

IONOSPHERIC DATA IN JAPAN

FOR MAY 2017

VOL. 69 NO. 5

CONTENTS

Preface

Introduction 1

A. Ionosphere

A1. Automatic Scaling

Hourly Values at Wakkanai ($foF2$, fEs and $fmin$) 3

Hourly Values at Kokubunji ($foF2$, fEs and $fmin$) 6

Hourly Values at Yamagawa ($foF2$, fEs and $fmin$) 9

Hourly Values at Okinawa ($foF2$, fEs and $fmin$) 12

Summary Plots at Wakkanai 15

Summary Plots at Kokubunji 23

Summary Plots at Yamagawa 31

Summary Plots at Okinawa 39

Monthly Medians $h'F$ and fEs 47

Monthly Medians Plot of $foF2$ 49

A2. Manual Scaling

Hourly Values at Wakkanai 50

Hourly Values at Kokubunji 64

Hourly Values at Yamagawa 78

Hourly Values at Okinawa 92

f -plot at Wakkanai 107

f -plot at Kokubunji 138

f -plot at Yamagawa 169

f -plot at Okinawa 200

« Real Time Ionograms on the Webhttp://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 (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

f_oF2	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 f_oF2).

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 f_oF2 , 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 f_xE and f_oE 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

fxl	Top frequency of spread F trace
f_oF2 f_oF1 f_oE f_oEs	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 replace 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 atmospheric.
- 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-associated 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 (CNT) 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 fEs AT Wakkanai

MAY 2017

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

$\frac{H}{D}$	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	G	G	G	G	G	G	68	106	92	108	47	71	64	73	61	61		49	53	35	G	31	58	94
2	35	28	28	26	G	G	26	41	45	46	C	C	C				34	154	32	31	52	115	94	103
3	G	34	G	G	56	28	85	106	50	68	C	66	51	52	60	35	40	67		47	43	84	36	40
4	24	G		G	G	G	40	93	124	52	132	65	79	93	C	46	C	59	38	28	45	56	G	G
5	G	G	G		G	145	150	91	46	126	42	40	37	52	63	111	87	43		C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C		69	91	76	53		44	39	G	G		G
7	G	G	G	G	G		35	43	56	72	50	56	63	60	46	40	60	91	105	44	26	25	G	G
8	G	G		G		113	39	135	106	138	60	87	47	66	47	81	62	63	92	58	56	56	83	54
9	26	G			G		40	35	46	118	146	96	71	53	70	64	90	39	44	36		25	G	29
10	32	36	28	24	G		31	111	46	48	57	50	56	51		48		53	59	47	47	36	27	G
11	G	G	G	G		11	22	36	46	49	51	41	62	42	91	40		85	34	34		G	39	G
12	G	G	G		48	36	36	44	56	72		54	61	56	51	70	71	52	94	61		26	G	G
13	26	G			G		92	58	46	58	49	45	41	38	40	60	34	44	48	48	46		G	24
14	G	G	G	G		28	30	66	65	151	49	50	36	41		40	G	33	46		24		24	G
15	G	G		G	G		94	40	109	53	68	44	115	51	40	40	38	92		34	35	26		G
16	G	G	G	G		144	54	112	40	55	166	46	48	39	34	39	G		40	40	35		27	G
17	G		G	G		26	91	44		94	70	86	57	41	61	91	60	52	61	62		26	G	G
18	G	G	G	G	G		33	39	49	68		C	C	C	C	C	C	C	C	C		60	66	32
19	25	36	54		G	49	54	81		92		C	C	C	C	C	C	C	C		83	90	82	69
20	58	G	G	G		25	38	58	73	70	46	135	51		38		G	G		G		24	37	G
21	G	G			108	141	70	58	72	148	116		75	86		61	43	40	42	45		25	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C		68	50	43	45	45	44	69	44	44	37	59
23	28	G		G		92	51	70	92	73	74	53	70	107	68	52	42	63	84	104	30		49	50
24	58	58	G	G		28	52	61	60	54	56	84	47	43	40	47	113	54	57	39	35	33	27	26
25	G	G	G	G		32	40	46	51			43	47		41	37	110	86		64	53	46	32	39
26	39	G	G	G	G		40	93	93	93	71	72		41	89	37	36	44	44	40	33	31	G	160
27	G	G	G	G	G		36	50	57	55	54	49	52	41	38	37	168	92	95	70		70	85	G
28	30	G	G	G	G		43	40	56	60	50	62	91	92	42	40	G	G		G		30	27	71
29	55	23	104		26	57	84	163	125	92	91	119	124	99		117	126	152			87	30	134	105
30	51	27	G	G		44	60	66	107	72	134	94	74	80	108	72	62	87				111	72	92
31	52	41	60	52	65		113				116	94	86		46	91	115	59			70	62	92	81
	00	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	26	26	28	28	29	26	27	24	25	24	25	25	26	26	26	26	23	28	30	30	29	29
MED	G	G	G	G	18	40	58	59	72	68	56	62	51	61	47	60	52	53	42	34	30	32	27	G
U Q	33	25	26	G	40	58	82	93	93	117	92	72	77	87	61	90	87	67	61	50	46	56	70	51
L Q	G	G	G	G	G	32	40	49	54	50	46	49	41	40	40	36	43	44	38	12	G	24	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 2017

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

$\begin{matrix} H \\ D \end{matrix}$	00	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	20	14	14	15	18	14	15	16	16	18	29	27	18	20	18		20	15	14	17	14	14	15	
2	14	14	14	15	18	20	15	26	28	18	C	C	C				14	14	14	14	14	14	15	15	
3	16	17	14	17	14	14	14	14	15	16	C	17	28	23	28	15	14	14		14	14	14	15	14	
4	15	20		15	15	14	14	14	14	18	18	29	21	28		16	C	14	14	14	14	14	18	27	
5	14	15	16	14	14	14	14	14	14	17	17	27	27	27	18	16	16	14	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C		15	17	17	15		15	14	14	23	21	18	14
7	15	15	15	16	14	15	14	14	15	14	29	16	20	17	15	15	15	14	14	17	14	15	16	15	
8	14	14	15	15		14	14	14	14	14	29	27	17	30	14	18	14	17	14	14	15	14	14	14	
9	15	14	15		16	14	14	14	14	17	17	18	28	17	17	14	14	14	14	16	14	15	15	15	
10	14	14	14	14	15	15	14	15	14	15	17	17	18		16		15	14	14	14	15	14	15	15	
11	15	27	23	20	16	15	14	15	14	18	28	21	18	17	18		14	17	15	17	15	14	15	16	
12	15	15	14	14	14	14	14	14	17		29	28	29	28	18	14	17	14	14	14	15	14	15	16	
13	16	15			17	14	14	14	17	18	17	15	16	26	15	18	14	14	14	14	27	15	14	15	
14	15	14	15	26	14	14	14	14	15	15	14	15	43		18	16	15	14		14	14	14	18	16	
15	16	14		14	15	14	14	14	14	17	18	30	15	33	17	15	18		14	14	15	14	14	14	
16	22	14	15	14	14	15	14	14	17	18	30	17	18	14	17	14	14	14	17	15	15	16	18	15	
17	14	14	15	17	15	14	14		14	14	30	27	18	18	17	14	14	14	14	14	17	27	14	15	
18	14	14	15	15	14	15	14	15	18		C	C	C	C	C	C	C	C	C		14	15	14	29	14
19	16	15	15	14	14	14	14		15		C	C	C	C	C	C	C	C			14	14	15	15	15
20	15	14	15	16	18	14	14	15	17	18	18	29		18	31	17	18	18	16	14	16	14	17	16	
21	14	18	17	15	14	14	14	14	14	17	30		28	32	30	20	15	18	15	14	16	18		C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C		32	18	29	27	16	14	14	16	14	15	15
23	14	15	15	14	14	16	15	14	28	29	30	17	29	24	28	16	15	15	14	14	15	14	15	15	
24	15	15	15	15	15	17	14	14	14	29	18	29	28	29	18	17	14	15	17	15	14	16	18	17	
25	15	16	15	15	14	16	15	18			16	18		23	18	18	17		14	15	15	15	15	15	
26	14	28	16	16	17	14	14	15	29	30	18		20	26	20	16	16	15	17	14	15	50	17	20	
27	15	15	15	14	15	17	15	15	18	15	30	28	29	24	16	20	17	14	15		17	14	16	15	
28	14	15	14	16	14	14	14	18	15	18	30	30	17	23	20	18	18	14	18	16	14	15	14	15	
29	14	18	14		15	14	14	15	15	18	18	29	18	27		18	16	15		15	15	14	15	15	
30	15	18	20	34	14	14	14	14	14	18	28	29	29	18	23	18	28				15	15	14	15	
31	14	15	15	15	14		14				30	29	29		18	18	17	15		15	15	15	15	15	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	26	26	28	28	29	26	27	24	25	24	25	25	26	26	26	26	23	28	30	30	29	29	
MED	15	15	15	15	14	14	14	14	15	18	18	27	21	24	18	16	15	14	14	14	15	14	15	15	
U Q	15	17	15	16	15	15	14	15	17	18	30	29	28	28	20	18	17	15	15	15	16	15	17	15	
L Q	14	14	14	14	14	14	14	14	14	15	17	17	18	18	17	15	14	14	14	14	14	14	14	15	

HOURLY VALUES OF fof2 AT Kokubunji

MAY 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	A	45	42	39	38	48	54	56	53	A		57	59	63	72	81	80	72	71	80	48	52	A	47		
2	A	40	37		34	44	51	47	A	100	107	71	69	72	69	67	74	80	72	67	A	45	A	44		
3	A	39	42	42	36	36	67	61	A	A	A		65	73	87	82	77	76	72	75	72	55	A	A		
4	A	A	A	A	A		37	57	50	60	53	A	A	57	66	74	76	71	65	58	62	66	54	A	48	
5	46	44	42	39	39	47	53	46	A	98	A	A	A	65	79	75		A	A	A		71	71		52	
6	49	A	42	39	A	A		56	54	A	A	A	A	64	70		A	76	65	61	81	A	45	A	40	
7	A	A	A		32	27	37	A	55	54	45	53		57	66	76	77	66	99	A	67	75	52	A	A	
8	42	39	38	32	A	58	52		A	A	A	A	A	56		55	66	66	71	75	64	A	A	A		
9	A	36		35	32	37	56	53	56	A	A		57	62	62	69	59	54	56	57	63	67	47	47	45	
10	44	41	40	38	37	39	41	49	47	A	A		55	67	65	59	58	68	72	64	72	A	58		38	
11	36	38	42	32	30	39	57	56	A	A		56	50	63	74	74	75	78	84	72	64	52	49	44		
12	39	35	36	31	30	39	46	53	62	54	A		A	A	A		72	72	61	51	51	A	A	54	44	
13	A	36	34	31	A	36	A	57	62	60	A		38	48	A	A	A	71	A	A	A	A	A	53	A	A
14	A	A	A	A	A	A	A	57	A	A	58		A	A	A	A		55	A	98	A	A		61	A	
15	A	A	A	A	32	A	A	A	A	A	A		A	A	A	A		59	65	55	A	78	A	64	54	49
16	43	40	37	34	36	41		A	A	A	74		A	A	A	A	A	59	59	55	54	54	A	A	47	49
17	47	48	34	36	A	45	42		58	46	A	A	A	A	54	55	59	54	58	39	54	51	54	54		
18	52	52	51	38	26		66	89	48		A	A	A	51		62	58	74	A	64	71	55	A	A	A	
19	A	A	A	A	25	41	42		A	A	A	A	A	A	C	C			62	89	80	A	A	A	A	
20	A	A	A	A	34		54	56	A	A	A			64	72	68		A	A		56	72	72	43	51	
21	50	46	37	42	44	38	43		A	A		A		A	A	A		106	A	57	128	A	A	A	A	
22	A	A	A	38	36	N	51		A	A				A	56	54		A	A	58	52	A	A	52	52	
23	A	A		49	45	45	53		A	A	A		100	A	A	A		66	66	55	67	66	63	52	52	49
24	A	46	46	45	A	42		A	66	86		139	104	81		61	A	109	129	A	80	A	A	54	47	
25	A	41	A	45	39	45	56	65	84	72		A	169	A	64		A	A	A	A		147	A	A	A	A
26	A	A	A	A	38		51	49	117	A		138		A	53	55		A	A		A	73	84	79	50	39
27	A	36	34	34	A	38		A	66	111		64		A	A	A		A		A	71	53	67	53	A	A
28	A	A	A	A	34	39		A	102	131	147	162		68	94	87	104	87	78	66	73	75	A	86	A	
29	64	A	A	47	49	67	75	77	A	102	187		A	A	A		A	A	47	47	52	55	A	52	108	
30	A	A	A	37		A	A	A	A	108						A	A	A	A		54	A	A	A	42	
31	38	37		30	30		A	A	A	77		165	198		A	A		50	56	147	86	A	51	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	12	18	17	23	22	22	20	21	18	13	10	9	12	15	19	20	23	19	23	27	17	15	14	19		
MED	45	40	40	38	35	40	54	56	62	74	122	57	60	64	69	66	71	67	64	71	64	52	52	47		
U Q	49	45	42	42	38	45	56	65	104	105	162	136	67	66	74	75	77	78	72	75	72	58	54	51		
L Q	40	37	36	32	30	38	48	51	56	53	64	55	54	63	59	58	59	61	57	62	53	51	49	44		

HOURLY VALUES OF fEs AT Kokubunji

MAY 2017

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC 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	57	50	33	G	G	G	35	50	56	81		G	G	40	52	50	35	43	G	29	60	59	103	49
2	80	30	28	G	G	G	26	G	51	101	81	50	39	G	45	50	46	72	61	53	78	48	60	52
3	66	33	40	34	34	27	42	51	64	82	50	71	G	G	G	G	45	36	28	57	57	57	72	52
4	59	55	54	39	38	27	49	50	38	48	58	56	G	64	33	42	G	37	53	56	60	58	67	40
5	41	37	30	33	34	G	45	50	74	87	107	107	103	51	83	59	115	137	71	50	45	104	70	52
6	56	57	31	25	72	121	48	58	86	82	80	84	55	54	57	71	60	97	107	163	79	41	65	36
7	45	39	50	42	G	G	60	50	47	49	50		41	70	G	35	43	86	128	71	130	72	86	94
8	21	26	27	32	48	30	55	61	60	64	80	122	62	51	49	48	42	58	59	108	83	70	57	51
9	72	37	49	36	36	50	26	34	50	35	45	40	33	G	46	47	34	35	41	31	53	48	29	33
10	38	30	32	28	33	26	35	40	48	62	57	48	55	53	50	45	47	46	81	81	95	79	88	33
11	G	26	28	29	G	G	30	43	58	61		45	52	56	48	42	72	35	40	71	79	36	32	47
12	33	G	G	G	G	G	43	48	68	50	38		55	68	62	G	G	27	37	41	80	57	53	39
13	57	G	29	60	58	28	43	41	54	48	49	44	51	57	118	113	48	156	115	81	84	59	69	116
14	69	58	40	48	35	41	56	74	81	101	50	69	65	69	85	55	47	90	78	78	114		60	70
15	70	53	52	61	50	43	85	120	99	79	64	77	61	57	49	36	53	54	57	116		40	25	G
16	G	G	G	G	G	G	37	53	65	70	57	72	65	89	70	142	133	42	38	31	57	60	48	35
17	24	G	25	27	27	25	37		43	43	48	69	147	63	36	43	40	40	35	43	40	27	28	30
18	52	50	33	28	G	35	70	82	46	G	64	45	43	55	55	76	60	96	75	86	45	61	103	57
19	59	59	45	34	G	31	151	51	78	122	147	76	62	114	C	C		40	105	126	113	86	79	106
20	59	107	65	70	G	37	42	47	56	70	127	62		53	63	33	162	132	70	42	33	60	28	29
21	29	31	53	G	G	30	34	47	45	97	52		58		64	73	62	72	61	50	110	59	85	67
22	71	55	60	30	28	29	37	65	79	62	69	50		45	G	50	59	87	52	40	60	87	42	49
23	60	71	70	25	G	32	52	59	65	126	95	110	82	59	G	44	47	45	56	60	58	42	54	37
24	43	35	34	29	29	35	46	52	71		86	102	73	76	53	72	78	57	87	85	87	93	54	57
25	36	26	29	G	G	29	48	60	91	77	114	146	118	70	82	124	60	161	140	130	135	129	71	73
26	84	59	49	44	31		49	48	63	61	152		78	45	50	74	63		145	144	134	59	24	26
27	33	G	G	G	39	32	58	63	86		110	75	93	71	G	78	150		153	56	41	45	91	69
28	72	114	114	56	31	31	72	81	96	126	117		57	G	G	G	33	40	43	42	70	69	86	108
29	35	84	57	29	42	28	42	53	94	87	162	134	128	117	G	56	52	43	47	41	40	94	110	110
30	92	72	43	36		55	42	48	61	106		150	99			39	56	60	72	51	115	109	45	38
31	34	32	38	27	28	41	57	55	72		140	163		139	44	35	42	56	79	77	165	83	94	130
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	31	30	31	28	28	26	28	29	28	30	30	29	31	31	30	30	31	31
MED	56	37	38	29	28	30	45	51	64	74	74	72	60	57	50	49	50	56	61	57	78	60	65	51
U Q	69	58	52	39	36	35	56	60	79	92	112	107	80	70	62	72	62	88	87	85	110	83	86	70
L Q	34	26	29	25	G	25	37	48	51	55	51	50	47	48	34	39	42	40	43	42	57	48	45	36

HOURLY VALUES OF fmin AT Kokubunji

MAY 2017

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	13	13	14	14	14	14	13	18	15		46	43	48	30	18	26	13	20	13	14	13	13	13
2	13	13	13	14	13	15	17	14	17	14	18	31	46	46	28	18	13	13	13	14	13	13	13	13
3	13	13	13	15	13	13	13	14	18	30	30	31	47	18	44	15	14	13	13	13	13	13	14	13
4	13	13	13	13	13	13	18	15	14	13	33	33	46	31	43	21	14	13	13	13	13	13	13	13
5	14	13	13	13	13	17	13	14	17	14	29	30	30	37	20	15	13	13	13	13	13	13	13	13
6	13	14	14	13	13	13	13	13	15	18	33	30	18	31	31	17	14	14	13	13	13	14	14	14
7	13	13	13	13	13	17	13	14	15	31	33		28	33	21	18	14	14	13	13	13	13	13	13
8	13	13	14	13	13	13	13	13	18	30	18	30	28	28	18	17	15	15	13	14	13	13	13	14
9	13	13	13	13	13	15	13	14	13	22	31	44	44	46	43	18	15	14	13	13	15	13	13	13
10	13	13	13	13	13	15	13	13	15	28	22	33	33	33	41	14	17	13	14	15	13	14	13	14
11	14	13	14	13	13	15	13	13	14	14		30	29	30	24	17	14	13	13	15	14	13	14	13
12	14	14	14	15	15	13	13	13	18	29	30		30	25	21	18	17	13	13	13	13	13	13	13
13	13	13	13	13	13	13	13	13	15	17	20	36	35	28	17	20	18	13	13	14	13	13	13	13
14	13	13	13	13	13	13	14	13	14	31	20	35	36	35	29	18	13	13	13	13	15		13	13
15	13	13	13	13	14	13	13	13	30	20	31	31	33	29	18	14	15	13	14	13		14	13	14
16	14	14	13	14	14	15	18	14	15	18	35	20	30	28	22	20	17	14	13	13	13	14	17	13
17	14	14	14	14	14	15	13		14	20	22	33	30	25	26	17	17	13	14	13	13	14	13	14
18	14	14	14	14	14	13	14	15	15	18	34	22	24	29	20	20	15	14	14	15	13	14	14	13
19	13	13	13	14	13	14	14	14	18	15	29	30	35	36				14	14	14	13	13	14	14
20	14	15	13	15	13	15	13	18	18	21	28	29		31	36	21	20	17	14	14	13	14	17	13
21	14	13	15	13	14	14	17	17	17	22	33		36		35	23	18	17	13	13	18	13	13	13
22	13	14	14	14	14	14	18	18	17	23	36	33		24	44	21	22	18	15	14	14	15	14	13
23	14	14	14	15	14	14	21	18	20	36	23	35	33	30	45	21	21	13	14	13	14	13	14	14
24	14	14	13	14	14	14	20	20	18		23	30	31	28	22	22	18	17	15	14	18	14	14	15
25	14	14	14	15	14	14	14	18	21	22	28	34	25	21	23	21	21	17	14	13	13	18	17	15
26	14	14	14	14	14		15	17	22	30	29		26	24	23	21	20		15	14	14	14	14	15
27	14	14	17	13	13	14	20	14	20		23	30	29	28		23	20		17	14	15	14	14	14
28	14	14	14	14	15	14	14	17	20	20	22		30	47	22	21	17	18	17	14	13	13	14	13
29	14	13	13	14	14	13	17	17	20	23	34	34	28	23	23	22	18	15	15	13	13	15	14	15
30	14	14	14	14		13	15	17	21	28		26	80			30	18	20	17	14	14	14	14	13
31	13	13	14	14	18	14	13	17	20		20	35		68	28	22	18	18	15	14	13	14	13	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	31	30	31	28	28	26	28	29	28	30	30	29	31	31	30	30	31	31
MED	14	13	13	14	14	14	14	14	18	22	29	31	30	30	25	20	17	14	14	13	13	14	14	13
U Q	14	14	14	14	14	15	17	17	20	28	33	34	36	35	35	21	18	17	15	14	14	14	14	14
L Q	13	13	13	13	13	13	13	13	15	17	22	30	28	26	21	17	14	13	13	13	13	13	13	13

HOURLY VALUES OF fof2 AT Yamagawa

MAY 2017

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					C	C	C	C	C					
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C				58	53	A	38				
12	A		37	37	34	32	30	42	67	64	A	A	A	A		67	80	80	77	68	52	49	53	56	A	A			
13	A	A		40	34	A	30	A		54	62	A	A	A	A	C		49	77	78	66	A	A	A	52	A	A		
14	A	A	A	A	A		30	33	50	52	80	A	A	A	A	A											A		
15	A		34	A	A	A	A		45	52	74	A	A	A	A		80	80	77	A	A	A	A	A	A	A	A		
16	50	47	38	35	34	34	26	44		A	A	104	A	A	A		65	78	76	72	56	54	54		54	54			
17	A		46	A	A		30	29	28	58	68	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C			
18	C	C	C	C	C	C	C	C	C	C	A	A	A	A			70	80	86	85	77	72	33		A	A	A		
19	A	A	A			A		46	55	A	52	A	A		52	52	A	109	109	A		79	A	54	A	A	A		
20			A	A	A		34	51	A	A	88	126		A	A		A										A		
21	47	42				34	51				88	126		154			86	77	64	70	81				50	A			
22	A	A	A	A		51	39	46		A	86	102	128		A	A		99	129	55	60	58	73		A	A	A		
23	A	A	A	A	A		34	37	48	64	A	A		103			61					90	85				A		
24	42	A				34					82						72	81	83	88	81	76			50	54	42	44	
25	A	A	A	A		31	32	57	55		A	A																A	
26	A	C	C	C	C	C	C	C	C	C	A	A	A	A			62	68	A		60	67	72	82	80		A		
27	42	37	42	34	36	31	50	45	52	54	104			A	A		132		66	66	71	77	80	75	42	66	59	A	
28	A	A			A	A	A			A							A											A	
29	A	A	A					111		A	89	143	126	155			90	103	101	86	81	81			A	A	A	A	
30				63	52	64	78	68		A	A	A					104	129	56	57	57	62	55	71	52	52	54		
31	52	47	48	42	40	37	35		A	A	A						A	A	A									A	
	A	A						A		A	A						A												A
			42	40	36	36	43		130					140			60	55	73		44	54						A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	5	8	8	10	12	15	15	13	7	7	8	7	5	9	14	17	17	14	16	14	12	11	6	4					
MED	47	44	39	36	35	34	45	55	64	82	104	80	68	76	75	80	77	70	72	62	54	53	52	49					
U Q	51	47	42	40	40	37	50	65	74	88	126	126	147	118	84	81	85	82	79	75	56	56	54	54					
L Q	42	37	37	34	33	30	35	51	52	54	101	39	55	67	62	67	72	64	59	54	51	51	50	41					

HOURLY VALUES OF fEs AT Yamagawa

MAY 2017

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					C	C	C	C	C		
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C				59	31	59	26	
12	45	34	68	G	G	G		28	43	59	69	74	92	110	62	57	63	55	44	52	42	35	29	39	46	
13	53	58	G	G		33	G	56	48	51	73	65	76	107	C	41	56	52	52	59	87	60	41	159	134	
14	85	57	110	79	45	40	39	162	53	84	154	108	130	112	93	148	41	40	38	39	40	50	59	83		
15	74	54	82	55	106	70	44	55	86	129	107	110	105	124	75	53	49	130	150	152	151	147	113	92		
16	32	40	29	29	29	G		114	50	64	79	94	95	67	128	60	52	47	42	36	25	59	78	57	43	
17	59	41	47	40	G	G		151	44	55	126	63	50	C	C	C	C	C	C	C	C	C	C	C		
18	C	C	C	C	C	C	C	C	C	C		73	72	83	103	32	48	42	34	46	54	40	56	104	70	
19	69	89	40	128	27	40	33	39	61	62	116	110	46	41	76	78	103	74	72	92	107	149	107	93		
20	29	43	92	111	116	28	153	64	110	57	70	84	130	109	135	60	36	28	26	48	78	85	50	55		
21	53	40	85	60	G	G		29	38	53	60	108	143	105	81	136	115	150	32	76	115	109	110	71	73	
22	56	83	93	86	148	32	45	64	70	84	70	107	62	73	46	60	69	93	109	94	131	60	60	69		
23	58	78	84	58	45	40	60	58	67	91	92	92	86	115	161	59	58	50	78	70	57	50	60	134		
24	35	48	26	31	G	G		31	41	92	130	67	47	107	52	108	48	53	40	95	51	53	91	92	92	
25	94	78	41	140	G	G		36	43	58	63	109	93	N	83	49	N	60	44	93	40	G	33	48	69	
26	58	C	C	C	C	C	C	C	C	C		150	135	109	89	47	83	58	56	49	34	35	110	72	70	
27	38	26	G		32	32	24	125	60	56	84	79	132	155	149	116	46	44	46	62	41	35	60	78	60	
28	48	85	58	52	69	93	60	86	93	92	144	95	134	147	91	61	31	28	33	36	57	91	74	60		
29	83	109	81	45	49	40	73	56	82	92	134	167	151	74	109	36	44	33	60	36	40	54	49	43		
30	41	41	40	23	G			26	111	70	106	117	125	49	51	56	61	60	45	57	39	26	38	26	44	58
31	59	41	26	G	G	G		33	72	111	122	156		78	48	54	50	49	86	36	38	106	111	161	60	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	19	18	18	18	18	18	18	18	18	18	20	19	18	18	19	18	19	19	19	19	19	20	20	20	20	
MED	56	51	52	48	30	25	50	56	66	84	100	95	106	86	75	60	49	44	59	42	57	60	66	69		
U Q	69	78	84	79	49	40	111	64	92	117	129	110	130	115	109	63	58	57	78	87	92	100	98	87		
L Q	41	41	29	29	G	G	33	43	56	69	71	76	78	62	49	50	44	34	38	36	39	45	53	56		

HOURLY VALUES OF fmin AT Yamagawa

MAY 2017

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

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

HOURLY VALUES OF fof2 AT Okinawa

MAY 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A	A	37	40	A	B	44	59	57	57		49	75	92	91	91	N	88	99	88	A	49	A	A	
2	47	A	A	A	34	B	43	A	52	54	A	62	72	86	90	101	100	90	82	81	65	A	A	A	
3	A	A	A	A	A		47	50	57		56	49		81	90	90	96	97	113	A	81	49	52	A	
4	A	A	A	A	A		49	61	A	A	A	63	76	87	98	107	108	96	88	82	53	49	A	A	
5	A	A	42	30	A		40	56	56	A	A	A	64	86	97	101	100	96	92	88	72	64	54	47	
6	43	37	34	B	30	B	44	54	A	A	A	A	A		90	102	119	108	94	87	81	A	A	A	
7	A	A	A	A	B	A	46	67	42	A	A	A	A	A	A		88	89	84	85	88	72	52	A	A
8	A	A	32	A	A	B	58	A	A	A	A	A	A	A		77	82	94	88	81	85	88	A	A	A
9	A	A	A	A	A	A	A	A	A	A		58	A	A	A		80	82	81	80	104	88	A	A	43
10	A	A	37	A	B	A	43	54	57	C	C	C	C	C	C	C	C		90	97	86	75	30	A	A
11	A	A	A	A	A	A	A	56	A	A	A	A	A		92	101	106	116	107	82	66	A	A	A	38
12	A	A	36	A	A	A	69	77	51	A	A	A	66	A	A	A		90	74	A	A	A	A	A	A
13	A	A	A	A	A	A	36	60	64	A	A	A	A	A	A		85	84	73	A	A		A	A	A
14	A	B	A	31	B	B		54	A	A	A	A		65	78	87	88	107	93	78	67	54	54	50	A
15	A	A	A	A	A	A	A	A	A	56	A	A	A	81	97	103	105	98	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C	C		51	54	54	52
18	52	52	45	A	A	119	46	47	A	A	A	A		65	81	90	89	101	97	71	57	A	A	A	A
19	A	A	A	28	A	A	45	141	A	A		51	56	61	A	61		73	80	A	A	A	A	A	A
20	A	A	A	A	A	34	A	A	A					82	94	94	91	85	169	92	80	65		52	
21	A	A	52	A	51	44	50	51	51	A	A	A	49	A	52	60	70	72	60	64	64	52	51	54	
22	54	54	51	47	A	25	51	65	B		56	191	141	A	A		72	77	78	86	82	A	A	A	51
23	49	A	A	A	A	A	A	A	A	210				A		91	96	100	90	81	91	89		45	45
24	48	52	52	58	54	44	51	60	46	48	50	54	64	70	83	94	87	74	68	67	82	45	40	38	
25	A	35	35	34	32	31	48	52	A	A		106	A	85	91	96	104	105	92	78	A	54	50	40	
26	40	37	38	31	30	32	38	A	72	189	A	A		205	A	203	A	A	204		85	104	72	A	A
27	A	A	A	A	A	28	51	51	205	164	120				66	76	80	90	92	86	77	67	A	47	
28	49	50	42	A	A	31	A	A	139	A	A	A	72	86	91	102	111	88	94	92	74	52	A	A	
29	A	A	A	A	A	A		110		189	189	73	189	75	A	A	69	78	82	A	74	A	54	52	
30	52	A	47	46	45	40	34	35	39	A	A	44	A	A	A	A	A		62	63	54	A	A	42	42
31	41	A	38	39	34	35	42	51	51	50	54	56	55	54	55	99	A	82	71	60	54	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	10	7	15	10	8	11	21	21	15	10	8	11	13	15	23	22	23	30	26	22	20	17	10	13	
MED	48	50	38	36	34	34	46	56	56	56	57	56	66	82	90	94	94	88	86	84	73	52	50	47	
U Q	52	52	47	46	48	44	50	63	64	189	154	73	75	86	94	101	105	96	97	88	80	64	54	52	
L Q	43	37	36	31	31	31	42	51	51	54	52	49	62	75	77	88	85	80	80	71	60	49	45	41	

HOURLY VALUES OF fEs AT Okinawa

MAY 2017

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC 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	40	46	G	48	39	B	G	G	G	49	G	G	G	G	52	52	60	56	60	54	36	33	68	55			
2	G	50	59	38	G	B		32	70	53	46	52	48	50	G	47	G		31	38	30	11	40	90	57		
3	26	54	79	53	25	G	G	G	G	G	G	49	G	G	G		48	47	67	72	114	71	39	41	49		
4	54	53	74	69	53	G	G		39	66	92	136		G	68	56	65	G	G		40	65	58		58	33	
5	43	45	52	33	45	G		28	39	53	107	65	52		G	58	63	58	57	46	48	54	46	41	54	53	
6	G	G	G	B	G	B		30	36	61	68	59	101	79	51	68	48	37	57	52	40	114	72	55	49		
7	59	58	55	41	B	43	G		54	55	92	84	75	78	94	125	48	52	52	52	60	43	53	73	69		
8	89	48		60	60	B		30	58	62	84	115	101	81	70	61	63	75	82	67	61	58	77	70	53		
9	58	65	55	67	69	47	53	60	52	51	58	47	49	57	61	51	G		48	56	82	48	40	40	28		
10	46	46	46	46	B	28	32	42	45	C	C	C	C	C	C	C	C		40	40	34	24	11	34	50		
11	43	50	40	54	43	40	40	46	62	63	60	80	123	75	79	66	58	32	47	39	33	84	54	24			
12	42	39	32	35	44	51	37	41	43	48	57	73	74	126	115	114	61	69	66	95	72	94	46	31			
13	37	49	52	34	34	42	29	40	52	68	47	54	126	113	95	87	70	50	42	93	86	52	45	59			
14	65	B		45	24	B	B	G		42	66	95	67	91	64	49	G	G		43	39	49	39	46	39	49	46
15	46	36	38	58	59	59	42	59	58	57	77	64	73	50	53	82	59	41	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		32	C	C	G		92	58	45	
18	30	30	28	52	104	G		34	44	152	141	126	86	89	60	38	52	47	46	34	40	44	129	60	50		
19	92	87	58	G	106	125	124	154	58	81	59	48	55	134	109	89	92	39	59	158	109	112	147	73			
20	94	66	73	91	94	138	77	70	105			92	86	49	68	36	39	31	30	78	G	G	G		28	26	
21	149	149	47	82	69	G		45	32	56	53	67	140	49	146	105	143	38	34	32							
22	38	28	24	25	43	124	70	162	B		63	111	116	87	76	68	65	46	69	57	81	70	85	145	56		
23	30	69	61	138	112	60	61	115	131	104		110		100	91	92	76	43	50	40	52	41	38		G		
24	27	34	88	65	39	56	165	58	159	146	46	43	77	48	47	46	51	164	58	58	32	28		G	38		
25	85	89	33	G	29	26	152	42	81	89	142	166	90	78	76	62	56	67	61	69	69	41		G	27		
26	G	G	G	164	G	204	29	78	86	134	127	144	150	114	101	127	128	110	92	57	50	73	38	50			
27	147	92	78	48	40	50	59	70	108	144	128				63	47	154	51	54	49	54	56	60	41			
28	58	59	45	52	95	G		57	81	95	96	73	69	149	63	65	50	88	32	34	86	34	58	94	92		
29	92	115	164	58	132	69	78	96		112	154	104	48	53	68	80	48	33	37	81	67	169	40	32			
30	43	49	43	44	38	32	30	33	35	50	68	47	60	59	62	54	65	61	57	36	41	54	34	39			
31	40	41	35	93	G	208	28	38	50	164	144	49	48	49	148	104	70	74	66	46	35	142	105	60			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	29	28	29	28	26	24	29	29	27	27	26	27	26	27	28	28	28	30	28	28	29	29	29	29			
MED	43	50	46	52	44	45	34	46	58	84	68	73	74	59	66	56	56	47	53	58	46	54	54	49			
U Q	75	65	60	66	69	64	60	70	86	107	126	101	87	94	93	84	70	67	60	81	68	88	71	55			
L Q	33	40	32	36	34	13	28	39	52	53	58	48	49	49	57	48	44	39	41	40	32	39	39	32			

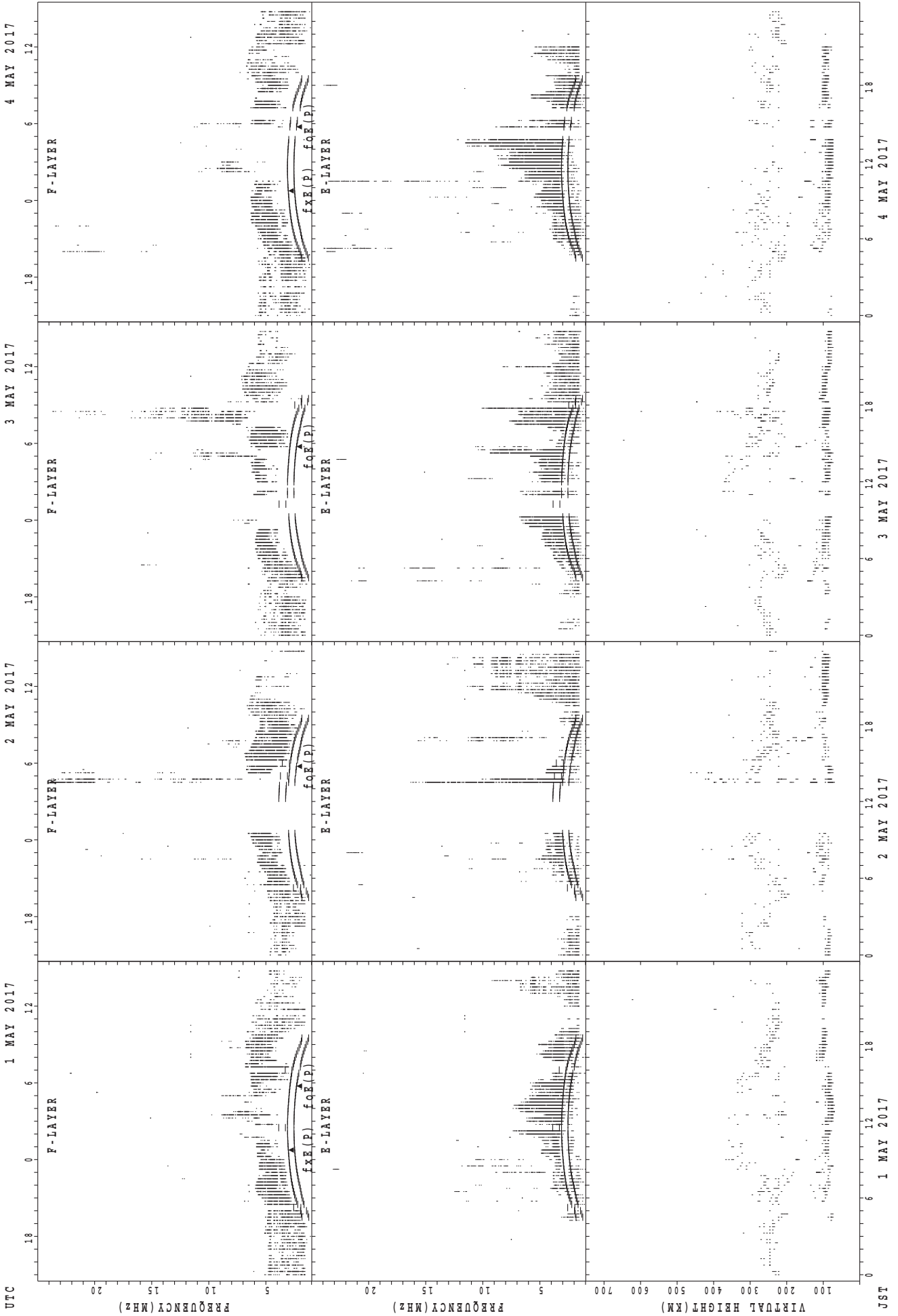
HOURLY VALUES OF fmin AT Okinawa

MAY 2017

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

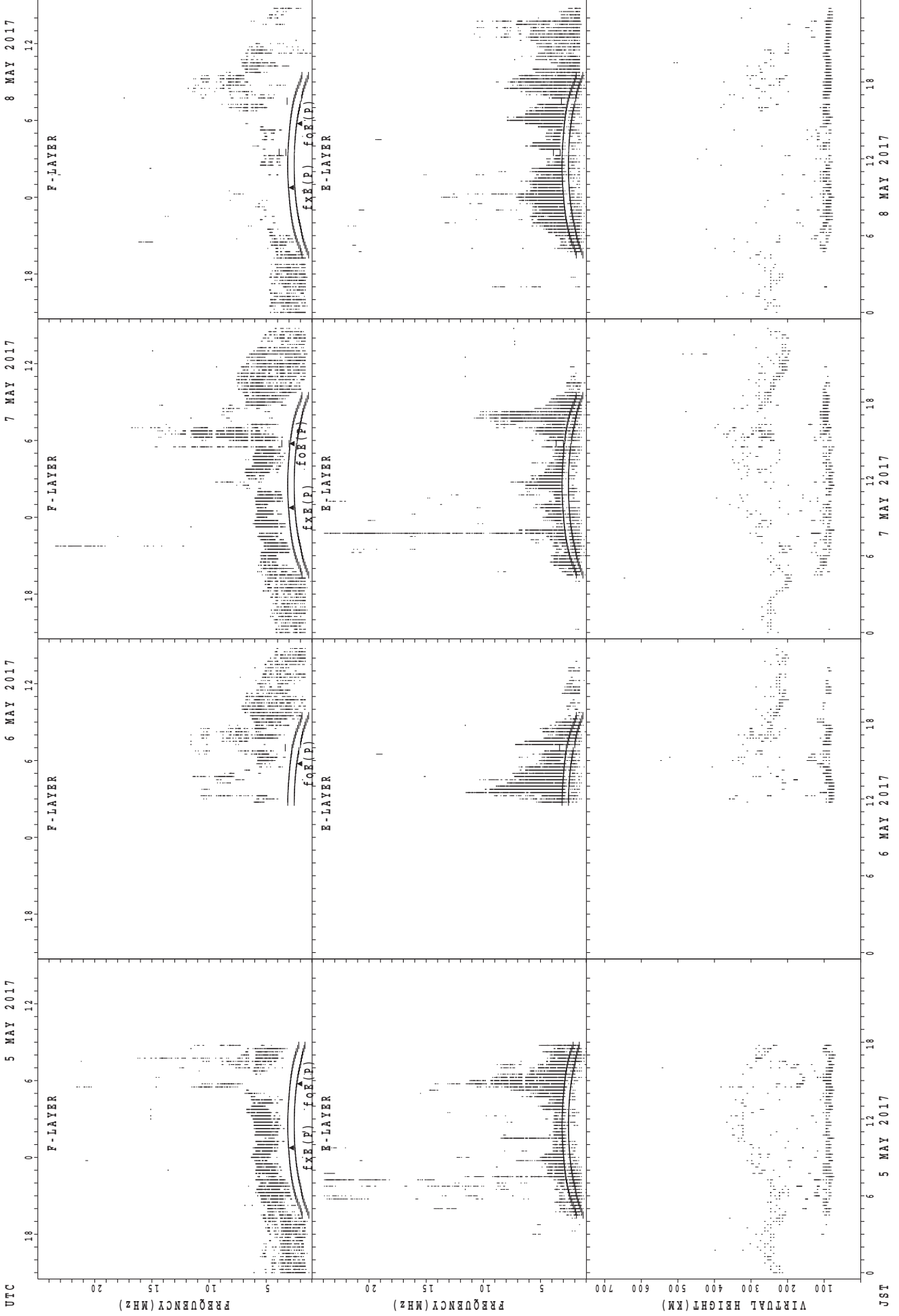
H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	17	15	15	15	B	17	26	20	35	53	46	52	52	36	33	28	24	27	17	15	15	16	15
2	16	15	15	15	17	B	17	17	26	28	32	34	38	48	38	55	44	24	17	15	17	16	16	34
3	17	18	16	16	17	66	20	27	20	71	49	81	101	61	53	42	45	29	18	20	17	21	17	15
4	81	29	34	21	20	71	17	20	24	33	38	91	42	42	38	50	45	27	14	18	24	18	15	15
5	15	15	15	15	14	66	15	14	18	23	29	33	41	40	36	38	32	20	16	14	16	16	15	15
6	28	24	17	B	17	B	14	16	21	24	33	32	34	41	40	38	44	27	14	14	17	15	17	15
7	16	15	16	16	B	21	18	18	20	27	38	35	34	38	34	35	32	21	16	16	15	16	15	15
8	15	28	18	17	17	B	16	21	18	33	35	39	40	35	32	36	32	17	15	17	17	17	15	16
9	15	15	17	16	16	16	16	15	17	24	30	35	34	33	29	29	43	27	17	15	16	16	16	16
10	14	15	16	17	B	15	15	15	20	C	C	C	C	C	C	C	C	41	17	18	15	17	15	15
11	15	15	15	15	16	15	15	15	18	29	32	33	38	38	32	30	23	15	18	15	15	15	14	15
12	15	15	15	16	16	16	15	16	22	28	34	34	33	30	26	26	20	17	15	16	16	15	15	15
13	15	15	15	17	16	16	16	24	17	21	71	34	35	33	30	30	27	18	14	16	21	15	16	15
14	15	B	15	16	B	B	27	17	17	18	30	34	33	36	50	52	45	28	16	15	15	15	18	16
15	15	14	15	15	14	16	14	15	18	32	33	38	39	49	48	34	32	18	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	14	C	C	14	14	14	15
18	14	14	14	14	15	14	14	14	14	15	15	18	18	20	18	17	16	14	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	14	14	15	17	18	20	17	18	16	14	14	14	14	14	14	15
20	15	15	14	15	14	14	14	14	14			18	22	17	21	17	14	14	14	14	14	14	14	14
21	14	14	14	14	14	15	14	14	14	14	15	18	20	22	18	18	18	14	14	14	15	14	14	14
22	14	14	15	14	14	14	14	14	B	17	20	18	20	21	22	17	14	15	14	14	14	14	14	14
23	14	14	14	14	14	14	14	14	14	14		18		22	20	18	17	14	14	14	14	14	14	15
24	15	14	14	14	14	14	14	14	14	14	20	27	20	28	20	18	16	14	14	14	14	14	18	14
25	14	14	14	14	15	15	14	14	14	14	17	17	21	27	20	22	17	14	14	14	14	15	14	14
26	14	14	15	15	14	14	14	14	14	17	16	17	20	20	20	17	15	14	14	14	14	14	15	14
27	14	15	14	15	14	14	14	14	14	17	18				20	20	16	14	14	14	14	14	15	14
28	14	14	15	14	14	14	14	14	14	15	20	18	21	18	23	17	15	14	14	14	14	14	15	14
29	14	14	15	14	14	14	14	14		15	17	17	21	21	18	18	15	14	14	14	14	14	15	14
30	14	14	14	14	14	14	14	14	14	15	17	20	20	20	17	23	17	14	14	14	14	14	14	15
31	14	14	15	14	14	14	14	14	14	14	17	16	24	22	24	20	15	14	14	14	14	14	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	28	26	24	29	29	27	27	26	27	26	27	28	28	28	30	28	28	29	29	29	29
MED	15	15	15	15	14	14	14	14	17	18	30	32	33	30	25	24	18	15	14	14	15	15	15	15
U Q	15	15	15	16	16	16	16	17	20	28	34	35	38	40	36	35	32	24	16	16	16	16	16	15
L Q	14	14	14	14	14	14	14	14	14	15	17	18	21	20	20	18	15	14	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai



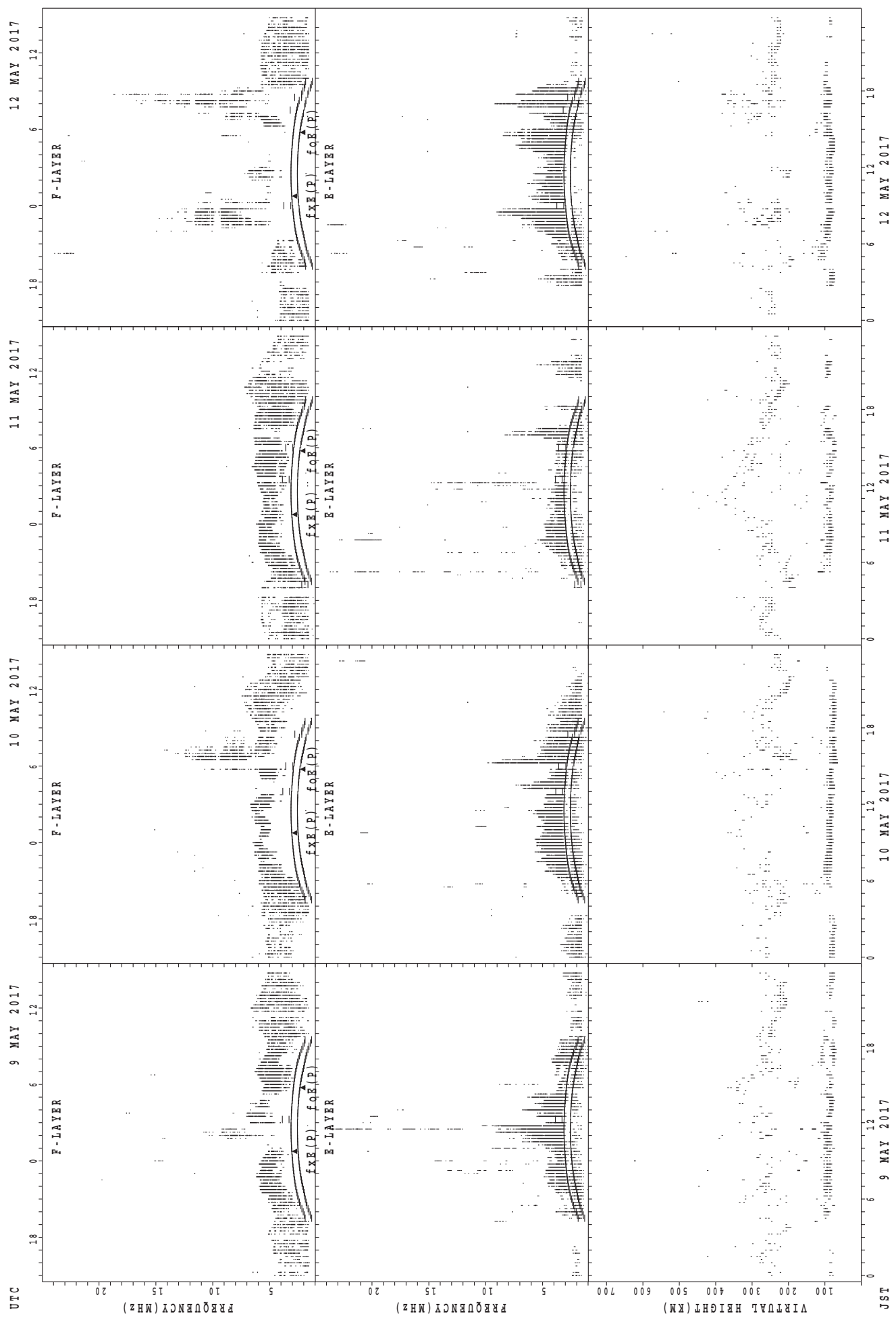
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



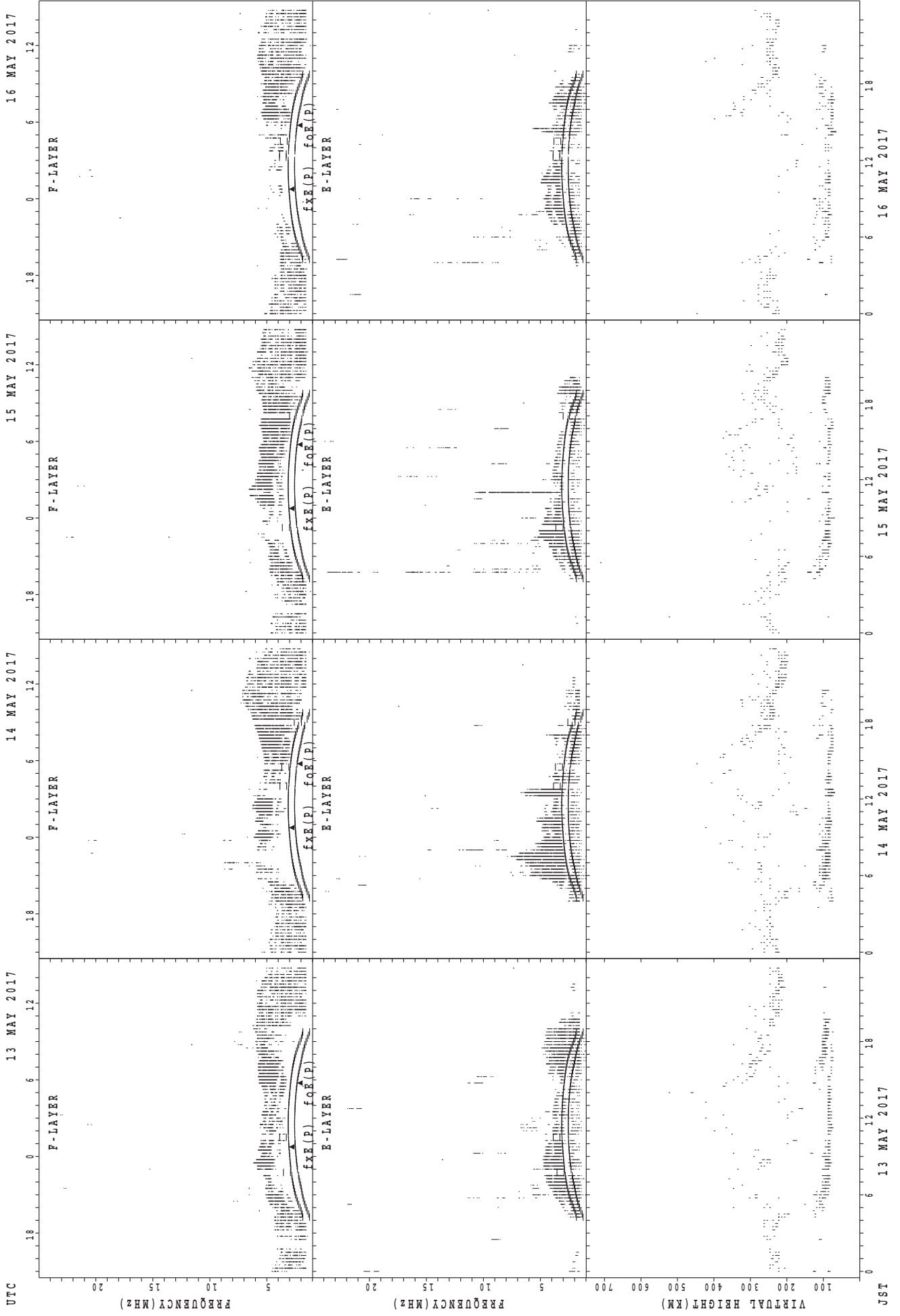
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



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

SUMMARY PLOTS AT Wakkanai



f_{XE}(P); PREDICTED VALUE FOR f_{XE}
f_OE(P); PREDICTED VALUE FOR f_OE

UTC

13 MAY 2017

14 MAY 2017

15 MAY 2017

16 MAY 2017

JST

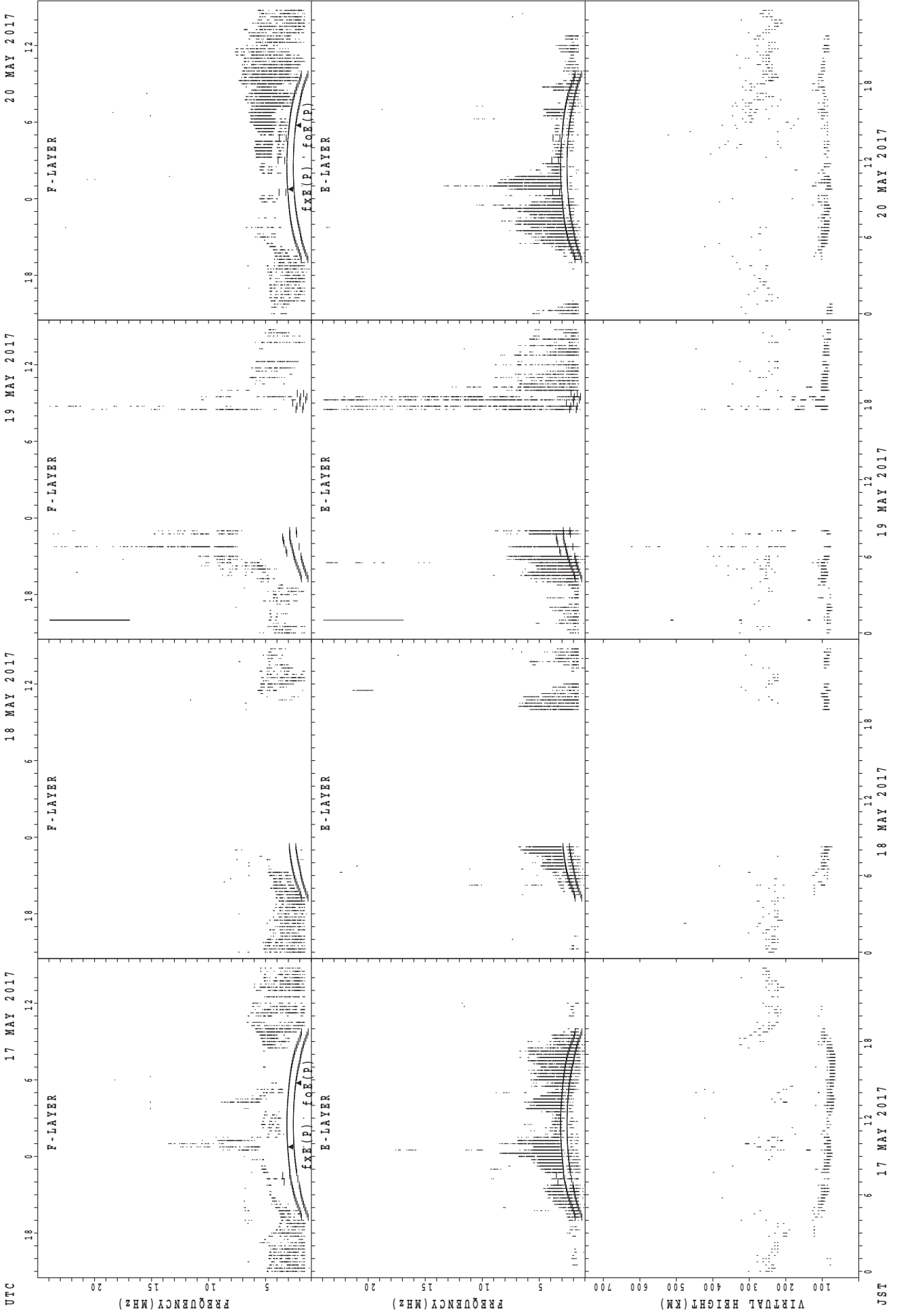
13 MAY 2017

14 MAY 2017

15 MAY 2017

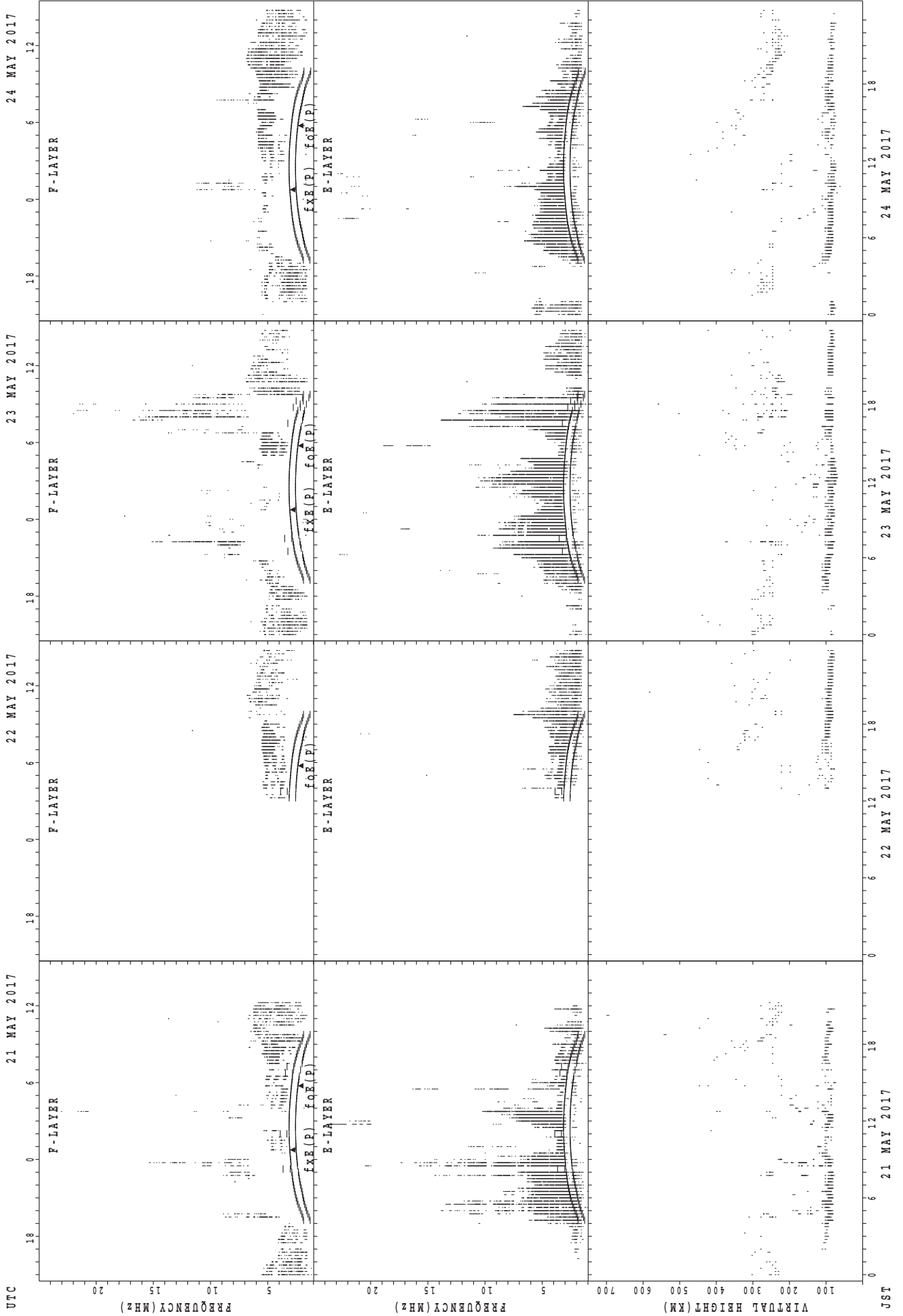
16 MAY 2017

SUMMARY PLOTS AT Wakkanai



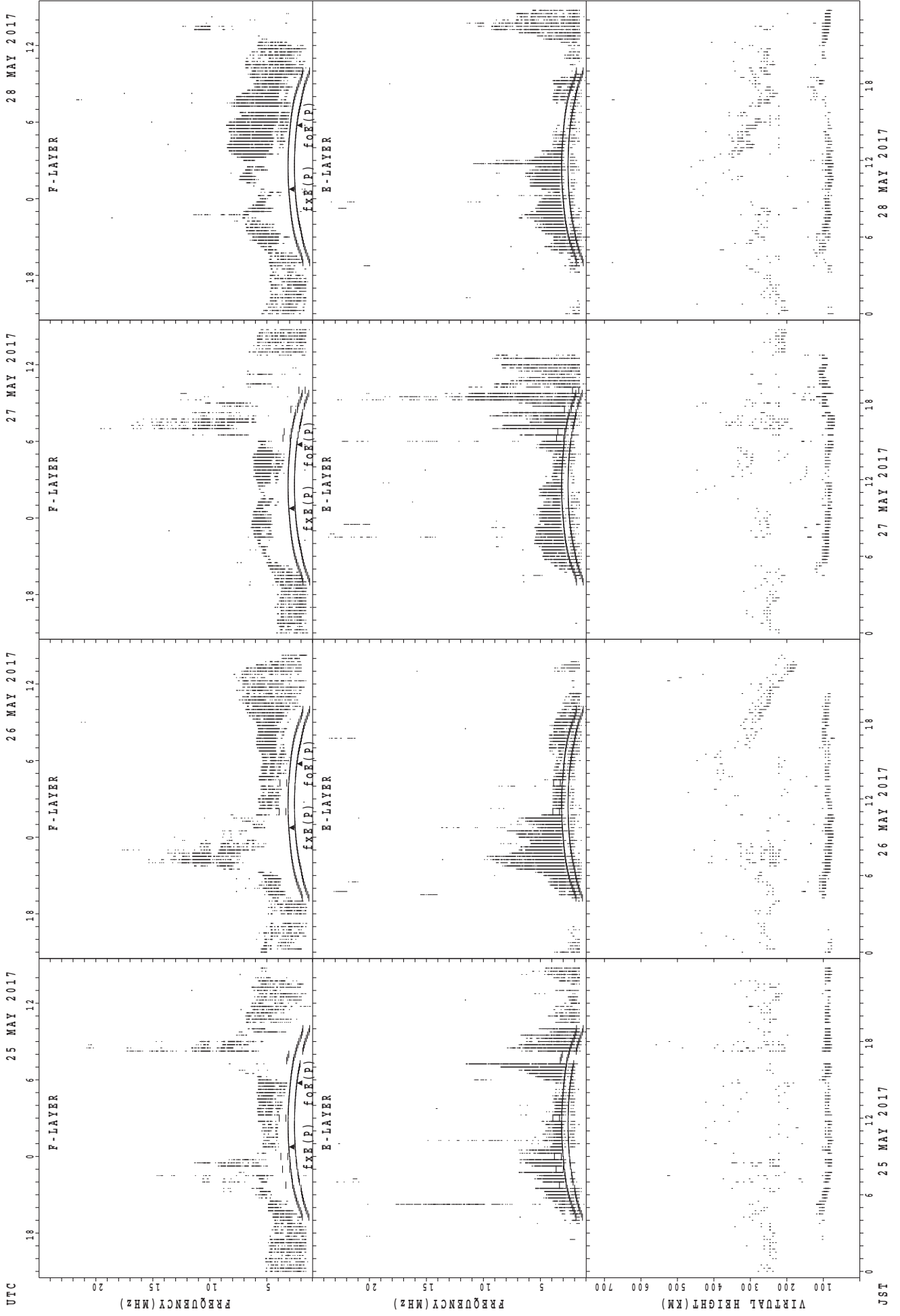
fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Wakkanai



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

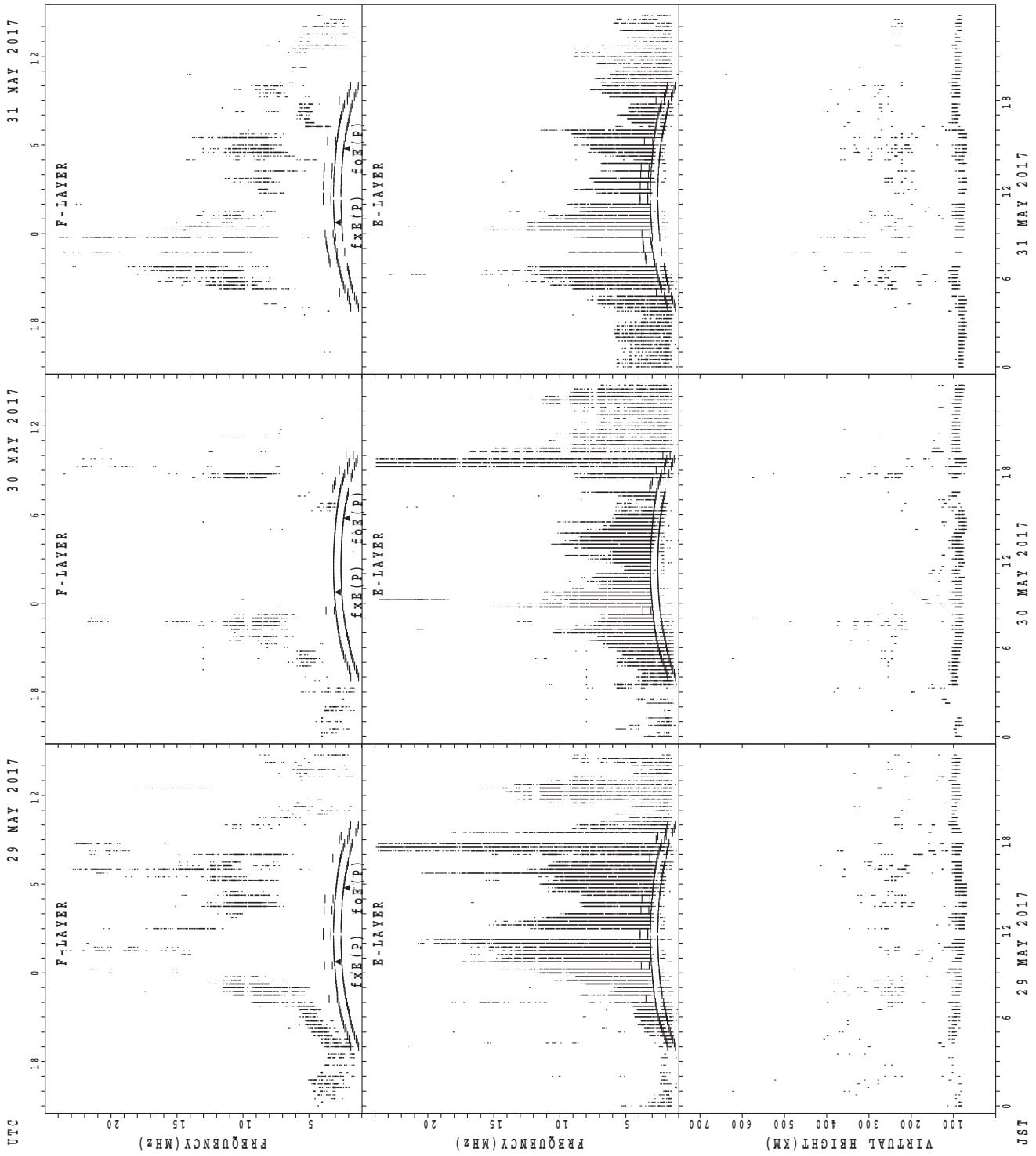
SUMMARY PLOTS AT Wakkanai



foF2(P); PREDICTED VALUE FOR foF2
foF2(P); PREDICTED VALUE FOR foF2

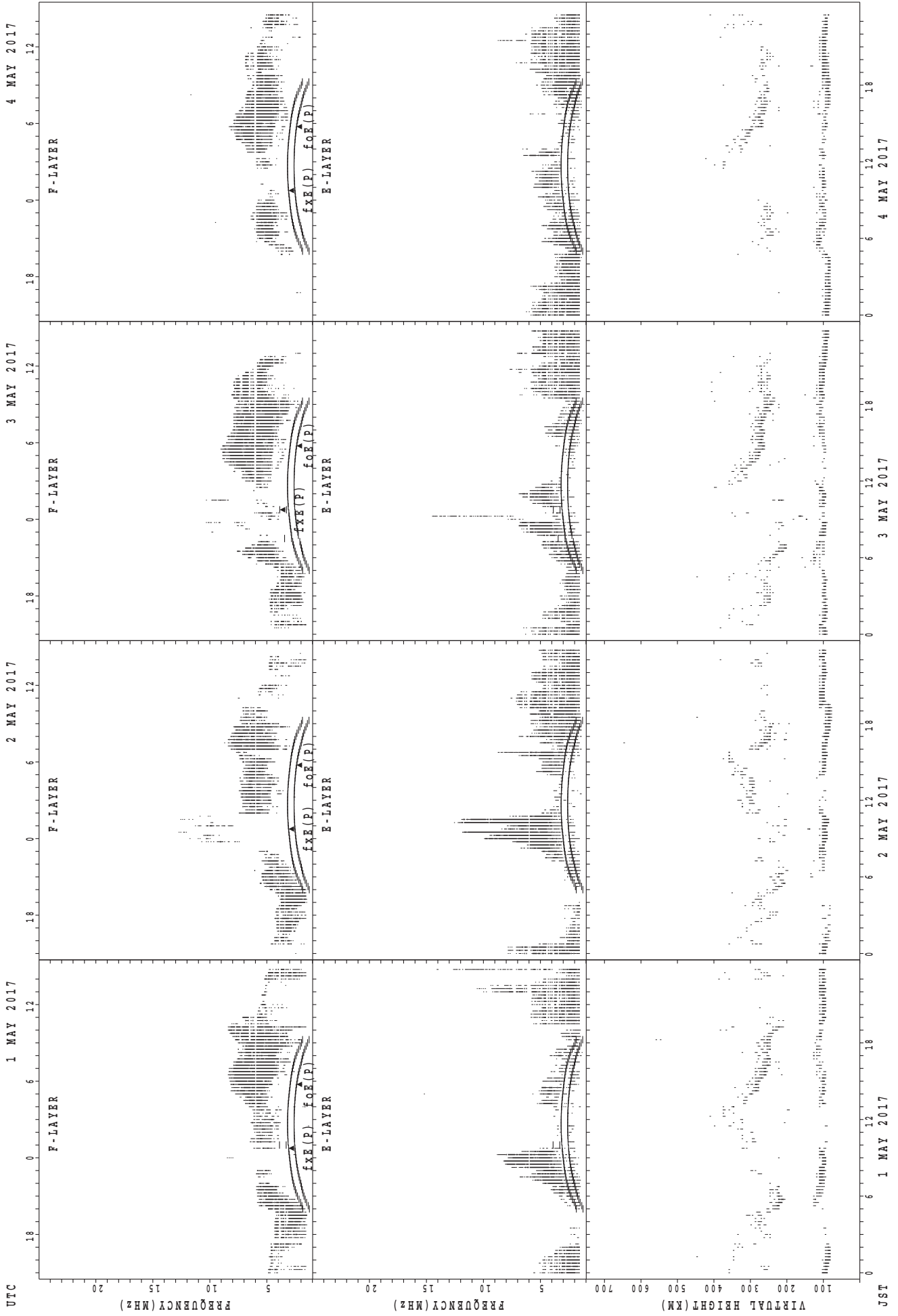
JST

SUMMARY PLOTS AT Wakkanai



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



fxe(p); PREDICTED VALUE FOR fxe
foe(p); PREDICTED VALUE FOR foe

1 MAY 2017

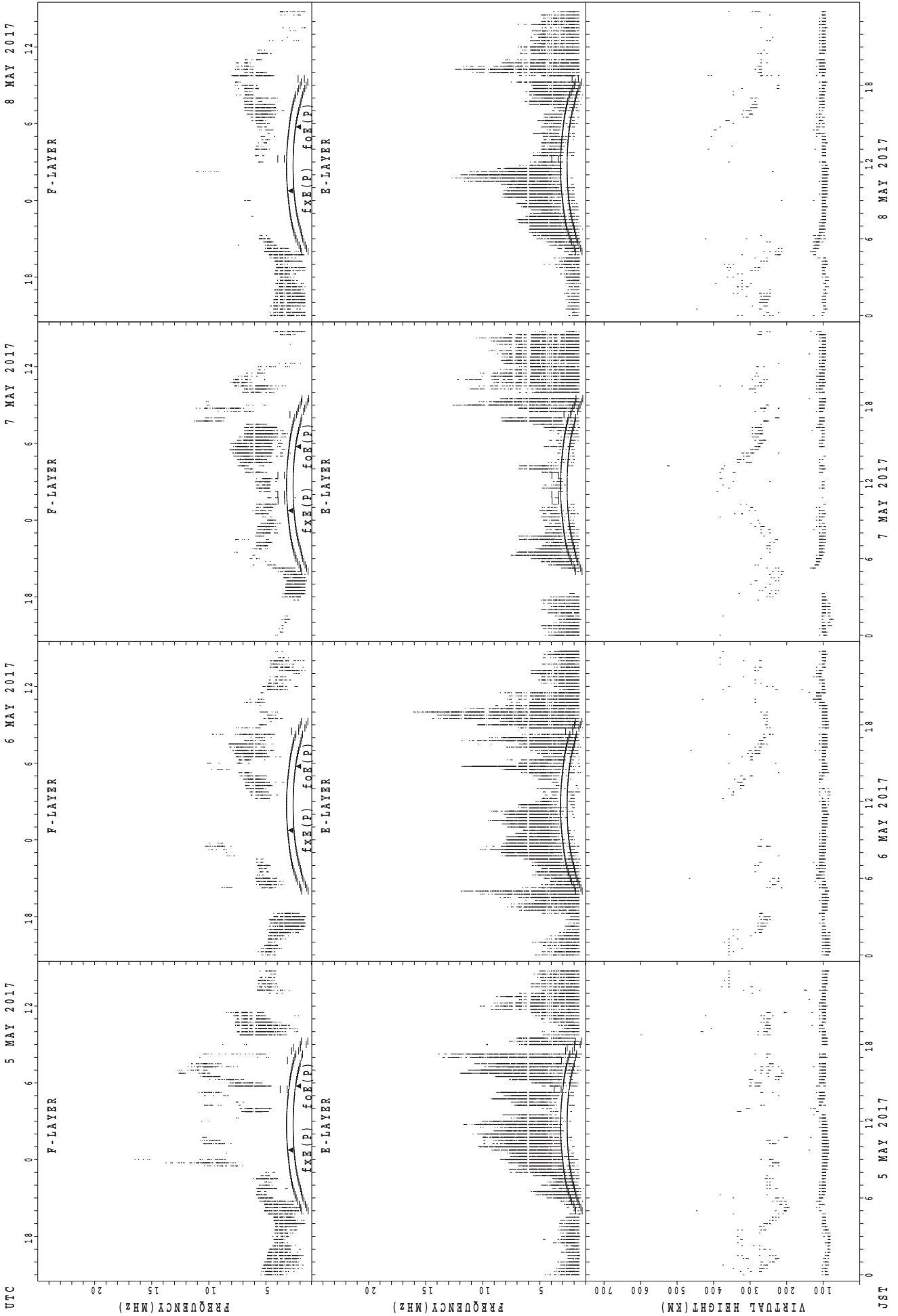
2 MAY 2017

3 MAY 2017

4 MAY 2017

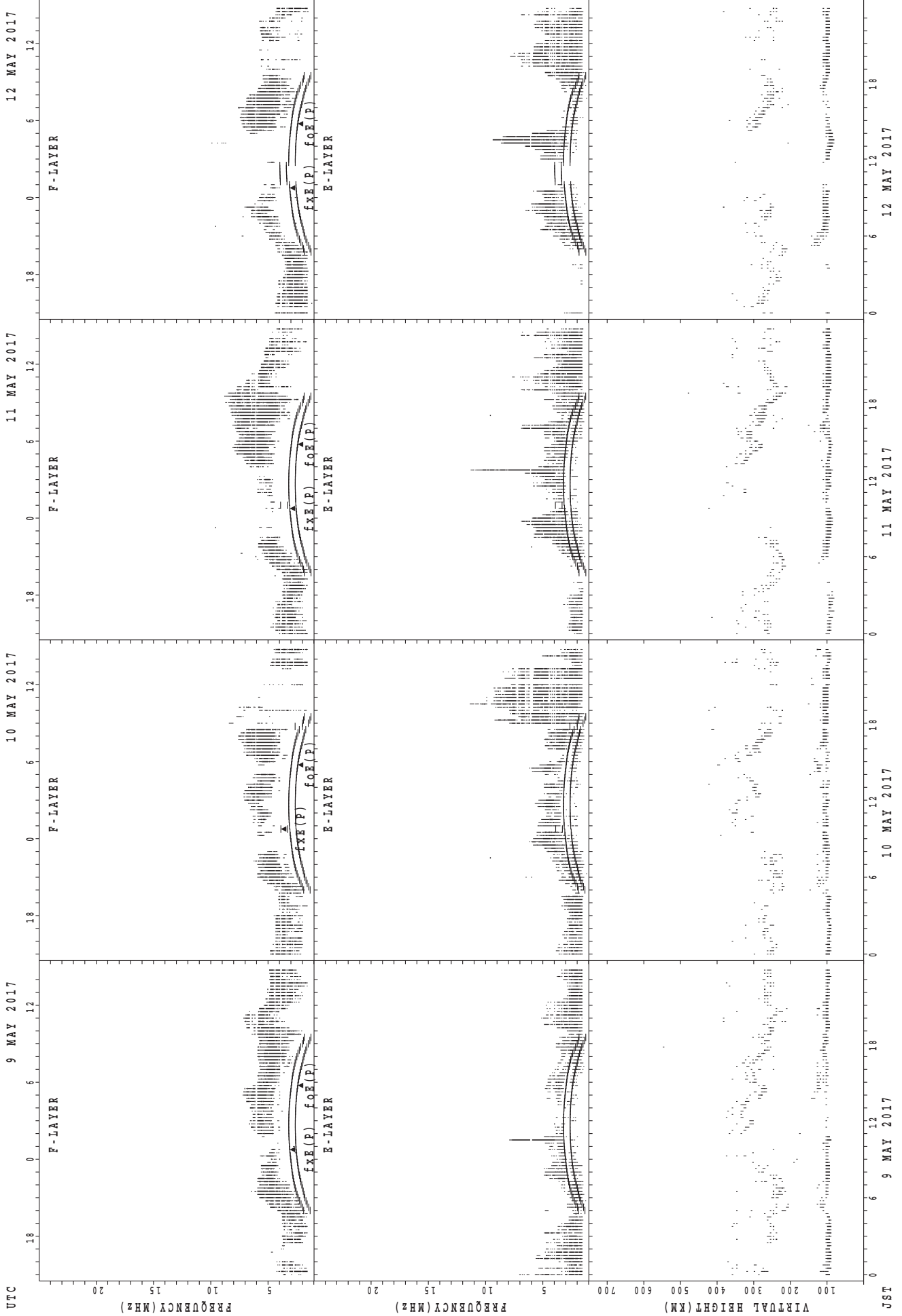
JST

SUMMARY PLOTS AT Kokubunji



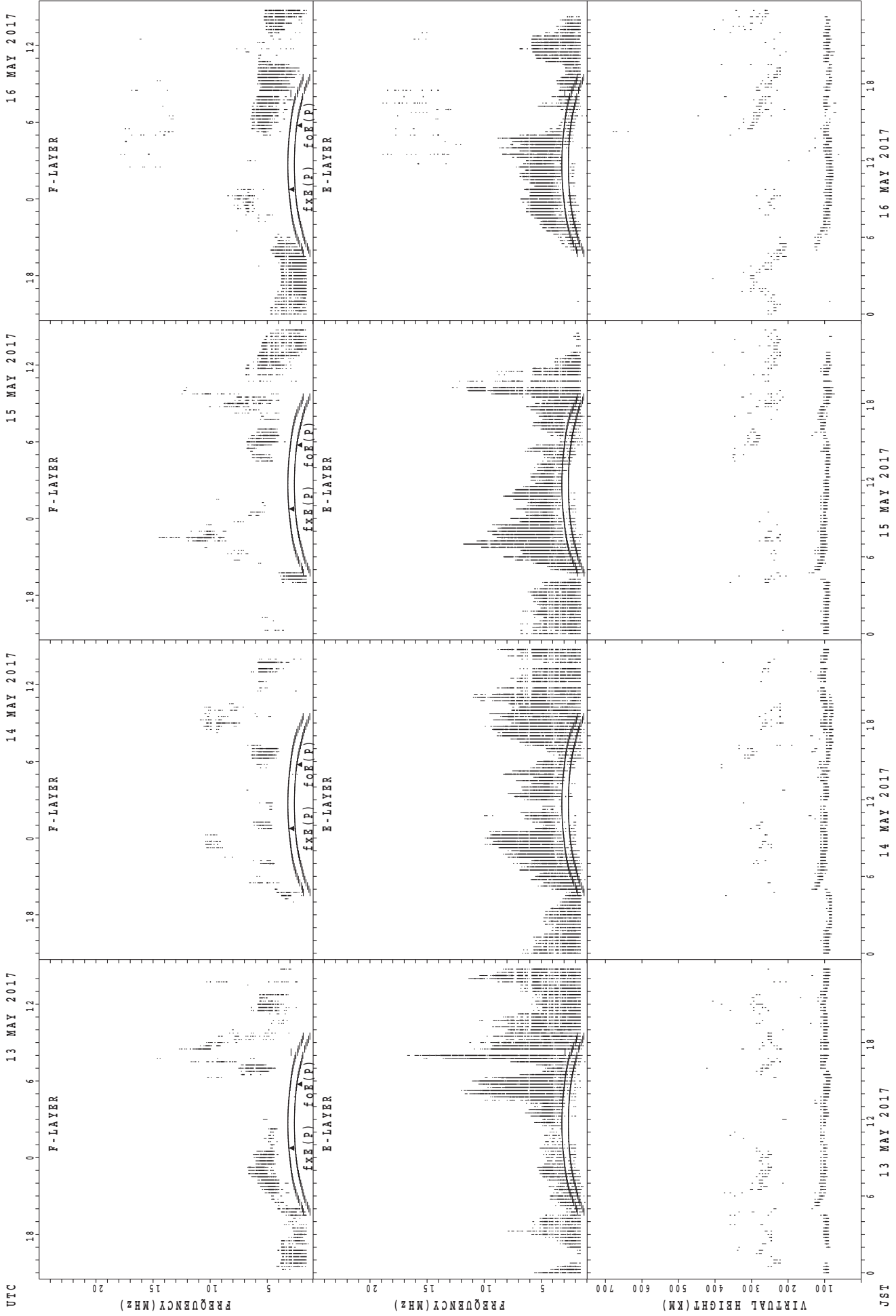
fxe(p); PREDICTED VALUE FOR fxe
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Kokubunji



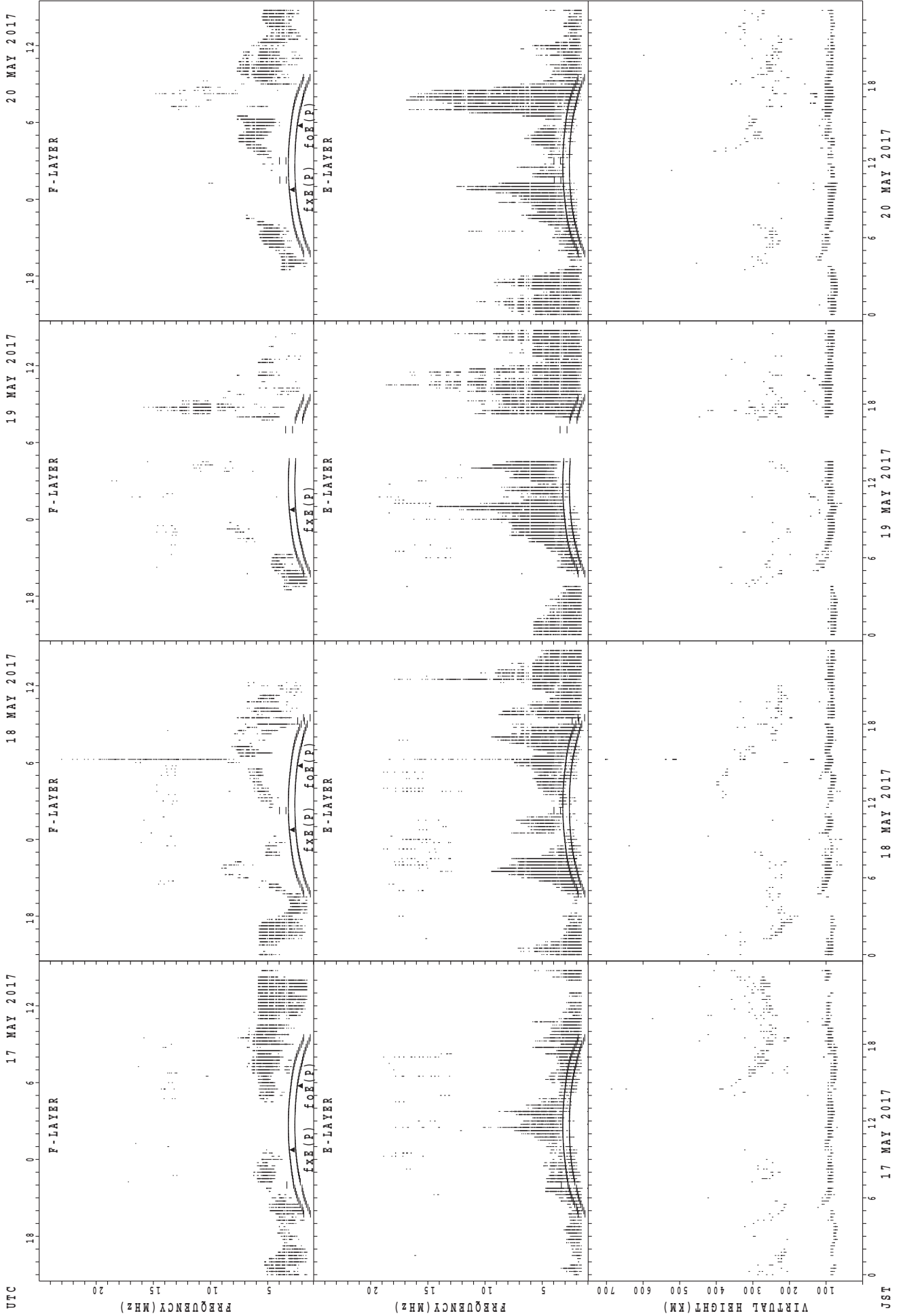
$f_{xE}(P)$; PREDICTED VALUE FOR f_{xE}
 $f_{oE}(P)$; PREDICTED VALUE FOR f_{oE}

SUMMARY PLOTS AT Kokubunji



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji

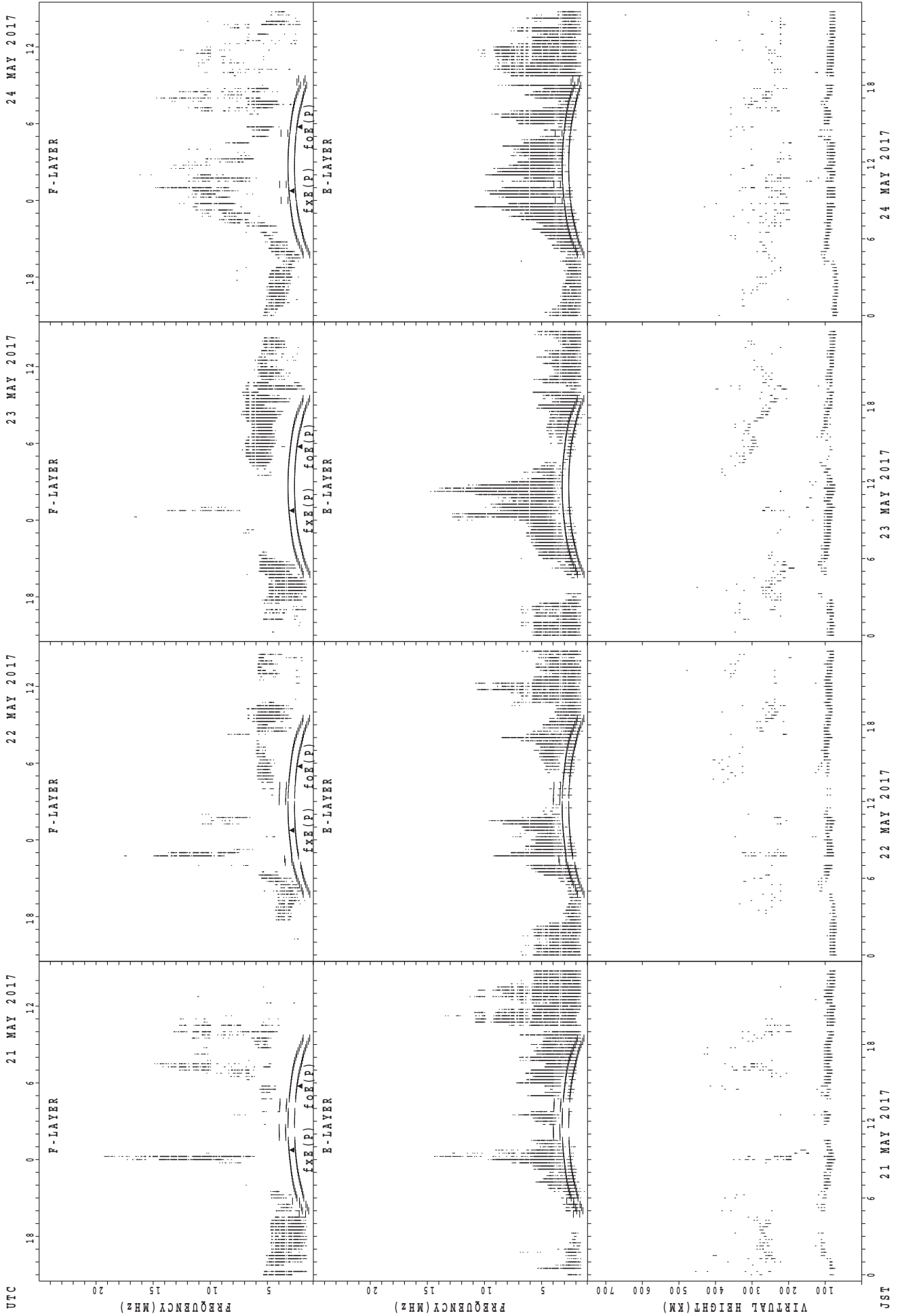


UTC

JST

f_xE(P); PREDICTED VALUE FOR f_xE
 f_oE(P); PREDICTED VALUE FOR f_oE

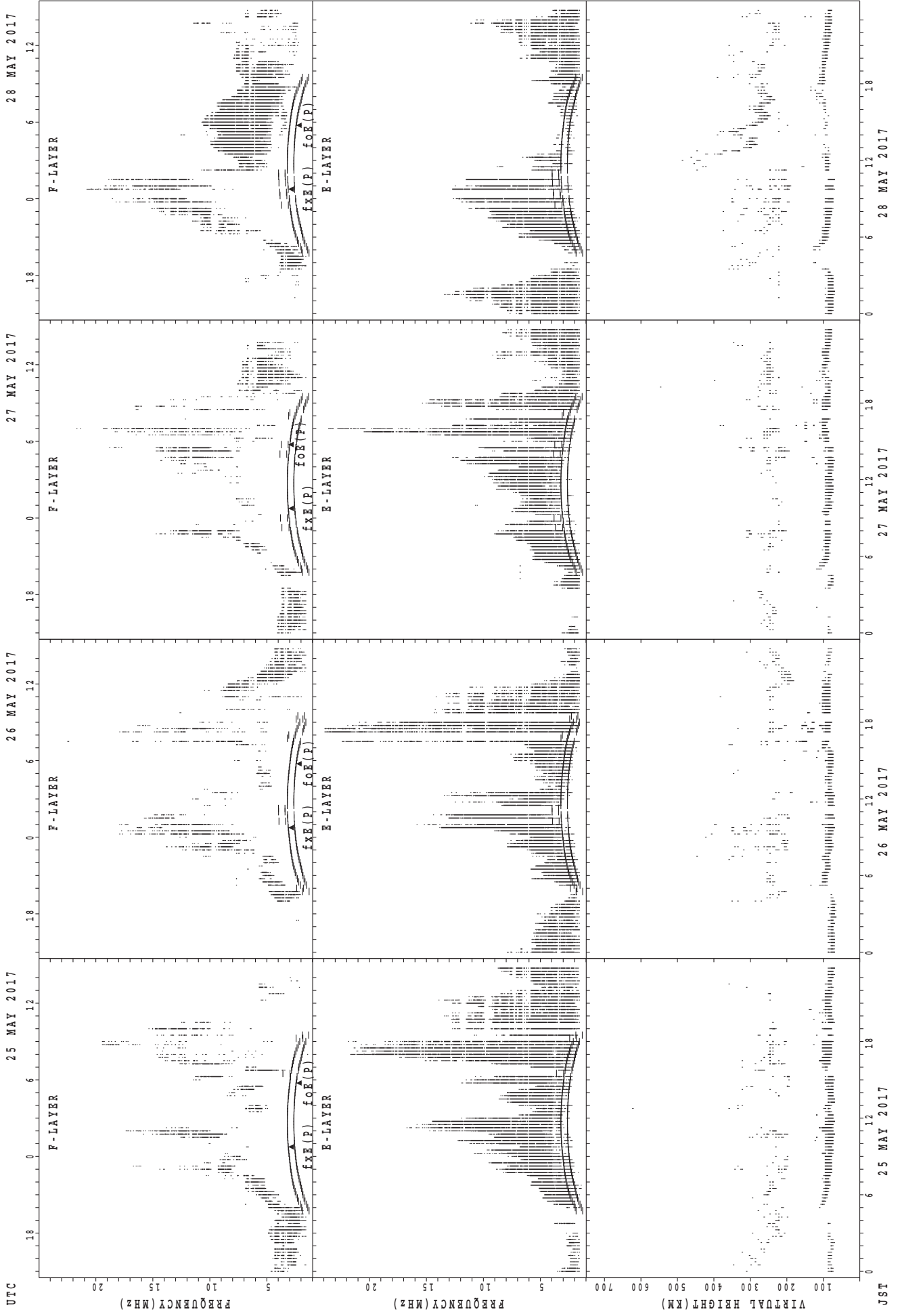
SUMMARY PLOTS AT Kokubunji



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

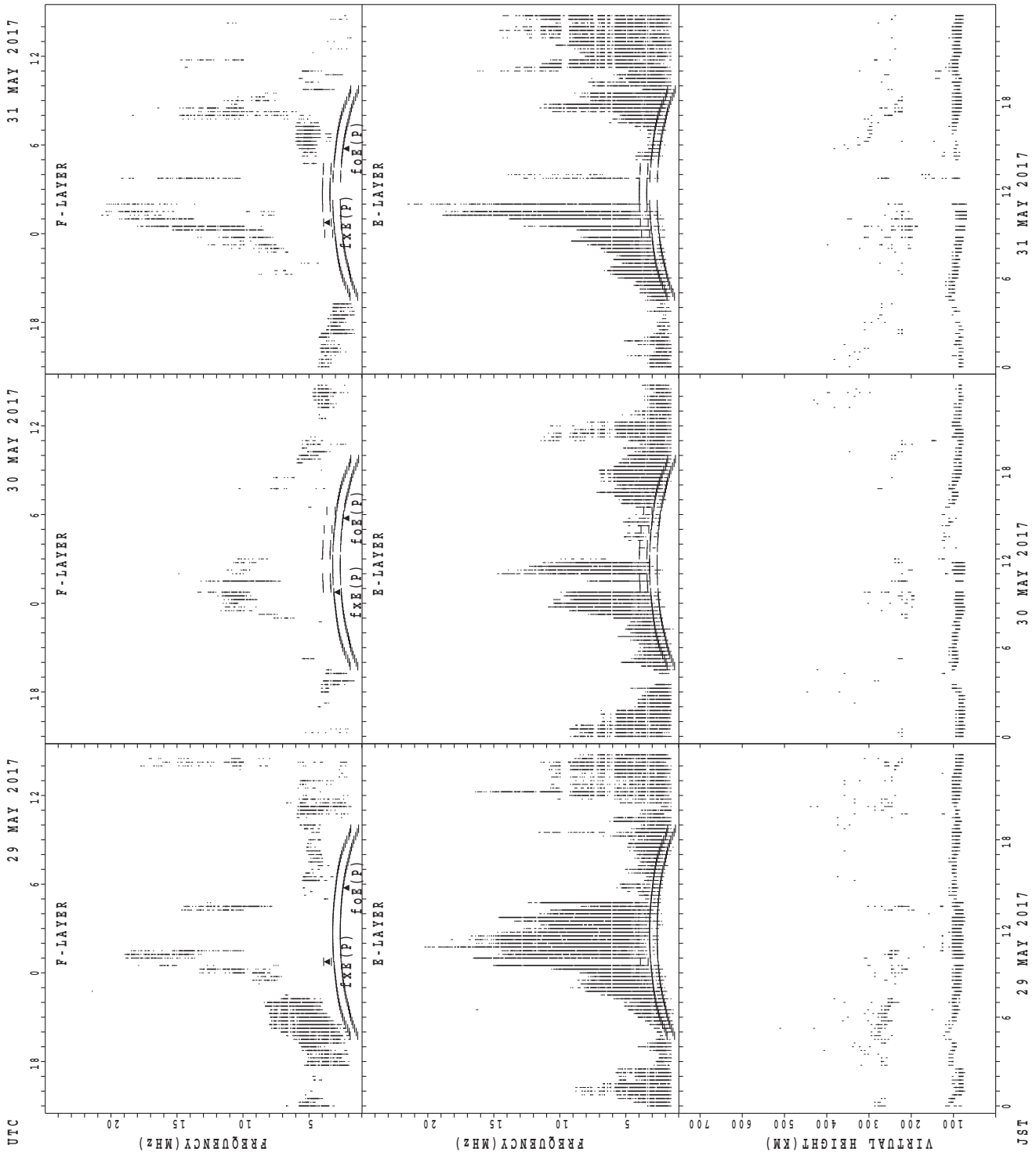
JST

SUMMARY PLOTS AT Kokubunji



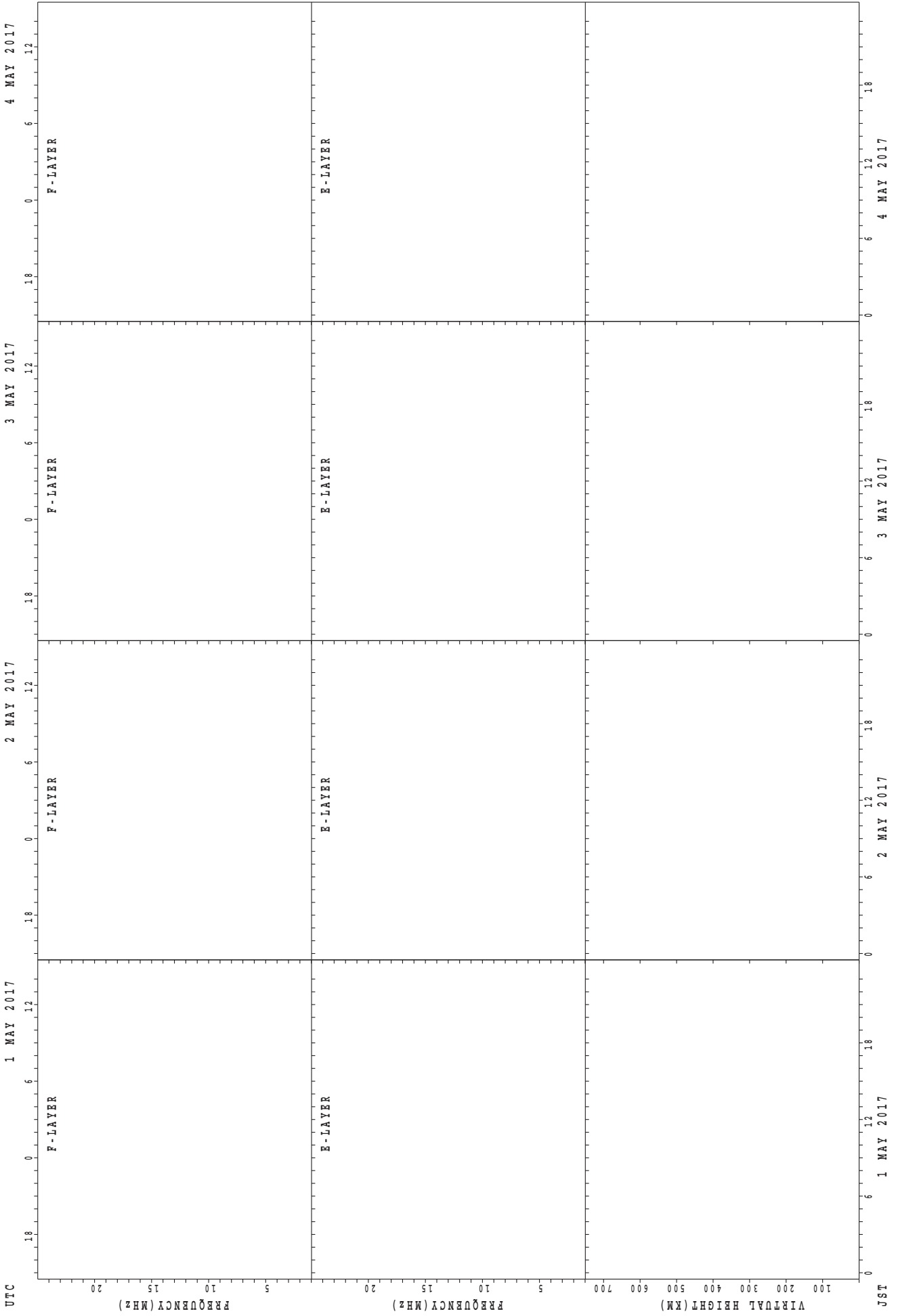
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



