F-842

IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 2019

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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

FEB. 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	37	34	34	36	34	26	A	37	64	54	58	65	55	54	61	53	53	158	47	36	34	31	34	32
2	34	34	34	40	40	45	29	40	47	51	159	62	63	52	52	55	52	40	A	32	32	32	34	32
3	28	31	31	30	31	32	N	28	44	54	54	189	60	57	66	44	48	40	28	32	30	32	59	A
4	38	34	34		32	32	30	39	48	51	51	158	59	58	49	58	57	A	59	A	40	40	43	47
5	40	34	40	36	40	34	31	40	45	49	53	56	62	56	50	52	48	44	A	30	A	34	34	36
6	34	32	40	48	50	46		37	55	51	52	60	51	62	60	49	51	40	32	30	34	37	30	40
7	37	40	40		31	34	32	N	49	58	52	61	62	62	189	52	57	42	32	A	A	42	A	40
8	40	38	38	38	40	43	N	40	50	62	56	58	64	58	54	50	49	37	32	36	36	34	36	40
9	40	38	37	38	38	36	29	43	46	58	54	54	61	49	58	54	46	A	40		40	37	32	37
10	37	41	40	38	34	34	29	42	51	50	52	65	64	57	59	59	57	A	A	48	31	32	34	36
11	34	34	34	34	34	34	59	44	50	47	52	48	53	54	53	51	50	38	32	37	43	36	37	39
12	40	40	47	39	28	34	26	38	41	51	56	64	67	50	54	56	52	36	40	31	A	28	34	34
13	34	34	34	34	34	34	32	39	46	50	46	58	67	56	58	52	55	40	34	34	A	34	34	31
14	30	32		29	28	30	N	46	42	51	49	58	59	57	56	50	60	47	34	36	34	29	32	30
15	31	30	30	30	29	26	N	40	47	41	50	57	N	59	52	46	50	47	28	A	A	A	A	A
16	30	31	34	32	32	30	26		51	28	51	54	62	53	51	49	46	41	32	A	32	29	34	38
17	38	36	36	35	36	50	34	41	55	51	52	60	55	65	56	59	51	55	28	34	36	37	36	34
18	34	29	37	37	39	38	31	40	51	52	56	62	58	59	51	54	54	45	38	38	37	40	42	41
19	41	42		38	37	34	32	47	N	49	53	62	59	57	51	52	51	44	32	34	31	30	31	
20	34	36	37	34	32	34	30	43	67	52	52	61	58	59	54	55	54	43	37	41	34	32	35	A
21	40	42	42	40	42	34	37	37	53	53	58	60	62	65	54	59	57	42	41	34	38	32	34	37
22	36	40	30	34	36	31	30	54	50	53	52	56	56	61	51	55	57	50	37	34	34	26	34	34
23	35	30	36	37	29	34	28	45	50	48	55	56	56	58	55	54	53	47	44	36	31	34	37	36
24	38	40	40	40	37	34	37	44	51	51	58	56	57	49	59	52	52	47	37	34	36	30	34	37
25	37	35	38	37	36	34	31	43	50	50	51	62	54	56	54	51	48	44	37	36	42	40	37	38
26	40	38	43	43	42	42	37	47	50	54	52	56	52	61	55	49	47	49	44	34	34	30	34	34
27	34	34	34	33	34	34	34	46	54	51	56	58	58	54	52	52	54	41	34	31	34	36	28	36
28	36	37	34	34	34	32	32	38	62	47	63	58	51	52	51	60	54	45	40	46	46	43	48	34
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	26	26	28	28	22	26	27	28	28	28	27	28	28	28	28	25	25	23	23	27	26	24
MED	36	34	36	36	34	34	31	40	50	51	52	59	59	57	54	52	52	44	37	34	34	34	34	36
U Q	39	39	40	38	38	35	34	44	53	53	56	62	62	59	58	55	54	47	40	36	38	37	37	38
L Q	34	33	34	34	32	32	29	39	47	49	52	56	55	54	51	50	49	40	32	32	32	30	34	34

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HOURLY VALUES OF fEs AT Wakkanai

FEB. 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	G	G	32	26	28	24	32	24	G	G	G	50	35	G	36	33	G	G	11	G	G	G	G	G
2	G	G	94	25	G	G	G	G	G	G	G	G	38	G	G	39	60	35	77	G	G	G	G	G
3	G	G	G	G	23	28	25	G	46	G	G	116	G	40	43	48	G	24	31	24	26	25	G	38
4	34	G	G		37	32	27	40	48	49	44	G	44	G	48	34	50	60	59	60	36	27	G	G
5	G	G	G	G	G	G	G	39	28	32	50	G	G	G	G	37	G	45	27	G	33	25	G	G
6	G	G	G	G	G	G		G	49	48	50	42	50	G	G	G	G	38	27	G	G	G	G	G
7	G	G	11		G	G	G	25	48	38	48	35	36	44	G	G	G	41	G	40	59	32	38	26
8	G	30	34	26	29	40	28	36	34	G	G	G	G	38	34	G	G	34	G	G	G	G	30	26
9	G	27	29	G	G	G	G	40	126	G	39	44	40	50	G	G	34	43	23	G	G	24	G	G
10	G	G	G	G	G	G	G	40	50	59	42	52	44	35	35	35	37	39	40	43	G	G	G	G
11	G	G	G	G	G	G	G	G	41	48	53	36	39	50	G	G	G	11	G	G	G	44	33	29
12	G	G	G	31	24	24	G	G	G	55	G	G	G	G	G	G	G	G	G	G	48	G	G	40
13	G	G	G	G	G	G	G	G	46	G	48	36	G	49	G	G	G	58	G	30	36	G	G	G
14	G	G		G	G	G	G	G	G	G	36	38	G	35	42	G	G	G	24	G	G	G	G	G	G
15	G	G	G	G	G	G	G	27	32	56	57	92	40	71	44	32	34	29	G	94	92	56	58	34
16	24	G	G	G	G	93	G		39	55	54	44	42	G	42	32	G	28	56	58	38	G	27	G
17	G	G	G	G	G	G	G	40	31	G	52	36	G	G	G	G	G	11	G	27	G	G	G	G
18	G	G	G	G	G	G	G	34	G	33	52	50	G	55	35	G	G	G	G	G	G	G	G	G
19	G	G		27	G	G	G	24	40	34	53	43	47	49	46	32	G	G	G	G	25	G	G	G
20	G	G	G	G	G	G	G	38	44	38	46	G	52	42	G	G	32	G	G	G	G	G	25	41
21	28	33	28	G	G	G	G	25	32	34	40	G	36	G	35	32	31	34	39	G	G	26	G	G
22	30	G	G	G	G	G	G	28	34	34	42	42	G	58	48	44	49	G	26	G	32	24	G	G
23	28	G	G	G	G	G	G	46	44	46	44	41	48	43	42	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	46	43	44	G	115	G	43	40	34	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	32	34	G	40	40	37	129	41	32	G	G	G	G	G	G	G
26	G	G	G	G	G	G	11	46	G	G	40	39	G	G	35	34	G	G	G	G	G	G	G	161
27	G	33	G	G	G	G	G	29	33	35	36	G	46	G	40	34	G	G	G	26	26	G	G	G
28	G	G	G	G	G	G	30	27	33	34	35	51	50	44	45	G	G	29	G	G	29	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	26	26	28	28	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	G	G	G	G	G	G	G	27	34	34	42	40	37	38	35	32	G	18	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	40	45	47	50	47	44	46	42	34	32	36	27	26	32	24	G	26
L Q	G	G	G	G	G	G	G	G	29	G	18	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

FEB. 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	15	14	14	14	14	14	14	14	15	15	14	14	15
2	15	14	14	15	14	14	17	14	15	14	14	14	14	16	14	16	14	14	14	14	14	14	14	14
3	14	14	15	15	17	14	16	16	14	17	21	18	16	15	15	14	14	15	14	14	15	15	14	14
4	14	14	14		14	15	15	15	15	18	15	30	15	15	14	15	14	15	14	14	14	15	14	14
5	14	14	14	14	14	14	14	14	14	14	14	14	15	15	14	18	15	14	16	14	14	14	14	14
6	14	14	14	14	14	14		17	18	14	14	14	14	14	18	15	14	14	14	15	14	14	14	14
7	14	14	14		15	14	14	14	15	14	14	14	14	14	14	14	20	14	14	14	14	14	14	14
8	15	14	14	14	14	14	15	14	14	16	29	15	15	15	14	14	14	14	14	14	15	15	14	14
9	14	14	14	14	15	15	14	15	14	14	15	14	14	14	15	14	14	14	14	16	14	14	14	14
10	14	15	14	15	14	14	14	14	14	14	15	15	17	14	14	14	15	14	14	14	14	14	14	14
11	14	14	14	14	14	14	14	17	14	18	14	18	15	20	16	14	21	14	14	14	14	14	14	14
12	14	14	14	14	14	14	15	18	15	18	28	37	30	28	27	27	21	15	14	14	14	15	14	14
13	15	14	15	14	14	14	14	14	14	26	27	29	35	21	28	18	21	14	14	14	14	14	14	14
14	15	14		14	14	14	16	18	14	15	15	16	18	18	14	14	21	15	14	14	14	14	14	14
15	14	14	14	15	14	14	17	17	14	15	15	15	15	14	14	14	14	14	14	14	14	14	14	14
16	14	14	14	14	14	14	14		14	14	14	14	15	14	15	15	14	14	15	14	14	14	14	14
17	15	14	14	15	14	15	15	14	14	14	16	16	18	17	15	14	14	15	15	14	14	14	14	15
18	15	15	14	14	14	14	14	20	14	15	15	14	15	14	14	14	14	15	14	14	14	14	14	14
19	14	14		14	14	14	15	17	14	14	14	15	14	15	15	15	15	14	14	14	15	15	14	18
20	15	14	14	14	14	14	14	18	14	14	14	16	15	14	15	15	14	14	14	14	14	14	14	15
21	14	14	14	14	14	15	15	16	14	14	14	15	15	14	14	14	14	17	14	15	14	14	14	14
22	14	14	14	14	14	14	17	14	14	14	14	14	14	14	14	14	14	14	15	14	14	15	14	14
23	14	14	15	14	15	15	14	15	14	14	14	14	14	16	14	15	14	16	14	14	15	14	14	14
24	15	14	14	14	14	15	14	14	14	14	14	15	15	15	14	14	14	14	14	14	14	14	14	14
25	14	14	14	14	15	14	14	14	14	16	14	15	33	18	15	14	14	15	14	14	14	14	14	14
26	14	14	14	14	14	14	14	21	14	15	15	15	16	15	14	14	14	16	14	14	14	14	14	16
27	15	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	16	14	14	15	16	14	14
28	14	14	14	14	14	14	14	14	14	14	14	15	16	14	14	14	14	14	14	14	14	15	14	14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	26	26	28	28	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	14	14	14	14	14	14	14	15	14	14	14	15	15	15	14	14	14	14	14	14	14	14	14	14
U Q	15	14	14	14	14	14	15	17	14	15	15	16	16	16	15	15	15	15	14	14	14	15	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

FEB. 2019

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

HD \ 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	30	27	28	31			44	49	58	58	67	51	51	51	54	60	53	42	36	41	27		27
2	30	30	31	32	31	34	N	36	54	48	64	62	53	73	56	48	54	50	A	A	A	A	30	30
3	31	30		30	30	27	28	N	A	48	61	65	75	71	58	55	54	41	34	31	A	A	A	21
4	30	A	31	28	27	26	26	40	A	53	50	51	69	62	59	55	52	47	A	32	26	34	34	A
5	26	32	32	58	28	N		44	54	51	59	67	66	61	56	46	51	47	A	A	34	A	A	A
6	35		A	35	34	28	58	43	54	50	46	62	49	64	58	58	47	43		35	34	36	35	31
7	32	32	23	23	30	28	32	39	49	51	58	58	64	57	59	59	47	45	30	A	36	38	A	32
8	32	A	34	32	45	34	25	34	51	61	58	62	72	84	64	51	49	47	26	A	A	30	34	26
9	31	34	34	34	31	30		41	54	54	51	64	67	59	65	56	55	45	30	38	31	30	58	A
10	30	31	32	32	32	28		44	52	52	A	65	64	71	61	53	51	53	A	21	32	A	32	A
11	A		30	28	30	27	30	54	N	48	48	65	58	56	55	51	48	56	42		32	32	31	A
12	30	30	31	31	27	58	26	34	49	51	56	68	71	80	59		54	52	28	34	38	27	30	30
13		31	30	30	30	26	26	47	47	51	54	59		59	60	51	47	52	A	34	36	30	34	A
14	A	30	A	27	A	N		43	59	52	A	56	61	58	56	55	53	54	A	35	36	30	27	28
15	30	30	28	28	30	26	27	50	52	47	55	56	64	61	51	53	50	45	38	32	28	27	27	30
16	28	31	31	30	27	28	26	43	54	58	51	48		62	49	55	51	56	34	32	34	30	27	27
17	27	27		23	30	27	30	42	53	A	A	A	63	66	67	53	50	47	38	24	A	27	A	32
18	30	27	28	30	30	26	N	44	51	51	48	58	62	52	58	51	52	52	35	34	36	28	32	30
19	32	32	32	32	28	31	34	42	51	55	51	61	64	61	A	54	46	54	37	N	37		A	27
20	25	30	31	32	30	26	27	45	54	54	58	56	52	61	58	56	53	51	35	30	34	28	30	30
21	30	30	34	31	32	28	28	49		51	54	61	65	74	83	52	44	64	34	39	44	28	30	31
22	31	31	34	28	28	30	58	47	55	59	51	58	73	55	49	56	51	62	44	32	36	32	A	34
23	30	31	34	34	48	31	30	44	53	54	53	55	54	63	56	52	55	52	47	44	36	33	27	30
24	30	28	30	28	30	27	27	39	46	59	50		58	53	49	57	52	51	30	32	30	32	A	A
25	30	25	31	34	32	28	28	44	46	47	55	54	56	54	56	51	51	44	39	A	36	41	39	32
26	34	34	34	34	34	30	34	44	48	52	51	53	56	55	54	55	51	45	45	43	38	36	30	32
27	34	31	31	31	32	28	30	48	46	62	46	56	54	61	65	47	46	49	39	34	30	30	30	34
28	32	32	33	34	30	27	34	48	51	54	52	71	56	52	54	52	59	59	44	34	32	38	36	38
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	24	28	27	25	21	27	24	27	25	26	26	28	27	27	28	28	21	21	24	23	20	21
MED	30	30	31	31	30	28	28	44	52	52	53	60	62	61	58	53	51	51	37	34	35	30	30	30
U Q	32	31	33	33	32	30	33	47	54	55	58	65	66	65	60	55	53	53	42	35	36	34	34	32
L Q	30	30	30	28	30	27	26	41	49	51	50	56	56	55	54	51	48	46	32	32	32	28	30	27

HOURLY VALUES OF fEs AT Kokubunji

FEB. 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	29	G	G	G	G			34	57	44	35	43	42	G	41	47	36	41	G	G	G	G		G
2	G	G	G	G	G	26	G	25	33	36	38	38	42	G	35	36	G	G	29	57	54	41	G	G
3	G	G		G	G	G	31	G	57	42	42	39	38	42	41	39	G	G	34	30	77	46	29	43
4	G	29	27	G	G	G	G	33	58	35	54	45	40	43	41	38	G	G	57	28	G	29	50	28
5	G	G	G	G	G	G		36	29	G	41	G	61	G	G	36	40	29	96	34	31	48	29	31
6	30		26	G	G	G	34	37	34	41	52	38	37	56	G	42	G	G		G	G	G	G	G
7	G	G	G	G	G	G	33	27	G	G	G	G	40	37	45	G	G	G	G	28	G	G	67	34
8	G	59	28	29	11	35	G	34	43	G	N	38	39	37	42	38	31	47	34	34	50	54	27	25
9	31	29	G	G	G	G		42	30	37	39	38	60	N	40	45	32	G	G	G	G	G	27	50
10	G	G	G	G	G	G		G	31	37	57	50	85	G	G	G	37	34	41	28	43	60	40	33
11	57		G	G	G	G	G	59	48	42	43	45	G	38	G	33	G	40	11		28	G	26	32
12	G	G	27	G	G	G	11	33	G	G	G	G	G	G	37		35	G	G	G	36	G	G	G
13		29	34	G	G	G	G	G	31	42	G	G		41	40	39	40	34	33	G	25	G	34	31
14	39	33	33	G	28	G		32	32	36	74	71	41	38	37	36	41	40	31	G	34	G	G	G
15	G	G	G	G	G	G	G	G	31	36	G	G	38	G	G	37	G	G	36	G	G	G	G	G
16	G	G	G	27	G	33	26	G	G	G	42	39	G	G	38	G	32	G	G	28	G	G	G	G
17	G	G		G	G	G	G	28	G	56	70	80	56	41	37	42	37	25	20	G	32	G	35	G
18	G	27	G	G	G	G	28	G	G	G	47	G	40	38	G	38	34	G	34	24	G	G	G	G
19	34	G	G	G	G	G	34	42	31	45	44	42	52	116	117	39	G	G	40	G	G		29	G
20	G	G	G	G	G	G	G	G	G	35	G	G	39	G	42	G	33	37	33	G	G	G	24	G
21	G	G	G	28	G	G	G	G		39	G	G	G	G	G	G	43	28	27	G	G	G	G	G
22	G	G	G	G	G	G	G	G	G	35	37	43	51	56	48	42	32	29	29	G	G	G	38	G
23	32	G	G	G	G	G	G	40	G	G	40	G	38	G	G	38	33	31	22	24	G	G	G	G
24	G	G	G	G	G	G	G	G	31	G	46		40	N	G	35	N	G	34	G	40	36	40	32
25	G	G	G	G	G	G	G	G	32	G	G	G	40	G	G	G	32	27	G	34	26	G	24	G
26	G	G	G	G	G	G	G	27	33	G	41	43	40	39	38	35	31	G	G	G	27	32	G	25
27	G	G	G	G	G	G	G	39	G	G	G	42	55	47	G	49	36	28	11	G	G	36	29	26
28	G	G	G	G	G	G	G	G	34	39	39	N	G	38	G	40	33	32	24	G	G	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	26	28	28	27	23	28	27	28	27	26	27	26	28	27	27	28	27	27	28	27	27	28
MED	G	G	G	G	G	G	G	27	31	36	40	38	40	38	37	38	32	26	29	G	G	G	26	G
U Q	29	G	G	G	G	G	26	35	34	40	46	43	51	41	41	40	36	33	34	28	33	36	34	31
L Q	G	G	G	G	G	G	G	G	G	G	G	G	38	G	G	33	G	G	G	G	G	G	G	G

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HOURLY VALUES OF fmin AT Kokubunji

FEB. 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	14	14	14			13	17	14	15	18	17	18	17	14	14	14	13	14	14	20		14
2	14	15	14	14	13	14	14	17	14	15	17	17	18	15	15	14	14	14	14	15	14	13	21	15
3	14	18		14	15	17	13	17	14	13	17	17	20	14	14	13	14	18	13	13	14	14	14	17
4	14	17	17	14	14	13	14	21	14	13	20	14	14	17	14	18	14	18	17	14	17	14	14	14
5	15	15	14	18	14	14		18	14	15	17	20	20	15	14	13	14	14	14	14	15	14	13	14
6	14		17	15	14	17	15	14	13	13	14	18	13	13	13	14	14	15		14	17	14	13	15
7	15	14	14	17	18	14	14	20	14	18	18	14	18	21	13	13	13	22	14	17	17	15	13	13
8	13	13	14	13	14	14	15	15	14	15	18	23	22	17	17	15	17	14	17	14	13	14	13	14
9	14	14	13	13	14	14		18	14	14	15	20	18	21	22	15	14	17	20	14	14	20	17	17
10	18	14	15	17	15	13		18	14	14	17	18	21	22	15	17	17	14	17	17	13	13	15	15
11	14		17	14	15	14	14	13	13	18	18	18	39	30	18	17	14	14	17		18	14	14	14
12	18	18	14	17	15	14	13	14	13	28	20	21	15	18	18		14	18	14	15	14	18	14	17
13		15	17	17	18	14	17	18	15	14	18	20		14	17	17	14	14	14	15	14	20	14	13
14	14	13	15	17	14	17		13	13	14	18	18	18	17	14	17	13	13	14	14	15	15	17	15
15	15	20	13	15	18	17	18	18	14	17	18	18	21	20	22	14	17	22	15	15	17	17	15	17
16	18	14	17	17	14	14	17	20	14	17	15	31	25	22	18	18	13	18	14	14	18	14	15	18
17	14	17		21	13	15	14	18	13	14	15	17	15	13	13	21	14	18	14	14	18	21	13	14
18	14	17	20	14	15	14	14	20	14	17	18	18	23	17	34	21	14	21	15	14	15	14	13	14
19	14	14	18	15	18	15	14	20	14	13	17	22	18	20	14	14	22	18	14	22	21		14	14
20	14	14	13	14	13	17	14	21	15	17	36	21	33	22	20	21	14	13	13	17	17	14	13	13
21	14	15	14	14	14	14	17	18		14	15	20	20	18	14	14	13	15	13	14	14	14	17	13
22	15	20	14	15	14	14	14	21	13	14	18	15	21	15	13	14	14	13	14	14	14	17	13	14
23	14	18	14	17	17	14	14	20	13	14	17	17	31	23	20	17	14	14	14	14	14	14	14	15
24	14	14	17	17	13	17	14	20	14	17	20		23	41	18	17	15	20	14	20	15	15	14	14
25	14	14	14	14	13	14	17	20	13	14	20	20	23	20	20	14	17	20	14	14	14	14	13	13
26	13	13	13	14	14	14	14	13	17	13	24	21	20	18	21	17	15	20	14	14	13	14	14	14
27	13	15	13	14	14	14	14	18	15	13	17	18	20	22	15	17	13	21	14	14	21	14	14	14
28	14	15	14	13	14	14	14	21	13	15	17	17	39	13	20	17	15	13	14	14	14	13	15	14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	26	28	28	27	23	28	27	28	28	27	27	28	28	27	28	28	27	27	28	27	27	28
MED	14	15	14	14	14	14	14	18	14	14	18	18	20	18	17	17	14	16	14	14	14	14	14	14
U Q	15	17	17	17	15	15	15	20	14	17	18	20	23	21	20	17	15	19	15	15	17	17	15	15
L Q	14	14	14	14	14	14	14	16	13	14	17	17	18	15	14	14	14	14	14	14	14	14	13	14

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

FEB. 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	A	A	A	32	32	B	B	35	49	51	68	70	58	47	55	72	58	53	43	22	A	34		B
2	30	31	31	31	34	28	31	32	50	51	64	66	53	70	67	51	58	50	159	31	32	35	30	A
3	28	30	28	A	37	B	N	34	48	52	58	57	76	68	70	56	52	47	47	49	49	B	A	A
4	A	30	30	28	29	59	N	34	40	50	66	64	53	62	66	55	49	51	43	43	28	A	A	A
5	B	27	28	28	29	29	B	29	52	C	C	C	C	C	C	C	C	54	41	34	A	30	32	28
6	29	31	30	29	30	26	B	36	48	51	49	56	62	65	54	67	54	54	41	30	31	30	31	29
7	29	31	N	26	26	34	29	32	47	54	64	67	57	56	58	169	188	55	50	49	28	36	A	N
8	28	30	40	32	45	A	N	A	51	50	62	63	57	71	76	50	51	54	47	35	28	32	A	30
9	28	31	31	30	A	28	A	31	52	54	50	57	65	55	169	53	65	55	42	34	49	29	A	A
10	A	28	29	A	30	49	49	31	51	50	57	56	62	63	78	65	54	53	50	34	A	A	A	179
11	30	31	31	A	31	31	26	34	47	51	52	53	140	57	52	58	59	52	47	45	A	30	31	32
12	30	30	30	30	49	26	26	36	44	50	54	70	70	70	72	63	57	52	42	32	32	34	29	28
13	28	30	A	28	49	26	B	35	48	51	58	63	61	61	57	61	54	47	44	44	34	34	34	32
14	B	28	29	28	27	N	N	34	53	51	65	77	72	49	56	60	54	60	64	40	42	28	N	28
15	31	30	28	28	28	28	N	38	54	52	52	55	62	54	58	65	67	47	45	51	N	N	N	26
16	32	29	28	28	28	32	N	37	53	52	50	51	55	50	63	68	50	54	52	30	26	34	29	29
17	29	28	29	29	28	31	B	35	46	51	50	56	60	64	72	60	49	53	54	34	49	30	A	A
18	32	31	32	30	30	A	N	37	47	48	54	56	67	63	54	63	50	50	51	36	34	36	A	A
19	29	30	30	30	31	31	30	34	50	54	57	60	61	60	73	72	55	48	55	A	N	34	N	N
20	A	28	A	29	32		B	35	51	50	52	62	56	52	46	71	63	54	48	30	30	35	28	28
21	28	28	23	29	26	26	49	40	49	54	56	61	71	72	86	64	54	51	50	38	41	32	A	A
22	30	31	32	32	30	29	26	42	53	44	139	63	70	59	55	55	56	56	53	48	26	34	32	32
23	A	A	30	31	32	31	N	42	50	50	50	57	58	68	54	64	65	49	54	51	25	34	28	26
24	49	A	49	28	30	N	N	37	47	54	54	61	50	57	64	57	57	54	N	36	31	22	A	28
25	A	30	A	31	32	31	N	36	45	46	48	56	58	57	60	56	54	44	46	40	40	34	34	32
26	A	30	31	28	30	26	29	48	48	48	54	54	46	63	54	64	58	54	50	44	47	37	42	A
27	26	31	29	28	29	29	N	40	50	52	50	64	49	55	60	51	51	48	51	37	30	30	34	26
28	N	29	30	28	28	28	26	43	139	47	54	49	54	52	54	56	65	39	50	54	42	42	32	42
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	25	23	25	27	21	10	27	28	27	27	27	27	27	27	27	27	28	27	27	22	24	14	17
MED	29	30	30	29	30	29	29	35	50	51	54	60	60	60	60	61	55	52	50	37	32	34	32	29
U Q	30	31	31	30	32	31	31	38	51	52	62	64	67	65	72	65	59	54	52	45	42	34	34	32
L Q	28	28	29	28	28	27	26	34	47	50	50	56	55	55	54	56	52	48	44	34	28	30	29	28

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HOURLY VALUES OF fEs AT Yamagawa

FEB. 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	44	35	39	24	27	B	B	G	28	35	36	55	60	47	44	48	45	56	11	29	35	26	G	B
2	G	G	G	G	G	G	25	24	38	43	43	42	46	44	40	G	G	30	26	G	G	G	G	40
3	G	24	28	35	29	B	G	G	28	G	37	38	44	45	40	G	36	30	28	25	26	B	40	56
4	30	27	35	G	G	G	G	11	30	38	41	44	G	40	G	45	G	G	G	11	35	37	35	34
5	B	G	G	G	G	23	B	G	48	C	C	C	C	C	C	C	C	29	29	30	28	G	G	G
6	G	G	27	G	G	G	B	G	G	50	41	46	44	44	41	41	G	32	21	G	G	G	G	G
7	G	26	G	G	G	G	G	G	29	34	41	42	44	G	G	G	35	29	24	27	25	34	29	G
8	G	G	35	34	54	48	G	38	32	34	45	45	42	57	G	52	34	29	46	G	34	G	35	36
9	28	G	28	G	48	31	30	30	34	G	35	46	42	39	40	52	38	G	40	G	G	G	46	37
10	28	G	G	33	G	G	G	G	G	33	G	47	44	46	G	G	G	34	39	34	28	70	41	28
11	G	G	24	40	27	G	G	36	34	46	41	G	40	40	44	G	35	32	29	41	28	G	G	G
12	G	G	G	24	G	G	G	29	46	44	38	48	44	43	46	44	43	32	24	29	G	G	G	G
13	G	G	29	33	G	G	B	G	30	43	42	39	41	39	40	38	35	30	30	G	G	G	G	G
14	B	G	G	G	G	G	G	G	34	43	G	G	38	G	44	58	48	43	150	24	11	G	G	G
15	26	G	G	G	G	G	G	G	29	34	45	38	46	G	N	36	36	G	G	11	G	G	G	G
16	G	G	G	G	G	35	24	32	29	35	45	46	41	45	40	42	36	G	48	G	G	G	G	G
17	G	G	G	G	G	11	B	G	G	36	44	44	46	43	41	40	36	30	23	26	G	G	39	28
18	G	28	G	G	G	34	G	11	30	33	39	40	39	G	42	43	36	35	26	G	G	G	40	33
19	29	G	G	G	G	G	G	11	G	34	37	38	47	46	44	G	G	G	25	25	G	G	G	G
20	30	25	34	G	G	G	B	24	G	33	36	45	G	G	45	41	42	34	29	G	G	G	G	G
21	G	G	G	G	G	G	G	G	128	142	G	46	43	44	G	42	35	32	G	G	G	28	49	28
22	G	G	G	G	G	G	G	G	G	45	43	40	G	G	45	38	34	G	G	11	G	G	G	G
23	54	33	G	G	G	G	G	33	G	53	46	45	39	G	G	38	G	30	34	45	32	24	G	G
24	G	25	G	G	G	29	G	39	32	37	39	46	40	47	G	40	43	34	25	29	G	26	34	24
25	24	28	34	29	G	32	G	36	32	37	37	46	47	46	44	36	34	31	G	G	G	G	G	G
26	30	G	G	G	G	G	G	G	31	34	45	46	43	44	42	39	35	32	G	G	11	24	G	35
27	G	G	G	G	G	G	G	24	34	38	G	64	49	47	45	45	39	34	24	25	G	G	G	11
28	G	G	G	G	G	G	G	39	153	44	43	44	48	45	G	41	G	34	G	G	27	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	28	28	28	26	22	28	28	27	27	27	27	27	26	27	27	28	28	28	28	27	28	27
MED	G	G	G	G	G	G	G	11	30	37	41	45	43	44	40	40	35	30	25	11	G	G	G	G
U Q	28	25	28	24	G	23	G	31	34	44	43	46	46	46	44	44	38	34	29	28	27	24	35	33
L Q	G	G	G	G	G	G	G	G	14	34	36	40	40	G	G	36	G	29	6	G	G	G	G	G

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HOURLY VALUES OF fmin AT Yamagawa

FEB. 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	15	15	14	14	15	B	B	15	14	15	15	15	16	15	18	15	15	15	14	15	14	15	231	B
2	15	14	14	14	14	14	14	14	14	14	15	18	18	18	17	16	17	15	16	15	15	15	18	14
3	16	16	15	15	14	B	16	14	14	14	15	16	17	18	20	17	15	14	15	16	14	B	14	14
4	14	14	14	17	14	16	14	14	14	15	14	15	15	15	15	15	15	17	15	15	14	14	15	14
5	B	15	15	14	14	15	B	15	14	C	C	C	C	C	C	C	C	15	15	15	14	15	15	15
6	17	14	15	14	14	15	B	14	18	14	15	17	16	17	18	17	16	15	15	14	15	15	14	15
7	15	14	15	15	14	14	15	14	14	15	14	16	18	17	16	15	15	15	15	15	14	14	14	14
8	16	14	15	14	14	15	17	14	14	14	15	18	17	16	15	16	15	14	15	14	15	15	14	15
9	15	14	14	14	14	14	14	14	16	15	15	15	17	16	16	16	17	15	14	15	16	15	14	14
10	14	16	14	14	15	14	14	14	14	15	16	17	17	20	17	18	15	14	15	15	15	14	15	15
11	16	14	14	14	14	15	15	14	15	15	16	20	18	16	18	15	15	15	15	14	16	17	14	15
12	15	15	15	16	16	16	14	14	14	15	14	15	20	17	20	17	16	15	16	14	21	15	15	14
13	14	14	14	15	15	15	B	14	14	15	14	15	17	17	17	18	15	14	16	14	14	15	15	14
14	B	15	14	15	15	14	14	14	14	15	16	15	15	15	15	14	14	14	14	15	14	18	17	14
15	15	23	15	15	14	14	14	14	14	14	15	20	16	18	17	20	18	14	16	14	20	21	20	15
16	16	15	14	14	15	15	16	15	14	18	17	20	16	16	16	18	15	15	15	14	15	14	17	14
17	14	14	15	14	14	14	B	14	14	14	16	18	18	22	18	17	15	14	15	15	16	15	14	16
18	15	14	15	15	14	15	15	14	14	17	15	17	17	18	17	18	16	14	16	14	14	14	14	14
19	14	14	14	15	14	14	15	14	14	15	15	17	17	15	17	15	17	14	16	15	18	14	15	15
20	15	15	15	16	14	66	B	15	14	16	18	18	18	20	18	17	17	15	14	14	18	16	15	18
21	14	14	15	16	15	15	21	17	14	15	15	16	18	20	17	18	15	14	15	15	14	14	14	15
22	14	15	14	14	14	14	14	14	14	15	15	16	18	23	18	18	17	14	15	14	15	15	14	14
23	14	14	15	17	15	15	14	16	15	15	18	16	20	21	18	17	17	14	14	14	15	15	15	15
24	14	15	17	15	15	14	15	17	14	15	15	18	16	18	20	14	14	15	15	14	15	15	14	14
25	15	15	14	15	15	15	14	16	14	14	15	17	15	17	21	18	17	14	17	14	14	15	14	15
26	14	14	14	16	16	18	16	15	14	15	15	17	16	15	20	18	15	15	16	15	15	14	15	14
27	16	15	15	15	15	14	15	17	15	15	17	17	20	15	18	18	15	14	16	15	15	15	14	15
28	18	15	15	15	15	14	14	17	14	14	15	18	18	18	18	16	16	15	16	16	15	15	15	15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	28	28	28	26	22	28	28	27	27	27	27	27	27	27	27	28	28	28	28	27	28	27
MED	15	14	15	15	14	15	14	14	14	15	15	17	17	17	18	17	15	14	15	15	15	15	15	15
U Q	16	15	15	15	15	15	15	15	14	15	16	18	18	18	18	18	17	15	16	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	14	15	16	16	16	17	15	15	14	15	14	14	14	14	14

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HOURLY VALUES OF foF2 AT Okinawa

FEB.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	30	A	A	A	32	A	N	32	52	49	71	81	57	45	51	72	72	71	A	A	40	30	26	B
2	26	30	31	32	32	26	N	30	50	55	71	78	64	57	75	66	63	56	50	41	A	A	31	N
3	B	59	B	N	32	A	A	30	64	52	60	67	78	71	80	72	55	49	47	32	A	37	59	31
4	A	A	A	26	A	A		34	48	54	74	62	86	68	68	77	54	54	52	50	42	A	A	
5	A	N	N	28	34	N	A	A	50	65	65	50	80	78	64	65	60	54	50	23	A	32	35	32
6	28	B	A	A	28	25	B	30	45	50	44	65	62	83	72	71	85	55	A	A	A	N	28	32
7	28	32	26	A	N	26	B	32	44	A	64	60	59	61	58	65	166	58	55	34	A	34	28	19
8	26	31	30	26	30	A	B	31	47	52	67	A	A	62	87	86	60	54	46	38	34	29	26	B
9	B	N	29	28	A	23	A	28	42	54	62	57	56	169	68	89	93	67	A	A	A	25	29	30
10	31	29	28	28	A	30	N	30	48	54	54	60	63	70	82	92	72	55	48	38	30	28	29	N
11	29	28	32	B	32	31	N	23	48	48	55	65	73	48	65	64	75	65	60	41	28	26	34	35
12	34	34	N	29	30	26	N	34	42	48	60	70	77	86	95	91	82	96	54	A	44	43	34	37
13	36	34	36	26	39	A	B	32	48	50	58	75	72	62	67	71	66	59	47	47	48	34	34	42
14	34	26	26	N	28	26	N	34	54	55	72	98	97	82	67	81	82	76	80	63	51	34	35	35
15	36	34	28	26	26	26	B	35	51	51	56	57	60	58	72	81	78	54	50	47	32	30	34	N
16	28	N	N	N	25	28	B	34	51	51	51	56	59	52	62	67	81	60	48	45	30	28	34	30
17	30	30	34	34	29	28	B	34	48	49	48	52	70	80	81	91	81	64	66	47	40	A	38	42
18	46	51	46	42	40	32	B	32	52	54	47	65	69	48	64	70	62	55	54	42	37	32	32	28
19	29	29	26	29	34	34	28	37	47	52	58	51	78	78	98	111	102	86	72	56	41	41	36	28
20	28	28	A	32	36	B	B	34	54	64	54	48	71	66	72	77	82	60	48	34	34	35	35	30
21	28	28	28	28	29	N	A	34	50	52	57	75	86	75	91	106	72	64	52	43	50	35	26	A
22	29	31	31	32	31	26	N	41	50	48	52	80	90	65	68	64	67	75	70	70	53	28	34	31
23	30	31	A	29	38	30	B	38	53	47	45	58	64	63	72	61	76	82	63	55	52	35	33	31
24	29	31	31	30	34	N	B	34	48	40	56	58	75	65	74	70	60	55	57	47	34	28	A	
25	59	26	26	B	28	34	B	34	42	46	52	55	52	64	64	62	54	50	54	45	41	36	N	28
26	28	29	A	29	28	28	N	40	53	54	48	50	54	58	55	64	66	70	71	50	47	42	41	49
27	N	25	N	26	28	28	B	34	50	55	57	68	66	63	57	59	50	58	54	44	A	31	38	B
28	26	A	N	N	N	N	N	42	47	53	54	70	58	51	56	57	72	65	53	50	52	54	51	36
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	21	16	19	23	18	1	27	28	27	28	27	27	28	28	28	28	28	25	24	21	24	25	19
MED	29	30	30	29	31	28	28	34	49	52	56	62	69	64	68	71	72	60	54	45	41	33	34	31
U Q	34	33	31	32	34	30	14	34	51	54	63	70	78	76	77	83	81	68	61	50	49	35	35	36
L Q	28	28	27	26	28	26	14	31	47	49	52	56	59	58	64	64	61	55	49	39	34	28	29	30

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HOURLY VALUES OF fEs AT Okinawa

FEB. 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	G	58	28	36	27	30	G	G	35	38	39	44	42	46	46	47	44	87	78	53	24	24	G	B
2	G	G	G	G	116	G	G	G	30	34	37	38	46	45	44	41	G	38	G	26	29	30	G	G
3	B	G	B	G	26	40	28	G	28	38	38	41	41	42	44	40	36	G	69	28	30	27	26	G
4	59	35	53	G	31	25	G	57	28	42	133	42	43	61	38	40	34	G	24	26	29	39	36	G
5	56	24	G	G	G	G	90	39	29	43	47	68	46	49	60	56	40	40	27	29	45	G	G	G
6	G	B	39	54	G	G	B	G	G	46	41	38	G	43	G	44	40	42	68	39	32	G	G	G
7	G	G	G	36	G	G	B	23	46	70	40	40	47	43	41	G	36	30	24	38	32	G	G	G
8	G	G	G	G	24	35	B	26	33	33	37	110	130	44	45	39	38	G	25	23	26	25	28	B
9	B	G	G	G	32	29	39	29	43	38	40	47	47	41	44	44	78	59	69	70	60	G	G	G
10	G	G	G	G	40	35	G	G	28	G	36	46	45	47	45	42	G	33	28	34	24	25	G	G
11	G	G	G	B	G	G	11	28	38	38	41	43	45	G	44	38	G	32	30	21	20	G	G	G
12	G	G	G	G	G	G	G	30	28	40	42	G	38	42	45	41	39	34	31	60	G	G	G	G
13	G	G	G	G	23	27	B	G	31	38	41	46	46	42	39	37	34	G	34	G	25	G	G	G
14	G	G	G	G	G	G	G	G	30	36	39	G	47	44	42	70	52	G	G	21	20	25	28	34
15	27	G	G	G	G	G	B	G	28	34	42	39	39	46	46	38	36	G	G	11	30	G	G	G
16	G	G	G	G	G	35	B	25	29	34	44	G	G	46	44	39	G	31	G	43	G	G	G	G
17	G	G	G	G	G	G	B	G	35	35	44	42	G	47	42	41	38	32	28	30	32	29	32	34
18	28	G	G	G	G	G	B	G	29	38	40	41	42	47	44	46	45	40	29	41	G	G	G	26
19	G	G	G	G	G	G	G	11	29	34	44	44	58	44	39	38	38	34	48	48	28	G	11	G
20	G	26	33	G	39	B	B	133	G	34	G	38	40	48	46	45	40	35	25	G	G	G	G	24
21	G	G	G	G	G	G	28	G	30	G	46	44	46	46	45	47	35	34	36	31	G	G	G	60
22	24	G	G	G	G	G	G	G	53	42	G	G	G	G	46	G	38	41	27	26	44	25	G	G
23	26	G	44	26	G	33	B	31	48	58	44	44	48	46	48	37	47	46	34	52	24	29	28	G
24	G	G	G	G	G	27	B	22	36	41	42	44	53	47	45	44	41	39	27	32	G	G	25	
25	G	30	G	B	33	G	B	24	35	38	40	G	103	48	47	41	38	35	27	G	24	24	G	G
26	G	G	35	G	G	G	G	G	30	41	46	46	48	47	47	45	37	34	70	G	G	G	26	29
27	G	26	30	G	G	G	B	G	30	38	40	39	46	48	48	44	G	38	32	25	27	26	11	B
28	G	29	24	G	G	G	133	44	G	41	46	46	46	G	44	G	G	34	G	G	25	G	27	32
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	26	28	27	15	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24
MED	G	G	G	G	G	G	G	6	30	38	41	42	46	46	44	41	38	34	28	28	25	G	G	G
U Q	G	24	28	G	26	29	28	28	35	41	44	45	47	47	46	44	40	39	35	40	30	25	26	25
L Q	G	G	G	G	G	G	G	G	28	34	39	38	40	42	43	38	34	30	24	21	10	G	G	G

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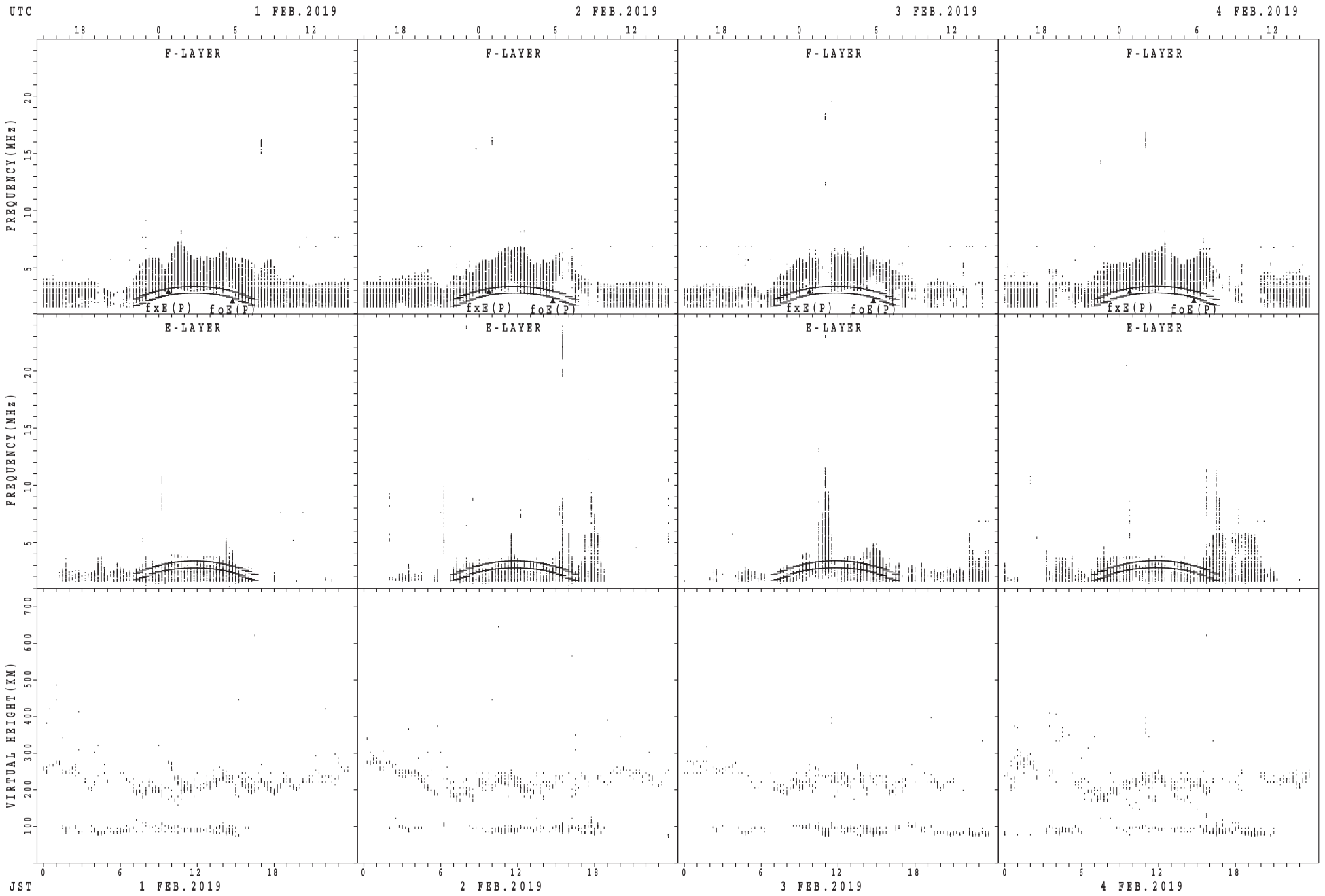
HOURLY VALUES OF fmin AT Okinawa

FEB. 2019

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

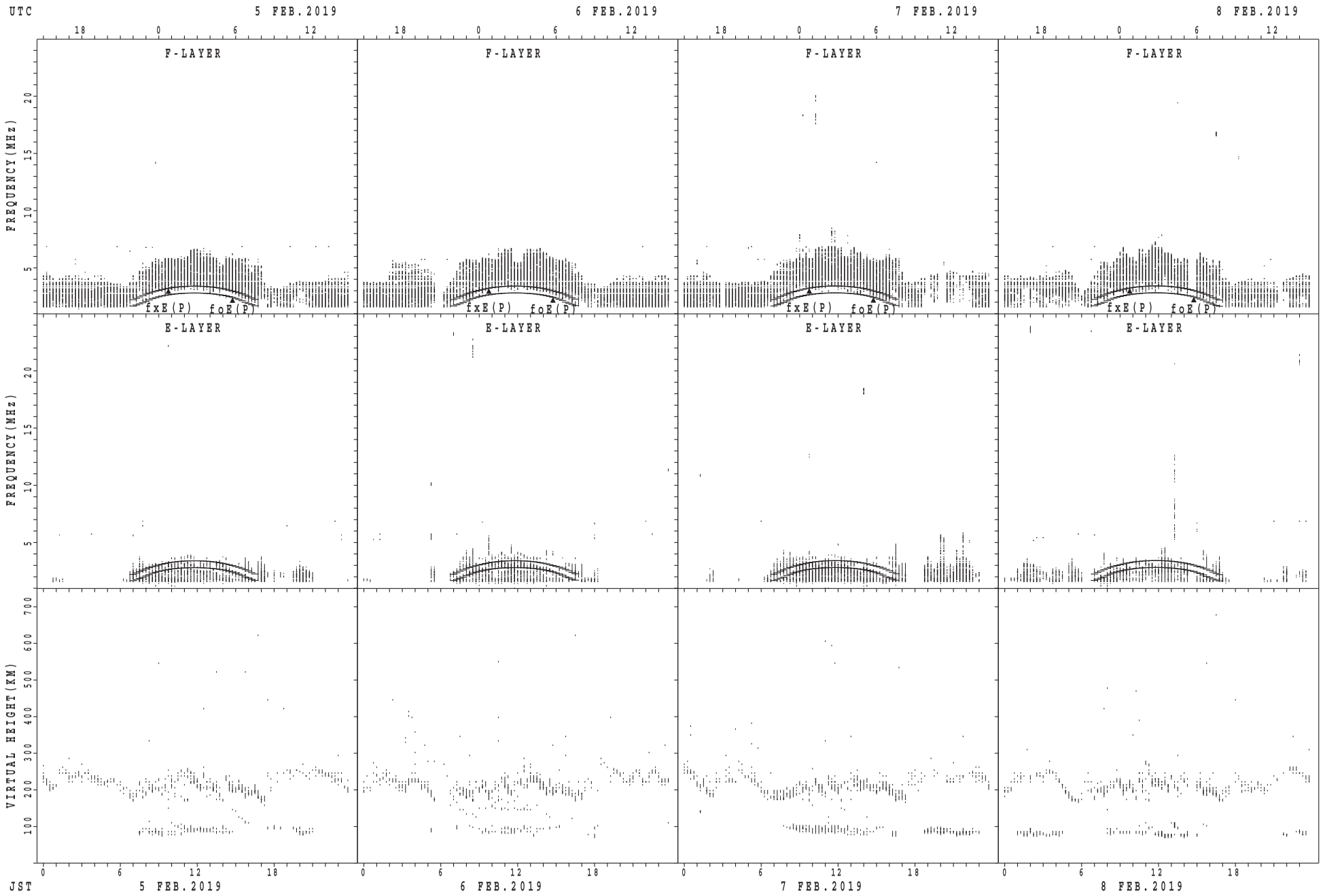
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	14	14	14	15	14	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	15	B
2	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14
3	B	14	B	15	14	14	15	14	14	15	14	14	14	15	14	14	14	14	15	14	14	14	14	14
4	15	14	15	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14	18
5	14	14	14	14	14	14	84	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	15	14
6	14	B	15	15	14	14	B	14	14	14	14	14	16	15	14	14	14	14	15	14	14	15	14	14
7	14	14	15	14	14	14	B	14	14	14	14	14	15	15	14	14	14	14	17	14	14	14	15	14
8	15	14	14	14	14	14	B	14	14	14	14	14	14	17	15	14	14	14	14	14	15	14	14	B
9	B	14	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	14	14	14	14	15	16	14	14	14	14	14	14	14	14	14
11	14	14	14	B	14	14	14	15	14	15	15	15	16	14	14	14	14	14	14	14	15	14	14	14
12	16	15	20	15	14	15	14	14	14	14	14	14	16	15	14	14	14	14	14	14	15	15	16	14
13	14	17	14	14	14	14	B	14	14	14	14	14	17	17	15	14	15	14	14	14	14	14	15	14
14	14	14	14	14	14	14	14	14	14	14	14	14	15	17	16	14	14	14	17	14	14	16	14	14
15	14	15	14	14	14	14	B	14	14	14	16	18	18	15	15	14	14	14	17	14	14	14	14	15
16	18	14	14	14	14	14	B	14	14	15	14	17	17	14	14	14	14	14	14	14	14	15	14	14
17	16	14	14	14	14	14	B	15	14	14	14	15	16	14	15	15	14	14	14	14	14	14	15	14
18	14	14	14	14	14	14	B	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	15	15
19	15	14	15	15	15	14	14	14	14	14	14	14	15	14	14	14	14	14	16	14	14	14	14	14
20	15	14	14	14	14	B	B	14	14	14	15	15	15	16	15	18	14	14	15	14	14	14	14	14
21	14	15	17	14	14	14	14	15	14	14	14	15	14	15	14	14	14	14	14	14	14	14	15	14
22	14	14	14	14	15	14	14	15	14	14	14	14	17	16	14	16	14	14	14	14	14	15	14	14
23	14	15	14	14	15	14	B	14	14	14	14	17	16	15	15	14	14	14	14	14	14	14	14	14
24	14	14	15	14	15	14	B	15	14	14	14	14	15	17	17	14	14	14	14	15	14	14	14	
25	14	14	15	B	14	14	B	15	14	14	14	17	15	16	15	14	14	14	14	14	14	15	15	14
26	14	14	15	14	15	14	14	15	14	14	14	15	14	15	14	14	14	14	16	14	14	14	14	14
27	15	14	14	14	14	15	B	15	14	14	14	15	14	14	16	14	15	14	14	14	15	15	14	B
28	14	14	15	14	14	14	14	14	14	14	14	14	16	17	14	15	14	14	15	14	14	14	14	14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	26	28	27	15	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	24
MED	14	14	14	14	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14	14	14	14	14
U Q	15	14	15	14	14	14	14	15	14	14	14	15	16	16	15	14	14	14	15	14	14	14	15	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

SUMMARY PLOTS AT Wakkanai



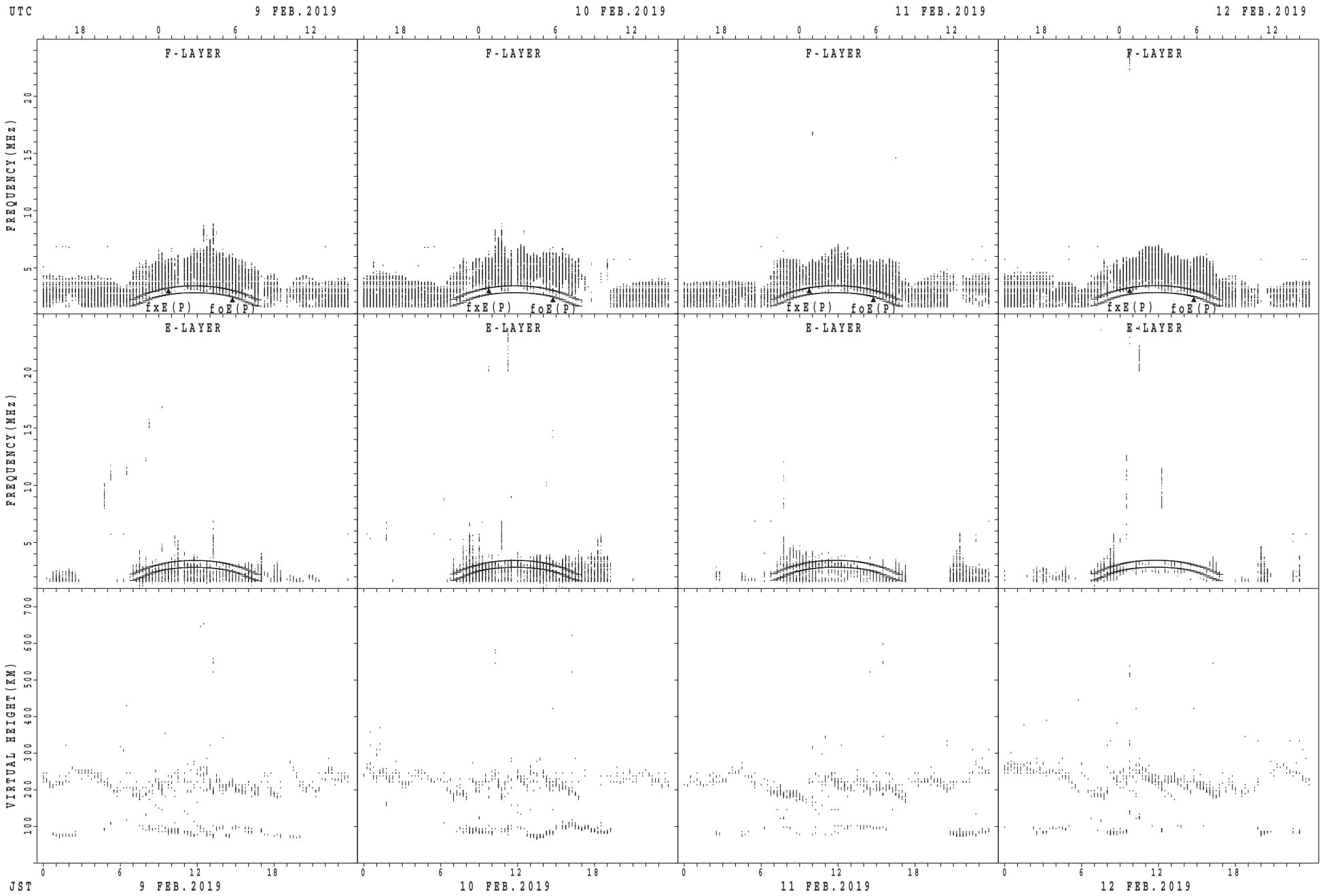
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



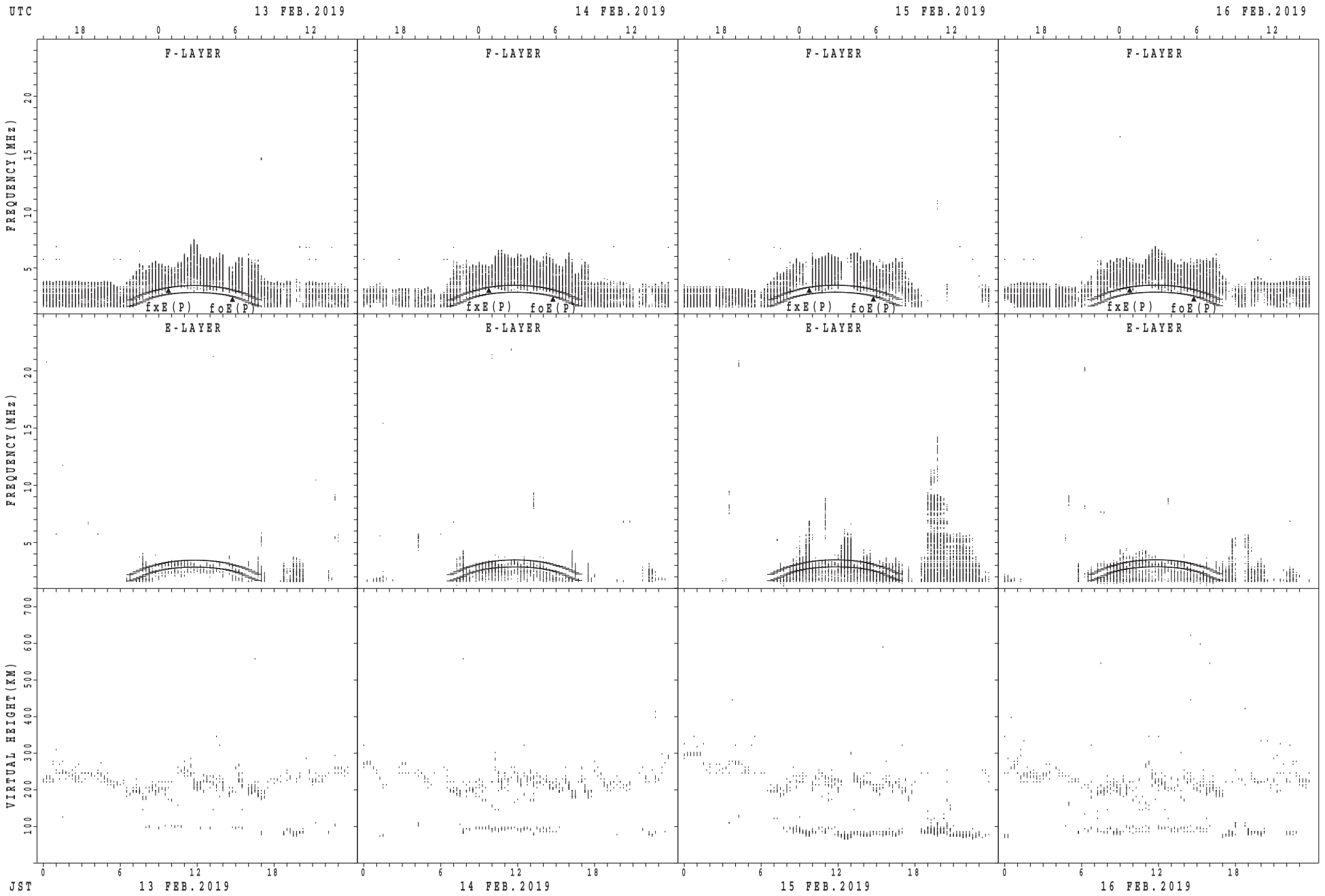
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



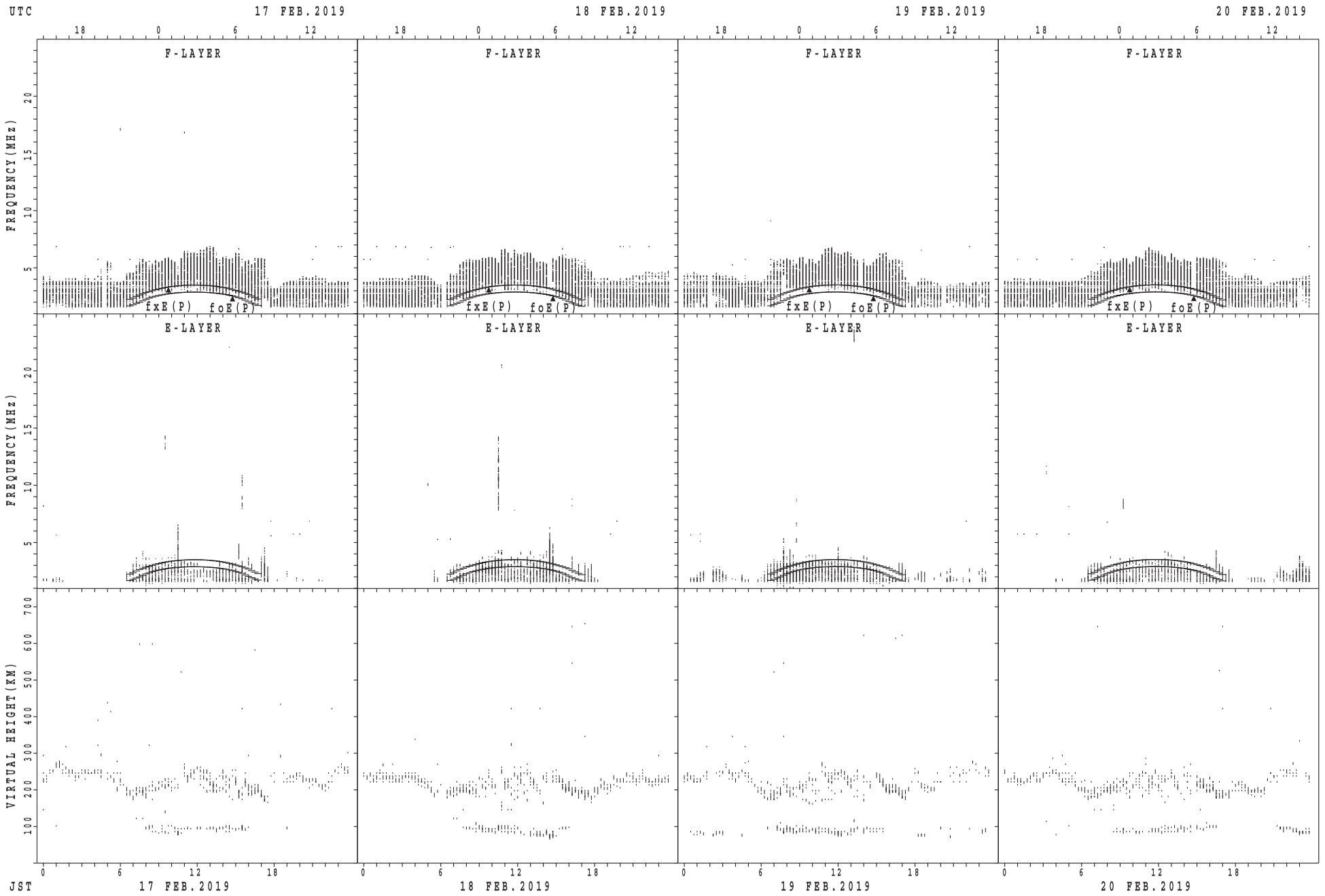
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



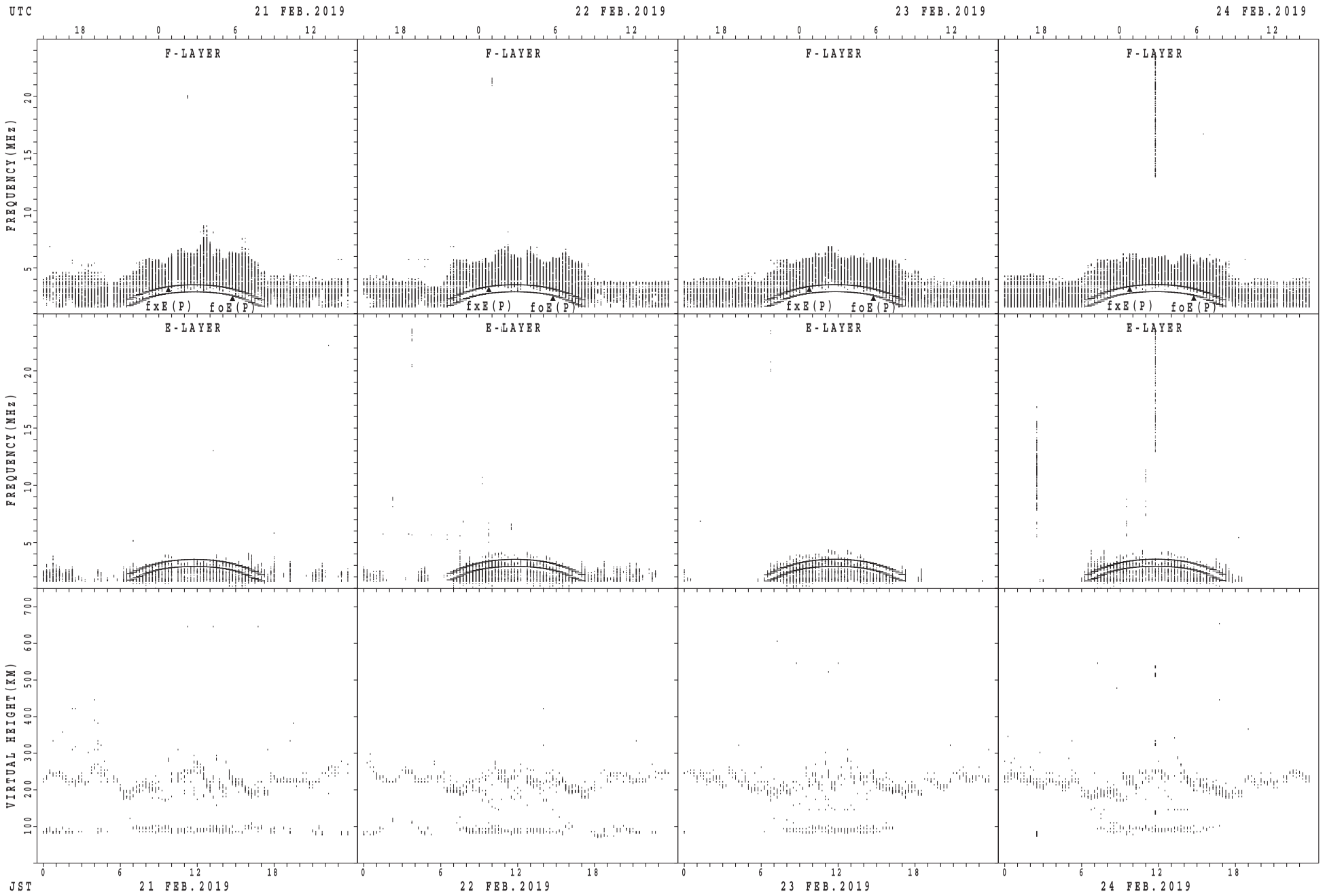
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



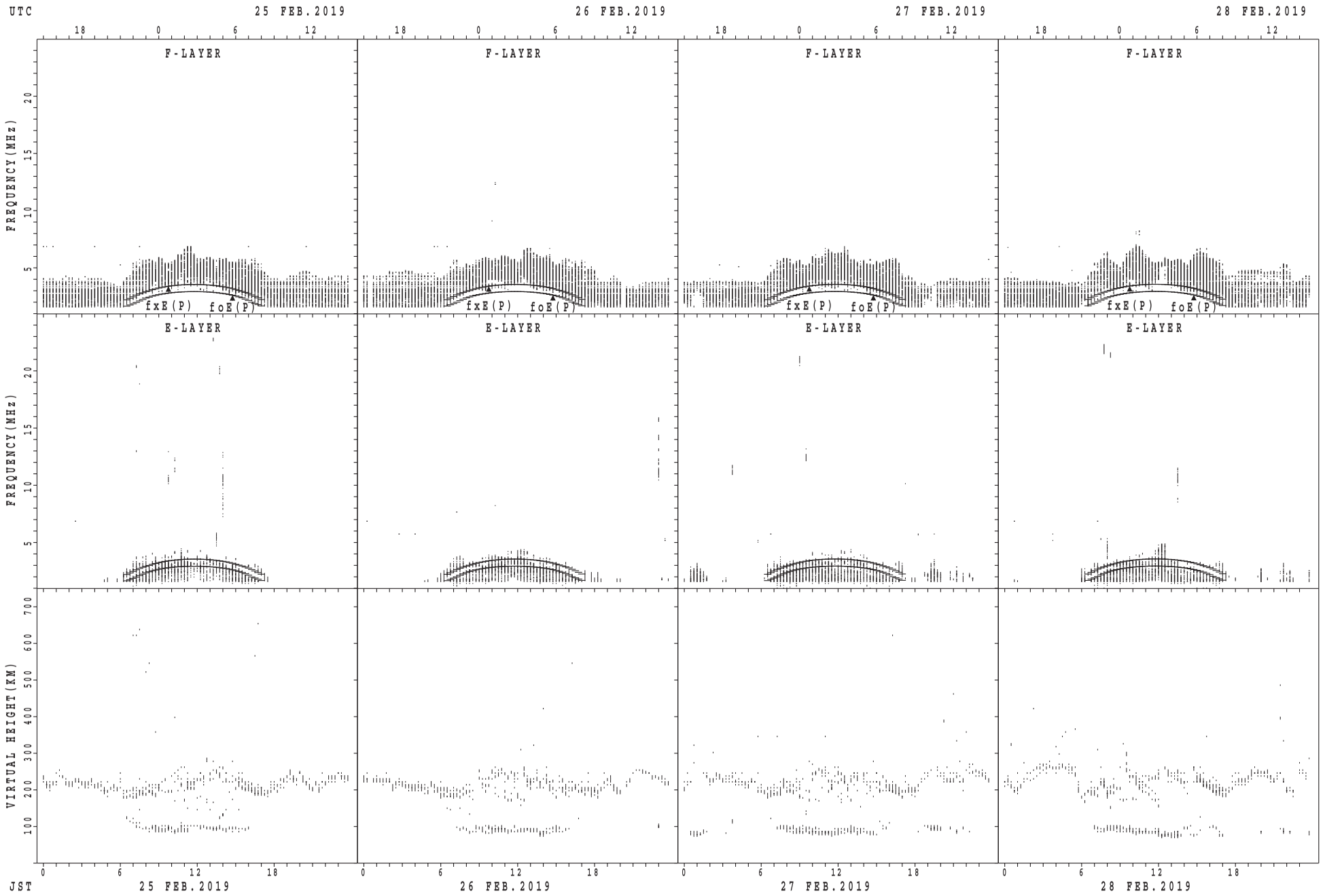
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



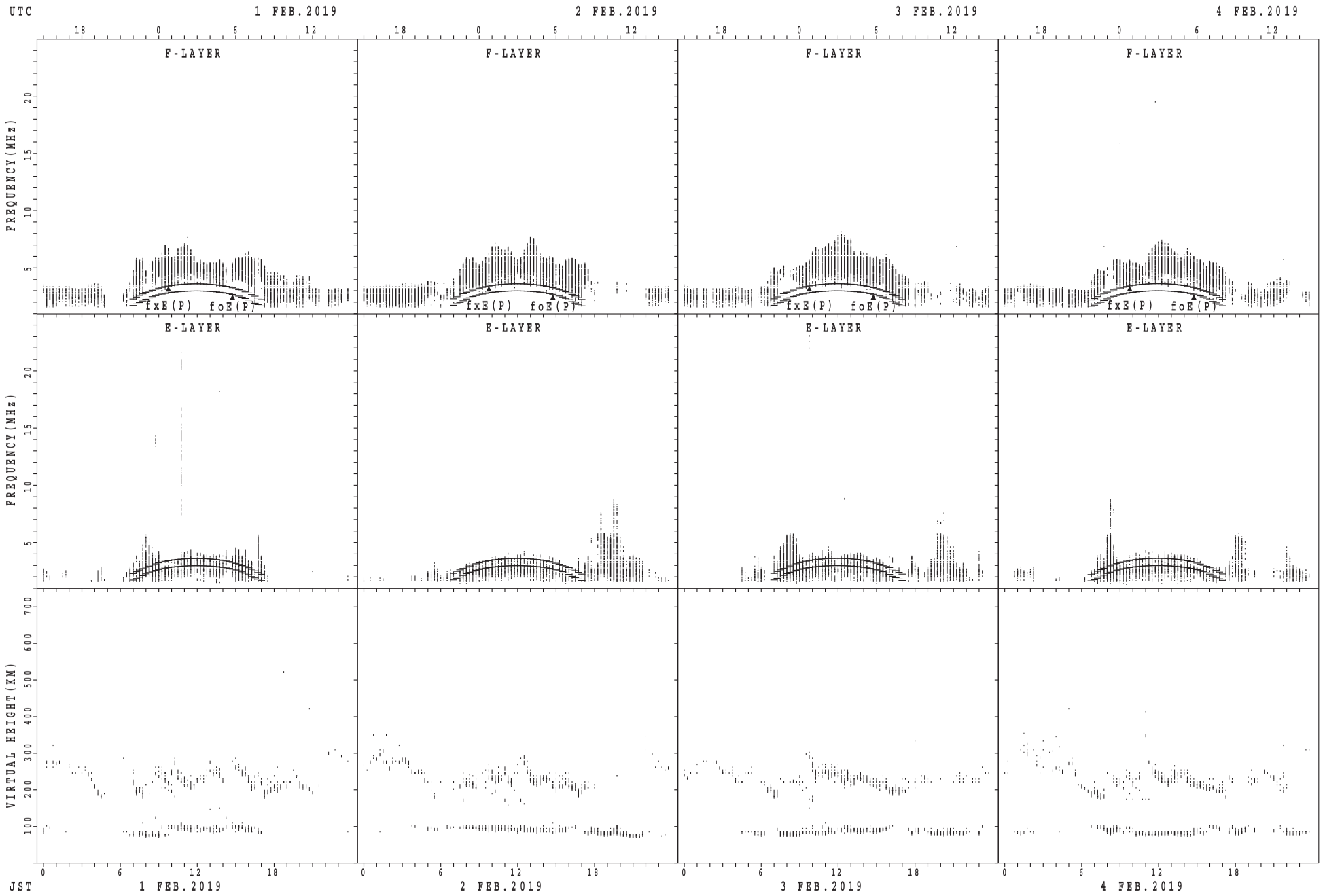
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



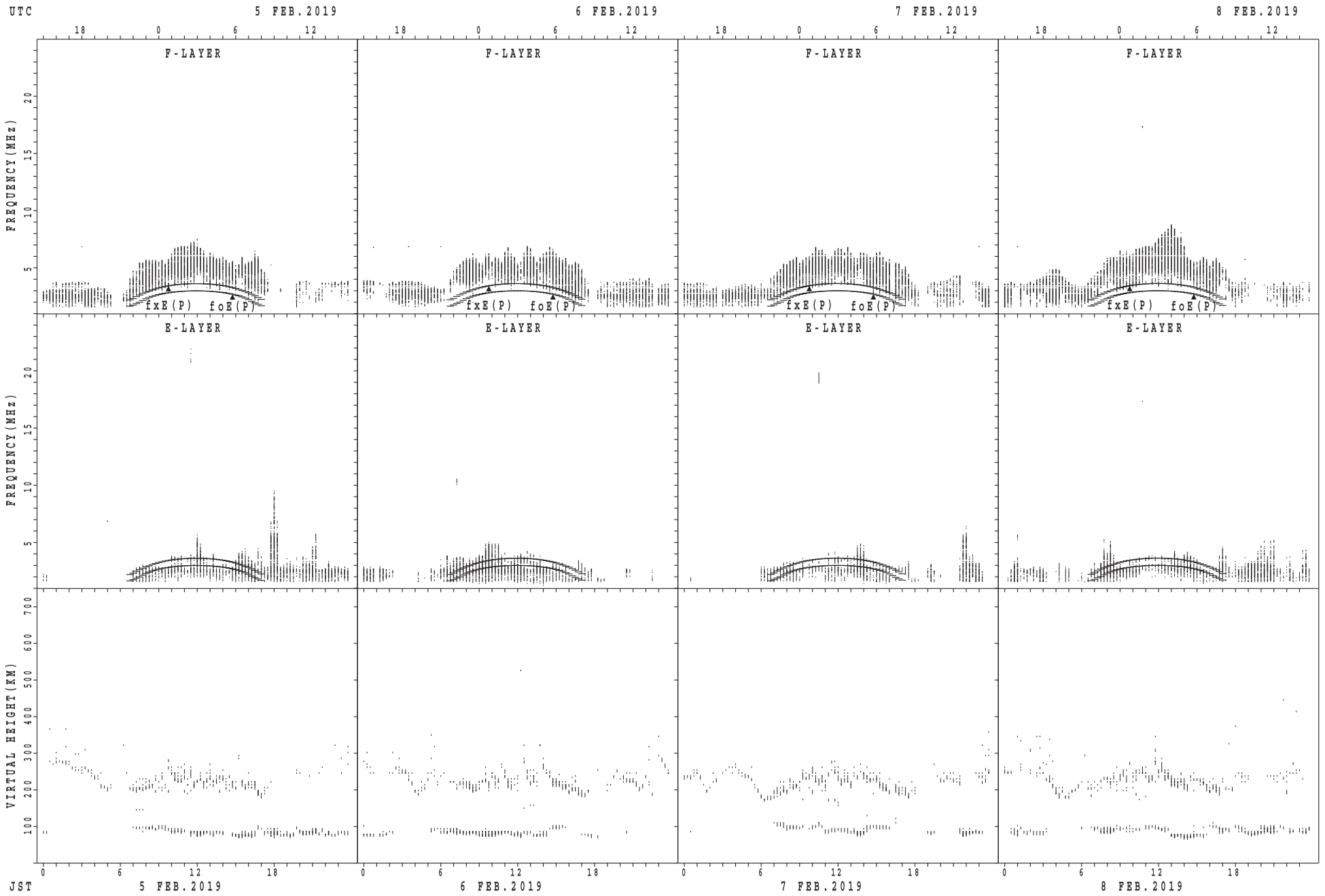
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



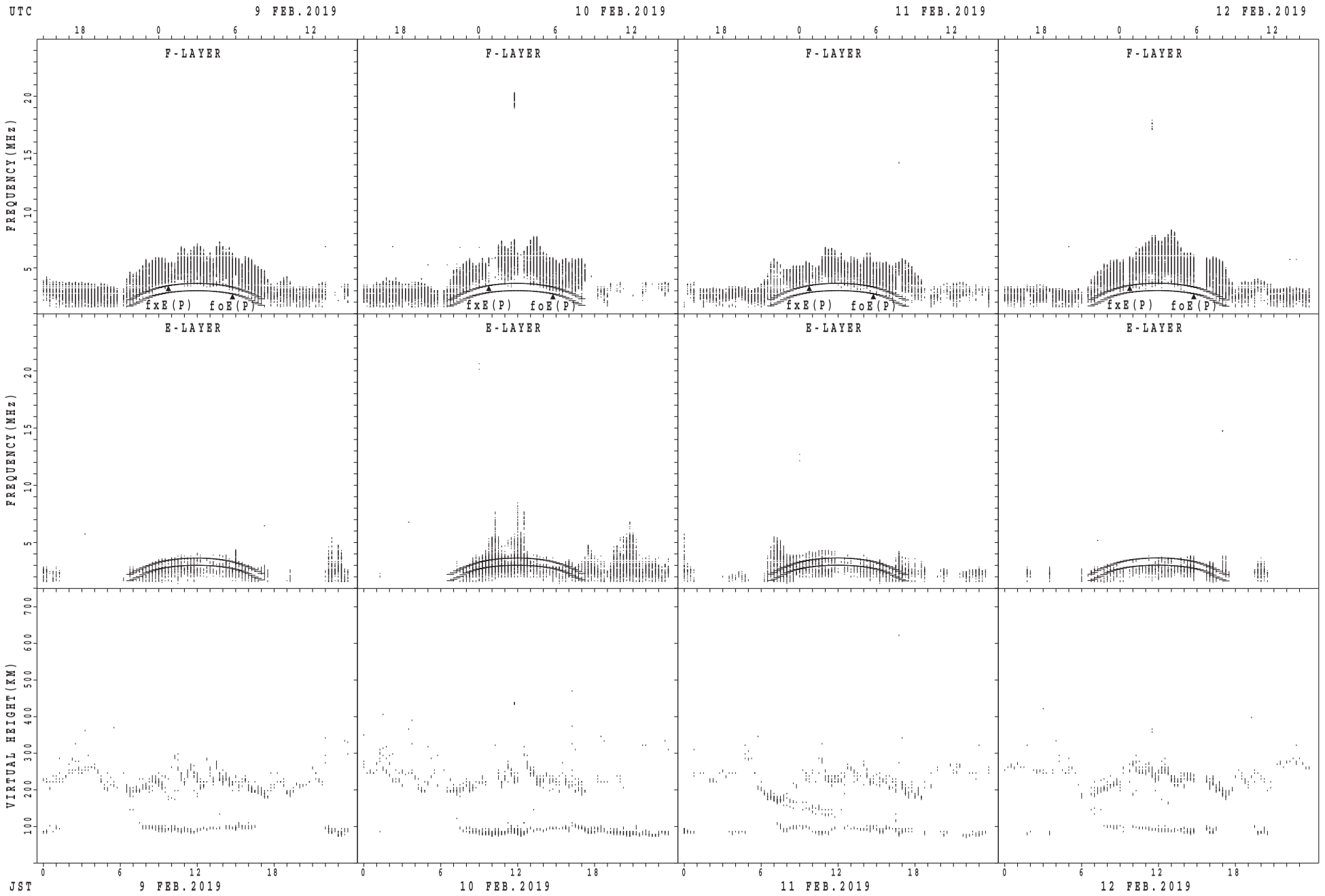
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



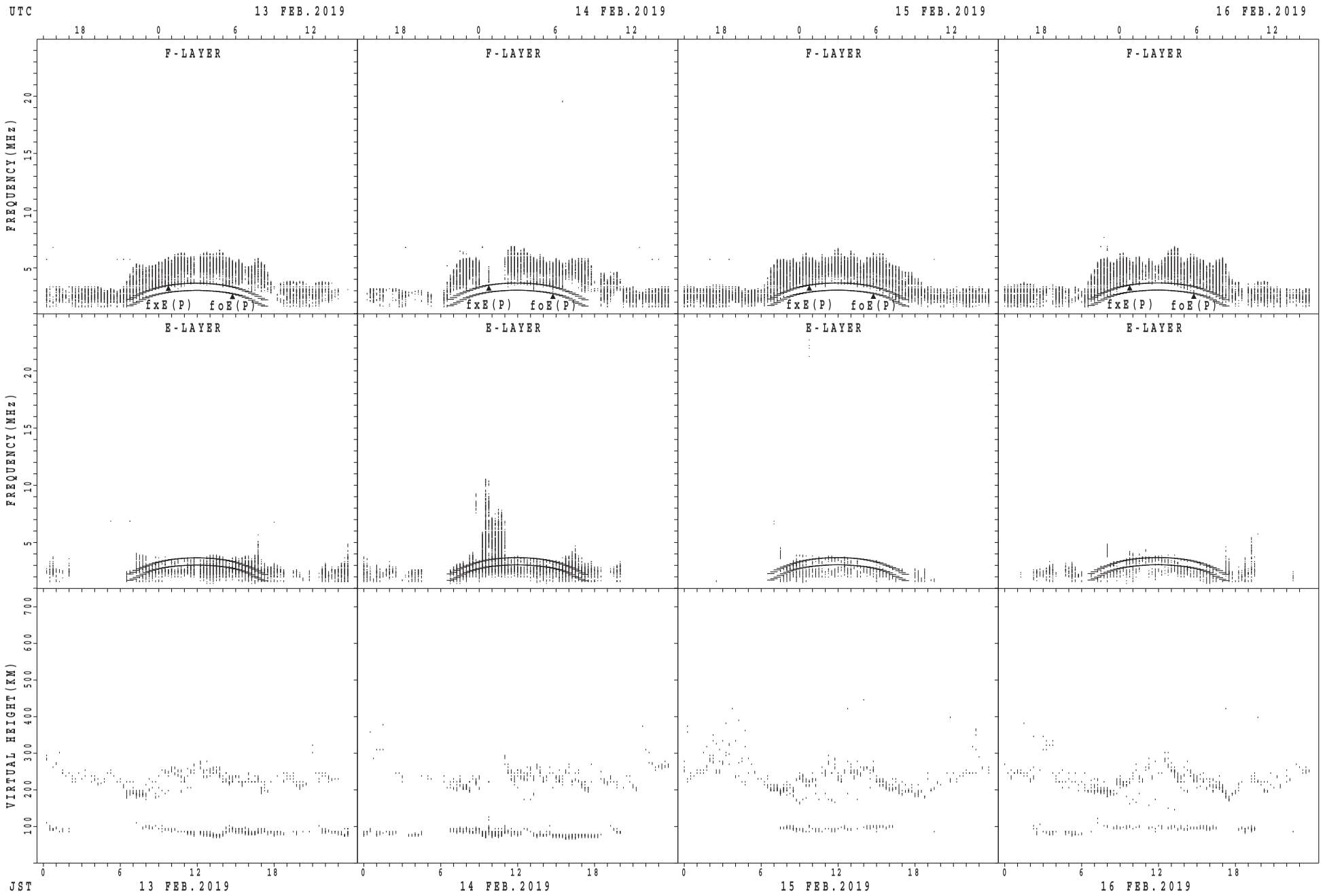
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



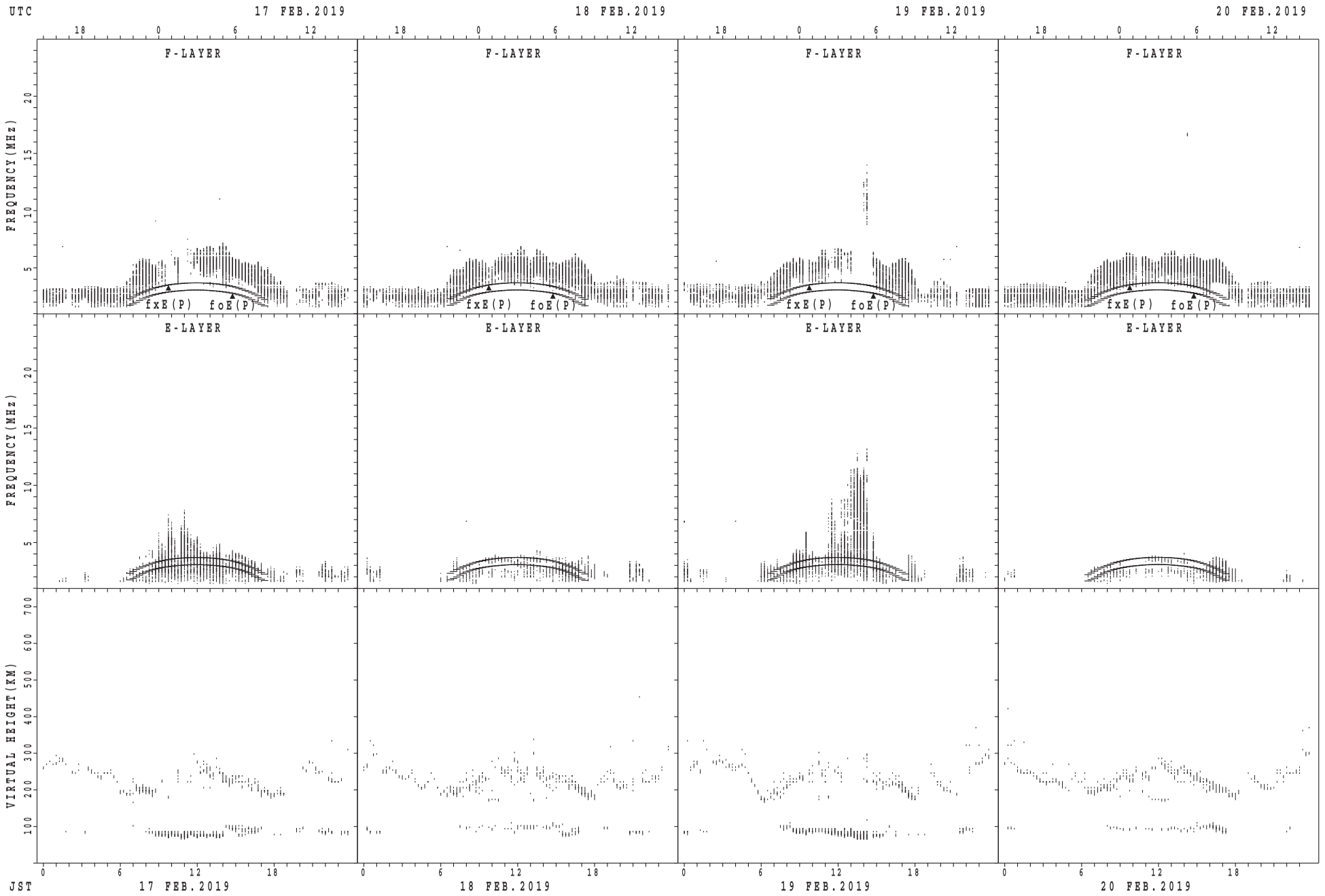
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



