

# IONOSPHERIC DATA IN JAPAN

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## CONTENTS

Preface	
Introduction	1
A. Ionosphere	
A1. Automatic Scalling	
Hourly Values at Wakkanai ( $f_oF2$ , $fEs$ and $fmin$ )	4
Hourly Values at Kokubunji ( $f_oF2$ , $fEs$ and $fmin$ )	7
Hourly Values at Yamagawa ( $f_oF2$ , $fEs$ and $fmin$ )	10
Hourly Values at Okinawa ( $f_oF2$ , $fEs$ and $fmin$ )	13
Summary Plots at Wakkanai	16
Summary Plots at Kokubunji	24
Summary Plots at Yamagawa	32
Summary Plots at Okinawa	40
Monthly Medians $h'F$ and $h'Es$	48
Monthly Medians Plot of $f_oF2$	50
A2. Manual Scalling	
Hourly Values at Wakkanai	51
Hourly Values at Kokubunji	65
Hourly Values at Yamagawa	79
Hourly Values at Okinawa	93
$f$ -plot at Wakkanai	108
$f$ -plot at Kokubunji	138
$f$ -plot at Yamagawa	168
$f$ -plot at Okinawa	198

« Real Time Ionograms on the Web .....[http://wdc.nict.go.jp/index\\_eng.html](http://wdc.nict.go.jp/index_eng.html) »



NATIONAL INSTITUTE OF INFORMATION  
AND COMMUNICATIONS TECHNOLOGY  
TOKYO, JAPAN

# INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the

National Institute of Information and Communications Technology, Japan.

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

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

## IONOSPHERE

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

### A1. Automatic Scaling

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

The published data consist of tabulations of hourly values of three factors ( $f_oF2$ ,  $fEs$ ,  $fmin$ ) and monthly medians of two factors ( $h'Es$ ,  $h'F$ ), daily Summary Plots and monthly medians plot of  $f_oF2$ .

#### a. Characteristics of Ionosphere

<b><math>f_oF2</math></b>	Ordinary wave critical frequency for the <b><math>F2</math></b> layer
<b><math>fEs</math></b>	Highest frequency of the <b><math>Es</math></b> layer whether it may be ordinary or extraordinary
<b><math>fmin</math></b>	Lowest frequency which shows vertical iono-spheric reflections
<b><math>h'Es</math></b> <b><math>h'F</math></b>	Minimum virtual height on the ordinary wave for the <b><math>Es</math></b> and <b><math>F</math></b> 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

<b><math>fxl</math></b>	Top frequency of spread <b><math>F</math></b> trace
<b><math>f_oF2</math></b> <b><math>f_oF1</math></b> <b><math>f_oE</math></b> <b><math>f_oEs</math></b>	Ordinary wave critical frequency for the <b><math>F2</math></b> , <b><math>F1</math></b> , <b><math>E</math></b> , and <b><math>Es</math></b> (including particle type <b><math>E</math></b> ) layers, respectively
<b><math>fbEs</math></b>	Blanketing frequency of the <b><math>Es</math></b> layer, e.g. the lowest ordinary wave frequency visible through <b><math>Es</math></b>
<b><math>fmin</math></b>	Lowest frequency that shows vertical ionospheric reflections
<b><math>M(3000)F2</math></b> <b><math>M(3000)F1</math></b>	Maximum usable frequency factor for a path of 3000 km for transmission by the <b><math>F2</math></b> and <b><math>F1</math></b> layers, respectively
<b><math>h'F2</math></b> <b><math>h'F</math></b> <b><math>h'E</math></b> <b><math>h'Es</math></b>	Minimum virtual height on the ordinary wave for the <b><math>F2</math></b> , whole <b><math>F</math></b> , <b><math>E</math></b> and <b><math>Es</math></b> layers, respectively
<b>Types of <math>Es</math></b>	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 foF2 AT Wakkanai

SEP. 2012

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	53	58	51	52	50	57	67	67	59	59	66	67	A	62	69	67	67	66	A	66	66	66	A		
2	62	52	53	52	54	52	A	64	64	68	62	68	68	67	A	A	A	67	N	66	65	54	63	A	
3	49	60	55	34	47	47	70	60	57			A			A	58	60	61	61	61	63	54	56	53	
4	32	34	32	32	31		32						65	61	65	67	67	67	A		54	63	61	54	
5	54	52	54	47	32	52	60	61	61	62	65	A	68	69	68	73	65	66	67	54	66	62	54	43	
6	34	34	A	34	A	A	A		53	55	A		64	64	66	68	67	65	62	62	63	54	53	52	
7	53	52	52	51	34	46	60	65	63	66	55	66	59	70	74	70	68	67	62	A	64	64	54	62	
8	58	51	42	37	44	34	55	62	66	67	61	67	59	71	70	68	69	70	66	62	63	A	52	63	
9	54	54	54	34	35	47	59	70	66	66	52	64	58	68	67	68	67	64	62	67	63	66	54	52	
10	43	48	34	34	47	38	58	64	67	67	65	69	64	66	68	66	67	66	66	66		52	55	56	
11	53	37	46	56	44	51	66	N	59	66	67	A	65	67	63	66	67	66	65	63	66	62	64	61	
12	53	52	50	48	42	53	67	68	N	70	64	64	68	68	70	67	67	64	65	64	A	A	65	52	
13	52	54	51	48	47	54	67	65	59	65	65	66	65	68	70	70	71	70	69	65	66	52	53	37	
14	42	46	37	37	47	58	A	64	A	60	66	66	67	67	67	67	68	67	60	62	66	63	51	42	
15	48		34	51	52	49	60	63	68	68	66	69	44	52	66	66	63	64	66	66	66	61	54	54	
16	42	48	40	50	34	49	64	65	49	70	65	66	N	69	43	64	68	67	64	66	67	52	54	52	
17	52	50	52	47	43	44	67	65	70	59	68	61	69	59	68	66	69	67	64	67	66	55	59	34	
18	58	47	50	53	44	53	63	66	N	87	67	70	N	70	70	65	68	67	66	66	60	54	42	37	
19	37	52	34	32	37	53	58	67	95	N	58	81	70	75	70	70	68	67	64	57	52	34	54	34	
20	50	37	40	35	34	34	54	64	66	67	66	45	66	68	68	70	68	67	67	A	63	62	61	32	
21	34	37	18	54	44		60	61	66	65	68	69	N	68	59	67	70	66	65	64	61	62	58	54	
22	42	54	56	52	48	50	64	61	64	69	N	59	60	68	67	70	68	66	64	64	61	62	54	62	
23	58	53	53	52	49	53	66	66	64	N	70	46	59	68	68	70	70	78	65	66	63	54	53	A	
24	54	53	50	50	39	42	62	62	67	67	68	70	67	60	70	70	70	70	65	66	58	63	62	55	
25	36	52	34	58	48	58	65	66	67	69	71	81	70	71	74	74	70		67	66	55	64	34	52	
26	55	53	58	56	54	52	67	65	67	79	69	70	71	70	74		58	69	65	66	66	64	63	53	
27	63	62	62	64	64	62	67	68	68	72	N	79	61		71	93	90	58	66	64	68	64	63	62	
28	54	52	64	55	63	54	61	66	68	71	90		69	71	92	90	71	70	66	67	66	65	63	54	
29	54	54	32	52	57	62	67	67	69	68	65		64	69	70	70	80	65	70	A	63	54	62	53	
30	54	53	58	52	52	A	67	65	69	59	69	71	70	70	70	70	74	61	65	67	63	58	54	52	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	29	30	29	26	27	28	26	25	25	23	24	28	28	28	29	29	28	26	28	28	29	27	
MED	53	52	50	50	47	52	64	65	66	67	66	67	66	68	68	68	68	67	65	66	63	62	54	53	
U Q	54	53	54	52	51	54	67	66	68	69	68	70	68	70	70	70	70	67	66	66	66	63	62	55	
L Q	42	47	35	37	38	47	60	62	61	65	64	64	60	65	67	66	67	65	64	63	62	54	53	43	

## HOURLY VALUES OF fEs AT Wakkanai

SEP. 2012

LAT. 45° 10.0' N LON. 141° 45.0' E SWEEP 1.0 MHz TO 30.0 MHz 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	G	G	G	G	G	G	34	56	41	55	G	G	68	62	G	G	G	40	101	68	51	35	104	
2	38	35	31	35	24	32	56	58	49	65	54	G	43	51	102	103	94	45	40	34	58	39	58	34
3	30	32	G	24	28	24	39	46	46	G	G	57	G	G	62	G	G	38	40	38	G	G	G	G
4	G	G	25	G	G	G	32	40	G	G	G	G	G	G	G	G	G	41	57	59	28	24	26	G
5	G	G	G	G	G	G	31	G	G	G	58	90	71	G	G	71	41	35	38	26	G	G	34	34
6	28	27	26	25	39	32	60	40	G	50	G	G	G	G	G	G	41	40	34	G	58	40	40	35
7	36	40	34	26	G	32	40	41	G	G	G	52	48	G	G	G	G	G	30	58	39	58	43	G
8	36	G	G	G	27	28	35	G	G	G	G	G	G	G	G	G	G	40	G	G	33	44	36	50
9	34	G	G	24	G	G	34	38	G	G	G	G	G	G	G	G	G	G	G	G	G	41	39	G
10	G	G	G	G	G	G	G	G	68	47	43	58	56	G	45	G	G	34	26	27	G	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	70	53	52	42	52	42	38	28	28	G	G	36	G
12	G	28	29	32	G	G	38	39	50	G	G	51	G	G	G	G	G	38	34	52	59	51	40	29
13	G	G	G	G	G	41	39	38	G	G	G	G	G	G	G	G	G	G	26	51	G	G	G	G
14	G	G	G	G	38	68	73	60	85	40	G	G	G	G	G	G	G	G	G	G	34	36	35	G
15	G	G	G	G	37	G	G	36	G	G	G	G	G	G	G	G	G	G	G	G	33	37	G	G
16	G	G	G	G	G	G	30	35	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	G	G	32	26	28	G	G	34	28
18	G	G	G	G	G	26	33	G	G	G	G	G	G	G	G	G	G	28	32	35	G	27	35	G
19	G	G	G	G	G	G	32	38	G	46	G	G	G	G	G	G	G	G	27	31	36	11	26	G
20	G	G	G	G	G	G	32	G	38	G	G	52	50	G	54	53	45	59	50	68	G	G	G	G
21	23	G	G	G	G	G	28	34	50	G	G	G	G	G	G	G	G	28	G	G	G	G	G	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	G	34	28	G	G	G
23	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G	G	33	G	G	G	G	G	26	30
24	26	G	G	G	G	G	G	35	G	G	G	G	G	G	G	G	33	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	38	32	G	G	G	34	24	24	G
26	G	G	G	G	G	G	G	33	G	G	G	G	G	G	G	G	38	34	30	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	65	40	26	G	25	29	G
28	G	G	G	G	G	G	G	50	55	48	G	G	50	52	56	36	G	30	28	49	40	33	32	
29	G	G	G	G	G	48	32	G	G	G	G	G	G	G	G	G	38	39	60	60	33	G	G	G
30	G	G	G	G	G	38	G	34	39	G	G	G	G	G	G	G	G	G	30	G	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	29	30	30	30	30	30	28	28	29	30	29	30	29	30	30	29	30	30	29
MED	G	G	G	G	G	G	32	35	G	G	G	G	G	G	G	G	G	32	29	28	G	18	26	G
U Q	23	G	G	G	G	30	35	40	41	G	G	26	22	G	G	G	37	39	38	38	35	37	36	28
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

SEP. 2012

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	15	14	16	14	16	14	15	20	20	21	21	20	23	22	21	17	15	15	14	14	14	14	
2	14	14	15	14	14	15	14	15	18	18	18	23	21	27	18	17	15	14	14	14	14	14	14	14
3	14	15	15	14	14	18	14	14	17	20	21	27		21	15	16	14	14	14	15	15	15	14	14
4	16	15	15	14	17	18	14	14	14	21	15	30	24	15	14	18	14	14	14	14	14	15	15	14
5	14	14	14	18	16	18	14	14	15	20	27	27	20	30	20	16	14	14	14	15	15	15	14	15
6	15	15	16	16	14	14	14	14	14	15	17	22	20	21	15	15	14	14	15	16	14	14	14	14
7	14	14	14	15	15	14	14	14	15	16	27	20	18	23	17	17	15	14	14	14	14	14	15	15
8	14	15	14	14	15	16	14	14	20	17	20	18	14	14	17	16	14	14	16	15	14	14	14	14
9	14	14	14	14	15	14	14	14	14	17	17	20	21	18	16	15	14	16	18	14	14	14	14	16
10	15	15	14	15	15	15	14	15	20	18	17	18	16	14	14	14	14	15	15	16		14	14	15
11	17	15	16	15	15	14	21	15	20	44	41	16	16	15	15	14	14	14	14	14	15	14	15	15
12	17	15	14	15	14	15	15	17	17	17	18	18	18	17	15	15	14	14	14	15	14	14	15	14
13	14	16	14	14	14	14	14	14	15	15	17	16	21	21	17	14	14	14	15	15	15	15	14	15
14	14	14	14	15	15	14	14	14	18	18	16	20	17	14	14	15	14	15	18	20	14	14	14	14
15	15		14	15	15	14	21	16	14	15	15	14	15	14	17	15	15	15	16	15	14	14	16	15
16	14	14	15	15	14	14	14	14	14	14	15	26	20	20	15	15	14	21	14	15	14	16	14	15
17	16	15	14	15	14	15	17	14	14	15	15	16	15	14	15	14	14	16	15	15	15	17	14	14
18	14	15	14	15	14	15	14	14	14	14	14	16	14	14	14	14	14	14	14	15	15	14	14	16
19	15	15	14	14	15	14	14	14	14	15	18	17	16	15	14	14	14	14	15	14	14	16	16	15
20	15	16	15	14	20	14	14	14	14	14	17	14	14	21	16	14	14	15	15	14	14	14	15	20
21	14	15	15	15	14		14	14	16	18	20	20	20	18	18	14	14	14	14	15	14	15	15	14
22	14	14	15	16	14	20	16	15	15	15	16	17	18	20	15	20	16	20	15	14	14	14	15	15
23	16	15	15	15	14	14	14	14	15	17	23	22	20	17	17	15	14	14	14	14	15	14	15	14
24	15	15	15	15	15	15	14	14	16	17	45	20	20	15	15	14	14	20	14	14	16	14	15	15
25	14	22	15	15	18	17	16	14	15	14	20	21	17	20	15	14	14		14	15	14	15	15	15
26	14	15	15	15	15	14	15	14	14	14	14	15	20	14	16		14	14	14	15	15	15	15	15
27	15	15	15	15	14	15	14	14	15	14	15	16	18		16	15	15	14	14	15	15	17	14	14
28	15	15	16	15	14	14	22	15	18	20	21		28	22	20	14	15	17	14	15	14	14	14	14
29	14	14	15	15	18	14	18	16	17	20	23			21	20	14	15	14	14	15	14	16	15	15
30	14	14	14	14	14	14	21	15	17	22	18	20	20	20	18	15	14	14	14	15	15	15	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	29	30	30	30	30	30	28	28	29	30	29	30	29	30	30	29	30	30	29
MED	14	15	15	15	14	14	14	14	15	17	18	20	19	18	16	15	14	14	14	15	14	14	14	15
U Q	15	15	15	15	15	15	16	15	17	20	21	21	20	21	17	16	15	15	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	16	16	16	14	15	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

SEP. 2012

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	53	45	51		46	48	76	83	87	76	78	81	80	90	81	78	81	87	94	87	79	73	54	61	
2	46	A	53	53	55	51	76	80	86	85	79	84	91	91	84	86	81	83	88	88	A	A	59	53	
3		53	A	53	52	60	52		64	64		A	77			65	72	73	67	53	59	54	53	49	
4	31			38	A	A	A			72	84	77	77		73	84	80	72	67	55	54	53	61	53	
5	52		51	47		42	64	87	80	61	74	102	111	102	108	98	81	94	A	A	57		A	A	
6	A	47						51	A	A	A		58	72	76	87	90	84	73	72	A	A	A	A	
7	53	52	52	A	A	51	66	72	A	A		68	81	90	97	97	94	93	88	81	62	A	61	54	64
8	52	A	A	A	A	A		69	76	71	86	77	88	86	92	92	86	88	81	80	58	53	53	54	A
9	53	42		45	47	44	71	81	87	78	98	110	106	94	86	82	72	73	75	74	64			54	
10	52	41		43	32		66	76	86	90	81	68	76	80	74	76	75	77	80	79	N	54	54	45	
11		N	44			46	76	88	79	74	71	77	77	78	77	75	A	A		83	88	A	67	57	A
12	A	52	52		44	44	75	101	77	71	69	62	76	84	87	82	81	77	77	80	67			54	
13	48	46	46	47		47	82	87	65	63	72	76	76	81	92	98	98	96	98	78			A	A	
14	47			38	40	42	63	68	74	77	80	76	77	87	82	78	85	90	86	77	60	A	60	48	
15	52			51	42	44	54	65	78	90	92	85	91	94	84	69	67	76	86	75	74	55	A	54	
16	52		44	47	36	39	67	76	73	71	71	82	85	77	77	81	84	78	74	67	54	53	53	52	
17	52	44	24	58	34		59	86	83	75	76	76	84	83	81	80	72	80	77	74	54	54		52	
18	46	44	52	52	44	36	53	90	95	78	72	76	91	77	75	78	87	76	80	74	44	45	51	46	
19	C	C	C	C	C	C	C	C	C	C		95	104	110	98	87	85	82	77	72	67		53	51	
20			44		41	46	53	86	101	105	93	101	101	96	105	97	84	80	85		A	54	54	54	
21	59	65	53	30	43	43	60	72	68	82	80	86	96	97	88	83	86	89	87	76	54	A	54	53	
22	52	53	52			43	67	72	72	81	78	80	98	104	96	96	83	78	72	63	54	53	54		
23	51	53	54		46	42	59	81	91	84	83	104	100	104	98	91	91	86	81	48			52		
24	53		45	42			64	81	77	77	86	90	93	88	85	91	95	91	83	63	54	48	53	54	
25	46			44	44	44	72	80	80	82	91	97	96	82	85	96	91	A	75	76	67	46	53	53	
26	52	48	53	44	42	44	67	85	85	80	93	93	94	101	98	97	100	98	87	77	54	53		53	
27	52		42	44	45	56	73	87	100	88	91	86	98	100	96	101	101	100	88	83	54	A	53	54	
28	45	63	67	67	39	36	71	80	82	83	101	107	107	104	100	106	110	98	80	74	73	63		61	
29	53	53		52	53	44	62	78	81	97	102	106	116	107	101	102	102	98	85	73	53	55	53	52	
30			51	52	44	26	67	91	107	102	92	101	103	100	94	84	87	91	96	76	58	54	52	46	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	23	16	19	20	20	23	27	27	26	27	28	29	30	28	29	30	29	28	29	27	21	21	20	23	
MED	52	50	51	47	44	44	67	81	80	80	80	85	91	93	87	86	84	82	81	74	54	54	54	53	
U Q	53	53	53	52	46	47	72	87	87	86	92	101	100	100	96	96	92	91	86	78	65	55	54	54	
L Q	47	44	44	43	40	42	60	76	74	74	75	76	77	82	81	80	81	77	75	63	54	53	53	51	