JST
29 MAY 2017
30 MAY 2017
31 MAY 2017
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



f_{xE}(P); PREDICTED VALUE FOR f_{xE}
foE(P); PREDICTED VALUE FOR foE

1 MAY 2017

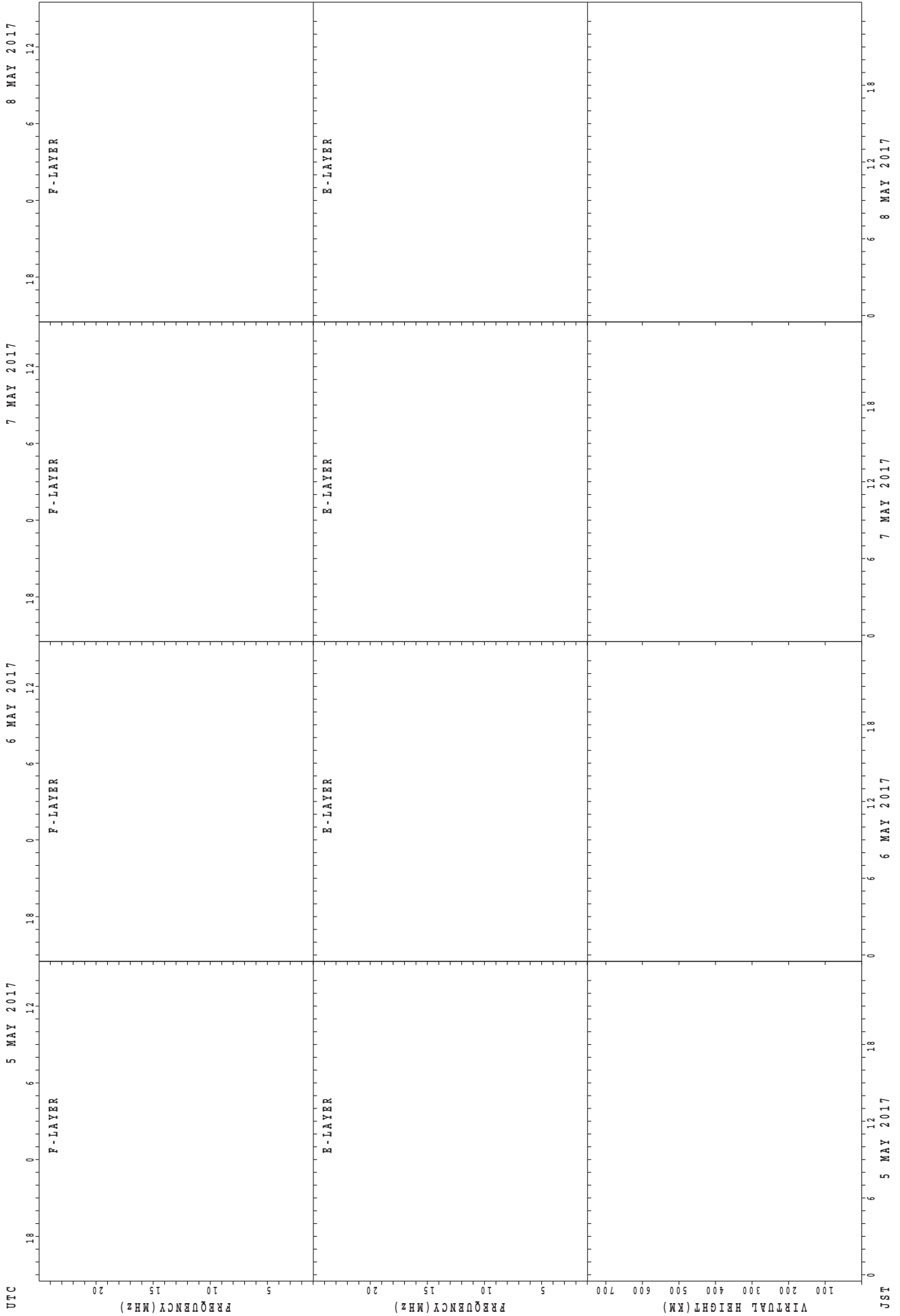
2 MAY 2017

3 MAY 2017

4 MAY 2017

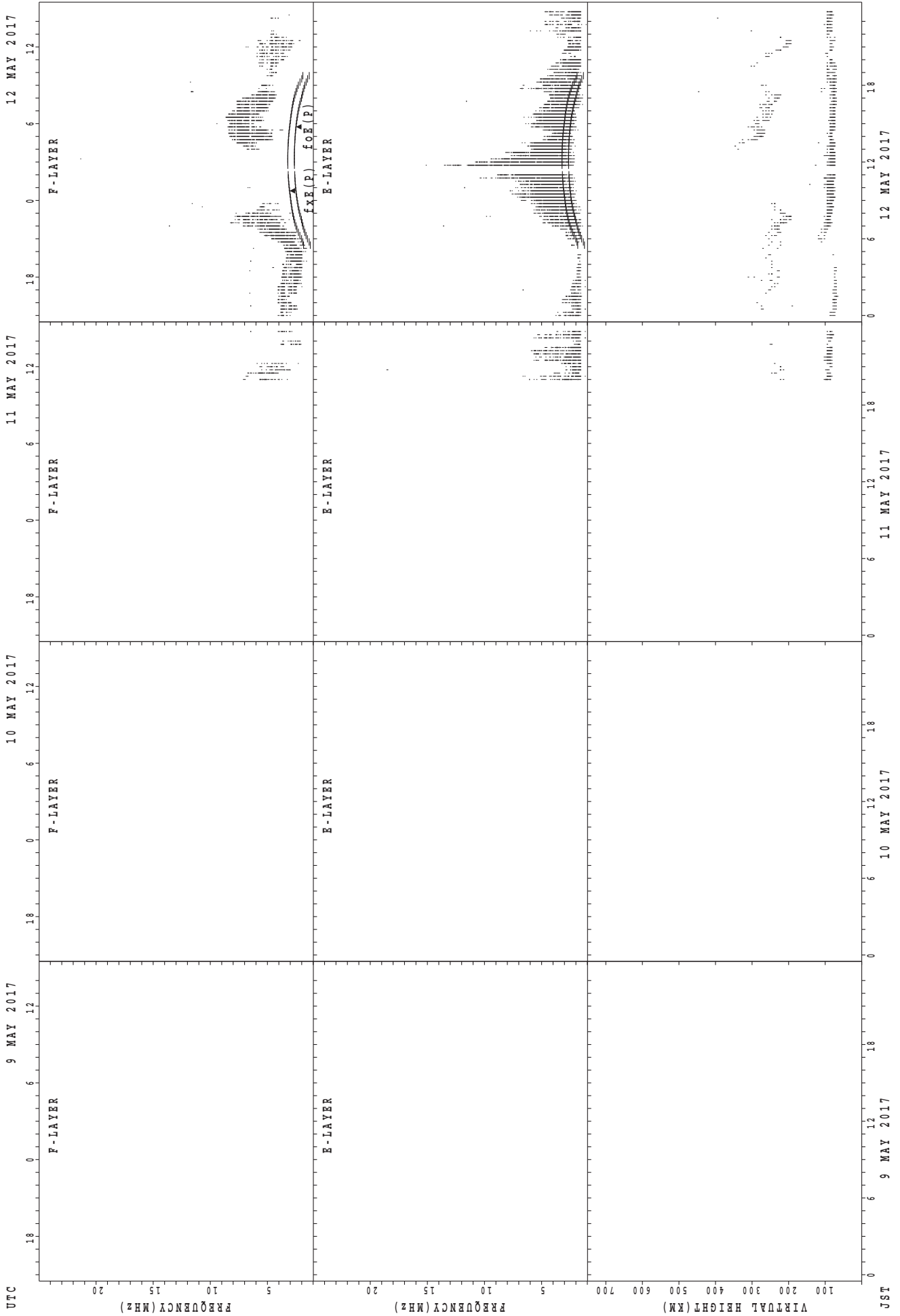
JST

SUMMARY PLOTS AT Yamagawa



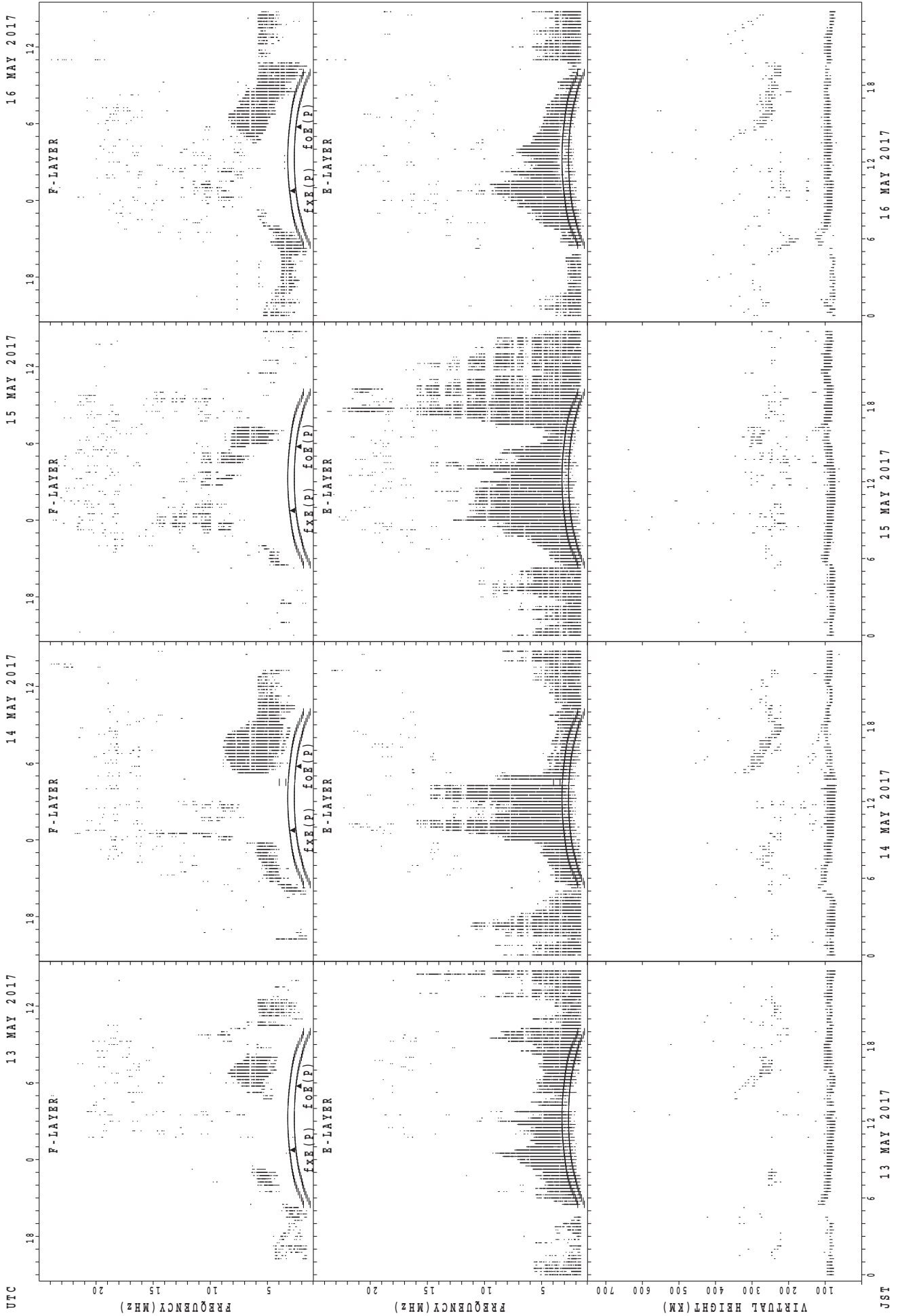
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



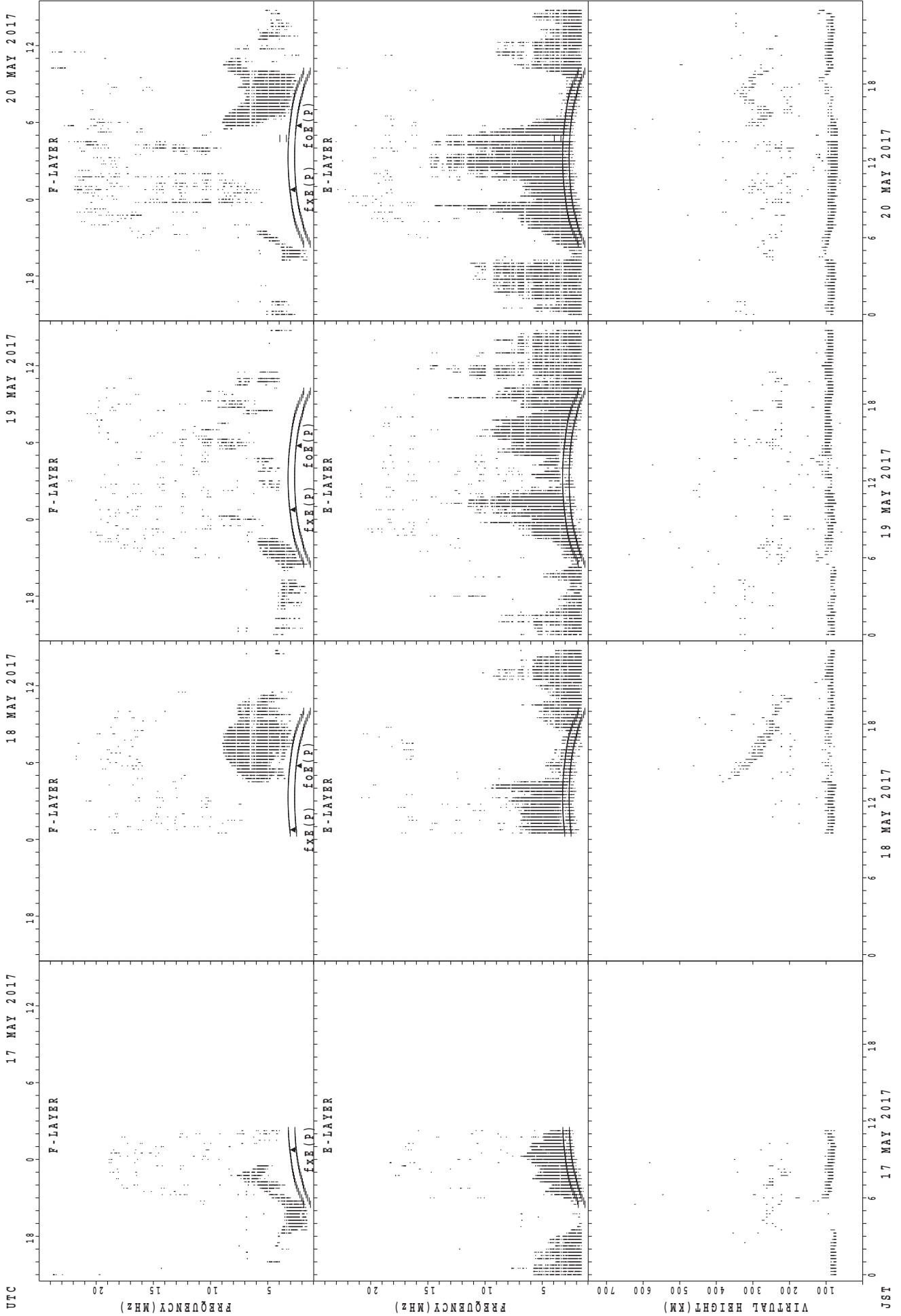
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

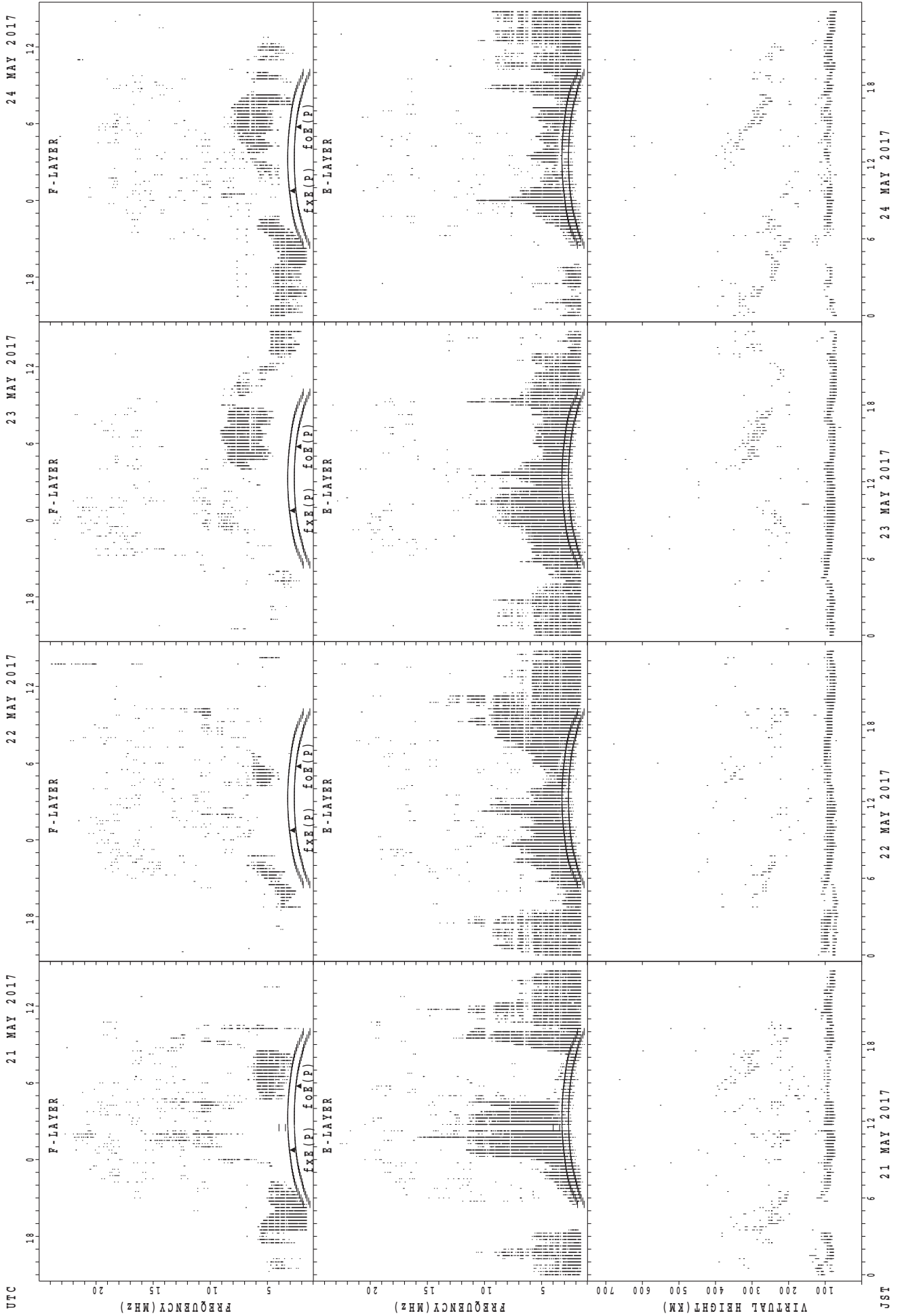
SUMMARY PLOTS AT Yamagawa



JST
 17 MAY 2017
 18 MAY 2017
 19 MAY 2017
 20 MAY 2017

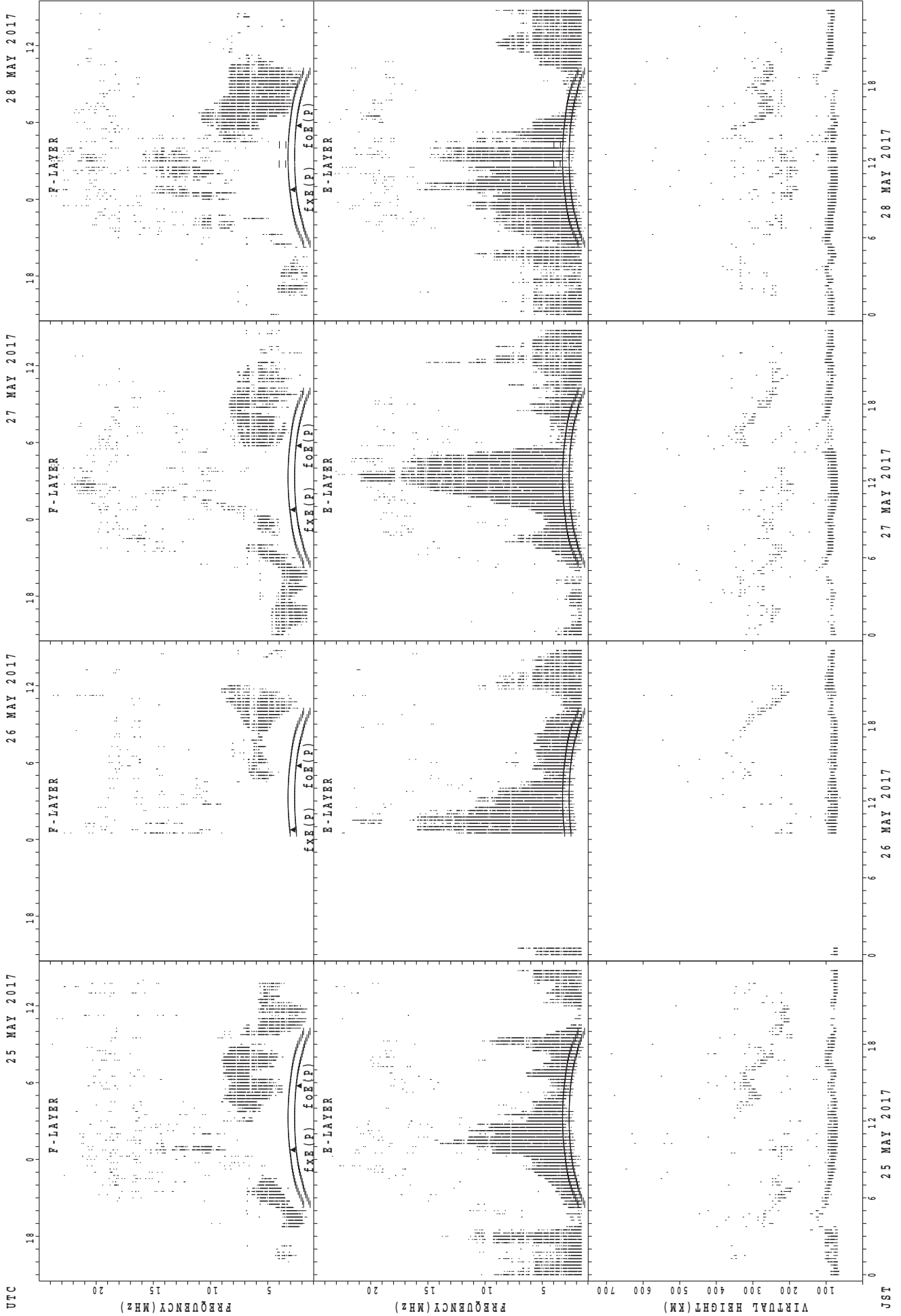
f_{x E}(P); PREDICTED VALUE FOR f_{x E}
 f_{o E}(P); PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Yamagawa



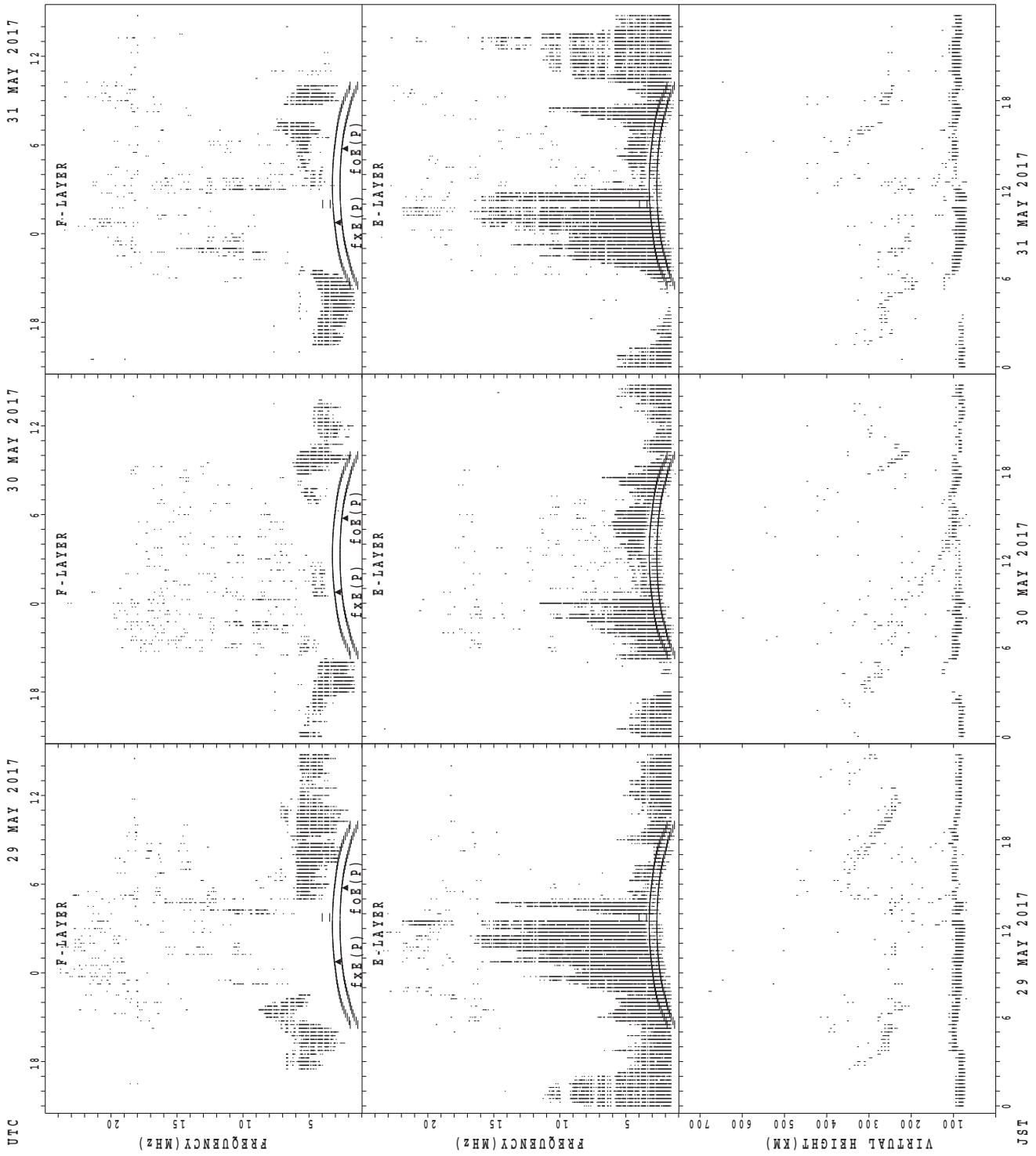
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



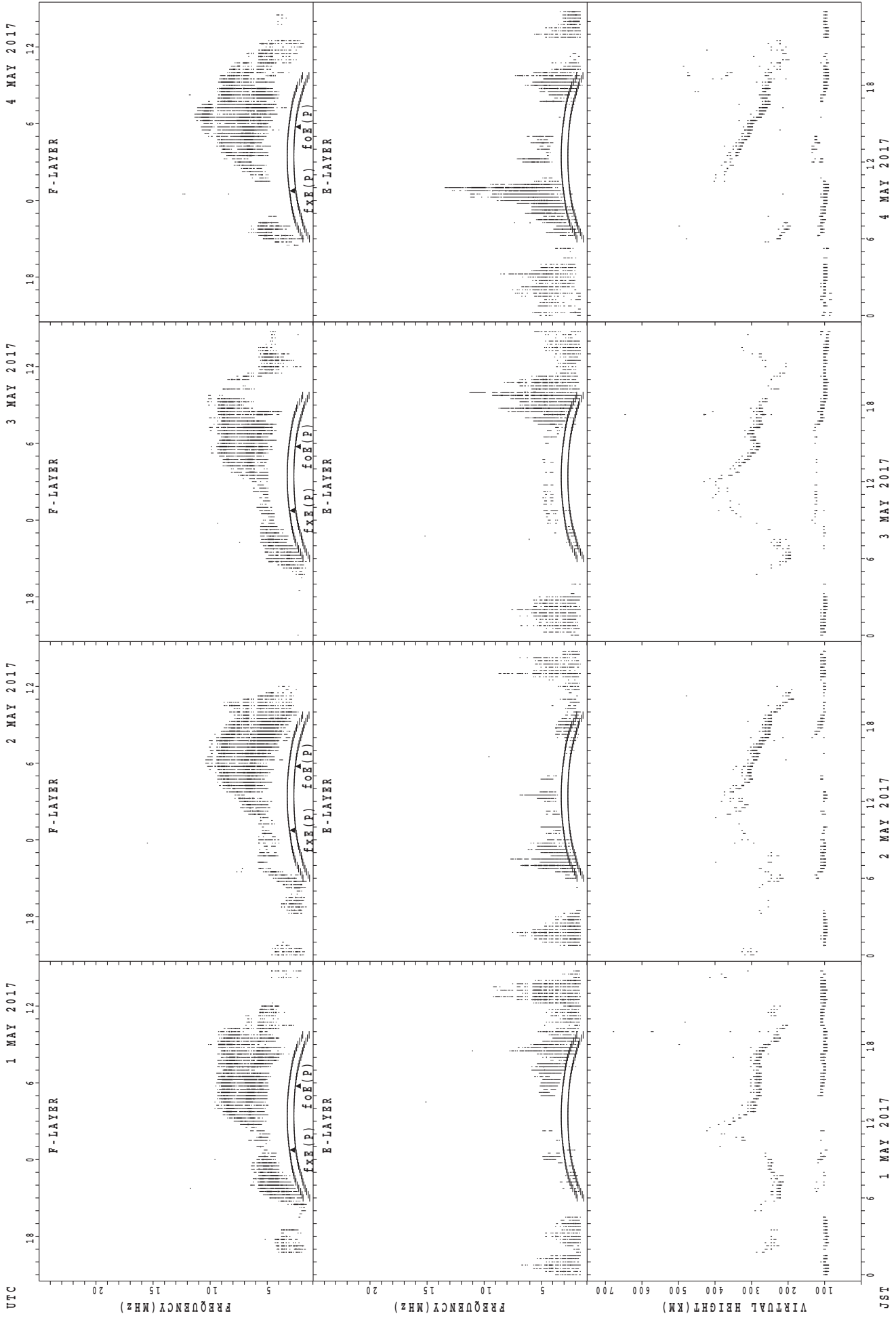
f_{x E}(P); PREDICTED VALUE FOR f_{x E}
f_{o E}(P); PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Yamagawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



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

1 MAY 2017

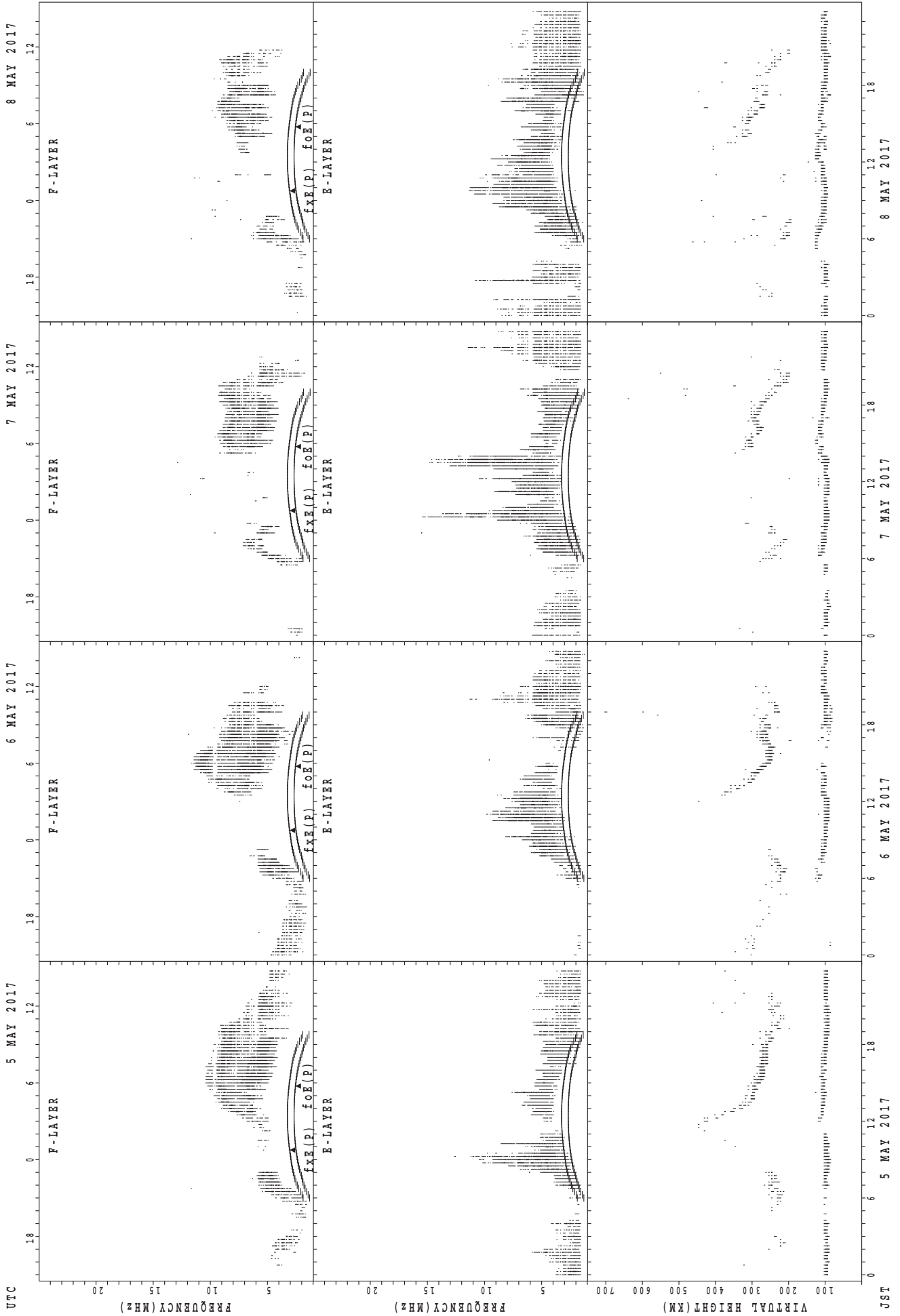
2 MAY 2017

3 MAY 2017

4 MAY 2017

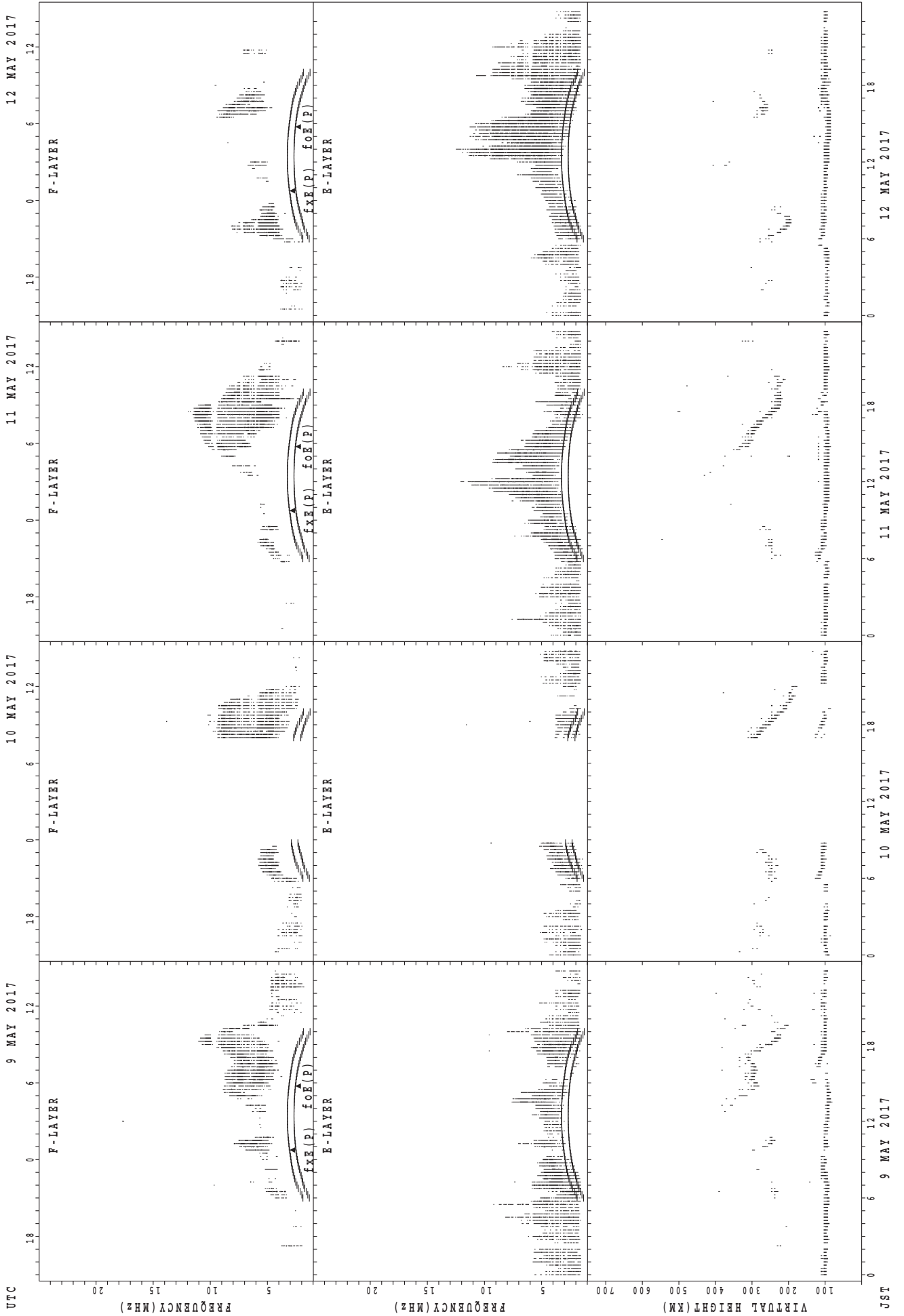
JST

SUMMARY PLOTS AT Okinawa



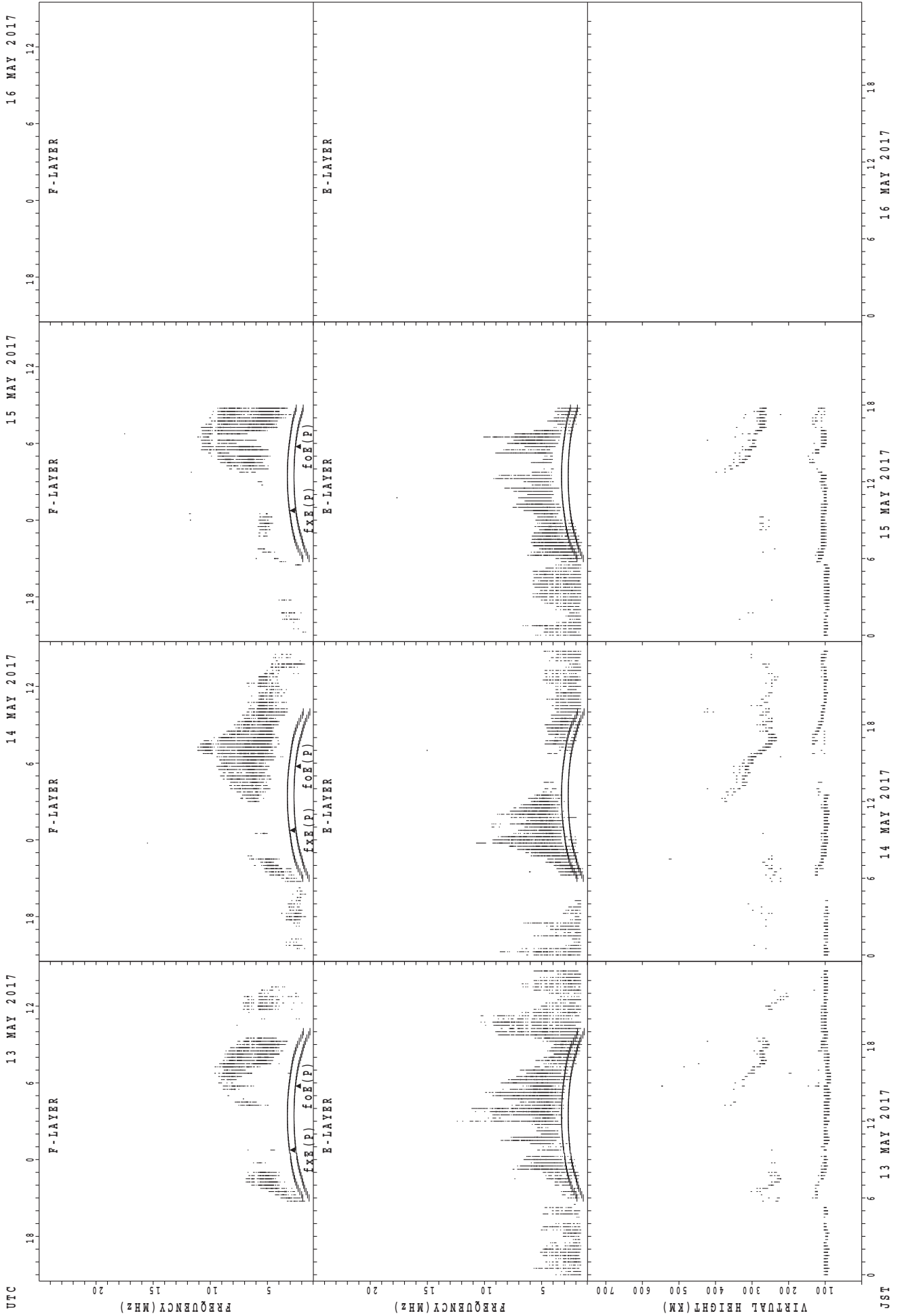
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

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

13 MAY 2017

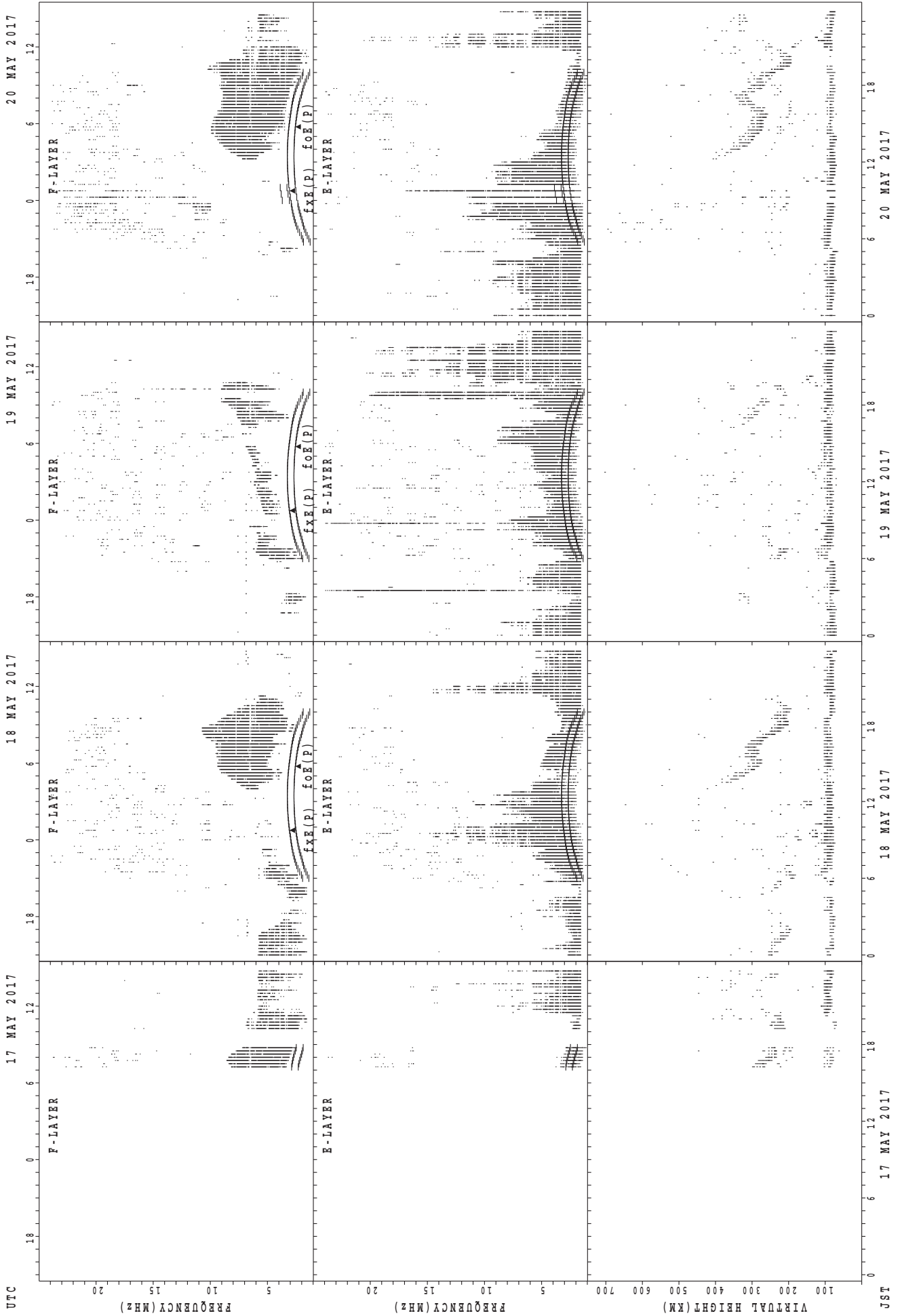
14 MAY 2017

15 MAY 2017

16 MAY 2017

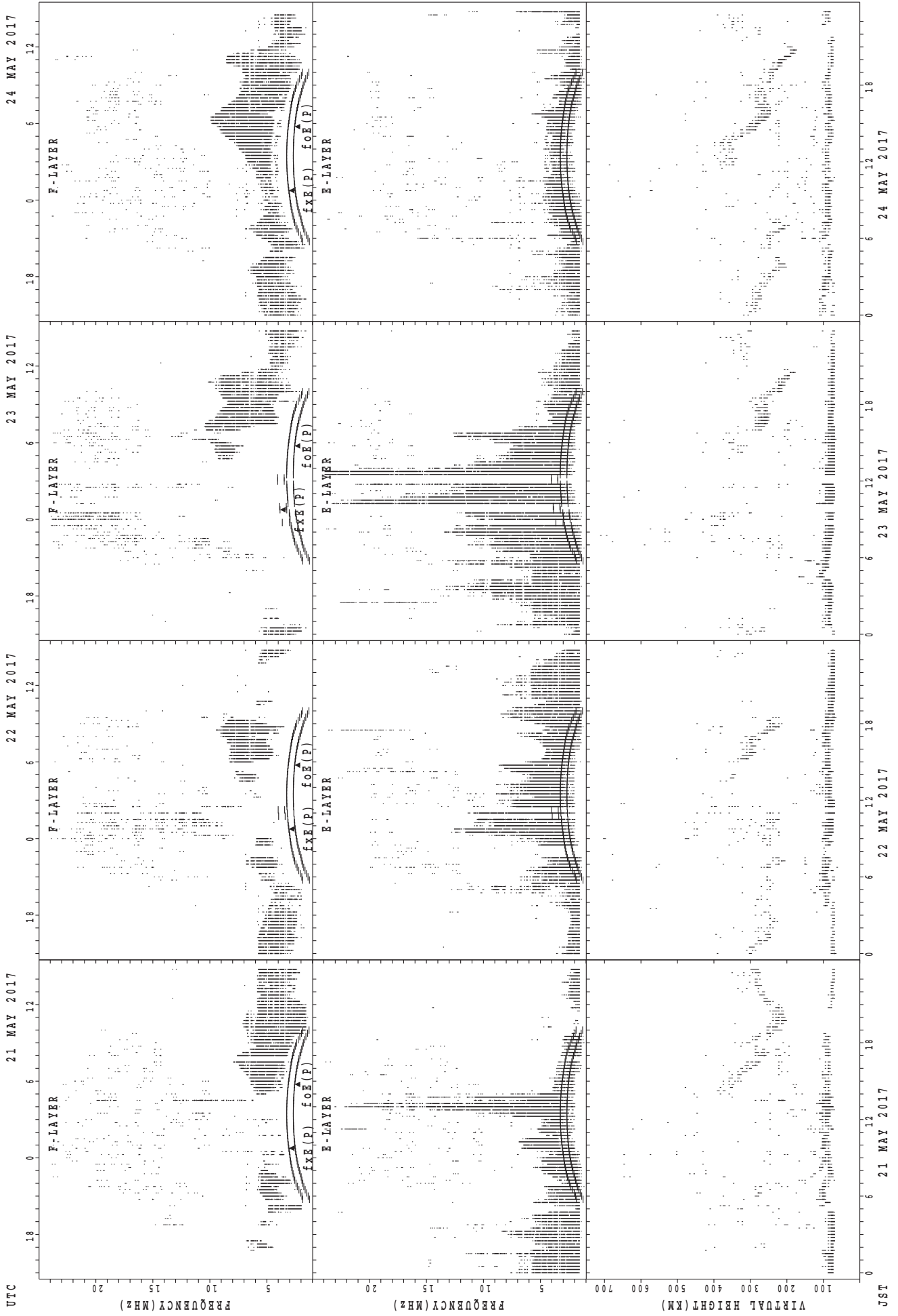
JST

SUMMARY PLOTS AT Okinawa



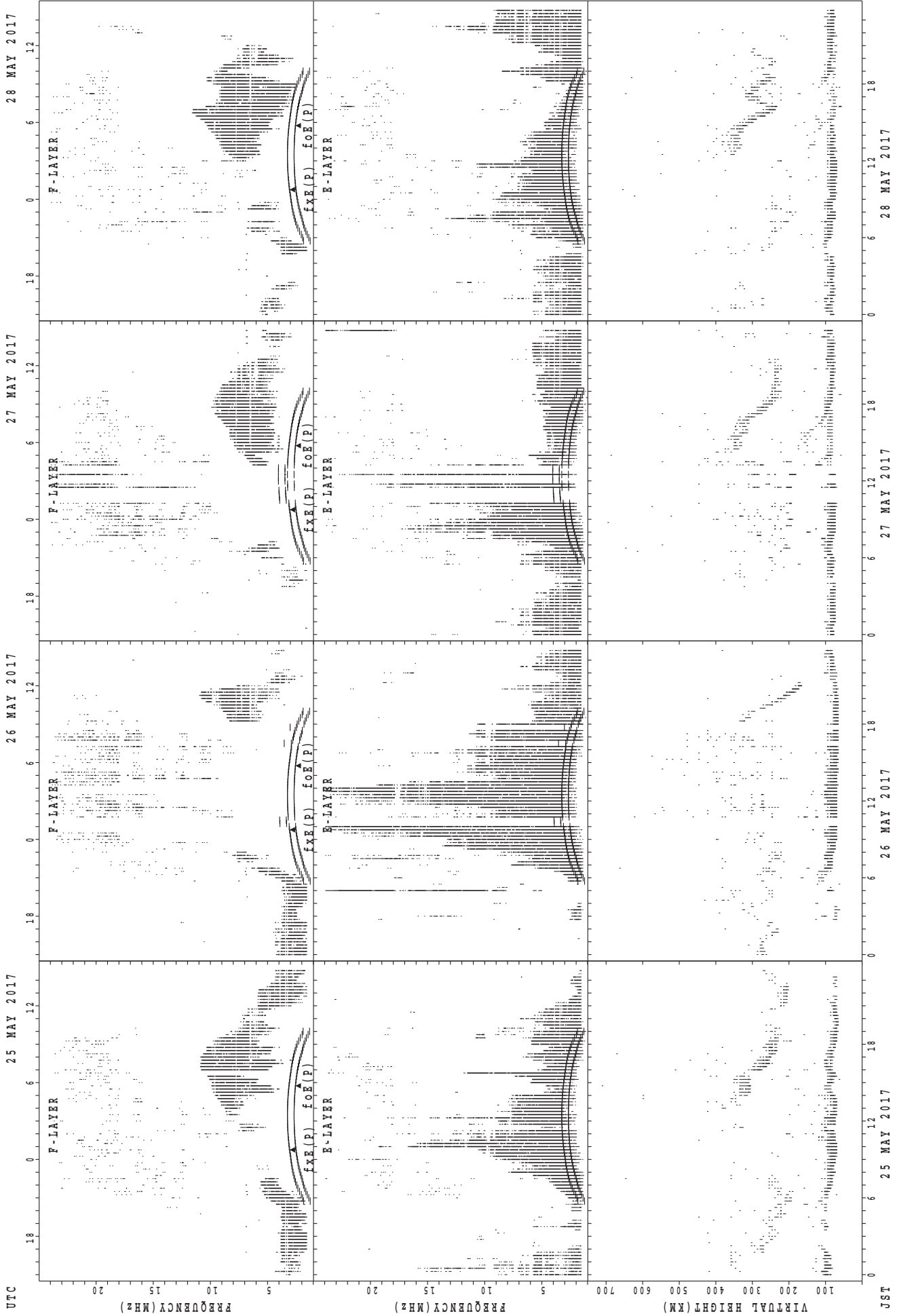
JST
17 MAY 2017
18 MAY 2017
19 MAY 2017
20 MAY 2017
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



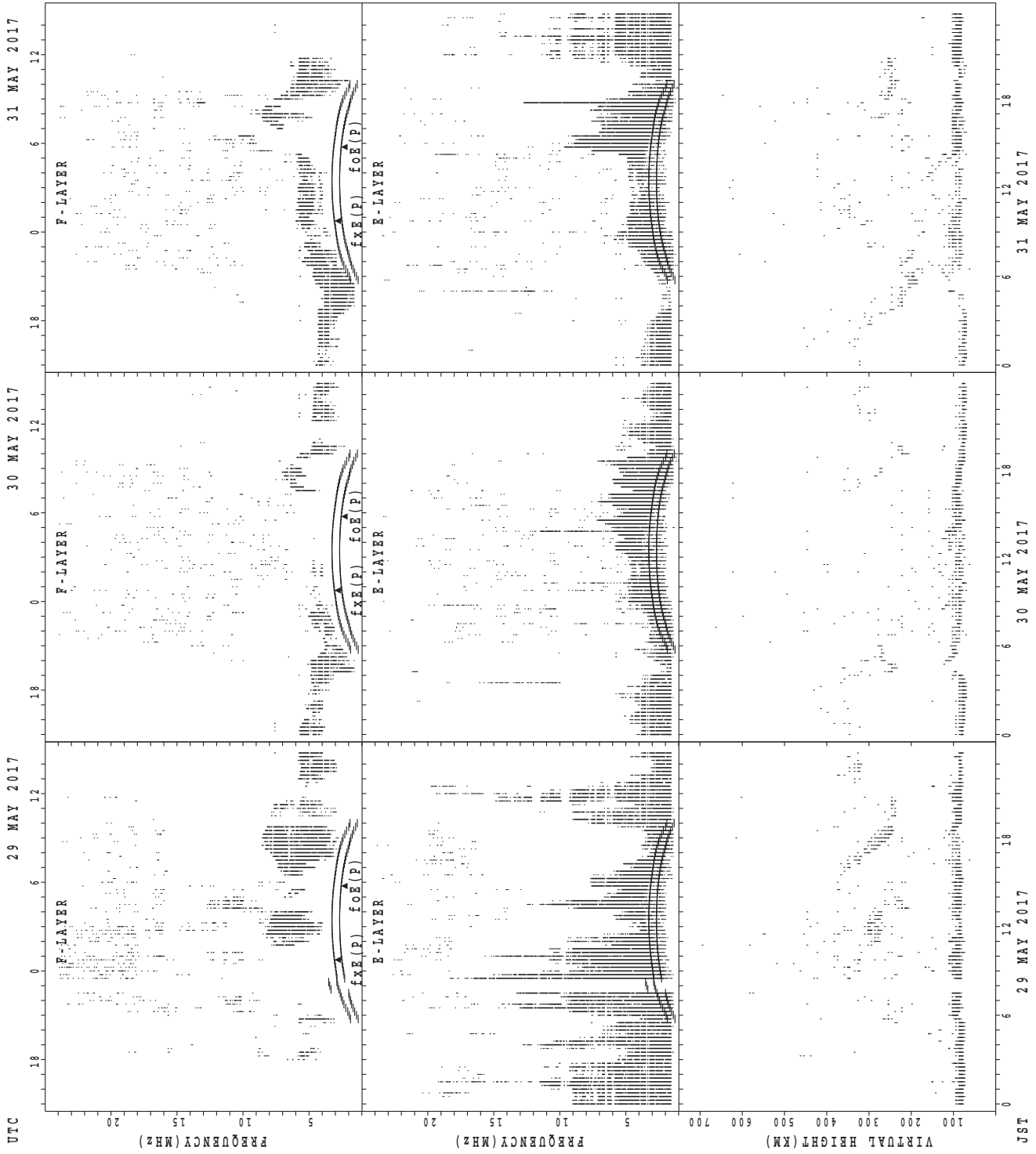
UTC
21 MAY 2017
22 MAY 2017
23 MAY 2017
24 MAY 2017
JST
fXE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



f_{x E}(P); PREDICTED VALUE FOR f_{x E}
f_{o E}(P); PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Okinawa



UTC
JST
fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

MONTHLY MEDIANS OF h'F AND h'Es
MAY 2017 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1				1	2	1									2	7	5	4	3	3	1	
MED		326				282	218	316									231	224	216	273	292	280	218	
U Q		163				141	222	158									272	274	242	303	308	298	109	
L Q		163				141	214	158									190	210	203	249	280	242	109	

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	9	9	6	14	25	29	26	27	24	25	24	25	25	24	22	25	25	23	21	22	23	17	14
MED	88	87	91	99	103	107	105	95	95	96	93	94	95	89	90	100	101	97	95	93	95	97	95	93
U Q	89	90	117	109	117	114	115	121	113	114	103	100	107	112	100	123	113	104	101	98	99	99	104	113
L Q	83	83	84	89	97	102	95	89	89	88	88	88	88	83	87	89	88	94	95	89	91	89	88	87

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	8									12	15	11	13	5	1	3	1
MED							344	231									276	266	236	220	266	218	226	198
U Q							172	247									290	288	262	274	272	109	254	99
L Q							172	212									263	250	206	201	226	109	196	99

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	26	28	24	18	23	31	29	31	27	28	25	24	25	22	27	28	29	30	31	30	30	31	30
MED	95	91	89	89	96	107	107	101	99	97	98	97	99	97	101	99	105	99	95	97	104	97	97	97
U Q	97	95	95	97	97	115	113	107	103	105	104	106	103	107	105	113	112	106	105	103	107	103	103	101
L Q	86	85	82	85	83	103	99	95	87	87	89	90	90	89	95	93	98	95	89	89	95	89	89	89

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							2	4	4									10	7	4	2	1		
MED							218	256	225									264	200	277	265	226		
U Q							220	306	250									278	258	288	282	113		
L Q							216	226	200									256	198	236	248	113		

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	19	18	15	15	11	10	18	18	18	18	20	19	18	18	18	18	18	19	19	19	19	20	20	20
MED	87	90	89	89	89	102	110	94	89	88	87	95	101	92	101	96	96	95	95	89	95	89	93	89
U Q	89	99	103	99	97	105	113	95	95	89	89	113	119	113	127	107	107	103	97	95	103	98	98	92
L Q	81	89	83	83	85	87	97	89	87	83	81	85	89	83	89	79	87	93	89	87	87	87	89	88

MONTHLY MEDIANS OF h'F AND h'Es
MAY 2017 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								7	4									29	24	17	11	4		1
MED								224	199									272	263	244	228	211		436
U Q								240	234									294	279	262	248	277		218
L Q								212	190									260	247	238	224	190		218

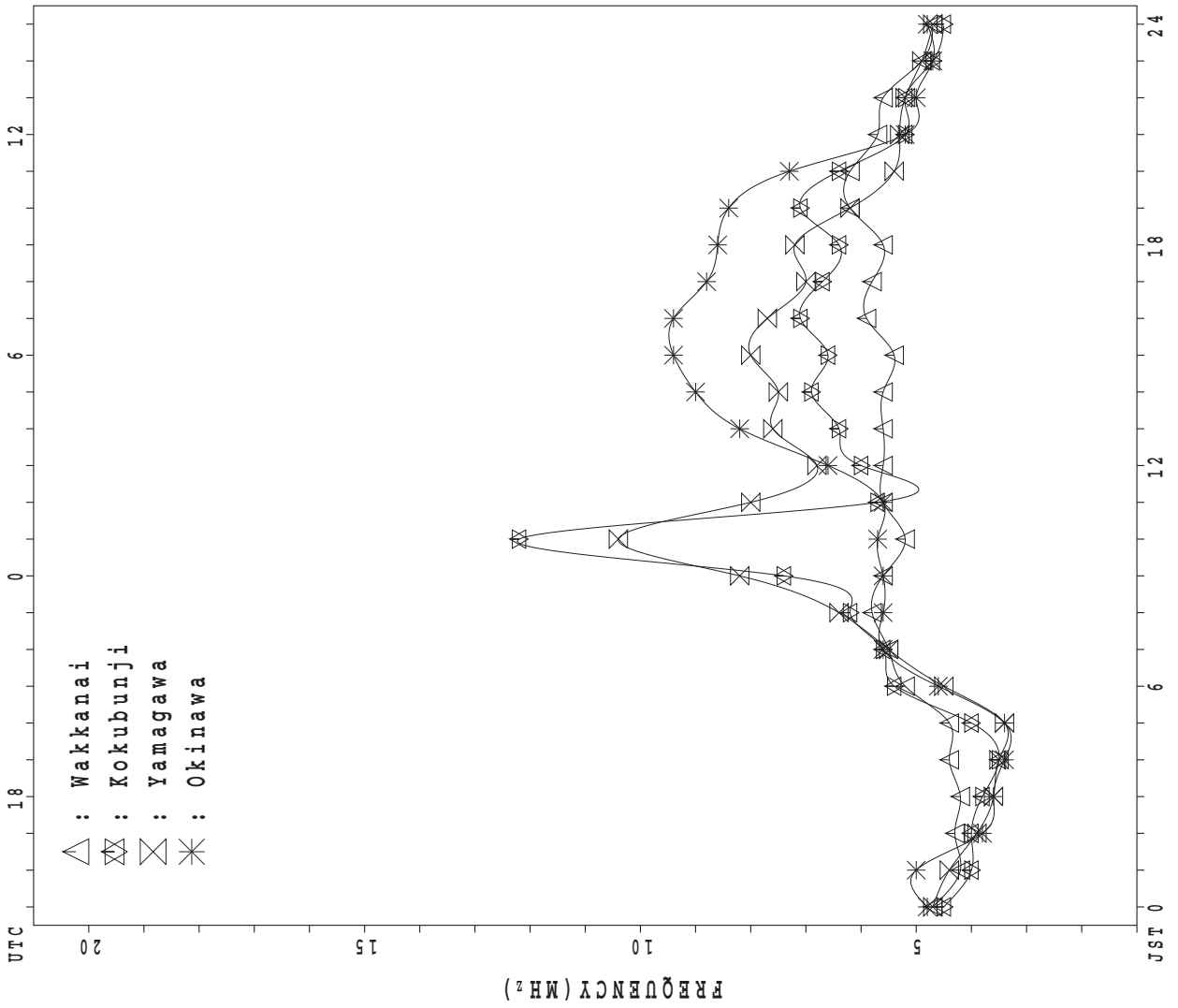
h'Es

	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	26	25	26	20	17	23	27	25	26	24	25	23	24	25	24	25	30	28	26	24	26	27	28
MED	101	101	97	97	97	97	103	107	103	101	100	99	97	102	107	100	101	104	101	94	97	104	99	96
U Q	107	105	104	101	101	100	121	113	106	105	104	107	111	116	118	112	113	111	106	103	104	107	105	102
L Q	95	89	86	95	92	91	97	95	91	95	96	95	95	92	95	94	95	91	92	87	83	89	87	86

MONTHLY MEDIANS PLOT OF fOF2

MAY 2017

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

MAY 2017 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	X 51	X 51	X 49	X 50																	X 65	X 64	X 54	X 48	
2	X 47	X 47	X 45	X 43							C	C	C								X 67	X 61	X 57	X 58	
3	X 56	X 50	X 58	X 52							C										X 69	X 68	X 58	X 57	
4	X 61	X 47	X 59	X 59	59										C		C				X 65	C	C	X 51	
5	X 55	X 47		55															C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C											X 59	X 55	X 47
7	X 45	X 46	X 46																			X 73	X 61	X 53	
8	X 47	X 47	X 47																			X 61	A	X 49	
9	X 47	X 45	X 48																			X 67	X 62	X 57	
10	X 53	X 55	X 55																			X 73	X 58	X 49	
11	X 54	X 58	X 58	71	63																	X 61	X 55	X 49	
12	X 44	X 43	X 41		57																	X 58	X 58	X 53	
13	X 48	X 44	X 39																			X 60	X 61	X 54	
14	X 49	X 47	X 45	X 45																		X 70	X 64	X 59	
15	X 48	X 46	X 43																			X 65	X 59	X 57	
16	X 54	X 47	X 47																			X 58	X 56	X 51	
17	X 50	X 48	X 47																			X 63	X 62	X 51	
18	X 55	X 51	X 47							C	C	C	C	C	C	C	C	C	C			X 56	X 53	X 50	
19	X 47	X 47	X 45	52	90					C	C	C	C	C	C	C	C	C				X 61	X 57	X 56	
20	X 48	X 47	X 47	52																		X 65	X 66	X 58	
21	X 58	X 47	X 42																			X 64	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C									X 62	X 59	X 54	
23		X 54	X 54						58													X 67	X 61	X 58	
24	X 47	X 50	X 58	63	54																	X 67	X 60	X 56	
25	X 51	X 51	X 51	X 46																		X 65	X 65	X 61	
26	X 57	X 53	X 53	58																		X 78	X 78	X 47	
27	X 43	X 41	X 41																			A	X 66	X 60	
28	X 57	X 50	X 48																			X 63	A	A	
29	X 44	X 45	X 47																			A	X 66	X 61	
30	X 40	X 43	X 38																			A	A	A	
31	A	X 43	A																		A	X 67	X 65	X 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	29	27	12	4	1			1												4	26	25	27	
MED	X 49	X 47	X 47	52	58	90			58												X 66	X 64	X 60	X 54	
U Q	X 55	X 50	X 53	58	61																X 68	X 67	X 64	X 58	
L Q	X 47	X 46	X 45	X 48	56																X 65	X 61	X 57	X 50	

MAY 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

MAY 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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						268	L	L	428	428	L	A	A	A	424	404	B								
2								L	412	432	C	C	C	A	L	B	L	L	L						
3						L	348	L			C	L	L	L		428	408		A	A					
4							L	396	416		L	L	A	A	C	404	C								
5						352	392	408	424	436	436		L	A	424	L	408	364		C	C				
6					C	C	C	C	C	C	C	C	L	A	L	L	A	L							
7									408	L	L		L	L	L	L	A	A							
8					L			L	L	A	L	L		L	A	A	A	A	A						
9				B	A	A	L	L	L	L	L	L	L	A	L		408	384		A	L				
10						L	356	396			L	A	A	A	L	L	A	A							
11							L	L	L	L	432	L	L	L	L	L	C	L							
12								A	A	A	A	L	A	A	A	L	A	A	A						
13						324	376	L	408	428	428	L	432	L	L	408	L	A							
14							A	A	A	A	436	L	L	424	L	L	L	356	L						
15							L	A	L	L	L	L	L	440	L	L	L	L	L						
16								A	A		L	L	L	L	L	388	384		L	L					
17					L	L	A	L	A	A	A	L	L	A	L	400	A	376	L						
18						360	364	A	A	C	C	C	C	C	C	C	C	C	C	A	A				
19				L	A		A	A	340	C	C	C	C	C	C	C	C	C	C	A	L				
20						324	A	A	A	A	L	432	L	L	L	L	L	360	L						
21					276	A	A	L	A	388	400	400	A	420	408	400	L	L	L						
22				C	C	C	C	C	C	C	C	C	C	L	L	L	L	L	L	A	A				
23				L		L	A	A	L	420	L	A	A	L	L	L	A	A	A						
24					A	A	A	A	L	A	L	L	444	428	L	L	A	A	340						
25							A	A	A	L	L	440	L	L	L	L	A	A	L						
26					L	L	A	A	A	A	L	456	444	444	444	L	424	412	L	332					
27					L	L	0	A	A	A	L	L	L	L	L	L	L	A	A		A				
28					L	L	198	A	A	L	A	A	L	L	L	L	C	L	4	106					
29				L	L	L	388	A	A	A	A	A	A	A	A	A	A	A	A	A					
30					A	A	A	A	A	A	A	L	A	A	A	L	L	A	A						A
31						A	A	A	A	A	A	A	A	A	L	A	384	A	L						A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					1	4	7	3	7	7	6	4	5	5	4	9	6	5	3						
MED					276	324	356	396	408	424	430	442	432	440	424	404	396	364	332						
U Q					342	376	396	416	428	436	452	442	444	426	416	408	374	340							
L Q					296	348	392	408	420	400	418	430	422	416	400	384	358	106							

MAY 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 f_oE (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

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					B	168	260	256	300	308	324	324		A	A	336	320	B	228	236	A			
2					B	196	228	U R 272	304	312		C	C	C	312	A	B	284	252	176	A			
3					A	204	228	U R 280	304	312		C	332	356	320	320	308	304	224	A	A			
4						192	228	284	308	308	A	308	340	A	C	A	C		232	A	A			
5			U R 260		A	252	236	292	296	312	340	348	348	308	308	344	316		A	C	C			
6					C	C	C	C	C	C	C	C	C	360		312	300	260	A	180	A	B		
7				R 196	B	176	236	296	276	160	316		A	332	328	320	304	276	232	A	A	A		
8					A	184	232	260	292	304	308	356	R 316	336	316	300	268	224	A	A	A			
9				B	A	168	236	288	284	312	324	332	356	A	A	296	284	240	A	A	A			
10				A	A	200	228	288	296	320	320	320	320	A	A	A	A	308	260	A	A			
11				B		184	220	A	A	308	312	304	344	336		A	A	U R 284	252	A	A	A		
12				A	192	196	236	276	U A 288	U A 304	U A 304	328	312	300		A	A	264	236	176	180	A		
13				B	A	180	232	280	296	308	320	320	A	316		A	304	272	224	180	A	A		
14					A	196	236	284	300	316	328	348		316	A	A	A	A	U R 252	288	164	A		
15				B	B	164	236	276	308	308	328	328	344	A	Y	Y		240	236	188	A	A		
16				A	A	180	248	U R 260	U R 288	U R 320	U R 320	A	308	292	328	296	272	244	188	180	U R 216			
17				A	208	184	236	U R 280	300	300	320	320	A	332	A	A	A	A	140	208	196	192		
18				B	B	192	236	280	304		C	C	C	C	C	C	C	C	C	C	A	A		
19				220	A	188	228	260	272		C	C	C	C	C	C	C	C	C	192	A	A		
20				B	A	208	220	280	304	316	A	320	312	320	316	308	300	228	204	212	A			
21				A	A	220	228	256	296	316	324	336	320	336		Y	300	276	244	A	A	A		
22				C	C	C	C	C	C	C	C	C	C	C			U R 252	240	196	A	A			
23				A	A	184	252	284	304	A	320	320	U R 320	A	312	296	280	244	212	A	A			
24				A	220	196	236	284	U A 292	U A 320	320	320	320	324	328	308	276	240	200	A	A			
25					A	200	256	288	296	312	A	312	352	352	328	328	300	248	196	A	A			
26				A	A	208	272	292	324	324	324		A	A	340	340	A	304	256	188	A	A		
27				B	B	208	268	292	312	320	U R 332	324	296	304	320		A	A	A	212	A	A		
28				200	168	212	252	292	304	324	324	324	A	360		A	268	224	240	220	180	A		
29				B	232	184	232	280	296	320	320	320	320	308		A	A	280	232	200	A	A		
30				A	168	196	240	280	280	304	308	308	308	288	A	A	288	240	192	A	A			
31				A	A	232	244	284	304	304	320	320		A	A	A	252	260	216	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	3	6	29	29	28	28	25	22	22	21	20	14	17	22	26	22	6	2			
MED		U R 260	200	200	196	236	280	298	312	320	322	320	318	320	304	278	240	198	180	204				
U Q			220	220	206	246	288	304	318	324	332	346	336	328	310	288	248	212	196					
L Q			R 196	168	184	228	276	292	306	320	320	314	308	316	296	268	232	188	180					

MAY 2017 f_oE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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	E 15	B 15	E 15	B 15	E 16	B 26	33	J 37	A 84	J 36	A 41	J 69	A 61	71	60	J 57	B 42	J 53	A 36	J 21	A 31	J 79	A 108		
2	J 32	A 30	J 26	A 26	E 16	B 20	G 26	35	36	38	C	C	C	166	J 39	B	G 145	J 25	A 25	J 45	A 119	J 88	A 107		
3	J 17	A 28	E 14	B 32	J 29	A 22	31	40	J 43	A 62	C 58	J 43	A 44	60	36	34	J 63	A 75	J 43	A 45	A 86	35	42		
4	J 24	A 22	E 23	B 14	E 15	B 26	32	34	J 53	A 45	J 124	64	78	85	C	J 54	C	59	40	J 21	A 38	C	C	25	
5	E 15	B 24	J 76	A 59	J 18	A 36	36	85	J 37	A 47	42	38	38	52	65	J 88	52	J 38	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	J 65	A 83	76	44	J 65	A 38	J 34	A 23	E 17	B 28	27	E 14	
7	21	E 16	B 16	G	E 16	B 27	33	40	J 63	A 51	J 51	A 59	59	46	41	J 56	A 83	J 98	A 37	27	24	23	E 16	B 16	
8	26	19	J 107	E 15	B 20	J 34	32	59	J 52	A 73	J 51	A 80	40	58	40	J 74	A 57	J 57	A 85	57	J 63	A 54	61	J 28	
9	26	23	26	60	23	40	28	J 39	A 41	54	J 89	A 65	47	63	57	J 95	33	35	37	24	24	24	29	J 24	
10	36	36	J 21	A 23	23	23	29	39	40	57	J 43	A 49	44	64	40	63	53	J 52	A 43	J 40	A 35	27	25	23	
11	23	23	E 14	B 15	J 18	A 23	28	J 38	A 41	45	J 49	A 39	118	41	41	20	J 79	A 34	A 33	A 35	20	38	52	22	
12	22	E 15	B 15	J 41	A 37	28	37	J 52	A 65	54	J 50	A 63	51	45	68	59	J 56	A 85	A 53	24	26	23	23	29	
13	26	22	94	E 14	A 24	25	33	37	40	41	37	J 59	51	41	J 52	35	36	J 41	A 48	39	24	23	23	E 16	
14	21	E 15	B 15	B 21	28	23	62	62	142	42	39	40	40	42	38	36	33	J 40	35	23	J 27	A 24	21	21	
15	E 15	B 22	E 15	B 15	23	J 108	32	J 108	A 47	39	37	J 109	51	51	Y	Y	J 84	A 27	J 27	A 27	25	E 15	B 15	B 15	
16	E 15	B 15	B 15	J 21	A 155	J 47	29	33	39	159	40		34	34	39	39	33	33	27	25	23	26	22	E 15	
17	22	22	22	J 19	A 26	26	J 39	A 36	41	68	J 79	A 58	38	60	45	J 52	52	G 52	A 55	28	28	J 21	E 16	20	
18	24	24	21	E 15	B 15	26	30	J 42	A 62	C	C	C	C	C	C	C	C	C	C	J 52	A 66	25	22	38	
19	25	J 39	42	29	44	54	77	90	65	C	C	C	C	C	C	C	C	C	C	J 202	A 85	J 86	A 84	72	68
20	J 51	A 26	E 15	B 15	25	J 31	A 52	J 66	70	41	J 127	A 52	46	38	G	G	25	40	25	J 32	A 30	25	36	E 15	B 15
21	E 14	B 22	24	26	J 107	A 70	D 69	C 56	J 67	A 72	J 108	A 76	67	40	G 25	J 57	A 36	J 35	A 44	J 39	25	26	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J 88	42	37	37	37	36	70	J 42	A 40	38	45
23	E 15	B 35	23	53	J 44	A 68	J 87	A 67	J 69	49	72	J 99	A 81	47	J 35	60	91	103	32	22	49	49	39		
24	J 50	A 61	22	24	29	51	J 53	A 60	52	J 49	A 87	40	38	40	41	J 106	52	J 51	A 31	A 31	34	31	25	28	
25	23	E 15	22	E 16	J 25	A 31	A 41	47	69	J 87	A 38	40	89	43	42	42	86	78	J 57	A 46	45	34	42	45	
26	J 51	A 30	27	26	26	J 32	A 42	94	101	70	J 58	A 38	42	J 84	A 42	33	37	J 36	A 32	25	25	28	E 16	B 15	
27	E 16	B 16	E 15	B 15	15	28	42	56	48	54	J 42	A 45	42	J 37	A 42	51	96	J 95	A 63	J 120	A 66	A 82	85	E 16	
28	28	19	E 15	B 22	26	J 35	A 32	J 47	A 54	44	60	J 57	64	43	43	G 26	D 26	C 34	J 36	23	30	26	69	73	
29	58	30	J 84	E 15	B 27	J 31	A 37	J 154	A 61	114	J 127	A 200	118	98	84	117	116	83	191	90	75	125	103	49	
30	38	J 29	25	21	J 38	A 56	A 64	J 99	70	J 99	A 86	69	72	101	73	J 55	37	92	92	J 252	A 77	A 74	A 71	95	
31	53	J 50	60	59	J 62	A 70	113	115	100	106	J 108	A 89	84	101	45	J 81	A 108	57	44	69	62	86	73	35	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	29	29	29	29	29	29	29	27	25	25	27	29	27	27	27	29	29	30	30	29	28	29	
MED	24	22	22	21	25	31	36	52	J 54	A 54	J 51	A 59	51	52	42	53	52	J 51	A 43	34	29	31	32	28	
U Q	34	30	31	26	33	46	52	86	J 68	A 72	J 88	A 70	72	84	60	63	79	80	60	52	J 45	A 64	70	45	
L Q	E 19	B 16	B 15	B 15	E 18	26	32	38	41	44	42	J 42	A 42	42	40	36	36	36	J 34	25	24	24	E 22	B 16	

MAY 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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	E 15	B 15	E 15	B 15	E 16	B 17		26	29	32	34	38	45	44	A 71	A 33	G 31	B 39	30	23	16	21	21	E 16	B 16
2	23	21	21	16	E 16	B 19	G 24	32	35	33	C	C	C	A 166	A 36	B	G	29	22	21	41	19	29	29	
3	E 14	B 17	E 14	B 14	E 16	B 19	G 28	36	40	38	C	A 40	A 39	A 37	51	34	32	A 63	A 75	A 30	22	48	20	E 29	A 29
4	20	17	15	E 14	E 15	B 17	G 28	30	30	42	39	E 40	A 78	A 44	C	30	C	30	30	18	21	C	C	E 15	B 15
5	E 15	B 15	E 17	B 15	E 14	B 23	G 28	29	35	39	34	37	36	43	37	35	G 29	29	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	36	45	37	A 36	A 65	26	16	15	17	19	E 16	B 14
7	E 16	B 16	E 16	B 16	G 11	E 24	B 29	31	35	38	36	34	39	35	33	34	34	A 98	A 31	18	E 15	B 15	E 16	B 16	
8	E 15	B 15	E 15	B 15	E 15	B 27	29	34	36	A 73	36	35	37	37	E 41	B 74	A 47	A 36	A 85	A 28	E 60	A 39	A 61	A 15	
9	E 15	B 14	E 15	B 16	E 16	B 33	26	33	35	34	40	37	37	39	34	32	30	33	21	E 15	B 15	E 15	18	20	
10	19	17	19	16	E 15	B 19	G 26	33	40	46	40	45	43	A 64	A 36	33	32	33	37	37	22	17	17	E 15	B 15
11	E 15	B 16	E 14	B 15	E 15	B 20	26	33	38	36	34	35	36	34	34	C	34	28	30	18	E 16	29	18	E 16	B 16
12	E 15	B 15	E 15	B 16	E 22	B 25	29	35	A 65	A 44	36	36	A 51	A 45	A 68	32	43	A 85	A 53	16	G 16	16	16	E 16	B 16
13	18	15	15	14	14	20	30	36	36	38	35	34	34	35	32	32	34	36	32	38	E 16	16	16	E 16	B 16
14	E 16	B 15	E 15	B 14	E 20	B 18	G 62	A 62	A 40	A 40	37	33	37	35	32	32	29	28	26	16	19	E 14	16	E 15	B 15
15	E 15	B 15	E 15	B 15	E 16	B 26	29	32	42	38	35	35	35	35	Y	Y	29	25	23	26	16	E 15	15	E 15	B 15
16	E 15	B 15	E 15	B 15	E 16	B 18	G 28	30	A 39	A 40	36		32	32	G 32	31	30	29	27	17	G 17	17	17	E 17	B 15
17	E 15	B 15	E 15	B 16	E 15	B 24	A 39	32	A 68	A 79	37	36	60	A 34	31	38	30	26	18	G 15	16	E 16	16	E 16	B 16
18	E 16	B 16	E 16	B 15	E 24	B 26	A 32	A 62	C	C	C	C	C	C	C	C	C	C	C	A 41	A 66	16	16	E 16	B 22
19	E 16	B 21	E 27	B 15	A 31	A 77	A 90	31		C	C	C	C	C	C	C	C	C	33	20	17	20	38	16	
20	19	E 16	B 15	E 15	B 22	A 37	35		A 33	A 127	34	35	35	A	G 23	G 31	G 23	G 26	27	E 16	B 18	15	15	E 15	B 15
21	E 14	B 17	E 16	B 16	E 20	A 70	A 36	32	A 67	34	35	35	A	U 37	Y 24	35	34	29	27	19	17	18	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C	37	35	34	34	34	24	42	20	32	27	20	
23	E 15	B 16	E 16	B 30	A 39	A 68	A 87	32	35	36	E 44	A 99	40	39	34	39	43	A 103	A 22	16	19	19	19		
24	16	17	16	16	19	A 51	A 53	A 60	41	37	87	37	34	34	34	34	41	37	30	22	22	22	16	15	
25	E 15	B 15	E 15	B 22	30	31	40	A 69	A 87	35	35	35	G 35	G 34	38	A 86	A 78	36	29	30	21	38	25		
26	20	18	E 15	B 16	E 15	B 28	A 35	A 94	A 101	A 70	39	36	34	36	G 34	32	31	33	28	23	16	21	E 16	B 15	
27	E 16	B 16	E 15	B 15	E 26	B 40	A 46	A 44	44	39	39	35	34	36	38	A 96	A 44	33	A 120	A 52	A 82	14	E 16	B 16	
28	21	E 15	B 15	E 15	B 18	31	30	44	46	41	A	48	37	35	G 32	G	C	30	30	16	G 21	18	A 69	A 73	
29	E 15	B 15	E 15	B 15	E 15	B 27	A 33	A 38	A 61	A 114	A 127	A 200	A 118	A 98	A 84	A 117	A 116	A 83	A 191	28	A 17	A 125	22	E 42	A 42
30	19	17	E 15	B 15	E 38	A 56	A 17	A 99	A 70	A 99	86	36	72	A 101	A 73	32	33	A 92	A 92	17	A 77	A 74	71	E 95	A 95
31	A 53	A 26	A 60	33	16	42	A 113	A 115	A 100	A 106	A 108	89	84	A 101	A 36	A 81	32	A 57	A 41	A 69	62	20	16	E 22	B 22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	29	29	29	29	29	29	27	27	24	25	26	29	27	26	26	29	29	30	30	29	28	29	
MED	E 16	B 16	E 15	B 15	E 16	B 25	29	35	40	40	38	36	37	37	34	34	34	33	30	22	17	19	17	E 16	B 16
U Q	19	17	16	16	20	31	38	53	62	68	60	42	44	52	37	35	41	50	39	29	22	26	24	E 22	A 22
L Q	E 15	B 15	E 15	B 15	E 15	B 20	G 27	32	35	36	36	35	35	35	33	32	31	29	26	18	E 16	16	16	E 15	B 15

MAY 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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

MAY 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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		334	306	317	306	325	315	337	345	327	309	315	319	292	R A	321	326	B	337	331	326	316	328	338	325				
2		301	301	321	323	308	351	349	321	341	321		C	C	C	A	312	B	327	330	327	317	332	317	340	309			
3		294	321	269	270	310	359	331	333	347	321		C	336	313	314	314	323	344		A	A	319	341	332	343	291		
4		F 288	F 312	F 310	F 308	F 287	F 328	F 337	F 330	F 359	F 353	F 303	F 307		A	C	334	C	345	328	321	328		C	C	331			
5		307	323	303	301	327	352	360	344	363	352	330	319	313	325	328	327	343	336		C	C	C	C	C	C			
6		C	C	C	C	C	C	C	C	C	C	C	C	C	308	318	325	312	A	324	318	334	354	335	322	343			
7		313	317	317	294	365	363	360	337	341	324	317	297	326	317	329	324	330		A	323	311	325	334	357	341			
8		325	326	326	327	319	282	344	338	292		A	294	283	274	293	260	A	303	310		A	324	343	348	336			
9		311	317	331	308	328	310	338	351	362	360	230	298	307	332	326	307	341	340	333	316	325	342	342	342				
10		314	321	324	318	334	329	339	335	318	362	323	336	338		A	295	328	328	334	317	320	315	349	339	337			
11		306	298	298	267	319	363	343	327	336	352	319	312	318	313	322		C	330	318	320	322	335	330	339	349			
12		323	329	327	331	341	377	387	299		A	340	286	310		A	A	A	300	327		A	A	323	320	320	335		
13		335	332	342	326	354	314	336	290	337	348	333	283	289	296	269	320	330	316	327	328	324	322	320	327				
14		323	329	321	318	348	346			A	310	373	306	319	333	328	309	292	323	310	333	316	317	331	342	356			
15		323	325	308	308	319	375	360	331	306	302	322	343	332	299	327	285	270	332	323	306	318	339	311	321				
16		331	315	289	299	312	357	345	390		A	271		R	264	260	238	R	275	309	323	320	326	305	320	313			
17		319	321	332	383	349	269		A	285	323		A	A	A	290	A	283	258	297	318	312	310	325	311	319	321		
18		318	321	334	323	322	319	287	321		A	C	C	C	C	C	C	C	C	C	C	C	R	A	326	310	311		
19		291	276	311	270		333		A	A		404		C	C	C	C	C	C	C	C	198	308	315	320	297	273		
20		320	333	306	291	297	295	344	279	219	311		A	266	261	306	243	320	313	336	318	311	300	340	315	324			
21		312	317	300	302	293		A	A	A		A	277	264		R	276	295	266	283	298	310	311	335		C			
22		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
23			297	297	283	365	299		A	A	F	321	223	292	268		A	309	270	291	298	233		323	331	315	314	319	
24		318	292	273	304	309		A	A	A		A	331	246		A	284	272	290	314	284	312	338	312	307	315	338	325	315
25		312	309	313	322	314	352	344	330		A	A	A	303	257	289	310	324	310		A	A	331	325	322	327	314	301	
26		297	305	293	273	346	354	339		A	A	A	341	327	322	294	302	287	317	309	305	306	304	321	350	334			
27		R 333	323	323	331	330	320	292	322	332	359	331	291	318	323	332	309		A	321	327		A	J 201	R A	333	336		
28		363	321	323	307	307	284	327	320	360	282	267	290	266	289	286	312		C	339	309	279	284	262		A			
29		316	285	309	293	280	283	294	294		A	A	A	A	A	A	A	A	A	A	A	A	A	R	A	303	319		
30		328	306	291	275		A	A	A	A	A	A	A	A	A	A	R	232	243		A	A	306		A	A			
31		A	301		295	310	312		A	A	A	A	A	A	A	A	A	238	292		A	208		A	A	320	307	332	
		00	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	29	28	29	27	26	22	21	20	20	17	21	21	20	25	24	22	22	23	28	26	26	25	27				
MED		318	317	312	306	319	328	339	330	334	322	315	298	307	310	309	308	316	324	320	316	320	328	320	325				
U Q		325	323	324	322	341	354	345	338	353	352	326	319	320	318	324	322	330	336	328	323	328	335	340	336				
L Q		307	303	299	292	309	310	331	310	320	306	293	283	273	294	270	289	298	314	312	308	315	320	313	313				

MAY 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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						376	L	L	362	394	L	A	A	A	386	379	B							
2								L	376	357	C	C	C	A	L	B	L	L	L					
3						L	413	L			C	L	L	L		360	374	A	A					
4						L	371	389			L	L	A	A	C	386	C							
5						396	389	372	357	376	407	L	A	399	L	359	368	C	C					
6					C	C	C	C	C	C	C	C	L	A	L	L	A	L						
7									404	L	L	395	L	L	L	L	A	A						
8					L		L	L	A	L	L	386	L	A	A	A	A	A						
9				B	A	A	L	L	L	L	L	L	L	A	L	405	368	A	L					
10					L	394	351				L	A	A	A	L	L	A	A						
11						L	L	L	L	396	L	L	L	L	L	C	L	363						
12							A	A	A	A	L	A	A	A	A	L	A	A	A					
13					355	365	L	384	396	409	L	413	L	L	L	364	L	A						
14						A	A	A	A	429	L	L	418	L	L	L	L	385	L					
15						L	A	L	L	L	L	L	396	L	L	L	L	L	L					
16							A	A	412		L	L	L	L	L	388	382	L	L					
17				L	L	A	L	A	A	A	L	L	A	L	378	A	357	L						
18					336	371	A	A	C	C	C	C	C	C	C	C	C	C	C	A	A			
19			L	A		A	A	442	C	C	C	C	C	C	C	C	C	C	A	L				
20					345	A	A	A	403	A	L	378	L	L	L	L	L	370	L					
21				273	A	A	L	A	429	416	415	A	389	404	369	L	L	L						
22			C	C	C	C	C	C	C	C	C	C	L	L	L	L	L	L	L	A	A			
23			L		L	A	A	L	426	L	A	A	L	L	L	L	A	A	A					
24					A	A	A	A	L	A	L	L	380	394	L	A	A	369	L					
25						A	A	A	L	L	391	L	L	L	L	A	A	L						
26					L	L	A	A	A	A	L	382	393	406	L	388	340	L	353					
27					L	L	A	A	A	A	L	L	L	L	L	L	A	A	A					
28					L	L	379	A	A	L	A	A	L	L	L	L	C	L	A					
29			L	L	L	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
30					A	A	A	A	A	A	A	L	A	A	A	L	L	A	A					A
31						A	A	A	A	A	A	A	A	A	L	A	A	L	A					A
																386								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	4	6	3	7	7	6	4	5	5	4	9	6	5	2					
MED					273	350	386	371	384	396	410	401	391	396	396	379	371	368	361					
U Q					366	396	389	404	426	416	411	403	412	402	388	382	378							
L Q					340	371	351	372	357	396	388	382	384	390	366	359	360							

MAY 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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						258	266	264	306	364	346	324	E A 354	A	310	310		B							
2								276	286	312		C	C	C	A	348		270	290	272					
3						266	256	300				C	288	330	316		298	268							
4							286	286	254		352	350		A	322		C	300							
5							238	242	260	274	300	326	334	304	304	304	304	292	272						
6					C	C	C	C	C	C	C	C	C	344	330	312	328		A	282					
7									282	310	320	366	296	306	316	318	284		A						
8						370		298	364		A	356	510	430	390	454		A	360	304					
9				Q	244	226	320	286	264	248	270	502	380	314	250	304	320	268	256	270					
10						254	264	296				314	294	276		A	370	332	278	280					
11							234	260	280	282	312	356	322	330	306			C	300	278					
12								E A 360		A	E A 296	352	364		A	A	A	336	288						
13						320	288	394	290	290	322	396	400	410	418	320	290	296							
14							A	A		372	266	360	328	290	316	366	372	314	288	266					
15								E A 328	A	362	370	340	274	300	348	350	382	318	280	288					
16									A	A		320		332	328	336	408	338	318	286					
17					250	422		A	370	334		A	A		A										
18						318	410	320			A	C	C	C	C	C	C	C	C	C					A
19					298			A	A			C	C	C	C	C	C	C	C						
20								E A 366	A	284	346		A	336		466	436	346	514	312	304	268	286		
21						360		A E A 318	A	342		A	316	314	424	462	370	414	376	422	366	324			
22					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
23					290		368		A	A			E A 460	A	350	444	392	362	E A 492	A					
24							A	A	A				A	408	448	396	352	414	316	280	284				
25								298				A	A		400	470	396	360	338	348					
26						258	250	272				A	A		296	330	334	396	376	426	324	308	296		
27						254	304	400	E A 314	266	270	320	402	346	318	308	336		A	298					
28						284	374	286	278	258	400	448	326	402	318	324	280		C	256	280				
29						306	372	362	302	390															
30							A	A	A	A	A	A	A	A	A	A	A	A	A	A					
31								A	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					4	7	14	15	20	17	16	19	22	21	21	24	24	22	20	15	3	1			
MED					294	258	320	285	295	281	311	331	356	339	330	351	336	315	287	286	U 416	272			
U Q					302	360	368	302	344	325	354	360	408	413	380	401	390	360	307	310	E A 664				
L Q					267	250	266	264	277	259	278	314	326	318	317	314	315	288	279	280	286				

MAY 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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	234	262	262	260	258	196	222	202	198	198	214	A	A	A	200	200	B	258	234	226	236	240	224	262		
2	268	294	258	258	262	224	226	212	198	222	C	C	C	A	192	B	196	212	242	254	252	244	252	252		
3	252	260	262	280	280	204	204	226	262	342	A	C	A	216	216	208	328	210	224	A	A	244	220	254	232	264
4	260	270	260	240	240	228	228	216	194	248	190	A	A	A	C	202	C	228	234	240	230	C	C	224		
5	226	242	264	264	234	224	194	180	200	A	198	200	180	A	204	192	202	216	A	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	A	186	208	214	A	A	236	234	242	230	240	224	218
7	250	264	264	254	220	232	238	200	200	216	194	194	220	202	196	196	A	A	A	A	244	248	250	222	208	214
8	224	250	268	234	284	240	214	254	238	A	198	206	210	338	A	A	A	A	A	A	240	260	234	A	226	
9	238	268	260	B	A	A	198	212	236	198	192	236	208	A	192	198	222	A	A	222	272	244	238	234	214	
10	256	256	240	270	268	202	206	216	286	272	230	A	A	A	196	224	A	A	A	268	268	258	218	208	232	
11	236	270	250	244	200	206	206	206	A	194	190	178	196	196	196	C	252	202	254	236	216	250	214	248		
12	252	238	246	222	232	194	214	A	A	A	A	A	A	A	A	206	A	A	A	242	250	250	234	226		
13	220	232	244	254	240	240	220	232	220	216	186	190	190	196	190	216	238	A	A	262	258	240	240	232	218	
14	248	240	240	244	246	222	A	A	A	A	182	182	188	194	200	206	200	200	238	248	256	232	222	222		
15	240	248	248	216	228	232	202	224	A	A	204	192	202	202	188	192	192	192	208	214	270	258	214	230	220	
16	226	242	278	246	272	204	204	218	A	A	194	194	194	206	194	202	228	228	240	244	254	244	234			
17	260	258	236	212	204	222	A	202	A	A	A	192	200	A	198	210	A	210	234	256	246	252	244	262		
18	262	244	244	238	220	204	194	A	A	C	C	C	C	C	C	C	C	C	C	A	A	244	250	274		
19	252	266	282	254	246	A	A	174	A	C	C	C	C	C	C	C	C	C	A	236	250	228	294	338		
20	250	250	268	278	254	232	A	A	A	192	A	192	208	200	192	196	224	198	228	268	264	218	258	222		
21	238	246	282	292	294	E A	A	A	A	A	168	178	202	A	226	200	226	222	208	228	248	252	242	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C	208	208	198	218	206	216	A	A	268	270	232		
23	250	286	232	234	234	A	A	A	192	182	202	A	A	E A	278	198	198	A	A	A	244	244	234	234	234	
24	256	274	258	260	286	A	A	A	A	196	A	204	198	198	198	198	A	A	E A	240	266	246	246	238	246	
25	258	248	270	242	266	252	230	A	A	A	180	194	202	196	196	228	A	A	A	256	260	248	284	260		
26	236	252	254	244	220	212	A	A	A	A	216	184	186	186	192	194	234	244	272	E A	284	256	250	200	196	
27	230	228	232	248	212	212	A	A	A	A	208	206	180	196	196	196	A	A	A	236	624	A	220	236		
28	220	220	250	266	228	A	208	A	A	208	A	A	194	202	210	210	C E	A	A	274	272	276	A	A		
29	248	282	244	248	288	E A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	272	268	A	A	270	264
30	238	282	274	334	A	A	A	A	A	A	A	A	A	A	A	190	232	A	A	A	270	A	A	A	A	
31	A	296	A	346	256	342	A	A	A	A	A	A	A	A	184	A	198	A	A	318	A	A	250	260	246	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	27	29	28	28	26	24	17	15	12	15	17	17	18	17	24	24	15	15	20	26	26	26	25	27		
MED	248	252	259	251	242	224	208	212	200	204	194	194	197	197	197	199	222	211	234	251	250	243	234	234		
U Q	256	269	268	265	268	237	224	224	237	222	205	205	208	208	202	210	232	236	249	268	258	250	255	260		
L Q	234	243	245	241	228	205	203	202	196	194	188	187	188	195	192	196	200	206	228	242	244	234	223	222		

MAY 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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					B	108	106	106	106	106	106	98	A	A	114	114	B	102	128	A				
2					B	120	120	108	108	108	C	C	C	102	A	B	102	116	116	A				
3					A	124	124	108	108	106	C	106	96	104	96	102	104	112	A	A				
4						130	116	116	116	104	A	100	100	A	C	A	C	100	A	A				
5			90		A	116	108	108	108	108	108	94	102	102	102	116	116	A	C	C				
6					C	C	C	C	C	C	C	C	104	A	104	108	108	A	108	A	B			
7				82	B	112	112	108	108	108	108	A	108	108	108	108	108	108	A	A	A			
8				B	A	124	100	104	104	104	104	108	108	100	106	106	110	110	A	A	A			
9				B	A	102	106	106	106	106	104	106	106	A	A	106	106	102	A	A	A			
10				A	A	120	116	116	100	100	100	100	100	A	A	A	A	102	102	A	A			
11				B		124	110	A	A	100	100	100	100	100	A	A	100	100	A	A	A			
12				A	100	112	108	108	108	104	104	98	92	92	A	A	106	108	108	106	A			
13				B	A	106	104	104	104	102	102	102	A	96	A	100	100	100	100	A	A			
14				A	100	100	100	102	102	102	102	102	102	A	A	A	A	102	118	88	A			
15				B	B	116	112	106	106	106	104	98	110	A	88	92	92	104	104	A	A			
16				A	A	100	92	108	108	A	92	96	96	96	96	96	98	102	102	104	98			
17				A	134	114	100	98	104	104	98	A	104	A	A	A	A	A	104	110	120			
18				B	B	120	112	100	104	C	C	C	C	C	C	C	C	C	C	A	A			
19				104	A	102	102	102	104	C	C	C	C	C	C	C	C	C	112	A	A			
20				B	A	112	98	102	102	102	A	102	86	106	106	106	110	110	118	118	A			
21				A	A	118	110	104	104	104	106	106	106	104	Y	108	108	104	A	A	A			
22				C	C	C	C	C	C	C	C	C	C	104	104	106	106	106	106	A	A			
23				A	A	106	106	106	106	A	106	106	98	A	108	108	108	108	108	A	A			
24				A	116	108	108	108	96	96	96	96	96	96	96	96	96	96	96	A	A			
25					A	110	110	102	102	102	A	102	102	102	102	102	102	110	110	A	A			
26				A	A	112	110	110	108	108	96	A	A	98	114	A	108	108	108	A	A			
27				B	B	114	114	102	102	102	102	98	98	98	98	A	A	A	A	A	A			
28				102	120	116	106	106	100	100	100	100	A	100	A	100	100	108	108	122	A			
29				B	126	114	100	106	106	106	106	106	106	96	A	A	96	104	104	A	A			
30				A	104	104	104	104	104	96	96	96	96	96	A	A	98	106	102	A	A			
31				A	A	104	104	104	104	104	104	94	A	A	A	94	A	94	112	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	3	6	29	29	28	28	25	22	22	21	20	15	18	22	25	22	6	2			
MED			90	102	118	112	108	106	104	104	103	100	100	100	104	106	105	104	108	108	109			
U Q				104	126	119	112	108	108	106	106	106	106	103	108	108	108	108	112	118				
L Q				82	104	106	103	103	103	102	100	98	96	96	96	100	100	102	102	104				

MAY 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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	B	B	B	B	B	94	134	118	118	116	106	98	100	94	96	96	B	118	112	108	106	106	106	112	
2	100	94	94	98	B	122	120	118	118	116	C	C	C	100	100	B	G	146	116	116	102	108	108	108	
3	104	100	B	100	100	126	118	120	112	106	C	106	106	104	96	142	116	104	102	110	110	98	98	98	
4	90	84	88	B	B	120	120	110	110	98	106	98	92	92	C	92	C	102	106	106	106	C	C	100	
5	B	96	96	100	100	96	120	96	104	104	92	158	158	90	96	106	98	92	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	86	100	104	140	114	96	116	112	B	100	100	B
7	94	B	B	G	B	114	116	110	98	106	102	108	102	96	104	120	92	108	108	106	98	98	B	B	
8	98	136	106	B	94	110	120	110	112	96	102	112	112	116	124	108	114	104	104	104	104	104	104	104	92
9	92	92	92	100	100	100	110	110	110	110	98	106	106	96	96	88	134	110	90	100	84	98	98	96	
10	92	88	88	88	94	130	122	104	104	96	96	96	96	96	96	82	86	110	100	86	86	86	96	96	
11	94	94	B	B	90	110	110	104	96	98	90	92	84	94	94	C	104	112	102	122	108	98	116	98	
12	94	B	B	94	106	112	106	96	100	100	100	96	96	96	96	96	110	102	102	106	100	100	100	100	
13	92	92	98	B	124	112	112	100	100	94	98	86	86	184	92	126	114	104	106	106	102	102	94	B	
14	96	B	B	96	90	110	110	110	110	106	98	98	98	98	98	102	90	106	110	84	106	106	104	94	
15	B	92	B	B	132	114	112	90	102	100	100	100	100	100	Y	Y	92	136	104	96	96	B	B	B	
16	B	B	B	88	110	120	98	106	106	116	102		92	92	84	84	108	108	108	112	86	104	104	B	
17	96	86	88	126	130	120	104	104	106	90	96	88	152	86	86	88	88	88	98	104	104	104		94	
18	98	98	100	B	B	214	114	106	100	C	C	C	C	C	C	C	C	C	C	100	100	96	96	96	
19	92	92	92	92	106	106	100	92	100	Q	C	C	C	C	C	C	C	C	C	102	106	110	100	100	92
20	92	92	B	B	124	114	108	100	94	104	94	100	94	94	G	94	108	116	124	102	102	98	C	C	
21	B	118	112	112	112		98	112	102	102	120	120	106	100	96	90	110	110	104	102	102	102			
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	104	104	94	94	
23		B	94	94	108	108	108	104	104	104	100	100	100	90	104	116	100	100	100	100	100	100	100	90	
24	94	94	94	86	112	98	98	98	98	104	98	98	98	108	108	88	100	100	100	100	92	92	92	92	
25	92	B	120	B	112	110	110	100	98	106	94	94	94	100	100	108	94	94	102	102	94	94	96	96	
26	94	94	102	102	118	104	104	104	94	94	98	96	96	120	94	94	106	106	106	102	96	96	B	B	
27	B	B	B	B	B	118	104	102	102	102	92	96	96	96	96	92	92	96	102	106	112	112	122	B	
28	90	90	B	96	94	118	118	106	100	100	90	90	90	90	104	G	94	124	116	136	110	110	106	92	
29	92	92	92	B	120	112	102	114	108	108	98	104	98	96	94	94	100	104	92	110	110	110	110	104	
30	104	104	106	128	108	108	96	96	96	96	96	100	100	104	96	98	122	100	100	114	106	104	104	96	
31	92	92	92	92	92	102	106	106	106	98	98	100	86	86	96	88	98	104	104	104	96	102	102	96	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	22	21	18	17	23	28	29	29	29	27	25	25	27	29	26	25	26	29	29	30	29	28	23	21	
MED	94	92	94	96	108	112	110	104	102	102	98	98	98	96	96	96	101	104	104	105	102	101	100	96	
U Q	96	97	102	101	118	119	118	110	109	106	101	105	102	101	104	112	110	110	108	110	106	104	106	99	
L Q	92	92	92	92	94	107	104	100	99	98	95	96	92	93	96	89	94	100	101	102	96	98	96	93	

MAY 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2017 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

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						F1	H1	C1	C1	C1	L2	L3	L2	L3	LC21	L1		C3	L3	L4	F1	F3	F3	F2
2	F4	F2	F2	F1		CL21	CL11	C1	C1	C1				L8	L2			H1	C2	L3	F5	F3	F3	F3
3	F1	F2		F2	L2	C2	C2	C4	C4	C3		C2	C2	C2	C3	H1	C1	C6	LL41	L4	F3	F4	F4	F3
4	F3	F2	F3			C2	C2	C2	C1	C2	L2	C2	C3	L3		L2		C4	L3	L2	F3			F1
5		F1	F1	F1	L1	C2	CL11	C1	C1	C2	L1	C1	H1	C2	C2	L2	L2	LL22						
6													LL11	LQ22	C2	C1	C5	L3	C3	L4		F3	F2	
7	F1					C2	C2	C1	C2	C2	C2	C1	C2	C2	L1	C2	C3	C5	L4	L2	L1	F1		
8	F1	F1	F1		L1	L3	C2	C4	C2	C4	C1	CL11	C1	C3	C2	C3	C4	C3	L4	L4	L8	F5	F4	F3
9	F2	F1	F1	L1	L1	C2	C2	C2	C3	C1	C2	C2	C2	C2	C2	C1	H1	CL31	LL31	L1	L2	F1	F2	F2
10	F5	F5	F3	L3	L1	C1	C1	C2	C3	C3	C2	C4	C3	C3	L1	L5	L5	CL13	C2	L3	L4	F3	F3	F1
11	F1	F1			L1	C2	C2	L2	L2	C3	C1	C2	C2	L1	L1	C1	C3	C1	L1	L1	L1	F3	F3	F1
12	F1			L3	C2	C2	C2	C3	CQ31	CQ21	C2	C2	C2	C2	L4	L1	C4	CQ61	C3	C2	L3	F1	F2	F2
13	F2	F2	F1		L1	C2	C2	C2	C2	C2	C2	C1	C1	C1	C1	C2	C2	C4	C4	C4	L1	F1	F1	
14	F1			F1	L3	C2	L5	C5	C2	C2	C3	L1	L1	L1	L1	L1	L2	C1	C2	LC11	L4	F1	F1	F1
15		F1			C1	LC11	C2	LC12	C3	C2	C2	C1	C1	L1			L1	H1	C2	L4	L2			
16				L1	C1	C2	C1	C2	C2	C3	C2		C2	C1	L2	L1	C1	CL11	CL21	CL21	L1	F2	F1	
17	F1	F2	F2	L1	C1	C3	C3	C2	C3	C4	C2	L1	HL11	L4	L2	L2	L3	L5	C3	C1	C2	F2		F1
18	F1	F1	F1			C1	C2	C3	C2											L5	L8	F3	F1	F3
19	F2	F3	F3	L1	L5	C5	C4	CQ63	CLQ12										CQ43	L4	LL21	F3	F3	F3
20	F3	F1			L1	C2	C2	C3	C3	C1	LQ21	C1	C2	LC11		LC11	C1	C1	C2	C3	L1	F3		
21		F2	F2	L2	L3	CL32	C3	C2	C3	C1	C2	C1	C2	C2	L1	LC12	C3	C2	L3	L4	L2	F2		
22														L1	C1	C2	C2	C3	C4	L6	L4	L4	L4	F3
23			F2	L1	L3	L3	C3	C4	CQ11	L2	C2	C2	CL23	LQ21	C2	C1	C2	CQ52	CQ52	L3	L1	F8	F6	F4
24	F5	F2	F1	L1	C3	C7	C6	C3	C3	C2	C4	C2	C2	C1	C1	C21	C3	C3	C2	C3	L2	F2	F2	F2
25	F1		F1		L2	C2	C2	C3	C4	LC24	L1	L1	LC11	C2	C1	C2	CQ52	CQ41	C7	L4	L4	F4	F3	F3
26	F3	F2	FF11	L1	L1	C3	C3	CQ41	LCQ13	C5	C2	L1	L1	LC11	C1	L1	C1	C2	C2	L3	L2	F2		
27						C2	C3	C3	C4	C2	C2	C2	C2	C2	L1	L2	LQ62	LL15	C5	C6	C5	C8	LL11	
28	F2	F1		C1	C2	C2	C1	C4	C3	C3	C3	C2	LL11	L1	L1		L1	C1	C2	C1	L4	F2	F7	F5
29	F3	F2	F1		C2	C2	C3	C3	CQ32	CQ32	CQ32	CQ43	CQ53	CQ43	LQ53	LQ32	CQ52	CQ62	CQ53	LL31	L3	F3	F3	F5
30	F3	F3	FF11	L2	C3	C5	CQ42	CQ52	CQ42	CQ42	CQ21	C1	C3	C2	CQ22	CQ11	C1	CQ52	CQ73	LLQ32	L6	F3	F3	F3
31	F4	F3	F3	LL21	LQ21	CL43	C4	CQ42	CQ72	CQ82	CQ42	CQ33	LQ52	LQ42	L2	CL22	CL22	C4	C7	C7	L5	F3	F2	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 f_{XI} (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

