F-872

IONOSPHERIC DATA IN JAPAN

FOR August 2021
VOL. 73 NO. 8

CONTENTS

≪Real Time Ionograms on the Web ・・・・・・・・・・・・http://wdc.nict.go.jp/index_eng.html≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the National Institute of Information and Communications Technology , Japan.

Stations	Geographic(WGS84)		Geomagnetic (IGRF-10(2005))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
✳Wakkanai/Sarobetsu	45˚10'N	141˚45'E	36.4˚N	208.9˚	Vertical Sounding (I)
Kokubunji	35˚43'N	139˚29'E	26.8˚N	208.2˚	Vertical Sounding (I)
Yamagawa	31˚12'N	130˚37'E	21.7˚N	200.5˚	Vertical Sounding (I)
Okinawa	26˚41'N	128˚09'E	17.0˚N	198.6˚	Vertical Sounding (I)
Hiraiso	36˚22'N	140˚37'E	27.6˚N	209.1˚	Solar Radio Emission (S)

✳We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on a computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

A Impossible measurement because of the presence of a lower thin layer, for example *Es* (for *foF2*).

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of very small ionization density of the layer (for *fEs*).

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

c. Definitions of CNT, MED, UQ ,and LQ

Median count (**CNT**) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a descriptive letter G.

Median (**MED**) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

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

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily *f*-plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

d A weak diffuse trace at heights below 95 km as-sociated with high absorption and large *fmin*.

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

c. Definitions of the CNT, MED, UQ and LQ

Median count (**CND**) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (**MED**) is the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

HOURLY VALUES OF foF2 AT Wakkanai

AUG.2021

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	49	45	A	38	37	47	A	56	55	52	49	A	52	52	47	A	91	56	61	A	61	64	57	51
2	44	36	40	39	39	52	A	54	53	56	A	53	53	A	A	A	A	A	A	N61	66	51	A	42
3	41	37	A	A	A	53	47	73	51	60	51	46	45	50	58	56	A	53	59	A	67	61	56	55
4	45	45	39	41	43	43	50	A	52	52	A	A	A	A	A	A	A	A	A	A	60	A	58	52
5	43	A	A	41	38	42	A	A	A	57	48	54	50	52	49	47	50	46	A	58	66	62	55	48
6	43	38	39	39	38	45	45	A	58	48	54	A	A	52	47	44	A	53	A	65	68	61	52	41
7	A	37	39	37	A	41	A	47	47	51	N44	52	57	50	52	49	52	61	53	55	57	55	53	51
8	53	52	39	39	A	A	49	A	A	41	A	A	A	A	47	A	58	88	50	A	51	52	A	43
9	37	33	35	34	39	39	37	A	A	64	54	A	A	A	A	49	47	A	51	62	60	55	53	42
10	44	A	36	A	34	38	51	57	A	53	A	51	51	51	49	45	49	52	46	51	58	53	50	45
11	41	38	36	33	32	37	51	46	52	56	50	A	51	49	56	51	55	A	47	55	65	59	59	37
12	35	38	33	38	37	42	A	49	54	62	55	53	52	47	52	53	47	51	53	59	61	57	53	45
13	A	A	A	A	A	35	40	A	71	A	61	51	48	53	50	50	50	50	A	53	57	55	56	54
14	49	39	39	39	33	33	A	47	44	A	A	A	53	52	A	A	A	47	49	53	56	55	48	47
15	46	A	38	35	38	41	45	A	65	55	A	53	A	A	A	52	A	51	A	A	63	68	59	52
16	43	45	42	41	37	38	A	A	47	51	A	A	A	51	51	48	49	52	49	54	61	53	45	43
17	41	41	40	37	37	39	41	A	41	49	A	52	A	77	A	A	A	49	47	50	A	43	A	46
18	35	A	A	37	A	36	37	45	49	48	A	47	49	A	51	78	106	51	A	A	58	53	48	45
19	42	36	37	37	36	39	47	47	51	A	A	51	47	A	51	50	A	A	47	56	57	59	49	A
20	A	39	38	33	34	42	A	A	44	49	55	51	A	A	48	A	58	47	53	64	66	77	61	48
21	A	A	33	31	A	A	35	A	43	A	A	A	45	46	46	A	A	A	46	50	51	55	A	37
22	34	32	33	34	36	A	45	44	53	50	54	51	51	A	A	A	A	A	A	A	A	A	57	41
23	A	28	A	29	32	35	48	49	A	A	A	A	A	A	A	A	A	A	50	64	61	60	50	42
24	A	A	36	35	32	38	43	54	61	59	A	52	54	A	51	50	51	47	51	60	59	61	55	49
25	38	35	36	35	34	39	47	45	59	A	54	A	52	A	53	53	48	A	74	69	71	60	49	A
26	38	36	36	36	33	36	A	A	A	A	A	A	A	50	A	46	41	A	41	52	55	51	53	A
27	A	A	A	A	32	A	43	56	A	A	64	A	N50	A	57	51	A	A	44	64	A	56	51	39
28	39	39	34	31	33	40	53	A	53	46	A	A	53	A	49	51	51	50	46	53	55	A	53	42
29	33	31	27	24	N23	30	35	46	55	A	56	52	49	52	50	54	53	50	49	51	53	49	A	37
30	32	A	31	29	30	38	45	48	65	58	56	57	55	58	53	57	59	60	58	59	57	56	53	A
31	34	33	33	33	33	40	56	51	55	A	67	60	60	64	56	59	57	59	A	A	N58	A	39	39
	00	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	22	24	27	25	27	22	18	24	21	16	17	21	17	22	21	19	20	22	23	28	27	26	27
MED	41	38	36	36	34	39	45	48	53	52	54	52	51	52	51	51	51	51	50	56	60	56	53	45
U Q	44	39	39	39	37	42	49	54	56	57	56	53	53	52	53	53	58	54	53	62	64	61	56	49
L Q	36	35	33	33	32	37	41	46	48	49	50	51	49	50	49	48	49	49	47	53	57	53	50	41

HOURLY VALUES OF fEs AT Wakkanai

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	32	40	46	38	33	47	61	53	54	53		59	50		51	44	92	115	36	82	39	37	31	34
2	24	G	G	G	59	168	58	56	90	114	82	48	91	63	91	109	77	67	60	30	27	32	126	41
3	58	132	49	46	59	60	61	78	54	113	66	49	37	39	40	45	71	47	38	92	58	G	58	27
4	31	33	28	G	G	32	45	59	40	90	48	54	40	92	54	124	93	71	90	70	49	59	40	60
5	49	58	58	32	33	29	126	65	104	53		89	66	46	38	40	39	40	135	39	56	39	G	G
6	G	G	G	G	G	38	34	59	53	112	51	64	52		45	46	54		116	90	G	28	56	39
7	58	32	38	38	70	49	56	40	40	36	37	39	38	40	35	39	48	40	52	56	31	24	G	34
8	G	G	26	34	40	39	89	130	109	33	69	39	39	50	39	62		95	103	133	38	39	59	59
9	31	G	37	26	G	159	48	72	109	64	53	63	51	158	36	38	38	86	50	32	39	40	71	35
10	32	28	29	116	91	41	112	91	61	54	50	52	146	41	39	36	32	31	31	29	G	38	29	56
11	38	G	G	G	28	113	48	50	36	39	57	91	117	56	63	42	43	60	49	41	35	39	33	59
12	28	G	27	28	G	36	48	49	80	124	42	34	41	38	46	35	60	39	33	33	26	32	43	44
13	41	58	40	85	35	134	34	81	76	162	110	58	42		38	38	40	47	72	59	58	32	55	36
14	39	24	24	23		32	39	45	43	135	53	180	56	149	50	61	59	37	41	33	35	36	58	55
15	43	59	40	59	G	G	37	63	59	58	180	84	91	85	58	69	92	48	110	63	38	33	29	G
16	G	25	G	27	180	26	35	59		45	60	41	40	36	38	36	36	30	29	33	39	33	40	29
17	27	32	G	29	28	32	33	45	58	59	96	128	127	102	113	59	61	46	34	38	58	30	56	40
18	38	59	58	40	39	33	32	133	40	37	56	106	57	66	81			94	109	107	48	47	115	91
19	41	G	G	G	36	29	39	38	44	72	81	48	50	40	45	62	86	61	37	36	38	29	32	34
20	39	34	32	27	34	90	111	57	58	114	60	76	57	98	42	59	81	129	48	46	40	38	60	58
21	40	38	26	26	40	39	32	37		46	64	40	48	39	44	59	N	92		41	58	40	54	25
22	24	25	G	27	36	48	59	38	37	48	40	48	34	51	81	113	71	111	112	60	134	60	38	38
23	60	31	53	27	27	34	38	50	57	66	61	54	107	92	91	65	54	64	50	51	39	G	38	39
24	59	39	32	G	28	103	35	54	46	54	91	47	50	41	36	56	35	G	32	55	31	39	48	32
25	G	28	31	26	G	27	34	148	55	109	70	60	50	111	91	54	70	71	55	52	54	58	45	58
26	31	28	G	29	G	28	39	62	61	70	44	46	44	42	62	41	54	61	39	32	36	35	39	35
27	35	38	48	40	29	38	41	55	112	91	105	90	104	83	91	92	60	60	N	165	110	30	40	G
28	32	28	58	29	G	27	37	56	50	112	57	83	34	50	41	33	48	40	40	32	48	60	40	25
29	32	33	G	G	26	32	116	45	40	57	50	39	56	52	41	41	33	60	27	28	G	33	39	26
30	31	32	G	G	G	G	24	41	37	69	51	43	48	43	44	37	35	37	G	31	39	46	G	90
31	32	G	G		G	G	30	36	50	68	49	40	84	58	51	52	64	78	91	91	48	51	26	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	31	31	31	29	31	29	31	31	28	31	30	28	30	29	31	31	31	31	31
MED	32	31	28	27	28	36	39	56	54	66	57	54	50	52	45	49	56	60	49	46	39	37	40	36
U Q	41	38	40	38	39	49	59	65	68	112	75	83	84	88	63	62	71	78	90	70	54	40	56	56
L Q	28	G	G	G	G	29	34	45	41	53	50	43	41	41	39	39	39	40	35	33	35	32	32	29

HOURLY VALUES OF fmin AT Wakkanai

AUG.2021

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	17	15	15	15	16	15	14	15	15	15	16	14	16	18	15	14	11	10	13	15	15	15	16	16
2	16	16	16	16	16	14	15	15	15	17	16	17	16	17	12	17	16	15	14	16	15	16	15	16
3	17	16	15	17	17	15	14	14	14	18	16	17	16	14	21	15	18	16	14	10	15	15	15	16
4	16	16	16	16	16	16	15	13	16	17	17	17	17	15	17	15	15	14	15	15	16	15	15	15
5	17	17	15	15	16	15	14	13	12	14	19	20	21	17	16	15	16	13	19	15	15	16	16	16
6	16	16	14	16	14	14	14	15	15	15	16	17	17	18	15	15	14	13	7	16	14	16	16	17
7	16	15	15	16	15	14	14	14	15	15	15	15	15	17	17	15	15	15	14	15	16	16	15	16
8	15	14	16	16	15	14	15	5	14	15	15	16	15	17	15	15	13	16	14	24	15	15	16	17
9	16	17	15	16	16	16	14	15	10	15	15	15	15	11	16	15	14	14	15	16	16	16	16	16
10	16	16	16	15	16	15	14	15	16	15	15	15	17	16	17	15	15	16	16	15	16	15	15	15
11	15	15	15	15	16	16	14	14	15	15	16	17	17	16	16	16	15	13	15	15	17	15	16	16
12	16	16	16	16	15	14	14	15	14	19	15	17	18	16	16	15	15	13	14	16	16	16	15	16
13	17	15	15	17	17	14	14	13	15	17	15	15	15	20	15	15	14	15	13	16	16	16	16	15
14	16	16	17	16	16	16	15	15	16	18	16	122	16	17	15	17	15	15	14	16	17	14	15	15
15	16	17	15	14	15	16	16	14	14	15	11	18	18	17	15	17	15	15	13	16	15	16	15	16
16	16	16	14	16	16	16	16	13	16	17	16	17	15	15	16	15	15	15	14	15	15	16	15	16
17	16	16	16	16	15	16	15	15	15	15	15	10	6	14	16	15	14	15	14	15	15	16	16	16
18	15	16	17	15	15	16	14	15	15	15	14	13	15	16	14	13	13	16	15	15	15	15	15	11
19	15	16	16	15	15	15	15	14	14	15	17	19	17	17	15	16	16	14	15	15	15	16	17	15
20	16	15	16	16	16	11	17	14	14	13	15	16	16	15	16	14	14	17	14	15	15	15	16	16
21	16	15	15	16	15	15	15	17	15	15	20	17	17	19	15	14	15	14	13	17	15	16	15	16
22	16	15	15	16	16	15	14	15	17	16	17	16	17	17	15	14	14	15	16	16	15	15	15	15
23	16	16	14	15	16	16	14	14	14	16	15	17	18	17	17	15	15	13	14	16	15	16	15	16
24	15	15	15	16	15	16	16	14	15	16	13	17	17	17	17	15	17	16	15	16	17	15	15	16
25	16	15	15	15	16	14	16	14	14	16	15	15	15	19	15	16	14	14	15	15	15	15	16	16
26	16	16	17	16	15	15	15	14	14	16	15	15	16	15	17	16	13	14	15	15	15	15	15	16
27	16	17	16	15	16	14	14	15	15	15	13	16	12	20	14	17	14	14	15	54	19	16	15	16
28	16	16	16	16	15	14	16	15	15	16	15	16	15	19	16	21	18	15	15	16	16	17	16	17
29	16	17	15	15	15	16	16	14	15	15	20	20	19	16	15	15	15	14	15	15	14	16	16	16
30	17	16	17	16	15	18	16	15	15	15	16	17	17	16	16	15	16	15	15	16	15	15	17	15
31	15	15	14		14	15	16	15	15	15	15	17	24	17	15	15	14	13	14	17	16	16	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	15	16	16	15	15	14	15	15	15	17	16	17	16	15	15	15	14	16	15	16	15	16
U Q	16	16	16	16	16	16	16	15	15	16	16	17	17	17	16	16	15	15	15	16	16	16	16	16
L Q	16	15	15	15	15	14	14	14	14	15	15	15	15	16	15	15	14	14	14	15	15	15	15	15

HOURLY VALUES OF foF2 AT Kokubunji

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	33	34	33	36	A	65	50	A	A	A	A	61		N	64	66	66	74	A	A	A	35
2	36	32	35	36	A	34	106	A	65	53	48	51	62	60	62	64	67	N 61	59	76	A	A	A	A
3	A	33	A	A	A	A	35	54	55	74	64	65	48	57	67	75	59	63	A	72	77	58	55	53
4	49	49	41	37	37	35	47	A	59	53	A	A		A	A	A	A	A	49	57	59	55	53	53
5	37	35	35	A	35	43	51	61	83	66	84	79	130		49	96	52	80	A	52	57	57	57	A
6	A	A	33	34	35	35	37	61	52	A	47	50	48	A		49	A	57	67	71	60	53	42	A
7	A	A	A	A	A	41	49	53	A		49	A	61	45	54	66	72	67	72	51	28	A	49	47
8	45	43	39	33	37	35	A	A	A	A	A	A	A	A	49	57	53	45	A	50	52	49	43	42
9	A	31	A	30	A	A	A	55	61		A	89	A	A	A	N 49	A	60	65	64	56	47	40	34
10	35	34	32	32	31	33	37	A	49	53	48	54	52	A	55	55	59	55	A	59	59	61	59	47
11	41	A	36	35	32	32	38	55		53	A	A	48	58	59	67	65	37	51	60	57	50	53	37
12	A	A	A	A	34	39	46	34	109	169	128	A	87	A	48	58	66	64	67	67	A	59	53	37
13	42	A	34	A	A	33	40	N 61	57			79	A	103	A	47	60	42	35	A	A	55	A	61
14	45	A	32	30	A	A	A	63	69	36	73	106	A	142	77	A	A	A	62	66	61	52	44	41
15	41	41	39	35	33	34	A	51	60	61	54	A	A	A	63	64	A	47	A	A	59	A	59	53
16	40	42	39	40	34	35	39	57	61	54	49	A	56	63	A	67	66	65	56	A	53	39	39	A
17	37	A	37	35	35	35	41	43	51	A	A	A	65	A	A	65	60	51	52	50	A	50	44	45
18	37	A	38	A	A	31	41	49	61	51	58	A	A		52	A	106	62	58	59	57	57	58	50
19	40	40	37	35	34	35	36	45	57	52	65	A	A	A	54	63	61	A	55	63	47		49	42
20	42	41	37	37	36	34	49	A	60	A	49	55	142	A	77	111	110	A	A	A	63	58	55	57
21	48	41	35	A	A	31	A	46	37	48	52	A	A	A	A		46	A		61	A	40		A
22	A	A	A	A	A	32	A	A	67	185	60	A						48	49	61	65	66	35	A
23	A	A	30	31	25	26	A	53	58	A	58	A		A	55	65	59	56	63	A	72	55	44	42
24	42	37	33	A	29	32	41	63	59	48	N 53	56		47	121	59	52	56	56	65	A	A	A	A
25	A	36	32	29	29	33	41	59	75	77	49	A	56	51	57	55	65	73	91	98	67	A	A	A
26	A	32	31	31	30	32	48	A	47	A	A	A	56	59	A	45	48	54	34	58	61	55	52	43
27	41	A	37	A	31	33	40	47	64	65	A	98	54	67	A	A	61	56	56	57	65	50	51	54
28	45	41	39	38	38	34	50	A	A	55	56	A	A	A	59	58	54	61	56	60	56	49	A	51
29	47	A	A	40	37	41	41	59	53	A	A	62	67	55	59	61	61	58	52	59	56	A	43	41
30	A	39	36	35	33	33	47	55	58	58	63	54	62	58	61	63	67	69	67	63	57	55	35	A
31	37	A	A	A	A	A	A	53	68		63	A	67	65	66	77	71	67	64	63	57	A	46	43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	17	24	20	21	27	22	23	27	19	21	13	17	15	20	24	25	26	24	26	24	22	24	22
MED	41	39	36	35	34	34	41	55	59	54	56	62	61	59	59	63	61	59	57	61	58	55	49	44
U Q	45	41	37	36	35	35	48	61	65	66	63	84	67	65	64	66	66	65	65	66	62	57	54	53
L Q	37	33	33	31	31	32	39	49	53	52	49	54	53	55	54	56	56	54	52	58	56	50	43	41

HOURLY VALUES OF fEs AT Kokubunji

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	59	45	32	47	29	G	58	50	52	161	154	124	60	61		108	53	47	52	46	92	75	57	56
2	34	31	37	82	55	34	79	144	67		37		34	42	40	37	34	33	40	132	91	60	55	60
3	85	39	72	108	103	34	40	84	55	60	64	47	67	56	47	72	96	104	90	106	71	34	49	33
4	24	G	27	29	30	27	45	63	147	111	82	41		34	47	95	173	60	45	34	26	G	41	59
5	G	G	G	80	G	G	33	40	45		81	85	145		66	70	56		118	92	57	49	38	72
6	41	39	33	34	146	G	29	91	47	57	52	50	36	50		47	62	37	41	59	11	57	72	55
7	60	43	57	39	72	48	41	57	61		70	52	39		50	117	149		58	41	56	59	31	G
8	G	27	G	24	G	29	41	66	60	90	82	37	53	40	61	31	53	48	153	G	34	G	54	39
9	70	27	51	24	35	39	37	43	42		123	51	55	50	55	62	64	45	40	55	53	33	27	37
10	39	33	26	G	31	24	40	61	55	48	41	42	41	55	47	40	37	51	61	47	27	G	G	40
11	35	135		34	G	33	80	37		48	65	53	60	43	57	47	82	117	49	46	60	35	45	70
12	61	53	50	36	28	G	39	84	136	132	129	165	76	75	50	43	95	104	76	80	60	39	47	52
13	59	57	34	79	50	G	58	90	78			109	166	76	95	145	57	145	83	136	144	69	162	60
14	92	49	72	92	43	108	134	49		65	110	93	90	96	105	118	131	79	50	47	34	G	G	30
15	28	23	28	33	31	28	65	38	57	56	42	45	40	61	52	60	66	109	91	80	41	90	60	47
16	35	36	37	36	25	29	39	55	65	60	116	52	52	50	92	39	36	38	115	88	52	24	34	49
17	36	45	34	31	34	G	32	42	51	60	49	81	63	74	82	59	34	49	47	70	60	33	53	45
18	59	56	60	48	59	31	31	39		45	53	44	51	G	52	70	116	51	109	50	40	48	40	43
19	40	24	G	22	G	52	50	156	55	104	57	42	43	51	48	47	40	79	34	47	40		29	G
20	23	35	38	G	26	26	35	92	54	96	48	50	139	106		79	108	112	133	178	152	38	91	47
21	43	33	81	38	40	25	80	46	32	40	40	41	39	41	38		42	82		92	90	46		57
22	67	50	69	78	48	23	44	71		142	132	58						41	41	32	31	33	34	60
23	57	37	23	G	25	30	62	45	50	62	82	64	G	33	37	33	34	50	48	82	41	39	40	33
24	G	25	38	40	36	G		38	57	40	52	41		62	117	51	37	48	40	47	73	103	113	70
25	83	G	G	27	G	G	31	41	50	62	52	94	65	45	40	40	39	37	41	78	59	37	106	73
26	45	34	G	29	29	27	132	42	50	60	93	54	40	40	41	38	50	43	81	G	41	G	28	32
27	39	55	56	43	85	G	45	37	55	54	66	89	50	62	62	71	40	40	40	31	40	33	41	27
28	39	24	G	G	G	G	G	58	127	52	55	90	64	64	40	G	35	41	50	50	41	G	69	61
29	40	49	40		28	G	32	42	44	79	52	53	81	49	41	43	33	41	35	55	38	80	35	45
30	56	36	43	31	29	G	33	37	36	41	38	40	40	G	33	33	40	34	34	23	G	G	56	49
31	43	58	55	39	37	37	47		37		33	90	71	60	38	39	32	32	G	39	30	79	40	57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	31	30	30	27	25	30	30	28	28	27	29	30	29	30	31	31	30	30	31
MED	41	36	37	35	31	26	41	50	55	60	60	52	54	50	50	47	52	48	50	50	41	38	43	49
U Q	59	49	55	47	48	33	58	71	61	93	82	89	69	62	62	71	82	80	83	82	60	59	57	60
L Q	35	27	26	27	25	G	33	41	47	50	49	44	40	41	40	39	37	40	40	41	34	24	34	37

HOURLY VALUES OF fmin AT Kokubunji

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	15	15	14	16	15	15	14	13	76	80	17	17	15	14	15	14	13	14	15	15	15	15	15
2	16	16	15	15	15	15	14	17	18	15	17	13	15	16	33	16	17	13	14	15	15	16	15	15
3	15	15	16	13	20	15	15	13	14	14	19	17	16	16	17	13	15	11	14	16	14	15	15	14
4	16	13	16	16	9	15	15	14	13	16	16	16	16	16	16	14	9	15	15	16	16	16	15	15
5	13	14	14	14	16	15	14	14	15	15	15	17	20	16	17	14	13	12	12	15	16	15	15	16
6	16	15	15	16	16	15	17	14	16	17	16	15	16	16	16	16	15	14	14	15	13	16	17	15
7	15	15	15	15	15	15	14	13	13	15	17	14	16	15	15	16	15	12	15	15	16	14	16	15
8	16	16	18	16	15	15	14	14	13	16	17	20	21	17	13	17	15	14	5	15	14	18	14	15
9	16	16	15	15	15	15	14	13	15	12	20	17	16	14	15	13	14	14	13	15	15	16	16	15
10	15	16	15	14	16	15	14	13	15	15	15	17	15	14	15	14	16	14	14	15	15	17	15	15
11	15	15	15	15	15	16	15	14		17	15	17	14	16	15	20	15	12	14	15	16	15	15	17
12	16	15	16	15	16	16	15	13	11	10	7	12	16	14	17	14	13	14	15	15	16	16	15	14
13	15	15	16	16	15	14	14	14	14		10	14	18	11	17	15	15	17	14	14	13	14	13	15
14	12	16	17	15	17	10	17	13	13	13	17	17	17	16	16	6	17	16	15	15	16	16	15	16
15	15	16	16	16	15	15	16	15	14	17	17	19	17	18	15	16	13	15	13	16	16	13	15	16
16	15	15	15	15	15	16	15	14	13	16	19	13	19	18	18	13	16	13	14	15	15	16	15	15
17	16	16	15	16	16	14	16	15	14	14	15	15	14	15	15	13	14	14	15	15	15	15	15	14
18	15	14	14	15	15	16	14	14	15	15	14	15	15	17	18	13	13	15	15	15	15	16	15	15
19	15	16	15	15	15	15	15	15	14	15	14	14	15	17	15	14	14	15	16	15	15		15	13
20	16	16	15	17	16	16	14	14	15	14	17	19	14	13	15	15	13	16	5	58	15	15	7	15
21	15	15	14	15	14	15	15	14	15	15	15	15	20	17	15		14	14		9	15	15		15
22	15	15	16	16	15	16	15	15	9	5	26	16						13	15	15	17	15	15	15
23	15	15	15	15	16	16	14	14	14	17	15	17	17	17	17	17	15	15	14	15	15	15	16	16
24	15	15	14	15	15	14	16	14	14	17	16	19		19	10	15	14	14	15	17	15	15	5	15
25	15	15	14	15	15	14	15	14	14	18	16	9	17	15	17	15	13	14	15	16	16	16	13	15
26	15	15	14	16	15	15	21	14	13	17	14	15	15	14	14	14	15	14	15	17	15	15	15	15
27	16	16	15	15	12	14	15	15	14	15	14	19	19	18	16	17	14	13	15	15	15	15	15	15
28	15	16	14	15	14	13	21	14	14	15	14	15	19	19	15	44	13	14	14	15	15	15	15	15
29	15	16	16	16	16	16	15	14	14	17	19	21	23	19	16	15	15	15	15	15	15	16	16	16
30	15	15	15	16	16	15	17	14	13	17	14	26	47	14	15	14	15	16	16	15	14	16	16	18
31	17	15	15	15	15	15	15	14	15		25	14	15	17	15	14	15	15	15	15	17	15	16	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	29	31	31	29	30	30	29	30	31	30	31	31	30	30	31
MED	15	15	15	15	15	15	15	14	14	15	16	16	16	16	15	15	14	14	14	15	15	15	15	15
U Q	16	16	16	16	16	16	16	14	15	17	17	17	19	17	17	16	15	15	15	15	16	16	15	16
L Q	15	15	15	15	15	15	14	14	13	14	14	14	15	15	15	14	13	13	14	15	15	15	15	15

HOURLY VALUES OF foF2 AT Yamagawa

AUG. 2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	44	41	41	36	48	57	A	55	52	A	A	A	57	68	70	73	71	63	A	52	A	A
2	A	41	35	27	33	A	A	A	A	A	A	A	57	59	A	A	67	88	99	83	A	A	41	39
3	40	38	35	33	A	A	34	49	64	58	57	A	A	77	77	83	81	46	A	61	A	66	A	59
4	60	55	45	43	39	37	39	57	70	56	49	A	A	A	A	A	62	A	50	A	65	57	51	48
5	43	42	38	32	33	37	35	56	77	54	A	A	A	A	A	56	54	55	A	47	A	56	47	62
6	34	B 25	B 24	N 24	25	A	A	67	48	A	52	51	A	A	A	A	A	A	74	80	A	A	A	A
7	A	A	36	35	35	33	39	48	A	A	A	A	A	58	69	71	A	79	61	A	A	43	A	A
8	A	A	34	34	A	31	A	49	A	A	A	A	A	A	58	63	54	A	A	A	A	A	52	A
9	A	38	A	A	32	A	A	51	60	A	73	A	A	A	53	A	A	68	A	51	59	48	A	A
10	33	A	33	A	33	32	A	50	51	53	61	A	A	A	A	A	51	52	59	61	57	55	44	41
11	A	37	37	33	33	34	35	51	63	51	47	55	54	62	65	74	73	61	62	58	A	A	40	A
12	A	A	39	37	33	32	36	47	51	67	55	50	A	A	A	A	78	87	75	65	54	53	A	A
13	A	A	A	37	36	A	37	58	65	48	A	A	57	A	A	48	69	A	A	55	A	A	46	A
14	37	A	33	32	A	31	A	57	49	A	A	A	48	49	56	A	A	82	71	63	59	54	53	A
15	47	A	37	35	33	35	41	45	48	54	A	47	A	55	65	61	66	62	56	57	61	58	A	A
16	A	39	36	37	34	33	37	56	62	51	A	47	A	74	79	79	77	74	60	51	55	52	41	50
17	48	43	A	A	37	33	39	44	54	50	49	49	A	A	A	67	55	59	A	51	62	60	A	39
18	A	A	A	A	A	A	37	49	A	50	48	A	A	A	A	59	65	65	A	54	A	58	53	43
19	52	43	40	39	37	A	A	46	57	56	49	A	47	53	A	55	46	A	59	77	68	A	40	39
20	38	36	36	35	32	33	35	51	67	56	53	48	62	63	55	60	60	57	53	56	61	52	49	A
21	41	40	41	A	A	A	37	44	A	59	59	62	A	A	47	51	53	59	67	56	54	A	A	A
22	A	A	A	A	B 31	B 23	32	49	62	52	52	49	52	53	51	51	A	53	59	73	81	73	39	35
23	A	B 34	33	33	B 32	B 28	31	56	60	A	A	A	A	A	55	67	66	63	66	71	72	57	A	41
24	38	40	39	39	38	36	41	53	55	51	54	53	53	47	53	57	54	59	61	61	59	58	51	40
25	A	A	41	A	A	A	A	59	75	63	59	55	54	A	57	63	71	75	91	109	53	36	B 37	39
26	37	38	35	36	34	B 23	37	A	47	57	59	A	74	A	A	A	A	63	64	62	59	61	56	53
27	43	40	40	40	38	B 23	35	51	59	55	53	48	60	A	63	65	60	59	60	66	58	57	51	A
28	43	45	45	43	39	35	49	43	A	66	59	A	73	84	A	A	67	71	77	69	60	46	45	49
29	A	A	41	37	32	33	38	57	A	A	55	48	65	73	65	68	69	60	59	67	60	47	42	38
30	40	36	A	39	35	A	39	53	A	61	55	A	59	67	61	66	74	73	61	61	58	51	43	42
31	41	41	36	38	A	A	A	58	61	63	64	55	64	68	76	82	74	71	80	67	51	A	A	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	19	25	24	24	20	22	29	22	23	22	14	15	15	19	22	25	26	24	28	21	23	20	18
MED	41	40	37	36	34	33	37	51	60	55	54	50	57	62	58	64	66	63	62	62	59	55	46	41
U Q	45	42	40	39	37	35	39	57	64	59	59	55	64	73	65	68	72	73	72	68	61	58	51	49
L Q	37	37	35	33	32	31	35	48	51	51	52	48	53	53	55	57	54	59	59	56	56	51	41	39

HOURLY VALUES OF fEs AT Yamagawa

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	112	44	39	G	G	G	30	60	67	70	54	56	62	56	48	52	46	48	40	47	73	89	73	45
2	41	G	41	G	23	50	73	156	126	153	133	96	45	49	57	70	128	48	113	60	65	54	40	34
3	36	G	G	G	55	44	G	35	42	45	45	53	60	49	60	79	52	36	83	69	58	50	73	38
4	32	G	G	G	23	33	33	79	46	43	47	51	80	118	124	116	46	82	46	107	52	G	47	G
5	G	34	G	G	G	G	32	36	129	45	89	56	48	129	66	42	48	43	54	31	50	40	35	38
6	G	B	B	G	G	40	60	47	59	134	46	44	49	47	60	74	83	73	48	32	72	71	60	72
7	41	49	G	30	43	G	G	54	70	74	70	68	57	57	65	116	90	70	76	135	73	36	83	60
8	69	58	34	G	78	41	48	67	70	104	107	71	56	48	45	48	50	88	133	106	84	60	39	53
9	45	32	58	54	G	55	38	39	60	144	84	101	87	74	74	64	79	57	59	39	35	G	41	70
10	38	46	34	34	G	G	60	45	58	57	47	66	73	62	62	60	44	32	G	G	G	33	33	G
11	41	G	G	G	G	G	G	34	44	38	47	50	49	54	52	60	48	40	63	57	81	70	40	110
12	111	58	G	G	G	104	G	40	38	50	50	43	62	62	90	79	50	71	44	40	41	60	56	55
13	43	40	56	G	G	64	44	60	54	118	59	55	56	127	133	86	90	116	91	60	91	56	41	54
14	36	46	G	29	40	41	38	43	84	60	79	78	82	107	74	162	144	90	69	60	39	37	35	56
15	G	43	35	G	G	71	G	40	43	49	53	83	54	43	40	44	37	36	31	G	G	G	70	92
16	59	37	G	G	G	G	G	61	45	41	94	84	74	57	50	56	146	42	32	32	G	G	G	G
17	G	G	110	41	G	G	G	35	40	44	38	90	126	110	58	39	41	41	54	60	38	G	41	41
18	92	54	58	58	60	41	G	34	57	53	76	110	96	54	58	60	41	54	113	46	49	41	41	34
19	40	G	32	G	G	40	73	36	56	50	50	51	44	50	71	96	104	116	54	116	58	70	38	G
20	33	32	G	36	G	G	G	39	40	40	48	50	49	43	49	38	42	41	36	G	G	G	56	57
21	47	32	38	55	54	58	33	84	70	46	50	53	71	45	50	51	44	41	44	40	41	60	40	43
22	58	59	70	49	B	B	G	59	48	38	49	49	43	50	46	48	60	43	40	50	43	41	35	G
23	28	B	G	G	B	B	G	55	49	90	84	147	116	47	42	53	41	48	40	32	G	G	70	36
24	G	G	G	G	40	G	41	38	36	45	40	43	42	50	40	48	39	35	31	34	28	33	33	57
25	49	72	34	52	56	60	45	33	40	44	50	50	57	75	46	46	47	53	67	42	38	37	B	G
26	G	G	G	G	G	B	G	59	90	81	92	84	78	127	141	107	60	54	36	36	38	G	G	39
27	34	38	G	31	G	B	G	43	41	41	33	50	55	58	50	42	40	35	G	34	G	G	G	53
28	55	47	43	G	G	G	G	G	70	63	54	145	96	66	85	72	90	60	38	50	43	42	42	35
29	72	72	33	G	G	G	G	42	70	72	44	44	51	46	41	38	38	36	33	G	G	G	G	31
30	G	G	47	33	28	43	G	49	60	44	47	76	47	45	48	44	41	43	32	24	G	G	33	G
31	G	G	G	36	40	44	40	36	47	45	71	46	54	66	56	53	54	47	44	54	41	42	70	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	30	31	29	27	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31
MED	40	37	32	G	G	40	G	43	56	50	50	56	57	56	57	56	48	48	44	42	41	37	40	40
U Q	55	48	41	36	40	50	41	59	70	74	79	84	78	74	71	79	83	70	67	60	58	56	56	56
L Q	G	G	G	G	G	G	G	36	43	44	47	50	49	48	48	46	41	41	36	32	G	G	35	31

HOURLY VALUES OF fmin AT Yamagawa

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	17	15	15	17	15	14	15	14	17	18	20	19	21	21	23	21	22	17	14	15	14	16	16	16
2	16	16	15	15	16	14	15	49	8	13	21	22	22	21	23	18	15	15	14	16	16	16	16	15
3	15	16	24	15	15	16	15	16	16	20	21	21	22	23	23	18	20	26	15	15	16	15	15	15
4	15	14	15	15	15	16	15	15	15	19	19	21	21	15	23	17	21	19	14	15	15	17	15	15
5	14	15	15	15	14	15	15	15	15	15	21	23	22	21	20	20	17	15	14	16	15	15	16	15
6	18	B 15	B 17	15	15	16	15	15	19	13	20	22	23	23	27	19	19	17	14	16	16	15	16	16
7	16	15	15	16	17	16	16	13	15	16	22	20	18	21	19	21	21	16	16	17	15	15	16	16
8	15	16	15	15	15	16	14	15	15	20	19	22	18	21	22	21	20	19	12	15	15	14	15	16
9	15	15	15	15	15	15	15	14	16	15	21	21	21	20	21	20	18	13	13	15	15	16	16	16
10	15	15	15	15	15	15	15	15	15	18	21	22	22	23	19	17	16	14	16	15	15	15	15	15
11	16	15	15	15	15	15	17	16	15	15	19	21	22	21	21	19	19	17	13	15	14	15	15	16
12	15	15	16	15	16	14	15	15	16	21	23	21	22	23	20	21	17	13	16	15	16	15	15	16
13	15	16	16	16	14	15	15	13	15	20	18	20	21	14	6	21	22	17	9	15	8	16	15	15
14	15	15	15	16	15	17	14	14	17	19	17	20	20	19	19	30	30	17	14	15	15	15	15	15
15	16	15	16	15	18	24	16	15	15	19	18	22	22	22	21	17	16	15	16	15	15	20	15	14
16	15	15	15	15	15	15	15	14	13	18	21	21	21	22	23	20	12	15	16	14	27	16	15	15
17	15	15	15	15	15	24	15	15	15	16	21	19	22	21	21	21	15	13	16	16	15	15	16	15
18	15	14	15	17	16	14	15	16	14	13	21	16	22	21	20	19	21	13	9	15	15	15	15	16
19	15	15	16	15	15	15	17	16	15	16	19	19	18	23	21	15	15	16	14	15	13	17	15	15
20	15	16	16	15	16	15	16	14	14	18	19	22	24	22	21	17	17	15	14	14	17	15	15	17
21	15	16	16	15	15	15	17	17	13	19	19	23	21	21	19	18	15	16	15	15	15	16	15	15
22	15	15	15	15	B 15	B 15	14	16	16	18	22	23	23	23	23	23	18	16	15	15	15	15	15	15
23	16	B	14	15	B 15	B	22	13	16	20	22	17	19	20	21	19	17	13	13	16	16	16	15	15
24	16	15	15	23	16	15	15	15	15	17	18	20	23	22	17	17	15	17	15	15	15	16	15	15
25	15	15	15	15	14	15	15	14	15	15	23	23	23	23	20	23	19	15	19	15	15	15	B 15	15
26	14	14	16	17	15	B	15	14	15	19	23	21	20	21	21	22	15	15	14	15	15	15	15	15
27	15	15	16	15	16	B 15	14	15	15	16	22	24	19	22	23	21	15	16	15	15	16	15	15	15
28	16	15	15	15	15	14	16	16	17	21	20	22	23	21	22	25	21	15	14	15	15	15	15	16
29	16	16	15	16	16	18	22	14	16	18	23	22	22	23	22	19	17	17	13	16	16	15	15	17
30	14	15	15	16	17	16	23	16	15	19	20	23	21	17	17	16	14	14	17	16	15	15	16	14
31	14	15	16	16	16	16	15	17	16	19	21	22	23	23	21	20	17	17	13	15	16	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	15	18	21	21	22	21	21	20	17	16	14	15	15	15	15	15
U Q	16	15	16	16	16	16	16	16	16	19	22	22	22	23	23	21	20	17	16	16	16	16	16	16
L Q	15	15	15	15	15	15	15	14	15	16	19	20	21	21	20	18	15	15	13	15	15	15	15	15

HOURLY VALUES OF foF2 AT Okinawa

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	57	62	53	49	55	A	51	56	60	53	A	A	A	62	72	80	84	81	73	87	63	56	A	A
2	35	37	A	N 24	A	A	A	68	A	A	A	52	A	A	70	A	87	A	103	62	51	49	43	A
3	A	37	36	33	31	30	37	63	54	61	55	A	69	78	83	91	79	81	67	60	61	57	57	A
4	66	48	44	43	40	A	43	47	60	48	A	A	A	64	A	A	70	63	67	73	75	69	57	49
5	49	49	45	A	A	N 26	32	60	67	51	A	A	53	57	64	63	63	53	50	49	55	57	55	44
6	37	33	34	A	A	N 23	38	N 70	49	A	A	A	A	58	57	55	61	72	85	95	64	50	43	A
7	A	A	A	34	A	N 25	34	53	78	58	50	A	A	A	78	87	96	75	A	A	44	40	A	A
8	A	A	A	25	30	31	34	50	A	A	A	51	A	77	79	77	68	58	67	61	60	61	49	45
9	A	A	A	A	A	A	A	A	A	A	A	56	N 47	A	A	82	94	82	58	56	67	49	A	33
10	A	35	A	31	26	A	37	A	A	62	54	54	A	A	61	65	58	64	74	62	56	53	42	A
11	A	39	A	39	32	31	30	59	63	52	54	61	63	77	83	95	95	99	87	85	63	50	37	A
12	A	A	36	35	28	A	33	43	55	78	A	A	61	55	A	63	87	92	89	65	71	43	A	A
13	A	32	33	A	30	24	32	61	53	A	A	A	A	A	66	69	A	86	90	85	50	A	A	A
14	A	A	A	36	A	26	31	45	58	A	53	A	A	54	71	A	A	94	A	A	A	A	A	A
15	A	39	A	33	31	33	40	47	55	56	51	A	55	67	71	70	87	85	75	77	71	64	39	A
16	37	39	35	A	33	31	33	54	56	A	47	A	A	79	89	105	102	81	74	71	57	58	55	42
17	39	39	A	41	A	33	34	59	57	A	52	54	53	69	75	72	70	A	61	59	76	A	44	40
18	37	37	A	A	A	A	A	A	A	50	54	62	A	A	A	A	A	64	A	A	A	A	A	A
19	44	50	A	39	33	B 23	A	55	A	80	A	A	55	57	A	A	65	66	78	84	77	A	A	A
20	34	34	A	A	A	27	30	54	61	67	A	47	62	68	61	63	71	A	57	59	63	58	53	41
21	42	37	A	45	36	N 24	A	A	61	79	A	65	61	55	58	57	73	74	66	62	63	A	31	A
22	A	A	A	A	A	A	A	56	65	62	A	55	55	52	48	54	57	A	A	87	93	66	A	A
23	A	A	A	33	31	A	32	62	60	A	55	A	A	A	A	71	77	84	92	91	75	61	47	42
24	39	41	41	38	36	33	A	59	52	61	48	53	63	60	56	55	67	71	69	78	78	60	43	39
25	A	A	A	28	33	A	33	55	74	63	60	55	55	54	67	75	85	92	122	111	45	40	37	39
26	48	53	50	51	36	27	32	53	63	71	A	A	A	52	A	A	A	A	A	A	72	A	A	A
27	44	39	37	44	34		33	55	69	67	51	55	64	72	83	79	74	71	77	A	62	61	52	46
28	45	45	A	41	38	37	44	63	55	59	73	75	79	104	91	77	82	99	91	77	61	52	46	42
29	43	41	A	40	A	31	N 33	47	54	49	68	67	81	109	121	120	110	101	98	103	75	43	37	39
30	41	40	39	39	31	A	A	56	57	64	65	59	61	75	79	77	73	73	74	74	58	52	32	33
31	33	32	33	33	B 24	B	32	54	65	67	61	62	63	80	89	84	84	105	95	65	59	48	43	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	23	13	23	20	18	23	27	25	22	17	17	18	24	24	25	27	26	26	26	29	24	21	14
MED	42	39	37	38	32	28	33	55	60	62	54	55	61	66	72	75	77	81	74	74	63	54	43	42
U Q	45	45	44	41	36	31	37	60	64	67	60	62	63	77	83	83	87	92	90	85	73	60	52	44
L Q	37	37	34	33	30	25	32	53	55	53	51	53	55	56	62	63	68	71	67	62	57	49	38	39

HOURLY VALUES OF fEs AT Okinawa

AUG.2021

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	57	59	55	G	25	178	53	53	58	54	88	62	50	110	47	38	44	44	40	41	30	45	67	46
2	33	33	40	G	49	32	34	178	137	148	107	70	119	67	48	82	88	109	116	32	G	37	25	57
3	59	34	38	G	G	G	G	39	91	44	56	96	54	52	52	39	44	43	29	29	32	60	59	94
4	25	49	39	29	57	83	80	149		136	62	73	65	56	116	82	74	109	42	58	38	32	30	G
5	G	G	G	37	29	G	G	34	49	44	56	58	75	57	52	47	60	50	44	60	27	26	27	29
6	69	G	29	27	30	G	30	48	57	54	69	68	44	50	51	51	76	88	106	28	48	G	29	49
7	55	48	38	34	48	G	29	38	44	116	114	130	110	97	104	98	66	93	116	77	35	54	43	116
8	60	46	38	G	G	45	29	46	145	132	142	86	96	70	60	44	48	43	63	53	27	25	35	33
9	59	57	66	58	40	60	74	84	78	67	72	52	83	158	149	68	78	67	89	58	41	34	26	27
10	47	23	46	30	33	38	32	60	146	110	57	151	92	70	52	62	49	41	30	27	26	45	38	60
11	38	G	57	33	G	G	G	32	107	104	46	49	50	49	48	45	44	41	36	G	G	G	58	50
12	43	54	60	25	29	27	48	45	57	62	77	55	48	46	52	60	59	41	66	32	46	33	49	30
13	39	26	110	30	G	G	26	35	49	71	110	59	73	68	78	88	97	60	64	25	34	60	54	39
14	69	33	88	G	69	G	136	178	48	62	58	112	110	36	111	79	110	128	110	162	104	89	60	141
15	60	55	37	G	G	G	G	40	54	52	48	45	96	58	50	49	46	46	56	G	G	11	G	116
16	60	34	33	49	G	G	G	40	46	93	77	150	96	72	62	70	54	69	61	60	28	24	G	G
17	26	26	59	35	45	32	23	33	48	59	106	45	47	48	48	52	48	147	107	93	67	48	38	G
18	26	28	45	46	56	43	55	70	67	48	78	50	51	49	82	60	83	56	84	57	144	130	112	93
19	45	92	73	37	G	B	32	40	144	106	52	54	115	53	65	96	103	87	116	111	116	46	40	46
20	32	28	45	59	38	27	29	44	35	60	87	67	50	40	40	39	37	70	30	G	G	G	24	35
21	33	33	47	56	28	34	34	62	54	57	90	64	40	57	40	34	44	40	41	40	40	93	33	48
22	93	41	60	39	39	32	33	35	58	55	69	50	43	149	46	51	50	62	111	39	45	54	59	46
23	36	32	30	G	G	26	24	32	44	132	55	67	61	60	92	67	113	62	52	47	29	G	G	G
24	G	27	G	G	G	G	109	38	48	40	50	49	52	50	46	45	42	38	30	G	G	22	24	28
25	33	54	57	33	41	47	40	45	59	42	57	47	48	50	51	85	60	58	40	22	37	26	30	G
26	G	G	G	G	11	G	28	40	50	74	128	144	88	161	124	79	163	161	125	92	60	67	85	54
27	56	29	G	28	34	G	26	45	38	62	38	49	47	43	48	46	45	46	51	102	59	91	G	G
28	56	49	59	30	29	G	23	36	56	48	57	47	53	62	48	G	45	42	58	50	34	30	33	34
29	32	G	57	40	32	G	G	137	46	40	52	36	49	49	41	38	37	33	G	G	22	G	G	G
30	G	G	G	34	G	40	41	35	29	46	46	50	48	48	59	58	42	46	46	40	32	G	G	G
31	G	G	24	25	B	B	26	40	41	44	39	50	46	46	43	50	96	78	69	47	34	39	29	33
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	29	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	39	33	45	30	29	26	29	40	54	60	62	58	53	56	52	52	54	58	58	41	34	34	33	35
U Q	59	49	59	37	40	39	41	60	67	104	88	73	92	70	78	79	83	87	106	60	46	54	54	54
L Q	26	23	30	G	G	G	23	36	46	48	52	49	48	49	48	45	44	43	40	27	27	22	24	G

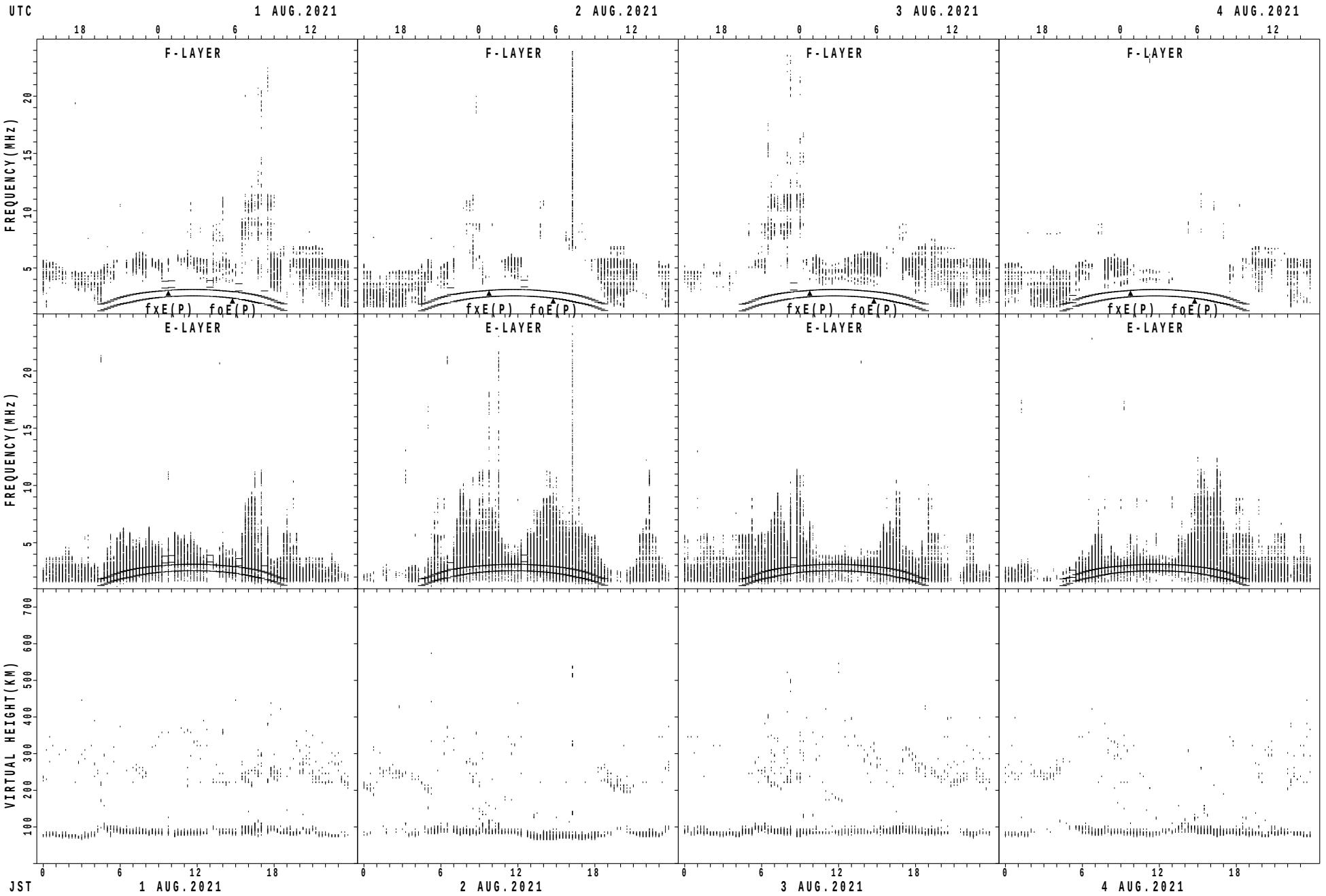
HOURLY VALUES OF fmin AT Okinawa

AUG.2021

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

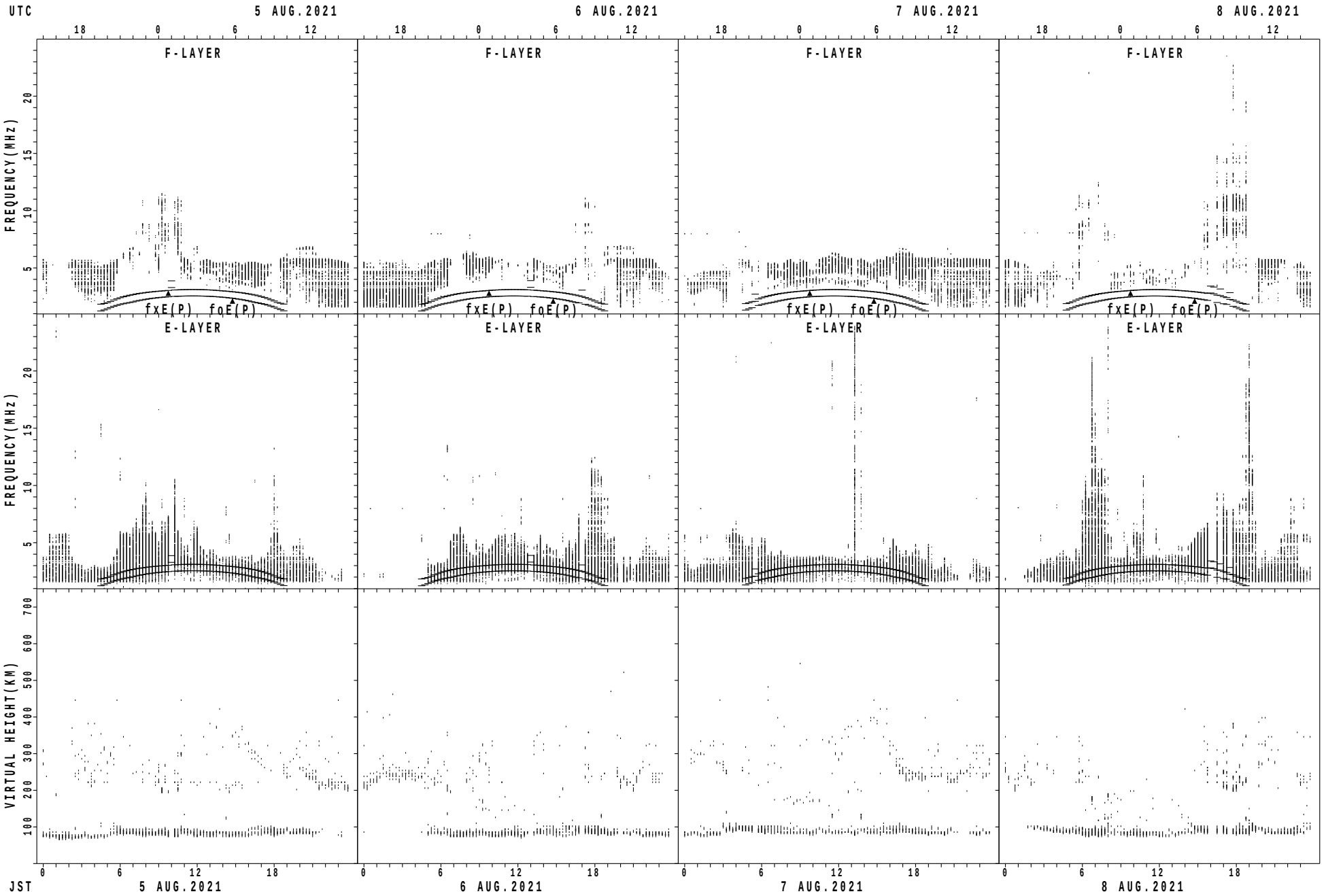
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	16	17	17	16	14	15	16	15	15	15	18	23	10	21	20	17	13	13	15	15	15	15	15
2	15	15	15	14	15	15	16	14	5	10	14	21	20	19	17	18	12	8	15	15	15	15	16	15
3	15	16	15	16	15	15	15	14	15	14	17	21	17	20	20	17	14	15	15	15	15	15	15	12
4	16	15	15	16	15	14	14	5	5	7	19	20	17	20	17	16	17	15	14	14	15	15	16	16
5	15	16	16	15	15	15	16	15	14	13	16	20	16	18	16	17	17	13	12	15	17	15	15	16
6	16	15	16	16	15	15	16	15	15	15	17	16	21	17	17	18	12	13	15	16	15	16	15	16
7	15	15	16	15	15	15	16	15	13	11	17	11	19	19	19	17	18	11	15	14	16	16	15	9
8	15	15	16	17	15	15	15	14	5	13	53	21	19	22	18	18	14	13	15	15	15	16	15	15
9	15	15	16	14	15	15	15	14	16	18	21	20	17	136	12	17	16	13	14	16	16	16	15	16
10	15	16	15	16	16	15	15	14	5	15	17	18	22	20	17	17	14	13	13	15	15	15	15	16
11	16	15	15	15	15	16	15	15	13	15	16	19	17	17	21	17	15	13	16	16	14	14	15	14
12	15	15	15	16	16	16	15	15	14	14	15	17	18	18	17	13	14	15	13	16	15	16	16	19
13	15	16	12	15	14	14	16	16	14	15	14	18	17	17	16	17	12	13	14	15	16	15	15	14
14	14	15	15	15	17	15	49	14	13	13	14	15	23	16	17	16	17	12	14	12	10	14	16	11
15	15	15	15	15	16	15	14	16	16	15	17	19	21	18	20	14	15	14	14	17	14	15	15	14
16	15	16	16	15	15	15	15	14	15	15	16	5	22	19	19	17	13	14	13	15	15	15	17	23
17	16	16	15	15	15	17	15	15	14	13	15	17	21	16	19	16	13	5	17	9	15	15	15	15
18	15	15	14	15	14	16	16	16	14	15	17	19	17	15	19	15	17	14	12	15	15	15	17	13
19	15	16	15	15	16	B 16	16	15	8	15	16	22	18	22	17	17	12	14	10	15	15	16	15	14
20	16	16	15	17	15	15	16	14	14	17	15	16	17	18	20	17	15	13	15	15	16	16	15	15
21	16	15	15	15	15	17	16	15	13	13	16	19	18	19	17	16	14	13	15	15	15	10	16	15
22	15	15	15	16	15	16	16	16	14	17	20	18	17	13	20	15	15	14	9	15	16	15	15	17
23	15	16	16	17	15	16	14	15	14	14	21	19	21	21	20	18	17	14	14	15	15	16	15	15
24	15	16	15	18	15	15	5	14	15	16	15	18	19	22	16	15	15	15	16	16	15	15	16	16
25	16	15	15	15	15	16	15	15	14	14	20	18	17	21	19	18	15	14	14	15	16	15	16	15
26	16	14	15	14	14	15	15	14	15	16	13	17	20	11	17	15	14	9	6	13	15	16	15	16
27	15	16	15	16	16	15	15	15	15	17	16	16	23	18	18	19	15	14	13	13	16	14	15	15
28	15	15	15	16	16	15	16	16	14	16	17	18	19	21	19	21	21	14	14	15	16	16	15	15
29	16	16	15	15	16	15	20	15	13	16	21	19	19	19	18	19	16	15	16	15	15	15	15	14
30	16	15	14	16	16	15	15	14	15	15	17	17	18	18	13	13	15	13	15	15	16	16	15	15
31	14	15	16	15	B 15	B 15	15	16	15	16	23	22	21	19	18	15	14	14	14	15	16	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	14	15	17	18	19	19	18	17	15	13	14	15	15	15	15	15
U Q	16	16	16	16	16	16	16	15	15	16	19	20	21	20	19	18	17	14	15	15	16	16	16	16
L Q	15	15	15	15	15	15	15	14	13	13	15	17	17	17	17	15	14	13	13	15	15	15	15	14

SUMMARY PLOTS AT Wakkanai



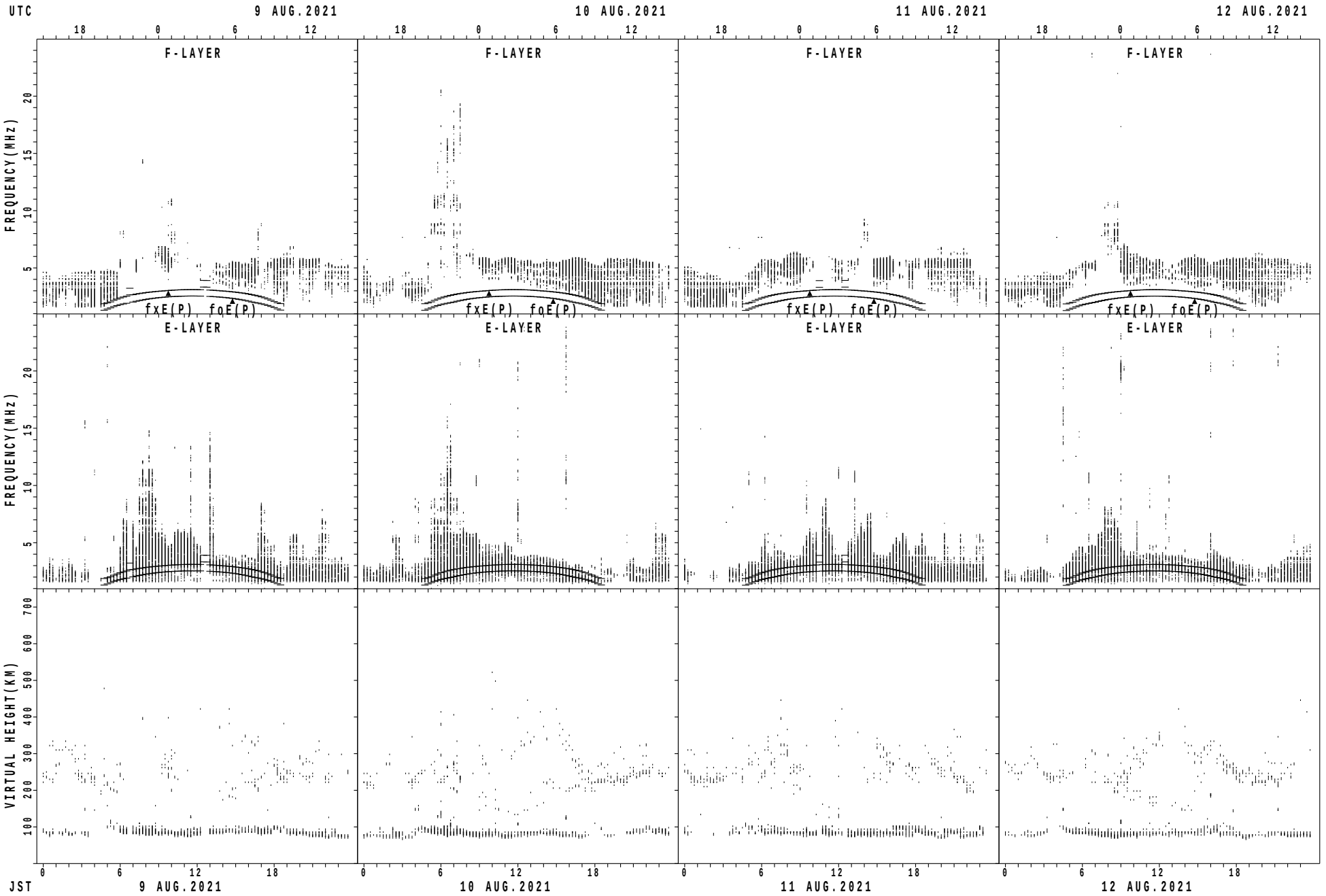
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



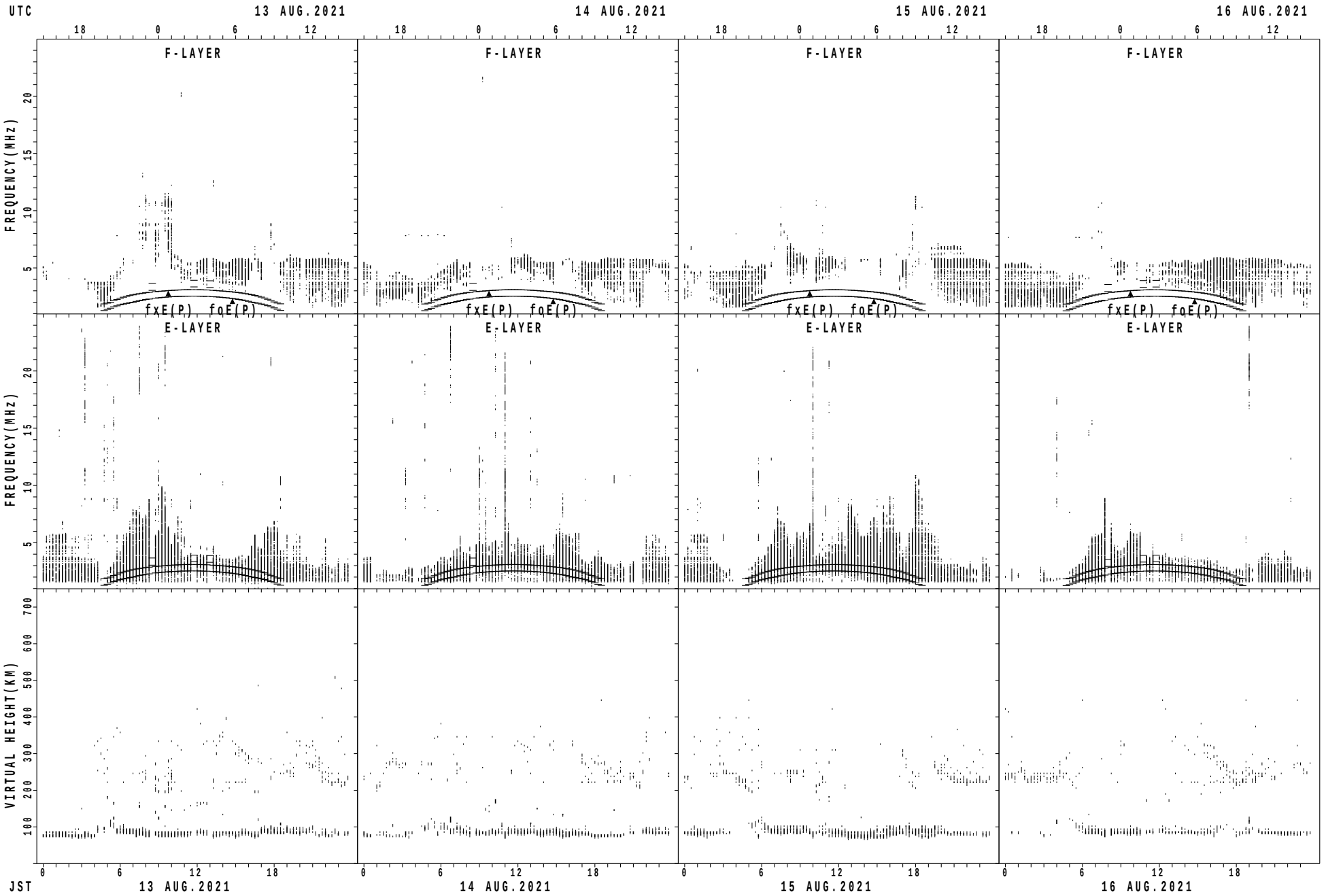
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



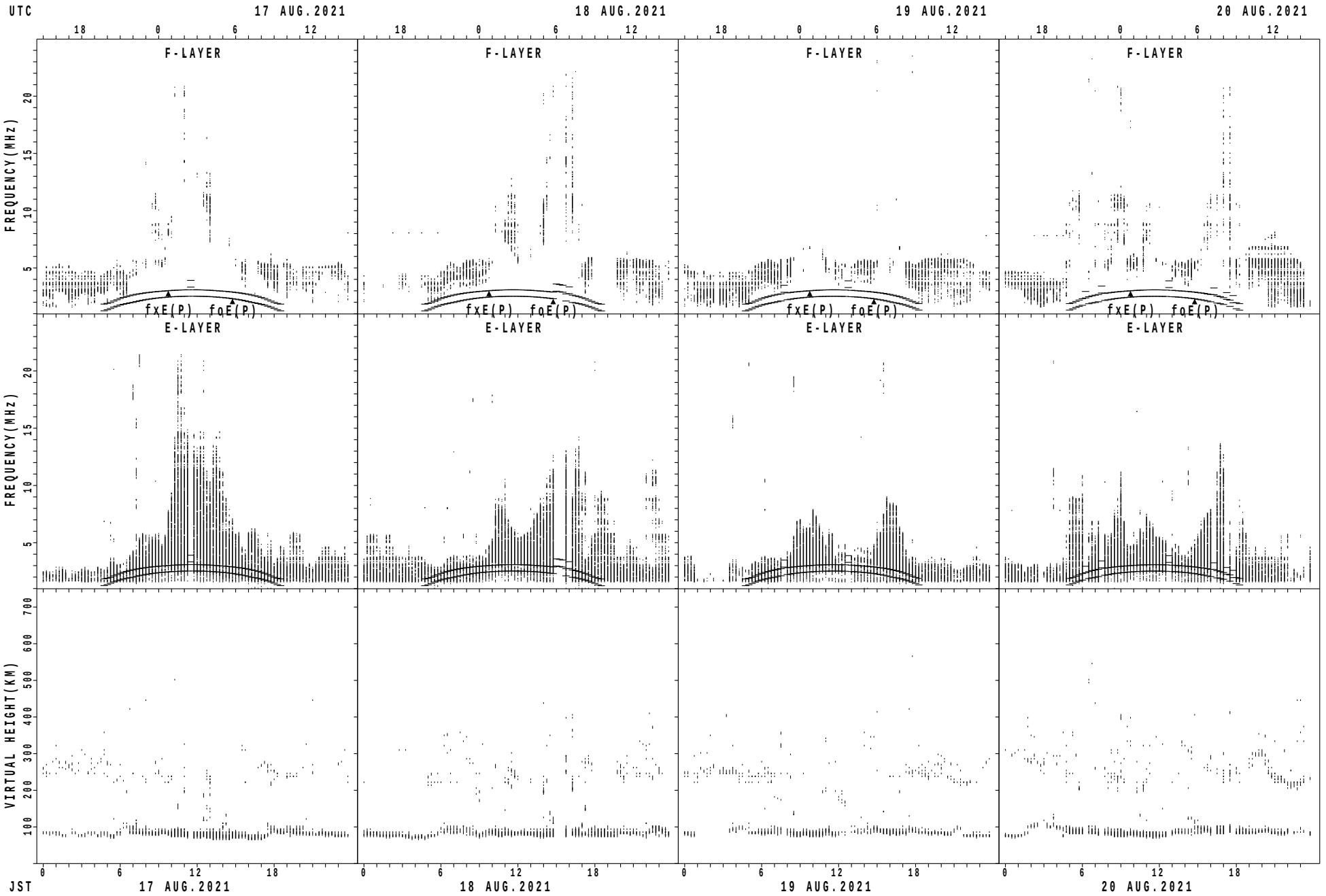
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



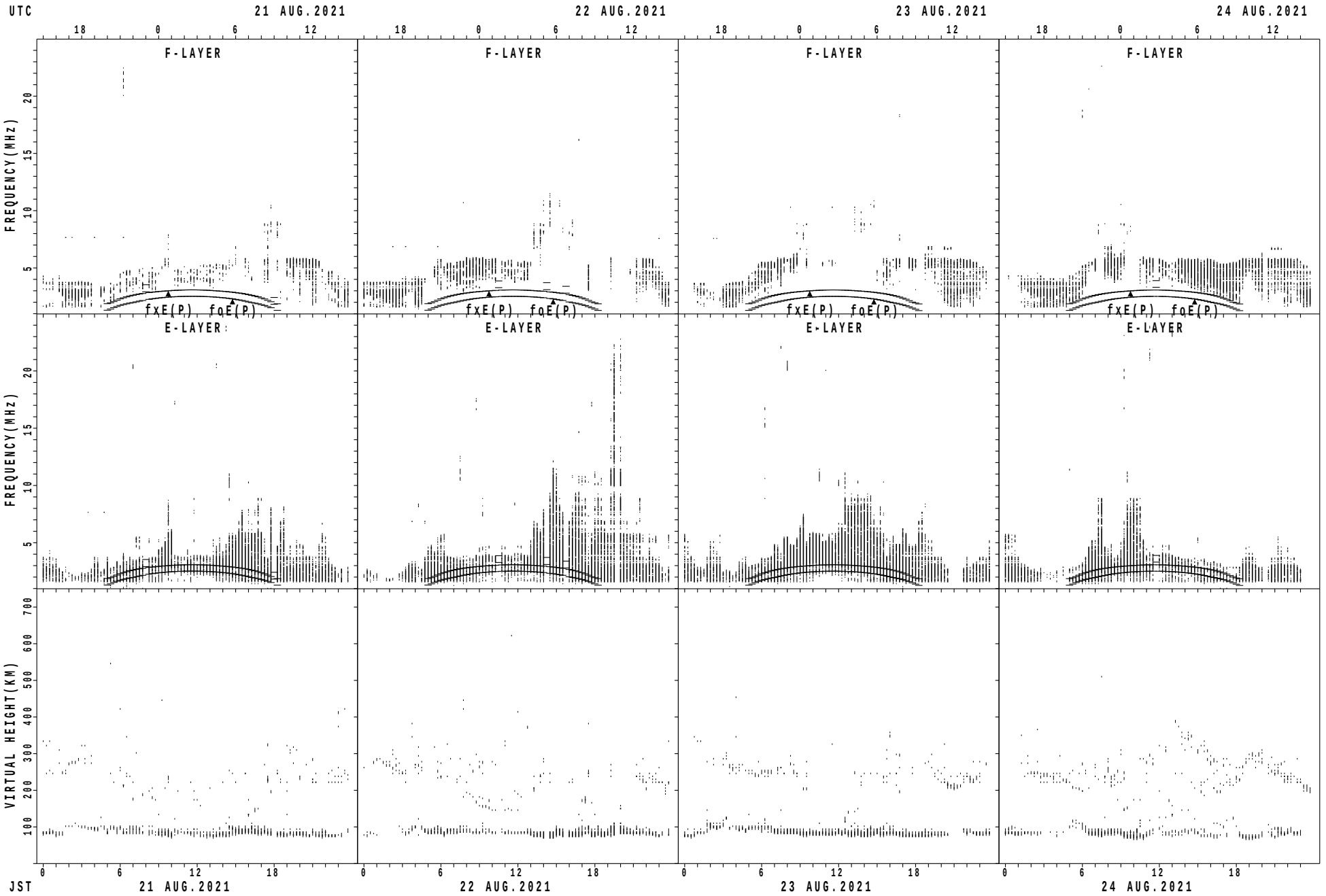
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



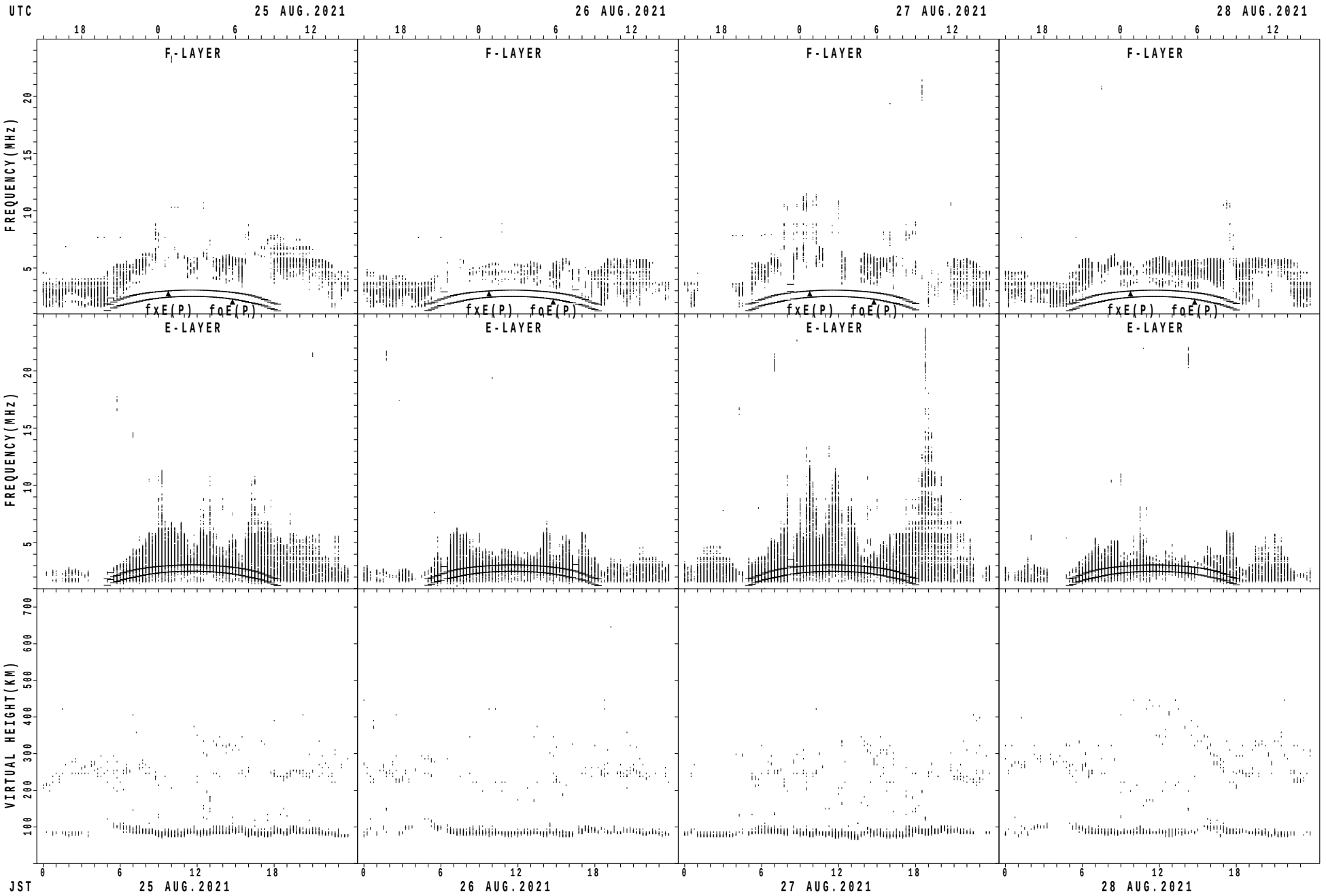
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



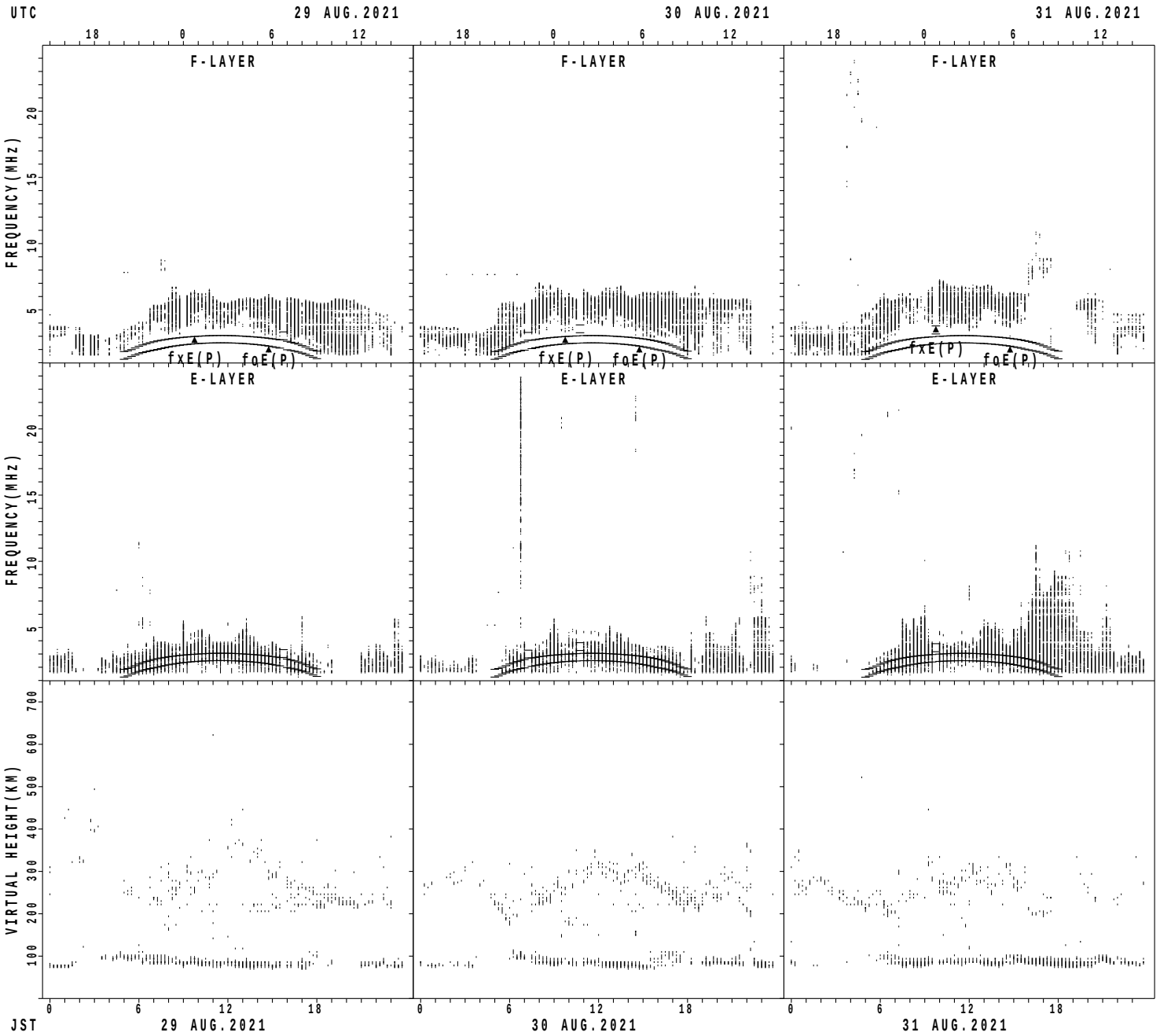
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

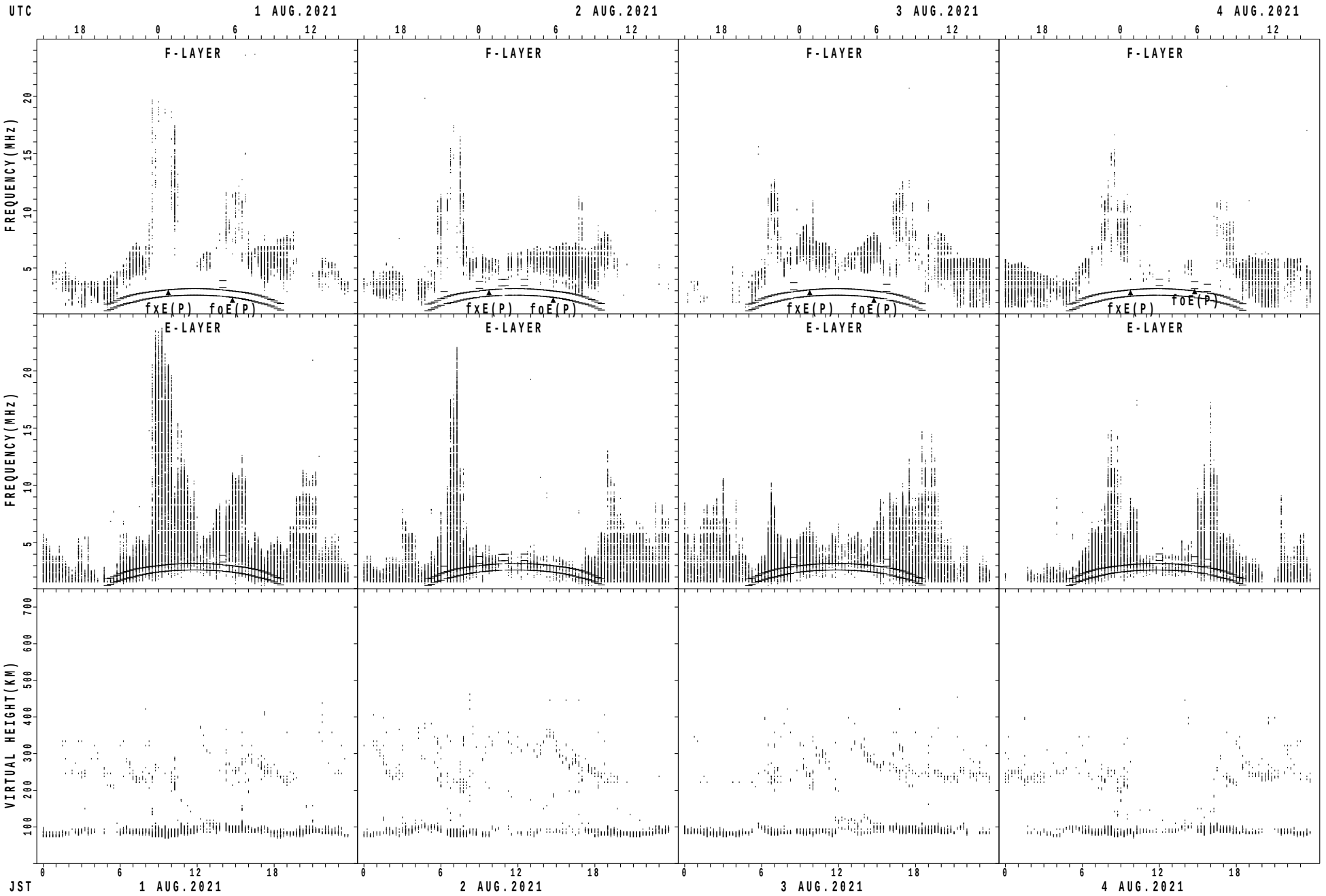


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

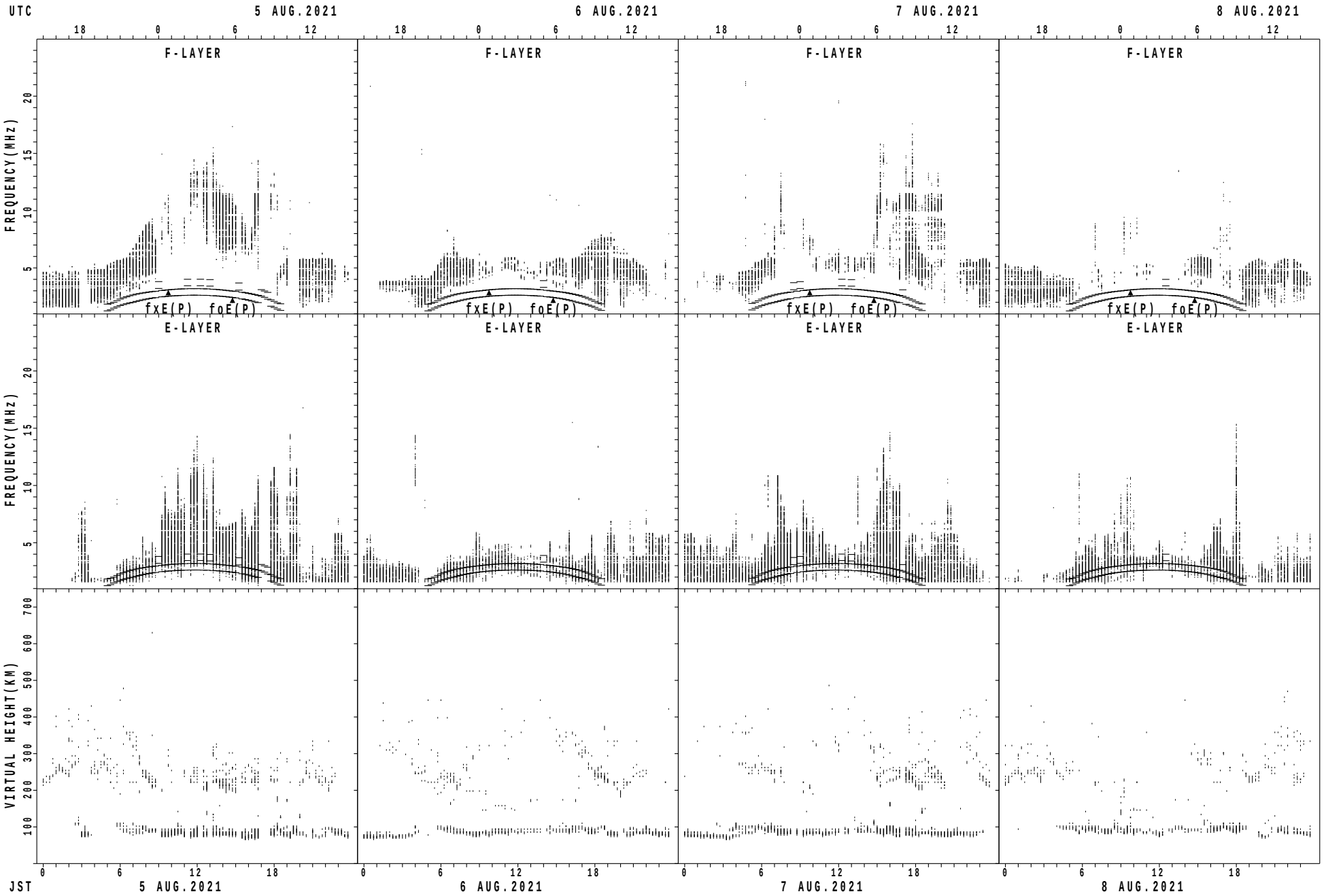


SUMMARY PLOTS AT Kokubunji



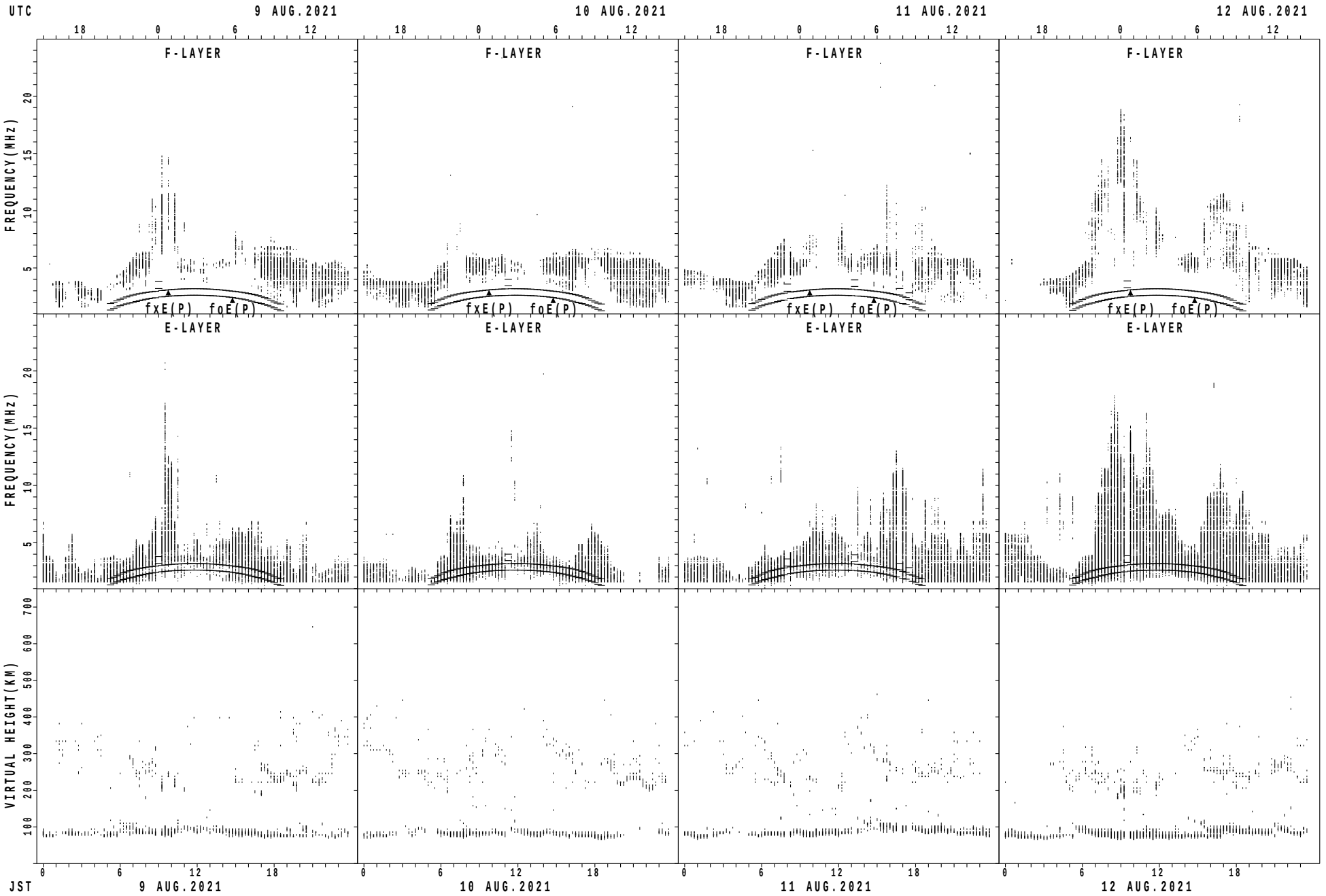
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



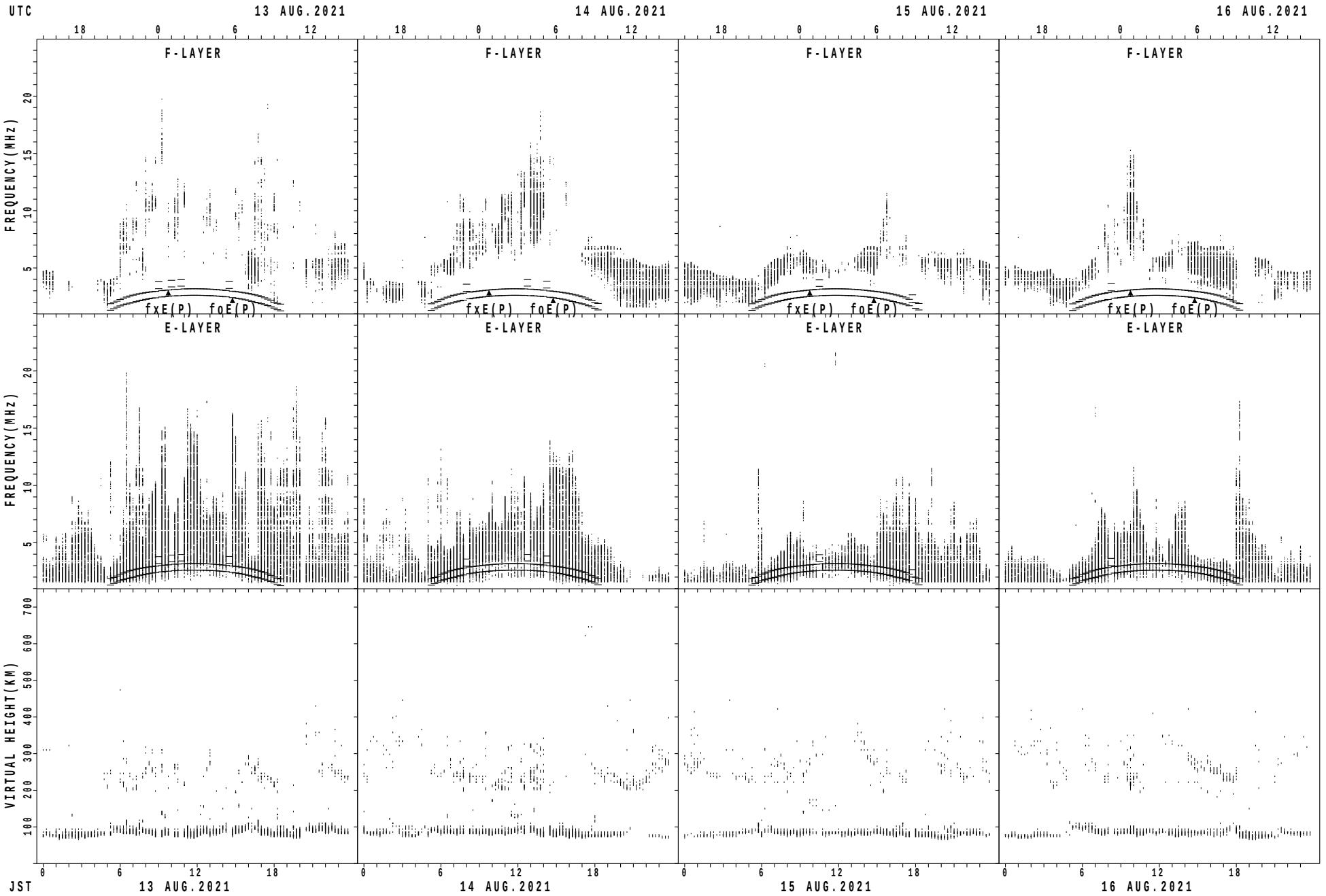
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



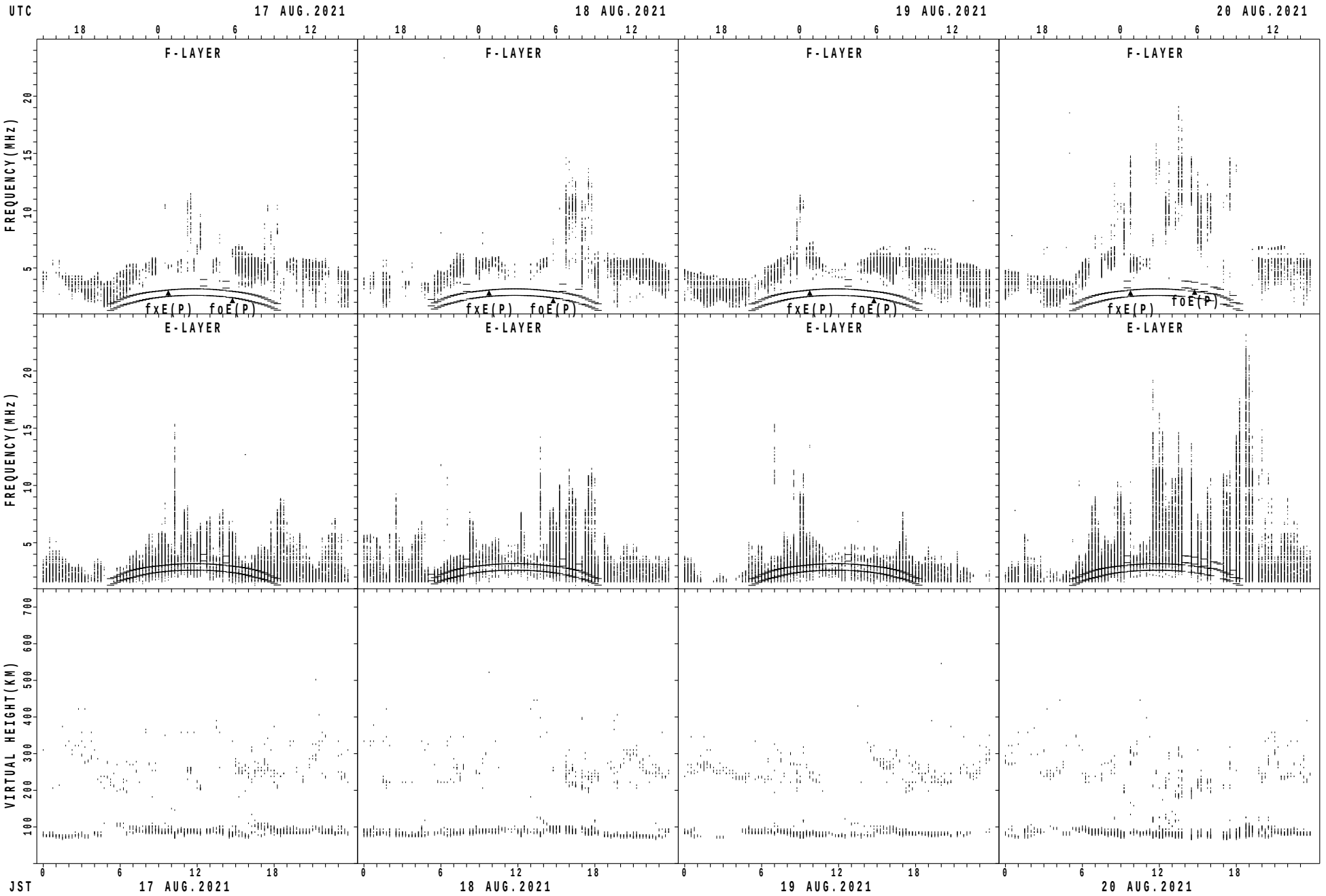
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



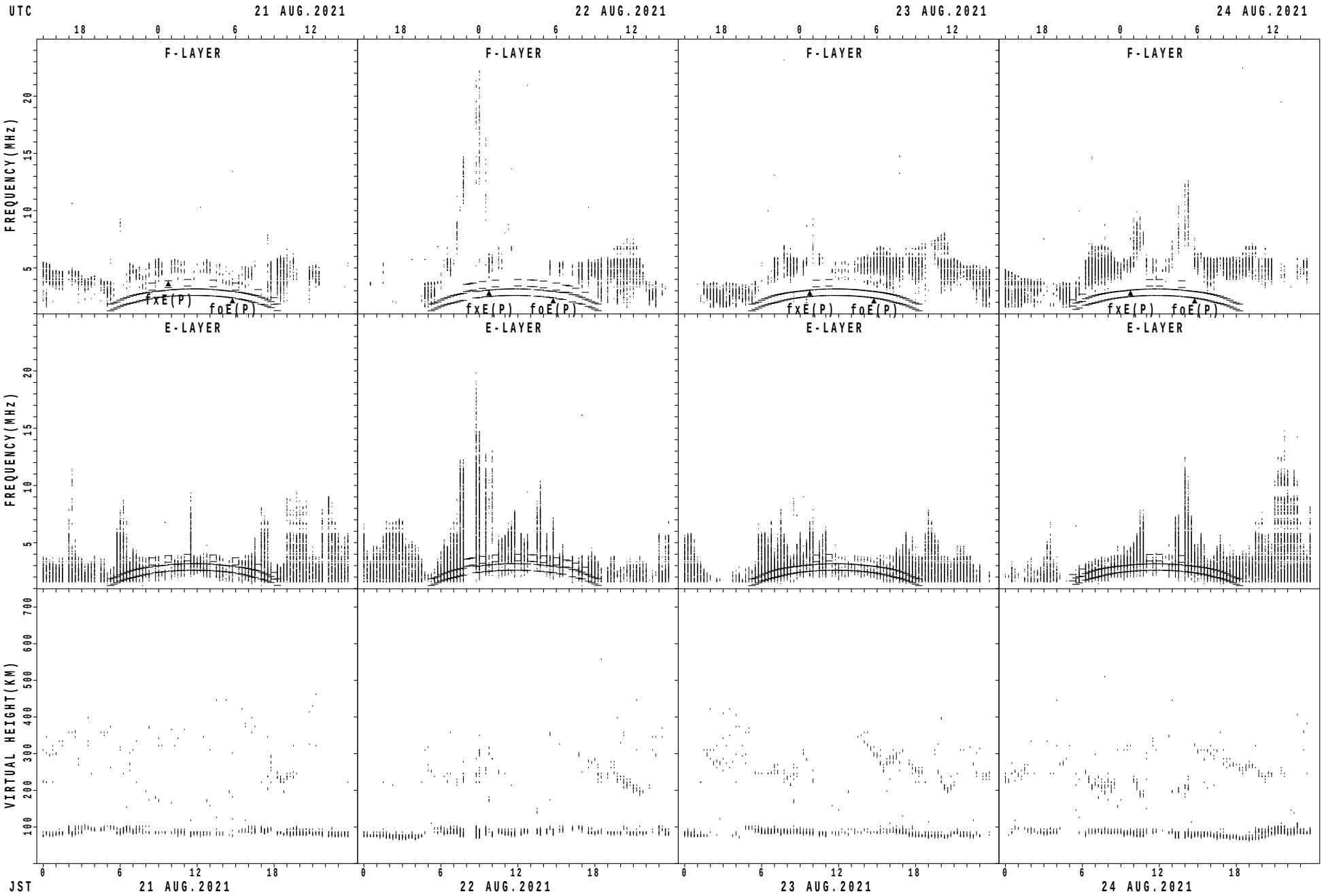
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



