F-869

IONOSPHERIC DATA IN JAPAN

FOR May 2021
VOL. 73 NO. 5

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

MAY 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	A 43	A 34	31	41	56	51	54	A	A 54	54	59	60	52	52	55	51	54	55	56	51	49			
2	41	40	38	38	37	45	47	50	53	56	55	53	54	53	56	66	72	69	69	69	60	52	49	51
3	49	43	41	38	37	37	A	A	A	59	57	52	54	57	54	54	60	55	55	61	69	57	50	48
4	43	42	42	40	46	43	A	A	55	55	64	60	A	52	59	55	59	52	55	60	61	57	55	51
5	46	43	43	40	35	35	A	A	A	57	49	A	44	53	51	51	48	79	91	A	A	A	51	51
6	39	39	39	38	37	A	47	46	55	69	55	54	57	A	55	54	51	48	50	A	A	A	A	56
7	52	40	37	42	32	34	A	A	A	A	49	75	A	A	52	57	51	49	47	A	63	61	56	A
8	40	39	37	35	33	44	44	56	A	50	49	48	50	50	49	51	50	53	A	57	63	61	57	52
9	43	39	37	37	35		48	53	54	56	56	55	53	A	57	50	51	55	50	58	63	60	57	52
10	41	41	38	36	34	38	45	46	A	57	52	56	50	51	51	52	48	49	55	61	62	64	53	49
11	41	41	39	38	34	42	A	A	51	A	A	52	A	A	61	A	61	59	56	57	54	52	52	50
12	48	44	41	42	43	55	56	53	56	A	A	57	52	52	52	53	55	55	A	66	66	66	55	48
13	49	41	42	37	37	40	36	A	A	51	A	54	60	49	44	52	49	54	46	54	62	59	59	53
14	41	39	39	41	40	44	59	49	56	56	51	54	57	59	A	54	56	51	58	68	70	71	63	56
15	56	54	52	52	53	49	56	52	56	52	A	A	A	52	55	57	53	56	56	67	69	69	67	61
16	52	45	43	42	41	49	57	A	A	A	A	48	55	A	50	50	52	53	59	69	74	68	65	62
17	59	47	42	37	39	37	47	53	A	A	A	55	A	55	60	55	59	57	60	68	71	69	60	53
18	54	54	49	47	41	41	N 53	A	49	57	49	52	A	A	A	66	66	55	57	54	A	A	A	49
19	A 42	A 41	41	44	47	51	A	A	A	A	A	A	A	A	A	51	A	A	56	A	49	54		
20	42	47	43	41	40	45	43	51	67	55	52	53	54	A	60	59	57	59	58	73	71	69	67	61
21	61	53	35	39	38	39	38	43	55	A	A	45	A	51	A	A	47	47	51	55	63	58	49	40
22	38	37	37	37	37	46	A	53	72	A	56	A	A	49	48	53	58	51	54	65	A	58	57	A
23	A	A	A	A	A	A	47	83	51	57	A	A	53	52	50	55	47	45	52	62	67	66	60	56
24	53	51	49	51	45	38	A	A	49	A	A	51	43	44	48	50	48	73	49	57	61	A	55	A
25	41	44	44	42	45	52	52	58	57	51	50	52	49	50	A	51	54	53	55	56	66	67	65	64
26	55	52	52	45	39	48	50	A	53	59	A	57	A	56	A	55	55	50	55	66	A	70	69	58
27	46	41	41	46	41	44	54	76	65	62	55	49	A	61	66	62	61	N 47	54	67	67	68	67	58
28	38	37	A	A	47	A	A	A	A	A	A	N 45	45	A	A	43	46	45	A	54	59	60	57	49
29	42	40	41	41	43	A	43	45	81	49	A	A	76	77	A	51	49	51	93	A	62	60	55	52
30	50	50	39	41	37	35	A	A	47	54	A	49	46	A	A	49	50	66	60	49	44	61	59	57
31	A 47	A 46	47	50	52	A	53	A	48	52	54	53	53	57	53	47	52	A	A	68	55	44		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	26	29	30	26	22	18	21	19	16	25	20	21	22	28	30	31	27	25	25	26	29	28
MED	46	42	41	41	39	44	48	52	55	56	52	53	54	52	54	54	52	53	55	61	63	61	57	52
U Q	52	47	43	42	43	46	54	53	56	57	55	55	54	56	59	56	58	56	58	67	68	68	61	56
L Q	41	40	38	37	37	38	45	49	52	52	49	50	49	50	50	51	49	49	51	55	60	58	52	49

HOURLY VALUES OF fEs AT Wakkanai

MAY 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	136	60	175	27	G	G	160	49	52	59	52	38	46	48	43	41	41	36	40	38	29	34	24	32
2	24	25	G	G	G	28	37	41	46	45	48	34	38	46	32	36	32	35	32	28	31	G	32	G
3	G	G	G	117	G	31	40	43	60	45	58	46	42	38	40	36	43	57	40	44	49	33	G	G
4	G	24	G	G	G	32	50	60	54	50	50	46	69	50	44		69	60	52	35	31	33	G	G
5	G	G	G	G	G	32	60	60	71		93	83	37	40	39	36	36	113		94	115	84	59	G
6	G	32	105	38	40	60	48	52	53	76	70	53	59	93	48	40	38	36	60	64	73	175	90	26
7	40	35	32	27	G	39	114	58	56	148	90	84	65	61	65	58	42	36	50	60	39	34	G	52
8	28	G	G	G	G	29	37	58	54	47	46	49	44	42	43	48	55	50	54	35	G	G	G	G
9	G	G	G	G	G		36	43	50	44	36	37	48	83	31	G	34	36	30	G	28	G	G	G
10	G	G	G	G	G	29	164	34	92	47	48	36		40	41	40	33	39	38	36	G	26	G	G
11	G	G	G	G	26	31	44	61	74	72	127	57	86	77		87	39	38	45	45	50	28	33	26
12	G	G	G	G	G	30	43	48	54	94	91	146	126	46	46	41	124	59	77	35	31	23	G	25
13	G	G	G	G	G	31	64	58	57	89	60	95	39	38	36	37		59	43	39	40	57	32	29
14	G	G	G	25	25	29	38	47	53	55	48	39	42	59	72	35	40	39	38	28	61	32	27	38
15	G	G	G	G	G	34	36	41	50	57	63	69	70	41	41	46	34	39	36	G	34	29	42	28
16	29	30	36	31	G	46	40	60	60	69	73	70	58	92	95	93	110	45	40	50	51	60	30	36
17	40	G	29	G	G	32	160	54	61	61	84	92	60	36	36	40	49	70	44	44	34	40	32	27
18	31	29	G	G	G	60	60	69	111	113		50	57	60	71	57	53	36	52	44	60	71	65	39
19	58	G	46	38	38	42	45	91	73	44	90	74	60	136	82	60	77		117	146	92	71	53	38
20	G	28	G	G	34	33	40	70	60	49	36	44	48	101	42	48	36	40	40	36	G	G	G	G
21	G	G	G	G	33	39	60	43	44	46	63	36	115	38	48	53	36	55	40	41	29	32	32	G
22	G	G	G	G	32	35	57	179	78	134		89	125	90	103	34	48	126		80	109	54	60	82
23	55	59	55	56	50	64	60	118	90	72	84	40	38	48	35	40	36	30	38	52	40	28	24	G
24	G	G	G	G	11	30	50	44	35	64	74	104	56	69	136	36			44	58	43	70	60	66
25	59	41	28	31	34	31	39	49	46		50	61	47	52	94		52	70	35	50	66	48	70	43
26	36	G	32	31	40	120		58	53	47	70	60	84	61	92	45	51	52	40	28	83	61	31	69
27	32	31	32	24	28	44	43	153	55	47	48	69	74	57	53	49	56	83	52	32	90	38	35	G
28	G	G	41	54	41	94	60	70	54	51	52	44	44	40	46	44	45	48	47	28	G	29	28	29
29	32	G	G	36	41	71	91	71		130	95	112			126	52	47	50	91	76	55	56	27	29
30	29	G	G	33	27	36	65	60	103	49	81	114		70	63	50	52	110		96	116	71	G	25
31	55	48	47	39	32	32	46	64	62	82		40	39	50	56	156	47	81		112	84	43	32	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	30	29	28	31	28	30	30	29	29	29	27	31	31	31	31	31
MED	G	G	G	G	11	32	49	58	56	57	63	57	56	51	47	44	45	50	43	44	43	34	31	26
U Q	36	30	32	33	34	44	60	69	71	79	84	84	69	70	72	52	52	65	52	60	73	60	42	38
L Q	G	G	G	G	G	31	40	47	53	47	49	40	43	41	41	36	36	37	38	35	31	28	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 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	16	15	15	14	21	16	14	15	16	14	15	13	15	15	17	14	15	15	15	16	15	16	15
2	16	16	14	16	14	14	16	15	14	14	14	15	17	17	15	15	13	14	13	15	16	15	16	16
3	16	15	14	14	14	15	14	14	18	15	15	15	14	15	15	15	15	14	15	15	14	15	15	16
4	15	15	16	15	15	15	14	13	13	14	15	14	14	14	14	14	13	12	14	15	15	16	15	14
5	17	14	15	14	16	15	15	15	14	15	15	16	19	17	19	14	15	13	15	15	9	15	15	15
6	14	16	16	15	15	15	16	15	15	15	15	17	16	18	15	14	15	13	13	15	14	16	15	15
7	16	15	16	16	15	15	14	13	15	15	11	18	17	18	16	15	14	16	13	15	15	16	16	16
8	16	15	16	16	15	15	15	14	13	13	14	15	17	19	15	15	12	13	14	16	15	14	14	17
9	14	16	16	15	16		16	13	13	14	15	15	15	11	17	13	17	16	15	14	15	14	14	14
10	15	14	16	16	14	15	15	15	16	14	13	14	15	15	14	15	16	15	14	15	14	16	14	15
11	15	14	15	14	16	16	15	13	17	15	9	13	16	14	12	16	14	15	14	14	14	15	16	16
12	16	15	15	15	15	15	14	14	15	13	15	19	19	17	19	14	17	15	14	15	15	16	14	16
13	15	16	14	14	14	15	14	13	13	14	14	17	16	17	16	15	17	14	14	14	15	15	16	16
14	16	15	16	16	16	15	16	14	13	15	17	17	15	13	17	15	14	14	15	15	15	14	15	15
15	16	17	15	16	15	17	14	14	15	14	16	14	17	17	17	15	17	17	16	14	15	16	14	15
16	15	16	16	15	16	15	14	13	14	14	13	15	17	14	9	17	16	15	14	14	15	15	16	15
17	15	15	15	14	15	15	14	14	15	17	15	8	15	16	15	14	13	13	15	14	16	15	17	16
18	16	16	16	16	15	15	14	13	12	15	18	18	15	20	16	15	15	15	14	14	15	15	15	16
19	17	16	16	15	14	15	13	12	14	15	19	15	15	17	15	15	14	15	16	12	13	15	15	15
20	15	15	14	15	15	15	13	15	14	15	15	15	15	14	15	15	15	17	13	14	15	14	17	15
21	15	15	13	16	16	17	15	14	15	15	16	15	15	17	17	14	17	15	16	15	15	16	16	15
22	16	16	14	14	16	16	15	14	13	10	15	18	19	15	15	14	15	16	16	14	15	15	15	17
23	15	17	15	16	15	15	13	15	16	15	18	16	17	15	15	16	15	17	15	14	15	15	17	17
24	14	15	15	16	15	16	14	15	15	15	12	15	14	16	15	15	16	6	15	15	14	16	15	16
25	16	14	16	16	15	16	15	13	15	15	18	20	16	16	19	16	15	14	16	15	16	14	16	15
26	15	15	15	16	15	17	15	14	13	15	16	15	15	16	16	15	15	12	14	15	15	15	15	17
27	17	16	15	16	15	15	15	14	14	15	15	19	14	21	18	14	15	16	14	16	18	16	16	15
28	15	15	15	15	13	15	13	13	15	18	14	18	16	15	16	15	14	15	14	15	16	16	16	16
29	16	16	16	16	15	15	11	15	21	21	20	18	60	112	17	17	15	13	15	14	14	15	15	15
30	16	15	15	16	14	15	15	13	11	15	18	15	15	16	17	15	15	17	16	13	5	16	17	16
31	16	15	16	15	16	16	14	14	14	17	16	17	15	16	15	14	15	14	13	18	15	15	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	15	15	15	15	15	14	14	14	15	15	15	15	16	15	15	15	15	14	15	15	15	15	16
U Q	16	16	16	16	16	16	15	15	15	15	16	18	17	17	17	15	16	16	15	15	15	16	16	16
L Q	15	15	15	15	14	15	14	13	13	14	14	15	15	15	15	14	14	13	14	14	14	15	15	15

HOURLY VALUES OF foF2 AT Kokubunji

MAY 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	45	43	40	38	33	38	51	52	A	51	65	A	57	67	67	76	63	58	A	62	A	55	52	47
2	A	39	A	35	34	40	52	54	55	65	64	A	A	53	69	79	87	93	87	74	49	A	45	41
3	41	A	39	33	32	A	77	49	70	50	52	59	55	A	73	73	60	A	60	61	69	57	37	37
4	37	37	35	33	33	40	52	56	56	A	A	A	A	60	68	71	69	63	54	A	A	A	A	A
5	40	42	41	37	32	38	A	A	46	49	A	A	61	A	A	69	55	52	51	54	53	51	A	A
6	40	39	37	38	36	37	46	52	A	35	52	71	47	61	A	65	61	53	51	60	61	A	A	A
7	A	A	33	33	32	37	46	48	A	A	A	A	53	50	58	69	67	54	A	66	65	57	53	55
8	45	44	41	40	36	39	55	63	55	49	A	A	53	A	52	54	57	48	60	68	A	58	53	52
9	55	50	39	34	32	43	50	A	69	49	61	A	A	49	54	63	51	59	61	68	63	58	A	54
10	53	42	40	36	34	41	48	A	57	A	52	53		54	A	A	53	A	63	69	66	A	59	50
11	51	A	38	A	35	43	50	A	48	A	63	49	69	59	74	92	89	72	A	58	51	A	A	41
12	A	39	39	35	36	45	57	60	A	A	55	55	A	A	65	77	75	70	71	75	71	65	59	58
13	54	45	49	46	39	35	51	A	A	A	A	73	55	A	A	C	56	45	86	48	61	A	A	55
14	A	A	52	50	51	48	49	59	54	A	53	A	A	A	62	55	65	64	53	65	69	68	52	44
15	A	A	42	42	39	52	56	69	56	63	67	53	53	A	58	63	61	62	60	73	76	82	59	47
16	50	45	43	40	39	48	52	61	55	A	50	A	A	A	A	58	64	66	72	76	69	64	A	A
17	A	A	A	A	A	39	56	47	A	A	A	A	61	59	A	78	71	61	63	72	70	A	A	43
18	43	A	A	A	35	41	N 56	A	A	46	49	A	63	74	A	87	89	76	66	65	61	52	45	49
19	51	40	42	39	37	45	58	53	36	N 57	61	53	N 47	189	66	A	63	60	55	62	A	A	A	A
20	A	A	35	35	35	39	51	A	A	A	N 66	A	59	63	72	70	69	N 66	A	85	74	62	59	67
21	63	67	A	A	36	45	A	36	45	48	A	A	A	A	59	A	N 49	114	56	73	60	A	A	A
22	A	A	A	A	33	45	50	A	A	A	A	57	73	169	56	61	61	109	A	65	64	53	A	A
23	A	38	37	A	31	40	A	48	53	70		A	A	A	56	47	A	A	A	57	70	63	56	51
24	49	49	47	38	A	37	44	59	58	A	61			A	53	57	63	59	A	53	55	A	56	A
25	43	41	41	A	33	42	65	52	A	35	A	A	A	52	A	A	60	A	65	50	A	A	56	54
26	55	52	44	41	41	46	A	A	78	67	A	52	52	N	55	79		117	45	37	A	74	A	A
27	A	51	A	39	A	41	A	77	75	A	53	A	A	71	85	83	63	A	A	A	71	79	73	A
28	A	37	31	33	30	A	41	50	A	49	A	A	A	A	A	A	49	49	A	A	A	53	A	44
29	A	A	39	36	34	42	50	57	93	A	A	A	49	A	36	A	59	55	59	65	A	A	57	A
30	A	38	35	37	34	A	48	A	48	46	A	A	A	A	50	49	54	47	65	70	A	A	A	A
31	A	38	37	A	32	A	50	A	49			A	A	A	49	A	53	56	54	65	72	66	66	44
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	21	25	23	28	27	26	20	20	16	16	10	16	15	22	23	29	26	22	28	22	18	17	19
MED	49	42	39	37	34	41	51	54	55	49	58	54	55	60	58	69	61	60	60	65	66	60	56	49
U Q	53	47	42	40	36	45	56	59	63	60	63	59	61	71	68	78	68	70	65	71	70	66	59	54
L Q	42	38	37	35	32	39	49	49	48	47	52	53	52	53	54	58	55	54	54	59	61	55	52	44

HOURLY VALUES OF fEs AT Kokubunji

MAY 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	40	G	G	G	G		35	50	70	64	89	56	52	49	57	70	124	90	115	91	70	48	47	29
2	52	39	57	26	G	G	55	42	57	59	109	53	79	36	41	40	N	31	56	33	28	40	39	31
3	45	60	24	G	G	60		99	76	78	40	40	40	85	56	60	49	58	46	79	52	40	34	31
4	32	32	26	G	G	G	40	111	51	64	58	84	92	37	39	36	46	69	71	128	71	84	70	60
5	40	G	G	G	G	29	49	90	73	92	71	92	48	81	145	53	107	36	48	39	48	38	88	72
6		31	29	33	38	34	41	54	60	60	70	79	68	83	84	52	57	52	40	47	35	106	72	41
7	54	40	G	40	24	G	40	43	63	64	69	40	50	G	57	46	42	40	62	44	31	32	43	G
8	31	G	24	26	G	38		53	51	84	92	87	41	43	42	55	60	67	74	90	107	55	53	24
9	31	25	G	24	G	31	42	60	71	76	60	51	37		40	38	86	92	57	34	34	24	71	39
10	38	31	39	33	G	35	50	60	60	49		39		55	115	138	71	132	92	57	52	86		25
11	G	40	G	55	G	G	36	50		80	80	68	77	54	49	43	64	94	108	51	41	60	70	60
12	94	33	G	G	G	26	34	53	60	60	53	49	54	60	39	51	41	57	42	48	G	G	39	34
13	29	28	G	G	G	28	35	60	53	60	68	40	40	60	42	C	G		97	71	43	73	70	60
14	90	60	35	G	G	33	36	103	40	60	48	57	67	56	G	52	50	55		47	41	45	43	G
15	72	71	36	28	G	35	46	50	83	40	34	40	43	86	55	G	50	54	56	48	57	33	45	33
16	37	33	30	40	G	29	44	56	70	56	54	57	57	70	58	65	35	G	54	55	60	61	106	179
17	60	134	122	84	87	39	111	91	70	97	71	67	64	56	85	62	57	G	G	30	35	109	71	54
18	26	55	81	82	G	35	89	154	107	93	134	107	55	91	84	50	G	33	43	40	50	84	48	41
19	52	79	G	G	G	G	33	41	113	63		59	112	157	69	92	43	77	144	117	102	105	71	60
20	57	54	32	39	36	33	47	70	76	71	93	155	96	55	69	62		153	138	104	57	40	49	40
21	33	43	51	55	50	28	57	65	128	70	76	52	54	52	40	73	71	117		60	92	112	84	73
22	72	106	87	52	G	G	43	55	80	154	137	116	102	125	33	48	53	135	134	112	56	113	69	116
23	93	39	28	40	G	27	60		106	97		74	55	50		130	65	78	60	50	26	56	38	G
24	G	G	26	33	39	G	28	42	54	35	39			48	48	48	42	37	59	108	82	84	69	59
25	G	35	35	40	24	G	38	44	95		175	126	36	42	61	83	42	61	60		84	78	60	31
26	25	G	28	G	36	40	50	65	104	70	60	G	136	81	50	77		91	138	90	115	103	82	112
27	72	31	70	48	49	33	60	94	96	134	65	83	54	43	55	54	31	71	136	81	61	55	81	84
28	40	G	25	G	G	30	40	49	52	75	92	54	50	54	49	45	82		132	146	113	57	153	116
29	45	40	30	26	G	G	45	106	110	116	92	146	108	117	88	84	60	34	36		109	60	31	56
30	40	66	71	G	G	32	47	56	84		134	116	60	48		G	46	84	78	65	130	87	74	81
31	39	31	29	43	29	41	46	97	94			166	60	40	78	63	40	52	69	127	60	50	50	107
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	29	30	30	28	27	30	29	30	29	30	28	29	29	29	31	31	30	31
MED	40	35	29	28	G	30	44	58	72	70	71	63	55	55	55	54	50	61	62	60	57	60	69	54
U Q	57	55	39	40	29	35	50	91	95	88	92	92	78	81	73	70	64	90	111	97	84	86	72	73
L Q	31	28	G	G	G	G	37	50	60	60	58	51	49	48	41	46	42	38	51	47	41	40	45	31

HOURLY VALUES OF fmin AT Kokubunji

MAY 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	15	15	15	15	14		15	16	17	16	25	18	21	22	17	17	12	14	20	12	15	15	15	15
2	16	15	16	15	15	14	14	15	17	20	25	22	20	20	19	16	17	16	15	16	15	15	15	15
3	15	16	15	15	13	15	14	15	12	17	18	18	17	20	17	15	16	16	15	14	14	16	16	16
4	15	16	15	95	14	17	20	14	17	19	19	16	21	22	20	17	16	15	14	17	14	15	15	15
5	15	15	14	17	14	15	15	17	16	17	16	23	23	17	9	18	21	15	14	15	15	14	15	9
6	15	15	16	16	15	17	15	14	17	17	16	26	18	23	21	17	15	14	14	15	15	16	15	15
7	16	15	16	15	15	18	15	15	16	17	22	18	31	45	22	17	15	15	15	15	15	16	15	15
8	16	15	15	15	16	15	15	17	15	16	18	20	22	20	25	18	18	17	14	15	17	14	14	16
9	16	15	16	16	15	15	14	15	16	14	21	23	19	17	44	15	16	14	14	14	14	16	15	15
10	15	16	15	16	16	16	16	15	13	18	19	26		20	22	10	15	6	15	14	14	15	15	16
11	14	15	16	15	15	18	16	16	14	19	21	17	23	20	34	21	16	16	17	14	14	14	15	16
12	14	16	14	16	13	15	16	15	17	18	20	31	22	24	23	21	17	15	14	14	15	16	14	15
13	16	16	15	15	14	14	16	21	19	18	23	29	18	22	23	C	15	18	16	15	15	14	15	15
14	16	15	15	15	15	14	15	15	16	21	33	20	21	21	45	17	17	20	16	14	14	15	15	16
15	14	15	15	15	15	16	15	15	19	30	25	19	19	23	18	21	15	14	15	15	15	15	15	16
16	15	16	15	14	15	14	19	18	19	21	16	21	21	27	23	19	18	15	15	14	14	15	14	39
17	16	18	15	15	15	14	14	18	16	15	22	23	21	19	19	21	18	25	21	15	15	15	15	16
18	16	15	14	14	15	16	16	16	18	20	19	20	25	25	24	22	15	15	14	15	14	17	15	15
19	15	14	15	13	14	18	15	14	17	21	20	25	20	43	24	15	16	14	10	13	9	15	15	16
20	15	15	15	14	15	15	15	14	17	21	25	16	23	22	21	14	9	8	15	11	15	15	15	15
21	16	15	15	15	15	18	14	19	18	20	18	20	24	24	29	16	18	11	15	14	13	14	16	15
22	17	16	14	15	15	13	15	14	19	7	21	29	30	27	24	31	19	10	11	13	15	13	16	6
23	15	15	15	15	13	15	15	15	16	19	17	21	23	19	21	18	17	14	14	13	16	15	15	16
24	15	15	16	14	15	21	16	19	21	17	46			24	20	17	17	17	14	17	16	15	15	15
25	16	15	15	15	16	15	15	17	17	17	15	22	19	22	16	18	14	17	14	9	15	14	15	15
26	15	14	15	14	15	15	15	16	19	20	24	47	23	33	47	21	17	12	7	14	14	14	16	14
27	15	15	15	15	15	15	17	14	15	15	24	25	21	21	21	17	14	18	5	13	15	15	15	14
28	15	16	16	15	13	15	15	17	14	17	20	24	31	22	19	20	18	14	69	9	16	15	5	21
29	15	15	14	16	16	14	15	17	22	23	26	22	21	20	19	17	16	15	15	14	15	15	15	15
30	15	15	15	15	14	15	15	14	15	18	17	23	23	19	17	15	17	17	15	15	5	9	14	14
31	15	16	15	15	16	13	14	17	16	19	18	21	20	22	19	17	15	16	14	11	15	14	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	31	31	31	31	31	30	29	31	31	30	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	17	18	20	22	21	22	21	17	16	15	15	14	15	15	15	15
U Q	16	16	15	15	15	16	16	17	18	20	24	25	23	24	24	20	17	17	15	15	15	15	15	16
L Q	15	15	15	15	14	14	15	15	16	17	18	20	20	20	19	16	15	14	14	13	14	14	15	15

HOURLY VALUES OF foF2 AT Yamagawa

MAY 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	41	39	39	38	33	33	45	57	56	A	A	A	A	78	76	80	87	72	72	61	A	57	53	49
2	A	A	39	39	36	35	46	59	61	57	53	57	55	75	80	90	97	100	87	60	56	51	43	44
3	A	A	A	A	36	35	50	58	58	A	A	A	73	A	A	60	A	44	A	78	A	A	43	39
4	35	34	34	33	31	A	55	58	A	46	A	A	64	A	87	92	78	74	80	A	52	46	45	A
5	42	A	A	A	A	A	49	A	A	A	A	A	A	85	A	93	83	77	70	67	54	43	A	A
6	38	A	36	34	34	31	A	45	A	A	A	A	57	A	65	70	73	A	63	69	59	44	42	42
7	39	37	38	38	35	25	41	47	A	A	A	A	A	A	67	A	76	67	65	61	A	63	46	A
8	42	A	A	A	34	35	49	53	A	A	A	A	A	A	A	54	A	A	A	83	A	57	A	A
9	A	A	A	A	A	33	47	A	A	A	A	A	52	51	66	71	75	78	83	73	69	56	55	45
10	40	37	34	A	A	A	44	63	56	A	51	A	A	49	A	A	77	A	A	71	55	A	48	54
11	A	A	A	40	39	37	48	A	A	A	A	A	N 47	A	A	100	90	A	51	60	A	49	A	A
12	A	A	A	A	A	36	57	52	A	A	A	A	A	A	A	89	87	75	74	75	A	67	52	51
13	53	45	49	52	35	33	48	A	A	A	79	A	A	A	A	A	72	79	69	58	56	62	A	55
14	50	53	A	46	41	40	53	A	52	A	A	A	A	63	66	64	63	69	A	A	A	62	A	A
15	54	44	40	40	39	38	59	54	54	A	A	53	A	A	109	68	71	66	71	71	86	90	A	A
16	A	43	A	A	A	36	58	60	56	49	53	54	56	52	A	69	73	69	70	72	66	60	59	52
17	57	A	A	A	A	38	A	51	47	A	A	63	66	70	A	45	A	A	A	A	73	46	A	A
18	A	47	41	37	37	36	47	58	46	51	59	A	A	A	83	95	101	100	82	70	62	56	50	A
19	A	A	40	43	39	39	49	56	55	A	A	A	A	A	A	72	65	61	64	A	A	A	A	A
20	A	A	38	A	34	32	A	58	62	A	A	A	A	46	A	85	A	A	A	87	88	85	63	78
21	70	78	58	A	44	52	51	A	A	A	49	A	48	A	65	73	61	67	74	90	59	43	A	A
22	A	A	A	A	A	A	45	A	A	A	A	A	72	50	A	80	A	A	A	A	A	A	49	41
23	A	A	39	37	N 30	30	A	A	A	A	A	A	A	A	47	A	A	A	A	A	A	59	53	45
24	53	A	47	41	A	32	46	56	A	A	A	51	A	49	59	65	64	68	58	55	58	55	45	N 39
25	41	40	A	38	36	38	49	47	A	A	A	A	A	A	A	A	A	67	61	A	79	71	A	A
26	A	A	A	A	37	A	43	A	A	36	A	A	A	A	A	69	A	A	A	A	37	A	A	A
27	A	A	A	49	46	38	A	53	A	103	A	A	66	90	97	85	71	64	57	A	A	84	59	A
28	A	A	36	32	A	A	A	A	A	37	A	A	A	A	A	43	A	A	A	A	A	A	A	A
29	A	A	A	A	34	34	47	49	A	A	A	A	A	A	A	A	A	A	A	56	A	55	A	51
30	A	39	38	39	36	37	47	A	56	53	A	A	A	A	A	55	54	A	61	68	81	A	A	A
31	A	39	39	37	35	33	44	52	A	A	A	A	A	A	55	54	58	62	62	61	66	61	50	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	14	13	17	18	22	25	25	20	12	8	6	5	11	12	14	25	21	19	20	21	18	24	17	14
MED	42	40	39	38	36	35	48	55	56	50	53	54	57	58	66	71	73	69	70	69	60	57	50	47
U Q	53	46	40	41	39	38	50	58	57	55	59	60	66	76	83	87	85	77	74	74	73	62	54	52
L Q	40	38	37	37	34	33	45	51	53	41	51	52	52	49	65	62	64	66	61	60	56	50	45	42

HOURLY VALUES OF fEs AT Yamagawa

MAY 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	33	G	G	G	G	G	G	39	45	66	64	63	94	56	50	66	50	53	43	45	40	49	38	46
2	59	56	39	34	G	G	G	38	48	53	48	56	50	49	40	43	41	40	36	41	31	G	32	G
3	46	55	57	58	32	28	41	60	60	71	92	61	56	85	166	48	76	125	92	77	110	58	91	33
4	G	G	G	108	G	28	34	60	94	88	89	82	54	107	45	51	52	57	60	76	54	36	41	54
5	44	71	90	59	59	41	45	72	70	90	116	96	89	87	100	46	43	43	33	32	28	48	58	38
6	32	41	32	G	G	G	43	45	89	87	89	84	56	66	66	60	66	71	45	49	58	G	G	G
7	40	G	G	33	G	G	31	50	65	73	90	76	60	89	74	91	50	60	55	49	54	G	G	56
8	36	58	41	48	G	G	31	45	102	87	102	91	101	95	72	55	64	90	77	74	109	52	50	59
9	73	54	40	41	41	38	49	82	65	69	62	68	56	50	59	48	54	51	53	61	52	46	49	39
10	41	G	34	38	55	40	37	55	66	62	50	56	71	150	108	78	60	113	113	53	54	110	34	52
11	59	91	116	G	93	53	49	67	80	75	66	82	71	65	88	76	84	64	42	38	91	40	109	48
12	71	43	56	54	59	39	43	47	60	67	87	85	60	66	92	53	60	76	40	45	82	46	G	G
13	G	33	24	G	G	G	33	42	93	113	71	84	110	115	77	77	39	34	33	35	52	40	84	44
14	50	55	70	59	40	39	29	90	54	59	62	70	74	59	47	46	64	57	84	70	86	39	78	58
15	G	37	G	38	36	36	35	54	50	61	75	74	104	152	130	59	46	44	57	60	54	84	83	73
16	83	48	84	57	48	G	G	45	52	51	46	49	52	49	58	50	49	44	38	44	41	G	52	39
17	56	104	71	59	54	27	55	52	78	105	75	72	53	72	85	124	156	95	136	60	31	39	60	116
18	84	G	G	G	57	28	43	57	70	125	57	130	100	91	50	58	45	42	60	34	30	24	29	69
19	57	58	40	G	40	G	33	40	47	60	69	74	148	151	95	46	50	36	36	89	92	109	59	92
20	65	92	59	60	35	G	58	48	49	115	161	127	113	116	154	111	127	109	83	69	44	55	49	57
21	40	38	38	48	38	G	32	72	59	108	110	96	90	149	45	39	38	39	55	52	24	57	78	60
22	69	113	91	71	71	60	47	69	76	132	74	105	80	78	151	54	98	148	170	166	113	115	54	39
23	92	48	28	G	G	G	48	54	60	112	156	132	116	71	80	102	90	58	95	106	152	50	41	58
24	84	53	G	39	41	31	34	43	78	61	71	96	53	50	56	58	40	44	33	31	31	G	35	38
25	35	33	40	35	29	36	41	39	61	106	96	132	144	109	87	74	77	93	54	60	59	35	110	79
26	73	57	54	59	36	59	42	69	134	107	92	109	78	91	70	60	124	169	167	115	176	125	85	112
27	113	60	47	48	59	32	56	53	73	112	155	117	76	78	58	56	58	48	69	56	113	79	57	41
28	91	60	G	46	50	52	60	60	85	102	96	110	149	145	112	85	70	63	92	111	92	72	81	129
29	111	59	45	48	32	32	32	46	71	106	91	150	115	60	92	87	83	60	69	45	60	49	81	56
30	107	41	30	44	G	G	42	73	58	84	102	78	92	121	92	56	44	61	54	66	92	90	125	84
31	58	40	34	32	G	G	24	39	60	59	63	93	86	150	57	55	49	50	34	34	G	41	38	49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	58	53	40	44	36	28	41	53	65	87	87	84	80	87	77	58	58	58	55	56	54	48	54	54
U Q	83	59	57	58	54	39	47	67	78	107	96	109	104	116	95	77	77	90	84	74	92	72	81	69
L Q	40	37	24	32	G	G	32	45	58	62	64	72	56	65	57	50	46	44	40	44	40	36	38	39

HOURLY VALUES OF fmin AT Yamagawa

MAY 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	15	16	15	16	15	71	14	14	17	16	21	19	17	21	16	18	22	15	14	15	19	17	15	15
2	14	16	17	16	32	20	15	15	15	20	20	22	22	21	21	19	16	16	15	13	16	15	16	16
3	15	15	14	14	15	15	15	14	16	18	17	18	20	22	15	19	20	18	15	14	15	15	16	16
4	15	16	15	15	15	16	16	14	13	18	21	21	21	24	19	23	18	13	15	15	15	15	14	15
5	15	14	15	15	15	16	15	15	15	15	18	21	21	21	19	21	18	15	16	16	16	15	15	15
6	15	15	17	15	16	15	15	14	19	20	19	21	23	21	19	18	20	18	15	14	15	16	15	15
7	15	16	17	16	14	23	16	15	15	16	19	22	23	22	22	16	17	17	13	16	15	16	14	14
8	15	15	16	17	15	15	15	15	13	18	20	23	22	23	21	19	18	15	15	14	11	14	14	15
9	15	15	15	15	16	15	15	15	15	15	21	23	20	23	20	18	15	13	12	16	15	15	15	15
10	15	15	17	15	14	15	16	15	17	17	21	22	22	7	22	20	20	17	12	15	15	9	15	15
11	17	12	10	16	15	15	15	13	15	15	17	21	22	20	13	21	19	21	14	15	14	15	13	15
12	15	15	15	15	15	15	15	16	13	17	23	20	19	19	21	20	17	19	15	15	14	15	27	15
13	15	17	16	15	14	23	15	17	17	15	19	22	21	22	22	22	19	15	16	16	14	15	17	15
14	16	14	16	16	15	15	15	15	15	19	21	18	18	21	21	22	17	15	14	15	14	15	18	16
15	15	16	16	15	14	16	16	15	15	14	21	20	21	8	14	20	17	13	14	11	15	12	15	15
16	17	19	15	16	16	22	15	15	14	14	17	23	22	22	21	21	20	20	15	15	15	16	15	16
17	14	9	16	15	14	15	15	15	18	16	21	21	21	17	21	20	15	16	15	14	16	16	15	16
18	17	15	16	16	16	16	15	15	13	14	21	21	22	23	21	21	19	17	12	15	15	15	16	16
19	15	16	15	16	15	15	15	15	15	15	21	20	13	19	21	21	17	15	13	14	14	15	15	15
20	15	15	15	16	15	15	15	15	17	12	16	20	23	19	21	16	13	17	12	16	15	15	15	16
21	15	15	15	15	15	15	15	13	17	18	20	23	21	8	23	22	18	15	14	14	16	15	16	15
22	17	14	8	14	15	16	14	17	13	11	23	20	17	19	12	26	18	15	5	12	13	15	15	15
23	13	15	16	15	16	15	15	14	13	16	31	23	19	23	21	22	20	16	14	15	19	15	15	16
24	13	16	15	15	14	15	16	15	18	16	16	21	21	22	22	22	17	16	16	15	16	17	16	15
25	16	15	15	15	15	15	14	14	14	16	21	15	20	21	20	19	19	17	15	14	15	15	11	15
26	14	15	15	15	15	17	15	12	10	17	23	21	21	23	20	21	17	169	179	5	14	7	15	7
27	10	17	16	15	15	15	15	14	16	13	10	21	23	22	22	21	19	15	16	14	14	17	15	14
28	13	17	15	16	15	14	14	15	19	21	22	20	20	13	20	19	17	19	15	17	14	16	13	5
29	12	15	16	15	16	16	15	15	18	22	19	20	23	23	21	21	17	16	14	14	16	15	14	15
30	7	15	15	15	17	15	14	15	14	21	19	18	23	21	21	22	15	18	13	14	15	15	5	14
31	14	16	16	16	15	15	15	13	16	21	21	21	20	28	21	21	20	15	14	13	16	15	16	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	15	16	21	21	21	21	21	21	18	16	14	15	15	15	15	15
U Q	15	16	16	16	16	16	15	15	17	18	21	22	22	23	21	22	19	18	15	15	16	16	16	16
L Q	14	15	15	15	15	15	15	14	14	15	19	20	20	19	19	19	17	15	13	14	14	15	14	15

HOURLY VALUES OF foF2 AT Okinawa

MAY 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	A	49	45	42	34	A	41	77	61	55	A	63	A	83	94	109	118	98	87	84	68	63	44	49
2	45	43	43	37	33	30	41	63	60	60	A	57	72	87	93	108	117	110	85	A	A	51	48	45
3	44	47	45	40	A	A	43	65	A	A	A	A	A	A	66	64	77	84	79	95	A	A	A	A
4	A	35	37	A	A	31	49	62	60	A	A	A	A	81	96	114	97	105	100	A	A	A	39	41
5	38	37	37	37	33	A	A	A	A	A	A	A	N 85	A	108	117	122	123	119	101	59	46	A	39
6	41	47	40	43	32	B	39	49	56	A	A	A	A	67	77	83	91	88	91	93	72	49	A	42
7	40	38	37	38	32	N	39	55	56	A	A	A	A	71	84	87	92	100	92	81	74	67	50	42
8	39	A	41	35	37	30	53	A	53	A	A	A	A	58	59	65	71	85	90	98	69	A	A	A
9	A	A	A	A	A	26	A	A	A	A	A	A	A	A	A	A	97	95	105	101	85	57	44	A
10	A	A	A	33	A	A	A	67	53	A	A	A	61	A	A	A	97	96	89	87	52	43	A	40
11	A	A	A	A	A	33	45	54	A	48	A	A	A	77	94	107	109	75	67	77	A	A	A	A
12	A	A	A	33	A	A	48	50	A	A	47	A	A	A	A	108	107	105	104	89	87	64	51	54
13	57	53	51	54	32	33	40	53	49	A	A	A	A	A	61	56	84	92	76	64	63	61	54	49
14	55	56	A	39	39	38	53	57	A	A	A	A	69	73	72	75	71	77	77	85	88	62	A	A
15	49	49	40	41	40	33	49	A	A	A	69	N 45	67	47	A	79	87	A	86	91	99	87	56	43
16	A	A	A	A	39	38	53	65	57	57	58	59	58	63	73	79	82	77	85	75	72	60	55	56
17	53	A	A	A	N 25	31	48	107	A	A	A	A	82	81	89	103	A	105	88	93	A	56	47	51
18	45	46	44	41	34	31	44	A	A	A	A	A	84	96	97	105	122	124	109	78	63	57	48	47
19	47	45	47	55	58	47	50	49	55	57	A	A	A	A	63	A	A	67	60	A	65	61	A	A
20	A	A	A	A	33	32	43	62	A	A	A	68	77	79	76	84	A	110	97	86	92	87	79	A
21	69	69	76	55	51	52	55	A	A	A	A	A	A	A	A	83	87	89	A	85	A	A	50	54
22	42	A	A	40	40	A	37	A	A	A	A	A	69	71	84	86	A	79	A	A	66	A	A	A
23	A	41	42	34	32	N 23	46	A	A	A	A	49	A		66	69	69	A	A	A	62	59	52	A
24	A	46	43	33	A	A	43	55	A	A	N 62	A	A	A	A	A	75	A	82	75	56	50	45	45
25	43	41	41	A	A	A	45	50	A	A	A	A	A	A	A	A	73	73	A	82	91	69	52	41
26	42	39	A	35	A	31	43	59	A	A	A	56	A	A	85	93	102	106	98	95	97	80	56	A
27	A	A	54	41	49	33	A	53	A	A	A	A	A	109	119	107	97	101	A	A	92	83	A	A
28	A	35	A	A	33	32	43	A	48	A	A	60		61	54	A	A	A	A	A	A	A	A	A
29	A	43	39	A	35	34	41	47	A	67	A	A	A	A	A	A	A	A	A	53	A	66	49	53
30	49	42	41	37	33	32	47	60	A	A	A	A	52	61	A	A	48	A	A	79	93	A	A	A
31	38	36	36	A	A	A	A	A	61	A	A	A	A	A	A	65	77	72	67	65	53	74	39	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	21	20	21	21	20	26	21	12	6	4	8	11	17	21	23	25	25	23	24	23	23	19	17
MED	44	43	42	39	34	32	44	57	56	57	60	58	69	73	84	86	91	95	88	85	72	61	50	45
U Q	49	48	45	41	39	33	49	64	60	60	65	61	82	82	94	107	104	105	98	93	91	69	54	52
L Q	41	38	39	35	32	31	41	51	53	55	52	52	61	62	66	75	76	78	79	77	63	56	45	41

HOURLY VALUES OF fEs AT Okinawa

MAY 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	113	32	G	G	26	43	27	57	56	54	70	58	124	71	56	60	80	54	70	93	53	43	G	26
2	G	32	31	28	G	G	G	36	46	78	64	55	46	88	58	52	49	89	61	71	60	40	G	G
3	G	37	32	54	152	83	47	78	69	130	133	154	156	122	144	64	56	73	124	126	91	145	91	59
4	59	31	31	40	39	G	29	48	172	121	156	150	112	51	53	49	52	78	87	90	92	84	34	G
5	G	G	29	27	G	60	94	93	92	76	77	74	126	148	59	46	36	35	32	24	32	28	28	G
6	25	32	29	31	24	B	34	44	90	67	92	86	73	61	59	71	58	46	70	60	36	G	47	G
7	G	G	31	G	G	G	29	36	51	81	69	74	60	88	61	66	48	65	40	34	32	30	40	36
8	32	45	32	G	G		31	67	69	56	93	125	78	60	56	49	46	71	90	45	54	72	104	60
9	55	65	60	59	41	127	71	127	115	145	146	129	110	111	104	148	92	71	84	46	48	49	49	69
10	67	72	59	G	65	45	49	46	69	131	142	149	49	73	91	90	84	67	66	53	28	32	43	70
11	59	57	92	93	57	33	26	51	65	108	78	69	67	62	60	79	58	69	37	45	93	91	92	91
12	59	59	57	28	38	36	40	52	66	84	93	92	126	98	96	65	72	79	105	61	58	45	60	46
13	34	40	45	35	26	G	27	31	45	64	90	129	121	91	58	60	46	36	46	28	27	25	32	41
14	41	70	70	G	G	40	39	45	59	89	76	75	70	77	53	66	60	64	70	59	50	28	58	58
15	30	40	27	32	24	G	45	151	110	89	115	136	158		151	58	56	147	57	54	57	54	30	28
16	92	114	126	71	78	60	34	42	40	47	43	49	46	44	49	54	55	34	43	53	40	29	50	44
17	37	70	114	80	29	39	34	92	111	72	126	93	144	70	86	110	115	65	38	50	85	40	28	58
18	60	93	60	25	G	G	45	73	81	73	115	90	76	47	52	69	61	34	45	43	24	G	G	29
19	36	32	40	29	G	G	G	31	54	55	83	60	58	69	61	116	122	62	69	70	54	49	92	132
20	104	70	70	60	26	52	35	67	127	132	105	125	54	60	58	156	124	50	166	56	69	55	57	124
21	49	33	48	45	41	50	46	70	93	92	129	121	151	81	92	84	47	50	90	73	107	48	53	41
22	43	48	64	41	30	40	36	86	60	91	100	91	77	138	54	74	124	111	167	164		113	110	127
23	60	40	36	G	G	26	36	59	91	110	154	148	140		40	53	74	129	146	150	78	60	40	56
24	48	34	33	59	46	69	34	125	67	96	174	130	127	66	133	88	73	74	105	50	33	32	G	26
25	29	32	36	55	53	55	47	40	57	85	172	106	89	91	97	71	57	55	92	76	69	43	24	34
26	38	60	85	43	40	G	34	95	112	115	92	54	116	126	73	56	57	60	44	39	56	60	81	108
27	115	140	24	G	40	60	66	48	110	82	171	128	144	114	112	78	70	60	92	108	113	106	105	59
28	45	31	58	59	28	26	40	69	74	98	113	139			56	96	80	93	144	162	115	108	84	144
29	56	35	35	36	35	27	35	50	71	97	110	108	117	134	143	114	121	94	128	78	58	57	31	46
30	32	25	32	G	27	G	34	45	59	69	130	77	51	56	67	60	86	69	84	54	91	133	91	127
31	72	127	32	54	35	45	81	69	56	70	65	69	154	116	81	63	56	45	46	42	52	G	28	30
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	31	31	31	31	31	31	30	28	31	31	31	31	31	31	30	31	31	31
MED	45	40	36	35	29	39	35	57	69	85	105	93	111	79	61	66	60	65	70	56	56	48	47	46
U Q	60	70	60	55	41	53	46	78	93	108	133	129	127	112	96	88	84	78	105	78	85	72	84	70
L Q	32	32	31	G	G	G	31	45	57	70	78	74	67	61	56	58	55	50	46	45	40	30	28	29

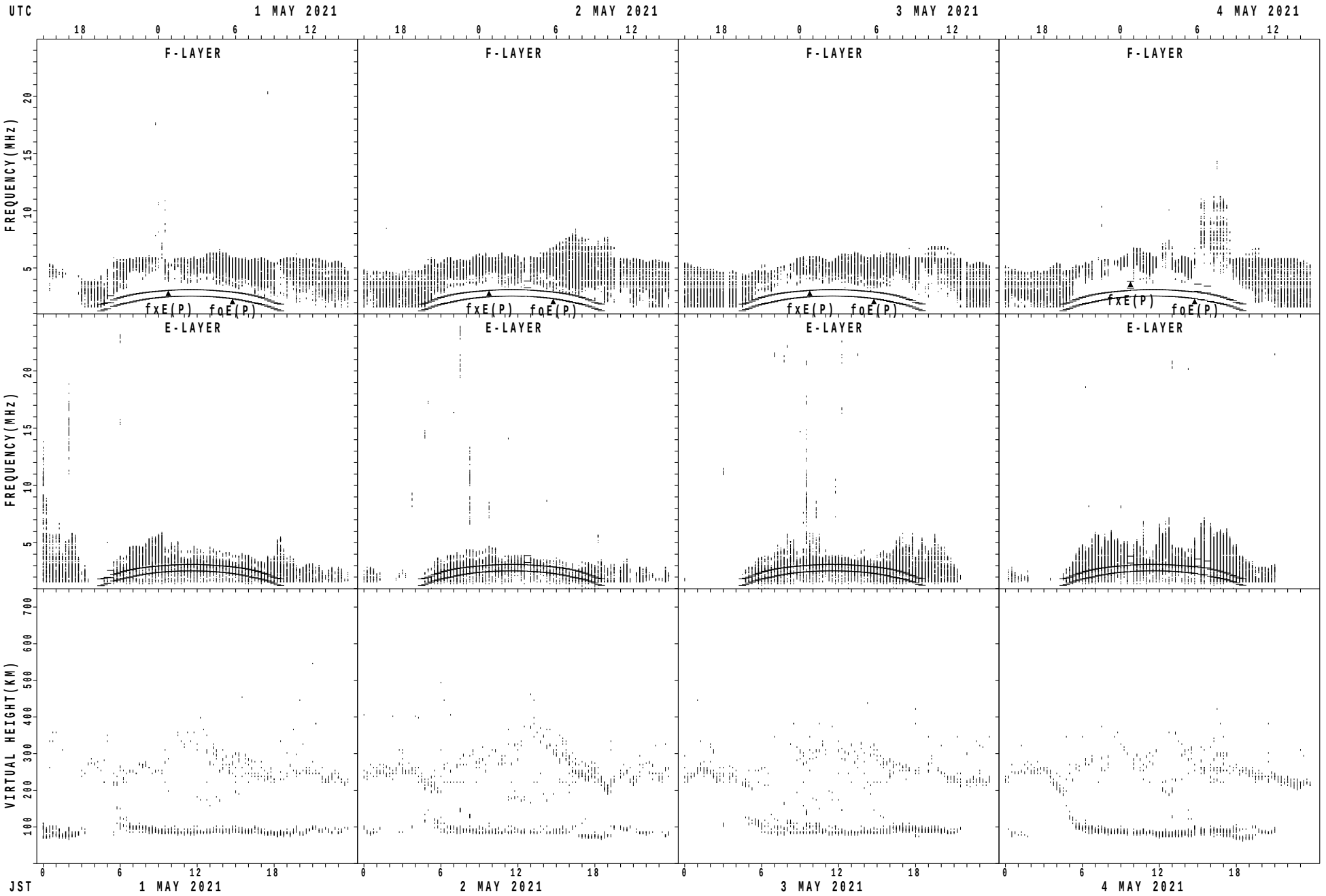
HOURLY VALUES OF fmin AT Okinawa

MAY 2021

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

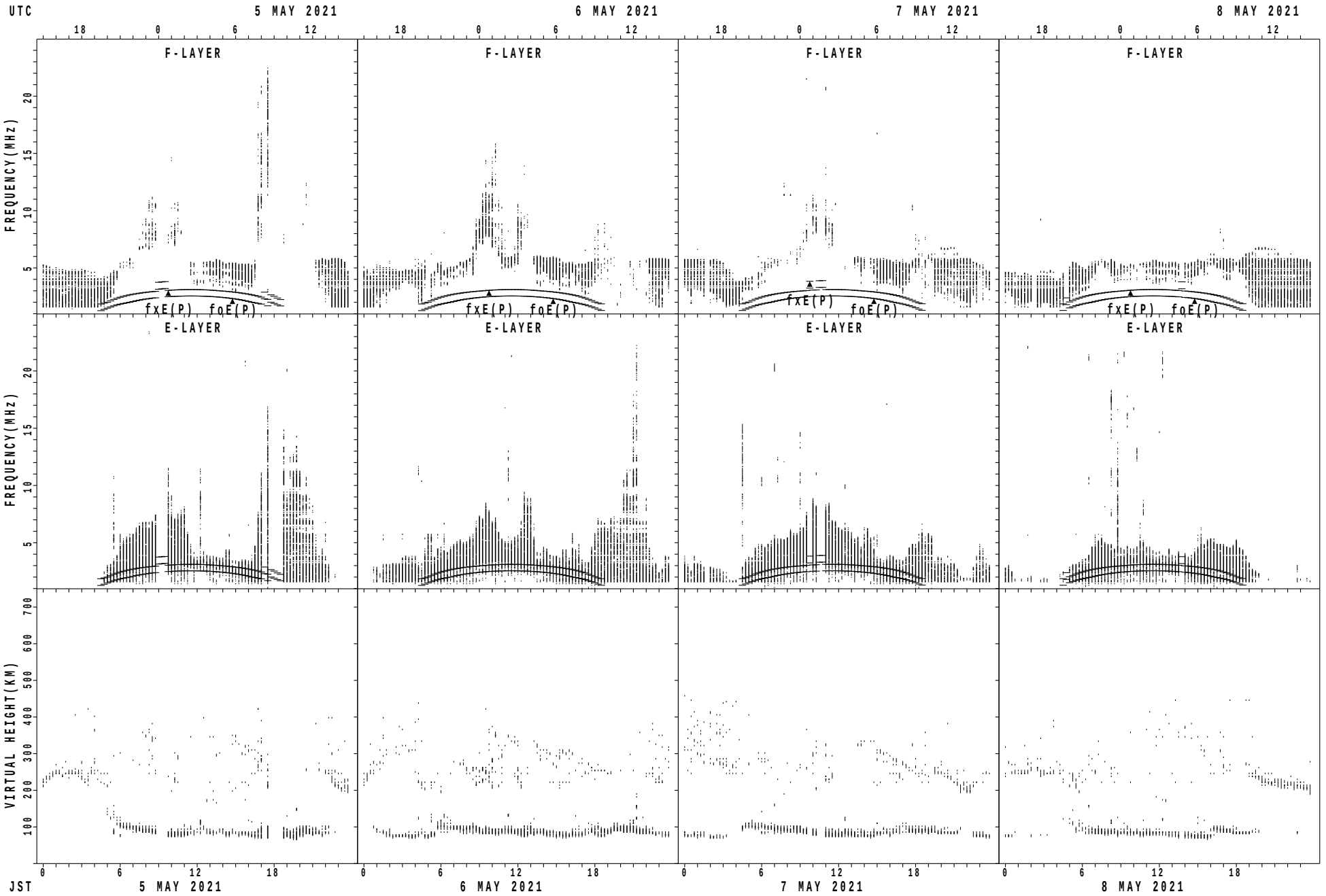
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	7	15	15	15	16	16	16	13	14	15	15	17	17	17	19	15	16	17	15	15	15	16	16	15
2	15	15	15	15	14	15	15	16	14	17	17	20	22	21	19	18	15	14	14	15	15	15	14	18
3	15	15	16	16	15	15	14	15	13	7	13	40	58	17	26	18	15	15	13	9	15	16	15	16
4	15	15	16	15	15	14	15	15	12	17	5	15	19	17	17	17	15	13	14	9	9	9	15	14
5	14	16	16	16	16	15	16	14	17	15	16	16	15	120	15	16	14	14	15	15	15	15	15	15
6	15	16	16	15	15	15B	16	15	13	14	16	19	20	18	21	17	17	14	15	15	15	16	15	15
7	14	15	16	15	14	16	16	17	14	12	16	15	21	21	16	19	16	14	14	16	16	15	15	15
8	15	15	16	15	15		16	15	13	15	15	16	17	20	18	17	15	14	14	15	15	15	10	15
9	15	16	15	15	16	18	14	17	13	90	47	36	17	18	6	12	14	14	11	15	14	15	15	15
10	15	15	15	15	14	17	15	15	13	19	114	92	14	17	12	17	16	13	14	15	15	16	16	14
11	15	14	9	17	14	16	15	16	14	12	15	18	17	12	18	11	14	14	15	15	15	11	7	15
12	15	16	16	15	15	15	16	14	16	14	17	18	12	17	14	17	17	14	13	15	14	15	15	15
13	15	15	16	15	16	16	15	15	16	13	10	16	17	18	17	18	15	15	14	15	15	16	16	16
14	15	15	15	15	15	15	15	14	15	13	12	17	17	19	20	17	14	14	13	14	15	16	15	15
15	16	15	16	16	15	16	14	5	15	14	19	14	33	21	5	15	16	9	13	15	15	15	15	16
16	13	7	10	14	17	16	16	14	14	16	17	19	18	19	19	20	16	15	14	14	15	16	15	15
17	14	14	15	15	15	14	16	14	17	16	17	14	9	17	15	16	11	13	14	15	15	15	15	14
18	16	15	14	16	14	14	15	15	15	16	17	19	20	18	18	17	19	15	14	14	16	16	15	15
19	15	15	15	16	15	16	16	15	14	14	15	16	20	21	17	16	11	15	13	15	15	15	9	15
20	13	15	14	16	15	16	15	14	15	5	18	19	19	17	17	14	17	16	13	14	15	15	16	8
21	15	15	15	14	15	15	17	13	11	15	19	19	8	15	17	14	15	14	9	14	15	15	15	15
22	14	15	15	15	15	15	15	15	13	15	17	15	20	11	17	16	9	13	107	12	5	14	14	13
23	15	15	15	16	14	15	16	13	13	12	14	12	23	18	17	17	16	14	9	7	14	14	14	14
24	15	16	15	14	14	16	16	15	13	17	18	10	19	16	9	16	12	13	15	14	15	16	16	15
25	16	16	15	15	16	15	15	14	13	15	5	20	17	19	17	17	13	14	14	15	15	15	16	15
26	15	15	16	15	15	14	16	15	15	17	17	22	18	17	17	18	15	15	14	15	14	15	13	18
27	7	19	16	15	15	14	15	13	15	15	18	17	19	20	16	17	16	15	11	13	14	9	17	16
28	16	15	16	16	15	14	14	14	16	16	16	8	71	9	17	18	15	14	23	25	20	6	13	11
29	16	15	15	15	15	15	15	15	15	19	16	18	19	23	6	53	12	13	11	13	15	15	16	15
30	16	16	16	16	15	17	17	13	13	14	16	18	16	19	20	20	15	14	12	14	15	9	11	5
31	15	13	16	16	16	16	14	14	14	15	19	16	11	20	19	16	15	15	14	15	15	15	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	30	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	16	17	18	18	17	17	15	14	14	15	15	15	15	15
U Q	15	16	16	16	15	16	16	15	15	16	18	19	20	20	19	18	16	15	14	15	15	16	16	15
L Q	14	15	15	15	15	15	15	14	13	14	15	15	17	17	15	16	14	14	13	14	15	15	14	14

SUMMARY PLOTS AT Wakkanai



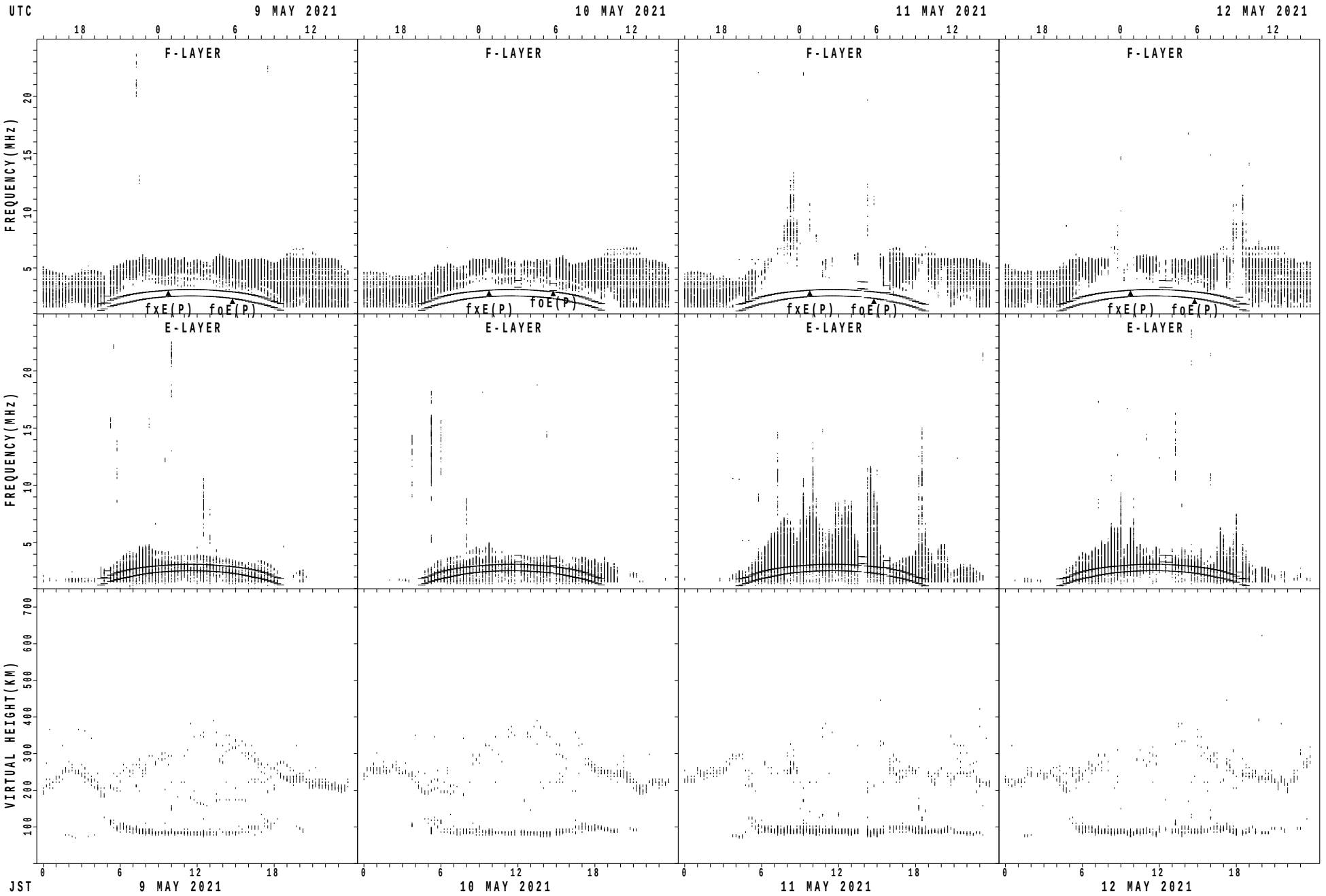
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



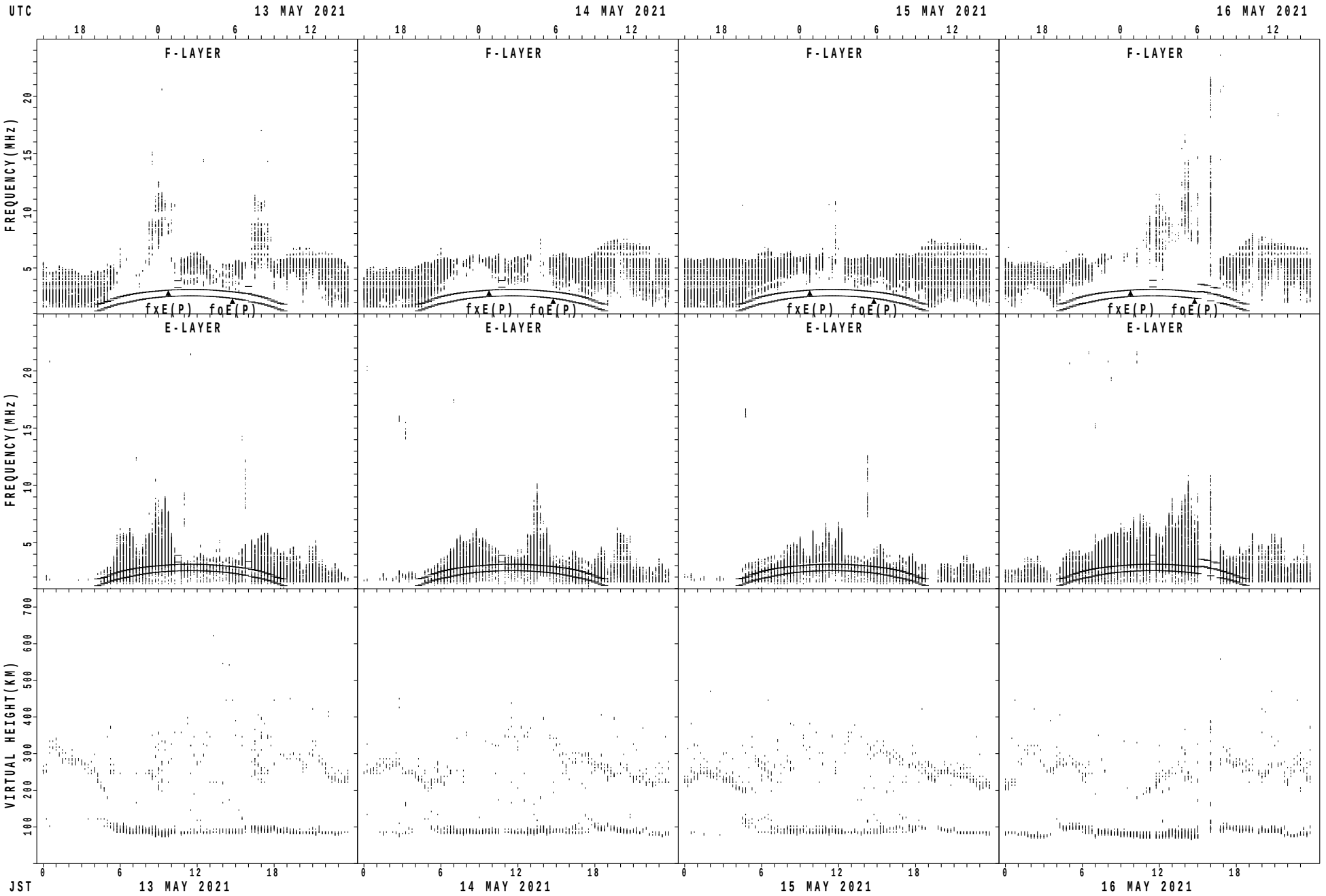
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



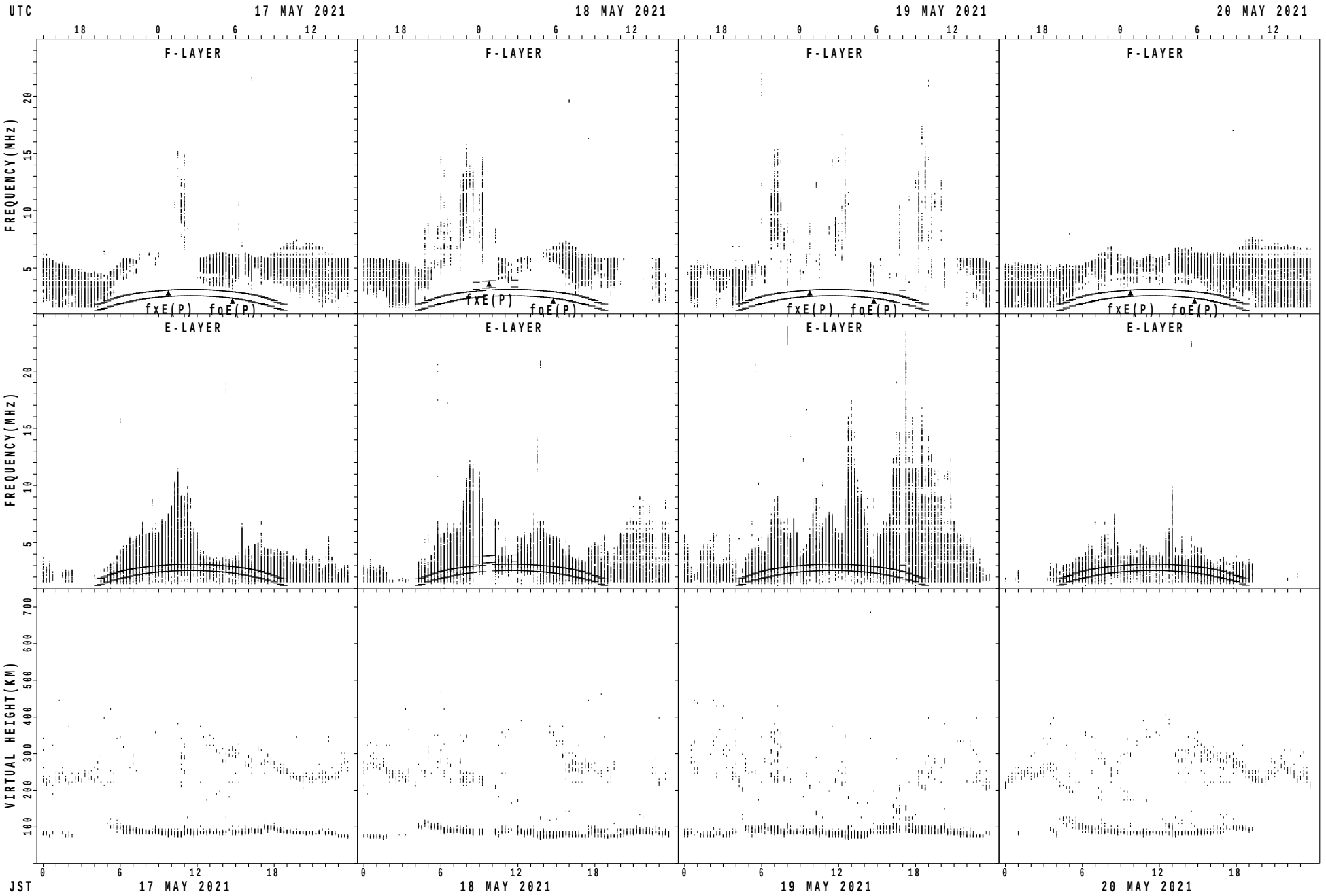
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



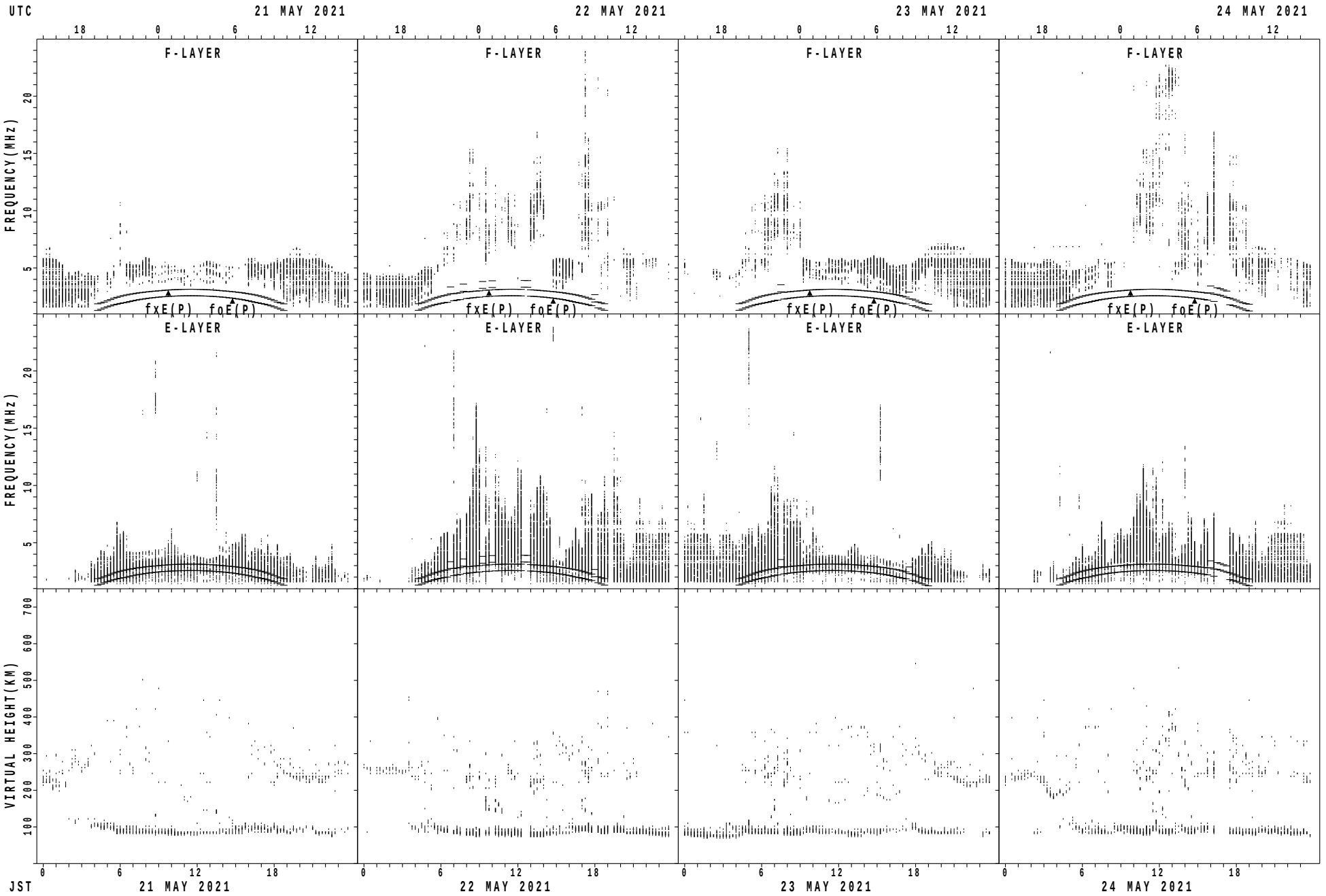
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



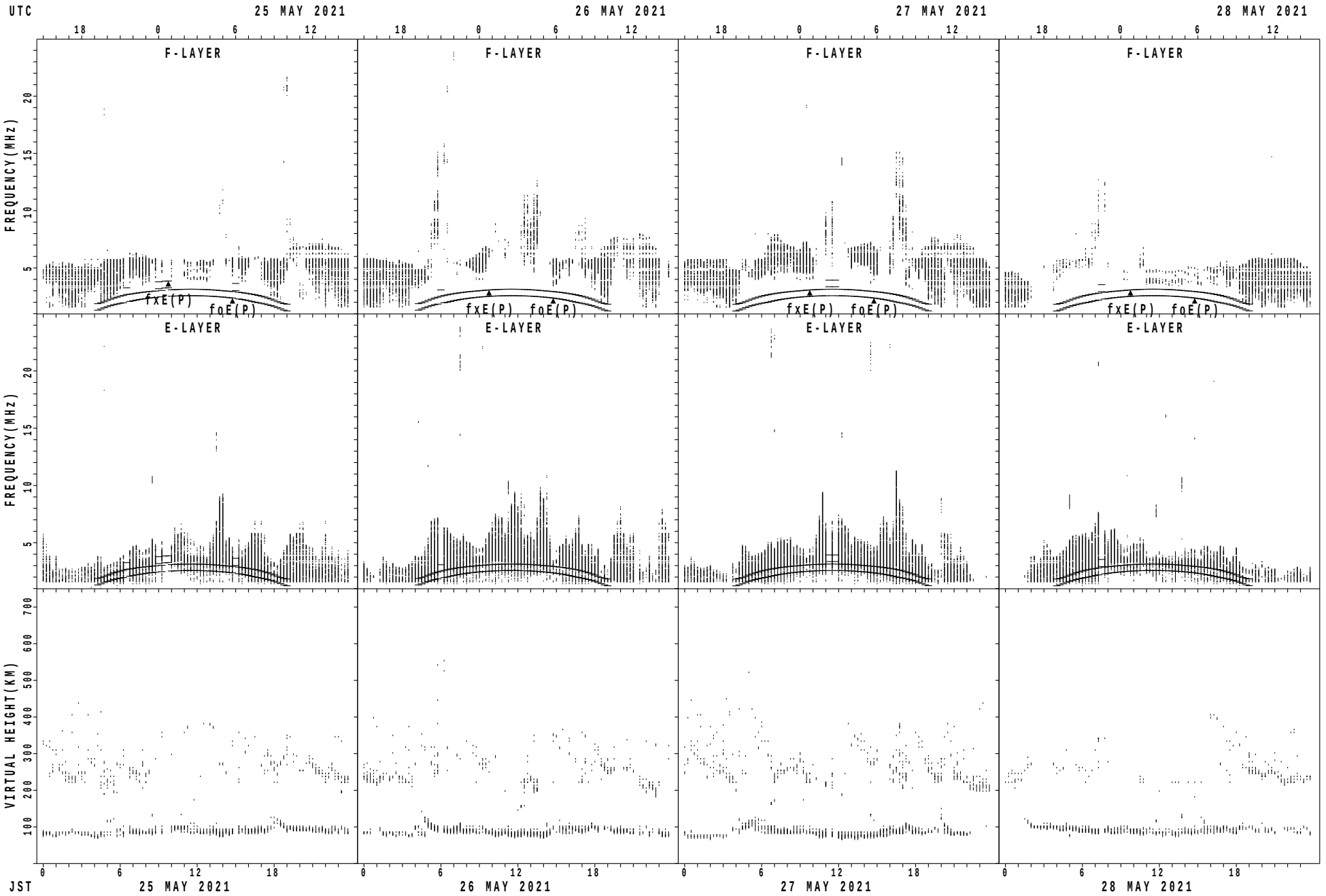
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



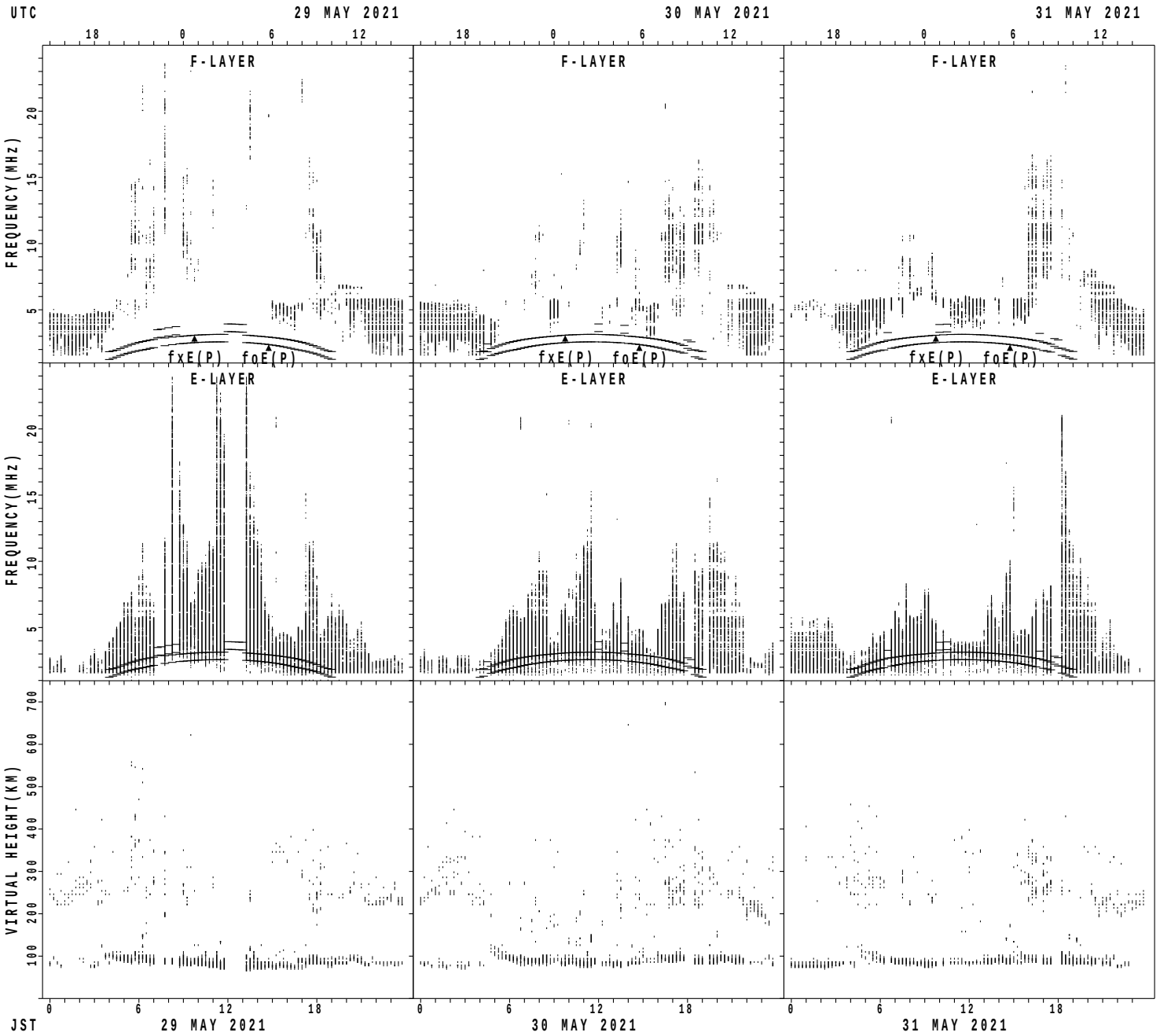
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



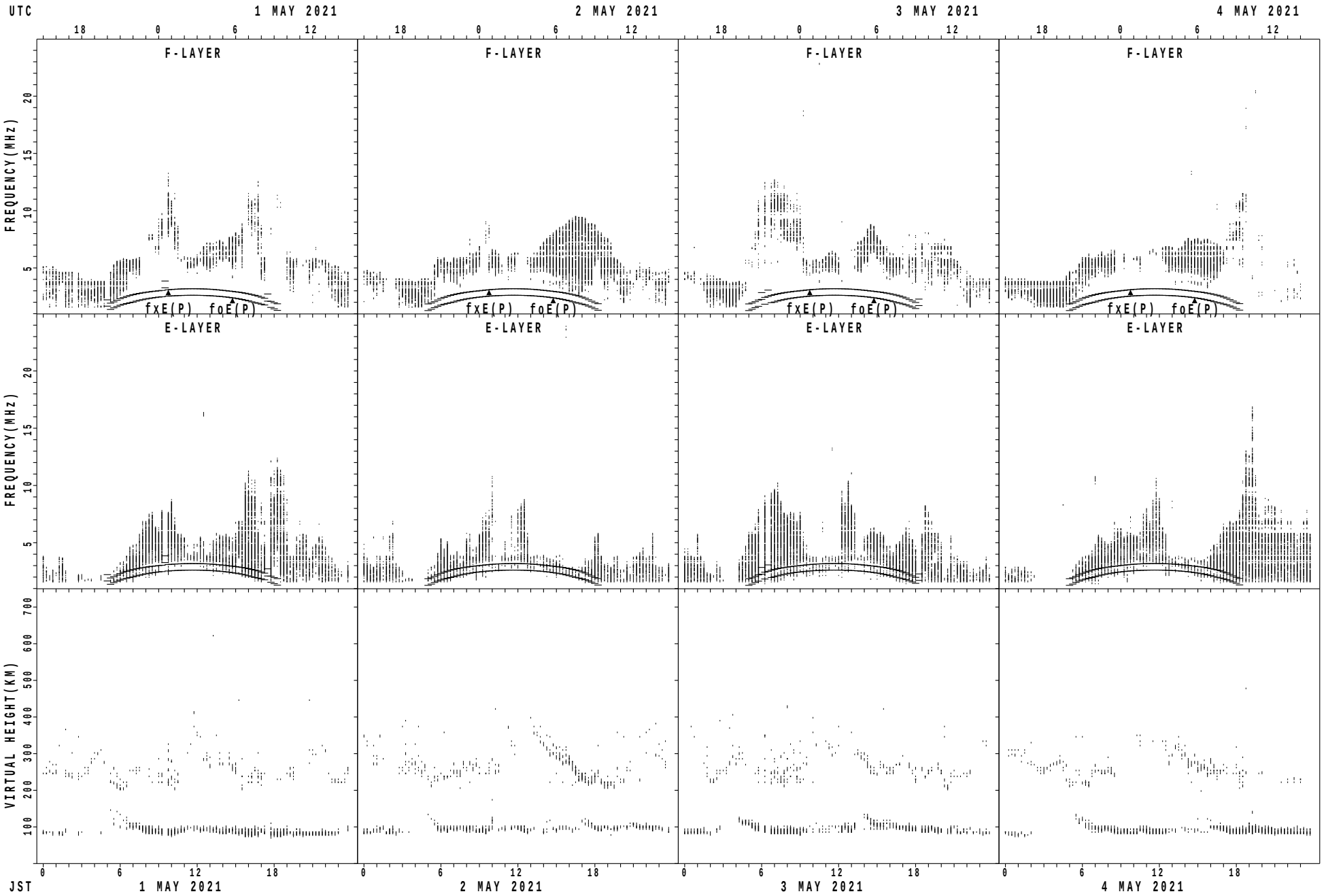
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



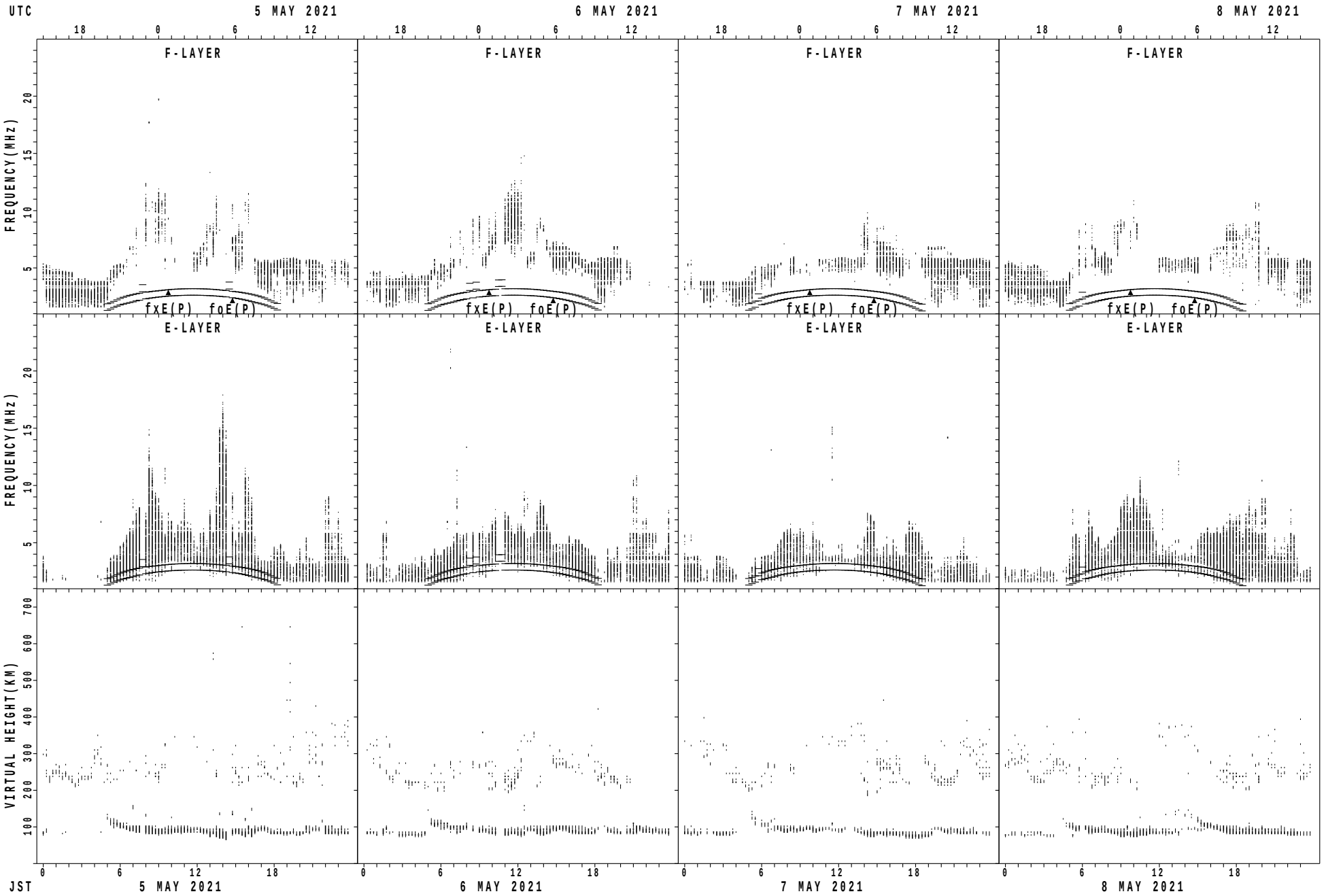
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



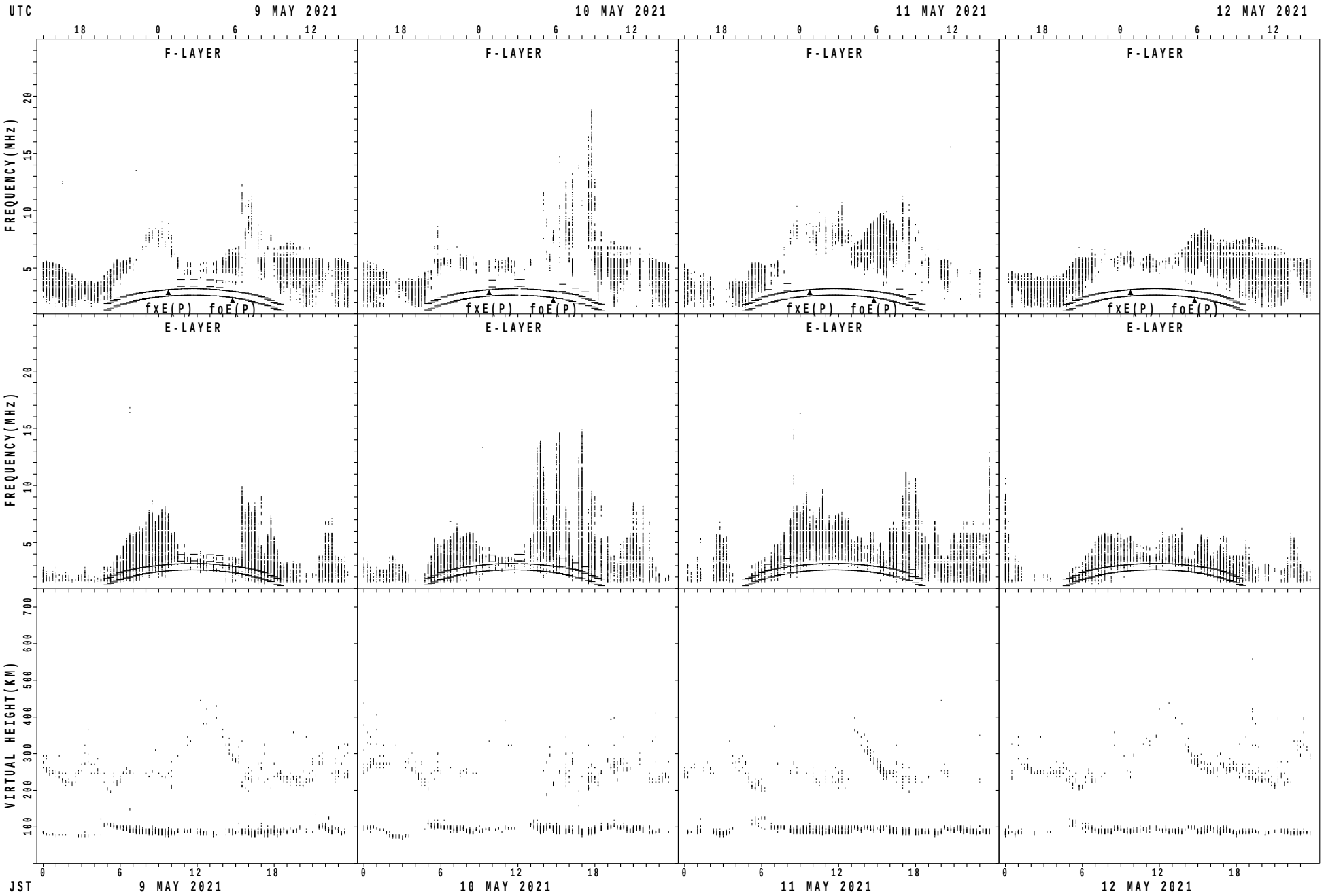
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



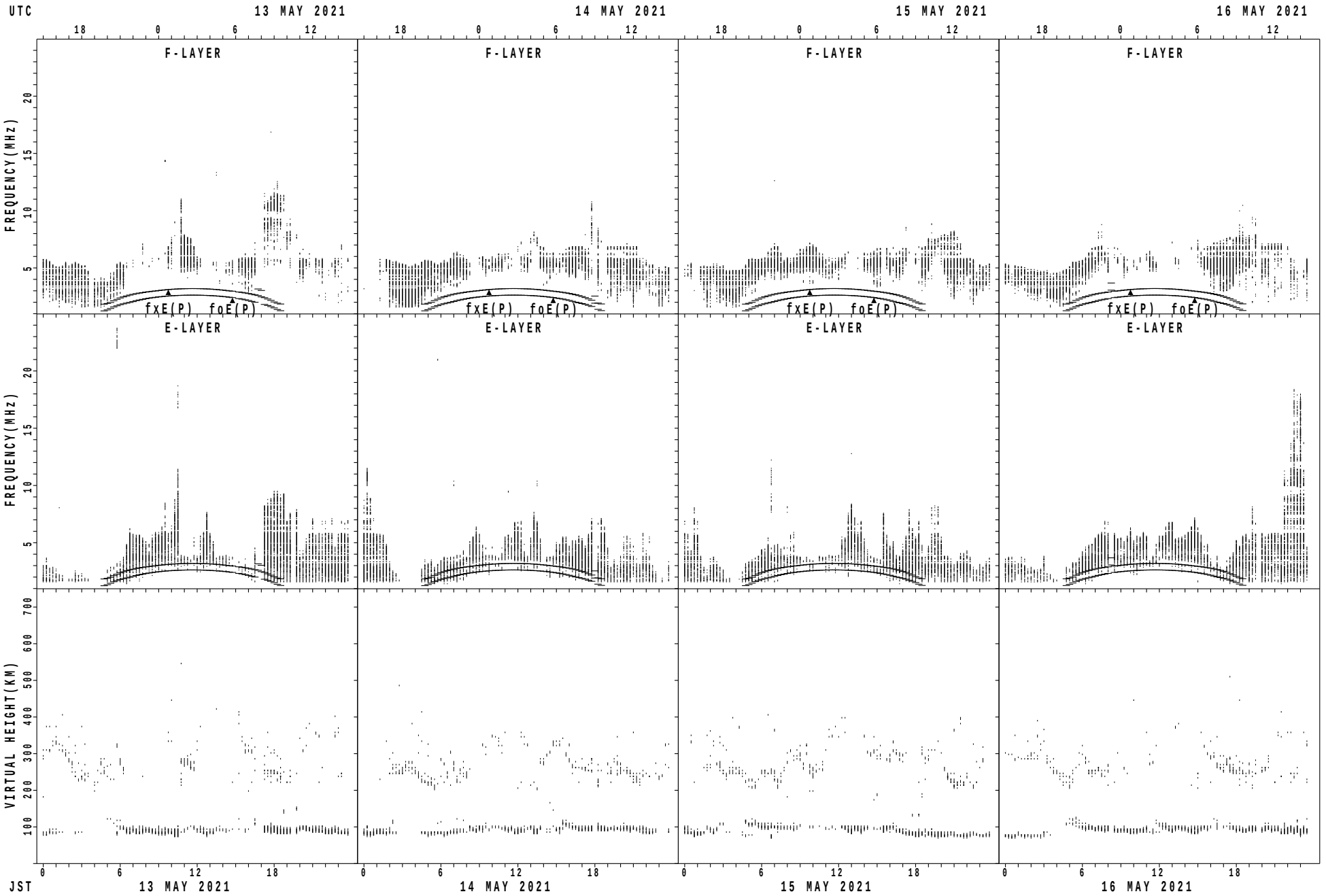
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



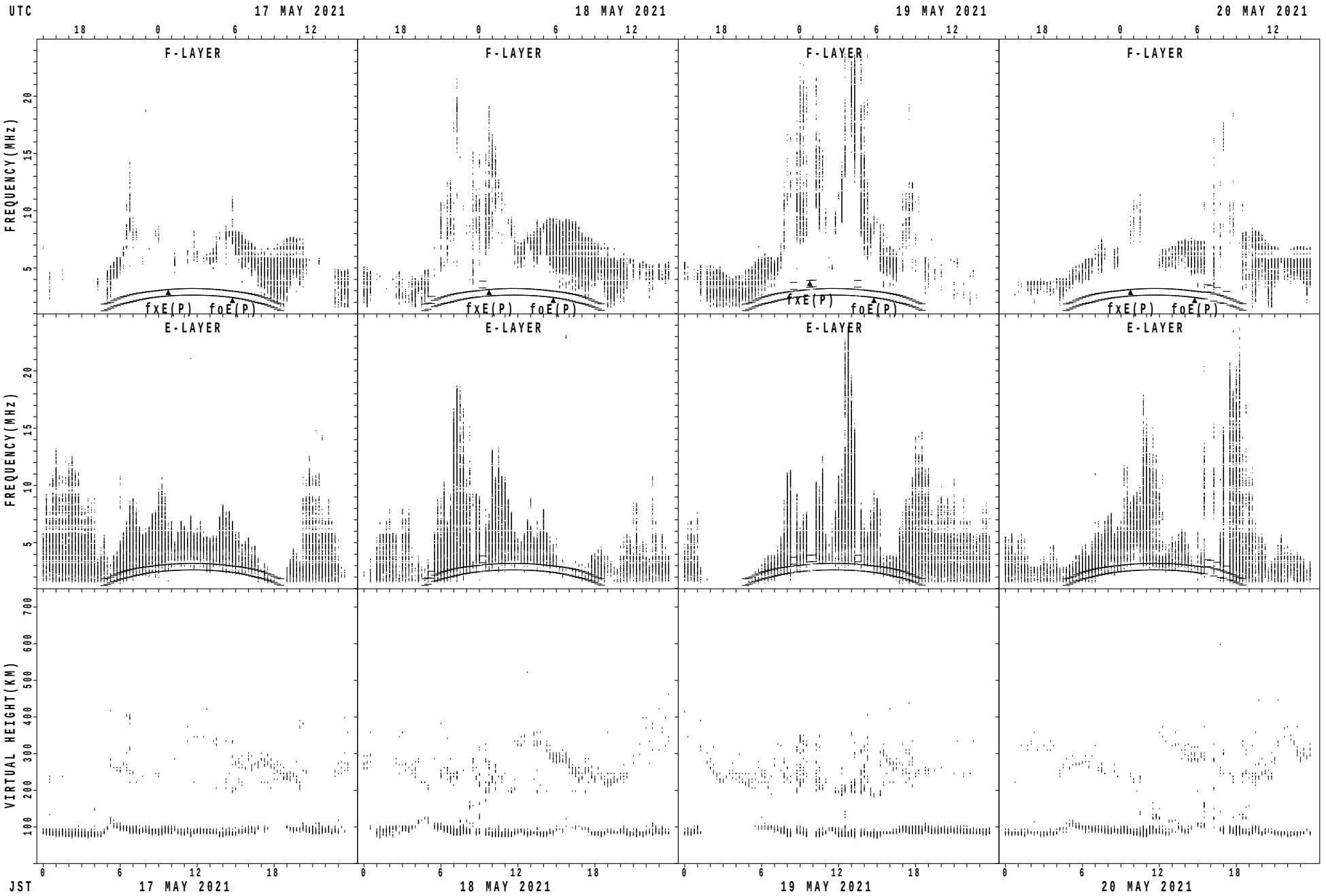
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



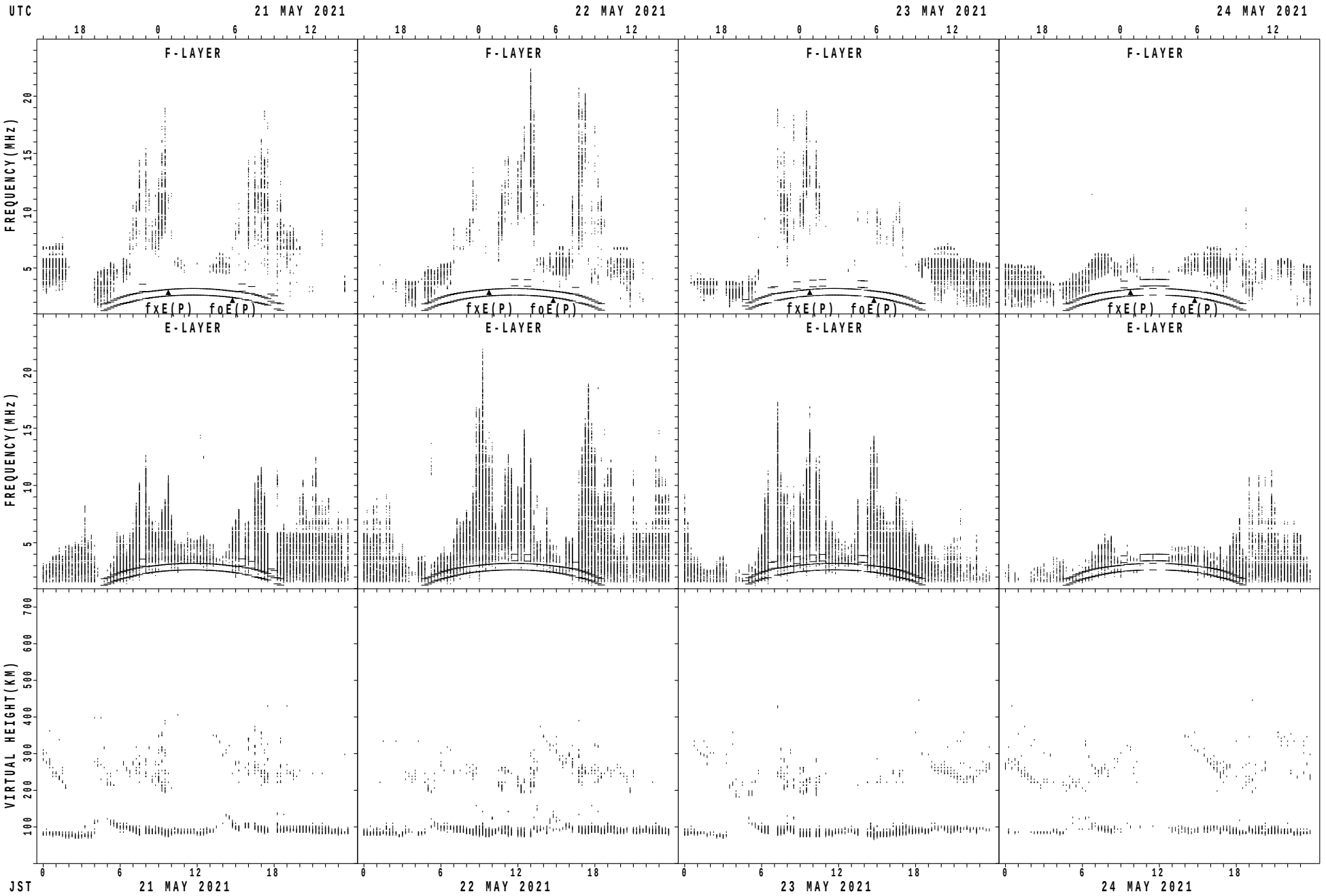
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



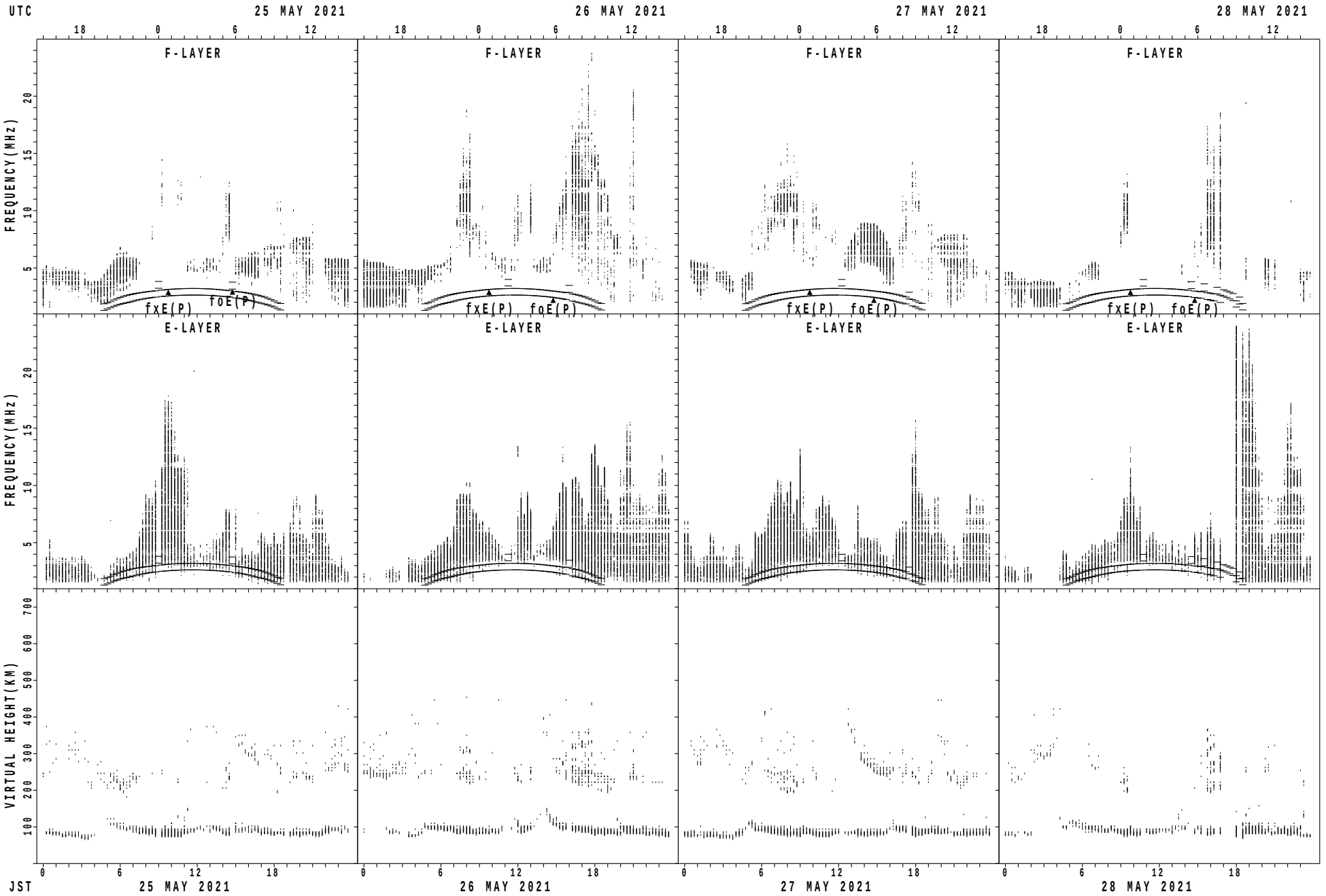
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