# HOURLY VALUES OF fEs AT Kokubunji

SEP. 2012

LAT. 35° 43.0' N LON. 139° 29.0' E SWEEP 1.0 MHz TO 30.0 MHz 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	G	G	G		G	G	G	G	G																			
2	G									43	45	G	G	G	G	G	51	38	G	29	G	G	G	G				
3		G	51	29	38	28	29	G	G	G																		
4	G																											
5	G	G	G	G	G	G	G	G	G	G	G																	
6	32	G		G																								
7	45	45	39	32	33	G	G	47	64	61	80	47	G	G	G	G	G	41	42	45	61	G	59	34				
8	G																											
9	G	G	81	84	50	49	29	G	G	G	G	G	G	G	G	G	G	50	54	46	28	27		26				
10	G	G		G	G																							
11		G	G	G		G	G	G	G	G	G	G	G	G	G		53	165	70	65	33	29	35	41	35			
12	47	39	33	G	G	G											65	45	40	79	36	34			G			
13	G	G	G	G																					47	26		
14	31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G			47	26		
15	G	G	G	G	G	G																				27	G	
16	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
17	G	G	G	G	G																						G	
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	G	G	G	G			G		
19	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	G	G	24		27				G		
20		G	G	G	G	G	G	G	G	G																43	45	28
21	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31		43	45	28	G		
22	G	G	G																								G	
23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	33	30	29			G	
24	G	G	G	G																							G	
25	G			G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
26	G	G	G	G	G	G	G	G	G																		G	
27	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	29	29					G	
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30							G	
29	26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	29						G	
30			G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G	G	G	
31																												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	25	24	24	27	24	25	29	28	28	29	29	30	30	30	29	30	30	30	30	30	29	28	25	25	28			
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G			
U Q	G	G	G	G	G	G	G	G	G	46	23	G	G	G	G	G	G	38	37	38	33	31	34	26				
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G				

# HOURLY VALUES OF fmin AT Kokubunji

SEP. 2012

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	21	20	36		21	20	34	40	40	52	38	46	49	56	54	39	42	13	13	15	14	17	40	18	
2	17	13	14	14	17	13	13	18	42	38	40	55	59	52	53	45	41	15	17	14	14	15	43	22	
3		43	22	14	43	13	18		38	40		44	53	55		49	18	18	22	17	15	17	17	13	
4	14			15	14	15	17	17		39	55	61	73	53	45	39	30	14	30	22	15	15	14	14	
5	15	17	18	15	25	18	34	18	42	43	49	39	57	58	44	36	22	34	14	14	14		15	15	
6	17	25		34			15	21	29	33	39	37	53	53	55	20	13	13	14	20	13	21	14	14	
7	14	14	13	13	15	15	14	31	39	38	40	50	51	31	44	47	37	34	14	23	17	14	14	17	
8	18	18	14	14	13	13	18	39	34	42	57	52	59	54	44	40	40	14	14	14	14	18	15	15	
9	34	15		33	15	17	14	18	53	43	52	55	52	31	42	40	39	14	13	13	15			17	
10	15	18		17	28		30	20	44	43	47	45	55	44	47	43	38	21	17	14	17	17	14	34	
11		18	20	34		22	35	20	37	45	55	52	59	60	42	35	33	14	13	14	15	13	15	20	
12	17	18	20	42	21	21	15	37	39	43	44	47	55	45	59	38	29	14	21	15	15			14	
13	14	14	22	14		22	36	37	39	43	46	44	52	44	45	43	38	33	18	18			18	18	
14	15	17	18	21	15	20	39	17	18	21	52	52	46	44	42	42	37	14	18	21	34	15	35	20	
15	18	26	15	15	15	14	17	34	39	43	53	54	44	44	44	39	43	13	20	14	17	17	18	34	
16	17		17	15	14	14	21	33	38	45	49	47	45	45	40	42	39	23	14	14	15	14	14	15	
17	15	14	15	14	18		21	39	40	43	45	45	54	44	43	39	17	17	15	15	15	25		42	
18	40	20	17	17	14	14	23	34	43	43	45	20	45	54	47	40	40	14	15	18	14	17	14	22	
19	C	C	C	C	C	C	C	C	C	C		47	51	54	52	40	20	37	25	17	14		13	14	15
20		18	15	14	14	20	23	34	40	35	40	58	36	54	44	39	37	18	14		15	17	14	15	
21	17	14	17	14	15	17	25	31	39	44	45	45	56	52	43	42	40	14	15	17	14	14	14	18	
22	23	14	43		14	36	21	38	44	39	47	59	52	44	39	21	33	21	20	17	20	40			
23	21	21	17	21	15	14	44	38	37	44	52	48	52	54	45	40	40	13	14	42	46		15		
24	17	18	14	13			33	15	40	44	45	56	51	45	44	40	18	36	15	17	17	40	40	31	
25	13			14	18	14	25	33	39	40	50	50	44	59	52	42	34	20	14	20	17	15	20	15	
26	36	18	15	14	18	18	31	42	40	36	38	55	55	45	40	43	18	31	17	15	42	14		17	
27	17		14	14	14	14	34	20	37	46	39	68	55	43	42	43	15	13	21	14	14	15	17	15	
28	22	31	14	13	15	14	39	36	37	42	44	44	44	53	47	39	39	34	22	14	17	18		14	
29	14	20	18	23	17	21	34	34	40	44	46	50	45	44	46	43	34	33	15	14	17	15	45	21	
30			20	14	18	15	34	39	42	43	38	44	43	53	42	43	34	13	37	18	37	37	20	15	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	25	24	24	27	24	25	29	28	28	29	29	30	30	30	29	30	30	30	30	29	28	25	25	28	
MED	17	18	17	14	15	15	25	33	39	43	45	49	52	52	44	40	37	16	15	15	15	17	15	17	
U Q	21	20	20	21	18	20	34	37	40	44	51	54	55	54	47	43	39	31	20	19	17	18	27	20	
L Q	15	14	14	14	14	14	17	20	37	39	40	45	45	44	42	39	22	14	14	14	14	14	14	15	

HOURLY VALUES OF foF2 AT Yamagawa

SEP. 2012

LAT. 31° 12.0' N LON. 130° 37.0' 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	53	51	51	46	34	47	62	75	70	74	74		71	68	69	69	72	N	76	73	34	A	54	53	
2	52	57	51	60	52	52	52	56	73	75	72		59	59	59	69	68	78	74	54	55	52	54	52	
3	53	52	53	53	52	51	66	72	67	67		A	A	A	A	A		75	48	77	A	53	50	53	
4	52	42	52	50	32	46	46	51	49		68	71	84	71	71	69	72	72	69	72	67	52	53	54	
5	52	51	47	54	47	47	59	78	66	67	76		79	79		69	61	59	78	73	53	52	52	A	
6		53	43	50	58	42	44	50	51	61	64	72	A		66	76	62	78	77	64	46	54	52	A	
7	52	52	53	48	45	47	52	70	67	74	74	A	A			N		91	93	90	N	A	A	54	67
8	A	54	51	53	52	46	54	70	67	71	69	70	71	88	69	59	77	92	78	74	52	54	54	54	
9	52		54	53	52	52	53	87	86	80	74	60	89	N	79	69	72	87	N	71		52	52	53	
10	51	53	44	44	46	44	53	66	59	74	68	70	72	89		N		75	75	76	74	75	54	52	45
11	44	53	53	53	51	46	52	72	81	66	71	74		73	72	76	71	78	86	50	N	63	54	54	
12	51	54	52	55	52	42	66	79	76	71	67		72	87	69	69	88	A	39	49	54	54	67	52	
13	52	53	50	53	51	47	65	78	67	62	70	67		69	90	88	60	N		88	55	47	52	A	42
14	47	42	47	46		34	46	70	67	71	67	74	70	59	68	72	77	90	80	72	53	54	53	53	
15	50	53	52	56	41	34	42		N	56	89	77	82	78	60	74	76	71	76	76	55	53	52	52	52
16	53	53	52	43	44	42	51	77		N	67	68	72	69	76	74	75	86	87	75	56	54	53	39	52
17	36	46	43	40	34	34	40	91	85	67	61	64	79	78	69	76	83	73	74	71	67	53	47	47	
18	47	42	51	51	37	38	44	82	75	70	67	77	59	N	69	N		79	86	76	N	A	A	52	
19	53	52	42	43	44	44	53	66	80	51	76	70	69	69	62	60	62	88	74	71	53	52	43	52	
20	52	52	52	37	B	40	52	70	75	N	70	66	76	69	69	69	N		89	40	59	67	49	53	63
21	52	52	54	52	46	46	52	65	72	67	78	76	69	94	69	69	89	89	40	54	48	54	41	A	
22	44	52	N	53	44	37	45		N	76	67	78	77	69	71	N	59	N	89	76	N	54	53	52	52
23	53	52	52	52	39	34	44	66	89		N	75	82	83	69	N	62	N	82	N	68	66	54	54	54
24	63	52	49	67	44	42	57	79	84	76	73	72	69	78		A	70	74	89	78	52	53	53	63	53
25	52	52	52	51	47	44	52	74	86	84	72	N	69		68		N	90	83	N	A	42	A	58	52
26	50	53	53	47	47	43	52	76	75	75	87	82	77	66	70	98	N	89	A	A	A		A	54	54
27	52	52	53	52	N	50	54	87	88	77	67	82	76	62	97	71	62	79	49	59	N	A		53	54
28	52	67	73	59	44	32	42	68	77	78		N	N	74	69	67	78	N	N	43	54	65	54	47	
29	54	53	54	58	64	46	48		N	76		N	89	62	61	75	N	59	N	N	N	52	54	53	54
30	53	53	54	53	47	37	45	94	96	N	76	72	59	N	89	69	66	79	N	N		52	54	52	52
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	29	30	27	30	30	27	29	25	28	22	25	25	23	25	24	26	24	22	25	25	27	26	
MED	52	52	52	52	46	44	52	72	75	71	72	72	71	71	69	69	73	86	76	59	53	53	53	52	
U Q	53	53	53	53	52	47	54	79	82	75	76	77	77	78	74	75	78	89	78	72	54	54	54	54	
L Q	50	52	49	47	44	38	45	66	67	67	68	70	69	67	69	65	69	77	71	54	52	52	52	52	

# HOURLY VALUES OF fEs AT Yamagawa

SEP. 2012

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	G	G	G	G	G	G	G	G	G																
2		33	28	G	G	G	G		G	48	69	G	49	G	G	G	40	54	76	56	35	57	50	38	
3		G		G	G	G	G		G														29	G	
4		27	G	26					35	G	60	79	84	90	76	84	73	61	50	46	56	36	G	32	
5		34	28	G	27	25	29	32	64	49	56	45	G	G		G	G	44	44	37	40	33	G	G	
6		G	G	G	G	G	G	G	G	G										G			G	43	
7		G	G	G	G	G	G	G	G														G	46	
8		G	G	G	G	G	G	G		42	76	68	78	65	87	75	71	74	60	30	33	58	72	48	49
9	59	34	46	33	38	34	43	52	42	46	54	56	54	59	51	55	56	48	31	29	35	34	G	G	
10		G	G	G	G	G	G	G	G	G															
11		27	G	G	G	G	G		35	44	49									45	46	37	32	36	32
12		G	G	G	G	G	G	G	G	G															
13		G	G	G	G	G	G	G	G	G															
14		G	G	G	G	G	G	G	G	G															
15		G	G	G	G	G	G	G	G	G															
16		G	G	G	G	G	G	G	G	G															
17		G	G	G	G	G	G	G	G	G															
18		G	G	G	G	G	G	G	G	G															
19		G	G	G	G	G	G	G	G	G															
20		G	G	G	G	G	G	G	G	G															
21		G	G	G	G	G	G	G	G	G															
22		G	G	G	G	G	G	G	G	G															
23		G	G	G	G	G	G	G	G	G															
24		G	G	G	G	G	G	G	G	G															
25		G	G	G	G	G	G	G	G	G															
26		G	G	G	G	G	G	G	G	G															
27		G	G	G	G	G	G	G	G	G															
28		G	G	G	G	G	G	G	G	G															
29		G	G	G	G	G	G	G	G	G															
30		G	G	G	G	G	G	G	G	G															
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	G	G	G	G	G	G	G	32	G	22	G	G	G	G	G	G	38	38	32	30	33	16	13	G	
U Q	27	G	G	G	G	G	G	35	40	48	49	G	49	45	G	G	46	50	40	46	40	36	34	32	
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Yamagawa

SEP. 2012

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	15	15	16	15	20	14	18	14	20	20	36	101	39	59	59	53	23	17	14	14	15	15	15	14
2	16	15	15	16	15	15	18	15	17	28	45	56	53	91	58	22	27	14	14	15	16	15	14	15
3	15	15	14	15	17	15	20	15	17	21	23	38	36	35	29	26	20	16	14	15	16	18	17	15
4	15	16	15	15	16	14	14	15	20	30	35	52	55	60	29	22	22	15	16	15	16	15	18	18
5	15	15	15	16	21	15	17	14	17	21	33	111	71	36	32	47	18	17	14	14	15	16	15	17
6	66	18	30	20	15	16	17	14	17	30	26	53	35	59	22	17	14	15	16	14	16	14	16	15
7	15	16	15	14	16	15	18	14	21	30	34	34	34	30	28	24	18	15	15	14	15	15	15	15
8	15	14	15	15	16	15	15	14	15	21	34	43	37	40	36	29	22	20	14	16	15	14	16	15
9	15	15	16	17	17	16	16	14	14	22	33	16	49	45	65	27	38	15	15	14	15	14	14	15
10	18	18	15	22	15	15	17	20	40	34	33	48	55	22	22	22	20	14	15	15	15	16	14	15
11	17	16	16	15	15	15	15	14	16	35	42	52	54	49	39	34	20	16	14	14	16	15	14	15
12	16	16	15	17	15	14	16	15	23	22	34	35	34	36	45	23	20	15	18	14	14	14	16	15
13	15	15	20	14	16	14	14	16	18	21	27	27	45	54	51	45	21	17	14	15	16	15	14	14
14	18	15	17	17	71	17	21	26	18	20	20	22	55	20	20	20	22	14	14	17	15	17	22	21
15	21	17	22	14	16	14	15	15	21	18	18	52	55	48	46	44	20	15	14	15	16	14	16	15
16	15	14	15	17	15	16	17	15	14	35	22	27	48	46	48	22	18	15	18	15	15	15	18	15
17	15	15	15	15	15	15	20	14	17	18	22	54	46	47	23	24	17	14	20	15	16	15	17	16
18	15	14	15	15	15	15	17	15	17	24	27	48	38	29	46	27	16	14	14	15	14	15	14	15
19	15	15	16	15	15	16	15	16	17	18	34	29	30	46	24	22	17	14	14	15	16	18	15	15
20	15	16	16	16	B	14	17	14	20	35	38	51	36	35	44	29	14	15	18	17	15	14	16	17
21	15	15	15	18	15	16	15	14	17	21	33	48	32	30	29	27	20	14	14	15	15	15	14	16
22	15	16	15	15	15	15	15	15	17	21	46	44	55	52	48	44	18	15	14	15	15	15	15	18
23	15	18	15	15	15	15	17	15	15	21	26	47	47	49	52	24	20	15	17	15	15	15	16	20
24	16	15	17	15	17	16	15	15	16	20	28	54	50	49	42	27	21	15	14	14	17	15	17	16
25	15	15	15	15	15	15	16	15	15	21	46	55	56	54	58	22	22	16	14	16	15	14	15	17
26	15	16	27	15	17	15	17	15	14	20	27	54	54	52	17	18	18	14	15	15	15	15	14	15
27	15	15	15	16	15	15	17	15	16	21	37	45	54	40	26	42	18	15	15	15	15	15	15	15
28	16	15	15	15	15	16	16	15	18	42	33	53	50	N	32	44	21	17	17	15	18	16	15	15
29	21	17	18	15	15	15	15	24	21	26	45	53	49	53	47	45	20	17	15	17	16	18	20	16
30	17	16	15	16	15	14	21	24	16	38	45	49	52	43	54	26	18	14	15	18	17	15	15	18
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	17	15	17	21	33	48	49	46	40	26	20	15	14	15	15	15	15	15
U Q	16	16	16	16	16	16	17	15	20	30	37	53	54	52	48	42	21	16	16	15	16	15	16	17
L Q	15	15	15	15	15	15	15	14	16	21	27	38	37	35	28	22	18	14	14	14	15	15	14	15