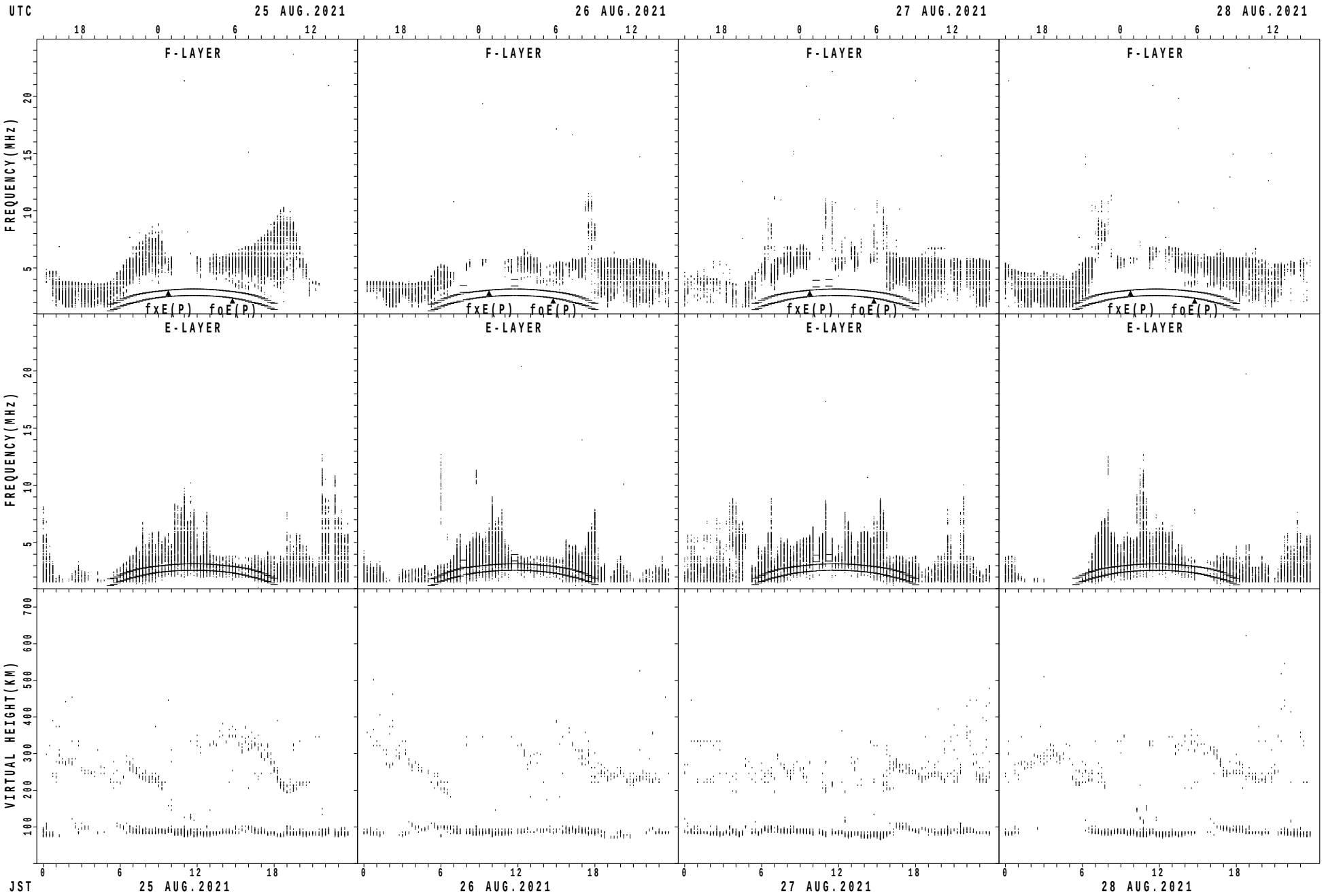
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



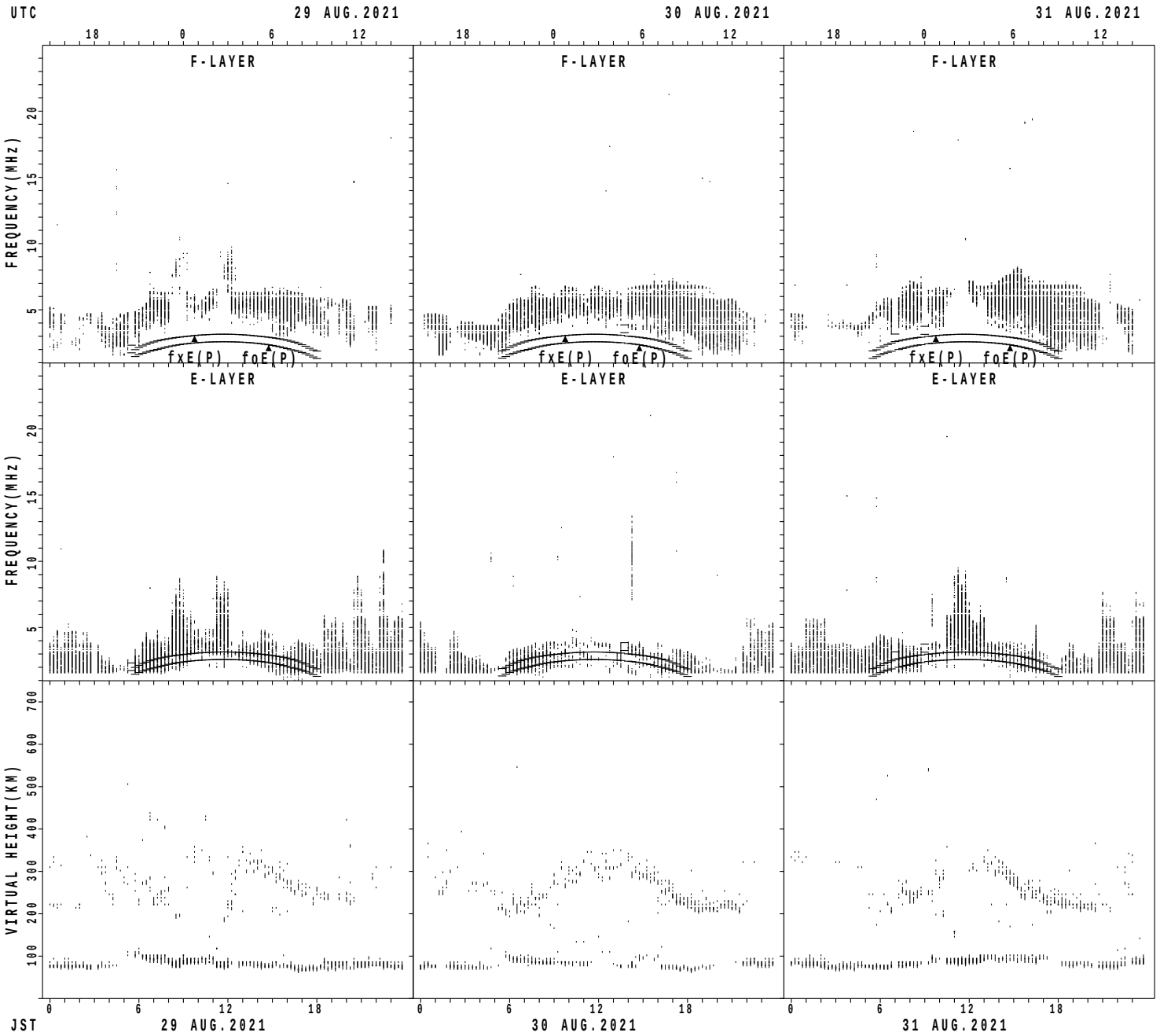
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



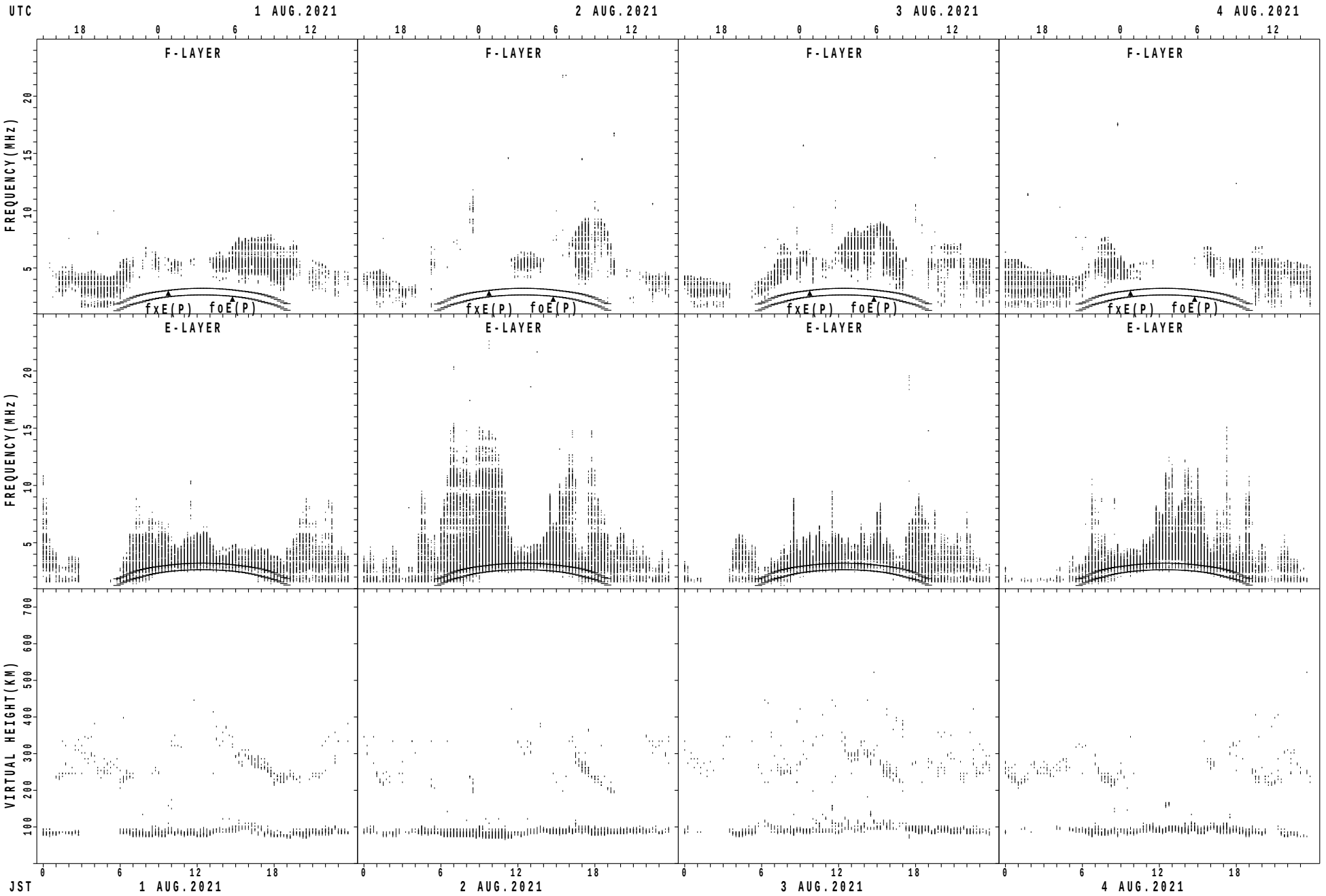
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



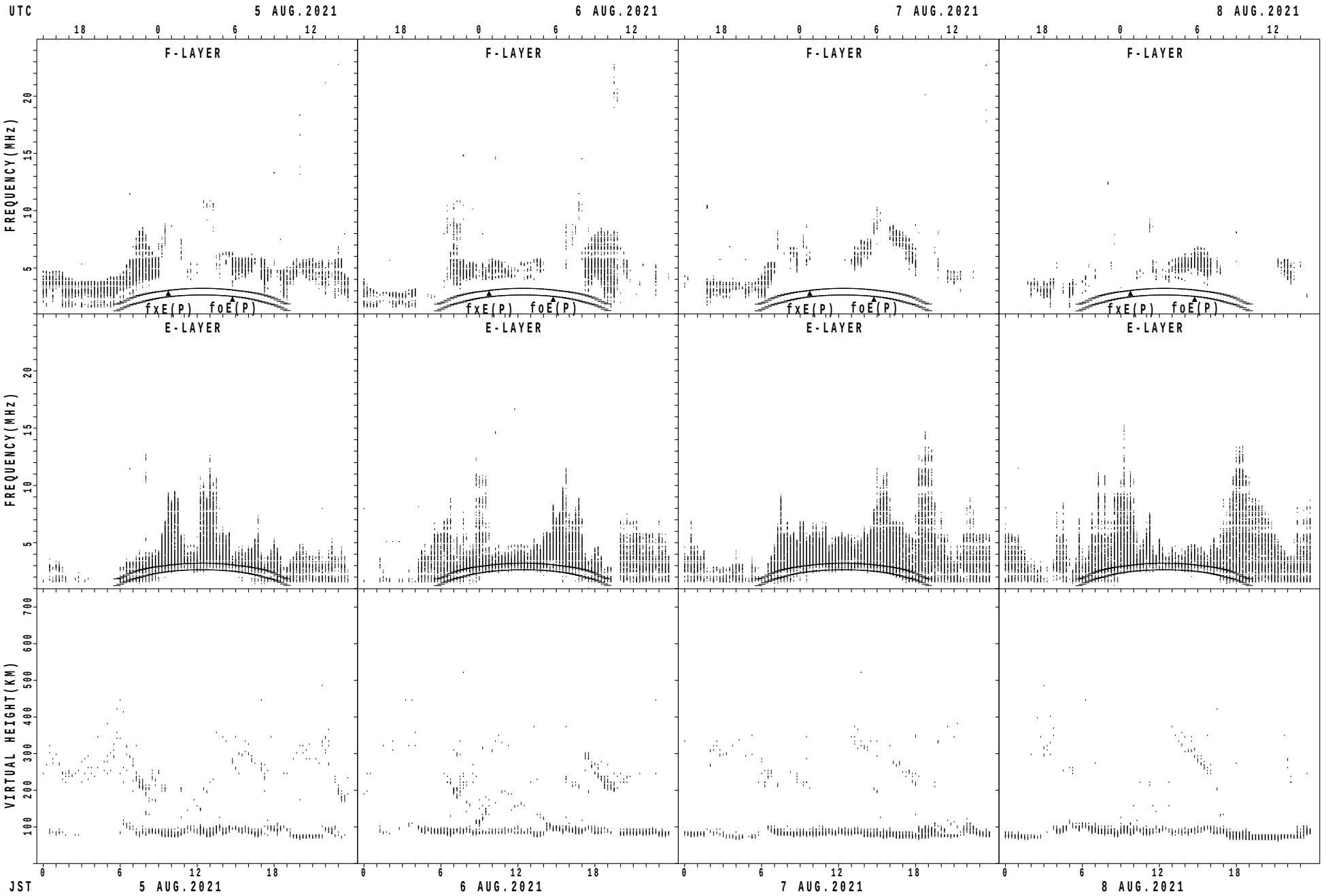
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



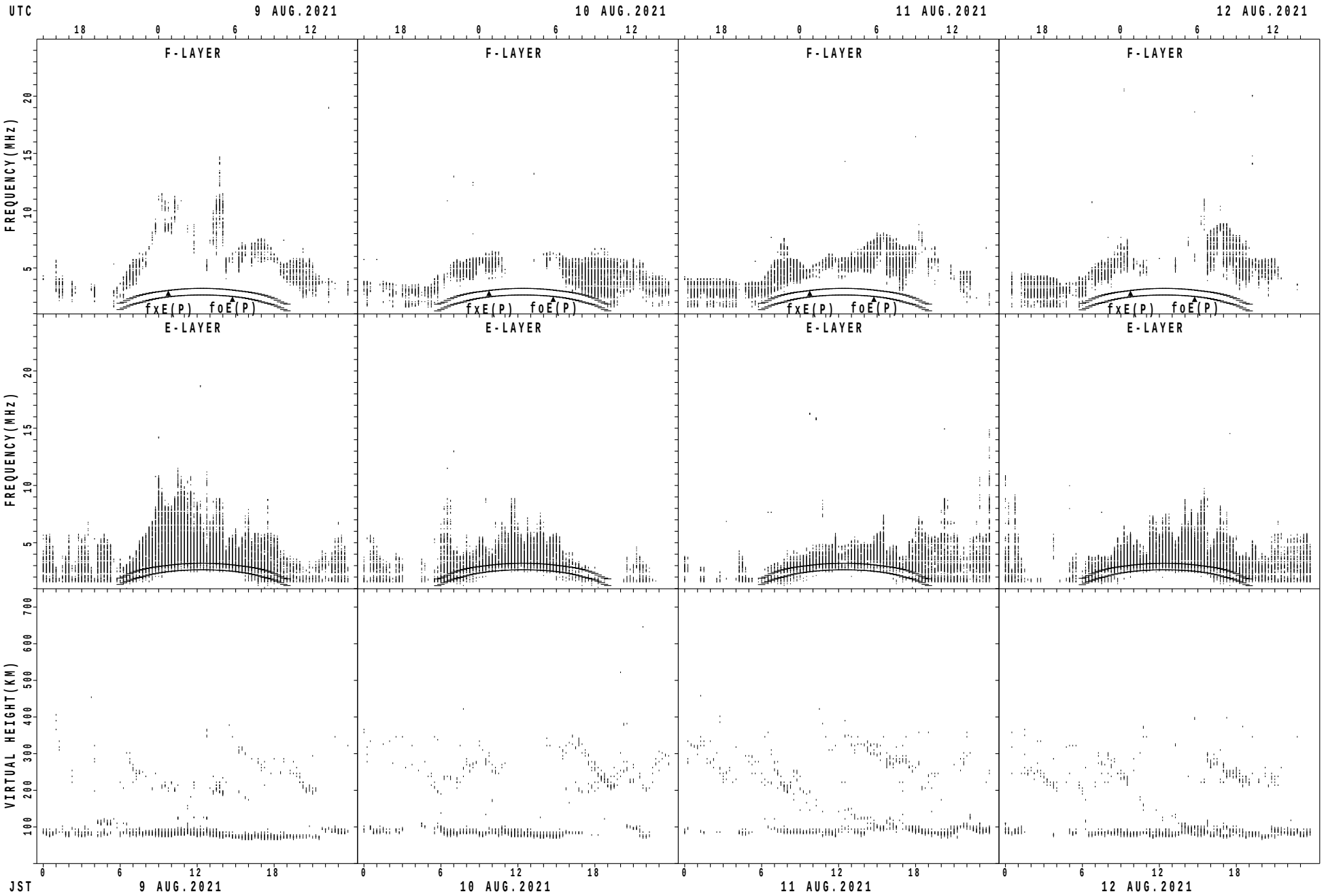
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



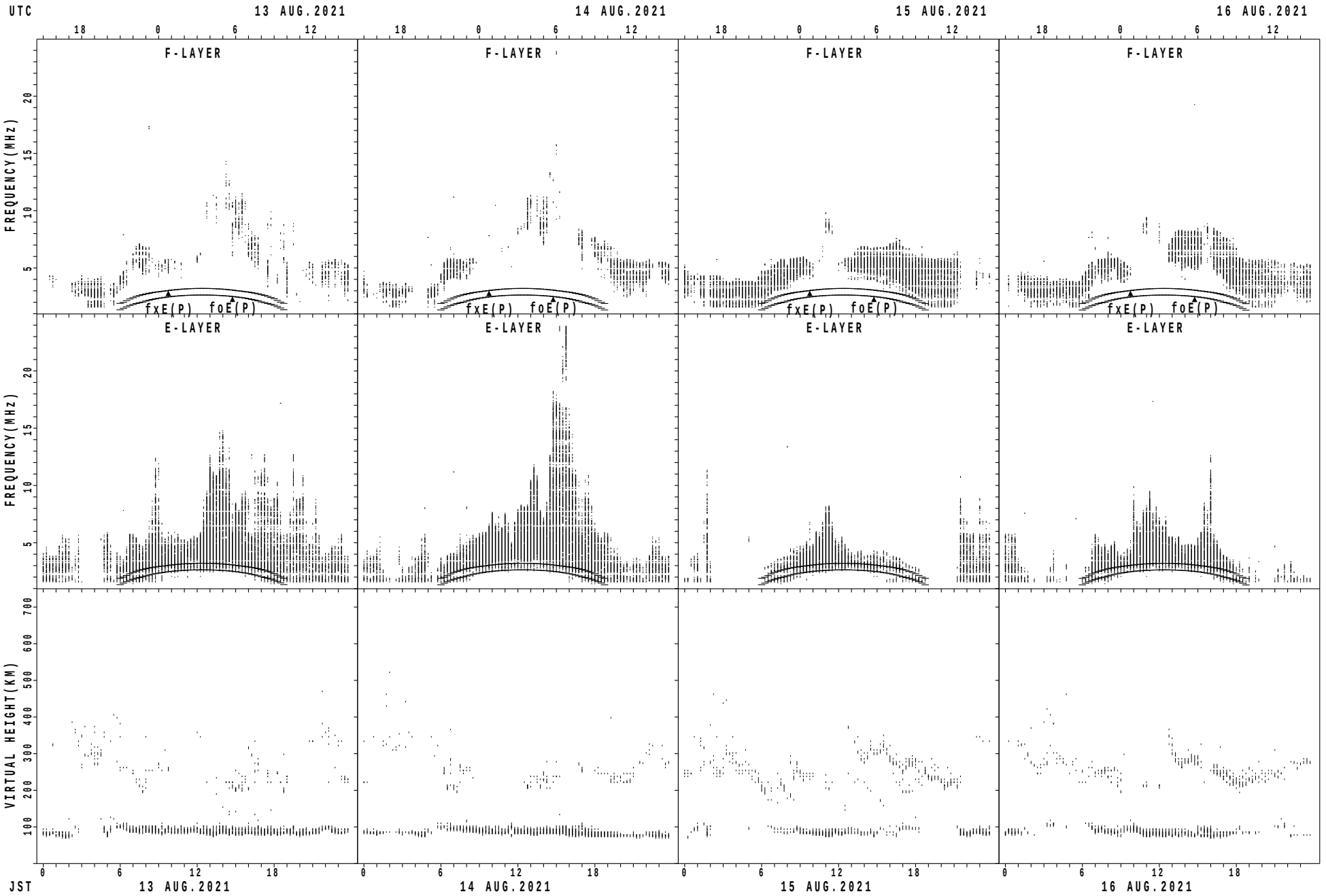
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



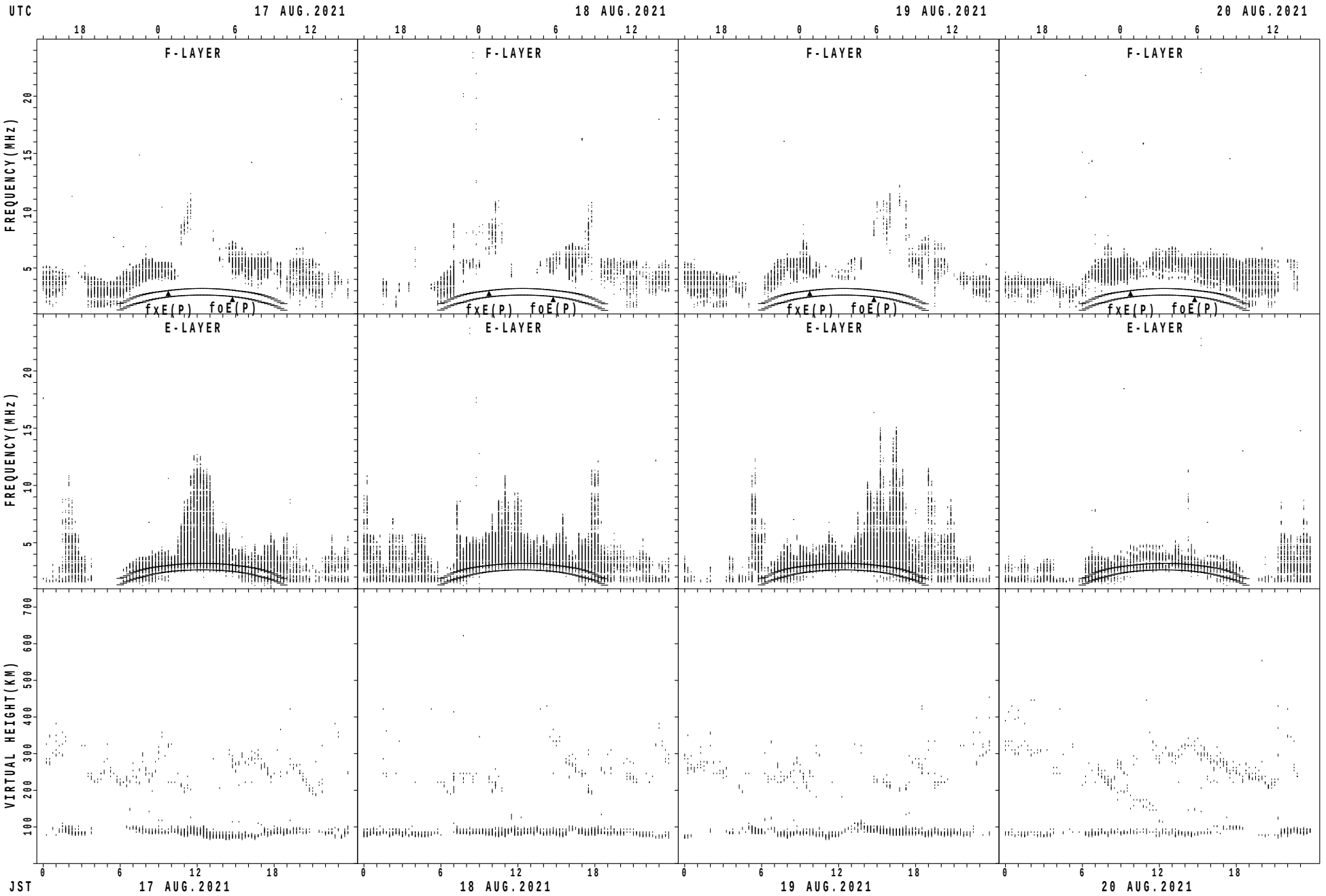
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



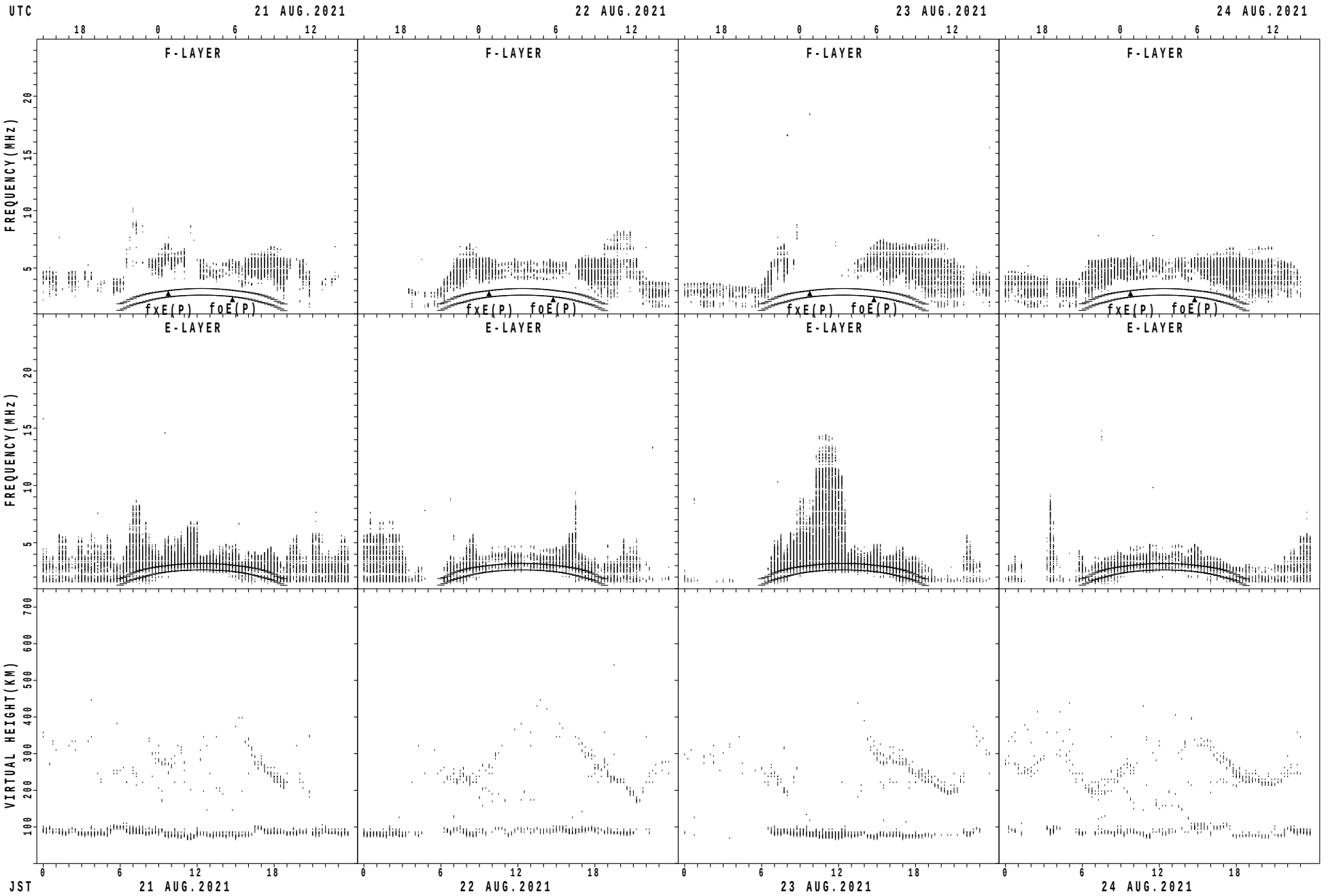
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



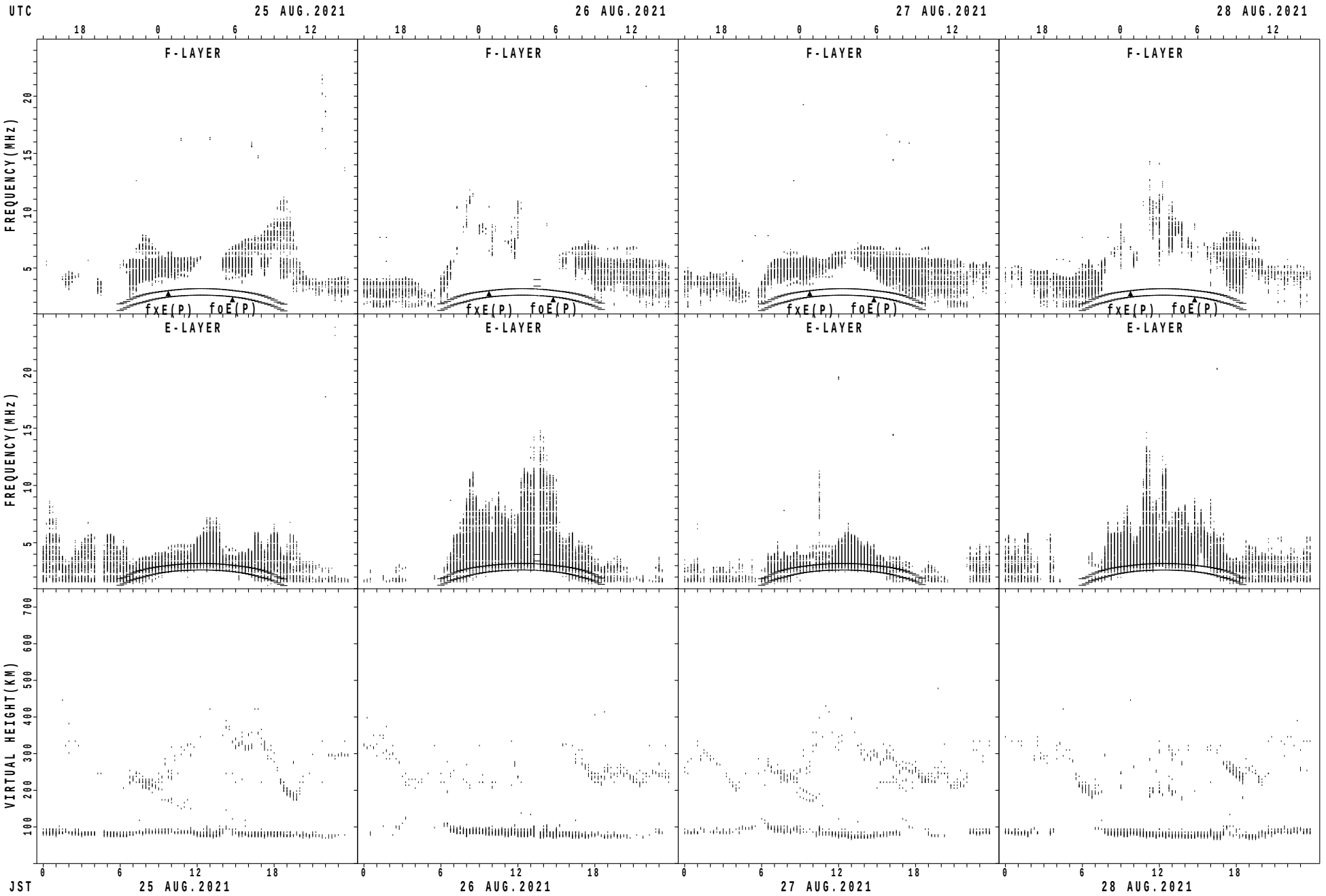
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



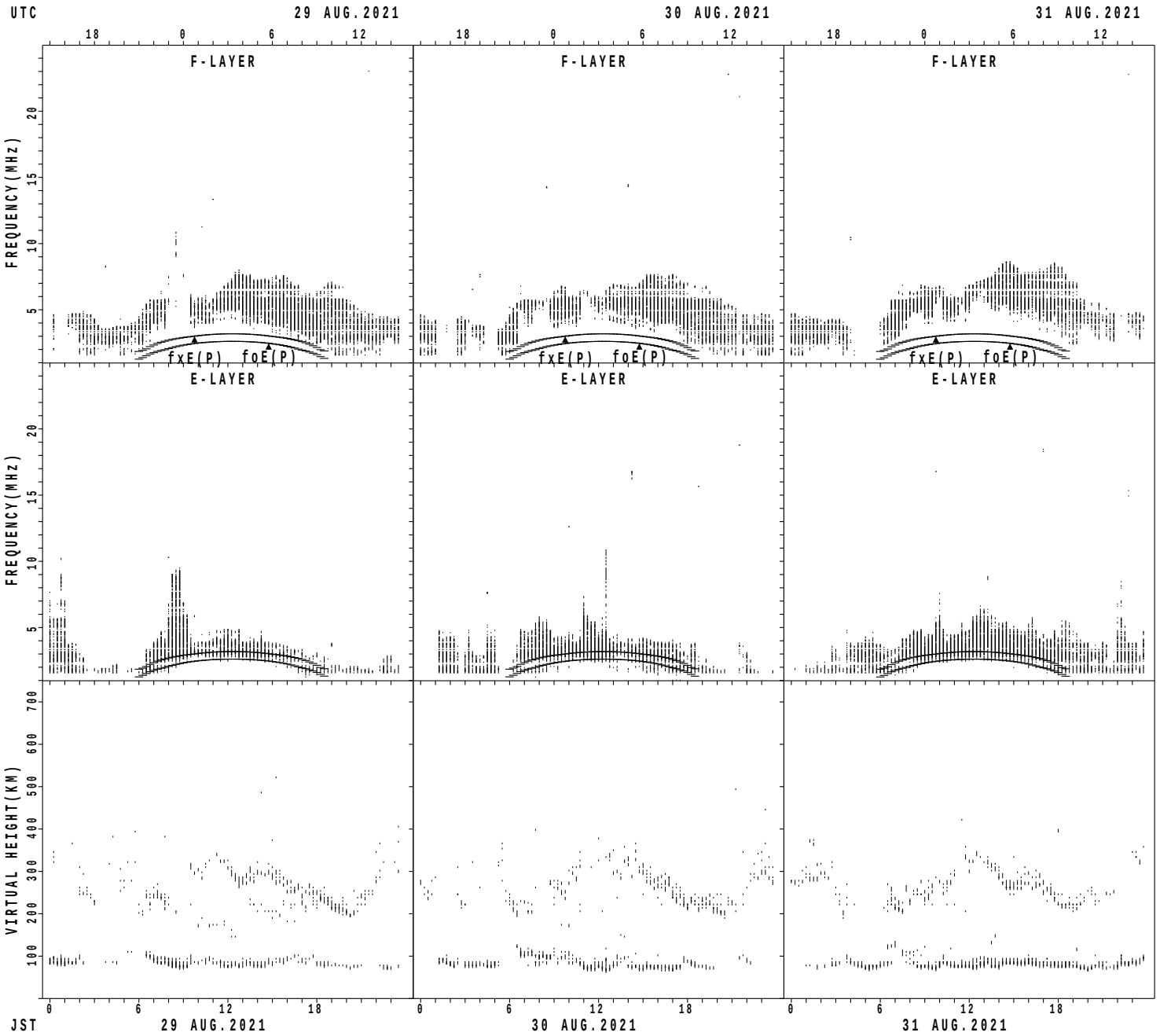
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



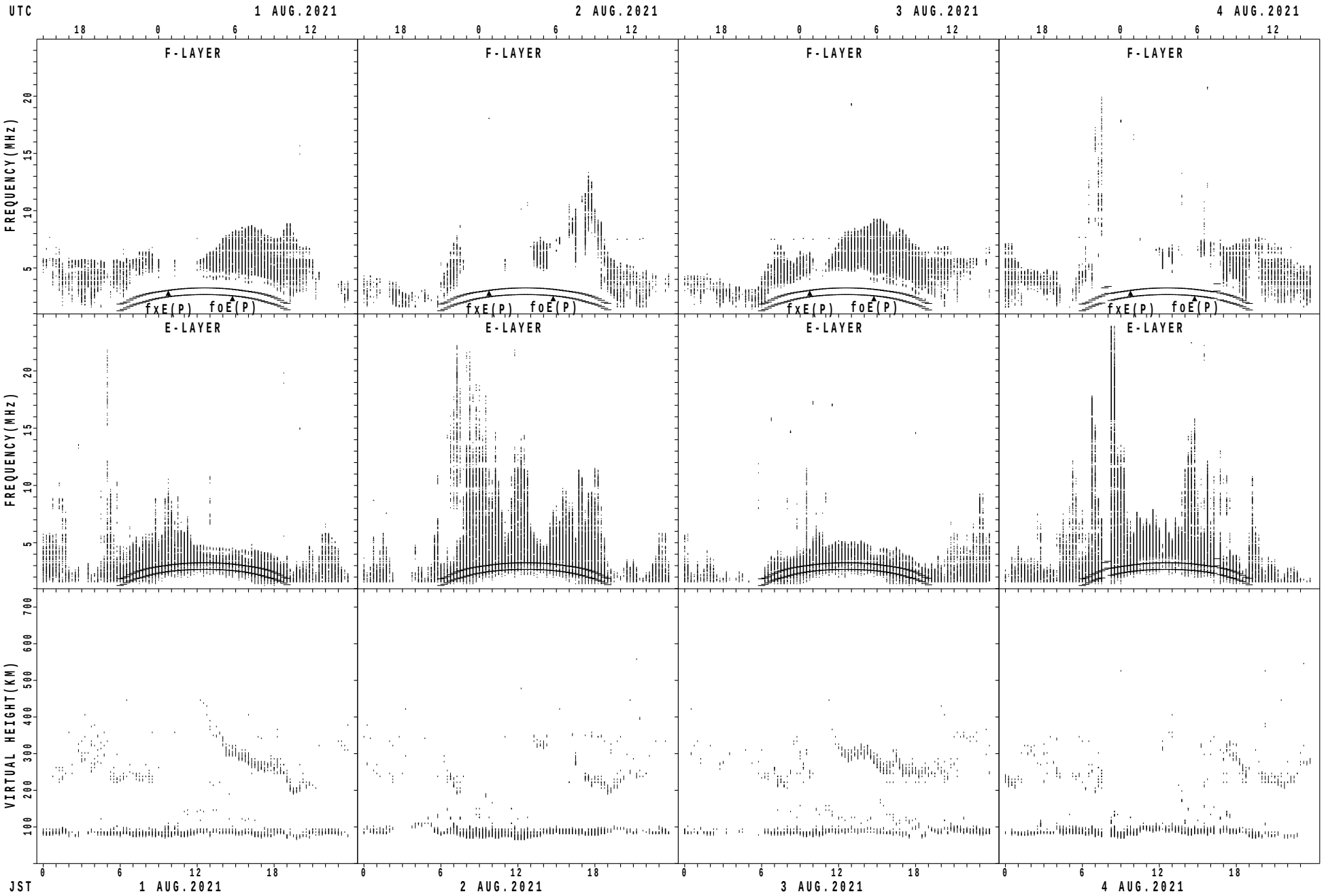
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



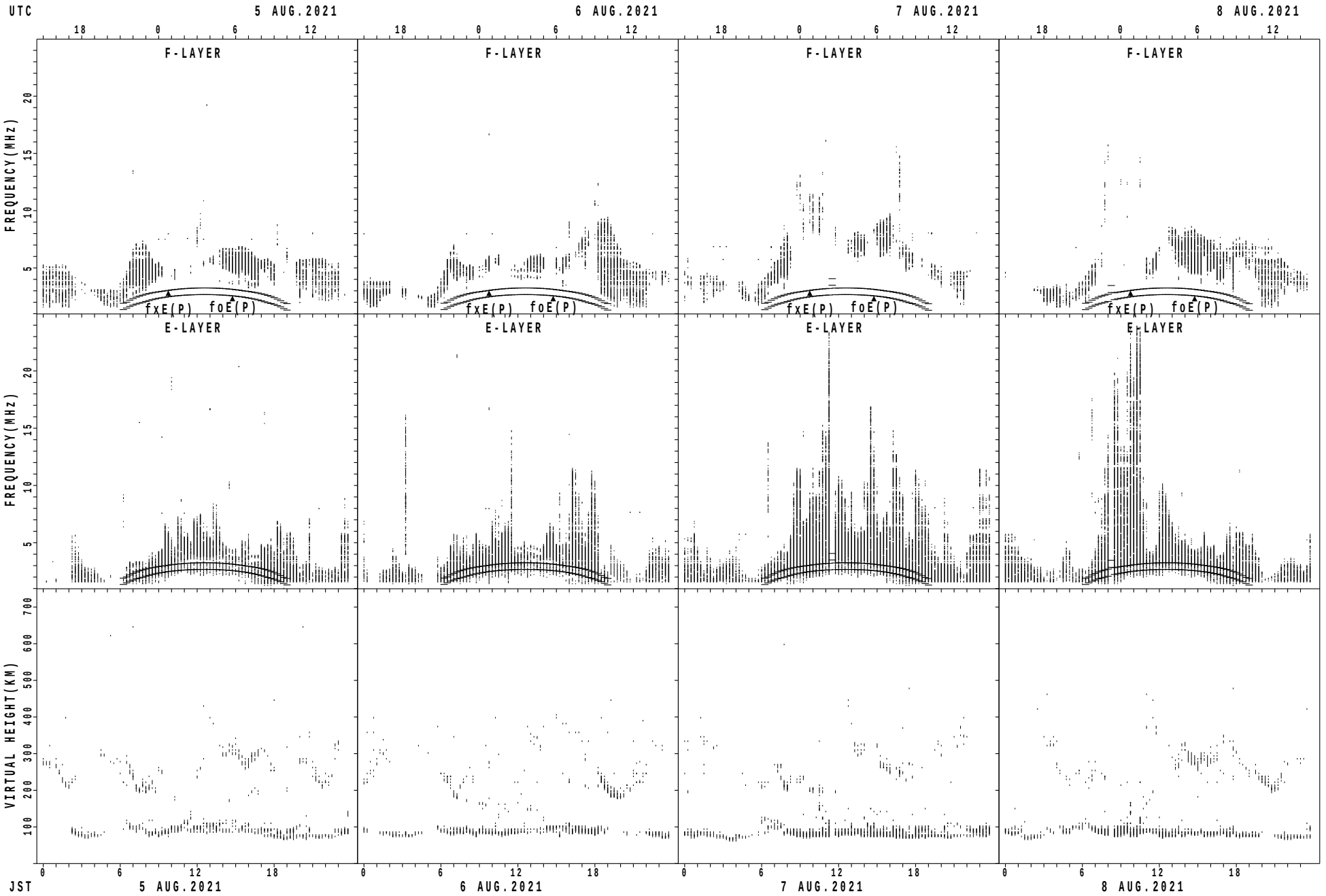
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



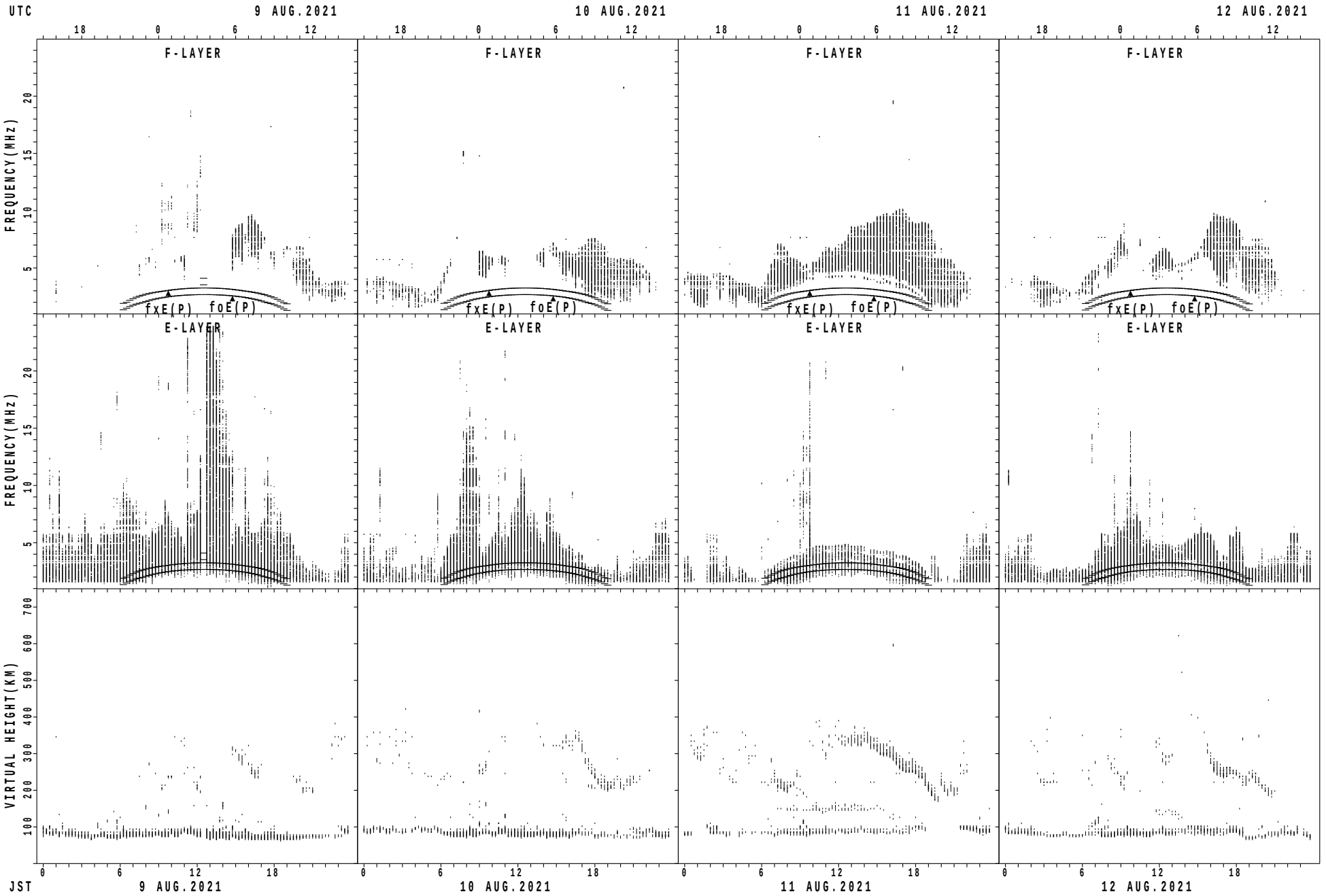
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



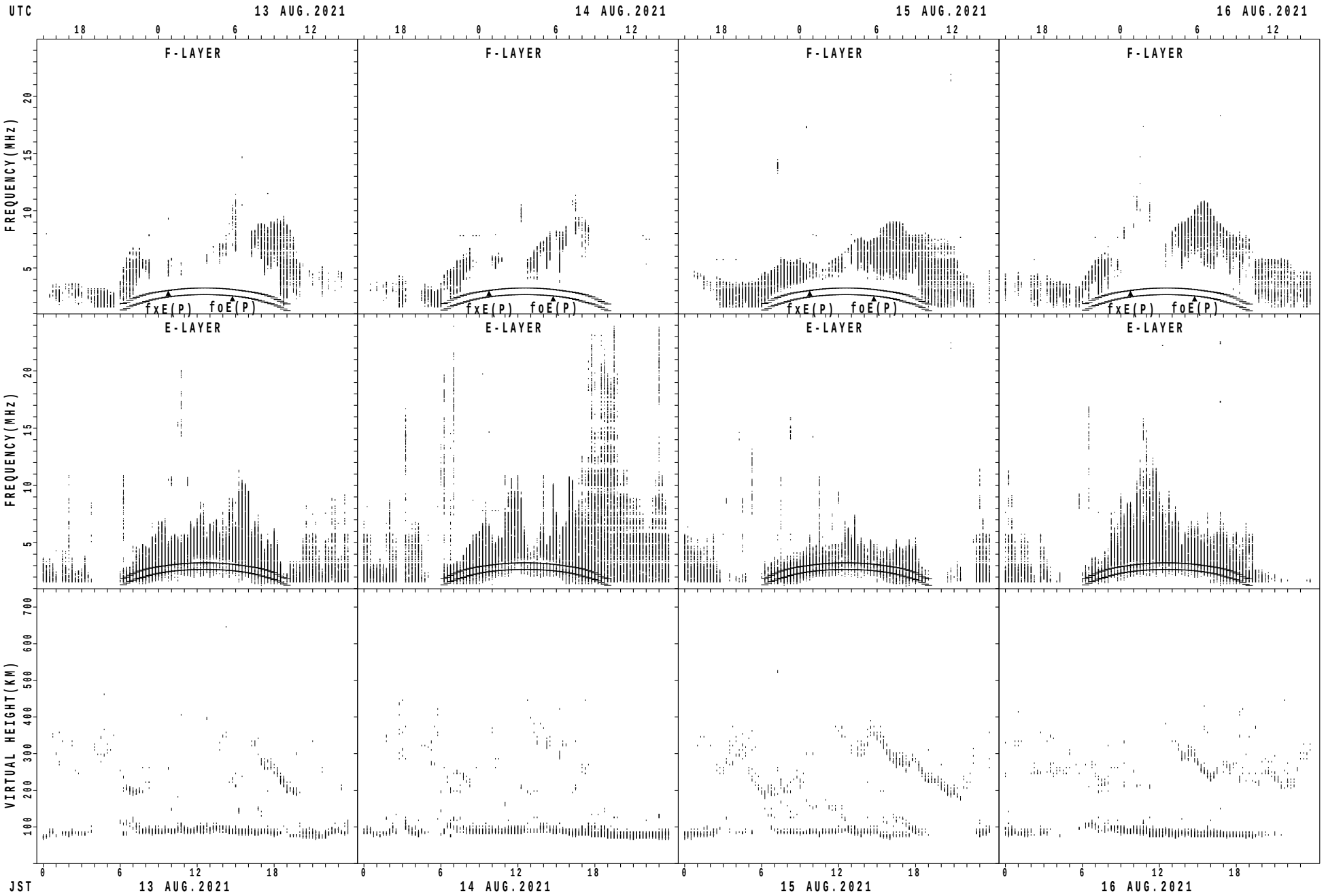
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



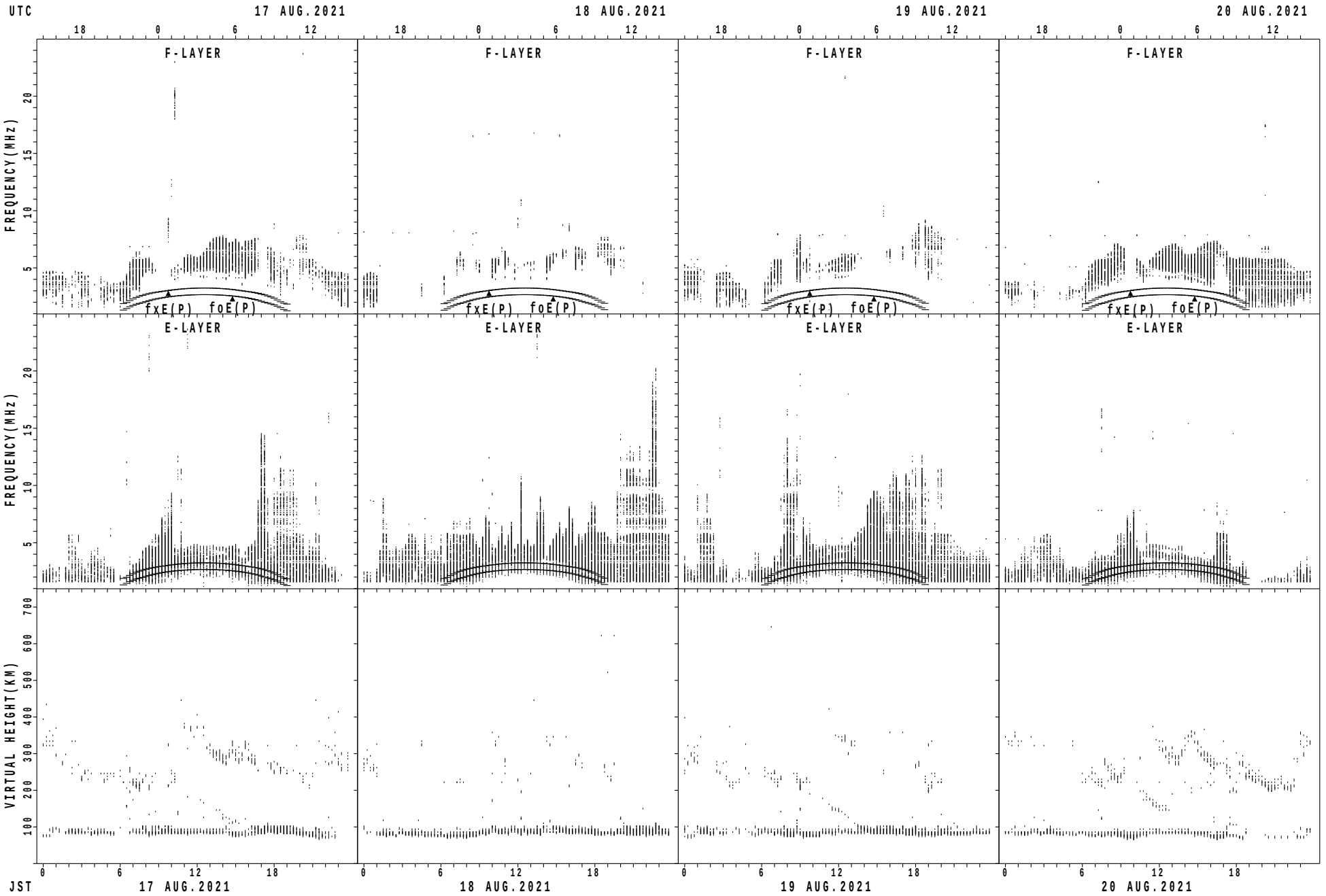
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



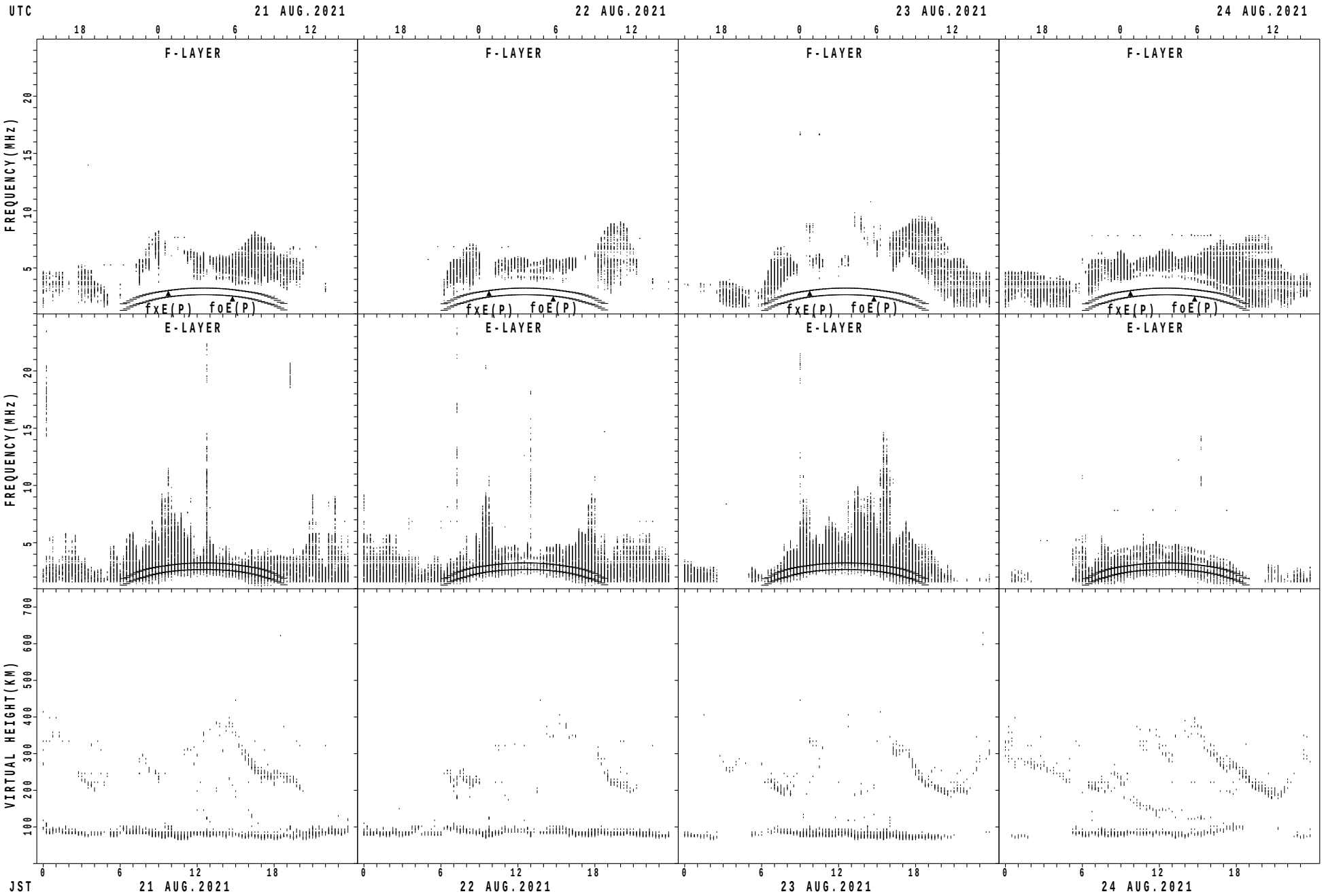
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



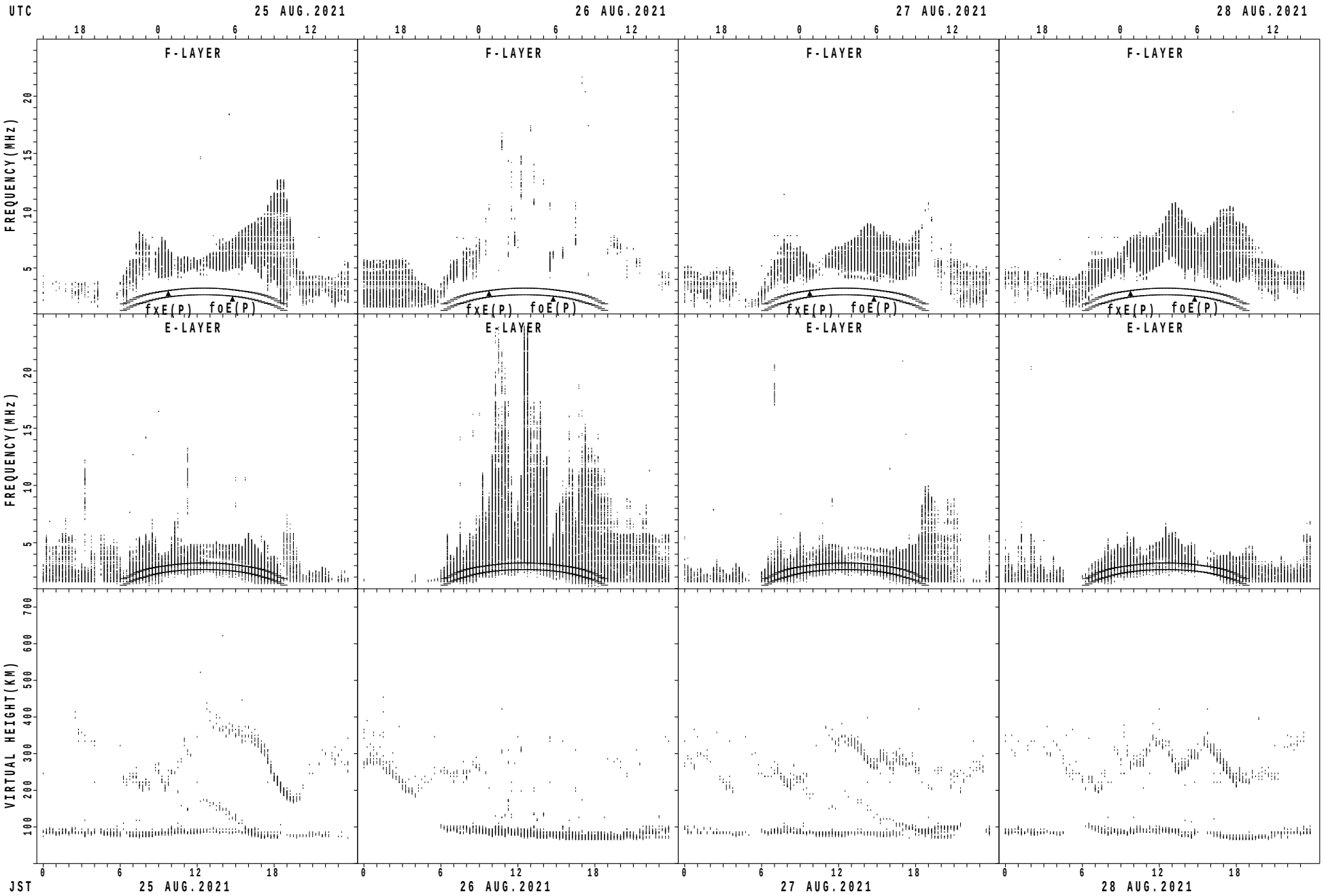
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



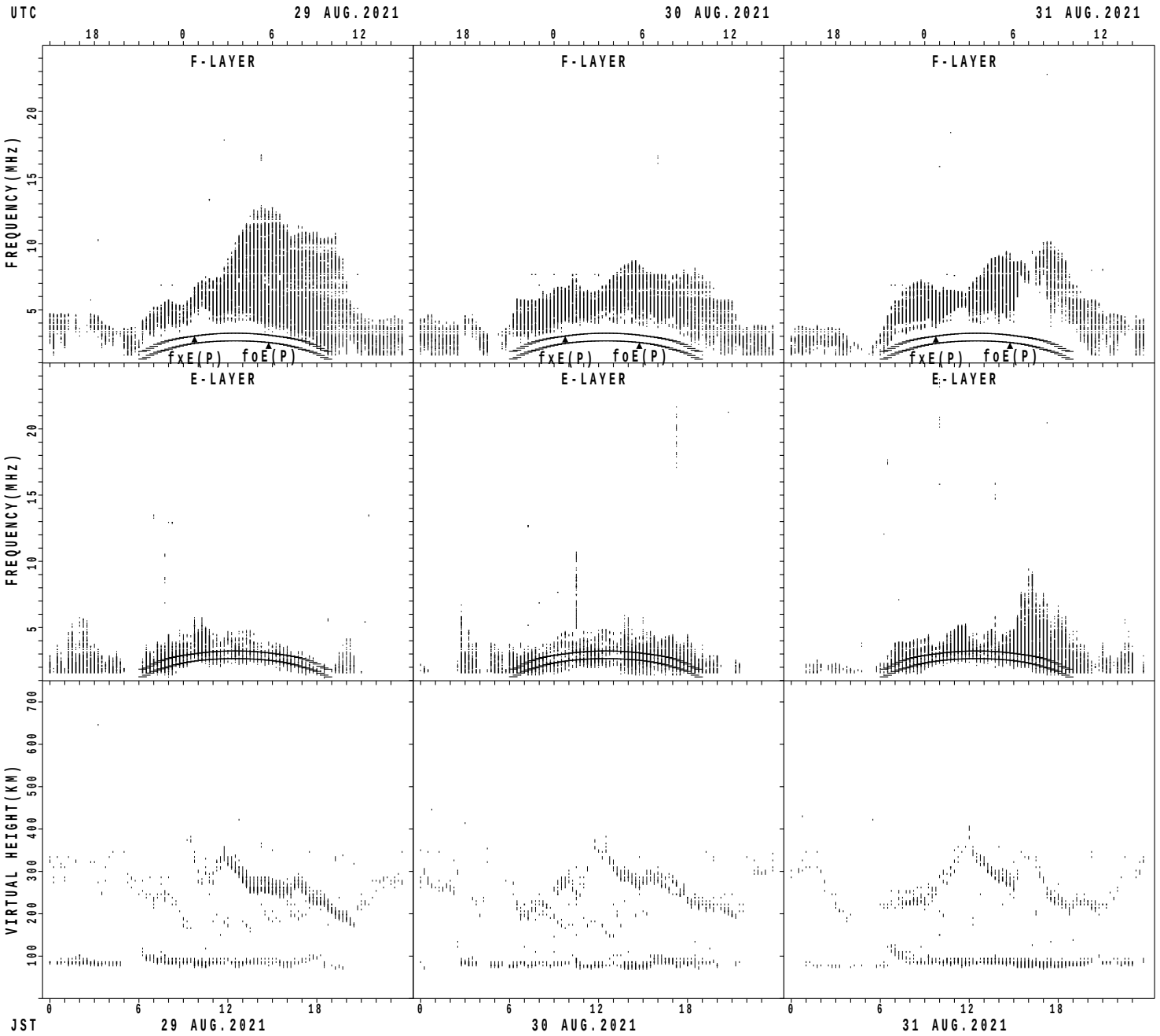
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

AUG.2021 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	3									4	6	3	1	2	1		
MED						208	221	208									209	214	208	198	257	354		
U Q						104	254	288									251	260	250	99	258	177		
L Q						104	207	206									200	198	196	99	256	177		

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	31	29	29	28	28	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	30	31	31
MED	96	96	96	96	98	98	98	96	96	96	94	96	96	96	96	96	96	96	98	94	96	98	96	96
U Q	98	98	98	98	98	99	100	98	98	98	98	98	100	98	98	98	98	98	98	98	98	98	98	98
L Q	96	95	95	96	96	97	96	96	94	94	92	94	92	92	94	94	94	94	94	92	94	94	92	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1		2	7									10	11	7	6	2	2	1	
MED					202		216	242									277	220	224	237	240	263	244	
U Q					101		224	258									296	250	264	264	252	308	122	
L Q					101		208	192									228	206	198	228	228	218	122	

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	30	29	28	31	30	26	30	31	30	29	31	31	29	30	30	28	30	31	30	31	30	29	30	30
MED	94	94	94	96	96	98	98	96	96	94	96	96	94	94	95	96	96	96	94	94	94	96	96	93
U Q	96	96	96	98	98	98	98	98	98	96	96	98	98	98	98	98	98	98	96	98	96	98	96	96
L Q	92	92	92	92	94	96	96	94	94	92	92	94	92	92	92	94	94	92	92	92	92	93	94	92

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								5	9									10	7	6				1
MED								232	222									270	266	225				218
U Q								248	245									278	298	272				109
L Q								199	208									256	240	206				109

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	24	25	31	31	31	31	31	31	31	31	31	31	31	31	28	29	29	31	30
MED	96	94	96	96	96	96	96	96	96	96	96	96	96	96	96	96	98	96	96	96	94	94	96	94
U Q	96	96	98	98	97	98	98	100	98	98	98	98	98	98	98	98	98	100	98	96	96	96	98	96
L Q	94	94	92	94	94	94	94	96	94	94	94	94	94	94	94	92	94	92	94	93	92	92	94	94

MONTHLY MEDIANS OF h'F AND h'Es

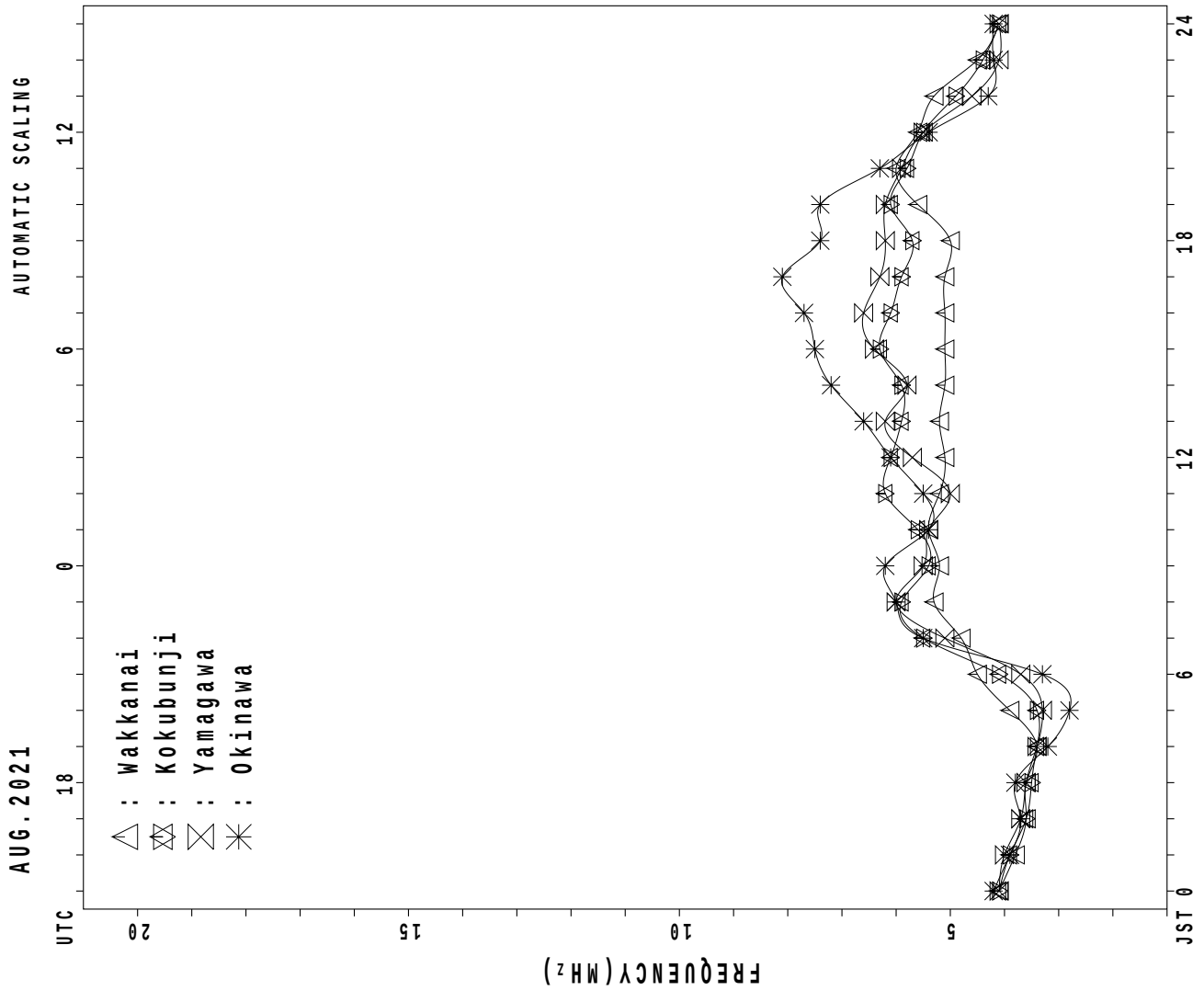
AUG.2021 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1							6	11									18	18	14	6	1		
MED	266							216	232									262	256	228	239	202		
U Q	133							226	242									278	274	244	270	101		
L Q	133							192	210									246	232	210	226	101		

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	30	27	29	25	30	26	29	31	31	31	31	31	31	31	31	31	31	31	31	31	28	29	28	28
MED	94	96	94	96	96	96	98	96	96	96	94	96	96	96	96	96	96	96	96	94	96	96	96	94
U Q	96	96	96	98	98	98	98	98	98	96	96	98	98	98	98	98	98	98	98	96	98	98	96	96
L Q	92	92	92	94	96	94	94	94	92	92	94	94	96	94	94	94	94	94	90	90	94	93	94	92


MONTHLY MEDIANS PLOT OF foF2
AUG.2021
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
0
6
12
18
JST 0
6
12
18
24
5
10
15
20
FREQUENCY(MHz)

IONOSPHERIC DATA STATION Wakkanai

AUG.2021 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	58	55	X 47	X 47																	76	71	X 62	X 59
2	X 54	X 44	X 48	X 46																		X 59	A	X 58
3	X 55	X 53	X 57	X 44																		X 66	X 64	X 61
4	X 55	X 55	X 49	X 51																		X 65	X 63	X 59
5	X 59	55	58	59	58																	X 67	X 62	X 55
6	56	54	X 58	X 55																		O X 66	X 59	X 51
7	X 45	X 45	X 47	X 53																		X 65	X 59	X 59
8	X 55	X 55	X 48	X 46																		X 60	X 55	X 55
9	48	X 40	X 44	48	48																	X 63	X 59	X 50
10	X 53	X 43	X 43	X 45																		X 61	X 55	X 55
11	X 51	X 45	X 45	X 41																	X 67	X 67	X 65	X 43
12	X 43	X 45	X 42	X 45																	X 66	X 64	X 59	X 53
13	X 51	A	X 44	X 40																	X 64	X 58	X 63	X 61
14	X 55	X 49	X 45	X 46																	X 63	X 63	X 59	X 54
15	X 54	X 48	54	54																	X 66	X 72	X 65	X 60
16	X 53	X 53	X 53	X 51																	X 65	X 61	X 55	X 55
17	X 52	X 50	X 54	X 46																	X 53	X 53	X 54	X 54
18	X 45	A	A	X 45																	X 63	X 58	X 58	X 53
19	X 53	X 46	X 45	X 45																	X 65	X 65	X 60	X 51
20	X 45	X 47	X 45	X 43																	X 74	X 86	X 66	X 54
21	X 44	X 44	X 43	X 39																	X 59	X 59	X 50	X 46
22	X 41	X 39	X 41	X 43	44																A	A	X 58	X 55
23	X 37	X 37	X 35	X 37																	X 67	X 65	X 57	X 52
24	X 46	X 44	X 44	X 44																	X 66	X 67	X 65	X 58
25	X 46	X 43	X 43	X 45																	X 77	X 65	X 55	X 49
26	X 49	X 45	X 45	X 45																	X 62	X 59	X 59	X 45
27	X 39	X 39	X 41	X 41																	X 67	X 58	X 58	X 49
28	X 48	X 46	X 43	X 40																	X 63	X 60	X 60	X 54
29	X 46	39	39	32																	X 61	X 55	X 50	X 45
30	X 39	X 39	X 37	X 35																	X 63	X 63	X 61	X 54
31	X 42	X 42	X 42	X 42																	X 65	X 58	X 48	X 47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	30	31	3																21	30	30	31
MED	X 49	X 45	X 45	X 45	48																X 65	X 63	X 59	X 54
U Q	X 54	X 52	X 48	X 47	58																X 67	X 66	X 62	X 58
L Q	X 45	X 42	X 43	X 41	44																X 63	X 59	X 55	X 50

IONOSPHERIC DATA STATION Wakkanai

AUG.2021 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Wakkanai

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

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

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	L	L	L	E A 460	E A 428	L	L	L	L	L	L	A				
2							L	L	A	A	L	L	L	L	A	A	A	A						
3					A	A	A	A	L	A	L	L	L	L	L	L	A	L	L					
4						L	A	A 396		L	L	L	420	L	A	A	L	L	A					
5						L	A	A	A	L	A	L	A	L	L	L	L	L	L					
6							L	L	A	L	L	L	L	L	L	A	L	A	A					
7					A		L	L	L	L	L	L	L	L	L	L	L	364						
8						L	A	A	L	L	L	432		L	L	A	A	A	A	A				
9							A	A	A	L	L	L	L	L	L	400	L	L	L					
10						L	A	A	L	L	L	L	L	L	L	L	L	372	L					
11						L	A	L	L	L	L	L	L	L	A	L	L	A	L					
12						L	A	A	A	L	L	L	L	L	408	L	L	L	L					
13						L	L	A	A	A	L	L	L	L	L	L	L	A	A					
14						L	356	L	L	L	L	444	L	436	L	L	L	L	L					
15							L	A	L	L	A	L	L	A	A	L	L	L	A					
16						L	L	A	A	L	L	L	L	L	L	L	L	L	L					
17						L	L	L	A	A	A	A	A	A	A	L	L	L	L					
18						L	L	388	L	420	A	A	A	A	A	A	A	L	A	A				
19						L	L	L	L	A	A	L	L	L	L	A	A	A	L					
20						A	A	A	A	A	L	A	A	440	L	A	A	A						
21						A	L	L	L	L	A	L	L	L	L	L	L	A		L				
22						L	L	L	L	L	L	L	L	L	A	A	A	L						
23							L	L	A	A	L	A	A	A	A	L	L	A						
24							L	L	A	L	A	L	L	L	L	L	384	L	L					
25						L	L	L	A	A	L	L	L	L	L	A	A	A	L					
26						L	L	A	A	L	L	L	L	L	L	L	364	L						
27					L		404	L	L	L	L	A	L	A	L	L	A		A					
28							L	A	A	L	L	L	L	L	L	L	L	L						
29							L	A	L	A	L	L	L	L	L	L	372	L						
30							L	L	420	452	L	L	436	452	444	L	388	L						
31							L	L	L	L	L	456	L	L	448	A	388	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	1	2	2		4	3	3	3	1	5	2						
MED							380	388	408	436		444	428	440	444	400	384	368						
U Q												458	436	452	448		388							
L Q												438	420	436	408		368							

AUG.2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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 212	252	284	308	304	304	304	304	340	288	288	288	256	196	A	A				
2					A 172	256	300	304	324	324	316	344	240	A	A	A	A	A	A	A				
3					A	A 244	276	308	320	320	324	324	324	340	320	280	256	188	256	A				
4					B 212	228	268	288	308	308	308	324	332	316	316	272	232	A	A	A				
5					A 176	232	268	288	292	308	308	308	A	312	272	288	244	240	A	A				
6					B 188	240	236	272	224	A	372	292	300	316	312	280	240	180	A	A				
7					A 172	236	260	292	332	332	332	332	332	320	320	284	248	180	260	A				
8					A 196	232	228	288	304	320	320	340	324	332	312	292	232	A	A	A				
9					A 180	228	260	276	300	300	300	300	300	316	308	292	228	176	224	A				
10					A	A 224	248	276	324	A	332	332	272	308	304	284	236	192	A	A				
11					B	A 232	264	296	312	300	A	332	A	A	312	284	232	180	A					
12					A 172	216	276	276	A	300	324	320	332	312	296	272	240	216	A					
13					A 192	240	272	300	300	300	336	336	336	320	292	A	240	204	A					
14					A 172	240	268	288	304	304	324	284	336	252	276	A	A	A	A					
15					208	B 224	276	296	312	312	312	324	A	A	A	276	268	A	A					
16					B 172	232	268	288	288	288	328	328	328	308	304	276	220	192	A					
17					A	A 192	260	296	296	324	324	300	284	268	A	A	A	176	A					
18					A	A 196	252	280	312	324	324	308	308	A	244	244	280	A	A					
19					A	A 188	264	280	280	308	308	332	320	320	300	276	220	A	A					
20					A	A 240	264	288	308	308	A	256	300	332	312	276	244	184	A					
21					A	A 204	256	272	288	260	312	340	324	324	300	268	216	A	A					
22					216	A 216	252	288	320	320	332	336	316	A	A	A	A	A	A					
23					200	A 228	276	296	304	328	328	328	296	296	296	296	A	A	A					
24					A 228	228	256	288	A	A	340	340	336	300	300	260	236	252	A					
25					A	A 232	272	288	300	288	A	316	316	312	312	244	A	A	304					
26					184	232	216	264	268	308	A	A	308	344	276	284	220	220	A	A				
27					A 280	236	256	288	288	328	328	292	A	316	316	A	A	A	A					
28					B 180	212	264	276	284	296	A	292	332	288	308	292	232	A	A					
29					188	180	208	256	284	300	300	300	360	316	316	284	260	236	A	176				
30					192	B 228	264	300	312	A	328	312	A	A	288	280	228	A	A					
31					B	A 232	236	A	296	336	336	356	312	320	304	276	212	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					6	17	31	31	30	29	26	26	31	26	25	27	25	24	14	5				
MED					196	180	228	264	288	304	308	324	324	322	316	304	276	236	190	256				
U Q					208	212	236	272	296	312	324	332	336	332	320	312	286	244	204	282				
L Q					188	172	216	256	280	294	300	312	304	300	298	288	270	228	180	200				

IONOSPHERIC DATA STATION Wakkanai

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

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

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 31	J A 33	J A 46	J A 33	J A 28	J A 45	J A 53	J A 50	J A 48	J A 49	J A 52	J A 53	J A 42	40	J A 53	J A 37	91	J A 107	J A 31	J A 76	J A 40	J A 50	31	34
2	24	J A 24	J A 25	27	J A 83	J A 31	J A 50	J A 51	J A 83	J A 63	67	40	J A 55	J A 55	J A 87	J A 83	J A 65	J A 60	J A 51	J A 25	J A 25	32	J A 66	42
3	J A 52	J A 181	48	J A 41	J A 51	J A 51	60	71	J A 50	J A 108	38	37	37	37	J A 52	39	J A 64	50	E B 14	J A 96	J A 51	E B 16	J A 51	31
4	J A 24	33	J A 24	J A 21	24	J A 30	J A 37	J A 53	J A 46	J A 34	J A 42	82	36	38	46	J A 95	J A 85	J A 66	J A 83	J A 82	J A 52	J A 75	J A 42	J A 51
5	J A 51	J A 52	J A 52	32	J A 25	J A 25	J A 54	J A 58	J A 97	J A 53	J A 93	47	J A 57	J A 39	J A 33	J A 34	35	33	J A 127	J A 32	J A 50	J A 33	27	J A 25
6	J A 20	21	E B 16	J A 23	E B 16	J A 29	J A 33	J A 52	J A 47	39	J A 40	J A 57	J A 51	36	38	39	J A 44	J A 69	J A 107	J A 63	32	24	J A 50	J A 50
7	J A 51	J A 30	J A 33	J A 41	J A 64	48	J A 48	33	34	40	40	40	37	40	39	36	J A 51	J A 40	J A 48	J A 50	31	25	24	J A 28
8	28	26	26	J A 30	J A 34	J A 32	J A 84	J A 159	J A 103	37	J A 61	J A 53	37	36	J A 49	J A 54	J A 75	J A 100	J A 96	J A 220	J A 40	39	J A 61	J A 30
9	J A 26	J A 32	J A 31	26	J A 19	22	J A 41	J A 66	J A 105	J A 58	J A 53	J A 59	J A 49	J A 154	40	34	31	J A 80	J A 49	33	38	J A 31	J A 82	J A 31
10	29	28	J A 27	J A 197	J A 31	J A 39	J A 52	J A 52	J A 54	J A 50	J A 45	J A 45	J A 201	47	39	34	34	J A 23	23	J A 22	33	J A 35	J A 25	J A 49
11	J A 33	E B 16	32	E B 16	30	J A 29	J A 40	J A 43	J A 50	41	J A 54	J A 83	39	J A 51	J A 57	36	36	54	J A 41	J A 36	32	J A 37	34	J A 52
12	J A 22	27	31	28	J A 24	J A 29	J A 41	J A 41	J A 73	J A 230	J A 35	35	40	38	37	35	J A 54	31	J A 36	33	28	J A 27	J A 37	J A 49
13	J A 49	J A 51	J A 50	J A 50	J A 32	21	J A 41	73	J A 71	J A 83	J A 53	J A 52	J A 39	J A 45	38	J A 31	J A 33	J A 43	J A 64	J A 53	J A 52	32	J A 51	J A 35
14	J A 41	25	J A 25	23	28	J A 25	31	38	35	J A 142	J A 44	J A 209	J A 49	J A 203	J A 45	J A 63	J A 52	J A 31	J A 35	J A 26	J A 28	35	J A 52	J A 52
15	J A 50	J A 83	J A 41	J A 101	28	J A 23	30	J A 55	J A 53	J A 53	J A 214	J A 77	J A 83	J A 82	J A 49	J A 35	J A 85	J A 41	J A 104	J A 61	J A 47	34	J A 22	22
16	22	27	E B 16	29	29	J A 20	27	J A 51	J A 63	38	J A 53	J A 50	J A 36	37	J A 34	33	31	24	J A 21	J A 33	J A 31	32	J A 33	28
17	28	J A 24	22	J A 25	J A 25	32	J A 25	J A 41	J A 51	J A 51	J A 88	J A 161	J A 127	J A 106	J A 106	J A 51	J A 55	J A 41	J A 27	J A 34	J A 53	32	J A 49	J A 41
18	J A 32	J A 51	J A 51	J A 33	38	32	J A 25	35	34	35	J A 50	J A 100	56	60	76	75	J A 127	J A 88	J A 107	J A 106	J A 51	J A 51	J A 33	J A 85
19	J A 40	23	J A 25	20	J A 31	J A 23	J A 30	31	J A 41	J A 65	J A 73	49	36	36	38	J A 57	J A 79	J A 53	J A 30	30	J A 31	30	32	J A 30
20	J A 32	31	J A 26	27	32	J A 83	J A 101	J A 50	J A 51	J A 107	J A 43	69	J A 49	J A 108	42	J A 52	80	J A 127	J A 50	J A 50	J A 35	J A 32	J A 51	J A 51
21	J A 50	J A 31	26	26	J A 38	J A 31	J A 25	J A 30	J A 32	J A 39	56	G	G	40	J A 38	62	51	J A 57	82	J A 53	J A 62	J A 50	J A 49	J A 19
22	32	25	25	28	J A 31	J A 40	J A 51	J A 49	J A 50	J A 43	J A 44	41	39	51	J A 73	J A 109	J A 64	J A 108	J A 65	J A 63	J A 254	J A 53	J A 51	J A 40
23	J A 53	J A 26	J A 47	J A 23	27	J A 30	J A 31	J A 43	J A 50	J A 62	J A 53	J A 47	J A 98	J A 84	J A 84	60	J A 52	J A 57	49	J A 51	J A 32	J A 29	J A 32	J A 41
24	60	J A 35	J A 25	32	J A 23	28	27	J A 51	J A 46	J A 54	J A 83	40	38	36	42	J A 61	35	J A 26	J A 24	J A 50	J A 25	J A 49	J A 40	J A 25
25	26	J A 23	30	J A 24	J A 24	J A 20	J A 27	J A 39	J A 49	J A 68	J A 63	J A 54	J A 49	J A 74	J A 43	J A 47	J A 63	J A 63	J A 51	J A 51	J A 51	58	J A 39	J A 52
26	J A 24	J A 23	25	J A 22	22	28	30	J A 55	J A 55	J A 63	J A 37	J A 49	J A 37	J A 37	59	34	J A 48	J A 53	J A 32	J A 27	J A 31	35	J A 31	J A 31
27	J A 29	J A 31	J A 48	J A 34	J A 24	J A 32	J A 35	J A 51	J A 88	J A 65	J A 99	J A 63	J A 105	J A 83	38	J A 48	J A 52	J A 53	J A 63	J A 181	J A 105	J A 82	J A 51	24
28	J A 24	28	J A 21	32	E B 16	27	J A 30	J A 49	J A 43	J A 35	J A 50	J A 50	J A 33	J A 62	41	J A 62	40	J A 44	J A 52	J A 26	J A 43	J A 52	J A 36	25
29	32	33	22	20	24	J A 30	J A 27	42	33	J A 51	J A 52	J A 37	40	J A 49	J A 35	J A 35	34	J A 53	J A 24	E B 26	16	34	J A 33	28
30	33	J A 26	J A 123	25	J A 25	E B 16	24	J A 33	34	J A 53	J A 34	J A 37	J A 84	J A 45	J A 48	J A 31	30	27	J A 22	J A 24	J A 34	48	24	J A 85
31	32	28	22	20	E B 15	22	26	29	J A 49	J A 63	37	40	J A 75	J A 53	J A 47	J A 47	J A 63	80	J A 83	J A 64	J A 52	J A 52	26	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 32	J A 28	J A 26	27	J A 28	J A 29	J A 33	J A 50	J A 50	J A 53	J A 52	J A 50	J A 42	J A 47	J A 43	J A 47	J A 52	J A 53	J A 49	J A 50	J A 38	J A 35	J A 37	J A 34
U Q	J A 49	J A 33	J A 46	J A 33	J A 32	J A 32	J A 50	J A 53	J A 63	J A 65	J A 63	J A 63	J A 57	J A 74	J A 53	J A 61	J A 65	J A 69	J A 82	J A 63	J A 51	J A 50	J A 51	J A 50
L Q	J A 26	25	25	23	24	23	27	39	43	40	J A 42	40	37	38	38	35	35	40	J A 30	J A 30	J A 31	32	31	28

AUG.2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	17	17	19	19	32	A	41	31	38	37	E A 46	A	39	A 40	34	32	30	24	A A 76	21	16	16	16
2	E B 16	E B 16	E B 16	E B 16	17	26	26	A	45	A	38	36	36	A	A 50	E A 45	E A 44	24	25	18	17	22	A A 66	A 23
3	20	E B 16	17	17	A	A A 51	A A 60	A A 71	35	44	G 32	35	35	35	34	35	A A 64	28	E B 14	G 22	20	E B 16	18	17
4	16	18	E B 16	E B 16	E B 16	G 18	A 29	33	32	33	33	36	36	37	A	A A 95	28	G 21	E A 30	E A 26	19	16	17	17
5	20	A	22	17	17	19	A	42	A A 97	38	39	37	A A 57	37	32	G 26	33	29	G 21	20	18	22	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	G 24	G 23	A	32	36	G 37	35	35	34	35	33	A 69	A A 107	19	E B 16	E B 16	20	17
7	18	16	E B 16	16	A A 64	20	G 20	29	32	G 32	G 32	38	36	34	34	33	33	30	22	G 18	18	E B 16	E B 16	19
8	E B 17	E B 17	18	23	20	A	A A 84	A A 159	30	31	G 30	34	35	34	37	A A 54	A A 75	A A 100	A	A A 220	18	18	19	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	A A 41	A	44	34	40	38	38	34	G 31	G 31	G 28	A	24	G 22	18	20	17	19
10	E B 18	E B 16	17	17	E B 17	25	A A 52	28	A	34	34	34	36	36	37	31	G 28	G 23	23	17	E B 17	18	E B 18	E B 18
11	E B 17	E B 16	E B 16	E B 16	16	20	A A 40	27	32	32	37	34	38	36	A	G 31	31	A	22	18	21	18	17	E B 16
12	E B 17	E B 17	E B 17	E B 17	E B 17	20	24	29	E A 42	31	34	34	40	36	36	33	33	26	G 21	17	E B 17	17	22	20
13	20	A A 51	18	18	18	G 18	G 21	A A 73	A A 71	A	36	37	35	36	G 31	G 29	29	28	A A 64	16	E B 16	E B 16	18	17
14	24	E B 17	E B 17	E B 17	E B 16	G 17	26	30	33	A	34	39	37	G 34	37	A	28	24	20	19	18	22	20	17
15	16	17	17	17	E B 16	21	26	A	A	A	A	36	A	A	A	31	G 26	G 24	A A 104	23	E B 17	E B 17	17	E B 17
16	E B 17	E B 17	E B 16	17	E B 14	G 16	G 23	A A 51	A A 63	32	36	34	34	34	32	31	30	24	21	21	19	19	18	18
17	17	16	E B 16	E B 17	E B 16	19	23	28	A	A	A A 88	A A 161	A A 127	A A 106	A	26	21	19	24	17	17	17	A	17
18	17	A A 51	A A 51	17	18	18	G 19	32	32	34	A	A A 100	A A 56	A A 60	A A 76	A A 75	A A 127	G 22	A	A	17	17	17	17
19	17	E B 16	E B 16	E B 16	16	16	25	28	32	A	A A 73	37	35	35	36	A	A	24	21	17	18	E B 16	E B 16	18
20	A	18	E B 16	16	18	19	A A 101	A	A	A A 107	34	A A 69	A	33	35	34	A A 80	A A 127	24	22	22	E B 16	17	17
21	E B 16	19	E B 17	E B 17	E B 17	A A 31	23	26	30	36	A A 56	G	G	36	33	34	31	A	23	18	E B 16	16	16	16
22	E B 16	E B 16	E B 16	E B 16	E B 17	22	26	27	31	32	34	40	36	38	A A 73	A	A A 64	20	20	20	A A 254	A A 53	E B 16	16
23	19	E B 16	18	16	E B 16	18	G 22	34	32	A A 62	34	A	A	A	A A 84	31	G 28	21	21	18	24	E B 16	E B 16	17
24	17	17	17	E B 16	E B 16	E B 17	24	28	42	35	31	36	36	G 32	35	33	27	G 23	G 21	25	E B 18	16	E B 17	16
25	E B 16	E B 16	17	E B 17	E B 17	17	G 22	33	A	A A 68	A 49	47	39	35	36	45	A A 63	22	23	G 23	23	21	18	18
26	17	18	16	16	E B 16	G 16	26	A A 55	A A 55	34	32	34	34	G 34	37	29	28	E A 27	26	E B 17	17	19	16	19
27	16	16	19	24	21	G 21	32	35	46	45	35	50	32	A A 83	G 31	G 30	27	23	A A 63	E B 16	17	17	17	E B 17
28	17	E B 17	E B 17	17	E B 16	E B 17	25	A	A	33	33	33	31	G 31	33	33	33	G 23	23	20	21	21	17	17
29	E B 17	17	E B 17	E B 17	E B 14	G 16	22	G 26	30	A	37	33	G 34	G 31	G 29	30	G 26	G 23	G 20	G E B 16	19	17	16	
30	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	24	31	G 29	37	33	34	35	33	33	30	G 28	24	18	18	16	16	16	17
31	E B 17	E B 16	E B 16	E B 16	E B 15	E B 16	24	28	30	32	35	36	G 35	37	37	A 34	G 27	A A 80	A A 83	23	21	22	17	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	30	30	29	26	24	24	29	30	27	28	27	28	30	28	29	30	31	31	30	31
MED	17	E B 16	E B 17	E B 17	E B 16	18	25	30	32	34	35	36	36	35	35	32	30	24	23	18	18	17	17	17
U Q	17	17	17	17	17	21	A A 30	A A 41	A A 44	38	38	39	38	37	A 37	A A 34	A A 33	28	A A 26	22	21	20	18	18
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	17	G 23	28	31	32	33	34	G	G 34	G 33	30	G 28	23	21	17	E B 17	E B 16	E B 16	16

AUG.2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	322	F 318	297	297	325	366	207	337	348	296	287	306	319	309	291	288	196	307	340	A	F	F	316	284
2	325	324	299	323	307	383	285	307	342	379	311	300	297	293	326	325	306	315	330	330	329	329	A	277
3	283	307	276	290	337	A	A	A	260	348	296	293	245	281	329	340	A	320	307	316	316	320	307	317
4	314	328	306	317	314	299	297	289	313	321	326	R	G	R	279	A	278	304	295	294	303	303	302	315
5	312	F 298	F 312	F 275	F	299	317	353	A	354	354	308	A	305	317	295	323	327	319	308	291	325	322	319
6	F	F	261	285	329	Z 324	302	R	361	328	338	291	277	304	325	263	296	A	A	311	R	R 343	298	330
7	312	289	289	289	A	319	219	337	287	311	264	306	333	292	289	286	310	328	327	307	306	296	293	290
8	307	304	328	303	303	285	A	A	G	271	315	G	R	287	277	A	A	A	325	A	267	301	345	323
9	F 334	302	302	295	313	334	A	R	320	328	338	281	R 278	298	302	317	327	210	322	321	313	313	334	328
10	340	321	322	322	332	339	A	349	314	314	257	323	336	316	297	282	301	325	321	321	313	313	310	307
11	306	327	327	294	300	309	A	336	R	335	350	334	328	289	324	315	340	340	333	300	335	315	366	304
12	317	316	307	333	320	335	332	319	318	354	303	316	313	361	304	328	326	333	339	332	328	328	328	318
13	342	A	290	318	295	316	303	A	A	340	339	304	278	308	305	312	337	337	A	307	289	286	295	335
14	322	327	314	314	294	327	293	322	312	330	314	G	324	329	283	319	319	329	327	306	326	325	283	325
15	322	321	F 323	F 298	295	Z 364	338	305	341	324	343	332	284	309	329	318	315	312	A	322	320	320	320	319
16	310	307	311	315	314	313	269	A	A	330	301	G	250	318	326	305	321	320	331	314	322	344	302	299
17	298	298	284	283	313	334	354	G	R	307	A	A	A	A	317	327	321	335	332	344	307	304	297	310
18	309	A	A	308	307	323	309	333	358	306	324	A	A	A	A	A	A	324	346	296	295	337	279	293
19	302	316	315	314	315	335	334	340	318	258	A	307	G	305	330	304	207	327	310	325	307	330	318	315
20	315	295	306	294	294	310	A	344	333	A	332	A	330	294	324	324	A	A	324	291	280	301	345	329
21	307	307	296	296	295	A	274	290	304	272	A	288	G	310	297	324	298	213	317	316	305	301	328	328
22	316	306	282	317	F 316	235	328	302	337	352	338	317	312	312	A	322	A	319	316	315	A	A	Z 349	349
23	287	287	317	293	293	329	353	326	337	A	336	346	303	R 216	A	303	314	256	328	300	316	350	325	322
24	322	323	322	316	329	325	341	340	346	335	346	354	331	G	331	331	331	327	326	314	277	308	304	332
25	354	319	319	305	304	339	336	282	358	A	R	G	315	331	322	321	A	320	330	329	330	329	318	317
26	298	313	303	302	328	328	G	A	A	265	307	G	290	316	299	328	274	214	308	303	306	303	326	325
27	331	302	307	307	306	343	322	371	248	322	352	342	348	A	311	327	332	335	A	301	307	326	326	302
28	295	298	298	297	297	319	331	275	299	280	272	277	302	280	293	303	312	326	306	299	292	301	298	296
29	295	F	F	F	295	334	R	358	315	315	335	350	307	306	303	328	336	327	326	295	296	318	291	324
30	303	307	307	307	314	344	312	317	366	339	318	331	307	327	326	324	324	340	340	317	316	303	339	313
31	303	303	283	319	319	341	347	311	342	278	321	333	333	332	297	334	317	A	A	301	301	359	316	315
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	27	29	30	29	29	24	24	25	28	27	27	27	27	28	28	25	27	26	29	28	29	30	31
MED	312	307	306	304	313	328	314	324	320	323	324	306	307	306	308	320	317	325	326	311	307	318	317	317
U Q	322	321	316	316	320	339	335	340	344	337	338	332	328	316	326	327	326	329	331	321	318	329	328	325
L Q	303	302	293	294	296	314	289	304	308	301	303	G 281	278	292	297	304	300	312	317	300	296	303	298	304

AUG.2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	L	L	L	A	A	L	L	L	L	L	L	A				
2							L	L	A	A	L	L	L	L	A	A	A	A						
3					A	A	A	A	L	A	L	L	L	L	L	L	A	L	L					
4						L	A	A	376		L	L	L	419	L	A	A	L	L	A				
5						L	A	A	A	L	A	L	A	L	L	L	L	L	L					
6							L	L	A	L	L	L	L	L	L	A	L	A	A					
7					A		L	L	L	L	L	L	L	L	L	L	L	357						
8						L	A	A	L	L	L	402	L	L	L	A	A	A	A	A				
9							A	A	A	L	L	L	L	L	L	389	L	L	L					
10						L	A	A	L	L	L	L	L	L	L	L	L	375	L					
11						L	A	L	L	L	L	L	L	L	A	L	L	A	L					
12						L	A	A	A	L	L	L	L	L	380	L	L	L	L					
13						L	L	A	A	A	L	L	L	L	L	L	L	A	A					
14						L	348	L	L	L	L	408	L	370	L	L	L	L	L					
15							L	A	L	L	A	L	L	A	A	L	L	L	A					
16						L	L	A	A	L	L	L	L	L	L	L	L	L	L					
17						L	L	L	A	A	A	A	A	A	A	L	L	L	L					
18						L	L	368	L	400	A	A	A	A	A	A	A	L	A	A				
19						L	L	L	L	A	A	L	L	L	L	A	A	A	L					
20						A	A	A	A	A	L	A	A	381	L	A	A	A						
21						A	L	L	L	L	A	L	L	L	L	L	L	A		L				
22						L	L	L	L	L	L	L	L	L	A	A	A	L						
23							L	L	A	A	L	A	A	A	A	L	L	A						
24							L	L	A	L	A	L	L	L	L	L	359	L	L					
25						L	L	L	A	A	L	L	L	L	L	A	A	A	L					
26						L	L	A	A	L	L	L	L	L	L	L	379	L						
27					L		376	L	L	L	L	A	L	A	L	L	A		A					
28							L	A	A	L	L	L	L	L	L	L	L	L						
29							L	A	L	A	L	L	L	L	L	L	376	L						
30							L	L	369	377	L	L	433	366	366	L	362	L						
31							L	L	L	L	L	362	L	L	361	A	358	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	1	2	2		3	2	3	3	1	5	2						
MED							362	368	372	388		402	426	370	366	389	362	366						
U Q												408		381	380		378							
L Q												362		366	361		358							

AUG.2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG.2021 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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 276		266	360	394	352	352	368	402	432	A	298	250	A				
2							338	328	A 242	376	382		372	378	320	312	330	322						
3					A	A	A	A	456	284	370	420	510	402	304	284	A	310	296					
4						302	330	A	338	312	324	G 324	G	286	A	A	366	346	E A 342					
5						296	304	266	A 278		A	348	A	374	344	360	328	284	302					
6							258	292	246	296	324	414	398	358	322	E A 422	354	A	A					
7					A		354	300	356	356	356	356	308	378	364	364	320	262						
8						390	A	A	G 372	372		G	354	368	404	A	A	A	E A 330	A				
9							A	A	304	296	282	414	420	340	370	332	320	604	290					
10						282	A	266	310	314	354	328	378	320	404	386	336	272	262					
11						290	A	276	322	266	280	298	324	390	312	336	270	286	294					
12						278	296	298	354	264	316	326	346	362	362	288	318	276	254					
13						322	348	A	A 286	264	336		408	352	366	320	294	270	A					
14						294	374	314	326	326	336	G	318	304	380	338	312	296	280					
15							274	362	260	312	266	330	362	352	324	318	320	316	A					
16						286	420	A	A 310	380		G	454	352	354	372	310	280	246					
17						288	262	G	A 340		A	A	A	A	338	328	332	270	278					
18						322	358	294	284	344	336	A	A	A	A	A	A	300	262	292				
19						274	274	254	328	A	A	336	G	262	340	346	A	292	276					
20						A	A	292	306	A	306	A	306	382	342	328	A	A						
21						A	402	428	366	310	A	434	G	384	376	334	338	A 326		292				
22						328	272	368	306	286	308	332	368	356	A	342	A	276						
23							266	298	256	A	306	250	398	E A 640	A	354	356	E A 470						
24							288	282	268	294	256	236	340	G	330	304	296	296	258					
25						292	282	400	264	A	416	G	352	302	344	324	A	288	258					
26						294	G	A	A 284	380		G	418	362	388	320	394	596						
27					336		322	258	522	306	274	274	290	A	352	286	A 296		A					
28							286	A	372	420	422	446	376	404	396	360	318	278						
29							316	234	316	284	296	276	350	350	350	296	290	258						
30							336	280	256	264	302	302	338	292	296	298	286	254						
31							258	336	248	366	276	284	308	308	284	278	304	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	15	24	23	25	27	27	28	28	28	27	28	23	26	16	2				
MED					336	294	310	294	310	306	324	342	365	358	350	329	320	288	270	292				
U Q						322	351	336	355	340	372	G 427	413	380	376	357	336	316	295					
L Q						286	274	276	265	284	282	313	339	330	324	308	296	276	258					