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	X 52	X 50	X 48	X 46	X 45															X 85	X 73	X 58	X 54	X 53
2	X 48	X 47	X 43	X 45	X 40															X 75	A	X 55	X 48	X 50
3	A	51	52	50	42															X 81	81	68	A	A
4	A	A	A	X 40	X 40															X 69	X 71	X 62	A	62
5	58	56	52	50	42															X 76	X 77	X 70	65	64
6	64	X 49	54	47	A															X 72	X 68	X 55	X 49	50
7	51	46	X 42	X 39	X 33															X 73	X 85	X 68	A	X 54
8	52	50	47	50	42															X 82	X 70	A	A	A
9	47	50	40	46	42															X 68	X 72	X 56	X 52	X 51
10	X 50	X 46	X 46	X 43	X 42															X 82	X 72	X 63	A	52
11	50	51	49	44	44															X 81	X 70	X 57	X 54	X 48
12	X 46	X 44	X 40	X 38	X 36															X 57	X 59	X 58	X 58	X 55
13	X 44	X 40	X 40	X 38	42															A	X 66	X 68	56	A
14	X 47	52	42	A	X 37													A		A	A	X 71	X 66	60
15	X 48	50	51	A	43															A	X 70	X 68	58	X 54
16	X 49	X 47	X 44	X 39	X 39															X 60	X 59	X 53	X 52	X 53
17	X 51	X 54	X 41	X 41	X 40															X 69	X 67	X 63	61	61
18	59	60	59	43	31															X 76	X 70	A	A	A
19	A	A	X 40	X 32	37										C	C	C			X 67	X 66	60	55	A
20	X 52	A	A	X 38	X 40															X 78	X 77	X 67	X 48	X 56
21	X 54	X 51	X 48	X 47	X 47															X 74	X 61	X 54	A	X 42
22	A	A	X 42	X 43	X 42															X 68	X 66	A	60	60
23	58	55	X 53	53	53															X 74	X 66	X 64	X 60	X 54
24	X 54	X 50	X 55	X 48	X 39															X 80	X 72	A	X 68	X 51
25	X 48	X 47	X 45	54	42															X 76	A	X 79	62	A
26	A	A	51	43	42															X 76	92	84	58	X 48
27	X 44	X 42	X 39	X 38	X 38															X 75	X 73	X 72	X 66	X 69
28	64	A	A	A	42															X 78	81	79	70	A
29	X 70	X 55	X 50	X 52	60															X 57	X 65	X 66	59	A
30	X 49	A	X 46	X 41	43															X 60	X 47	X 42	X 44	X 47
31	X 42	X 42	X 42	X 37	X 34															X 57	60	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	26	24	28	28	30				1											28	28	26	23	22
MED	X 50	X 50	X 46	X 43	X 42				83											X 74	X 70	X 64	X 58	X 54
U Q	54	52	51	48	42															X 78	X 73	X 68	X 62	X 60
L Q	X 48	X 46	X 42	X 39	X 39															X 68	X 66	X 57	X 52	X 50

MAY 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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	42	40	39	44	55	53	55	A	60	58	58	63	73	80	79	71	71	79	67	52	48	47
2	42	41	37	39	34	45	49	48	52	A	A	70	69	70	67	65	77	78	71	68	A	49	42	F
3	A	F	F	F	36	36	61	62	A	51	51	A	66	75	85	82	77	76	73	75	F	F	A	A
4	A	A	A	34	34	38	51	54	59	52	51	53	57	64	72	77	71	64	57	63	65	56	A	F
5	F	F	F	F	36	47	52	52	49	A	A	A	A	70	A	80	A	A	66	70	71	64	F	F
6	F	43	F	F	A	43	54	53	A	A	A	A	53	62	69	72	75	70	64	66	62	49	43	F
7	F	F	36	33	27	36	A	54	55	50	54	52	57	67	74	77	65	A	A	67	79	F	A	48
8	F	F	F	F	36	44	49	A	A	A	A	A	57	55	52	54	64	66	69	76	64	A	A	A
9	F	F	34	F	F	35	51	52	50	50	45	57	62	61	67	57	54	56	53	62	66	50	46	45
10	44	40	40	37	36	38	55	57	48	A	56	59	65	64	58	57	66	71	A	76	66	56	A	F
11	F	F	F	F	F	37	48	53	54	A	50	55	55	62	73	73	75	78	84	75	64	51	48	42
12	40	38	34	32	30	38	46	51	61	54	50	46	A	A	63	70	71	63	51	51	53	52	52	F
13	38	34	34	32	F	35	43	54	62	58	49	49	46	50	A	A	71	A	A	A	60	F	F	A
14	41	F	36	A	31	40	A	52	A	A	58	A	A	A	A	57	60	A	A	A	A	65	60	F
15	42	F	F	A	F	A	A	A	A	A	58	A	A	55	60	64	55	52	58	A	64	62	52	48
16	43	41	38	33	33	41	37	A	A	A	A	A	A	50	56	60	60	56	52	54	53	47	46	47
17	45	48	35	35	34	42	41	V	50	58	52	49	A	A	50	53	54	61	61	61	63	61	F	F
18	F	F	F	37	25	39	A	A	48	50	A	A	54	58	61	66	74	A	63	70	64	A	A	A
19	A	A	34	26	F	40	41	A	A	A	A	A	A	A	C	C	C	62	A	61	60	F	F	A
20	46	A	A	32	34	41	52	55	A	A	A	57	52	63	70	67	A	A	56	72	71	60	42	50
21	48	45	42	41	41	38	42	A	R	A	A	50	51	52	A	A	53	49	57	68	F	A	A	36
22	A	A	36	36	36	36	49	A	A	A	A	A	48	50	56	54	56	A	57	62	60	A	F	F
23	F	F	46	F	F	52	51	A	A	A	A	54	53	56	64	66	60	66	66	68	60	58	54	48
24	48	44	F	42	33	41	45	53	A	A	A	A	A	56	60	A	64	64	64	74	66	61	45	A
25	42	41	39	F	36	43	56	65	A	A	A	58	64	70	70	63	A	A	A	70	A	71	F	A
26	A	A	F	37	36	44	50	48	A	58	A	A	A	52	55	55	A	A	A	70	F	78	F	42
27	38	36	33	32	31	40	50	65	A	56	A	A	A	A	65	60	A	A	60	69	67	66	60	F
28	F	A	A	A	F	40	A	A	A	A	A	67	72	93	88	102	87	78	66	72	75	72	64	A
29	64	49	44	46	F	66	72	F	A	A	A	A	A	A	A	A	47	46	46	51	59	60	F	A
30	45	A	40	35	F	A	36	A	A	A	A	A	A	A	A	46	49	42	A	54	40	36	38	41
31	35	36	36	30	28	35	A	47	A	A	A	A	A	49	50	56	56	53	A	51	F	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	19	20	21	29	25	20	12	10	12	13	18	25	25	26	26	21	22	28	24	21	15	12
MED	43	41	36	35	34	40	50	53	54	52	51	55	57	61	64	66	64	64	62	68	64	56	48	46
U Q	46	44	40	38	36	44	53	54	58	56	57	58	62	64	71	73	74	71	66	72	66	64	60	48
L Q	40	38	34	32	31	38	44	52	50	50	50	51	53	52	56	57	56	54	57	62	60	50	43	42

MAY 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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								A	A	A				U L	A	A		A						
2								U L	A	A	452	460	460	476	U L	A	392	A	A					
3								A		U L	A	A	A		U L	A	396	A	A					
4								A	A	U L	A	A	U L	U L	U L	A		L	L					
5								A	A	412	444	A	A	452	440	440	A	404	A	A				
6								A	A	A	A	A	A	A	A	A	A	A	A					
7								A	A	A	U L	U L	U L	A	U L	U L	A	A	A					
8								A	A	A	A	A	A	A	A	U L	U L	A	A					
9								L	L	U L	U L	U L	U L	U L	U L	A	U L	L	A					
10								A	L	A	A	A	A	A	A	A	A	A	A					
11								L	A	A	A		U L	A	A	U L	A	U L	A					
12								A	A	A	A		U L	A	A	A	U L	U L	U L	A				
13								A	U L	A		U L	A	U L	A	A	A	A	A					
14								A	A	A	A	A	A	A	A	A	A	A	A					
15							A	A	A	A	A	A	A	A	A	A	416	A	A	A				
16								A	A	A	A	A	A	A	U L	A	U L	A	A					
17								A	408	432	436	A	A	452	432	432	404	376	U L	A				
18								A	A	U L	A	A	U L	A	A	A	A	A	L					
19								U L	A	A	A	A	A	A	A	C	C	C	L	A				
20								A	A	A	A	U L	U L	A	A	A	A	A	U L					
21							U L	A		A	A	A	A		A	A	A	A	A					
22							U L	A	A	A	A	U L	U L		U L	U L	A	A						
23								A	A	A	A	A	A	A	436	412	A	A	A					
24							L	A	A	A	A	A	A	A	A	A	A	U L	A					
25								A	A	A	A	A	A	A	A	A	A	A	A					
26								A	A	A	A	A	A	U L	444	A	A	A	A					
27								A	A	A	A	A	A	A	A	A	A	A	A					
28								A	A	A	A	A	A	444	440	420	404	A						
29							L	A		A	A	A	A	A	U L	A	A	A	A					
30								A	U L	A	A	A	A	A	A	U L	A	A	A					
31								A	U L	A	A	A	A	U L	U L	U L	388	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	4	3	4	7	7	8	9	12	14	12	12	5	1					
MED						U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L
U Q						304	350	428	418	432	436	444	448	440	434	416	402	372	360					
L Q						U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L
						336	392	410	424	432	436	436	434	428	412	392	360							

MAY 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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						B	A	A	A	A	A	U R	A	A	A	A	A	A	A	B				
2						B	224	280		A	A	A	A	A	A	A	A	A	A	B				
3						B	U A	A	A	A	A	A	A	A	A	R	A	A	A	B				
4						B	232			A	A	A	A	A	A	A	A	R	A	A				
5						B	A	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	A	B				
7						B	U A	A	A	A	A	R	A	A	A	A	A	A	A	A				
8						B	220			A	A	A	A	A	U A	A	A	A	A	B				
9						B	U R	R	A	A	A	A	R	A	316		A	A	A	B				
10						B	248			A	A	A	A	A	316		A	A	A	B				
11						B	A	A	A	A	A	A	A	A	U A	A	U A	A	A	A				
12						B	236			A	A	A	A	A	A	A	R	U A	A	B				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
14						U A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
15						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						U A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
17						U A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
18						B	180			A	A	A	R	A	A	A	A	A	A	B				
19						B	U A	A	A	A	A	A	A	A	C	C	C	C	A	B				
20						B	236			A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						A	A	A	A	A	A	A	A	A	R	A	A	A	A					
23						B	A	A	A	A	A	A	A	A	R	A	A	A	A	B				
24						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
27						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
28						A	A	A	A	A	A	A	A	R	A	R	U A	U A	A	A				
29						U A	A	A	A	A	A	A	A	A	R	A	A	A	A	B				
30						B	192			A	A	A	R	A	A	A	A	A	A	B				
31						B	A	A	A	A	A	A	A	R	A	U R	U A	A	A	B				
																320	284							
	00	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	6	1				1			3	1	4	1						
MED						U A	U	234	280			U R			U A	U R	U A	U A	U A					
U Q						U A	U	236							U A		U A							
L Q						U A	U	224							316		U A							

MAY 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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	J	A	J	A	J	A	E	B	J	A		J	A	J	A	J	A		J	A	J	A	J	A	J	A		
2	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
3	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
4	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
5	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
6	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
7	J	A	J	A	J	A	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
8	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
9	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
10	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
11	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
12	J	A	E	B	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
13	J	A	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
14	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
15	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
16	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
17	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
18	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
19	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
20	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
21	J	A	J	A	J	A	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
22	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
23	J	A	J	A	J	A	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
24	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
25	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
26	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
27	J	A	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
28	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
29	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
30	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
31	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	
MED	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
UQ	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
LQ	J	A	J	A	J	A	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A

MAY 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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		28	27	E B	E B	E B	E B	26	37	46	A A	39	G	38	38	45	41	34	36	19	20	41	32	31	20						
2		20	16	E B	E B	E B	E B	17	26	31	A A	A A	40	37	34	38	42	29	43	39	37	A A	31	31	E B						
3		A A	E B	15	20	17	19	18	32	42	A A	36	41	66	43	37	G	34	38	27	20	38	37	30	A A						
4		A A	A A	A A	A A	23	23	16	37	37	31	37	42	45	39	36	34	36	21	29	34	44	19	33	A A						
5		E B	15	19	17	20	14	16	36	30	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	53	112	132	53	20	33					
6		31	22	E B	E B	A A	A A	34	40	45	A A	A A	A A	A A	A A	A A	46	42	48	56	29	40	48	32	38	E B					
7		23	20	20	17	15	18	A A	56	39	39	37	37	G	38	53	36	34	35	A A	A A	A A	E B	15	35	A A					
8		E B	E B	E B	E B	18	19	21	44	58	58	65	77	118	44	42	38	36	32	36	55	43	41	68	A A	A A					
9		E B	15	16	20	16	15	16	G	G	35	34	38	36	G	33	38	39	32	27	30	18	31	20	E B						
10		19	17	20	17	17	18	27	32	39	A A	59	43	41	48	43	42	39	38	37	A A	74	69	50	A A						
11		E B	E B	E B	E B	18	18	17	28	32	48	58	36	38	39	46	41	35	58	29	27	54	30	24	21	22					
12		E B	E B	E B	E B	E B	E B	20	33	38	44	41	36	38	A A	A A	A A	G	52	28	30	27	27	34	30	44					
13		19	15	16	15	15	20	34	31	43	37	36	38	40	38	117	108	A A	A A	A A	A A	40	181	110	74	44					
14		24	31	26	A A	46	23	29	52	44	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	110	37	36	34					
15		34	31	36	A A	60	16	39	80	114	93	73	50	A A	74	58	47	43	34	39	44	38	110	22	17	E B					
16		E B	E B	E B	E B	E B	E B	20	28	50	63	64	56	66	61	46	37	37	32	30	27	21	46	40	28	E B					
17		E B	E B	E B	E B	16	19	19	27	40	34	36	39	A A	65	64	40	36	33	31	29	27	36	18	E B	E B					
18		18	23	18	E B	E B	A A	A A	A A	72	87	36	36	60	44	G	44	44	63	50	A A	90	21	37	36	A A					
19		A A	A A	A A	E B	E B	22	27	49	74	119	142	61	61	110	A A	A A	C	C	C	A A	32	104	19	44	37	A A				
20		21	120	64	19	16	29	31	38	55	66	122	41	40	42	48	38	A A	A A	A A	A A	166	161	22	32	18	27	20	20		
21		E B	16	20	E B	E B	E B	22	27	44	34	94	58	46	44	38	A A	A A	A A	A A	60	68	44	45	40	42	40	39	A A	88	20
22		A A	A A	A A	38	20	18	20	28	61	74	61	63	57	38	38	G	38	39	82	40	30	47	87	33	36					
23		31	32	E B	E B	E B	24	40	55	65	71	81	47	47	49	G	37	38	34	46	50	23	34	23	22						
24		32	22	21	22	20	24	37	41	71	77	84	96	68	50	44	A A	67	46	31	59	65	39	102	38	21					
25		24	E B	20	E B	E B	20	38	51	A A	A A	A A	A A	51	47	62	60	A A	A A	A A	A A	51	215	228	44	145	46	34	66		
26		A A	A A	A A	34	24	22	23	36	39	A A	62	52	109	108	77	37	38	42	A A	A A	A A	58	139	169	51	48	19	E B	E B	
27		20	E B	E B	E B	E B	22	22	47	53	87	45	68	67	88	67	56	42	A A	A A	A A	A A	144	129	44	21	16	30	22	22	
28		38	A A	A A	A A	A A	22	A A	A A	65	77	110	126	113	57	46	G	36	G	32	32	32	31	60	52	56	119				
29		18	32	22	E B	23	G	32	38	90	85	161	169	142	119	A A	A A	52	38	32	33	32	22	31	22	108					
30		28	A A	24	E B	A A	50	29	49	60	102	99	107	99	44	42	36	46	37	A A	65	41	36	24	22	21					
31		21	20	19	E B	E B	A A	32	55	41	72	112	135	214	176	G	38	35	33	43	A A	80	44	27	76	88	146				
		00	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	30	30	30	31	31	31	31	31	31						
MED		21	20	20	E B	16	20	34	41	A A	A A	A A	A A	47	43	42	38	38	37	40	37	37	34	31	22						
U Q		A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A						
L Q		E B	E B	E B	E B	E B	18	28	37	42	41	39	41	39	38	36	35	32	31	27	30	23	27	E B	E B						

MAY 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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

MAY 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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	302	309	304	307	299	347	370	374	347	A	331	342	313	303	321	318	330	315	319	339	345	290	303	305
2	315	300	296	326	304	337	358	316	308	A	A	336	315	321	313	279	314	329	341	323	A	341	315	F
3	A	F	F	F	304	327	344	390	A	307	326	A	308	306	314	326	329	322	330	322	F	F	A	A
4	A	A	A	330	310	332	349	352	365	354	307	265	293	303	305	319	324	336	326	304	322	326	A	F
5	F	F	F	F	331	383	382	384	346	A	A	A	A	310	A	326	A	A	321	313	323	315	F	F
6	F	302	F	F	A	348	388	347	A	A	A	A	295	310	330	298	328	334	331	318	327	349	299	F
7	F	F	256	351	335	362	A	369	370	357	338	302	309	301	307	338	333	A	A	304	351	F	A	294
8	F	F	F	F	310	337	360	A	A	A	A	A	322	292	287	306	314	312	290	322	337	A	A	A
9	F	F	318	F	F	347	361	361	357	322	286	318	314	316	332	332	332	316	316	323	333	309	314	309
10	322	311	318	320	312	341	383	362	350	A	324	301	326	327	310	306	313	327	A	321	338	314	A	F
11	F	F	F	F	F	358	371	367	348	A	287	325	298	295	306	310	305	296	330	330	341	326	312	305
12	301	304	317	328	312	366	343	332	360	352	338	309	A	A	311	320	348	350	339	312	300	308	318	F
13	309	339	303	312	F	336	330	282	354	361	307	326	302	289	A	A	348	A	A	A	316	F	F	A
14	330	F	311	A	316	362	A	355	A	A	352	A	A	A	A	313	307	A	A	A	A	337	345	F
15	315	F	F	A	F	A	A	A	A	A	352	A	A	290	316	333	331	323	306	A	307	333	312	325
16	305	322	302	295	312	398	370	A	A	A	A	A	A	298	305	328	341	352	334	344	318	310	292	286
17	310	320	319	305	319	339	292	318	378	372	331	A	A	294	309	305	324	325	333	327	313	F	F	F
18	F	F	F	404	329	358	A	A	359	308	A	A	288	302	298	301	313	A	312	338	369	A	A	A
19	A	A	308	300	F	347	349	A	A	A	A	A	A	A	C	C	C	330	A	312	307	F	F	A
20	305	A	A	300	304	325	358	334	A	A	A	282	263	301	317	307	A	A	286	323	322	322	291	297
21	298	300	312	289	314	297	315	A	R	A	A	280	290	310	A	A	336	299	318	325	F	A	296	F
22	A	A	309	337	304	353	338	A	A	A	A	A	247	270	308	294	318	A	322	343	318	A	F	F
23	F	F	317	F	F	390	367	A	A	A	A	301	301	301	307	316	306	334	333	329	329	319	306	290
24	292	293	F	314	336	340	327	369	A	A	A	A	295	300	A	330	319	293	336	320	A	318	326	A
25	316	305	307	F	320	350	357	377	A	A	A	A	306	323	311	321	326	A	A	A	329	331	F	A
26	A	A	F	299	310	378	366	380	A	373	A	A	A	A	308	314	336	A	A	A	300	F	F	307
27	308	327	321	316	309	343	326	368	A	368	A	A	A	A	338	321	A	A	298	315	305	320	327	F
28	F	A	A	A	F	301	A	A	A	A	A	261	250	292	273	311	301	328	300	297	283	287	256	A
29	304	307	293	301	F	291	315	F	A	A	A	A	A	A	267	A	292	292	310	288	299	300	F	A
30	306	A	303	287	F	A	241	A	A	A	A	A	A	A	A	252	323	275	A	363	316	302	289	279
31	304	289	341	316	324	351	A	300	A	A	A	A	A	286	289	317	328	314	A	334	F	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	19	20	21	29	25	20	12	10	12	13	18	25	25	26	26	21	22	28	24	21	15	12
MED	306	306	309	313	312	347	357	362	356	356	328	302	302	301	309	316	325	323	320	323	321	319	312	301
U Q	315	320	318	327	322	360	368	372	362	368	338	326	313	310	315	326	331	332	331	332	335	332	318	308
L Q	303	300	303	300	306	336	328	333	348	322	307	281	290	293	302	306	313	313	306	312	310	308	292	292

MAY 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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								A	A	A				U L	A	A		A						
2								U L	A	A	376	374	398	389	U L	A	403		A	A				
3								A		A					U L	A	366		L	L				
4								A	A	U L	A	A	A	357	365	378								
5								A	A	U L	A	A	U L	U L	A	A	360							
6								A	A	A	A	A	A	A	A	A	U L	A	A					
7								A	A	A	U L	U L		A	U L	U L	A	A	A					
8								A	A	A	A	A	A	A	U L	U L	U L	A	A					
9								L	L	U L	U L	U L	U L	U L	U L	A	U L	L	A					
10								A	L	A	A	A	A	A	A	A	A	A	A					
11								L	A	A	A		U L	A	A	U L	A	U L	A					
12								A	A	A	A		U L	A	A	A	U L	U L	U L	A				
13								A	U L	A		U L		A	U L	A	A	A	A					
14								A	A	A	A	A	A	A	A	A	A	A						
15							A	A	A	A	A	A	A	A	A		375	A	A	A				
16								A	A	A	A	A	A	A	U L	A	U L	A	A					
17								A	404	403	433	U L	A	A	U L	U L	U L	U L	A					
18								A	404	426		A	U L	A	A	A	A	A	A	L				
19								U L	A	A	A	A	A	A	A	C	C	C	L	A				
20								A	A	A	A	U L	U L	A	A	A	A	A	U L					
21							U L	A		A	A	A	A		A	A	A	A	A					
22							329	363	A	A	A	A	U L	U L		U L	U L	A	A					
23								364	A	A	A	A	A	A	A	398	386	440	A	A				
24									A	A	A	A	A	A	393	388		A	A					
25								L	A	A	A	A	A	A	A	A	A	A	U L	A				
26								A	A	A	A	A	A	A	U L	A	A	A	A					
27								A	A	A	A	A	A	A	420	390		A	A					
28								A	A	A	A	A	A	A	A	A	A	A	A					
29								L	A		A	A	A	A	366	364	376	353						
30								A	U L	A	A	A	A	A	U L	A	A	A	A					
31								409	A	A	A	A	A	A	A	U L	U L	U L	A	A				
								A	U L	A	A	A	A	U L	U L	U L	U L	U L	A	A				
								372						375	383	368	399							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	3	4	7	7	8	9	12	14	12	12	5	1					
MED						U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L
U Q						329	383	372	402	404	424	410	390	393	391	376	379	375	323					
L Q						U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L
						406	389	404	426	427	420	412	402	404	386	392	382							
						U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L	U L
						364	367	400	402	387	380	370	380	383	368	363	356							

MAY 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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								242	E A 286	A	304	298	326	344	300	284	266	252							
2								342	E A 338	A			286	298	298	320	344	290	252	240					
3							246		A	330	310		326	320	288	266	270	270	258						
4							254	254	244	276	358	E A 430	364	326	310	270	268	262							
5								228	E A 258	A	A	A	A	302		272		A	A	E A 282					
6								E A 262	A	A	A	A	E A 394	328	298	308	278	250	E A 250						
7							A	242	246	282	288	384		E A 350	344	310	276	268		A					
8							E A 268	A	A	A	A	A	322	366	376	344	298	288	E A 324						
9							260	252	282	324	448	338	312	332	290	294	288	286	E A 260						
10							232	250	E A 260	A		328	346	310	296	324	340	288	264	A					
11								254	E A 278	A	410	330	374	350	310	290	E A 302	278	254						
12							278	292	252	282	312	360		A	E A 324	292	266	258	236						
13							E A 320	274	246	262	354	344	E A 360	414		A	260		A	A					
14								A	E A 266	A	A	278		A	A	A	328	302							
15						A	A	A	A	A	E A 274	A	A	E A 374	316	290	294	E A 322	E A 284						
16								A	A	A	A	A	A	E A 394	354	290	264	262	250						
17								318	234	244	326		A	A	398	352	348	300	284	258					
18								A	A	A	A	A	A	400	350	340	E A 400	E A 290	A		264				
19							268		A	A	A	A	A	A	A	C	C	C	274	A					
20							246	280		A	A	A	420	460	346	292	302		A	A					
21						360	352	A		A	A	E A 436	390	352		A	A	E A 286	E A 388	E A 296					
22							286	A	A	A	A	A		552	452	340	360	312		A	E A 286				
23								A	A	A	A	E A 366	E A 386	E A 370	E A 324	298	312	280	254						
24							E A 280	E A 298	242		A	A	A	E A 366	324		A	292	292	E A 362					
25							246			A	A	A	E A 342	306	E A 328	E A 306	284		A	A					
26								250		E A 254	A	A	A	A	374	350	306		A	A					
27							E A 342	234		A	268		A	A	A	E A 288	310		A	A	E A 314				
28								A	A	A	A	E A 418	438	300	326	276	272	246							
29						302	270		A	A	A	A	A	A	A	448		364	374	300					
30							A	550		A	A	A	A	A	A		486	E A 356	450						
31								A		A	A	A	A	A	420	386	324	292	E A 302						
	00	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	16	18	12	10	12	13	18	25	25	26	26	21	19						
MED						302	263	252	252	279	319	345	354	341	324	298	287	271	257						
U Q						E A 360	E A 309	280	283	324	356	E A 419	394	374	345	340	300	297	E A 300						
L Q						280	250	242	246	262	296	334	326	323	305	290	270	260	254						

MAY 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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	E A E B E B E B E B	286 290 296	248 256	226 214	A A	A	218 214 200 204	A A	A	218 214 200 204	A A	A	214	A	A	214	A	238 228	218 278 300 268	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
2	E A E A E B E B E B E B	284 270 276	228 260	228 218 210	A A	A	228 190 198 204	A A	A	228 190 198 204	A A	A	190	A	A	190	A	A	254	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
3	A E B E A E A E A E A	294 264	246 246	252	A	A	204 190	A A	A	190	A A	A	220 208 204	A	A	204	A	226 214	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
4	A A A A E A E A E A	A A	274 292 228	A A	A	A	200 208	A A	A	200 208	A A	A	212 202 202	A A	A	A	210 224 244	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
5	E B E B E B E B E B E B	292 228 240	270 246	208 216	A A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
6	E A E A E A E B E B E B	298 290 258 248	A A	E A E A	A A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	208	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
7	E A E A E A E B E B E B	308 306 332	242 218 214	A A	A	A	204 220 196 224	A A	A	204 220 196 224	A A	A A	210 218	A A	A	218	A A	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
8	E B E B E B E B E B E B	234 258 240	296 268 212	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	208 258 252	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
9	E B E B E B E B E B E B	270 312 312	234 240 222	204 204 204 188 208 182 182 198 222	A A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
10	E A E A E A E B E B E B	242 232 258	260 272 222	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
11	E B E B E B E B E B E B	244 248 274	274 234 218 216 218	A A	A	A	A A A A	A A	A	A A A A	A A	E A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
12	E B E B E B E B E B E B	246 256 256	226 244 212	A A	A	A	192 200	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	216 216 200	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
13	E A E A E A E B E B E B	278 218 270	236 270 236	A A	A	A	218 210 190 200	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
14	E A E A E A E B E B E B	240 312 320	280 240	A A	A	A	198	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
15	E A E A E A E B E B E B	312 318 318	A A	E A E A	A A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	222	A A	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
16	E B E B E B E B E B E B	234 230 252	276 246 218 206	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	214	206	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
17	E B E B E B E B E B E B	252 224 206	268 276 218 212	A A	A	A	208 196 196	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
18	E A E A E A E B E B E B	276 274 210 186 238 222	A A	A	A	A	206 192	A A	A	A A A A	A A	E A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	218 232 214	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
19	A A A A E A E A E B E B	A A	280 310 238 222 206	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
20	E A E A E A E B E B E B	294	306 266 258	A A	A	A	A A A A	A A	A	A A A A	A A	E A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
21	E B E B E B E B E B E B	266 244 234 248 256 240 224	A A	A A	A A	A A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
22	A A A A E A E A E B E B	A A	330 236 230 228 232	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	184 210 232 236 220	A A	A A	A A	A A	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
23	E A E A E A E B E B E B	310 322 240	208 236 212 232	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
24	E A E A E A E B E B E B	326 292 268	246 214 222	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	210	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
25	E A E A E A E B E B E B	284 272 234	202 218 218	A A	A	A	224	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
26	A A A A E A E A E B E B	A A	324 316 258 204 220	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	194 226	A A	A A	A A	A A	A A	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
27	E A E A E A E B E B E B	250 236 226	248 292 212	A A	A	A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
28	E A E A E A E B E B E B	292	A A	E A E A	A A	A	A A A A	A A	A	A A A A	A A	A A A A	244 230 196 230	A A	A A	A A	A A	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
29	E A E A E A E B E B E B	250 276 286	252 270 232	A A	A	A	226	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
30	E A E A E A E B E B E B	288	A A	E A E A	A A	A	244	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
31	E A E A E A E B E B E B	298 298 260 252 250 288	A A	A A	A A	A A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E 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	26	24	28	28	30	29	14	9	5	7	7	8	9	12	14	12	12	9	6	28	28	26	23	22	
MED	E A E A E B E B E B E B	281 273 266 248 255 220 217 217 206 196 198 200	A A	A A	A A	A A	A A A A	A A	A	A A A A	A A	U 198 208 209 214 211 222 230	E A	208 209 214 211 222 230	252 238 259 260 261	A A	A A	A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	
UQ	E A E A E A E B E B E B	294 296 292 274 270 234 224 225 212 208 218 213 256 229 222 225 219 237 244 275 288 296 300 274	A A	A A	A A	A A	A A A A	A A	A	A A A A	A A	E A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A
LQ	E B E B E B E B E B E B	250 240 240 236 238 216 212 207 202 190 192 189 187 200 206 206 207 215 218 239 222 234 236 236	A A	A A	A A	A A	A A A A	A A	A	A A A A	A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	A A A A	E A E A E A	E A E A E A	E A E A E A	E A E A E A	E A E A E A

MAY 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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						B	116	112		A	A	112	110	110	110	A	A	110	110						
2						B	110	110	112		A	A	A	112	112	A	A	A	A	B					
3						B	112	112		A	A	A	A	114	114	114	114	114	114						
4						B	118	114	112		A	A	A	112		A	A	112	110	110					
5						B	A	A	A	A	A	A	A		118	A	110	A	A	B					
6						B	114	112		A	A	A	A	A	A		A	A	A	B					
7						B	118	110	110		A	108	118		A	A	A	A	A						
8						B	112	112		A	A	A	A	A	A		116	114	114						
9						B	114	114		A	A	A	A	112	112	110	110	112	116						
10						B	116	114	114		A	A	A	A	A		114	114	114	114					
11						B	114	114		A	A		A	A	A	A	A	114	116						
12						B	118		A	A	A	A	A	A	A		114	114	112						
13						B	114	110		A	A	A	A	A	A		A		A	B					
14						116	118		A	A	A	A	A	A	A		118	118							
15						116		A	A	A	A	A	A	A	A		116		A	A					
16						112	120		A	A	A	A	A	A	A		114	110							
17						110	114		A	A	A	A	A	A	A		A	A	110						
18						B	A	A	A		A	A		A	A	A	A	A	A	B					
19						B	110		A	A	A	A	A	A	A	C	C	C	A	B					
20						B	112		A	A	A	A	A	A		110	114		A	A	B				
21						B	114		A	A	A	A	A	A	114		A	A	A	B					
22						112	118		A	A	A	A	A	A		112	114		A	A	A				
23						B	A	A	A	A	A	A	A	A		110	106	112	110						
24						B	A	A	A	A	A	A	A	A		110		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		A		110		A	B				
27						B	A	A	A	A	A	A	A	A		A	A	A	A	B					
28						112		A	A	A	A	A	A		110	108	114	112	110	110					
29						112		A	A	A	A	A	A		A		A	A	A	B					
30						B	A	A	A	A	A	A		112	108	108	108	110		A	B				
31						B	A	A	A	A	A	A		A		A	110	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						7	19	11	4	1	3	2	7	9	13	15	17	10	2						
MED						112	114	112	112	110	112	114	112	112	110	114	112	111	110						
U Q						116	118	114	113		114		112	114	114	114	114	114							
L Q						112	112	110	111		108		110	110	109	110	110	110							

MAY 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	98	98	98	98	B	104	122	122	106	104	114	G	124	112	106	102	116	122	122	112	104	104	104	104
2	102	100	96	90	104	140	136	144	116	102	102	108	114	114	106	104	104	98	94	110	110	104	104	104
3	98	108	102	102	100	102	130	118	104	108	106	106	118	128	G	136	116	116	106	106	106	106	100	100
4	94	94	88	88	88	104	114	114	114	102	104	102	116	102	104	94	108	116	114	100	100	100	100	100
5	96	96	96	92	100	102	108	104	102	102	100	100	100	116	104	116	104	102	102	102	108	104	104	100
6	96	94	94	102	100	96	114	110	104	102	102	98	102	102	106	100	104	102	96	94	110	108	112	104
7	104	102	102	100	B	126	118	112	106	108	110	G	104	106	126	102	124	104	104	104	110	110	104	104
8	116	100	96	96	94	120	120	114	104	100	100	100	102	102	122	116	116	106	104	104	104	104	102	102
9	96	100	98	100	100	114	G	G	100	100	106	100	G	112	128	118	118	122	106	106	104	112	106	104
10	102	102	94	96	100	128	122	122	118	104	106	104	102	108	136	126	124	114	106	106	106	106	106	98
11	98	100	96	92	90	142	142	112	100	100	116	108	102	102	102	98	114	124	104	104	104	102	100	106
12	100	B	B	B	B	126	124	104	102	104	104	104	104	98	94	98	130	118	116	104	104	104	98	98
13	102	B	102	100	98	132	122	116	102	102	106	106	104	104	102	94	116	100	100	102	98	100	104	96
14	94	94	92	88	92	130	118	106	104	104	106	102	102	98	106	112	124	116	102	102	102	106	106	100
15	100	100	100	100	100	122	106	102	106	106	104	100	100	100	98	116	108	106	96	96	96	98	96	96
16	90	90	B	B	B	120	122	102	94	92	88	86	88	94	98	112	112	98	98	94	100	94	96	96
17	88	88	88	82	82	124	112	96	94	94	96	96	94	90	92	92	86	110	94	98	96	96	94	106
18	94	92	88	88	96	114	100	100	98	118	96	96	G	92	90	92	98	90	94	88	88	88	88	88
19	88	82	82	82	94	120	120	102	94	92	84	94	96	96	C	C	C	98	94	94	100	100	88	88
20	88	88	82	88	116	110	110	94	92	90	90	88	94	120	110	124	96	96	96	94	92	90	90	88
21	88	92	106	112	B	116	114	100	98	90	90	98	98	114	96	98	94	94	92	92	86	86	90	86
22	80	82	82	78	80	112	112	98	90	92	90	98	102	98	G	112	100	94	100	96	92	90	94	92
23	86	84	90	110	B	100	100	98	98	94	94	88	96	94	G	114	112	110	94	88	90	86	86	86
24	82	82	76	72	82	106	102	96	96	90	90	88	86	86	114	94	96	100	90	88	86	84	84	84
25	84	84	82	80	86	110	100	94	90	90	90	82	80	86	84	82	98	90	90	90	84	90	90	84
26	82	82	80	78	76	100	98	94	90	88	86	86	86	86	86	84	112	94	88	94	94	96	96	90
27	90	B	B	B	86	114	94	94	92	92	90	90	90	88	86	90	102	96	92	92	94	104	96	90
28	90	84	84	82	118	116	96	96	90	84	84	84	92	G	114	G	134	110	114	106	102	94	86	88
29	88	92	88	106	106	G	102	100	96	96	90	90	92	90	G	98	100	102	98	96	96	96	96	88
30	88	86	84	86	110	100	98	98	92	88	86	86	126	124	114	114	110	104	96	90	90	94	94	90
31	86	88	94	94	94	108	102	102	96	92	82	82	82	G	94	128	120	96	96	92	92	100	92	92
	00	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	25	30	30	30	31	31	31	29	29	29	26	29	30	31	31	31	31	31	31	31
MED	94	92	93	92	96	114	113	102	98	100	96	98	100	102	104	102	111	102	98	96	100	100	96	96
U Q	98	100	97	100	100	124	122	112	104	104	106	102	104	112	114	116	116	114	104	104	104	104	104	102
L Q	88	85	84	84	87	104	102	98	94	92	90	88	92	93	94	94	100	96	94	92	92	94	90	88

MAY 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2017 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

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	F4	F4	F2	F2		L1	C2	C2	L3	L3	C2		C2	C2	L2	L2	C2	C2	C2	F3	F4	F5	F4	F4	
2	F3	F2	F2	F1	F1	H1	H2	H2	C2	L3	L3	L2	C2	C2	L2	L2	L2	L3	L3	FF23	F5	F5	F4	F4	
3	F6	F2	F5	F5	F4	L3	H2	C2	L3	L2	L2	L3	C1	C1		C1	C2	C2	L3	F3	F5	F4	F6	F4	
4	F5	F4	F4	F3	F3	L2	C3	C2	C2	L1	L2	L2	C1	L2	L1	L1	L2	CL22	CL33	FF64	F3	F5	F6	F4	
5	F2	F2	F2	F3	F2	L2	L3	L3	L2	L3	L3	L2	L3	C2	L4	C2	L3	L4	L4	F3	F6	F4	F5	F5	
6	F4	F3	F2	F2	F5	L3	CL32	C3	L4	L3	L3	L3	L3	L2	L2	L3	L2	L3	L4	F3	F4	F3	F4	F2	
7	F3	FF22	FF42	F2		C2	C4	C3	L2	L2	C2		L2	L2	C1	L2	C1	L3	L5	F4	F4	F6	F5	F5	
8	F1	F2	F2	F2	F2	C2	C3	C4	L3	L3	L3	L3	L2	L2	CL22	C2	C2	L3	L5	F4	F4	F6	F6	F5	
9	F3	F5	F5	F4	F4	C1			L2	L2	L2	L2		C1	C1	C2	C2	C1	L4	F4	F5	F3	F3	F3	
10	F4	F4	F4	F3	F3	CL12	C3	C2	C2	L3	L2	L2	L2	L2	H2	C2	C2	C2	L5	F6	F4	F5	F7	F3	
11	F2	F2	F2	F2	F2	H1	H1	C2	L3	L3	C2	L2	L2	L2	L2	L2	CL22	C2	L3	F4	F3	F3	F4	F3	
12	F2					C2	C3	L2	L3	L2	L1	L2	L2	L3	L2	L2	L2	C2	C2	F6	F6	F6	F6	F6	
13	F5		F3	F4	F3	C3	C3	C1	L2	L2	L2	L2	L2	L2	L2	L3	C2	C3	L4	F5	F5	F4	F4	F6	
14	F4	F4	F4	F4	F3	C3	C5	L3	L3	L3	L2	L3	L3	L3	L3	CL22	CL23	CL23	LL44	FF44	FF52	F4	F4	F5	
15	F4	F4	F5	F5	F5	C3	L3	L3	L4	L3	L2	L3	L2	L3	L2	CL12	CL3	L3	L3	F7	F2	F4	F2	F4	
16	F1	F1				C2	C2	L3	L3	L3	L3	L3	L3	L3	L3	C2	C1	L2	L4	F3	F4	F5	F7	F2	
17	F2	F2	F3	F2	F2	CL22	C3	L3	L1	L1	L1	L3	L2	L2	L1	L2	L2	CL22	L4	F5	F2	F2	F4	F2	
18	F4	F4	F2	F1	F2	C5	L5	L5	L2	L1	L2	L2		L2	L2	L3	L2	L4	L3	F5	F7	F7	F5	F5	
19	F4	F6	F3	F2	F1	C2	C2	L2	L4	L2	L3	L2	L3					L2	L5	F4	F7	F6	F3	F6	
20	F6	F6	F5	F3	F2	C4	C3	L2	L3	L3	L3	L2	L2	CL11	CL22	CL21	L4	L5	L4	F5	F3	F6	F5	F3	
21	F2	F4	F2	F3		C3	C2	L2	L1	L5	L2	L1	L2	L1	L3	L3	L3	L5	L4	F7	F6	F5	F5	F3	
22	F4	F6	F4	F3	F3	C2	C3	L4	L5	L3	L3	L2	L2	L1		C1	L2	L4	L4	F3	F6	F6	F8	F8	
23	F6	F7	F5	F2		L3	L2	L3	L4	L3	L3	L3	L2	L2		C1	C1	C3	L5	F6	F5	F8	F8	F4	
24	F5	F5	F4	F3	F1	L3	L4	L3	L4	L4	L4	L4	L3	L3	C2	L3	L3	L3	L6	F8	F6	F7	F7	F6	
25	F4	F2	F2	F2	F2	C2	L3	L4	L5	L4	L4	L4	L3	L2	L4	L4	L3	L6	L6	F5	F5	F5	F4	F7	
26	F6	F5	F4	F4	F2	L2	L3	L3	L4	L3	L4	L4	L3	L2	L2	L2	CL42	L5	L6	F4	F4	F2	F1	F2	
27	F3				F3	C2	L5	L4	L4	L2	L3	L3	L3	L3	L4	L2	L3	L4	L4	F4	F3	F5	F6	F7	
28	F5	F6	F6	F5	F1	C3	L6	L5	L5	L5	L4	L3	L2		C1		H1	C2	C5	F5	F8	F8	F8	F7	
29	F4	F5	F5	F3	F5		L3	L2	L3	L4	L4	L3	L3	L3		L2	L2	L3	L4	F5	F4	F6	F4	F8	
30	F7	F6	F4	F2	F2	L5	L4	L3	L3	L4	L4	L3	C2	C1	C1	C1	C2	L2	L5	F7	F7	F5	F5	F5	
31	F4	F3	F3	F2	F2	L4	L4	L3	L4	L4	L5	L5	L5		L1	C1	C1	L3	L5	F5	F6	F8	F8	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 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 f_{XI} (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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C						C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					X	X	X	X	X
12	X	X	X	X	X	X															85	76	68	48	44
13	A	X	X	X	X	X															X	X	X	X	A
14	C	C	C	C	C	C															52	63	72	49	C
15	A	45	45	40	0	X	X														C	C	C	C	C
16	X	X	X	X	X	X															X	X	X	X	A
17	X	X	X	X	X	X															C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C											X	X	A	A	A
19	X	X	X	X	X	X															77	68	A	A	A
20	58	57			X	X															X	X	A	X	X
21	X	X	X	X	60	43															60	62	60	60	C
22	X	A	X	X	X	X															A	A	A	A	A
23	A	55	59	43	38	42															X	X	X	X	X
24	56	47	44	44	44	44															77	78	59	51	48
25	A	50	45	38	40	38															X	X	X	X	X
26	A	C	C	C	C	C	C	C	C	C											73	64	65	53	60
27	X	45	50	48	47	43	43														X	X	X	A	A
28	X	49	50	46	38	36	33														79	91	85	A	A
29	X	A	A	X	X	X															X	X	X	X	X
30	X	X	X	X	X	X															68	76	68	58	62
31	A	44	47	44	41	41															X	X	X	X	X
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	12	15	15	16	17	17				1											17	17	12	10	8
MED	X	X	X	X	X	X															X	X	X	X	X
U Q	58	52	53	48	44	43				73											73	70	66	52	49
L Q	X	X	X	X	X	X															X	X	X	X	X
	48	44	44	38	38	37															80	78	72	57	60
																					X	X	X	X	X
																					62	64	63	49	44

MAY 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	73	78	79	78		C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	89	C	A		79	70	60	42	38
12	36	37	37	32	31	30	42	69	66	49	49	A	54	64	78	81	77	69	52	46	57	66	43	A	
13	A	37	40	42	F	37	A	55	60	A	A	A	A	C	61	71	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	46	48	57	A	62	A	A	A	65	79	83	81	64	56	58	56	50	A	
15	A	F	F	F	34	32	44	50	A	A	A	A	A	A	80	78	75	A	A	A	A	A	A	A	
16	48	45	39	32	32	34	40	48	58	A	A	55	59	S	A	64	77	75	68	56	54	56	A	54	
17	53	45	38	32	29	29	42	58	69	54	A	48	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	A	A	A	A	68	79	84	85	76	71	62	A	A	A	
19	40	37	36	32	F	30	44	54	52	A	A	A	52	51	54	A	A	A	64	71	73	A	A	A	
20	F	F	A	A	32	32	50	A	A	50	A	A	A	A	A	84	76	63	69	82	77	71	48	44	
21	44	46	52	52	F	37	46	43	A	A	A	A	A	A	54	54	59	58	A	64	59	A	46	A	
22	50	A	49	40	32	35	47	62	62	A	A	A	54	54	59	59	A	A	A	A	A	58	A	A	
23	A	F	F	37	32	36	A	50	A	A	56	60	56	70	80	82	87	81	70	70	72	53	45	42	
24	F	41	38	38	38	38	41	54	49	A	A	52	58	62	67	76	72	68	A	62	64	58	A	A	
25	A	F	F	32	F	32	56	53	A	52	A	A	66	72	80	77	82	84	76	66	58	58	47	F	
26	A	C	C	C	C	C	C	C	C	C	A	A	A	56	61	62	58	60	64	73	85	79	A	A	
27	39	F	F	F	F	F	49	62	52	56	A	A	A	A	A	66	69	75	80	75	70	65	A	A	
28	43	F	F	32	30	27	47	65	A	A	A	A	A	92	90	101	100	86	78	79	70	A	A	A	
29	72	A	A	62	59	62	76	F	A	A	A	A	A	58	57	56	56	59	59	62	70	62	52	56	
30	54	47	47	42	40	35	A	A	A	A	R	50	50	A	A	A	48	49	56	55	38	41	41	37	
31	A	37	41	38	35	35	42	A	A	A	A	A	49	49	52	56	65	A	61	56	56	A	A	37	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	10	9	10	14	12	16	15	14	9	5	4	5	8	10	16	18	18	15	15	17	17	12	10	7	
MED	46	41	40	38	32	34	46	54	58	52	53	52	55	60	64	76	76	69	64	66	64	59	46	42	
U Q	53	46	47	42	36	36	49	62	64	55	59	58	58	70	79	79	83	81	76	74	71	66	50	54	
L Q	40	37	38	32	32	31	42	50	52	50	50	49	53	54	58	62	65	60	59	56	58	57	43	37	

MAY 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
5						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
7						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
9						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
10						C	C	C	C	C	C	C	C	C	C	428		A	A	A				
11						C	C	C	C	C	C	C	C	C	C	C	C	A	C	A				
12								U L 380	U L 412	A	A	A	A	432	444		A	A	A	A				
13							A	A	A	A	A	A	A	C				C	C	C				
14								A		A	A	A	A	A	A		U L 412	U L 404	376					
15								A	A	A	A	A	A	A	A	A	396		A	A				
16								A	A	A	A	A	A	A	A	A	408	U L 384						
17							L	A		A		U L 436	C	C	C	C	C	C	C					
18							C	C	C	C	A	A	A	U L 448	U L 432	U L 416	U L 392			A				
19								U L 388	A	A	A	A	456	444		A	A	A	A					
20								A	A	A	A	A	A	A	A	A		420	396	348				
21								U L 380	A	A	A	A	A	U L 436	424	408	404			A				
22								A	A	A	A	A	U L 452	432		A	A	A	A					
23								A	A	A	A	U L 464	A	448		A	A		404					
24								U L 384		A	A	448	A	A		436	424	U L 384		A				
25									A	A	A	A	A	452	444		U L 392		U L 392					
26							C	C	C	C	A	A	A	U L 448		A	A	A	A					
27									U L 420	U L 440	A	A	A	A	A		U L 452	U L 432	408					
28								A	A	A	A	A	A	A	A	A	U L 420	U L 396						
29								A		A	A	A	A	U L 436	432	416	388	U L 360						
30								A	A	A	U L 416	U L 440	A	A	A	A	U L 404		A					
31								A	A	A	A	U L 436	U L 436	A	A				U L 348					
	00	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	2	1	1	3	3	4	9	9	11	11	3					
MED								U L 382	U L 416	U L 440	U L 416	U L 440	U L 456	U L 440	444	432	416	392	U L 348					
U Q								U L 386				448	464	448	448	440	420	404	360					
L Q								U L 380				U L 436	U L 436	434	436	426	404	384	348					

MAY 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
5						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
7						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
9						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
10						C	C	C	C	C	C	C	C	C	C	U	A	A	A					
																332	296							
11						C	C	C	C	C	C	C	C	C	C	C	A	C	B					
12						U	A	A	A	A	A	A	A	A	A	A	A	A	A					
						200																		
13						A	A	A	A	A	A	A	A	C	A	A	C	C	C					
14						A	A	A	A	A	A	A	A	A	A	U	A	U	A					
																324	296	260						
15						B	A	A	A	A	A	A	A	A	A	A	U	A	A					
																	292							
16						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
17						A	A	A	A		A	C	C	C	C	C	C	C	C					
18						C	C	C	C	A	A	A	A	U	R	A	A	R	A					
																348		276						
19						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						A	A	A	A	A	A	A	A	A	A	A	U	R	U	R	U	A		
																	292	268	208					
21						A	A	A	A	A	A	A	A	U	R	U	A	R	R					
																336	348	280						
22						A	A	A	A	A	A	A	A	U	R	A	A	A	A					
																364								
23						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						A	A	A	A	A	A	A	A	A	A	U	A	U	A	A				
																332	304	268						
25						U	A	A	A	A	A	A	A	A	A	A	A	A	A					
						184																		
26						C	C	C	C	A	A	A	A	A	A	A	A	A	A					
27						A	A	A	A	A	A	A	A	A	A	A			A	A				
																	340	312						
28						A	A	A	A	A	A	A	A	A	A	A	U	R	U	R	U	R		
																	300	276	224					
29						A	A	A	A	A	A	A	A	A	A	A	A	U	R	A				
																		292						
30						A	A	A	A	U	R	U	R	U	A	U	A	A	A	A				
										340	336	360	360											
31						A	A	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							2				1	1	1	1	3	5	7	7	2					
MED							U	A			U	R	U	R	U	A	U	R	U					
							192				340	336	360	360										
U Q																U	R	U	R					
																364	344	304	280					
L Q																U	R	U	A					
																336	328	292	268					

MAY 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J	A	J	A	J	A	C	C	C	
																36	63	63	52							
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J	A	J	A	J	A	J	A	J	A
																	53		86	40	52	35	54	24		
12	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	43	31	23	22	21	20	23	39	56	64	68	68	101	55	43	56	53	40	46	37	31	25	38	52		
13	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	52	54	25	48	29	15	54	46	48	68	60	71	84		43	51										
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
							34	40	46	78	128	90	88	144	87	38	35	32	32	36	36	48	52	78		
15	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	74	54	86	52	86	63	39	50	82	123	104	104	99	118	70	48	44	126	153	153	154	146	111	111		
16	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	26	38	33	29	26	16	28	46	58	76	90	76	61	69	55	48	45	40	32	25	52	85	52	38		
17	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	53	42	46	35	22	22	29	38	53	62	60	45														
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
											67	65	76	96			41	36			47	48	46	51	107	72
19	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	60	88	43	32	24	42	26	32	57	56	113	82	40	41	69	73	100	67	65	86	54	147	103	90		
20	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	28	42	87	87	112	23	40	66	88	57	66	84	145	103	102	54				25	43	81	80	52	52	
21	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	49	49	84	59	16	16	24	32	45	57	102	90	96	74						69	109	106	108	67	68	
22	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	50	80	87	87	32	26	39	61	64	65	65	89	63	58			56	62	88	103	91	128	52	54	65	
23	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	53	81	87	52	46	38	54	53	64	86	80	87	66	73	46	55	54	46	75	68	54	48	55	33		
24	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	32	44	23	29	26	16	26	35	53	104	74	41	46	46	52	43	47	35	89	48	48	53	87	88		
25	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	89	81	41	106	20	126	30	38	53	58	111	90	61	56	44	40	56	38	90	34	19	30	42	52		
26	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	53										160	112	103	82	46	51	54	49	43	28	30	16	68	66		
27	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	35	22	22	26	28	24	29	53	53	45	72	127	206	180	112	39	37	40	56	41	31	53	72	54		
28	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	42	53	22	53	72	88	54	81	86	88	138	90	123	143	70	58				26	32	52	86	75	58	
29	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	86	110	89	44	44	36	68	53	78	88	129	162	153	70	44	37	37	33	53	32	34	50	42	40		
30	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	40	38	34	23	22	21	42	64	100	111			38	44	49	56	57	38	54	36	21	33	23	39	52	
31	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	54	52	24	23	20	20	26	65	105	119	161	154	76	42	45	46	42	80	31	35	109	109	156	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	18	17	17	17	17	17	18	18	18	18	20	20	19	18	19	20	20	19	20	19	19	19	19	19	19	
MED	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	51	52	41	44	26	23	32	48	58	72	85	88	84	72	46	48	44	40	52	40	52	52	55	54		
UQ	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	54	80	86	56	45	40	42	61	82	88	120	97	103	103	70	56	54	63	80	68	81	86	87	72		
LQ	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	40	40	24	28	22	18	26	38	53	58	66	70	61	55	43	40	36	32	34	32	33	35	52	52		

MAY 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	34	48	53	44		C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	47	CA	AA				E	B	B
12				E	B	E	B				A	A						86	31		31	28	16	16	
13	A	A	E	B	E	B				A	A	A	A	A	C			C	C		C	C	C	C	
14	C	C	C	C	C	C				A	A	A	A	A									A	A	
15	A	A								A	A	A	A	A	A								A	A	
16	21	19	E	B	E	B				A	A	A	A	A								A	A		
17	42	28	E	B	E	B				A	A	A	A	A								C	C	C	
18	C	C	C	C	C	C				C	A	A	A	A	A	G						A	A	A	
19	19	22	E	B						A	A	A	A	A								A	A	A	
20	E	B	E	B	A	A				A	A	A	A	A	A							A	A	A	
21	36	21	35	25	E	B	E	B			A	A	A	A	A							A	A	A	
22	33	A	A								A	A	A	A	A							A	A	A	
23	A	A	23	16	24	19	28				A	A	A	A								E	B		
24	19	E	B	E	B	E	B				A	A	A	A								A	A	A	
25	A	A	23	18	20	E	B	E	B													E	B		
26	A	A	C	C	C	C	C				C	A	A	A	A							E	B	A	
27	24	E	B		E	B	E	B				A	A	A	A	A						A	A	A	
28	28	21	E	B	E	B	E	B				A	A	A	A	A						A	A	A	
29	65	110	89	30	29	24	62	44				A	A	A	A	A						A	A	A	
30	34	26	23	E	B	E	B	E	B													E	B		
31	A	A	E	B	E	B																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	18	17	17	17	17	17	18	18	18	18	20	20	19	18	19	20	20	19	20	19	19	19	19	19	
MED	35	22	19	18	17	E	B				A	A	A	A	A	76	48	43	42	36	35	42	31	31	
UQ	A	A									A	A	A	A	A	A	A	A	A	A	A	A	A	A	
LQ	21	E	B	E	B	E	B															A	A	A	

MAY 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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

MAY 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	307	315	318	322		C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	308	C	A	342	346	336	324	302	
12	316	325	322	335	329	313	344	367	394	378	312	A	292	307	327	329	342	360	348	325	309	358	351	A	
13	A	313	332	274	F	294	A	359	373	A	A	A	A	C	326	317	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	382	363	376	A	359	A	A	A	289	301	313	339	350	324	319	325	364	A	
15	A	F	F	F	322	307	358	383	A	A	A	A	A	A	311	315	315	A	A	A	A	A	A	A	
16	323	301	290	308	313	310	407	338	356	A	A	A	S	A	307	329	346	341	334	336	316	A	302	307	
17	337	326	314	334	327	327	343	353	384	348	A	275	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	A	A	A	A	287	292	309	320	327	345	371	A	A	A	
19	342	301	314	292	F	315	346	355	341	A	A	A	320	302	319	A	A	A	316	317	349	A	A	A	
20	F	F	A	A	291	309	373	A	A	362	A	A	A	A	A	318	324	284	291	311	301	316	303	293	
21	297	284	298	300	F	302	350	304	A	A	A	A	A	A	299	299	317	307	A	321	326	A	295	A	
22	307	A	310	334	283	313	352	362	358	A	A	A	279	278	309	302	A	A	A	A	A	302	A	A	
23	A	F	F	305	318	380	399	A	A	283	351	289	304	314	300	323	322	339	336	347	351	275	296	A	
24	F	304	293	334	334	296	348	379	377	A	A	282	305	311	295	322	321	339	A	316	322	343	A	A	
25	A	F	F	308	F	310	364	371	A	318	A	A	320	300	309	295	313	342	339	337	329	329	324	F	
26	A	C	C	C	C	C	C	C	C	C	A	A	A	A	309	313	331	304	303	299	306	337	376	A	A
27	325	F	F	F	F	F	365	375	350	358	A	A	A	A	A	305	291	297	313	318	342	327	A	A	
28	314	F	F	306	309	309	352	367	A	A	A	A	293	284	303	321	313	303	316	320	A	A	A	A	
29	316	A	A	289	293	323	337	F	A	A	A	A	323	317	299	310	310	310	318	319	335	274	288	A	
30	301	271	298	284	291	328	A	A	A	A	R	287	274	A	A	A	282	309	343	357	301	296	310	299	
31	A	302	295	317	314	325	369	A	A	A	A	A	270	244	292	303	316	A	339	323	334	A	A	287	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	10	9	10	14	12	16	15	14	9	5	4	5	8	10	16	18	18	15	15	17	17	12	10	7	
MED	316	302	304	307	314	312	352	365	373	358	300	282	298	303	309	304	315	318	327	323	326	332	306	296	
U Q	325	319	314	334	324	324	369	375	380	370	336	338	320	309	316	318	321	339	339	336	344	347	324	302	
L Q	307	292	295	292	292	308	346	355	353	333	285	274	284	293	294	300	309	307	310	316	318	320	295	288	

MAY 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2						C	C	C	C	C	C	C	C	C	C	C	C	C						
3						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
5						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
7						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
9						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
10						C	C	C	C	C	C	C	C	C	C	407		A	A	A				
11						C	C	C	C	C	C	C	C	C	C	C	C	A	C	A				
12							U L	U L	A	A	A	A	A	433	416		A	A	A	A				
13							A	A	A	A	A	A	A	C				C	C	C				
14								A	A	A	A	A	A	A	A		U L							
15								A	A	A	A	A	A	A	A	A	388		A	A				
16								A	A	A	A	A	A	A	A	A	394	U L	L					
17							L	A	A		U L	C	C	C	C	C	C	C	C					
18							C	C	C	C	A	A	A	A	U L	U L	U L	U L		A				
19								U L	A	A	A	A	A	U L	A	A	A	A	A					
20								A	A	A	A	A	A	A	A	A		393	379	346				
21								U L	A	A	A	A	A	A	U L	U L		394	402	354				
22								A	A	A	A	A	A	U L	A	A	A	A	A					
23								A	A	A	A	A	U L	A	401		A	A		356				
24								U L		A	A	A	A	A	A		397	380	U L	A				
25									A	A	A	A	A	A	348	U L	A	U L	A					
26								C	C	C	C	A	A	A	U L	A	A	A	A					
27									U L	U L	A	A	A	A	A		382	U L		A				
28								A	A	A	A	A	A	A	A	A	A	U L	U L	L				
29								A	A	A	A	A	A	A	U L	U L	384	369	U L					
30								A	A	A	U L	U L	A	A	A	A	U L	A	L					
31								A	A	A	A	A	U L	U L	A	A		A	U L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	2	1	1	3	3	4	9	9	11	11	3					
MED								U L	U L	U L	U L	U L	U L	U L	401	394	385	370	U L					
U Q								380			447	433	434	412	402	393	385	379						
L Q								U L			U L	U L	U L	U L	U L	U L	U L	U L						
								354			411	387	406	393	384	380	357	346						

MAY 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
5						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
7						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
9						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
10						C	C	C	C	C	C	C	C	C	C	302	288	268	254					
11						C	C	C	C	C	C	C	C	C	C	C	280	C	A					
12								238	208	230	E A 322	A	370	340	280	280	252	236	258					
13						A		244	244	A	A	A	A	C	306	296	C	C	C					
14								264		A E A 264	A	A	A	A	334	284	274	254						
15								246	A	A	A	A	A	A E A 292	284	284	A	A						
16								284	262	A	A E A 308	A E A 320	A	320	274	262	262	262						
17						288	246		E A 278	A	A	432	C	C	C	C	C	C						
18						C	C	C	C	A	A	A	A	348	320	290	270	256						
19								254	E A 266	A	A	A	342	382	E A 352	A	A	E A 352						
20								A	A E A 270	A	A	A	A	A	A	288	274	320	300					
21								352	A	A	A	A	A	A	354	354	304	310						
22								232	242	A	A	A	386	406	338	E A 342	A	A	A					
23								A	A	E A 394	274	378	324	300	304	278	278	E A 278						
24								248		A	A	422	356	334	318	286	286	256						
25									A E A 318	A	A	A E A 316	322	288	318	284	262	242						
26								C	C	C	C	A	A	A	348	318	298	334	E A 312	310				
27									282	260	A	A	A	A	A	314	328	304	264					
28								E A E A 278 266	A	A	A	A	A	310	328	310	264	264	272					
29								E A 270	A	A	A	A	A E A 298	336	344	332	310	298						
30								A	A	A	A	380	436	A	A	A	404	E A 358	270					
31									A	A	A	A	A	462	524	390	362	A	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	12	6	5	4	5	8	10	16	18	17	15	14					
MED							E A 278	246	248	E A E A 270 351	422	363	337	322	302	284	267	267						
U Q							288	265	266	E A 298	387	434	382	382	343	320	316	310	298					
L Q							E A 270	241	242	E A 245	293	291	E A 331	322	303	286	274	262	258					

MAY 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	202	A	A	A	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	C	A	206	208	204	220	E B 240
12	E A 246	E A 254	E A 242	A	212	228	228	214	214	178	A	A	A	A	186	178	A	A	A	E A 274	E A 256	E A 202	E A 216	A
13	E A 252	E A 234	E A 218	A	250	250	A	A	A	A	A	A	A	A	C	188	204	C	C	C	C	C	C	C
14	C	C	C	C	C	C	204	A	230	A	A	A	A	A	A	A	200	210	210	226	E A 236	E A 258	E A 252	E A 214
15	E A 290	E A 240	E A 258	E A 298	E A 242	220	A	A	A	A	A	A	A	A	A	A	220	A	A	A	A	A	A	A
16	E A 256	E A 248	E A 246	E A 262	E A 256	232	190	A	A	A	A	A	A	A	A	A	206	206	206	216	E A 264	E A 276	E A 276	E A 276
17	E A 268	E A 244	E A 288	E A 242	E A 240	E B 238	220	A	214	A	A	198	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	192	192	198	190	A	216	202	A	A
19	E A 224	E A 264	E A 296	E A 262	E A 258	E A 258	220	206	A	A	A	A	198	198	A	A	A	A	A	E A 350	216	A	A	A
20	E B 276	E B 268	A	E A 282	E A 234	E B 224	A	A	A	A	A	A	A	A	A	A	190	190	202	E A 262	E A 274	E A 240	E A 248	E A 306
21	E A 346	E A 312	E A 304	E A 256	E B 232	E B 240	214	214	A	A	A	A	A	A	200	194	194	214	A	E A 264	E A 264	E A 338	E A 338	E A 338
22	E A 310	E A 252	E A 212	E A 314	E A 226	E A 232	A	A	A	A	A	A	A	A	210	206	A	A	A	A	A	E A 298	A	A
23	E A 304	E A 270	E A 254	E A 262	E A 248	A	A	A	A	A	A	A	A	232	A	228	A	E A 256	E A 290	E A 234	E A 218	E A 224	E A 292	E A 292
24	E A 306	E A 282	E A 266	E A 248	222	222	198	200	E A 258	A	A	A	192	A	A	A	212	216	208	E A 266	222	222	A	A
25	E A 316	E A 296	E A 314	E A 234	E B 234	220	218	A	A	A	A	A	A	E A 274	E A 262	A	E A 258	E A 258	A	220	210	208	E A 274	E A 274
26	A	C	C	C	C	C	C	C	C	C	A	A	A	A	A	190	A	A	A	E A 270	224	228	A	A
27	E A 250	E A 236	E A 236	E A 270	E A 270	E B 252	202	202	200	200	A	A	A	A	A	A	208	208	204	A	234	220	220	A
28	E A 272	E A 266	E A 252	E A 260	E A 278	E A 290	A	A	A	A	A	A	A	A	A	A	224	212	210	242	E A 268	A	A	A
29	E A 338	A	E A 292	E A 250	E A 246	A	228	A	A	A	A	A	A	A	228	192	204	204	210	E A 264	E A 234	E A 234	E A 336	E A 282
30	E A 294	E A 308	E A 302	E A 292	E A 274	E B 274	A	A	A	A	178	192	A	A	A	A	230	A	A	214	214	E A 280	E A 260	E A 290
31	E A 330	E A 242	E A 250	E A 250	E A 228	202	A	A	A	A	A	A	202	200	A	A	300	A	A	218	232	232	A	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	12	15	15	16	17	17	13	7	5	1	1	3	3	4	9	9	12	11	7	17	17	12	10	8
MED	E A 274	E A 268	E A 252	E A 257	E A 256	240	214	214	207	200	178	192	202	199	196	201	209	206	210	E A 242	E A 234	E A 216	E A 261	E A 287
U Q	E A 308	E A 308	E A 296	E A 266	E A 276	E A 251	220	218	244			198	232	205	228	210	222	E A 214	E A 218	E A 268	E A 264	E A 246	E A 290	E A 306
L Q	E A 253	E A 252	E A 242	E A 245	E A 237	E A 230	202	202	189			192	198	192	189	193	201	204	206	218	218	213	220	E A 275

MAY 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
5						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
7						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
9						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
10						C	C	C	C	C	C	C	C	C	C	110	110	110	112					
11						C	C	C	C	C	C	C	C	C	C	C	A	C	B					
12							112	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	C	A	A	C	C	C					
14							122	118	114	A	A	A	A	A	A	108	112	112	A					
15							B	110	A	A	A	A	A	A	A	A	110	A	A					
16							B	110	A	A	A	A	A	A	A	A	A	A	A					
17							A	A	A	A		A	C	C	C	C	C	C	C					
18							C	C	C	C	A	A	A	A	110	110	110	110	A					
19							110	112	A	A	A	A	A	112	112	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	108	108	108					
21							120	108	108	A	A	A	A	A	108	106	106	106	A					
22							A	A	A	A	A	A	A	A	112	A	A	A	A					
23							A	A	A	A	A	A	A	A	A	A	A	A	A					
24							114	108	A	A	A	110	110	114	A	114	116	116	A					
25							114	A	A	A	A	A	A	A	A	A	A	A	A					
26							C	C	C	C	A	A	A	A	A	A	A	A	A					
27							A	A	A	A	A	A	A	A	A	A	106	110	112					
28							A	A	A	A	A	A	A	A	A	A	A	112	112	110				
29							A	A	A	A	A	A	A	A	A	A	114	114	112					
30							A	A	A	A	110	104	104	110	A	A	114	A	A					
31							110	A	A	A	A	A	A	110	110	A	112	A	112					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	6	2		1	2	2	4	5	7	12	9	4					
MED							114	110	111		110	107	107	111	110	110	111	112	111					
U Q							120	112						113	112	114	113	112	112					
L Q							110	108						110	109	106	110	109	109					

MAY 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	122	114	110	108		C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	90	C	90	90	90	90	94	94	
12	94	86	82	82	80	80	120	102	96	96	92	90	94	94	94	90	88	84	82	92	92	90	92	92	
13	92	92	92	92	92	B	102	102	96	94	94	92	90	C	90	88	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	114	114	110	102	102	96	92	92	100	128	128	122	108	104	98	104	104	96	
15	96	98	92	96	98	98	106	112	102	102	102	98	98	90	98	106	124	104	100	98	106	106	106	98	
16	92	104	90	90	90	B	126	114	104	104	100	106	106	104	104	104	104	104	104	104	104	100	100	94	
17	90	90	90	86	86	96	104	106	102	92	92	92		C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C		98	98	98	98	G	112	112		G	102	100	100	98	98
19	98	98	98	90	90	90	112	112	106	102	102	102	106	124	118	104	102	102	102	100	100	100	100	100	
20	100	100	94	94	94	100	104	104	98	98	96	96	96	90	86	86		G	G	118	106	102	102	96	94
21	112	112	96	104	B	B	110	110	110	102	96	96	98	98	G	G	G	G		98	94	102	102	102	94
22	90	90	100	100	82	90	98	96	96	96	96	96	96	96	96	G	106	100	100	100	94	94	94	94	94
23	94	94	94	94	94	104	104	102	102	92	92	90	96	96	94	90	90	94	94	92	86	86	86	86	
24	82	88	102	94	102	B	116	116	98	98	98	110	108	108	102	118	118	118	96	96	96	96	94	88	
25	82	82	92	92	84	122	114	106	98	96	90	90	90	88	88	92	90	108	96	90	90	90	84	82	
26	82	C	C	C	C	C	C	C	C	C		88	88	88	88	92	92	90	90	86	94	94	B	94	94
27	94	92	92	92	92	122	108	100	98	98	92	84	84	90	90	156	140	114	100	100	96	96	96	96	
28	96	96	96	96	90	90	100	100	94	94	88	88	88	86	86	86	G	G	120	114	104	94	94	92	
29	90	90	90	90	98	104	104	104	98	98	96	94	94	94	100	112	110	164	96	96	96	96	96	96	
30	94	94	94	100	138	124	102	100	96	94	G	152	138	124	104	102	116	98	102	102	94	92	92	92	
31	92	92	92	92	92	120	116	98	96	96	86	86	100	118	108	100	120	92	110	98	98	98	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	18	17	17	17	16	13	18	18	18	18	19	20	19	18	16	19	17	15	20	19	19	18	19	19	
MED	93	92	92	92	92	100	107	104	98	97	96	95	96	95	96	104	110	104	100	98	96	96	96	94	
U Q	96	98	96	96	96	121	114	112	102	102	98	98	100	104	103	112	119	114	106	102	102	100	100	96	
L Q	90	90	91	90	88	90	104	100	96	94	92	90	90	90	90	90	90	94	96	94	94	92	94	92	

MAY 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2017 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

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																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																C 1	C 3	C 6	C 6						
11																	L 3		L 7	F 4	F 5	F 8	F 5	F 5	
12	F 2	F 2	F 2	F 2	F 2	F 1	C 1	L 4	L 3	L 3	L 3	L 4	L 2	L 2	L 1	L 2	L 3	L 4	L 4	F 3	F 4	F 4	F 4	F 4	
13	F 4	F 4	F 4	F 3	F 2		L 4	L 3	L 3	L 3	L 4	L 3	L 3		L 1	L 2									
14							C 5	C 3	C 3	L 4	L 4	L 4	L 3	L 4	L 2	C 1	C 1	C 2	L 2	F 7	F 7	F 8	F 8	F 9	
15	F 9	F 9	F 9	F 7	F 8	F 8	L 6	C 6	L 6	L 5	L 6	L 4	L 7	L 7	L 4	L 3	C 2	L 8	L 8	F 9	F 7	F 6	F 8	F 9	
16	F 6	F 4	F 2	F 2	F 5		C 2	C 3	L 3	L 4	L 5	L 2	L 2	L 4	L 2	L 4	L 2	L 2	L 3	F 1	F 6	F 6	F 9	F 9	
17	F 8	F 8	F 5	F 5	F 1	F 1	L 2	L 3	L 4	L 4	L 3	L 2													
18											L 3	L 3	L 3	L 3		C 2	C 2		L 5	F 2	F 4	F 9	F 8	F 6	
19	F 3	F 3	F 6	F 2	F 3	F 4	C 2	C 2	L 4	L 6	L 3	L 3	L 1	C 1	C 3	L 3	L 5	L 4	L 7	F 8	F 7	F 8	F 9	F 6	
20	F 2	F 2	F 9	F 9	F 6	F 2	L 5	L 8	L 6	L 5	L 5	L 3	L 3	L 4	L 4	L 2			C 2	F 8	F 8	F 5	F 4	F 7	
21	F 7	F 3	F 4	F 4			C 2	C 2	C 3	L 3	L 4	L 4	L 2	L 3					L 6	F 6	F 5	F 6	F 5	F 4	
22	F 4	F 5	F 3	F 2	F 4	F 2	L 4	L 5	L 5	L 4	L 4	L 3	L 3	L 2		L 2	L 6	L 4	L 7	L 7	F 5	F 4	F 4	F 8	
23	F 8	F 4	F 4	F 5	F 5	F 8	L 7	L 7	L 7	L 5	L 3	L 3	L 2	L 2	L 2	L 3	L 3	L 3	L 6	F 6	F 6	F 7	F 2	F 4	
24	F 5	F 3	F 2	F 5	F 2		C 2	C 3	L 3	L 5	L 3	L 1	L 1	L 1	L 2	C 2	C 2	C 1	L 3	F 5	F 2	F 5	F 5	F 6	
25	F 4	F 2	F 3	F 4	F 1	F 1	C 2	L 2	L 3	L 3	L 6	L 5	L 4	L 3	L 2	L 2	L 5	L 3	L 6	F 5	F 2	F 3	F 5	F 3	
26	F 6										F 6	F 6	F 5	F 3	F 3	F 3	F 3	F 6	F 6	F 3	F 5		F 5	F 5	
27	F 5	F 2	F 2	F 2	F 2	F 2	L 3	L 5	L 3	L 2	L 4	L 6	L 6	L 5	L 3	H 1	H 1	C 2	L 4	F 2	F 5	F 3	F 8	F 5	
28	F 5	F 3	F 2	F 2	F 4	F 3	L 3	L 6	L 4	L 5	L 6	L 6	L 6	L 4	L 4	L 2			C 1	F 4	F 8	F 8	F 8	F 9	
29	F 9	F 6	F 6	F 4	F 5	F 4	L 6	L 5	L 4	L 6	L 6	L 4	L 4	L 2	L 2	C 1	C 1	H 1	L 2	F 2	F 3	F 5	F 5	F 6	
30	F 8	F 6	F 3	F 1	F 1	F 1	L 6	L 4	L 4	L 5		H 1	H 1	C 2	L 2	L 3	C 1	L 5	L 2	F 2	F 6	F 1	F 3	F 4	
31	F 4	F 5	F 2	F 2	F 1	F 1	C 3	L 4	L 6	L 4	L 4	L 4	L 2	C 1	C 2	L 1	C 1	L 5	C 2	F 3	F 3	F 3	F 6	F 8	
	00	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																									

IONOSPHERIC DATA STATION Okinawa

MAY 2017 f_{XI} (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

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	X 42	47	50	47	X 32	29															X 74	X 57	A	53		
2	55	52	A	44	43	X 34																X 78	X 42	36	44	
3	52	46	A	A	35	37																X 89	X 62	X 57	56	
4	54	54	54	77	A	44	55															X 75	X 62	A	54	
5	51	52	54	40	X 32	31																X 82	X 72	X 60	X 52	
6	51	47	X 41	38	X 36	X 32																X 78	67	X 36	A	
7	44	X 33	55	49	45	42	51															X 84	68	68	55	
8	52	47	44	A	36	X 33																X 94	A	A	A	
9	A	A	X 38	A	A	X 28																X 57	X 50	X 49	51	
10	X 48	46	44	44	40	35				C	C	C	C	C	C	C	C					X 88	X 38	X 35	A	
11	A	A	40	X 34	36	A																X 74	X 61	A	47	
12	47	44	A	A	A	A																X 67	A	A	38	
13	31	A	X 40	44	36	32																A	X 74	X 66	X 36	
14	A	44	X 40	44	A	32																X 70	X 68	X 55	X 46	
15	X 43	39	53	47	A	X 31															C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	X 70	X 62	60	59	
18	59	X 58	X 50	X 36	A	34																X 63	X 48	X 41	X 39	
19	X 41	X 38	X 37	X 34	A	X 37																A	X 55	X 50	A	
20	X 45	X 46	A	X 44	A	X 38																X 86	72	72	70	
21	X 68	X 58	67	A	58	X 50																X 71	X 65	X 63	X 61	
22	X 60	X 60	X 57	X 53	X 49					C												X 59	X 60	X 58	X 58	
23	X 58	X 53	X 54	A	X 39																	X 99	X 51	X 50	X 50	
24	X 54	60	59	68	64																	X 89	X 50	X 45	X 48	
25	52	47	46	44	X 37																	X 72	X 65	X 62	X 48	
26	X 44	X 46	X 45	X 37	X 35	38																	X 109	X 78	X 45	A
27	A	A	A	39	38																		X 81	X 72	X 55	X 53
28	56	58	X 47	X 34	X 34																		X 79	X 72	A	A
29	A	A	X 78	X 70	A	62																	X 80	X 67	X 59	X 58
30	59	X 54	X 53	X 58	X 49	53																	X 48	X 50	X 48	X 48
31	X 46	X 44	X 44	X 46	X 42																		X 65	X 58	X 43	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	24	24	24	23	21	19	2															27	27	23	22	
MED	52	47	48	44	37	35	53															X 78	X 62	X 55	52	
U Q	56	54	54	49	44	42																X 86	X 68	X 60	56	
L Q	X 44	X 45	X 44	X 38	X 35	32																	X 70	X 51	X 45	47

MAY 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	36	F38	F39	F40	26	F22	44	60	59	57	58	60	76	91	95	94	91	90	99	90	68	51	A	F42	
2	F47	F41	F	F36	F34	28	43	A	53	55	58	63	75	86	95	100	99	93	82	82	72	36	F28	F34	
3	F35	F34	A	A	F	F29	47	51	53	51	57	58	65	82	94	94	96	96	98	A	83	56	51	F48	
4	F	F	F	A	A	F	F48	Z60	A	A	A	66	81	92	100	106	108	97	92	91	69	56	A	F	
5	F	F	F40	F30	26	F23	38	56	56	A	54	54	66	87	96	101	99	96	94	94	76	66	54	46	
6	F43	F37	F35	F31	30	26	44	56	56	A	R53	A	77	90	103	120	108	90	82	81	72	F58	30	A	
7	F	27	F	F	F37	33	42	69	57	A	A	A	A	A	A	89	91	84	84	95	78	F	F	F	
8	F	F39	F33	A	F29	27	58	55	A	A	A	56	A	74	80	84	94	90	82	85	88	A	A	A	
9	A	A	R32	A	A	22	41	48	48	50	72	50	H51	64	79	82		80	103	92	51	44	43	F43	
10	42	F37	F37	F35	F31	F27	42	54	54	C	C	C	C	C	C	C	C	92	98	97	82	31	29	A	
11	A	A	F34	28	30	A	40	52	A	A	53	A	A	78	90	101	106	117	107	82	68	55	A	F39	
12	F38	F37	F36	33	A	A	42	77	52	44	A	A	67	A	A	96	89	74	62	A	61	A	A	F30	
13	F22	A	A	A	F21	A	36	60	64	A	A	48	55	A	83	89	90	84	73	A	A	68	60	J30	
14	A	F35	F34	F30	F	F23	38	52	A	A	53	56	65	78	88	92	106	93	77	C	C	C	C	40	
15	37	F32	F36	F34	A	25	40	A	54	56	A	A	63	82	99	104	106	96	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	80	C	C	R64	56	53	F52	
18	52	52	44	30	A	26	45	46	49	49	58	51	54	65	80	90	90	100	96	77	A	57	42	35	33
19	35	32	31	28	A	31	44	54	54	54	50	53	56	57	60	65	68	72	80	A	A	48	44	A	
20	J39	U40	A	A	A	32	51	A	A	A	53	64	81	93	94	90	85	87	92	V	80	65	F	F	
21	J62	R52	F54	A	F49	44	48	50	V49	46	A	A	50	A	57	61	68	72	61	64	65	59	57	55	
22	54	54	51	47	43	41	52	63	C	54	A	A	55	62	73	76	78	85	83	A	53	54	48	52	
23	Z52	47	48	A	R33	A	A	A	A	A	A	A	A	76	90	95	99	93	81	89	93	46	44	44	
24	48	F52	F51	F58	F55	42	48	59	A45	48	50	54	63	71	83	94	88	73	68	66	82	44	39	F38	
25	F38	32	F34	F34	31	31	48	52	A	A	A	64	74	84	92	95	103	104	95	78	66	59	56	42	
26	38	40	39	31	29	F25	38	A	72	A	A	A	A	A	73	A	A	A	78	84	103	72	39	A	
27	A	A	A	32	F27	26	49	55	A	A	A	A	A	58	66	76	79	89	92	90	75	66	48	47	
28	47	F49	41	28	28	27	47	A	R63	56	A	A	74	86	92	102	111	90	94	92	73	66	A	A	
29	A	A	72	R61	A	F	54	A	A	52	65	72	73	69	62	61	67	77	80	A	74	R61	53	52	
30	53	48	47	F48	43	39	33	38	45	RE42	GE42	GE42	A	A	A	A	A	62	A	54	42	44	42	42	
31	40	38	38	F38	36	34	43	50	49	49	54	55	54	52	54	A	70	83	72	60	59	52	37	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	20	22	22	21	19	23	27	23	19	15	14	17	21	22	25	25	25	29	27	22	27	26	21	19	
MED	41	38	38	F34	31	27	44	54	54	51	54	55	65	78	88	94	91	90	83	84	72	56	44	42	
U Q	50	48	47	40	F37	33	48	60	57	55	58	62	74	86	94	100	104	94	95	92	80	62	53	F48	
L Q	38	35	34	30	F28	25	40	51	49	48	53	52	55	65	73	83	84	80	78	77	64	46	38	F38	

MAY 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	LU	LU	UR	UB		UA	UA	A								
2								A	A	UL	A	456	460	460	464	440	432	396	L						
3								L	LU	LU	L	A	A	UB	UA	UA	A				A				
4								A	A	A	A	448	A	UA	AO	R	468	420	416	408					
5								L	L	A	A	A	UA	A	A	A	A	L	A						
6								L		A	A	A	A	A	A	412	420	384	UL	A					
7									L	A	A	A	A	A	A	UA	UA	A	A	A					
8									A	A	A	A	A	A	A	A	A	A	A						
9									A	A	448	448	A	UA	UA	A			A						
10								L	UL	C	C	C	C	C	C	C	C	388	348	L					
11									A	A	A	A	A	A	A	A	A	384							
12									L	L	A	A	A	A	A	A	A	A			A				
13									L	A	A	A	A	A	A	A	AO	R	A	A					
14									A	A	A	A	A	448	448	464	424	388	UYE	UYE	Y				
15									A	A	A	A	A	UA	A	A	396		C	C					
16								C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17								C	C	C	C	C	C	C	C	C	C	388	C	C					
18									UL	436	440	436	444	A	436	432	412	400	L						
19									A	A	432	444	452	A	A	A	400	A	A						
20							A	A	A	A	A	A	R	444	444	436	416	396	356	L					
21									400	A	A	L	UA	UA	428	420	392	392	360	UL					
22									C	L	A	A	A	A	A	A	416	A		A					
23					A	A	A	A	A	A	A	A	A	A	A	A	A	404	364	L					
24								L		L	436	436	444	448	440	436	412	388	396	UL					
25								L	A	A	A	452	A	A	440	A	420	404	A						
26								A		A	A	A	A	A	A	A	A	A	A						
27								A	A	A	A	A	A	A	A	436	420	392	A						
28								A	L	A	A	A	A	460	452	432	424	396	L						
29								A	UL	A	A	A	A	A	A	A	420	388	364	A					
30									336	380	396	416	424	A	A	A	A	A	A						
31								L	UL	L	412	420	436	436	440	440	448	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								1	8	9	8	12	10	9	14	14	15	21	6						
MED								336	L	L	436	444	448	448	446	436	420	396	362	L					
U Q								408	UL	UL	444	450	460	460	452	440	424	400	364	L					
L Q								L	394	410	432	436	440	446	440	424	416	388	356	L					

MAY 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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							168	236	284	328	B	B	B	B	B	B	288	248		A	A			
2							A	U A	232	280	296	A	A	A	A	U A	348	296	264	196		A		
3							B	240	296	336	U R	B	B	B	B	B	316	268	204		A			
4							180	U A	240	280	A	A	A	A	A	A	R	U R	U A	A	A			
5							A	A	A	A	A	A	B	A	A	A	R	336	300	260		A	A	
6							A	232	280		A	A	A	A	A	A	332	320	268		A	A		
7							172	248	292	296		A	A	A	A	A	A	R	A		A			
8							172	236	288	308	324	352		A	A	A	A	304	264	208		A		
9							A	A	A	A	A	A	A	A	A	A			264	208		A		
10							A	232	288		C	C	C	C	C	C	C	C	U A	A				
11							A	220	268	316	U A	U A	A	A	A	A	A	A	284	204		A		
12							A	U A	240	268	304		A	A	A	A	A	A	A	A		A		
13							A	A		296	304		A	A	A	A	A	A	A		212			
14							192	248	292	312		A	A	A	A	U R	352	332	308	276	216			
15							A	256	280	304		A	A	A	B	B	332	304	276		C	C		
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
17							C	C	C	C	C	C	C	C	C	C	C	C	268		C	C		
18							180	252		A	A	A	A		348	344	324	300	272	220		A		
19							196	232	U A	U A	316	340		A	U A	352	360	344	336	304	276	208		
20							A	240	U A	296	A	A	A	A	A	A	332	300	268	200		A		
21							A	228	268	304	336	348	360		A	340	332	304	268	200	152			
22						B	A		C	312		A	A	A	A	A	A	308	268		A	A		
23						B	A	U A	256	A	A	A	A	A	A	A	A	A	A	A	A			
24						B	A	252	300	U A	328	344	356	360	368	356	336	304	268	204	200			
25						B	A	U A	252	A	A	A	A	A	A	A	340	316		A	A			
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A		
27						B	A	A	A	A	A	A	A		360	348	340	320	280	232		A		
28						B	A	A	A	A	A		324		A	A	A	320	308	272	228			
29						B	A		A		A											A		
30						B	A	244	292		340	352	340	344	344	328	308	272	224		A			
31						A	A	U A	228	280	304	336	340	356	332	336	324	300	264	224		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							7	23	20	16	9	7	6	7	10	15	21	24	19	2				
MED							180	240	282	310	336	348	358	356	344	332	304	268	212	176				
U Q							192	252	292	320	342	352	360	360	348	336	308	274	220					
L Q							172	232	278	304	328	340	352	344	340	328	300	264	204					

MAY 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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

MAY 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	E B 14 27	E B 15 18	E B 15 18	E B 15 18	E B 15 18	E B 15 18	G	26	31	40	E B 42 40	E B 47 45	E B 45 45	E B 45 45	45	46	45	36	56	41	23	18	A A 85 25		
2	E B 14 22	A A 62 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	A A 24 64	45	38	45	40	41	U Y 37 41	34	41	G	30	30	22	16	24	18	15	
3	E B 14 23	A A 84 56	A A 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 15 20	G	33	39	40	45	46	45	44	44	42	60	67	A A 108	51	28	20 25	
4	19	29	18	24	A A 64	20	19	30	A A 63	A A 86	A A 130	40	56	49	47	U Y 36	34	33	58	40	18	E B 14	A A 57	A A 19	
5	21	20	22	16	22	E B 14	19	26	35	A A 105	46	47	46	52	53	49	49	39	40	48	29	22	29	21	
6	18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	28	54	A A 62	47	95	62	47	60	40	38	32	40	28	31	29	21 48	
7	E B 14	21	26	20	23	22	19	37	34	A A 91	A A 81	A A 69	A A 72	A A 87	A A 122	42	44	44	44	47	21	33	24	20	
8	16	15	E B 14	E B 14	E B 14	E B 14	E B 14	21	44	A A 60	A A 81	A A 109	48	74	64	53	56	63	74	48	46	22	A A 80	A A 68	A A 62
9	A A 58	A A 63	23	67	74	A A 14	24	37	44	44	45	43	44	47	43	44		40	46	74	32	20	20	E B 14	
10	25	E B 14	19	E B 14	18	18	22	29	37	C	C	C	C	C	C	C	C	C	34	30	25	E B 14	17	18 46	
11	A A 48	A A 49	17	19	22	A A 42	31	33	57	59	48	74	131	67	78	60	50	32	32	24	26	29	A A 55	E B 14	
12	28	17	E B 14	E B 14	A A 46	A A 47	27	30	34	39	A A 52	A A 67	49	128	110	66	50	55	57	A A 93	36	A A 106	A A 53	E B 14	
13	19	A A 62	53	31	E B 14	E B 40	22	31	38	63	48	45	49	106	54	80	58	34	34	A A 87	92	31	26	26	
14	A A 64	E B 14	28	E B 14	E B 14	E B 14	G	32	A A 60	A A 89	45	50	48	42	39	G U 38	Y U 35	Y U 38	32	C	C	C	C	C	
15	E B 14	16	21	16	A A 58	E B 14	30	A A 56	48	48	A A 70	A A 61	55	44	45	74	48	32	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	C	C	E B 16	18	E B 16	E B 16
18	E B 16	16	E B 16	E B 16	A A 38	E B 16	G	14	30	40	36	37	44	37	49	G	43	37	36	27	25	38	E B 16	E B 23	E B 16
19	19	23	E B 16	E B 16	E B 67	A A 21	G	36	42	48	37	36	39	48	48	54	53	31	44	A A 190	102	36	20	A A 67	
20	32	30	A A 66	A A 16	E B 88	A A 25	A A 72	47	97	126	90	42	40	38	38	G	G	G	G	G	E B 16	E B 14	22	21	
21	35	34	27	79	36	E B 16	29	25	42	34	A A 60	A A 46	39	226	43	G	G	G	24	G	E B 14	E B 16	22	E B 16	
22	20	E B 16	E B 16	E B 16	E B 16	E B 16	39	35	C	A A 34	A A 103	A A 103	46	52	49	49	36	41	36	A A 78	34	26	40	23	
23	E B 16	22	33	103	26	A A 62	A A 57	A A 108	A A 130	A A 97	A A 166	A A 165	A A 203	61	52	53	63	34	33	21	E B 14	18	20	21	
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 18	22	G	31	33	36	38	39	40	38	38	35	32	23	16	18	18	E B 16	19	
25	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	20	31	A A 74	A A 82	A A 163	37	46	58	41	50	42	37	53	37	50	28	E B 16	E B 16	
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	A A 71	A A 64	A A 129	A A 259	A A 85	A A 206	A A 254	56	A A 95	A A 119	A A 106	66	40	29	28	18	A A 48	
27	A A 52	A A 87	A A 62	A A 16	E B 16	E B 15	31	A A 43	A A 88	A A 125	A A 90	A A 200	A A 174	51	52	40	40	39	43	40	46	34	E B 36	E B 16	
28	20	18	E B 16	23	E B 13	E B 16	34	A A 74	38	48	A A 61	A A 62	54	44	39	40	33	30	26	80	28	47	A A 102	A A 85	
29	A A 86	A A 110	51	42	A A 128	35	A A 34	A A 90	A A 156	36	53	38	28	G	41	53	57	38	G	A A 25	A A 75	30	35	19	20
30	28	30	25	27	E B 16	E B 20	19	25	G	35	37	38	A A 43	A A 53	A A 54	A A 48	A A 61	A A 52	A A 52	27	28	33	20	20	
31	20	18	20	17	E B 16	E B 16	20	29	38	35	40	39	40	41	45	A A 86	48	54	54	25	19	20	E B 16	A A 52	
	00	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	29	29	E B 29	29	29	28	28	28	28	28	28	28	28	27	30	28	28	29	29	29	29	
MED	19	21	20	17	18	E B 16	22	32	43	48	50	46	46	49	48	47	42	34	40	40	28	28	22	21	
U Q	A A 30	A A 30	A A 30	A A 29	A A 42	A A 22	A A 30	A A 46	A A 62	A A 88	A A 90	A A 68	A A 59	A A 62	54	56	50	41	52	A A 74	37	33	A A 38	A A 38	
L Q	E B 16	E B 16	E B 16	E B 16	E B 14	E B 14	19	28	36	37	44	40	40	44	42	40	36	32	30	25	E B 18	18	18	E B 16	

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	15	15	15	15	15	16	17	25	42	40	47	45	36	34	20	18	16	16	15	14	14	14
2	14	14	14	14	14	14	15	17	18	20	29	34	24	29	24	22	19	15	15	14	14	14	14	14
3	14	14	14	14	14	14	15	16	18	20	26	39	40	45	36	34	24	17	16	15	14	14	16	14
4	14	15	14	14	14	14	14	17	19	24	33	28	40	40	36	25	24	18	14	16	14	14	14	14
5	14	14	14	14	14	14	15	14	17	19	25	27	39	40	36	25	26	17	17	12	14	14	14	14
6	14	14	14	14	14	14	14	14	18	20	24	27	28	30	35	24	20	14	14	14	15	14	14	14
7	14	14	14	14	16	15	15	16	17	21	20	34	32	30	30	34	24	20	17	15	14	14	14	14
8	14	14	14	14	14	14	14	18	16	18	28	28	39	33	30	30	21	16	13	16	15	14	14	14
9	14	14	14	14	14	14	14	16	14	22	26	29	29	29	27	25		16	14	14	14	14	14	14
10	14	14	14	14	14	14	15	14	17		C	C	C	C	C	C	C		20	16	15	14	14	14
11	14	14	14	14	14	14	14	14	16	20	20	22	34	35	30	26	24	16	16	15	14	14	14	14
12	14	14	14	14	14	14	15	16	17	20	21	25	34	26	25	21	17	16	14	14	14	14	14	14
13	14	14	14	14	14	14	15	20	18	19	26	32	30	30	28	28	24	17	14	15	14	14	14	14
14	14	14	14	14	14	14	14	15	14	18	21	25	24	36	29	29	20	18	14	14	14	14	14	14
15	14	14	14	14	14	14	15	15	18	20	23	35	37	39	35	25	20	16	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		14	C	C			
18	16	14	16	16	16	16	14	12	14	16	16	20	20	21	18	19	16	13	14	11	16	16	16	16
19	16	16	16	16	16	14	14	15	12	14	15	18	18	20	18	19	16	16	12	12	15	15	16	16
20	16	16	16	16	14	14	14	14	14	15	18	18	23	19	22	16	14	14	12	14	16	14	14	16
21	16	16	16	16	14	16	14	14	14	16	19	22	21	20	20	17	15	14	12	12	14	16	14	16
22	16	16	16	16	16	16	16	15	C	18	21	19	18	21	22	18	15	16	14	14	15	16	16	16
23	16	16	16	16	16	16	16	13	14	15	17	18	23	23	22	18	18	14	14	10	14	16	16	16
24	16	16	16	16	16	14	15	14	14	14	21	27	21	27	22	18	16	15	14	14	14	14	16	16
25	16	16	16	16	15	16	16	14	14	14	17	20	21	28	21	22	18	16	14	12	15	14	16	16
26	16	16	16	16	16	16	14	14	14	14	17	17	21	20	21	18	15	14	14	15	16	16	16	16
27	16	16	16	16	16	15	14	14	14	16	20	20	20	20	21	21	16	15	15	11	14	16	16	16
28	16	16	16	16	13	16	16	12	14	17	19	18	21	20	21	19	16	14	13	11	16	16	16	16
29	16	16	16	16	15	16	14	14	14	14	17	19	22	22	20	20	16	14	14	14	14	16	16	16
30	16	16	16	16	16	16	14	12	15	16	18	22	20	22	19	23	17	14	14	11	14	16	16	16
31	16	16	16	16	16	16	16	14	15	16	18	18	24	21	22	19	16	15	13	14	14	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	29	29	29	29	29	29	29	29	28	28	28	28	28	28	28	28	27	30	28	28	29	29	29	29
MED	14	14	15	15	14	14	15	14	15	18	20	24	24	28	23	22	18	16	14	14	14	14	14	16
U Q	16	16	16	16	16	16	15	16	17	20	26	28	34	34	30	26	21	17	15	15	15	16	16	16
L Q	14	14	14	14	14	14	14	14	14	16	18	19	21	21	21	19	16	14	14	12	14	14	14	14

MAY 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	302	323	F	F	F	F	309	356	380	356	367	297	289	287	312	325	322	321	315	338	352	345	352	A	F			
2	F	F	F	A	F	F	311	320	356	A	385	323	312	295	291	294	305	312	317	331	336	337	384	375	F	F		
3	F	F	A	A	F	F	336	404	369	350	314	320	287	271	288	311	316	313	325	333	A	349	318	316	F	F		
4	F	F	F	A	A	F	F	361	389	Z	A	A	A	283	287	297	309	314	328	328	333	352	367	344	A	F		
5	F	F	F	F	F	F	361	367	367	366	A	331	265	269	297	315	323	330	328	325	339	340	342	316	303	A		
6	F	F	F	F	F	F	309	352	373	383	383	A	R	A	282	294	314	332	334	310	319	339	346	342	F	A		
7	F	307	F	F	F	F	309	313	354	380	381	A	A	A	A	A	307	319	311	319	347	361	F	F	F			
8	F	F	F	A	F	F	324	381	404	A	A	A	289	A	282	302	300	324	335	315	333	365	A	A	A			
9	A	A	R	A	A	A	348	371	396	347	314	353	354	276	290	307	316	A	296	345	370	359	309	312	300	F		
10	329	335	F	F	F	F	367	361	368	350	C	C	C	C	C	C	C	C	C	C	314	331	344	370	424	297	A	
11	A	A	F	F	F	F	A	A	375	371	A	A	A	A	279	295	308	311	335	360	339	350	356	A	F	F		
12	F	F	F	F	A	A	346	397	386	396	A	A	283	A	A	332	336	329	335	A	A	326	A	A	A	F	F	
13	F	A	A	A	F	A	344	A	A	A	A	A	280	290	A	306	309	315	317	342	A	A	A	A	A	J	R	
14	A	F	F	F	F	F	308	349	361	A	A	328	311	292	291	299	313	336	352	320	321	326	340	355	316	C	C	
15	315	292	F	F	F	F	337	363	A	381	369	A	A	277	282	300	311	313	320	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	328	336	377	346	A	321	383	394	354	311	350	287	261	271	289	308	301	322	360	351	A	333	335	294	291	A	F	
19	307	311	320	294	A	314	355	368	307	377	299	296	311	303	306	312	291	298	315	A	A	359	312	A	A	F	F	
20	303	U	A	A	A	333	370	A	A	A	A	291	262	279	303	308	307	278	303	316	V	341	292	F	F	F	F	
21	J	R	F	F	F	311	309	322	312	277	268	A	A	264	A	300	300	309	326	298	299	A	321	305	300	299	F	F
22	293	318	316	317	309	327	368	373	A	361	A	A	278	281	290	289	304	312	346	A	A	306	290	296	298	F	F	
23	Z	292	373	A	R	A	A	A	A	A	A	A	A	A	284	303	301	318	323	309	325	371	294	297	280	F	F	
24	288	307	299	334	354	326	340	398	370	313	284	280	297	278	289	313	330	326	315	316	362	382	307	293	F	F	F	
25	F	290	300	315	325	375	372	366	A	A	A	A	295	276	287	296	295	315	333	336	331	320	350	343	322	A	A	
26	305	316	336	310	319	329	332	404	A	A	A	A	A	A	A	313	A	A	A	291	308	355	423	324	A	A	A	
27	A	A	A	308	318	340	354	389	A	A	A	A	A	A	277	279	283	288	303	327	340	335	351	352	299	A	A	
28	297	318	309	322	299	310	352	A	R	335	333	A	A	261	281	277	290	334	294	306	322	298	292	A	A	A	A	
29	A	A	274	286	F	319	A	A	A	329	327	329	312	327	301	290	281	288	314	A	327	340	287	278	R	F	F	
30	297	278	272	276	296	352	303	268	301	255	R	G	G	A	A	A	A	A	329	A	362	303	291	301	305	A	A	
31	309	306	290	296	324	337	393	380	342	307	321	320	300	295	291	A	290	318	337	311	332	348	318	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	18	22	22	21	19	23	27	23	19	15	14	17	21	22	25	25	25	29	27	22	27	26	21	19				
MED	302	307	318	322	321	329	356	373	356	323	322	289	282	288	302	309	315	322	327	338	341	341	312	299				
U Q	309	318	331	340	344	348	372	389	381	367	328	304	292	295	308	315	329	329	337	347	361	352	321	306				
L Q	292	292	306	299	309	314	346	368	342	311	299	282	270	281	293	300	306	310	315	321	326	309	297	291				

MAY 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	A	B		B	B	A	A	A							
2								A	A	U	L	A	429	434	378	346	390	370	367	L				
3								L	U	L	A		A	A	B	A	A	A		A				
4									A	A	A		430		A	A	Y	359	356					
5								L	L	A	A	A	A	A	A	A	A	A	A	A				
6								L		A	A	A	A	A	A	A	398	U	L	A				
7									L	A	A	A	A	A	A	A	A	A	A	A				
8									A	A	A	A	A	A	A	A	A	A	A					
9									A	A	A	A	A	A	A	A	A	A	A					
10								L	U	L	C	C	C	C	C	C	C	C	L					
11									A	A	A	A	A	A	A	A	A	A	361					
12									L	L	A	A	A	A	A	A	A	A	A		A			
13									A	A	A	A	A	A	A	A	A	A	O	R	A	A		
14								L	A	A	A	A	A				Y	Y	Y					
15								A		A	A	A	A	A	A	A	A	A		C	C			
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
18									U	L	A	A	436		A	A	A	A	L					
19									A	A	435	426	402		A	A	A	A	A	A				
20						A			A	A	A	A	R	395	402	400	406	394	402	364	352			
21										415	A	A	L	A	A	A	404	412	374	U	L			
22								C	H	A	A	A	A	A	A	A	A	A	A		A			
23					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
24								L		L	431	432	434	397	389	389	388	408	U	L				
25								L	A	A	A	426		A	A	A	A	A	A	A				
26								A		A	A	A	A	A	A	A	A	A	A	A				
27								A	A	A	A	A	A	A	A	A	A	A	A	A				
28								A	L	A	A	A	A	352	364	A	A	369	353	L	L			
29								A	A	U	L	A	413	373	377	A	A	381	370	358	A			
30									396	378	425	421	445		A	A	A	A	A	A				
31								L	U	L						A	A	A	A					
									362	412	412	454	421	422										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	7	9	7	11	8	7	7	5	10	17	6					
MED								396	386	390	412	426	412	397	404	390	384	370	360					
U Q									401	419	431	432	434	410	406	399	402	374	368					
L Q									378	380	378	413	398	377	364	382	369	361	357					

MAY 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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								226	244	244	370	372	346	294	282	282	286	280						
2								A	238	314	336	364	330	336	308	298	290	262	252					
3								220	264	318	332	400	400	344	306	284	298	282		A				
4									A	A	A	376	354	334	312	302	268	262						
5								250	246		A	316	464	424	332	300	284	272	268	264				
6								228			A	320		A	A	A	258	254	266	258				
7									228		A	A	A	A	A		304	280	298	276				
8									A	A	A	386		A	A	320	318	292	280					
9									A	296	360	264	288	396	368	318	292		316					
10								240	268		C	C	C	C	C	C	C	C	296	260				
11									A	A	E	A	A	A	E	A	400	364	310	296	262			
12									L	224	248		A	A	A	A	276	268	272			A		
13									A	242		A	E	A	A	A	316	344	290	274	260			A
14								250		A	A	324	360	342	338	320	306	270	242					
15									A		250		A	A	402	358	314	296	282	274		C	C	
16								C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17								C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18											356	278	422	468	402	330	288	296	278	216				
19										322	244	382	402	348	350	344	324	328	314	280				A
20							A		A	A	A	370	422	348	310	288	284	326	284					
21										468		A	A	A	A	360	348	310	272	310				
22									C	276		A	A	418	378	340	328	308	290				A	
23						A	A	A	A	A	A	A	A	A	A	360	312	314	282	268	268			
24								212		L	354	422	416	358	360	336	292	260	274	296				H
25								236		A	A	A	356	354	344	328	324	294	268	250				
26									A		A	A	A	A	A	312		A	A	A				360
27								220		A	A	A	A	A	E	A	418	384	342	328	310	260		
28									A	266	306		A	A	404	346	352	316	254	298	288			
29									A	A	L	300	302	290	292	284	340	406	356	316	264			A
30								466	368	520		G	G	A	A	A	A	A	A	A	A	A	A	A
31								228	306	366	324	332	372	390	392		A	356	268					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								11	13	15	14	17	21	22	25	25	25	29	17					
MED								228	264	314	325	374	382	347	319	303	290	274	264					
U Q								250	301	360	370	419	411	378	342	324	303	298	286					
L Q								220	240	250	316	358	351	338	311	288	271	268	259					