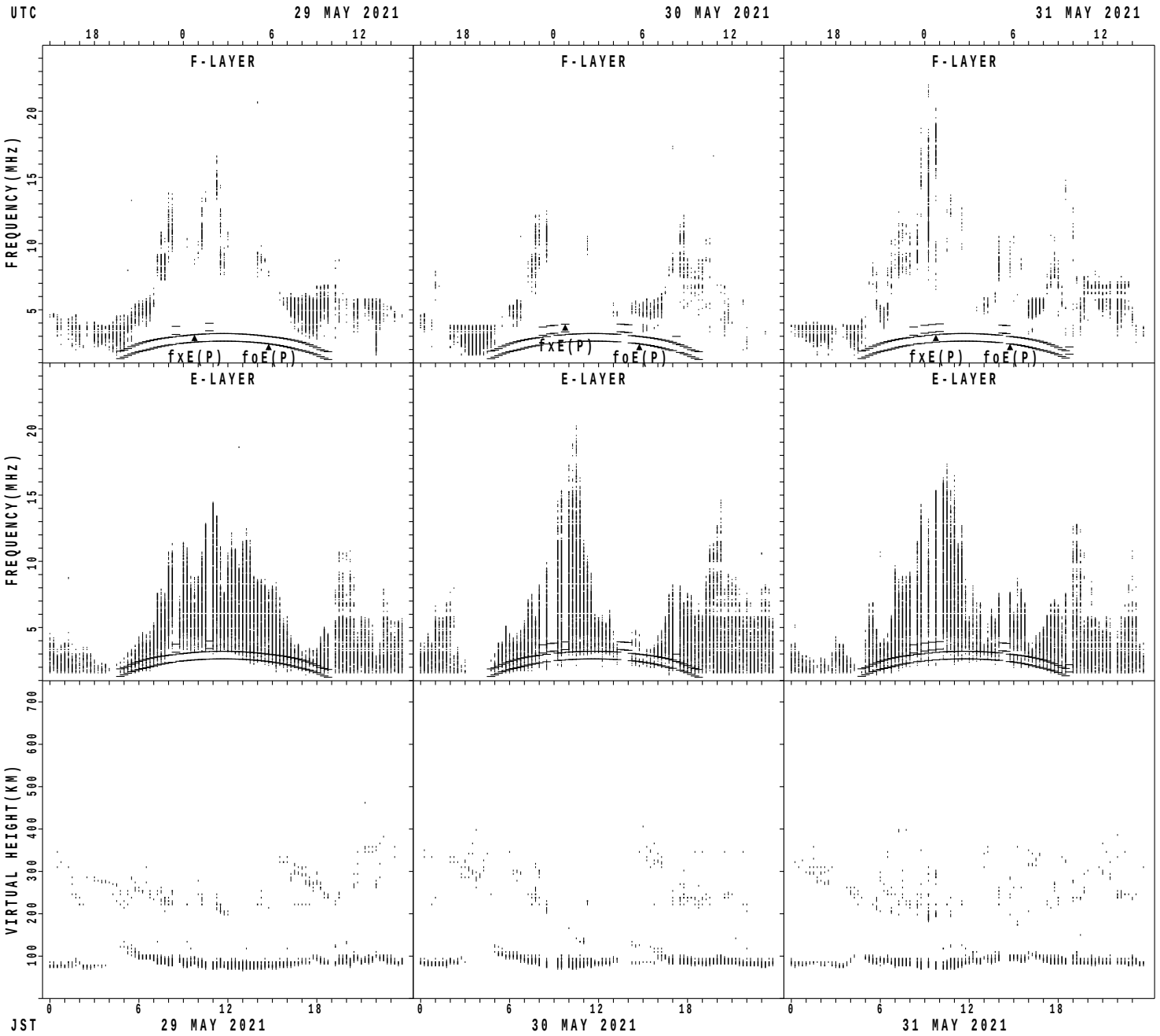
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



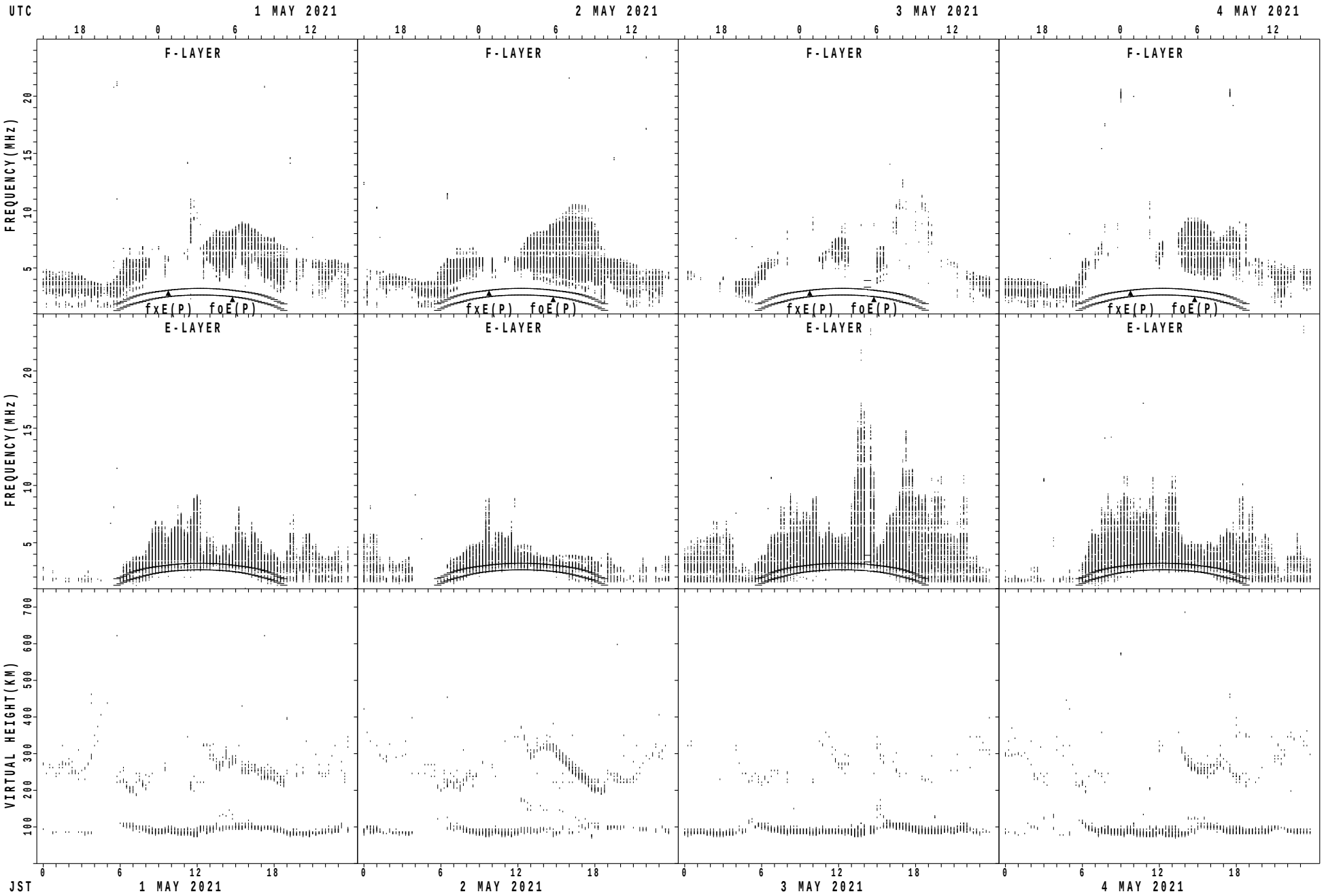
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



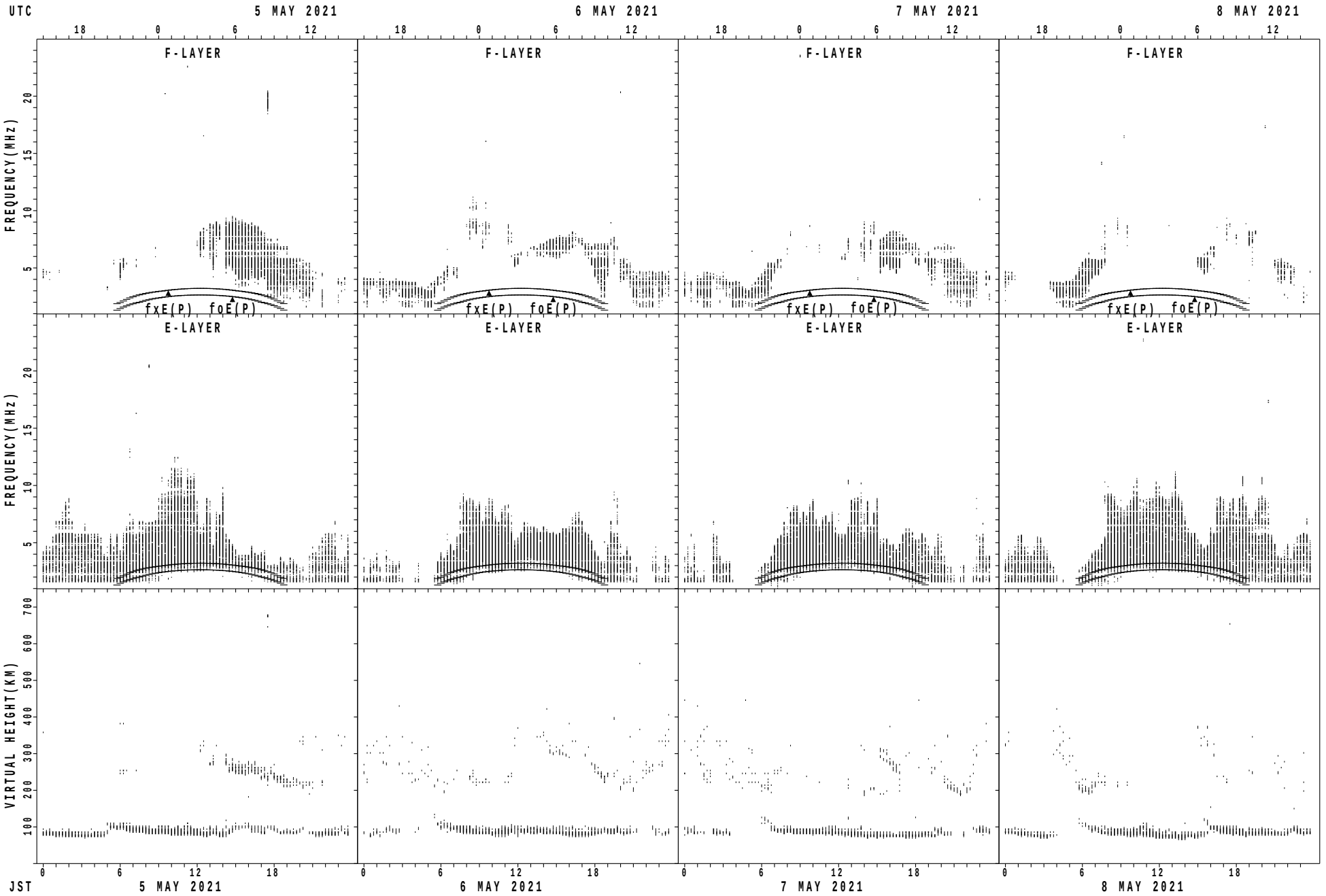
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



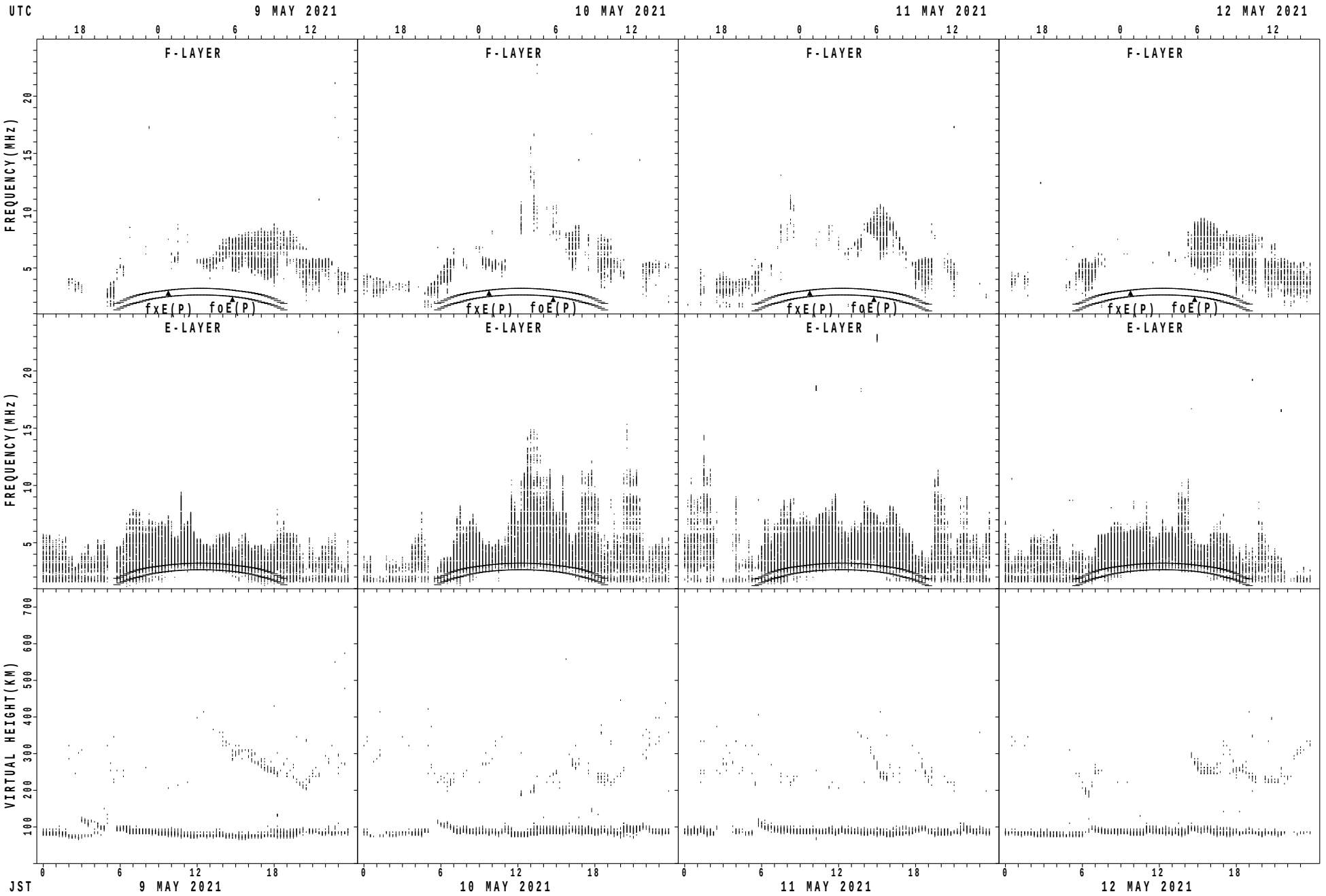
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



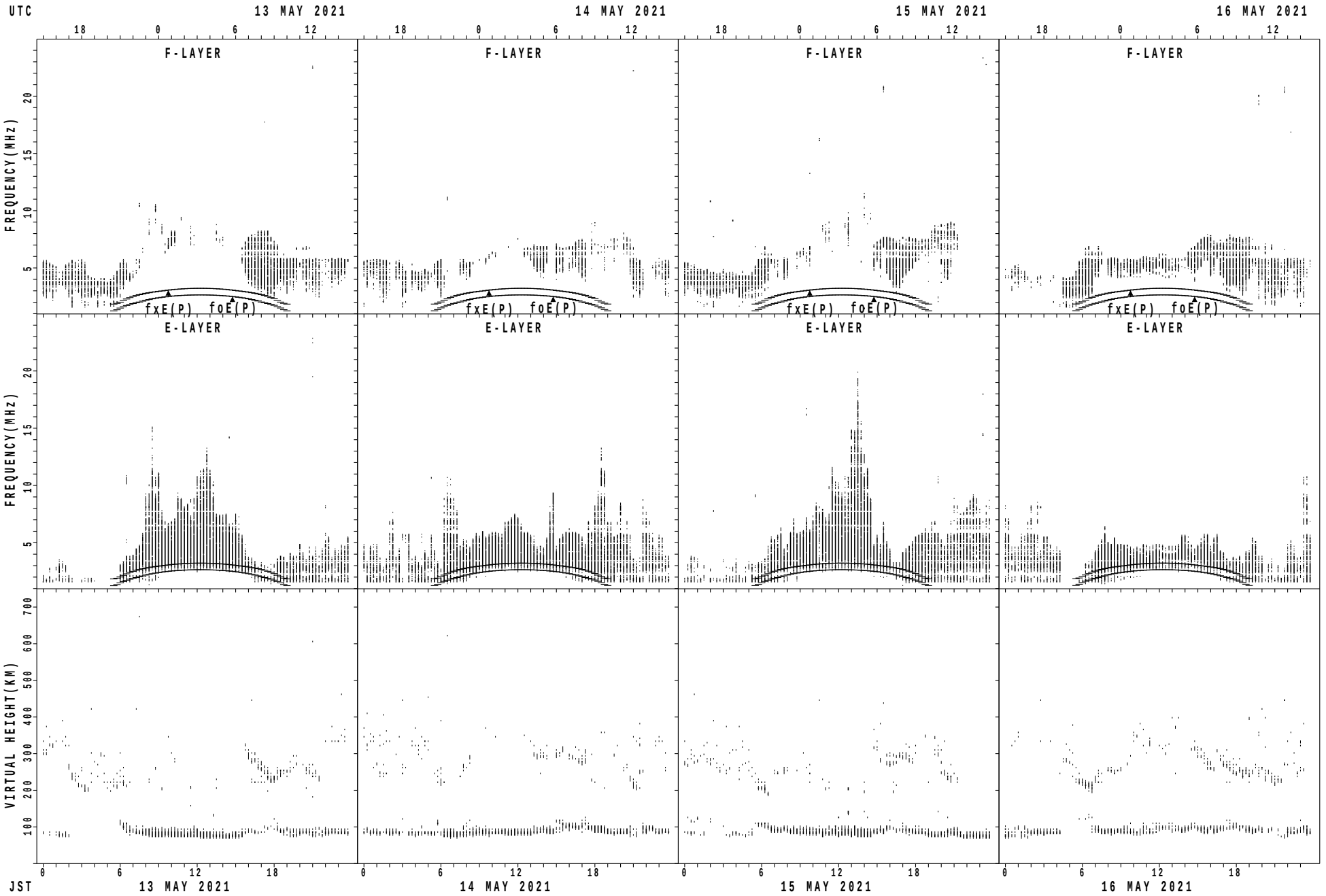
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



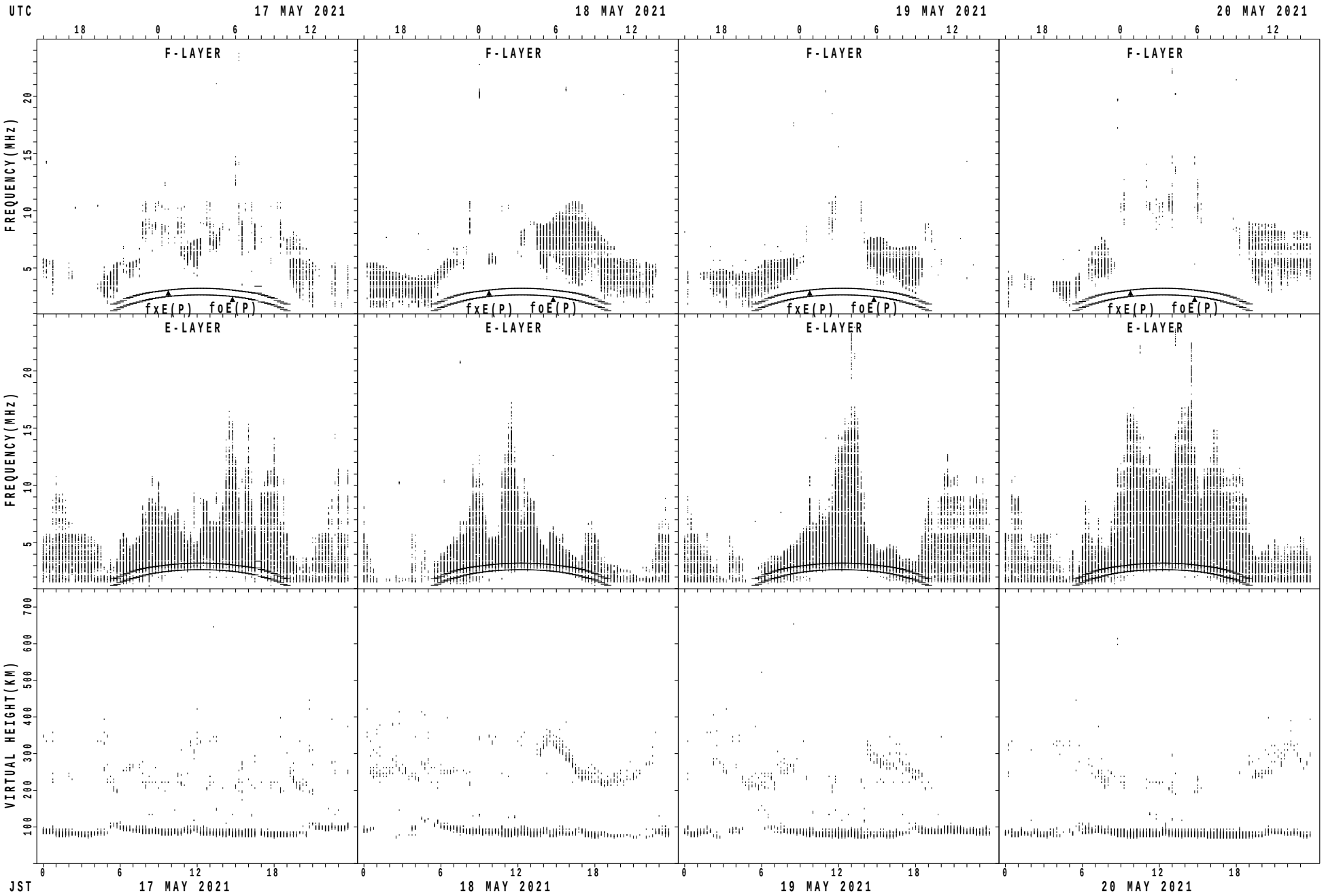
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



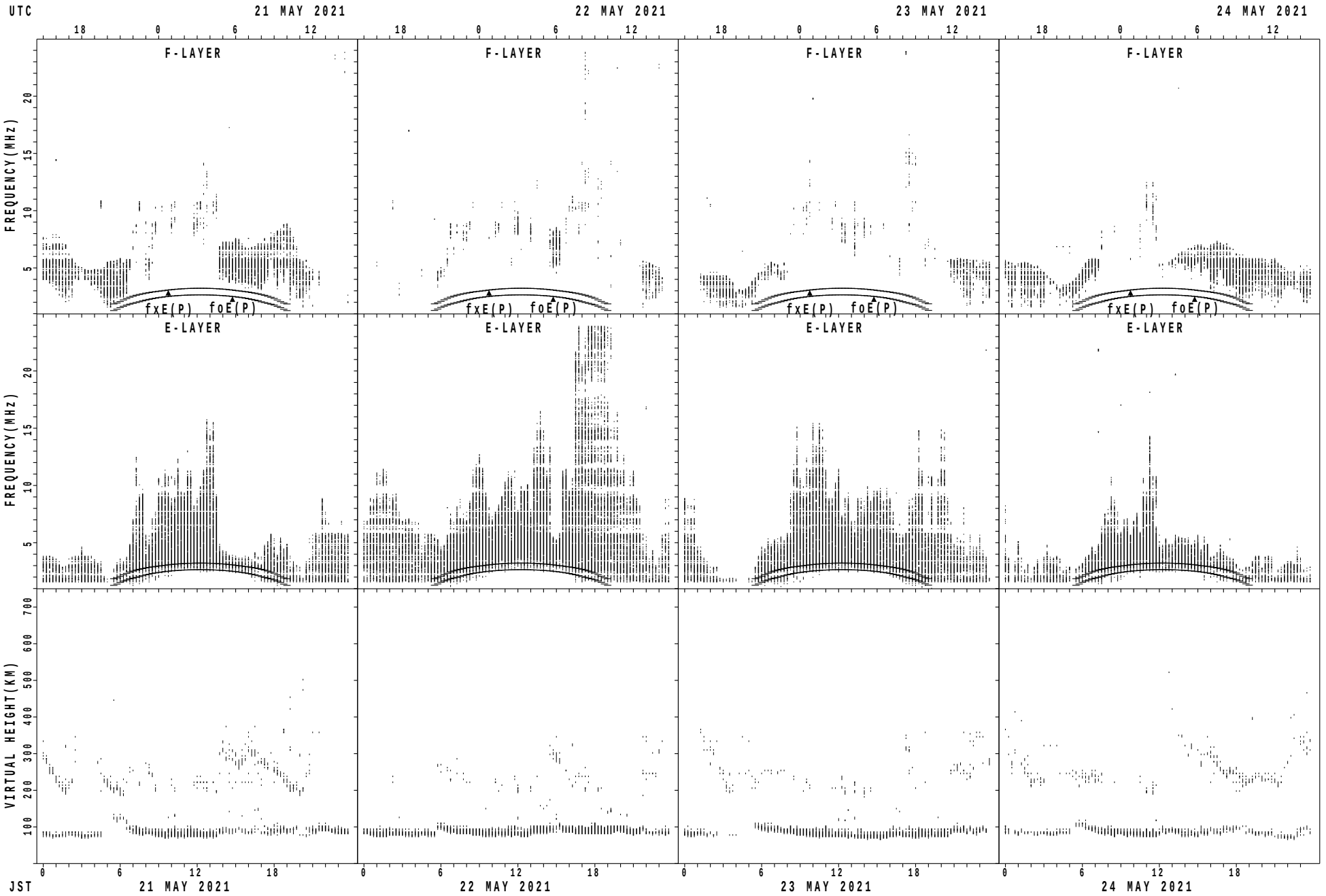
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



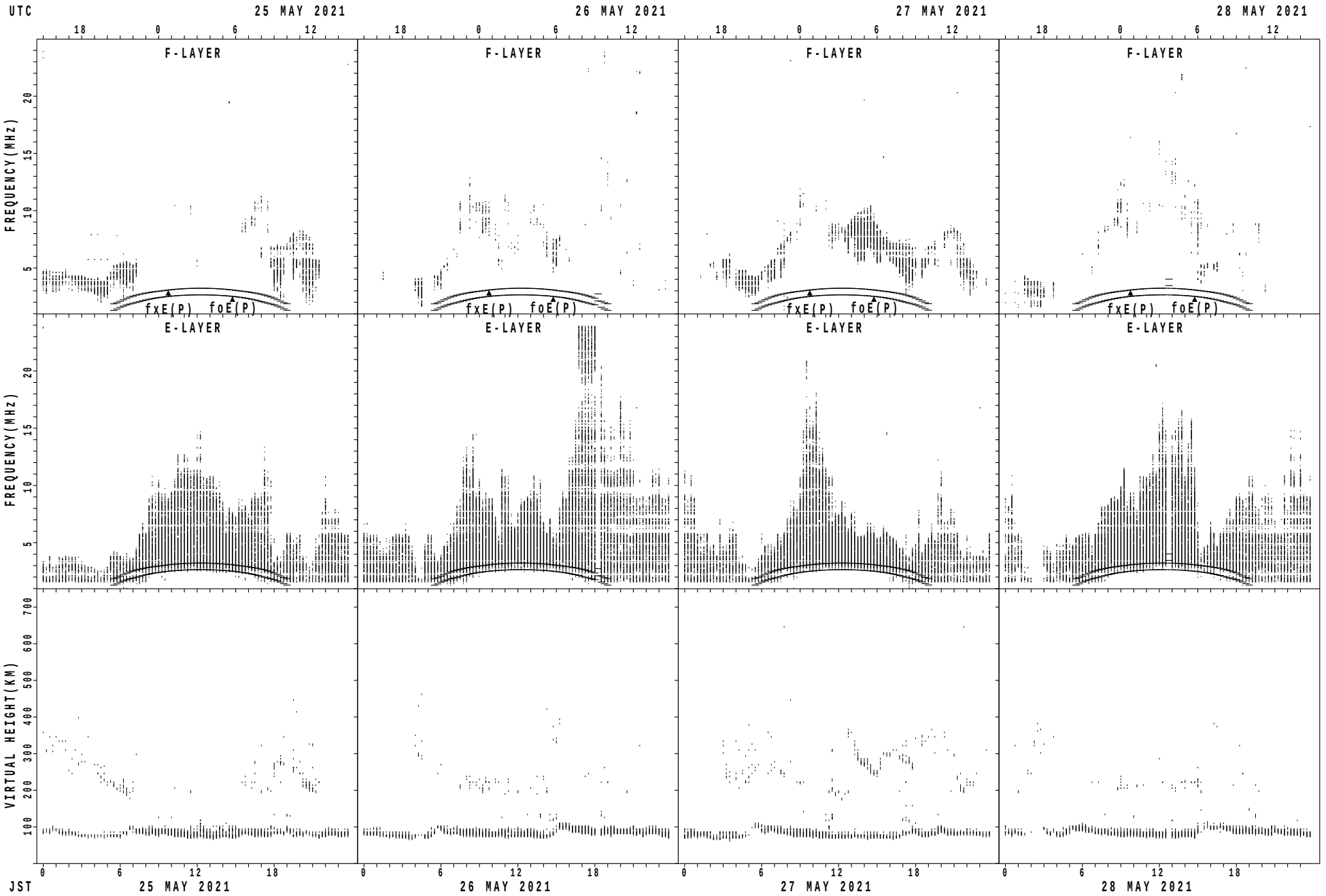
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



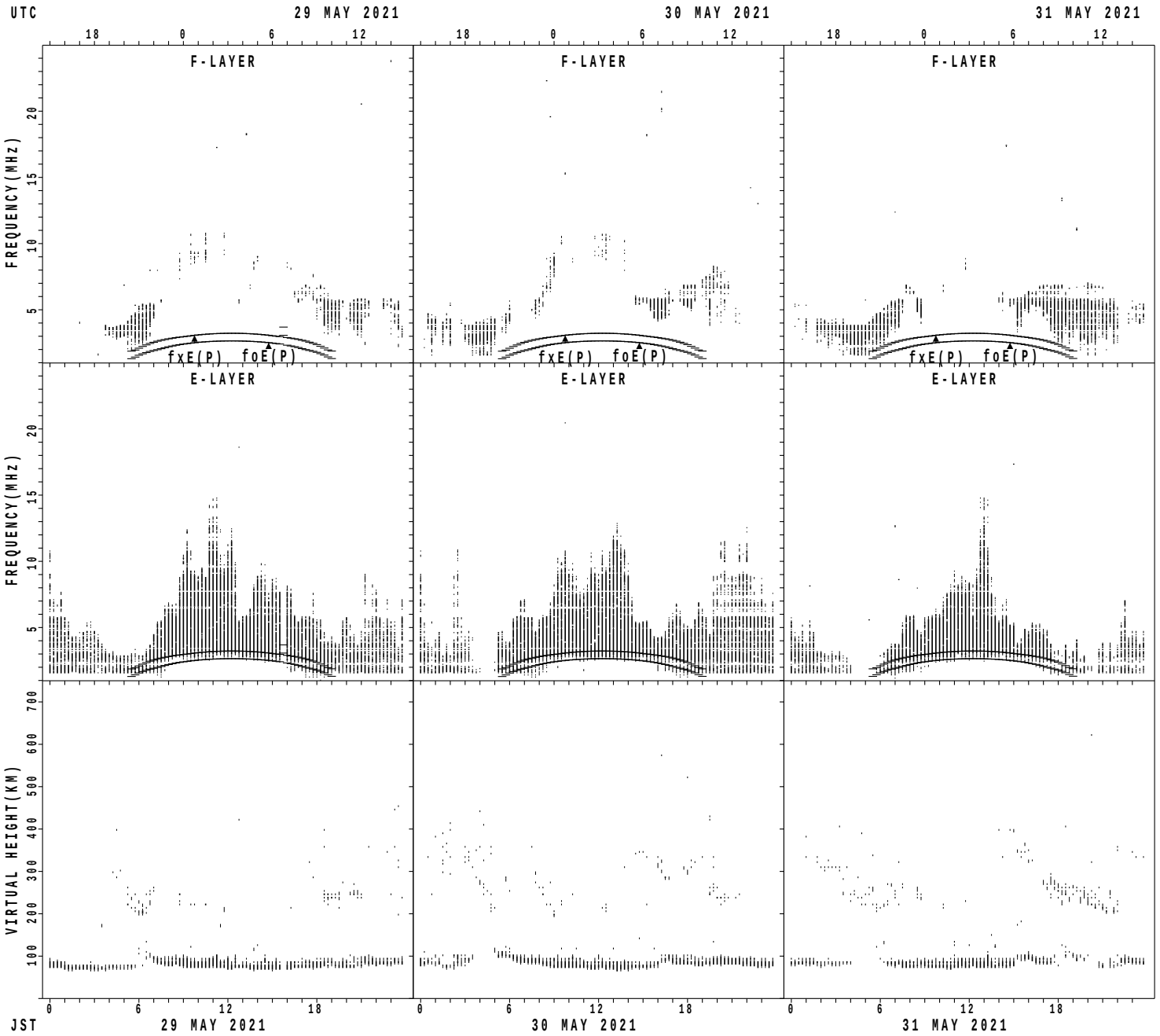
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



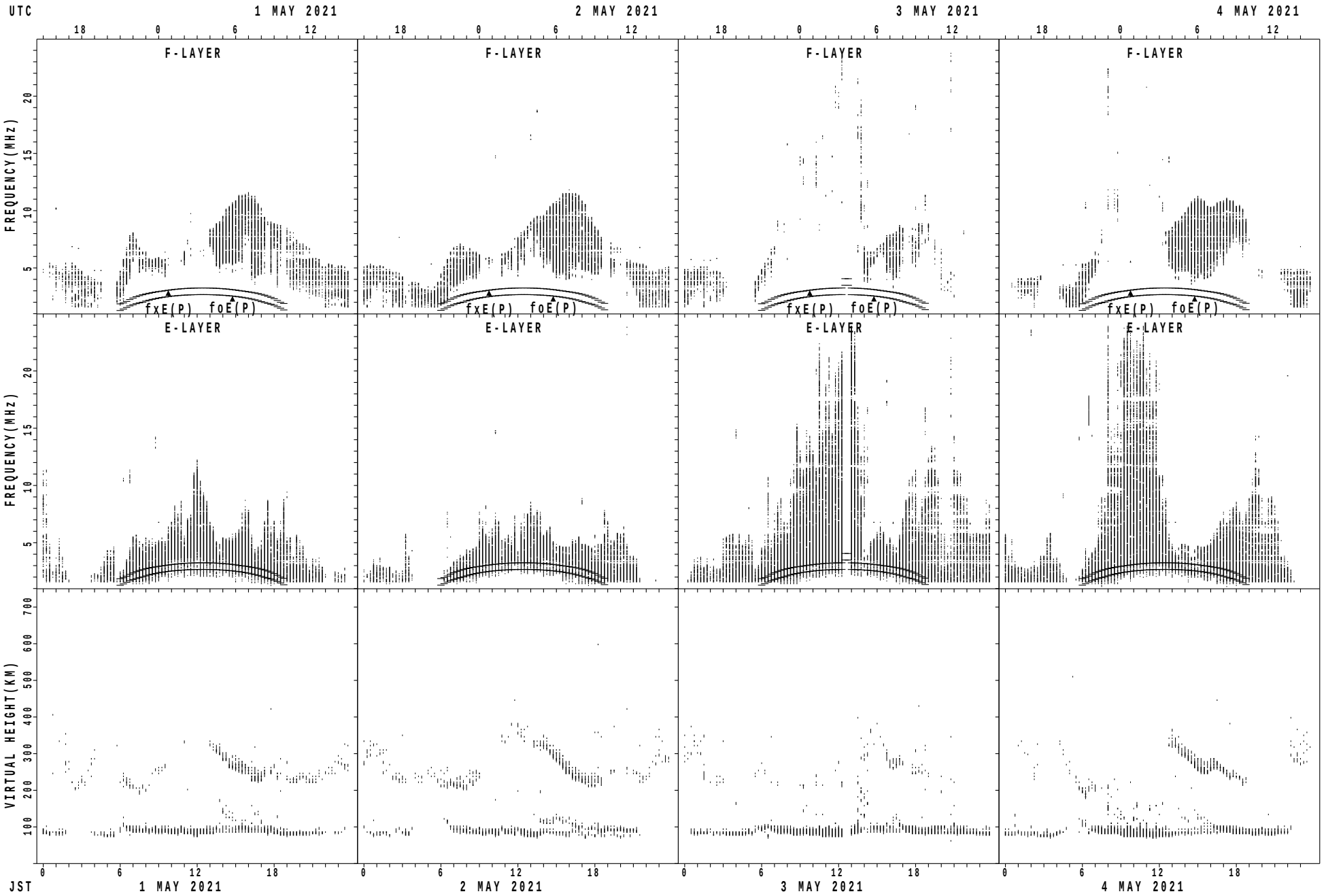
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



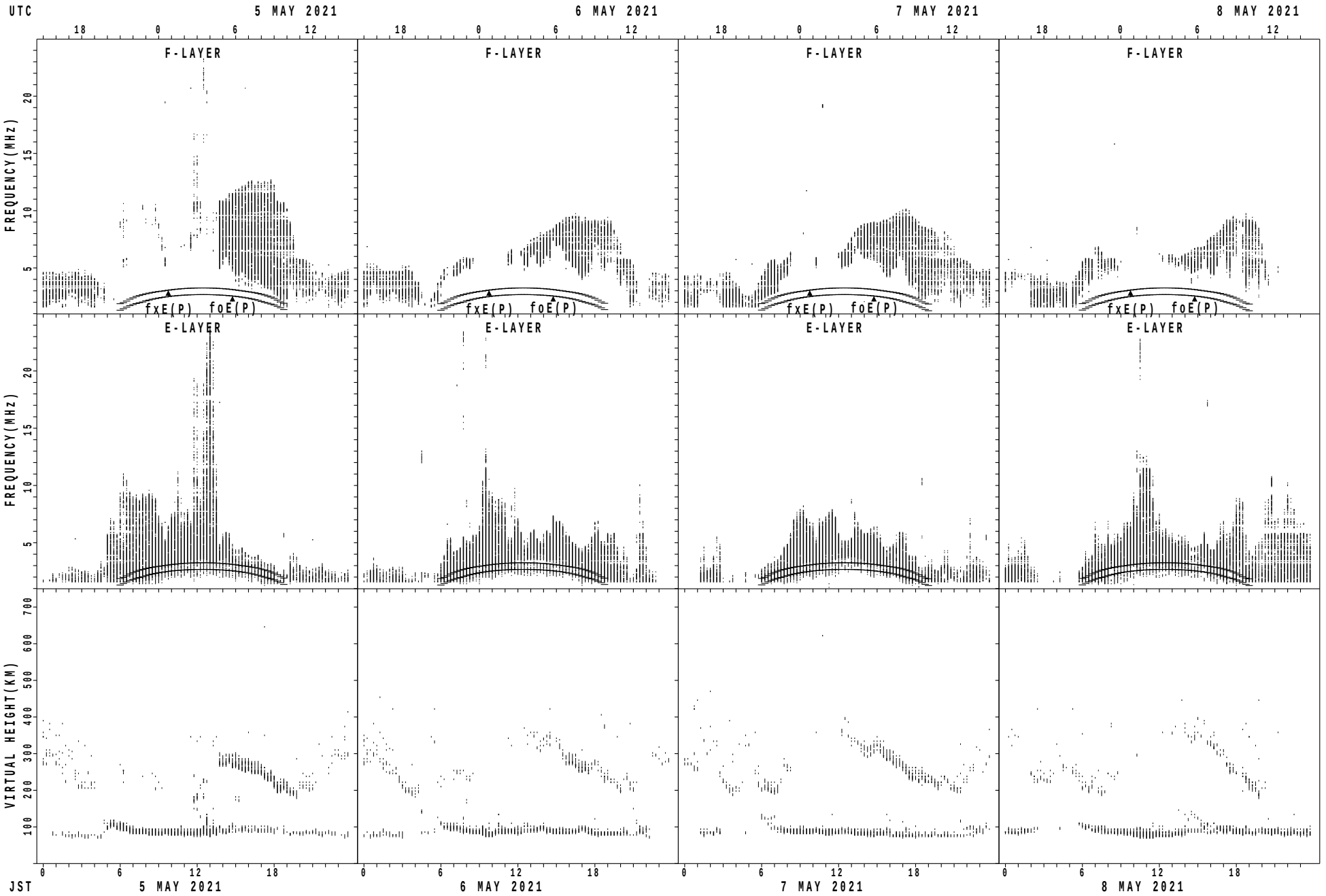
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



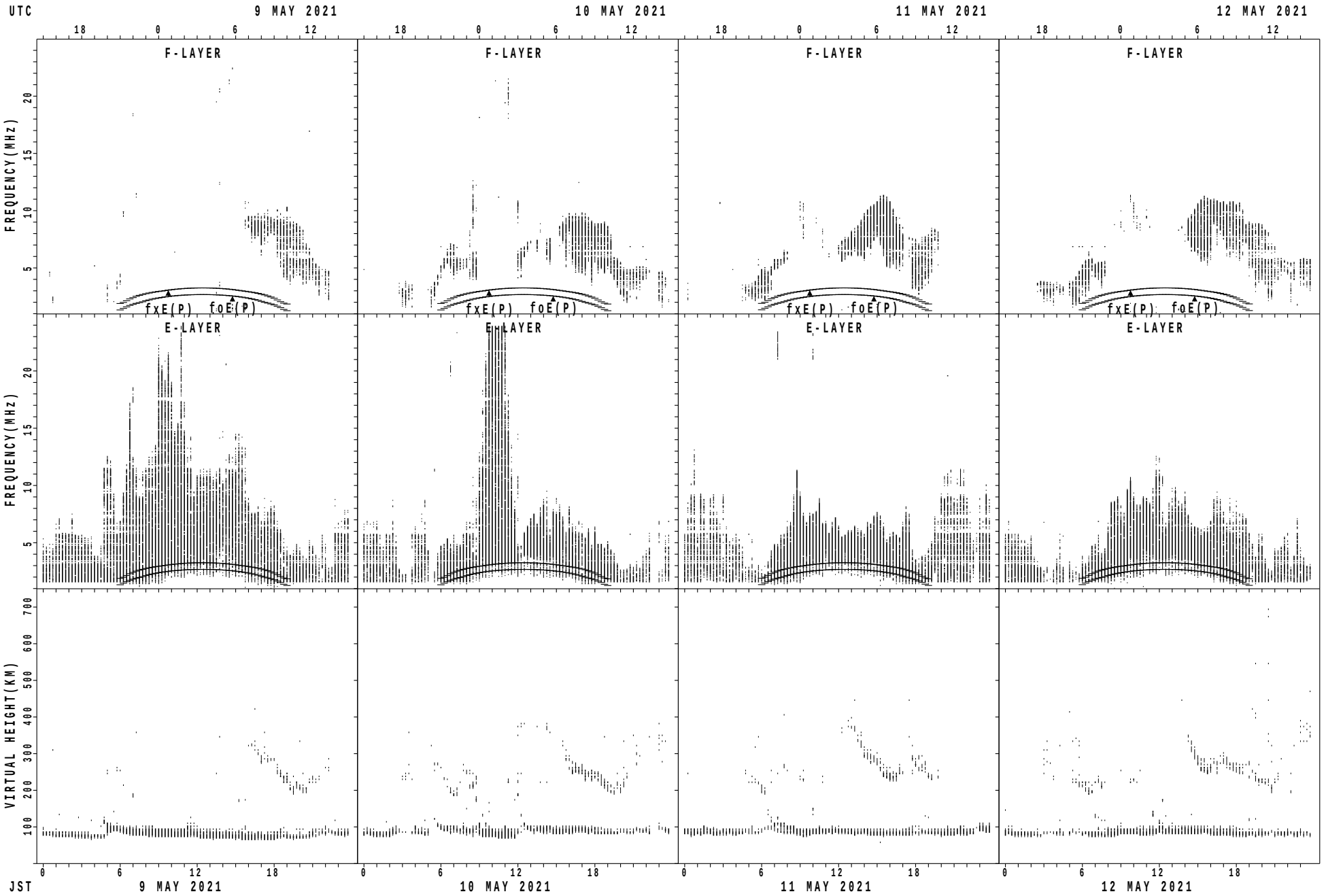
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



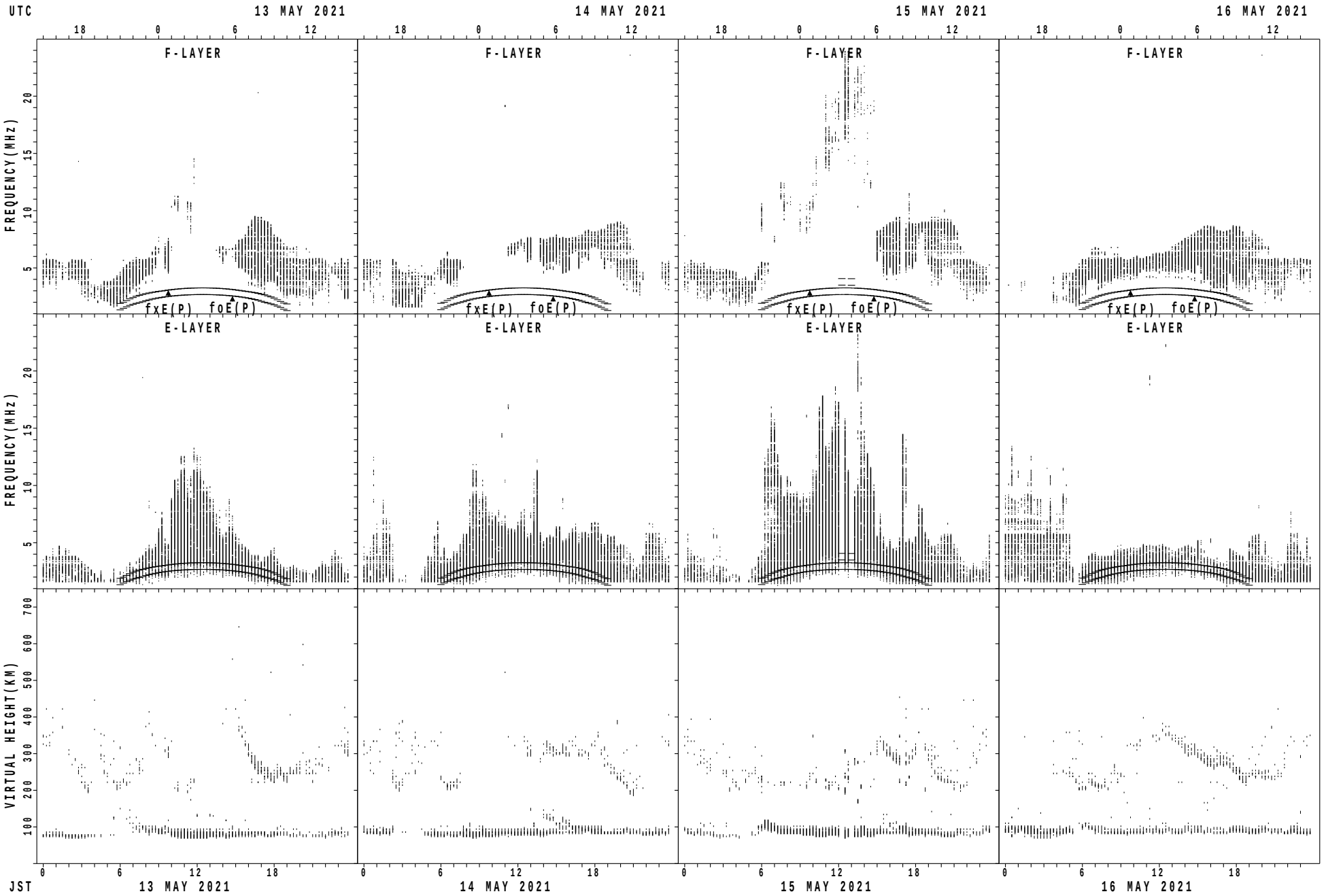
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



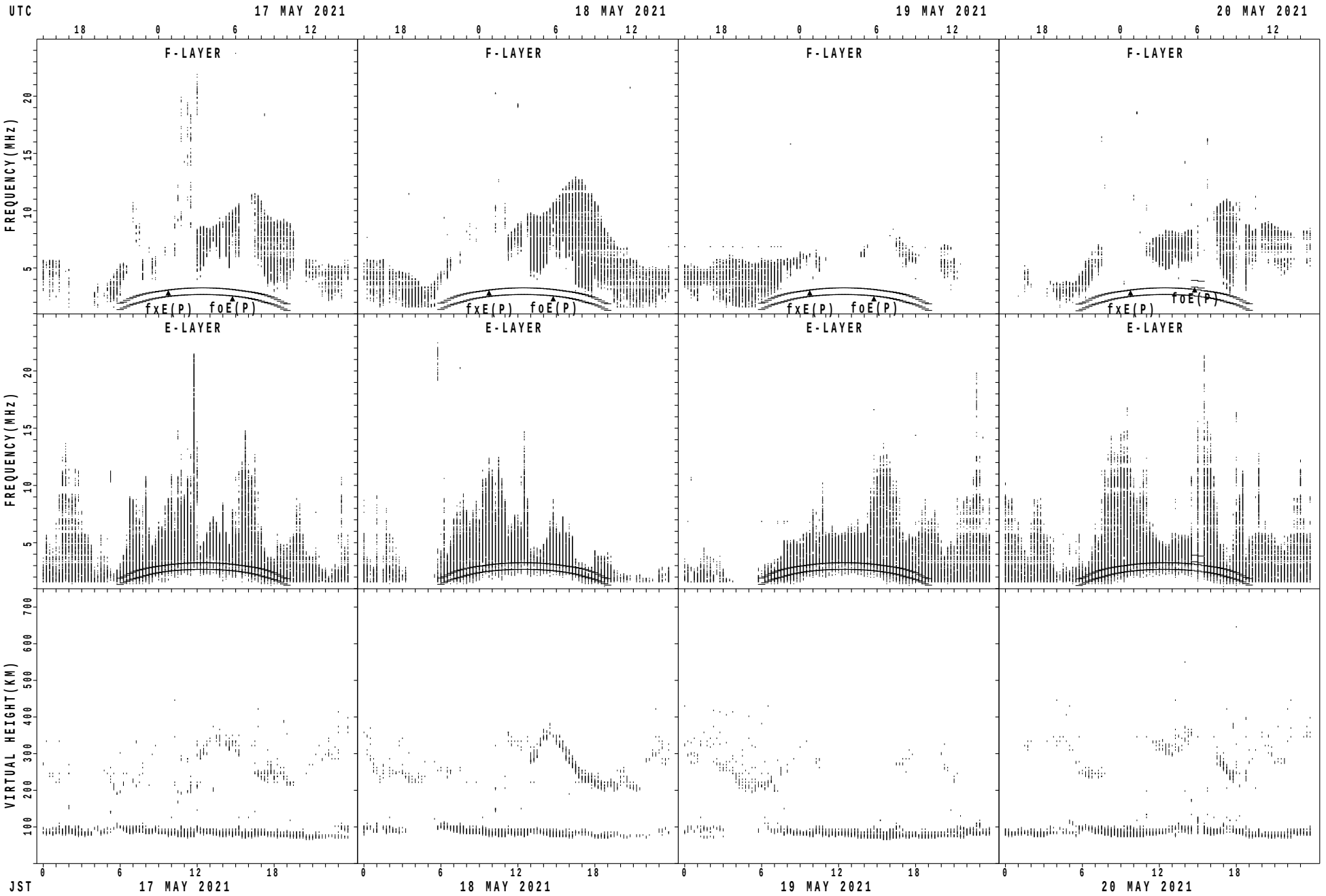
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



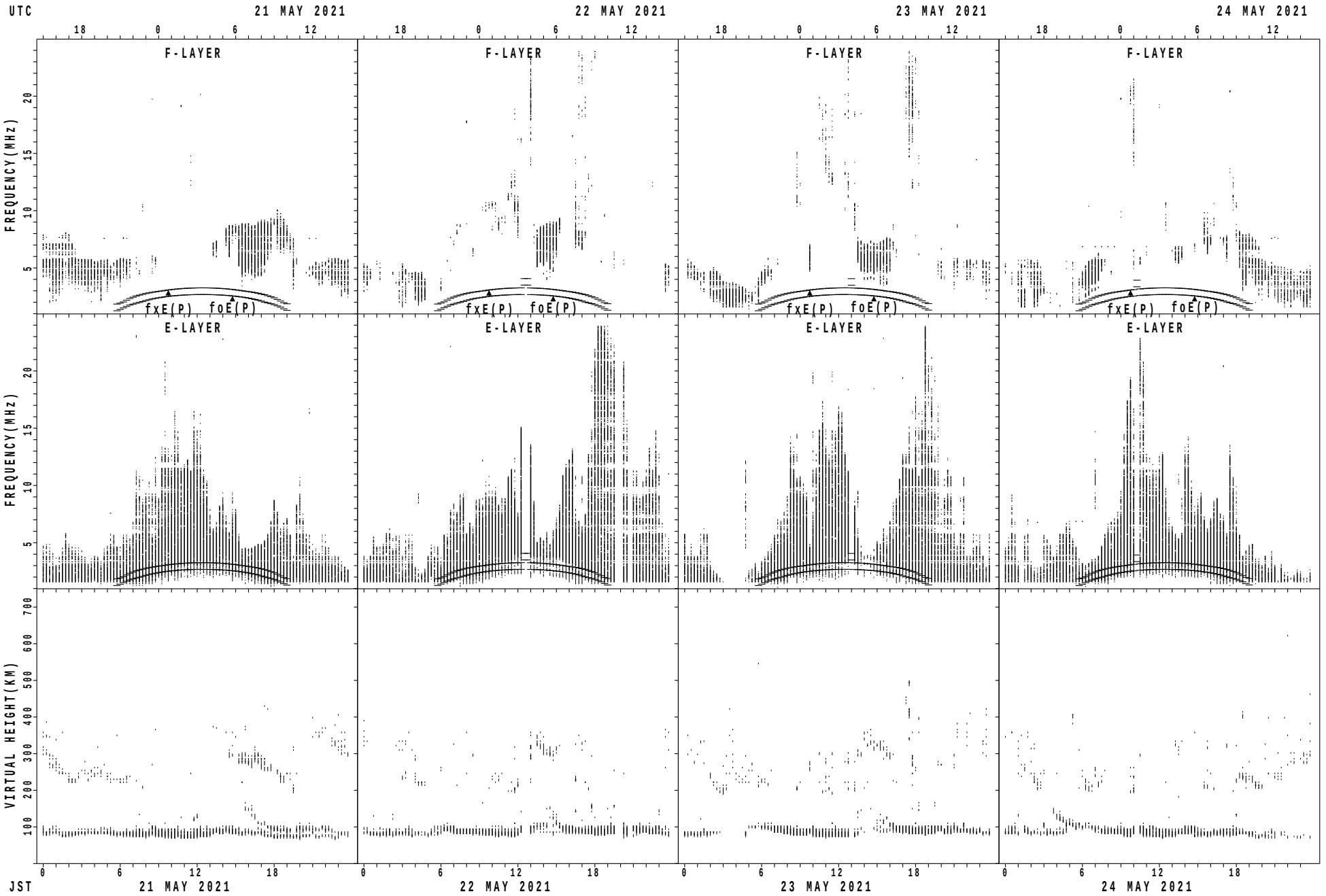
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



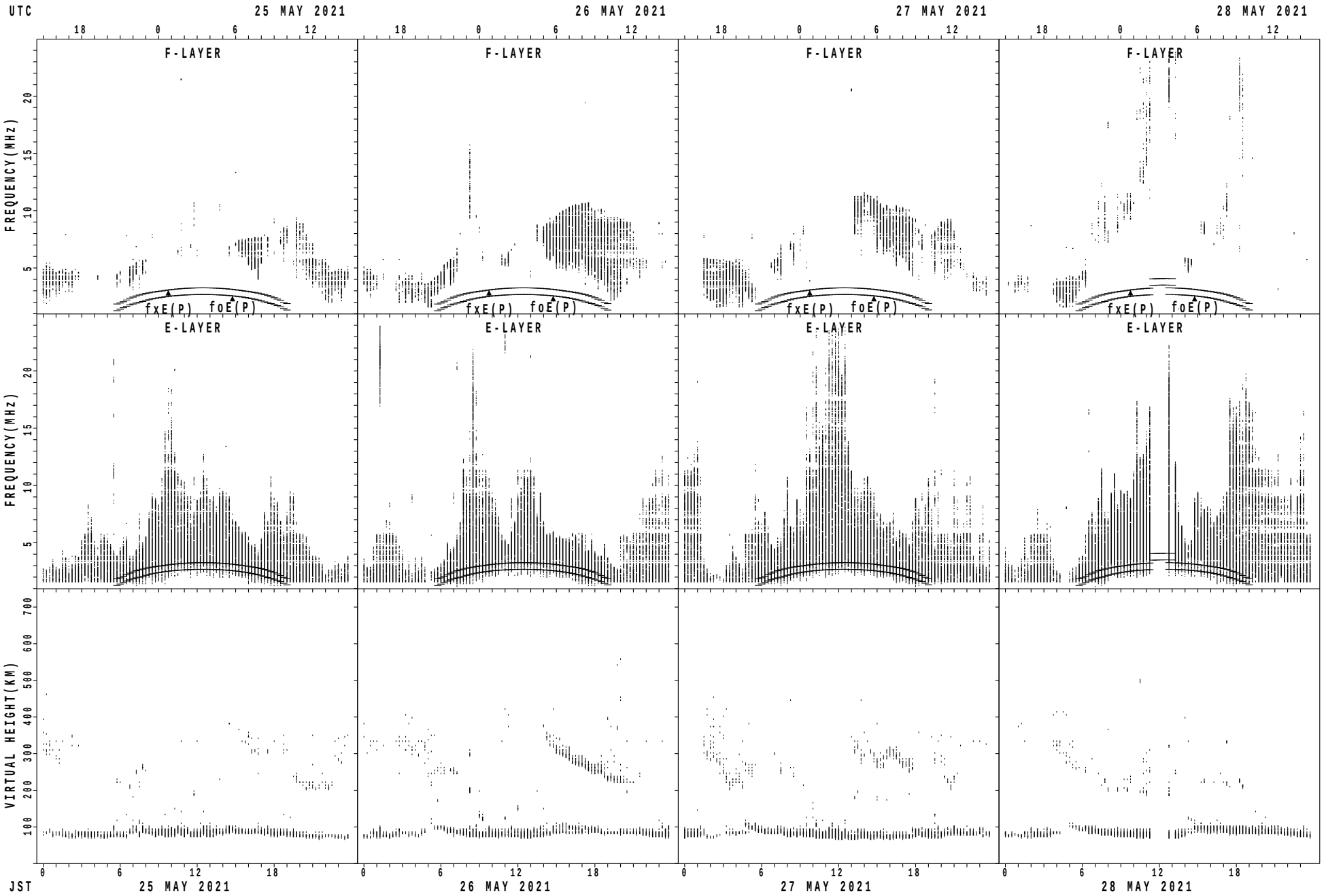
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



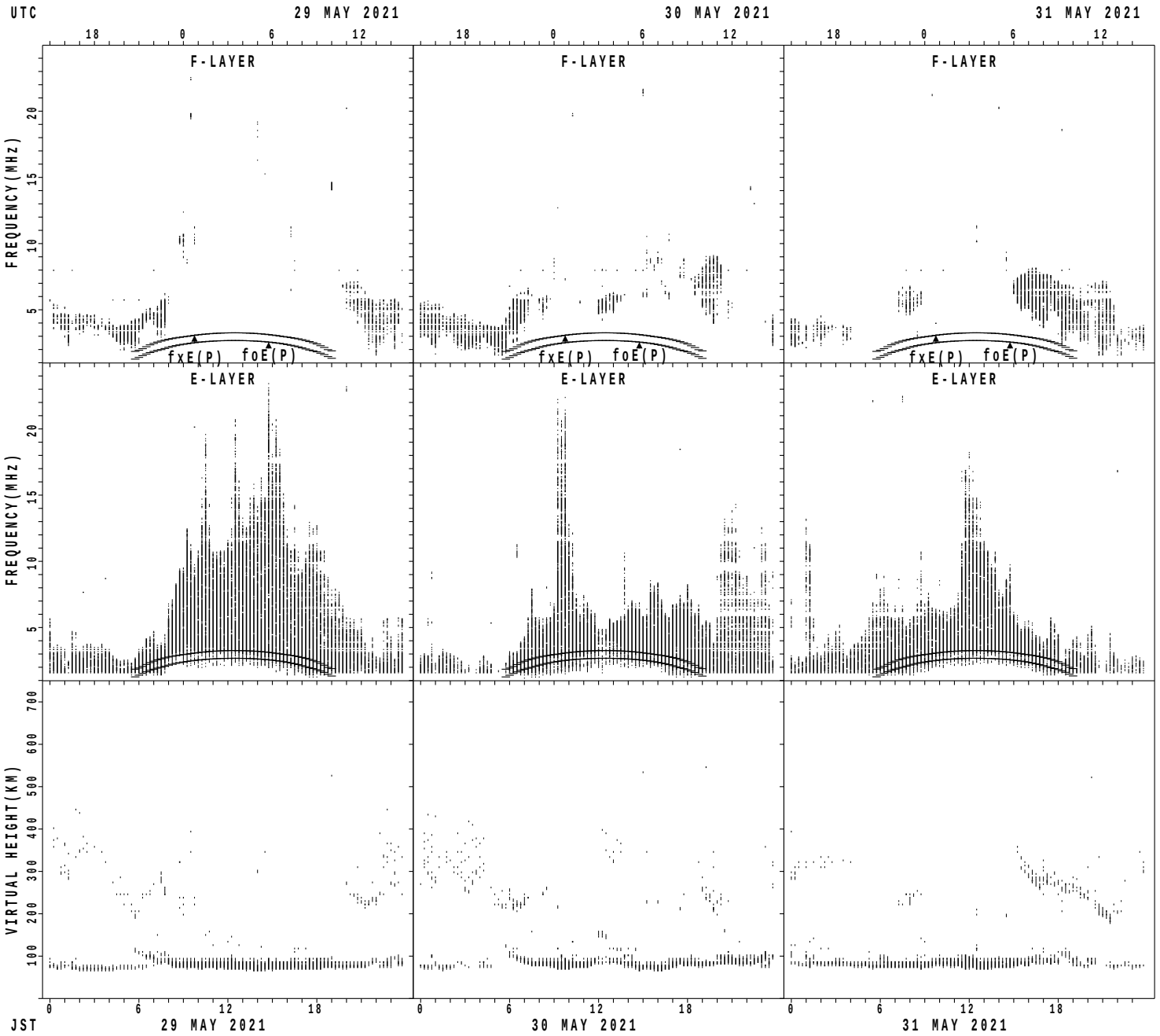
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

MAY 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							2										2	10	3	3	5	3	3	
MED							265										250	228	246	210	256	330	248	
U Q							312										292	272	266	224	272	330	322	
L Q							218										208	206	200	198	215	242	242	

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	26	24	25	26	21	29	31	31	31	31	31	31	31	31	31	31	31	31	31	29	30	28	27	29
MED	98	96	98	96	98	98	98	98	96	98	96	98	98	96	96	98	98	98	98	98	98	98	98	98
U Q	98	98	98	98	98	98	100	98	98	100	98	98	98	98	98	98	100	100	98	99	98	98	100	98
L Q	96	95	94	96	96	96	96	96	96	96	96	96	94	94	94	94	96	94	96	96	96	94	94	96

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	8									11	13	12	13	2	2	1	
MED		242					220	235									264	208	215	218	275	213	260	
U Q		121					222	254									290	268	263	274	292	230	130	
L Q		121					218	204									232	204	203	205	258	196	130	

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	30	29	29	21	22	31	31	31	31	31	29	29	30	30	29	31	30	30	31	31	31	31	31
MED	95	96	96	96	96	98	98	96	96	96	96	96	96	96	98	96	96	96	96	96	96	96	94	96
U Q	98	98	98	98	98	100	100	98	98	98	98	97	97	96	99	98	100	98	98	98	98	98	96	98
L Q	92	94	94	92	96	98	98	96	96	96	94	92	94	94	94	94	96	94	94	94	94	94	94	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1					1	2	3									11	8	11	6	3		
MED		276					234	233	214									254	266	232	279	282		
U Q		138					117	240	234									288	278	278	282	296		
L Q		138					117	226	206									230	249	206	266	250		

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	31	31	31	29	24	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31
MED	94	94	96	96	94	96	98	98	96	96	94	96	94	96	96	96	96	98	96	96	94	94	96	94
U Q	96	96	98	96	96	98	98	98	98	98	96	96	96	96	98	98	98	98	98	98	98	96	96	96
L Q	94	90	92	90	92	94	96	96	96	94	94	94	94	92	92	92	94	96	94	92	94	94	94	94

MONTHLY MEDIANS OF h'F AND h'Es

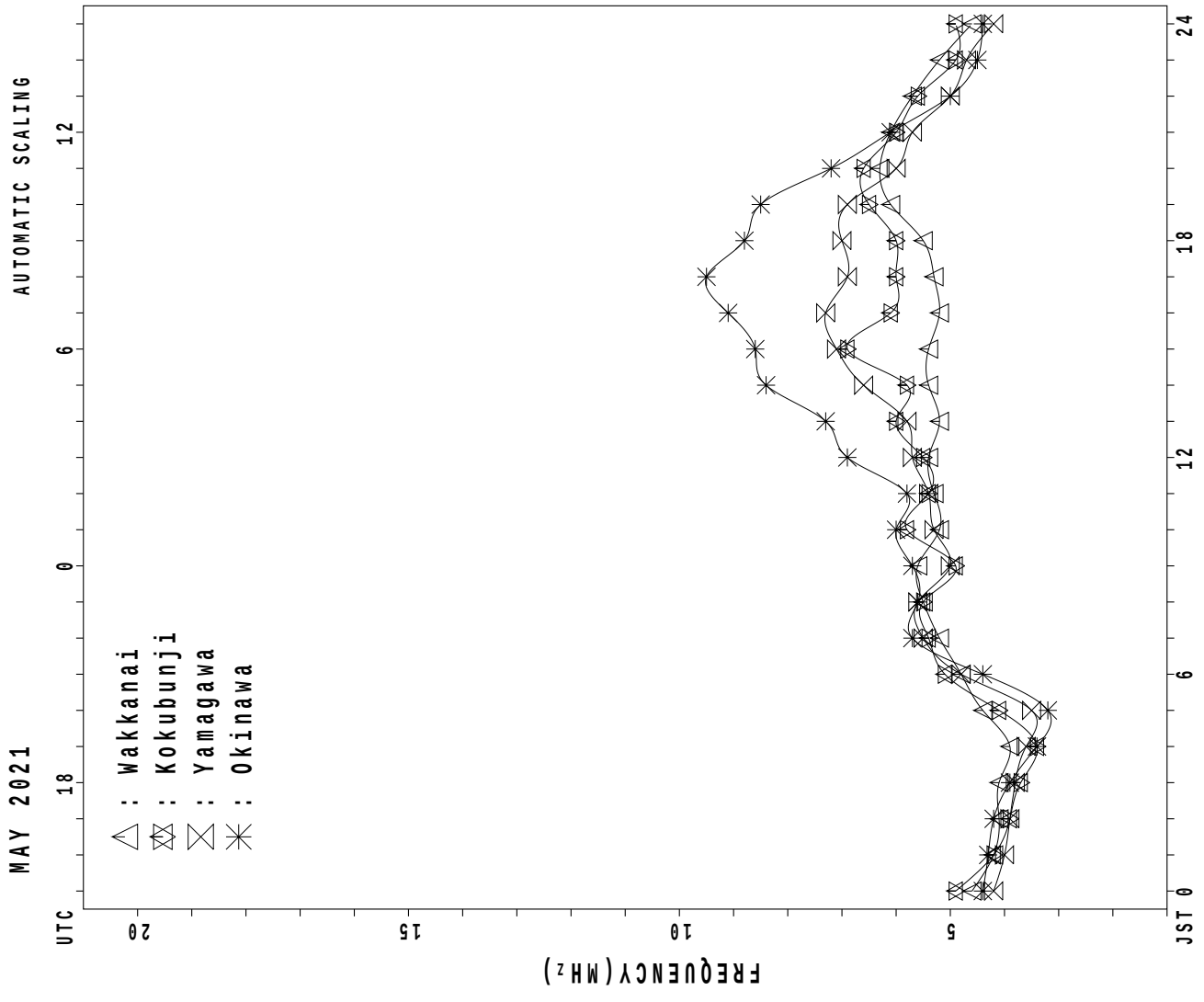
MAY 2021 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	2					1	8	7									20	20	19	8	3		
MED	370	271					230	221	226									255	231	252	244	232		
U Q	185	346					115	244	248									271	272	284	275	244		
L Q	185	196					115	209	196									241	208	224	234	210		

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	29	31	31	29	27	25	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29
MED	94	94	96	96	96	96	98	96	96	96	96	96	96	96	96	96	96	96	96	94	94	96	96	96
U Q	96	96	96	96	98	96	98	98	98	98	100	98	98	98	96	98	98	98	98	96	96	98	96	97
L Q	92	92	92	92	94	94	96	90	94	96	94	94	96	96	94	94	94	94	92	92	90	94	94	93


MONTHLY MEDIANS PLOT OF foF2
MAY 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

MAY 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	X 54	X 50	X 48	X 42																	X 63	X 62	X 59	X 56
2	X 50	X 48	50	50	49																X 66	X 61	X 57	X 55
3	X 55	X 51	X 49	X 45	49																X 70	X 65	X 57	X 54
4	X 51	X 51	X 49	X 47																	X 67	X 64	X 62	X 57
5	X 53	X 51	X 50	54	49																A	X 56	X 56	60
6	X 46	56	57	54	56																X 62	X 64	X 59	X 59
7	X 57	58	58	58	47																	X 67	X 64	X 54
8	X 47	X 46	X 45	48	49																	X 67	X 63	X 60
9	X 51	X 46	X 44	50	50																	X 66	X 63	X 59
10	X 49	X 48	X 45		44																	X 70	X 60	X 57
11	X 51	X 49	X 46																			X 58	X 58	X 57
12	X 55	X 51	X 49																			X 74	X 64	X 57
13	X 56	X 49	X 51																			X 66	X 65	X 60
14	C	54	54	55	52																	X 73	X 66	X 61
15	X 58	X 57	X 59																			X 73	X 73	X 65
16	X 59	X 51	56	57																		X 75	X 70	X 66
17	X 65	X 55	54	50																		X 72	X 66	X 60
18	X 59	X 60	X 58		53																	X 59	X 59	X 59
19	X 51	59	56	53	54																	X 57	X 57	X 59
20	X 53	X 54	X 57	54																		X 76	X 71	X 66
21	X 67	X 59	X 45																			X 65	X 57	X 49
22	X 46	X 46	X 45																			X 65	X 58	X 58
23	X 55	58	53																			X 71	X 66	X 62
24	X 59	X 56	X 56																			X 65	X 59	X 52
25	X 51	X 53	X 51																			X 71	X 73	X 67
26	X 59	X 58	X 56																			X 79	X 75	X 65
27	X 55	58	58	58																		X 80	X 74	X 61
28	X 48	X 45	X 39																			X 66	X 64	X 54
29	X 50	X 48	X 47																			X 66	X 61	X 58
30	X 57	58	56	56																		X 70	X 65	X 61
31	X 52	X 51	X 51																			X 73	X 60	X 54
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	16	11																5	31	31	31
MED	X 54	X 51	X 51	54	49																X 66	X 66	X 63	X 59
U Q	X 57	58	X 56	56	53																X 68	X 73	X 66	X 61
L Q	X 51	X 49	X 47	X 49	49																X 62	X 64	X 59	X 56

MAY 2021 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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

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

MAY 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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						L 396			L		L	L	L	L	L	L	L	368						
2					L	L Z	392	420		L	L	444	L	L	L	L	L	356	L					
3						L	L	L 396	420	420	440	432	432	432	412	372								
4						L		A	A	L	L	L	A	L 428	A	A	A							
5							A	A	A	A	A	A	L	L	L	L	L	A	A	A				
6						A			L	A	A	L	A	A	L	L	L	L		A				
7						L	L	A	A	A	A	A	A	L	L	L	L	364	L	A				
8						308	360	A	A	436	L	L	436	L	L	L	A							
9						C	L	392	L	428	440	440	440	L	L	L	L	L						
10							L	396	L	L	L	L	L	L	L	L	L	360	L					
11							L	A	A	A	A	L	L	A	A	A	L	L						
12						L		L	A	L	L	L	L	L	L	L	L	A	A					
13						L	A	A	A	A	A	428	L	L	L	L	A	A	L	L				
14						L	L	U L 440	L	4 242	436	L	L	A	424	L	388	368	L					
15							L	412	L	L	A	L	A	436	L	L	L	372	L					
16						L	376	L	A	A	L	A	A	A	A	A	412	396	L					
17						L	L	L	A	A	A	A	448	448	432	420	396	376	L					
18						L	L	A	A	A	A	L	L	L	A	A	396	360						
19							L	A	424	L	A	A	A	A	L	L	412	L	A	A	A			
20							404	400	412	L	L	L	L	A	L	L	380	380						
21				L	L	324	A	L	L	412	424	L	L	L	L	A	L	A	L					
22						L	A	A	A	A	A	A	444	A	A	L	A	A	A					
23				A		A	A	A	A	L	L	L	L	L	L	L	L	L	L					
24						L	A	L	L	A	A	A	L	L	A	L	A	A	A					
25						324	L	E A 400	416	A	L	L	428	444	A	L	L	U L 384	L	A				
26							A	A	A	436	L	A	A	A	A	432	L	L	344	L				
27						A	L	L	E A 424	L	L	A	A	444	L	E A 424	A	A	L					
28				A		A	A	A	L	L	A	L	L	L	L	L	404	E A 384	324	L				
29						A	A	A	A	A	A	A	A	A	A	L	L	396	A	A				
30						336	A	A	A	L	L	A	L	A	A	L	A	A	A	A	A			
31						L	L	A	A	A	444	444	L	L	L	L	A 416	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	4	7	6	6	5	5	6	5	4	4	9	13	2					
MED						324	386	400	416	424	436	440	438	444	430	419	396	370	334					
U Q						330	400	412	424	436	442	444	444	446	432	428	412	384						
L Q						316	368	392	412	412	422	434	432	434	426	416	384	362						

MAY 2021 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Wakkanai

MAY 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					B 180	240	276	300	320	320	332	324	316	308	292	248	200		A 180	A 192				
2					B 192	244	276	300	324	324	324	324	324	308	276	264	236		A 180	A 192				
3					B 192	224	284	296	320	332	340	340	332	316	292	264	228		B 180	A 192				
4					192	192	228	268	300	316	316	316	300	A	A	312	276	232	184	A 192				
5					B 196	244	280	304	316	316	316	316	324	256	296	280	344	304		A 192				
6					B 924	A 236	280	288	328	328	328	324	324	300	A	A	264	184		A 192				
7				B	A 184	244	284	304	320	324	348	320	A	320	296	260	244	204		A 192	B			
8				B	B 196	252	276	304	320	320	320	300	320	A	312	272	228		A 192	A 192	B			
9				B	A	C 252	276	300	300	316	300	328	328	316	288	272	232	184		B 180	A			
10				B	B 224	248	280	300	308	336	320	336	288	244	A	276	236	188		A 192	B			
11				B	A 224	240	276	304	332	332	336	340	308	320	A	272	248		B 180	B 192	B			
12				B	B 204	240	284	296	308	308	308	316	316	308	328	292	236	216		A 192	B			
13				B	188	204	240	280	300	316	316	316	340	340	316	A	272	228	192		A	B		
14				B	B 180	244	280	292	292	336	320	344	340	340	312	268	236	208		A 192	A			
15				B	B 208	248	284	300	320	328	328	328	328	320	316	292	244	196		B 180	A			
16				A	232	180	240	272	296	308	284	A	A	A	A	A	320	248	192		A	A			
17				B	200	200	260	276	296	336	324	336	336	312	324	320	280	236	208		A	A			
18				192	A 192	248	280	304	324	324	328	356	316	A	A	A	248	212		A 192	A	B			
19				B	A 204	248	300	300	324	336	336	A	A	A	312	276	256	220		A 192	A			
20				B	B 220	248	292	308	308	320	320	288	328	328	292	292	280	196		A 192	A			
21				B	256	184	244	280	308	308	340	332	336	312	312	304	280	236	192		A	A			
22				B	A 192	256	288	308	320	320	336	336	316	316	292	276	244	252		A 192	A	B			
23				B	A 208	240	284	308	324	328	316	340	292	316	284	284	240	208		A 192	A			
24				B	B 216	248	272	296	324	324	336	328	328	328	308	288	244	188		A 192	A			
25				B	A 224	260	284	296	312	324	332	332	368	324	308	300	276	216	284		A			
26				B	A 228	256	300	312	324	348	348	312	312	A	312	280	260	208	228		A			
27				B	192	228	272	292	320	320	320	332	A	A	A	312	300	264	200		A	B			
28				B	A 200	248	284	312	320	332	316	304	A	304	308	280	252	192		B 180	B			
29				B	A 192	232	292	344	336	340	332	A	A	A	336	276	244	188	228		B			
30				B	A 216	252	292	312	336	336	336	336	312	284	300	288	252	204	232		A			
31				B	204	228	268	288	312	324	324	312	356	336	336	304	288	248	204	A 180	8 132			
	00	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	29	31	31	31	31	31	30	27	24	23	25	29	31	26	4	1			
MED				192	202	200	248	280	300	320	324	328	328	322	316	308	280	244	202	230	132			
U Q					244	218	252	288	308	324	332	336	340	328	324	312	288	252	208	258				
L Q					192	192	240	276	296	312	320	316	316	312	308	292	272	236	192	228				

IONOSPHERIC DATA STATION Wakkanai

MAY 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 139	J A 51	54	26	E B 15	21	35	42	J A 45	J A 51	44	38	40	37	36	35	J A 34	J A 28	J A 39	J A 33	J A 23	34	23	J A 22
2	J A 19	24	19	28	E B 16	29	36	35	38	38	40	40	39	39	34	J A 32	32	28	J A 25	J A 21	J A 23	21	J A 25	20
3	21	18	E B 16	20	E B 16	26	32	35	J A 56	38	J A 54	41	J A 44	37	40	36	36	J A 52	J A 35	J A 40	J A 48	J A 32	E B 16	20
4	28	24	J A 22	20	J A 21	23	J A 42	J A 52	J A 47	J A 52	J A 55	J A 38	J A 61	J A 53	J A 37	J A 56	J A 62	J A 53	J A 44	J A 35	J A 25	J A 27	20	E B 16
5	28	E B 17	E B 16	E B 14	31	26	J A 42	J A 52	70	J A 63	J A 85	J A 81	40	45	38	J A 31	35	J A 107	J A 103	J A 88	J A 123	J A 78	J A 64	22
6	E B 16	31	32	38	J A 35	J A 55	J A 45	J A 46	J A 46	J A 68	69	J A 48	J A 53	J A 85	J A 42	J A 33	36	36	J A 59	J A 64	J A 70	J A 179	J A 85	26
7	J A 45	J A 32	31	J A 35	J A 26	J A 34	J A 43	54	J A 49	J A 225	J A 82	J A 80	65	J A 53	J A 58	J A 51	J A 35	30	J A 46	J A 53	J A 31	34	21	J A 45
8	32	J A 61	22	21	20	22	30	J A 47	J A 51	40	38	J A 51	J A 41	J A 37	J A 36	J A 52	J A 47	J A 44	J A 47	J A 28	21	E B 16	E B 15	21
9	E B 16	20	J A 24	J A 24	J A 27	C	30	36	J A 43	37	36	J A 35	36	J A 86	G	34	31	29	22	E B 16	J A 20	E B 16	E B 16	E B 16
10	E B 16	E B 16	21	J A 21	E B 16	J A 24	29	35	J A 85	39	40	37	G	35	J A 35	J A 35	31	32	J A 30	J A 29	E B 16	25	E B 16	26
11	21	E B 16	E B 16	E B 14	24	J A 24	J A 37	59	75	J A 65	J A 132	J A 55	J A 58	J A 78	77	J A 81	32	32	44	J A 41	J A 41	28	32	25
12	20	29	20	20	E B 17	24	J A 37	J A 42	J A 48	J A 87	J A 83	J A 41	J A 41	J A 41	39	J A 42	34	60	78	J A 31	J A 25	24	E B 17	24
13	24	E B 16	E B 16	27	23	J A 25	J A 61	J A 52	J A 51	J A 85	J A 55	J A 97	39	38	39	36	J A 46	J A 52	J A 35	J A 33	J A 33	J A 51	32	30
14	19	19	21	24	25	20	31	39	J A 45	J A 51	J A 44	36	J A 40	J A 52	J A 66	33	32	32	J A 30	J A 25	J A 63	33	J A 29	36
15	25	23	21	23	E B 16	26	29	34	40	J A 49	62	J A 61	J A 64	36	36	40	34	33	J A 29	E B 16	J A 27	30	41	29
16	30	30	38	30	J A 27	J A 39	33	J A 53	J A 53	J A 59	J A 66	J A 67	J A 52	J A 84	J A 89	J A 50	J A 96	J A 41	J A 33	J A 50	J A 47	J A 52	32	41
17	J A 38	20	31	E B 15	J A 26	24	38	J A 51	59	59	83	J A 87	J A 53	J A 51	40	43	50	J A 65	J A 40	J A 38	31	J A 34	33	J A 29
18	32	J A 26	J A 23	J A 31	31	J A 59	60	J A 62	J A 103	J A 107	J A 68	J A 49	J A 50	J A 54	J A 63	J A 55	43	J A 31	J A 47	J A 40	J A 52	J A 66	J A 57	J A 41
19	J A 65	31	J A 53	J A 32	J A 31	J A 37	J A 39	J A 87	J A 81	38	J A 83	J A 69	J A 55	J A 169	J A 77	J A 53	J A 70	J A 47	J A 111	J A 144	J A 86	J A 64	J A 53	J A 36
20	21	J A 22	E B 16	29	J A 27	26	32	J A 41	J A 52	37	37	37	37	J A 93	J A 50	J A 41	J A 50	34	J A 33	J A 31	22	E B 16	20	20
21	21	E B 16	22	23	34	32	J A 53	J A 37	38	38	J A 57	G 36	G 36	36	40	44	J A 53	J A 58	J A 48	J A 46	J A 24	31	J A 28	J A 24
22	28	28	E B 16	E B 16	J A 27	27	J A 51	J A 65	J A 77	J A 126	J A 60	J A 82	J A 117	J A 84	J A 97	34	52	J A 41	J A 73	J A 73	J A 75	J A 52	J A 61	J A 65
23	J A 53	J A 52	J A 52	J A 52	J A 42	J A 59	J A 53	J A 86	J A 87	72	J A 77	40	J A 39	J A 42	40	J A 35	J A 30	29	J A 29	J A 44	39	J A 22	24	24
24	E B 16	E B 16	25	25	E B 16	J A 24	J A 42	J A 38	35	J A 56	J A 66	J A 97	J A 47	J A 63	J A 51	36	J A 67	98	44	J A 52	J A 41	J A 63	J A 65	J A 65
25	J A 52	39	J A 25	30	J A 30	29	31	J A 41	39	44	44	J A 61	J A 45	J A 45	J A 87	44	52	J A 63	28	J A 44	J A 64	J A 41	J A 64	J A 45
26	38	24	32	J A 31	J A 33	J A 51	J A 62	J A 52	J A 47	40	J A 63	61	J A 76	J A 55	J A 84	37	J A 45	J A 45	39	29	J A 78	J A 65	38	J A 76
27	J A 33	J A 24	J A 24	J A 24	J A 23	J A 38	36	J A 44	J A 47	J A 47	J A 40	J A 62	J A 68	J A 53	J A 47	J A 50	56	J A 83	J A 49	J A 26	J A 53	J A 31	36	22
28	21	19	J A 36	J A 48	J A 37	J A 48	J A 53	68	57	J A 46	J A 45	37	J A 37	42	J A 40	36	38	J A 40	J A 40	J A 21	24	J A 23	J A 26	J A 23
29	30	25	J A 19	J A 32	J A 34	J A 64	J A 83	J A 63	J A 129	J A 124	96	J A 107	J A 161	J A 266	J A 120	47	39	J A 43	J A 88	J A 63	J A 48	J A 49	27	J A 25
30	J A 29	20	21	J A 51	J A 27	28	J A 59	J A 53	J A 103	J A 74	J A 47	J A 106	36	J A 63	J A 57	40	J A 47	J A 107	102	J A 105	J A 109	J A 80	J A 45	23
31	J A 51	J A 46	49	J A 35	J A 26	28	36	J A 59	60	76	J A 44	36	G	43	J A 49	40	41	J A 78	J A 53	J A 109	J A 84	J A 51	32	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	28	24	22	26	J A 26	28	J A 38	J A 51	J A 51	J A 52	J A 57	J A 51	J A 44	J A 52	J A 42	J A 40	41	J A 43	J A 44	J A 40	J A 41	J A 34	32	25
U Q	J A 38	J A 31	32	J A 32	J A 31	38	J A 53	J A 59	J A 75	J A 74	J A 77	J A 80	J A 58	J A 78	J A 66	J A 50	J A 52	J A 60	J A 53	J A 53	J A 64	J A 52	J A 45	J A 36
L Q	21	E B 19	E B 19	21	E B 20	24	32	39	45	40	44	38	39	39	38	35	34	32	J A 33	J A 29	24	25	E B 21	22

MAY 2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	20	22	E A 32	E B 16	E B 15	20	29	40	37	40	38	35	36	36	34	32	31	26	24	21	E B 16	18	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	32	36	36	37	36	35	37	33	29	30	25	19	19	E B 16	E B 16	20	16
3	E B 16	E B 16	E B 16	E B 16	E B 16	21	29	31	32	36	35	36	37	36	35	33	33	37	30	24	28	20	E B 16	E B 16
4	E B 16	E B 16	E B 17	E B 16	E B 16	22	30	A A 52	A	38	36	36	A A 61	40	32	E A 47	A A 62	A A 53	31	23	20	E B 16	E B 16	E B 16
5	E B 16	E B 17	E B 16	E B 14	E B 16	22	A A 42	A A 52	A A 70	A A 63	A A 85	A	34	33	33	G 29	G 28	A A 107	A A 103	A A 88	A A 123	E B 17	E B 17	E B 16
6	E B 16	E B 16	E B 16	21	G 18	A	31	E A 39	35	A A 68	A A 69	40	A	A	35	30	30	G 26	26	A A 64	20	20	20	E B 16
7	E B 16	18	E B 17	E B 16	E B 16	26	30	A A 54	A A 49	A A 225	A A 82	A A 80	A A 65	38	36	G 29	30	26	24	27	22	20	E B 16	20
8	18	E B 16	E B 16	E B 16	E B 16	G 20	28	A	41	37	37	37	34	35	35	34	38	32	29	22	E B 16	E B 16	E B 15	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	C	27	33	38	36	34	34	34	G 32	G	G 28	29	27	20	E B 16	16	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	G 21	26	31	34	37	37	35	G	33	30	30	29	29	26	24	E B 16	E B 16	E B 16	E B 16
11	E B 16	E B 16	E B 16	E B 14	E B 16	G 20	30	A	E A 46	A	46	38	A	A	40	E A 50	29	30	24	23	23	E B 16	17	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 17	21	31	35	E A 43	33	E A 40	39	39	36	36	G 31	31	27	26	20	21	E B 16	E B 17	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	21	A A 61	A A 52	A A 51	A A 85	47	36	36	35	33	35	A A 52		30	22	19	23	18	16
14	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	36	34	E A 47	37	35	36	A	36	32	30	26	24	19	20	20	E B 16	18
15	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	32	39	39	A	36	A A 64	34	34	37	32	30	26	E B 16	18	19	19	16
16	E B 16	E B 16	22	18	E B 16	29	29	32	A	A	A	A A 67	E A 48	A A 84	E A 46	A A 50	34	32	22	22	16	24	18	20
17	18	E B 17	E B 17	E B 15	E B 17	22	29	34	35	A	A A 83	A	38	35	35	33	32	29	29	23	23	21	16	16
18	19	E B 16	E B 16	E B 16	E B 16	24	39	E A 44	A A 103	E A 45	A	38	38	40	E A 44	E A 43	25	G 24	27	22	23	29	A	17
19	18	E B 16	22	E B 18	17	25	29	A	34	34	A A 83	A A 69	A A 55	A A 169	36	36	34	28	E A 30	A	A A 86	A	18	18
20	E B 16	E B 16	E B 16	E B 16	18	24	29	31	36	34	36	35	36	48	33	33	G 28	28	27	22	E B 16	E B 16	E B 16	E B 16
21	E B 16	E B 16	E B 16	16	G 22	25	A A 53	29	35	35	G 34	G 35	G 33	36	A	A	32	E A 38	21	20	17	17	17	E B 17
22	E B 17	E B 16	E B 16	E B 16	E B 16	24	A	A	A A 77	A A 126	A	A A 82	36	A A 84	A 44	32	A 38	A	35	39	22	19	20	37
23	19	21	20	A	20	A A 59	28	A A 86	E A 42	40	36	35	35	35	32	32	G 27	27	27	30	21	16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	22	A	32	32	A A 56	A A 66	A A 97	36	36	A	34	A A 67	A A 98	A	25	20	26	24	23
25	16	19	E B 16	E B 16	E A 22	G 22	29	E A 39	36	43	40	38	36	38	A A 87	38	32	28	24	G 22	25	20	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	34	A A 62	A	E A 42	36	40	E A 45	A A 76	E A 44	A A 84	35	37	30	30	G 17	26	28	22	E B 16
27	E B 16	E B 16	E B 17	E B 17	G 17	A	32	36	A	38	40	A A 62	A	36	37	36	35	39	26	21	E B 16	19	19	E B 17
28	E B 17	E B 16	16	A A 48	26	A A 48	A A 53	A A 68	35	38	A A 45	34	G 30	31	32	34	33	30	22	17	E B 16	18	E B 16	E B 16
29	E B 17	E B 16	E B 16	E B 16	17	A A 64	30	A	A A 129	A A 124	A A 96	A A 107	A A 161	A A 266	A A 120	G 33	G 24	28	A	G 20	21	25	17	16
30	E B 16	E B 16	E B 16	E B 16	E B 16	25	A A 59	A A 53	A	37	36	A A 106	36	A A 63	A	39	A	A A 107	A A 102	A A 105	A A 109	E B 16	E B 16	E B 16
31	18	19	17	17	22	G 22	32	38	46	A A 76	36	36	G	36	36	36	36	A A 78	29	17	G 20	17	17	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	28	29	25	27	28	27	29	28	28	28	30	29	30	29	30	31	30	30	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	22	30	35	37	38	40	36	36	36	35	34	32	30	26	22	20	18	17	E B 16
U Q	17	16	17	16	17	25	A A 36	A A 52	A A 46	A A 60	A A 66	A A 64	A A 44	A A 42	A 38	36	34	A A 38	30	24	23	20	18	17
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	32	35	36	36	35	34	35	33	32	29	27	24	20	E B 16	E B 16	E B 16	E B 16

MAY 2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

IONOSPHERIC DATA STATION Wakkanai

MAY 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	316	309	309	309	295	328	342	351	350	367	279	328	319	333	333	333	332	329	334	309	302	313	324	321
2	305	304	F 301	F 289	F 317	332	337	326	326	342	326	336	335	274	290	302	306	323	307	341	316	301	289	324
3	315	284	301	305	F	343	340	317	313	324	331	334	327	312	337	322	358	338	324	308	307	312	315	312
4	312	305	305	302	332	334	323	A	357	323	334	333	A	313	325	328	A	A	328	318	317	302	317	315
5	321	306	305	296	F 311	322	A	A	A	A	A	297	232	311	320	310	336	A	A	A	A	315	312	312
6	308	F	F	F	F	253	396	343	352	A	A	318	334	317	323	337	330	321	328	A	283	310	313	285
7	263	F	F	F	F	294	345	A	A	A	A	A	A	305	320	338	338	334	320	306	324	329	330	322
8	311	316	274	F 306	F 310	332	350	376	353	367	327	306	314	305	307	319	329	337	336	301	325	320	320	319
9	319	318	308	F 308	F	C 348	347	361	356	355	349	320	298	333	320	324	341	320	320	330	323	323	341
10	317	308	308	307	F 271	345	362	356	295	348	332	340	307	304	315	325	322	319	330	315	303	325	325	320
11	317	316	315	304	304	345	329	R 261	325	333	332	292	315	314	313	323	331	337	336	336	312	309	306	303
12	326	322	321	318	315	315	348	336	351	328	328	341	340	303	304	307	326	326	309	308	308	314	313	284
13	298	269	285	285	306	305	A	A	A	A	329	297	335	299	267	294	291	A	311	290	290	290	306	306
14	D C 314	294	283	F	313	326	361	320	320	350	306	317	319	318	280	300	324	313	312	310	309	309	309	309
15	299	279	298	300	328	315	338	338	307	317	309	343	A	305	310	319	319	319	297	297	296	296	313	312
16	342	296	295	F	296	319	358	318	336	305	338	A	329	A	329	A	310	292	296	307	315	292	315	301
17	301	299	323	306	337	298	295	349	333	340	A	297	260	303	321	321	321	320	319	315	317	317	305	298
18	302	299	296	310	F 316	313	331	331	A	355	274	306	288	286	296	305	322	322	337	314	313	313	307	326
19	297	F 297	F	F 299	F	360	333	249	302	G	A	A	A	A	301	294	293	318	212	250	A	293	315	290
20	302	V 299	278	F	311	365	292	306	333	341	313	306	296	310	320	303	322	322	298	309	305	291	300	299
21	298	319	290	317	291	315	A	340	326	266	280	G	R	308	305	269	306	318	308	300	314	314	323	311
22	310	299	299	299	312	341	340	337	A	A	329	A	308	A	316	316	329	315	229	344	314	300	297	368
23	292	F 291	F 277	305	354	A	355	A	303	344	319	295	325	317	299	340	340	312	298	297	306	306	337	322
24	314	311	308	340	337	337	333	301	335	A	A	A	G	263	304	297	A	A	300	320	320	312	311	309
25	302	299	308	297	309	335	335	345	369	348	331	311	282	291	A	297	315	335	326	293	328	304	321	323
26	308	305	302	299	335	313	A	346	320	341	340	350	A	299	A	309	310	307	301	301	314	312	331	335
27	296	F	F 295	F	295	248	276	353	330	320	345	A	268	298	311	311	317	291	279	289	299	299	320	319
28	311	310	310	A	355	A	A	A	272	373	A	362	411	379	G	270	276	294	293	301	301	295	325	322
29	304	304	304	301	351	A	316	313	A	A	A	A	A	A	A	320	318	314	202	312	308	323	316	316
30	307	F 273	F	F	314	G	A	A	305	330	292	A	270	A	290	287	320	A	A	A	A	323	316	337
31	284	284	283	284	298	326	327	327	322	A	267	306	321	308	308	324	320	A	306	305	310	310	326	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	27	23	26	27	25	24	25	23	23	23	24	26	28	30	29	25	29	28	28	31	31	31
MED	308	302	301	304	312	326	338	336	326	341	328	317	317	305	310	314	322	320	309	308	311	310	315	315
U Q	315	310	308	308	332	337	349	346	350	350	332	340	328	313	320	323	330	332	327	315	316	315	323	322
L Q	299	295	290	299	304	313	328	318	310	323	306	297	285	299	300	300	312	314	298	300	304	300	309	303

IONOSPHERIC DATA STATION Wakkanai

MAY 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

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						L			L		L	L	L	L	L	L	L							
							374											359						
2					L	L	Z		L	L			L	L	L	L	L		L					
								388	370			391						370						
3						L	L	L																
									392	394	419	390	417	380	358	371	367							
4						L		A	A	L	L	L	A	L		A	A	A						
															378									
5							A	A	A	A	A	A	L	L	L	L	L	A	A	A				
6						A			L	A	A	L	A	A	L	L	L	L		A				
7						L	L	A	A	A	A	A	A	L	L	L	L		L	A				
																		361						
8								A	A		L	L		L	L	L	A							
						378	382			402			402											
9						C	L		L		L	L		L	L	L	L	L						
								377		387	388	388	424											
10							L		L	L	L	L	L	L	L	L	L		L					
								391										354						
11							L	A	A	A	A	L	L	A	A	A	L	L						
12						L		L	A	L	L	L	L	L	L	L	L	A	A					
13						L	A	A	A	A	A		L	L	L	L	A	A	L	L				
												397												
14						L	L	U L	L	A		L	L	A		L								
								356			406				389		372	369	L					
15							L		L	L	A	L	A		L	L	L		L					
								361						407				370						
16						L		L	A	A	L	A	A	A	A	A			L					
							366										357	348						
17						L	L	L	A	A	A	A							L					
													399	367	380	377	373	355						
18						L	L	A	A	A	A	L	L	L	A	A								
																	373	373						
19							L	A		L	A	A	A	A	L	L								
									385								375	L	A	A	A			
20										L	L	L	L	A	L	L								
							338	384	381								377	350						
21				L	L		A	L	L			L	L	L	L	A	L	A	L					
						349				385	379													
22						L	A	A	A	A	A	A		A	A	L	A	A	A					
													398											
23				A		A	A	A	A	L	L	L	L	L	L	L	L	L	L					
24						L	A	L	L	A	A	A	L	L	A	L	A	A	A					
25							L	A		A	L	L				A	L	U L	L	A				
						380			398				410	400				342						
26							A	A	A		L	A	A	A	A		L	L		L				
										399						378			348					
27						A	L	L	A	L	L	A	A		L	A	A	A	L					
														357										
28				A		A	A	A	L	L	A	L	L	L	L	L		A	A	L				
																	343							
29						A	A	A	A	A	A	A	A	A	A	A	L	L	A	A	A			
30							A	A	A	L	L	A	L	A	A	L	A	A	A	A	A			
						375																		
31						L	L	A	A	A			L	L	L	L	A	A	A	A				
											401	410												
	00	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	4	6	5	5	5	5	6	5	4	3	8	11	1					
MED						376	370	380	385	394	401	391	406	380	379	377	372	359	348					
U Q						379	378	388	395	400	412	404	417	404	384	378	374	370						
L Q						362	352	361	376	386	384	389	399	362	368	371	362	350						

MAY 2021 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Wakkanai

MAY 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						336	262		274		376	314	332	298	286	294	292	290						
2					Q 262	262	254	270	294	280	332	292	306	384	370	312	292	276	268					
3						258	274	360	346	304	302	314	326	348	294	306	258							
4						274		A	274	320	280	288	A	356	298	314	A	A						
5							A	A	A	A	A	A	314	370	350	350	306	A	A	A				
6						A			260	A	A	312	306	320	308	290	302	302		A				
7						328	284	A	A	A	A	A	A	380	324	300	290	290	276	312				
8						284	236	252	280	276	328	354	352	380	370	340	308							
9						C 246	276	262	282	290	290	352	378	300	334	296	268							
10							246	282	380	286	310	310	372	362	344	326	308	314	278					
11							326	A	314	306	296	376	344	332	316	308	280	262						
12						286		286	274	324	324	296	298	384	358	348	298	280	284					
13						348	A	A	A	A	316	372	292	354	458	378	352	A	308	308				
14						262	238	308	350	284	312	348	334	338	376	342	290	300	300					
15							266	266	306	322	332	300	A	358	338	336	298	294	304					
16						298	252	328	318	342	320	A	304	A	334	A	334	334	294					
17						266	340	294	330	302	A	296	462	348	304	306	292	292	280					
18						320	308	300	A	286	E A 430	348	406	408	348	330	282	272						
19							330	E A 506	352	G	A	A	A	A	362	366	366	318	570	392	A			
20							346	338	290	300	350	356	380	340	306	332	304	290						
21				286	340	370	A	270	308	460	442	G	284	372	400	A	362	290	308					
22						280	302	298	A	A	298	A	384	A	306	346	312	328	506					
23				292		A	292	A	386	280	348	404	356	364	390	286	276	308	354					
24						242	A	360	314	A	A	A	G	468	360	382	A	A	302					
25						252	266	268	238	286	302	364	424	384	A	356	316	272	278	304				
26							A	292	330	292	290	290	A	368	A	360	322	330	312	282				
27						498	366	246	278	300	280	A	444	348	326	310	286	250	342					
28				A		A	A	A	340	246	A	228	210	254	G	432	406	364	340	280				
29						A	294	340	A	A	A	A	A	A	A	334	314	312	E A 662	282				
30						G	A	A	388	330	388	A	374	A	396	424	336	A	A	A	A			
31						266	288	E A 348	314	A	356	370	302	350	342	308	336	A	336	286				
	00	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	2	19	21	21	25	22	23	22	25	26	28	29	29	23	20	8				
MED				289	301	284	284	290	314	300	318	314	344	360	343	334	304	292	304	295				
U Q						336	317	339	343	322	350	364	382	380	370	353	328	314	341	310				
L Q						262	253	270	276	284	298	296	305	348	307	308	291	276	282	282				

MAY 2021 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	274	276	E 302	A 238	250	208	212	254	A	228	202	200	200	180	204	204	218	212	244	244	244	244	232	232
2	Q 258	Q 258	Q 248	Q 264	Q 216	218	232	208	238	228	204	214	200	256	210	210	222	222	214	214	244	234	274	246
3	Q 254	Q 258	Q 258	244	Q 238	216	232	212	226	210	196	202	192	214	218	208	214	266	258	242	242	226	226	238
4	238	250	250	266	222	216	278	A	A	218	202	202	A	A	204	A	A	A	240	226	226	258	232	232
5	236	262	262	Q 246	272	240	A	A	A	A	A	A	200	194	200	200	212	A	A	A	A	260	246	Q 228
6	Q 214	Q 280	Q 266	282	230	A	216	A	220	A	A	214	A	A	196	196	196	212	254	A	A	238	236	Q 230
7	Q 248	Q 292	Q 272	256	266	232	226	A	A	A	A	A	A	200	A	200	218	206	212	A	256	226	228	228
8	238	262	Q 262	248	268	218	200	A	A	192	190	190	194	194	226	192	A	290	288	266	248	244	216	234
9	206	254	262	Q 248	232	C	198	218	A	202	202	202	186	182	196	196	224	218	232	256	248	234	236	234
10	240	258	258	258	256	214	202	210	204	198	202	194	198	196	200	200	208	232	238	248	262	234	210	228
11	238	258	252	274	264	252	230	A	A	A	A	202	A	A	A	A	202	218	250	240	260	258	256	244
12	244	228	260	250	252	204	238	238	A	192	A	196	206	202	202	200	206	A	A	246	248	242	230	318
13	262	298	286	290	272	196	A	A	A	A	A	202	202	230	218	274	A	A	260	246	272	276	276	232
14	260	Q 268	Q 268	Q 258	258	200	206	230	216	A	196	188	202	A	202	202	202	202	246	252	264	230	230	234
15	234	Q 260	248	252	222	264	212	212	A	224	A	184	A	190	204	212	206	232	232	246	254	258	248	228
16	228	266	276	Q 258	290	232	224	A	A	A	A	A	A	A	A	A	228	236	216	248	236	286	262	Q 262
17	246	250	238	Q 232	256	222	222	222	A	A	A	A	198	198	198	198	210	230	224	252	242	242	242	Q 242
18	258	282	244	246	234	238	226	A	A	A	A	194	194	E A 278	A	A	212	206	248	270	270	A	A	234
19	244	Q 276	Q 254	Q 270	Q 250	222	216	A	202	192	A	A	A	A	192	214	214	216	A	A	A	A	246	232
20	Q 220	Q 264	Q 250	Q 264	248	224	234	198	222	208	190	190	192	A	202	196	206	230	290	248	234	282	276	254
21	230	232	252	228	294	230	A	208	208	226	200	198	192	230	232	A	218	A	218	276	244	244	244	262
22	274	260	260	Q 260	254	212	A	A	A	A	A	A	192	A	A	202	A	A	A	268	272	272	234	202
23	Q 278	284	A 288	A	228	A	A	A	A	A	196	196	196	206	206	206	192	192	226	276	256	254	236	242
24	242	272	260	238	212	192	A	222	202	A	A	A	224	242	A	218	A	A	A	242	252	268	250	258
25	252	272	Q 252	Q 252	270	204	208	A	196	A	204	184	200	200	A	248	220	220	220	A	262	262	Q 234	236
26	250	Q 228	236	254	232	288	A	A	A	198	208	A	A	A	A	216	234	240	246	238	260	260	230	208
27	Q 276	276	Q 256	Q 260	228	A	236	228	A	200	200	A	A	226	208	A	A	A	228	272	Q 250	250	236	236
28	224	236	234	A	256	A	A	A	222	202	A	186	196	202	204	236	256	A	A	238	252	252	228	228
29	256	256	268	Q 254	244	A	A	A	A	A	A	A	A	A	A	220	218	A	A	A	258	256	250	254
30	250	Q 266	Q 250	Q 256	252	212	A	A	A	198	208	A	198	A	A	A	A	A	A	A	A	244	Q 208	208
31	258	216	276	250	250	214	222	A	A	A	198	198	200	220	208	250	A	A	A	A	240	210	210	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	31	31	31	29	31	25	21	13	11	16	16	20	21	20	21	24	23	19	22	23	27	29	30	31
MED	246	262	258	254	250	218	222	218	216	202	201	197	198	202	204	205	214	220	239	248	252	250	236	234
U Q	258	276	268	262	264	232	232	229	222	221	203	202	200	228	209	217	220	232	250	266	260	260	248	244
L Q	236	254	250	247	232	210	210	209	202	198	196	190	193	195	200	200	206	212	224	242	244	236	230	228

MAY 2021 h'F (KM)

