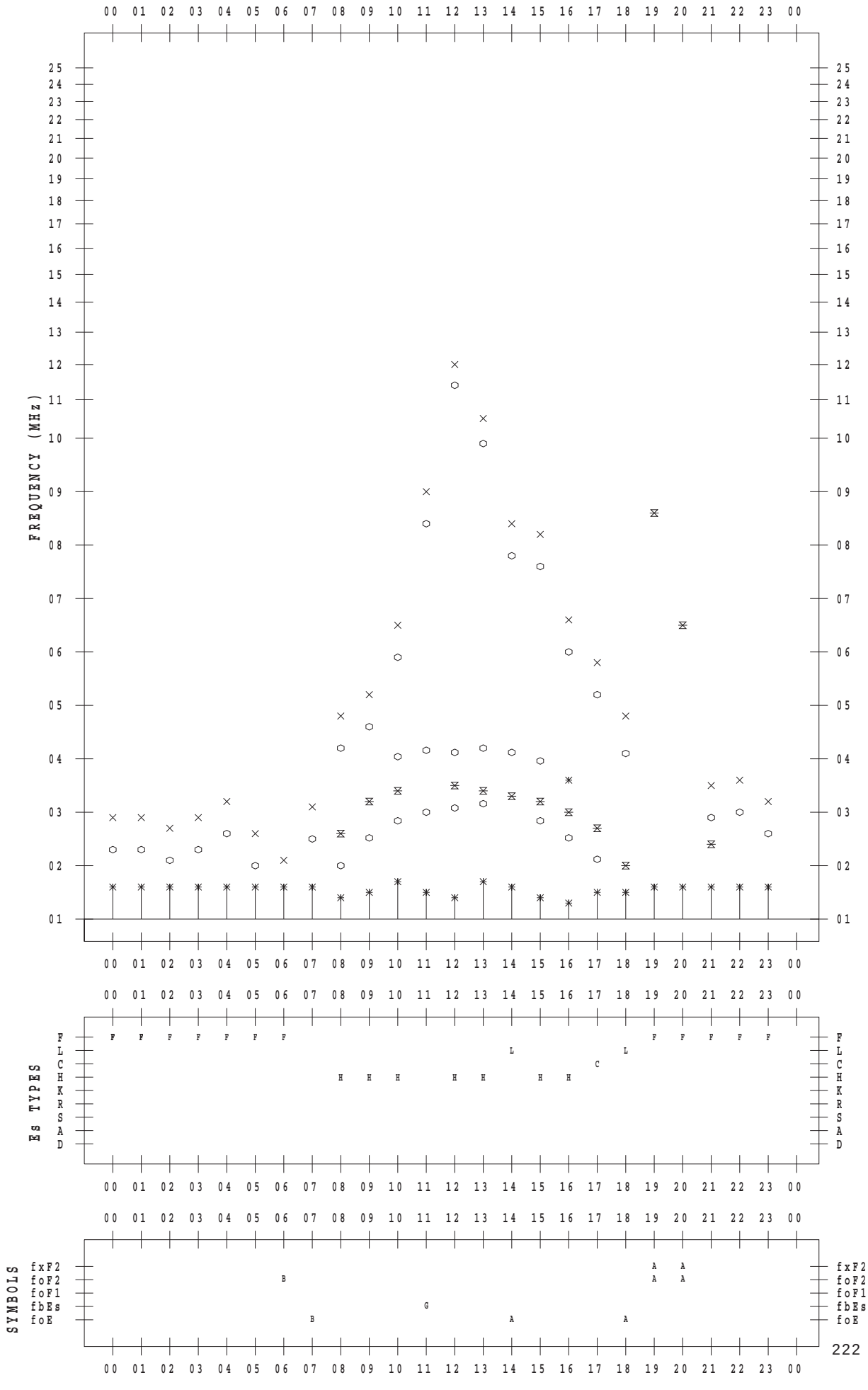
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/22