MAY 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	284	284	232	236	234	262	224	220	204	238	246	188					254	252	224	222	204			340		
2	286	310		288	238	256	218			210		188	184	242	282	190	202	210	250	238	188	206	342	330		
3	280	316			284	258	198	198	204	246	226								270		232	250	262	264		
4	286	302	262	310		284	226	198					186				234	236	250	230	194	200		278		
5	290	296	240	208	274	226	224	220	214												244	208	224	242	274	
6	270	270	254	232	244	204	224	214	252								224	226		224	224	240	248			
7	272	348	280	290	284	270	226	226	220												232	206	254	308		
8	230	252	236		254	252	218	208												262	246	214				
9			248			240	230	220					260							252	238	224	276	274		
10	270	244	244	252	250	242	236	236	244										242	252	218	192	186	328		
11			268	216	216		226	236											226	228	220	208	228	284		
12	322	312	256	228			252	208	194	200									308		246			290		
13	294				260		228	246											248				242	214	258	
14		268	348	222	262	268	218	230						226	200						268	256	260	238	266	
15	264	306	278	210		254	246		242										220							
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	250	224	192	232		240	200	200	250	224	234		186		182		224		212	210	242	216	298	304		
19	292	274	246	292		288	220	232			190	170	224						202				236	260		
20	334	340		298		266		272					234	226	198	210	200	186	190	216	246	202	234	290	294	
21	316	346	238		270	212	274	206	426	230			230				200	194	206	202	220	218	230	256	270	
22	280	252	226	238	248	230	234	232		208								246		238		284	276	350	290	
23	280	332	208		276															224	260	232	202	192	288	310
24	302	276	258	226	192	242	216	202	182	176	172	188	186	228	226	232	224	194	192	246	212	184	270	290		
25	300	302	260	238	248	206	204	206				164			204				246		238	278	220	212	230	
26	266	266	232	258	258	240	234		214												278	216	178	248		
27				278	304	242	250										260				236	238	206	246	248	
28	292	254	258	292	298	262	252		234					306	252		204	224	248	300	254	324				
29			358	336		256	232			208		186	224	234			238	178	224		240	220	284	306		
30	292	328	324	308	276	260	234	212	214	202	196	188									216	298	328	272	290	
31	280	312	316	266	226	216	208	206	278	190	200	172	208	208						260	246	232	228	226		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	24	24	24	23	21	25	27	22	15	11	7	11	8	7	7	5	10	17	19	22	27	27	23	22		
MED	284	286	253	245	254	247	226	215	212	205	198	187	216	228	207	200	224	215	249	237	220	228	265	284		
U Q	293	314	273	292	276	262	234	232	250	230	234	188	225	242	252	246	234	239	260	246	242	250	288	304		
L Q	271	267	237	228	241	235	218	206	204	200	190	172	186	208	200	195	202	203	224	224	208	206	246	266		

MAY 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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							134	110	108	108	B	B	B	B	B	B	108	108	A	A				
2							A	114	110	108	A	A	A	A	108	A	108	108	112	A				
3							B	118	112	108	108	B	B	B	B	B	110	110	112	A				
4							122	116	110	A	A	A	A	A	A	110	110	110	A	A				
5							A	A	A	A	A	A	B	A	A	110	110	110	A	A				
6							A	110	110	A	A	A	A	A	A	110	116	116	A	A				
7							116	110	110	108	A	A	A	A	A	A	110	A	110	A				
8							130	114	108	108	108	108	A	A	A	A	108	108	116	A				
9							A	A	A	A	A	A	A	A	A	A		110	112	A				
10							A	110	110	C	C	C	C	C	C	C	C	110	110	A				
11							A	110	110	108	108	A	A	A	A	A	A	110	112	A				
12							A	112	110	108	A	A	A	A	A	A	A	A	A	A				
13							A	A	110	110	A	A	A	A	A	A	A	A	A	A				
14							122	116	108	108	A	A	A	A	112	112	112	110	114	A				
15							A	112	110	108	A	A	A	B	B	110	110	110	C	C				
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18							120	112	A	A	A	A	A	100	102	100	100	100	106	A				
19							112	102	102	102	100	A	100	100	100	100	100	102	102	A				
20							A	100	100	A	A	A	A	A	A	100	102	106	108	A				
21							A	100	108	102	102	104	104	A	100	100	100	100	100	100				
22						B	A	100	C	100	A	A	A	A	A	A	104	104	A	A				
23						B	A	100	A	A	A	A	A	A	A	A	A	A	A	A				
24						B	A	100	98	98	98	100	100	102	102	102	A	104	104	124				
25						B	A	102	A	A	A	A	A	A	A	104	104	A	A	A				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
27						B	A	A	A	A	A	A	A	A	110	104	104	104	104	A				
28						B	A	A	A	A	A	100	A	A	A	104	104	104	104	A				
29						B	A	108	102	A	100	102	104	106	106	106	104	106	106	A				
30						B	A	104	104	104	102	102	102	102	102	A	A	104	104	A				
31						B	A	106	104	102	102	102	102	102	106	106	106	104	104	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							7	23	20	16	9	7	6	6	10	15	20	24	19	2				
MED							122	110	109	108	102	102	102	102	104	104	107	107	108	112				
U Q							130	112	110	108	108	104	104	102	108	110	110	110	112					
L Q							116	102	104	102	100	100	100	100	102	100	104	104	104					

MAY 2017 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	104	104	102	100	104	106		G	122	128	112		B	B	B	B	110	110	108	108	104	104	112	108	108	108
2	146	106	104	104	104	108	122	108	108	108	106	106	108	108	112	104		G	124	114	110	104	106	106	110	
3	114	106	106	106	106		B	B	104	146	130	128	124	124		B	124	124	128	114	112	106	106	106	102	100
4	108	108	108	104	104	100	120	118	112	104	102	108	132	130	126	114	114	108	104	100		98		B	98	100
5	102	100	100	100	100	108	102	112	102	100	100	104	118	112	112	112	110	108	106	104	102	100	102	102	102	
6	102	92	90	100	100	126	120	118	112	108	108	98	102	108	108	112	130	114	108	108	102	114	114	104	104	
7	106	104	100	100	94	104	124	112	112	100	104	104	100	104	110	122	120	116	110	104	104	124	108	108	108	
8	104	108	104	104	104	122	124	118	114	110	106	114	130	124	124	118	118	112	108	108	108	108	108	108	106	
9	106	106	102	102	102	102	102	102	112	110	102	102	102	100	100	132		118	110	108	108	110	108	102	102	
10	100	104	104	104	98	98	126	118	112		C	C	C	C	C	C		C	126	112	108	96	110	110	106	
11	106	106	104	100	100	100	120	116	108	108	106	102	102	102	102	102	100	126	116	114	106	104	104	104	104	
12	104	98	98	98	100	102	114	110	110	110	108	104	104	102	96	98	122	116	112	108	108	108	108	108	106	
13	98	104	100	100	108	102	126	120	116	106	108	106	104	100	100	98	100	100	114	104	106	106	104	104	104	
14	104	100	104	104	100		B	G	120	108	108	126	104	104	116	120		132	134	116	114	104	104	106	108	
15	104	106	102	102	100	100	122	114	114	114	108	108	112	120	138	110	110	124		C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	C	C					
18	100	94	92	114	94	132	102	120	108	108	110	106	102	106		G	104	106	104	110	96	96	98	94	94	
19	102	96	98	92	92	94		G	114	106	100	152	108	108	128	118	112	108	112	108	102	98	108	112	100	
20	116	100	96	96	106	110	110	108	98	98	98	98	94	98	92		G	92	94	136	102	98	106	102	94	
21	90	94	90	90	90	88	116	152	122	110	118	122	134	106	106		G	G	G	112		G	120	88	88	86
22	86	86	84	84	100	108	108	108		C	106	106	94	94	114	124	114	112	106	106	98	92	92	88	84	
23	86	98	96	96	96	110	104	102		G	96	96	94	124	92	122	94	94	94	94	92	90	90	88	86	86
24	112	112	110	102	100	106	132		G	106	108	116	136	126	118	128	122	118	120	126	96	88	88	156	98	
25	130	134	112		B	114	110	110	106	98	98	98	98	98	92	120	106	106	100	98	90	88	88	88	88	
26	B	82	B	80	84	98	120	104	100	96	96	94	112	98	92	92	98	92	88	88	86	86	96	94		
27	96	106	94	94	92	98	106	108	96	94	94	96	94	112	112	156	136	114	106	100	96	104	98	102		
28	98	98	94	96	96	118	104	100	96	96	96	94	94	96	96	116	128	180	142	106	100	100	94	98		
29	94	118	94	94	96	96	108	108	110	110	112	116	98	112	108	104	108		G	118	102	104	104	100	98	
30	96	96	96	90	100	124	108	128		G	118	150	140	140	122	118	98	108	106	102	92	92	88	92	92	
31	90	92	90	90	90	88	124	116	114	114	110	110	158	154	118	104	112	112	104	104	110	118	102	102	102	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	28	29	28	28	29	27	25	28	27	28	27	27	27	26	27	25	25	27	28	27	29	28	29	29	29	
MED	103	104	100	100	100	104	116	113	110	108	106	106	104	110	112	110	110	112	110	104	102	105	102	102		
U Q	106	106	104	103	104	110	123	118	114	110	112	114	124	120	120	117	121	120	114	108	106	108	108	105		
L Q	97	96	94	94	95	98	107	108	102	100	100	98	98	102	100	103	106	106	105	98	94	95	95	94		

MAY 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2017 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

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	F5	F5	F3	F3	F3	F1		C1	C1	C1					C1	C2	C3	C1	L2	L6	F4	F4	FQ31	FQ41	
2	FQ11	FQ41	FQ41	FQ21	F1	F1	C2	C5	C1	C1	C1	C1	C1	C1	C1	L1		C1	C2	C1	F1	F2	F3	F2	
3	F3	FQ31	FQ41	FQ31	F2			L1	H1	H1	C1	C1	C1	C1	C1	C1	C1	C2	C8	C9	F4	F4	F3	F3	
4	FF21	FF11	FF21	FF32	F3	F1	C1	C1	C3	L3	L3	HC11	H1	C1	C1	C1	C1	C1	L3	L3	FF11		F6	FQ21	
5	FQ21	FQ41	FQ31	F5	F5	FF11	L1	CL12	L2	L3	L2	L1	L1	C1	C2	C2	C1	C1	C2	L7	F3	F1	FF42	F3	
6	F1	F1	F1	F1	F1	F1	C2	C1	C2	C3	C2	L4	L2	C1	C2	C1	HL11	CL21	CL23	CL23	FF42	FQ41	F3	F5	
7	F4	FQ41	FQ31	FQ21	F1	F2	C1	C3	C1	L5	L2	L2	L2	L4	L2	C1	C1	CL21	C4	L2	F3	FF17	FQ41	FQ31	
8	FQ41	FQ81	F2	F71	F6	F1	C3	C2	C4	C4	C3	C3	CL22	CL11	CL11	CL1	C3	CL21	CL71	C8	FQ31	FQ41	FQ31	FQ41	
9	FQ41	F8	F3	F6	FQ31	FQ51	LQ31	LQ41	C2	C1	L1	L1	L2	L21	LH11	HL11		CL21	CL41	C8	FF51	F2	FF31	F2	
10	F4	FQ31	FQ31	FQ41	F1	F2	C2	C1	C2									C1	C1	CL11	F1	F1	FQ41	F8	
11	FQ31	F8	F3	F41	F4	FQ31	CL31	CL21	CL31	C2	C3	L2	L2	L2	L4	L2	L2	CL11	CL41	CL51	FF22	F2	F8	F2	
12	F3	F3	F3	F4	F8	F4	C3	C1	C1	C2	C2	L2	L3	LQ21	LQ41	LQ21	CL23	CL31	CL61	CL81	FQ41	FQ41	FQ31	F2	
13	FQ21	FQ31	F3	F3	F2	FQ31	C3	C1	C2	C1	C1	LQ11	LQ2	LQ21	LQ21	LQ31	21	LQ21	LC21	CL8	F8	F5	F2	FQ31	
14	FQ61	FQ21	F6	F3	F2			C2	C3	C3	CL12	LQ21	LQ11	C1	C1		H1	H1	C3	C2	F6	F9	F6	F7	
15	F7	FQ31	F5	FQ31	F41	F3	C3	C6	C3	C1	C3	C2	C2	C1	HC11	C5	C2	C1							
16																									
17																						F2	FF13	FQ21	FQ41
18	F4	F4	F3	FF17	F5	FF11	LC12	CL31	C3	CQ21	CQ11	CQ21	L1	C2		C1	C1	C2	C1	L3	FF93	FQ31	FQ71	FQ41	
19	FQ41	FQ31	FF22	F2	F7	F4		C5	C4	C5	H1	C1	C1	C2	C2	C5	C5	C1	C8	L5	F8	FQ41	FQ41	FQ91	
20	FF15	FQ91	FQ51	FQ31	FF29	FF15	F8	C8	L9	L9	LQ61	LQ21	LQ21	LC11	L3		L1	L1	H1	L3	F1	F3	FQ31	FQ51	
21	F5	FQ61	FQ81	FQ91	FQ61	FQ11	CQ41	H1	CL32	C1	C2	C1	H1	CQ51	C2				C1		F1	F1	F3	F2	
22	F4	F4	F2	F2	FF32	FF32	51	3			CQ11	CL25	LQ71	LH21	CL22	CL21	CL51	CL11	C5	CL62	LQ91	F5	FQ61	FQ61	
23	F2	F5	FQ51	FQ71	FF33	C7	L8	L9	L9	LQ71	LQ71	CLQ14	LQ91	LQ23	LQ21	LQ51	L6	L6	L6	L4	FQ41	FQ41	FQ51	F2	
24	FF23	FQ21	FQ21	FQ31	FQ41	CL14	HC14		C1	C1	C1	H1	C1	C1	CL11	CL11	CL11	CL11	CL11	L2	F4	F2	FF11	FF31	
25	FF12	FF12	F2		F2	C1	C2	C3	C8	C6	C5	LQ21	LQ21	LQ41	CL11	C4	C2	C2	L5	L5	F9	F7	F2	F5	
26		F1		F2	F1	L1	C2	C6	C6	L8	LQ61	LQ61	CL17	LQ61	LQ51	LQ61	LQ71	LQ91	LQ71	LQ61	FQ51	FQ51	FQ41	FQ51	
27	FQ41	FF15	FQ61	FQ31	F2	L2	CL15	CL13	LQ91	L8	L7	L8	L8	C2	C2	H1	H2	C2	C7	C8	F9	FF14	FQ41	FQ41	
28	FQ51	FQ91	F6	F8	F7	C1	C6	C5	L4	L3	L4	L3	L3	L2	LC21	C11	CL11	HL11	HL11	CL61	F8	FF91	F9	F9	
29	FQ91	FF19	FQ81	FQ91	FQ91	LC91	C8	C8	C8	C3	C5	C2	L1	C1	C3	C3	C2		C1	L6	F7	F3	F3	F5	
30	FQ71	FQ71	FQ51	FQ41	FQ21	C2	C1	C1		C1	H1	H1	H1	C2	C2	LC22	CHL41	CL2	C6	LH71	F7	F6	FQ51	FQ31	
31	FQ41	FQ31	FQ41	FQ31	FQ11	L1	C2	C2	C2	C1	C1	C1	H1	HC11	C2	C7	CL21	C8	C4	C6	FF17	FF13	FQ41	FQ51	
	00	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																									

f - PLOTS OF IONOSPHERIC DATA

KEY OF f - PLOT	
	SPREAD
◊	f _o F ₂ , f _o F ₁ , f _o E
×	f _x F ₂
*	DOUBTFUL f _o F ₂ , f _o F ₁ , f _o E
⊗	f _b E _s
└	ESTIMATED f _o F ₁
†, ‡	f _{min}
^	GREATER THAN
∨	LESS THAN

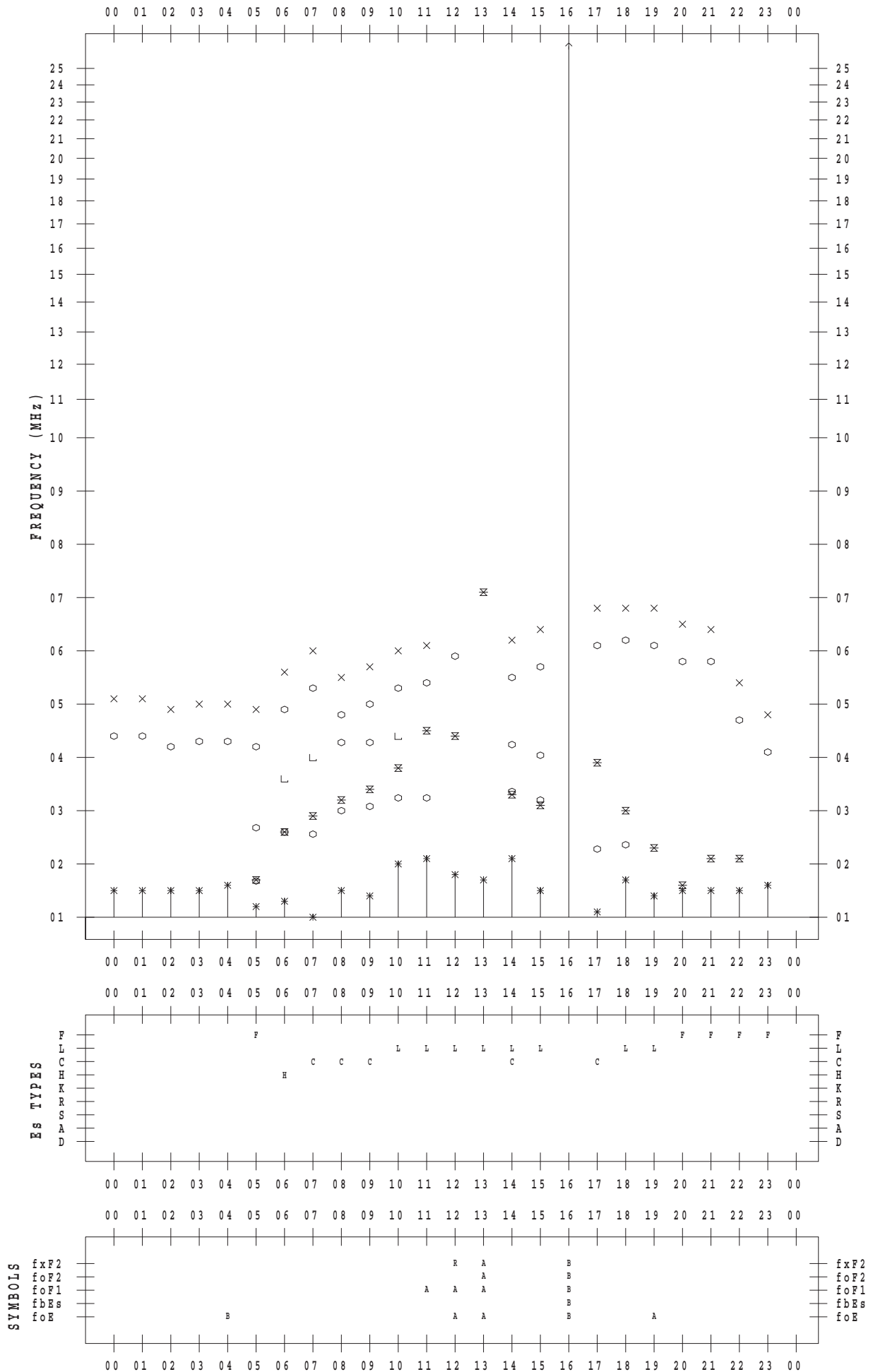
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 1

135 ° E MEAN TIME



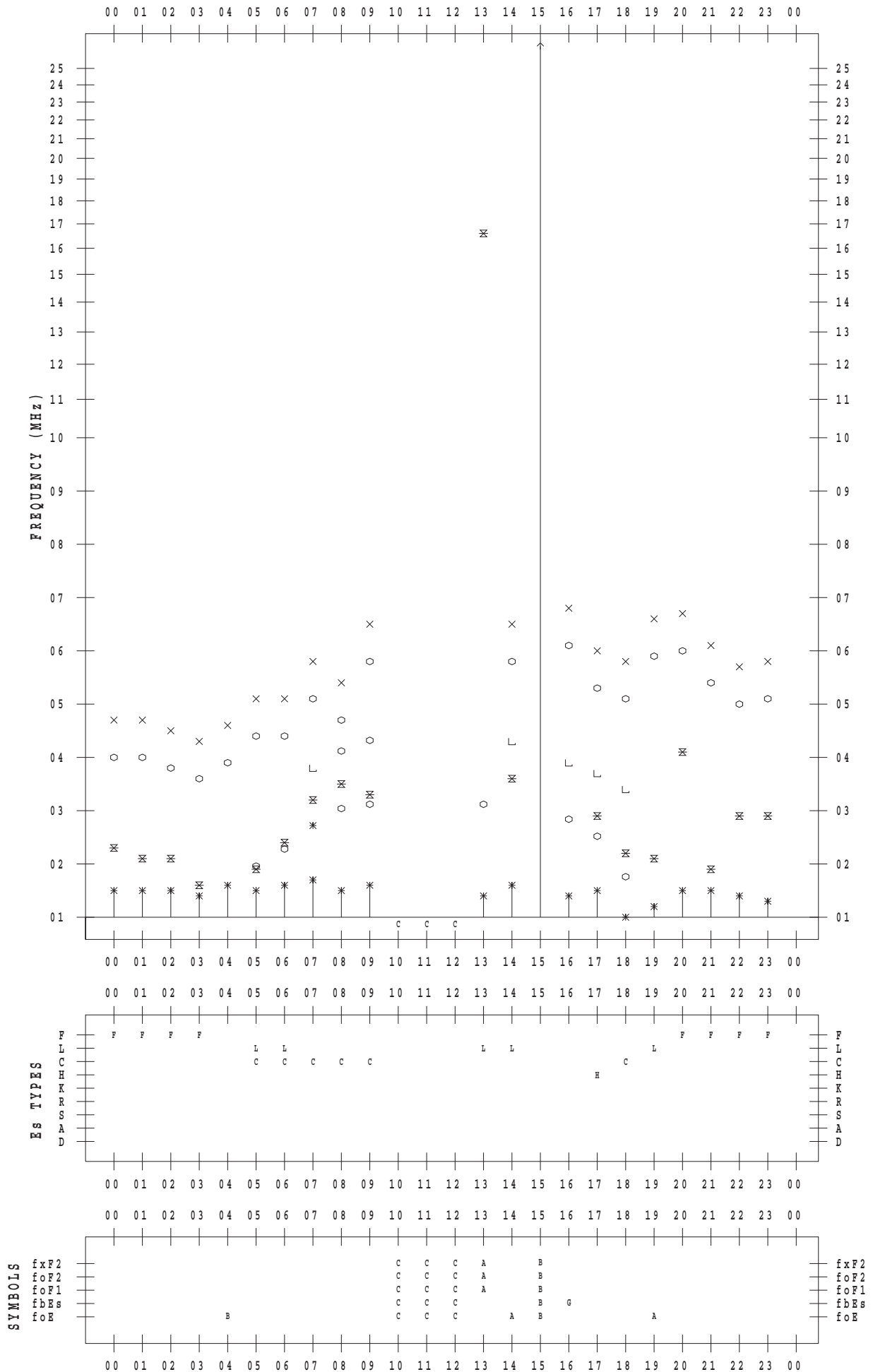
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 2

135 ° E MEAN TIME



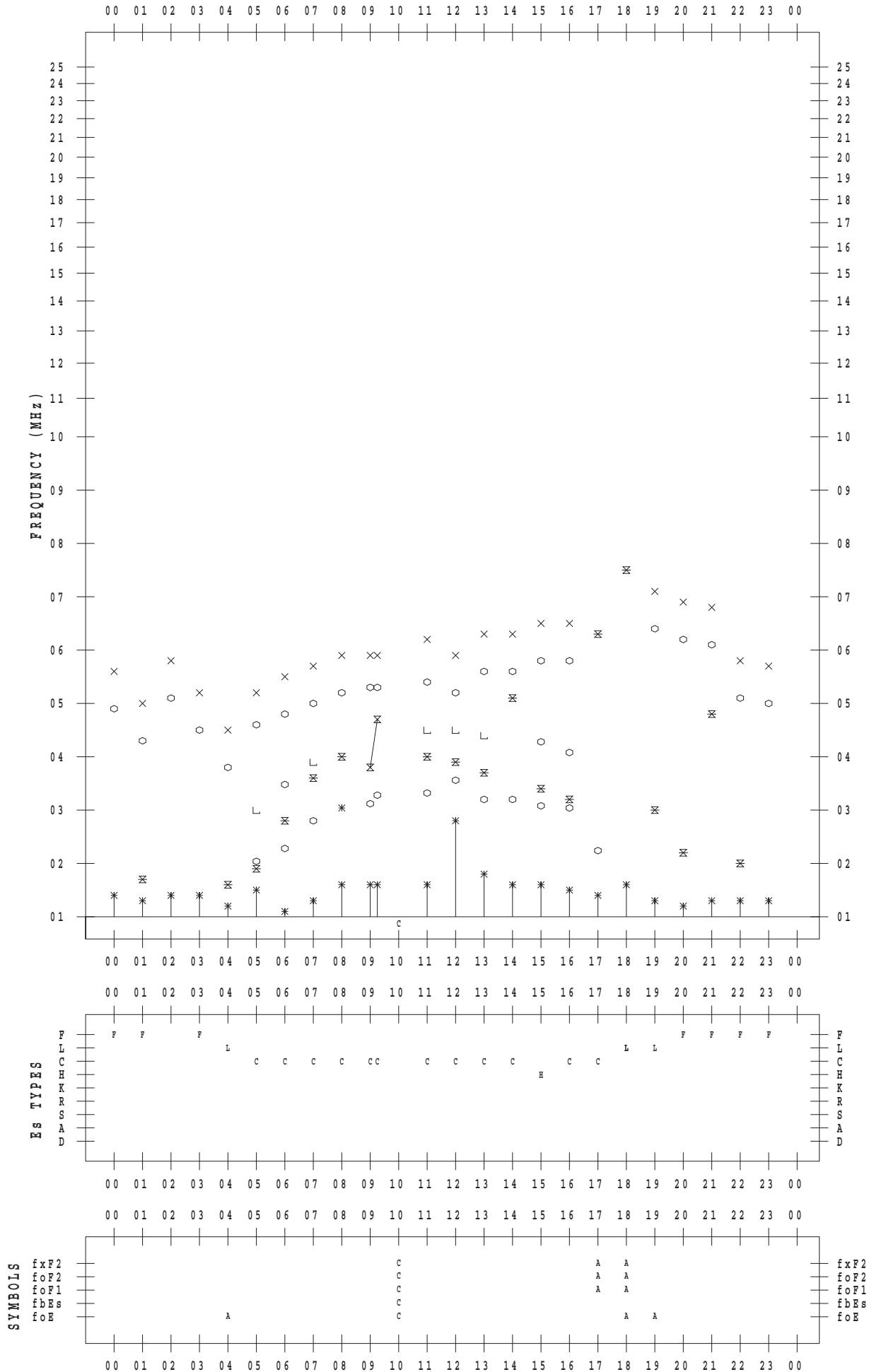
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 3

135 ° E MEAN TIME



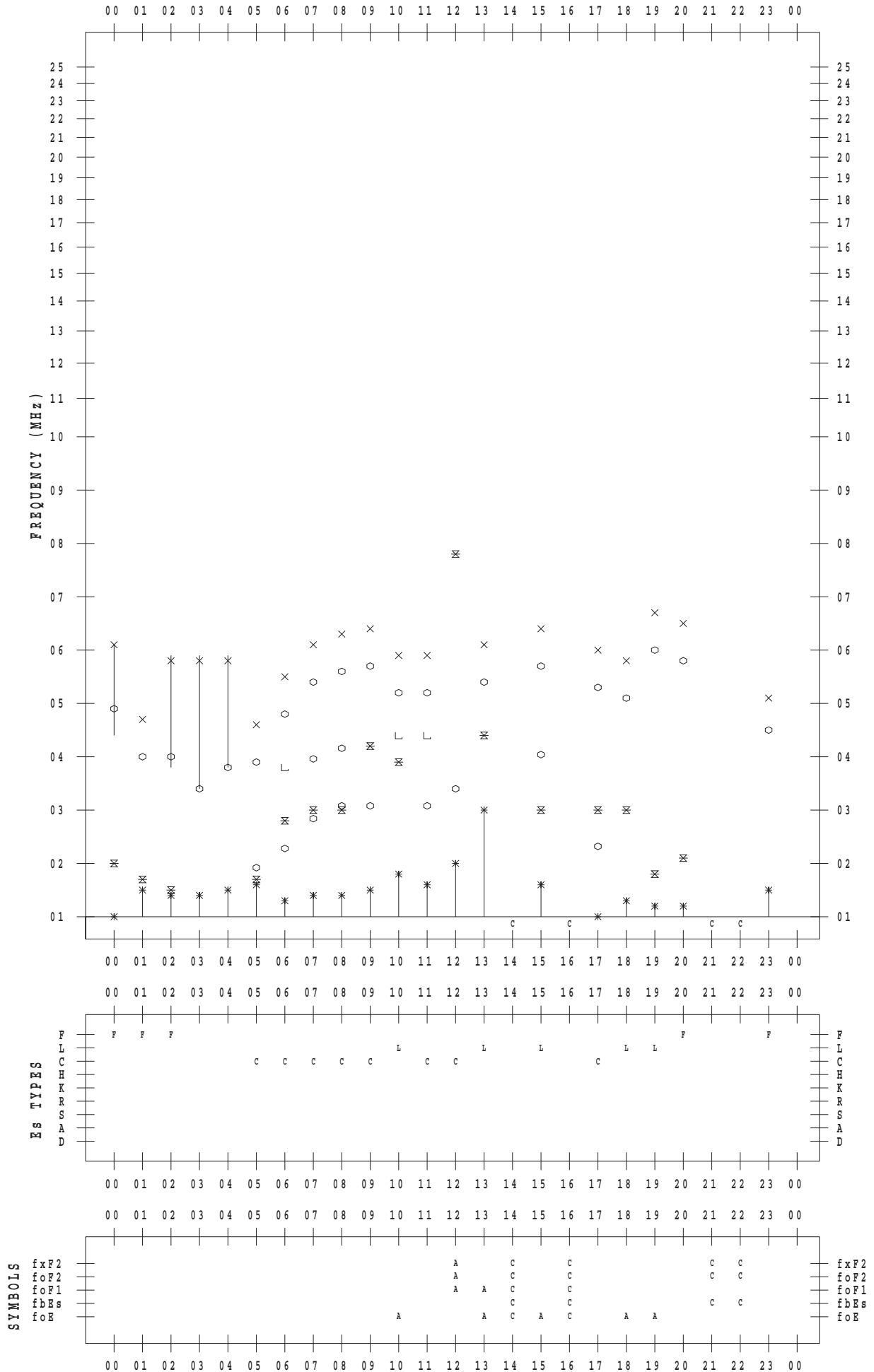
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 4

135 ° E MEAN TIME



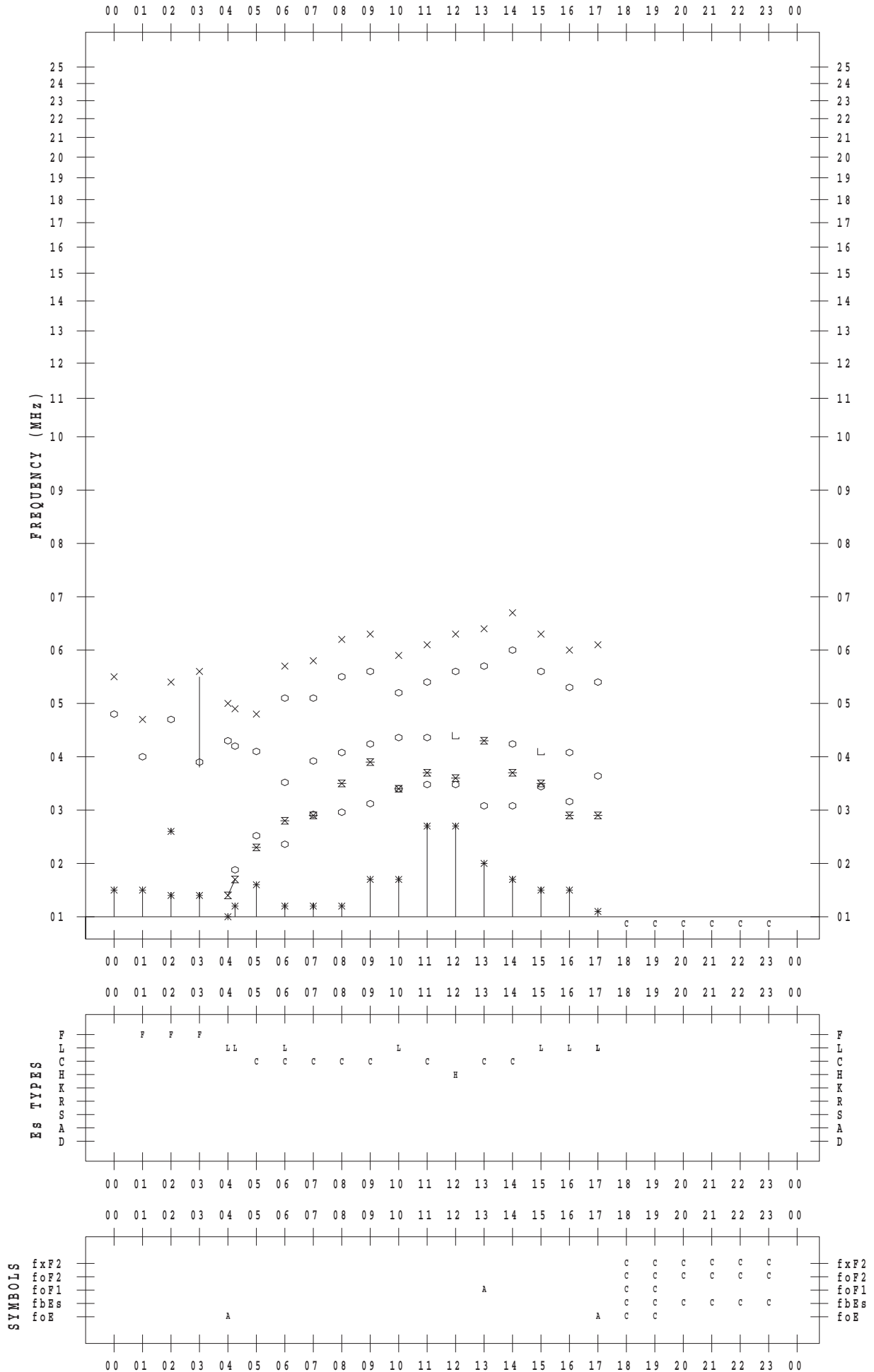
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 5

135 ° E MEAN TIME



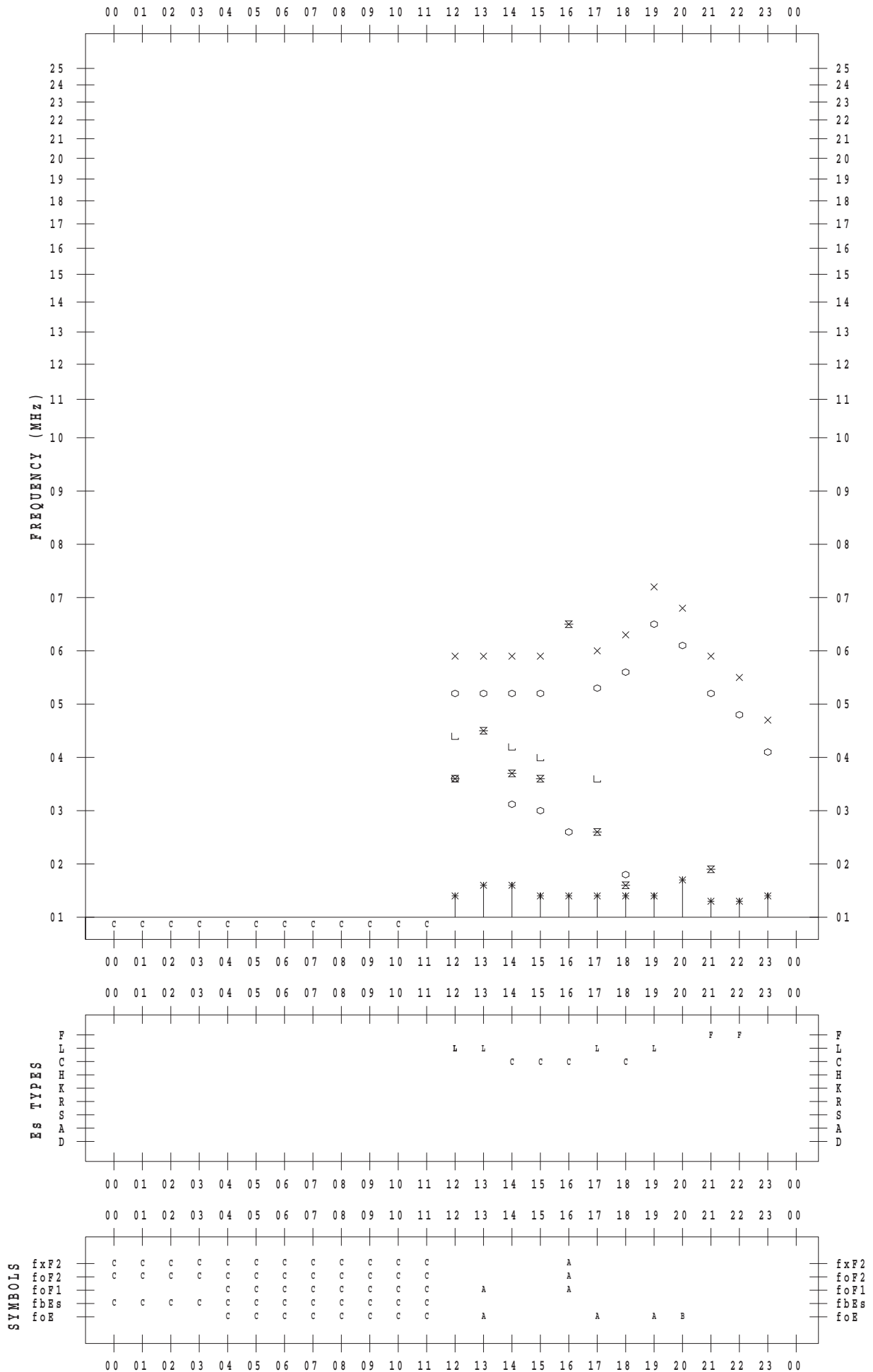
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 6

135 ° E MEAN TIME



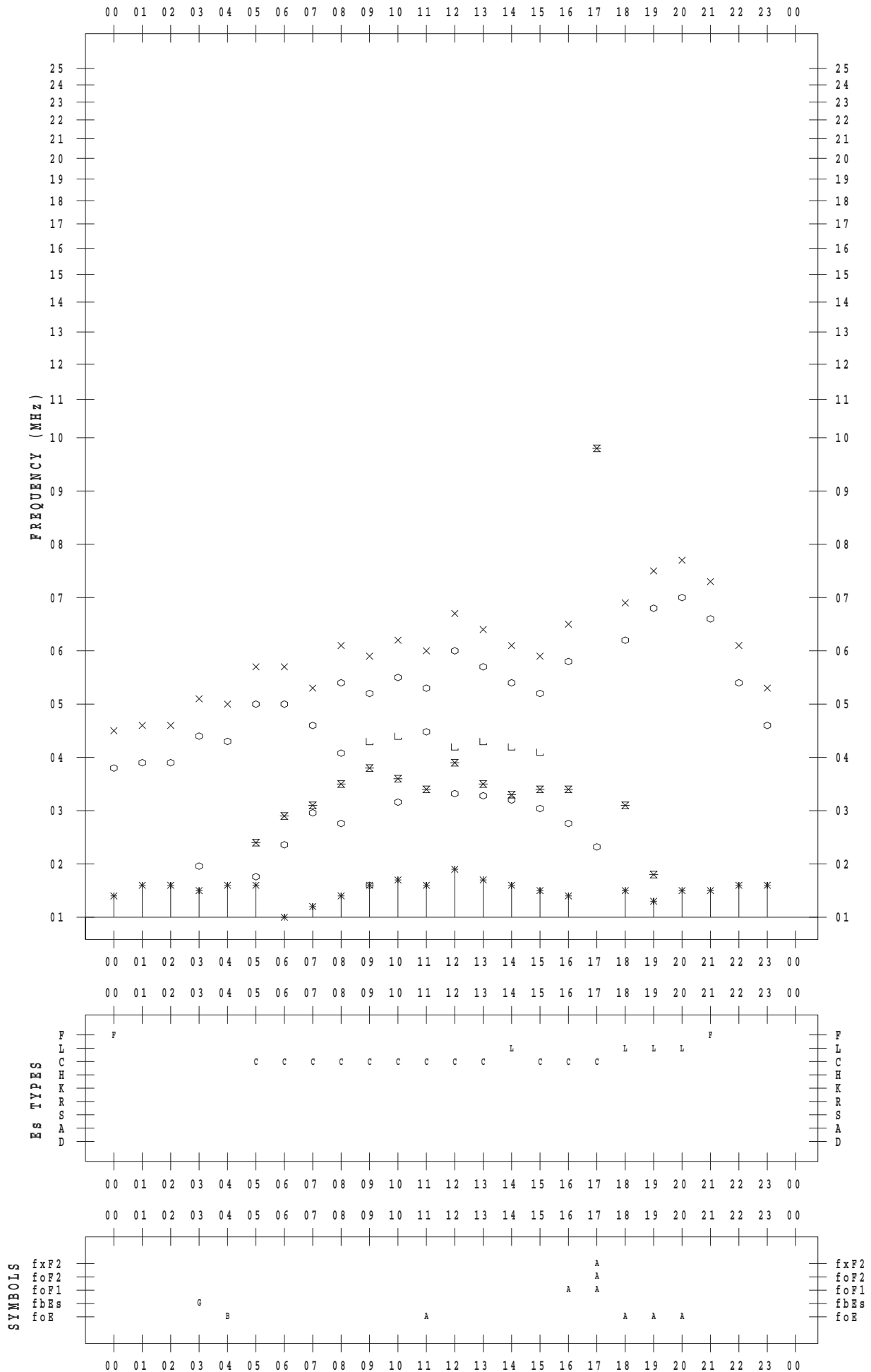
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 7

135 ° E MEAN TIME



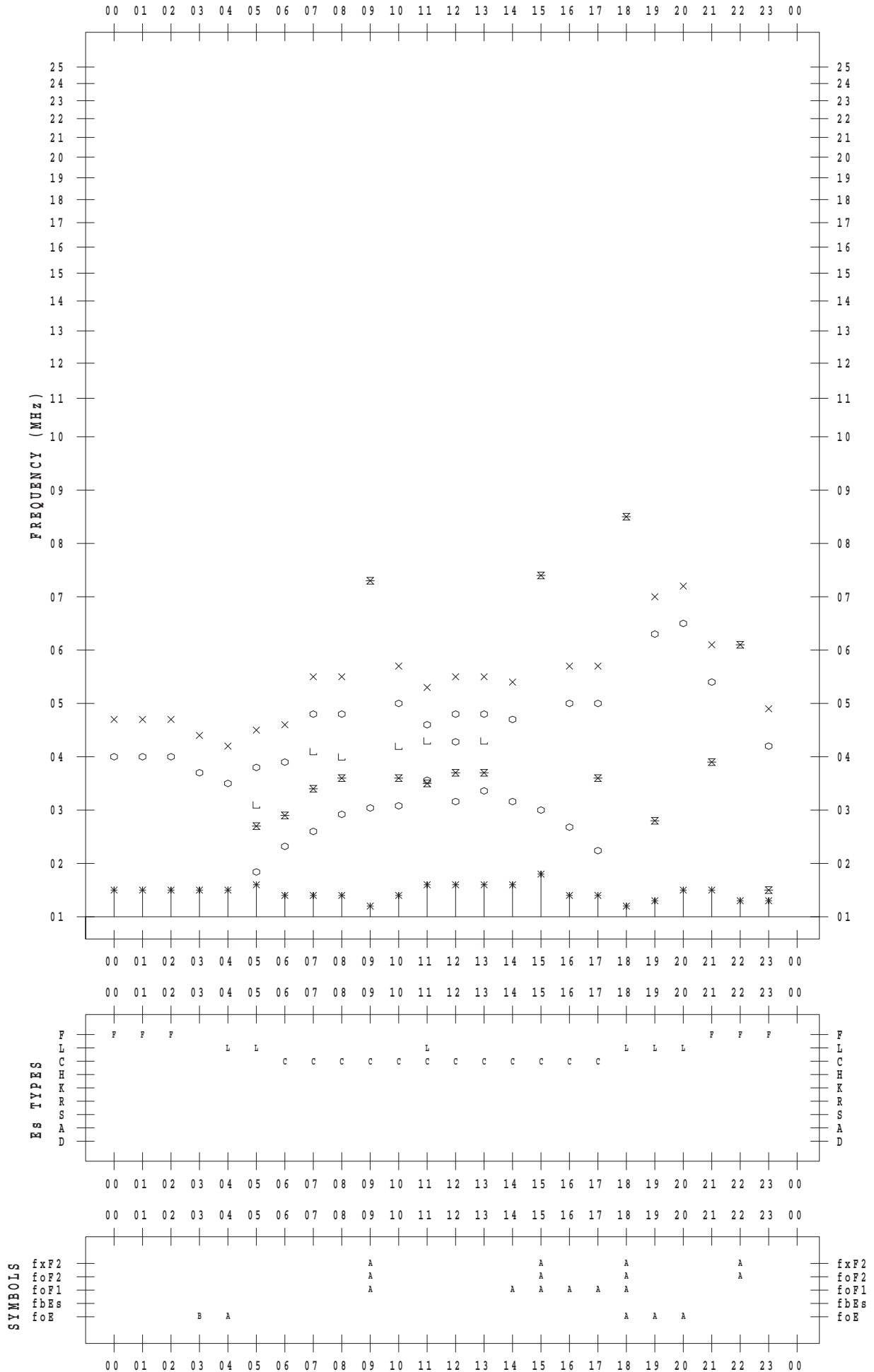
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 8

135 ° E MEAN TIME



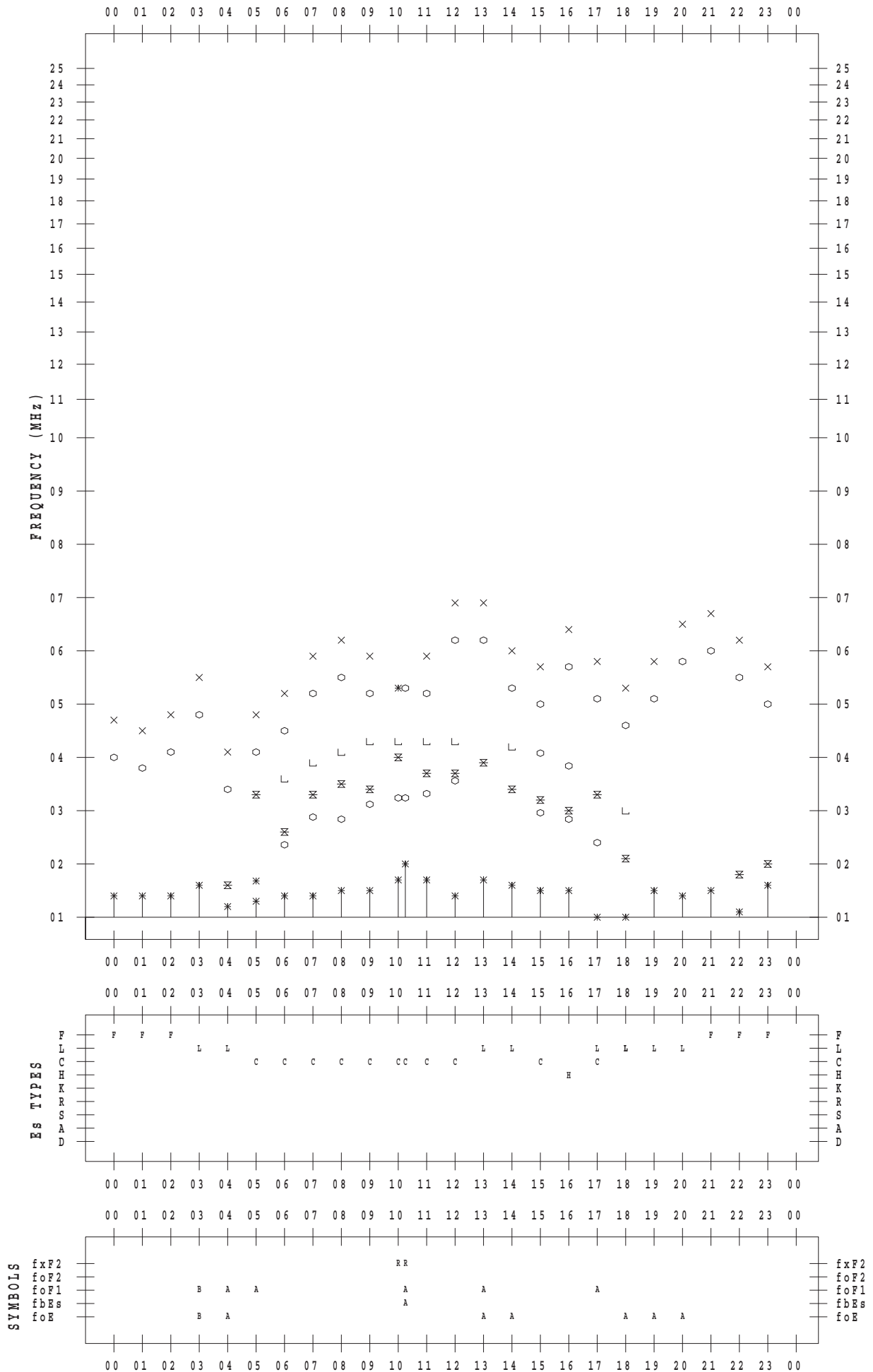
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 9

135 ° E MEAN TIME



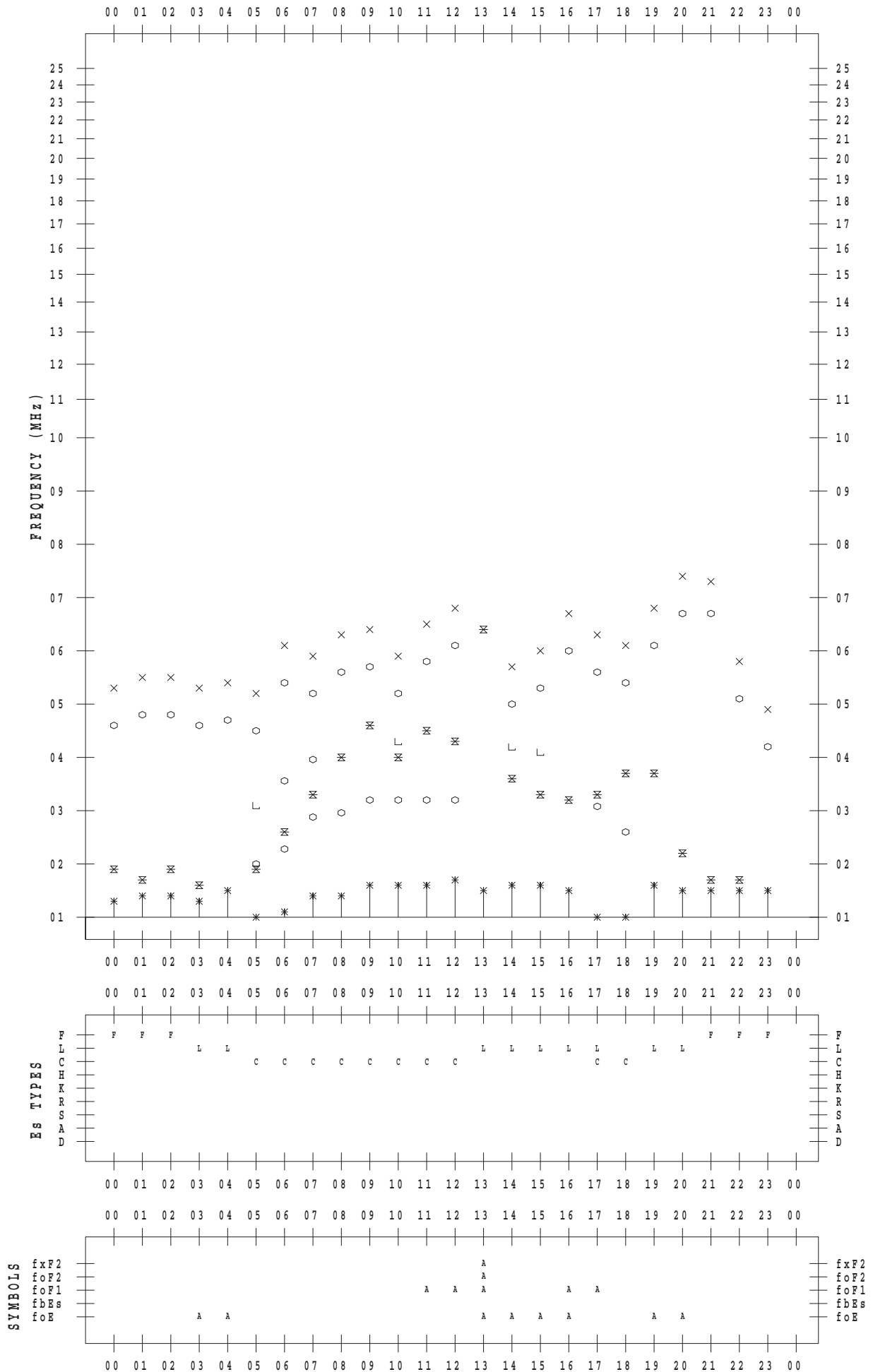
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 10

135 ° E MEAN TIME



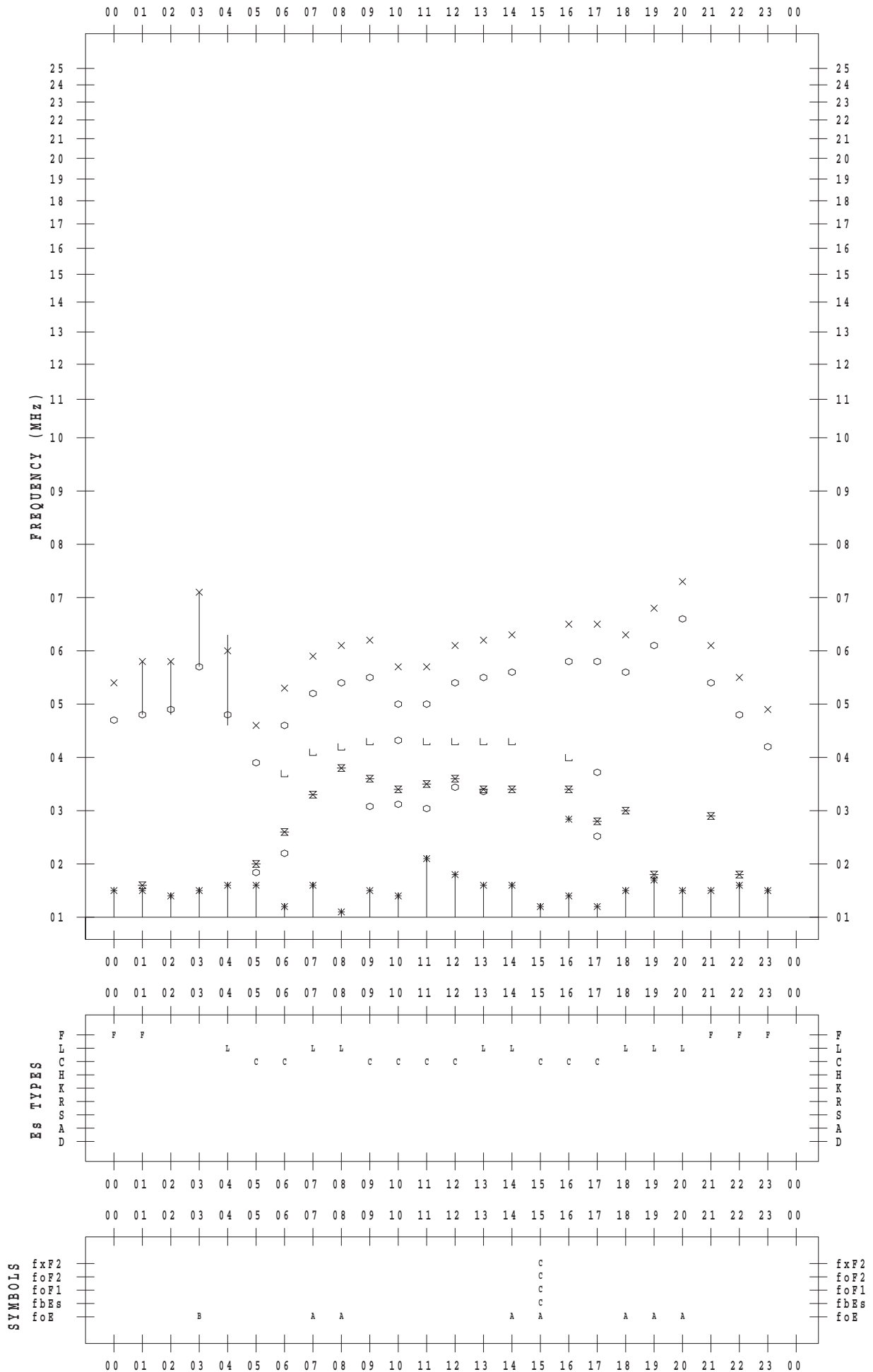
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 11

135 ° E MEAN TIME



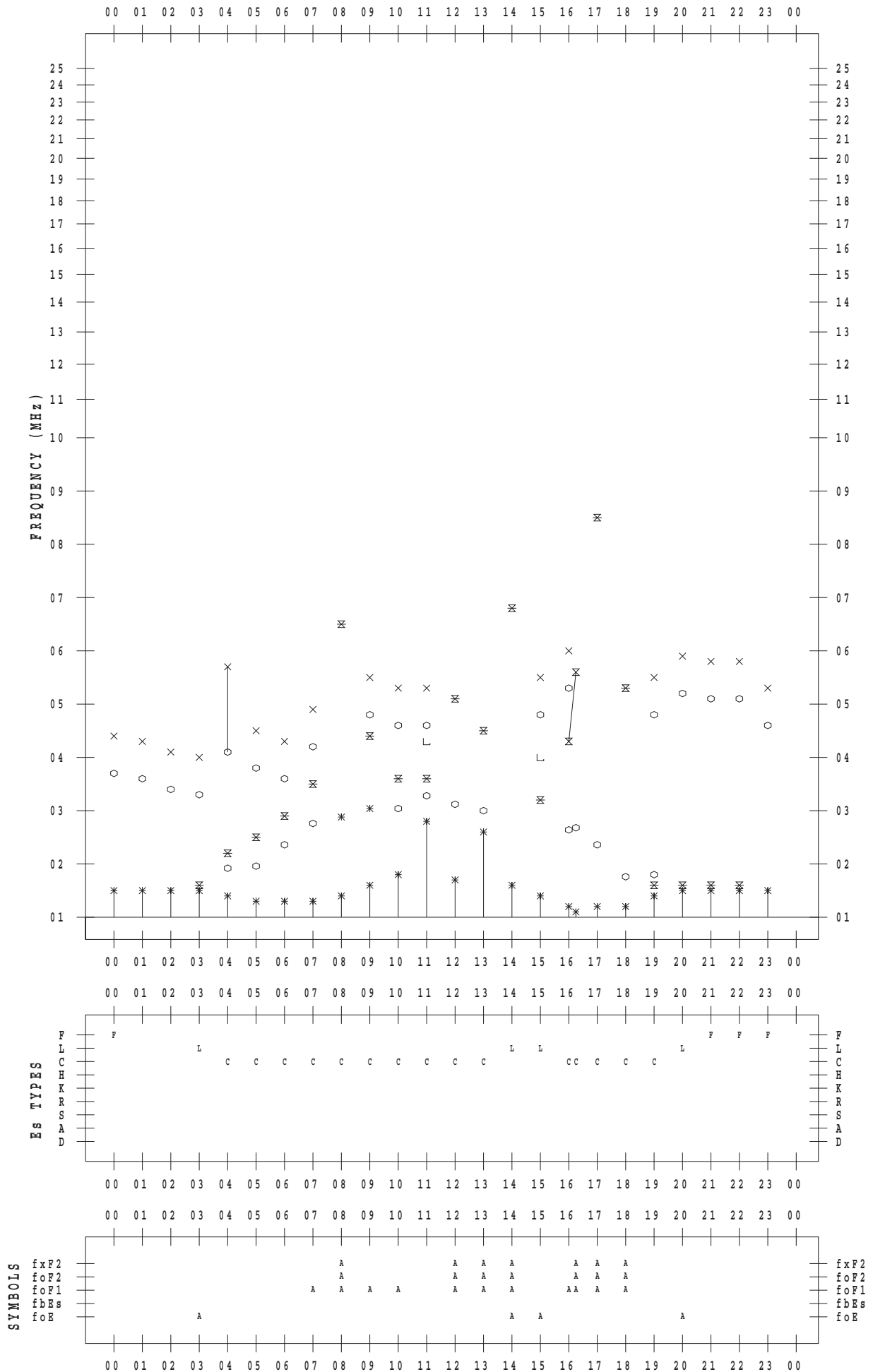
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 12

135 ° E MEAN TIME



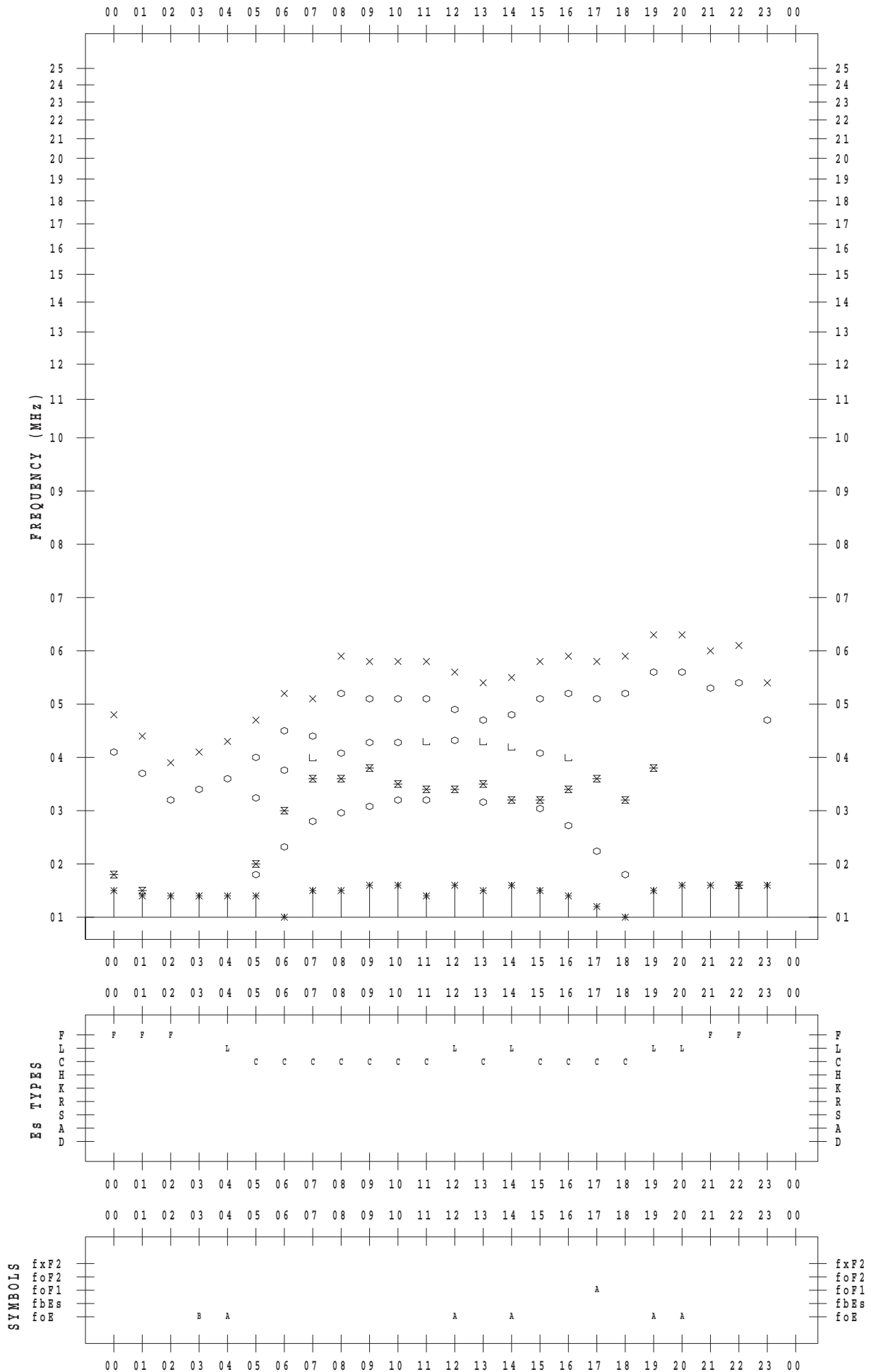
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 13

135 ° E MEAN TIME



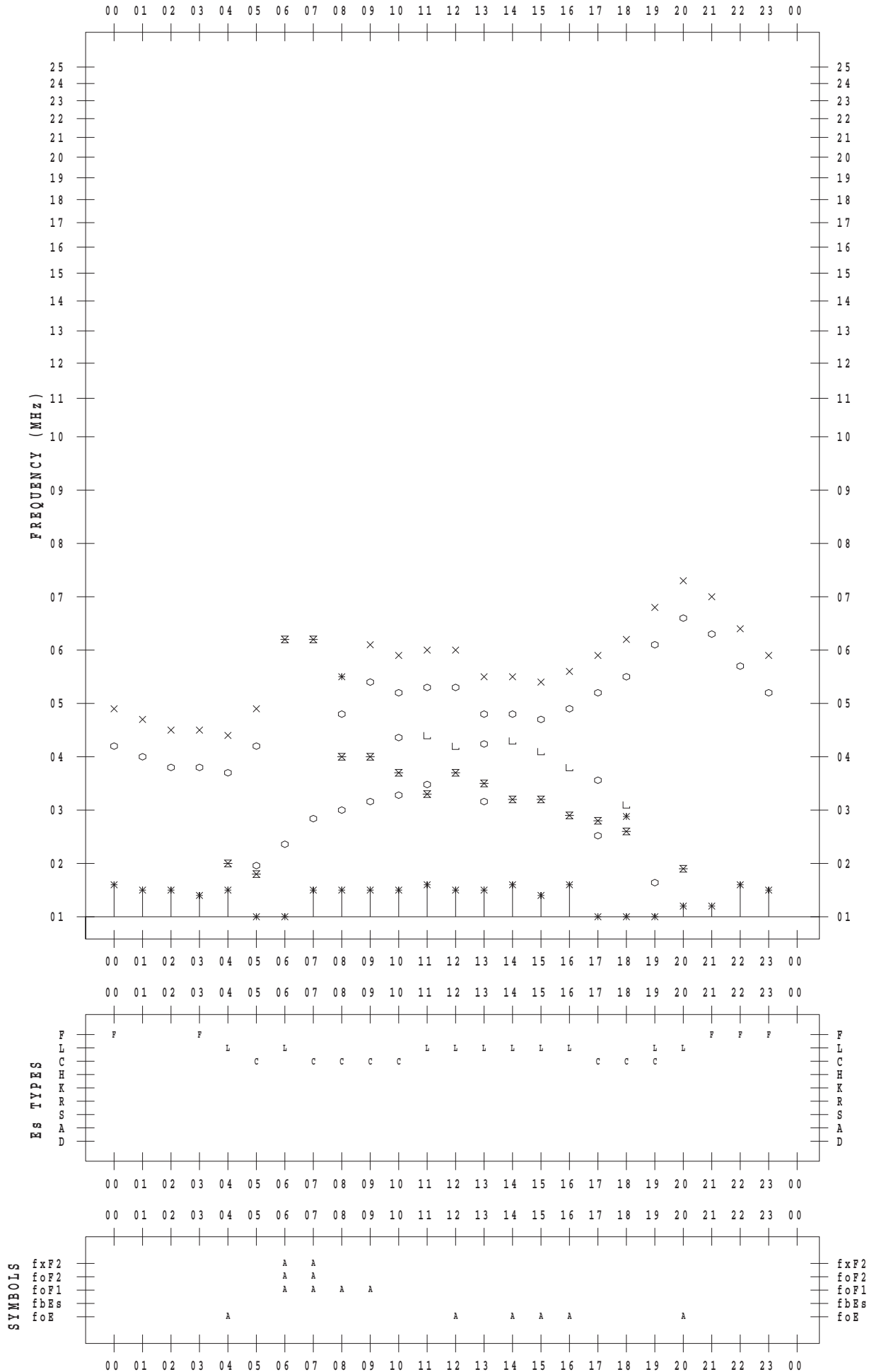
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 14

135 ° E MEAN TIME



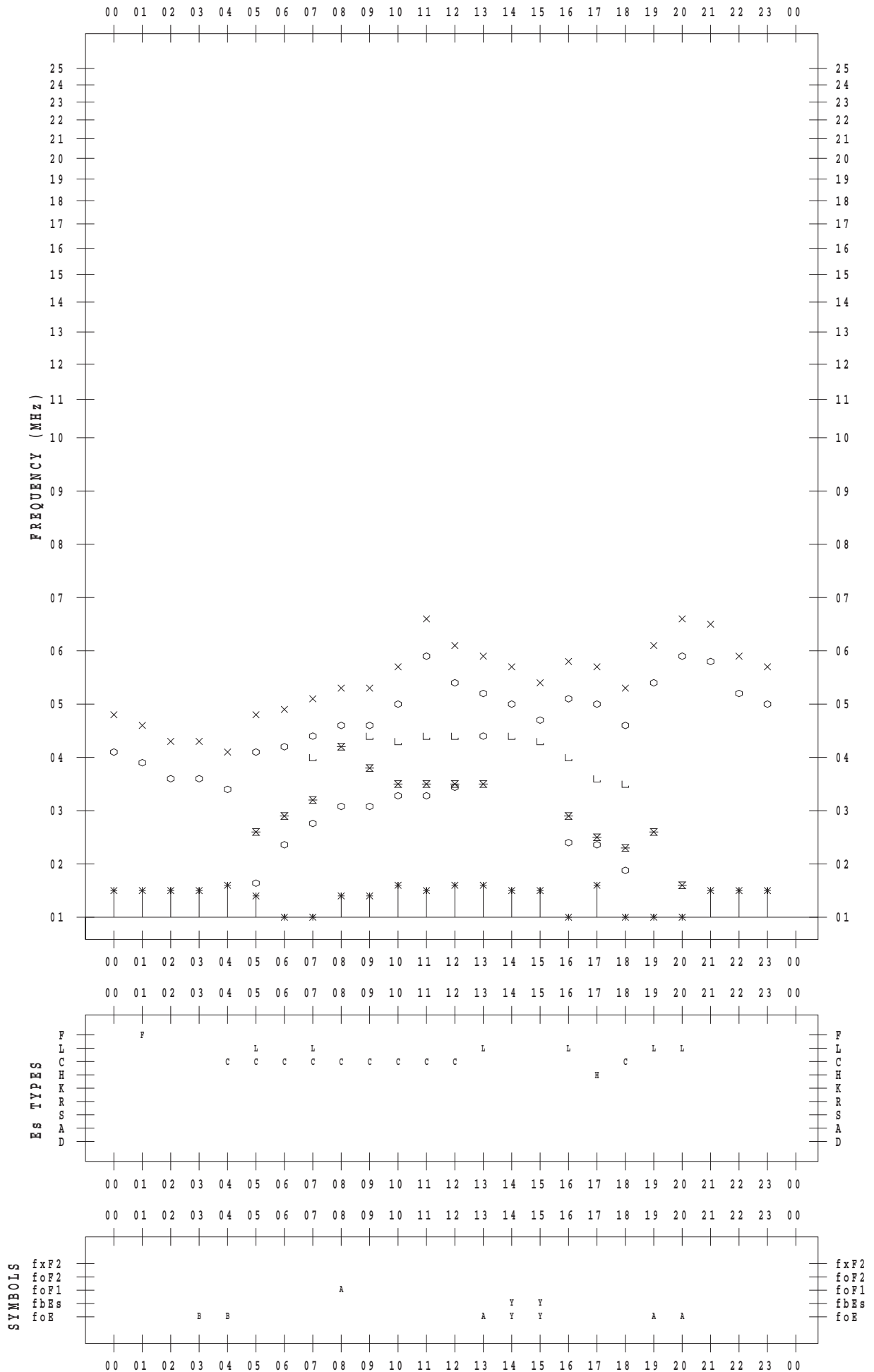
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 15

135 ° E MEAN TIME



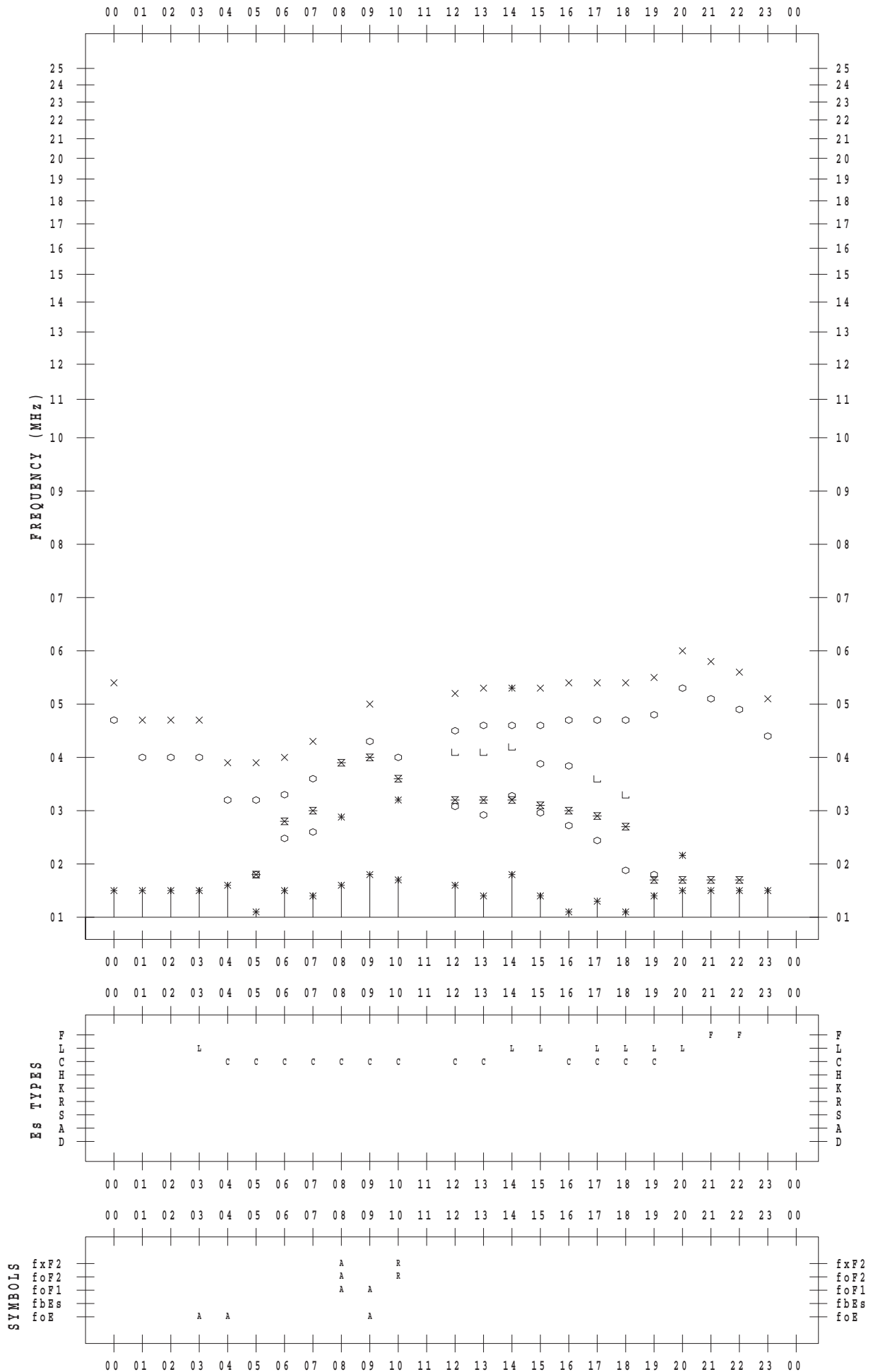
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 16

135 ° E MEAN TIME



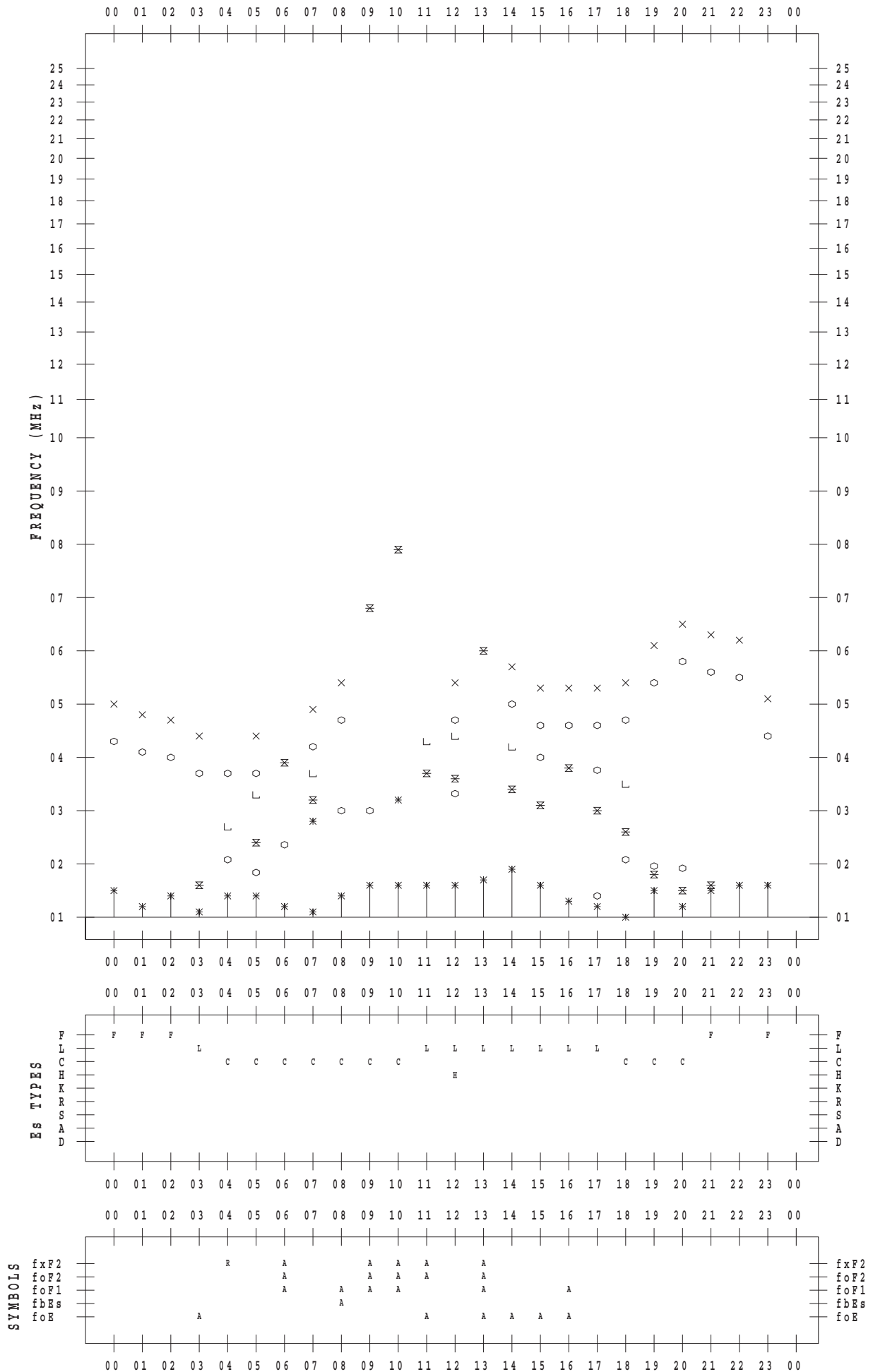
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 17

135 ° E MEAN TIME



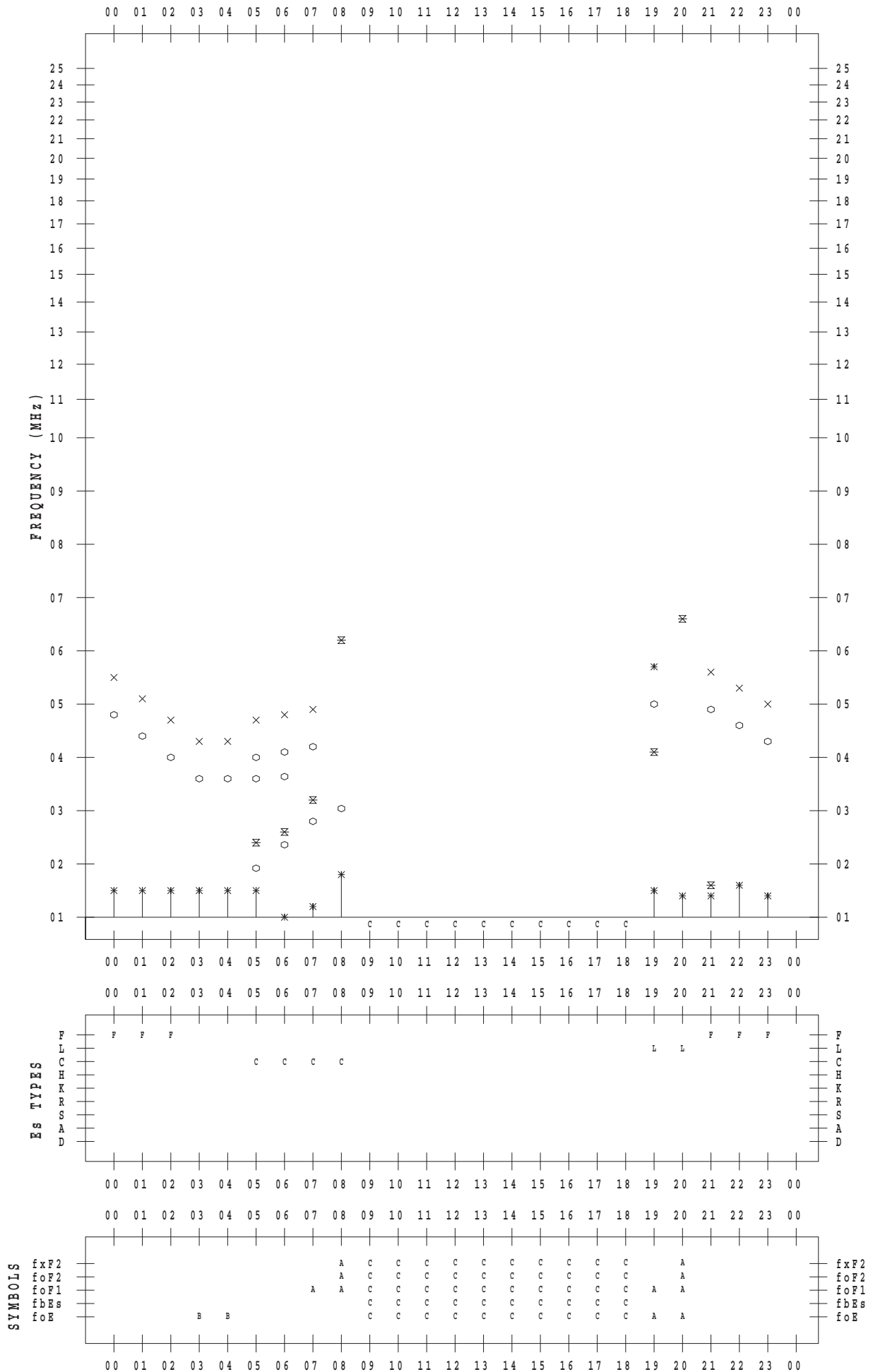
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 18

135 ° E MEAN TIME



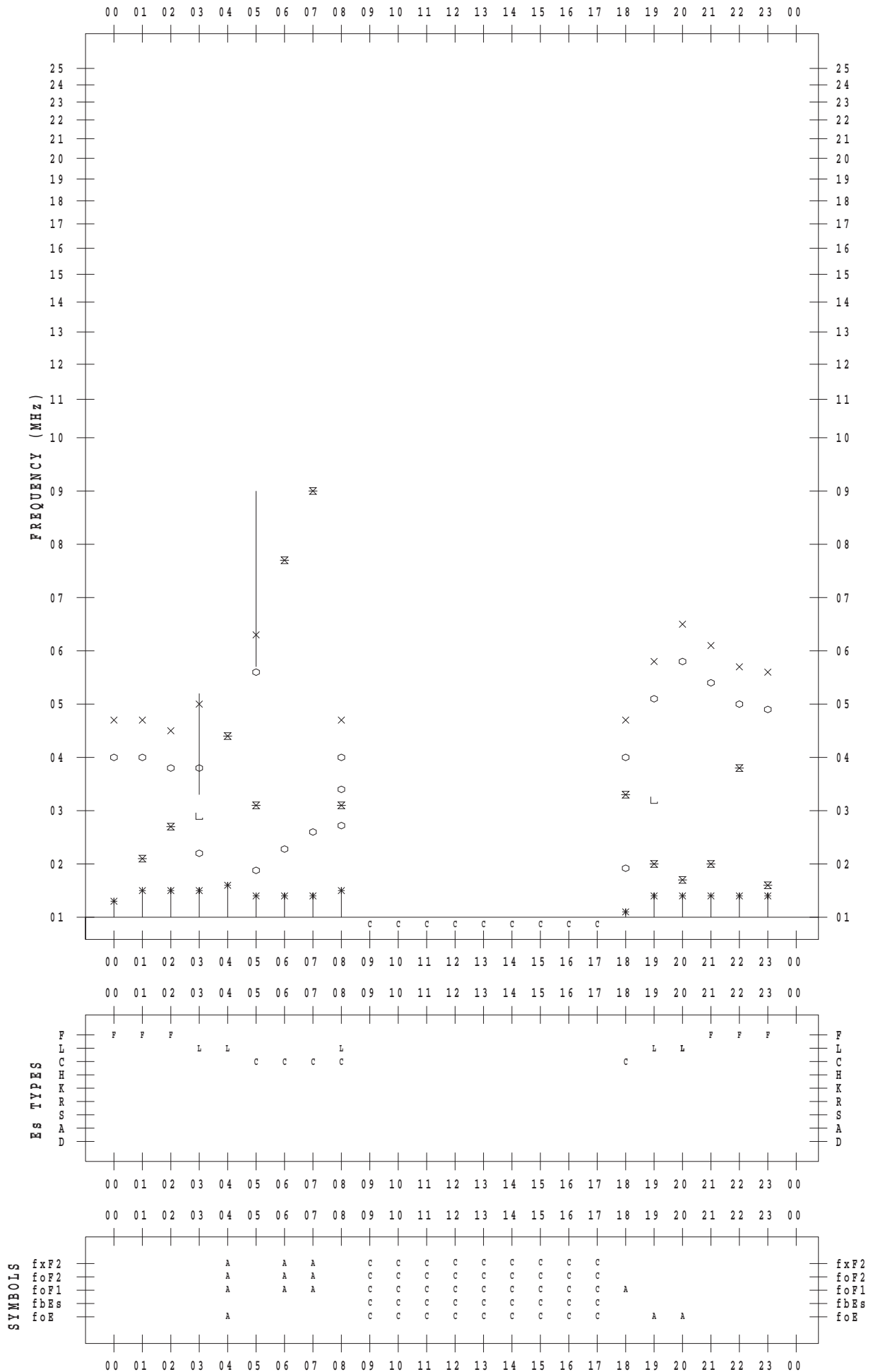
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 19

135 ° E MEAN TIME



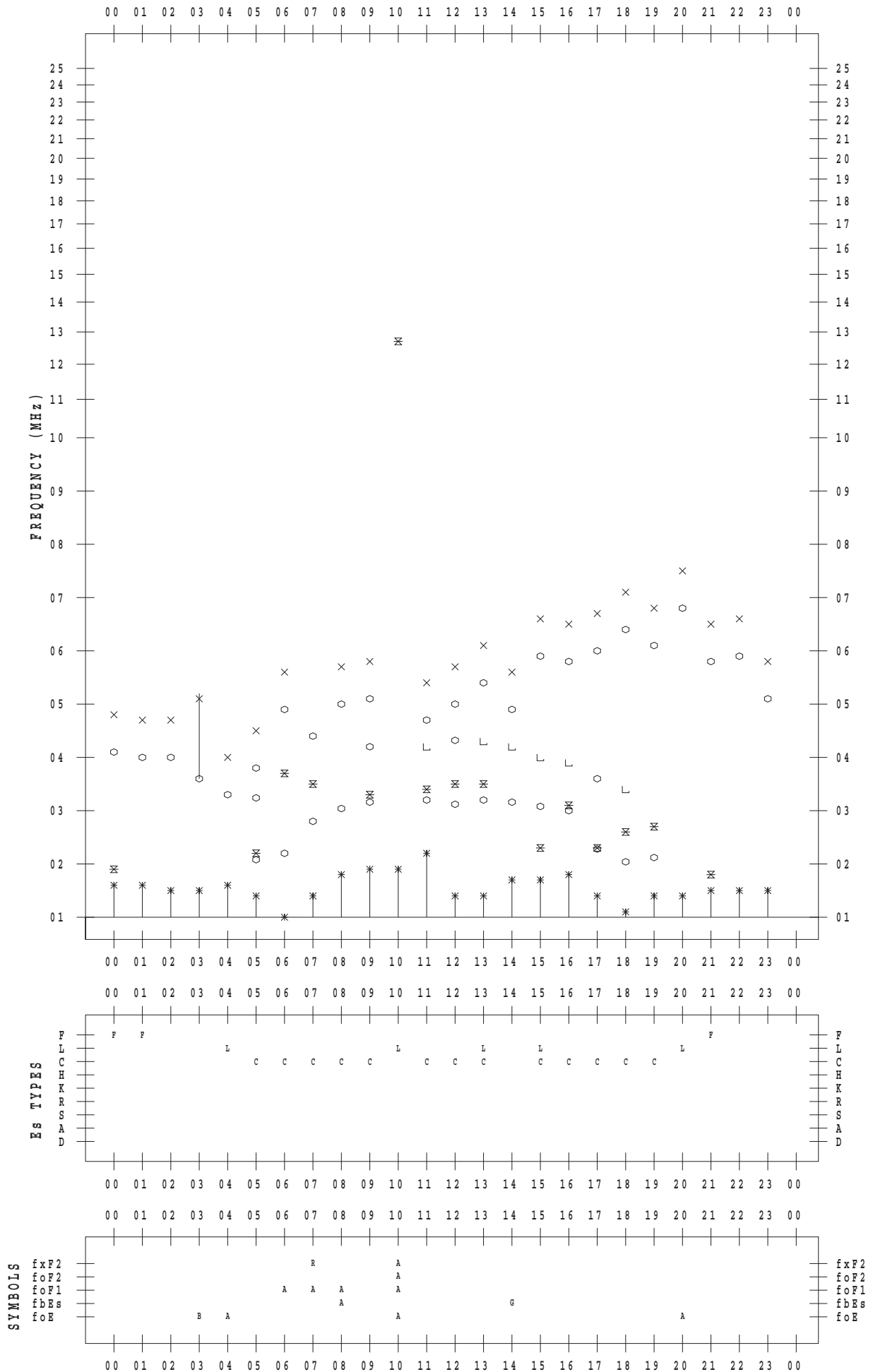
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 20

135 ° E MEAN TIME



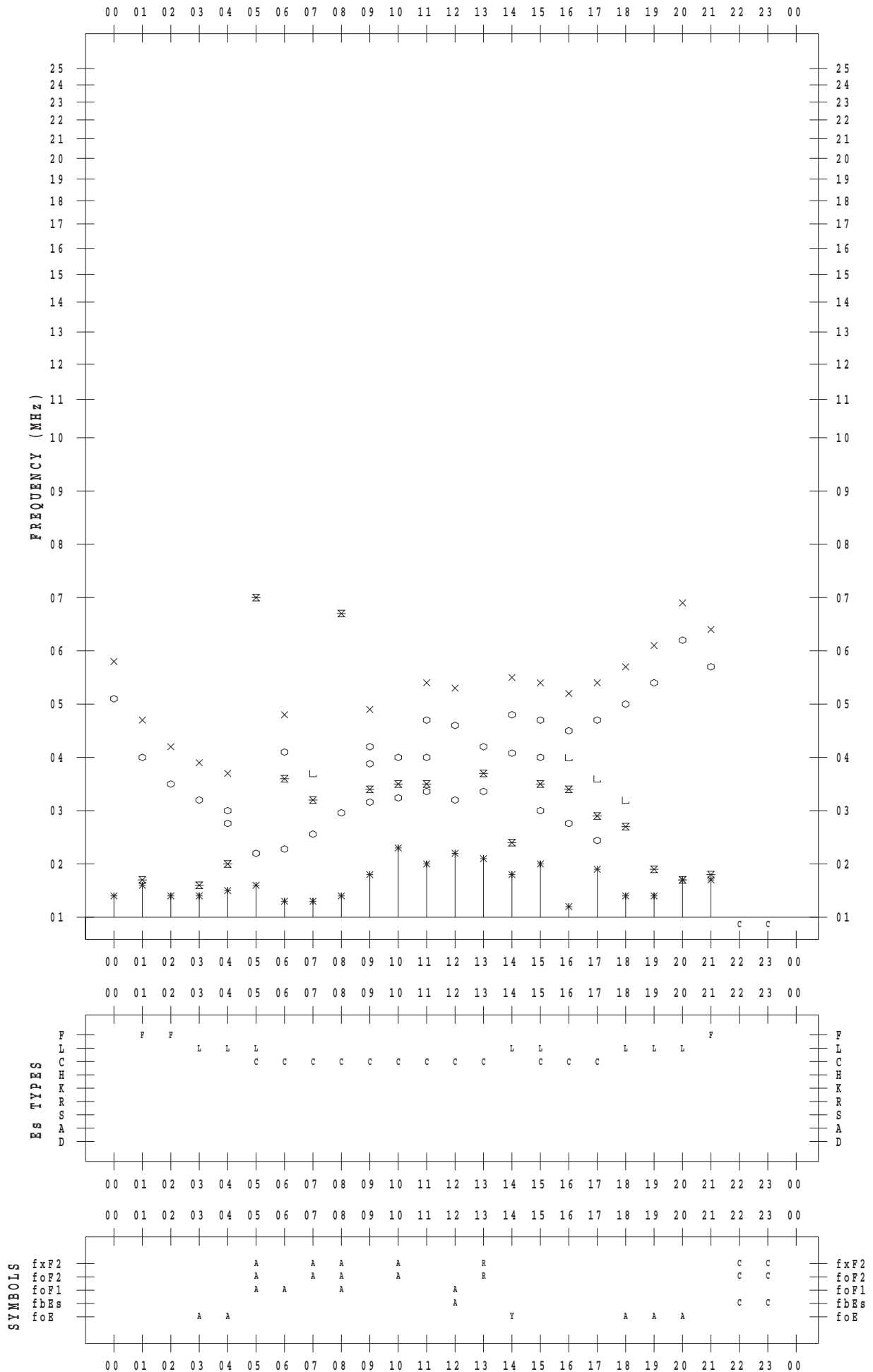
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 21

135 ° E MEAN TIME



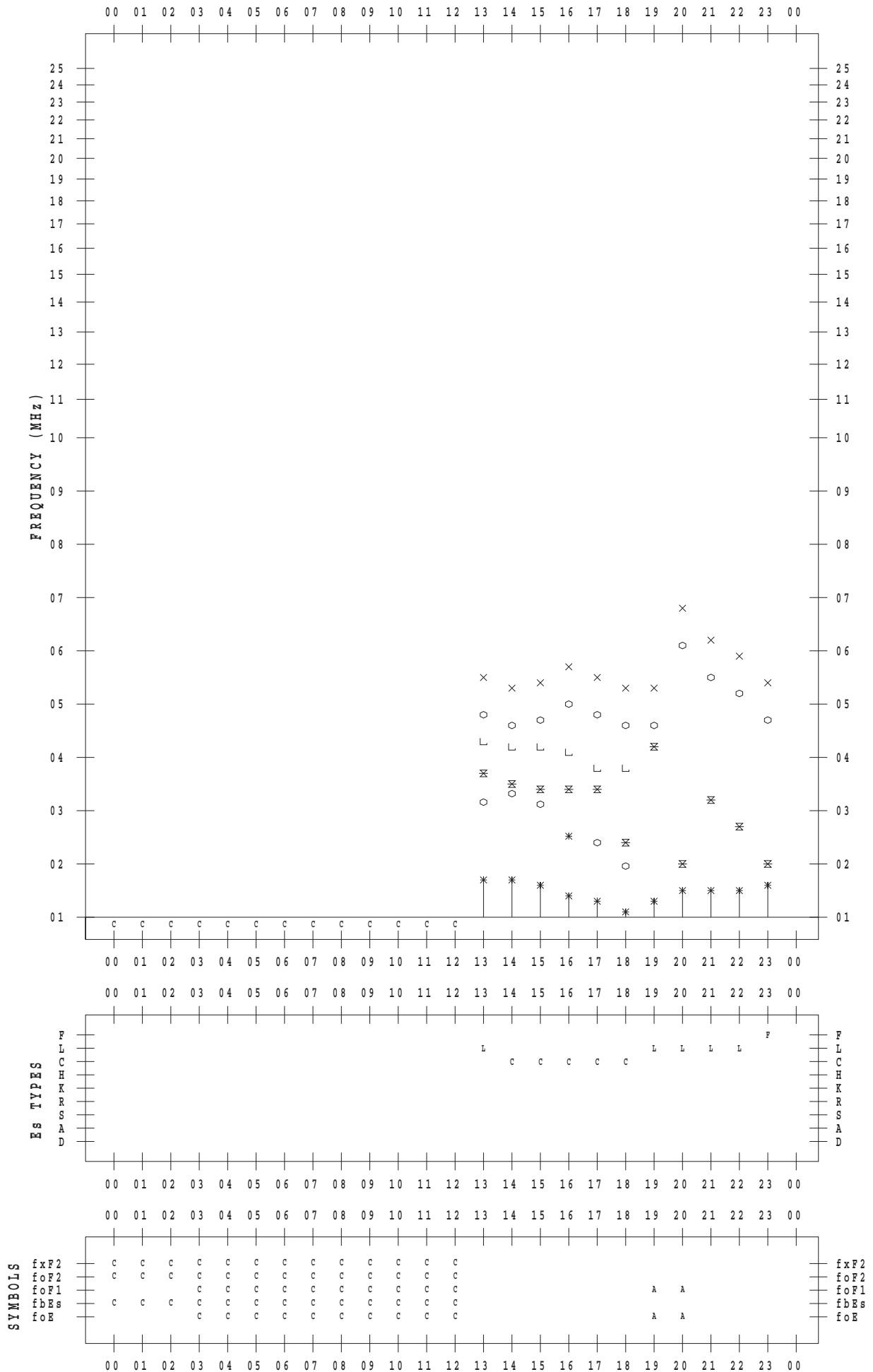
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 22

135 ° E MEAN TIME



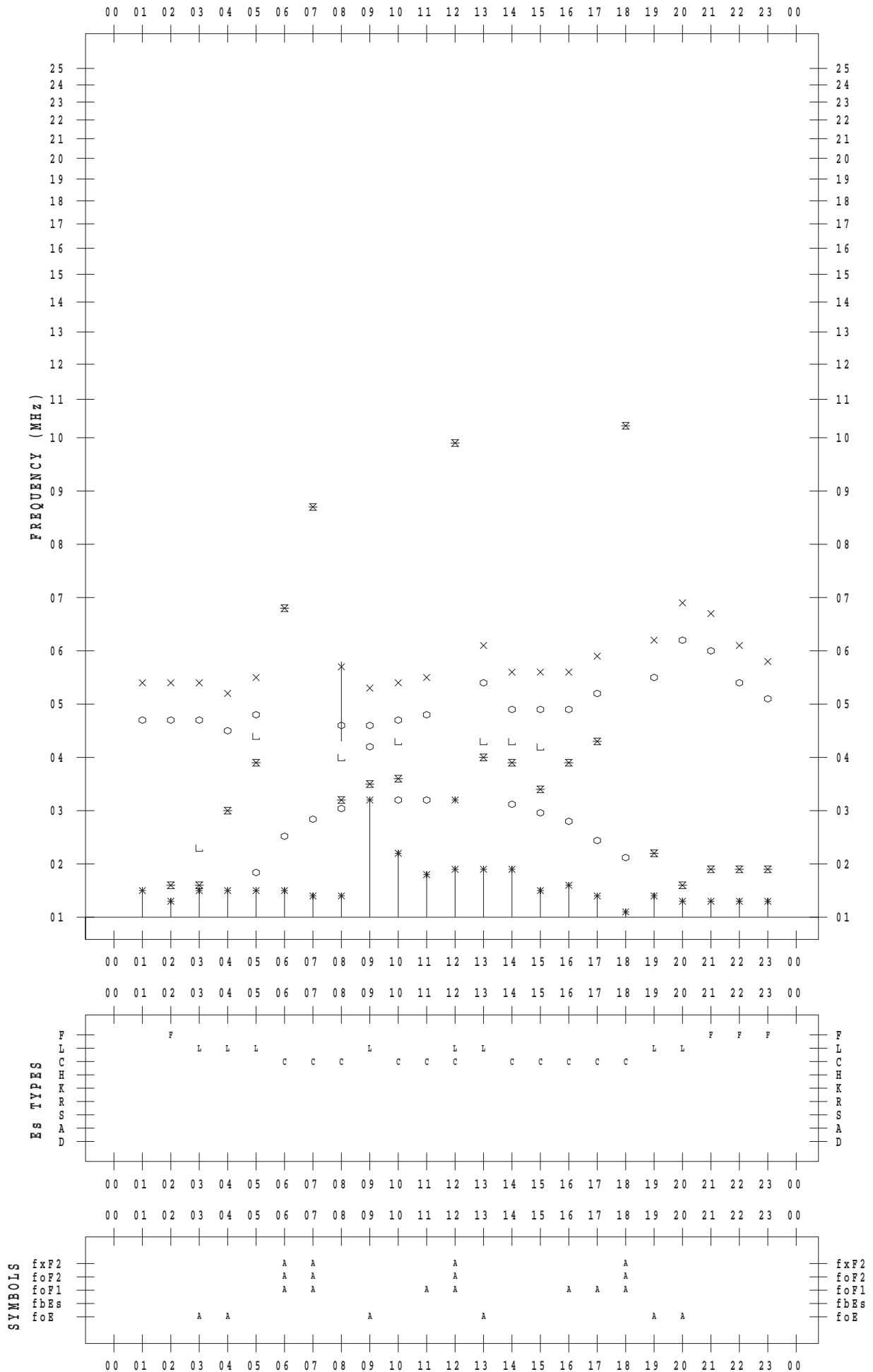
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 23

135 ° E MEAN TIME



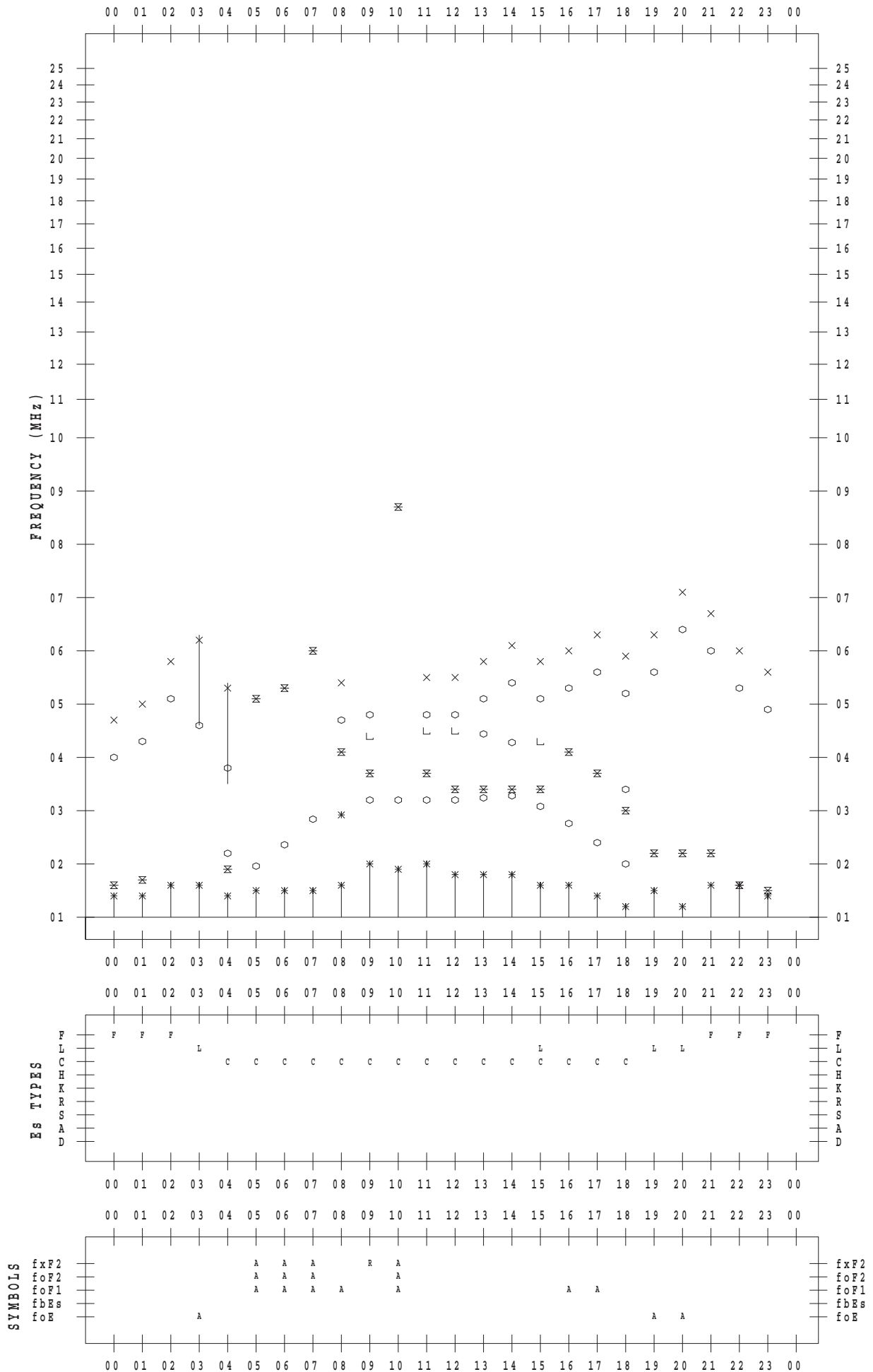
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 24