IONOSPHERIC DATA STATION Wakkanai

MAY 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					B	112	102	100	100	100	100	100	100	94	94	98	98	98	A	A				
2					B	98	98	98	98	98	98	98	98	98	98	98	90	102	A	A				
3					B	112	96	96	96	98	98	102	102	102	102	102	102	102	B	A				
4					102	144	108	98	98	98	98	96	96	A	A	96	96	100	92	A				
5					B	122	94	94	96	96	96	96	96	96	98	98	98	108	108	A				
6					B	A	108	104	100	100	100	100	100	100	100	A	A	100	100	A				
7				B	A	120	106	94	100	100	100	100	92	A	98	98	98	98	98	A	B			
8				B	B	98	98	98	98	98	98	98	98	98	A	98	92	92	A	A	B			
9				B	A	C	94	94	94	94	94	94	94	94	94	98	98	98	98	B	A			
10				B	B	120	102	90	92	92	92	92	92	92	92	A	98	98	106	A	B			
11				B	A	120	92	92	104	92	104	104	100	100	100	A	100	100	B	B	B			
12				B	B	152	94	94	94	104	104	96	96	96	96	100	100	100	100	A	B			
13				B		112	98	98	98	98	98	98	98	98	98	A	98	98	106	A	B			
14				B	B	106	96	96	96	96	96	96	96	96	96	96	96	96	106	A	A			
15				B	B	106	100	100	100	94	94	94	94	94	94	100	100	100	108	B	A			
16				A	100	108	104	98	98	98	98	A	A	A	A	A	98	98	104	A	A			
17				B	104	104	104	104	104	104	94	94	94	94	94	94	94	94	108	A	A			
18				92	A	110	96	96	96	96	96	96	96	96	A	A	A	96	96	A	B			
19				B	A	100	100	90	100	100	100	90	A	A	A	100	100	100	106	A	A			
20				B	B	110	100	100	100	100	100	102	98	98	98	98	98	98	108	A	A			
21				B	118	112	104	104	104	96	96	96	96	104	104	104	104	104	104	A	A			
22				B	A	100	100	100	100	100	100	100	100	100	100	100	100	100	110	A	B			
23				B	A	114	98	98	98	98	98	98	98	98	104	104	104	104	104	A	A			
24				B	B	104	104	94	94	94	94	94	94	90	90	90	100	100	100	A	A			
25				B	A	104	104	104	104	96	96	96	96	96	102	102	96	102	102	108	A			
26				B	A	108	102	102	102	102	102	102	102	102	A	102	102	100	108	108	A			
27				B	96	96	96	96	96	96	96	96	A	A	A	96	96	96	96	A	B			
28				B	A	116	112	112	106	104	110	108	104	A	104	104	104	104	102	B	B			
29				B	A	112	104	104	104	98	98	104	A	A	A	102	102	102	102	104	B			
30				B	A	110	104	104	104	104	104	104	104	104	100	98	106	106	104	104	A			
31				B		112	106	106	106	106	104	104	104	104	100	100	104	104	106	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	6	29	31	31	31	31	31	30	27	24	23	25	29	31	26	4				
MED				92	103	110	100	98	100	98	98	98	98	98	98	98	98	100	104	106				
U Q					112	115	104	104	104	100	100	102	100	100	100	102	102	102	106	108				
L Q					100	104	96	94	96	96	96	96	96	95	94	98	97	98	100	104				

MAY 2021 h'E (KM)

IONOSPHERIC DATA STATION Wakkanai

MAY 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	106	106	86	102	B	158	126	110	110	110	110	112	106	106	106	106	106	104	102	100	100	110	102	102
2	104	104	104	100	B	136	118	118	112	112	102	108	108	164	144	102	102	128	92	92	110	110	100	94
3	94	94	B	104	B	128	116	116	122	122	122	108	114	152	128	128	122	114	114	108	108	108	B	98
4	108	96	102	98	98	144	114	114	112	110	104	104	94	94	94	110	110	110	110	Q 90	106	106	98	B
5	98	B	B	B	90	146	120	120	112	112	98	108	98	98	98	98	126	100	104	104	106	106	106	98
6	B	98	98	98	98	96	122	122	116	106	106	106	98	110	102	92	92	98	108	108	108	114	108	100
7	98	98	88	86	88	118	118	118	116	110	106	106	96	96	96	98	106	118	108	108	102	98	98	98
8	94	94	92	94	90	126	112	112	108	108	108	98	98	98	94	94	116	110	110	102	102	B	B	92
9	B	92	96	94	90	C	112	112	106	104	104	100	94	106	G	104	158	126	112	B	108	B	B	B
10	B	B	92	92	B	122	122	122	96	108	108	108	G	92	102	102	132	118	118	104	B	104	B	92
11	108	B	B	B	90	136	120	114	114	114	104	104	104	102	102	102	102	122	104	104	104	104	104	94
12	94	94	94	94	B	152	106	106	106	106	96	104	104	104	104	110	148	106	106	106	106	98	B	102
13	122	B	B	110	120	120	110	110	110	100	100	94	128	128	98	170	122	102	112	106	106	106	102	102
14	102	102	102	94	100	132	112	104	108	108	108	100	102	102	110	162	136	126	118	118	108	108	108	98
15	98	98	98	98	B	116	116	112	112	112	104	106	106	148	148	130	130	130	114	B	108	106	106	102
16	102	98	90	90	94	114	114	86	106	102	96	96	96	96	96	96	124	120	114	114	110	110	102	102
17	94	94	94	B	94	116	116	114	106	106	106	106	106	112	112	110	110	94	110	110	110	98	98	94
18	94	94	94	94	94	122	116	116	108	108	102	102	108	104	100	100	100	90	108	108	108	106	104	104
19	102	102	102	98	100	106	112	112	112	112	106	102	102	102	94	118	118	110	110	110	110	100	100	100
20	100	96	B	118	96	126	114	114	106	106	106	100	100	112	104	104	104	132	112	112	116	B	100	98
21	98	B	120	136	128	122	112	112	114	102	102	108	108	150	126	114	120	112	112	104	104	104	104	110
22	110	102	B	B	104	124	112	112	106	102	102	102	102	102	102	140	122	110	110	110	110	110	108	108
23	108	100	100	104	104	104	104	104	104	104	104	104	104	104	104	96	104	126	118	108	108	104	104	104
24	B	B	104	104	B	124	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108
25	102	96	96	96	94	122	110	110	110	110	110	110	110	110	98	106	106	106	132	116	116	110	110	106
26	104	100	100	100	122	122	108	108	108	108	102	102	102	102	102	128	116	112	112	116	106	106	106	106
27	100	94	94	94	98	118	118	118	104	108	104	104	92	92	92	110	120	106	106	106	124	102	102	102
28	110	136	124	118	118	112	108	118	118	110	108	104	100	100	106	132	112	112	106	112	112	102	104	104
29	104	100	100	100	122	112	116	112	102	104	104	98	98	100	104	120	120	110	110	104	104	104	100	100
30	100	98	90	98	100	120	116	116	110	98	104	104	128	102	102	124	124	112	112	110	110	110	126	100
31	100	100	100	100	100	118	118	108	106	100	100	100	G	104	112	112	112	112	112	108	108	108	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	25	27	24	30	31	31	31	31	31	31	29	31	30	31	31	31	31	29	30	28	26	29
MED	102	98	98	98	98	122	114	112	108	108	104	104	102	104	102	110	116	112	110	108	108	106	104	100
U Q	106	101	102	104	104	128	118	116	112	110	108	108	108	110	108	124	124	120	112	110	110	109	106	104
L Q	98	94	93	94	94	116	112	110	106	104	102	100	98	100	98	102	106	106	108	104	106	104	100	98

MAY 2021 h'Es (KM)

IONOSPHERIC DATA STATION Wakkanai

MAY 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	F 6	F 5	F 6	F 1		H 2	C 2	C 3	C 3	C 3	C 2	C 2	C 2	C 2	C 2	C 2	C 3	C 5	L 3	L 5	F 3	F 4	F 1	F 3
2	F 2	F 1	F 1	F 2		F 2	C 2	C 3	C 3	C 2	C 2	C 1	C 2	HL 11	H 1	C 2	C 2	CL 22	L 3	L 2	FF 11	F 1	F 3	F 1
3	F 2	F 1		F 1		C 2	C 3	C 3	C 2	C 2	C 1	C 1	C 1	C 1	C 2	C 2	C 2	C 4	C 6	L 8	F 4	F 4		F 1
4	F 1	F 1	F 1	F 1	C 1	C 2	C 3	C 4	C 2	C 2	C 2	C 2	C 3	L 3	L 3	C 3	C 5	C 4	C 4	LL 42	F 4	F 3	F 1	
5	F 1				L 1	C 2	C 5	C 5	C 4	C 7	C 5	C 3	C 2	C 2	C 2	LC 11	CL 22	LQ 71	LQ 71	LQ 51	FQ 61	FQ 51	F 3	F 1
6		FQ 11	FQ 21	F 5	L 4	L 4	C 2	C 3	C 3	C 4	C 5	C 2	C 2	C 3	C 2	L 2	L 2	C 2	C 5	L 6	F 6	F 3	F 6	F 2
7	F 3	F 3	F 2	L 2	L 1	C 5	C 5	C 3	C 3	C 3	C 4	C 5	C 3	L 3	C 3	C 3	C 2	C 1	C 6	L 5	L 4	F 7	F 1	F 6
8	F 4	F 1	F 2	L 1	L 1	C 2	C 2	C 3	C 2	C 2	C 2	C 3	C 2	C 2	L 3	LC 31	C 3	C 4	L 5	L 4	L 1			F 1
9		F 1	F 1	L 2	L 1		C 2	C 3	C 3	C 2	C 2	C 2	LC 11	C 2		LC 11	C 1	C 2	C 2		L 2			
10			F 1	L 1		C 2	C 2	C 2	C 2	C 3	C 2	C 2		C 2	C 2	L 2	C 2	C 3	C 3	L 4		F 1		F 1
11	F 1				L 2	C 2	C 5	C 5	C 4	C 2	C 3	C 2	C 2	C 3	C 4	L 3	C 3	C 2	C 3	L 5	L 5	F 2	F 5	F 2
12	F 1	F 1	F 1	L 1		C 1	C 3	C 3	C 2	C 1	C 2	C 2	C 2	C 3	C 2	C 2	C 3	C 4	C 5	L 3	L 5	F 2		F 1
13	F 1			C 1	C 1	C 2	C 4	C 4	C 4	C 5	C 3	C 1	C 1	C 1	LC 11	HL 21	C 3	C 4	C 8	L 5	L 4	F 6	F 5	F 5
14	F 1	F 1	F 1	L 2	L 2	C 2	C 2	C 4	C 2	C 2	C 2	C 1	C 1	C 2	C 2	H 1	HL 21	CL 21	C 2	L 2	L 6	F 6	F 1	F 5
15	F 1	F 1	F 1	L 2		C 2	C 2	C 2	C 2	C 2	C 2	C 2	C 2	H 1	H 1	C 2	C 2	C 2	C 2		L 5	F 5	F 5	F 3
16	F 1	F 3	F 5	L 3	LL 11	C 7	C 4	LC 22	C 3	C 4	C 3	L 4	L 3	L 2	L 2	LL 62	C 1	C 4	C 3	L 8	L 2	F 8	F 3	F 7
17	F 3	F 1	F 2		LC 11	C 2	C 7	C 3	C 4	C 3	C 4	C 4	C 2	C 2	C 2	C 2	C 3	LC 11	C 8	L 6	L 3	F 8	F 3	F 2
18	F 4	F 2	F 1	C 1	L 1	C 4	C 3	C 5	C 5	C 3	C 3	C 2	C 2	C 3	L 3	L 4	L 2	L 2	C 4	LL 64	LL 73	F 5	F 8	F 3
19	F 5	F 2	F 5	LQ 21	L 3	C 5	C 3	C 6	C 2	C 1	C 2	C 4	C 2	LQ 61	LQ 21	C 2	C 3	C 3	C 5	L 8	L 7	F 8	F 5	F 6
20	F 2	F 2		L 1	L 2	C 2	C 6	C 4	C 2	C 2	C 2	C 2	C 2	C 2	C 1	C 2	C 2	C 2	C 4	L 5	L 1		F 1	F 1
21	F 1		F 1	H 1	C 3	C 3	C 4	C 4	C 3	C 2	C 2	C 1	C 1	H 1	C 2	C 3	C 2	C 3	C 3	L 3	L 3	FQ 31	F 3	F 1
22	FF 11	F 1			FL 22	C 2	C 3	C 4	C 3	C 4	C 2	C 2	C 1	C 3	C 5	C 1	C 2	C 4	C 4	L 7	L 6	F 9	FQ 53	FQ 51
23	FQ 41	FQ 32	FQ 52	LQ 41	LQ 51	CQ 51	CQ 31	CQ 71	CQ 31	CQ 21	C 1	C 1	C 1	C 3	C 2	C 2	C 1	C 1	C 2	L 8	L 4	F 2	F 1	F 1
24			F 1	L 1		C 2	C 3	C 2	C 2	C 2	C 3	C 4	C 1	C 1	C 2	C 2	C 4	C 4	C 4	L 4	L 5	F 9	FQ 71	FQ 51
25	F 4	F 4	F 2	L 2	L 3	CL 11	C 3	C 3	C 3	C 2	C 2	C 1	C 1	C 2	C 3	C 2	C 2	C 3	C 2	LL 43	L 7	F 8	F 2	F 4
26	F 3	F 1	F 3	L 2	L 2	C 3	C 8	C 2	C 2	C 2	C 3	C 3	C 3	C 3	L 3	C 2	C 2	C 4	C 5	C 1	L 5	F 6	F 3	F 1
27	F 2	F 6	F 2	L 2	C 1	C 4	C 4	C 3	C 3	C 1	C 2	C 3	L 3	L 2	L 3	C 2	C 3	C 4	C 4	L 3	L 1	F 5	F 5	F 1
28	F 1	F 1	F 6	L 7	L 3	C 4	C 4	C 4	C 3	C 2	C 2	C 1	C 2	L 2	C 2	C 1	C 2	C 4	C 4	L 2	L 1	F 3	F 1	F 2
29	F 2	F 2	FF 11	L 2	CL 21	C 3	C 3	C 3	CQ 42	C 3	C 3	C 4	LQ 31	LQ 41	LQ 21	CL 22	CL 32	CL 32	C 8	C 5	L 6	F 6	F 2	F 3
30	F 3	F 1	F 2	L 2	L 1	C 3	C 5	C 3	C 3	LC 11	C 2	C 3	CL 11	C 3	C 3	C 2	C 2	C 5	C 6	C 7	L 7	F 3	F 1	F 1
31	F 4	F 6	F 5	L 3	LC 21	C 2	C 4	C 3	C 3	C 4	C 2	C 1		C 2	C 1	C 2	C 3	C 6	C 6	C 5	L 8	F 3	F 3	F 1
	00	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																								

MAY 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	X 52	X 50	X 49	X 45	X 40	X 45														X 68	X 65	X 62	X 59	X 52
2	51	50	44	X 42	X 43															X 77	X 56	X 52	X 52	X 50
3	50	49	48	42	39															X 71	X 74	X 62	X 47	X 44
4	X 44	47	45	44	42															X 68	X 66	A	64	58
5	56	56	48	X 44	X 39															X 62	X 60	59	60	58
6	59	48	50	52	47															X 66	X 65	X 45	X 46	46
7	54	53	X 37	40	40															X 69	X 70	X 61	59	59
8	59	59	56	53	45															X 75	X 75	67	60	60
9	57	59	X 47	44	41															X 73	X 70	X 64	63	62
10	59	58	49	44	44								C							74	73	69	71	60
11	X 54	X 48	X 45	X 42	X 42															X 64	X 58	X 52	X 50	55
12	A	X 46	X 45	X 44	X 44				59											X 79	X 76	X 70	X 65	X 64
13	X 60	X 52	X 55	X 52	X 44						75					C				A	X 65	X 65	62	64
14	64	62	60	60	60	60														X 70	X 72	X 70	X 58	X 52
15	54	59	55	56	52	X 57														X 77	X 80	X 82	X 64	X 54
16	X 54	X 52	54	X 46	X 45	X 52														X 81	X 78	73	72	71
17	70	65	A	A	43	X 47														X 78	X 78	61	59	X 52
18	57	54	X 45	48	47	X 48														X 69	X 68	X 59	59	59
19	60	55	56	X 46	X 44	X 52														X 70	X 66	X 58	60	53
20	X 46	X 44	X 41	X 42	45															X 83	X 78	70	X 63	78
21	71	72	59	A	52															X 81	A	A	A	A
22	45	46	44	X 42	X 40															X 72	X 70	X 60	54	54
23	A	55	X 46	X 37	X 37															X 66	X 70	X 68	X 61	X 56
24	X 55	X 54	X 52	X 45	X 37															X 60	X 64	61	61	56
25	X 51	53	53	50	X 40															A	X 76	75	60	60
26	60	60	X 50	X 50	53															A	82	X 79	X 66	A
27	61	60	58	52	48															X 70	X 76	X 81	X 77	A
28	X 49	X 44	X 40	43	X 35															A	66	61	A	59
29	X 48	X 46	X 47	X 42	43															X 74	X 65	59	62	58
30	55	A	48	46	42															X 77	X 72	X 66	60	A
31	48	46	46	45	42															X 73	76	78	77	61
	00	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	31	7			1		1									27	30	29	29	27
MED	55	53	48	45	43	X 52			59		75									X 72	X 70	X 64	60	58
U Q	60	59	54	50	45	57														X 77	X 76	X 70	64	60
L Q	50	48	X 45	X 42	X 40	X 47														X 68	X 65	X 60	X 59	X 53

MAY 2021 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	46	44	43	39	34	39	52	52	A	A	A	56	59	68	69	77	65	58	A	62	59	56	53	46
2	F	F	F	36	37	39	53	54	57	65	63	52	58	56	68	77	87	91	84	71	50	46	46	44
3	F	F	F	F	F	A	A	A	A	A	52	56	56	63	72	74	60	56	60	65	68	56	41	38
4	38	F	F	F	F	41	52	57	58	58	55	59	60	61	67	72	69	62	A	63	60	A	F	F
5	F	F	F	38	33	39	50	A	A	A	53	54	60	67	A	72	55	52	51	56	54	F	F	F
6	F	F	F	F	F	39	47	53	A	A	A	A	A	60	A	67	62	54	52	60	58	39	40	F
7	F	F	31	F	F	38	46	49	54	53	51	53	55	53	59	69	66	55	54	63	64	55	F	F
8	F	F	F	F	F	41	55	62	55	A	A	A	54	52	54	56	58	A	62	70	69	F	F	F
9	F	F	41	F	F	43	51	52	A	A	60	51	R 54	51	57	63	A	58	61	67	64	58	F	F
10	F	F	F	F	F	42	49	A	57	50	54	54	C	54	A	A	56	A	67	F	F	F	F	F
11	48	42	39	36	36	43	50	49	A	56	A	A	A	63	74	90	88	74	A	58	52	46	44	F
12	A	40	38	38	38	44	57	59	F	57	54	56	53	56	64	77	75	70	70	73	70	64	59	58
13	54	46	49	46	38	38	50	A	A	53	F	72	56	53	A	C	57	A	A	A	59	59	F	F
14	F	F	F	F	F	F	48	59	54	54	55	57	A	60	62	58	63	64	58	64	66	64	52	46
15	F	F	F	F	F	51	55	66	55	60	67	54	55	61	59	62	60	62	62	70	74	76	58	48
16	48	46	F	40	39	46	50	61	57	58	52	60	54	A	54	58	63	68	71	75	72	F	F	F
17	F	F	A	A	F	41	56	A	A	A	59	A	60	60	72	78	70	61	61	72	72	F	F	46
18	F	F	39	F	F	42	56	A	58	A	A	A	66	76	84	88	88	76	68	63	61	53	F	F
19	F	F	F	40	38	46	58	54	A	58	58	56	A	A	66	A	63	62	A	64	60	52	F	F
20	40	37	34	36	F	41	50	60	65	A	A	A	60	64	71	69	69	69	76	77	72	F	57	F
21	F	F	F	A	F	44	50	A	A	A	A	49	50	55	60	A	53	A	61	75	A	A	A	A
22	F	F	F	36	34	46	49	52	A	67	63	58	A	A	58	62	62	A	58	66	64	54	F	F
23	A	F	40	31	31	41	A	A	54	A	A	A	50	52	58	A	52	A	51	60	64	62	55	50
24	49	48	46	39	31	38	44	58	58	49	57	52	48	49	54	59	64	60	54	54	58	F	F	F
25	45	F	F	F	34	44	63	53	A	A	A	54	54	54	56	55	60	61	66	A	70	F	F	F
26	F	F	44	44	F	45	48	A	A	63	59	54	54	A	57	A	A	A	A	A	F	73	60	A
27	F	F	F	F	F	40	53	A	A	A	56	A	53	70	85	82	63	A	A	64	70	75	71	A
28	43	38	34	F	29	31	44	51	A	A	A	A	47	A	A	48	A	51	A	A	F	F	A	F
29	42	40	41	36	F	42	51	58	A	A	A	A	A	A	A	A	60	57	60	68	59	F	F	F
30	F	A	F	F	F	38	47	49	A	A	A	A	A	51	51	52	56	A	66	71	66	60	F	A
31	F	F	F	F	F	40	49	A	A	A	A	A	54	58	A	59	55	54	58	67	F	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	9	13	14	13	29	29	20	12	14	17	19	23	25	24	24	28	22	23	26	26	18	12	8
MED	46	42	40	38	34	41	50	54	57	58	56	54	54	58	61	68	62	61	61	66	64	57	54	46
U Q	48	46	44	40	38	44	54	59	58	60	60	57	59	63	70	77	68	68	67	71	70	64	58	49
L Q	42	39	36	36	32	39	48	52	54	53	54	53	53	53	57	58	58	56	58	63	59	53	45	45

MAY 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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								A	A	A	A	A	A	A	A	A	A	A	A					
2							A	A	A	A	U L 436	A	A	U L 460	U L 452	432	412	A	A					
3						A	A	A	A	A	456	448	448	A	A	A	A	A	A					
4								A	A	A	A	A	A	452	436	U L 436	A	A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	L	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7								L	A	A	A	U L 440	A	U L 440	A	A	392	A	A					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9								A	A	A	A	A	U L 444	U L 444	U L 436	416	A	A	A					
10								A	A	A	A	U L 456	C	A	A	A	A	A						
11						L		A	A	A	A	A	A	A	A	A	A	A	A					
12								A	A	A	A	U L 452	A	A	440	A	U L 404	372	A					
13							L	A	A	A	A	A	448	A	A	C	400	A	A					
14								392	A	A	U L 456	A	A	A	444	A	A	A	A					
15							A	A	436	436	440	456	464	A	444	U L 424	A	A	A					
16							A	A	A	A	A	A	A	A	A	A	396	L	A					
17							A	A	A	A	A	A	A	A	A	A	A	U L 412	L					
18							A	A	A	A	A	A	A	A	A	440	408	L	A					
19							L	L	A	A	A	A	A	A	A	A	U L 424	A	A					
20							A	412	A	A	A	A	A	A	A	428	404	A	A					
21							A	A	A	A	A	A	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	A	A	U L 436	420	A	A	A					
23							A	A	A	A	A	A	U L 452	448	A	A	A	A	A					
24								388	A	U L 452	A	U L 460	U L 448	U L 456	A	A	388	372	A					
25						L	A	L	A	A	A	A	448	460	A	428	404	A	A					
26						A		A	A	A	A	464	A	A	A	A	A	A	A					
27							A	A	A	A	A	A	A	464	A	A	L	A	A					
28						264	352	A	A	A	A	A	428	A	A	420	A	A	A					
29							A		A	A	A	A	A	A	A	A	424	388	L					
30							A	A	A	A	A	A	A	A	428	U L 424	400	A	A					
31						A	A	A	A	A	A	A	A	448	A	A	412	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	1	3	1	2	4	7	8	9	8	10	13	4						
MED						264	352	392	436	444	448	U L 456	448	452	438	426	404	380						
U Q								412			456	460	U L 450	460	444	432	412	400						
L Q								388			438	448	446	U L 446	436	420	398	372						

MAY 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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							U A 220	A	A	A	A	A	A	A	A	A	A	A	A					
2						B	A	A	A	A	A	A	A	U A 344	A	A	U A 280	U A 228	B					
3						B	A	A	A	A	A	A	U R 368	A	348	U A 316	U A 280	A	B					
4						B	A	A	A	A	A	A	A	A	U A 336	U A 308	A	A	B					
5						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
6						U A 176	U A 232	A	A	A	A	A	A	A	A	A	A	A	A					
7						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
8						B	A	A	A	A	A	A	A	A	U A 332	A	A	A	B					
9						B	A	A	A	A	A	A	A	A	R	A	A	A	B					
10						B	A	A	A	A	A	A	C	A	A	A	A	A	B					
11						U R 188	A	A	A	A	A	A	A	A	A	A	A	A	B					
12						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
13						B	A	A	A	A	A	A	A	A	A	C	U A 280	A	B					
14						B	A	A	A	A	A	A	A	A	U R 324	A	A	A	B					
15							A	A	A	A	U R 364	A	U R 372	A	A	U R 328	A	A	B					
16							A	A	A	A	A	A	A	A	A	A	A	U A 248	B					
17							A	A	A	A	A	A	A	A	A	A	A	A	R					
18							A	A	A	A	A	A	A	A	A	A	U R 300	U R 268	B					
19							U R 240	A	A	A	A	A	A	A	A	A	A	A	A					
20						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
21						U A 176	A	A	A	A	A	A	A	A	360	A	A	A	B					
22						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
23						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
24						U A 172	U A 228	A	A	A	A	R	A	A	A	A	A	A	B					
25						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
26						B	A	A	A	A	A	A	A	A	U A 380	A	A	A	A					
27						A	A	A	A	A	A	A	A	A	A	A	U R 316	A	B					
28						B	A	A	A	A	A	A	A	A	A	U A 380	A	A	B					
29						A	A	A	A	A	A	A	A	A	A	A	A	U R 288	B					
30						U A 200	A	A	A	A	A	A	A	A	U A 344	U R 316	U A 308	A	B					
31						B	A	A	A	A	A	A	A	A	A	A	U A 284	A	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	4				1		2	1	7	5	7	4						
MED						U A 176	U A 230				U R 364		U R 370	U A 344	U A 344	U A 316	U A 284	U 258						
U Q						U 194	U 236								360	U 354	U 308	U R 278						
L Q						U A 174	U A 224								U 332	U A 312	U A 280	U A 238						

MAY 2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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 36	J A 34	22	23	20	E B 16	30	J A 50	J A 64	J A 63	J A 85	J A 50	J A 49	J A 48	J A 54	J A 64	J A 122	J A 50	J A 92	J A 92	J A 83	J A 44	J A 46	J A 25
2	J A 52	J A 34	J A 54	24	E B 15	23	J A 52	J A 38	J A 55	J A 56	J A 55	J A 52	J A 74	J A 38	J A 36	J A 35	31	31	J A 57	J A 29	J A 29	J A 34	J A 52	J A 36
3	J A 48	J A 54	24	22	22	J A 58	J A 83	J A 92	J A 71	J A 74	40	40	G J A 79		J A 56	J A 55	J A 45	58	J A 51	J A 81	J A 50	J A 49	J A 49	J A 36
4	J A 26	J A 30	J A 26	E B 16	E B 15	19	30	J A 51	J A 50	J A 60	J A 57	J A 81	J A 86	J A 38	39	38	J A 43	J A 62	J A 65	J A 148	J A 74	78	65	J A 52
5	J A 38	23	E B 16	E B 16	E B 15	J A 26	J A 43	J A 61	J A 71	J A 89	J A 66	J A 90	J A 50	J A 78	J A 162	J A 49	J A 107	J A 32	J A 46	J A 51	J A 43	J A 38	J A 86	J A 68
6	J A 34	J A 28	J A 28	J A 31	J A 37	25	34	J A 53	J A 62	J A 57	J A 64	J A 81	J A 65	J A 53	J A 79	J A 46	J A 54	J A 48	39	J A 42	J A 33	J A 107	J A 75	J A 44
7	J A 53	J A 37	J A 32	J A 34	J A 24	19	33	J A 38	J A 64	J A 62	J A 65	40	J A 46	38	J A 54	J A 46	J A 45	J A 43	J A 63	J A 40	J A 27	J A 28	J A 40	21
8	J A 27	23	J A 30	J A 23	23	J A 34	J A 55	J A 53	J A 45	J A 84	J A 86	J A 84	J A 46	46	42	J A 54	J A 58	J A 64	J A 70	J A 84	J A 105	J A 51	J A 52	J A 22
9	J A 28	J A 28	J A 26	23	22	23	J A 38	J A 54	J A 65	J A 71	J A 59	J A 49	39	J A 37	G	36	J A 82	J A 91	J A 50	J A 32	J A 32	23	J A 64	J A 40
10	J A 38	J A 31	J A 34	J A 26	22	J A 31	J A 45	J A 54	J A 55	J A 45	J A 47	39	C	J A 49	J A 117	J A 141	J A 68	J A 147	J A 90	J A 55	J A 48	J A 86	J A 97	24
11	E B 16	J A 41	J A 34	J A 52	22	G	31	J A 46	J A 64	J A 75	J A 76	J A 62	J A 71	J A 54	J A 47	J A 50	J A 61	J A 89	J A 108	J A 45	J A 43	J A 54	J A 65	J A 55
12	J A 86	J A 32	E B 16	24	E B 16	20	28	J A 48	J A 54	J A 60	J A 50	J A 48	J A 53	J A 57	39	J A 47	J A 37	J A 52	J A 39	J A 49	21	J A 26	J A 34	J A 32
13	J A 32	J A 24	23	23	E B 16	21	28	J A 58	J A 50	J A 55	J A 63	44	40	J A 56	J A 45	C	32	J A 86	J A 91	J A 72	J A 42	J A 65	J A 66	J A 67
14	J A 104	J A 60	J A 42	19	19	J A 32	J A 32	32	38	J A 54	42	J A 52	J A 70	J A 56	G	J A 50	J A 49	J A 51	J A 76	J A 42	J A 40	J A 46	J A 54	22
15	J A 80	J A 80	J A 48	J A 25	23	J A 31	J A 42	J A 45	J A 48	39	G	40	G J A 80		J A 51	G	J A 48	J A 54	J A 54	J A 53	J A 52	J A 34	J A 39	J A 30
16	J A 32	J A 30	J A 28	J A 36	J A 29	22	J A 39	J A 52	J A 67	J A 56	J A 50	J A 53	J A 56	J A 65	J A 54	J A 60	35	31	J A 50	J A 54	J A 55	J A 59	J A 105	J A 181
17	J A 54	J A 140	J A 141	J A 90	J A 96	J A 35	J A 50	J A 87	J A 67	J A 98	J A 66	J A 64	J A 66	J A 54	J A 78	J A 67	J A 53	30	G	J A 26	J A 32	J A 108	J A 80	J A 53
18	J A 24	J A 54	J A 81	J A 80	J A 27	J A 32	J A 87	J A 163	J A 84	J A 76	J A 130	J A 104	J A 50	J A 87	J A 82	J A 54	G	G	J A 40	J A 36	J A 53	J A 46	J A 48	J A 48
19	J A 51	J A 76	21	E B 15	E B 16	20	G	35	J A 106	J A 63	J A 108	J A 56	J A 108	J A 209	J A 72	J A 86	J A 42	J A 81	J A 138	J A 120	J A 99	J A 104	J A 76	J A 87
20	J A 64	J A 51	J A 32	J A 34	J A 35	J A 30	J A 44	J A 64	J A 70	J A 68	J A 88	J A 163	J A 64	J A 56	J A 65	J A 64	J A 186	J A 147	J A 201	J A 100	J A 53	J A 48	J A 42	J A 38
21	J A 30	J A 43	J A 46	J A 54	J A 52	G	J A 52	J A 62	J A 123	J A 72	J A 74	J A 47	J A 50	J A 53	43	J A 68	J A 66	J A 112	J A 71	J A 59	J A 87	J A 120	J A 88	J A 75
22	J A 82	J A 102	J A 82	J A 49	J A 25	21	J A 39	J A 52	J A 74	J A 170	J A 80	J A 120	J A 97	J A 119	39	41	J A 50	J A 146	J A 132	J A 123	J A 63	J A 112	J A 68	J A 159
23	J A 88	J A 35	J A 24	J A 33	E B 15	22	J A 54	J A 105	J A 104	J A 97	J A 133	J A 71	J A 60	J A 48	J A 124	J A 80	J A 77	J A 75	J A 53	J A 49	J A 29	J A 82	J A 37	22
24	24	22	J A 23	J A 27	J A 32	21	30	36	J A 53	40	40	G	38	42	J A 46	J A 43	J A 40	31	J A 53	J A 103	J A 81	J A 82	J A 49	J A 53
25	J A 53	J A 32	J A 39	J A 41	26	22	31	J A 40	J A 91	J A 94	J A 176	J A 136	39	41	J A 60	J A 80	J A 40	J A 62	J A 56	86	J A 111	77	55	J A 42
26	25	E B 16	J A 24	E B 16	J A 33	J A 36	J A 44	J A 67	J A 99	J A 68	J A 59	40	J A 73	J A 74	45	J A 74	J A 102	J A 85	J A 131	J A 84	J A 111	J A 104	J A 82	J A 111
27	J A 76	J A 26	J A 67	J A 51	J A 50	J A 32	J A 56	J A 89	J A 103	J A 131	J A 61	J A 74	J A 49	J A 42	55	J A 54	G	J A 66	J A 155	J A 76	J A 67	J A 54	J A 84	J A 80
28	J A 48	J A 21	25	23	23	23	34	J A 49	J A 48	J A 70	J A 91	J A 53	J A 46	J A 51	J A 45	42	J A 82	J A 74	J A 292	J A 252	J A 110	J A 106	J A 167	J A 118
29	J A 44	J A 41	J A 35	J A 28	23	23	J A 41	J A 51	J A 107	J A 116	J A 85	J A 146	J A 105	J A 112	J A 84	J A 79	J A 58	G	J A 32	J A 62	J A 124	J A 62	J A 28	J A 50
30	J A 41	J A 64	J A 74	J A 25	E B 16	26	J A 42	J A 56	J A 78	J A 90	J A 147	J A 113	63	J A 50	40	G	40	J A 84	J A 73	J A 65	J A 126	J A 87	J A 77	J A 83
31	J A 35	J A 28	J A 24	J A 38	J A 31	J A 45	J A 45	J A 94	J A 92	J A 133	J A 149	J A 163	J A 56	40	J A 74	J A 60	39	J A 48	J A 64	J A 138	J A 56	46	J A 48	J A 110
	00	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	30	31	31	30	31	31	31	31	31	31	31	31
MED	J A 41	J A 34	J A 30	J A 26	23	23	J A 41	J A 53	J A 67	J A 70	J A 66	J A 56	J A 54	J A 53	J A 54	J A 54	J A 49	J A 62	J A 64	J A 62	J A 53	J A 59	J A 64	J A 50
U Q	J A 54	J A 54	J A 46	J A 38	J A 31	J A 32	J A 50	J A 64	J A 91	J A 90	J A 88	J A 90	J A 70	J A 74	J A 74	J A 67	J A 68	J A 85	J A 92	J A 92	J A 87	J A 87	J A 80	J A 80
L Q	J A 30	28	24	23	E B 16	21	31	J A 46	J A 54	J A 57	55	47	46	42	42	43	40	43	J A 50	J A 45	J A 40	J A 46	J A 48	32

MAY 2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	22	E B 16	E B 16	E B 16	E B 16	E B 16	26	40	A A 64	A A 63	A A 85	45	45	44	47	46	52	38	A A 92	26	25	36	19	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 15	20	45	34	45	50	36	38	46	37	30	31	30	30	46	24	21	22	24	19
3	E B 15	20	E B 15	E B 15	E B 15	A A 58	A A 83	A A 92	A A 71	A A 74	37	37	G	50	48	47	36	46	36	34	38	30	E B 15	E B 15
4	E B 16	E B 16	E B 16	E B 16	E B 15	18	28	41	41	49	48	44	45	36	36	36	36	50	A A 65	24	36	A A 78	40	23
5	22	E B 16	E B 16	E B 16	E B 15	20	35	A A 61	A A 71	A A 89	48	46	44	57	A A 162	39	42	27	42	25	35	21	22	E B 16
6	25	E B 16	E B 16	20	21	21	30	45	A A 62	A A 57	A A 64	A A 81	A A 65	45	A A 79	42	46	42	38	34	28	20	26	23
7	E B 16	E B 16	E B 16	E B 16	E B 16	18	32	34	50	45	47	40	44	36	44	44	34	40	47	35	E B 16	E B 16	23	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	23	50	42	40	A A 84	A A 86	A A 84	42	42	42	43	47	A A 64	54	52	27	36	20	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	21	23	46	A A 65	A A 71	47	44	34	34	G	34	A A 82	35	48	24	24	E B 16	18	E B 16
10	E B 16	E B 16	20	20	E B 16	26	36	A A 54	43	41	43	38	C	45	A A 117	A A 141	45	A A 147	40	29	26	46	42	E B 16
11	E B 16	E B 16	E B 16	18	E B 16	G	28	41	A A 64	49	A A 76	A A 62	A A 71	47	40	44	53	51	A A 108	32	30	28	34	26
12	A A 86	E B 16	E B 16	E B 16	E B 16	19	26	40	46	43	43	38	42	45	35	41	34	28	31	21	E B 16	E B 16	18	23
13	E B 16	E B 16	E B 16	E B 16	E B 16	19	23	A A 58	A A 50	47	46	44	37	42	A A 45	C	30	A A 86	A A 91	A A 72	32	44	23	23
14	42	40	E B 16	E B 16	E B 16	24	26	32	35	42	40	44	A A 70	45	G	42	41	46	43	22	21	E B 16	25	E B 16
15	29	31	E B 16	E B 16	E B 16	26	35	36	35	37	G	37	G	47	39	G	43	38	49	26	35	22	35	22
16	22	22	E B 15	21	E B 16	20	34	45	45	47	47	47	50	A A 65	47	52	32	28	44	45	28	44	31	22
17	40	E B 16	A A 141	A A 90	24	22	38	A A 87	A A 67	A A 98	47	A A 64	46	46	65	52	46	27	G	22	26	30	28	E B 15
18	E B 16	24	24	E B 16	E B 15	24	41	A A 163	48	A A 76	A A 130	A A 104	47	57	50	35	G	G	34	E B 15	21	30	24	E B 16
19	22	21	E B 16	E B 15	E B 16	18	G	31	A A 106	50	47	52	A A 108	A A 209	51	A A 86	31	46	A A 138	46	20	E B 15	21	22
20	22	24	E B 16	20	20	17	36	36	50	A A 68	A A 88	A A 163	45	47	44	36	31	48	48	34	36	23	26	28
21	E B 15	21	29	A A 54	E B 16	G	47	A A 62	A A 123	A A 72	A A 74	45	46	44	40	A A 68	41	A A 112	52	46	A A 87	A A 120	A A 88	A A 75
22	22	22	20	20	E B 16	18	34	45	A A 74	50	52	50	A A 97	A A 119	37	37	42	A A 146	39	33	24	E B 16	28	27
23	A A 88	20	20	22	E B 15	21	A A 54	A A 105	41	A A 97	A A 133	A A 71	41	39	50	A A 80	45	A A 75	41	46	E B 16	E B 16	E B 16	E B 16
24	E B 16	E B 15	E B 16	E B 16	21	21	26	34	45	36	39	G	37	39	42	40	34	29	44	24	17	23	18	22
25	E B 16	21	22	22	20	20	28	33	A A 91	A A 94	A A 176	46	37	40	50	36	34	42	49	A A 86	46	42	36	E B 17
26	E B 16	E B 16	E B 16	E B 16	24	28	34	A A 67	A A 99	55	45	38	50	A A 74	42	A A 74	A A 102	A A 85	A A 131	A A 84	40	51	43	A A 111
27	36	E B 16	26	20	20	22	50	A A 89	A A 103	A A 131	43	A A 74	44	36	52	45	G	A A 66	A A 155	50	20	22	28	A A 80
28	E B 16	E B 16	E B 16	E B 16	E B 16	19	30	35	A A 48	A A 70	A A 91	A A 53	38	A A 51	A A 45	38	A A 82	46	A A 292	A A 252	36	E B 16	A A 167	23
29	31	22	E B 16	E B 16	E B 16	20	35	41	A A 107	A A 116	A A 85	A A 146	A A 105	A A 112	A A 84	A A 79	34	G	24	46	22	28	E B 16	34
30	21	A A 64	E B 16	E B 16	E B 16	24	36	46	A A 78	A A 90	A A 147	A A 113	A A 63	45	38	G	34	A A 84	59	48	31	34	38	A A 83
31	22	E B 16	E B 16	20	E B 16	34	34	A A 94	A A 92	A A 133	A A 149	A A 163	46	38	A A 74	52	32	43	53	42	35	34	28	28
	00	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	30	31	31	30	31	31	31	31	31	31	31	31
MED	21	E B 16	E B 16	E B 16	E B 16	20	34	45	A A 62	A A 63	48	46	45	45	45	42	36	46	48	34	27	28	26	22
U Q	25	22	20	20	16	24	38	A A 62	A A 78	A A 89	A A 86	A A 74	A A 50	A A 51	A A 51	A A 52	46	A A 66	A A 65	46	35	36	35	27
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	36	45	47	43	40	41	39	39	36	32	30	40	24	21	E B 16	20	E B 16

MAY 2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

MAY 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	319	307	319	343	310	336	370	368	A	A	A	322	308	336	337	336	346	353	A	324	311	312	326	337
2	F	F	F	302	281	360	374	344	337	368	336	279	326	279	291	303	320	329	354	358	330	302	287	281
3	F	F	F	F	F	A	A	A	A	A	302	315	315	327	320	352	348	325	323	324	327	348	319	292
4	297	F	F	F	F	340	360	344	351	359	311	318	312	311	318	331	346	349	A	326	345	A	F	F
5	F	F	F	339	291	340	369	A	A	A	321	300	317	303	A	329	353	328	322	320	345	F	F	F
6	F	F	F	F	F	356	370	393	A	A	A	A	A	319	A	327	331	353	330	319	365	369	320	F
7	F	F	301	F	F	387	387	345	355	361	340	319	317	302	312	328	343	332	317	314	334	331	F	F
8	F	F	F	F	F	318	380	377	402	A	A	A	317	314	312	326	336	A	316	322	328	F	F	F
9	F	F	322	F	F	361	383	381	A	A	356	335	R 257	306	307	329	A	334	339	319	333	318	F	F
10	F	F	F	F	F	378	385	A	359	329	338	316	C 297	A	A	308	A	348	F	F	F	F	F	F
11	330	308	321	310	310	353	385	312	A	340	A	A	A	292	288	318	329	346	A	338	326	317	313	F
12	A	314	331	315	312	346	349	376	F	342	348	318	286	303	308	318	327	324	323	313	318	326	299	301
13	286	270	282	315	355	318	333	A	A	276	F	324	326	296	A	C	315	A	A	A	285	285	F	F
14	F	F	F	F	F	F	337	342	357	317	315	326	A	316	326	311	330	332	309	313	310	321	332	322
15	F	F	F	F	F	356	356	378	354	335	361	328	310	340	305	325	327	318	299	297	310	348	346	311
16	308	314	F	306	315	341	331	356	366	350	284	322	310	A	294	307	327	323	316	322	302	F	F	F
17	F	F	A	A	F	306	368	A	A	A	320	A	328	305	320	328	329	317	317	332	341	F	F	290
18	F	F	287	F	F	360	356	A	364	A	A	A	302	287	280	299	313	312	332	322	330	307	F	F
19	F	F	F	329	325	338	345	324	A	341	347	316	A	A	326	A	324	336	A	342	297	313	F	F
20	338	303	296	291	F	333	331	331	364	A	A	A	300	310	319	323	315	310	307	316	314	F	264	F
21	F	F	F	A	F	345	306	A	A	A	A	272	283	301	334	A	305	A	310	333	A	A	A	A
22	F	F	F	317	331	360	342	331	A	342	342	307	A	A	308	311	332	A	322	313	327	341	F	F
23	A	F	300	311	371	388	A	A	346	A	A	A	302	293	314	A	324	A	313	310	312	328	302	310
24	296	305	330	360	329	355	330	361	387	348	373	287	269	281	303	321	343	346	343	318	323	F	F	F
25	305	F	F	F	302	355	385	369	A	A	A	304	295	314	324	312	321	314	311	A	325	F	F	F
26	F	F	317	309	F	356	320	A	A	378	345	323	319	A	309	A	A	A	A	A	F	359	322	A
27	F	F	F	F	F	335	309	A	A	A	318	A	247	275	306	336	339	A	A	305	298	316	353	A
28	321	327	285	F	281	275	325	362	A	A	A	A	274	A	A	305	A	318	A	A	F	F	A	F
29	305	301	327	313	F	350	351	384	A	A	A	A	A	A	A	A	322	320	313	335	325	F	F	F
30	F	A	F	F	F	326	320	350	A	A	A	A	A	287	285	295	318	A	330	316	313	325	F	A
31	F	F	F	F	F	350	354	A	A	A	A	A	291	327	A	320	322	307	315	303	F	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	9	13	14	13	29	29	20	12	14	17	19	23	25	24	24	28	22	23	26	26	18	12	8
MED	306	307	317	314	312	350	354	358	358	342	338	318	308	303	310	322	327	326	317	320	325	323	320	306
U Q	321	314	324	329	330	358	372	376	365	359	348	323	317	315	320	328	338	336	330	326	330	341	329	316
L Q	297	302	292	309	296	336	331	343	352	335	316	304	286	292	304	311	320	318	313	313	311	313	300	291

MAY 2021 M(3000)F2 (0.01)

IONOSPHERIC DATA STATION Kokubunji

MAY 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								A	A	A	A	A	A	A	A	A	A	A	A					
2							A	A	A	A	U L 429	A	A	U L 390	U L 353	363	377	A	A					
3						A	A	A	A	A	392	396	396	A	A	A	A	A	A					
4								A	A	A	A	A	A	382	375	U L 377	A	A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	L	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7								L	A	A	A	U L 416	A	U L 381	A	A	404	A	A					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9								A	A	A	A	A	U L 410	U L 408	U L 410	397	A	A	A					
10								A	A	A	A	U L 401	C	A	A	A	A	A						
11						L		A	A	A	A	A	A	A	A	A	A	A	A					
12								A	A	A	A	U L 424	A	A	399	A	U L 389	366	A					
13							L	A	A	A	A	A	417	A	A	C	381	A	A					
14								387	A	A	U L 383	A	A	A	394	A	A	A	A					
15							A	A	384	410	406	392	405	A	400	U L 403	A	A	A					
16							A	A	A	A	A	A	A	A	A	A	394	L	A					
17							A	A	A	A	A	A	A	A	A	A	A	U L 357	L					
18							A	A	A	A	A	A	A	A	A	357	365	L	A					
19							L	L	A	A	A	A	A	A	A	A	U L 371	A	A					
20							A	378	A	A	A	A	A	A	A	380	377	A	A					
21							A	A	A	A	A	A	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	A	A	U L 402	417	A	A	A					
23							A	A	A	A	A	A	U L 421	425	A	A	A	A	A					
24								385	A	U L 403	A	U L 409	U L 409	U L 421	A	A	421	387	A					
25						L	A	L	A	A	A	A	387	400	A	394	390	A	A					
26						A		A	A	A	A	400	A	A	A	A	A	A	A					
27							A	A	A	A	A	A	A	400	A	A	L	A	A					
28						351	368	A	A	A	A	A	409	A	A	386	A	A	A					
29							A		A	A	A	A	A	A	A	A	367	363	L					
30							A	A	A	A	A	A	A	A	341	U L 381	372	A	A					
31						A	A	A	A	A	A	A	A	396	A	A	384	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	1	3	1	2	4	7	8	9	8	10	13	4						
MED						351	368	385	384	406	399	U L 401	409	400	396	384	381	364						
U Q								387			418	U L 416	U L 414	U L 414	U L 401	397	392	376						
L Q								378			388	396	400	U L 386	364	377	372	360						

MAY 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	A	A	A	344	344	268	268	256	E A 262	240	A					
2							E A 246	246	252	244	282	E A 264	302	384	328	298	282	240	234					
3						A	A	A	A	A	344	338	316	298	282	238	248	280	254					
4								254	254	E A 270	E A 316	322	326	290	300	260	248	E A 252	A					
5						E A 240	234	A	A	A	E A 330	360	312	E A 316	A	246	E A 254	282	E A 294					
6							226	E A 236	A	A	A	A	A	308	A	268	268	E A 250	268					
7								268	E A 286	258	E A 310	348	316	338	326	276	264	264	E A 308					
8						E A 252	E A 240	222	224	A	A	A	334	342	342	310	E A 278	A	E A 316					
9								E A 236	A	A	256	310	416	370	342	290	A	262	E A 262					
10								A	236	E A 278	292	342	C	368	A	A	E A 330	A						
11						264		E A 336	A	E A 296	A	A	A	338	310	260	242	246	A					
12								226	E A 358	282	258	336	E A 348	340	326	272	252	264	256					
13							278	A	A	E A 408	316	274	304	362	A	C	302	A	A					
14								266	240	322	334	302	A	308	278	298	284	E A 264	E A 264					
15							254	236	280	286	246	298	338	290	346	288	288	284	E A 316					
16							290	240	256	270	400	308	E A 354	A	376	E A 344	296	264	252					
17							244	A	A	A	314	A	308	350	E A 324	256	262	286	282					
18							234	A	E A 258	A	A	A	322	E A 336	320	282	272	258	232					
19							256	284	A	E A 290	274	E A 370	A	A	290	A	276	E A 258	A					
20							276	276	236	A	A	A	342	322	296	296	296	E A 288	E A 304					
21							E A 380	A	A	A	A	E A 430	E A 430	354	294	A	334	A	E A 334					
22							E A 268	E A 298	A	266	E A 276	E A 334	A	A	338	304	294	A	E A 266					
23							A	A	286	A	A	A	376	392	E A 320	A	E A 298	A	E A 304					
24								248	240	306	250	386	432	428	342	306	272	260	E A 270					
25						270	218	242	A	A	A	364	378	340	E A 320	328	302	E A 280	E A 302					
26						230		A	A	E A 248	272	330	E A 344	A	344	A	A	A	A					
27							E A 376	A	A	A	310	A	524	368	280	252	252	A	A					
28						456	328	258	A	A	A	A	R 432	A	A	362	A	E A 342	A					
29							256		A	A	A	A	A	A	A	A	296	296	278					
30							314	E A 294	A	A	A	A	A	388	398	382	318	A	E A 318					
31						258	278	A	A	A	A	A	E A 364	306	A	E A 330	322	E A 318	E A 338					
	00	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	19	19	13	14	18	19	23	25	24	24	28	22	22					
MED						258	251	244	247	274	U 288	333	335	340	321	284	277	262	E A 280					
U Q						270	290	E A 276	283	296	316	360	378	368	342	308	297	284	E A 308					
L Q						240	240	236	238	266	272	308	316	308	295	260	262	258	262					

MAY 2021 h'F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

MAY 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 242	E B 236	E B 230	E B 230	E B 266	216	204	A	A	A	A	A	A	A	A	A	A	A	A	E A 220	E A 224	E A 260	E A 238	E B 222
2	E B 260	E B 260	E B 288	E B 244	E B 244	220	A	A	A	A	188	A	A	190	198	198	202	A	A	202	206	E A 250	E A 288	E A 288
3	210	E A 282	E B 214	E B 226	E B 264	A	A	A	A	A	196	196	200	A	A	A	A	A	A	E A 236	E A 242	208	E B 220	E B 270
4	E B 270	E B 282	E B 258	E B 242	E B 254	214	210	A	A	A	A	A	A	200	212	200	A	A	A	E A 246	E A 236	A	E A 302	E A 302
5	E A 264	E B 252	E B 232	E B 226	E B 266	A	A	A	A	A	A	A	A	A	A	A	A	200	A	E A 234	E A 226	E A 262	E A 238	E B 248
6	E A 274	E B 252	E B 236	E A 236	206	196	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 246	214	200	E A 250	E A 340
7	E B 276	E B 276	E B 260	E B 244	200	200	208	206	A	A	A	212	A	200	A	A	200	A	A	E A 250	216	208	E A 282	E B 244
8	E B 244	E B 258	E B 228	E B 228	E B 252	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 252	E A 226	E A 266	E A 242	E B 232
9	E B 258	E B 232	E B 212	E B 230	E B 230	210	212	A	A	A	A	A	212	198	198	198	A	A	A	214	214	E B 224	E A 242	E B 230
10	E B 238	E B 256	E A 252	E A 272	E B 236	202	222	A	A	A	A	208	C	A	A	A	A	A	218	E A 268	E A 268	E A 274	E A 230	E B 212
11	E B 232	E B 254	E B 248	E A 276	E B 258	216	204	A	A	A	A	A	A	A	A	A	A	A	A	214	E A 232	E A 258	E A 314	E A 268
12	A	E B 262	E B 250	E B 244	E B 242	208	208	A	A	A	A	192	A	A	192	A	210	210	A	222	E B 222	E B 212	212	E A 278
13	E B 278	E B 300	E B 266	E B 224	E B 208	218	218	A	A	A	A	A	182	A	A	C	196	A	A	A	E A 288	E A 356	232	E A 304
14	E A 308	E A 310	E B 244	E B 242	E B 242	208	208	196	A	A	204	A	A	A	198	A	A	A	A	E A 244	E A 246	E B 224	E A 224	E B 224
15	E A 292	E A 326	E B 250	E B 230	E B 240	212	A	A	200	196	196	196	196	A	E A 210	190	A	A	A	E A 254	E B 254	212	220	E A 238
16	E A 260	E A 268	E B 268	E A 286	E B 240	204	A	A	A	A	A	A	A	A	A	A	202	218	A	E A 252	E A 228	E A 300	E A 300	E A 262
17	E A 320	216	A	A	E A 272	E A 224	A	A	A	A	A	A	A	A	A	A	A	196	198	218	210	222	E A 256	E B 242
18	E B 252	E A 284	E A 298	E B 240	E B 240	208	A	A	A	A	A	A	A	A	A	208	208	206	A	E B 206	E A 224	E A 256	E A 256	E B 256
19	E A 280	E A 298	E B 250	216	E B 232	218	212	192	A	A	A	A	A	A	A	A	210	A	A	E A 230	E A 222	E B 230	E A 230	226
20	E A 218	E A 292	E B 246	E A 266	E A 260	E A 234	A	204	A	A	A	A	A	A	A	204	206	A	A	226	E A 234	E A 254	E A 316	E A 272
21	E B 264	214	E A 290	A	E B 276	220	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 244	A	A	A	A
22	E A 296	E A 296	E A 246	E A 246	E B 228	208	A	A	A	A	A	A	A	A	206	220	A	A	A	E A 226	226	208	E A 312	E A 292
23	A	E A 278	E A 278	E A 278	192	192	A	A	A	A	A	A	192	192	A	A	A	A	A	E A 286	E B 232	E B 222	E B 222	E B 234
24	E B 260	E B 254	E B 226	E B 216	E A 238	206	202	E A 224	A	198	A	198	198	198	A	A	198	202	A	220	E A 220	E A 244	E A 250	E A 266
25	E B 240	E A 262	E A 278	E A 278	E A 260	202	A	202	A	A	A	A	202	202	A	202	212	A	A	A	E A 256	E A 238	E A 238	E B 274
26	E B 246	E B 238	E B 238	E B 238	E A 256	A	220	A	A	A	A	204	A	A	A	A	A	A	A	A	E A 256	E A 226	E A 256	A
27	E A 294	E B 256	E A 256	E A 262	E A 262	212	A	A	A	A	A	A	A	198	A	A	198	A	A	E A 314	E A 274	E A 234	E A 228	A
28	E B 236	E B 216	E B 256	E B 272	E B 306	E A 230	E A 246	A	A	A	A	A	208	A	A	208	A	A	A	A	E A 256	E B 248	A	E A 222
29	E A 320	E A 320	216	E B 242	E B 246	216	A	212	A	A	A	A	A	A	A	A	210	202	210	E A 244	222	E A 306	E B 266	E A 266
30	E A 266	A	E B 266	E B 266	E B 266	E A 224	A	A	A	A	A	A	A	A	E A 268	196	196	A	A	E A 270	E A 226	E A 234	E A 290	A
31	E A 252	E B 258	E B 258	E A 264	E B 230	A	A	A	A	A	A	A	A	210	A	A	210	A	A	E A 274	E A 250	E A 276	E A 236	204
	00	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	31	26	13	7	1	2	4	7	8	9	8	10	14	7	3	27	30	29	29	27
MED	E 260	E B 261	E B 250	E B 242	E B 244	210	209	203	200	197	196	198	199	198	200	201	204	202	210	E A 244	E A 227	E A 238	E A 242	E 256
U Q	E A 279	E A 284	E 266	E A 266	E A 262	E B 218	E A 219	212			200	208	205	201	E A 211	208	210	210	218	E A 252	E A 250	E A 261	E A 285	E A 274
L Q	E B 243	E B 252	E B 236	E B 230	E B 232	206	206	196			192	196	194	195	198	198	198	200	198	220	222	222	E 230	E B 230

MAY 2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

MAY 2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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

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	92	92	92	92	92	B	126	104	96	96	90	90	92	92	92	92	90	90	90	90	90	90	90	90
2	90	90	90	90	B	126	102	102	98	98	102	102	102	122	98	98	154	120	104	104	104	104	104	104
3	88	92	92	92	150	118	100	94	94	94	94	94	G	94	136	112	116	100	100	100	100	100	98	98
4	92	88	88	B	B	138	128	112	94	94	94	94	94	94	136	124	104	100	94	98	98	92	92	92
5	88	88	B	B	B	124	116	104	102	88	92	96	96	84	82	88	88	94	94	94	94	98	98	94
6	94	88	88	86	86	130	120	102	102	98	94	92	92	94	88	92	92	92	92	92	92	92	92	92
7	92	92	92	92	92	122	118	104	98	98	98	98	98	98	94	94	94	94	86	86	92	92	92	92
8	82	82	82	82	82	102	102	102	102	94	88	88	88	138	126	126	106	96	96	96	96	94	88	88
9	88	88	88	88	88	106	102	94	94	92	92	92	90	90	G	108	90	90	90	90	100	100	100	100
10	100	100	92	76	82	114	108	96	96	96	96	96	C	106	98	98	98	86	88	100	100	98	98	98
11	B	98	98	82	100	G	116	110	96	94	94	94	94	94	102	102	100	90	90	90	90	90	90	90
12	90	90	B	90	B	104	114	98	92	92	92	94	94	94	98	98	98	98	92	92	92	92	92	92
13	92	92	92	92	B	118	118	98	98	92	92	92	90	90	90	C	124	106	96	96	96	96	96	92
14	92	92	92	92	92	92	92	118	118	100	98	98	96	102	G	102	104	104	100	100	100	100	100	100
15	100	92	92	106	82	112	104	108	102	114	G	104	G	92	92	G	94	94	88	88	88	88	86	86
16	86	86	86	86	86	114	104	104	104	100	94	94	110	102	102	92	98	118	104	100	100	100	96	90
17	90	90	84	84	84	90	98	94	94	94	94	94	94	94	92	92	92	102	G	102	102	100	100	100
18	94	90	90	94	100	126	104	96	96	94	90	90	90	90	90	90	G	G	90	90	90	90	90	90
19	90	90	90	B	B	110	G	94	88	88	88	88	88	86	86	86	94	100	96	96	96	96	96	90
20	90	90	90	90	90	116	100	100	96	96	90	88	96	112	90	110	100	96	96	90	90	90	90	90
21	86	86	84	84	104	G	104	100	98	98	96	96	94	94	130	102	102	102	92	96	96	96	96	96
22	92	92	86	86	90	114	104	104	96	94	94	94	90	90	118	118	108	98	98	98	98	98	98	98
23	92	92	92	80	B	116	96	96	96	90	84	84	96	96	90	82	82	96	96	96	96	96	96	96
24	96	96	96	94	94	122	116	114	100	114	114	G	118	98	98	98	98	98	94	94	94	94	94	88
25	98	94	94	80	80	120	114	102	98	92	92	92	94	110	94	94	94	94	94	86	88	88	90	96
26	96	B	96	B	86	98	98	98	98	92	92	92	100	100	146	118	100	96	92	92	92	92	92	92
27	88	86	86	86	86	118	100	100	86	86	86	86	86	86	86	86	G	94	86	86	86	86	86	86
28	86	88	88	106	130	114	114	102	96	92	92	92	96	96	108	120	94	86	86	90	96	96	96	96
29	88	88	88	88	88	130	102	102	94	94	90	90	86	86	86	82	82	G	96	92	98	98	104	94
30	94	94	94	94	B	124	102	100	92	90	90	86	86	90	130	G	112	100	94	94	94	94	92	86
31	86	86	86	86	86	96	96	96	88	84	84	84	88	94	94	94	114	104	94	94	94	94	94	94
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	27	23	28	30	31	31	31	30	30	28	31	29	28	29	29	30	31	31	31	31	31
MED	91	90	90	88	88	116	104	102	96	94	92	92	94	94	94	98	98	96	94	94	96	94	94	92
U Q	94	92	92	92	94	123	116	104	98	98	94	94	96	100	113	109	105	101	96	98	98	98	98	96
L Q	88	88	87	84	86	108	100	96	94	92	90	90	90	90	90	92	93	94	90	90	92	92	90	90

MAY 2021 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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		C2	L2	L5	L4	L4	L2	L1	L2	L2	L3	L3	L2	L5	F3	F3	F6	F5	F3
2	F3	F3	F3	F2		C2	L3	L2	L2	L2	L1	L2	L2	C1	L2	L1	H1	C1	L5	F4	F2	F4	F4	F3
3	F5	F2	F2	F1	F1	C5	L6	L5	L5	L4	L2	L1		L2	H1	C2	C2	L3	L3	F5	F8	F4	F3	F3
4	F2	F2	F2			H1	C3	C2	L2	L2	L2	L1	L2	L1	H1	C1	L1	L3	L8	F4	F6	F6	F8	F7
5	F5	F2				C2	C3	L3	L4	L4	L3	L2	L2	L3	L3	L2	L2	L2	L3	F7	F6	F7	F3	F5
6	F6	F2	F2	F4	F4	H2	C3	L3	L2	L3	L3	L3	L3	L2	L4	L3	L3	L3	L3	F8	F5	F3	F5	F5
7	F3	F3	F2	F2	F2	C2	C3	L2	L2	L2	L1	L1	L1	L1	L3	L2	L2	L4	L4	L6	F3	F4	F4	F2
8	F3	F2	F2	F2	F1	L4	L3	L2	L3	L4	L4	L2	L1	CL11	C1	C2	L2	L4	L5	F7	F4	F6	F6	F3
9	F2	F2	F1	F2	F2	L3	L2	L3	L4	L3	L2	L2	L2	L2		C1	L5	L3	L4	F6	F2	F2	F6	F5
10	F2	F2	F3	F3	F1	C4	C4	L3	L3	L2	L2	L1		L1	L3	L4	L3	L4	L5	F5	F5	F4	F3	F2
11		F2	F2	F5	F2		C1	C2	L3	L3	L3	L3	L3	L2	L2	L2	L3	L3	L4	F5	F4	F6	F5	F6
12	F5	F2		F2		L2	C1	L2	L2	L2	L2	L1	L2	L2	L2	L2	L2	L2	L4	F2	F1	F3	F3	F2
13	F2	F2	F2	F1		C2	C1	L3	L3	L2	L2	L2	L1	L2	L2		C1	L6	L6	F8	F5	F8	F5	F8
14	F7	F7	F3	F1	F1	F5	L2	CL22	C1	L2	L1	L1	L3	L2		L2	L3	L4	L5	F5	F4	F2	F3	F1
15	F4	F5	F2	F2	F2	F2	L3	C2	L2	C1		L1		L2	L1		L2	L3	L4	F4	F4	F4	F5	F3
16	F3	F2	F2	F2	F1	F3	L4	L2	L2	L2	L2	L2	C1	L3	L2	L3	L2	C2	L3	F3	F6	F6	F6	F3
17	F8	F5	F6	F4	F6	F1	L3	L4	L3	L3	L2	L3	L2	L2	L5	L4	L4	L2		F2	F3	F3	F4	F2
18	F2	F3	F3	F3	F2	F4	L4	L5	L3	L3	L4	L4	L2	L3	L3	L2			L5	F3	F3	F3	F2	F4
19	F2	F4	F2			F2		L2	L5	L3	L3	L2	L4	L5	L3	L4	L2	L3	L7	F5	F5	F3	F5	F5
20	F5	F5	F2	F2	F2	C1	L3	L3	L3	L3	L2	L3	L1	C1	L2	C1	L3	L3	L5	F4	F5	F3	F5	F4
21	F2	F5	F5	F5	F2		L3	L3	L4	L3	L2	L2	L2	L2	C1	L4	L2	L5	L5	F7	F5	F7	F7	F8
22	F7	F7	F4	F2	F2	C1	L3	L3	L3	L3	L2	L2	L3	L4	C1	C1	L3	L5	L6	F5	F7	F2	F7	F6
23	F5	F3	F4	F2		C1	L3	L4	L2	L3	L4	L3	L1	L2	L2	L4	L2	L4	L6	F7	F2	F2	F2	F1
24	F2	F2	F2	F2	F3	C1	C1	C1	L2	C1	C1		C1	L1	L2	L3	L2	L1	L5	F3	F3	F4	F3	F4
25	F2	F4	F4	F4	F2	C2	C2	L2	L3	L3	L3	L2	L1	C1	L2	L1	L2	L3	L3	F5	F6	F5	F4	F3
26	F2		F2		F2	L3	L3	L4	L5	L3	L2	L1	L2	L3	H1	C3	L4	L4	L7	F6	F6	F7	F4	F9
27	F6	F2	F2	F4	F2	C3	L3	L5	L4	L3	L2	L3	L2	L1	L2	L3		L3	L5	F4	F4	F3	F3	F5
28	F5	F3	F2	F1	F1	C3	C2	L2	L2	L3	L2	L2	L2	L2	L2	C2	L3	L3	L5	F6	F5	F3	F6	F6
29	F8	F4	F2	F2	F1	C1	L2	L2	L4	L3	L3	L4	L4	L3	L3	L3	L3		L3	F5	F3	F4	F3	F7
30	F4	F6	F2	F2		C2	L3	L3	L4	L3	L4	L2	L2	L2	H1		C2	L4	L5	F7	F4	F5	F5	F5
31	F4	F2	F2	F4	F2	L2	L2	L4	L4	L4	L7	L3	L2	L2	L3	L3	C2	L3	L4	F4	F6	F7	F5	F4
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	56	54	49	X 44	42	42														X 69	X 69	X 64	X 62	60
2	X 53	X 50	X 47	X 45	X 43															X 67	X 62	X 58	X 52	X 52
3	X 50	X 47	49	X 43	45															X 83	X 76	X 56	51	X 44
4	X 44	X 42	X 41	41	X 34															A	X 58	59	55	57
5	54	A	A	A	40															X 74	X 61	X 54	X 45	46
6	48	43	44	42	41	38														X 77	X 68	X 53	X 50	X 48
7	52	50	46	46	44	31														X 69	X 73	X 72	X 54	X 53
8	51	47	44	42	42	44														X 84	X 78	X 64	X 57	59
9	58	58	49	42	42															X 79	X 76	X 62	60	X 51
10	52	X 44	43	43	X 38	37														X 77	X 67	A	61	60
11	A	60	A	56	48													X 71		X 65	A	X 55	42	48
12	48	48	47	45	A	42														X 81	X 80	X 76	X 59	X 58
13	X 58	X 53	X 58	62	X 40		57													X 66	X 69	X 75	X 60	61
14	60	60	60	58	58	52	X 58													X 75	A	X 74	A	60
15	60	54	49	53	48	45														X 80	X 89	X 88	A	A
16	55	55	51	49	46	47														X 80	X 77	X 69	X 65	63
17	65	65	64	56	56	46														X 77	X 78	X 55	A	54
18	56	58	52	X 43	X 44	51														X 76	X 68	X 63	X 57	X 56
19	57	56	52	56	X 46															A	X 68	X 70	62	A
20	A	X 43	X 42	44	X 38															X 91	X 92	X 91	X 80	87
21	84	84	X 65	54	X 48	58														X 92	X 66	56	52	48
22	A	A	A	43	A															A	A	A	56	X 55
23	49	49	52	48	39															X 65	A	X 68	59	59
24	59	X 54	X 54	X 46	X 36																X 64	X 61	X 53	59
25	56	56	49	X 43	46															X 75	X 90	X 76	A	A
26	48	50	46	A	43	45														A	A	A	59	A
27	A	49	49	59	57	51														X 71	A	X 88	X 60	X 46
28	44	A	44	44	X 37															A	A	A	A	A
29	48	A	48	A	41															X 65	X 66	X 61	58	60
30	57	50	50	46	42	45														X 75	X 87	A	A	A
31	53	49	49	46	42	42														X 68	X 72	X 69	X 59	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	28	29	16	2											1		25	24	26	25	25
MED	54	50	49	46	42	45	58											X 71		X 75	X 70	X 64	X 58	57
U Q	58	56	52	54	46	49														X 80	X 78	X 74	X 60	60
L Q	49	X 48	46	43	X 40	42														X 68	X 66	X 58	X 52	X 50

MAY 2021 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	F	F	F	38	F	F	46	57	57	A	55	59	A	74	76	83	84	74	72	63	62	58	56	F
2	47	44	41	39	37	34	46	59	61	58	54	58	60	76	78	90	100	101	85	61	56	52	46	46
3	44	41	F	37	F	34	49	59	59	53	A	61	73	62	64	63	A	A	A	77	70	50	F	38
4	38	36	35	F	28	28	52	60	59	A	55	59	65	69	85	90	79	75	80	A	52	F	F	F
5	F	A	A	A	F	30	47	A	A	A	A	59	73	84	86	93	83	79	70	68	55	47	39	F
6	F	F	F	F	F	F	38	47	A	A	A	A	58	60	67	73	74	72	66	71	62	47	44	43
7	F	F	F	F	F	F	42	50	55	A	A	A	54	A	69	A	78	72	68	63	67	65	47	47
8	F	F	F	F	F	F	49	54	A	50	A	50	A	A	54	57	64	66	75	78	72	58	51	F
9	F	F	F	F	F	29	48	A	A	63	59	A	54	56	68	72	76	78	82	73	70	56	F	45
10	F	38	F	F	32	F	45	62	56	54	52	54	56	A	A	A	77	83	79	70	61	A	F	F
11	A	F	A	F	F	36	50	A	A	A	A	A	A	61	82	99	90	65	51	59	A	49	F	F
12	F	F	F	F	A	F	56	55	54	A	A	52	A	A	70	91	85	75	75	75	74	70	53	52
13	52	47	52	F	34	32	F	44	A	A	78	A	A	A	A	56	72	77	69	60	63	69	54	F
14	F	F	F	F	F	F	52	54	51	53	60	56	63	64	64	66	65	70	70	69	A	68	A	F
15	F	F	F	F	F	F	58	54	54	62	60	55	A	A	A	69	71	70	71	74	83	84	A	A
16	F	F	F	F	F	F	57	59	57	50	54	56	58	54	57	68	74	69	72	74	71	63	59	F
17	F	F	F	F	F	F	48	52	A	A	60	64	66	72	83	A	83	83	A	71	72	49	A	F
18	F	F	F	37	38	F	48	60	A	54	59	59	76	87	83	94	104	102	82	70	62	57	51	50
19	F	F	F	F	40	40	50	57	56	57	57	54	A	A	66	75	65	63	63	A	62	64	F	A
20	A	36	36	F	32	32	44	62	62	A	A	A	A	A	A	A	A	88	95	85	86	83	74	F
21	F	F	59	F	42	F	54	57	58	A	A	A	A	A	68	71	63	69	76	86	60	F	F	F
22	A	A	A	F	A	A	45	A	63	A	A	A	A	A	76	81	A	A	A	A	A	A	F	45
23	F	F	F	F	F	28	42	48	50	A	A	A	A	A	A	A	58	53	A	59	A	62	F	F
24	F	48	48	40	30	30	46	56	60	50	A	A	48	54	61	67	66	69	60	56	58	55	47	F
25	F	F	F	37	F	37	48	48	A	A	59	A	53	A	A	57	A	65	64	69	84	70	A	A
26	F	F	F	A	F	F	44	A	A	A	A	A	A	A	A	72	A	A	A	A	A	A	F	A
27	A	F	F	F	F	F	44	56	69	A	A	A	70	91	99	85	71	69	61	65	A	82	54	40
28	F	A	F	F	30	29	A	A	A	A	A	A	A	A	A	48	49	A	A	A	A	A	A	A
29	F	A	F	A	F	33	48	50	A	A	A	50	A	56	A	A	A	60	62	58	60	55	F	F
30	F	F	F	F	F	F	46	A	58	A	53	50	A	A	A	56	58	60	62	69	81	A	A	A
31	F	F	F	F	F	F	44	53	61	52	52	A	A	A	56	56	60	64	64	62	66	62	53	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	4	7	6	6	10	14	29	24	19	12	15	16	15	15	21	25	25	27	25	26	24	24	14	9
MED	46	41	44	38	33	32	48	56	58	54	57	56	60	64	69	72	74	70	70	69	64	60	52	45
U Q	50	47	52	39	38	34	50	59	61	58	60	59	70	76	82	88	83	78	78	74	72	68	54	48
L Q	41	36	36	37	30	29	44	51	55	51	54	53	54	56	64	60	64	65	64	62	60	54	47	42

IONOSPHERIC DATA STATION Yamagawa

MAY 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									L	A	A	A	A	A	A	A	A	A	A					
2								A	A	A	U L 432	A	456	A	440	420	400	384						
3							A	A	A	A	A	A	A	A	A	416	A	A	A					
4							A	A	A	A	476	A	444	A	A	A	A	A	A					
5								A	A	A	A	A	A	444	A	428	408	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7								A	A	A	A	A	A	A	440	A	A	A	A					
8								A	A	A	A	A	A	A	432	424	A	A	A					
9								A	A	A	A	A	A	440	440	U L 432	412	A	A					
10										A	440	U L 464	A	A	A	A	A	A	A					
11								A	A	A	A	A	A	A	A	A	A							
12								A	A	A	A		A	A	440	A	416	A	L					
13								A	A	A	A	A	A	A	A	A	408	396	L					
14						A			U L 352	A	A	A	A	464	448	448	A	A	A					
15						A			A	A	A	A	A	A	A	A	U L 416	416	A					
16									A	432	456	448	436	468	A	420	416	A	L					
17							A	A	A	A	A	A	468	A	A	A	A	A	A					
18							A	A	A	456	A	A	A	A	A	448	432	404						
19									416	448	436	A	A	A	A	436	404	396	L					
20							A	L	L	A	A	A	A	A	A	A	A	A	A					
21								A	A	A	A	A	A	A	456	440	420	384	A					
22						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
23							A	A	452	A	A	A	A	A	A	A	432	U L 420	A					
24								L	A	A	A	A	448	448	444	A	408	388	L					
25								L	A	A	A	A	A	A	A	448	A	A	368					
26							A	A	A	A	A	A	A	A	A	A	A	A	A					
27							A	U L 424	A	A	A	A	A	A	A	A	A	A	U L 368					
28						A	A	A	A	A	A	A	A	A	A	428	A	A	A					
29								A	A	A	A	A	A	U L 452	A	A	A	A	360					
30							A	A	A	A	480	A	A	A	A	A	420	A	A					
31								L	A	U L 448	A	A	A	A	A	436	416	A	352					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	3	4	6	2	5	6	8	13	14	8	4					
MED								U L 424	416	448	448	456	448	450	440	432	416	396	364					
U Q									452	452	476		462	464	446	444	420	410	368					
L Q									U L 352	440	436		440	444	440	422	408	386	356					

MAY 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	U R 196	A	A	A	A	A	A	A	U A 340	U A 320	U A 304	A	A					
2						B	U R 212	A	A	A	A	A	A	A	U A 336	300	U A 284	A	U A 208					
3						B	A	A	A	A	A	A	A	A	A	U A 328	A	A	A					
4						B	A	A	A	A	A	A	A	A	A	U A 328	A	A	A					
5						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
6						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
7						B	U A 192	A	A	A	A	A	A	A	A	A	A	A	A					
8						B	U R 228	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	A					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						B	A	A	A	A	A	A	A	A	A	A	A		A					
12						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						B	B	A	A	A	A	A	A	A	A	A	A	U R 260	A					
14						B		A	A	A	A	A	A	A	U R 384	328	U A 304	U A 268	A					
15						B	U R 228	A	A	A	A	A	A	A	A	A	U A 300	U A 264	A					
16						B	U R 208	A	A	A	A	A	A	U A 348	A	A	A	A	A					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	B	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	U A 196	A	A	A	A	A	A	A	A	U R 340	A	A	U R 280					
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						B	B	A	A	A	A	A	A	A	A	U A 332	U A 304	U A 272	A					
22						B	A	A	A	A	A	A	A	A	A	344	A	A	A					
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
25						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
26							A	A	A	A	A	A	A	A	A	U A 352	A	A	A					
27						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
28						B	A	A	A	A	A	A	A	A	A	A	U A 304	A	A					
29						B	U A 204	A	A	A	A	A	A	A	A	A	A	A	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31						B	U R 212	A	A	A	A	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							9							1	3	9	6	4	2					
MED							U R 208							U A 348	U A 340	U A 328	U A 304	U A 266	U 244					
U Q							U R 220								U R 384	U 342	U A 304	U A 270						
L Q							U A 196								U A 336	324	U A 300	U 262						

MAY 2021 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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 32	J A 31	23	23	23	E B 16	G	J A 35	J A 40	A J 62	A J 60	A J 59	A J 88	A J 51	46	J A 64	J A 49	A J 49	A J 45	A J 44	A J 35	A J 50	A J 41	A J 49
2	J A 54	A J 78	A J 38	A J 32	E B 16	E B 15	G	33	J A 42	A J 49	A J 55	A J 53	A J 45	42	40	37	34	34	28	J A 38	A J 28	26	J A 29	A J 29
3	J A 49	A J 50	A J 63	A J 54	A J 35	A J 22	A J 40	A J 62	A J 59	A J 66	A J 91	A J 59	A J 54	A J 83	J A 160	41	J A 72	A J 124	A J 92	A J 75	A J 108	A J 67	A J 84	A J 38
4	J A 29	24	J A 34	23	22	J A 28	A J 32	A J 62	A J 99	A J 84	A J 86	A J 78	A J 51	A J 106	A J 46	48	A J 49	A J 56	A J 78	A J 74	A J 54	A J 41	A J 42	A J 49
5	J A 44	A J 72	A J 86	A J 54	A J 56	A J 39	A J 51	A J 67	A J 65	A J 85	A J 112	A J 93	A J 83	A J 84	A J 96	A J 43	A J 41	A J 41	A J 28	A J 32	A J 30	A J 48	A J 55	A J 43
6	J A 33	A J 42	A J 40	A J 24	A J 28	A J 22	J A 38	A J 44	A J 83	A J 82	A J 84	A J 79	A J 57	A J 62	A J 60	A J 55	A J 62	A J 65	A J 39	A J 46	A J 51	27	E B 15	A J 40
7	J A 48	A J 38	A J 52	A J 31	E B 16	E B 16	26	J A 44	A J 60	A J 70	A J 86	A J 72	A J 55	A J 84	A J 62	A J 86	A J 45	A J 58	A J 54	A J 52	A J 57	23	E B 15	A J 54
8	J A 36	A J 52	A J 41	A J 42	A J 34	E B 14	G	J A 40	A J 98	A J 86	A J 98	A J 84	A J 96	A J 90	A J 67	A J 52	A J 61	A J 84	A J 71	A J 73	A J 110	A J 47	A J 53	A J 53
9	J A 74	A J 54	A J 36	A J 35	A J 35	A J 40	A J 45	A J 77	A J 59	A J 63	A J 57	A J 70	A J 50	A J 47	A J 53	A J 42	A J 53	A J 49	A J 48	A J 64	A J 55	A J 50	A J 50	A J 36
10	J A 45	23	J A 34	A J 37	A J 50	A J 36	A J 33	A J 51	A J 64	A J 58	A J 45	A J 56	A J 66	A J 146	A J 75	A J 74	A J 54	A J 85	A J 108	A J 50	A J 50	A J 130	A J 34	A J 49
11	J A 52	A J 86	A J 114	23	J A 89	A J 51	A J 47	A J 62	A J 80	A J 69	A J 64	A J 77	A J 70	A J 69	A J 84	A J 71	A J 80	A J 59	A J 39	A J 35	A J 88	A J 44	A J 105	A J 56
12	J A 76	A J 45	A J 53	A J 54	A J 63	A J 34	A J 50	A J 44	A J 55	A J 65	A J 58	A J 87	A J 58	A J 62	A J 102	A J 50	A J 62	A J 71	A J 42	A J 49	A J 78	A J 47	E B 15	25
13	21	J A 35	25	22	20	E B 24	25	J A 40	A J 89	A J 109	A J 67	A J 78	A J 106	A J 109	A J 74	A J 72	A J 38	G	27	J A 32	A J 48	A J 38	A J 110	A J 54
14	J A 53	A J 52	A J 86	A J 26	A J 34	A J 33	A J 27	A J 86	A J 55	A J 53	A J 57	A J 63	A J 68	A J 61	G	J A 47	A J 59	A J 51	A J 84	A J 76	A J 82	A J 35	A J 85	A J 64
15	J A 25	A J 37	A J 26	A J 36	A J 36	A J 31	G	J A 50	A J 47	A J 58	A J 75	A J 71	A J 95	A J 148	A J 128	A J 54	A J 50	A J 42	A J 53	A J 76	A J 48	A J 99	A J 83	A J 79
16	J A 86	A J 53	A J 78	A J 52	A J 43	E B 15	G	J A 41	A J 48	A J 47	A J 44	43	J A 50	43	J A 54	A J 50	A J 44	A J 40	A J 36	A J 38	A J 38	A J 26	A J 54	A J 40
17	J A 53	A J 106	A J 78	A J 66	A J 54	A J 30	A J 50	A J 47	A J 84	A J 100	A J 73	A J 70	A J 52	A J 66	A J 82	A J 123	A J 160	A J 91	A J 135	A J 57	A J 28	A J 53	A J 55	A J 122
18	J A 111	A J 31	A J 24	22	J A 53	A J 42	A J 38	A J 53	A J 66	A J 120	A J 61	A J 132	A J 104	A J 87	A J 46	A J 57	A J 44	A J 42	A J 55	A J 34	A J 28	A J 25	J A 29	A J 62
19	J A 54	A J 54	A J 52	A J 31	A J 40	22	26	32	J A 42	A J 56	A J 67	A J 84	A J 148	A J 173	A J 65	A J 46	A J 47	32	34	J A 86	A J 87	A J 102	A J 54	A J 88
20	J A 66	A J 87	A J 36	A J 63	E B 16	A J 42	A J 45	A J 43	A J 46	A J 109	A J 169	A J 127	A J 111	A J 112	A J 166	A J 112	A J 122	A J 107	A J 106	A J 68	A J 43	A J 51	A J 51	A J 53
21	J A 53	A J 38	A J 38	A J 45	A J 38	22	J A 30	A J 65	A J 54	A J 102	A J 88	A J 90	A J 92	A J 149	A J 43	38	34	34	J A 52	A J 45	25	J A 63	A J 77	A J 67
22	J A 66	A J 107	A J 105	A J 67	A J 69	A J 53	A J 45	A J 68	A J 72	A J 130	A J 73	A J 99	A J 75	A J 72	A J 147	46	J A 93	A J 202	A J 166	A J 206	A J 110	A J 110	A J 53	A J 36
23	J A 89	A J 46	A J 28	22	22	24	J A 47	A J 50	A J 57	A J 107	A J 151	A J 138	A J 110	A J 71	A J 79	A J 101	A J 85	A J 52	A J 91	A J 55	A J 168	A J 52	A J 49	A J 65
24	J A 84	A J 47	23	J A 38	A J 37	A J 26	A J 29	A J 40	A J 73	A J 62	A J 65	A J 92	A J 50	A J 48	A J 52	A J 58	34	J A 40	A J 30	A J 28	A J 32	A J 32	A J 33	A J 35
25	J A 40	A J 36	A J 35	A J 36	A J 26	A J 32	A J 42	33	J A 57	A J 101	A J 95	A J 143	A J 146	A J 108	A J 81	A J 69	A J 72	A J 91	A J 33	A J 59	A J 56	A J 33	A J 111	A J 83
26	J A 67	A J 53	A J 53	A J 56	A J 45	A J 52	A J 38	A J 67	A J 132	A J 101	A J 90	A J 103	A J 71	A J 96	A J 64	A J 57	A J 120	A J 169	A J 175	A J 112	A J 178	A J 146	A J 88	A J 124
27	J A 128	A J 53	A J 44	A J 44	A J 68	A J 27	A J 37	A J 53	A J 72	A J 110	A J 158	A J 113	A J 80	A J 72	A J 58	A J 52	A J 52	A J 42	A J 70	58	J A 124	A J 80	A J 54	A J 40
28	J A 86	A J 68	A J 24	J A 43	A J 44	A J 51	A J 54	A J 54	A J 80	A J 97	A J 78	A J 108	A J 143	A J 142	A J 109	A J 80	A J 66	A J 62	A J 92	A J 110	A J 104	A J 72	A J 82	A J 156
29	J A 110	A J 53	A J 50	A J 52	A J 32	A J 31	26	J A 42	A J 67	A J 86	A J 88	A J 145	A J 112	A J 62	A J 88	A J 84	A J 82	A J 56	A J 66	A J 44	A J 52	A J 53	A J 77	A J 54
30	J A 106	A J 50	A J 51	A J 54	A J 40	A J 33	A J 38	A J 68	A J 56	A J 82	A J 100	A J 82	A J 91	A J 116	A J 92	A J 53	A J 38	A J 57	A J 51	A J 62	A J 87	A J 87	A J 146	A J 84
31	J A 55	A J 55	A J 33	A J 33	A J 23	E B 15	G	J A 36	A J 58	A J 56	A J 60	A J 72	A J 83	A J 148	A J 52	A J 50	A J 44	A J 51	A J 30	A J 34	A J 23	J A 38	A J 32	A J 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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 54	A J 52	A J 40	A J 37	A J 36	A J 30	A J 37	A J 50	A J 60	A J 82	A J 75	A J 82	A J 80	A J 84	A J 67	A J 54	A J 53	A J 56	A J 53	A J 55	A J 54	A J 50	A J 54	A J 53
U Q	J A 84	A J 55	A J 53	A J 54	A J 50	A J 39	A J 45	A J 62	A J 80	A J 101	A J 91	A J 103	A J 104	A J 112	A J 92	A J 72	A J 72	A J 84	A J 91	A J 74	A J 88	A J 72	A J 83	A J 67
L Q	J A 44	A J 38	33	26	23	E B 22	G J 26	A J 40	A J 55	A J 62	A J 60	A J 70	A J 55	A J 62	A J 52	47	J A 44	42	36	J A 38	J A 35	35	J A 34	A J 40

MAY 2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	24	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	32	A A 62	52	52	A A 88	48	45	55	39	42	29	34	30	36	E B 16	32
2	18	E B 16	21	E B 16	E B 16	E B 15	G	28	34	40	37	42	40	41	38	36	33	31	27	24	22	E B 16	22	E B 16
3	19	25	31	24	E B 18	17	33	46	49	47	A A 91	45	44	44	61	38	A A 72	A A 124	A A 92	64	43	32	24	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	44	50	A A 84	38	49	37	46	42	43	42	45	40	A A 74	32	25	25	26
5	26	A A 72	A A 86	A A 54	26	23	25	A A 67	A A 65	A A 85	A A 112	46	48	38	64	35	34	34	24	23	23	23	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	32	35	A A 83	A A 82	A A 84	A A 79	44	53	56	49	54	59	35	40	25	25	E B 15	E B 15
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	32	48	A A 70	A A 86	A A 72	46	A A 84	40	A A 86	40	49	43	26	50	E B 15	E B 15	31
8	24	25	25	26	24	E B 14	G	26	A A 98	46	A A 98	46	A A 96	A A 90	36	36	40	44	61	61	42	40	35	28
9	28	25	25	22	24	E B 16	36	A A 77	A A 59	51	46	A A 70	46	37	38	36	34	41	33	48	24	27	25	25
10	E B 16	E B 16	22	24	E B 16	E B 15	25	39	38	44	38	38	47	A A 146	A A 75	A A 74	44	42	41	44	33	A A 130	E B 18	30
11	A A 52	26	A A 114	E B 16	E B 16	24	40	A A 62	A A 80	A A 69	A A 64	A A 77	A A 70	54	69	65	74	53	24	28	A A 88	23	E B 16	24
12	23	26	26	26	A A 63	E B 16	26	37	48	A A 65	A A 58	38	A A 58	A A 62	40	40	37	40	27	27	27	24	E B 15	21
13	E B 16	23	20	E B 17	E B 17	E B 24	23	32	A A 89	A A 109	56	A A 78	A A 106	A A 109	A A 74	47	30	G	24	27	29	22	24	24
14	24	24	24	E B 15	22	23	23	28	26	46	45	52	59	40	G	37	46	39	47	56	A A 82	24	A A 85	27
15	E B 16	17	E B 16	26	18	24	G	44	40	49	50	50	A A 95	A A 148	A A 128	42	33	31	48	51	36	26	A A 83	A A 79
16	32	25	23	26	E B 16	E B 15	G	25	39	39	36	37	40	39	44	38	34	34	26	23	24	E B 16	23	25
17	25	26	26	26	26	E B 16	42	35	A A 84	A A 100	50	44	42	57	64	A A 123	72	76	A A 135	47	18	E B 16	A A 55	22
18	25	E B 16	E B 15	E B 15	E B 15	E B 15	19	31	A A 66	36	46	54	48	61	43	38	35	26	42	25	22	E B 16	17	42
19	24	E B 16	17	E B 16	E B 15	E B 15	25	29	32	36	36	48	A A 148	A A 173	54	G 34	35	30	G 28	A A 86	27	27	41	A A 88
20	A A 66	23	23	24	E B 16	E B 15	26	29	32	A A 109	A A 169	A A 127	A A 111	A A 112	A A 166	A A 112	A A 122	62	39	30	29	43	26	26
21	24	24	E B 16	26	22	E B 16	25	48	40	A A 102	A A 88	A A 90	A A 92	A A 149	36	36	31	31	40	23	22	24	17	26
22	A A 66	A A 107	A A 105	18	A A 69	A A 53	37	A A 68	57	A A 130	A A 73	A A 99	A A 75	A A 72	45	43	A A 93	A A 202	A A 166	A A 206	A A 110	A A 110	E B 16	24
23	25	E B 16	E B 16	E B 16	E B 16	E B 16	36	39	37	A A 107	A A 151	A A 138	A A 110	A A 71	A A 79	A A 101	36	35	A A 91	30	A A 168	24	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	18	24	26	49	44	A A 65	A A 92	39	37	38	44	30	31	25	22	23	23	24	24
25	E B 16	E B 16	24	24	19	E B 16	24	29	A A 57	A A 101	50	A A 143	44	A A 108	A A 81	38	A A 72	39	26	48	27	18	A A 111	A A 83
26	23	E B 16	24	A A 56	E B 15	27	29	A A 67	A A 132	A A 101	A A 90	A A 103	A A 71	A A 96	A A 64	43	A A 120	A A 169	A A 175	A A 112	A A 178	A A 146	A A 25	A A 124
27	A A 128	25	26	26	25	16	30	30	42	A A 110	A A 158	A A 113	57	66	47	44	45	33	24	50	A A 124	65	34	26
28	E B 15	A A 68	E B 15	E B 15	E B 15	27	A A 54	A A 54	A A 80	A A 97	A A 78	A A 108	A A 143	A A 142	A A 109	35	42	A A 62	A A 92	A A 110	A A 104	A A 72	A A 82	A A 156
29	26	A A 53	26	A A 52	25	18	24	30	A A 67	A A 86	A A 88	44	A A 112	39	A A 88	A A 84	A A 82	49	28	24	24	E B 16	27	16
30	27	E B 16	E B 16	E B 16	E B 16	22	23	A A 68	44	A A 82	40	44	A A 91	A A 116	A A 92	45	35	37	38	55	30	A A 87	A A 146	A A 84
31	26	E B 16	23	E B 16	E B 16	E B 15	G	28	50	38	46	A A 72	A A 83	A A 148	44	40	36	36	26	26	E B 16	E B 16	21	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	24	23	23	18	E B 16	E B 16	25	35	49	A A 70	A A 58	54	A A 59	A A 66	54	43	40	40	38	40	29	24	24	26
U Q	26	25	26	26	24	23	32	A A 48	A A 67	A A 101	A A 88	A A 92	A A 95	A A 112	A A 75	A A 55	A A 72	53	A A 48	A A 56	A A 50	A A 40	A A 35	A A 32
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	G 23	29	39	46	46	45	44	44	40	37	34	33	26	26	24	E B 18	E B 16	E B 22

MAY 2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

MAY 2021 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	F	F	F	318	F	F	327	390	392	A	358	338	A	314	324	310	339	354	356	335	334	318	313	F
2	302	321	301	311	299	321	338	365	357	338	356	322	300	303	290	294	318	336	367	346	333	319	298	296
3	320	303	F	336	F	350	379	371	371	354	A	310	341	321	323	308	A	A	A	328	353	314	F	303
4	277	302	309	F	289	301	384	358	367	A	305	317	312	294	313	333	326	319	344	A	332	F	F	F
5	F	A	A	A	F	348	376	A	A	A	A	314	310	318	307	321	327	342	324	355	343	334	348	F
6	F	F	F	F	F	F	367	370	A	A	A	A	311	312	310	308	329	331	315	329	368	321	310	313
7	F	F	F	F	F	F	355	366	357	A	A	A	305	A	320	A	321	331	318	314	337	348	351	290
8	F	F	F	F	F	F	384	367	A	344	A	324	A	A	305	295	310	312	326	344	347	321	307	F
9	F	F	F	F	F	340	398	A	A	352	366	A	307	297	302	297	303	316	330	341	357	329	F	308
10	F	294	F	F	313	F	363	366	368	372	337	302	313	A	A	A	303	330	336	360	324	A	F	F
11	A	F	A	F	F	317	377	A	A	A	A	A	A	279	306	326	350	345	297	329	A	355	F	F
12	F	F	F	F	A	F	383	365	376	A	A	324	A	A	290	316	336	306	306	317	320	338	317	279
13	292	280	307	F	317	378	F	293	A	A	322	A	A	A	A	282	308	331	348	310	300	325	282	F
14	F	F	F	F	F	F	348	368	355	326	338	291	329	328	328	313	317	329	301	309	A	337	A	F
15	F	F	F	F	F	F	374	388	339	346	366	317	A	A	A	317	328	319	293	296	322	368	A	A
16	F	F	F	F	F	F	359	367	354	377	318	339	328	290	298	322	329	325	323	328	310	326	299	F
17	F	F	F	F	F	F	346	340	A	A	324	315	296	309	300	A	312	324	A	314	352	299	A	F
18	F	F	F	311	323	F	347	350	A	292	323	335	293	312	286	289	301	328	339	338	322	315	296	301
19	F	F	F	F	314	352	352	382	358	342	342	355	A	A	308	307	341	330	330	A	304	309	F	A
20	A	286	293	F	302	294	311	358	365	A	A	A	A	A	A	A	A	294	320	314	325	302	278	F
21	F	F	330	F	313	F	365	345	341	A	A	A	A	A	304	326	314	314	324	345	357	F	F	F
22	A	A	A	F	A	A	370	A	353	A	A	A	A	A	297	308	A	A	A	A	A	A	F	323
23	F	F	F	F	F	347	374	364	312	A	A	A	A	A	A	A	320	312	A	314	A	307	F	F
24	F	310	308	336	307	337	354	367	369	348	A	A	261	282	324	320	324	342	345	320	331	327	299	F
25	F	F	F	323	F	330	406	386	A	A	318	A	301	A	A	293	A	313	311	301	323	352	A	A
26	F	F	F	A	F	F	331	A	A	A	A	A	A	A	A	286	A	A	A	A	A	A	F	A
27	A	F	F	F	F	F	313	297	337	A	A	A	254	282	315	335	323	306	278	284	A	343	369	323
28	F	A	F	F	288	300	A	A	A	A	A	A	A	A	A	281	296	A	A	A	A	A	A	A
29	F	A	F	A	F	349	364	355	A	A	A	298	A	305	A	A	A	304	334	330	319	318	F	F
30	F	F	F	F	F	F	347	A	337	A	370	290	A	A	A	321	311	318	311	310	343	A	A	A
31	F	F	F	F	F	F	340	356	357	336	309	A	A	A	303	296	292	319	321	310	324	343	374	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	4	7	6	6	10	14	29	24	19	12	15	16	15	15	21	25	25	27	25	26	24	24	14	9
MED	297	302	308	320	310	338	363	366	357	345	337	317	307	305	306	308	320	324	324	324	332	326	308	303
U Q	311	310	309	336	314	349	376	369	368	353	358	330	313	314	318	321	328	331	338	338	345	340	348	318
L Q	284	286	301	311	299	317	346	356	341	337	318	306	296	290	299	294	309	313	311	310	322	316	298	293

IONOSPHERIC DATA STATION Yamagawa

MAY 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									L	A	A	A	A	A	A	A	A	A	A					
2								A	A	A	U L 422	A	400	A	388	407	397	387						
3							A	A	A	A	A	A	A	A	A	397	A	A	A					
4							A	A	A	A	385	A	440	A	A	A	A	A	A					
5								A	A	A	A	A	A	440	A	417	399		A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7								A	A	A	A	A	A	A	389	A	A	A	A					
8								A	A	A	A	A	A	A	396	404	A	A	A					
9								A	A	A	A	A	A	424	385	U L 403	400	A	A					
10										A	431	U L 444	A	A	A	A	A	A	A					
11								A	A	A	A	A	A	A	A	A	A							
12								A	A	A	A		A	A	431	A	415	A	L					
13								A	A	A	A	A	A	A	A	A	377	380	L					
14						A			U L 411	A	A	A	A	407	422	387	A	A	A					
15						A			A	A	A	A	A	A	A	A	U L 395	352	A					
16									A	420	407	463	427	399	A	425	388	A	L					
17							A	A	A	A	A	A	381	A	A	A	A	A	A					
18							A	A	A	390	A	A	A	A	A	372	382	366						
19									382	407	401	A	A	A	A	402	418	392	L					
20							A	L	L	A	A	A	A	A	A	A	A	A	A					
21								A	A	A	A	A	A	A	403	393	385	394	A					
22						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
23							A	A	362	A	A	A	A	A	A	A	380	U L 370	A					
24								L	A	A	A	A	344	409	413	A	428	392	L					
25								L	A	A	A	A	A	A	A	392	A	A	369					
26							A	A	A	A	A	A	A	A	A	A	A	A	A					
27							A	U L 361	A	A	A	A	A	A	A	A	A	A	U L 368					
28						A	A	A	A	A	A	A	A	A	A	404	A	A	A					
29								A	A	A	A	A	A	U L 408	A	A	A	A	360					
30							A	A	A	A	380	A	A	A	A	A	384	A	A					
31								L	A	U L 405	A	A	A	A	A	354	413	A	388					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	3	4	6	2	5	6	8	13	14	8	4					
MED								U L 361	382	406	404	454	400	408	400	402	396	384	368					
U Q									U L 411	414	422		434	424	418	406	413	392	378					
L Q									362	398	385		362	407	388	390	384	368	364					

MAY 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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									222	A	E A 300	E A 300	A	298	276	270	254	244	228					
2								224	240	260	264	316	338	294	320	294	264	244						
3							208	E A 242	E A 232	E A 268	A	328	266	284	E A 324	324	A	A	A					
4							222	244	E A 230	A	354	E A 334	308	330	286	256	256	268	238					
5								A	A	A	A	326	294	280	E A 314	256	256	244	244					
6							E A 256	228	A	A	A	A	332	E A 330	E A 330	E A 284	266	E A 290	254					
7								236	E A 248	A	A	A	346	A	292	A	272	248	E A 248					
8								236	A	E A 288	A	E A 332	A	A	348	346	300	E A 300	E A 292					
9								A	A	E A 254	248	A	354	382	316	306	298	270	256					
10										E A 266	292	362	E A 338	A	A	A	292	E A 258	250					
11								A	A	A	A	A	A	E A 422	E A 344	E A 254	E A 254							
12								254	E A 268	A	A		A	A	340	268	254	270	270					
13								236	A	A	278	A	A	A	A	E A 388	294	264	250					
14						E A 262			262	E A 308	282	E A 418	E A 336	306	306	294	294	272	E A 292					
15						E A 262			E A 254	246	E A 252	E A 336	A	A	A	296	282	296	E A 288					
16									250	250	338	304	320	390	352	300	268	268	260					
17							E A 272	E A 254	A	A	E A 322	288	324	E A 316	E A 326	A	E A 326	E A 326	A					
18							234	234	A	358	308	E A 332	314	296	316	316	290	234						
19									266	300	294	E A 294	A	A	E A 318	280	270	274	266					
20							E A 254	254	234	A	A	A	A	A	A	A	A	E A 292	254					
21								E A 282	264	A	A	A	A	A	310	276	306	286	262					
22						A	E A 238	A	E A 272	A	A	A	A	A	314	288	A	A	A					
23							E A 256	E A 240	366	A	A	A	A	A	A	A	314	314	A					
24								240	E A 234	284	A	A	504	400	312	300	300	256	256					
25								234	A	A	E A 296	A	374	A	A	360	A	286	272					
26							E A 256	A	A	A	A	A	A	A	A	330	A	A	A					
27							E A 254	286	264	A	A	A	E A 414	E A 326	272	250	274	282	296					
28						E A 332	A	A	A	A	A	A	A	A	A	430	E A 366	A	A					
29								222	A	A	A	E A 392	A	342	A	A	A	E A 316	266					
30							236	A	270	A	276	400	A	A	A	320	314	290	278					
31								260	234	312	332	A	A	A	364	360	324	276	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						3	11	18	18	12	15	15	15	15	21	25	25	26	22					
MED						E A 262	E A 254	238	244	270	286	E A 332	330	316	313	295	282	270	258					
U Q						E A 332	E A 256	254	266	304	322	362	354	382	335	327	303	E A 290	274					
L Q						E A 262	234	234	E A 234	257	276	304	314	296	308	273	265	258	250					

MAY 2021 h'F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

MAY 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	E A 264	E B 240	E B 246	E B 232	E B 284	E B 284	218	204	200		A	A	A	A	A	A	A	A	A	212	E A 232	E A 260	220	E A 270
2	E A 252	E B 252	E A 282	E B 248	E B 226	E B 236	202		A	A	A	190		A	194		A	E A 226	218	212	212	206	206	208	208	E A 276	E B 276
3	E A 240	E A 284	E A 292	E A 234	E A 280	218		A	A	A	A	A	A	A	A	A	E A 228	A	A	A	E A 284	E A 238	E A 230	E A 254	E B 254
4	E B 268	E B 268	E B 258	E B 206	E B 266	E B 262		A	A	A	A	186		A	186		A	A	A	A	A	E A 228	E A 278	E A 300	E A 288
5	E A 294		A		A	E A 294	E A 240	222		A	A	A	A	A	A	188		A	188	188		A	A	206	214	214	E B 214	E B 300
6	E B 242	E B 270	E A 294	E B 230	E B 222	206		A	A	A	A	A	A	A	A	A	A	A	A	A	E A 236	196	202	E B 246	E B 252
7	E B 238	E B 266	E B 228	E B 252	E B 206	218	206		A	A	A	A	A	A	A	214		A	A	A	A	E A 244	E A 260	204	E B 204	E A 310
8	E A 288	E A 288	E A 288	E A 288	E A 298	E B 246	204		A	A	A	A	A	A	A	204	210		A	A	A	E A 250	E A 246	E A 246	E A 302	E A 318
9	E A 294	E A 294	E A 242	E A 246	E A 274	E B 274	200		A	A	A	A	A	A	198	202	194	200		A	A	E A 226	204	E A 232	E A 252	E A 252
10	232	E B 262	E A 290	E A 298	E B 262	E B 230	212	212	224		A	192	192		A	A	A	A	A	A	A	224	222		A	E B 254	E A 262
11		A	E A 286		A	E B 250	E B 250	E A 250	200		A	A	A	A	A	A	A	A	A	A	E A 252	204	216		A	206	E B 206	E A 298
12	E A 304	E A 290	E A 290	E A 294		A	E B 230	188		A	A	A	A	196		A	A	196		A	206		A	210	228	228	214	E B 214	E B 288
13	E B 288	E A 306	E A 268	214	212	206	214			A	A	A	A	A	A	A	A	204	204	212	212	E A 252	E A 236	E A 250	E A 308				
14	E A 304	E A 256	E A 250	222	E A 254		A	212	212	206		A	A	A	A	204	204	198		A	A	A	E A 294		A	200		A	E A 280
15	E B 244	E A 250	E B 250	E A 250	E A 250		A	208	208		A	A	A	A	A	A	A	A	192	200		A	E A 292	E A 246	E A 198		A		A
16	E A 322	E A 294	E A 294	E A 272	E A 248	E B 264	212	202		A	196	196	196	196	196		A	214	206		A	198	212	220	E B 220	E B 262	E A 250		
17	E A 294	E A 294	220	E A 276	E A 292	204		A	A	A	A	A	A	E A 240	A	A	A	A	A	A	A	E A 274	204	204		A	E A 288		
18	E A 276	224	E B 228	E B 232	E B 214	E B 238		A	A	A	192		A	A	A	A	220	212	194	222	222	222	E B 222	E A 256	E A 334				
19	E A 264	E B 284	E A 276	E B 248	E B 244	202	210	210	206	206	188		A	A	A	A	188	194	194	202		A	E A 244	E A 244	E A 314		A		
20		A	E A 286	E A 284	E A 284	E B 272	E B 252		A	202	196		A	A	A	A	A	A	A	A	A	E A 236	E A 232	E A 268	E A 286	E A 262				
21	E A 268	222	196	E A 278	E A 262	212	198		A	A	A	A	A	A	A	198	198	198	206		A	206	192	E A 272	E A 314	E A 326				
22		A		A	E A 244		A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	218	E A 244				
23	E A 282	E B 270	E B 260	E B 236	E B 206	208		A	A	202		A	A	A	A	A	A	202	E A 222		A	E A 254		A	E A 236	E B 222	E B 262		
24	E B 262	E B 284	216	216	216	228	214	212		A	A	A	A	188	188	188		A	188	206	198	208	220	220	E A 258	E A 298				
25	E B 290	E B 286	E A 252	E A 252	E A 252	212	198	186		A	A	A	A	A	A	A	196		A	A	196	E A 296	E A 240	196		A			
26	E A 302	E B 290	E A 290		A	E B 290	E A 248		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 226		A		
27		A	E A 280	E A 280	E A 250	196	198		A	208		A	A	A	A	A	A	A	A	208	E A 336		A	E A 254	198	E A 230				
28	E B 282		A	E B 240	E B 282	E B 314		A	A	A	A	A	A	A	A	A	202		A	A	A	A	A	A	A	A				
29	E A 288		A	E A 276		A	E A 272	214	200		A	A	A	A	A	204		A	A	A	A	204	204	E A 224	210	E A 274	E B 238		
30	E A 266	E B 266	E B 266	E B 266	E B 248	210		A	A	A	A	210		A	A	A	A	A	208		A	A	E A 308	200		A	A	A		
31	E A 298	E B 270	E A 272	E B 242	E B 236	216	202	188		A	202		A	A	A	A	A	E A 256	202		A	202	E A 228	E B 224	206	198	E A 292		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	28	29	27	19	11	6	4	6	3	5	6	8	13	14	9	12	26	24	26	25	25
MED	E A 282	E 280	E A 267	E 249	E B 252	U 213	206	208	204	199	191	196	191	197	202	200	202	203	204	E A 228	U 211	E 220	E A 252	E A 280
U Q	E A 294	E A 288	E A 286	E A 274	E A 277	E B 248	212	212	206	204	196	196	218	204	209	219	206	E A 217	209	E A 274	E A 239	E A 244	E A 275	E A 299
L Q	E B 262	E 262	E 244	E 233	E B 224	210	200	202	200	194	188	192	187	188	197	195	194	197	200	212	211	206	E B 216	E A 253