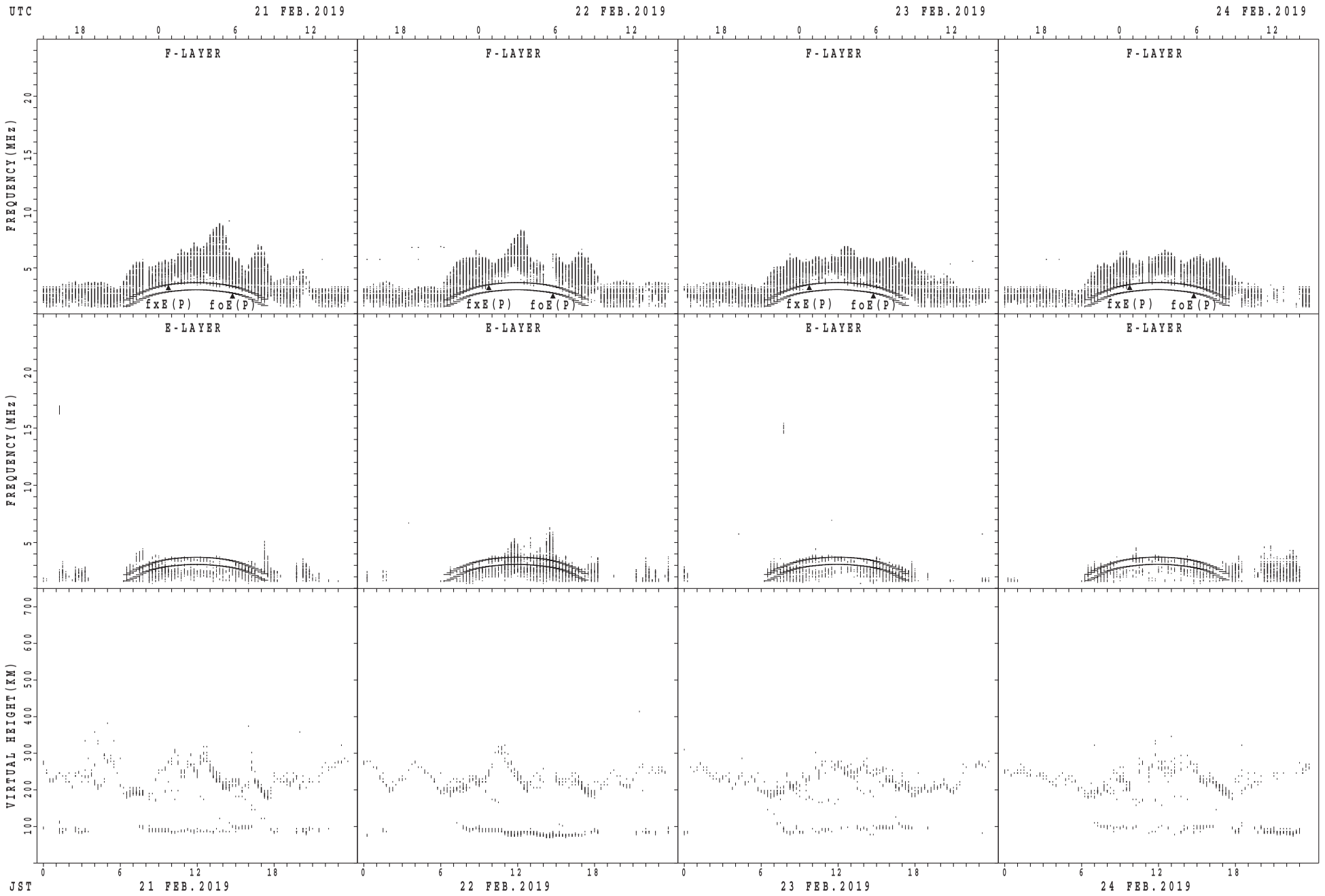
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



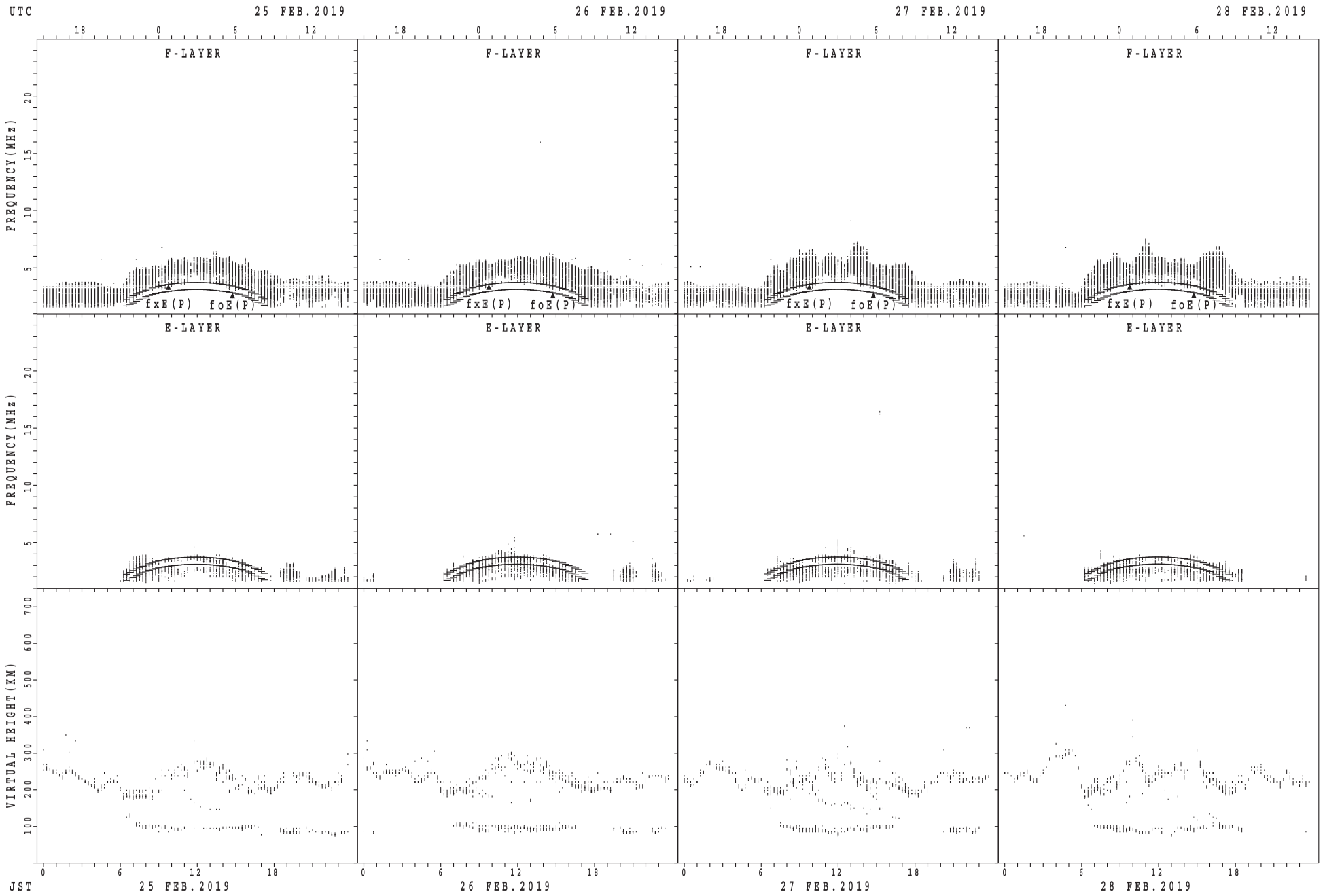
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



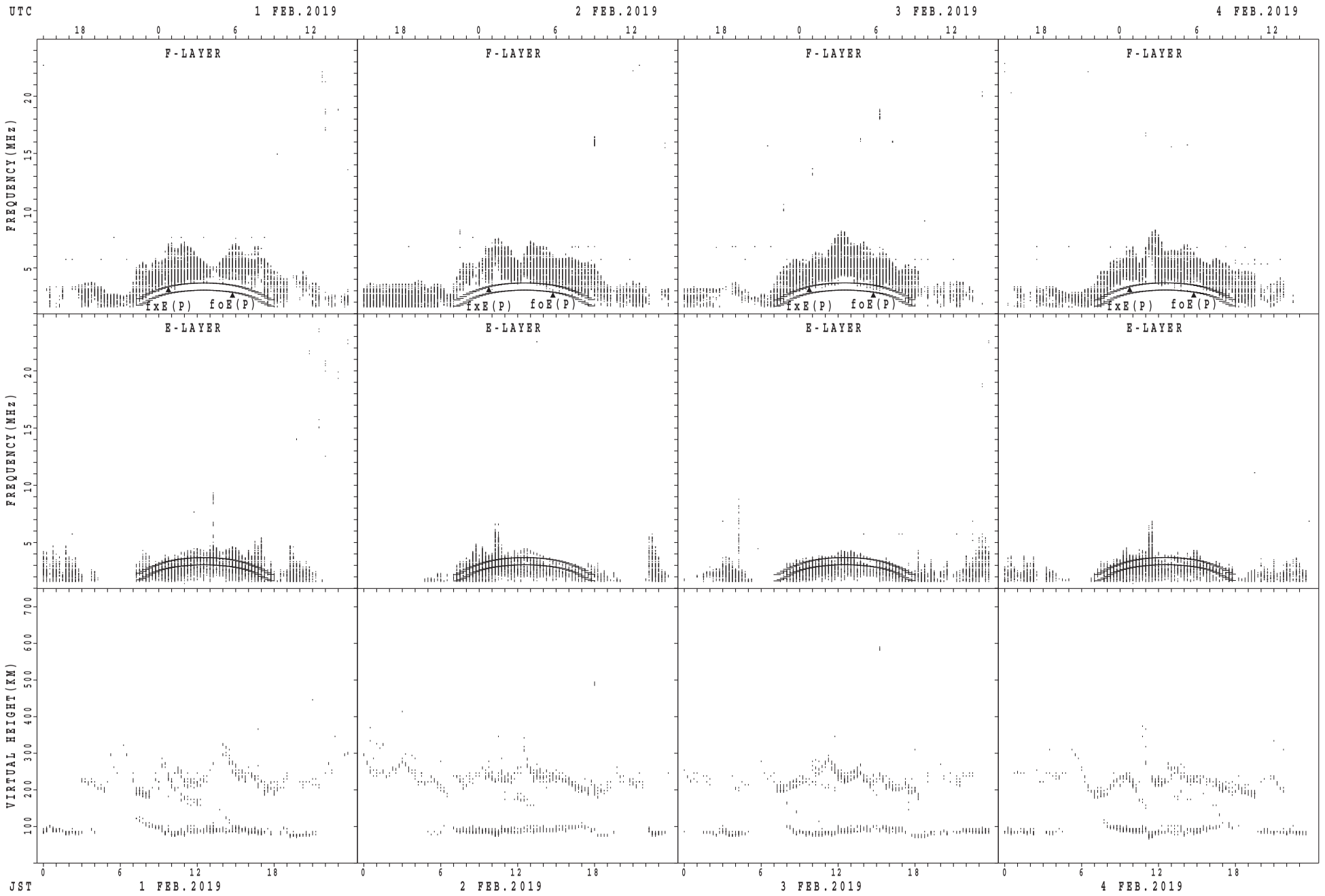
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



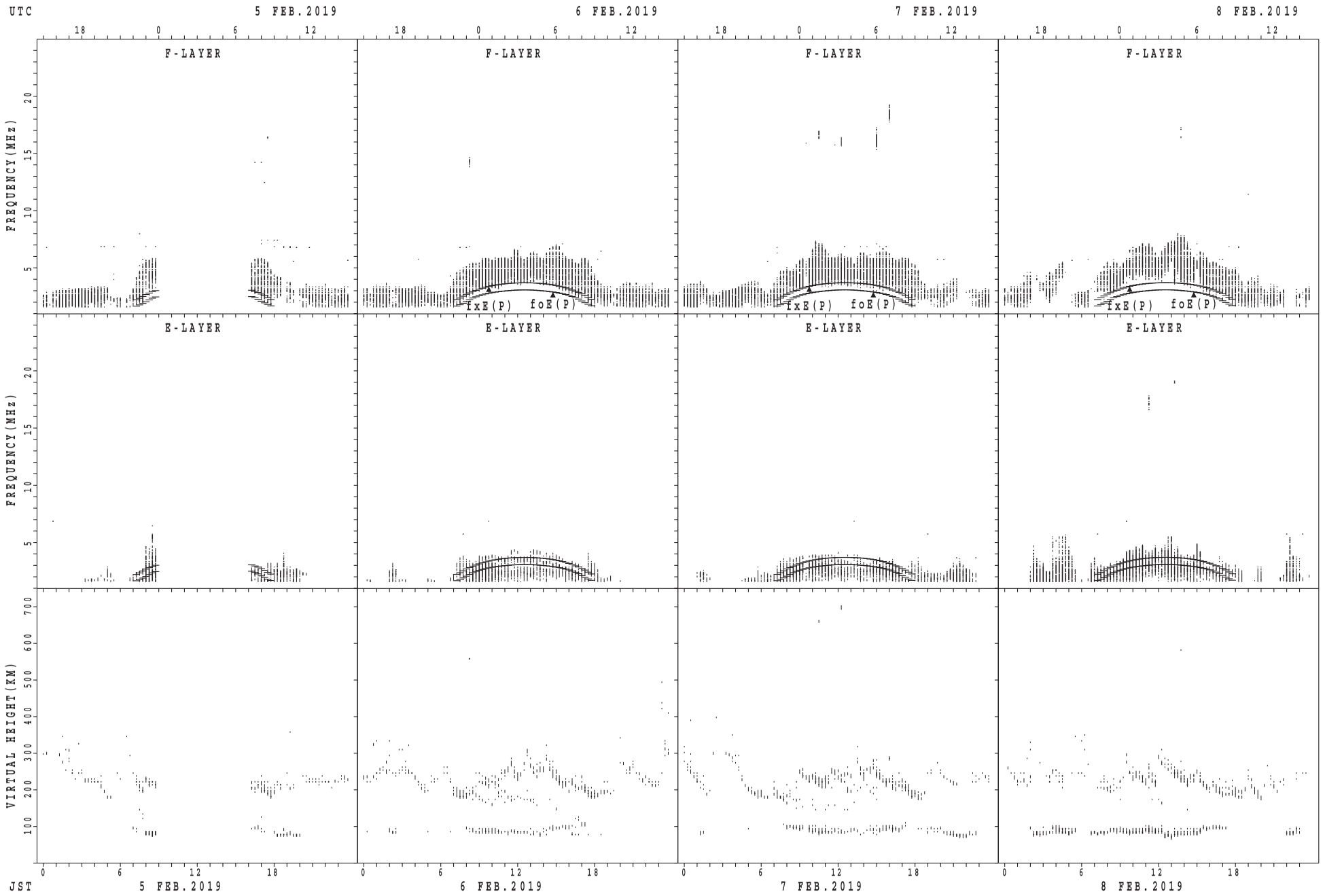
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



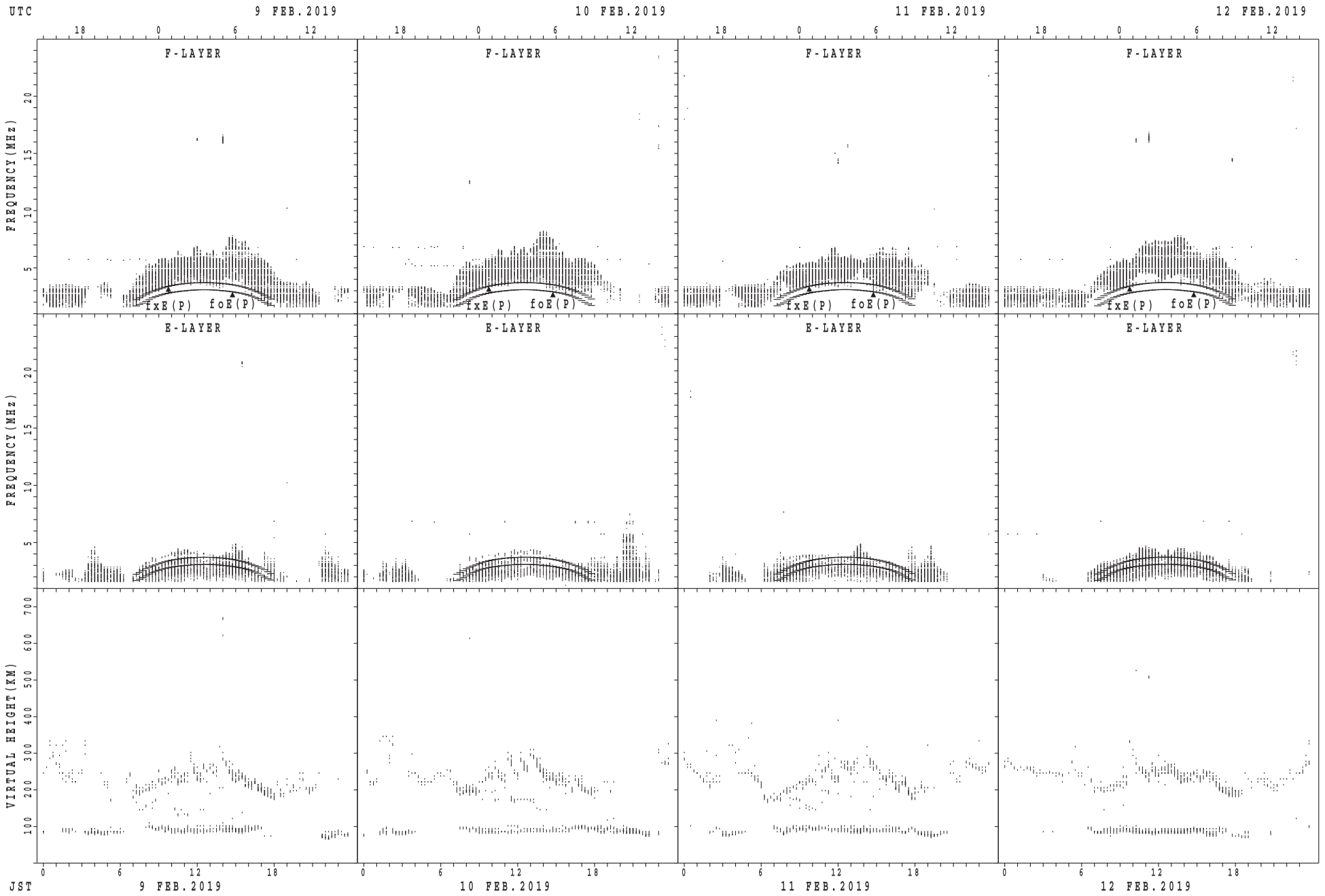
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



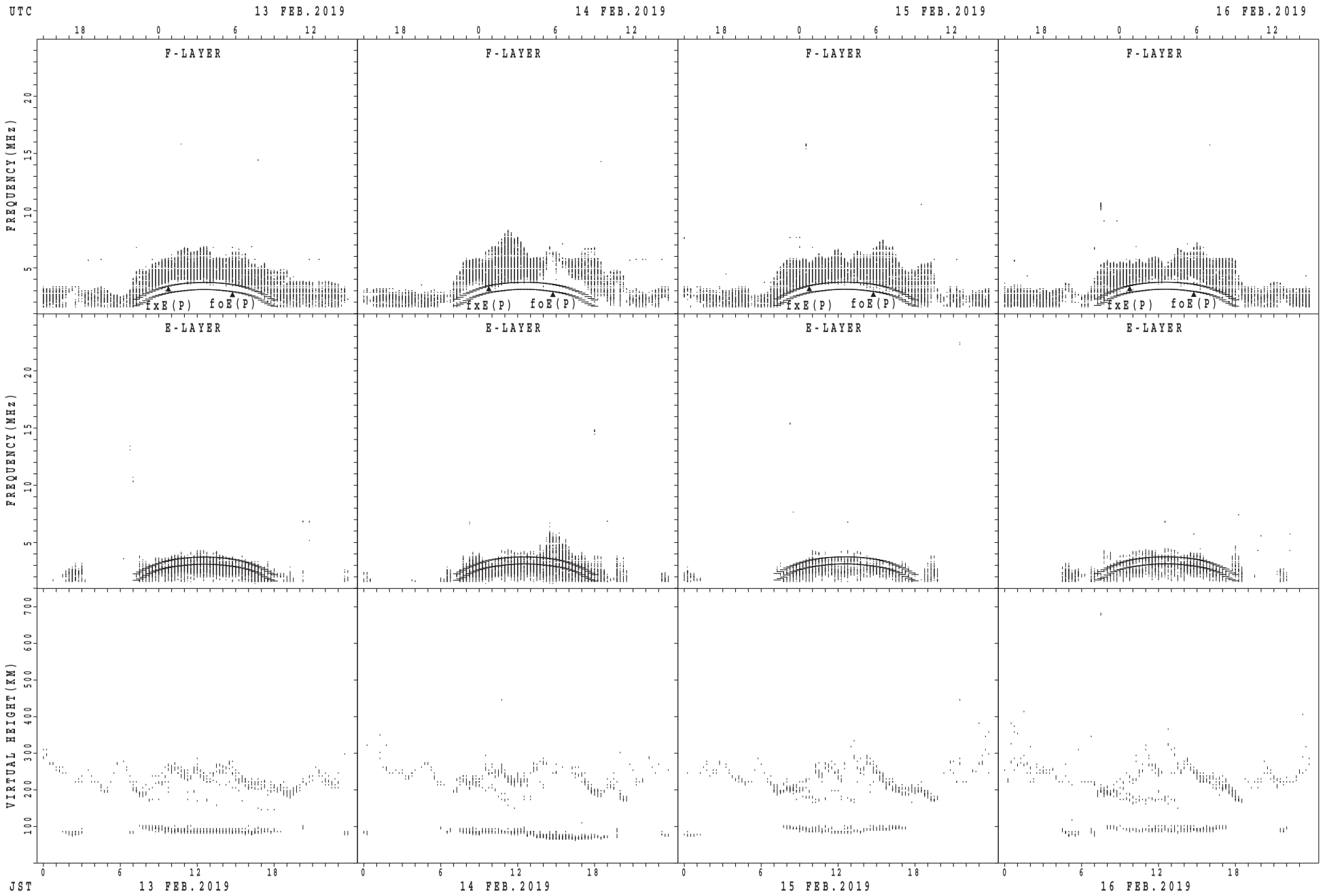
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



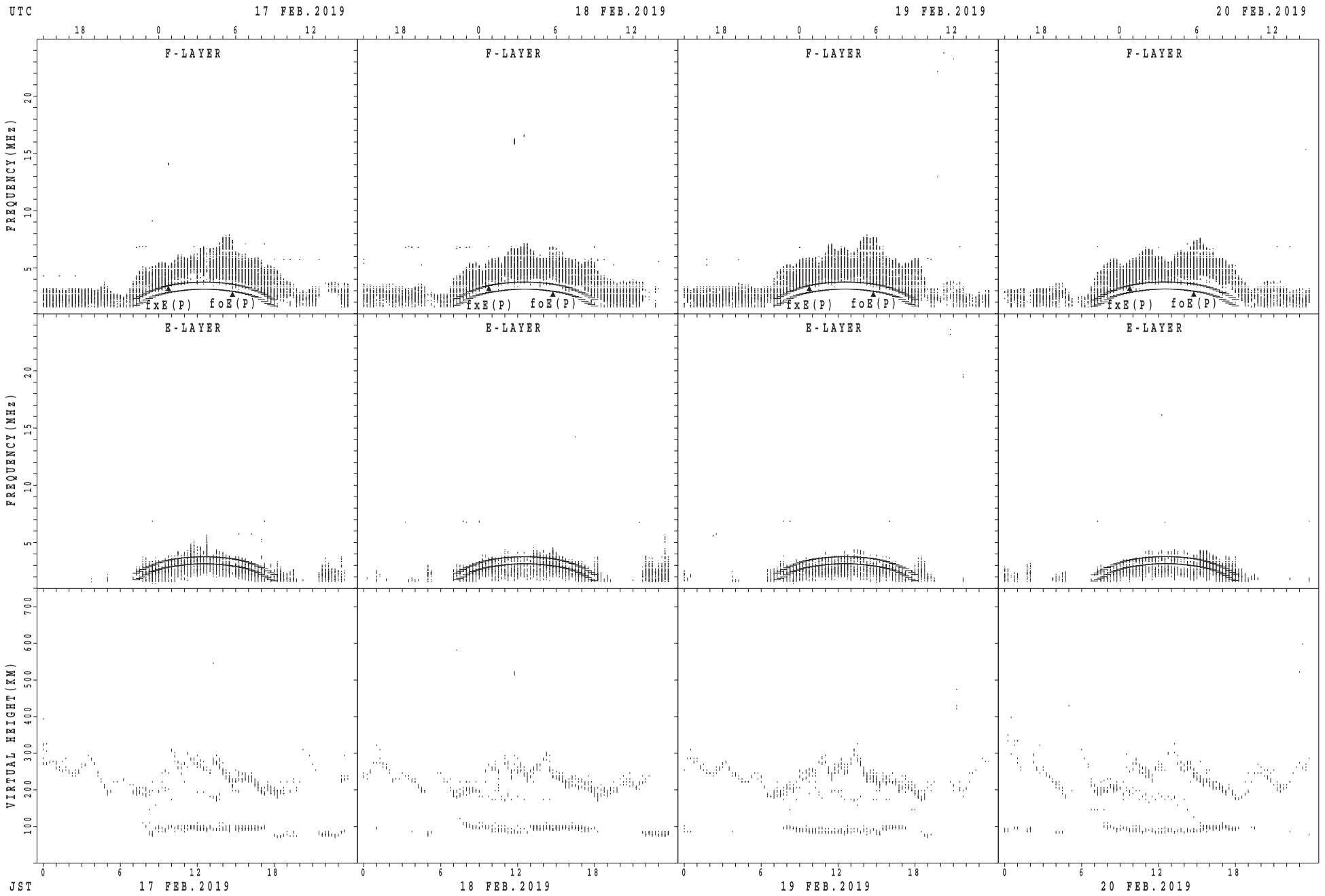
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



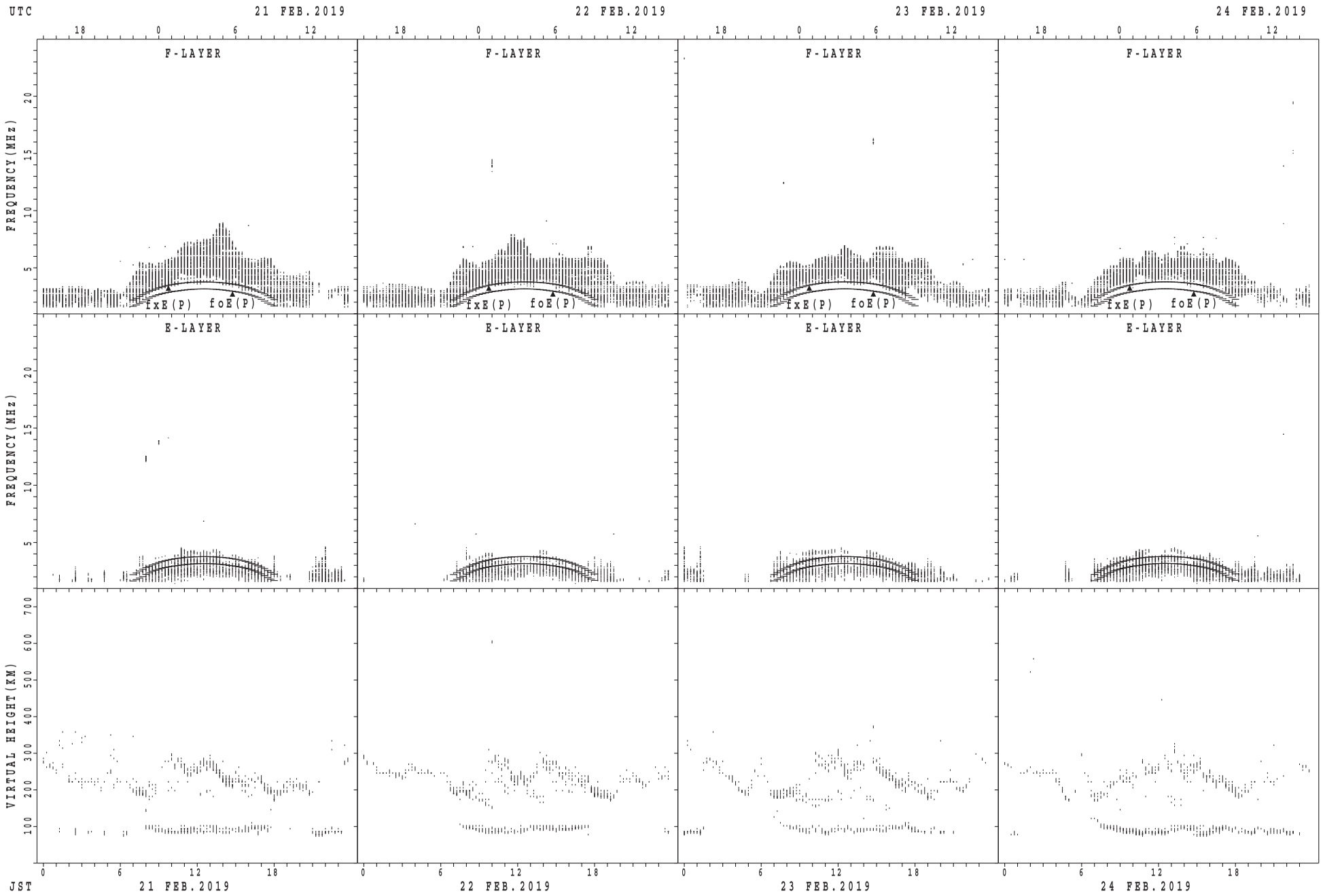
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

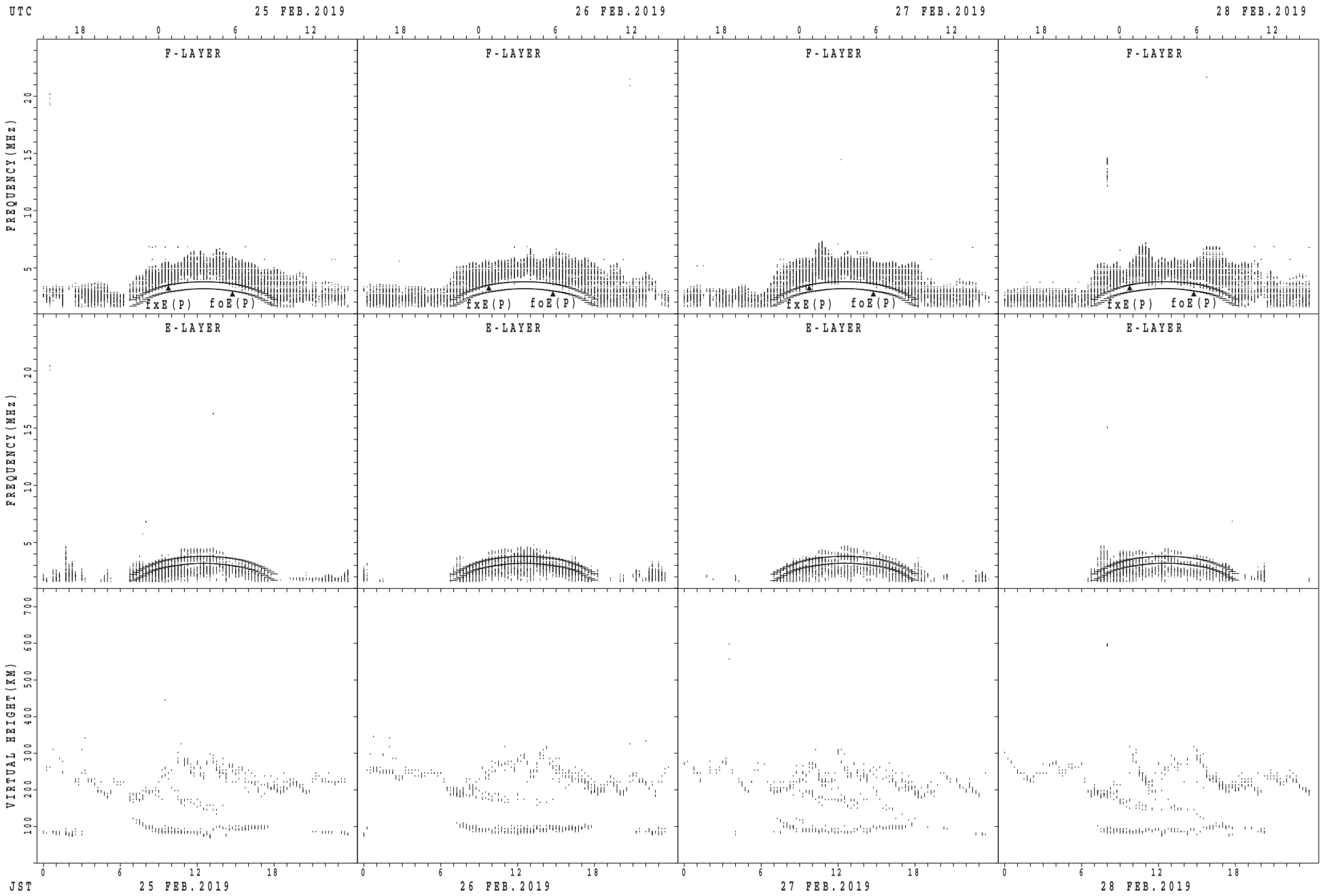


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

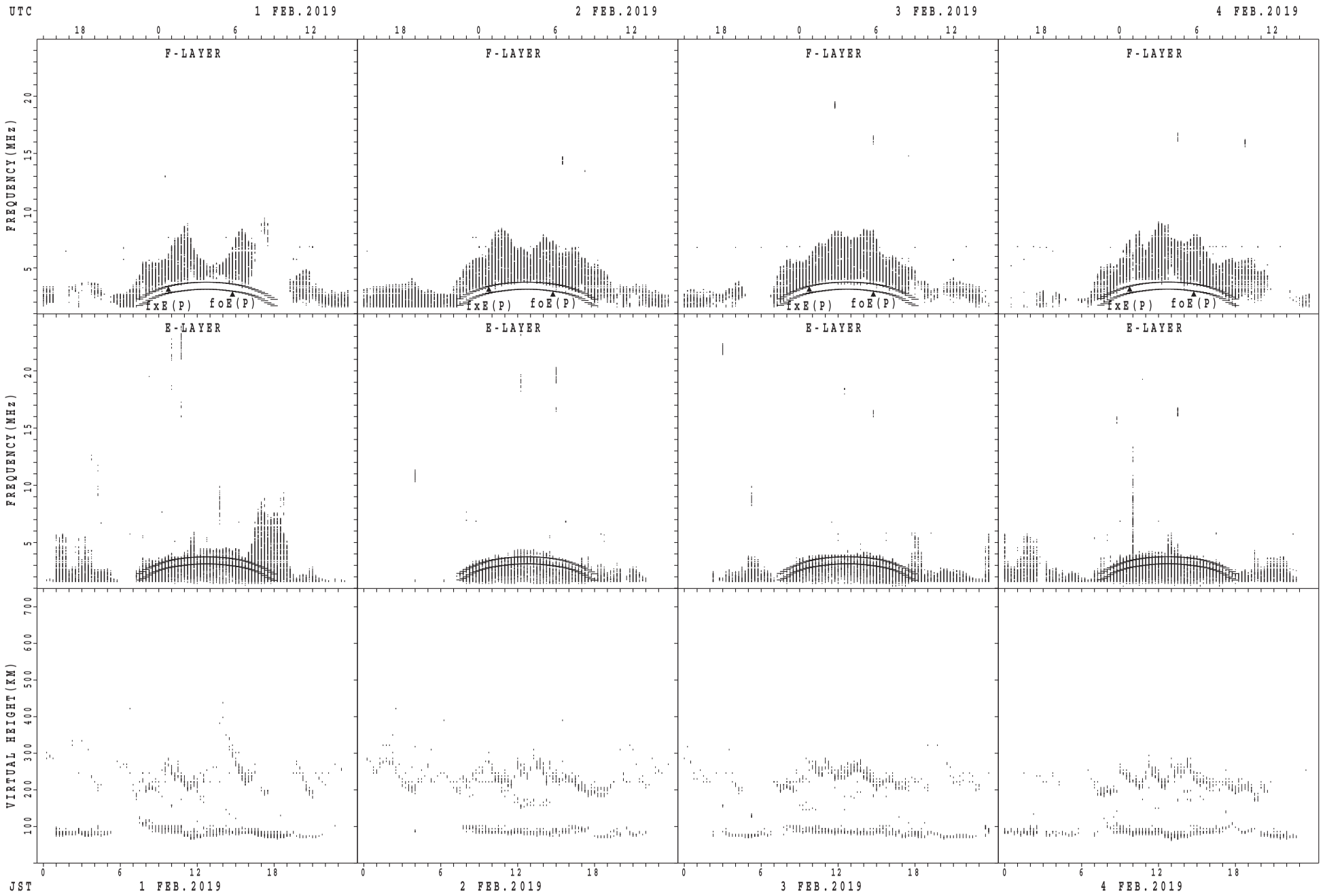
SUMMARY PLOTS AT Yamagawa



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

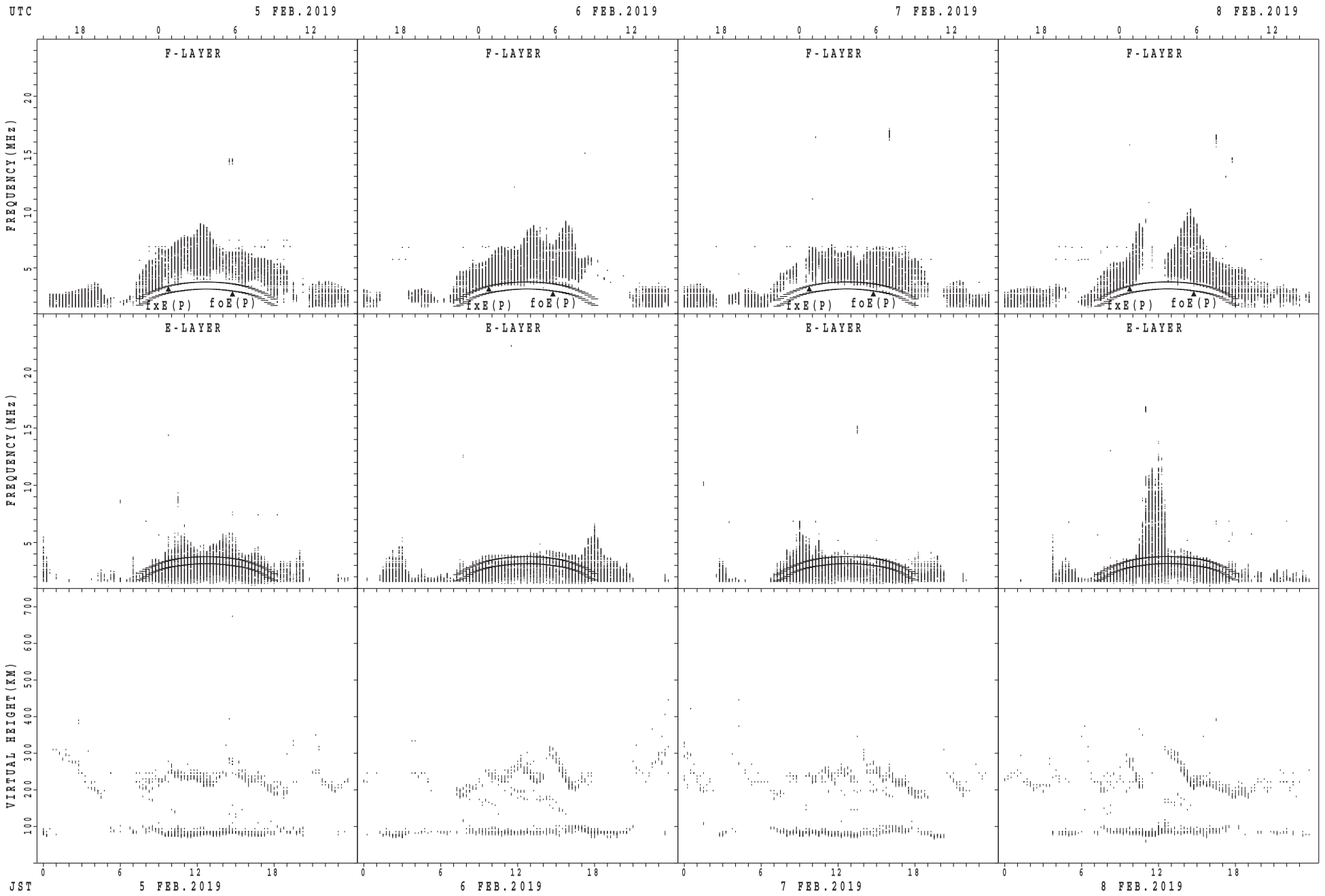

SUMMARY PLOTS AT Yamagawa
UTC
25 FEB.2019
26 FEB.2019
27 FEB.2019
28 FEB.2019
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



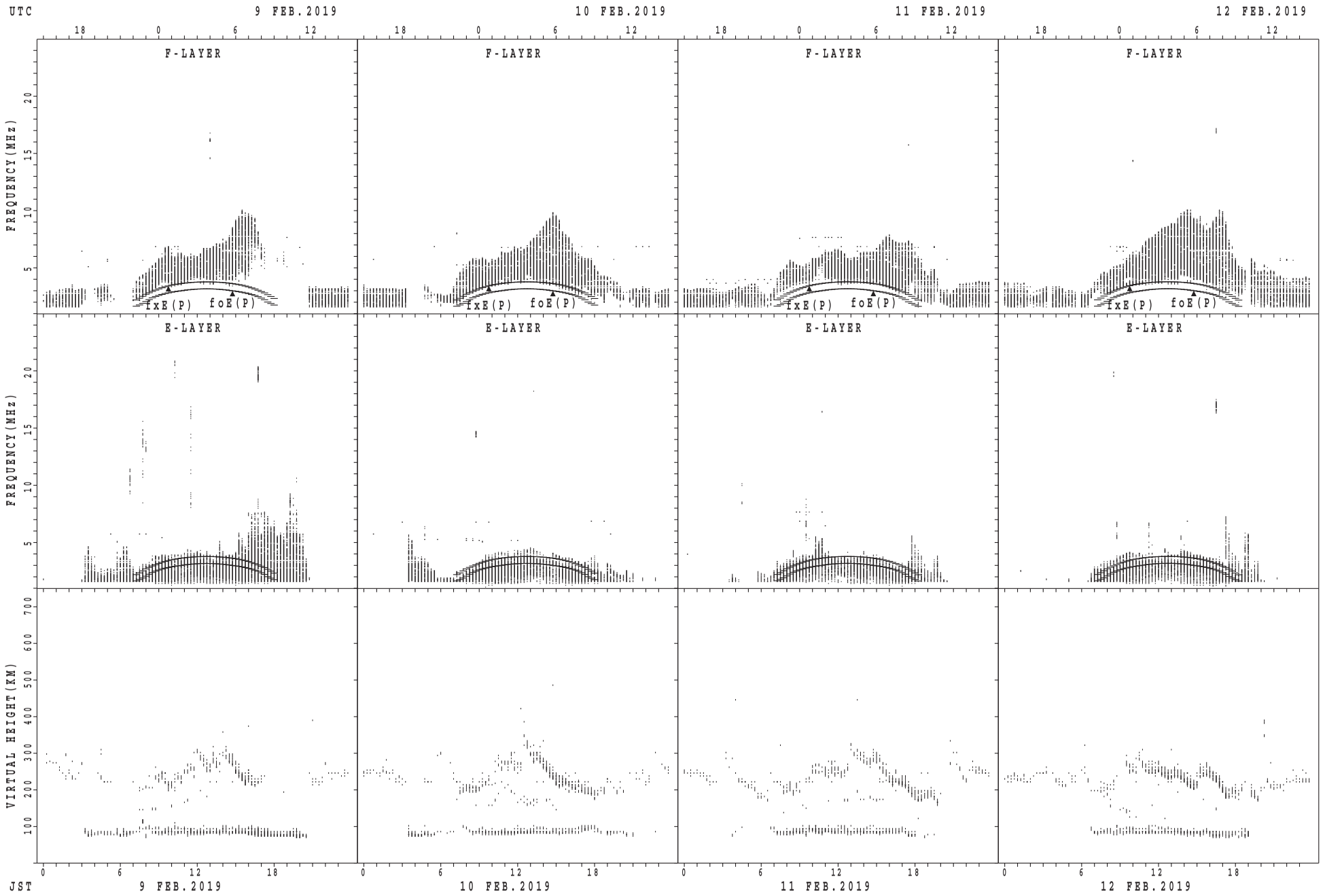
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



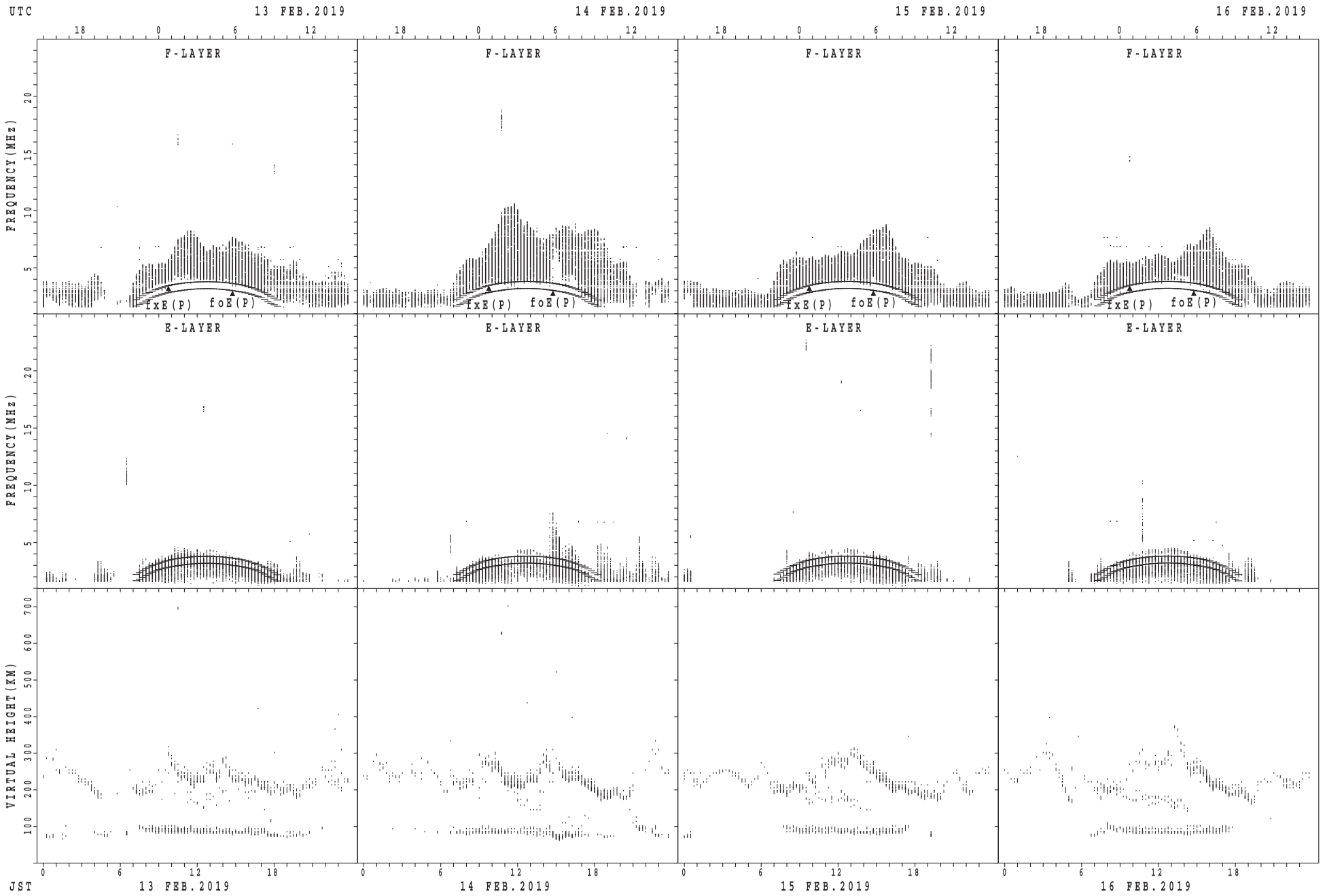
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



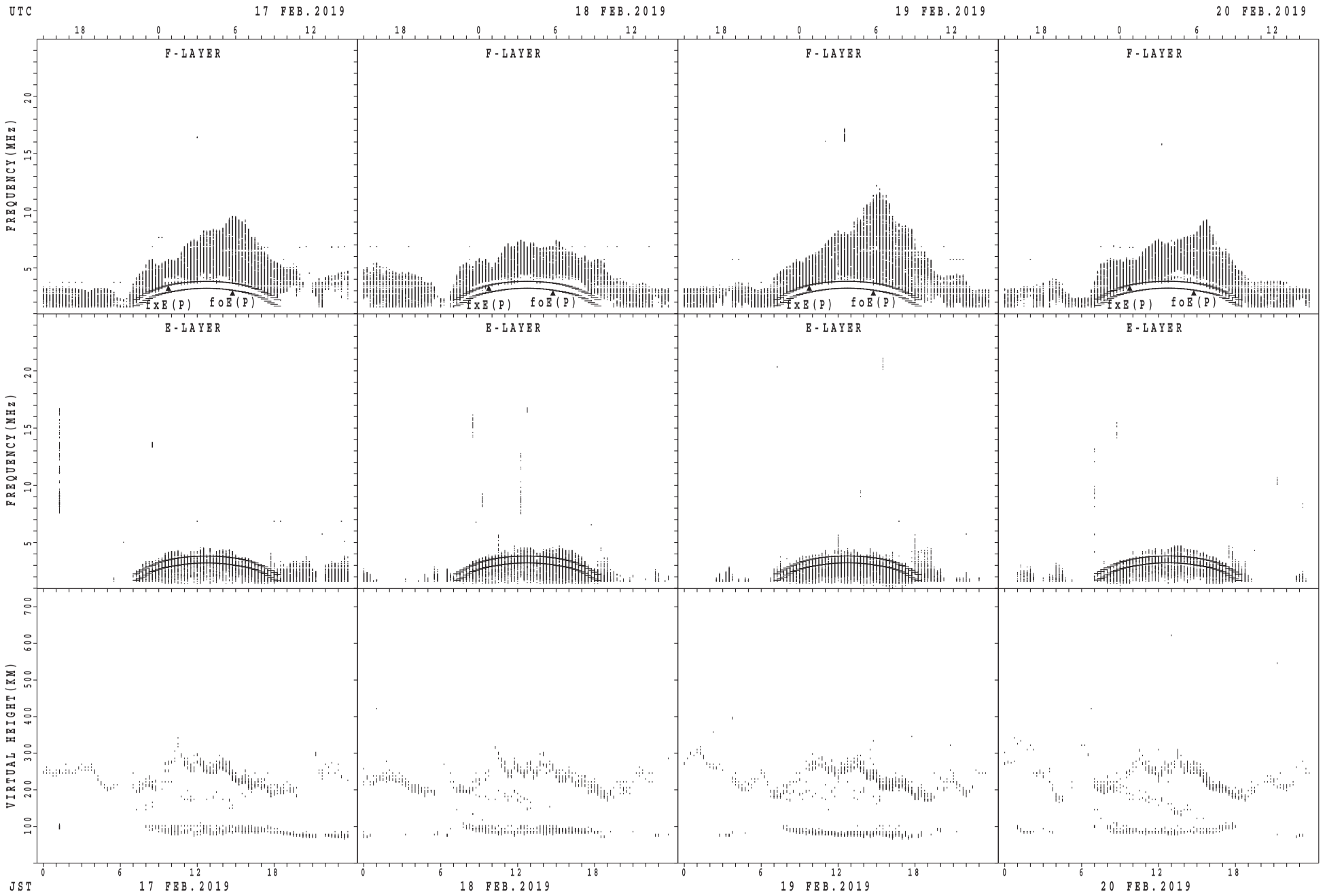
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



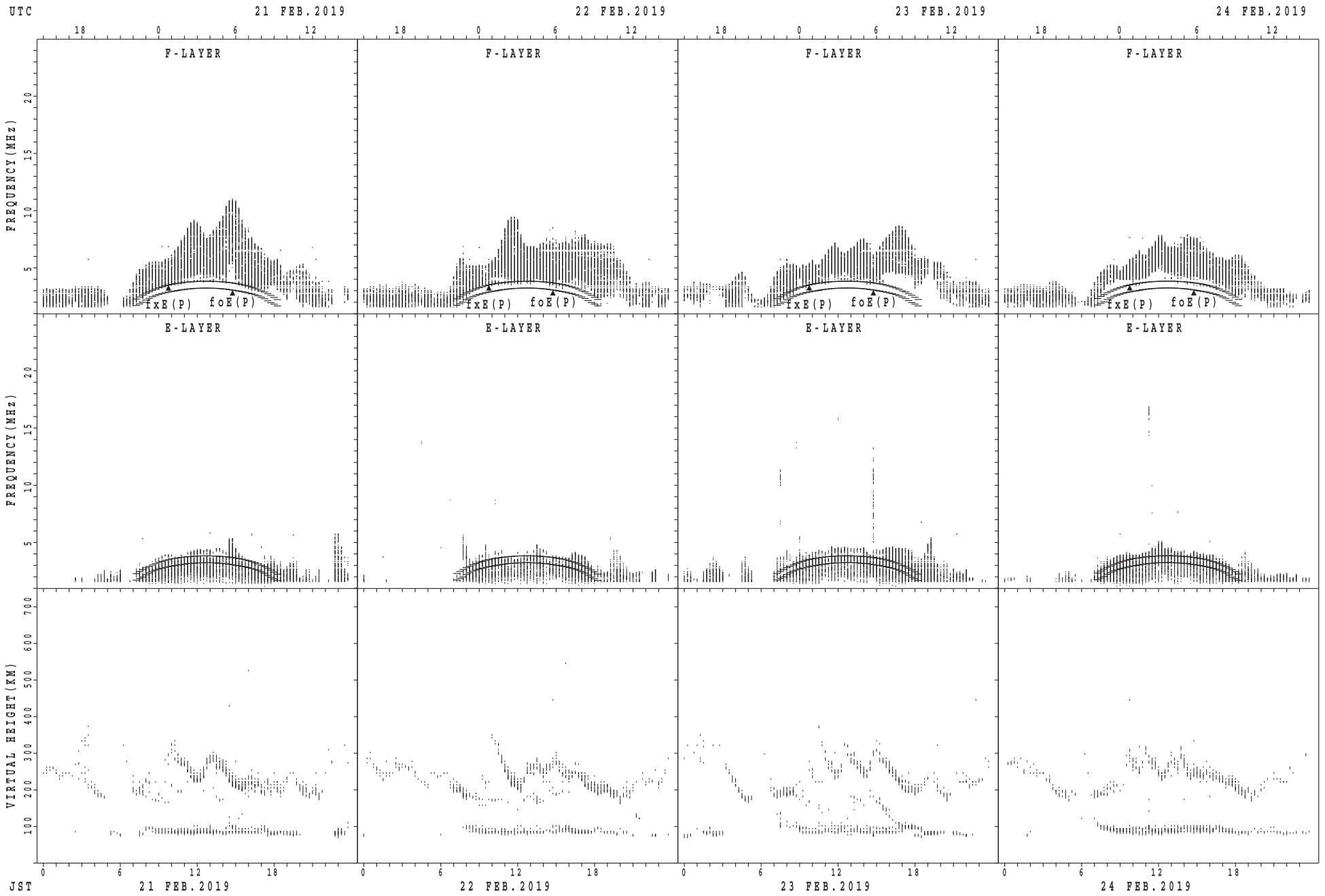
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



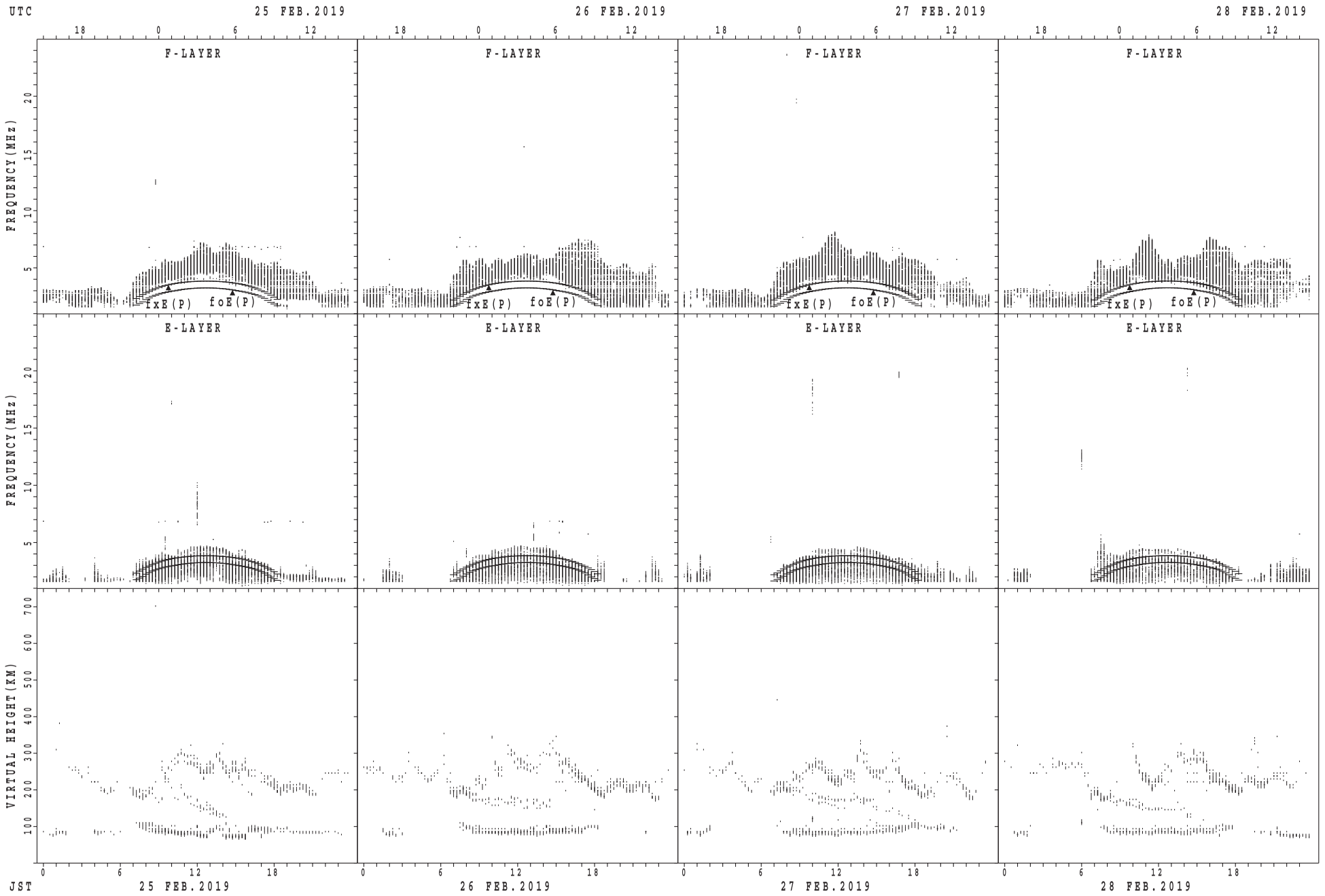
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

FEB.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									1	2	2	4		3	5	4	1	1						
MED									196	226	239	228		246	226	239	222	230						
U Q									98	232	256	243		268	256	245	111	115						
L Q									98	220	222	202		230	224	235	111	115						

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	5	4	5	5	5	6	5	19	22	19	21	20	17	17	18	15	9	14	11	9	12	9	6	8
MED	83	82	89	87	89	105	95	163	137	113	167	161	149	165	155	95	101	92	91	95	89	89	84	89
U Q	89	86	95	94	96	165	165	177	171	153	169	169	164	171	171	147	123	171	105	99	93	90	85	92
L Q	79	80	82	84	86	93	89	125	101	91	113	100	93	128	89	93	88	87	83	89	84	85	81	84

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	6	2				2	2	1	2						
MED									220	241	266				251	261	252	216						
U Q									110	246	274				258	272	126	226						
L Q									110	236	258				244	250	126	206						

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	7	6	6	3	1	3	6	16	18	17	19	16	22	15	16	21	19	15	18	11	13	9	16	12
MED	87	92	89	89	81	95	133	124	97	91	97	94	95	95	86	95	99	91	89	87	89	89	87	84
U Q	89	97	91	91	40	181	185	157	97	167	171	121	165	167	98	107	113	103	99	97	92	92	92	90
L Q	81	87	89	81	40	87	83	98	91	82	87	88	81	87	80	83	87	89	89	83	88	85	83	82

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	6					6	5	2						
MED										240	250					240	242	226						
U Q										120	266					248	261	226						
L Q										120	228					236	226	226						

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	9	10	8	5	7	3	12	21	25	23	25	24	20	18	21	20	22	20	13	10	8	10	11
MED	89	89	89	86	85	85	87	139	99	101	101	151	105	102	101	95	95	97	95	81	87	87	83	83
U Q	89	96	89	88	89	171	89	165	122	165	165	169	168	167	167	104	97	99	120	93	89	89	87	87
L Q	81	86	85	83	81	83	87	89	93	95	89	95	90	90	91	90	89	91	88	77	83	84	81	79

MONTHLY MEDIANS OF h'F AND h'Es

FEB.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	8						20	12	1	1				
MED										258	249						233	225	212	240				
U Q										129	266						241	242	106	120				
L Q										129	239						215	208	106	120				

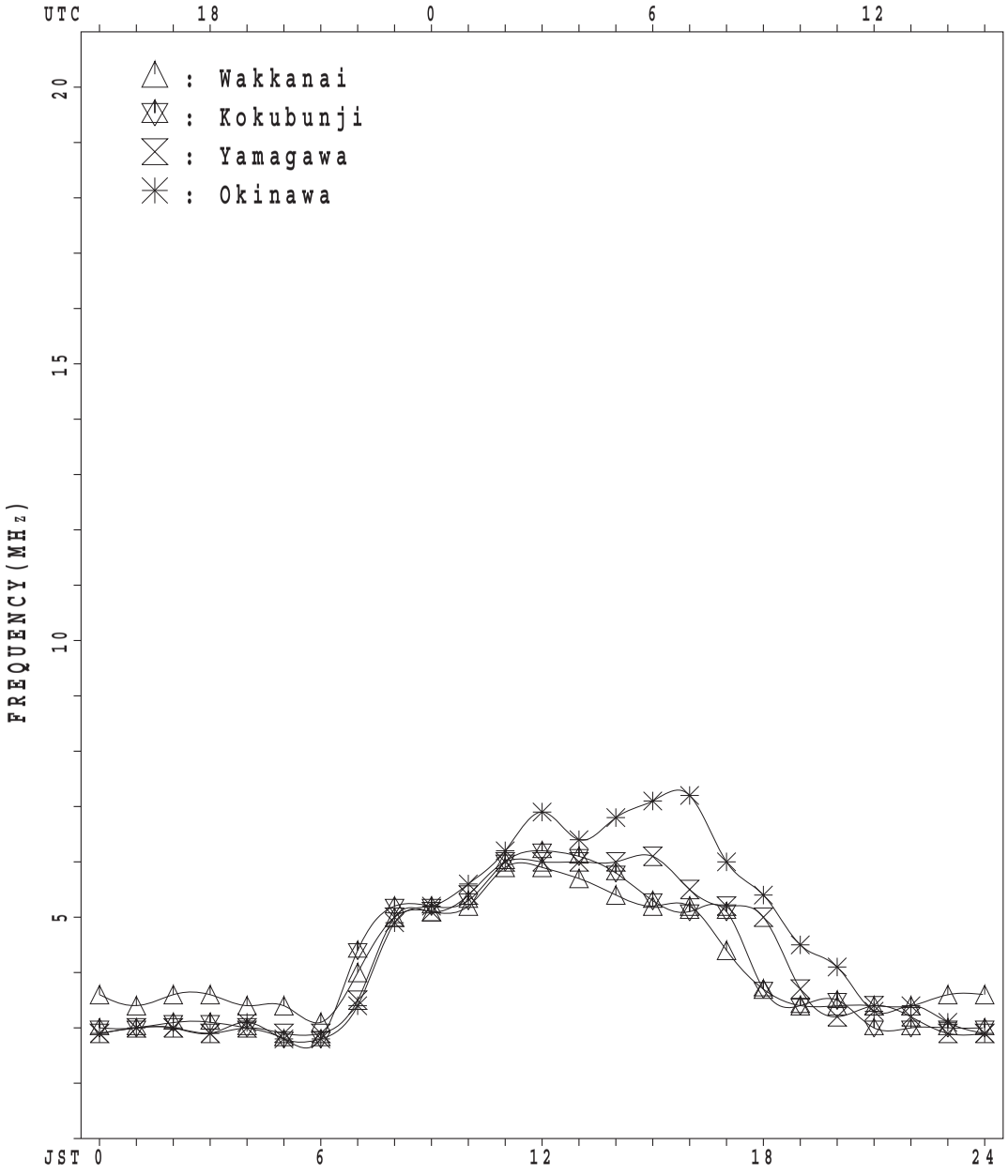
h'Es

	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	6	7	8	4	10	10	5	12	25	26	26	23	24	25	27	25	22	22	23	22	21	12	9	7
MED	79	87	91	83	87	82	83	98	107	95	101	101	111	143	145	97	95	95	89	83	83	82	81	79
U Q	89	95	101	84	89	169	108	131	125	125	165	163	164	167	167	152	111	101	105	97	89	87	89	91
L Q	75	83	88	80	81	81	80	88	94	93	89	89	89	90	93	89	89	87	83	81	78	78	76	77

MONTHLY MEDIANS PLOT OF foF2

FEB.2019

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

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

FEB.2019 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

FEB. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB.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	L		L	L	L							
2									L	312	L	L	L	L	L									
3										L	L	400	L	L	L		L							
4								L	L	L	L	L	L	L	L	L								
5										L	L	L	L	L										
6									292			L	L	L	L									
7									L		L	L	L	L	L	L								
8											L	L	L	384	L	L								
9										L	L		L	L	L	L								
10											L	L	L	L	L	L								
11										L	L	384	L	L	L	L								
12								L	L	L	L	L	408	L	L	L								
13									L	L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L			L					
15								L	L	L	L	L	L	L	L									
16									L	L	L	L	L	L	L									
17									L	L	L	392	L	380	L	316	L							
18									L	L	L	L	L	L	L	L								
19							L			L	L	L	396	396	L	L	L							
20									L	L	L	L	400	L	L	L								
21									L	L	L	L	L	L	L	L	L							
22									L	L	L	L	L	368	L	L	L							
23										L	L	L	L	L	L	L	L							
24									L		L	L	L	L	L	L	L							
25										L	L	L	L	L	L	L								
26										L	392	408	L	L										
27										L	L	L	L	L	L	360								
28									L	L	L	412	416	384	L	L	L	L						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	1	5	4	5		2								
MED									292	312	392	400	404	384		338								
U Q												410	412	390										
L Q												388	398	374										

FEB.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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							B	B	212	248	276	276	276	276	244	196	184	184						
2							B	B 788	204	232	256	268	244	276	248	220	A	A						
3							B	A	184	240	260	248	276	A	252	212	204	A						
4							B	A	204	236	256	280	280	260	268	228	A	A						
5							B	B 608	216	244	276	276	288	280	240	240	180	B						
6							E B 164	188	200	244	260	276	276	276	252	224	168	A						
7							B	164	208	232	264	268	264	280	256	236	180	A						
8							164	A	212	252	272	288	284	272	264	248	192	B						
9							A	208	208	240	272	272	276	276	276	240	A	A						
10							B	196	248	268	276	288	288	276	264	244	176	A						
11							A	168	212	236	276	304	284	284	268	252	204	B						
12							B	176	228	A	288	312	284	272	284	240	224	B	B					
13							B	172	236	268	280	284	292	276	268	228	204	A	B					
14							B	176	228	260	284	284	284	284	268	220	176	176	B					
15							B	176	204	240	280	280	280	A	A	244	208	A	A					
16							A	208	240	252	264	284	284	284	264	248	212	A	A					
17							B	188	228	256	284	284	284	284	276	244	196	B	B					
18							B	180	240	252	280	292	292	292	272	252	204	A	B					
19							B	176	224	268	260	296	296	284	272	240	168	B	B					
20							B	192	228	256	256	272	288	288	292	244	204	B	B					
21							B	168	232	264	280	300	300	288	276	252	204	204	A					
22							B	192	244	252	276	296	300	284	272	236	196	B	A					
23							B	208	232	248	272	284	288	288	276	240	224	A	B					
24							B	176	224	256	292	292	292	292	268	236	204	B	B					
25							B	204	248	260	292	296	296	296	272	244	208	B	B					
26							B	208	236	244	288	304	308	304	276	276	220	160	B					
27							B	176	256	260	288	288	296	292	252	252	212	B	B					
28							B	208	244	276	292	296	300	288	276	232	216	A	B					
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	24	28	27	28	28	28	26	27	28	25	4						
MED							164	188	228	252	276	284	286	284	268	240	204	180						
U Q								208	238	260	284	296	294	288	276	246	210	194						
L Q								176	210	240	264	276	280	276	256	230	182	168						

FEB. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	21	E B 16	J A 46	J A 24	28	25	J A 25	26	31	J A 25	J A 46	31	31	32	38	J A 26	J A 26	25	E B 16	E B 16	24	E B 16	26	E B 16
2	E B 16	E B 16	J A 95	26	26	E B 16	E B 16	E B 16	G	28	29	29	30	G	G	J A 32	58	J A 39	J A 72	J A 51	E B 16	E B 16	E B 16	E B 16
3	J A 51	E B 16	J A 31	26	J A 21	J A 25	26	20	21	27	J A 28	J A 114	G	J A 33	J A 37	J A 48	J A 19	J A 28	J A 25	26	27	27	26	J A 33
4	33	32	23	J A 37	J A 43	33	28	24	23	G	32	G 32	32	G	33	26	54	J A 52	J A 29	J A 52	J A 45	32	21	21
5	E B 16	J A 20	19	20	E B 16	E B 16	E B 16	E B 16	27	34	29	G	G 27	G	32	27	21	E B 16	J A 22	25	J A 31	J A 29	20	19
6	20	18	E B 16	E B 16	18	26	E B 16	E B 16	25	30	G 21	34	31	32	30	25	20	J A 16	J A 70	19	E B 16	E B 16	E B 16	E B 16
7	E B 16	27	E B 16	J A 63	E B 16	E B 16	E B 16	24	27	J A 31	33	35	33	E B 16	30	26	21	G 27	E B 16	39	J A 51	J A 30	J A 32	27
8	E B 16	J A 27	37	26	28	E B 16	20	G 21	26	32	G	G 27	J A 32	J A 30	J A 57	J A 62	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	32
9	22	33	J A 28	J A 50	E B 16	E B 16	J A 37	24	26	30	J A 33	36	32	31	G	G	J A 26	44	23	21	J A 25	23	19	21
10	22	22	28	E B 16	E B 15	E B 16	E B 16	25	34	J A 33	J A 42	31	36	J A 42	J A 28	J A 28	J A 33	J A 31	39	J A 40	E B 16	E B 20	J A 25	E B 16
11	E B 16	E B 16	E B 15	26	26	22	20	18	24	25	G	G	33	31	G	G	G	E B 16	E B 16	22	E B 16	J A 51	32	J A 27
12	J A 31	26	25	31	28	25	E B 16	21	26	J A 51	G	G	G	G	G	G	G	E B 17	E B 16	E B 16	J A 41	E B 16	25	J A 36
13	E B 16	J A 23	20	J A 24	J A 24	J A 22	E B 16	G	G	G	G	32	G	32	G	27	G	J A 107	E B 16	40	38	E B 16	26	J A 59
14	E B 16	27	26	21	E B 16	E B 15	E B 16	G	G	G	G	32	34	G	29	25	22	G	26	E B 16	24	E B 16	J A 26	J A 26
15	E B 16	21	23	J A 19	21	21	J A 21	J A 21	25	J A 49	J A 52	J A 85	42	J A 65	J A 37	36	J A 29	J A 25	23	J A 104	91	J A 51	J A 53	J A 28
16	35	20	20	20	E B 16	E B 16	E B 16	J A 28	J A 25	J A 29	31	34	33	32	G 20	27	J A 53	J A 23	J A 51	J A 52	J A 31	27	29	23
17	27	22	22	E B 14	E B 13	E B 16	E B 16	G	G	31	31	31	31	G	J A 28	J A 26	24	E B 16	23	27	J A 24	E B 15	19	23
18	25	E B 16	E B 15	E B 15	E B 16	E B 16	E B 16	G	G	J A 35	32	32	32	34	32	G 22	G	24	E B 15	E B 16	E B 16	E B 16	E B 16	22
19	22	25	25	26	21	20	E B 16	24	J A 41	J A 28	J A 28	31	J A 57	34	J A 31	G	20	E B 16	26	30	26	J A 25	21	27
20	E B 16	E B 16	E B 12	E B 15	20	E B 16	E B 16	G	25	30	30	30	G	G	32	28	J A 25	E B 16	E B 16	E B 16	E B 16	30	28	44
21	27	J A 29	28	22	23	26	25	J A 23	J A 26	34	34	G	G	G	G	G	J A 32	J A 37	J A 32	21	27	27	J A 25	26
22	J A 27	30	G 20	19	27	J A 27	22	G	J A 27	G	G	34	G	34	G	G	23	E B 15	J A 26	22	32	J A 22	E B 16	25
23	J A 27	19	E B 16	E B 14	E B 15	E B 16	26	G	28	30	32	33	34	35	31	28	G	J A 18	E B 17	E B 17	E B 17	E B 16	E B 16	19
24	E B 16	E B 16	E B 16	19	26	E B 16	E B 16	21	27	G	34	J A 108	J A 54	34	32	26	24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
25	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 24	28	31	34	36	34	33	J A 123	29	25	E B 16	E B 16	E B 16	E B 17	E B 17	E B 17	E B 17
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	26	31	32	34	G	34	31	G	G	J A 24	E B 16	E B 15	E B 16	E B 16	22	E B 16
27	21	J A 30	20	20	E B 16	E B 16	E B 16	22	G	34	37	J A 32	34	34	28	J A 30	24	E B 16	E B 16	26	26	26	19	19
28	E B 16	E B 16	E B 16	E B 16	20	E B 16	E B 16	22	28	30	39	G	J A 46	32	30	28	25	J A 26	J A 23	J A 20	28	19	29	19
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	20	20	20	20	20	E B 16	E B 16	21	26	30	32	32	32	32	30	26	24	24	22	22	24	20	22	22
U Q	27	27	27	26	26	24	22	24	27	32	34	34	34	34	32	J A 28	J A 26	G	J A 26	J A 34	J A 31	27	26	J A 27
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 22	G 26	G	32	G	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 18	E B 18

FEB. 2019 foEs (0.1MHz)

IONOSPHERIC DATA STATION Wakkanai

FEB. 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 17 16	E B 16 16	E B 17 16	E B 16 16	16	E B 16 16	E B 16 16	E B 16 16	22	G 24	28	30	30	30	27	22	19	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
2	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	G	27	27	G 26	28	G	G	29	26	E B 16 16	A A 72	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
3	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	16	16	E B 16 16	19	26	G 26	35	G	30	30	35	G 16	E B 16 16	20	16	20	E B 16 16	E B 16 16	E B 16 16
4	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	16	21	G	G 25	G 28	30	G	G 27	25	33	26	E B 17 16	16	16	16	17	E B 17 16
5	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	22	21	G 26	G	G 26	G	30	26	20	E B 16 16	16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
6	E B 17 17	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	21	30	G 20	32	31	G 25	28	24	19	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
7	E B 16 16	Q 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	17	22	29	30	30	30	E B 16	28	G 23	20	E B 17 16	E B 16	21	24	E B 18	17	E B 16
8	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	G 16	G 16	22	26	G	G 25	G 28	G 27	G 26	G 24	G	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	18	E B 16 16
9	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	G 16	23	28	G 27	32	30	30	G	G	22	20	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
10	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 15 16	E B 16 16	E B 16 16	E B 16 16	G 24	G 25	G 26	30	34	31	27	27	G 18	28	24	A	E B 16 16	E B 16 16	E B 16 16	E B 16 16
11	E B 16 16	E B 16 16	E B 15 16	E B 16 16	E B 15 16	E B 15 15	16	G 16	22	25	G	G	32	29	G	G	G	E B 16 16	E B 16 16	E B 16 16	E B 16 16	22	18	E B 17 16
12	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	18	24	28	G	G	G	G	G	G	G	E B 17 16	E B 16 16	E B 16 16	18	E B 16 16	E B 16 16	16
13	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16	G	G	G	G	G 28	G	28	G	25	G	16	E B 16 16	E B 16 16	16	E B 16 16	E B 16 16	E B 16 16
14	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 15 16	E B 16	G	G	G	G	30	30	G	28	24	20	G	E B 17 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
15	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	19	23	30	G 28	31	29	30	31	G 24	G 20	E B 16	E B 16 16	16	A A 91	17	A A 53	16
16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	G 19	G 23	G 25	28	31	31	29	G 19	G 24	G 18	16	E B 16 16	16	16	16	E B 16 16	E B 16 16
17	E B 16 16	E B 16 16	E B 16 14	E B 13 16	E B 16 16	E B 16	E B 16	G	G	30	30	30	29	G	G 27	G 24	20	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16 15	E B 16 16	E B 16 16
18	E B 16 16	E B 16 16	E B 15 15	E B 16 16	E B 16 16	E B 16 16	E B 16	G	G	28	30	31	31	30	G 19	G 19	G	17	E B 15	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 17
19	E B 17 17	E B 17 17	E B 17 17	E B 17 17	E B 16	E B 16 16	E B 16	G 17	G 22	G 27	27	G 29	G 29	30	G 26	18	E B 16	E B 14	E B 16	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 17 16
20	E B 16 16	E B 16 16	E B 12	E B 15	16	E B 16 16	E B 16	G	G 22	29	27	29	G	G	G 29	26	23	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	16
21	E B 16	16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	18	G 23	G 24	28	G	G	G	G	G	23	G 19	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
22	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16	G	G 23	G	G	33	G	G 26	G	G	22	E B 15	E B 16 16	E B 16 16	E B 16 16	16	E B 16 16	E B 16 16
23	E B 16 16	E B 16 16	E B 16 14	E B 15 15	E B 16 16	E B 16 16	E B 16	G	26	27	29	30	34	34	29	25	G	E B 16	E B 17 16	E B 17 17	E B 17 17	E B 16 16	E B 16 16	E B 16 16
24	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16	20	24	G	32	G 29	33	33	30	26	22	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
25	E B 15 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16	G 20	26	28	31	33	32	30	30	27	22	E B 16 16	E B 16 16	E B 16 16	E B 17 17	E B 17 17	E B 17 17	E B 17 17
26	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16	G 20	26	27	30	33	G	G 29	30	G	G	17	E B 16 16	E B 16 15	E B 16 16	E B 16 16	E B 17 16	E B 16 16
27	E B 17 17	E B 17 17	E B 17	E B 16 16	E B 16 16	E B 16 16	E B 16	20	G	G 25	G 26	30	30	30	26	G 25	24	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
28	E B 16 16	E B 16 16	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16	G 20	26	G 27	G 29	G	G 30	G 28	28	26	23	14	E B 16 16	E B 16 16	E B 16 16	E B 16 16	16	E B 16 16
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28
MED	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	G 18	23	G	G 28	30	G	G	G	G	G	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16
U Q	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16	G	G	28	G	31	31	30	G	26	22	17	16	16	16	16	16	E B 16
L Q	E B 16 16	E B 16 16	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16	E B 16	22	G 26	G 27	G	G	G	G 27	G 24	G	E B 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16	E B 16 16

FEB. 2019 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

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

FEB. 2019 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

FEB.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	F 297	F 317	323	324	361	365	377	368	370	385	332	367	360	369	357	359	378	314	367	335	343	326	321	305
2	283	269	297	307	307	F 323	331	392	406	363	357	357	344	402	354	362	388	341	A	347	329	308	308	347
3	310	309	309	313	313	349	375	369	388	372	360	369	369	355	383	366	379	334	339	340	364	309	294	F 262
4	319	F 254	F 279	F 301	F 301	F 288	F 383	382	386	376	353	370	350	375	363	360	400	384	366	318	302	334	316	327
5	325	317	332	302	327	329	F 314	384	382	370	377	360	379	366	366	328	381	398	316	323	314	323	310	327
6	338	F 305	F 317	F 332	F 331	F 339	323	364	406	388	365	369	361	371	385	373	367	381	353	318	V 314	315	315	296
7	287	F 308	372	296	F 322	F 314	F 352	410	362	360	337	331	397	335	361	384	385	372	V 332	330	340	352	325	312
8	328	325	314	312	312	402	366	376	374	375	385	362	379	350	354	370	368	357	326	352	350	338	308	318
9	316	319	324	314	314	339	F 351	378	398	377	362	358	359	382	331	392	355	361	400	308	347	359	300	334
10	F 290	F 344	307	353	305	326	337	384	397	373	335	351	325	361	360	375	383	386	R 332	312	362	337	323	V 327
11	340	341	330	335	333	325	345	381	390	410	391	379	385	398	373	368	373	358	304	336	329	371	313	F 302
12	F 289	F 289	F 310	F 295	312	308	F 277	380	416	337	359	363	373	358	367	364	384	342	366	371	371	323	322	314
13	323	309	319	318	331	318	355	362	383	377	372	365	370	363	408	327	358	368	346	329	342	333	328	320
14	314	320	328	315	315	362	333	370	373	394	296	336	371	362	V 316	361	385	332	293	349	338	329	331	348
15	F 273	269	F 278	328	280	303	345	365	383	384	382	386	388	347	367	382	366	371	329	342	A	357	A	316
16	323	297	337	307	301	328	362	394	383	390	379	336	342	385	355	372	362	401	339	339	371	350	351	F 321
17	F 328	F 312	318	302	294	308	F 323	382	366	367	376	361	332	377	367	370	374	387	337	319	314	326	343	310
18	315	F 315	333	337	307	339	356	390	373	381	375	385	371	384	355	343	382	369	355	347	327	317	340	326
19	325	325	R 326	F 285	F 307	326	323	409	380	378	380	348	359	377	366	346	388	382	314	359	344	334	333	315
20	V 326	332	327	309	321	330	351	404	382	358	383	362	376	351	348	375	350	362	342	363	366	332	313	338
21	F 356	297	328	321	F 247	F 325	F 349	388	363	384	375	344	322	V 343	357	364	378	342	335	347	336	345	315	318
22	301	335	341	310	342	349	339	385	362	366	317	358	342	388	334	351	375	373	356	340	340	340	340	316
23	331	324	324	343	320	F 332	344	375	391	361	342	319	342	366	360	360	368	363	365	339	335	326	332	326
24	F 321	F 297	F 327	314	328	309	359	389	389	312	368	360	359	355	363	311	359	358	354	316	347	353	337	318
25	332	335	329	329	336	341	342	396	385	414	353	340	346	376	348	359	360	362	352	297	322	329	343	331
26	331	324	337	337	351	352	370	393	391	356	382	374	376	369	340	349	362	376	363	330	376	331	326	330
27	351	299	338	335	347	347	355	400	378	371	385	344	361	330	346	371	377	390	358	341	316	317	299	299
28	334	354	302	F 298	317	F 293	325	394	406	353	361	379	342	367	379	350	365	368	319	317	329	318	366	315
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	27	28	27	28
MED	323	316	325	314	316	328	347	384	383	374	366	360	360	366	360	363	374	368	342	338	340	332	323	318
U Q	331	325	331	330	331	344	358	394	391	384	380	369	374	377	367	372	382	382	358	347	350	342	337	327
L Q	306	298	312	304	307	316	332	376	374	362	353	346	343	355	351	350	364	358	329	318	327	323	313	313

FEB.2019 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Wakkanai

FEB.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	L		L	L	L							
2									L 411		L	L	L	L	L									
3										L	L 380		L	L	L		L							
4								L	L	L	L	L	L	L	L	L								
5										L	L	L	L	L										
6									415			L	L	L	L									
7									L		L	L	L	L	L	L								
8											L	L	L 378		L	L								
9										L	L		L	L	L	L								
10											L	L	L	L	L	L								
11										L	L 391		L	L	L	L								
12								L	L	L	L	L	365	L	L	L								
13									L	L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L			L					
15								L	L	L	L	L	L	L	L									
16									L	L	L	L	L	L	L									
17									L	L	L 398		L	L 390	L	L 409	L							
18									L	L	L	L	L	L	L	L								
19							L			L	L	L	397	395	L	L	L							
20									L	L	L	L	401	L	L	L								
21									L	L	L	L	L	L	L	L	L							
22									L	L	L	L	L	414	L	L	L							
23										L	L	L	L	L	L	L	L							
24									L		L	L	L	L	L	L	L							
25										L	L	L	L	L	L	L								
26										L	413	397	L	L										
27										L	L	L	L	L	L	397								
28									L	L	L	406	402	419	L	L	L	L						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	1	5	4	5		2								
MED									415	411	413	397	399	395		403								
U Q												402	402	416										
L Q												386	381	384										

FEB.2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB.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										228	284	222	240		244	230	226							
2									214	242	262	238	238	222	242									
3										230	230	252	236	232	222		208							
4								228	216	224	240	240	246	226	236	240								
5										226	230	256	230	230										
6									206			234	234	246	226									
7									204		230	248	224	242	232	214								
8											210	234	234	268	252	234								
9										228	234		248	228	228	216								
10											258	228	264	268	256	242								
11										202	224	232	232	220	230	238								
12								216	216	260	260	254	240	240	252	238								
13									222	230	230	262	214	244	228	282								
14									218	226	338	254	238	246	252	232			298					
15								232	238	224	224	236	228	274	242									
16									228	212	220	288	232	236	258									
17									214	238	228	268	268	234	252	242	216							
18									236	236	224	224	234	234	250	266								
19							216			222	236	262	250	232	240	254	216							
20									220	232	252	262	228	256	264	232								
21									222	226	244	256	288	226	226	234	214							
22									228	226	260	252	238	238	234	234	224							
23										258	250	284	248	258	242	242	232							
24									218		236	260	274	248	254	280	226							
25										222	264	282	244	244	254	234								
26										250	244	244	236	220										
27										234	250	260	248	236	270	244								
28									214	278	260	234	256	250	246	258	234	216						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	3	16	23	27	27	28	27	26	21	9	1	1					
MED							216	228	218	228	240	252	238	238	243	238	224	216	298					
U Q								232	225	238	260	262	248	248	252	249	229							
L Q								216	214	224	230	234	233	230	232	233	215							

FEB.2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	256	Q 274	238	Q 248	220	222	244	210	202	196	196	206	188	226	216	200	200	240	200	230	214	216	222	Q 228
2	Q 252	Q 264	282	246	252	206	194	206	194	200	200	200	200	198	198	242	228	236	A	228	246	242	244	216
3	254	262	268	268	264	230	210	220	218	200	200	A	204	198	A	198	208	214	210	240	206	238	256	Q 276
4	Q 246	Q 260	Q 268	252	Q 266	272	198	198	178	174	180	194	210	196	192	204	204	192	202	238	238	220	234	208
5	Q 232	214	248	Q 240	236	224	218	188	204	190	206	200	200	200	220	220	204	184	204	260	238	248	Q 246	228
6	202	Q 246	Q 220	214	242	Q 208	200	212	192	214	202	212	190	188	216	214	208	190	202	268	248	240	218	Q 242
7	252	238	Q 194	Q 236	220	Q 244	210	198	182	222	180	198	200	188	222	200	210	202	212	206	230	222	244	244
8	206	252	234	238	248	196	190	200	214	230	192	184	194	180	202	202	214	196	222	218	218	234	268	248
9	Q 238	220	242	250	240	Q 220	200	204	204	220	188	242	200	188	202	206	206	228	200	E B 244	220	204	Q 246	228
10	Q 232	Q 248	Q 234	222	232	Q 240	210	200	194	212	186	184	238	186	206	196	212	196	216	A	216	244	246	236
11	216	232	212	232	250	240	214	216	204	180	174	188	212	196	196	204	230	206	224	224	224	204	222	Q 258
12	Q 242	Q 258	Q 262	256	250	Q 226	Q 230	194	194	206	198	194	202	198	204	204	198	226	208	192	204	232	262	234
13	228	252	246	240	240	230	214	216	194	194	180	190	190	198	198	198	212	202	220	242	204	234	244	262
14	262	246	242	270	234	230	E B 246	224	190	190	176	202	186	186	190	170	224	252	238	210	218	220	236	236
15	Q 276	Q 308	Q 254	254	260	246	E B 214	196	196	194	186	184	198	184	206	212	226	202	214	214	A	204	A	244
16	238	250	Q 236	Q 236	Q 258	218	220	208	200	192	184	172	208	198	192	222	222	192	218	230	196	226	226	226
17	242	242	258	226	232	232	198	194	192	192	178	192	206	198	198	192	192	206	210	236	246	230	214	260
18	242	234	234	234	234	214	232	200	200	188	188	214	192	180	184	202	222	222	204	204	230	236	236	236
19	236	236	246	Q 250	Q 226	Q 230	196	196	214	196	172	192	192	194	188	188	208	202	258	214	218	244	250	270
20	252	226	230	242	246	Q 224	208	204	192	192	192	192	196	174	198	198	216	196	222	204	198	240	250	268
21	212	230	218	Q 230	Q 270	Q 218	214	206	196	190	192	198	190	204	190	196	204	214	228	234	230	206	246	272
22	272	248	224	258	234	240	230	206	198	192	176	198	182	184	184	198	208	204	222	228	248	230	230	250
23	252	232	228	214	236	206	212	200	216	178	194	182	182	180	204	210	210	206	218	240	218	246	240	258
24	Q 232	Q 236	Q 226	Q 210	226	Q 214	198	206	190	196	190	182	194	180	242	204	194	206	206	232	224	224	240	244
25	238	212	216	222	216	198	230	202	202	192	192	192	192	170	192	190	230	210	220	218	242	206	216	246
26	242	234	234	222	218	204	204	204	214	182	194	194	184	H 162	202	196	204	220	220	208	204	224	250	222
27	198	264	224	226	226	218	212	206	220	190	180	190	190	190	216	188	218	200	200	222	248	228	248	248
28	228	202	234	260	260	Q 254	182	214	214	198	198	198	170	180	208	228	216	190	234	234	252	230	212	254
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	27	28	28	27	28	28	28	27	27	27	28	27	28
MED	240	244	234	239	238	224	210	204	199	193	189	194	194	188	202	201	210	205	216	228	224	230	244	244
U Q	252	Q 255	247	251	251	236	219	209	209	200	195	200	201	198	208	208	220	217	222	238	242	239	248	258
L Q	230	232	225	226	229	214	199	199	193	190	180	188	190	180	192	196	204	196	204	214	214	220	226	231