## HOURLY VALUES OF foF2 AT Okinawa

SEP. 2012

LAT. 26° 41.0' N LON. 128° 09.0' 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	84	83	87	62	52	52	54	78	67	80	82	86	104	105	106	105	118	131	133	122	88	82	73	72	
2	67	A	67	64	62	52	66	100	82	76	83	102	110	118	109	115	118	123	109	118	88	87	77	67	
3	52	64	66	52	52	67	82	66	70	83	88	A	120	108	85	90	94	97	88	80	54	A	52	52	
4	52	50	52	52	50		41	58	57	62	78	102	N	102	102	97	98	93	81	83	76	67	60	53	
5	63	52	52	55		45	58	70	70	73	86	110	131	133	142	151	145	143	145	110	87	77	67	52	
6	54	52	58	63	52	28		80	80	82	82	82	100	112	106	110	116	115	87	89	80	67	54	54	
7	67	54	66	46	46	46	52	64	72	75	84	88	105	117	127	106	134	144	129	130	87	70	67	67	
8	73	67	67	53	57	54	52	85	A	78	97	108	116	130	131	131	135	146	130	110	86	74	55	67	
9	52	52	68	53	53	50	51	87	81	85	110	125	131	134	131	128	130	120	107	106	88	84	52	A	
10	53	53	50	48	43	44	51	88	94	80	74	90	107	117	107	100	98	90	87	88	86	54	52	54	
11	A	51	53	59	60	51	48	82	81	72	82	84	89	88	98	88	92	90	102	102	87	58	54	53	
12	67	67	73	67	60	51	73	87	71	72	76	82	97	110	111	116	111	118	128	116	86	80	76	87	
13	66	77	77	76	66	67	76	76	67	64	70	76	87	108	121	126	124	118	118	121	80	53	A	52	
14	54	64	51	46	51	34	42	67	72	67	72	84	105	106	105	107	102	106	108	104	82	N	58	63	
15	54	66	72	67	47	B	37	63	87	115	87	102	118	120	117	108	110	96	106	89	85	54	52	60	
16	52	52	53	48	44	40	44	77	74	84	C	C	C	C	C	C	C	C	C	C	C	C	53	52	
17	52	52	46	36	32	32	30	89	85	71	62	77	97	101	94	96	101	114	87	71	67	A	50	47	
18	49	47	47	42	32	31	38	81	78	88	88	98	120	130	143	151	144	126	123	108	108	78	65	A	
19	76	66	48	46	44	45	50	67	88	100	75	100	124	142	142	N	156	146	142	112	104	86	54	58	
20	52	51	51	B	38	44	54	72	73	88	82	80	110	131	131	142	132	132	121	114	109	88	106	86	
21	88	108	110	73	52	52	60	78	76	82	85	102	117	124	131	143	149	148	148	131	130	107	44	86	
22	79	86	76	84	45	29	36	67	80	86	80	98	110	124	132	142	146	142	134	119	104	76	54	54	
23	66	67	72	52	B	32	42	80	90	102	85	101	120	126	134	143	134	128	130	109	129	59	129	53	
24	N	120	111	81	64	52	51	79	87	81	C	C	C	C	C	C		111	120	111	83	78	80	82	74
25	67	72	54	52	52	43	44	85	84	88	86	101	97	A	110	118	119	118	108	86	100	104	86	88	
26	82	85	72	54	N	52	52	85	86	97	97	100	107	114	122	N	127	132	132	130	131	108	108	88	
27	86	82	78	54	58	52	54	81	87	100	82	90	102	119	128	118	128	131	131	118	108	109	108	87	
28	89	108	105	73	58	32	40	80	90	93	108	110	131	142	124	149	149	139	134	119	108	107	108	107	
29	107	106	88	107	86	48	40	74	80	99	96	130	89	129	152	143	148	151	143	107	105	88	87	87	
30	87	84	88	67	36	34	38	80	102	107	108	121	142	149	142	143	152	148	135	108	108	88	87	86	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	30	29	27	28	29	30	29	30	28	27	27	27	28	26	29	29	29	29	29	26	29	28	
MED	66	66	67	54	52	46	51	80	80	82	84	100	110	119	123	118	127	126	123	109	88	80	65	65	
U Q	80	83	77	67	58	52	54	85	87	93	88	102	120	130	131	143	144	142	133	118	108	88	86	86	
L Q	52	52	52	50	44	34	40	70	72	75	79	84	100	108	106	106	110	114	106	89	83	67	53	53	

HOURLY VALUES OF fEs AT Okinawa

SEP. 2012

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	65	34	G	27	G	G	G	35	G	G	G	54	G	G	78	64	59	67	45	51	70	59	50	38
2	47	37	33	34	G	33	26	33	39	50	G	G	47	G	G	G	52	42	54	G	G	G	G	24
3	G	24	24	G	G	G	G	35	G	53	G	91	75	60	68	60	54	68	66	103	78	60	30	29
4	G	G	G	G	G	G	29	39	48	54	58	49	47	G	G	G	G	43	50	24	G	G	31	47
5	G	G	G	G	G	G	G	G	G	48	56	63	74	68	56	57	47	47	42	44	28	G	G	G
6	44	G	25	G	G	G	G	G	40	G	G	G	G	55	55	G	G	46	46	48	47	46	G	25
7	G	30	G	G	G	G	G	35	42	50	70	69	60	G	G	74	45	G	114	112	27	27	33	59
8	49	49	36	40	46	36	28	G	73	76	66	64	66	55	60	60	59	72	40	66	37	39	G	G
9	25	G	G	G	G	G	G	G	42	50	50	52	52	G	G	49	G	G	71	50	53	G	32	30
10	40	32	G	G	G	G	G	33	G	G	G	47	G	G	G	G	G	G	45	56	24	29	G	43
11	32	G	G	G	G	G	G	G	G	G	G	G	G	71	68	54	52	81	61	48	59	43	36	24
12	G	G	G	G	G	G	G	32	49	52	51	53	63	52	58	48	58	92	62	126	49	36	30	24
13	25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	47	42	38	G	36	50	36	G
14	G	G	G	G	G	G	G	G	G	G	G	51	46	46	68	56	51	45	51	50	31	45	54	34
15	G	G	G	40	G	B	G	G	G	G	G	G	G	G	G	G	G	56	43	38	G	G	G	G
16	G	G	G	G	G	G	G	G	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	G
17	G	G	G	G	G	G	G	G	39	44	G	G	G	G	G	G	G	G	G	G	G	G	24	G
18	G	G	G	G	G	G	G	N	G	G	G	G	G	G	G	G	G	44	30	46	32	34	27	46
19	44	24	G	G	G	G	G	G	G	44	47	G	G	G	G	44	G	G	G	G	G	G	G	G
20	G	G	G	B	G	G	G	32	41	G	G	50	50	52	49	56	55	40	46	G	G	G	55	39
21	28	32	25	G	G	G	G	G	G	43	49	56	58	G	G	G	G	50	32	G	29	31	G	G
22	G	G	G	G	11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	50	G	G	G	G
23	G	G	G	G	B	G	G	33	40	G	G	G	G	G	G	G	61	67	55	60	34	26	G	G
24	G	G	G	11	24	27	45	G	39	G	C	C	C	C	C	C	G	G	39	29	28	G	G	G
25	G	G	G	G	G	G	G	35	43	G	52	G	58	125	G	G	G	45	40	55	49	45	60	39
26	32	28	G	G	G	G	G	G	41	47	58	56	G	49	G	G	53	47	44	G	G	35	G	G
27	40	28	33	G	G	G	G	G	38	G	G	G	G	G	G	G	43	50	36	36	G	46	33	25
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	50	49	35	G	28	29	32
29	27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	43	34	G	G	G	G	G
30	G	G	G	G	G	G	G	G	G	G	G	G	47	G	G	46	G	39	36	G	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	29	29	30	29	30	30	28	28	28	28	28	28	29	29	29	29	29	29	30	30
MED	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G	G	43	45	44	44	28	29	26	24
U Q	32	28	G	G	G	G	G	33	41	48	50	53	55	52	55	55	52	53	52	53	42	45	33	34
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	20	36	G	G	G	G	G

HOURLY VALUES OF fmin AT Okinawa

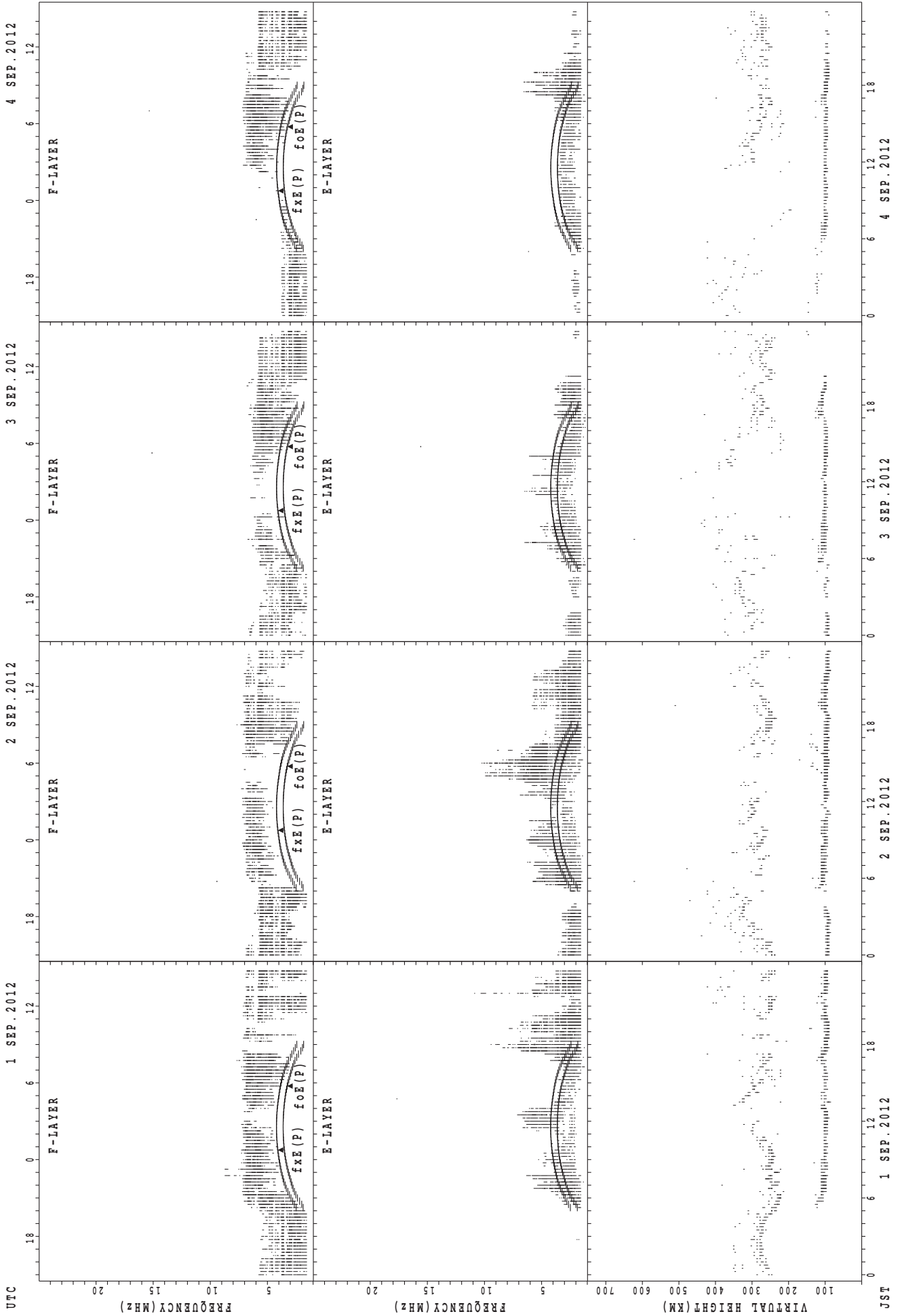
SEP. 2012

LAT. 26° 41.0' N LON. 128° 09.0' 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	15	17	14	15	15	26	20	20	40	46	40	53	54	40	39	37	20	15	15	14	15	15	15
2	14	14	14	15	16	15	15	17	18	26	45	53	44	56	58	52	23	17	14	15	21	15	16	15
3	14	14	15	14	33	15	16	21	34	42	55	40	39	38	36	35	35	20	14	14	15	15	14	14
4	15	66	27	20	20	66	14	15	21	24	38	40	51	56	50	51	23	22	14	15	15	16	15	16
5	17	15	16	15	27	15	16	24	20	32	35	38	38	40	38	32	24	20	14	14	15	16	15	18
6	14	14	15	14	23	15	21	15	17	24	45	46	71	38	36	24	15	15	14	15	18	14	17	16
7	20	15	15	14	20	16	15	18	20	21	36	33	33	54	48	22	20	17	16	14	17	17	15	15
8	15	14	14	14	15	14	14	15	15	18	36	39	40	40	39	40	26	20	14	14	14	14	18	20
9	17	15	15	21	16	39	16	14	14	28	35	38	38	59	49	42	40	18	15	14	14	21	15	14
10	15	14	15	16	15	15	15	15	41	39	43	54	52	49	51	23	22	15	14	15	15	15	51	15
11	17	16	16	15	15	16	15	16	29	42	45	53	53	42	39	37	21	21	14	16	15	14	15	15
12	15	18	20	15	15	16	17	15	17	29	42	39	40	39	38	34	26	15	14	14	15	14	14	15
13	14	16	17	17	16	15	16	14	16	18	28	48	54	56	48	43	29	15	17	21	15	15	16	16
14	15	14	21	20	14	16	15	24	30	40	44	23	28	29	23	39	33	18	16	14	14	14	15	14
15	21	20	18	21	20	B	15	14	18	39	43	52	48	47	52	47	20	16	15	15	15	22	18	18
16	17	16	17	21	15	15	15	18	21	37	C	C	C	C	C	C	C	C	C	C	C	C	15	17
17	15	15	15	15	16	15	18	14	14	23	42	35	48	48	50	44	30	27	18	15	15	15	14	16
18	17	17	15	15	15	15	15	15	17	40	47	48	50	53	49	44	21	17	15	14	14	15	15	14
19	14	16	16	17	15	15	15	24	18	21	38	42	48	46	48	27	20	15	14	15	14	16	14	15
20	15	16	18	B	15	18	15	16	18	29	39	51	42	38	40	34	23	18	18	16	17	16	15	15
21	14	15	15	14	17	24	18	15	18	22	34	36	38	45	52	40	21	17	15	14	14	14	18	16
22	18	18	15	15	14	15	14	23	17	29	40	52	52	48	50	43	21	18	16	16	15	17	17	15
23	30	16	18	15	B	17	14	14	16	21	46	49	49	52	50	43	20	20	15	17	16	17	15	18
24	16	15	15	18	15	15	15	18	14	18	C	C	C	C	C	C	24	16	16	15	15	17	18	18
25	15	15	15	14	14	15	15	15	16	41	39	49	39	40	54	42	38	17	14	14	15	15	15	17
26	16	14	15	17	16	15	15	15	16	29	36	42	54	22	53	51	20	16	14	20	17	15	16	15
27	15	15	15	14	17	15	15	14	17	41	46	49	53	42	49	42	28	17	15	15	18	15	14	15
28	20	15	15	15	15	15	15	27	20	42	42	48	54	50	53	47	22	23	17	15	20	16	15	14
29	16	15	15	21	16	22	28	28	20	41	43	51	55	20	52	44	20	27	16	16	17	23	42	17
30	18	15	17	15	15	17	16	15	21	40	42	55	50	50	49	20	39	27	15	16	18	15	17	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	29	29	30	30	30	30	28	28	28	28	28	28	29	29	29	29	29	29	30	30
MED	15	15	15	15	15	15	15	15	18	29	42	47	48	46	49	41	23	18	15	15	15	15	15	15
U Q	17	16	17	17	17	16	16	20	20	40	45	51	53	52	51	44	29	20	16	16	17	16	17	17
L Q	15	15	15	14	15	15	15	15	16	23	37	39	39	39	39	34	20	16	14	14	14	15	15	15