AUG.2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG.2021 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	248	254	280	Q 276	258	232	A	A	206	202	202	A	A	230	238	208	A	A	214	A	266	236	Q 238	266
2	218	224	268	254	240	214	196	A	A	A	198	188	188	A	A	A	A	A	236	246	228	228	A	A
3	294	286	238	216	A	A	A	A	216	A	202	198	188	202	206	198	A	222	222	242	222	230	244	230
4	248	248	256	250	272	226	A	A	208	198	188	212	194	218	A	A	224	A	A	258	238	256	256	262
5	242	A	206	214	206	230	A	A	A	196	A	180	A	194	196	208	216	200	234	264	272	242	226	238
6	224	Q 238	Q 246	Q 260	272	220	196	210	A	190	206	180	176	166	222	A	198	A	A	236	228	216	226	224
7	250	294	294	Q 262	A	230	230	192	200	192	192	192	206	202	208	206	226	208	220	234	272	244	268	268
8	280	250	226	278	232	A	A	A	196	196	194	196	196	196	A	A	A	A	A	A	Q 270	270	252	222
9	240	266	280	Q 244	240	228	A	A	A	188	A	188	190	198	198	198	214	A	212	246	246	244	230	278
10	234	234	256	244	232	232	A	A	A	190	182	168	202	174	210	192	210	210	202	258	246	246	270	256
11	274	226	226	238	262	214	A	220	210	198	190	182	196	194	A	226	236	A	238	264	246	246	206	274
12	268	252	300	262	264	216	A	A	A	196	196	196	186	188	200	230	208	220	208	262	242	242	242	250
13	234	A	234	A	276	226	218	A	A	A	190	204	186	200	184	210	198	A	A	250	260	280	Q 256	234
14	242	222	278	266	284	224	234	234	202	A	194	194	190	224	210	A	218	210	210	246	244	244	288	246
15	242	246	262	Q 262	Q 240	222	216	A	A	A	A	186	A	A	A	A	A	220	A	258	238	224	240	242
16	258	258	250	250	234	234	208	A	A	210	188	188	194	200	200	210	208	214	198	248	254	254	266	282
17	262	274	274	274	260	234	192	216	A	A	A	A	A	A	A	184	194	194	228	244	260	270	A	250
18	222	A	A	248	248	206	230	230	210	192	A	A	A	A	A	A	A	220	A	A	240	240	252	Q 254
19	256	242	274	252	250	216	202	202	202	A	A	194	182	182	206	A	A	A	206	258	258	242	236	244
20	A	276	276	280	284	A	A	A	A	A	218	A	A	206	212	A	A	A	246	284	286	252	230	230
21	272	294	276	304	296	A	218	204	194	204	A	188	188	202	216	A	232	A	270	216	246	242	232	246
22	258	278	268	248	Q 270	230	212	196	202	178	172	220	192	218	A	A	A	196	250	250	A	A	212	222
23	280	Q 280	252	260	260	236	200	216	A	A	A	A	A	A	A	196	208	A	238	268	230	230	246	252
24	242	268	Q 258	250	252	260	218	218	A	192	A	202	192	182	198	212	202	202	222	244	Q 286	262	242	240
25	214	246	252	268	272	214	214	224	A	A	276	248	206	218	218	A	A	A	222	248	242	242	258	266
26	272	258	250	228	260	246	230	A	A	190	200	208	196	196	222	208	208	E A 478	270	262	256	274	246	246
27	260	298	192	286	282	244	212	212	228	228	200	A	208	A	184	200	A	248	A	Q 258	282	232	232	242
28	272	294	250	268	288	284	238	A	A	206	206	192	206	214	202	234	234	234	280	256	A	266	266	252
29	Q 264	314	318	E B 388	304	274	224	A	196	A	216	198	198	198	198	212	212	212	236	258	226	250	254	236
30	280	262	290	314	268	242	204	212	214	206	192	192	176	196	198	204	214	216	240	238	242	258	226	214
31	272	272	288	240	246	236	214	194	194	194	180	228	210	228	214	A	214	A	A	A	250	230	256	268
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	30	30	29	27	21	15	15	20	22	25	24	25	22	18	20	17	23	27	29	30	29	30
MED	257	260	260	258	260	230	214	212	202	196	195	194	193	200	206	208	213	213	228	250	246	244	244	246
U Q	272	279	278	274	274	236	227	220	210	203	202	203	200	216	214	212	221	221	240	258	263	256	256	262
L Q	242	246	250	248	243	220	203	202	196	191	190	188	188	194	198	198	208	205	212	244	239	236	231	236

AUG.2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG.2021 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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 102	102	102	102	102	102	90	90	104	98	98	98	98	98	A	A				
2					A 108	108	100	100	100	92	92	96	96	A	A	A	A	A	A	A				
3					A	A 104	96	96	96	96	96	96	96	96	96	96	98	106	106	104	A			
4					B 104	104	90	98	98	98	98	98	98	98	90	100	100	100	A	A	A			
5					A	94	100	100	100	100	100	100	100	A	100	100	90	100	96	A	A			
6					B 106	102	94	94	94	A	106	96	96	96	96	88	90	92	92	A	A			
7					A 102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	A			
8					A 102	102	102	102	92	92	94	94	94	96	104	98	98	A	A	A				
9					A 114	102	102	96	96	96	96	96	96	104	104	104	104	104	104	104	A			
10					A	A 104	94	94	94	A	94	94	94	104	94	94	90	102	A	A				
11					B	A 102	102	102	94	94	A	94	A	A	94	94	94	94	A					
12					A 104	104	104	98	A	98	98	98	98	98	98	98	98	98	98	A				
13					A 120	96	96	96	96	96	96	96	96	96	96	96	A	96	110	A				
14					A 104	104	102	102	102	96	96	96	96	96	96	96	A	A	A	A				
15					96	B 110	98	98	98	98	98	98	98	A	A	A	98	98	A	A				
16					B 120	104	100	100	100	100	100	100	100	100	100	100	100	100	100	A				
17					A	A 100	100	100	100	100	100	100	100	100	100	A	A	A	100	A				
18					A	A 100	100	100	102	102	104	100	100	A	100	100	100	104	A	A				
19					A	A 104	104	96	90	92	92	92	92	92	92	92	102	102	A	A				
20					A	A 108	102	100	100	100	A	94	94	100	100	100	100	110	110	A				
21					A	A 104	98	98	98	98	94	94	94	94	94	94	100	100	A	A				
22					110	A 110	102	104	102	102	96	100	100	A	A	A	A	A	A	A				
23					100	A 100	100	100	100	100	100	100	100	100	100	100	100	A	A	A				
24					A 118	104	100	100	A	A	92	92	100	100	98	98	112	114	A					
25					A	A 114	104	104	104	102	A	102	102	102	102	102	102	A	A	102				
26					B 114	104	100	100	100	A	A	100	100	100	100	100	100	100	A	A				
27					A 100	100	94	100	100	100	100	100	A	100	100	A	A	A	A					
28					B 108	108	100	100	100	100	A	100	100	100	100	112	98	A	A					
29					110	98	98	98	98	98	98	98	114	100	100	88	88	88	A	98				
30					92	B 110	108	108	104	A	106	104	A	A	94	94	94	A	A					
31					B	A 102	102	A	102	102	102	102	102	102	102	102	102	102	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					5	17	31	31	30	29	26	26	31	26	25	27	25	24	14	5				
MED					100	104	104	100	100	100	99	98	98	99	100	100	100	100	101	102				
U Q					110	114	104	102	102	102	100	100	100	100	100	100	101	102	106	104				
L Q					94	102	102	98	98	96	96	94	94	96	96	94	96	97	98	100				

IONOSPHERIC DATA STATION Wakkanai

AUG.2021 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	90	96	96	96	116	106	106	106	106	106	98	98	174	102	102	114	108	114	104	104	112	96	96
2	98	108	100	100	100	106	114	116	110	106	106	106	106	98	98	98	96	96	102	102	104	104	98	98
3	108	108	104	102	104	104	112	112	104	104	104	152	106	106	104	118	114	114	B	104	104	B	102	102
4	96	96	118	98	120	120	110	104	108	108	104	104	146	154	122	110	110	110	110	104	96	98	102	98
5	102	102	96	96	94	96	106	106	106	106	96	108	90	98	98	98	116	112	104	106	106	104	98	96
6	96	96	B	100	B	100	102	98	98	102	102	102	102	102	112	110	116	112	106	106	116	98	98	100
7	98	98	102	118	116	116	110	110	110	110	186	186	150	98	108	124	114	114	104	102	102	102	102	96
8	96	F 104	118	110	110	110	104	104	118	104	104	96	148	144	98	116	112	112	108	114	106	106	106	106
9	102	110	96	96	108	120	108	108	108	100	100	100	100	100	106	106	126	98	112	106	102	96	96	96
10	88	88	88	120	96	106	106	102	102	102	102	90	118	94	94	142	94	90	120	92	100	100	110	104
11	106	B	94	B	104	118	112	112	100	94	100	100	154	98	98	132	132	116	108	108	86	102	98	108
12	98	98	98	102	106	108	108	102	100	108	106	128	158	158	166	140	104	106	90	90	90	96	96	96
13	96	102	102	100	100	132	106	106	106	100	100	92	104	104	94	94	100	116	108	108	100	108	100	100
14	92	92	92	92	88	108	110	116	110	96	106	92	104	114	98	106	104	102	92	92	92	104	104	104
15	102	102	102	100	100	118	120	112	110	104	88	106	102	100	94	88	110	110	102	102	102	102	102	96
16	96	96	B	92	104	100	104	108	106	106	106	90	102	106	106	144	122	126	98	100	106	98	98	96
17	96	96	96	96	96	96	110	110	106	102	102	102	102	102	104	96	90	90	108	106	106	106	102	102
18	96	96	96	98	90	90	118	100	100	112	102	102	102	102	98	102	110	110	106	100	100	100	100	108
19	108	90	90	90	110	110	100	100	100	100	100	100	134	142	126	110	110	110	110	96	96	96	96	96
20	96	96	118	114	114	114	104	104	104	104	100	98	98	98	126	120	110	110	110	110	110	104	104	104
21	104	94	120	118	110	108	108	114	112	98	100	G	G	94	94	114	104	104	104	100	100	100	94	94
22	98	96	96	100	114	106	106	122	118	94	104	162	144	104	92	100	100	106	102	102	114	102	102	102
23	92	100	114	122	104	106	106	106	106	106	100	100	100	100	100	100	100	100	96	96	96	96	106	98
24	100	104	104	104	94	124	116	106	106	102	100	154	136	102	190	94	116	124	120	86	90	104	104	104
25	94	94	94	94	94	116	116	110	110	106	102	102	102	102	102	102	102	102	108	108	108	108	102	102
26	96	96	96	96	100	124	114	110	98	102	102	102	102	102	102	102	98	102	102	102	102	102	102	102
27	102	102	102	98	98	98	108	108	102	102	102	102	100	94	100	100	98	98	106	106	106	110	110	110
28	98	98	104	122	B	122	114	104	104	106	100	106	104	104	104	104	120	112	102	102	102	102	100	100
29	92	92	98	114	114	114	116	114	104	104	104	100	100	100	100	88	96	96	110	96	B	96	96	96
30	104	86	92	92	92	B	134	106	112	112	102	102	102	98	98	90	122	112	112	100	100	100	100	100
31	100	100	94	94	B	104	128	106	106	106	142	120	126	100	100	116	104	104	104	96	96	106	106	106
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	30	28	30	31	31	31	31	31	30	30	31	31	31	31	31	30	31	30	30	31	31
MED	98	96	98	100	102	109	110	106	106	104	102	102	103	102	100	104	110	110	106	102	102	102	102	100
U Q	102	102	104	110	110	118	114	112	110	106	104	106	134	106	106	116	116	112	110	106	106	104	104	104
L Q	96	94	95	96	96	104	106	104	102	102	100	100	102	98	98	98	100	102	102	96	96	98	98	96

AUG.2021 h'Es (KM)

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F5	F4	F4	L3	C4	C6	C3	C3	C2	C3	C3	C3	HL11	C2	C2	C8	C4	C5	A5	AQ31	FQ31	F4	F4
2	F2	FF11	F2	F1	L3	C4	C2	C3	C4	C3	C2	C2	C2	C2	L3	L3	L3	L4	L4	L4	L3	F3	F6	F4
3	F5	F5	F8	F7	L6	L5	C6	C7	C3	C3	C2	H1	C2	C2	C2	C3	C5	C4		C4	L3		F4	FF32
4	F3	F4	FQ21	FQ11	C1	C2	C3	C3	C2	C2	C2	C2	H1	H1	C2	C3	C3	C3	LQ61	LQ31	L4	F4	F5	F3
5	F6	F9	FQ41	FQ31	L4	LC11	C4	C8	C5	C2	C4	C2	C2	C2	C2	C2	C2	C3	C6	LL33	L4	F3	F1	F1
6	F1	F1		F1		LC11	C4	C4	C3	C2	L2	L2	C2	LH21	C2	C3	C3	C5	C4	L5	L1	F1	F5	F4
7	F4	F4	F3	F3	L5	C5	C5	C3	C2	C1	C1	C1	HL11	LH21	LC21	CL21	C2	C3	C4	C6	L3	F2	F2	F3
8	F1	F1	F2	F5	L6	C4	C7	C3	C2	C1	C2	C2	CL21	C1	LC11	C3	C5	C7	L5	LQ62	L3	F7	F7	F1
9	FQ31	F2	F3	F2	L1	C3	C3	C4	C4	C3	C3	C2	C2	C2	C2	LC11	C2	C3	C3	C5	L7	F5	F4	F3
10	F3	F1	FF21	FF22	L2	L3	C4	C4	C4	C2	L2	L2	CH11	C2	LH21	HL11	CL11	LC21	C2	L2	L1	F5	F3	F3
11	F3		F1		L3	C4	C4	C5	C4	C2	C2	L2	HL11	L2	L3	HL22	HL22	C6	C5	L4	F5	F3	F4	F2
12	F2	F1	F2	F2	L1	C4	C4	C5	C3	L3	C2	C1	H1	CL11	CL11	CL21	LC12	C3	L2	L2	FF11	F4	F6	F5
13	F4	FQ62	FQ51	FQ31	L3	C2	C4	C3	C5	C4	C3	LH11	C1	C2	LC21	L2	L3	C6	C8	C8	F3	F2	F3	F3
14	F4	F2	F2	F2	L1	C3	C3	C3	C2	C3	C2	C2	C2	C1	C2	C2	L2	L3	L3	L5	F4	F3	F5	FQ51
15	F7	F5	F3	F2	C1	C2	C2	C3	C4	C3	C2	C2	C2	L3	L3	L3	C4	C2	L8	LL33	FQ21	F2	F3	F1
16	F1	F2		F4	L1	LC11	C2	C4	C4	C2	C2	LC21	C1	C2	LC11	H1	C2	C2	C2	L1	F4	F4	F7	F3
17	F3	F3	F1	F2	L2	L4	C1	C4	C4	C3	C4	C5	CQ41	C5	C3	L3	L4	L3	C3	L3	F3	F3	F7	F6
18	F2	F6	F5	F5	L5	L3	C2	C2	C2	CL22	C3	C3	C3	C3	L4	C3	C6	C3	L7	LQ41	FQ51	F6	F3	F3
19	F3	F1	F1	F1	L4	L2	C5	C2	C2	C3	C4	C3	C1	H1	C2	C3	C2	C4	L2	L3	F5	F2	F4	F6
20	F5	F5	F2	F1	L4	L5	L6	C6	C4	C6	C3	C4	C2	C2	C1	C2	C7	C7	C5	L8	F7	F3	F3	F2
21	F3	F3	F2	F2	L3	L3	C3	C2	C2	C2	C2			L2	L2	C2	C3	C4	L5	L5	F3	F3	F3	F2
22	FF11	F1	F1	F2	C2	L5	C3	C2	CH11	LC11	LC11	H1	H1	C2	L4	L3	L5	L4	L4	L4	FQ41	F7	F6	F3
23	F3	F2	F4	F2	C2	L2	C3	C3	C3	C5	C3	C3	C2	C4	C4	C3	L3	L4	L6	L5	F5	F1	F3	F5
24	F4	F4	F2	F2	L2	C1	C2	C3	C2	L2	L4	HL22	C1	CL11	CL11	LC11	CL22	CL21	CL31	L4	F2	F3	F3	F3
25	F1	F2	F2	F2	L1	L1	C2	C4	C3	C3	C2	L3	C3	C2	C2	C2	C5	L5	L5	L6	F7	F4	FQ51	FQ61
26	FF22	F2	F1	F2	C1	C1	C3	C5	C5	C2	L2	L2	C2	C2	L3	C2	C4	C3	L3	L4	F5	F6	F4	F4
27	F5	F4	FQ41	FQ41	L3	L2	C4	C5	C3	C3	C4	C3	C3	L3	CL11	LC21	L4	L2	L6	L4	F5	F6	F5	F1
28	F3	F1	FQ11	F4		C1	C2	C4	C3	C1	C1	C1	C2	C2	C2	LC11	C2	C2	L4	L4	F4	F3	FQ31	F2
29	F2	F4	FF11	F1	C2	C3	C3	C2	C2	C3	C2	C2	LC11	C3	C2	C2	CL22	CL21	C2	C2		F4	F5	F3
30	F2	F2	F1	F1	L1		C2	C3	C2	C2	L2	C2	C1	L2	L3	C2	C2	C2	L1	L2	F3	F7	F1	F4
31	F2	F1	F1	F1		L1	C2	C2	L2	C2	HL11	C1	CL11	C2	LC22	C4	C5	C5	L5	L5	F6	F6	F3	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2021 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	58	58	48	45	X37																X59	58	59	49
2	50	48	50	50	42	44															X54	A	A	44
3	42	45	A	39	A																X80	X66	X63	X60
4	X58	X54	X50	X46	X44																X65	X65	X58	X58
5	X50	50	53	48	59	56			89												X64	X63	X63	60
6	X45	X38	49	46	47	46														X79	X65	X58	51	X45
7	48	48	49	X43	46	51														X58	X52	59	59	60
8	X55	X53	53	X44	X44															X56	X58	X55	59	56
9	42	X38	42	X36	X31															X71	X64	X56	58	57
10	56	X42	41	X38	40															X65	X67	X68	X64	X55
11	X50	50	X45	X44	X38				C											X66	X64	X58	64	55
12	X46	X45	X44	X44	X42															X72	X66	68	65	X53
13	X47	X44	47	X41	43	X37				C										X55	59	66	72	72
14	59	40	42	40	40															X71	X70	X58	X54	53
15	58	56	X47	X45	45															X63	X65	X64	69	60
16	X52	53	X47	X47	44															X60	X62	X51	X49	X46
17	X45	48	X45	X44	47															X58	X61	59	60	X52
18	X46	X45	X45	X39	X39															X66	X64	X63	X65	X56
19	X50	X47	X45	X42	X42															X70	X66	C	X56	X52
20	X50	X47	X44	X44	X43															X66	X70	70	64	X64
21	X56	X48	60	48	X44											C			C	X68	X57	56	C	42
22	A	A	A	38	41	41							C	C	C	C	C			X66	X73	X73	X45	40
23	X46	40	40	40	38	38													O	X76	X80	X59	X53	X53
24	X50	X45	X40	X38	X36															X71	X70	X57	X54	64
25	60	55	X37	X37	X36															X102	X72	X43	A	A
26	41	44	42	X38	X36															X64	X67	X63	X58	X50
27	X45	X44	X43	X41	X38															X70	X69	65	63	66
28	X53	X49	X47	X47	X45															X66	X65	X55	59	60
29	X53	X48	X46	X47	X43															X66	X64	X55	X53	58
30	X49	X47	49	X43	X39															X70	X64	X61	X49	X46
31	54	54	X44	X40	X42					C										X71	X64	X57	X56	X52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	31	30	7			1											26	31	29	28	30
MED	X50	X48	X45	X43	X42	44			89											X66	X65	X59	X59	55
U Q	55	50	49	46	44	51														X71	X69	65	64	60
L Q	X46	X44	42	X39	X38	38														X64	X62	X56	X54	50

AUG.2021 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2021 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	F	31	36	44	65	52	51	A	52	53	59	A	A	60	66	67	74	53	F	F	F
2	F	F	F	F	F	F	48	62	65	56	54	56	60	61	61	65	66	63	65	76	48	A	A	F
3	F	F	A	F	A	34	44	55	58	71	64	66	58	60	68	75	60	60	62	73	74	60	57	54
4	52	48	44	40	38	36	51	56	60	56	48	56	45	60	48	50	52	50	50	56	59	55	52	52
5	43	F	F	F	F	F	51	58	F	63	A	53	A	A	A	A	52	A	49	54	58	57	57	F
6	39	32	F	F	F	F	50	57	52	52	48	56	58	48	52	54	53	58	69	73	59	52	F	39
7	F	F	F	37	F	F	50	54	50	48	56	56	60	53	58	67	72	69	70	52	46	F	F	F
8	49	47	F	38	38	35	A	A	42	50	48	49	A	R	49	58	54	48	45	50	52	49	F	F
9	F	32	F	30	25	32	40	56	61	58	A	55	52	50	54	52	56	62	66	65	58	50	F	F
10	F	36	F	33	F	33	48	51	58	54	54	55	52	47	54	57	59	58	58	59	61	62	58	49
11	44	F	39	37	32	31	46	56	C	54	A	A	55	59	57	66	66	53	52	60	58	52	F	F
12	40	39	38	37	36	37	48	57	58	A	A	55	A	A	58	59	A	66	69	66	60	F	F	47
13	41	38	F	35	F	31	41	60	59	C	50	A	A	A	57	A	60	56	A	49	F	F	F	F
14	F	F	F	F	F	A	A	64	65	A	A	A	57	A	A	A	A	58	62	65	64	54	48	F
15	F	F	41	39	F	36	41	51	60	60	54	52	50	56	63	64	60	50	56	57	59	58	F	F
16	46	F	41	41	F	35	42	57	61	55	50	54	57	61	65	69	66	65	57	54	56	45	43	40
17	39	F	39	38	F	34	43	49	49	49	49	A	A	54	56	65	59	52	53	52	55	F	F	46
18	40	39	38	33	33	32	44	52	60	54	56	49	49	49	55	58	A	65	60	60	58	57	59	50
19	44	41	39	36	36	36	42	48	55	55	68	49	R 50	A	53	62	60	A	57	64	60	C	50	46
20	44	41	38	38	37	33	52	52	60	A	59	55	A	59	A	A	A	A	A	60	64	F	F	58
21	50	42	F	F	38	31	A	49	46	54	52	50	50	50	47	C	47	48	C	62	51	F	C	F
22	A	A	A	F	F	F	40	52	60	A	60	A	C	C	C	C	C	52	52	60	67	67	39	F
23	40	F	F	F	F	F	44	54	58	55	49	52	50	50	56	64	62	58	63	70	74	53	47	47
24	44	39	34	32	30	30	46	61	60	52	57	54	53	58	58	58	54	54	58	65	64	51	48	F
25	F	F	31	31	30	34	46	59	72	75	58	54	56	56	57	60	66	73	88	96	66	37	A	A
26	F	F	F	32	30	33	48	44	50	51	A	53	56	58	48	52	52	54	A	60	61	57	52	44
27	39	38	37	35	32	31	46	52	64	66	A	A	55	68	56	58	61	58	58	62	63	F	F	F
28	47	43	41	41	39	35	52	55	A	58	56	60	61	64	61	57	57	61	56	60	59	49	F	F
29	47	42	40	41	37	41	44	60	56	58	56	62	66	60	60	61	61	58	54	60	58	49	47	F
30	43	41	F	37	33	34	48	54	60	59	60	57	64	60	61	64	68	69	68	64	58	55	43	40
31	F	F	38	34	35	38	50	56	68	C	62	62	68	64	68	76	71	68	65	65	58	51	50	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	16	15	22	18	24	28	30	28	25	23	25	24	24	26	24	26	28	27	31	30	21	15	14
MED	44	40	39	37	34	34	46	56	60	55	56	55	56	58	57	60	60	58	58	60	59	53	50	46
U Q	47	42	41	38	37	36	49	58	60	58	59	56	59	60	61	65	66	65	66	65	63	57	57	50
L Q	40	38	38	33	31	32	44	52	54	52	50	52	51	52	54	58	54	54	54	57	58	50	47	44

IONOSPHERIC DATA STATION Kokubunji

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

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

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								404	UL444	UL452	A	A	472	A	A	A	A	A	A					
2							A	A	A	456	456	472	460	A	A	440	408	368	L					
3							UL368	A	A	A	A	444	UL456	464	440	A	A	A	A					
4						L	A	A	428	A	A	UL444		UL444	UL428	A	A	A	A					
5							L	392	408	A	A	A	A	A	A	A	A	A	A	A				
6							364	L	428	440	UL460	A	524	440	440	432	396	376	L					
7							A	A	A	A	A	456	444	464	444	A	A	L						
8							A	A	UL384	UL412	412	440	A	UL424	428	392	392	380	UL324					
9							356	384	UL416	A	A	456	A	452	A	A	A	360	L					
10							A	A	424	432	440	A	448	A	448	424	416	A	A					
11							UL376	396	C	412	A	A	A	A	A	A	A	A	A					
12								A	A	A	A	UL436	A	A	A	420	A	A	A					
13							364	A	A	C	448	A	A	A	A	A	400	L	A					
14						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
15							360	392	A	A	444	UL456	456	444	444	440	A	392	A					
16							380	A	A	A	UL452	456	460	A	452	424	396	UL376						
17								UL388	A	440	436	A	A	A	424	424	404		A					
18								396	416	440	A	452	A	436	A	A	A	A	L					
19							A	UL404	UL420	A	448	456	456	A	440	428	412	A						
20							L	A	A	A	444	UL456	A	A	A	A	A	A	A					
21							A	372	408	420	432	448	444	A	424	C	396	UL380	C					
22								392	A	A	444	A	C	C	C	C	C	UL384	L					
23								L	420	512	A	464	476	UL392	440	436	UL420	A	A					
24							L	L	392	UL460	A	UL460	UL476	A	A	436	408	UL380	A					
25								L	412	A	516	A	UL464	A	460	460	412	388	A					
26									A	A	A	456	452	456		440	A	A	A					
27							L		A	A	A	A	476	A	A	A	L	L	A					
28								A	A	A	A	A	A	A	UL432	UL420	L	A	A					
29							L	L	UL460	460	436	464	A	460	452	436	400	A	A					
30									L	452	468	480	464	UL456	464	436	404	L	A					
31							A	L	UL428	C	444	484	A	A	460	448	L	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	10	15	13	16	19	16	12	17	17	14	10	1					
MED							364	392	420	440	444	456	460	448	440	436	404	380	UL324					
U Q							376	396	UL428	458	454	464	474	458	452	440	412	384						
L Q							360	388	408	426	438	448	454	438	430	424	396	376						

AUG.2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	U A 352	A	A	A	A	A	B				
2							A	A	A	A	U A 352	A	A	U A 364	344	U R 324	U A 292	U R 260	A	B				
3						B	A	A	A	A	A	A	U A 360	U A 352	U A 336	U A 328	A	A	A	B				
4						B	A	A	A	A	A	A	U A 344	A	A	A	A	A	B	B				
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
6						B	A	U R 328	U A 300	A	U R 388	360	360	U R 352	336	U A 320	A	U A 256	B					
7						B	U A 208	A	A	A	A	A	A	A	A	A	A	A	B					
8						B	A	A	A	A	A	U A 364	A	A	A	U A 328	U A 280	A	B					
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
10						B	A	A	A	336	U A 360	372	372	A	A	A	A	A	A					
11						B	A	A	C	A	A	A	A	U A 360	U A 348	U A 316	A	A	B					
12						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
13							A	A	A	C	A	A	A	A	A	A	A	A	B					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
17						B	U A 208	A	A	A	A	A	A	A	A	A	U R 288	U A 244	B					
18						B	U R 228	A	A	A	A	A	A	U R 356	U A 340	A	A	A	B					
19						B	A	A	A	A	A	A	U A 356	A	A	A	A	A	B					
20						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
21						B	A	A	A	A	U A 344	A	A	360	U A 340	C	A	A	C					
22						B	A	A	A	A	A	A	C	C	C	C	C	A	A					
23						B	A	A	A	A	A	A	U A 360	U R 344	U A 332	U A 312	A	A	B					
24						B	A	A	U R 316	A	A	A	R	A	A	A	U A 284	A	A					
25						B	A	A	A	A	A	A	A	U A 332	U R 364	A	R	A	B					
26						B	A	A	A	A	A	A	A	U R 352	U R 356	R	A	A	B					
27						B	A	A	A	A	A	A	A	A	A	A	U A 276	A	B					
28						B	U R 208	A	A	A	A	A	A	A	A	R	U A 296	A	B					
29						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
30						B	U R 224	268	U R 324	U R 340	U A 364	U A 348	U A 380	360	U A 340	316	U A 284	U A 220	B					
31						B	A	A	U R 312	C	U A 332	A	A	A	A	A	U R 288	U R 236	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	2	4	2	6	4	7	11	10	7	8	5						
MED							U R 208	298	U R 314	338	U A 356	362	U A 360	U A 352	U A 340	U A 320	U A 286	U A 244						
U Q							U R 226		U R 320		U 364	368	372	U A 360	U R 348	U A 328	U A 290	U 258						
L Q							U A 208		U 306		U A 344	354	U A 356	U A 352	U A 336	316	U A 282	U 228						

AUG.2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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 64	J A 50	J A 26	J A 43	J A 32	23	J A 55	J A 51	J A 51	J A 232	J A 195	J A 120	J A 56	J A 57	J A 73	J A 107	J A 59	J A 44	J A 50	J A 42	J A 86	J A 110	J A 66	J A 55
2	J A 32	J A 29	J A 36	J A 79	J A 54	J A 36	J A 74	J A 177	J A 64	J A 47	39	39	40	44	43	G 36	G	J A 34	J A 140	J A 100	J A 66	J A 54	J A 54	J A 59
3	J A 81	J A 38	J A 70	J A 104	J A 42	J A 30	J A 36	J A 82	J A 54	J A 54	J A 70	J A 45	J A 63	J A 56	41	J A 72	J A 90	J A 99	J A 88	J A 89	J A 72	J A 35	J A 50	J A 33
4	J A 28	E B 14	J A 31	J A 26	J A 29	J A 27	J A 42	J A 60	J A 150	J A 66	J A 77	43	40	40	40	J A 88	J A 170	J A 53	J A 44	J A 29	26	J A 27	J A 50	J A 54
5	E B 16	E B 16	J A 27	J A 77	22	23	26	33	J A 41	J A 61	J A 81	J A 78	J A 142	J A 71	J A 68	J A 65	J A 55	J A 90	J A 112	J A 40	J A 78	J A 57	J A 41	J A 62
6	J A 53	J A 33	J A 33	J A 35	J A 29	23	27	G	35	J A 54	G	45	39	G	39	35	J A 58	30	J A 39	J A 60	E B 16	54	J A 78	J A 51
7	J A 53	J A 47	J A 55	J A 37	J A 78	J A 50	J A 40	J A 57	J A 54	J A 56	J A 66	J A 48	38	40	41	J A 83	J A 68	J A 90	J A 40	J A 38	J A 56	J A 56	J A 33	24
8	23	J A 26	E B 16	23	23	21	J A 36	J A 65	J A 53	38	J A 45	38	J A 49	40	38	36	J A J 52	A 42	J A 152	24	J A J 29	A 47	J A 51	J A 36
9	J A 64	J A 28	J A 48	J A 24	J A 31	J A 35	30	J A 39	J A 37	J A 63	J A 116	J A 47	J A 49	J A 56	J A 51	J A 61	J A 58	J A 40	J A 39	J A 49	J A 50	J A 33	21	J A 46
10	J A 39	J A 32	J A 32	22	J A 32	J A 27	J A 36	J A 56	56	41	41	43	41	J A 54	J A 44	J A 38	J A 36	J A 47	J A 54	J A 48	J A 24	E B 16	21	J A 40
11	J A 35	J A 36	J A 36	J A 31	22	J A 28	J A 39	J A 36	C	J A 41	J A 60	J A 54	J A 56	46	J A 54	J A 52	J A 77	J A 111	J A 45	J A 44	J A 52	J A 32	J A 41	J A 54
12	J A 62	J A 53	J A 52	J A 35	J A 29	24	J A 36	J A 91	J A 146	J A 128	J A 124	J A 160	J A 70	J A 76	J A 52	J A 40	J A 91	J A 99	J A 76	J A 76	J A 54	J A 46	J A 46	J A 47
13	J A 55	J A 54	J A 37	J A 91	J A 50	25	J A 44	J A 84	J A 71	C	J A 123	J A 104	J A 148	J A 69	J A 74	J A 140	J A 58	J A 153	J A 84	J A 145	J A 150	62	J A 161	J A 80
14	J A 86	J A 48	J A 34	J A 51	J A 43	J A 44	J A 51	J A 44	J A 66	J A 65	J A 79	86	J A 57	J A 101	J A 87	J A 123	J A 129	64	J A 50	52	J A 32	22	22	J A 31
15	J A 28	J A 31	J A 28	J A 30	J A 28	J A 24	J A 60	32	J A 56	J A 52	36	J A 45	41	J A 57	J A 50	J A 54	J A 60	64	J A 89	J A 77	J A 44	86	J A 55	J A 55
16	J A 34	J A 34	J A 34	J A 32	J A 25	J A 25	J A 37	J A 52	J A 68	J A 60	J A 118	J A 50	J A 48	J A 47	J A 98	J A 35	33	30	J A 107	J A 71	J A 51	23	J A 32	J A 49
17	J A 33	J A 48	J A 34	J A 30	J A 32	E B 16	26	J A 40	J A 48	J A 54	J A 48	J A 75	J A 66	J A 73	J A 83	J A 70	G	J A 52	J A 50	J A 74	J A 63	J A 34	J A 53	J A 53
18	J A 65	J A 50	J A 63	J A 52	J A 63	J A 33	G	J A 36	J A 42	J A 42	J A 47	38	J A 46	G	J A 47	J A 64	J A 129	J A 62	J A 44	J A 48	J A 39	J A 48	J A 36	J A 44
19	J A 40	25	24	23	23	J A 51	J A 48	J A 42	J A 53	J A 90	J A 70	39	40	J A 46	41	J A 44	34	J A 75	J A J 31	A 46	J A 38	C	J A 29	E B 15
20	J A 28	J A 25	J A 54	J A 34	J A 26	J A 28	J A 34	J A 86	J A 52	J A 94	J A 41	J A 47	J A 120	J A 68	J A 122	J A 78	J A 103	J A 106	J A 142	J A 215	J A 145	J A 44	J A 86	J A 54
21	J A 41	J A 32	J A 78	J A 36	J A 35	24	J A 76	J A 43	32	35	G	J A 42	J A 40	42	38	C	38	J A 81	C	J A 106	J A 79	J A 54	C	J A 53
22	J A 65	J A 50	J A 66	J A 77	J A 44	22	J A 39	J A 64	J A 181	J A 148	J A 129	J A 54	C	C	C	C	C	J A 35	J A 38	J A 31	J A 32	J A 32	J A 34	J A 68
23	J A 56	J A 41	23	20	J A 28	J A 26	J A 60	J A 52	J A 44	J A 58	J A 75	J A 64	41	G	38	36	35	J A 48	J A 44	J A 79	J A 48	J A 34	J A 36	J A 34
24	23	24	J A 34	J A 36	J A 47	E B 16	J A 29	J A 33	G	36	J A 48	37	G	J A 61	J A 115	J A 44	32	J A 48	J A 35	J A 54	J A 73	J A 102	J A 119	J A 67
25	J A 78	24	20	J A 24	J A 25	E B 15	26	J A 39	J A 46	J A 57	J A 48	J A 90	J A 66	44	G	35	G	J A 35	J A 36	J A 76	J A 64	J A 34	J A 113	J A 84
26	J A 51	J A 32	20	J A 32	J A 26	J A 25	J A 29	J A 36	J A 46	J A 54	J A 88	J A 51	42	G	G	G	J A 50	J A 39	J A 75	21	J A 36	24	J A 26	J A 34
27	J A 25	J A 38	J A 36	J A 36	J A 81	J A 26	J A 48	32	J A 54	J A 50	J A 62	J A 84	J A 46	J A 56	J A 58	J A 65	32	31	J A 38	29	J A 37	29	J A 43	J A 26
28	J A 38	25	E B 16	21	E B 16	E B 16	G	J A 56	J A 78	J A 46	J A 48	J A 72	J A 65	J A 67	J A 42	G	36	J A 38	J A 47	J A 45	J A 40	23	J A 64	J A 54
29	J A 39	J A 51	J A 46	J A 44	J A 26	24	25	J A 38	J A 41	J A 82	J A 49	J A 57	J A 100	J A 43	J A 38	J A 42	J A 35	J A 38	J A 34	J A 52	J A 52	J A 81	J A 31	J A 46
30	J A 53	J A 32	J A 40	J A 31	J A 28	23	G	30	G	G	40	43	40	40	38	38	34	30	J A J 30	A 28	22	22	J A 52	J A 51
31	J A 51	J A 52	J A 55	J A 34	J A 37	J A 32	J A 42	J A 39	G	C	40	J A 65	J A 65	J A 64	J A 43	J A 37	G	G	21	J A 42	J A 29	J A 84	J A 40	J A 53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	29	31	31	30	30	30	29	30	31	30	31	31	30	30	31
MED	J A 41	J A 33	J A 34	J A 34	J A 29	J A 25	J A 36	J A 43	J A 52	J A 54	J A 60	J A 50	J A 48	J A 50	J A 44	J A 44	J A 51	J A 48	J A 44	J A 49	J A 50	J A 40	J A 44	J A 51
U Q	J A 62	J A 48	J A 52	J A 44	J A 43	J A 30	J A 48	J A 60	J A 64	J A 66	J A 81	J A 75	J A 65	J A 64	J A 68	J A 71	J A 68	J A 81	J A 76	J A 76	J A 72	J A 57	J A 55	J A 55
L Q	J A 32	26	27	26	26	23	27	36	41	44	41	43	40	40	39	36	34	35	J A J 38	A 40	J A 32	29	J A 33	J A 36

AUG.2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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	24	24	E B 16	E B 16	E B 16	E B 16	24	32	37	39	A A 195	46	44	45	A A 73	A A 107	45	36	41	35	39	28	22	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	25	44	42	38	37	37	38	38	41	40	G	33	G	24	24	38	A A 66	A A 54	E B 16
3	E B 16	18	A A 70	E B 16	A A 42	20	30	48	46	44	45	38	39	39	39	45	37	49	47	27	E B 16	E B 16	E B 16	E B 16
4	E B 16	E B 14	E B 16	E B 16	E B 16	E B 15	36	50	36	46	39	37	37	40	36	41	41	41	35	22	E B 16	E B 16	E B 16	20
5	E B 16	E B 16	E B 16	E B 16	E B 16	17	24	29	35	55	A A 81	48	A A 142	A A 71	A A 68	A A 65	46	A A 90	29	26	E B 15	21	E B 16	22
6	24	21	21	20	16	E B 16	26	G	33	36	G	44	38	G	37	33	34	28	21	23	E B 16	23	23	25
7	E B 16	E B 16	22	22	E B 16	20	26	39	45	45	45	40	38	38	38	46	47	29	25	25	25	24	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	18	A A 36	A A 65	33	33	34	38	A A 49	36	36	35	33	29	24	E B 17	23	E B 16	E B 16	E B 16
9	18	E B 16	E B 16	E B 16	17	E B 16	27	32	34	52	A A 116	37	45	42	43	45	50	32	22	23	17	18	E B 16	E B 16
10	E B 16	18	E B 16	E B 16	E B 15	16	30	36	35	39	38	41	40	40	36	34	27	40	47	28	18	E B 16	E B 15	E B 15
11	21	23	19	19	E B 15	18	27	26	C	38	A A 60	A A 54	45	44	44	42	40	32	32	26	24	23	21	23
12	26	28	27	E A 18	E B 15	16	27	49	52	A A 128	A A 124	40	A A 70	A A 76	42	34	A A 91	41	44	24	27	E B 16	25	22
13	17	E B 16	E B 16	23	24	16	29	38	42	C	42	A A 104	A A 148	A A 69	44	A A 140	31	26	A A 84	25	19	35	29	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	A A 44	A A 51	39	46	A A 65	A A 79	A A 86	47	A A 101	A A 87	A A 123	A A 129	39	31	23	E B 16	E B 16	E B 16	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	30	41	43	34	37	37	37	34	35	37	33	28	22	E B 16	E B 16	40	29
16	24	E B 16	E B 16	E B 16	E B 16	E B 16	28	37	46	46	37	42	39	44	37	31	32	29	20	31	E B 16	E B 16	E B 16	E B 16
17	E B 16	E B 16	18	E B 16	E B 16	E B 16	22	30	40	39	38	A A 75	A A 66	42	36	33	G	26	28	37	32	18	33	18
18	E B 16	20	E B 16	20	20	E A 17	G	27	36	36	42	36	44	G	42	51	A A 129	32	18	20	23	26	28	22
19	20	E B 16	E B 16	E B 16	E B 16	17	34	29	32	46	39	39	39	A A 46	36	36	32	A A 75	21	36	E B 16	C	18	E B 15
20	E B 16	19	E B 16	E B 16	E B 16	E B 15	22	41	41	A A 94	34	41	A A 120	46	A A 122	A A 78	A A 103	A A 106	A A 142	16	E B 16	22	E B 16	E B 16
21	20	E B 16	E B 16	E B 16	21	E B 16	A A 76	32	31	33	G	35	34	40	37	C	32	28	C	28	18	21	C	23
22	A A 65	A A 50	A A 66	18	20	E B 16	26	34	48	A A 148	36	A A 54	C	C	C	C	C	30	30	18	24	E B 16	E B 16	E B 16
23	18	19	E B 16	E B 16	E B 16	E B 16	30	30	32	44	44	39	39	G	36	34	31	32	24	22	21	E B 15	27	20
24	E B 16	E B 16	E B 16	19	E B 16	E B 16	21	28	G	34	44	36	G	50	50	35	30	29	28	32	23	19	34	30
25	20	E B 16	E B 16	16	E B 15	E B 15	22	31	36	33	37	46	39	41	G	32	G	30	23	19	40	20	A A 113	A A 84
26	19	E B 16	E B 16	E B 16	E B 16	E B 16	21	31	42	44	A A 88	38	38	G	G	G	38	34	A A 75	E B 16	32	E B 16	18	E B 16
27	17	18	20	E B 16	E B 16	E B 16	29	31	40	44	A A 62	A A 84	39	46	51	47	30	29	27	19	24	E B 15	22	E B 16
28	22	E B 16	E B 16	E B 16	E B 16	E B 16	G	47	A A 78	44	47	46	46	44	34	G	34	32	24	21	24	E B 16	24	32
29	24	E B 16	25	26	E B 16	E B 16	22	30	30	34	38	38	46	37	35	33	30	32	29	22	26	27	19	23
30	E B 16	E B 16	E B 15	E B 15	16	E B 16	G	29	G	G	38	40	39	38	36	34	32	27	23	15	E B 15	E B 16	20	26
31	E B 16	E B 16	20	24	20	24	35	28	G	C	36	43	47	46	35	32	G	G	18	21	19	37	30	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	29	31	31	30	30	30	29	30	31	30	31	31	30	30	31
MED	17	E B 16	E B 16	E B 16	E B 16	E B 16	27	32	36	44	39	40	40	42	37	35	34	32	28	23	21	18	20	E B 16
U Q	21	19	20	19	16	17	30	39	42	46	A A 60	A A 46	A A 47	A A 46	44	A A 46	45	39	35	27	25	23	28	23
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	33	36	37	38	38	38	36	33	31	29	23	20	E B 16	E B 16	E B 16	E B 16

AUG.2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	F	304	354	306	373	323	283	A	320	298	331	A	A	328	336	311	348	319	F	F	F
2	F	F	F	F	F	F	335	338	390	339	320	310	316	315	316	304	324	341	332	365	393	A	A	F
3	F	F	A	F	A	318	286	302	278	305	305	337	254	313	313	334	338	347	304	305	332	323	300	313
4	311	322	325	317	338	287	314	320	332	336	275	R 247	307	277	280	330	322	324	299	313	316	314	293	310
5	309	F	F	F	F	F	304	311	F	367	A	327	A	A	A	A	323	A	310	298	319	307	345	F
6	341	308	F	F	F	F	369	384	364	341	359	322	299	286	308	308	294	318	325	343	330	327	F	320
7	F	F	F	338	F	F	351	347	341	322	326	297	319	293	290	314	327	344	371	339	275	F	F	F
8	326	310	F	274	318	339	A	A	265	298	285	328	A	R	294	331	349	330	309	327	315	312	F	F
9	F	288	F	307	297	323	309	339	348	339	A	338	322	282	312	304	318	334	332	312	313	339	F	F
10	F	293	F	315	F	334	359	337	348	360	293	352	310	300	311	330	319	326	327	322	318	315	345	338
11	299	F	300	310	326	304	307	353	C	333	A	A	322	333	321	323	334	317	325	335	317	291	F	F
12	308	311	315	306	313	381	335	324	324	A	A	366	A	A	312	304	A	323	333	336	326	F	F	339
13	314	304	F	287	F	351	271	352	353	C	347	A	A	A	321	A	342	343	A	320	F	F	F	F
14	F	F	F	F	F	A	A	363	390	A	A	A	329	A	A	A	A	337	341	322	329	315	326	F
15	F	F	332	303	F	320	304	346	381	361	334	309	284	315	315	330	342	309	327	297	311	320	F	F
16	297	F	295	300	F	316	269	338	366	330	304	246	310	316	332	334	350	353	365	298	322	311	296	295
17	289	F	296	288	F	328	323	352	339	344	295	A	A	305	325	335	366	345	351	312	318	F	F	301
18	297	289	342	329	314	300	337	350	374	373	363	334	300	288	299	311	A	343	329	325	321	300	320	318
19	320	313	320	322	315	340	351	315	339	312	349	313	R 285	A	306	322	337	A	314	329	331	C	315	303
20	294	297	294	295	322	301	315	324	354	A	328	291	A	334	A	A	A	A	A	302	341	F	F	307
21	304	296	F	F	313	287	A	333	292	322	324	318	292	346	251	C	307	327	C	344	328	F	C	F
22	A	A	A	F	F	F	329	308	358	A	338	A	C	C	C	C	C	304	326	316	339	372	357	F
23	267	F	F	F	F	F	321	361	363	285	296	348	276	266	315	324	320	318	325	318	330	361	311	312
24	328	317	309	337	299	318	339	353	381	333	340	341	235	287	315	328	320	351	318	313	332	322	335	F
25	F	F	296	326	315	316	312	352	349	374	358	311	319	325	303	297	297	286	319	369	383	317	A	A
26	F	F	F	310	323	318	373	353	331	331	A	308	325	334	369	295	304	340	A	307	326	324	308	329
27	322	306	307	328	325	338	354	338	367	359	A	A	294	344	305	332	347	336	328	318	326	F	F	F
28	314	319	306	297	301	305	322	355	A	339	312	297	286	316	304	314	308	337	308	317	324	298	F	F
29	294	275	290	307	341	288	335	396	340	330	332	326	353	298	316	313	339	347	328	317	332	320	299	F
30	316	293	F	306	324	316	345	381	359	340	323	316	320	310	315	329	330	346	347	318	336	337	318	289
31	F	F	281	311	307	335	346	323	359	C	351	322	344	317	312	322	333	354	321	324	331	324	303	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	16	15	22	18	24	28	30	28	25	23	25	24	24	26	24	26	28	27	31	30	21	15	14
MED	309	305	306	308	315	318	326	346	351	336	326	320	308	314	312	322	328	336	326	318	326	320	315	311
U Q	320	312	320	322	324	336	346	353	365	352	347	336	321	328	316	330	339	344	332	335	332	326	335	320
L Q	297	293	295	300	307	304	308	324	336	322	304	308	289	290	304	310	319	324	314	312	318	312	300	301

IONOSPHERIC DATA STATION Kokubunji

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

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

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								386	UL 392	UL 380	A	A	385	A	A	A	A	A	A					
2							A	A	A	398	398	398	409	A	A	401	397	401	L					
3							UL 357	A	A	A	A	420	UL 414	368	389	A	A	A	A					
4						L	A	A	383	A	A	UL 419		UL 388	UL 403	A	A	A	A					
5							L	371	419	A	A	A	A	A	A	A	A	A	A	A				
6							394	L	430	420	UL 439	A	382	455	421	408	381	374	L					
7							A	A	A	A	A	387	398	389	375	A	A	L						
8							A	A	UL 435	UL 405	448	412	A	UL 430	414	413	401	358	UL 358					
9							362	400	UL 440	A	A	412	A	333	A	A	A	391	L					
10							A	A	408	400	393	A	418	A	362	383	365	A	A					
11							UL 352	390	C	477	A	A	A	A	A	A	A	A	A					
12								A	A	A	A	UL 439	A	A	A	369	A	A	A					
13							360	A	A	C	423	A	A	A	A	A	386	L	A					
14						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
15							351	396	A	A	440	UL 431	432	427	375	372	A	390	A					
16							345	A	A	A	UL 430	372	369	A	374	376	415	UL 371						
17								UL 390	A	424	446	A	A	A	406	381	388		A					
18								378	394	409	A	418	A	434	A	A	A	A	L					
19							A	UL 368	UL 388	A	399	408	436	A	367	398	373	A						
20							L	A	A	A	428	UL 426	A	A	A	A	A	A	A					
21							A	390	410	422	426	400	404	A	425	C	372	UL 349	C					
22								409	A	A	428	A	C	C	C	C	C	UL 362	L					
23								L	413	370	A	407	399	UL 471	406	405	UL 379	A	A					
24							L	L	463	UL 413	A	UL 432	UL 419	A	A	379	380	UL 364	A					
25								L	407	A	452	A	UL 426	A	380	375	394	368	A					
26									A	A	A	389	394	394		373	A	A	A					
27							L		A	A	A	A	382	A	A	A	L	L	A					
28								A	A	A	A	A	A	A	UL 375	UL 391	L	A	A					
29							L	L	UL 392	392	432	402	A	406	397	392	400	A	A					
30									L	414	375	380	394	UL 389	381	391	385	L	A					
31							A	L	UL 381	C	421	381	A	A	401	394	L	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	10	15	13	16	19	16	12	17	17	14	10	1					
MED							357	390	408	409	428	408	402	400	389	391	386	370	UL 358					
U Q							362	396	430	421	440	UL 420	418	432	406	400	397	390						
L Q							351	378	UL 392	395	410	389	390	388	375	376	379	UL 362						

AUG.2021 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Kokubunji

AUG.2021 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	320	416	A	E A 310	398	298	A	A	298	266	252					
2							E A 322	258	212	300	314	360	320	308	326	318	270	240	260					
3							372	E A 366	374	298	302	280	502	314	300	246	274	E A 270	E A 306					
4						338	294	E A 324	286	E A 286	E A 400	R 402		R 414	424	326	314	E A 314	E A 302					
5							302	318	254	248	A	E A 338	A	A	A	A	E A 300	A	286	E A 260				
6							240	250	258	294	372	318	382	444	356	342	350	302	254					
7							266	254	E A 298	E A 328	324	330	318	384	356	304	270	270						
8							A	A	510	372	416	356	A	366	396	284	272	300	312					
9							356	264	264	E A 300	A	300	338	418	332	E A 358	E A 332	260	246					
10							246	254	266	256	364	262	354	E A 368	348	298	298	252	E A 290					
11							334	270	C	288	A	A	332	300	318	286	264	256	250					
12								E A 322	E A 316	A	A	262	A	A	322	344	A	266	266					
13							408	242	242	C	300	A	A	A	304	A	282	286	A					
14						A	A	248	234	A	A	A	E A 316	A	A	A	A	266	248					
15							378	274	236	262	286	342	408	342	316	286	266	322	270					
16							428	262	238	E A 298	404	470	340	326	290	260	260	236						
17								278	316	296	400	A	A	354	318	278	242		242					
18								264	230	244	266	334	E A 388	410	356	E A 338	A	254	256					
19							E A 232	326	290	316	236	358	370	A	360	290	274	A						
20							314	334	270	A	290	384	A	314	A	A	A	A	A					
21							A	286	406	320	326	358	406	306	510	C	354	314	C					
22								334	256	A	268	A	C	C	C	C	C	306	284					
23								272	244	434	E A 392	296	428	464	336	294	286	286	252					
24							286	242	234	298	294	284	528	384	E A 338	312	312	282	250					
25								268	244	218	286	340	322	320	344	344	314	298	262					
26									E A 302	322	A	362	322	284		368	350	278	A					
27							278		242	264	A	A	398	274	276	296	264	272	254					
28								256	A	302	342	352	350	304	342	324	316	248	248					
29							248	238	276	304	318	300	278	344	314	306	278	242	236					
30									252	274	298	330	294	310	328	292	268	248	226					
31							242	288	240	C	262	316	280	306	308	272	272	246						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	18	27	29	25	23	25	23	25	25	24	26	27	23	1				
MED						338	294	265	255	297	307	332	345	323	330	298	277	268	253	E A 260				
U Q							356	318	300	318	372	358	398	384	356	332	314	298	284					
L Q							248	254	241	269	286	300	320	306	315	286	270	252	248					

IONOSPHERIC DATA STATION Kokubunji

AUG.2021 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 A 294	E A 294	E B 244	E B 232	E B 276	212	212	212	212	212	A	A	220	A	A	A	A	A	A	214	212	E A 294	E A 294	194
2	E B 286	E B 286	212	212	E B 276	E A 276	A	A	A	180	188	198	198	A	A	198	198	198	198	198	210	A	A	E B 290
3	E B 318	E A 258	A	E B 276	A	226	E A 226	A	A	A	A	192	194	194	194	A	A	A	A	220	E B 216	E B 216	E B 240	E B 240
4	218	E B 238	E B 218	E B 218	226	E B 218	A	A	218	A	A	218	202	208	208	A	A	A	A	E A 236	226	E B 226	E B 248	226
5	E B 216	E B 234	E B 234	E B 278	E B 244	E A 238	190	190	196	A	A	A	A	A	A	A	A	A	A	A	200	E A 256	210	E A 226
6	210	E A 266	E A 260	E A 260	E B 232	226	192	198	194	194	194	A	194	194	192	192	214	210	210	210	192	208	E A 230	E A 284
7	E B 218	E B 246	E A 264	E A 264	E B 272	242	A	A	A	A	A	E A 236	220	210	210	A	A	210	210	210	E A 306	E A 306	E B 266	E B 234
8	E B 214	E B 234	E B 234	E B 228	E B 240	E A 240	A	A	198	190	190	208	A	192	192	192	192	198	210	E B 224	E A 242	E B 242	E B 266	202
9	E A 266	E B 266	E B 292	E B 222	E A 294	226	206	212	192	A	A	184	A	E A 316	A	A	A	204	210	214	214	214	214	E B 266
10	E B 278	E A 282	E B 272	E B 230	E B 230	218	A	A	210	E A 228	218	A	204	A	204	204	204	A	A	E A 248	218	E B 228	206	214
11	E A 260	E A 280	E A 280	E A 256	E B 256	E A 256	202	202	C	186	A	A	A	A	A	A	A	A	A	E A 242	E A 242	E A 230	E A 230	E A 230
12	E A 300	E A 300	E A 308	E A 266	E B 246	198	206	A	A	A	A	194	A	A	A	202	A	A	A	214	E A 236	E B 226	E A 238	220
13	E A 248	E B 238	E B 272	E A 330	E A 246	206	218	A	A	C	210	A	A	A	A	A	206	208	A	220	E A 290	E A 314	E A 256	208
14	190	E B 252	E B 242	E B 272	E B 282	A	A	A	A	A	A	A	A	A	A	A	A	A	A	220	210	E B 210	E B 214	E B 232
15	E B 254	E B 254	E B 222	E B 244	E B 212	212	224	192	A	A	184	178	182	188	188	188	A	202	A	E A 236	E B 226	E B 226	220	E A 274
16	E A 274	E B 264	E B 264	E B 264	210	E B 234	E A 234	A	A	A	190	E A 262	216	A	200	200	192	202	218	E A 280	E B 224	E B 214	E B 276	E B 292
17	E B 272	E B 272	E A 270	E B E 260	E B 232	224	194	202	A	202	184	A	A	A	190	192	192	214	A	E A 272	E A 254	E A 262	E A 284	E A 252
18	E B 266	E A 300	202	E A 248	E A 278	E A 250	206	190	200	190	A	190	A	202	A	A	A	A	206	206	E A 242	E A 242	E A 230	E A 230
19	E A 236	E B 236	E B 256	E B 244	E B 226	E A 226	A	202	196	A	196	192	186	A	204	204	204	A	216	228	E B 216	C	E A 238	E B 238
20	E B 266	E A 278	E A 270	E B E 234	E B E 240	E B 232	208	A	A	A	176	204	A	A	A	A	A	A	A	E B 240	E B 216	E A 298	204	E B 204
21	204	E B 258	E B 250	E B 260	E A 296	218	A	220	192	192	190	196	194	A	194	C	210	210	C	220	220	E A 284	C	E A 284
22	A	A	A	E A 242	200	E B 218	E A 230	206	A	A	190	A	C	C	C	C	C	204	204	E A 230	222	188	178	E B 288
23	E A 316	E A 304	E B 266	E B 254	E B 212	214	214	206	194	E A 240	A	188	188	188	188	188	188	A	A	E A 220	220	206	E A 252	E A 244
24	E B 226	230	E B 238	E B E 248	E B 248	E B 234	208	190	190	190	A	178	198	A	A	202	194	204	A	E A 242	222	222	E A 250	E A 288
25	E A 234	220	E B 260	E B E 248	E B 242	234	206	208	208	A	188	A	184	A	194	194	210	210	A	198	200	206	A	A
26	E A 334	E B 272	E B 246	E B 268	E B 248	224	208	194	A	A	A	192	192	190	186	184	A	A	A	E A 232	E A 242	E B 220	E A 232	210
27	E A 240	E A 270	E A 286	E B 236	E B 236	236	208	200	A	A	A	A	200	A	A	A	202	222	A	E A 230	224	E B 212	E A 320	E B 232
28	E A 238	E B 234	E B 254	E B 270	E B 274	E B 266	216	A	A	A	A	A	A	A	206	214	E A 234	A	A	E A 234	224	E B 224	E A 296	E A 296
29	E A 290	E B 288	E B 296	E A 278	E A 238	E B 270	198	198	198	196	196	190	A	188	186	192	198	A	A	216	216	E A 248	E A 226	E A 268
30	E B 276	E B 246	E B 246	E B 246	E B E 252	E B 216	202	202	198	188	198	200	200	200	200	190	200	202	A	200	200	210	214	E A 308
31	E B 298	E B 290	E A 290	E A E 278	E A 240	E A 240	A	194	184	C	184	220	A	A	200	190	190	202	216	216	216	E A 284	E A 274	E B 242
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	31	30	30	22	19	16	13	16	19	17	12	18	17	17	16	10	30	31	29	28	30
MED	E 263	E B 265	E B 260	E B 254	E B 243	220	207	202	197	191	190	193	198	194	194	192	199	204	210	U 210	215	E 226	E A 238	E 239
U Q	E A 286	E A 282	E A 272	E A E 268	E B 272	E A 240	216	206	204	207	196	208	203	205	204	202	208	210	216	E A 236	E A 236	E A 259	E A 266	E A 284
L Q	226	E B 238	E B 240	E B 236	E B 232	218	202	194	193	189	186	190	190	189	190	190	192	202	206	214	214	213	217	226

AUG.2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2021 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

AUG.2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2021 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	88	88	88	88	88	106	92	92	92	88	88	88	90	108	100	100	100	100	98	94	92	92	92	92
2	86	86	94	94	94	98	98	88	88	88	110	110	110	156	156	G	122	G	90	90	90	90	90	90
3	90	90	90	86	86	86	96	94	90	90	90	90	118	118	122	108	100	100	96	96	96	94	94	94
4	94	B	94	94	94	100	94	94	94	94	80	90	114	114	114	98	98	98	98	98	98	98	98	90
5	B	B	128	86	86	86	114	108	98	90	90	90	90	90	90	90	90	90	90	90	108	96	96	96
6	84	84	84	84	84	84	130	G	144	84	G	154	142	G	142	132	94	106	92	92	B	92	92	84
7	84	84	80	80	96	100	108	94	94	94	94	94	94	94	114	102	102	92	92	92	88	88	88	88
8	88	88	B	106	106	106	106	102	102	102	96	136	84	96	108	130	120	114	100	100	82	114	98	90
9	90	90	90	90	90	90	114	98	98	92	92	96	96	96	96	94	90	90	90	90	90	90	90	90
10	90	90	90	102	102	102	94	92	92	156	156	156	146	86	86	86	86	86	86	86	86	B	86	86
11	86	86	86	86	92	92	92	92	C	92	92	92	92	126	126	126	114	96	96	96	96	96	96	96
12	86	84	84	84	84	84	96	90	90	88	82	88	88	82	82	82	98	98	98	98	98	98	98	92
13	82	86	86	86	86	120	108	98	98	C	100	88	94	92	100	98	110	90	90	86	86	92	92	92
14	92	92	92	92	86	92	96	96	90	90	90	90	94	96	86	86	86	86	86	86	86	88	90	84
15	82	82	82	82	82	94	90	90	90	90	90	90	90	90	90	92	90	90	90	90	86	86	86	86
16	86	86	86	86	86	108	102	98	92	92	94	94	94	94	96	90	114	110	102	84	84	84	94	94
17	86	80	80	80	88	B	112	98	98	98	92	92	92	92	92	92	G	106	102	96	96	96	96	92
18	92	90	90	90	84	84	G	86	88	90	94	110	94	G	116	98	92	98	98	88	80	78	78	88
19	94	90	90	90	94	94	90	98	92	88	88	116	116	112	110	98	98	92	92	92	92	C	92	B
20	84	82	100	94	94	98	98	92	92	86	86	86	86	86	86	84	84	80	80	88	88	88	88	88
21	88	88	94	96	96	108	92	92	112	112	G	94	94	138	126	C	120	96	C	90	90	90	C	90
22	82	82	78	78	78	90	96	96	92	86	86	86	C	C	C	C	C	104	88	88	88	88	88	88
23	88	86	86	86	86	100	98	98	98	96	86	86	130	G	130	126	118	94	90	82	82	92	92	86
24	86	90	90	90	90	B	92	92	G	92	92	92	G	92	80	80	124	94	84	82	88	92	92	92
25	94	94	108	108	98	B	112	100	98	96	106	92	92	138	G	104	G	98	96	96	96	96	96	88
26	88	88	88	88	102	104	104	102	98	94	94	92	92	G	G	G	94	94	94	94	94	92	94	94
27	96	96	92	88	88	102	100	108	98	98	96	86	90	90	88	88	118	108	96	96	96	96	96	96
28	96	96	B	100	B	B	G	100	92	92	92	86	86	86	86	G	110	104	100	96	96	96	96	90
29	82	82	82	82	82	82	116	100	100	102	92	92	92	92	90	88	88	84	84	84	84	84	84	84
30	82	82	82	84	84	84	G	148	G	G	150	134	148	152	126	122	134	114	78	78	78	76	90	90
31	90	90	90	86	86	86	86	86	G	C	112	104	104	104	102	98	G	G	94	92	92	82	82	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	31	30	27	28	30	27	28	29	31	29	26	28	26	27	29	30	31	30	29	30	30
MED	88	88	90	88	88	94	98	96	94	92	92	92	94	95	100	98	100	96	92	90	90	92	92	90
U Q	90	90	92	94	94	102	108	100	98	96	96	104	112	114	119	104	118	104	98	96	96	96	96	92
L Q	84	84	84	84	86	86	93	92	92	89	89	88	90	90	89	88	90	90	90	86	86	88	88	88

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F2	F3	F2	L2	L4	L3	L3	L4	L4	L2	L2	C2	L3	L4	L2	L3	L7	L6	F7	F3	F3	F3
2	F3	F2	F2	F2	F2	F4	L5	L4	L3	L2	C1	C1	C1	HL12	H1		C1		L2	L3	F5	F5	F5	F5
3	F6	F6	F5	F4	F8	L3	L3	L4	L3	L2	L2	L1	C1	C2	C2	C3	L2	L4	L6	L4	F3	F3	F4	F3
4	F2		F1	F2	F2	L1	L6	L5	L2	L3	L2	L1	C1	C1	C1	L2	L2	L3	L2	L5	L3	F2	F3	F3
5			F1	F4	F2	L1	C2	C2	L2	L2	L3	L3	L3	L3	L4	L4	L3	L5	L5	L4	F2	F3	F1	F4
6	F4	F3	F2	F2	F2	L2	C2		H1	L3		H1	H1		H2	C2	L3	C2	L4	F4		F4	F5	F7
7	F3	F2	F4	F5	F3	L2	C3	L3	L3	L3	L2	L2	L2	L2	C1	L3	L4	L3	L2	F6	F4	F3	F2	F2
8	F1	F1		F1	F2	L4	L5	L3	L3	L1	L2	H1	L2	L1	C1	H1	C2	C2	L3	F1	F5	F2	F3	F2
9	F3	F2	F5	F2	F4	F6	C2	L3	L2	L3	L3	L1	L2	L2	L2	L2	L3	L3	L3	F5	F3	F2	F2	F2
10	F2	F4	F2	F2	F3	L2	L3	L3	L2	HL12	H1	H1	H1	L3	L2	L2	L3	L3	L5	F3	F4		F2	F2
11	F3	F4	F3	F4	F2	L4	L4	L3		L3	L3	L2	L2	C1	C2	C1	C3	L3	L4	F8	F8	F9	F7	F7
12	F4	F6	F5	F3	F2	L1	L3	L4	L4	L5	L5	L3	L3	L3	L3	L2	L5	L4	L5	F5	F8	F2	F6	F2
13	F3	F2	F2	F4	F4	F1	L4	L4	L2		L3	L5	L3	L3	L2	L4	C2	L3	L5	F5	F5	F8	F5	F5
14	F5	F4	F2	F2	F4	L8	L6	L3	L3	L3	L3	L3	L2	L3	L4	L3	L4	L4	L5	F5	F4	F1	F2	F2
15	F2	F2	F2	F2	F2	L2	L2	L2	L4	L2	L2	L2	L1	L2	L2	L2	L3	L3	L3	F4	F4	F4	F6	F9
16	F8	F2	F2	F2	F2	L2	L3	L3	L3	L2	L2	L2	L2	L2	L2	L2	C1	C2	L2	F4	F4	F3	F3	F5
17	F2	F5	F3	F2	F2		C2	L2	L2	L3	L2	L4	L3	L2	L2	L2		C2	L6	F6	F6	F4	F8	F5
18	F3	F8	F6	F6	F5	L2		L2	L3	L3	L2	C1	L2		C2	L2	L4	L3	L3	F6	F6	F5	F5	F4
19	F3	F2	F1	F2	F1	F4	L4	L2	L2	L3	L2	CL12	CL12	C2	C1	L2	L2	L3	L4	F5	F3		F3	
20	F2	F5	F5	F3	F3	L2	L4	L4	L4	L4	L2	L3	L4	L3	L5	L4	L4	L7	L4	F3	F3	F4	F6	F8
21	F8	F3	F3	F4	F8	L2	L5	L3	C1	C1		L2	L2	H2	C1		C3	L2		F5	F4	F4		F4
22	F5	F7	F7	F6	F5	L1	L5	L3	L4	L4	L2	L2						L2	L5	F3	F3	F1	F2	F2
23	F4	F5	F2	F1	F2	F2	F5	L2	L2	L2	L2	L2	H1		H1	C1	C2	L3	L4	F4	F4	F2	F3	F3
24	F1	F1	F2	F6	F3		L3	L2		L2	L2	L1		L2	L4	L3	CL13	L3	L3	F4	F2	F3	F4	F5
25	F6	F2	F2	F2	F2		C2	L3	L3	L2	L2	L2	L2	HL12		L1		L3	L4	F2	F3	F4	F4	F6
26	F3	F5	F3	F3	F5	L3	L3	L3	L3	L2	L3	L2	L2				L3	L4	L6	F2	F4	F1	F3	F3
27	F3	F8	F4	F4	F5	L2	L3	C2	L3	L2	L3	L4	L2	L2	L3	L3	CL12	C1	L3	F4	F4	F3	F4	F3
28	F6	F3		F2				L4	L5	L3	L2	L3	L2	L2	L2		C1	C3	L2	F4	F5	F2	F4	F7
29	F7	F5	F6	F6	F3	L2	C2	L2	L2	L2	L2	L2	L2	L2	L2	L4	L2	L3	L3	F3	F3	F3	F3	F3
30	F3	F3	F2	F2	F2	F2		H1			H1	H1	H1	H1	C1	C1	H1	CL12	L3	F2	F2	F1	F2	F3
31	F2	F5	F5	F4	F3	F4	L3	L3			C1	L3	L2	L2	L1	L1			L3	F4	F4	F5	F5	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG.2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2021 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	A 55	57	59	58	53	49	X 54													X 69	X 67	X 62	X 54	55
2	55	59	44	42	42	42														X 86		X 50	X 48	X 47
3	X 45	X 43	X 41	X 38	40	42														X 70	X 72	X 74	X 67	X 66
4	X 64	X 61	X 52	X 50	X 45	X 42														X 58	X 72	X 64	X 59	X 54
5	X 50	X 49	X 45	X 39	X 39	46	X 44													X 53	X 64	X 63	60	72
6	44	X 30	X 30	X 30	39	41														X 84	X 77	X 59	58	X 54
7	53	56	45	45	42	40														X 54	A	X 50	X 51	X 53
8	X 54		44	44	44	40														A		X 61	X 59	56
9	52	52	45	45	38															X 58	X 66	X 55	44	43
10	44	44	X 38	X 36	X 36															X 67	X 63	X 67	X 54	X 46
11	X 45	44	X 42	44	42	40														X 68	X 59	X 54	51	52
12	45	53	X 44	X 44	42	40														X 70	X 62	X 61	X 43	44
13	44	46	42	48	52	44														X 62	X 59	X 56	59	62
14	50	X 39	41	39	37															X 73	X 65	X 60	X 58	X 58
15	X 53	46	46	46	42															X 64	X 65	X 66	A	58
16	56	49	X 44	46	47	47	X 44													X 59	X 61	X 60	X 59	X 55
17	X 54	56	X 49	X 47	X 44															X 58	X 67	X 65	A	54
18	46	X 41	42	42	A		X 43													X 62	X 63	X 66	X 60	57
19	60	57	52	X 46	X 44	40														X 81	X 76	X 53	X 48	48
20	48	50	46	48	43															X 65	X 70	X 61	A	57
21	56	X 48	X 48	X 48	50	41														X 62	X 62	X 44	46	46
22	A 42	42		X 36	X 32	X 28														X 77		X 78	X 46	X 41
23	X 40	X 40	X 38	X 38	X 36		X 39													X 77	X 77	X 64	X 53	57
24	49	54	47	46	46	40														X 68	X 72	X 66	X 56	53
25	56	43	51	X 46	44															X 116	X 62	X 44	X 44	X 44
26	X 41	46	46	X 43	X 40															X 67	X 69	X 71	X 63	X 60
27	X 52	X 47	X 46	X 46	X 42															X 72	X 66	X 65	X 58	X 55
28	53	X 53	X 52	X 51	X 47															X 77	X 66	X 54	X 54	X 54
29	X 50	X 49	X 49	X 44	X 39	42														X 73	X 68	X 52	X 50	X 45
30	51	X 44	46	49	42	40														X 67	X 67	X 59	X 49	X 49
31	X 48	X 47	X 44	X 44	39		X 42													X 75	X 61	X 57	X 49	48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	31	31	30	18	6													30	27	31	28	31
MED	50	48	45	X 45	42	41	X 44													X 68	X 66	X 61	X 54	54
U Q	54	53	X 48	47	44	42	X 44													X 75	X 70	X 65	X 59	57
L Q	45	X 44	42	X 42	39	40	X 42													X 62	X 62	X 54	X 48	X 47

IONOSPHERIC DATA STATION Yamagawa

AUG.2021 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Yamagawa

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

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

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	440	452	456	A	A	448	A	432	A	L					
2							A	A	A	A	A	452	464	452	A	A	416	384	352		A			
3								388	400	440	444	440	UL 472	460	452	A	416	428	A					
4							UL 332	L	L	424		448	A	444	A	432	408	380	340					
5								L	408	428	A	436	448	A	A	428	416	392	A					
6								L	L	UL 384	436	448	448	456	A	A	A	A	A					
7								A	A	A	A	A	A	452	A	A	A	A						
8		A					A	A	388	A	436	A	A	448	432	432	420	400	A		A			
9						A		L	A	A	A	A	A	A	A	A	A	388	A					
10								L	UL 420	416	428	444	A	456	A	A	428	404	360					
11							UL 320	384	404	L	444	448	452	A	A	A	A	388	A					
12								UL 420	408	A	UL 436	452	456	A	A	A	408	A	A					
13							A	A	A	480	UL 460	460	A	A	A	A	A	L	A					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15										404	444	A	452	452	444	436	420	396	352					
16								A	L	L	448	A	A	A	440	A	A	396	L					
17								L	400	428	444	A	A	A	A	424	412	396	A					
18						A		L	556	A	A	A	A	444	A	428	424	A	A					
19							A	L	A	432	448	452	452	452	A	A	A	A	A					
20								L	412	428	444	452	452	452	448	436	420	404	L					
21						A		A	A	408	440	452	452	452	UL 440	420	428	396	A					
22								L	404	428	440	456	452	452	444	432	428	392	L					
23								A		A	A	A	A		452	432	436	408						
24									412	416	440	464	456	464	UL 464	432	424	412	L					
25						A	A	L	L	440	456	448	464	A	456	444	424	392	A					
26								A	A	A	A	A	A	UL 444	476	448	428	L						
27									L	436	448	460	464	A	464	444	440	L	L					
28									A	A	456	A	456	A	A	A	448	408	A					
29									A	A	440	480	440	464	468	440	432	L	L					
30									A	L	UL 464	A	472	464	476	448	424	UL 380						
31						A			A	436	448	484	460	460	452	452	L	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	3	11	17	22	19	18	18	16	17	22	19	4					
MED							UL 326	388	408	428	444	452	454	452	452	432	424	396	352					
U Q								UL 420	412	438	448	460	464	460	464	444	428	404	356					
L Q								384	400	416	440	448	452	452	444	430	416	388	346					

AUG.2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B		A	A	A	A	A	A	A	UA348	UA336	UA308	A	A					
2						B	A	A	A	A	A	A	UA360	UA356	A	A	A	A	A		A			
3						B	A	UR244	A	A	UA332	A	A	UA344	UA352	A	304	A	A					
4							A	A	A	308	A	A	A	A	A	A	A	A	A					
5						B		A	A	A	A	A	A	A	A	A	A	A	A					
6							A	A	A	A	A	A	A	A	UA352	A	A	A	A					
7						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
8		A				B	A	A	A	A	A	A	A	A	A	A	A	A	A		A			
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
10						B	A	A	A	A	A	A	A	A	A	A	312	UR284	UR240					
11						B	UR192	268	UA288	300	A	A	344	UA340	A	A	UA304	UA260	A					
12						B	A	A	UA292	A	A	UA348	A	A	A	A	A	A	A					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						B	B	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	B	UA256	280	A	A	A	A	UA352	UR352	UR324	A	A	UR220					
16						B		A	A	A	A	A	A	A	A	A	A	A	UA212					
17						B	UR176	UA252	A	UA304	UR364	A	A	A	A	A	A	A	A					
18						B		A	A	A	A	A	A	A	A	A	UA296	A	A					
19						B	A	A	A	A	A	A	A	UA364	A	A	A	A	A					
20						B	B	A	A	A	UR340	UR348	376	UA348	A	UA336	304	A	A					
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
22							UR172	UR268	A	312	UR336	A	UR348	A	A	A	A	A	B		A			
23						B		A	A	A	A	A	A	A	UR364	A	A	A	A					
24						B	A	A	A	A	A	A	UR352	UR340	UA344	A	UA308	A	B					
25						B	A	UR264	A	A	UR356	A	A	A	UA352	UA332	A	A	A					
26						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
27						B	B	A	A	A	UR348	UR368	A	A	A	UR352	304	A	UR224					
28						B	B	UR248	A	A	A	A	A	A	A	A	A	A	A					
29						B	B	A	A	A	A	UR352	A	356	UR344	UR332	UR308	A	UR220					
30						B	UR176	UA220	A	UA308	A	A	UA368	UA360	A	A	A	A	B					
31						B		UA236	UA284	A	A	UA336	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	9	4	5	6	5	6	9	8	6	10	2	5					
MED							UR176	UA252	UA286	308	UR344	UR348	U356	UA352	UA352	U334	304	U272	UR220					
U Q							UR184	UR266	UA290	310	UR356	UR360	368	UA358	UR352	U336	U308		UR232					
L Q							UR174	UA240	282	302	U336	UA342	348	UA342	UA346	U332	304		U216					

AUG.2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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 109	J A 40	J A 34	J A 32	E B 15	E B 15	J A 30	J A 54	J A 64	J A 70	J A 51	J A 52	J A 60	J A 51	42	J A 48	39	J A 43	J A 37	J A 43	J A 68	J A 86	J A 87	J A 39
2	J A 44	J A 29	J A 39	24	J A 28	J A 44	J A 68	J A 200	J A 128	J A 162	J A 127	J A 101	41	42	J A 53	J A 65	J A 125	J A 51	J A 123	J A 59	J A 60	J A 51	J A 44	J A 34
3	J A 34	22	E B 16	E B 16	J A 50	J A 49	J A 26	G	36	39	40	44	J A 57	44	J A 64	J A 74	J A 50	36	J A 79	J A 63	J A 53	J A 52	J A 86	J A 40
4	J A 32	19	22	21	J A 27	J A 32	J A 32	J A 48	J A 54	37	J A 42	45	J A 80	J A 123	J A 121	J A 111	J A 45	84	J A 45	J A 108	J A 53	27	44	27
5	21	J A 34	22	22	E B 15	20	J A 35	J A 33	J A 38	J A 39	89	54	40	J A 130	J A 64	J A 49	J A 42	41	J A 49	29	J A 47	38	J A 50	43
6	21	21	23	20	22	J A 44	J A 60	J A 52	J A 38	J A 140	45	40	J A 43	49	58	69	J A 64	55	J A 42	27	74	68	61	J A 80
7	J A 44	J A 48	J A 33	J A 27	65	21	J A 33	J A 53	J A 65	J A 72	J A 68	J A 64	J A 54	50	J A 63	110	J A 84	65	J A 46	J A 130	J A 90	32	84	J A 77
8	J A 67	J A 54	J A 40	J A 38	84	J A 37	47	63	J A 65	J A 108	J A 103	66	J A 52	45	40	46	J A 53	59	J A 130	J A 109	84	54	37	46
9	J A 52	J A 35	J A 63	J A 51	32	53	34	35	56	J A 106	80	95	J A 82	71	69	62	74	54	56	36	33	33	41	68
10	J A 36	J A 49	J A 30	J A 44	22	22	J A 67	40	48	53	40	64	J A 72	60	62	56	37	G	G	E B 16	21	J A 32	J A 38	J A 50
11	J A 38	24	E B 16	J A 25	J A 38	22	J A 33	28	J A 45	35	J A 45	44	43	47	44	J A 54	41	34	J A 61	J A 56	J A 74	J A 67	J A 36	J A 108
12	J A 147	J A 66	J A 36	21	20	J A 105	J A 26	38	32	J A 53	46	40	J A 61	58	J A 84	J A 77	J A 48	68	J A 42	36	J A 46	71	53	J A 53
13	J A 39	J A 39	J A 53	J A 40	E B 15	J A 62	J A 42	J A 55	J A 50	J A 88	J A 55	J A 50	J A 56	127	J A 147	J A 82	J A 76	110	J A 85	J A 66	102	66	J A 40	J A 53
14	J A 40	J A 44	21	J A 29	J A 37	J A 48	J A 34	J A 40	J A 48	J A 54	74	74	J A 78	101	J A 70	174	J A 164	90	J A 75	J A 66	J A 38	37	32	J A 54
15	J A 34	J A 50	J A 36	E B 16	J A 42	E B 15	E B 15	30	32	J A 44	J A 48	77	J A 50	40	J A 40	G	33	J A 32	G	E B 15	E B 15	E B 15	J A 56	J A 88
16	J A 53	J A 38	22	22	22	E B 15	22	J A 64	J A 42	37	J A 95	J A 79	J A 68	J A 53	J A 46	J A 50	J A 148	J A 38	G	J A E B 38	15	22	22	22
17	21	J A 29	J A 111	J A 38	J A 32	E B 16	22	29	37	41	G	J A 87	J A 122	J A 109	J A 65	42	J A 47	36	J A 49	J A 53	J A 33	25	J A 44	J A 38
18	J A 104	J A 50	J A 52	J A 53	J A 61	J A 38	23	28	J A 52	J A 50	J A 75	J A 105	J A 91	52	J A 52	60	37	J A 50	J A 109	J A 54	J A 50	51	J A 39	34
19	J A 39	E B 17	J A 26	J A 24	J A 29	J A 55	84	34	J A 49	46	J A 44	45	47	45	J A 67	94	J A 105	J A 111	J A 54	J A 111	86	80	J A 38	22
20	J A 34	J A 34	J A 34	J A 33	J A 38	23	23	J A 40	J A 36	J A 36	G	G	42	41	J A 41	38	37	J A 38	J A 34	E B 15	25	24	J A 54	J A 54
21	J A 43	J A 28	J A 40	J A 52	J A 52	J A 66	29	J A 79	J A 65	47	47	52	J A 68	45	J A 49	51	37	J A 38	J A 41	J A 34	J A 42	74	56	J A 44
22	J A 55	J A 53	J A 76	J A 47	27	22	G	28	J A 46	34	36	36	G	38	38	40	J A 53	41	J A 34	J A 38	J A 40	40	J A 31	23
23	J A 32	23	20	19	21	E B 15	E B 15	J A 50	J A 49	84	80	J A 149	J A 110	J A 42	G	J A 56	J A 36	42	J A 41	27	21	20	J A 69	J A 37
24	23	J A 40	E B 16	J A 28	J A 48	J A 54	J A 40	J A 40	J A 33	40	J A 36	38	G	G	39	J A 44	36	34	J A 26	J A 34	J A 27	30	J A 35	J A 53
25	J A 53	J A 68	J A 36	J A 49	J A 52	J A 78	J A 49	J A 36	J A 36	36	G	J A 43	J A 51	71	42	39	J A 42	51	J A 65	J A 39	J A 37	37	35	J A 29
26	23	21	21	J A 27	20	E B 14	J A 28	J A 54	J A 84	75	J A 72	81	J A 76	J A 107	J A 145	J A 106	J A 63	52	J A 36	J A 34	J A 38	27	22	J A 34
27	J A 34	J A 34	24	J A 32	J A 29	23	22	J A 36	J A 37	36	G	G	J A 53	J A 55	J A 44	J A 42	34	31	G	J A 36	J A E B 30	15	J A 44	J A 55
28	J A 55	J A 52	J A 52	22	20	J A 28	G	G	J A 65	J A 62	J A 52	J A 141	J A 103	J A 63	J A 84	J A 71	J A 84	J A 60	J A 36	J A 47	J A 42	J A 43	J A 53	J A 34
29	J A 78	J A 68	J A 44	21	22	E B 15	20	J A 39	J A 69	J A 66	37	G	J A 42	40	G	G	G	J A 38	G	J A 28	21	20	20	J A 32
30	E B 16	J A 36	J A 43	J A 30	J A 27	J A 46	G	J A 49	J A 56	38	J A 46	J A 74	42	42	36	38	36	J A 42	J A 29	24	23	20	J A E B 30	16
31	E B 16	23	23	J A 33	J A 45	J A 41	J A 39	30	J A 45	41	J A 70	40	J A 48	68	J A 53	J A 48	J A 52	42	J A 42	43	J A 39	37	J A 44	J A 39
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 39	J A 36	J A 34	J A 28	J A 29	J A 32	J A 30	J A 40	J A 48	J A 47	J A 47	J A 52	J A 54	J A 51	J A 53	J A 54	J A 47	J A 42	J A 42	J A 38	J A 40	J A 37	J A 44	J A 40
U Q	J A 53	J A 50	J A 43	J A 38	J A 45	J A 49	J A 40	J A 53	J A 64	J A 72	J A 74	J A 79	J A 76	J A 71	J A 67	J A 74	J A 74	J A 59	J A 61	J A 59	J A 60	J A 54	J A 54	J A 54
L Q	32	24	22	22	22	E B 20	22	30	37	38	40	40	43	42	41	42	37	38	G 34	29	27	25	J A 35	34

AUG.2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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 109	28	28	E B 16	E B 15	E B 15	18	35	37	38	34	40	45	45	39	43	36	38	25	28	27	24	22	27
2	24	E B 16	18	E B 16	E B 16	20	A A 68	34	A A 128	46	A A 127	36	40	39	46	59	32	28	29	58	A A 60	27	23	E B 16
3	23	E B 16	E B 16	E B 16	24	E B 16	22	G	32	36	38	40	39	40	40	70	35	30	54	28	E B 15	40	25	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	18	24	26	30	34	36	40	A A 80	39	43	36	34	30	25	25	25	E B 15	32	19
5	E B 15	25	E B 16	E B 15	E B 15	E B 15	19	24	28	34	A A 89	38	38	A A 130	44	34	34	30	A A 49	20	35	26	24	23
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	25	27	31	34	34	37	34	44	44	46	50	36	21	41	28	28	23
7	24	24	E B 16	E B 16	18	18	22	33	51	52	47	A A 64	47	38	46	50	46	56	36	29	A A 90	24	26	27
8	26	A A 54	24	17	E B 16	E B 16	26	38	32	A A 108	35	42	40	39	36	38	34	30	A A 130	A A 109	A A 84	43	28	28
9	E B 16	23	24	23	E B 16	A A 53	24	24	50	A A 106	A A 80	A A 95	A A 82	48	49	53	60	28	42	28	24	24	24	23
10	17	24	E B 16	E B 15	E B 16	E B 16	19	26	30	34	34	36	A A 72	42	42	42	35	G	G	E B 16	16	E B 16	E B 16	E B 16
11	25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 26	30	32	35	36	40	44	43	44	39	30	50	42	46	25	18	24
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	30	41	36	38	42	45	A A 84	58	34	40	36	18	26	E B 16	27	26
13	24	24	24	23	E B 15	E B 16	24	44	33	37	39	40	45	A A 127	45	A A 82	42	28	46	26	E B 16	23	24	26
14	E B 16	E B 16	E B 16	E B 16	23	E B 16	28	27	40	46	A A 74	A A 74	A A 78	A A 101	56	A A 174	A A 164	37	32	37	24	22	19	25
15	16	24	E B 16	E B 16	E B 15	E B 15	E B 15	27	30	33	38	A A 77	38	39	G 31	G	31	27	G	E B 15	E B 15	E B 15	A A 56	E B 16
16	25	E B 16	E B 16	E B 16	E B 16	E B 15	17	40	34	33	36	A A 79	A A 68	45	36	44	45	28	G	19	E B 15	E B 15	16	E B 15
17	E B 16	E B 16	25	E B 15	E B E 16	E B 16	G 17	28	33	37	G	A A 87	A A 122	A A 109	48	38	32	31	41	28	E B 15	23	A A 44	23
18	24	23	23	25	A A 61	A A 38	18	25	44	36	A A 75	A A 105	A A 91	38	43	38	35	37	48	25	18	E B 16	28	25
19	24	E B 17	E B 16	E B 16	E B 17	E B 16	28	27	35	36	36	40	37	41	48	42	A A 105	A A 111	33	30	28	30	26	E B 16
20	E B 15	E B 16	E B 16	24	20	E B 15	20	24	26	31	G	G	40	39	30	35	32	32	24	E B 15	24	23	A A 54	24
21	24	16	22	31	22	24	22	A A 79	A A 65	32	34	37	35	36	35	36	34	32	32	26	22	23	23	26
22	A A 55	25	E B 16	27	19	E B 16	G	G 26	27	34	35	35	G	37	37	39	38	28	26	20	27	25	E B 16	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	40	35	41	A A 80	44	A A 110	36	G	35	32	32	25	23	15	E B 15	24	25
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	24	28	35	30	38	G	G	37	38	33	30	23	23	23	E B 16	20	20
25	23	27	26	33	24	27	A A 49	G 23	31	34	G	34	41	A A 71	38	36	36	35	54	26	24	24	19	19
26	E B 16	E B 16	E B 15	E B 15	E B 16	E B 14	20	A A 54	A A 84	A A 75	51	51	60	40	39	38	33	27	24	26	27	24	E B 15	18
27	E B 16	E B 16	E B 16	23	23	E B 16	19	24	29	33	G	G	41	46	39	G 30	32	29	G	24	20	E B 15	E B 15	23
28	E B 15	26	18	E B 17	E B 17	E B 16	G	G	54	40	40	A A 141	42	54	70	51	35	32	28	32	26	24	E B 16	E B 16
29	E B 16	25	E B 16	E B 16	E B 15	E B 15	18	27	A A 69	46	35	G	37	38	G	G	G	28	G	18	E B 16	E B 16	E B 15	E B 15
30	E B 16	E B 16	24	23	23	22	G	37	40	36	40	45	40	40	36	36	32	28	23	23	21	E B 16	23	E B 16
31	E B 16	E B 16	E B 16	E B 16	18	A A 41	24	26	38	37	40	38	41	40	40	35	32	36	28	24	30	30	28	27
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	33	36	36	40	41	40	40	38	34	30	29	25	24	23	24	23
U Q	24	24	23	23	20	18	24	35	44	41	A A 47	A A 64	A A 68	A A 46	46	50	39	36	42	28	28	25	28	25
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	G	25	30	34	34	36	38	38	36	36	32	28	G 24	20	E B 16	E B 16	E B 18	E B 16

AUG.2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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

AUG.2021 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	F	F	F	F	F	368	358	354	354	318	255	318	285	316	318	320	326	351	338	349	335	294	F
2	F	F	F	F	F	F	A	368	A	309	A	300	322	324	305	283	296	327	351	377	A	319	304	277
3	310	323	318	307	F	F	311	325	347	335	317	307	280	308	301	314	339	299	323	315	296	289	306	304
4	311	339	305	307	310	324	316	328	368	358	358	278	A	283	297	316	348	330	312	307	320	318	303	314
5	309	309	326	327	322	F	284	329	380	379	A	392	269	A	322	349	334	340	A	299	296	305	F	F
6	F	324	309	297	F	F	358	399	390	334	337	340	286	299	325	275	308	315	332	348	355	327	F	318
7	F	F	F	F	F	F	322	342	327	341	337	A	264	301	319	323	330	352	363	338	A	281	293	314
8	353	A	F	F	F	F	329	357	314	A	284	299	274	301	323	337	369	312	A	A	A	313	325	F
9	F	F	F	F	F	A	349	355	370	A	A	A	A	306	301	316	319	352	351	317	348	335	F	F
10	F	F	306	309	321	352	370	331	345	346	366	367	A	269	320	325	309	314	328	358	330	323	333	299
11	288	F	306	F	F	F	297	355	417	384	285	316	304	314	305	303	320	321	344	347	334	312	F	F
12	F	F	322	323	F	F	338	327	335	366	358	318	325	348	A	306	320	346	335	355	308	373	314	F
13	F	F	F	F	F	F	345	368	399	353	334	358	320	A	301	A	314	335	334	354	326	288	F	F
14	F	307	F	F	F	321	311	375	350	353	A	A	A	A	311	A	A	340	341	342	325	318	300	324
15	316	F	F	F	F	328	389	347	373	381	373	A	284	300	332	322	319	338	330	329	329	347	A	F
16	F	F	291	F	F	F	319	348	345	376	264	A	A	316	320	328	334	350	347	327	304	319	298	299
17	302	F	304	317	331	294	348	354	358	338	342	A	A	A	319	352	332	337	378	320	323	351	A	F
18	F	303	F	F	A	A	360	374	275	313	A	A	A	274	295	317	332	352	333	311	317	335	326	F
19	F	F	F	307	340	F	309	330	374	359	367	326	255	315	328	329	A	A	326	323	357	360	284	F
20	F	F	F	F	F	292	346	323	361	341	371	292	350	344	327	326	345	345	339	318	328	329	A	F
21	F	294	298	309	F	F	329	A	A	333	346	357	352	328	257	320	325	346	358	350	348	308	F	F
22	A	F	F	374	329	325	328	373	377	377	377	301	327	335	314	311	301	311	326	322	351	393	336	321
23	307	308	308	310	299	335	315	356	407	383	A	319	A	412	299	326	315	299	305	318	344	342	298	F
24	F	F	F	F	F	F	345	365	378	365	374	318	334	264	312	323	321	321	337	328	328	340	303	F
25	F	F	F	330	F	313	A	364	396	385	387	320	310	A	299	308	294	282	314	369	369	312	287	326
26	307	F	F	298	354	344	352	A	A	A	325	319	338	359	276	306	321	322	335	329	334	324	316	317
27	313	290	300	334	378	294	338	361	354	363	323	280	314	304	322	333	328	328	332	327	307	327	323	303
28	F	289	295	278	288	280	398	393	328	341	339	A	317	307	341	298	317	318	333	330	348	286	287	295
29	314	275	303	338	278	F	327	318	A	304	331	274	320	336	301	324	349	341	319	344	352	328	291	274
30	F	301	F	F	F	F	354	374	375	364	336	336	318	328	317	319	333	343	337	349	333	334	298	276
31	306	293	286	334	F	A	332	361	364	365	363	343	323	316	326	321	324	328	341	342	320	319	293	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	15	17	11	12	29	29	27	28	25	23	23	26	30	29	29	30	29	30	28	31	22	15
MED	310	303	305	310	322	322	338	356	364	356	339	318	318	311	315	320	321	329	335	330	330	324	302	304
U Q	314	316	309	332	340	332	353	368	378	371	366	340	325	328	322	326	334	343	346	348	348	335	316	318
L Q	306	292	298	307	299	294	318	330	345	340	324	299	284	300	301	310	316	318	327	320	320	312	293	295

AUG.2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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 422	422	422		A	A	413	A	386	A	L					
2							A	A	A	A	A	432	426	421	A	A	406	393	374		A			
3								359	385	386	411	448	U L 385	432	418	A	396	370	A					
4							U L 342	L	L 422			400	A	419	A	390	413	393	383					
5								L	410	434	A	467	455	A	A	421	395	381	A					
6								L	L	U L 445	415	428	449	427	A	A	A	A	A					
7								A	A	A	A	A	A	388	A	A	A	A						
8		A					A	A	416	A	407	A	A	424	425	425	380	354	A		A			
9						A		L	A	A	A	A	A	A	A	A	A	359	A					
10								L	U L 381	431	458	434	A	411	A	A	394	362	368					
11							U L 346	373	404	L	452	449	428	A	A	A	A	410	A					
12								U L 360	406	A	U L 384	443	403	A	A	A	386	A	A					
13							A	A	A	384	U L 413	433	A	A	A	A	A	L	A					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15										469	428	A	423	377	396	403	402	375	371					
16								A	L	L	405	A	A	A	412	A	A	391	L					
17								L	407	405	391	A	A	A	A	435	397	378	A					
18						A		L	356	A	A	A	A	366	A	409	383	A	A					
19							A	L	A	400	416	419	419	419	A	A	A	A	A					
20								L	373	408	420	430	438	438	421	411	368	379	L					
21						A		A	A	418	399	384	406	423	U L 432	429	359	370	A					
22								L	372	416	432	418	421	434	426	415	377	364	L					
23								A		A	A	A	A		428	406	384	373						
24									398	418	426	404	426	420	U L 370	398	383	368	L					
25						A	A	L	L 410	417	452	427		A	391	405	375	376	A					
26								A	A	A	A	A	A	U L 427	399	403	364	L						
27									L 422	434	424	376		A	359	379	358	L	L					
28									A	A 391	A	392	A		A	A	363	366	A					
29									A	A 434	399	456	383	382	409		380	L	L					
30									A	L	U L 424	A	397	424	402	402	403	U L 380						
31						A			A	399	406	395	416	400	407	407	L	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	3	11	17	22	19	18	18	16	17	22	19	4					
MED							U L 344	360	398	418	416	428	422	420	410	407	384	375	372					
U Q								373	407	426	428	443	428	427	423	418	396	381	378					
L Q								359	373	402	406	404	403	400	394	402	375	366	370					

AUG.2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2021 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								234	268	256	316	496	340	394	332	294	294	264	232					
2							A	236	A	EA 348	A	378	332	304	344	EA 396	316	264	230		A			
3								304	262	272	318	350	372	292	306	EA 306	246	368	EA 344					
4							348	284	226	258		434	A	414	378	310	270	284	296					
5								272	206	250	A	278	452	A	316	262	298	264	A					
6								208	220	322	298	310	384	386	334	454	EA 348	EA 312	254					
7								248	EA 302	EA 292	EA 292	A	EA 440	342	300	EA 300	272	EA 250						
8		A					242	268	330	A	368	380	EA 282	364	314	288	254	326	A		A			
9						A		260	238	A	A	A	A	EA 366	EA 366	EA 324	EA 330	258	238					
10								256	272	288	264	264	A	450	318	306	320	308	264					
11							366	266	214	242	452	346	350	320	326	300	276	276	EA 256					
12								352	290	240	270	350	334	308	A	EA 366	272	254	246					
13							238	238	210	262	312	312	326	A	364	A	298	262	EA 270					
14							EA 284	220	250	EA 308	A	A	A	A	EA 360	A	A	250	242					
15										242	266	A	438	370	282	302	288	258	272					
16								252	252	246	462	A	A	308	284	274	262	244	244					
17								272	254	306	306	A	A	A	EA 332	258	278	268	220					
18						A		252	R 450	EA 304	A	A	A	R 602	392	314	282	254	EA 272					
19							EA 274	284	238	256	258	412	506	366	304	288	A	A	270					
20								274	230	282	274	388	284	284	318	308	282	278	270					
21						EA 280		A	A	282	270	260	270	320	474	334	326	278	236					
22								242	238	242	244	380	336	322	342	342	358	314	280					
23								240		240	A	344	A		360	290	290	276						
24									230	262	262	342	324	482	324	318	316	290	256					
25						EA 306	A	250	230	230	244	312	312	A	352	324	324	324	274					
26								A	A	A	EA 308	EA 300	EA 278	286	416	354	312	284						
27									244	244	316	394	314	340	294	294	292	278	282					
28									EA 330	248	266	A	298	282	EA 298	EA 312	312	278	252					
29									A	324	314	428	316	278	298	290	266	266	266					
30									248	248	292	278	328	304	316	302	266	258						
31						A			242	242	258	294	308	308	298	268	278	258	234					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	6	22	25	28	24	23	23	25	30	29	29	30	25					
MED						EA 293	U 268	254	241	252	288	346	327	321	321	303	286	270	254					
U Q							348	272	270	290	315	388	372	378	360	324	316	284	272					
L Q							242	240	230	243	265	300	308	304	304	290	272	258	240					

AUG.2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2021 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	E A 228	E A 228	E B 242	E B 244	E A 242	212	A	A	192	186	204	A	A	194	A	204	A	204	214	206	214	E A 234	E A 282
2	E A 290	E B 230	212	212	E B 246	E A 248	A	A	A	A	A	210	194	194	A	A	192	190	196	204	A	E A 262	E A 278	E B 282
3	E A 282	E B 258	E B 254	E B 270	E A 344	E B 260	222	214	202	202	196	194	194	200	200	A	198	198	A	E A 248	E B 248	E A 270	E A 238	E B 232
4	E B 248	E B 214	E B 232	E B 238	E B 244	E A 252	E A 234	204	200	190	190	E A 236	A	206	A	206	196	196	196	E A 248	E A 232	E B 208	E A 272	E A 248
5	E B 224	E A 276	E B 236	E B 228	E B 228	E B 236	E A 230	204	182	184	A	184	184	A	A	186	220	200	A	218	E A 290	E A 266	E A 290	192
6	E B 192	E B 268	E B 276	E B 284	E B 284	E B 276	224	180	180	182	180	182	184	184	A	A	A	A	A	208	208	E A 244	E A 260	E A 254
7	E A 304	E A 304	E B 256	E B 264	E A 280	E A 258	E A 230	A	A	A	A	A	A	224	A	A	A	A	216	E A 230	A	E A 328	E A 308	E A 292
8	210	A	E A 288	E A 276	E B 262	E B 226	A	A	212	A	194	A	A	192	192	192	198	198	A	A	A	E A 288	E A 236	E A 310
9	E B 280	E A 304	E A 256	E A 288	E B 240	A	218	204	A	A	A	A	A	A	A	A	A	204	A	E A 238	222	196	E A 274	E A 288
10	E A 268	E A 300	E B 256	E B 278	E B 264	220	200	190	188	188	182	176	A	212	A	A	202	190	194	208	E B 216	210	202	E B 246
11	E A 292	E B 292	E B 266	E B 220	E B 228	E B 244	210	194	186	180	184	184	198	A	A	A	A	198	A	226	E A 264	E A 226	E A 276	E A 326
12	220	E B 278	E B 224	E B 224	204	204	200	200	200	A	200	200	224	A	A	A	208	A	A	202	E A 226	194	E A 288	E A 314
13	E A 280	E A 280	E A 324	E A 250	E B 260	E B 286	A	A	A	194	194	194	A	A	A	A	A	204	A	216	E B 224	E A 282	E A 294	E A 230
14	194	E B 282	E B 276	E B 276	E A 320	E B 266	A	A	A	A	A	A	A	A	A	A	A	A	A	222	210	216	E A 262	E A 248
15	E B 230	E A 258	E B 258	E B 242	E B 242	E B 226	208	194	188	180	180	A	186	220	182	182	182	190	202	E B 234	E B 214	E B 214	A	E B 256
16	E A 270	E B 264	E B 260	E B 254	E B 260	E B 246	E A 232	A	216	184	190	A	A	A	190	A	A	198	198	E A 226	E B 226	E B 226	E A 234	E B 260
17	E B 264	E B 274	E A 296	E B 228	E B 220	E B 228	214	214	206	196	196	A	A	A	A	192	192	200	A	E A 234	E B 236	190	A	E A 298
18	E A 242	E A 292	E A 244	E A 386	A	A	E A 214	198	202	A	A	A	A	E A 240	A	208	206	A	A	E A 222	E A 232	E B 228	E A 234	E A 296
19	E A 260	E B 250	E B 250	E B 238	220	228	A	212	A	204	190	190	190	190	A	A	A	A	A	206	206	204	E A 300	E B 260
20	E B 292	E B 256	E B 266	E A 274	E A 240	E B 262	216	196	188	182	174	184	186	186	180	190	194	194	194	230	226	218	A	202
21	E A 282	E B 280	E A 298	E A 308	E A 266	A	E A 234	A	A	202	196	196	184	184	172	186	202	206	A	206	206	E A 280	E A 318	234
22	A	E A 340	E B 268	E A 280	E A 260	250	228	208	202	188	188	188	188	188	184	200	E A 240	200	216	E A 236	224	192	192	E B 236
23	E B 260	E B 272	E B 272	E B 248	E B 252	E B 242	E B 224	A	202	A	A	A	A	180	182	196	208	214	204	218	202	204	E A 260	E A 296
24	E B 250	E B 250	E B 240	E B 260	E B 270	E B 254	206	192	188	188	176	186	182	182	184	196	196	194	204	216	216	210	226	E A 232
25	E A 302	E A 290	E A 290	E A 286	E A 244	A	A	208	204	184	184	176	186	A	194	196	E A 226	E A 244	A	204	186	E A 246	E A 254	E A 268
26	E B 284	E B 284	E B 278	224	208	232	220	A	A	A	A	A	A	194	194	194	194	194	216	224	E A 236	E A 230	E B 224	E A 232
27	E B 228	E B 266	E B 266	E A 250	204	E B 262	E B 234	216	204	192	186	184	E A 234	A	220	202	202	208	206	220	E A 230	206	224	E A 258
28	E B 258	E A 304	E A 280	E B 280	E B 280	280	208	200	A	A	E A 218	A	218	A	A	A	214	208	A	E A 232	208	E A 272	E B 272	E B 248
29	E B 254	E A 350	230	E B 222	E B 288	E B 238	200	212	A	A	184	184	182	220	198	194	194	202	208	212	E B 198	E B 214	E B 244	E B 284
30	E B 252	E B 254	E A 288	222	E A 262	E A 290	214	216	A	200	194	A	216	192	192	188	194	184	204	216	216	E B 214	E A 258	E B 272
31	E B 250	E B 264	E B 264	E B 240	218	A	E A 236	216	A	200	198	198	198	198	198	190	198	A	A	210	E A 228	E A 242	E A 268	E A 294
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	31	31	30	26	25	21	18	20	23	19	18	19	16	17	23	23	15	30	28	31	28	31
MED	E B 260	E B 275	E B 264	E B 250	E B 249	E B 247	213	204	201	189	189	187	188	193	192	194	198	198	204	213	E 223	E 218	E A 260	E A 260
U Q	E A 282	E A 292	E A 278	E A 278	A E 266	E B 262	E A 230	213	204	198	196	198	198	212	196	198	208	204	208	E A 230	E A 231	E A 262	E A 277	E A 292
L Q	E 236	E B 258	E 244	E B 228	228	232	209	195	188	184	184	184	184	186	183	189	194	194	196	210	208	208	234	E 236

AUG.2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2021 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B		A	A	A	A	A	A	A	114	116	118	A	A					
2						B	A	A	A	A	A	A	112	112	A	A	A	A	A		A			
3						B	A	112	112	112	112	112	112	112	112	112	112	112	A					
4							A	A	A	112	A	112	A	A	A	A	A	A	A					
5						B		A	A	A	A	A	A	A	A	A	A	A	A					
6							A	A	A	A	A	A	A	A	112	A	A	A	A					
7						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
8		A				B	A	A	A	A	A	A	A	A	A	A	A	A	A		A			
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
10						B	A	A	A	A	A	A	A	A	A	A	112	108	110					
11						B	122	112	112	110	A	A	110	110	110	A	110	112	A					
12						B	A	A	112	A	A	112	A	A	A	A	A	114	A					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						B	B	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	B	114	114	A	A	A	A	114	114	114	114	A	114					
16						B		A	A	A	A	A	A	A	A	A	A	A	114					
17						B	114	114	116	108	108	A	A	A	A	A	A	A	A					
18						B		110	A	A	A	A	A	A	A	A	110	A	A					
19						B	A	112	A	A	A	A	A	112	112	A	A	A	A					
20						B	B	A	A	A	114	110	110	110	A	110	110	110	A					
21						B	A	A	A	A	A	A	A	A	A	A	110	A	A					
22							110	110	A	110	110	A	114	114	118	A	A	A	B		A			
23						B		A	A	A	A	A	A	A	108	A	A	A	A					
24						B	A	A	A	A	A	A	108	108	108	108	112	112	B					
25						B	A	112	A	A	112	A	A	A	112	112	A	A	A					
26						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
27						B	B	A	A	A	106	108	A	A	A	108	108	108	108					
28						B	B	104	A	A	A	A	A	A	A	A	A	A	A					
29						B	B	A	A	A	A	110	A	110	108	106	106	A	110					
30						B	128	118	112	112	112	A	110	110	A	A	A	A	B					
31						B		110	110	A	A	110	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	11	7	6	7	7	7	10	11	8	11	7	5					
MED							118	112	112	111	112	110	110	111	112	111	110	112	110					
U Q							125	114	114	112	112	112	112	112	114	113	112	112	114					
L Q							112	110	112	110	108	110	110	110	108	108	110	108	109					