FEB. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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							B	B	114	114	114	112	110	100	100	98	110	98						
2							B	B	102	110	110	110	110	110	112	112	A	A						
3							B	A	108	102	110	104	104	A	104	102	102	A						
4							B	A	124	112	112	112	112	112	112	112	A	A						
5							B	B	108	108	108	106	106	106	98	116	98	B						
6							198	148	96	98	102	108	108	108	108	118	92	A						
7							B	110	110	98	102	96	96	102	96	96	110	86						
8							E B 144	94	106	106	104	104	98	98	98	82	110	B						
9							A	126	114	110	110	110	106	106	106	106	A	A						
10							B	104	104	104	104	104	104	94	96	106	106	A						
11							A	106	106	106	106	98	98	108	108	108	108	B						
12							B	102	102	A	102	118	110	102	96	102	106	B	B						
13							B	102	102	102	102	102	102	102	102	102	102	A	B						
14							B	102	102	102	102	102	104	104	104	114	102	140	B						
15							B	104	104	106	106	106	92	A	A	108	96	A	A						
16							A	108	120	104	104	104	104	104	104	104	104	A	A						
17							B	138	112	112	102	106	106	108	104	106	108	B	B						
18							B	114	114	114	100	112	102	102	102	102	116	A	B						
19							B	116	116	116	98	106	106	100	106	108	102	B	B						
20							B	110	94	104	104	104	104	104	110	110	110	B	B						
21							B	106	110	108	108	108	108	104	104	104	104	142	A						
22							B	104	112	102	102	102	106	106	96	98	98	B	A						
23							B	106	106	106	106	106	106	106	106	106	106	A	B						
24							B	106	106	104	104	112	110	108	108	108	116	B	B						
25							B	116	116	116	116	116	116	116	116	116	116	B	B						
26							B	120	102	102	104	112	102	102	106	106	112	A	B						
27							B	110	110	110	110	110	110	110	110	110	128	B	B						
28							B	120	120	116	116	108	100	100	102	102	106	A	B						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	23	28	27	28	28	28	26	27	28	25	4						
MED							171	108	108	106	104	106	106	104	104	106	106	119						
U Q								116	114	112	110	111	109	108	108	110	110	141						
L Q								104	103	102	102	104	102	102	100	102	102	92						

FEB. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB.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	104	B	104	94	102	102	102	106	118	108	98	146	140	112	106	104	100	86	B	B	92	B	92	B
2	B	B	102	108	104	B	B	B	G	158	140	120	102	G	G	104	104	96	98	116	B	B	B	B
3	90	B	108	110	110	104	104	104	126	124	110	98	G	104	104	102	102	88	118	104	100	96	96	96
4	96	90	106	116	98	106	100	100	108	G	142	150	150	G	104	142	100	104	104	104	104	100	100	90
5	B	94	88	88	B	B	B	B	98	98	90	G	102	G	108	148	120	B	104	104	96	102	Q 242	96
6	88	92	B	B	84	122	B	B	132	150	96	146	152	152	134	136	120	86	82	92	B	B	B	B
7	B	92	B	96	B	B	B	126	114	102	152	110	110	B	136	122	144	198	B	100	100	100	100	96
8	B	96	104	94	92	B	106	96	138	94	G	90	90	90	84	84	G	B	B	B	B	B	92	92
9	92	92	92	92	B	B	88	154	144	150	94	154	152	150	G	G	98	112	88	88	74	92	92	92
10	98	88	94	B	B	B	B	112	106	100	88	164	150	86	86	100	118	104	104	100	B	90	90	B
11	B	B	B	92	92	92	112	142	136	136	G	G	136	104	G	G	G	B	B	90	B	94	94	104
12	114	104	90	94	104	104	B	110	124	98	G	G	G	G	G	G	G	B	B	B	98	B	98	98
13	B	90	88	96	92	92	B	G	G	G	G	152	G	162	G	158	G	86	B	102	102	B	102	90
14	B	90	90	90	B	B	B	G	G	G	G	152	108	G	168	136	144	G	110	B	88	B	100	100
15	B	100	94	88	88	88	88	130	104	104	94	94	88	88	88	88	96	96	98	110	104	96	96	92
16	86	86	86	84	B	B	B	94	94	94	150	150	150	144	96	156	104	82	104	104	94	94	94	94
17	86	86	86	B	B	B	B	G	G	146	154	164	160	G	108	114	170	B	104	96	104	B	92	92
18	86	B	B	B	B	B	B	G	G	108	148	148	128	94	86	86	G	86	B	B	B	B	B	94
19	94	94	94	90	94	94	B	104	104	104	104	102	90	98	92	G	116	B	96	104	94	86	86	100
20	B	B	B	B	94	B	B	G	150	140	118	120	G	G	102	138	112	B	B	B	B	104	104	98
21	98	98	98	98	98	98	98	106	102	100	100	G	G	G	G	G	112	102	102	108	100	100	102	102
22	92	98	106	100	100	100	100	G	106	G	G	158	G	182	G	G	148	B	96	90	102	102	B	86
23	92	92	B	B	B	B	92	G	140	150	142	148	148	162	152	136	G	108	B	B	B	B	B	92
24	B	B	B	86	92	B	B	126	132	G	152	108	90	146	146	134	134	B	B	B	B	B	B	B
25	B	B	B	B	B	B	B	128	146	130	116	164	148	148	144	136	136	B	B	B	B	B	B	B
26	B	B	B	B	B	B	B	142	122	122	106	106	G	154	154	G	G	88	B	B	B	B	94	B
27	94	94	94	94	B	B	B	136	G	100	100	100	154	96	132	92	174	B	B	110	106	106	98	98
28	B	B	B	B	94	B	B	132	132	124	104	G	96	90	166	134	114	90	88	88	102	102	102	82
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	18	18	19	16	11	10	18	22	23	22	23	21	19	21	21	21	16	15	18	17	15	21	21
MED	92	92	94	94	94	100	100	119	123	108	108	146	136	112	108	134	116	93	102	103	100	100	96	94
U Q	98	96	104	98	101	104	104	132	136	140	142	152	150	152	145	137	140	104	104	104	103	102	101	98
L Q	88	90	90	90	92	92	92	104	106	100	98	106	99	94	94	101	103	86	96	92	94	94	92	92

FEB.2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	F1		F1	F2	FQ21	FF12	L2	LL11	C2	C2	LC11	H1	CL11	C1	C1	C2	LC11	LC11			F1		F1	
2			F1	F1	F2					H1	H1	C1	C2			C2	L4	L2	F3	F1				
3	F1		F2	F2	F1	FQ11	LQ11	L1	C1	C1	C1	C3		L2	C2	C3	L2	L1	F3	F2	F2	F2	F1	F2
4	FQ21	F1	F1	F1	F2	F3	F1	L1	C1		H1	H1	H1		C1	H2	L2	LQ21	F2	F3	F3	F1	F1	F1
5		F1	F1	F1					L2	LC21	LC11		LC11		C2	C2	C2		F1	F1	F2	F1	F1	F1
6	F1	F1			F1	F1			H1	H1	L1	H2	H1	H1	H2	C1	C1	L1	F3	F1				
7		F1		F1				C1	C2	C2	H1	C1	C2		C1	C2	H2	L1		F4	F6	F3	F4	F2
8		F1	F2	F1	F2		L1	L1	CL11	CL11		LC11	LC11	LC21	LC11	LC11							F4	F1
9	F1	F2	FQ11	F1			L1	C1	C1	C1	LC21	CC11	CL11	CL11			L3	L3	F1	F2	F2	F1	F1	F1
10	F1	F1	F1					C1	C2	C1	C1	H1	H1	LH11	L2	L2	C2	L3	F3	F5		F1	F1	
11				F1	F1	F1	L1	C1	C1	CL11			CL11	LC11						F1		F4	F2	FQ11
12	FQ11	F1	F1	F3	F2	F1		C1	C2	L1											F2		F1	F3
13		L1	F1	F1	F1	F1						H1		H1		H1		L1		F1	F2		F1	F1
14		F1	F1	F1								H1	C2		H1	H1	C1		L1		F1		F1	F1
15		F1	F1	F1	F1	F1	L1	C1	C2	LC11	LC11	LC11	LC11	LC21	L2	LC21	LC11	LQ11	L1	FQ21	FQ52	FQ41	FQ31	FQ21
16	F2	F1	F1	F1				L2	LC31	LC21	HL11	HL11	H1	C1	LC11	CC21	LC11	L1	L1	F3	F3	F1	F2	F1
17	F1	F1	F1							H1	H1	H1	H1		C1	C2	H1		L1	F1	F1		F1	F1
18	F1									C1	C1	C1	C1	LC21	LC21	LC21		L1						F1
19	F1	F1	F1	F1	F1	F1		LC11	C2	LC11	LC11	LC11	LC11	LC11	LC11		C2		L1	F1	F1	F1	F1	F2
20					F2				H1	H1	C1	CL11			LC11	CL11	C2					F1	F1	F4
21	F2	F2	F3	F2	F2	FQ11	L1	LC11	LC11	C2	C1						C2	L1	L2	L1	F1	F1	F1	F1
22	F2	F2	F1	F1	F1	F2	F1		LQ11			CL11		C1			C2		L1	F2	F2	F2		F1
23	F2	F1					F1		C2	H1	H1	H1	H1	H1	H1	H1		L1						F1
24				F1	F1			C2	C2		H1	LC11	LC11	H1	H1	C2	C2							
25								C2	C2	C1	C1	C1	H1	H1	C1	C1	C2							
26								H1	C1	C1	C2	C2		C1	HL11			LH11					F1	
27	F1	F2	F1	F1				C2		C2	L2	L2	HL11	LC12	C2	LC21	C2			F1	F2	F1	F1	F1
28					F1			C2	C2	CL21	CL21		L2	L2	HL11	HL11	C2	L1	L1	F1	F2	F1	F1	F1
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

FEB. 2019 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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	30	29	29	29	33	21	22	44	49	58	57	66	53	51	50	55	60	54	42	38	41	30	26	28
2	30	29	30	29	30	32	22	37	55	49	63	61	54	72	56	48	54	50	30	A	31	34	28	30
3	30	29	28	29	30	26	29	45	47	48	60	63	74	69	59	56	53	40	35	35	32	31	28	26
4	29	29	30	27	27	25	25	39	46	53	51	52	68	62	59	53	52	47	34	32	31	34	37	22
5	F	F	F	F	27	25	18	42	52	50	59	66	66	61	56	45	51	44	A	28	33	A	30	F
6	F	C	30	31	34	28	28	42	56	50	52	61	49	62	60	59	49	44	28	34	33	38	34	28
7	32	32	28	27	29	30	32	40	48	50	58	58	62	59	58	58	52	45	32	30	36	39	F	F
8	29	29	F	30	F	F	F	39	55	58	58	65	70	83	64	50	49	46	31	34	31	30	32	33
9	38	33	32	32	31	28	24	40	53	56	50	63	65	60	66	56	55	46	31	38	30	30	32	29
10	F	F	30	F	F	F	22	44	51	52	57	63	62	69	60	54	51	53	A	28	33	26	31	F
11	30	30	28	29	28	27	F	54	45	47	47	64	58	56	54	51	48	56	42	28	31	32	32	29
12	30	30	30	30	28	24	26	40	49	50	55	66	70	78	60	C	53	51	30	34	38	28	29	29
13	29	29	29	26	28	26	26	46	47	51	53	59	56	58	59	51	46	52	31	35	36	30	33	32
14	29	28	28	26	25	25	22	45	59	51	59	57	61	57	54	54	52	55	39	39	35	29	26	29
15	28	28	28	F	28	25	26	49	53	52	55	56	62	60	51	58	50	42	38	30	30	29	28	28
16	28	28	30	28	F	28	25	44	56	58	54	49	50	62	50	55	50	56	34	32	34	29	28	27
17	28	28	28	27	28	27	27	44	52	51	48	52	62	65	66	54	50	48	39	26	30	31	33	31
18	28	28	29	30	29	28	25	44	52	52	49	58	60	51	58	50	52	52	35	33	37	35	34	32
19	31	31	31	30	30	30	33	41	51	54	51	60	62	60	A	53	46	53	37	31	36	28	26	27
20	F	27	30	31	28	26	25	44	52	52	57	56	52	60	57	54	53	51	35	30	35	29	29	28
21	28	30	32	F	F	F	F	48	47	51	53	60	64	74	82	51	49	65	35	39	43	29	30	30
22	31	32	34	29	28	30	30	47	56	59	51	58	75	55	50	57	49	62	44	32	36	33	32	32
23	32	31	32	33	32	31	28	44	54	52	53	54	56	63	55	52	55	52	47	42	37	34	28	30
24	30	29	30	30	29	26	26	43	48	58	50	57	56	59	49	56	52	50	37	32	31	31	30	29
25	29	29	30	30	30	F	28	44	45	47	53	54	54	54	55	50	V 50	43	39	36	37	40	40	33
26	32	32	33	31	31	F	30	43	47	52	49	53	55	54	54	54	50	44	45	44	38	37	31	31
27	33	30	30	30	31	28	28	45	50	62	62	56	54	62	64	45	46	48	40	32	32	34	34	32
28	32	32	34	31	28	26	30	47	50	52	53	70	56	52	53	53	60	60	42	36	38	38	37	38
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	25	26	24	24	23	25	28	28	28	28	28	28	28	27	27	28	28	26	27	28	27	27	25
MED	30	29	30	30	29	27	26	44	51	52	53	58	60	60	57	54	51	50	36	33	34	31	31	29
U Q	32	31	31	30	30	28	28	45	54	55	58	63	64	64	60	56	53	54	40	36	37	34	33	32
L Q	29	28	29	28	28	25	24	42	48	50	51	56	54	56	54	51	49	46	32	30	31	29	28	28

IONOSPHERIC DATA STATION Kokubunji

FEB. 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										A	L	U L 416	L	A	A	A	A							
2									U L 292		U L 408	412		A	L									
3									A	L	U L 404	U L 416	U L 428		L	L								
4										L	L	432	U L 412	L	L									
5										L	U L 396	412	U L 412	L	A	A								
6										L	A	408	L	U L 404	U L 408									
7											U L 412	U L 412	U L 396		A	L								
8										L	L	U L 420	U L 424	U L 404		L								
9										L	U L 424	L	392	U L 408	A									
10									L	L	508	L	U L 416	A	L									
11										L	380	A	L	U L 428	U L 408									
12											U L 412	U L 428	424		L	C	L							
13										L	U L 420	L	U L 432	L	A	L								
14										L	A	L	L	U L 416	A	L								
15										U L 392	U L 408	L	U L 432	428	L	L								
16										L	L	U L 412		408	L	L								
17										L		A	412	420	U L 408	A	A							
18									L	L		A	416	L	L	L								
19								L		L	L	420	A	U L 416	A	L								
20										L	L	424	U L 436	424	412	L								
21										L	U L 436	U L 416	424	412		L	U L 416						
22										L	U L 440	428	A	A		L								
23									L	L	U L 460	U L 432	U L 432	U L 416	U L 424	L	L							
24									L	L	U L 448	U L 412	408	U L 432		L								
25											408	U L 428	U L 408	U L 428	428	L								
26										L	L	416	428	416		L	L							
27									L	408	428	A	432	416	U L 412	L								
28										L	U L 444	428	U L 424	U L 432	U L 380	U L 416								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	2	17	19	20	17	8	1	1							
MED									U L 292	400	U L 420	U L 416	U L 424	U L 416	U L 410	U L 416	U L 416							
U Q											U L 442	U L 428	U L 430	U L 428	U L 418									
L Q											U L 408	412	412	U L 410	U L 408									

FEB. 2019 foF1 (0.01MHz)

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FEB. 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								A	A	A	UR 308	A	A	A	UA 276	A	A	B						
2								B	A	A	A	UR 316	A	UA 300	UA 272	A	UR 208	B						
3								UR 172	A	A	A	A	R	A	A	A	UR 216	B						
4								UR 188	A	UR 304	R	A	A	A	A	A	R	A						
5								B	216	UR 264	A	UR 316	A	R	A	A	A							
6									A	A	A	R	A	R	UR 280	260	216							
7								B	A	A	R	R	R	A	UA 300	A	R 220	B						
8								A	A	UR 284	UR 300	A	A	R 320	A	A	A	A						
9								B	UR 236	A	A	UR 316	R	R	UA 276	A	UR 240	B						
10									A	UR 272	A	A	A	UA 308	280	UA 260	A	B						
11								UR 176	UR 252	UR 284	UA 308	UA 316	R	UR 304	UR 296	UR 268	UA 224	B						
12								B	UR 252	UA 256	UR 308	UR 308	A	UA 308	A	C	A	B						
13								B	UR 244	UR 280	UR 308	R	R	A	A	A	A	A						
14								A	A	A	A	A	A	UR 304	292	A	A	B						
15								UR 188	UR 244	R	R	R	R	UR 308	R	A	R	B						
16								172	UR 252	R	UR 308	R	A	R	UR 300	UR 280	A	B						
17								UR 184	UR 244	UR 284	UA 348	A	A	A	A	A	A	B						
18								UA 176	260	R	UR 312	UR 324	A	A	UA 312	A	A	B						
19								UR 192	UR 268	A	A	A	A	A	A	A	UR 228	B						
20								180	UR 248	UR 288	R	R	R	R	UR 308	A	A	B						
21								UR 196	UR 256	R	A	A	R 332	A	A	UR 280	228	B						
22								184	UR 268	A	A	A	A	A	A	A	A	B	A					
23								UR 204	248	UA 280	R	R	R	A	UA 304	A	232	A						
24								A	UR 256	296	R	332	UR 328	UR 316	UR 292	UR 272	UR 248	UR 196						
25								UA 192	252	292	R	R	UR 336	UA 320	296	UA 272	UA 240	UR 188						
26								UR 200	UR 256	A	A	A	A	A	UR 308	UR 284	252	B						
27								204	252	R	UR 324	324	UA 320	UR 308	UR 292	264	A 228	UA 172						
28								UR 184	A	A	UR 324	UR 324	UR 324	R	UA 308	UA 268	A	A						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								16	18	12	10	9	5	10	17	10	13	3						
MED								UR 186	UR 252	UR 284	UR 308	UR 316	UR 328	UR 308	U 296	U 270	U 228	UR 188						
U Q								UR 194	UR 256	290	UR 324	UR 324	R 334	UR 316	UA 306	UR 280	U 240	UR 196						
L Q								U 178	UR 244	U 276	UR 308	UR 316	U 322	UR 304	UA 280	264	R 218	UA 172						

FEB. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	J A 27	E B 16	E B 16	23	20	E B 15	22	J A 31	J A 53	J A 40	G	J A 40	J A 38	38	35	J A 44	J A 32	J A 44	19	E B 16	E B 15	E B 16	E B 16	E B 16
2	23	21	24	E B 15	24	24	24	J A 22	J A 28	36	J A 35	G	J A 42	36	33	30	G	20	J A 24	J A 67	J A 63	J A 39	J A 28	J A 22
3	22	21	E B 16	E B 16	J A 21	J A 25	J A 25	G	J A 52	J A 39	33	J A 35	G	35	J A 36	J A 35	G	E B 17	J A 38	J A 26	J A 85	J A 45	J A 31	J A 46
4	J A 24	J A 28	J A 27	J A 23	20	22	E B 16	G	J A 52	G	G	36	J A 37	J A 40	J A 38	J A 34	G	J A 26	J A 54	J A 26	E B 16	J A 29	J A 52	J A 24
5	24	E B 16	E B 15	22	E B 15	20	E B 15	20	26	G	J A 37	G	J A 58	G	35	J A 32	J A 34	J A 26	J A 99	J A 32	J A 27	J A 45	J A 27	J A 32
6	J A 31	C	J A 27	E B 16	E B 16	20	J A 31	J A 33	J A 30	J A 39	J A 48	J A 44	J A 37	G	34	29	26	24	J A 25	E B 16	21	J A 23	E B 15	E B 15
7	E B 16	E B 16	E B 16	20	E B 16	E B 16	20	19	30	J A 34	G	G	G	37	36	31	24	E B 15	E B 15	J A 24	23	20	J A 64	J A 32
8	J A 22	J A 34	J A 26	J A 28	18	19	J A 23	J A 29	J A 41	G	G	39	J A 35	J A 32	J A 40	J A 36	26	J A 44	J A 35	J A 35	J A 54	J A 51	J A 33	J A 22
9	J A 30	J A 34	E B 15	E B 14	E B 15	E B 15	E B 15	20	G	J A 35	J A 36	G 30	G	G	34	J A 40	G	E B 16	E B 16	22	E B 16	J A 22	J A 53	J A 49
10	J A 26	E B 16	21	E B 15	E B 15	E B 15	E B 15	J A 22	J A 28	G	J A 52	J A 46	J A 85	37	32	32	J A 34	J A 31	J A 40	J A 38	J A 50	J A 68	J A 42	J A 34
11	J A 54	J A 27	E B 16	23	23	J A 24	19	G	G	G	G	39	G	G	34	G	26	J A 36	J A 23	22	J A 28	20	26	J A 31
12	E B 16	E B 16	J A 26	E B 15	23	20	E B 15	23	G	30	G	G	35	36	J A 36	C	J A 30	E B 16	E B 14	E B 15	J A 34	E B 16	E B 16	23
13	22	J A 33	J A 35	E B 16	E B 16	E B 16	E B 15	E B 16	G	G	G	G	J G 32	J A 36	J A 38	J A 36	J A 36	J A 34	J A 32	J A 28	J A 26	J A 24	J A 29	J A 27
14	J A 38	J A 33	J A 32	J A 24	J A 23	E B 16	21	J A 27	J A 29	J A 32	J A 72	J A 68	J A 38	G	34	J A 33	J A 37	J A 40	J A 28	E B 16	J A 34	18	E B 16	E B 16
15	E B 16	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	G	G	G	G	G	G	G	G	J A 35	G	E B 15	E B 15	20	E B 15	E B 16	E B 15	E B 16
16	E B 16	E B 16	22	J A 26	J A 26	J A 33	J A 23	21	G	G	G	G	35	G	G	G	J A 28	G	24	J A 28	E B 15	E B 15	E B 16	22
17	J A 22	E B 16	21	23	J A 20	E B 16	E B 16	J A 24	G	J A 54	38	J A 75	J A 51	J A 40	J A 36	J A 38	J A 34	J A 23	21	23	J A 27	23	J A 33	J A 22
18	21	J A 24	E B 15	E B 16	E B 15	J A 24	E B 16	21	G	G	G	39	J A 41	J A 36	36	32	J A 30	E B 18	24	J A 22	21	J A 29	19	19
19	J A 36	J A 25	J A 22	J A 22	21	E B 16	E B 15	G	G	J A 45	J A 42	J A 39	J A 50	J A 55	J A 110	J A 36	G	21	E B 16	J A 23	E B 17	E B 15	J A 31	E B 15
20	22	E B 15	22	21	E B 16	E B 16	E B 17	G	G	G	G	G	G	G	37	G	J A 30	J A 34	E B 16	E B 15	E B 16	23	23	18
21	22	J A 27	22	J A 28	E B 16	E B 16	E B 16	G	G	G	34	36	G	34	34	G	32	22	J A 23	E B 16	E B 16	J A 22	20	20
22	E B 15	E B 16	21	E B 15	E B 16	E B 15	E B 16	G	G	J A 32	J A 35	J A 38	J A 48	J A 53	J A 42	J A 36	27	J A 28	J A 24	20	E B 15	E B 15	J A 33	J A 25
23	J A 30	23	E B 16	E B 16	E B 15	E B 15	E B 15	G	28	31	G	G	G	34	32	32	28	25	24	J A 20	19	20	E B 16	20
24	20	19	E B 16	E B 16	E B 15	E B 16	E B 16	J A 23	G	G	G	E B 20	G	G	G	G	G	G	J A 28	E B 17	J A 48	J A 45	J A 41	J A 33
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	27	32	G	G	G	37	36	31	28	G	24	J A 27	J A 24	22	22	24
26	J A 25	21	E B 16	E B 16	E B 16	E B 16	E B 15	22	G	32	34	39	J A 44	J A 37	34	G	28	E B 17	E B 16	E B 16	J A 24	28	20	J A 25
27	20	J A 22	22	E B 16	E B 15	E B 15	E B 16	24	28	G	G	42	J A 51	G	G	30	30	20	E B 16	E B 16	22	J A 33	J A 33	J A 21
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	22	J A 30	J A 36	G	G	G	J G 27	34	34	28	J A 27	23	E B 16	E B 15	E B 16	E B 16	23
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28
MED	22	21	21	E B 16	E B 16	E B 16	E B 16	21	G	30	G	36	J 35	34	34	32	28	22	24	22	22	22	26	J A 22
U Q	J A 26	J A 27	J A 23	J A 23	20	20	20	J A 23	J A 30	J A 36	J A 36	J A 39	J A 43	J A 37	J A 36	J A 36	J A 31	J A 30	J A 28	J A 26	J A 31	J A 31	J A 33	J A 29
L Q	E B 18	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	G	G	G	G	G	G	G	34	G 29	G	G	E B 16	E B 16	E B 16	E B 17	E B 16	E B 20

FEB. 2019 foEs (0.1MHz)

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FEB. 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 16	E B 16	E B 16	E B 15	E B 16	22	32	31	G	34	33	35	33	38	26	25	E B 15	E B 16	E B 15	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	E B 16	19	22	32	30	G	37	34	31	28	G	18	20	A A 67	18	28	E B 15	E B 16
3	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	G	34	26	32	32	G	33	30	28	G	E B 17	E B 16	21	E B 16	21	18	E B 16
4	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	E B 16	G	24	G	G	30	33	32	32	28	G	18	28	E B 16	E B 16	E B 16	E B 16	E B 16
5	E B 16	E B 16	E B 15	E B 16	E B 15	E B 16	E B 15	19	24	G	30	G	35	G	32	28	24	23	A A 99	20	E B 16	A A 45	20	23
6	20	C	18	E B 16	E B 16	E B 16	19	28	28	28	37	32	31	G	31	29	24	20	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	18	26	28	G	G	G	36	34	29	23	E B 15	E B 15	20	E B 16	E B 16	22	E B 16
8	E B 16	20	E B 16	18	E B 16	E B 16	E B 16	19	26	G	G	34	33	G 23	32	28	24	33	E B 16	20	20	21	E B 17	E B 16
9	20	E B 16	E B 15	E B 14	E B 15	E B 15	E B 15	18	G	28	31	G 28	G	G	33	35	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	19
10	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	17	24	G	34	33	36	34	31	29	28	23	A A 40	E B 16	22	20	20	20
11	E B 16	20	E B 16	E B 15	E B 16	E B 16	E B 16	G	G	G	G	38	G	G	33	G	26	18	E B 16	E B 16	E B 16	E B 16	16	20
12	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	21	G	29	G	G	33	36	30	C	23	E B 16	E B 14	E B 15	19	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	G	G	G	G	G 23	31	32	29	28	20	20	E B 16	E B 16	E B 16	19	19
14	18	E B 16	E B 15	E B 16	19	E B 16	E B 16	24	22	27	51	32	34	G	32	30	29	26	21	E B 16	E B 16	E B 16	E B 16	E B 16
15	E B 16	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	G	G	G	G	G	G	G	G	28	G	E B 15	E B 15	E B 15	E B 15	E B 16	E B 15	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	20	G	G	G	G	32	G	G	G	22	G	16	E B 16	E B 15	E B 15	E B 16	E B 15
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	G	G 24	37	43	35	34	32	34	29	19	E B 16	E B 17	E B 16	E B 16	22	E B 16
18	E B 16	E B 16	E B 15	E B 16	E B 15	E B 16	E B 16	20	G	G	G	36	34	32	34	31	24	E B 18	E B 16	E B 16	E B 16	E B 16	22	16	E B 15
19	E B 16	E B 15	E B 15	E B 16	E B 15	E B 16	E B 15	G	G	36	33	33	36	36	A A 110	25	G	19	E B 16	E B 16	E B 16	E B 17	E B 15	E B 16	E B 15
20	E B 16	E B 15	E B 16	E B 15	E B 16	E B 16	E B 17	G	G	G	G	G	G	G	34	G	27	28	E B 16	E B 15	E B 16	E B 16	16	E B 15
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	32	34	G	33	34	G	29	20	20	E B 16	E B 16	E B 15	E B 16	E B 16
22	E B 15	E B 16	E B 15	E B 15	E B 16	E B 15	E B 16	G	G	28	30	36	42	34	32	28	25	21	18	E B 16	E B 15	E B 15	19	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	E B 15	G	27	30	G	G	G	34	32	31	27	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17
24	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	19	G	G	G	E B 20	G	G	G	G	G	G	20	E B 17	E B 16	E B 16	18	17
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	27	31	G	G	G	36	35	30	26	G	E B 16	20	18	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	21	G	30	33	36	36	34	34	G	27	E B 17	E B 16	E B 16	E B 16	20	E B 16	E B 16
27	E B 16	E B 16	E B 15	E B 16	E B 15	E B 15	E B 16	23	27	G	G	41	G 26	G	G	29	28	18	E B 16	E B 16	E B 16	18	17	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	21	26	29	G	G	G	G 20	33	32	26	22	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	G	G	G	31	32	32	32	28	24	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	26	29	32	34	34	34	34	30	27	22	20	17	16	19	18	16
L Q	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	G	G	G	G	31	G 25	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

FEB. 2019 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

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

FEB.2019 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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	319	311	329	327	376	344	312	361	357	363	357	382	365	361	381	341	374	378	349	347	345	366	309	308
2	320	295	297	323	319	361	365	372	375	331	372	352	335	359	372	380	374	350	343	A	346	357	315	313
3	339	332	321	336	349	337	372	413	382	378	360	361	363	382	371	388	403	380	347	355	354	358	339	349
4	329	334	283	332	307	321	381	390	382	380	395	309	365	371	360	394	369	366	387	349	332	334	380	335
5	F	F	F	F	340	365	356	384	381	371	372	354	364	372	385	388	366	376	A	338	345	A	323	F
6	F	C	321	320	361	352	347	394	366	388	366	375	389	385	348	368	380	393	326	370	350	346	306	305
7	327	322	369	361	331	330	395	390	400	369	362	401	362	386	351	368	368	379	380	313	337	338	F	F
8	320	319	F	324	F	F	F	388	362	367	351	367	354	368	396	371	369	370	346	364	364	369	337	304
9	349	337	326	305	288	341	351	392	391	386	349	368	386	366	370	385	380	380	321	374	353	322	336	315
10	F	F	319	F	F	F	345	370	381	361	315	348	368	359	370	366	356	392	A	355	385	321	325	F
11	322	343	361	344	347	326	F	429	409	385	388	379	365	361	349	356	376	390	406	327	327	326	333	334
12	325	325	312	340	297	325	411	394	383	366	338	349	348	376	363	C	373	384	338	354	370	332	319	316
13	337	326	333	337	360	327	364	403	395	374	350	376	360	355	382	362	383	384	344	335	348	310	350	342
14	310	309	359	356	347	347	345	381	393	372	375	356	338	370	390	373	372	368	335	343	379	372	332	311
15	291	343	306	F	339	312	356	393	364	372	382	350	377	364	353	384	379	376	376	358	355	332	324	303
16	330	325	316	318	F	355	369	397	410	388	363	357	336	343	356	354	382	387	360	328	365	338	352	336
17	332	329	331	349	343	335	389	360	399	366	362	344	356	364	375	366	382	356	382	374	333	322	337	352
18	330	312	337	337	356	328	375	404	368	383	340	374	351	357	365	371	366	388	369	324	356	348	339	325
19	311	316	330	319	320	331	417	398	384	379	363	381	360	343	A	378	366	388	408	309	369	387	328	298
20	F	323	326	351	352	327	351	385	388	367	389	381	334	364	364	383	379	379	362	322	349	332	341	321
21	302	342	359	F	F	F	F	401	401	357	354	367	348	342	383	380	294	382	330	343	366	348	318	319
22	309	324	374	338	336	324	359	384	367	387	357	339	361	410	342	377	354	370	363	327	356	339	331	331
23	297	319	333	341	370	359	366	385	344	414	353	343	343	373	342	356	373	366	350	365	358	378	324	317
24	317	328	322	356	345	362	365	392	402	385	366	353	353	354	335	359	366	387	357	356	350	362	324	319
25	287	317	325	316	337	F	389	397	415	377	391	366	368	343	350	373	V 389	377	364	336	326	339	361	337
26	329	329	317	312	312	F	361	390	402	375	369	362	360	369	364	364	373	351	342	338	347	351	322	341
27	352	340	323	326	352	351	361	410	344	384	395	364	351	344	385	393	370	378	389	363	332	322	339	327
28	328	341	347	345	294	289	383	372	377	366	314	371	368	375	376	313	361	387	366	305	321	339	319	357
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	25	26	24	24	23	25	28	28	28	28	28	28	28	27	27	28	28	26	27	28	27	27	25
MED	324	325	326	336	342	335	365	391	382	374	362	363	360	364	365	371	373	379	358	343	350	339	331	321
U Q	330	336	337	344	352	352	382	398	400	384	374	374	365	372	381	383	380	387	376	358	361	358	339	336
L Q	310	318	319	322	320	326	354	384	368	366	352	351	350	356	351	362	366	370	343	327	341	332	322	312

FEB. 2019 M(3000)F2 (0.01)

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FEB. 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										A	L	U L 412	L	A	A	A	A							
2									U L 406		U L 387	411		A	L									
3									A	L	U L 424	U L 383	U L 387		L	L								
4										L	L	405	U L 425	L	L									
5										L	U L 412	407	U L 405	L	A	A								
6										L	A	418	L	U L 404	U L 373									
7											U L 397	U L 412	U L 448		A	L								
8										L	L	U L 419	U L 387	U L 418		L								
9										L	U L 396	L	439	U L 395	A									
10									L	L	359	L	U L 445	A	L									
11										L	480	A	L	U L 389	U L 376									
12											U L 405	U L 385	394		L	C	L							
13										L	U L 414	L	U L 396	L	A	L								
14										L	A	L	L	U L 401	A	L								
15										U L 422	U L 406	L	U L 392	393	L	L								
16										L	L	U L 434		412	L	L								
17										L		A	429	393	U L 391	A	A							
18									L	L		A	408	L	L	L								
19								L		L	L	404	A	U L 425	A	L								
20										L	L	410	U L 402	402	396	L								
21										L	U L 379	U L 422	402	401		L	U L 370							
22										L	U L 404	423	A	A		L								
23									L	L	U L 403	U L 390	U L 411	U L 399	U L 395	L	L							
24									L	L	U L 410	U L 425	446	U L 389		L								
25											408	U L 413	U L 468	U L 402	388	L								
26										L	L	432	420	432	L	L	L							
27									L	395	391	A	421	449	U L 406	L								
28										L	U L 373	396	U L 409	U L 400	U L 427	U L 367								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	2	17	19	20	17	8	1	1							
MED									U L 406	408	U L 404	U L 412	U L 410	U L 401	U L 393	U L 367	U L 370							
U Q											U L 411	U L 422	434	415	U L 401									
L Q											U L 389	U L 404	U L 399	U L 394	U L 382									

FEB. 2019 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

FEB.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										246	244	236	234	248	240	260	238							
2									238		250	248		240	238									
3									230	244	262	244	244		240	234								
4										238	228	340	240	234	250									
5										244	254	236	226	244	236	216								
6										226	232	246	232	232	272									
7											246	230	244		248	238								
8										244	242	242	246	226		244								
9										236	274	228	228	246	232									
10									228	234	352	242	228	254	246									
11										234	238	238	242	262	274									
12											274	256	236		240	C	234							
13										250	252	226	256	242	236	248								
14										240	E A 242	270	254	240	238	254								
15										246	242	254	236	266	256	240								
16										226	242	256		262	260	236								
17										238		E A 284	272	246	242	232	226							
18									244	232		246	260	268	244	246								
19								220		248	254	230	260	270	A	230								
20										254	234	244	290	250	254	248								
21										264	276	244	242	264		226	366							
22										234	264	292	240	210		242								
23									244	222	278	256	274	250	270	258	248							
24									214	228	270	270	266	252		248								
25											244	246	260	268	268	252								
26										240	260	252	276	258	262	246	246							
27									268	236	220	266	282	282	232	226								
28										246	332	238	244	246	250	308								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	7	24	26	28	26	25	23	21	6							
MED								220	238	239	251	246	244	250	246	244	242							
U Q									244	246	270	256	260	263	260	250	248							
L Q									228	234	242	238	236	241	238	233	234							

FEB.2019 h'F2 (KM)

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FEB. 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 264	E B 254	E B 252	E B 242	206	198	E B 286	220	194	A	200	188	172	A	A	A	A	210	196	E B 200	218	196	228	E B 268
2	E B 258	E B 272	E B 252	E B 268	236	218	186	202	184	214	198	180	198	A	202	210	208	196	210	A	210	E A 246	E B 252	E B 256
3	E B 234	E B 240	E B 250	E B 240	226	228	222	196	A	198	182	184	202	210	206	204	198	198	212	216	210	216	214	210
4	230	234	E B 268	E B 244	E B 252	E B 256	210	192	190	198	178	174	174	198	188	210	200	198	212	216	224	226	194	E B 248
5	E B 256	E B 256	E B 252	E B 240	E B 228	206	222	204	208	196	188	202	190	204	A	A	204	194	A	E A 260	E B 238	A	E A 252	E A 272
6	E A 246	C	232	E B 240	208	204	218	208	212	192	A	186	174	168	196	214	202	188	210	204	220	220	E B 218	E B 268
7	E B 232	E B 240	200	216	E B 252	E B 232	188	188	202	194	194	190	182	212	A	194	200	198	190	E A 260	222	E B 222	222	218
8	E B 236	E A 252	E B 240	E A 240	198	180	202	188	212	198	186	182	200	188	204	182	196	202	198	208	216	210	222	234
9	222	210	E B 236	E B 238	E B 254	202	186	188	212	204	192	186	184	182	A	218	214	198	E B 192	198	198	226	200	E A 232
10	E B 248	E B 242	E B 238	210	228	200	202	192	180	174	196	196	186	A	206	206	214	202	A	204	216	E B 322	E A 232	E A 278
11	E B 230	212	210	224	E B 236	E B 264	200	178	178	166	164	A	206	190	222	214	210	202	188	194	228	E B 248	242	E A 236
12	E B 234	E B 248	E B 264	E B 240	E B 246	E B 242	184	198	206	206	198	206	192	226	196	C	194	194	196	202	216	E B 212	E B 260	E B 266
13	E B 238	E B 248	E B 234	214	214	222	212	194	190	184	190	188	182	182	A	194	210	200	216	216	206	E B 260	228	216
14	E A 288	E B 276	E B 232	220	E A 268	220	E B 232	202	206	194	A	184	190	184	A	192	E A 238	216	200	218	192	210	E B 278	E B 248
15	E B 236	222	E B 268	E B E B 242	E B 230	226	218	202	192	176	182	184	184	182	202	198	202	200	194	202	E B 198	E B 220	E B 240	234
16	E B 246	E B 238	218	E B 246	228	204	200	194	194	196	166	168	176	174	202	202	206	204	186	E B 236	212	194	210	E B 238
17	E B 244	E B 262	E B 246	E B 244	E B 236	E B 236	196	196	198	180	E A 236	A	186	194	206	A	A	194	180	194	E B 260	E B 244	E A 244	216
18	E B 256	E B 268	E B 244	224	218	E B 206	188	196	196	190	178	A	204	192	210	184	212	198	186	224	208	214	220	220
19	E B 268	E B 248	E B 254	E B E B 258	E B 244	E B 242	184	164	208	212	192	180	A	186	A	182	200	208	184	254	206	196	E B 244	E B 260
20	E B 268	E B 254	E B 238	216	214	198	218	194	210	198	204	194	186	180	212	204	204	200	190	E B 234	208	202	228	E B 244
21	E B 266	222	212	210	216	E B 256	208	202	198	180	192	188	186	184	208	188	208	208	216	222	212	198	E B 250	250
22	E B 258	E B 246	202	222	E B 250	E B 238	194	196	200	202	188	182	A	A	182	200	202	210	192	202	222	212	E A 256	E B 242
23	E B 242	E B 238	E B 238	226	204	214	200	194	186	180	180	180	180	182	194	186	214	208	194	200	200	196	E B 238	E B 258
24	E B 240	236	E B 236	226	210	216	192	190	184	196	182	176	170	170	180	208	208	204	204	204	208	220	E A 244	E A 252
25	E B 250	E B 244	E B 250	232	214	204	198	188	194	194	192	188	178	174	202	202	190	204	202	E A 250	228	222	208	198
26	E B 262	E B 238	E B 240	E B 248	216	E B 222	202	192	200	190	190	190	182	182	202	202	204	200	202	202	206	218	208	E B 222
27	216	216	E B 258	E B 252	224	220	208	202	192	206	192	A	164	170	156	178	206	204	198	198	226	E A 232	222	216
28	E B 228	222	230	E B 232	E B 274	E B 294	208	198	202	196	190	182	182	176	184	202	212	202	192	206	E B 240	222	E B 222	216
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	28	28	28	28	28	27	27	26	24	26	24	21	24	26	28	26	27	28	27	28	28
MED	E B 245	E B 242	E B 239	E B 239	U 218	210	201	195	198	196	190	185	184	183	202	202	204	201	196	204	212	215	U 216	E 240
U Q	E B 258	E B 254	E B 252	E B 243	E B 245	E B 237	215	202	206	198	194	189	190	193	206	207	210	204	204	E 224	223	E B 226	E B 244	E B 257
L Q	E B 234	234	232	223	214	204	193	191	190	184	182	181	178	178	191	190	200	198	190	202	207	210	219	219

FEB. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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								A	A	A	108	A	A	A	108	108	A	B						
2								B	A	A	A	114	A	114	114	114	114	B						
3								112	A	A	A	112	112	A	A	A	114	B						
4								126	A	122	112	A	A	A	A	A	110	A						
5								B	110	110	A	108	A	108	A	A	A							
6									A	A	A	108	A	108	102	108	108							
7								B	110	A	110	110	112	112	112	114	108	B						
8								A	A	110	110	A	A	110	A	A	114	A						
9								B	116	A	A	112	112	110	112	A	118	B						
10									A	118	A	A	A	118	108	108	116	B						
11								116	116	116	114	108	110	110	112	114	120	B						
12								B	116	116	112	112	112	112	A	C	A	B						
13								B	112	112	114	108	108	A	A	A	A	A						
14								A	A	A	A	A	A	108	112	A	A	B						
15								132	110	112	112	112	112	110	110	A	114	B						
16								116	120	112	112	112	108	108	108	108	A	B						
17								108	108	108	108	A	A	A	A	A	A	B						
18								116	114	112	114	112	112	A	114	110	A	B						
19								112	114	A	A	A	A	A	A	A	108	B						
20								110	110	104	112	112	110	110	108	112	A	B						
21								114	114	116	116	114	112	110	110	108	108	B						
22								114	110	A	A	A	A	A	A	A	A	B	A					
23								124	118	110	108	108	108	110	110	110	110	110						
24								122	120	116	116	114	108	106	106	106	110	110						
25								110	114	114	114	110	110	110	110	110	110	122						
26								122	122	110	110	A	A	A	110	110	110	B						
27								118	118	120	114	112	112	110	108	108	108	108						
28								108	A	A	108	108	112	112	112	116	116	A						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								17	19	18	19	19	16	19	19	16	18	4						
MED								116	114	112	112	112	112	110	110	110	110	110						
U Q								122	118	116	114	112	112	112	112	113	114	116						
L Q								111	110	110	110	108	109	108	108	108	108	109						

FEB. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.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	92	B	B	96	96	B	96	92	88	86	G	98	98	148	126	114	100	96	90	B	B	B	B	B
2	90	90	96	B	108	108	108	108	108	108	108	G	98	146	132	118	G	104	92	92	92	82	84	84
3	104	98	B	B	110	92	98	G	92	92	92	114	G	96	96	94	G	B	92	92	92	92	90	90
4	84	90	90	94	94	94	B	G	104	G	G	92	90	90	90	92	G	100	96	100	B	100	92	92
5	92	B	B	92	B	100	B	140	152	G	98	G	92	G	90	90	84	94	92	90	88	88	88	88
6	88	C	86	B	B	94	94	94	94	94	88	96	88	G	146	150	136	88	86	B	84	98	B	B
7	B	B	B	90	B	B	110	106	108	104	G	G	G	134	154	114	128	B	B	98	96	96	90	90
8	106	94	92	92	98	102	100	100	100	G	G	100	98	80	80	80	118	102	100	98	92	94	94	94
9	92	98	B	B	B	B	B	140	G	104	100	100	G	G	126	104	G	B	B	100	B	96	96	92
10	94	B	94	B	B	B	B	114	96	G	94	92	86	142	140	122	120	96	98	96	94	88	90	86
11	88	88	B	90	88	92	90	G	G	G	G	136	G	G	154	G	160	96	100	90	88	86	86	82
12	B	B	90	B	92	92	B	138	G	132	G	G	128	146	100	C	96	B	B	B	92	B	B	86
13	86	98	92	B	B	B	B	B	G	G	G	G	96	90	84	94	94	94	94	118	96	96	98	94
14	88	90	90	90	82	B	100	98	98	98	90	90	90	G	144	86	84	84	84	B	98	84	B	B
15	B	B	B	B	B	B	B	G	G	G	G	G	G	G	G	102	G	B	B	96	B	B	B	B
16	B	B	102	100	90	90	84	156	G	G	G	G	120	G	G	G	96	G	94	94	B	B	B	100
17	90	B	90	106	96	B	B	112	G	84	152	84	86	86	84	100	98	98	88	100	98	98	96	90
18	116	92	B	B	B	88	B	144	G	G	G	144	122	98	160	112	88	B	92	98	98	98	92	92
19	94	100	96	94	94	B	B	G	G	96	94	92	92	90	84	84	G	120	B	80	B	B	92	B
20	92	B	98	98	B	B	B	G	G	G	G	G	G	G	126	G	114	102	B	B	B	100	98	94
21	92	98	96	90	B	B	B	G	G	G	110	116	G	112	112	G	150	128	98	B	B	98	96	104
22	B	B	90	B	B	B	B	G	G	100	100	96	90	90	88	88	100	86	90	100	B	B	96	96
23	94	110	B	B	B	B	B	G	148	150	G	G	G	134	134	118	140	116	104	104	92	92	B	92
24	94	92	B	B	B	B	B	126	G	G	G	B	G	G	G	G	G	G	102	B	100	98	96	94
25	B	B	B	B	B	B	B	130	144	152	G	G	G	152	142	130	142	G	104	98	98	98	98	94
26	94	100	B	B	B	B	B	154	G	114	114	102	102	102	146	G	164	B	B	B	106	98	98	98
27	94	94	96	B	B	B	B	134	130	G	G	156	86	G	G	136	136	124	B	B	98	98	98	98
28	B	B	B	B	B	B	B	156	114	108	G	G	G	92	132	120	120	100	100	B	B	B	B	98
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	15	15	12	11	10	9	18	14	15	12	16	17	18	24	21	21	18	20	18	18	21	20	23
MED	92	94	92	93	94	93	98	128	106	104	99	99	92	100	126	104	118	99	94	98	95	96	95	92
U Q	94	98	96	97	98	100	104	140	130	114	109	115	100	142	143	119	138	104	100	100	98	98	97	96
L Q	89	90	90	90	90	92	92	106	96	94	93	92	89	90	90	91	96	94	91	92	92	90	90	90

FEB.2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	F2			F2	F1		F3	L4	L4	L3		L2	L2	HL12	C2	C2	L3	L3	F1					
2	F2	F2	F1		F2	F1	F2	L2	L2	L2	L2		L2	H1	C1	C1		L1	F4	F4	F4	F5	F2	F2
3	F1	F1			F1	F3	F4		L3	L4	L2	CL22		L2	L3	L3			F2	F4	F3	F3	F3	F2
4	F1	F2	F2	F1	F1	F2			L2			L2	L2	L2	L2	L2		L2	F4	F1		F1	F2	F2
5	F2			F1		F1		HL31	H2		L2		L2		L2	L3	L3	L2	F5	F2	F2	F4	F2	F2
6	F2		F2			F1	F7	L5	L3	L4	L3	L2	L2		H1	H3	H1	L1	F2		F1	F1		
7				F1			F1	L3	C2	L2				CL11	HL12	C2	C2			F3	F2	F1	F4	F4
8	F1	F3	F2	F3	F1	F2	F1	L3	L2			L2	L2	L2	L2	L2	C1	L5	F3	F5	F5	F4	F3	F2
9	F4	F3						H2		L3	L1	L2			C1	L3				F1		F2	F3	F4
10	F2		F1					C1	L2		L3	L2	L2	H1	H1	C2	C3	L2	F4	F4	F5	F4	F3	F3
11	F2	F2		F2	F2	F2	F1					HL12			H1		H1	L1	F2	F1	F2	F1	F2	F2
12			F2		F1	F2		H2		C1			C1	H1	L2		L3				F2			F1
13	F2	F1	F1										L2	L2	L2	L2	L4	L2	F2	F2	F2	F1	F3	F3
14	F2	F2	F2	F1	F2		F1	L4	L2	L2	L3	L2	L2		HL12	L3	L3	L3	F2		F1	F1		
15																L2				F1				
16			F1	F2	F1	F2	F3	H1					C1				L2		F1	F2				F1
17	F2		F2	F1	F1			C2		L2	HL12	L3	L2	L2	L3	L2	L3	L2	F1	F1	F2	F1	F4	F3
18	F2	F2				F1		H3				H1	C1	L1	H1	C1	L3		F2	F2	F1	F2	F1	F1
19	F2	F2	F1	F1	F1					L2	L2	L2	L2	L3	L3	L3		C1		F1			F2	
20	F1		F1	F1											H2		C2	L5				F1	F3	F2
21	F2	F2	F2	F2							C1	C1		C1	C1		H1	C2	F4			F2	F1	F2
22			F1							L2	L2	L2	L2	L2	L2	L2	FF12	L4	L2	F1			F3	F3
23	F4	F2							H1	H2				H1	H1	C1	H1	C3	F1	F1	F1	F1		F1
24	F1	F3						C1											F3		F2	F2	F3	F2
25								C3	H2	H1				H1	H2	H1	H1		F1	F4	F3	F3	F2	F3
26	F2	F1						H2		C2	C2	L1	L1	L2	H1		H2				F2	F3	F2	F2
27	F2	F1	F2					H2	H1			HL12	L2			H1	H2	C2			F2	F3	F4	F2
28								H1	C2	L3				L2	H1	C2	C1	L3	F1					F2
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

FEB.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 420	U L 408		U L 412	A								
2										L	L 416		L	416	L	L	L							
3									L		U L 408	L	U L 416	L		L	L							
4										L	L 416			U L 436	412	A	L							
5										C	C	C	C	C	C	C	C							
6										L	L 412	420	420		L	A	L							
7									L	L	L		U L 428	L	U L 420	U L 416	L	L						
8										L	L	L	U L 428	A		A								
9										L	U L 408	A	U L 424	U L 448	U L 416	L	L							
10											L	L	U L 428	U L 440	U L 424	L	L							
11									L			U L 420	U L 424	U L 420	U L 428	L	L							
12											408	L	U L 424	420	U L 416	L	L							
13									L	L	L	428	U L 428	L	L	L	L							
14									L	L	U L 428	436	428	L	U L 436	A	A	A						
15									L	L	U L 424	L	420	U L 448	U L 432	L	L							
16										L	L	U L 444	L	U L 440	U L 416	U L 400	L							
17											U L 416	U L 424	428	428	U L 420	L	L							
18											U L 416	412	424	U L 428	U L 444	U L 400	L							
19									L	L	L	428	436	U L 444	420	L	L							
20											L	420	432	U L 444	412		A							
21											U L 432	432	432	U L 440	U L 424	L	L	L						
22											L	440	436	L	U L 440	U L 420	L	L						
23										L	U L 432	428	428	444	L	U L 404		L						
24									L	L	L	420	436	420	U L 424	L	L							
25											L	424	432	U L 428	U L 412	L	L							
26											U L 416	420	436	U L 424	416	L	L	L						
27										L	L		444	428	404	L	L	L						
28										L	U L 420	420	432	U L 444	U L 444	U L 412	L							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											11	19	24	20	21	6								
MED											U L 416	420	428	U L 432	U L 420	U L 408								
U Q											U L 428	428	432	U L 444	U L 430	U L 416								
L Q											U L 408	420	U L 424	422	414	U L 400								

FEB.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	U R 216	R	U A 284	U R 308	U R 316	A	U A 308	A	A	A						
2								B	B	A	A	A	U R 308	U R 308	R	U R 280	U R 260	A	B					
3								B	U R 204	U A 252	U A 288	A	A	A	A	296	A	B	B					
4								B	U A 220	U R 284	U R 300	336	332	312	U R 296	A	U R 252	U A 204	B					
5								B	A	C	C	C	C	C	C	C	C	U A 208	B					
6								B	U R 192	U R 248	288	U R 308	U R 316	U R 312	U R 300	284	A	A	B					
7								B	U R 208	R	U R 292	U A 308	U R 316	U A 300	U A 292	A	A	R 208	B					
8								B	U A 236	U R 276	A	A	A	A	320	A	U R 264	U R 216	B					
9								B	244	260	296	U A 320	328	316	U R 328	A	A	U R 208	B					
10								B	U R 216	U R 260	U R 288	324	U R 324	U A 308	304	A	U R 280	A	B					
11								B	A	U A 268	292	320	A	A	A	U R 288	A	204	B					
12								B	A	288	U A 300	A	A	A	A	A	A	A	B					
13								B	U R 228	272	U R 308	A	328	U R 320	316	U R 300	U R 268	U R 208	B					
14								B	A	U A 276	U R 300	U R 316	U R 340	U R 320	A	A	A	A	B					
15								B	U R 224	U R 276	U R 304	U R 316	U R 328	U R 320	R	U R 300	U R 264	U R 220	B					
16								B	U R 228	U R 284	U R 304	U R 300	A	A	A	A	A	U R 220	B					
17								B	220	252	304	A	A	A	A	A	A	A	B					
18								B	U R 236	U R 288	A	A	R	A	A	A	A	A	B					
19								B	216	U R 272	300	U R 308	U R 324	U R 316	308	292	U A 280	U R 228	B					
20								B	U R 228	U R 276	U R 308	U R 320	U R 336	R	316	A	A	A	B					
21								B	U R 232	U R 276	U R 316	A	A	A	A	A	A	A	B					
22								B	U R 236	U R 280	308	316	R	R	A	U R 324	U R 272	U R 228	B					
23								B	U R 236	U R 284	U R 312	U R 324	336	U R 344	A	A	U A 268	A	B					
24								B	U R 240	U A 284	U A 292	A	A	U R 332	A	A	A	A	B					
25								B	252	U R 288	U R 312	U R 328	U R 340	A	R	U R 312	U R 272	U R 232						
26								B	U R 232	U R 288	U R 312	A	A	A	A	R	U R 268	A	B					
27								B	A	U R 292	U R 316	U A 328	328	U R 320	U R 312	288	A	A	B					
28								B	A	U R 268	U R 296	312	U R 320	U A 332	U A 300	288	A	A	B					
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									21	24	24	17	16	14	12	11	11	12						
MED									U R 228	U R 276	U R 300	U R 316	U R 328	U R 318	U 308	U R 292	U R 268	U R 212						
U Q									U R 236	U R 284	U R 308	U 324	U R 334	U R 320	316	U R 300	U R 272	U R 224						
L Q									U R 216	U 268	U 292	U R 308	U R 318	U 312	U 300	288	U R 264	208						

FEB. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	J A 42	J A 43	J A 33	23	J A 23	E B 16	E B 16	E B 16	G	G	33	G	G	J A 46	38	J A 45	J A 42	J A 51	J A 31	J A 34	J A 28	J A 29	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	23	24	25	J A 33	J A 42	J A 40	J A 40	G	G	G	G	G	26	J A 24	23	21	E B 16	21	J A 44
3	22	22	J A 25	J A 33	J A 30	20	E B 16	E B 16	G	31	34	33	J A 40	J A 42	36	G	J A 33	23	J A 26	J A 27	J A 27	J A 25	J A 34	J A 54
4	J A 40	J A 27	J A 31	20	J A 23	25	E B 16	E B 16	26	G	G	37	37	35	G	J A 42	G	24	E B 16	E B 16	J A 36	J A 32	J A 36	J A 30
5	E B 16	E B 17	E B 17	E B 17	24	22	E B 16	25	J A 42	C	C	C	C	C	C	C	C	25	J A 29	J A 26	J A 24	E B 16	E B 16	E B 15
6	E B 17	E B 16	J A 26	22	E B 16	20	E B 16	20	G	G	34	G	G	G	G	34	30	26	23	19	19	E B 16	E B 16	E B 16
7	E B 16	J A 22	E B 16	E B 16	E B 16	21	E B 16	E B 16	G	G	G	36	G	37	34	34	32	G	J A 24	J A 25	J A 25	J A 30	J A 28	E B 16
8	E B 16	18	J A 40	J A 34	J A 54	J A 46	18	J A 35	G	G	J A 41	J A 43	J A 38	J A 55	36	J A 49	G	G	23	E B 16	E B 16	E B 16	E B 30	J A 36
9	J A 33	J A 22	J A 27	J A 27	J A 43	J A 31	J A 27	J A 23	28	31	37	39	36	36	G	J A 48	J A 36	G	20	22	22	E B 16	J A 51	J A 40
10	J A 25	J A 23	J A 28	J A 32	22	E B 16	20	22	G	G	G	37	G	40	36	33	G	J A 30	J A 45	J A 43	J A 32	J A 67	J A 46	J A 25
11	E B 16	E B 16	J A 25	J A 38	J A 21	21	E B 16	J A 21	J A 31	34	35	35	J A 39	J A 38	J A 41	G	30	26	J A 31	J A 38	J A 29	J A 30	E B 16	E B 16
12	E B 16	E B 16	E B 16	J A 26	J A 24	22	E B 16	J A 25	J A 29	32	35	J A 45	J A 42	J A 40	J A 43	J A 41	J A 42	J A 28	26	J A 26	E B 16	23	E B 16	J A 22
13	J A 24	22	J A 23	J A 36	J A 24	E B 15	E B 16	24	G	G	G	36	36	G	35	G	G	G	19	E B 16	J A 22	22	E B 15	24
14	J A 25	23	E B 16	E B 16	19	E B 16	J A 19	24	J A 30	J A 41	G	G	G	G	J A 43	J A 59	J A 46	J A 43	J A 28	J A 25	22	E B 16	E B 16	E B 16
15	J A 30	24	E B 16	E B 16	E B 16	20	E B 16	E B 15	G	G	G	G	G	G	G	G	G	G	E B 16	21	E B 16	E B 17	E B 17	E B 16
16	21	E B 17	E B 16	E B 15	E B 15	J A 34	J A 24	J A 29	G	G	G	G	35	37	J A 38	J A 37	J A 35	G	E B 16	E B 16	E B 16	J A 21	J A 23	E B 16
17	E B 16	E B 16	E B 16	E B 16	20	E B 16	E B 15	E B 16	25	29	34	37	J A 45	J A 42	35	35	J A 32	J A 27	23	J A 23	21	E B 16	J A 37	J A 30
18	E B 16	J A 31	23	E B 16	J A 23	J A 29	E B 16	E B 17	G	G	J A 35	35	G	36	J A 39	J A 43	32	J A 30	20	E B 16	20	20	J A 34	J A 28
19	J A 33	E B 16	19	E B 16	23	E B 16	E B 16	E B 16	24	G	34	G	G	G	G	34	32	G	19	25	23	E B 15	E B 15	E B 16
20	J A 29	J A 26	J A 31	E B 16	J A 20	E B 16	E B 16	E B 17	G	G	G	G	G	G	36	36	J A 38	J A 32	J A 25	20	E B 16	20	E B 16	E B 16
21	22	J A 21	E B 16	J A 26	E B 16	J A 26	22	E B 16	G	G	G	J A 44	36	37	35	37	32	J A 28	20	J A 22	E B 16	J A 30	J A 47	J A 26
22	22	22	E B 16	E B 16	E B 16	E B 16	22	E B 16	G	G	36	35	G	G	G	G	G	G	24	21	20	E B 17	20	J A 21
23	J A 50	J A 29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	36	G	34	34	31	26	J A 29	22	J A 27	24	E B 16	E B 16
24	21	25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	33	33	J A 37	J A 40	G	34	J A 38	J A 40	J A 35	19	J A 23	23	J A 24	J A 28	25
25	J A 30	J A 24	J A 32	J A 26	E B 15	E B 15	E B 15	E B 16	G	G	G	G	G	J A 37	G	G	G	G	E B 16	22	22	22	23	22
26	J A 27	20	E B 17	E B 17	E B 16	E B 16	E B 16	E B 16	G	G	G	35	37	J A 40	J A 42	G	G	J A 31	J A 22	J A 25	21	J A 23	22	J A 32
27	E B 17	E B 16	E B 16	E B 16	J A 24	E B 16	E B 16	J A 21	J A 28	G	G	38	36	G	G	34	33	27	E B 16	24	19	20	19	E B 16
28	E B 16	E B 16	E B 15	E B 16	E B 16	E B 17	E B 16	19	J A 30	G	G	37	G	39	36	34	33	30	22	22	J A 24	E B 16	E B 16	E B 16
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	28	28	28	28	28	28	28
MED	22	22	E B 17	E B 16	20	18	E B 16	E B 17	G	G	G	35	35	36	35	34	32	26	23	22	22	20	20	22
U Q	J A 30	J A 24	J A 26	J A 26	J A 24	J A 22	18	24	J A 28	31	35	J A 37	J A 37	J A 40	J A 38	J A 41	J A 35	J A 30	J A 26	J A 25	J A 24	J A 24	J A 32	J A 29
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	G	G	G	G	G	G	G	G	E B 19	E B 20	E B 19	E B 16	E B 16	E B 16

FEB. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	20	E B 16	22	E B 17	E B 16	E B 16	E B 16	E B 16	G	G	32	G	G	36	35	38	36	32	E B 16	E B 16	21	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	30	30	G	G	G	G	G	23	18	E B 15	E B 16	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	E B 16	E B 16	E B 16	G	28	31	33	33	34	32	G	25	22	17	E B 15	E B 15	18	22	A A 54
4	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	G	36	36	33	G	33	G	22	E B 16	E B 16	E B 16	E B 16	20	E B 16
5	E B 16	E B 17	E B 17	E B 17	E B 16	E B 16	E B 16	E B 16	23	C	C	C	C	C	C	C	C	23	E B 16	19	16	E B 16	E B 16	E B 15
6	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	33	G	G	G	G	34	27	23	E B 15	E B 15	E B 16	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	34	G	34	32	31	28	G	16	17	E B 16	19	19	E B 16
8	E B 16	E B 16	E B 16	E B 17	E B 16	A A 46	E B 16	29	G	G	32	32	33	40	35	43	G	G	E B 16	E B 16	E B 16	E B 16	23	E B 16
9	E B 16	E B 16	E B 16	E B 16	21	E B 16	E B 16	E B 16	26	30	35	37	36	34	G	31	26	G	E B 16	E B 16	E B 16	E B 16	A A 51	19
10	E B 17	17	E B 16	20	E B 16	E B 16	E B 16	E B 16	G	G	G	35	G	37	34	31	G	20	E B 16	E B 16	E B 16	26	20	E B 16
11	E B 16	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 16	20	32	33	34	33	33	33	G	27	24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	21	30	32	34	32	32	35	32	29	21	20	20	E B 16	E B 15	E B 16	E B 16
13	E B 16	16	E B 17	E B 16	E B 16	E B 15	E B 16	E B 16	G	G	G	33	36	G	34	G	G	G	16	E B 16	E B 16	E B 16	E B 15	E B 16
14	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G 21	G	G	G	G	33	34	29	29	20	20	E B 16	E B 16	E B 16	E B 16
15	E B 16	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	G	G	G	G	G	G	G	G	G	G	E B 16	E B 16	E B 16	E B 17	E B 17	E B 16
16	E B 17	E B 17	E B 16	E B 15	E B 15	E B 15	E B 16	22	G	G	G	G	34	32	32	32	28	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	23	28	32	36	33	33	33	30	28	22	17	E B 16	E B 16	E B 16	22	20
18	E B 16	E B 16	E B 16	E B 16	E B 16	19	E B 16	E B 17	G	G	30	32	G	34	31	31	29	24	17	E B 16	16	E B 16	20	20
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	22	G	32	G	G	G	G	32	31	G	17	E B 15	E B 15	E B 15	E B 15	E B 16
20	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	G	G	G	34	34	32	25	19	E B 16	E B 16	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	G	G	G	37	36	35	33	34	29	24	17	E B 17	E B 16	E B 16	E B 20	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	G	G	36	34	G	G	G	G	G	G	E B 16	E B 16	E B 17	E B 17	E B 17	E B 17
23	E B 17	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	36	G	34	32	29	25	24	E B 16	20	E B 16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	32	32	32	34	G	32	31	28	24	E B 16	18	E B 15	E B 15	18	E B 16
25	20	E B 16	21	E B 16	E B 15	E B 15	E B 15	E B 16	G	G	G	G	G	34	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
26	18	E B 16	E B 17	E B 17	E B 16	E B 16	E B 16	E B 16	G	G	G	33	34	35	35	G	G	22	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16
27	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	24	G	G	37	36	G	G	32	32	26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
28	E B 16	E B 16	E B 15	E B 16	E B 16	E B 17	E B 16	17	23	G	G	35	G	37	34	32	30	26	18	E B 16	E B 16	E B 16	E B 16	E B 16
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	28	28	28	28	28	28	28
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	G	G	G	33	32	33	32	31	28	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	22	26	32	35	34	34	34	33	29	24	17	16	16	E B 16	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	G	G	G	G	G	G	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

FEB. 2019 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

FEB.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	321	312	323	350	379	353	306	349	391	373	370	391	399	365	325	355	338	345	358	338	354	317	326	268
2	299	315	320	320	329	322	408	365	387	333	366	375	347	353	366	375	375	383	370	363	347	360	321	318
3	335	367	350	327	389	394	338	362	373	385	355	321	359	360	379	351	373	349	379	347	333	344	366	A
4	335	344	324	334	350	321	324	385	376	368	382	325	386	357	363	378	364	356	346	360	371	349	409	281
5	324	311	302	328	369	426	355	353	375	C	C	C	C	C	C	C	C	365	371	357	319	339	362	339
6	351	335	326	316	335	379	366	384	395	373	381	370	392	356	349	361	356	354	396	380	316	306	346	359
7	F	F	376	F	F	369	390	379	378	351	360	397	364	367	377	372	374	375	390	370	305	346	355	326
8	330	335	F	342	F	A	F	383	378	357	357	374	329	354	358	351	374	376	382	322	379	357	310	336
9	328	F	315	308	F	F	343	379	381	364	375	366	376	336	337	367	364	386	374	357	348	357	A	323
10	321	330	292	327	322	359	361	364	398	372	351	371	358	321	355	376	373	364	402	380	341	369	311	307
11	331	321	373	329	319	330	356	410	388	379	383	366	369	369	336	345	351	348	350	374	322	327	315	308
12	308	328	294	321	334	332	350	403	380	372	342	357	354	356	353	367	349	398	386	362	330	350	345	336
13	306	307	337	347	357	385	343	364	392	363	368	374	358	380	367	372	390	363	378	373	354	325	349	351
14	306	284	343	335	322	322	360	365	372	381	359	360	374	341	344	351	326	356	392	340	381	330	305	331
15	329	315	338	334	362	358	318	386	387	390	341	345	380	315	350	350	372	390	354	383	381	321	334	291
16	324	F	F	327	334	371	365	375	399	384	388	323	364	311	347	371	369	372	400	340	316	337	337	304
17	293	326	322	322	322	384	356	381	386	377	330	349	345	353	356	372	353	386	377	362	314	319	335	340
18	344	312	333	335	364	377	349	399	381	392	371	356	355	366	321	376	376	365	385	352	330	348	355	329
19	317	304	330	321	351	337	347	383	380	361	374	351	355	354	351	379	369	364	384	371	308	361	336	330
20	314	314	314	325	365	395	326	365	393	387	355	370	365	299	357	357	377	397	389	340	327	367	356	318
21	301	306	F	366	345	351	336	372	396	356	349	357	343	326	362	346	386	371	384	344	355	349	309	320
22	312	325	326	349	325	334	330	389	390	349	334	335	365	381	341	342	347	354	382	392	315	336	349	350
23	F	311	309	311	357	382	321	408	394	384	315	355	339	350	344	349	369	372	372	377	347	348	351	305
24	324	338	338	338	353	422	333	392	380	363	367	367	356	350	359	353	353	356	389	382	326	370	343	330
25	316	290	331	F	353	386	370	398	373	374	364	359	346	334	370	354	359	371	359	337	369	325	336	343
26	332	316	320	333	333	331	331	394	376	381	357	369	350	307	333	355	360	348	380	325	370	327	361	388
27	324	343	313	301	336	375	321	391	374	375	353	401	338	381	381	357	355	370	380	363	315	325	358	364
28	322	335	340	331	332	324	326	401	418	400	339	377	362	332	333	328	357	385	368	346	346	323	320	337
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	25	25	26	25	26	27	28	28	27	27	27	27	27	27	27	27	28	28	28	28	28	27	27
MED	323	316	326	328	345	364	343	383	384	373	359	366	358	353	353	357	364	368	380	361	337	342	343	330
U Q	330	335	338	335	360	384	360	393	392	384	371	374	369	365	363	372	374	380	388	374	354	354	355	340
L Q	312	311	314	321	330	332	326	365	377	363	349	351	347	332	341	351	353	356	370	342	318	325	321	308

FEB.2019 M(3000)F2 (0.01)

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FEB.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 412	U L 440		U L 404	A								
2										L	L 404		L	433	L	L	L							
3									L		U L 390	L	U L 423	L		L	L							
4										L	L 420			U L 397	421	A	L							
5										C	C	C	C	C	C	C	C							
6										L	L 421	411	413		L	A	L							
7									L	L	L		U L 404	L	U L 389	U L 393	L	L						
8										L	L	L	U L 412	A		A								
9										L	U L 411	A	U L 412	U L 388	U L 383	L	L							
10											L	L	U L 410	U L 401	U L 379	L	L							
11									L			U L 412	U L 401	U L 402	U L 394	L	L							
12											393	L	U L 406	410	U L 399	L	L							
13									L	L	L	403	U L 420	L	L	L	L							
14									L	L	U L 371	400	408	L	U L 385	A	A	A						
15									L	L	U L 429	L	425	U L 384	U L 385	L	L							
16										L	L	U L 403	L	U L 415	U L 402	U L 378	L							
17											U L 395	U L 398	391	401	U L 410	L	L							
18											U L 413	427	433	U L 409	U L 411	U L 424	L							
19									L	L	L	413	407	U L 399	423	L	L							
20											L	423	410	U L 399	430		A							
21											U L 372	379	408	U L 402	U L 391	L	L	L						
22											L	385	394	L	U L 391	U L 395	L	L						
23										L	U L 410	401	425	390	L	U L 422		L						
24									L	L	L	423	408	428	U L 411	L	L							
25											L	431	422	U L 426	U L 426	L	L							
26											U L 422	419	432	U L 443	451	L	L	L						
27										L	L		427	444	454	L	L	L						
28										L	U L 412	404	425	U L 412	U L 373	U L 368	L							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											11	19	24	20	21	6								
MED											U L 410	412	412	U L 406	U L 402	U L 394								
U Q											U L 413	421	425	420	422	U L 422								
L Q											U L 390	401	408	U L 399	U L 387	U L 378								

FEB.2019 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Yamagawa

FEB. 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										240		220	220		298	242								
2										298	240	230	258	258	244	244	236							
3									224		264	274	244	244		244	234							
4										238	230	272		252	252	238	238							
5										C	C	C	C	C	C	C	C							
6										240	244	244	240	266	256	252	240							
7									222	254	254		254	238	238	258	236	236						
8										240	240	228	292	254		258								
9										258	248	252	240	266	290	240	224							
10											240	240	242	302	244	230	238							
11									222			248	248	248	278	270	266							
12											288	246	246	256	244	244	258							
13									218	240	260	242	256	230	256	242	226							
14									228	230	248	248	236	246	278	260	238	238						
15									226	228	254	268	240	302	252	252	236							
16										232	232	312	252	310	266	244	244							
17											306	254	268	252	252	236	244							
18											244	270	256	246	288	238	238							
19									226	252	252	276	254	270	252	222	242							
20											266	248	256	300	264		230							
21											282	258	258	276	230	248	232	242						
22											274	274	234	234	268	268	252	230						
23										218	310	260	290	242	266	266		234						
24									222	252	252	252	252	256	244	260	260							
25											264	272	272	288	258	258	266							
26											268	268	276	246	286	250	250	250						
27										240	264		296	248	242	254	262	256						
28										224	274	236	268	280	290	290	252							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									8	16	25	25	26	26	25	26	24	7						
MED									223	240	254	252	254	255	256	249	239	238						
U Q									226	252	271	271	268	276	278	258	252	250						
L Q									222	231	244	243	242	246	244	242	236	234						

FEB. 2019 h'F2 (KM)

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IONOSPHERIC DATA STATION Yamagawa

FEB.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 A 300	E B 254	E A 290	224	208	E B 208	E B 270	220	188	190	210	182	174	206	202	A	226	218	196	202	212	210	214	E B 252
2	E B 272	E B 228	E B 226	E B 254	218	216	198	204	204	186	210	186	186	178	172	182	190	198	198	196	214	214	214	E B 236
3	224	224	216	E B 246	208	200	E B 250	220	178	198	198	198	188	204	228	196	188	200	198	216	220	218	218	A
4	226	226	226	218	218	E B 240	E B 240	186	196	194	194	194	218	196	194	A	180	200	200	190	190	222	196	E B 270
5	E B 280	E B 280	E B 262	E B 230	218	182	224	222	210	C	C	C	C	C	C	C	C	208	190	208	E A 240	214	E B 212	212
6	220	220	E B 246	E B 246	E B 228	192	212	204	196	190	190	180	174	174	164	A	192	204	194	192	E B 254	E B 254	218	216
7	E B 262	222	188	E B 284	E B 264	206	194	194	178	172	174	214	176	188	188	180	188	188	188	190	E B 232	208	E A 230	E B 218
8	E B 230	216	216	228	216	A	216	228	210	186	206	192	188	A	226	A	200	200	194	220	184	202	E A 316	E B 236
9	E B 240	E B 244	E B 234	E B 242	E A 254	196	E B 238	192	202	202	202	A	190	190	202	202	198	208	180	192	192	192	A	222
10	E B 256	208	E B 262	E A 262	228	218	222	208	202	186	184	204	172	202	202	200	192	206	198	192	204	E A 236	E A 282	E B 254
11	E B 246	E B 242	210	E A 244	E B 244	E B 240	210	182	180	208	220	188	188	188	188	190	198	198	188	186	218	218	E B 246	E B 246
12	E B 252	E B 248	E B 248	E B 234	E B 234	E B 234	E B 234	186	194	206	200	220	202	190	190	190	190	196	196	214	214	208	208	222
13	E B 264	E B 252	E B 250	214	214	204	E B 252	208	178	176	182	182	182	180	194	194	194	194	194	194	194	218	218	210
14	E A 292	E B 292	E B 230	E B 230	236	E B 252	206	200	186	178	192	186	190	180	194	A	A	A	194	210	178	226	E B 242	E B 242
15	E B 236	E B 236	E B 236	E B 250	232	212	E B 248	210	184	182	174	174	174	174	174	174	188	200	200	192	E B 192	210	E B 210	E B 234
16	E B 234	E B 246	E B 224	E B 230	E B 230	208	208	208	196	184	176	172	174	174	182	216	200	200	190	194	E B 206	218	210	E B 230
17	E B 258	E B 258	E B 246	E B 248	E B 248	192	226	202	192	192	180	184	182	182	176	186	186	198	198	198	198	E B 246	E A 256	E A 230
18	230	E B 258	E B 230	E B 230	220	206	226	190	190	190	186	186	178	180	180	180	200	200	194	192	202	202	208	E A 244
19	E B 248	E B 260	E B 238	E B 248	E B 238	222	E B 222	194	184	184	200	178	178	178	178	194	202	204	194	188	E B 242	208	E B 208	E B 244
20	E B 280	E B 266	E B 274	E B 242	214	208	E B 304	200	200	200	192	186	186	178	178	230	A	208	190	190	E B 238	218	202	E B 242
21	E B 262	E B 250	216	212	E B 212	E B 236	216	202	196	184	188	214	194	178	182	190	186	186	186	196	204	186	E A 294	E B 260
22	E B 270	E B 254	E B 244	E B 232	E B 242	E B 242	E B 242	204	198	184	E B 234	200	190	190	174	192	192	192	192	192	204	214	212	220
23	E B 238	E B 242	E B 258	E B 250	216	192	E B 236	190	196	180	170	170	186	186	186	174	230	198	204	188	206	206	206	E B 266
24	E B 266	E B 246	E B 246	E B 234	226	178	E B 272	184	180	198	192	186	186	178	178	196	198	198	196	196	210	200	226	E B 244
25	E A 252	E B 252	E A 264	E B 230	214	192	198	186	194	194	186	186	174	166	166	188	192	192	208	202	202	210	210	210
26	E A 252	E B 252	E B 248	228	228	E B 236	E B 236	196	190	190	168	168	178	178	178	196	196	196	200	214	194	220	214	192
27	E B 248	E B 238	238	E B 240	E B 240	202	E B 248	200	200	200	196	212	190	168	168	180	206	200	200	200	212	224	200	188
28	E B 260	E B 242	218	E B 234	E B 242	E B 242	E B 246	198	192	182	174	206	182	182	188	198	198	210	210	210	198	216	216	214
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	27	28	28	28	27	27	26	27	26	27	22	25	27	28	28	28	28	27	27
MED	E B 252	E B 246	E B 238	E B 234	221	200	E B 230	200	194	190	191	186	186	180	182	191	194	200	195	195	202	212	211	E B 234
U Q	E B 265	E B 254	E B 249	E B 247	E B 239	E B 236	E B 247	208	199	198	200	200	190	190	194	196	200	204	199	205	E 216	219	E A 230	E B 244
L Q	237	232	225	230	216	196	214	191	185	184	180	182	176	178	176	182	189	196	191	192	196	208	208	216

FEB.2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

FEB.2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB.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	90	92	92	94	92	B	B	B	G	G	160	G	G	92	126	102	96	94	94	94	86	84	B	B
2	B	B	B	B	B	82	86	94	94	94	94	94	G	G	G	G	G	110	94	92	80	B	80	86
3	86	86	86	92	90	90	B	B	G	136	146	104	100	100	98	G	98	94	94	94	92	92	92	92
4	92	92	92	92	92	92	B	B	158	G	G	148	148	136	G	94	G	140	B	B	88	88	88	88
5	B	B	B	B	88	88	B	90	90	C	C	C	C	C	C	C	C	110	100	80	80	B	B	B
6	B	B	90	96	B	96	B	94	G	G	152	G	G	G	G	146	124	122	92	80	82	B	B	B
7	B	92	B	B	B	92	B	B	G	G	G	146	G	148	134	124	124	G	102	102	102	88	88	B
8	B	108	108	96	96	96	96	94	G	G	94	96	96	84	152	92	G	G	92	B	B	B	92	92
9	92	92	92	92	92	92	92	90	134	154	148	136	144	132	G	92	100	G	86	90	84	B	84	84
10	84	84	94	94	94	B	102	98	G	G	G	144	G	154	126	126	G	96	96	96	96	94	86	86
11	B	B	86	86	88	88	B	94	94	148	140	140	102	102	98	G	114	136	102	92	92	92	B	B
12	B	B	B	92	92	94	B	94	94	144	128	94	94	94	94	94	94	94	86	86	B	86	B	94
13	94	94	92	92	92	B	B	98	G	G	G	118	162	G	156	G	G	G	144	B	112	98	B	96
14	88	88	B	B	94	B	94	94	94	94	G	G	G	G	86	86	86	86	86	86	86	B	B	B
15	86	86	B	B	B	86	B	B	G	G	G	G	G	G	G	G	G	G	B	90	B	B	B	B
16	104	B	B	B	B	92	92	92	G	G	G	G	112	96	96	96	100	G	B	B	B	102	102	B
17	B	B	B	B	102	B	B	B	150	144	128	116	102	102	102	102	102	102	88	88	88	B	88	88
18	B	88	88	B	88	88	B	B	G	G	102	102	G	110	104	104	104	102	102	B	90	90	90	90
19	98	B	92	B	92	B	B	B	138	G	162	G	G	G	G	160	160	G	130	80	82	B	B	B
20	94	94	94	B	94	B	B	B	G	G	G	G	G	G	142	120	116	106	106	106	B	106	B	B
21	92	92	B	96	B	96	96	B	G	G	G	96	96	100	100	114	118	110	92	92	B	92	92	92
22	82	90	B	B	B	B	90	B	G	G	154	148	G	G	G	G	G	G	106	106	102	B	100	100
23	94	94	B	B	B	B	B	B	G	G	G	G	144	G	126	118	152	118	104	104	96	96	B	B
24	96	94	B	B	B	B	B	B	G	142	136	96	96	G	100	100	96	96	96	96	96	96	96	96
25	96	96	92	92	B	B	B	B	G	G	G	G	G	84	G	G	G	G	B	92	96	96	96	94
26	94	94	B	B	B	B	B	B	G	G	G	108	96	96	100	G	G	100	100	100	94	94	94	94
27	B	B	B	B	94	B	B	140	106	G	G	158	144	G	G	142	134	120	B	106	106	106	106	B
28	B	B	B	B	B	B	B	134	96	G	G	130	G	138	138	126	114	114	108	106	96	B	B	B
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	18	13	12	16	14	8	13	11	8	13	18	14	16	18	19	18	19	23	23	22	17	16	15
MED	92	92	92	92	92	92	93	94	96	143	140	117	102	101	103	104	109	106	96	92	92	94	92	92
U Q	95	94	93	95	94	94	96	98	138	146	153	144	144	134	134	126	124	118	104	102	96	97	96	94
L Q	87	88	89	92	91	88	91	93	94	115	115	96	96	95	98	94	98	96	92	88	86	89	88	88

IONOSPHERIC DATA STATION Yamagawa

FEB.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	F6	F2	F6	F4	F3						H2			L2	C1	L3	L4	L5	F2	F3	F3	F3		
2						F2	F3	L3	L3	L3	L3	L2						C1	L3	F2	F2		F2	F3
3	F1	F2	F3	F2	F2	F2				H2	H1	L3	L2	L3	L2		L4	L3	L2	F2	F3	F2	F4	F6
4	F3	F2	F2	F1	F1	F1			H2			H1	H1	H1		L4		H2			F2	F3	F4	F3
5					F2	F1		L2	L4									C1	L2	F4	F4			
6			F2	F1		F1		L1			H1					H2	C1	C1	L1	F1	F1			
7		F1				F1						H1		H1	H1	C1	C2		L1	F2	F2	F4	F3	
8		F1	F1	F2	F3	F6	F1	L9			L3	L2	L2	L3	H1	L5			L1				F7	F3
9	F2	F2	F2	F2	F3	F2	F2	L2	H2	H2	H2	H2	H2	H1		L2	L3		L1	F1	F1		F4	F5
10	F2	F2	F2	F4	F2		F1	L2				H1		H1	C1	C1		L2	L1	F1	F2	F4	F2	F2
11			F1	F3	F2	F1		L2	L2	H2	H2	H1	L2	L2	L2		C2	H22	L2	F2	F2	F1		
12				F2	F1	F1		L5	L4	H2	C2	L3	L2	L2	L2	L2	L3	L1	L1	F2		F1		F1
13	F1	F2	F3	F1	F1			L1				C1	H1		H1				H11		F1	F1		F2
14	F2	F2			F2		F1	L1	L2	L2					L5	L5	L3	L3	L3	F1	F1			
15	F5	F1				F1														F1				
16	F2					F5	F1	L3					C1	L2	L2	L2	L2					F1	F1	
17					F1				H2	H1	C1	C1	L1	L1	L1	L1	L2	L2	L2	F1	F1		F5	F2
18		F2	F1		F1	F3					L1	L1		C1	L1	L1	L1	L2	L1		F1	F1	F6	F7
19	F2		F2		F2				H2		H1					H1	H2		H1	F2	F1			
20	F2	F2	F2		F3										H1	C1	C2	L3	L3	F1		F1		
21	F1	F1		F1		F2	F2					L2	L1	L1	L1	C1	C1	L2	L1	F1		F1	F4	F2
22	F2	F1					F1				H1	H1							L1	F1	F1		F1	F2
23	F2	F2											H1		C1	C2	H1	C2	L4	F3	F4	F4		
24	F2	F2								H2	H2	L2	L2		L1	L1	L2	L2	L1	F3	F1	F2	F4	F4
25	F4	F4	F5	F4										L2						F1	F1	F3	F3	F3
26	F5	F2										C2	L2	L2	L2			L2	L1	F1	F1	F2	F2	F3
27					F2			HL21	L2			H1	H1			H1	H1	C2		F1	F1	F1	F1	
28								H2	L2			H2		H1	H1	C1	C2	C1	L1	F1	F1			
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB.2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

FEB. 2019 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

FEB. 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	30	30	30	33	32	21	23	31	51	50	65	81	57	E G 49	51	72	70	A	A	34	41	33	26	26
2	27	30	30	F 30	F 31	F 26	22	29	47	55	70	77	62	60	75	66	62	56	49	38	31	30	31	24
3	24	26	26	24	31	A	18	29	53	51	59	67	78	70	79	71	55	47	46	33	30	37	31	30
4	26	26	26	25	25	20	19	33	48	55	73	61	86	70	70	76	52	50	51	55	42	26	20	22
5	22	22	24	26	31	18	18	27	50	62	65	74	78	77	H 60	60	58	54	48	44	30	31	34	31
6	26	25	25	24	26	24	17	30	45	49	57	64	62	84	R 73	70	82	54	A	32	A	27	27	F 27
7	F 27	F 30	24	19	F 23	F 25	22	32	43	48	63	60	58	60	58	64	62	58	54	35	28	33	28	24
8	26	27	30	26	F 27	25	20	30	46	51	66	72	58	62	87	R 86	60	50	45	38	34	28	30	22
9	24	26	28	27	27	30	A	28	42	53	56	56	56	62	70	88	94	65	A	A	A	29	27	28
10	30	28	27	26	A	29	22	28	48	53	53	59	63	69	82	92	72	55	47	38	30	26	27	24
11	27	27	27	24	27	30	26	28	48	47	53	60	62	53	59	63	74	68	60	40	27	27	32	34
12	32	32	30	29	30	26	24	32	41	48	59	69	77	85	94	J R 90	82	95	54	49	43	44	34	36
13	35	32	33	32	40	18	17	32	48	49	58	73	72	62	65	70	65	58	48	47	42	34	35	F 35
14	28	26	27	25	27	25	28	31	51	56	72	98	96	R 83	68	77	82	76	79	64	52	35	33	35
15	35	33	28	26	26	26	23	35	51	56	55	57	59	58	71	81	78	54	49	48	33	29	34	25
16	26	24	24	22	24	30	18	33	50	50	50	55	58	50	62	66	81	60	48	44	29	29	33	30
17	30	29	27	26	27	26	20	31	48	47	52	65	70	78	80	93	81	64	H 52	46	38	32	38	41
18	45	48	44	42	39	31	20	31	50	53	48	64	68	67	62	69	61	54	53	42	37	30	32	28
19	28	28	29	29	32	29	26	37	46	51	57	66	78	78	J R 102	110	101	84	69	57	42	40	36	27
20	27	28	29	31	34	22	19	34	50	52	52	62	70	64	73	77	82	59	47	35	33	35	33	28
21	27	27	27	30	29	21	19	34	48	50	57	74	85	75	91	106	72	62	52	43	48	40	26	27
22	29	30	30	31	31	27	25	40	48	47	51	80	88	65	68	65	68	74	69	70	52	35	34	31
23	30	30	30	30	36	29	18	38	50	47	52	58	63	63	71	61	76	81	60	52	53	33	36	32
24	28	30	32	32	34	26	J B 16	34	47	43	55	58	74	64	72	71	61	55	58	46	33	28	25	24
25	26	26	25	26	29	25	18	33	42	45	51	54	63	64	64	61	53	50	51	44	40	35	26	28
26	28	28	30	28	26	27	24	39	52	53	48	48	56	56	54	58	64	68	66	48	48	42	42	26
27	24	26	26	26	26	26	20	34	51	54	57	67	70	62	57	58	49	58	53	44	34	34	37	23
28	25	27	28	27	25	25	24	42	46	46	52	70	56	50	56	56	72	62	51	50	53	48	48	V 35
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28	28	27	25	27	26	28	28	28
MED	27	28	28	26	29	26	20	32	48	50	56	64	66	64	70	70	71	58	52	44	38	33	32	28
U Q	30	30	30	30	32	29	24	34	50	53	61	72	78	72	77	84	81	68	59	49	43	35	34	32
L Q	26	26	26	26	26	24	18	30	46	48	52	58	58	60	61	64	61	54	48	38	31	29	27	24

IONOSPHERIC DATA STATION Okinawa

FEB. 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											424	428	424	492	U L 436	U L 396	L 384	A	A					
2										L	412	428	428	U L 432	416	396	L							
3										L	404	424	432	428	420	408	L							
4										U L 400	404	U L 416	L 400	432	U L 440	412	U L 368							
5										U L 388	400	428	424	L 420	428	U L 392		L						
6									L	L	L 404	428	428	424	424	L 416			A					
7										A	404	L 428	432	428	436	416	388	L						
8										L	408	A	U L 424	L 428	428	416	L	L						
9										U L 380	400	424	U L 444	424	U L 440	408	388		A					
10									260	U L 372	U L 412	L 432	420	420	428	416	L 388	L						
11											L 412	416	428	444	428	L 408	380	L						
12									L	U L 384	412	416	432	432	416	412	388							
13									L	L	412	432	440	428	L 432	416	384	L						
14									U L 280	L	L 420	428	428	424	U L 424	U L 428	L 392	L	180					
15									L 260	L	L	U L 436	L 436	432	428	416	392	L						
16										L	416	436	432	424	420	424	L 400	L	196					
17											L 416	416	436	432	420	420	L	L	L					
18										U L 392		420	428	432	428	416	400							
19									L 280	U L 380	428	424	440	436	428	412	L							
20										L	L 412	432	428	428	424	416		L						
21									L	L	436	424	428	444	428	424	L 396							
22											L 428	420	432	448	432	428	L 392	L						
23									L	L	U L 408	420	432	432	428	424	A							
24										L	L 420	436	A	440	424	420	396	L						
25										U L 368	U L 424	428	428	432	432	420	396	L						
26									L	396	436	U L 432	424	440	428	420	408	L						
27										L 396	412	436	424	436	424	408		L						
28											424	420	428	428	428	L 416	400	L						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	10	26	27	27	28	28	28	18		2					
MED									L 270	U L 386	412	428	428	432	428	416	392		188					
U Q									L 280	L 396	424	432	432	436	430	420	396							
L Q									260	U L 380	408	420	424	428	424	410	388							

FEB. 2019 foF1 (0.01MHz)