135 °E MEAN TIME



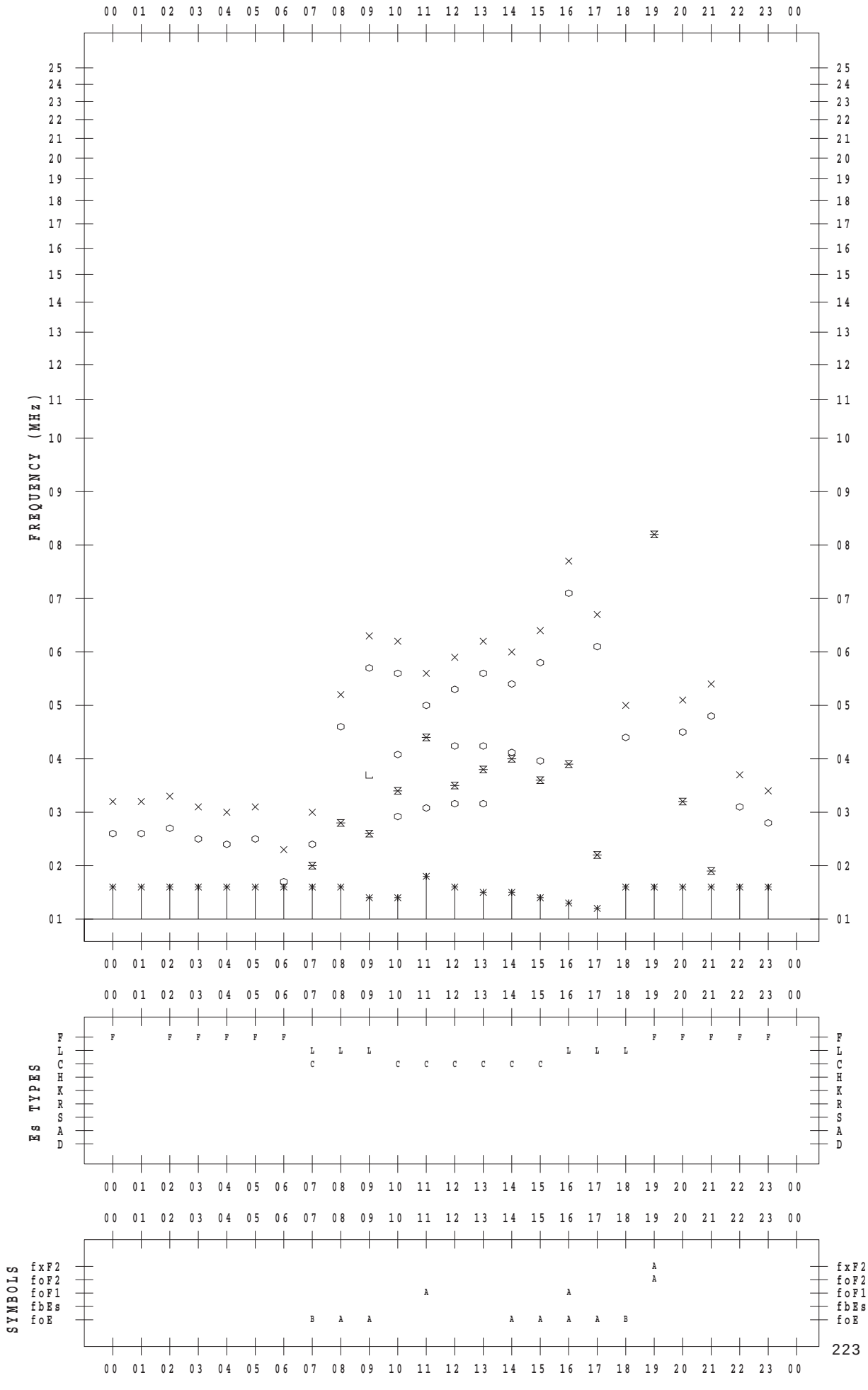
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/23