AUG.2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2021 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	88	90	90	88	B	B	92	92	92	90	90	90	90	88	116	116	116	100	94	86	86	90	90	90
2	92	92	92	92	92	92	92	92	92	92	86	86	118	120	96	96	96	100	100	100	100	98	98	96
3	96	96	B	B	94	94	100	G	110	110	110	124	122	122	122	116	116	118	100	100	100	100	94	92
4	92	92	92	102	102	102	102	102	102	140	92	116	100	100	100	92	98	98	100	90	90	90	90	90
5	80	84	84	84	B	84	88	104	94	94	84	92	90	90	90	100	100	100	100	100	78	78	92	92
6	92	92	92	94	108	96	96	96	96	100	100	102	100	96	122	102	102	98	96	98	94	90	90	84
7	86	86	88	84	84	82	84	92	90	90	90	92	92	92	92	92	92	86	86	92	92	86	98	90
8	86	86	82	84	92	112	112	96	96	100	100	100	100	100	100	100	102	98	82	82	82	84	84	84
9	90	92	84	84	84	110	90	90	90	90	90	92	90	90	84	84	84	84	86	78	78	80	90	90
10	90	90	90	90	114	106	100	100	100	90	92	92	92	92	86	84	154	G	G	B	86	94	86	86
11	90	90	B	92	102	98	98	124	120	124	96	96	134	126	126	102	118	122	96	96	92	92	102	102
12	96	96	96	96	96	96	104	92	116	100	96	126	92	90	100	100	88	112	102	94	84	84	90	88
13	88	86	86	86	B	86	102	102	102	102	102	98	96	92	94	94	94	96	96	96	86	88	98	94
14	94	86	86	86	86	92	102	102	102	102	98	94	92	92	92	92	92	92	88	88	88	88	88	88
15	86	96	96	B	96	B	B	148	138	90	92	92	92	142	94	G	114	104	G	B	B	B	94	94
16	94	94	94	94	106	B	106	100	100	100	104	92	92	92	92	92	92	92	G	92	B	104	108	86
17	88	88	88	88	100	B	104	134	128	128	G	88	88	80	80	80	80	108	100	96	96	96	96	98
18	88	88	88	88	86	86	88	108	96	96	90	90	90	90	90	90	110	96	94	94	94	94	88	84
19	86	B	90	90	96	100	100	108	90	90	90	86	86	116	116	104	94	94	94	86	86	86	86	86
20	88	88	90	86	90	90	90	90	94	94	G	G	124	124	90	128	124	116	112	B	80	78	84	94
21	94	92	92	92	92	92	98	98	94	94	92	88	88	90	90	84	108	102	98	90	90	90	90	90
22	86	86	86	86	86	86	G	150	94	158	158	94	G	110	110	96	96	96	96	94	94	94	96	96
23	96	94	94	74	74	B	B	90	90	90	90	88	82	82	G	84	90	90	90	90	90	90	90	90
24	90	90	B	90	94	96	94	92	92	94	94	88	G	G	120	112	120	120	84	84	84	84	90	90
25	90	90	90	84	84	86	86	88	88	94	G	94	94	92	142	132	88	88	88	88	88	88	80	80
26	74	84	84	94	94	B	100	100	100	100	96	92	92	92	92	90	90	88	90	88	84	84	84	84
27	90	90	90	90	92	100	116	102	96	94	G	G	86	84	80	90	146	128	G	88	86	B	92	92
28	92	92	92	92	92	92	G	G	92	92	92	86	86	84	84	84	84	92	90	78	84	84	90	90
29	90	90	94	94	94	B	120	100	92	90	90	G	88	140	G	G	G	100	G	88	88	88	88	88
30	B	100	90	90	90	90	G	110	110	112	116	78	120	126	90	84	84	82	92	88	88	82	90	B
31	B	86	86	86	86	86	86	114	114	86	86	106	96	96	88	94	96	92	92	92	78	82	82	88
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	28	29	28	24	26	29	31	31	27	28	29	30	29	29	30	30	26	28	29	29	31	30
MED	90	90	90	90	92	92	99	100	96	94	92	92	92	92	92	94	96	98	94	90	88	88	90	90
U Q	92	92	92	92	96	99	102	108	102	102	100	97	100	116	113	102	114	104	100	95	92	93	94	92
L Q	87	86	86	86	86	86	90	92	92	90	90	88	89	90	90	87	90	92	90	88	84	84	88	86

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F4	F6	F5	F4			L3	L5	L6	L5	L3	L3	L4	L2	C1	C2	C2	L5	L3	F4	F4	F3	F2	F3
2	F2	F3	F3	F2	F2	L5	L5	L5	L7	L6	L5	L4	CL12	C1	L3	L4	L3	L2	L4	F9	F6	F9	F3	F3
3	F3	F2			F6	F6	L2		C2	C3	C2	C2	C2	C2	C2	C3	C3	C2	L8	F3	F3	F9	F4	F4
4	F4	F1	F1	F2	F5	F4	L5	L5	L4	H1	L3	C2	L5	L2	L3	L3	L3	L3	L3	F5	F7	F2	F4	F3
5	F1	F2	F1	F2		L2	L3	L1	L2	L3	L4	L2	L2	L4	L4	L2	L3	L4	L8	F5	F6	F4	F4	F3
6	F1	F1	F2	F2	F3	F3	L3	L4	L3	L2	L2	L2	L2	L2	C3	L5	L4	L5	L4	F3	F6	F6	F4	F4
7	F5	F4	F2	F2	F4	L4	L2	L7	L6	L7	L3	L3	L2	L2	L5	L6	L3	L6	L9	F6	F7	F6	F3	F5
8	F7	F6	F2	F2	F5	L3	L3	L8	L3	L4	L3	L2	L2	L2	L2	L2	L3	L2	L6	L6	F9	F9	F5	F3
9	F3	F7	F5	F6	F2	LL75	L3	L3	L5	L6	L5	L5	L5	L3	L4	L5	L7	L4	L7	F3	F4	F4	F2	F3
10	F2	F3	F2	F2	F1	L3	L3	L2	L2	L2	L2	L2	L3	L2	L2	L4	H2				F1	F3	F3	F1
11	F3	F2		F1	F2	F2	L1	C2	C1	C1	L2	L2	C2	C2	CL22	L2	C2	C2	L8	F9	F8	F3	F5	F6
12	F4	F5	F2	F2	F2	L3	L3	LC32	CL22	L5	L3	C1	L2	L2	L5	L4	L5	CL32	L4	F4	F3	F3	F4	F3
13	F3	F3	F2	F2		L5	L4	L7	L4	L4	L3	L3	L3	L6	L3	L4	L3	L5	L9	F5	F7	F4	F8	F4
14	F2	F2	F2	F3	F7	L4	L6	L5	L5	L5	L4	L4	L3	L5	L5	L8	L6	L5	L4	F8	F6	F3	F2	F2
15	F1	F2	F2		F1			H2	H2	L2	L3	L4	L3	H1	L2		C1	L1					F8	F7
16	F4	F2	F1	F2	F1		F1	L4	L4	L2	L3	L4	L4	L4	L3	L3	L4	L3		F2		F1	F3	F2
17	F2	F2	F4	F5	F1		L1	C2	C2	C2		L4	L4	L4	L4	L4	L2	CL32	L6	F5	F3	F7	F4	F3
18	F4	F4	F6	F8	F9	L8	L2	C2	L4	L3	L4	L4	L4	L3	L3	L2	C2	L6	L6	F2	F3	F3	F3	F2
19	F2		F2	F2	F2	F3	L3	C1	L5	L3	L2	L3	L1	C2	C3	L6	L6	L8	L8	F9	F5	F3	F3	F1
20	F2	F2	F2	F6	F2	L2	L3	L2	L2	L2			C1	C1	L2	C1	C2	C2	L2		F4	F2	F9	F4
21	F8	F5	F4	F7	F7	L4	L4	L8	L8	L2	L3	L3	L2	L2	L2	L2	C2	L3	L6	F5	F5	F4	F2	F3
22	F7	F5	F3	F7	F3	F2		HL22	L3	H1	H1	L1		C1	C1	L2	L4	L2	L2	F3	F5	F3	F1	F1
23	F2	F1	F1	F1	F1			F4	L2	L3	L5	L4	L4	L3		L3	L3	L5	L3	F3	F1	F2	F2	F2
24	F2	F2		F1	F2	L2	L3	L3	L2	L2	L2	L2			C1	C2	C1	C1	L3	F3	F4	F2	F2	F2
25	F6	F3	F5	F9	F5	F6	L4	L3	L2	L2		L1	L3	L3	H1	C2	L4	L4	L4	F4	F4	F2	F2	F2
26	F2	F2	F1	F1	F1		L4	L8	L7	L7	L4	L4	L3	L2	L4	L3	L3	L5	L3	F3	F4	F3	F1	F3
27	F2	F4	F2	F6	F3	F2	C2	L4	L3	L1			L4	L4	L4	L2	H1	C1		F3	F2		F3	F2
28	F3	F4	F3	F2	F1	L1			L8	L8	L3	L6	L3	L3	L4	L2	L2	L3	L4	F7	F3	F4	F2	F2
29	F4	F7	F2	F2	F2		C2	L2	L5	L4	L1		L2	H1				L1		F2	F1	F2	F2	F3
30		F2	F4	F4	F4	L5		C5	C3	C1	C2	L2	CL12	CL12	L2	L3	L2	L3	L2	F2	F2	F1	F2	
31		F2	F2	F3	F4	L5	L3	C2	C3	LC21	L2	CL22	L2	L2	L3	L3	L2	L7	L4	F3	F4	F4	F5	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG.2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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	69	72	X 60	X 47	X 44	55	57														X 71	X 63	A	X 41
2	47	47	X 38	X 30	X 30	X 29	X 39														X 56	X 54	X 50	A
3	46	X 44	X 42	X 39	X 36	X 34															X 71	X 63	67	70
4	X 73	X 55	X 51	X 50	X 49	X 49															X 79	X 74	X 62	X 54
5	X 54	X 53	X 51	X 39	X 33	X 33															X 60	X 63	X 60	59
6	47	43	X 40	X 34	X 28	X 27															X 70	X 57	X 50	X 50
7	X 48	47	48	44	X 38	X 32															X 52	X 49	54	X 50
8	X 48	X 33	X 31	X 32	X 34	X 34															X 72	X 69	X 55	X 52
9	53	45	49	A	A	A											X 98				X 72	X 54	X 41	X 38
10	X 38	45	X 40	X 36	X 33	X 32															X 64	X 59	X 48	X 44
11	52	X 44	X 45	X 45	X 38	X 36															X 72	X 56	X 46	47
12	49	48	46	47	X 34	X 31															X 76	X 50	X 34	X 34
13	X 37	X 34	X 38	X 36	X 34	38															X 58	X 52	X 52	53
14	41	42	X 37	47	X 33	38															A	A	69	66
15	X 51	X 47	X 41	46	42	44														X 82	X 76	X 70	X 45	48
16	54	52	47	X 43	X 40	X 38															X 62	X 64	X 59	X 50
17	X 47	X 48	X 45	X 48	X 44	X 39															X 82	X 60	X 50	X 48
18	X 46	X 45	44	X 38	A	A															X 71	X 65	X 59	A
19	X 53	56	X 49	X 44	X 40	X 30															X 81	X 42	X 39	X 38
20	X 39	43	X 39	X 35	X 32	X 34															X 70	X 63	X 59	50
21	52	X 45	X 46	X 54	X 44	X 29															X 70	A	X 38	A
22	X 37	X 38	A	A	X 26	A															X 92	X 71	A	X 41
23	X 39	X 38	X 38	X 40	X 37	X 32															X 81	X 67	X 54	X 48
24	56	X 47	X 46	X 44	X 43	X 39															X 82	X 66	X 51	X 45
25	X 45	X 42	X 36	45	X 38	X 34															X 55	X 45	X 44	X 46
26	59	61	X 54	X 55	X 43	X 34															X 78	X 70	X 54	X 46
27	X 53	X 45	X 45	X 52	X 39	X 26															X 69	X 68	X 58	X 54
28	X 52	X 52	X 48	X 47	X 44	X 44															X 68	X 58	X 52	X 48
29	51	X 49	X 48	X 48	X 38	X 36															X 77	X 50	X 45	X 46
30	X 45	X 47	X 44	X 46	X 37	38															X 64	X 58	X 40	X 40
31	X 41	X 40	X 39	X 39	X 30	X 24															X 64	X 55	X 48	X 47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	29	29	28	2										1			1	30	29	29	28
MED	X 48	X 45	X 45	X 44	X 38	X 34	48										X 98			X 82	X 71	X 60	X 51	X 48
U Q	53	49	X 48	X 47	X 42	X 38															X 77	X 66	X 58	51
L Q	X 45	X 43	X 39	X 38	X 33	X 32															X 64	X 54	X 45	X 44

IONOSPHERIC DATA STATION Okinawa

AUG. 2021 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

HD	00	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 58	F 60	54	41	38	F 43	F 47	56	60	53	52	51	52	60	71	79	83	79	72	85	65	57	A	35
2	F 36	F 36	32	24	24	23	33	68	A	A	63	52	A	64	71	70	85	110	104	63	50	48	44	A
3	F 37	38	36	33	30	28	37	61	54	59	54	50	68	78	82	89	78	78	66	60	65	57	F	F
4	67	49	45	44	43	43	42	A	A	A	49	A	63	66	61	68	70	64	69	72	73	68	56	48
5	48	47	44	33	27	27	31	61	66	50	47	A	51	55	64	62	62	53	48	A	54	57	54	F 44
6	F 36	F 28	34	28	22	21	36	67	47	46	52	53	48	56	55	54	60	72	82	91	64	51	44	44
7	42	F 36	F 35	F 35	32	26	35	50	76	A	A	A	A	72	76	85	92	72	A	50	46	43	F 44	44
8	42	27	25	26	28	28	34	49	A	A	A	54	64	80	J R 84	77	70	62	70	64	66	63	49	46
9	F	F 35	F 32	A	A	A	A	A	54	47	54	55	A	A	64	81	92	78	59	63	66	48	35	32
10	32	35	34	30	27	26	35	52	A	61	55	54	A	54	63	64	59	64	72	62	58	53	42	38
11	F 35	38	39	39	32	30	30	58	60	50	51	62	64	81	83	91	92	97	86	85	66	50	40	F
12	F	F	F 33	F 33	28	25	32	46	53	75	52	49	59	54	50	61	88	91	86	65	70	44	28	28
13	31	28	32	30	28	F 26	32	63	53	56	53	A	A	63	68	70	A	85	86	84	52	46	46	F 42
14	F 30	F 31	31	F 33	27	F 26	32	46	58	52	56	55	A	56	71	78	A	90	83	A	A	A	F 53	F 54
15	45	41	35	F 33	F 27	F 28	39	46	52	53	49	49	56	66	71	75	88	84	77	76	70	64	39	F 37
16	F 36	F 38	F 36	37	34	32	34	53	57	51	A	A	A	78	87	100	97	80	72	70	56	58	53	44
17	41	42	39	42	38	33	33	56	57	48	50	55	56	68	74	70	70	68	62	62	76	54	44	42
18	40	39	F 33	32	A	A	34	53	50	48	53	60	48	51	55	58	A	63	64	72	65	59	53	A
19	47	F 46	43	38	34	24	29	52	53	75	E G 46	48	54	57	57	A	62	66	79	82	75	36	33	32
20	33	F 33	33	29	26	28	30	52	59	64	A	51	61	66	58	63	68	63	54	59	64	57	53	F 40
21	F 42	39	40	48	38	23	26	A	60	76	63	62	59	56	57	60	72	73	64	61	64	A	32	A
22	31	32	A	A	20	A	28	56	63	59	51	54	54	51	52	53	55	56	65	83	86	65	A	35
23	33	32	32	34	31	26	29	60	59	A	54	52	54	54	A	70	76	81	90	89	75	61	48	42
24	F 39	41	40	38	37	33	38	58	53	61	50	56	61	59	56	58	65	70	68	74	76	60	45	39
25	39	36	30	F 29	32	28	33	57	70	63	59	55	54	58	71	74	83	91	114	104	49	39	38	40
26	F 47	F 48	48	49	37	28	32	52	64	70	A	A	76	A	A	62	A	A	72	74	72	64	48	40
27	47	39	39	46	33	20	31	52	67	65	50	57	65	70	82	77	74	68	77	A	63	62	52	48
28	46	46	42	41	38	38	42	62	56	60	73	74	82	102	90	77	84	98	89	75	62	52	47	42
29	F 44	43	42	42	32	30	33	48	51	48	66	70	84	107	124	125	109	107	105	100	71	44	39	40
30	39	41	38	40	31	F 29	34	54	55	62	63	60	61	72	80	76	73	72	75	72	58	52	34	34
31	35	34	33	33	24	18	29	54	63	66	60	60	63	77	87	83	84	97	91	66	58	49	42	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	29	28	30	28	27	26	26	25	24	29	29	30	27	30	30	28	30	29	28	26
MED	39	38	36	34	31	28	33	54	57	59	53	55	60	64	71	72	76	76	74	72	65	54	44	40
U Q	46	42	40	41	36	30	35	59	63	64	59	60	64	74	82	79	88	90	86	84	71	60	50	44
L Q	35	34	33	31	27	26	31	52	53	50	50	52	54	56	58	62	68	66	66	63	58	48	39	37

IONOSPHERIC DATA STATION Okinawa

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

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

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 416	L 436	U L 448	U A 460	452	448	440	436	404	400	L 380					
2								L	A	A 448	456		A	A	452	436	A	A	A					
3								L	U L 396	L 448	440	452	A	U A 440	U A 440	424	432	400	L 356					
4								A	A	A	452	A	A	U A 452	A	436	416	396	364					
5								L	404	L 444	436	A	A	A	436	432	420	A	L	A				
6								A	L	432	440	444	448	432	448	A	408	348	A					
7								L	404	A	A	A	A	444	A	A	A	A	A					
8									A	A	A	444	436	A	448	424	424	400	A					
9							A	A	L 392	A	428	448	A	A	A	A		A	L					
10								A	A	428	440	452	A	A	436	428	408	392	L 344					
11								L	L 404	L 428	436	448	448	452	436	424	412	396	360					
12								A	A		440	U L 460	452	440	U A 436	A	A	392	A					
13								L	L	A	464	A	A	A	444	A	A	A	A					
14									A	A	468	A	A	448	A	A	A	388	A	A				
15									368	416	440	456	444	A	444	432	420	396	A					
16									L	A	A	A	A	A	A	U A 444	424	400	A					
17									A	432	U L 452	440	448	436	440	424	412	A	L					
18								A	A	U L 412	U L 472	448	452	448	440	A	A	A	A					
19								L	U L 424	424	464	452	444	448	A	A	420	A	364					
20								L	U L 428	440	A	456	448	444	448	424	424	396	L					
21								A	416	420	444	A	464	468	444	436	416	392	A					
22								L	396	428	444	456	456	456	448	440	416	A	L 348					
23								L	392	A	L 448	A	456	452	A	A	428	A	A					
24								L	L	432	U L 460	464	U A 456	460	440	444	420	408	L 352					
25								L	L	444	452	460	464	460	448	440	A	404	348					
26								L	L	A	A	A	A	A	A	A	A	A	A					
27								L	404	428	U L 444	456	472	468	452	444	428	L 420	A	A				
28									A	L 444	A	472	A	A	464	452	456	408						
29									L	U L 416	452	472	476	452	468	460	448	400	L					
30								248	L	436	464	L 476	480	468	460	456	440	L 432						
31									L	436	U L 468	472	484	472	472	448	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	13	20	25	22	19	21	23	21	21	19	9					
MED								248	404	432	448	456	452	452	444	436	420	400	L 356					
U Q									L 416	L 438	462	460	464	460	452	444	428	404	364					
L Q									394	426	440	448	448	444	440	426	414	392	L 348					

AUG.2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	A	308	A	216	A				
2								A	A	A	A	A	A	A	A	336	304	268	200	A				
3							B	A	A	A	A	A	A	360	348	316	A	272	232	A				
4							A	A	A	A	A	348	360	348	344	A	A	A	A	A				
5							A	208	256	A	A	328	348	352	348	320	312	272	220	A				
6							A	A	A	A	A	A	A	336	344	332	300	264	208	B				
7							A	A	260	284	A	A	A	A	A	A	A	A	A	A				
8							A	200	252	A	A	A	A	A	A	A	A	A	A	A				
9							A	A	A	A	A	332	A	A	A	A		A	A	A				
10							A	U A 176	A	A	A	A	A	A	A	A	A	272	A	A				
11							B	A	A	296	316	A	348	356	340	320	292	268	208	B				
12							B	212	A	A	A	A	A	A	340	324	308	264	220	A				
13							B	208	264	300	324	348	352	348	344	324	304	264	A	A				
14							B	A	272	304	312	336	348	348	344	324	300	A	A	A				
15							B	196	252	A	A	A	352	A	A	332	A	272	220					
16							A	180	264	304	332	340	344	A	A	A	A	A	A	A				
17							B	244	264	304	336	352	A	A	340	A	A	268	212	A				
18							A	A	A	A	A	336	348	336	344	328	300	260	A	A				
19							B	A	A	A	A	A	A	356	356	328	292	260	A	A				
20							B	A	A	A	A	A	352	348	336	A	304	A	216	B				
21							B	A	240	A	A	A	A	A	A	328	308	A	A	A				
22							A	A	248	A	A	324	352	348	336	332	304	256	A	B				
23							B	A	260	A	A	A	A	A	A	A	A	A	A	A				
24							A	A	A	A	320	A	356	A	336	324	308	276	220	B				
25							A	A	A	A	A	A	A	352	348	328	304	A	A	B				
26							B	184	264	300	328	344	360	A	A	A	A	A	A	A				
27							A	184	A	296	A	A	A	352	332	328	300	268	204	A				
28							B	200	256	304	320	340	352	348	A	A	A	A	A	A				
29							B	196	256	A	A	344	356	348	344	332	308	264	204	B				
30							A	A	A	272	296	A	A	A	A	320	304	260	A	A				
31							B	216	272	308	336	344	A	A	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								13	15	11	10	13	14	15	17	18	18	17	13					
MED								200	260	300	322	340	352	348	344	328	304	268	216					
U Q								210	264	304	332	346	356	352	346	332	308	272	220					
L Q								184	252	296	316	334	348	348	338	324	300	262	206					

AUG.2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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 58	J A 86	J A 26	E B 16	J A 22	J A 250	J A 47	J A 50	J A 51	J A 47	J A 82	J A 55	J A 45	42	41	J A 40	38	J A 38	J A 35	J A 35	J A 25	J A 38	J A 62	J A 53
2	J A 48	J A 32	J A 36	J A 16	J A 44	J A 26	J A 27	J A 48	J A 131	J A 134	J A 89	J A 50	J A 116	J A 62	46	J A 84	J A 84	J A 102	J A 110	J A 44	J A 18	39	J A 20	J A 50
3	J A 63	J A 31	J A 40	J A 20	J A 17	J A 22	J A 19	J A 39	J A 37	J A 40	J A 52	42	J A 47	46	45	G	41	36	30	J A 24	J A 26	J A 53	J A 61	J A 88
4	J A 22	J A 45	J A 36	J A 22	J A 72	J A 52	J A 74	J A 154	J A 150	J A 135	J A 58	J A 67	J A 58	J A 50	J A 67	J A 76	J A 72	J A 35	J A 36	J A 54	J A 25	J A 25	J A 23	J A 18
5	18	19	J A 25	J A 38	J A 25	20	19	27	30	J A 38	J A 56	J A 55	J A 68	50	J A 46	42	J A 55	J A 44	J A 39	J A 62	J A 29	J A 21	J A 22	J A 26
6	J A 77	19	J A 32	J A 21	J A 24	E B 16	J A 30	J A 42	J A 51	J A 47	J A 64	J A 62	J A 44	43	44	J A 46	J A 70	J A 81	J A 103	J A 23	E B 16	J A 25	J A 34	J A 46
7	J A 50	J A 47	J A 35	J A 30	J A 52	J A 18	J A 24	J A 33	40	J A 110	J A 85	J A 137	J A 104	J A 89	J A 56	J A 71	J A 61	J A 89	J A 109	J A 71	J A 31	J A 30	J A 38	J A 120
8	J A 60	J A 52	J A 49	J A 25	20	J A 38	J A 23	J A 43	J A 129	J A 110	J A 191	44	J A 62	J A 65	J A 54	J A 38	J A 41	J A 36	J A 60	J A 47	J A 31	J A 20	J A 30	J A 34
9	J A 61	J A 52	J A 66	J A 53	J A 38	J A 59	J A 63	J A 78	J A 52	J A 63	J A 65	J A 48	J A 76	J A 264	J A 120	J A 63	J A 87	J A 64	J A 61	J A 49	J A 41	J A 30	J A 26	J A 30
10	J A 42	J A 28	J A 40	J A 24	J A 26	J A 32	J A 27	J A 53	J A 155	J A 108	J A 52	J A 62	J A 85	J A 55	J A 47	J A 64	J A 48	34	J A 30	J A 21	J A 22	J A 38	J A 32	J A 60
11	J A 40	E B 16	J A 50	J A 29	J A 18	J A 20	J A 83	J A 27	32	34	G	42	44	43	42	38	37	34	29	J A 16	E B 16	E B 16	J A 53	J A 49
12	J A 39	J A 48	J A 61	J A 27	J A 22	J A 26	J A 22	J A 38	J A 52	J A 61	J A 76	J A 49	43	42	45	J A 54	J A 53	34	J A 59	J A 24	J A 42	J A 28	J A 42	J A 52
13	J A 36	J A 31	J A 138	J A 38	E B 16	E B 16	J A 20	29	J A 42	J A 71	J A 54	J A 53	J A 68	J A 62	J A 76	J A 82	J A 90	J A 53	J A 58	J A 21	J A 25	J A 54	J A 47	J A 44
14	J A 75	J A 28	J A 84	J A 21	J A 65	J A 21	E B 16	28	J A 42	J A 56	J A 52	J A 78	J A 105	39	J A 105	J A 76	J A 104	J A 124	J A 108	J A 218	J A 97	J A 85	J A 53	J A 128
15	J A 62	J A 50	J A 34	J A 21	J A 19	J A 14	E B 16	30	34	J A 39	36	J A 39	44	J A 54	45	J A 44	40	40	J A 50	J A 32	E B 16	E B 16	E B 16	J A 85
16	J A 61	J A 31	J A 40	J A 50	J A 19	E B 16	J A 21	J A 33	J A 43	J A 89	J A 74	J A 144	J A 90	J A 68	J A 56	J A 63	J A 49	J A 64	J A 54	J A 55	J A 22	J A 18	20	E B 16
17	J A 26	J A 26	J A 53	J A 33	J A 39	J A 28	J A 19	27	J A 41	J A 53	J A 104	39	J A 44	J A 50	41	J A 49	41	J A 145	J A 107	J A 99	J A 88	J A 50	J A 49	24
18	J A 24	J A 25	J A 41	J A 40	J A 51	J A 32	J A 52	J A 66	J A 59	J A 42	J A 48	J A 45	J A 45	J A 42	J A 77	J A 54	J A 77	J A 50	J A 79	J A 50	J A 88	J A 160	J A 126	J A 110
19	J A 46	J A 102	J A 85	J A 41	J A 21	J A 22	J A 28	J A 34	J A 137	35	J A 46	J A 47	43	46	J A 60	J A 93	J A 96	J A 84	J A 110	J A 36	J A 155	J A 42	J A 38	J A 48
20	J A 26	J A 25	J A 52	J A 52	J A 34	J A 30	J A 22	J A 35	J A 41	J A 54	J A 80	J A 61	43	40	41	36	34	J A 62	24	20	E B 16	J A 16	J A 18	J A 32
21	J A 31	J A 34	J A 41	J A 50	J A 29	J A 32	J A 29	J A 61	J A 48	J A 64	J A 85	J A 58	39	J A 53	J A 40	G 30	37	J A 33	J A 36	J A 33	J A 34	J A 97	J A 29	J A 42
22	J A 66	J A 41	J A 62	J A 32	J A 35	J A 29	J A 27	J A 29	J A 53	J A 52	J A 60	J A 47	42	42	39	J A 46	J A 44	J A 57	J A 107	J A 35	J A 52	J A 53	J A 53	J A 48
23	J A 33	J A 28	J A 25	E B 16	J A 18	J A 22	J A 17	J A 27	J A 39	J A 67	J A 49	J A 60	J A 54	J A 54	J A 69	J A 62	J A 63	J A 56	J A 45	J A 42	J A 24	J A 15	E B 16	J A 16
24	20	J A 20	19	E B 16	E B 16	E B 16	E B 16	J A 118	J A 33	J A 46	J A 34	G	J A 46	46	43	40	38	36	31	G 20	E B 16	J A 16	J A 17	J A 23
25	J A 29	J A 48	J A 54	J A 33	J A 38	J A 46	J A 38	J A 33	J A 53	J A 40	J A 59	J A 44	J A 42	G	44	45	J A 54	J A 38	J A 36	20	J A 18	J A 20	J A 24	J A 21
26	J A 29	E B 16	E B 16	E B 16	E B 16	19	J A 23	J A 32	J A 44	J A 70	J A 124	J A 170	J A 82	J A 176	J A 117	J A 74	J A 119	J A 147	J A 122	J A 89	J A 53	J A 63	J A 86	J A 51
27	J A 52	J A 25	J A 18	J A 24	J A 28	J A 23	J A 21	J A 42	J A 31	J A 61	J A 36	J A 43	J A 43	G 34	J A 41	J A 39	J A 38	J A 39	J A 44	J A 96	J A 53	J A 88	J A 20	J A 19
28	J A 49	J A 44	J A 52	J A 32	J A 31	E B 16	J A 17	J A 30	J A 52	J A 41	J A 50	J A 40	J A 46	J A 55	J A 43	J A 44	J A 39	J A 36	J A 33	J A 37	J A 26	J A 28	J A 29	J A 31
29	J A 28	J A 21	J A 52	J A 38	J A 27	J A 15	E B 16	J A 31	J A 41	J A 34	J A 46	G	G	J A 35	J A 39	G	32	G	G	20	J A 15	18	E B 16	E B 16
30	J A 24	E B 16	E B 16	J A 30	J A 33	J A 37	J A 40	J A 32	32	34	35	38	J A 52	41	J A 55	J A 53	J A 37	J A 39	J A 41	J A 36	J A 28	J A 27	J A 19	E B 16
31	E B 16	J A 21	J A 21	J A 20	20	20	J A 20	33	35	37	37	J A 44	J A 41	J A 42	38	J A 44	J A 90	J A 73	J A 63	J A 42	J A 28	J A 39	J A 28	J A 35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 40	J A 31	J A 40	J A 29	J A 26	J A 22	J A 23	J A 33	J A 44	J A 53	J A 56	J A 48	J A 46	J A 46	J A 45	J A 46	J A 49	J A 44	J A 50	J A 36	J A 26	J A 30	J A 29	J A 42
U Q	J A 60	J A 47	J A 53	J A 38	J A 38	J A 32	J A 38	J A 43	J A 53	J A 70	J A 80	J A 61	J A 68	J A 55	J A 60	J A 64	J A 77	J A 73	J A 103	J A 54	J A 42	J A 53	J A 49	J A 52
L Q	J A 26	21	J A 26	21	J A 19	E B 18	19	30	39	39	46	43	43	42	41	39	38	36	35	23	E B J A 18	20	20	23

AUG.2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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	26	E B 16	18	E B 16	E B 16	18	21	37	38	34	40	45	42	40	39	36	36	34	30	22	22	32	A A 62	E B 16
2	E B 16	E B 16	18	E B 16	E B 16	E B 16	E B 16	25	A A 131	A A 134	38	38	A A 116	47	41	40	66	101	68	19	E B 16	34	E B 16	A A 50
3	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	30	36	40	40	45	44	44	G	36	32	26	20	22	30	29	31
4	E B 16	22	E B 16	20	E B 16	E B 16	21	A A 154	A A 150	A A 135	43	A A 67	54	45	56	38	35	30	33	30	18	E B 16	18	E B 16
5	E B 16	E B 16	E B 16	18	E B 16	E B 16	17	26	29	33	36	A A 55	48	48	43	37	34	42	31	A A 62	E B 16	20	18	23
6	E B 16	E B 16	18	E B 16	17	E B 16	22	33	30	32	37	40	38	42	40	43	38	31	57	E B 16	E B 16	E B 16	E B 16	27
7	E B 16	22	E B 16	20	20	E B 16	18	26	36	A A 110	A A 85	A A 137	A A 104	42	50	54	53	43	A A 109	24	22	20	21	19
8	21	22	20	E B 16	E B 16	E B 16	19	30	A A 129	A A 110	A A 191	37	38	58	40	36	35	32	51	34	E B 16	E B 16	22	21
9	20	E B 16	E B 16	A A 53	A A 38	A A 59	A A 63	A A 78	38	44	38	40	A A 76	A A 264	54	54	54	57	26	28	30	17	E B 16	E B 16
10	23	E B 16	E B 16	E B 16	E B 16	E B 16	22	42	A A 155	37	40	37	A A 85	46	38	37	35	32	22	17	E B 16	21	23	28
11	24	E B 16	19	E B 16	E B 16	E B 16	E B 16	24	30	34	G	40	42	42	40	37	36	33	28	E B 16	E B 16	E B 16	E B 16	E B 16
12	25	21	E B 16	E B 16	19	18	E B 16	34	39	52	41	43	42	42	44	44	45	32	42	22	E B 16	20	E B 16	23
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	34	50	43	A A 53	A A 68	52	42	55	A A 90	48	54	20	20	26	32	E B 16
14	18	20	24	E B 16	E B 16	E B 16	E B 16	26	39	45	40	46	A A 105	39	47	65	A A 104	37	54	A A 218	A A 97	A A 85	32	35
15	E B 16	23	21	E B 16	E B 16	E B 16	E B 16	28	33	32	35	37	42	46	41	36	39	39	42	18	E B 16	E B 16	E B 16	22
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	30	32	46	A A 74	A A 144	A A 90	46	47	44	36	33	40	42	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	19	E B 16	27	37	38	38	38	37	36	39	38	37	42	G 18	21	E B 16	E B 16	E B 16	20
18	E B 16	E B 16	E B 16	26	A A 51	A A 32	26	39	36	37	40	41	43	40	41	48	A A 77	43	53	47	18	30	24	A A 110
19	E B 16	E B 16	21	22	E B 16	E B 16	E B 16	28	37	34	37	37	42	44	50	A A 93	40	42	32	26	23	22	22	20
20	E B 16	E B 16	E B 16	20	E B 16	E B 16	E B 16	25	30	33	A A 80	37	42	40	40	36	33	29	23	E B 16	E B 16	E B 16	E B 16	E B 16
21	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 16	A A 61	39	35	37	46	39	42	35	G 26	36	28	32	25	21	A A 97	E B 16	A A 42
22	E B 16	E B 16	A A 62	A A 32	A E 16	E B 16	A A 29	19	25	36	36	38	39	39	40	37	40	35	46	22	E B 16	20	28	A A 53	22
23	E B 16	22	E B 16	E B 16	E B 16	E B 16	E B 16	24	35	A A 67	40	46	40	40	A A 69	46	35	52	42	32	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	21	27	25	33	G	36	46	41	39	37	34	29	G	E B 16	E B 16	E B 16	E B 16	18
25	E B 16	21	E B 16	18	20	23	26	26	35	35	36	38	38	G	42	43	52	35	30	E B 16	E B 16	17	20	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	30	36	48	A A 124	A A 170	52	A A 176	A A 117	58	A A 119	A A 147	65	48	46	42	40	19
27	E B 16	E B 16	E B 16	18	23	E B 16	18	30	30	36	36	38	38	G 30	40	38	37	38	42	A A 96	20	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	26	40	36	48	38	45	51	40	41	37	32	30	30	22	21	E B 16	E B 16
29	E B 16	E B 16	E B 16	20	18	E B 16	E B 16	27	35	33	37	G	G	G 31	39	G	32	G	G	E B 16	E B 16	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	23	31	34	35	38	38	41	41	G 28	34	36	30	20	E B 16	E B 16	E B 16	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	30	34	35	36	40	38	40	38	39	62	42	32	27	20	E B 16	E B 16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	36	36	38	40	42	42	41	39	37	36	32	22	18	17	E B 16	19
U Q	16	20	18	20	17	16	21	33	39	A A 48	A A 43	A A 46	A A 54	46	47	46	53	43	51	32	22	28	23	23
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	31	34	36	38	38	40	39	36	35	32	26	E B 17	E B 16	E B 16	E B 16	E B 16

AUG.2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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

IONOSPHERIC DATA STATION Okinawa

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

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

D \ 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 324	F 336	292	300	324	F 333	F 347	368	360	352	331	291	266	290	301	301	317	329	317	326	343	339	A	306
2	F 302	F 337	352	333	312	315	315	374	A	A	358	314	A	310	292	273	288	346	359	356	307	320	302	A
3	F 315	304	312	318	295	312	308	343	342	327	370	244	308	311	304	321	327	346	336	318	309	313	F	F
4	339	332	301	340	345	327	336	A	A	A	246	A	319	281	292	319	322	312	294	312	324	325	324	307
5	295	309	355	321	320	305	314	349	411	367	227	A	291	300	325	318	341	328	346	A	296	327	338	F 279
6	F 344	F 329	318	312	319	306	354	408	393	354	355	299	259	315	302	298	299	311	320	368	360	314	298	318
7	325	F 299	F 291	F 307	324	351	365	328	399	A	A	A	A	300	308	311	346	352	A	321	296	275	F 298	323
8	361	334	302	291	323	367	343	336	A	A	A	297	295	303	J R 271	327	307	282	305	342	320	322	316	308
9	F	F 310	F 296	A	A	A	A	A	352	399	299	323	A	A	300	298	321	346	316	318	329	384	305	324
10	314	317	310	301	319	355	373	365	A	360	328	323	A	273	311	324	311	306	338	352	339	340	343	293
11	F 294	298	296	333	333	317	312	365	394	370	337	319	284	263	270	297	302	321	322	340	313	350	322	F
12	F	F	F 333	F 374	370	355	359	339	340	383	339	278	314	344	255	292	314	334	344	315	367	391	276	321
13	310	326	308	312	305	F 302	348	389	384	362	332	A	A	313	303	295	A	316	332	366	326	286	339	F 365
14	F 293	F 301	311	F 308	F 311	F 325	354	354	365	366	306	336	A	282	298	309	A	333	328	A	A	A	F 308	F 293
15	311	314	291	F 303	F 305	F 326	368	391	397	395	344	222	300	311	300	273	295	314	282	317	335	368	315	F 314
16	F 322	F 314	F 330	319	335	318	328	344	373	361	A	A	A	294	304	323	345	328	334	327	303	319	340	291
17	280	287	306	337	318	350	343	377	359	320	340	297	296	316	327	323	314	332	310	308	318	322	304	308
18	301	330	F 292	326	A	A	353	372	388	338	308	345	230	278	302	309	A	327	306	345	312	322	310	A
19	313	F 313	304	325	370	336	327	372	336	397	G	248	307	318	307	A	312	306	312	367	382	315	290	295
20	298	F 281	295	325	326	320	331	366	350	372	A	276	318	323	320	316	337	345	310	315	326	333	343	F 284
21	F 286	302	310	319	351	354	327	A	332	361	338	347	333	309	320	285	323	356	358	346	374	A	310	A
22	307	323	A	A	336	A	342	372	377	387	354	328	324	299	292	311	309	301	299	331	354	383	A	324
23	326	301	320	311	299	338	329	382	396	A	320	325	304	291	A	305	292	302	325	342	350	320	349	298
24	F 311	325	324	317	316	335	342	391	397	384	292	323	312	339	299	296	317	332	313	333	348	358	319	300
25	316	315	301	F 294	361	370	340	358	388	361	369	307	301	282	259	275	279	291	335	389	327	311	304	301
26	F 311	F 301	325	366	373	340	345	363	361	351	A	A	317	A	A	307	A	A	343	326	340	340	297	282
27	296	308	297	349	390	313	332	345	376	385	332	295	295	297	310	329	331	322	316	A	318	338	312	305
28	295	301	287	291	292	306	351	387	390	317	311	303	274	311	319	296	283	316	337	336	316	313	286	273
29	F 286	292	313	299	300	307	319	369	347	315	339	306	277	311	298	298	310	290	301	342	383	311	302	299
30	304	297	315	327	344	F 290	330	379	359	343	334	343	301	318	315	331	318	325	339	332	335	362	282	292
31	296	277	310	339	380	312	331	350	367	374	319	322	285	296	312	317	294	325	346	342	324	339	317	293
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	29	28	30	28	27	26	26	25	24	29	29	30	27	30	30	28	30	29	28	26
MED	310	310	309	319	324	326	341	367	373	362	332	307	300	303	302	308	314	325	324	334	326	325	310	300
U Q	319	325	318	333	348	345	351	378	393	383	340	324	313	314	312	319	323	333	338	346	348	345	323	314
L Q	296	301	296	305	312	312	328	350	352	351	308	293	284	290	295	296	299	311	310	320	316	314	300	293

IONOSPHERIC DATA STATION Okinawa

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

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

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	L 414	U L 409	A	425	413	435	401	409	380	L 371					
2								L	A	A	402	412	A	A	407	416	A	A	A					
3								L	U L 408	L 364	427	430	A	A	A	424	374	362	L 374					
4								A	A	A	A	A	A	A	A	405	395	372	A					
5								L	393	395	423	A	A	A	A	400	415	A	L	A				
6								A	L	437	434	474	424	435	393	A	377	430	A					
7								L	A	A	A	A	A	A	A	A	A	A	A					
8									A	A	A	427	451	A	423	430	388	376	A					
9							A	A	A	A	463	407	A	A	A	A		A	L					
10								A	A	379	425	415	A	A	431	386	396	389	L 373					
11								L	L 407	L 407	426	402	411	399	399	404	392	378	368					
12								A	A		439	A	417	A	A	A	A	389	A					
13								L	L	A	A 388	A	A	A	A	A	A	A	A					
14									A	A	406	A	A	421	A	A	A	A	A	A				
15									423	409	441	426	443	A	391	406	A	A	A					
16									L	A	A	A	A	A	A	A	389	392	A					
17									A	385	U L 385	425	451	441	A	405	398	A	L					
18								A	A	U L 442	U L 358	410	432	385	A	A	A	A	A					
19								L	U L 381	398	404	438	426	A	A	A	A	A	354					
20								L	U L 372	388	A	436	415	434	391	409	370	379	L					
21								A	A	395	400	A	407	410	415	407	386	389	A					
22								L	A	398	424	418	422	410	410	A	391	A	L 357					
23								L	415	A	L 400	A	423	420	A	A	383	A	A					
24								L	L	408	U L 421	436	A	A	431	385	386	359	L 375					
25								L	L	392	399	426	438	448	A	A	A	343	377					
26								L	L	A	A	A	A	A	A	A	A	A	A					
27								L	394	391	U L 434	446	428	407	408	395	387	A	A	A				
28									A	L 373	A	387	A	A	392	A	354	351						
29									L	U L 431	402	400	413	436	374	374	363	368	L					
30								426	L	406	408	L 408	406	392	364	385	372	L 357						
31									L	384	U L 396	391	393	400	392	397	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	8	20	24	20	18	15	16	17	19	16	8					
MED								426	400	396	408	422	424	413	403	404	387	377	L 372					
U Q									412	408	426	433	432	435	419	408	395	389	L 374					
L Q									U L 387	386	L 400	408	413	400	392	390	374	360	362					

AUG.2021 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Okinawa

AUG.2021 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								254	246	270	294	404	478	380	338	310	288	276	274					
2								224	A	A	270	356	A	332	334	386	344	EA 284	224					
3								272	258	302	244	552	332	302	306	282	264	262	262					
4								A	A	A	548	A	324	348	EA 394	306	294	300	302					
5								246	208	268	654	A	EA 410	378	308	316	280	308	268	A				
6								200	224	UL 302	296	360	514	346	368	386	350	310	278					
7								290	216	A	A	A	A	338	310	302	262	252	A					
8									A	A	A	380	346	286	322	276	292	348	294					
9							A	A	278	EA 242	370	332	A	A	360	306		250	240					
10								236	A	256	312	330	A	436	334	302	332	328	250					
11								248	216	254	318	300	356	344	352	324	310	270	260					
12								248	296		280	454	338	308	508	370	294	254	252					
13								206	224	262	326	A	A	342	324	326	A	282	254					
14									240	260	364	296	A	412	332	320	A	264	262	A				
15									214	230	314	682	380	320	314	358	298	284	288					
16									236	EA 270	A	A	A	324	304	282	246	258	250					
17									238	354	302	384	384	320	292	302	302	272	250					
18								230	232	296	358	282	624	440	374	336	A	280	EA 318					
19								256	296	220	G	554	362	332	344	A	324	310	274					
20								234	272	248	A	454	330	308	326	328	286	266	300					
21								A	286	248	278	276	308	364	322	364	294	250	234					
22								230	236	228	294	330	338	378	406	356	344	350	296					
23								224	218	A	310	340	378	398	A	330	316	308	260					
24								220	212	234	410	324	334	296	380	370	312	280	274					
25								248	224	266	254	348	354	406	384	364	356	322	246					
26								246	246	272	A	A	274	A	A	EA 378	A	A	EA 298					
27								264	226	230	308	384	336	342	302	276	280	290	268	A				
28									218	292	284	312	346	296	278	304	324	272						
29									254	314	294	292	334	294	272	264	268	270	240					
30								212	240	274	294	282	366	320	296	278	294	292						
31									238	240	306	318	392	334	296	270	312	272	234					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								20	27	25	26	25	24	29	29	30	26	30	28					
MED								241	236	261	307	340	348	338	325	316	296	279	261					
U Q								251	254	283	358	394	382	378	364	358	324	308	283					
L Q								224	218	241	294	306	334	314	305	302	286	266	250					

AUG.2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2021 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	238	238	250	286	260	248	228	A	A	190	192	A	206	210	192	194	214	228	228	238	204	204	A	274
2	306	234	228	244	292	312	226	202	A	A	202	190	A	A	212	208	A	A	A	204	214	E A 278	248	A
3	276	276	256	268	300	276	244	222	204	216	194	198	A	A	A	176	222	248	212	246	248	228	E A 312	E A 296
4	234	212	258	220	244	222	238	A	A	A	E A 306	A	A	A	A	202	210	200	E A 254	250	228	216	214	244
5	274	264	210	260	296	270	230	212	190	182	190	A	A	A	A	196	196	A	238	A	278	238	220	E A 302
6	196	262	260	248	E A 304	302	236	A	182	180	176	166	202	208	226	A	252	190	A	210	192	214	252	E A 270
7	244	E A 304	272	E A 256	E A 258	224	216	218	A	A	A	A	A	E A 252	A	A	A	A	A	218	254	306	294	236
8	220	E A 290	E A 342	318	264	216	240	222	A	A	A	178	174	A	202	180	210	210	A	236	228	206	238	262
9	E A 332	244	284	A	A	A	A	A	A	A	162	222	A	A	A	A	276	A	194	238	220	198	246	286
10	E A 306	284	266	272	268	228	226	A	A	228	196	194	A	A	186	E A 218	208	214	214	216	212	208	230	E A 342
11	E A 312	288	306	236	224	268	230	218	204	200	156	E A 220	228	232	E A 226	202	218	214	232	214	226	194	238	330
12	E A 334	E A 324	248	214	E A 220	E A 232	238	A	A	236	198	E A 288	220	E A 232	A	A	A	210	A	232	210	186	280	E A 304
13	280	256	252	250	284	302	228	202	200	A	E A 236	A	A	A	E A 266	A	A	A	A	208	194	300	E A 256	228
14	E A 292	E A 308	E A 328	286	304	290	206	206	A	A	188	A	A	186	A	A	A	A	A	A	A	A	E A 300	E A 310
15	256	258	E A 286	248	296	264	206	206	202	170	158	174	202	A	230	190	A	A	A	236	216	198	208	E A 286
16	232	276	242	250	244	250	232	224	206	A	A	A	A	A	A	A	222	204	A	242	234	240	214	256
17	316	284	252	232	250	230	216	232	A	230	240	186	178	172	E A 228	210	228	A	220	238	230	210	248	266
18	268	248	306	E A 302	A	A	242	A	A	188	248	212	206	242	E A 306	A	A	A	A	240	242	254	E A 244	A
19	240	268	278	256	196	240	232	202	E A 230	210	180	178	206	E A 260	A	A	E A 302	A	E A 256	206	200	E A 258	336	E A 320
20	306	304	280	262	264	278	222	214	186	196	A	182	222	190	232	196	220	200	212	250	220	212	212	300
21	282	306	302	226	198	234	244	A	A	200	200	A	202	204	176	200	E A 212	212	A	234	204	A	272	A
22	278	258	A	A	258	A	250	212	A	188	180	190	182	202	192	E A 248	206	A	220	242	208	192	A	E A 284
23	242	E A 308	278	264	272	262	238	212	200	A	204	A	192	190	A	A	212	A	A	222	204	206	198	276
24	294	248	266	256	238	224	222	210	196	188	178	158	A	E A 210	190	198	214	200	218	236	210	190	212	264
25	230	278	312	E A 324	218	254	236	220	212	194	186	182	178	168	E A 270	A	A	E A 286	E A 234	196	178	238	E A 268	274
26	258	280	248	216	190	216	218	220	230	A	A	A	A	A	A	A	A	A	A	254	244	238	E A 330	288
27	274	268	272	226	196	292	238	226	208	204	192	178	168	184	202	212	228	E A 274	A	A	236	220	232	258
28	288	282	292	288	288	246	236	218	A	210	A	198	A	A	208	A	E A 228	242	230	226	234	234	278	288
29	290	276	254	250	270	286	226	230	A	186	186	190	180	182	234	194	218	204	218	218	194	216	256	270
30	268	262	260	248	194	292	244	208	204	188	174	186	192	230	266	208	184	236	242	226	202	202	282	296
31	284	310	282	224	186	E B 346	234	224	218	222	190	206	200	200	210	206	A	A	A	208	228	204	242	274
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	29	29	28	30	23	16	21	25	21	18	19	20	18	21	17	16	28	30	29	29	28
MED	267	269	264	249	258	255	232	218	204	196	189	188	201	197	U 208	199	216	211	221	233	218	212	243	272
U Q	294	E A 290	286	270	286	288	238	222	210	213	201	202	206	E A 232	233	208	228	239	E A 236	239	234	238	279	E A 298
L Q	242	258	252	234	219	231	226	208	198	188	179	178	180	186	197	194	210	202	216	215	204	203	225	265

AUG. 2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG.2021 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

AUG.2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG.2021 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	96	96	94	B	98	94	96	94	98	96	96	96	138	136	128	98	122	114	106	86	86	94	98	96
2	94	100	98	126	112	136	96	108	94	94	98	94	92	94	108	106	104	102	102	102	102	96	102	98
3	98	94	94	104	102	96	110	100	98	100	98	156	132	126	120	G	144	124	122	114	102	102	102	100
4	94	94	94	98	110	100	100	98	94	92	120	116	112	114	104	102	104	106	102	94	90	94	90	92
5	86	88	118	92	90	88	130	110	118	96	108	126	114	118	114	122	118	110	110	102	114	86	90	102
6	100	84	94	92	92	B	108	102	104	100	100	100	98	150	126	116	118	102	100	98	B	90	94	90
7	96	92	94	88	80	80	124	118	134	100	100	98	98	102	102	96	96	106	108	106	94	110	104	106
8	104	100	84	96	98	98	114	108	100	98	100	108	96	94	94	98	98	104	92	92	106	86	86	88
9	98	96	90	88	86	88	88	96	92	96	96	104	96	94	92	92	90	86	88	84	84	84	84	104
10	102	104	100	100	102	104	100	98	94	118	98	100	98	98	98	94	90	116	120	86	100	100	100	92
11	92	B	100	94	96	96	90	94	158	164	G	142	148	150	154	146	126	126	120	106	B	B	108	102
12	104	98	100	94	90	92	90	124	116	102	100	98	168	150	120	114	108	116	106	88	110	96	102	112
13	88	88	90	96	B	B	124	130	112	104	108	112	110	112	110	104	102	102	100	102	88	98	94	104
14	100	96	98	96	98	96	B	124	112	108	106	104	106	124	114	108	104	102	98	92	90	88	94	100
15	98	96	96	132	96	98	B	138	154	98	118	112	156	118	128	98	156	128	104	84	B	B	B	96
16	98	96	98	96	84	B	122	120	120	110	110	102	98	98	100	94	98	94	92	92	90	92	86	B
17	90	104	98	98	96	96	106	188	112	118	104	112	98	96	138	94	114	106	106	102	100	92	100	88
18	104	96	96	96	94	94	94	92	92	100	110	102	106	102	114	114	106	108	102	98	98	100	100	102
19	104	104	96	96	96	96	96	94	96	148	92	98	140	122	112	106	106	104	100	98	98	98	98	98
20	98	98	100	94	98	96	96	94	94	94	92	88	158	140	164	166	138	94	118	110	B	84	82	102
21	106	102	94	92	94	104	100	104	102	94	96	90	148	92	94	92	158	86	112	106	100	102	94	98
22	96	98	96	94	100	92	96	112	104	102	94	110	118	118	120	112	110	102	98	98	96	94	92	92
23	94	90	84	B	96	98	92	114	104	96	98	96	96	96	94	94	94	90	88	88	86	86	B	86
24	86	84	82	B	B	B	96	94	96	96	G	98	140	136	142	124	124	118	G	110	B	98	100	84
25	98	98	102	100	100	96	94	94	96	110	112	114	116	G	154	126	110	112	92	90	88	92	92	88
26	108	B	B	B	B	116	112	110	110	108	102	100	102	98	94	94	92	90	90	86	86	86	108	102
27	102	100	98	98	96	82	104	104	108	102	168	96	96	98	160	136	126	122	112	102	106	104	84	82
28	96	98	98	96	96	B	114	108	104	104	102	114	112	108	120	96	126	92	88	86	84	98	98	100
29	98	98	98	98	94	102	B	106	104	100	96	G	G	94	164	G	170	G	G	88	86	84	B	B
30	90	B	B	98	124	92	90	94	146	148	108	160	92	156	88	88	108	104	100	98	96	98	94	B
31	B	92	90	88	88	86	88	128	124	120	122	110	96	104	144	104	98	94	94	96	96	98	96	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	27	28	26	28	31	31	31	29	30	30	30	31	29	31	30	29	31	26	29	28	28
MED	98	96	96	96	96	96	98	106	104	100	100	103	108	110	114	104	108	104	102	98	96	94	95	98
U Q	102	99	98	98	99	98	111	118	116	110	109	112	138	126	138	115	126	114	109	102	100	98	100	102
L Q	94	93	94	94	93	92	94	94	96	96	97	98	98	98	100	94	98	94	93	88	88	87	91	91

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F2	F3		F2	F3	L3	L4	L3	L2	L2	L3	HL11	H1	C1	LH11	CL11	CL12	C4	L2	F2	F6	F3	F3
2	F3	F5	F1	F1	F2	F1	L2	CH11	L3	L5	L2	L2	L7	L2	C1	C4	C6	C6	C5	C3	F1	F9	F3	F6
3	F2	F4	F2	F2	F1	F1	C1	LQ21	L2	LH11	L3	HL11	HL11	C1	C1		H1	C1	C2	C3	F5	F7	F3	F7
4	F2	F3	F3	F5	F2	F3	L3	L7	L5	L4	CL22	C3	C2	C2	C3	C1	C3	C1	C3	L5	F3	F2	F3	F1
5	F1	F1	F1	F3	F3	F1	H1	C2	C1	LC21	C1	C2	C2	C2	C2	C1	C2	C2	C5	CL94	FF21	F3	F1	F5
6	F3	F1	F4	F4	F5		C2	C5	C2	L1	C2	L2	LH11	H1	C1	C3	C3	C2	C5	L1		F2	F1	F4
7	F5	F3	F2	F4	F3	F1	C1	C1	HC11	C7	C5	L5	L4	C2	C4	L4	L7	CL26	CL37	CL32	FQ41	FF14	F5	FF24
8	FQ21	FQ31	F3	F1	F1	F1	C2	C4	C7	LQ31	CQ31	C1	L1	L3	L2	L1	L2	C2	L4	L7	F1	F2	F3	F2
9	F2	F2	F3	F5	F3	FF43	LQ41	LQ51	L3	L3	L2	C1	L3	L6	L4	L4	L4	L8	LQ31	L6	F3	F3	F1	FF12
10	F2	F2	F2	F2	F2	F2	L5	L6	L7	CL11	L2	L1	L3	L3	L2	L2	L2	C1	CL11	L1	FF12	FF32	F3	F3
11	F3		F3	F1	F2	F1	L1	LH21	H1	H1		H1	H1	H1	H1	H1	C1	C2	C2	C1			F3	F3
12	F8	F8	F4	F2	F6	F6	L3	C2	CL33	C5	C4	L2	H1	HL11	C1	C3	C3	C2	C6	L4	FF14	F4	FQ41	F1
13	F3	F1	F3	F2			C1	H2	C3	C3	C2	C2	C4	C2	C2	C3	C5	C6	C4	C2	F3	FF34	FF32	F2
14	FQ21	F6	F4	F1	F4	F2		C1	C2	C5	C2	C2	C3	C1	C3	C4	C6	C3	LQ71	L7	F5	F3	FF25	FF33
15	FF32	F4	F4	F1	F1	F1		H2	H1	L1	C1	C1	HC11	CL21	CL11	LC11	HL11	C2	C4	L1				FQ31
16	F2	F3	F2	F2	F1		C1	C3	C2	C5	C4	C3	L4	L3	L3	LC31	L2	L4	L4	L4	F2	F2	F1	
17	F2	F1	F2	F3	F3	F3	C1	H1	C3	C2	C3	C1	L1	L1	H1	LC21	C1	C4	C3	C2	F3	F3	FF12	F1
18	F1	F2	F3	F6	F9	F7	L2	L5	L5	L3	CH11	C2	C1	C1	C3	C2	C2	C3	C7	L9	F3	F3	F4	F4
19	F2	F1	F3	F3	F1	F2	L2	L2	L4	HL11	L3	L1	HL11	C1	L3	C7	C3	C4	C4	L2	F3	FQ21	F5	F6
20	F2	F2	F2	F2	F3	F6	L2	L3	LH11	LH21	L5	L1	H1	H1	HL11	HL11	H1	L2	C1	C1		F1	F2	FF22
21	F2	F2	F5	F3	F5	F1	L3	C6	C3	L3	LQ21	L4	HL11	LC11	L1	L1	HL22	L3	CL25	CL34	FF34	FF43	F2	F4
22	F2	F7	F6	F5	F2	F4	L3	CH11	C2	C2	L2	C1	C1	C1	C1	C2	C2	C3	L2	L2	F4	F3	F5	F3
23	F3	F3	F3		F1	F1	L1	CL11	C2	L5	L2	L2	L2	L2	L5	L4	L2	L4	L5	L6	F2	F1		F1
24	F1	F2	F1				L5	LH21	L3	L1		L1	HL11	HL11	HL11	CL11	C1	C1		C1		F1	F1	F1
25	F2	F4	F2	F5	F4	F7	L5	L2	L5	CL12	CL21	CL11	CL11		H1	C2	C4	CL25	L5	L1	F1	F1	F2	F2
26	FF11					F1	C1	C5	C2	C3	C6	C9	C2	L4	L7	L6	L9	L9	L7	L6	F5	F3	FF42	FF23
27	F2	F4	F2	F5	F6	F1	C2	C5	C1	C2	HL11	LC21	L1	L1	H1	HL11	CL11	C3	C8	C5	FF33	FF21	F1	F1
28	F2	F2	F3	F2	F2		C1	C2	C5	C1	C3	C1	C1	C3	CL11	L1	CL11	L2	L3	L5	F3	FF42	F3	F3
29	F2	F1	F5	F4	F5	F2		C2	C2	C1	L1			L1	H1		H1			L1	F2	F1		
30	F1			F2	FF11	F3	L2	LC11	HC11	HC11	C1	HC11	L1	HC11	L1	LC11	C1	C3	C4	L2	F2	F1	F1	
31		F1	F1	F2	F1	F1	L1	C3	C2	C1	CL11	CL11	LC11	C1	HL11	C2	L6	L3	L3	L5	F4	F3	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG.2021 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

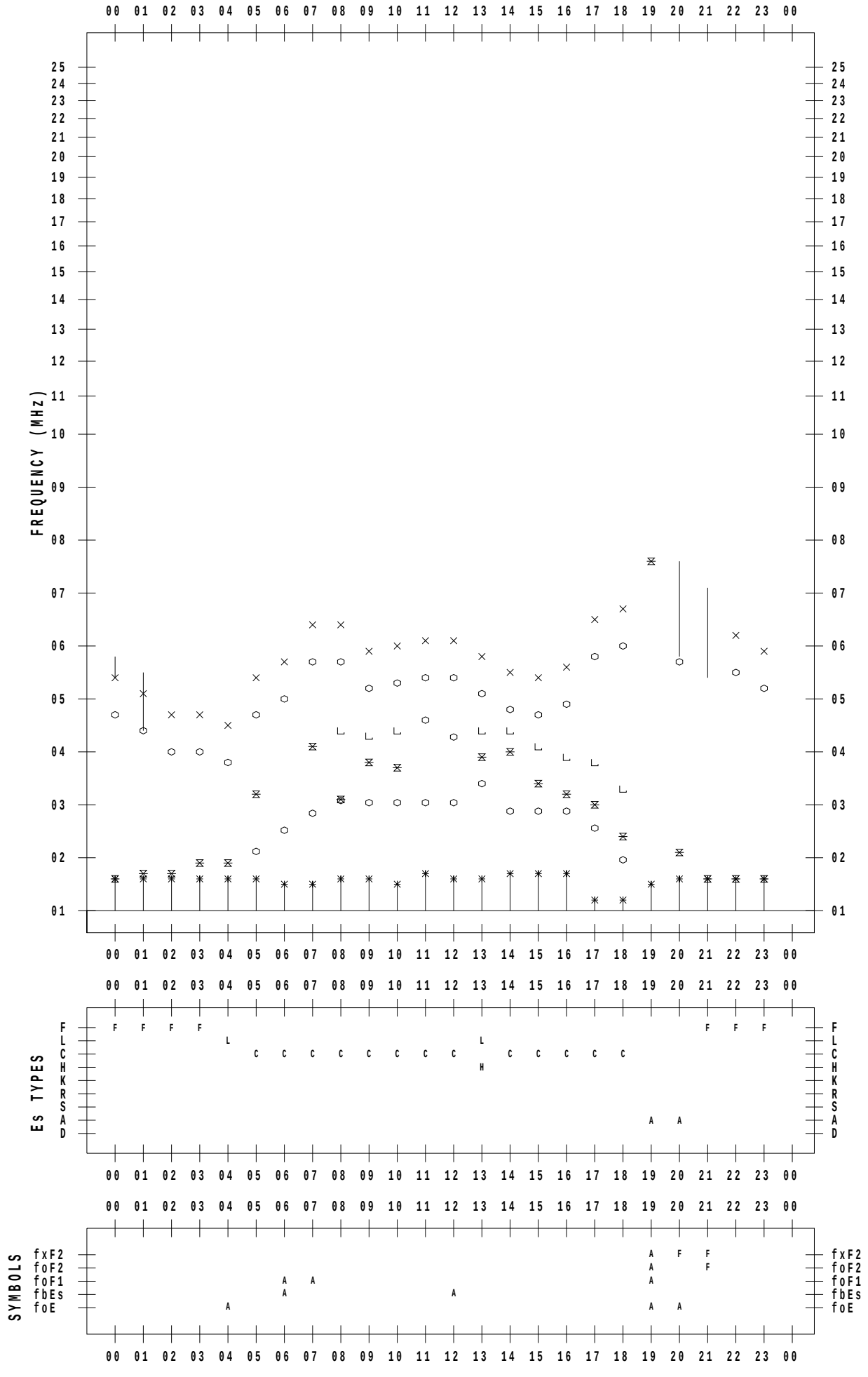
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 1

135 °E MEAN TIME



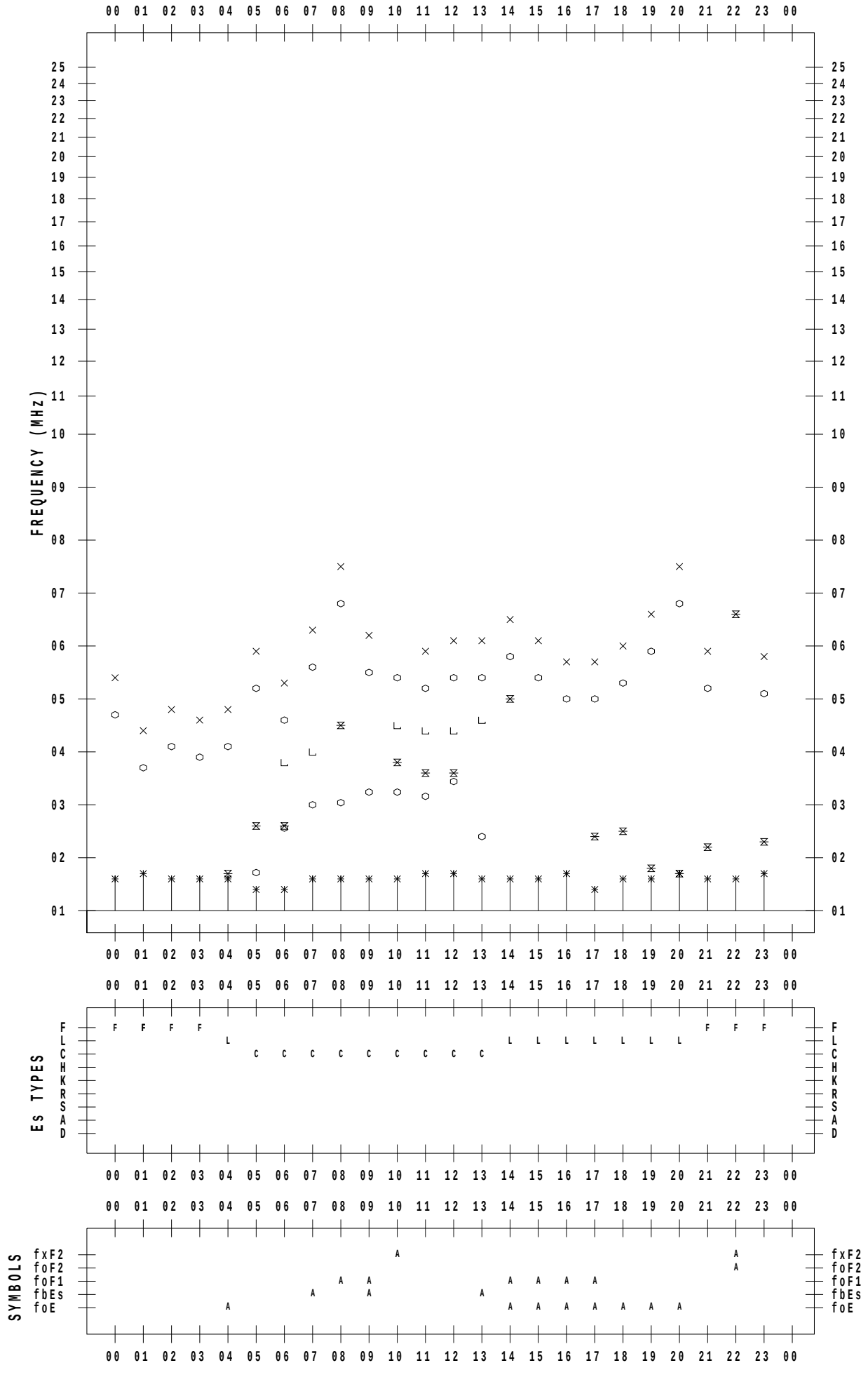
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 2

135 °E MEAN TIME



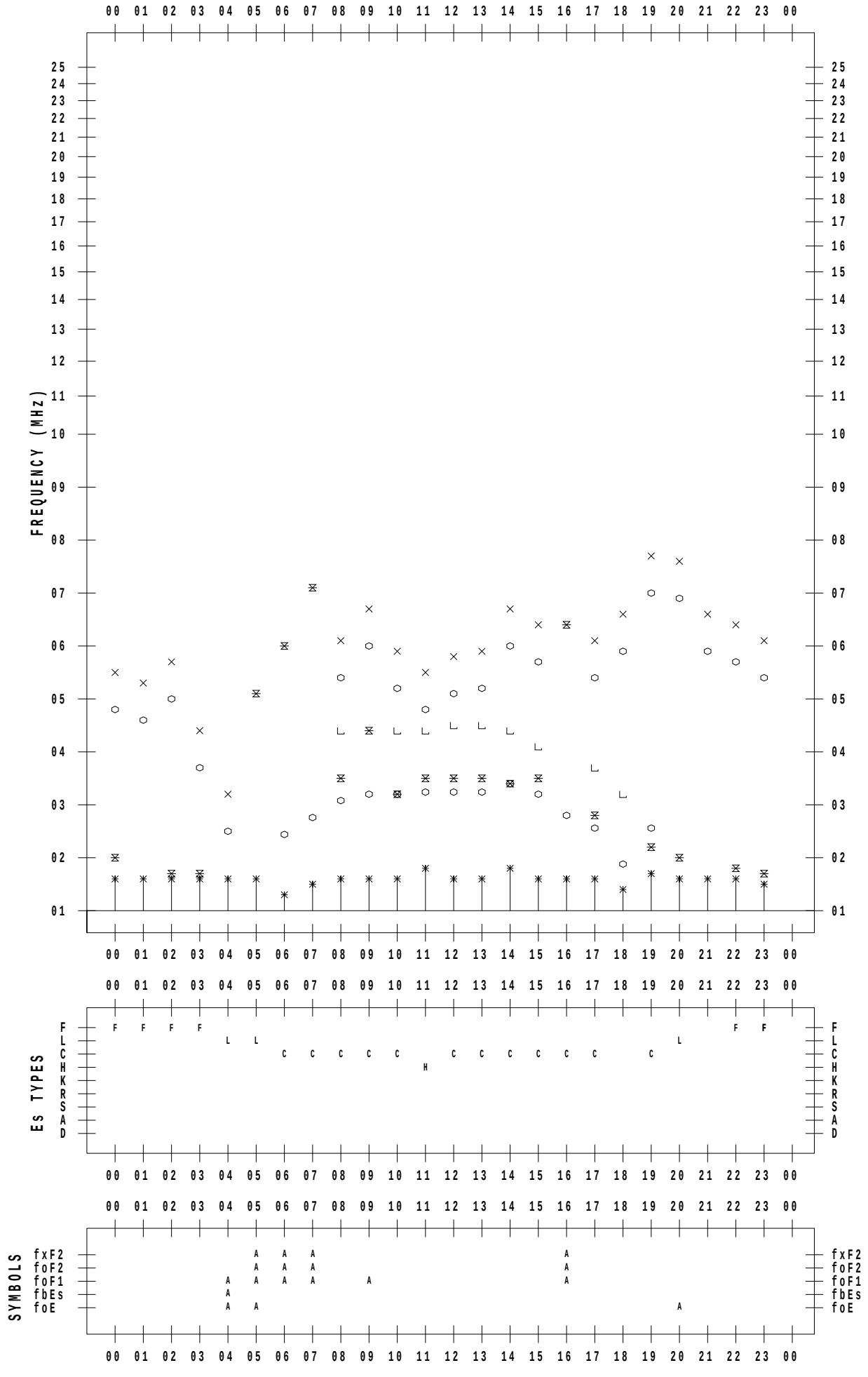
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 3

135 °E MEAN TIME



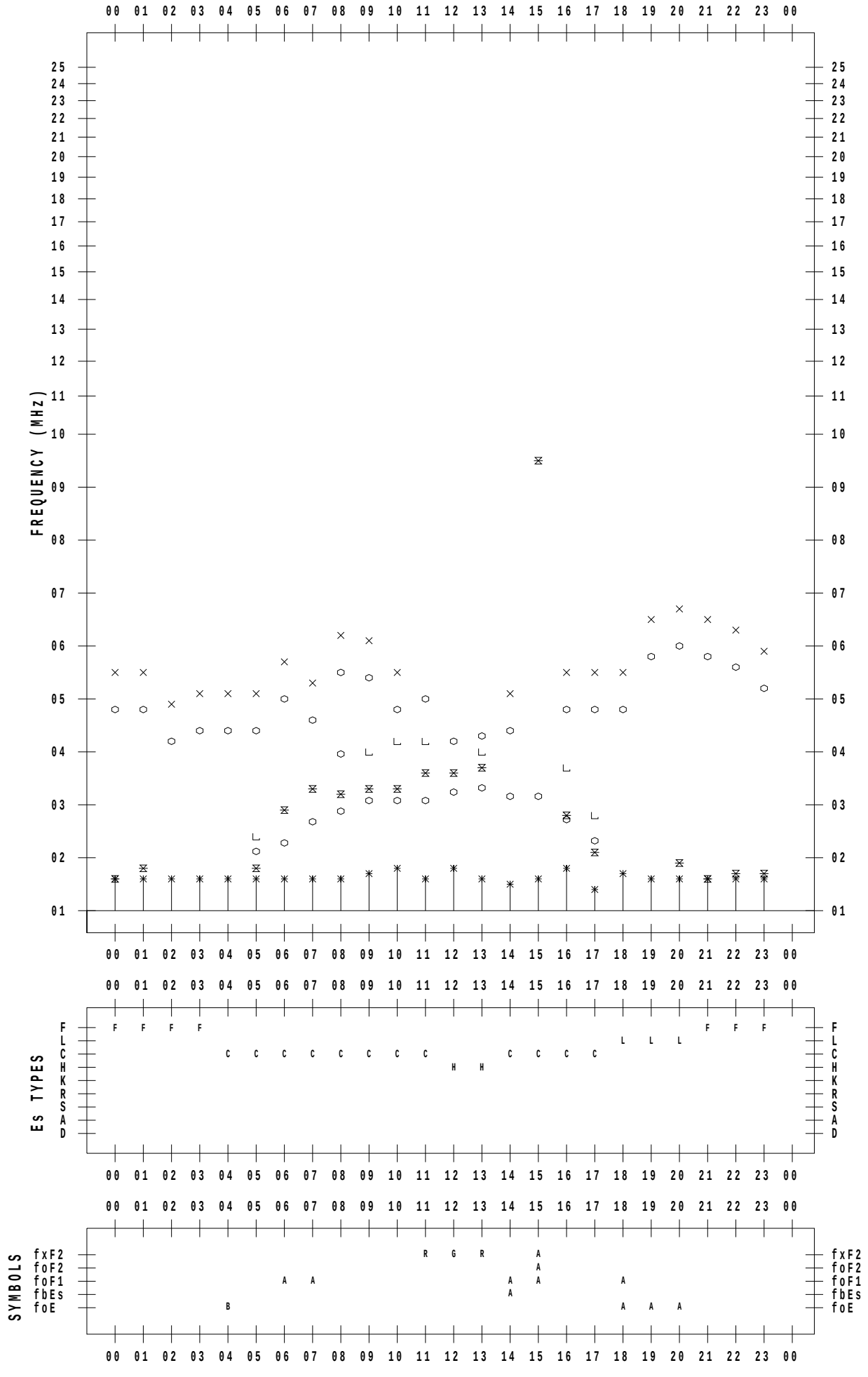
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 4

135 °E MEAN TIME



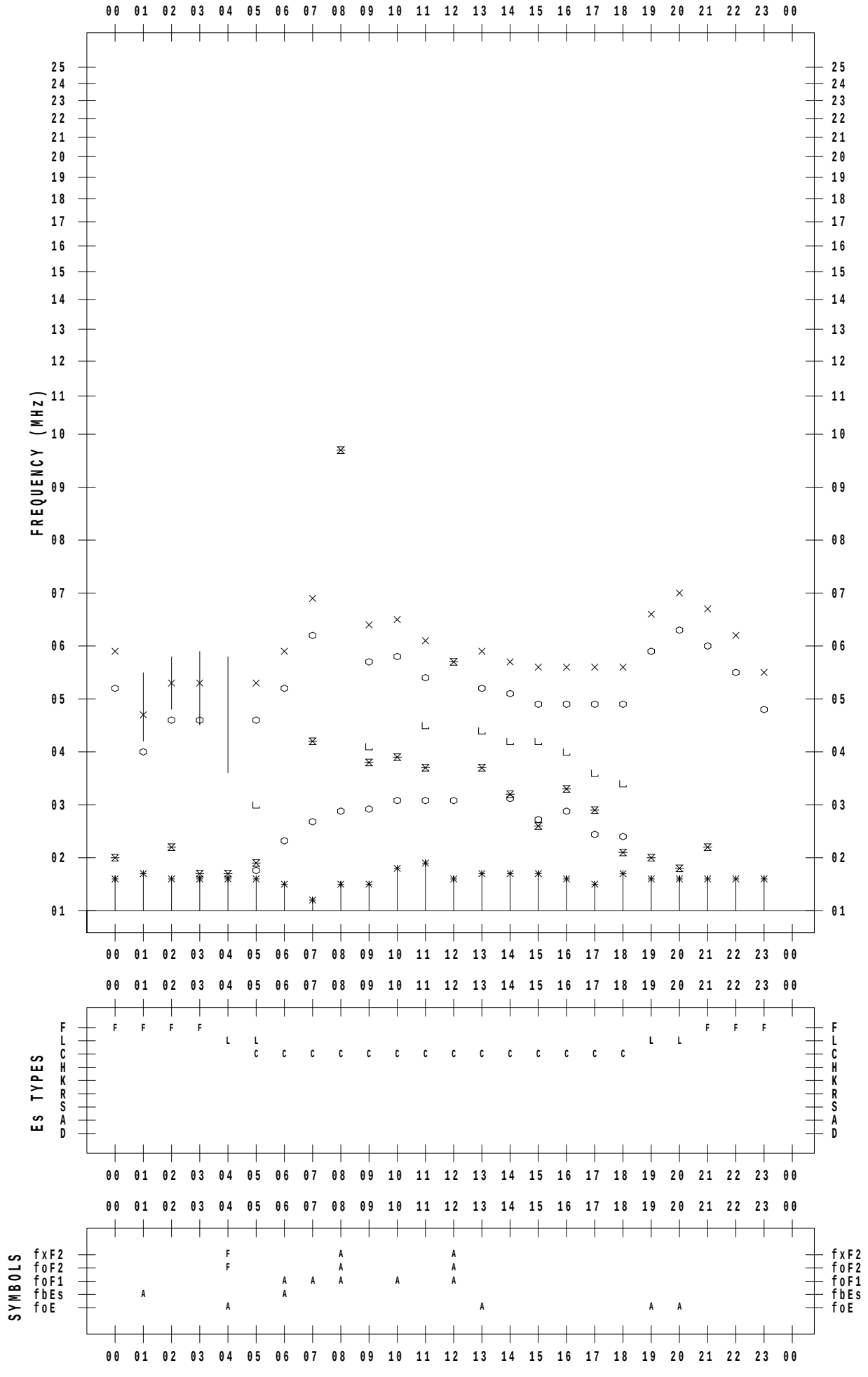
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 5

135 °E MEAN TIME



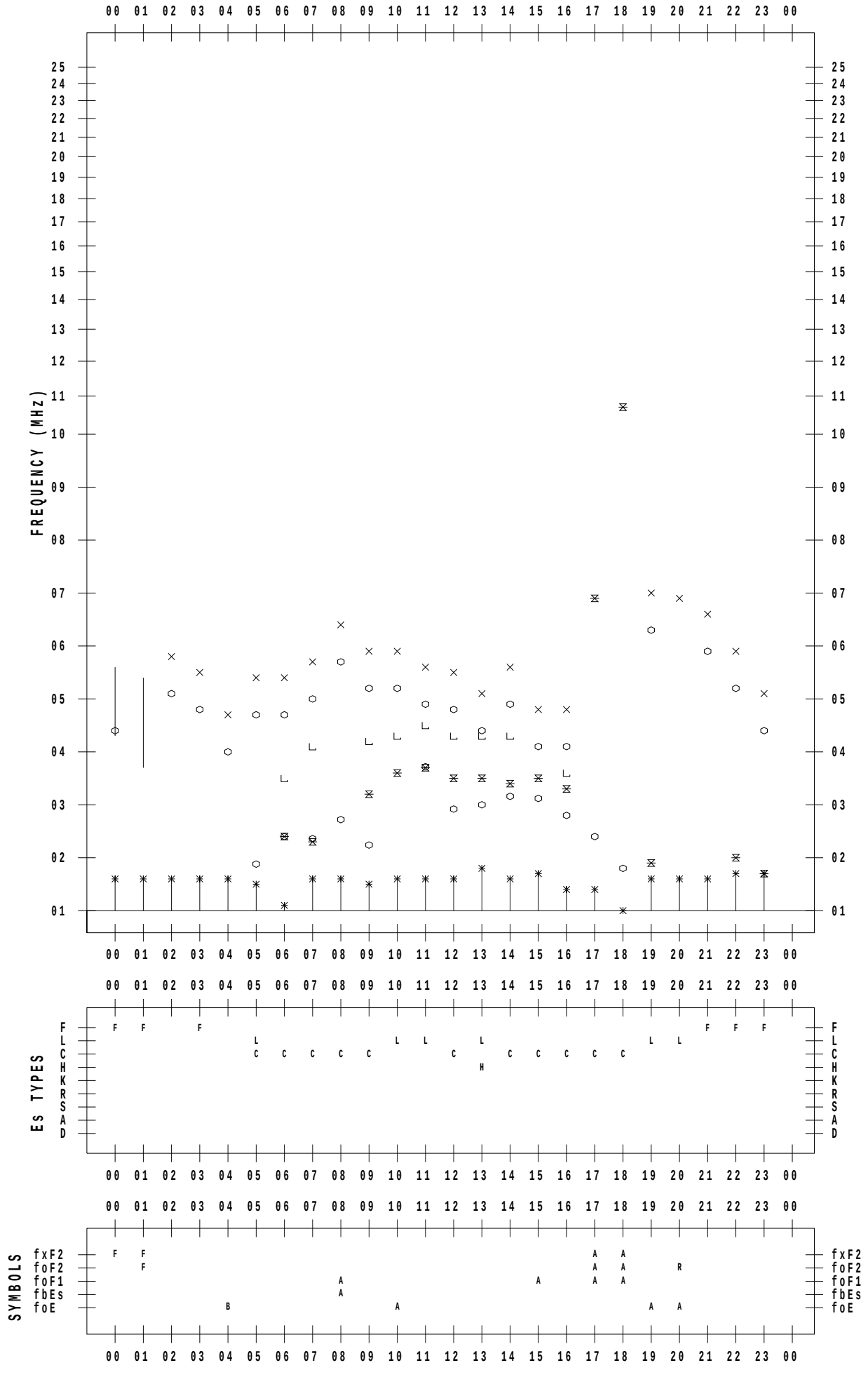
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 6

135 °E MEAN TIME



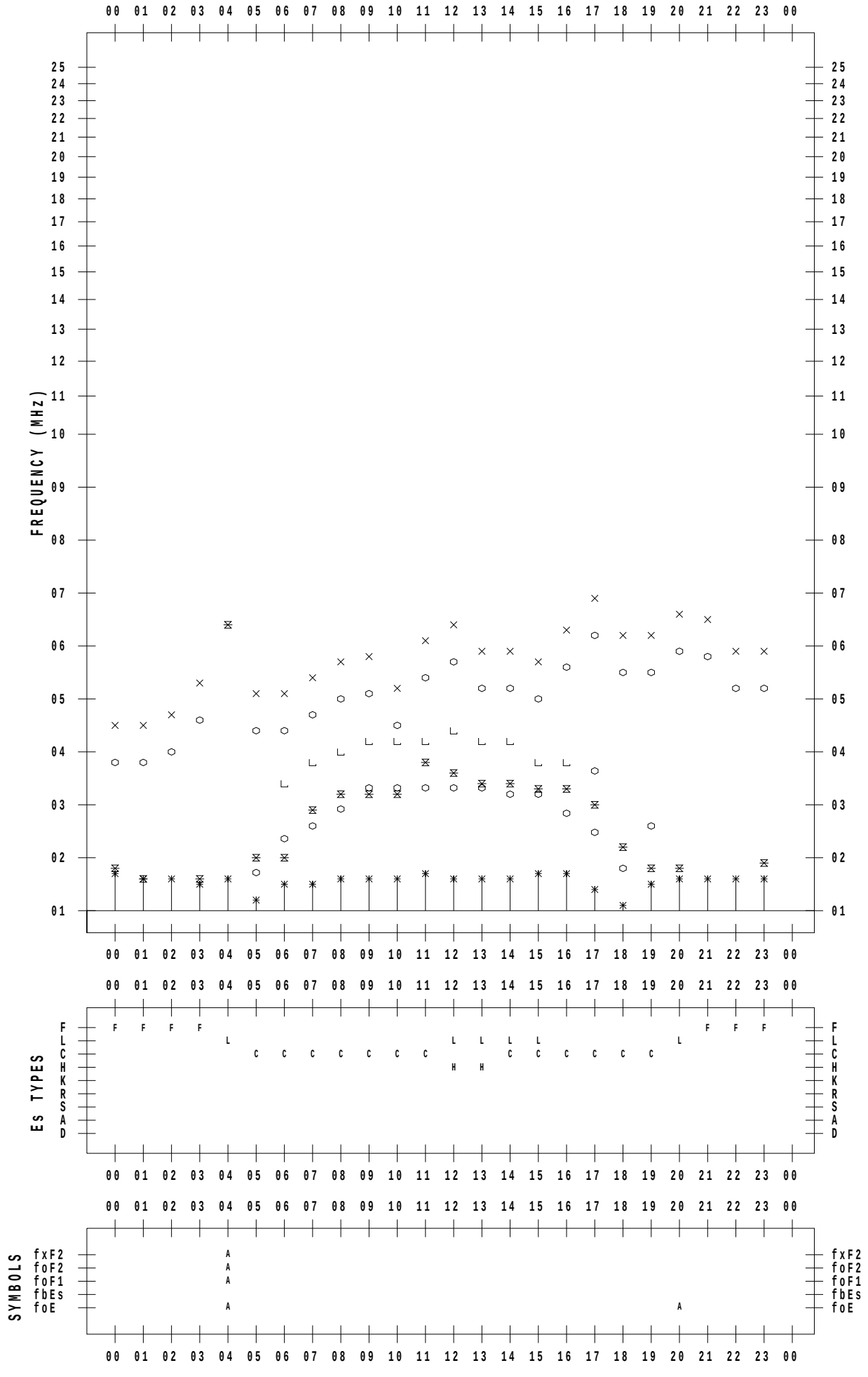
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 7

135 °E MEAN TIME



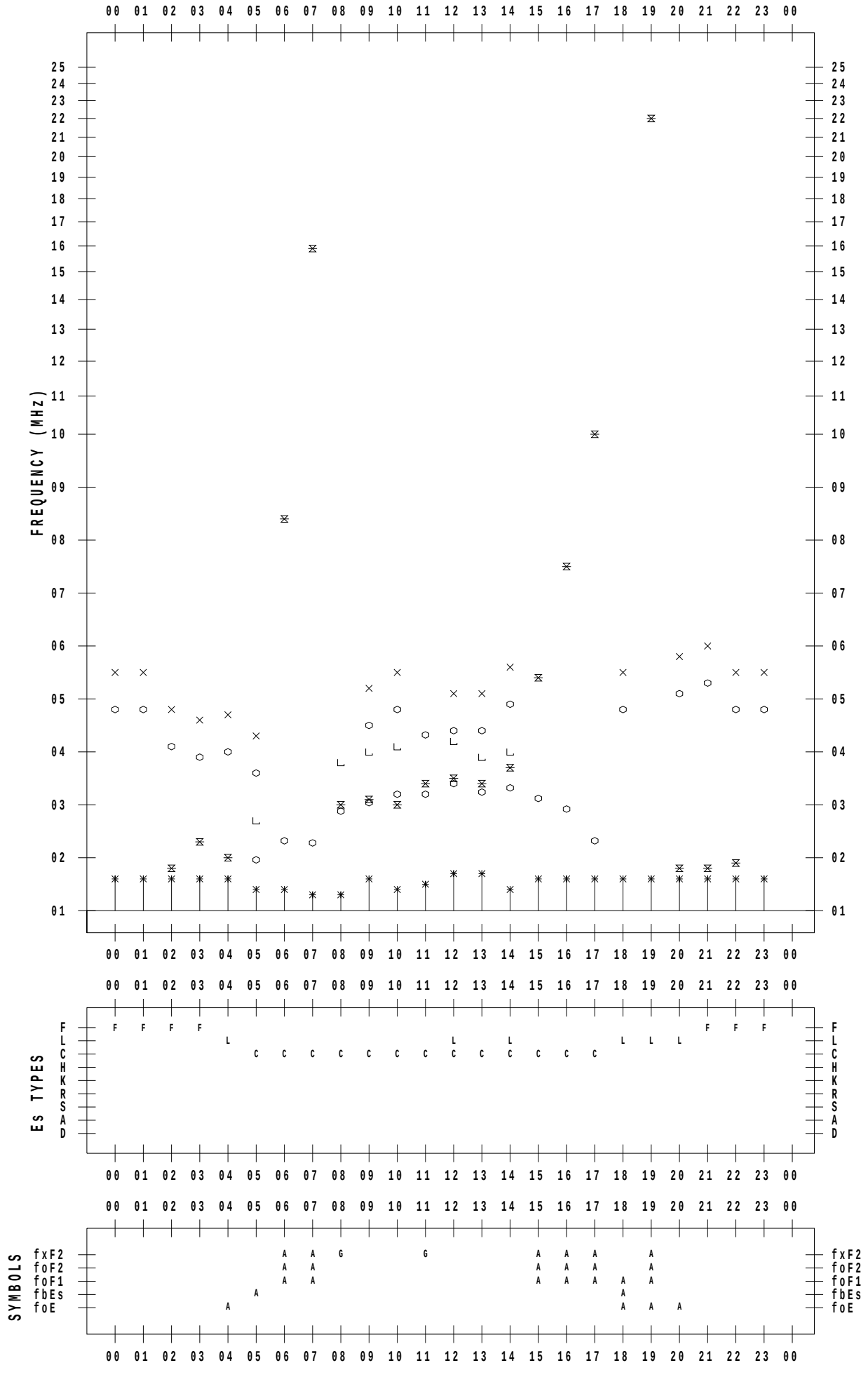
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 8

135 °E MEAN TIME



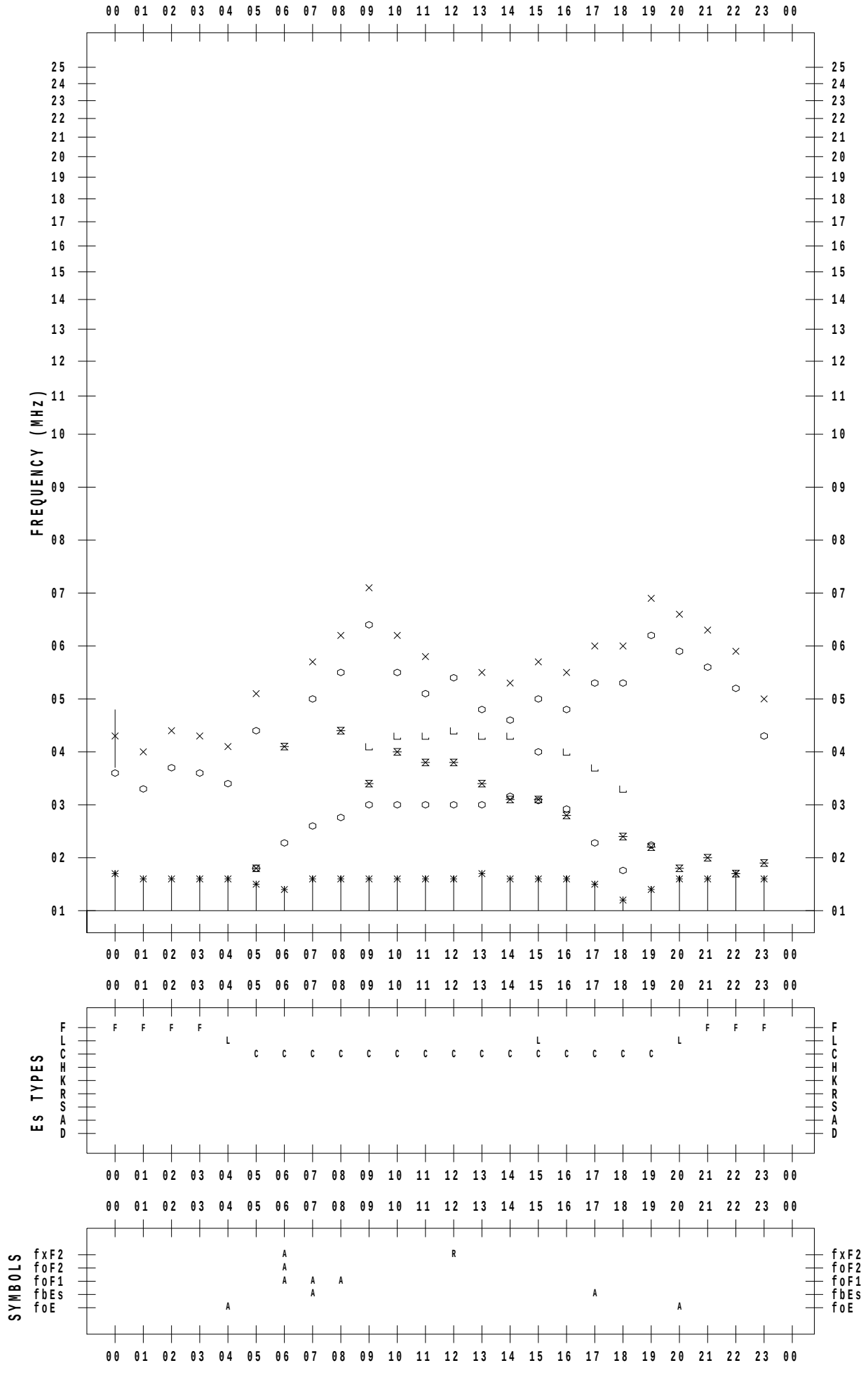
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/ 9

135 °E MEAN TIME



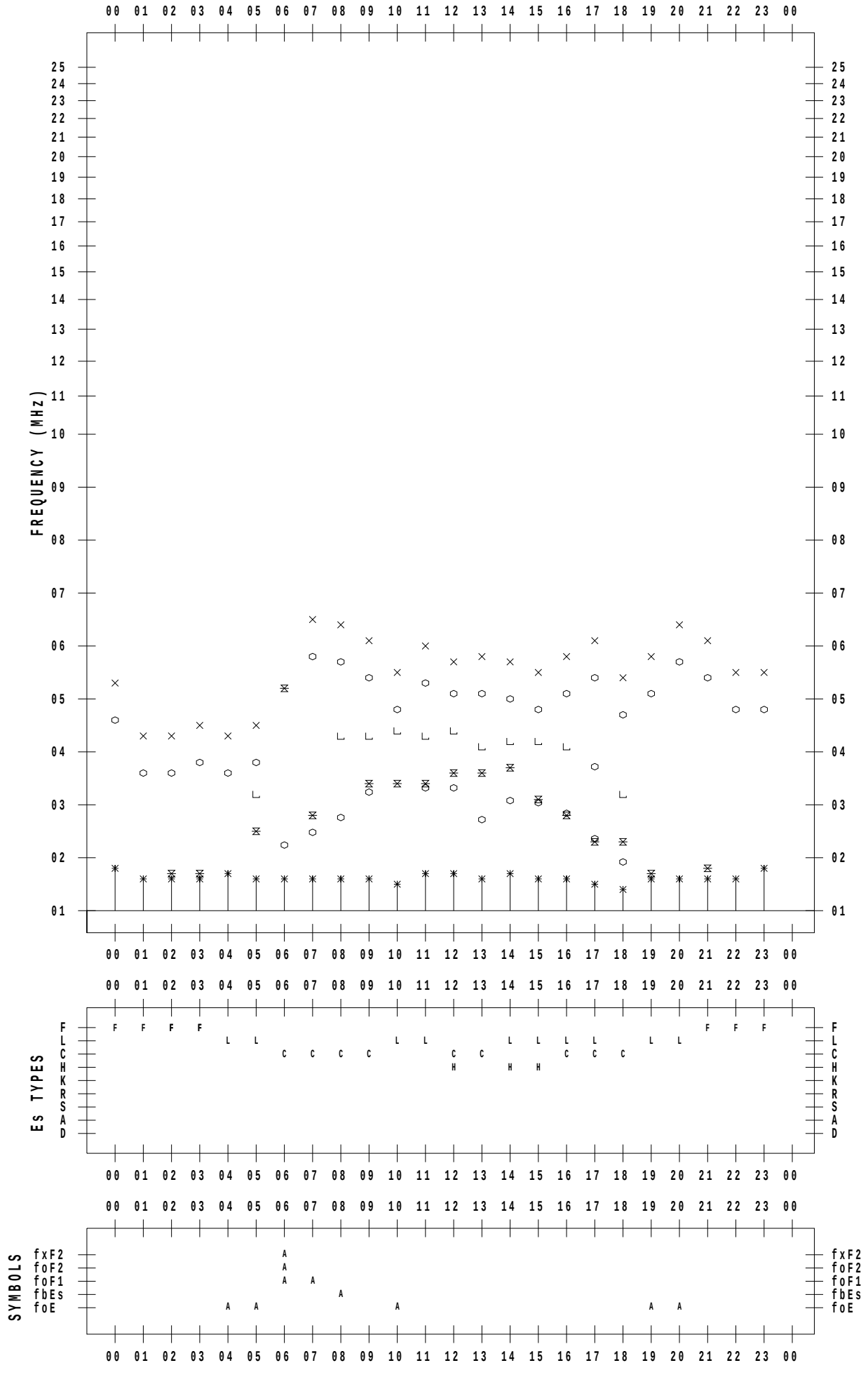
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/10

135 °E MEAN TIME



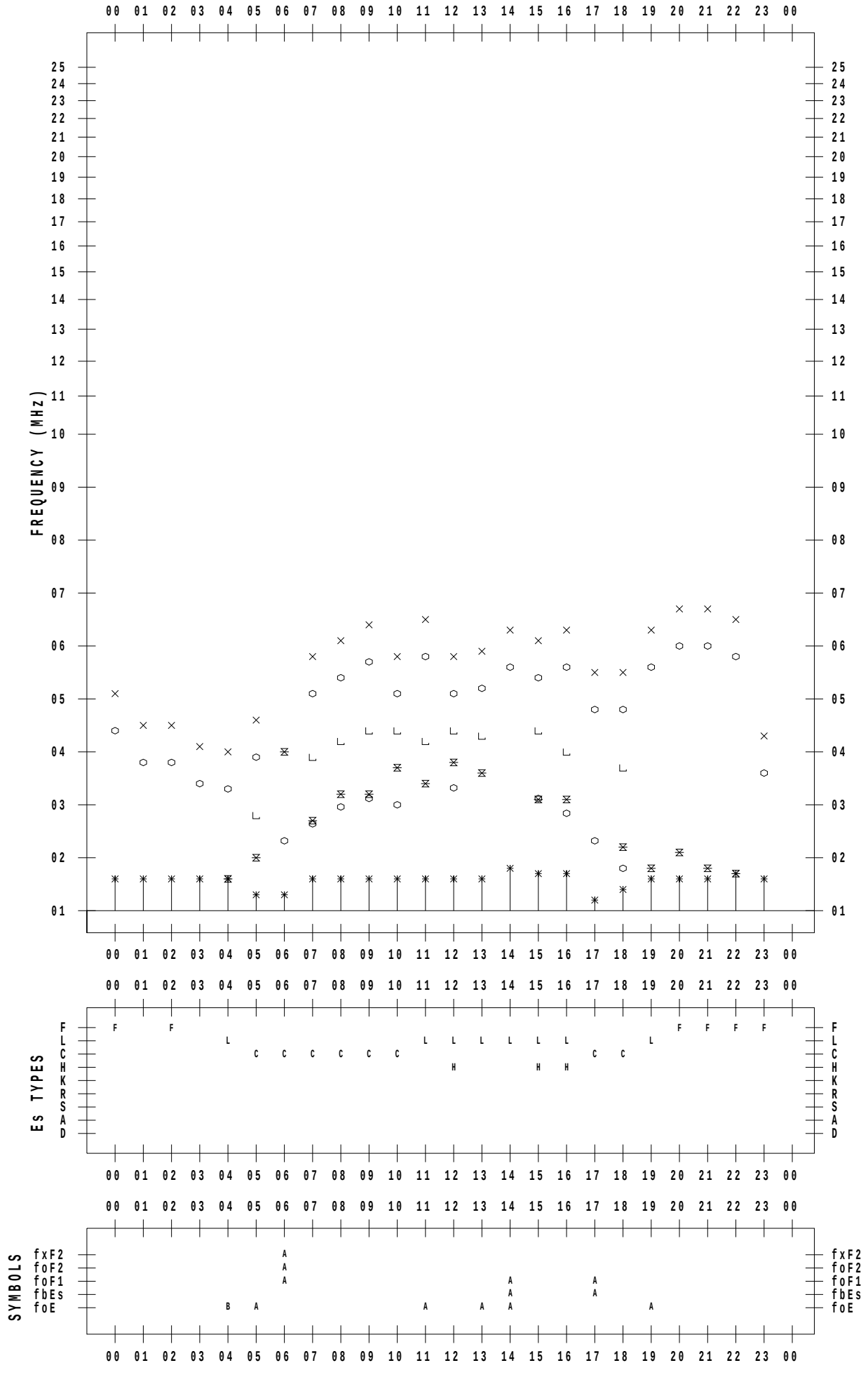
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/11

135 °E MEAN TIME



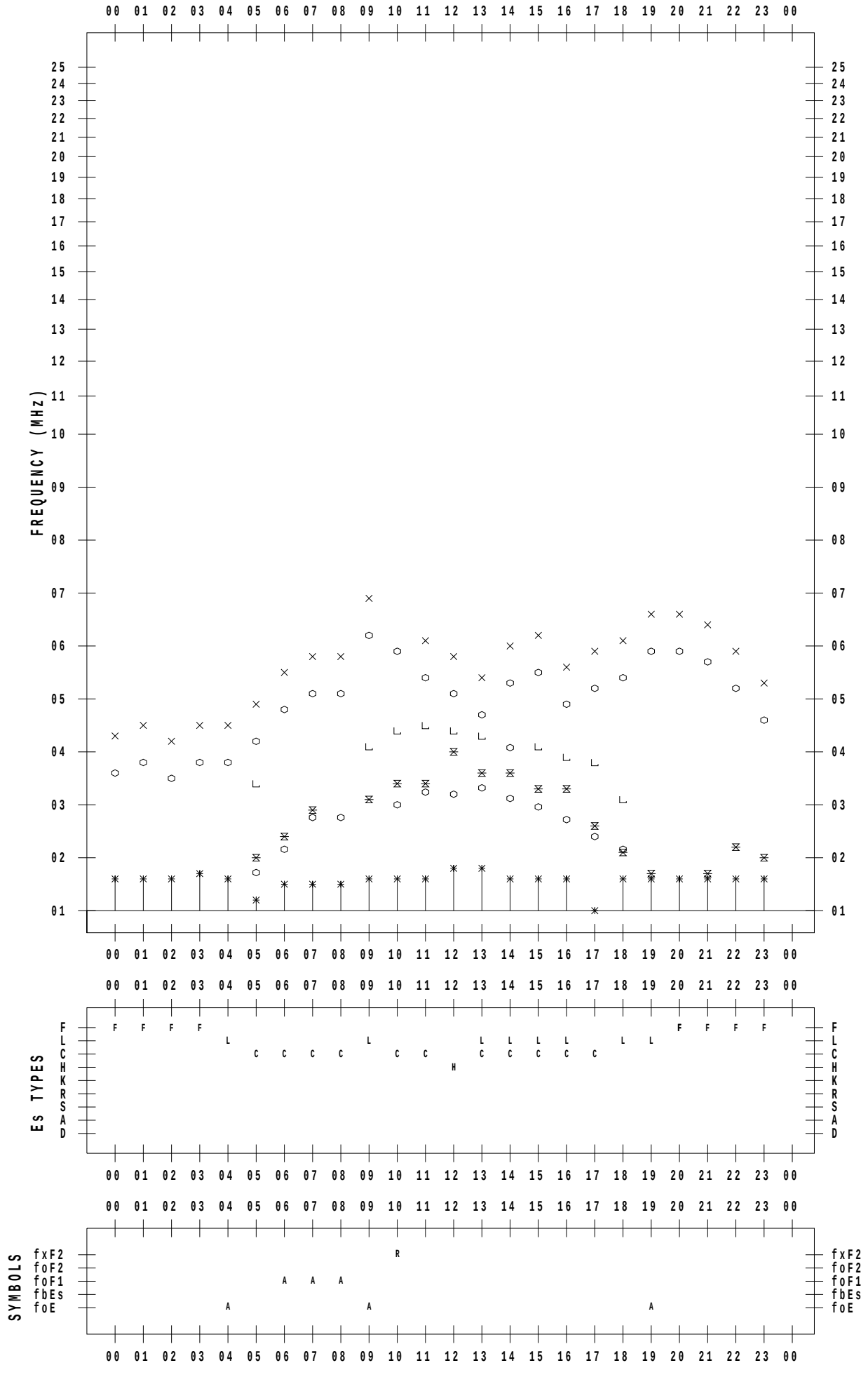
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/12