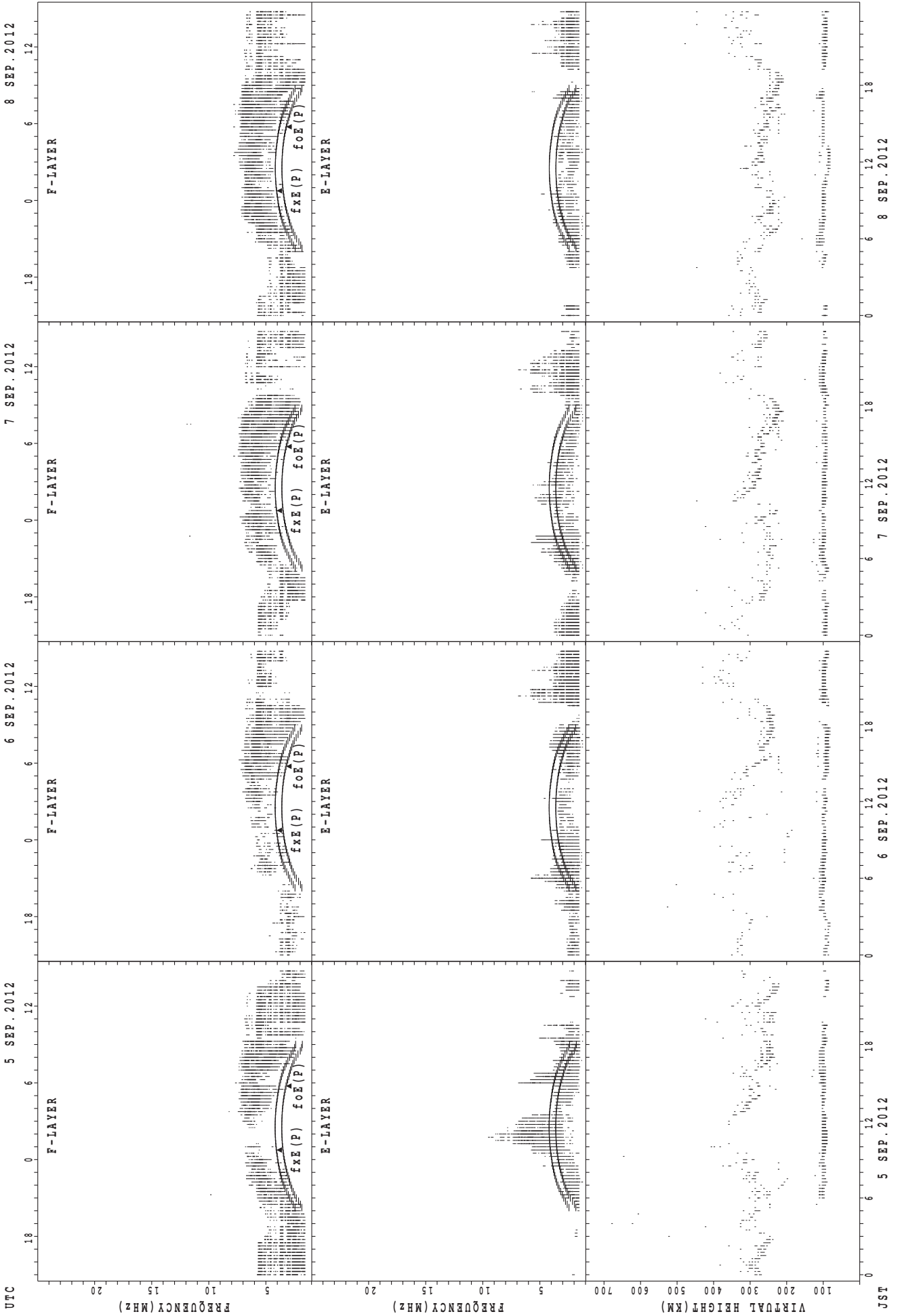


SUMMARY PLOTS AT Wakkanai



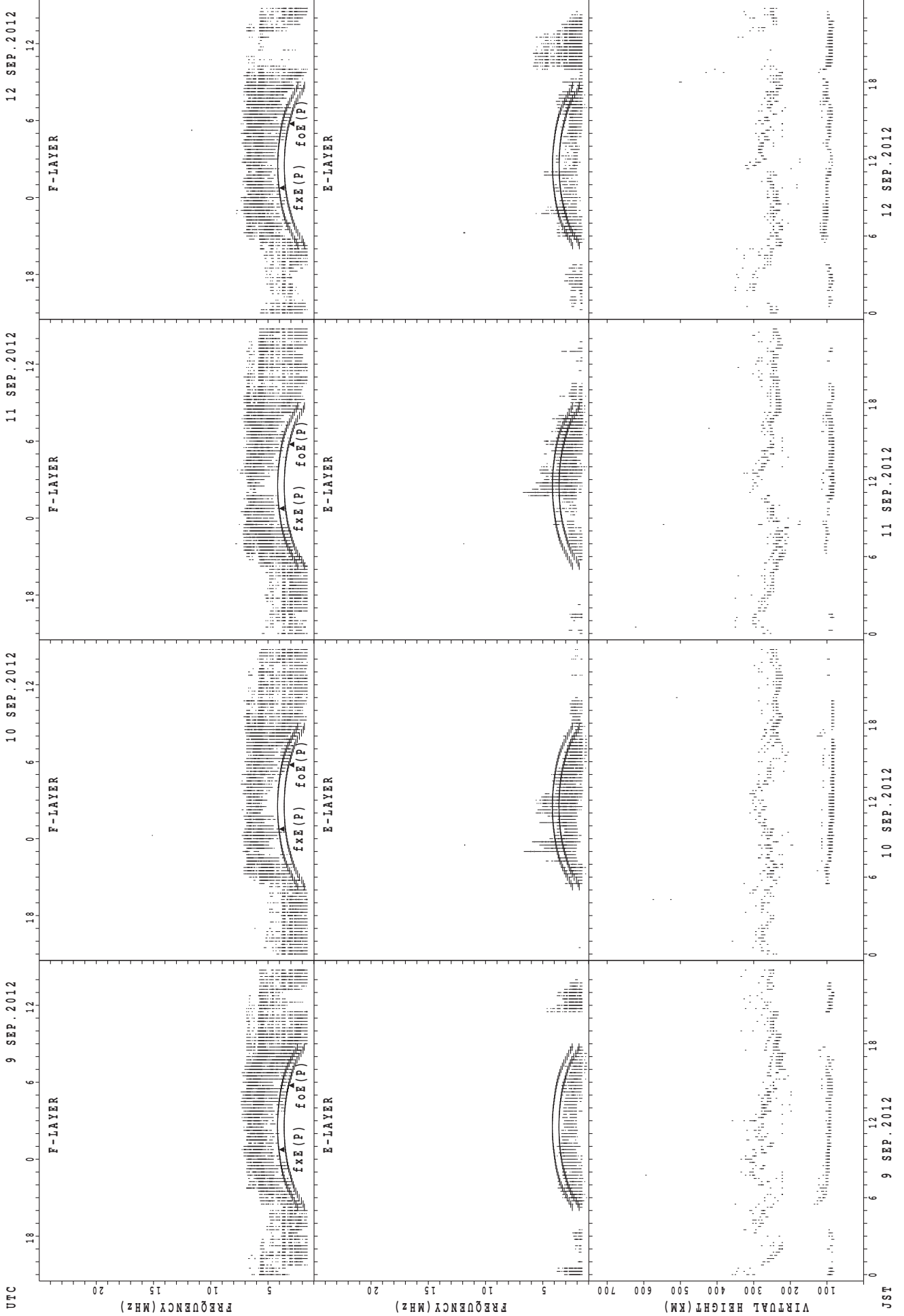
$f_xE(P)$ ; PREDICTED VALUE FOR  $f_xE$   
 $foE(P)$ ; PREDICTED VALUE FOR  $foE$

SUMMARY PLOTS AT Wakkanai



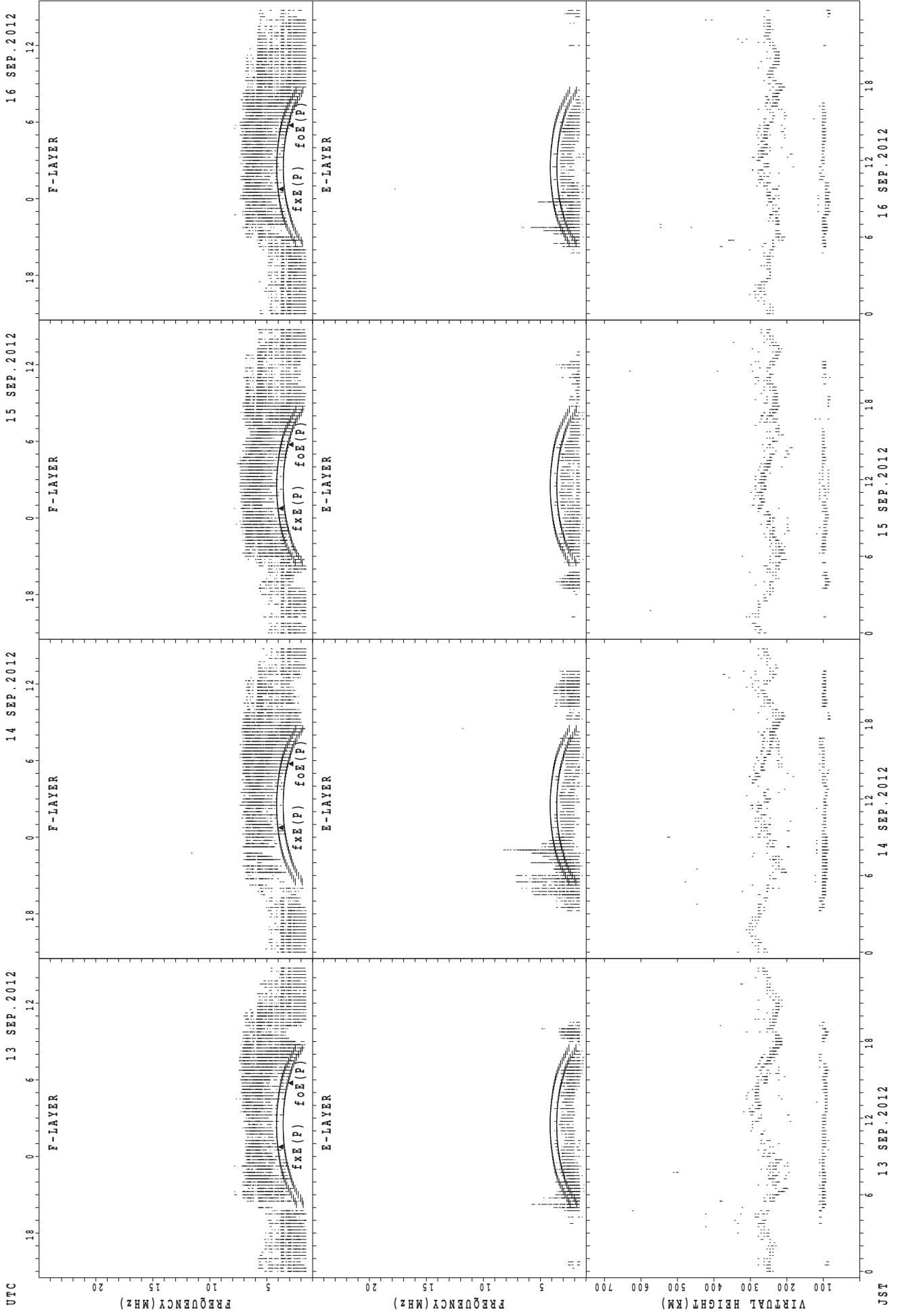
f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
f<sub>o</sub>E(P); PREDICTED VALUE FOR f<sub>o</sub>E

SUMMARY PLOTS AT Wakkanai



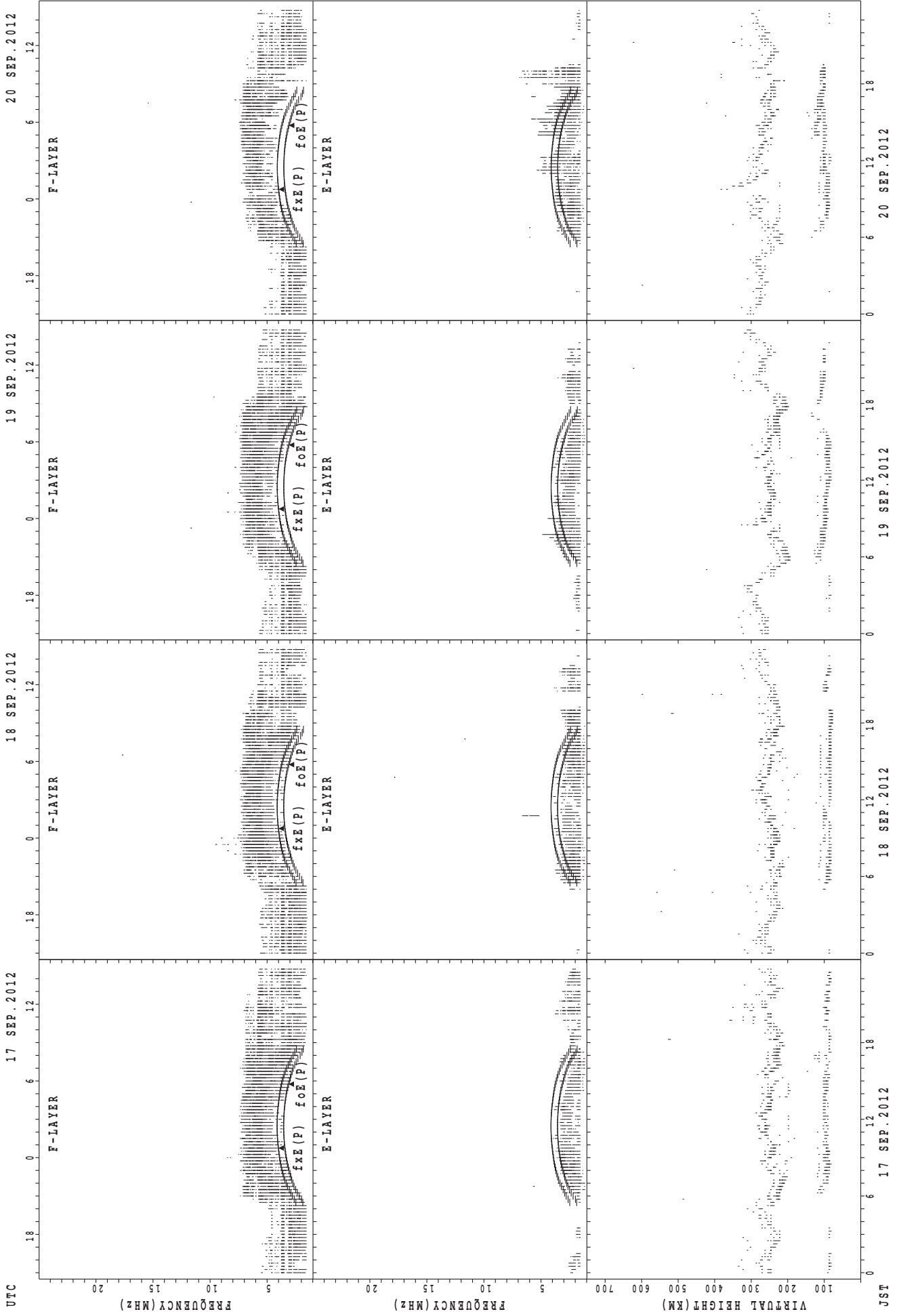
fxE(P); PREDICTED VALUE FOR fxE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



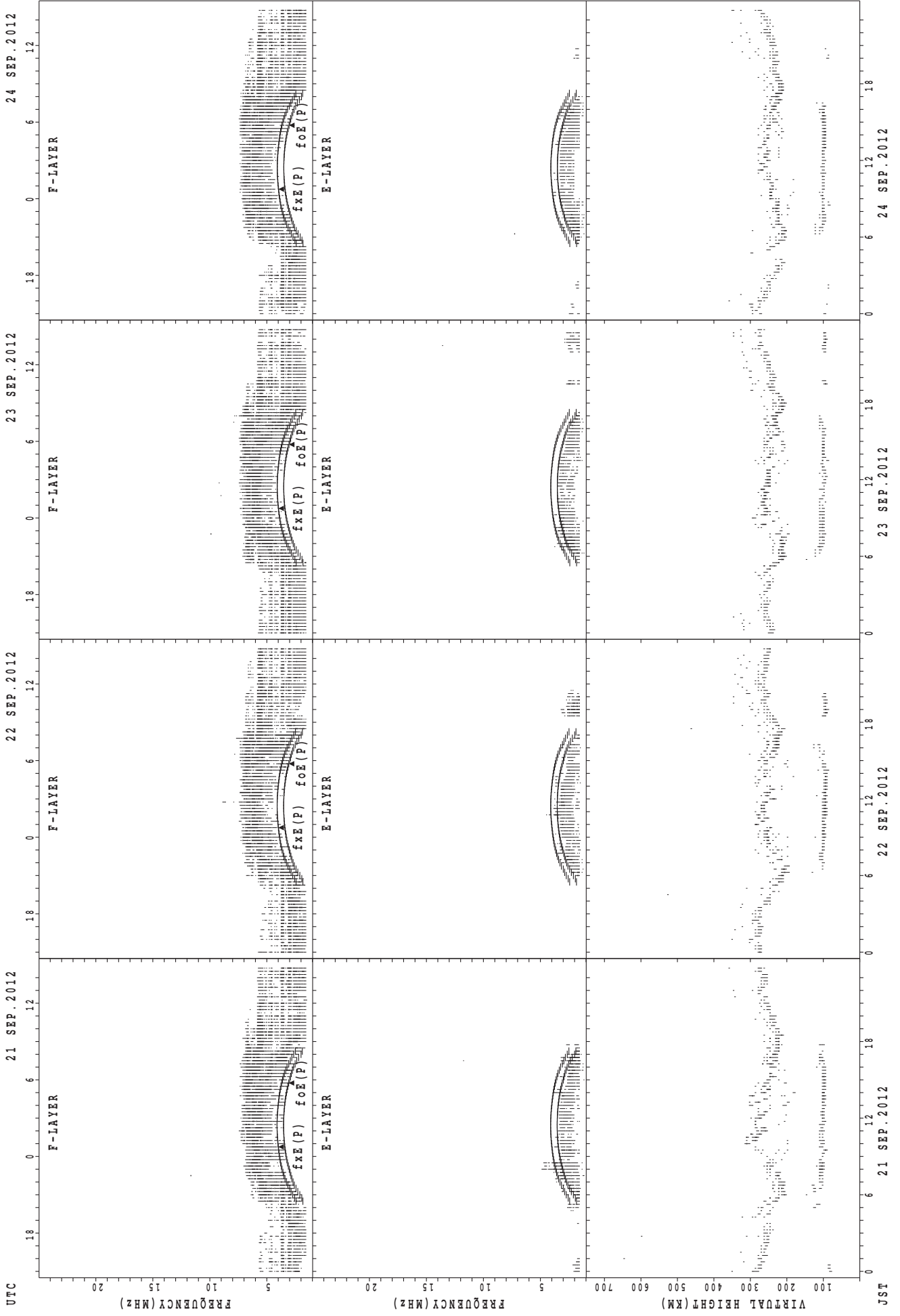
fxe(P); PREDICTED VALUE FOR fxe  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