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FEB.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	208	A	A	312	A	324	316	292	U A 260	A	A					
2								B	204	268	292	312	316	312	300	284	252	200	A					
3								B	200	260	A	A	U A 308	U A 320	304	288	244	196	A					
4								B	212	A	A	A	320	A	312	288	A	212	A					
5								B	A	260	280	A	A	A	A	A	A	A	A					
6								B	200	248	292	312	308	308	308	296	264	220	A					
7								B	A	A	A	A	316	312	308	304	288	228	A					
8								B	196	A	296	A	A	316	320	304	A	A	B					
9								B	A	A	292	304	A	312	316	A	A	A	A					
10								B	200	264	296	312	312	320	316	292	272	224	A					
11								A	220	268	300	A	320	324	312	308	268	A	A					
12								A	A	264	292	316	324	A	U A 308	A	A	A	A					
13								B	A	A	A	A	A	324	324	312	280	216	A					
14								B	220	268	296	A	324	328	316	A	272	228	B					
15								B	212	276	300	320	332	324	304	304	272	232	180					
16								B	224	272	292	312	320	324	320	300	284	236	B					
17								B	200	264	300	316	332	328	320	308	A	A	A					
18								B	232	A	A	A	A	328	U A 312	A	A	A	A					
19								B	216	260	296	316	A	A	A	304	276	U A 256	B					
20								B	228	264	300	320	320	324	320	300	276	240	B					
21								B	224	264	300	316	324	324	336	312	288	U A 232	A					
22								B	220	272	292	316	328	332	320	U A 308	A	A	A					
23								B	244	272	280	328	328	328	324	312	280	236	A					
24								B	A	A	A	U A 308	U A 316	A	A	A	A	A	A	B				
25								B	U A 240	A	U A 296	324	324	A	324	A	A	A	A	B				
26								B	232	276	300	316	324	332	316	A	A	A	A	B				
27								B	232	A	U A 296	U A 300	A	320	U A 312	300	280	232	A	B				
28								B	224	272	296	312	328	328	320	304	280	U A 236	B	B				
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									22	18	21	19	20	22	25	20	17	16	1					
MED									220	266	296	316	322	324	316	304	276	230	180					
U Q									228	272	300	316	326	328	320	308	280	236						
L Q									204	264	292	312	316	320	310	294	266	218						

FEB.2019 foE (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

FEB. 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 22	J A 53	J A 25	J A 36	J A 24	J A 26	18	E B 16	J A 32	J A 29	36	J A 40	J A 37	40	J A 40	40	J A 37	J A 80	J A 71	J A 48	J A 19	J A 20	20	19
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	G	30	32	G	G	G	G	G	29	J A 31	J A 18	J A 21	J A 26	J A 30	20	18
3	E B 16	19	J A 16	J A 18	J A 20	J A 36	J A 25	19	G	31	33	34	35	J A 35	J A 37	34	J A 30	J A 25	J A 66	J A 21	J A 25	J A 22	J A 22	J A 16
4	J A 66	J A 41	J A 52	E B 16	J A 30	J A 18	J A 17	J A 22	G	J A 38	J A 128	J A 36	G	J A 59	G	34	28	26	16	J A 19	J A 26	J A 50	J A 32	J A 17
5	J A 52	J A 20	18	E B 16	20	J A 20	J A 15	J A 32	26	30	36	J A 62	J A 42	J A 42	J A 59	J A 50	J A 45	J A 42	J A 20	J A 27	J A 39	19	E B 16	J A 20
6	E B 16	E B 16	J A 32	J A 52	J A 16	J A 18	J A 18	18	23	J A 40	34	G	33	36	34	36	34	J A 36	J A 62	J A 32	J A 26	20	E B 16	E B 16
7	19	E B 16	E B 16	J A 32	20	18	E B 16	J A 17	J A 40	J A 64	J A 34	J A 34	G 29	37	35	G	G	G	J A 18	J A 18	J A 26	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	J A 18	J A 18	J A 30	19	J A 20	23	J A 27	G	J A 84	J A 109	G	34	34	J A 32	25	J A 19	J A 17	J A 19	J A 19	J A 22	J A 20
9	J A 21	E B 16	E B 16	18	J A 31	J A 25	J A 32	J A 21	26	32	34	G	37	36	G	J A 38	J A 71	J A 62	J A 64	J A 66	J A 62	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	J A 38	J A 28	J A 16	20	G	G	34	36	36	40	36	35	31	26	20	J A 27	J A 19	J A 19	J A 50	19
11	E B 16	E B 16	E B 16	E B 16	J A 20	E B 16	E B 16	J A 22	J A 31	J A 34	J A 49	J A 37	G	35	G	36	G	J A 26	J A 24	J A 15	19	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	20	E B 16	J A 26	J A 22	G	36	35	35	J A 36	J A 39	J A 35	J A 32	J A 29	J A 26	J A 64	19	18	E B 16	E B 16
13	E B 16	J A 15	18	E B 16	J A 20	J A 22	E B 16	E B 16	J A 26	J A 32	34	J A 42	38	J A 37	G	G	G	27	J A 27	J A 18	J A 20	19	20	21
14	J A 16	E B 16	E B 16	E B 16	20	18	20	J A 20	J A 24	G	G	34	G	G	35	J A 71	J A 45	27	20	J A 18	20	J A 19	J A 25	J A 28
15	J A 24	J A 32	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	30	35	G	G	G	G	33	G	G	G	19	19	18	E B 16	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 19	G	G	G	G	G	G	G	34	30	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 17	E B 16	28	29	38	36	G	40	35	34	30	J A 26	J A 21	J A 24	J A 29	J A 25	J A 25	J A 28
18	J A 23	18	E B 16	E B 16	E B 16	19	20	J A 19	G	31	33	36	36	36	J A 40	J A 40	J A 38	J A 32	J A 22	J A 17	J A 17	J A 17	20	J A 20
19	20	E B 16	E B 16	18	18	18	E B 16	E B 16	G	G	G	38	J A 62	J A 47	J A 34	G	J A 34	J A 30	20	J A 16	J A 24	E B 16	E B 16	J A 17
20	E B 16	J A 22	J A 27	J A 18	E B 16	E B 16	17	J A 16	G	29	G	G	34	40	40	38	32	28	19	E B 16	E B 16	E B 16	20	J A 20
21	E B 16	E B 16	18	J A 15	E B 16	J A 18	J A 21	18	G 20	32	34	36	39	38	39	41	G	26	J A 30	J A 25	J A 16	E B 16	J A 22	J A 53
22	J A 20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 18	G	G	31	36	36	G	38	33	32	J A 34	21	J A 20	J A 22	J A 19	E B 16	E B 16
23	J A 25	J A 22	J A 39	J A 21	E B 16	E B 16	E B 16	E B 16	G	J A 53	33	37	41	36	40	39	40	J A 40	J A 29	J A 46	J A 17	J A 24	J A 23	18
24	19	17	J A 20	E B 16	E B 16	E B 16	19	E B 16	J A 30	J A 34	34	37	J A 48	J A 41	35	J A 37	J A 37	J A 30	J A 21	J A 26	J A 17	J A 18	J A 18	J A 16
25	20	J A 27	20	20	J A 28	J A 16	J A 20	17	27	J A 34	36	G 31	J A 31	41	40	35	J A 32	28	J A 21	J A 17	J A 17	18	20	20
26	20	E B 16	J A 32	J A 17	E B 16	E B 16	E B 16	E B 16	G	G	G	G	G	G	J A 35	J A 40	31	J A 28	J A 20	E B 16	18	E B 16	J A 20	J A 16
27	J A 19	J A 32	J A 30	E B 16	E B 16	E B 16	E B 16	E B 16	26	32	33	33	33	34	34	34	32	31	J A 26	J A 19	J A 28	J A 19	E B 16	E B 16
28	E B 16	J A 22	J A 21	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	39	38	38	36	34	30	27	E B 16	19	J A 20	J A 16	J A 24	J A 30
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	18	E B 16	16	E B 16	16	18	16	18	G	30	34	36	35	36	35	35	32	J A 28	J A 21	J A 19	J A 20	J A 18	20	18
U Q	J A 20	J A 22	J A 23	J A 18	J A 20	J A 20	19	J A 20	J A 26	J A 33	36	J A 37	38	40	39	J A 38	J A 36	J A 32	J A 26	J A 26	J A 26	J A 20	J A 22	J A 20
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	G	G	G	G	G	34	G 30	26	19	J A 17	J A 18	E B 16	E B 16	E B 16

FEB. 2019 foEs (0.1MHz)

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FEB. 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	24	27	34	G 28	32	37	39	40	36	A A 80	A A 71	29	E B 16	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	29	32	G	G	G	G	G	28	28	18	E B 16	E B 16	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 36	E B 16	E B 16	G	30	33	33	33	34	36	33	28	22	17	E B 16	19	E B 16	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	29	31	32	G	35	G	32	27	25	16	E B 16	E B 16	E B 16	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	25	29	35	32	33	35	33	36	34	24	19	21	18	E B 16	E B 16	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	G 20	33	G	32	35	33	36	32	32	A A 62	29	A A 26	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	32	36	30	32	G 25	36	34	G	G	G	18	E B 16	23	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	26	G	49	33	G	33	33	29	24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 32	E B 16	26	30	33	G	36	34	G	32	33	35	A A 64	A A 66	A A 62	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	A A 38	19	E B 16	E B 16	G	G	34	36	35	39	35	34	30	25	20	21	E B 16	E B 16	E B 16	E B 16
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	G 17	G 22	G 25	33	G	35	G	35	G	24	19	E B 16	E B 16	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	20	G	34	34	35	35	36	33	30	25	20	42	E B 16	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	33	32	38	34	G	G	G	26	19	E B 16	E B 16	E B 16	E B 16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	G	G	34	G	G	35	36	G 21	26	E B 16	E B 16	E B 16	E B 16	E B	21
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	G	30	34	G	G	G	G	32	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	G	G	G	34	30	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	28	36	34	G	38	34	34	30	25	18	21	22	E B 16	18	18
18	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	30	32	34	34	34	33	33	33	31	20	E B 16	E B 16	E B 16	E B 16	E B 16
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	G	G	G	37	36	34	34	G	28	G 17	19	E B 16	E B 16	E B 16	E B 16	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	G	G	33	40	39	37	32	26	E B 16	E B 16	E B 16	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	G 18	30	34	35	37	37	38	40	G	25	28	21	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	G	G	31	36	36	G	38	32	30	31	18	E B 16	E B 16	E B 16	E B 16	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 18	32	36	40	36	40	38	40	36	24	43	E B 16	E B 16	21	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	28	33	34	36	43	38	34	33	30	25	18	17	E B 16	E B 16	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	30	32	G 30	G 28	40	40	34	30	26	18	E B 14	E B 16	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	G	G	33	33	30	26	17	E B 16	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	25	31	32	32	33	33	33	32	31	29	24	E B 16	23	E B 16	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	39	38	37	36	34	30	26	E B 16	E B 16	E B 16	E B 16	E B	20
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
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	G	28	32	32	33	35	34	33	30	26	18	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	34	36	36	37	36	36	32	28	20	21	17	E B 16	E B 16	E B 16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	G	G	G	32	G 28	24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

FEB. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

FEB. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	311	324	321	316	378	342	325	360	397	346	357	374	389	G	296	331	355	A	A	328	307	384	356	317
2	305	322	307	F 337	F 361	F 349	340	351	378	352	351	360	338	308	352	367	358	383	367	365	315	297	367	342
3	299	338	352	322	378	A	299	355	389	374	347	327	350	344	362	369	372	370	377	383	314	370	346	357
4	337	329	358	368	372	312	305	369	392	354	373	325	376	339	317	357	376	355	371	371	360	367	347	342
5	362	299	305	331	371	376	328	351	365	370	353	364	355	362	H 336	340	377	364	381	397	315	332	355	360
6	332	323	324	332	345	358	304	366	391	383	369	376	342	328	R 296	320	374	371	A	397	A	325	334	F 308
7	F 371	F 348	371	312	F 308	F 357	341	373	394	374	383	356	364	372	335	355	362	361	387	403	303	351	399	336
8	347	326	362	386	F 343	413	315	354	356	359	348	374	357	326	348	R 324	365	376	372	376	364	311	371	356
9	307	324	315	323	338	392	A	377	373	368	389	364	322	333	276	343	361	374	A	A	A	341	307	334
10	326	339	331	347	A	383	308	365	386	389	354	343	349	309	330	364	343	381	403	372	357	323	357	319
11	318	326	338	316	341	365	403	372	388	385	361	367	359	332	332	324	371	365	388	358	370	316	332	309
12	337	344	350	329	351	346	336	389	393	353	351	347	338	332	352	J R 300	333	379	376	348	334	330	323	327
13	317	329	315	341	385	418	324	362	382	354	342	348	358	342	296	355	348	351	362	345	361	353	328	F 341
14	335	308	337	337	336	323	360	365	359	331	326	358	372	R 327	306	325	340	348	373	377	355	317	290	310
15	346	340	335	329	331	368	325	357	402	391	379	355	332	322	322	348	376	376	378	355	374	317	377	329
16	329	349	315	327	329	435	345	384	386	375	366	355	357	345	327	339	368	393	363	396	329	308	365	351
17	324	335	335	328	328	373	312	365	370	374	349	337	310	329	328	341	360	339	H 339	357	354	291	338	337
18	319	315	322	337	370	378	337	367	393	382	353	356	349	345	341	361	359	372	379	391	348	337	329	325
19	310	293	323	329	357	378	336	394	382	372	352	348	351	325	J R 300	351	338	322	363	372	316	339	388	326
20	322	311	319	329	408	386	305	366	375	381	360	349	348	346	329	342	389	381	385	355	320	342	351	341
21	329	342	330	330	393	388	288	372	380	351	321	330	358	310	333	352	358	404	364	319	352	353	317	280
22	311	327	332	321	329	359	348	357	415	352	308	346	379	348	348	318	348	338	357	357	348	309	346	345
23	323	322	307	313	356	406	328	382	407	373	374	342	357	330	348	314	340	377	379	375	328	300	357	316
24	321	312	333	330	370	391	B	386	394	396	348	324	355	322	338	348	362	370	376	383	371	341	344	322
25	303	311	333	332	368	394	374	394	407	371	359	344	347	347	344	348	363	355	374	356	357	390	326	337
26	332	329	339	337	331	358	308	405	408	384	315	342	356	355	327	329	340	356	359	341	340	353	356	401
27	337	333	331	337	340	375	346	383	394	375	357	361	378	370	342	368	326	370	372	365	351	345	397	332
28	320	326	341	337	331	324	328	387	402	364	328	367	386	380	345	331	359	366	378	327	348	304	353	V 346
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	27	27	26	28	28	28	28	28	28	28	28	28	28	27	25	27	26	28	28	28
MED	324	326	332	330	351	375	328	368	390	372	353	352	356	332	332	342	360	370	374	365	348	334	349	335
U Q	336	336	338	337	371	391	341	384	396	382	364	362	362	346	344	355	370	377	379	383	357	352	361	344
L Q	314	318	320	325	331	357	308	361	379	354	348	342	348	326	320	327	346	355	364	355	320	314	330	320

FEB. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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											372	380	419	370	A 385	A	A	A	A					
2										L 366	403	417	U L 403	407	388		L							
3										L 369	384	384	411	427	398		L							
4										U L 373	390	U L 412	L 449	414	U L 390	391	U L 403							
5										U L 388	379	387	399	L 395	402	U L 406		L						
6									L	L	L 402	385	404	413	408	L 387			A					
7										A	398	L 395	396	387	379	383	391	L						
8										L	379	A	U L 409	L 419	416	393	L	L						
9										U L 396	399	413	U L 381	398	U L 380	377	374		A					
10									430	U L 406	U L 398	L 391	432	A 407	385	366	L 398	L						
11											L 388	417	400	387	395	L 390	382	L						
12									L	U L 397	369	399	385	395	411	401	384							
13									L	L	392	399	385	417	L 409	401	412	L						
14									U L 413	L	L 390	382	424	430	U L 421	U L 389	L 376	L	442					
15									L 428	L	L	U L 401	L 396	421	417	372	389	L						
16										L	408	399	415	445	430	369	L 368	L	440					
17											L 386	407	394	410	432	380	L	L	L					
18										U L 411		416	421	438	402	398	380							
19									L 425	U L 411	381	396	403	414	412	409	L							
20										L	L 412	402	424	A 412	406	392		L						
21									L	L	382	403	405	391	408	A	L 396							
22											L 386	406	398	399	384	386	L 387	L						
23									L	L	U L 416	408	413	426	U A 367	379	A							
24										L	L 402	396	A	416	421	394	385	L						
25										U L 438	U L 396	422	455	A	A	391	392	L						
26									L	401	404	U L 421	447	433	438	394	370	L						
27										L 396	417	405	425	420	445	439		L						
28											424	A 404	393	409	426	L 368	376	L						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	10	26	27	27	27	27	26	17		2					
MED									L 426	U L 399	391	402	405	412	408	390	385		441					
U Q									429	U L 411	402	408	424	420	421	398	L 394							
L Q									L 419	U L 396	381	395	396	398	390	380	376							

FEB. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB.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											256	228	224	G	374	280	234	A	A					
2										262	256	240	272	264	256	234	240							
3										240	272	272	244	258	246	218	236							
4										266	236	250	240	260	260	232	226							
5										242	258	242	242	228	252	266		230						
6									208	228	244	238	270	244	242	292			A					
7										232	234	260	250	246	300	254	252	228						
8										232	272	236	264	300	254	224	232	212						
9										238	222	252	318	266	308	260	234		A					
10									210	218	260	282	262	306	278	232	228	216						
11											264	254	258	310	288	286	232	224						
12									206	272	262	264	262	248	234	224	248							
13									204	258	282	248	232	260	288	242	232	222						
14									222	286	266	224	220	236	288	272	240	234	210					
15									198	218	230	260	286	304	278	246	218	218						
16										218	250	268	266	280	304	270	226	212	200					
17											270	278	290	258	272	236	222	220	198					
18										232		264	262	268	280	246	246							
19									206	242	270	266	248	264	256	234	218							
20										228	268	268	240	260	258	258		216						
21									232	258	318	280	236	286	270	224	232							
22											358	266	218	260	250	286	244	242						
23									200	210	250	296	246	292	250	320	264							
24										200	278	310	252	288	280	252	248	234						
25										228	270	288	278	262	274	266	254	L 254						
26									202	230	362	L 274	272	268	312	310	276	232						
27										236	260	256	230	246	288	252		238						
28											328	240	236	248	288	290	246	234						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									10	23	27	28	28	28	28	28	24	17	3					
MED									206	232	264	262	251	263	276	253	235	228	200					
U Q									210	258	272	273	268	287	288	276	247	234	210					
L Q									202	228	250	245	238	253	255	234	230	217	198					

FEB.2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	256	272	240	268	200	270	254	206	206	206	228	212	184	196	E A 218	A	A	A	A	E A 306	240	182	214	250
2	280	240	272	220	200	238	238	212	210	212	218	196	174	170	166	188	214	214	206	190	252	248	212	234
3	256	216	210	248	212	A	342	224	222	214	214	212	204	192	180	214	194	190	204	190	276	218	218	206
4	244	254	248	214	220	308	330	200	208	194	194	168	154	194	194	196	180	212	206	204	192	218	282	246
5	240	308	278	242	204	240	352	218	216	204	228	174	198	220	184	222	226	204	198	192	244	238	218	206
6	222	242	256	266	234	216	378	208	196	198	206	174	188	188	184	212	220	230	A	A 222	A	254	230	Q 292
7	Q 228	Q 220	210	332	276	230	228	186	204	A	168	174	174	224	198	196	198	194	194	178	E A 332	224	194	230
8	228	242	212	200	230	192	356	198	210	188	190	A	188	172	H 164	218	202	196	190	186	202	244	200	218
9	264	262	254	254	254	190	A	198	204	206	206	176	204	178	198	196	230	214	A	A	A	220	254	238
10	238	238	230	218	A	208	282	222	190	194	210	208	178	E A 234	206	A	208	208	190	210	194	236	208	262
11	254	248	224	258	238	208	186	198	202	192	200	188	170	200	178	222	194	206	192	184	176	268	228	250
12	232	232	216	244	228	234	260	190	174	158	232	200	206	204	192	198	186	206	192	E A 252	200	206	220	224
13	232	250	242	218	196	194	372	210	188	202	200	172	214	182	192	208	192	212	196	196	186	216	236	216
14	230	274	220	236	240	268	212	206	178	172	188	208	178	158	206	A 208	208	214	176	186	188	194	238	264
15	220	218	232	256	240	212	266	200	184	206	208	176	182	166	158	214	206	202	204	188	176	244	202	238
16	254	222	244	278	258	182	294	198	200	186	182	184	174	170	158	224	220	198	180	180	206	242	216	204
17	240	242	242	258	246	206	306	216	224	182	218	184	172	200	168	214	H 184	198	182	198	200	264	234	238
18	216	228	228	224	202	192	272	210	206	194	184	174	186	164	174	196	210	226	208	178	198	210	232	252
19	268	304	254	248	220	200	248	192	186	182	176	216	196	192	190	176	206	224	188	178	212	226	190	246
20	264	280	262	242	180	202	324	218	212	204	182	184	168	A 230	220	E A 226	216	200	190	184	216	218	204	238
21	252	242	246	248	194	188	372	204	190	204	206	178	202	208	210	A	194	204	204	226	204	194	234	320
22	266	248	234	262	242	208	232	206	192	172	184	206	212	192	226	198	202	222	212	198	170	192	224	210
23	258	270	254	274	218	176	302	192	194	180	178	196	A 214	180	A	248	A	222	204	230	182	214	222	220
24	256	260	242	238	196	178	B	192	202	184	174	192	A	192	170	194	194	214	214	186	194	230	210	252
25	268	278	256	222	198	188	E B 256	198	196	182	182	180	166	A	A	202	198	204	216	202	196	188	246	230
26	252	250	234	226	254	222	268	196	196	180	174	174	176	168	160	196	178	212	208	204	216	200	204	178
27	238	246	244	238	248	200	236	200	208	200	184	178	164	176	174	158	206	230	212	188	220	226	194	216
28	260	262	234	252	264	258	256	196	188	170	170	228	222	198	174	226	204	210	206	226	208	228	220	218
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	27	27	26	28	28	27	28	27	27	27	26	25	26	27	25	27	26	28	28	28
MED	252	248	242	246	228	208	270	200	201	194	192	184	184	192	183	205	203	210	204	191	200	222	219	236
U Q	259	266	254	258	246	234	330	210	208	204	209	206	204	200	198	220	210	214	207	210	216	240	233	250
L Q	232	239	229	225	200	192	248	197	190	182	182	174	174	172	170	196	194	202	190	186	192	208	206	217

FEB. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	108	A	A	102	A	106	104	102	100	A	A					
2								B	102	102	102	102	102	100	100	100	100	100	A					
3								B	108	104	A	A	100	100	100	100	100	98	A					
4								B	106	A	A	A	102	A	100	100	A	102	A					
5								B	A	102	102	A	A	A	A	A	A	A	A					
6								B	102	106	106	104	104	104	104	100	100	100	A					
7								B	A	A	A	A	102	102	108	102	102	102	A					
8								B	98	A	100	A	A	102	102	102	A	A	B					
9								B	A	A	102	102	A	102	108	A	A	A	A					
10								B	102	102	102	102	100	102	104	102	102	102	A					
11								A	104	108	110	A	102	100	100	100	100	A	A					
12								A	A	100	102	102	102	A	102	A	A	A	A					
13								B	A	A	A	A	A	104	102	102	102	102	A					
14								B	108	106	106	A	106	102	100	A	100	100	B					
15								B	102	102	102	102	100	100	100	100	102	102	E B 162					
16								B	102	104	104	102	102	100	100	100	104	104	B					
17								B	104	104	104	104	104	104	104	104	A	A	A					
18								B	104	A	A	A	A	104	104	A	A	A	A					
19								B	100	100	100	102	A	A	A	102	100	104	B					
20								B	108	108	104	102	102	98	98	98	104	104	B					
21								B	118	102	102	102	102	102	102	104	104	104	A					
22								B	104	104	104	104	102	102	102	102	A	A	A					
23								B	108	104	104	104	104	102	102	102	102	102	A					
24								B	A	A	A	102	102	A	A	A	A	A	A	B				
25								B	102	A	102	116	108	A	106	A	A	A	A	B				
26								B	104	104	102	98	98	98	98	A	A	A	A	B				
27								B	102	A	108	102	A	106	102	102	102	102	A	B				
28								B	102	102	98	100	100	100	100	100	102	102	B	B				
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									22	18	21	19	20	22	25	20	17	16	1					
MED									104	104	102	102	102	102	102	102	102	102	E B 162					
U Q									108	104	104	104	103	104	104	102	102	103						
L Q									102	102	102	102	101	100	100	100	100	101						

FEB. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	102	98	98	94	94	94	96	B	124	112	170	90	88	104	104	122	104	94	88	88	82	84	84	110
2	B	B	B	B	B	B	B	112	G	168	162	G	G	G	G	G	152	104	84	84	92	92	92	84
3	B	84	92	92	86	86	94	94	G	164	152	102	102	104	104	102	106	104	90	90	88	80	80	80
4	98	96	98	B	92	92	100	90	G	104	92	102	G	86	G	106	98	164	106	100	92	94	88	80
5	96	90	108	B	94	102	98	96	194	172	164	94	96	96	96	142	130	100	116	100	98	90	B	92
6	B	B	92	92	92	92	96	96	174	98	156	G	122	112	118	164	124	108	98	98	96	106	B	B
7	96	B	B	94	96	112	B	102	96	96	96	96	88	156	134	G	G	G	102	92	86	B	B	B
8	B	B	B	100	92	92	92	94	146	96	G	94	98	G	114	150	102	136	114	104	98	96	96	94
9	86	B	B	94	94	94	90	98	172	158	168	G	164	104	G	102	108	98	92	92	92	B	B	B
10	B	B	B	B	90	90	96	96	G	G	172	162	162	172	164	144	128	112	102	96	98	90	120	92
11	B	B	B	B	92	B	B	98	96	98	108	104	G	168	G	176	G	102	92	86	86	B	B	B
12	B	B	B	B	B	90	B	98	96	G	148	156	160	104	100	100	96	94	94	88	84	90	B	B
13	B	86	84	B	92	88	B	B	110	104	180	104	176	102	G	G	G	166	88	86	90	82	86	78
14	80	B	B	B	96	96	100	100	96	G	G	168	G	G	148	86	94	144	86	82	82	136	104	88
15	82	96	B	B	B	B	B	B	G	172	166	G	G	G	G	160	G	G	G	84	82	134	B	B
16	B	B	B	B	B	B	B	86	G	G	G	G	G	G	G	154	144	G	B	B	B	B	B	B
17	B	B	B	B	B	B	96	B	158	140	110	108	G	108	106	158	100	100	98	94	86	86	86	84
18	84	86	B	B	B	84	96	92	G	102	102	106	104	106	108	106	100	98	96	98	98	92	92	86
19	88	B	B	94	94	94	B	B	G	G	G	180	84	92	88	G	106	84	134	112	98	B	B	98
20	B	98	92	96	B	B	92	140	G	136	G	G	124	148	142	124	126	112	106	B	B	B	102	86
21	B	B	92	94	B	94	90	90	100	176	152	122	108	110	158	114	G	106	96	94	94	B	128	98
22	86	B	B	B	B	B	B	92	G	G	120	158	144	G	168	166	102	98	98	96	98	88	B	B
23	84	94	100	92	B	B	B	B	G	100	142	146	112	124	162	184	134	116	110	96	96	90	90	90
24	86	92	90	B	B	B	126	B	102	102	102	102	102	102	102	106	106	106	98	94	98	98	94	94
25	94	94	92	90	96	86	88	126	110	110	100	100	90	152	136	108	102	102	100	100	98	98	96	94
26	88	B	90	90	B	B	B	B	G	G	G	G	G	G	112	98	108	100	102	B	110	B	96	90
27	100	94	100	B	B	B	B	B	142	116	114	112	116	116	120	108	148	130	112	108	108	102	B	B
28	B	92	106	B	B	B	B	B	G	G	G	166	146	138	144	132	120	106	B	104	96	96	92	88
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	13	14	12	14	16	15	18	15	20	21	21	20	21	21	24	23	25	25	25	26	20	17	19
MED	88	94	92	94	93	92	96	96	110	111	148	106	110	108	118	123	106	104	98	94	95	92	92	90
U Q	96	96	100	94	94	94	98	100	158	161	165	157	145	143	146	156	128	114	106	100	98	98	99	94
L Q	84	88	92	92	92	89	92	92	96	101	105	101	97	103	104	106	102	99	92	88	86	89	87	84

IONOSPHERIC DATA STATION Okinawa

FEB. 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	F1	F5	F2	F3	FQ21	F2	F1		C2	C1	HC11	L2	L2	C2	C2	C2	C3	L7	L9	F4	F4	F3	F2	F1
2								C1		H1	H1						H1	C4	L1	F3	F4	F5	F1	F1
3		F1	F1	F1	F3	F7	F3	L1		H1	HL11	C1	C1	C1	C1	C1	C1	CL11	L2	F1	F3	F3	F1	F1
4	F2	F2	F3		F3	F2	F2	L2		C2	LC12	C1		L3		C2	L2	H1	C1	F5	F3	F3	F2	F1
5	F1	F1	F1		F1	F2	F2	L2	HL13	H1	HL22	L3	L2	L2	L2	H2	H2	LQ21	CL21	F5	F3	F1		F2
6			F2	F6	F2	F2	F3	L1	H1	LH11	H1		C1	C1	C1	H1	C3	C7	LL52	FF93	FF42	F1		
7	F1			F4	F2	F1		C1	L5	L3	L2	L1	L2	HL11	H1				C1	F3	F5			
8				F1	FQ21	FQ31	FF21	L3	H1	L2		L7	L3		C1	H1	C1	HL11	C1	FF11	F1	F2	F3	F1
9	F1			F2	F4	F4	F9	L4	H1	HC22	HC11		HC11	C1		C1	C4	LQ61	L9	F9	F5			
10					F6	F7	F1	L1			H1	H1	H1	H1	H1	H2	C2	C2	C3	F5	F1	F1	F1	F2
11					F1			L3	LH31	LH21	CH11	C1		H1		H1		C2	L4	F1	F1			
12						F1		L8	L1		H1	H1	H1	C1	C2	C1	L2	L2	L3	F6	F1	F1		
13		F1	F1		F1	F1			C2	C2	HC11	C1	HC11	C1				H1	L3	F3	F3	F1	F1	F1
14	F1				F2	F2	F1	C1	L1			HL11			H1	L4	LH11	HL11	L1	F1	F1	F3	F2	F4
15	F2	F1								H1	H1					H1				F1	F1	F1		
16								L1								H1	H1							
17							F1		HH21	H1	C1	C1		C1	C1	HC11	C1	C2	L2	F7	F4	F4	F4	F4
18	F3	F1				F1	F1	L1		C1	C1	C1	C1	C1	C2	C2	C3	L3	L2	FF11	FF11	F1	F1	F2
19	F1			F1	F1	F1						H1	LH11	LQ11	LQ21		C1	L3	H1	FF11	F4			F1
20		F1	F2	F1			FF11	H1		H1			C1	H1	H1	C1	C1	C2	C1				F1	F1
21			F1	F1		F1	F3	L1	L1	H1	H1	C1	C2	C1	H1	C2		C1	L6	F5	F2		F1	FQ31
22	F1							L1			C1	H1	H1		H1	HC11	C1	L2	L1	F1	F3	F1		
23	F2	F1	F2	F1						LH11	H1	H1	C2	C2	HC11	H1	H4	C3	C3	F4	F1	F2	F3	F1
24	F1	F1	F1				F1		C2	C2	C2	C2	C2	C1	C1	C1	C1	C3	L2	L4	F1	F2	F3	F2
25	F1	F2	F1	F1	F2	F1	F1	C1	C2	C1	C1	CL11	L1	HC11	H1	CL12	C1	CL21	L1	L1	F1	F1	F2	F2
26	F1		F3	F1											C1	L1	C1	C1	CH11		F1		F1	F1
27	F1	F3	F2						H1	CL22	CL11	C1	CL11	CL11	C1	C1	H1	H2	C4	C2	F3	F2		
28		F3	F1									H1	H1	H1	H1	H1	C1	C1		C1	F3	F1	F3	F4
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 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

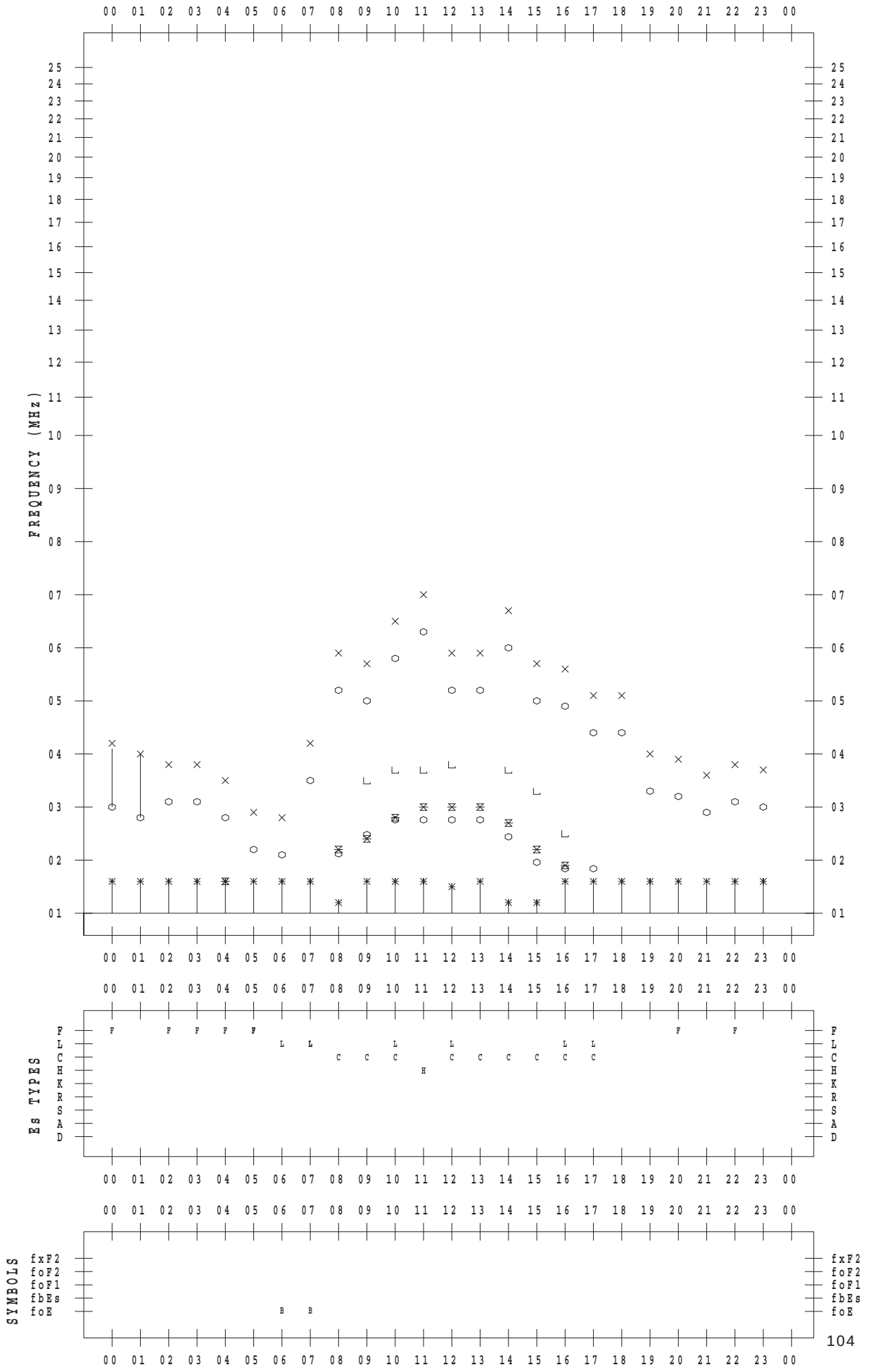
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 1

135 °E MEAN TIME



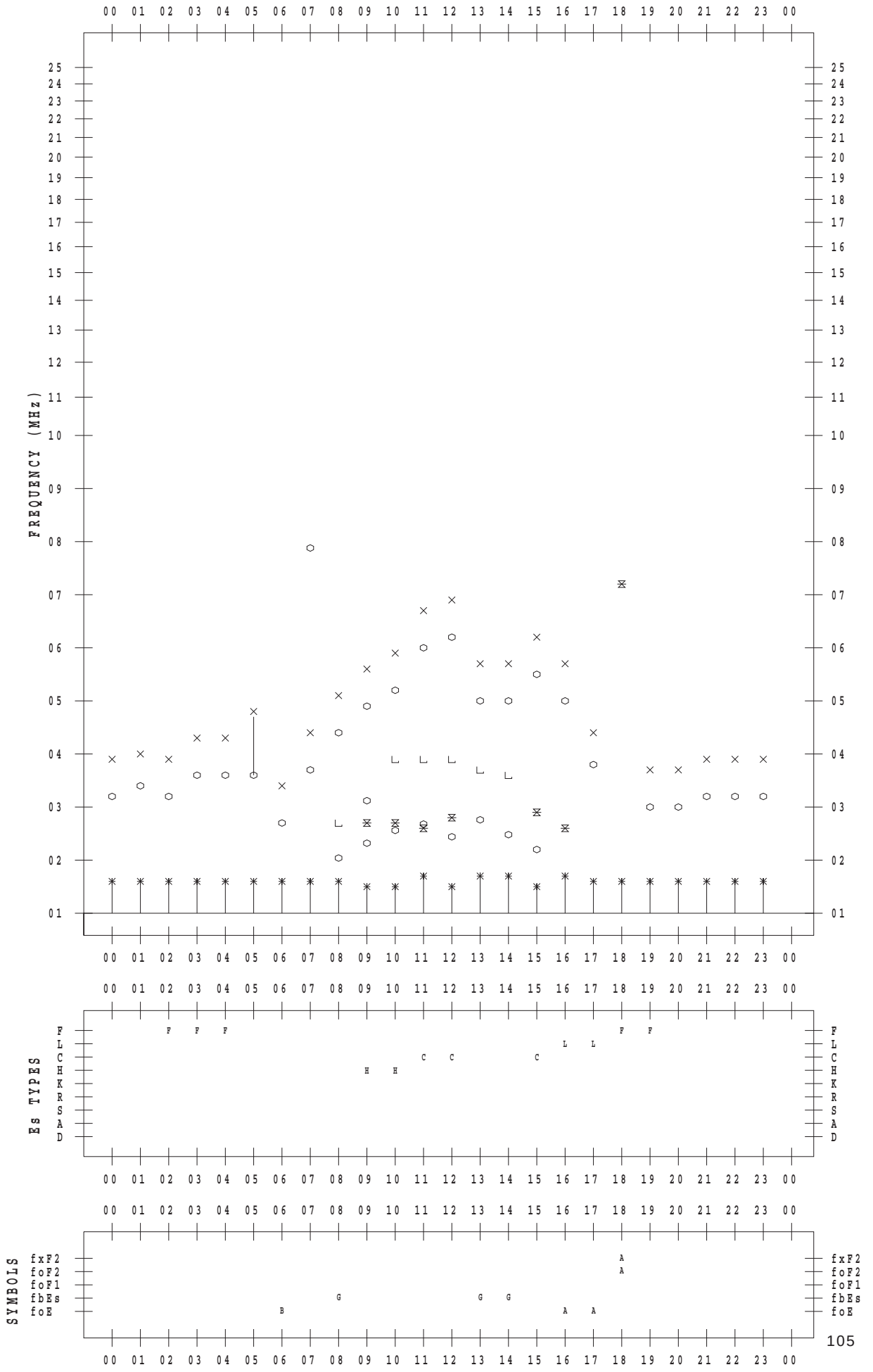
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 2

135 °E MEAN TIME



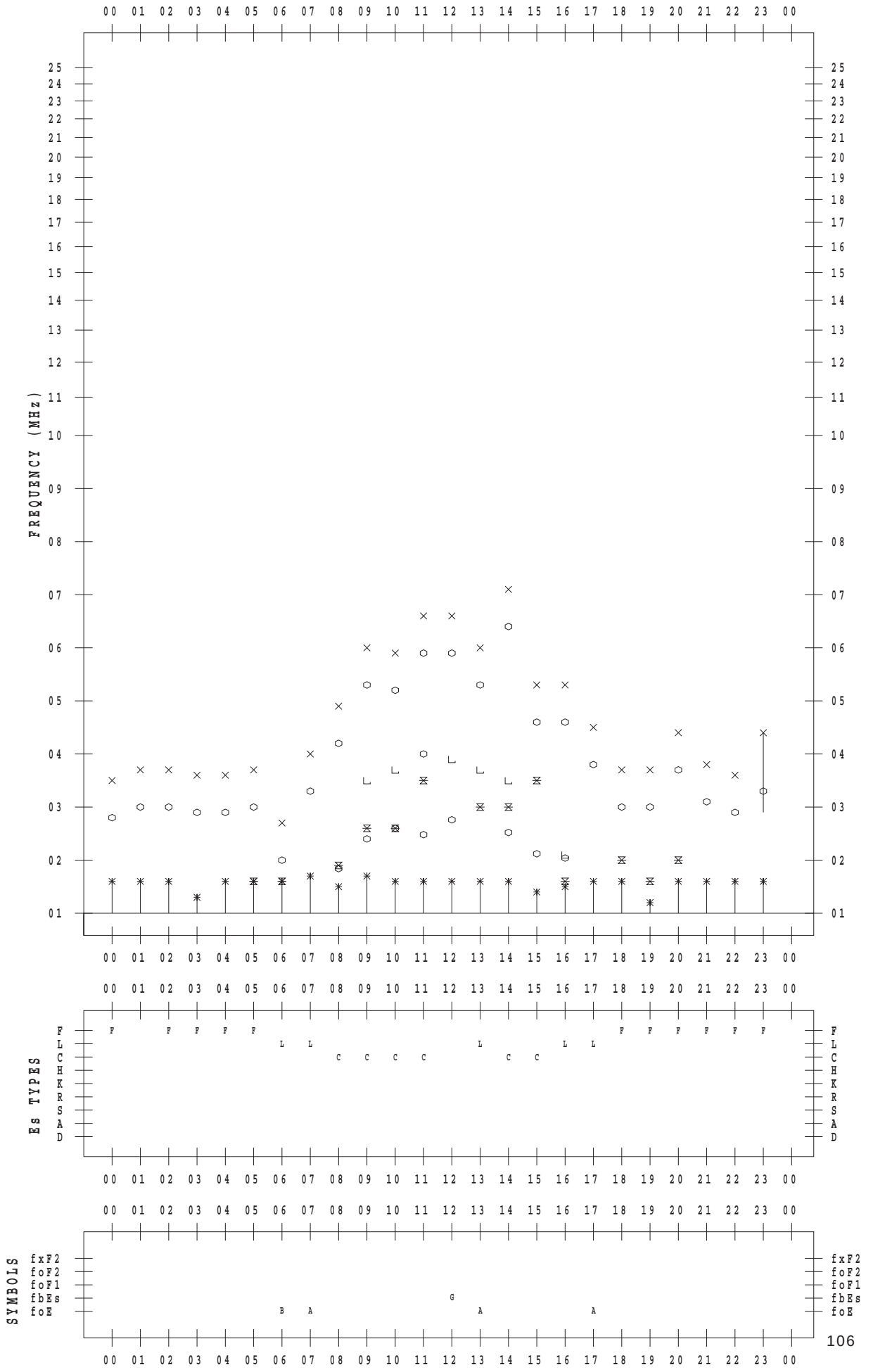
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 3

135 °E MEAN TIME



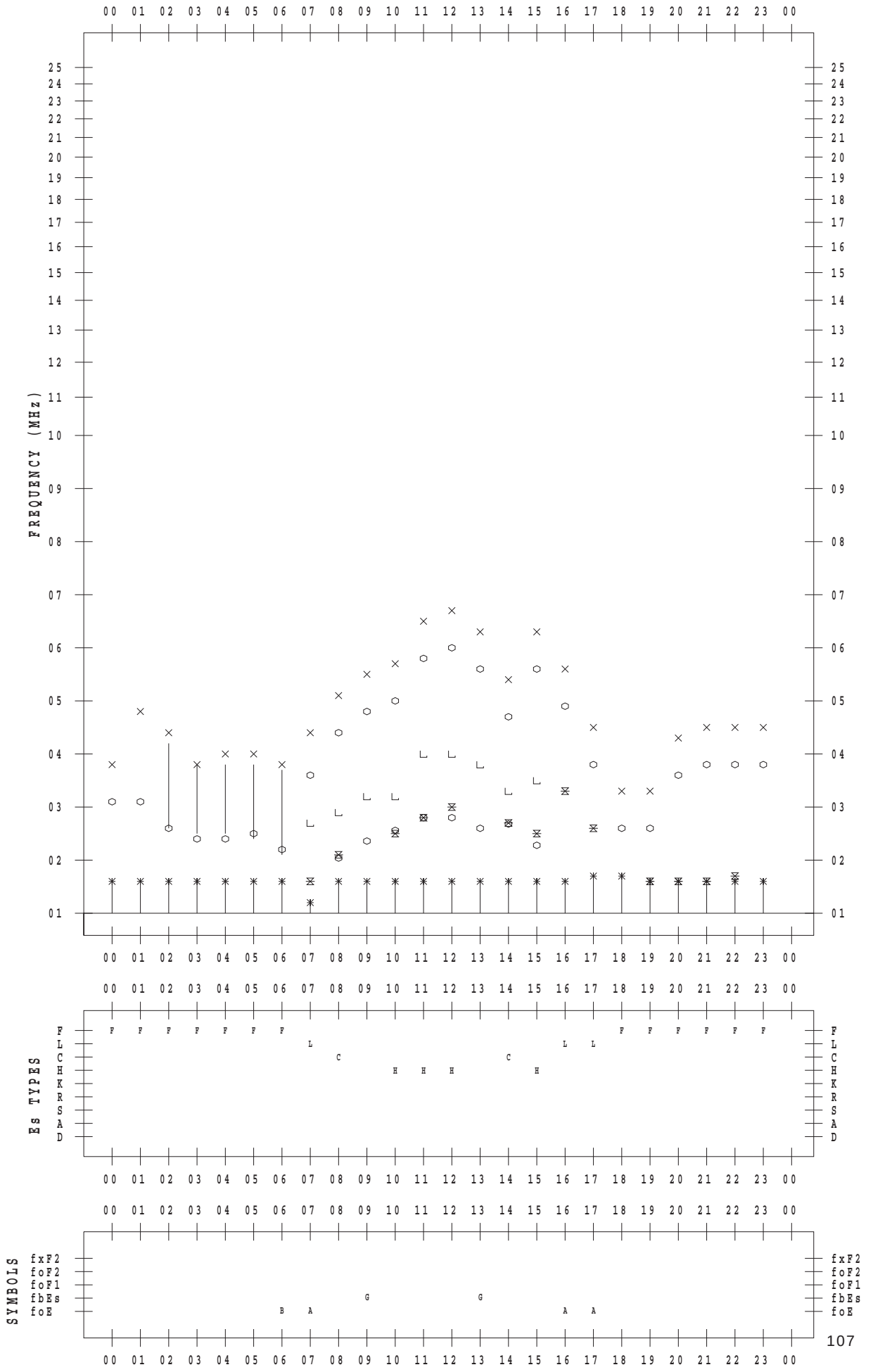
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 4

135 °E MEAN TIME



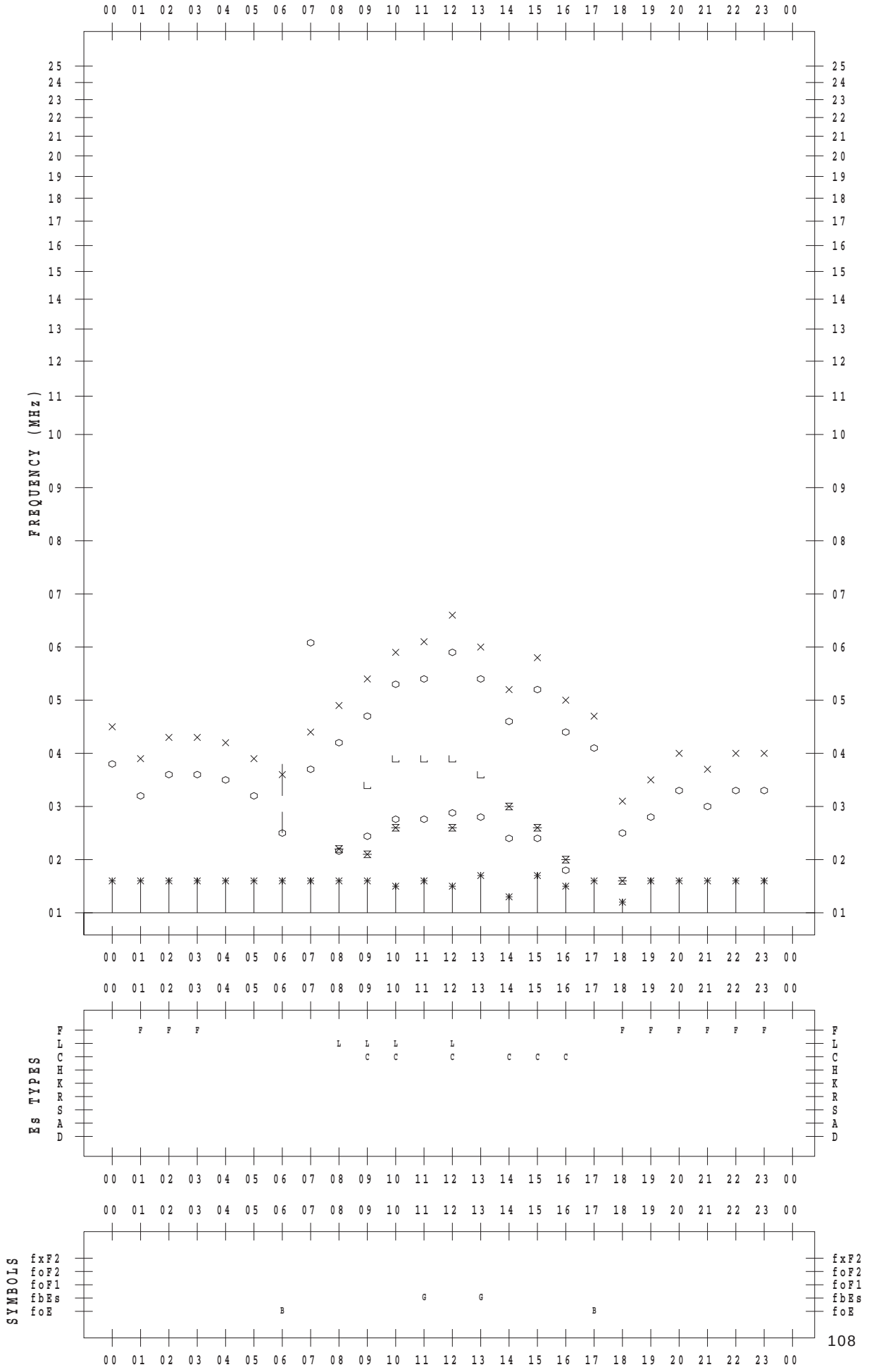
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 5

135 °E MEAN TIME



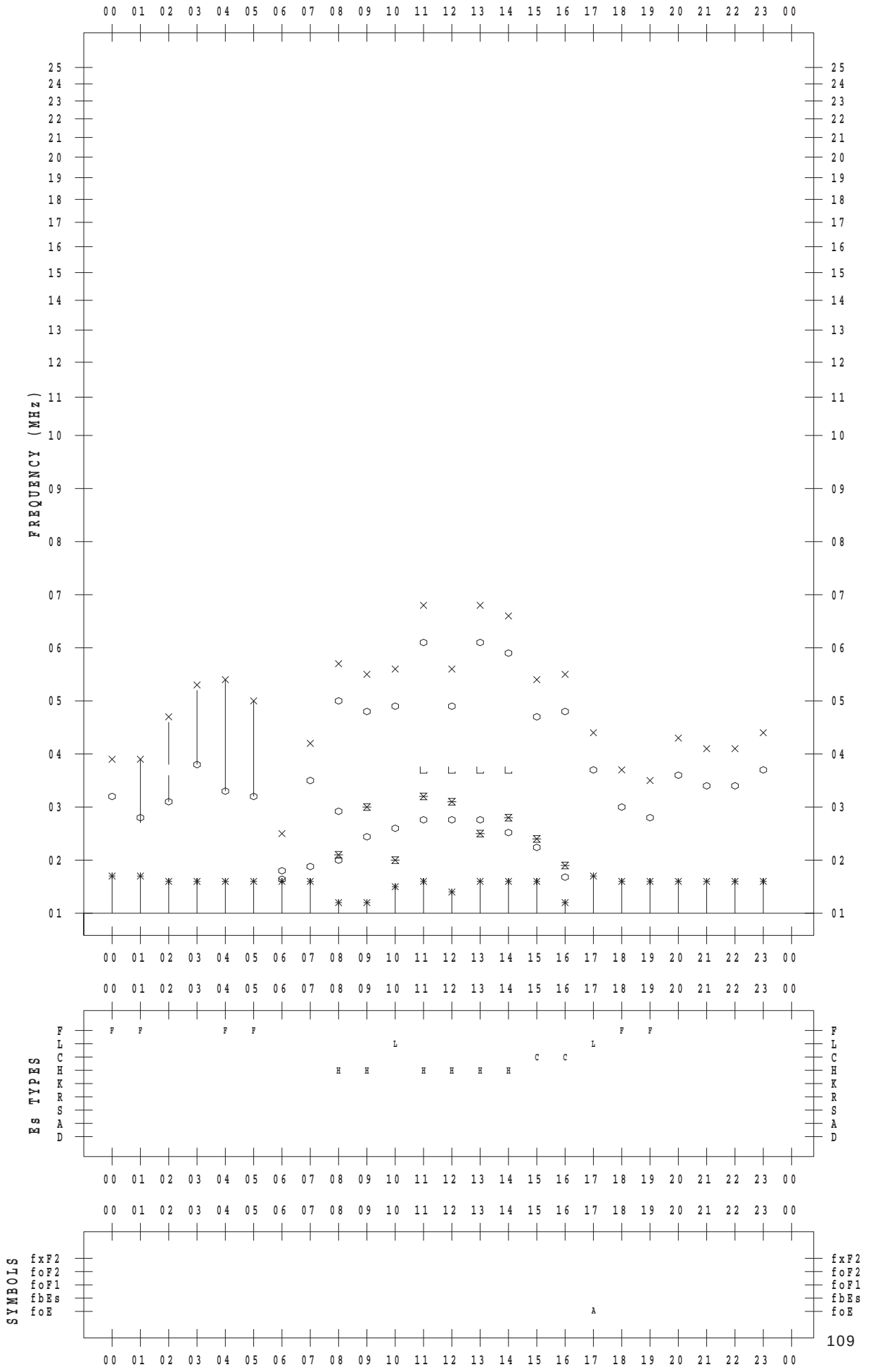
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 6

135 °E MEAN TIME



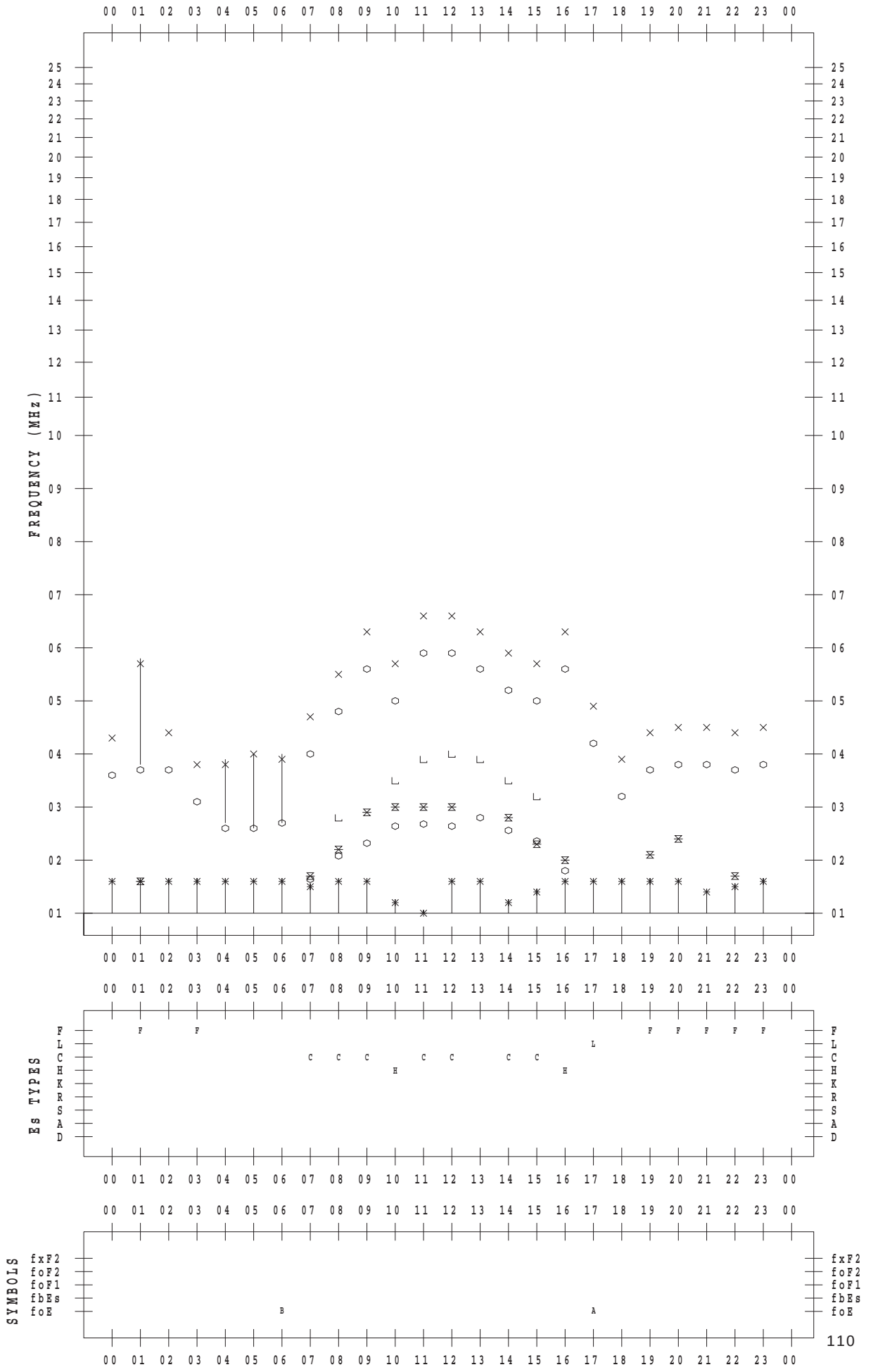
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 7

135 °E MEAN TIME



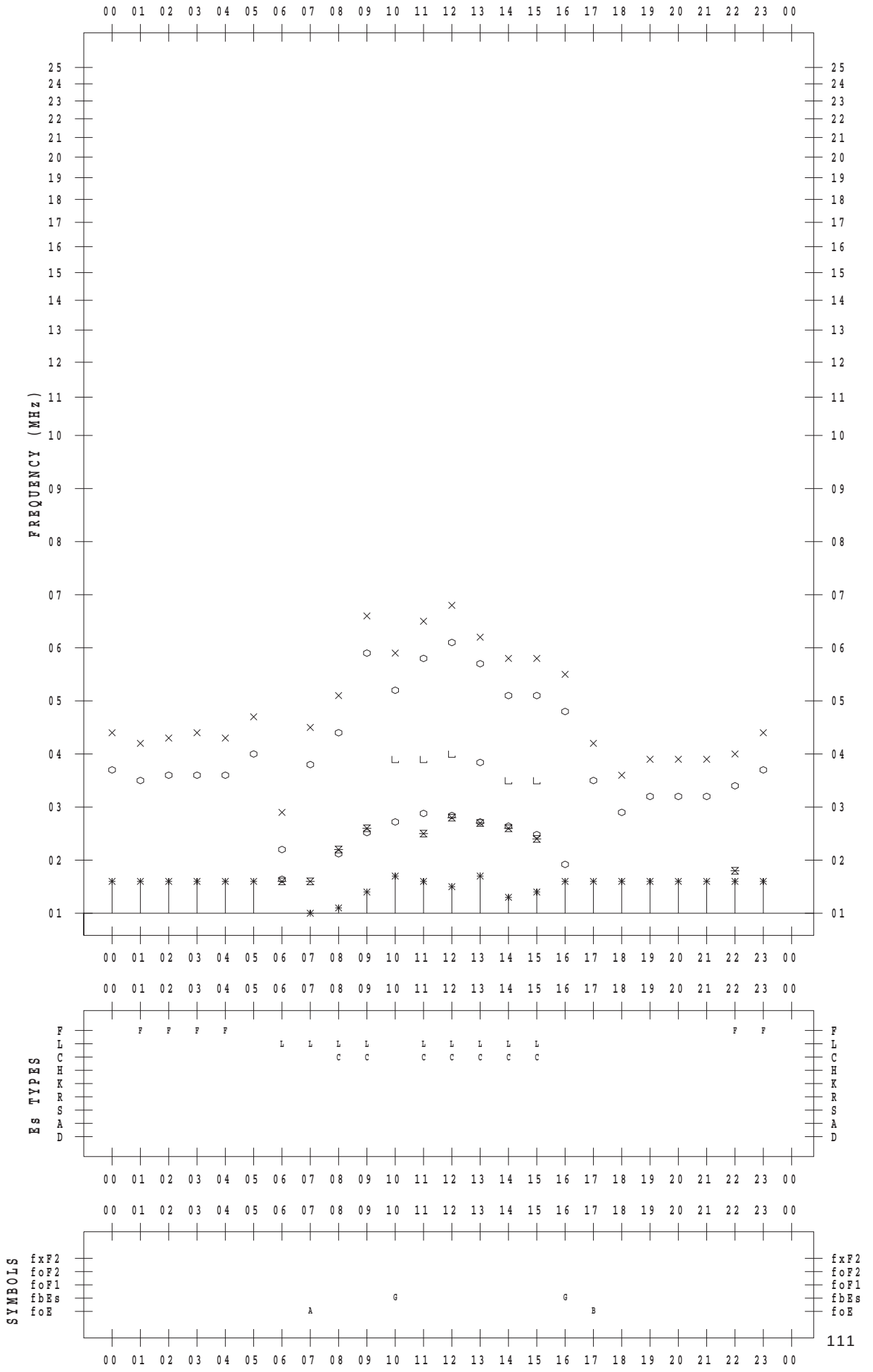
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 8

135 °E MEAN TIME



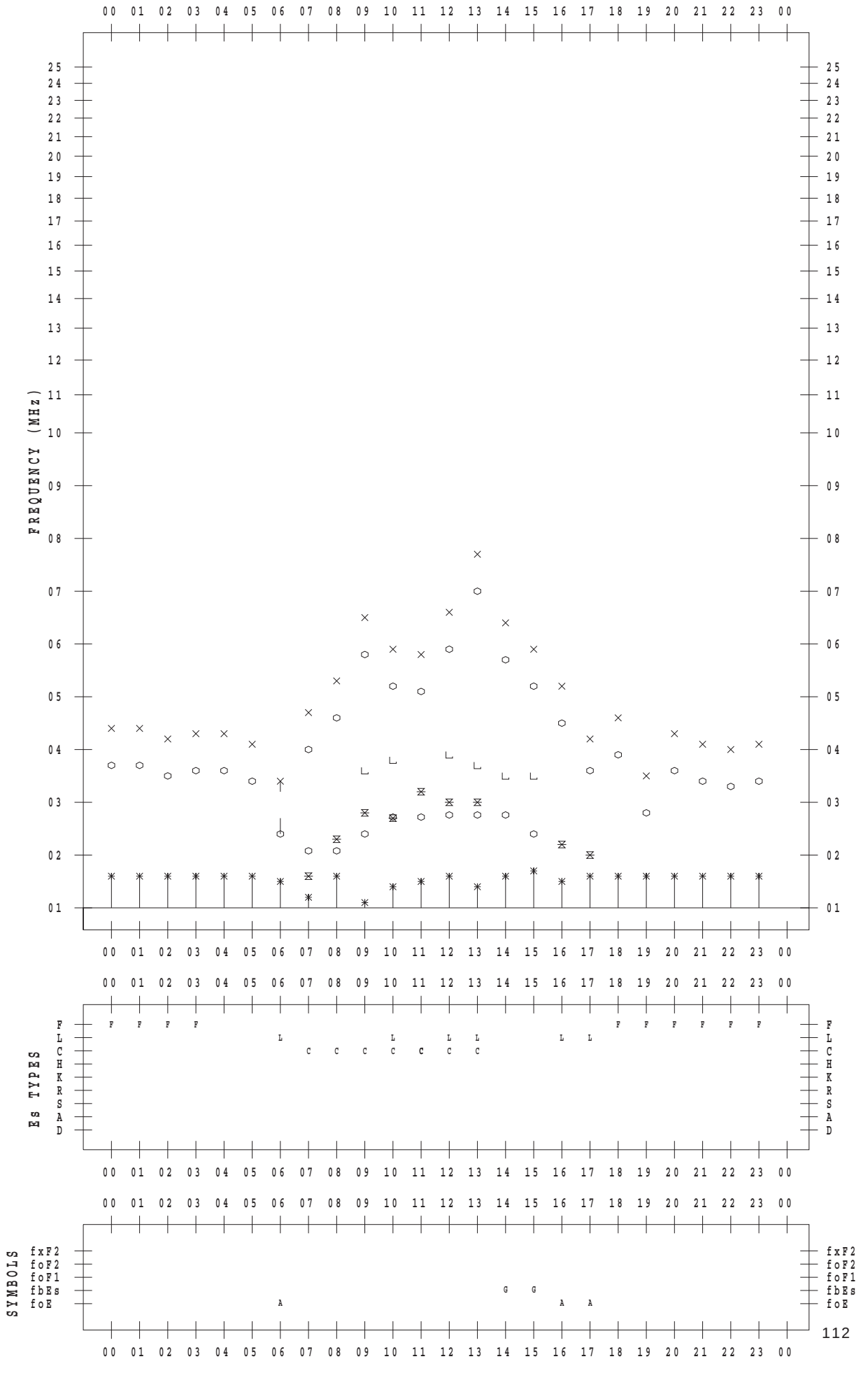
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/ 9

135 °E MEAN TIME



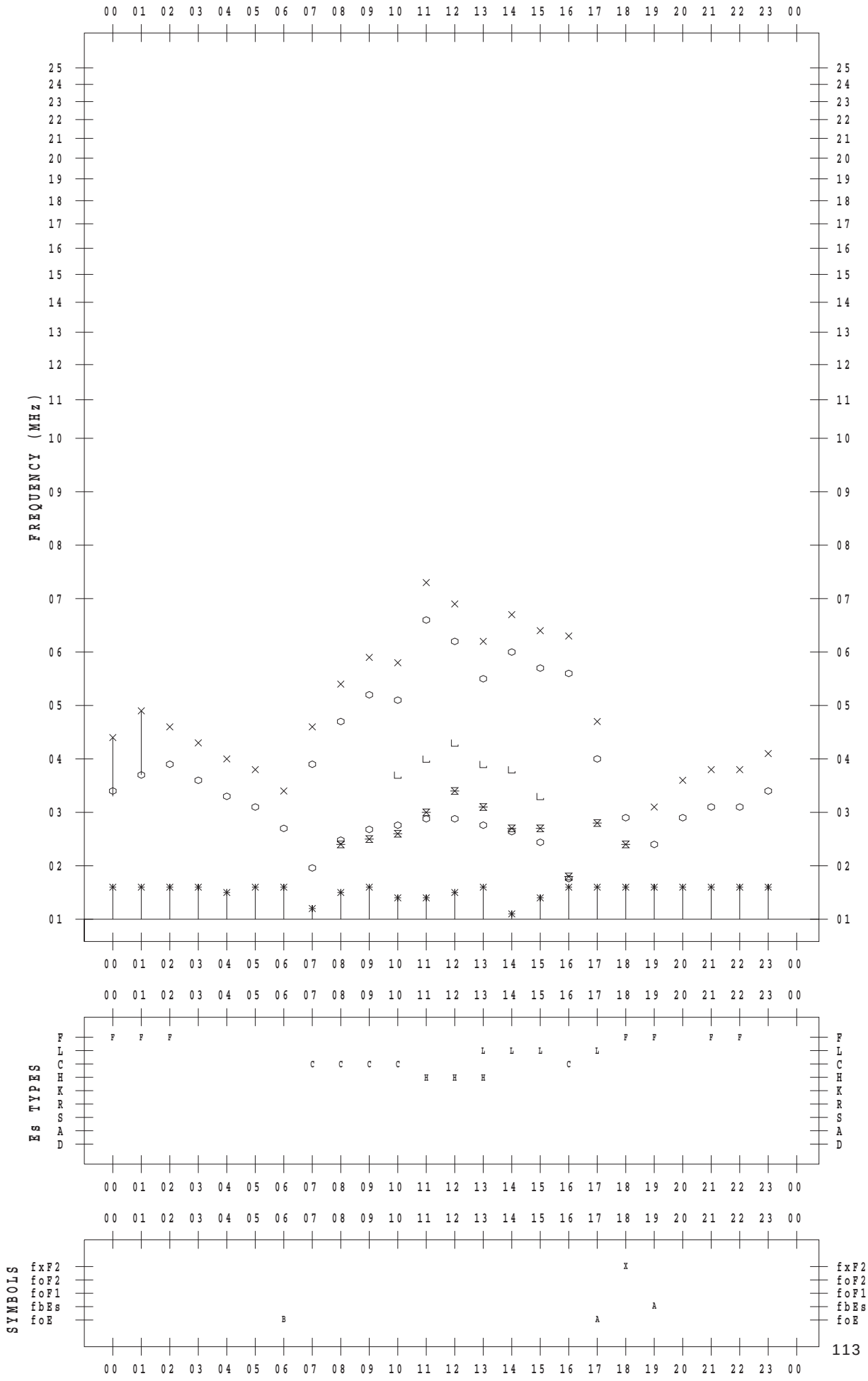
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/10

135 °E MEAN TIME



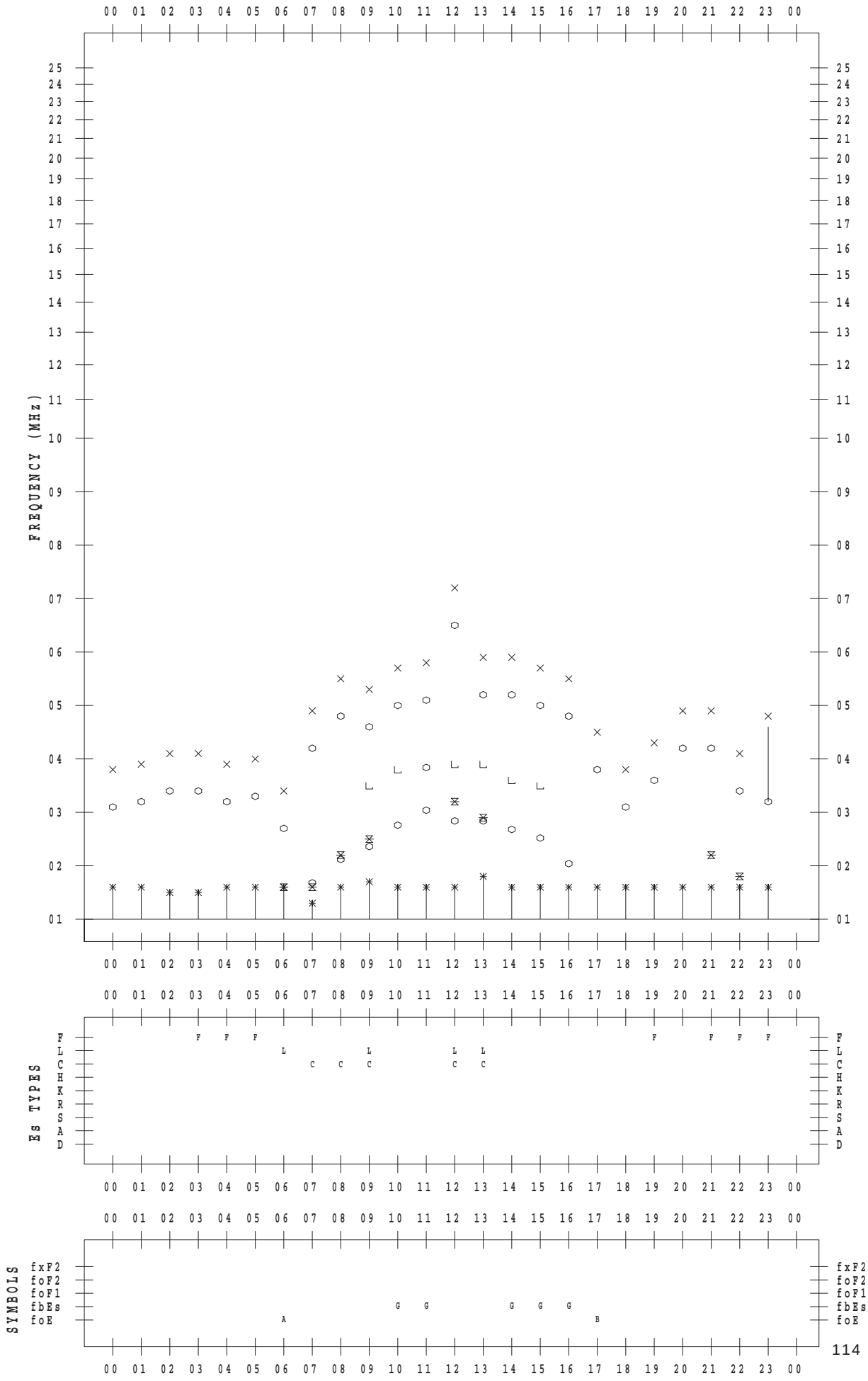
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/11

135 °E MEAN TIME



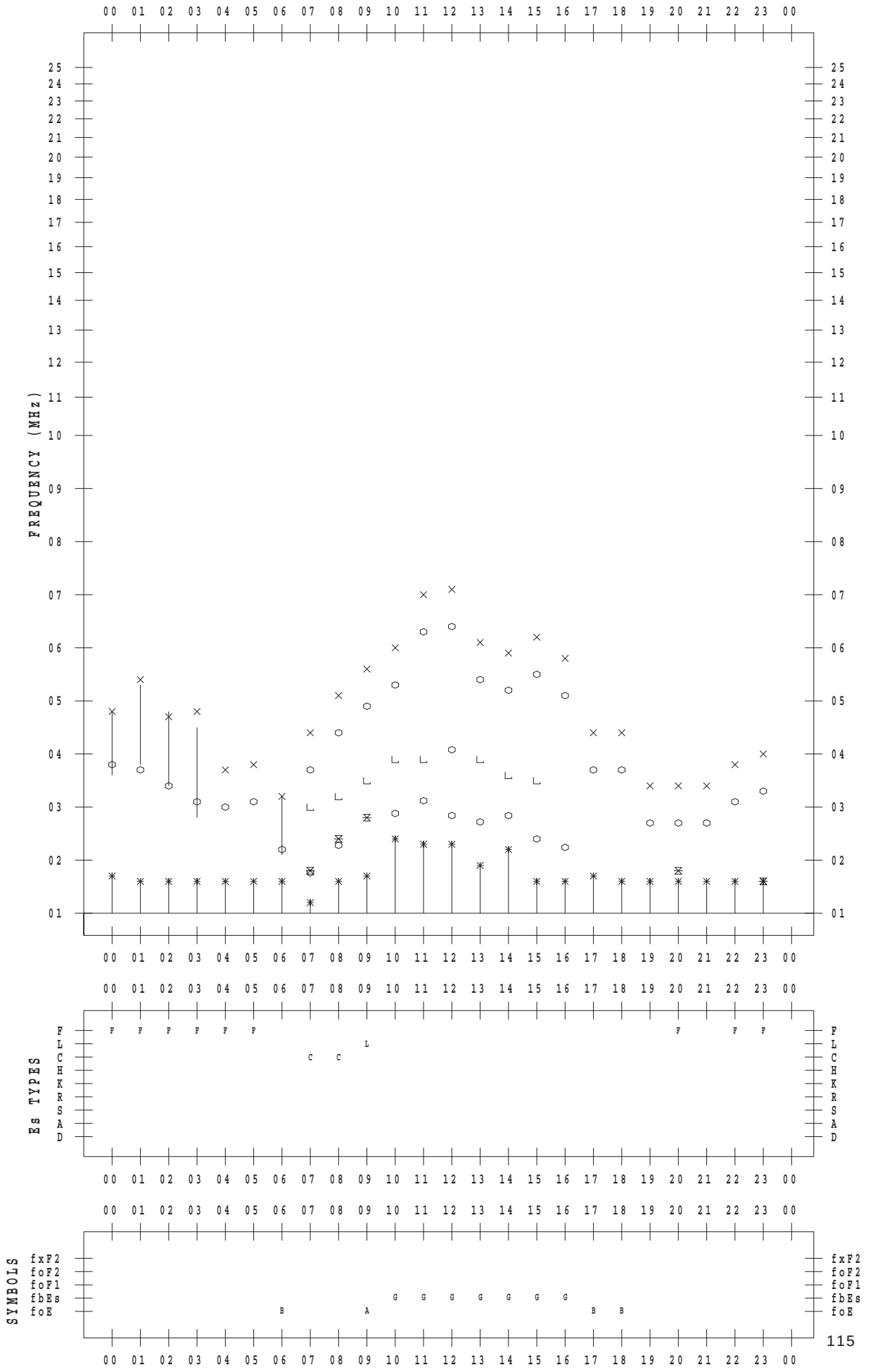
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/12

135 °E MEAN TIME



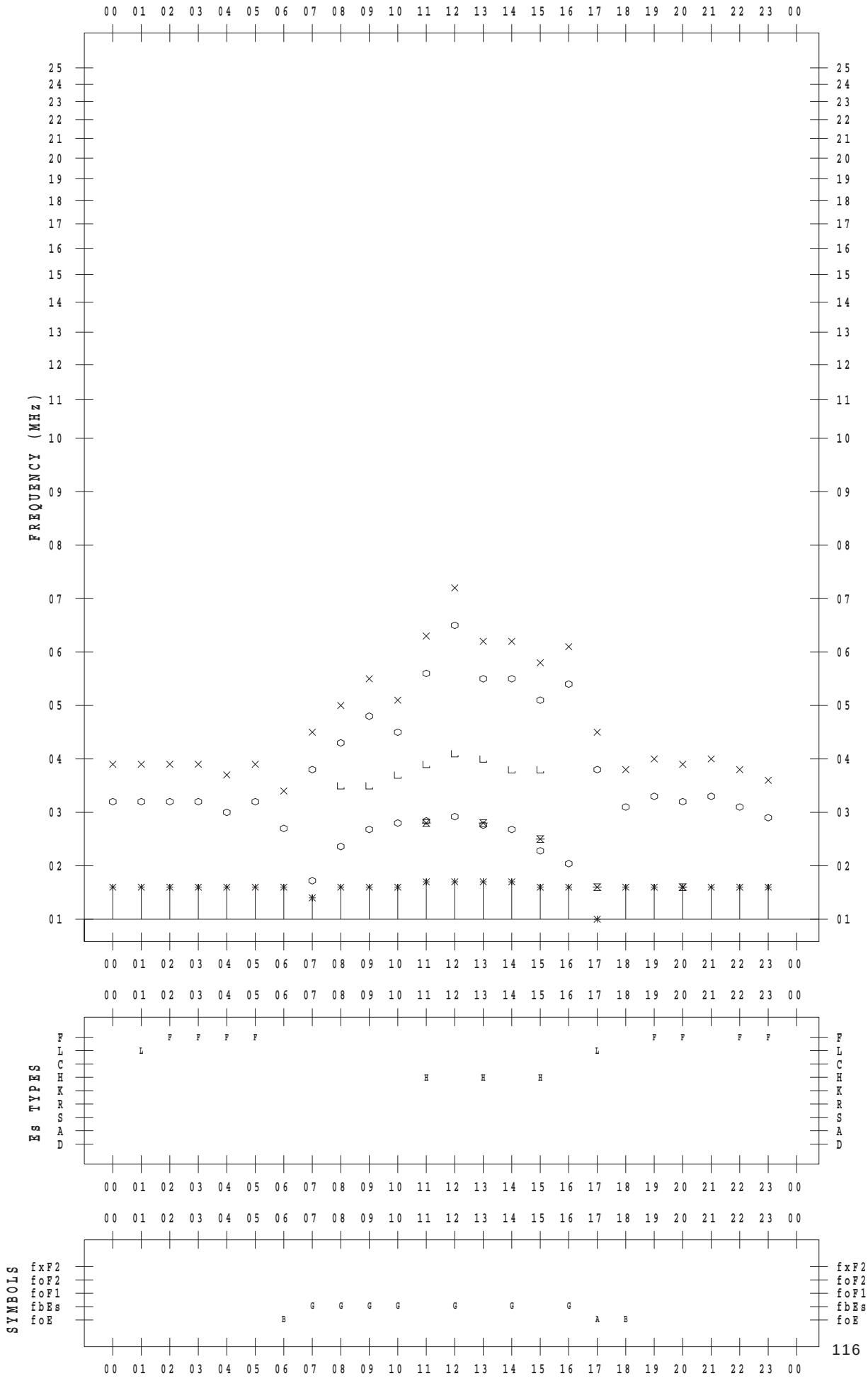
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/13

135 °E MEAN TIME



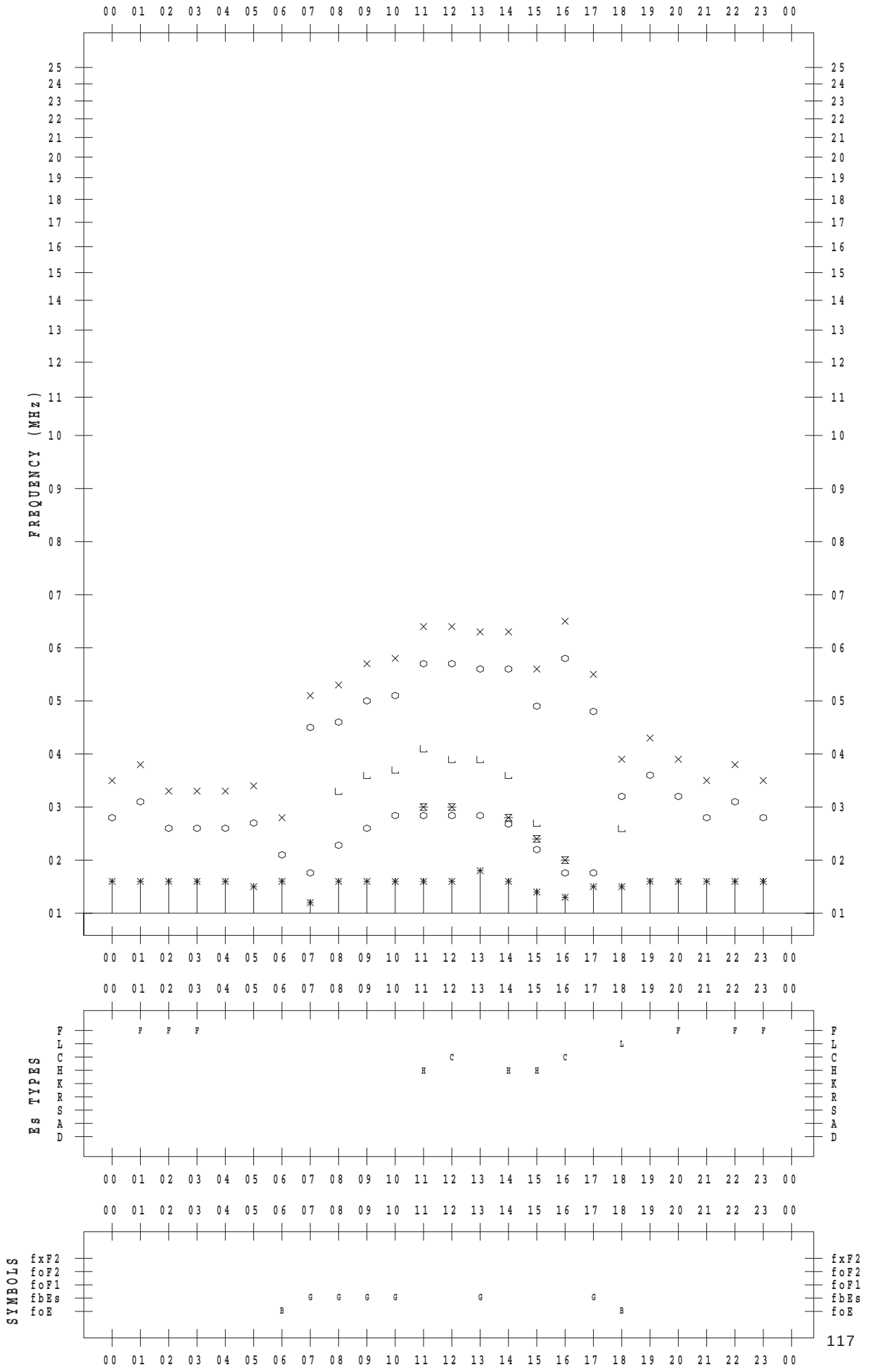
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/14

135 °E MEAN TIME



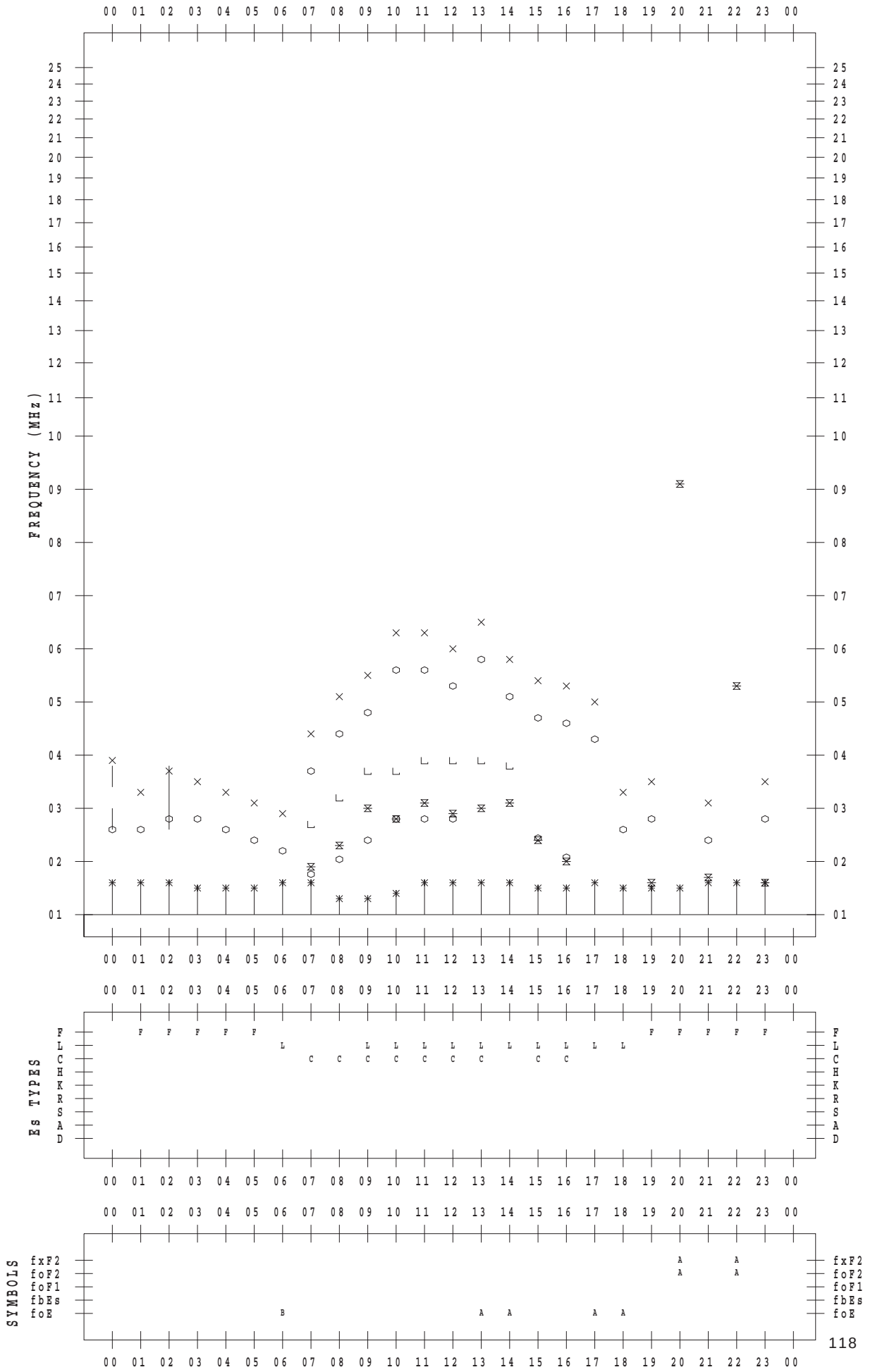
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/15