135 °E MEAN TIME



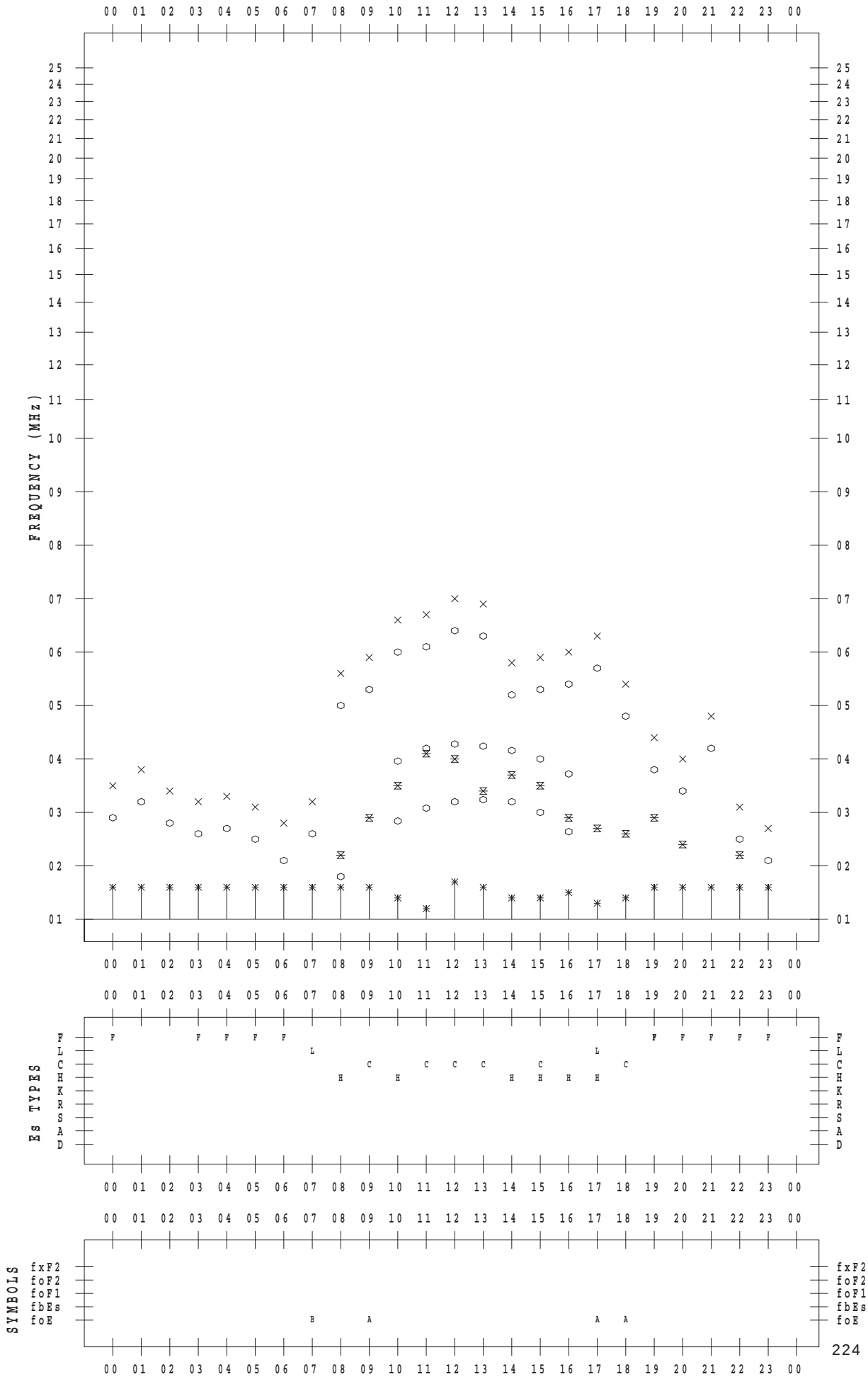
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/24