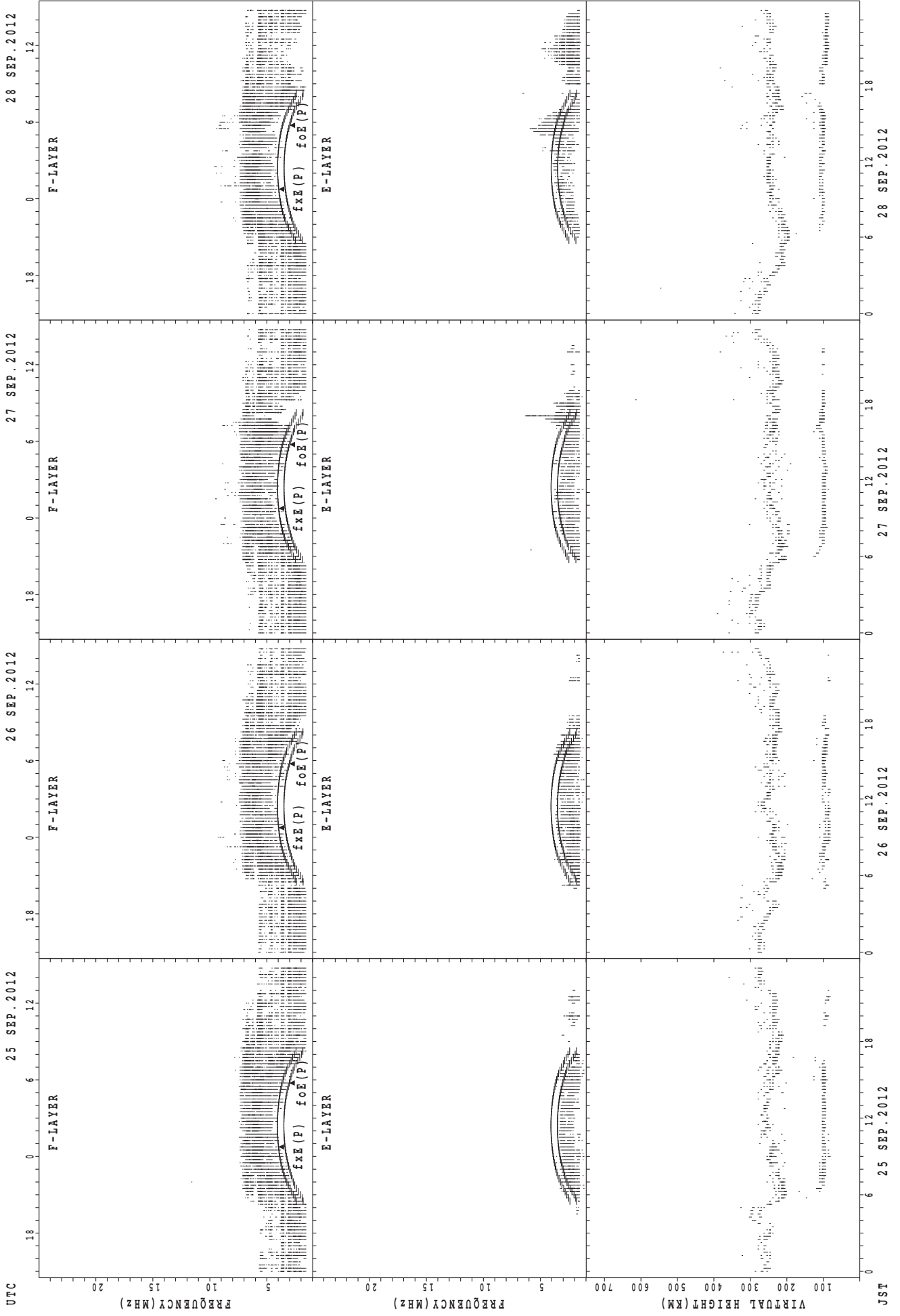
fxE(P); PREDICTED VALUE FOR fxE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



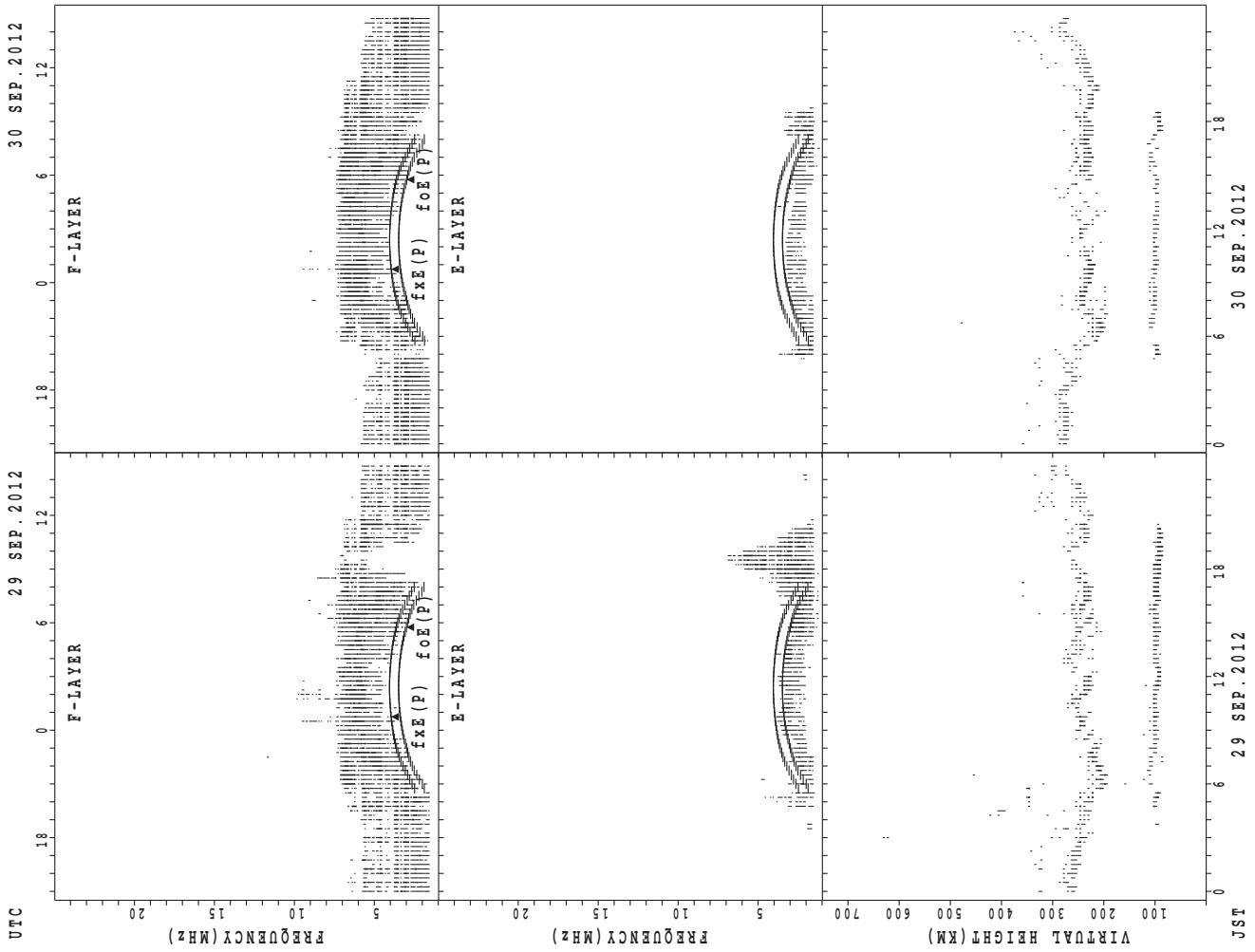
fxe(P) ; PREDICTED VALUE FOR fxe  
 foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



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

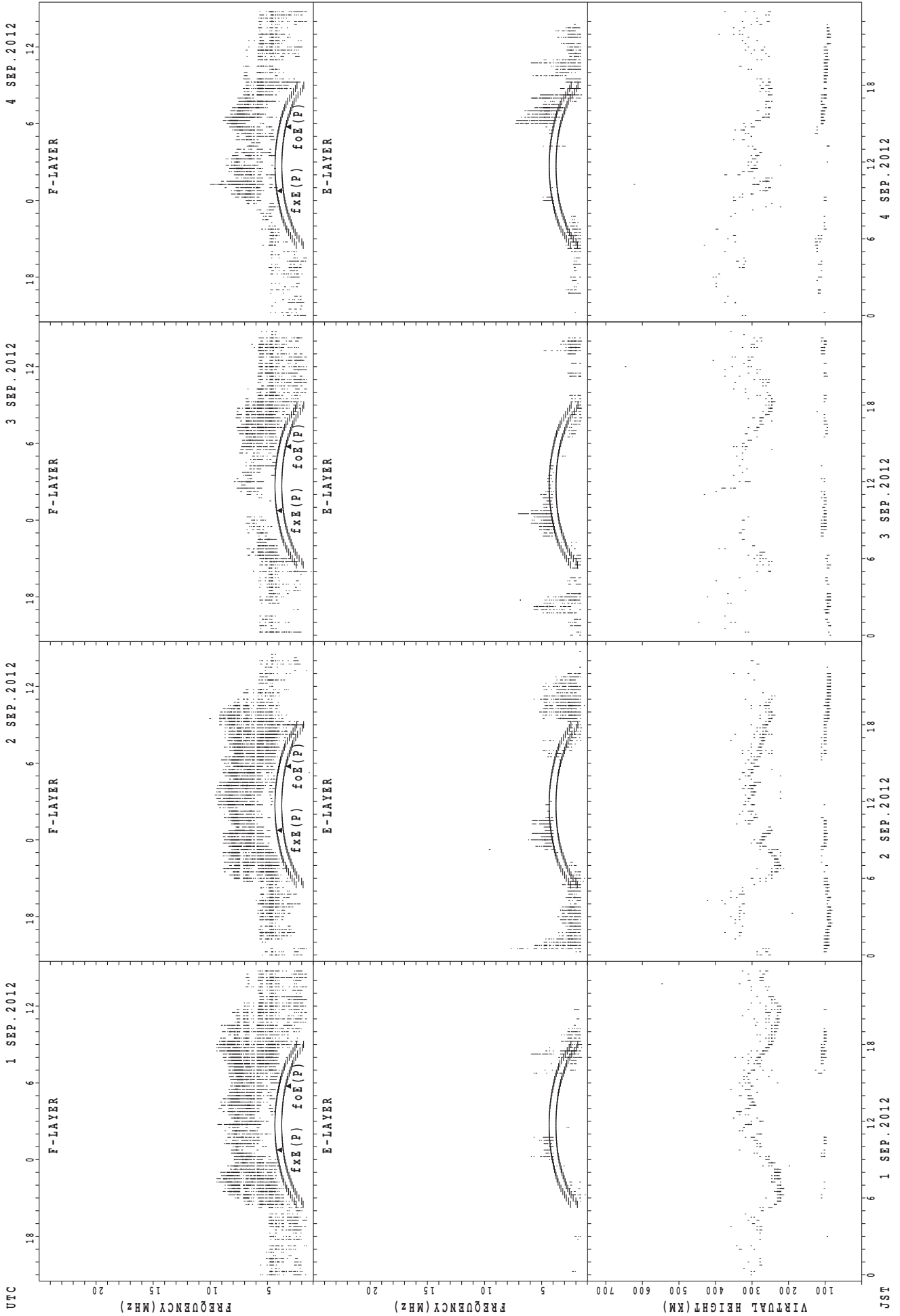
SUMMARY PLOTS AT Wakkanai



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



SUMMARY PLOTS AT Kokubunji



f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
foE(P); PREDICTED VALUE FOR foE