135 °E MEAN TIME



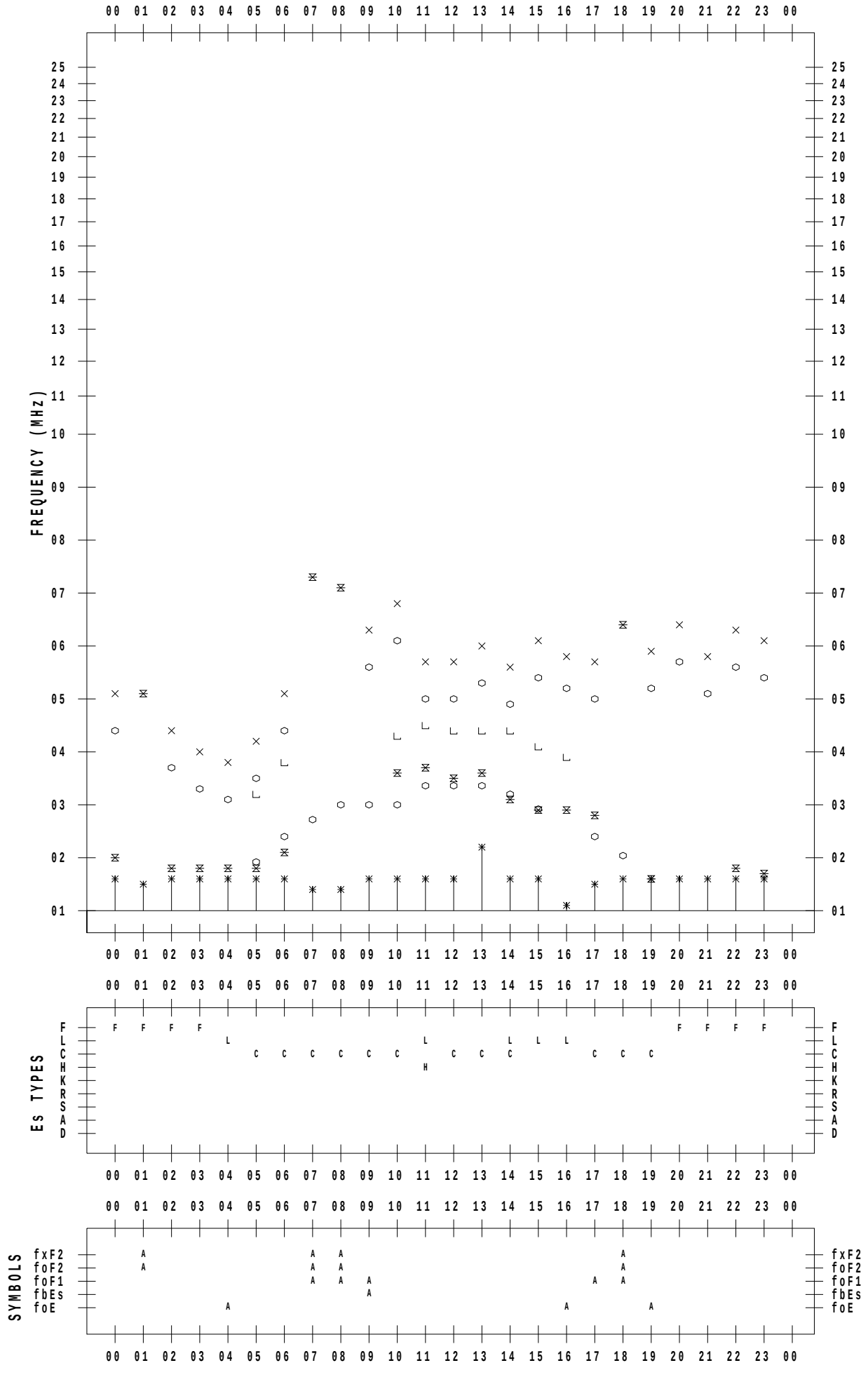
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/13

135 °E MEAN TIME



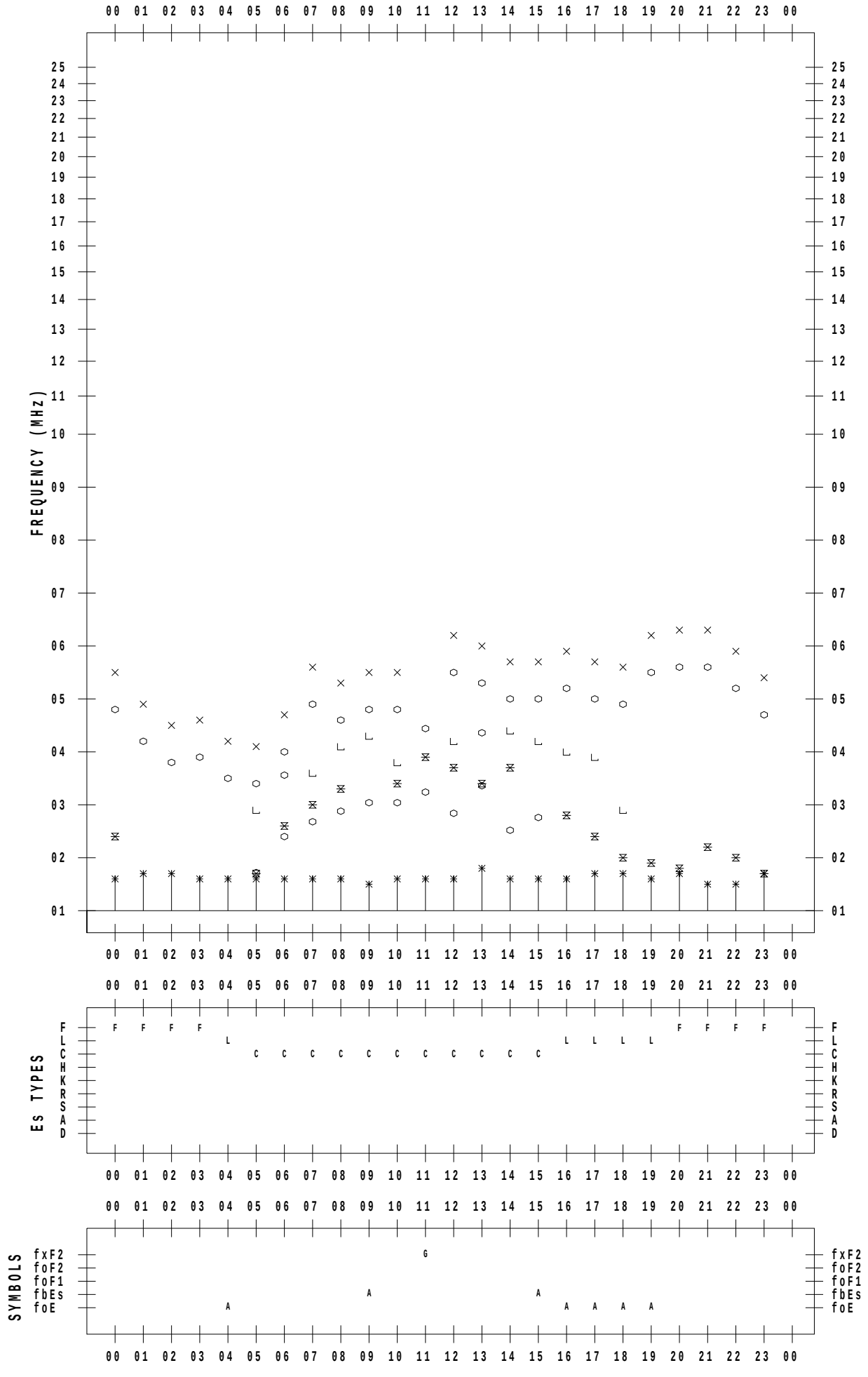
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/14

135 °E MEAN TIME



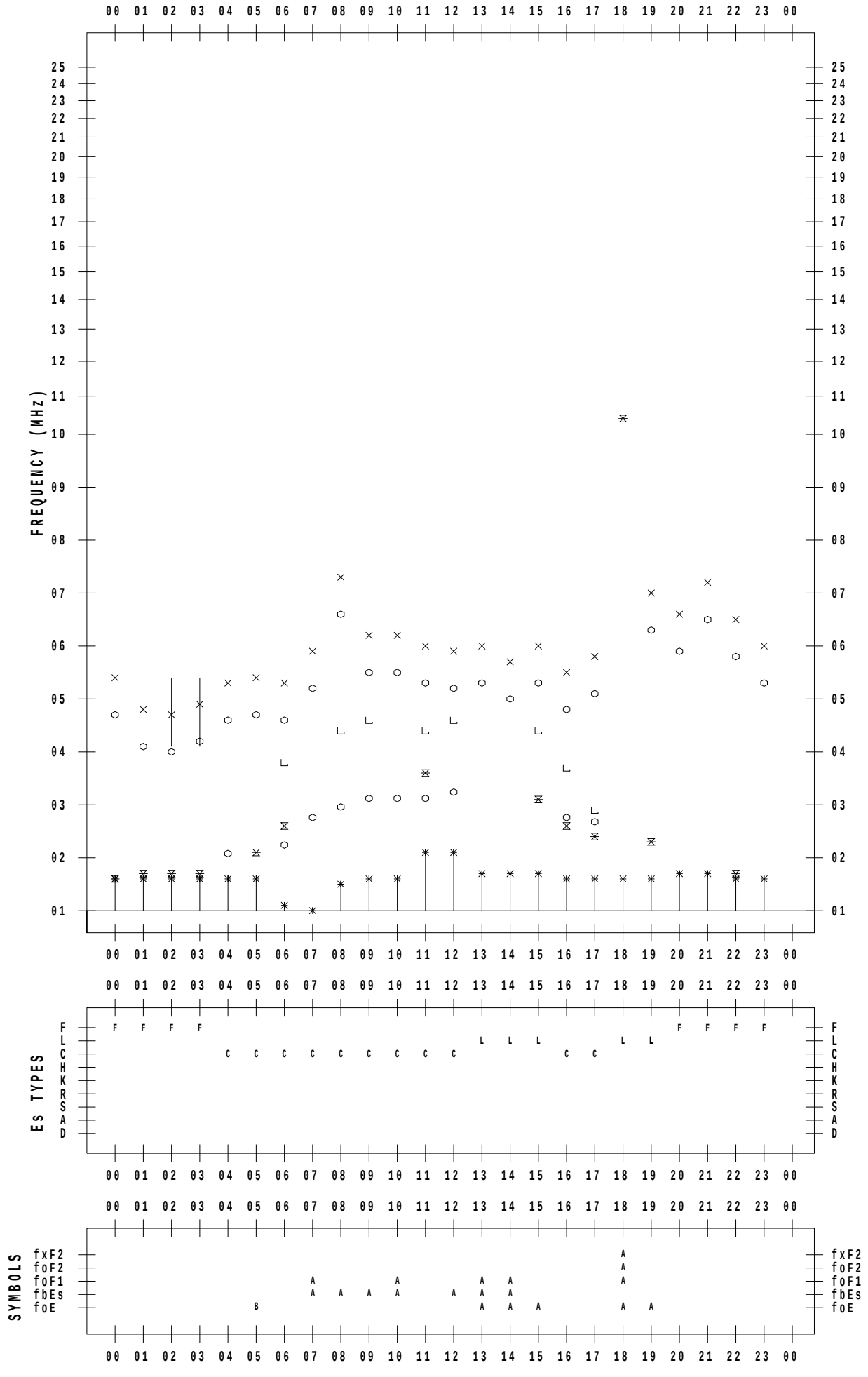
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/15

135 °E MEAN TIME



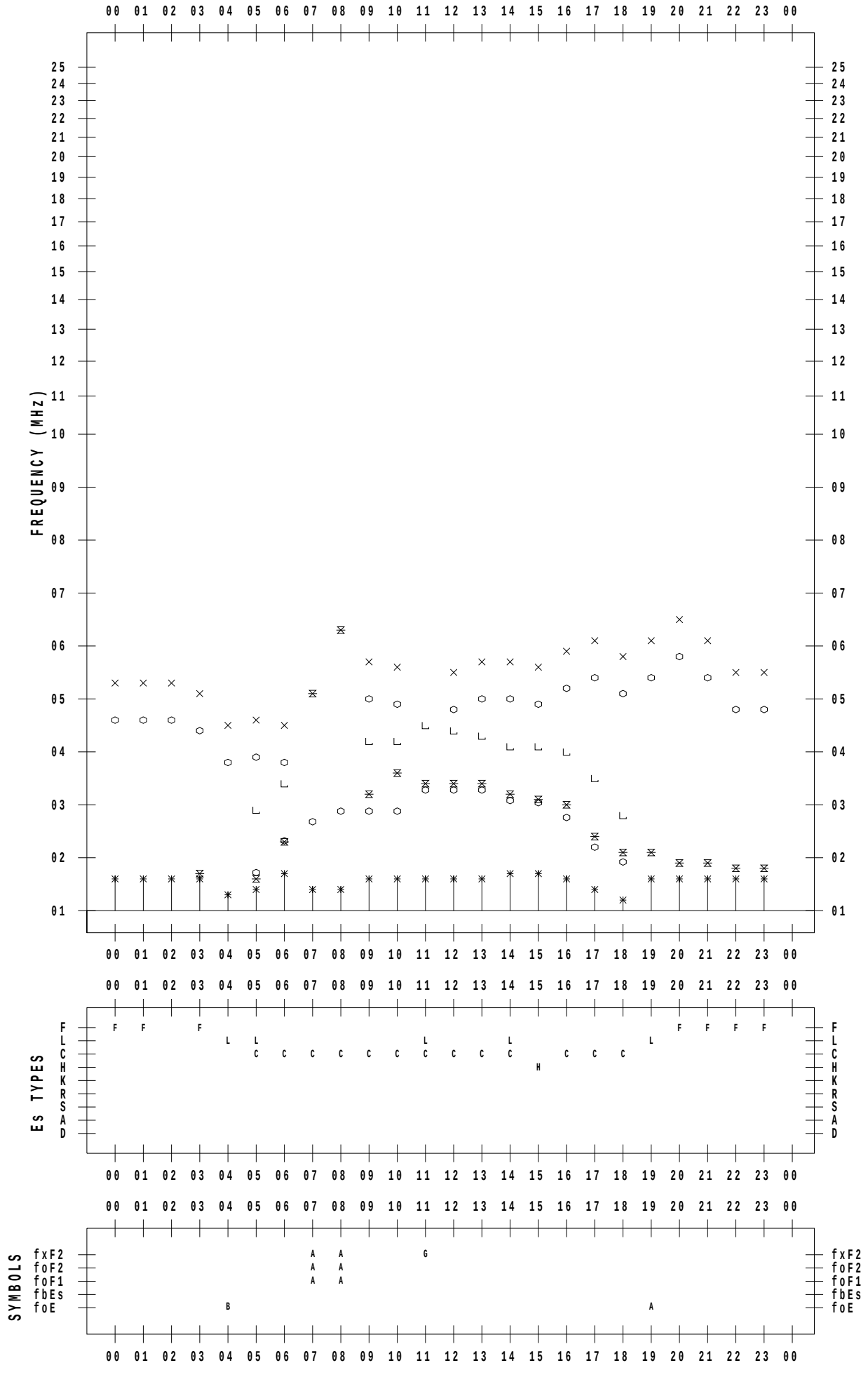
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/16

135 °E MEAN TIME



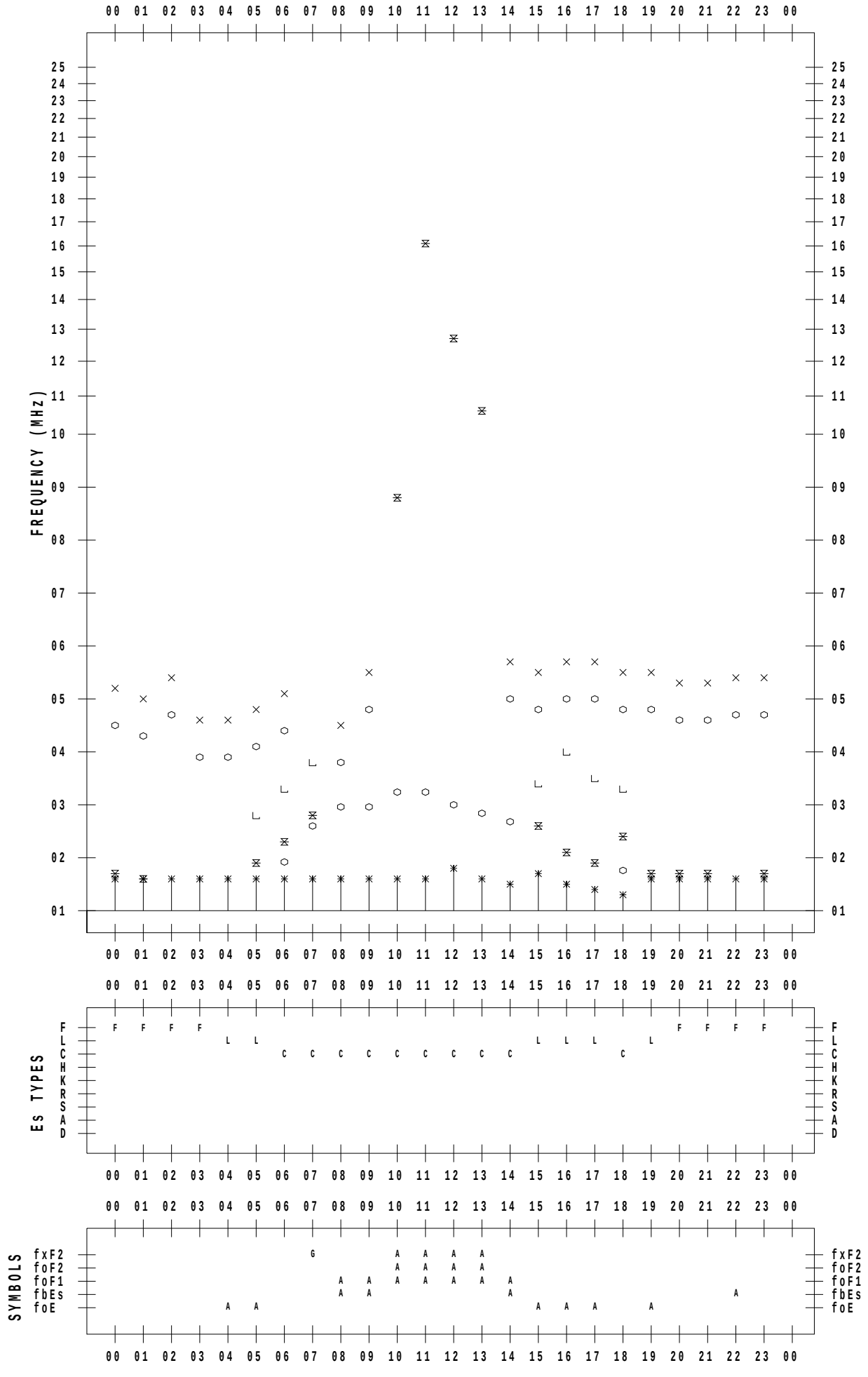
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/17

135 °E MEAN TIME



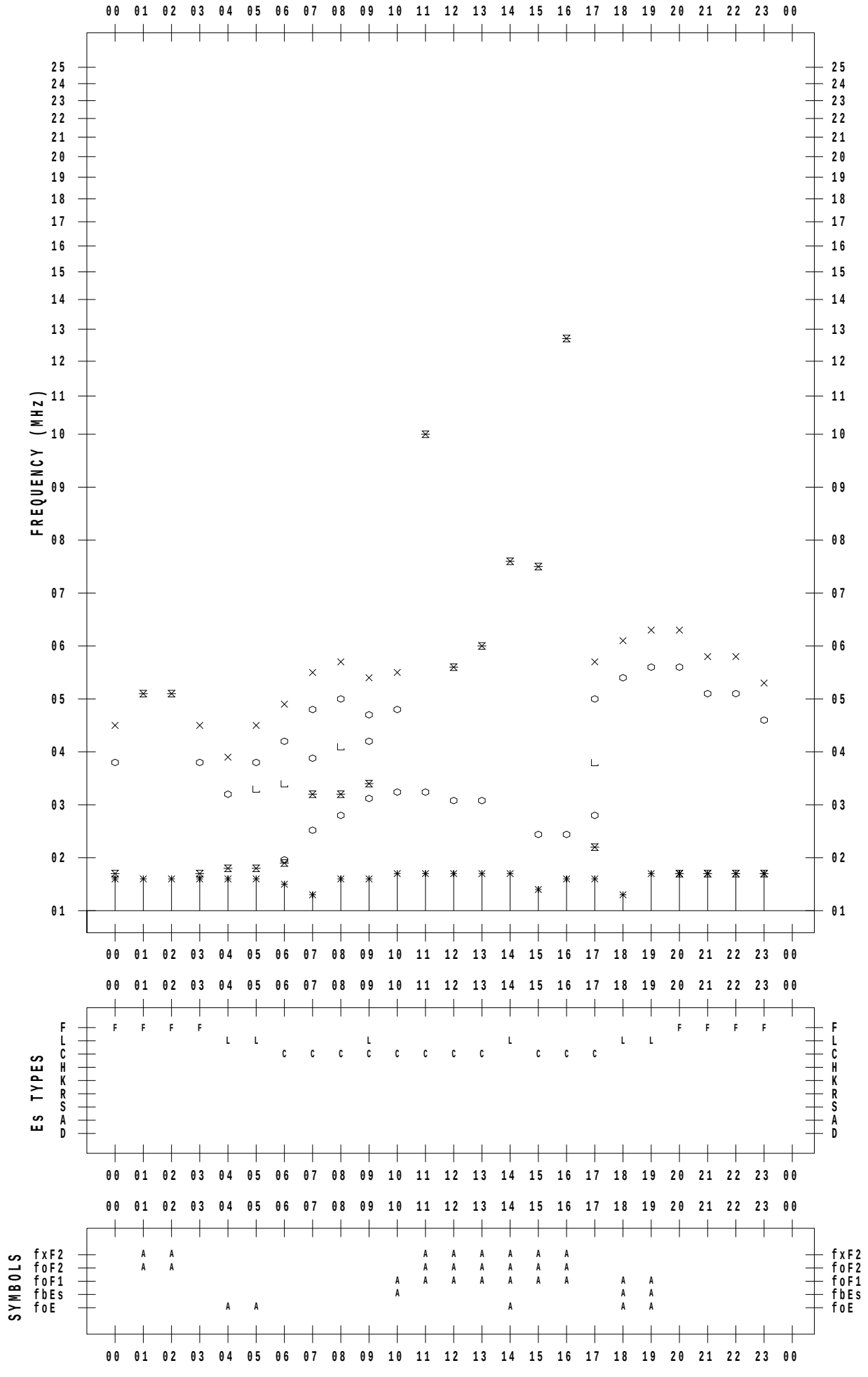
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/18

135 °E MEAN TIME



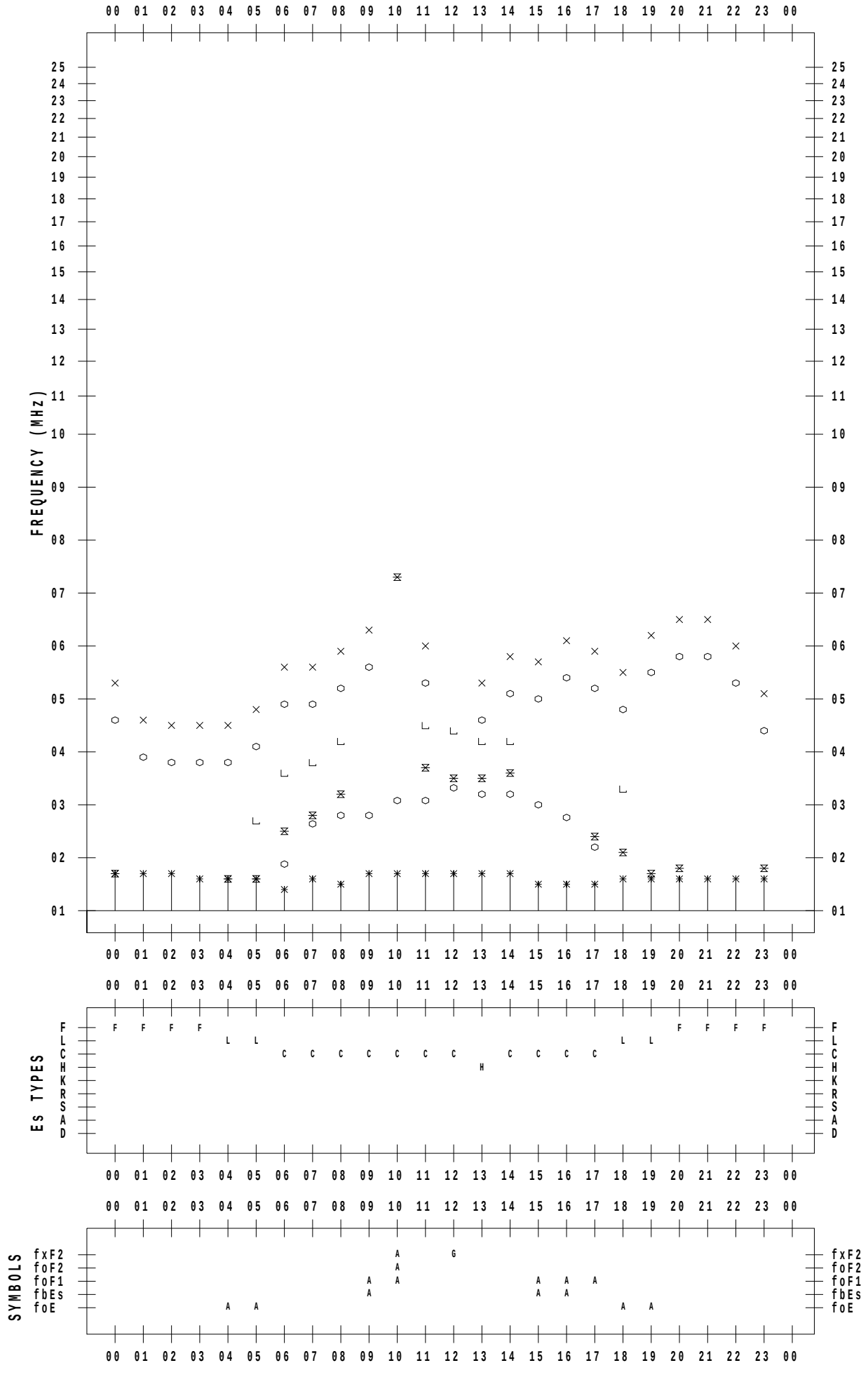
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/19

135 °E MEAN TIME



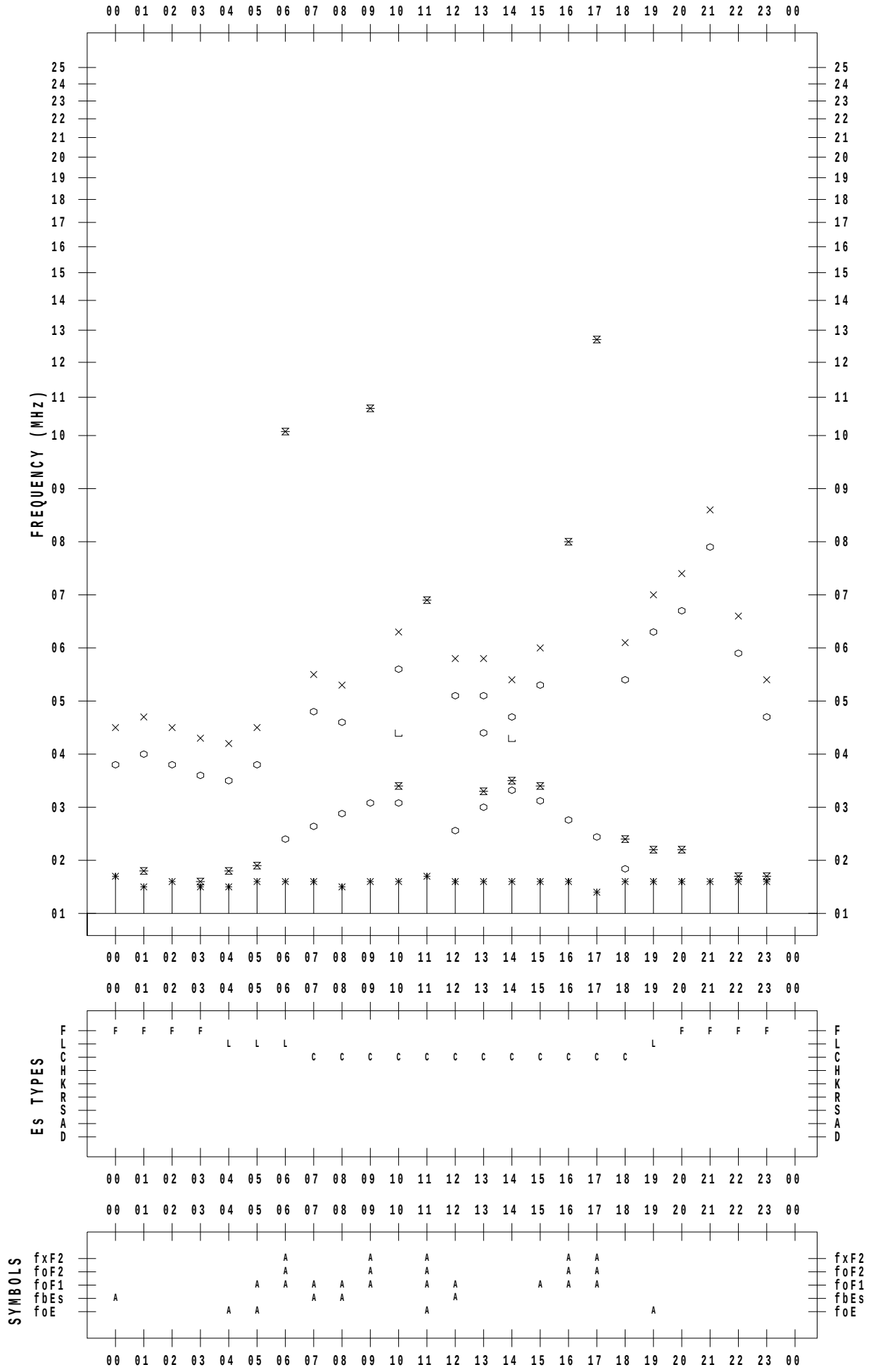
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/20

135 °E MEAN TIME



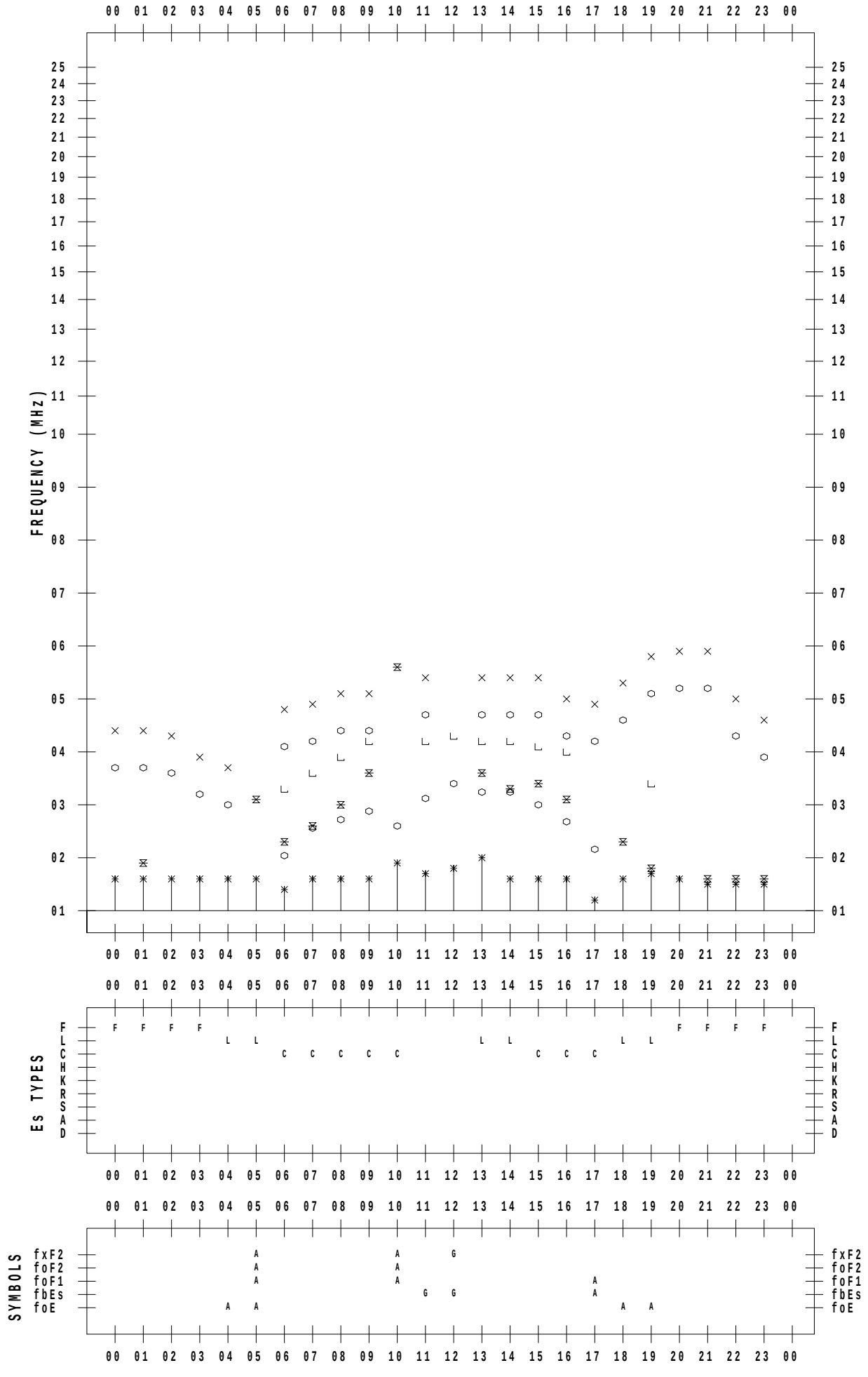
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/21

135 °E MEAN TIME



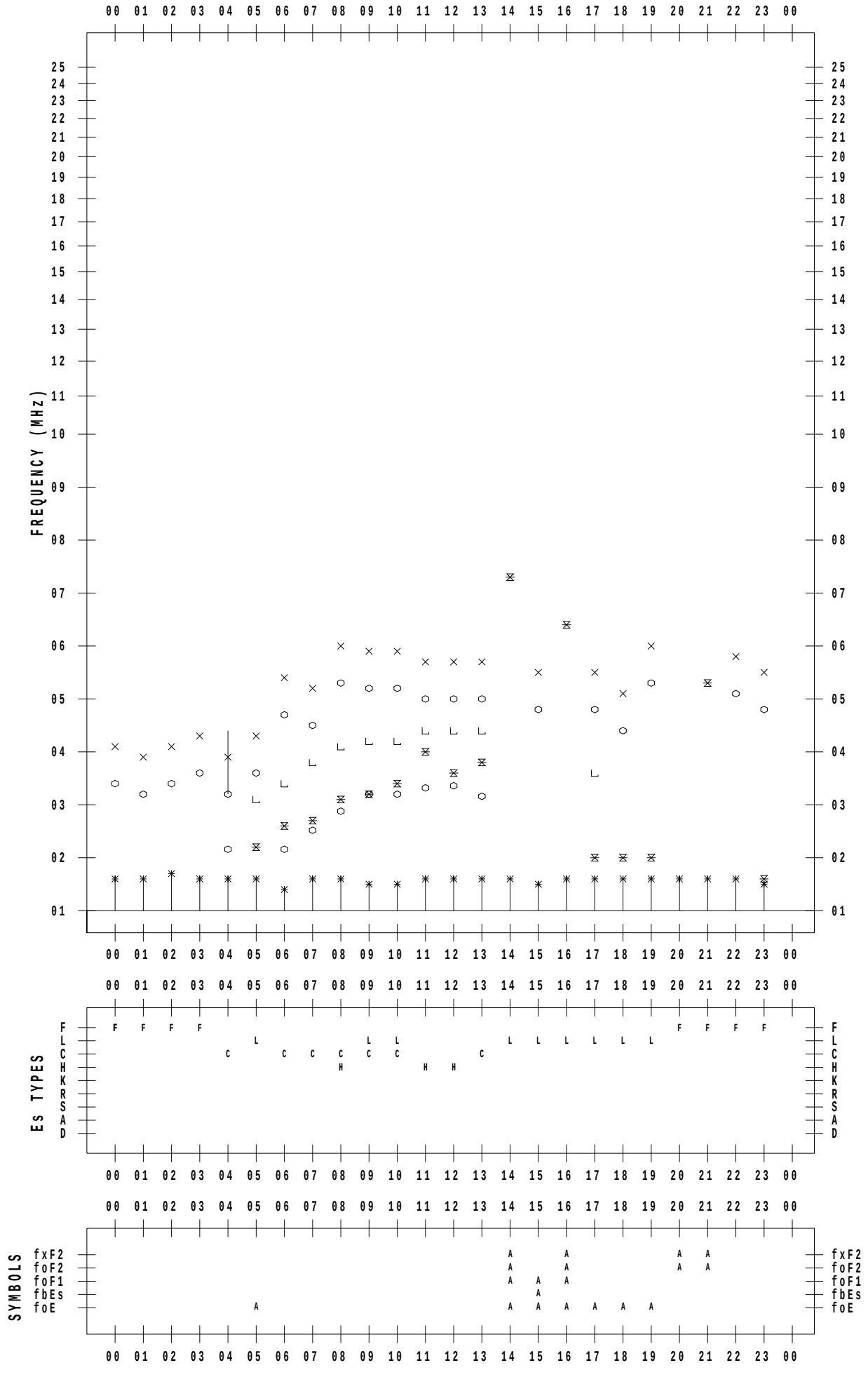
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/22

135 °E MEAN TIME



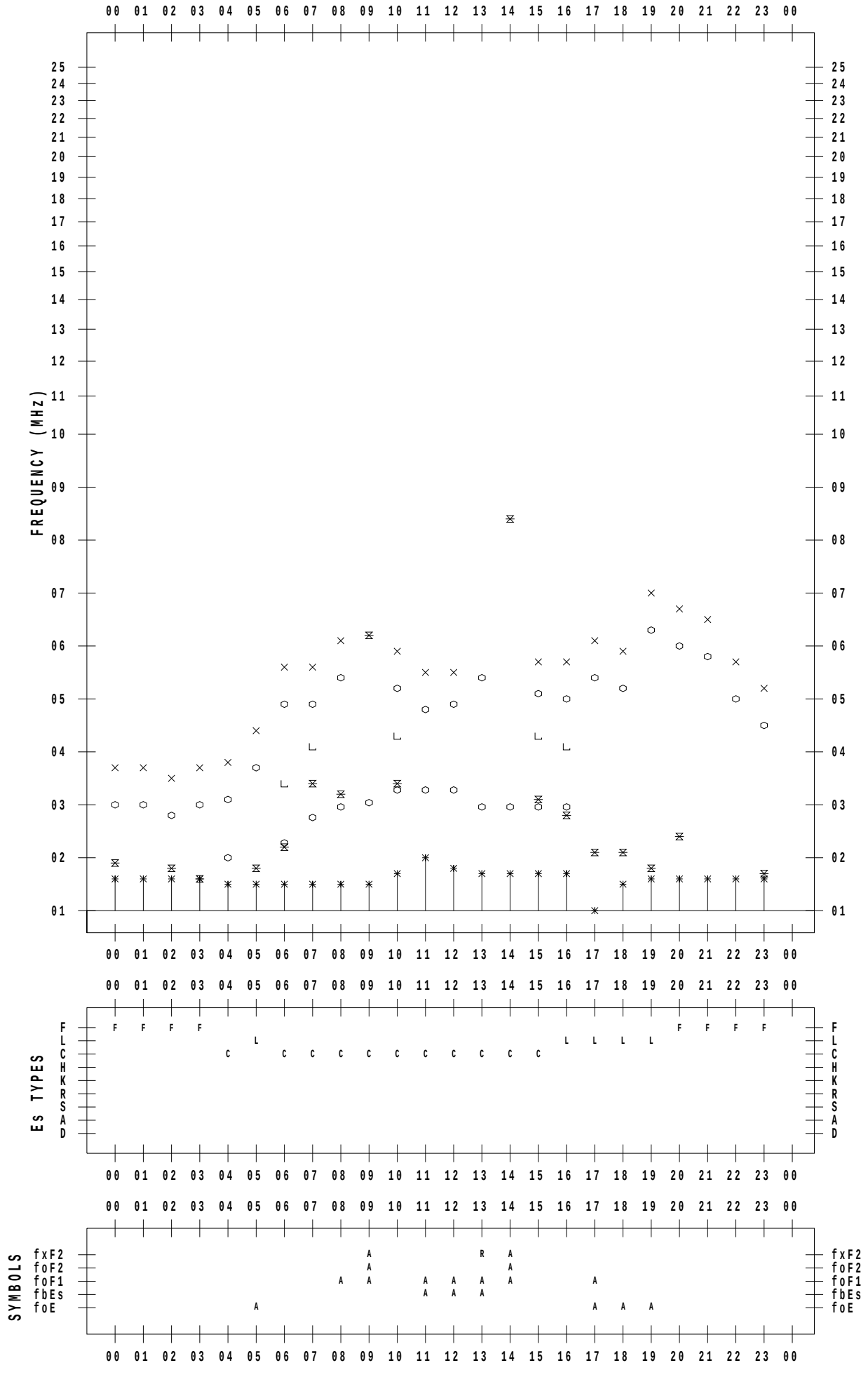
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/23

135 °E MEAN TIME



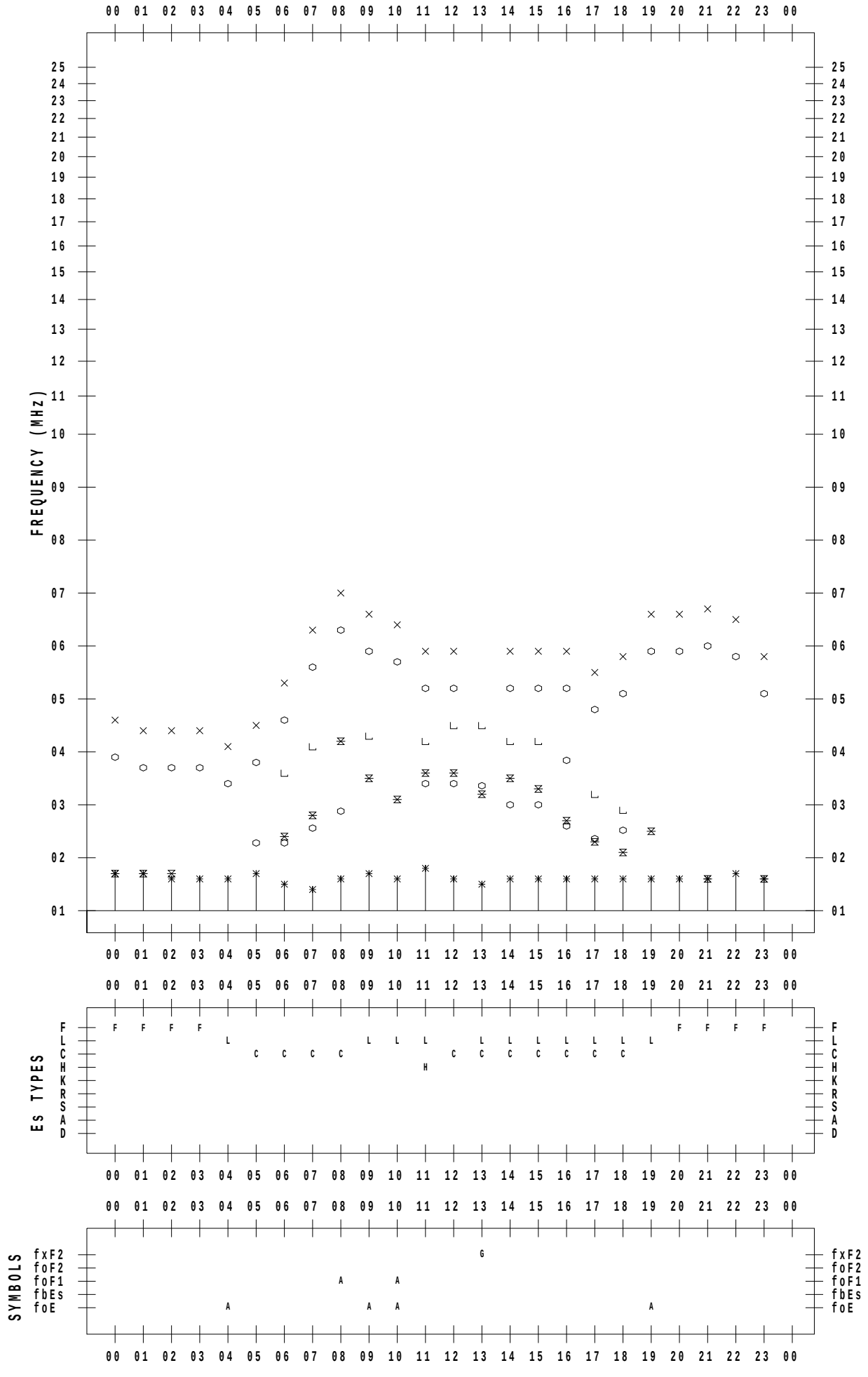
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/24

135 °E MEAN TIME



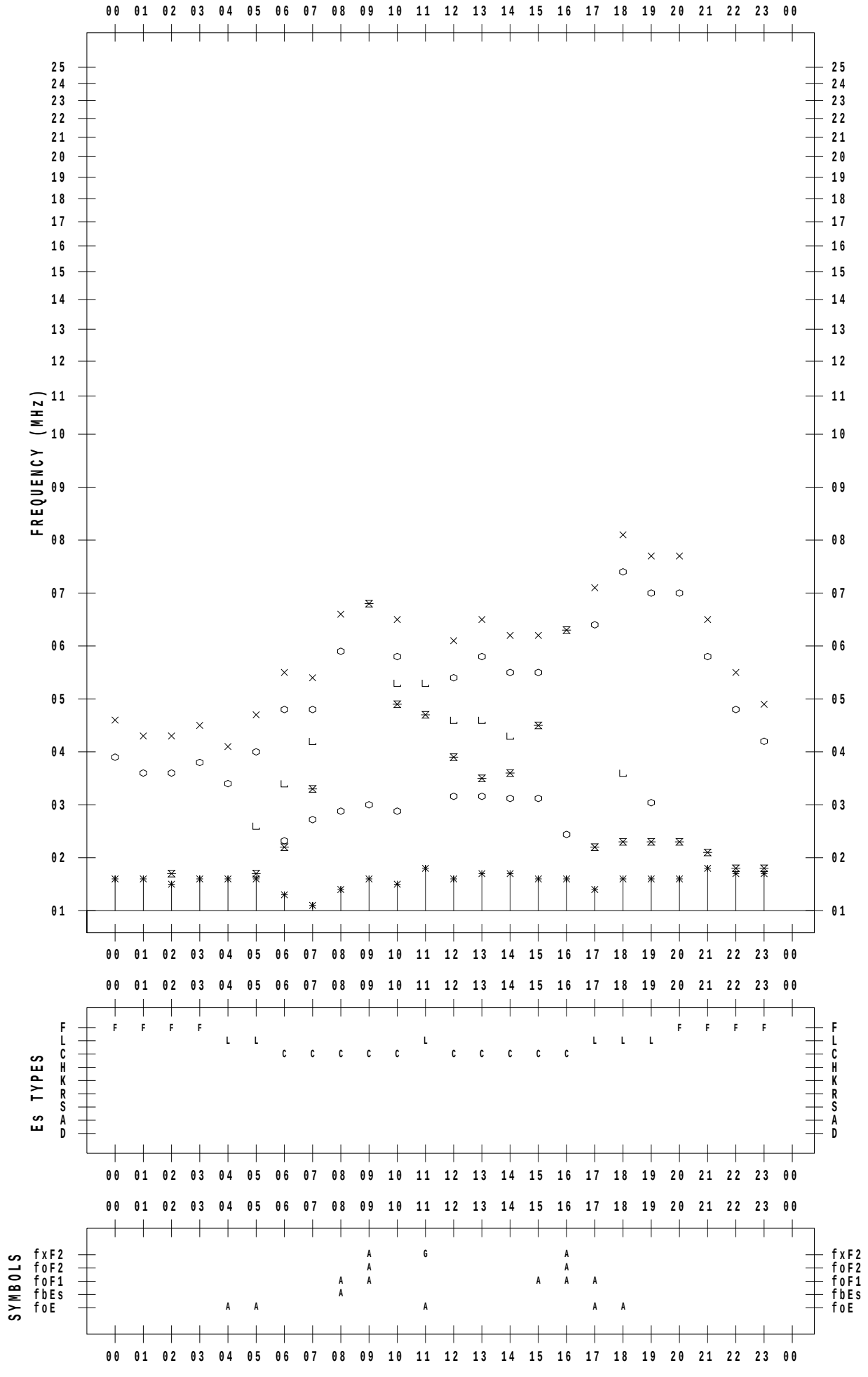
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/25

135 °E MEAN TIME



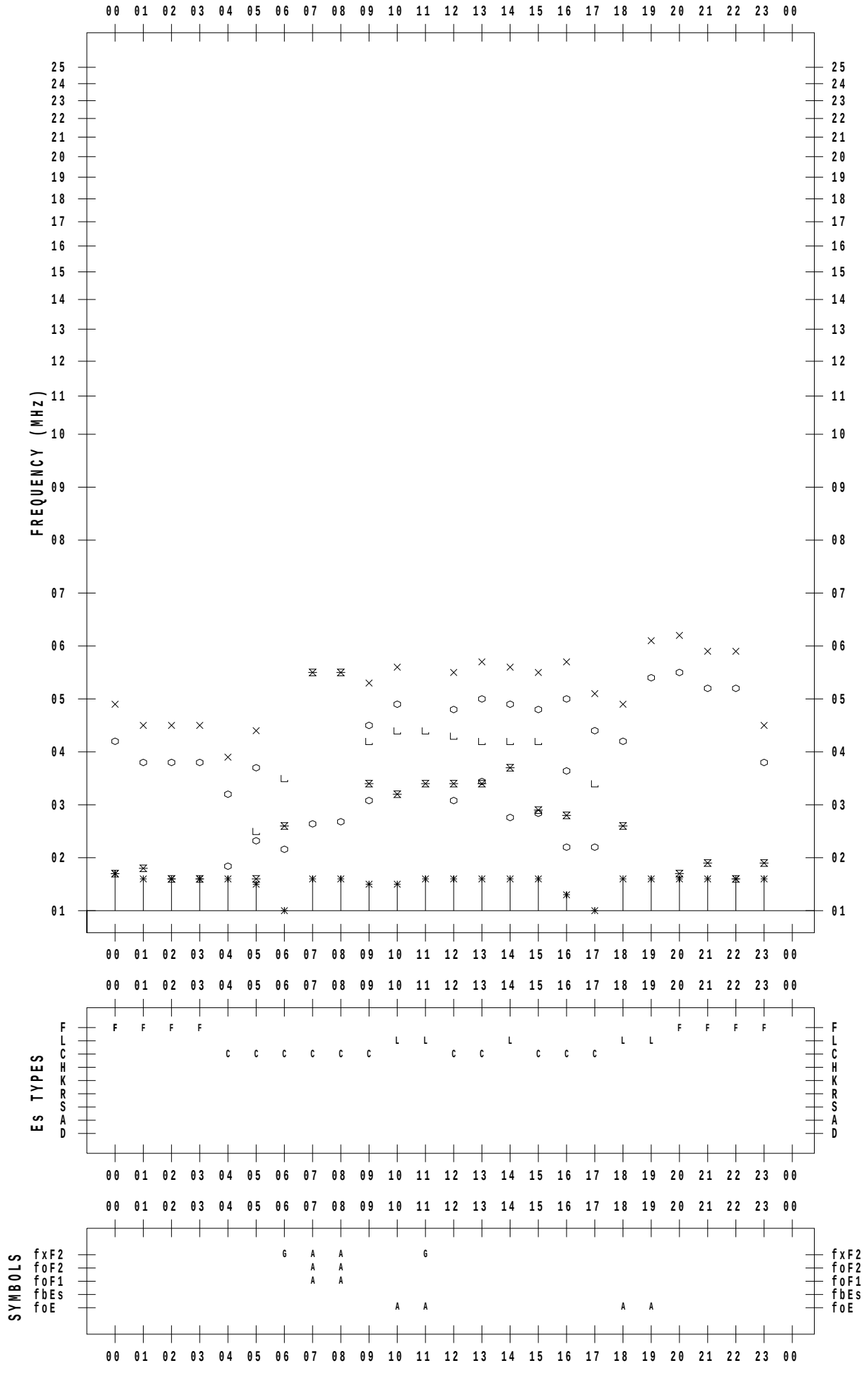
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/26

135 °E MEAN TIME



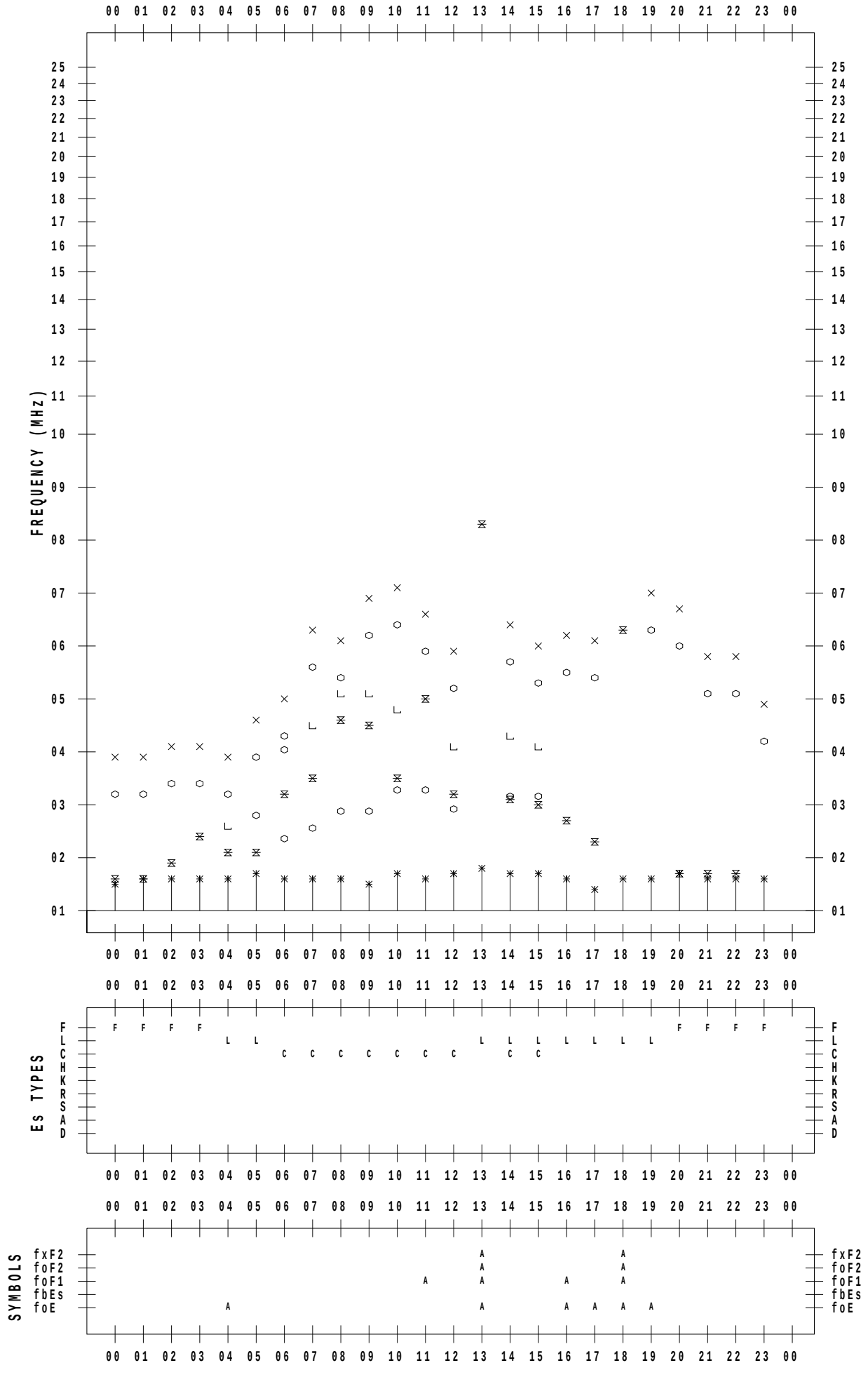
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/27

135 °E MEAN TIME



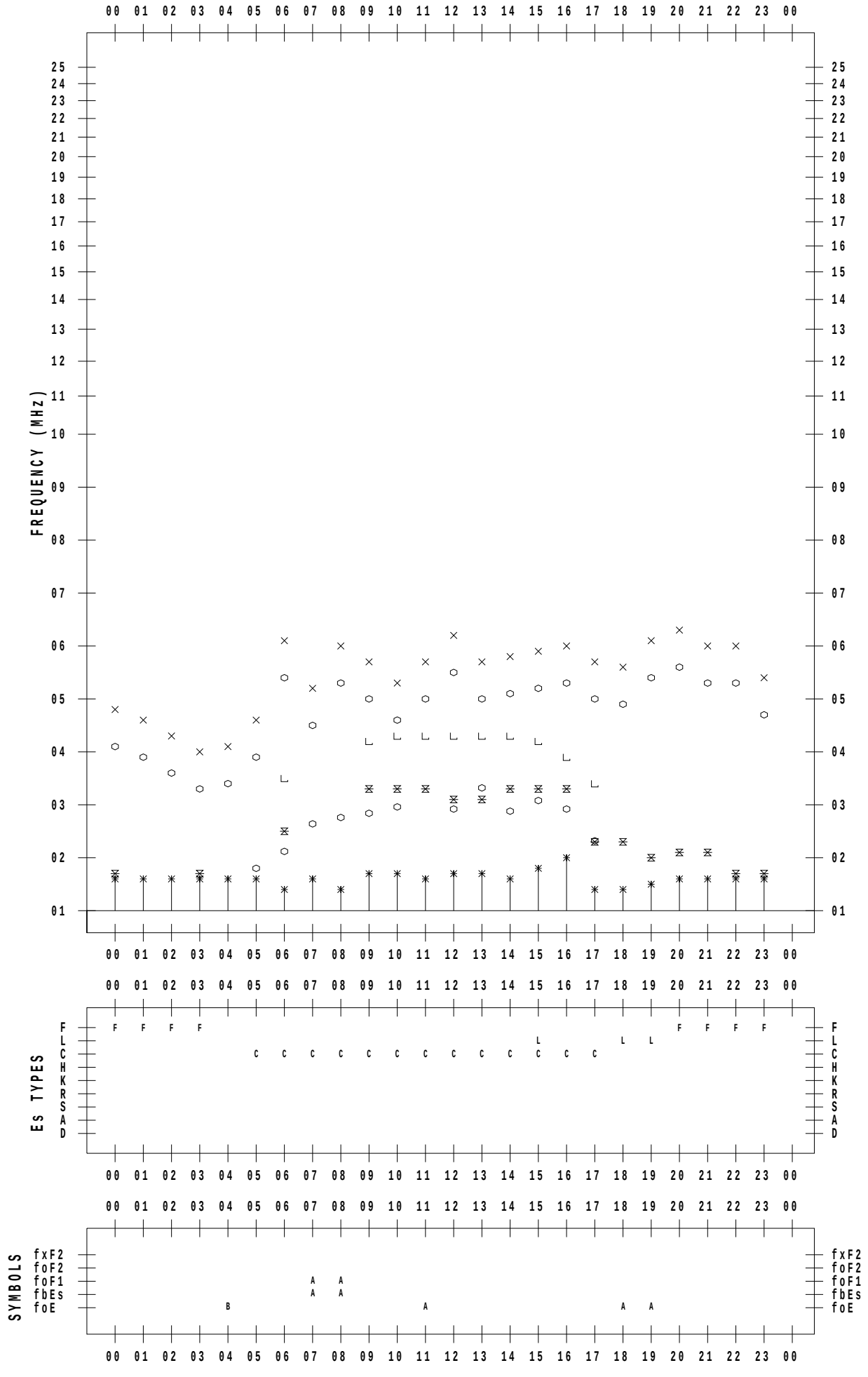
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/28

135 °E MEAN TIME



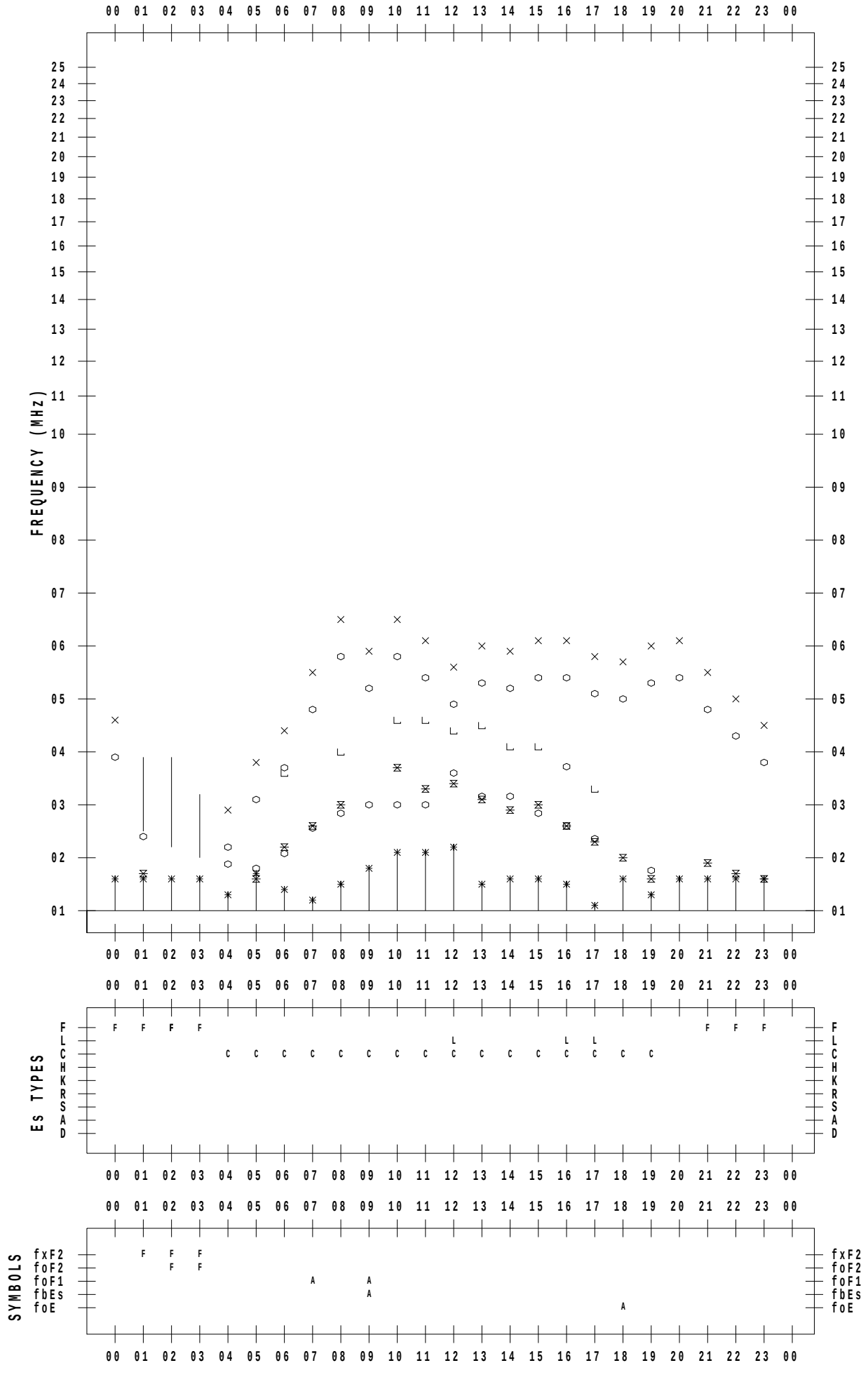
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/29

135 °E MEAN TIME



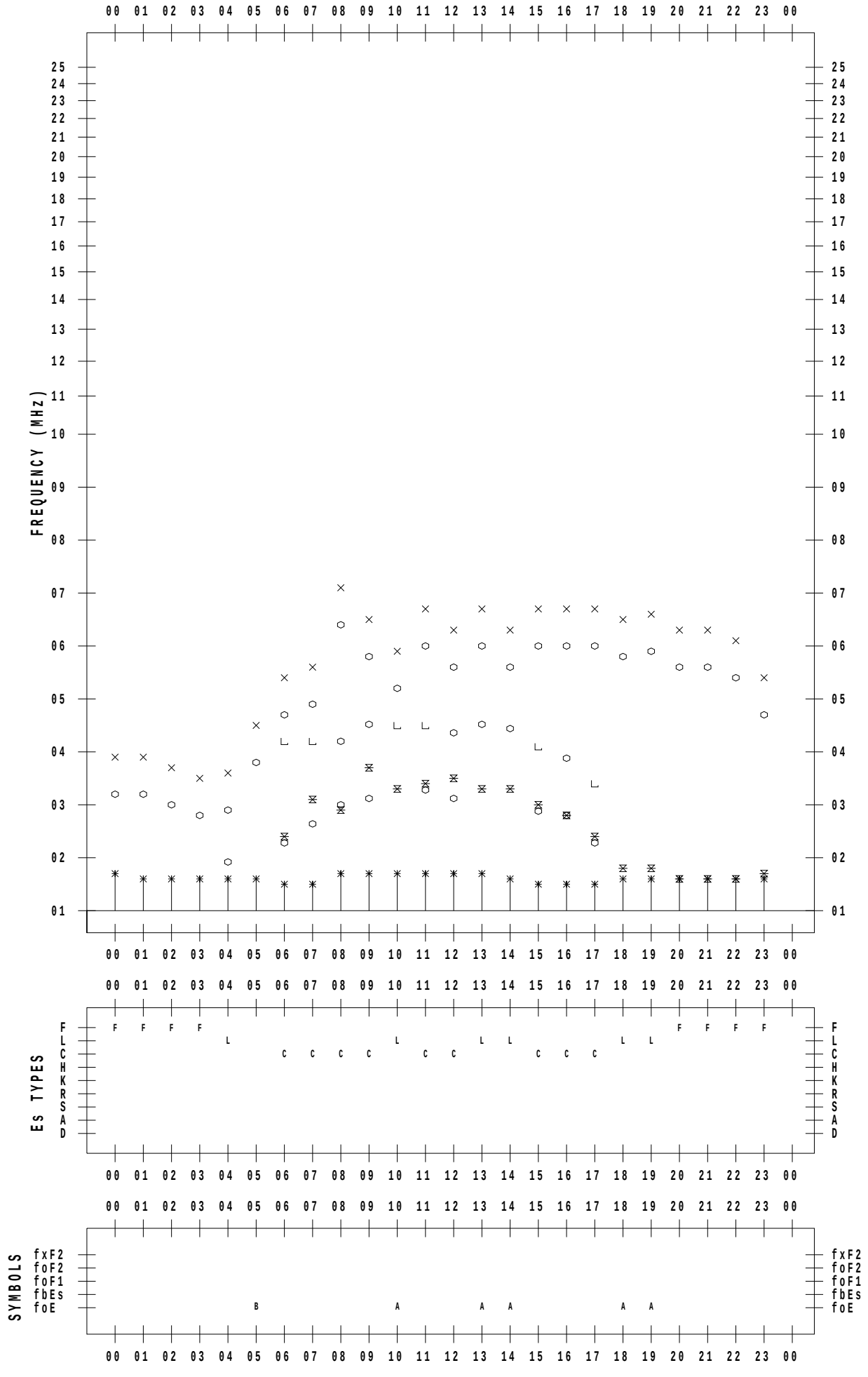
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/30

135 °E MEAN TIME



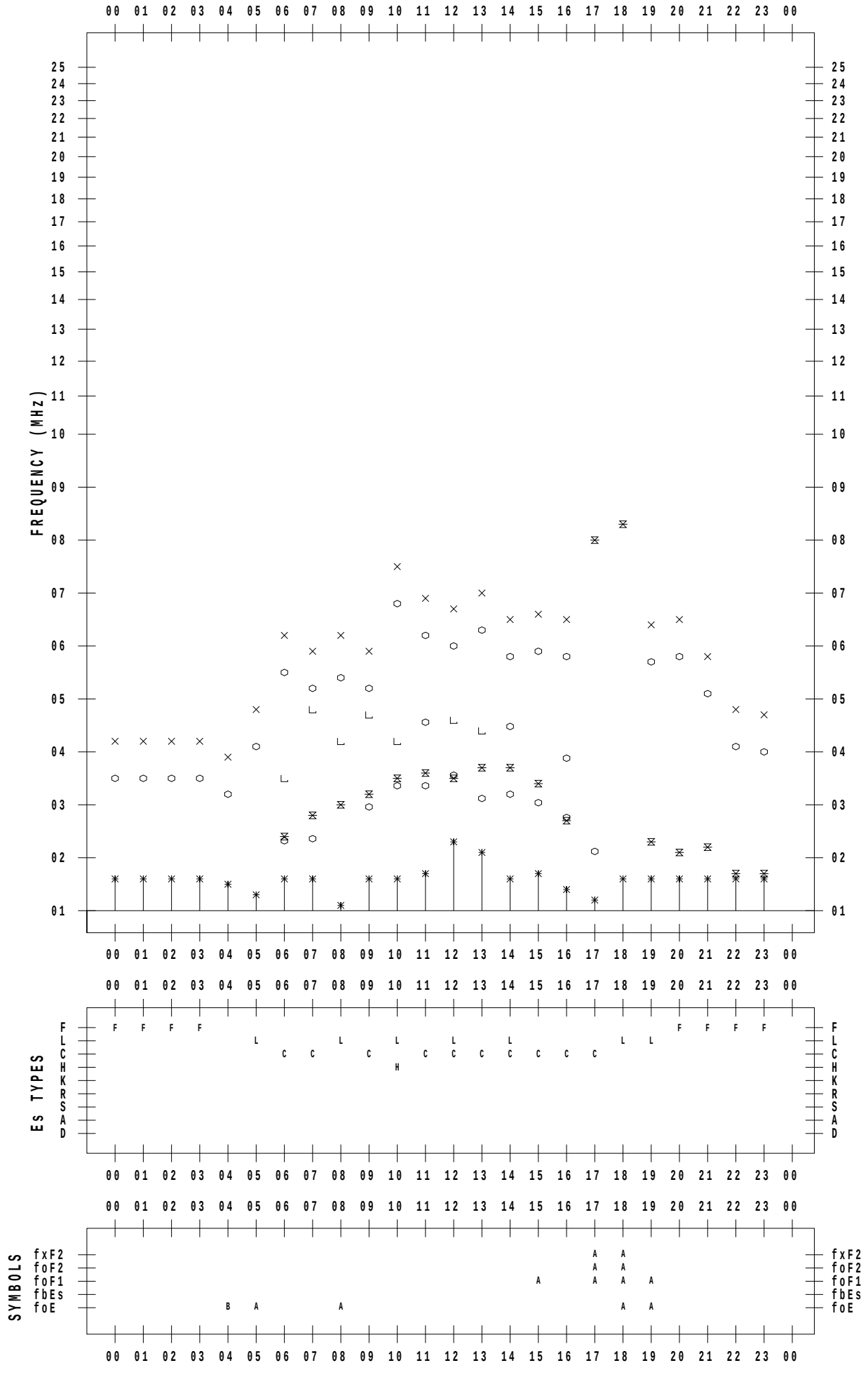
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 8/31

135 °E MEAN TIME



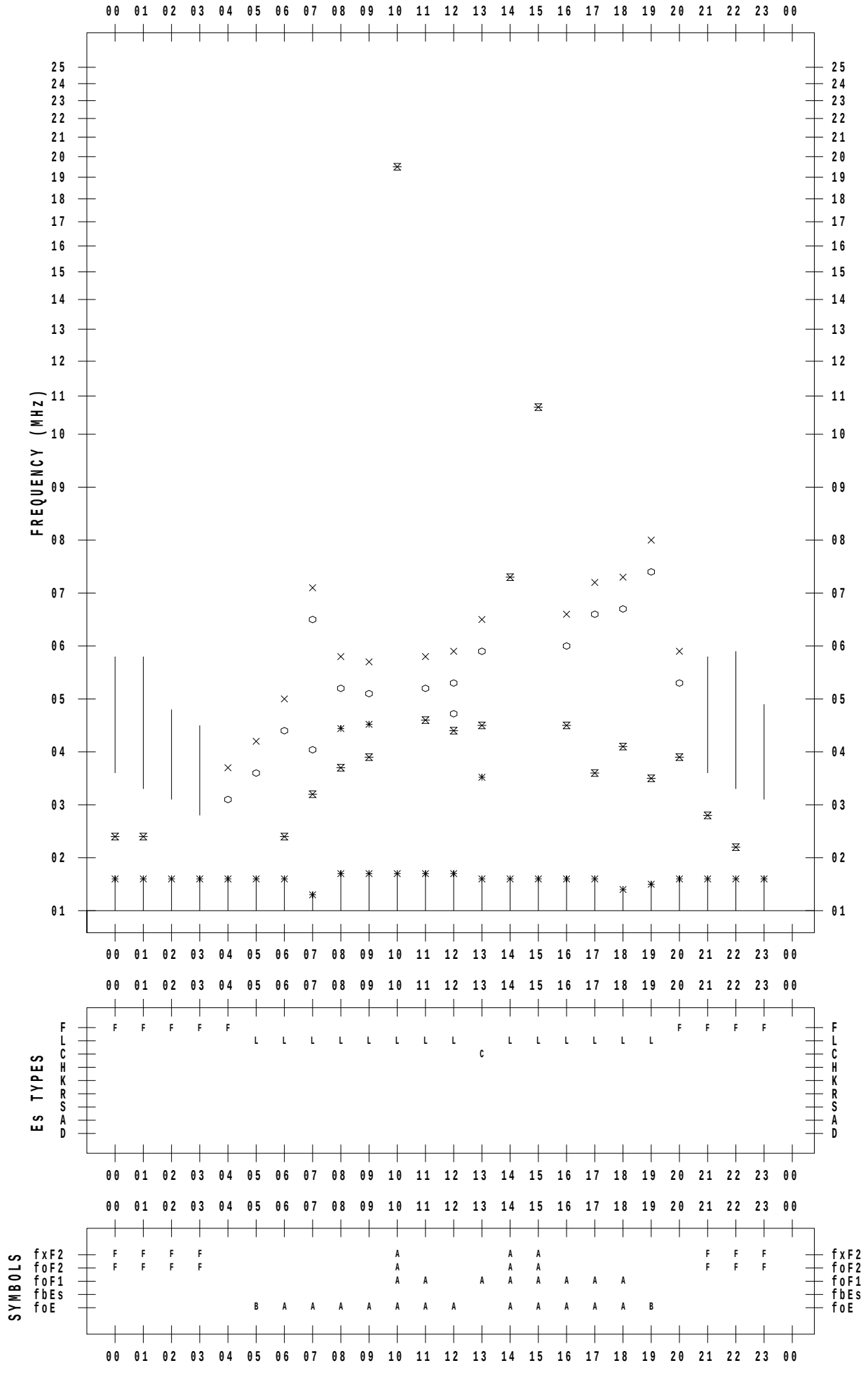
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 1

135 °E MEAN TIME



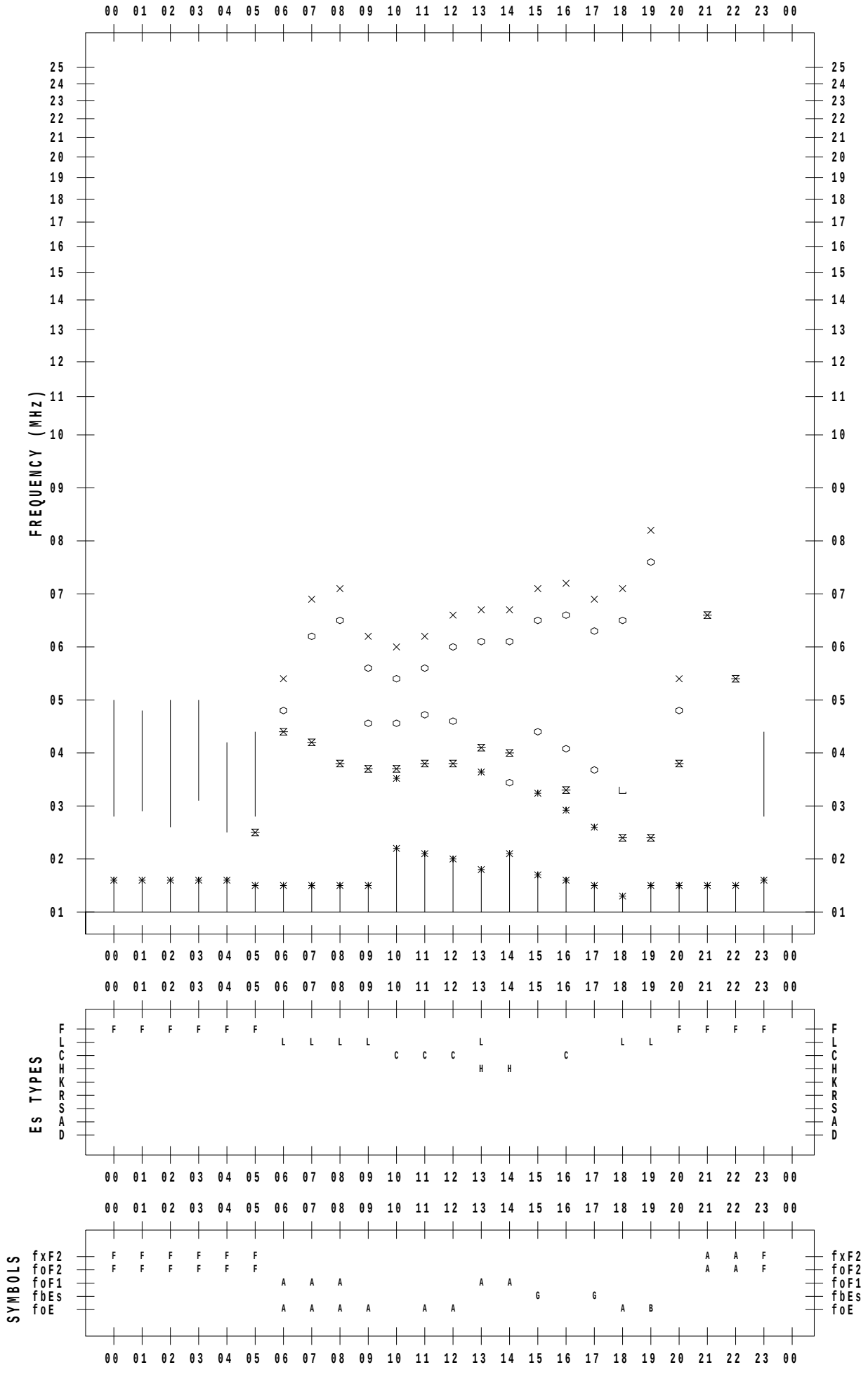
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 2

135 °E MEAN TIME



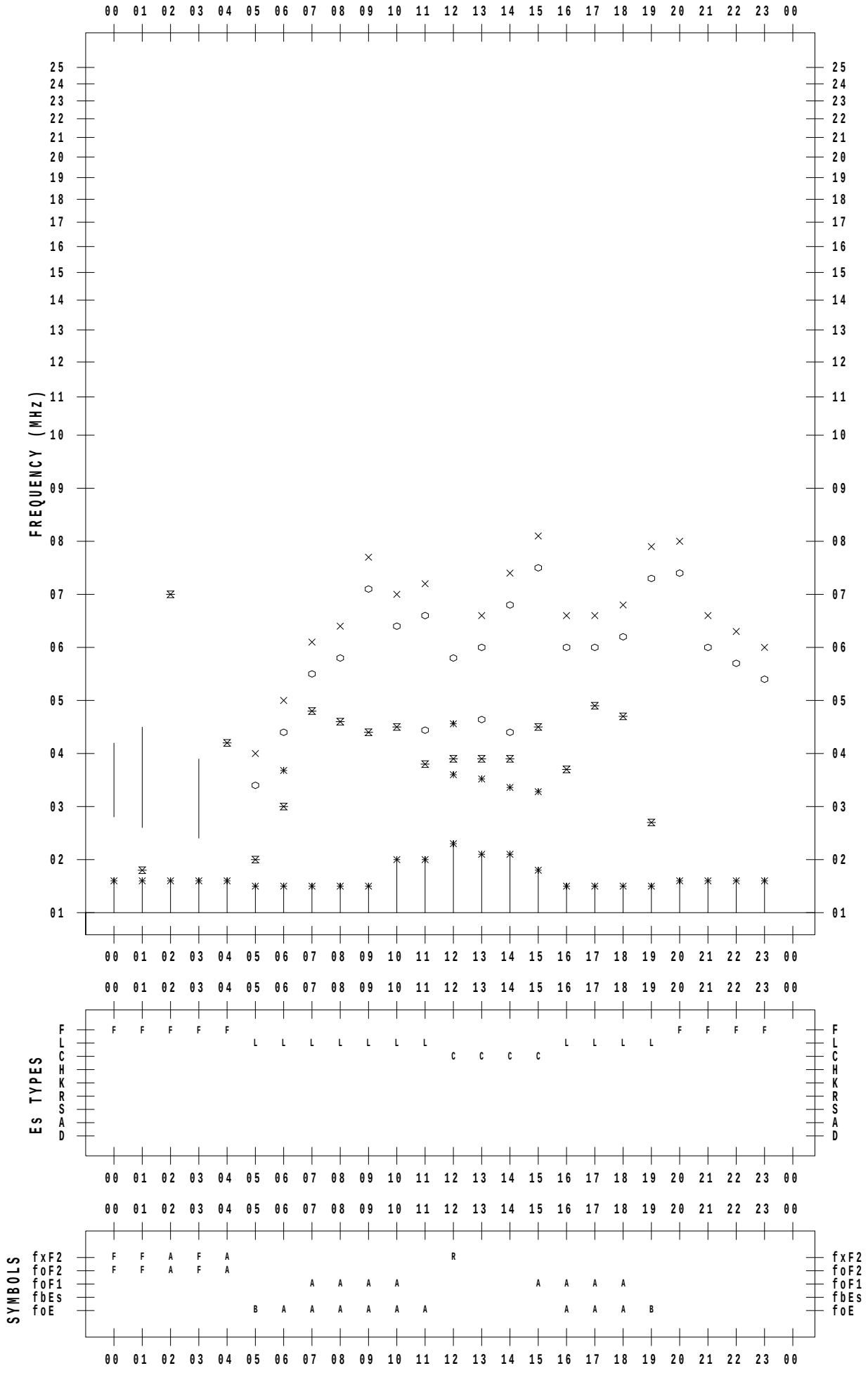
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 3

135 °E MEAN TIME



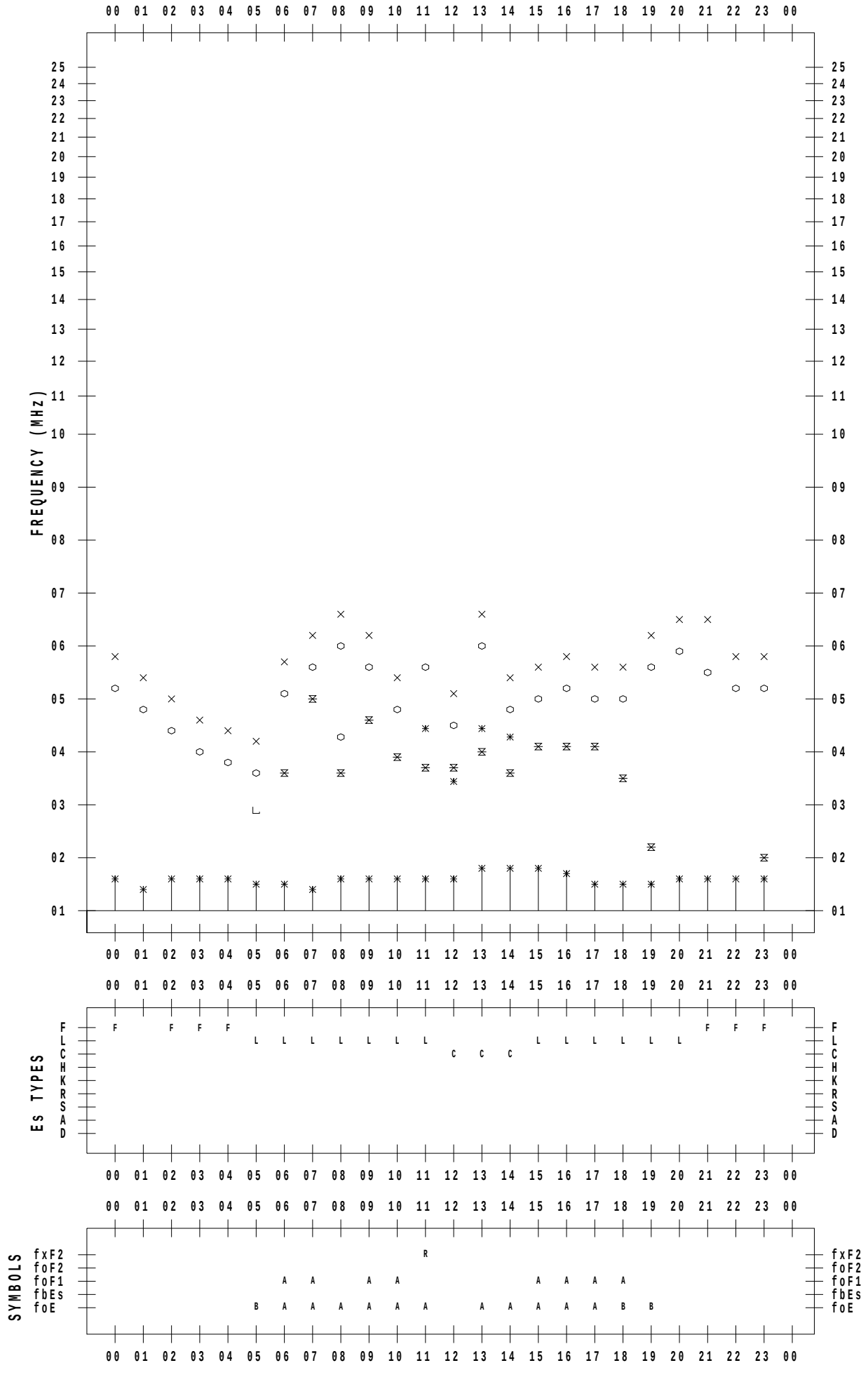
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 4

135 °E MEAN TIME



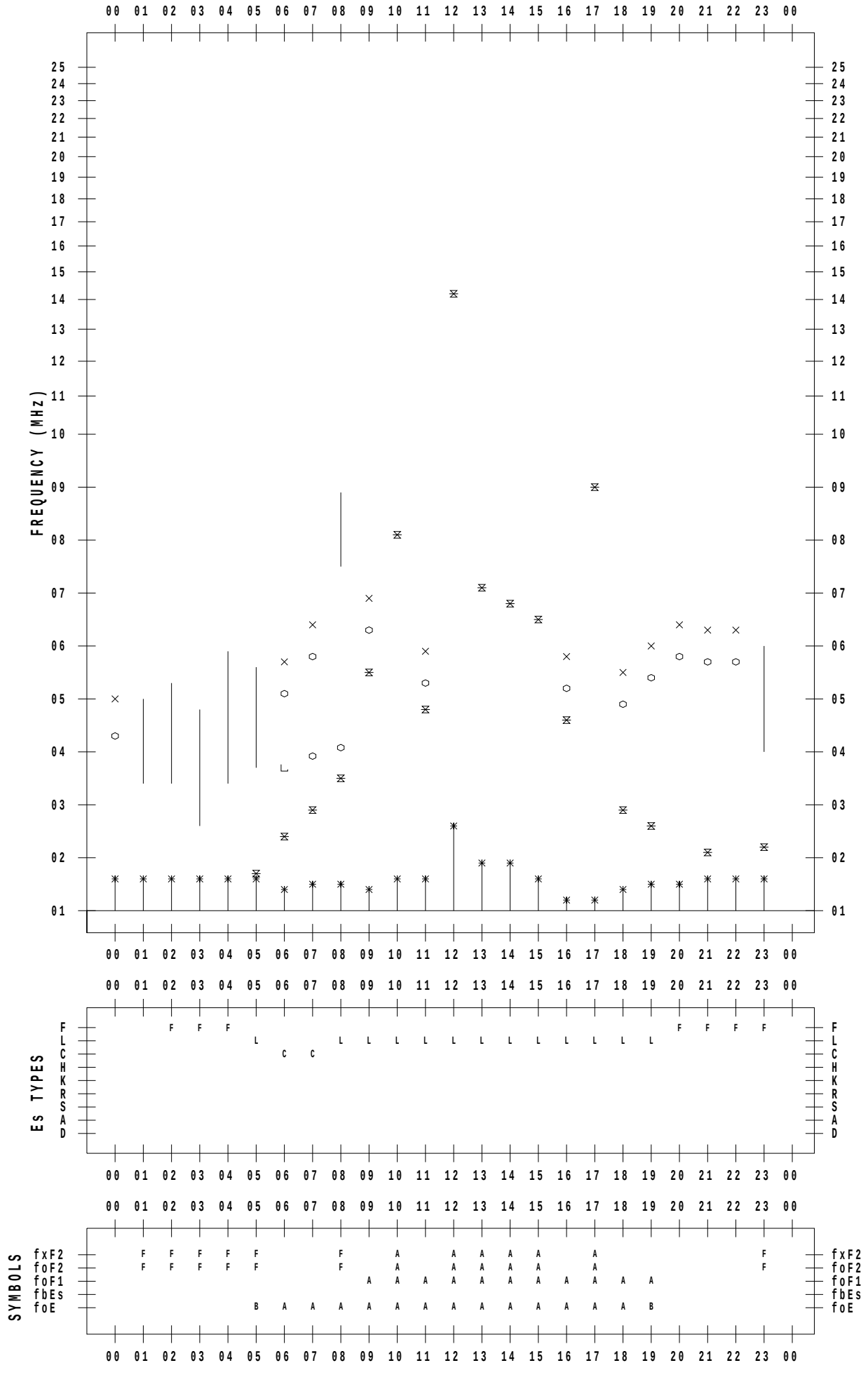
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 5

135 °E MEAN TIME



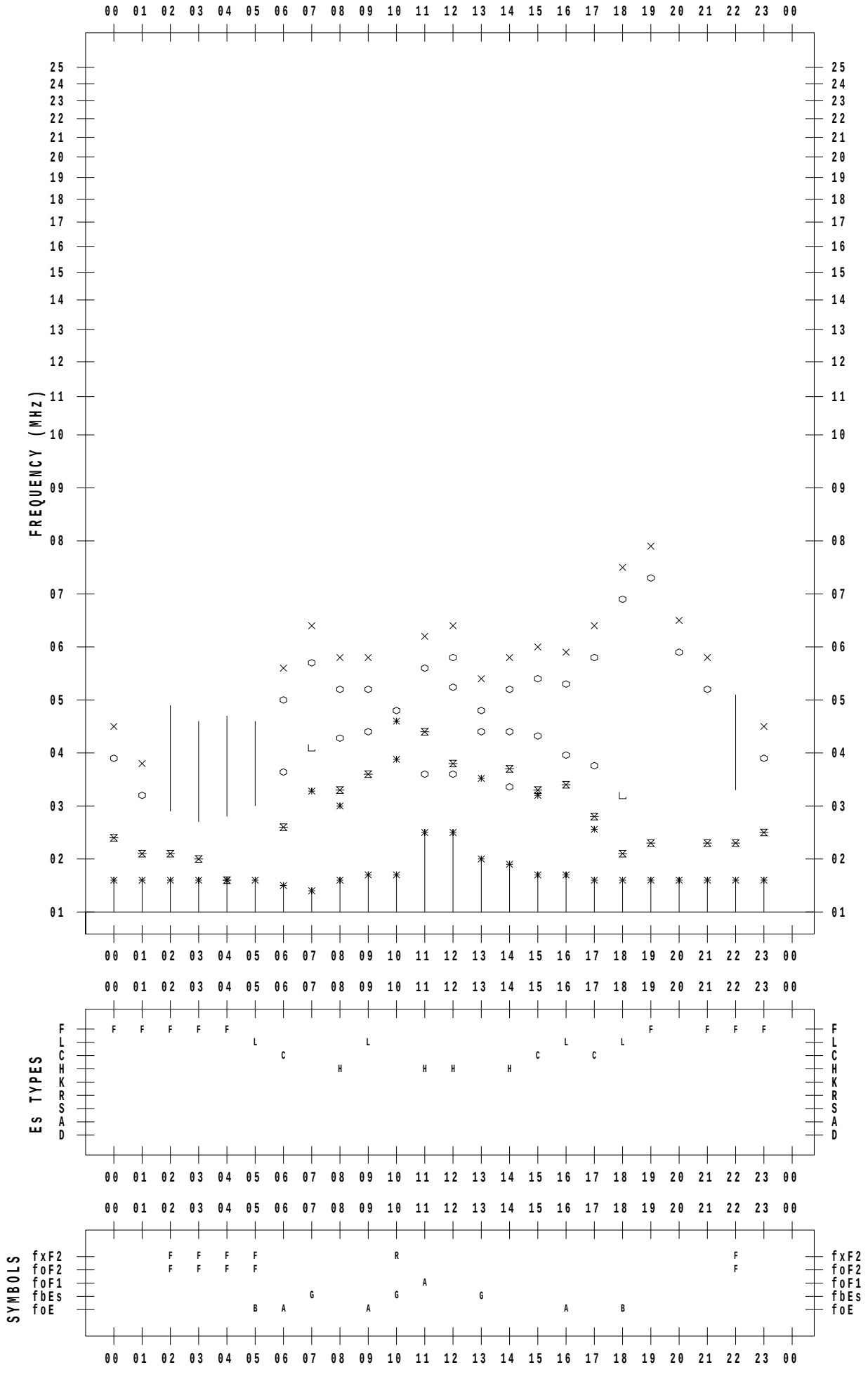
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 6

135 °E MEAN TIME



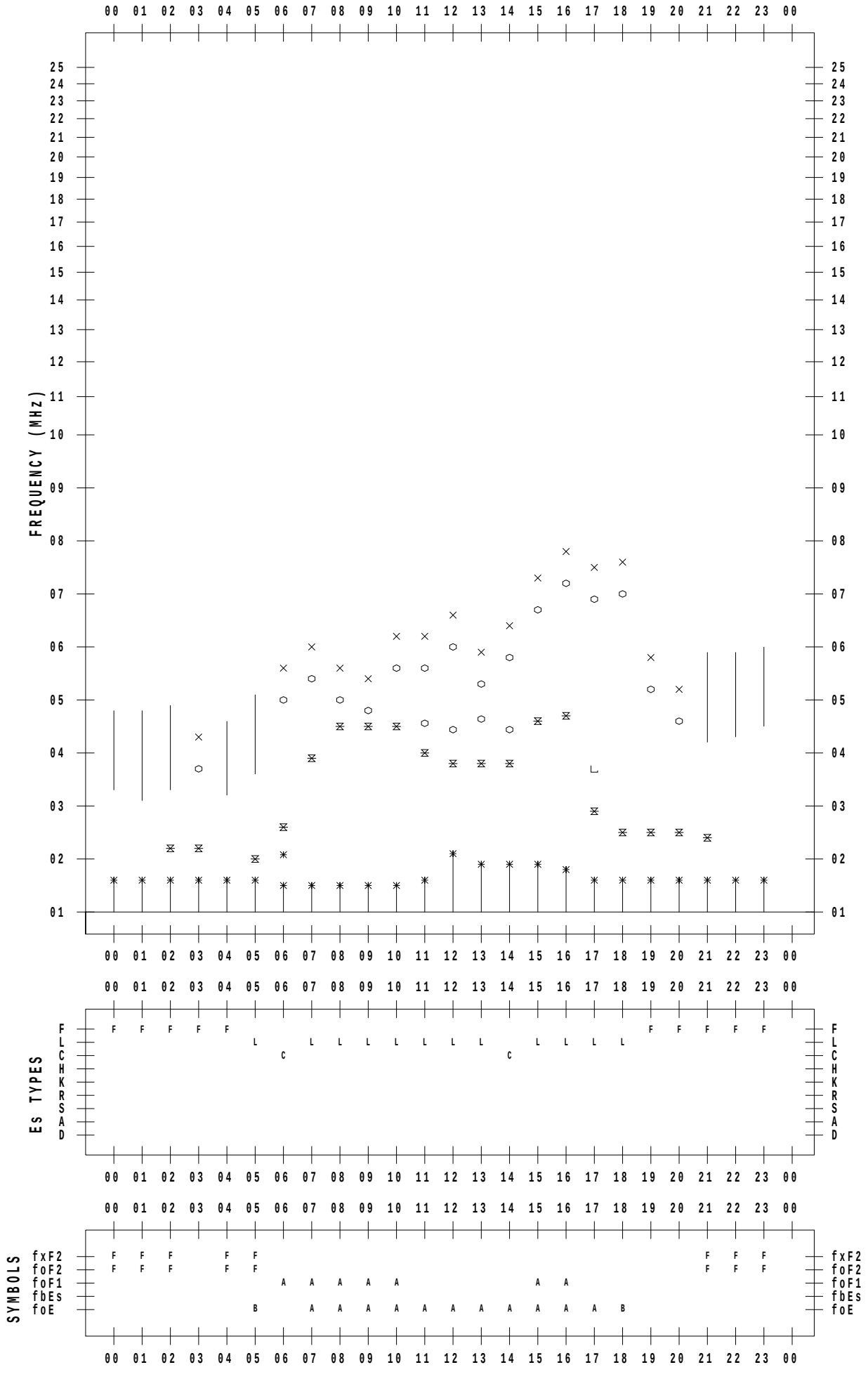
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 7

135 °E MEAN TIME



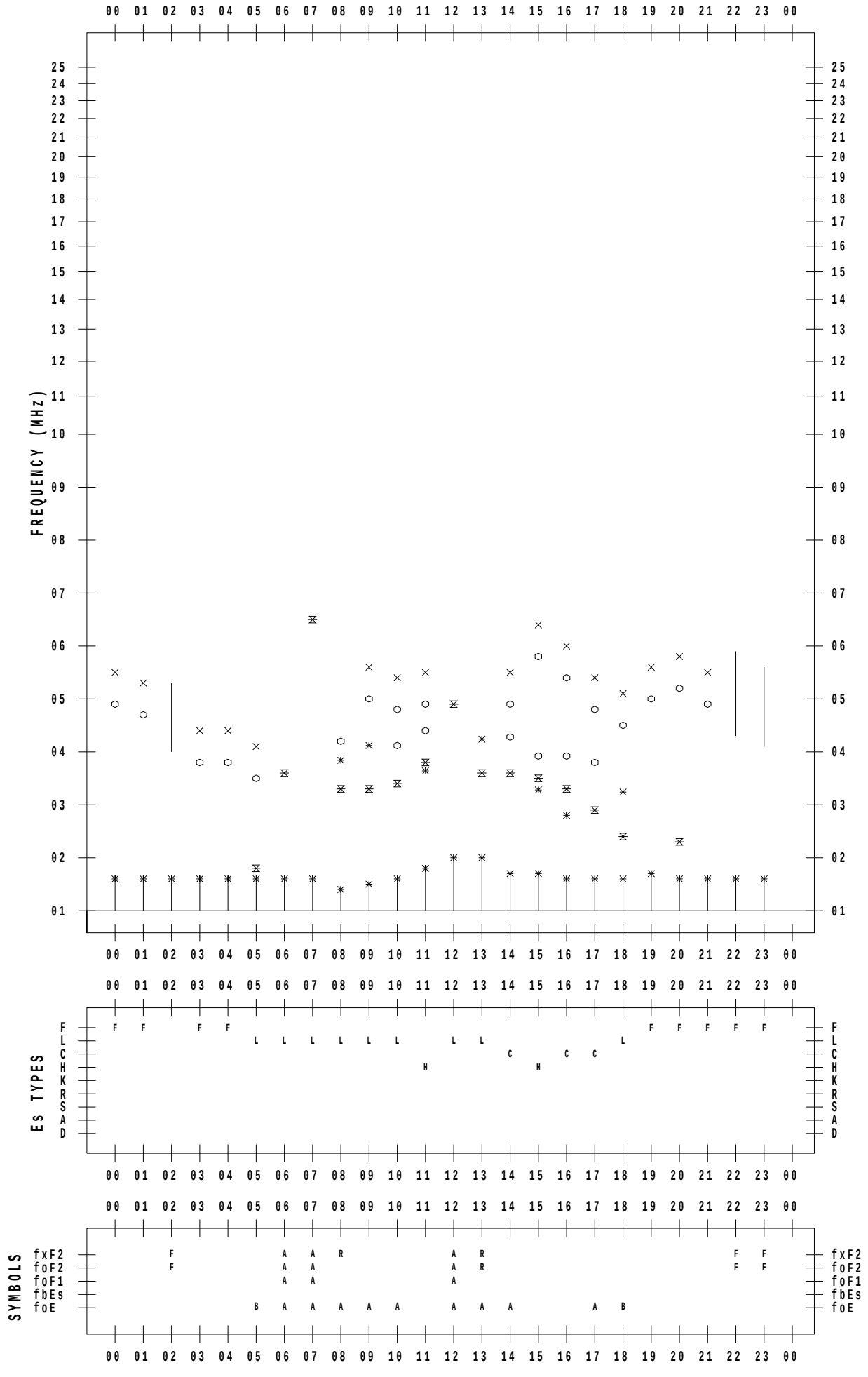
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 8

135 °E MEAN TIME



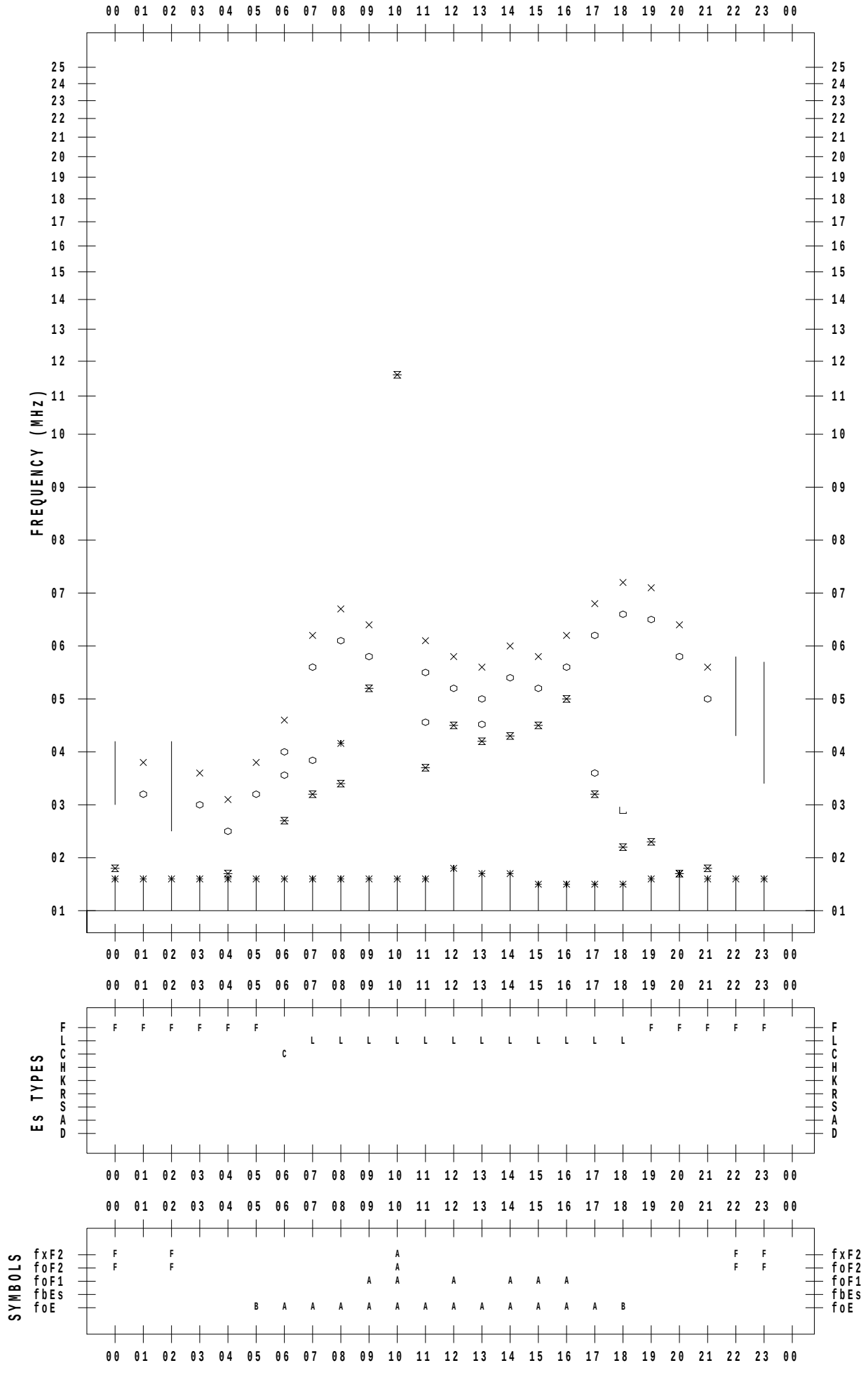
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/ 9