135 °E MEAN TIME



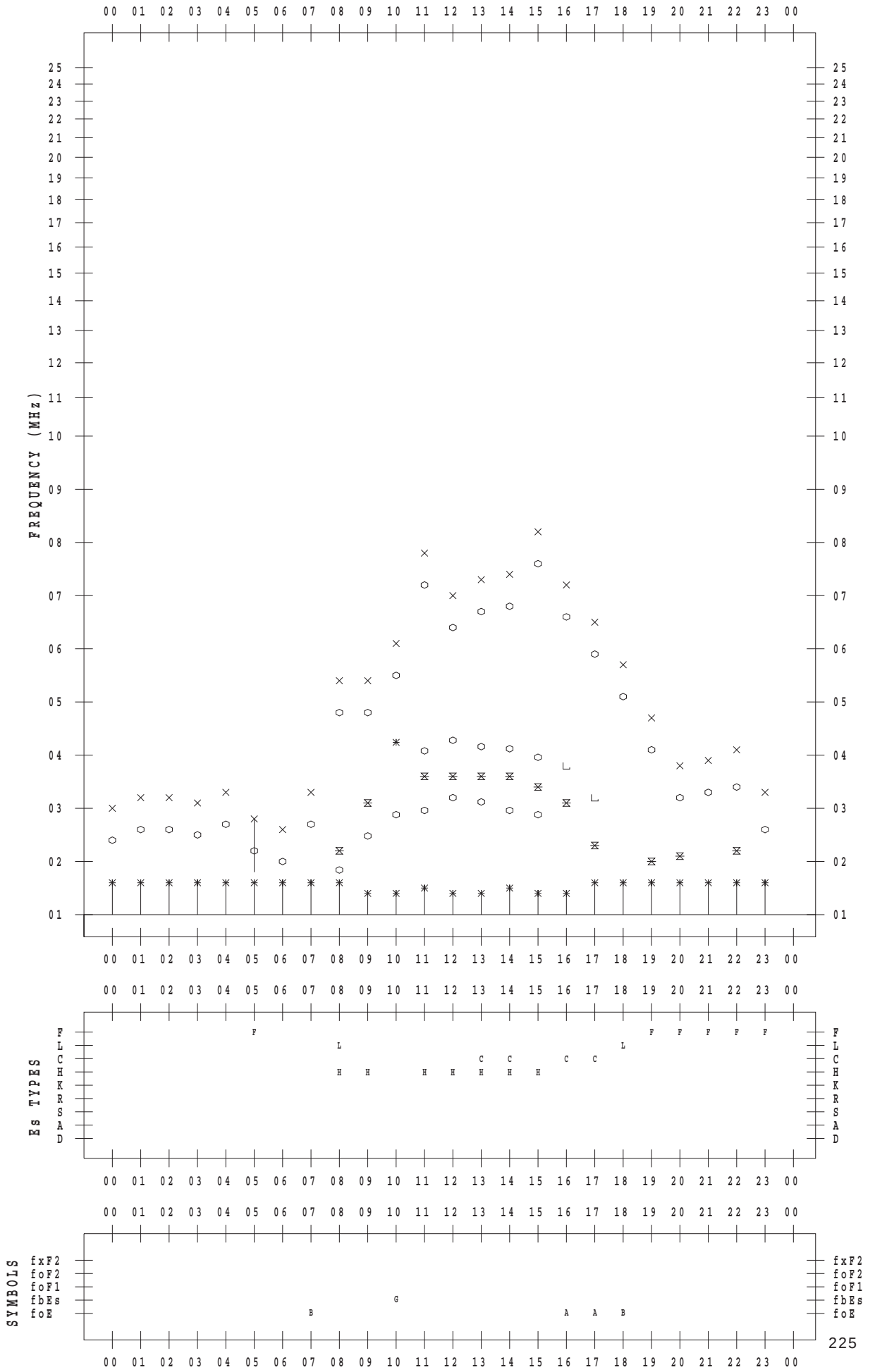
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/25

135 °E MEAN TIME



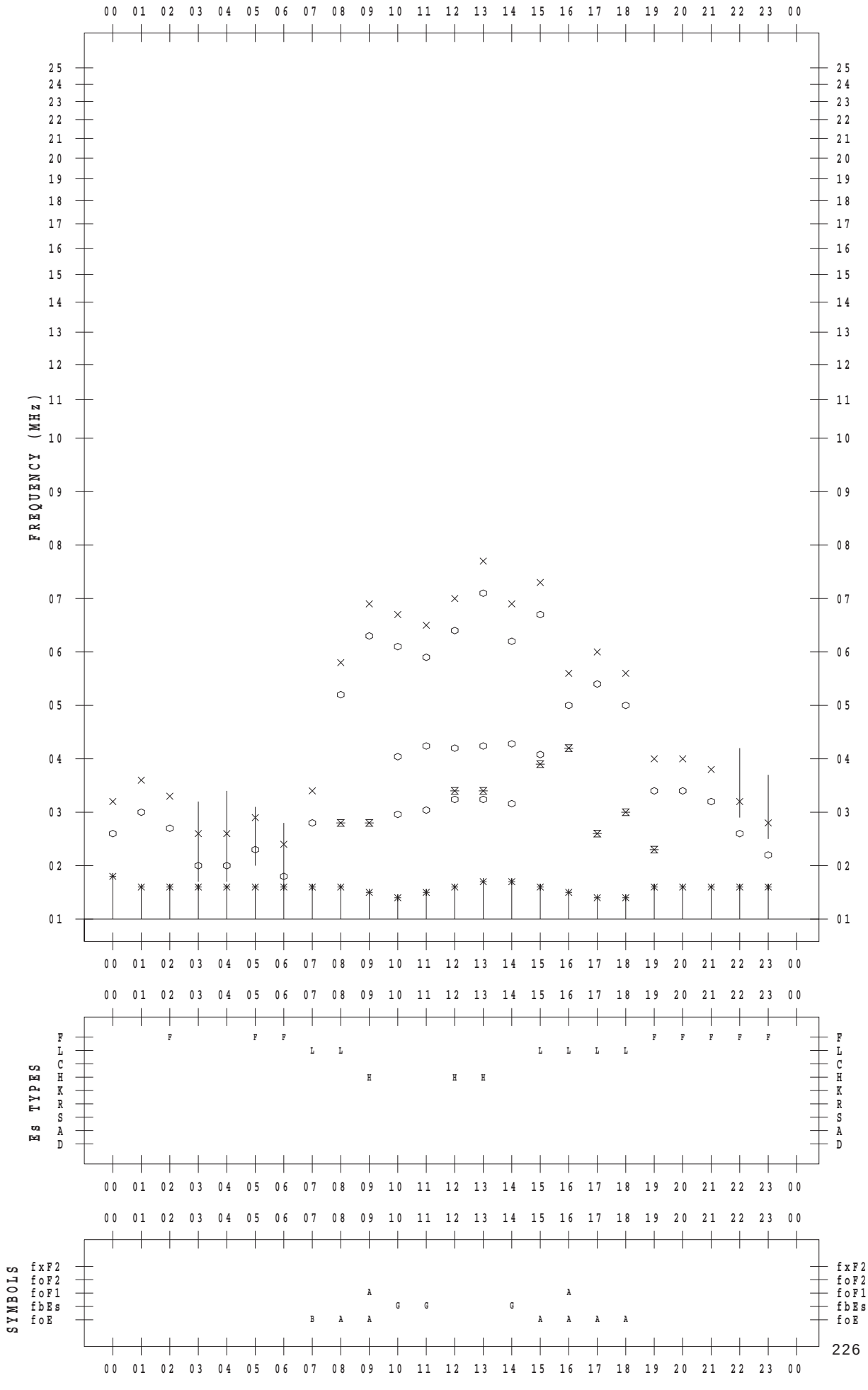
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/26