1 SEP. 2012

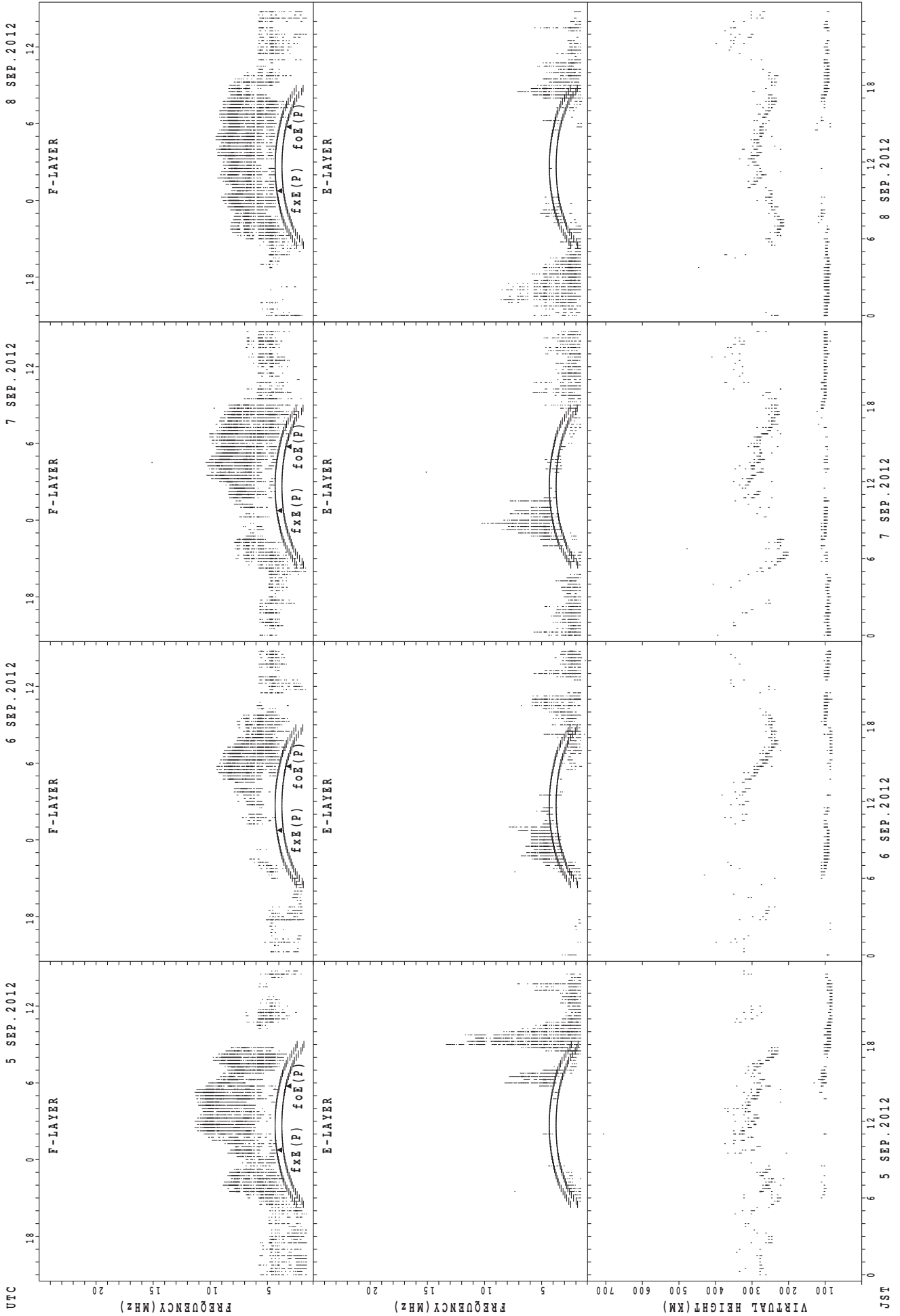
2 SEP. 2012

3 SEP. 2012

4 SEP. 2012

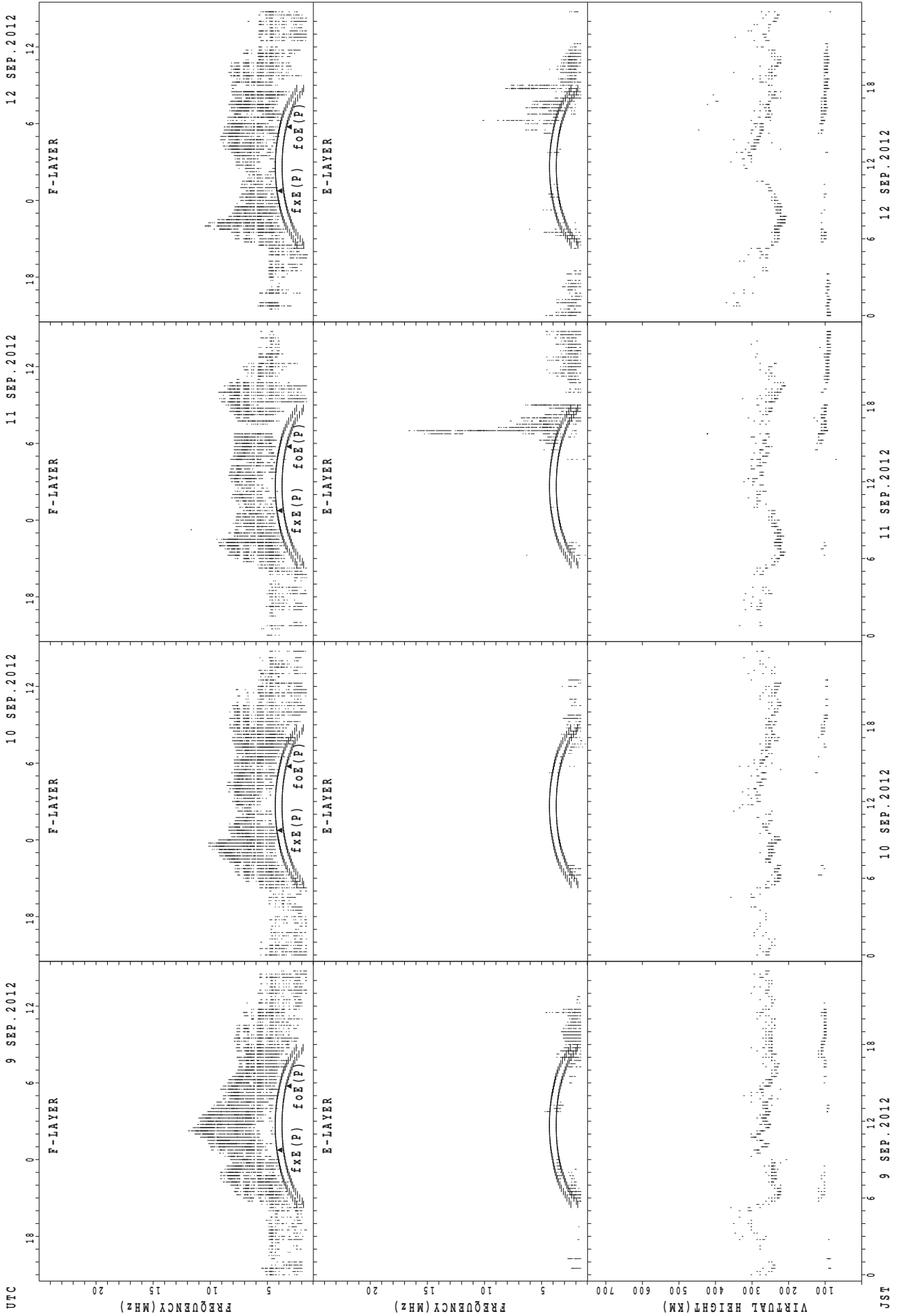
JST

SUMMARY PLOTS AT Kokubunji



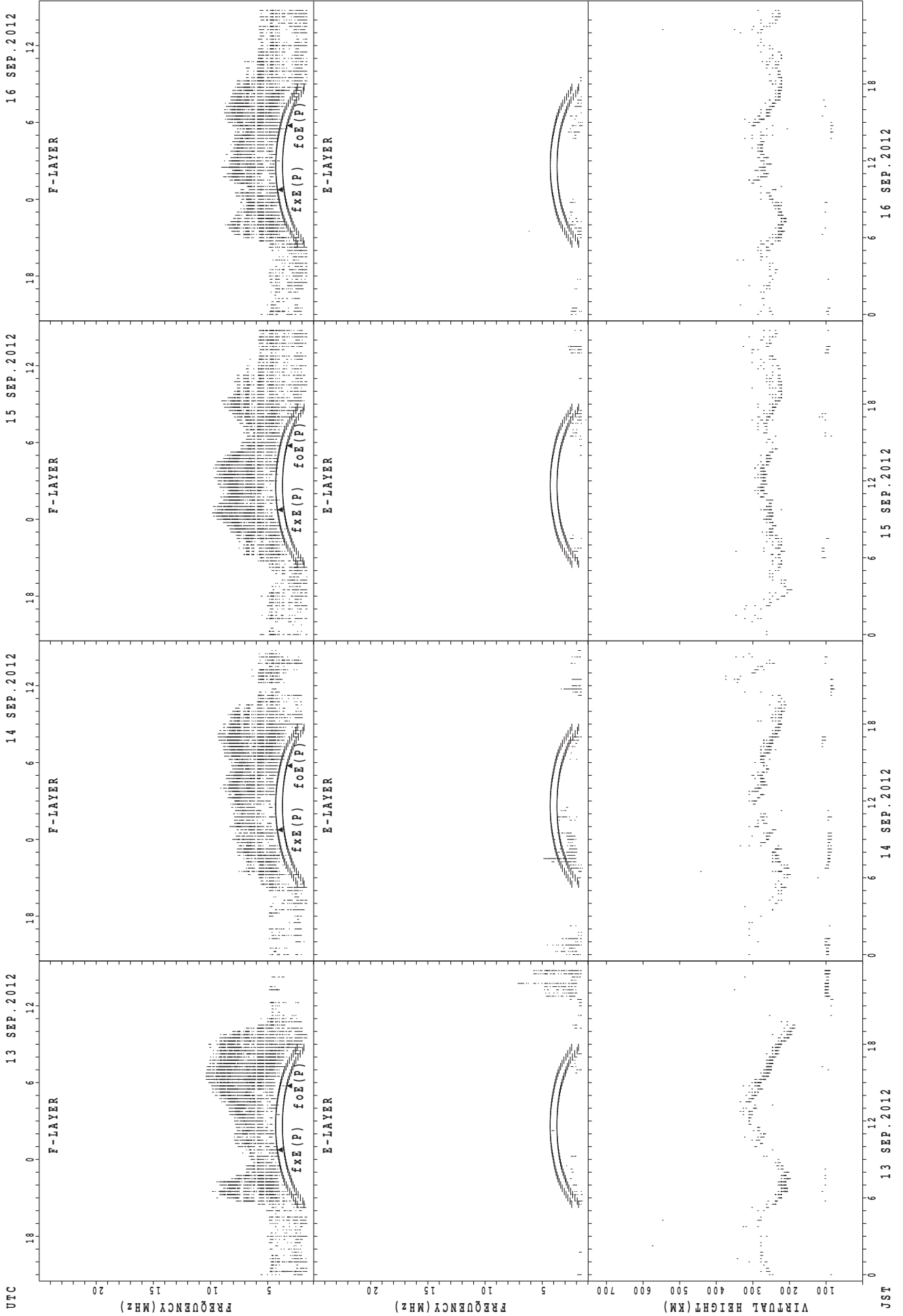
f\_xE(P); PREDICTED VALUE FOR f\_xE  
f\_oE(P); PREDICTED VALUE FOR f\_oE

SUMMARY PLOTS AT Kokubunji



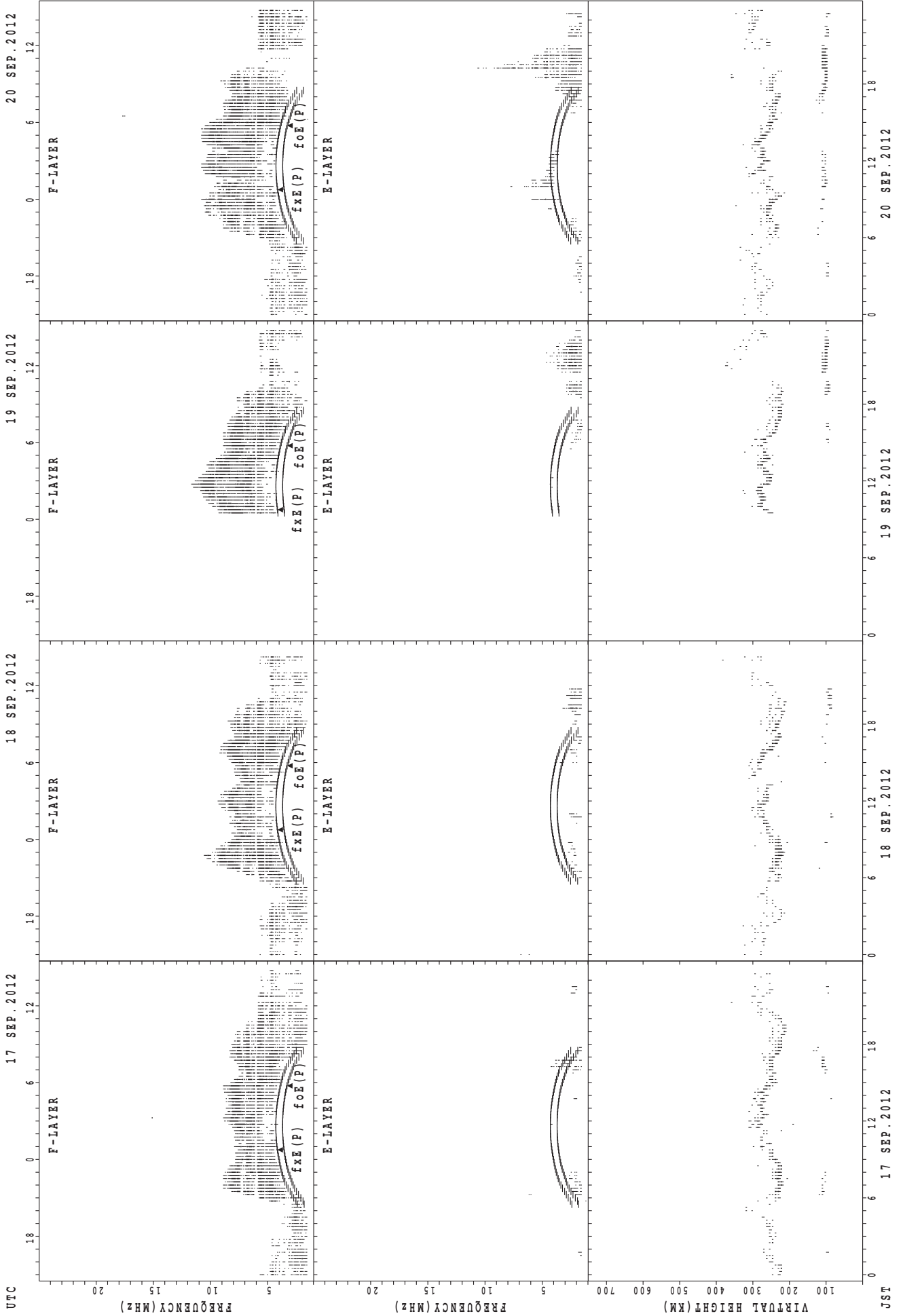
UTC  
JST  
f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



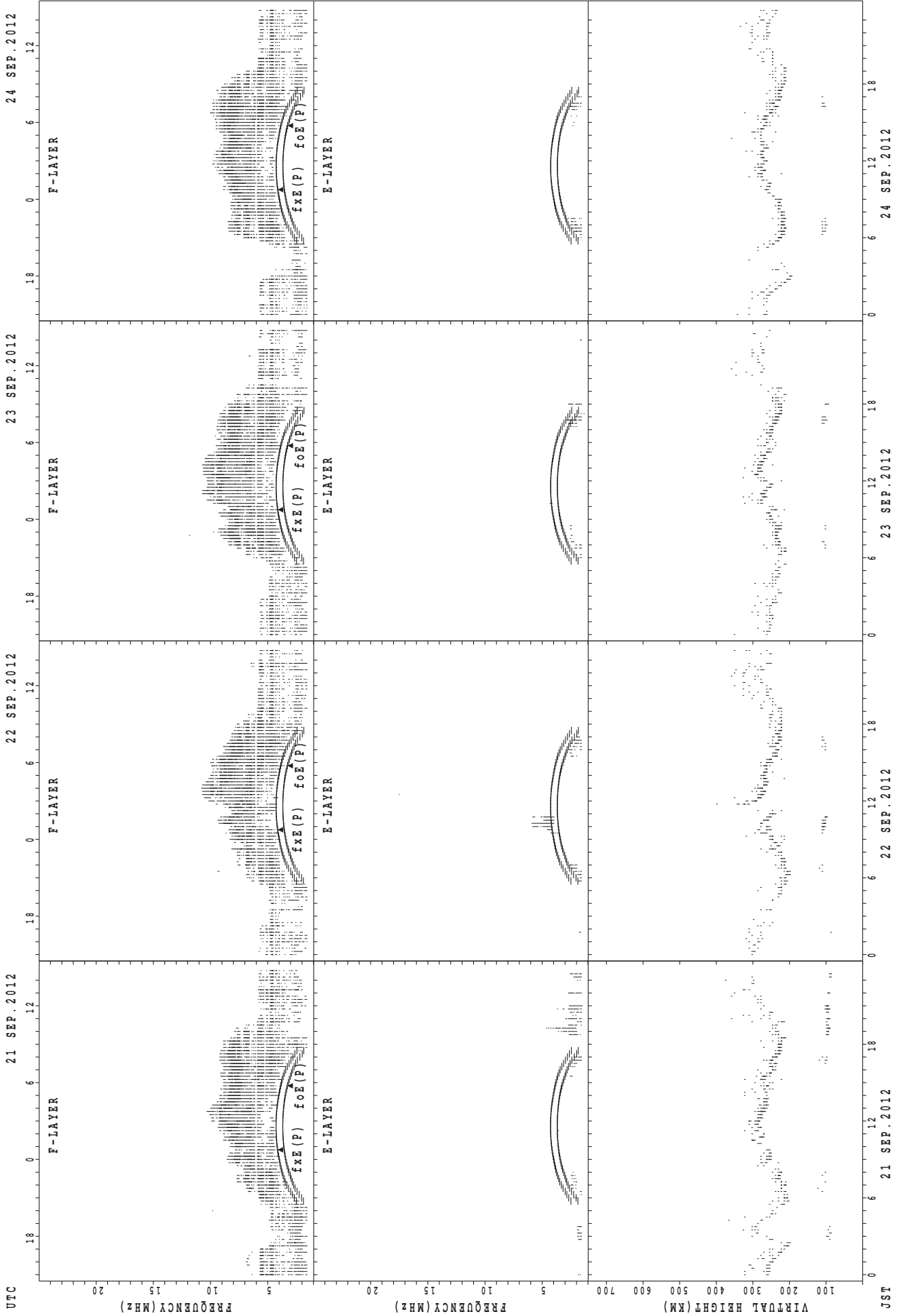
fxE(P); PREDICTED VALUE FOR fxE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



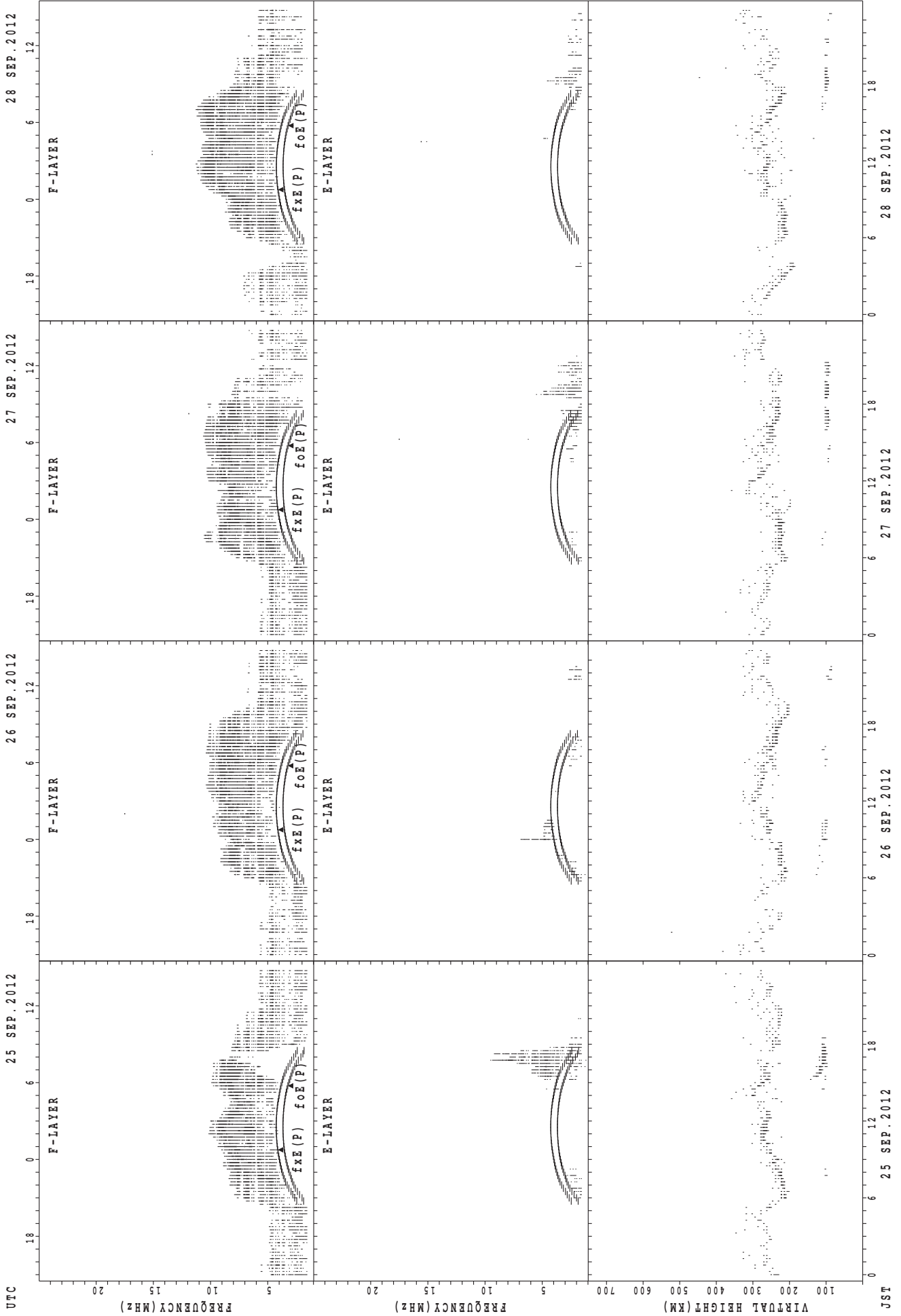
fxE(P); PREDICTED VALUE FOR fxE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