MAY 2021 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	110	110	110	A	A	A	A	A	110	110	110	A	A					
2						B	110	110	A	A	A	A	A	A	110	110	110	110	110					
3						B	A	A	A	A	A	A	A	A	A	112	112	A	A					
4						B	A	A	A	A	A	A	A	A	A	112	112	A	A					
5						B	A	A	A	A	A	A	A	A	A	A	112	A	B					
6						B	A	112	A	A	A	A	A	A	A	A	A	A	B					
7						B	112	A	A	A	A	A	A	A	A	A	A	A	A					
8						B	118	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	A					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						B	A	A	A	A	A	A	A	A	A	A	A		A					
12						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						B	B	A	A	A	A	A	A	A	A	A	A	114	114					
14						B		A	A	A	A	A	A	A	112	112	112	112	A					
15						B	116	A	A	A	A	A	A	A	A	A	116	112	A					
16						B	112	A	A	A	A	A	A	112	A	A	A	A	A					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	B	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	112	112	A	A	A	A	A	A	A	112	A	112	112					
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						B	B	A	A	A	A	A	A	A	A	112	112	112	A					
22						B	A	A	A	A	A	A	A	A	A	114	A	A	A					
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
25						B	A	114	A	A	A	A	A	A	A	A	A	A	B					
26							A	A	A	A	A	A	A	A	A	110	A	A	A					
27						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
28						B	A	A	A	A	A	A	A	A	A	A	110	A	A					
29						B	110	A	A	A	A	A	A	A	A	A	A	A	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31						B	122	A	A	A	A	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							9	5	1					1	3	9	9	6	3					
MED							112	112	110					112	110	112	112	112	112					
U Q							117	113							112	112	112	112	114					
L Q							110	110							110	110	110	112	110					

MAY 2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	94	94	94	94	94	B	G	110	110	92	92	92	92	94	126	118	122	100	100	92	92	92	92	92
2	92	92	92	92	B	B	G	110	100	92	90	90	90	138	152	152	124	116	106	106	106	106	100	100
3	100	94	94	92	92	122	110	94	90	90	90	90	90	90	90	140	112	102	98	98	98	98	98	98
4	98	90	96	96	104	86	108	102	100	94	94	92	92	92	92	114	108	100	94	94	94	94	94	94
5	94	88	88	88	88	92	102	96	96	96	96	96	90	90	90	100	118	96	96	96	96	96	96	96
6	90	90	96	96	96	96	104	110	96	96	94	94	94	94	94	94	88	88	92	92	92	92	B	92
7	92	92	114	90	B	B	128	102	102	100	96	96	96	86	86	86	86	86	86	86	96	96	B	96
8	96	96	88	88	88	B	G	102	98	98	98	94	86	86	86	86	100	100	94	94	94	94	94	94
9	88	88	88	88	88	116	98	98	98	90	90	84	84	84	84	84	84	102	102	100	100	100	100	94
10	94	88	88	88	88	88	106	100	100	94	94	94	90	90	90	90	90	90	90	90	90	90	96	96
11	94	94	90	90	90	90	106	106	100	100	100	100	100	100	86	86	86	86	94	94	94	94	94	94
12	94	94	94	94	84	84	84	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	B	94
13	88	88	88	88	88	B	112	100	92	90	90	90	90	86	86	86	92	G	114	100	98	94	94	94
14	94	94	94	94	90	90	90	90	90	90	90	90	90	90	G	114	114	114	104	96	96	96	96	96
15	88	122	122	102	86	86	G	94	94	94	94	94	92	92	92	92	116	112	90	90	90	90	86	86
16	96	96	84	84	86	B	G	94	94	94	94	94	94	112	96	96	96	96	104	104	98	98	98	98
17	98	92	92	92	92	92	98	98	96	90	90	92	92	92	92	92	88	88	82	82	82	106	106	100
18	94	94	76	80	94	122	112	102	100	100	100	90	90	90	90	90	90	90	84	84	84	84	84	92
19	92	92	92	92	92	98	126	108	100	100	98	98	88	88	88	88	88	110	110	96	96	96	96	94
20	94	92	92	86	B	86	92	92	96	94	88	88	88	88	88	88	88	88	88	88	88	88	88	88
21	88	88	88	88	88	88	126	108	100	92	92	92	92	88	88	140	158	124	102	102	96	98	98	98
22	94	84	84	94	94	84	100	100	100	92	92	92	92	92	100	136	102	96	96	96	96	96	96	92
23	92	92	92	92	90	104	98	98	98	98	98	92	90	90	88	84	84	86	86	86	86	96	96	96
24	96	92	92	92	92	92	106	104	98	98	94	90	90	90	90	90	90	90	106	100	96	96	88	88
25	94	94	90	84	84	84	84	114	98	94	94	92	88	82	82	82	86	90	90	96	92	78	86	86
26	92	92	86	86	86	86	98	98	92	92	84	84	84	84	84	112	106	96	96	96	96	96	96	96
27	84	84	84	84	84	108	108	108	96	96	90	90	90	84	84	84	84	84	90	90	90	90	90	90
28	90	90	92	92	92	92	92	92	92	92	92	88	88	88	88	92	112	104	98	98	94	94	94	88
29	88	84	84	78	78	78	112	100	92	92	92	92	92	92	84	84	84	84	84	84	84	84	84	84
30	90	92	92	92	102	112	112	100	100	94	94	94	92	86	86	86	86	86	90	90	90	90	90	90
31	90	90	90	90	90	B	G	90	90	90	90	90	90	90	90	90	96	96	96	106	106	82	82	90
	00	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	28	24	25	31	31	31	31	31	31	31	30	31	31	30	31	31	31	31	28	31
MED	94	92	92	90	90	91	106	100	98	94	94	92	90	90	89	90	92	96	94	94	94	94	94	94
U Q	94	94	94	92	92	101	112	106	100	96	94	94	92	92	92	112	112	102	102	98	96	96	96	96
L Q	90	88	88	88	87	86	98	94	94	92	90	90	90	86	86	86	86	88	90	90	90	90	89	90

IONOSPHERIC DATA STATION Yamagawa

MAY 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	F5	F3	F3	F1	F1			C2	C2	L8	L4	L5	L5	L2	C3	C5	C3	L4	L7	F6	F8	F9	F3	F7
2	F3	F3	F4	F4				C1	L3	L4	L2	L3	L2	HL11	H1	H1	C2	C3	C3	F5	F2	F1	F8	F2
3	F4	F3	F3	F4	F4	C2	L6	L8	L8	L4	L4	L3	L3	L3	L4	H2	C4	L6	L8	F9	F5	F4	F5	F2
4	F2	F4	F3	F1	F2	F2	C3	L6	L8	L5	L3	L3	L2	L2	L2	C2	C3	L5	L8	F5	F7	F4	F9	F3
5	F7	F8	F9	F9	F5	L3	L3	L8	L6	L4	L3	L2	L2	L3	L3	L1	C1	L4	L2	F2	F2	F5	F5	F2
6	F3	F3	F5	F2	F3	L1	L4	C5	L6	L8	L4	L3	L3	L3	L4	L3	L7	L7	L7	F8	F5	F2		F2
7	F2	F2	F1	F3			C2	L7	L7	L5	L4	L5	L5	L4	L3	L3	L5	L6	L9	F3	F8	F2		F4
8	F6	F5	F4	F4	F2			L4	L5	L6	L4	L4	L4	L5	L3	L4	L3	L7	L9	F9	F7	F9	F7	F7
9	F7	F7	F5	FF42	FF32	C2	L8	L8	L6	L7	L5	L5	L3	L3	L3	L2	L3	LL42	LL32	FF83	F2	F6	F3	F6
10	F3	F2	F2	F2	F4	L2	L2	L7	L7	L6	L3	L3	L3	L6	L5	L4	L4	L5	L6	F6	F8	F8	F2	F8
11	F9	F6	F7	F3	F3	L4	L7	L7	L6	L5	L4	L5	L3	L4	L6	L4	L4	L8	L3	F2	F5	F4	F4	F9
12	F8	F4	F6	F5	F8	F4	L3	L5	L5	L5	L4	L2	L3	L3	L2	L2	L3	L4	L3	F3	F5	F4		F4
13	F2	F3	F5	F1	F2		C3	L4	L5	L5	L5	L4	L4	L5	L5	L4	L2		C1	F2	F9	F3	F3	F3
14	F2	F3	F4	F4	F5	L4	L3	L5	L3	L4	L3	L3	L4	L3		C1	C4	C6	L7	F9	F9	F3	F8	F3
15	F2	F2	F2	F2	F4	L2		L6	L3	L5	L4	L4	L3	L4	L4	L3	C3	C2	L6	F6	F4	F2	F9	F8
16	FF25	FF12	F2	F4	F3			L3	L6	L2	L2	L2	L2	C2	L3	L2	L2	L3	L2	F3	F2	F2	F3	F2
17	F8	F5	F5	F3	F4	L3	L6	L5	L8	L5	L4	L3	L2	L3	L6	L7	L7	L7	L6	F9	F6	F4	F8	F4
18	F4	F3	F2	F2	F3	C1	C3	L6	L7	L3	L4	L4	L2	L4	L2	L3	L3	L1	L5	F2	F3	F3	F2	F6
19	F5	F3	F3	F2	F3	L2	H2	C2	L3	L4	L3	L3	L4	L7	L4	L2	L4	CL22	C2	F9	F4	F7	F9	F7
20	F9	F4	F6	F6		F2	L4	L2	L2	L6	L5	L5	L5	L6	L5	L5	L4	L4	L5	F3	F3	F9	F3	F2
21	F2	F3	F1	F5	F3	L1	L2	L7	L4	L4	L5	L5	L4	L4	L2	H1	H1	C2	L8	F4	F2	F5	F7	F9
22	F9	F6	F9	F7	F9	F7	L7	L8	L6	L7	L7	L6	L3	L3	L3	H2	L4	L8	L7	F7	F8	F7	F3	F4
23	F5	F4	F2	F2	F1	F2	L8	L6	L5	L6	L6	L6	L6	L5	L5	L7	L3	L4	L5	F5	F7	F7	F4	F4
24	F2	F6	F3	F3	F3	L3	L2	L5	L7	L4	L3	L4	L3	L2	L2	L2	L2	L4	L1	L3	F5	F3	F6	F2
25	F5	F2	F5	F5	F6	L3	L3	C3	L5	L5	L4	L4	L3	L3	L3	L3	L6	L6	L2	F5	F4	F4	F8	F6
26	F6	F3	F6	F5	F2	F2	L8	L9	L5	L4	L4	L4	L4	L4	L4	C3	L6	L7	L6	F8	F9	F9	F5	F9
27	F5	F5	F4	F3	F4	L1	L6	L3	L5	L5	L6	L7	L4	L5	L5	L4	L6	L6	L5	F9	F8	F9	F4	F4
28	F4	F6	F1	F3	F3	L4	L8	L8	L8	L6	L4	L5	L7	L7	L6	L4	C2	L4	L7	F8	F9	F9	F9	F9
29	F6	F6	F5	F9	F5	F3	C2	L5	L4	L4	L6	L2	L4	L3	L7	L5	L7	L7	L6	F4	F4	F3	F5	F6
30	F3	F2	F2	F2	F1	F2	L2	L8	L8	L7	L3	L3	L3	L5	L4	L6	L2	L5	L6	F9	F8	F8	F7	F6
31	F9	F6	F4	F4	F3			L3	L4	L3	L4	L4	L5	L4	L5	L3	L3	L3	L2	F2	F1	F3	F3	F6
	00	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																								

MAY 2021 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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	59	57	X54	52	44	X40														X88	X74	X67	X55	X54
2	X52	X52	X50	X43	X40	X36															X68	X59	X55	X52
3	X51	X52	X54	X44	X42	X38															X68	X46	A	A
4	A	47	X43	X38	34	X37						A									X59	A	58	53
5	56	56	52	46	X42	A															X65	X53	X48	X46
6	55	55	53	56	42	28															X76	X56	X48	X47
7	X45	X44	47	52	38	27															X79	X74	X58	X50
8	49	58	48	46	X40	X34	57														X75	X57	X52	A
9	59	A	A	A	41	X32															X88	X63	X50	A
10	A	A	A	X41	X34	X35															X58	X52	X51	X48
11	X47	X44	46	A	45	X38															X79	A	A	A
12	X36	X37	X40	43	X35	41															X90	X74	X58	X60
13	X64	62	58	66	41	40	48														X70	X65	X59	X55
14	61	61	58	52	50	46															X91	X70	X50	59
15	58	X53	56	54	X47	X40															X100	X88	X59	X54
16	X43	54	56	57	54	50															X78	X68	61	X60
17	X58	X58	X42	A	X36	39															X72	X61	X56	X54
18	58	58	55	50	X41	X36																X64	X54	X54
19	X52	X52	X51	64	63	58	58														X70	X67	A	A
20	X47	52	52	38	39	X37															91	X90	X84	92
21	82	78	X79	X61	X56	X57															X56	X57	58	60
22	58	58	57	57	50	X37															A	A	A	A
23	58	X50	X48	44	39																70	71	68	67
24	60	59	63	47	A																X62	X56	X52	X50
25	54	53	53	58	X43																X91	X74	X58	X50
26	58	54	54	51	47	39															X99	X83	X60	69
27	69	59	72	64	59	55															X92	X88	X60	X44
28	X41	47	46	46	44																X68	A	A	A
29	52	57	58	57	47																X73	X72	X55	59
30	58	58	57	52	45	40															X89	X60	X54	52
31	47	47	51	43	X37																X73	X77	X48	X39
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	30	24	3													1	29	27	26	24
MED	56	54	53	52	42	X38	57													X88	X74	X67	X56	X54
U Q	58	58	57	57	47	40	58														X90	X74	X59	60
L Q	X48	51	48	44	39	X36	48														X68	X57	X52	X50

MAY 2021 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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

D \ H	00	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 52	F 46	48	F 42	F 37	34	40	75	59	54	A	60	67	80	92	105	112	97	84	82	68	61	49	48
2	46	46	44	37	34	30	40	63	62	59	55	60	72	86	92	105	115	105	83	A	62	53	49	46
3	45	46	48	38	36	32	44	64	54	A	A	A	A	78	65	64	75	81	80	87	62	40	A	A
4	A	F 36	37	32	F 26	31	48	60	60	A	A	A	72	81	95	108	99	105	99	78	53	A	F 44	F 45
5	F 39	F 38	F 38	F 37	36	A	A	A	A	A	56	67	84	91	106	114	121	120	118	97	59	47	42	40
6	F 42	F 46	F 38	F 43	F 33	F 20	38	48	55	A	A	58	60	69	76	83	90	88	88	89	70	50	42	41
7	39	38	F 35	F 38	F 30	F 20	39	52	56	A	54	A	59	72	84	86	90	96	89	80	73	68	52	44
8	F 41	F	F 40	F 38	34	28	F 50	63	56	50	A	A	57	57	59	63	72	84	89	94	69	51	46	A
9	F	A	A	A	F 31	26	41	A	A	A	A	A	A	A	A	A	91	94	94	99	82	57	44	A
10	A	A	A	35	28	28	46	66	54	57	A	A	60	70	70	78	93	94	85	82	52	46	45	42
11	41	38	F	A	F 34	32	44	53	60	A	A	A	64	77	93	104	104	79	70	78	73	A	A	A
12	30	31	R 34	F 32	29	F 28	45	50	53	A	A	A	54	66	85	101	106	102	102	86	84	68	52	54
13	58	F 53	F 49	F 54	F 26	F 30	F 39	50	53	64	74	A	60	60	62	64	83	90	76	65	66	59	53	49
14	F 52	F 53	49	F 40	F 37	F 38	51	56	47	54	A	62	69	73	71	74	72	76	78	83	85	64	44	F 46
15	F 46	46	F 43	F 43	41	34	50	A	A	A	A	A	A	71	80	78	86	A	84	86	94	82	53	48
16	37	F 38	F 42	F 44	F 39	F 38	51	63	56	55	54	56	59	64	72	78	82	77	82	74	72	62	F 52	54
17	52	52	36	A	29	F 31	47	A	A	56	66	73	81	81	88	98	111	104	88	89	65	55	50	48
18	F 47	F 50	F 46	F 41	35	30	45	A	A	A	A	A	84	95	94	107	120	124	104	76	65	58	48	48
19	46	46	45	F 48	F 52	F 46	F 50	51	54	58	61	55	53	54	63	79	83	68	59	57	65	61	A	A
20	41	F 40	F 39	F 28	F 31	31	43	63	A	A	60	67	74	78	77	84	94	105	96	83	F 84	84	78	F 80
21	F 71	F 68	73	55	50	51	54	58	57	59	72	A	A	66	76	82	85	88	90	85	50	51	F 49	F 51
22	F 49	F	F	F 45	F 42	31	37	A	56	62	61	61	68	R 73	83	87	A	78	75	A	A	A	A	A
23	F 49	44	42	F 36	F 32	24	43	A	A	A	64	A	A	A	67	68	71	72	A	J R 62	F 62	F 61	F 52	F 52
24	F 48	F 48	F	F 27	A	A	42	54	A	A	61	50	A	62	68	A	74	74	81	77	56	50	46	44
25	F 46	F 40	F 45	F 44	37	A	42	47	53	A	A	62	70	68	A	68	72	73	75	82	85	68	52	44
26	F 39	F 39	F 38	F 30	F 28	F 30	42	58	A	A	A	58	68	81	82	92	98	102	96	91	93	77	54	F 54
27	F	F 40	F	F 42	F 44	F 30	33	54	70	53	62	83	A	A	114	106	99	J R 100	91	75	86	82	54	38
28	35	F 34	F 32	F 33	F 28	30	42	A	A	A	A	A	A	A	54	A	A	A	A	61	62	A	A	A
29	F 39	F	F 34	F 33	F 34	34	40	46	60	A	A	A	A	64	A	A	A	A	72	64	67	65	49	F 49
30	F	F 43	F 36	F 28	F 30	F 31	47	59	55	59	55	50	53	59	A	61	A	A	A	77	83	54	47	F 40
31	F 39	F 36	F 38	F 32	31	27	40	56	63	52	49	53	55	60	59	67	76	74	68	63	67	71	42	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	26	26	25	28	30	28	30	23	21	14	15	16	22	27	27	27	27	27	28	29	30	27	26	24
MED	F 46	F 44	F 40	F 38	F 34	30	43	56	56	56	61	60	66	71	77	83	90	90	84	82	68	61	49	47
U Q	F 49	F 46	46	F 43	F 37	33	47	63	60	59	64	64	72	80	92	104	104	102	92	86	83	68	52	F 50
L Q	39	F 38	F 36	F 32	F 30	28	40	51	54	54	55	56	59	64	67	68	76	77	77	74	62	51	45	43

MAY 2021 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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										432	A	A	A	A	A	A	A	L 404						
2								L	L	A	U L 436	456	452	A	A	428	416	A	A	A				
3									A	A	A	A	A	A	444	420	416	A	A					
4									A	A	A		A	452	444	436	A	A	A					
5							A	A	A	A	A	A	A	A	A	420	416	404						
6									A	A	A	444	A	A	436	A	A	392						
7									A	A	U L 456	A	A	A	A	U A 432	A	A		A				
8									A	U L 460	A	A	L 448	432	U A 444	432	408	A						
9								A	A	A	A	A	A	A	A	A	A	A	A					
10									L	L 440	A	A	452	A	A	A	A	A	A					
11									A	A	A	A	A	A	A	A		A	348					
12									A	A	A	A	456	A	A	A	A	A	A					
13									U L 404	A	U A 424	A	A	A	A	432	420	400	L					
14								L	A	A	A	A	A	A	448	A	A	A	A					
15								A	A	A	A	A	A	A	A	A	432	A	A					
16									L	428	448	456	460	456	444	U A 460	428	400	L 368					
17								A	A	A	U A 444	A	452	A	A	432	A	A	L 356					
18								A	A	A	A	A	456	456	460	U A 436	A	400	A					
19									U L 412	436	452	460	460	452	A	A	A	A	A					
20								A	A	A	A	452	456	U A 452	U A 452	428	A	396	A					
21									A	U L 432	A	A	A	U A 472	A	A	420	A	A					
22								A	A	A	A	A	A	A	440	A	A	A	A	A				
23								A	A	A	A	A	A	A	440	A	428	A	A					
24						A		L	A	A	U A 440	480	A	U A 460	A	A	A	A	A					
25						A			A	A	A	A	456	A	A	A	420	A	A					
26							L	L	A	A	A	A	A	A	A	A	A	A	368					
27								U L 416	A	A	A	A	A	A	A	A	A	A	L 424					
28								A	A	A	A	A	A	A	U A 444	A	A	A	A					
29									A	A	A	A	A	A	A	A	A	A	A					
30							L	L	A	A	A	U L 448	444	A	A	A	A	A	A					
31								A	A	A	448	A	A	A	A	A	U A 416	412	368					
	00	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	6	8	7	11	8	11	11	11	8	6					
MED								U L 416	U L 408	434	U 446	456	456	454	444	432	420	400	368					
U Q										L 440	450	460	456	U A 458	448	U A 436	428	404	L 368					
L Q										432	U A 438	448	452	452	440	428	416	398	356					

MAY 2021 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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							B	U A 220	276	316	324	336	348	336	352	328	308	268	200					
2							172	216	272	308	324	A	A	A	344	332	296	252	A	A				
3							A	236	272	300	324	336	340	328	340	328	300	272	212	A				
4							A	220	272	296	316		A	A	340	320	300	272	204	A				
5							A	208	264	300	A	320	328	324	324	324	296	256	A	B				
6							172	244	276	284	A	A	344	348	340	324	300	264	A	A				
7							176	216	288	312	324	340	344	348	A	A	288	A	A	A				
8							168	212	260	296	308	A	A	A	A	328	300	268	204	A				
9							A	A	272	A	A	A	A	A	A	A	A	A	A	A				
10							A	216	A	292	U A 300	A	A	356	340	320	296	252	212	A				
11							A	200	284	A	340	332	A	A	A	308	A	A	U A 204	A				
12							A	A	A	A	336	344	348	336	332	332	304	A	A	A				
13							A	200	280	304	324	A	A	A	A	A	A	A	A	A				
14							A	A	A	A	A	A	A	A	A	A	300	268	216	A				
15							A	224	272	304	332	344	348	340	336	328	316	276	212	A				
16							A	228	A	A	A	A	364	A	340	332	A	268	204	A				
17							A	224	288	316	320	A	364	352	332	300	A	A	A	A				
18							A	220	244	300	328	332	A	A	A	A	A	272	A	A	B			
19							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20							A	224	268	A	A	A	A	360	340	A	A	276	200	A				
21							A	A	A	A	A	A	A	316	336	320	A	264	A	A				
22							A	A	284	304	320	324	344	356	352	336	312	272	204	A				
23						A	A	240	284	308	316	316	320	324	332	324	304	280	228	A				
24						A	A	216	268	308	320	A	A	A	336	A	A	268	192	A				
25						A	A	A	284	U A 300	324	A	A	A	A	A	288	264	A	A				
26						B	A	216	A	A	A	A	A	A	A	A	A	268	220	A				
27						B	A	216	276	A	A	A	A	A	A	A	A	A	A	A				
28						B	A	220	280	308	328	328	328	320	308	328	308	268	212	A				
29						B	A	224	280	308	312	316	324	A	A	A	A	A	A	A				
30						B	A	232	A	A	A	A	360	344	A	A	A	A	200	A				
31						A	A	A	A	A	A	A	A	A	A	A	A	252	208	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	23	22	19	19	12	14	15	17	17	16	21	17					
MED							172	220	276	304	324	332	344	340	340	328	300	268	204					
U Q							174	224	284	308	328	338	348	352	340	330	306	272	212					
L Q							170	216	272	300	316	322	328	324	332	320	296	264	202					

MAY 2021 foE (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

MAY 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 110	J A J 50	J A J 22	E B J 16	J A J 19	J A J 38	J A J 19	J A J 51	J A J 50	J A J 47	J A J 66	J A J 54	J A J 118	J A J 66	49	J A 55	J A J 74	J A J 50	J A J 64	J A J 50	J A J 49	J A J 41	J A J 19	J A J 21
2	J A J 22	J A J 30	J A J 25	J A J 29	E B 16	E B 16	G	28	J A J 43	J A J 71	J A J 57	J A J 48	J A J 41	J A J 81	J A 54	44	42	J A 48	J A J 44	J A J 65	J A J 53	J A J 34	18	18
3	E B 16	J A J 33	J A J 29	J A J 59	J A J 50	J A J 53	J A J 41	J A J 71	J A J 65	J A J 125	J A J 128	J A J 183	J A J 210	D D 300	39	J A 61	J A J 49	J A J 67	J A J 120	J A J 129	J A J 77	J A J 161	J A J 73	J A J 52
4	J A J 54	J A J 33	J A J 33	J A J 36	J A J 33	18	J A J 25	J A J 45	J A J 88	J A J 109	J A J 166	J A J 168	J A J 105	J A J 53	45	42	J A J 48	J A J 72	J A J 81	J A J 100	J A J 100	J A J 87	J A J 42	J A J 18
5	J A J 19	J A J 18	J A J 24	J A J 22	J A J 20	J A J 53	J A J 90	J A J 88	J A J 86	J A J 71	J A J 71	J A J 69	J A J 85	J A J 288	54	52	35	30	25	J A 21	J A J 26	J A J 23	J A J 25	J A J 18
6	J A J 18	J A J 29	J A J 22	J A J 26	J A J 18	J A J 18	J A J 28	J A J 38	J A J 47	J A J 62	J A J 85	J A J 80	J A J 66	J A J 54	J A J 54	J A J 67	J A J 52	J A J 44	J A J 64	J A J 54	J A J 32	J A J 17	J A J 52	19
7	E B 16	J A J 26	J A J 28	J A J 26	E B 16	J A J 22	23	28	J A J 45	J A J 74	J A J 62	J A J 68	J A J 54	J A J 50	J A J 55	J A J 64	J A J 42	J A J 62	J A J 34	J A J 29	J A J 25	J A J 26	J A J 42	J A J 40
8	J A J 38	J A J 43	J A J 31	E B J 16	J A E 28	B J 16	J A J 26	J A J 63	J A J 63	J A J 52	J A J 90	J A J 121	J A J 71	J A J 54	J A J 52	J A J 42	40	J A J 70	J A J 84	J A J 40	J A J 54	J A J 74	J A J 102	J A J 65
9	J A J 48	J A J 72	J A J 61	J A J 53	J A J 40	J A J 138	J A J 64	J A J 121	J A J 108	J A J 243	J A J 184	J A J 180	J A J 98	J A J 108	J A J 101	J A J 118	J A J 86	J A J 64	J A J 85	J A J 45	J A J 45	J A J 48	J A J 33	J A J 65
10	J A J 64	J A J 71	J A J 53	J A J 22	J A J 76	J A J 52	J A J 42	J A J 42	J A J 64	J A J 133	J A J 271	J A J 180	J A 42	J A 66	J A J 88	J A J 73	J A J 77	J A J 53	J A J 59	J A J 47	J A J 22	J A J 28	J A J 46	J A J 66
11	J A J 64	J A J 58	J A J 88	J A J 104	J A J 52	J A J 38	J A J 22	J A J 45	J A J 59	J A J 89	J A J 71	J A J 62	J A J 61	J A J 58	J A J 54	J A J 72	J A J 53	J A J 64	J A J 31	J A J 40	J A J 88	J A J 87	J A J 88	J A J 108
12	J A J 53	J A J 52	J A J 52	J A J 22	J A J 34	J A J 30	J A J 34	J A J 48	J A J 60	J A J 83	J A J 89	J A J 86	J A J 111	J A J 76	J A J 90	J A J 59	J A J 68	J A J 78	J A J 107	J A J 63	J A J 53	J A J 40	J A J 54	J A J 52
13	J A J 33	J A J 33	J A J 43	J A J 32	J A J 26	J A 20	J A 26	J A 30	J A J 41	J A J 58	J A J 85	J A J 122	J A J 125	J A J 81	J A J 52	J A J 54	J A J 40	J A J 31	J A J 49	J A J 24	J A J 21	J A J 25	J A J 27	J A J 38
14	J A J 53	J A J 72	J A J 78	J A J 14	J A J 16	J A J 33	J A J 35	J A J 42	J A J 53	J A J 65	J A J 71	J A J 69	J A J 64	J A J 58	J A J 48	J A J 61	J A J 55	J A J 58	J A J 63	J A J 52	J A J 44	J A J 22	J A J 53	J A J 61
15	J A J 41	J A J 31	J A J 24	J A J 24	J A J 18	J A J 21	J A J 39	J A J 152	J A J 103	J A J 83	J A J 108	J A J 131	J A J 168	J A J 84	J A J 149	J A J 61	J A J 50	J A J 141	J A J 51	J A J 48	J A J 52	J A J 51	J A J 31	J A J 22
16	J A J 88	J A J 75	J A J 130	J A J 88	J A J 86	J A J 58	J A J 28	J A J 37	J A J 36	J A J 43	J A J 40	J A J 43	J A J 43	J A J 40	J A J 44	J A 48	J A J 31	J A J 29	J A J 38	J A J 47	J A J 37	J A J 30	J A J 49	J A J 41
17	J A J 33	J A J 77	J A J 90	J A J 87	J A J 42	J A J 39	J A J 27	J A J 85	J A J 106	J A J 56	J A J 89	J A J 88	J A J 139	J A J 66	J A J 80	J A J 78	J A J 115	J A J 60	J A J 33	J A J 50	J A J 84	J A J 31	J A J 23	J A J 62
18	J A J 85	J A J 102	J A J 65	J A J 26	E B 16	J A J 20	J A J 39	J A J 66	J A J 76	J A J 67	J A J 111	J A J 85	J A J 79	J A J 41	J A J 46	J A J 63	J A J 56	J A G 24	J A J 39	J A J 39	J A J 18	J A J 15	J A J 15	J A J 26
19	J A J 33	J A J 27	J A J 42	J A J 27	J A 19	E B 16	J A J 21	J A J 31	J A J 48	J A J 50	J A J 76	J A J 52	J A J 52	J A J 63	J A J 54	J A J 85	J A J 110	J A J 55	J A J 52	J A J 65	J A J 50	J A J 44	J A J 108	J A J 142
20	J A J 103	J A J 65	J A J 66	J A J 52	J A J 29	J A J 48	J A J 32	J A J 62	J A J 108	J A J 143	J A J 107	J A J 58	J A J 49	J A J 54	J A J 52	J A J 152	J A J 140	J A J 45	J A J 72	J A J 52	J A J 64	J A J 52	J A J 50	J A J 129
21	J A J 48	J A J 43	J A J 52	J A J 41	J A J 38	J A J 48	J A J 36	J A J 64	J A J 88	J A J 88	J A J 125	J A J 119	J A J 148	J A J 70	J A J 88	J A J 77	40	J A J 50	J A J 83	J A J 68	J A J 102	J A J 52	J A J 52	J A J 37
22	J A J 38	J A J 42	J A J 71	J A J 45	J A J 35	J A J 36	J A J 32	J A J 79	J A J 53	J A J 78	J A J 92	J A J 85	J A J 72	J A J 137	46	66	J A J 118	J A J 62	J A J 215	J A J 253	J A J 241	J A J 88	J A J 103	J A J 109
23	J A J 52	J A J 48	J A J 65	J A J 20	E B 16	J A J 21	J A J 31	J A J 52	J A J 88	J A J 102	J A J 73	J A J 148	J A J 166	J A J 106	40	46	J A J 71	J A J 122	J A J 128	J A J 130	J A J 83	J A J 66	J A J 36	J A J 52
24	J A J 42	J A J 31	J A J 29	J A J 52	J A J 36	J A J 62	J A J 28	J A 32	J A J 62	J A J 85	J A J 177	J A J 110	J A J 124	J A J 62	J A J 129	J A J 83	J A J 67	J A J 69	J A J 84	J A J 43	J A J 31	J A J 32	J A J 20	J A J 20
25	J A J 23	J A J 25	J A J 32	J A J 50	J A J 41	J A J 50	J A J 42	J A J 33	J A J 52	J A J 78	J A J 180	J A J 101	J A J 82	J A J 84	J A J 92	J A J 64	J A J 53	J A J 54	J A J 85	J A J 80	J A J 70	J A J 46	J A J 22	J A J 27
26	J A J 31	J A J 64	J A J 62	J A J 46	J A J 38	E B 16	J A J 32	J A J 46	J A J 108	J A J 79	J A J 72	J A J 50	J A J 85	J A J 120	J A J 71	50	J A J 52	J A J 54	J A J 38	J A J 32	J A J 50	J A J 53	J A J 86	J A J 88
27	J A J 120	J A J 141	J A J 20	J A 19	J A J 37	J A J 53	J A J 62	J A J 41	J A J 103	J A J 77	J A J 109	J A J 122	J A J 203	J A J 111	J A J 109	J A J 70	J A J 63	J A J 54	J A J 85	J A J 102	J A J 53	J A J 122	J A J 66	J A J 53
28	J A J 47	J A J 26	J A J 52	J A J 52	J A J 21	J A J 22	J A J 38	J A J 62	J A J 79	J A J 92	J A J 108	J A J 133	J A J 218	J A J 168	J A J 46	J A J 89	J A J 77	J A J 88	J A J 166	J A J 168	J A J 125	J A J 109	J A J 85	J A J 138
29	J A J 52	J A J 30	J A J 28	J A J 31	J A J 29	J A J 22	J A J 29	J A J 45	J A J 65	J A J 98	J A J 104	J A J 102	J A J 114	J A J 140	J A J 136	J A J 171	J A J 116	J A J 88	J A J 126	J A J 84	J A J 52	J A J 53	J A J 28	J A J 42
30	J A J 26	J A J 18	J A J 31	J A J 18	J A J 22	J A 18	J A 26	J A J 40	J A J 53	J A J 62	J A J 130	J A J 55	J A 44	J A 48	J A J 61	J A J 54	J A J 80	J A J 63	J A J 78	J A J 47	J A J 121	J A J 142	J A J 87	J A J 125
31	J A J 86	J A J 132	J A J 26	J A J 50	J A J 30	J A J 40	J A J 79	J A J 62	J A J 51	J A J 61	J A J 58	J A J 62	J A J 179	J A J 110	J A J 76	J A J 60	J A J 50	J A J 41	J A J 44	J A J 38	J A J 52	J A J 16	J A J 23	J A J 25
	00	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 J 47	J A J 43	J A J 42	J A J 31	J A J 29	J A J 33	J A J 32	J A J 46	J A J 63	J A J 78	J A J 90	J A J 86	J A J 85	J A J 70	J A J 54	J A J 63	J A J 55	J A J 58	J A J 64	J A J 50	J A J 52	J A J 46	J A J 46	J A J 52
U Q	J A J 64	J A J 71	J A J 65	J A J 52	J A J 38	J A J 50	J A J 39	J A J 64	J A J 88	J A J 92	J A J 125	J A J 122	J A J 139	J A J 110	J A J 88	J A J 77	J A J 77	J A J 69	J A J 85	J A J 80	J A J 83	J A J 74	J A J 73	J A J 66
L Q	J A J 31	J A J 30	J A 28	22	19	20	26	38	J A J 51	J A J 62	J A J 71	J A J 62	J A J 61	J A J 54	48	54	48	J A J 48	J A J 44	J A J 40	J A J 37	J A J 28	J A J 25	J A J 25

MAY 2021 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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	24	E B 16	E B 16	E B 16	E B 16	22	E B 16	46	36	40	A A 66	46	53	55	48	47	54	34	56	28	E B 16	21	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	33	44	39	39	38	47	49	42	40	42	43	A A 65	51	32	E B 16	E B 16
3	E B 16	20	E B 16	E B 16	19	21	35	51	45	A A 125	A A 128	A A 183	A A 210	62	38	40	37	49	39	72	22	29	A A 73	A A 52
4	A A 54	20	E B 16	24	E B 16	E B 16	20	35	50	A A 109	A A 166	A A 168	52	39	40	41	42	50	64	65	E B 16	A A 87	E B 16	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	A A 53	A A 90	A A 88	A A 86	A A 71	46	53	53	68	45	G 20	33	28	23	E B 16	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	35	43	A A 62	A A 85	41	56	50	43	61	49	31	61	51	22	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	43	A A 74	43	A A 68	48	47	51	43	40	42	31	25	21	19	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	44	42	39	A A 90	A A 121	40	40	44	40	34	50	56	32	E B 16	E B 16	34	A A 65
9	26	A A 72	A A 61	A A 53	18	E B 16	30	A A 121	A A 108	A A 243	A A 184	A A 180	A A 98	A A 108	A A 101	A A 118	75	46	51	33	32	20	24	A A 65
10	A A 64	A A 71	A A 53	E B 16	E B 16	E B 16	38	30	35	39	A A 271	A A 180	41	61	62	52	57	42	50	34	20	18	24	E B 16
11	19	24	20	A A 104	E B 16	17	19	36	51	A A 89	A A 71	A A 62	51	53	50	64	48	50	29	36	65	A A 87	A A 88	A A 108
12	20	19	22	E B 16	E B 16	E B 16	24	32	46	A A 83	A A 89	A A 86	41	51	59	49	50	43	40	36	37	21	22	20
13	24	20	26	26	E B 16	E B 16	18	30	34	55	42	A A 122	53	47	46	37	33	27	24	20	E B 16	E B 16	20	E B 16
14	E B 16	37	21	E B 16	E B 16	19	29	25	42	45	A A 71	50	52	49	44	53	47	46	61	50	40	19	28	33
15	E B 16	E B 16	E B 16	20	E B 16	E B 16	28	A A 152	A A 103	A A 83	A A 108	A A 131	A A 168	69	52	49	42	A A 141	48	43	29	21	E B 16	E B 16
16	24	E B 16	E B 16	17	E B 16	E B 16	21	28	30	34	37	40	40	39	40	46	30	28	32	28	E B 16	17	20	27
17	E B 16	E B 16	E B 16	A A 87	E B 16	E B 16	25	A A 85	A A 106	50	44	61	40	62	66	37	46	41	27	22	51	30	18	E B 16
18	E B 16	E B 16	E B 14	E B 16	E B 16	E B 16	30	A A 66	A A 76	A A 67	A A 111	A A 85	41	38	42	44	49	G 19	36	29	E B 16	E B 16	E B 16	E B 16
19	E B 16	E B 16	23	E B 16	E B 16	E B 16	20	28	32	36	40	38	44	40	50	54	44	40	44	47	36	34	A A 108	A A 142
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	37	A A 108	A A 143	53	41	40	45	45	35	78	30	44	40	36	38	20	29
21	E B 16	E B 16	21	E B 16	20	E B 16	30	31	42	37	62	A A 119	A A 148	47	52	49	38	42	80	62	33	22	24	20
22	E B 16	28	18	E B 16	E B 16	22	26	A A 79	47	44	54	54	64	62	37	49	A A 118	62	61	A A 253	A A 241	A A 88	A A 103	A A 109
23	18	E B 16	E B 16	E B 16	E B 16	16	25	A A 52	A A 88	A A 102	51	A A 148	A A 166	A A 106	40	43	40	54	A A 128	45	33	E B 16	28	E B 16
24	32	E B 16	20	E B 16	A A 36	A A 62	25	29	A A 62	A A 85	44	43	A A 124	46	46	A A 83	53	60	55	40	20	19	E B 16	E B 16
25	E B 16	E B 16	E B 16	28	24	A A 50	30	30	44	A A 78	A A 180	52	42	55	A A 92	56	41	42	40	33	34	E B 16	17	19
26	21	E B 16	E B 16	E B 16	E B 16	E B 16	20	37	A A 108	A A 79	A A 72	45	58	57	57	47	43	44	34	26	18	24	21	20
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	32	55	48	46	71	A A 203	A A 111	49	51	50	50	34	34	25	34	34	20
28	23	E B 16	18	22	E B 16	E B 16	33	A A 62	A A 79	A A 92	A A 108	A A 133	A A 218	A A 168	44	A A 89	A A 77	A A 88	A A 166	35	45	A A 109	A A 85	A A 138
29	E B 16	28	24	20	22	E B 16	24	32	41	A A 98	A A 104	A A 102	A A 114	55	A A 136	A A 171	A A 116	A A 88	68	38	37	33	E B 16	23
30	18	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	43	47	49	44	42	47	A A 61	49	A A 80	A A 63	A A 78	44	22	26	17	18
31	E B 16	E B 16	E B 16	20	20	24	34	46	38	48	42	45	49	51	48	46	42	30	29	30	17	E B 16	18	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	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	24	35	45	A A 67	A A 66	62	52	51	48	49	46	43	44	36	25	21	20	20
U Q	23	20	21	20	16	19	30	A A 52	A A 79	A A 89	A A 108	A A 122	A A 114	62	57	54	54	50	61	47	37	33	A A 28	A A 33
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	30	41	44	44	45	41	47	44	42	40	34	34	29	E B 17	E B 16	E B 16	E B 16

MAY 2021 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

IONOSPHERIC DATA STATION Okinawa

MAY 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	F311	F308	333	F345	F303	293	335	385	408	374	A	318	298	303	311	325	346	348	329	318	319	338	308	298
2	295	302	317	341	334	320	348	379	378	367	322	313	277	297	294	307	329	349	340	A	339	311	309	289
3	294	312	345	340	338	323	346	374	350	A	A	A	A	327	316	301	330	341	335	367	390	328	A	A
4	A	F300	326	379	F297	313	389	388	375	A	A	A	295	281	301	328	319	334	355	363	329	A	F283	F303
5	F312	F307	F298	F368	350	A	A	A	A	A	300	302	310	303	308	319	320	329	349	369	336	335	297	307
6	F312	F310	F344	F349	F394	F318	363	373	383	A	A	312	305	283	289	294	313	322	326	345	357	336	303	304
7	306	309	F315	F339	F357	F327	374	384	350	A	314	A	303	292	297	296	306	327	327	319	339	354	327	301
8	F308	F	F329	F323	292	309	369	384	388	317	A	A	306	312	294	280	289	310	334	359	362	310	312	A
9	F	A	A	A	F330	345	372	A	A	A	A	A	A	A	A	A	315	314	328	344	367	358	314	A
10	A	A	A	335	312	318	364	409	375	364	A	A	296	282	280	285	329	337	345	372	355	299	305	292
11	329	302	F	A	F329	354	376	359	375	A	A	A	279	271	308	326	344	314	294	314	366	A	A	A
12	296	300	R303	F316	329	F332	375	377	345	A	A	A	272	271	293	321	327	312	318	320	335	340	302	284
13	283	F273	F310	F328	F339	F360	F338	334	283	309	309	A	313	293	282	273	303	334	339	302	302	306	313	300
14	F301	F322	334	F330	F304	F345	365	381	344	329	A	299	308	315	307	312	295	299	305	318	340	346	308	F295
15	F309	328	F310	F315	358	348	371	A	A	A	A	A	A	A	301	294	299	A	297	293	331	353	328	289
16	279	F296	F293	F325	F325	F354	365	372	357	369	322	305	307	296	302	306	317	311	326	311	324	307	F304	321
17	311	352	355	A	297	F334	379	A	A	306	322	312	300	294	294	304	332	340	323	338	331	320	288	305
18	F289	F325	F322	F317	325	310	345	A	A	A	A	A	294	304	280	285	302	333	347	330	314	331	292	287
19	293	303	292	F321	F335	F350	F355	360	353	332	341	313	288	278	285	318	336	331	318	317	293	347	A	A
20	321	F295	F309	F319	F284	304	347	364	A	A	317	304	289	304	274	287	308	322	333	304	F290	301	280	F269
21	F295	F315	345	310	327	338	365	341	335	276	273	A	A	290	295	309	318	315	333	361	358	275	F278	F305
22	F287	F	F	F310	F337	F357	343	A	338	346	313	284	286	R285	298	301	A	309	313	A	A	A	A	A
23	F299	312	347	F355	F298	339	377	A	A	A	339	A	A	A	291	292	314	309	A	J R333	F319	F318	F303	F303
24	F309	F305	F	F346	A	A	362	355	A	A	354	285	A	305	300	A	308	285	334	317	349	317	299	305
25	F286	F325	F315	F318	337	A	402	364	353	A	A	330	308	300	A	289	290	291	289	314	361	358	325	299
26	F305	F315	F311	F308	F301	F357	347	353	A	A	A	254	271	275	277	291	305	318	324	323	335	364	320	F306
27	F	F269	F	F297	F365	F341	349	324	358	326	289	280	A	A	316	308	292	J R302	284	280	315	358	352	293
28	300	F270	F292	F298	F310	311	330	A	A	A	A	A	A	A	292	A	A	A	A	331	339	A	A	A
29	F281	F	F297	F307	F308	347	352	346	357	A	A	A	A	307	A	A	A	A	316	321	326	354	316	F301
30	F	F300	F305	F312	F321	F338	351	382	368	346	337	317	287	315	A	302	A	A	A	316	363	379	307	F341
31	F304	F323	F295	F314	329	324	344	360	380	362	320	299	309	317	285	272	303	299	310	311	324	357	328	301
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	25	28	30	28	30	23	21	14	15	16	22	26	27	27	27	27	28	29	30	27	26	24
MED	F300	F308	F315	F322	F328	336	362	372	357	339	320	304	297	296	294	301	314	318	326	320	336	336	308	301
U Q	F309	F315	334	F340	F337	348	372	382	376	364	337	313	307	305	302	312	329	334	334	344	357	354	316	305
L Q	F293	F300	F300	F313	F304	318	347	355	348	317	309	292	287	283	285	289	303	309	314	314	324	311	299	292

MAY 2021 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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										385	A	A	A	A	A	A	A	L 381						
2								L	L	A	U L 390	398	423	A	A	A	A	A	A	A				
3									A	A	A	A	A	A	418	415	U A 361	A	A					
4									A	A	A		A	388	409	A	A	A	A					
5							A	A	A	A	A	A	A	A	A	422	393	352						
6									A	A	A	432	A	A	A	A	A	362						
7									A	A	A	A	A	A	A	A	A	A		A				
8									A	U L 389	A	A	L 412	424	A	375	393	A						
9								A	A	A	A	A	A	A	A	A	A	A	A					
10									L	L 396	A	A	412	A	A	A	A	A	A					
11									A	A	A	A	A	A	A	A		A	369					
12									A	A	A	A	406	A	A	A	A	A	A					
13									U L 385	A	A	A	A	A	A	403	368	359	L					
14								L	A	A	A	A	A	A	A	A	A	A	A					
15								A	A	A	A	A	A	A	A	A	A	A	A					
16									L	406	423	427	420	411	412	A	388	375	L 375					
17								A	A	A	A	A	424	A	A	387	A	A	L 371					
18								A	A	A	A	A	413	399	A 399	A	A	370	A					
19									U L 401	391	378	401	A 412	411	A	A	A	A	A					
20								A	A	A	A	391	414	A	A	413	A	367	A					
21									A	U L 382	A	A	A	A	A	A	U A 378	A	A					
22								A	A	A	A	A	A	A	413	A	A	A	A	A				
23								A	A	A	A	A	A	A	411	A	A	A	A					
24						A		L	A	A	A	U A 362	A	A	A	A	A	A	A					
25						A			A	A	A	A	385	A	A	A	A	A	A					
26							L	L	A	A	A	A	A	A	A	A	A	A	A					
27								U L 363	A	A	A	A	A	A	A	A	A	A	L 331					
28								A	A	A	A	A	A	A	A	A	A	A	A					
29									A	A	A	A	A	A	A	A	A	A	A					
30							L	L	A	A	A	A	411	A	A	A	A	A	A					
31								A	A	A	A	A	A	A	A	A	A	363	367					
	00	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	6	3	6	11	5	6	6	6	8	5					
MED								U L 363	U L 393	390	390	400	412	411	412	408	383	365	L 369					
U Q										396	423	427	420	418	413	415	393	372	L 373					
L Q										385	378	391	411	394	409	387	368	360	349					

MAY 2021 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										244	A	324	324	318	296	274	256	246						
2								226	222	240	298	326	370	332	330	298	260	238	232	A				
3									250	A	A	A	A	284	296	334	280	272	258					
4									232	A	A		322	334	306	270	272	262	238					
5							A	A	A	A	366	336	310	332	288	282	270	258						
6									230	A	A	338	E A 372	354	336	332	288	266						
7									266	A	322	A	356	334	308	312	300	272		232				
8									238	338	A	A	352	350	372	370	338	302						
9								A	A	A	A	A	A	A	A	A	A 316	282	262					
10									232	260	A	A	360	E A 378	E A 396	348	272	258	242					
11									238	A	A	A	390	374	310	278		254	280					
12									288	A	A	A	448	392	336	284	270	274	256					
13									338	340	316	A	A 340	370	376	392	310	264	236					
14								226	E A 284	E A 298	A	340	316	298	316	310	310	306	304					
15								A	A	A	A	A	A	E A 466	312	316	316	A	306					
16									222	242	334	368	352	358	320	308	284	286	260					
17								A	A	E A 344	298	316	310	344	332	312	268	244	244					
18								A	A	A	A	A	320	294	354	344	292	244	226					
19									256	298	290	350	412	434	378	300	270	264	290					
20								248	A	A	330	330	326	312	350	336	326	272	246					
21									276	332	E A 402	A	A	356	328	306	286	278	302					
22								A	E A 268	272	E A 338	E A 392	E A 418	E A 364	320	310	A	304	296	A				
23								A	A	A	282	A	A	A	350	336	302	296	A					
24						A		256	A	A	272	426	A	342	332	A	304	350						
25						A			260	A	A	E A 300	318	346	A	350	334	312	308					
26							274	262	A	A	A	402	E A 404	348	356	320	300	282	262					
27								310	244	E A 298	382	E A 384	A	A	280	280	306	282	302					
28								A	A	A	A	A	A	A	392	A	A	A	A					
29									264	A	A	A	A	338	A	A	A	A	E A 340					
30							254	232	258	272	E A 304	354	406	336	A	342	A	A	A					
31								256	240	E A 276	350	382	370	322	384	380	304	298	280					
	00	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	8	20	14	15	16	22	27	27	27	26	27	22	1				
MED							264	252	248	U 276	313	341	U 344	340	331	312	296	272	262	232				
U Q								259	267	332	350	383	390	364	356	342	310	296	302					
L Q								229	235	260	298	328	322	332	310	298	272	258	244					

MAY 2021 h'F2 (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 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	E A 248	260	238	224	262	E A 352	230	214	216	A	A	A	A	A	A	A	A	242	256	220	212	220	238	268
2	262	268	252	222	240	242	224	216	218	A	E A 232	208	192	A	A	A	A	A	A	A	E A 272	254	236	284
3	286	278	226	206	232	E A 246	240	230	A	A	A	A	A	A	200	E A 228	E A 266	A	A	240	198	E A 274	A	A
4	A	E A 302	250	E A 228	302	258	206	214	A	A	A	A	A	224	A 210	A	A	A	A	E A 238	226	A	312	Q 278
5	Q 274	Q 268	230	206	222	A	A	A	A	A	A	A	A	A	A	174	178	192	226	208	202	202	248	270
6	Q 266	284	256	214	188	294	222	226	A	A	A	196	A	A	A	A	A	224	272	234	200	202	266	276
7	274	260	274	Q 222	198	284	214	208	A	A	E A 276	A	A	A	A	A	A	A	246	A	214	208	222	250
8	Q 264	248	Q 254	228	272	262	220	218	A	210	A	A	198	214	A	E A 242	218	A	246	218	184	218	E A 290	A
9	E A 338	A	A	A	196	202	206	A	A	A	A	A	A	A	A	A	A	A	A	232	210	206	252	A
10	A	A	A	236	260	280	E A 252	202	196	224	A	A	206	A	A	A	A	A	A	210	198	270	282	296
11	258	E A 326	E A 306	A	256	202	212	252	A	A	A	A	A	A	A	A	246	A	238	244	E A 250	A	A	A
12	E A 332	E A 324	E A 306	234	220	242	218	202	A	A	A	A	212	A	A	A	A	A	A	234	230	214	240	294
13	320	330	270	222	226	210	214	242	226	A	A	A	A	A	A	200	224	208	228	238	246	230	248	276
14	276	E A 284	240	210	248	256	232	196	A	A	A	A	A	A	A	A	A	A	A	266	234	192	E A 278	E A 314
15	288	258	256	242	216	230	212	A	A	A	A	A	A	A	A	A	A	A	A	290	232	208	202	268
16	338	290	286	252	246	246	214	226	192	188	184	184	184	192	204	A	190	206	246	238	226	218	262	E A 264
17	258	214	200	A	260	220	208	A	A	A	A	A	190	A	A	238	A	A	214	228	E A 270	250	278	268
18	Q 300	232	236	240	226	260	236	A	A	A	A	A	202	212	E A 232	A	A	212	A	214	218	210	268	288
19	276	280	282	258	226	208	220	208	198	196	228	204	E A 236	206	A	A	A	A	A	E A 300	276	224	A	A
20	258	320	270	270	282	280	224	A	A	A	A	228	204	A	A	180	A	194	A	258	294	268	272	314
21	274	260	224	232	228	218	220	230	A	224	A	A	A	A	A	A	E A 246	A	A	232	224	280	326	288
22	276	E A 358	264	240	222	E A 228	E A 240	A	A	A	A	A	A	A	186	A	A	A	A	A	A	A	A	A
23	314	248	234	204	232	218	222	A	A	A	A	A	A	A	216	A	E A 296	A	A	E A 286	E A 240	246	E A 300	272
24	E A 310	244	222	206	A	A	222	208	A	A	A	E A 256	A	A	A	A	A	A	254	230	202	228	248	272
25	294	276	276	262	242	A	200	196	A	A	A	A	238	A	A	A	A	A	A	268	216	206	214	256
26	300	278	292	Q 272	290	244	222	A	A	A	A	A	A	A	A	A	A	A	A	242	228	202	230	254
27	292	336	Q 284	260	208	202	E A 236	226	A	A	A	A	A	A	A	A	A	A	E A 276	332	254	218	226	E A 296
28	308	324	310	302	286	264	264	A	A	A	A	A	A	A	A	A	A	A	A	258	250	A	A	A
29	306	286	308	282	E A 288	222	216	216	A	A	A	A	A	A	A	A	A	A	A	E A 248	246	224	228	266
30	246	272	286	260	274	230	230	220	A	A	A	E A 332	228	A	A	A	A	A	A	260	212	208	238	248
31	260	284	270	278	258	E A 310	E A 260	A	A	A	E A 232	A	A	A	A	A	A	188	240	264	238	206	200	266
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	30	28	30	20	6	5	5	7	11	5	6	6	8	8	12	28	30	27	26	24
MED	275	273	260	235	238	236	220	216	207	210	E A 232	202	203	212	204	U 196	U 210	207	244	238	222	218	244	270
U Q	307	311	285	260	262	263	232	226	218	224	E A 254	E A 256	228	219	216	238	E A 256	218	255	262	246	246	278	288
L Q	263	260	237	222	222	219	214	208	196	192	206	196	192	199	200	180	204	193	233	231	212	206	230	266

MAY 2021 h'F (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 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							B	100	102	102	102	102	102	102	102	102	102	104	104					
2							126	100	100	100	100	A	A	A	100	100	102	104	A	A				
3							A	104	104	102	102	102	102	102	100	102	102	102	102	A				
4							A	100	100	98	98		A	A	112	106	104	104	104	A				
5							A	104	102	102	A	102	102	102	102	102	102	106	A	B				
6							118	110	110	102	A	A	102	102	102	102	102	104	A	A				
7							134	108	104	104	102	102	102	102	A	A	100	A	A	A				
8							112	100	100	100	100	A	A	A	A	102	102	104	104	A				
9							A	A	102	A	A	A	A	A	A	A	A	A	A	A				
10							A	102	A	100	100	A	A	100	100	100	104	104	106	A				
11							A	104	104	A	104	102	A	A	A	102	A	A	102	A				
12							A	A	A	A	104	104	104	104	104	104	104	A	A	A				
13							A	104	104	102	102	A	A	A	A	A	A	A	A	A				
14							A	A	A	A	A	A	A	A	A	A	102	102	102	A				
15							A	104	104	102	102	102	102	102	102	102	102	104	104	A				
16							A	104	A	A	A	A	104	A	104	104	A	104	104	A				
17							A	104	104	104	102	A	102	102	102	102	A	A	A	A				
18							A	102	102	102	102	102	A	A	A	A	A	102	A	A	B			
19							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20							A	102	102	A	A	A	A	102	102	A	A	102	102	A				
21							A	A	A	A	A	A	A	102	102	102	A	102	A	A				
22							A	A	106	106	106	106	104	104	104	104	104	104	104	A				
23						A	A	104	104	104	104	104	102	102	102	104	106	106	108	A				
24						A	A	102	102	102	102	A	A	A	102	A	A	A	102	A				
25						A	A	A	102	100	100	A	A	A	A	A	100	100	A	A				
26						B	A	102	A	A	A	A	A	A	A	A	A	102	108	A				
27						B	A	106	102	A	A	A	A	A	A	A	A	A	A	A				
28						B	A	102	102	102	102	102	102	102	102	102	102	102	106	A				
29						B	A	108	102	102	102	102	102	A	A	A	A	A	A	A				
30						B	A	104	A	A	A	A	106	102	A	A	A	A	100	A				
31						A	A	A	A	A	A	A	A	A	A	A	A	100	100	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	23	22	19	19	12	14	15	17	17	16	20	17					
MED							122	104	102	102	102	102	102	102	102	102	102	104	104					
U Q							130	104	104	102	102	103	104	102	103	104	104	104	105					
L Q							115	102	102	100	100	102	102	102	102	102	102	102	102					

MAY 2021 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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	98	94	94	B	92	90	120	108	108	108	104	106	100	102	146	130	110	124	104	96	96	96	92	94
2	104	94	92	94	B	B	G	104	106	102	102	102	104	96	130	134	128	116	112	108	106	104	88	100
3	B	96	96	98	96	100	110	108	106	100	100	100	96	108	120	114	116	112	102	102	102	114	96	96
4	96	112	96	90	94	110	118	110	102	102	100	96	104	94	128	134	128	110	106	102	98	98	98	122
5	114	92	88	88	86	116	112	104	102	100	100	100	100	98	104	100	110	112	100	100	98	96	96	92
6	88	88	88	88	92	92	124	112	108	102	100	104	102	110	112	100	104	112	98	96	94	88	100	86
7	B	116	98	102	B	98	132	134	108	102	104	104	104	104	100	98	128	122	114	92	92	90	106	104
8	100	98	98	B	100	B	116	106	102	102	96	94	96	96	110	126	128	108	100	100	102	100	96	96
9	96	92	92	92	92	110	106	100	100	98	94	96	98	94	90	88	90	90	88	90	90	100	100	98
10	98	92	94	94	102	98	112	110	106	106	98	96	102	110	110	104	102	108	104	102	98	98	102	118
11	102	98	100	100	98	98	98	124	114	110	108	104	120	102	104	100	100	100	116	100	96	96	96	108
12	98	94	94	94	94	94	96	96	108	108	102	102	106	104	104	104	102	102	98	96	96	94	94	94
13	90	90	90	88	88	88	88	128	108	104	98	94	94	96	96	94	94	96	96	110	92	90	86	96
14	100	96	96	94	98	94	114	92	112	94	96	102	100	98	98	128	124	114	104	100	100	100	96	96
15	102	96	114	90	86	84	114	112	102	102	102	102	102	102	102	102	124	106	108	104	94	90	100	94
16	104	104	102	102	100	100	112	112	118	116	128	114	118	164	114	106	98	140	106	102	102	102	100	100
17	100	98	104	98	102	100	112	104	104	104	100	98	106	102	96	100	96	96	94	94	92	86	88	110
18	104	106	106	102	B	124	116	108	108	104	102	98	98	106	102	98	94	94	92	90	90	90	88	100
19	96	112	102	106	84	B	140	136	104	102	96	98	98	94	94	94	94	94	94	94	92	100	100	120
20	98	98	96	94	98	120	110	102	102	100	100	102	102	114	112	128	102	118	104	104	94	92	94	94
21	100	100	94	100	100	100	96	94	94	94	94	94	94	98	104	104	152	122	112	106	114	116	106	92
22	98	94	98	94	94	94	116	106	106	102	102	100	100	110	118	126	110	106	100	100	106	110	106	102
23	98	96	90	98	B	110	112	108	104	100	100	100	98	98	148	122	124	108	104	102	108	110	102	102
24	100	96	96	114	94	120	116	114	102	102	104	98	98	98	106	106	104	104	100	100	90	102	100	86
25	90	94	92	92	92	92	92	112	104	102	102	96	98	114	102	104	104	104	98	96	94	90	90	84
26	86	92	84	96	90	B	114	104	100	96	96	96	96	92	120	120	116	110	106	100	96	96	96	96
27	100	100	88	88	94	116	106	104	100	100	100	94	94	92	96	92	92	92	104	102	98	104	100	98
28	92	90	102	94	96	114	110	104	102	100	96	96	96	96	98	114	112	108	102	102	102	100	96	94
29	90	90	86	84	84	86	126	112	102	98	98	96	96	96	94	92	92	92	96	94	92	92	100	100
30	90	92	86	86	98	90	114	110	98	96	96	98	156	128	120	118	90	106	102	100	110	102	102	108
31	114	108	96	96	94	94	106	98	94	94	100	96	96	94	98	98	100	116	102	108	104	92	90	86
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	31	29	27	27	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	98	96	96	94	94	98	112	108	104	102	100	98	100	98	104	104	104	108	102	100	96	98	96	96
U Q	101	100	98	99	98	110	116	112	108	104	102	102	104	108	118	122	124	114	106	102	102	102	100	102
L Q	94	92	90	90	92	92	106	104	102	100	96	96	96	96	98	98	96	100	98	96	92	92	94	94

IONOSPHERIC DATA STATION Okinawa

MAY 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	F2	F2	F2		F2	F4	CL12	C7	C3	C2	C2	C4	C4	C3	H1	H2	C2	C2	C6	L4	F4	F3	F1	F1
2	F3	F3	F3	F1				C2	C2	C3	C2	CH11	C1	L3	H2	H2	C1	C4	C5	C8	FF84	FF82	F1	F1
3		F4	F2	F4	F4	F6	C7	C6	C5	C6	C6	C9	L8	CQ51	C1	C2	C2	C3	C4	C8	F4	FF25	F9	F9
4	F5	FF13	F4	F4	F3	F1	C4	C6	C4	FQ41	C6	LQ51	CL32	LH11	CL11	H1	C2	C6	C8	C6	FQ31	F4	F2	F1
5	F1	F2	F4	F3	F2	F5	C8	C7	C9	C7	C3	C4	C4	L3	C2	L1	C1	C1	C2	C1	F4	F3	F2	F2
6	F2	F2	F2	F2	F1	F1	C3	C6	C4	C4	L4	C2	C4	C2	C1	C3	C3	C3	L7	L9	F4	F2	FF22	F1
7		F2	F3	F1		F1	H2	H1	C3	C6	C3	C3	C3	C2	C2	L2	CL11	CL34	CL32	L4	F9	F5	F3	F2
8	FQ11	FQ31	F3		F1		C5	C4	C3	C3	L3	LQ41	LQ21		CHL11	C1	C3	C4	C5	C7	F3	F3	F4	F8
9	F7	FQ61	F6	F6	F4	FF23	C7	C9	C9	L5	L5	L3	L3	LQ41	L7	L9	L8	L4	LQ51	L4	F4	FF44	F9	F6
10	F9	F5	F5	F2	F2	F2	C8	C3	C3	C2	LQ61	L7	C1	C3	C5	C4	C4	C2	C3	C5	F1	F3	F2	FF11
11	F2	F7	F3	F3	F3	F2	L1	C3	C4	C5	C3	C3	CL21	C2	C2	C4	C3	C5	C3	LC81	F5	FQ41	F4	F5
12	F6	F3	F6	F4	F3	F3	L3	LH33	CL43	CL61	C5	C5	C1	C3	C4	C3	C4	C3	L4	L4	F8	F7	F4	F5
13	F4	F4	F6	F6	F2	F1	LH12	C2	C1	C4	L3	L6	L4	LH31	LH22	L2	L1	L1	L2	CL21	F1	F3	F3	F3
14	F3	F5	F5	F1	F1	F3	CL26	L4	CL33	LQ31	L3	C3	C4	L3	LH22	CL31	C4	C3	C8	C6	F9	F3	F4	F3
15	F2	F4	FF12	F3	F1	F3	C4	C8	C8	C5	C6	C8	C8	C4	C3	C2	C2	C4	C8	C9	F4	F6	F3	F2
16	F6	F2	FF32	FF24	F2	F2	C4	C3	C1	C1	CL11	C1	CL11	HCL11	C1	C1	L1	H1	C4	C4	F3	F5	F3	F9
17	F3	F4	F1	F4	F2	F1	C4	C8	C5	C4	C3	L3	C1	C4	L3	L2	L5	L3	L5	L4	F5	F5	F3	FF12
18	F2	F3	F3	F3		F1	C3	C7	C8	C5	C5	L5	L2	C1	C2	L3	L4	L1	L3	L2	L3	F1	F2	F4
19	F3	FF32	F4	F3	F1		H1	H1	CQ11	CQ21	L2	L2	L2	L2	L3	L5	LQ31	LQ41	L6	LQ61	F4	FF94	FF63	FF38
20	F4	F5	F4	F5	F5	FF22	C2	C5	C7	C4	C3	C2	C1	C2	C2	C1	CQ31	C2	C5	CL33	FQ41	FQ31	FF24	F3
21	F2	F3	F4	F2	F7	F4	L6	L3	L3	L3	L5	L7	L5	L3	C4	C4	HL21	C2	CL73	CL45	FF38	FF33	F3	FF23
22	F3	F6	F5	F2	F3	F6	CL32	C8	C6	C3	C5	C7	C3	C3	C1	C2	C6	C4	C5	C7	F5	F8	F8	F6
23	F4	FQ51	FQ21	F1		C2	C5	C7	C6	C6	C4	C7	L6	L8	H1	C2	C3	C4	C6	C8	FQ51	F5	F9	F9
24	F6	F3	F4	FF14	F6	C7	C3	C2	C6	C6	C3	LQ31	L5	L3	C2	C4	C3	C7	C8	C8	F4	F3	F2	F2
25	F2	F3	F4	FF22	FF23	L3	L4	C3	C3	C6	C3	L4	LQ31	CL32	C4	C4	C3	C4	L5	L5	F3	F4	F4	F4
26	F8	F3	F3	F2	F2		C2	C3	C7	L4	L5	L2	L5	L4	CL22	CL21	C3	C5	C3	C3	F7	F5	F5	F4
27	FF33	F4	F2	F1	F3	C2	C7	C4	C4	C5	C3	LQ41	LQ61	LQ61	L3	L4	L5	L7	CL33	CL43	FF35	FF32	F5	F3
28	F4	F2	FF33	F3	F4	C1	C5	C8	C7	C8	L7	L9	L9	L6	L2	C6	C5	C7	C7	C5	F7	F4	F5	F5
29	F4	F5	F6	F5	F5	L4	CL32	C3	C3	L6	L6	L4	L4	LQ31	LQ91	LQ61	LQ81	L8	L7	L9	F6	F3	F3	FF23
30	F3	F1	F3	F1	FF22	L1	C2	C3	L5	L4	LQ31	L2	H1	C2	C3	CL22	L9	CL74	C9	L3	FF13	F3	F3	FF22
31	FF12	FF32	F2	F3	F3	L7	CL25	L6	L3	L4	C2	L2	L4	L4	L3	L3	L3	C2	C2	C5	FF43	F1	F3	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																								

MAY 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

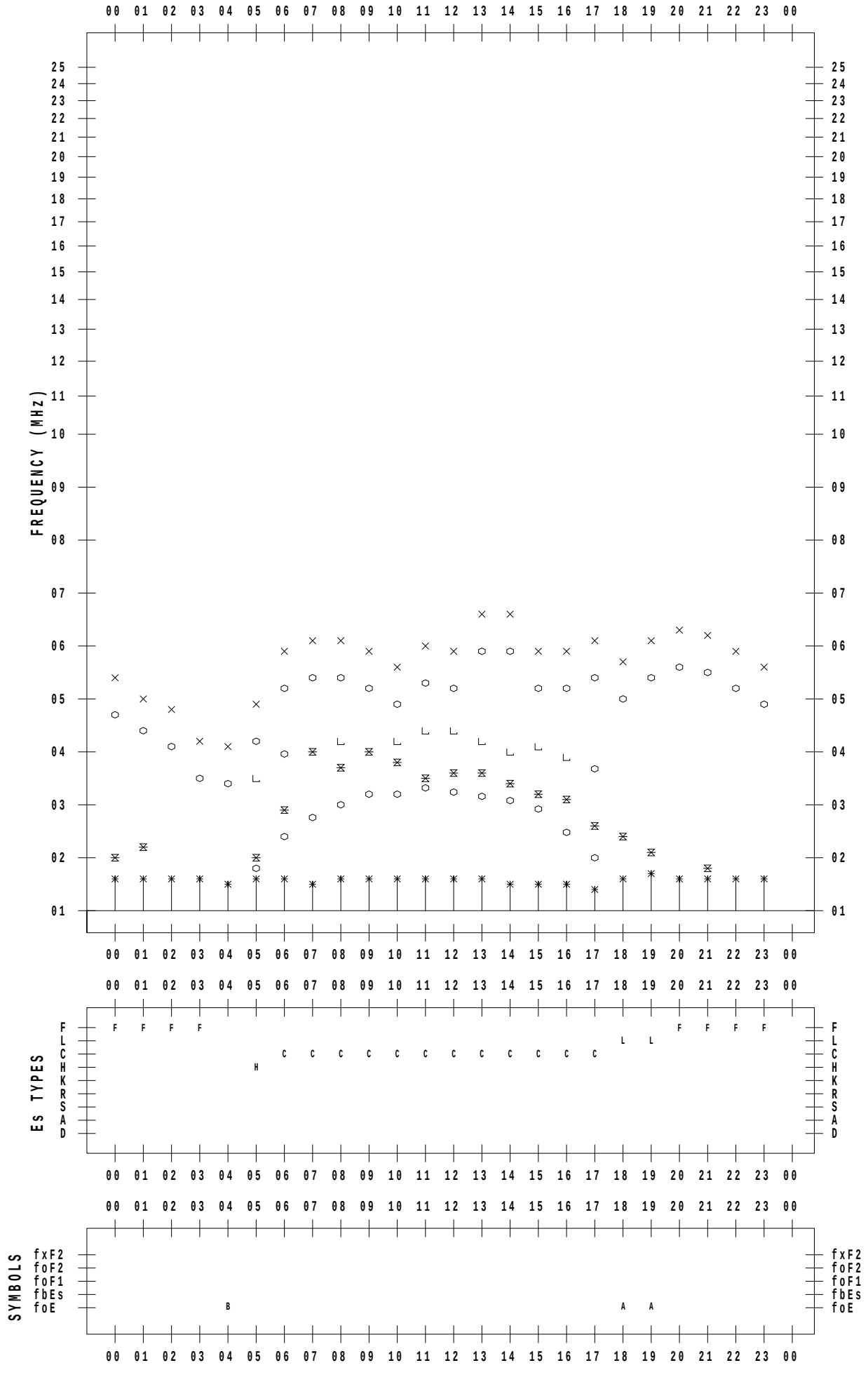
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 1

135 °E MEAN TIME



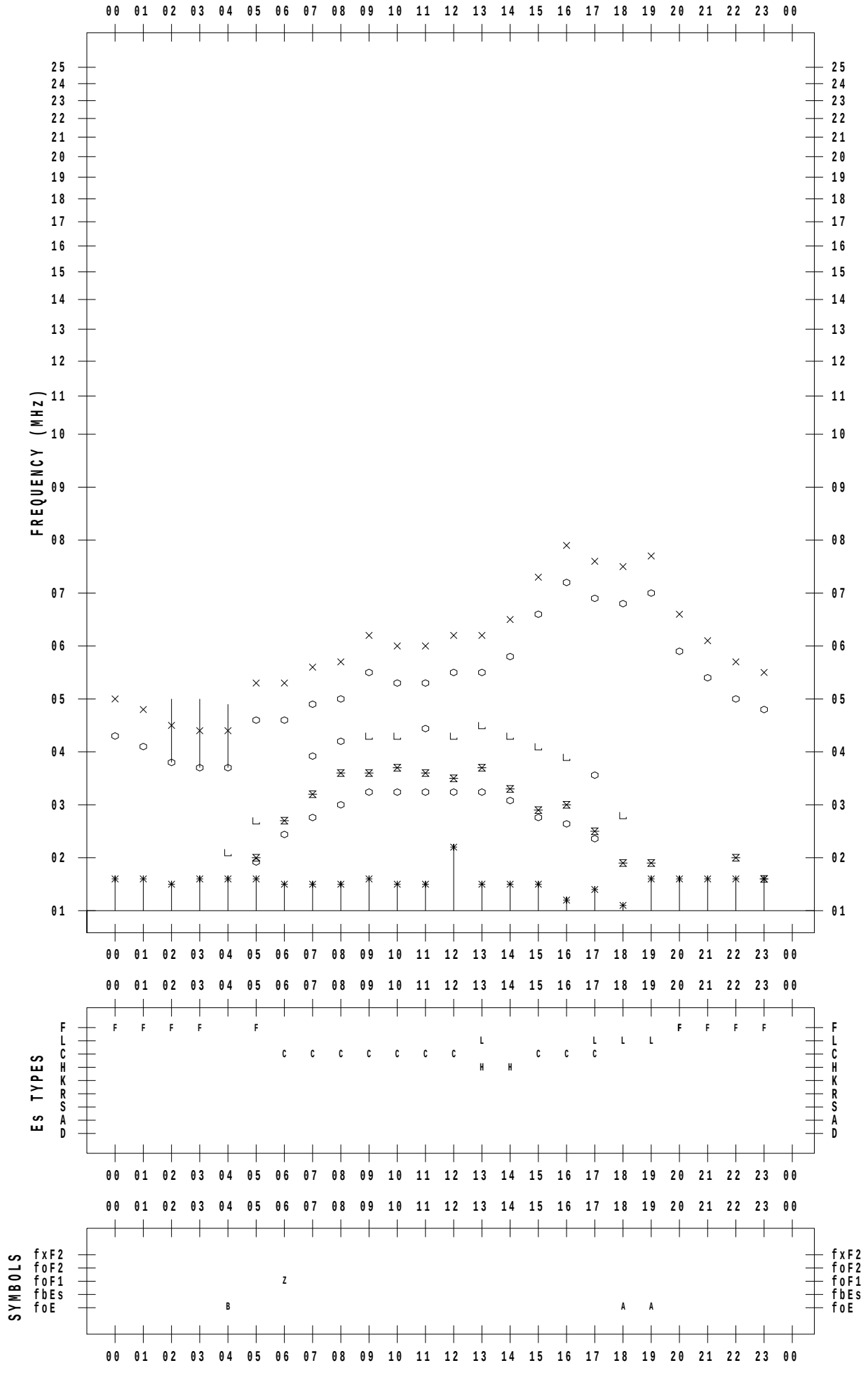
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 2

135 °E MEAN TIME



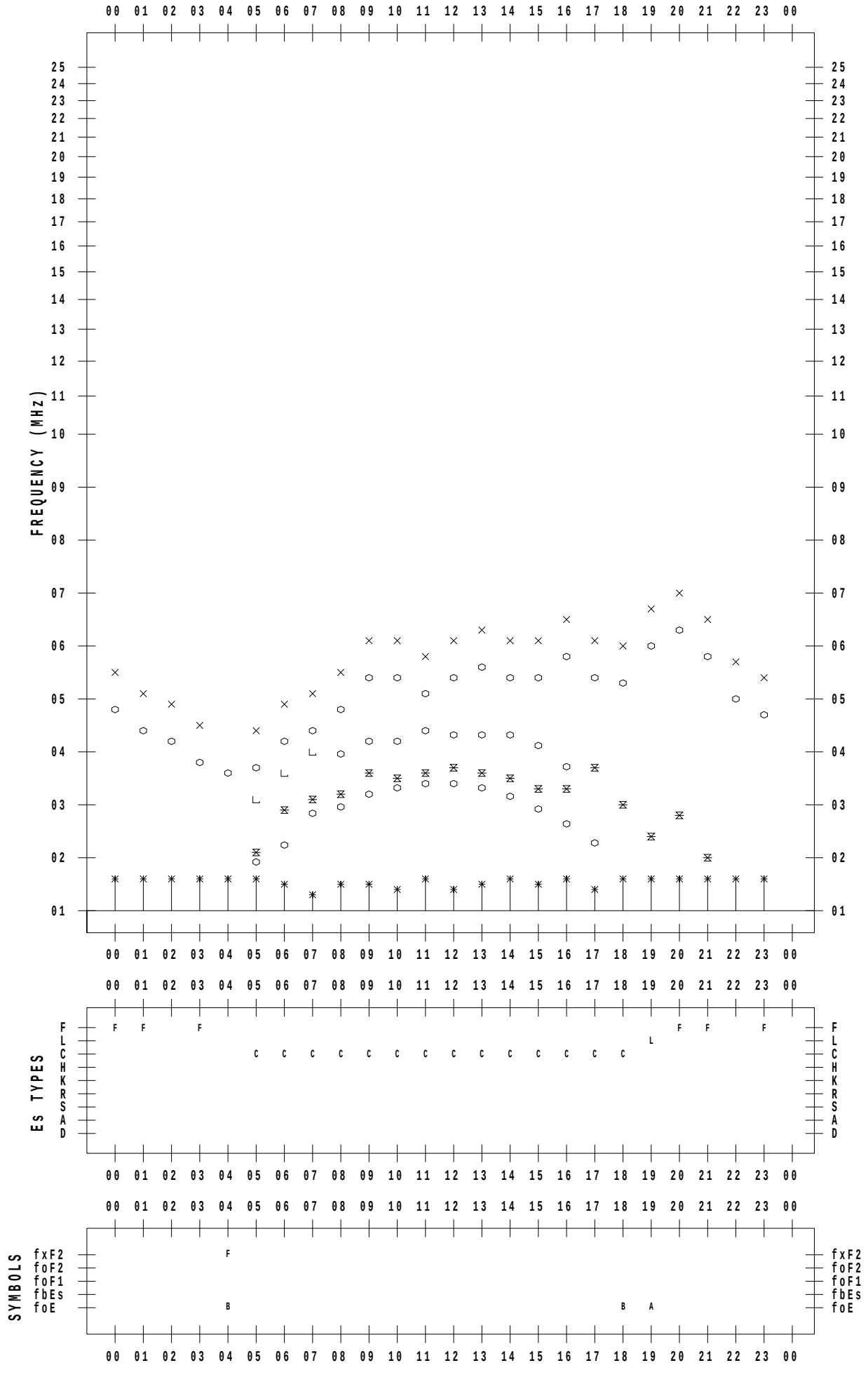
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 3

135 °E MEAN TIME



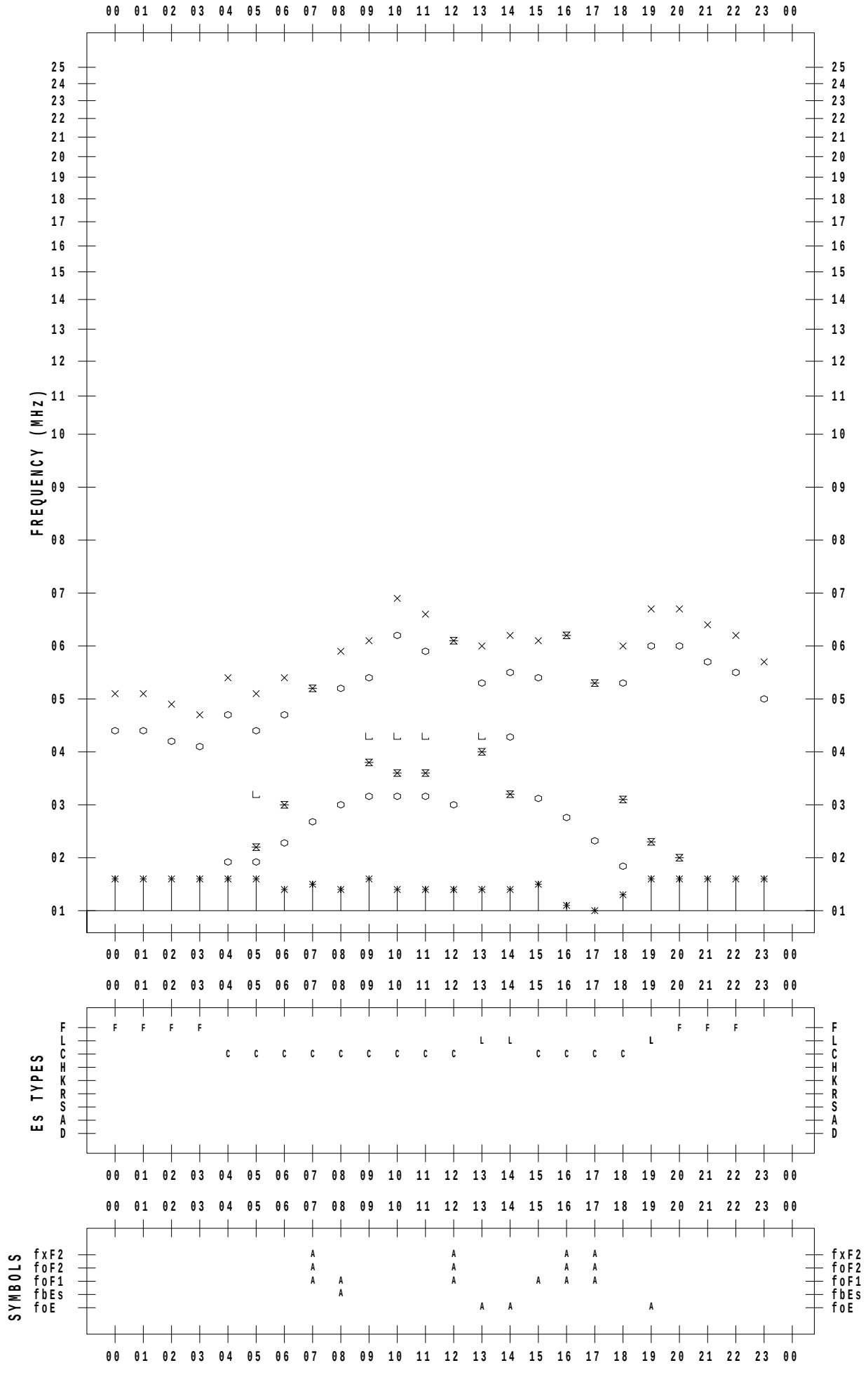
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 4

135 °E MEAN TIME



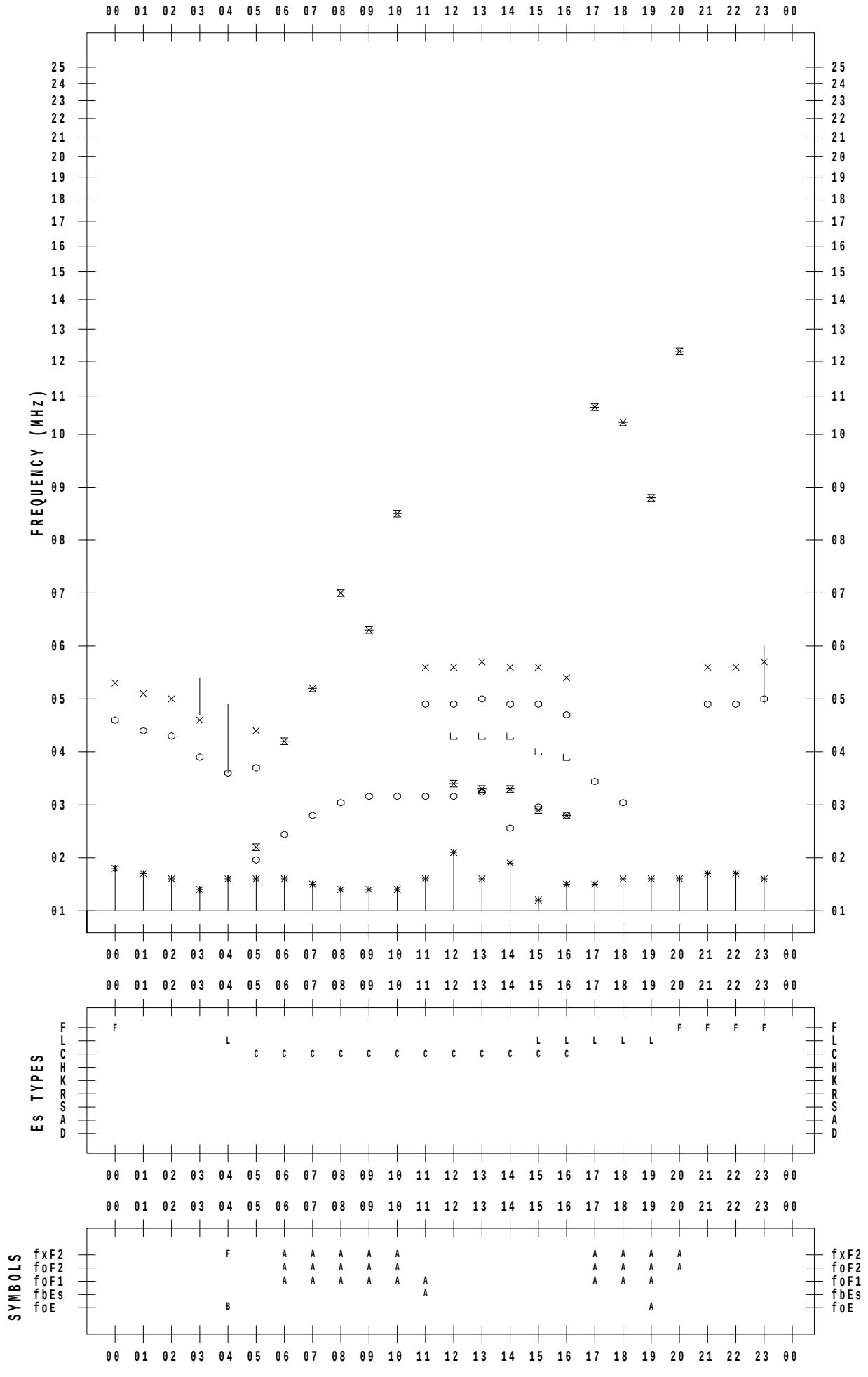
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 5

135 °E MEAN TIME



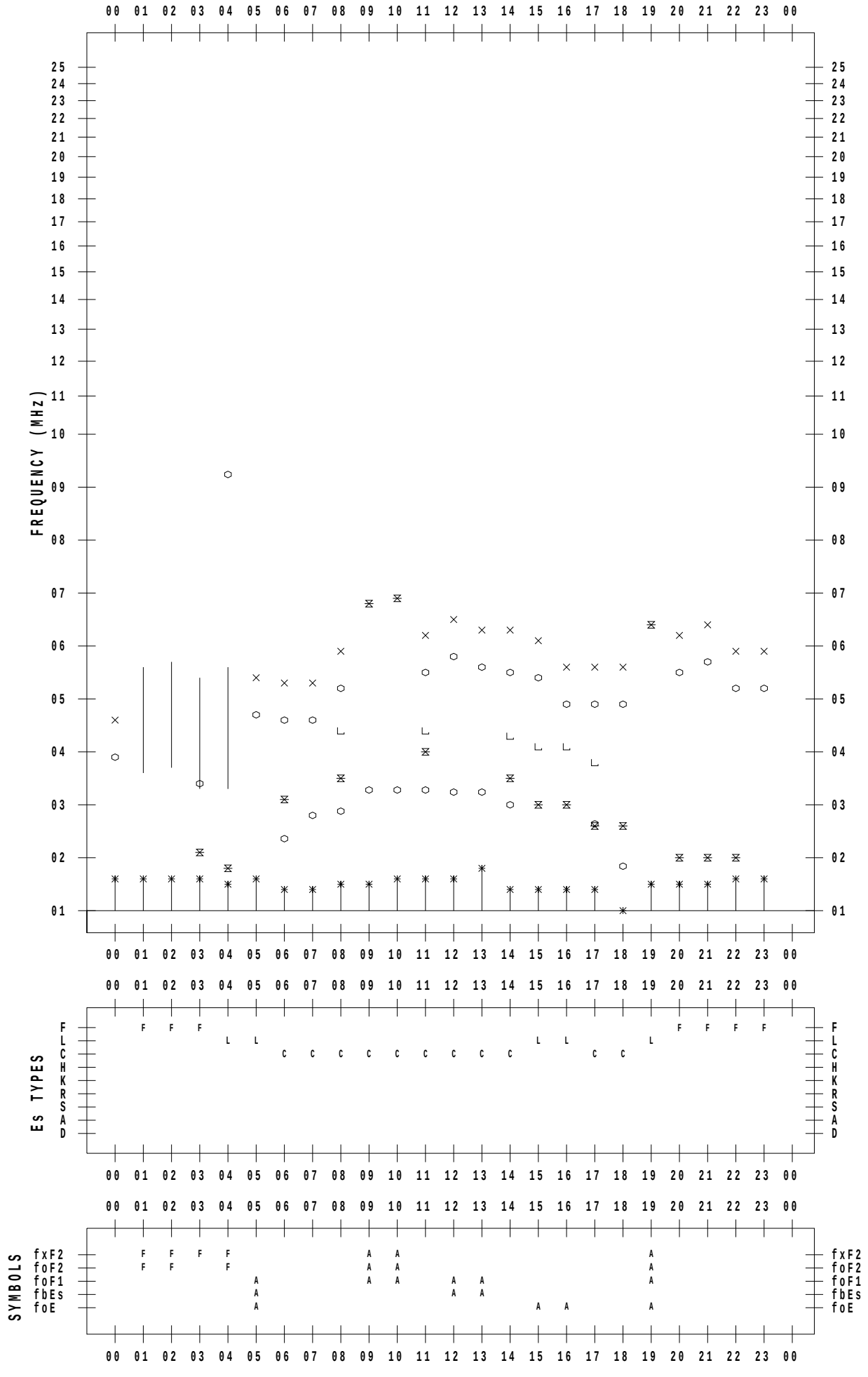
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 6

135 °E MEAN TIME



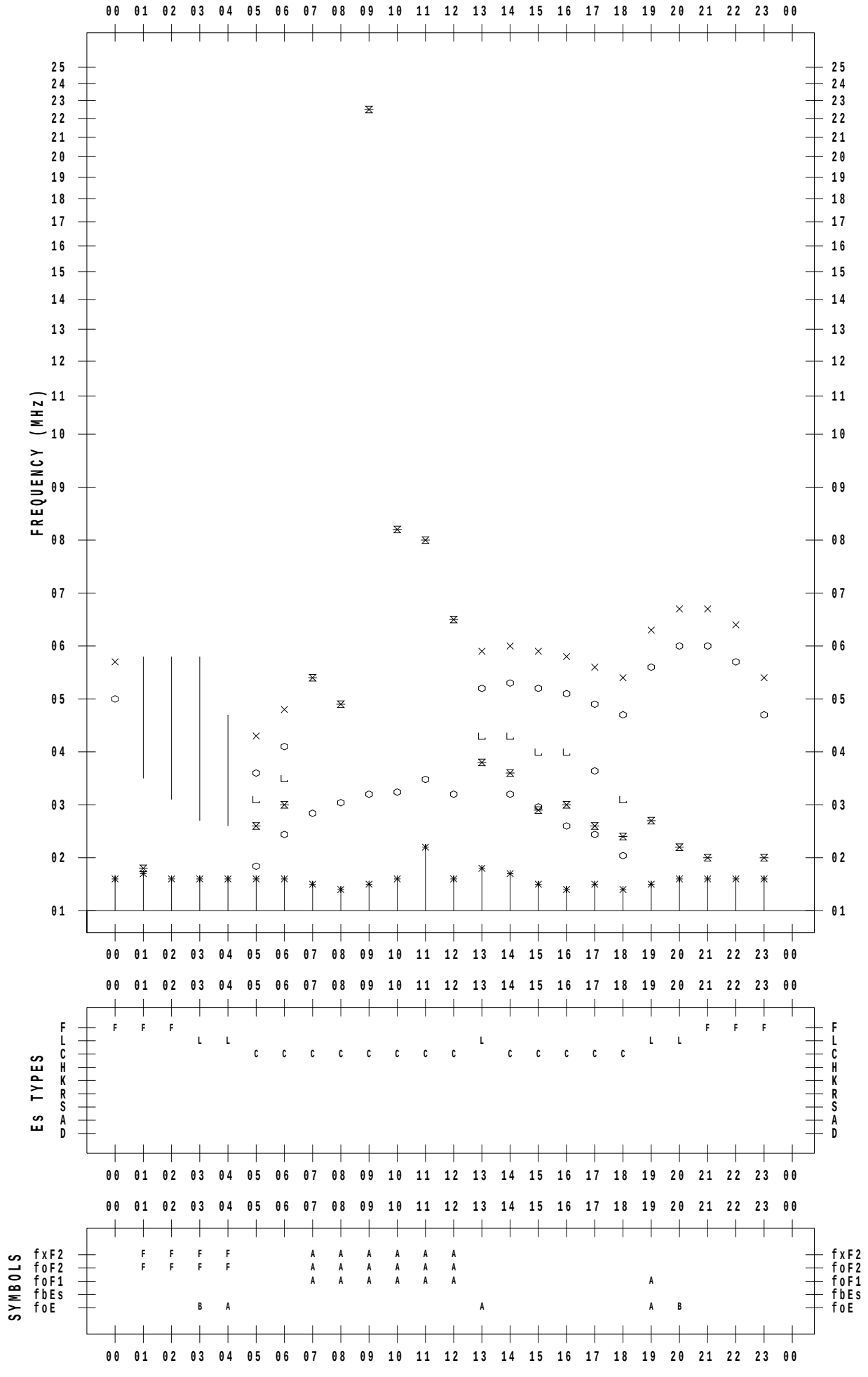
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 7

135 °E MEAN TIME



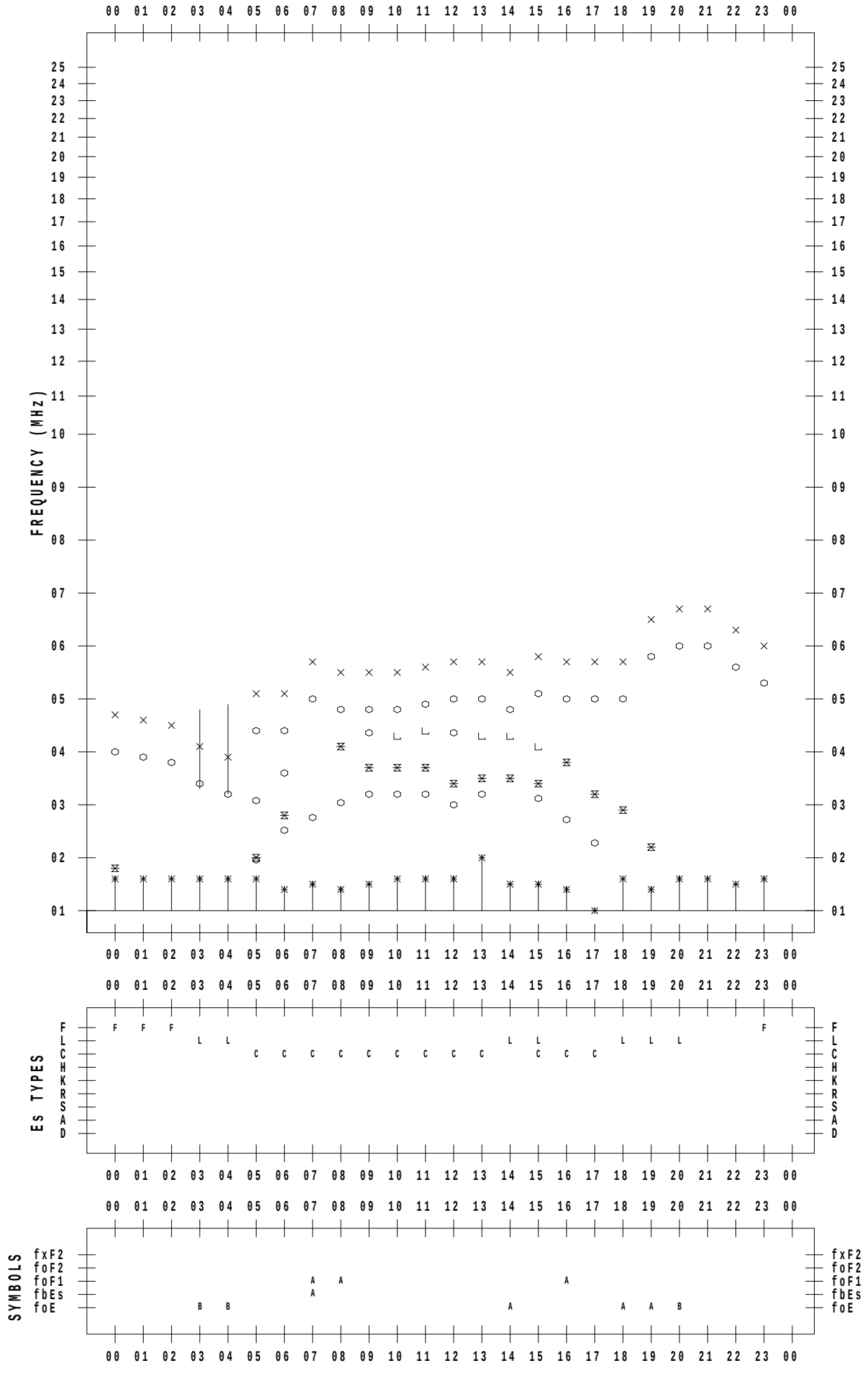
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 8

135 °E MEAN TIME



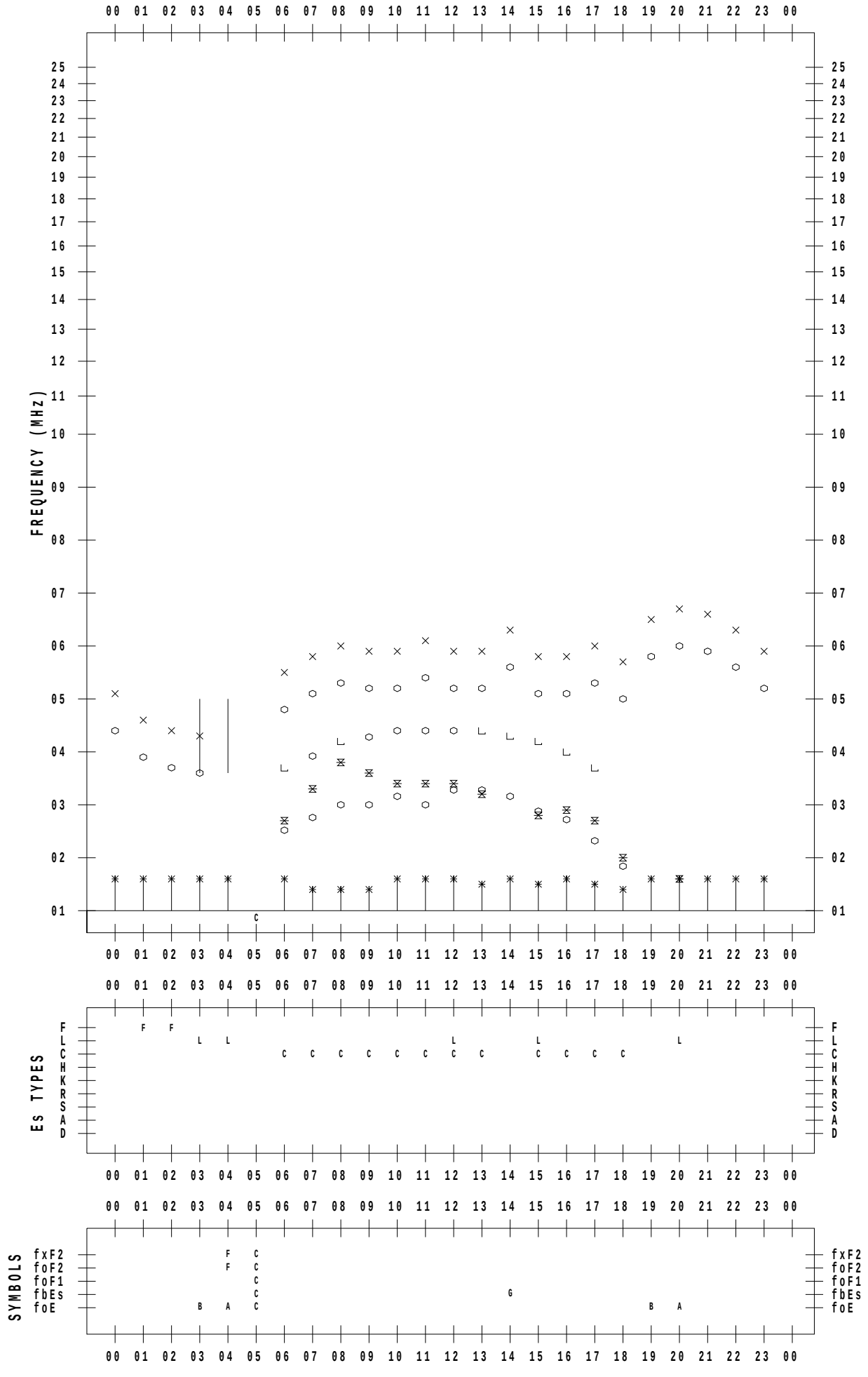
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/ 9

135 °E MEAN TIME



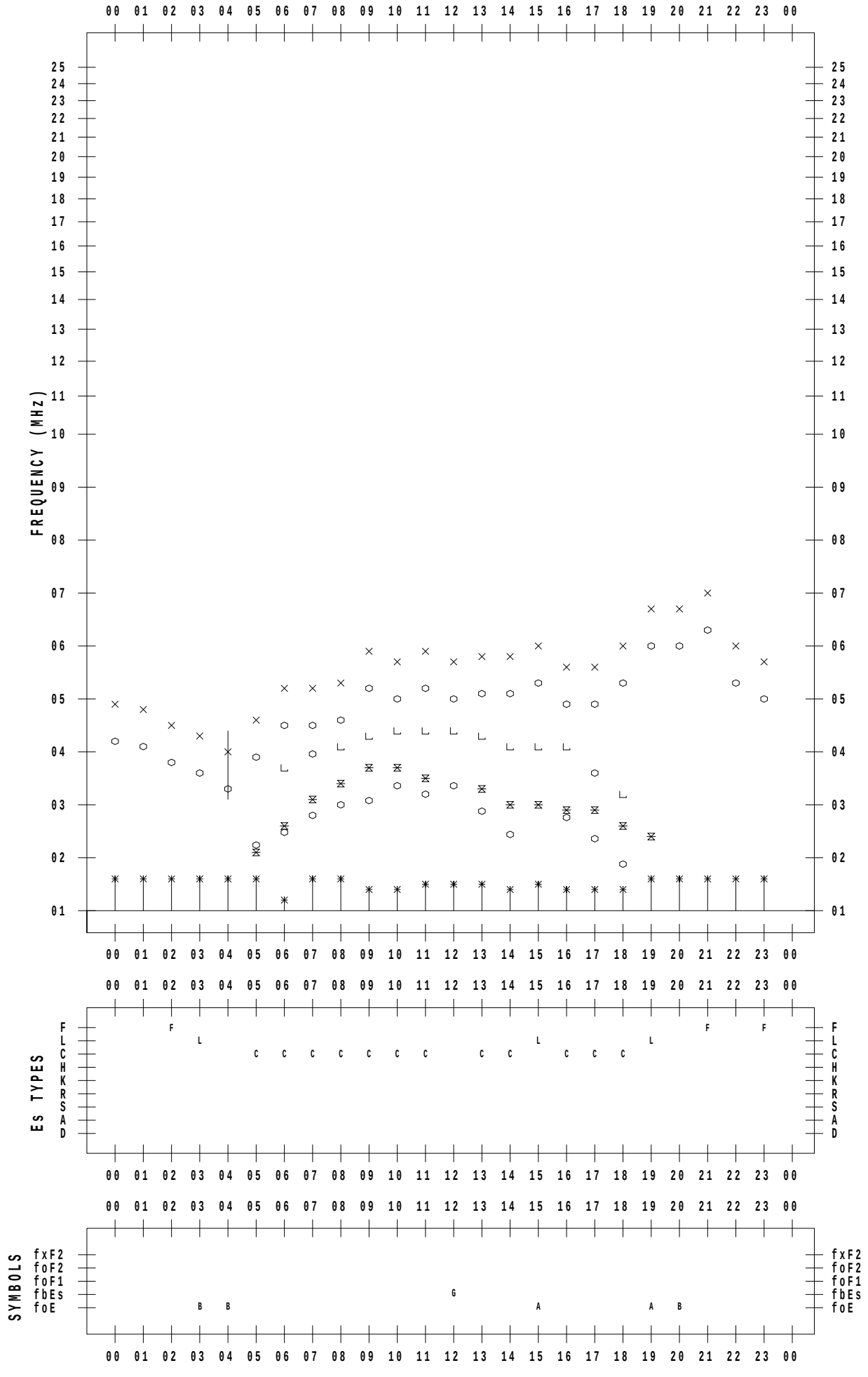
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/10