135 ° E MEAN TIME



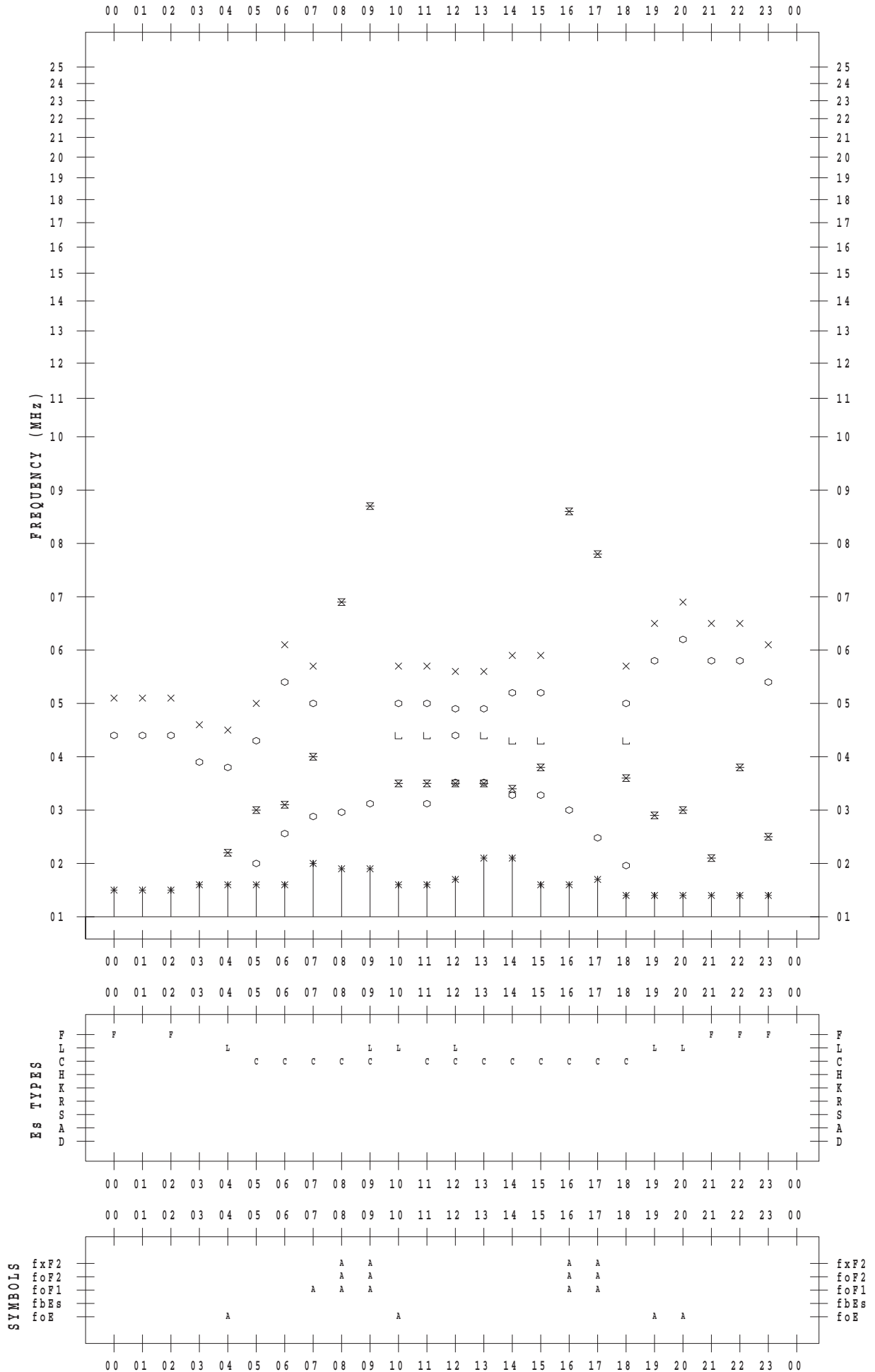
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 25

135 ° E MEAN TIME



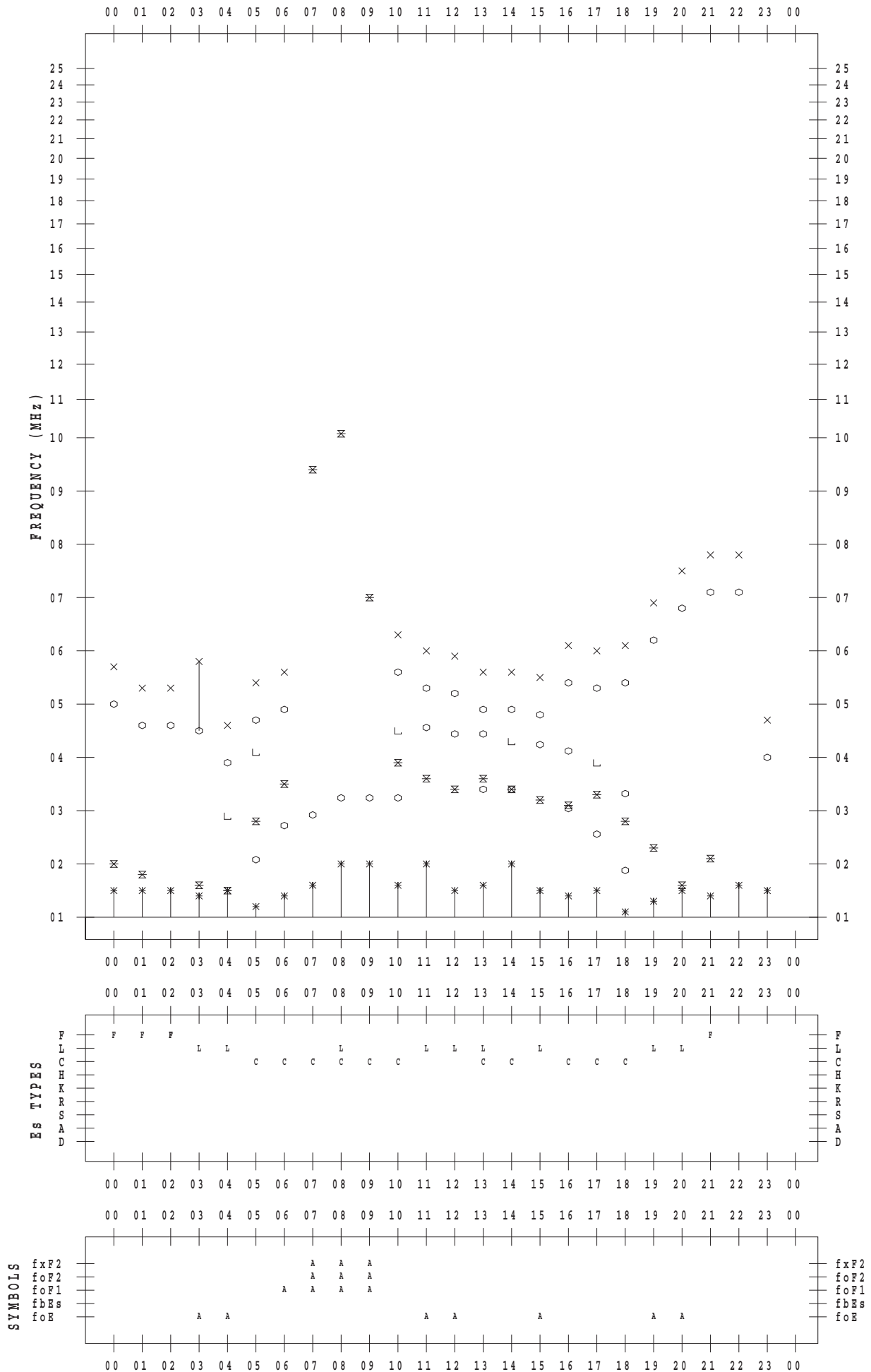
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 26

135 ° E MEAN TIME



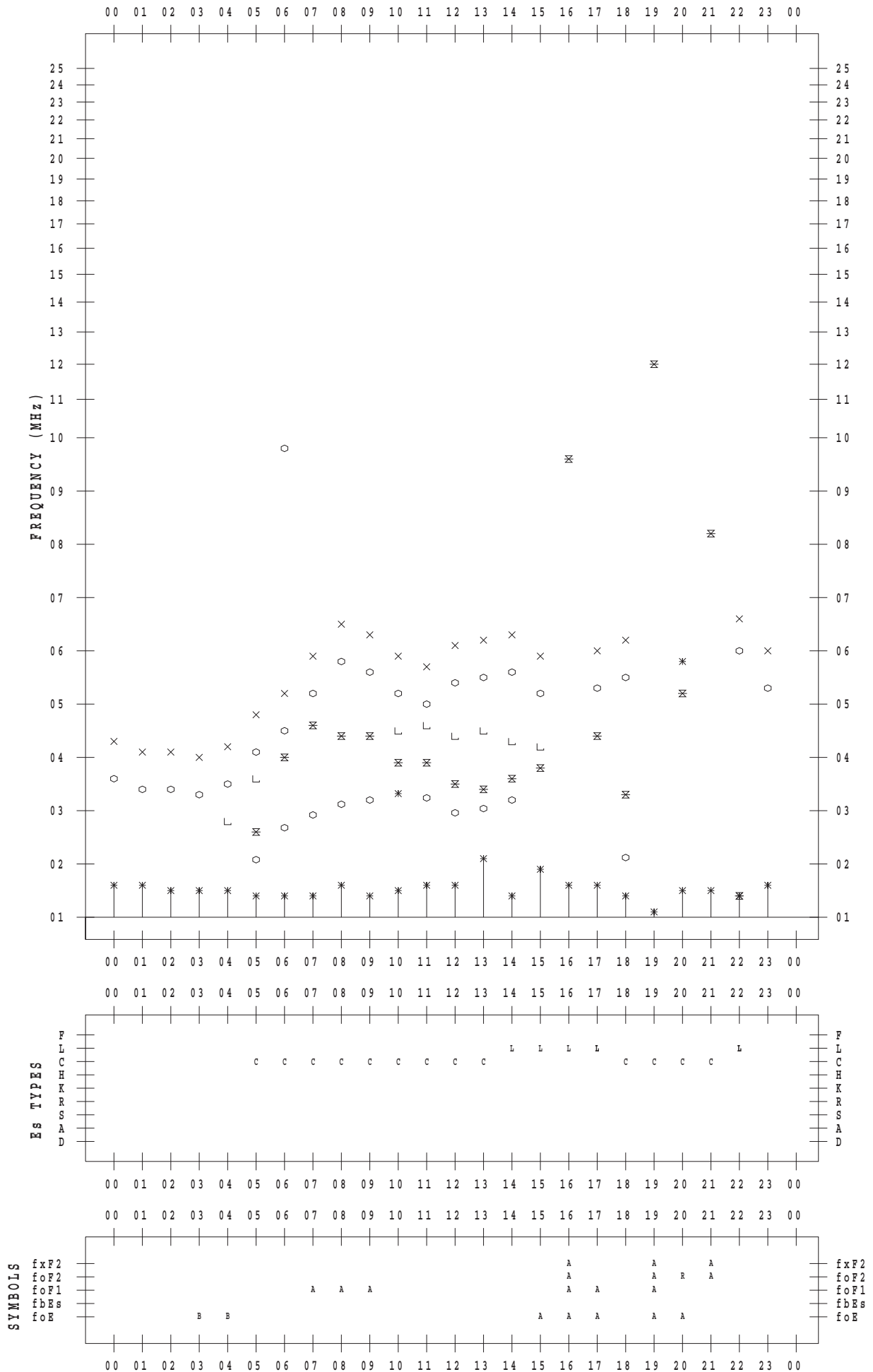
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 27

135 ° E MEAN TIME



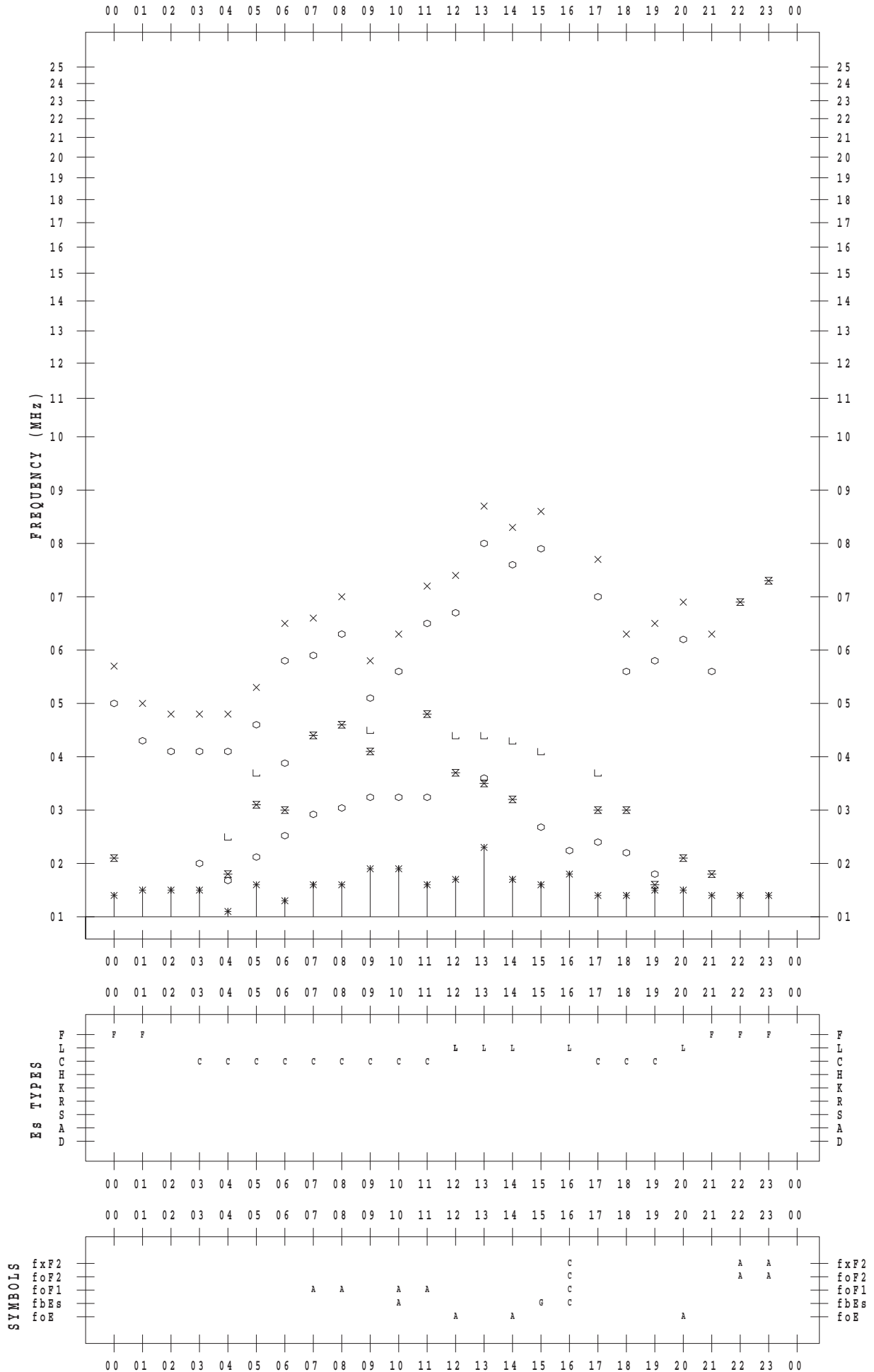
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 28

135 ° E MEAN TIME



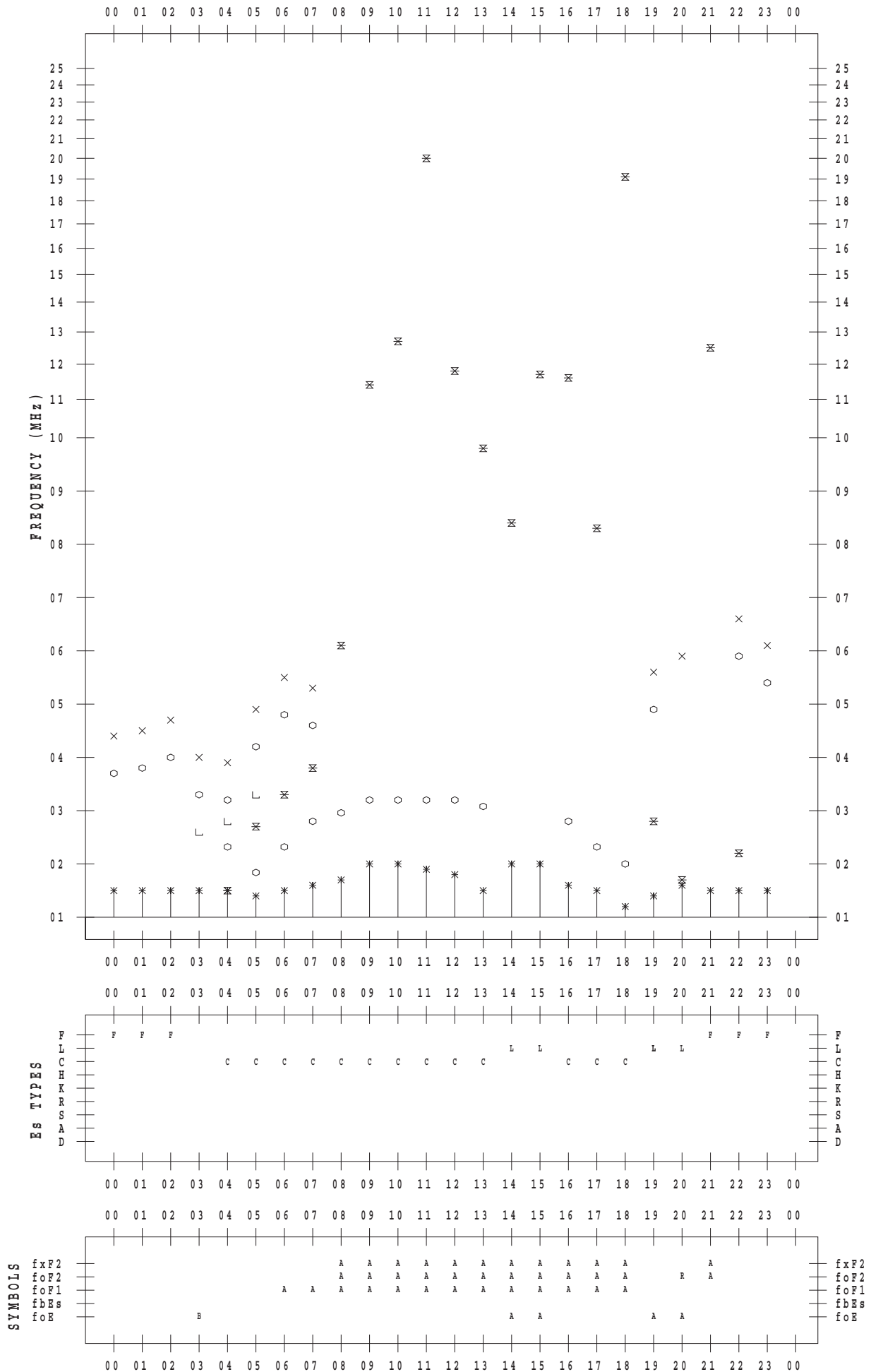
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 29

135 ° E MEAN TIME



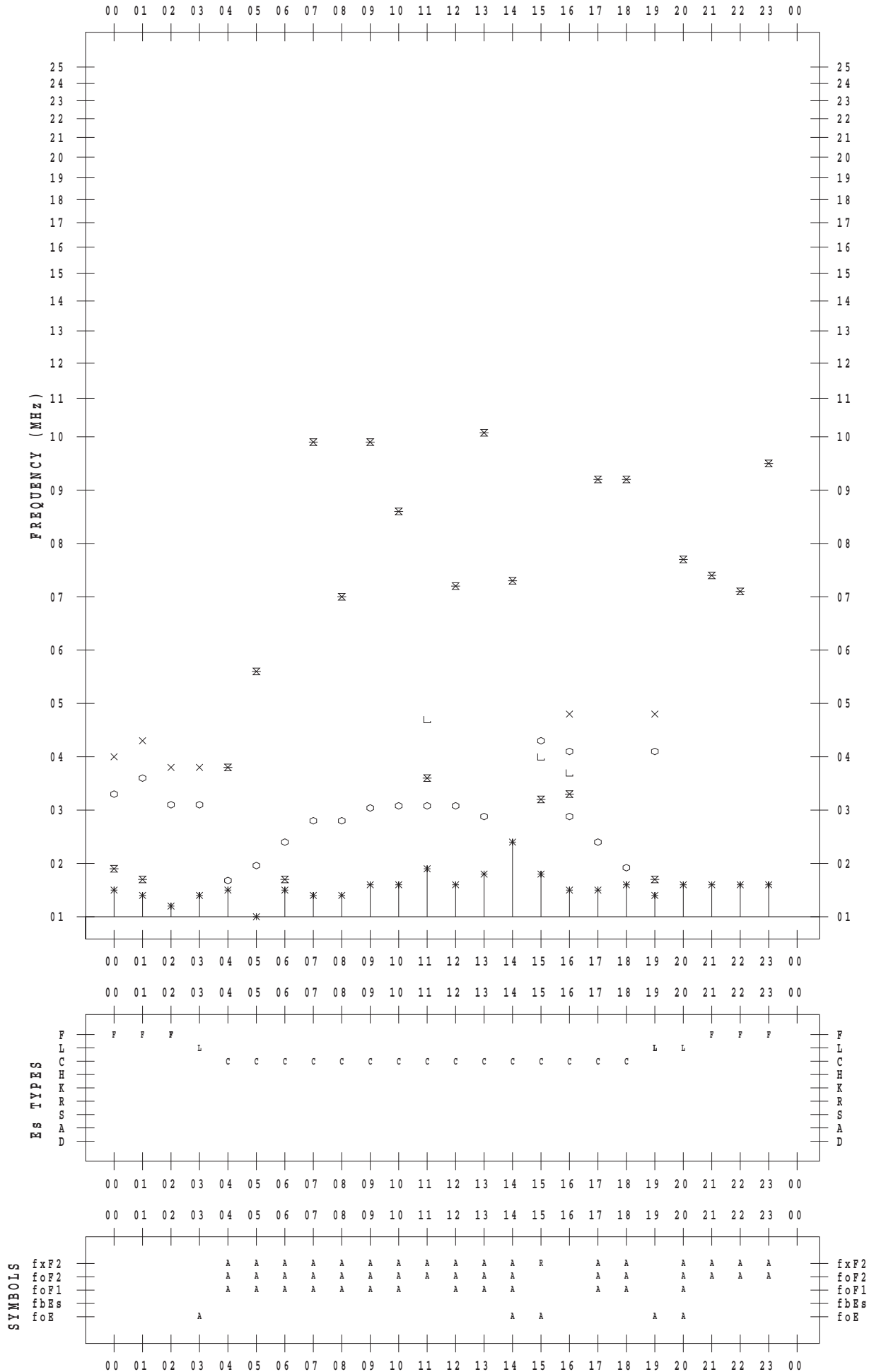
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 30

135 ° E MEAN TIME



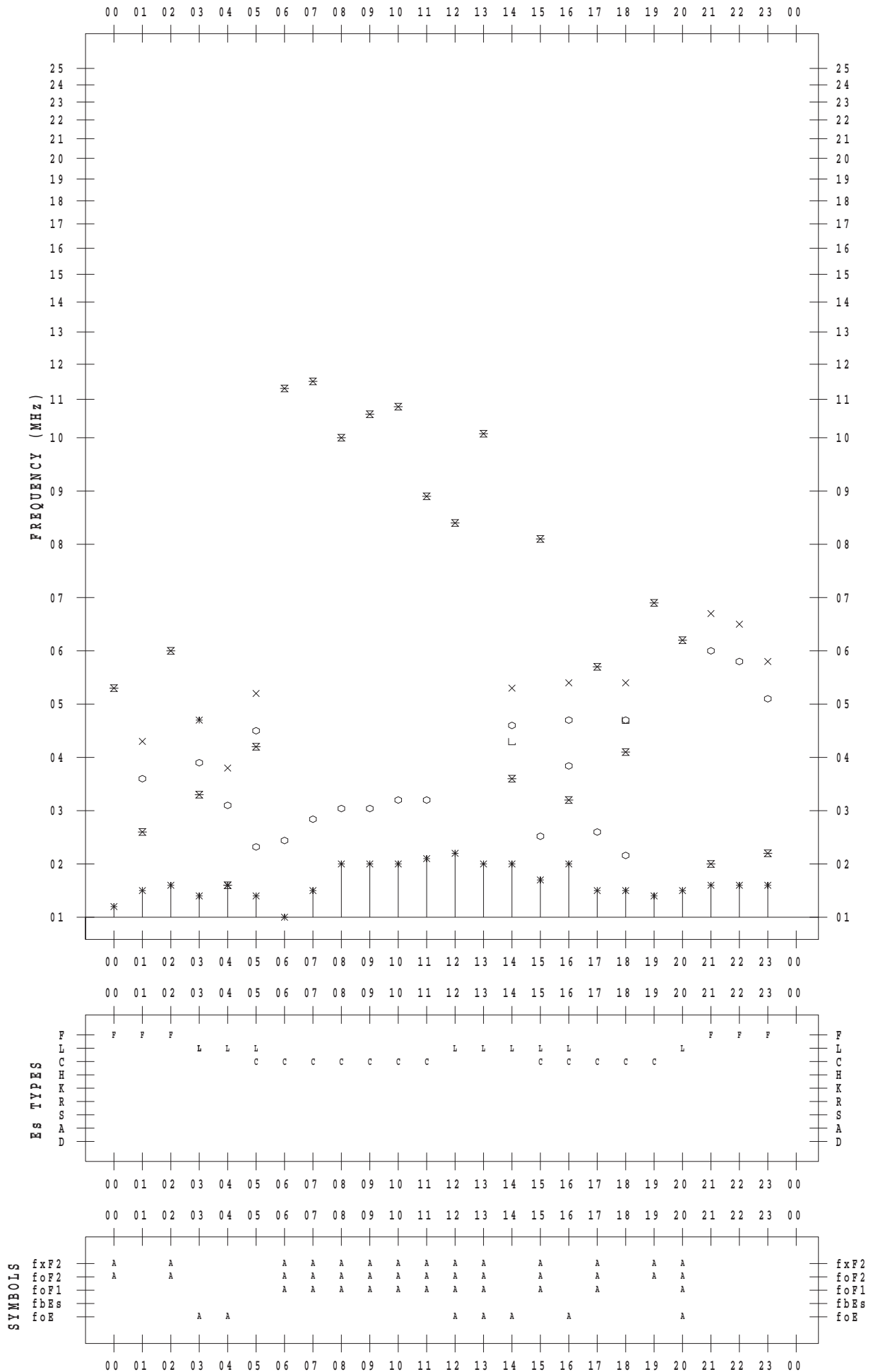
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017 / 5 / 31

135 ° E MEAN TIME



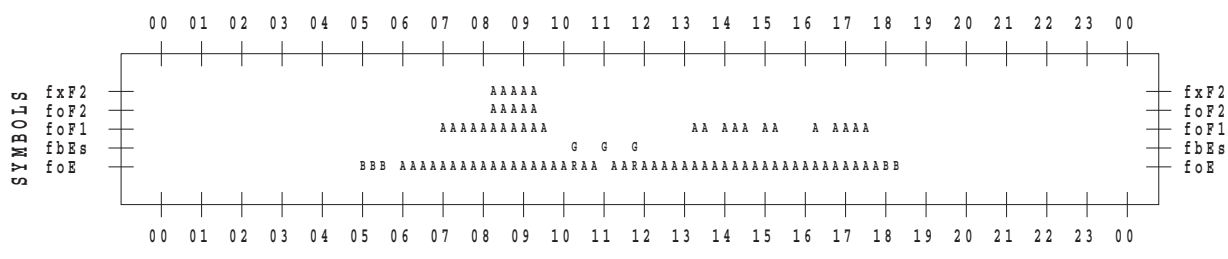
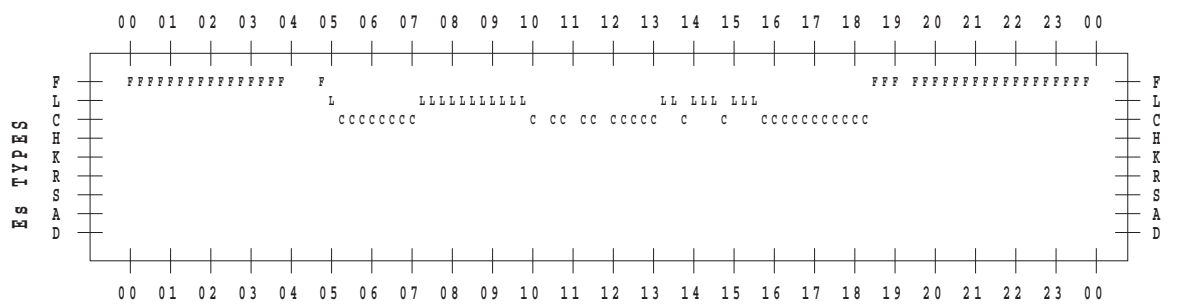
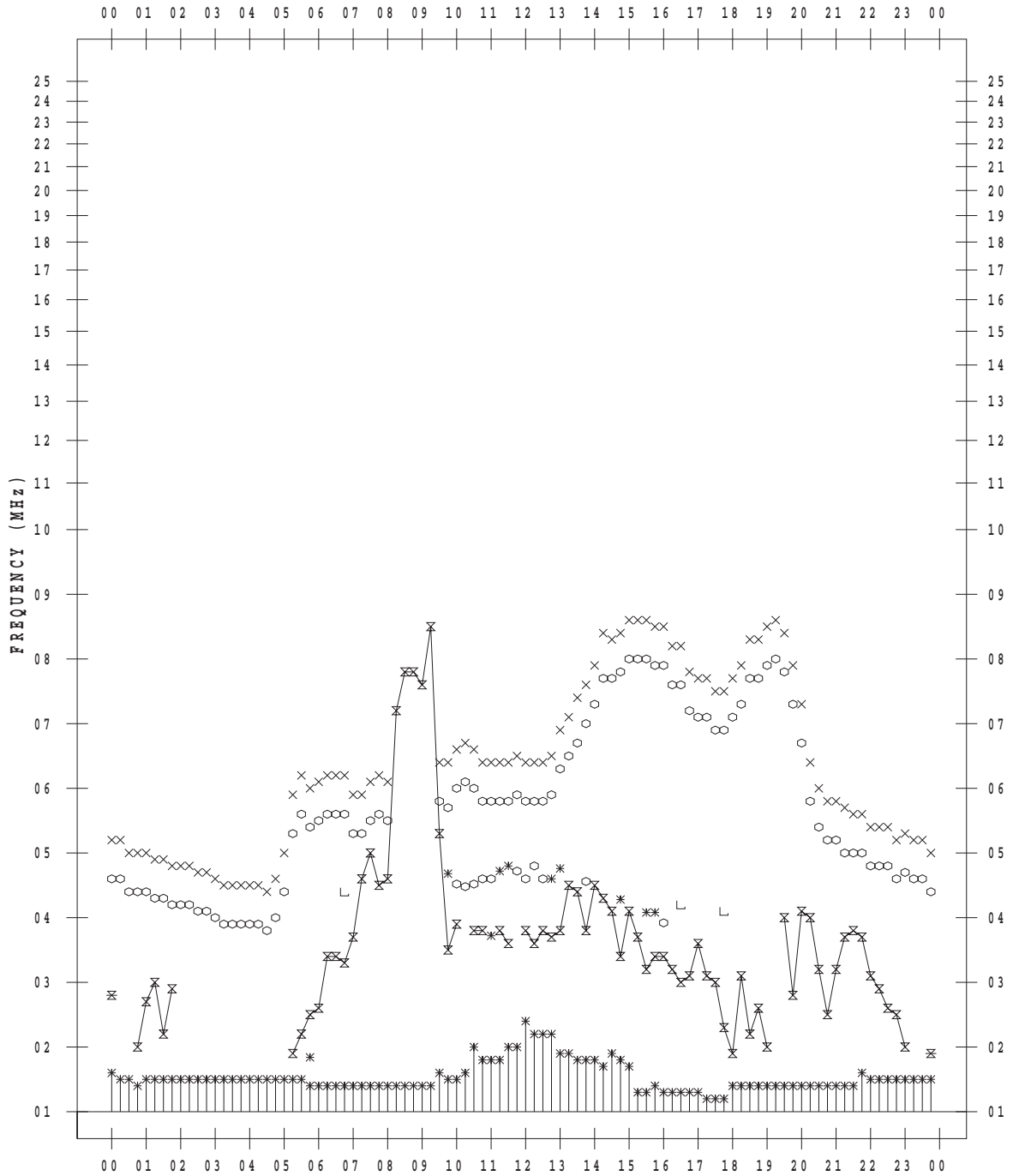
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 1

135 ° E MEAN TIME



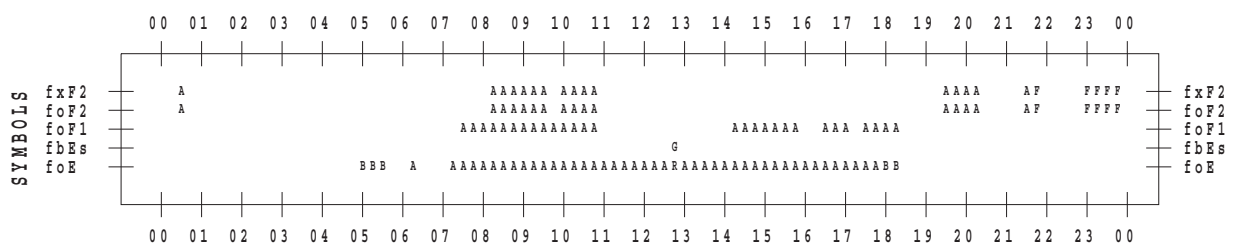
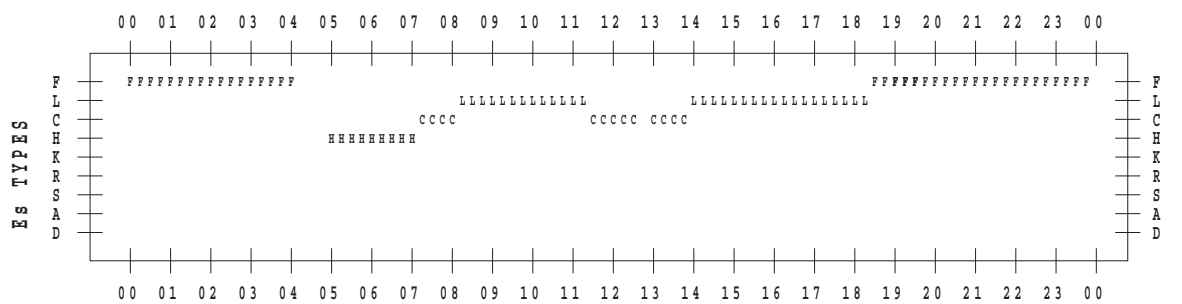
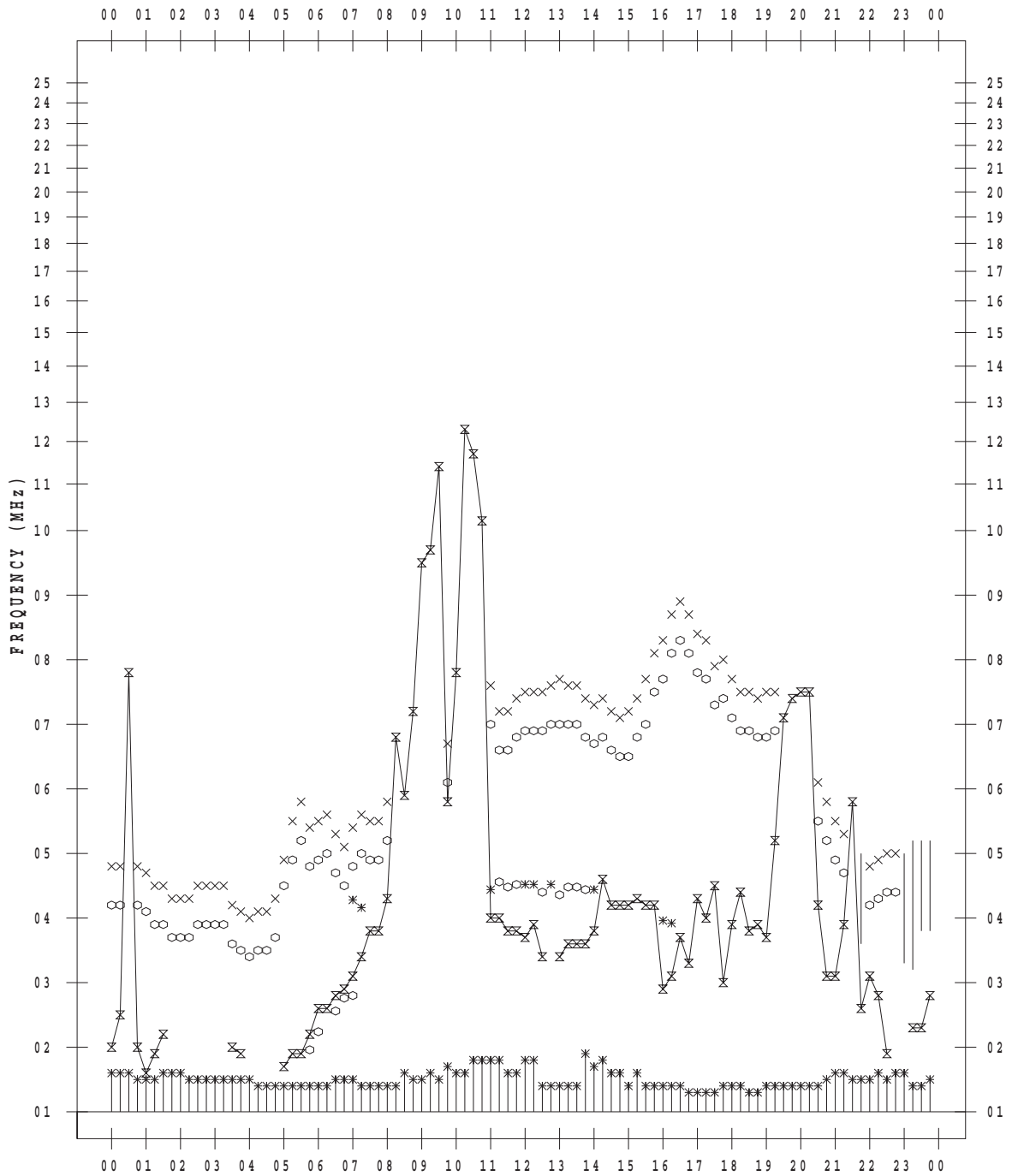
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 2

135 ° E MEAN TIME



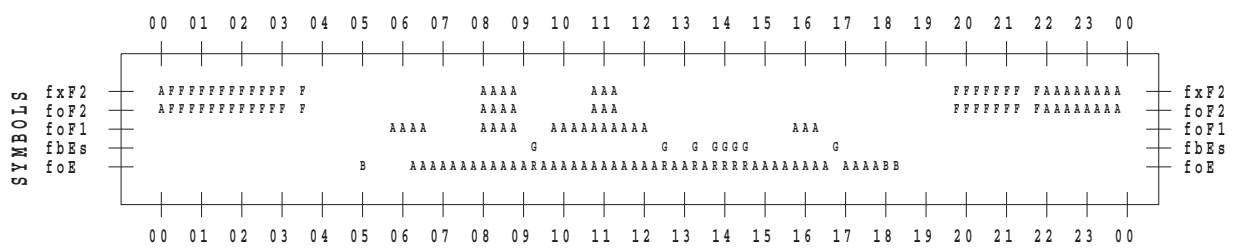
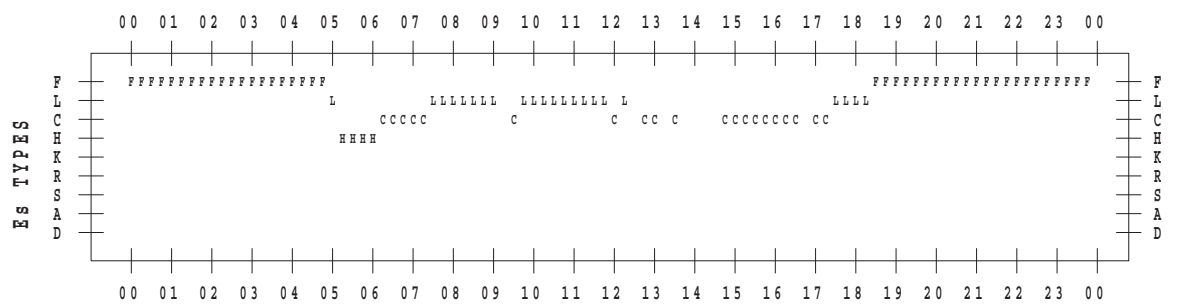
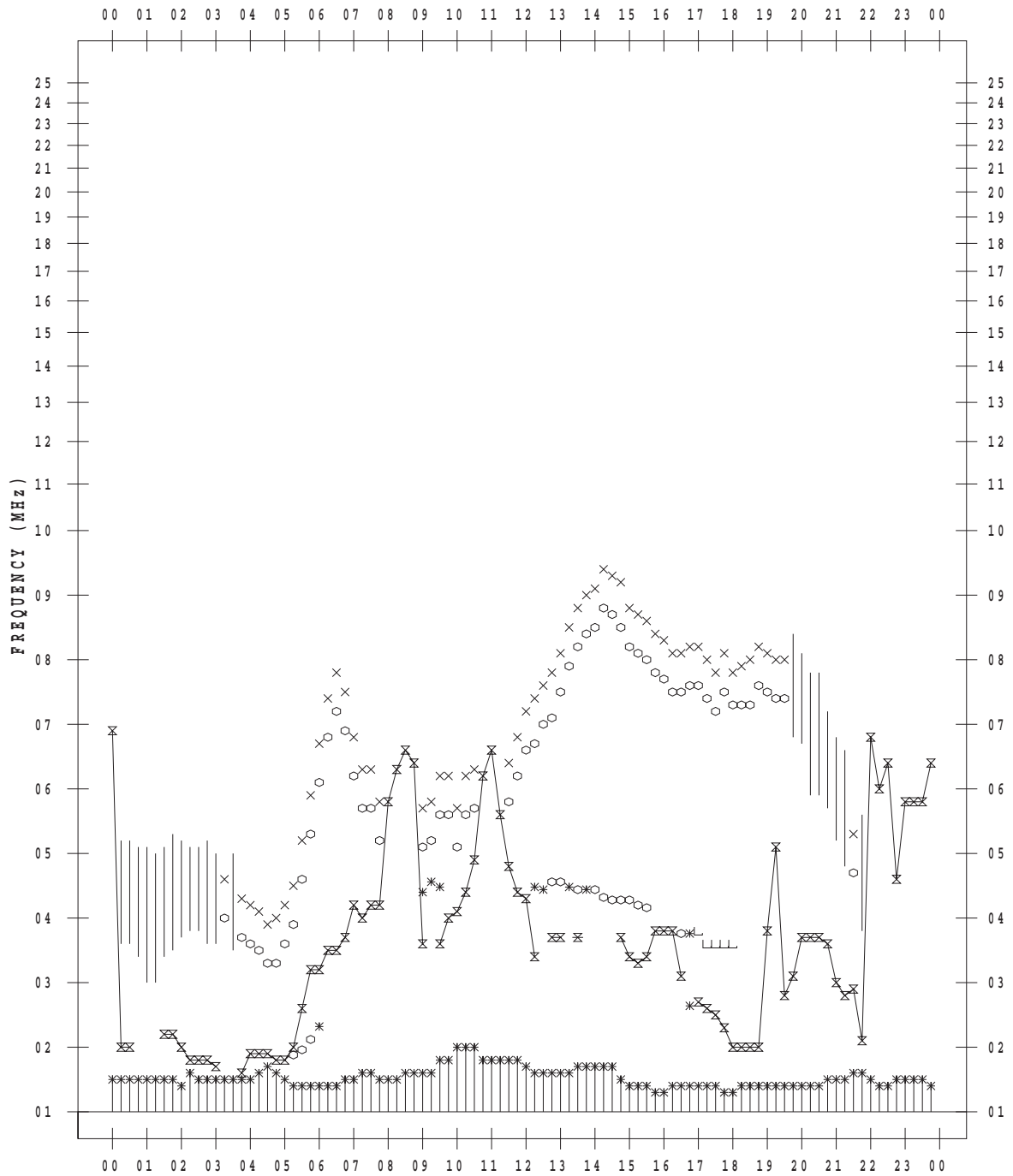
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 3

135 ° E MEAN TIME



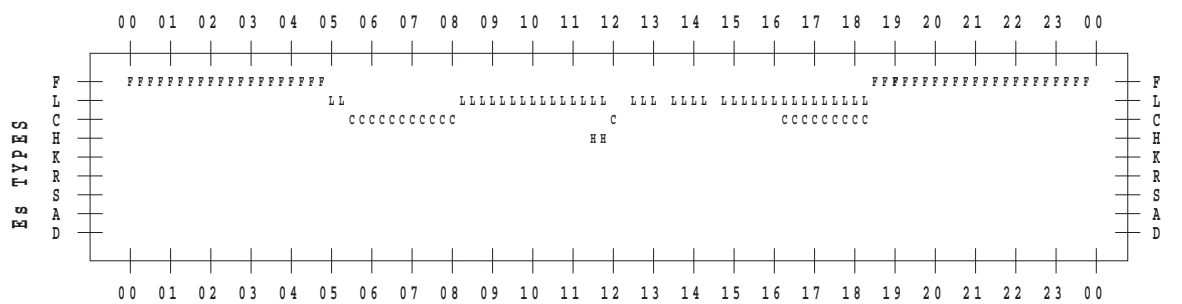
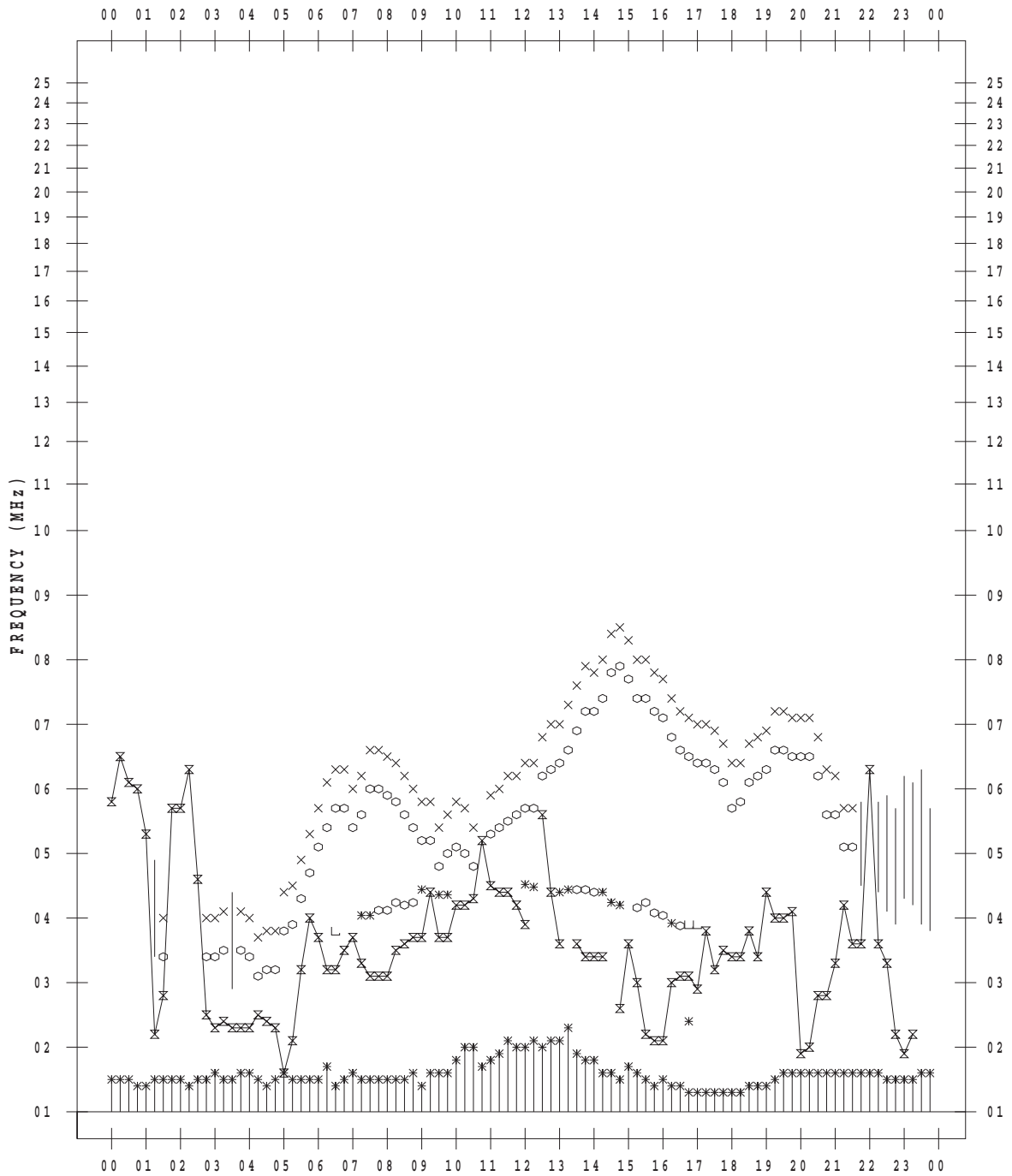
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 4

135 ° E MEAN TIME



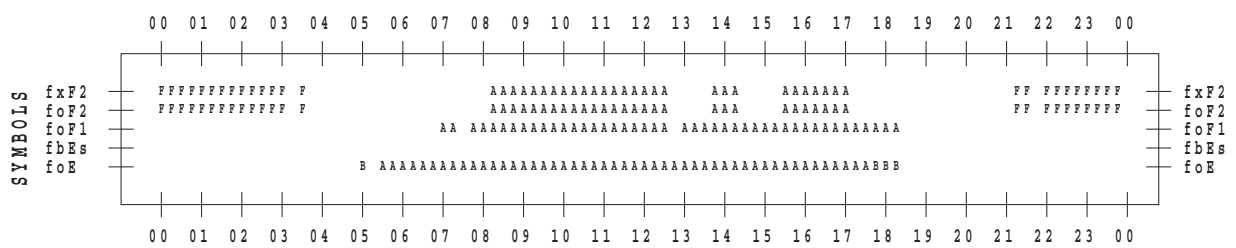
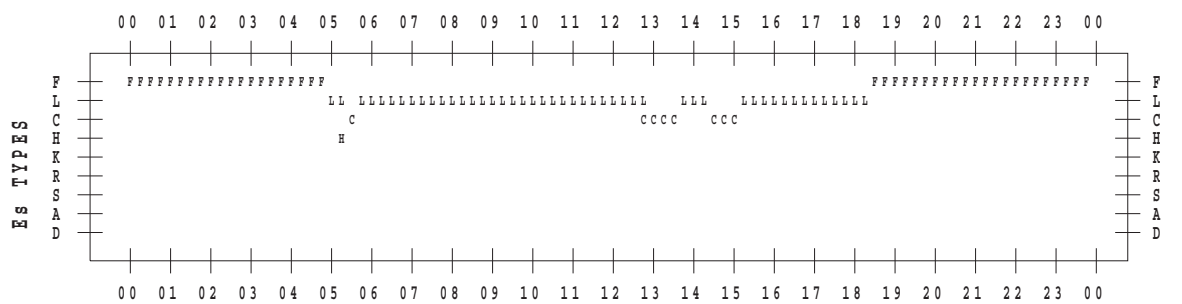
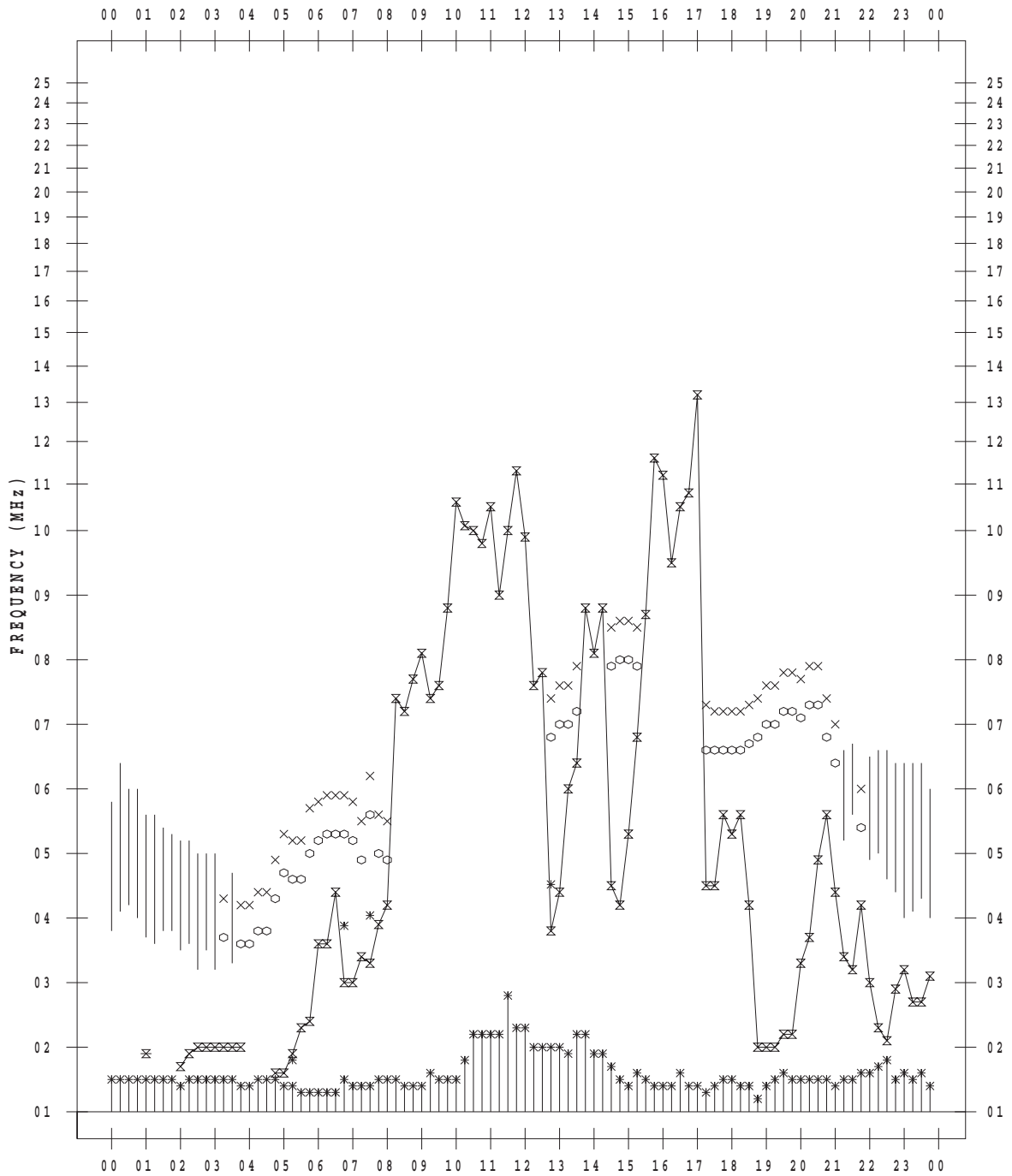
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 5

135 ° E MEAN TIME



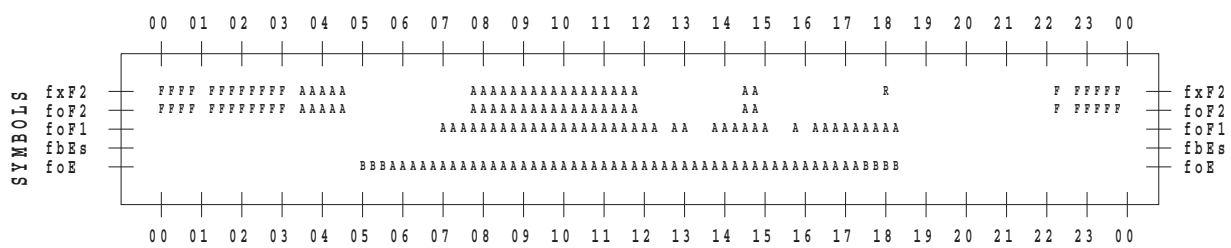
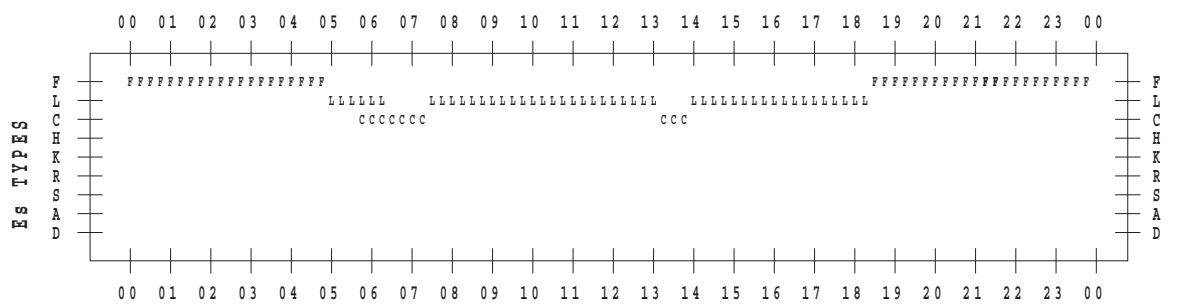
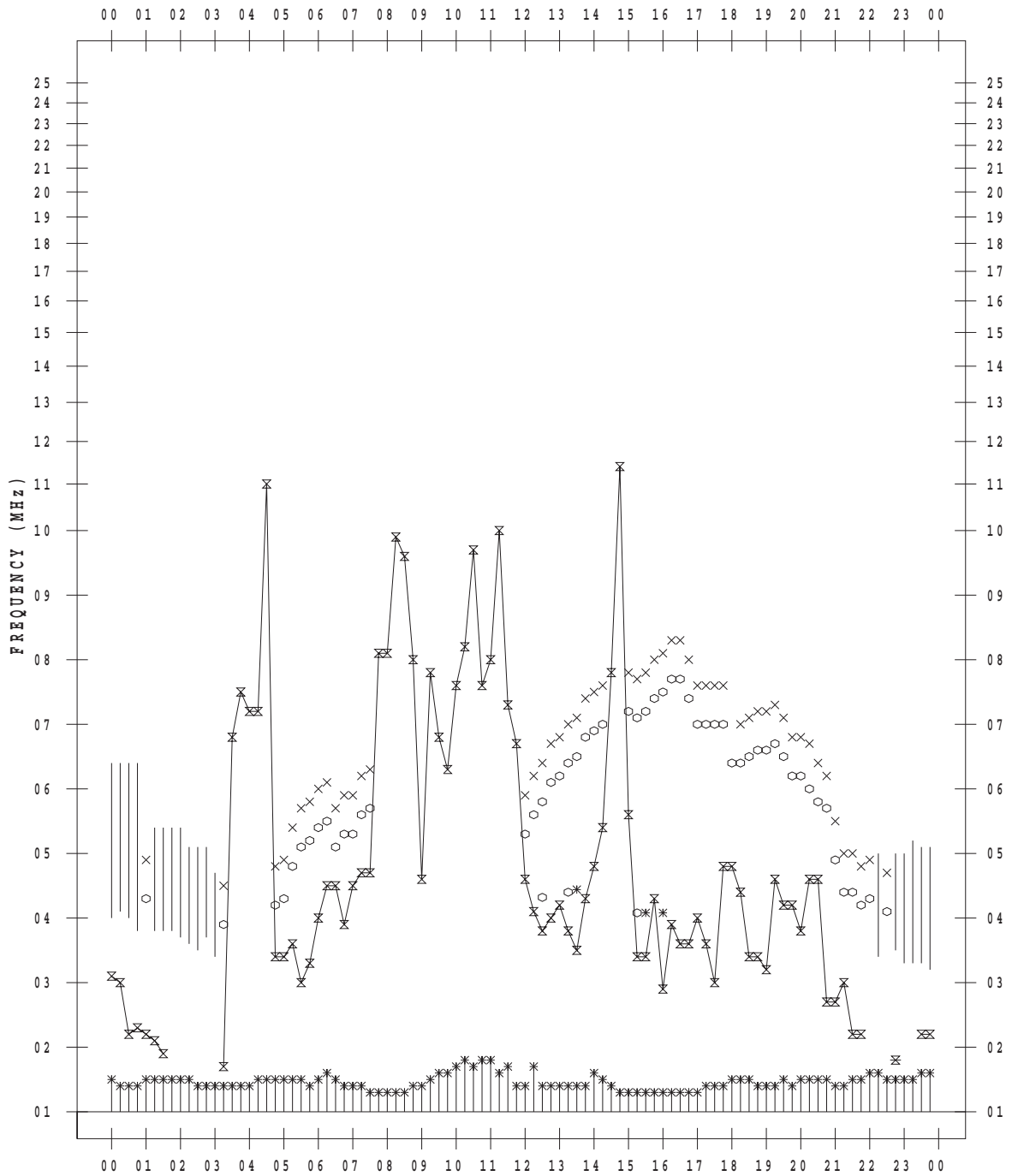
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 6

135 ° E MEAN TIME



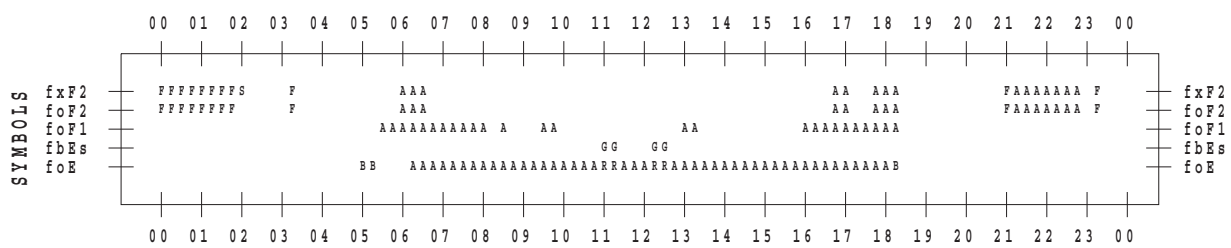
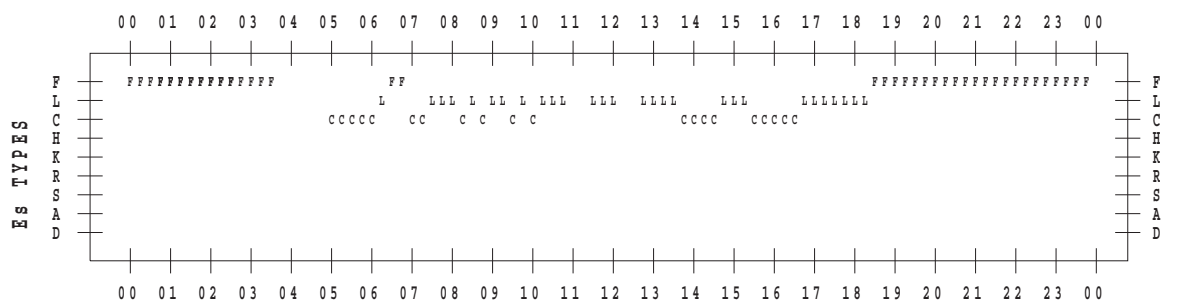
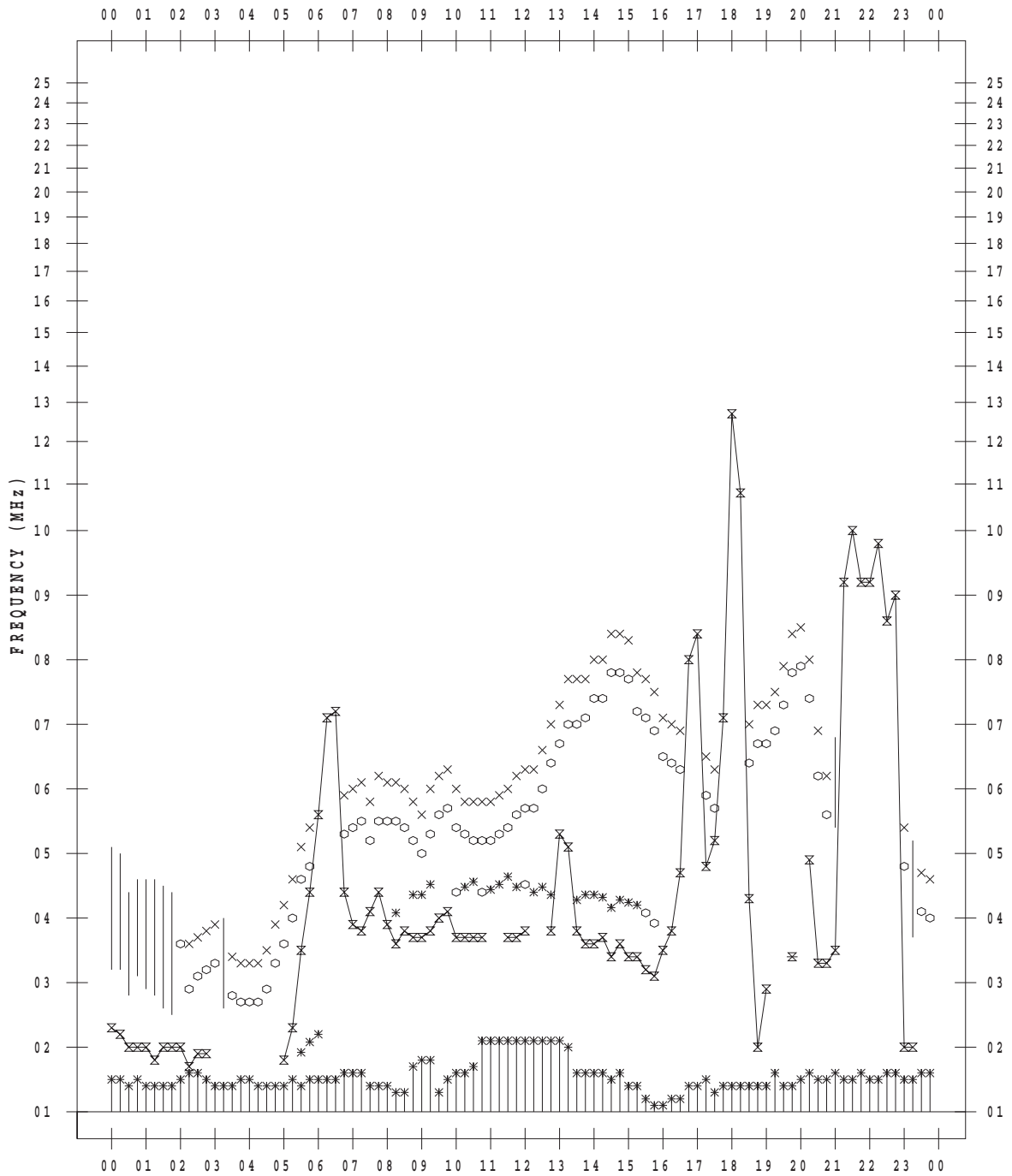
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 7

135 ° E MEAN TIME



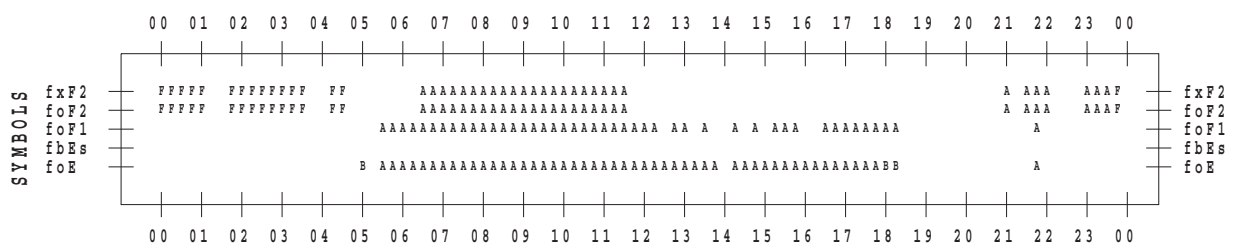
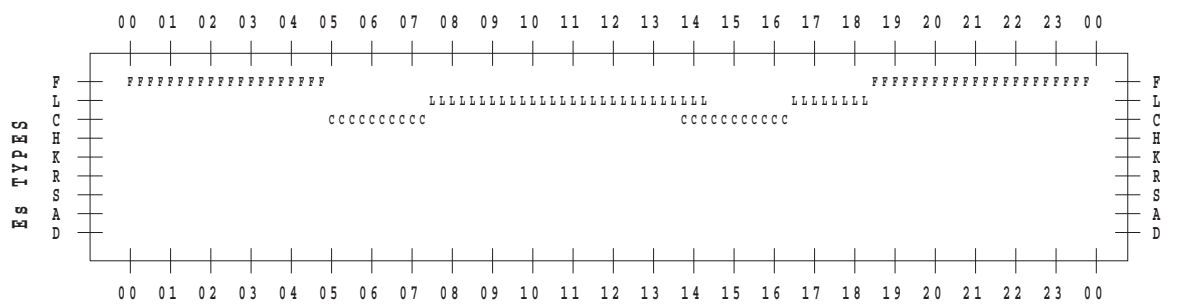
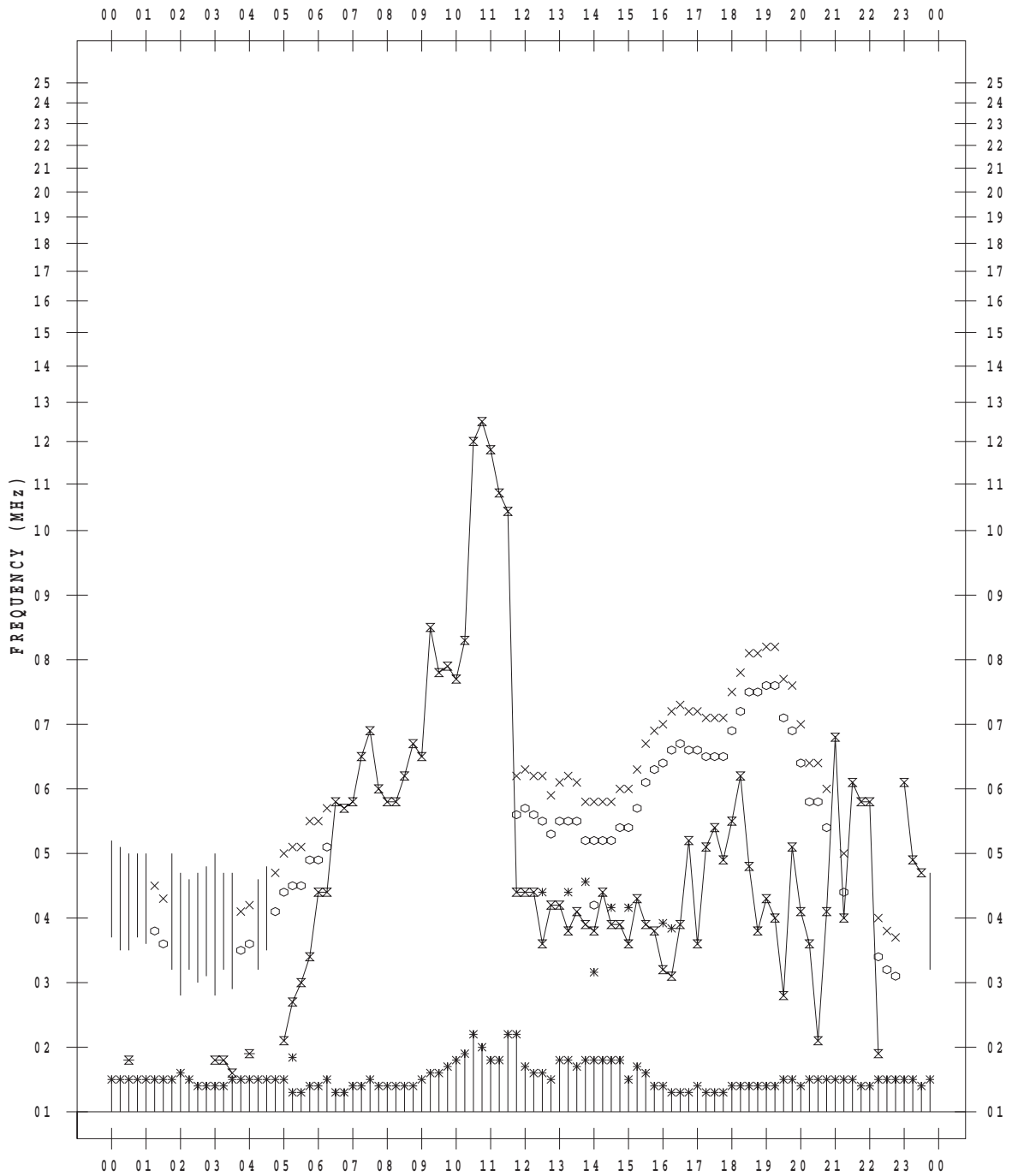
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 8

135 ° E MEAN TIME



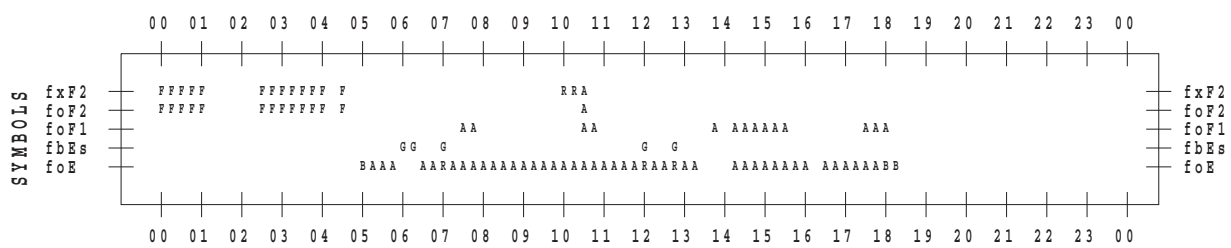
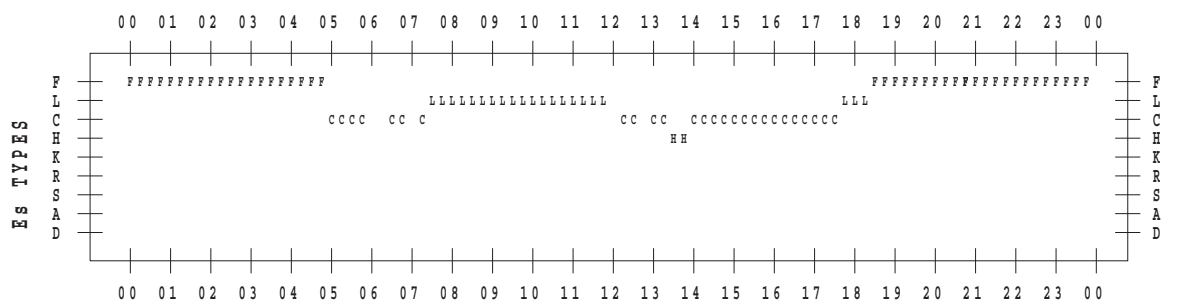
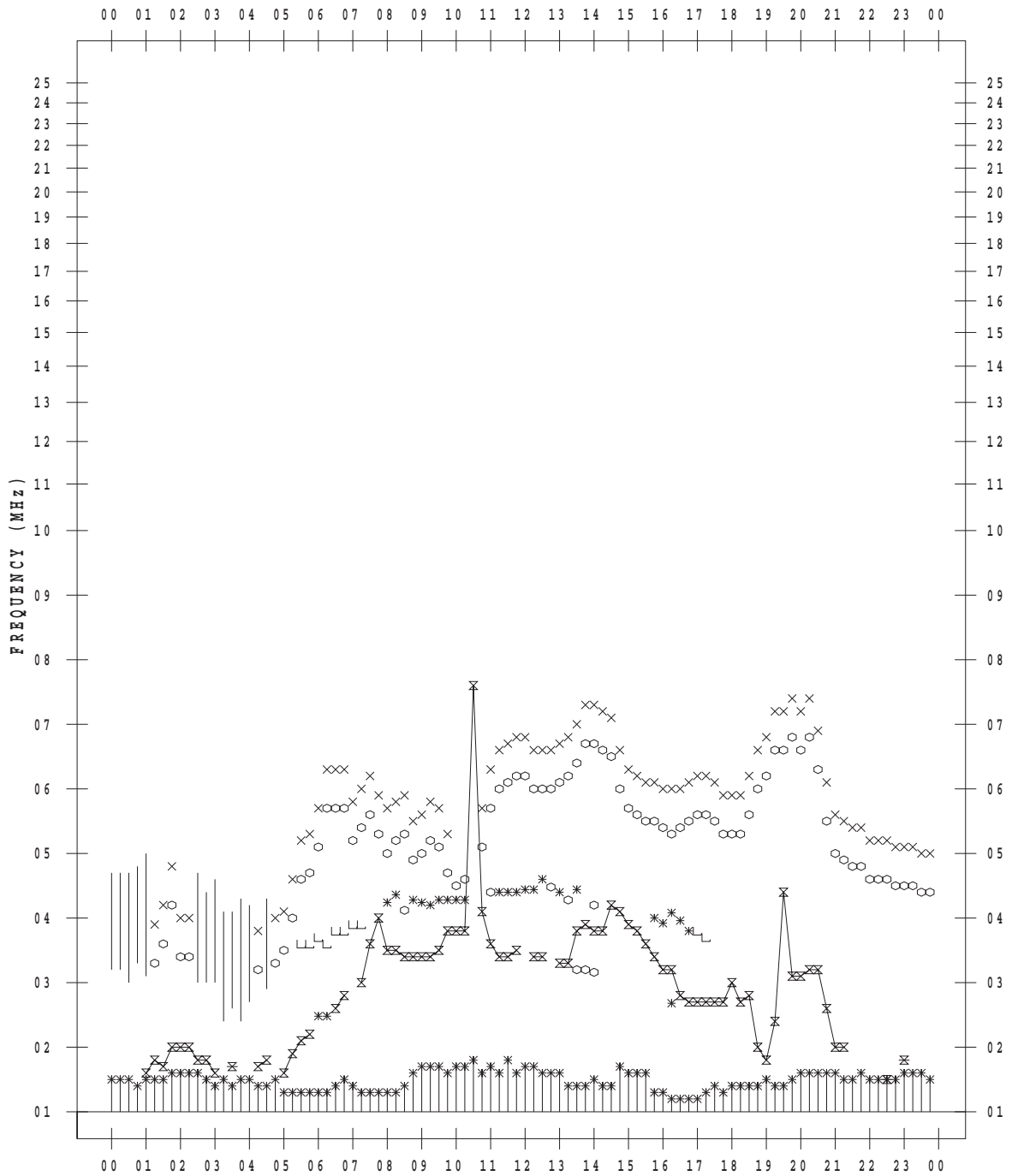
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 9

135 ° E MEAN TIME



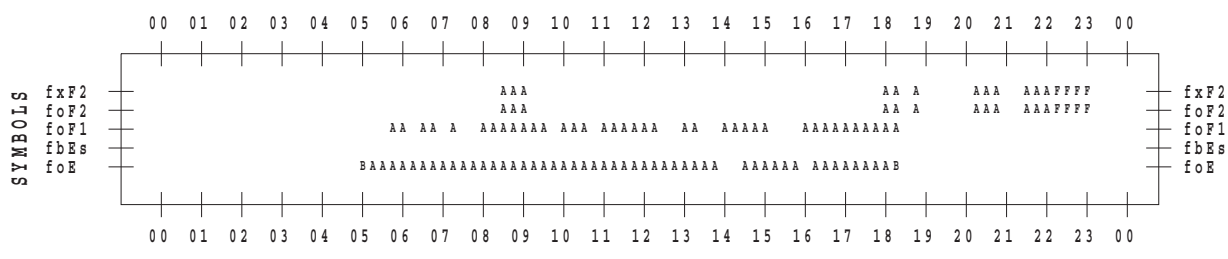
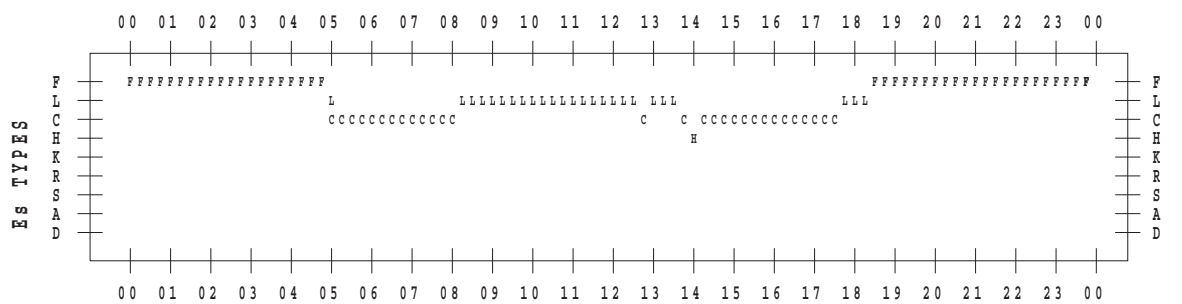
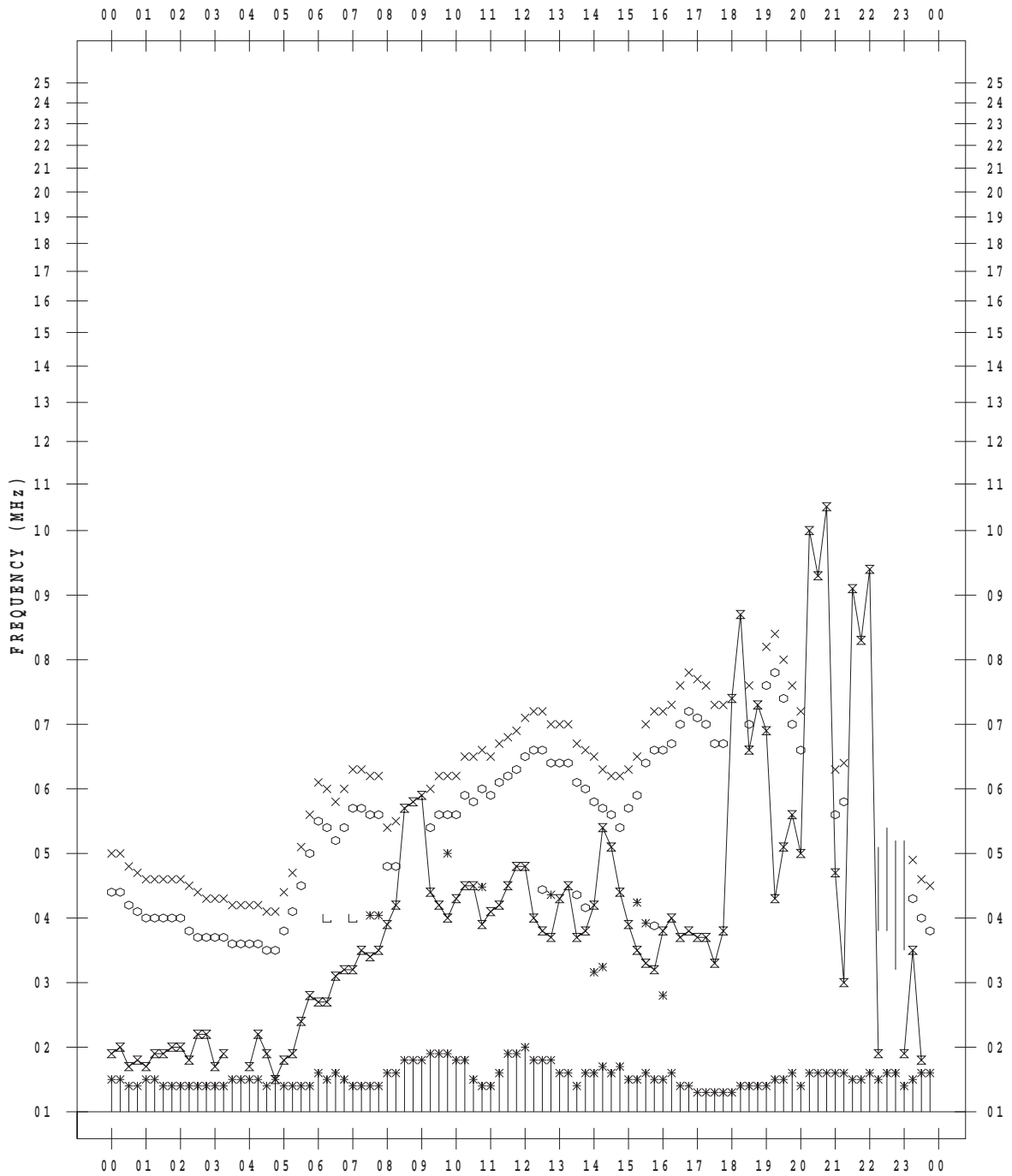
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 10

135 ° E MEAN TIME



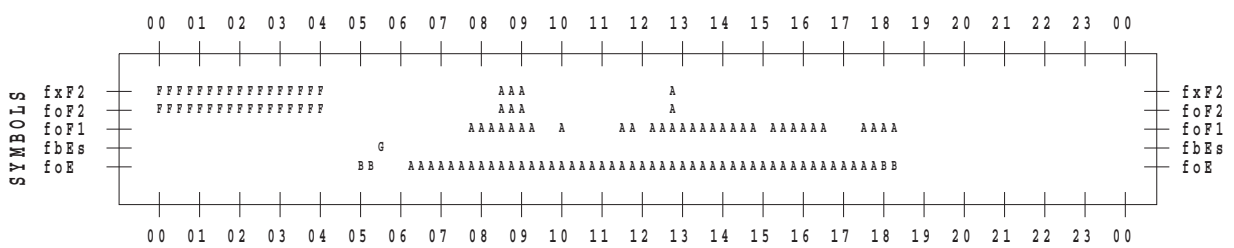
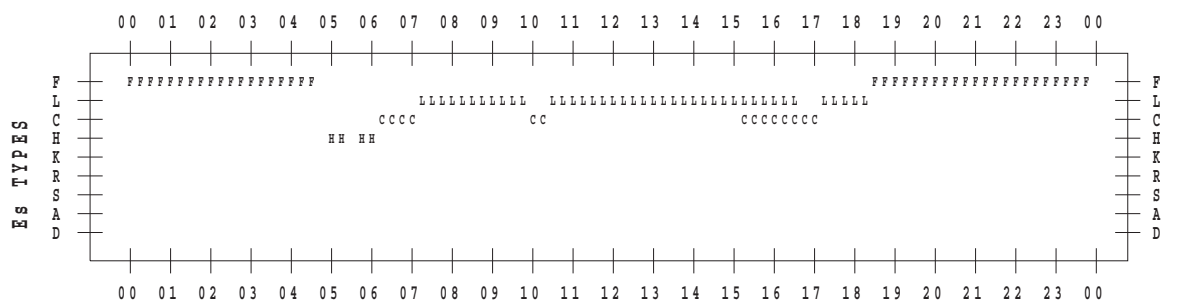
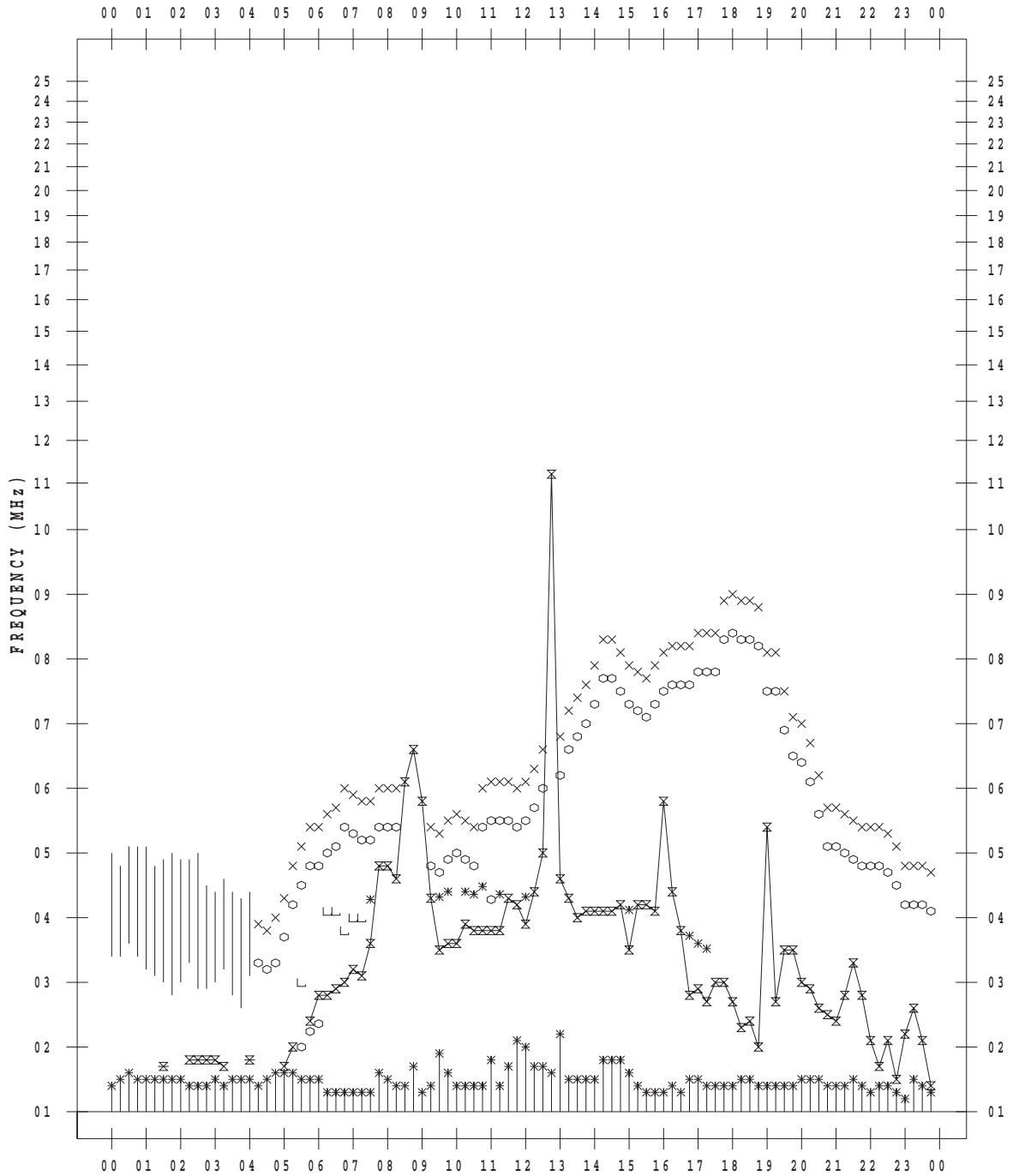
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 11

135 ° E MEAN TIME



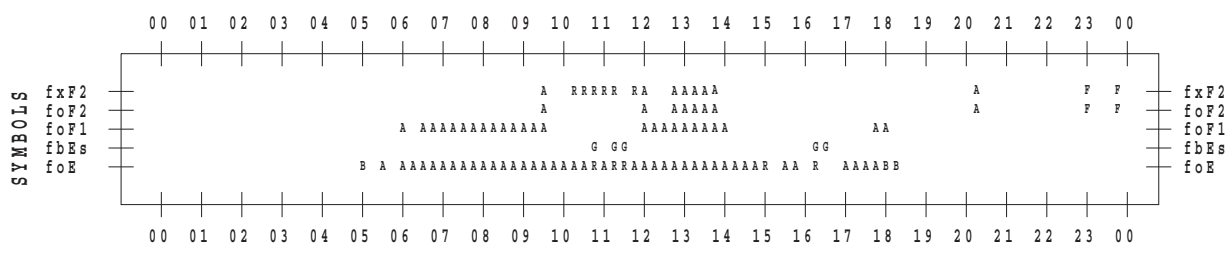
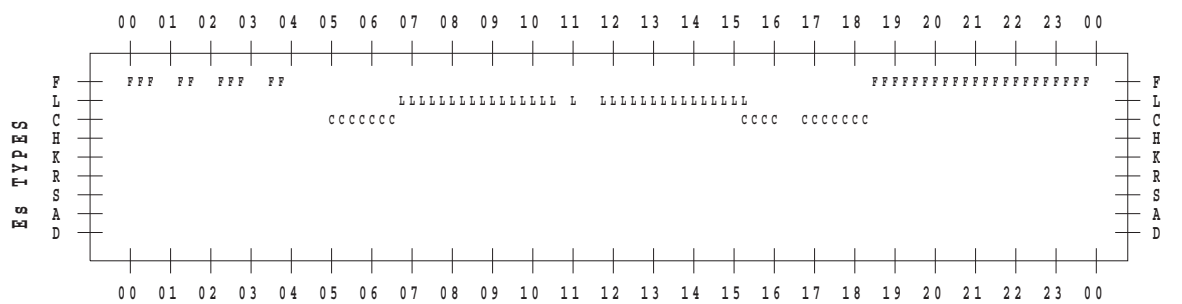
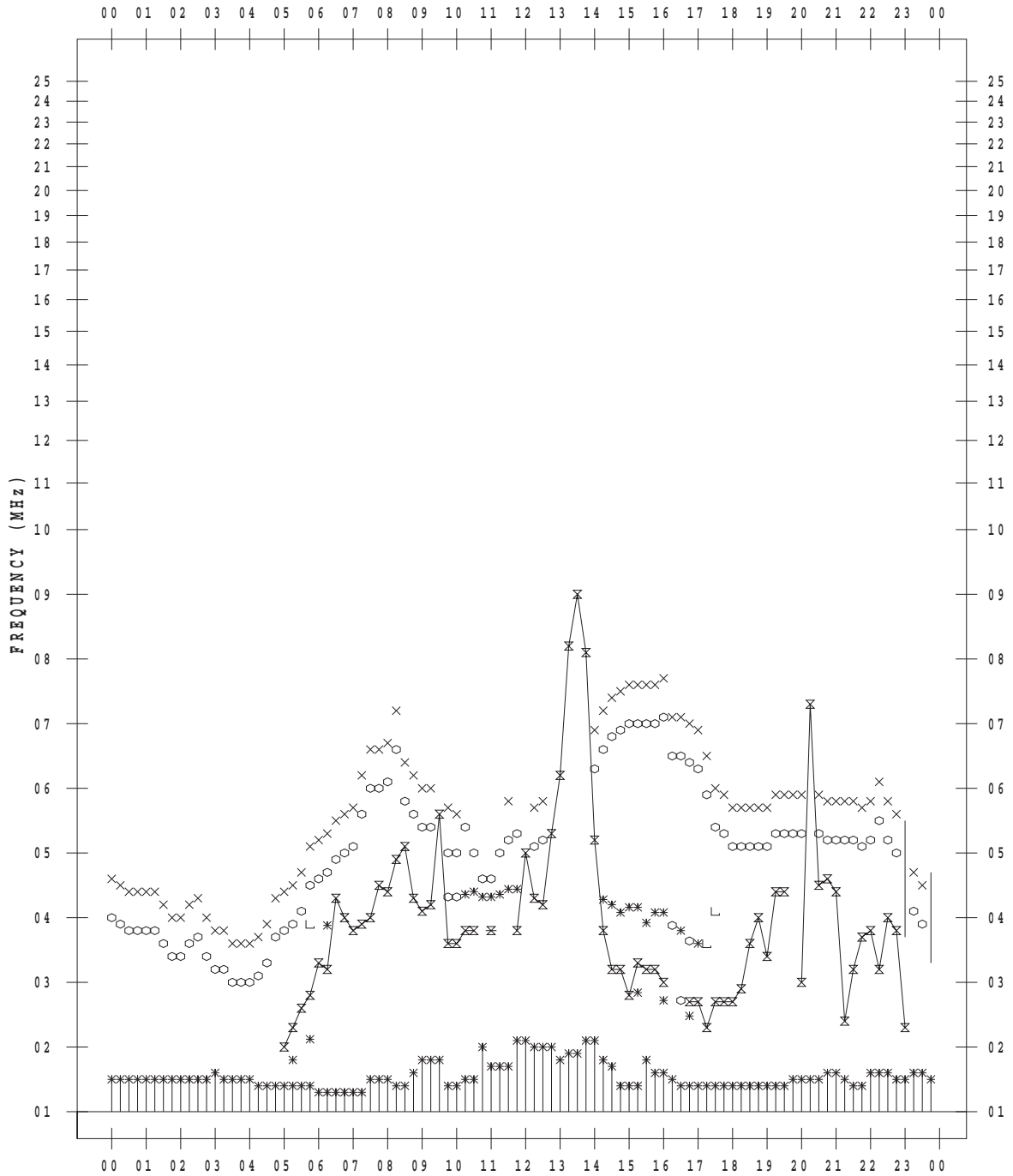
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 12

135 ° E MEAN TIME



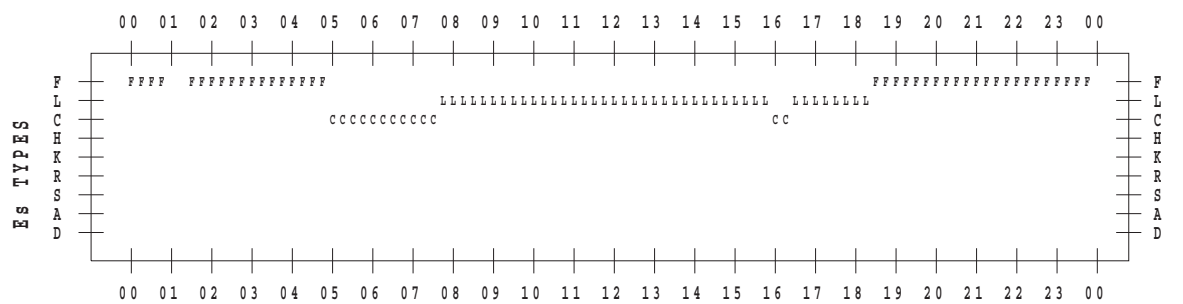
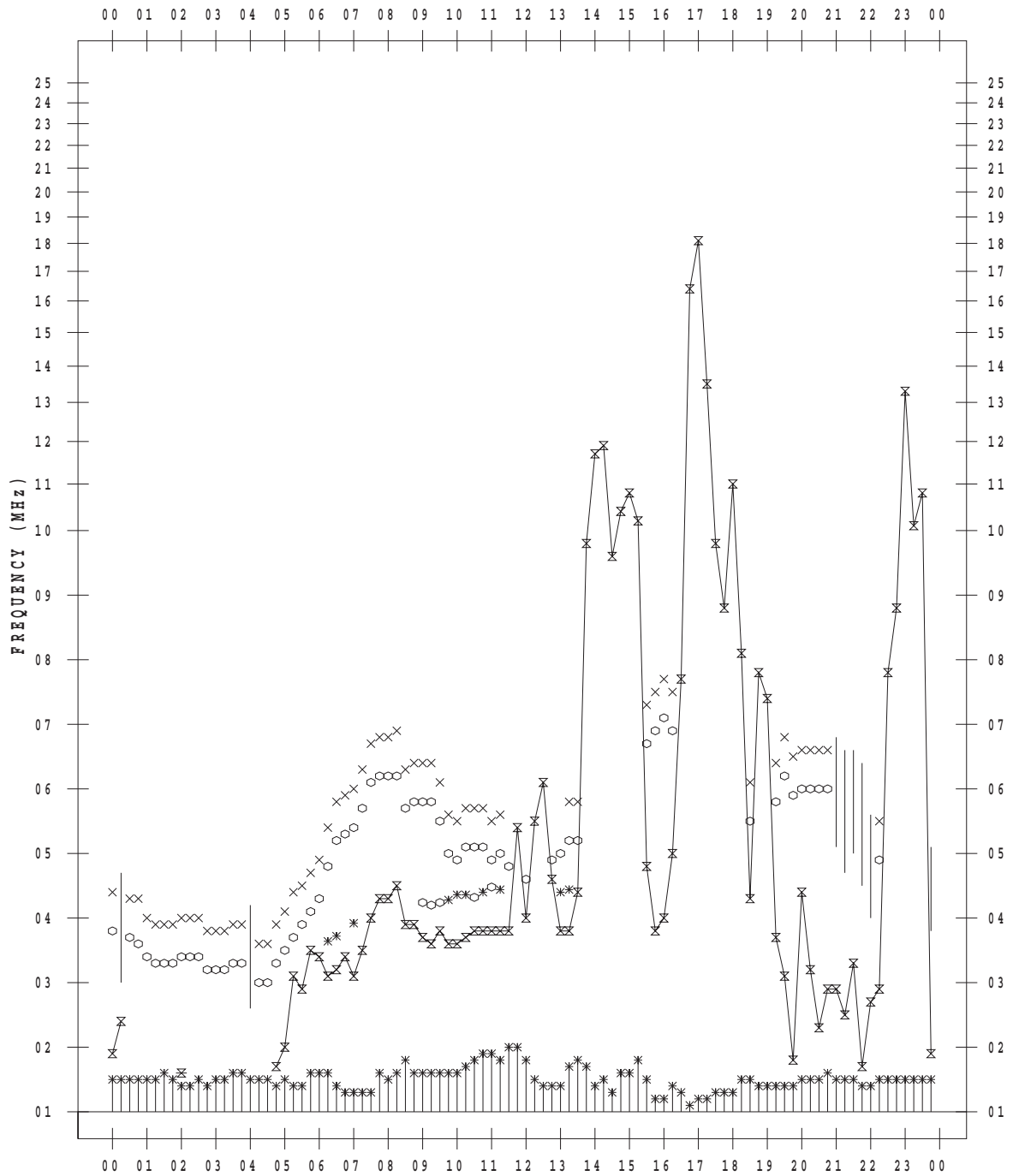
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 13

135 ° E MEAN TIME



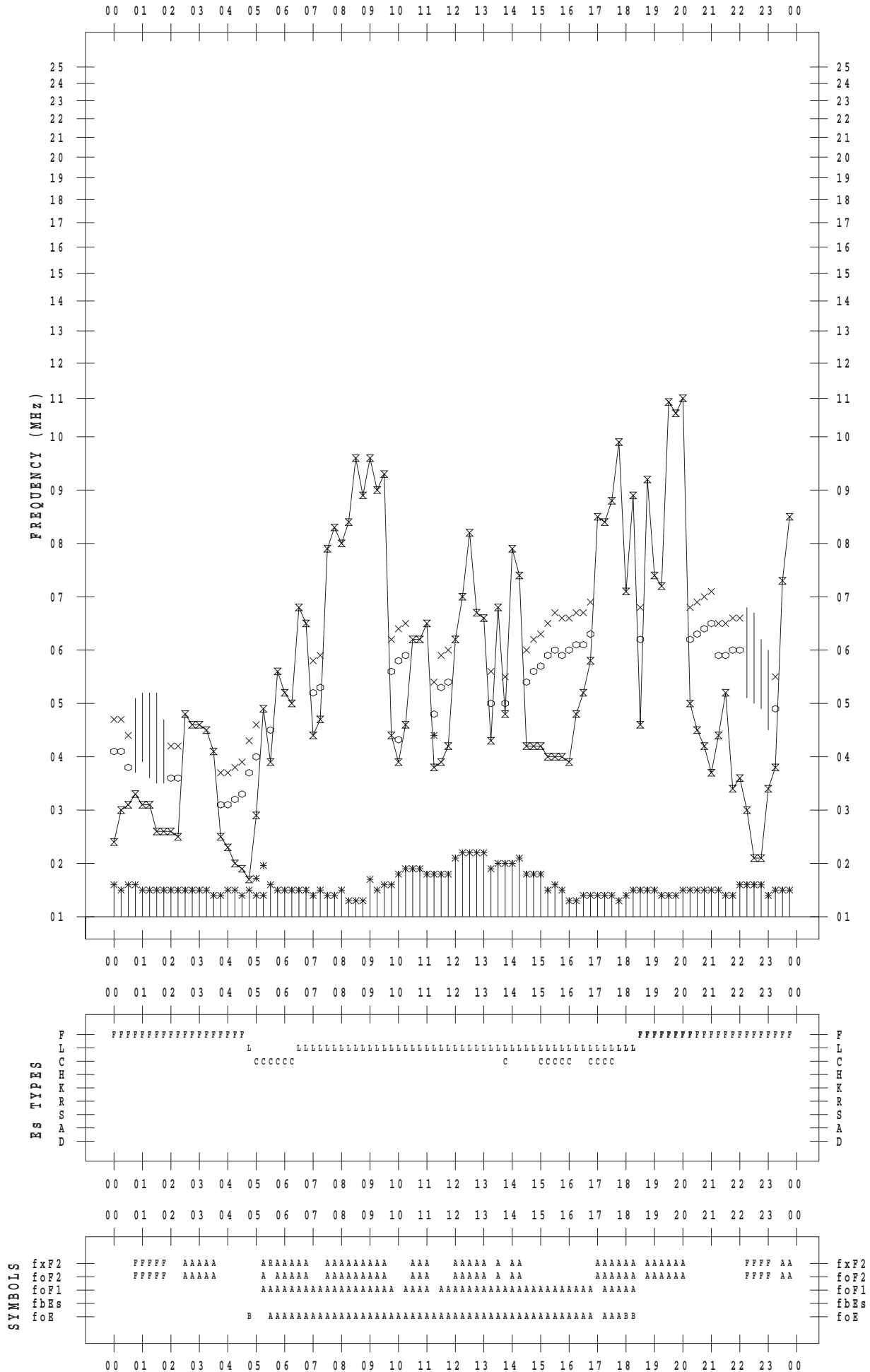
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 14