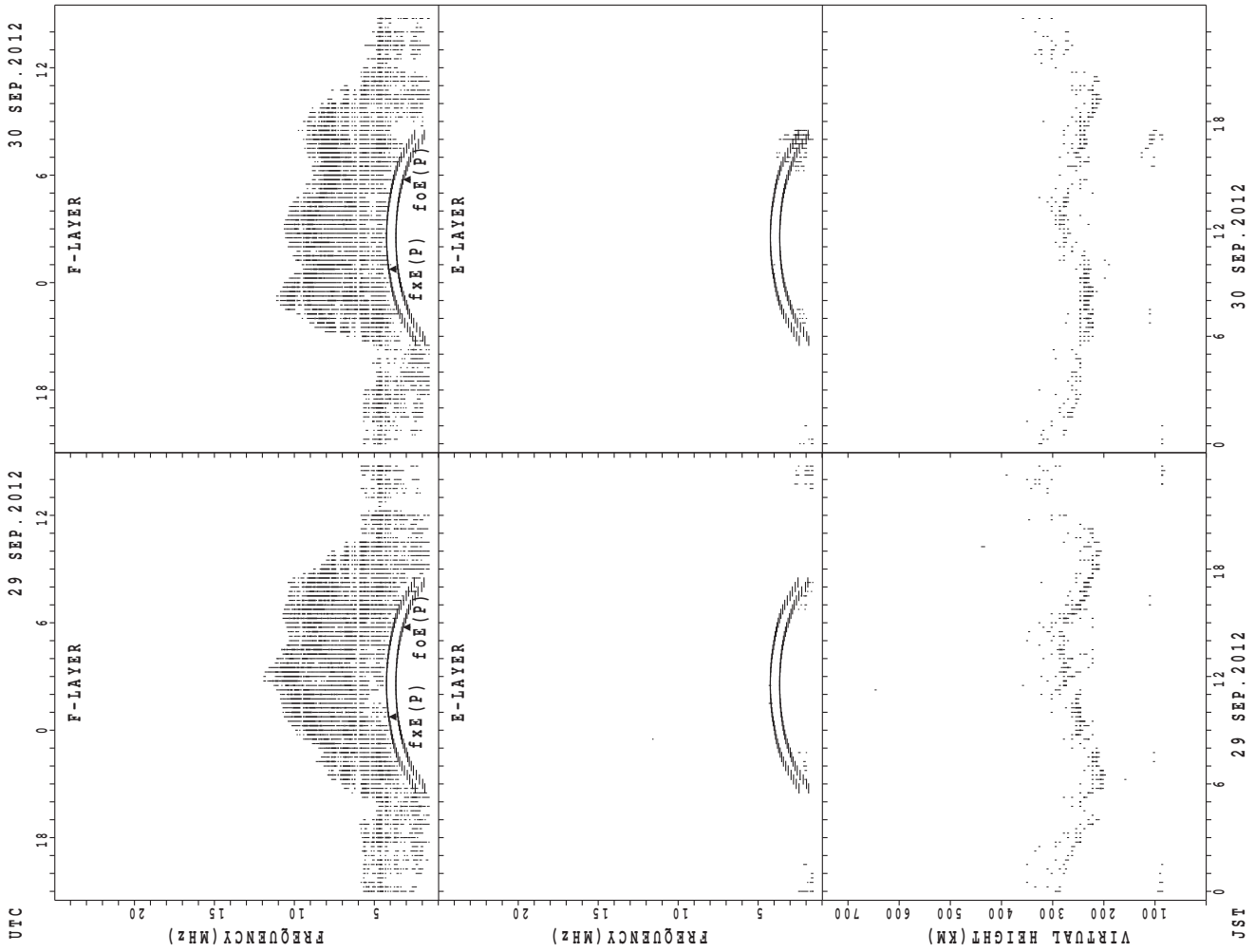
UTC  
21 SEP. 2012  
22 SEP. 2012  
23 SEP. 2012  
24 SEP. 2012  
JST  
foE(P); PREDICTED VALUE FOR fxe  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



UTC  
25 SEP. 2012  
26 SEP. 2012  
27 SEP. 2012  
28 SEP. 2012  
JST  
foF2(P); PREDICTED VALUE FOR foF2  
fxF2(P); PREDICTED VALUE FOR fxF2  
foE(P); PREDICTED VALUE FOR foE  
fxE(P); PREDICTED VALUE FOR fxE

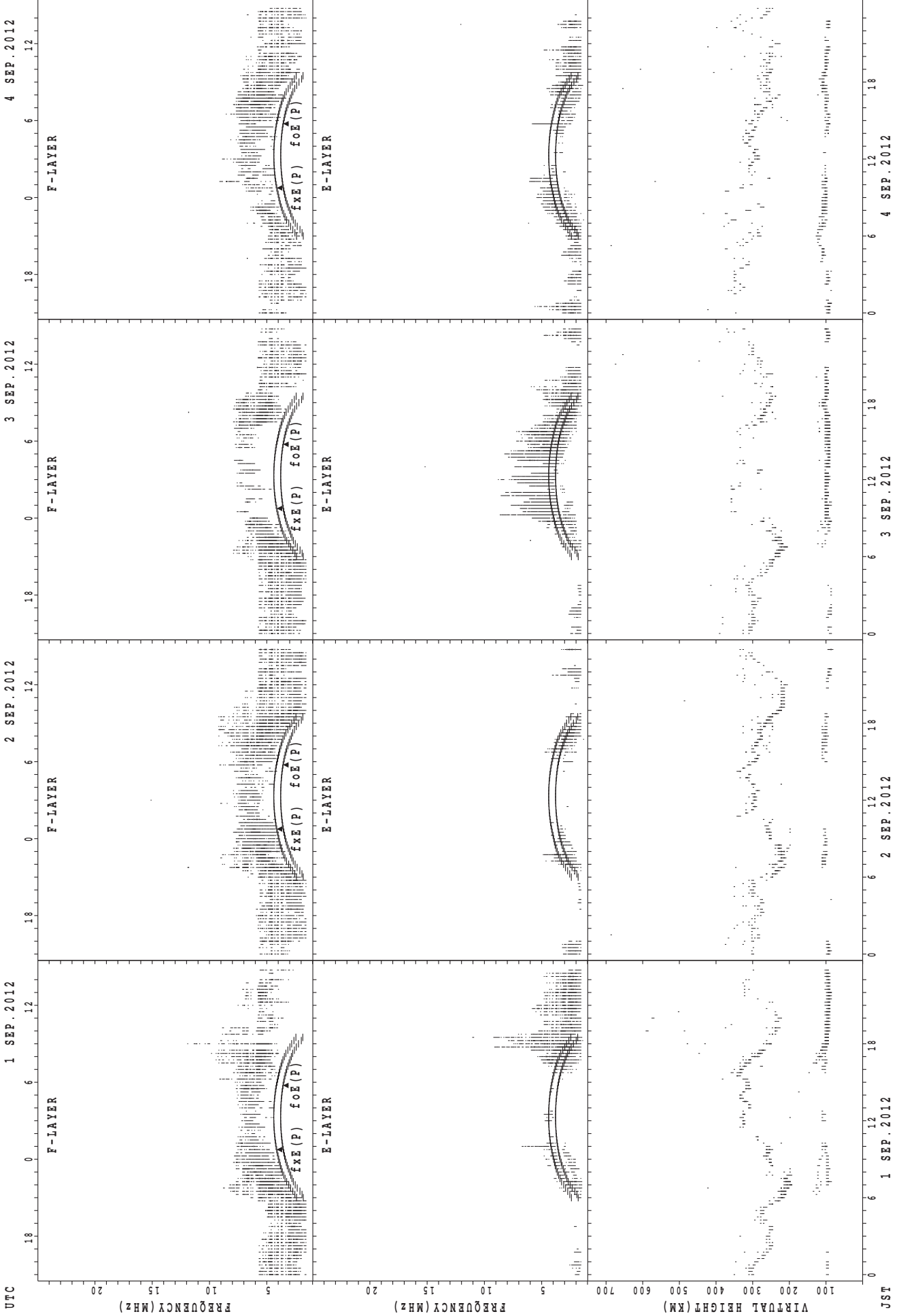
SUMMARY PLOTS AT Kokubunji



f<sub>o</sub>F(P); PREDICTED VALUE FOR f<sub>o</sub>F  
f<sub>o</sub>E(P); PREDICTED VALUE FOR f<sub>o</sub>E



SUMMARY PLOTS AT Yamagawa



f<sub>x E</sub>(P); PREDICTED VALUE FOR f<sub>x E</sub>  
f<sub>o E</sub>(P); PREDICTED VALUE FOR f<sub>o E</sub>

1 SEP. 2012

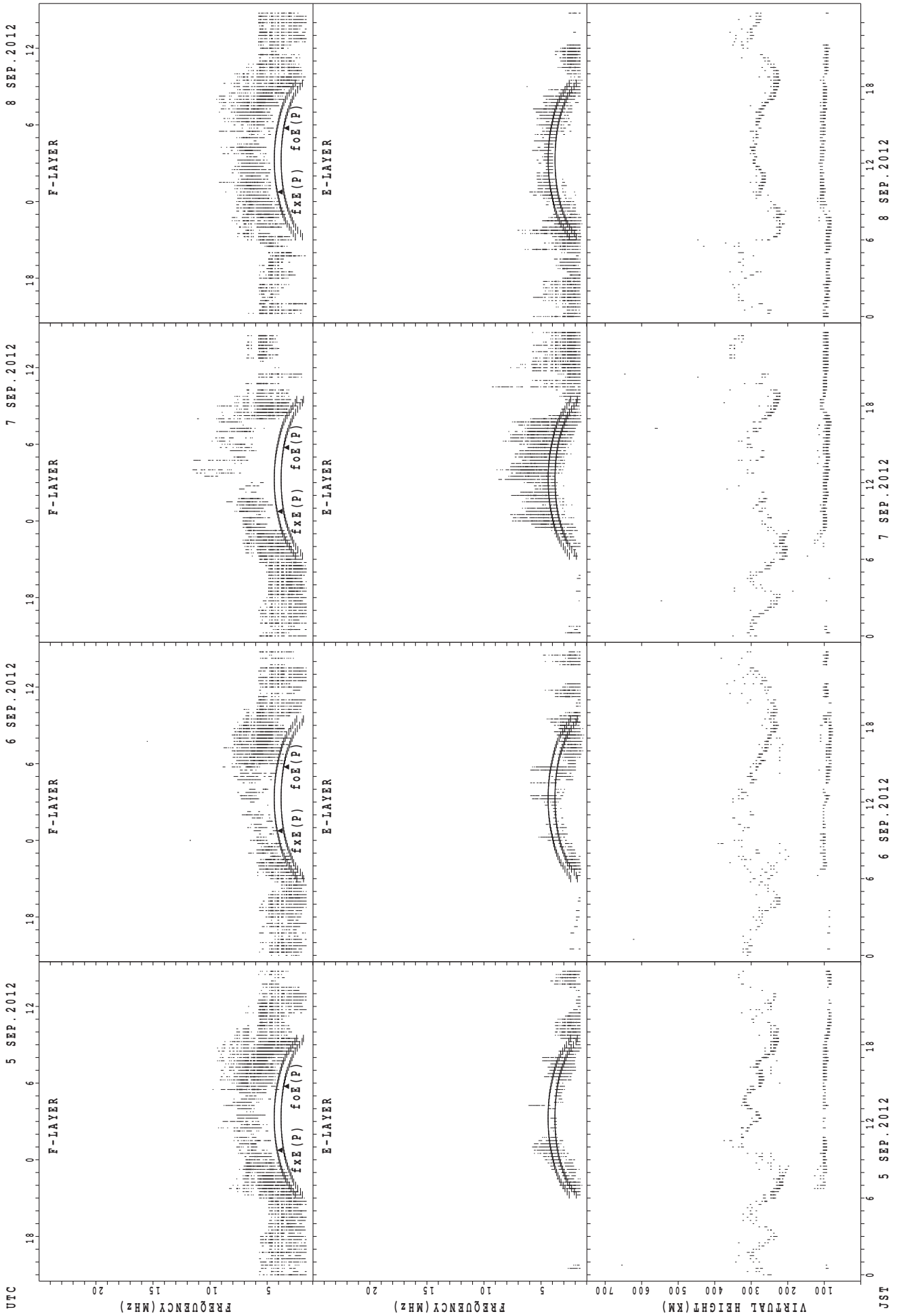
2 SEP. 2012

3 SEP. 2012

4 SEP. 2012

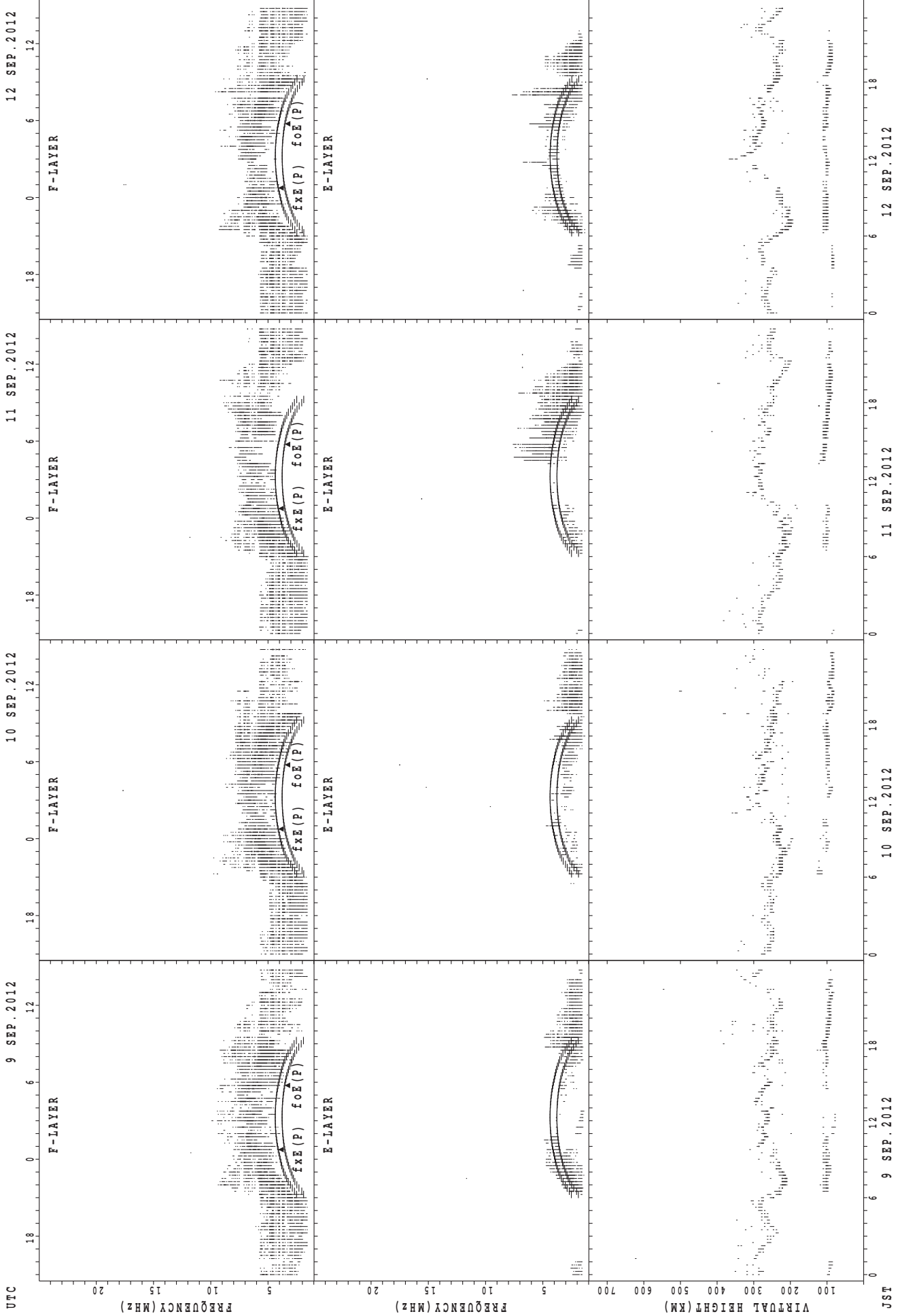
JST

SUMMARY PLOTS AT Yamagawa



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

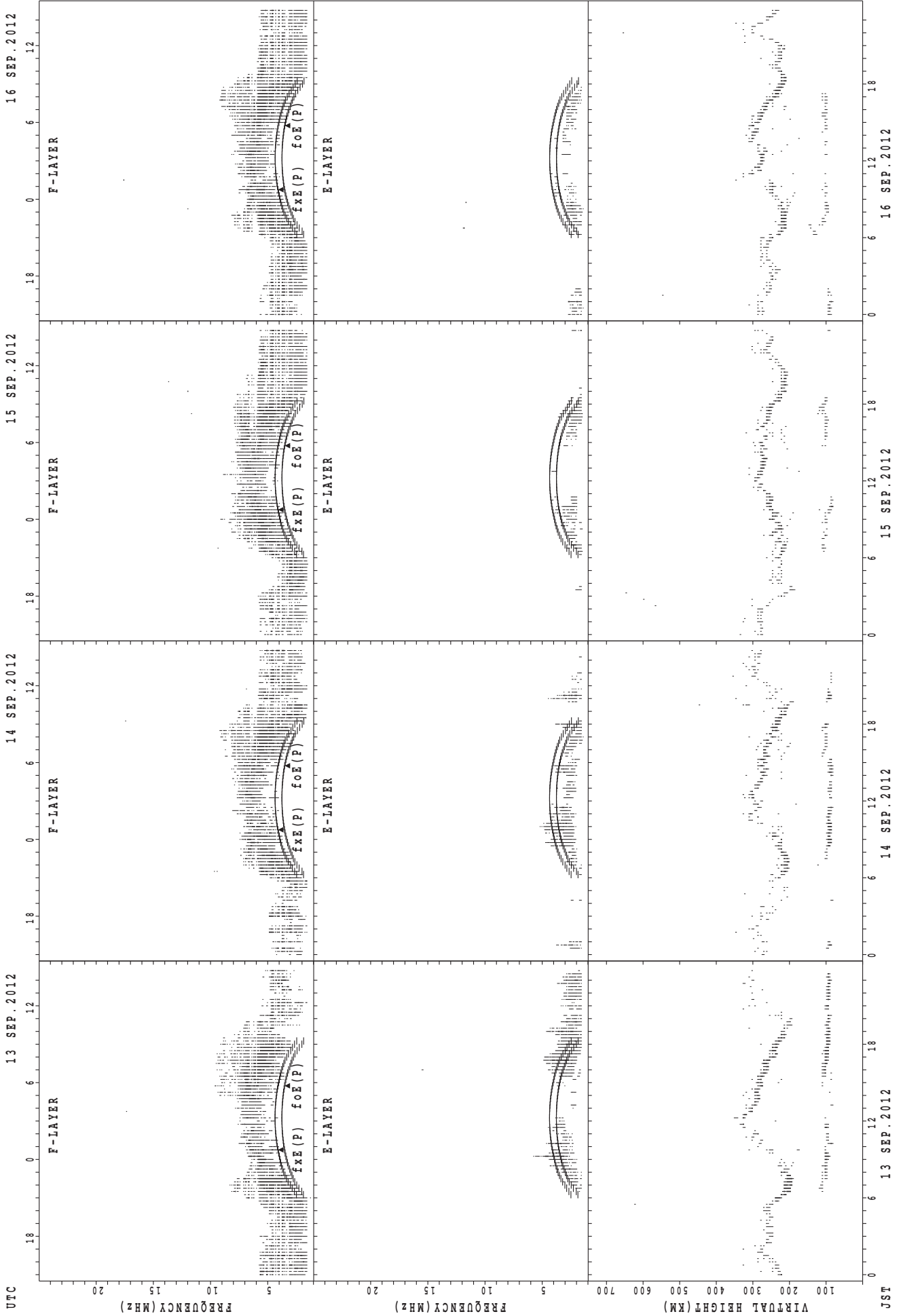
SUMMARY PLOTS AT Yamagawa



f<sub>x E</sub>(P); PREDICTED VALUE FOR f<sub>x E</sub>  
f<sub>o E</sub>(P); PREDICTED VALUE FOR f<sub>o E</sub>