135 °E MEAN TIME



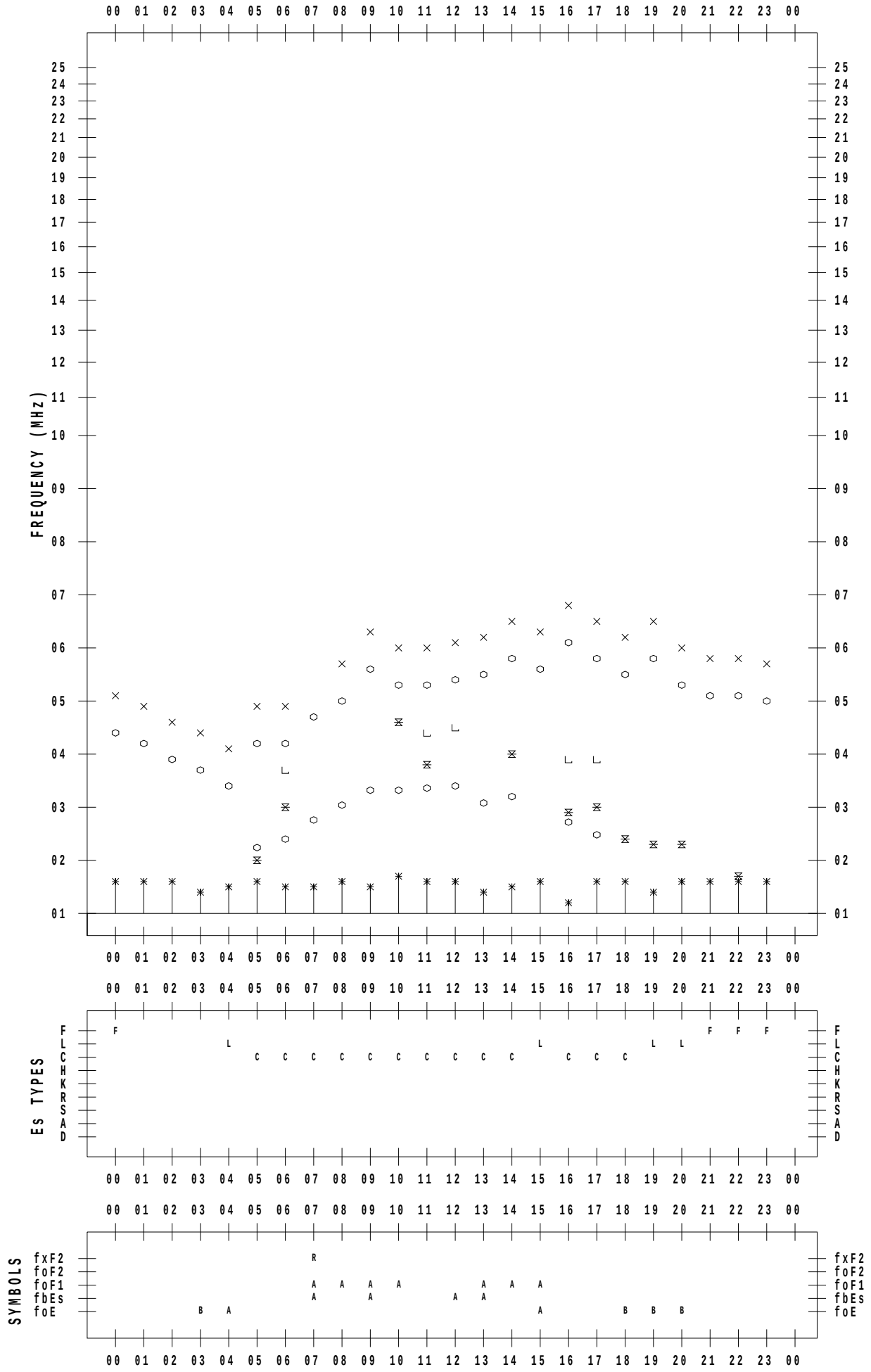
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/11

135 °E MEAN TIME



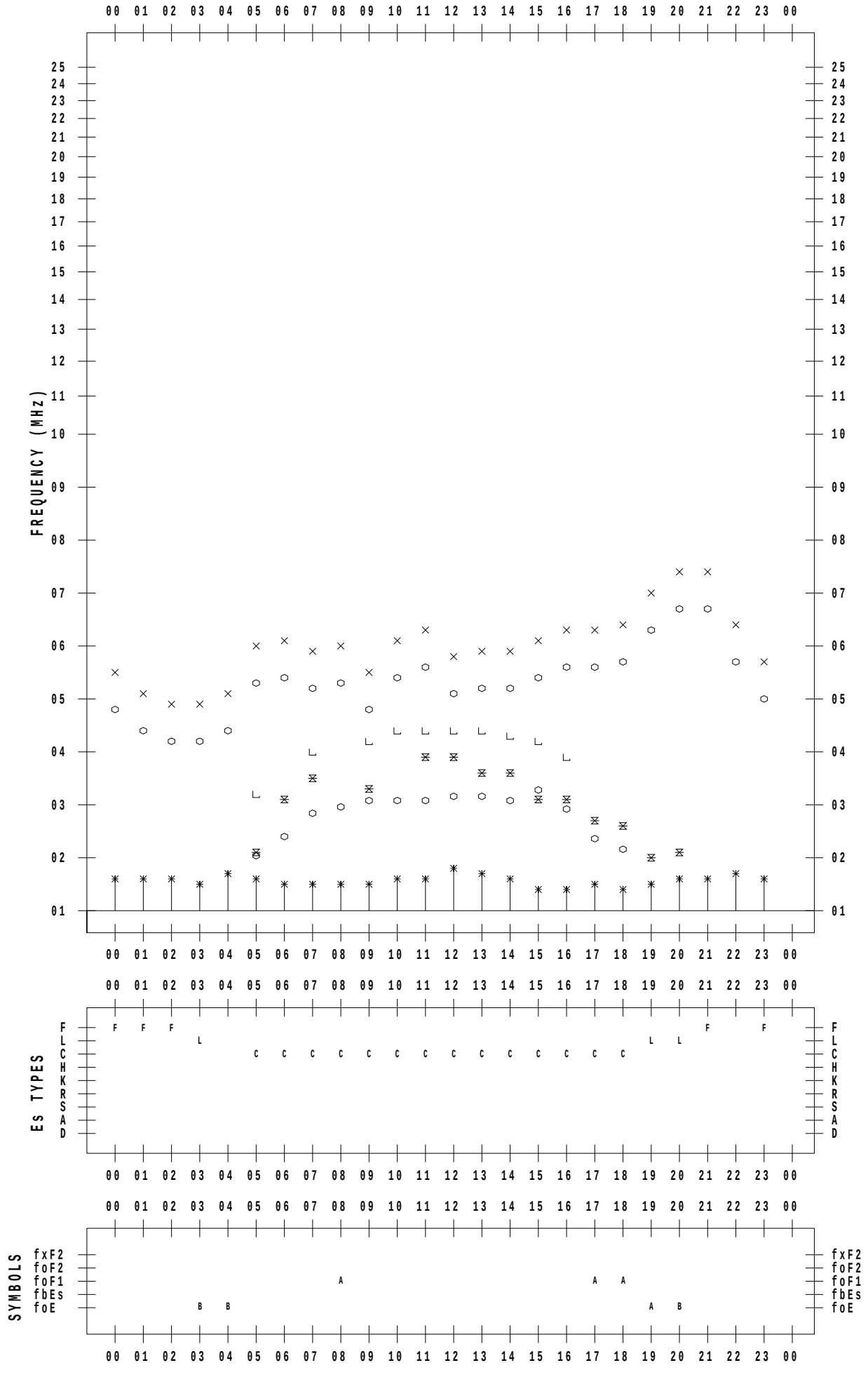
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/12

135 °E MEAN TIME



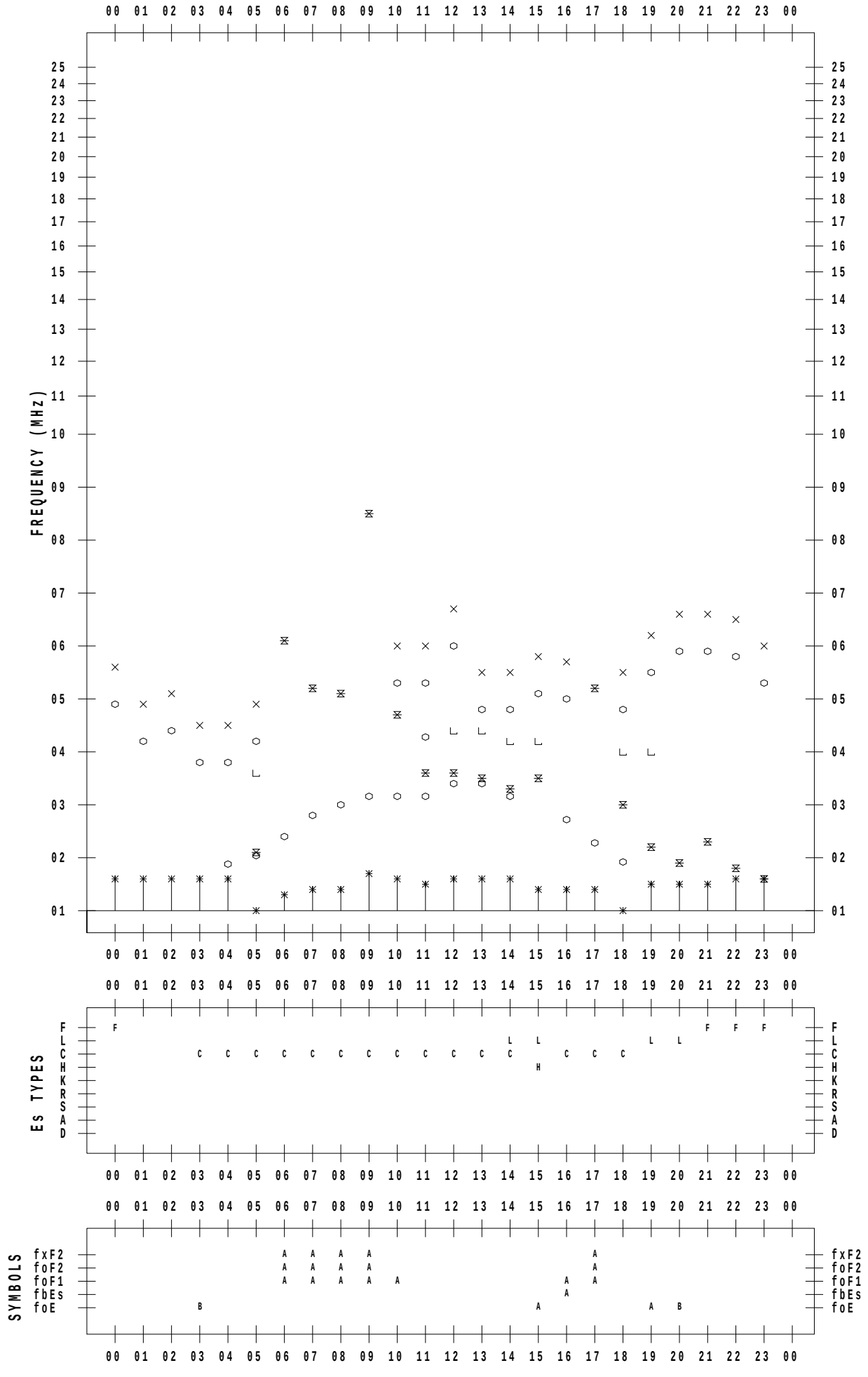
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/13

135 °E MEAN TIME



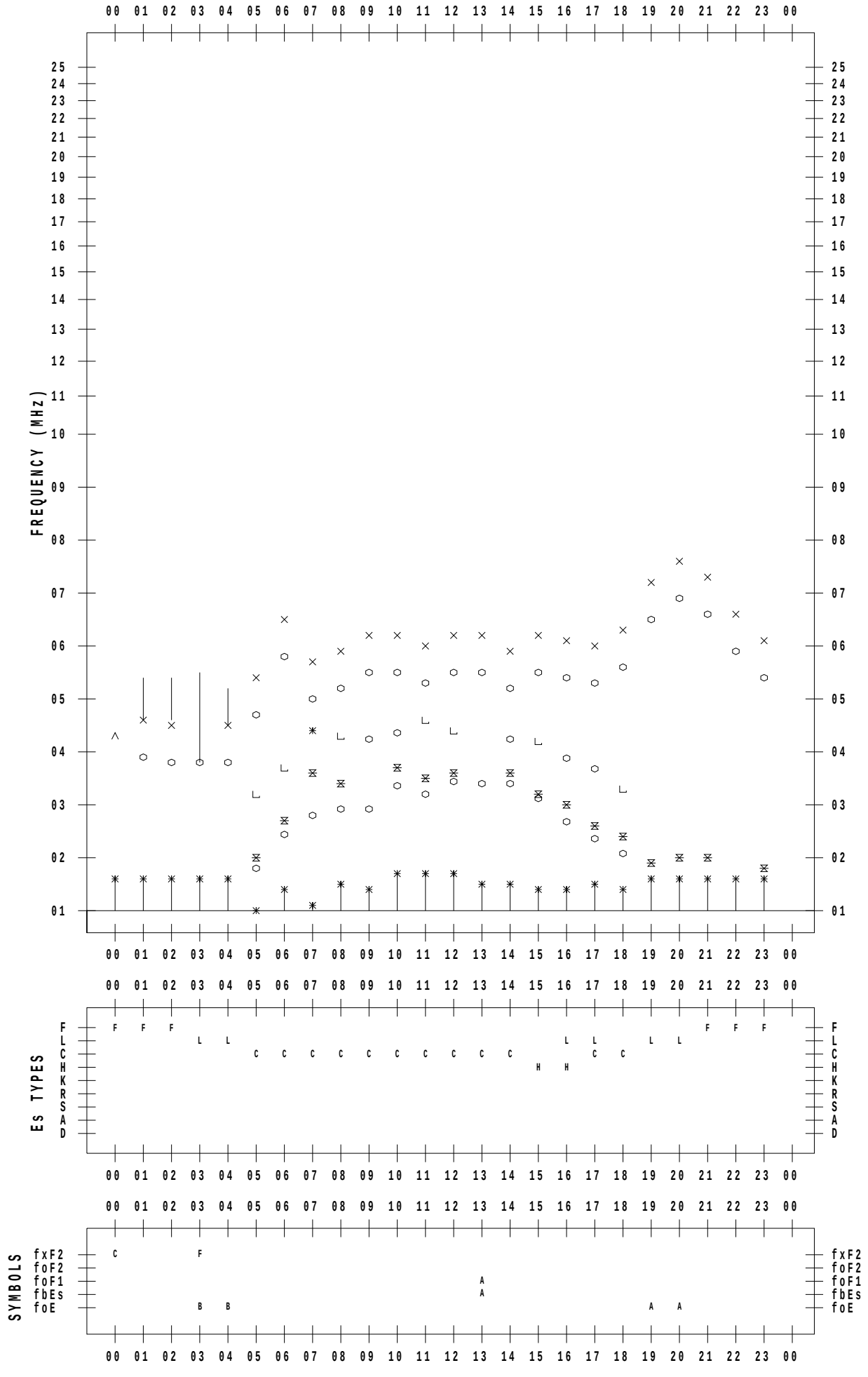
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/14

135 °E MEAN TIME



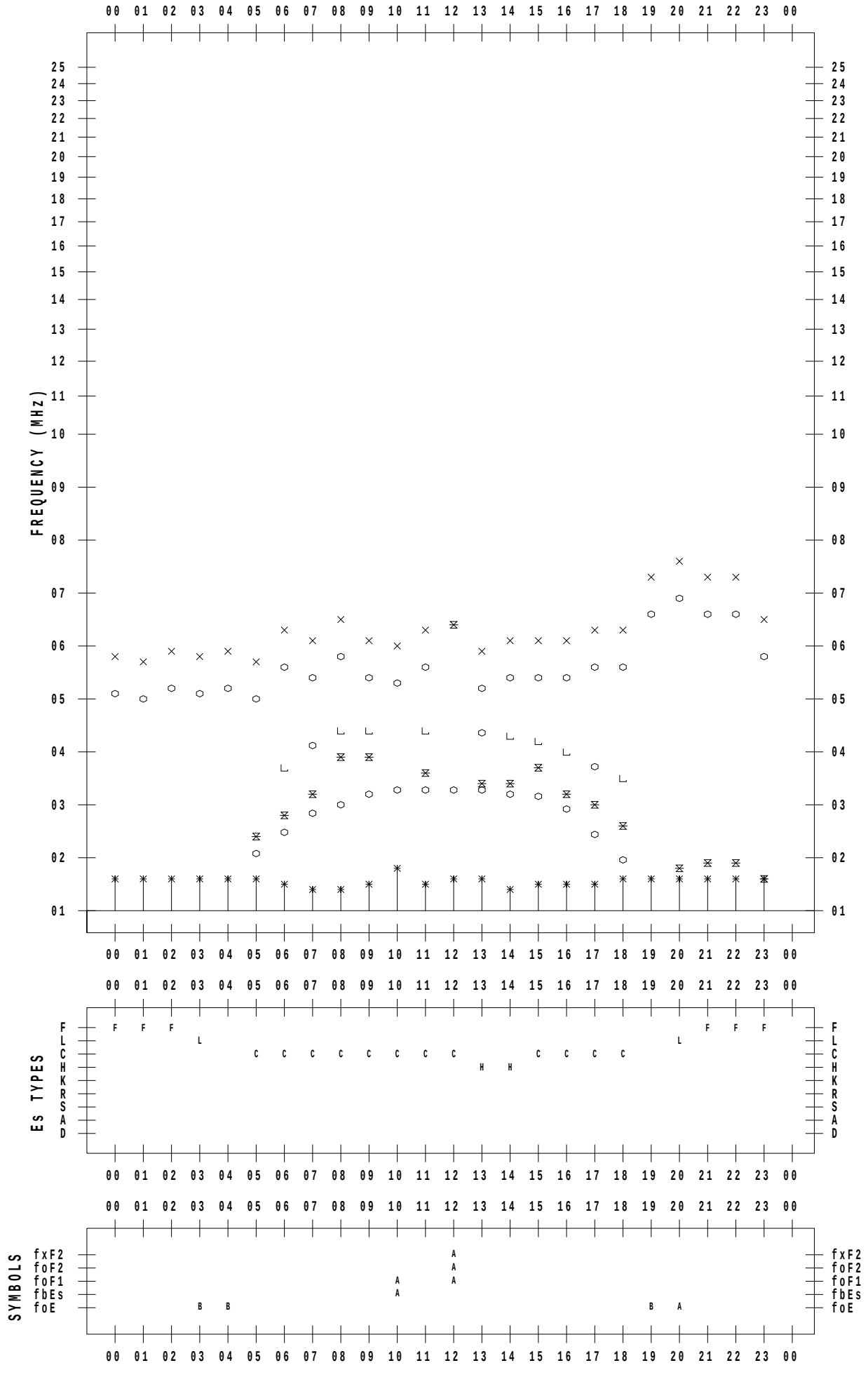
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/15

135 °E MEAN TIME



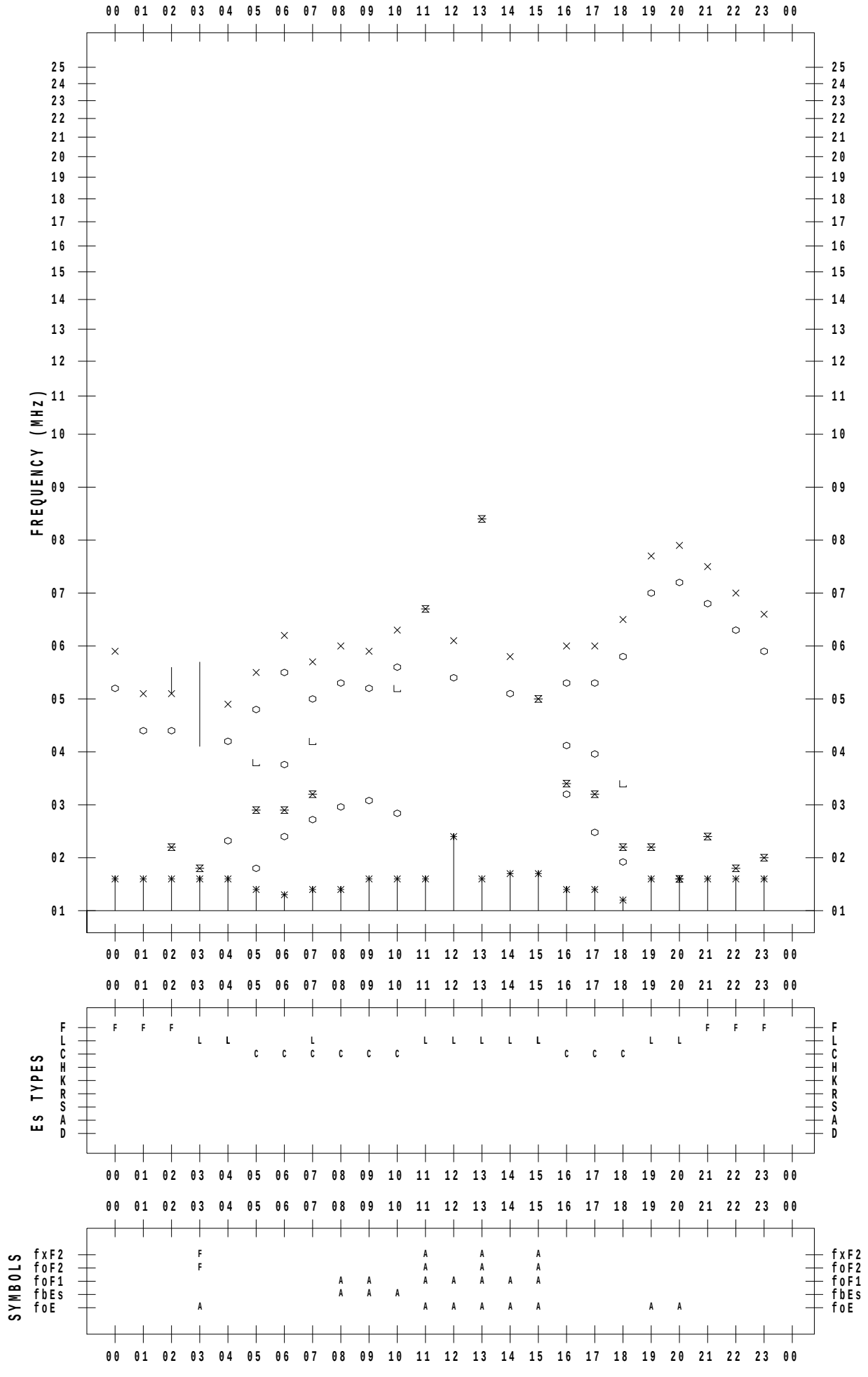
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/16

135 °E MEAN TIME



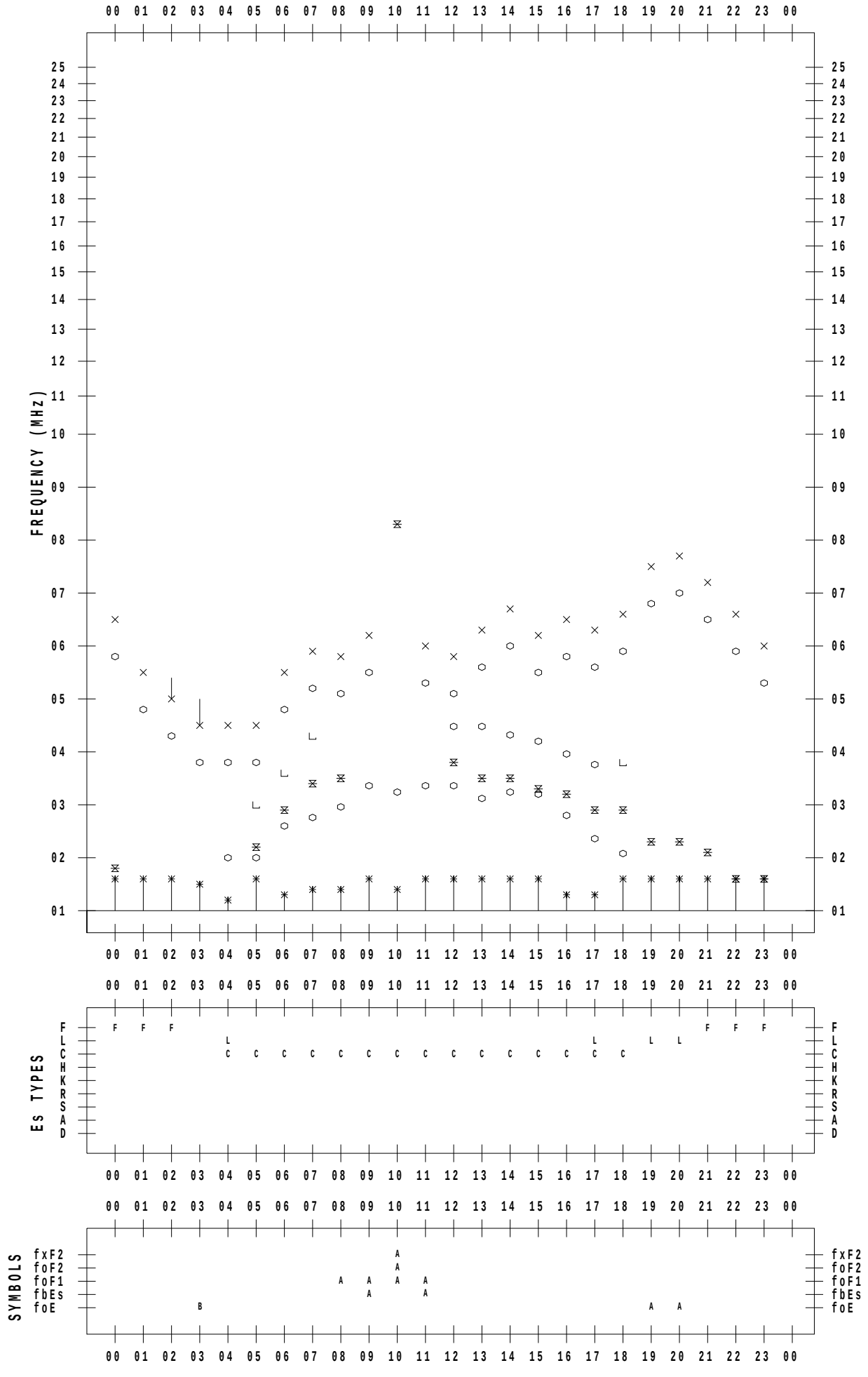
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/17

135 °E MEAN TIME



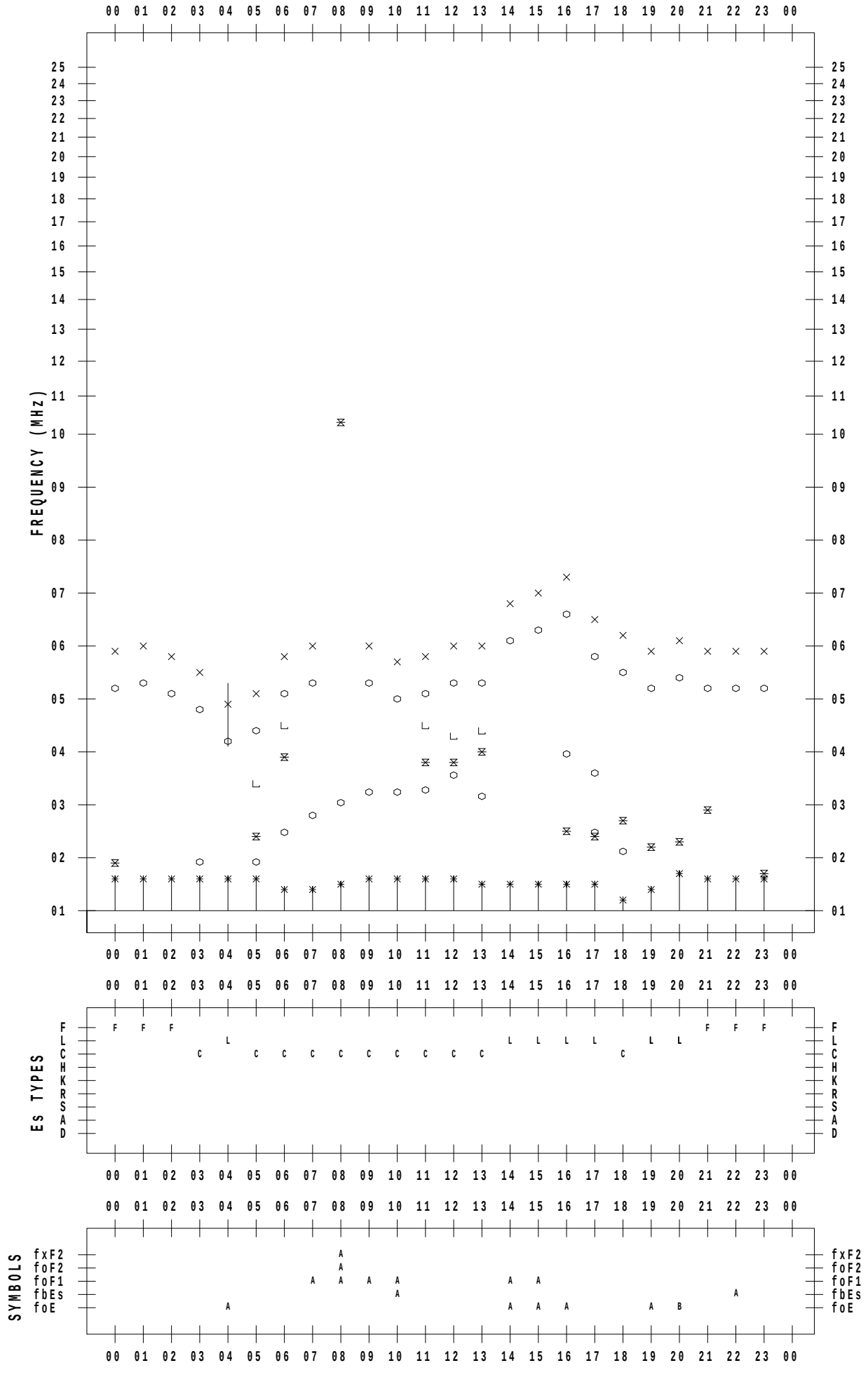
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/18

135 °E MEAN TIME



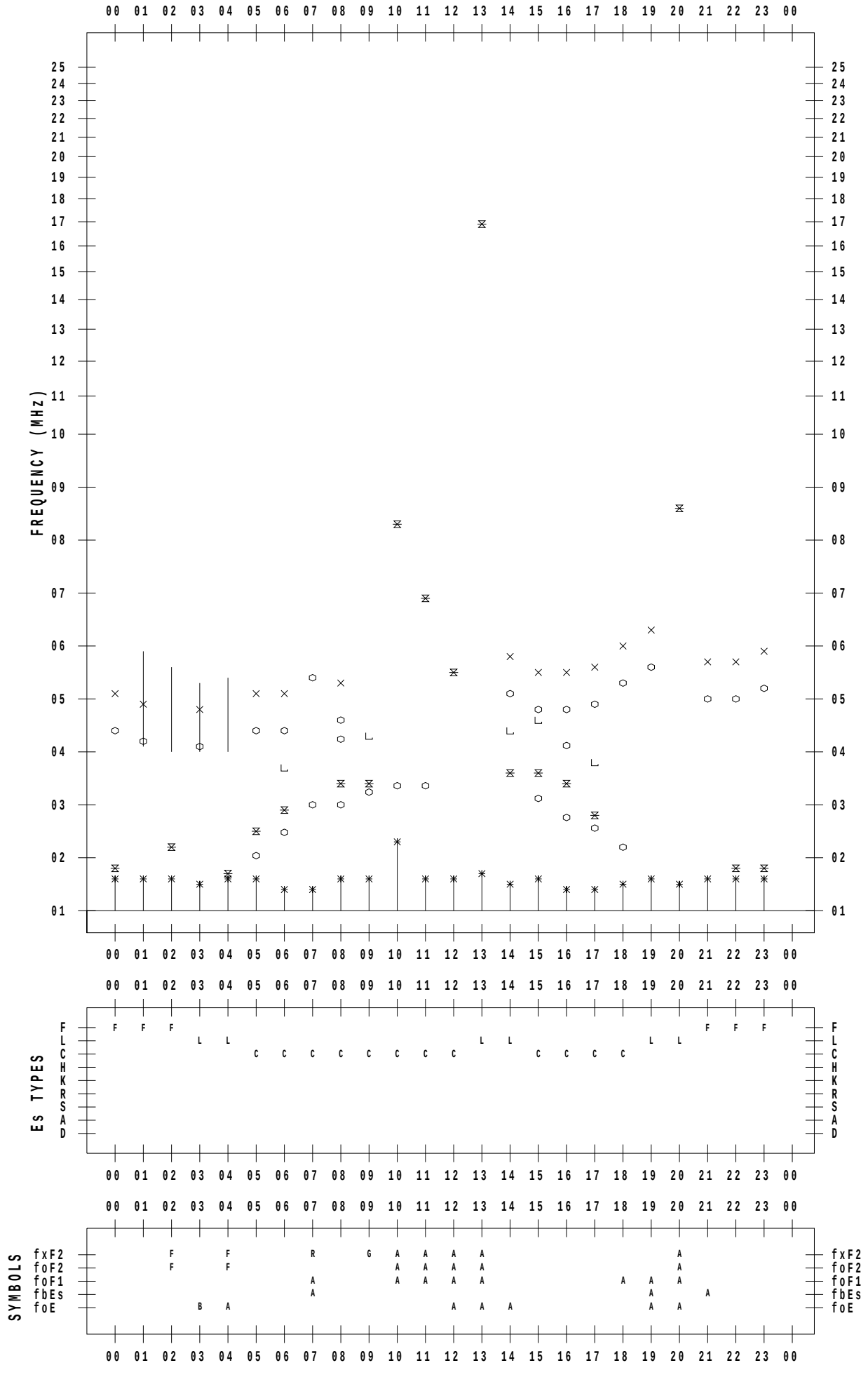
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/19

135 °E MEAN TIME



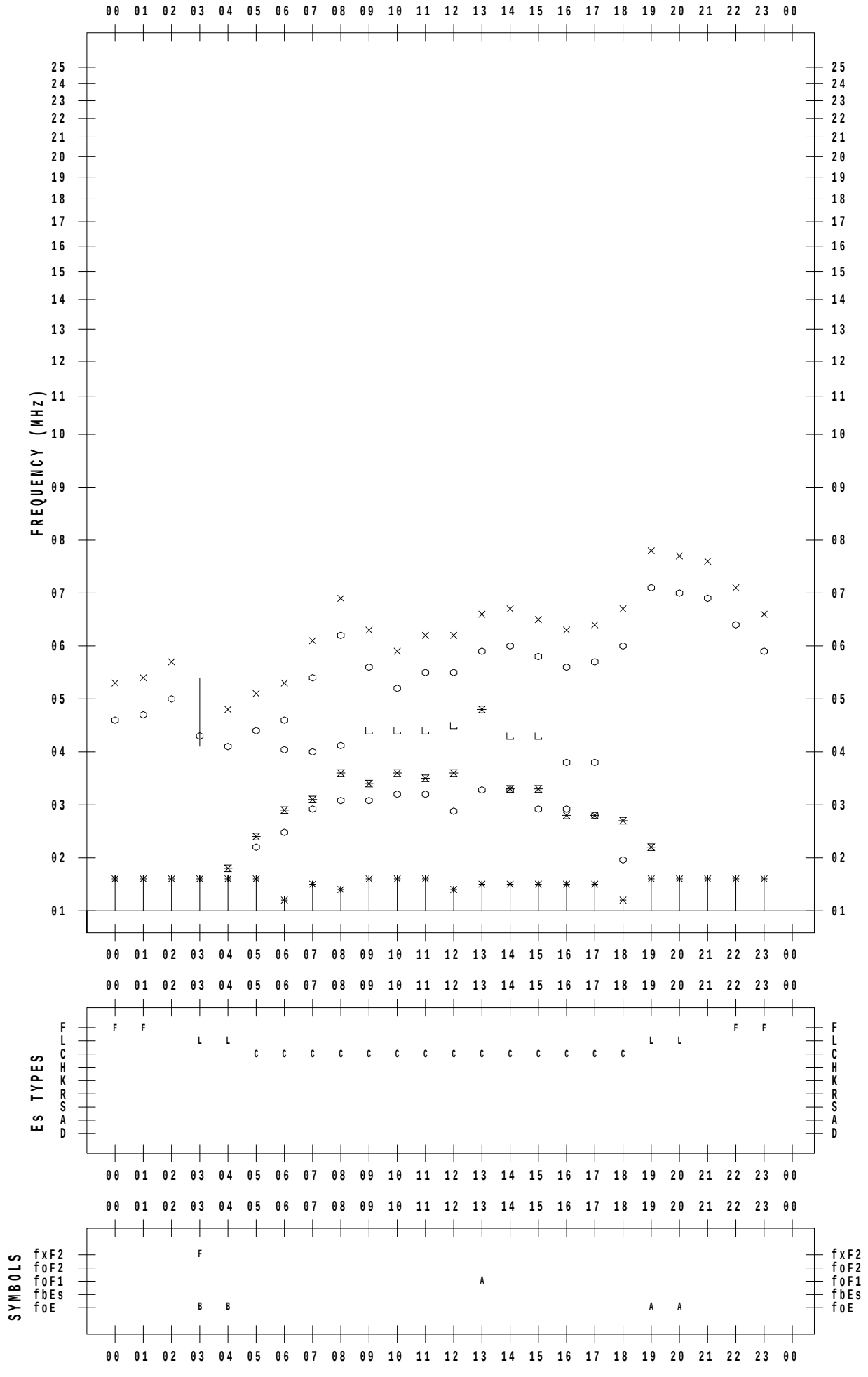
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/20

135 °E MEAN TIME



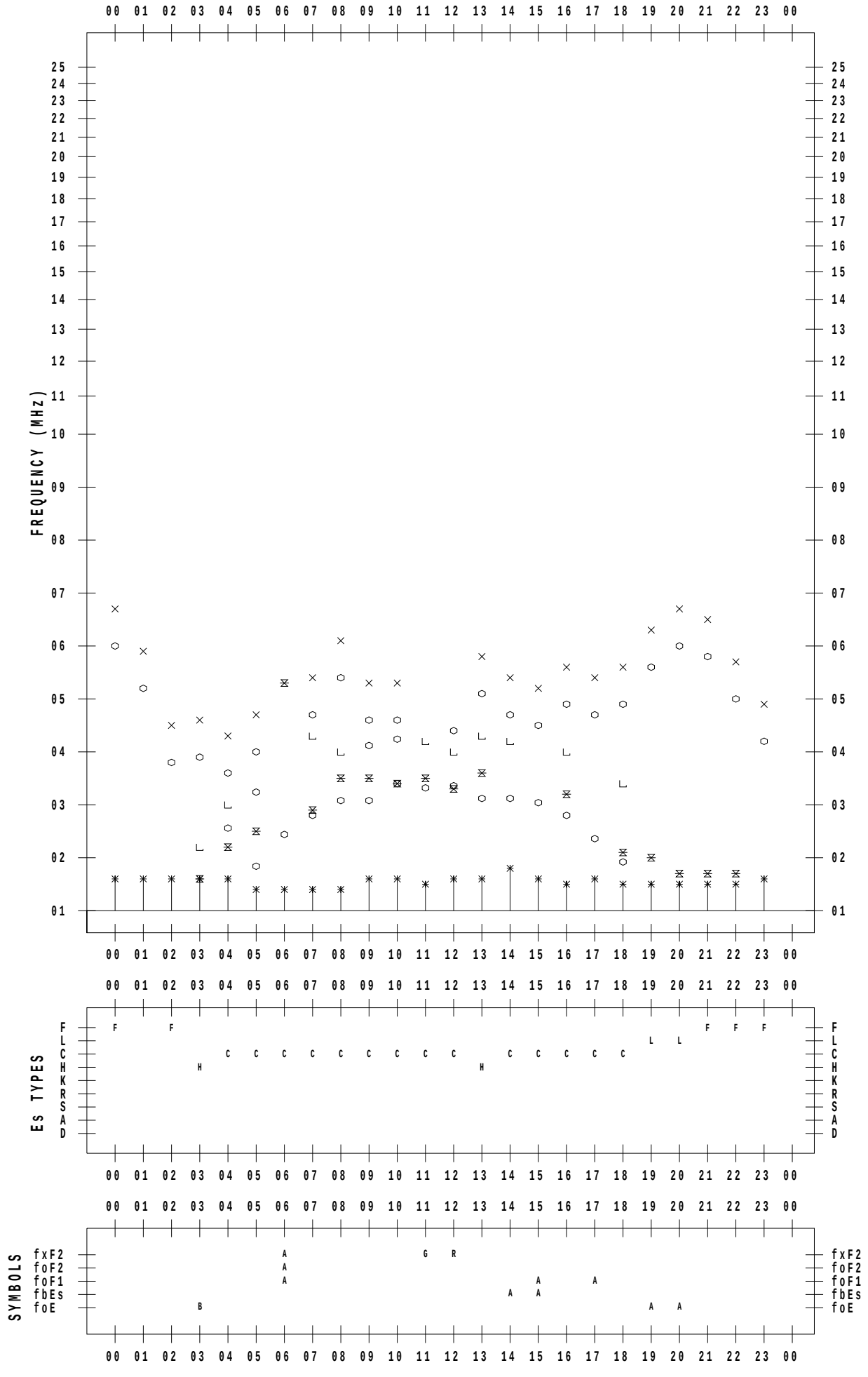
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/21

135 °E MEAN TIME



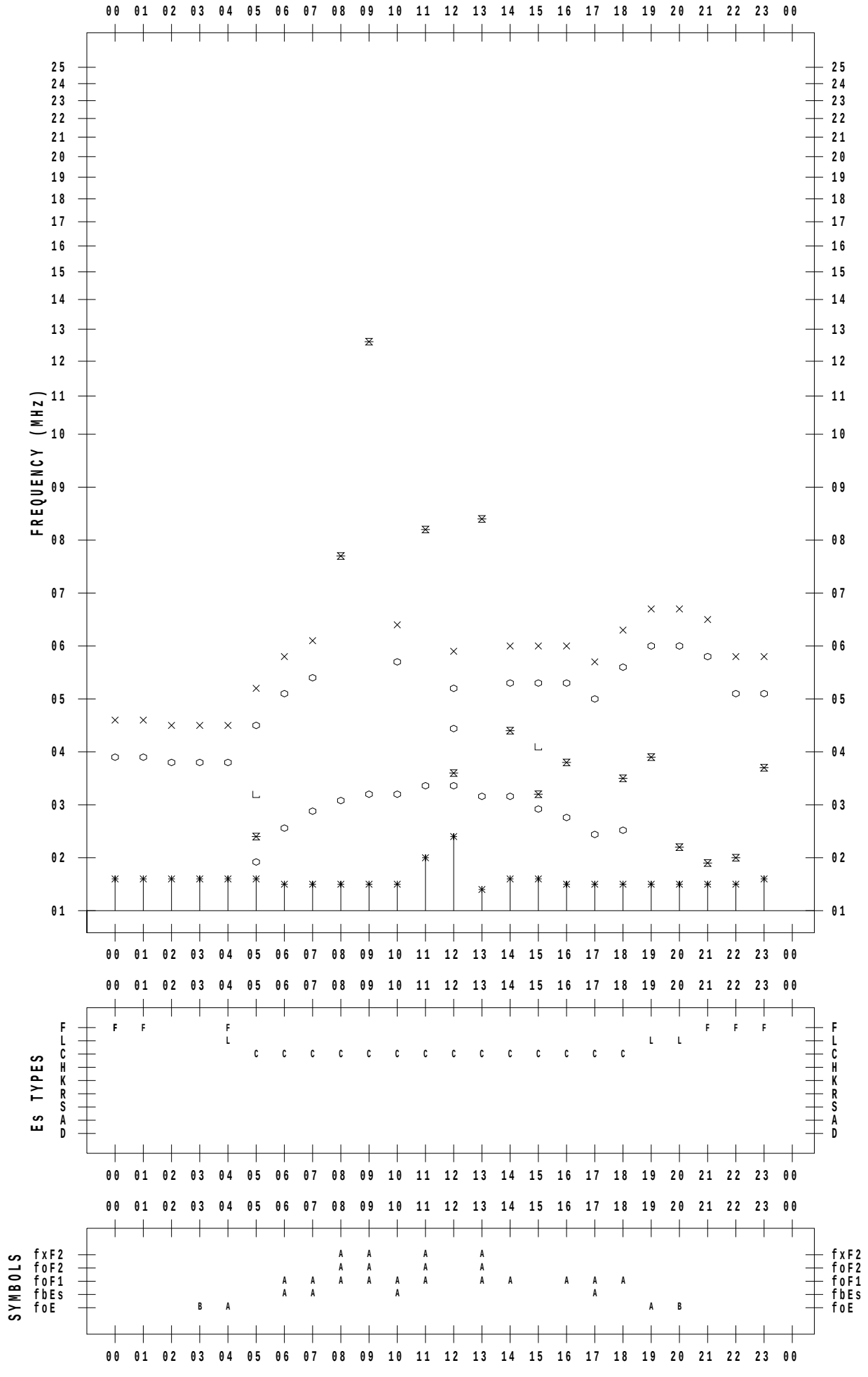
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/22

135 °E MEAN TIME



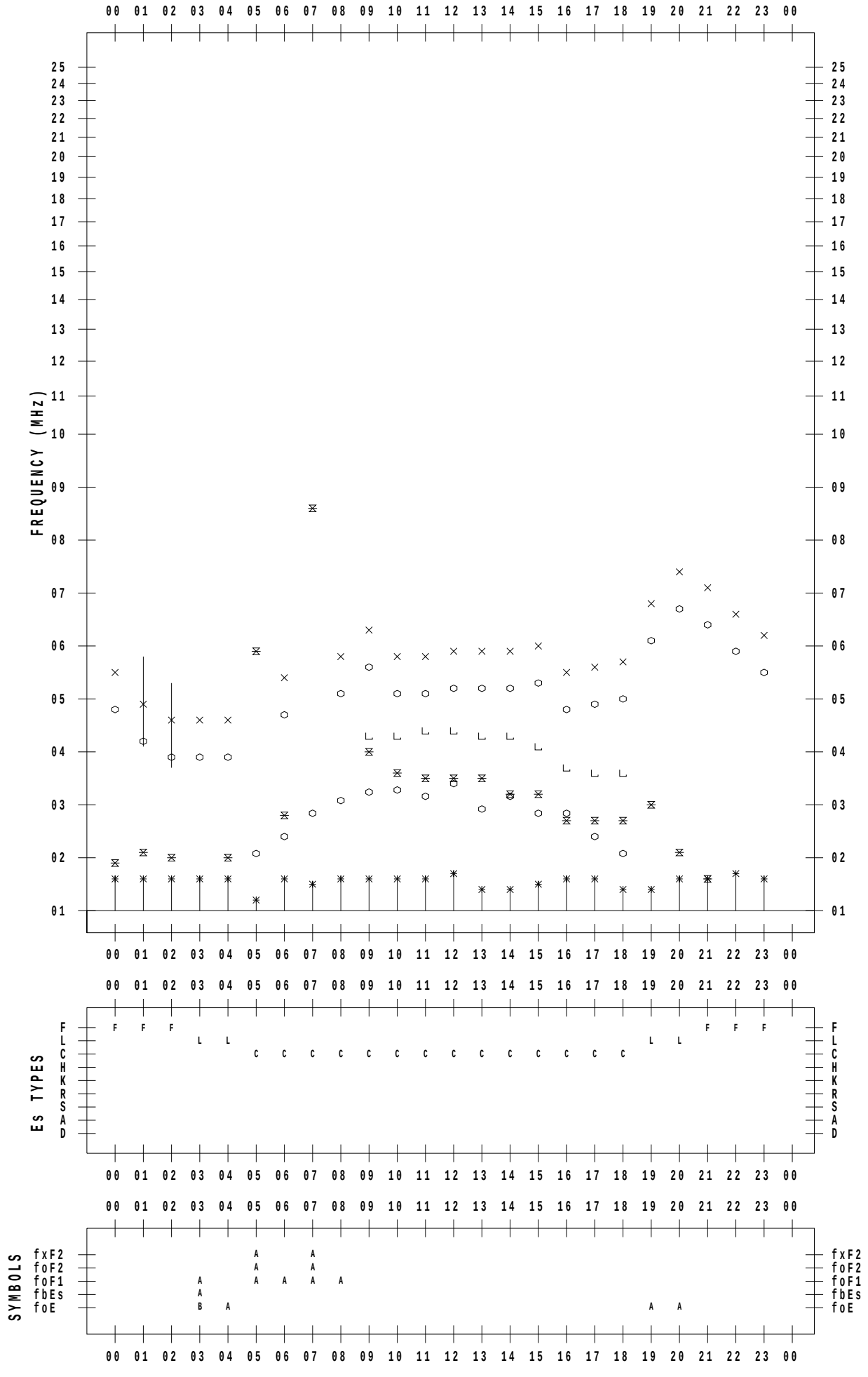
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/23

135 °E MEAN TIME



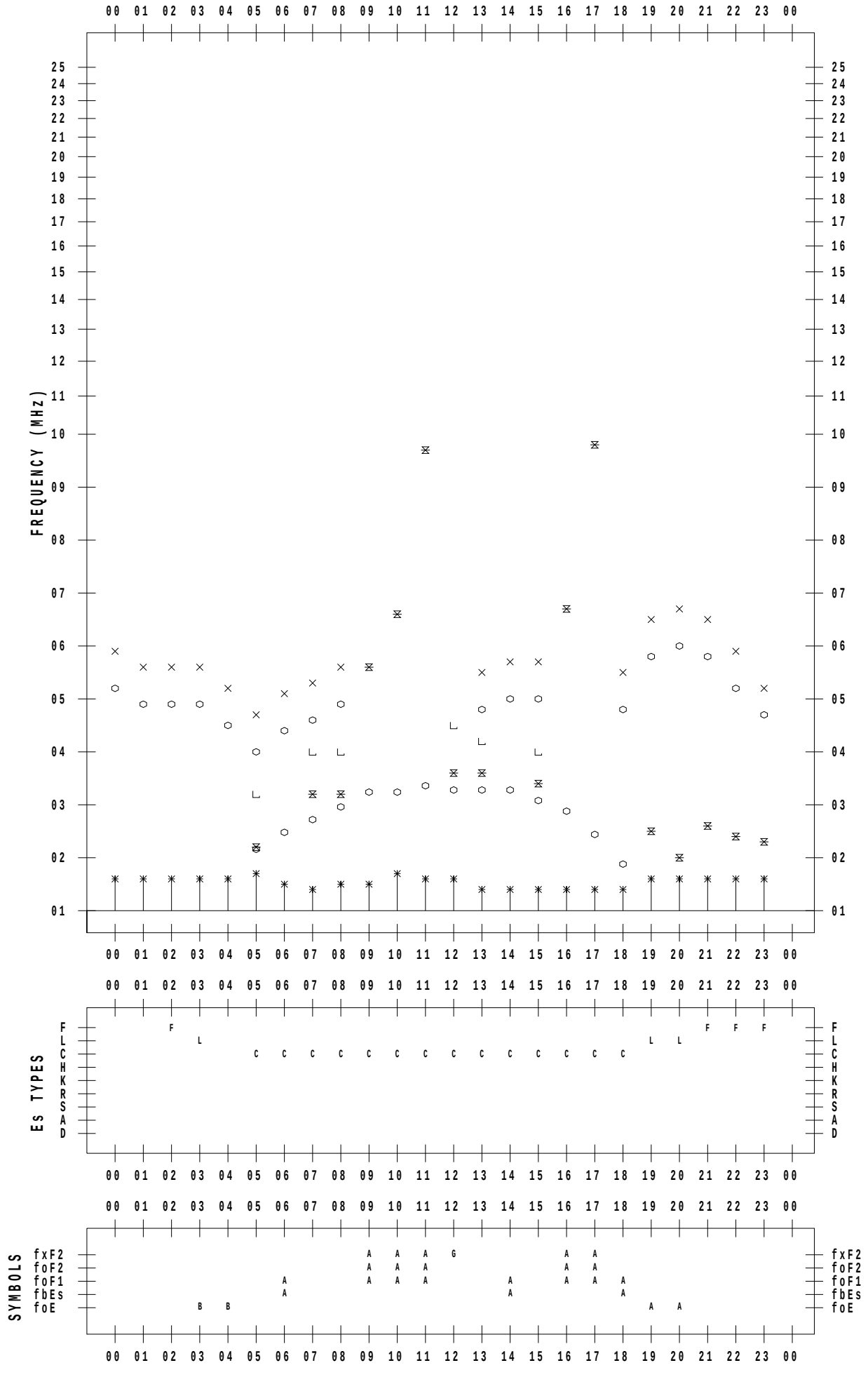
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/24

135 °E MEAN TIME



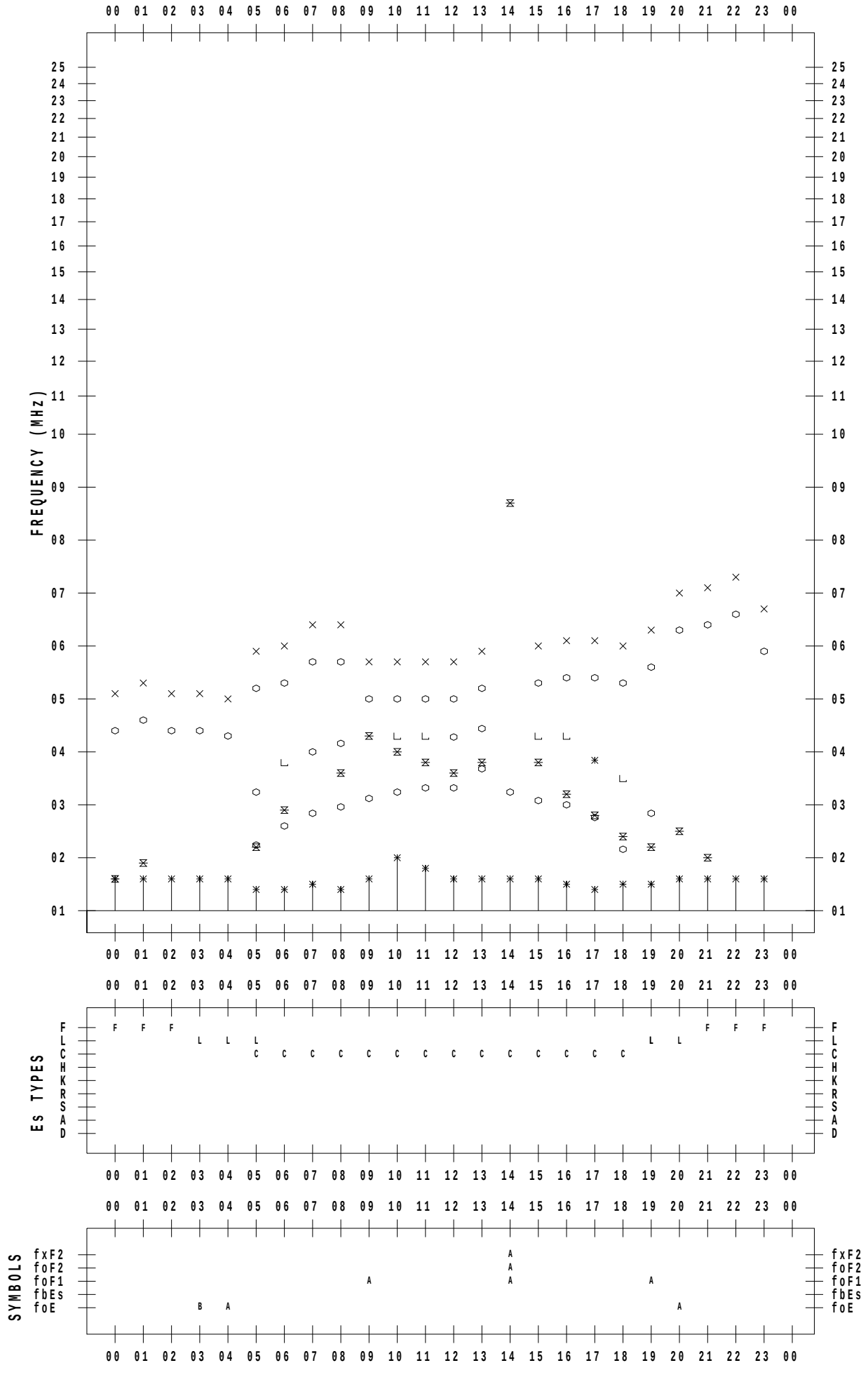
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/25

135 °E MEAN TIME



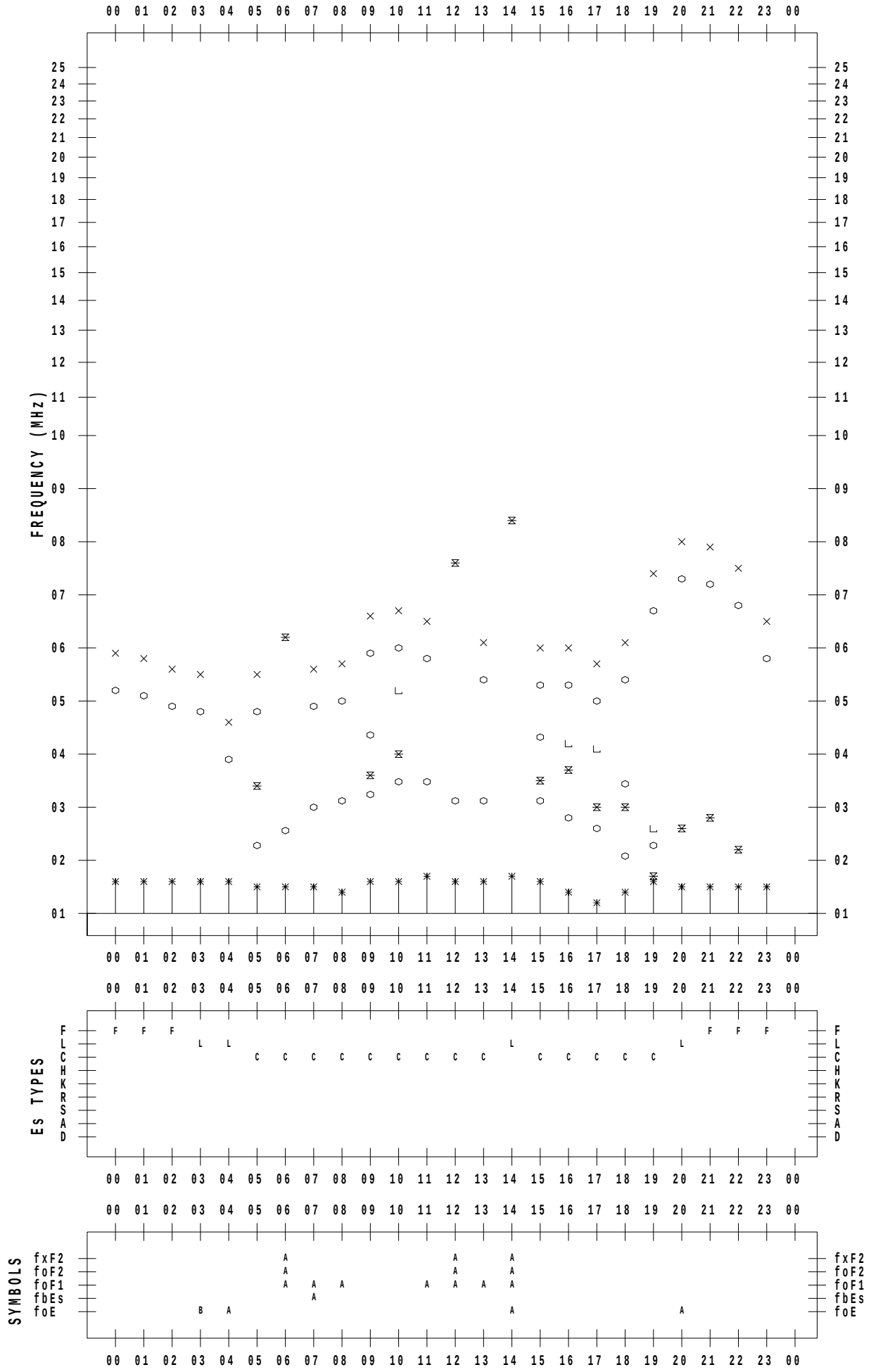
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/26

135 °E MEAN TIME



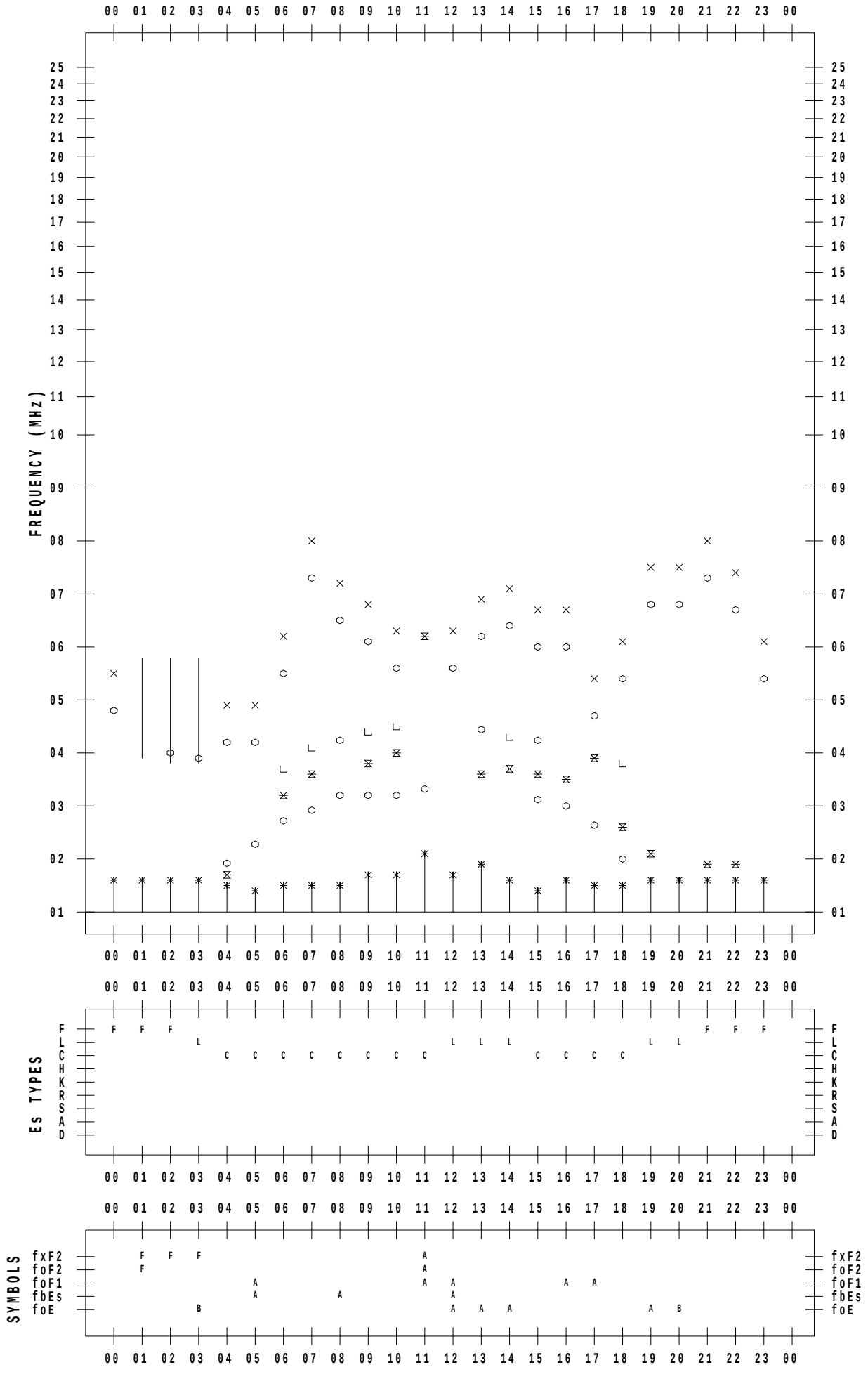
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/27

135 °E MEAN TIME



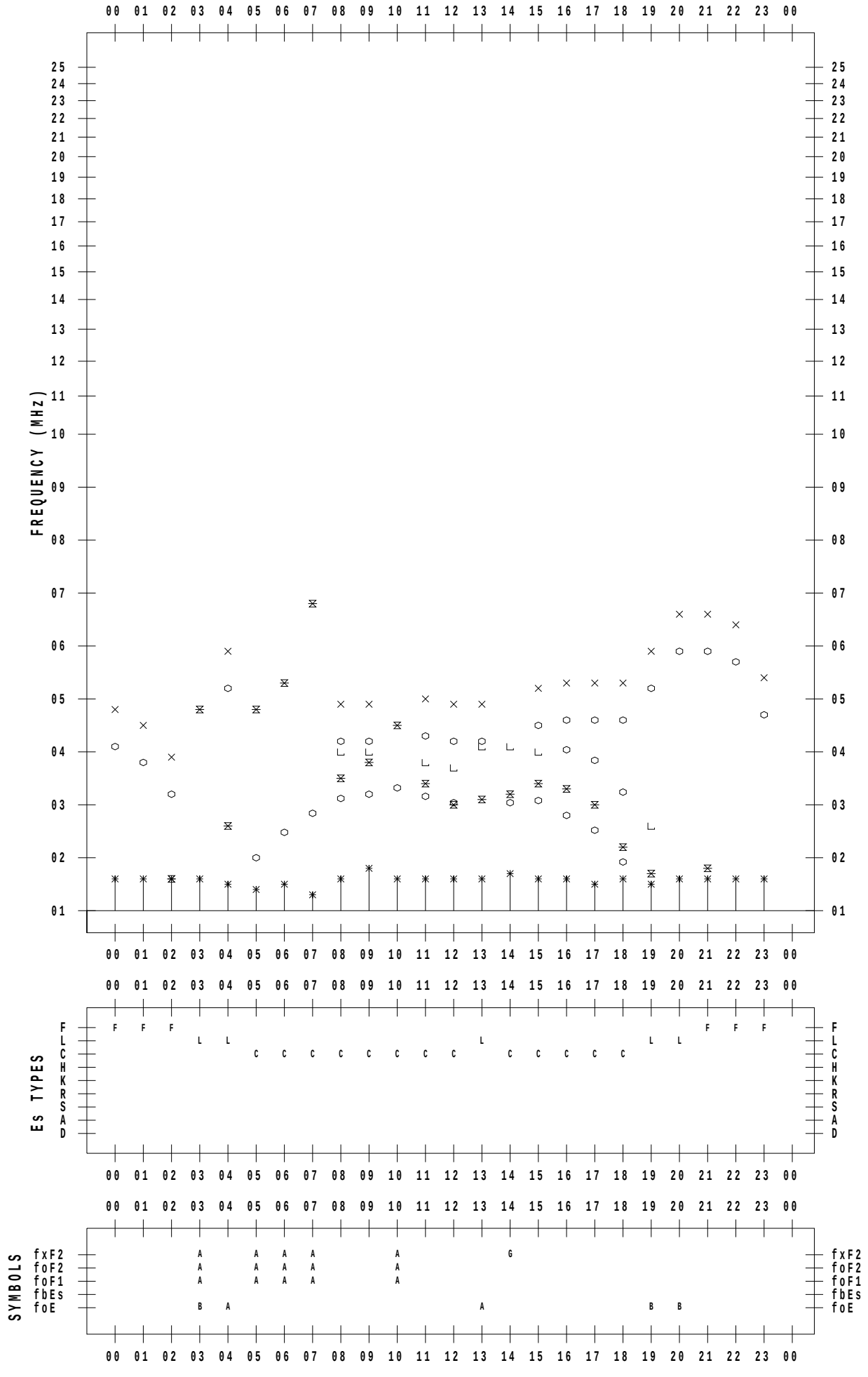
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/28

135 °E MEAN TIME



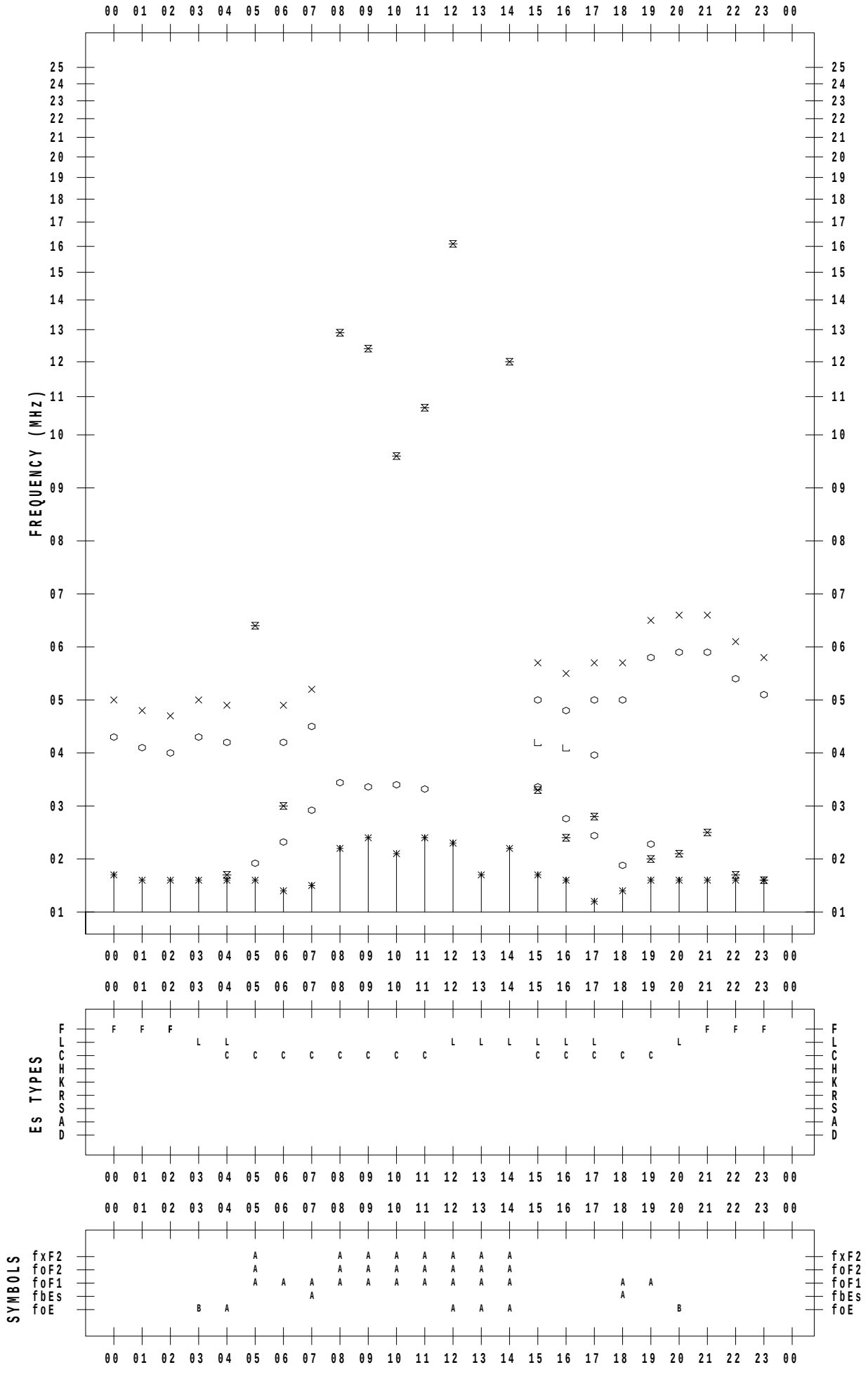
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/29

135 °E MEAN TIME



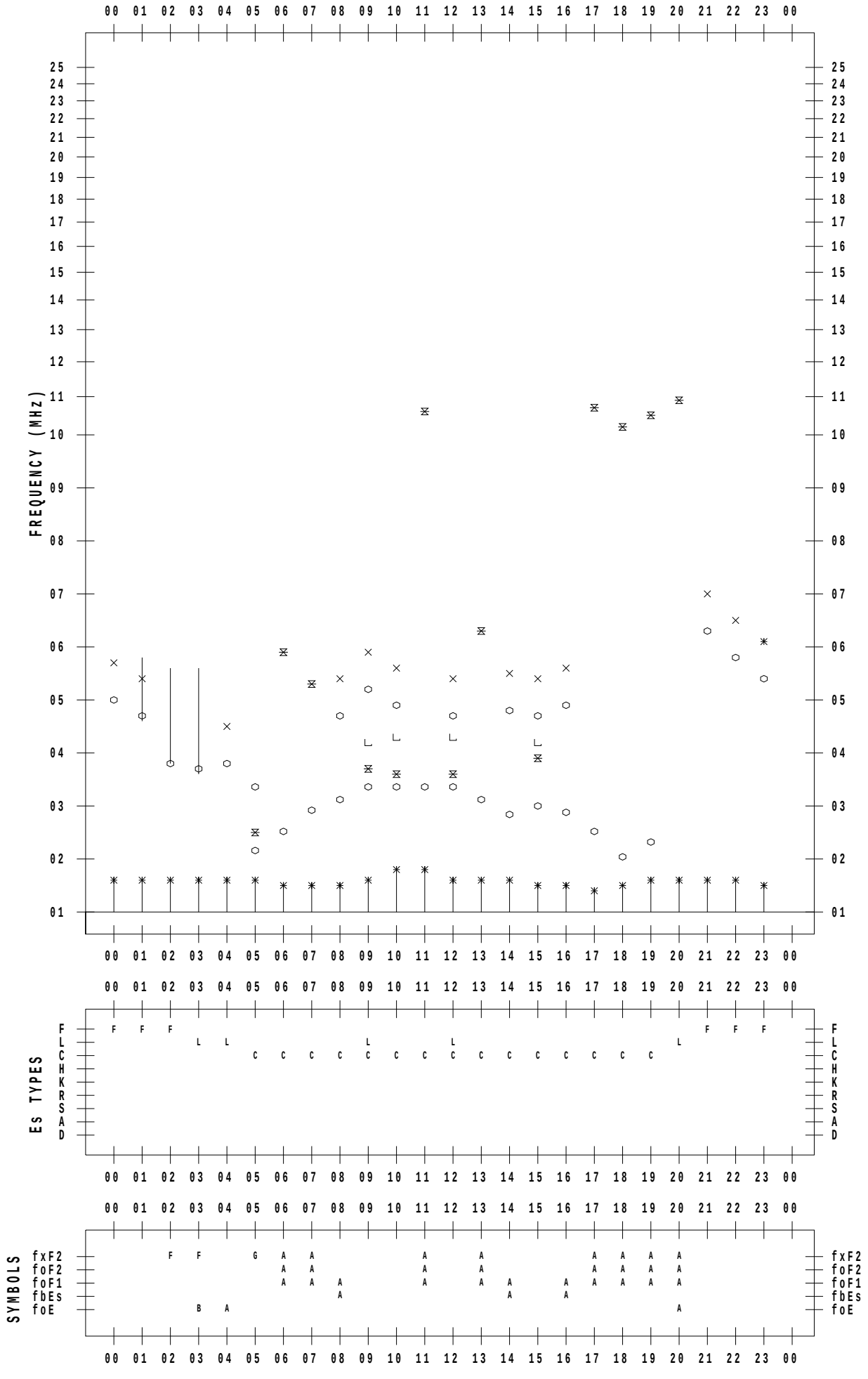
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/30

135 °E MEAN TIME



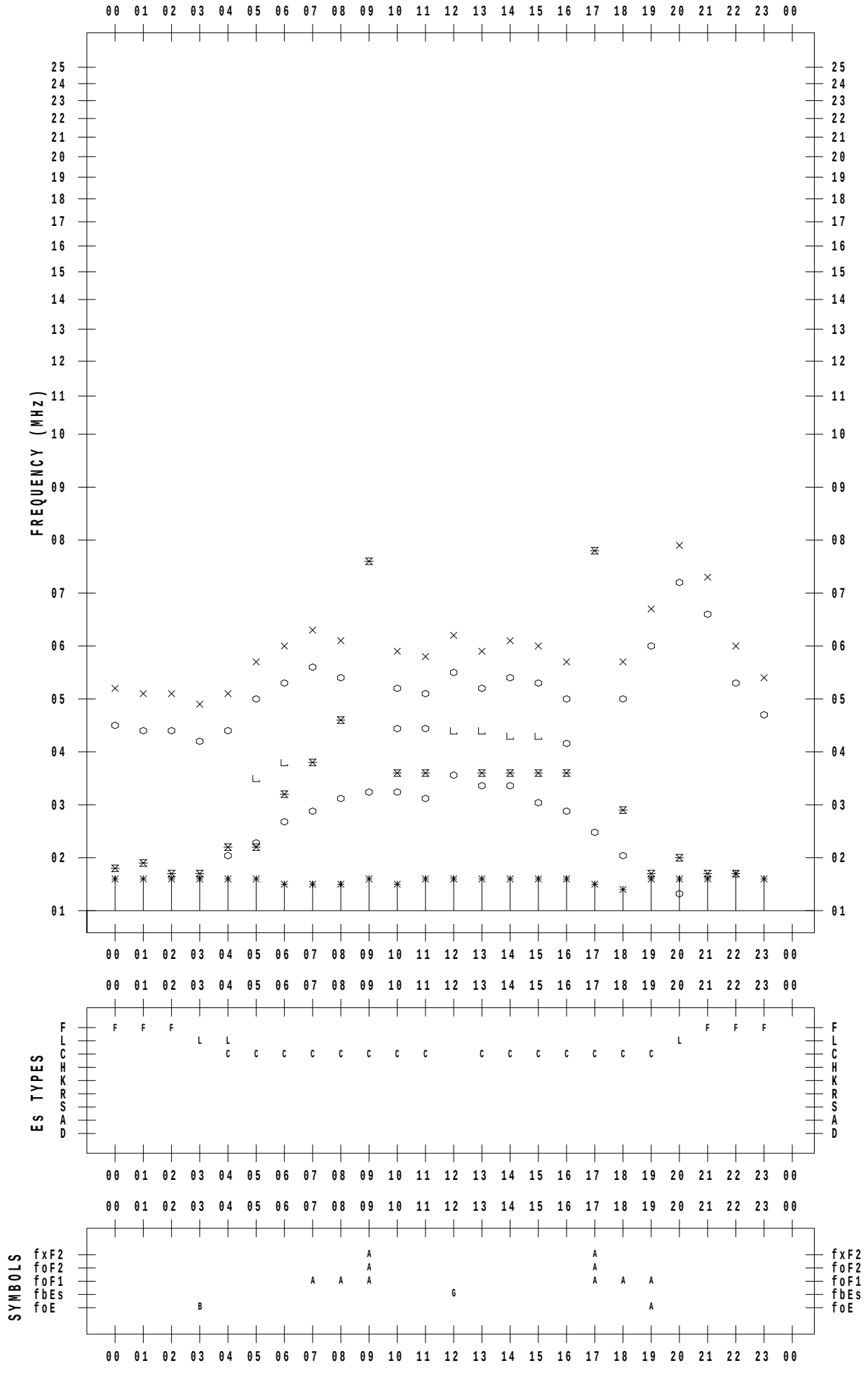
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2021/ 5/31

135 °E MEAN TIME



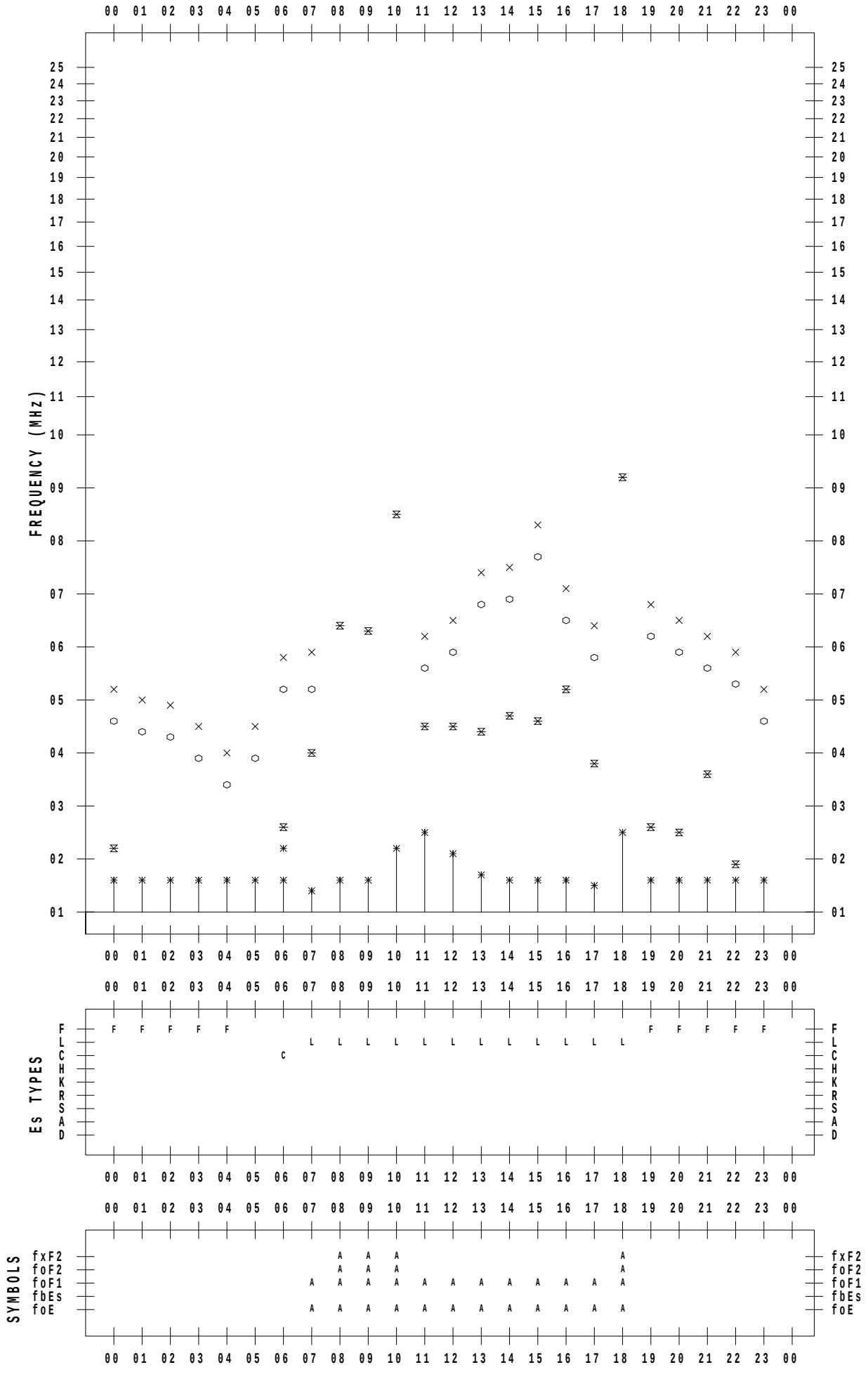
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 1

135 °E MEAN TIME



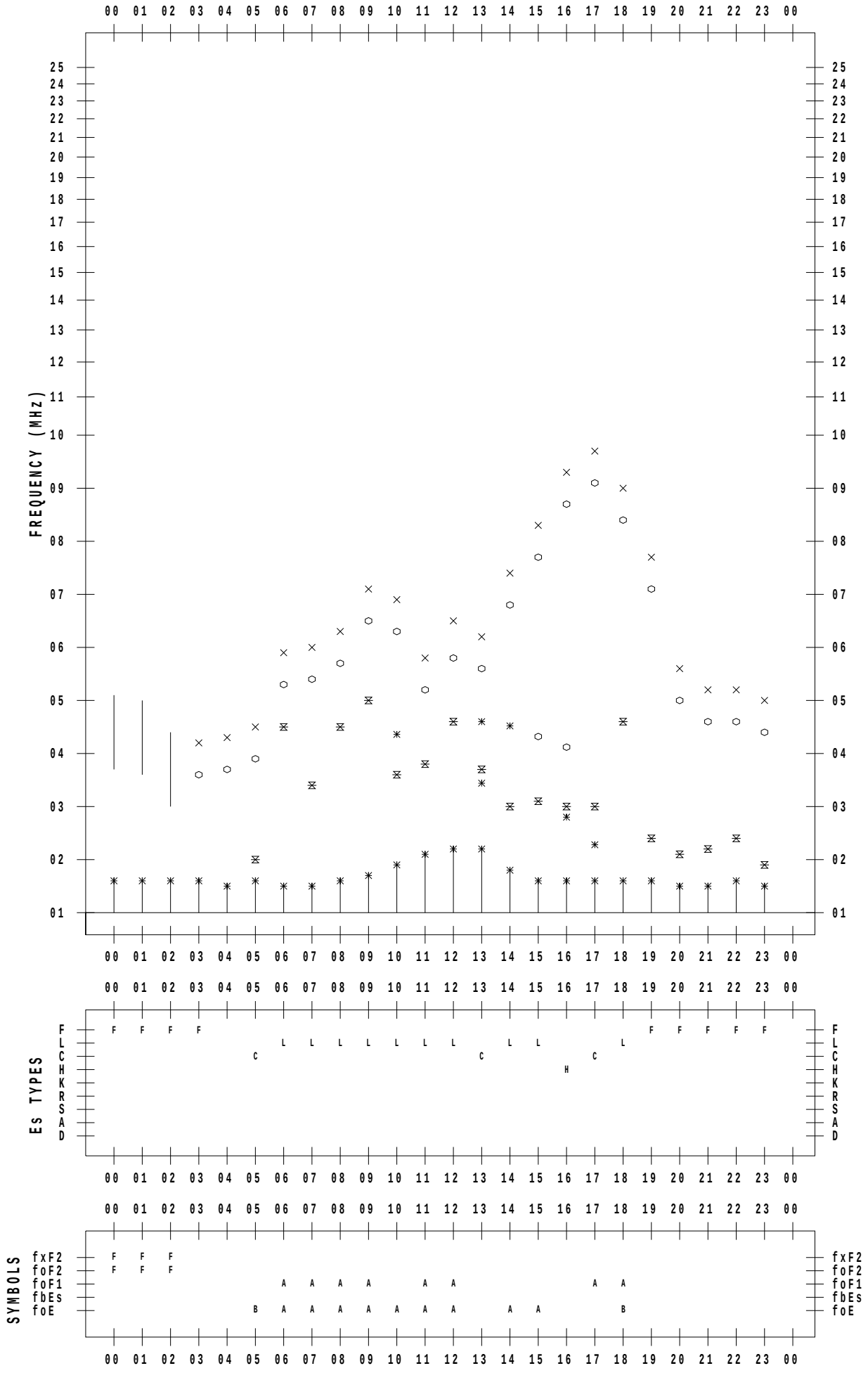
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 2

135 °E MEAN TIME



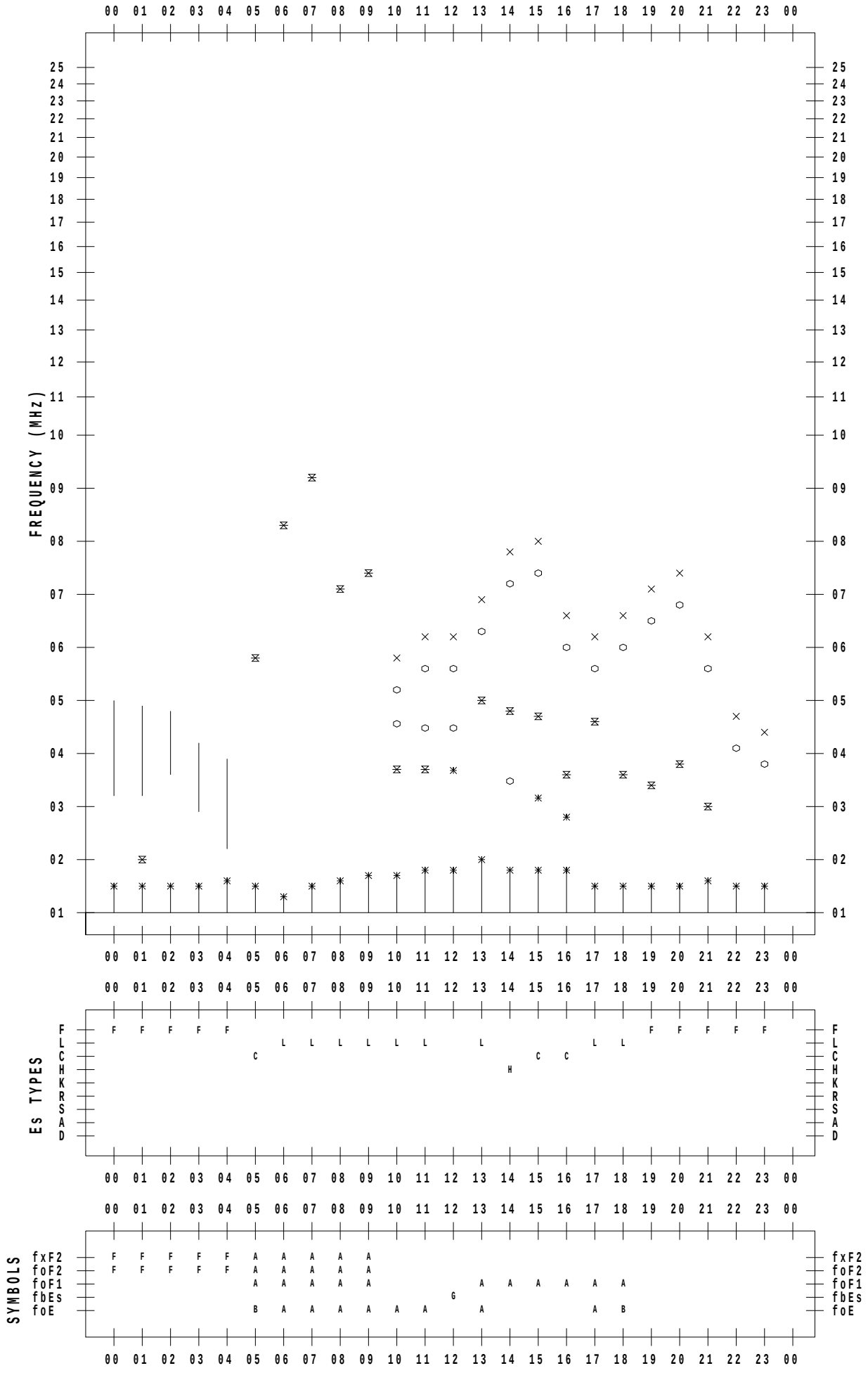
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 3

135 °E MEAN TIME



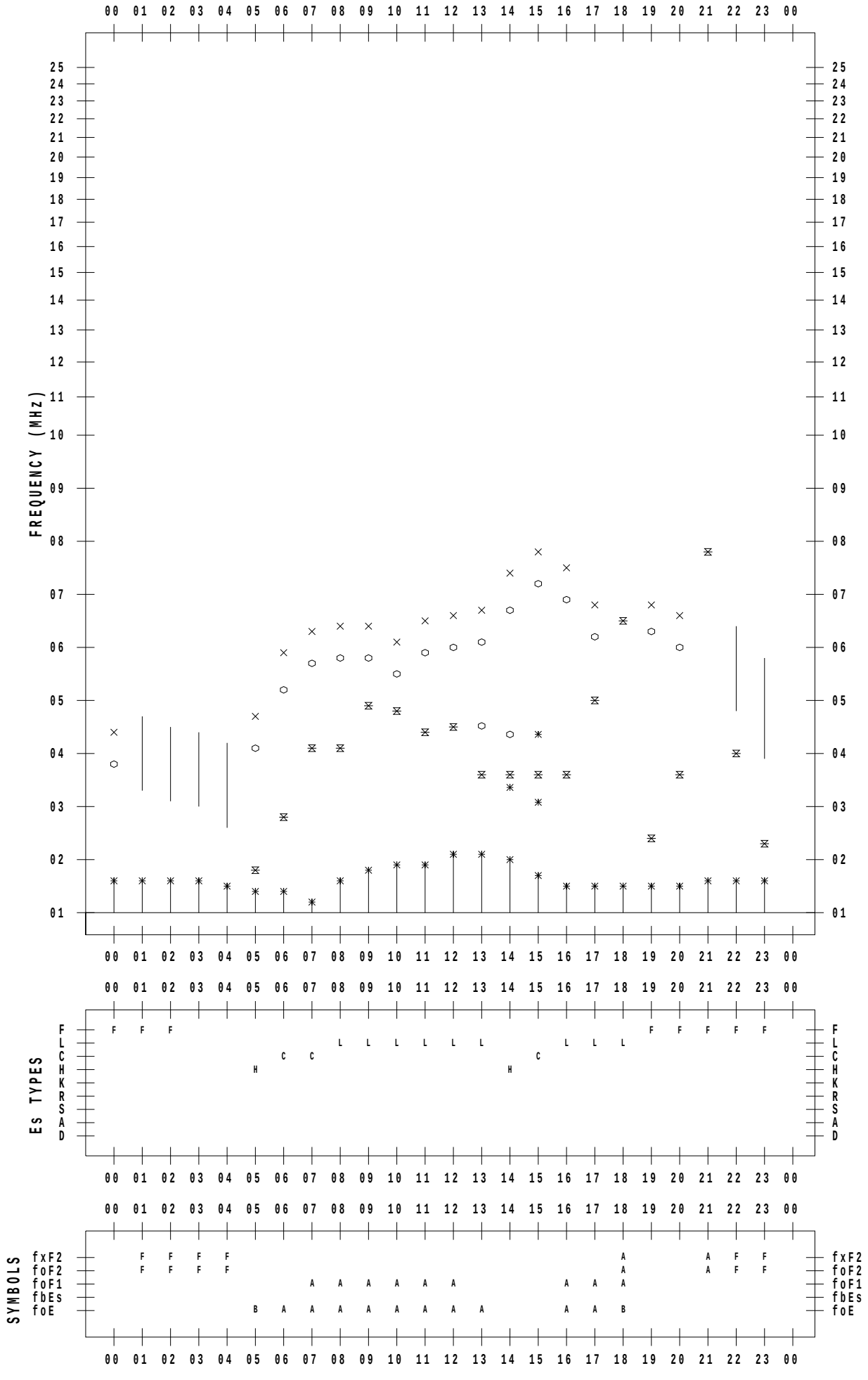
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 4

135 °E MEAN TIME



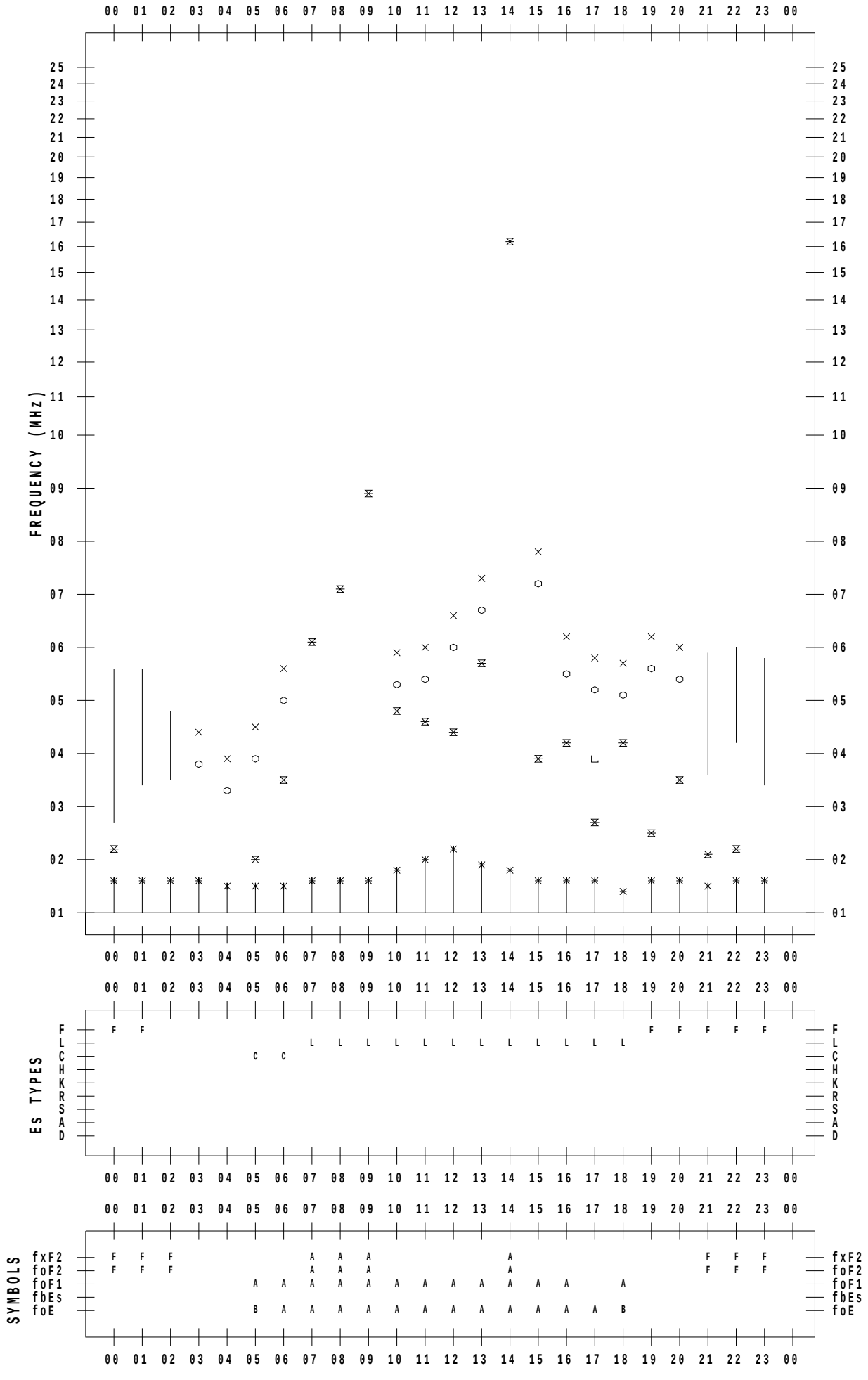
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 5

135 °E MEAN TIME



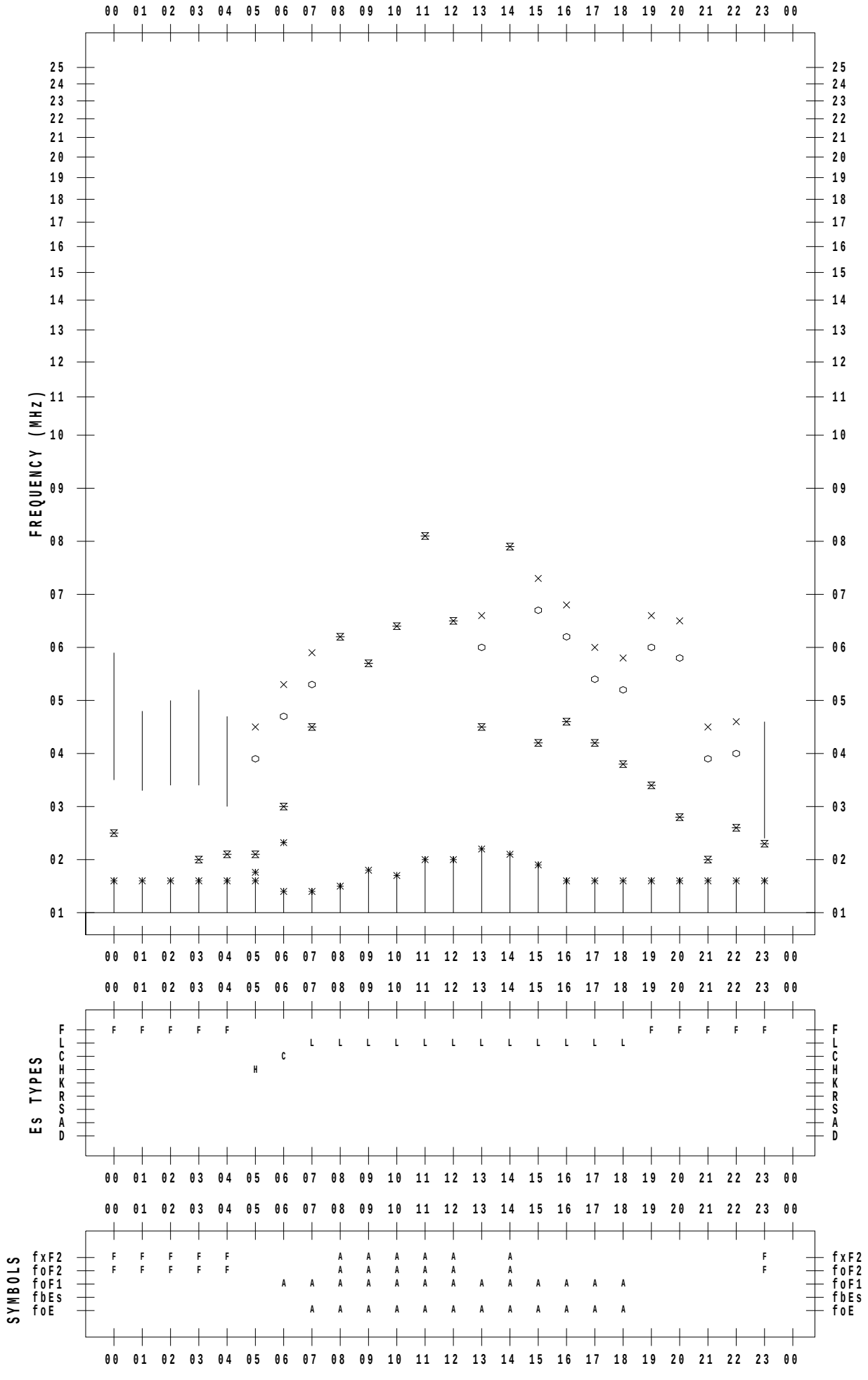
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 6

135 °E MEAN TIME



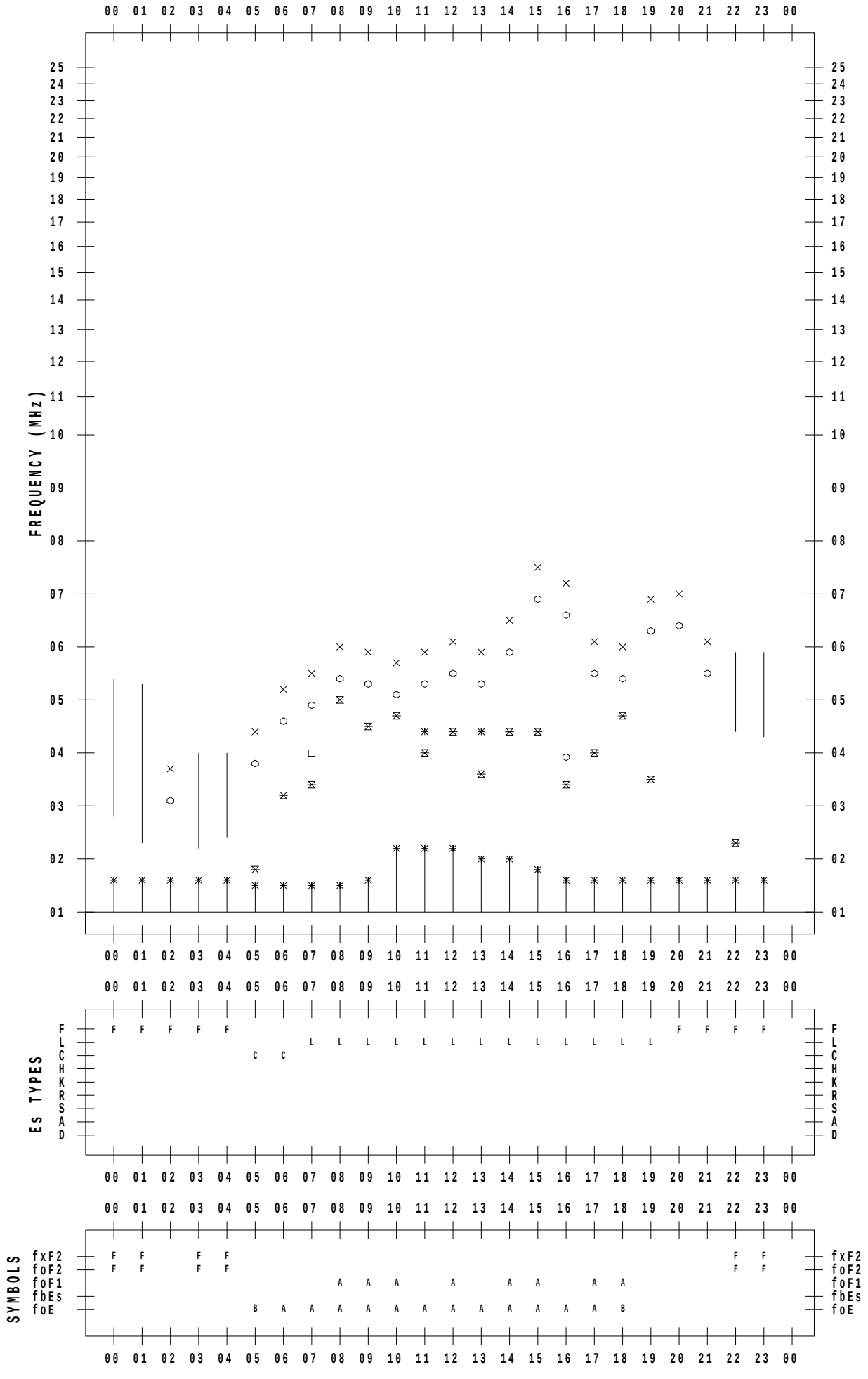
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 7