135 °E MEAN TIME



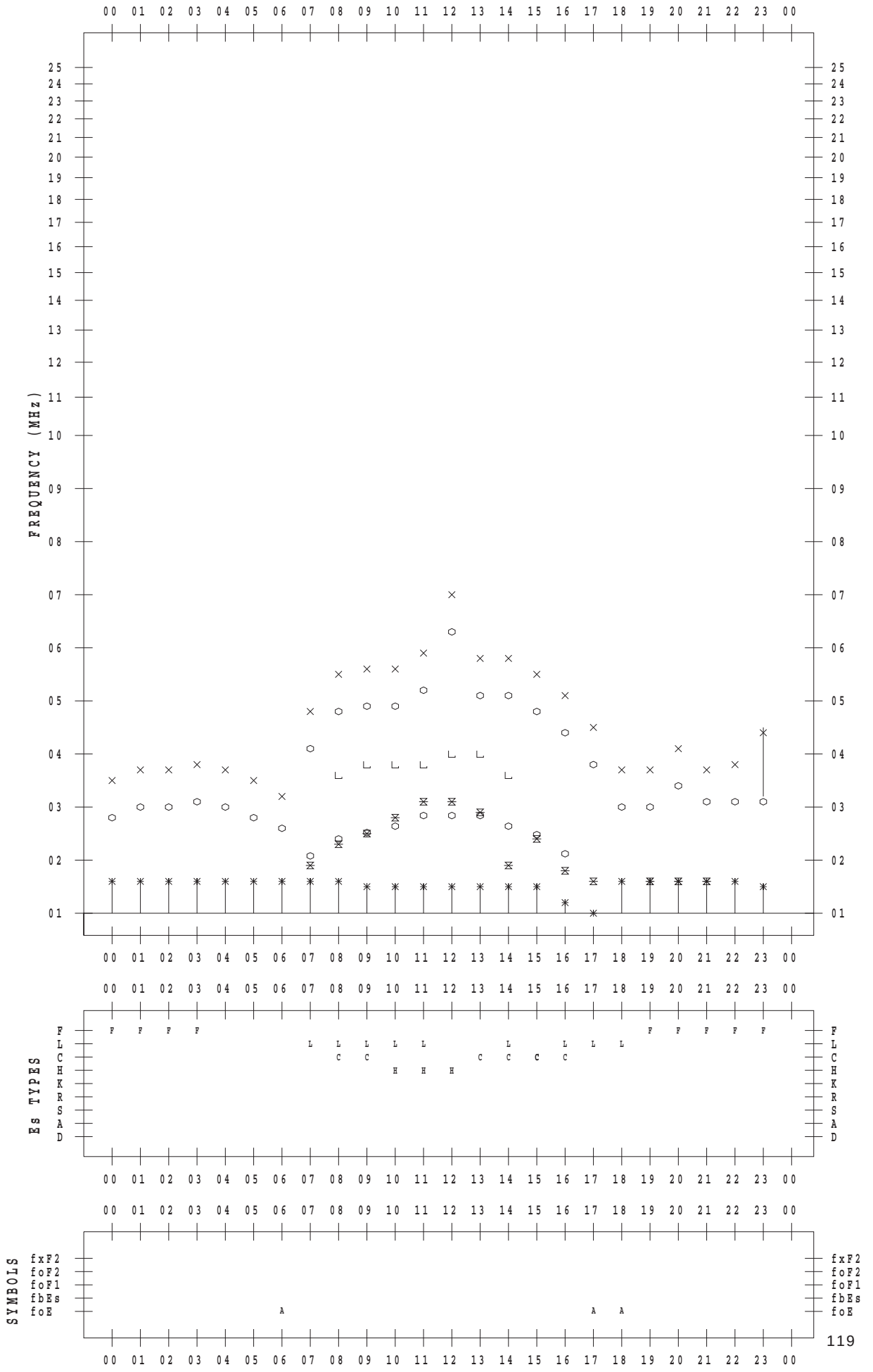
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/16

135 °E MEAN TIME



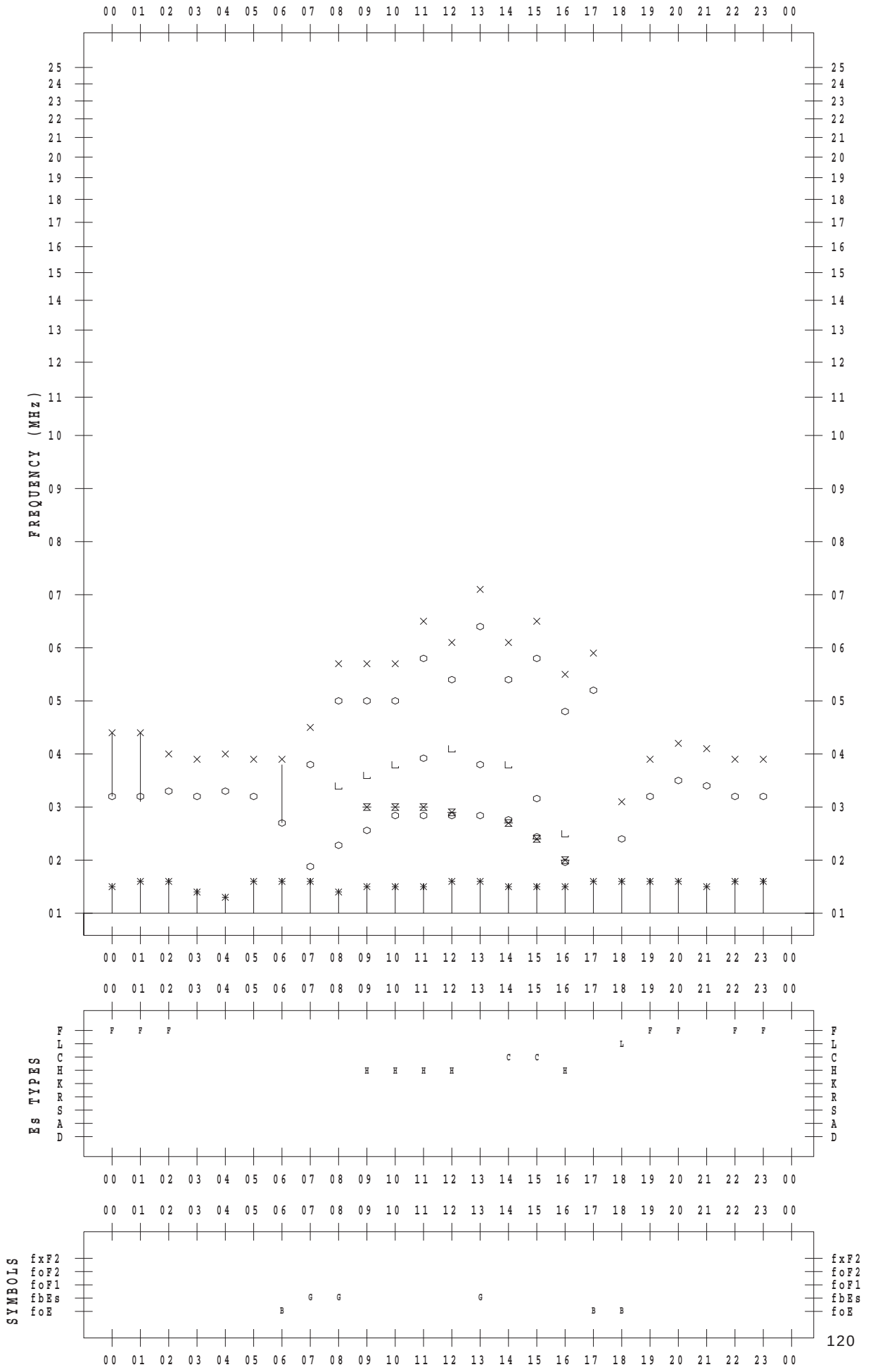
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/17

135 °E MEAN TIME



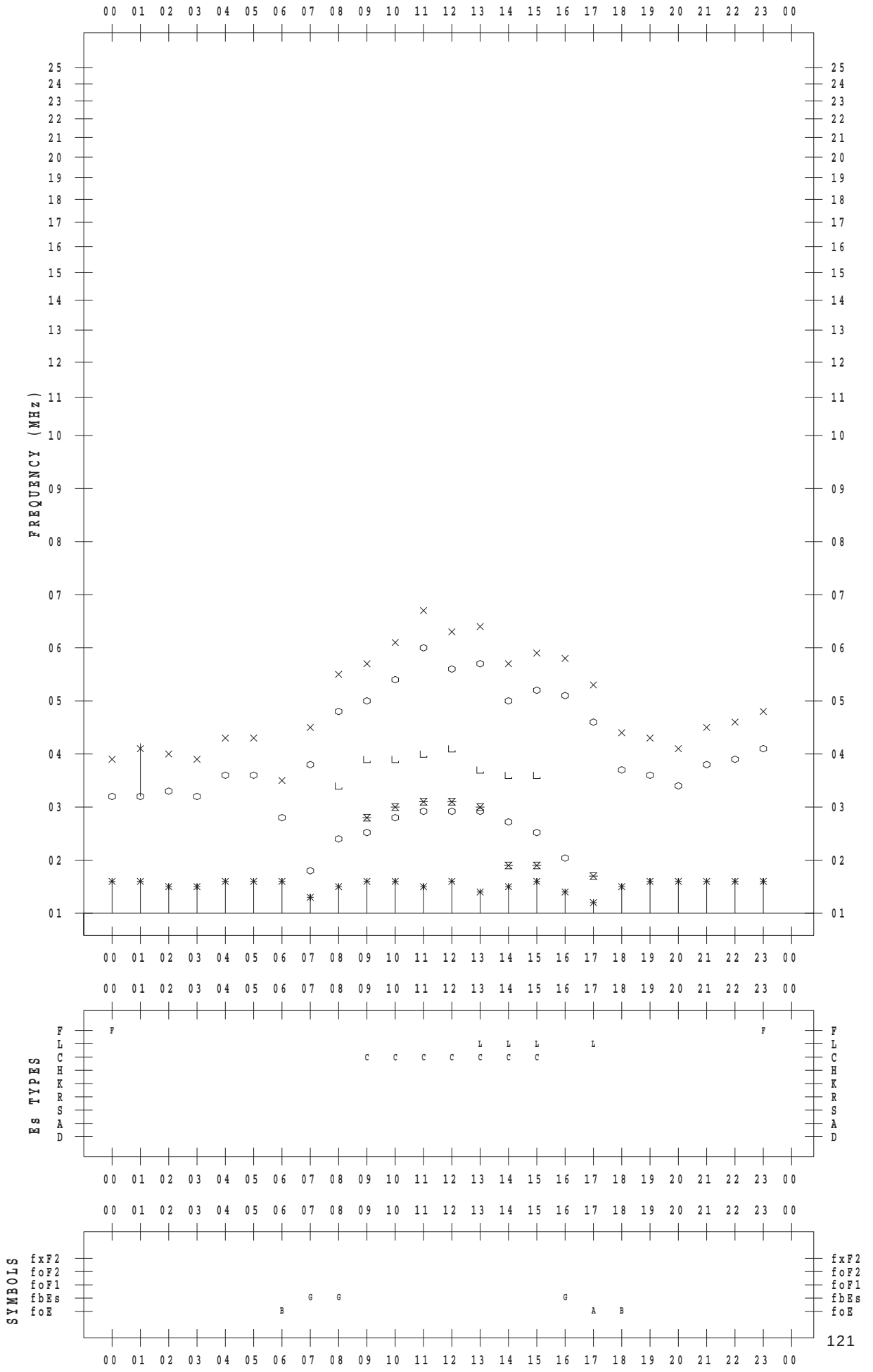
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/18

135 °E MEAN TIME



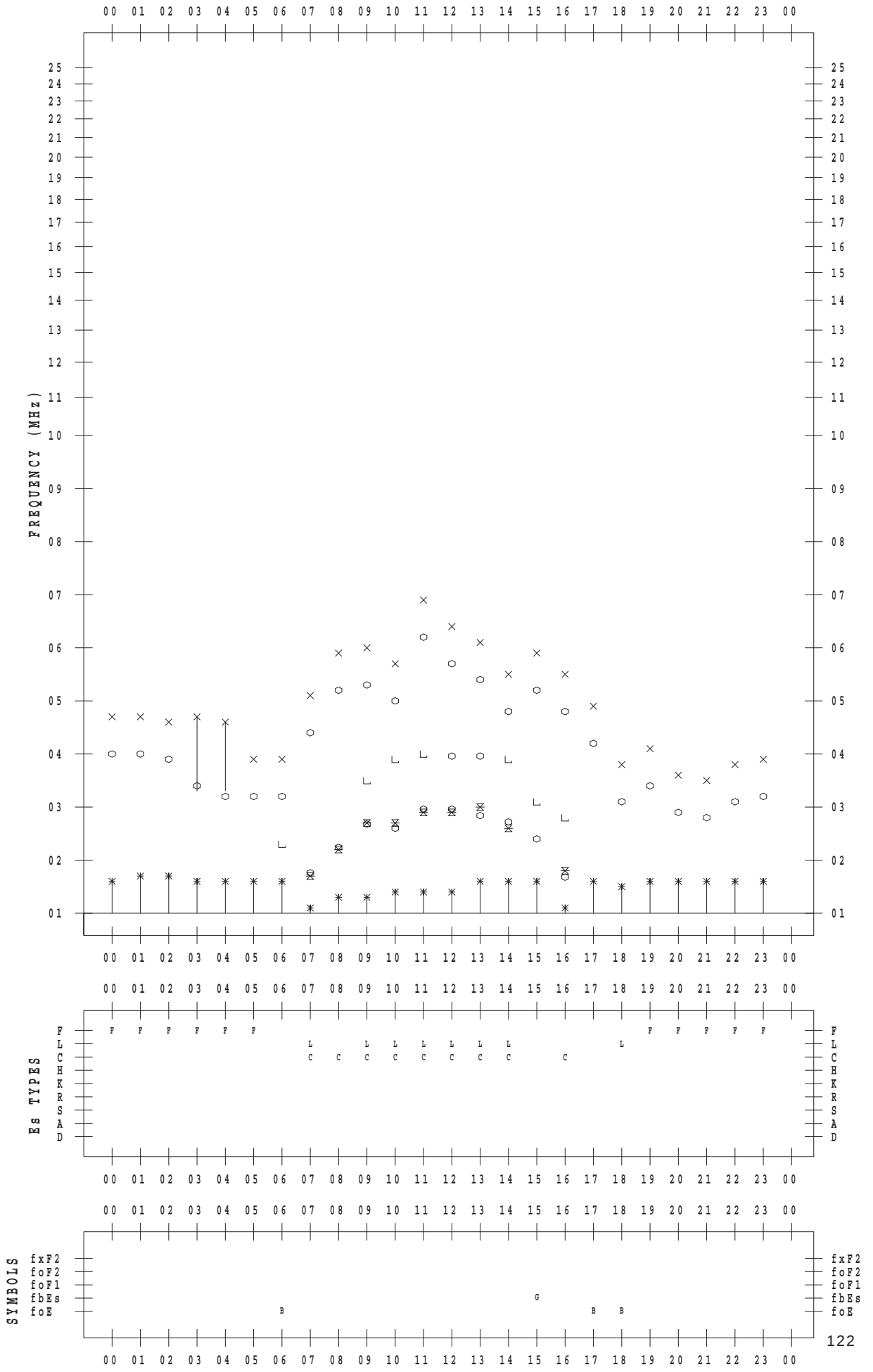
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/19

135 °E MEAN TIME



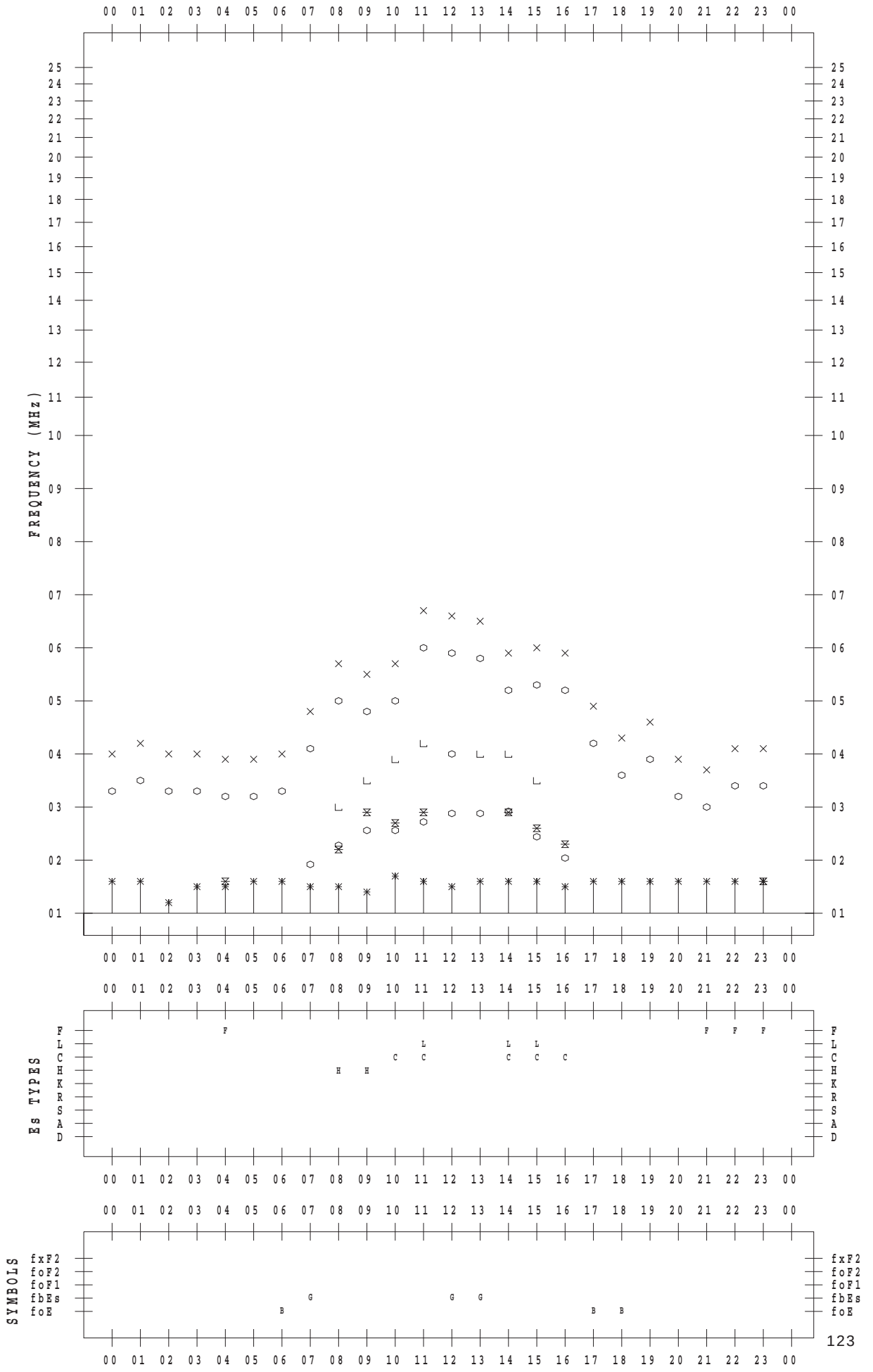
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/20

135 °E MEAN TIME



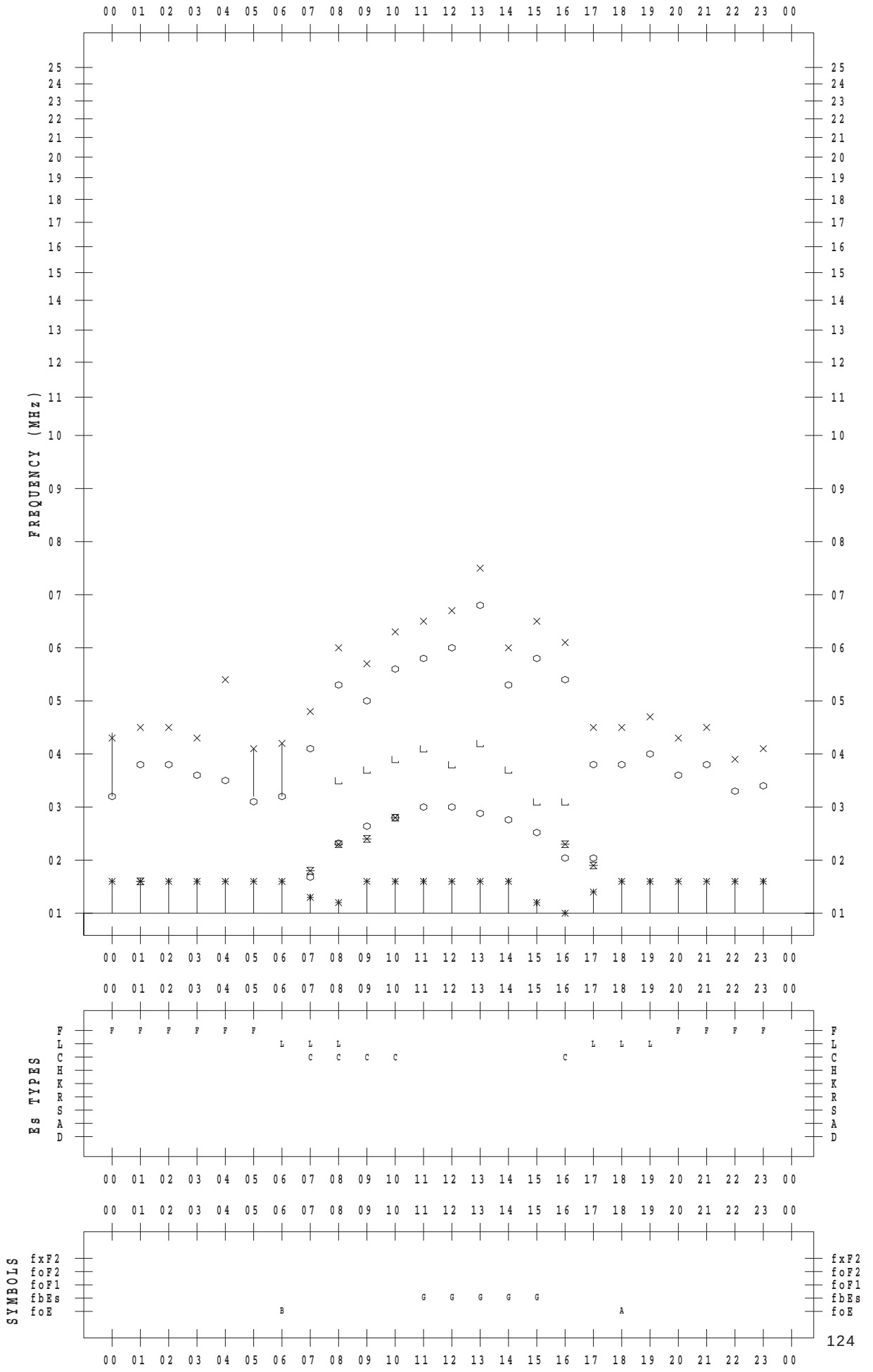
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/21

135 °E MEAN TIME



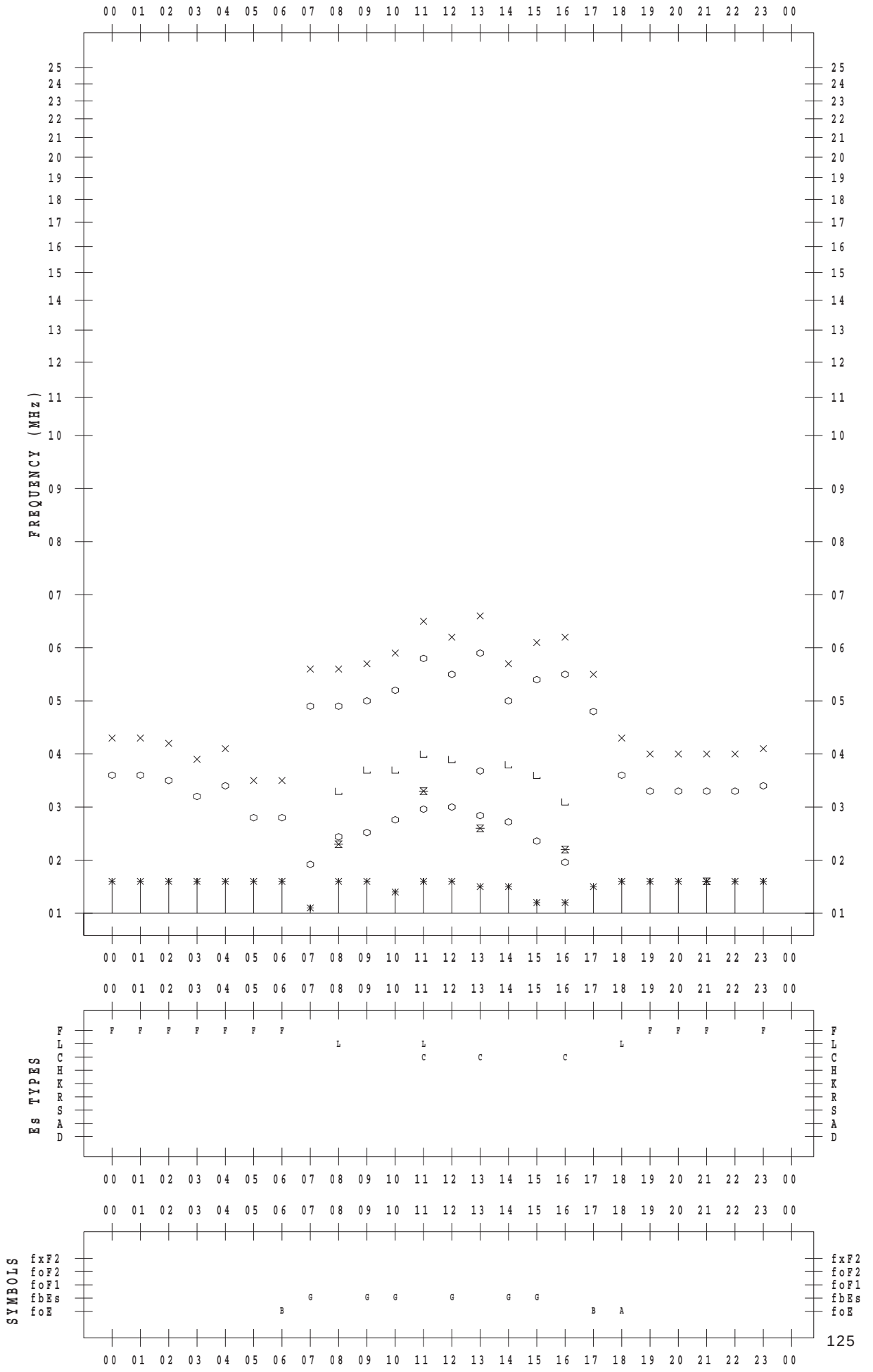
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/22

135 °E MEAN TIME



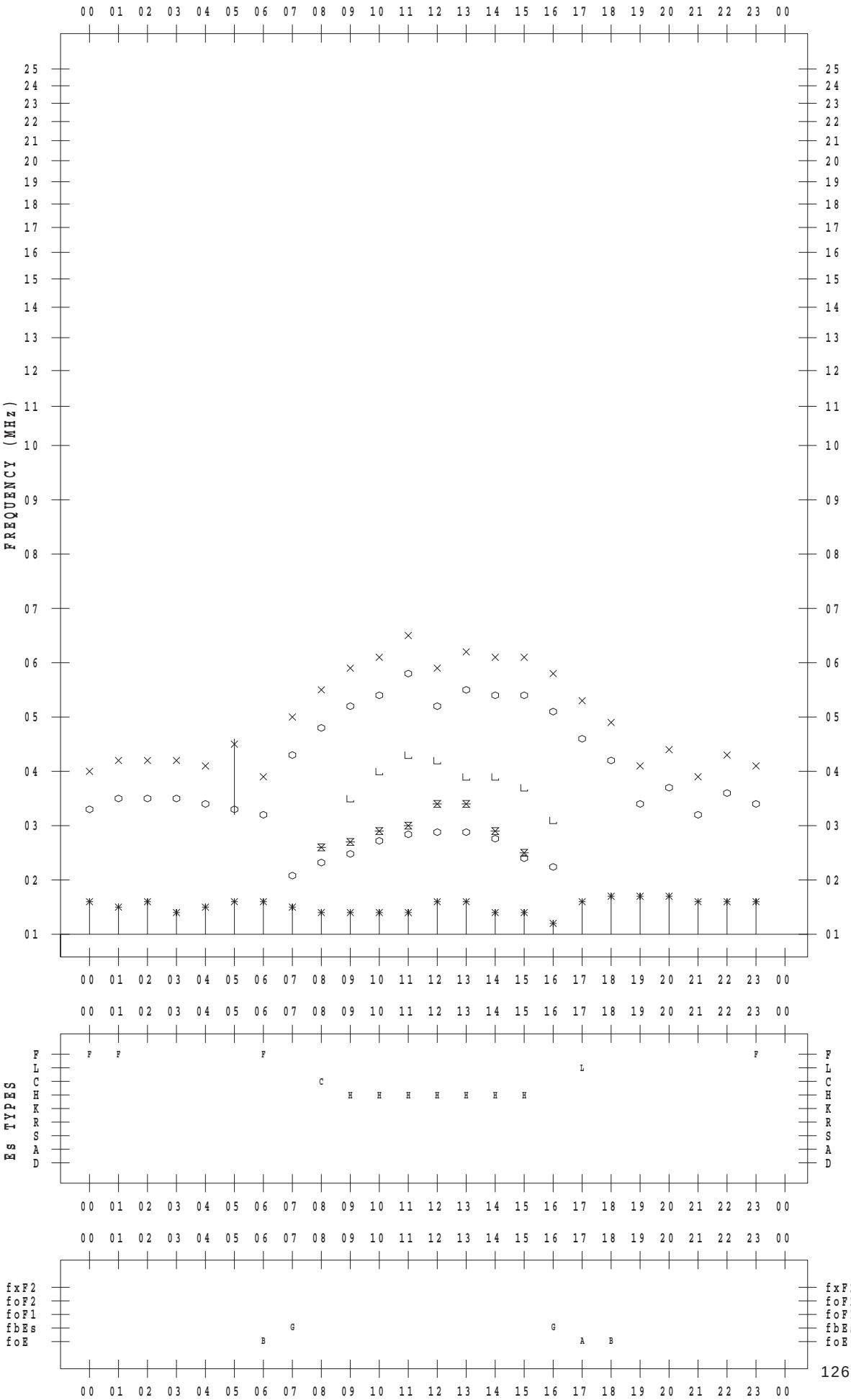
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/23

135 °E MEAN TIME



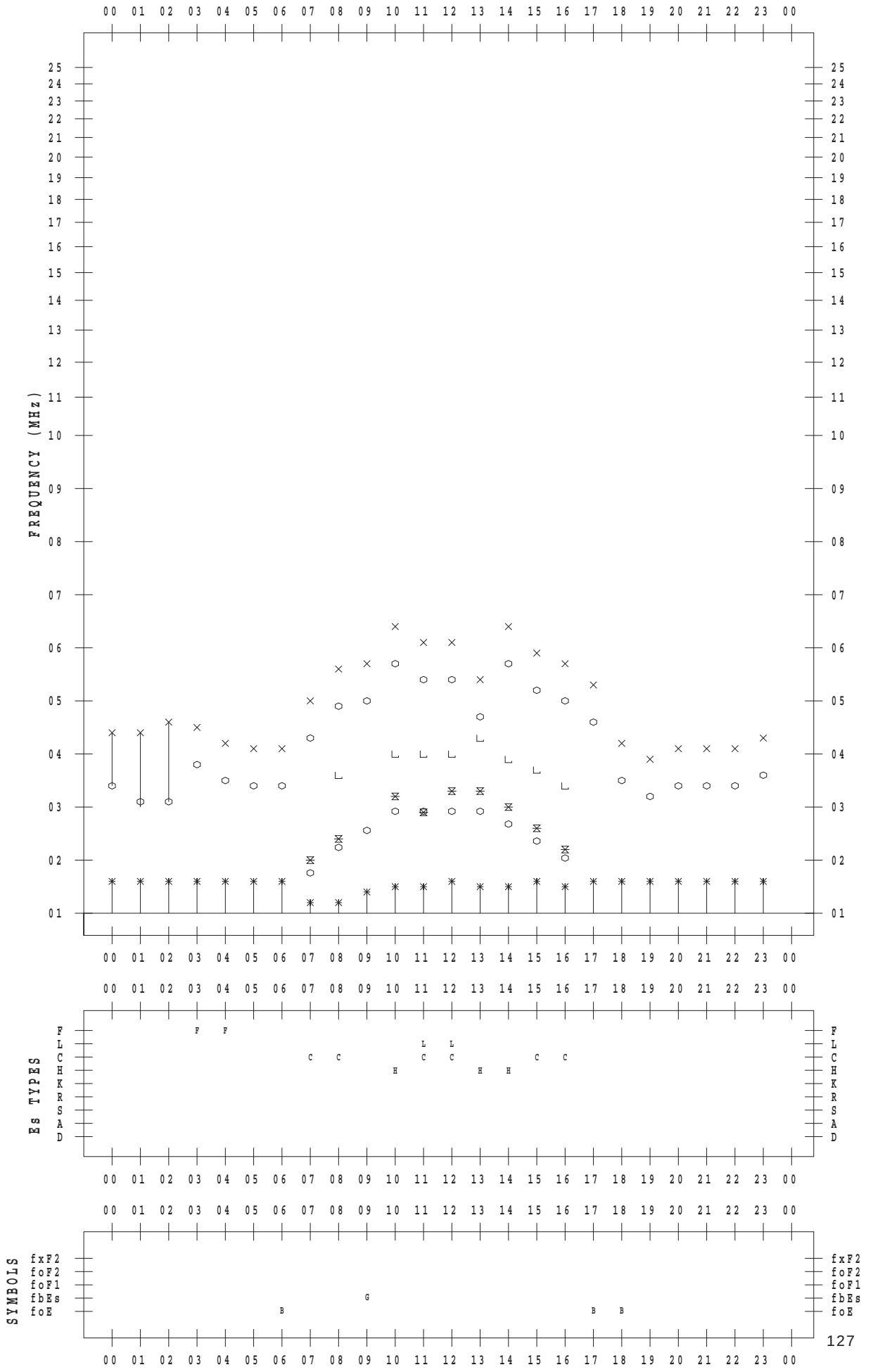
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/24

135 °E MEAN TIME



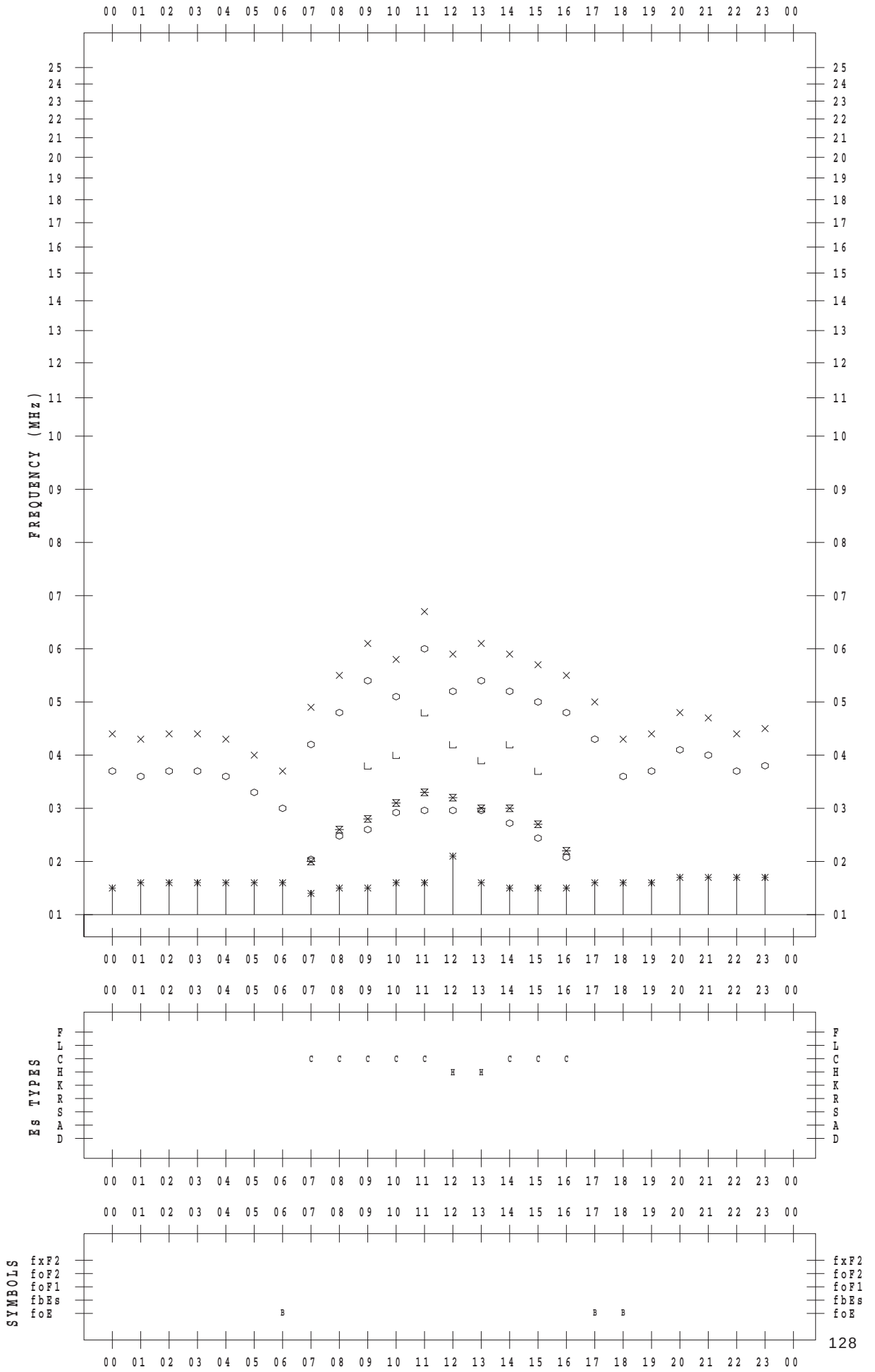
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/25

135 °E MEAN TIME



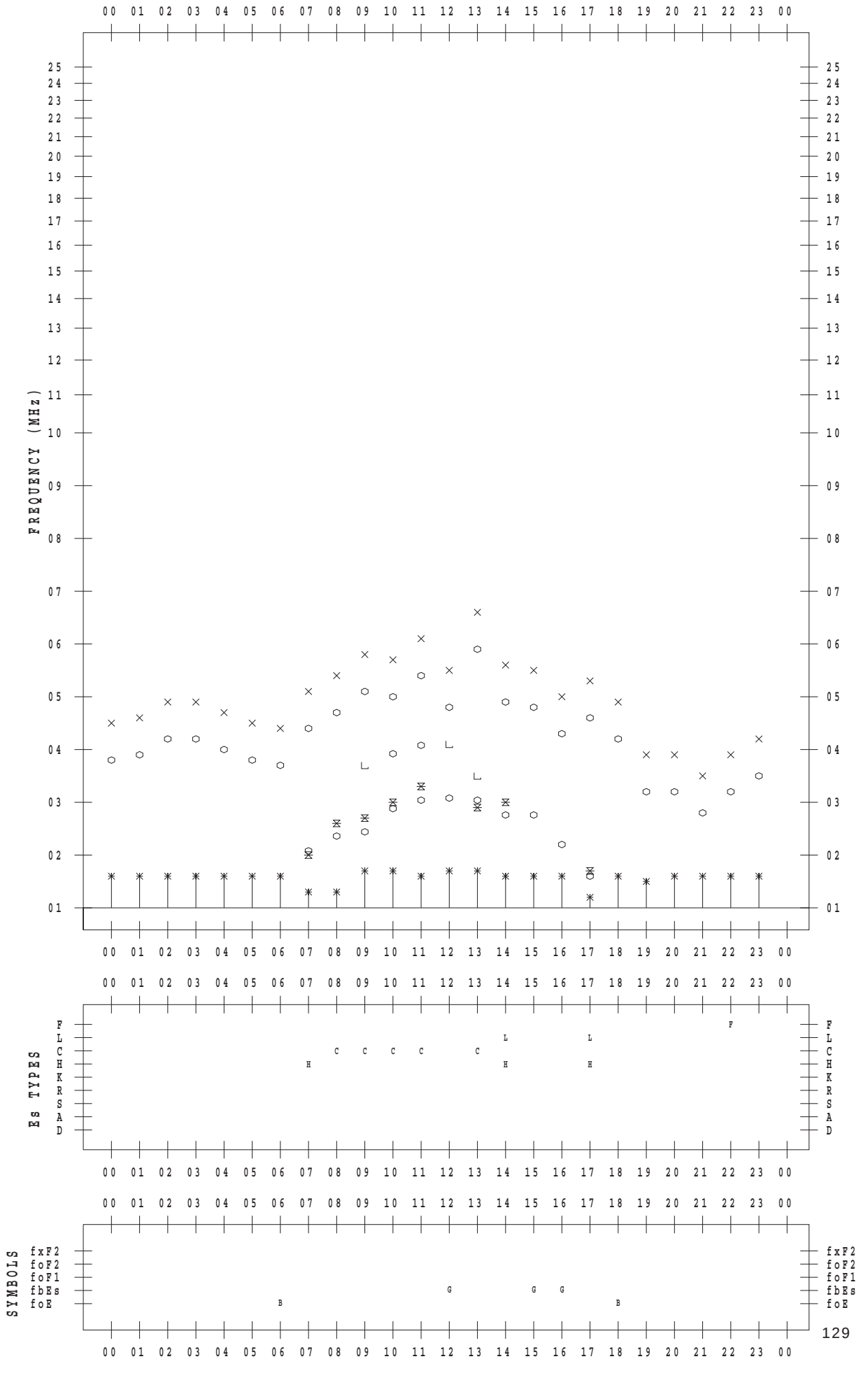
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/26

135 °E MEAN TIME



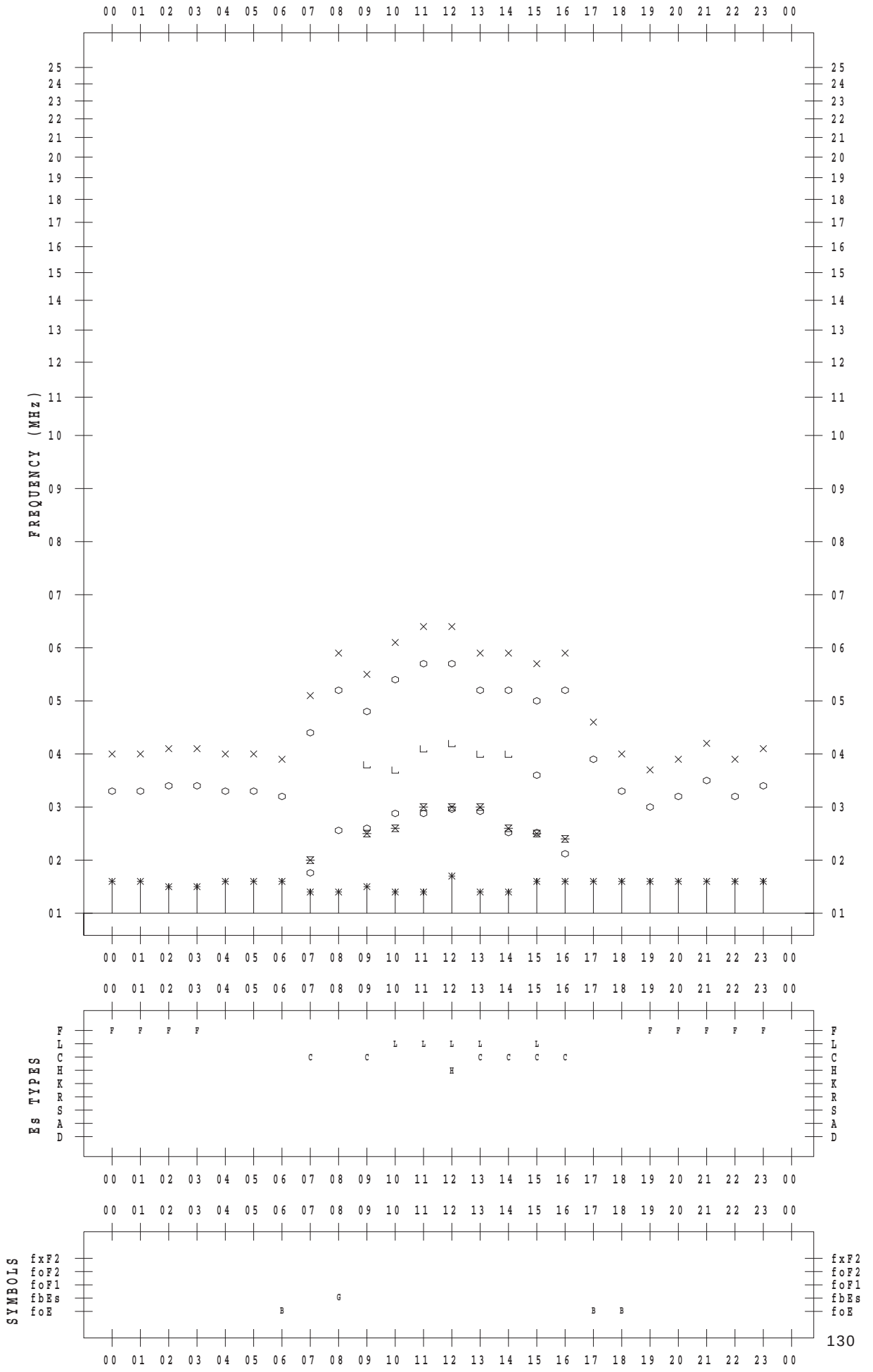
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/27

135 °E MEAN TIME



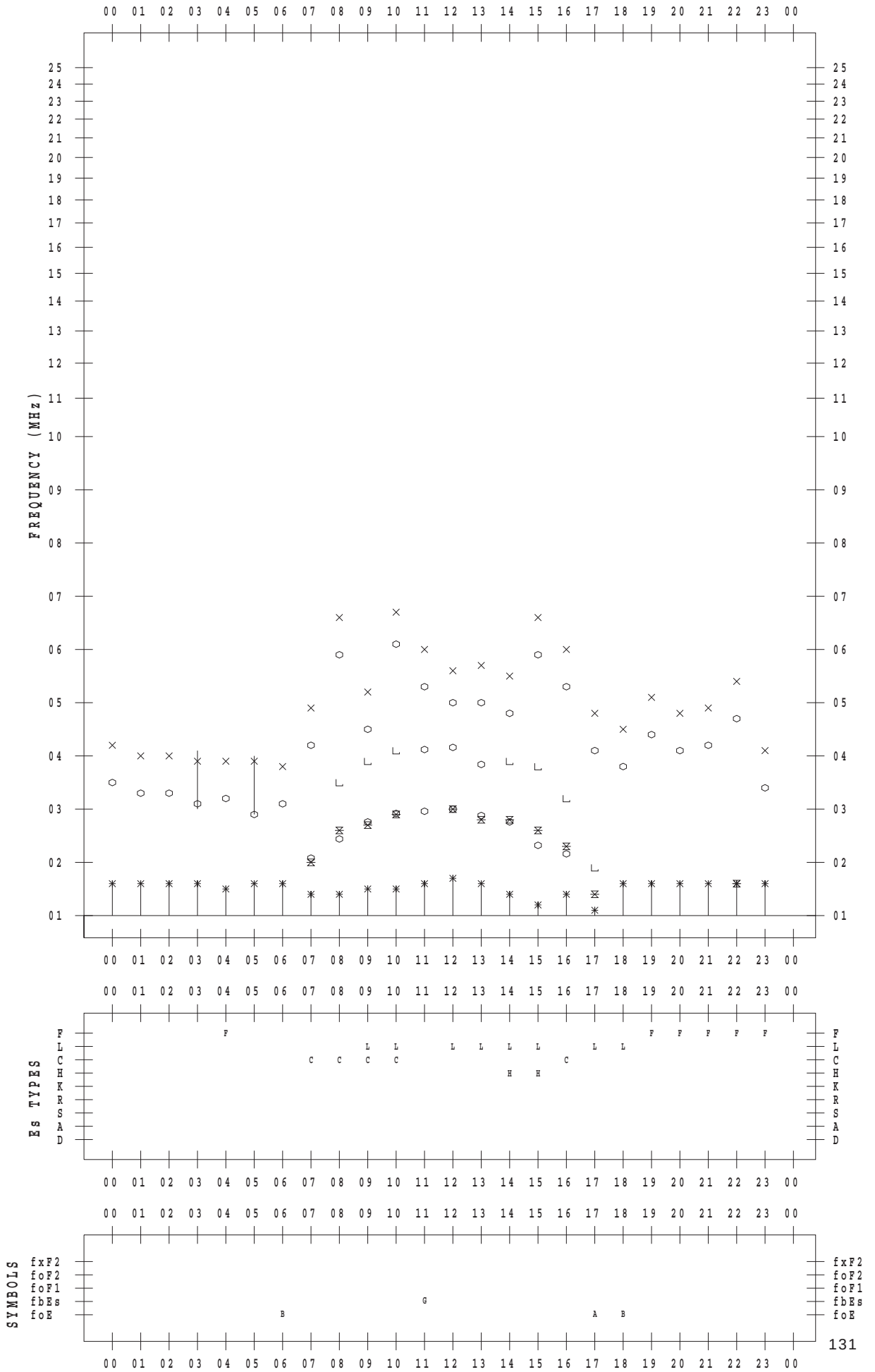
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 2/28

135 °E MEAN TIME



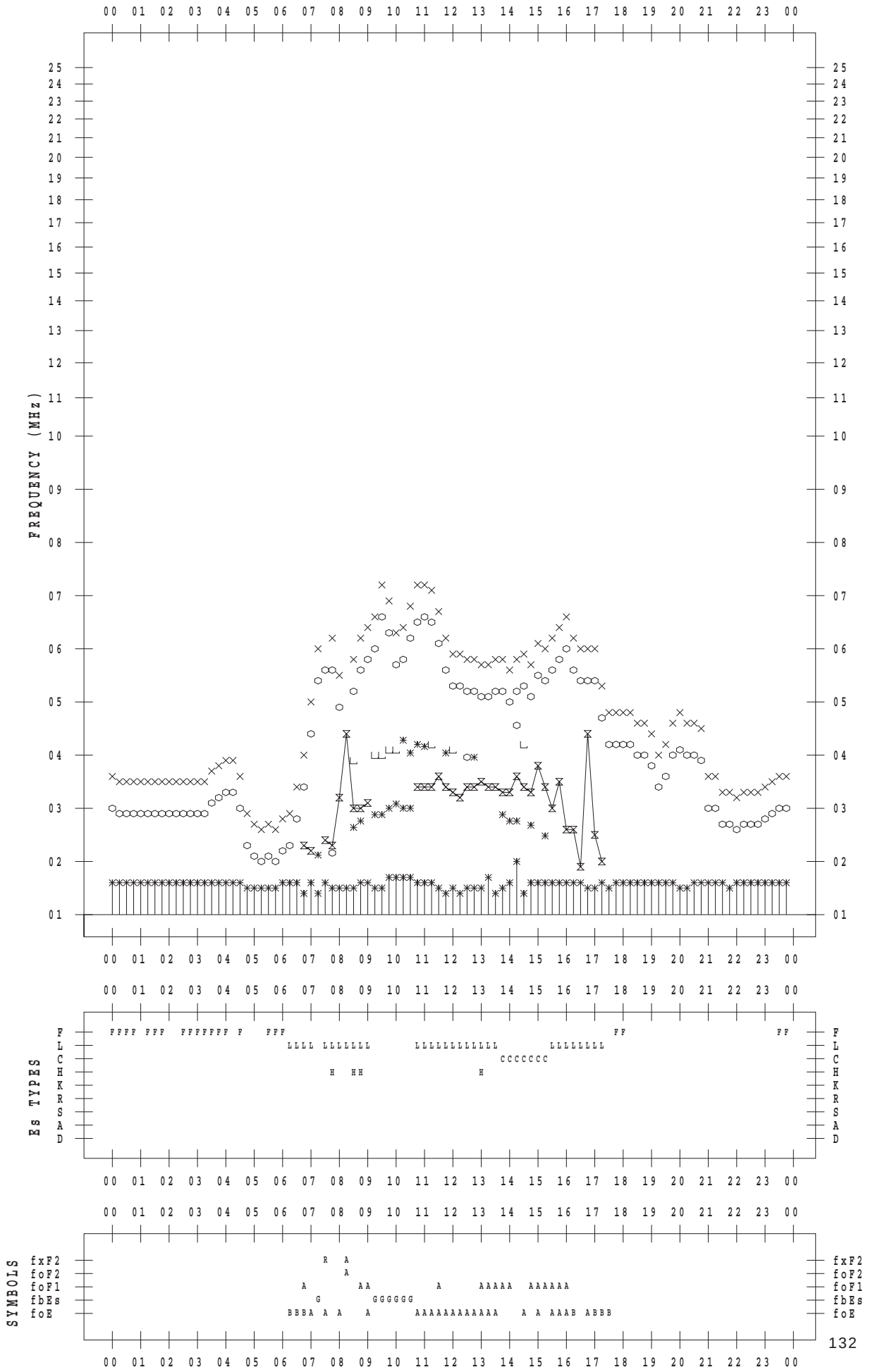
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 1

135 °E MEAN TIME



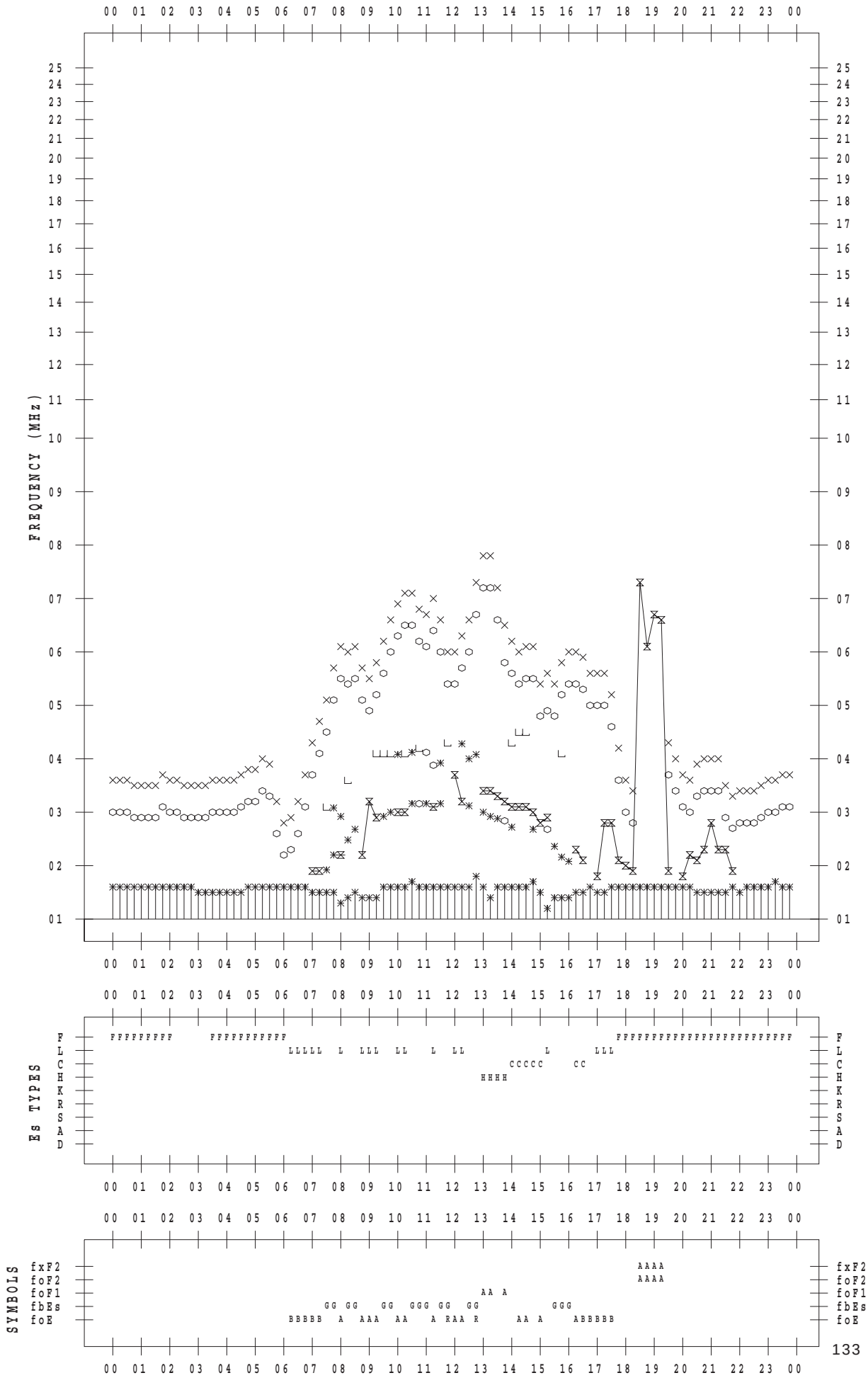
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 2

135 °E MEAN TIME



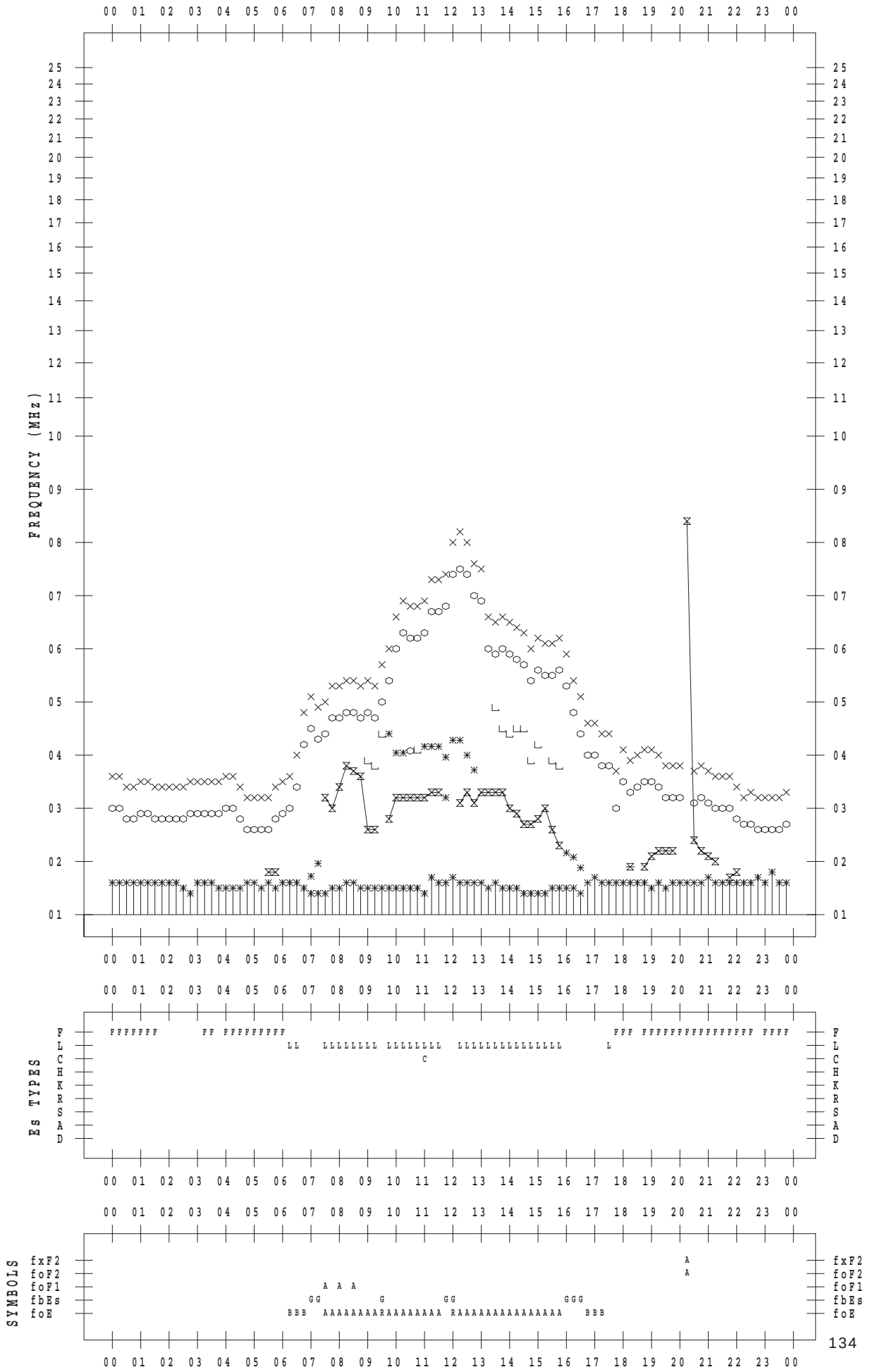
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 3

135 °E MEAN TIME



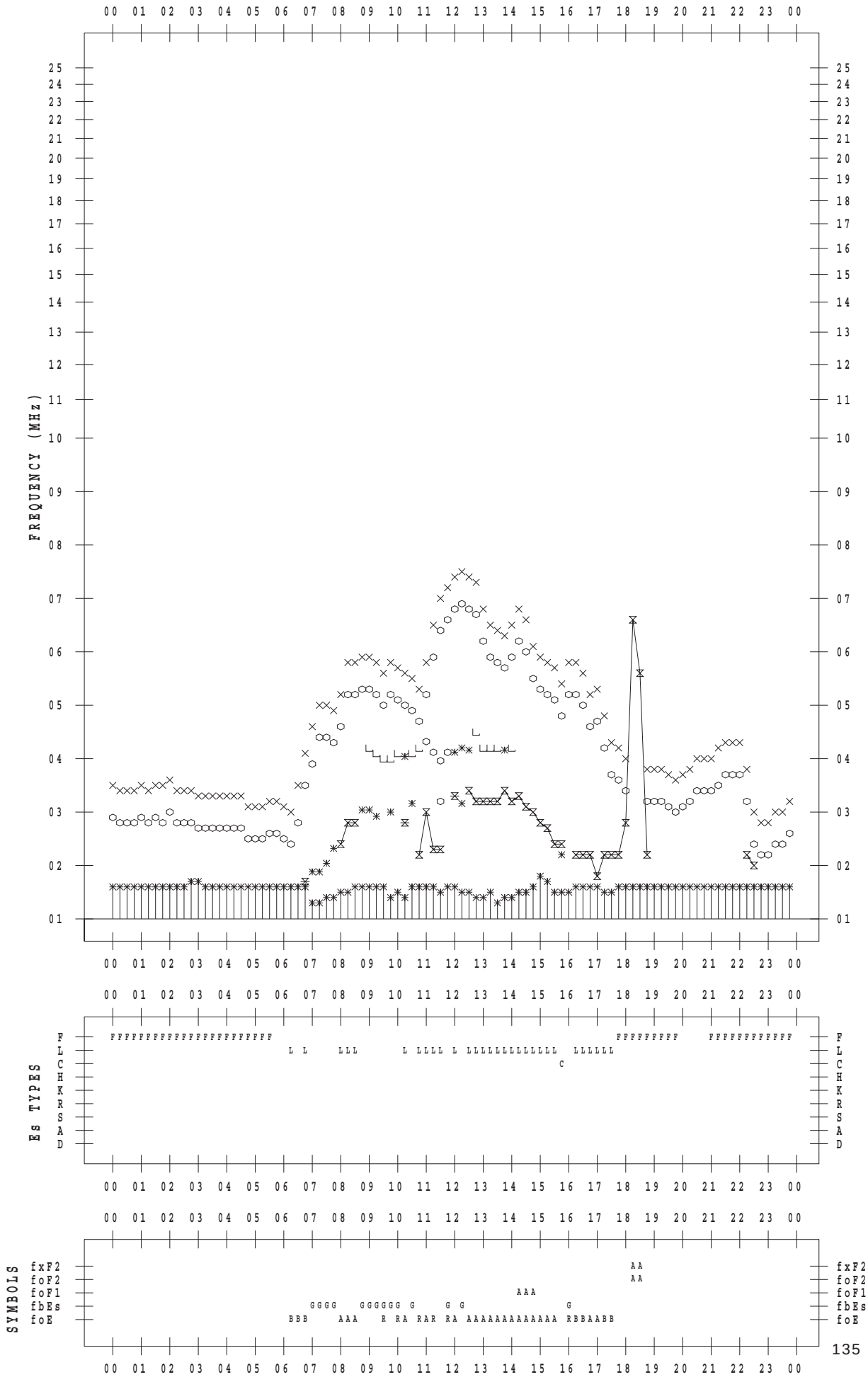
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 4

135 °E MEAN TIME



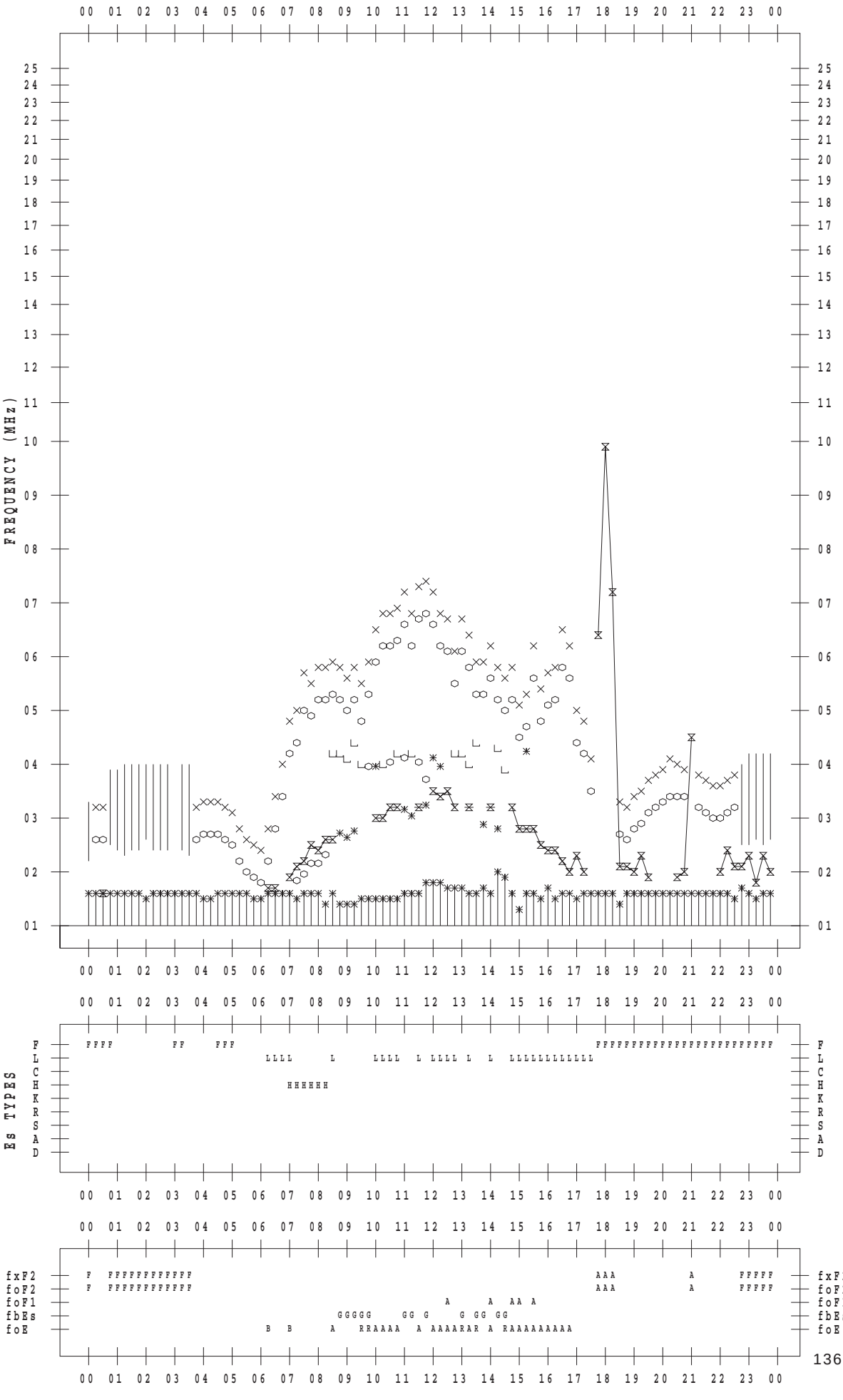
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 5

135 °E MEAN TIME



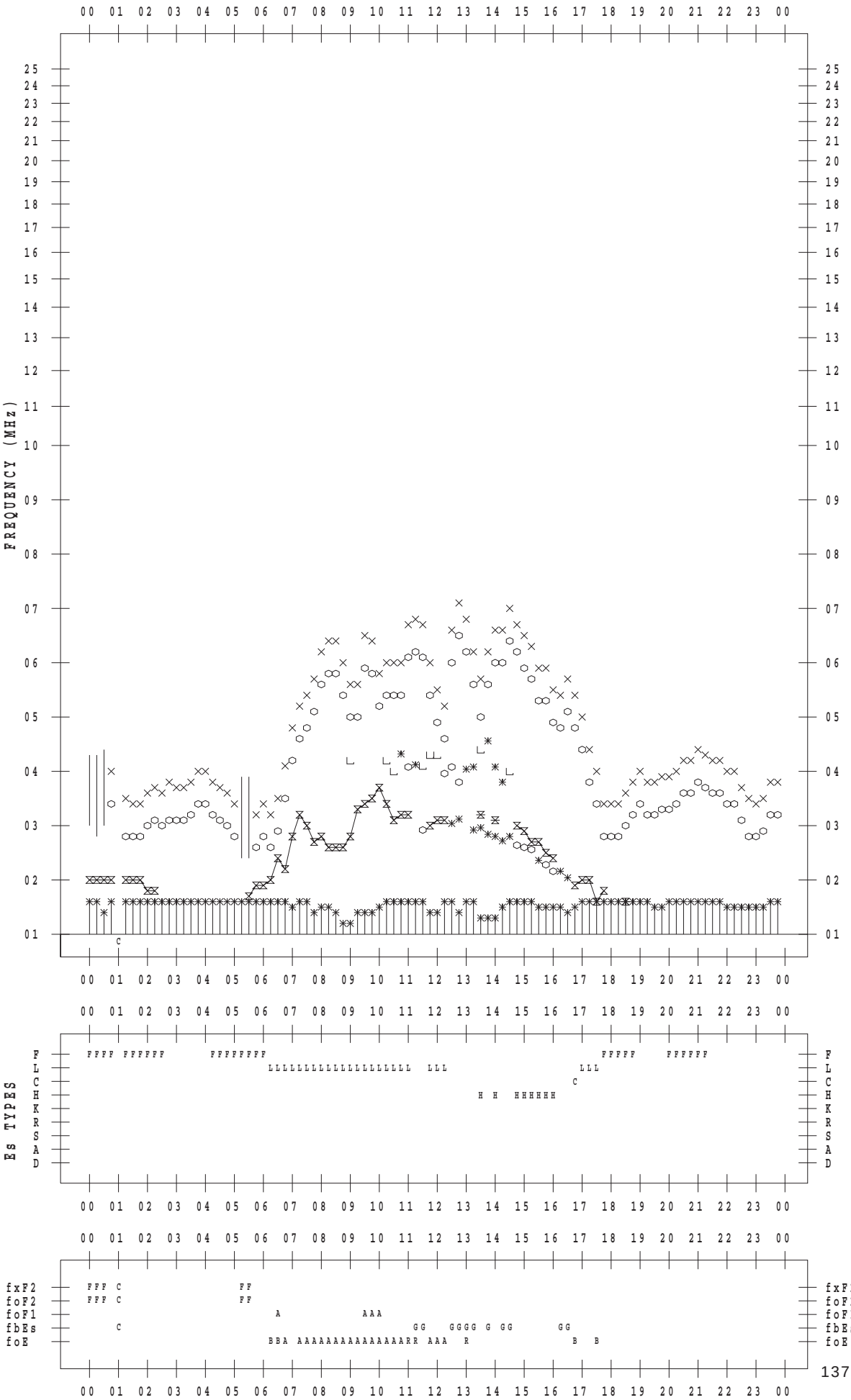
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 6

135 °E MEAN TIME



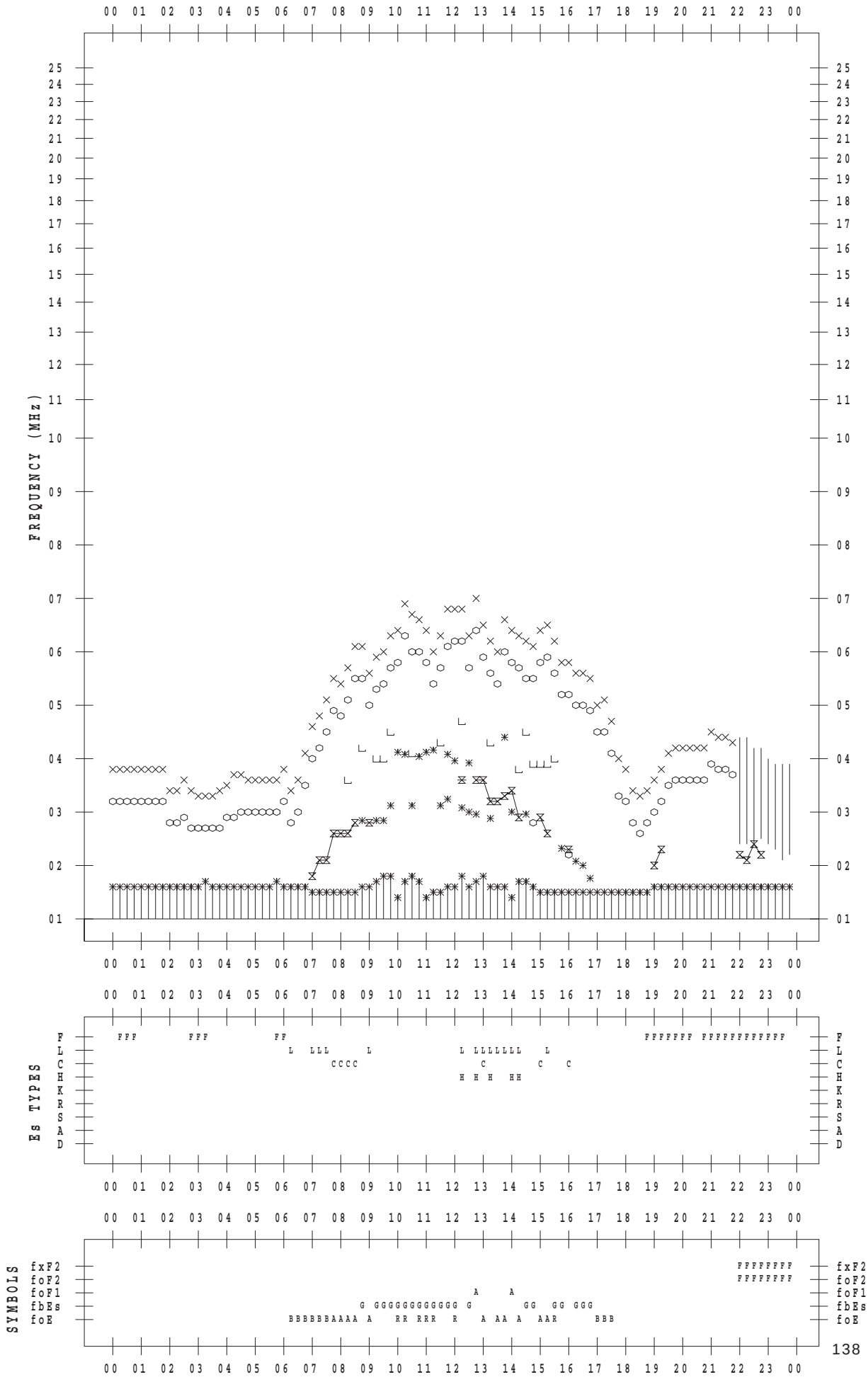
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 7

135 °E MEAN TIME



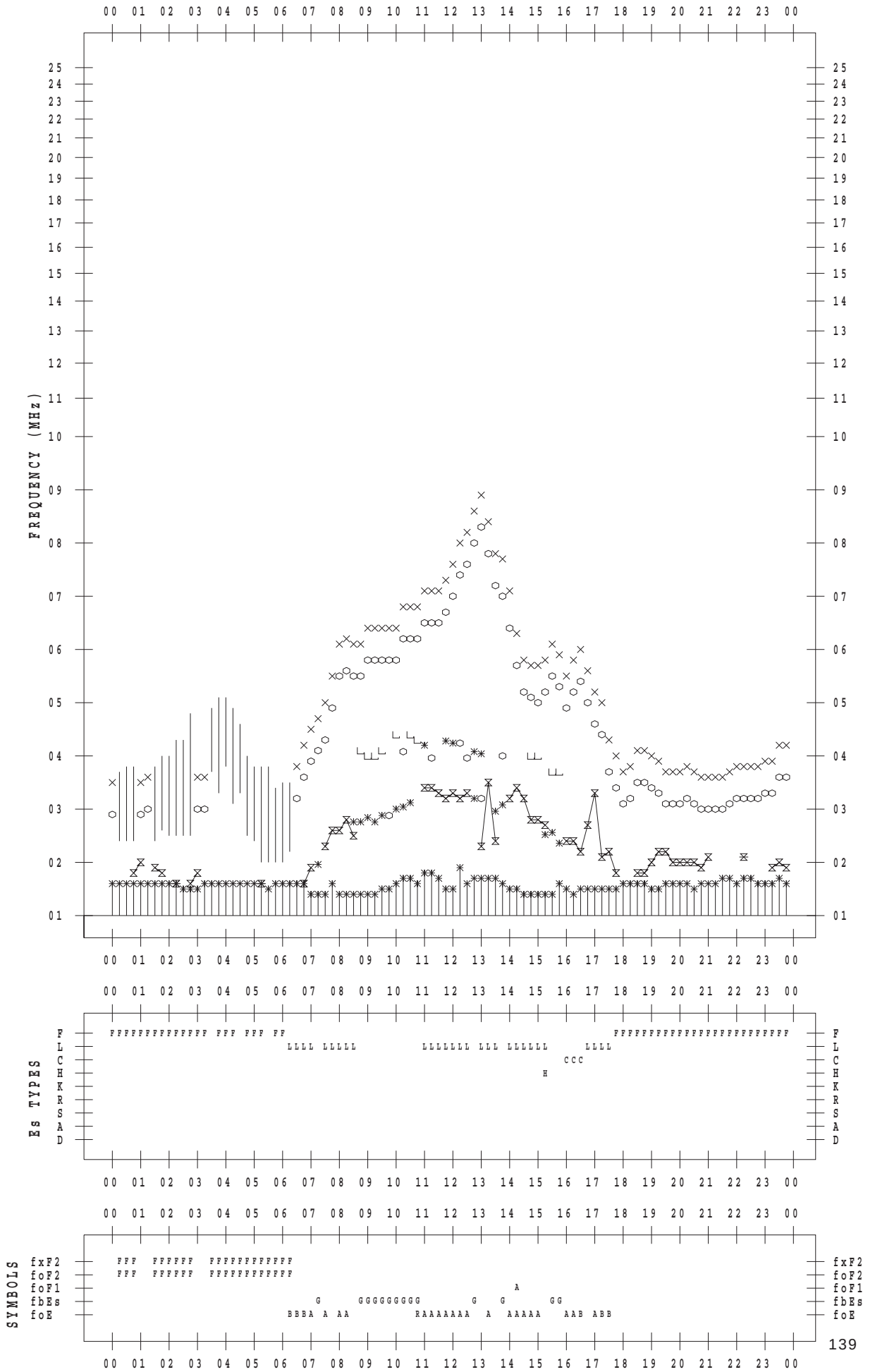
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 8

135 °E MEAN TIME



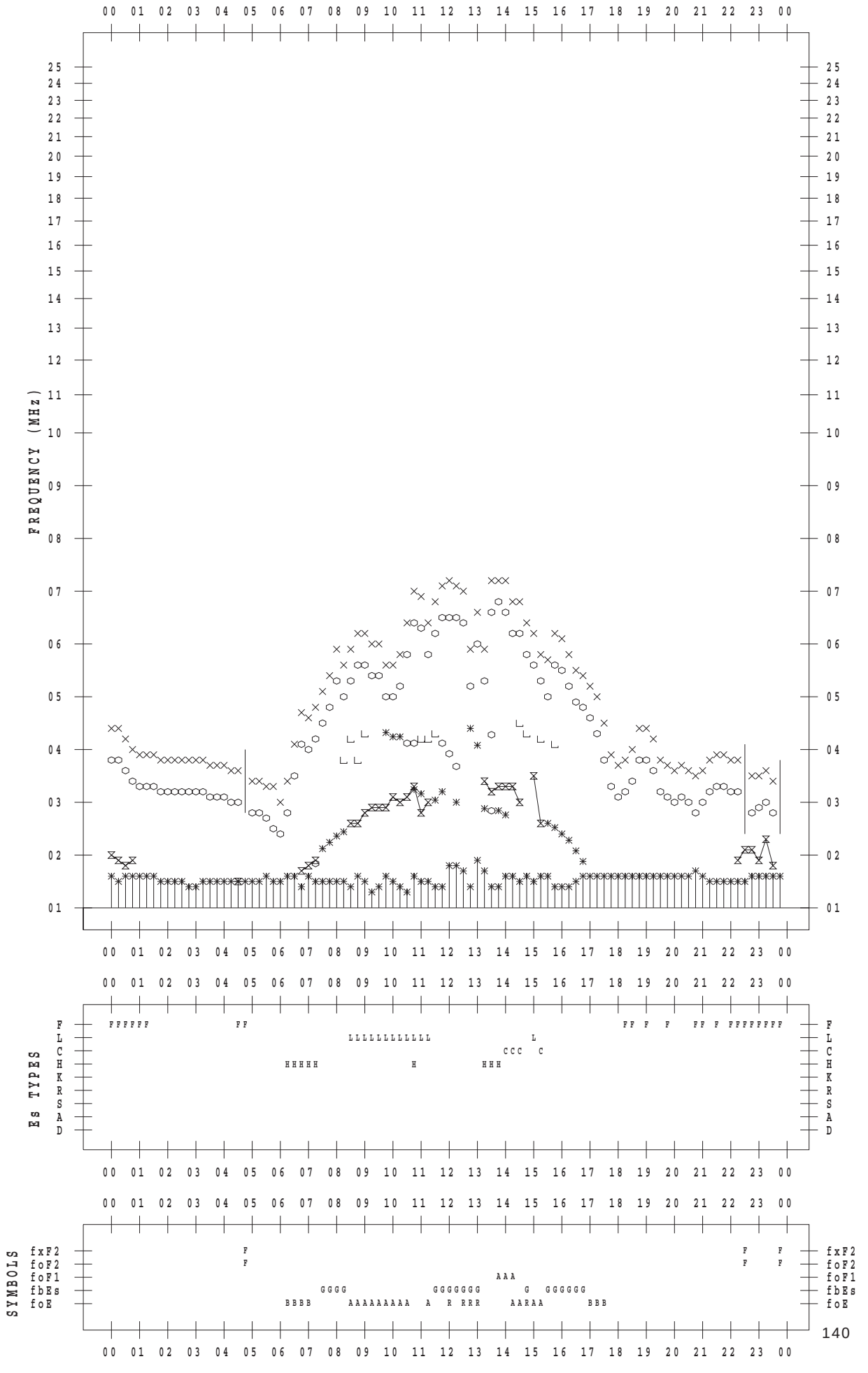
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/ 9

135 °E MEAN TIME



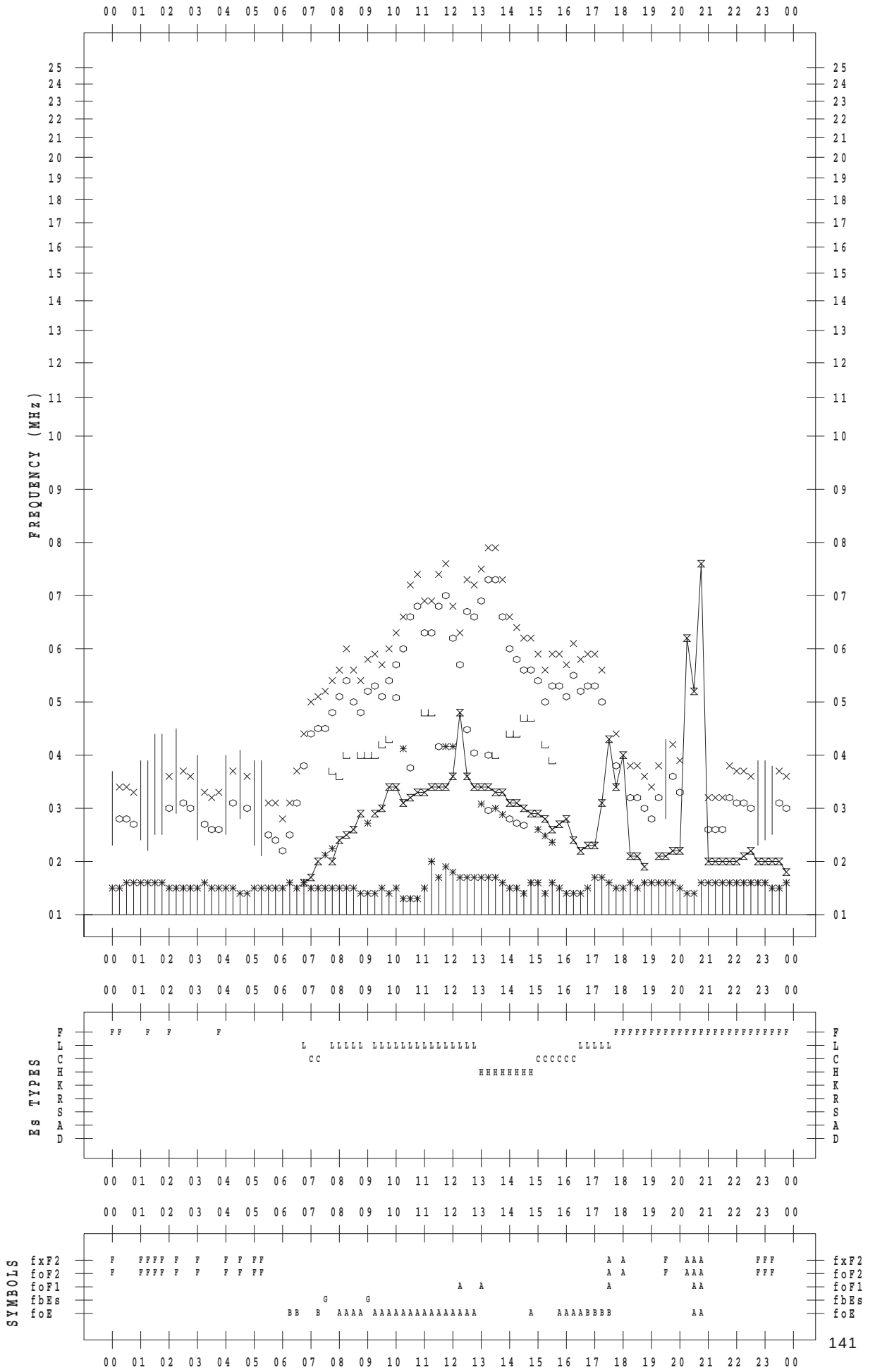
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/10

135 °E MEAN TIME



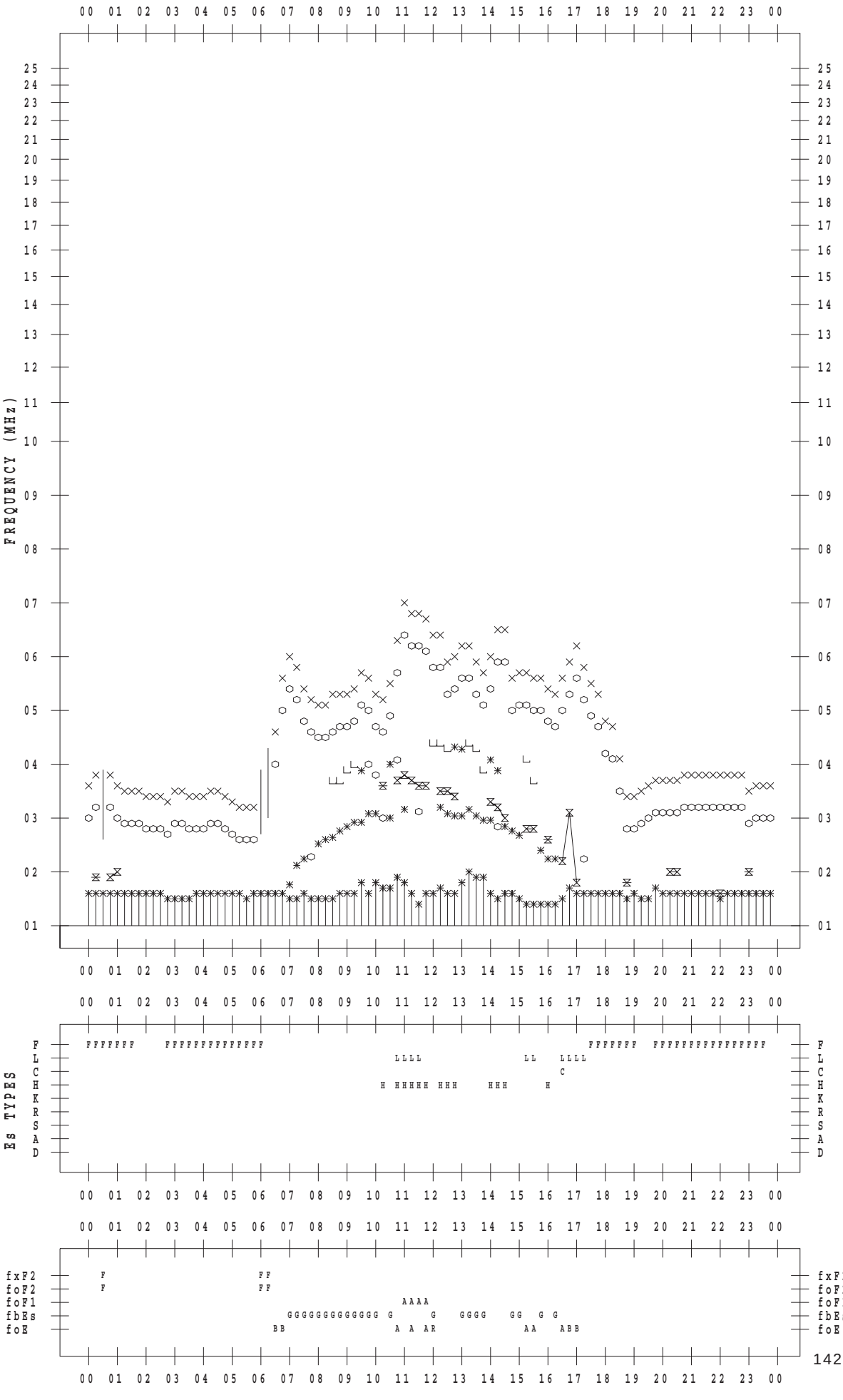
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/11