135 °E MEAN TIME



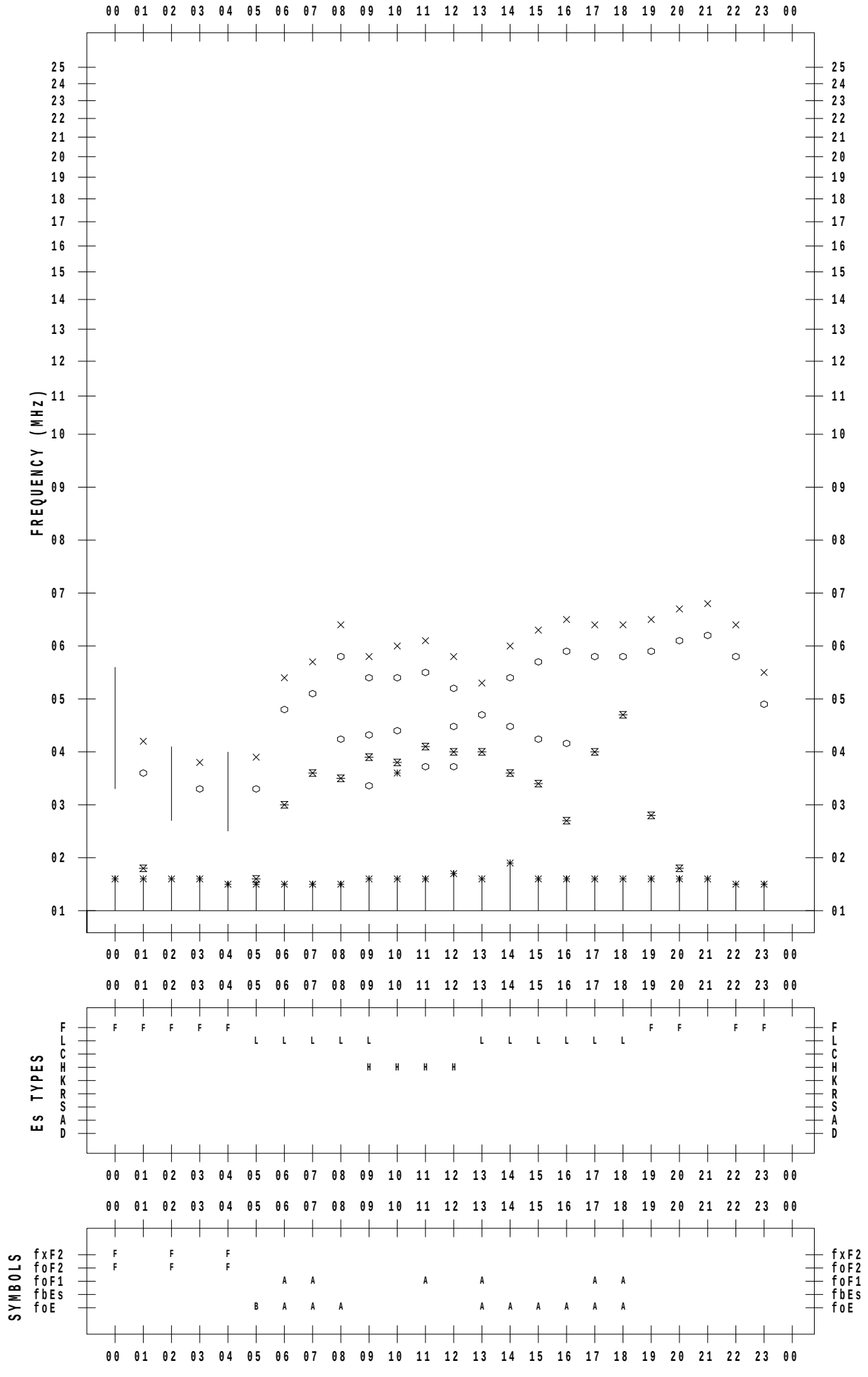
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/10

135 °E MEAN TIME



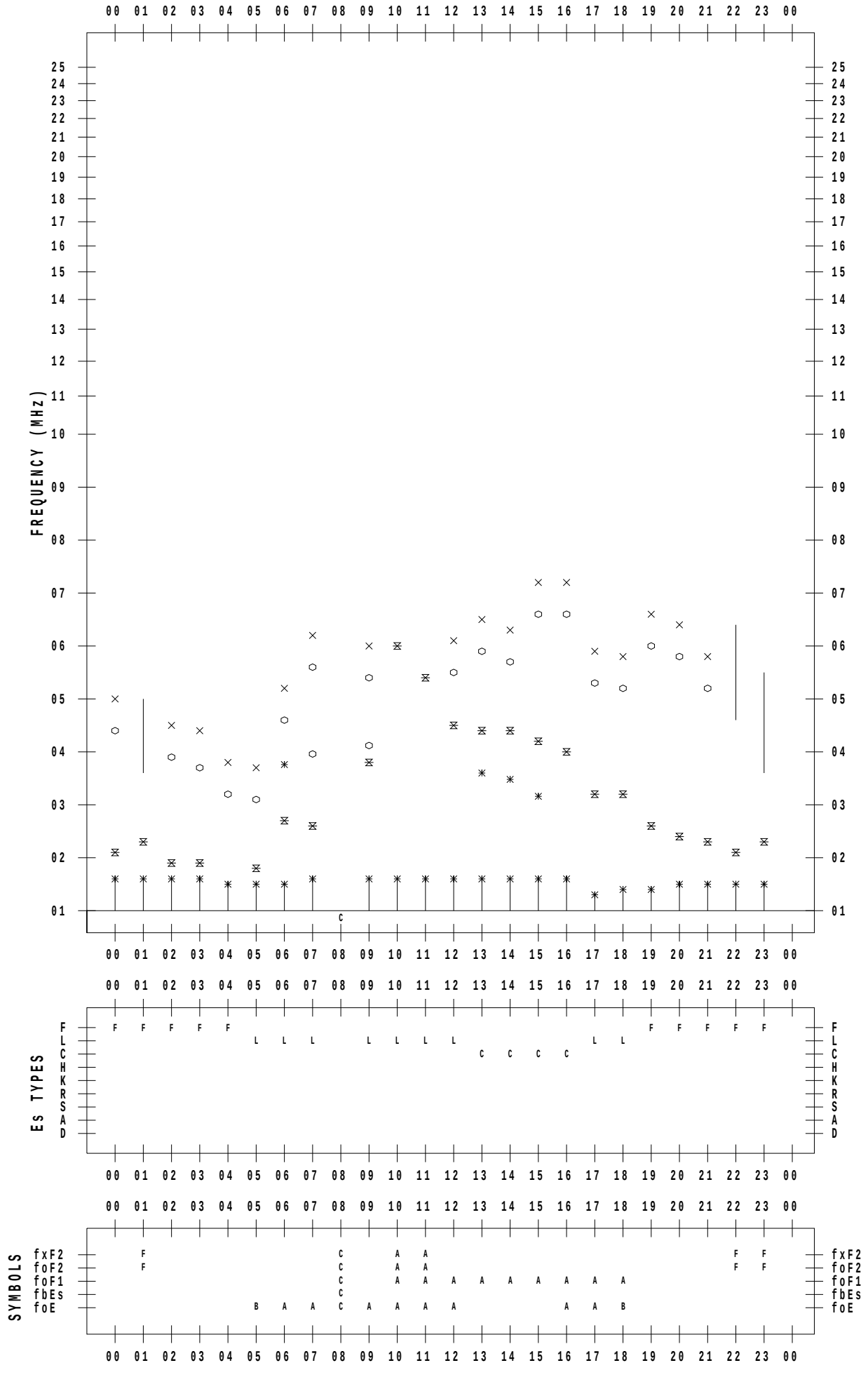
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/11

135 °E MEAN TIME



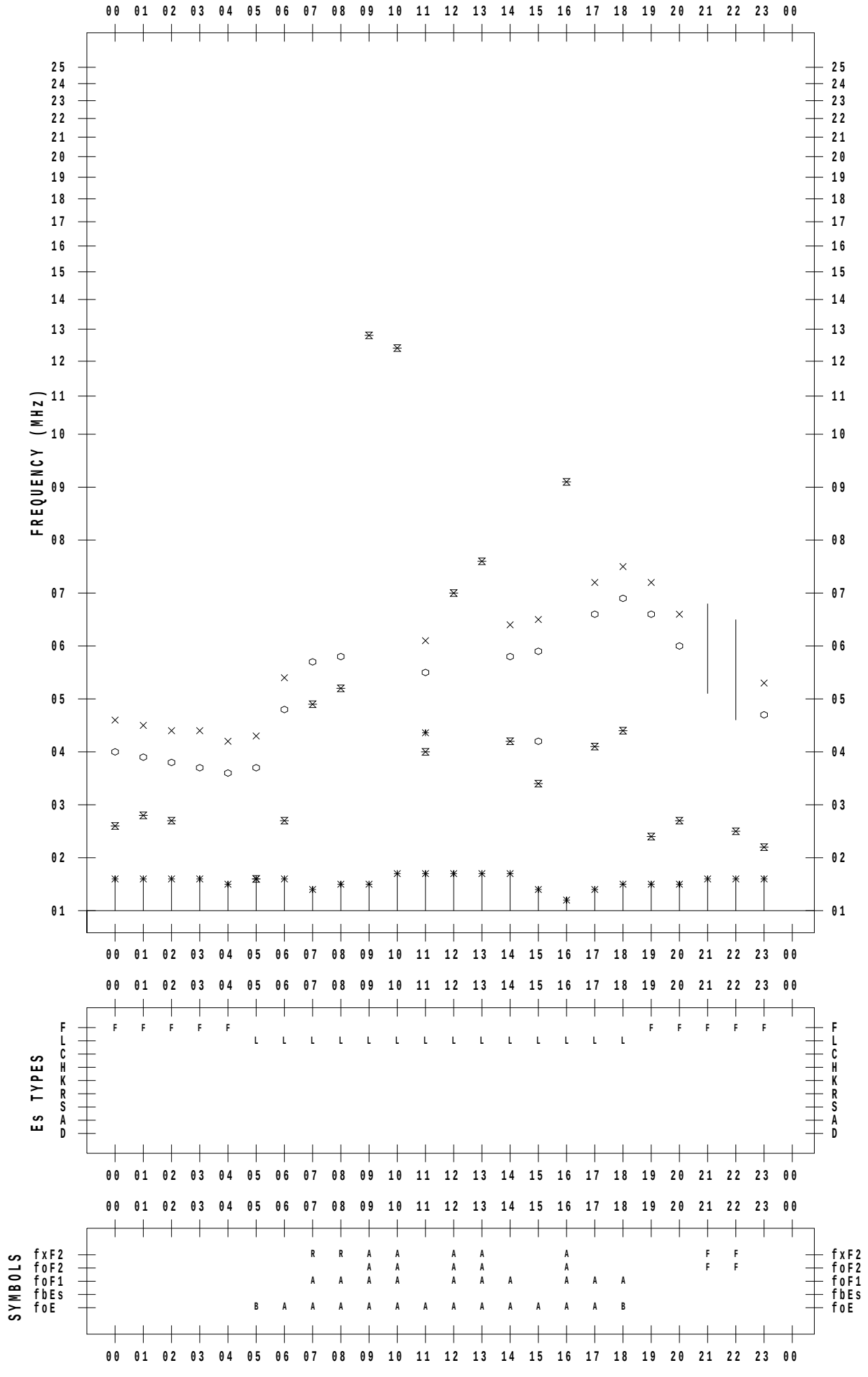
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/12

135 °E MEAN TIME



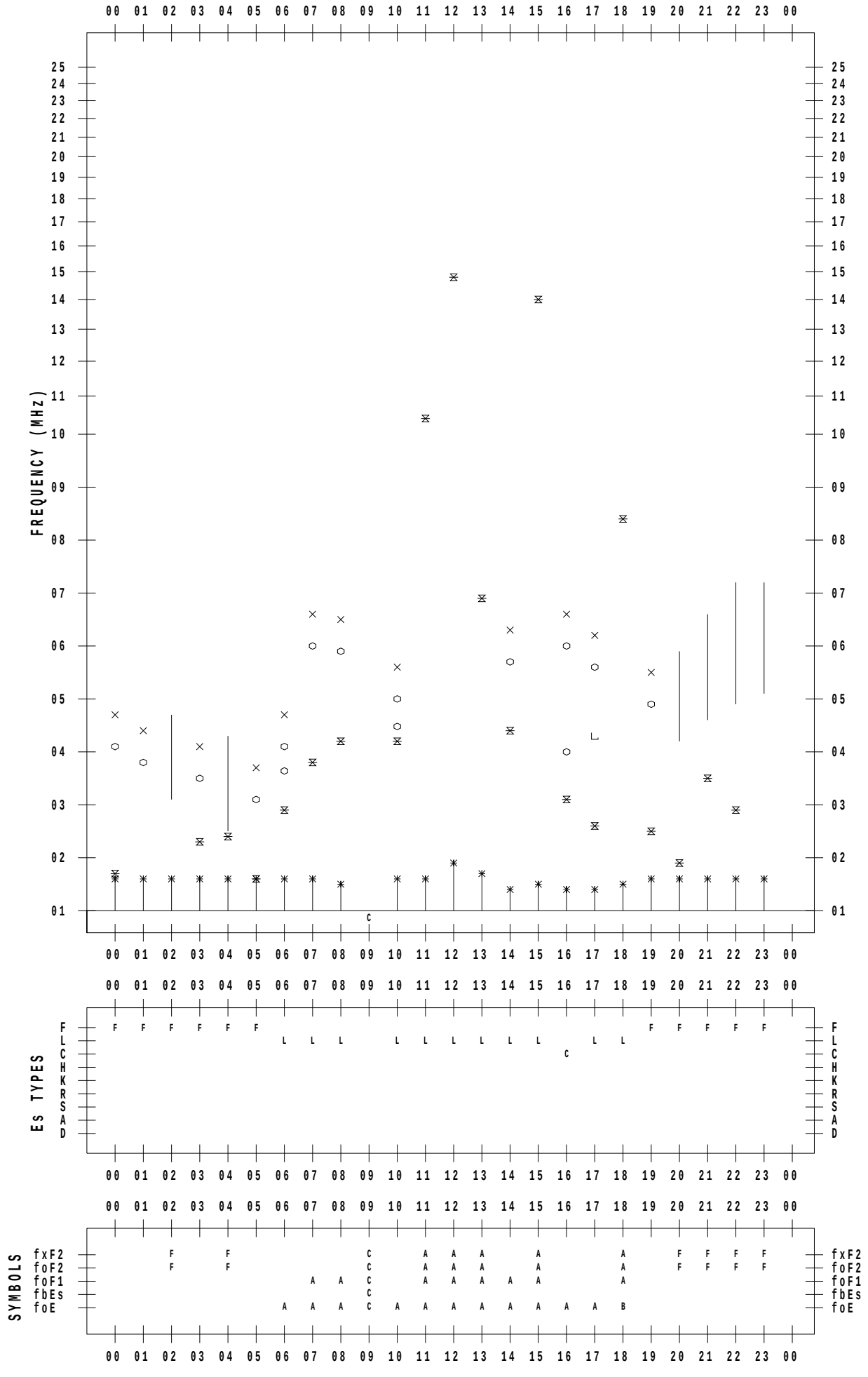
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/13

135 °E MEAN TIME



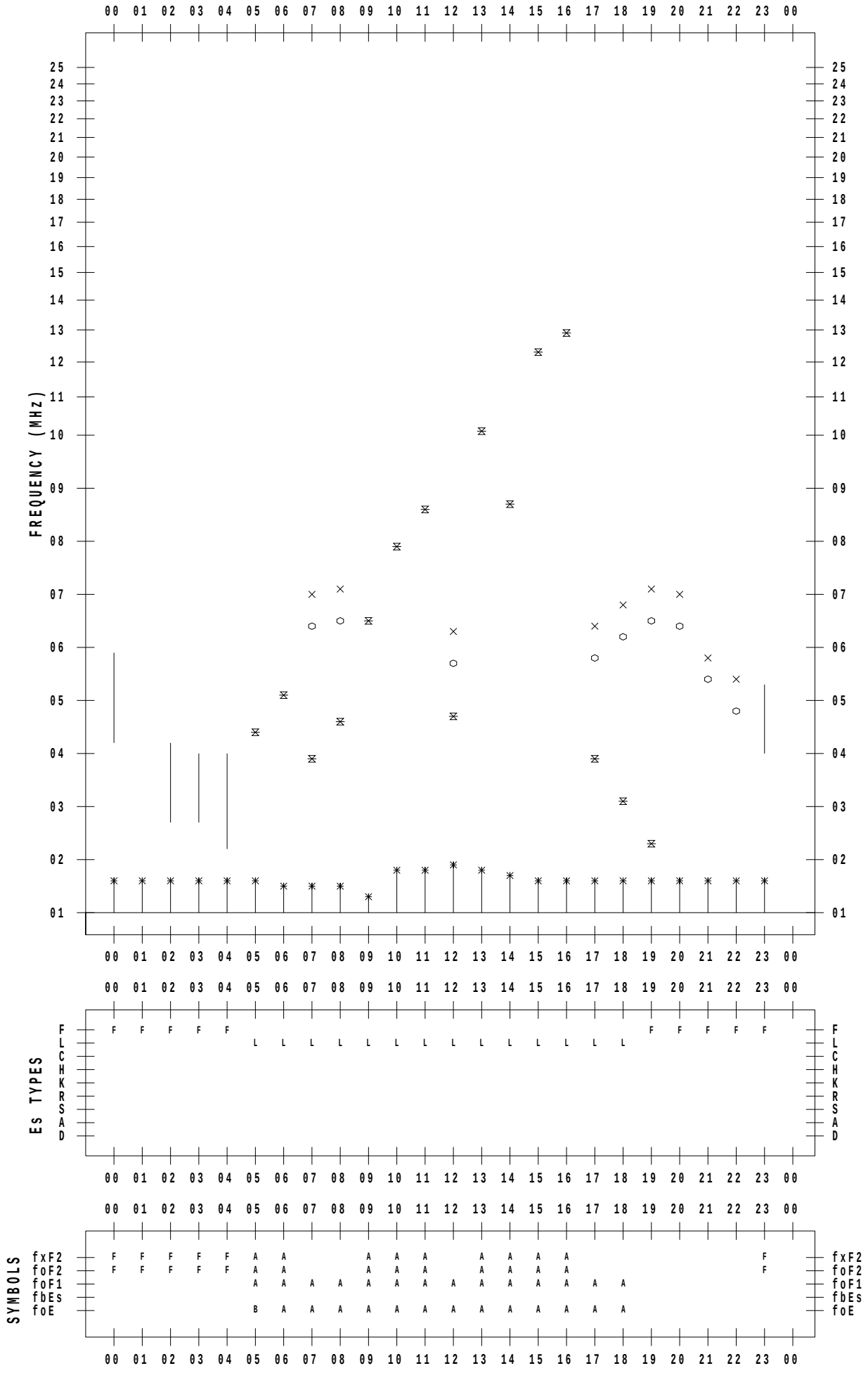
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/14

135 °E MEAN TIME



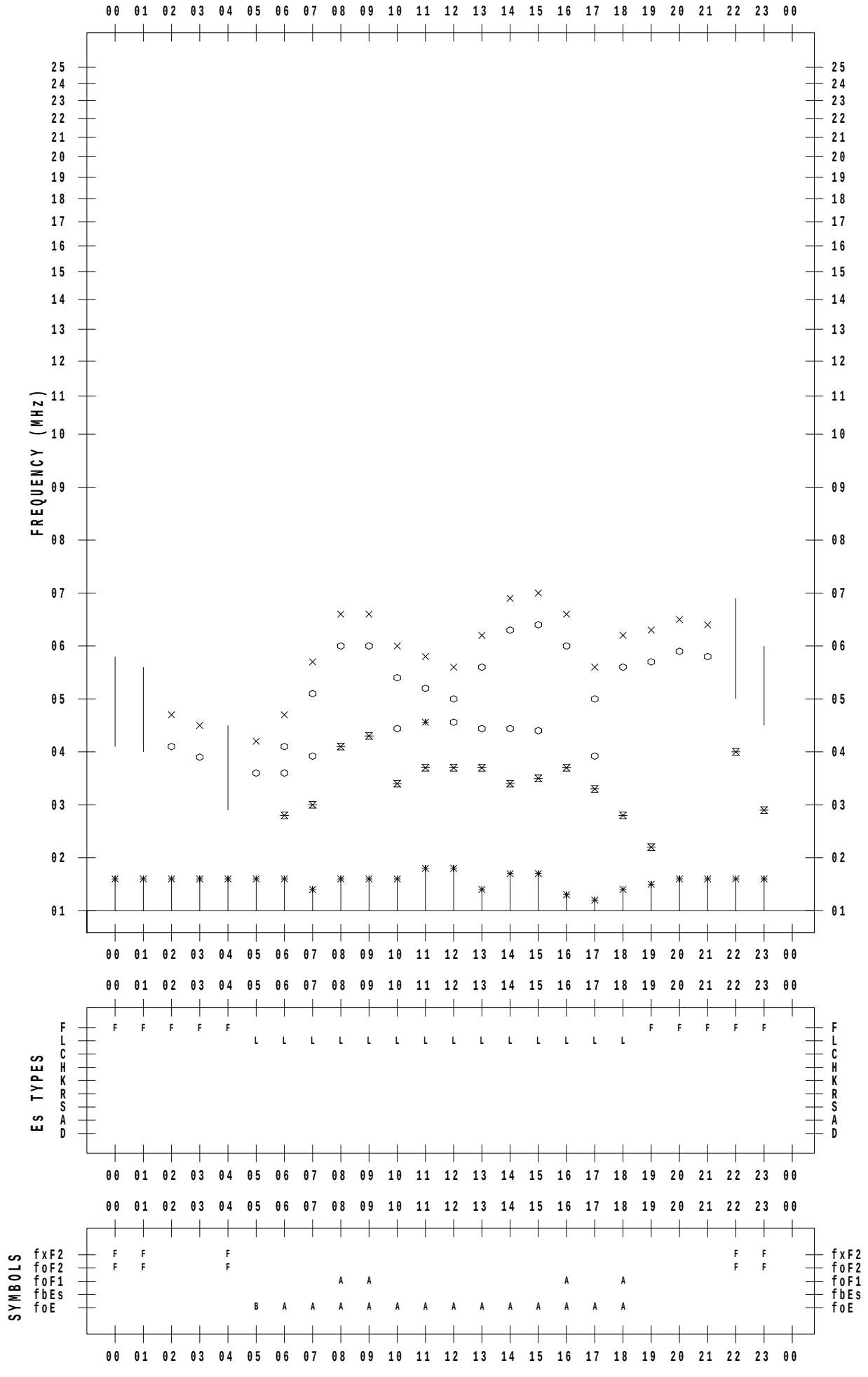
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/15

135 °E MEAN TIME



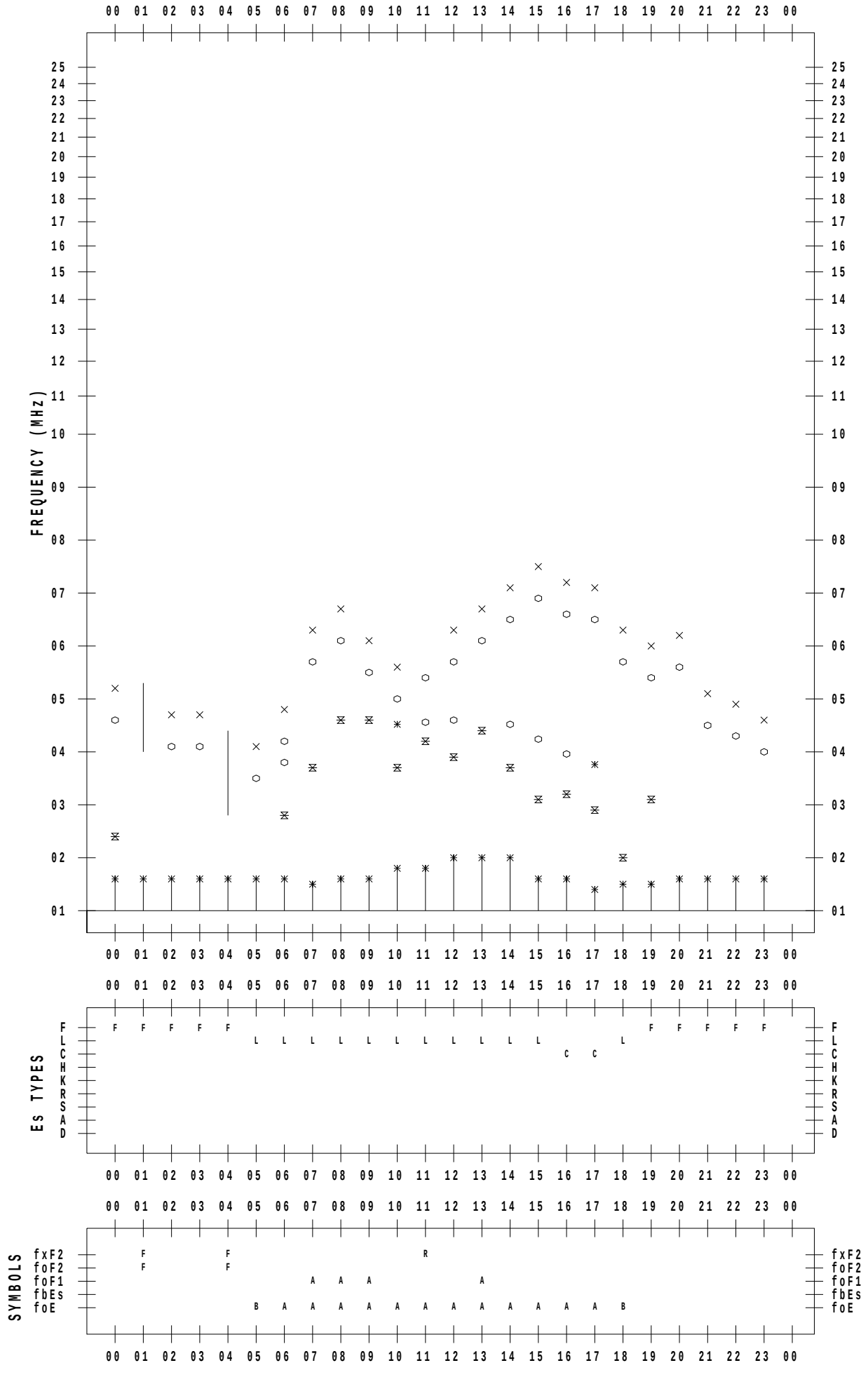
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/16

135 °E MEAN TIME



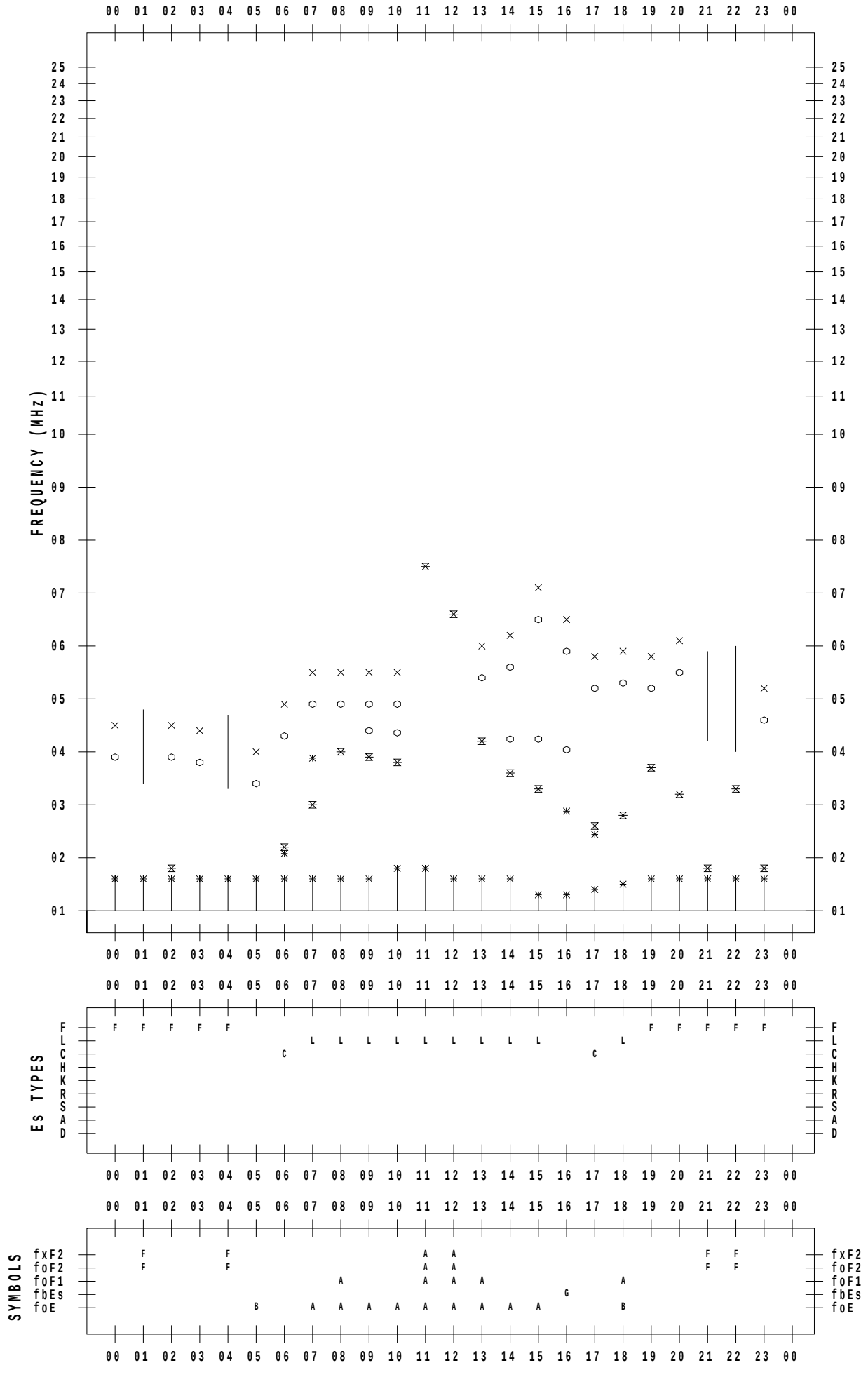
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/17

135 °E MEAN TIME



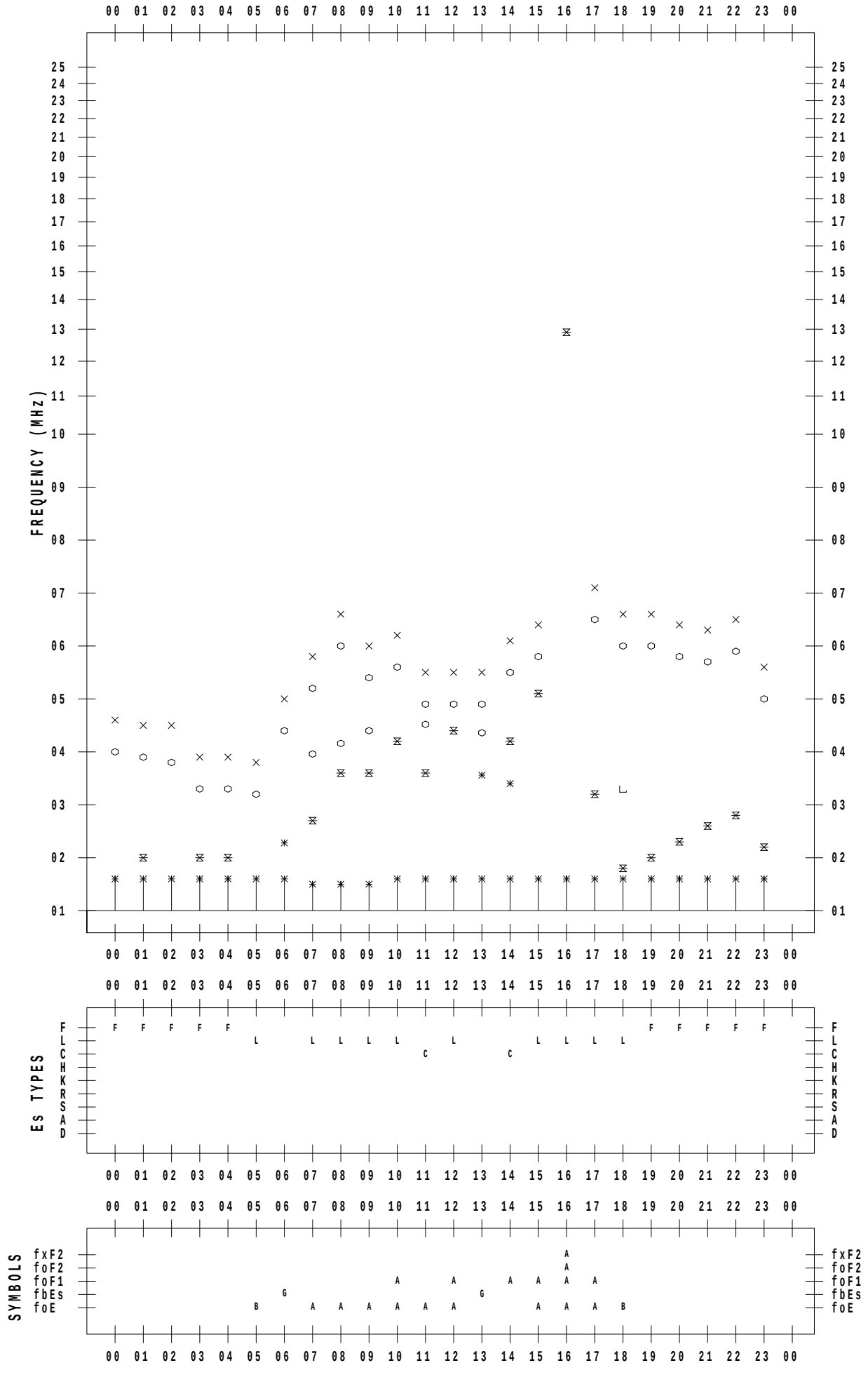
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/18

135 °E MEAN TIME



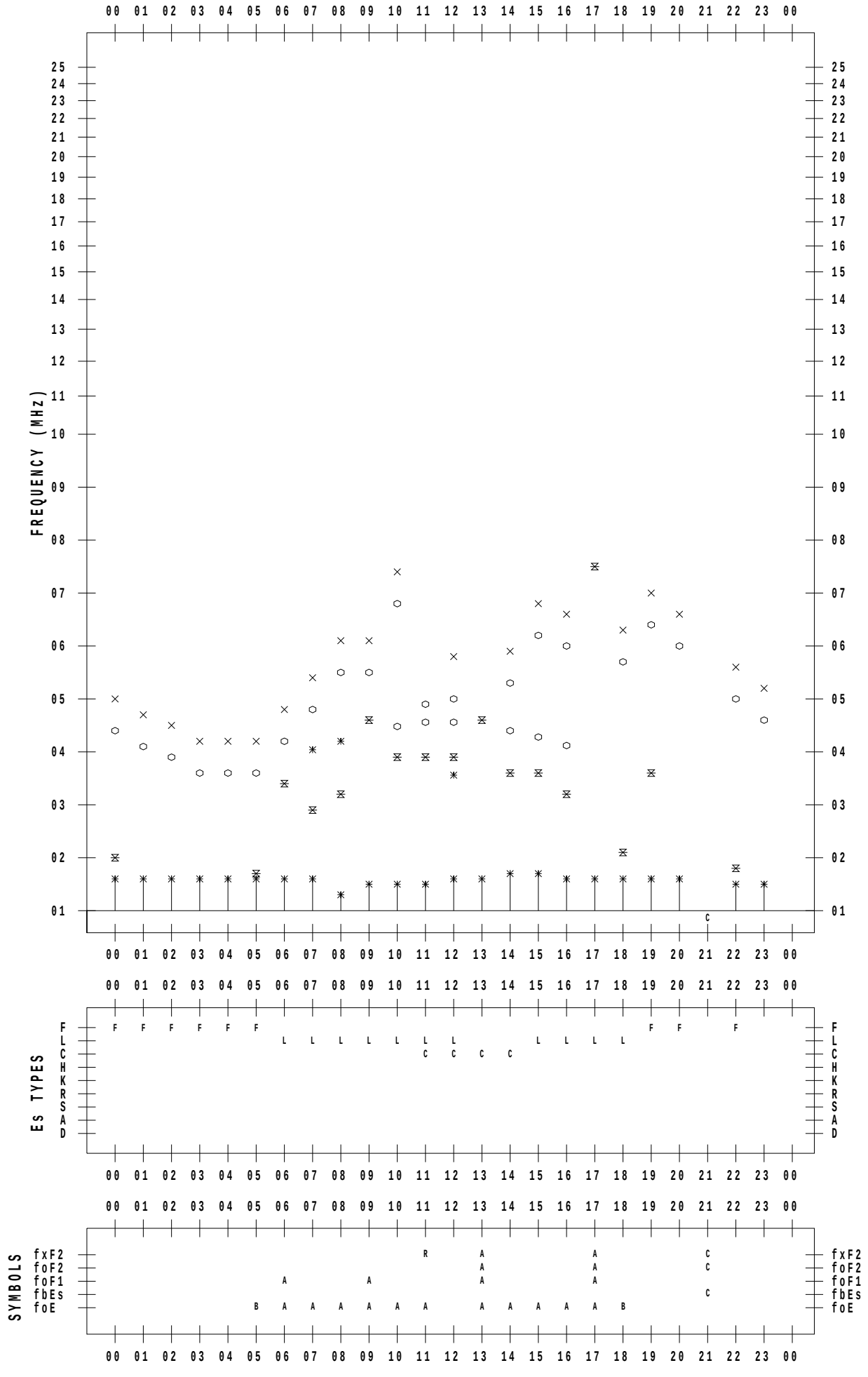
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/19

135 °E MEAN TIME



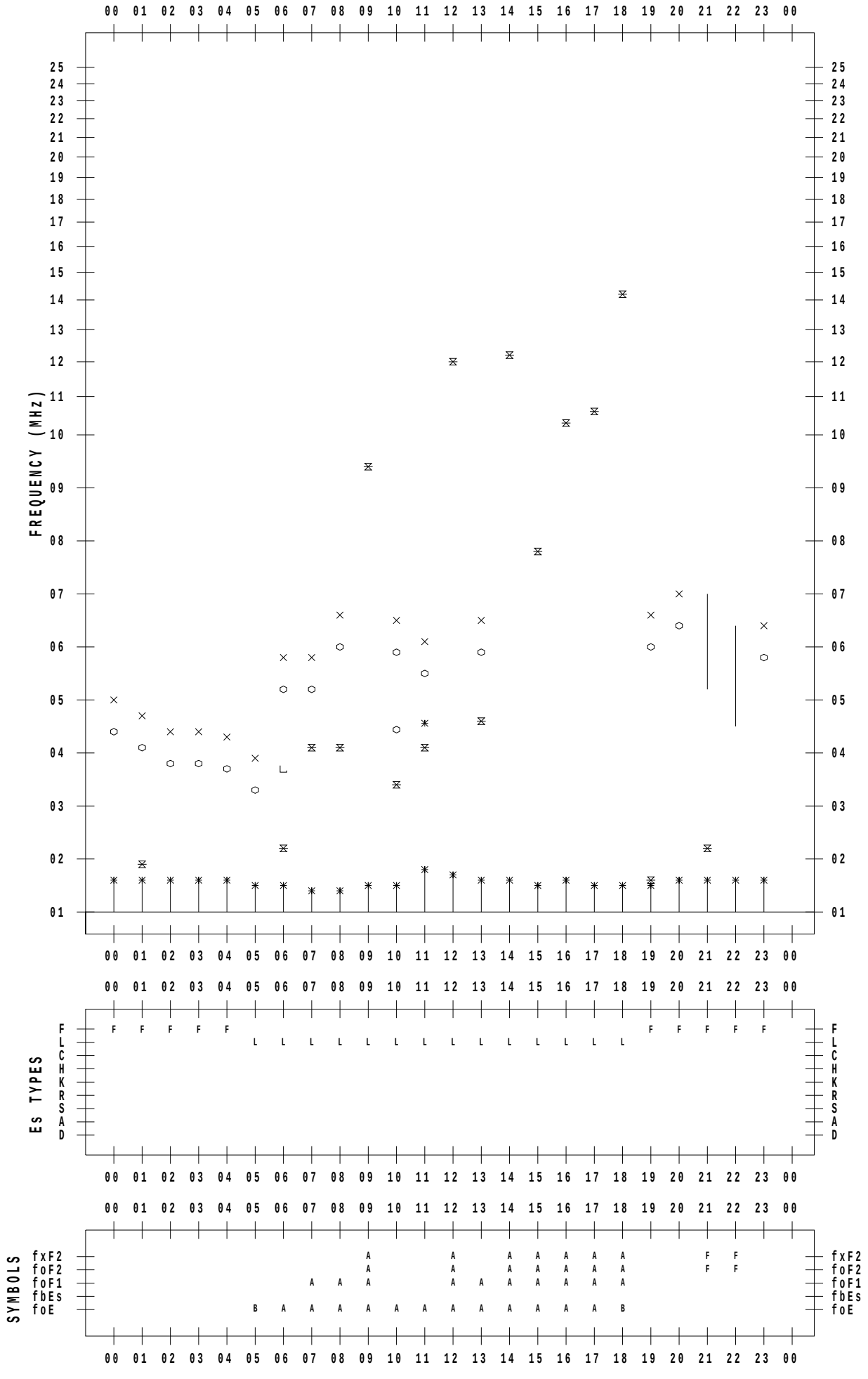
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/20

135 °E MEAN TIME



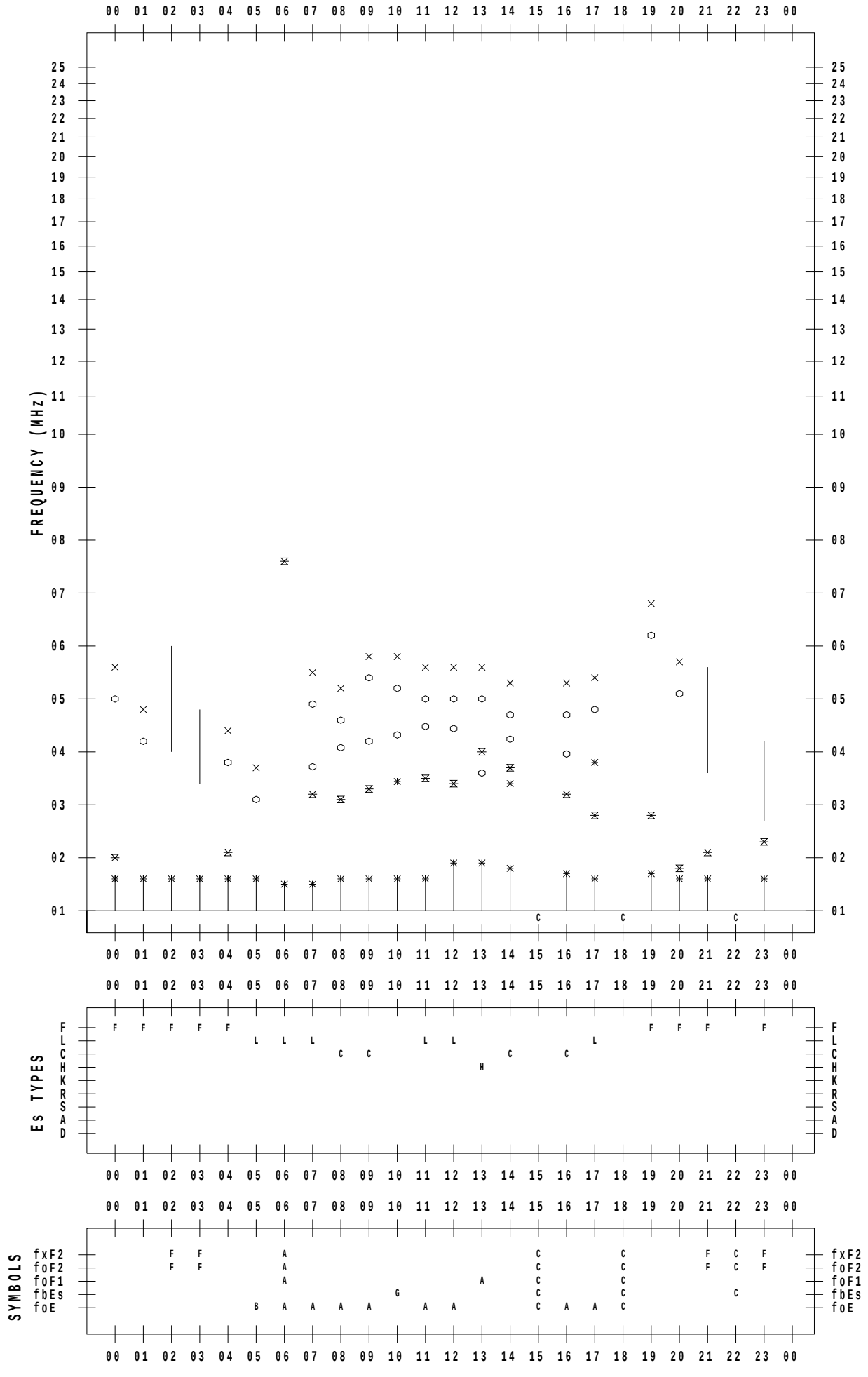
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/21

135 °E MEAN TIME



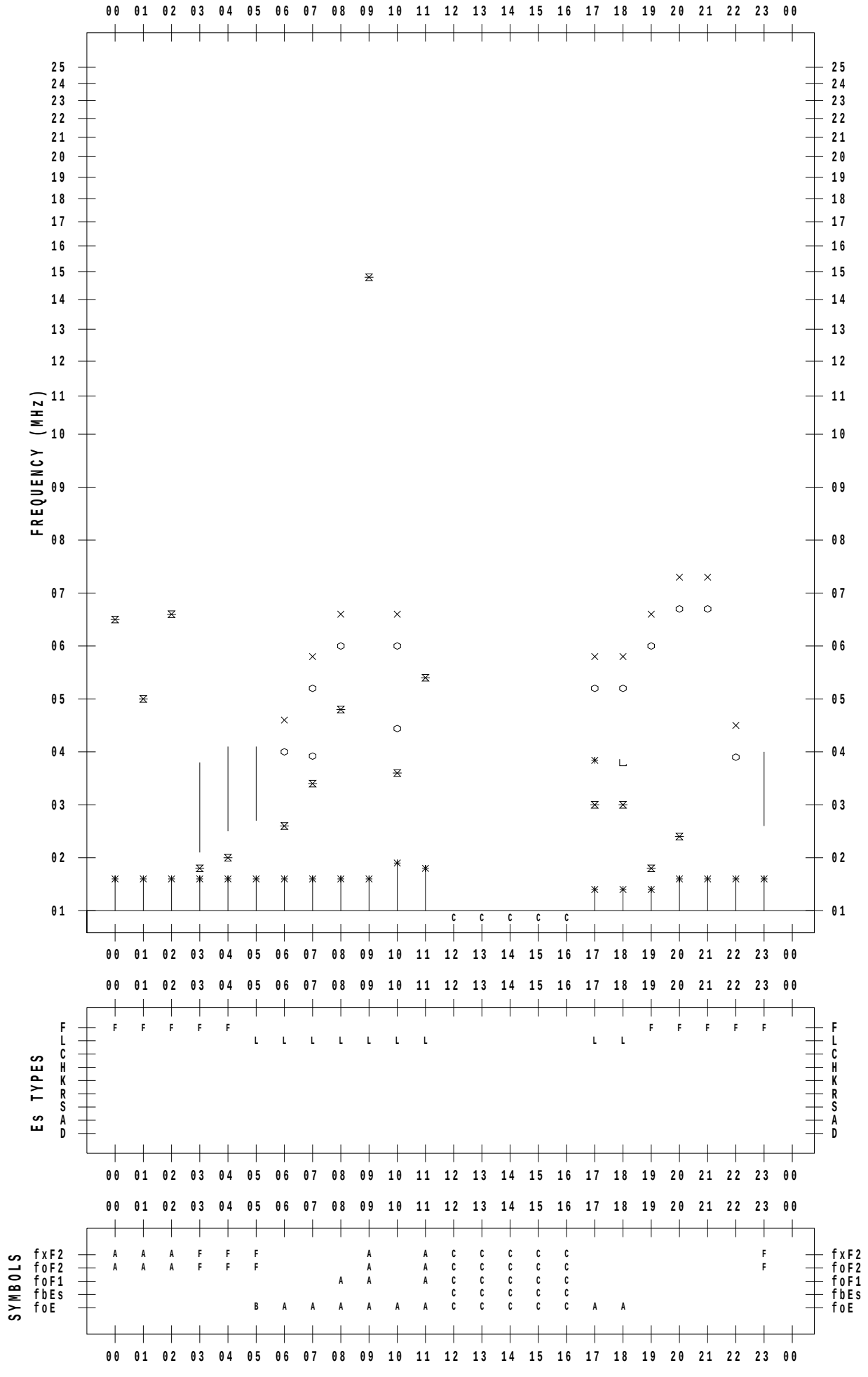
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/22

135 °E MEAN TIME



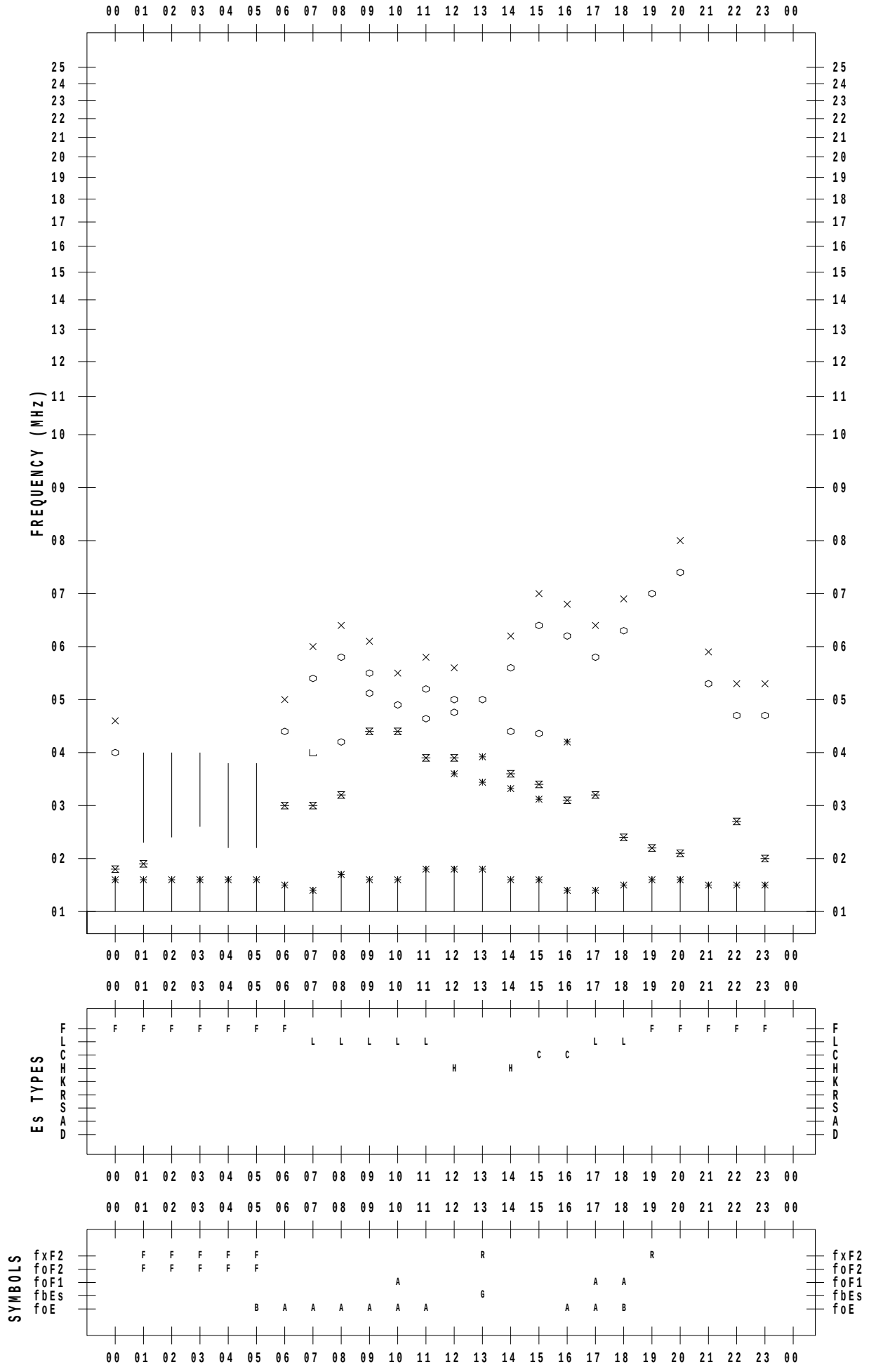
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/23

135 °E MEAN TIME



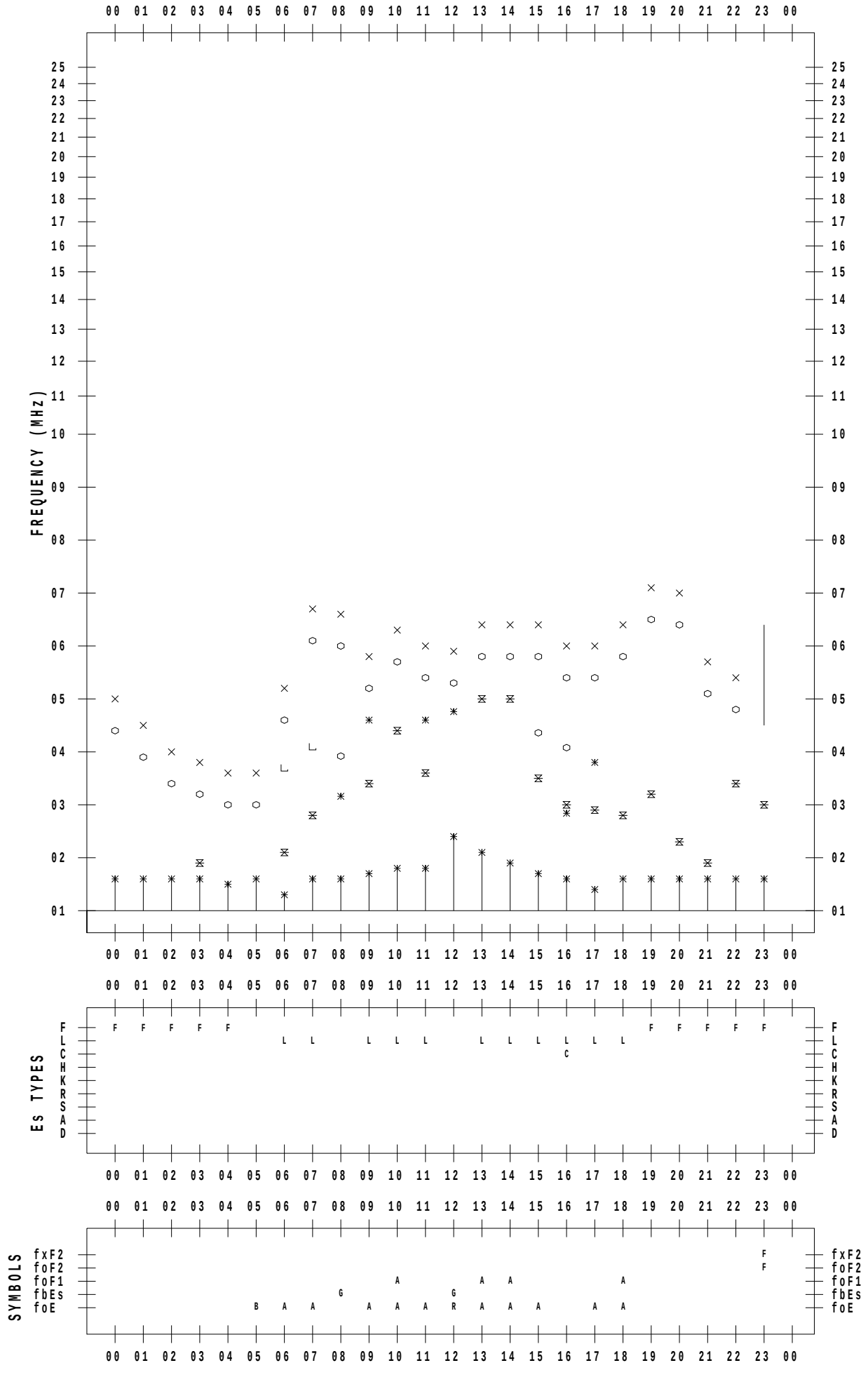
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/24

135 °E MEAN TIME



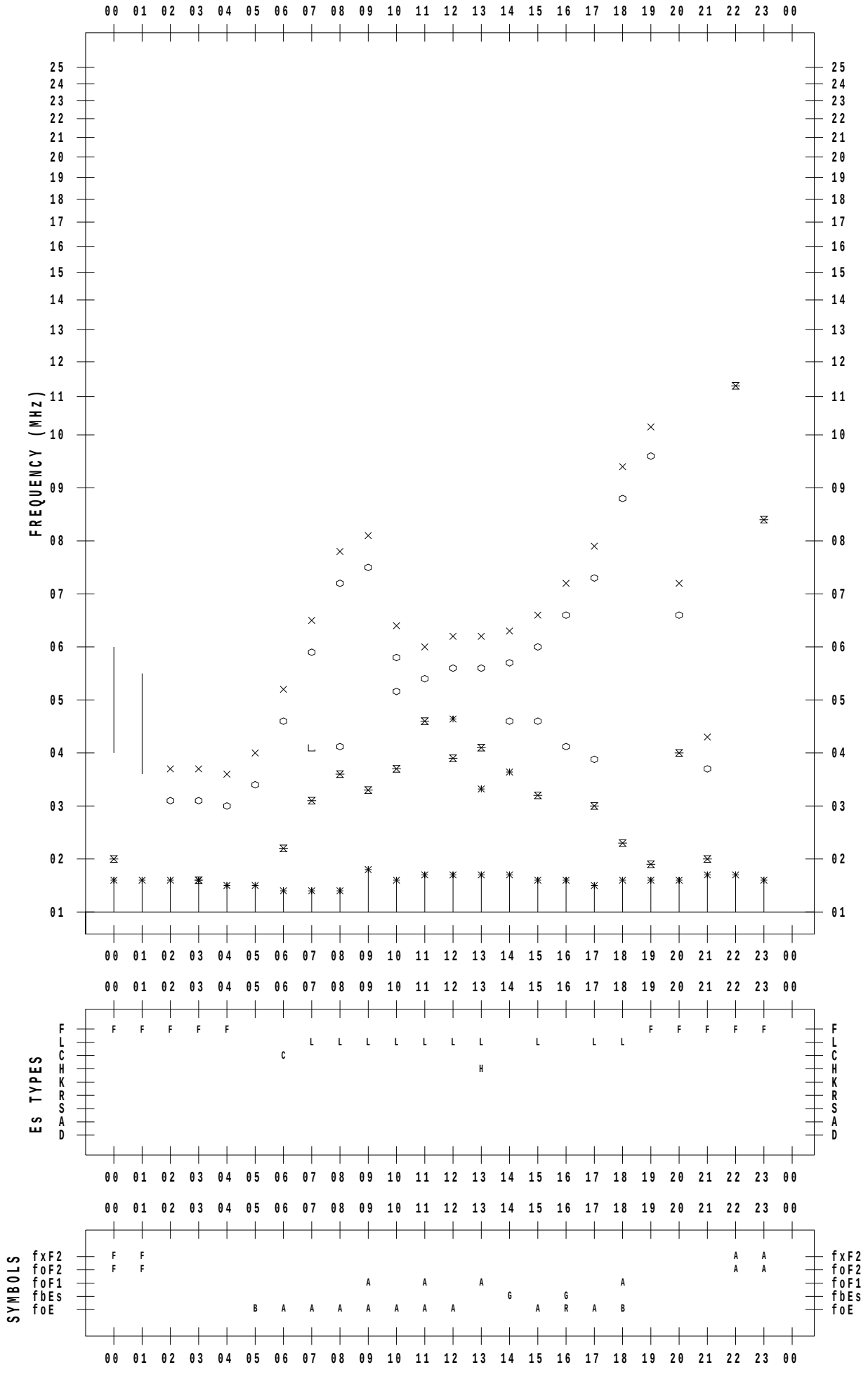
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/25

135 °E MEAN TIME



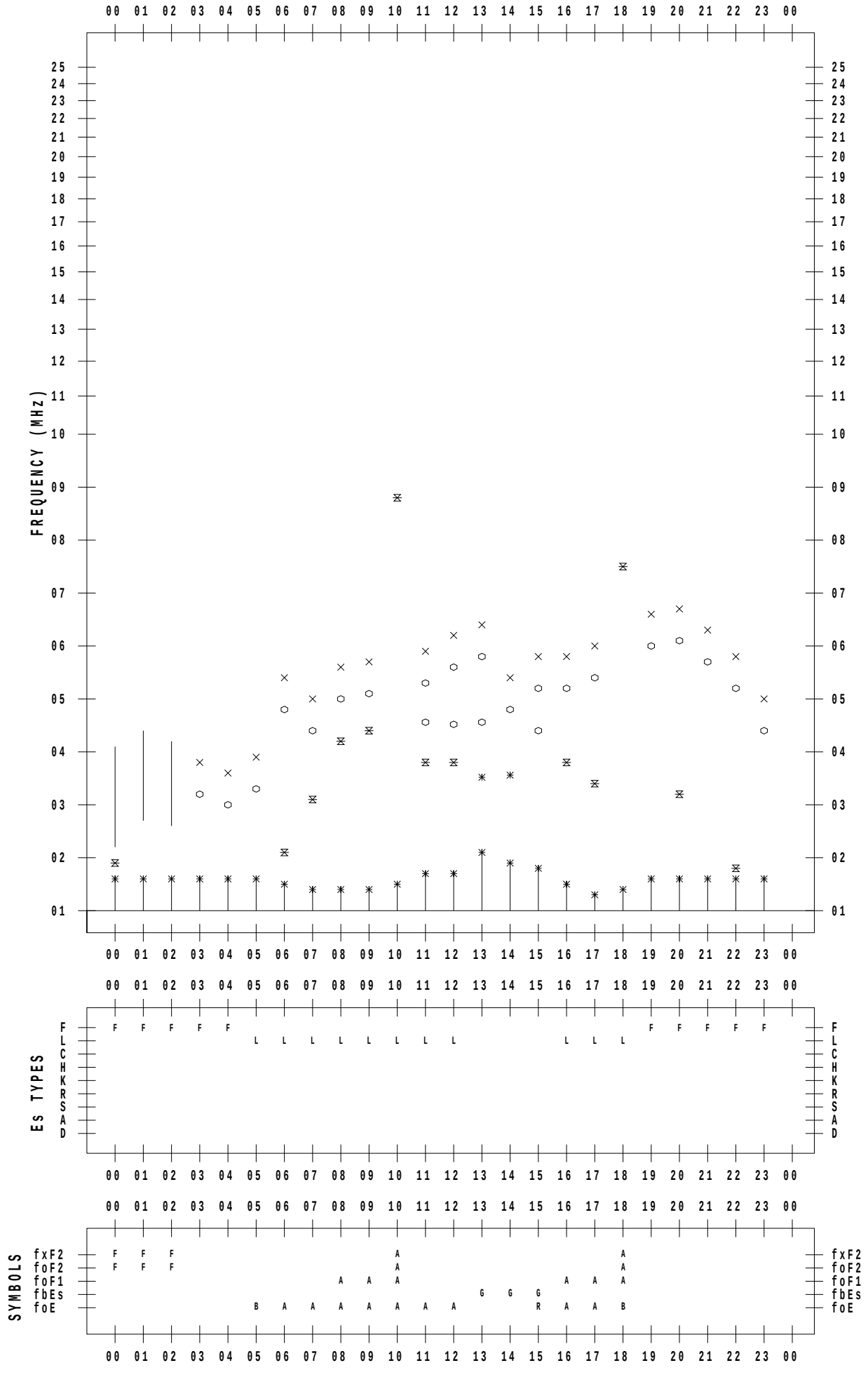
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/26

135 °E MEAN TIME



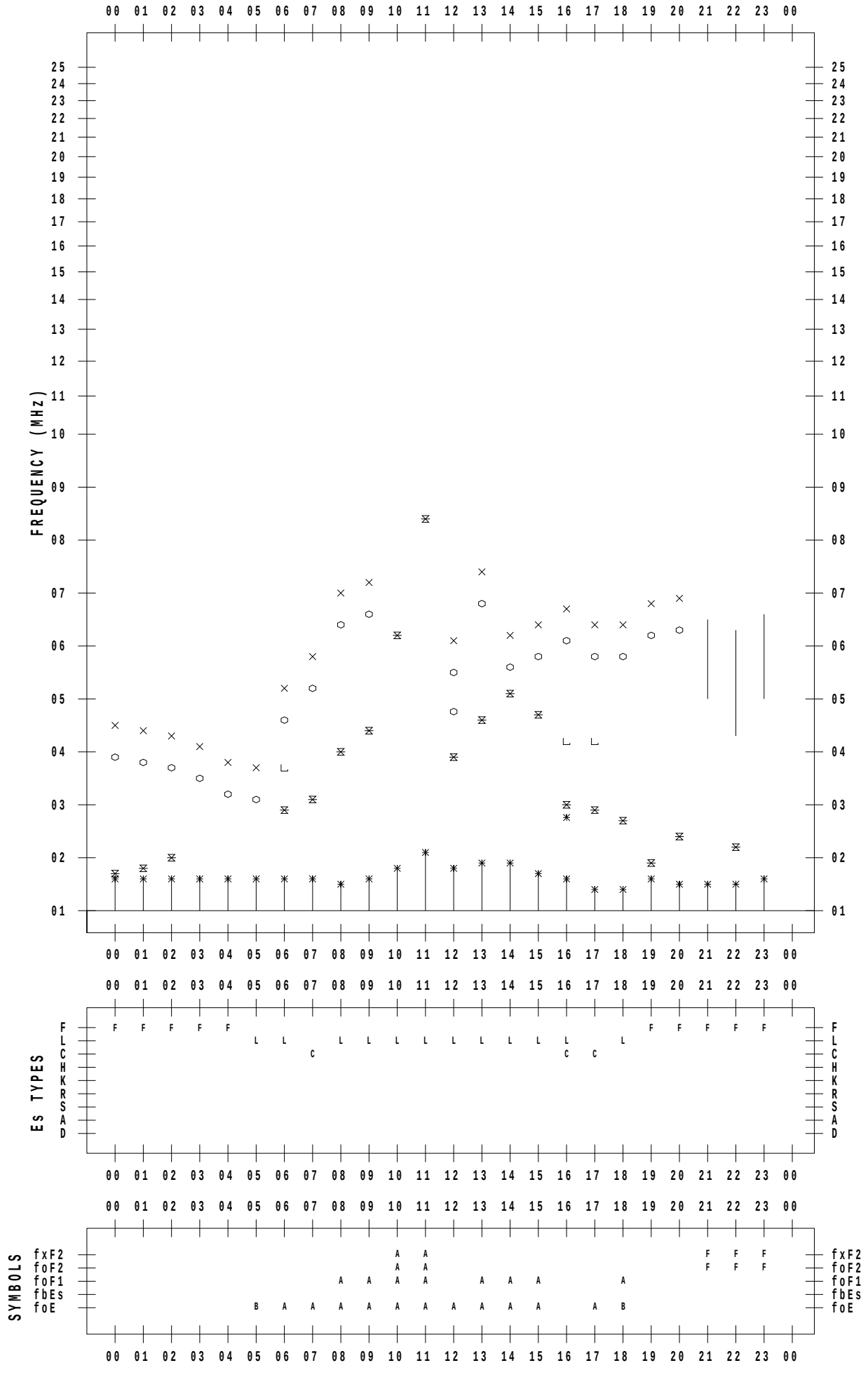
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/27

135 °E MEAN TIME



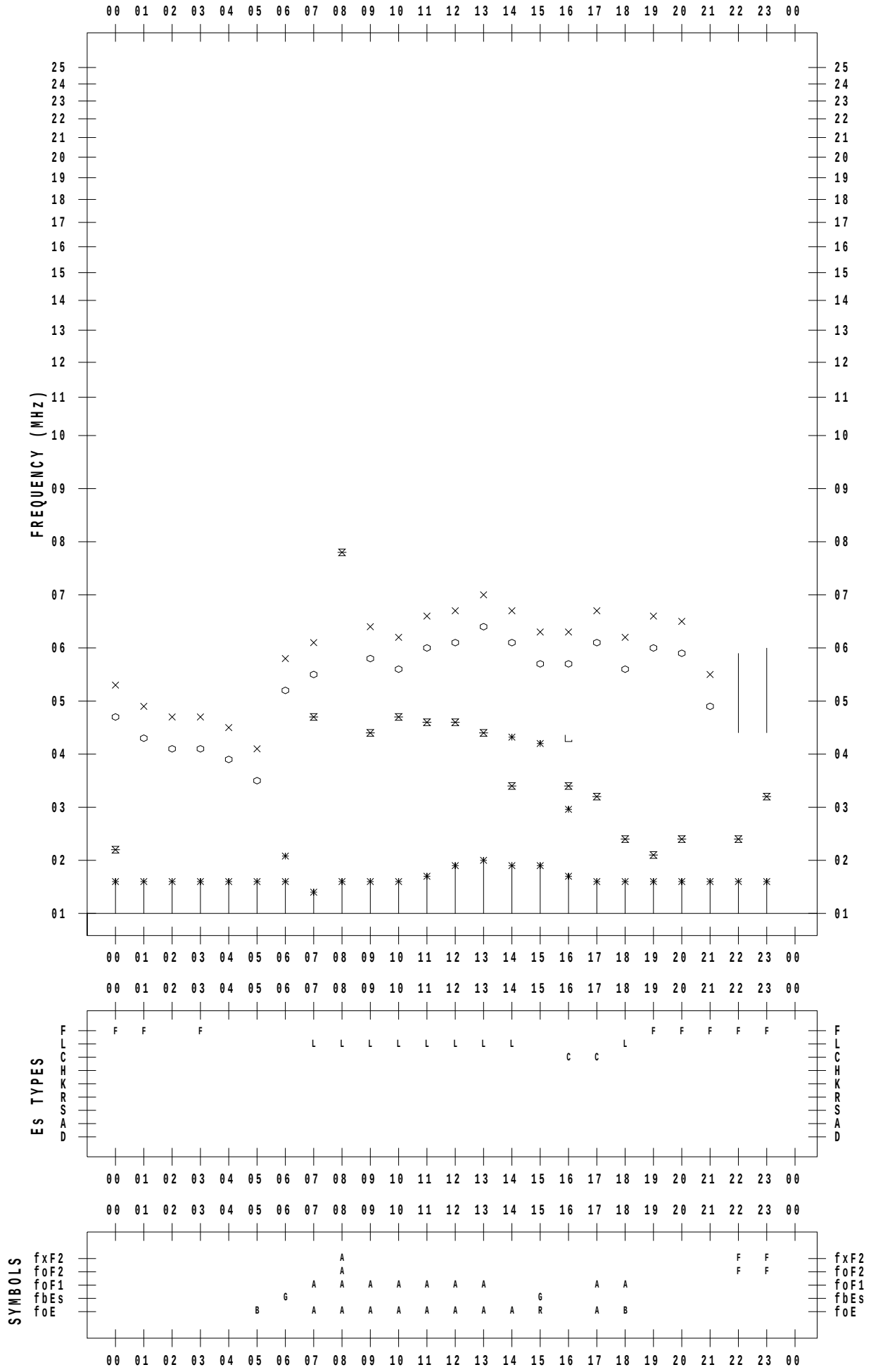
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/28

135 °E MEAN TIME



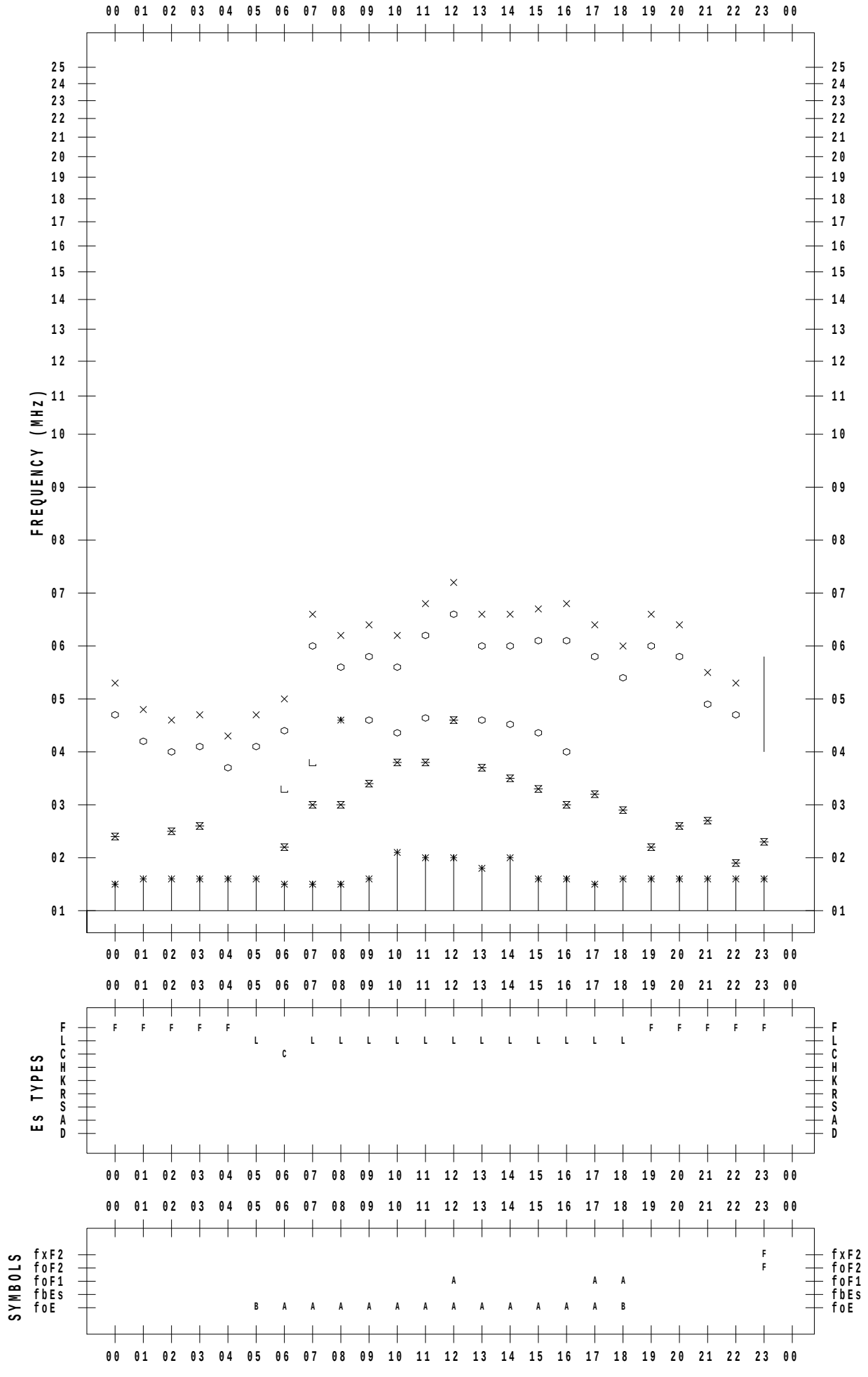
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/29

135 °E MEAN TIME



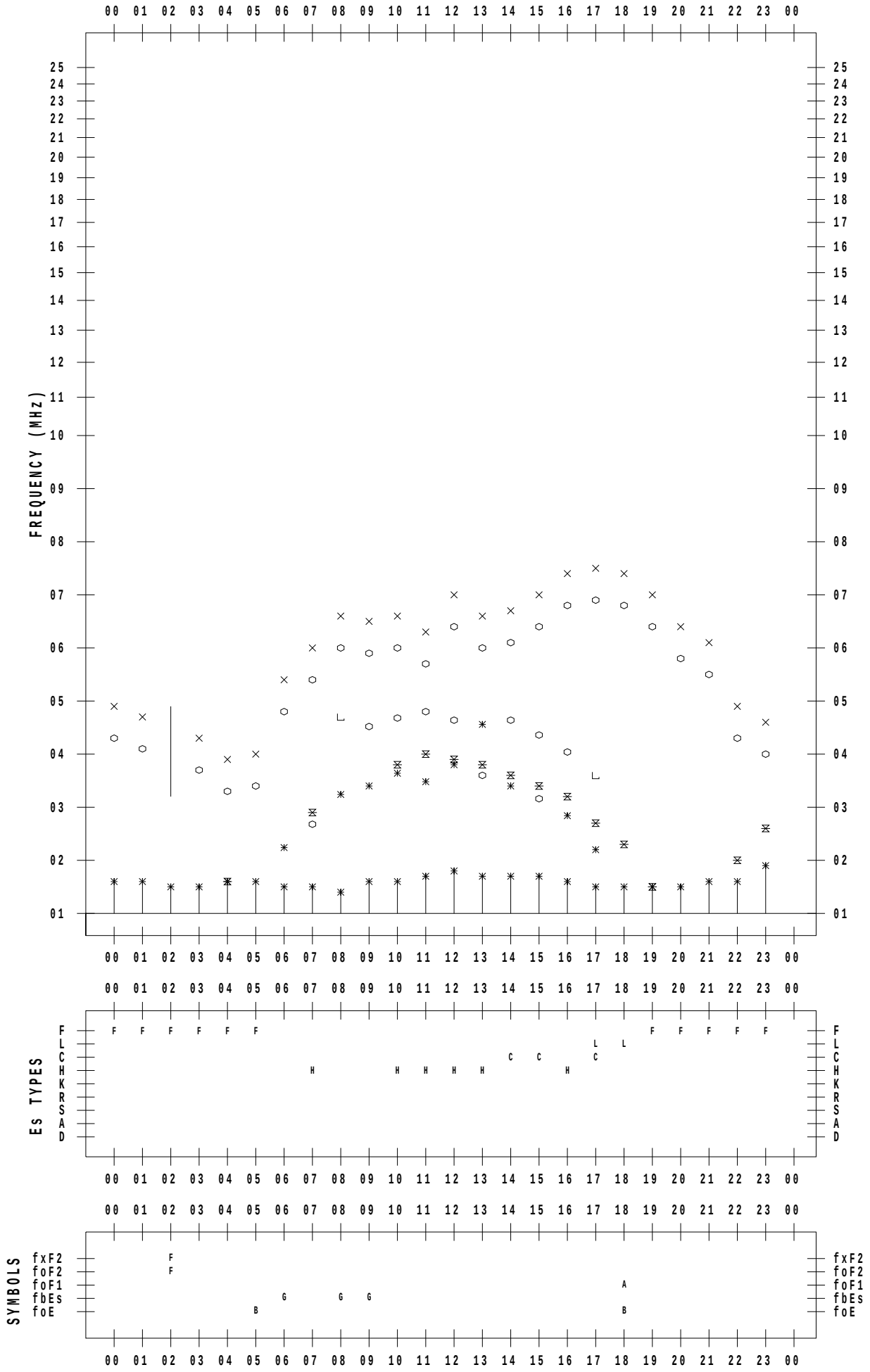
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/30

135 °E MEAN TIME



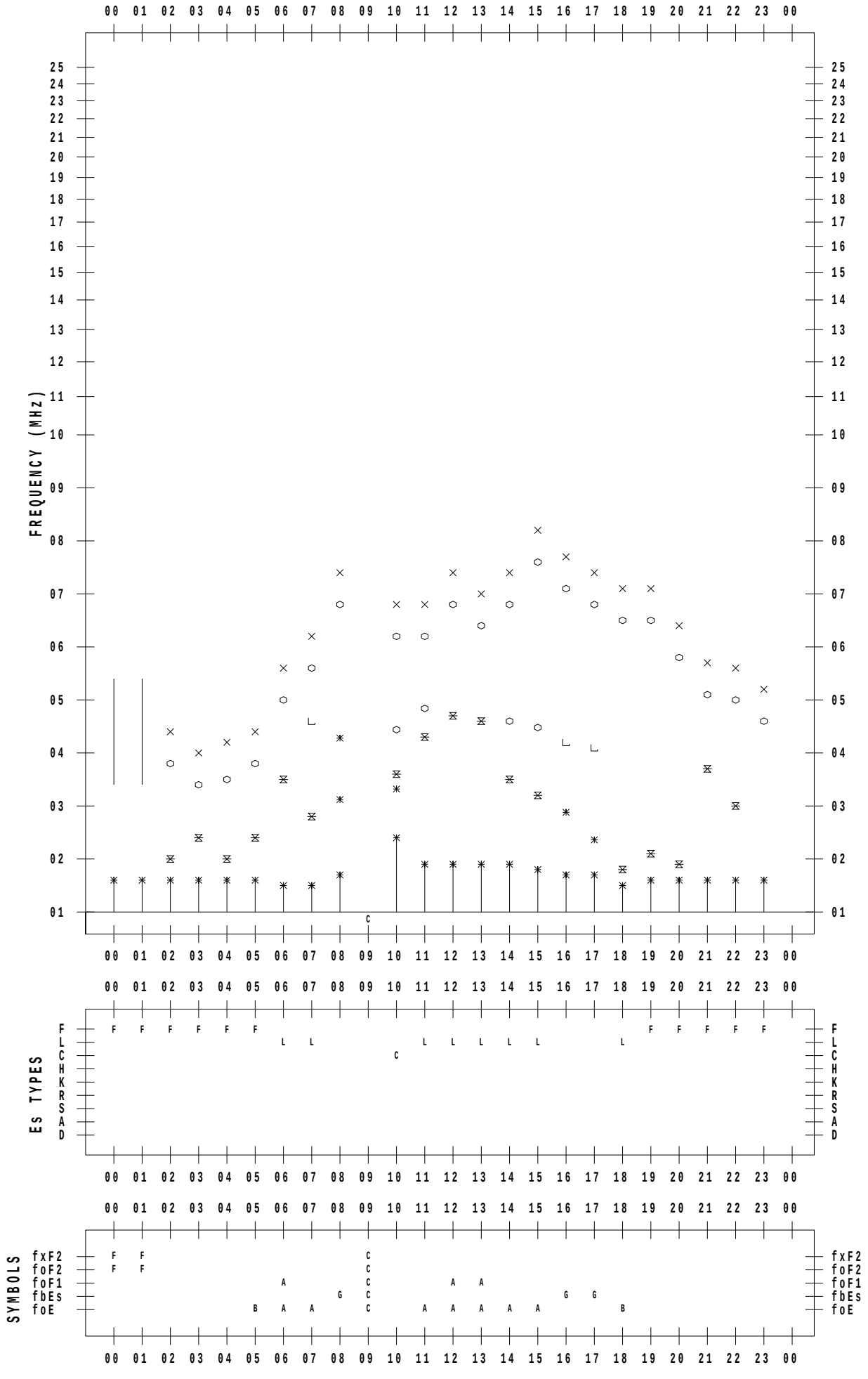
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 8/31

135 °E MEAN TIME



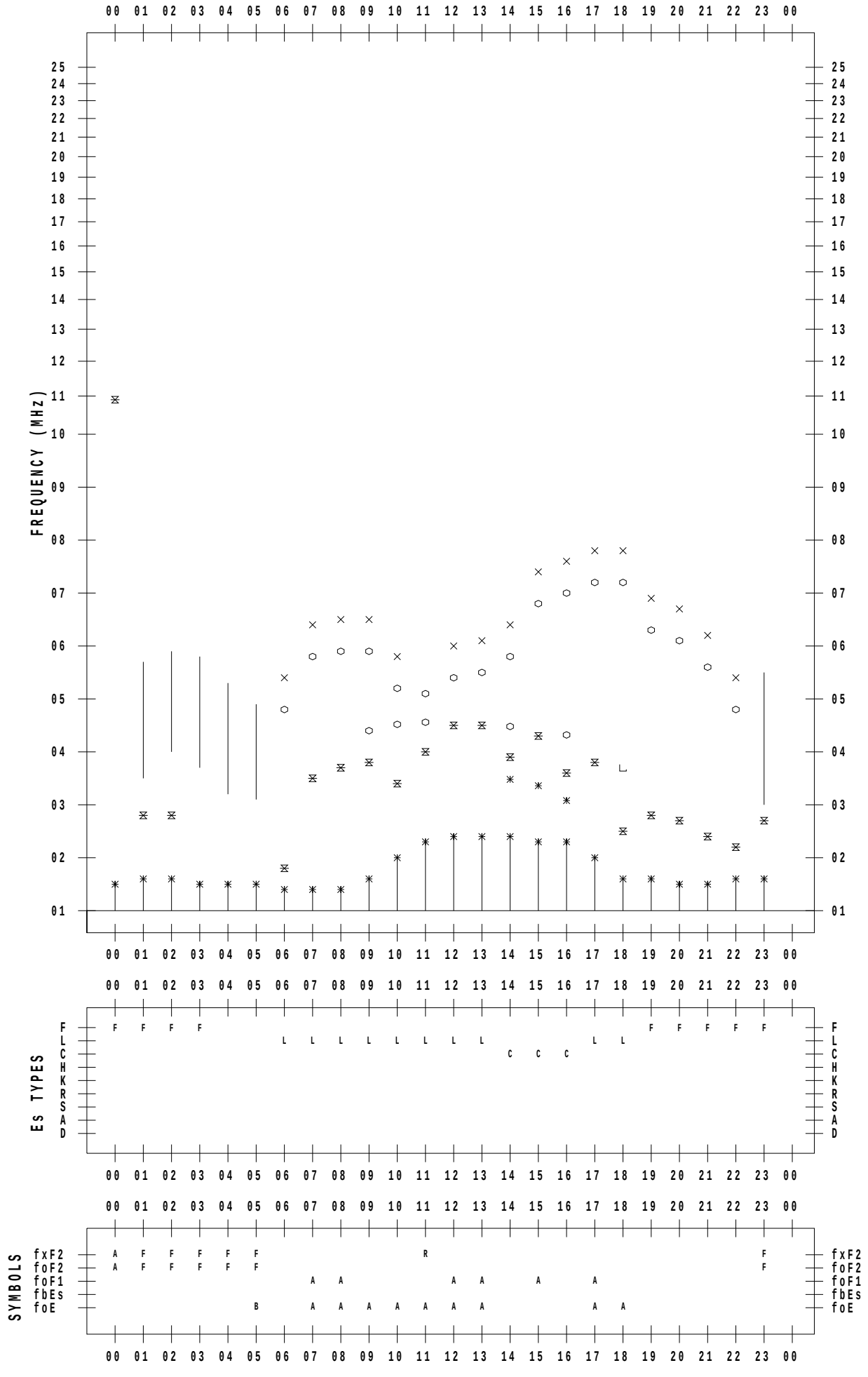
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 1

135 °E MEAN TIME



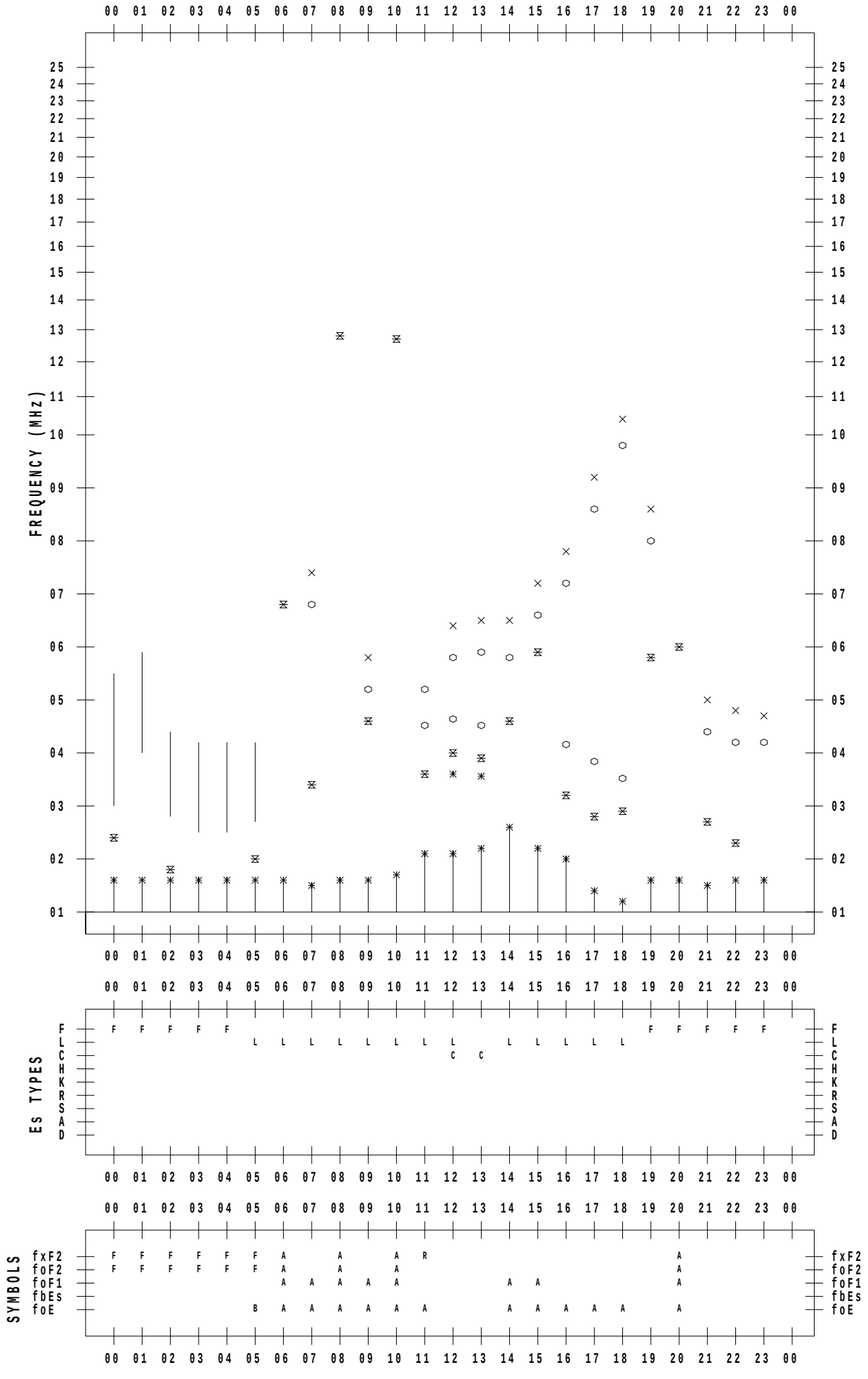
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 2

135 °E MEAN TIME



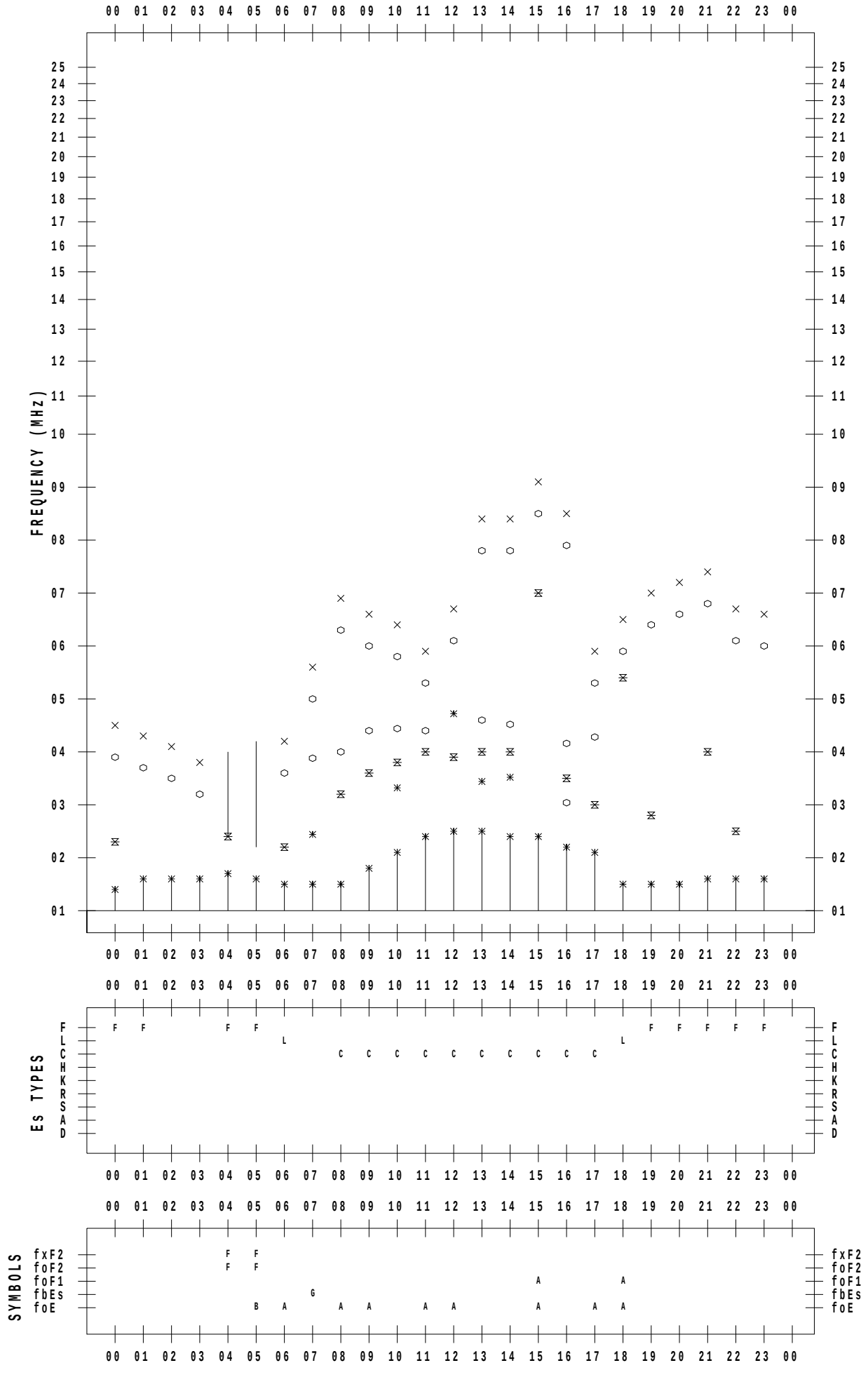
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 3

135 °E MEAN TIME



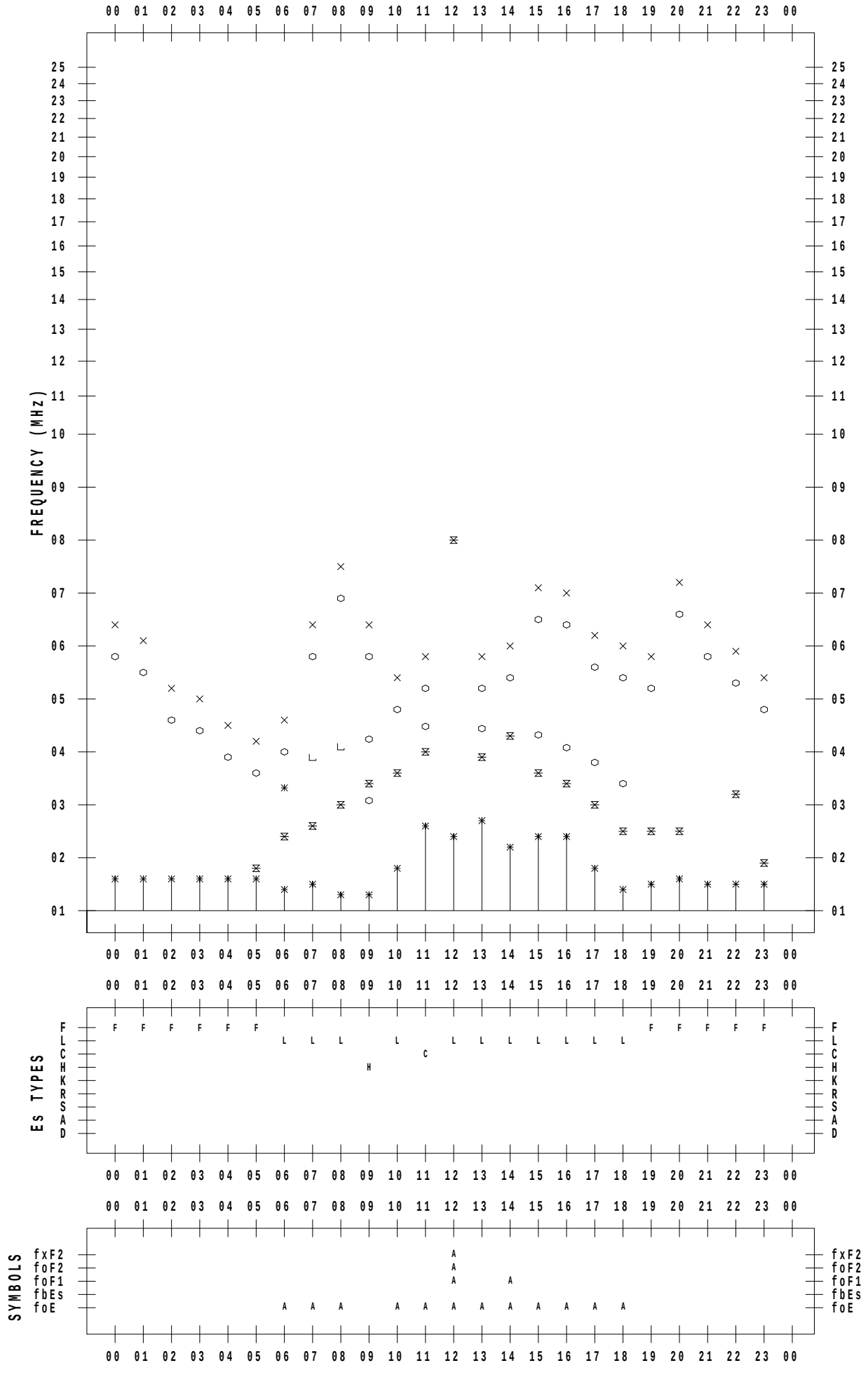
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 4

135 °E MEAN TIME



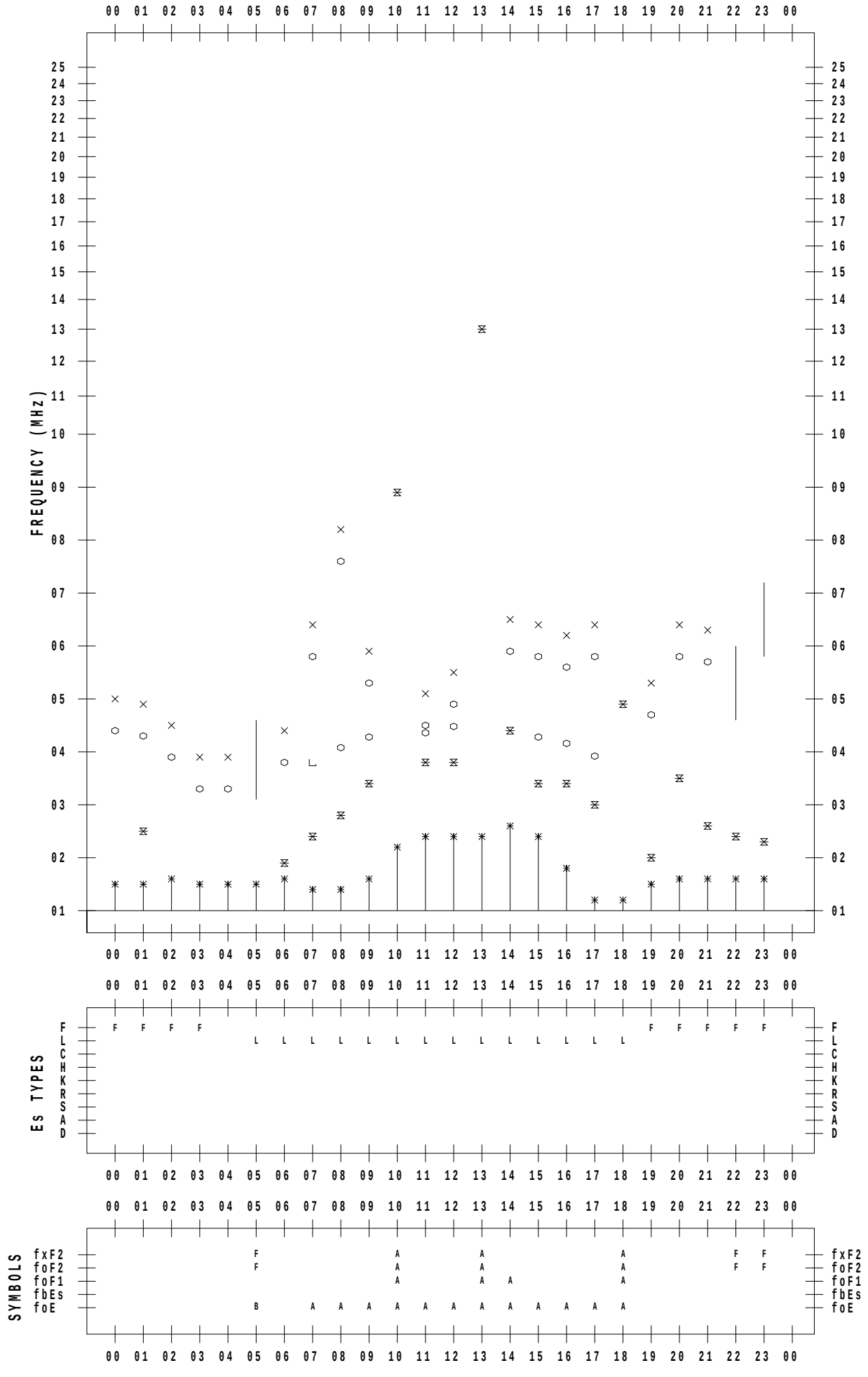
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 5