135 ° E MEAN TIME



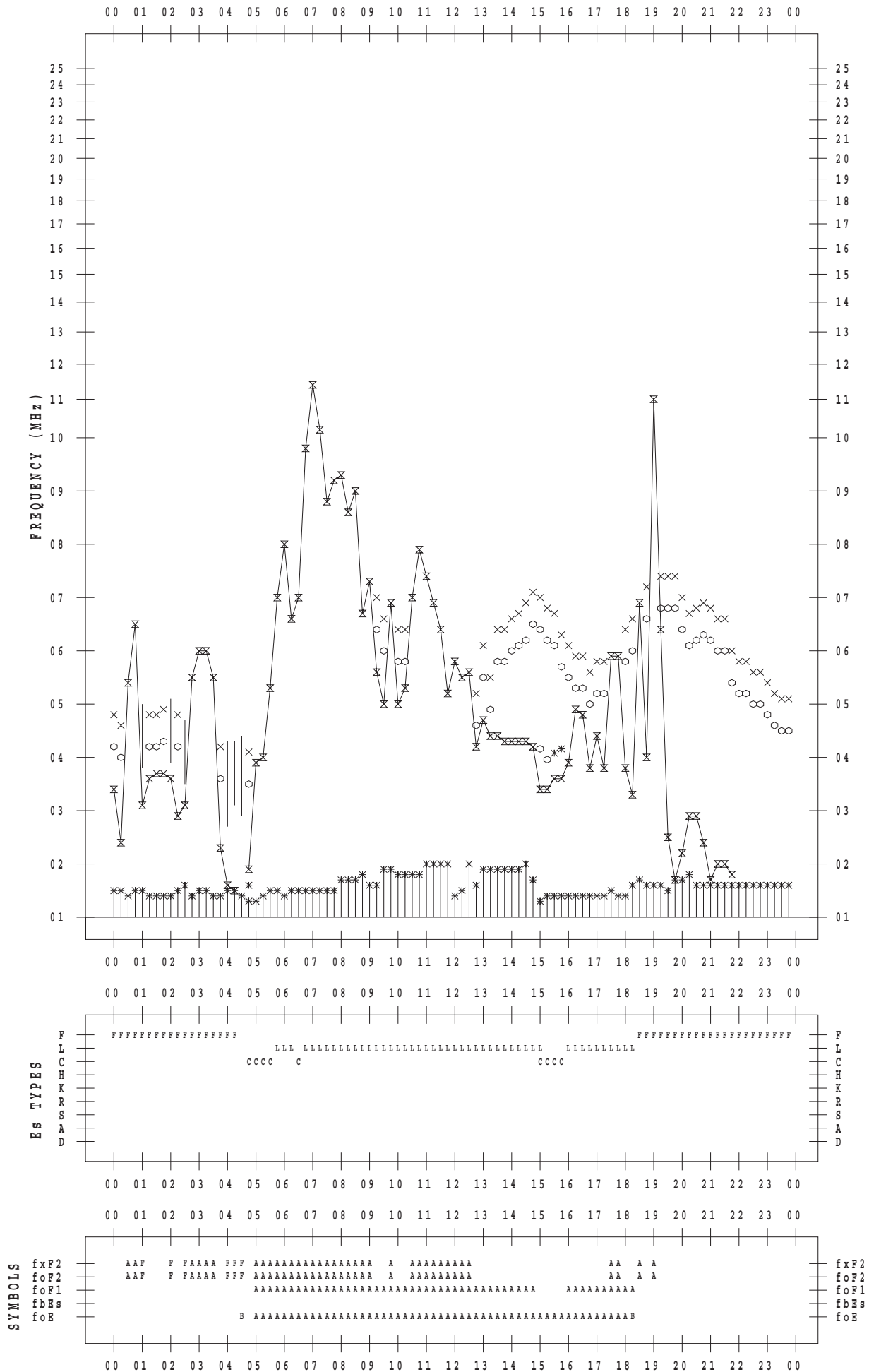
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 15

135 ° E MEAN TIME



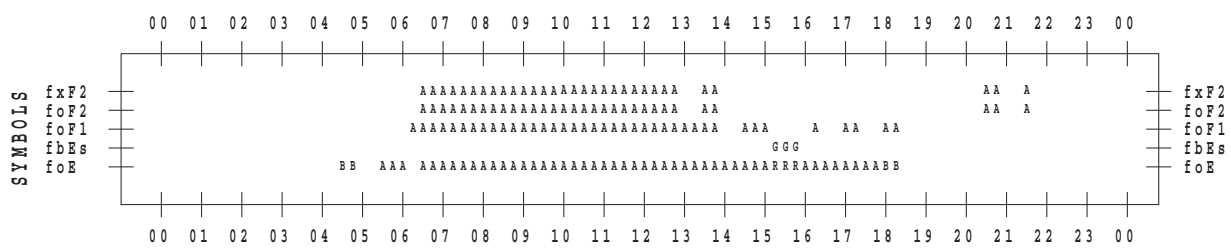
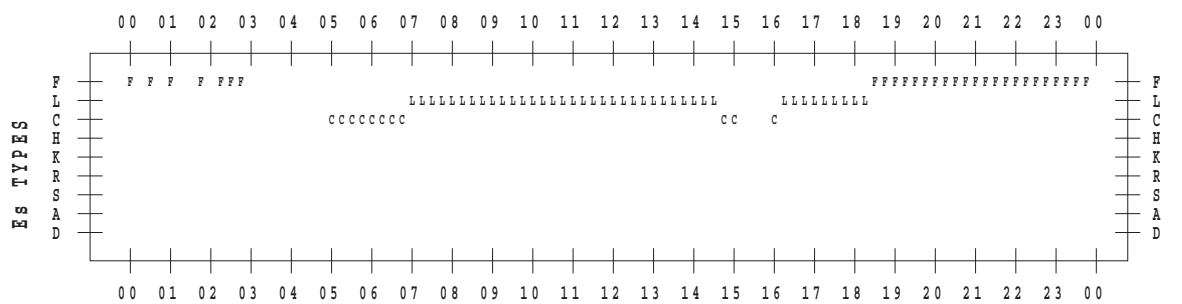
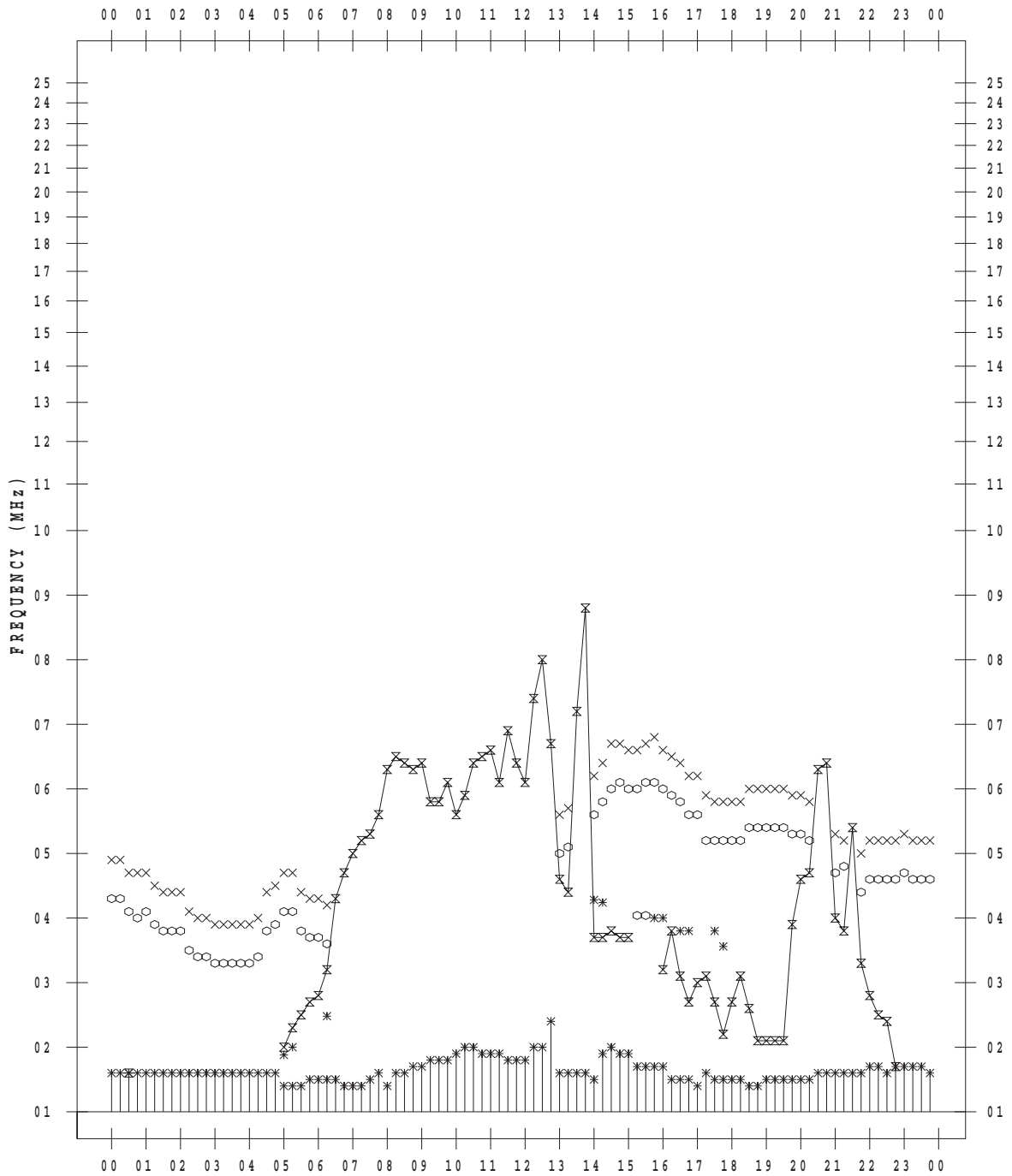
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 16

135 ° E MEAN TIME



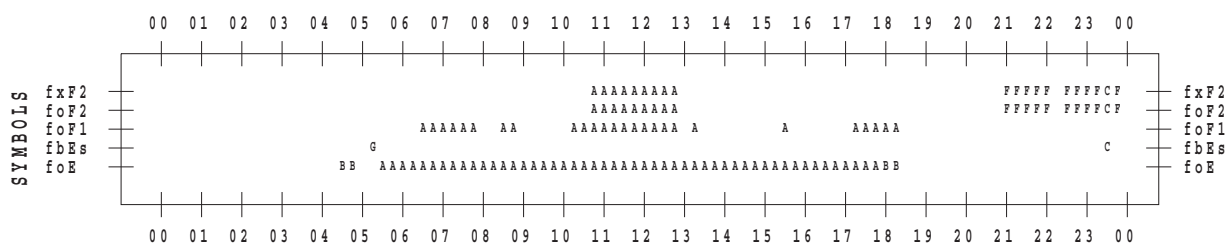
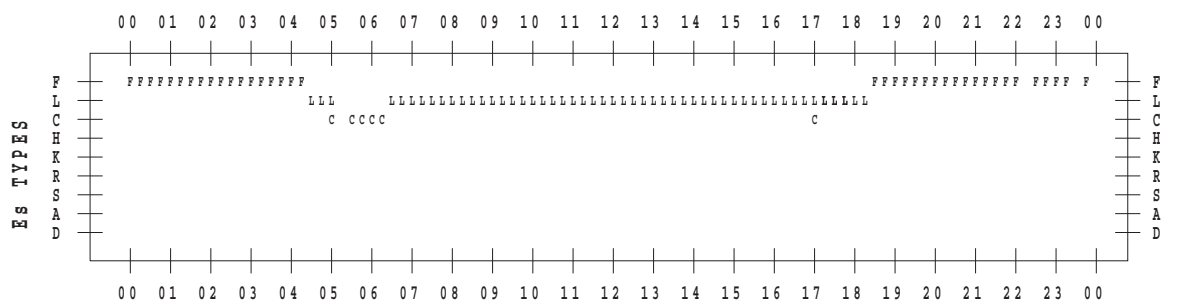
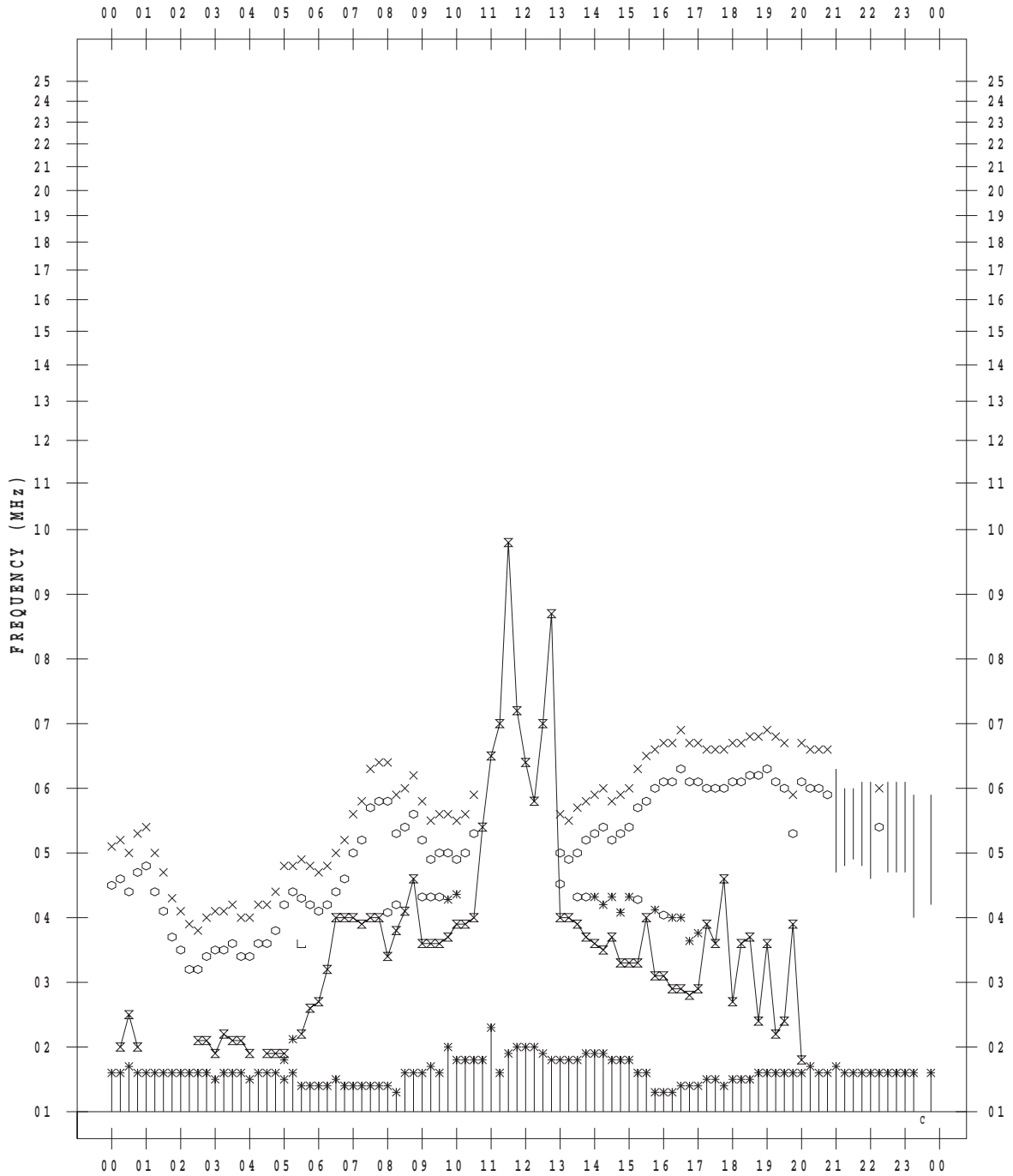
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 17

135 ° E MEAN TIME



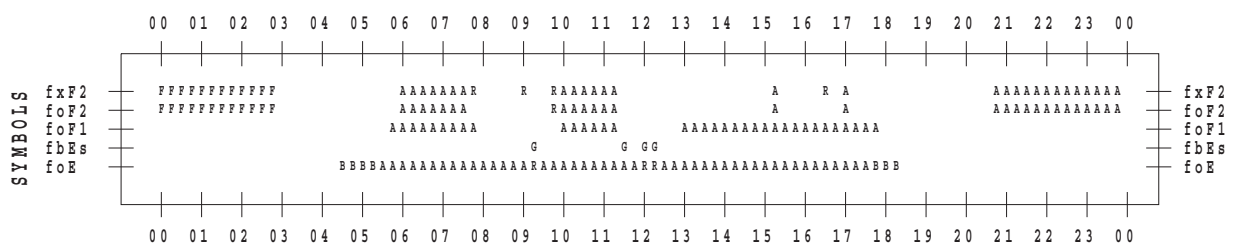
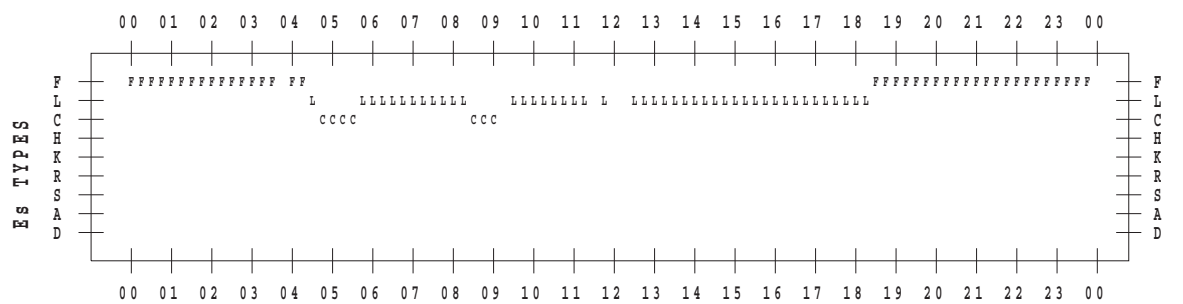
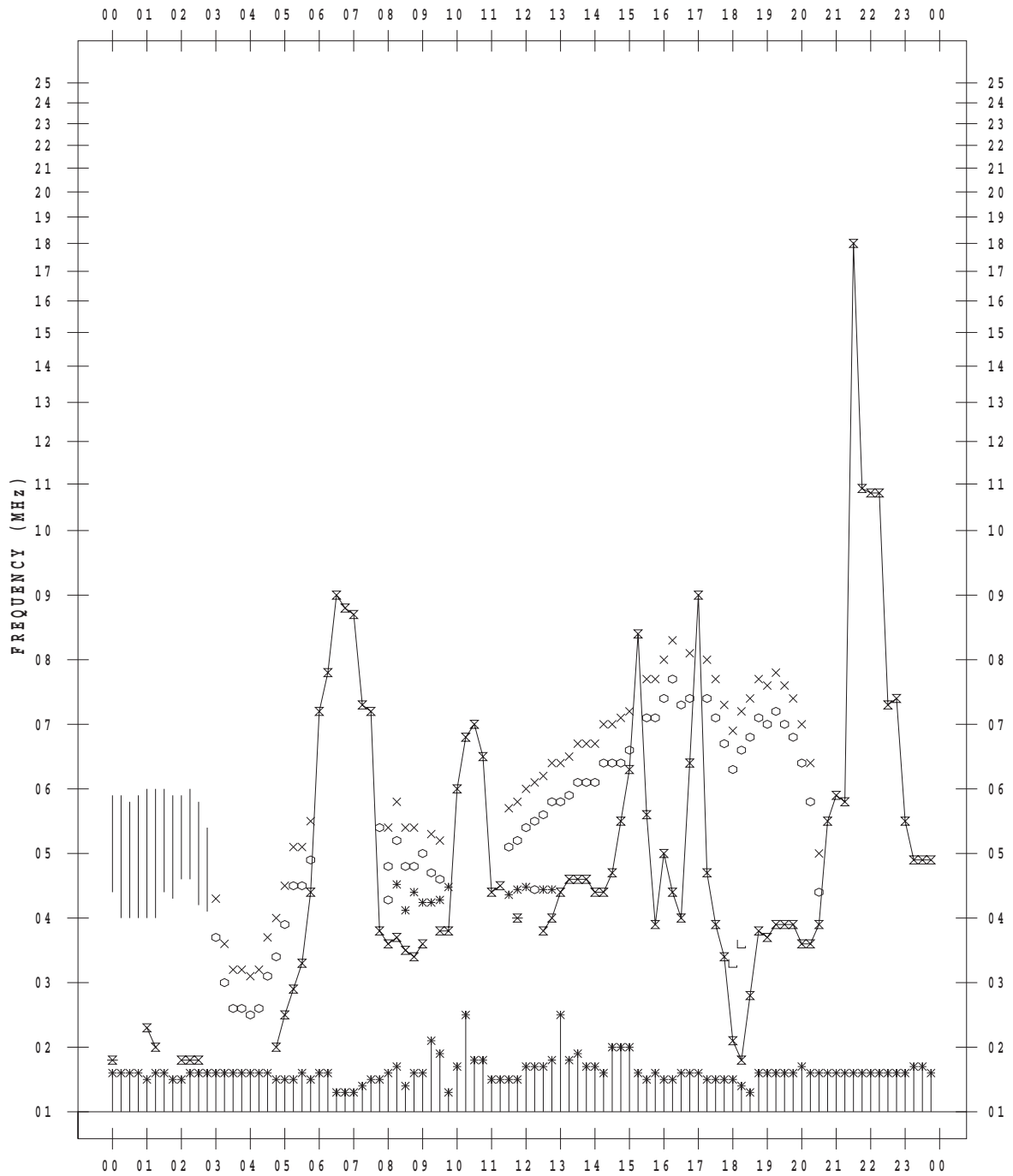
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 18

135 ° E MEAN TIME



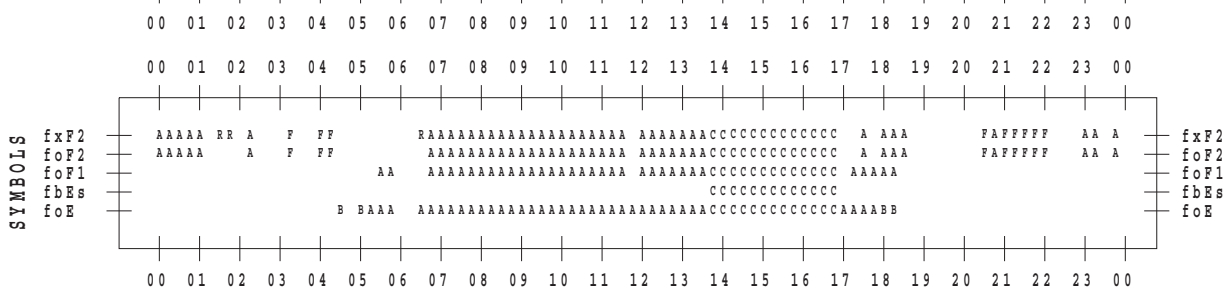
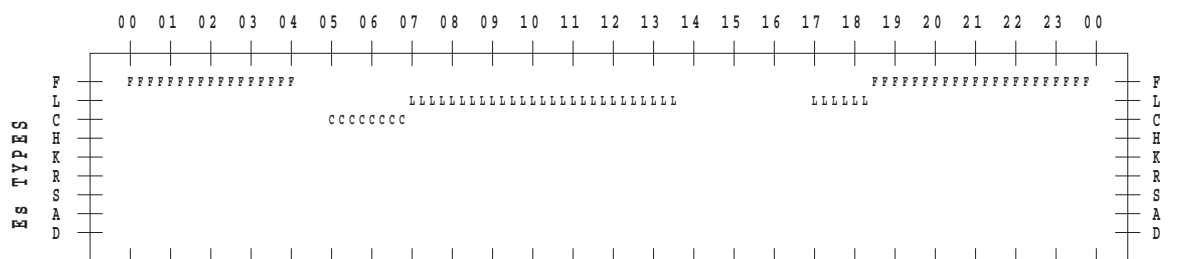
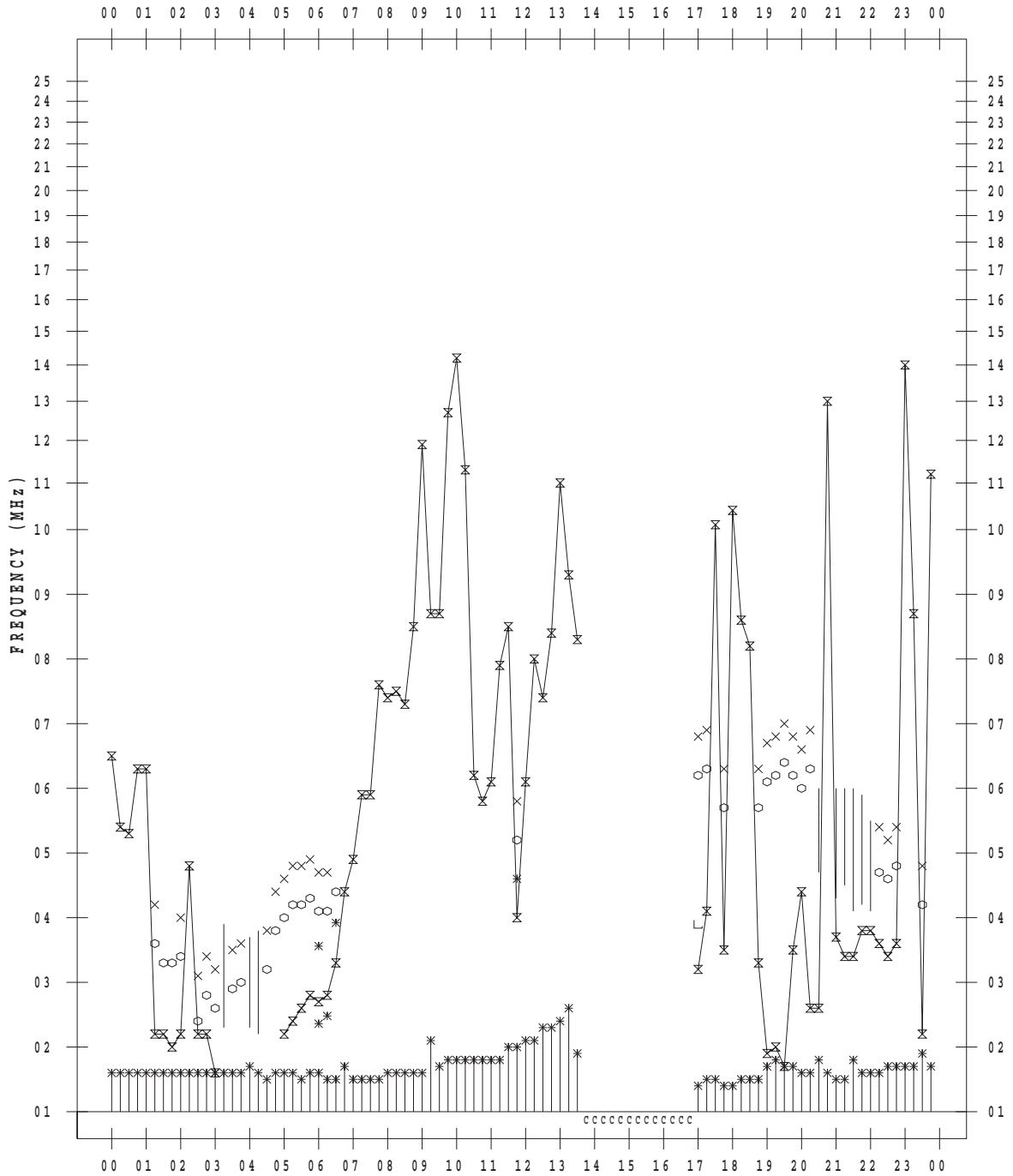
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 19

135 ° E MEAN TIME



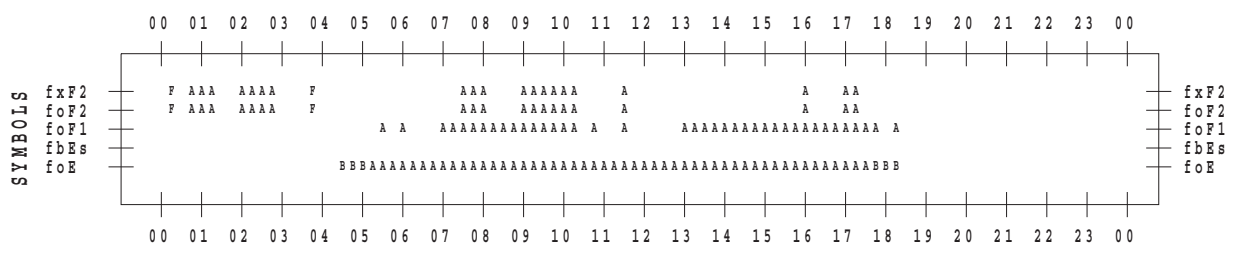
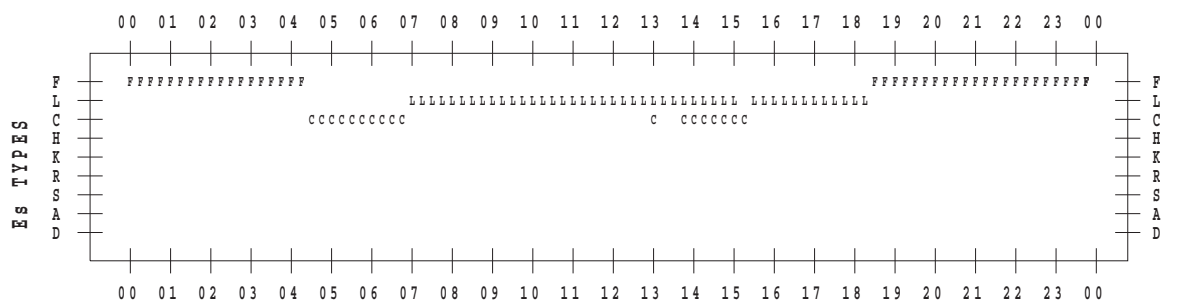
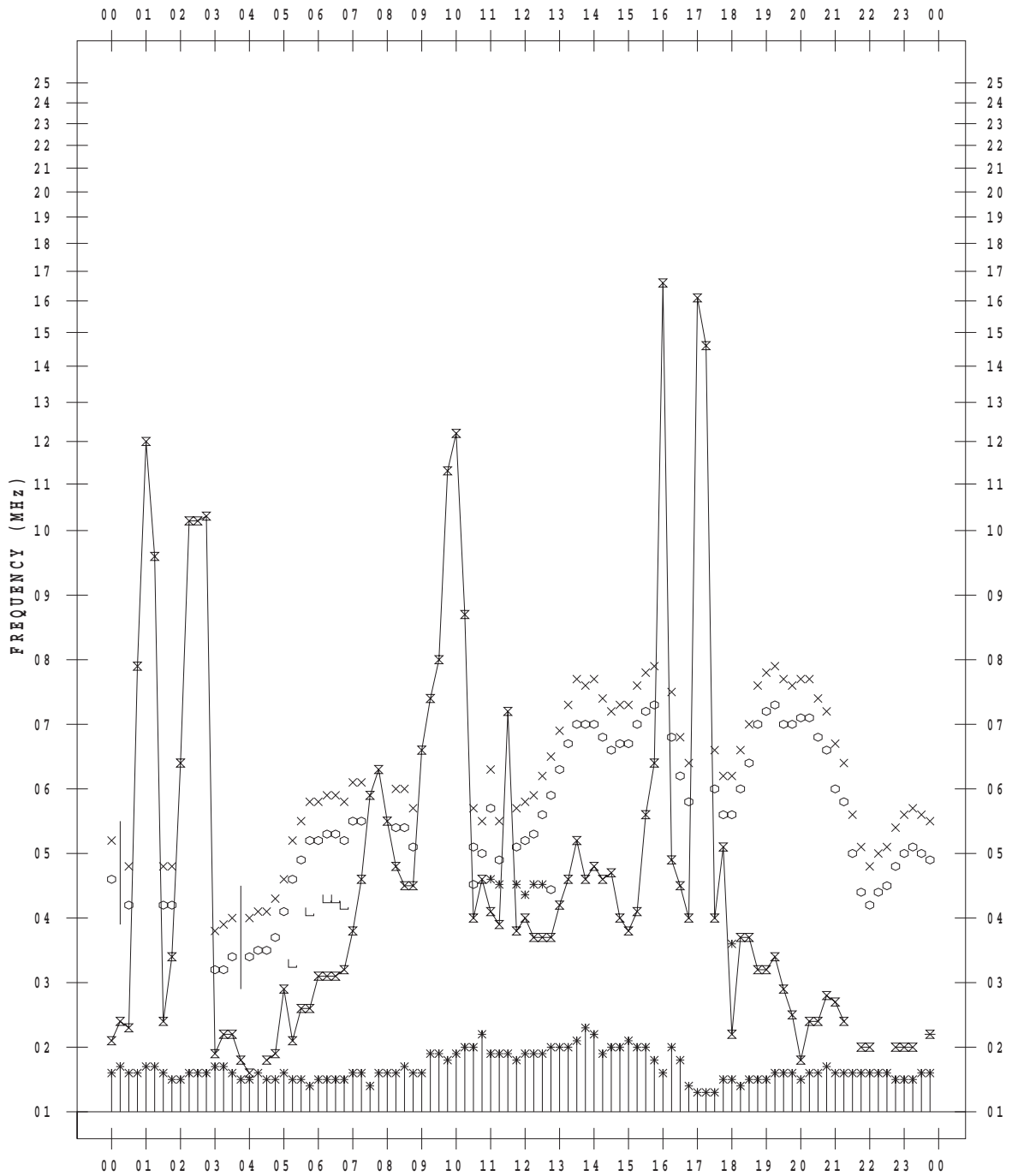
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 20

135 ° E MEAN TIME



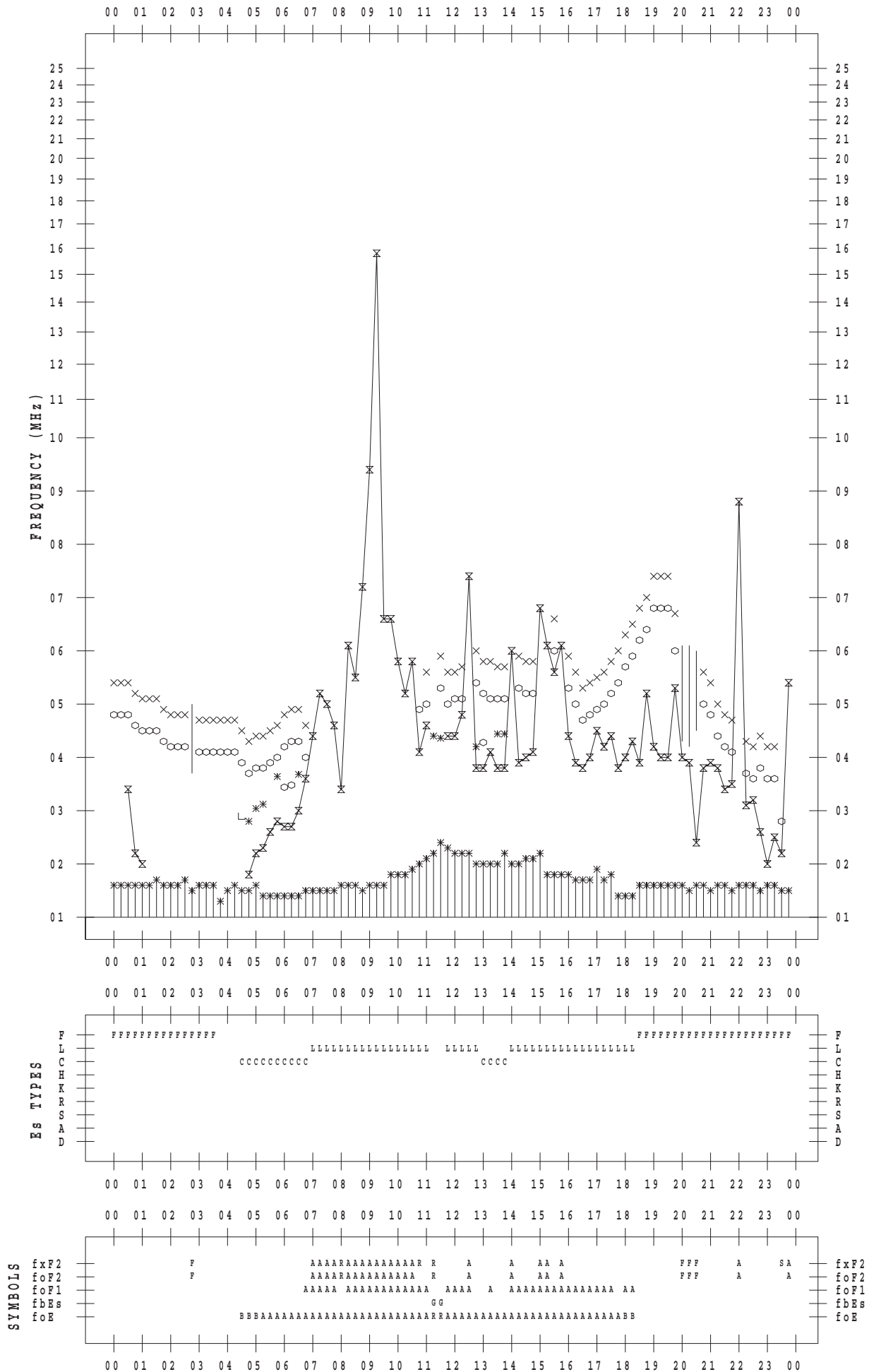
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 21

135 ° E MEAN TIME



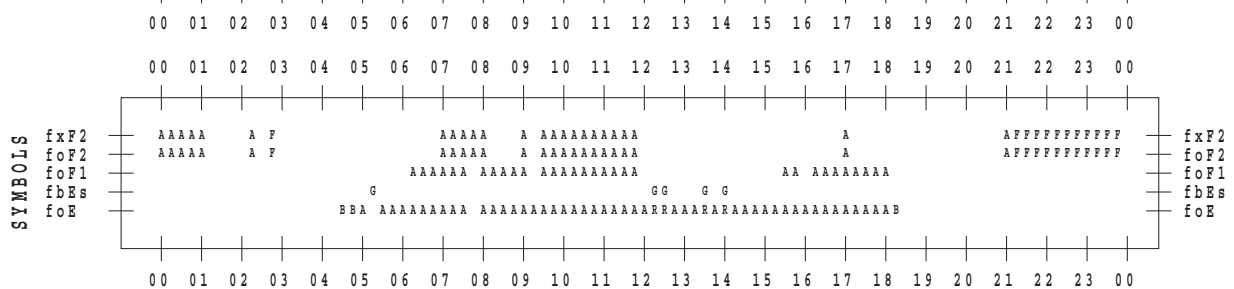
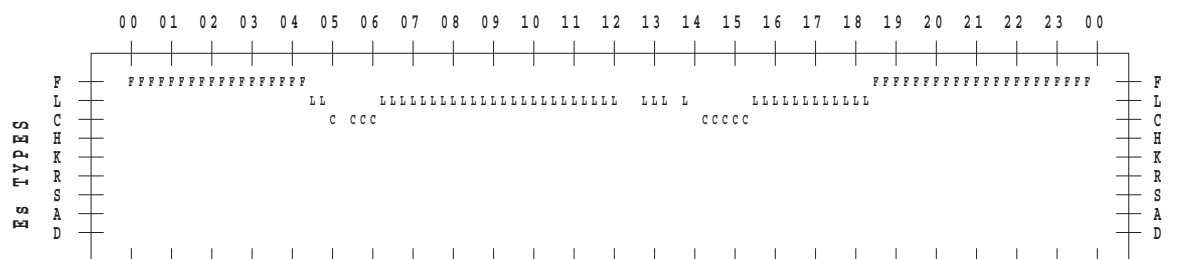
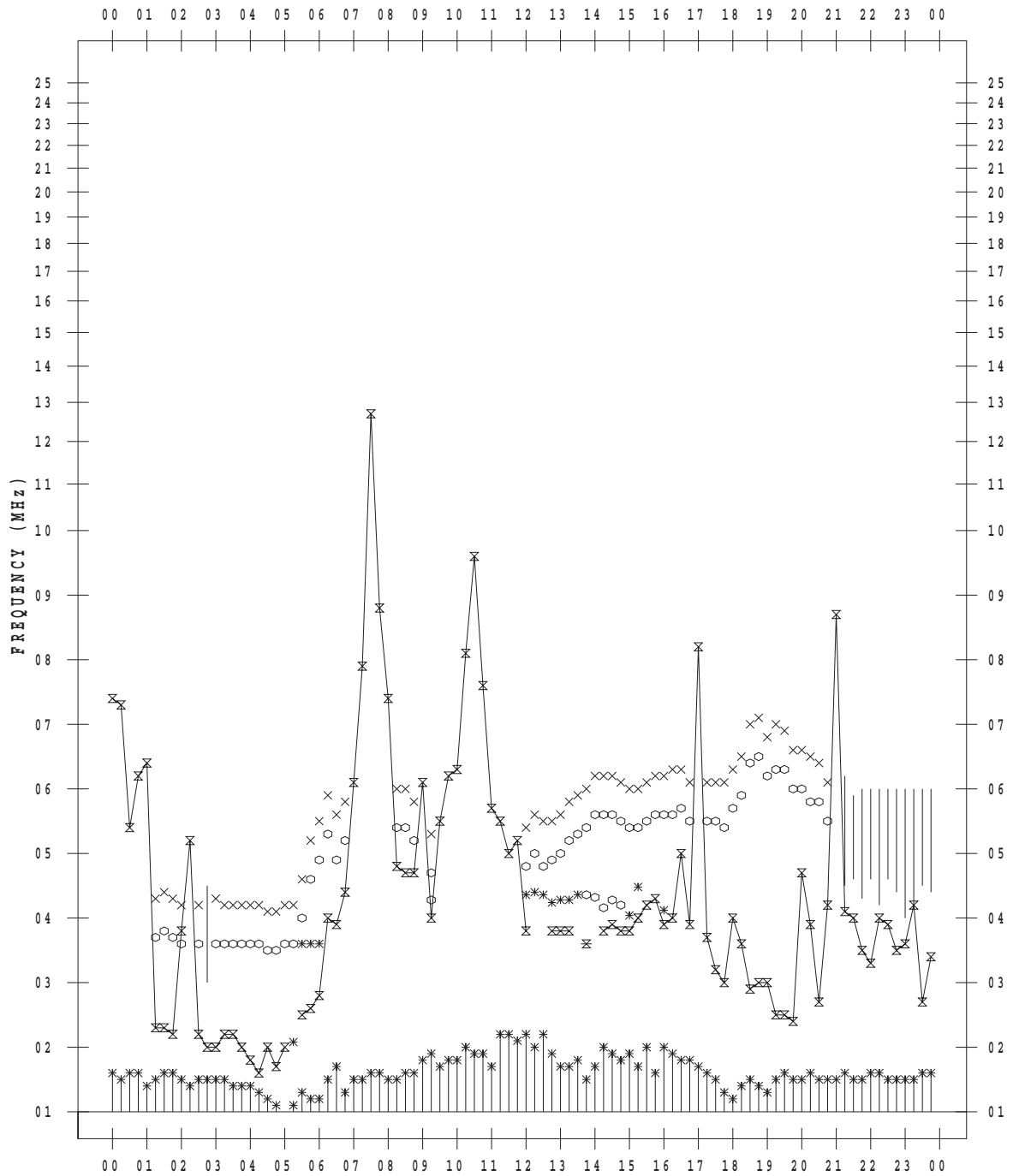
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 22

135 ° E MEAN TIME



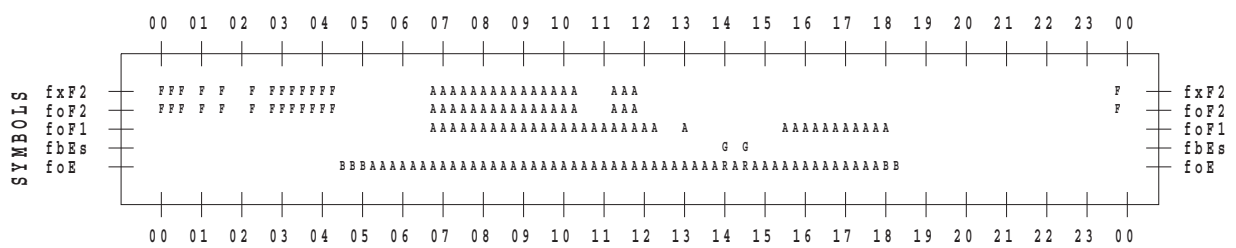
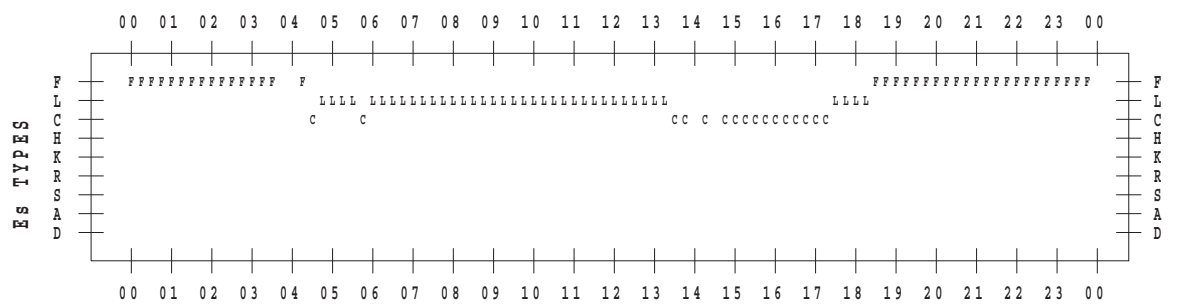
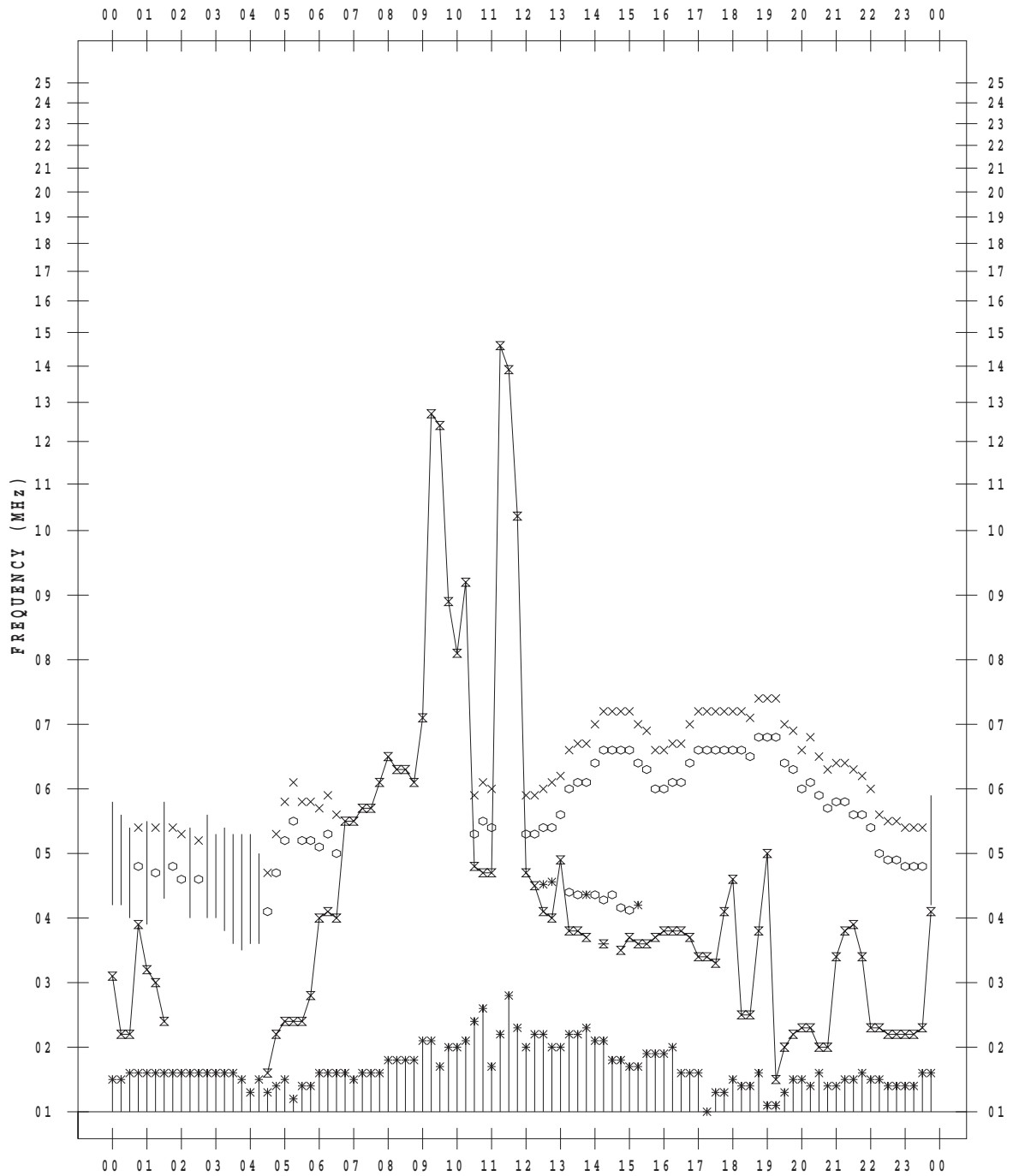
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 23

135 ° E MEAN TIME



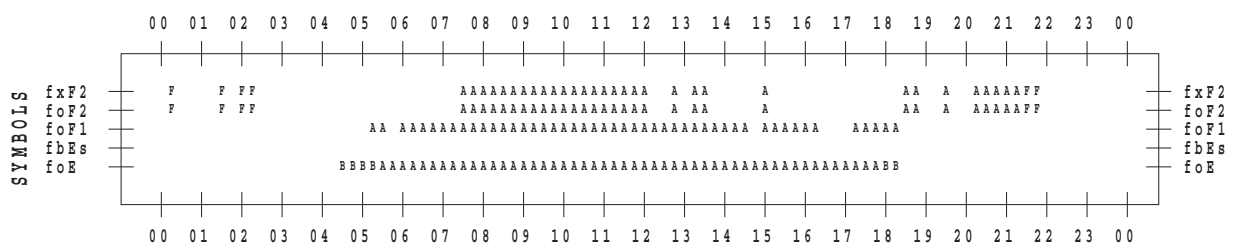
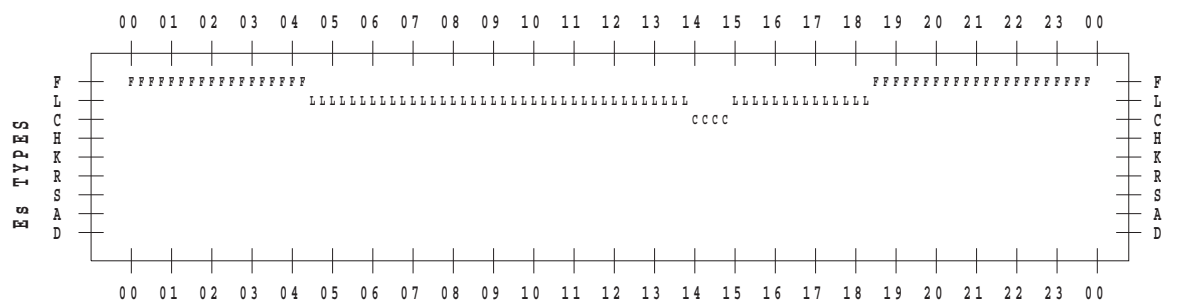
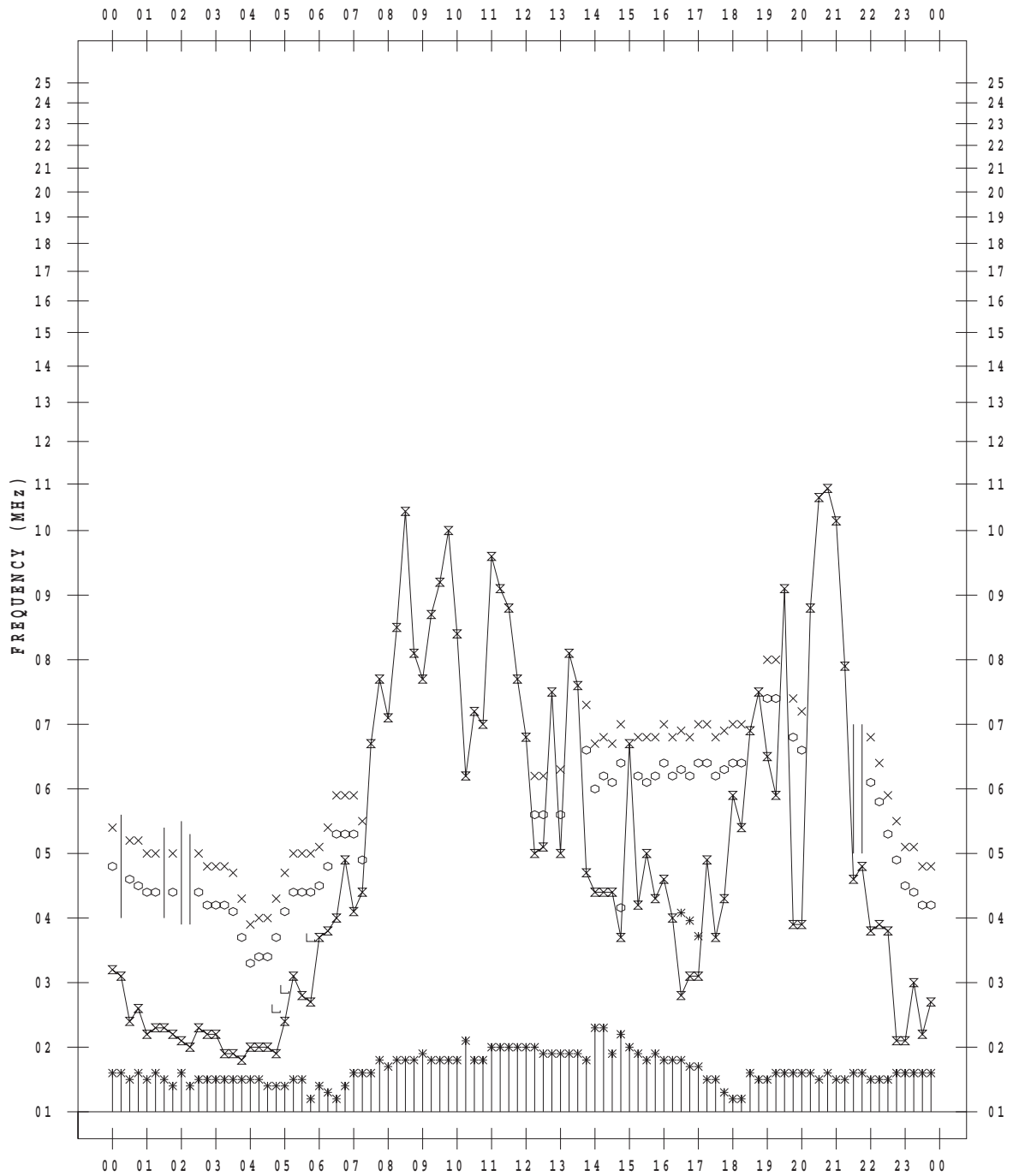
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 24

135 ° E MEAN TIME



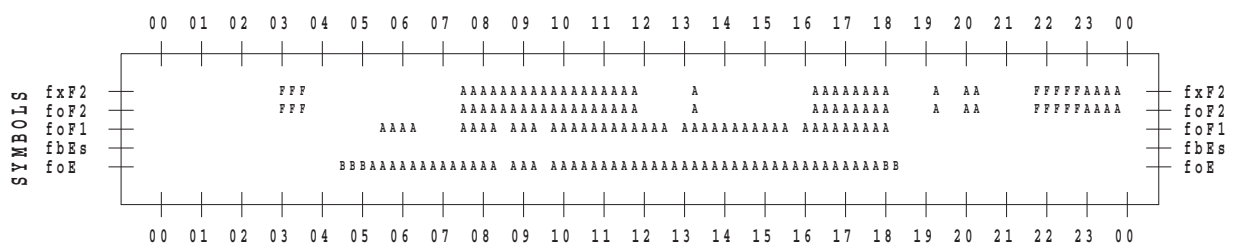
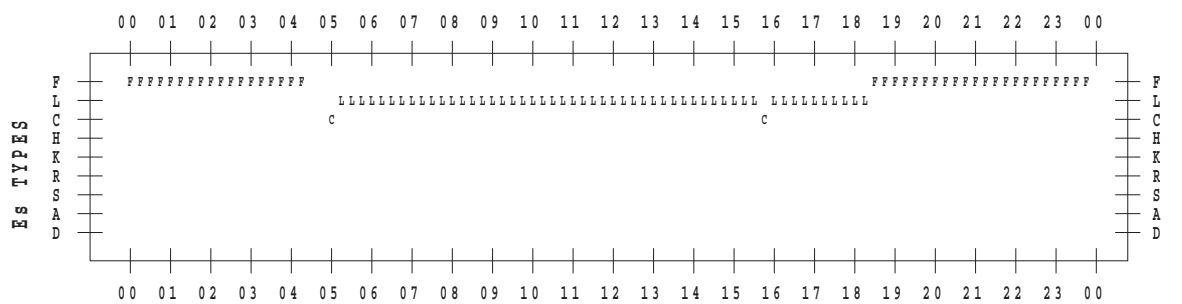
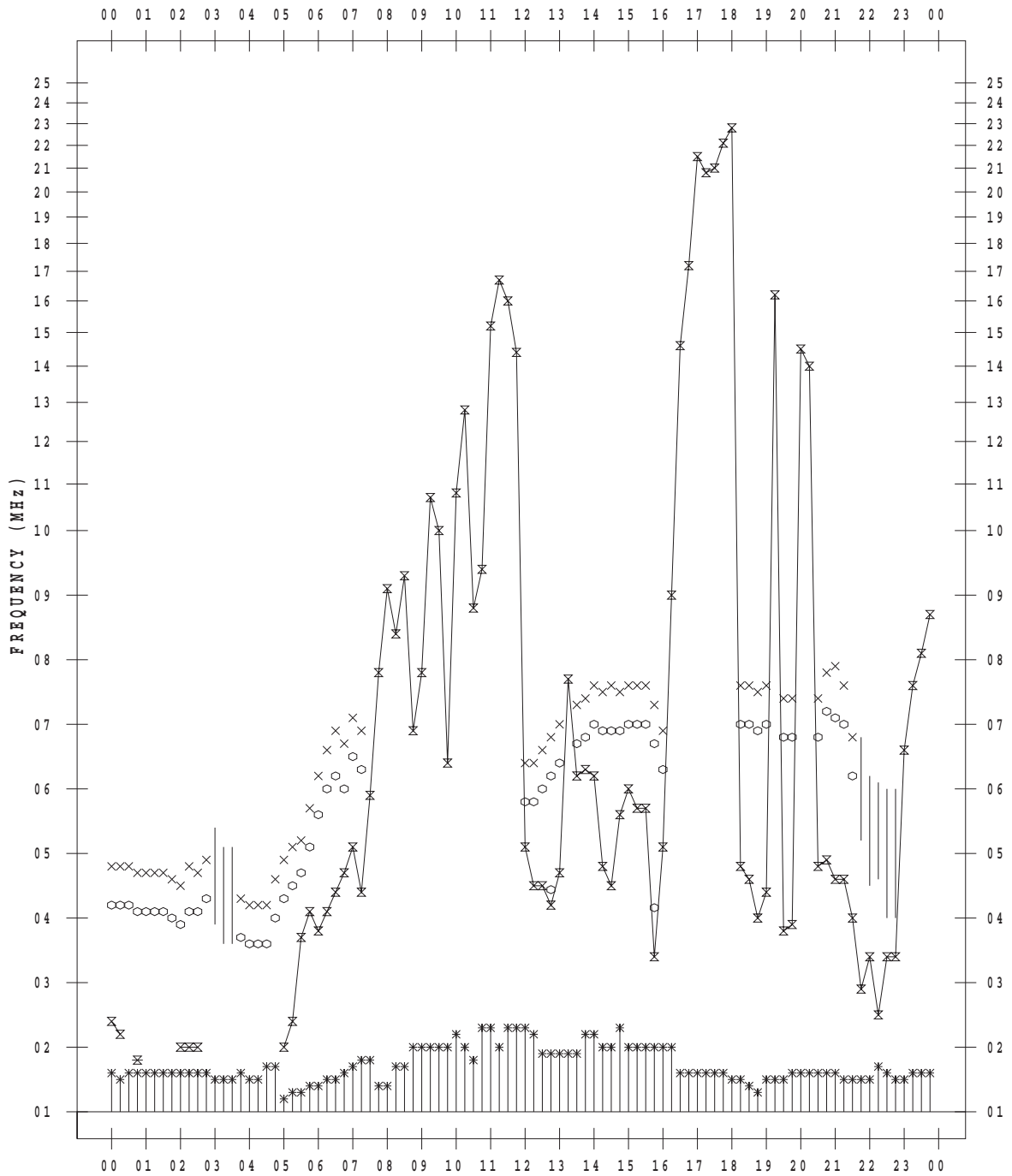
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 25

135 ° E MEAN TIME



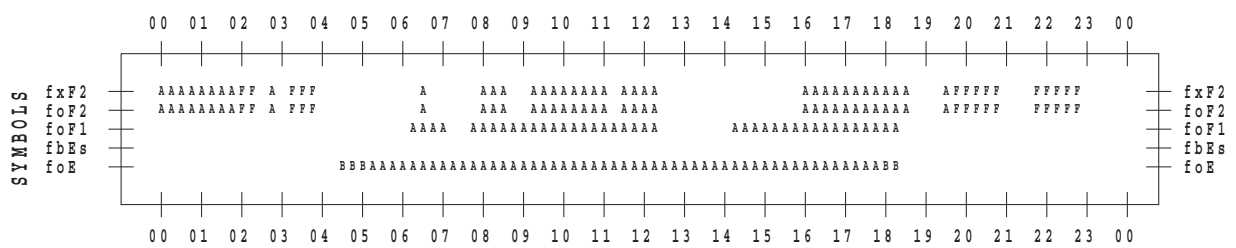
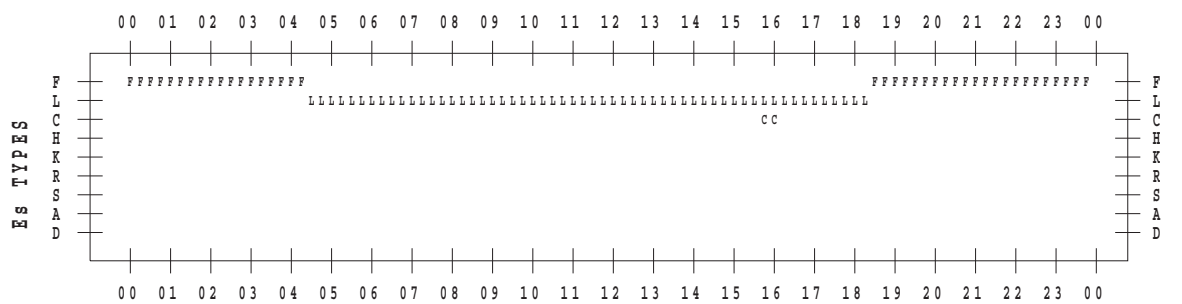
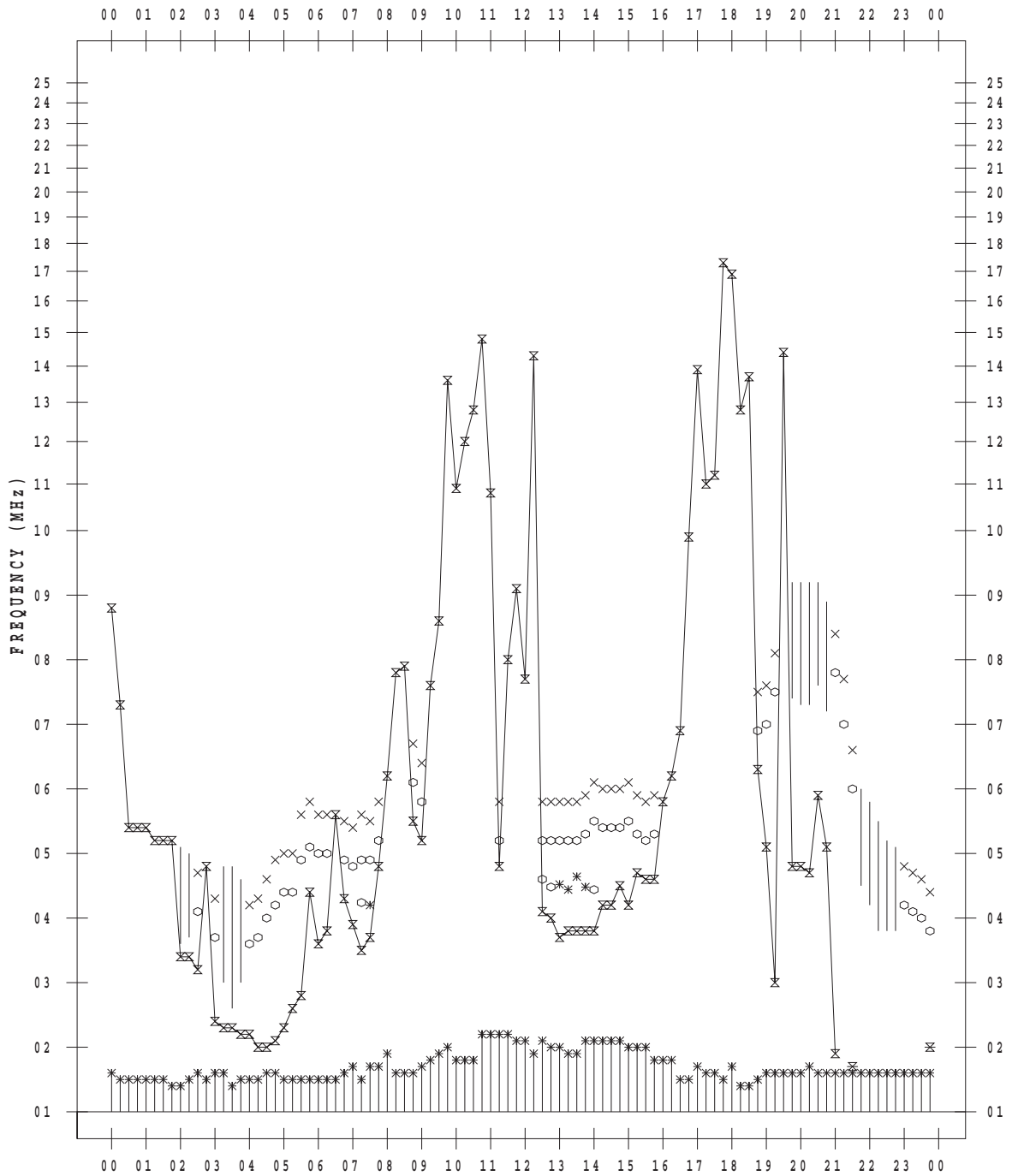
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 26

135 ° E MEAN TIME



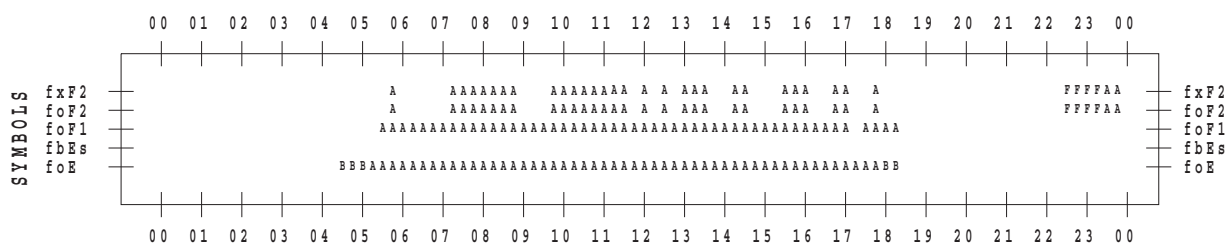
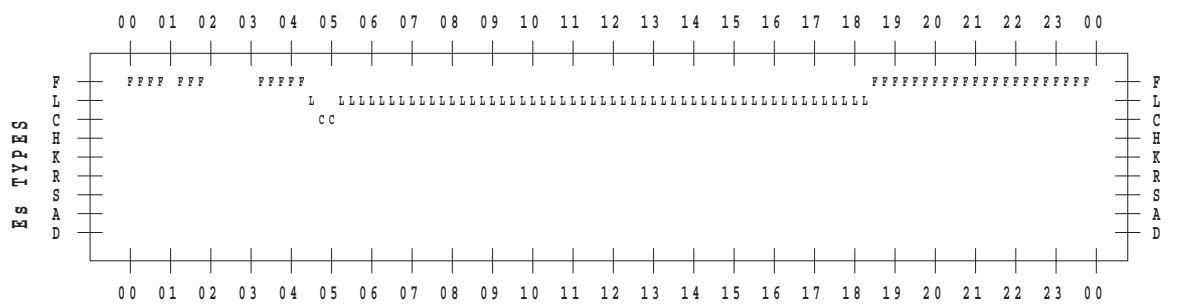
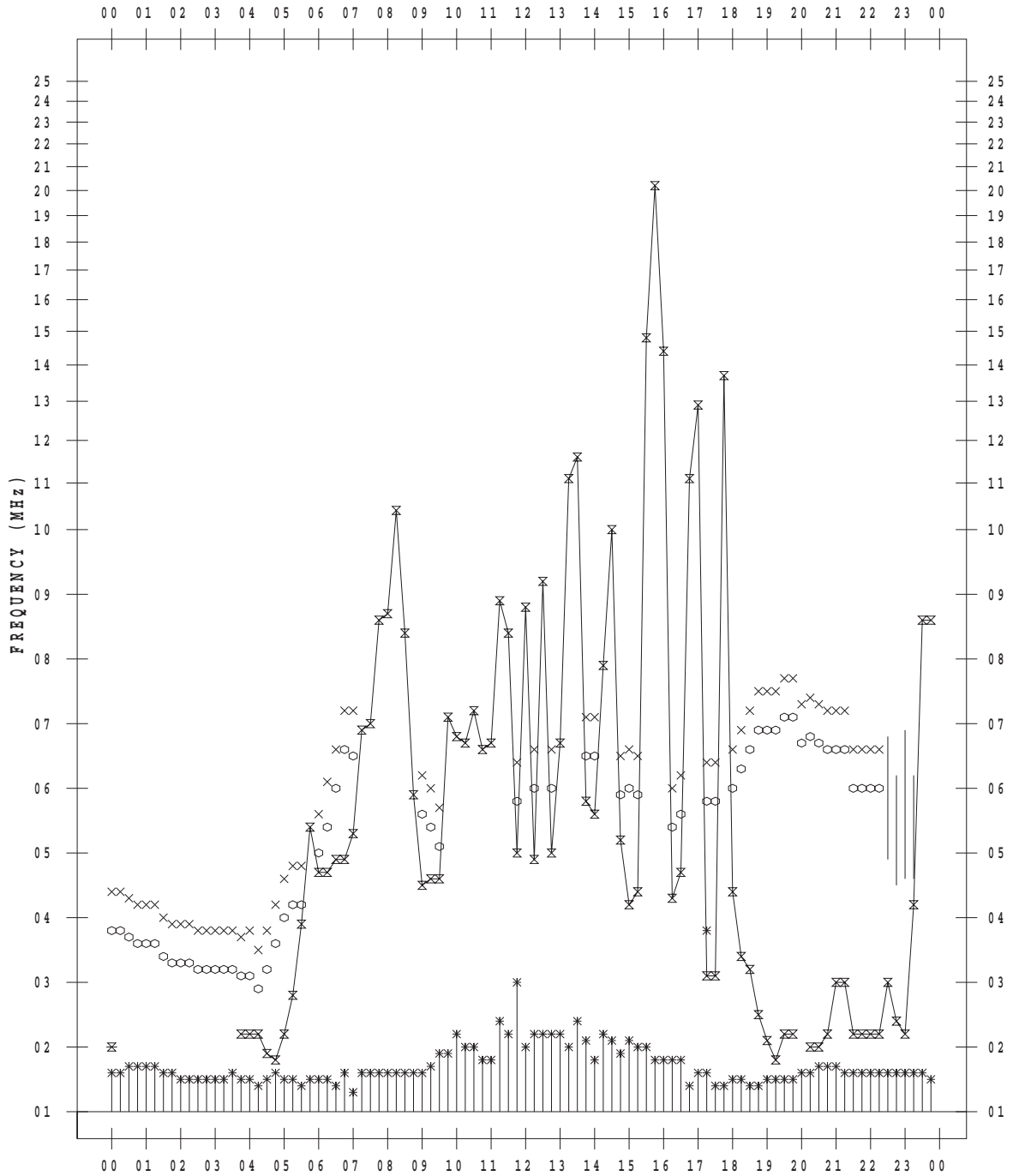
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 27

135 ° E MEAN TIME



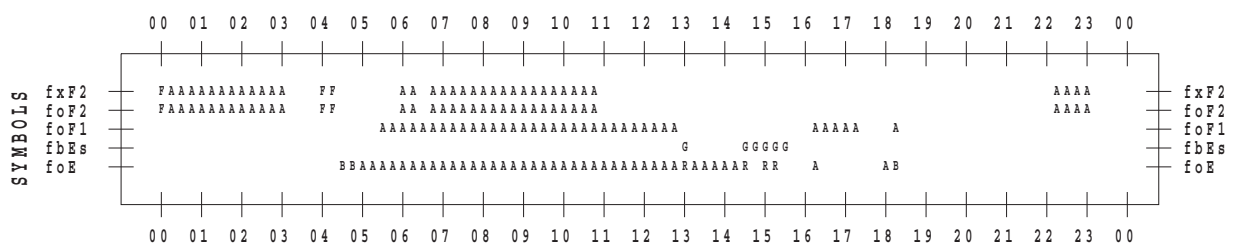
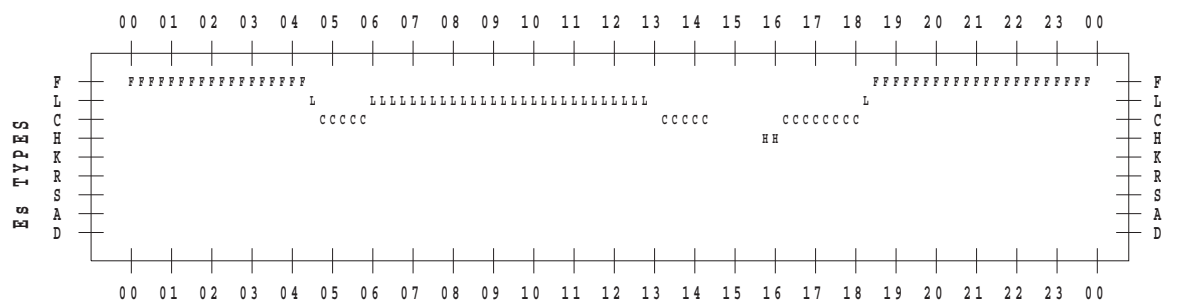
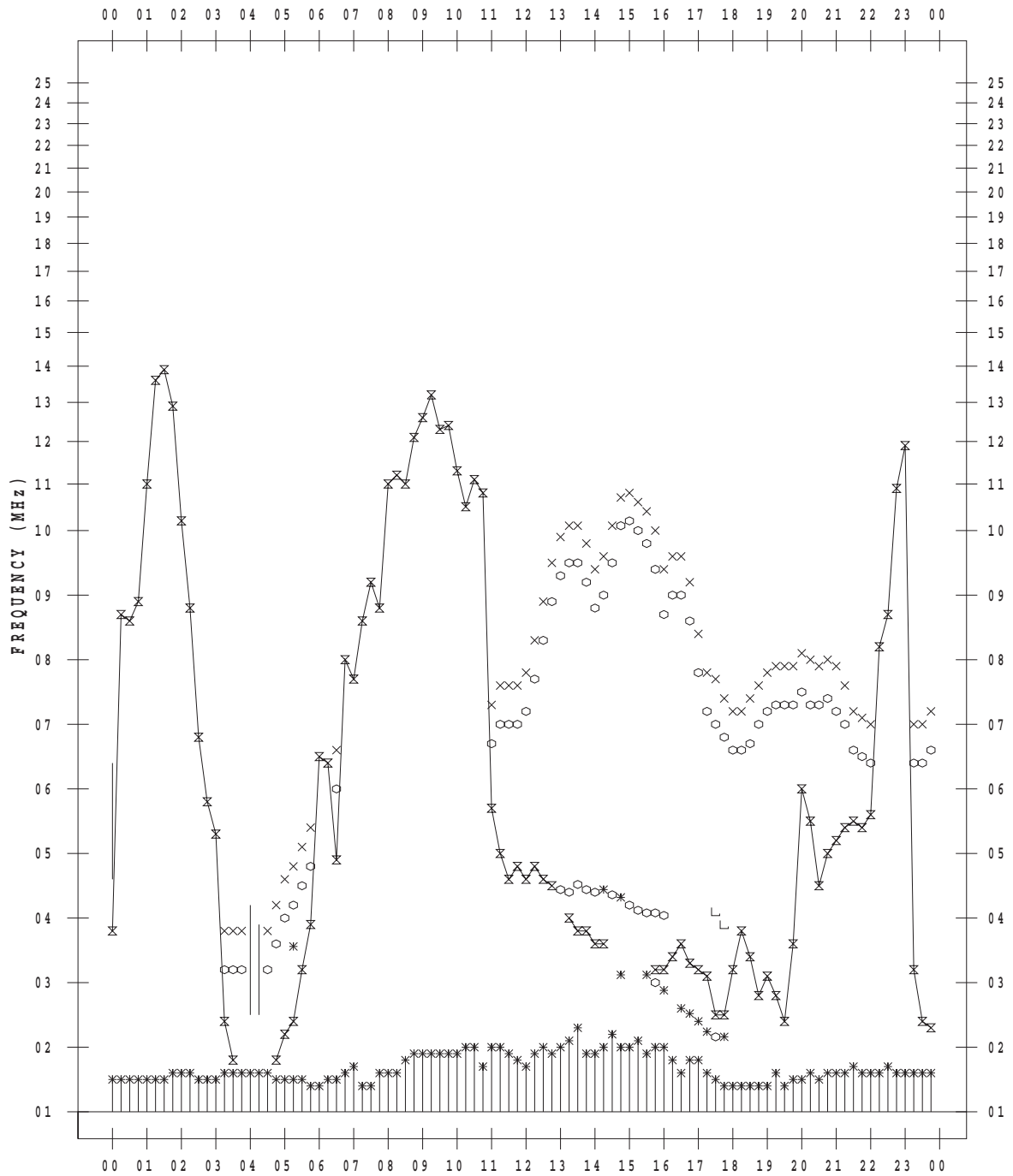
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 28

135 ° E MEAN TIME



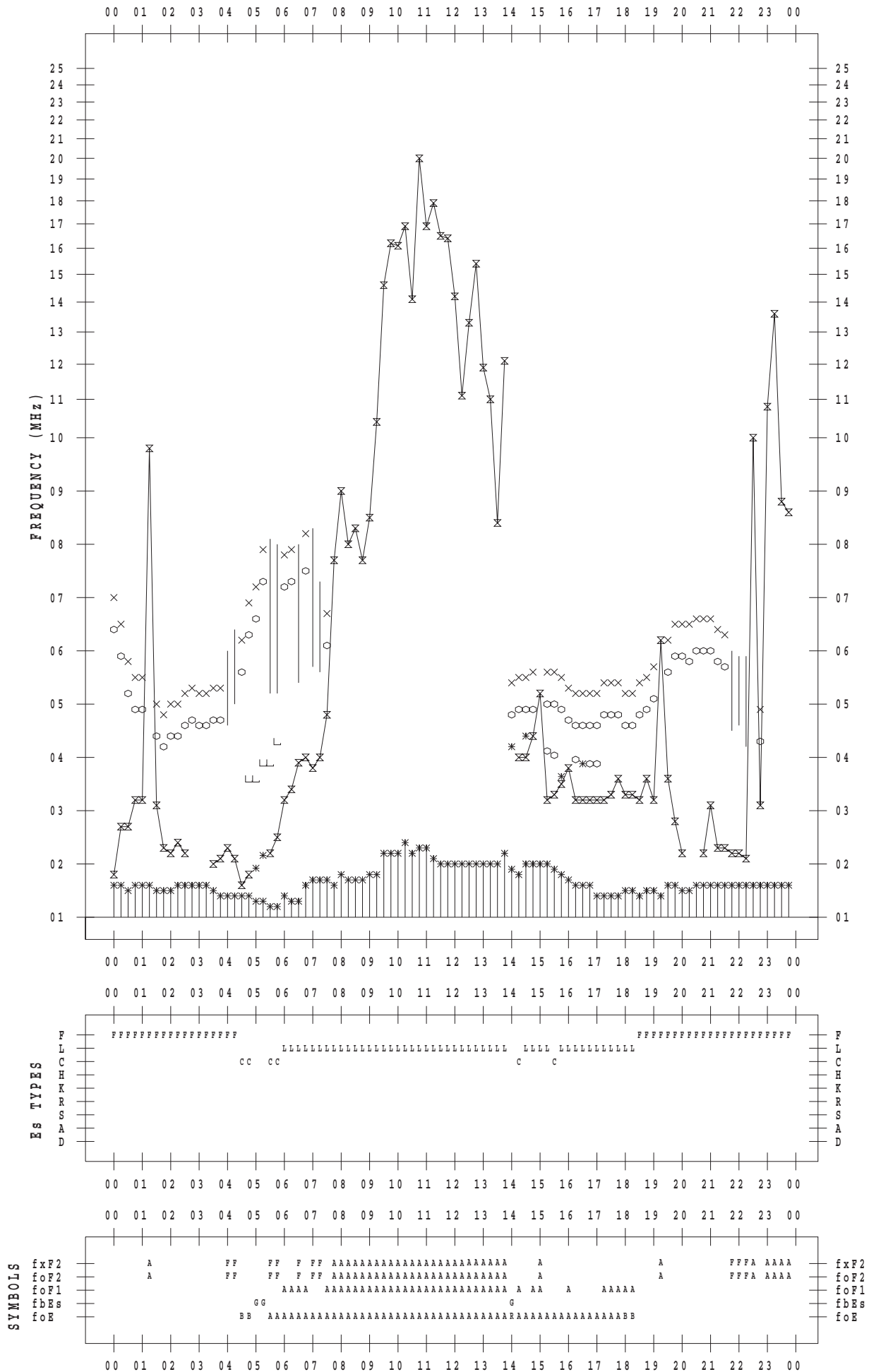
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5 / 29

135 ° E MEAN TIME



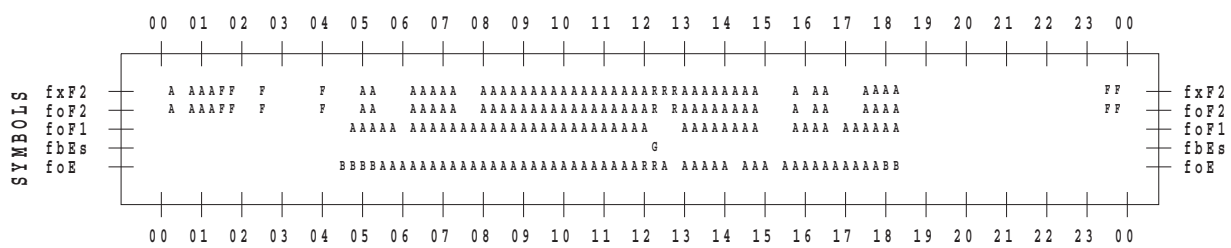
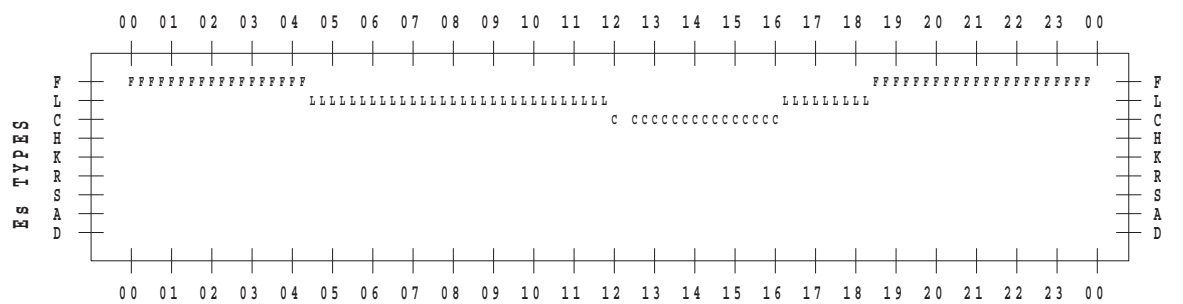
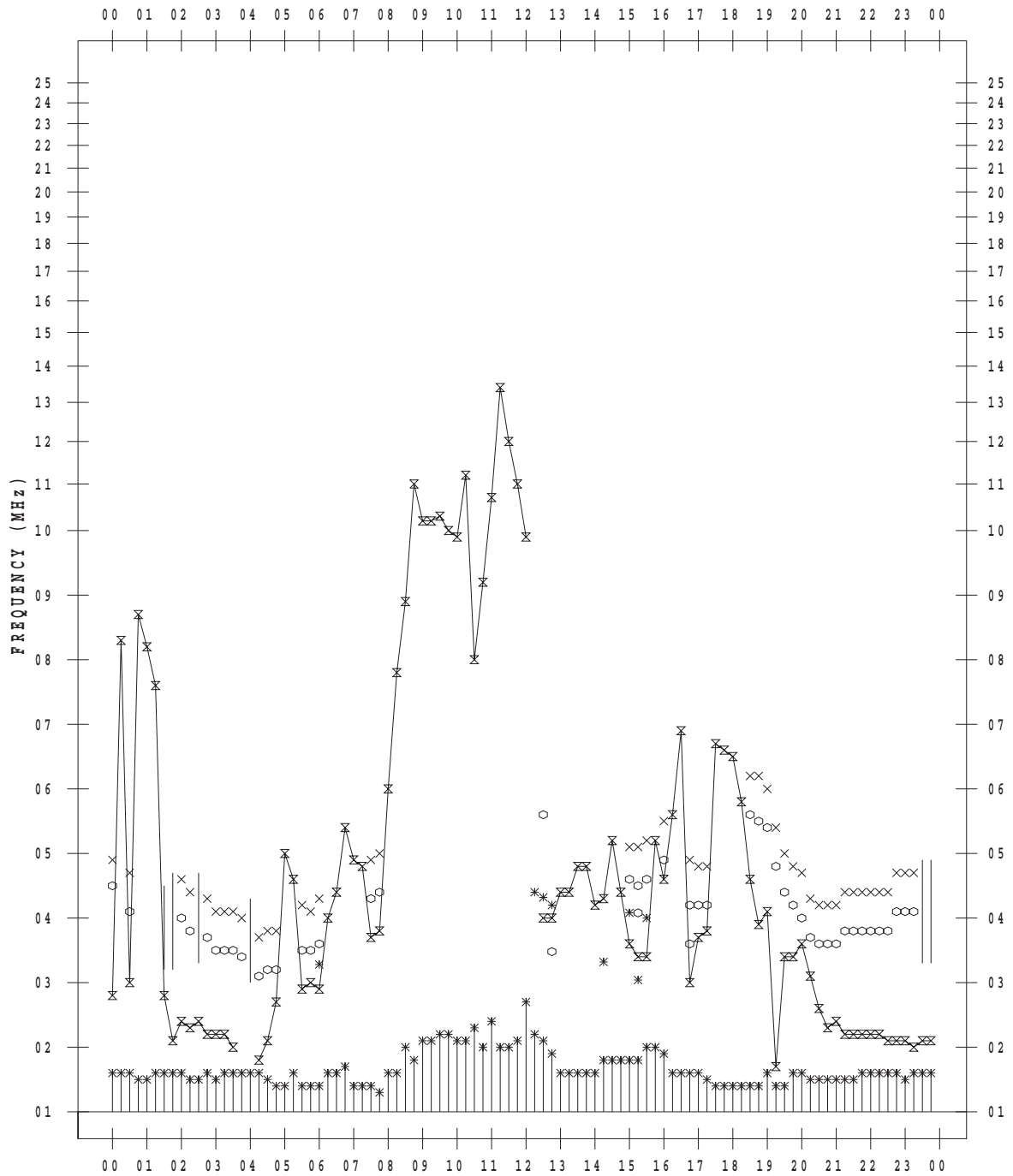
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5/30

135 ° E MEAN TIME



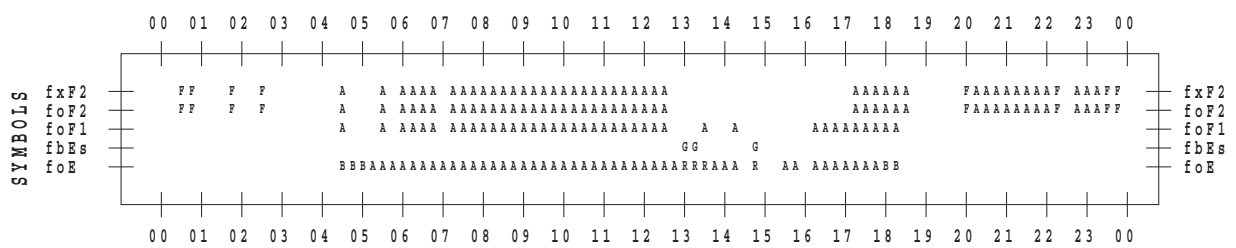
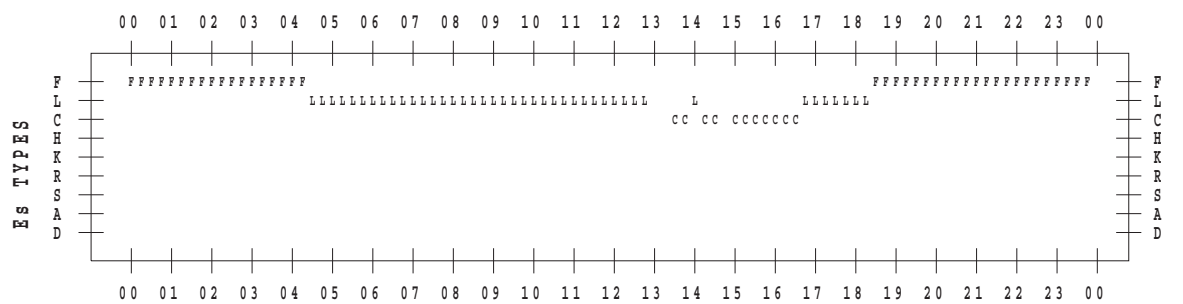
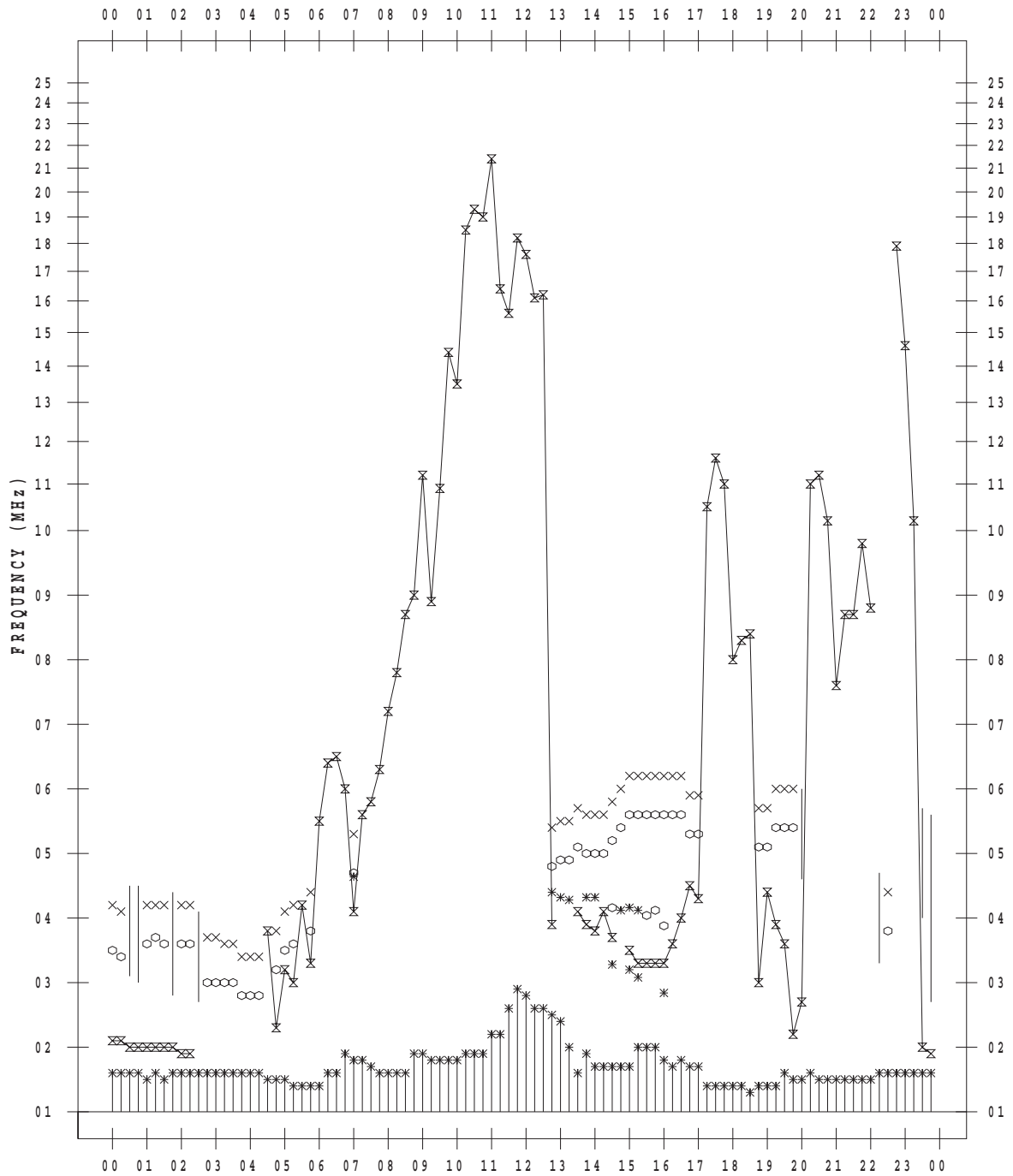
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017 / 5/31

135 ° E MEAN TIME



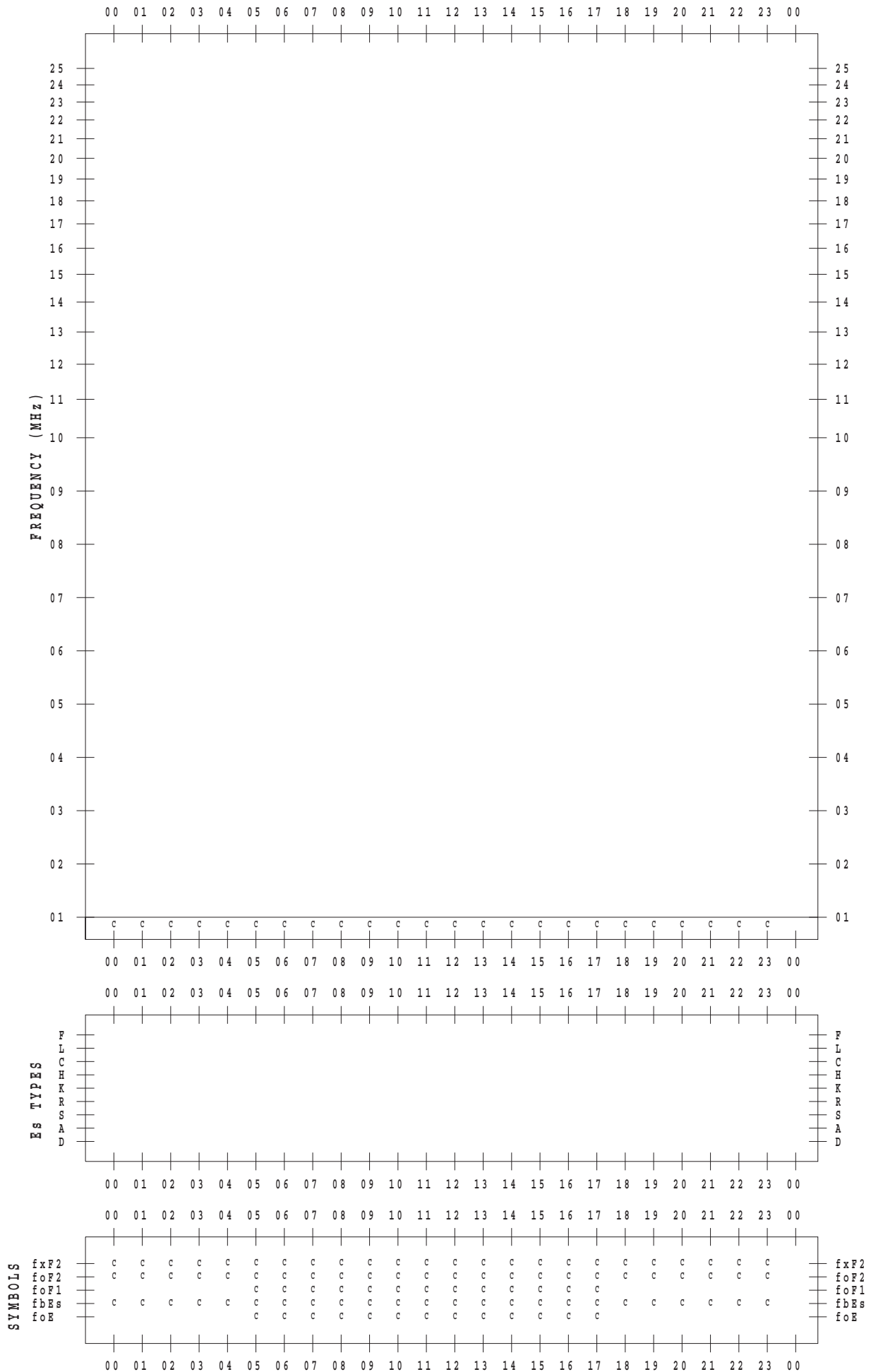
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 2

135 ° E MEAN TIME



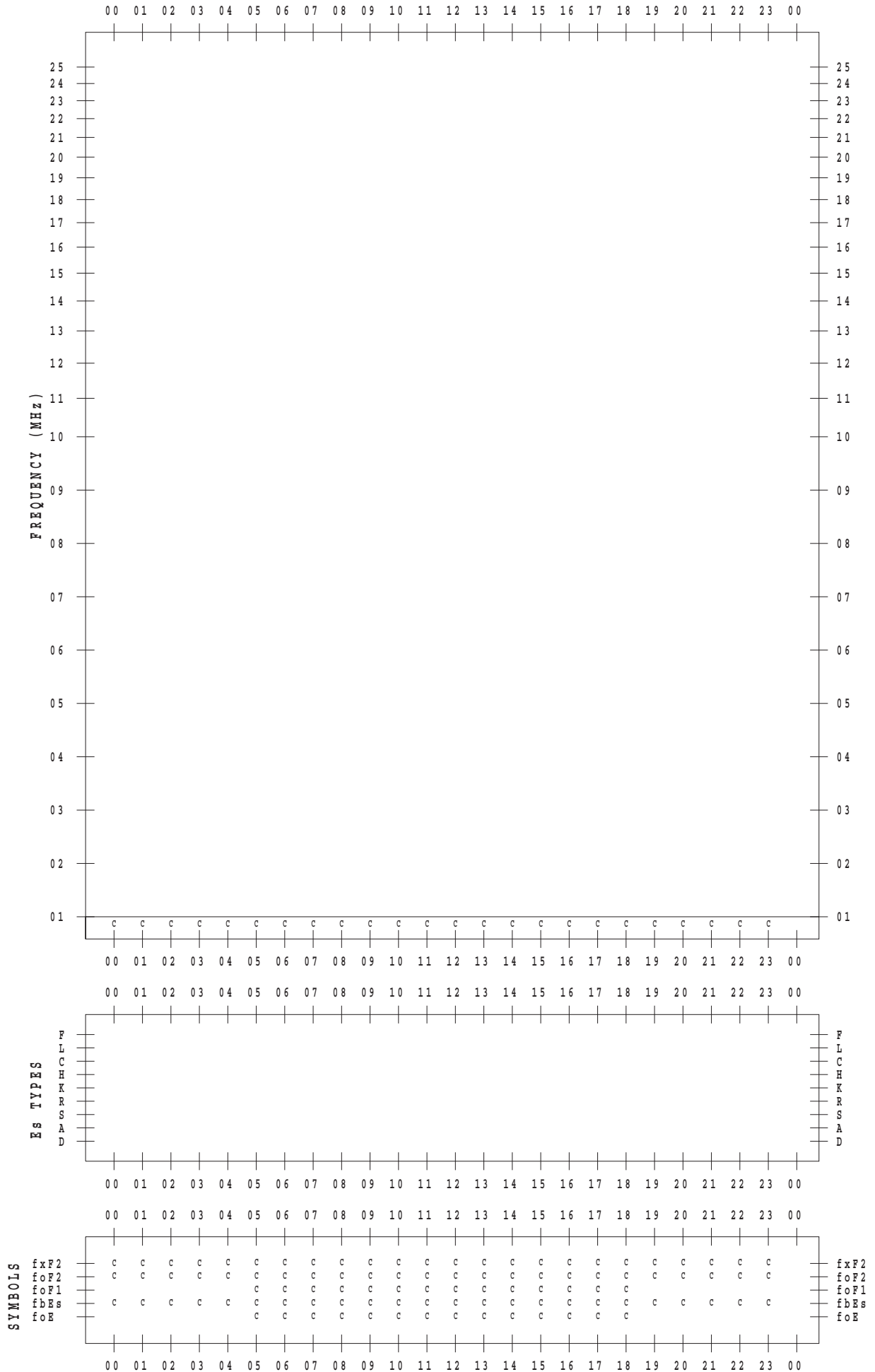
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 3

135 ° E MEAN TIME



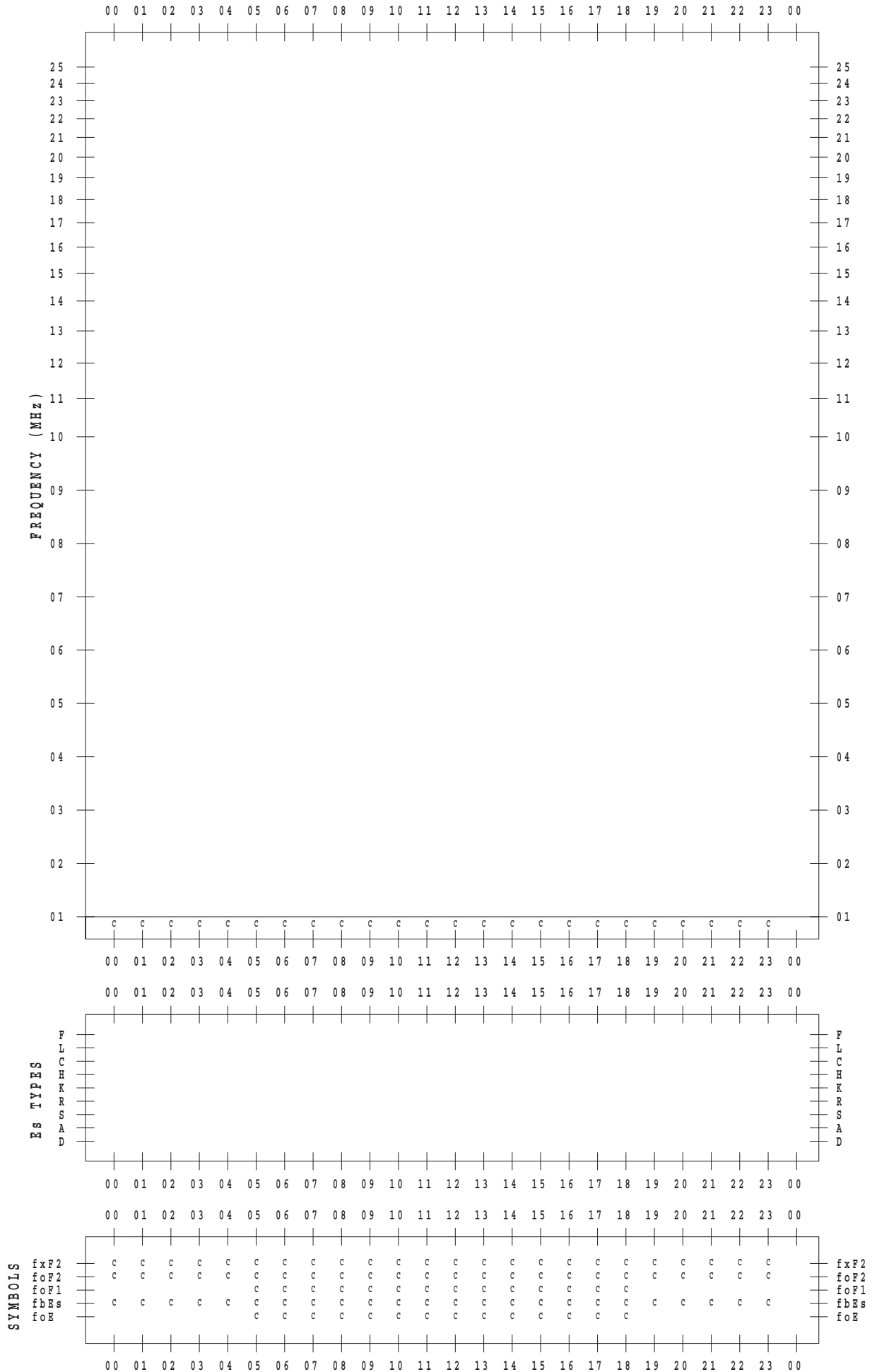
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 4