135 °E MEAN TIME



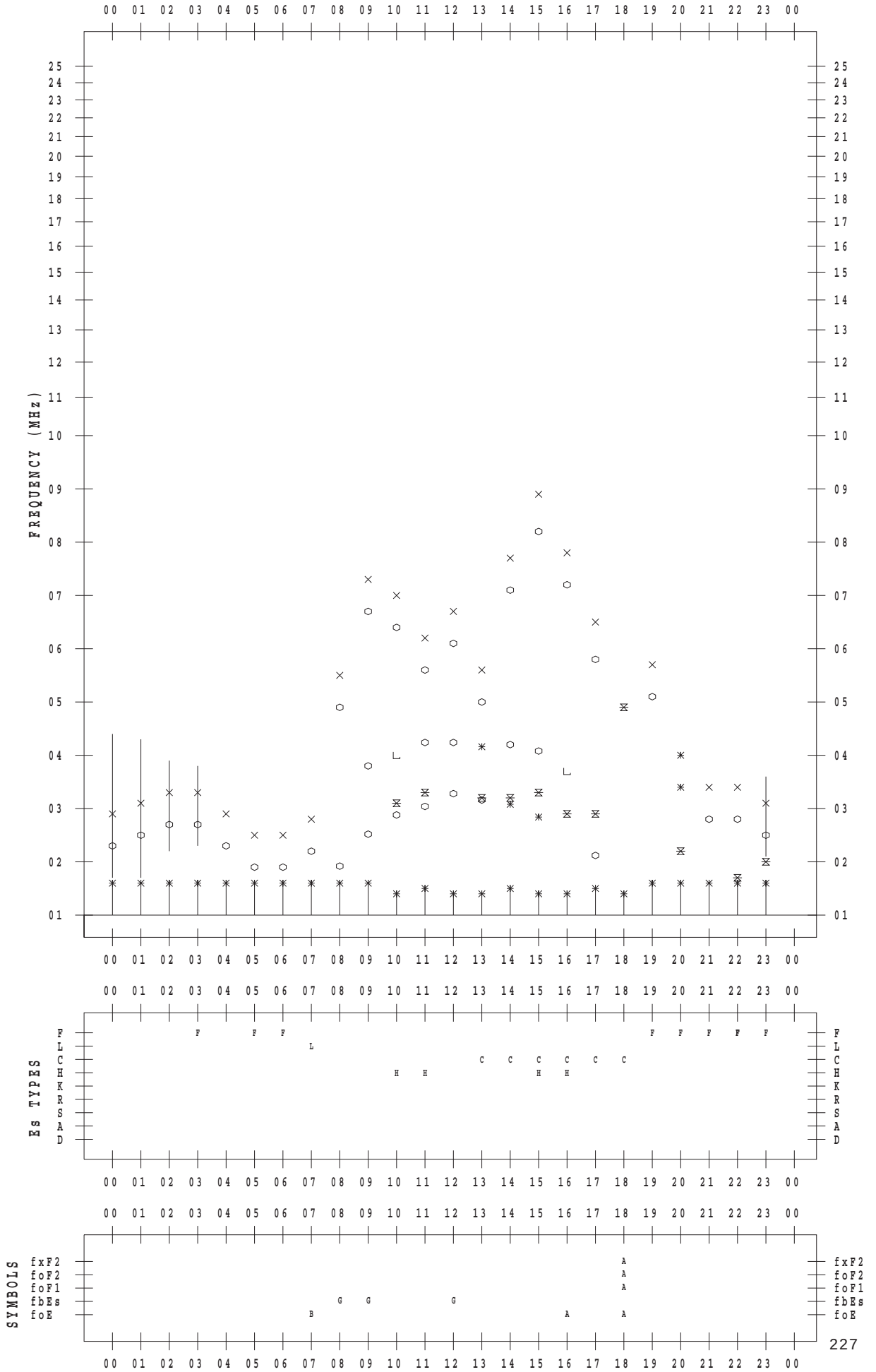
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/27