135 °E MEAN TIME



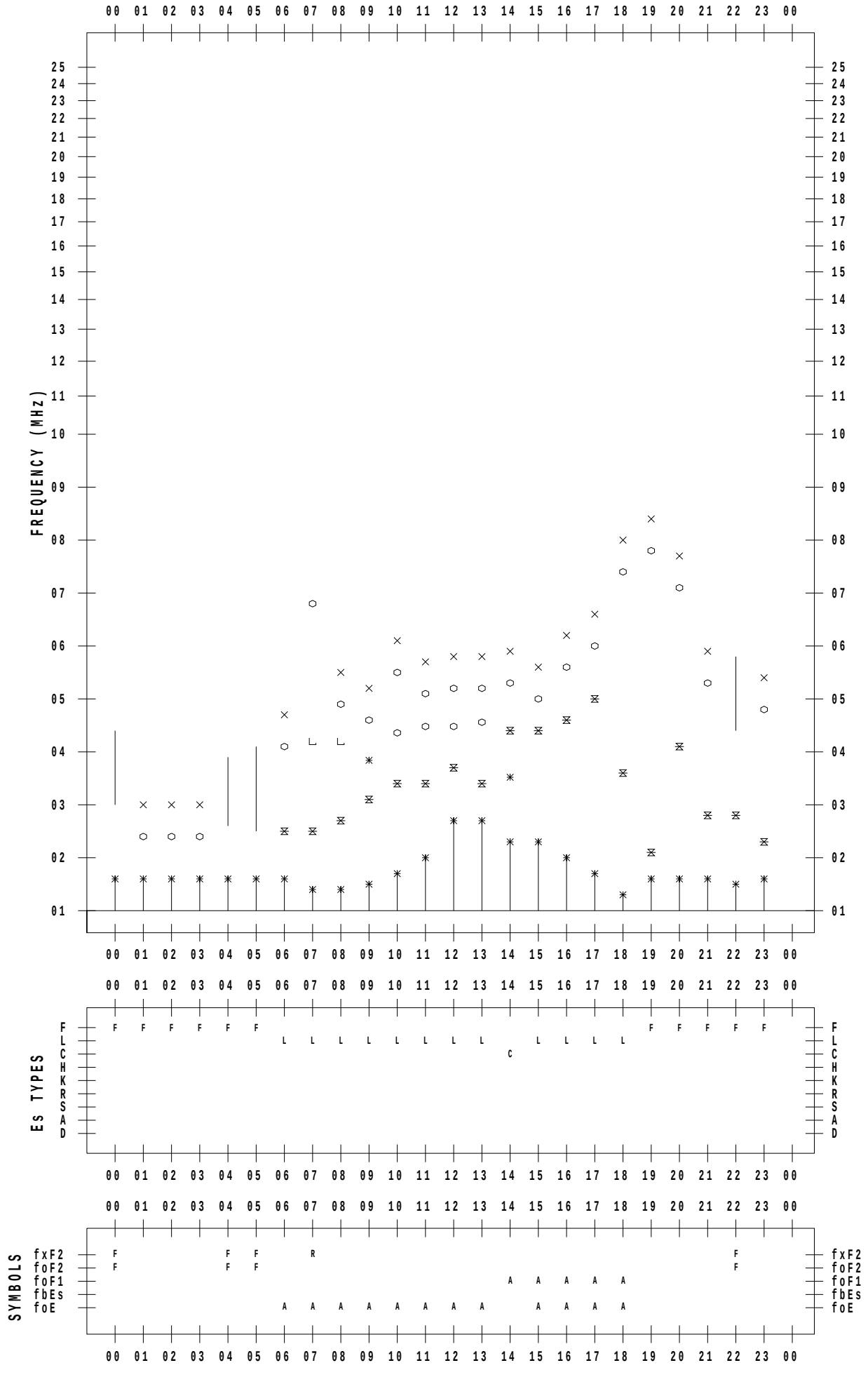
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 6

135 °E MEAN TIME



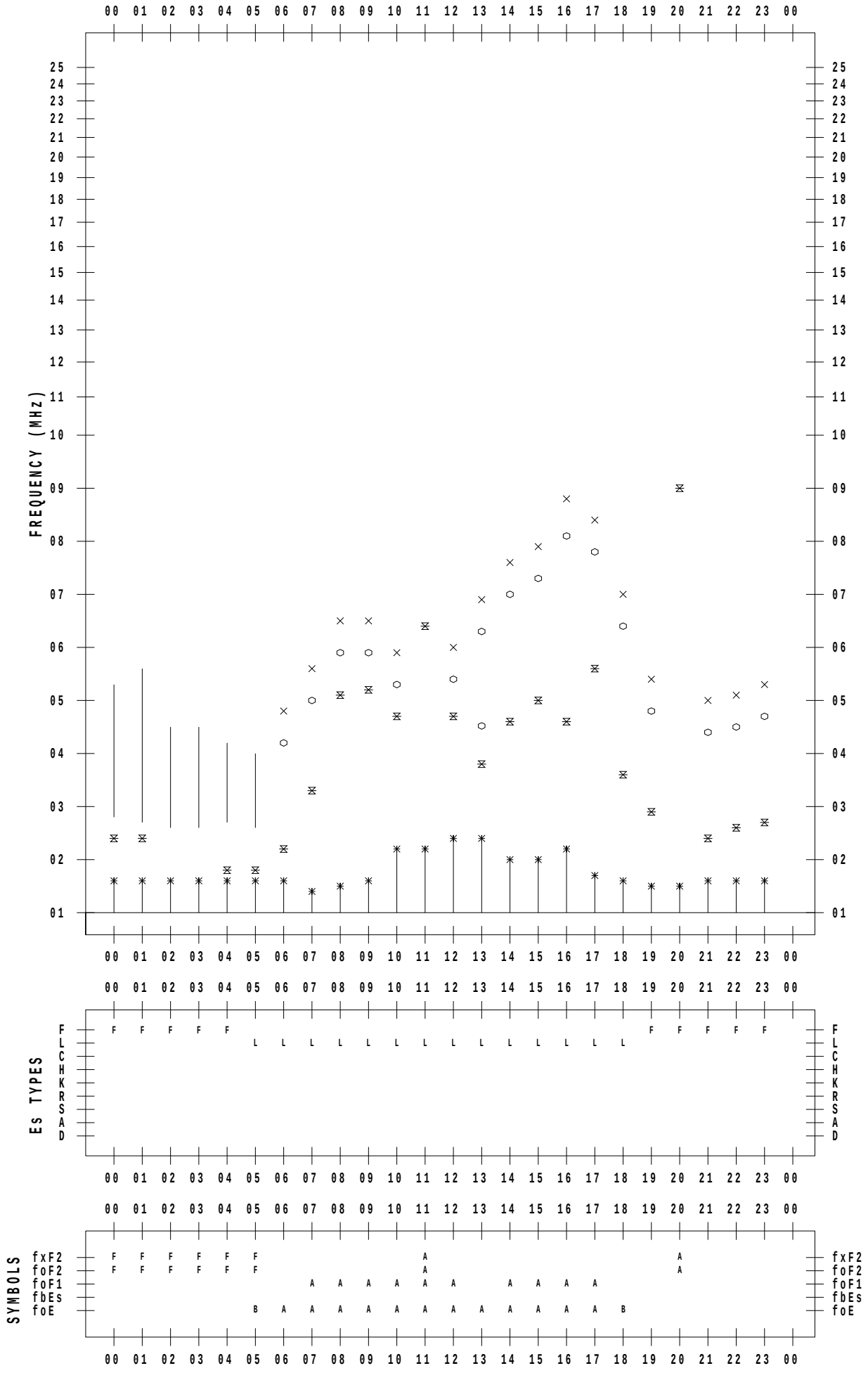
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 7

135 °E MEAN TIME



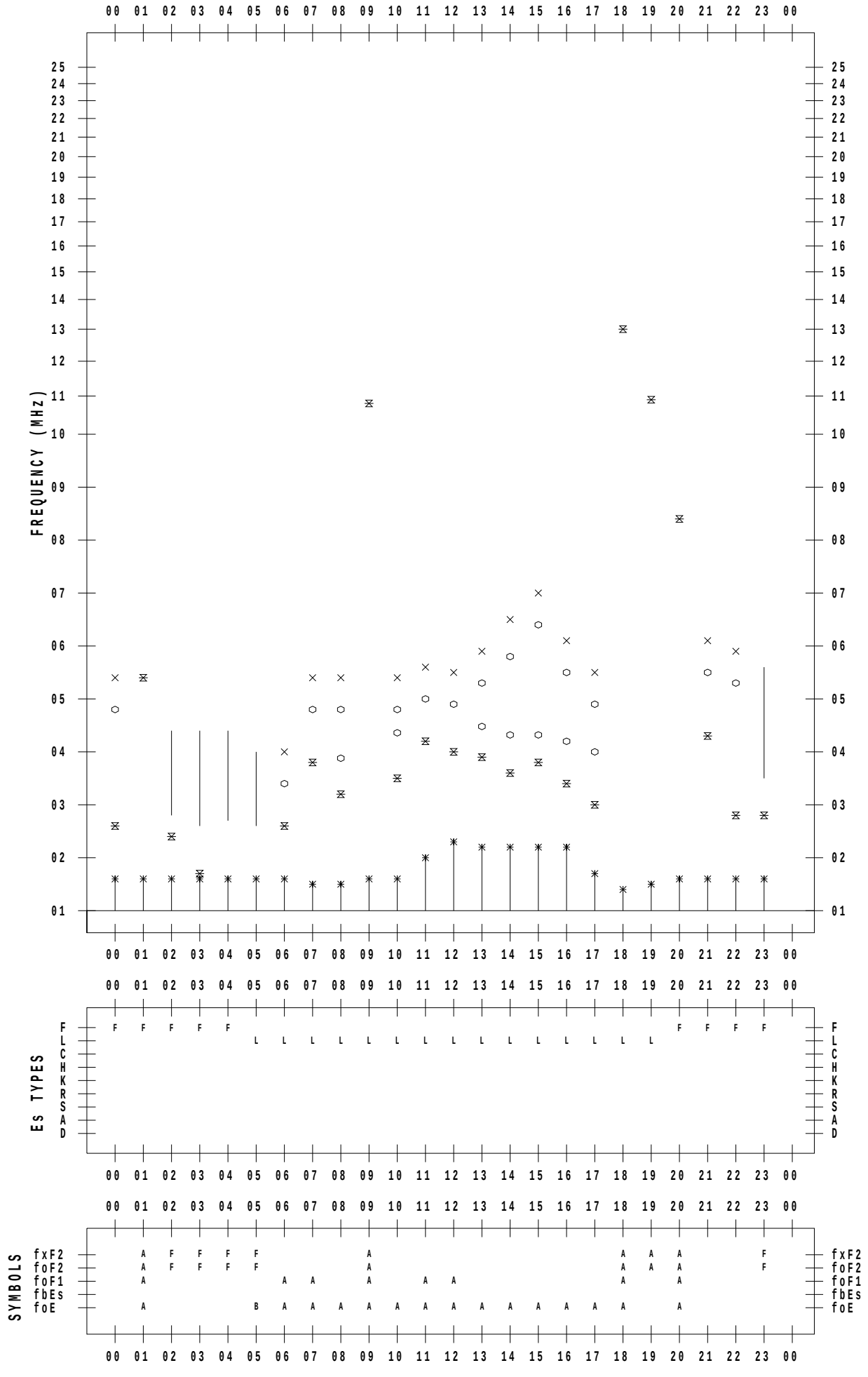
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 8

135 °E MEAN TIME



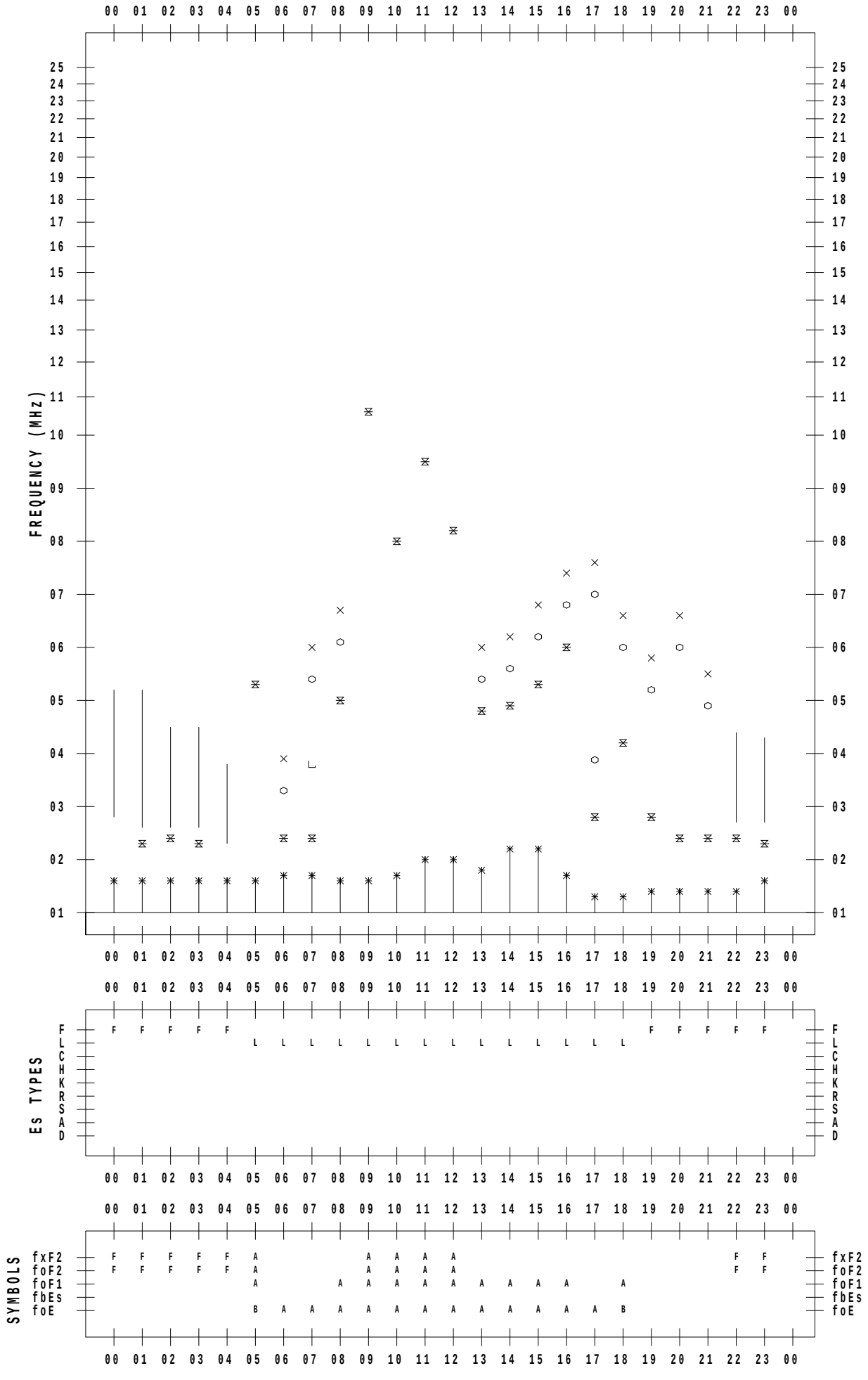
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/ 9

135 °E MEAN TIME



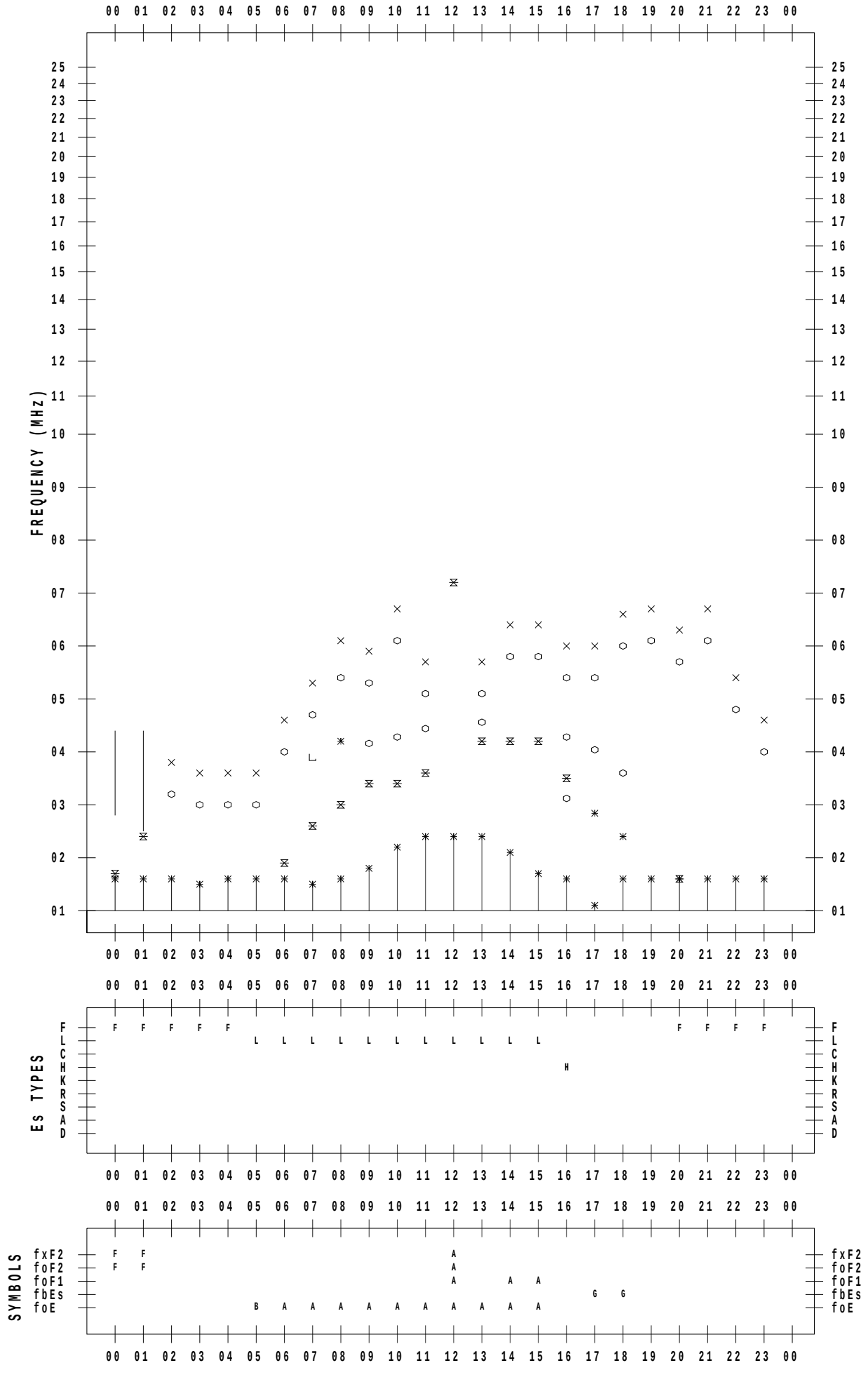
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/10

135 °E MEAN TIME



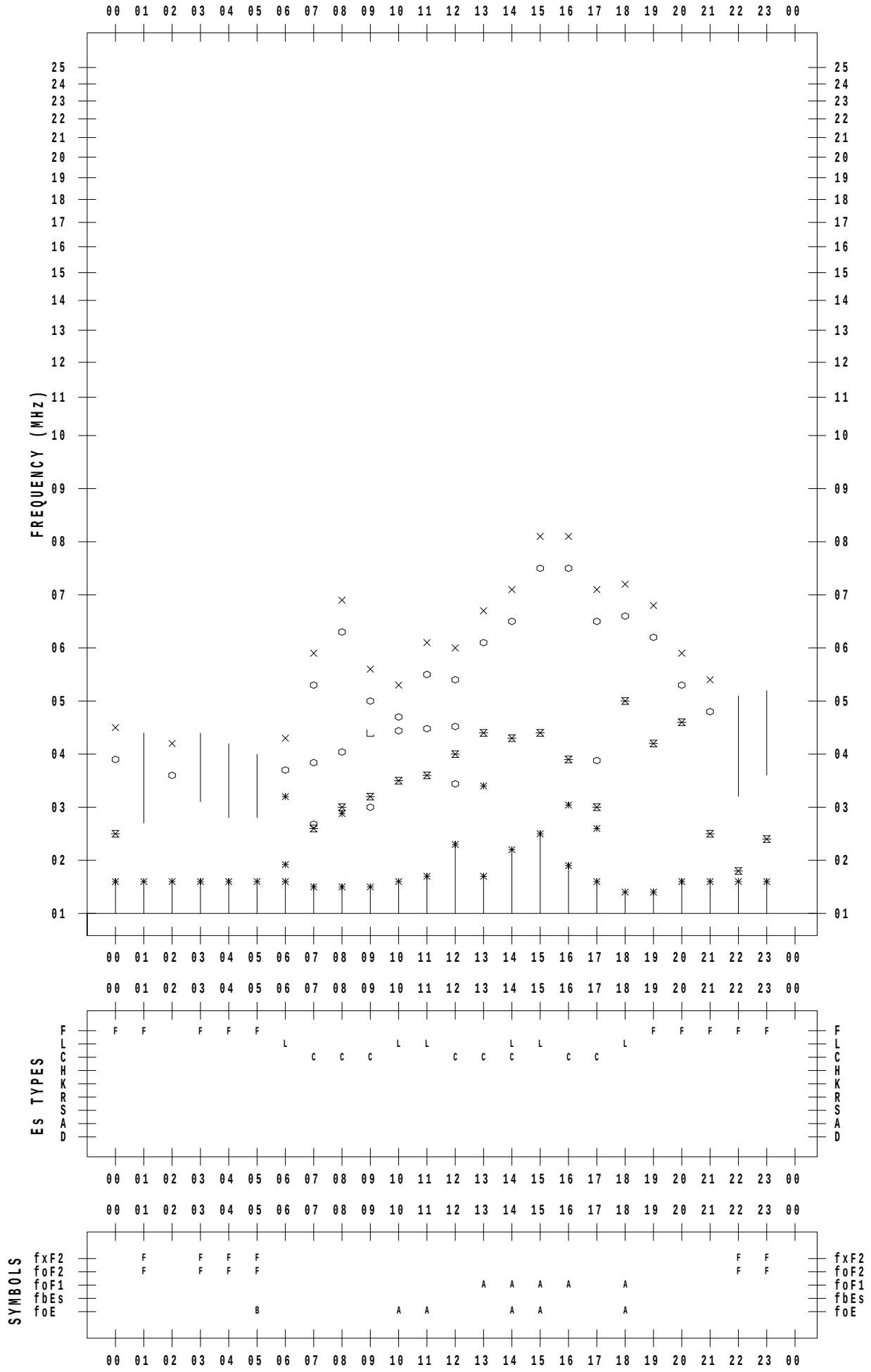
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/11

135 °E MEAN TIME



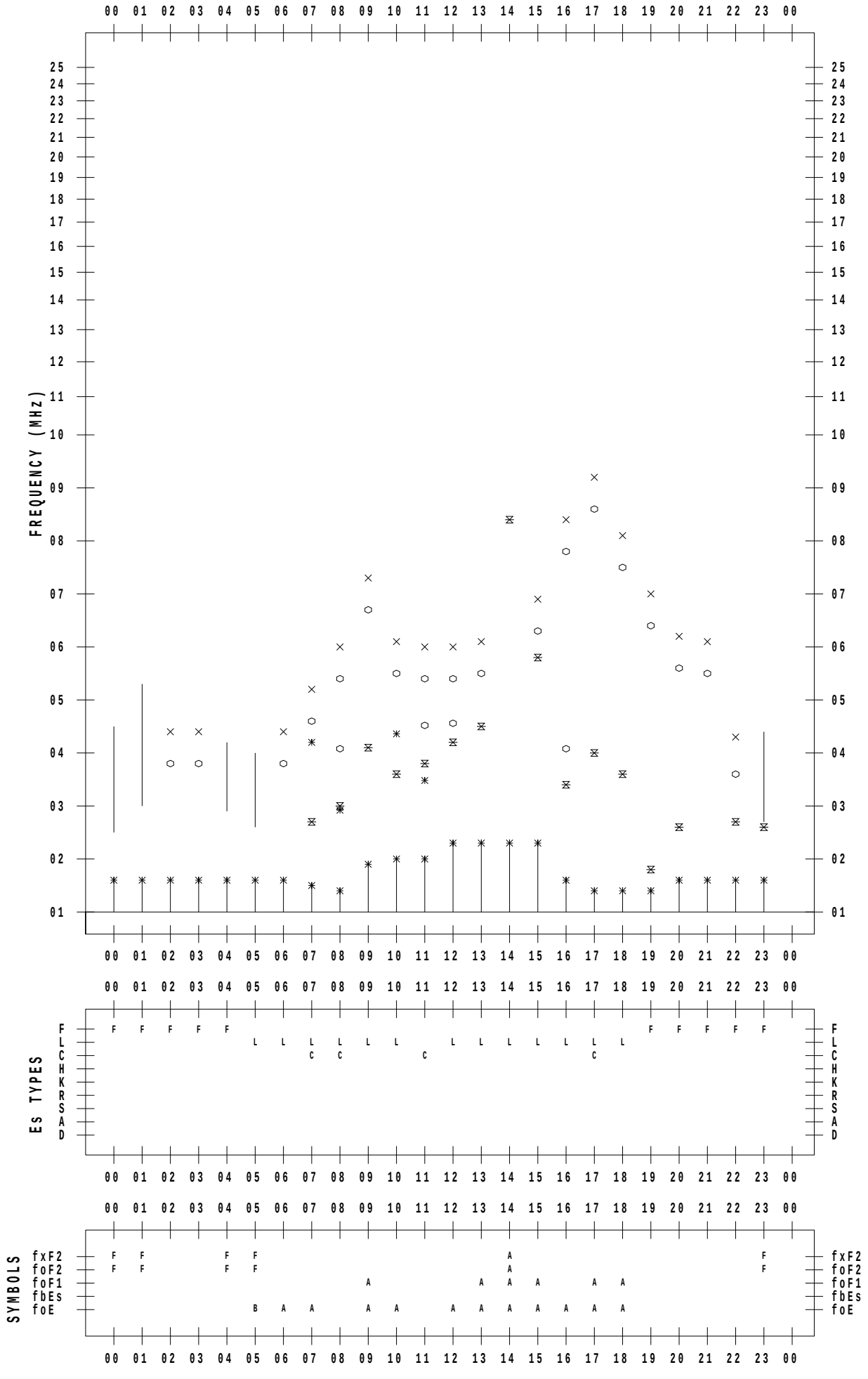
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/12

135 °E MEAN TIME



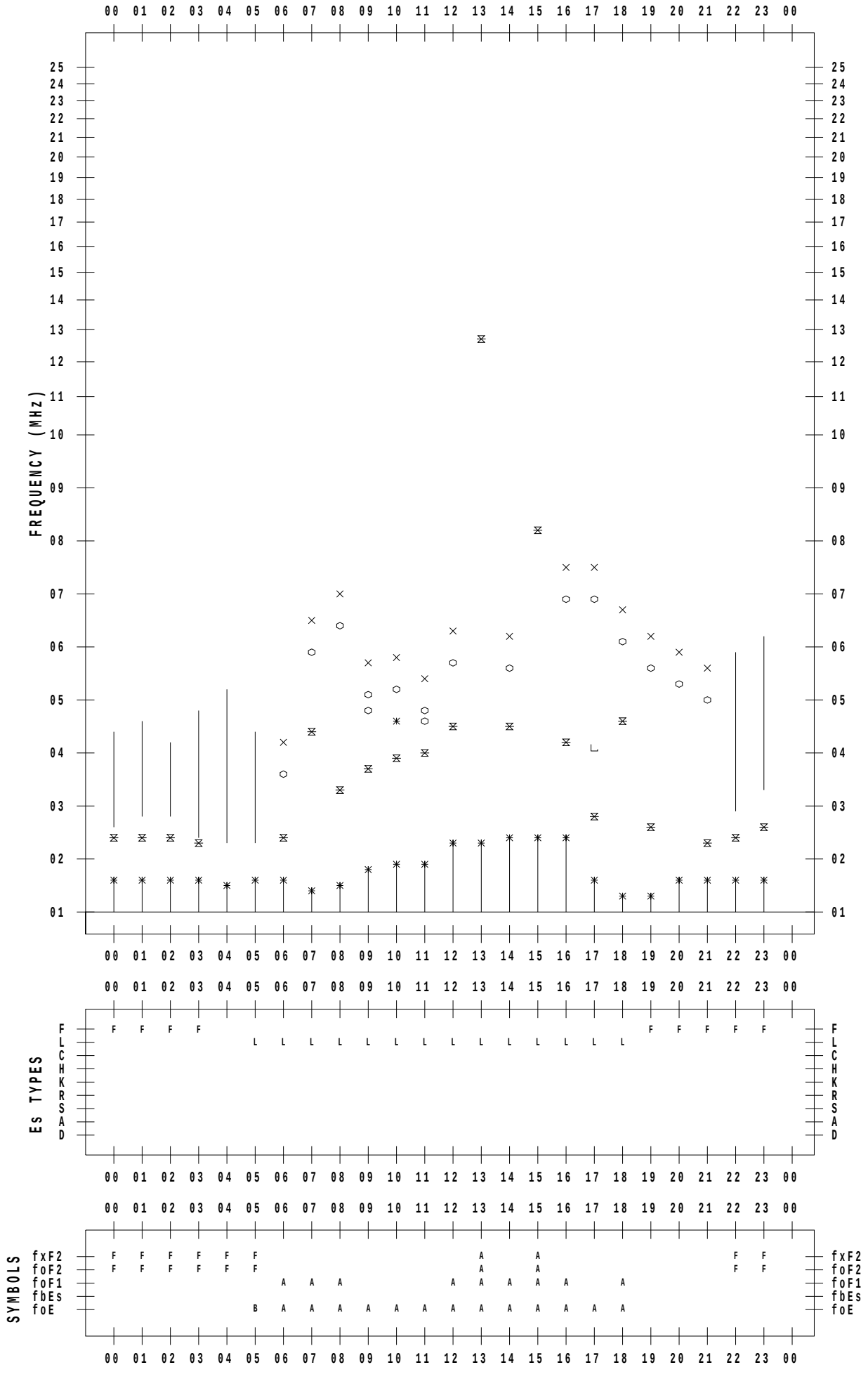
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/13

135 °E MEAN TIME



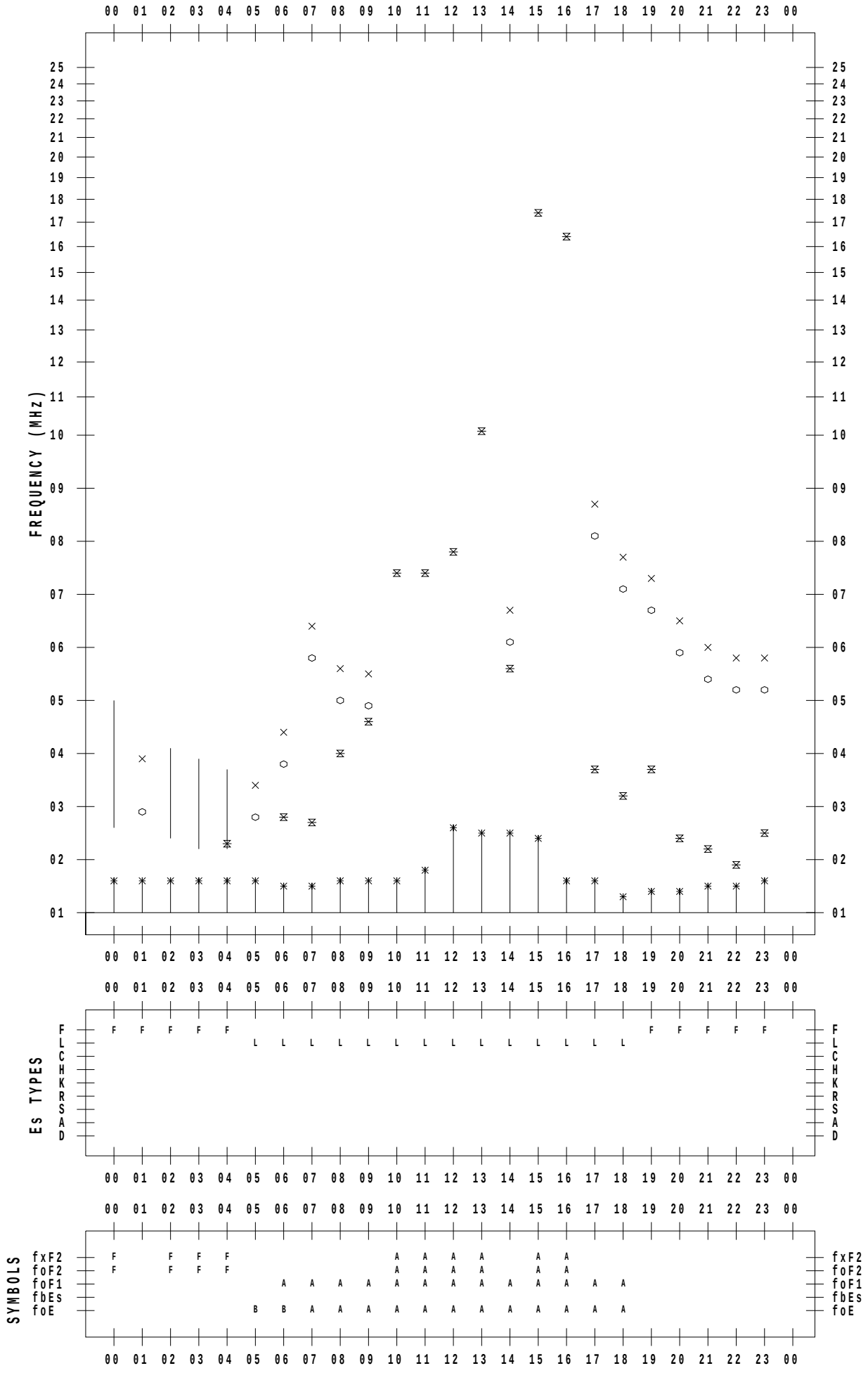
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/14

135 °E MEAN TIME



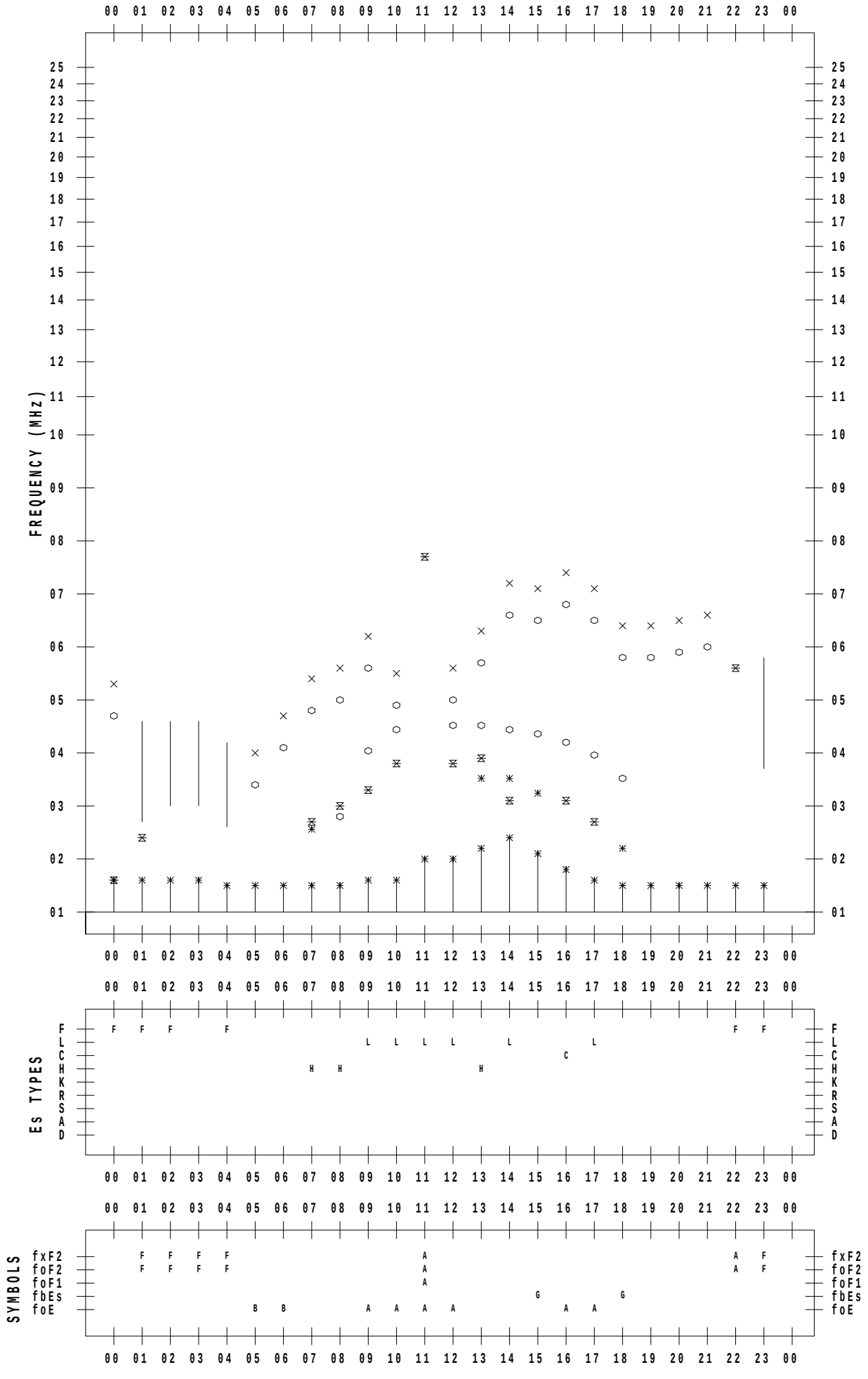
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/15

135 °E MEAN TIME



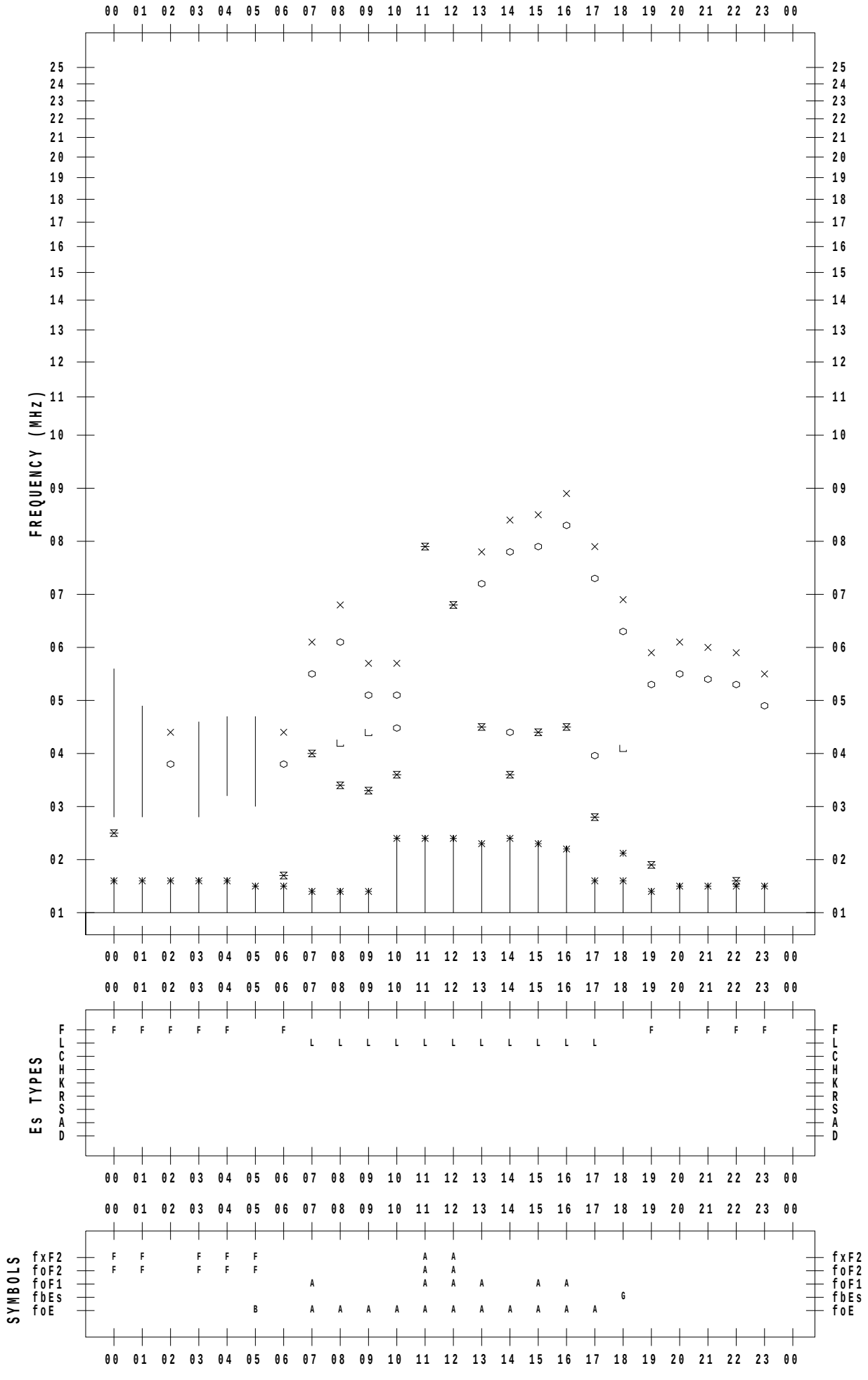
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/16

135 °E MEAN TIME



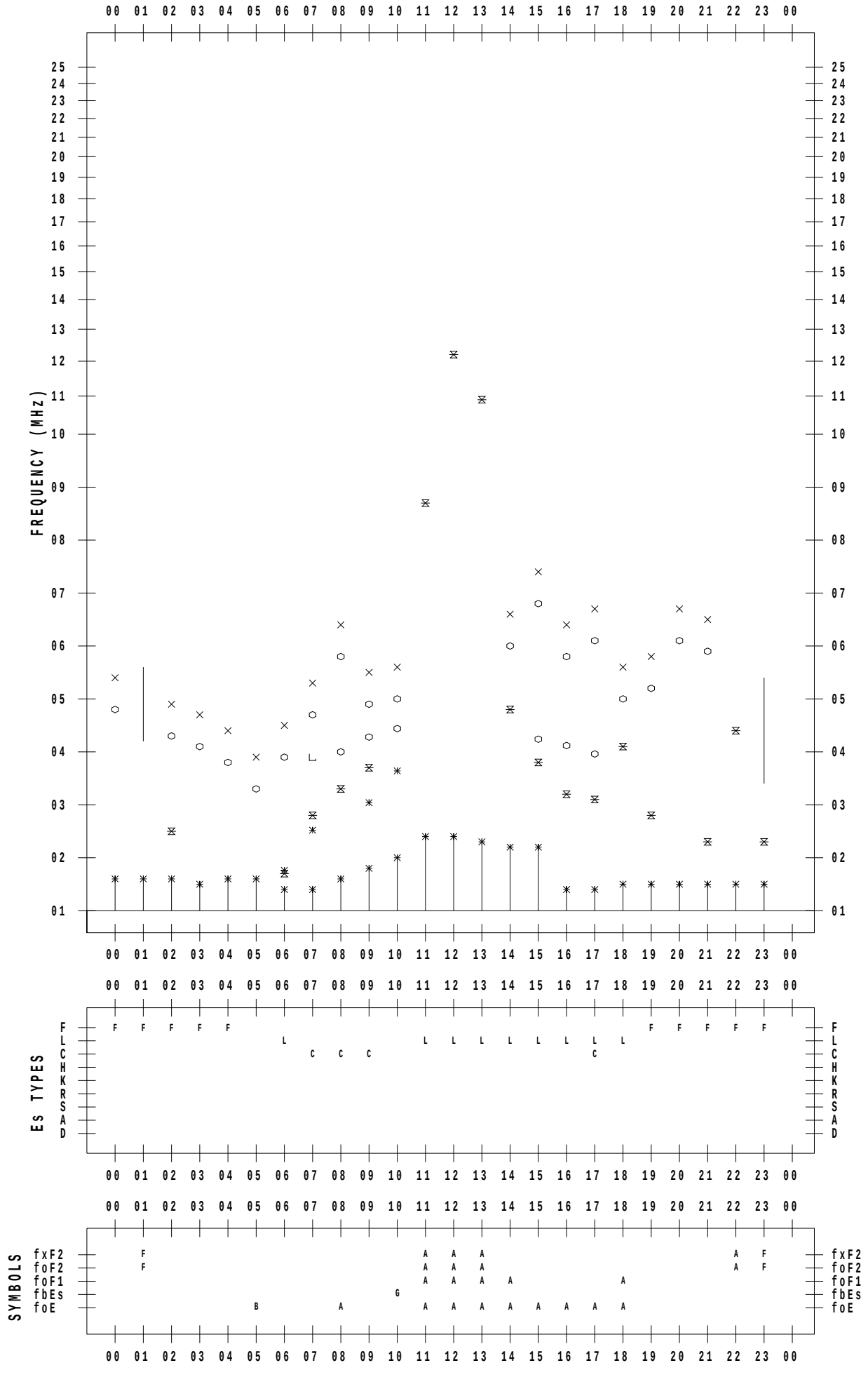
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/17

135 °E MEAN TIME



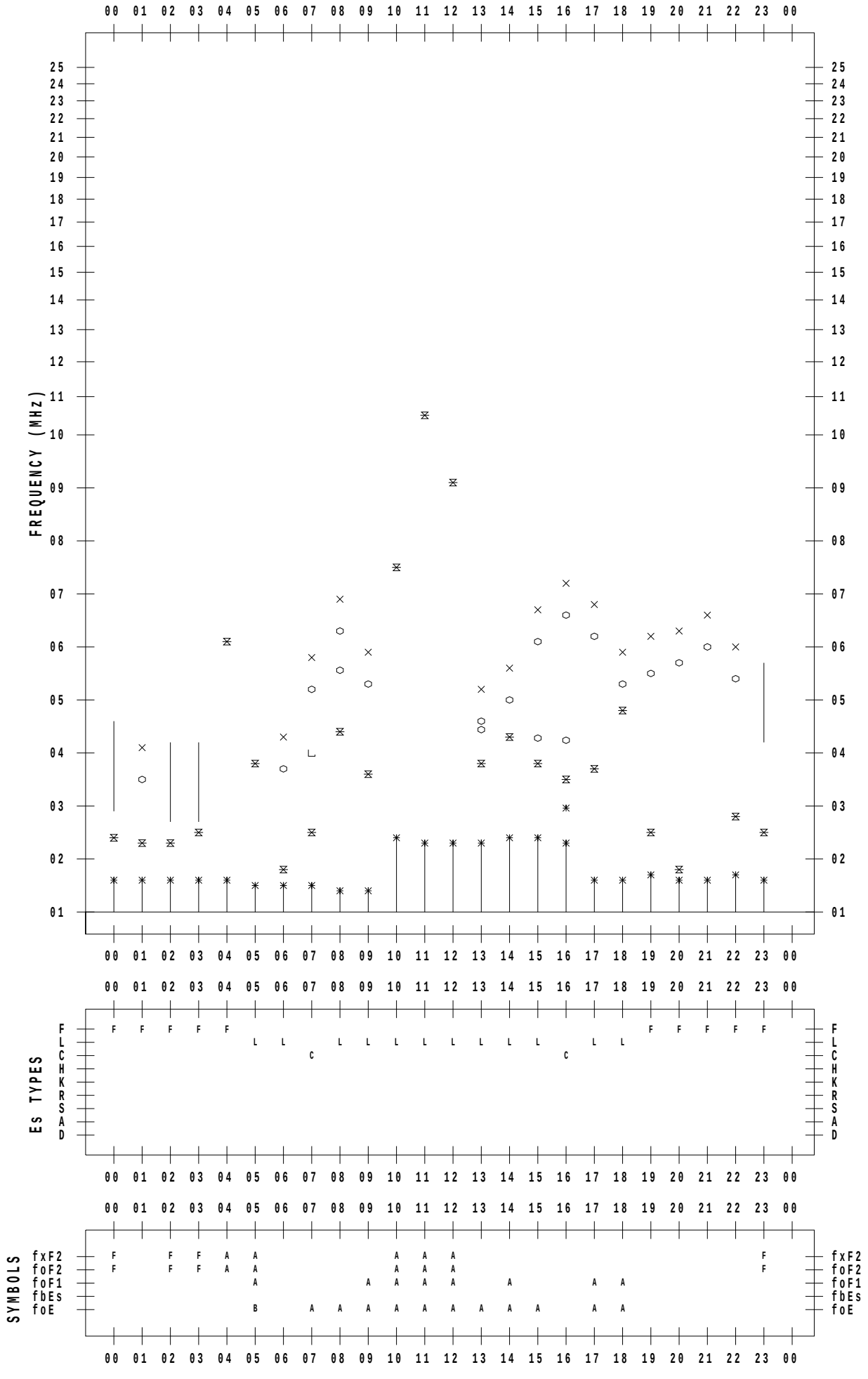
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/18

135 °E MEAN TIME



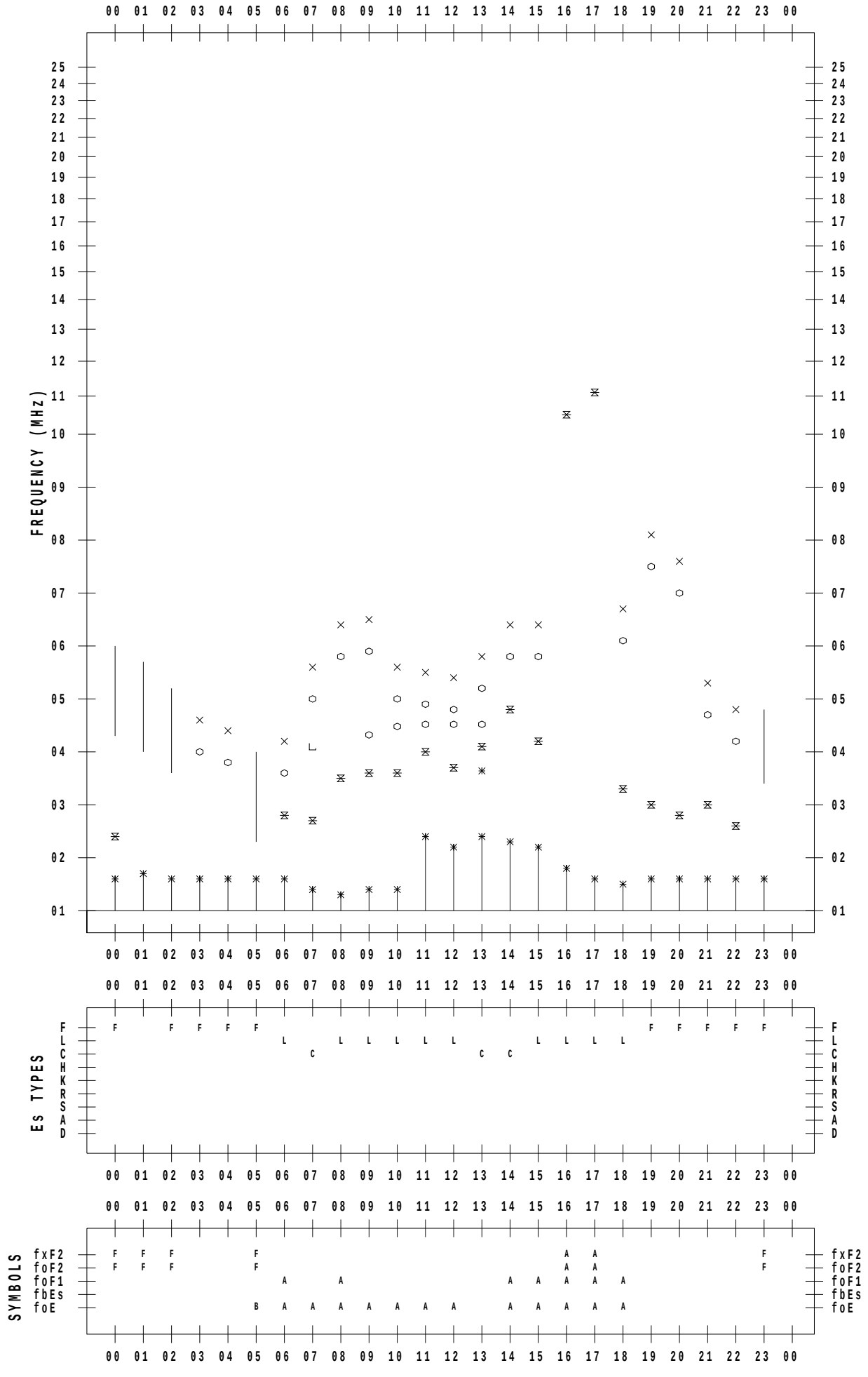
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/19

135 °E MEAN TIME



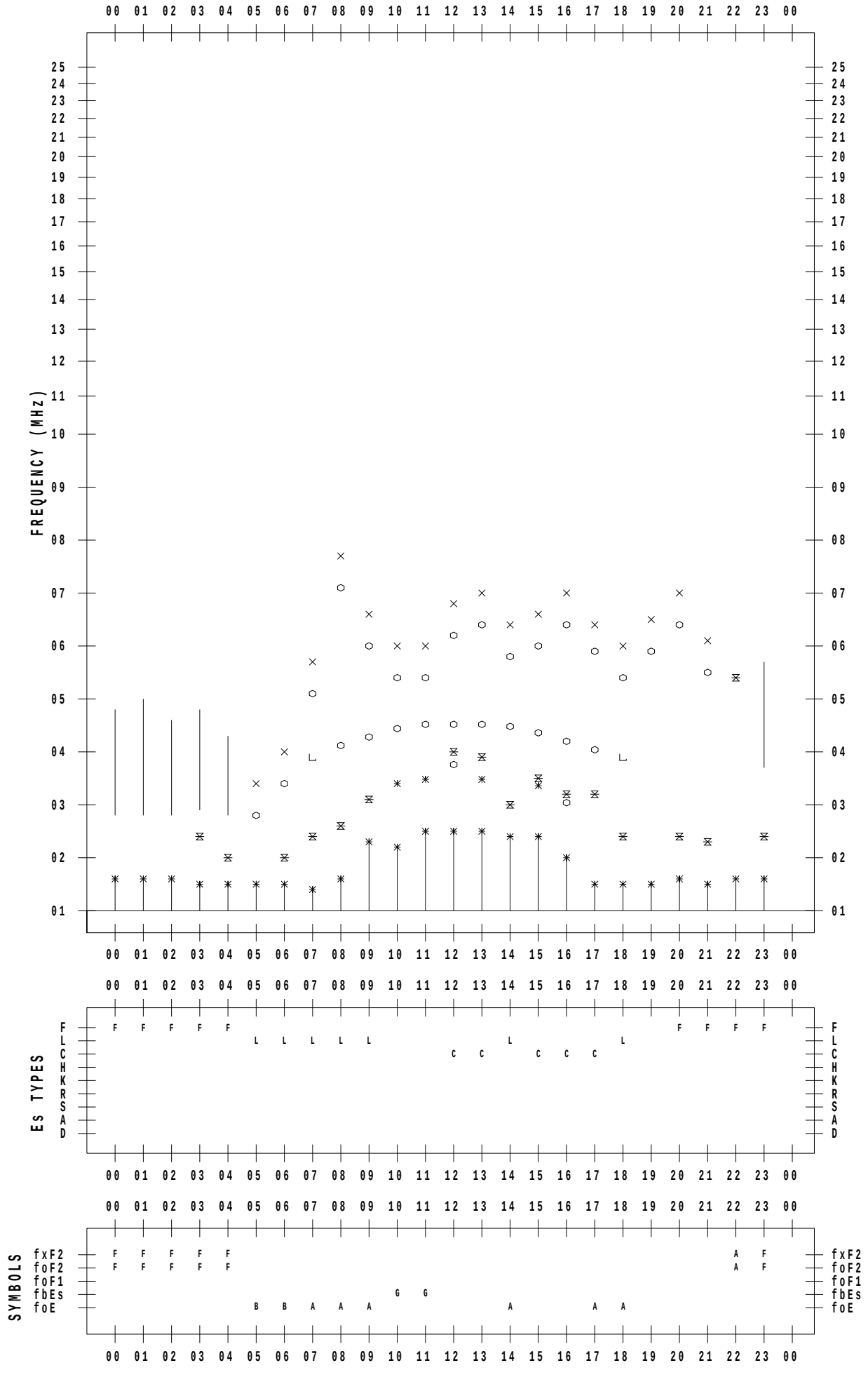
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/20

135 °E MEAN TIME



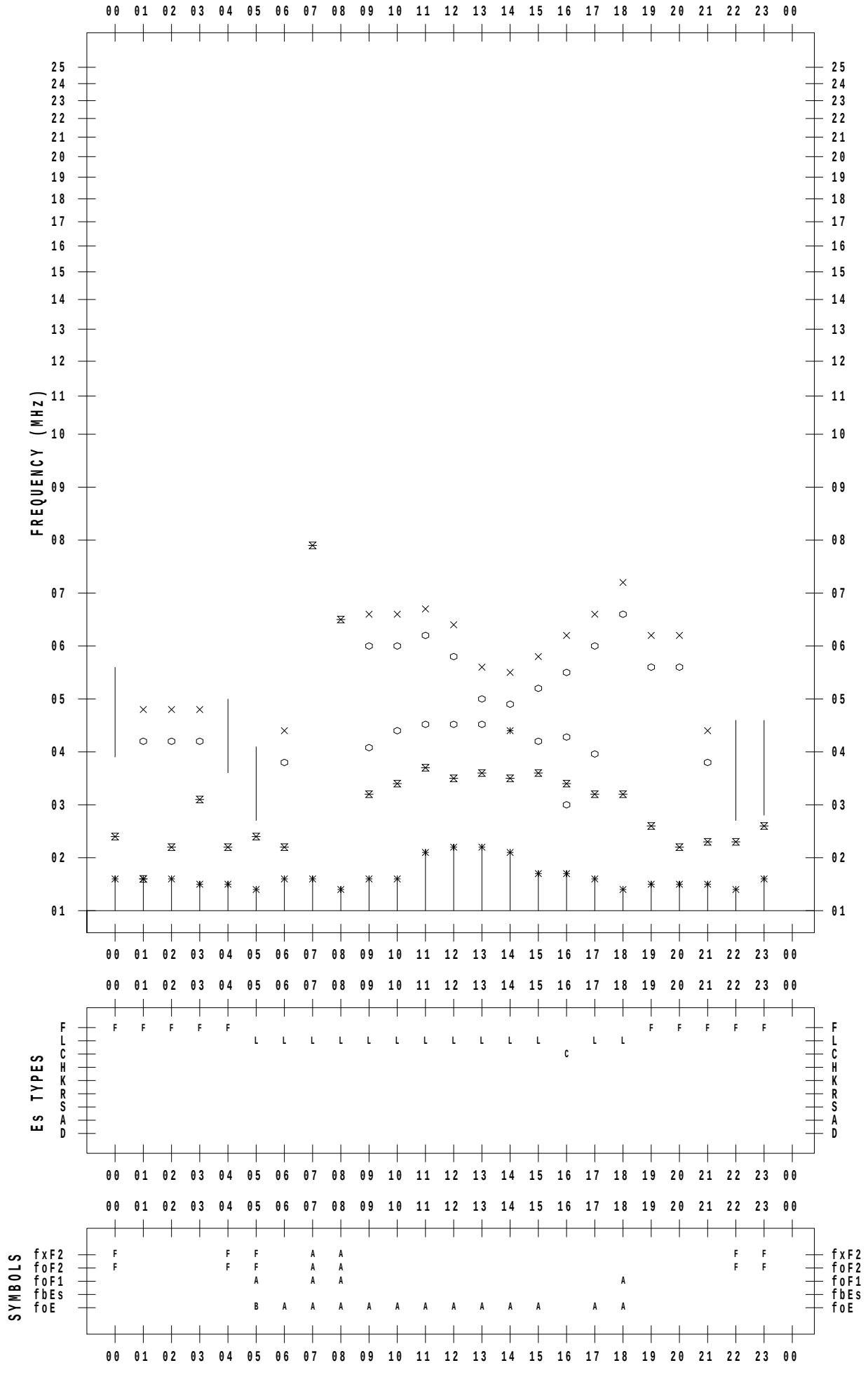
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/21

135 °E MEAN TIME



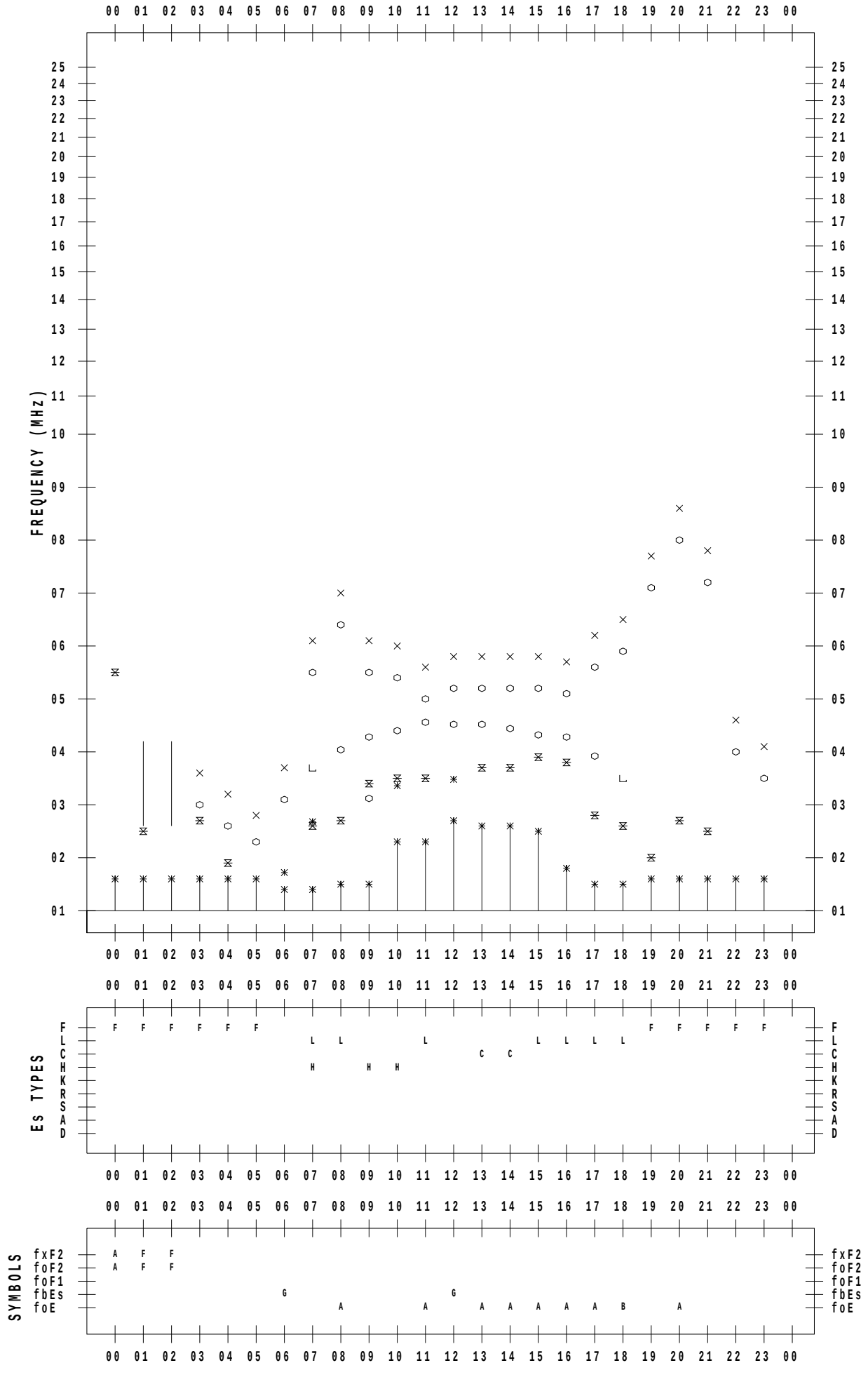
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/22

135 °E MEAN TIME



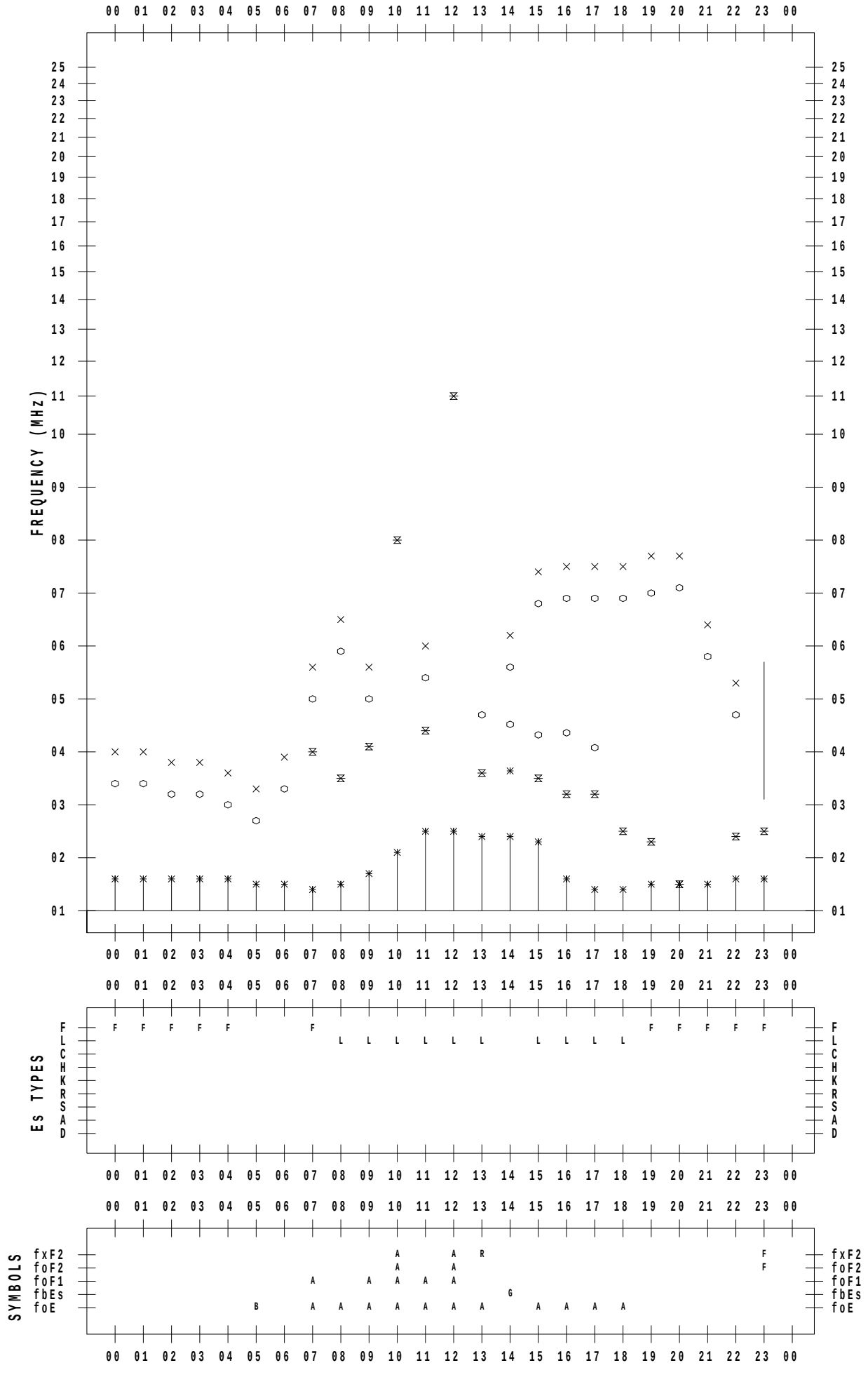
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/23

135 °E MEAN TIME



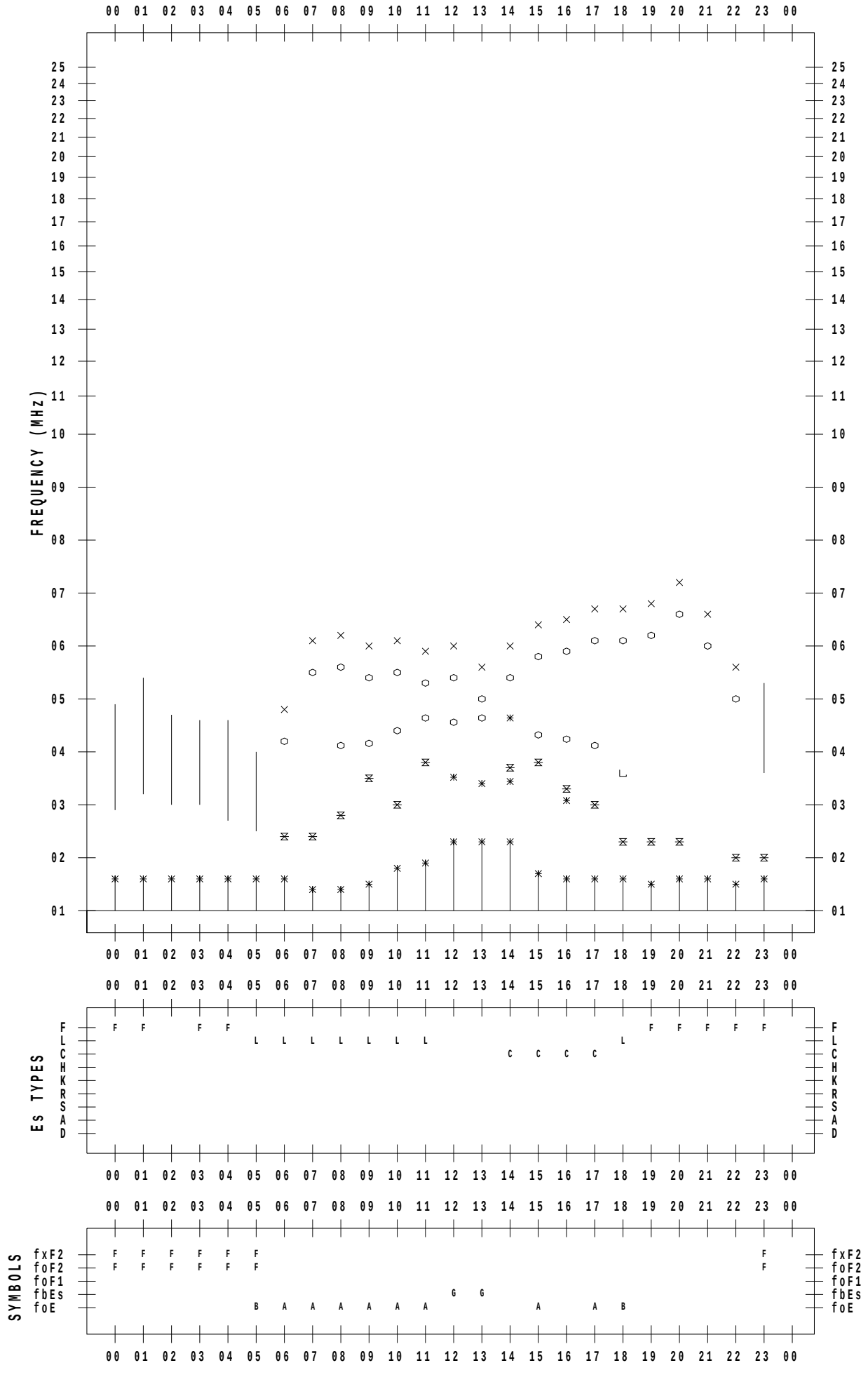
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/24

135 °E MEAN TIME



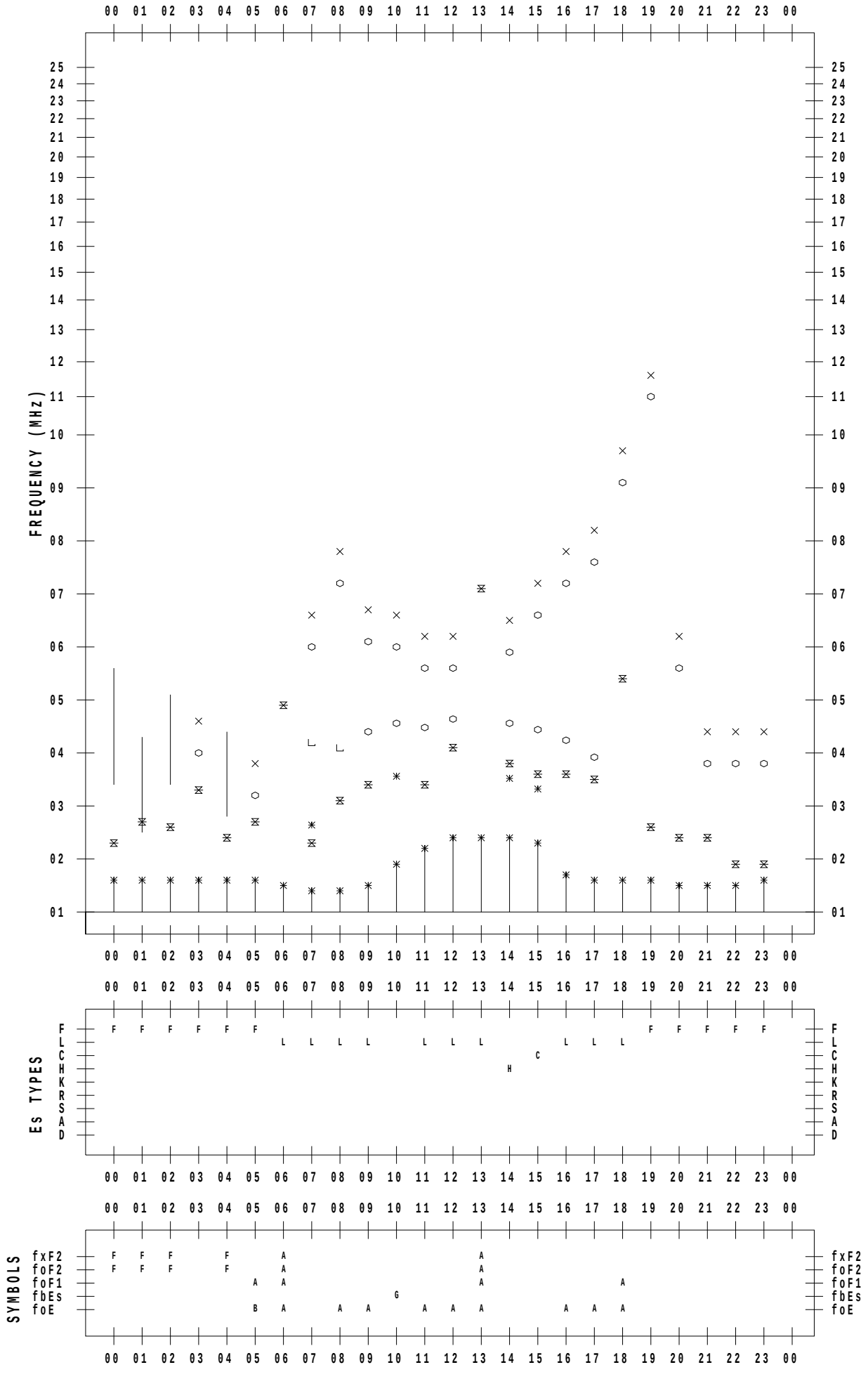
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/25

135 °E MEAN TIME



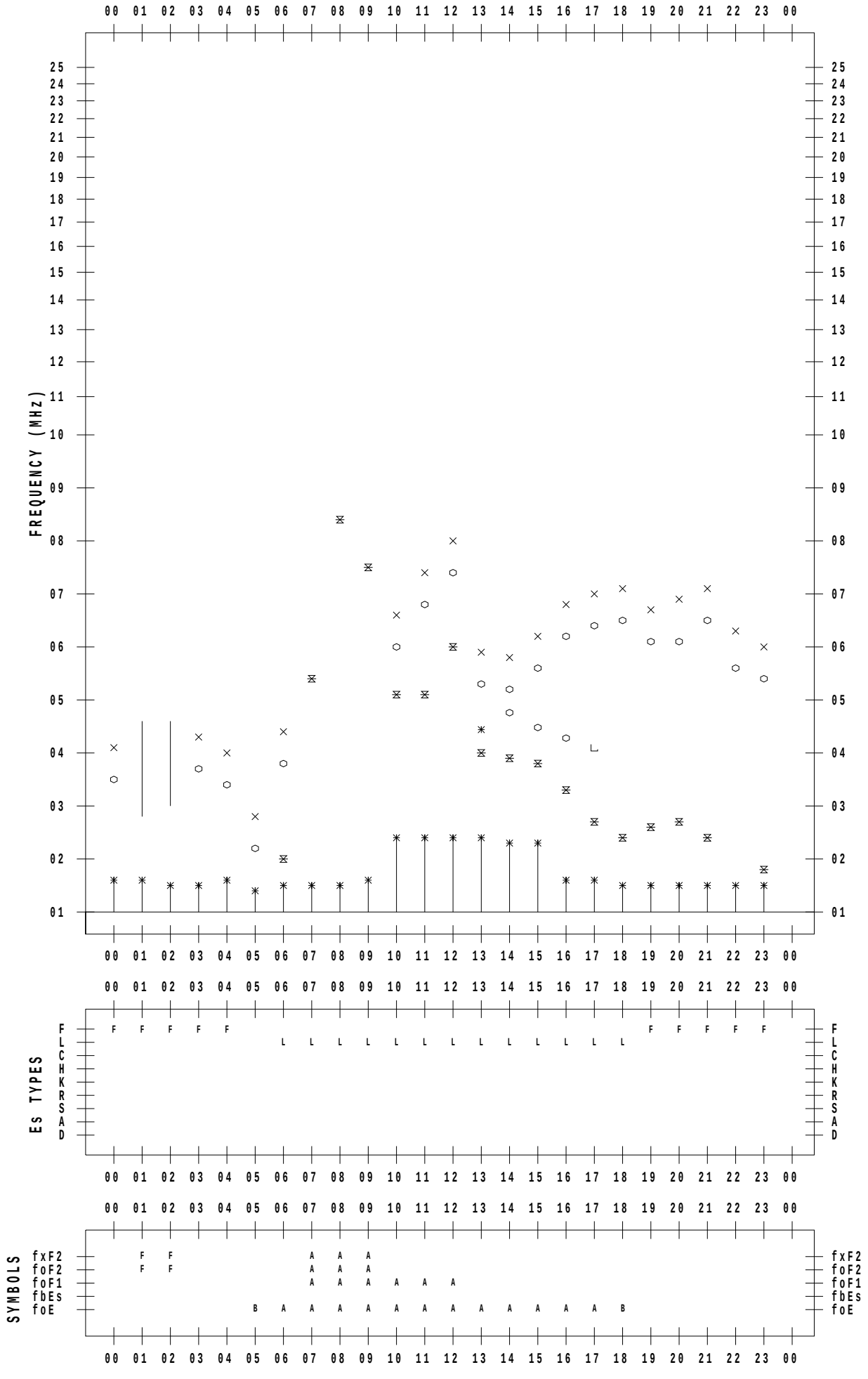
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/26

135 °E MEAN TIME



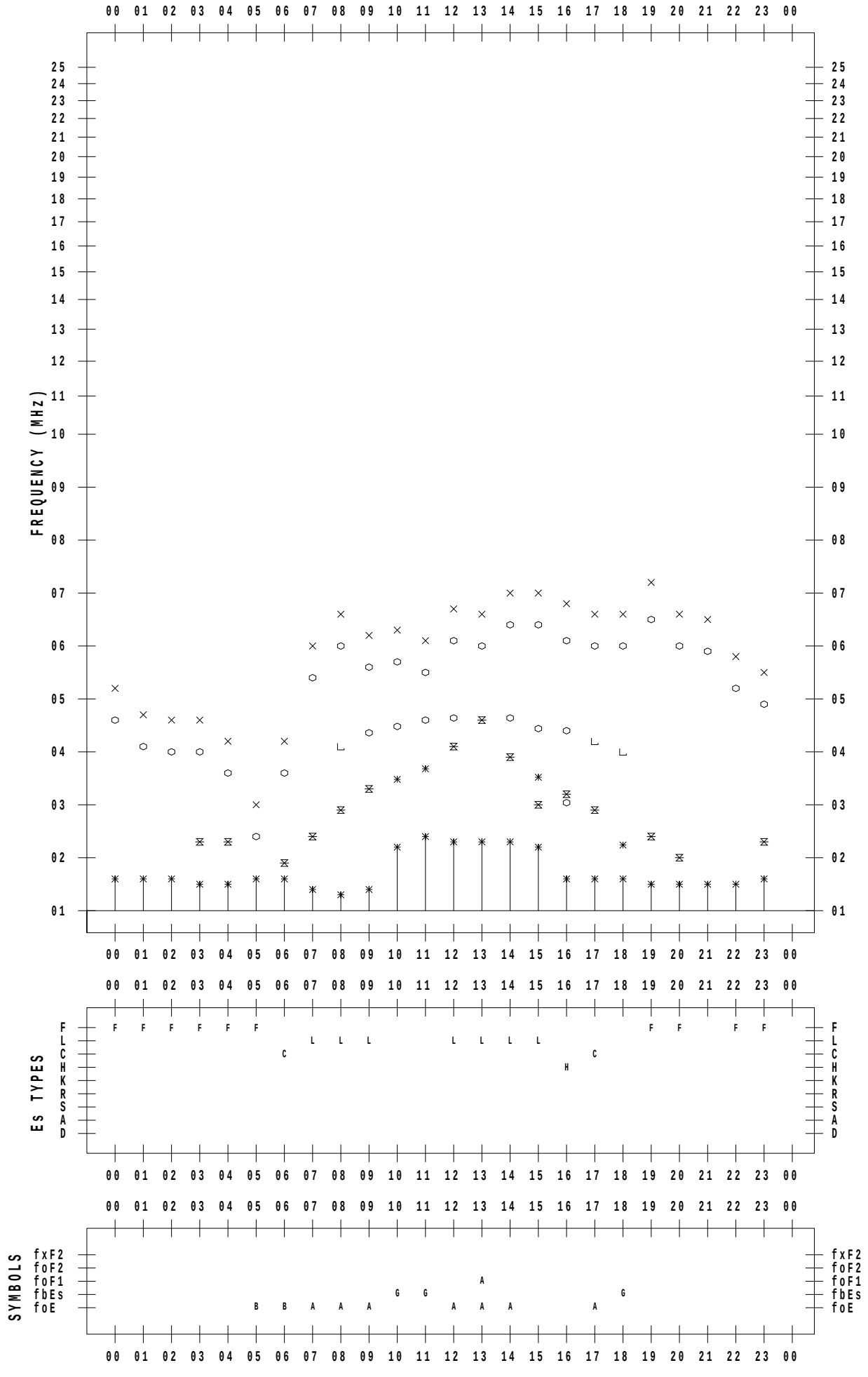
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/27

135 °E MEAN TIME



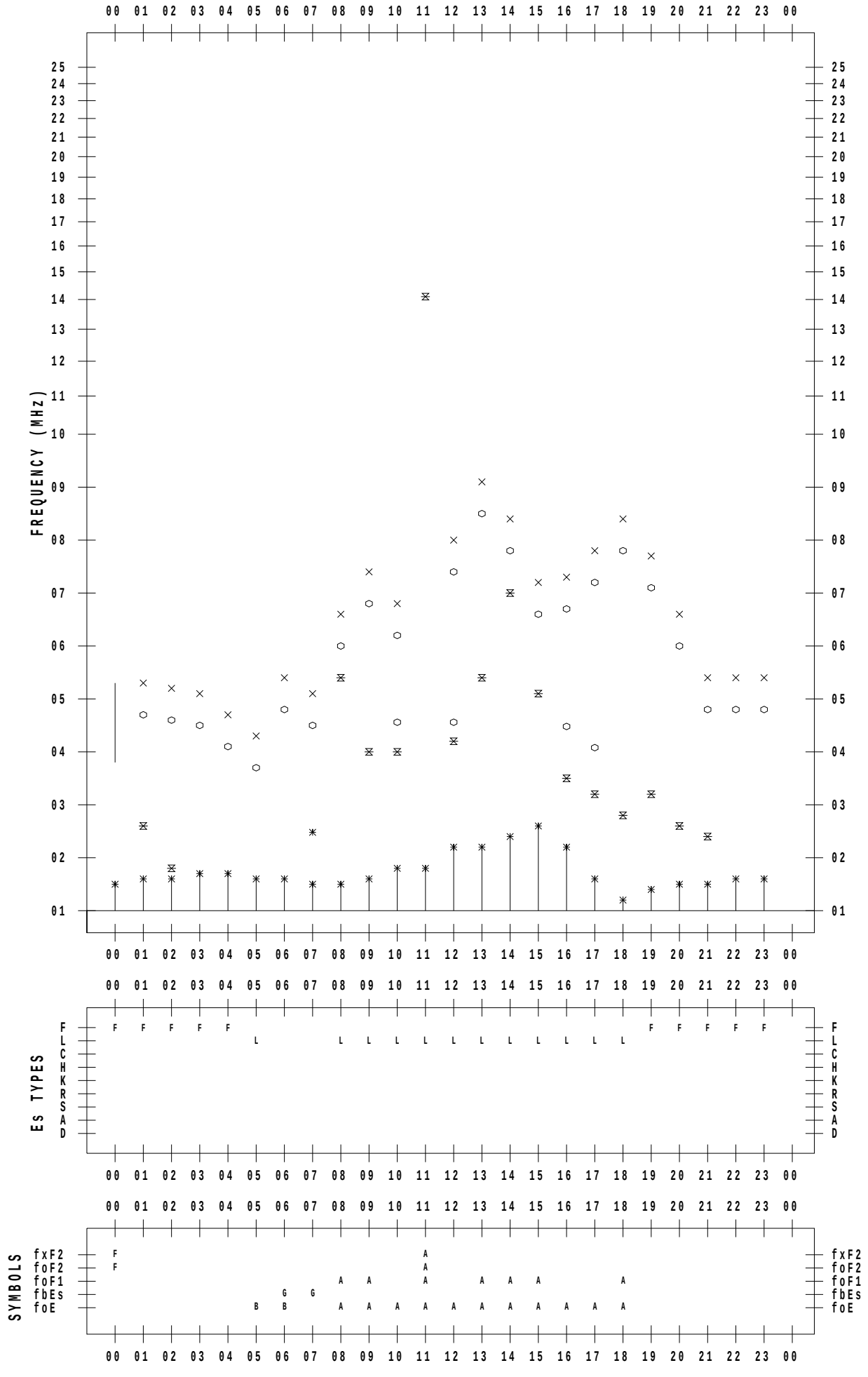
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/28

135 °E MEAN TIME



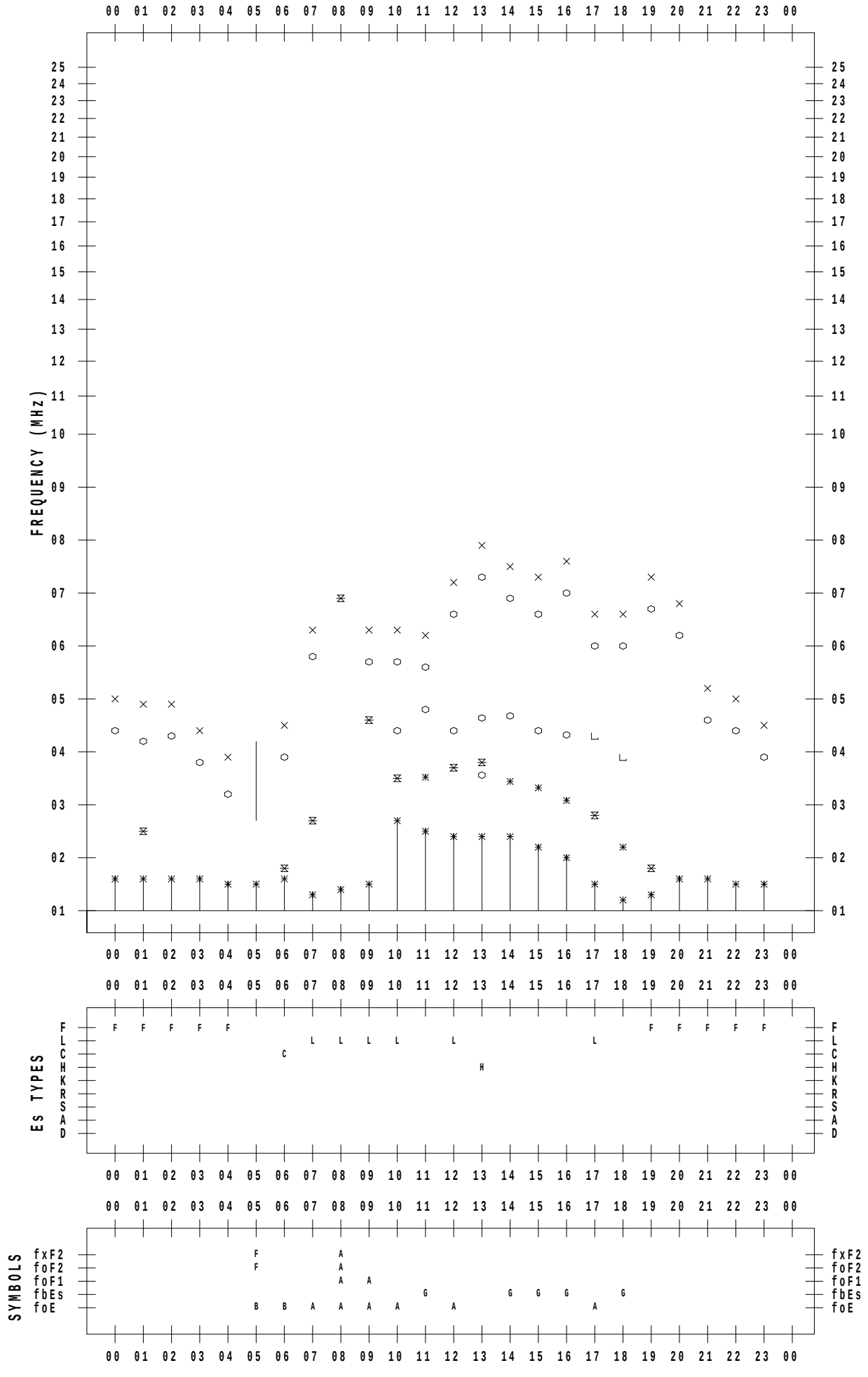
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/29

135 °E MEAN TIME



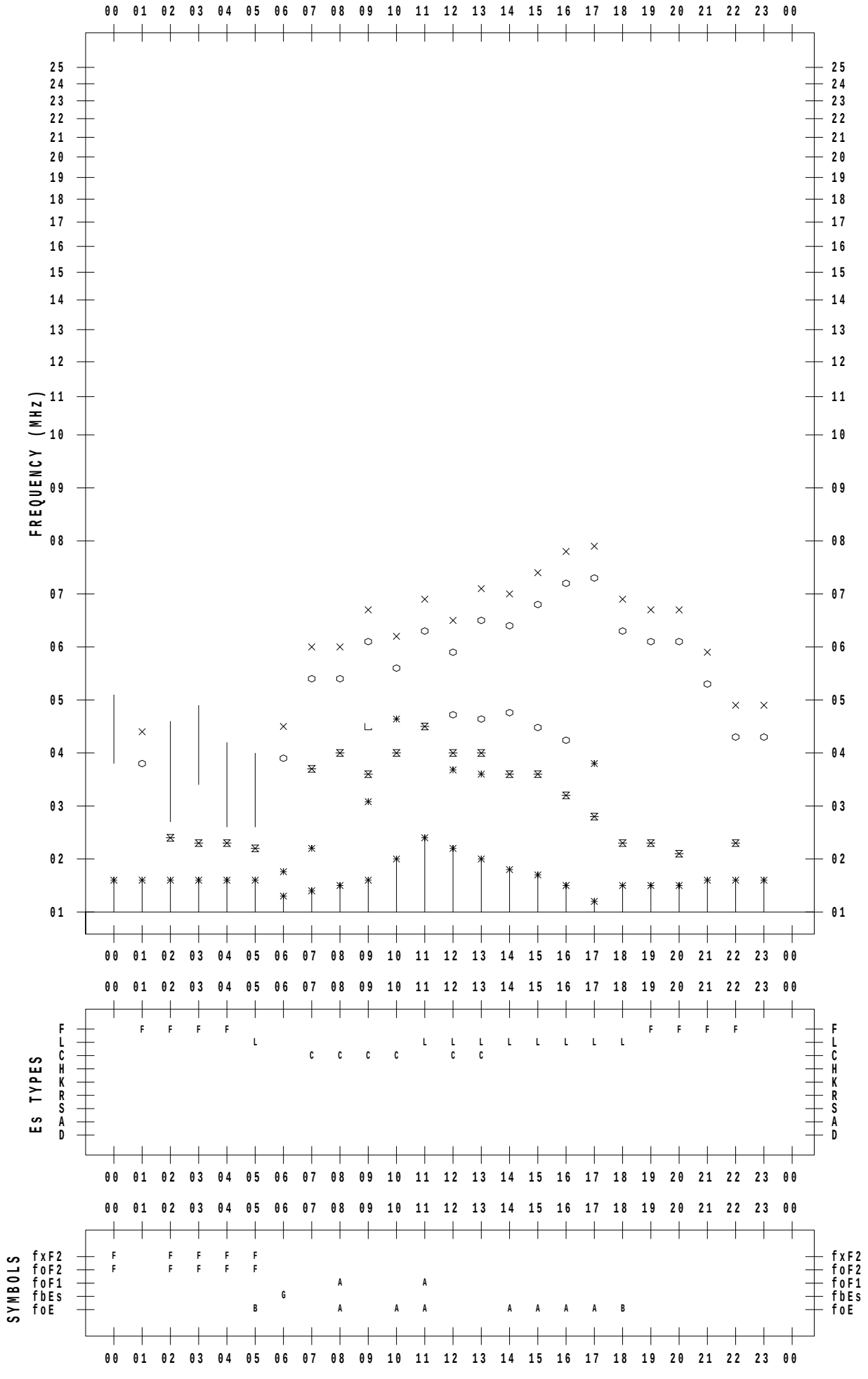
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/30

135 °E MEAN TIME



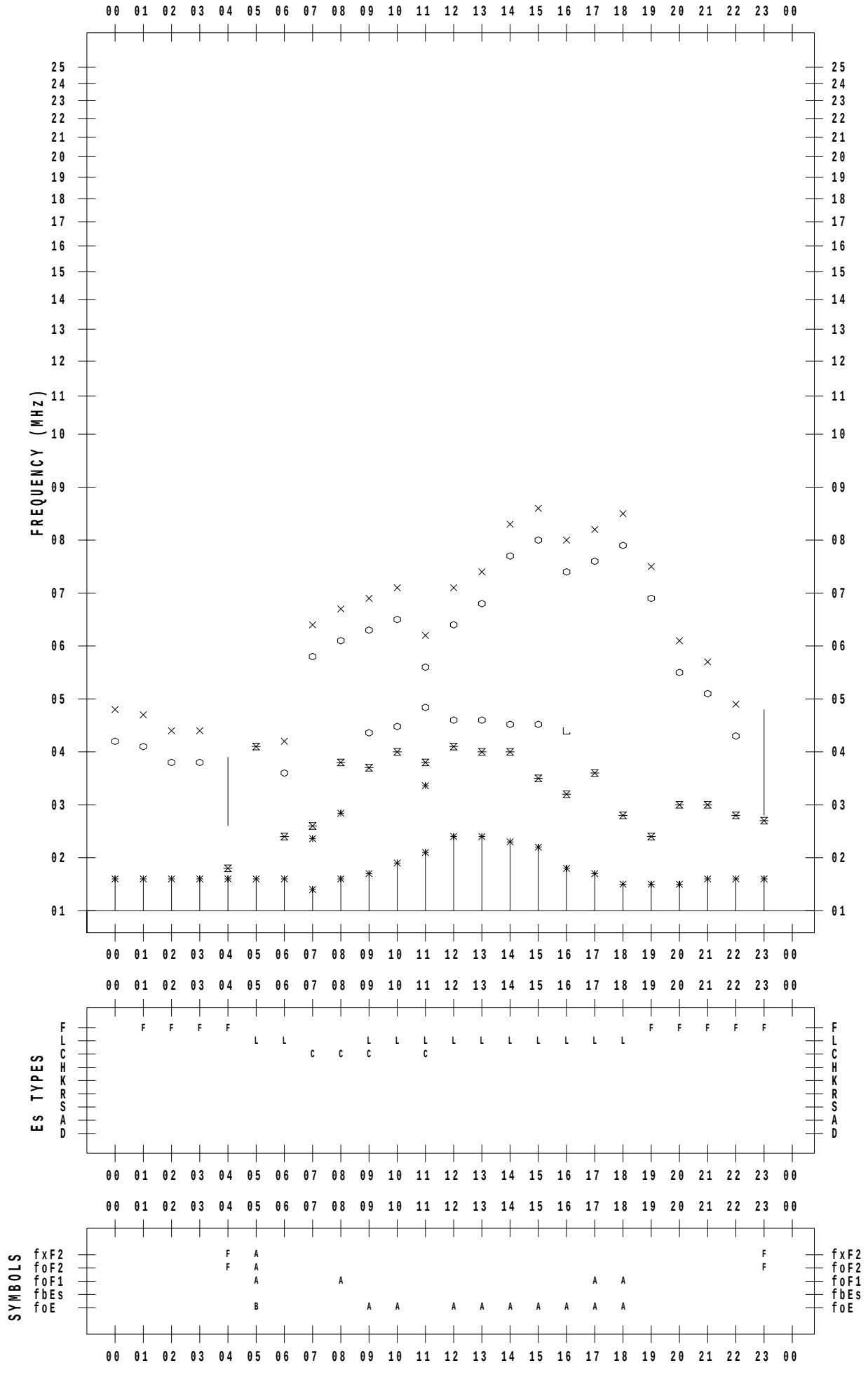
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 8/31

135 °E MEAN TIME



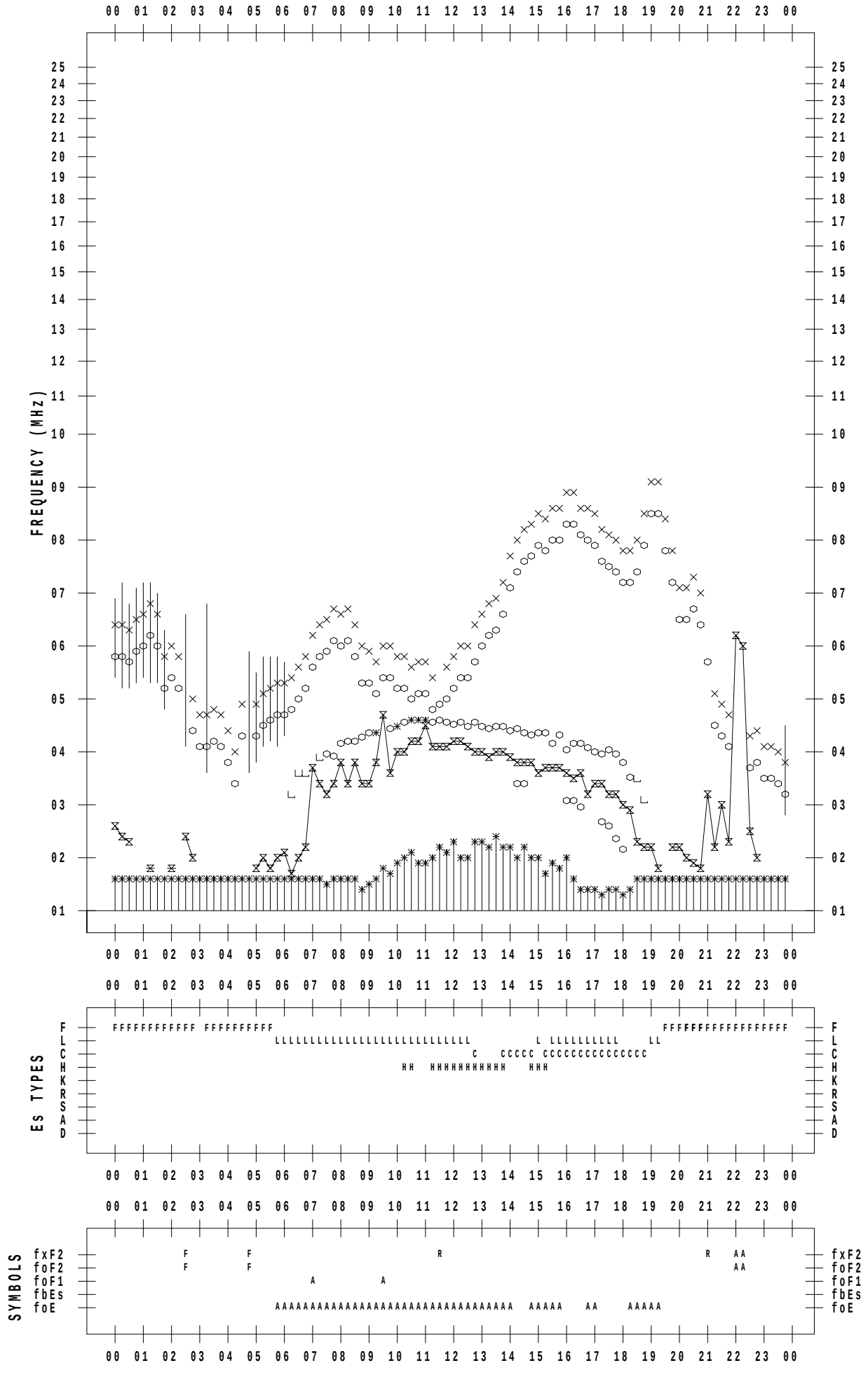
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 1

135 °E MEAN TIME



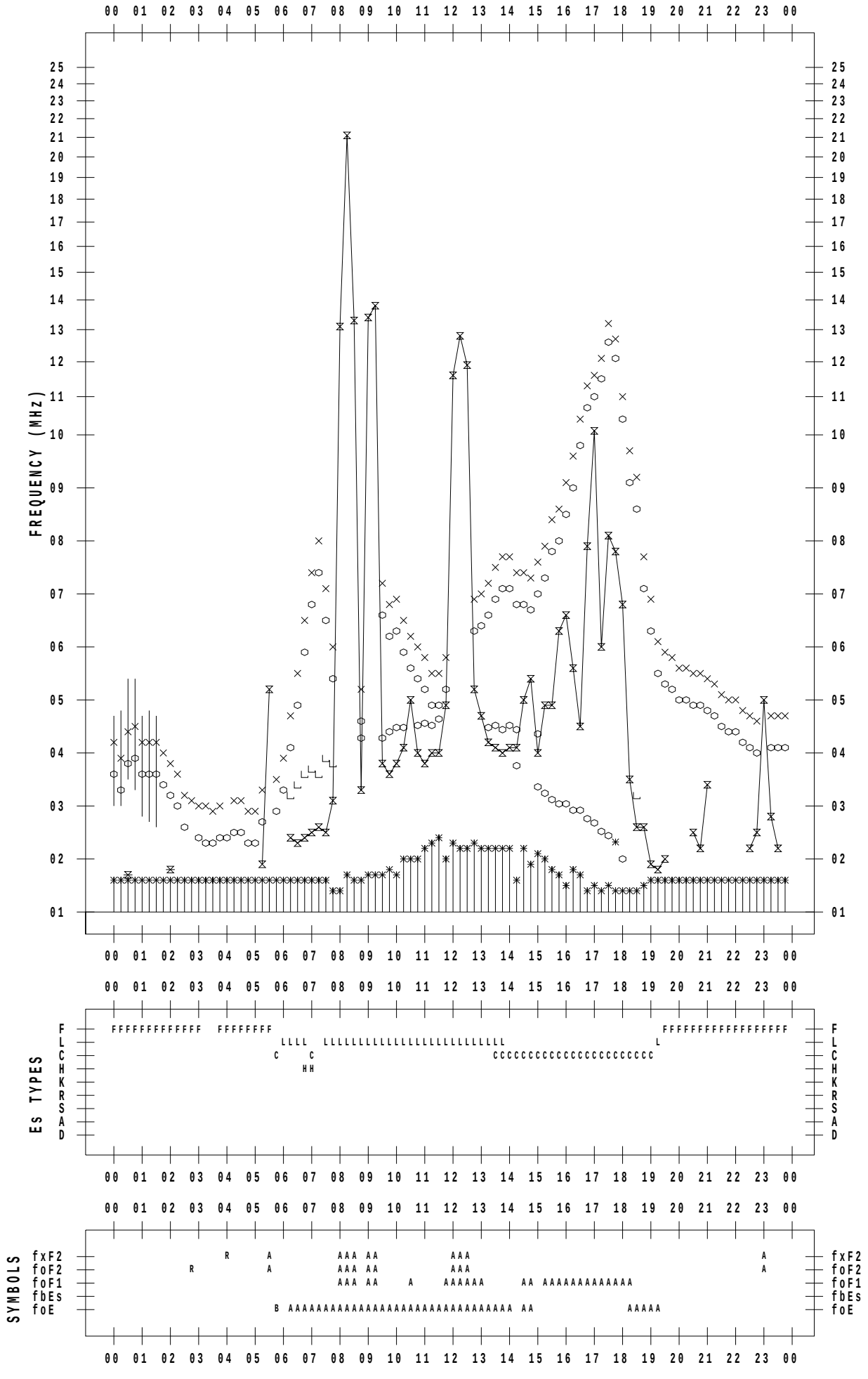
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 2