135 ° E MEAN TIME



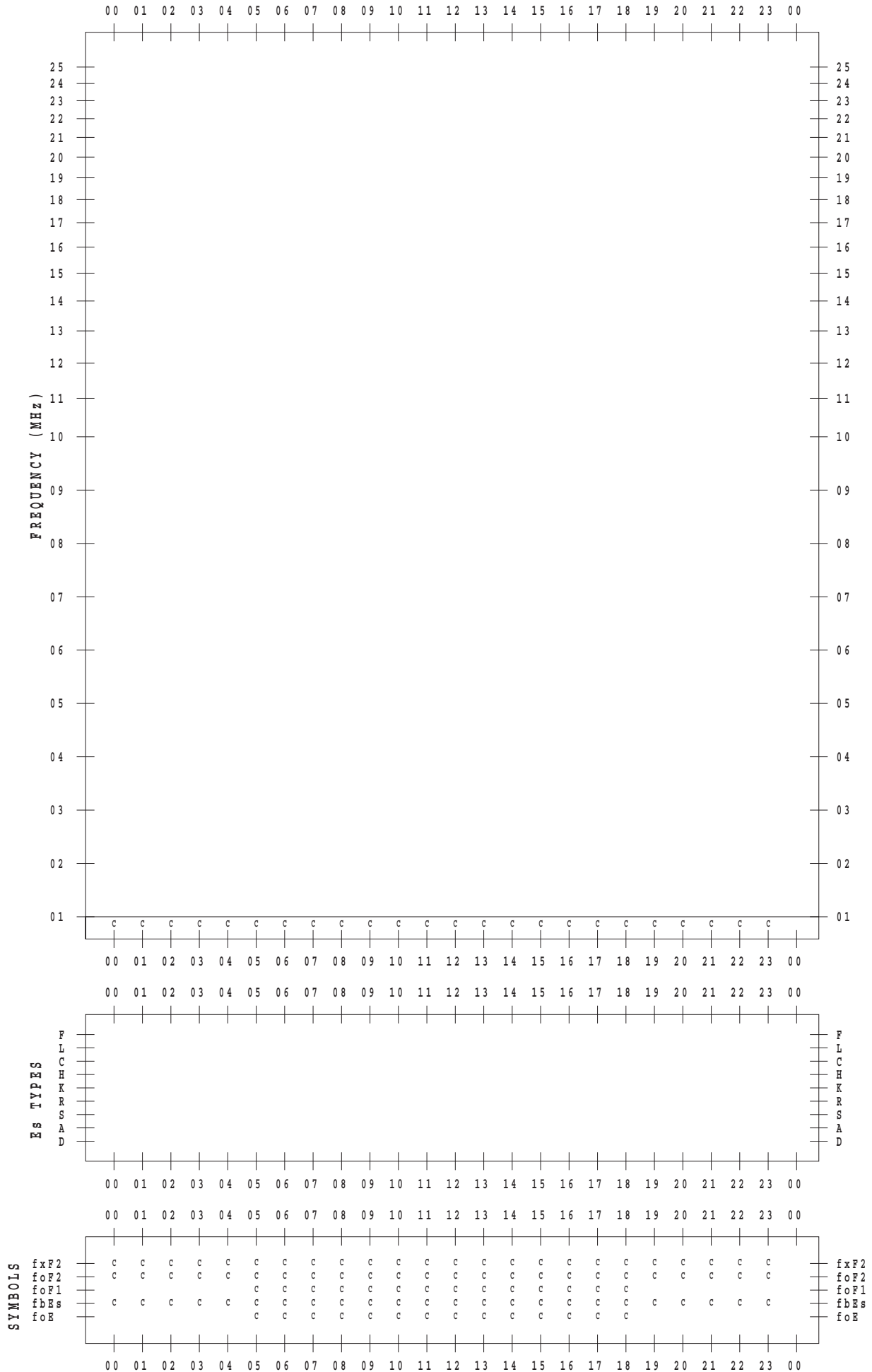
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 5

135 ° E MEAN TIME



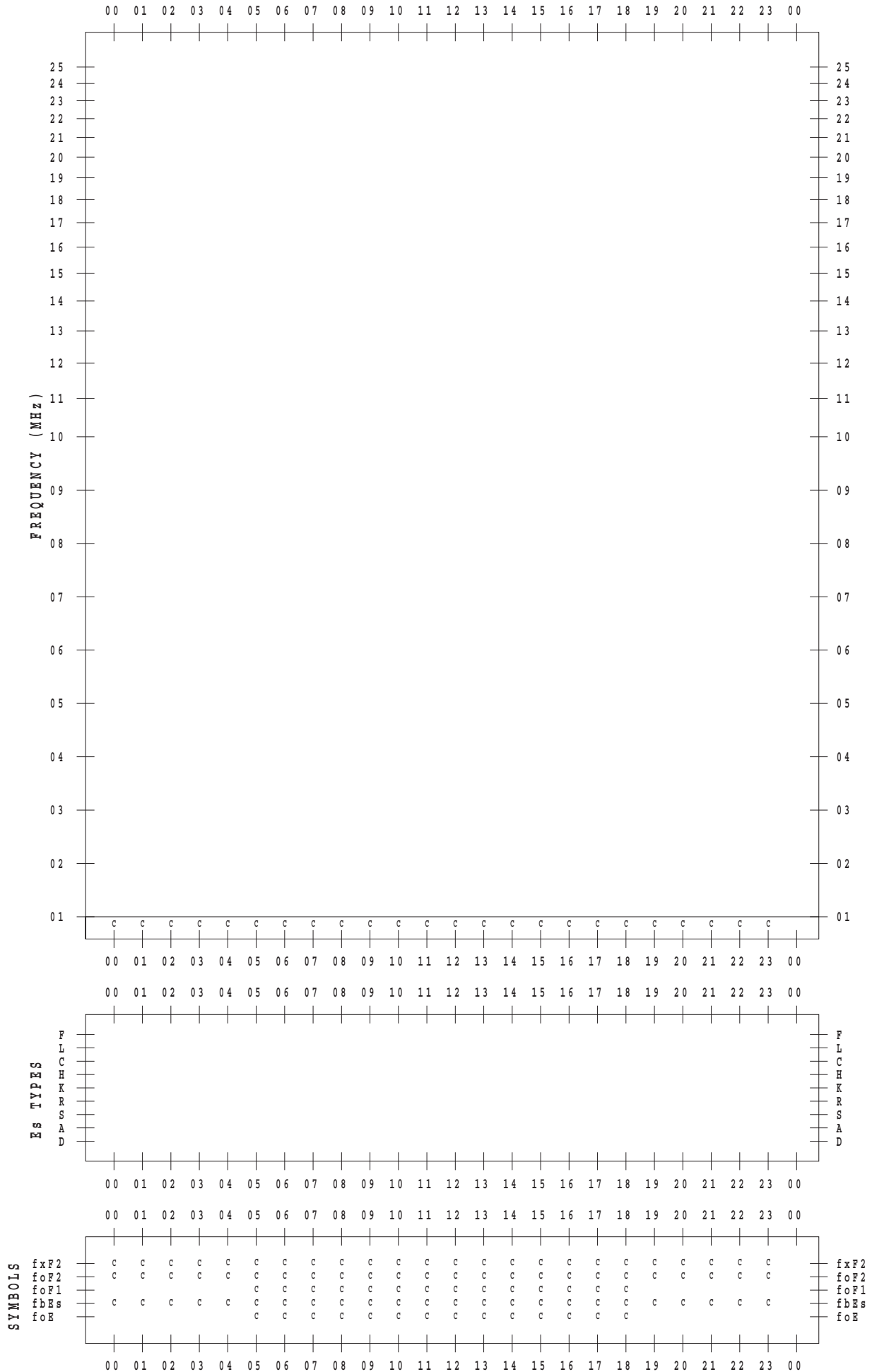
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 8

135 ° E MEAN TIME



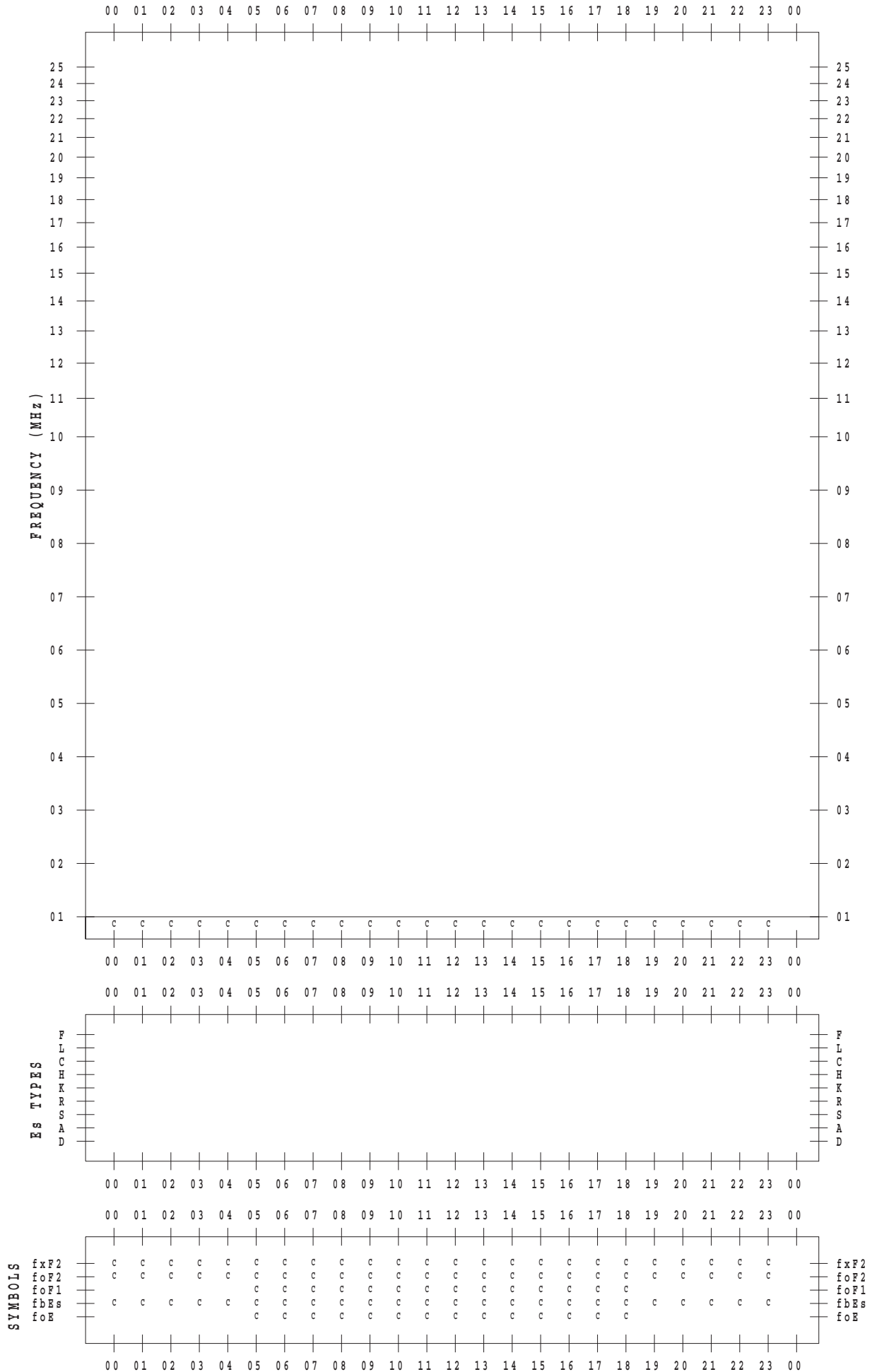
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 9

135 ° E MEAN TIME



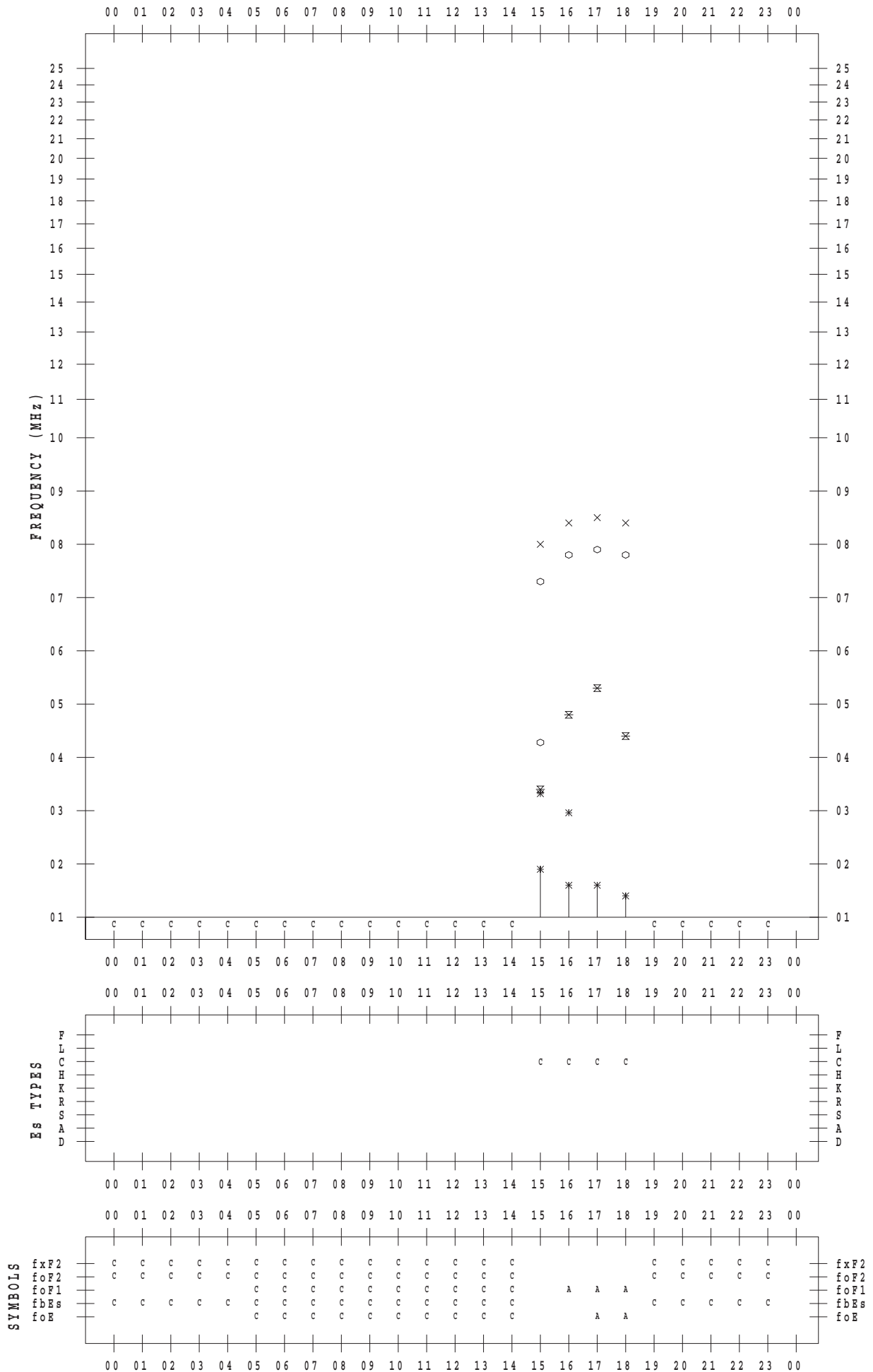
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 10

135 ° E MEAN TIME



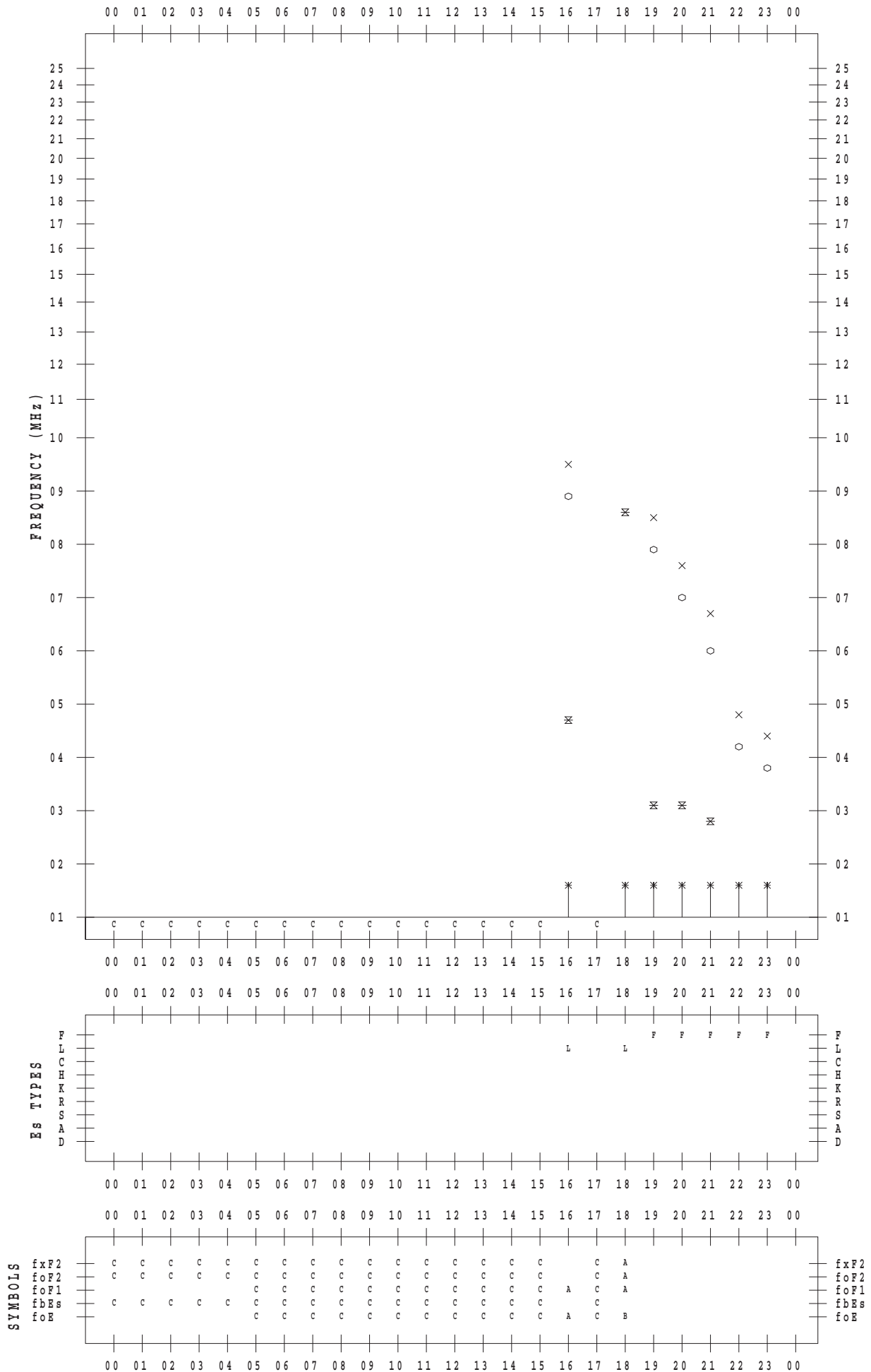
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 11

135 ° E MEAN TIME



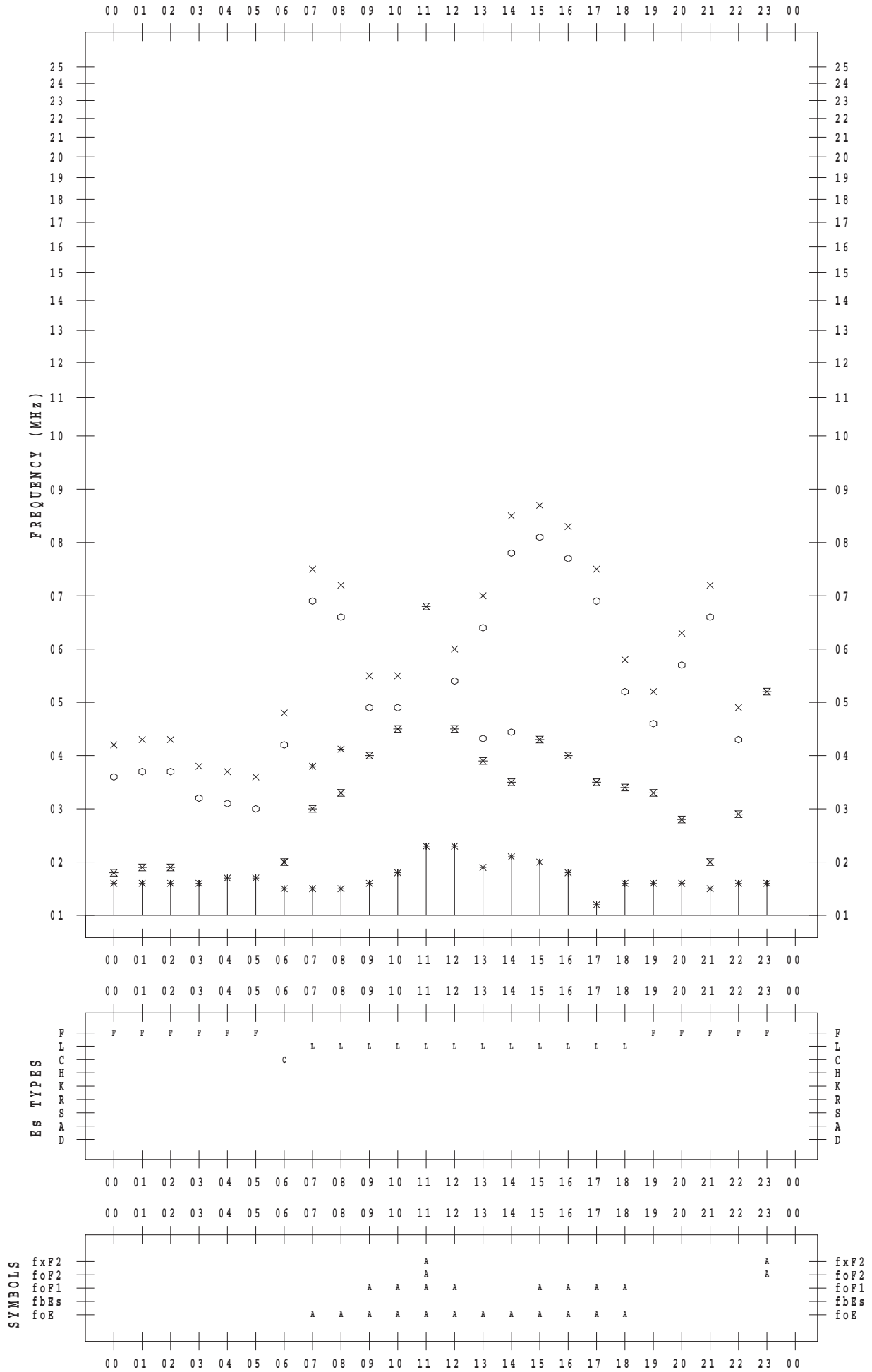
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 12

135 ° E MEAN TIME



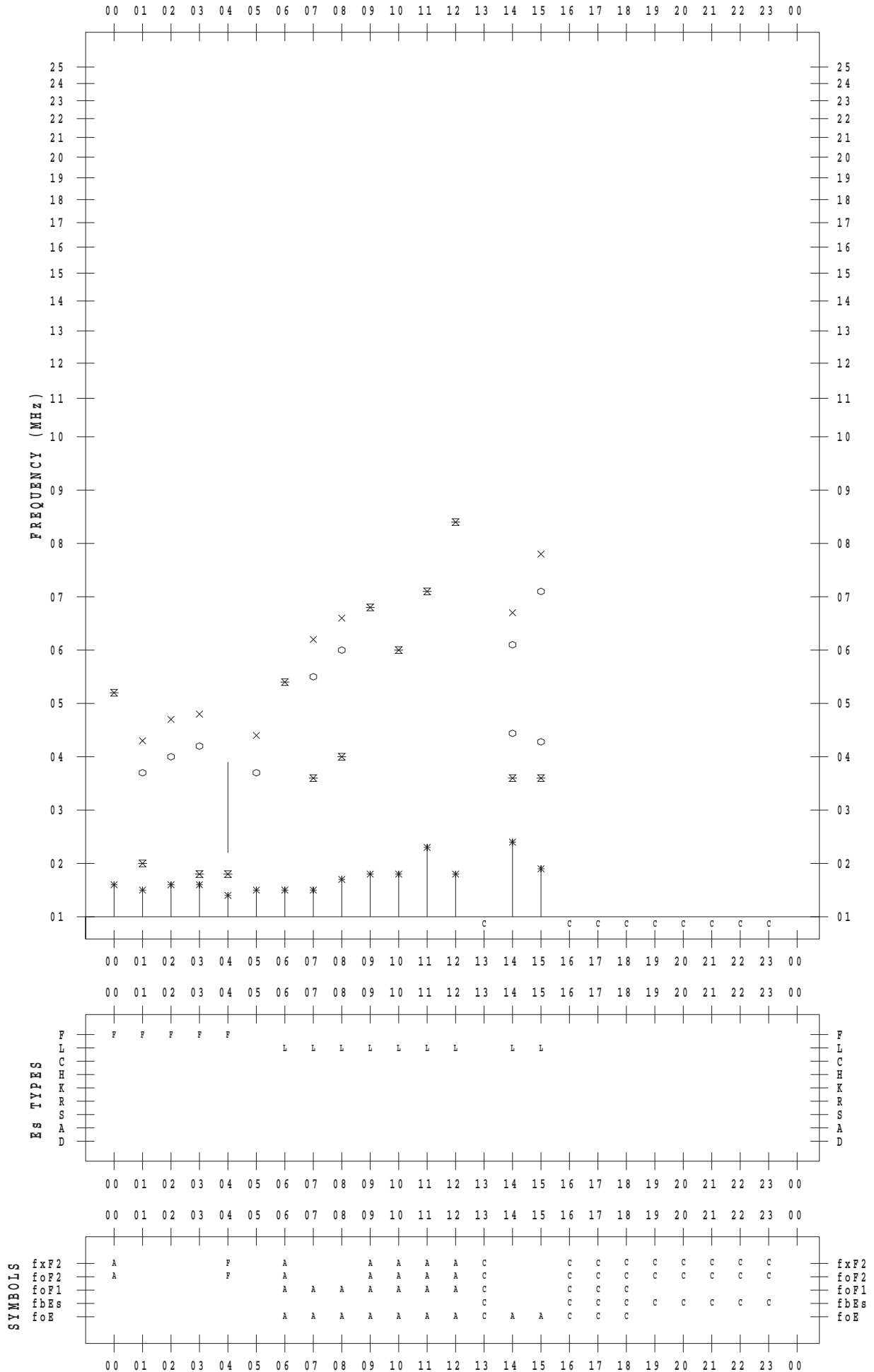
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 13

135 ° E MEAN TIME



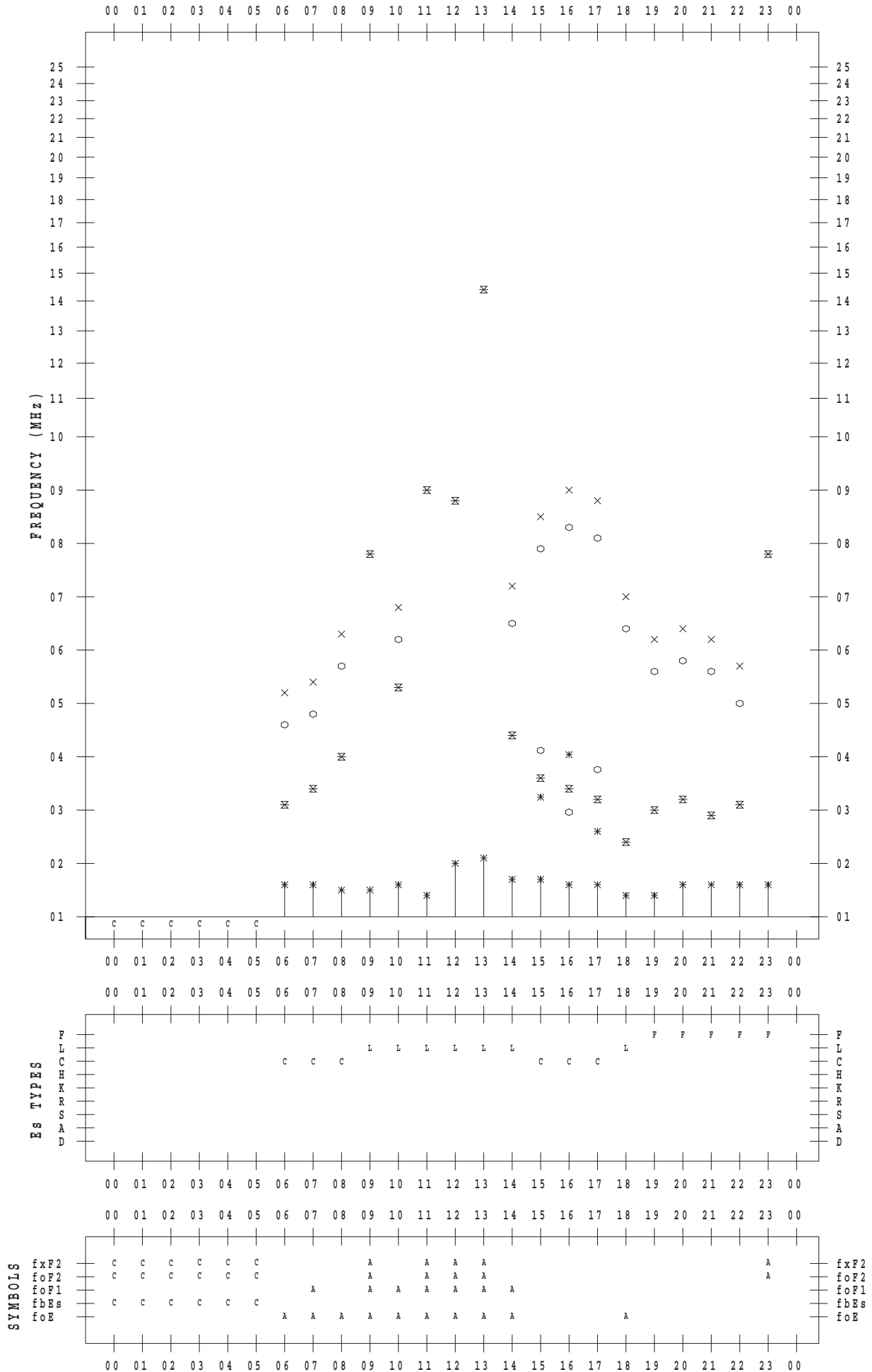
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 14

135 ° E MEAN TIME



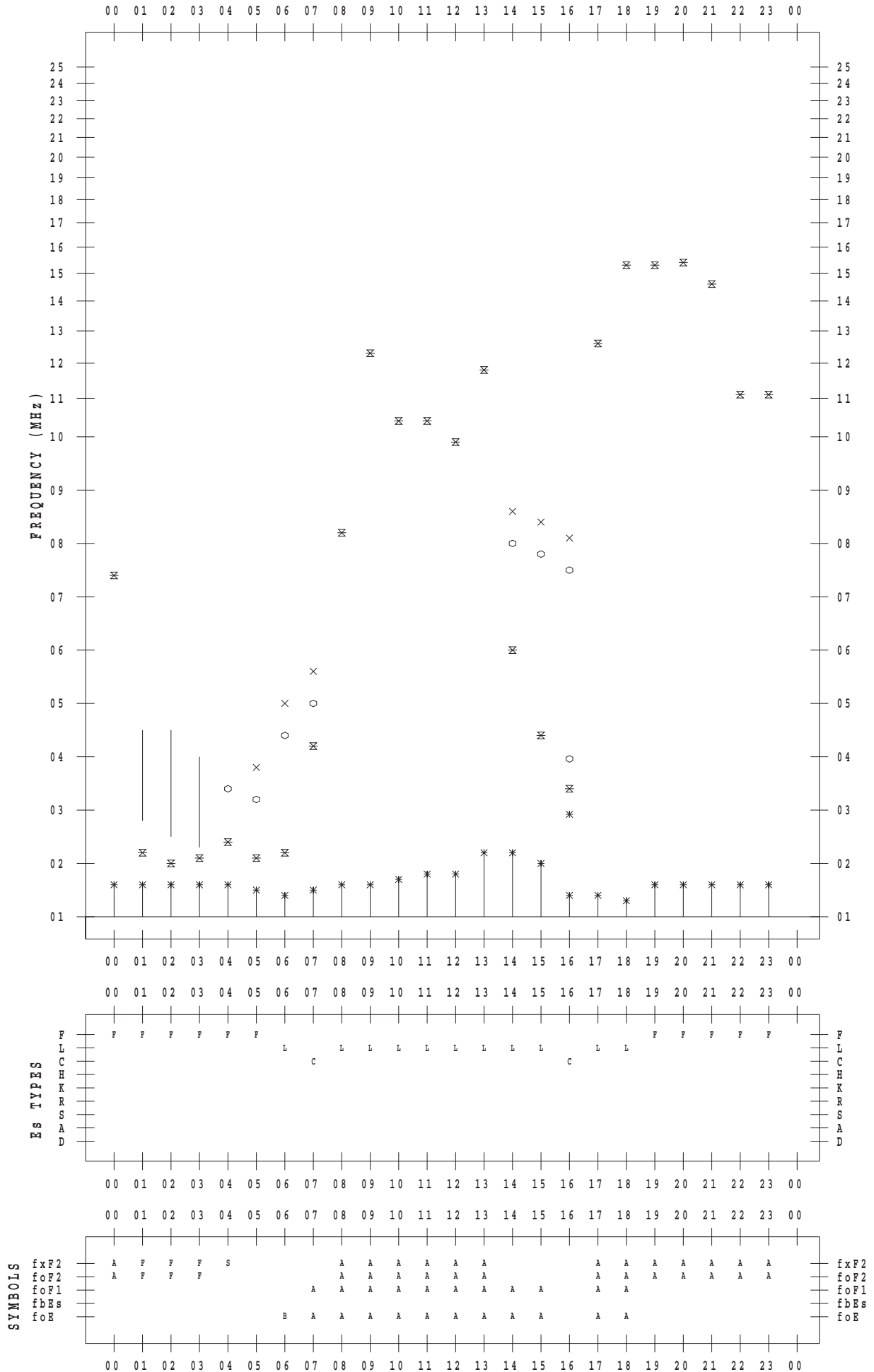
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 15

135 ° E MEAN TIME



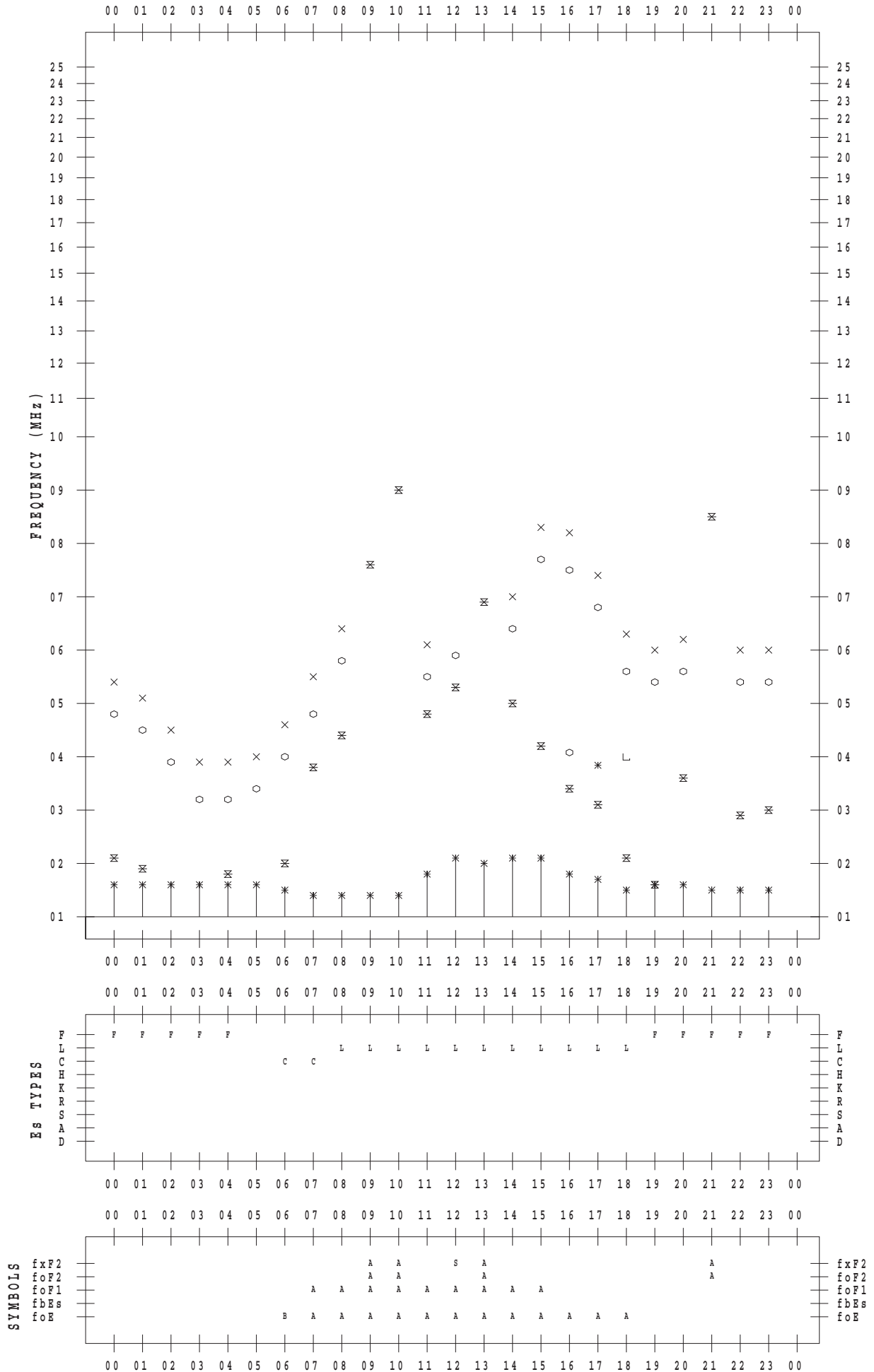
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 16

135 ° E MEAN TIME



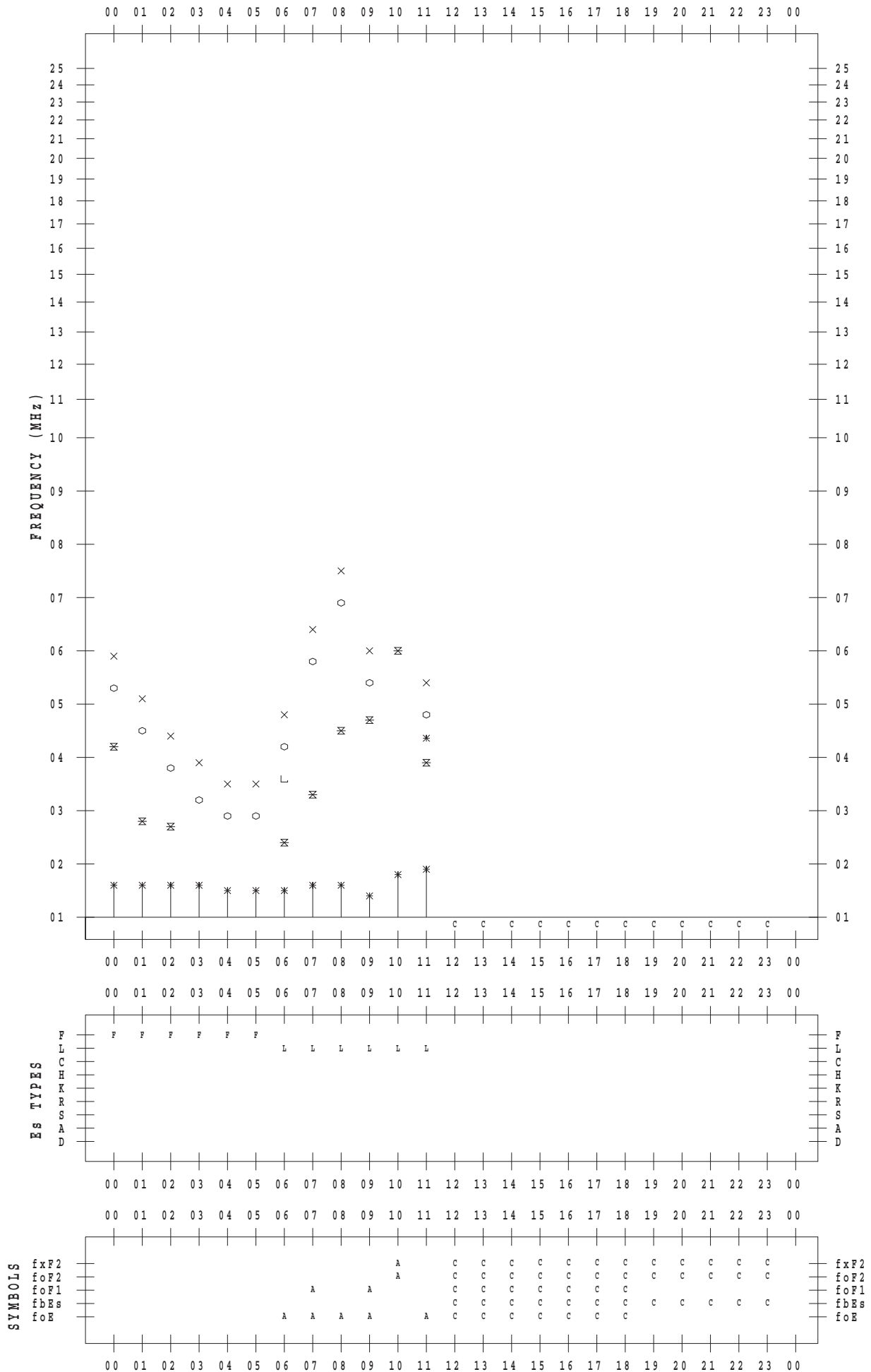
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 17

135 ° E MEAN TIME



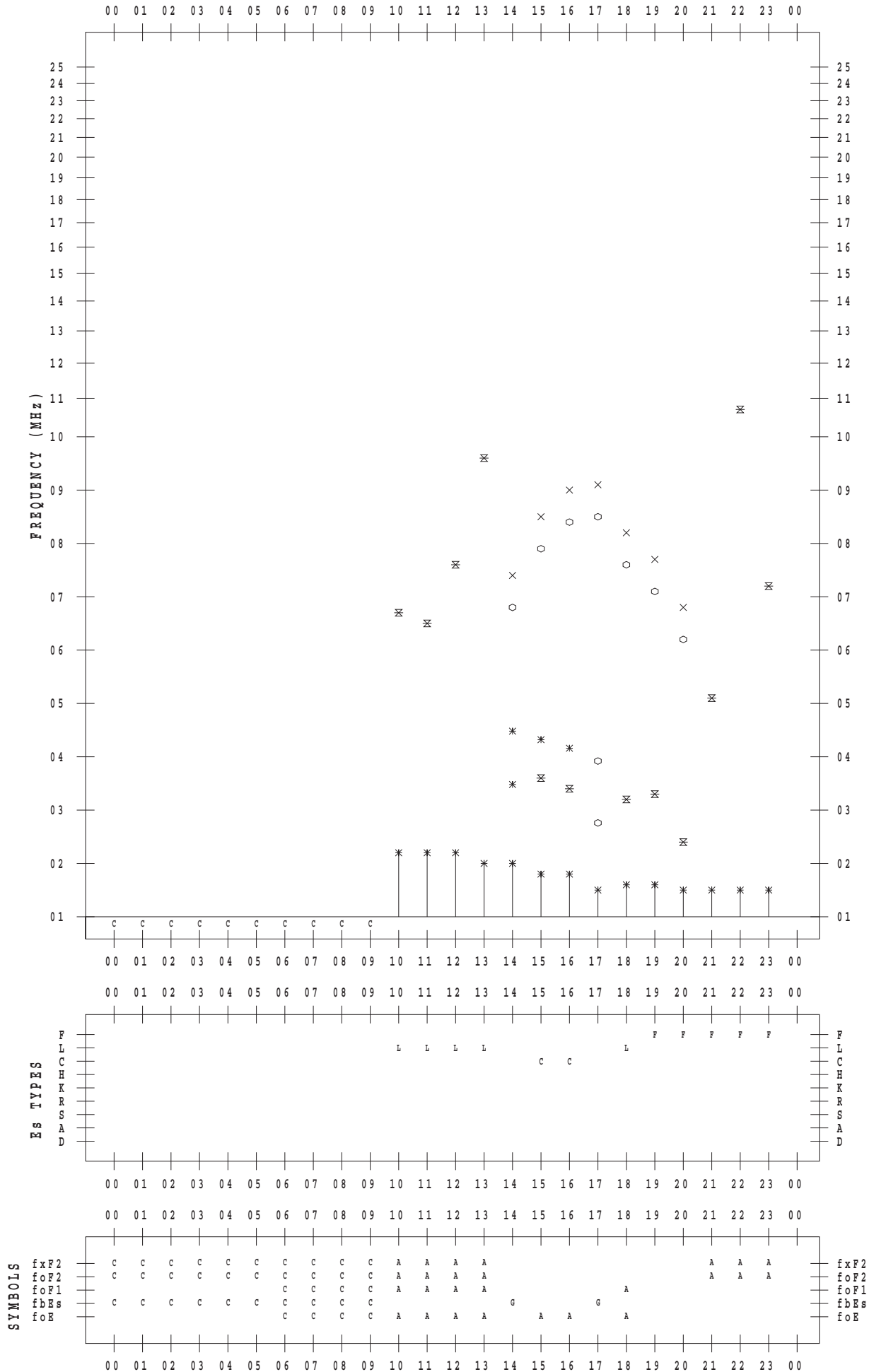
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 18

135 ° E MEAN TIME



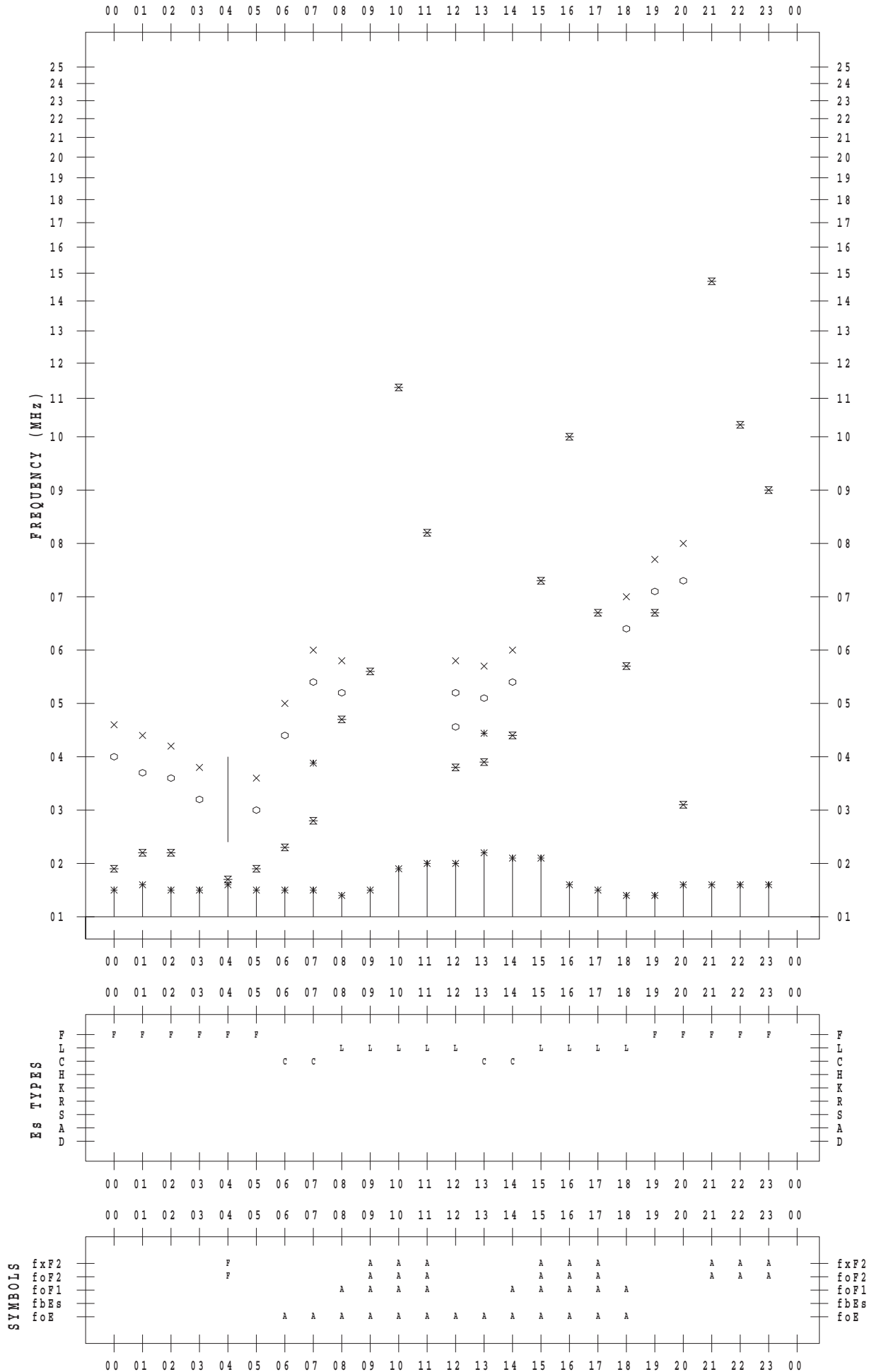
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 19

135 ° E MEAN TIME



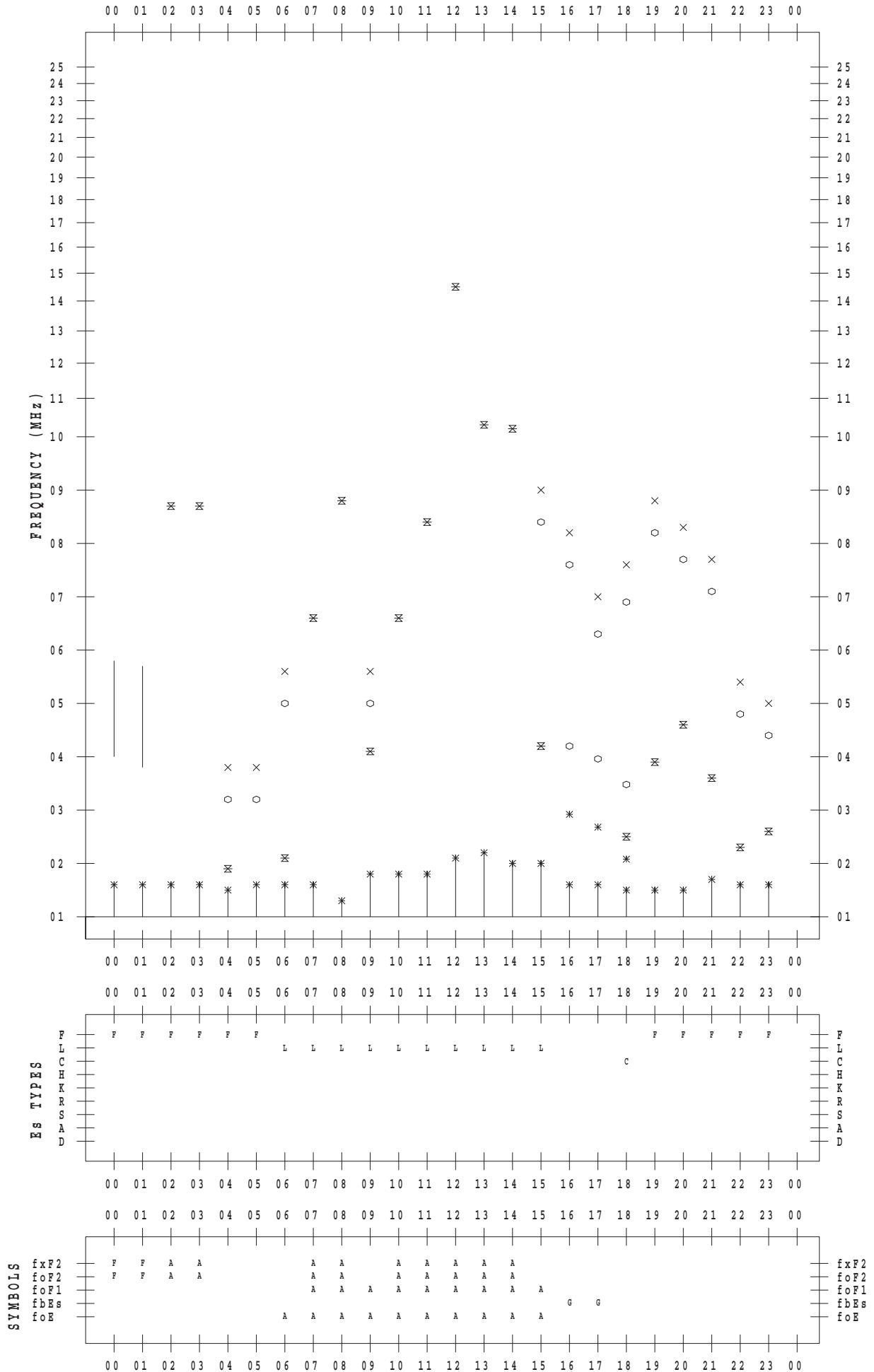
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 20

135 ° E MEAN TIME



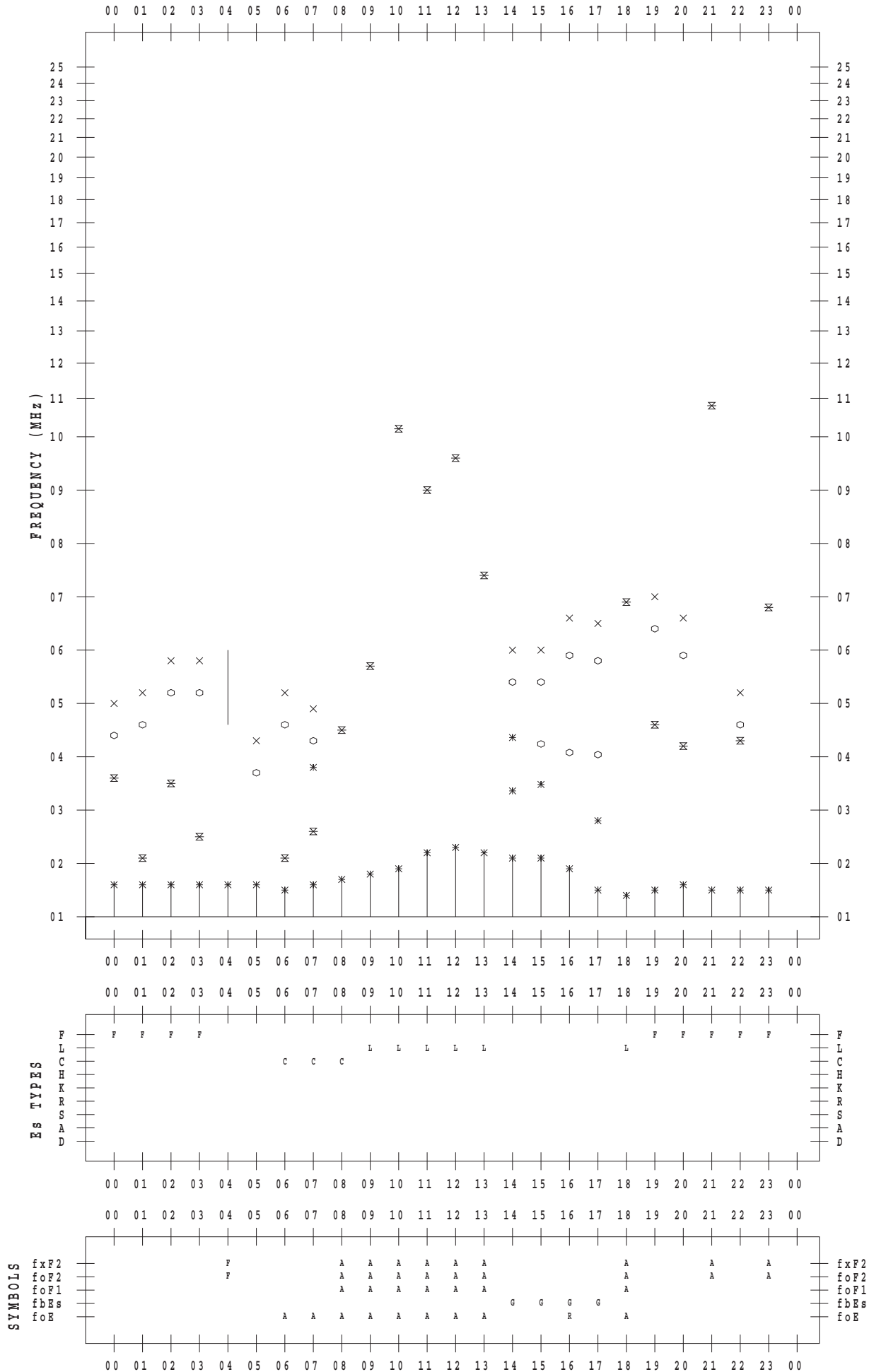
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 21

135 ° E MEAN TIME



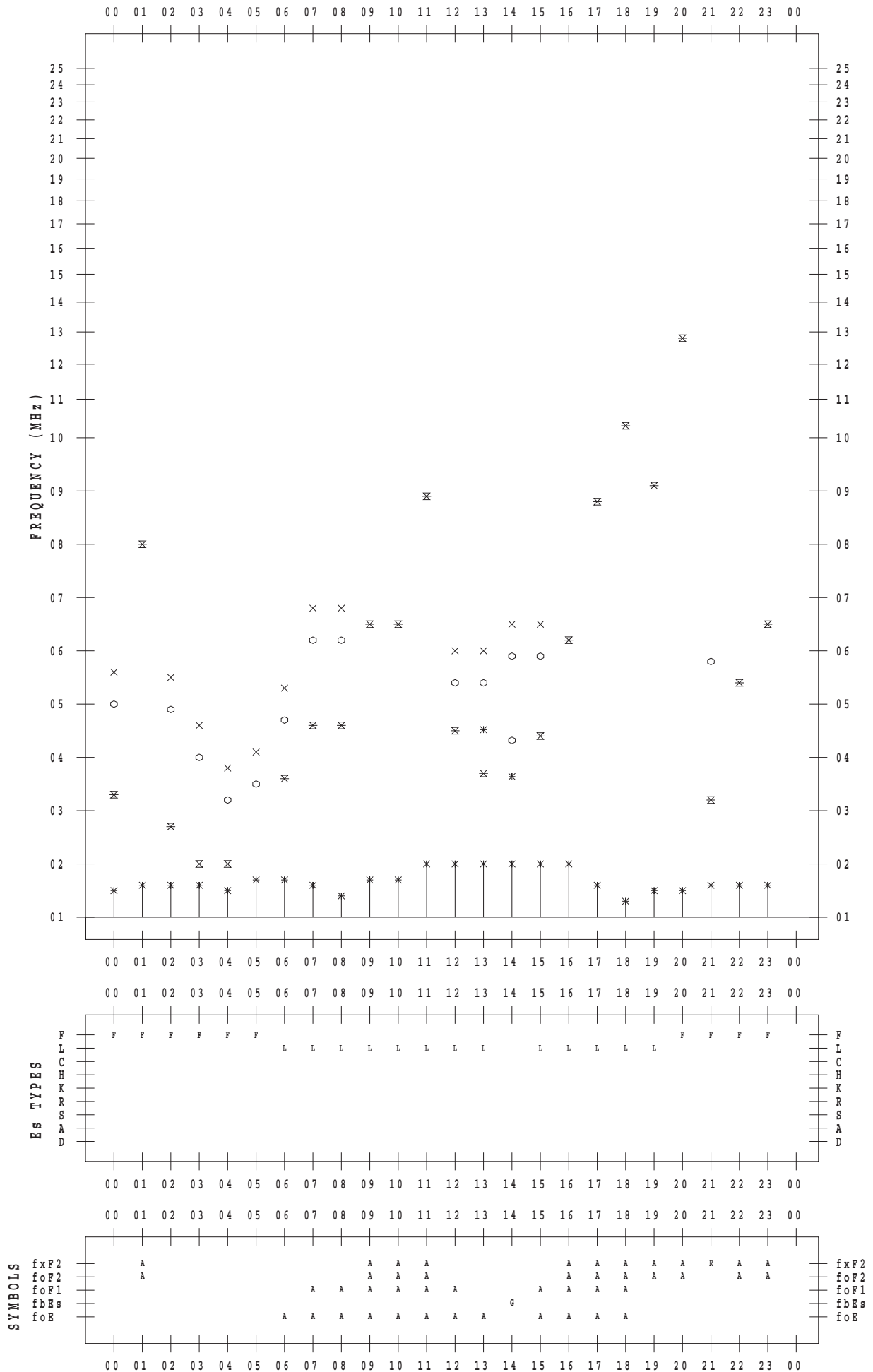
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 22

135 ° E MEAN TIME



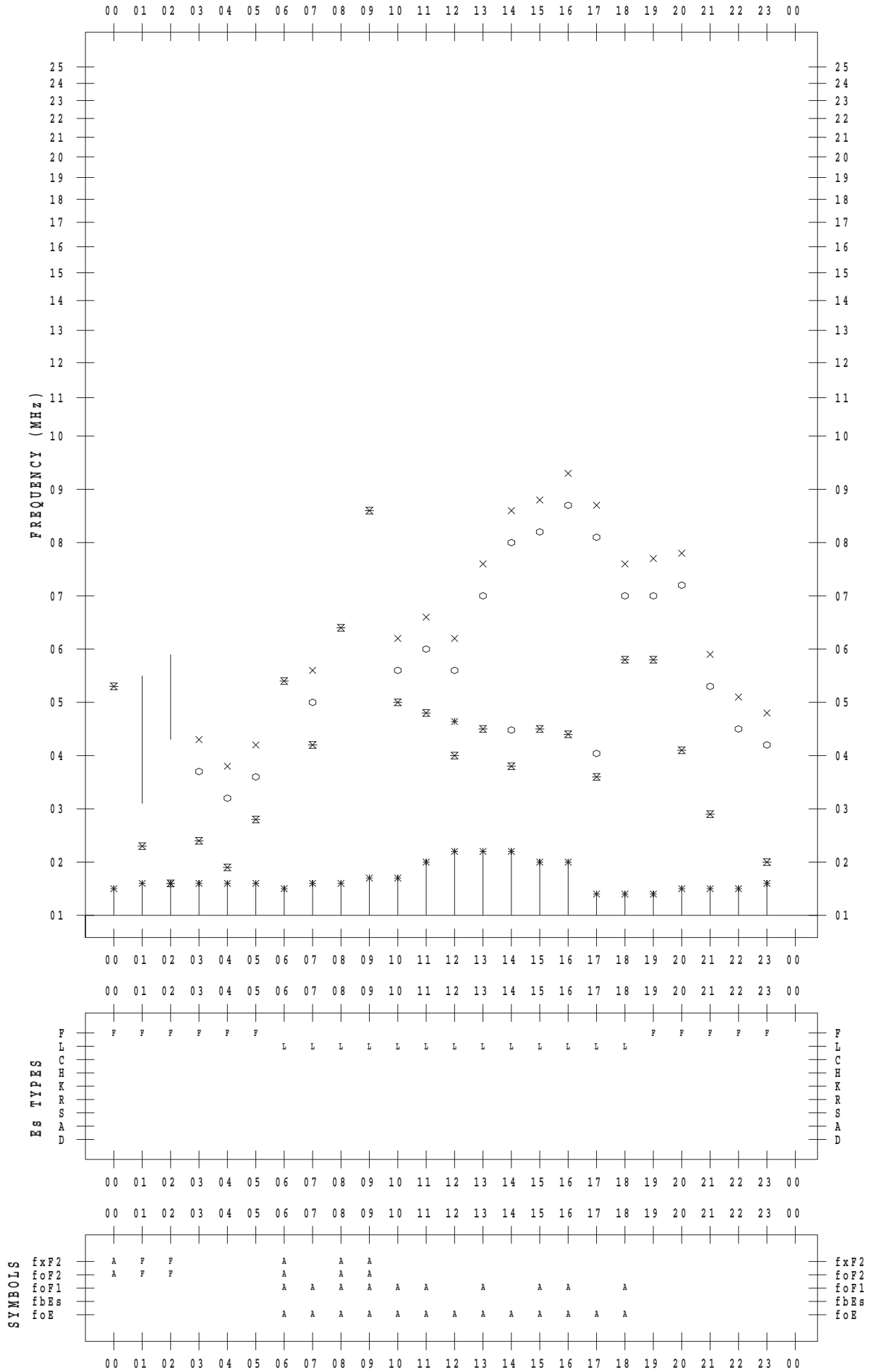
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 23

135 ° E MEAN TIME



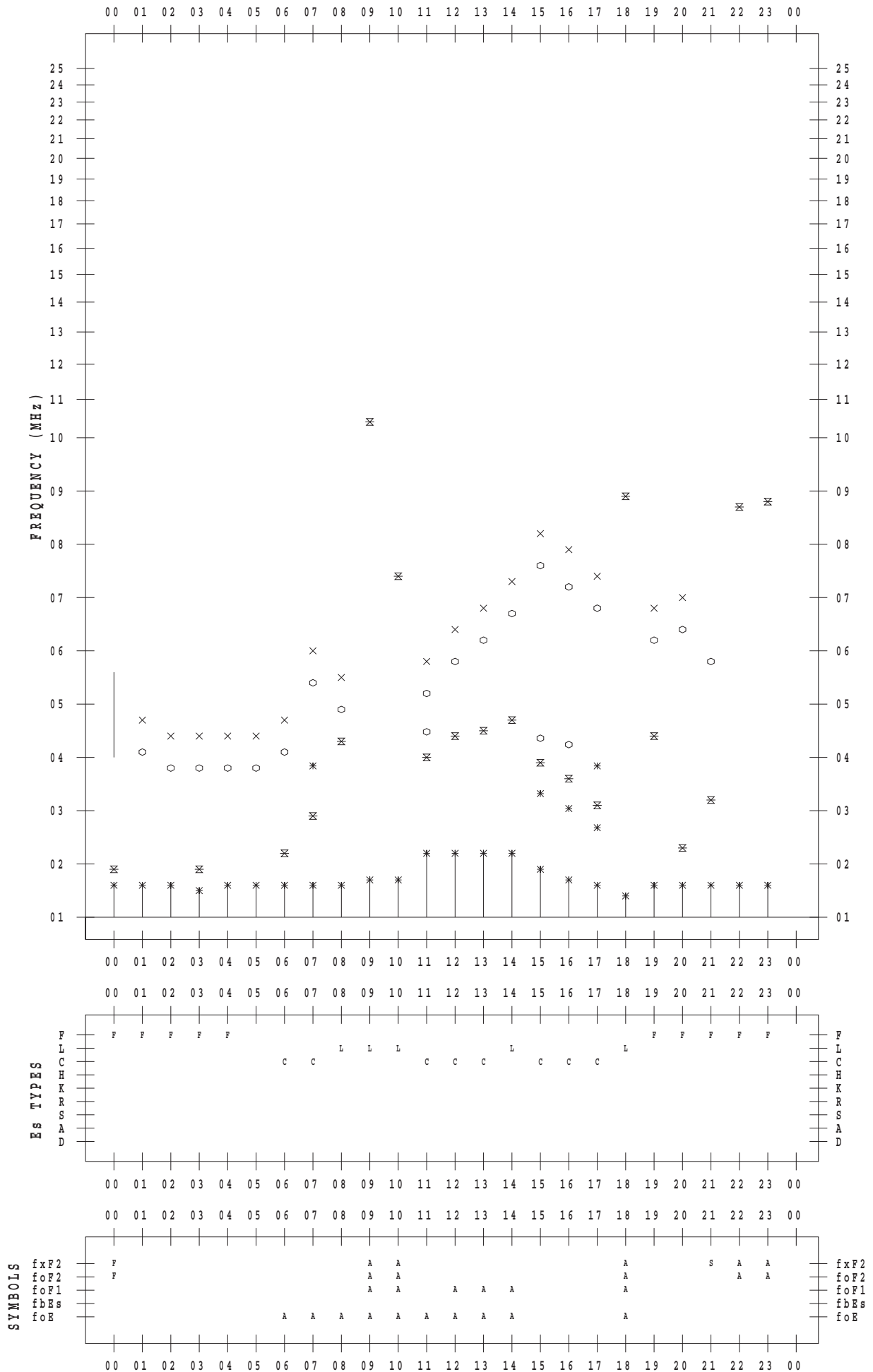
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 24

135 ° E MEAN TIME



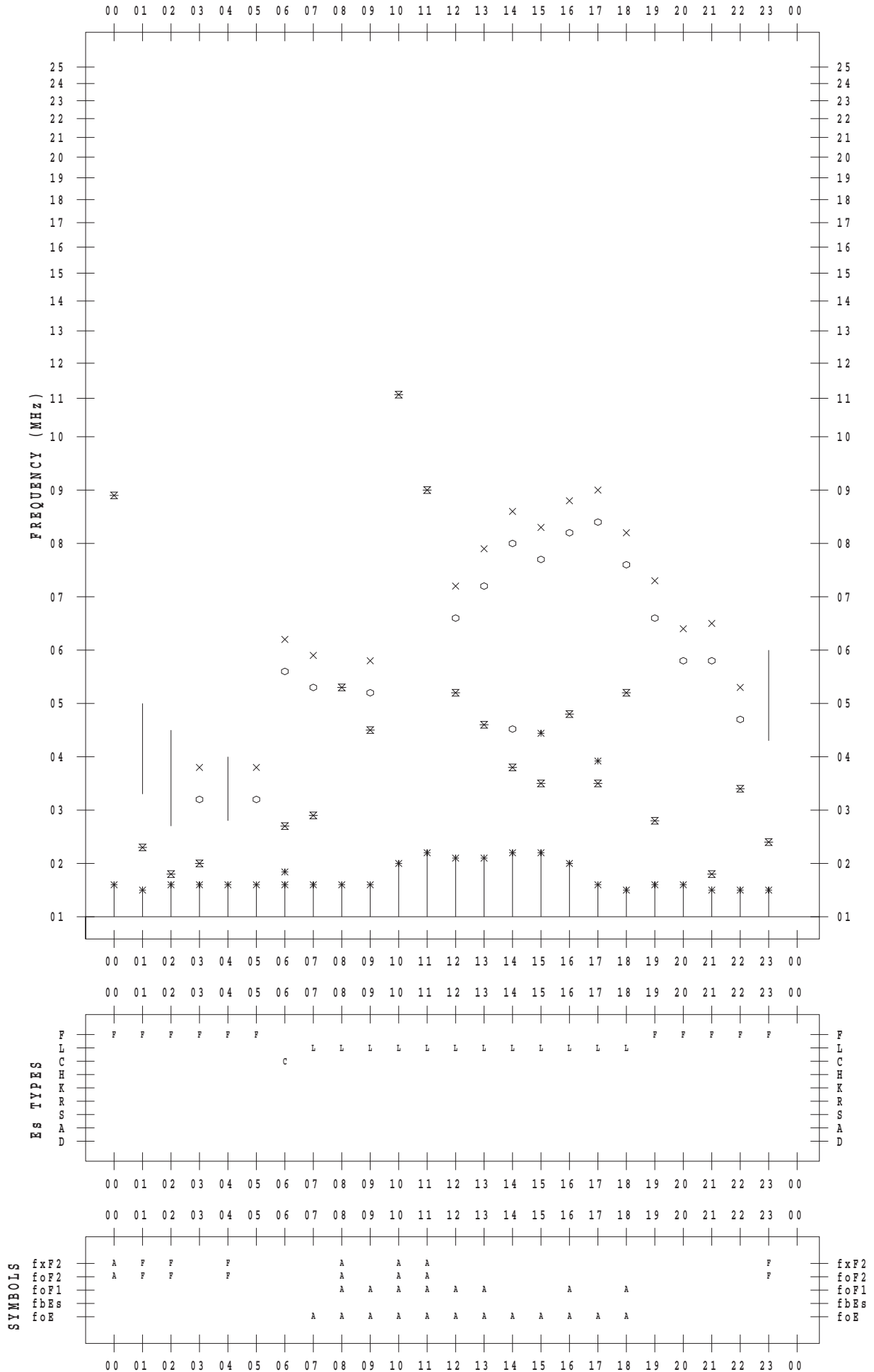
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 25

135 ° E MEAN TIME



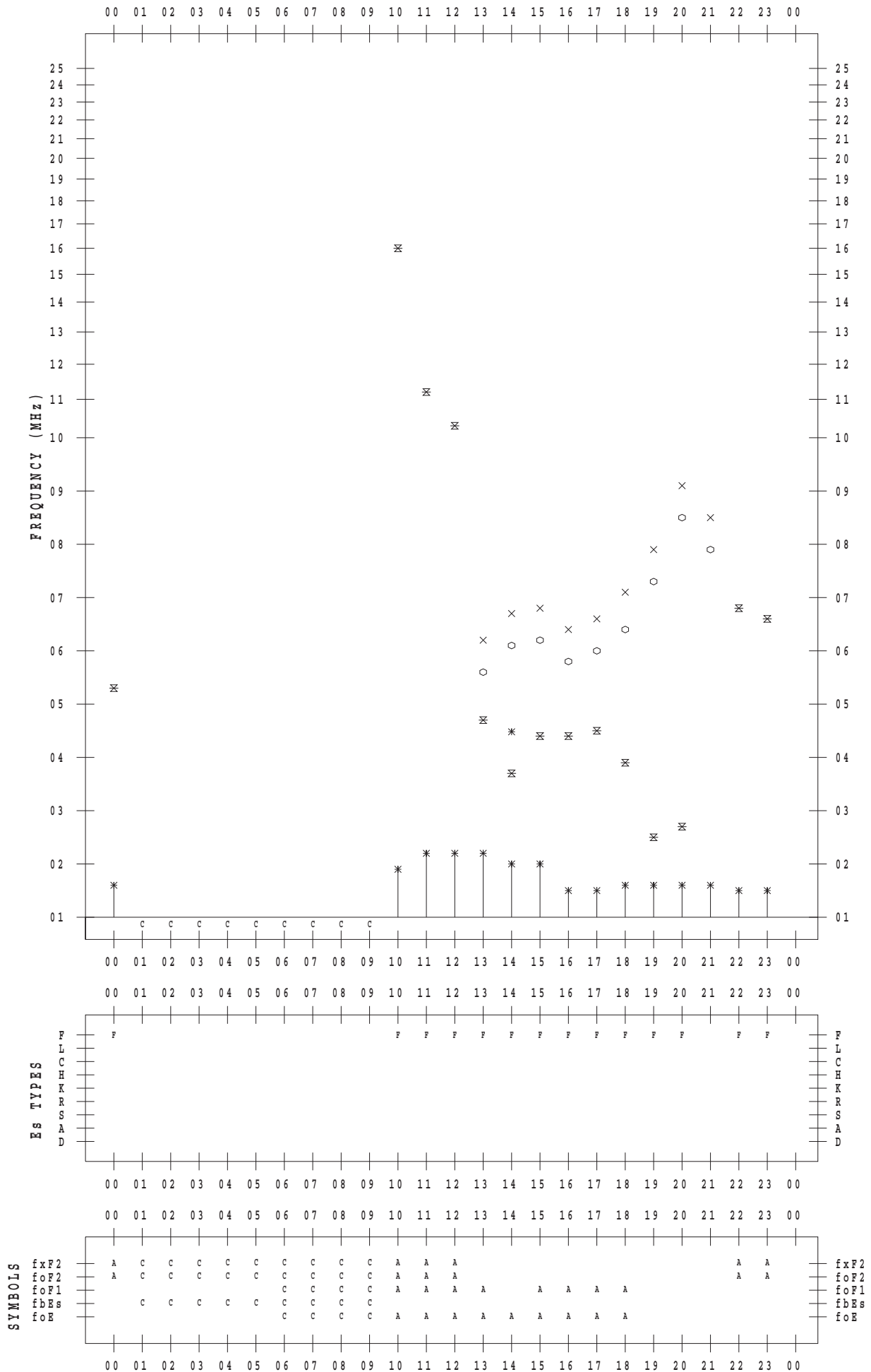
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 26

135 ° E MEAN TIME



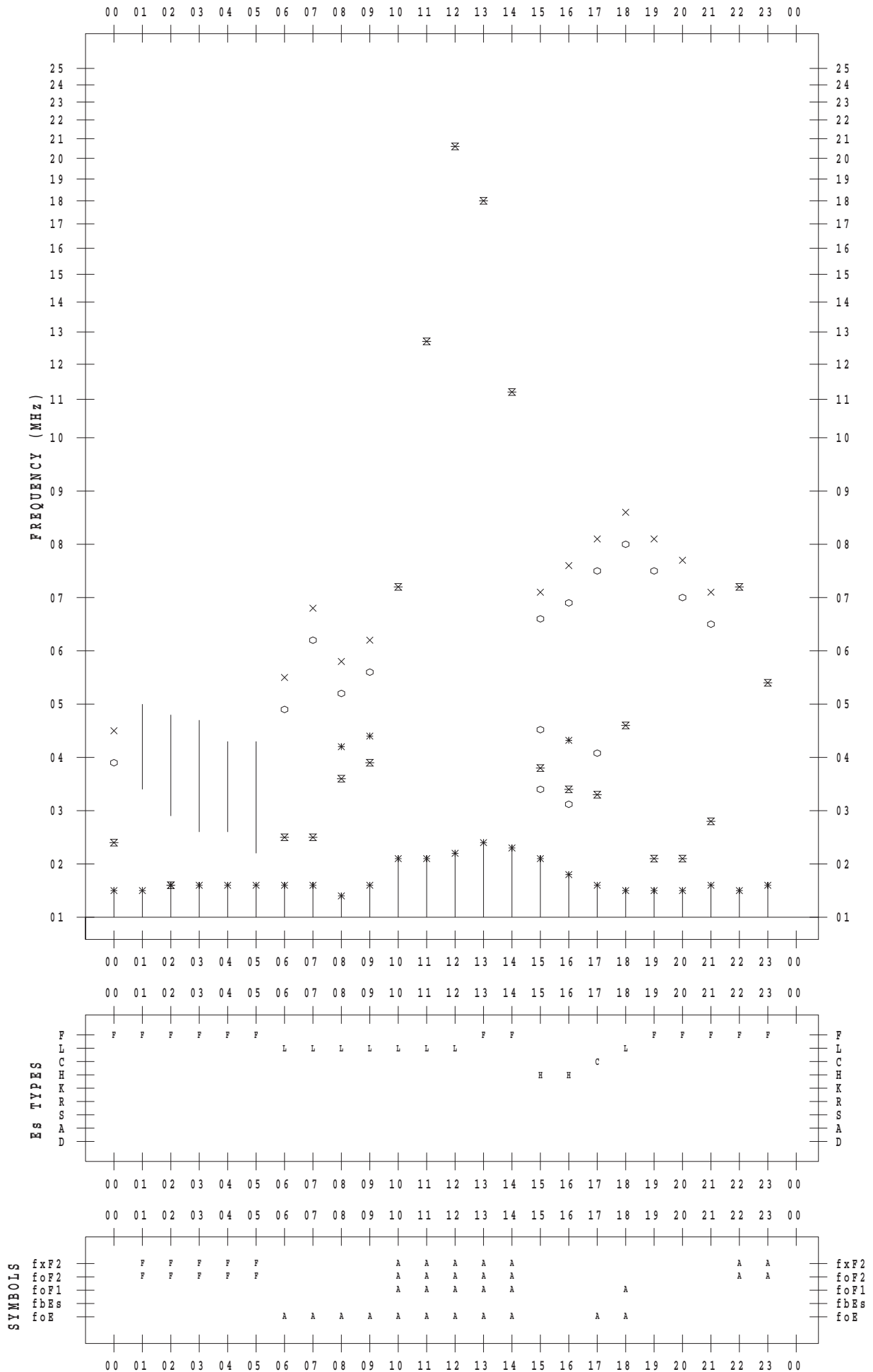
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 27

135 ° E MEAN TIME



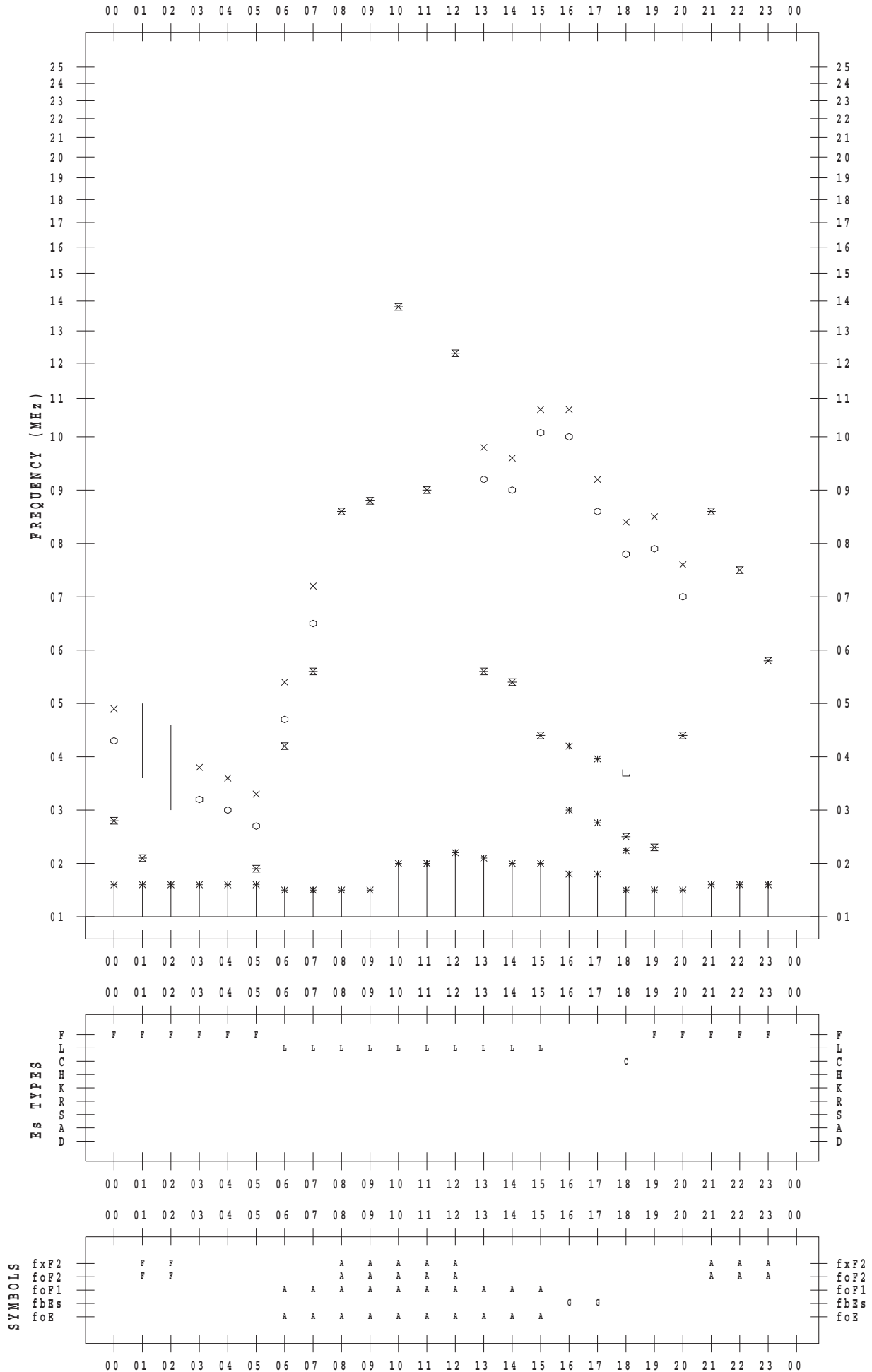
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 28

135 ° E MEAN TIME



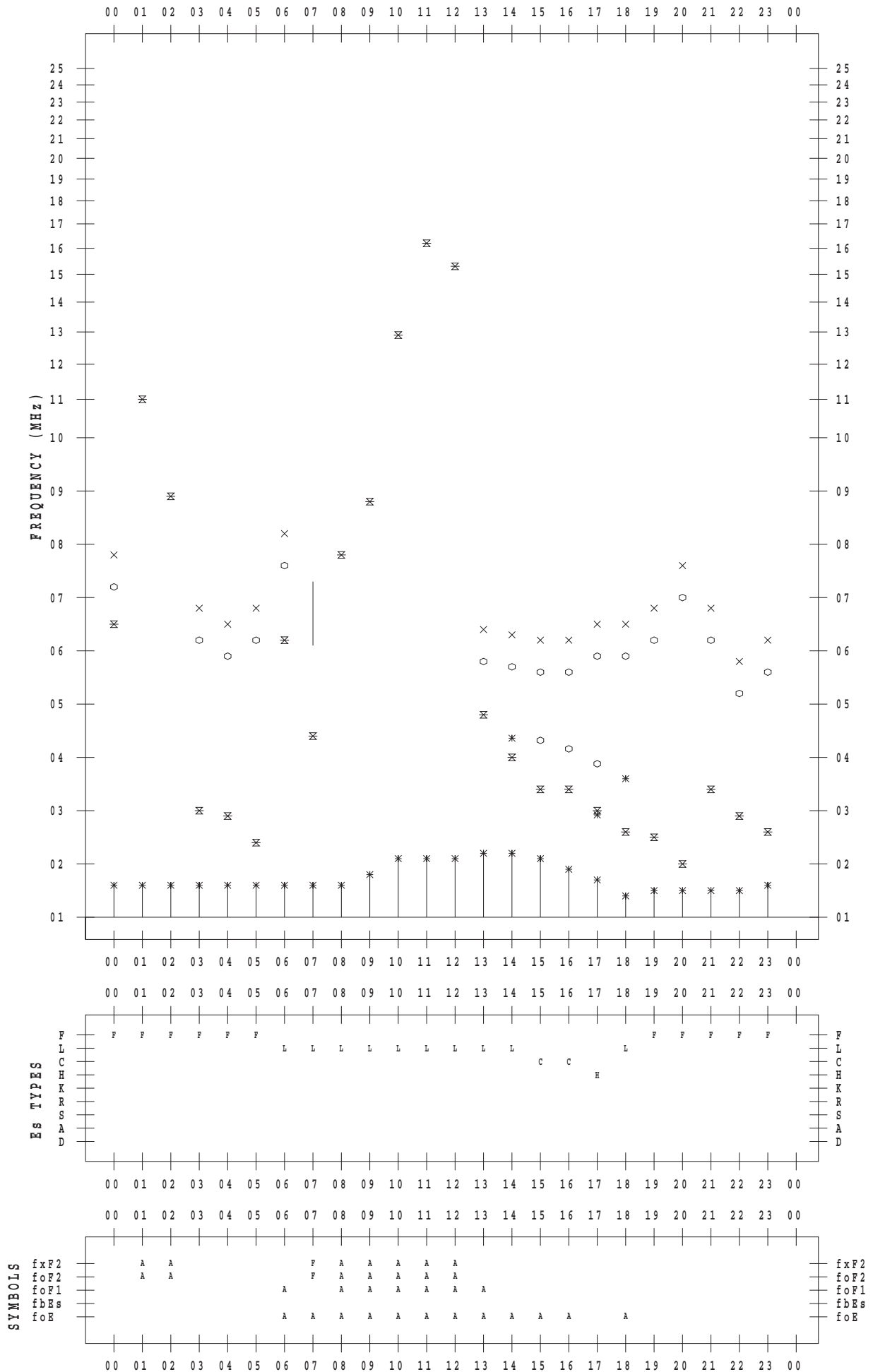
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 29

135 ° E MEAN TIME



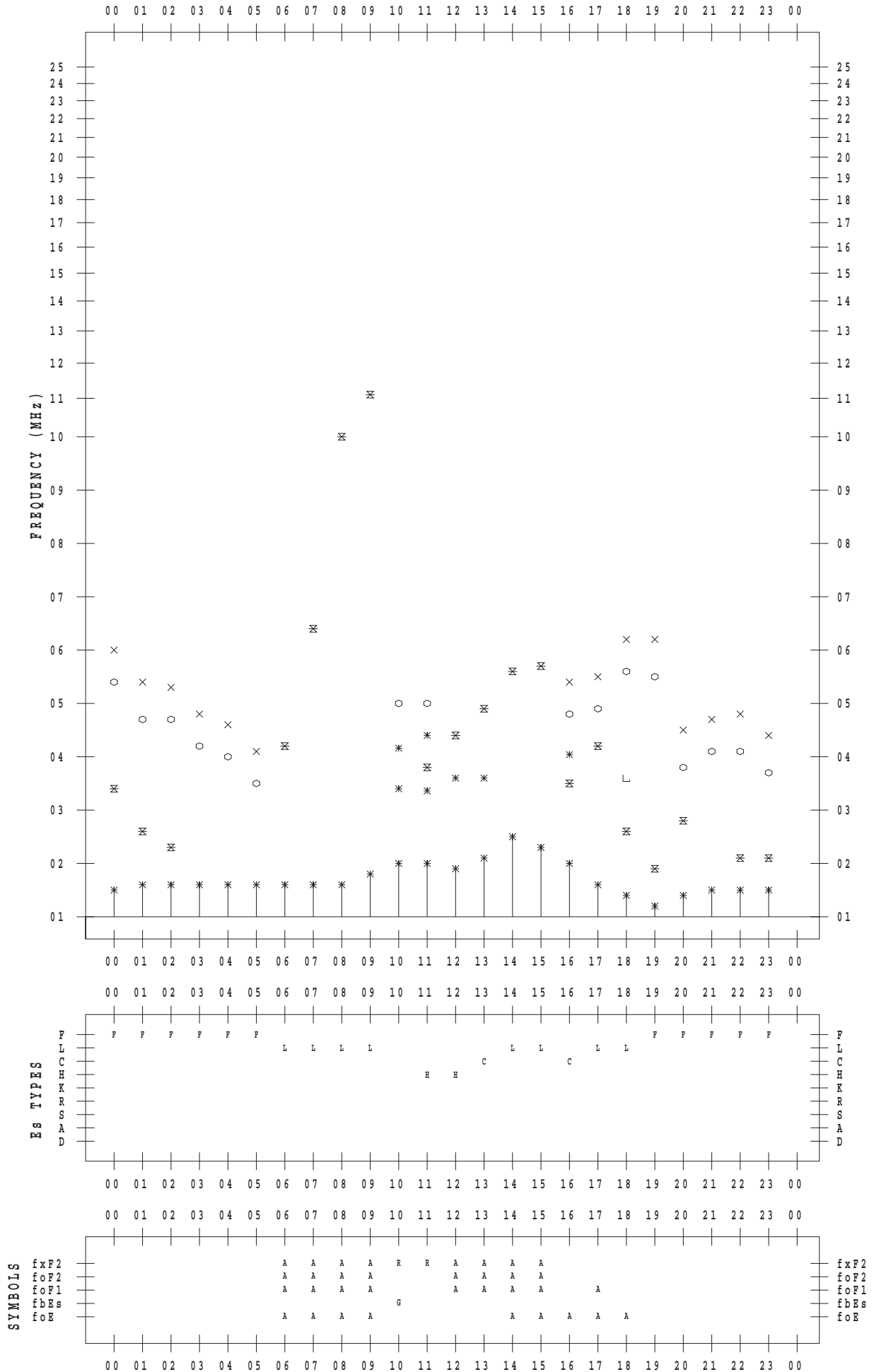
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 30

135 ° E MEAN TIME



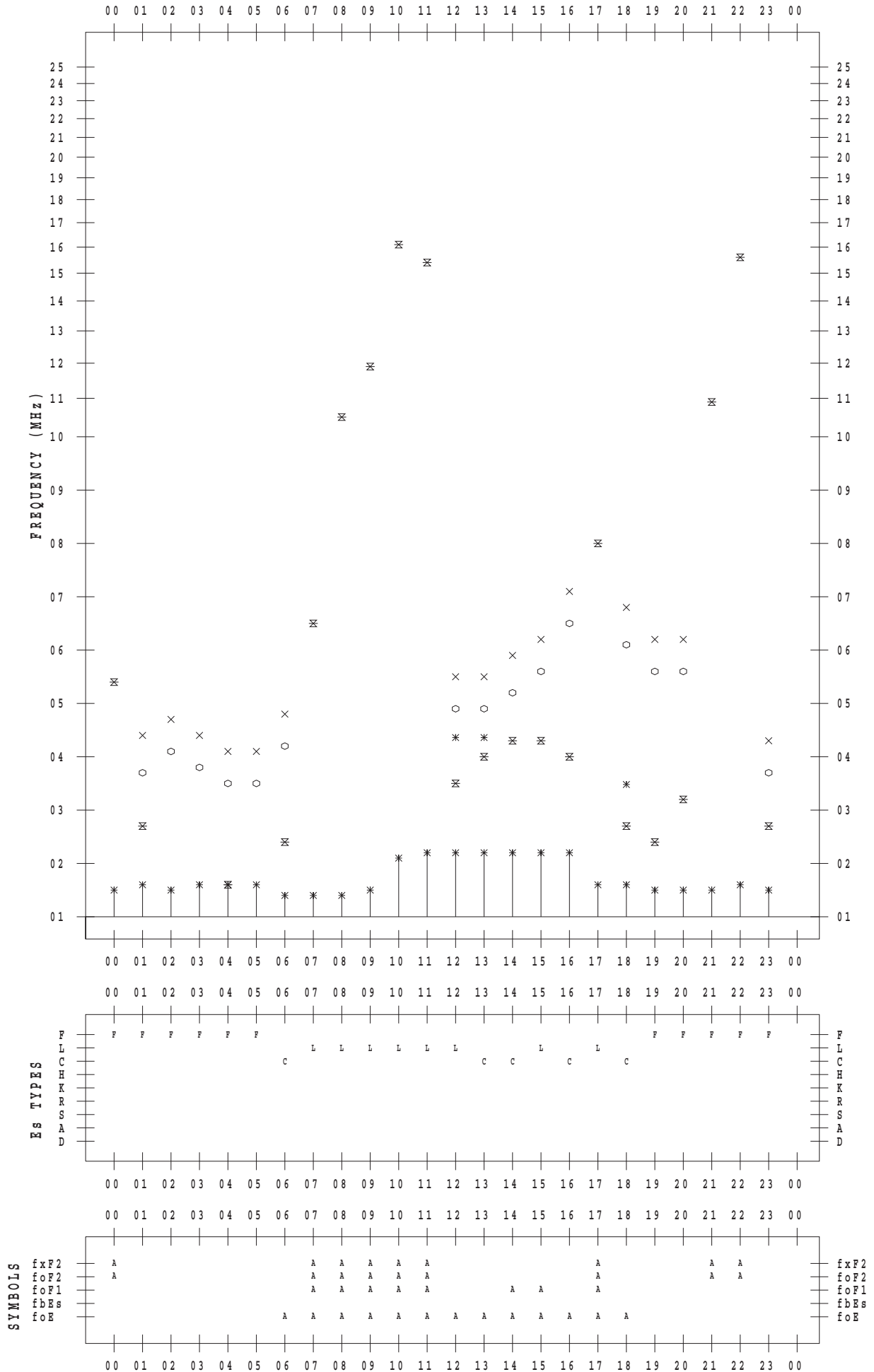
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017 / 5 / 31

135 ° E MEAN TIME



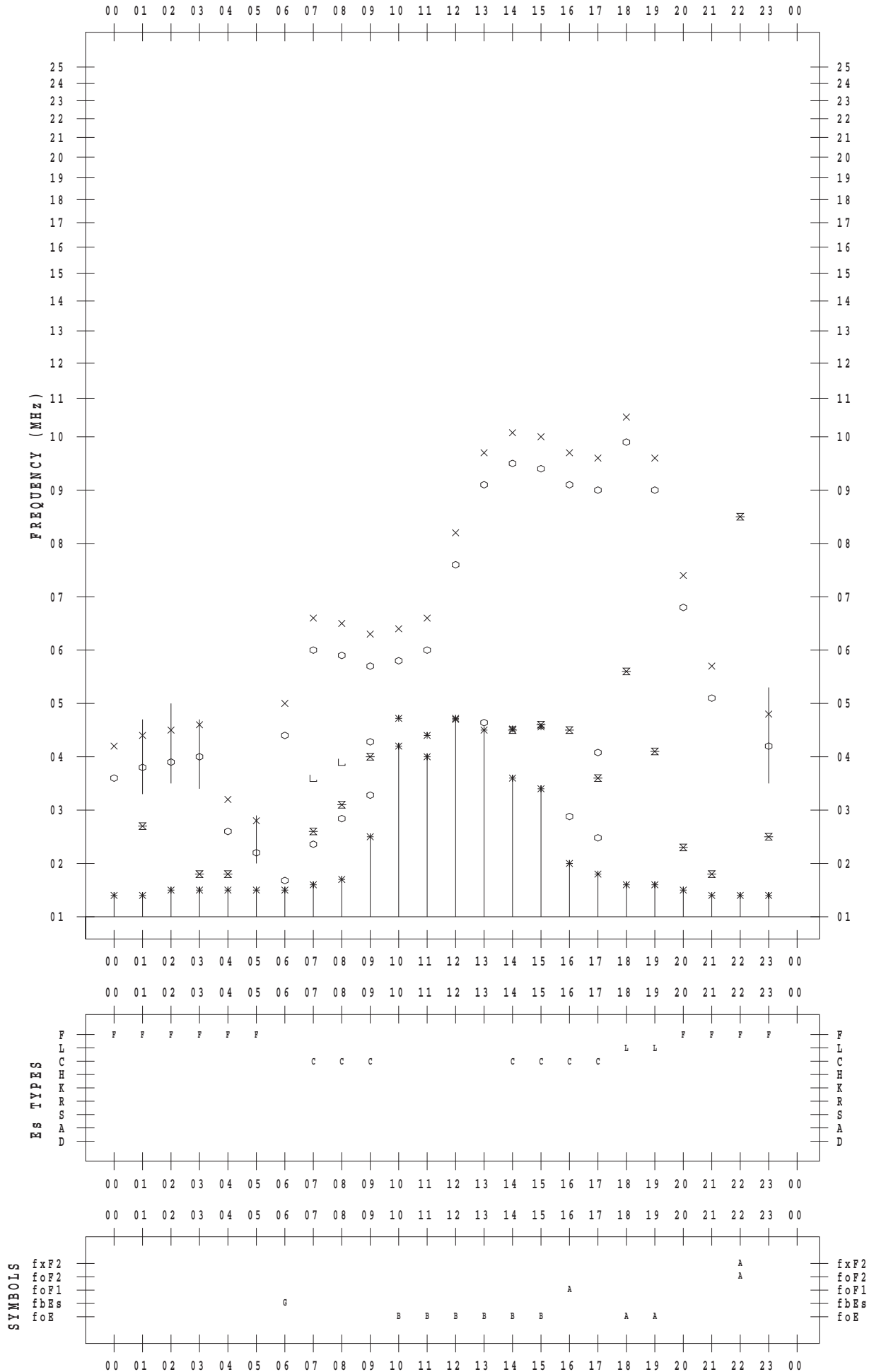
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 1

135 ° E MEAN TIME



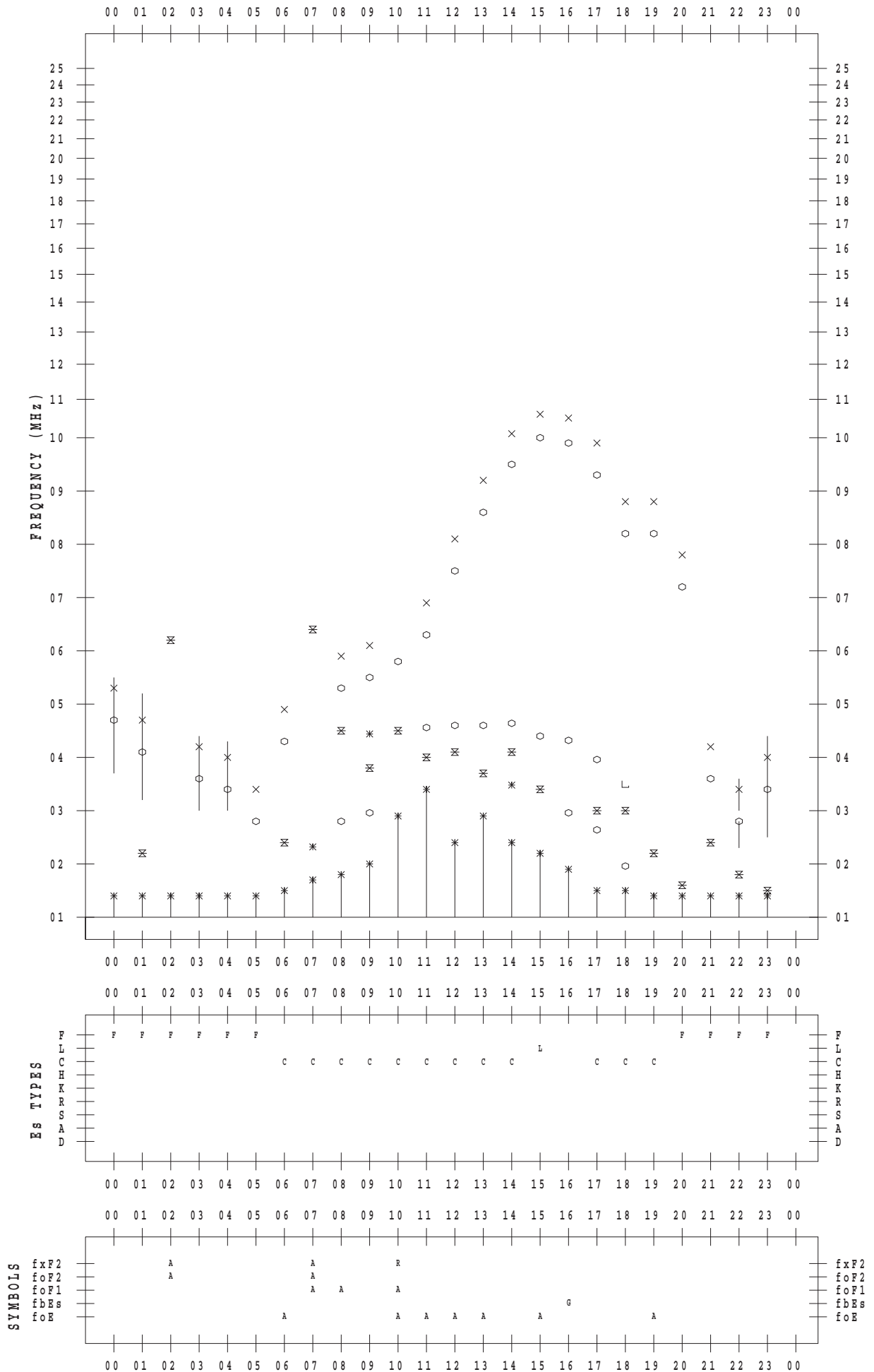
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 2

135 ° E MEAN TIME



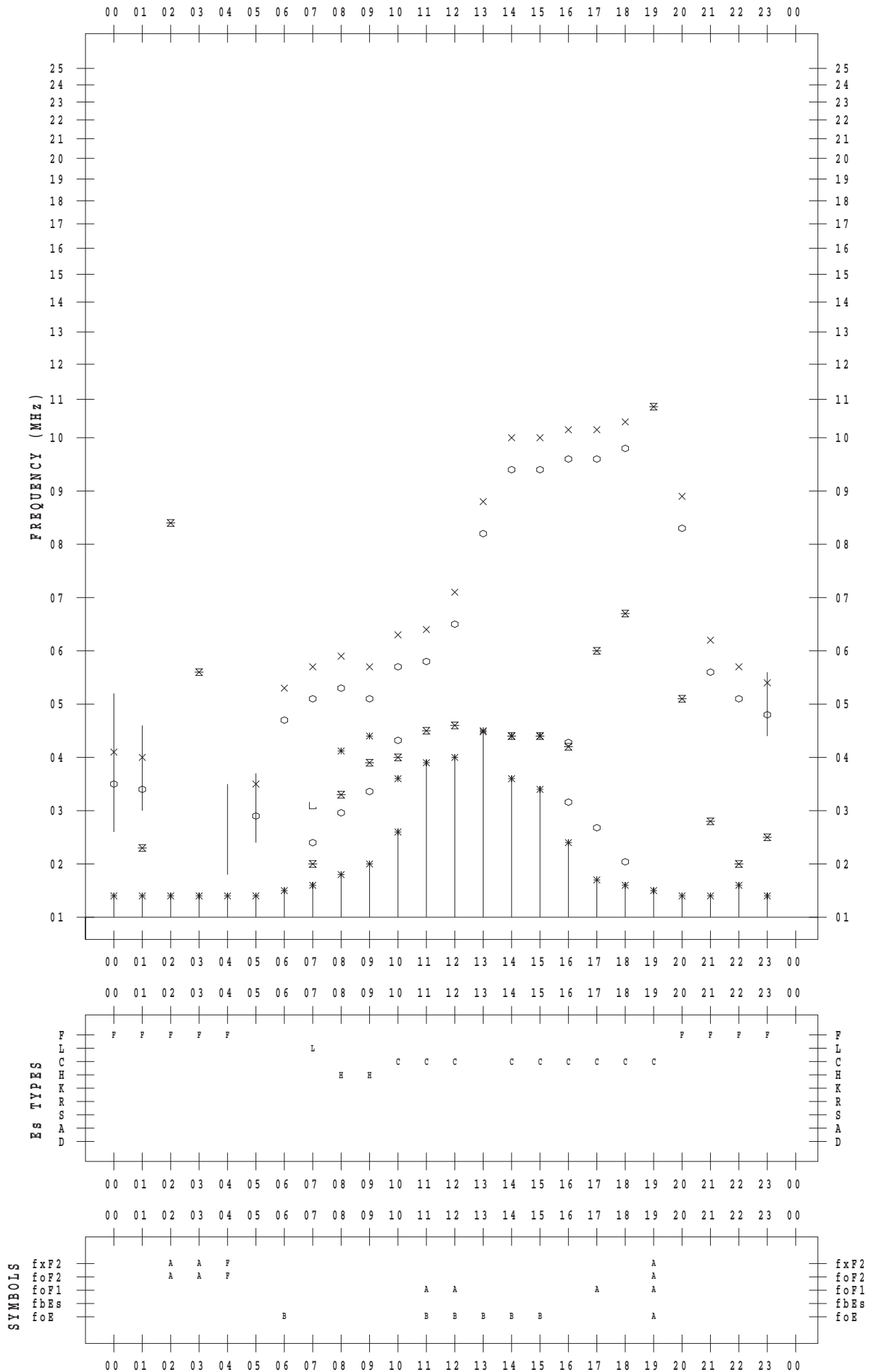
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 3