135 °E MEAN TIME



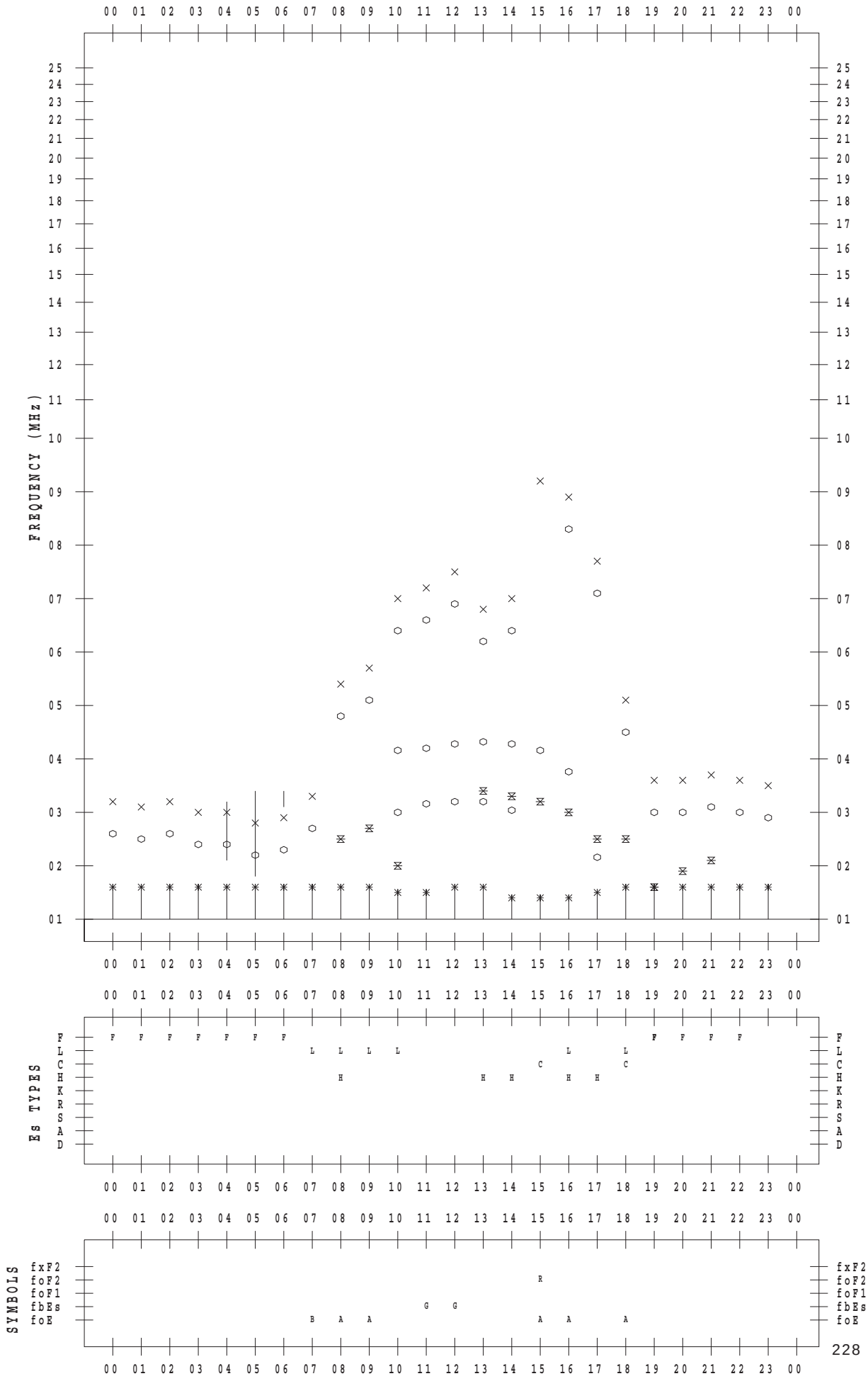
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/28