135 °E MEAN TIME



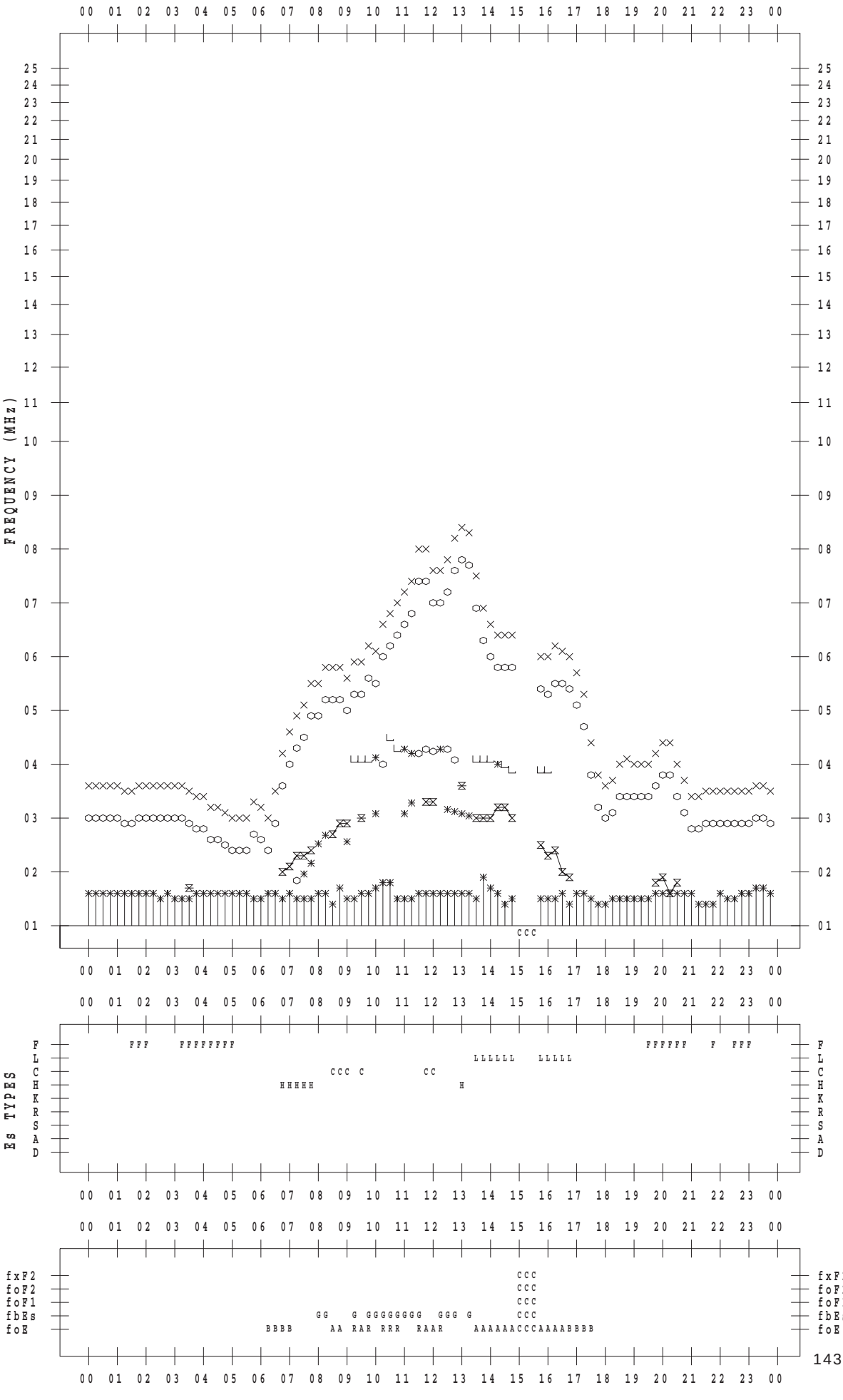
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/12

135 °E MEAN TIME



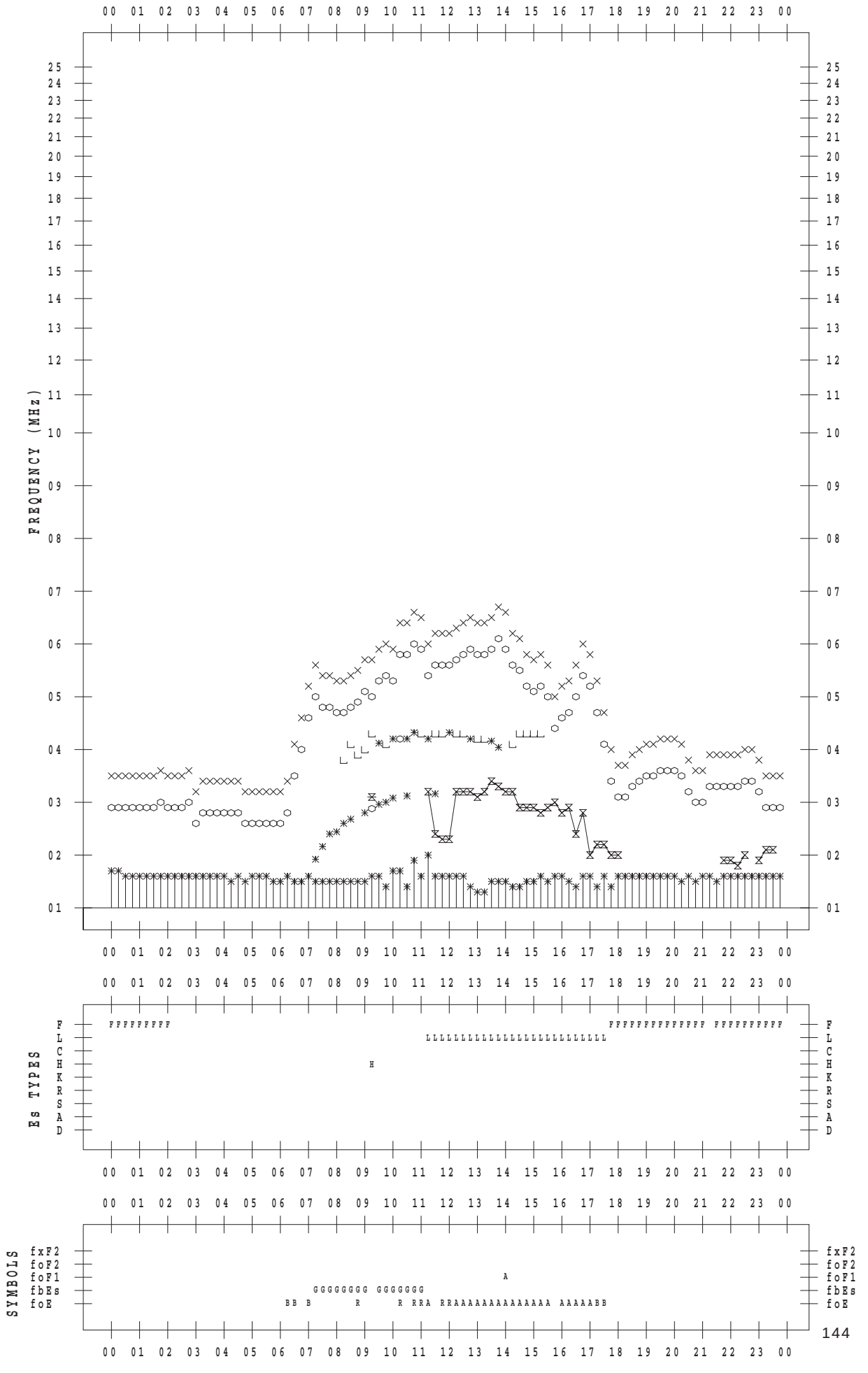
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/13

135 °E MEAN TIME



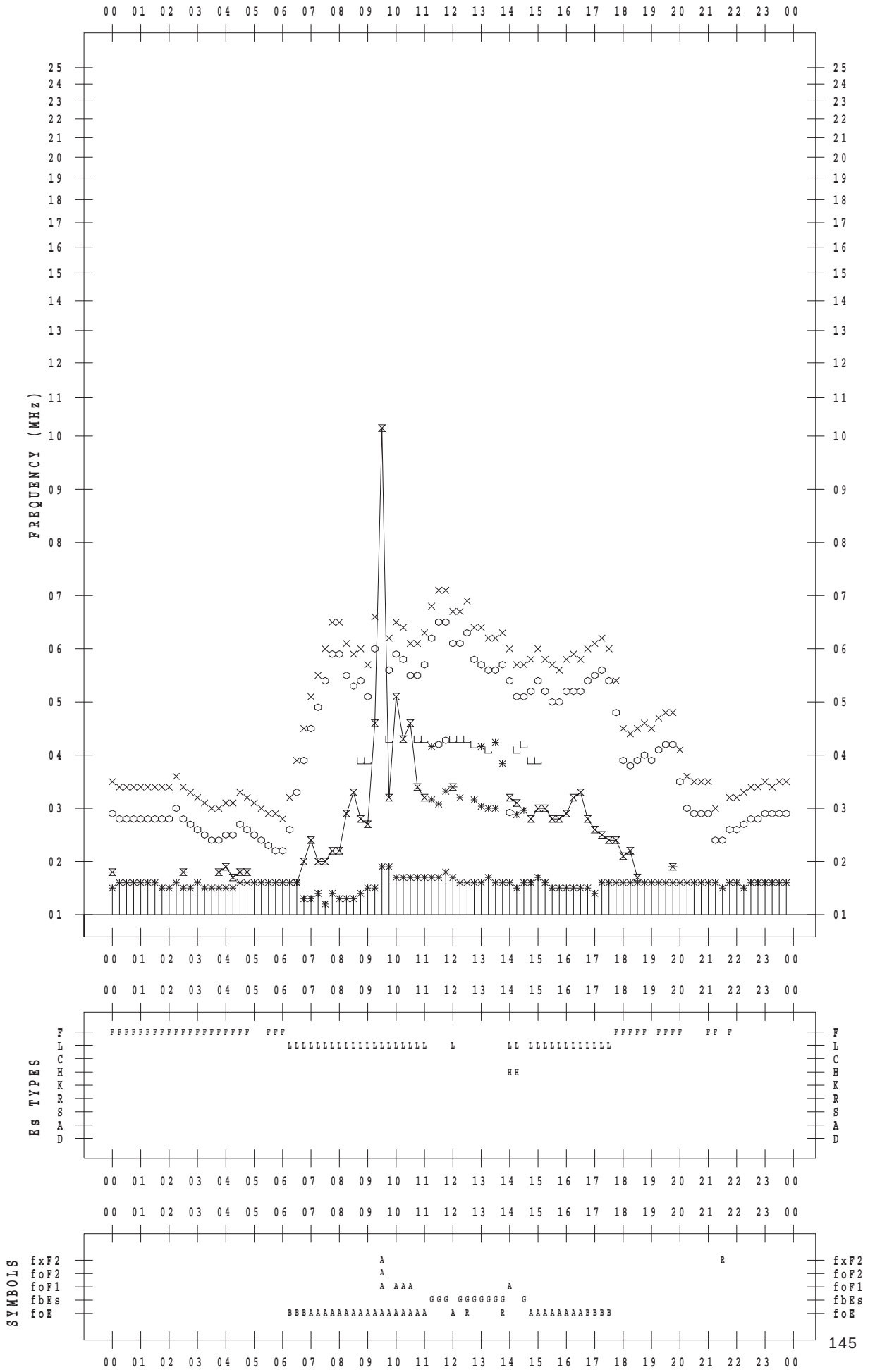
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/14

135 °E MEAN TIME



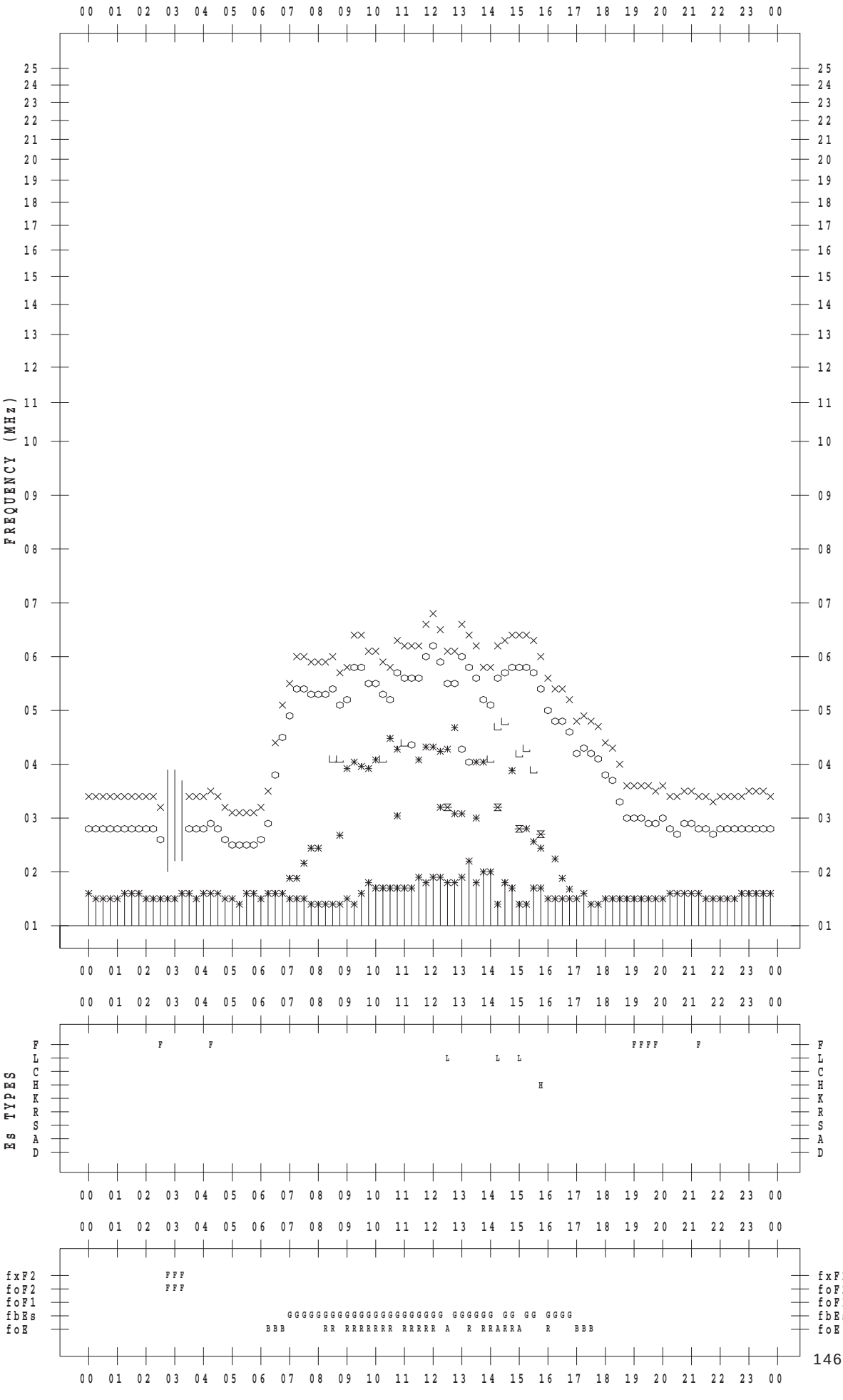
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/15

135 °E MEAN TIME



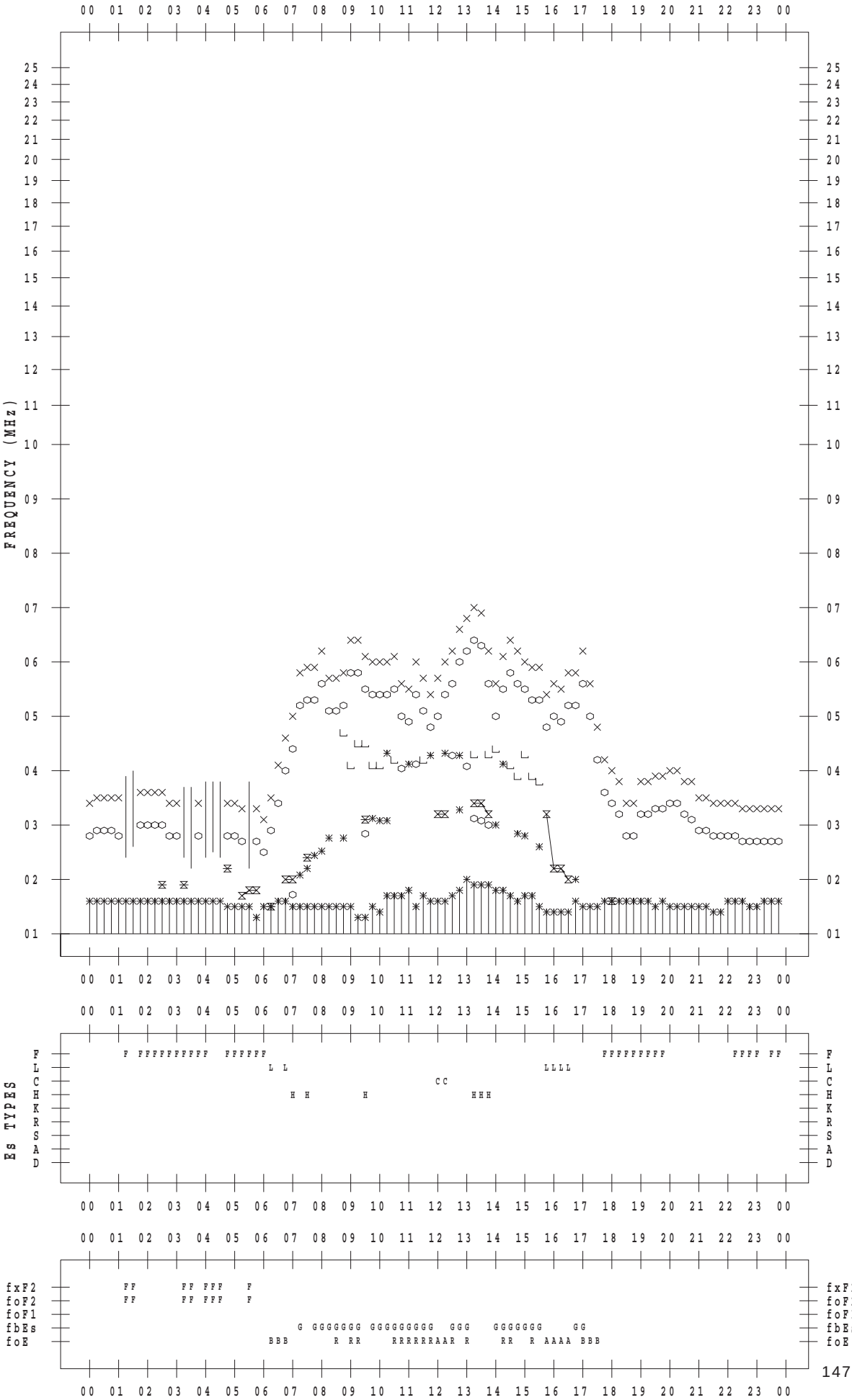
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/16

135 °E MEAN TIME



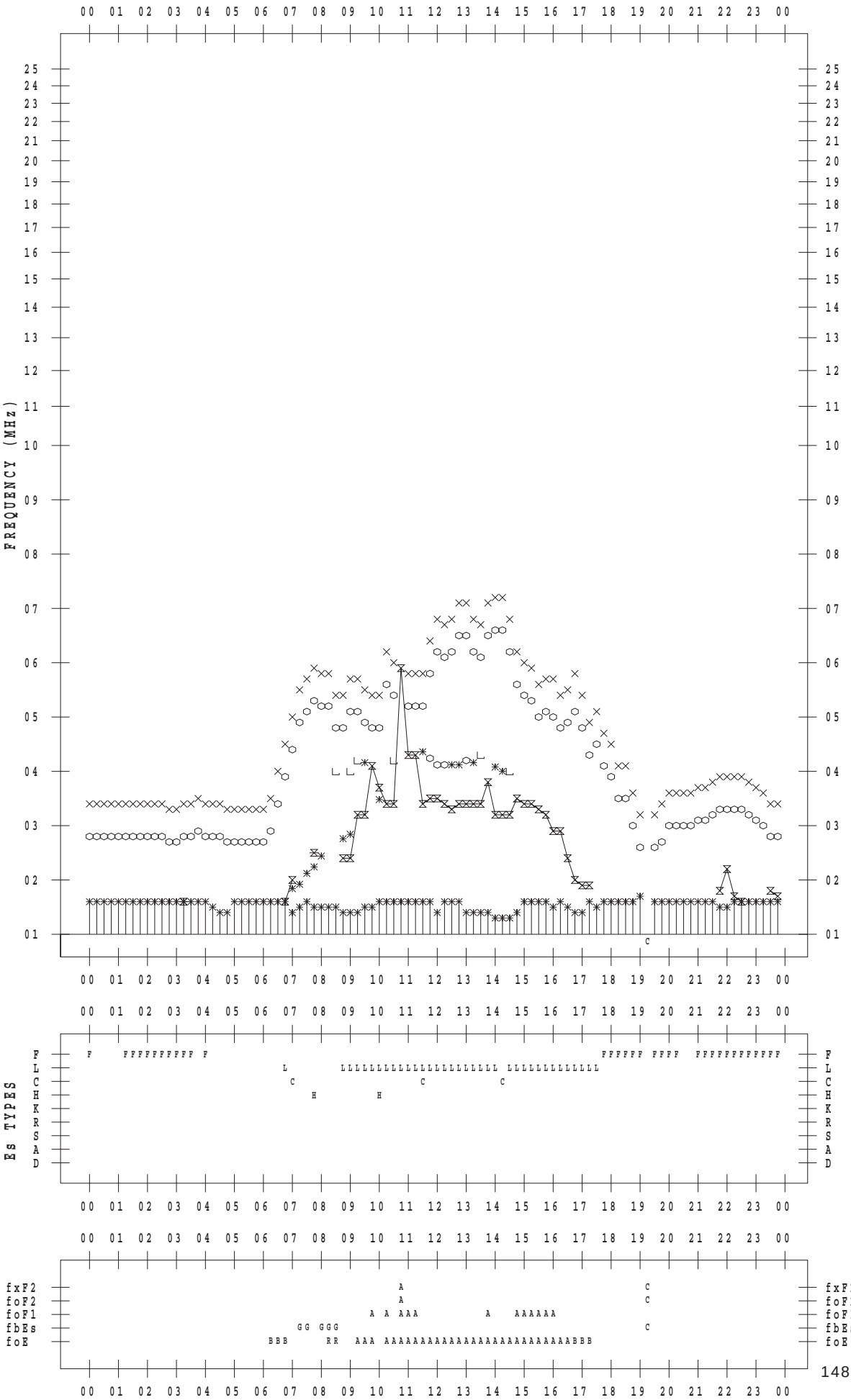
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/17

135 °E MEAN TIME



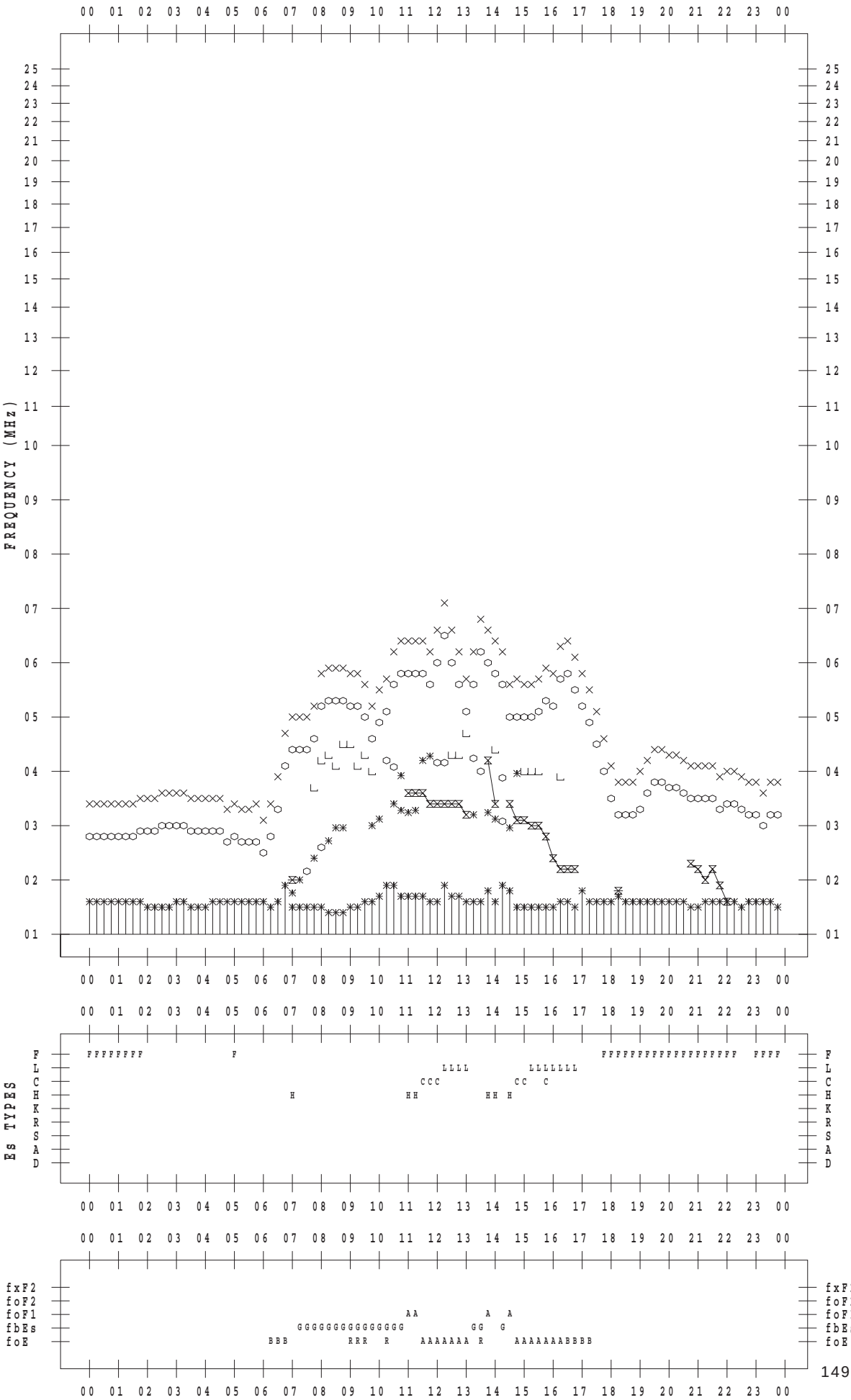
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/18

135 °E MEAN TIME



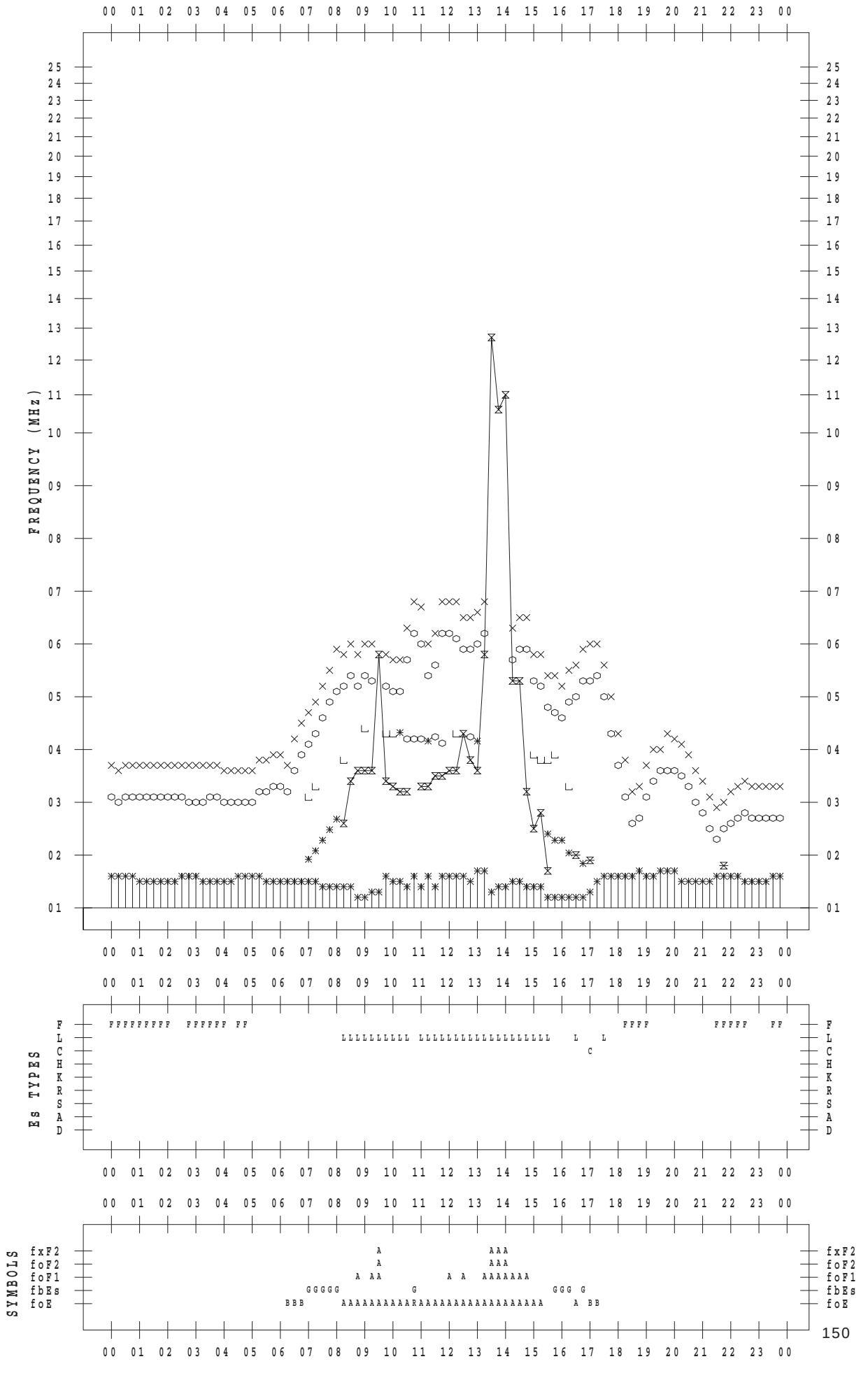
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/19

135 °E MEAN TIME



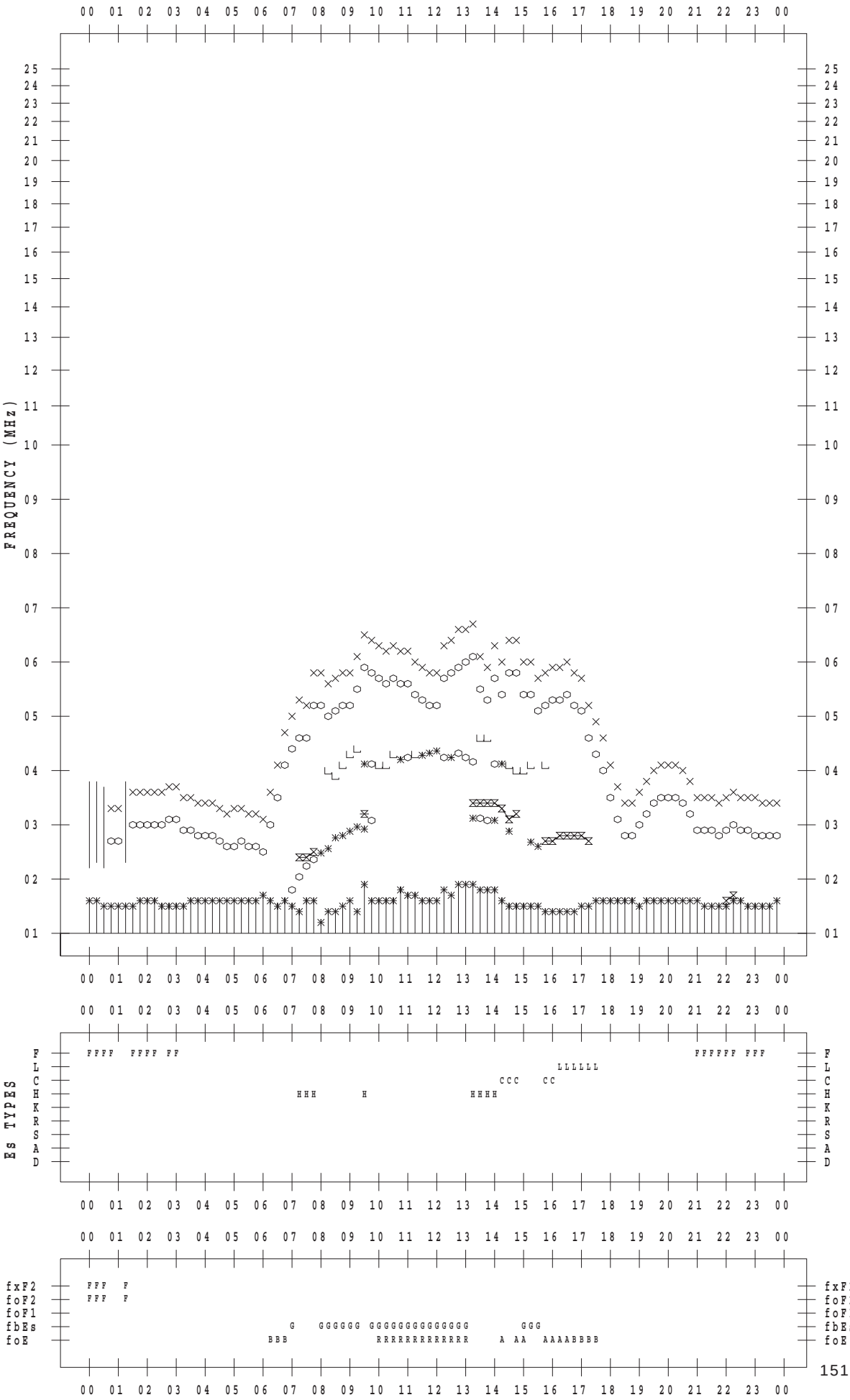
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/20

135 °E MEAN TIME



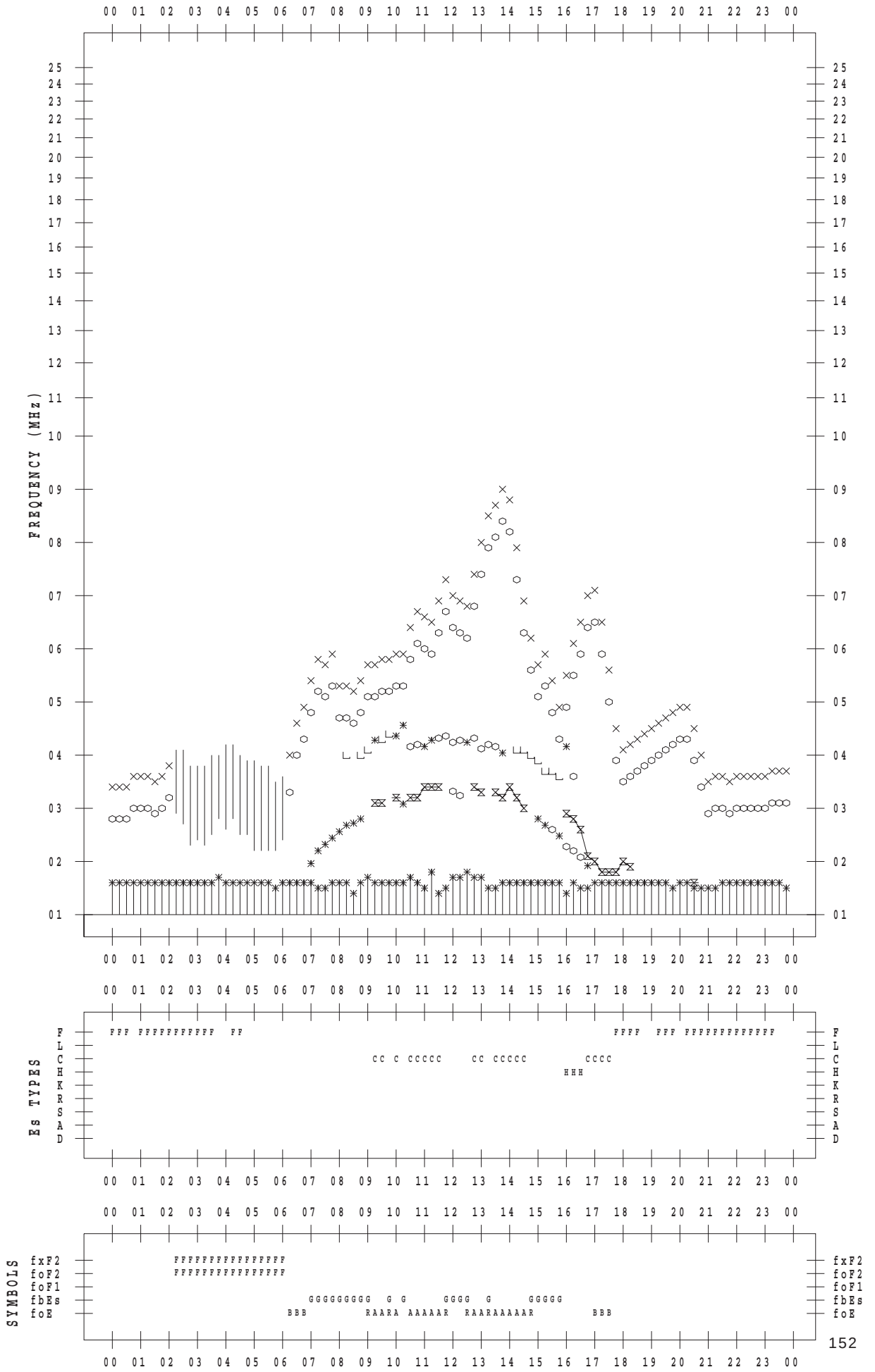
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/21

135 °E MEAN TIME



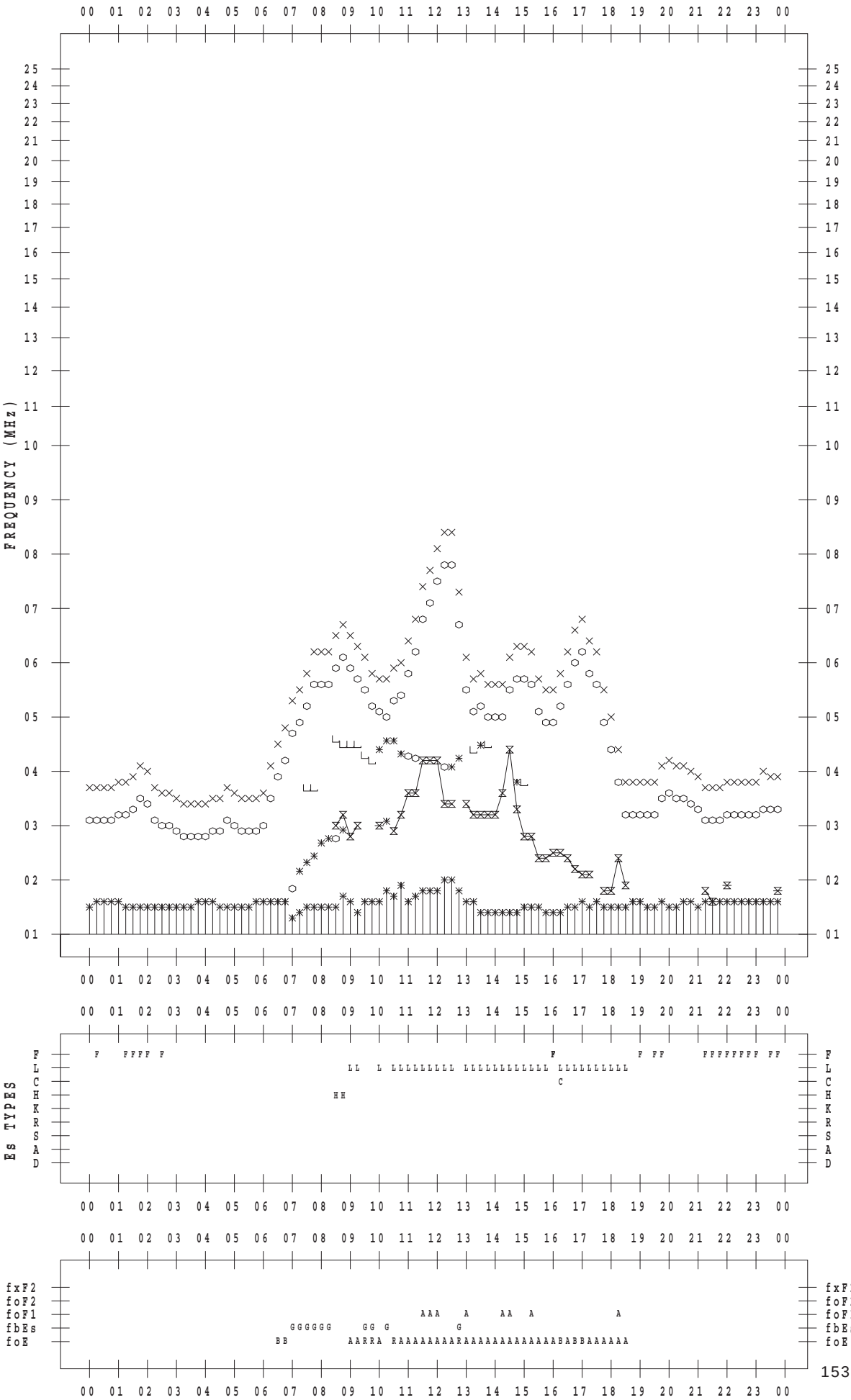
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/22

135 °E MEAN TIME



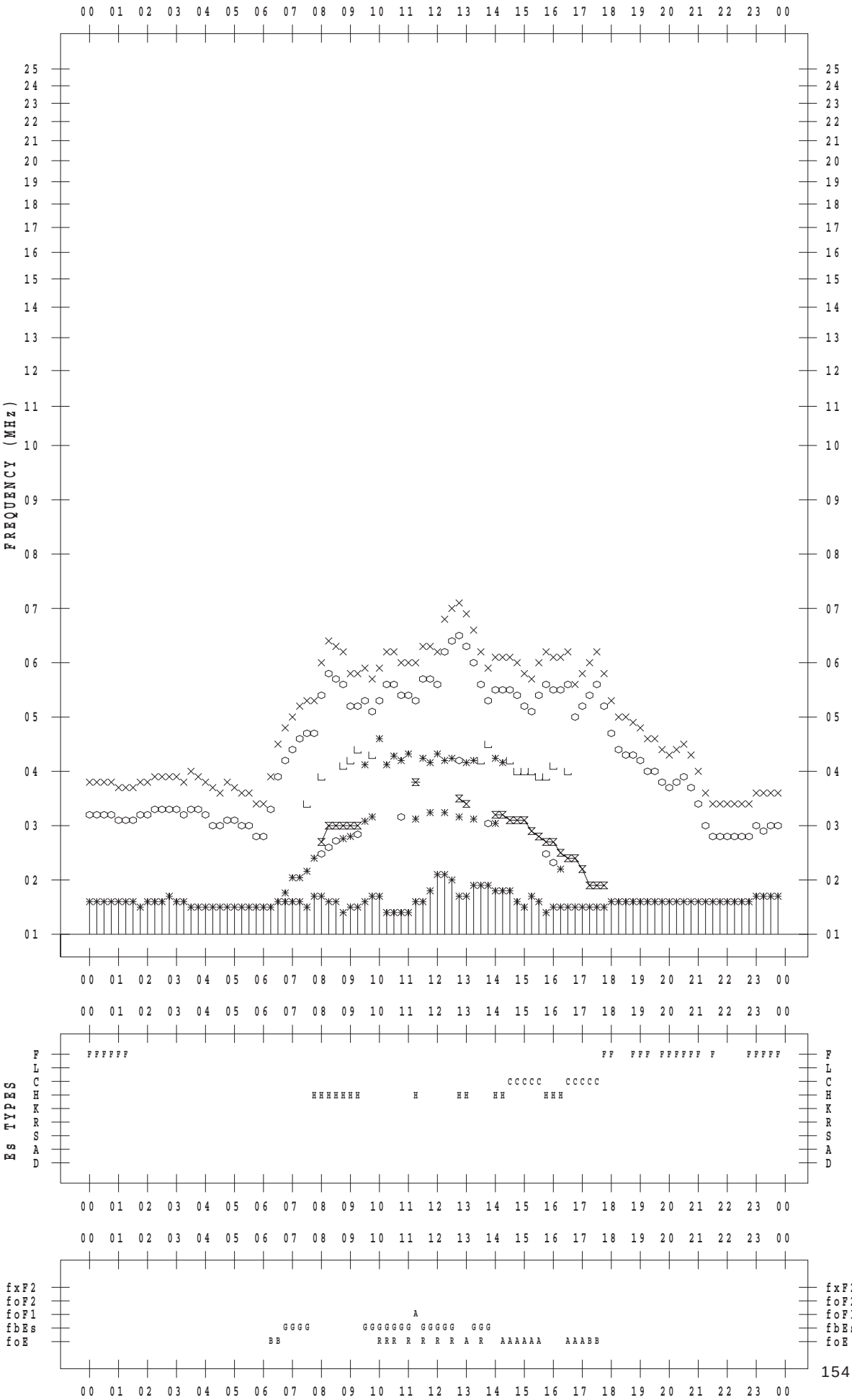
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/23

135 °E MEAN TIME



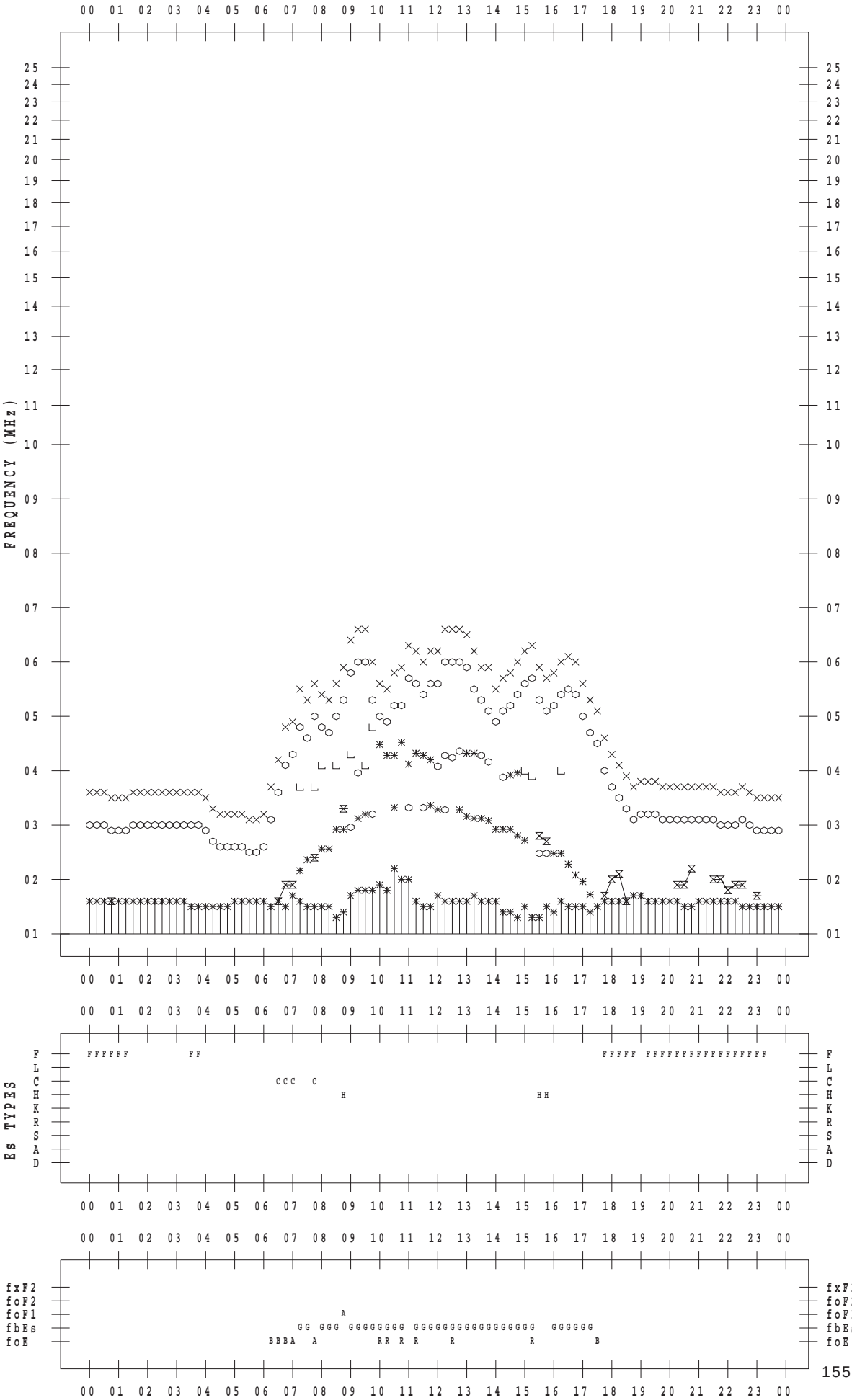
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/24

135 °E MEAN TIME



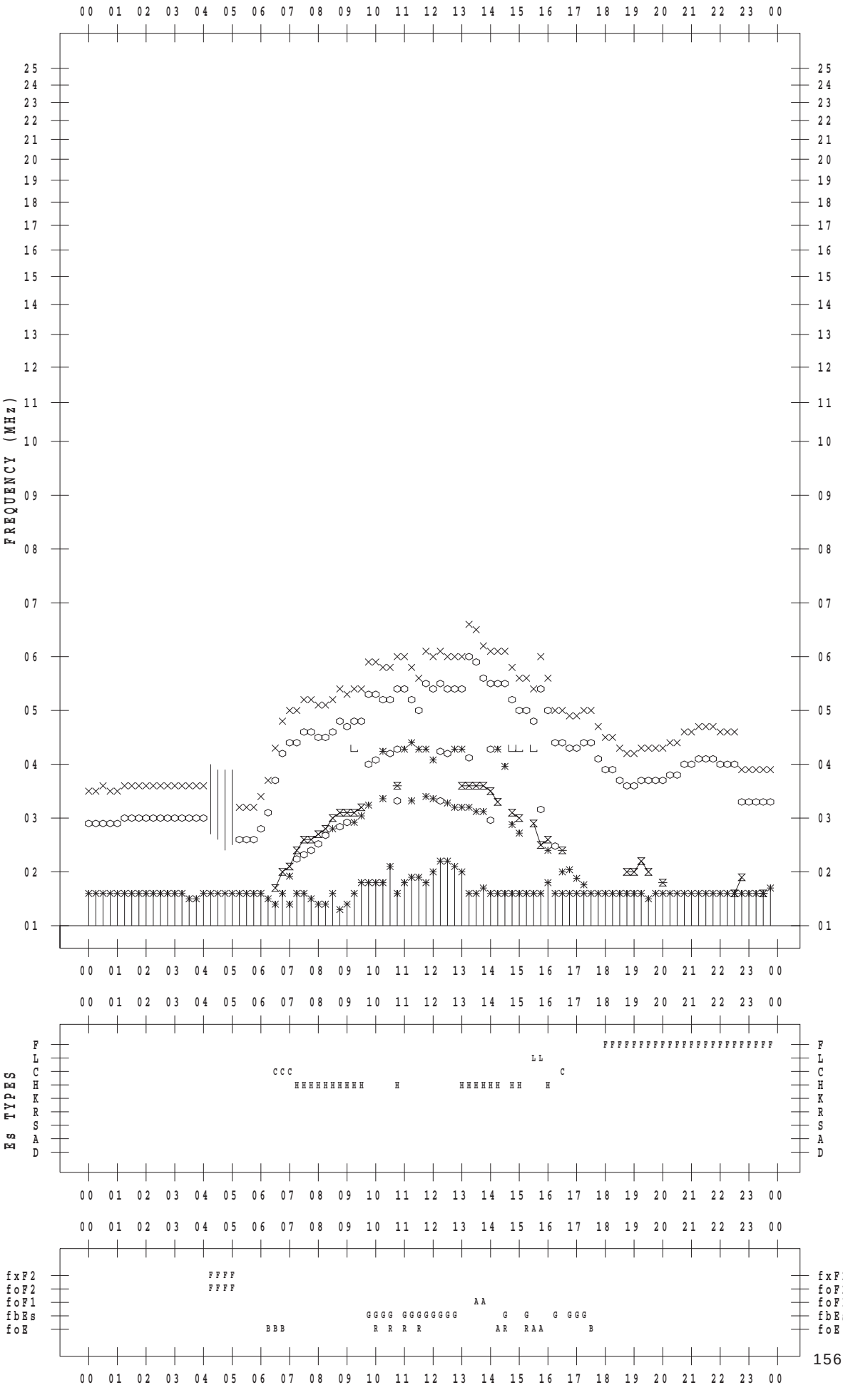
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/25

135 °E MEAN TIME



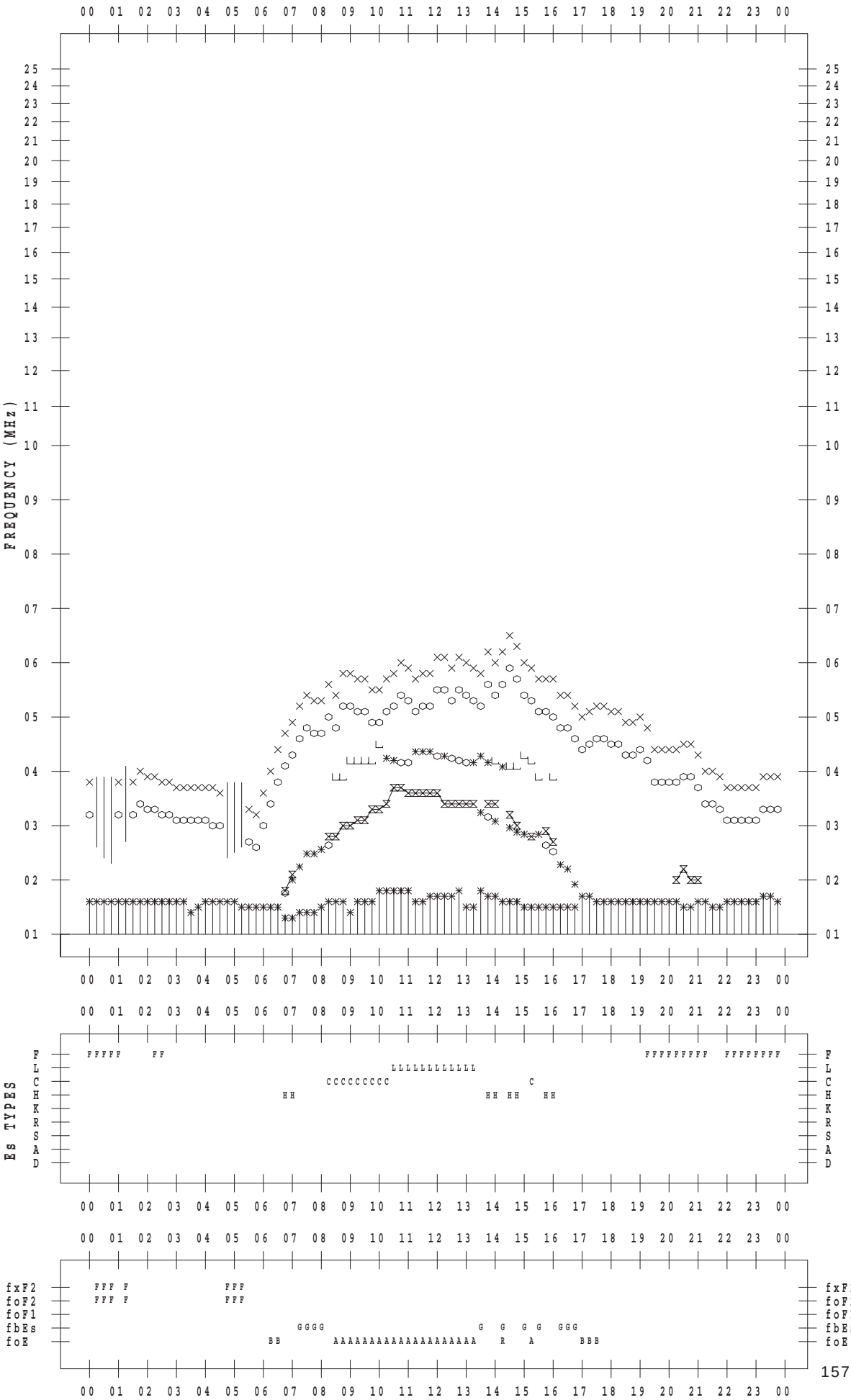
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/26

135 °E MEAN TIME



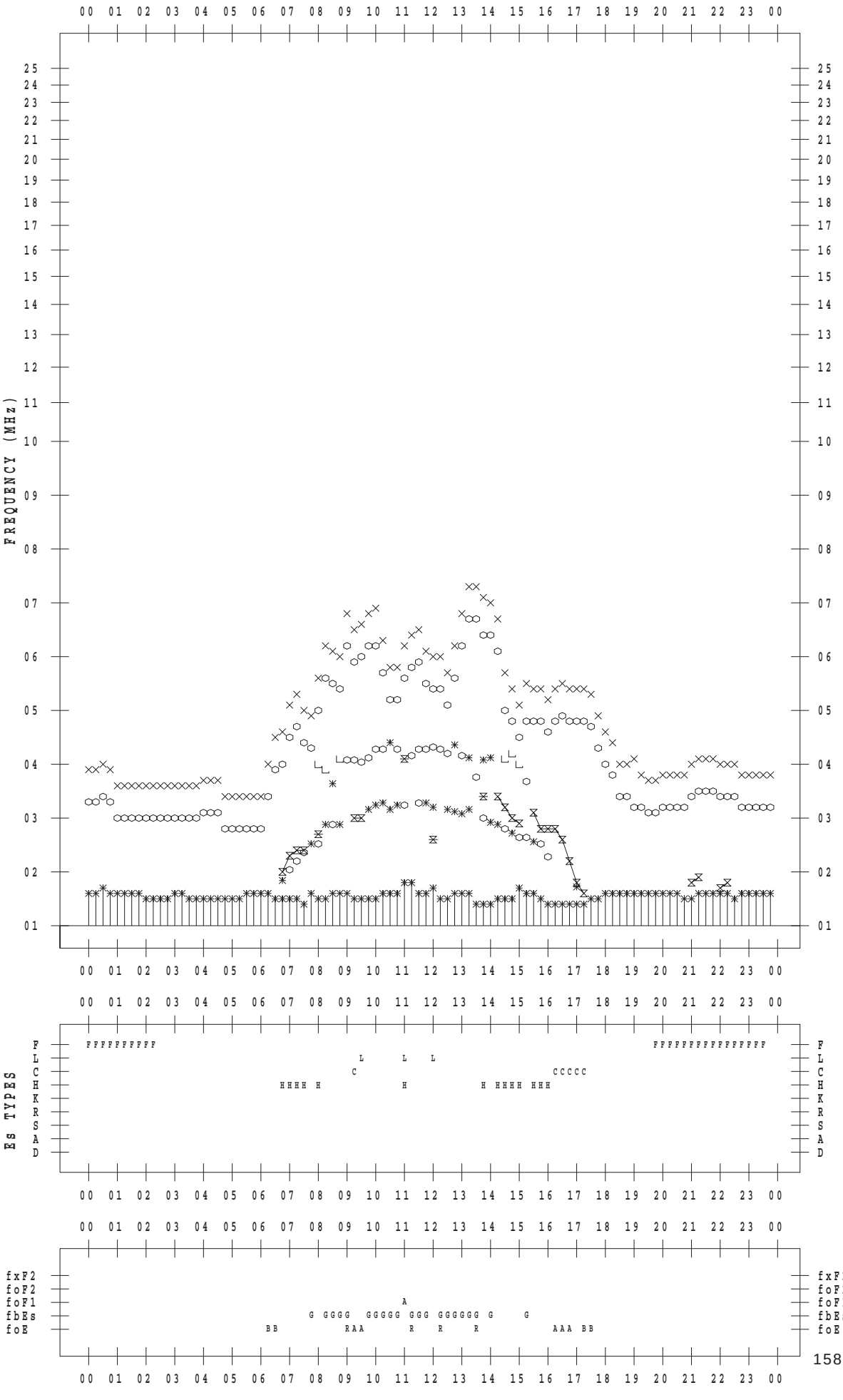
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/27

135 °E MEAN TIME



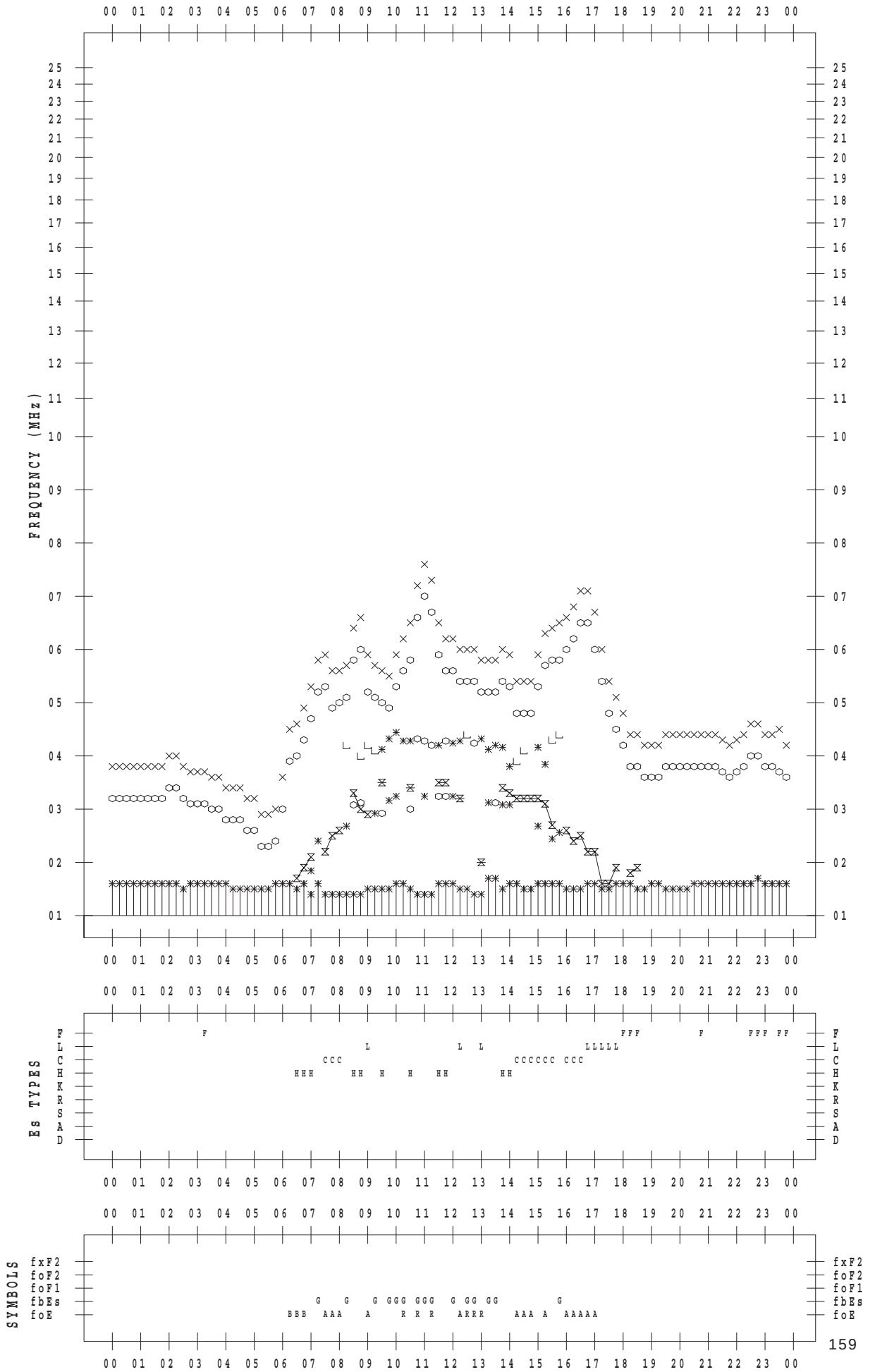
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 2/28

135 °E MEAN TIME



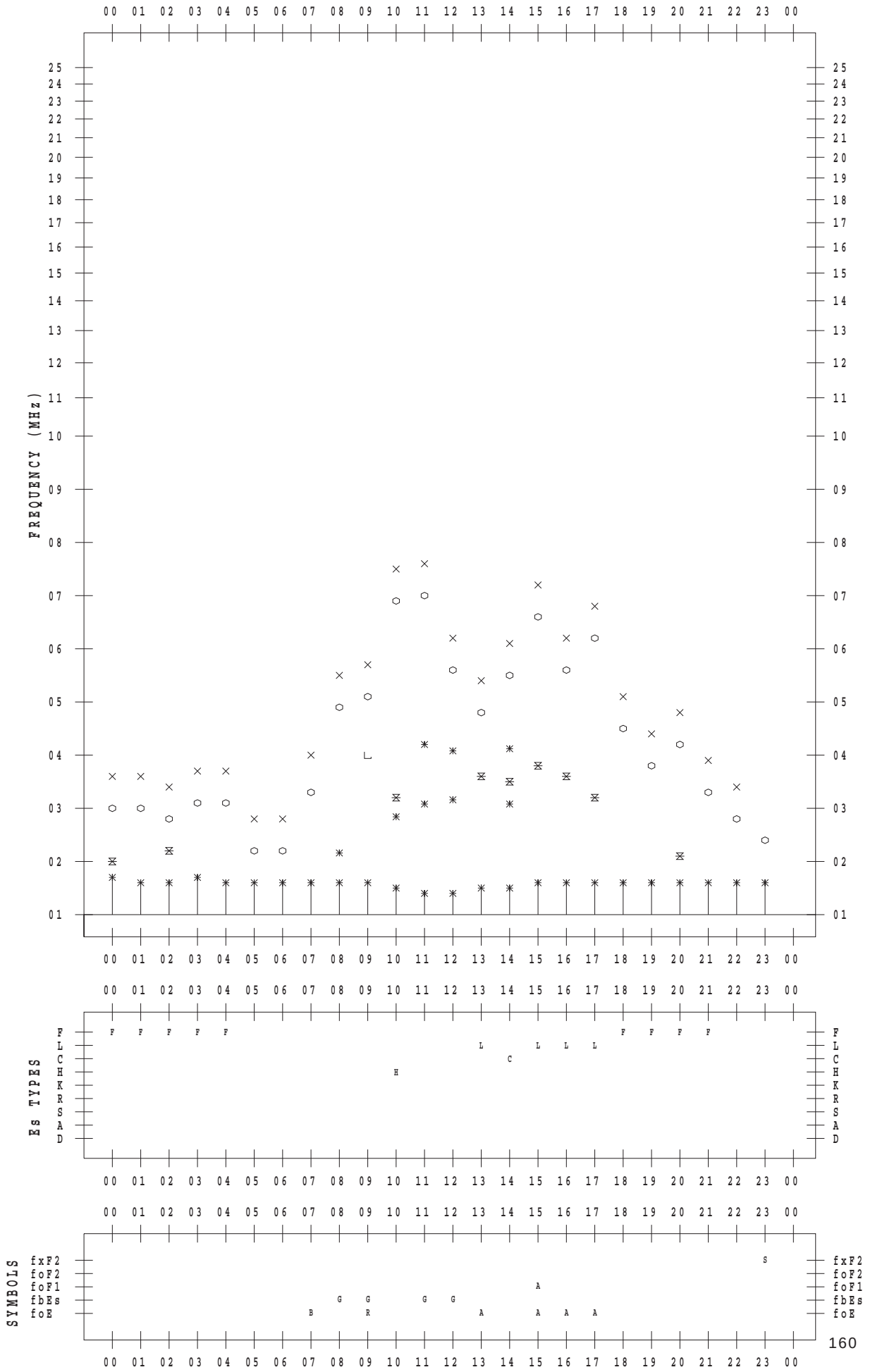
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 1

135 °E MEAN TIME



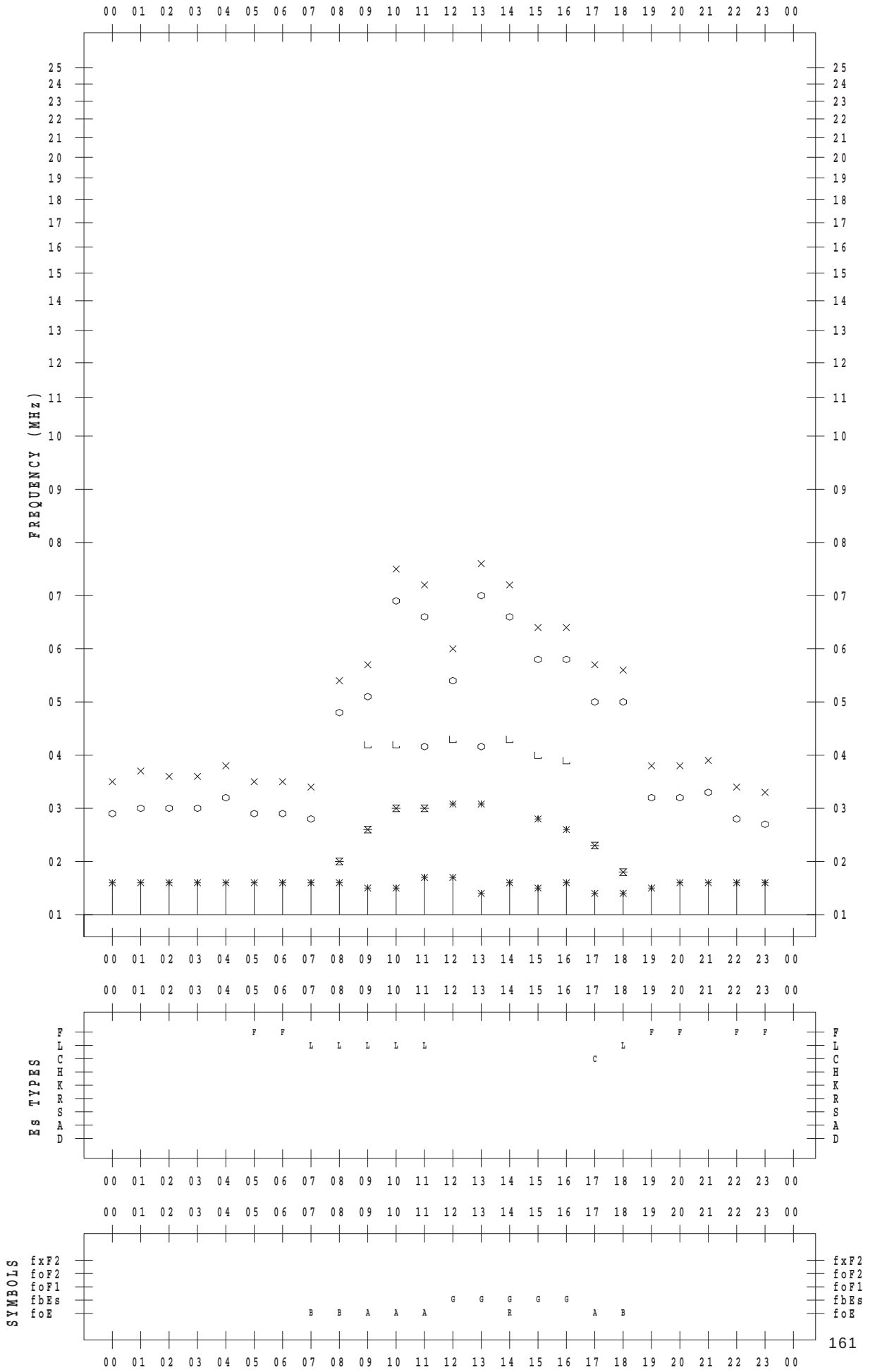
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 2

135 °E MEAN TIME



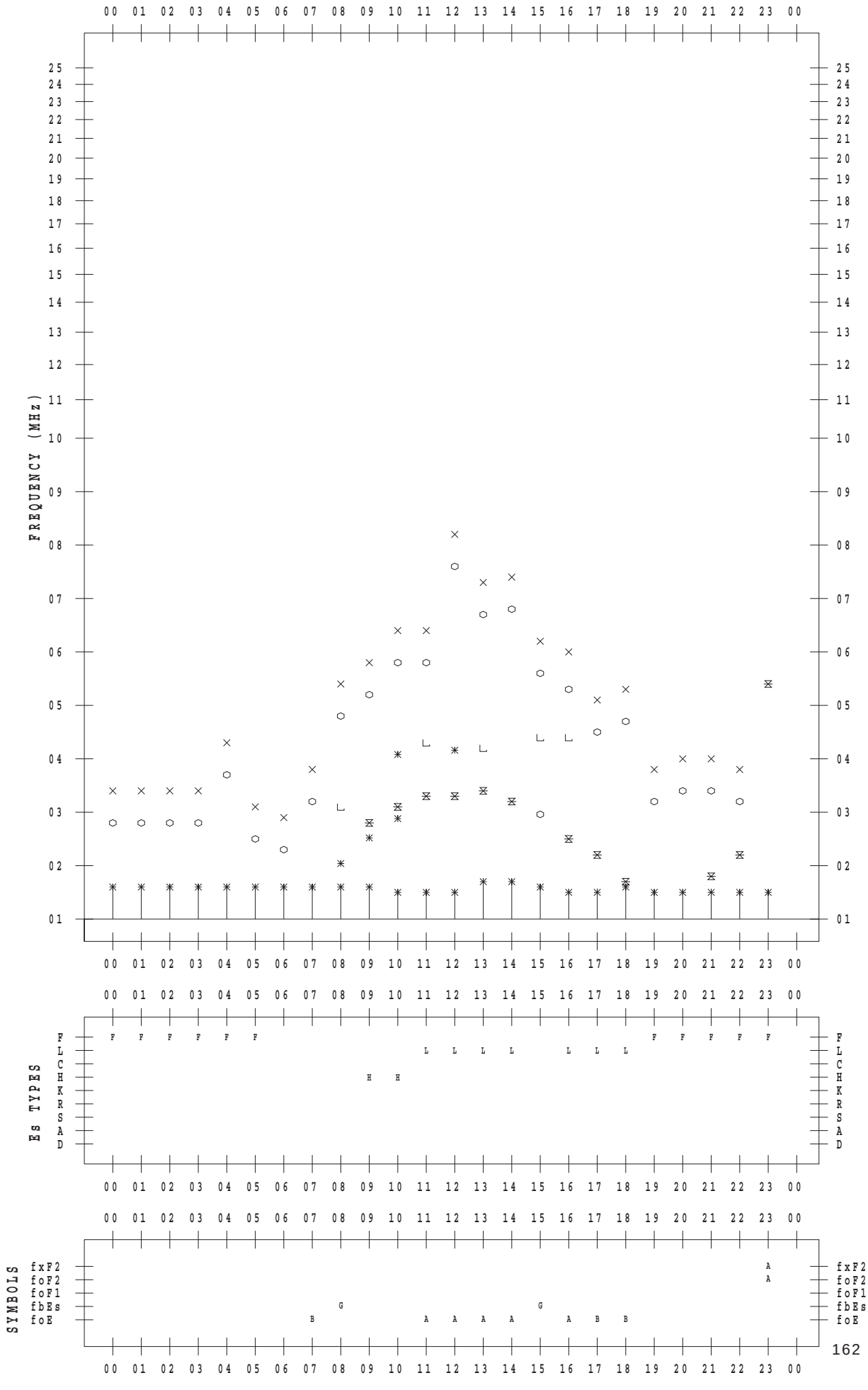
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 3

135 °E MEAN TIME



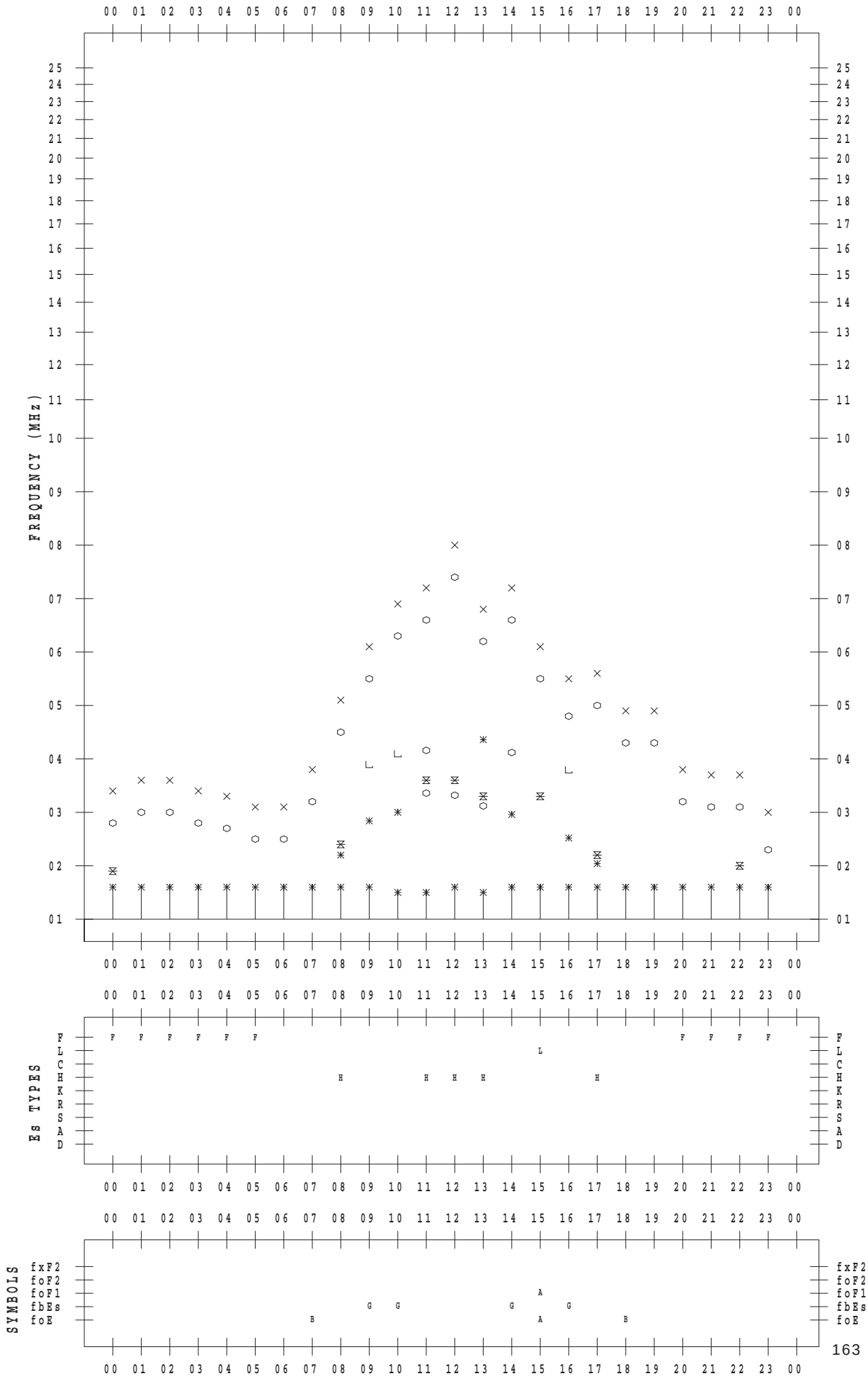
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 4

135 °E MEAN TIME



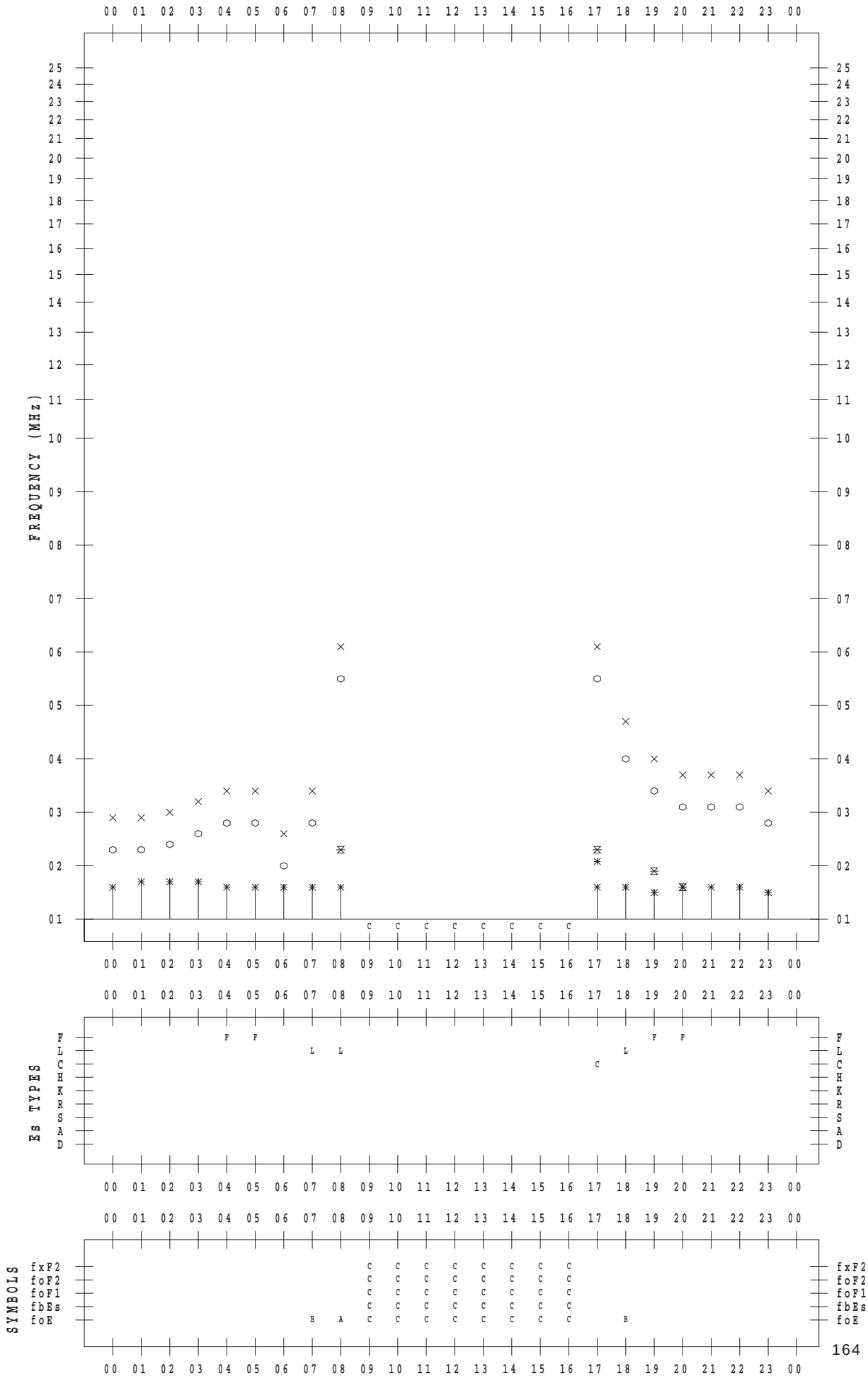
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 5

135 °E MEAN TIME



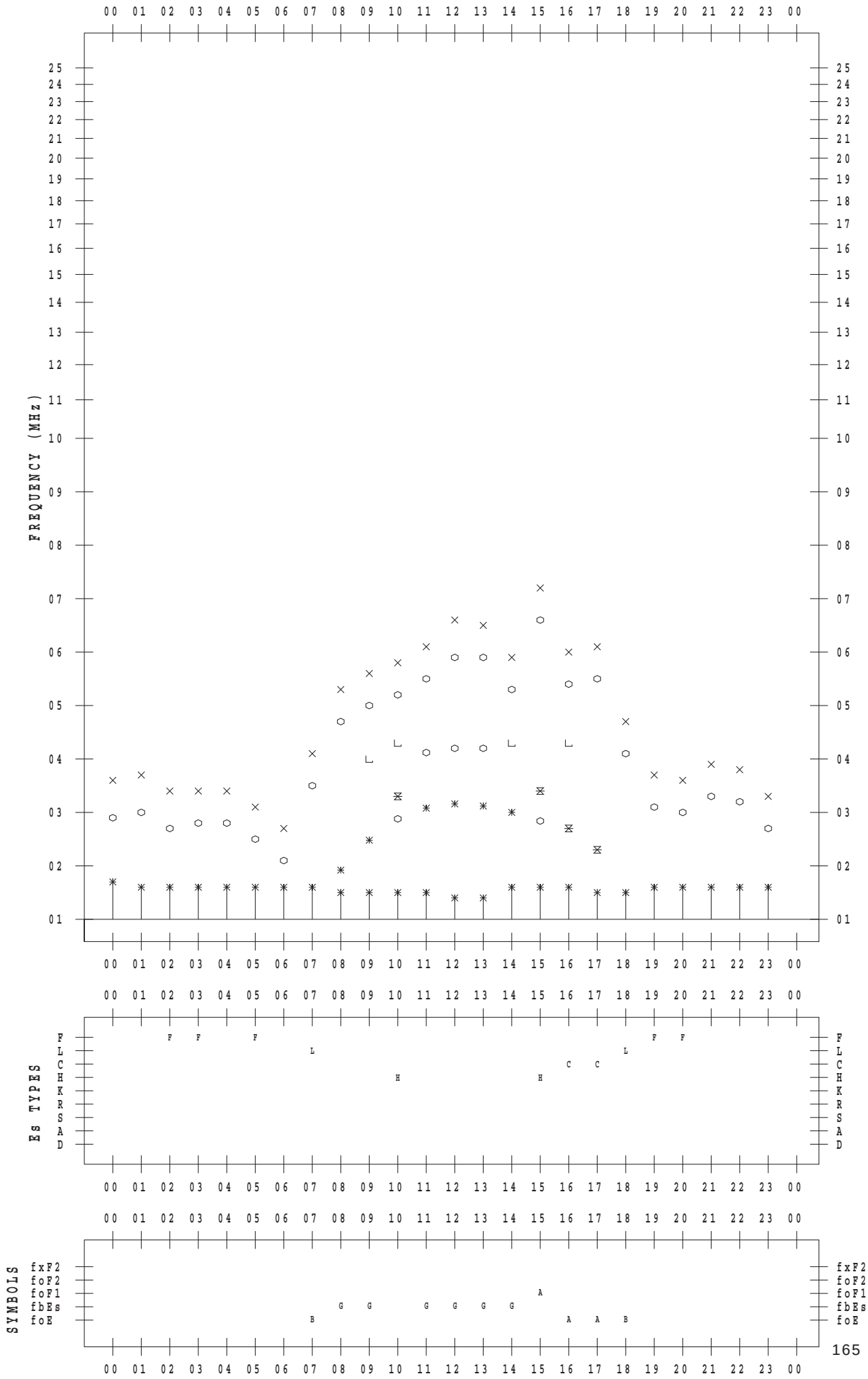
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 6

135 °E MEAN TIME



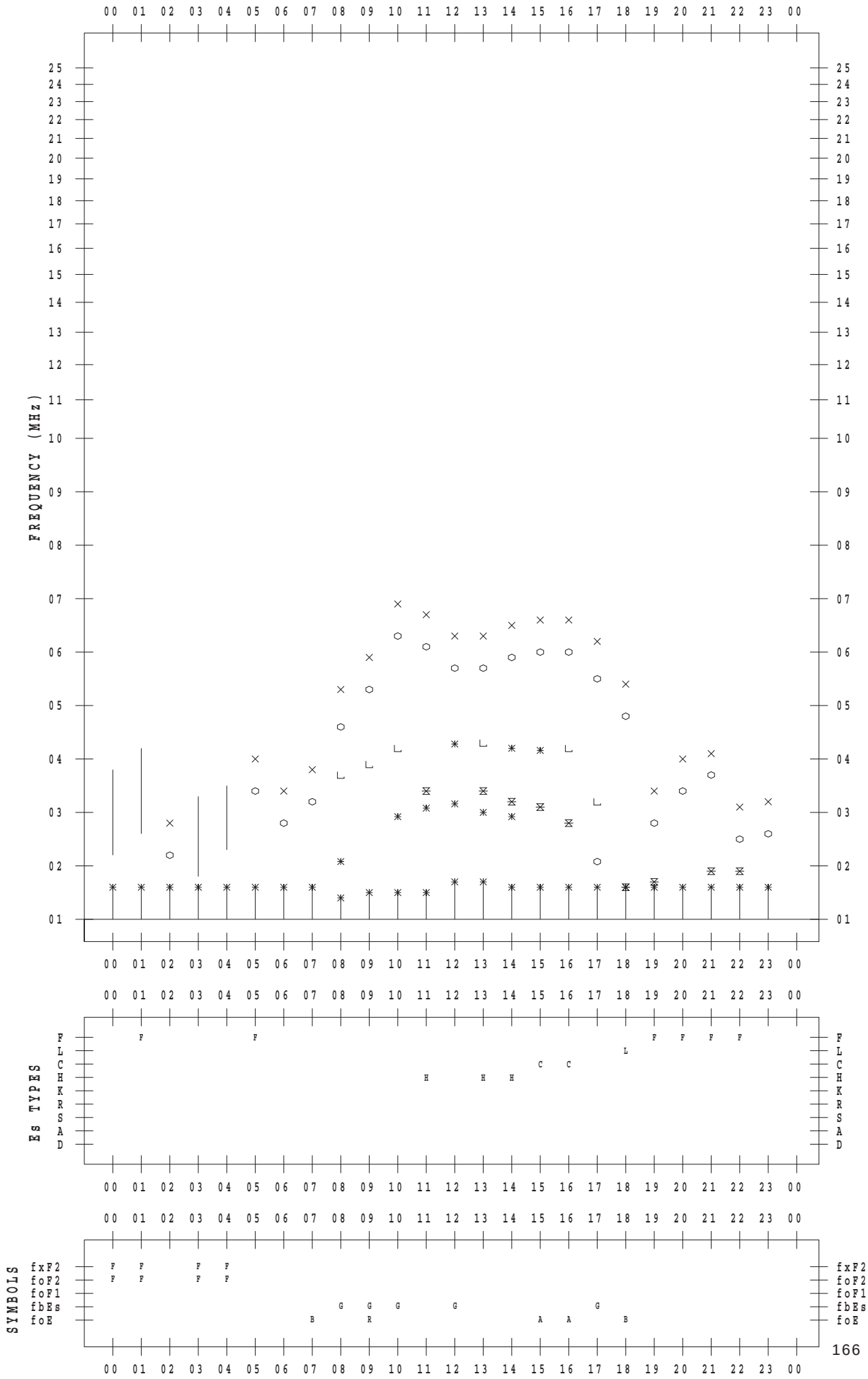
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 7