135 ° E MEAN TIME



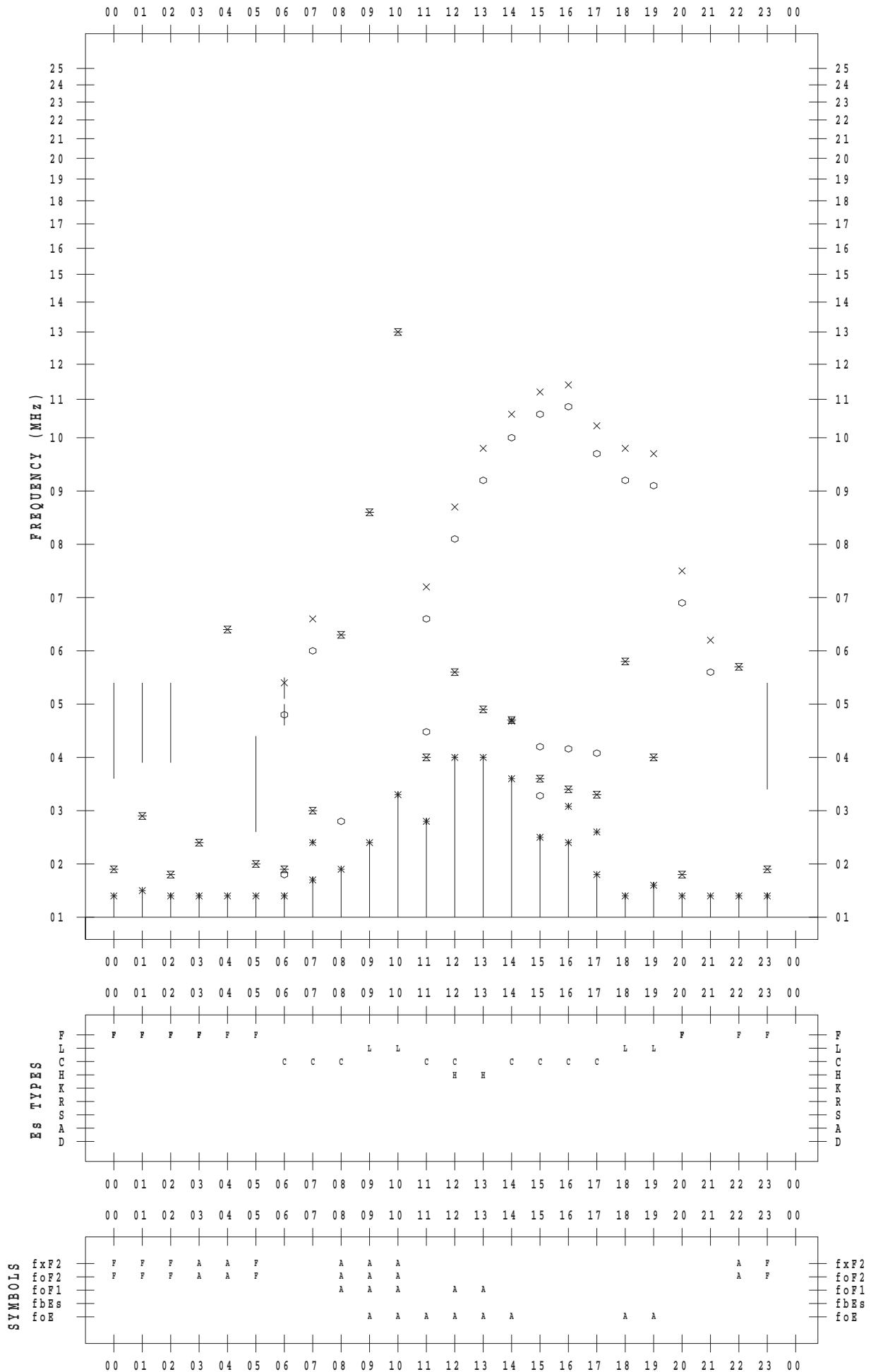
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 4

135 ° E MEAN TIME



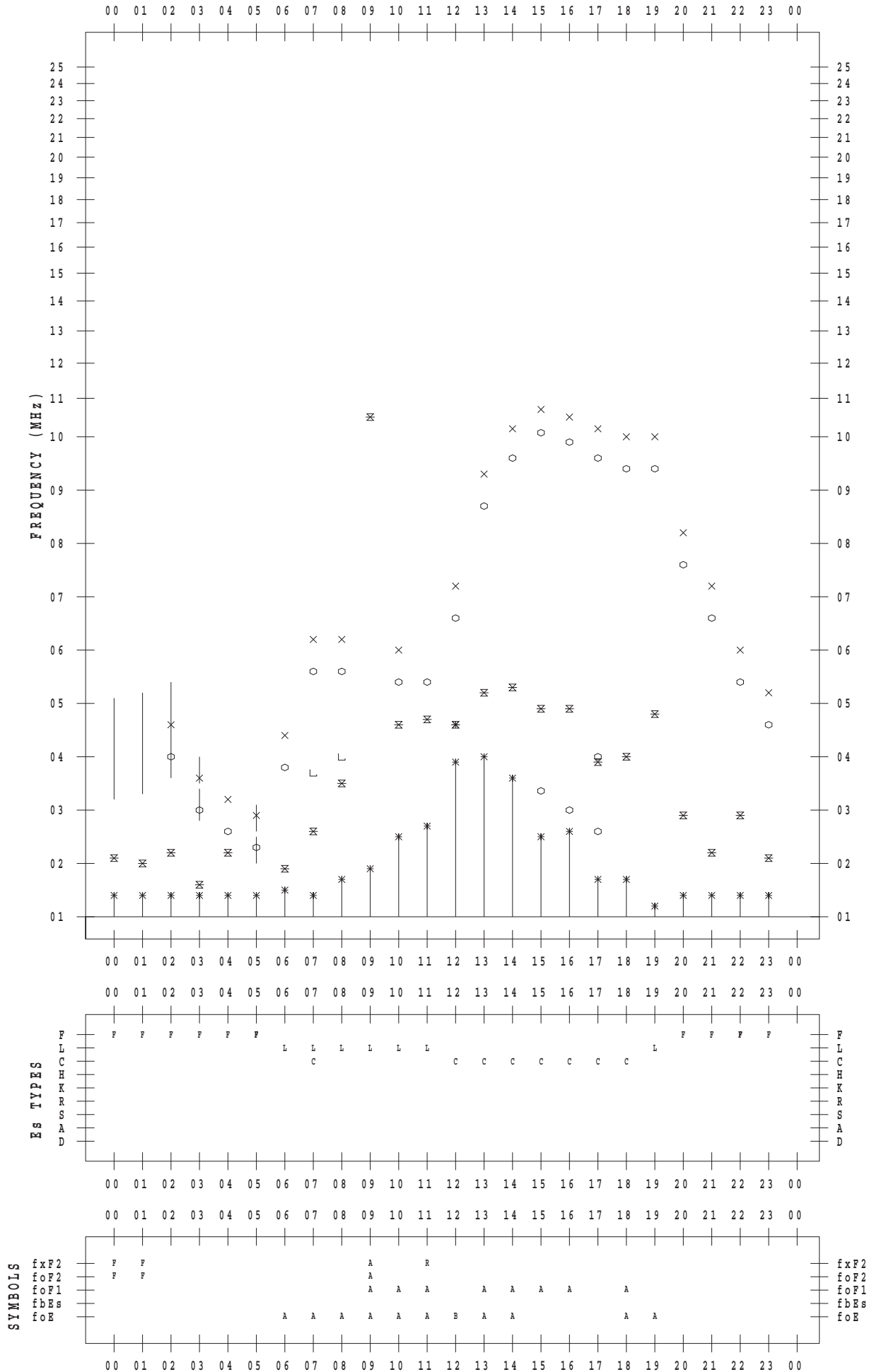
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 5

135 ° E MEAN TIME



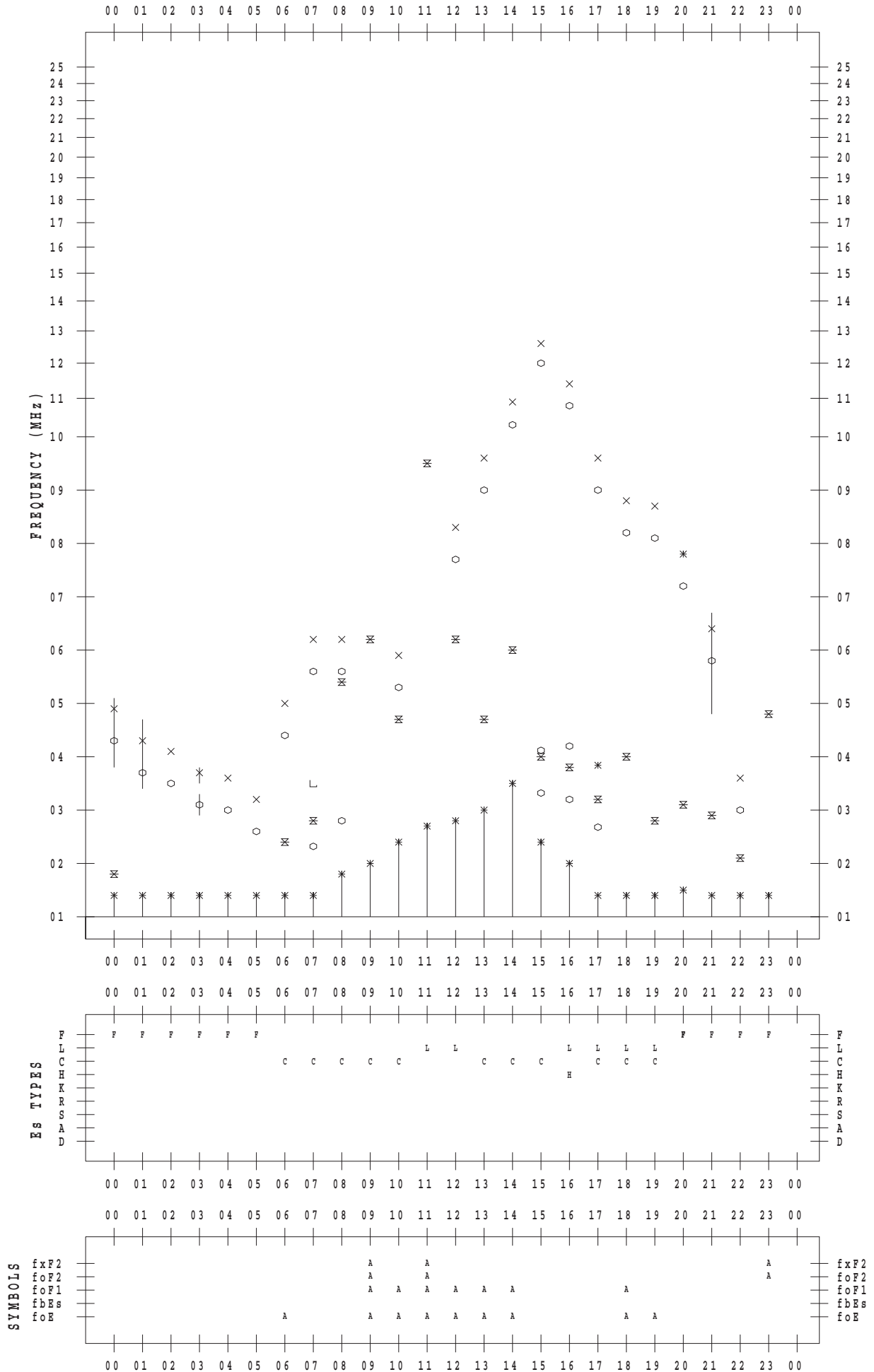
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 6

135 ° E MEAN TIME



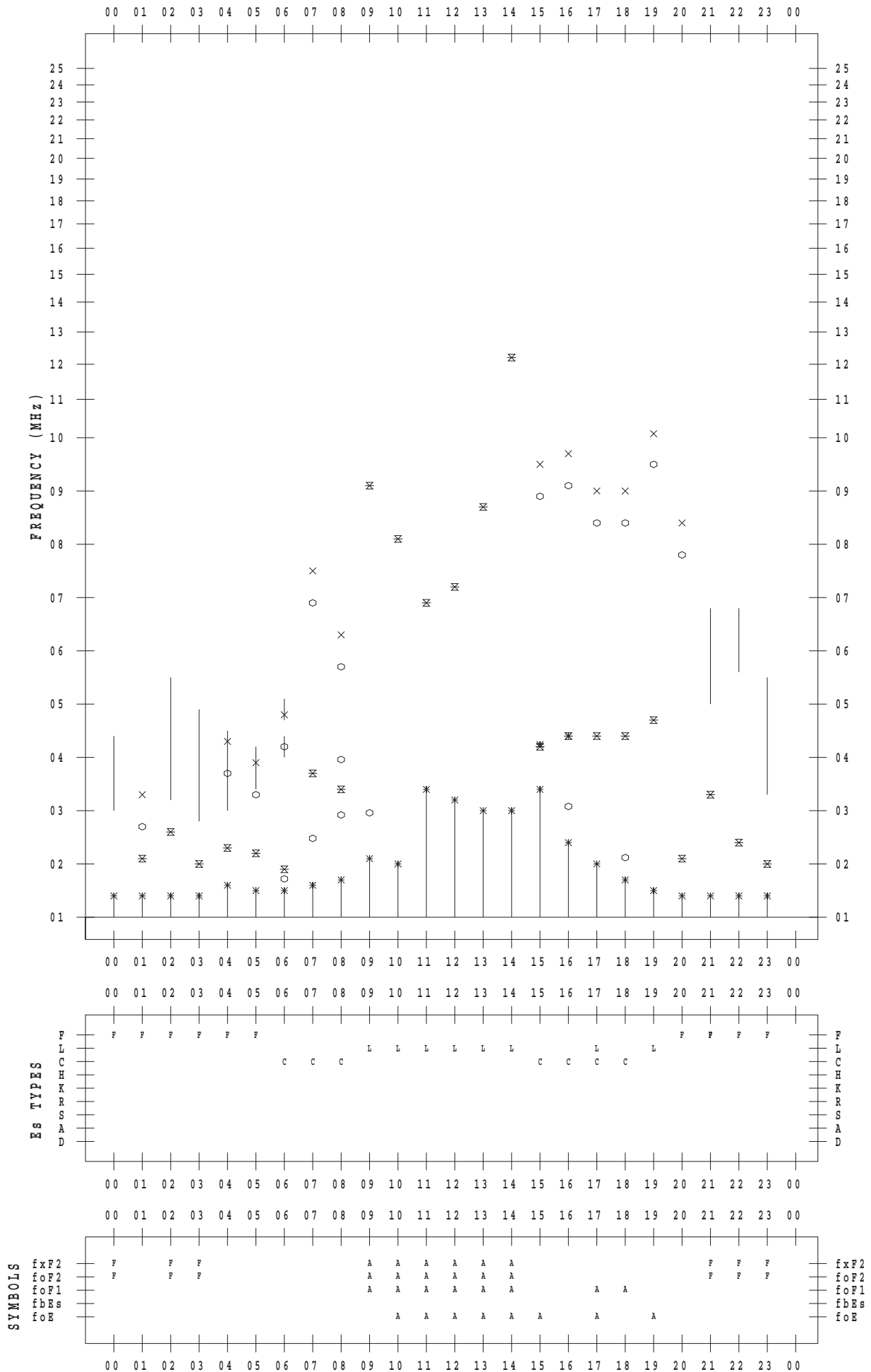
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 7

135 ° E MEAN TIME



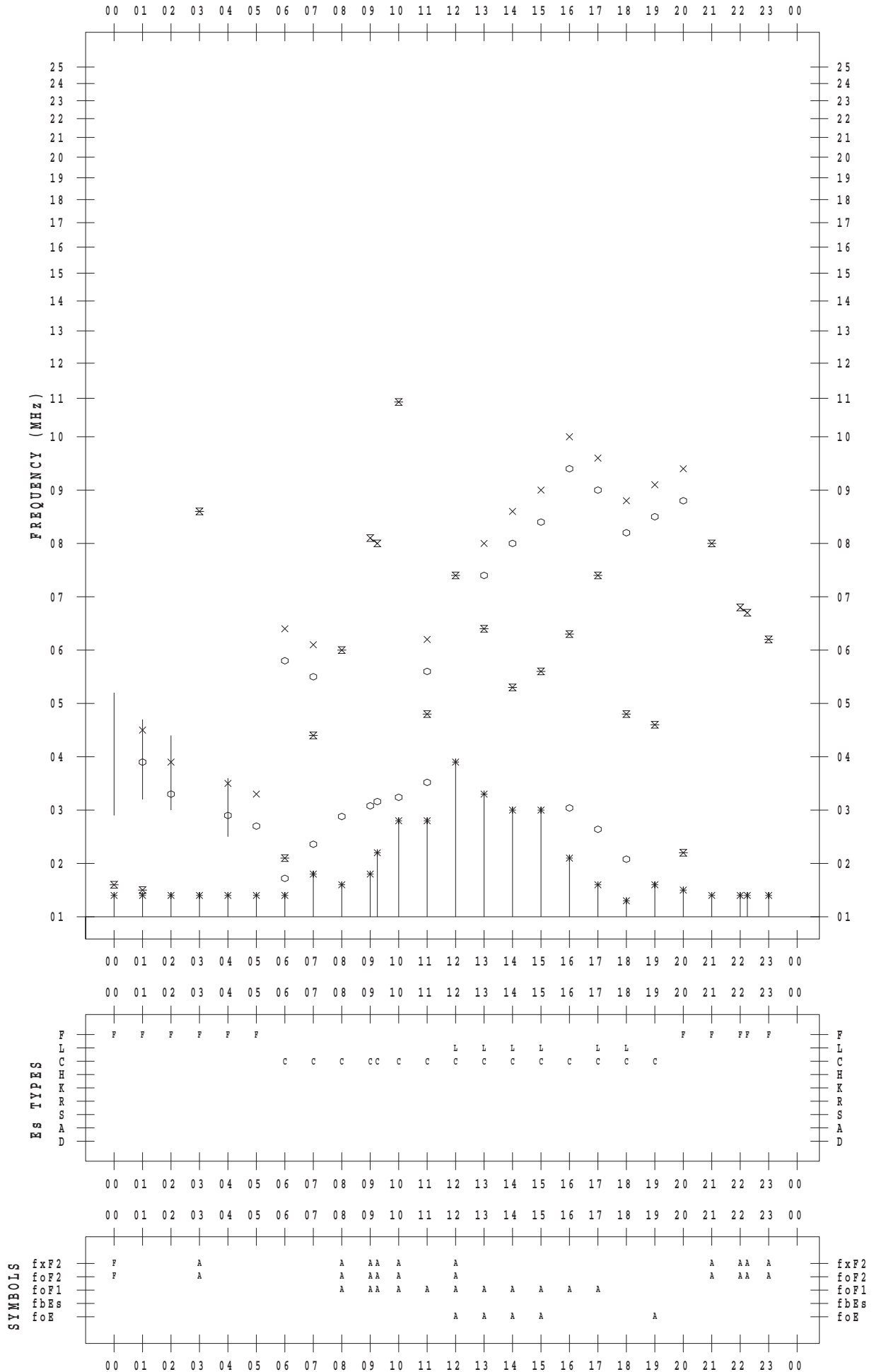
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 8

135 ° E MEAN TIME



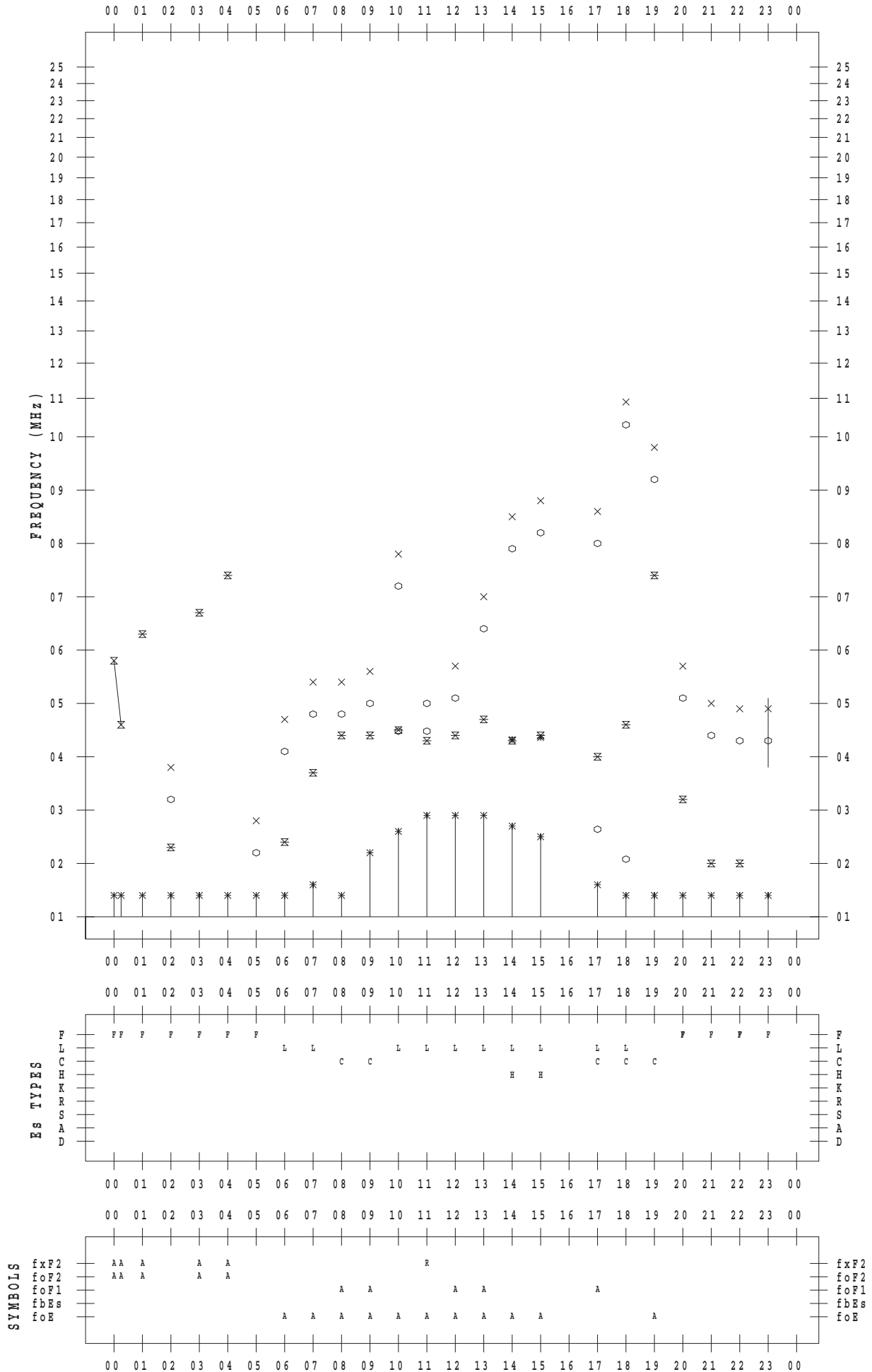
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 9

135 ° E MEAN TIME



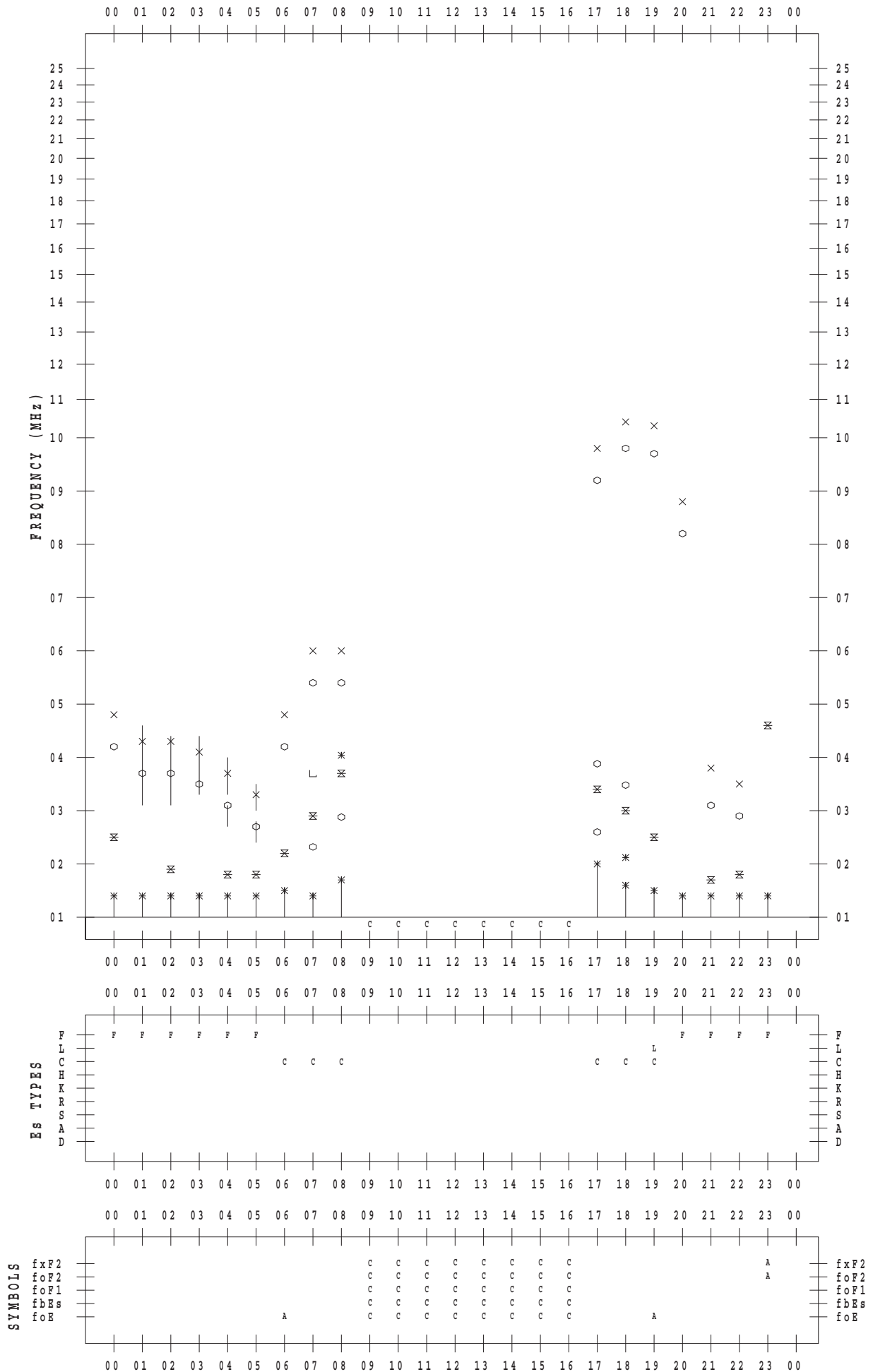
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 10

135 ° E MEAN TIME



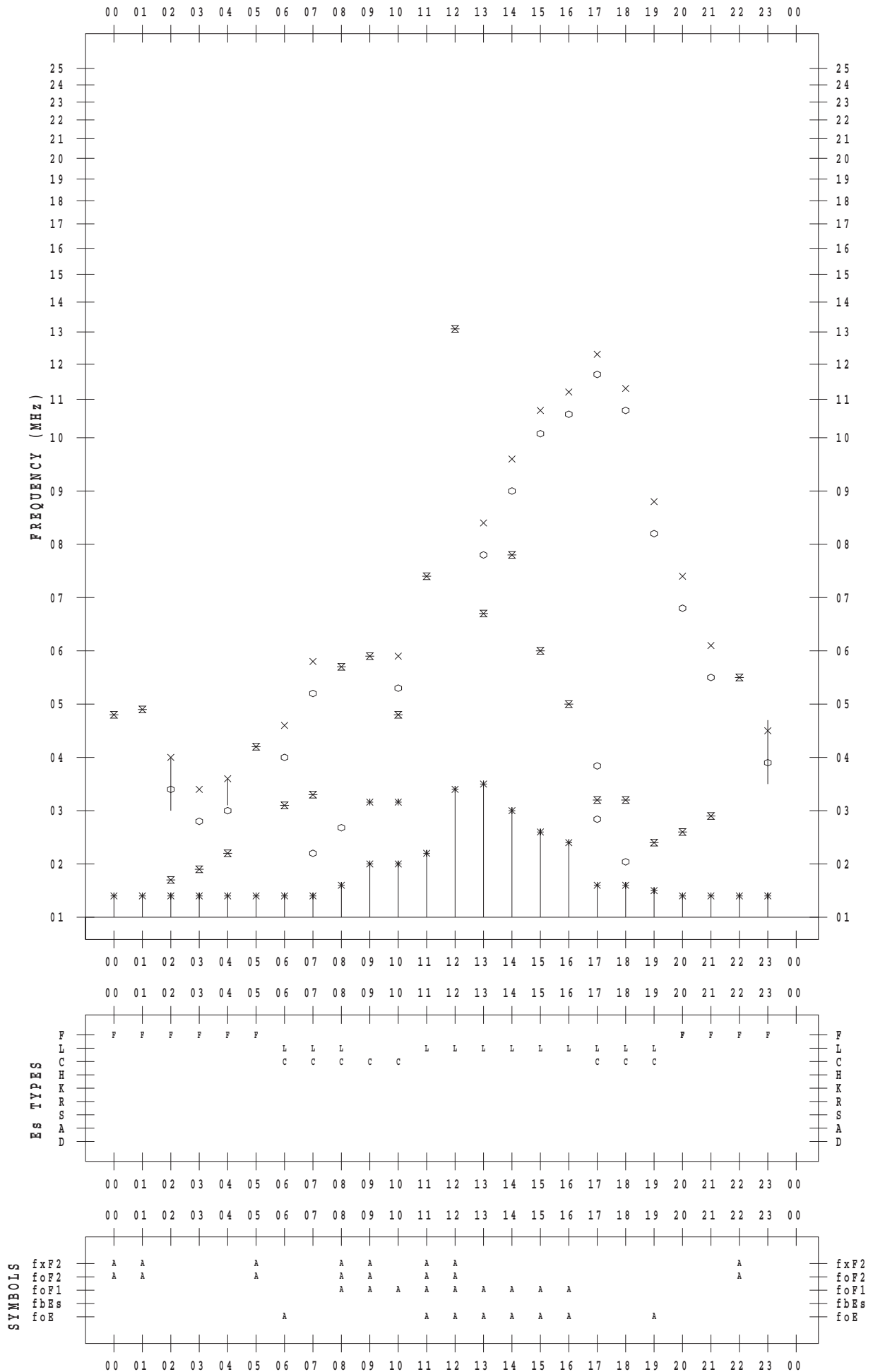
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 11

135 ° E MEAN TIME



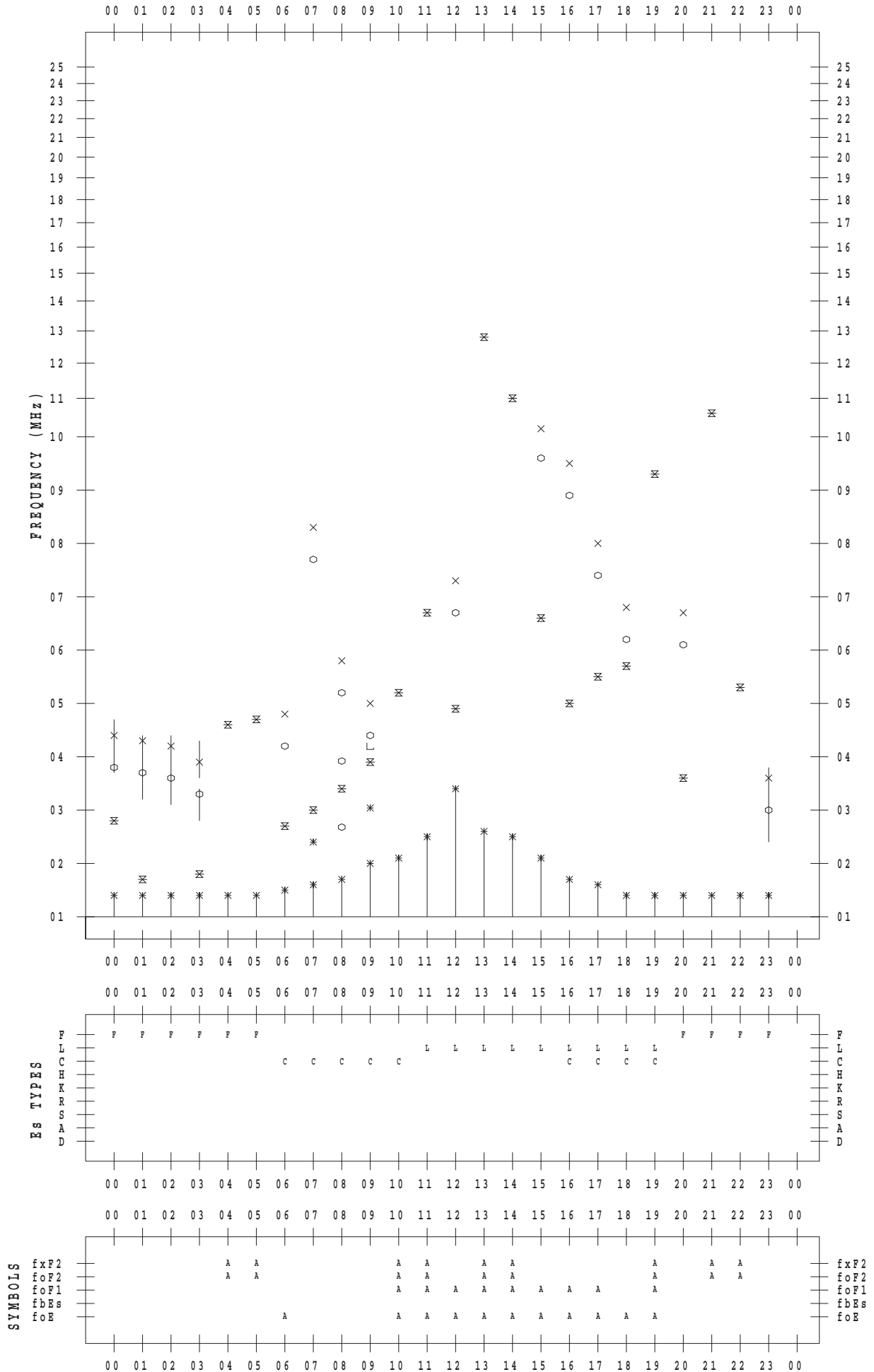
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 12

135 ° E MEAN TIME



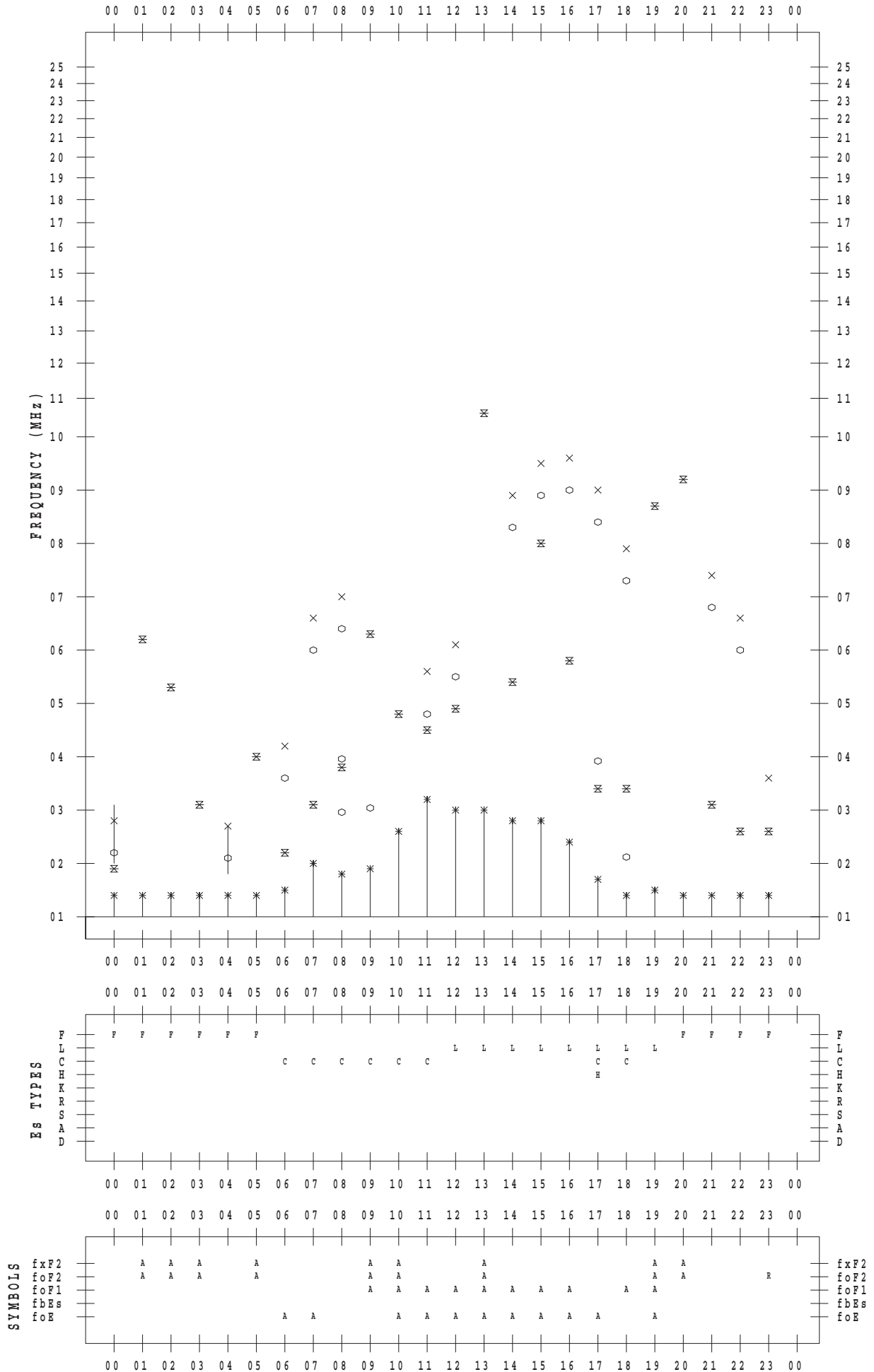
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 13

135 ° E MEAN TIME



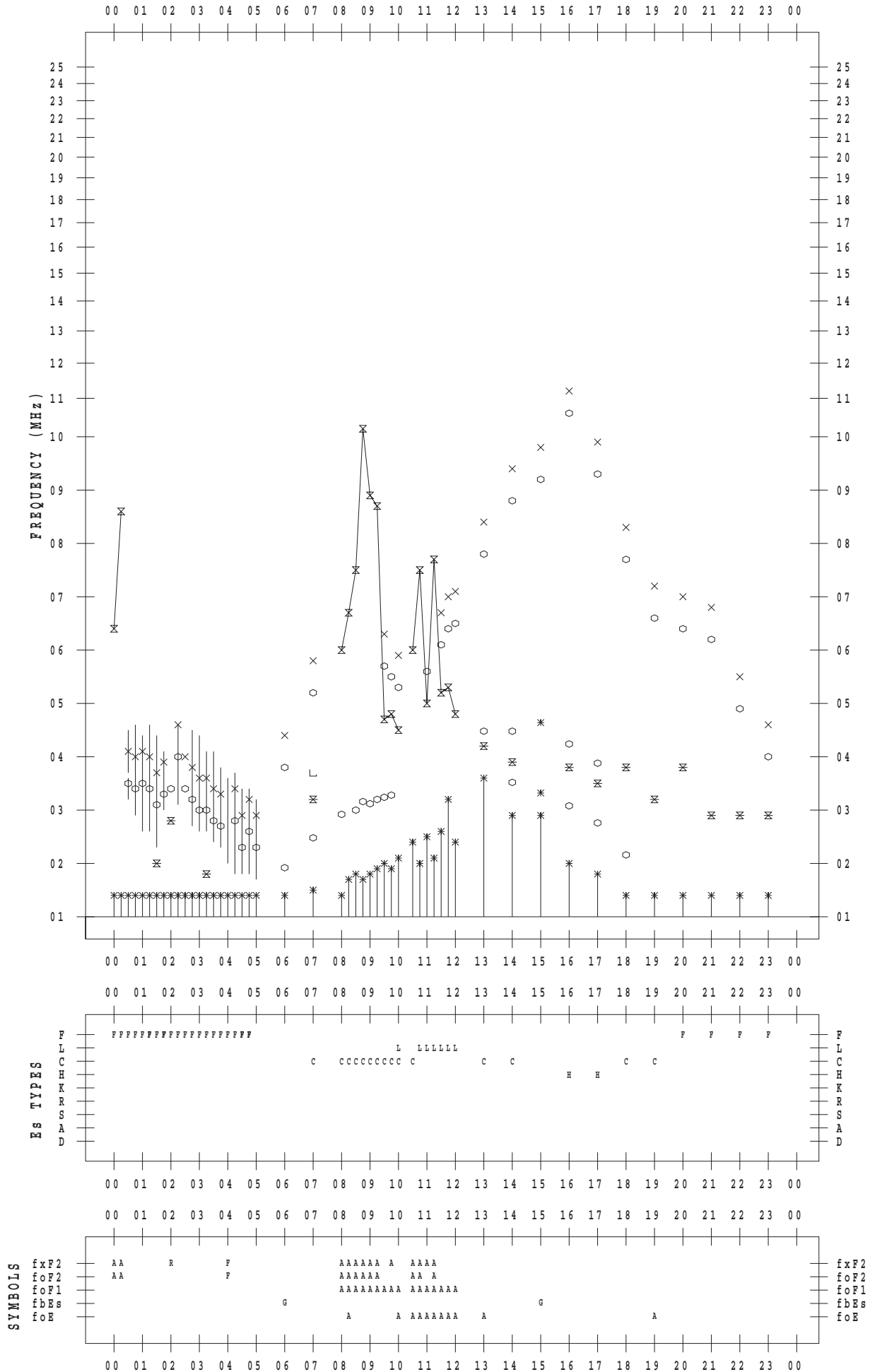
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 14

135 ° E MEAN TIME



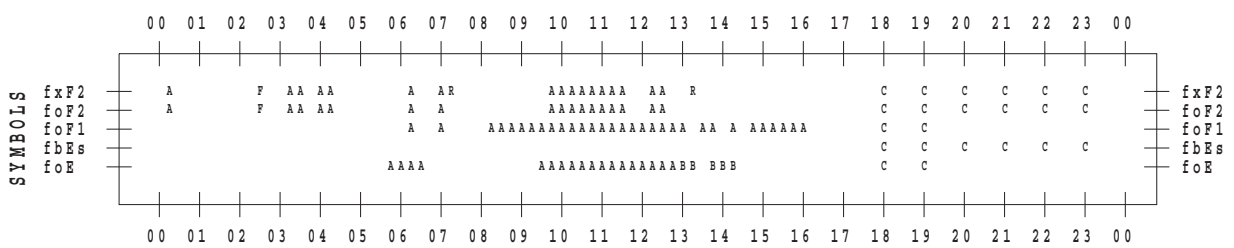
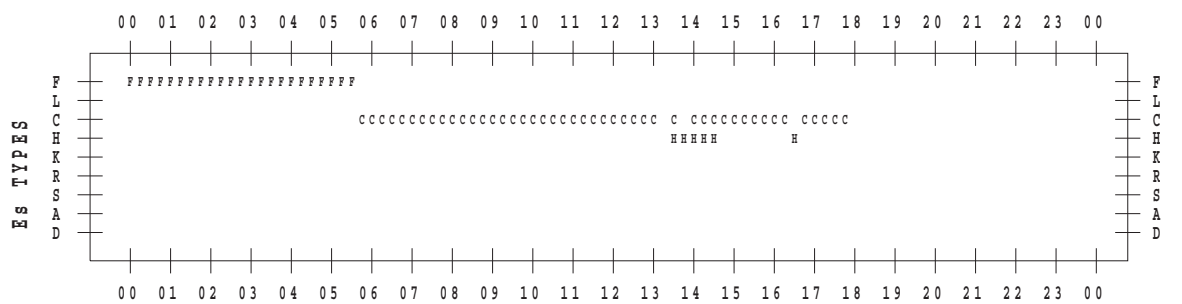
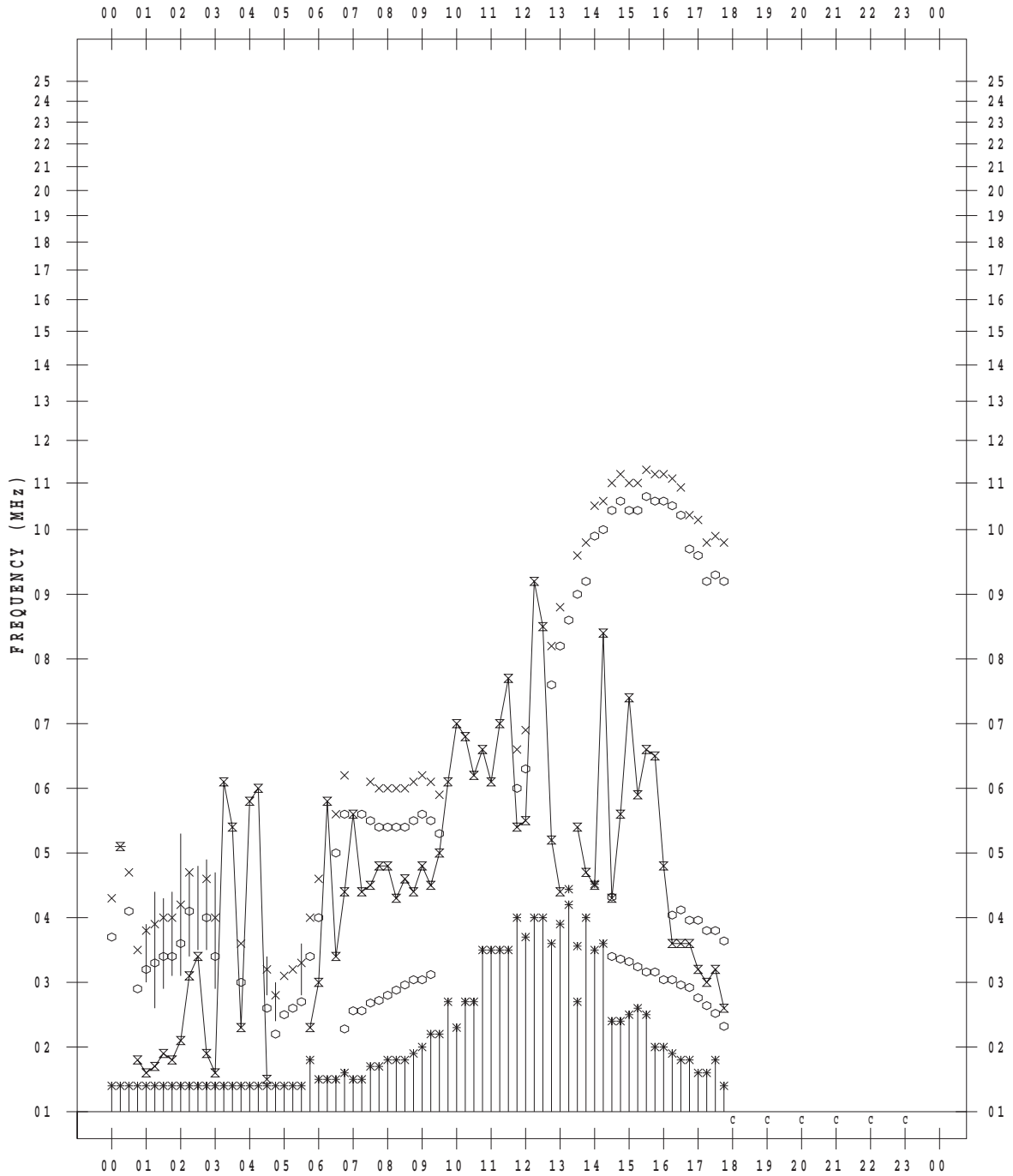
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 15

135 ° E MEAN TIME



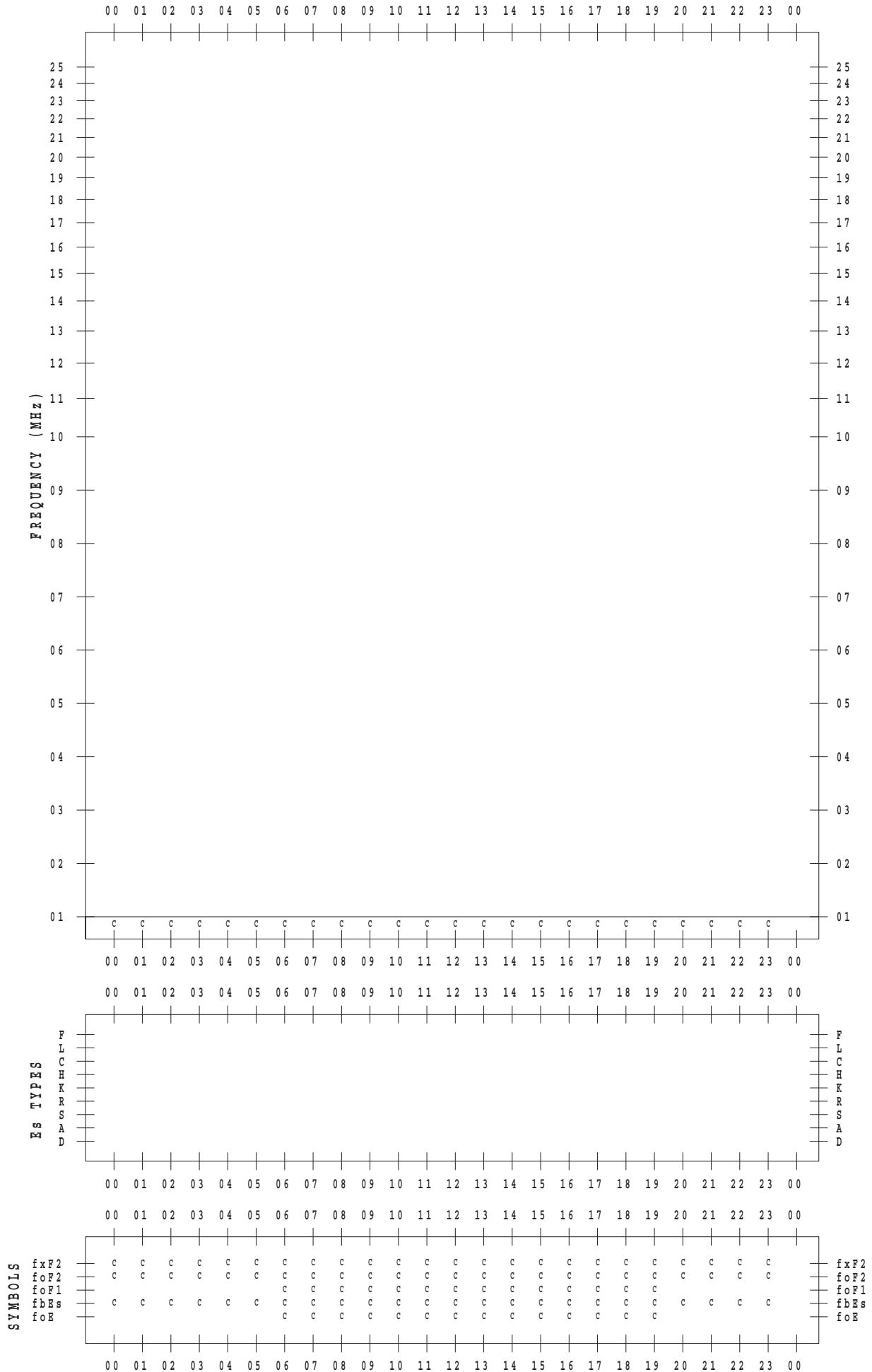
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 16

135 ° E MEAN TIME



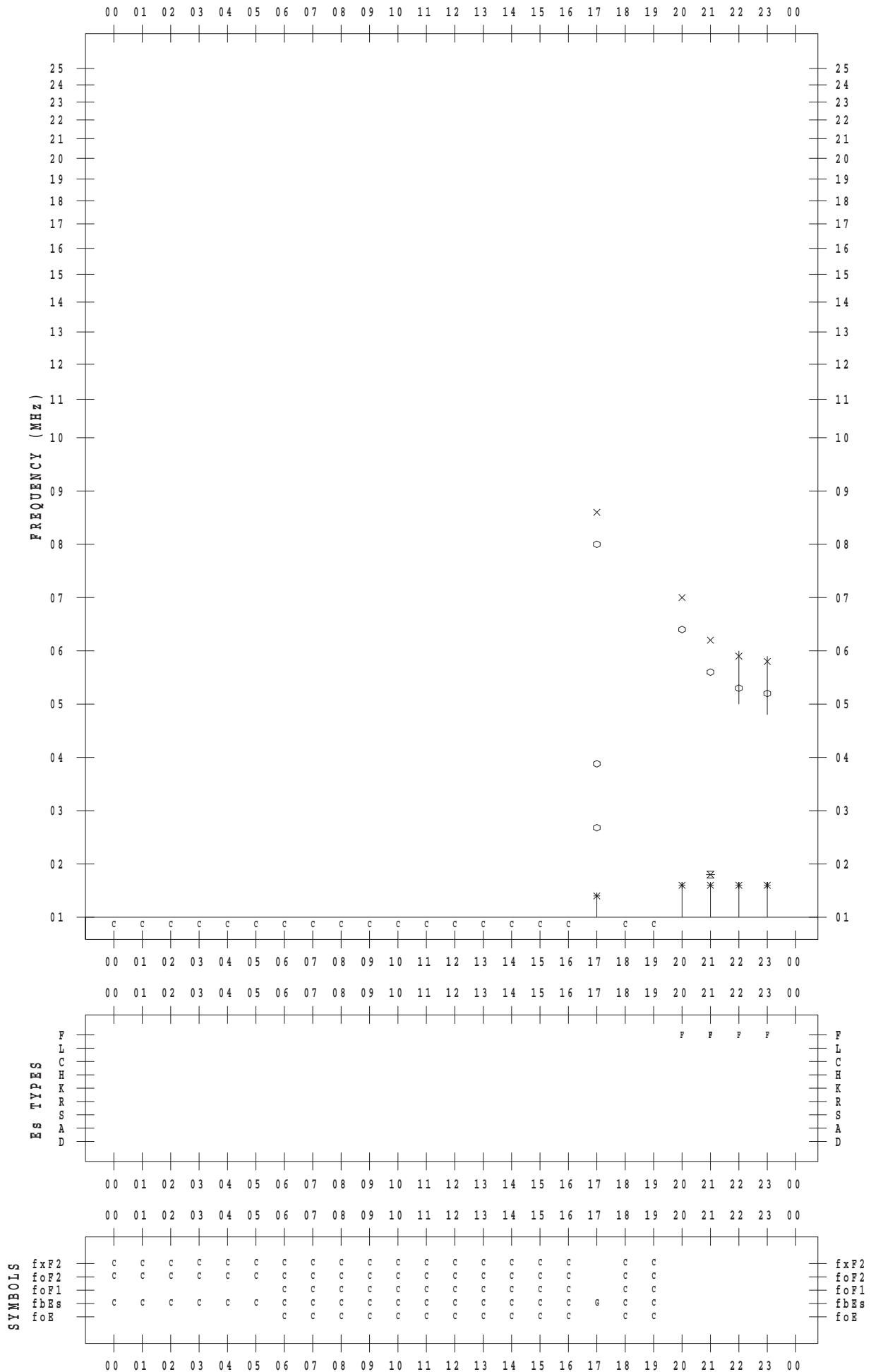
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 17

135 ° E MEAN TIME



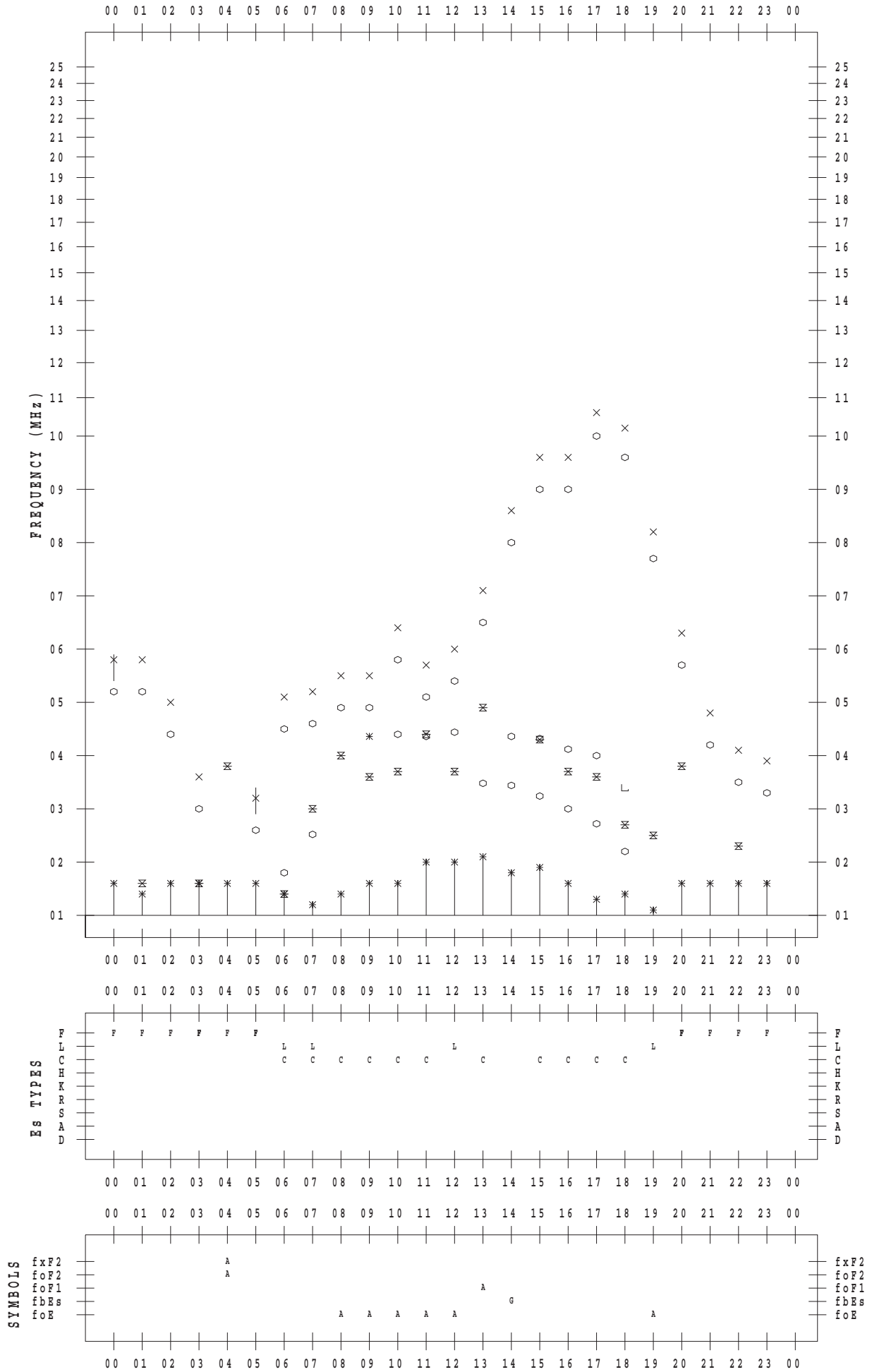
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 18

135 ° E MEAN TIME



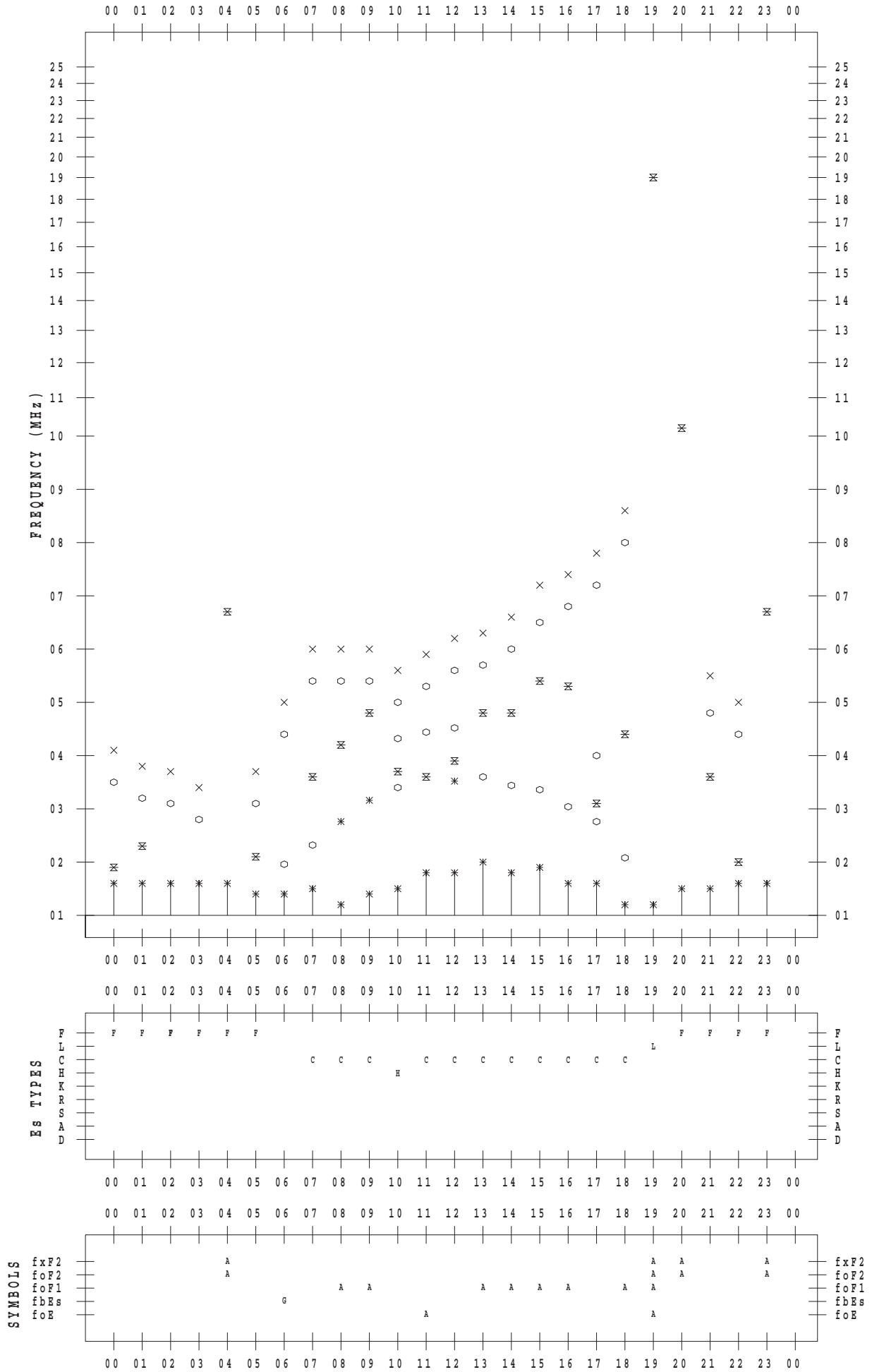
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 19

135 ° E MEAN TIME



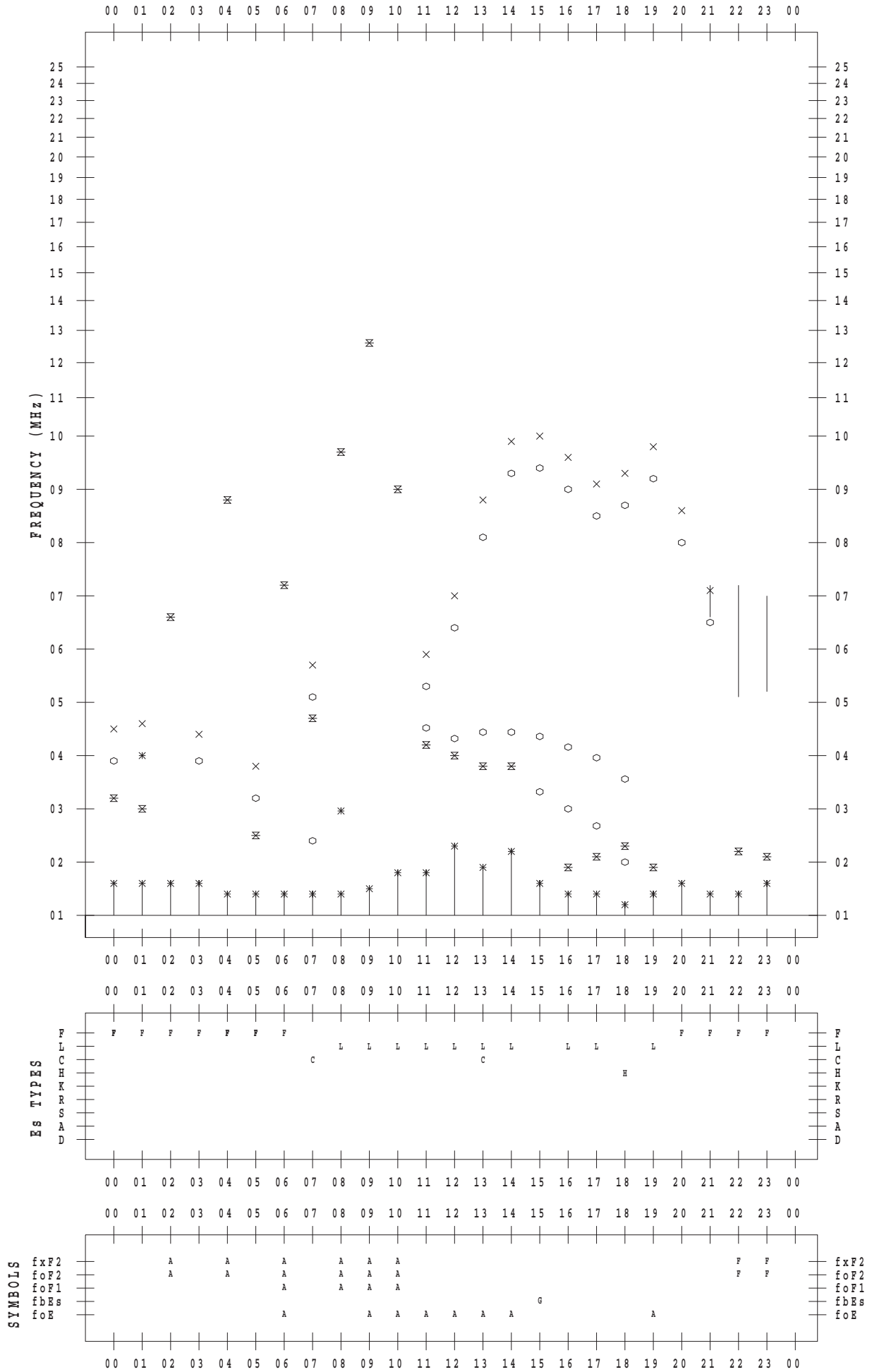
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 20

135 ° E MEAN TIME



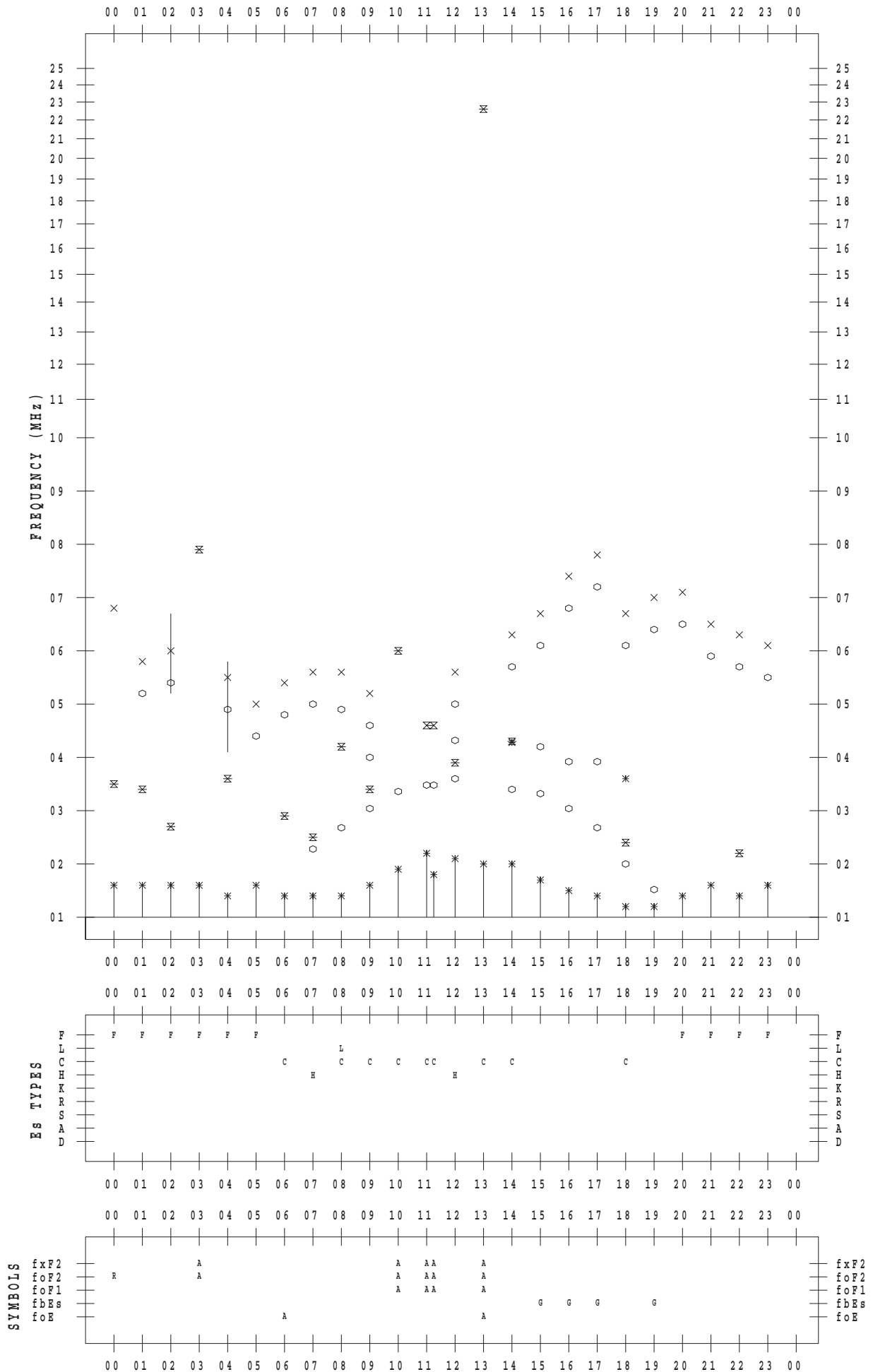
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 21

135 ° E MEAN TIME



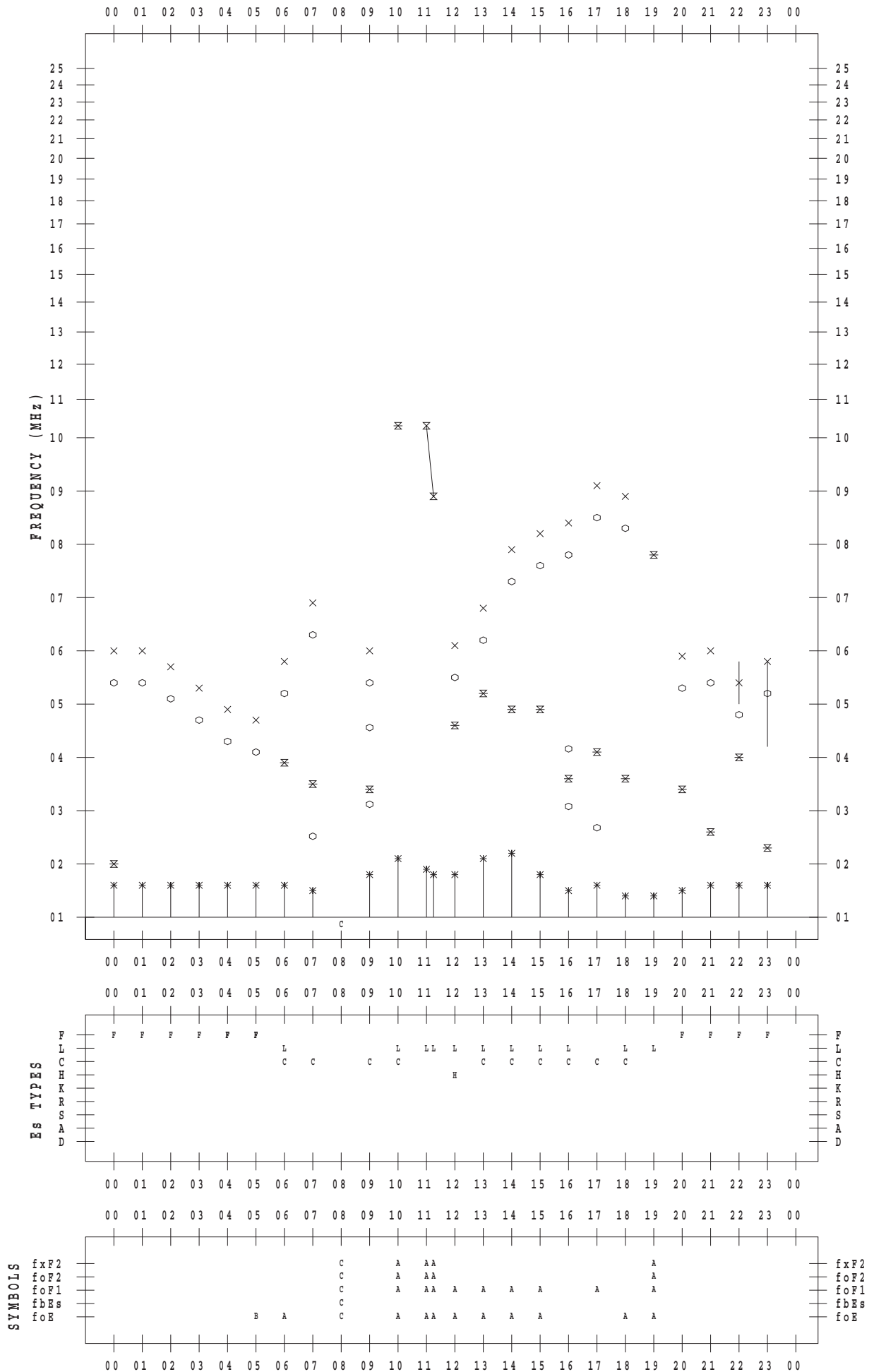
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 22

135 ° E MEAN TIME



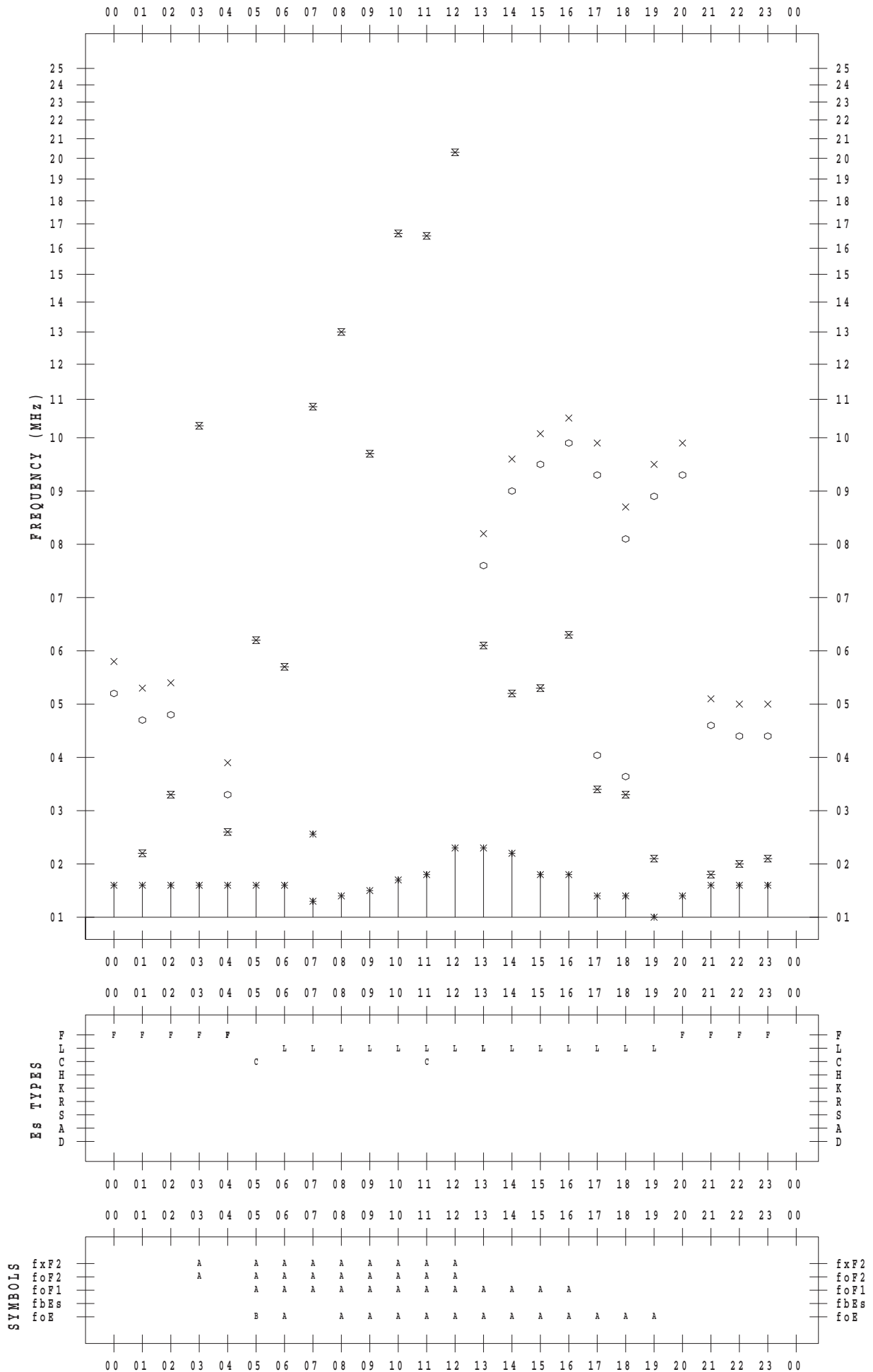
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 23

135 ° E MEAN TIME



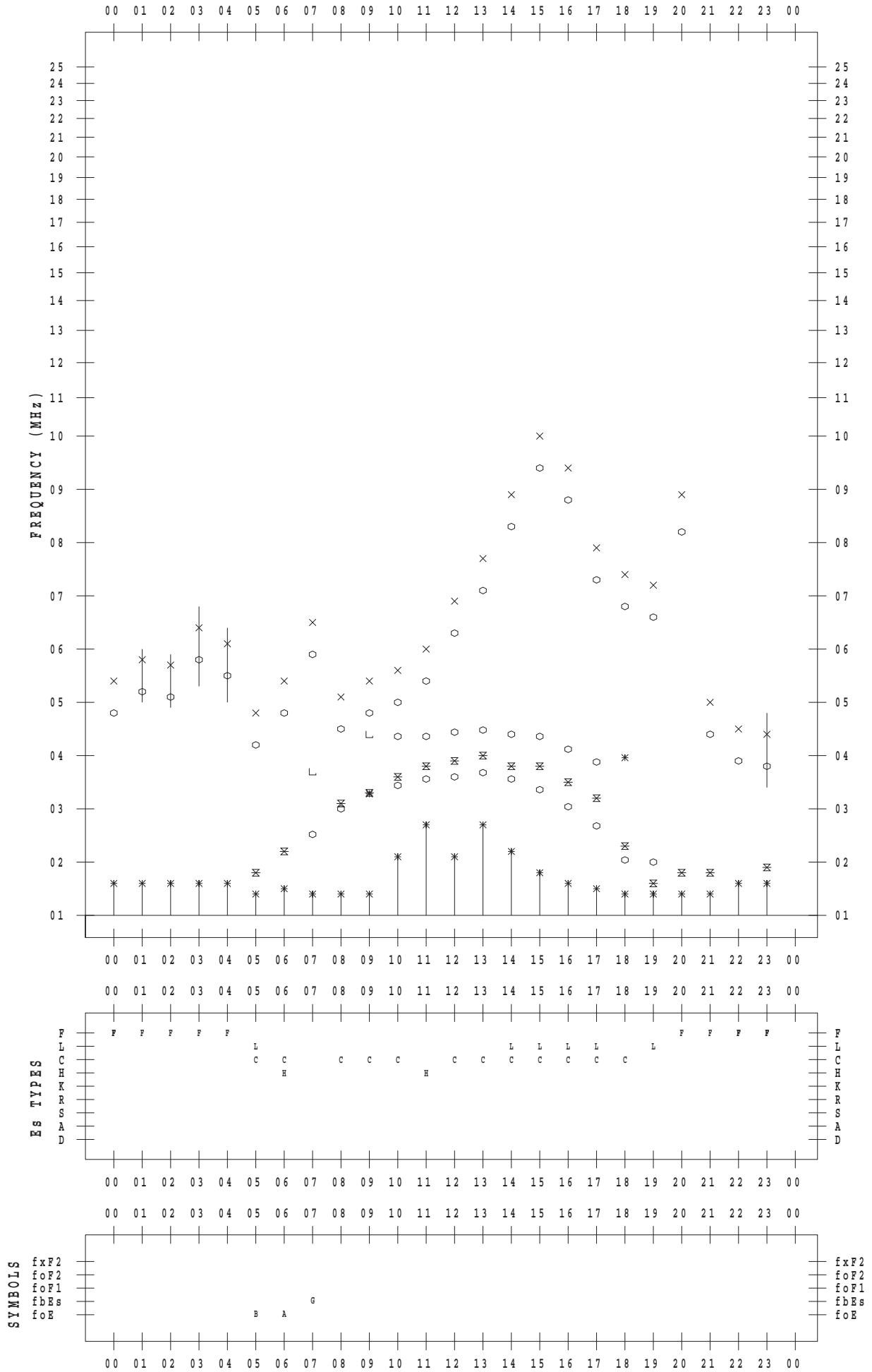
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 24

135 ° E MEAN TIME



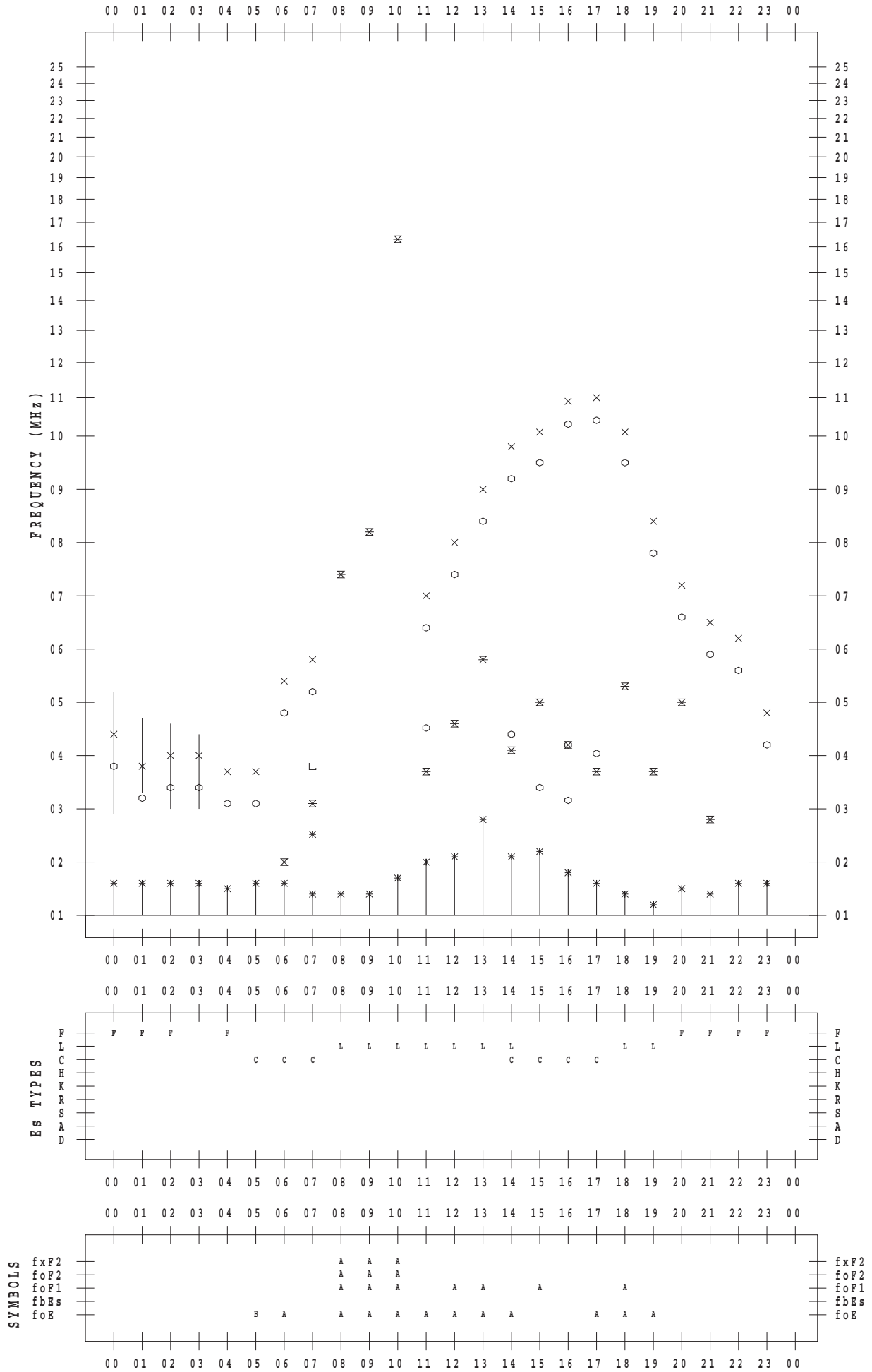
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 25

135 ° E MEAN TIME



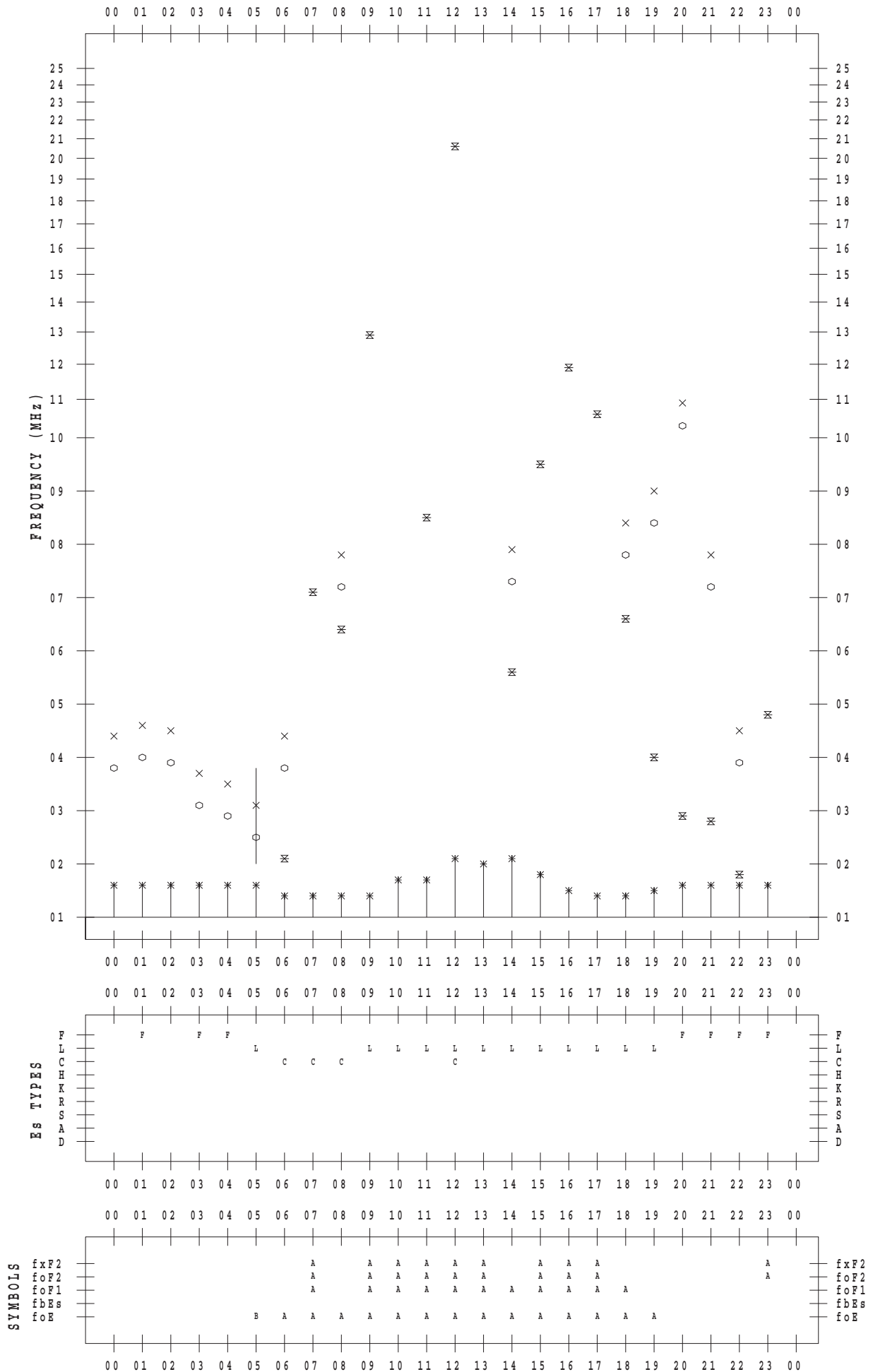
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 26

135 ° E MEAN TIME



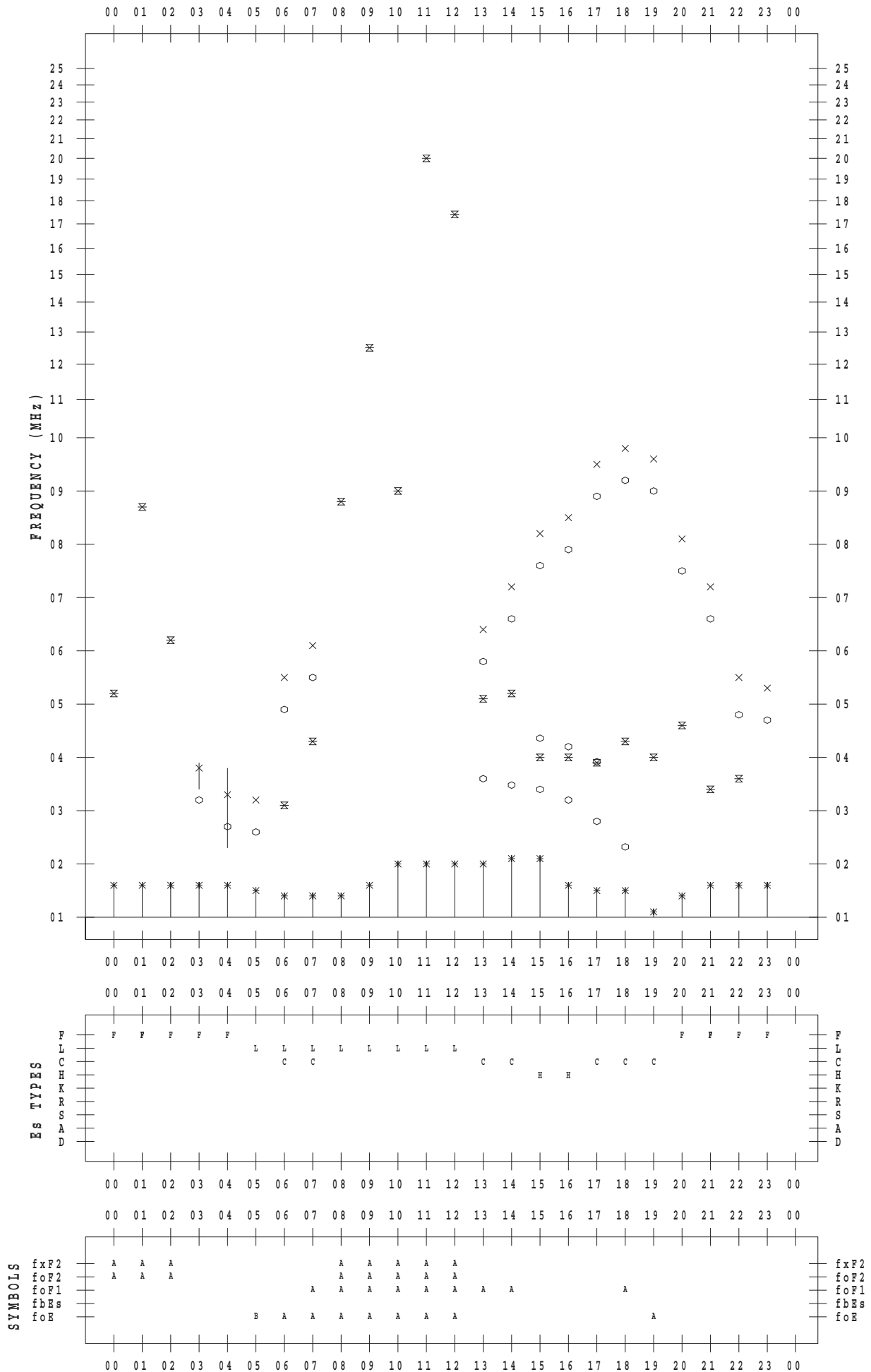
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 27

135 ° E MEAN TIME



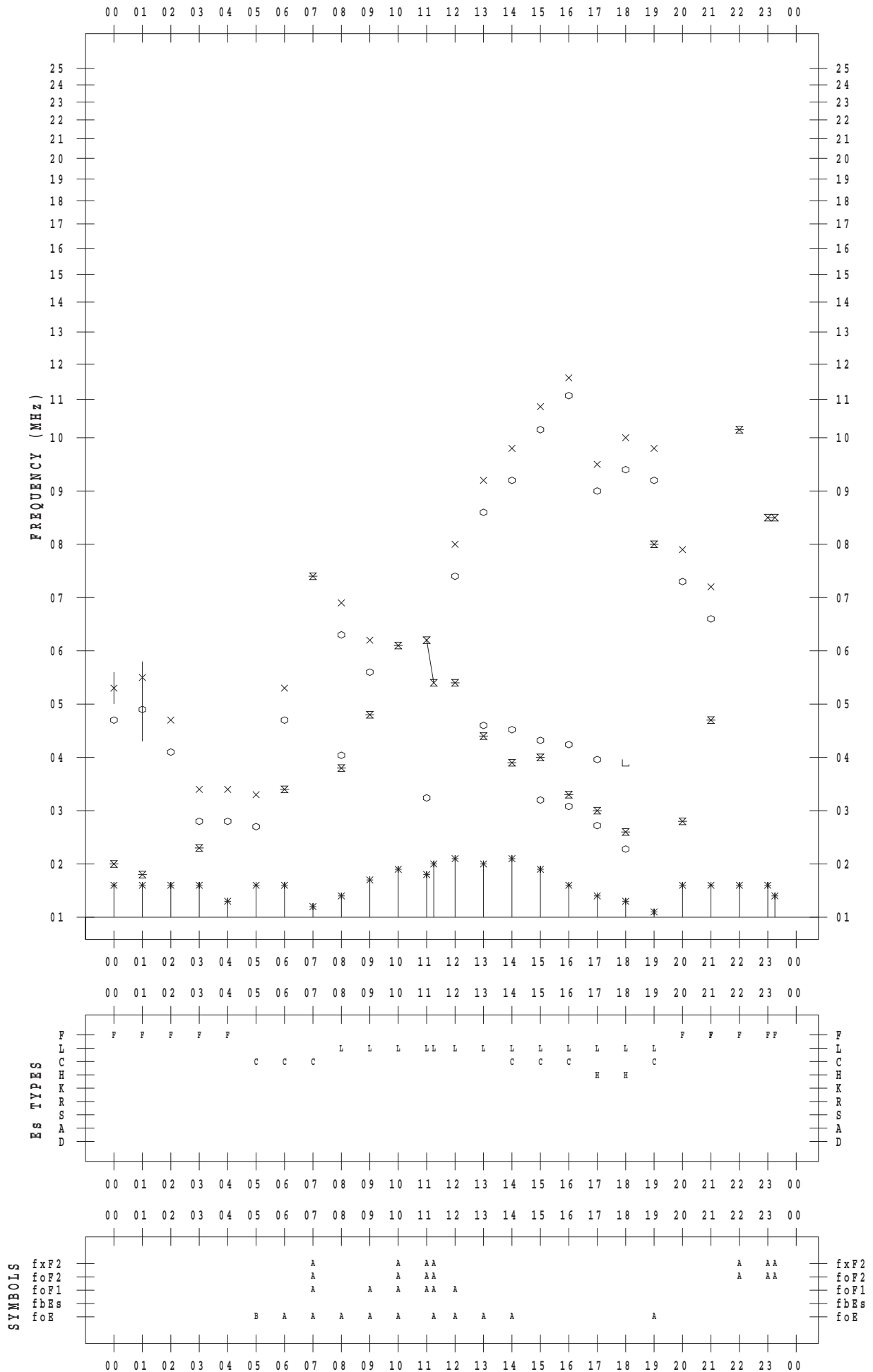
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 28

135 ° E MEAN TIME



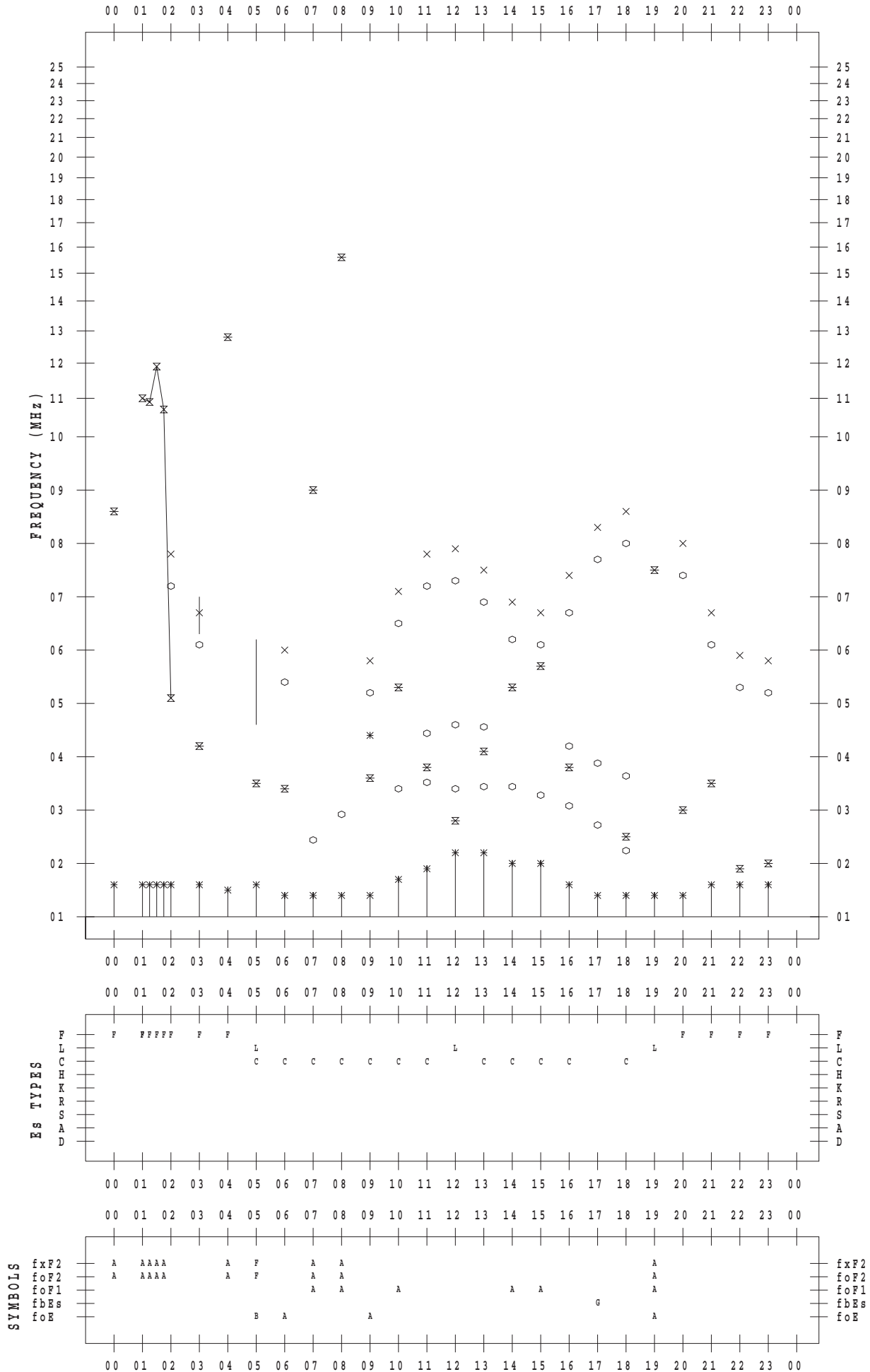
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 29

135 ° E MEAN TIME



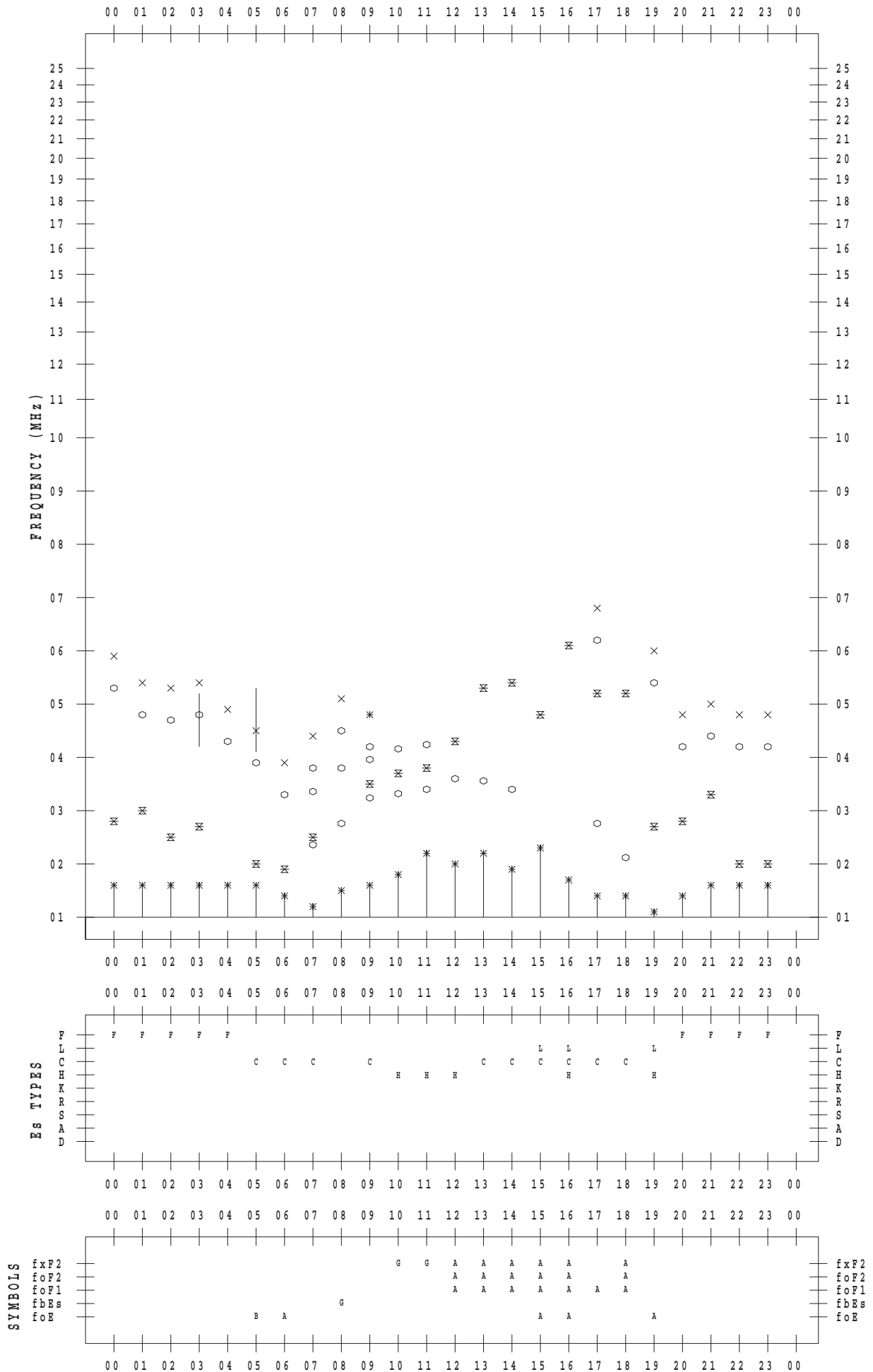
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5/30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017 / 5 / 31

135 ° E MEAN TIME