135 °E MEAN TIME



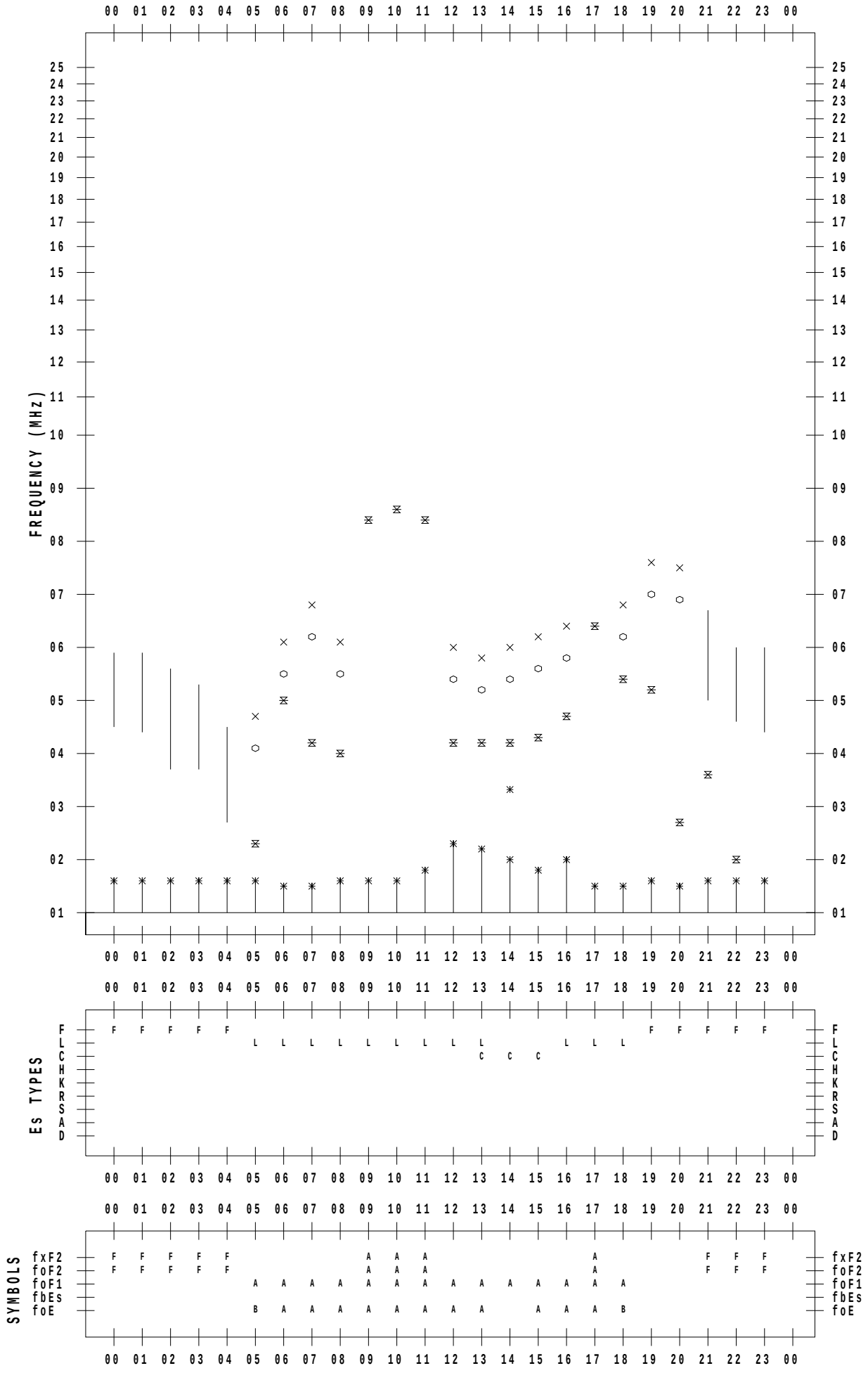
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 8

135 °E MEAN TIME



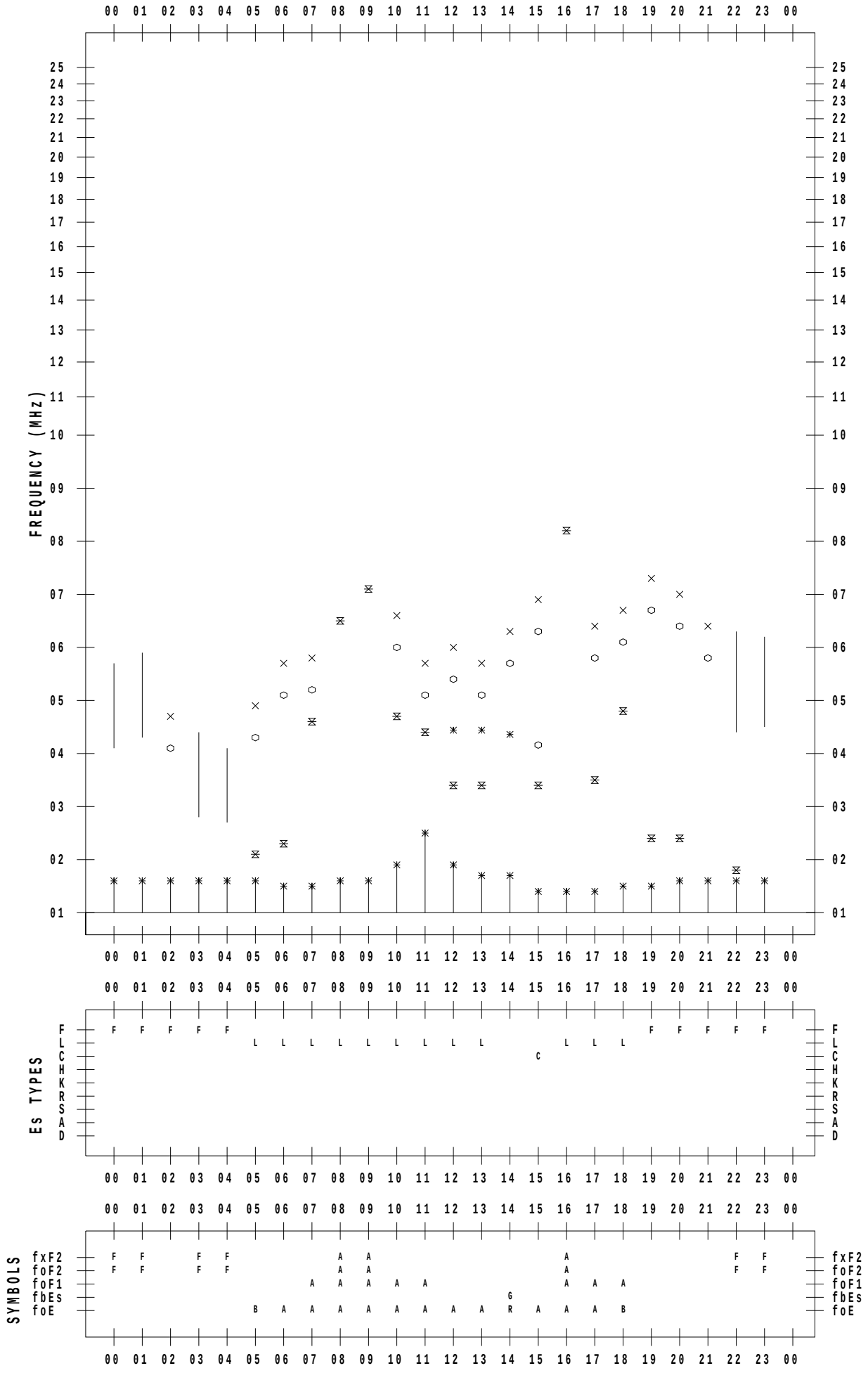
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/ 9

135 °E MEAN TIME



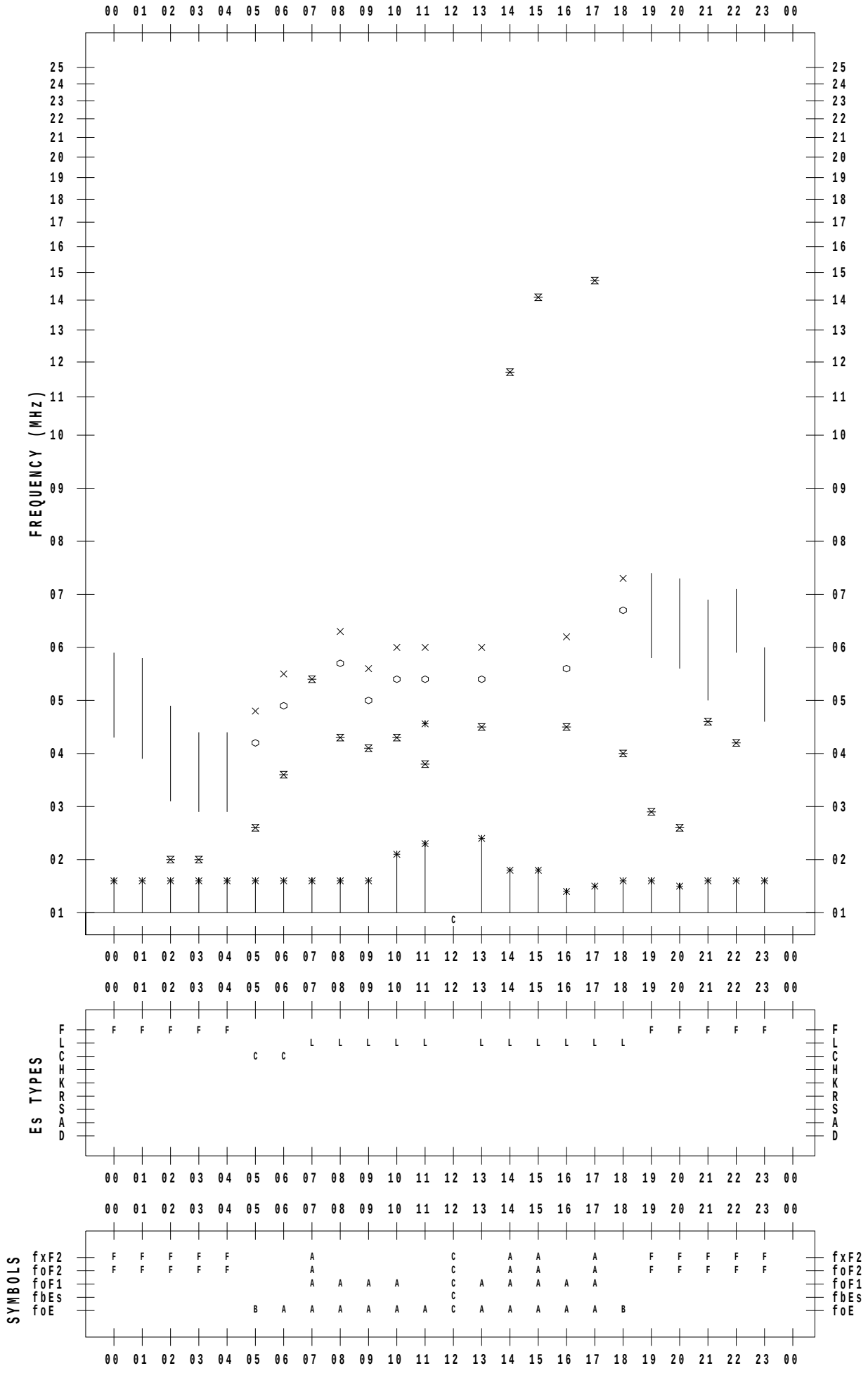
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/10

135 °E MEAN TIME



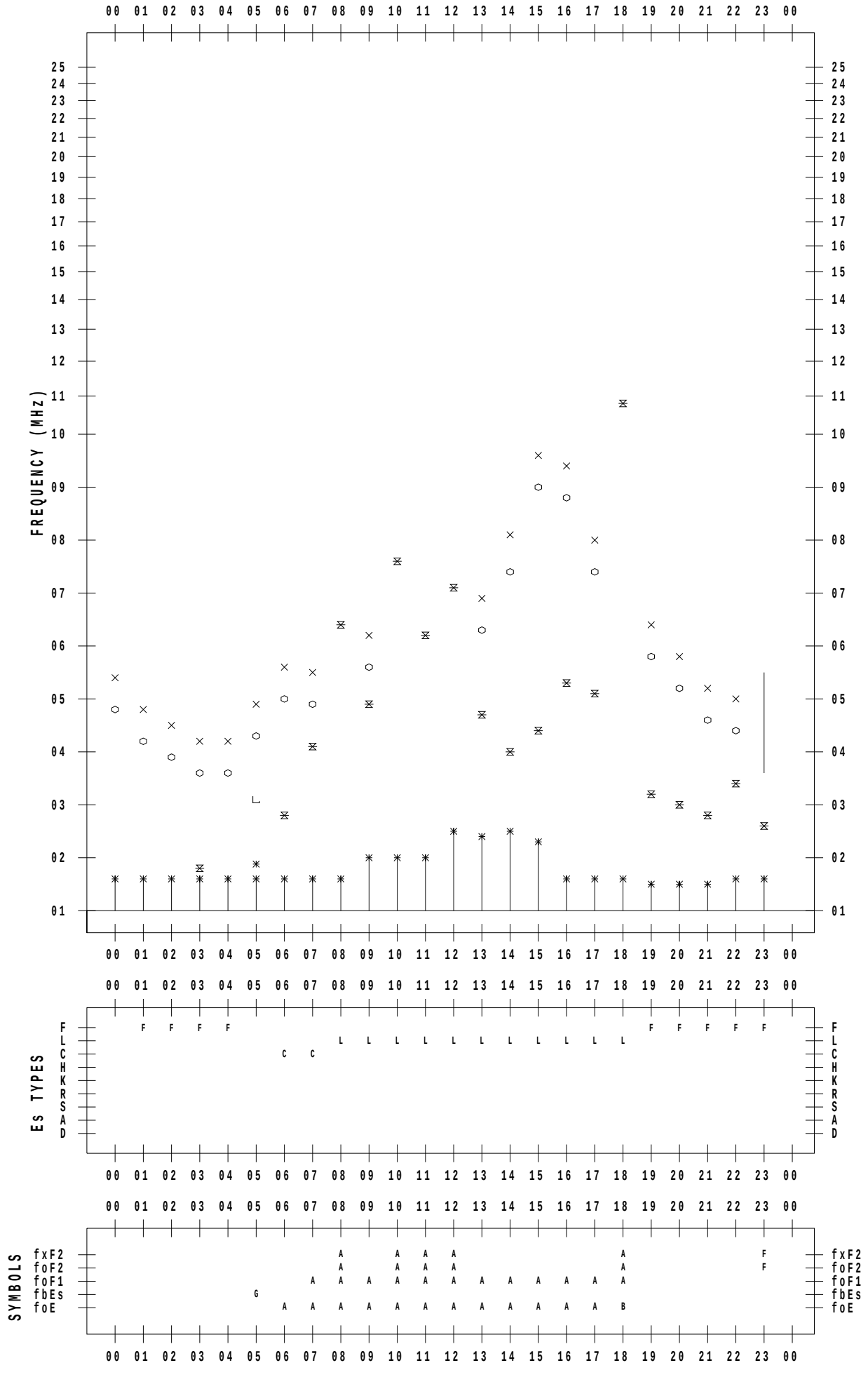
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/11

135 °E MEAN TIME



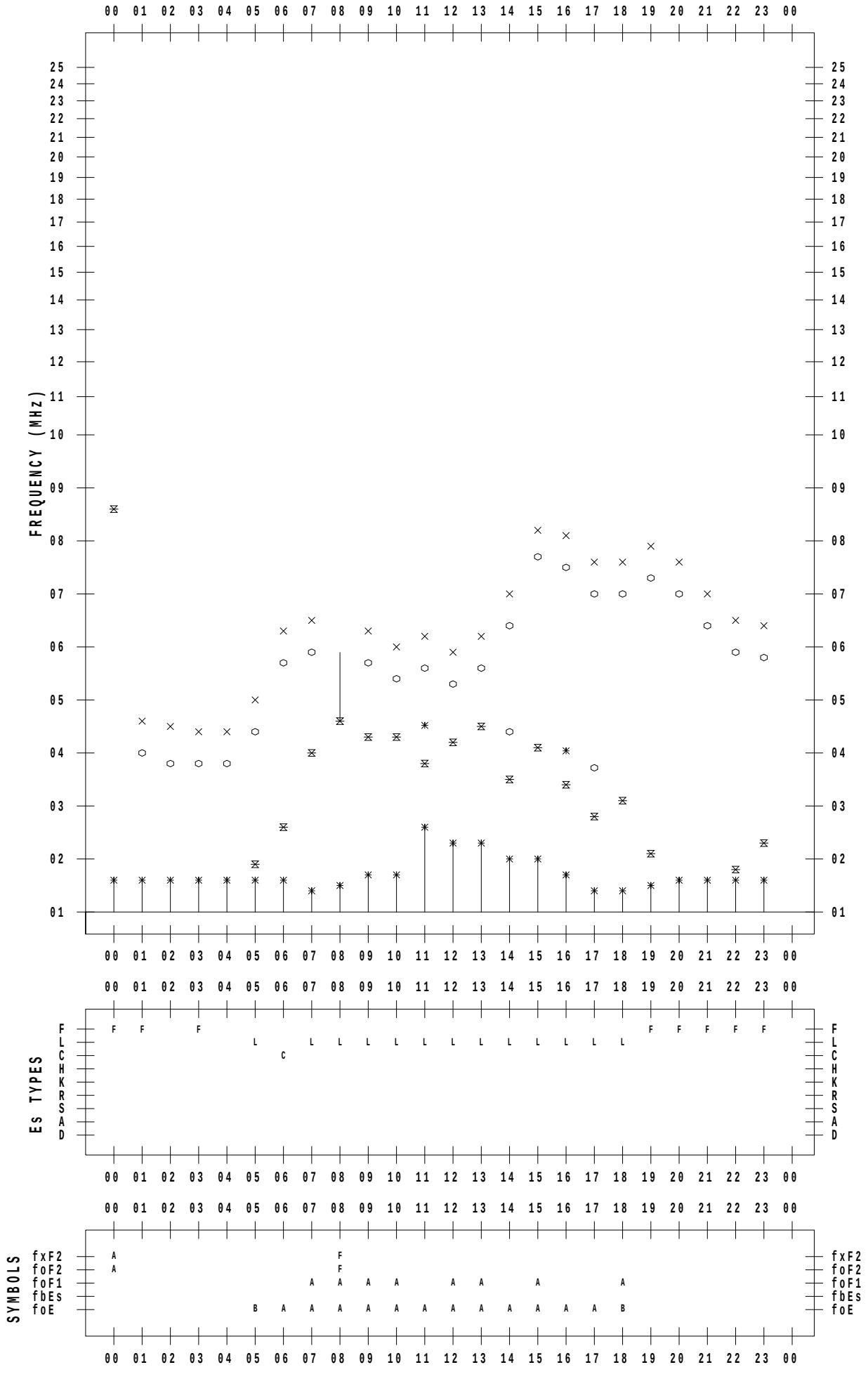
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/12

135 °E MEAN TIME



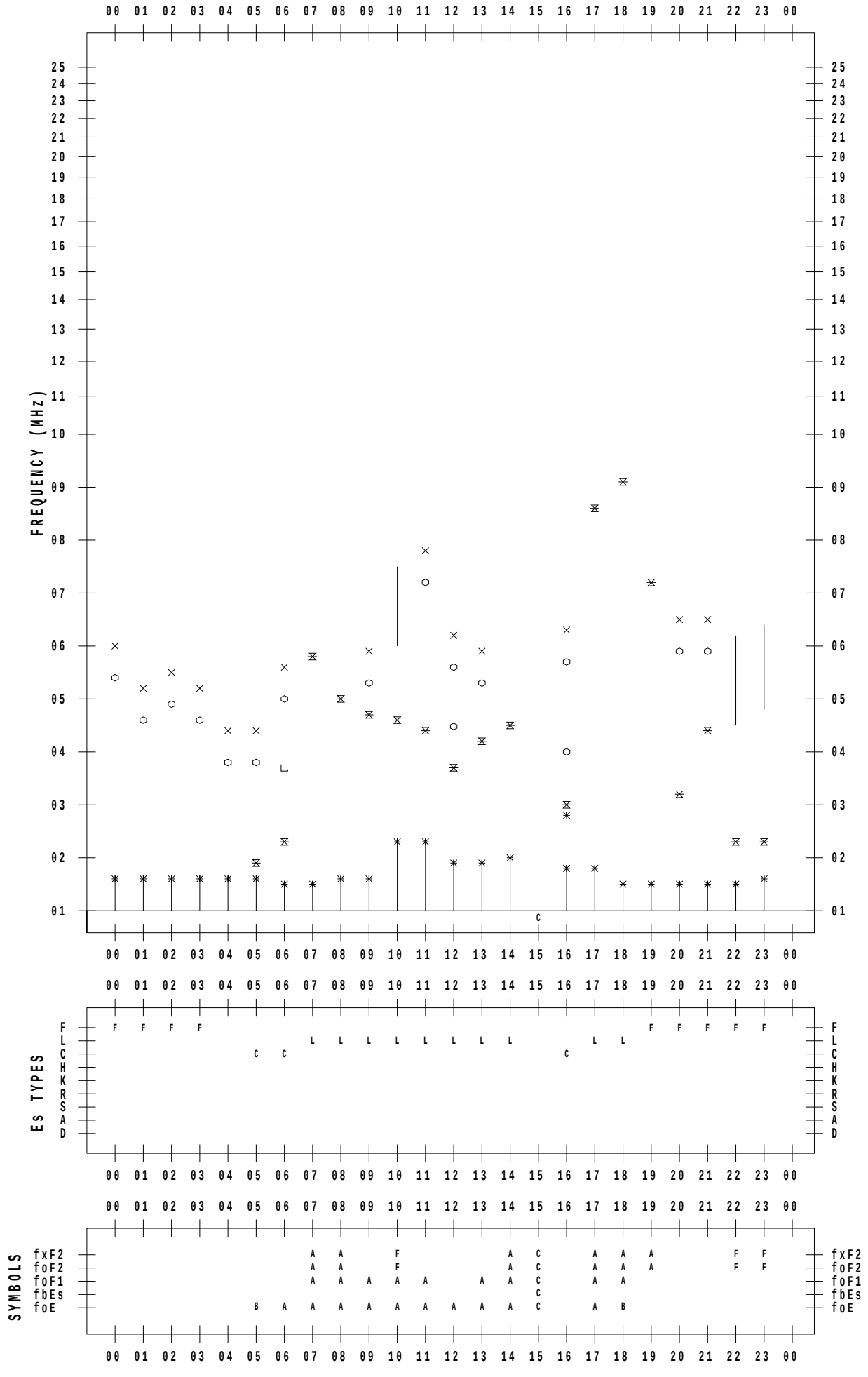
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/13

135 °E MEAN TIME



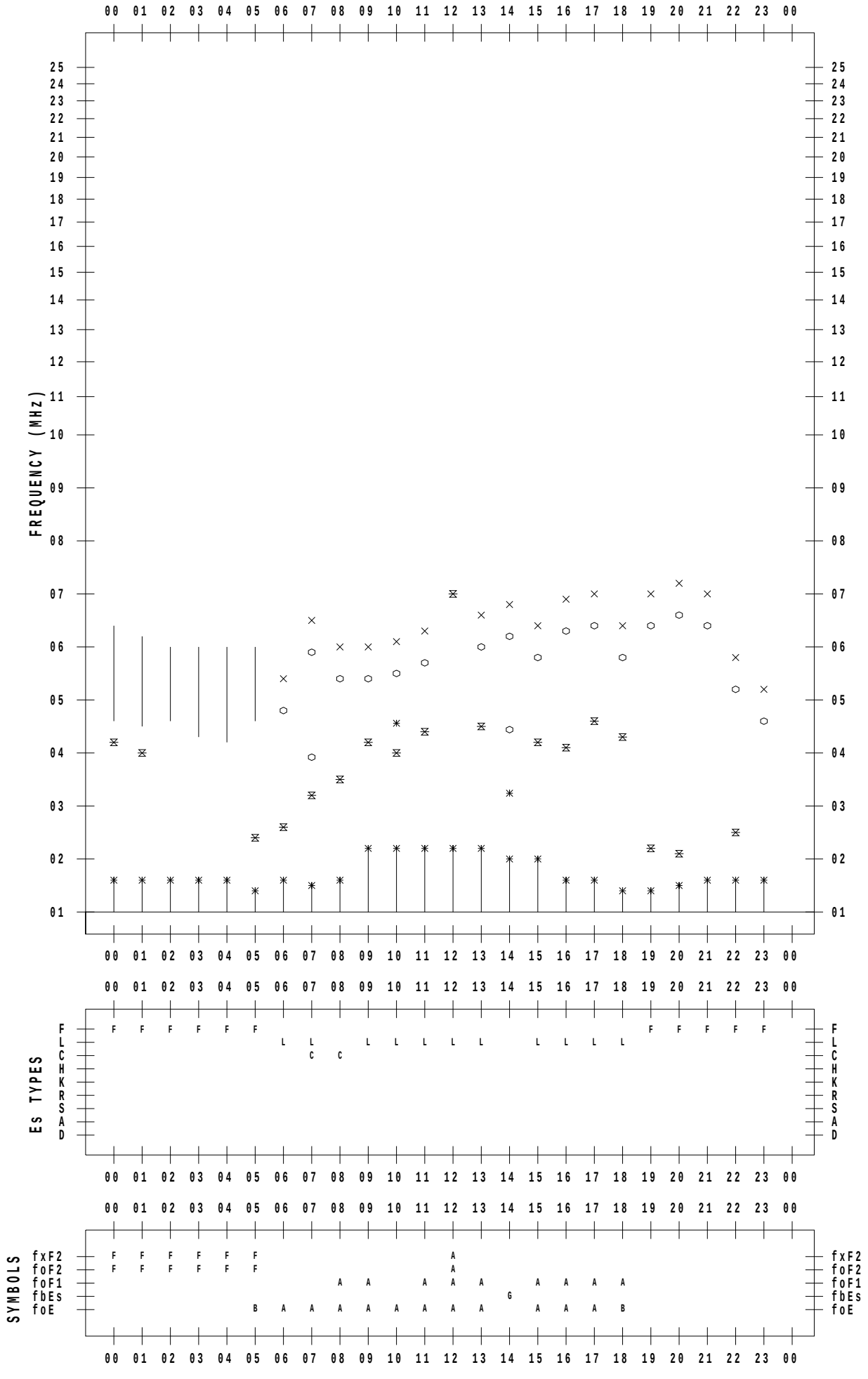
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/14

135 °E MEAN TIME



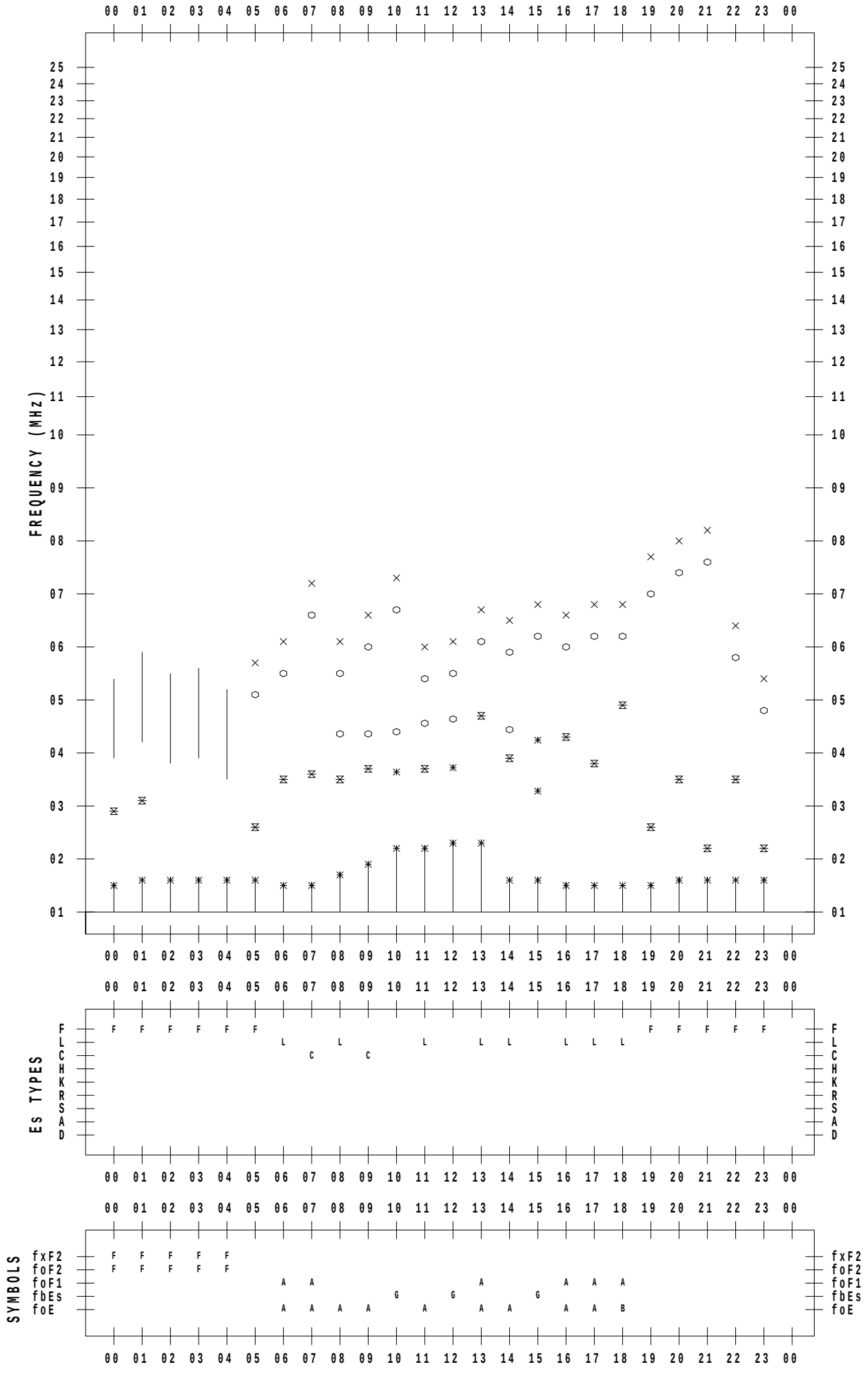
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/15

135 °E MEAN TIME



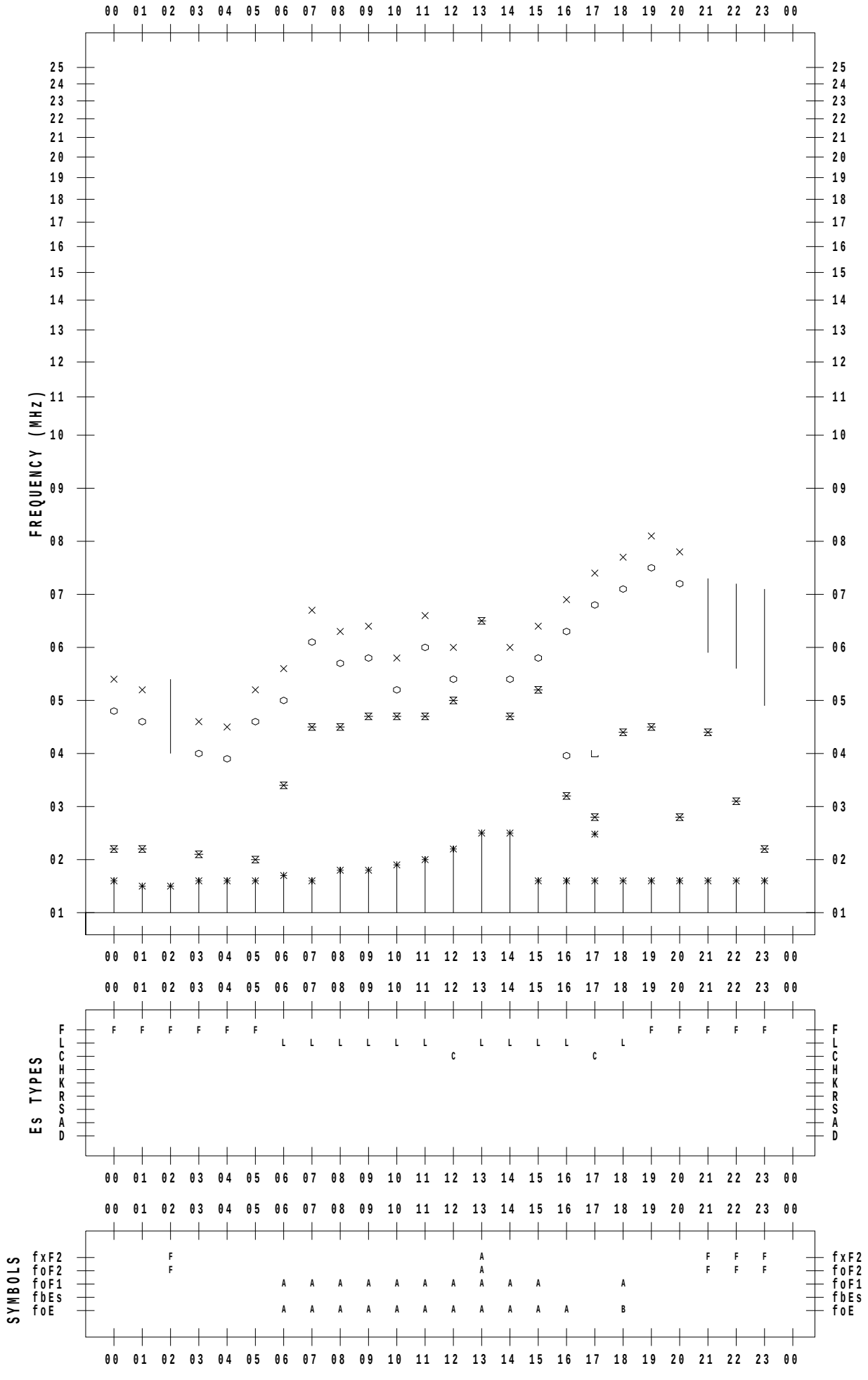
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/16

135 °E MEAN TIME



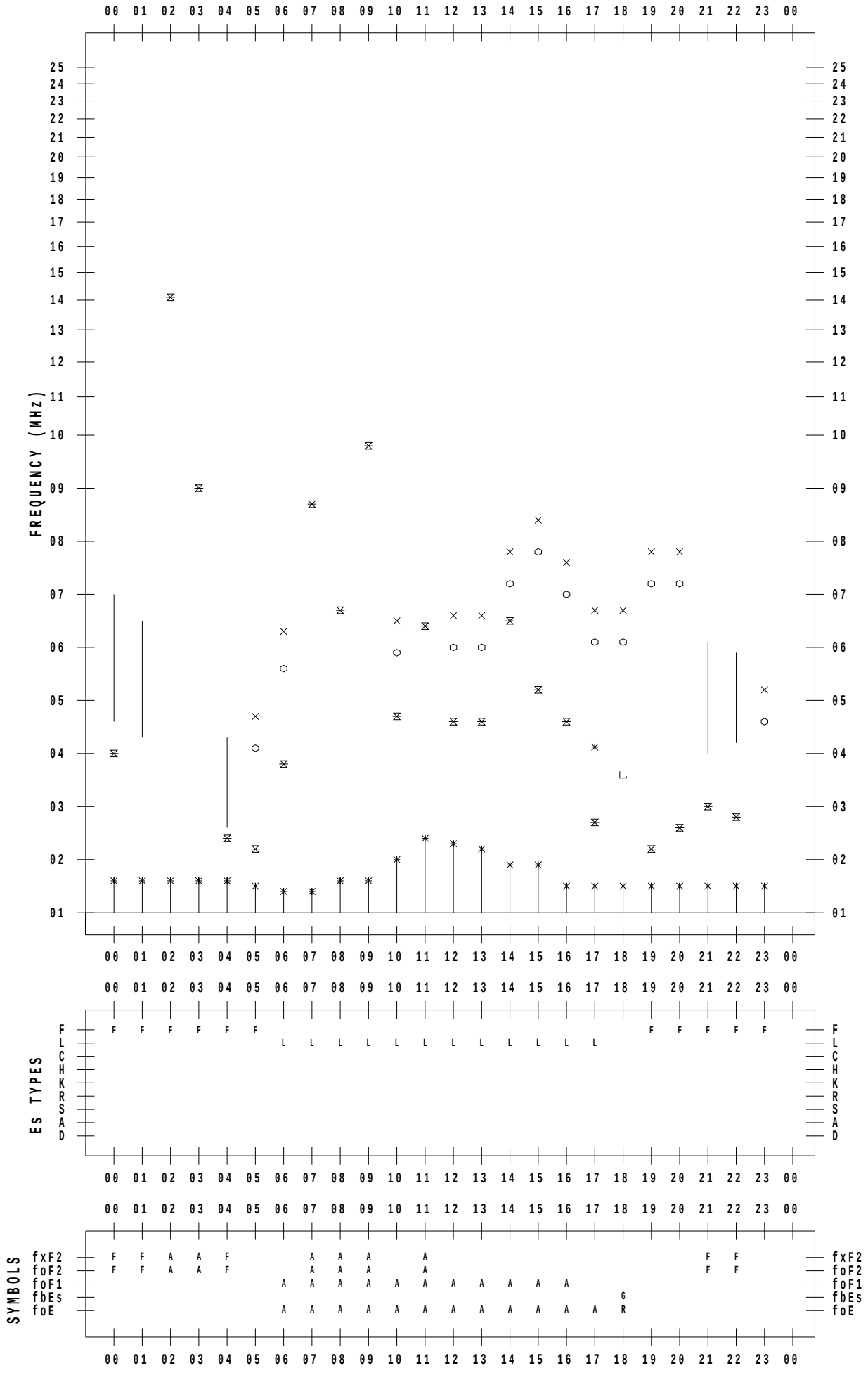
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/17

135 °E MEAN TIME



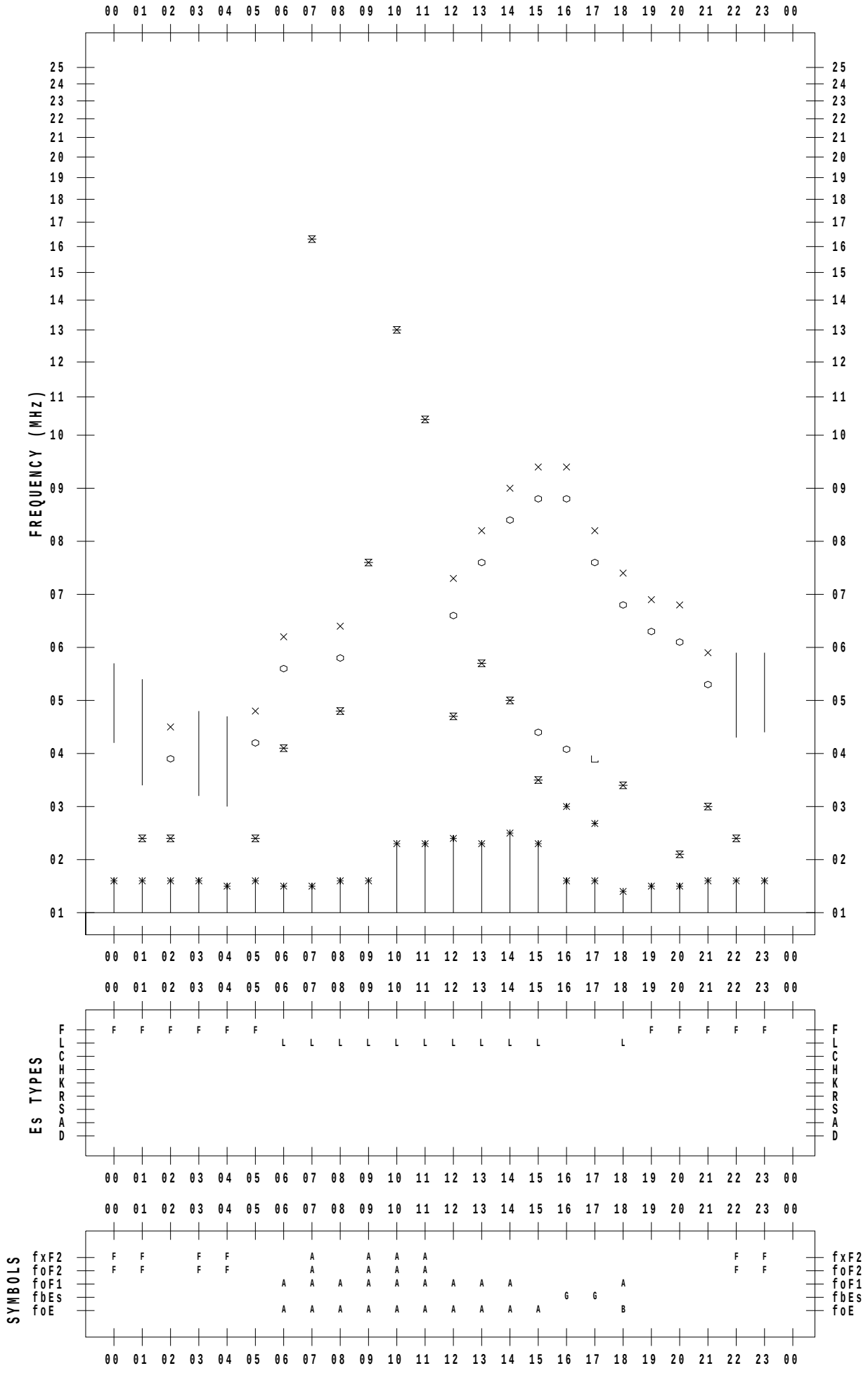
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/18

135 °E MEAN TIME



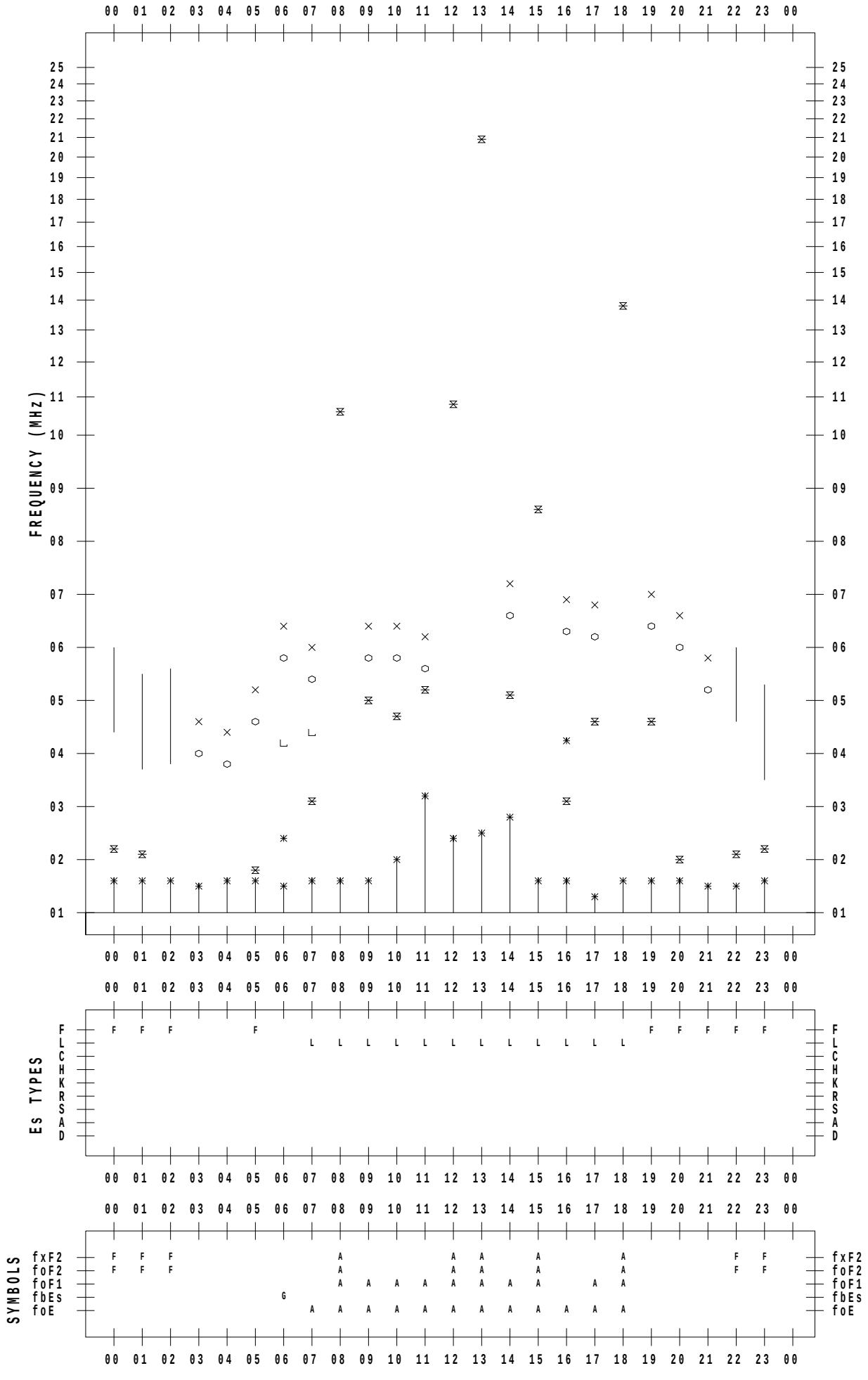
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/19

135 °E MEAN TIME



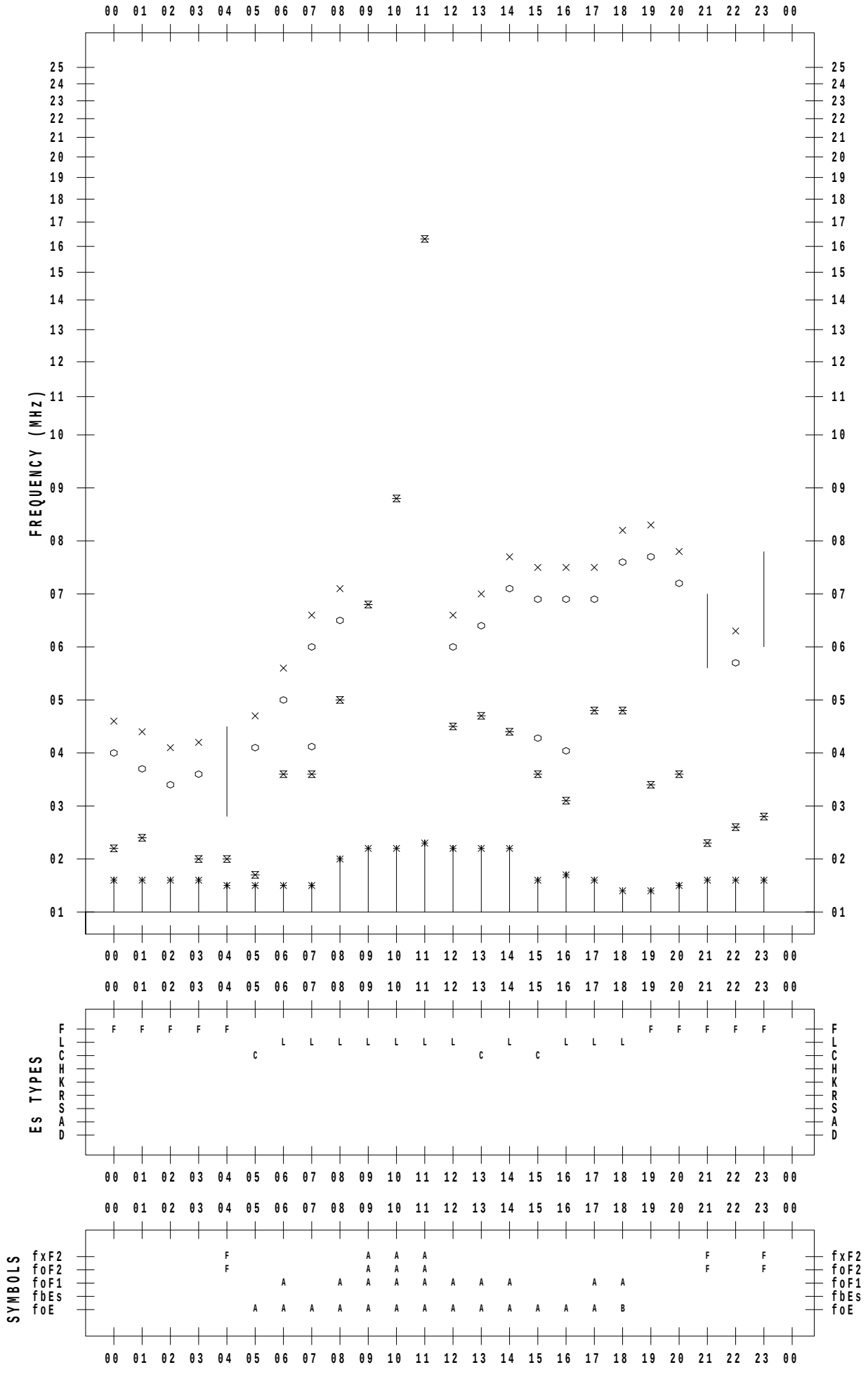
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/20

135 °E MEAN TIME



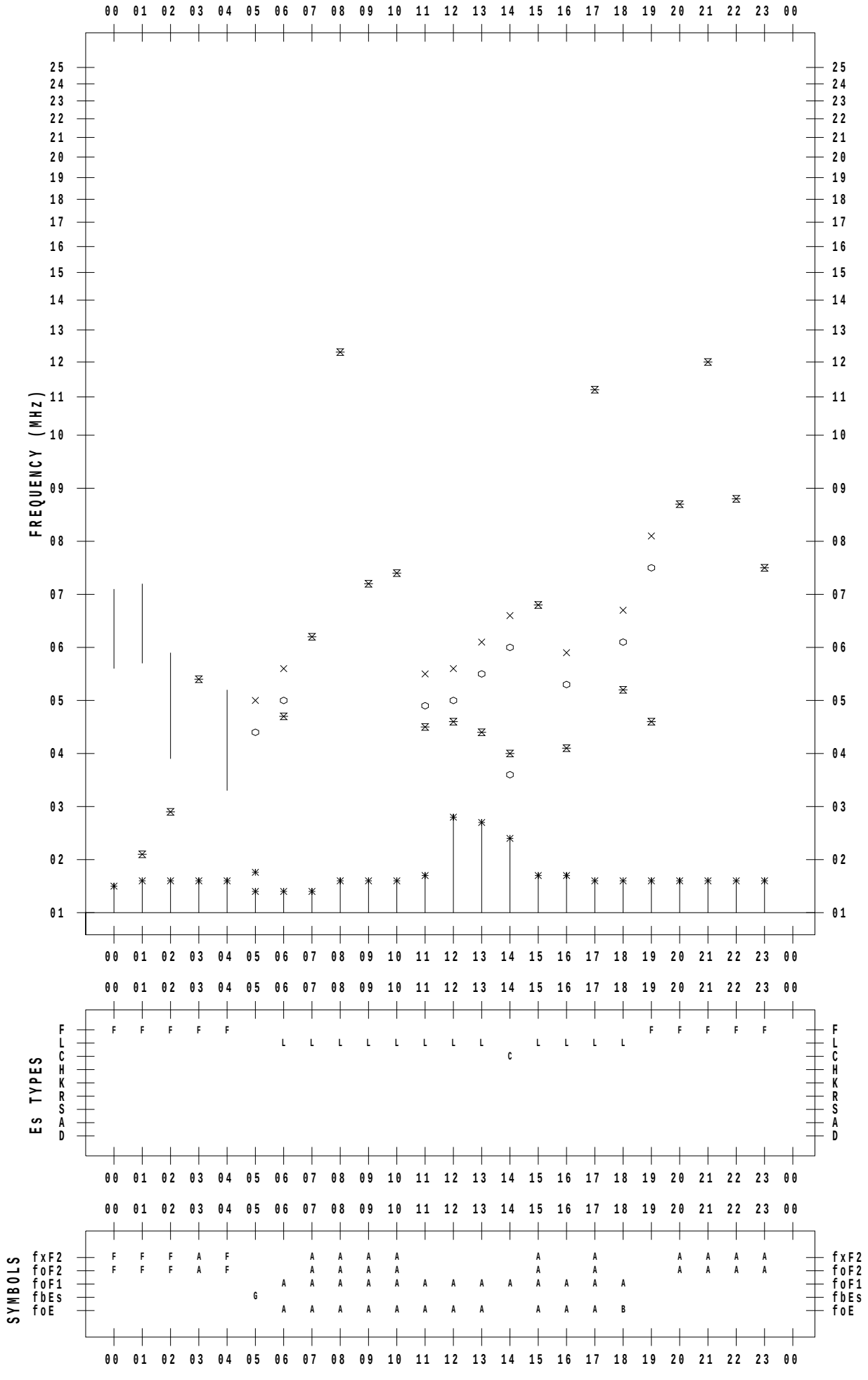
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/21

135 °E MEAN TIME



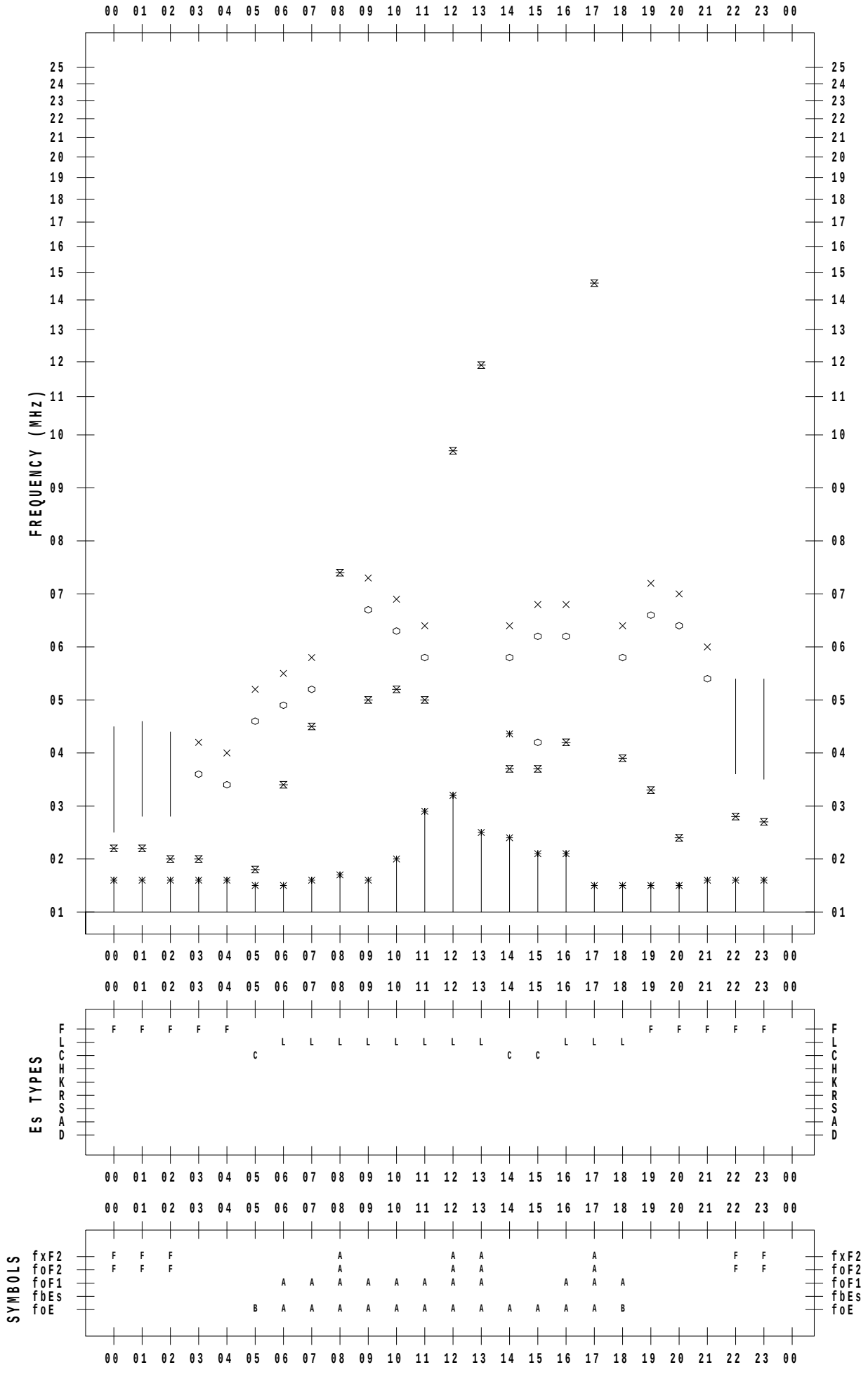
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/22

135 °E MEAN TIME



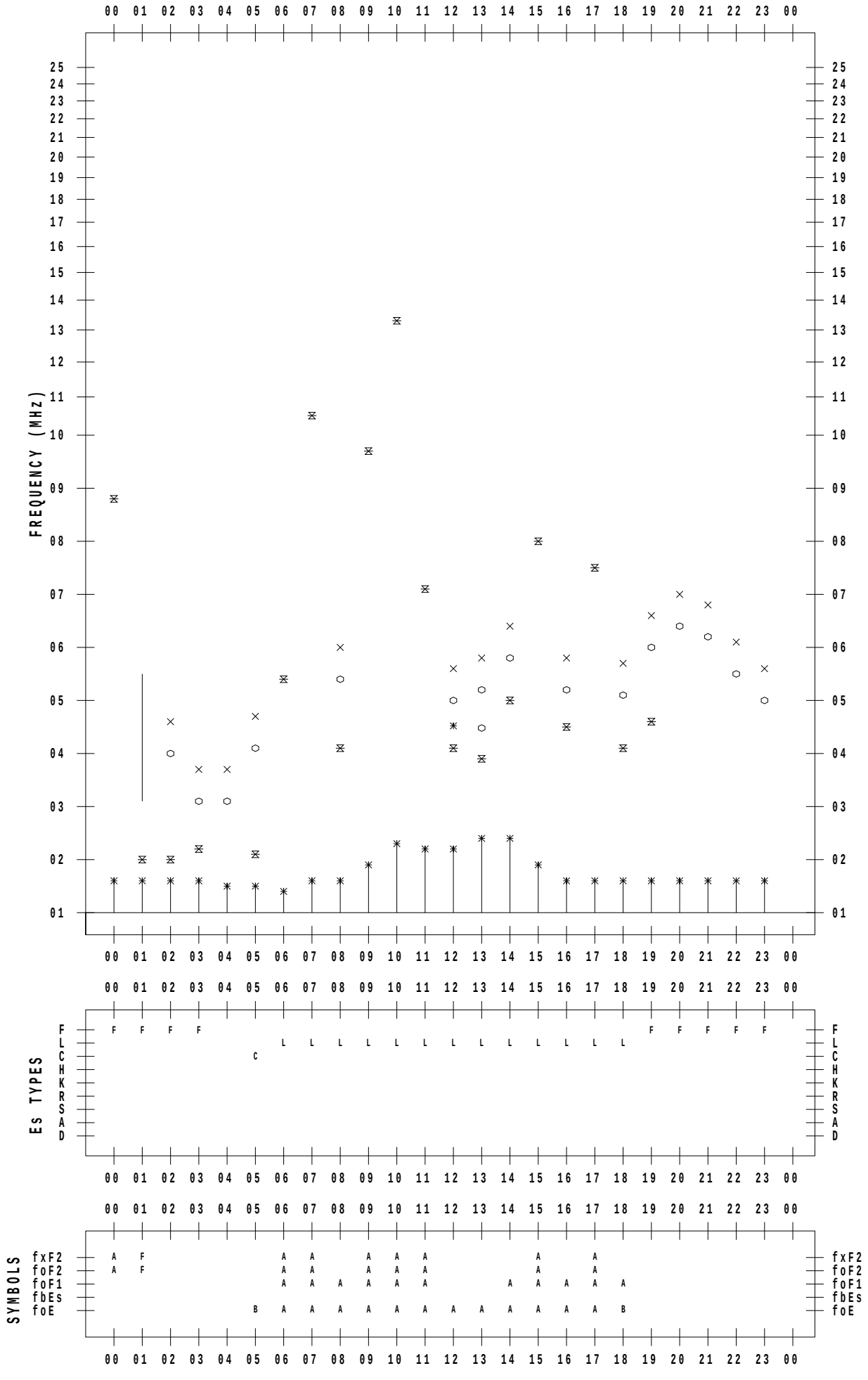
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/23

135 °E MEAN TIME



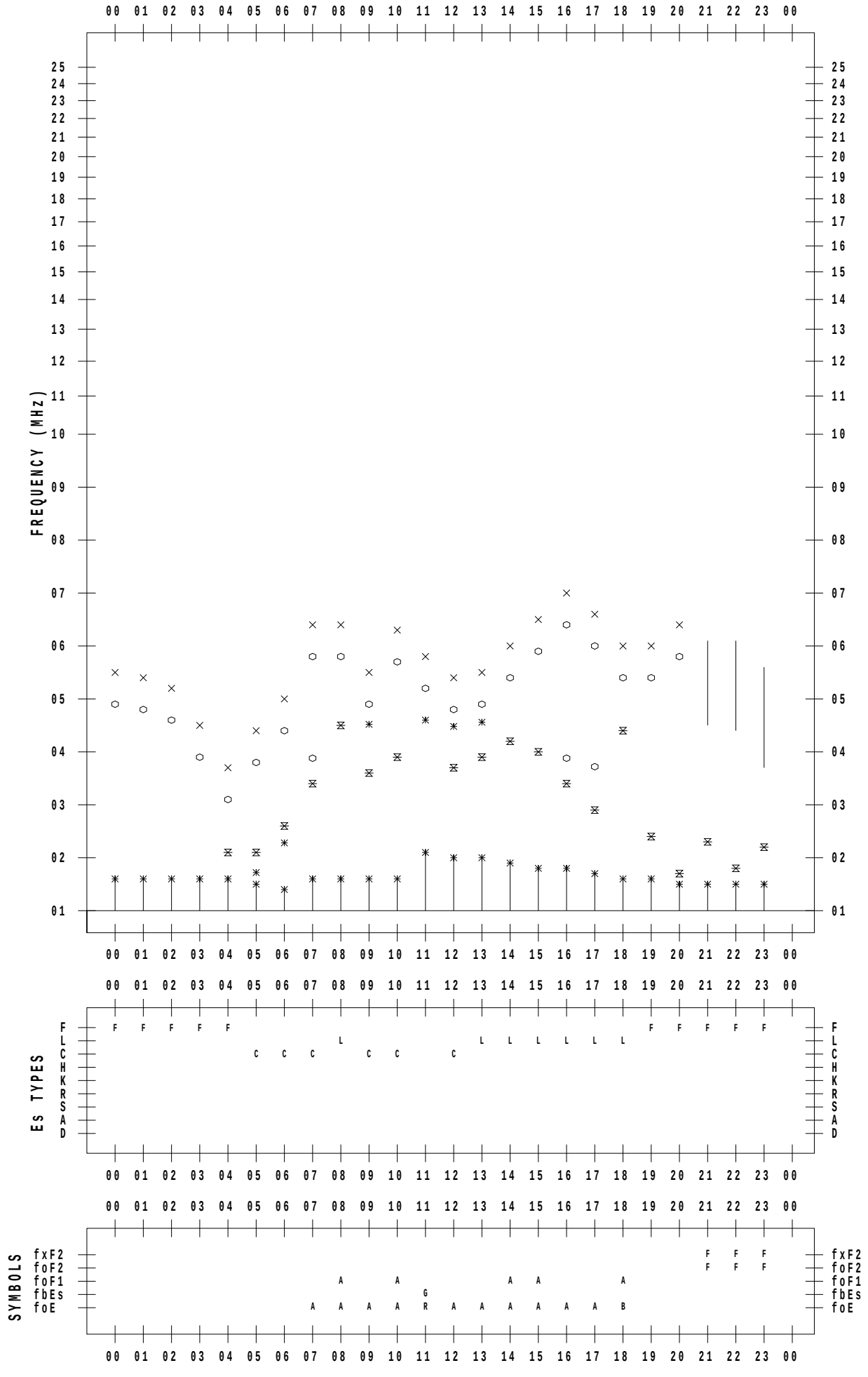
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/24

135 °E MEAN TIME



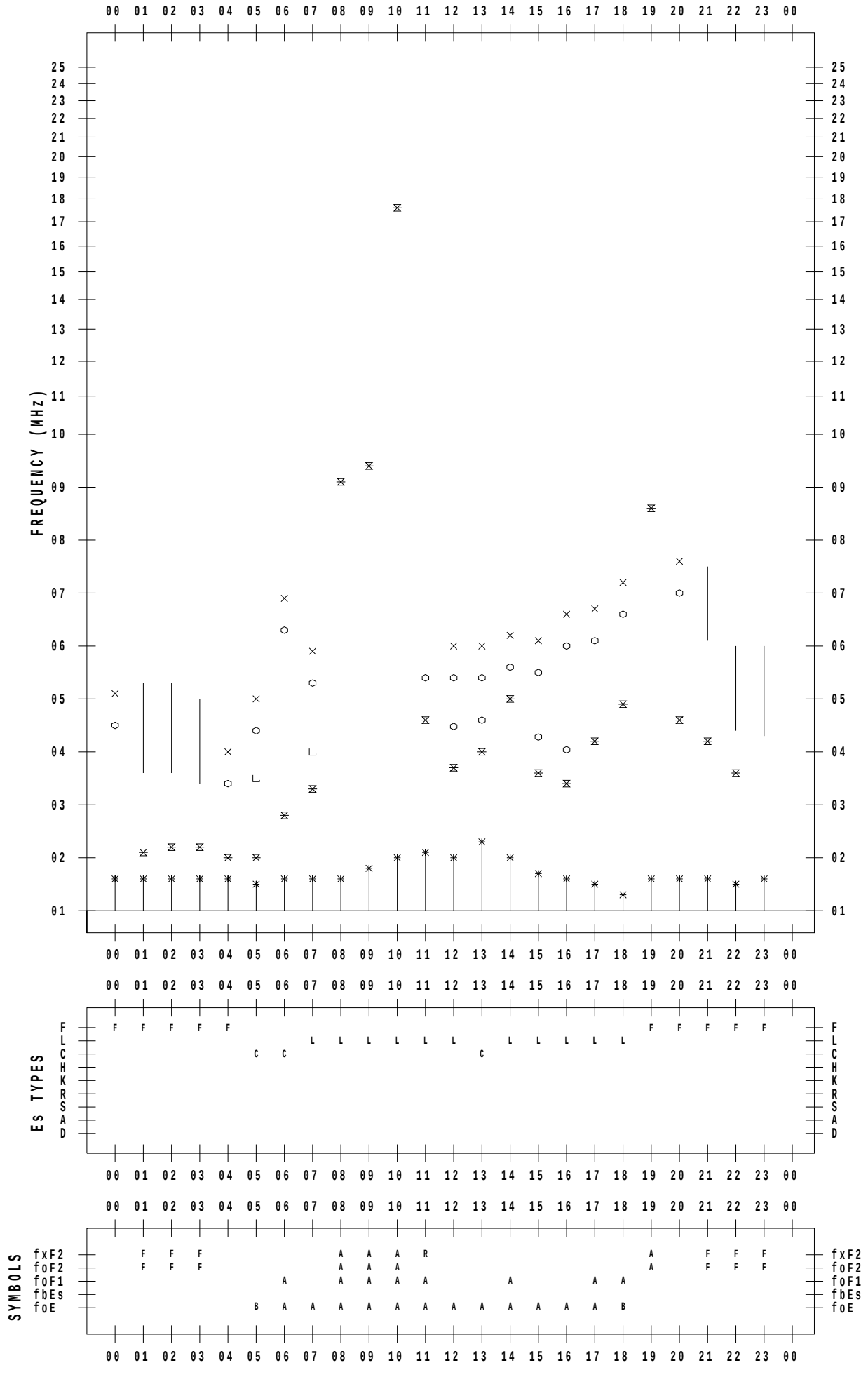
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/25

135 °E MEAN TIME



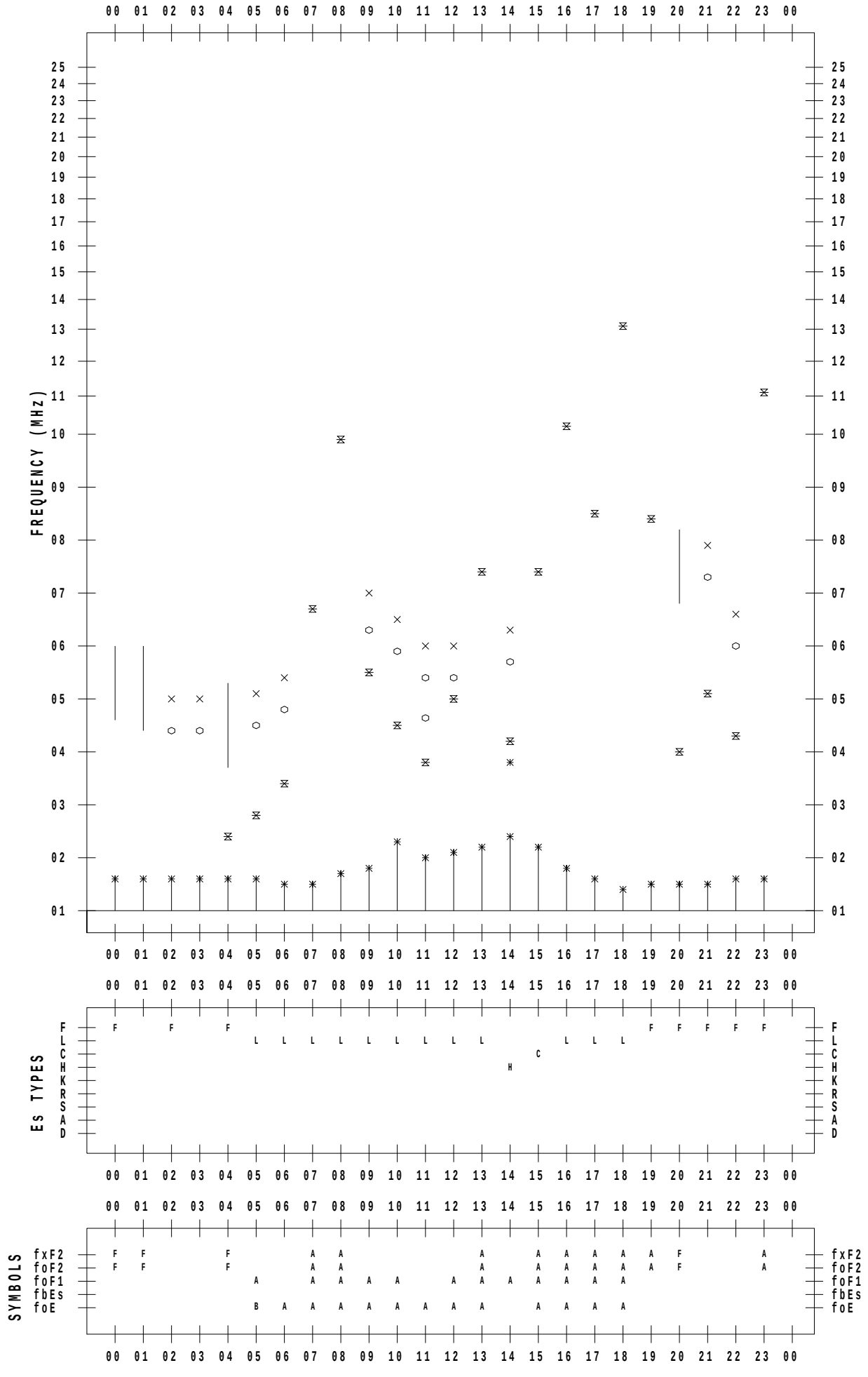
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/26

135 °E MEAN TIME



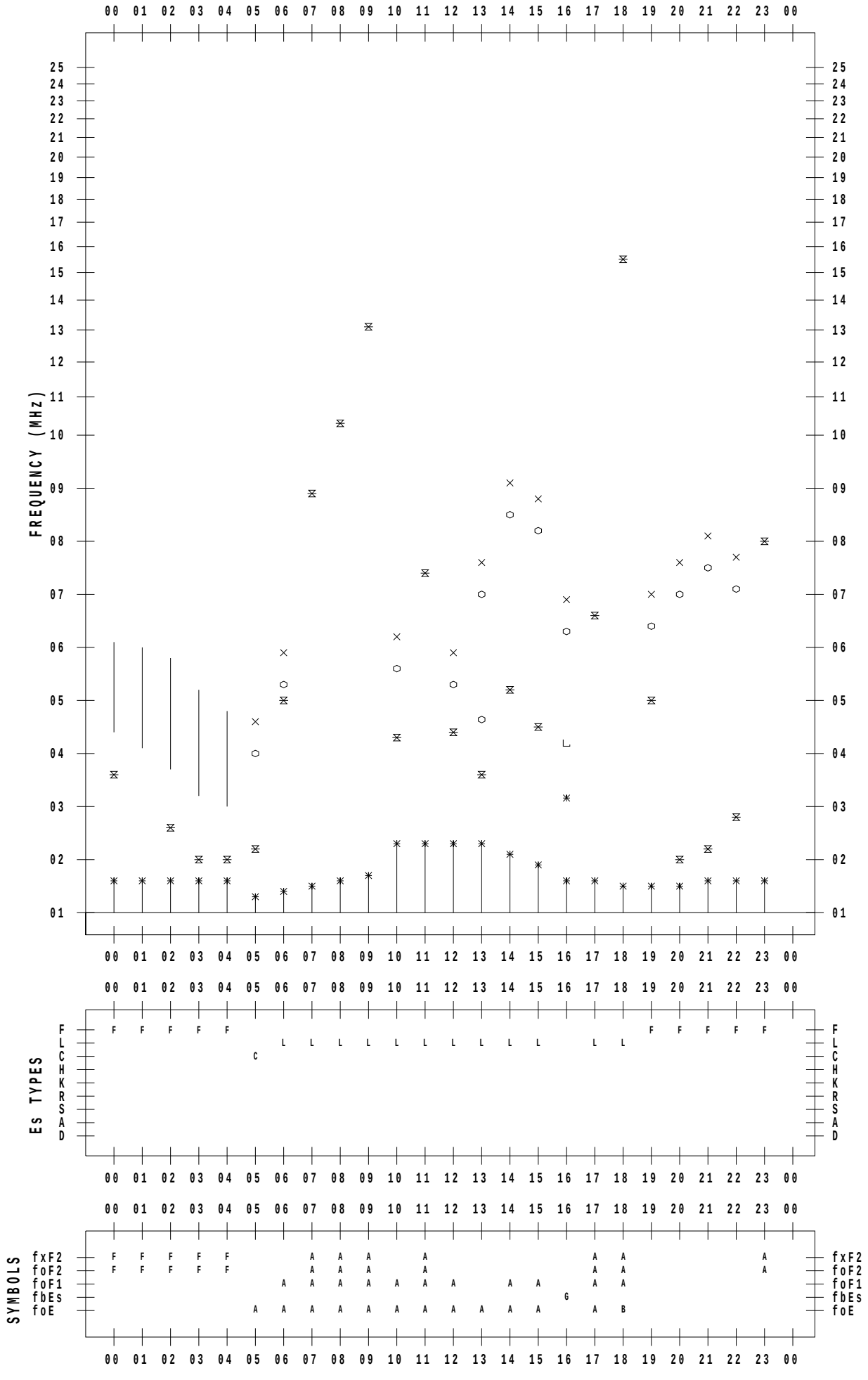
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/27

135 °E MEAN TIME



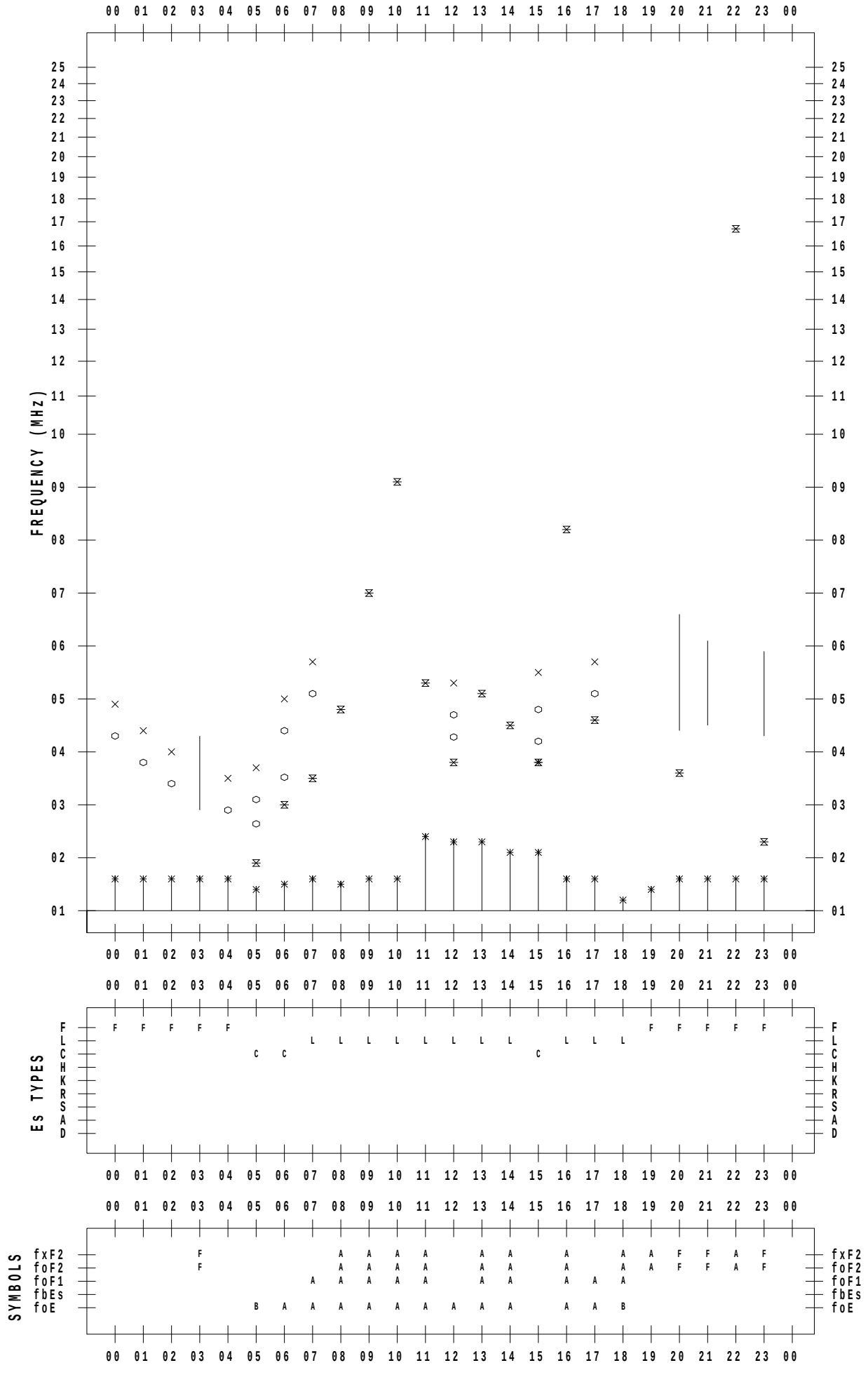
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/28

135 °E MEAN TIME



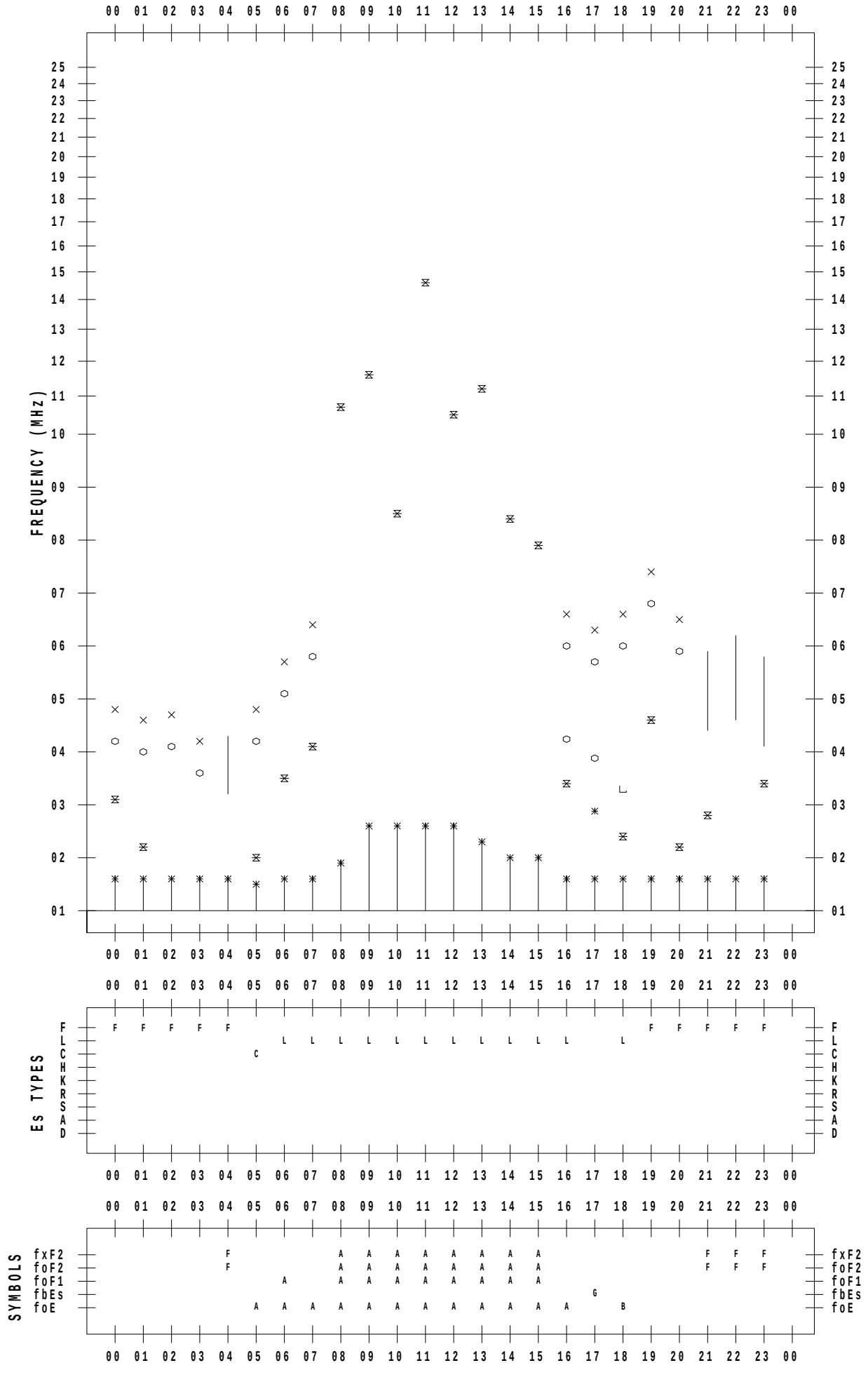
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/29

135 °E MEAN TIME



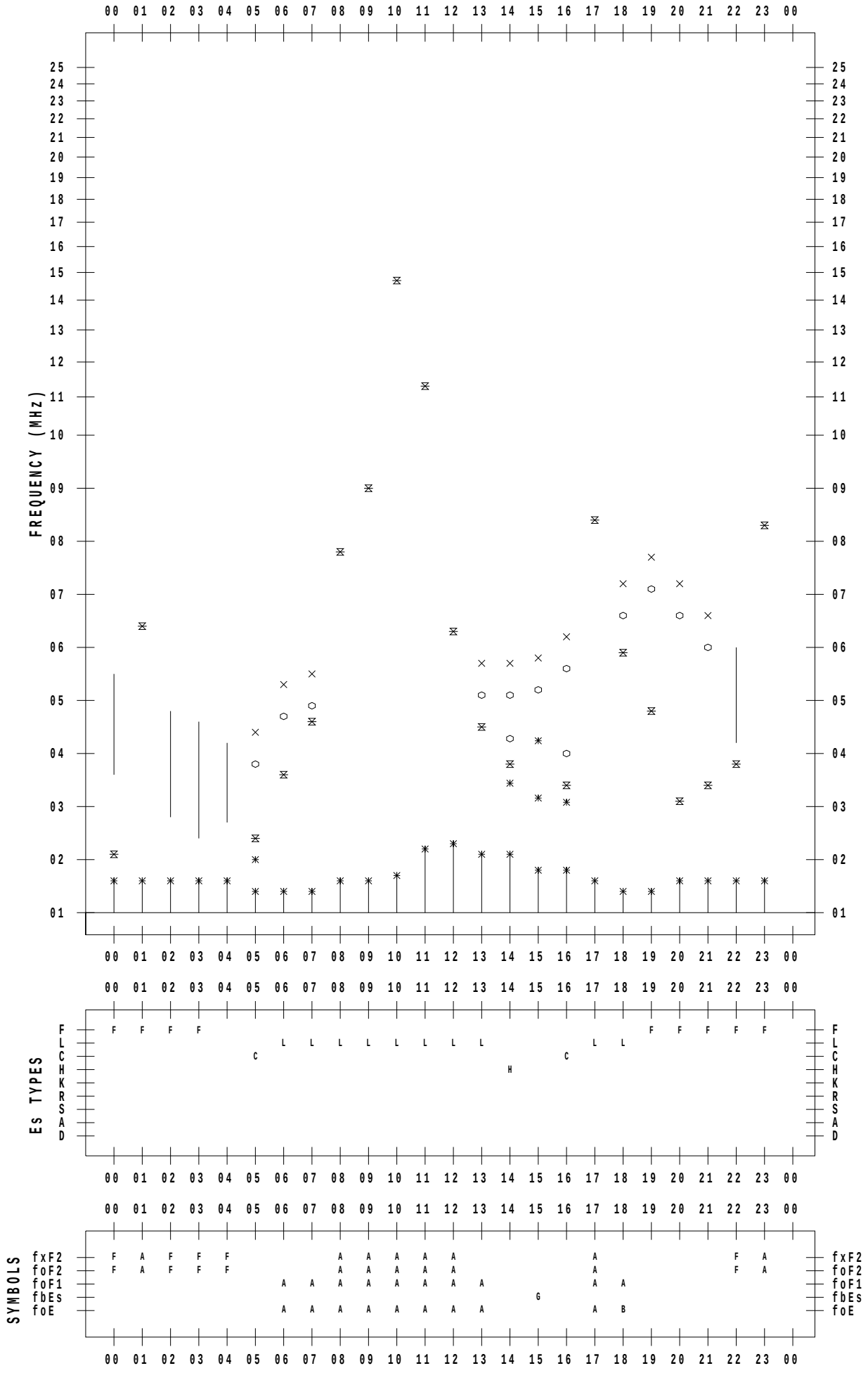
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/30

135 °E MEAN TIME



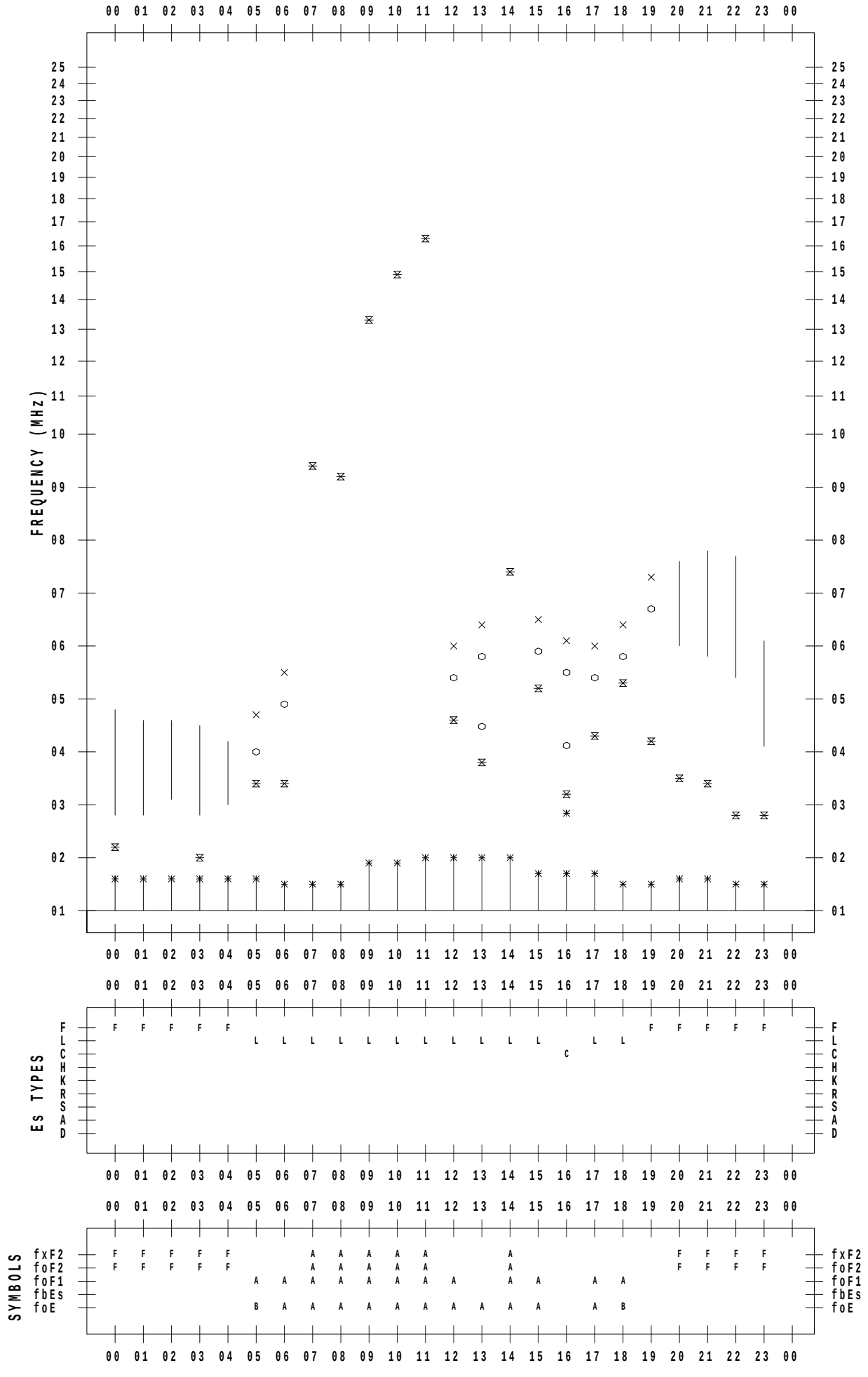
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2021/ 5/31

135 °E MEAN TIME



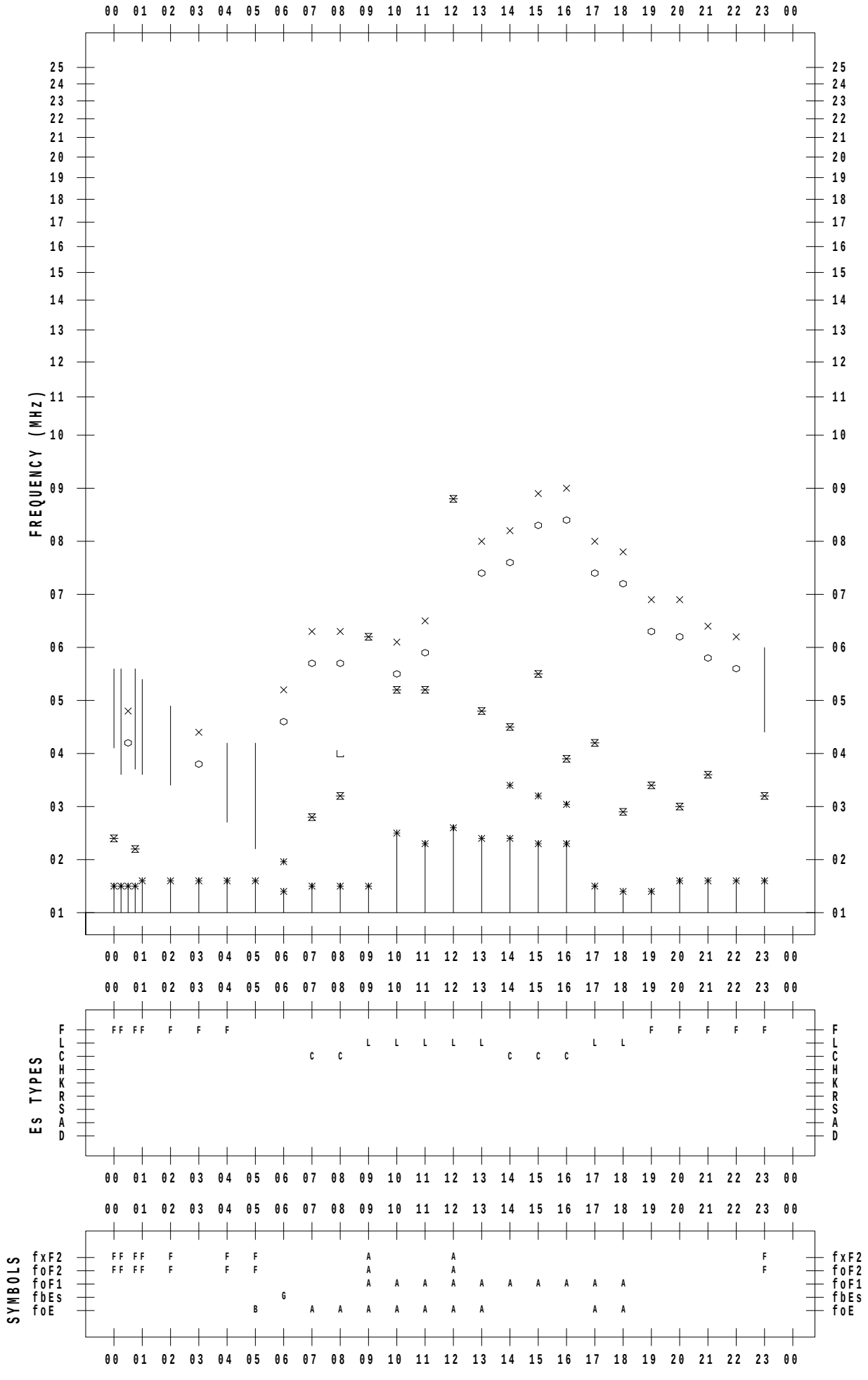
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 1

135 °E MEAN TIME



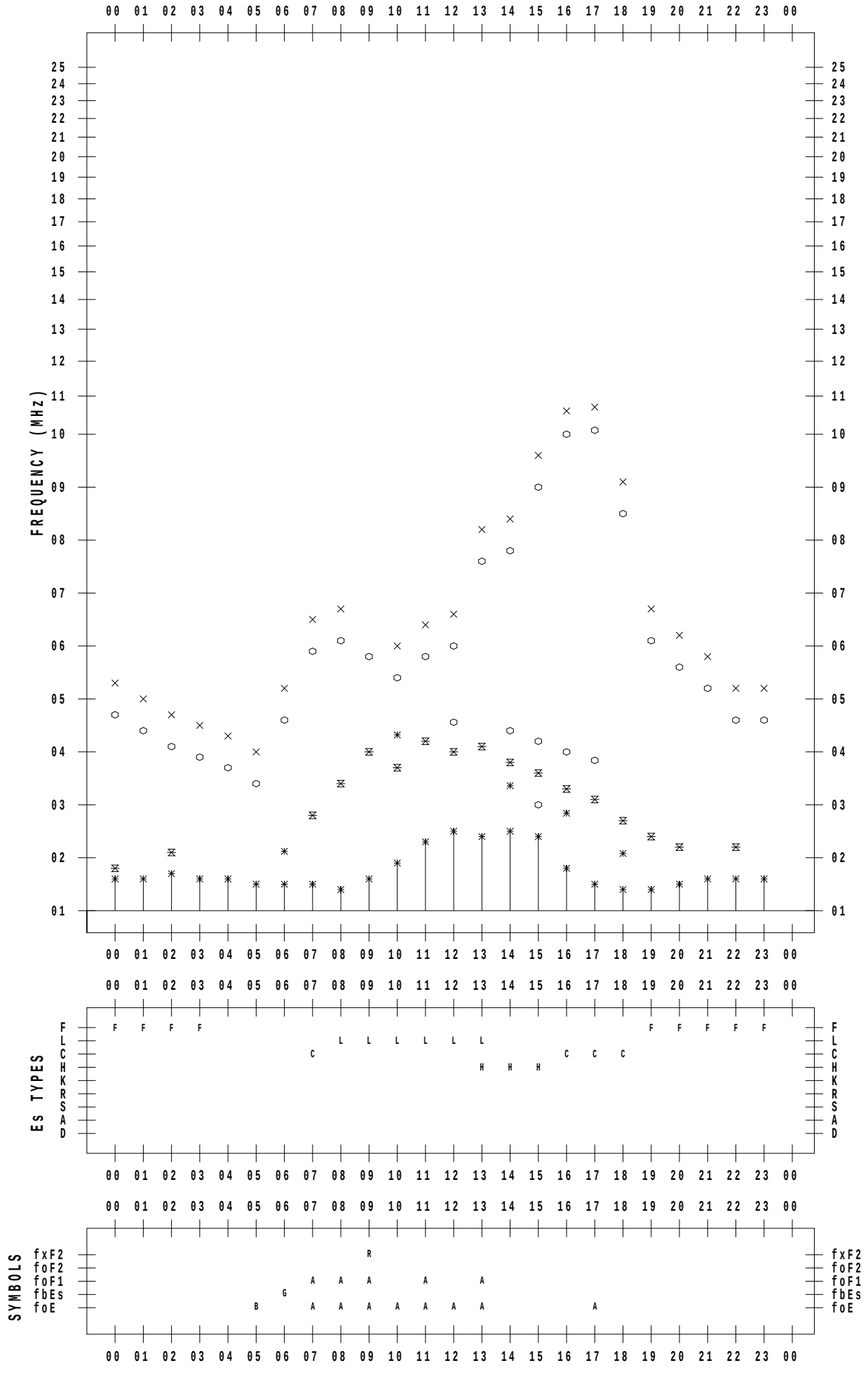
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 2

135 °E MEAN TIME



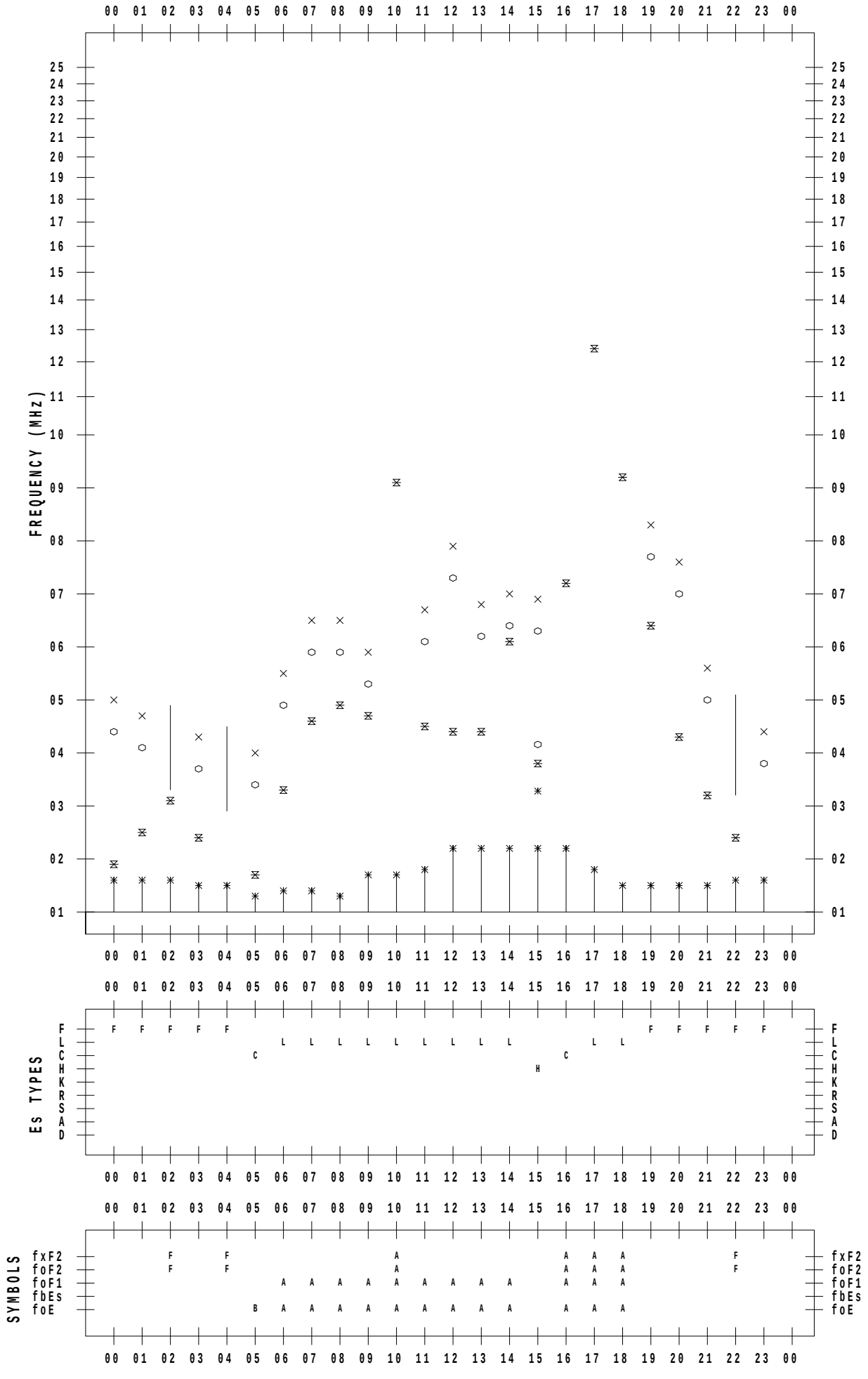
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 3

135 °E MEAN TIME



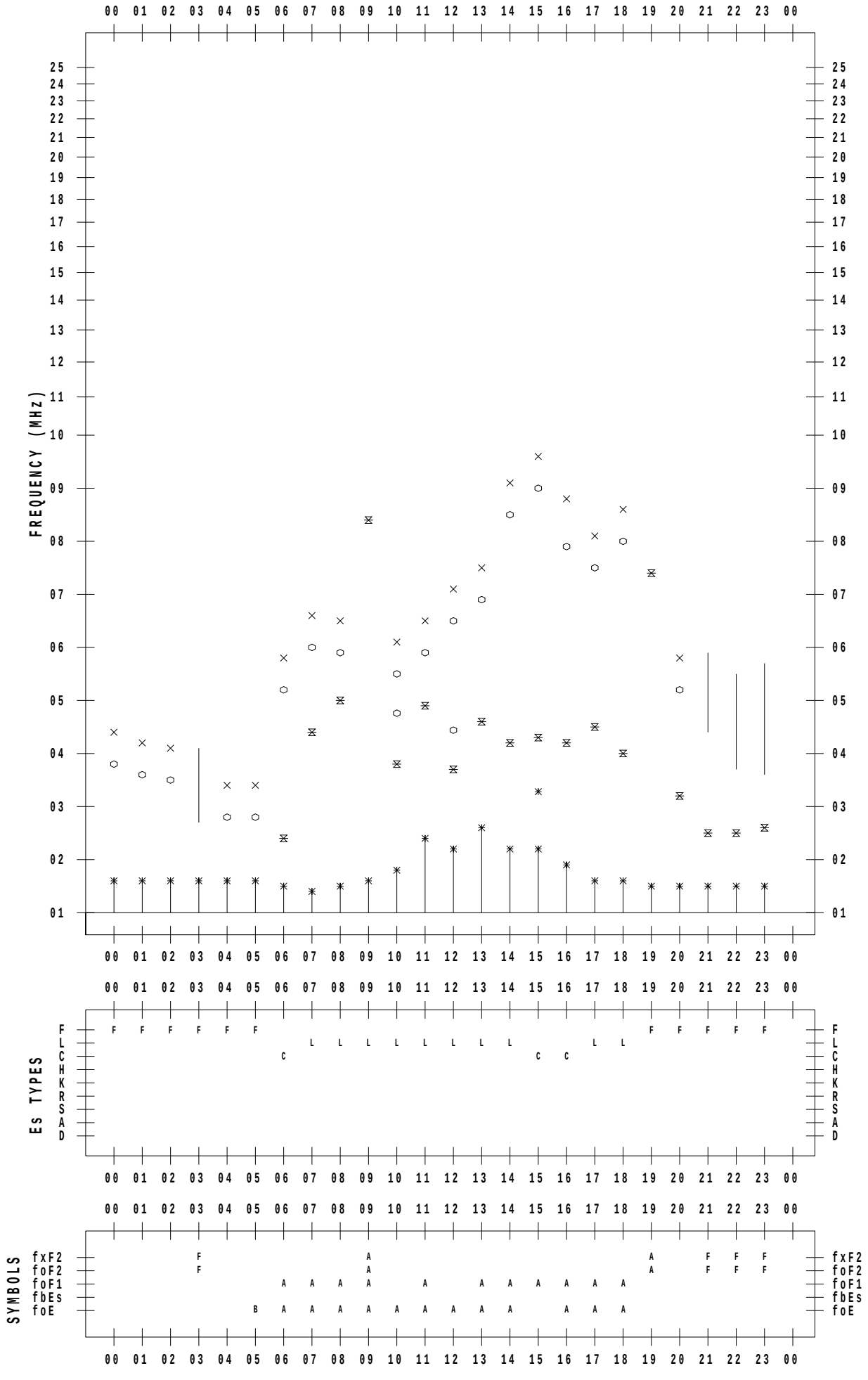
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 4

135 °E MEAN TIME



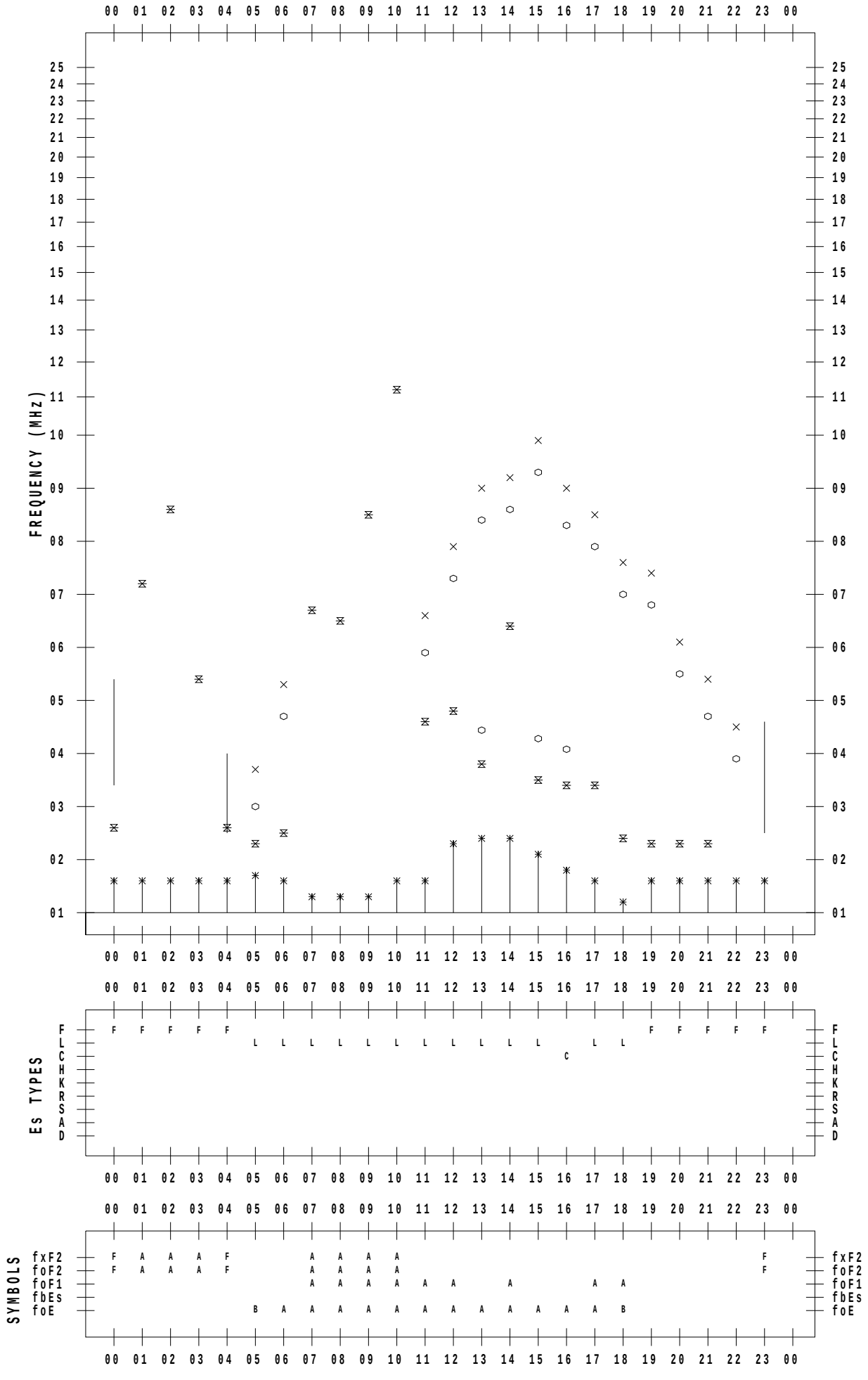
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 5