135 °E MEAN TIME



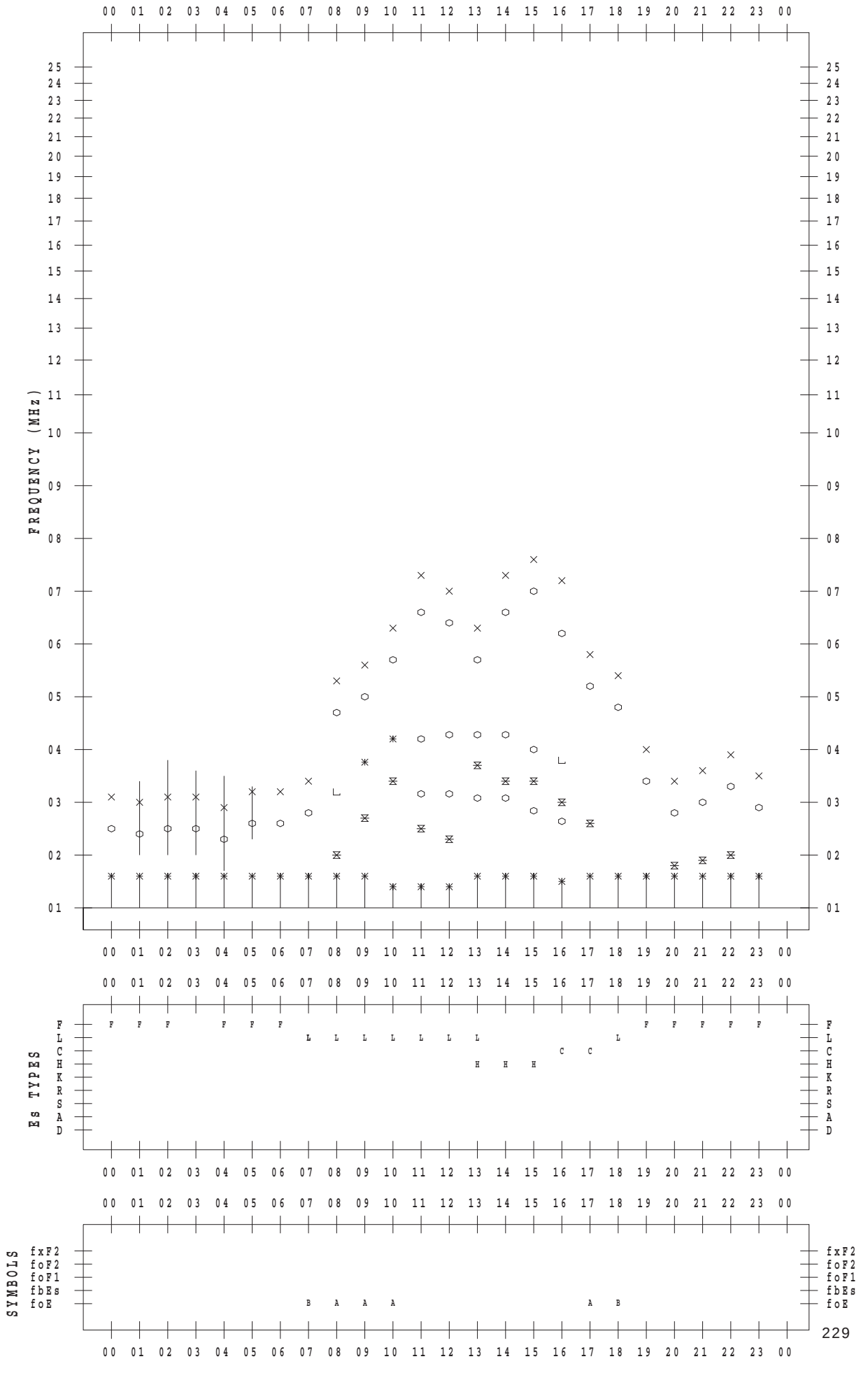
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/29