135 °E MEAN TIME



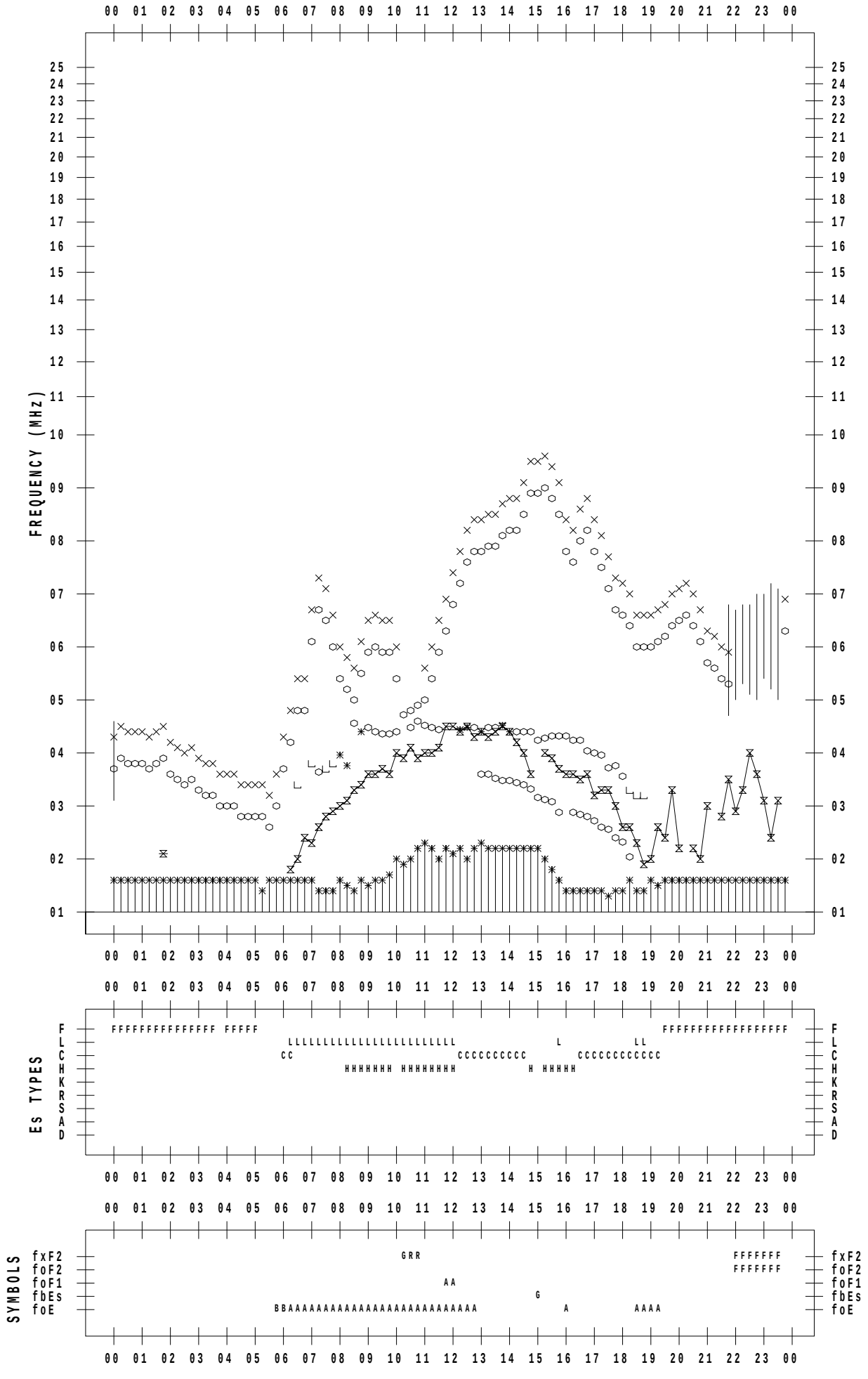
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 3

135 °E MEAN TIME



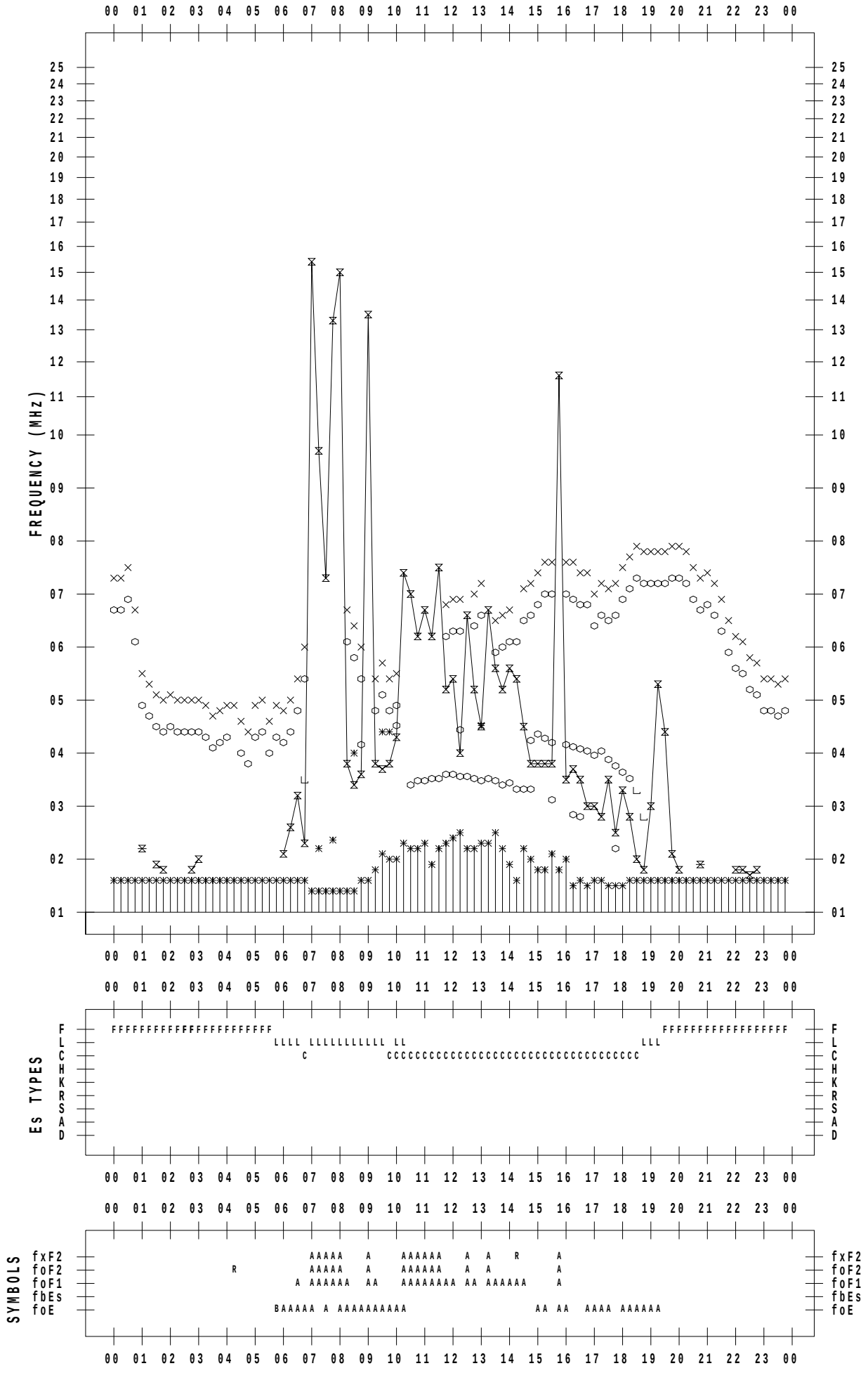
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 4

135 °E MEAN TIME



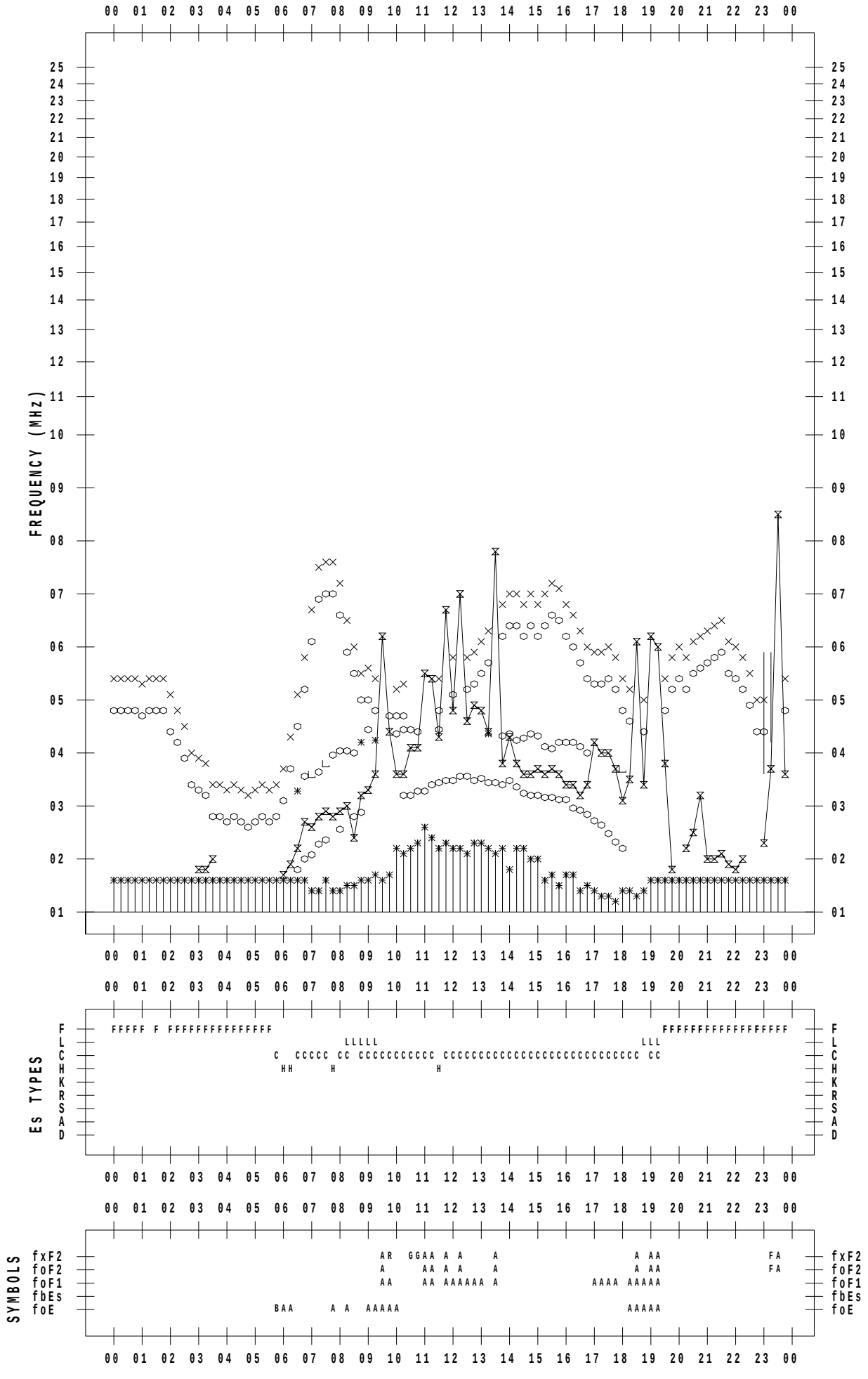
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 5

135 °E MEAN TIME



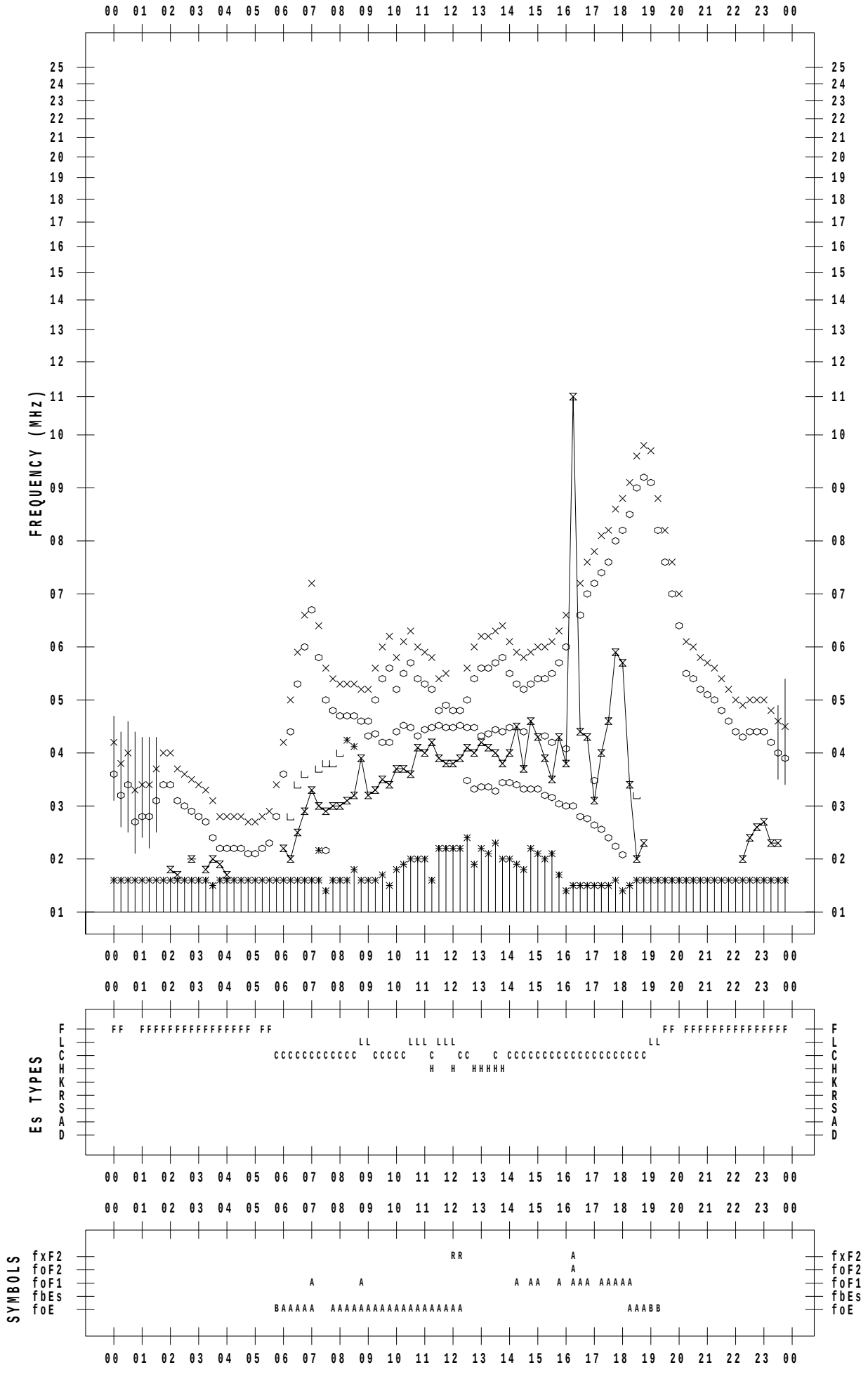
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 6

135 °E MEAN TIME



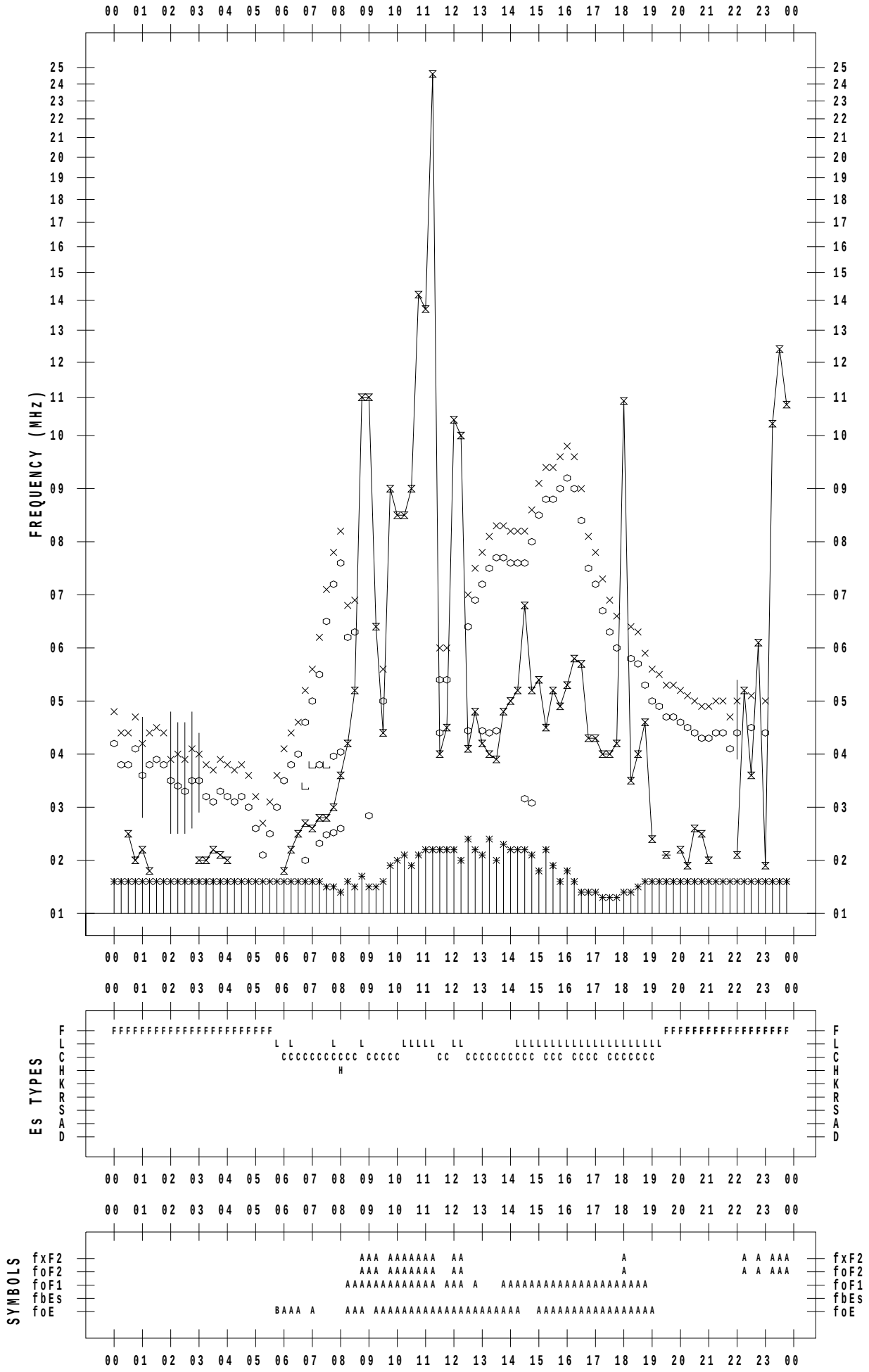
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 7

135 °E MEAN TIME



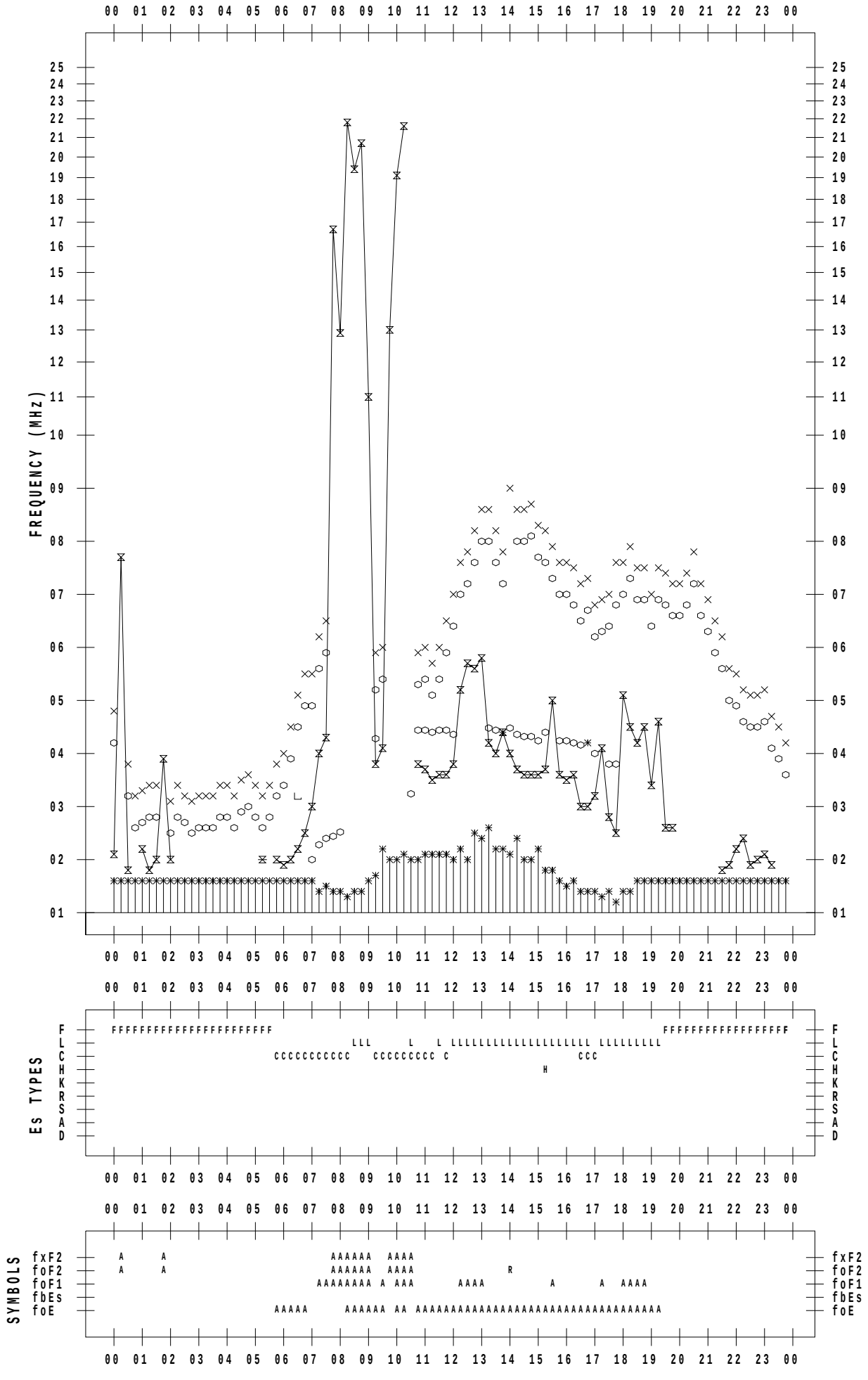
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 8

135 °E MEAN TIME



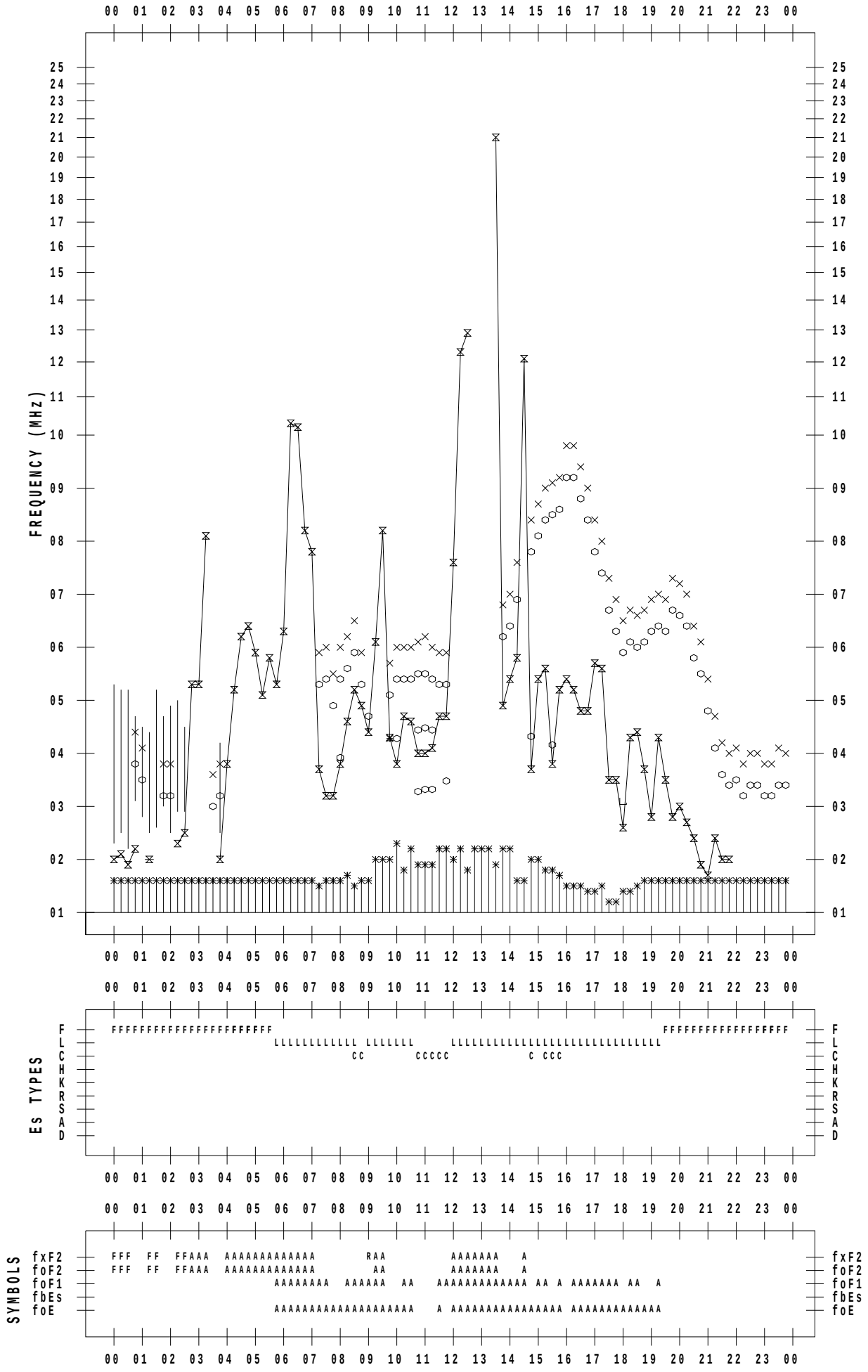
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/ 9

135 °E MEAN TIME



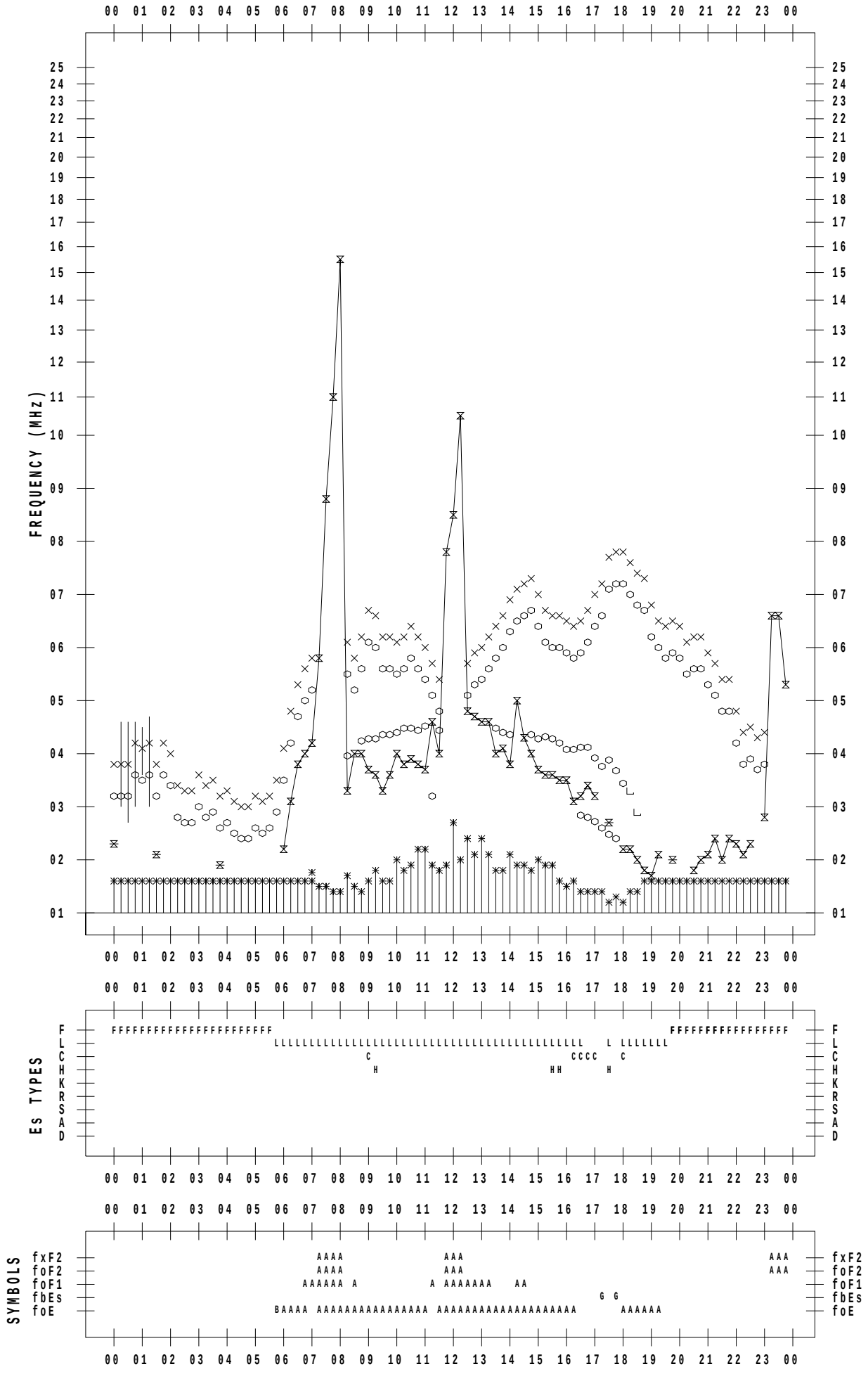
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/10

135 °E MEAN TIME



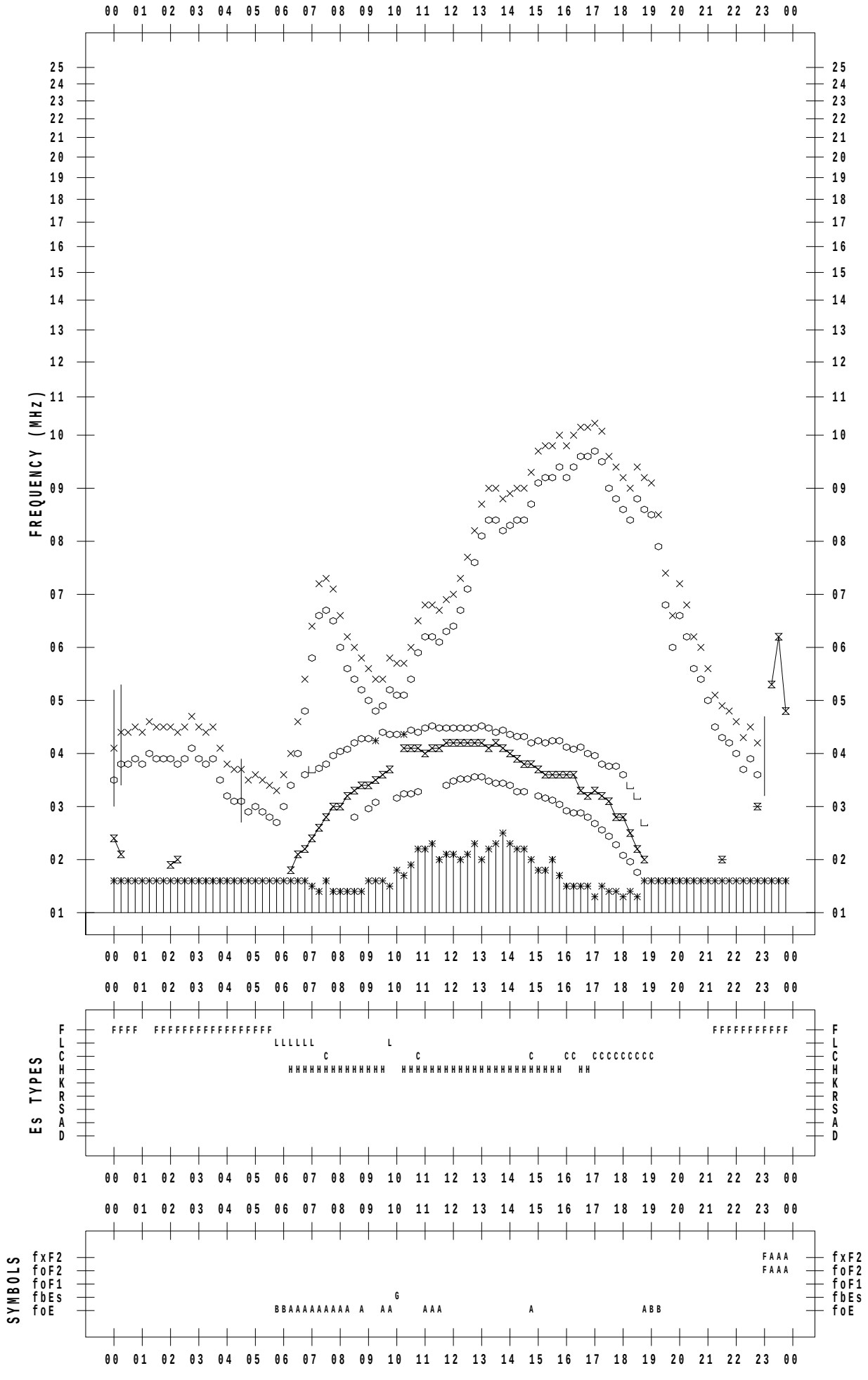
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/11

135 °E MEAN TIME



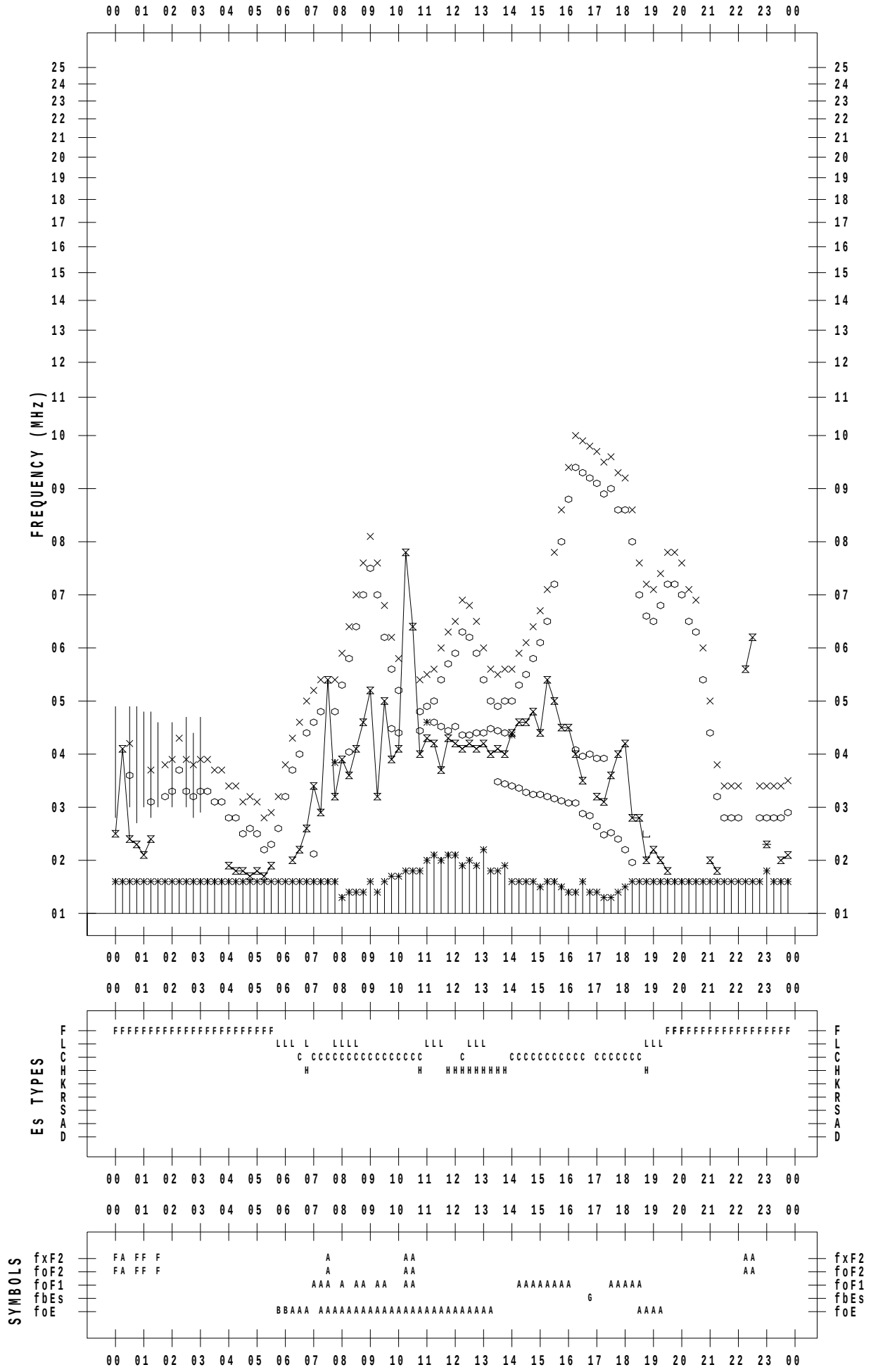
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/12

135 °E MEAN TIME



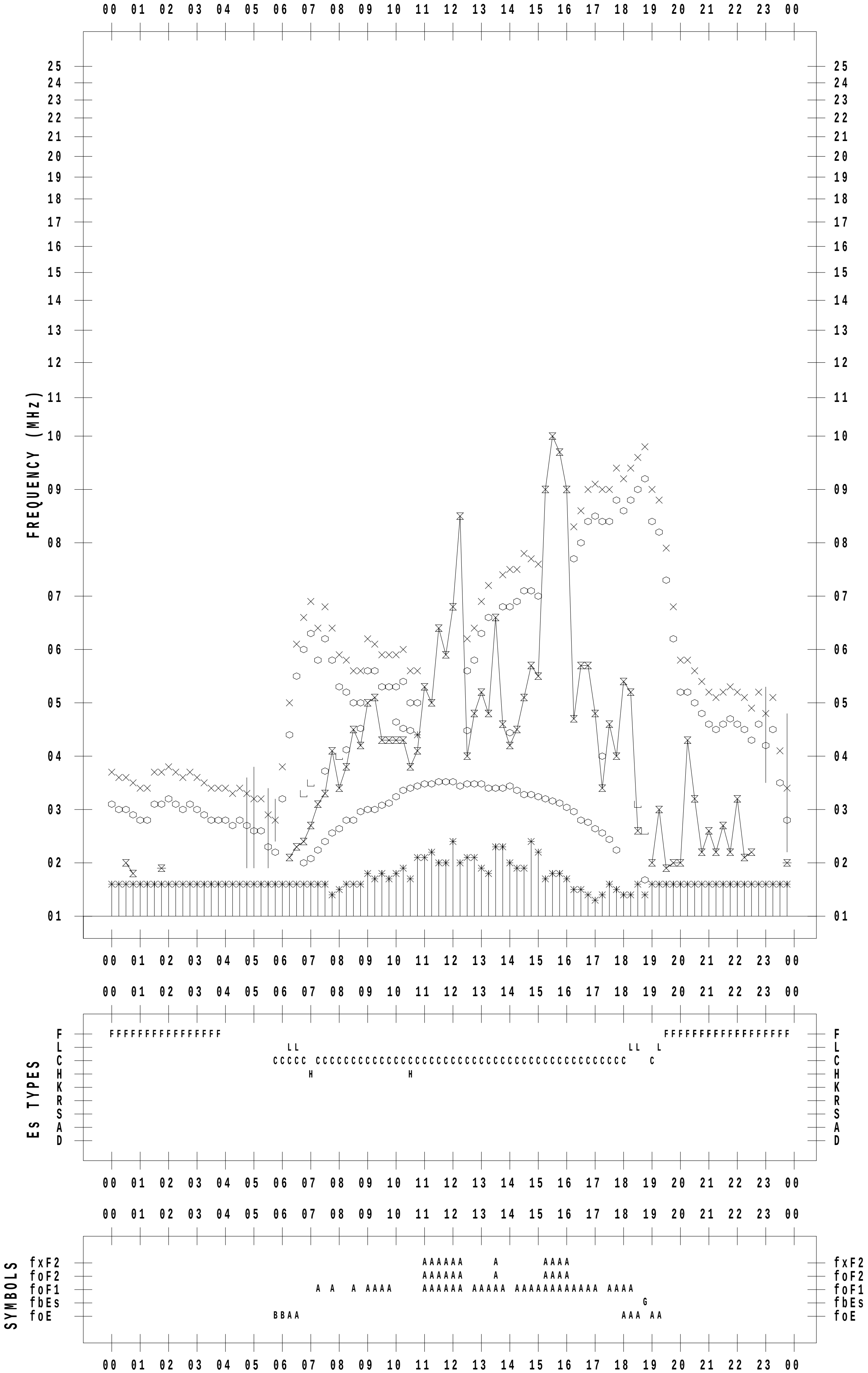
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/13

135 °E MEAN TIME



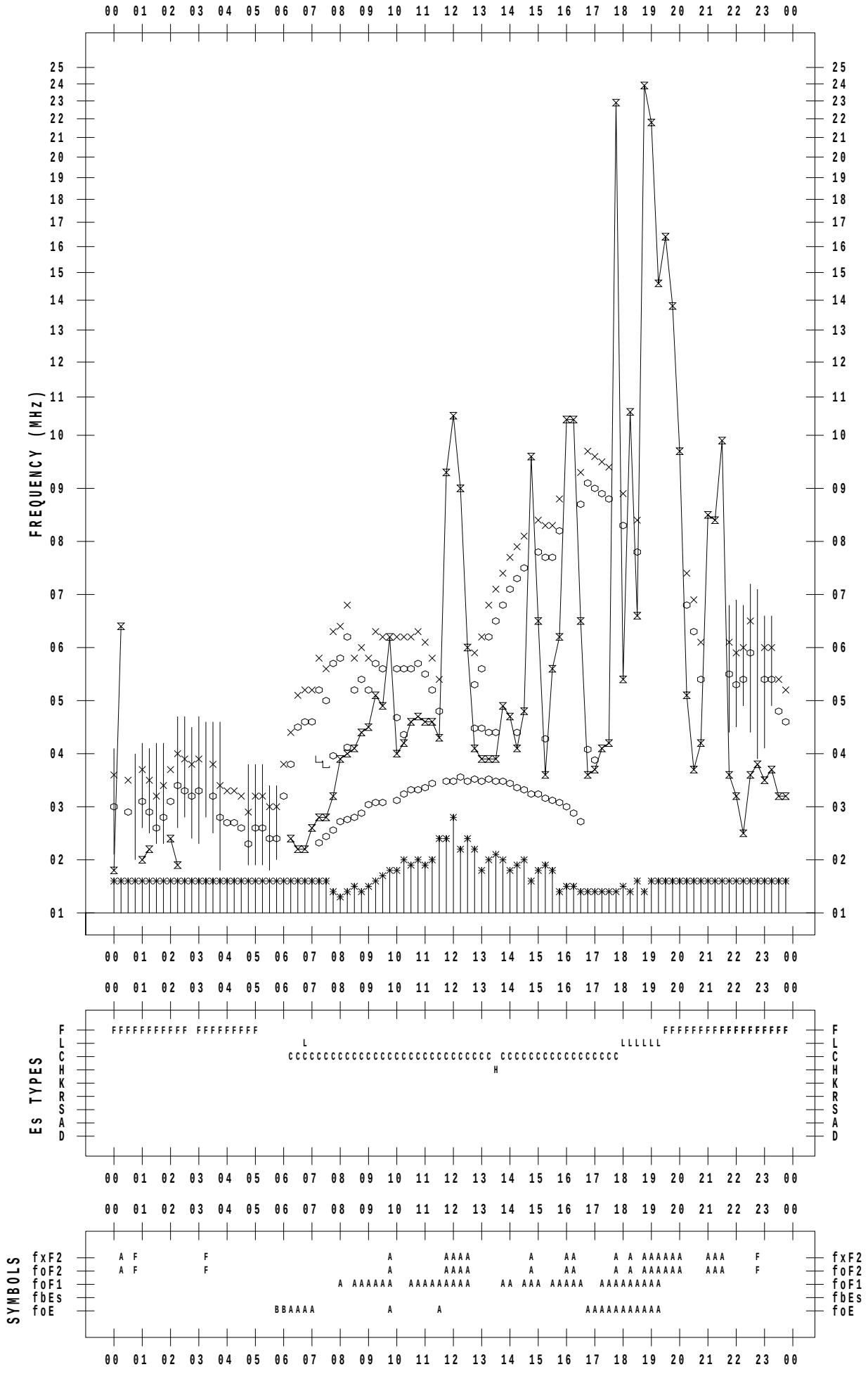
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/14

135 °E MEAN TIME



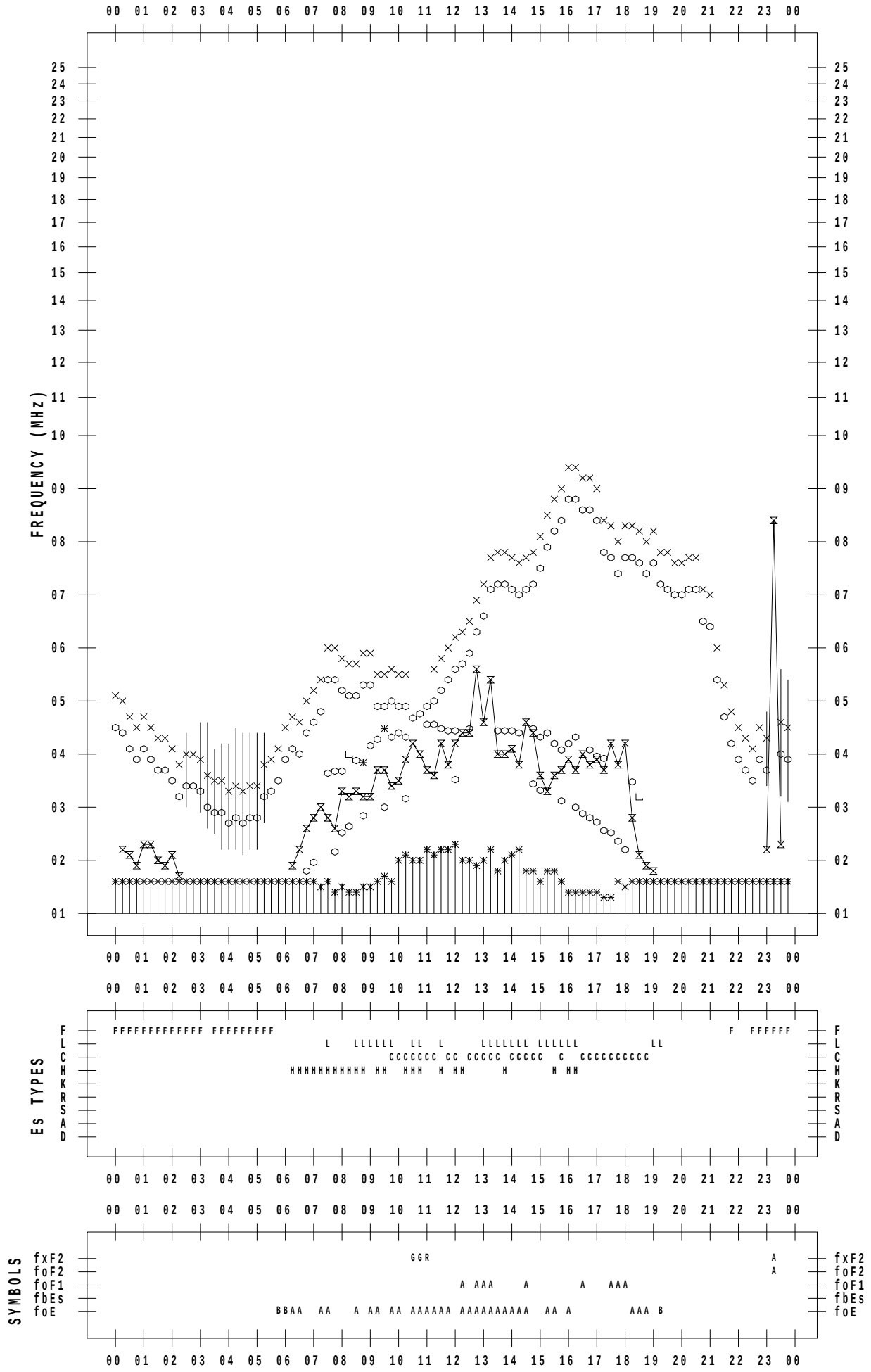
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/15

135 °E MEAN TIME



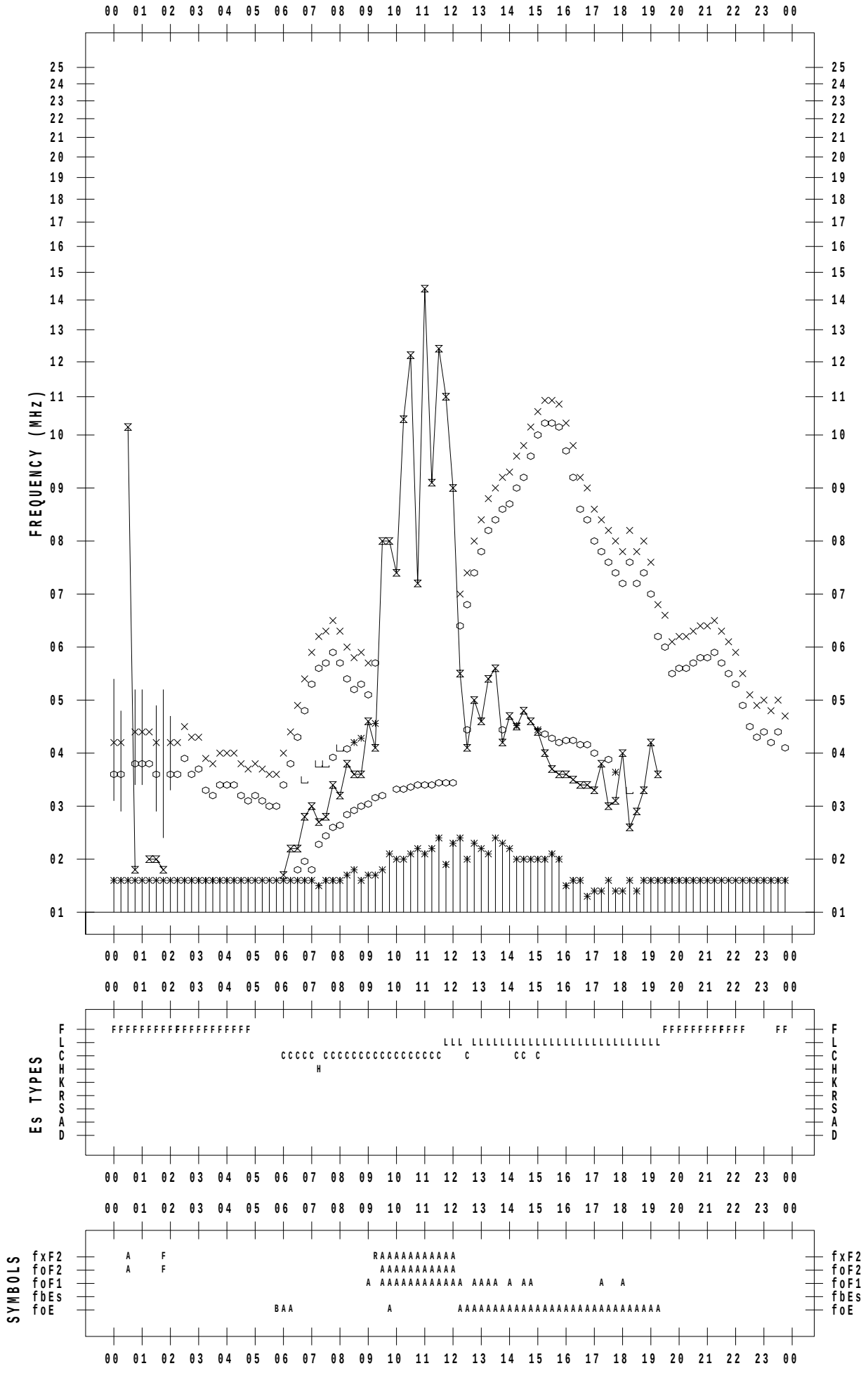
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/16

135 °E MEAN TIME



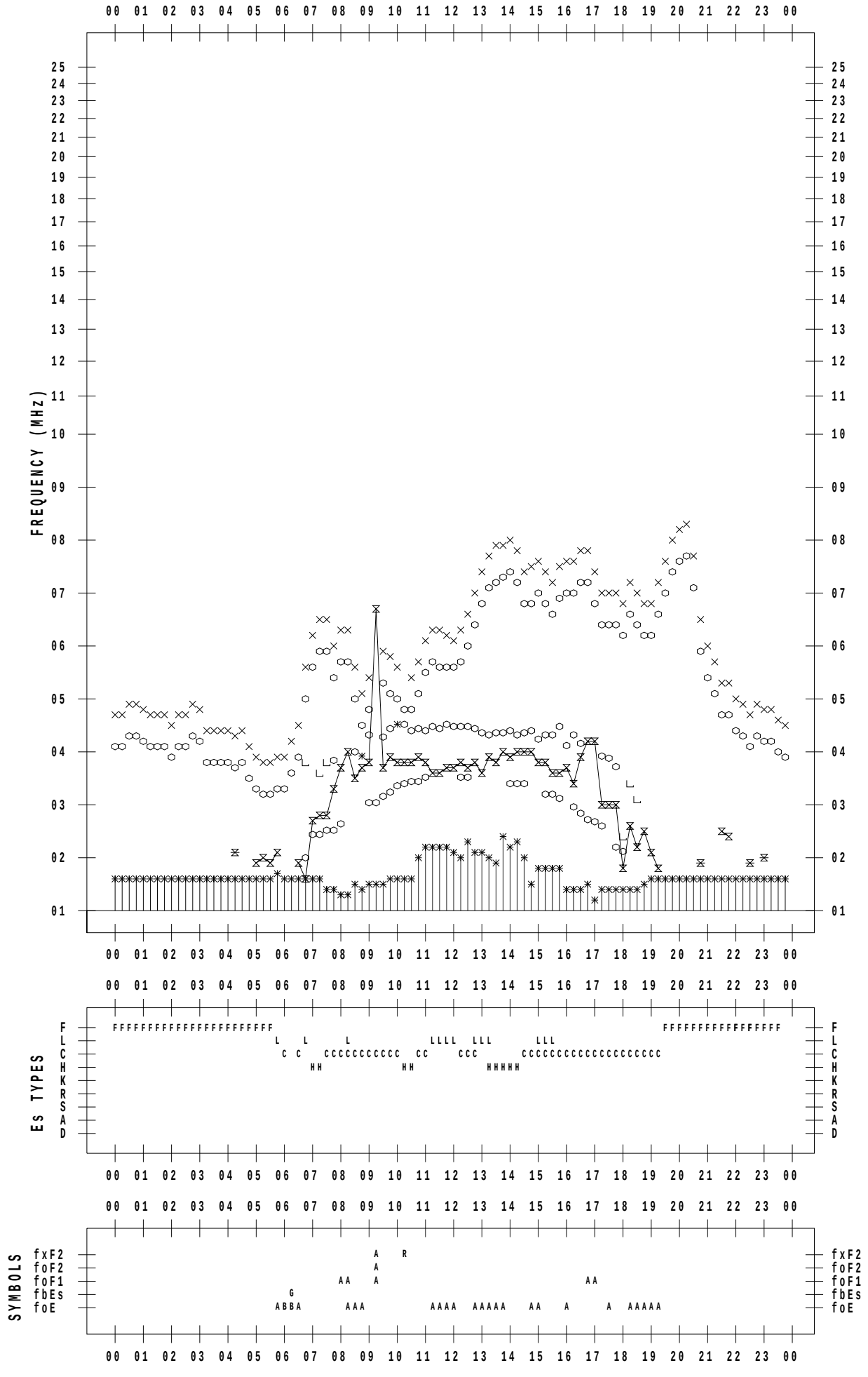
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/17

135 °E MEAN TIME



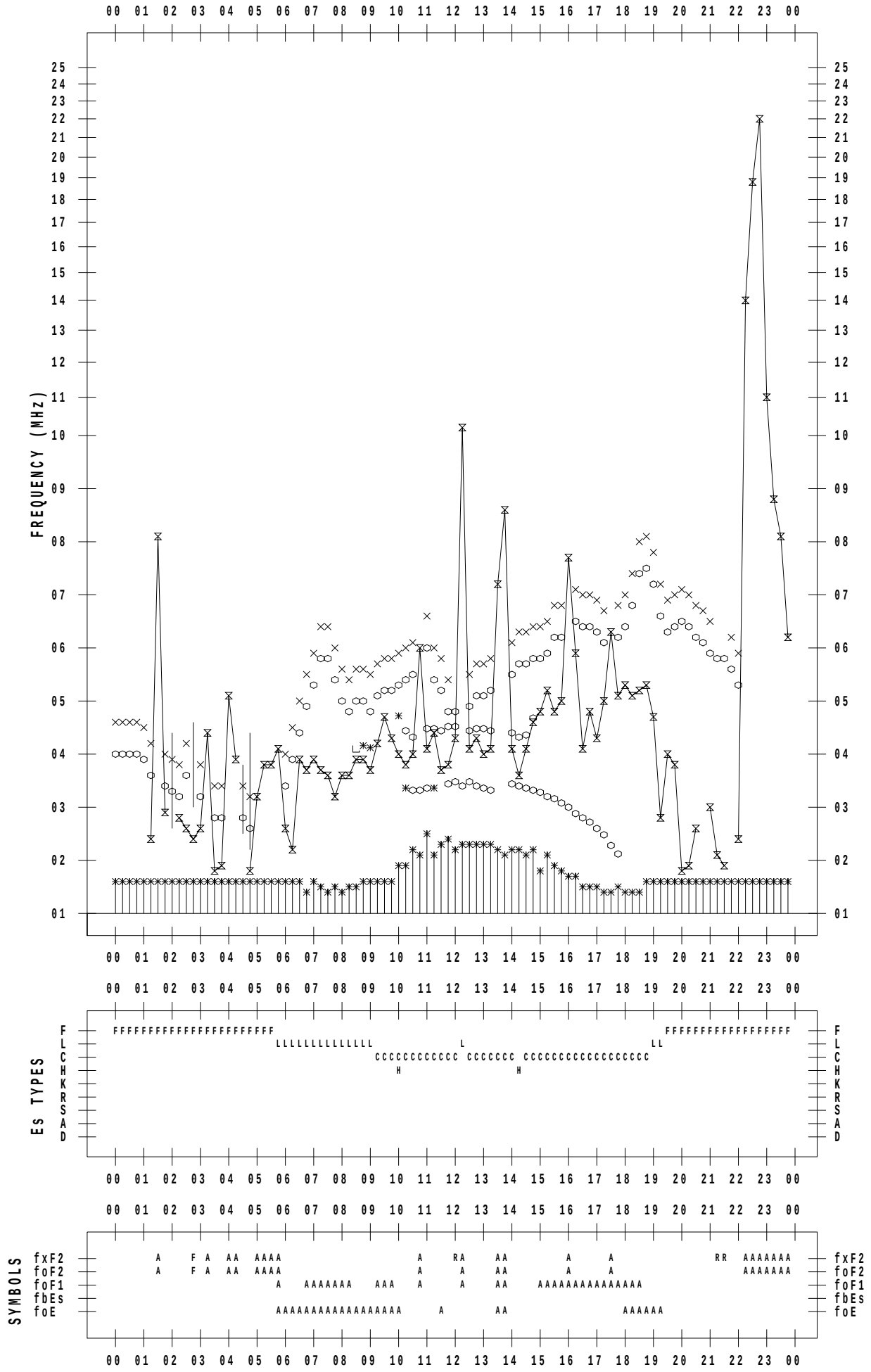
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/18

135 °E MEAN TIME



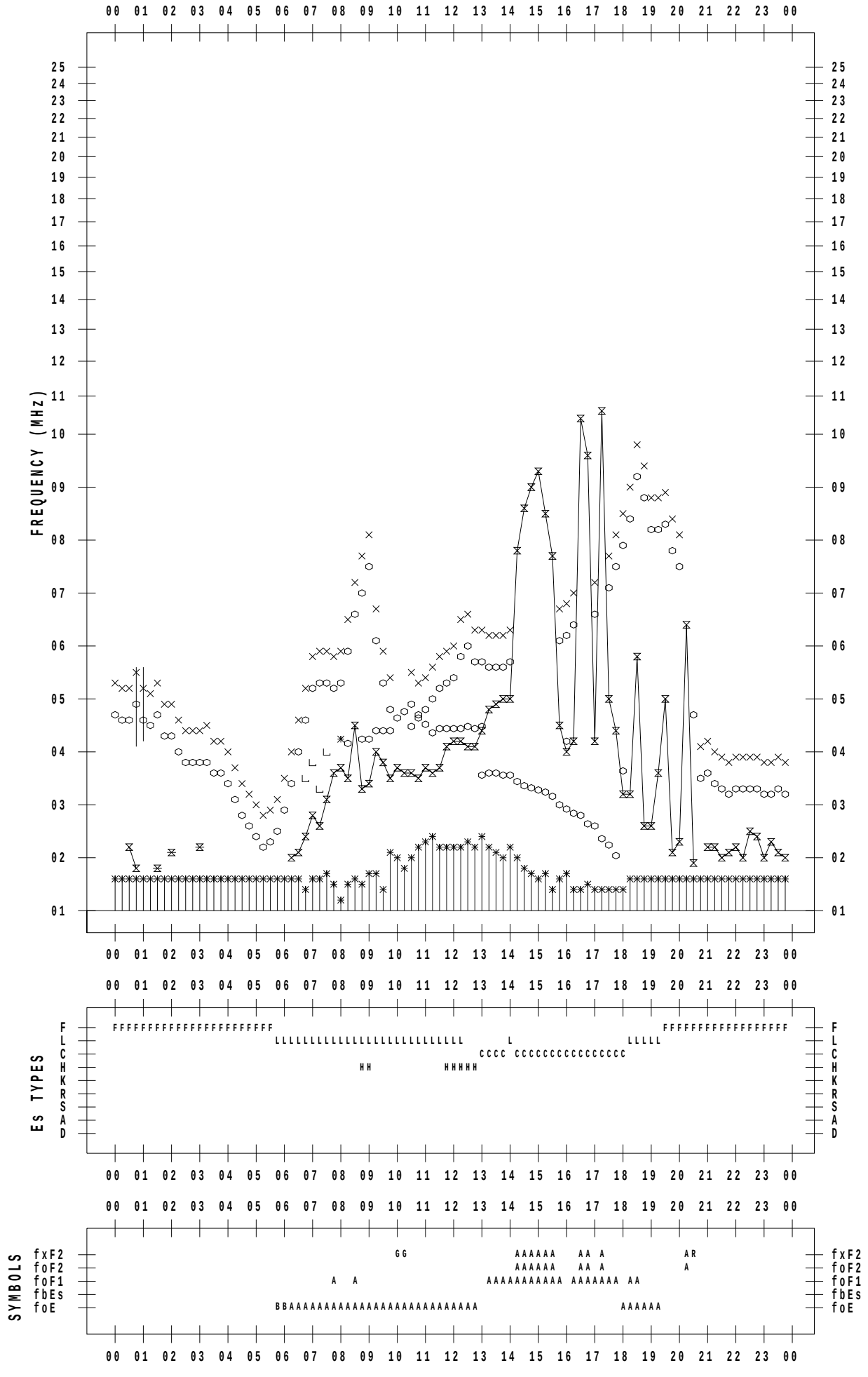
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/19

135 °E MEAN TIME



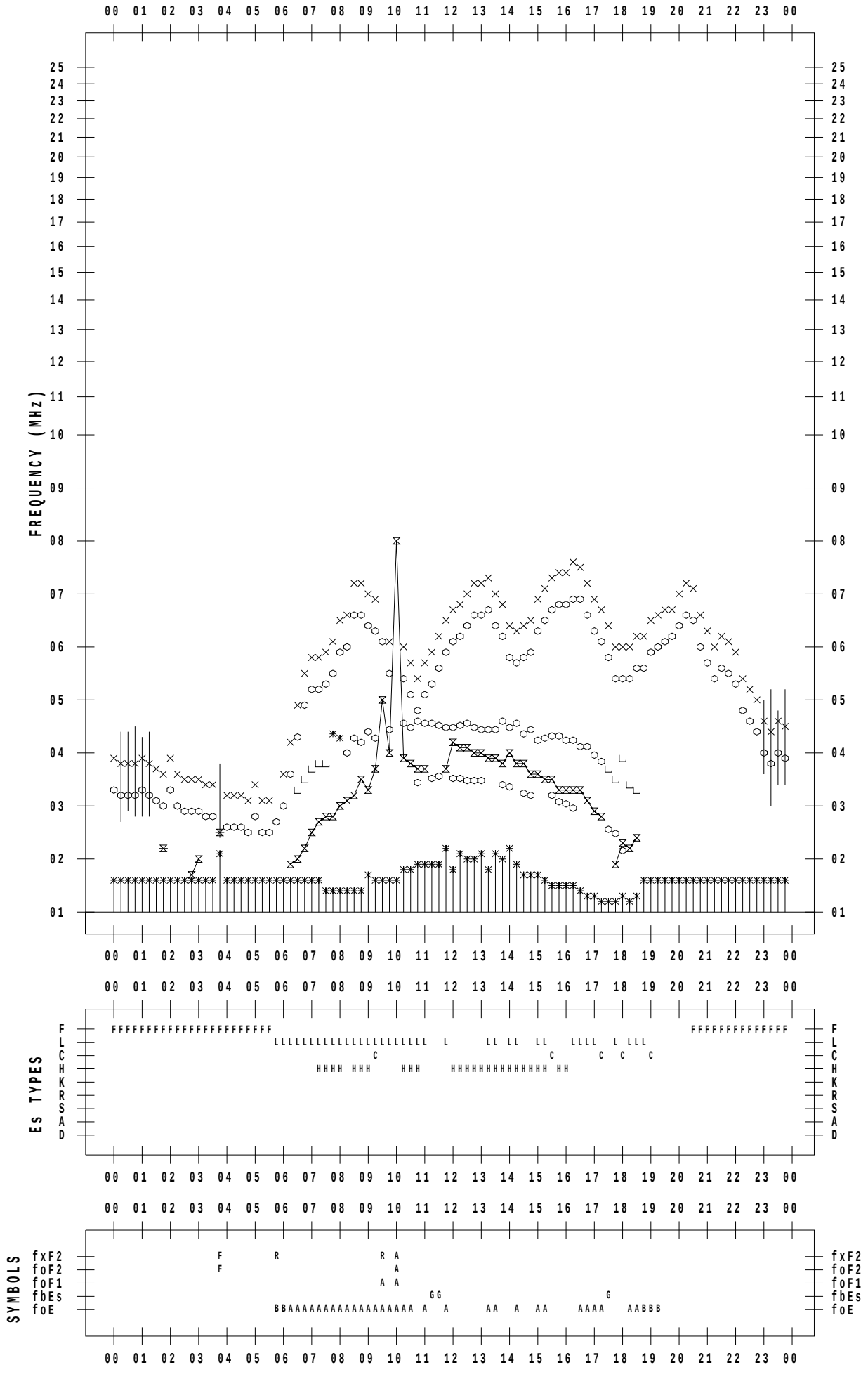
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/20

135 °E MEAN TIME



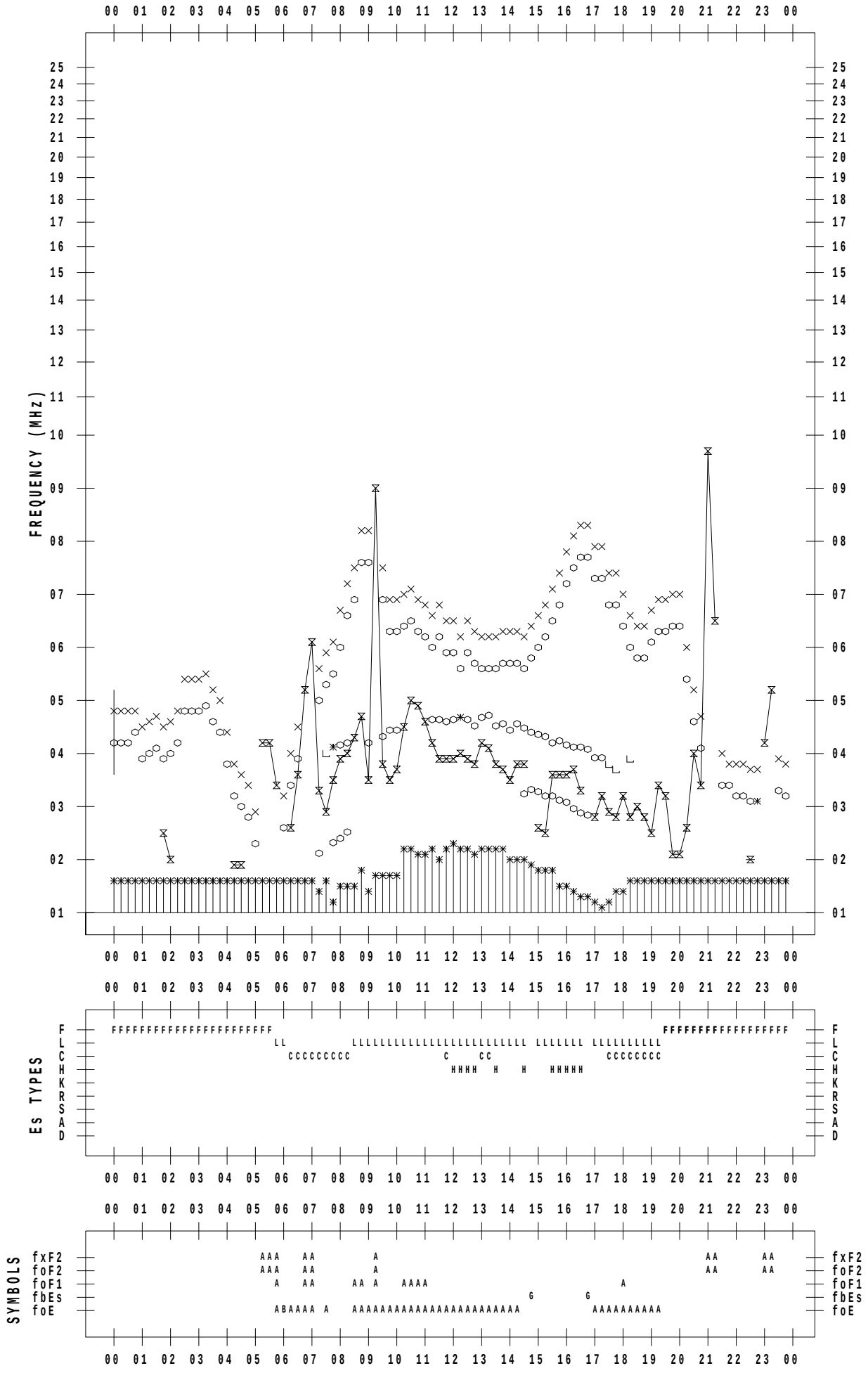
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/21

135 °E MEAN TIME



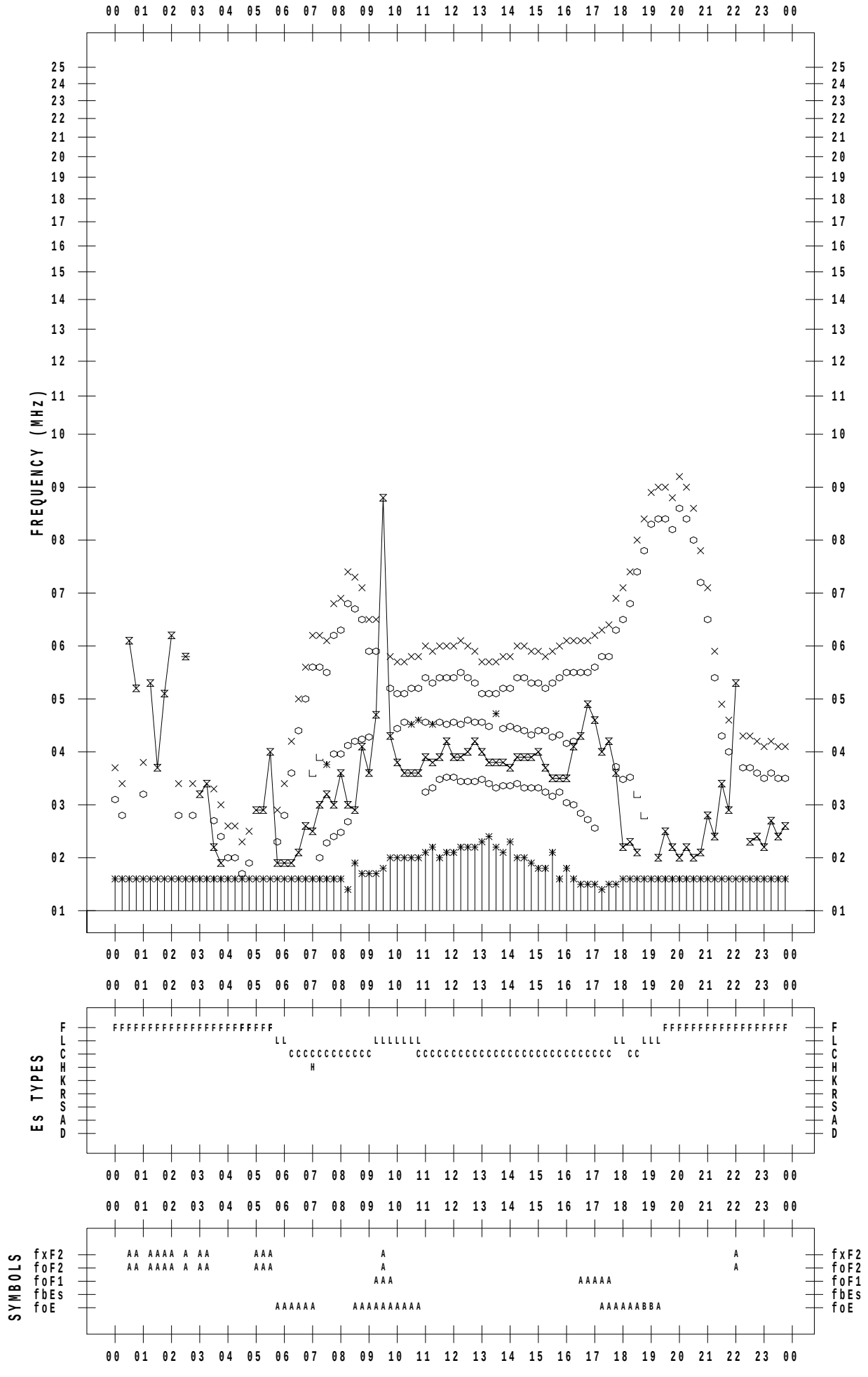
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/22

135 °E MEAN TIME



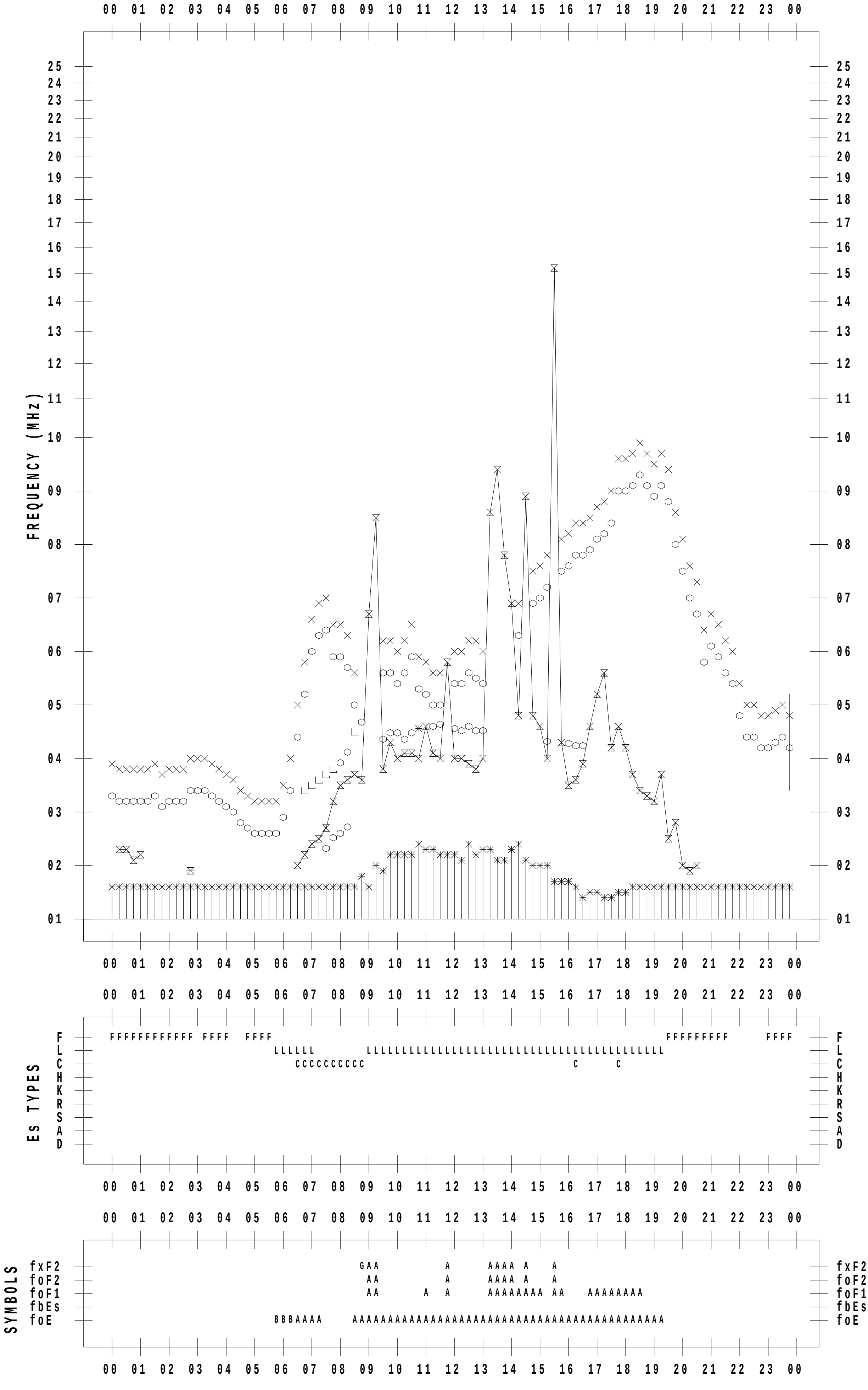
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/23

135 °E MEAN TIME



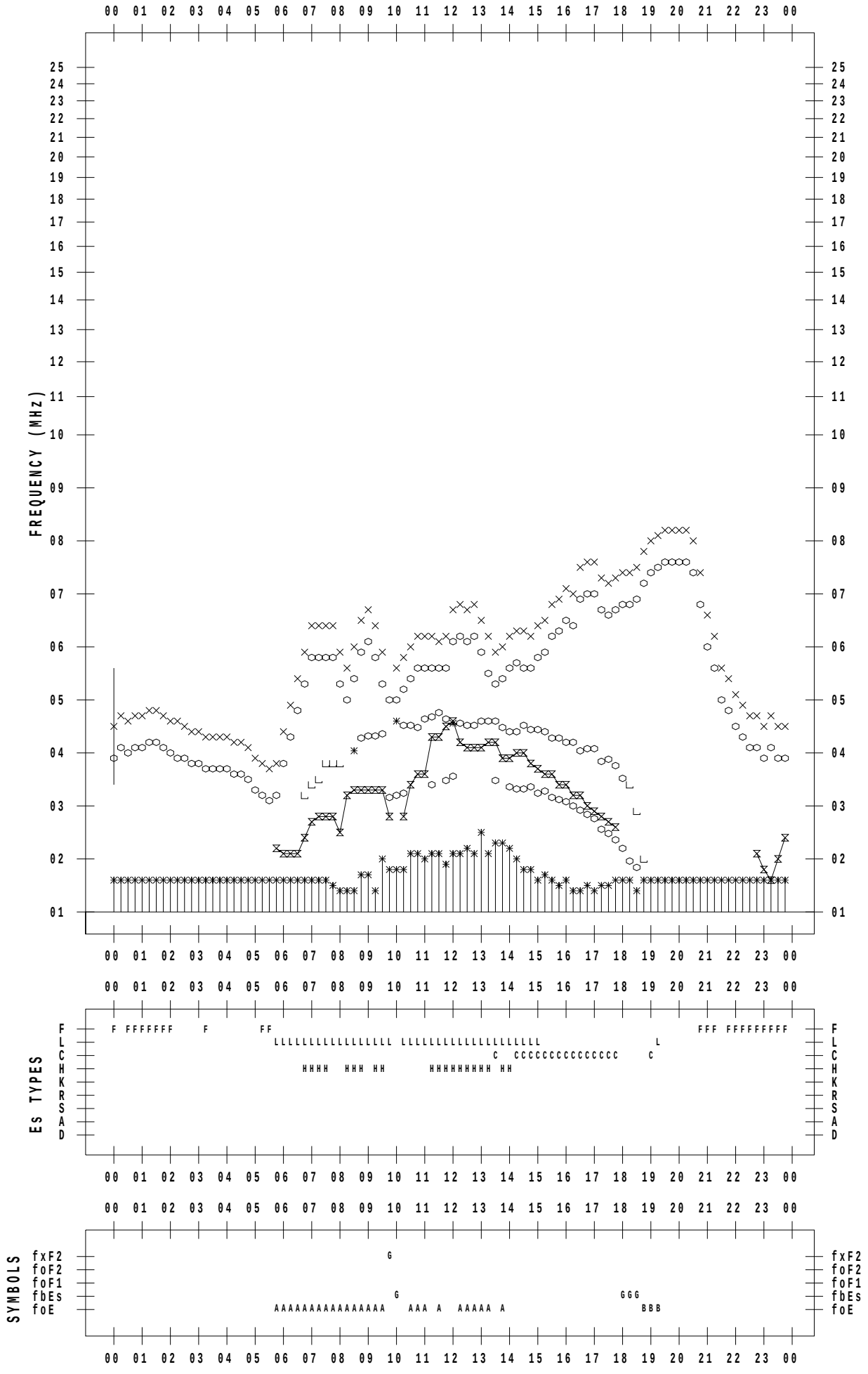
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/24

135 °E MEAN TIME



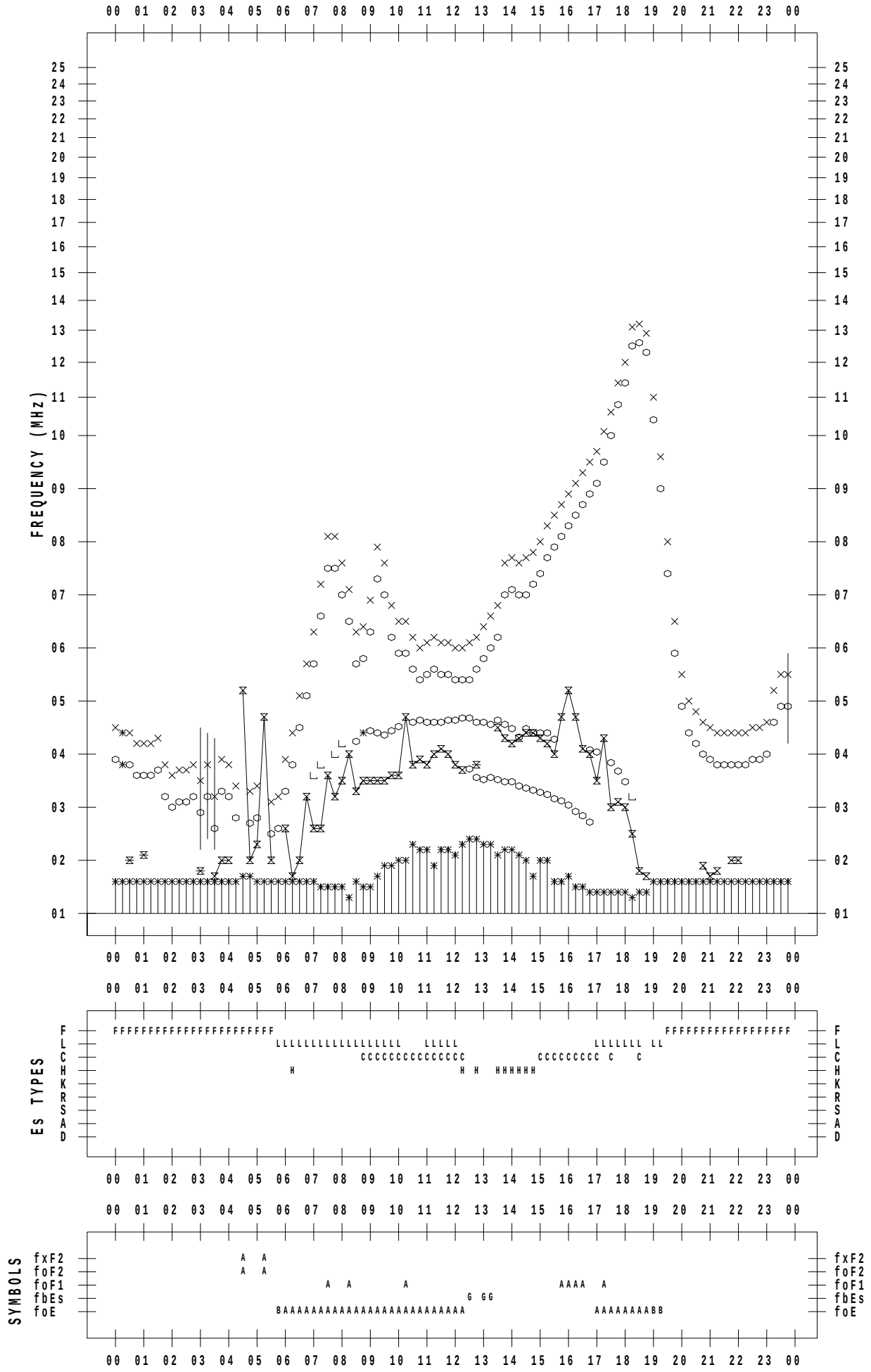
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/25

135 °E MEAN TIME



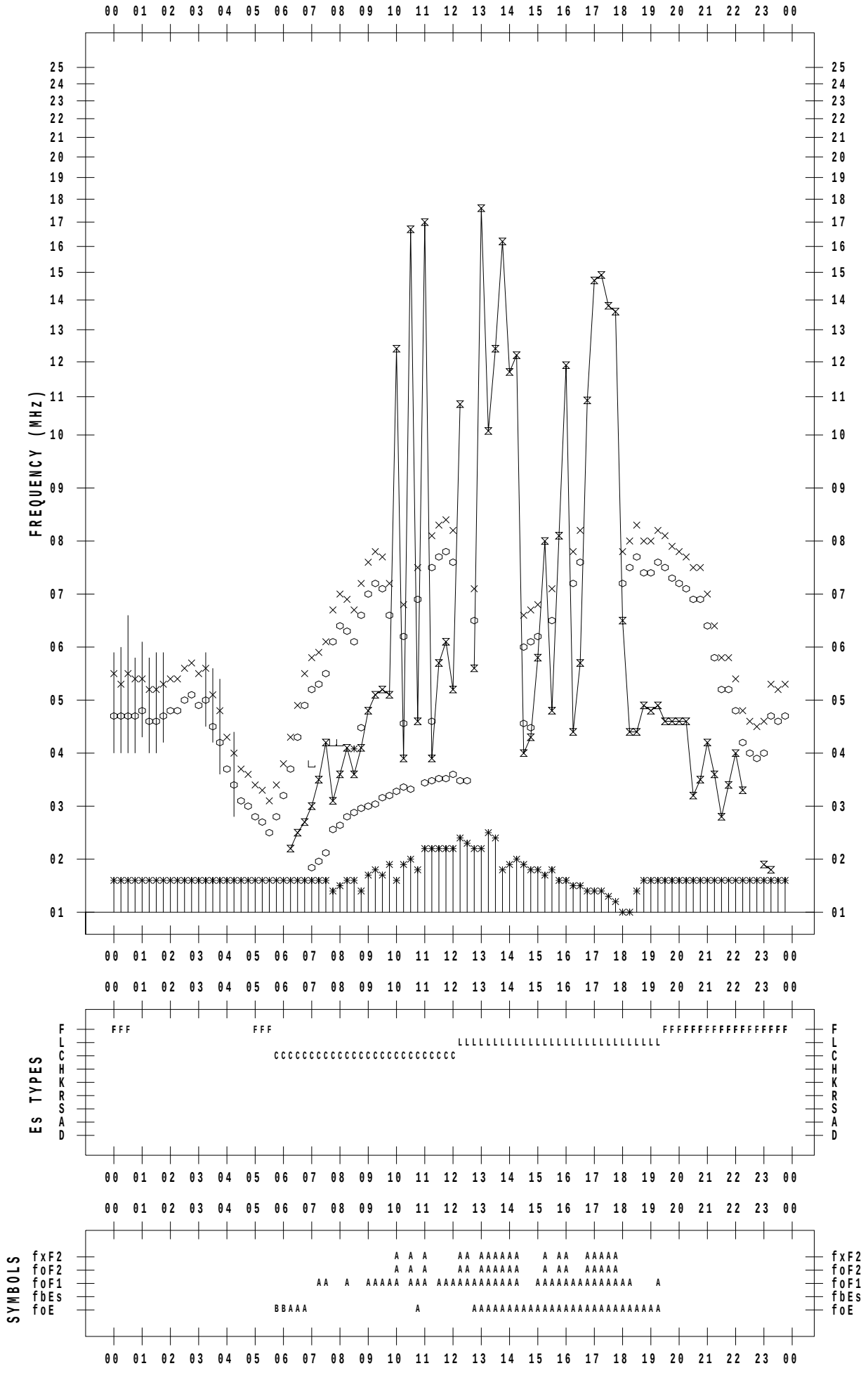
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/26

135 °E MEAN TIME



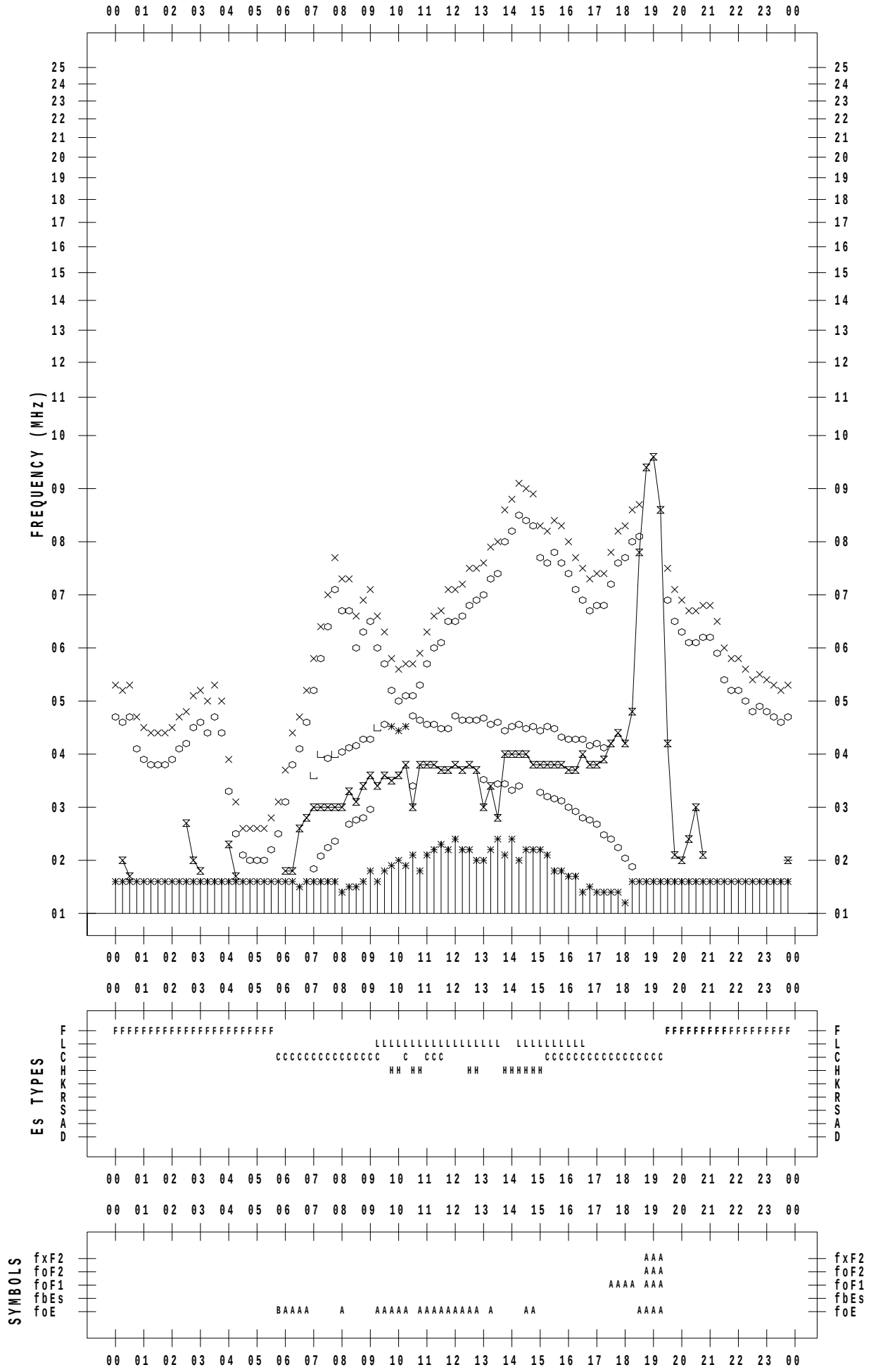
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/27

135 °E MEAN TIME



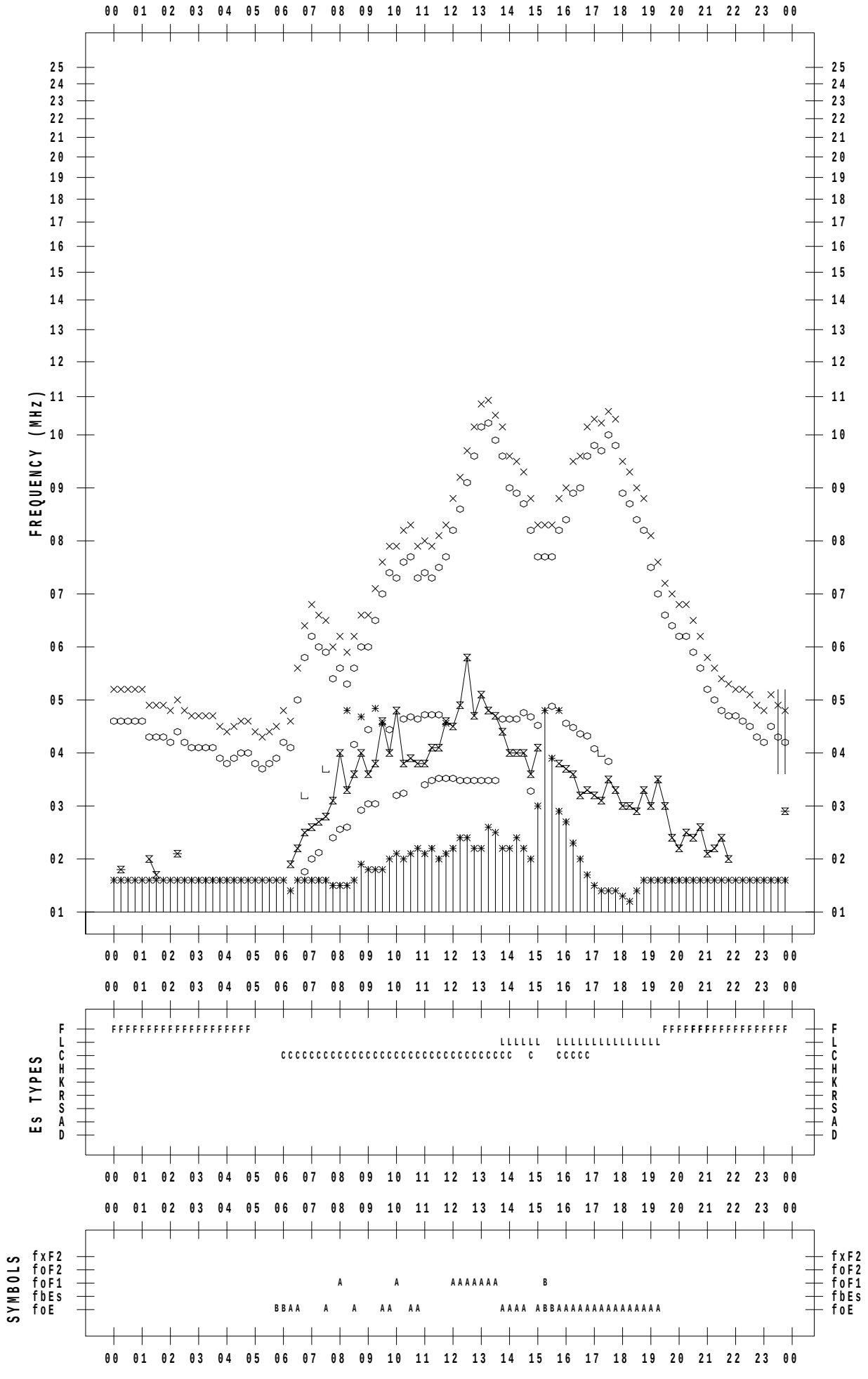
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/28

135 °E MEAN TIME



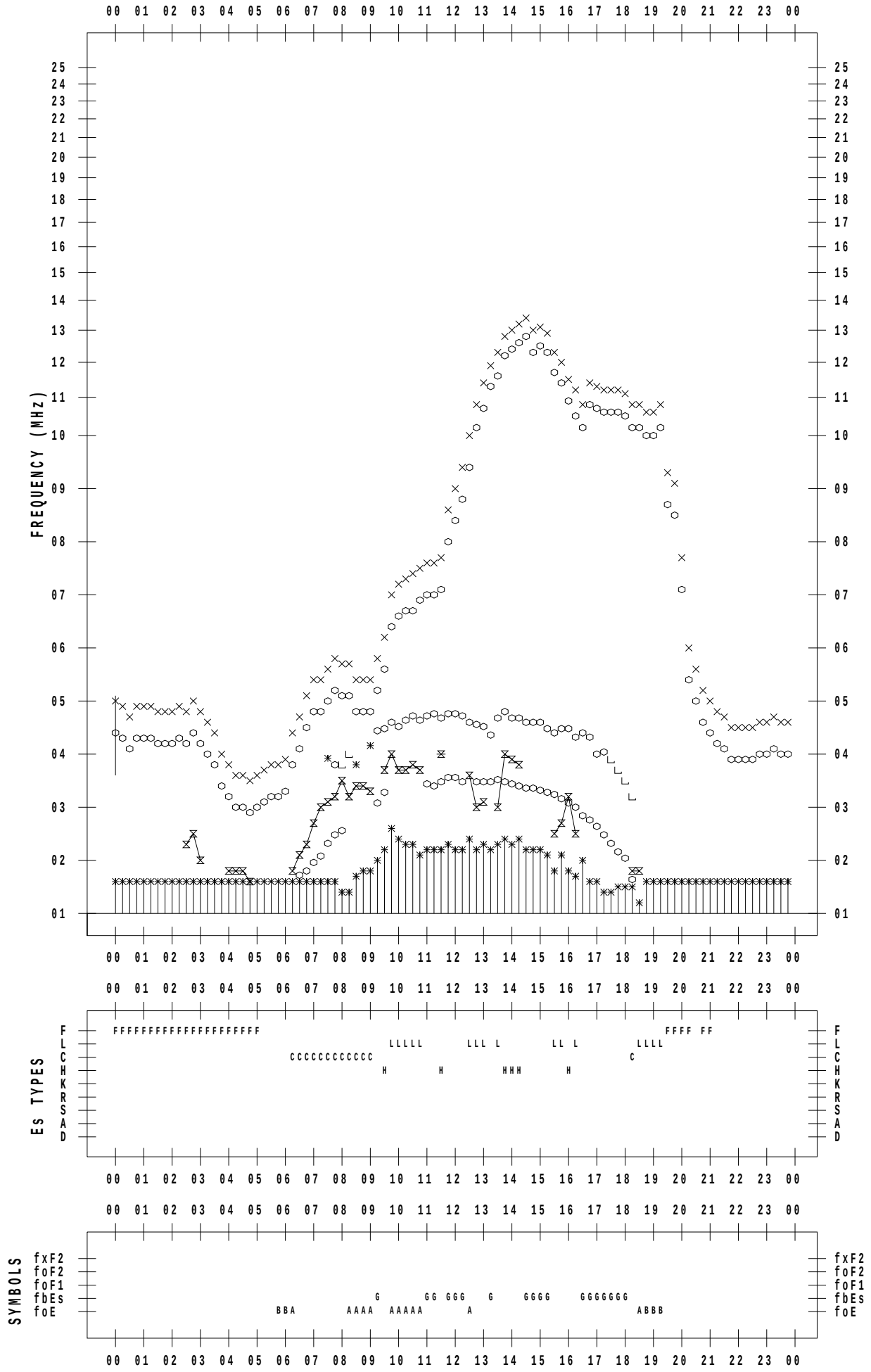
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/29

135 °E MEAN TIME



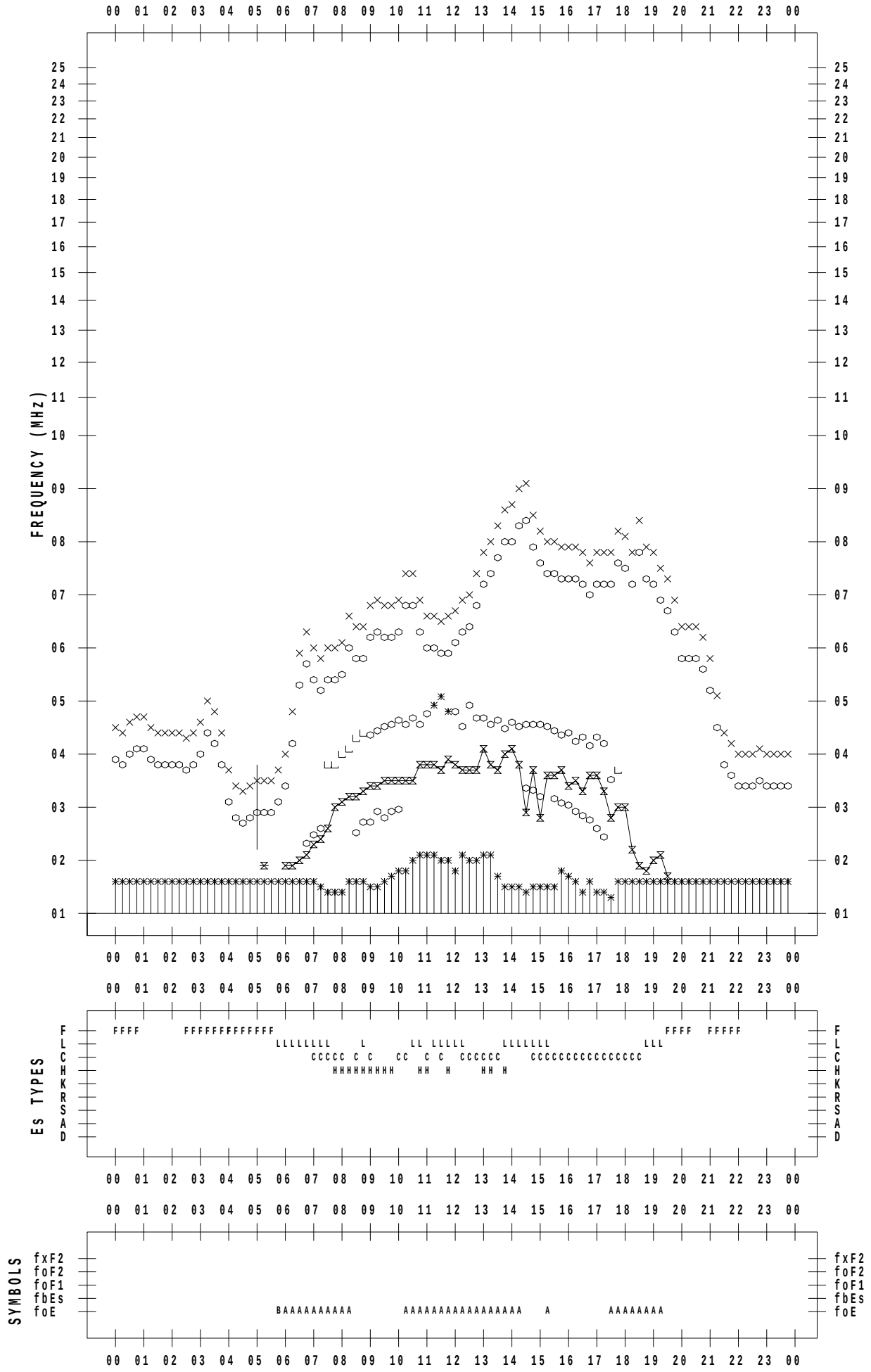
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 8/31

135 °E MEAN TIME