135 °E MEAN TIME



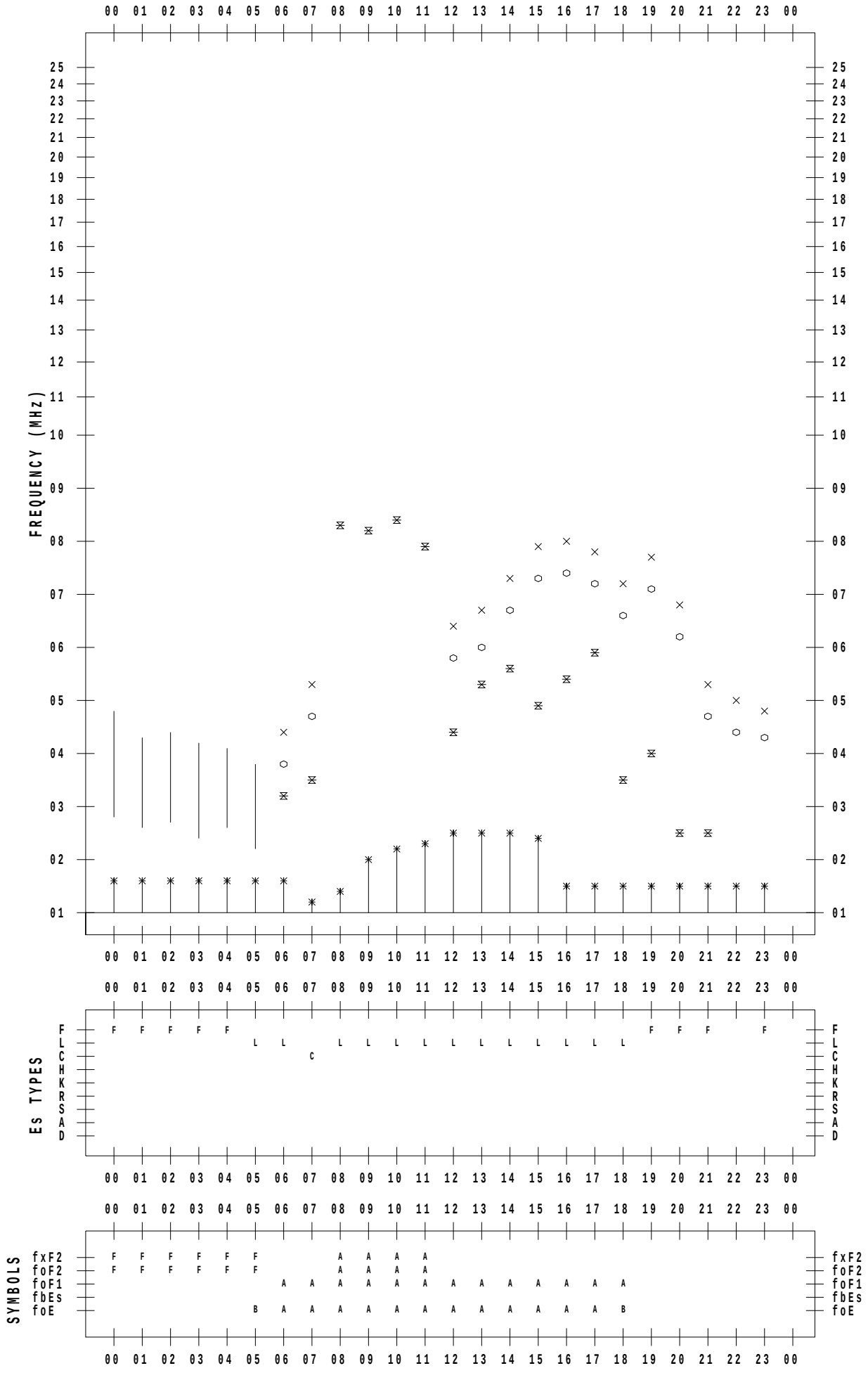
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 6

135 °E MEAN TIME



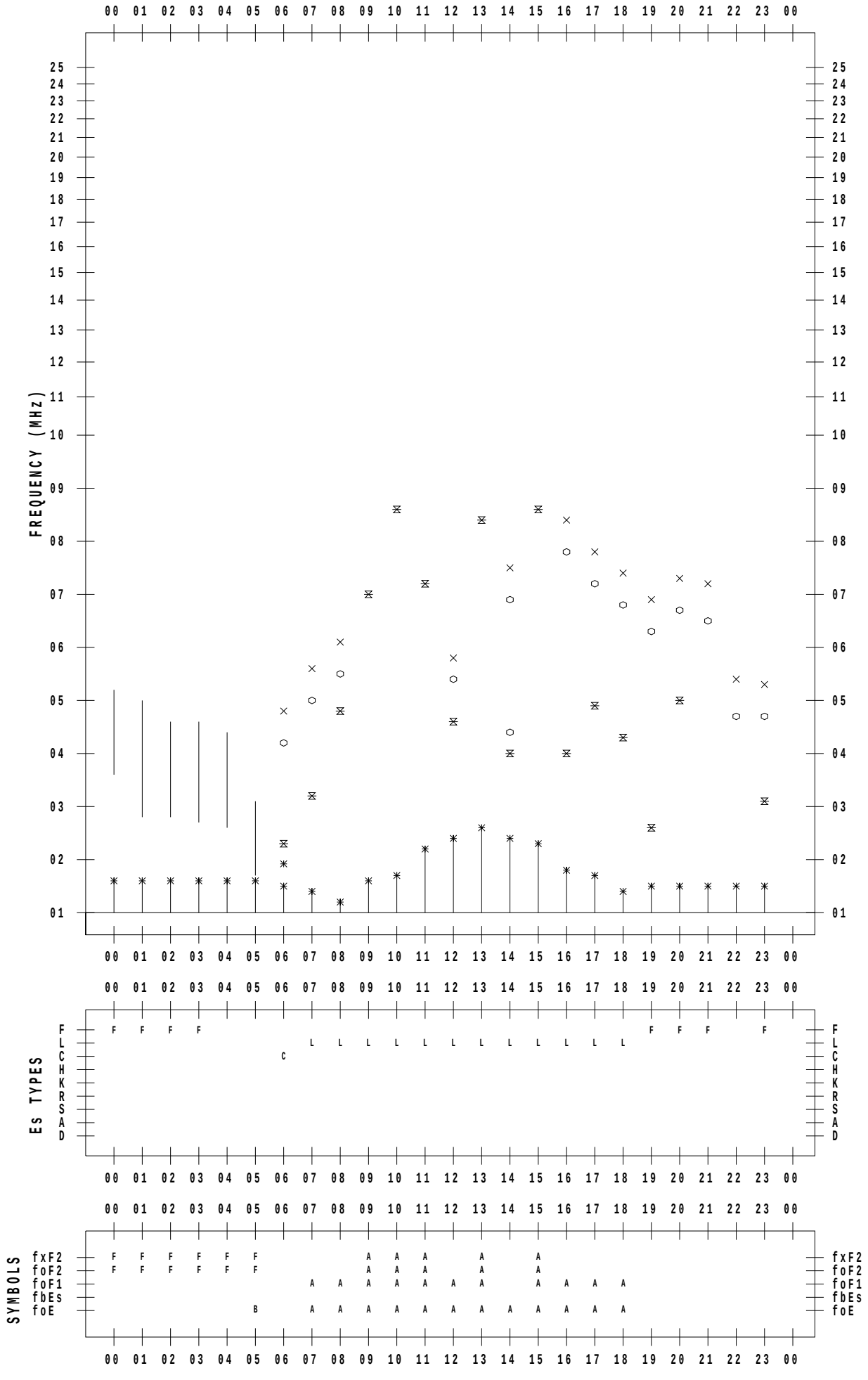
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 7

135 °E MEAN TIME



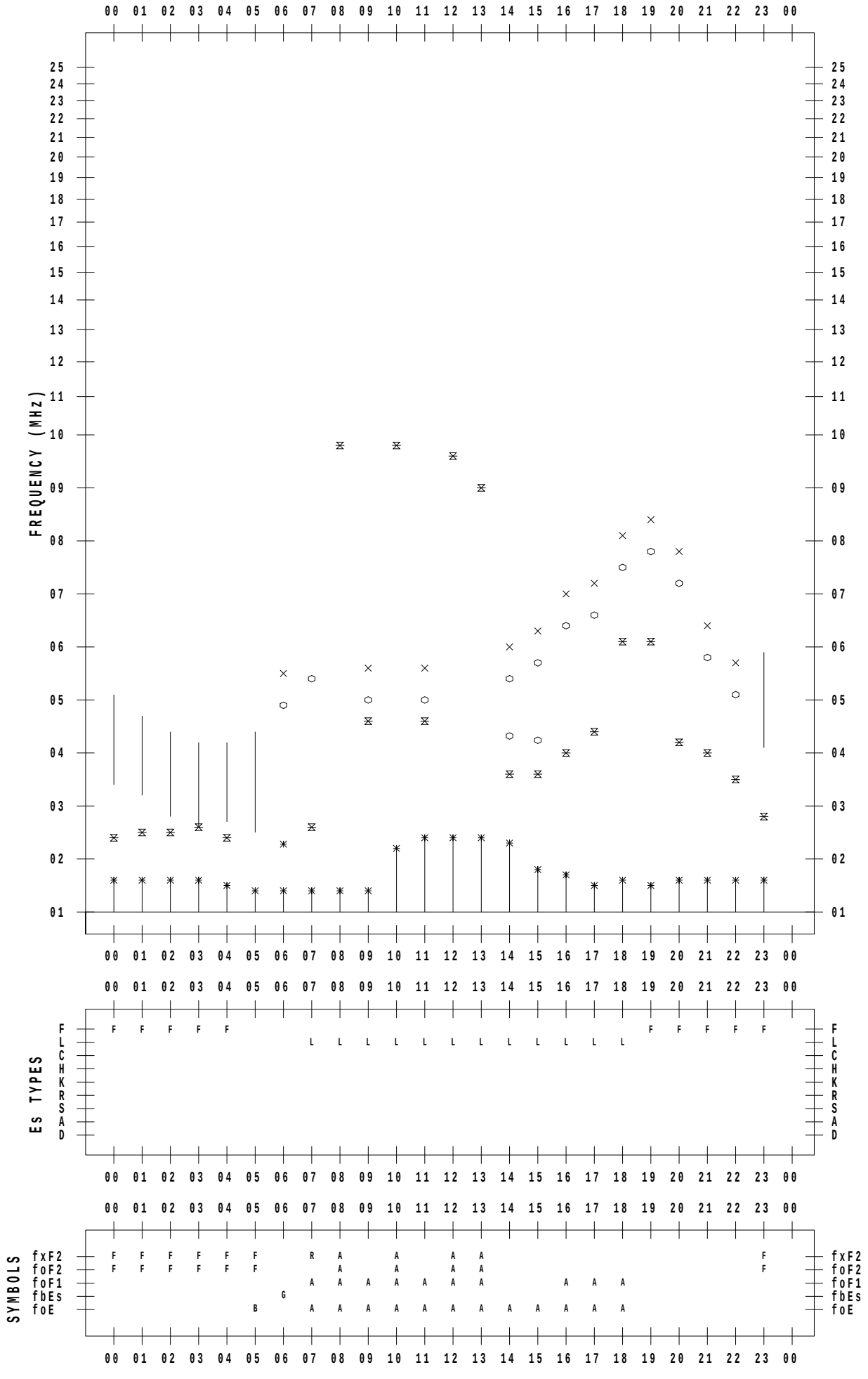
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 8

135 °E MEAN TIME



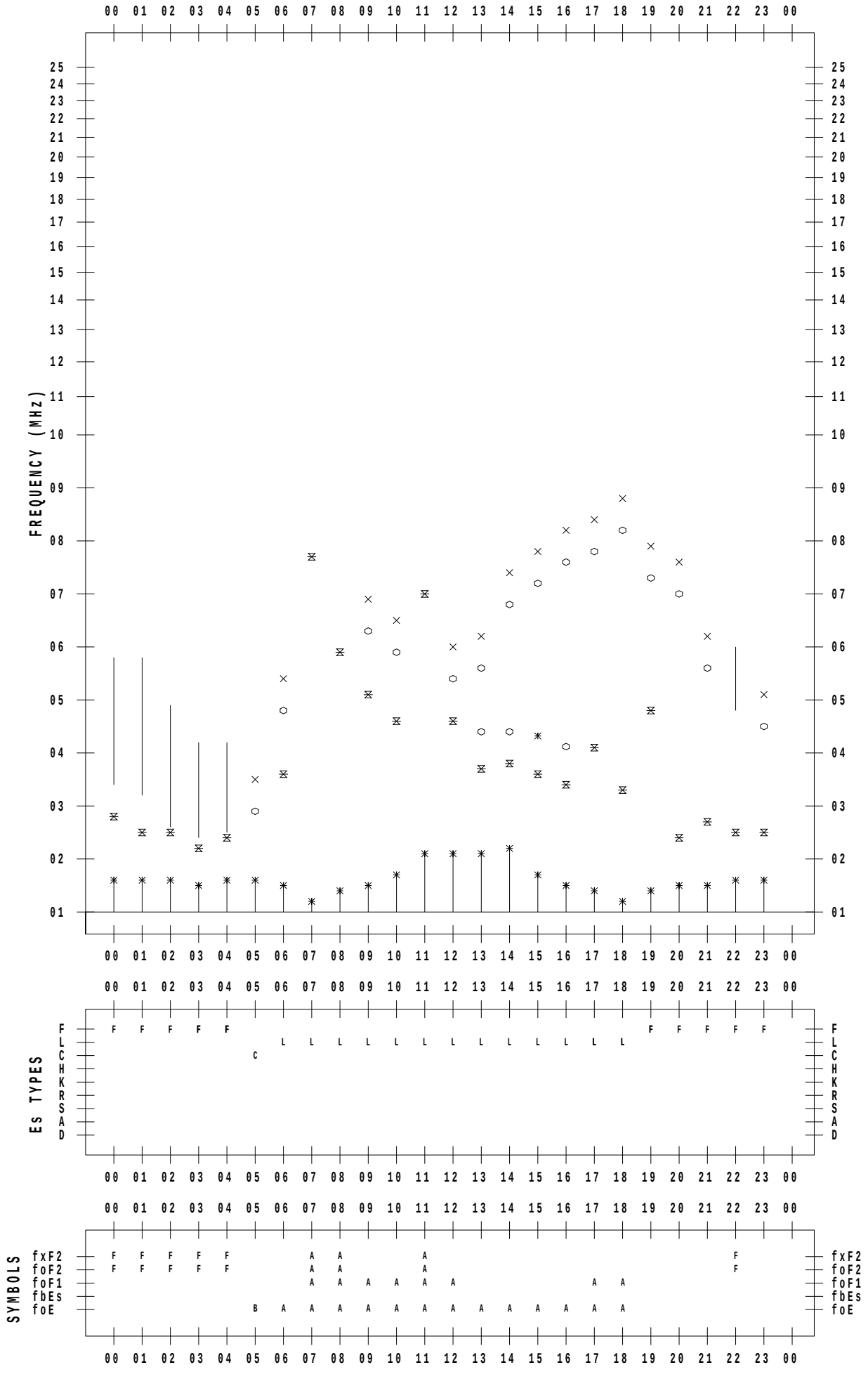
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/ 9

135 °E MEAN TIME



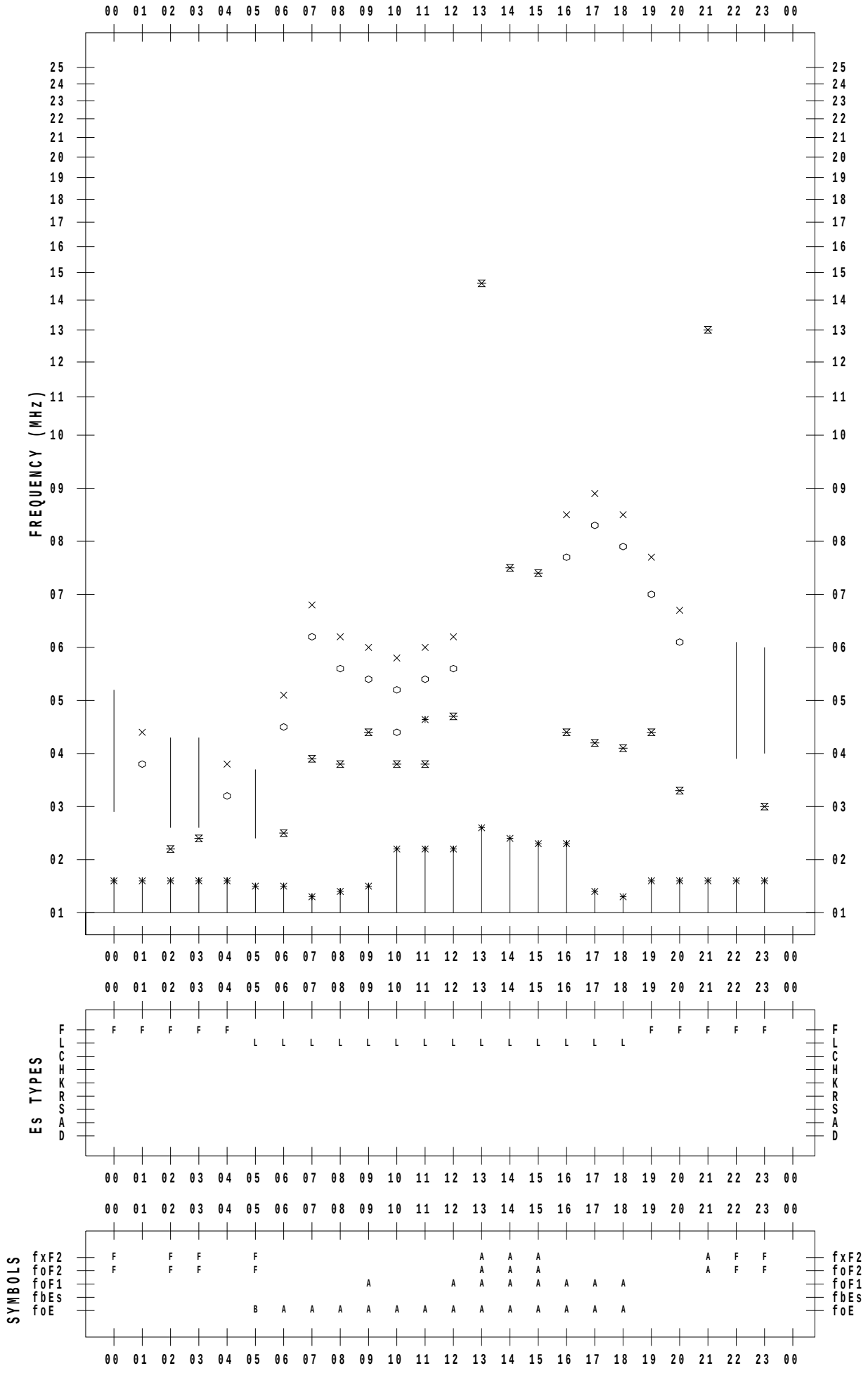
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/10

135 °E MEAN TIME



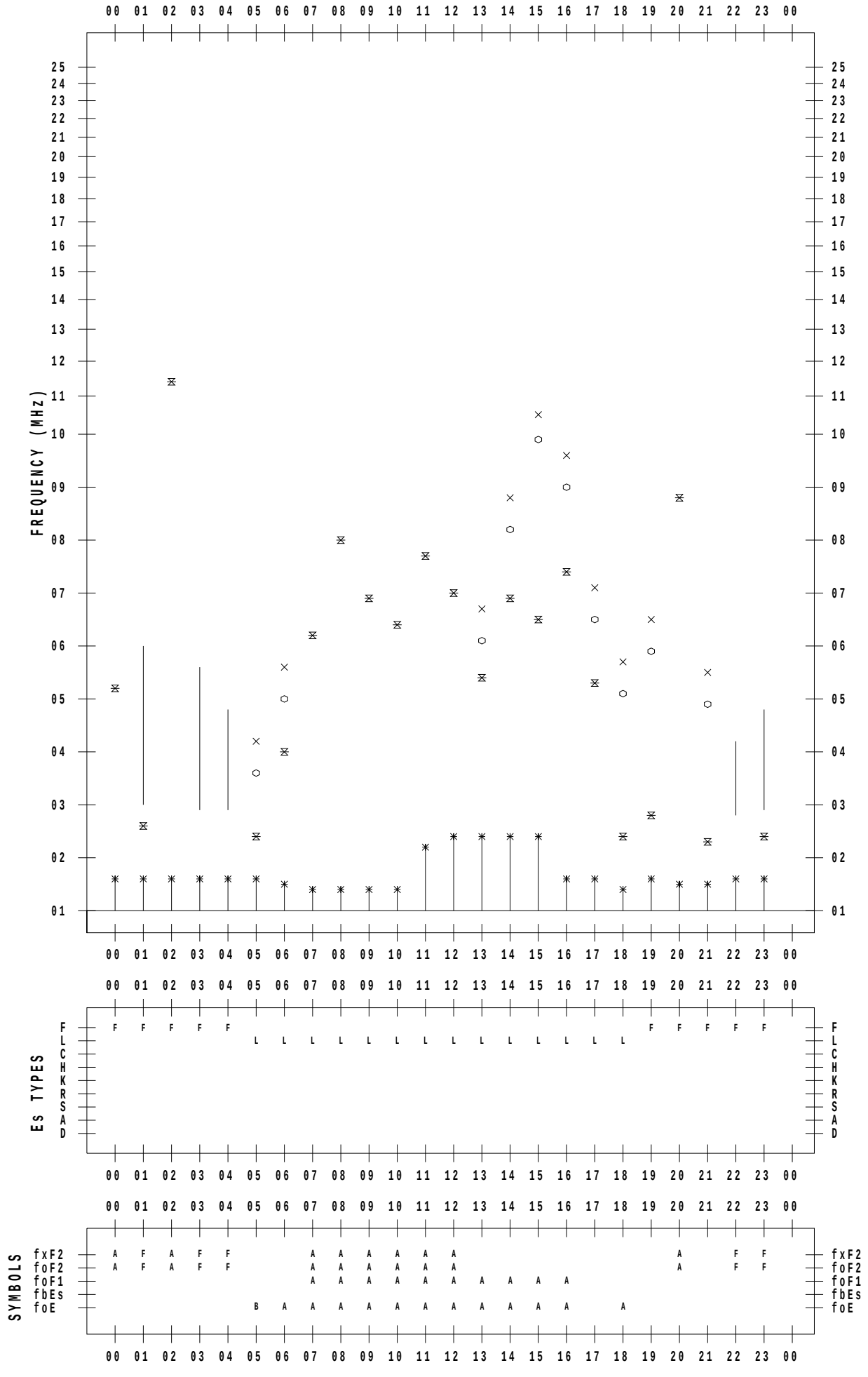
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/11

135 °E MEAN TIME



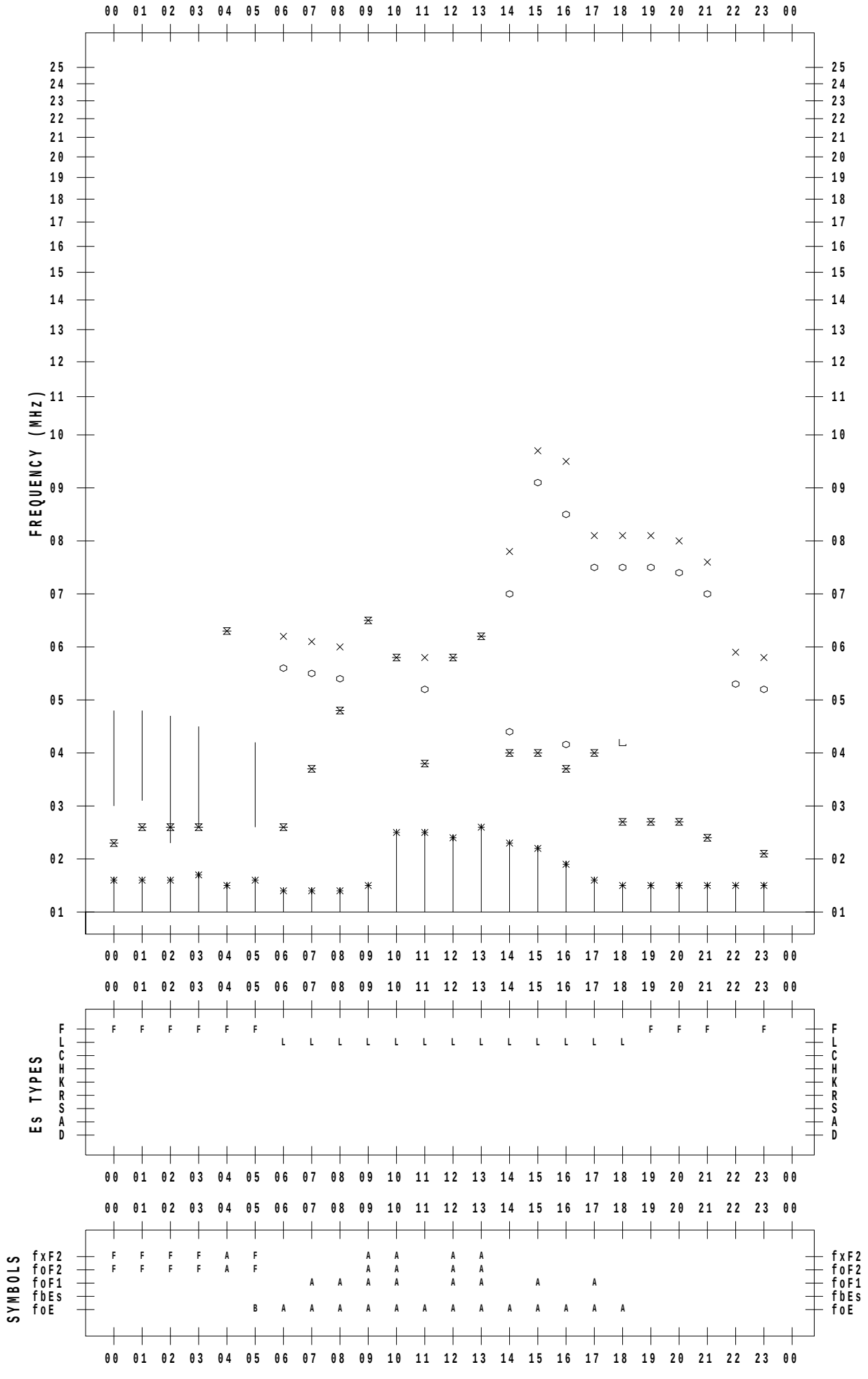
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/12

135 °E MEAN TIME



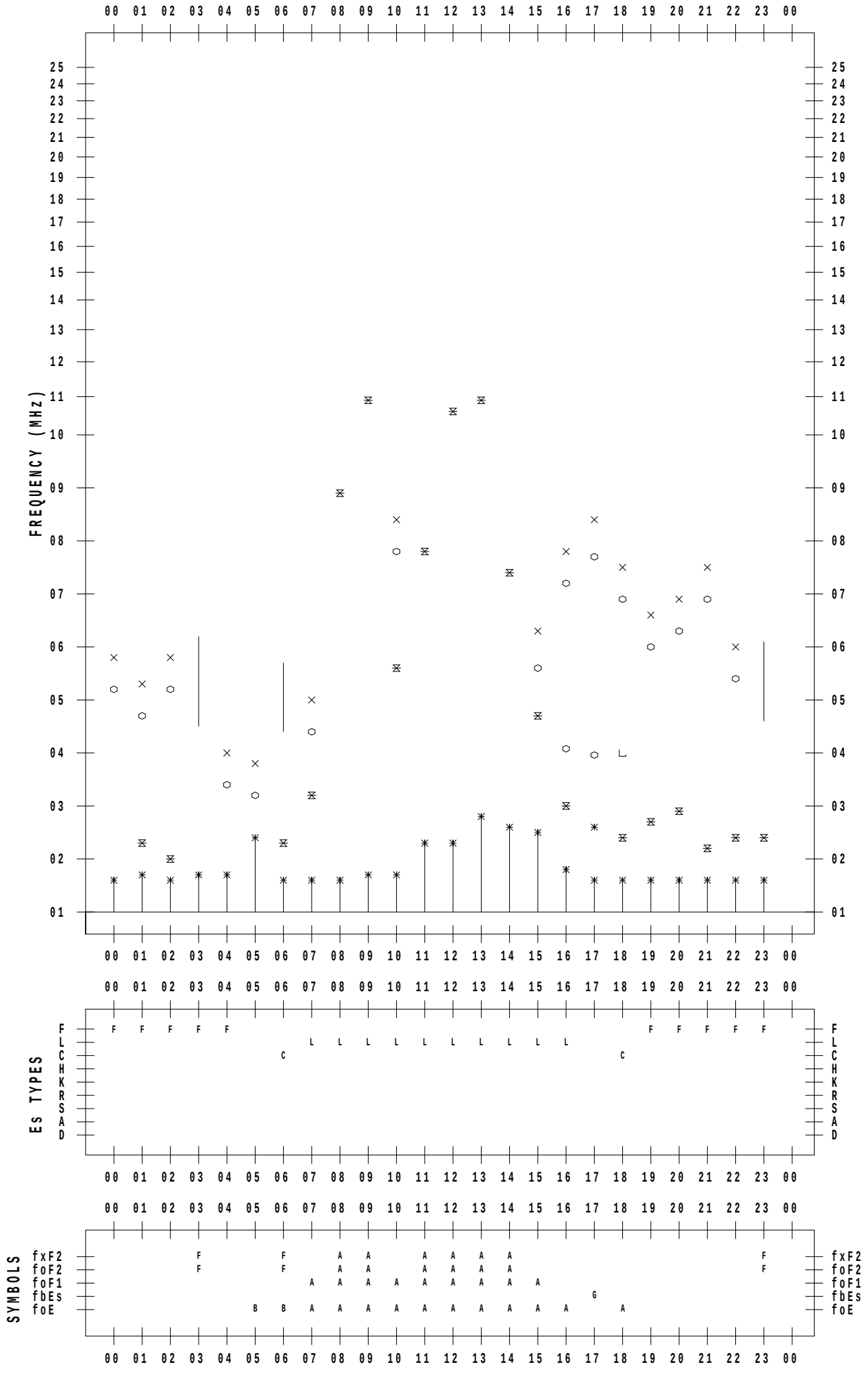
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/13

135 °E MEAN TIME



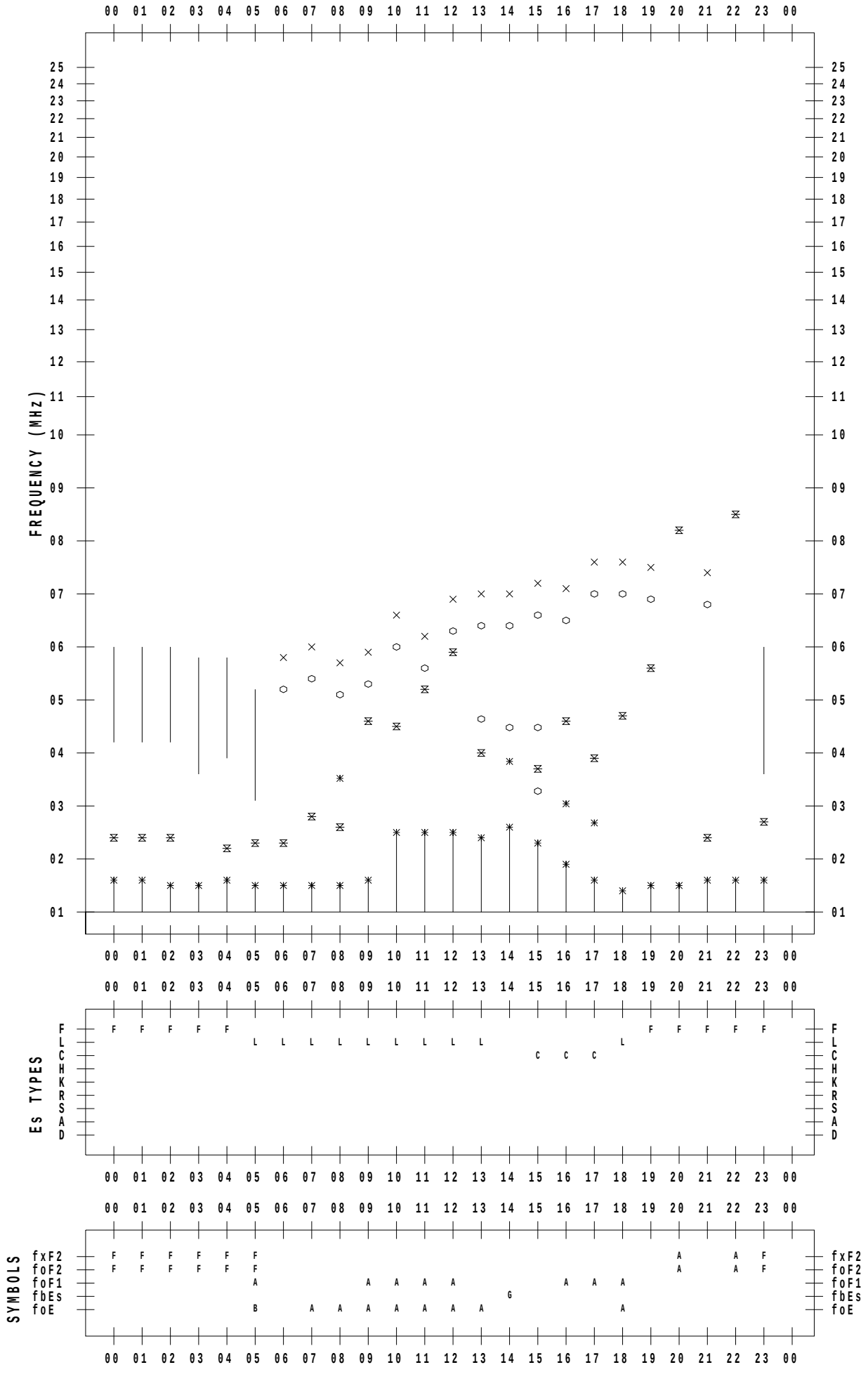
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/14

135 °E MEAN TIME



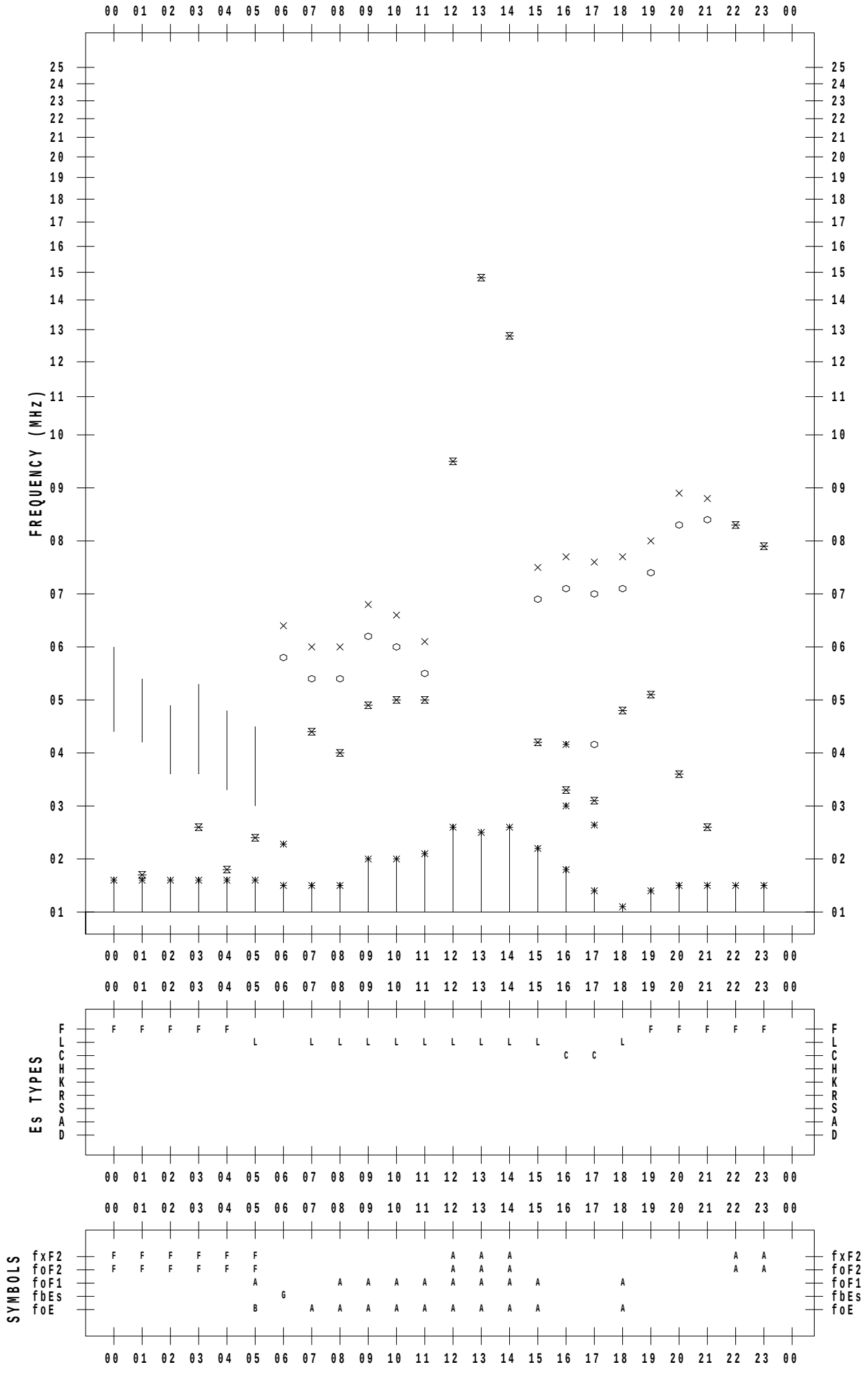
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/15

135 °E MEAN TIME



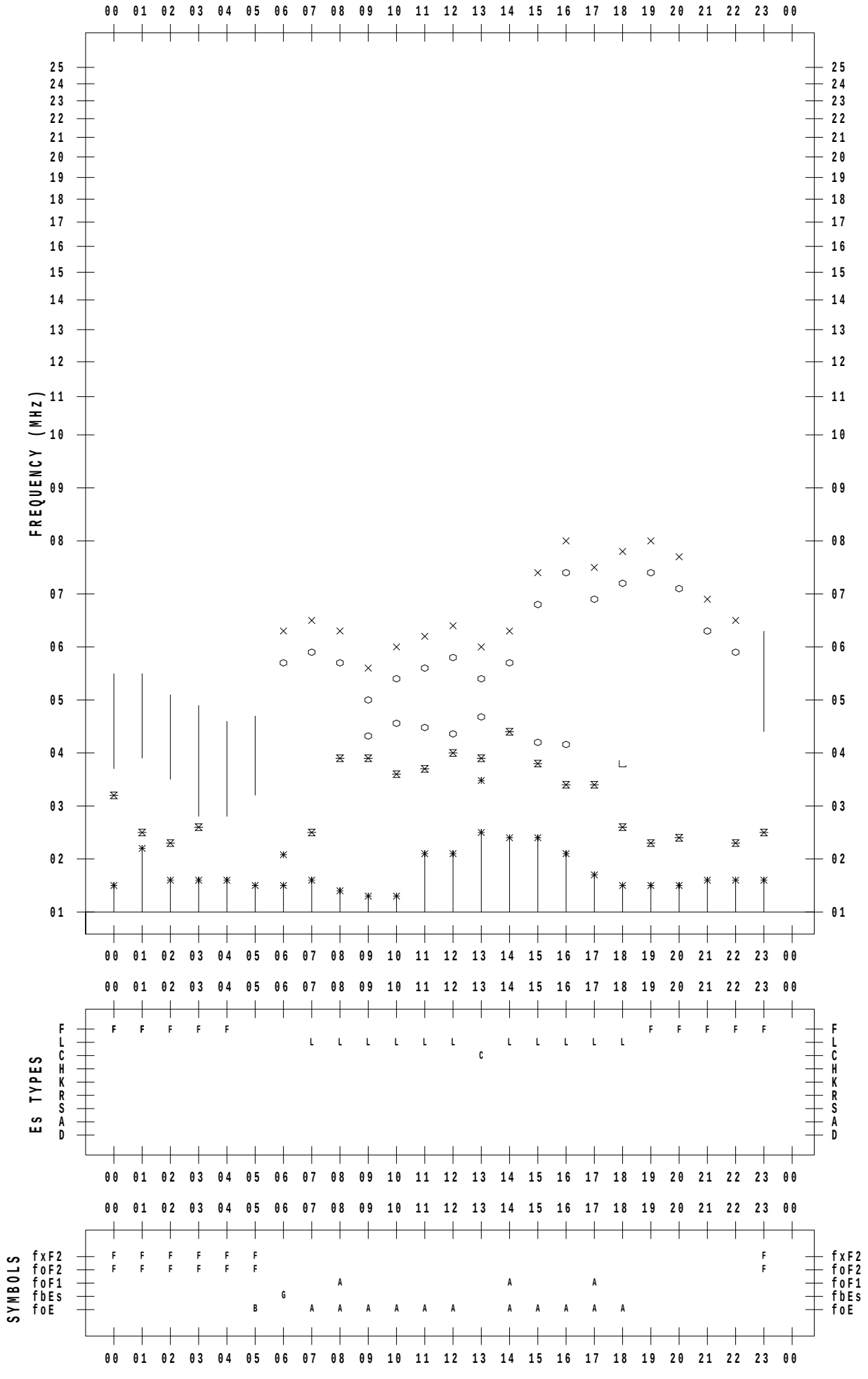
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/16

135 °E MEAN TIME



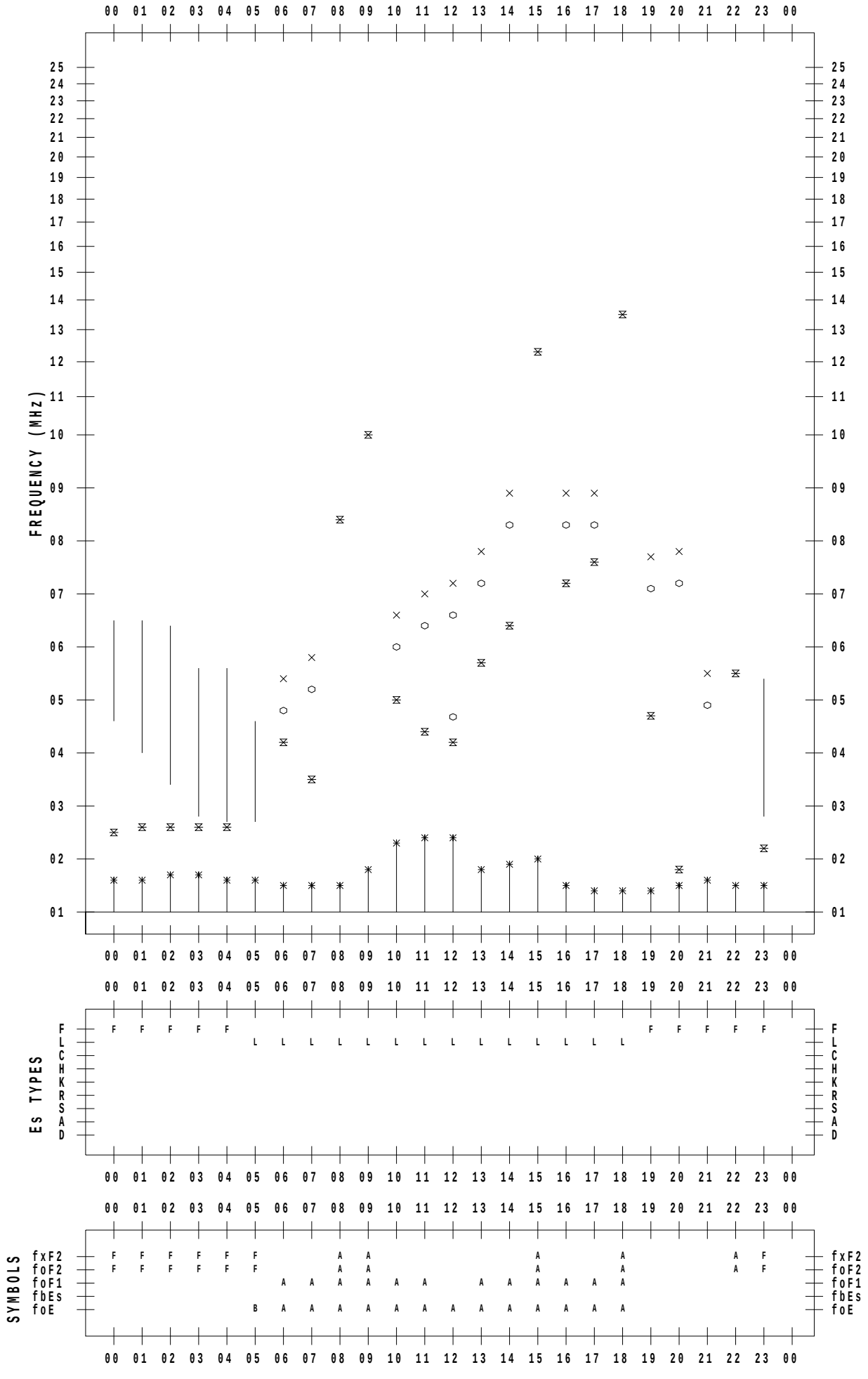
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/17

135 °E MEAN TIME



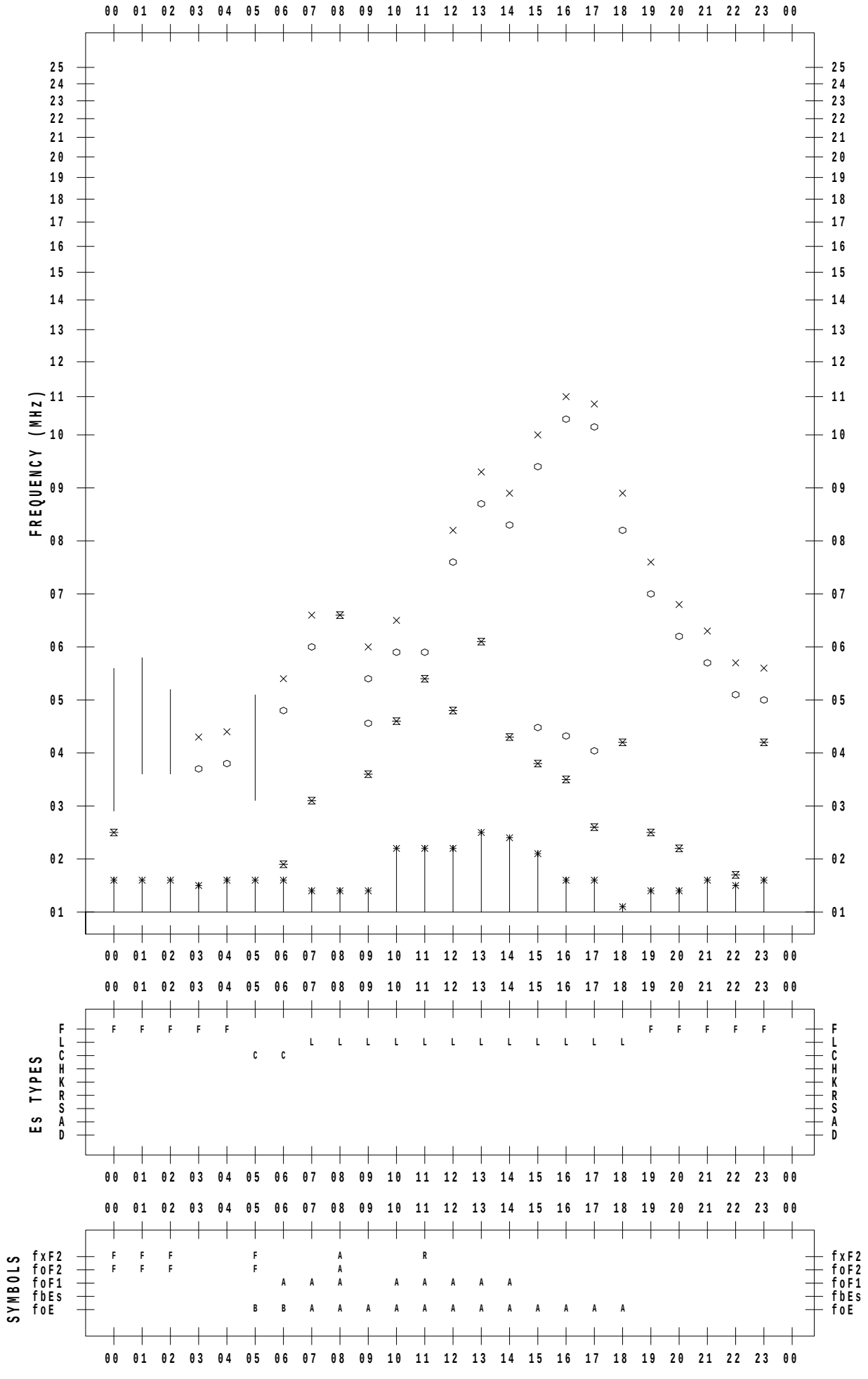
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/18

135 °E MEAN TIME



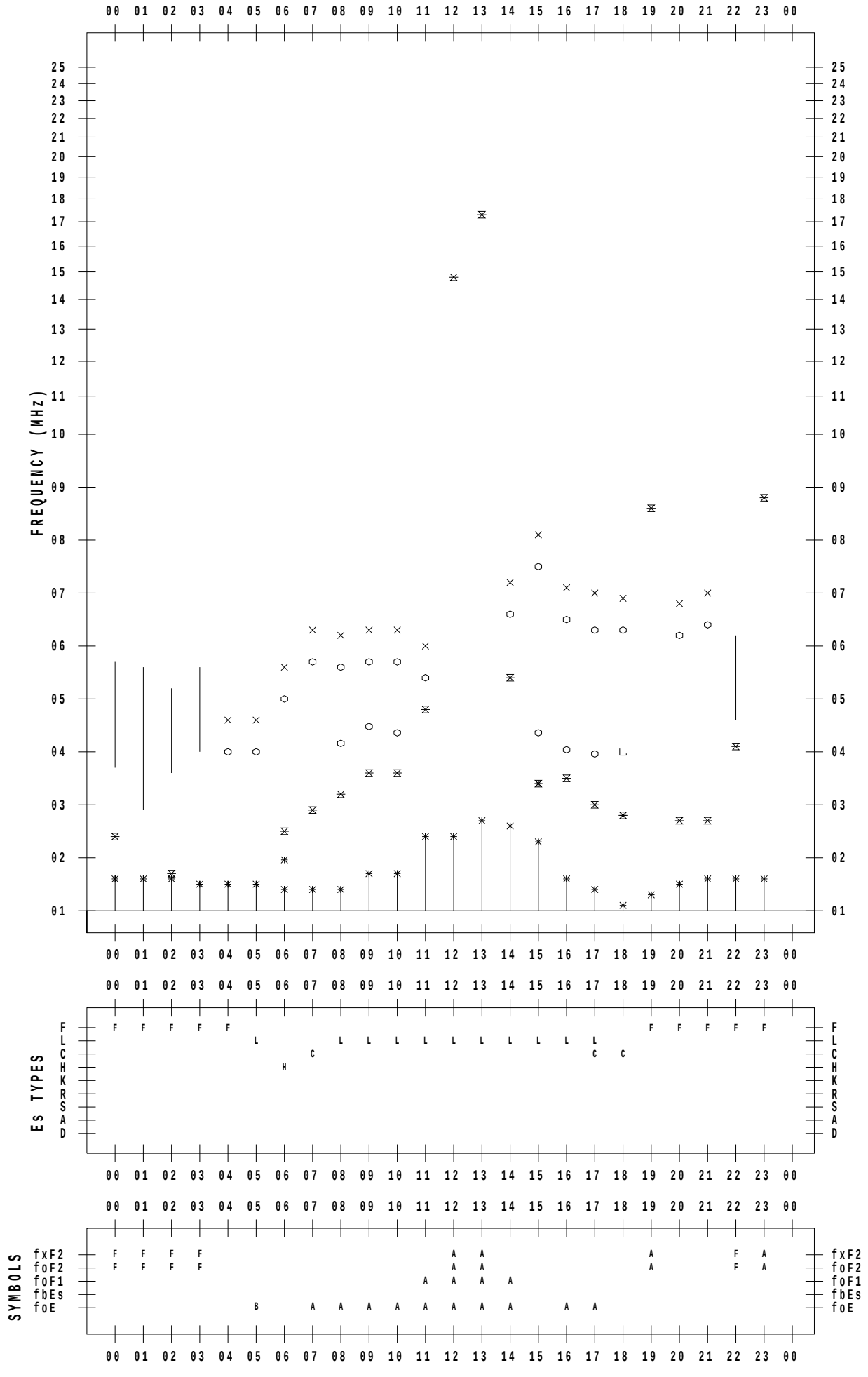
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/19

135 °E MEAN TIME



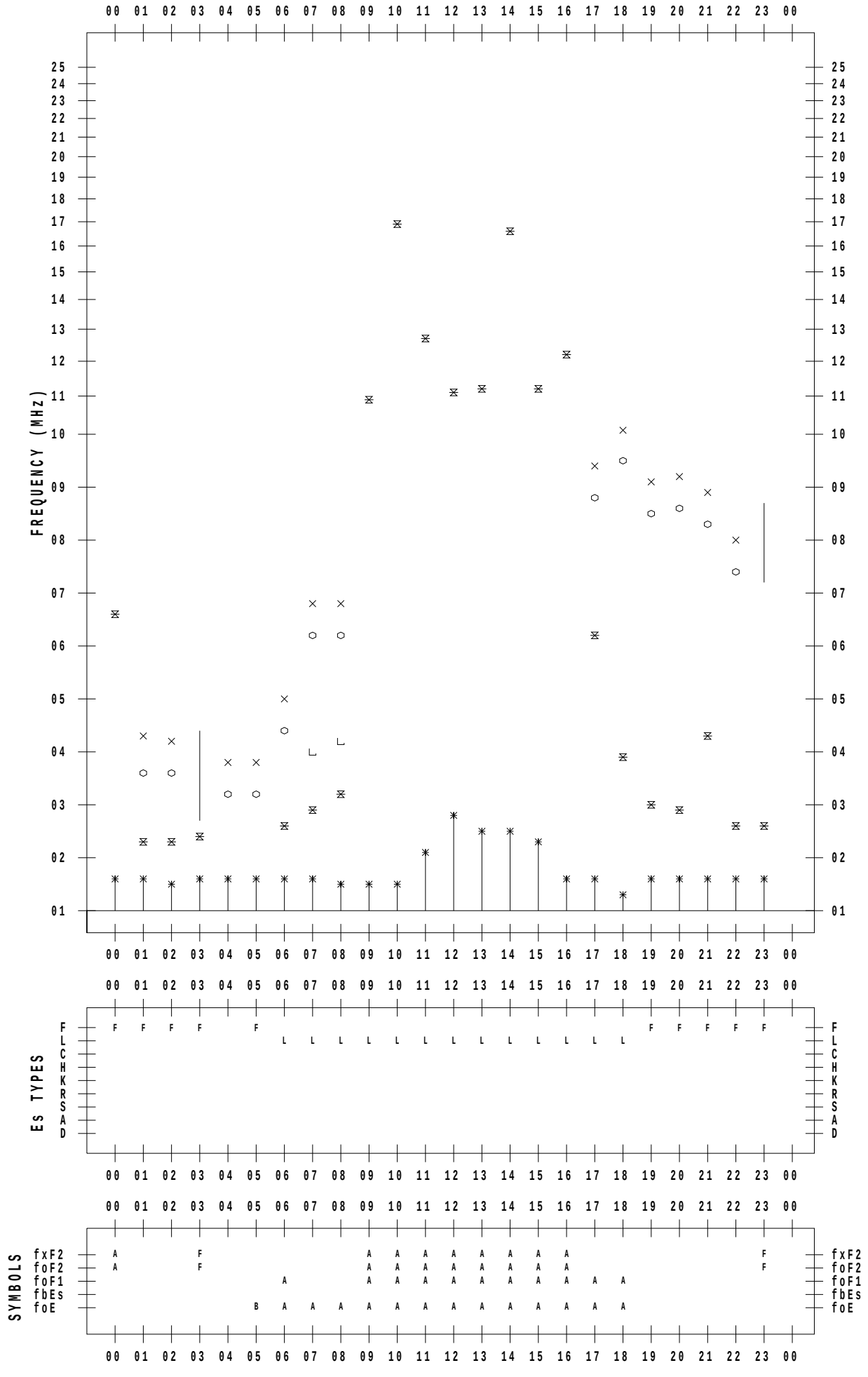
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/20

135 °E MEAN TIME



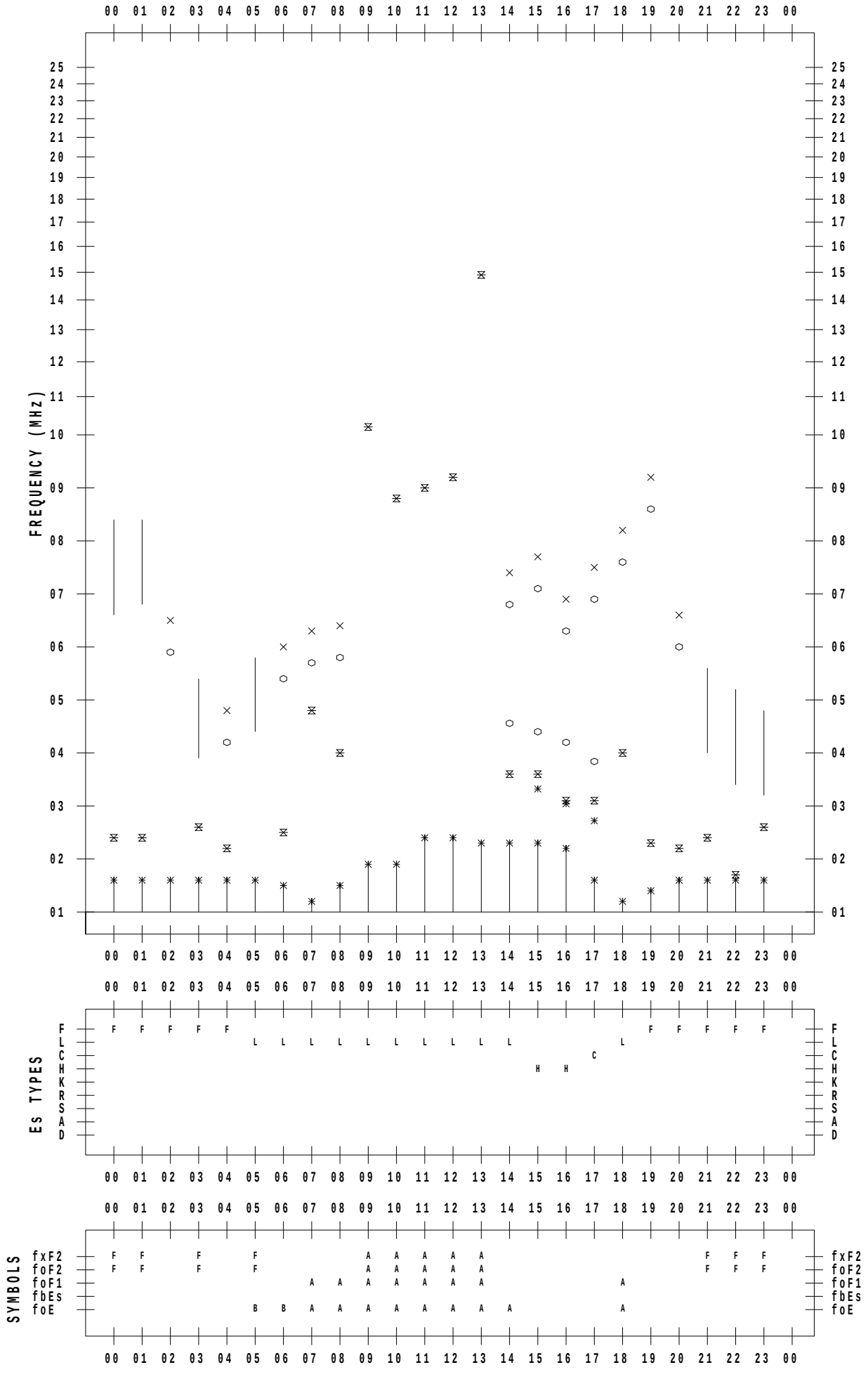
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/21

135 °E MEAN TIME



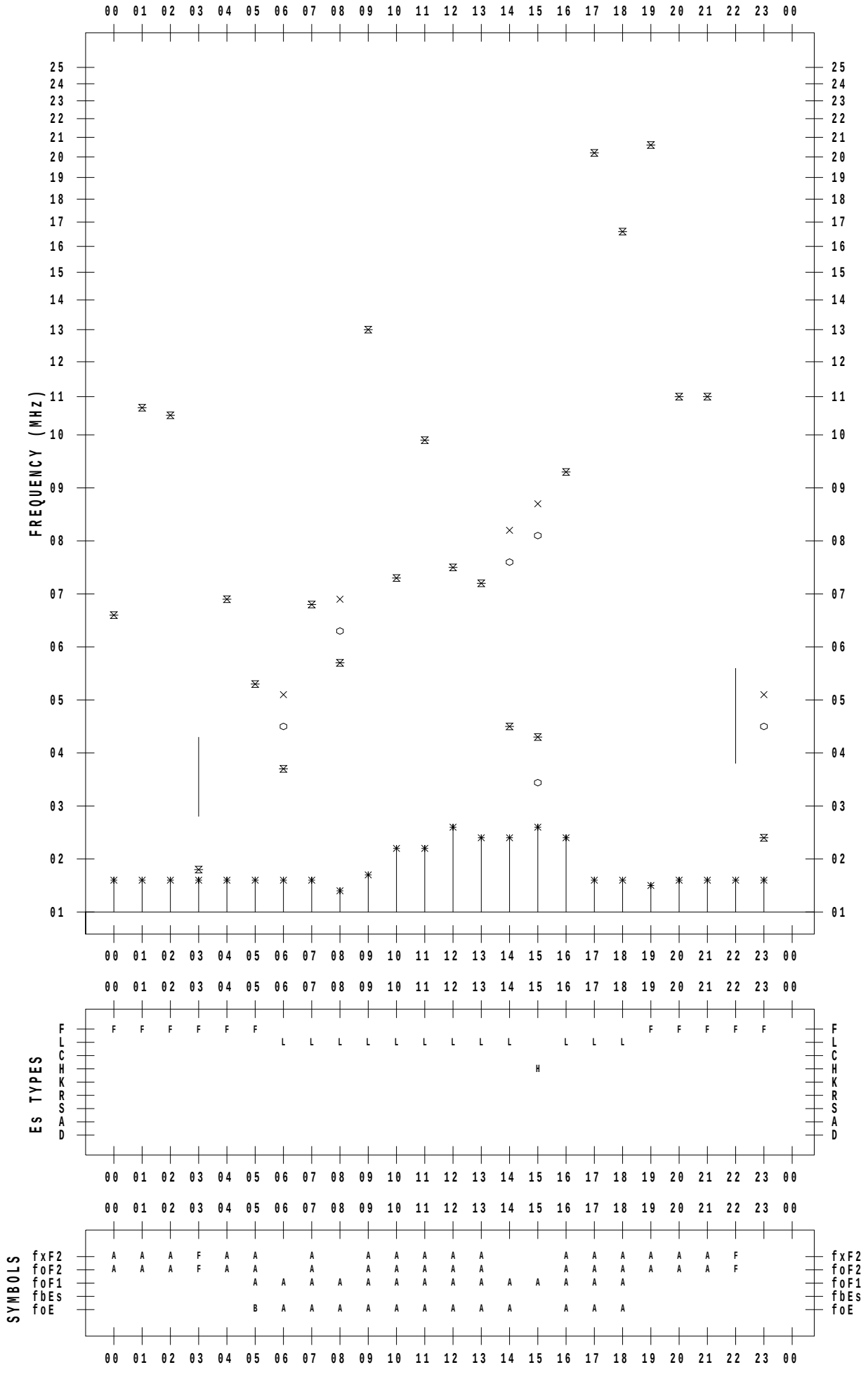
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/22

135 °E MEAN TIME



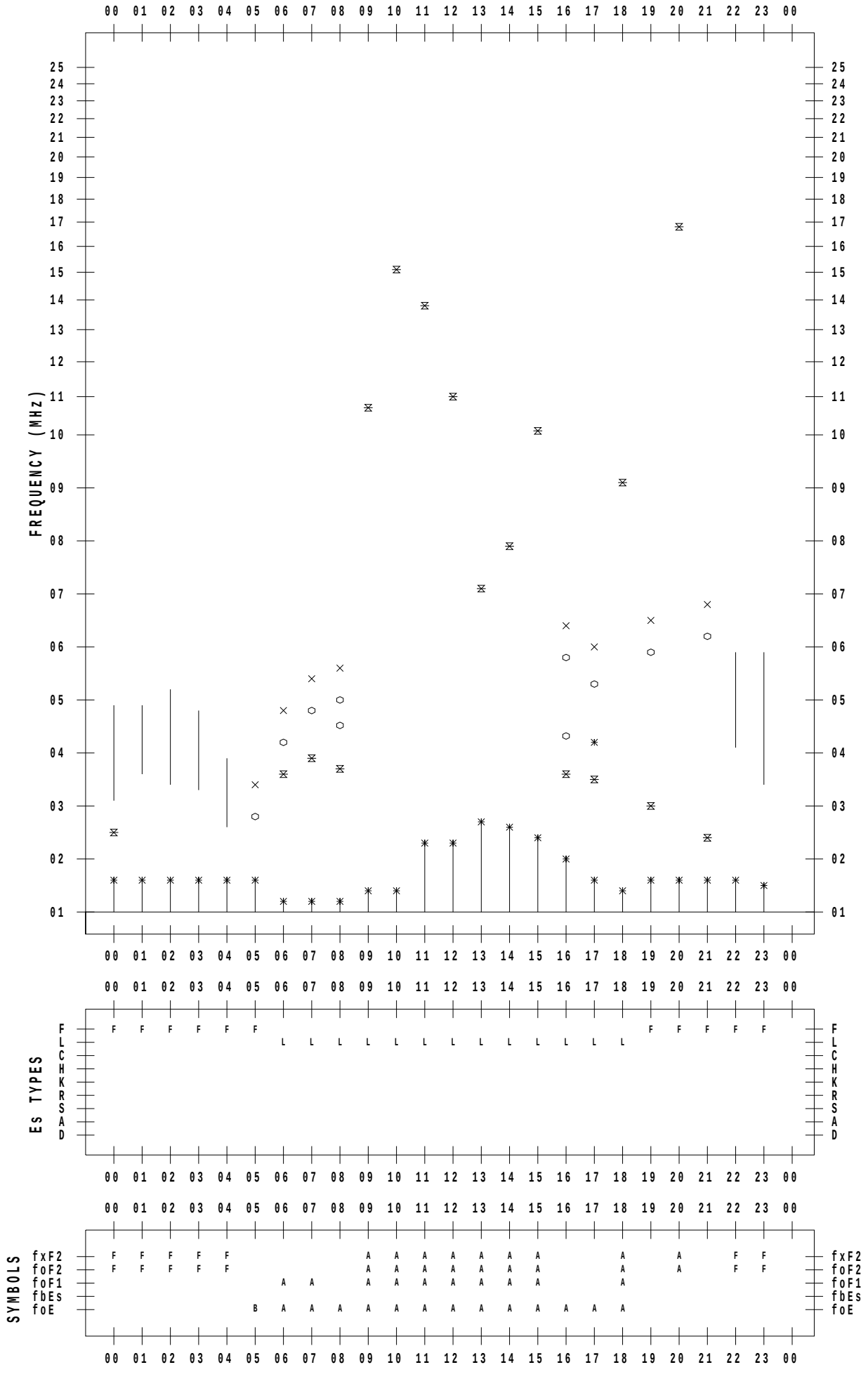
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/23

135 °E MEAN TIME



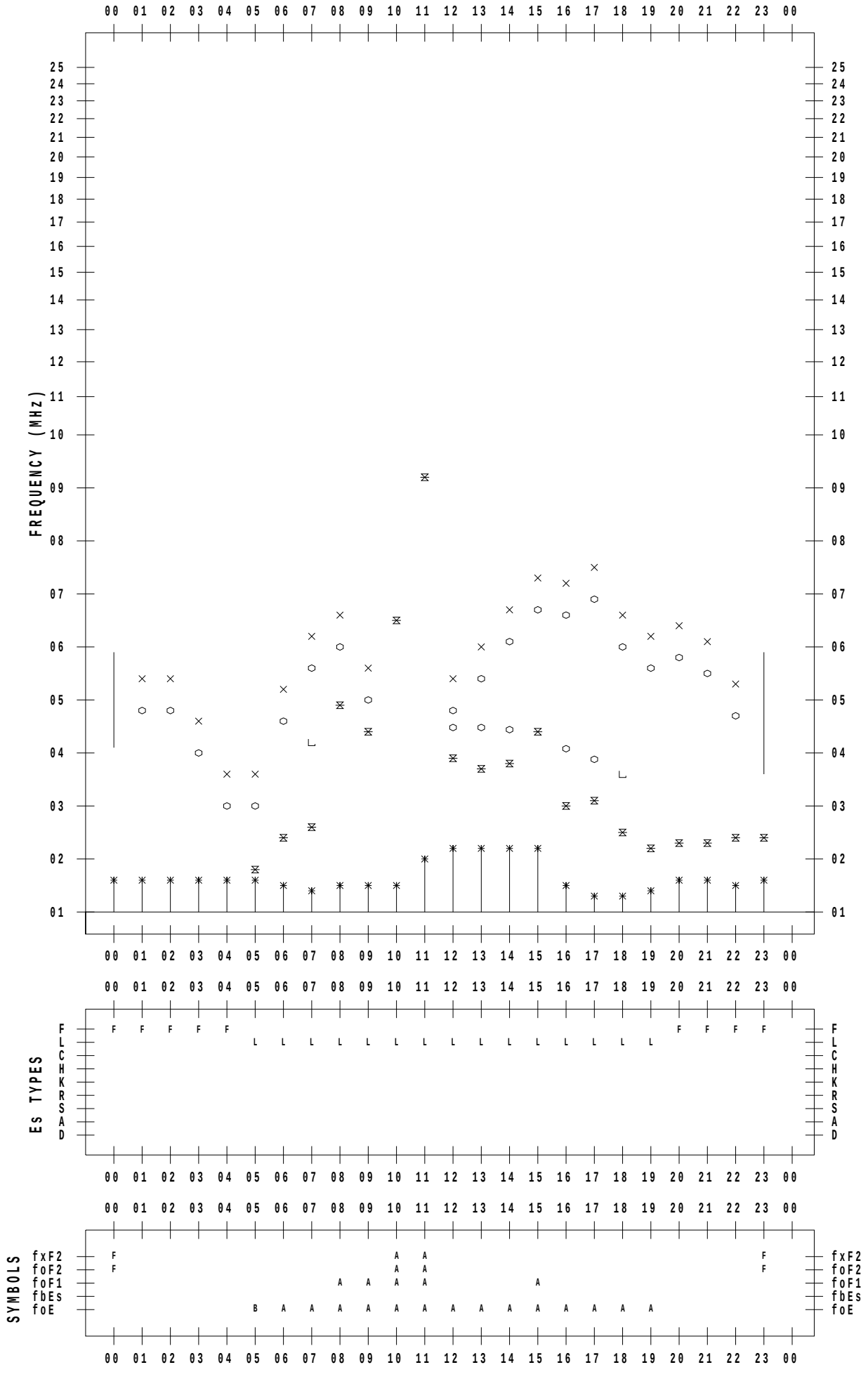
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/24

135 °E MEAN TIME



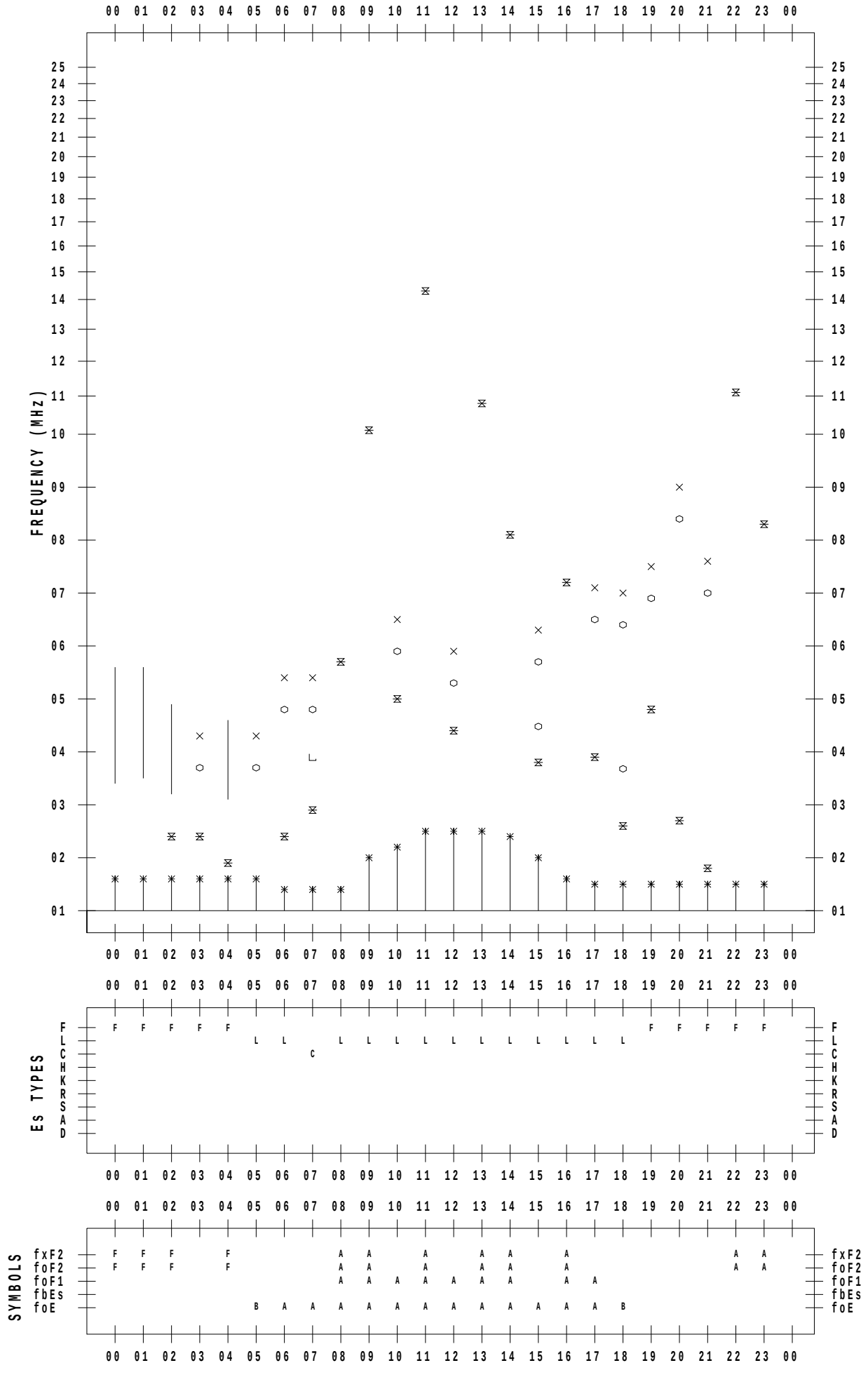
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/25

135 °E MEAN TIME



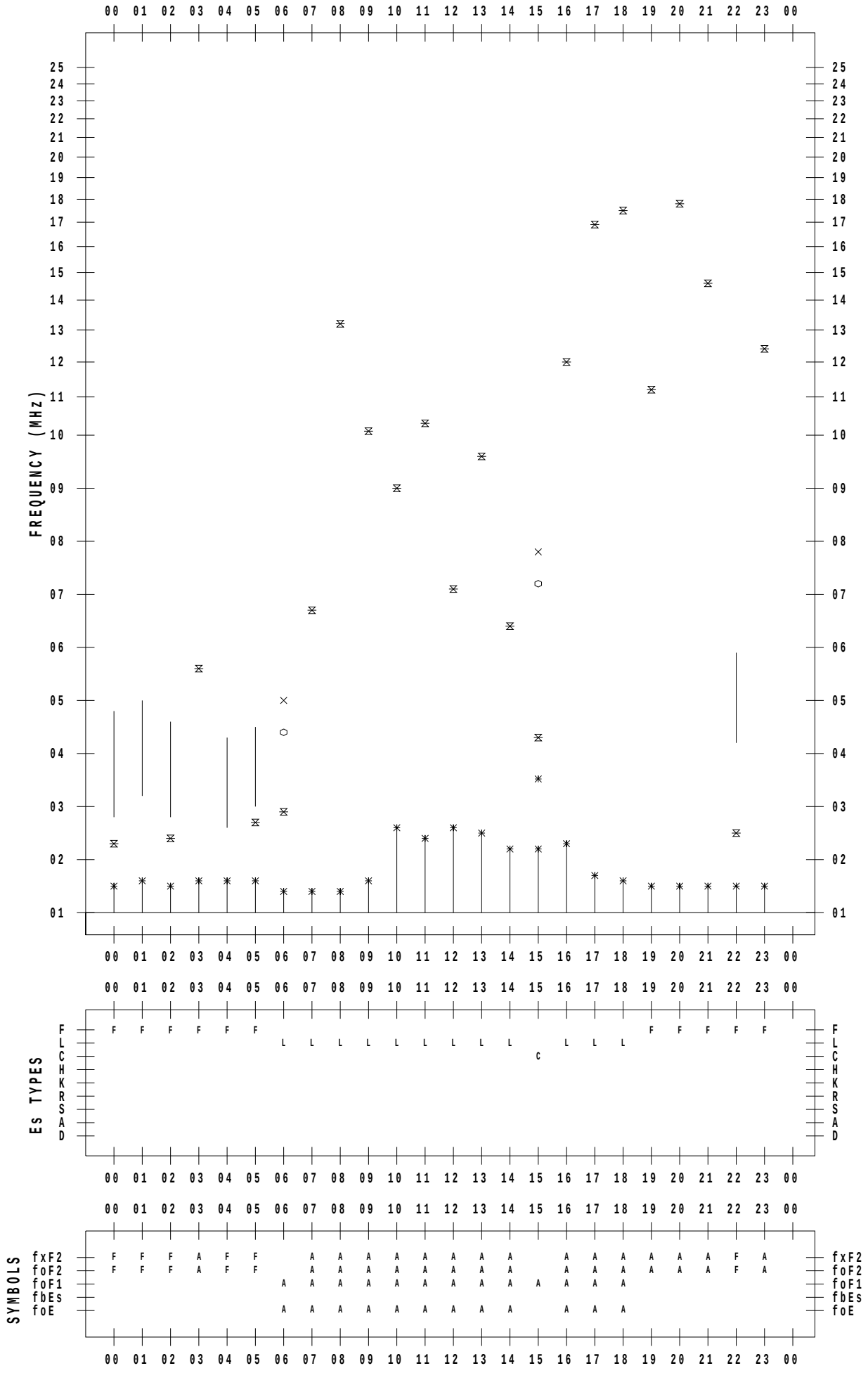
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/26

135 °E MEAN TIME



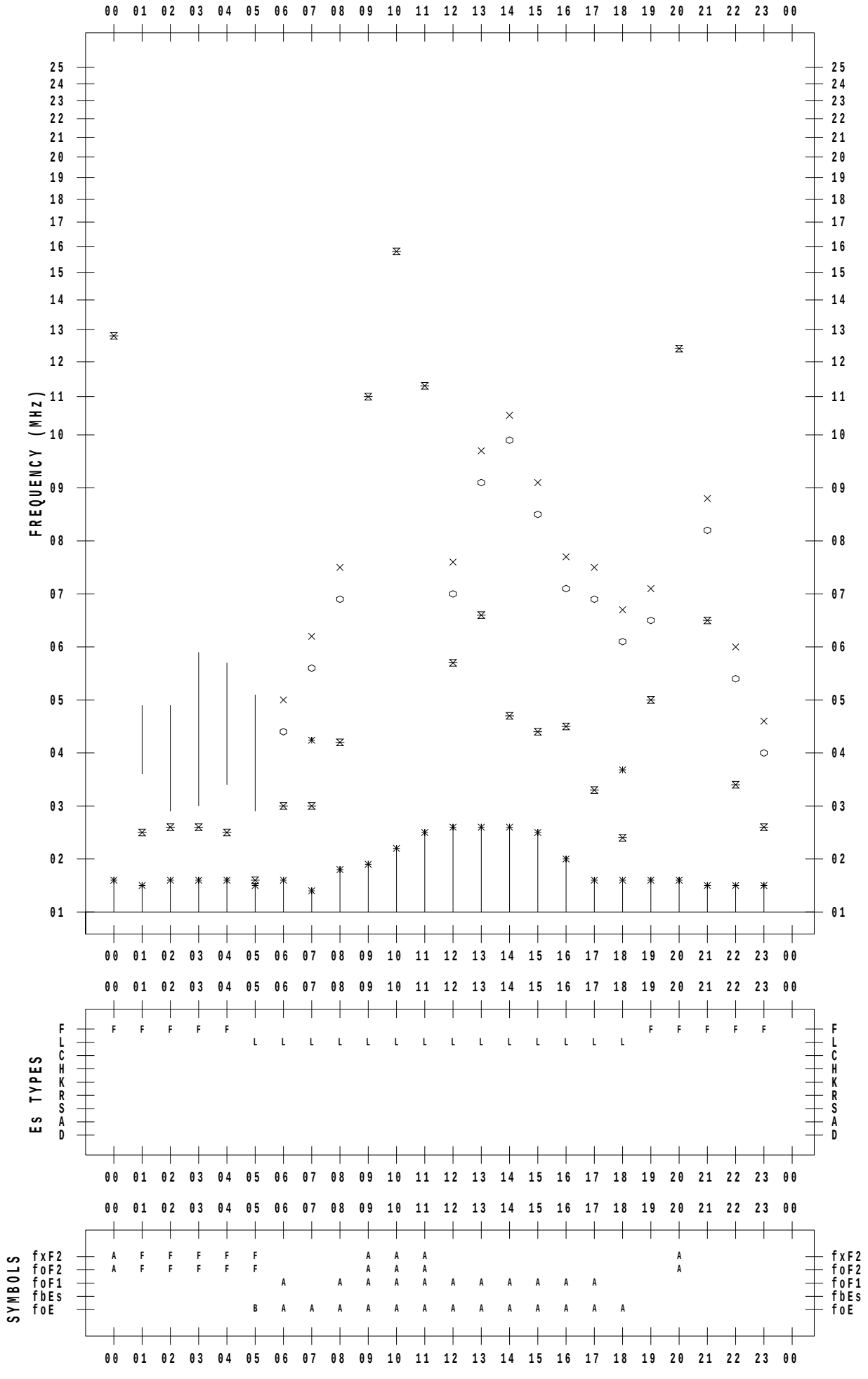
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/27

135 °E MEAN TIME



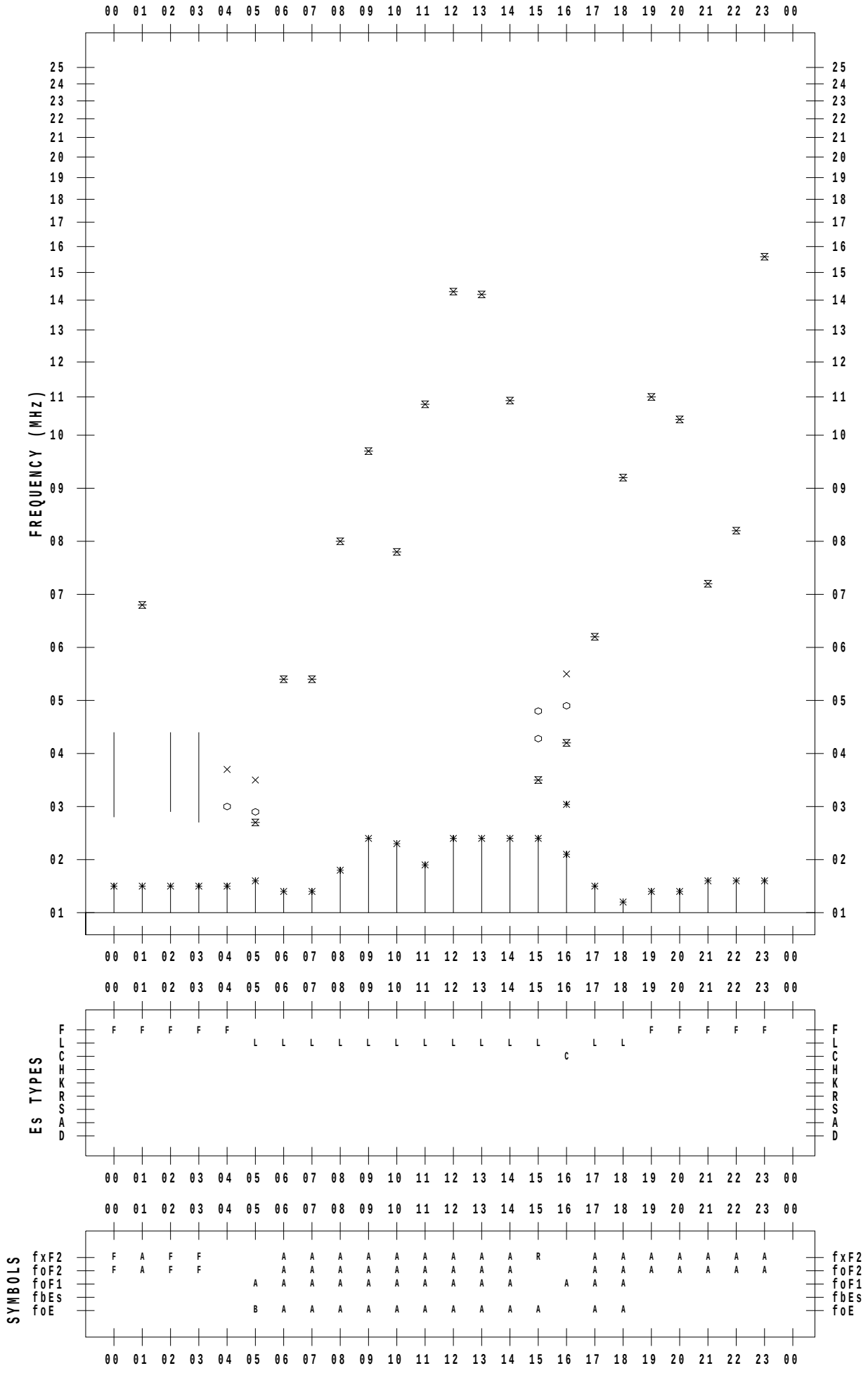
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/28

135 °E MEAN TIME



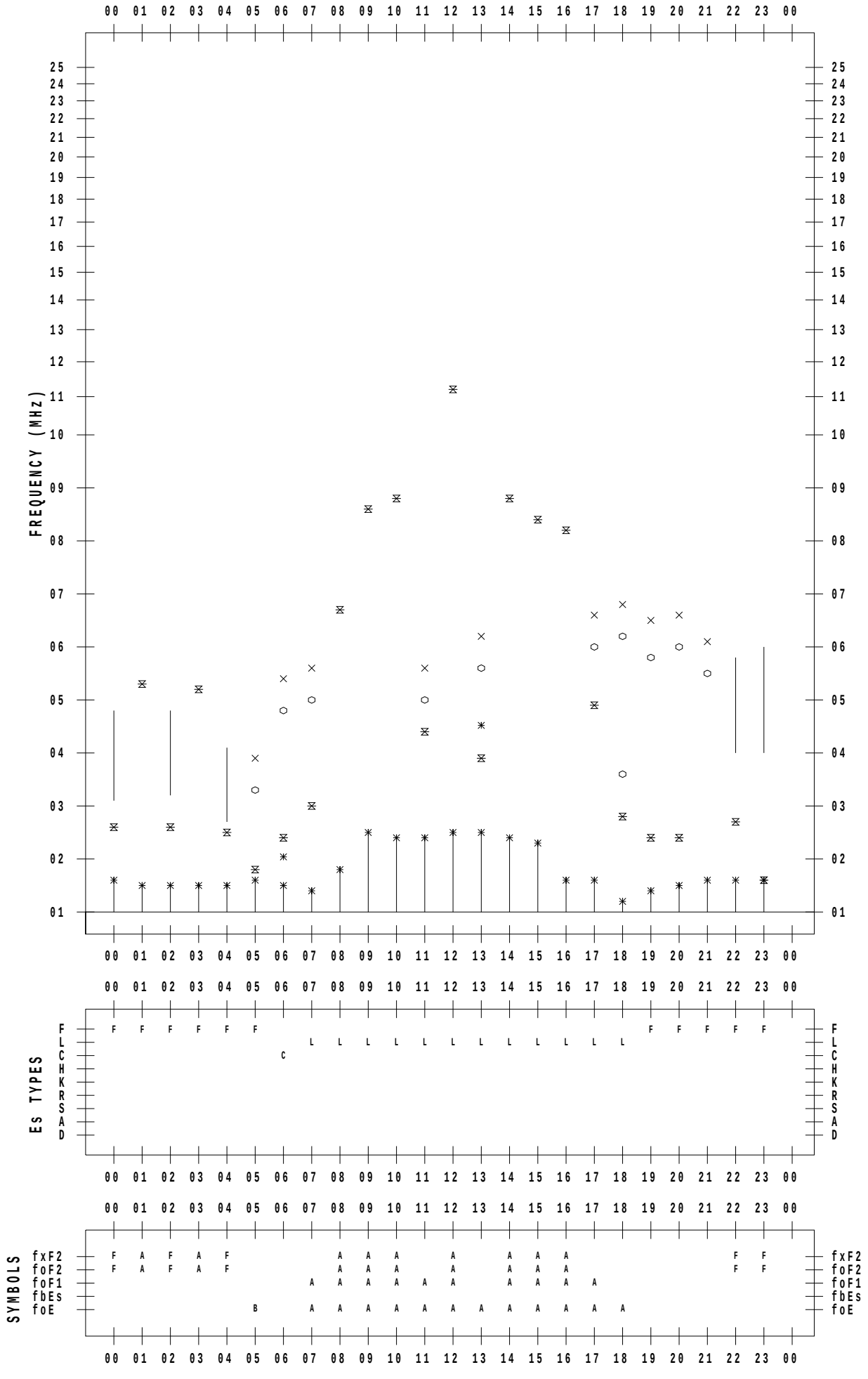
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/29

135 °E MEAN TIME



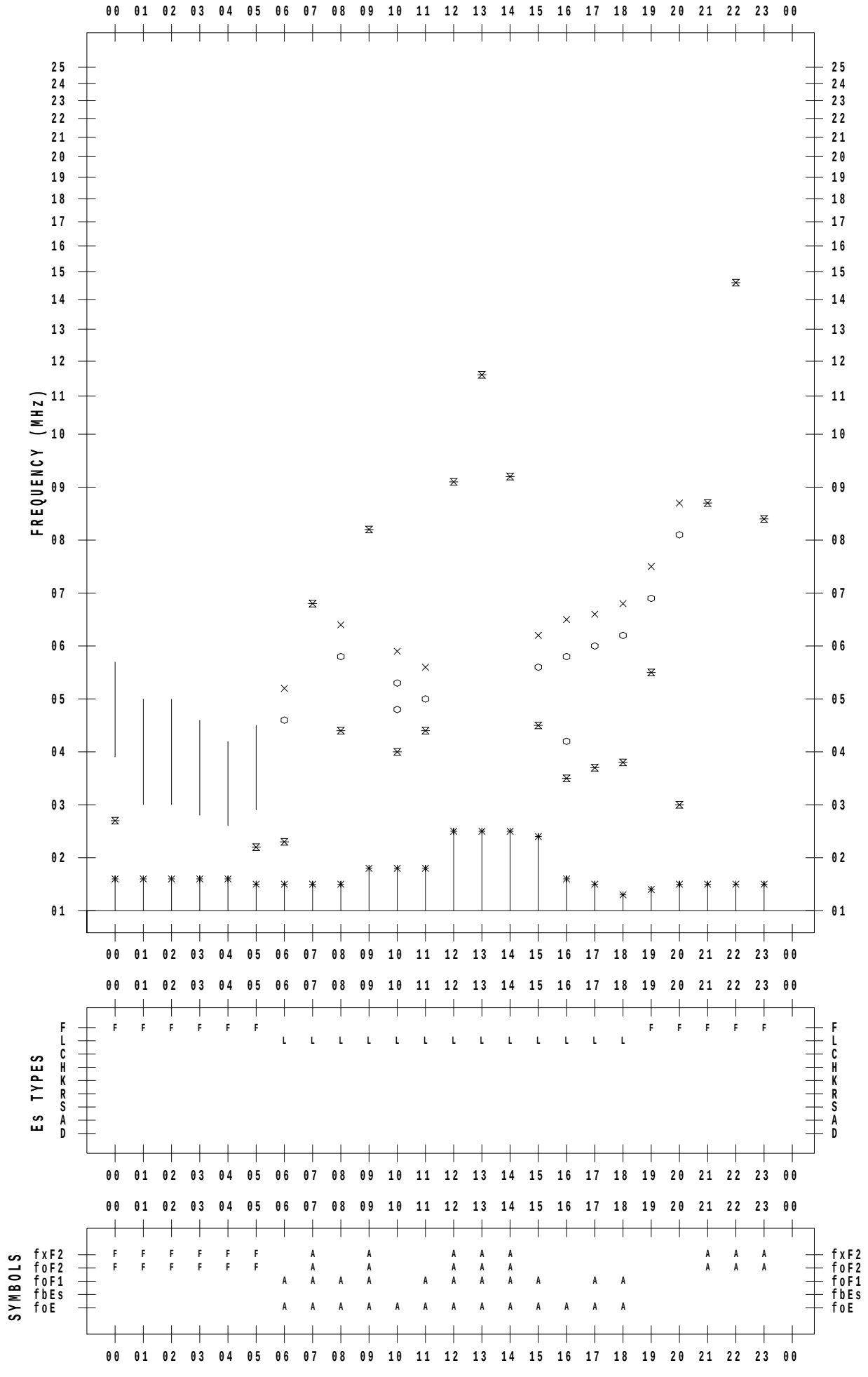
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/30

135 °E MEAN TIME



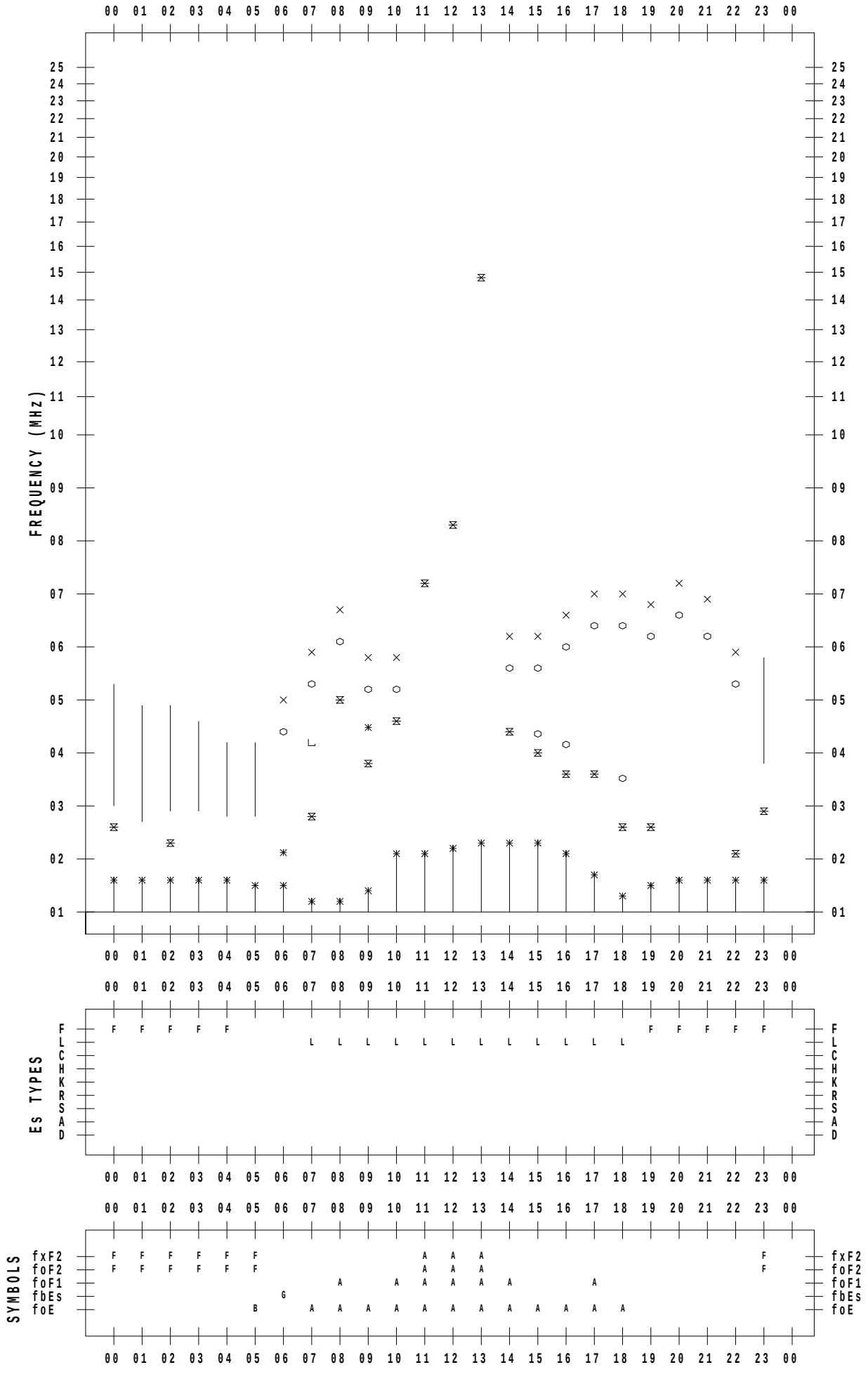
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2021/ 5/31

135 °E MEAN TIME



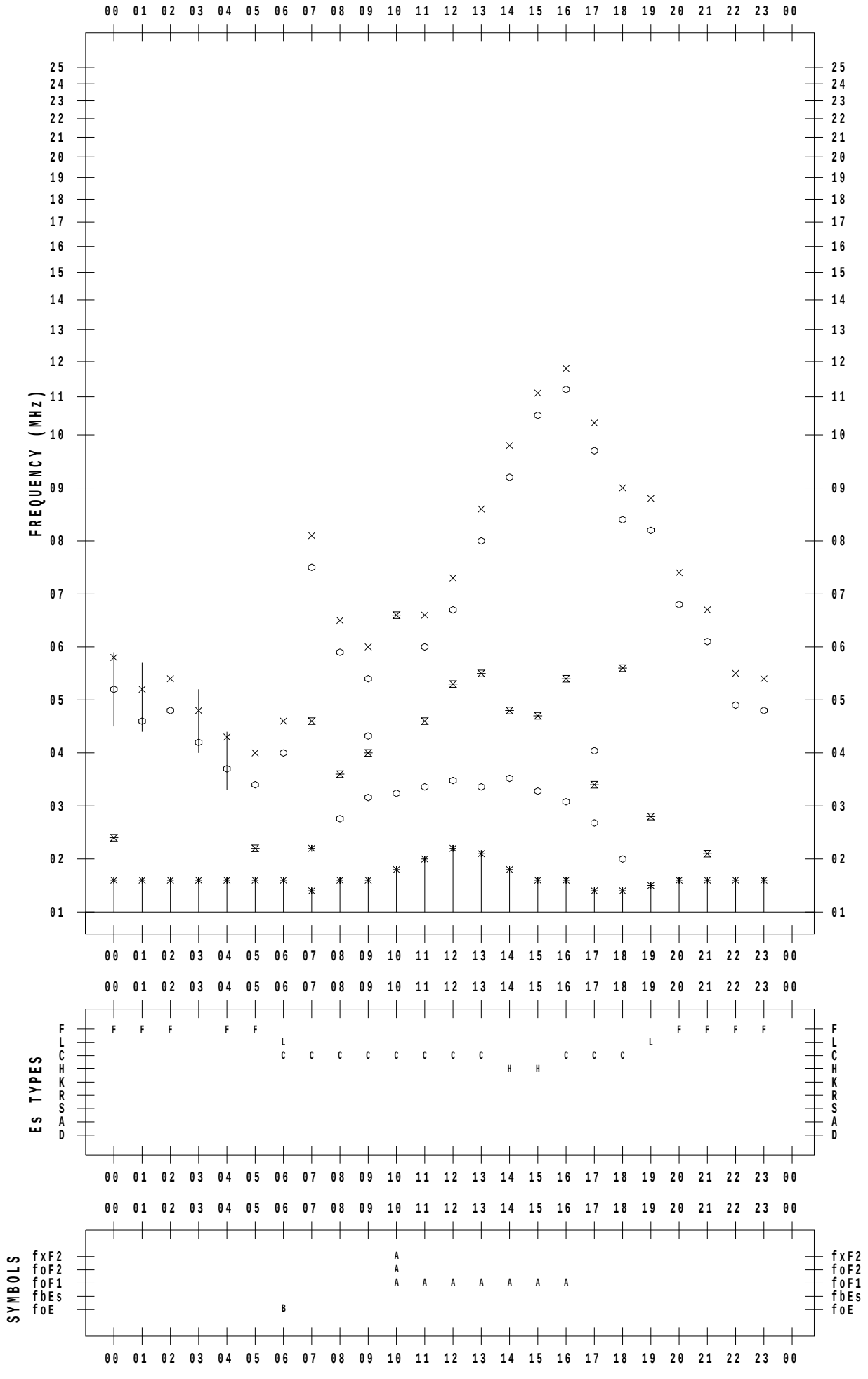
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 1

135 °E MEAN TIME



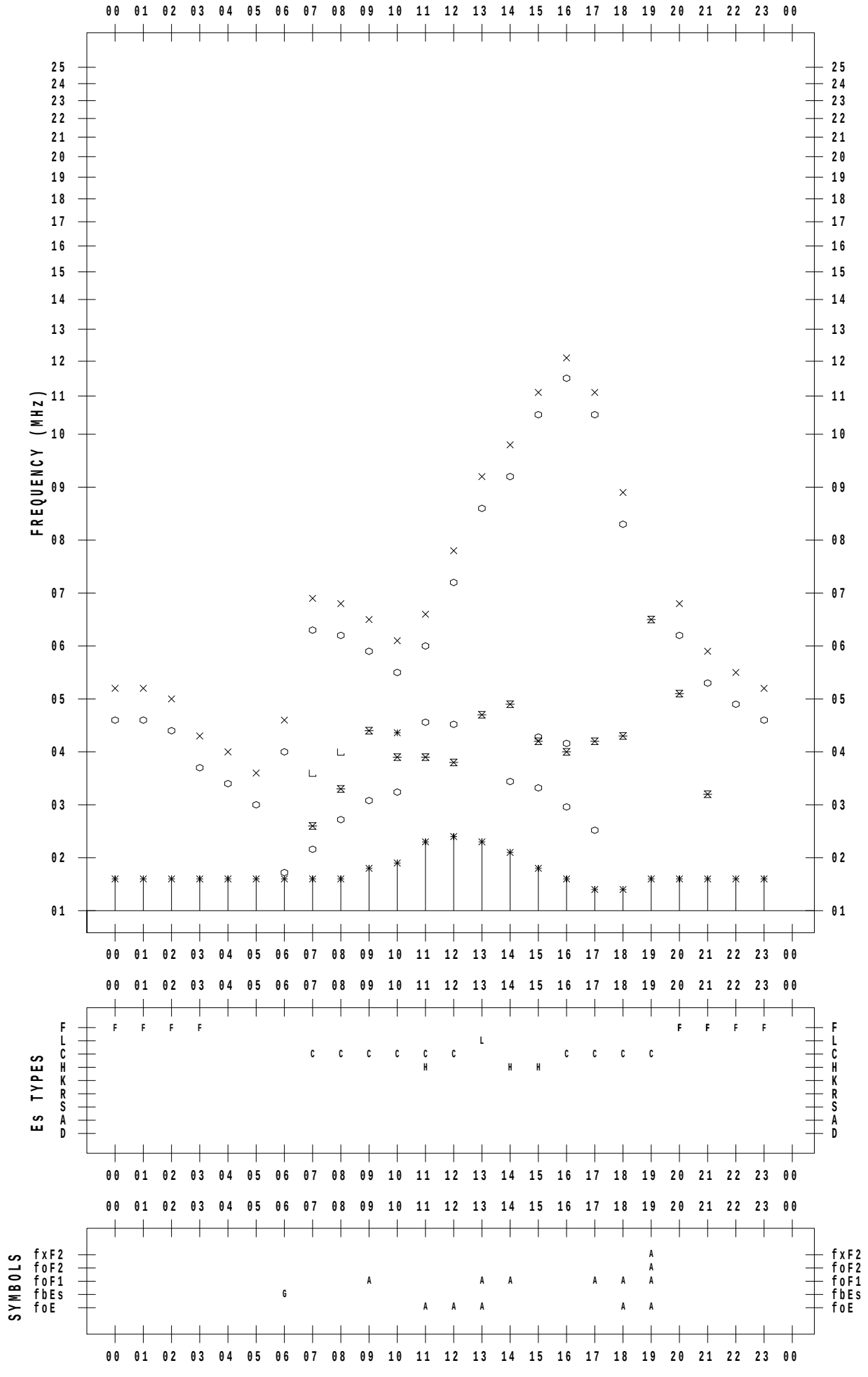
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 2