135 °E MEAN TIME



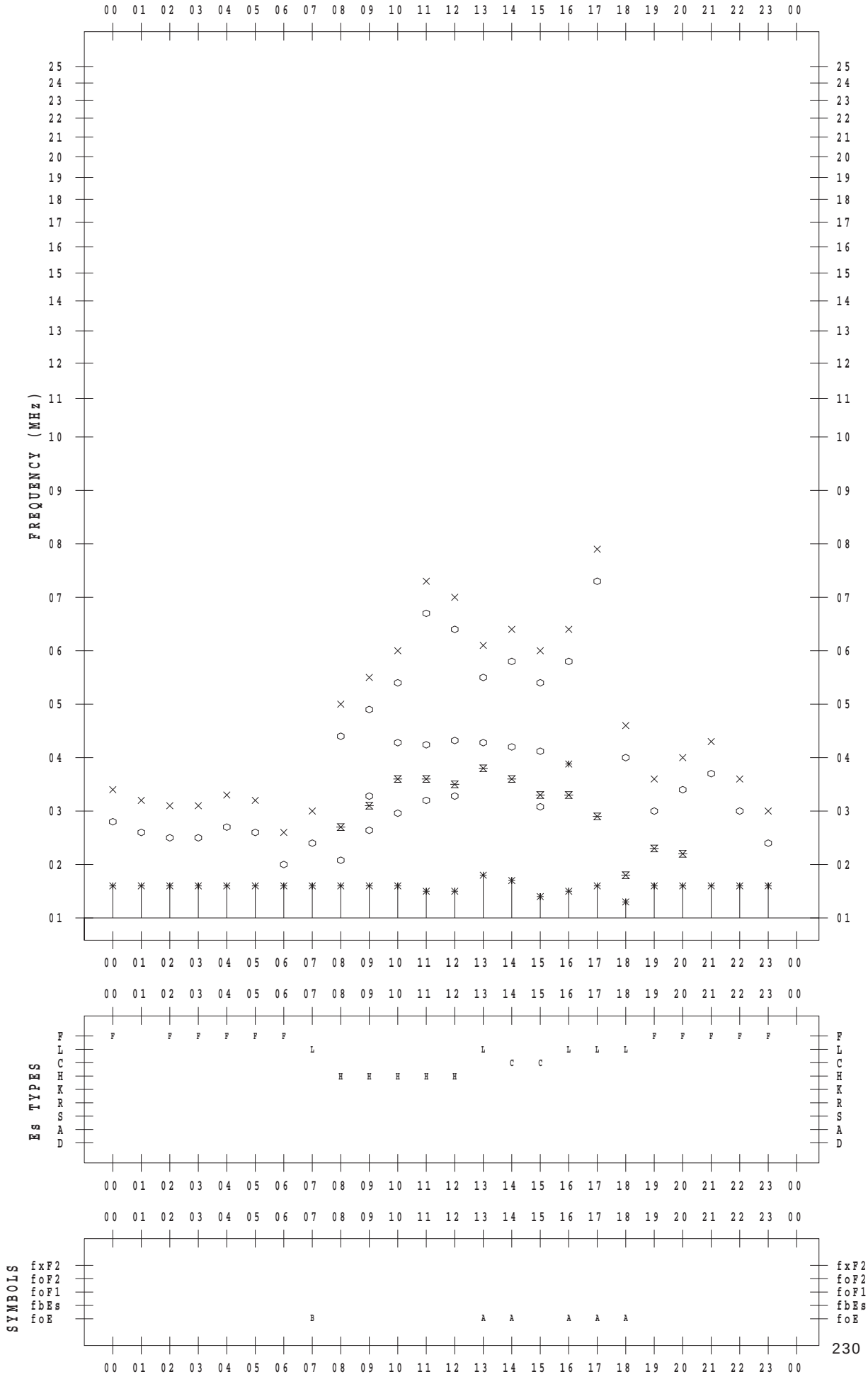
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 1/31

135 °E MEAN TIME