135 °E MEAN TIME



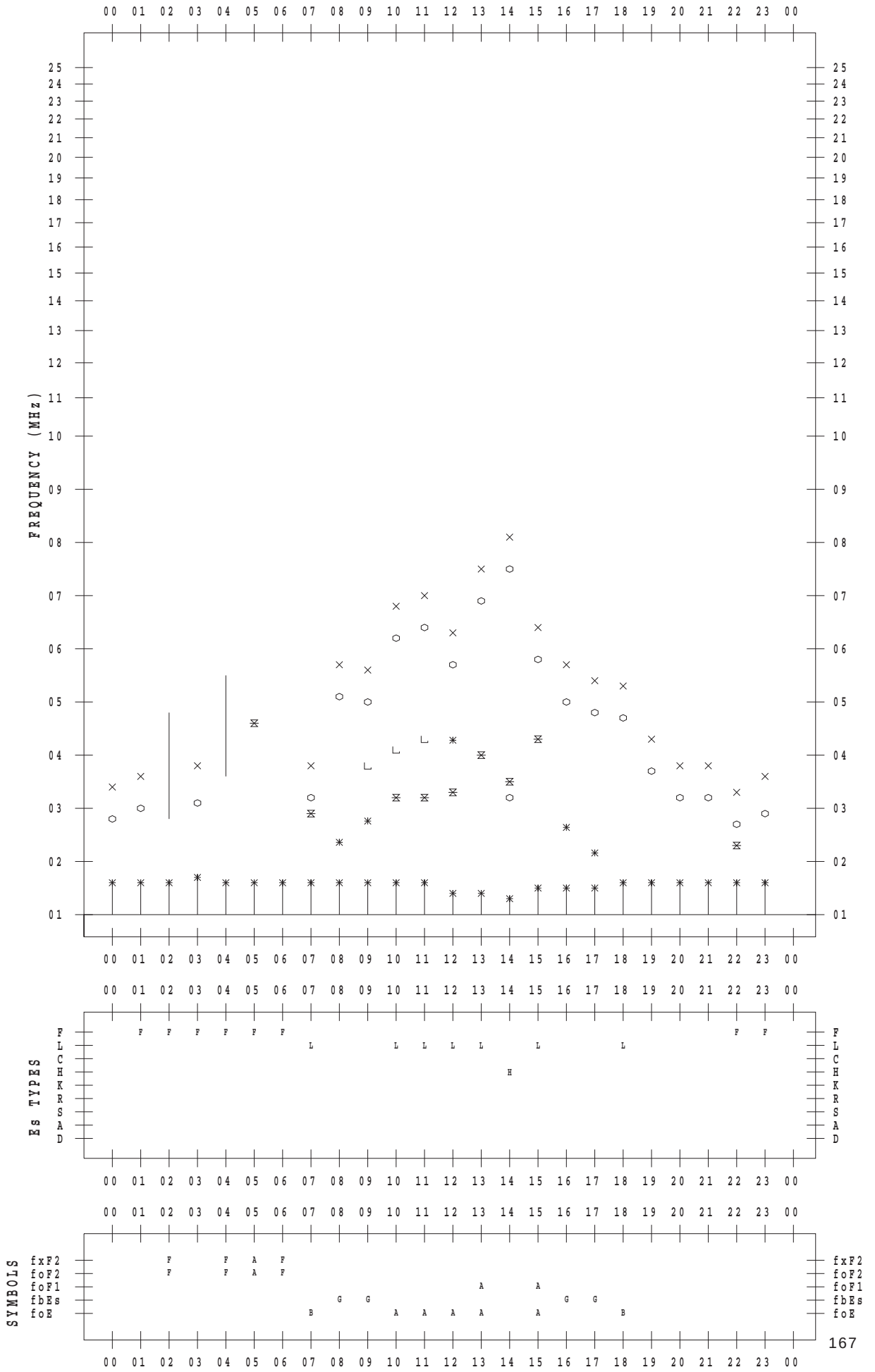
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 8

135 °E MEAN TIME



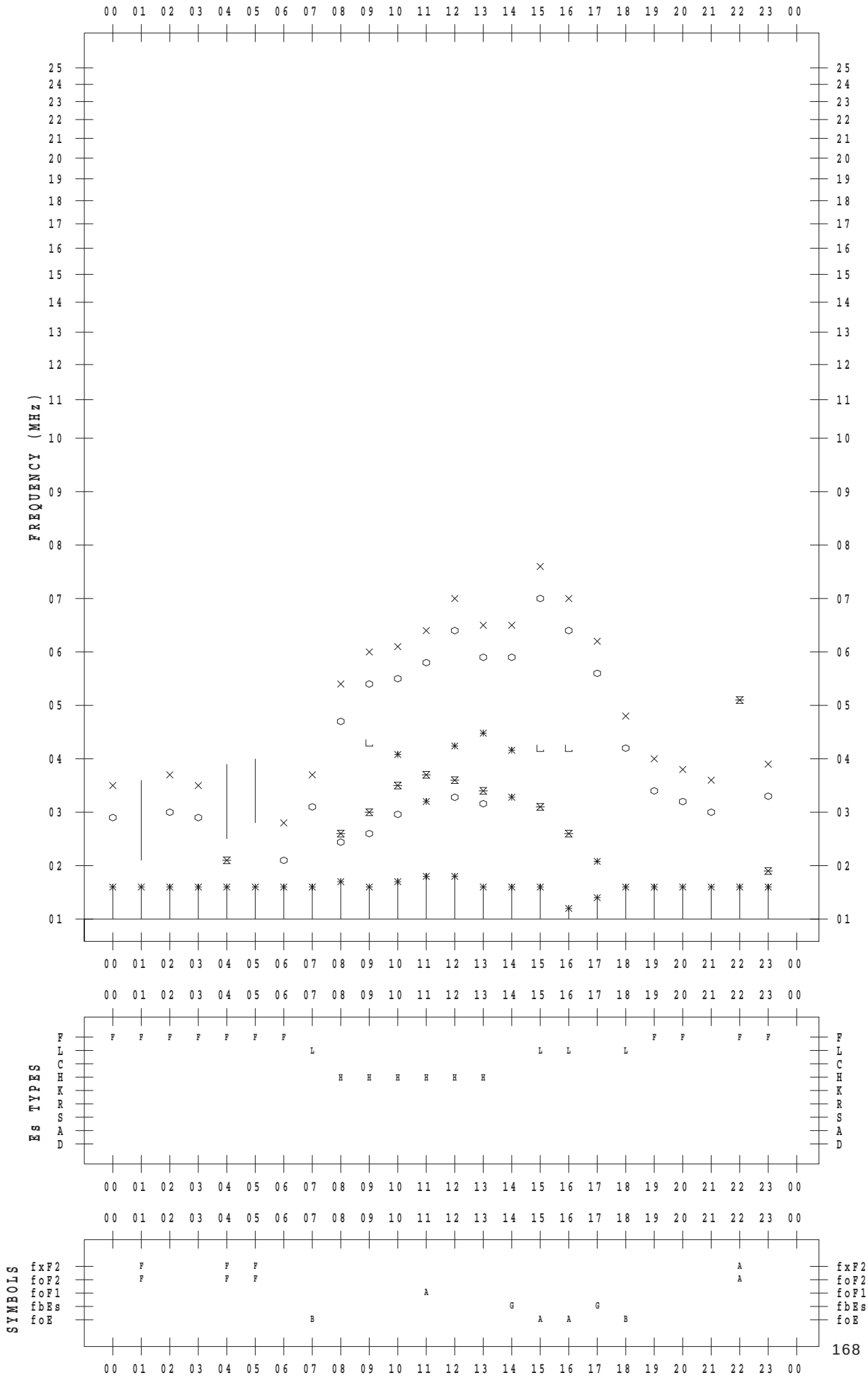
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/ 9

135 °E MEAN TIME



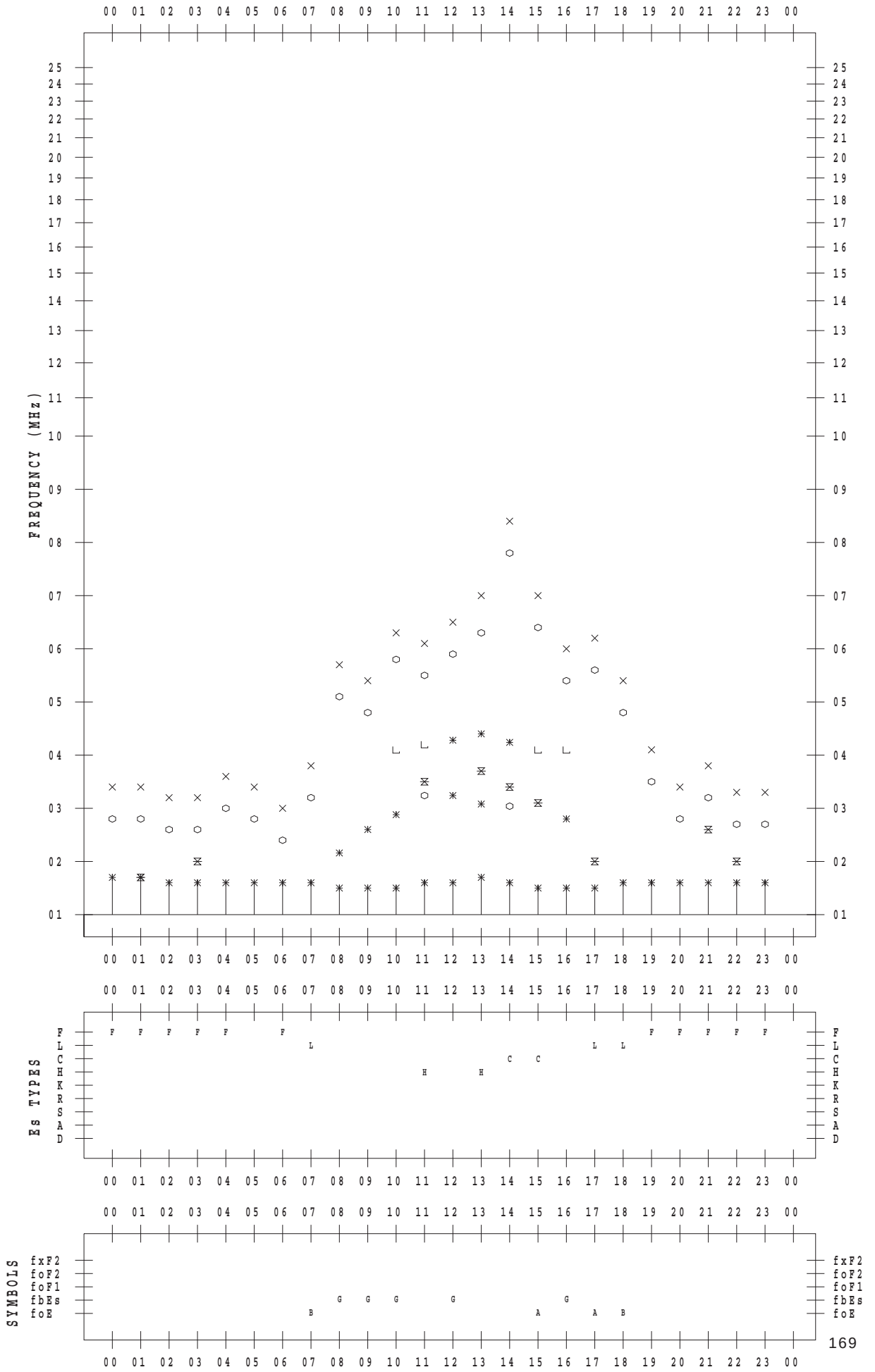
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/10

135 °E MEAN TIME



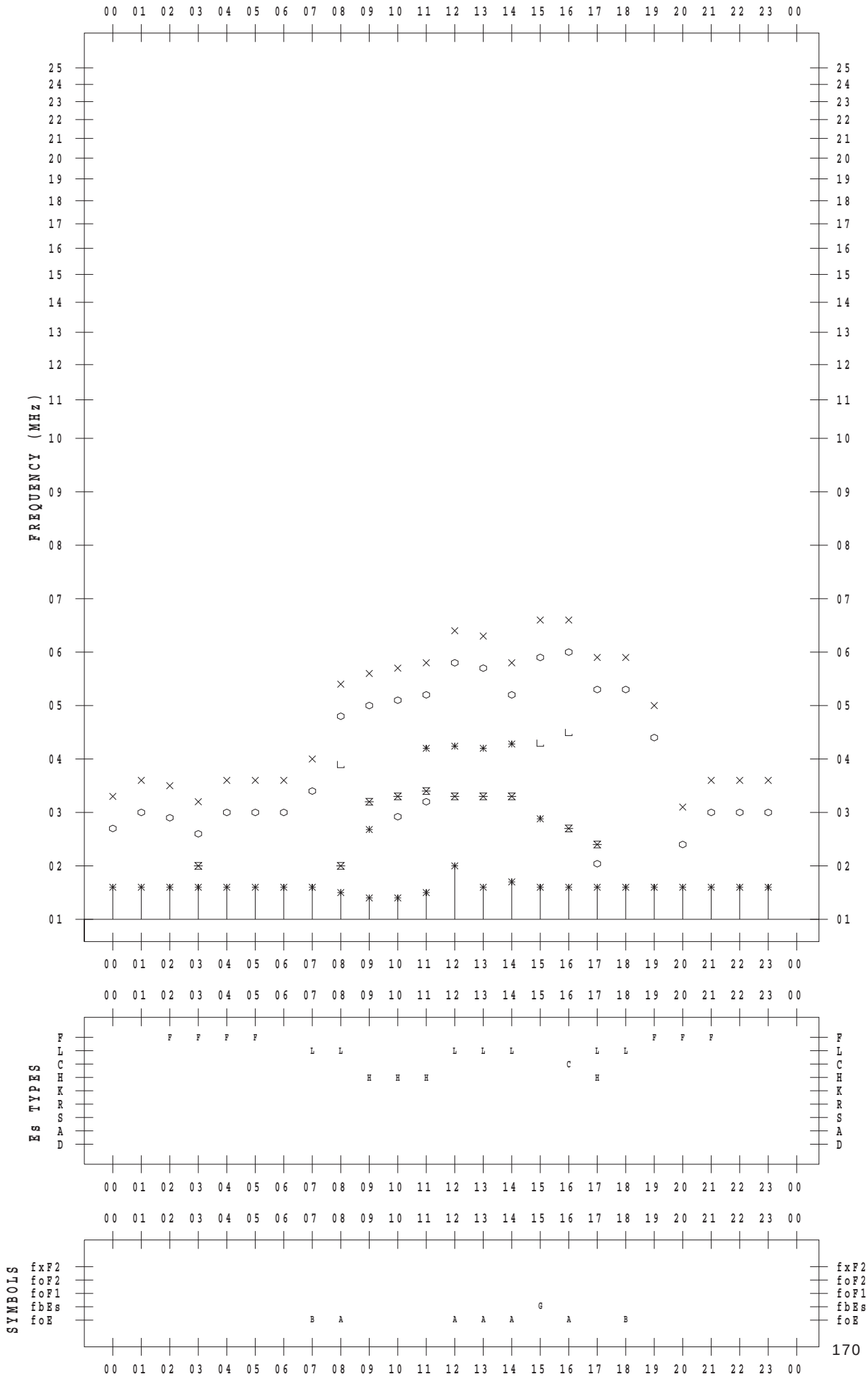
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/11

135 °E MEAN TIME



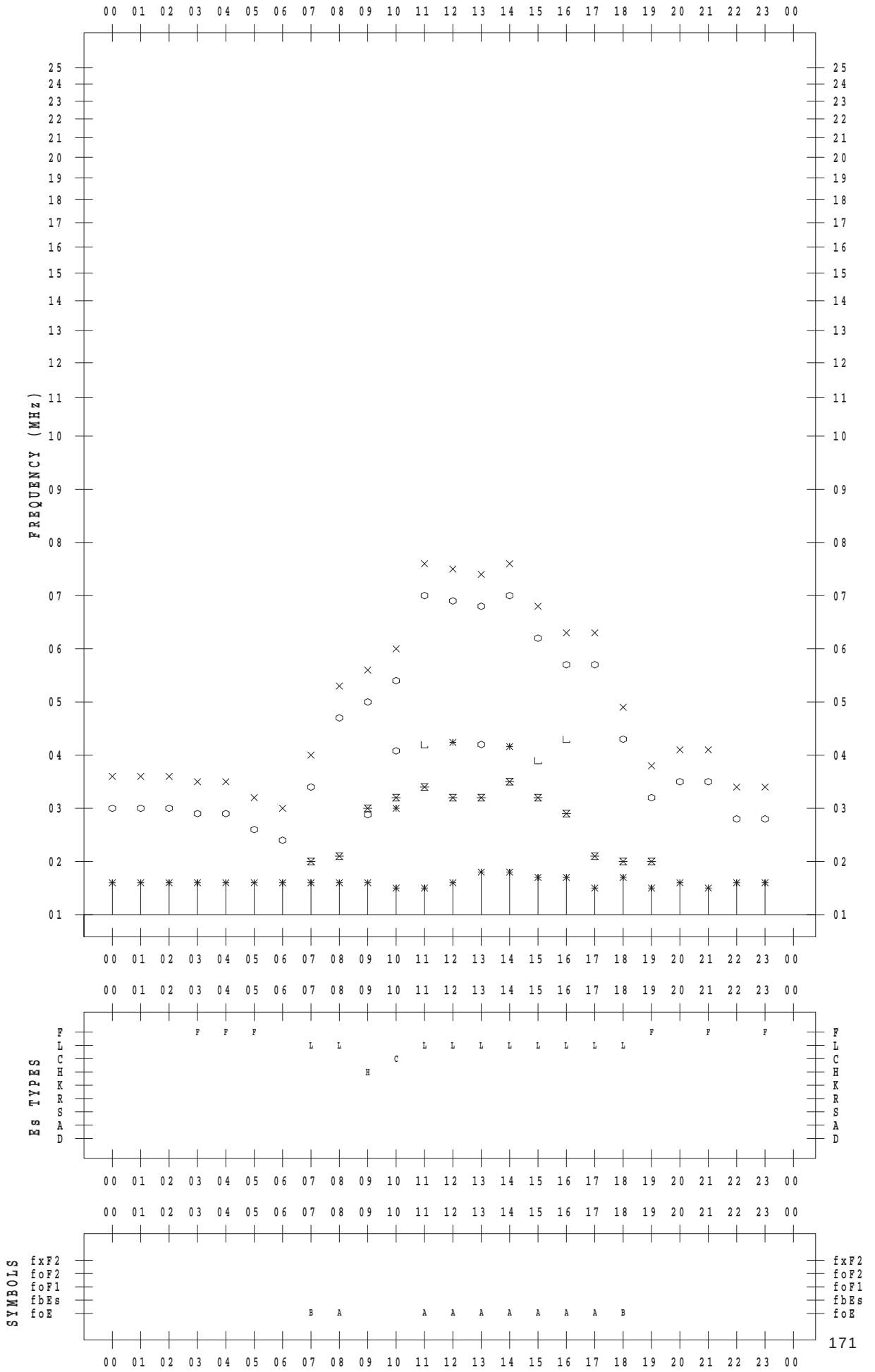
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/12

135 °E MEAN TIME



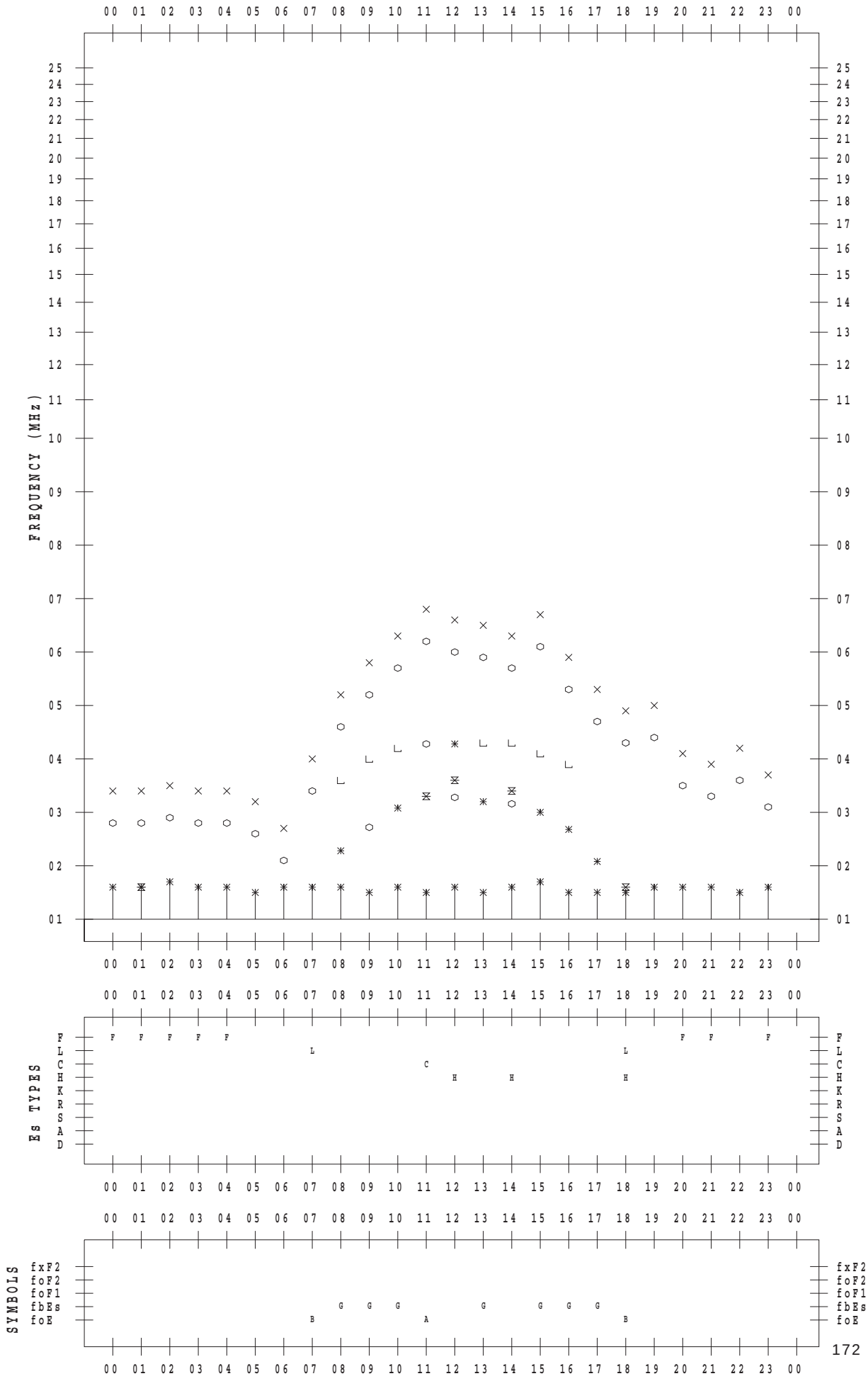
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/13

135 °E MEAN TIME



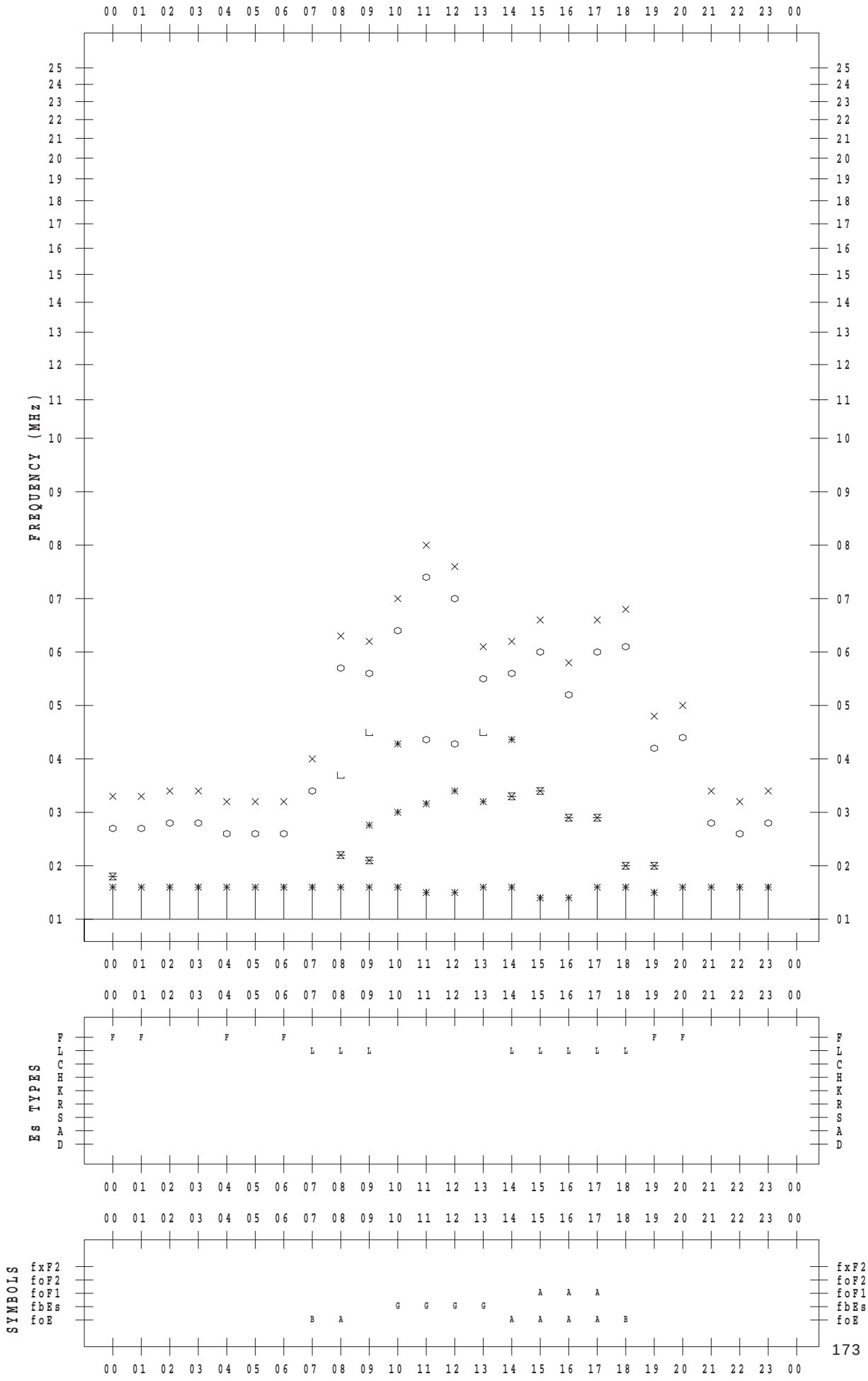
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/14

135 °E MEAN TIME



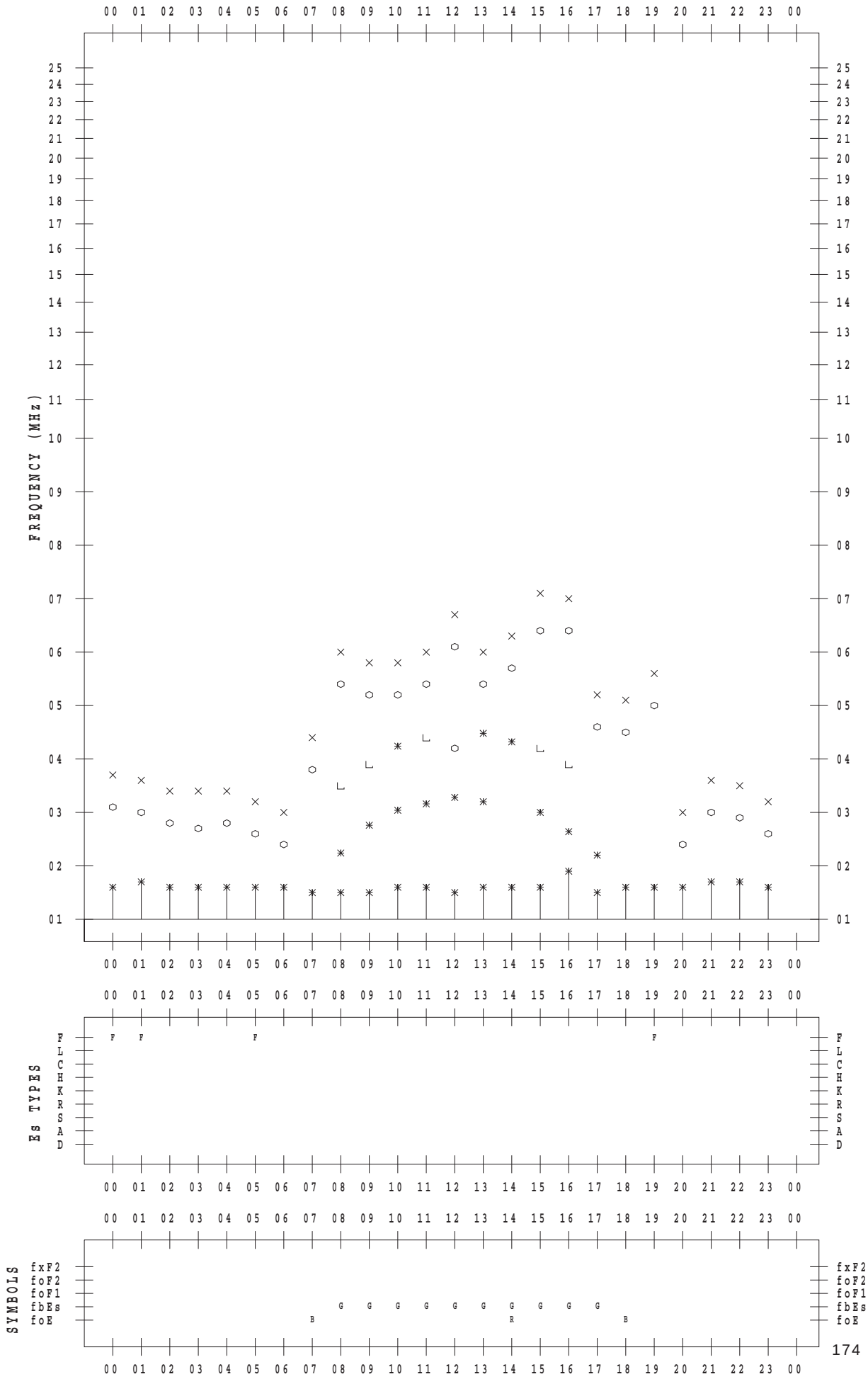
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/15

135 °E MEAN TIME



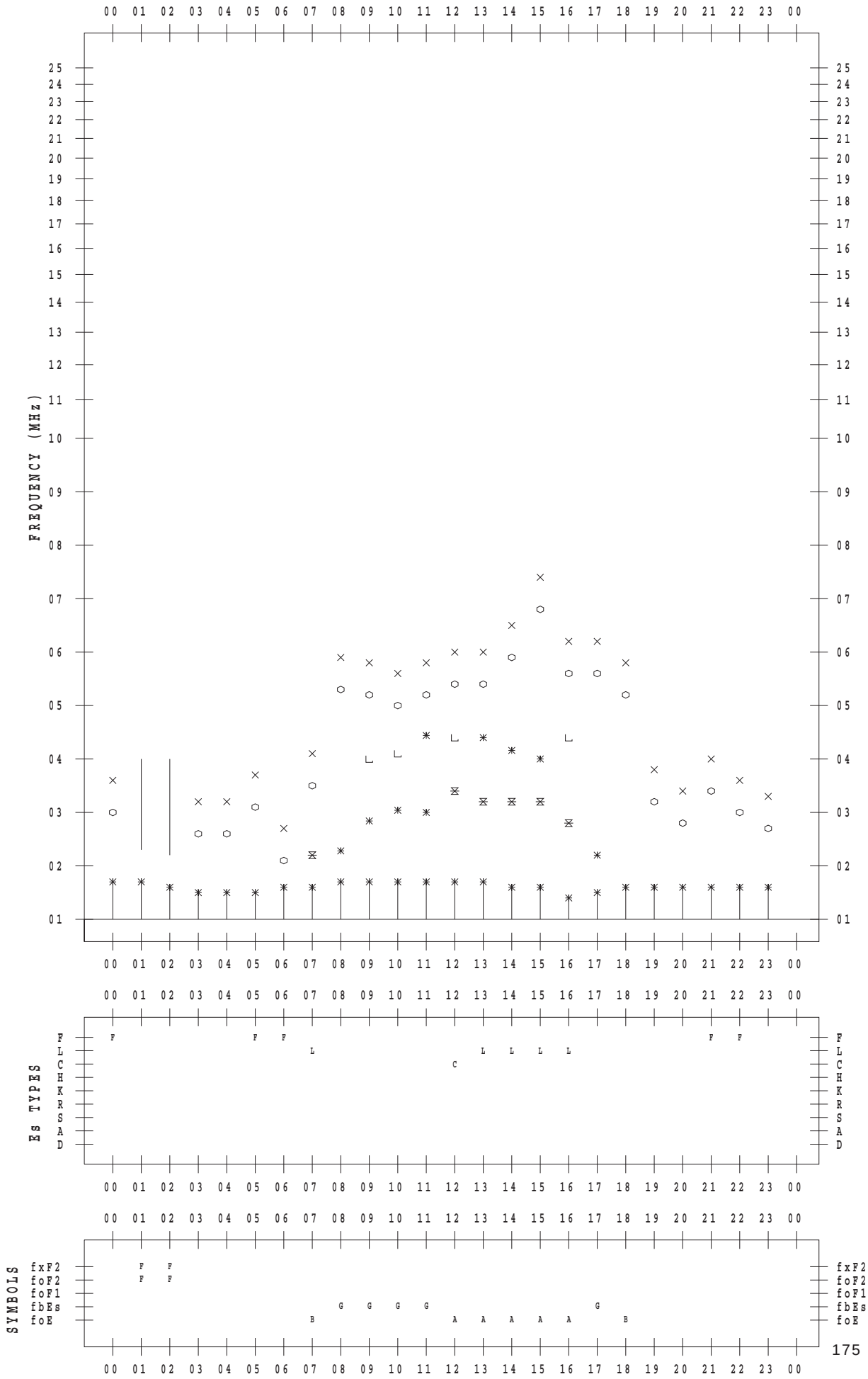
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/16

135 °E MEAN TIME



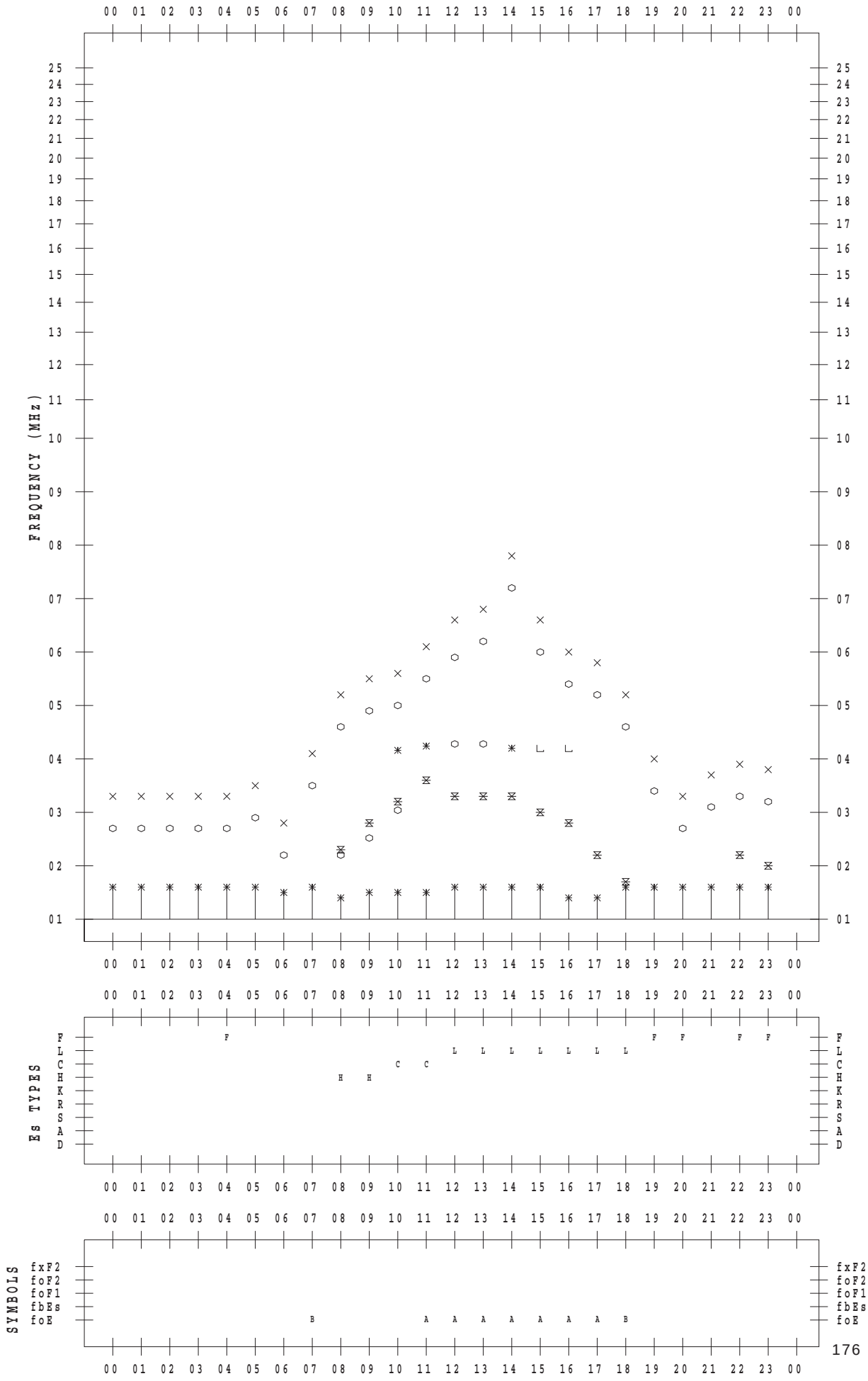
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/17

135 °E MEAN TIME



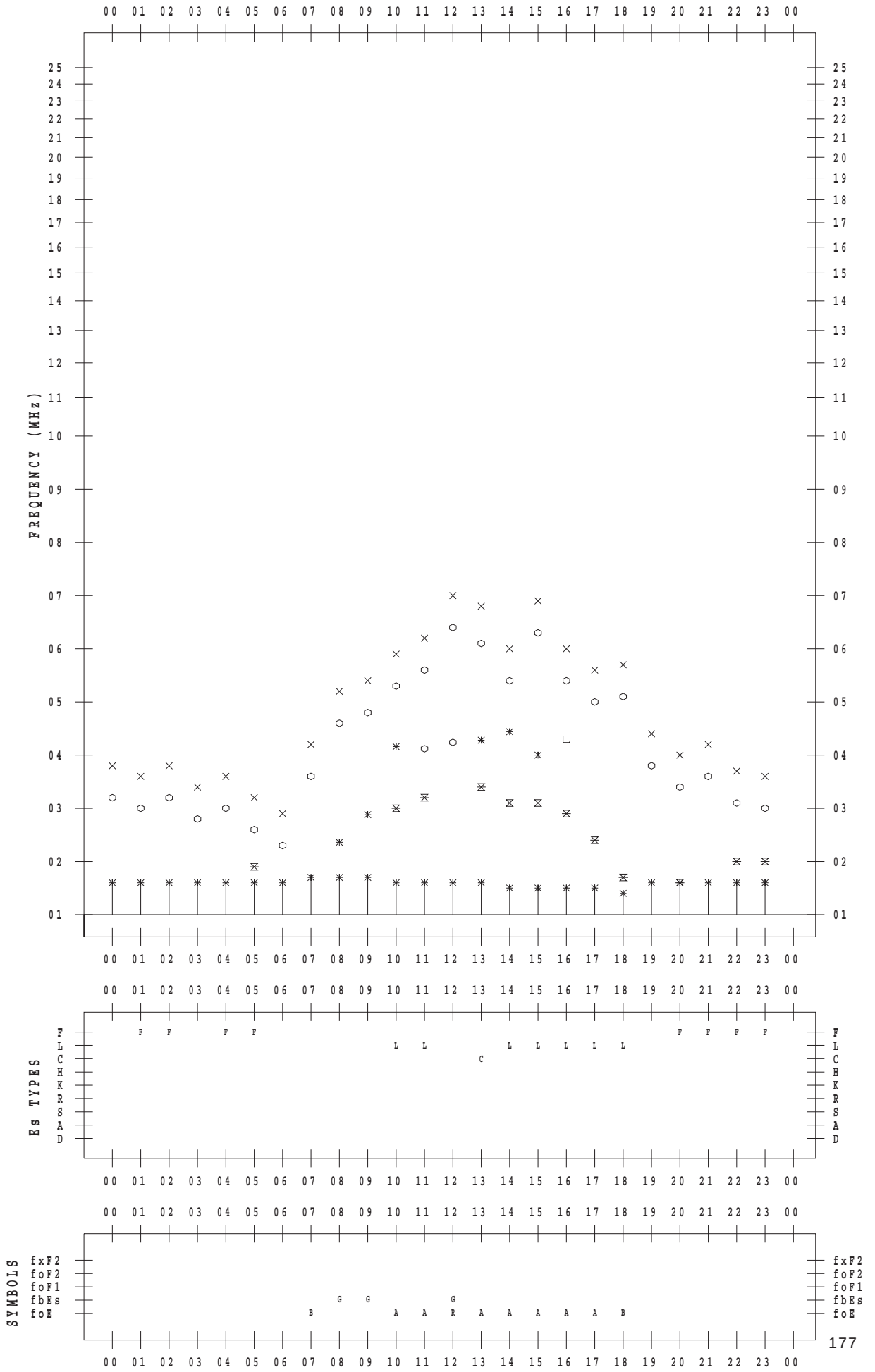
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/18

135 °E MEAN TIME



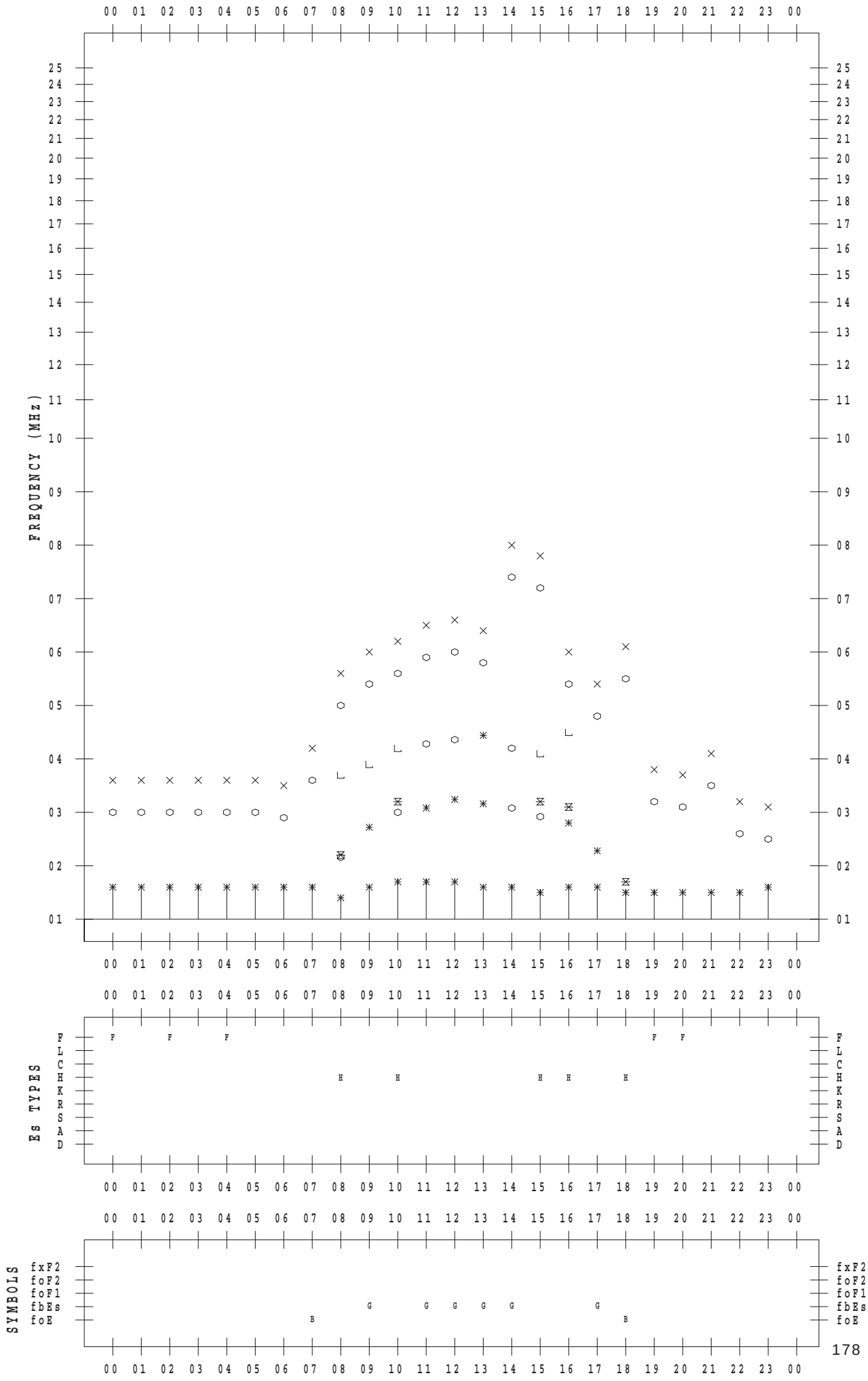
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/19

135 °E MEAN TIME



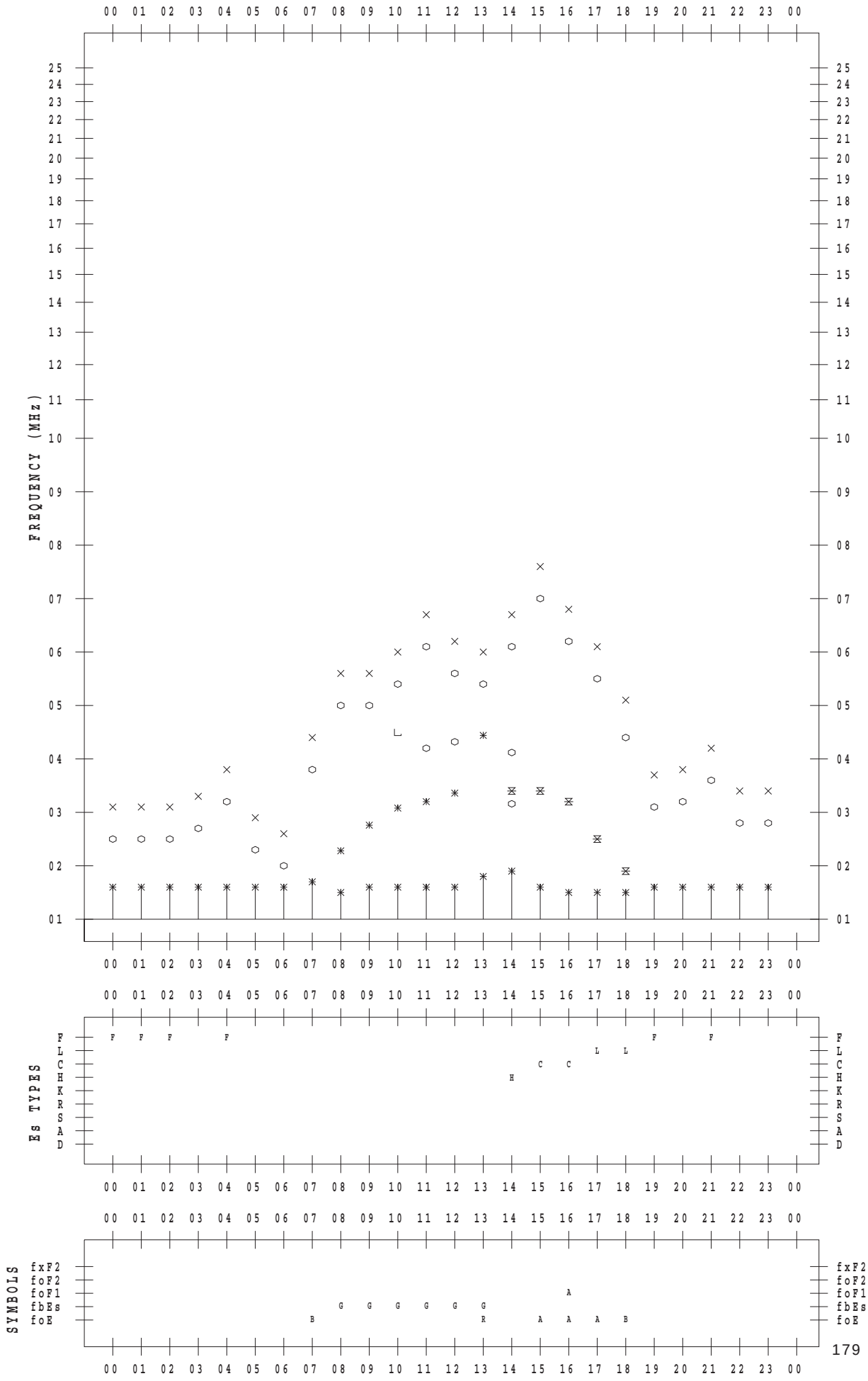
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/20

135 °E MEAN TIME



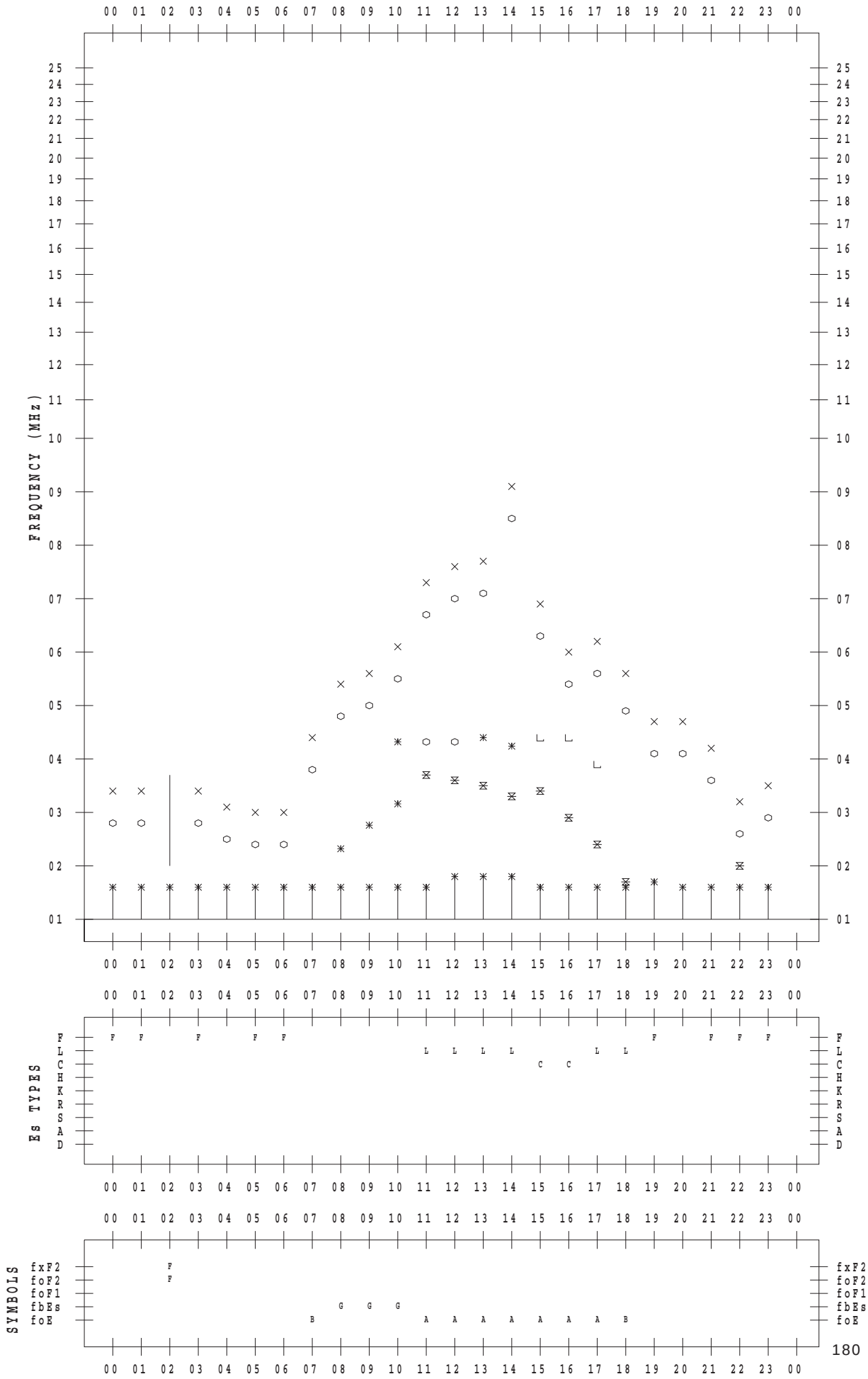
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/21

135 °E MEAN TIME



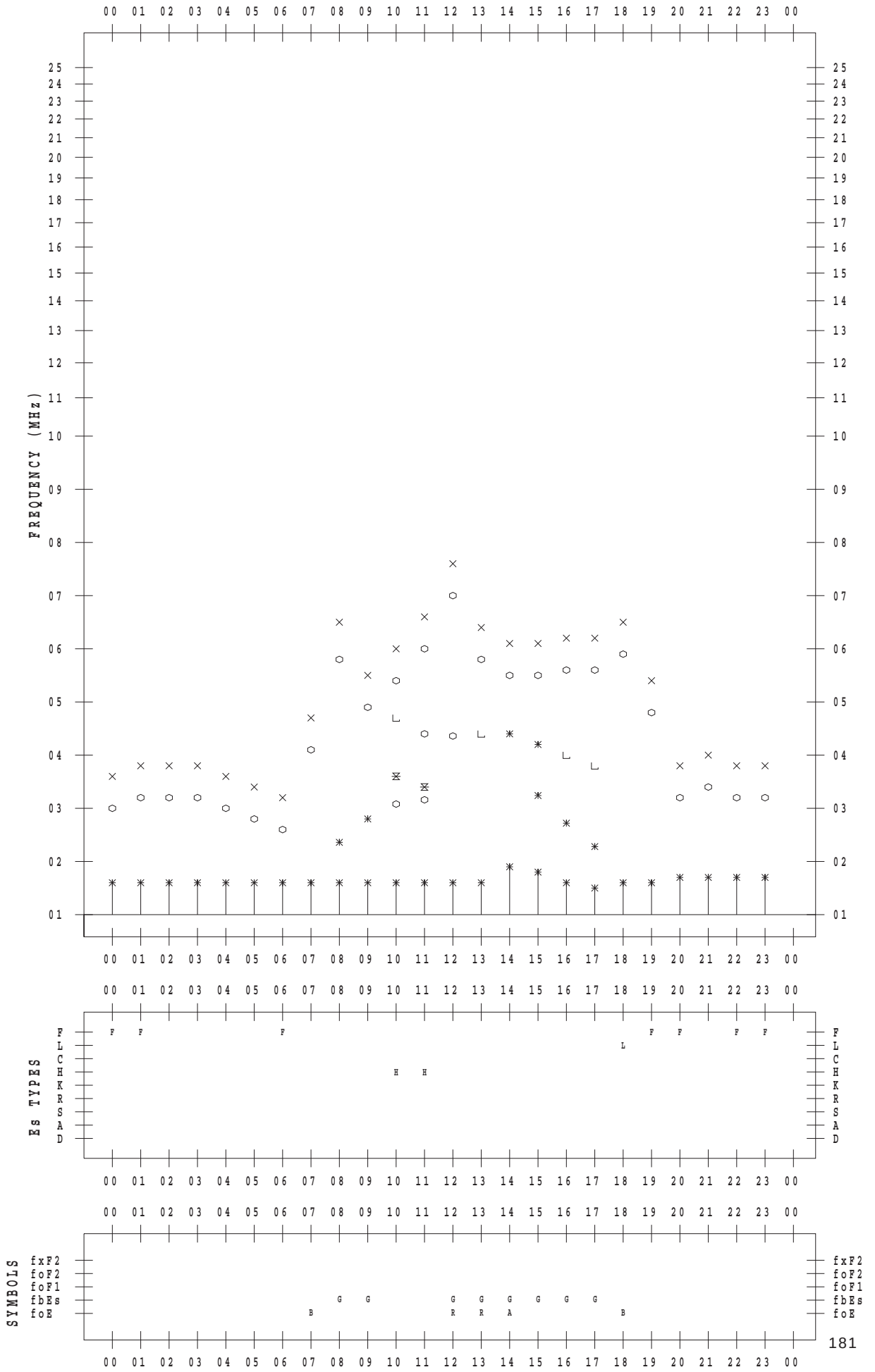
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/22

135 °E MEAN TIME



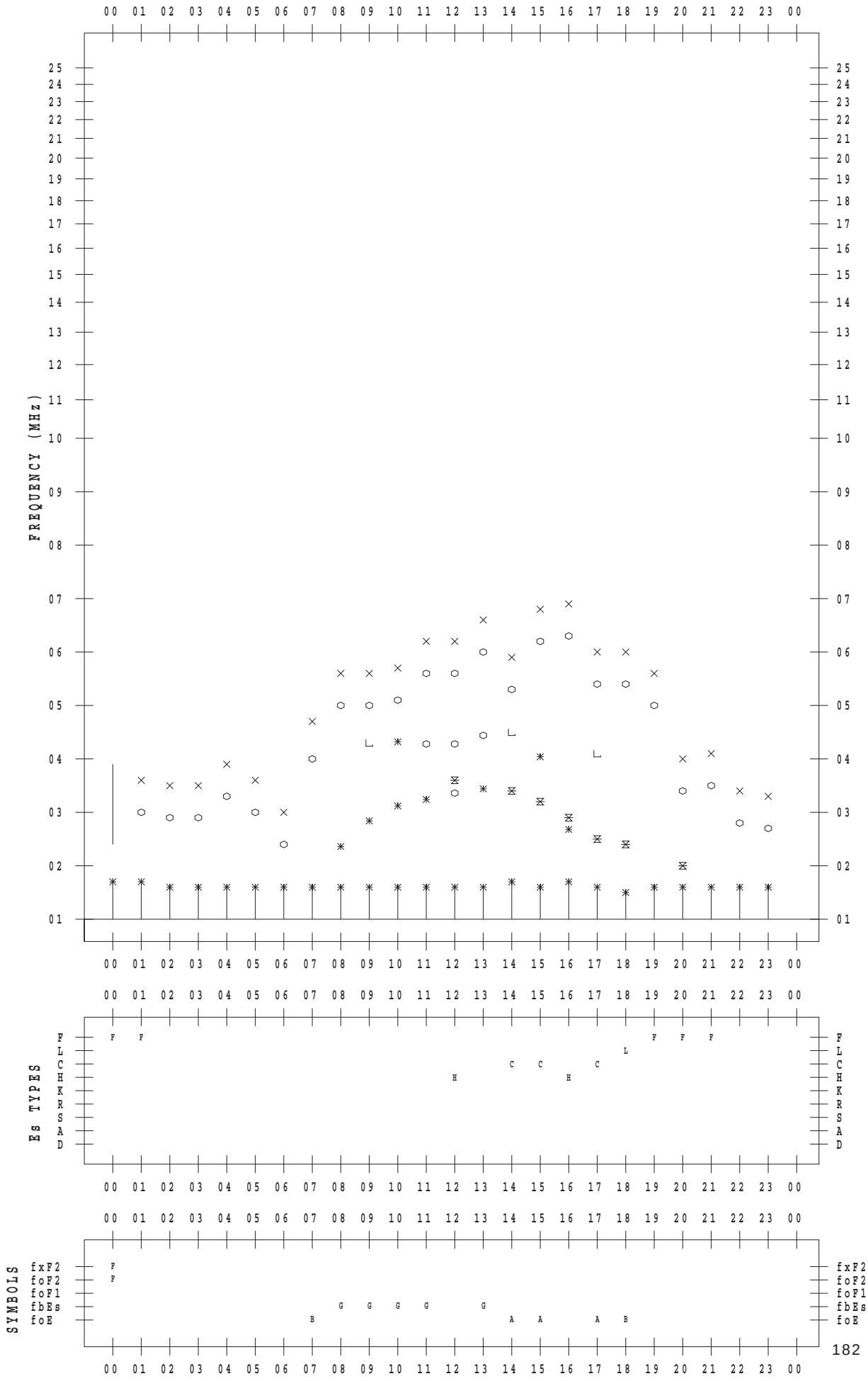
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/23

135 °E MEAN TIME



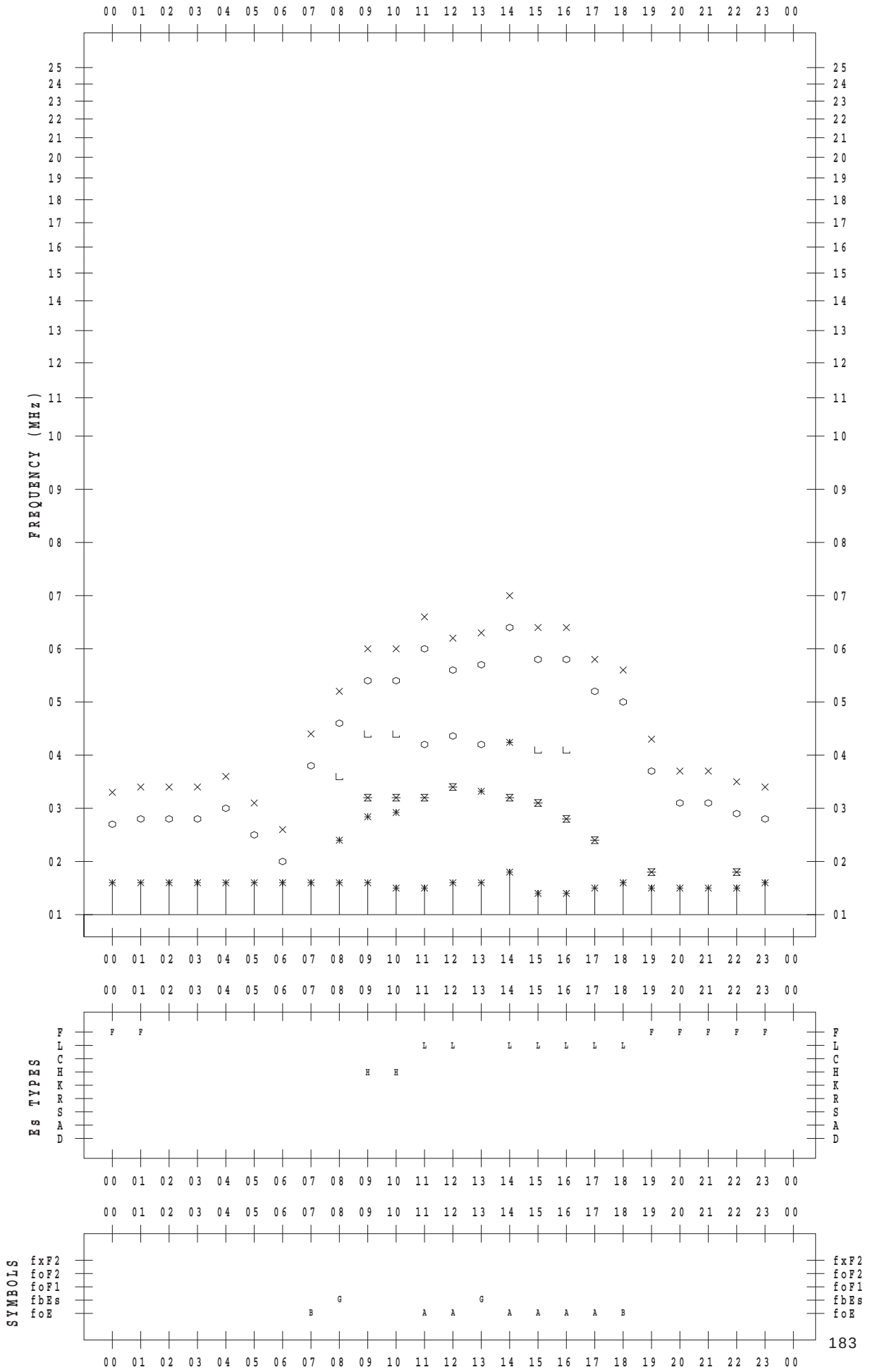
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/24

135 °E MEAN TIME



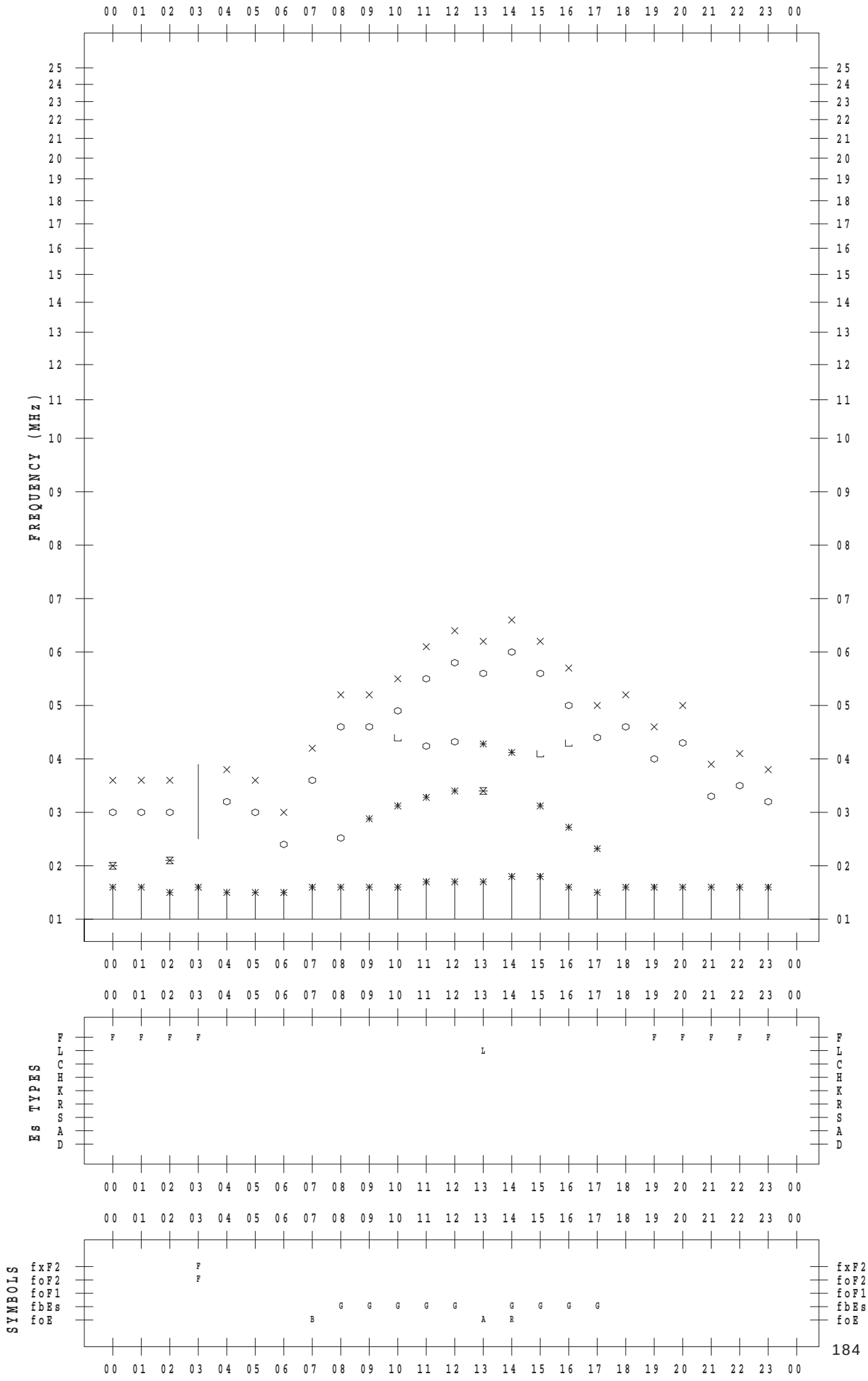
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/25

135 °E MEAN TIME



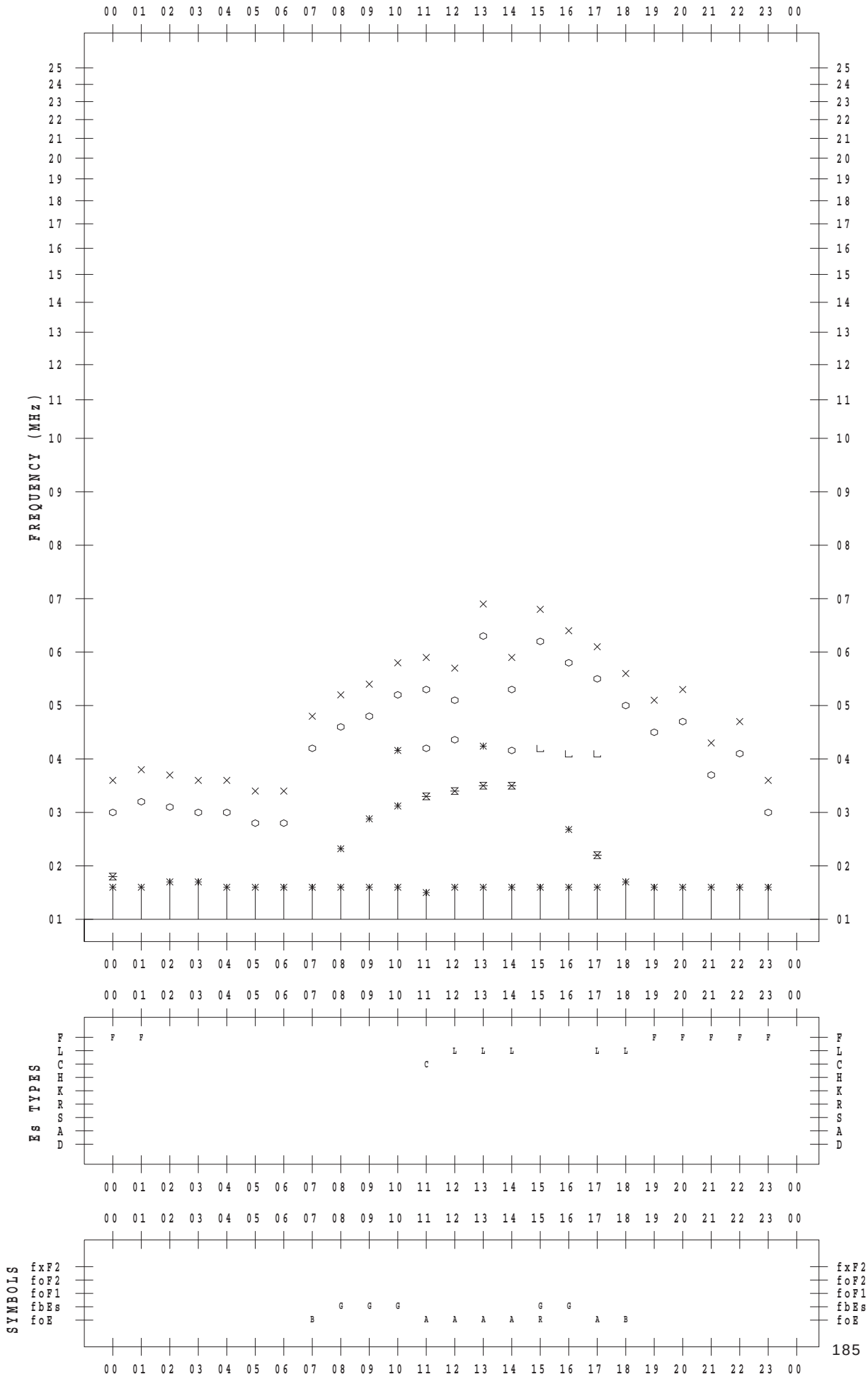
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/26

135 °E MEAN TIME



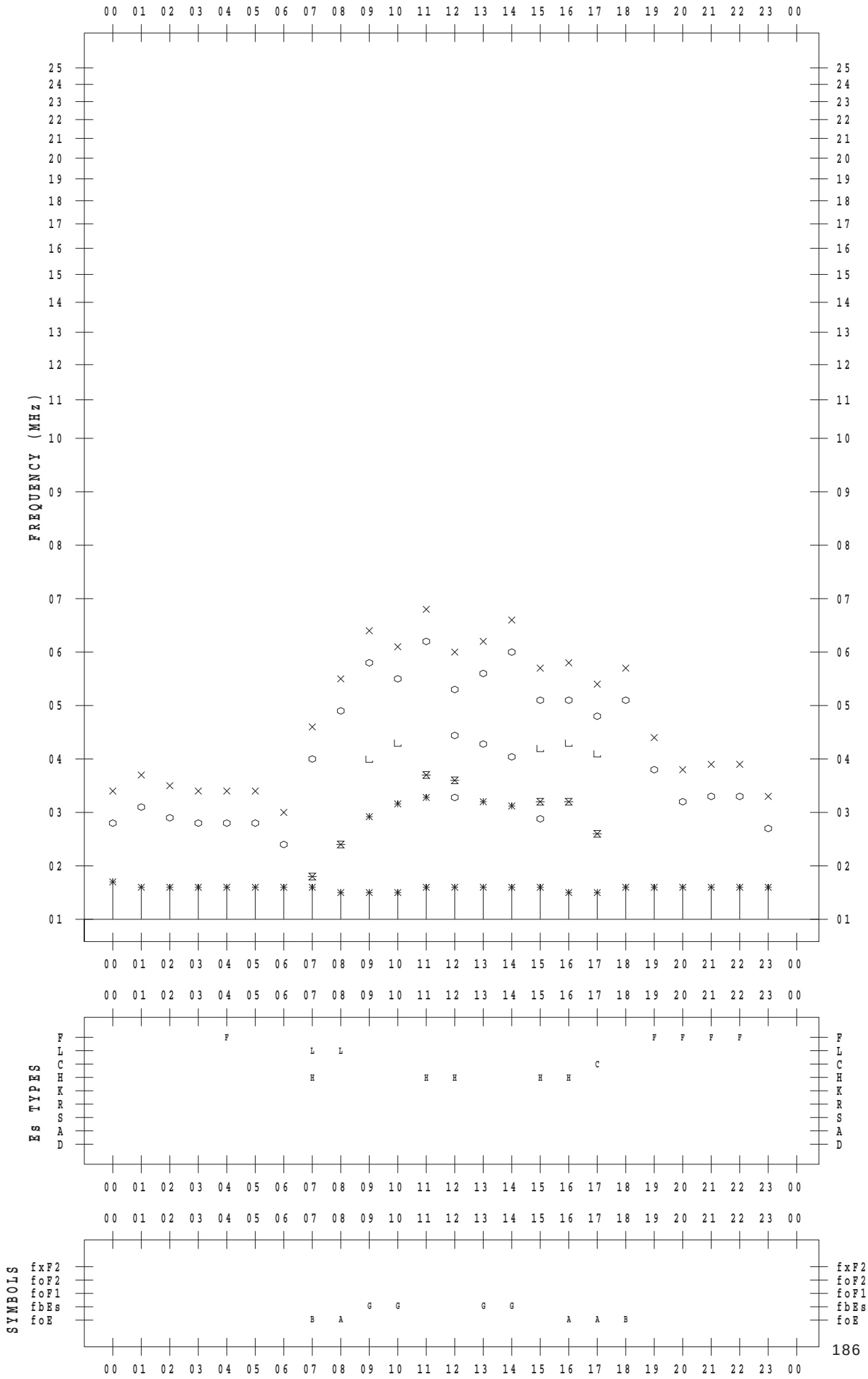
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/27

135 °E MEAN TIME



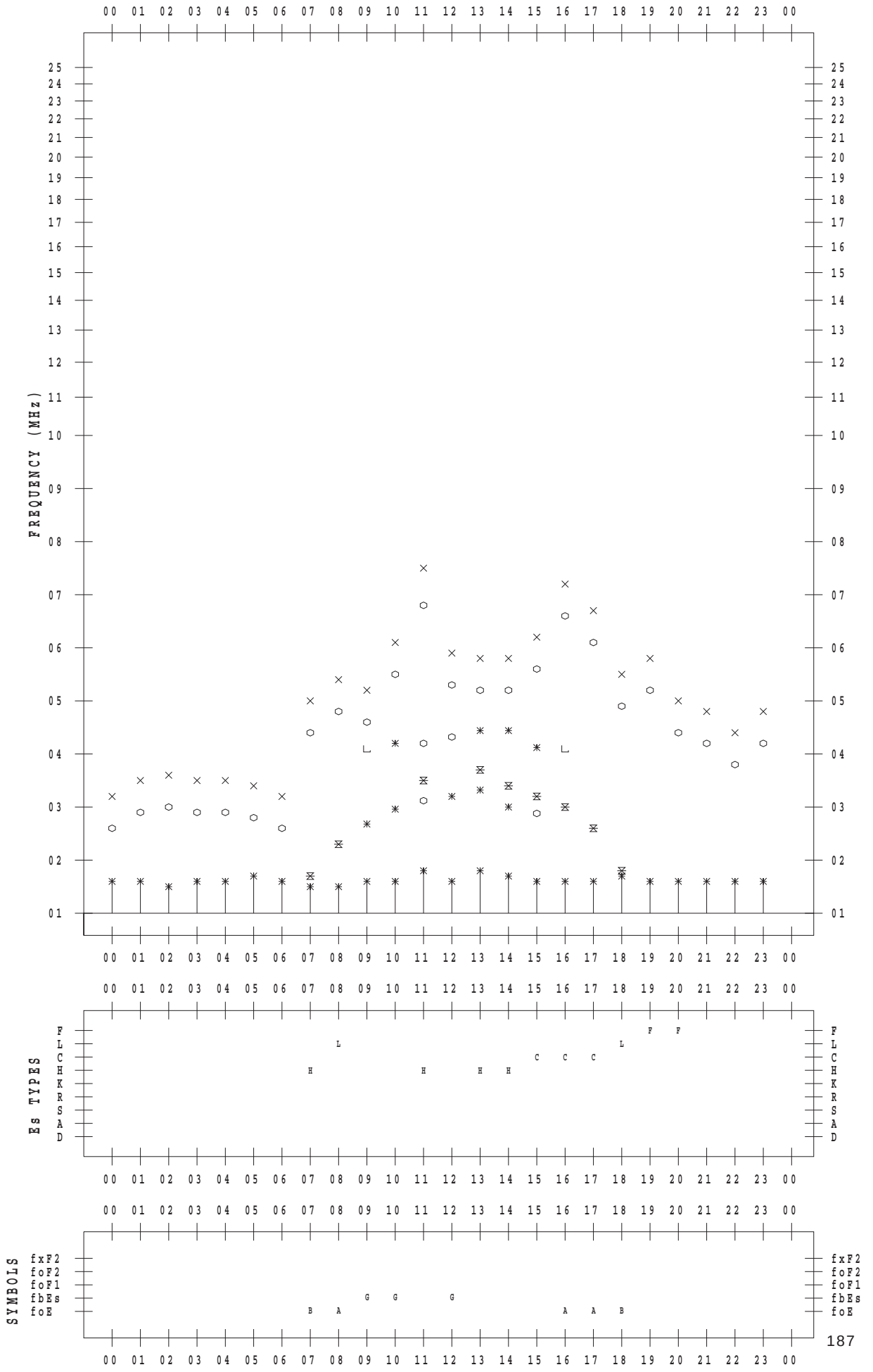
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 2/28

135 °E MEAN TIME



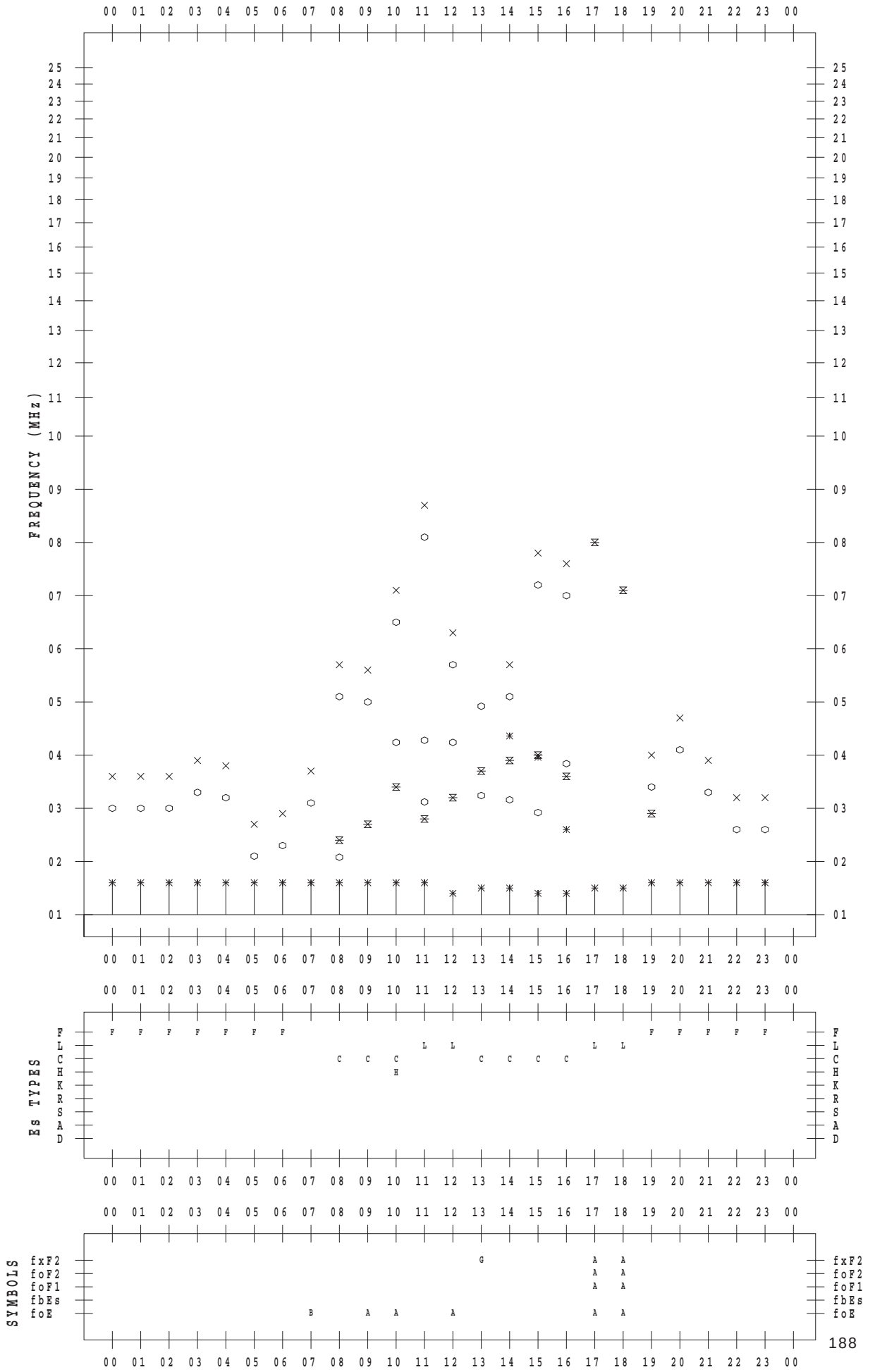
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 1

135 °E MEAN TIME



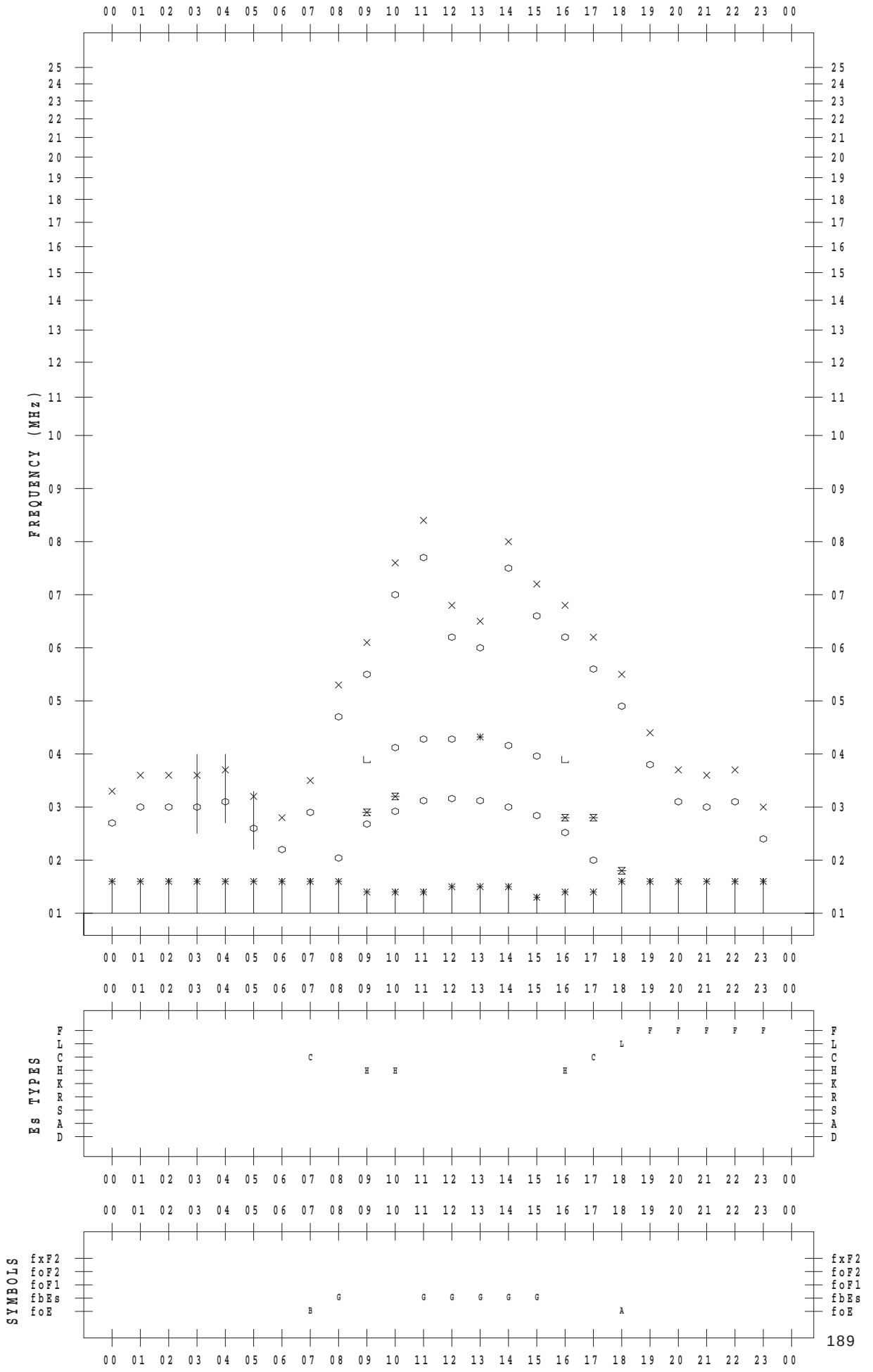
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 2

135 °E MEAN TIME



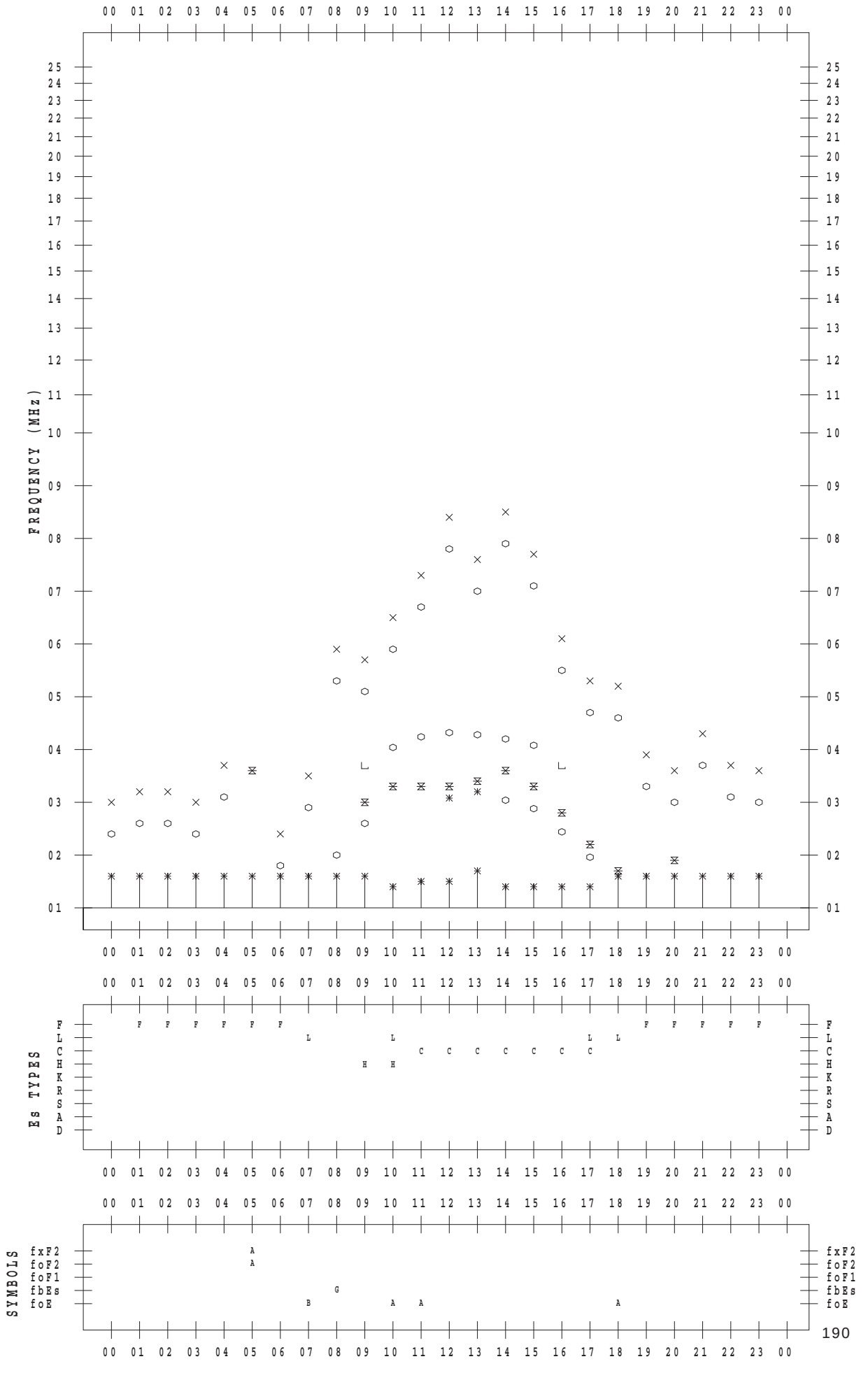
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 3