135 °E MEAN TIME



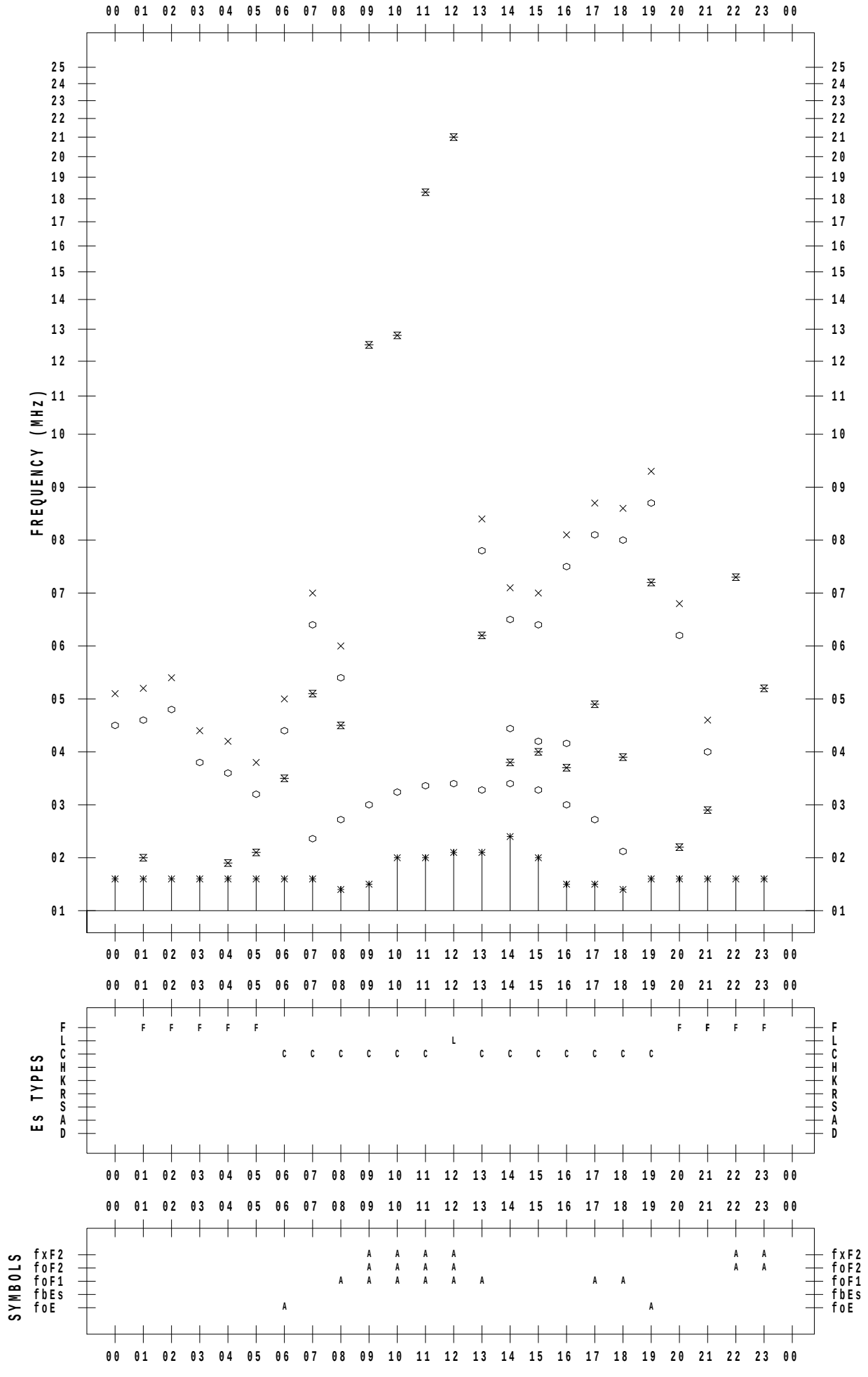
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 3

135 °E MEAN TIME



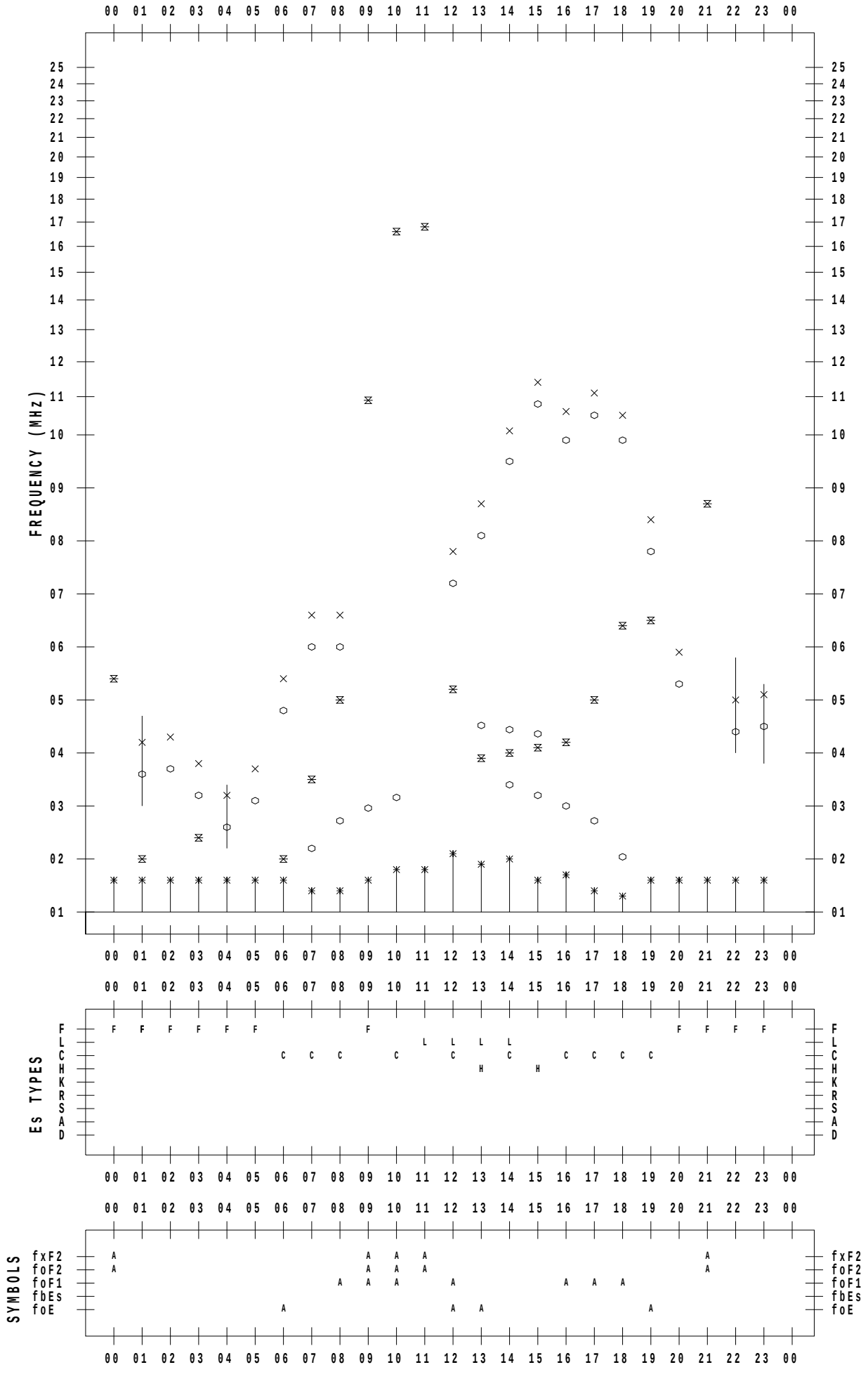
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 4

135 °E MEAN TIME



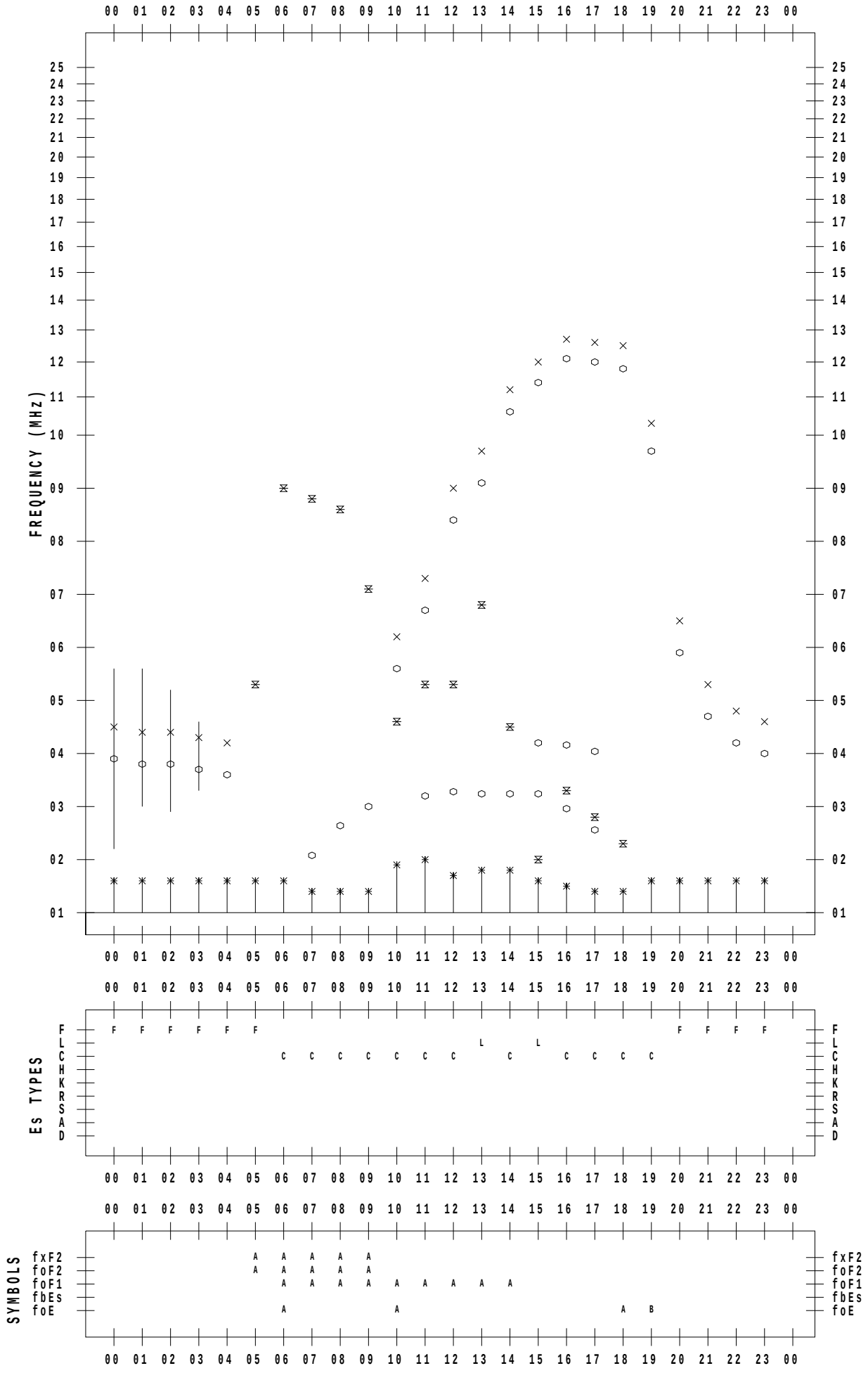
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 5

135 °E MEAN TIME



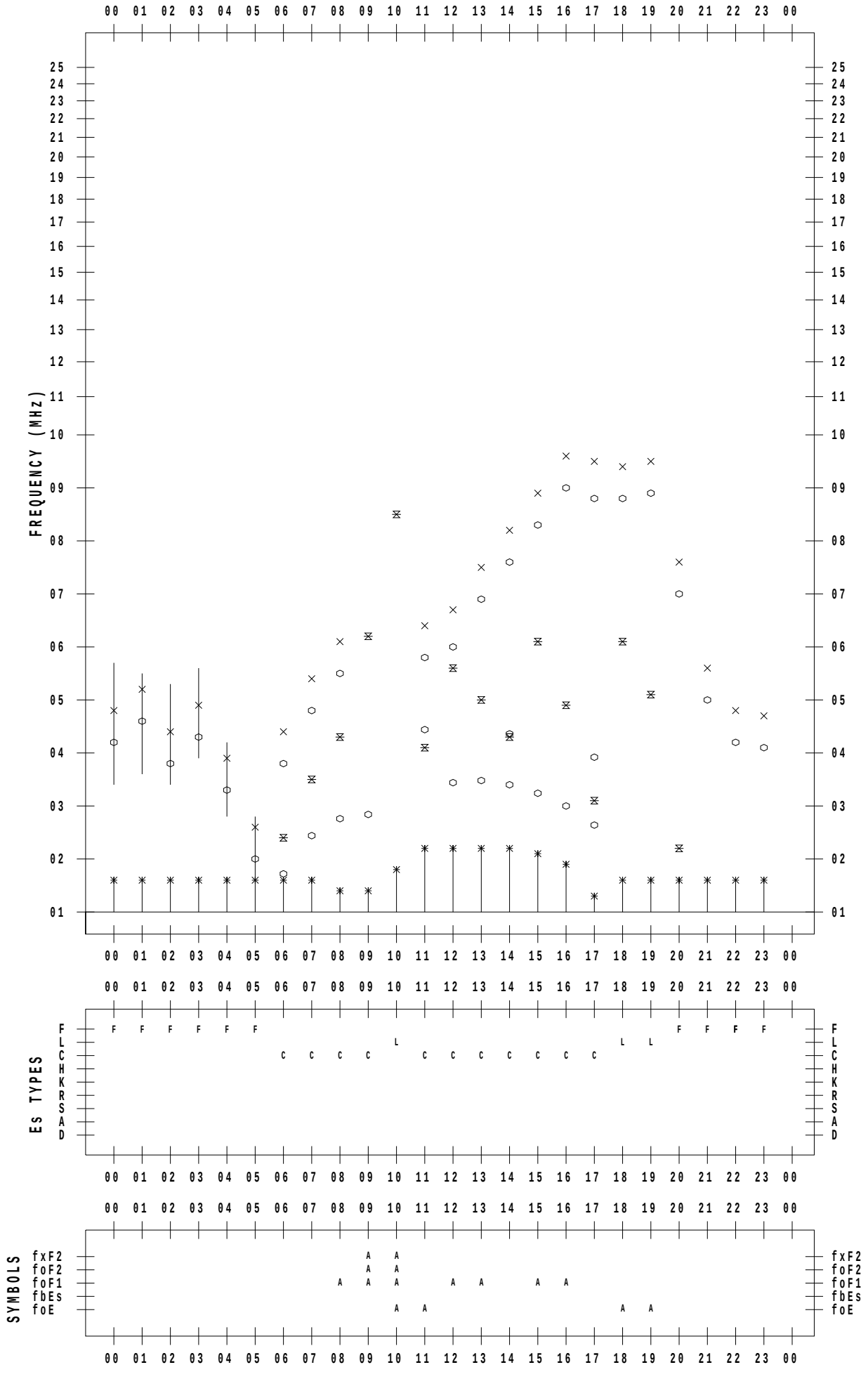
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 6

135 °E MEAN TIME



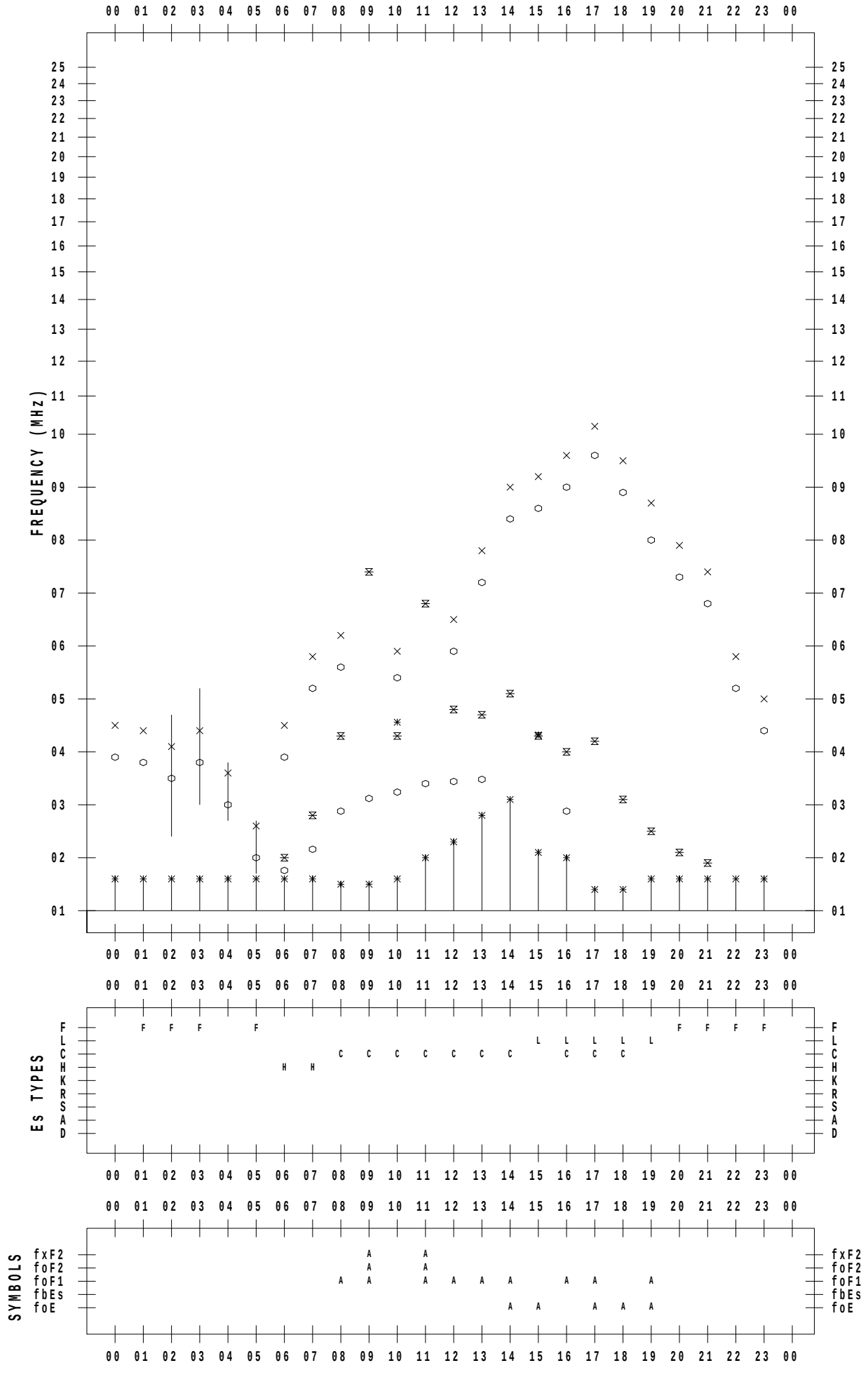
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 7

135 °E MEAN TIME



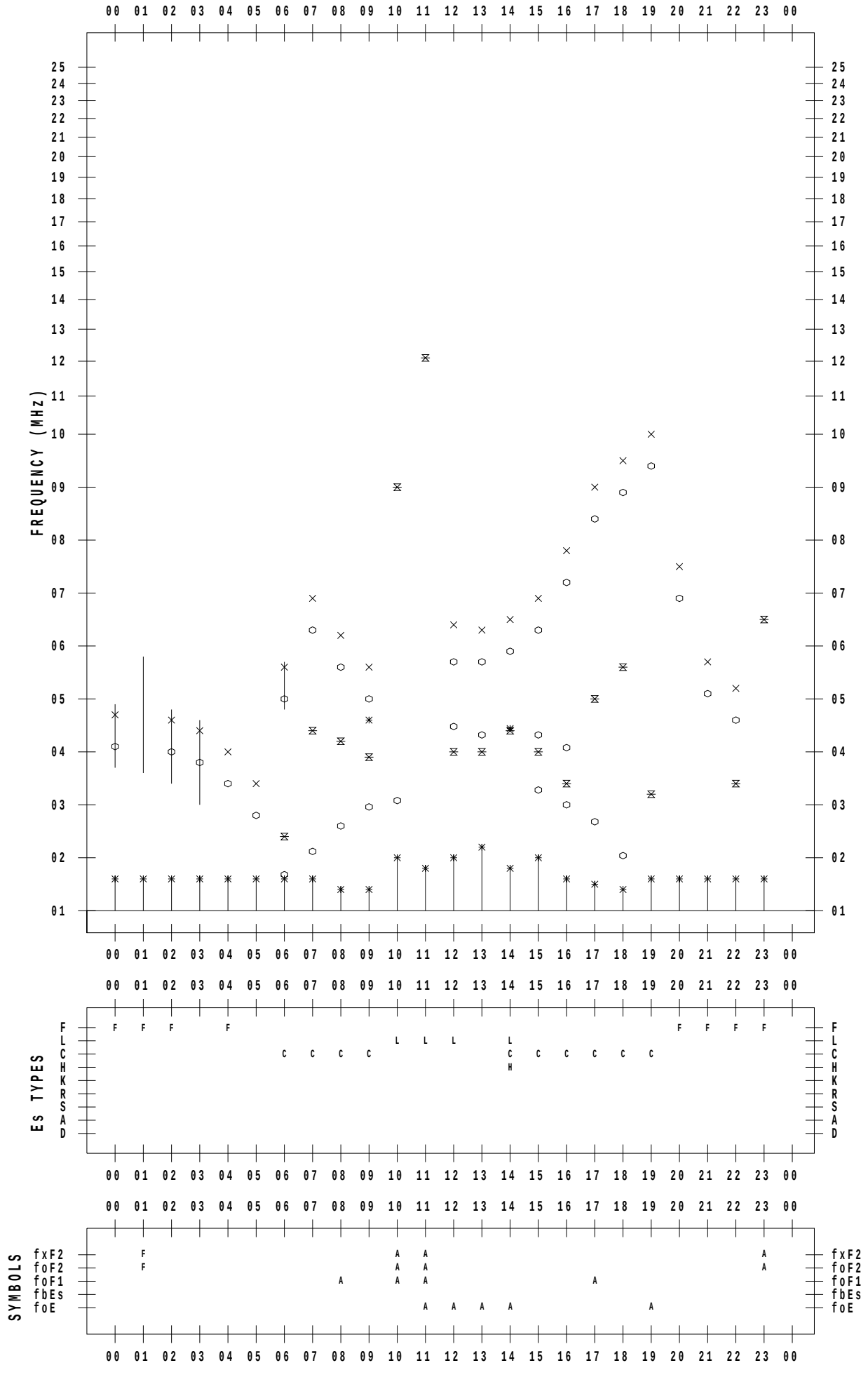
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 8

135 °E MEAN TIME



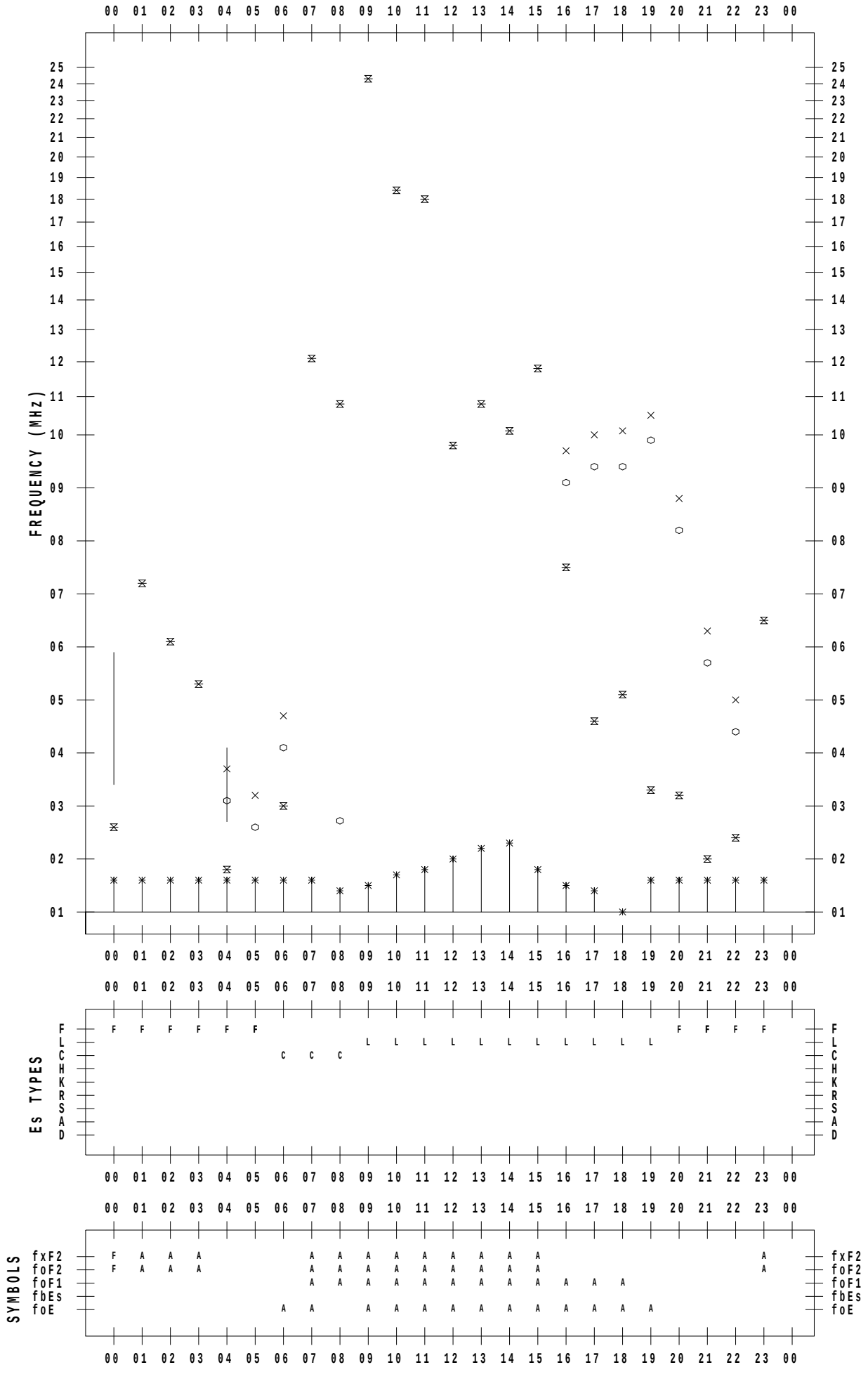
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/ 9

135 °E MEAN TIME



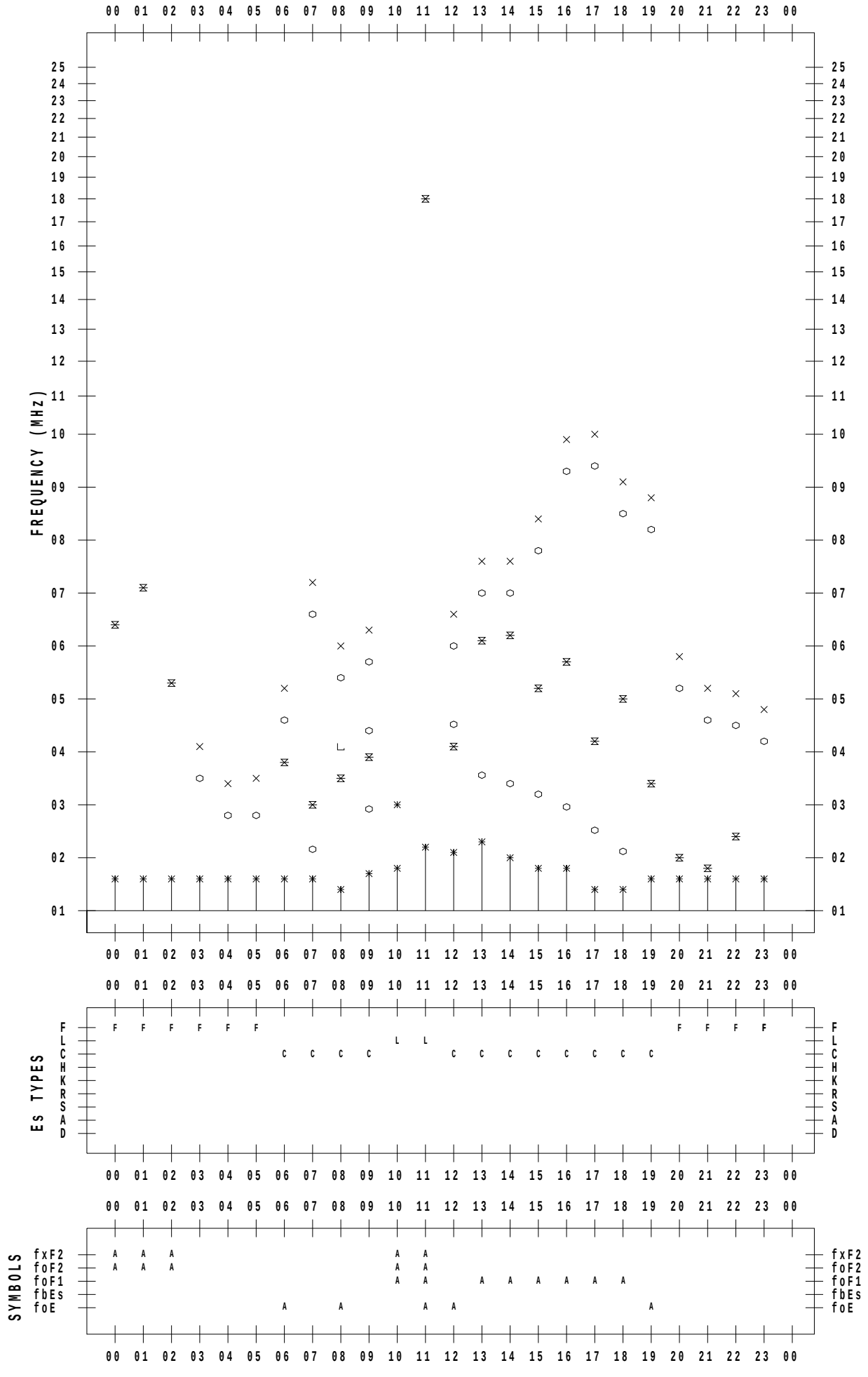
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/10

135 °E MEAN TIME



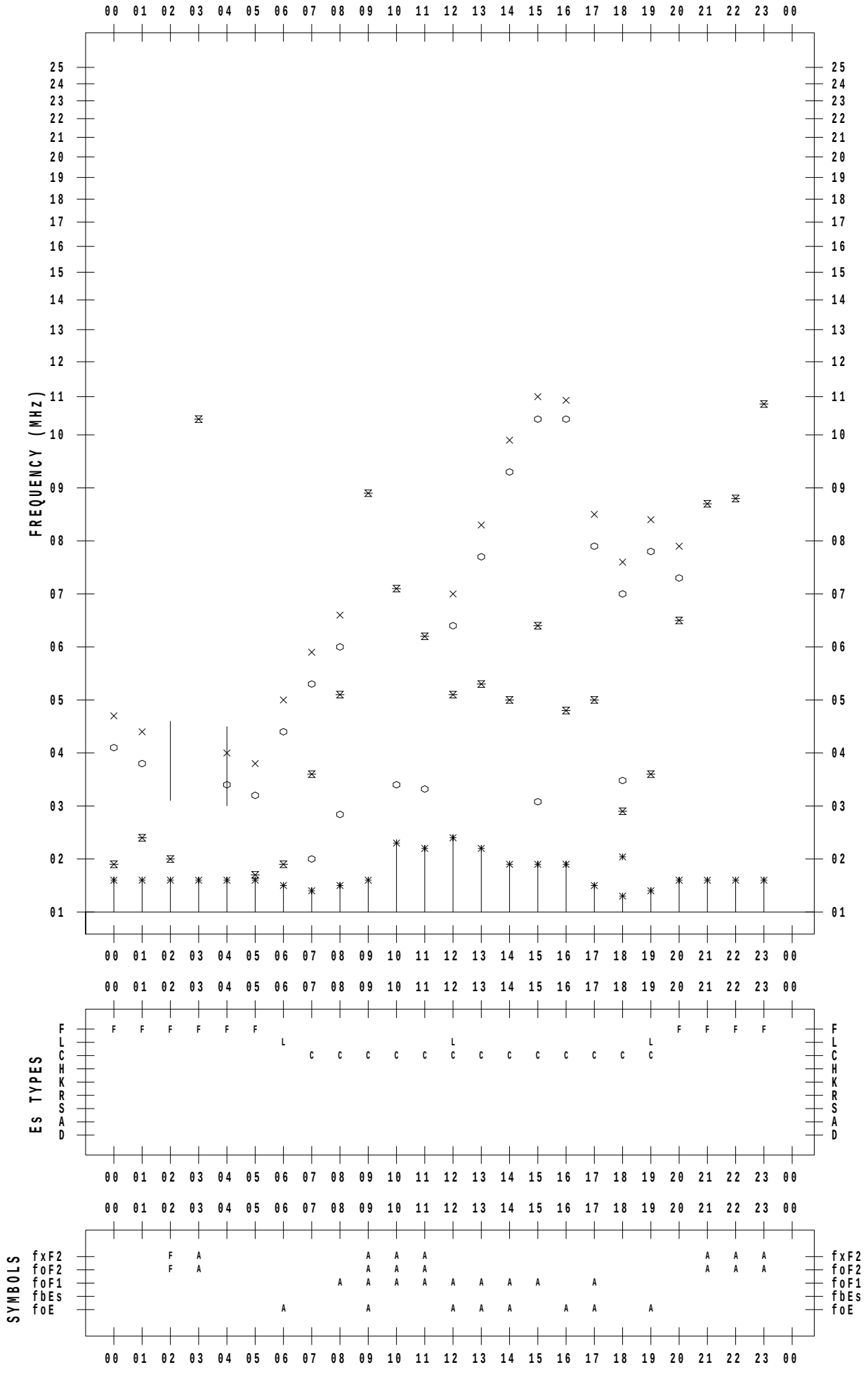
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/11

135 °E MEAN TIME



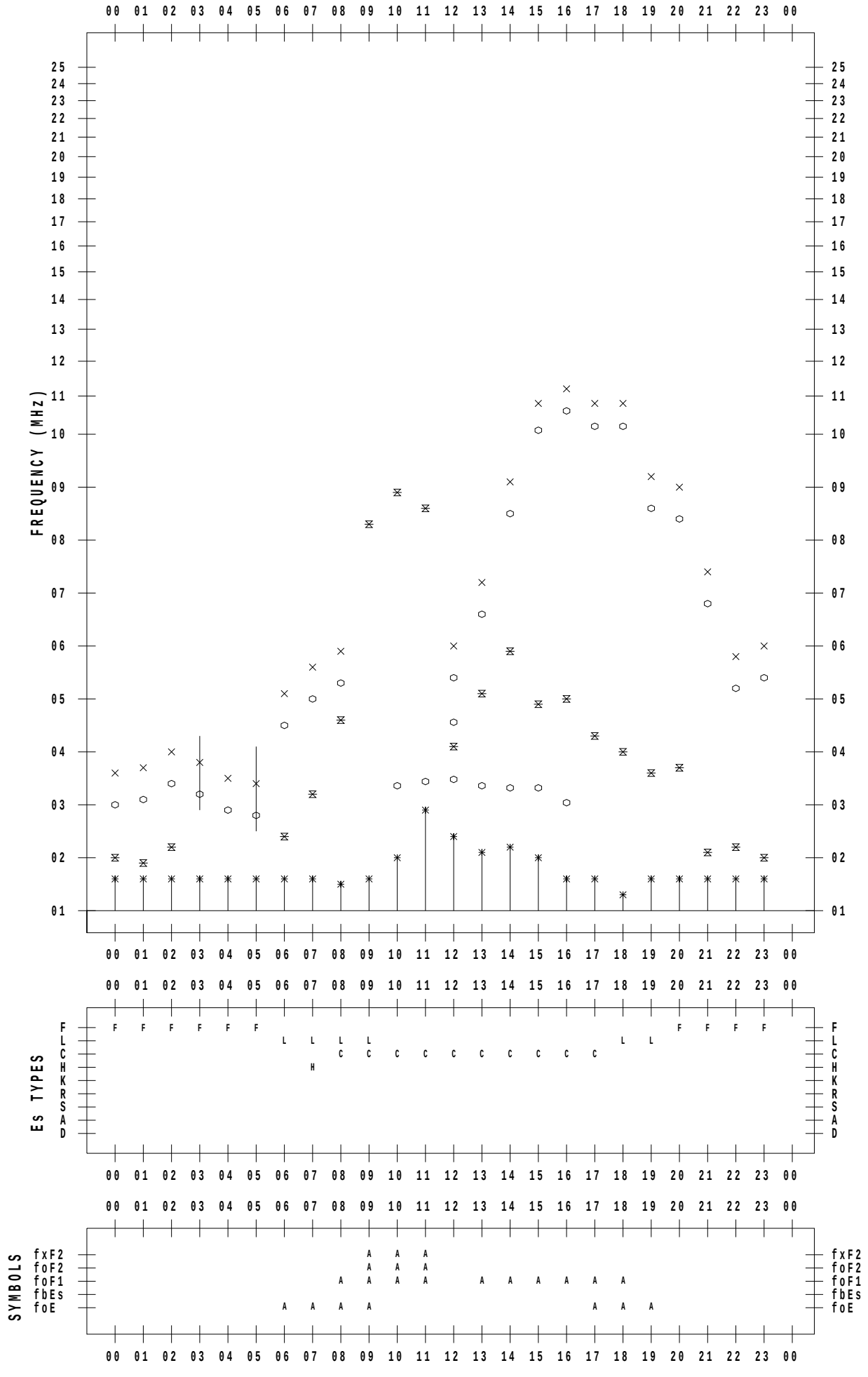
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/12

135 °E MEAN TIME



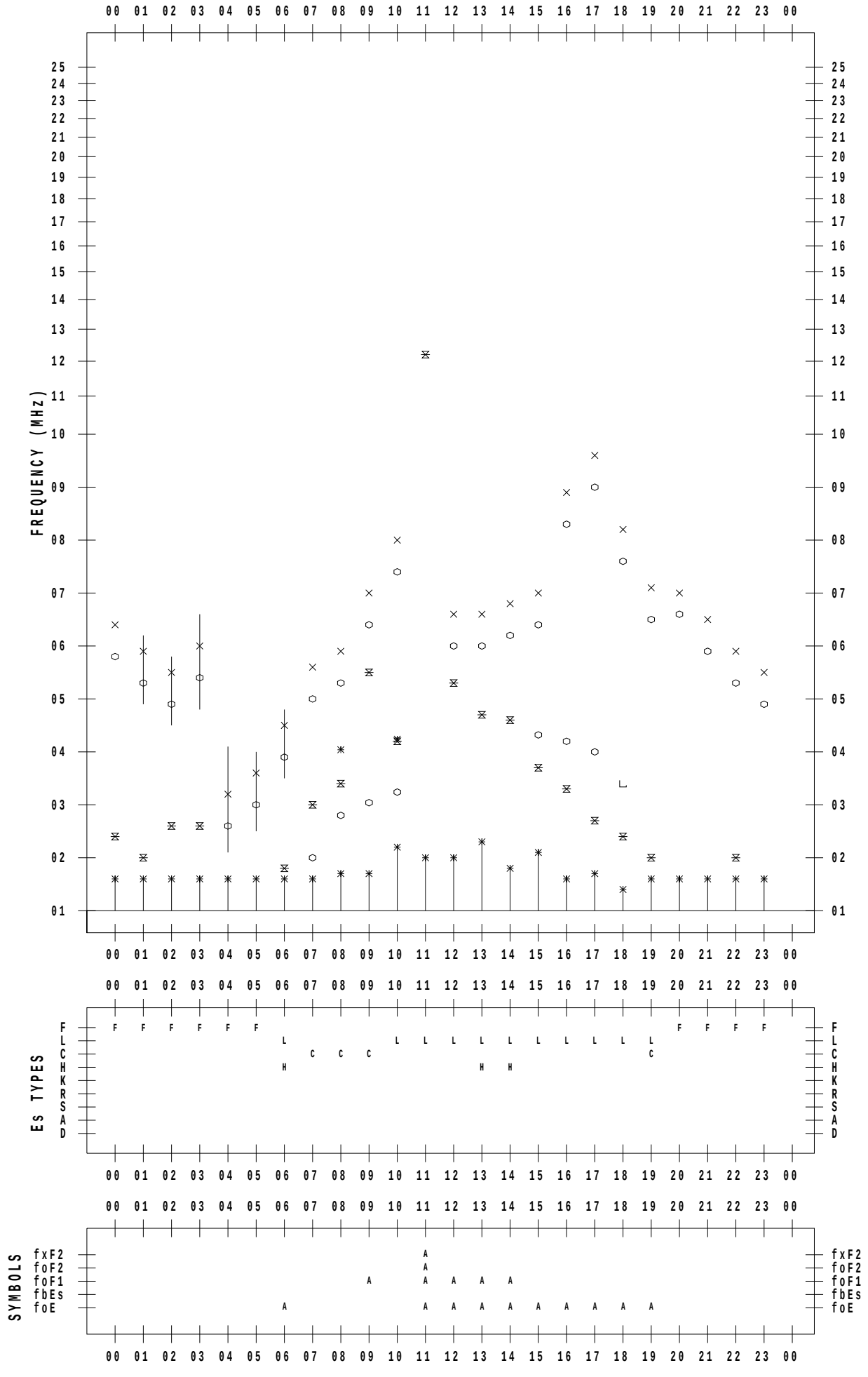
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/13

135 °E MEAN TIME



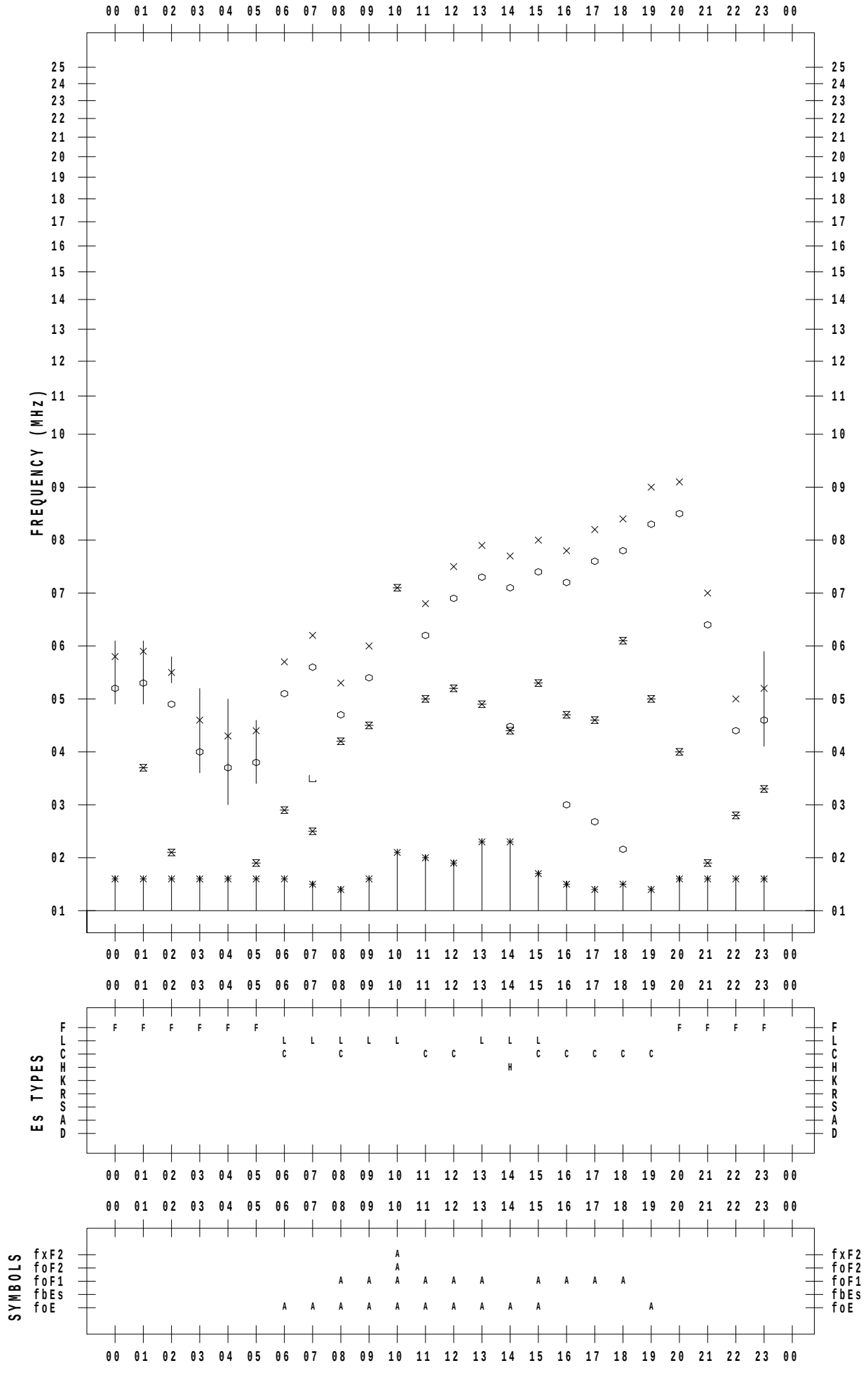
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/14

135 °E MEAN TIME



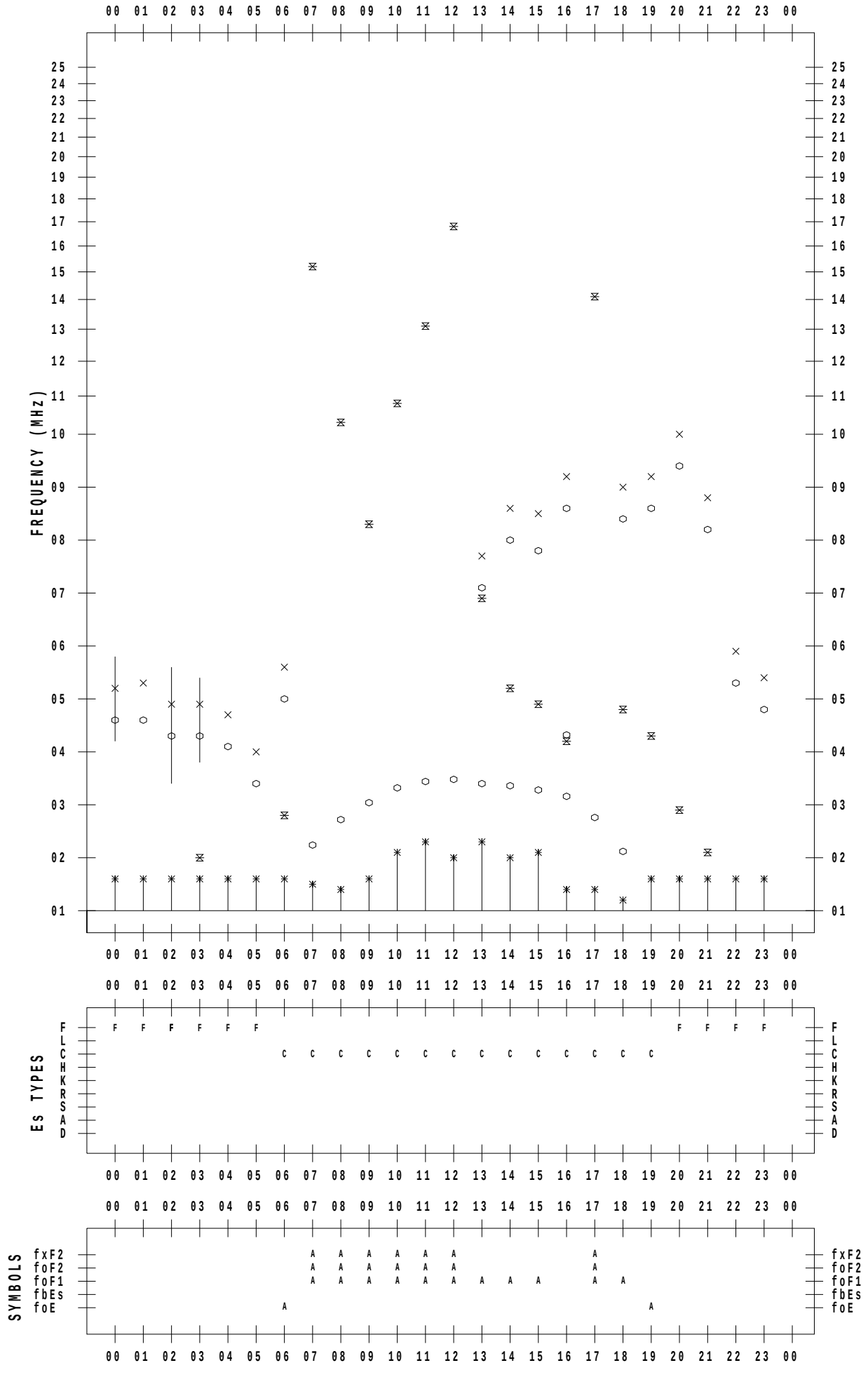
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/15

135 °E MEAN TIME



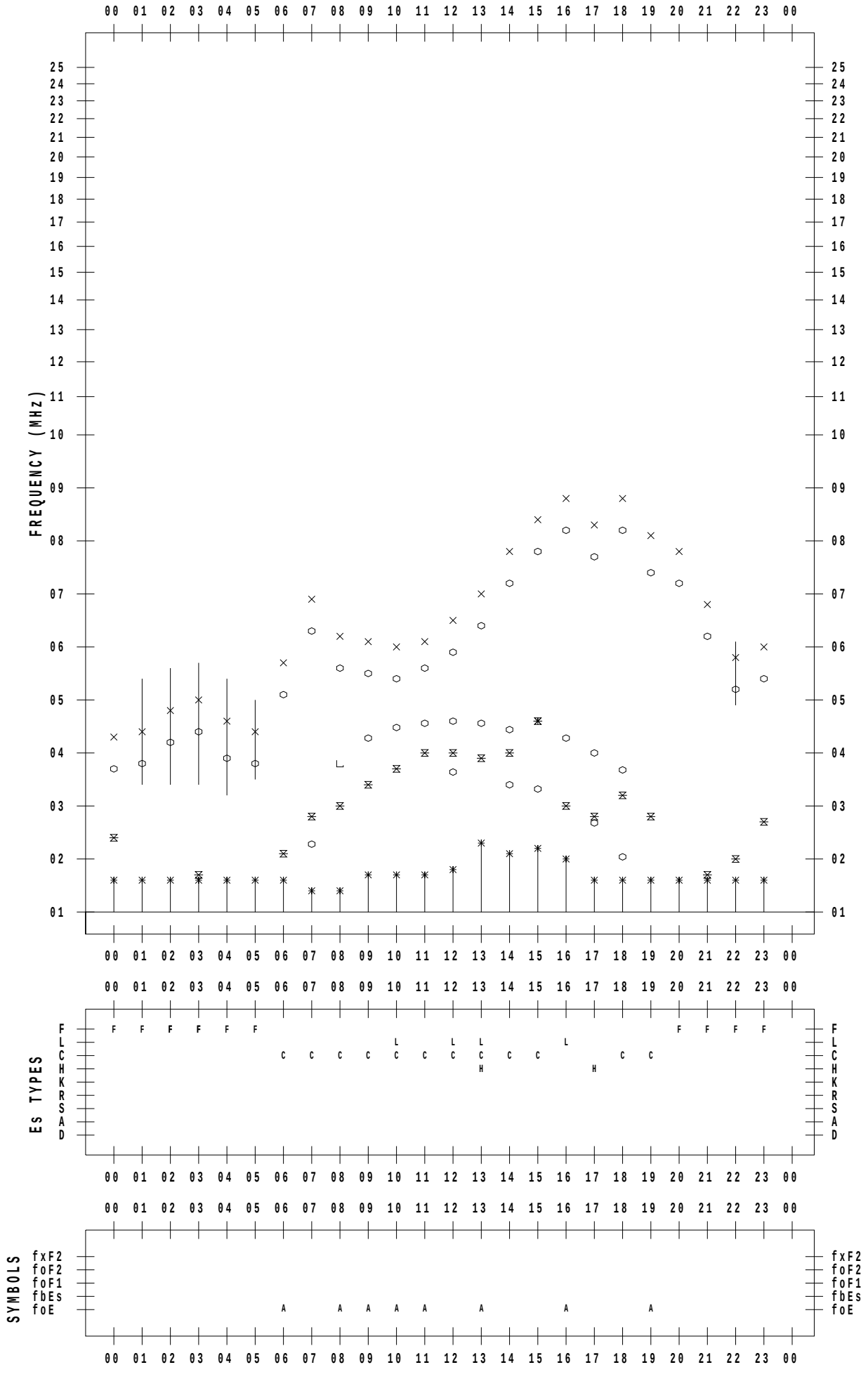
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/16

135 °E MEAN TIME



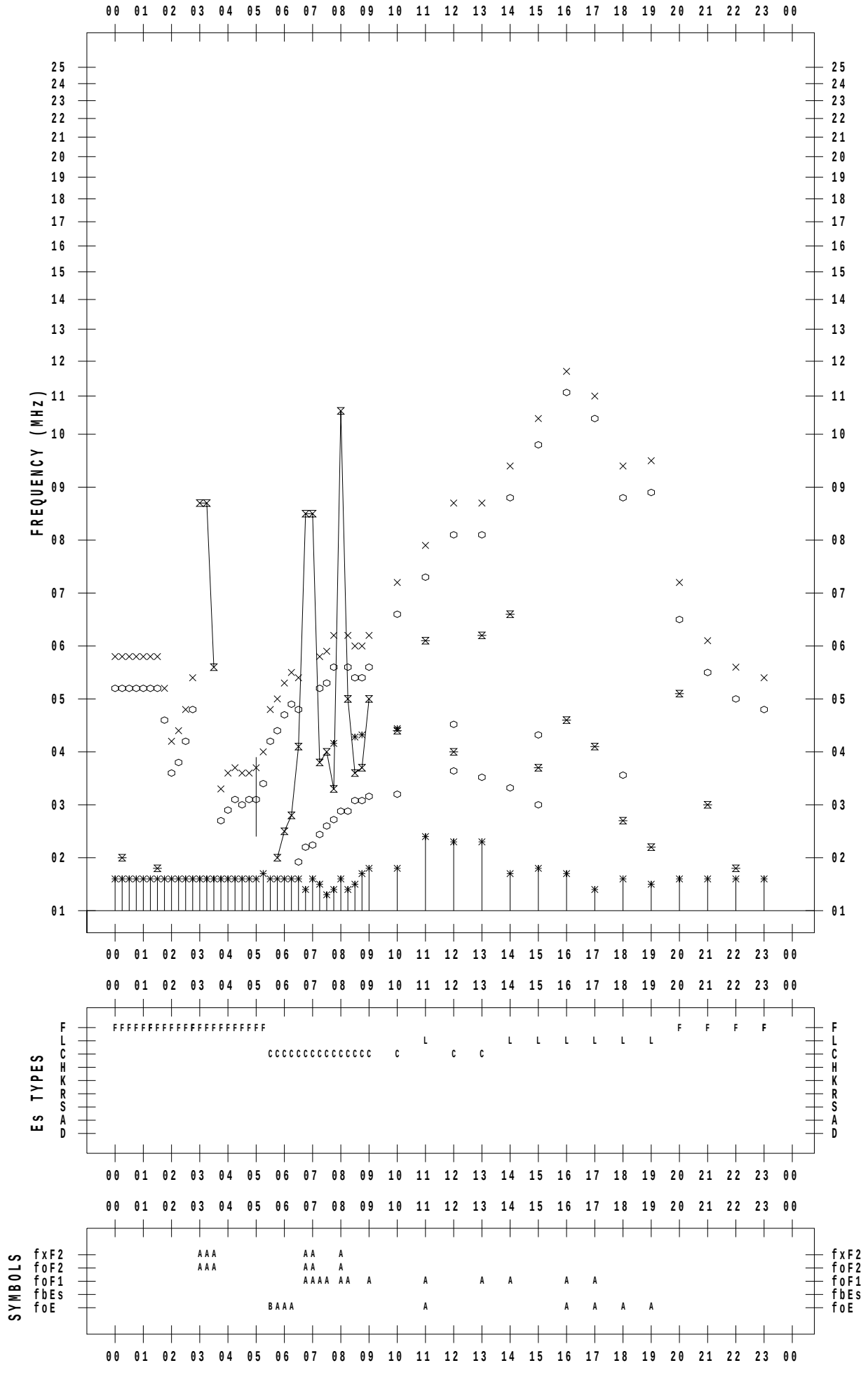
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/17

135 °E MEAN TIME



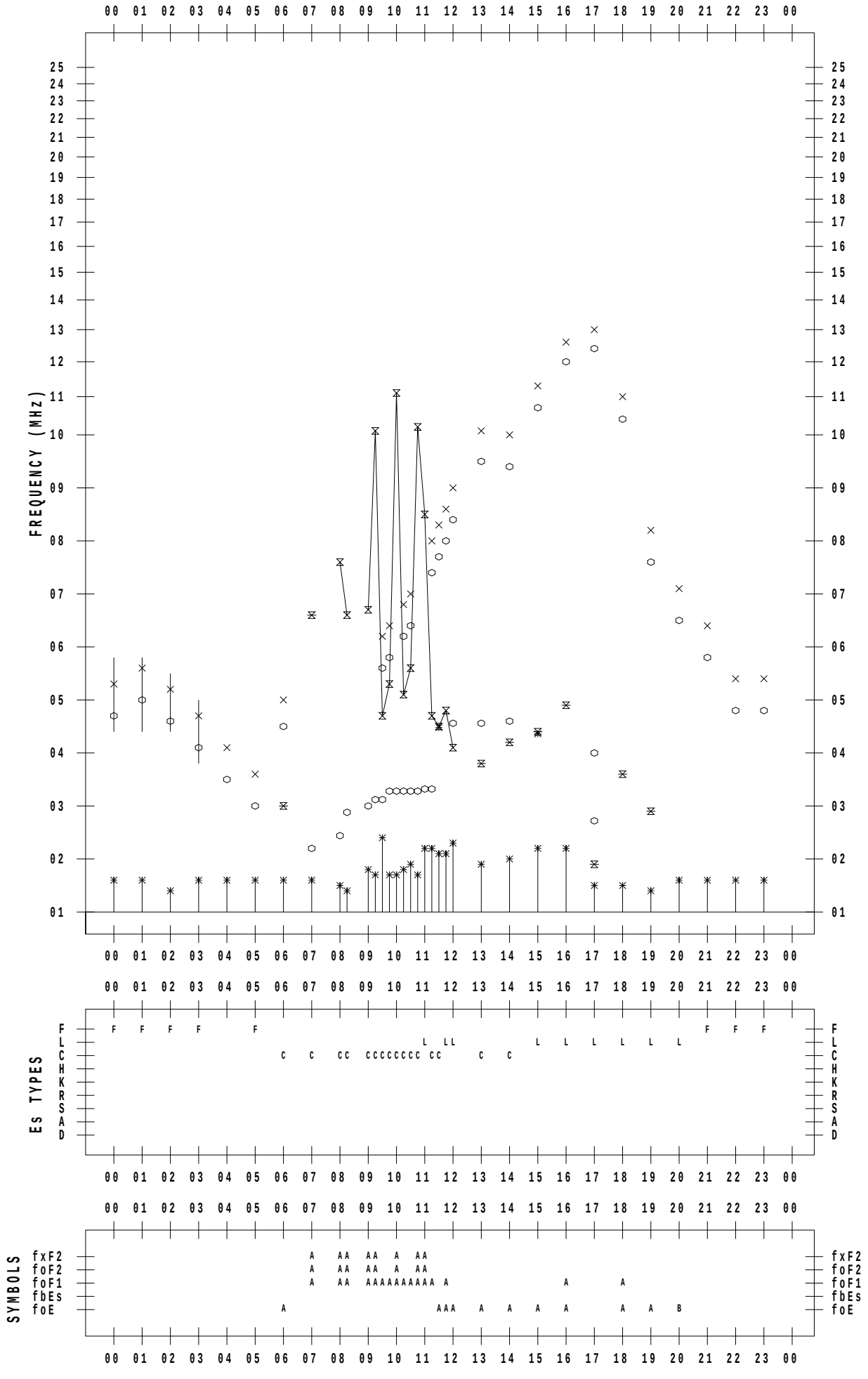
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/18

135 °E MEAN TIME



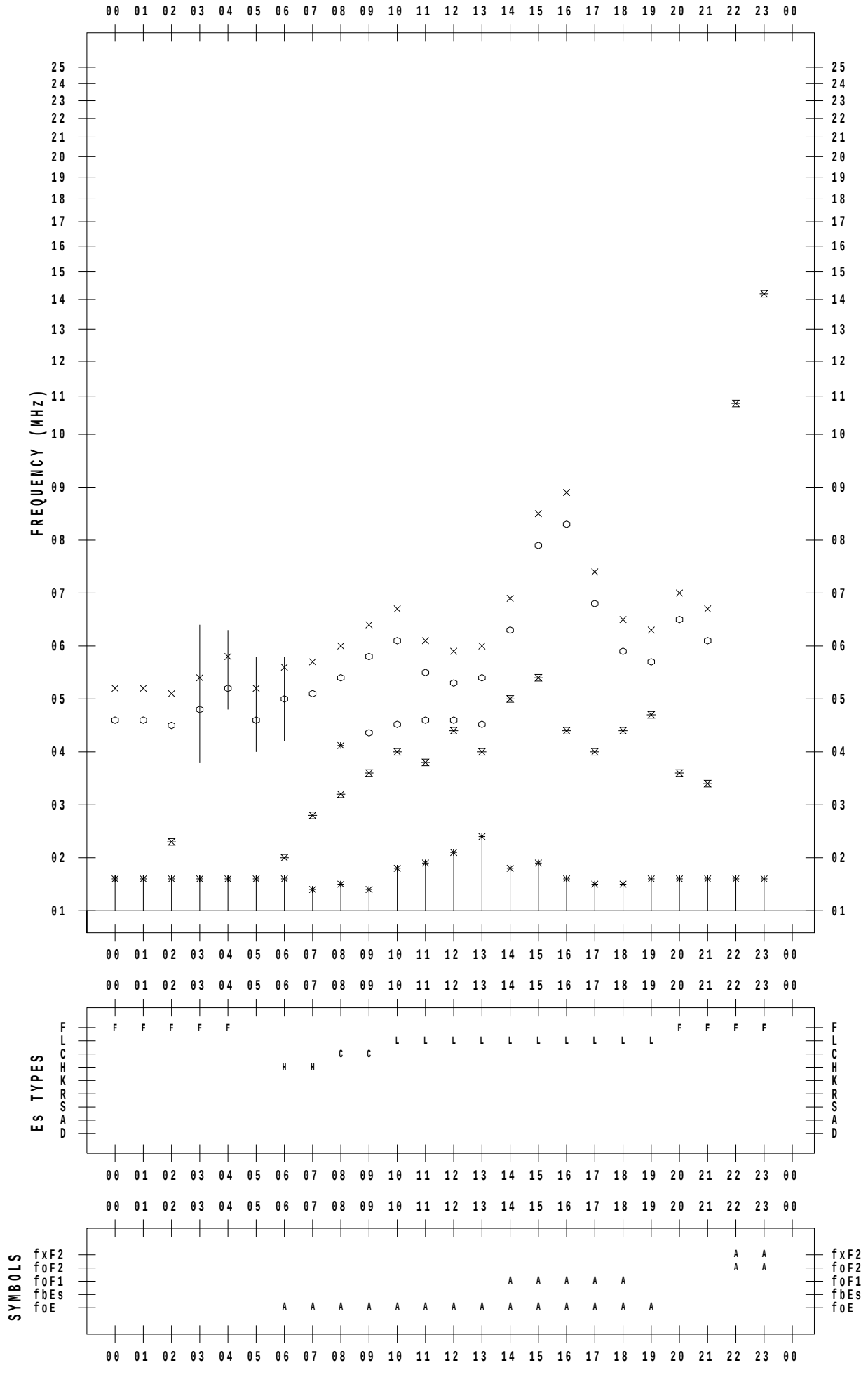
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/19

135 °E MEAN TIME



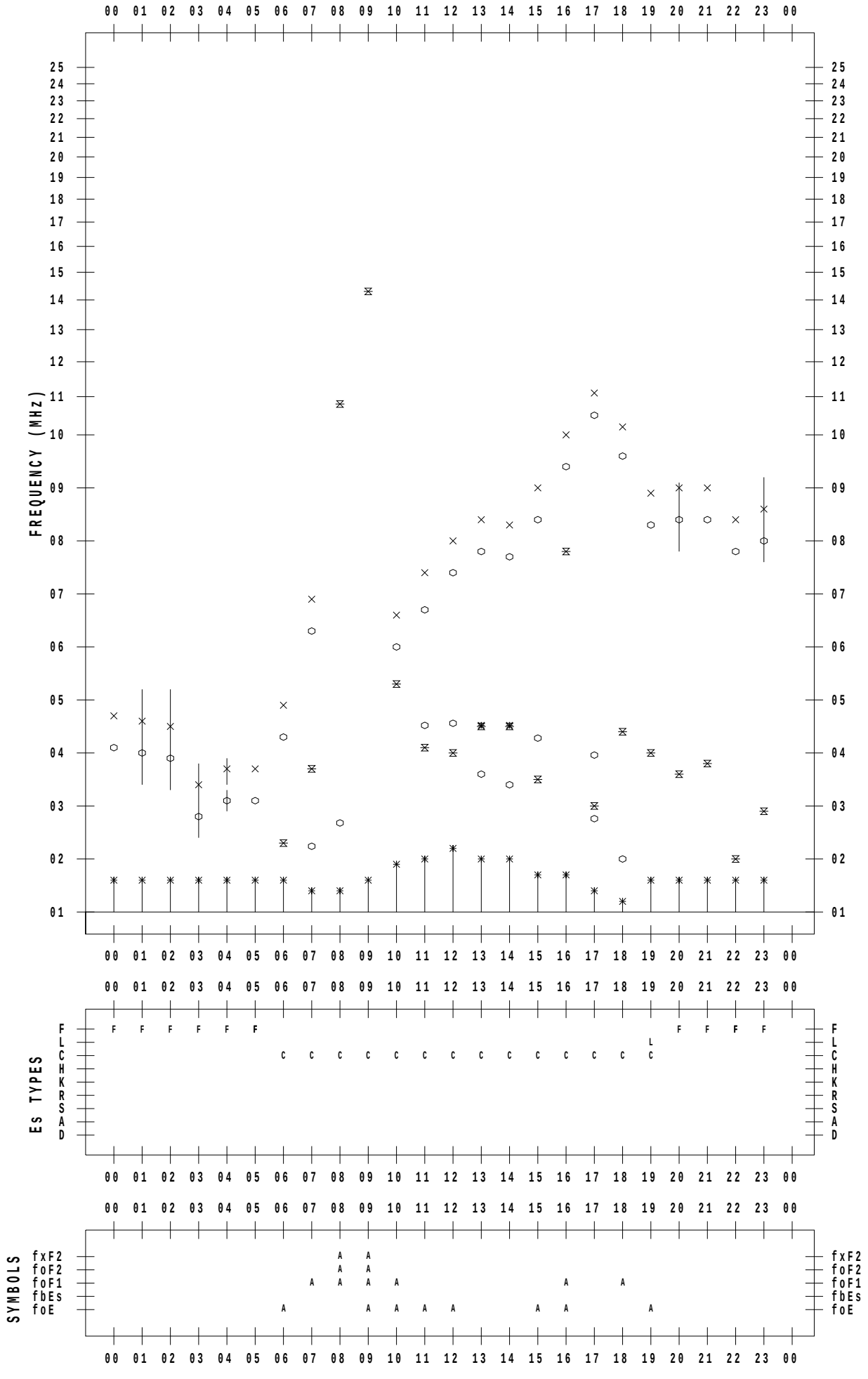
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/20

135 °E MEAN TIME



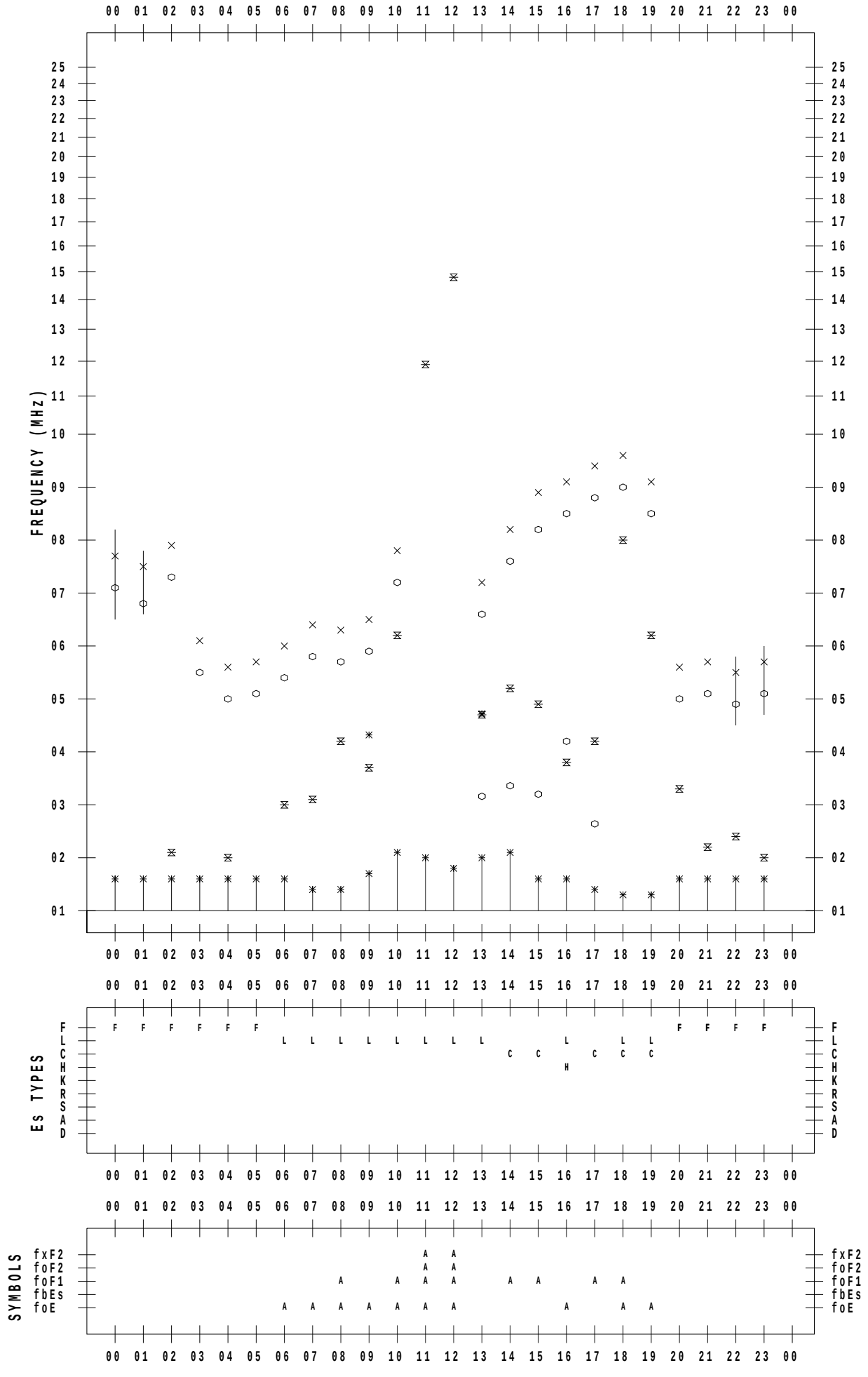
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/21

135 °E MEAN TIME



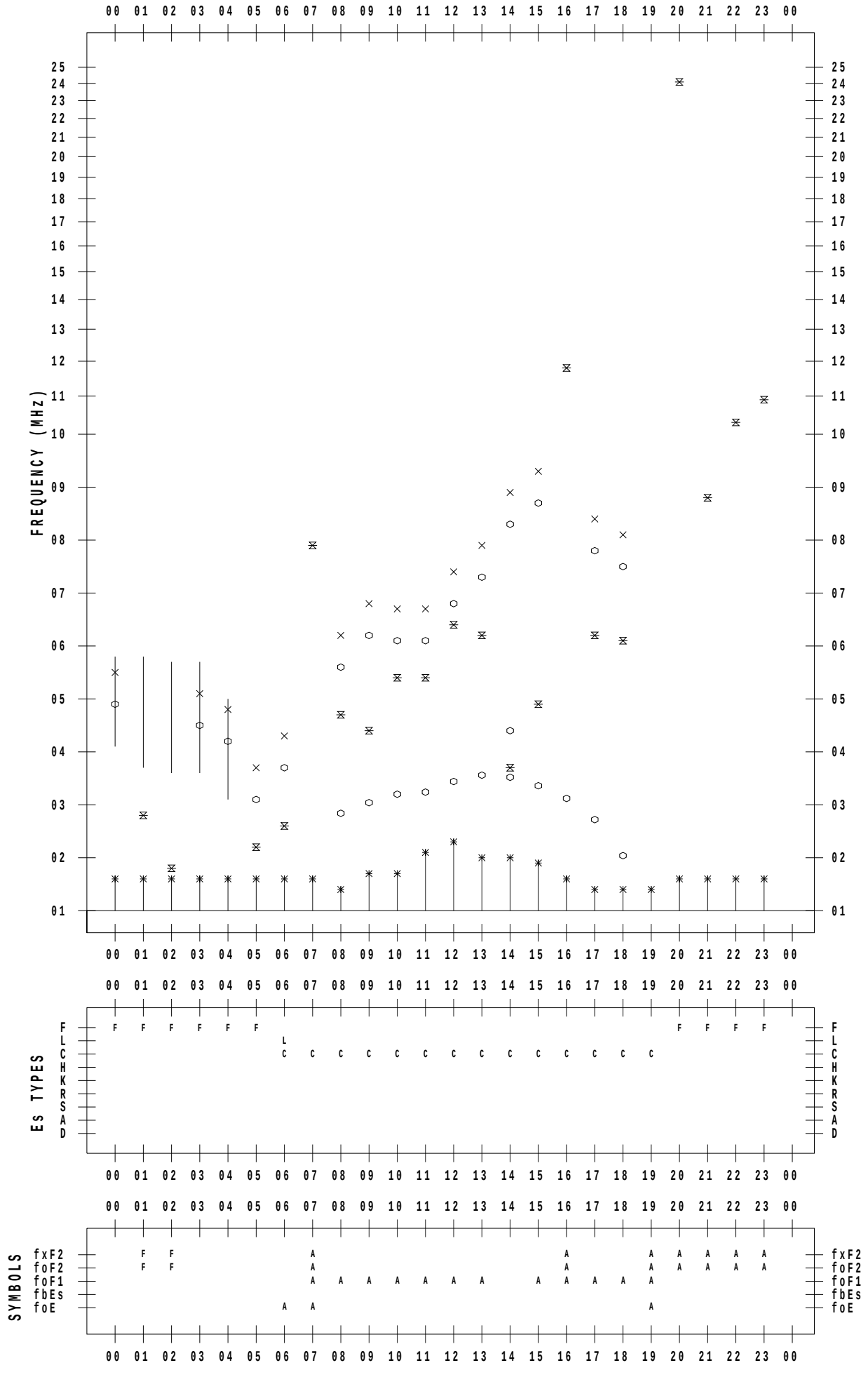
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/22

135 °E MEAN TIME



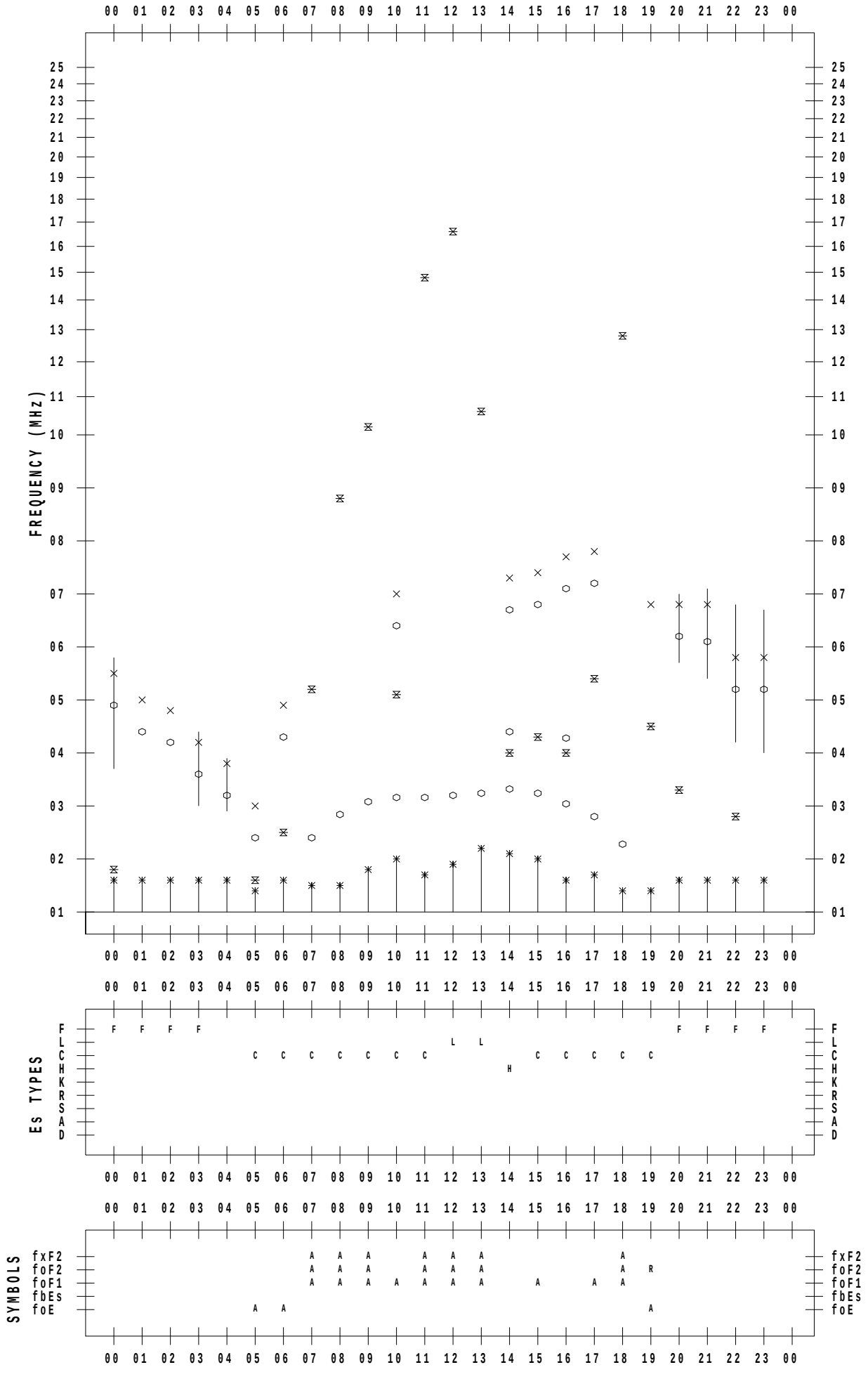
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/23

135 °E MEAN TIME



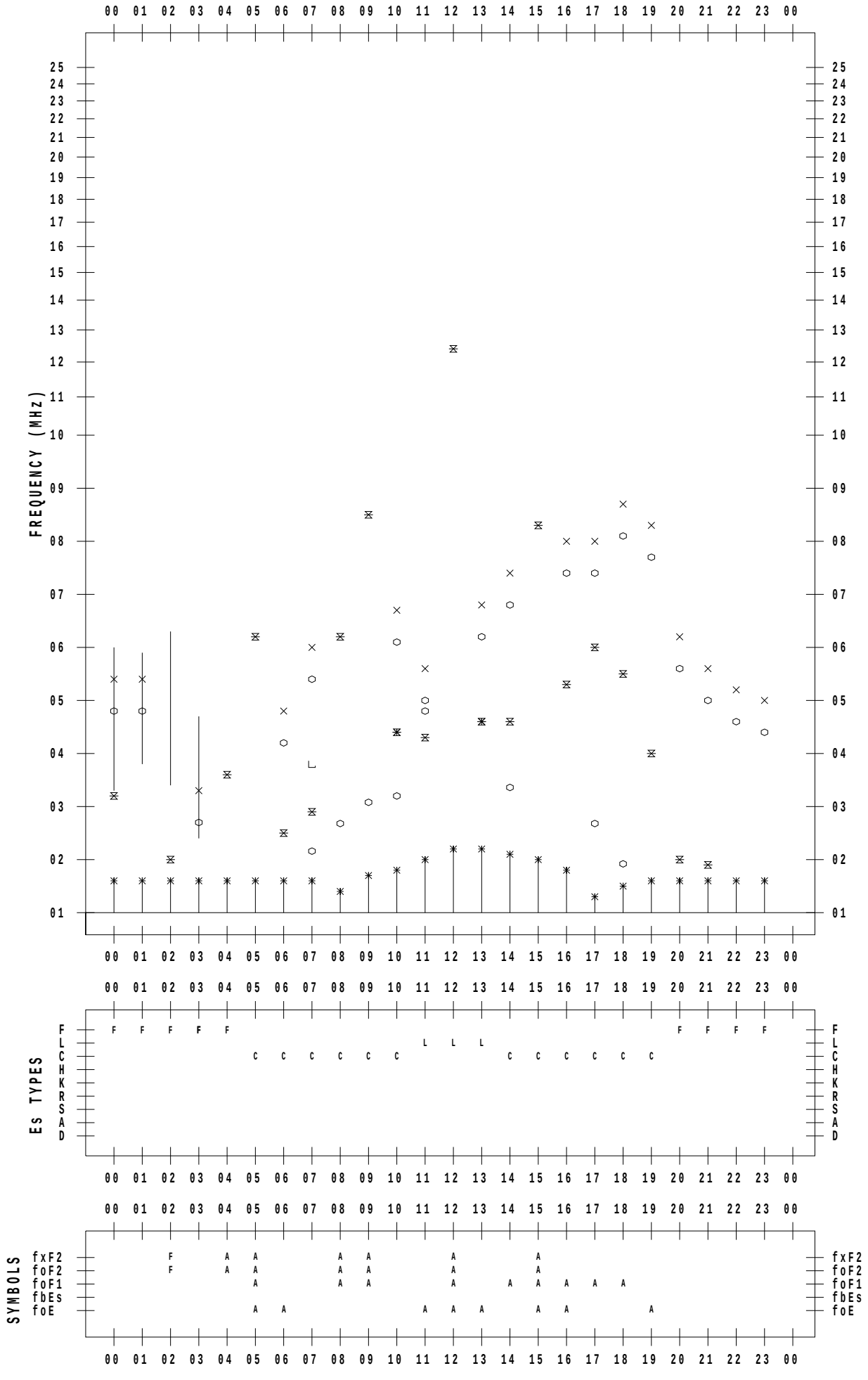
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/24

135 °E MEAN TIME



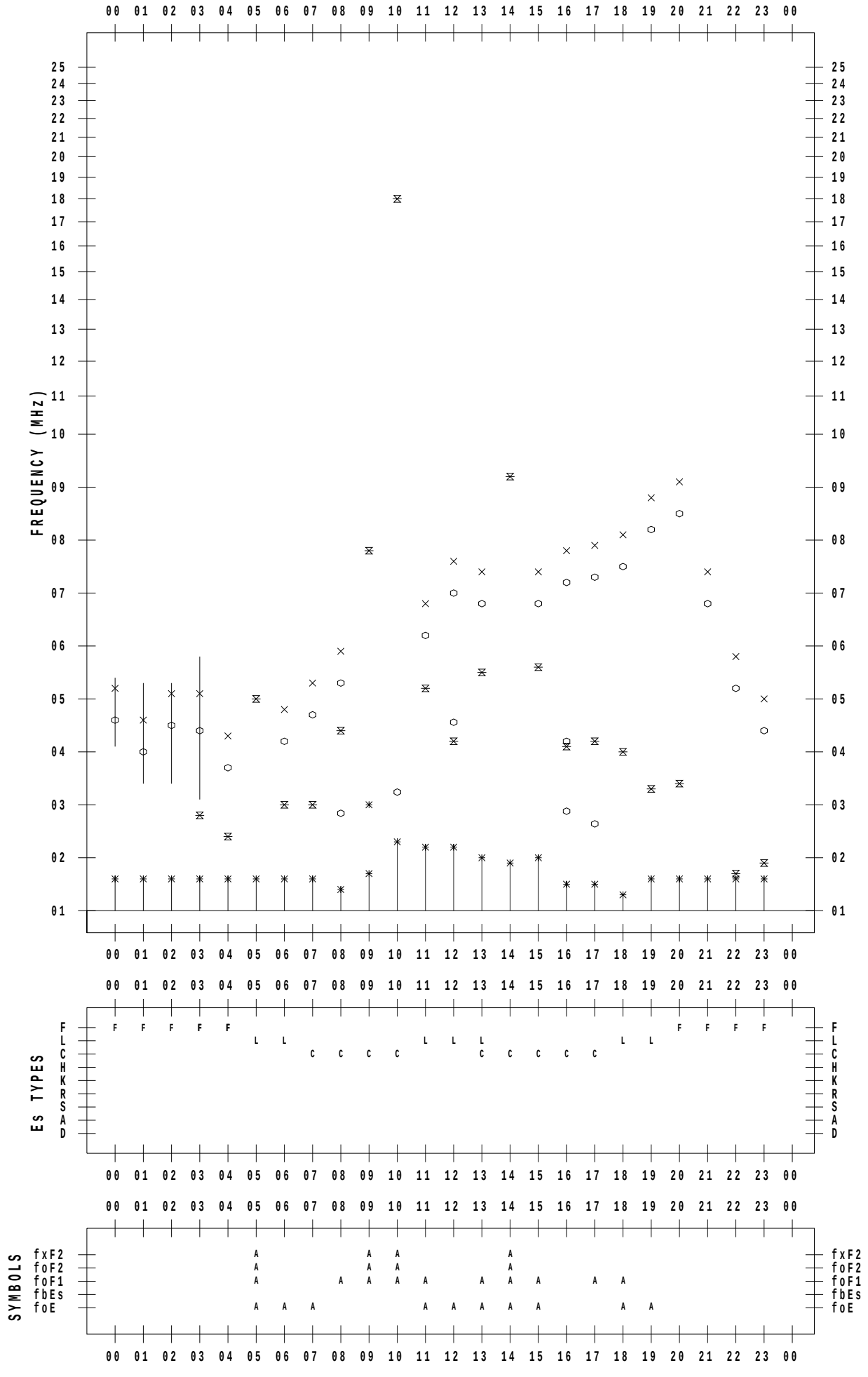
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/25

135 °E MEAN TIME



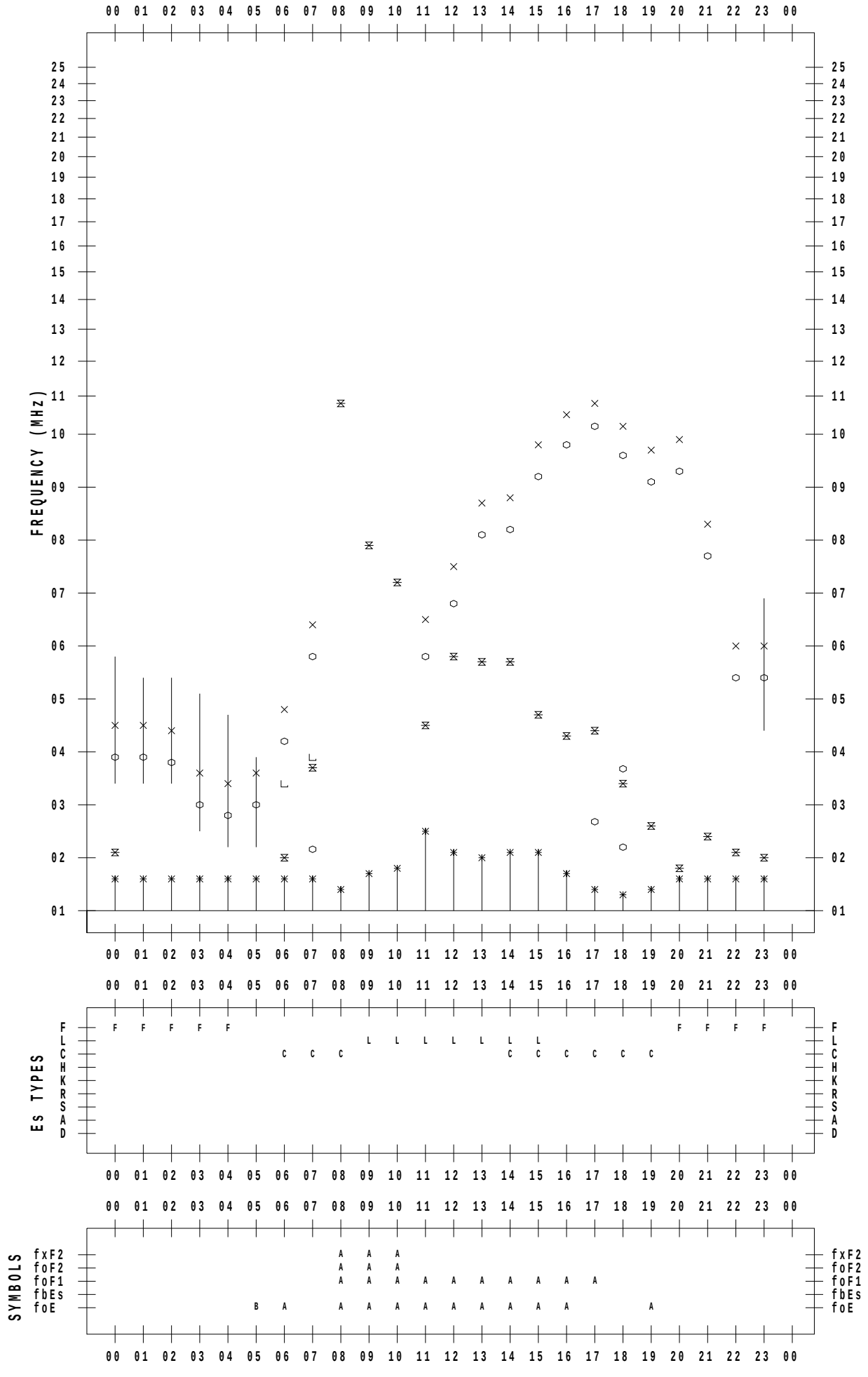
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/26

135 °E MEAN TIME



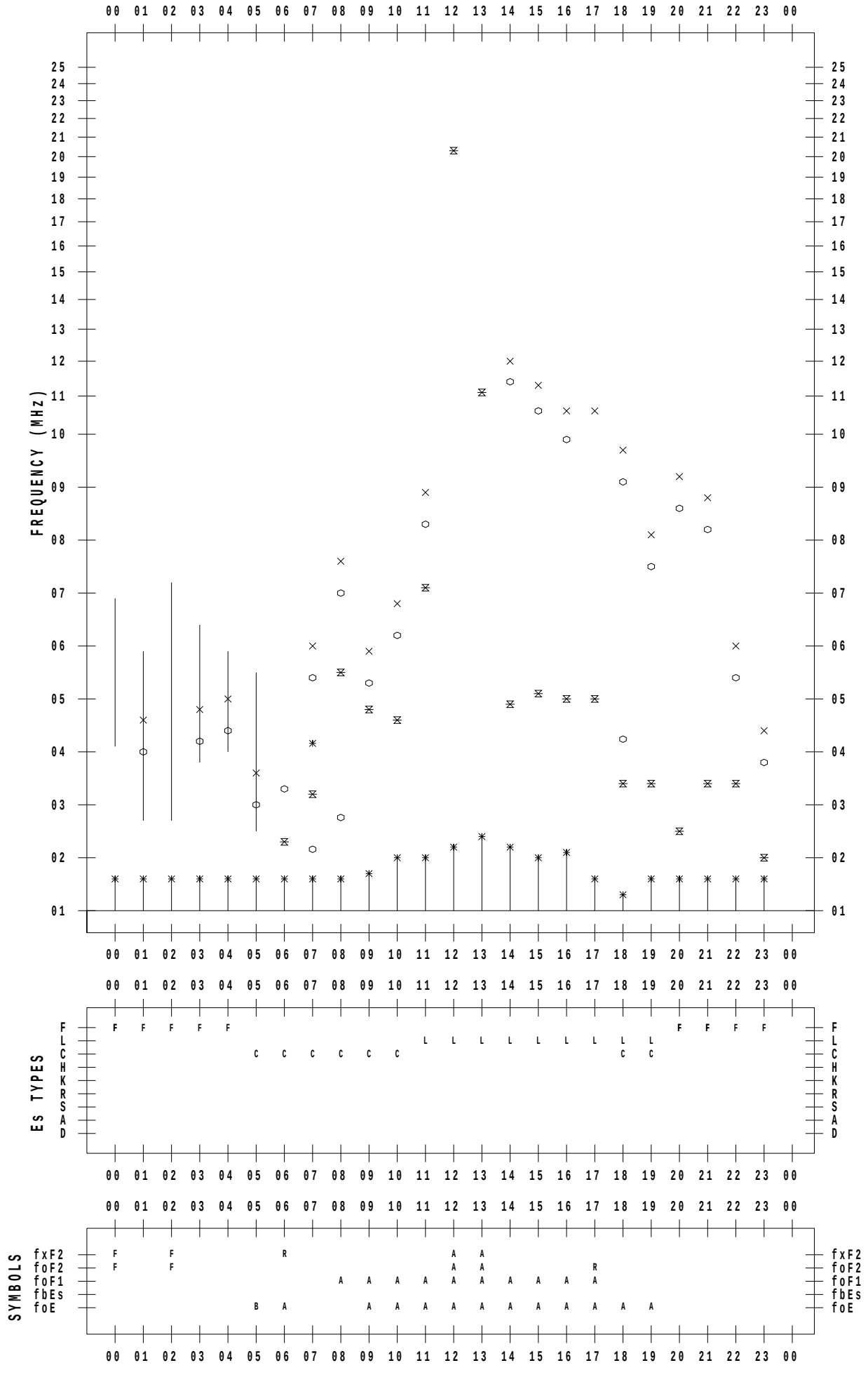
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/27

135 °E MEAN TIME



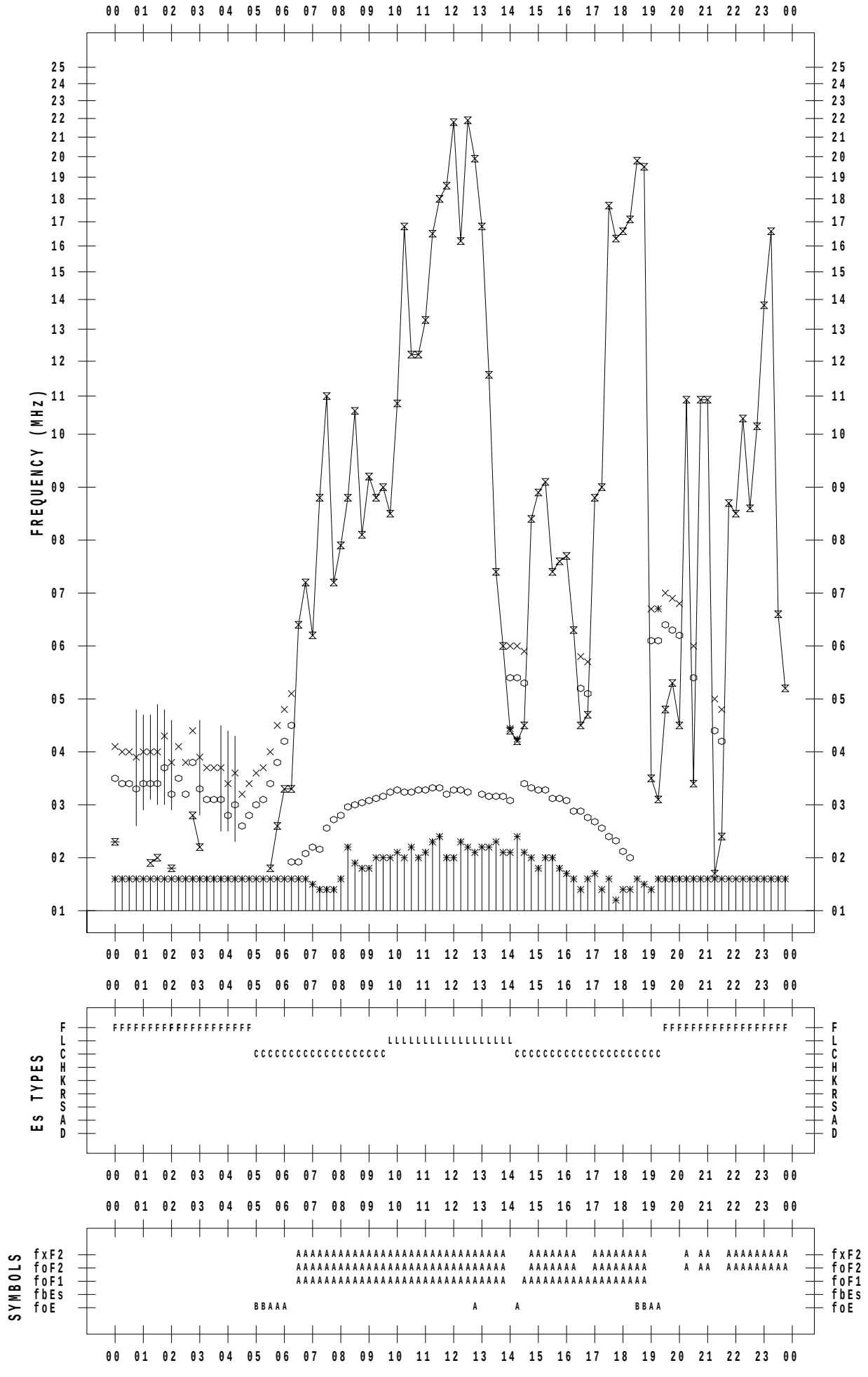
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/28

135 °E MEAN TIME



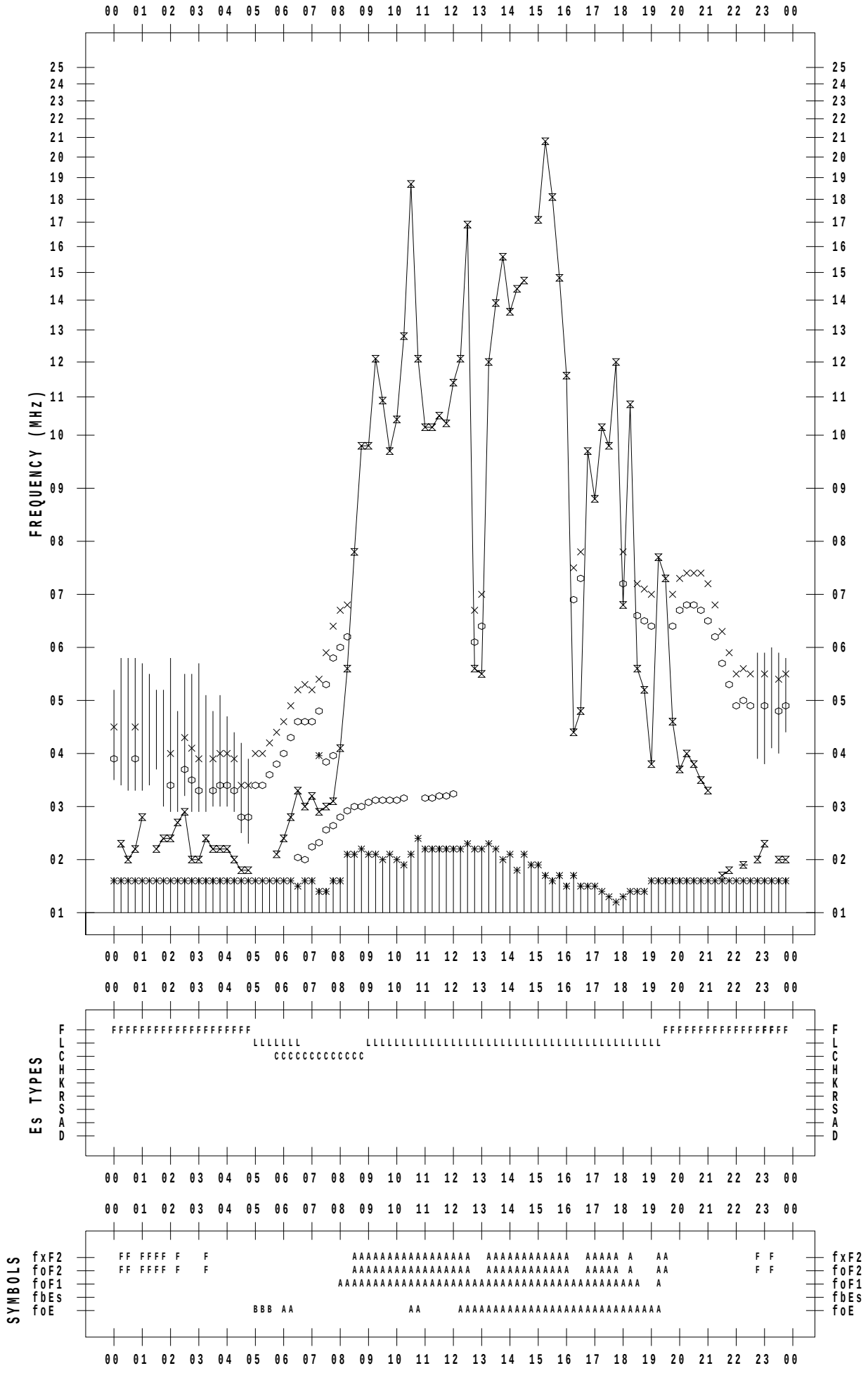
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/29

135 °E MEAN TIME



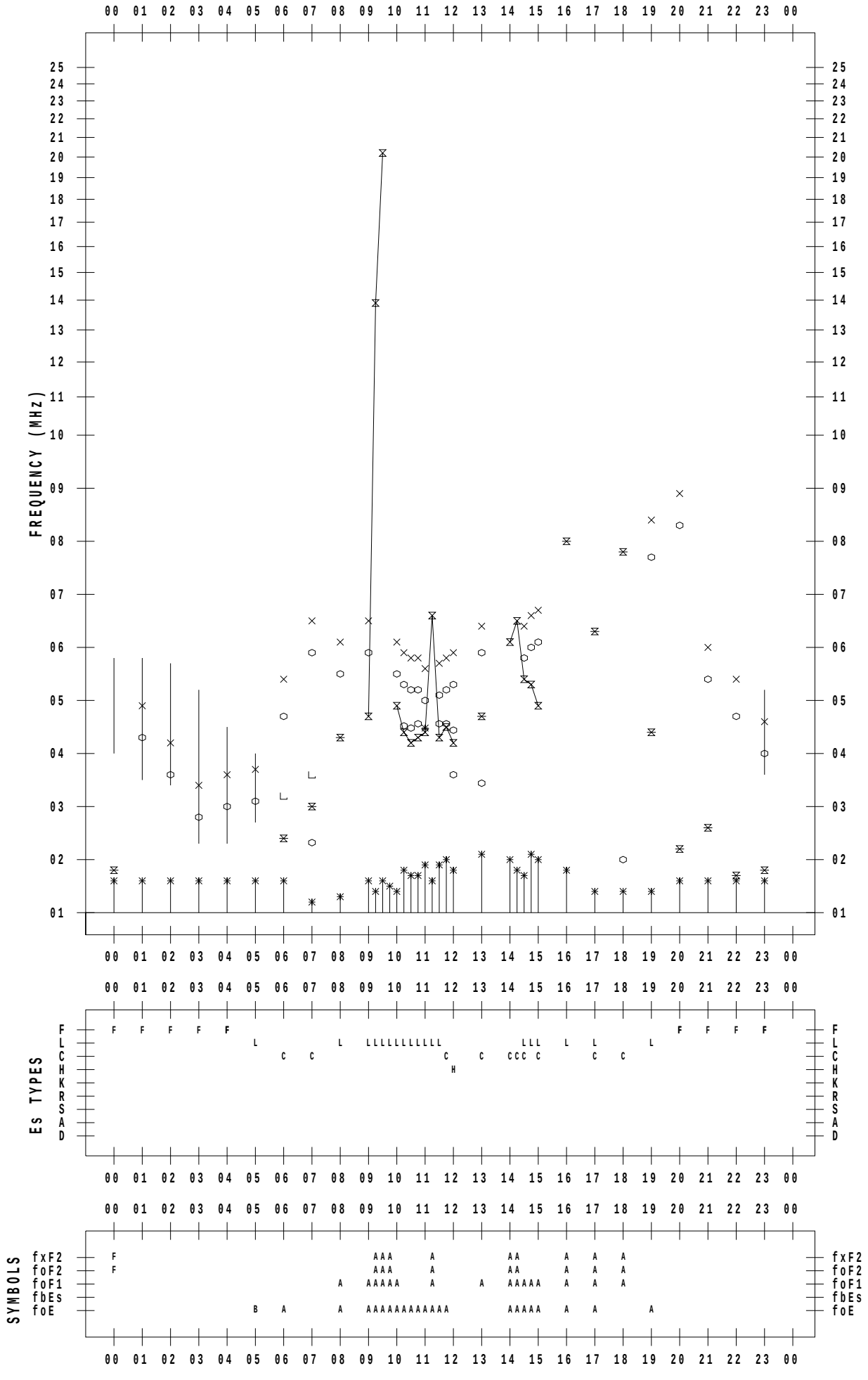
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2021/ 5/31

135 °E MEAN TIME