135 °E MEAN TIME



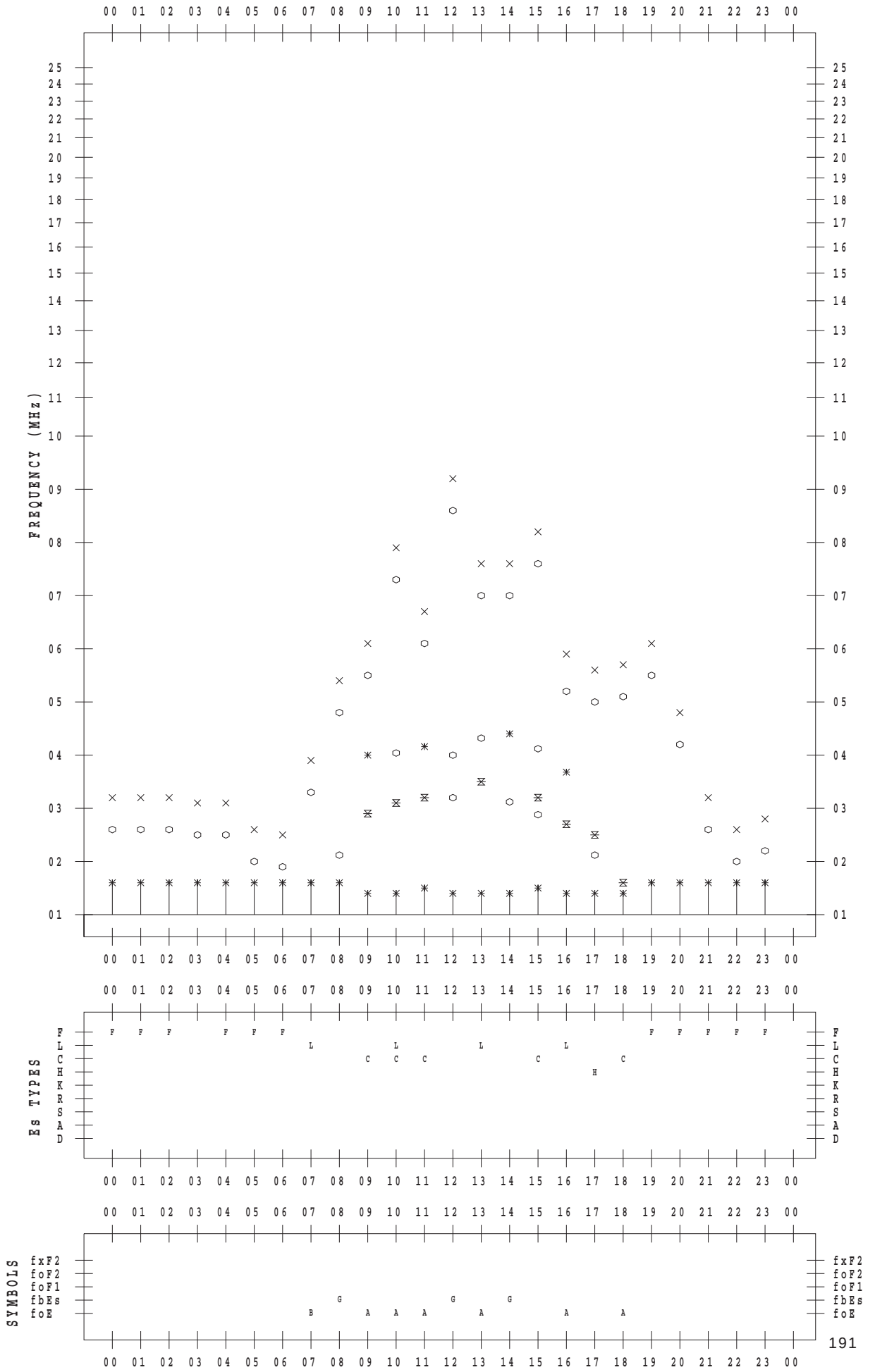
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 4

135 °E MEAN TIME



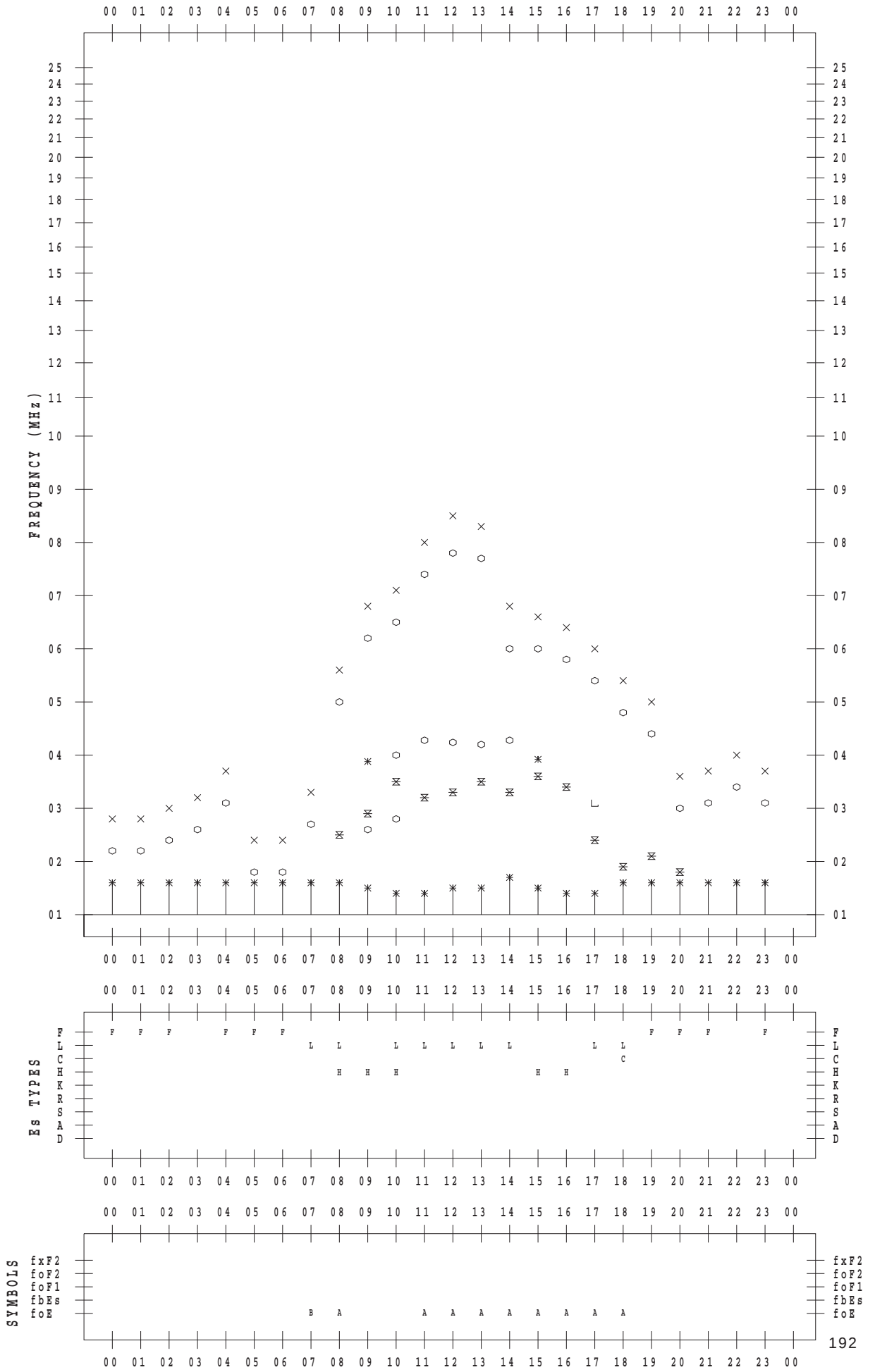
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 5

135 °E MEAN TIME



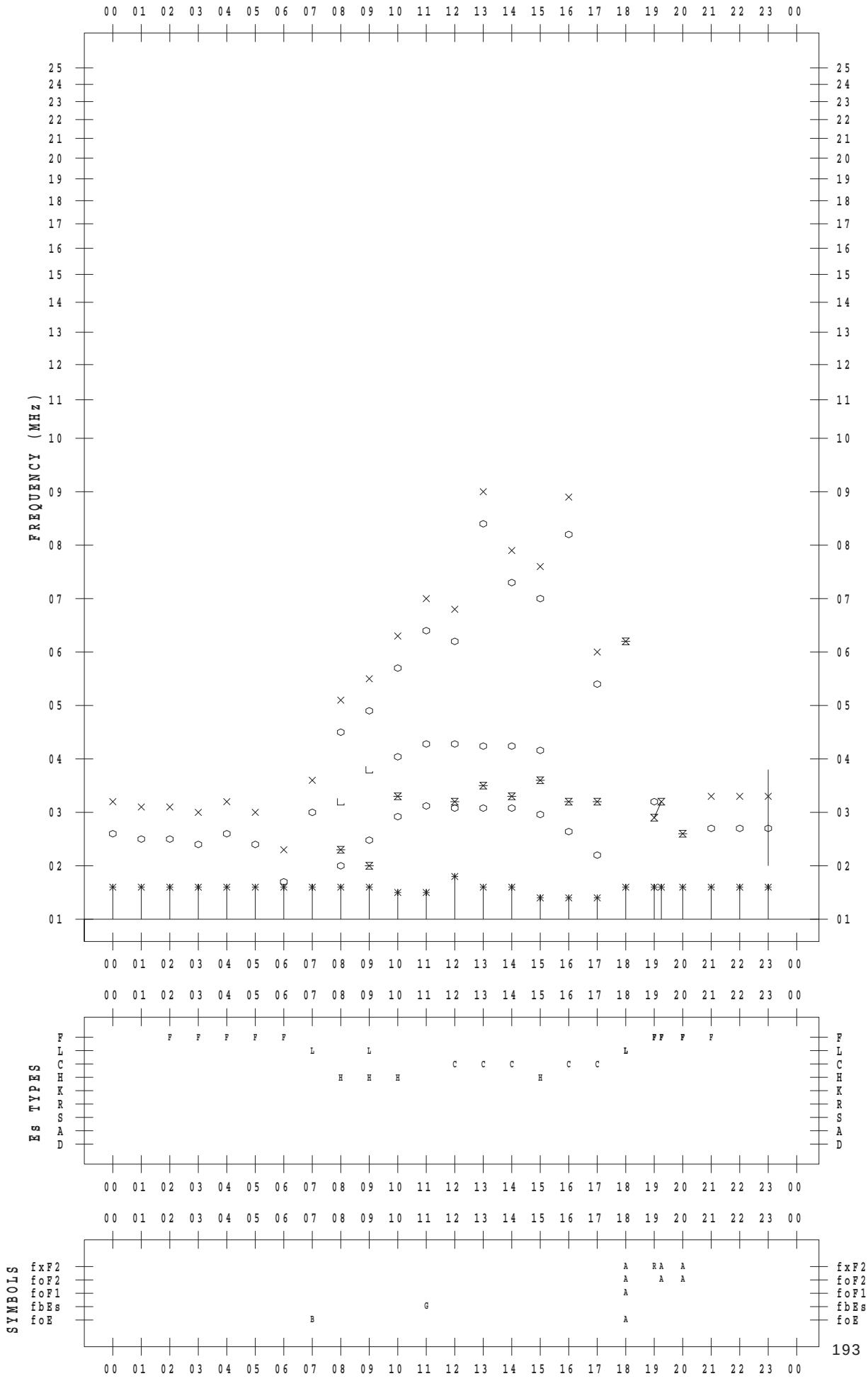
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 6

135 °E MEAN TIME



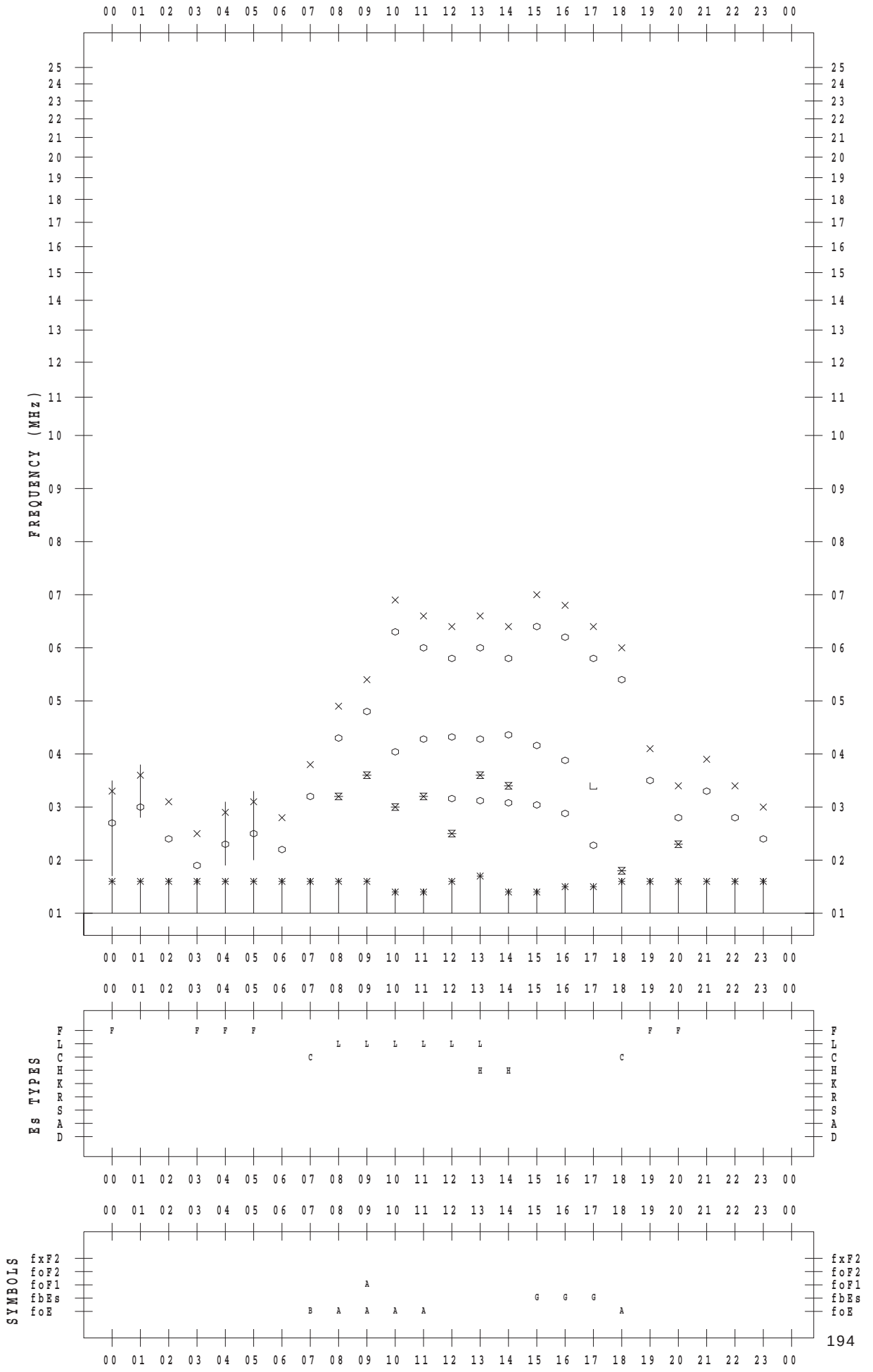
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 7

135 °E MEAN TIME



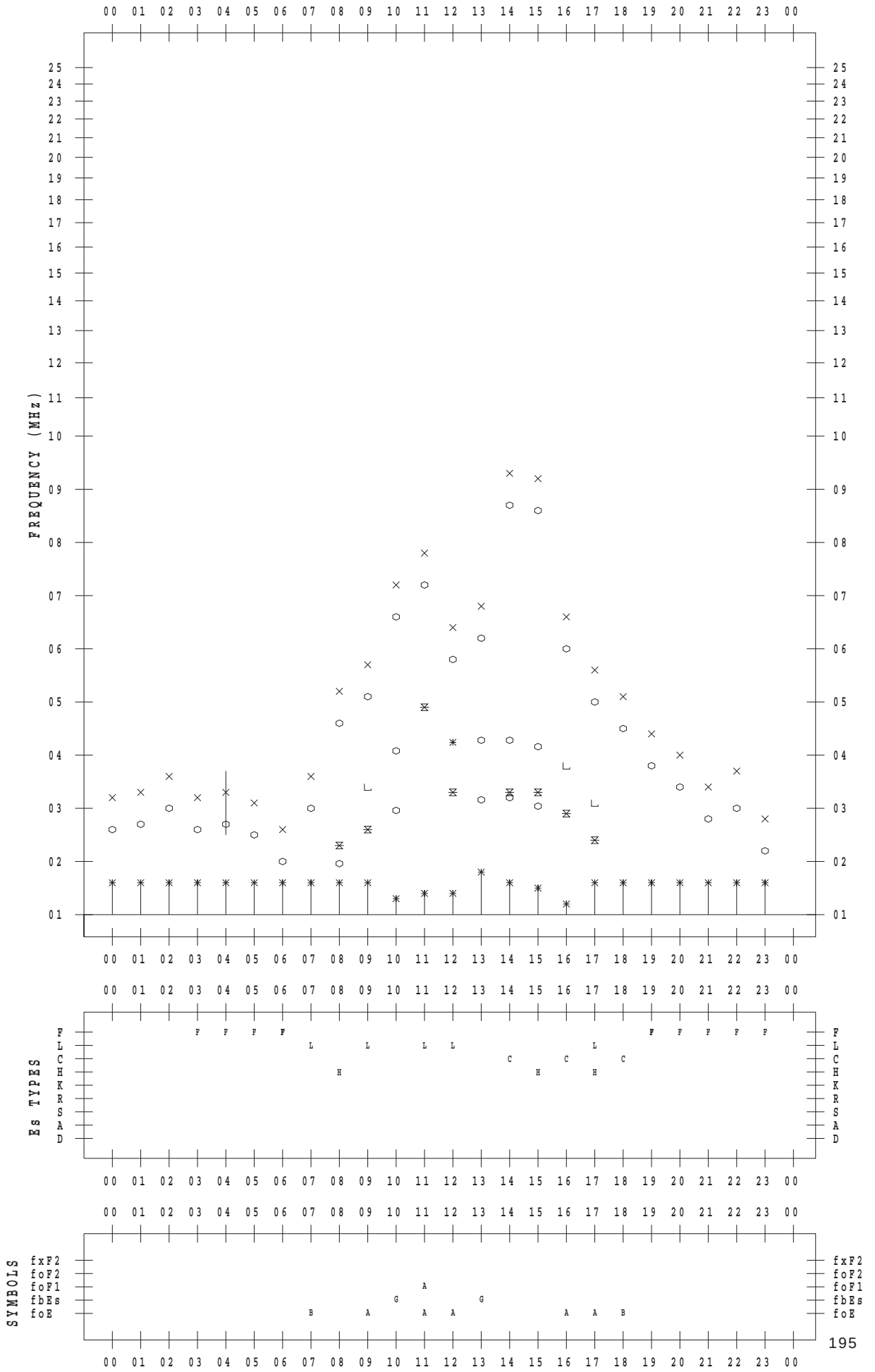
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 8

135 °E MEAN TIME



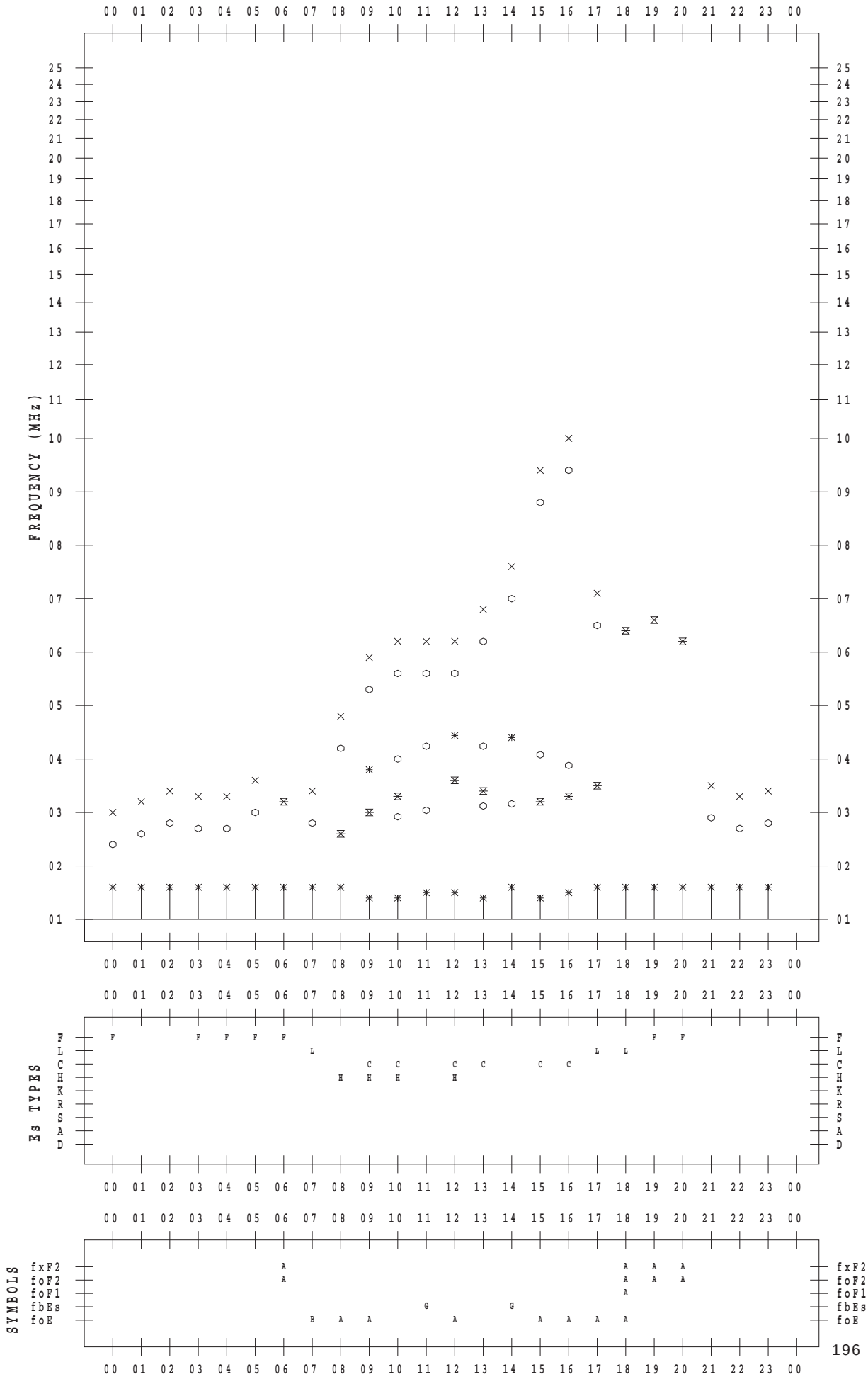
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/ 9

135 °E MEAN TIME



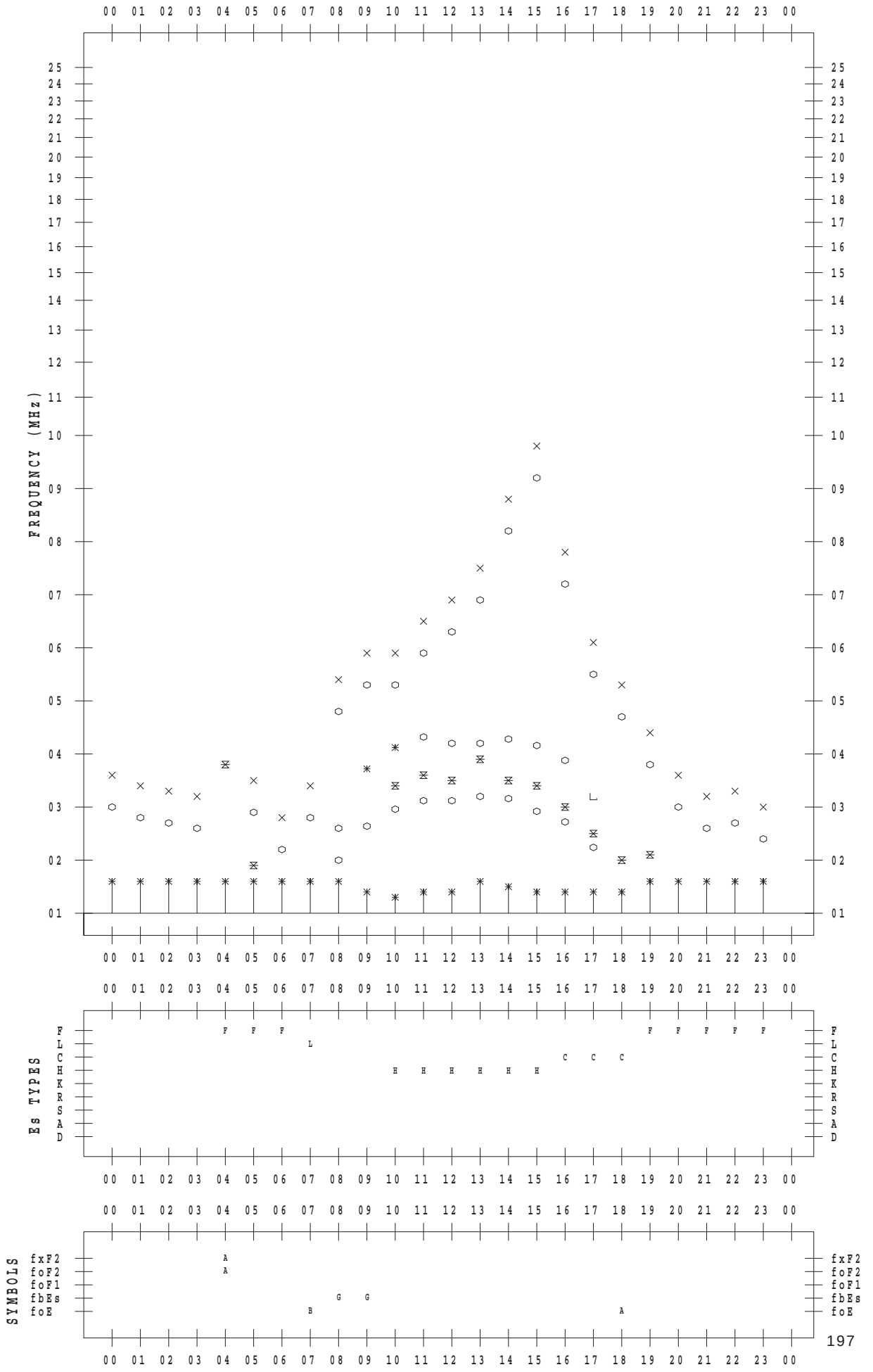
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/10

135 °E MEAN TIME



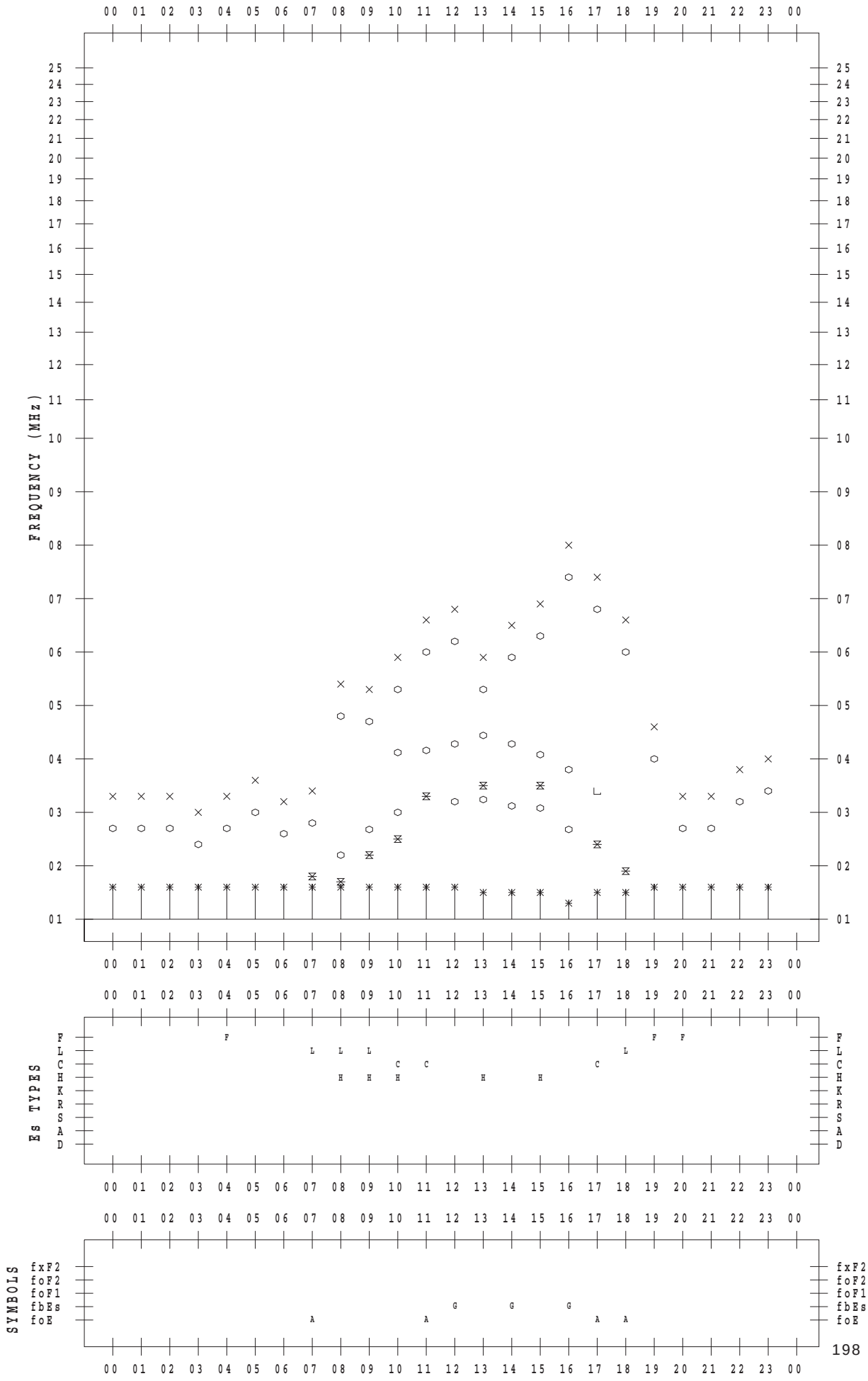
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/11

135 °E MEAN TIME



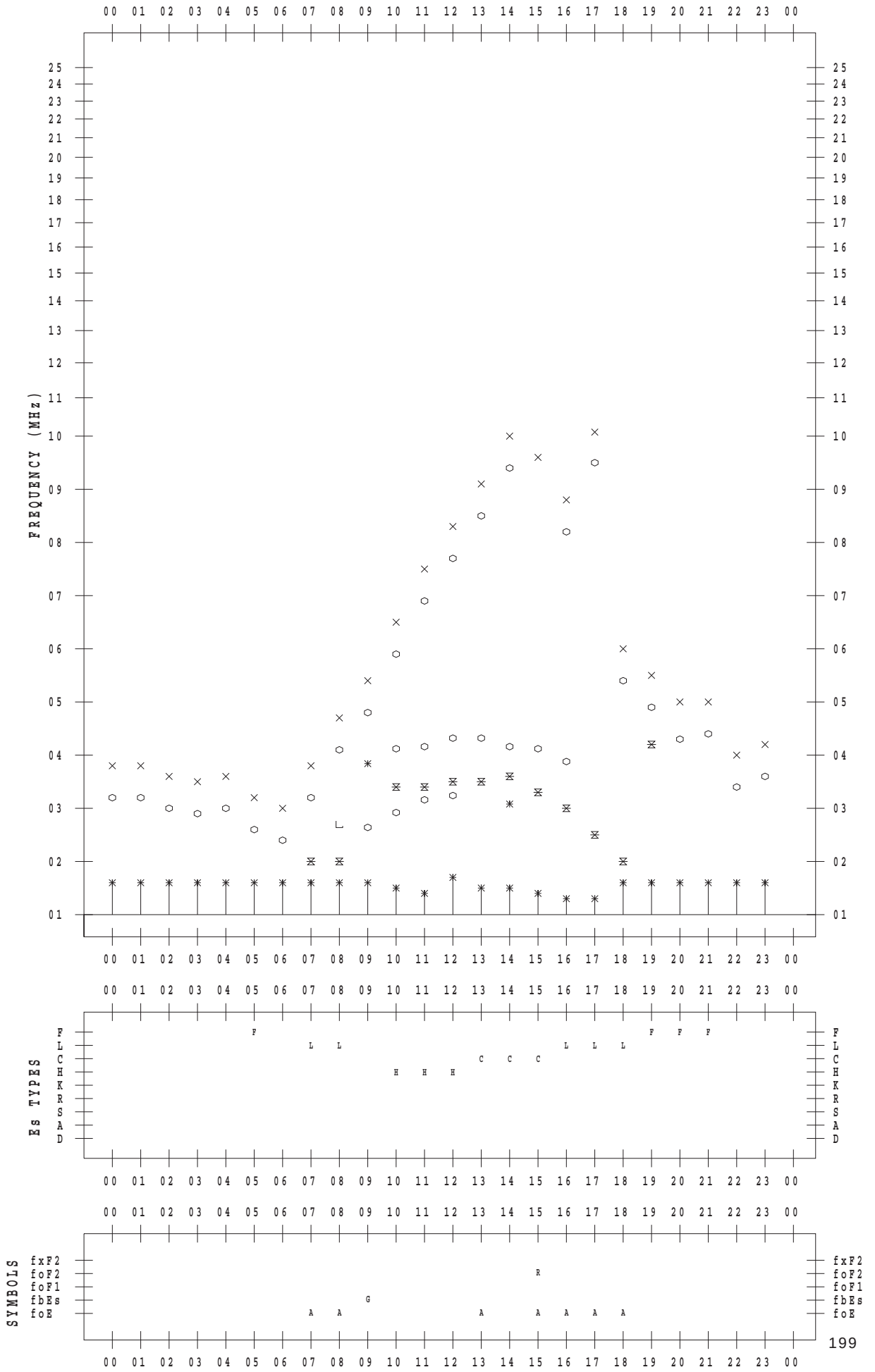
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/12

135 °E MEAN TIME



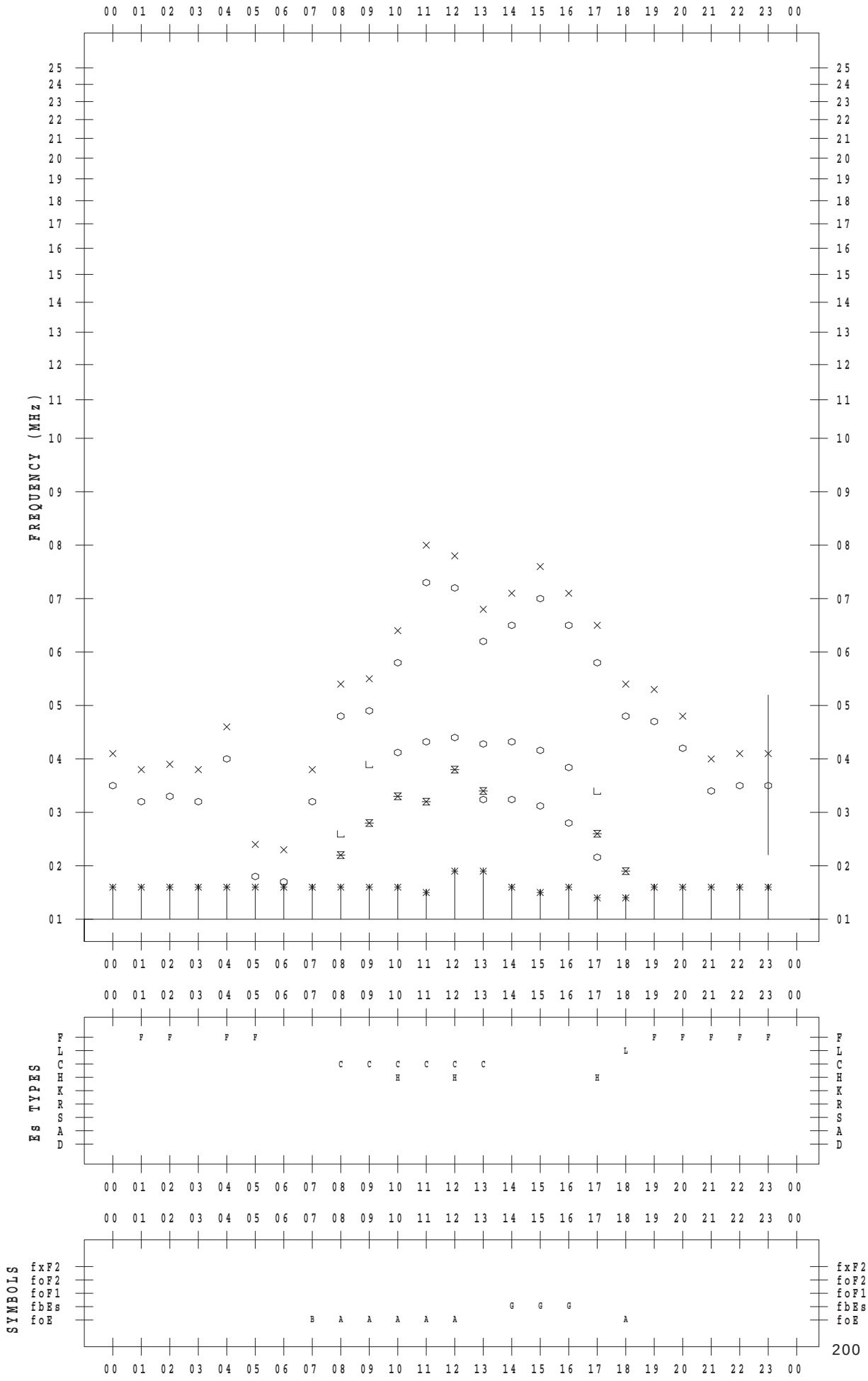
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/13

135 °E MEAN TIME



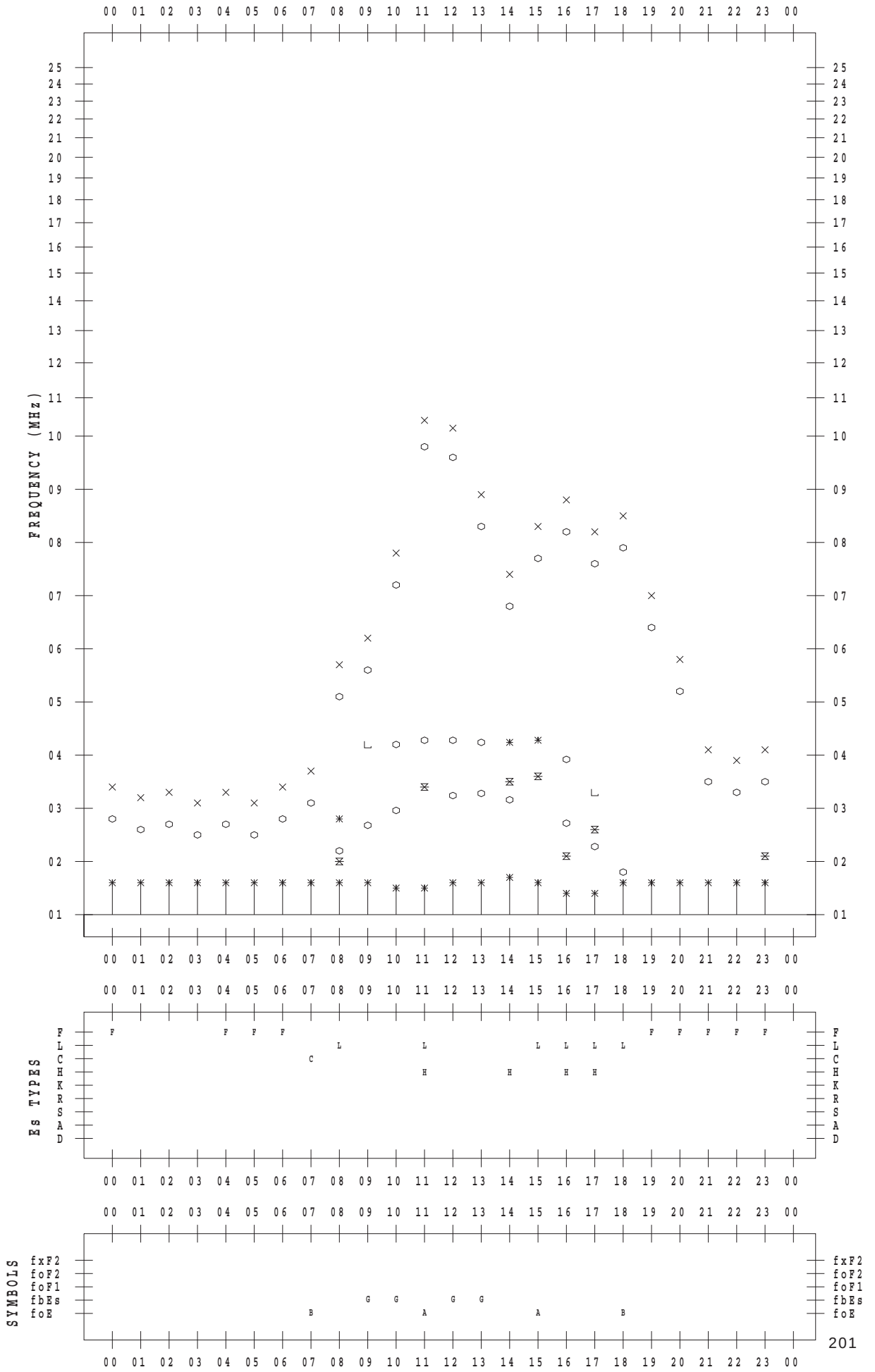
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/14

135 °E MEAN TIME



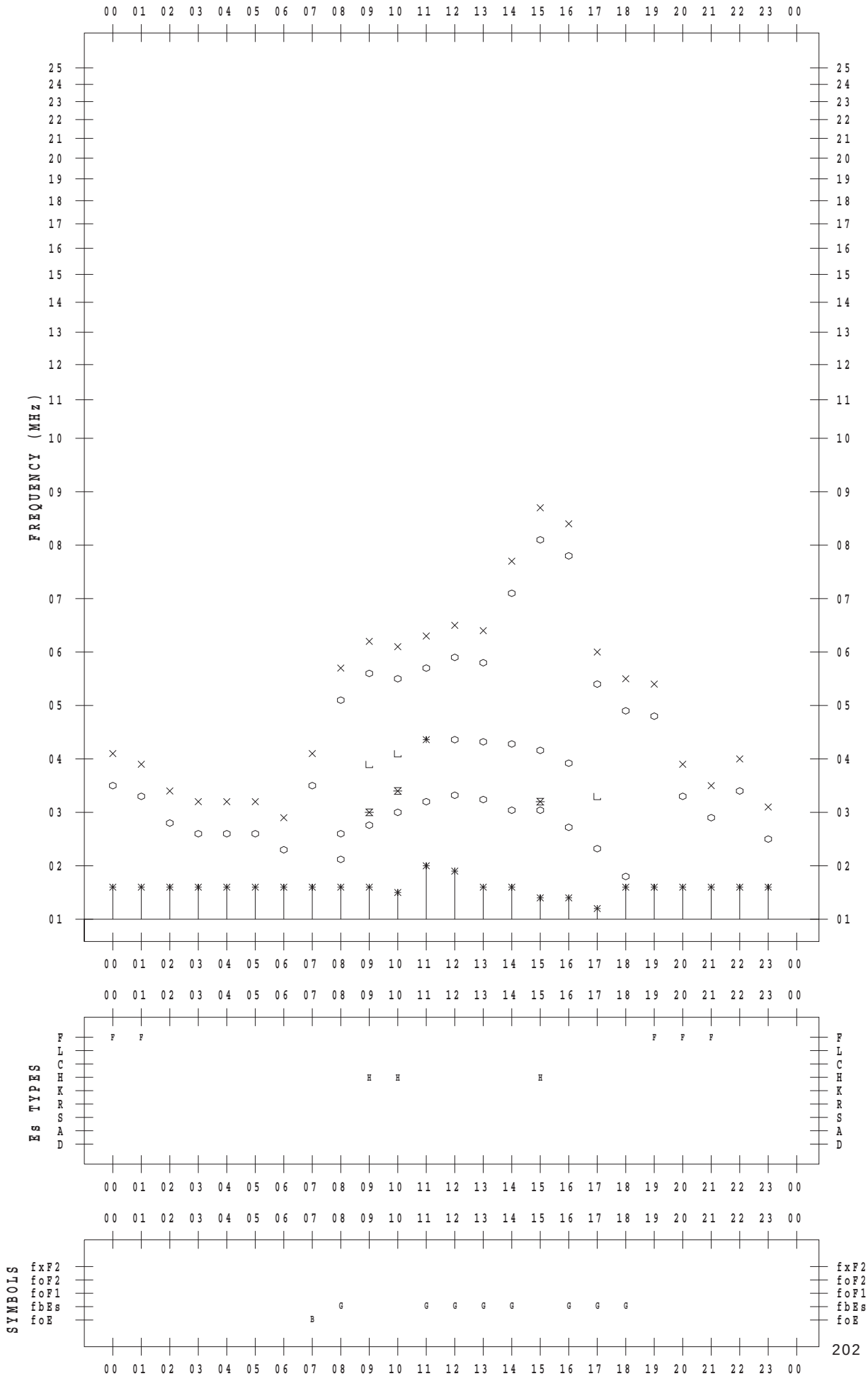
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/15

135 °E MEAN TIME



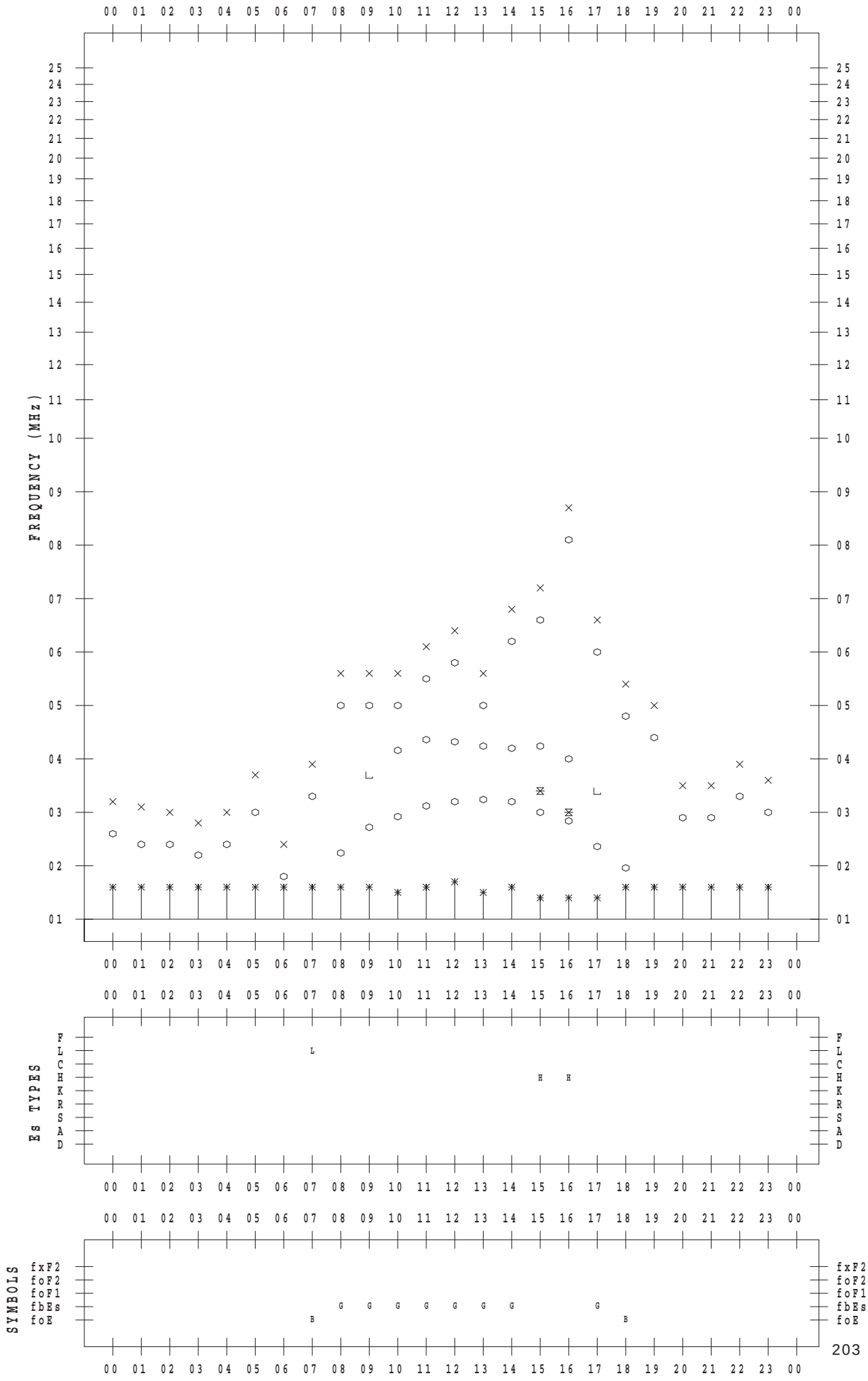
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/16

135 °E MEAN TIME



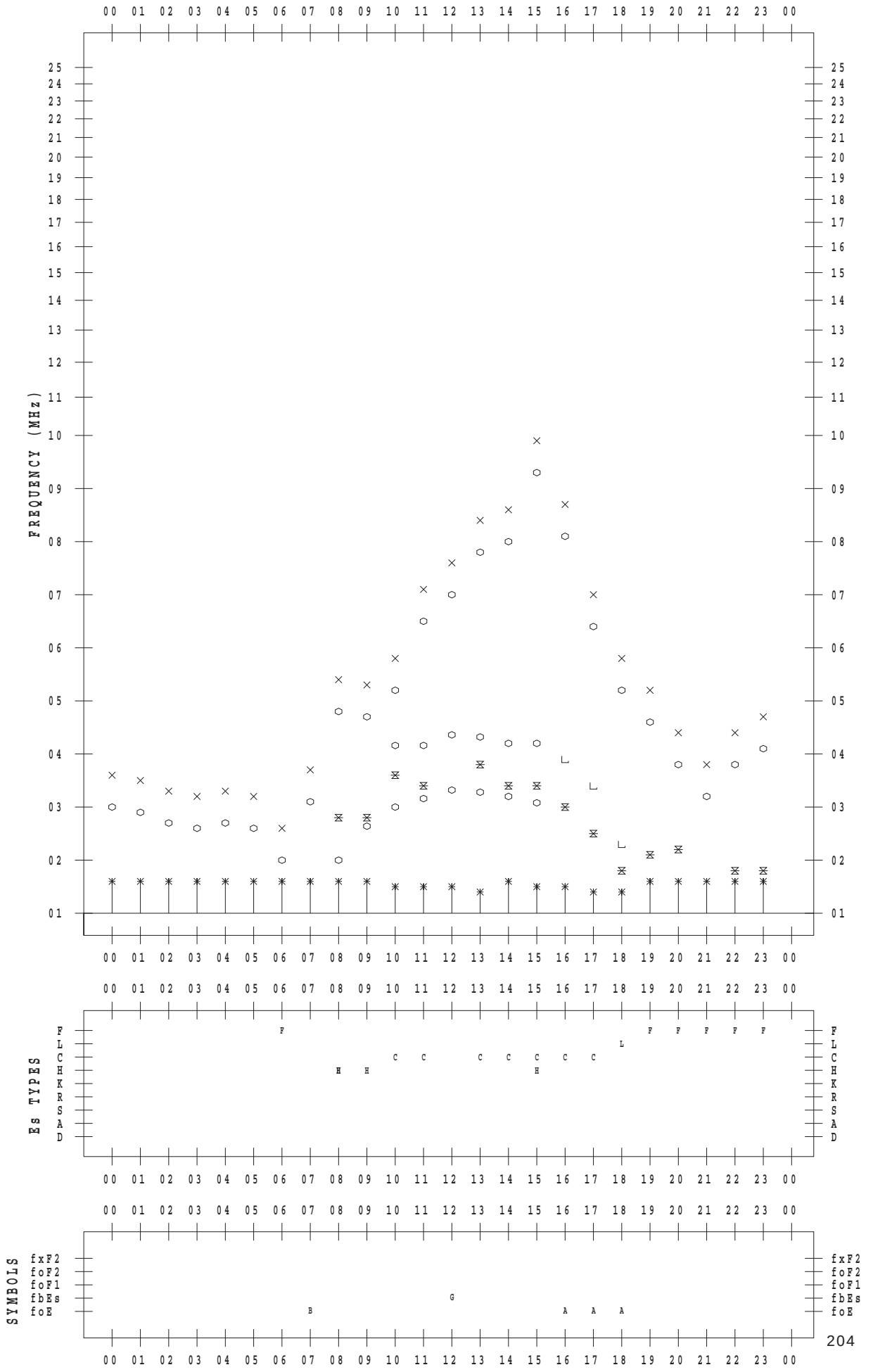
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/17

135 °E MEAN TIME



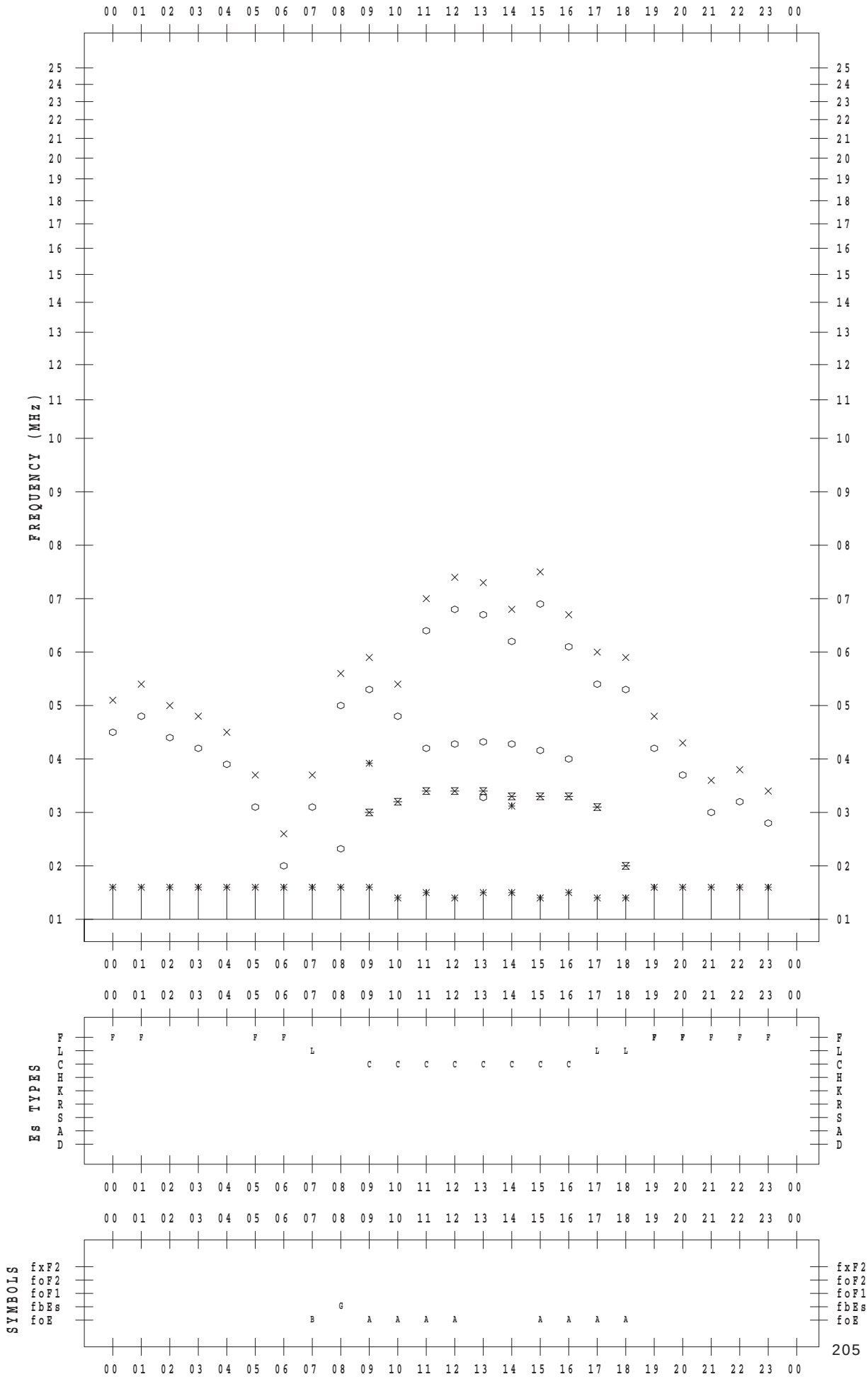
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/18

135 °E MEAN TIME



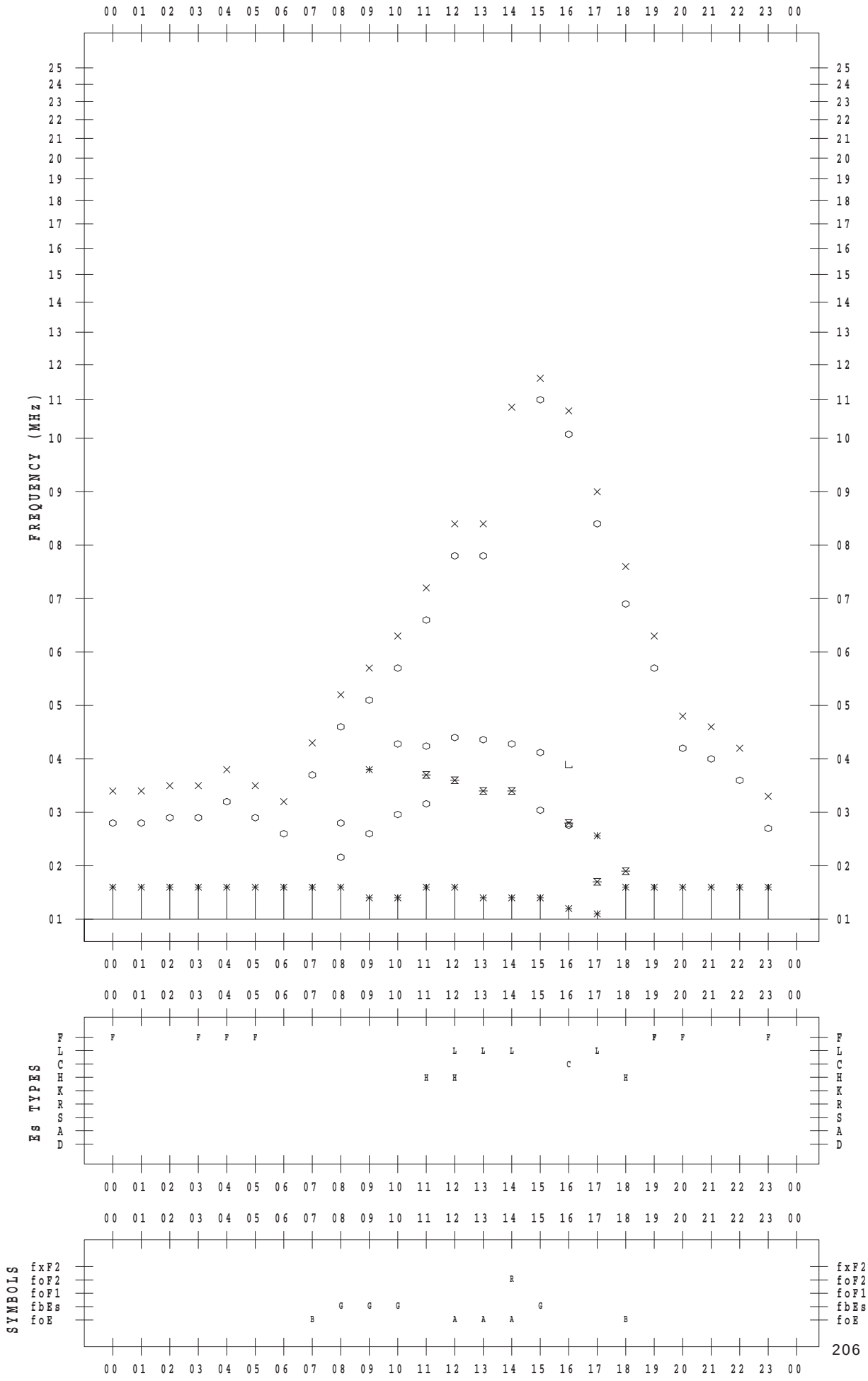
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/19

135 °E MEAN TIME



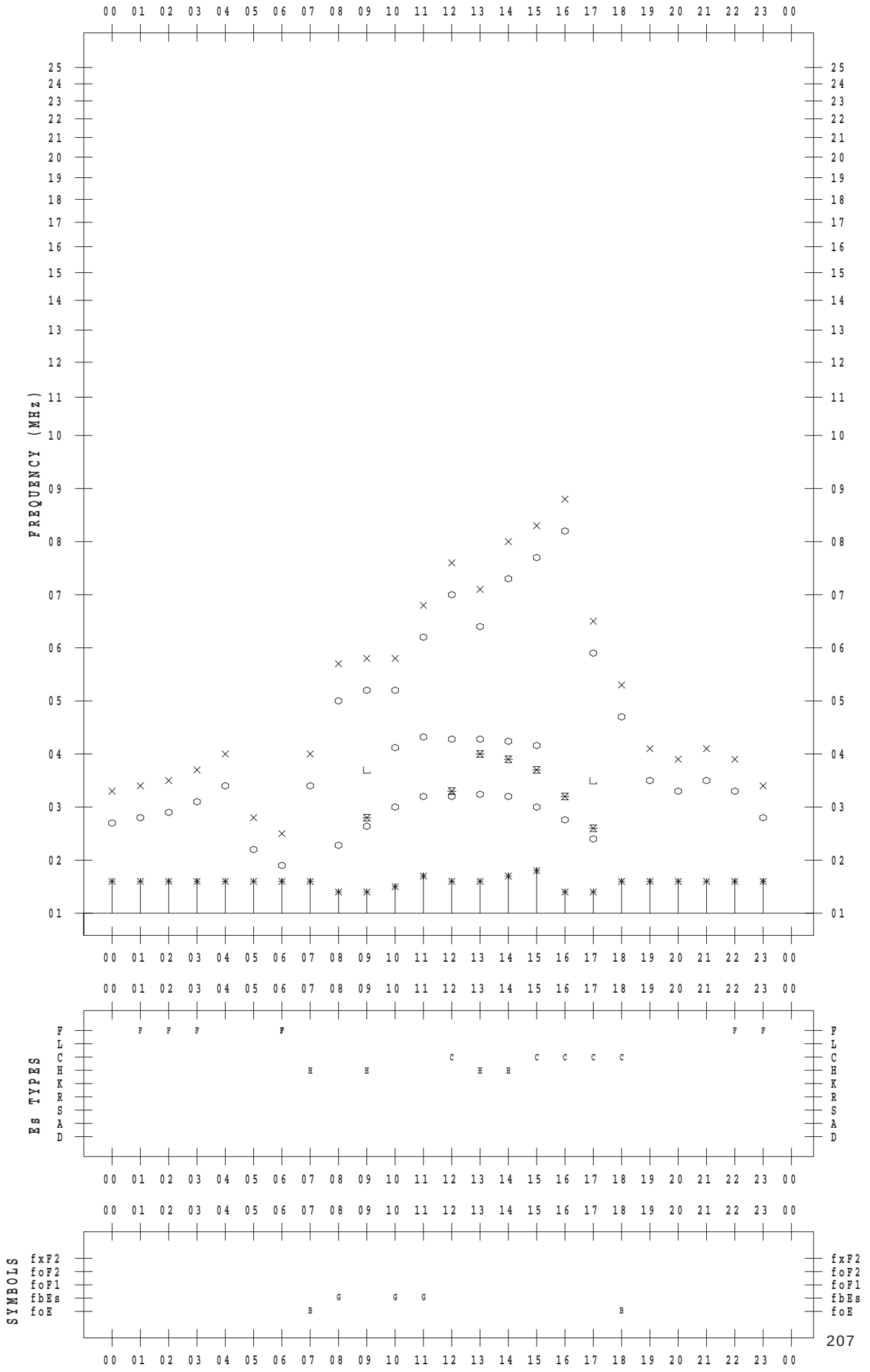
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/20

135 °E MEAN TIME



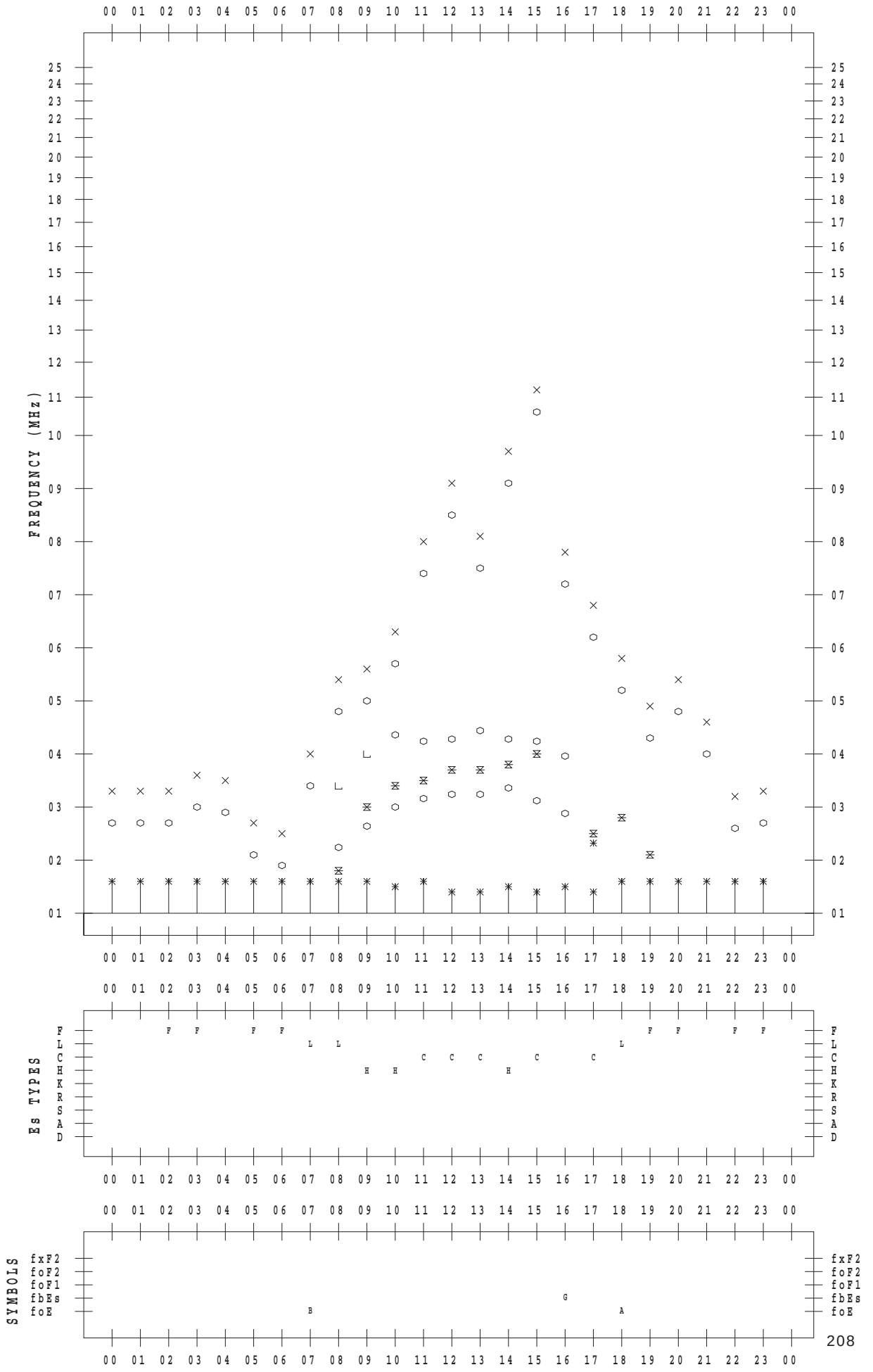
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/21

135 °E MEAN TIME



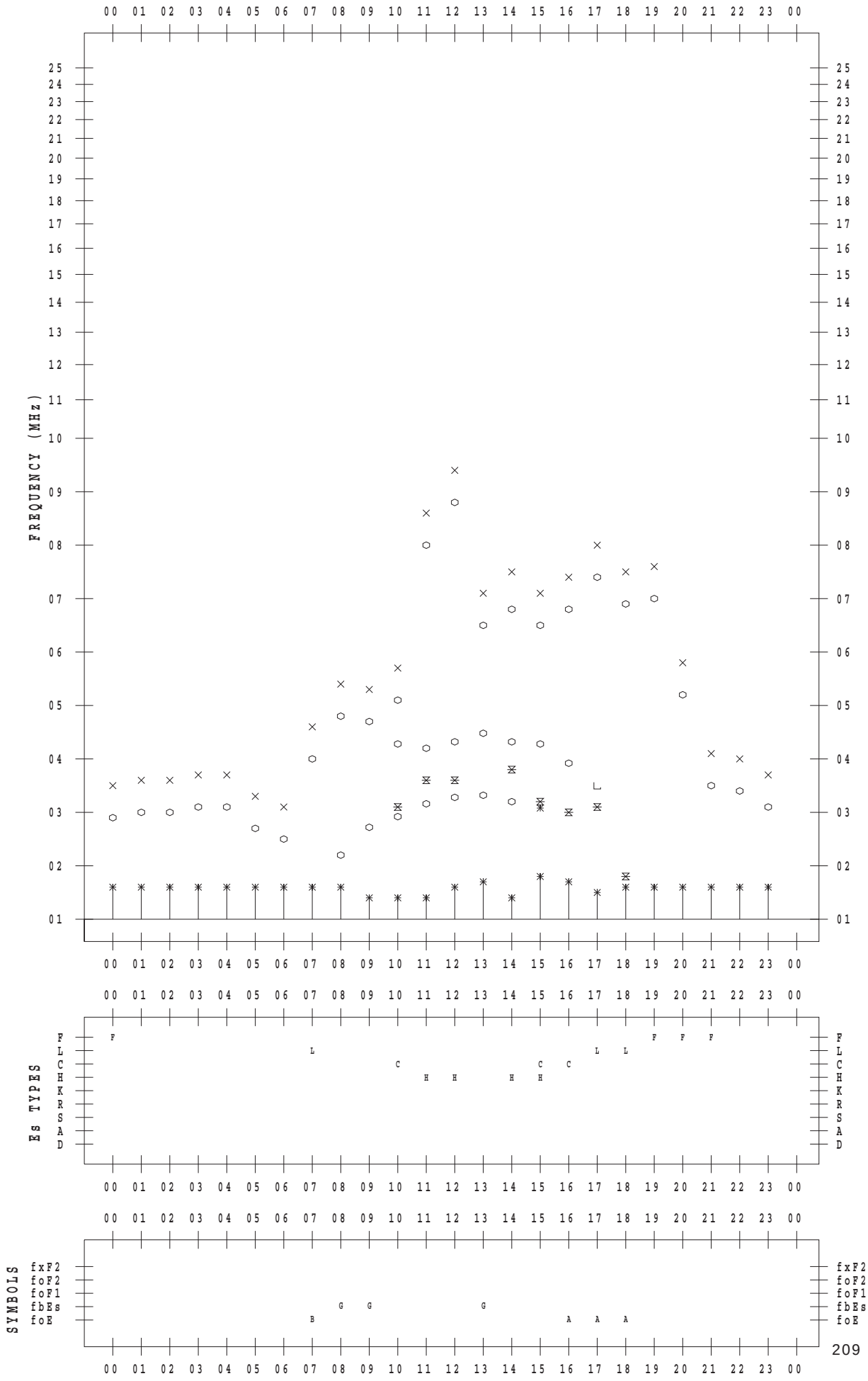
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/22

135 °E MEAN TIME



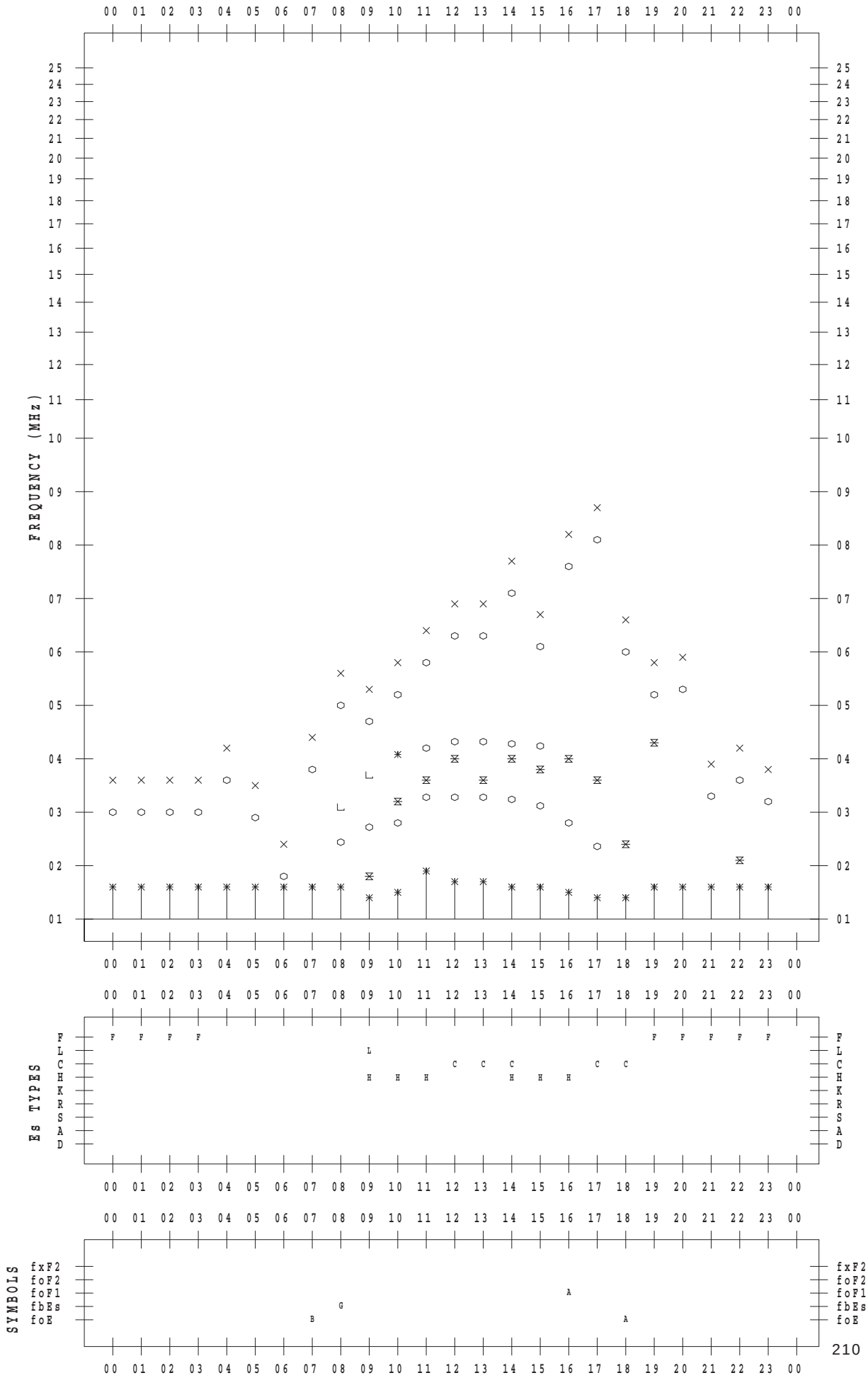
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/23

135 °E MEAN TIME



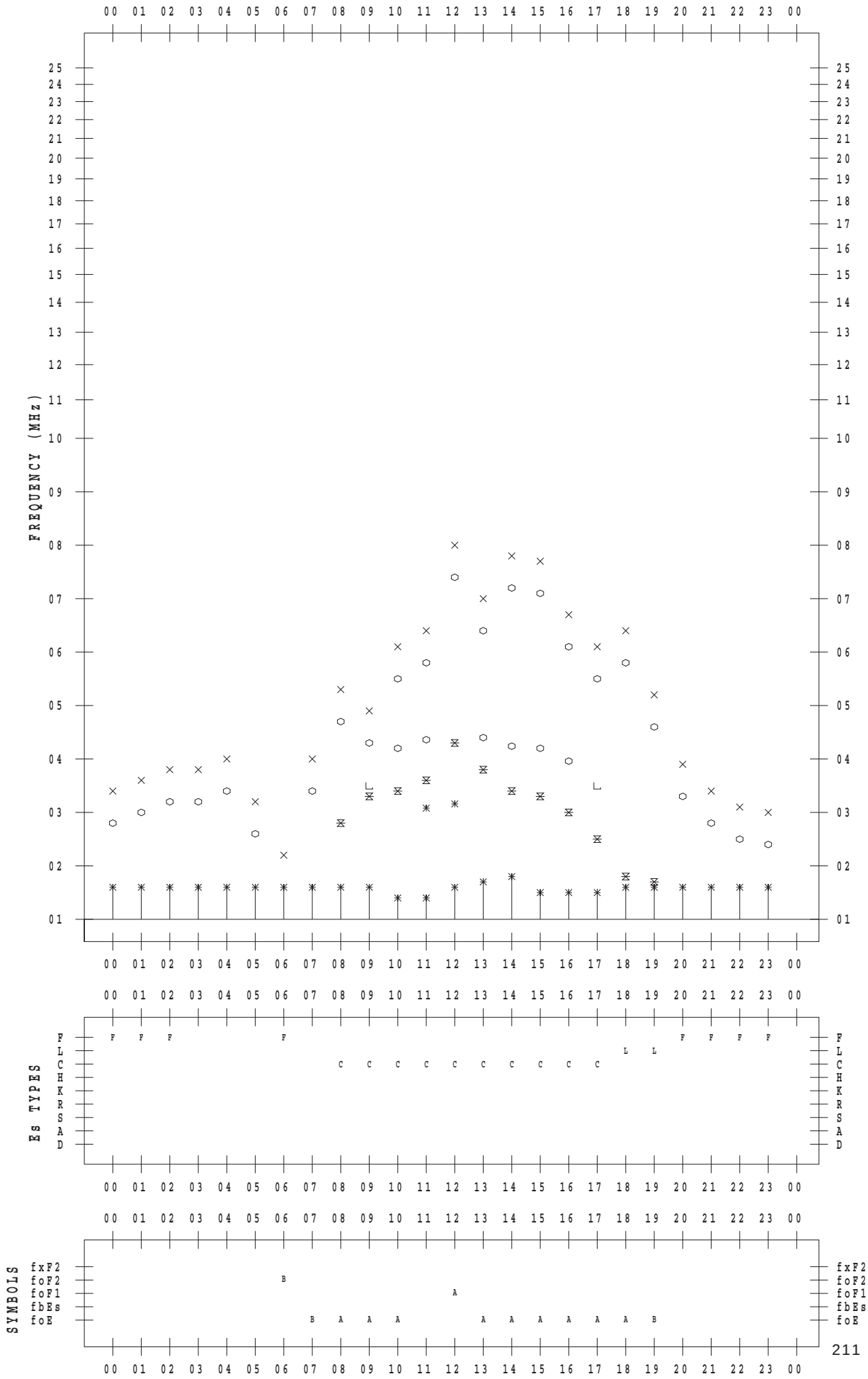
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/24

135 °E MEAN TIME



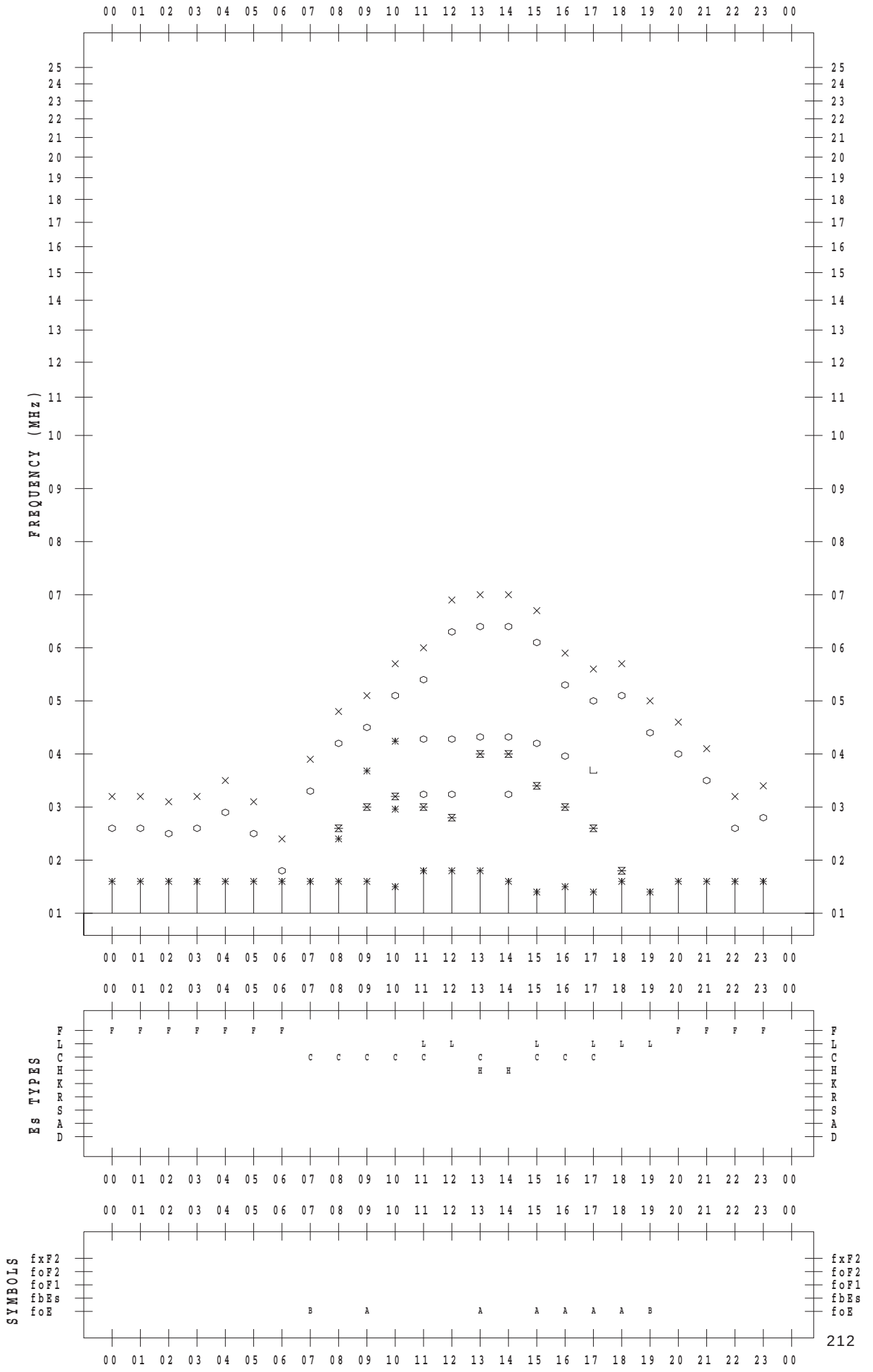
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/25

135 °E MEAN TIME



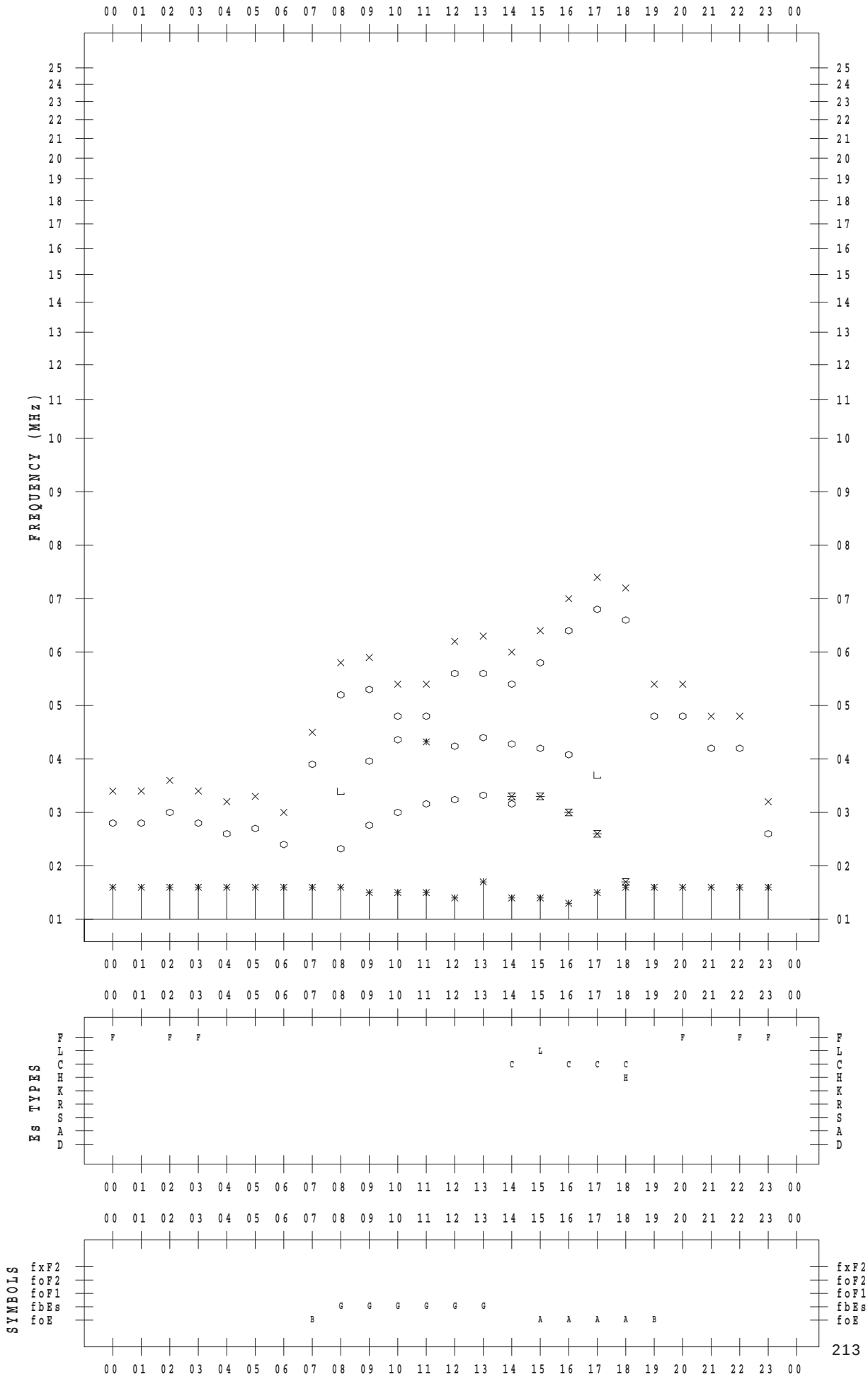
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/26

135 °E MEAN TIME



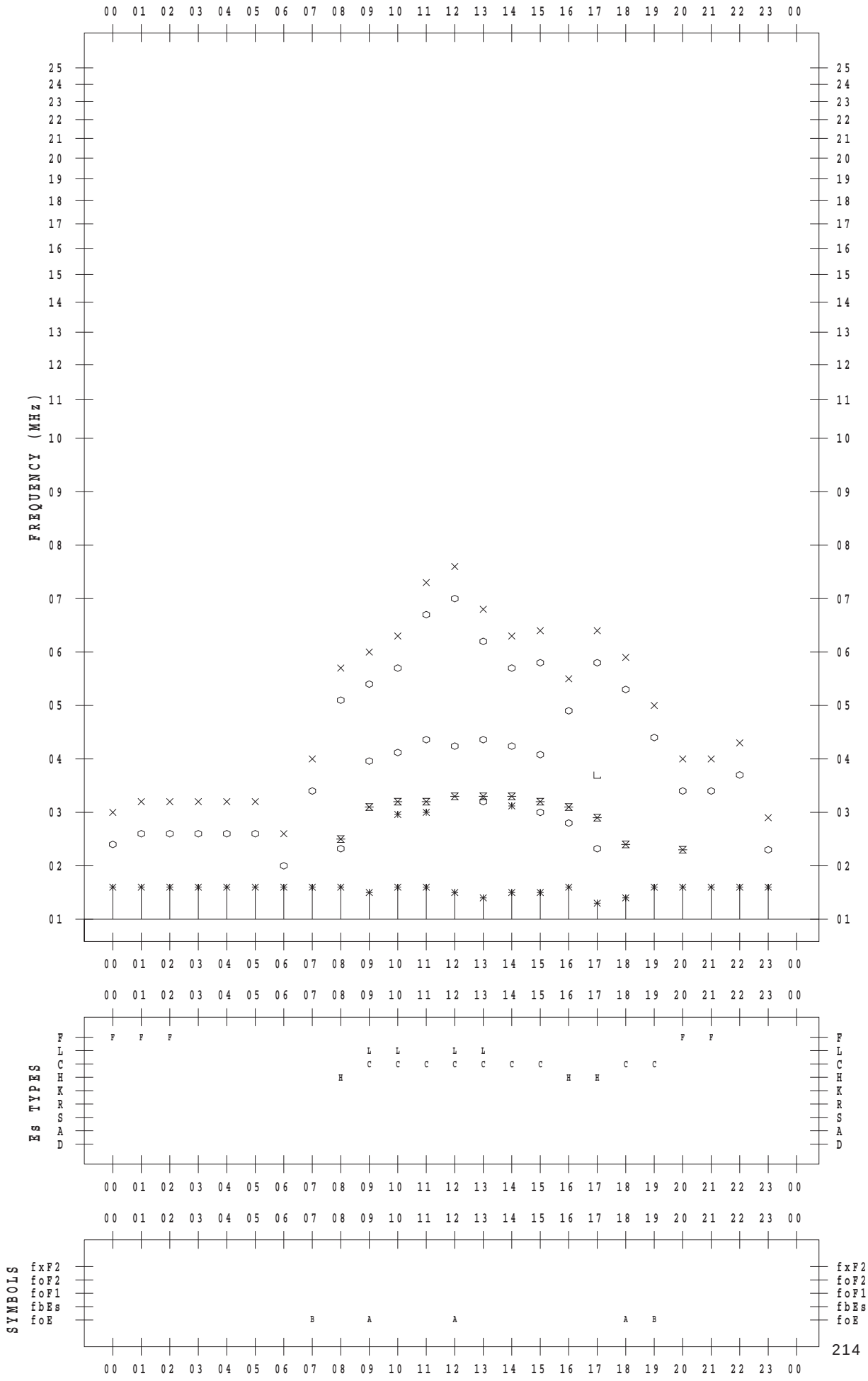
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/27

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 2/28

135 °E MEAN TIME