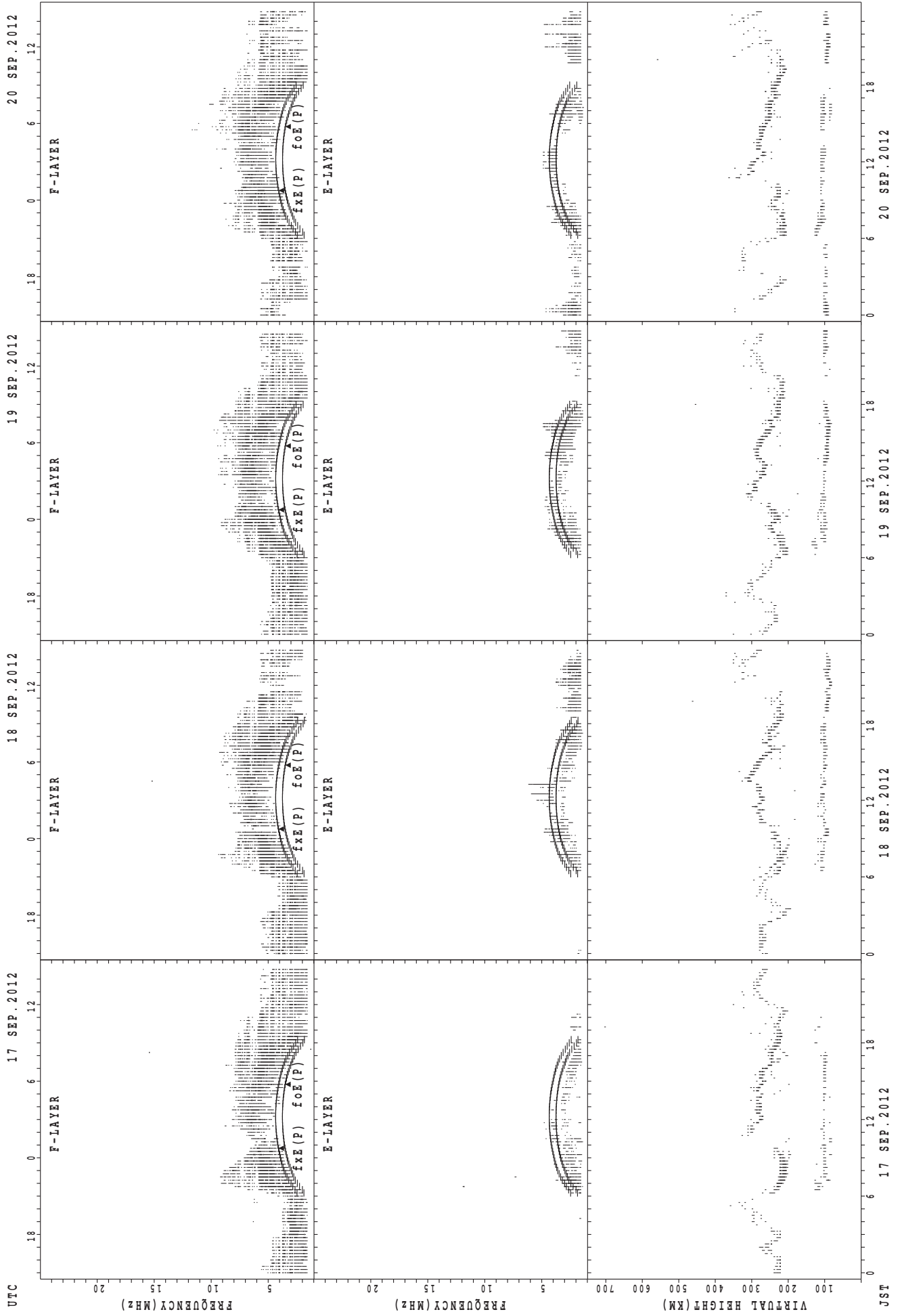
JST

SUMMARY PLOTS AT Yamagawa



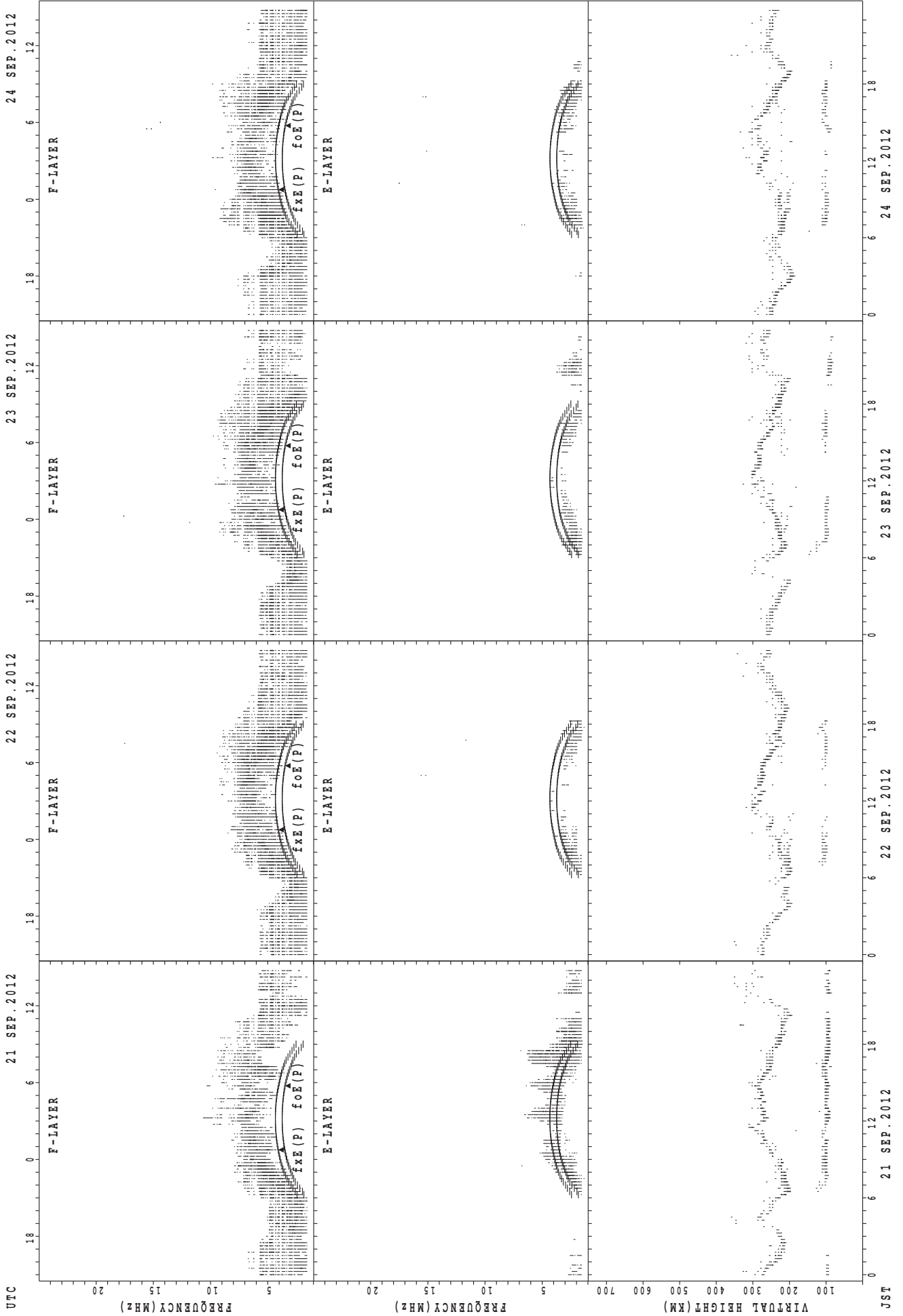
foE(P); PREDICTED VALUE FOR foE  
fXE(P); PREDICTED VALUE FOR fXE

SUMMARY PLOTS AT Yamagawa



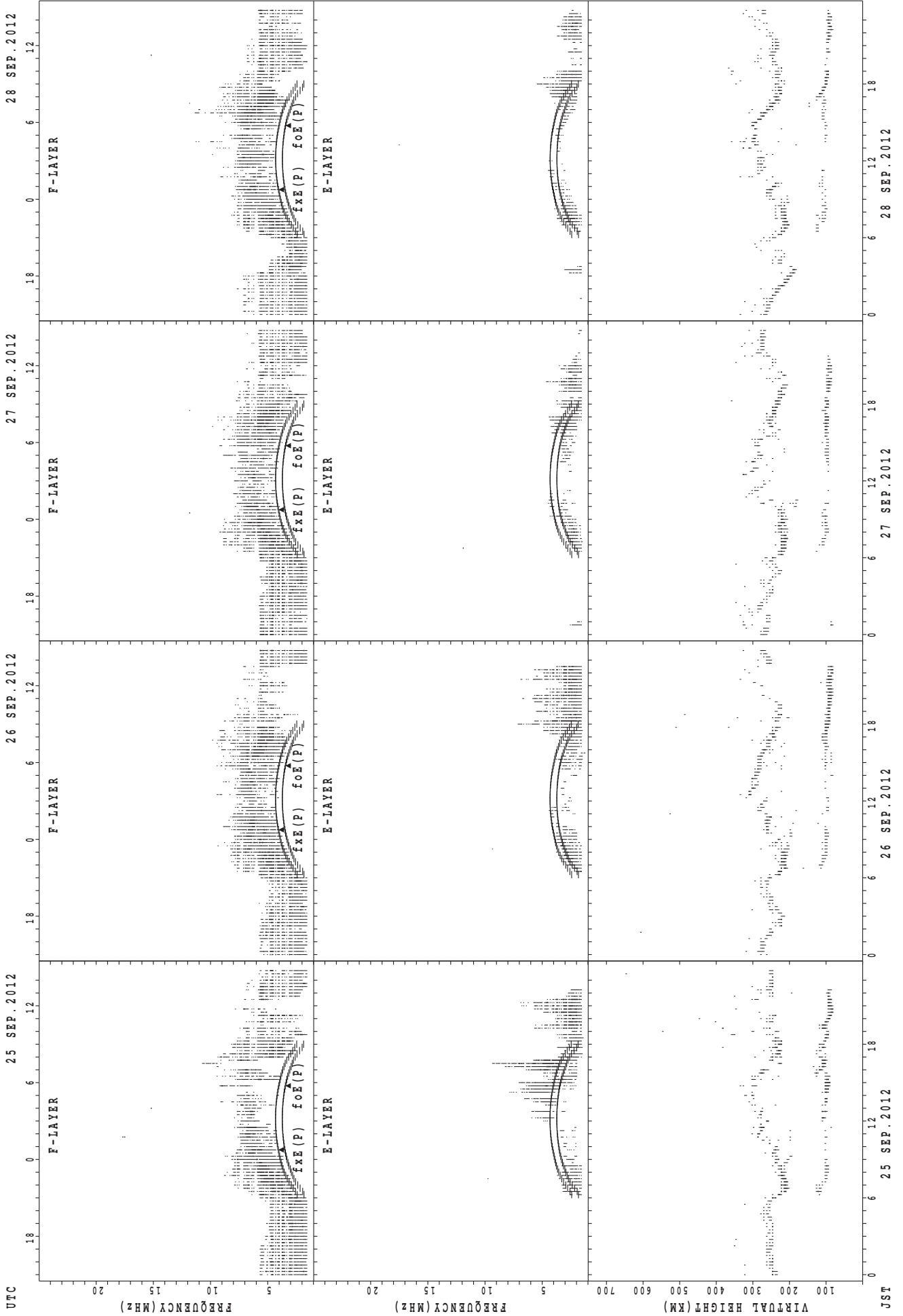
$f_xE(P)$ ; PREDICTED VALUE FOR  $f_xE$   
 $foE(P)$ ; PREDICTED VALUE FOR  $foE$

SUMMARY PLOTS AT Yamagawa



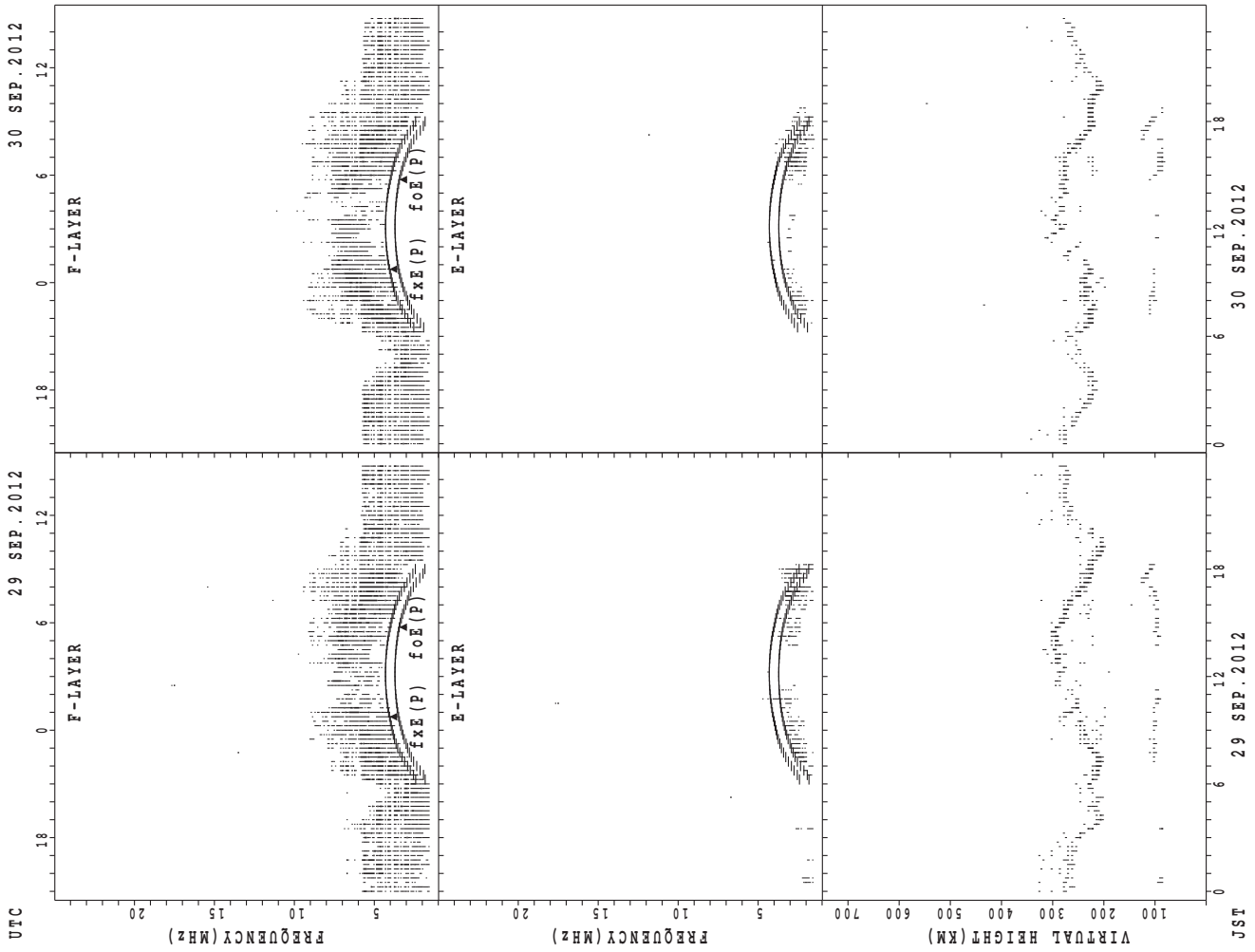
f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
f<sub>o</sub>E(P); PREDICTED VALUE FOR f<sub>o</sub>E

SUMMARY PLOTS AT Yamagawa



UTC  
25 SEP. 2012  
26 SEP. 2012  
27 SEP. 2012  
28 SEP. 2012  
JST  
f<sub>xe</sub>(P); PREDICTED VALUE FOR f<sub>xe</sub>  
foE(P); PREDICTED VALUE FOR foE

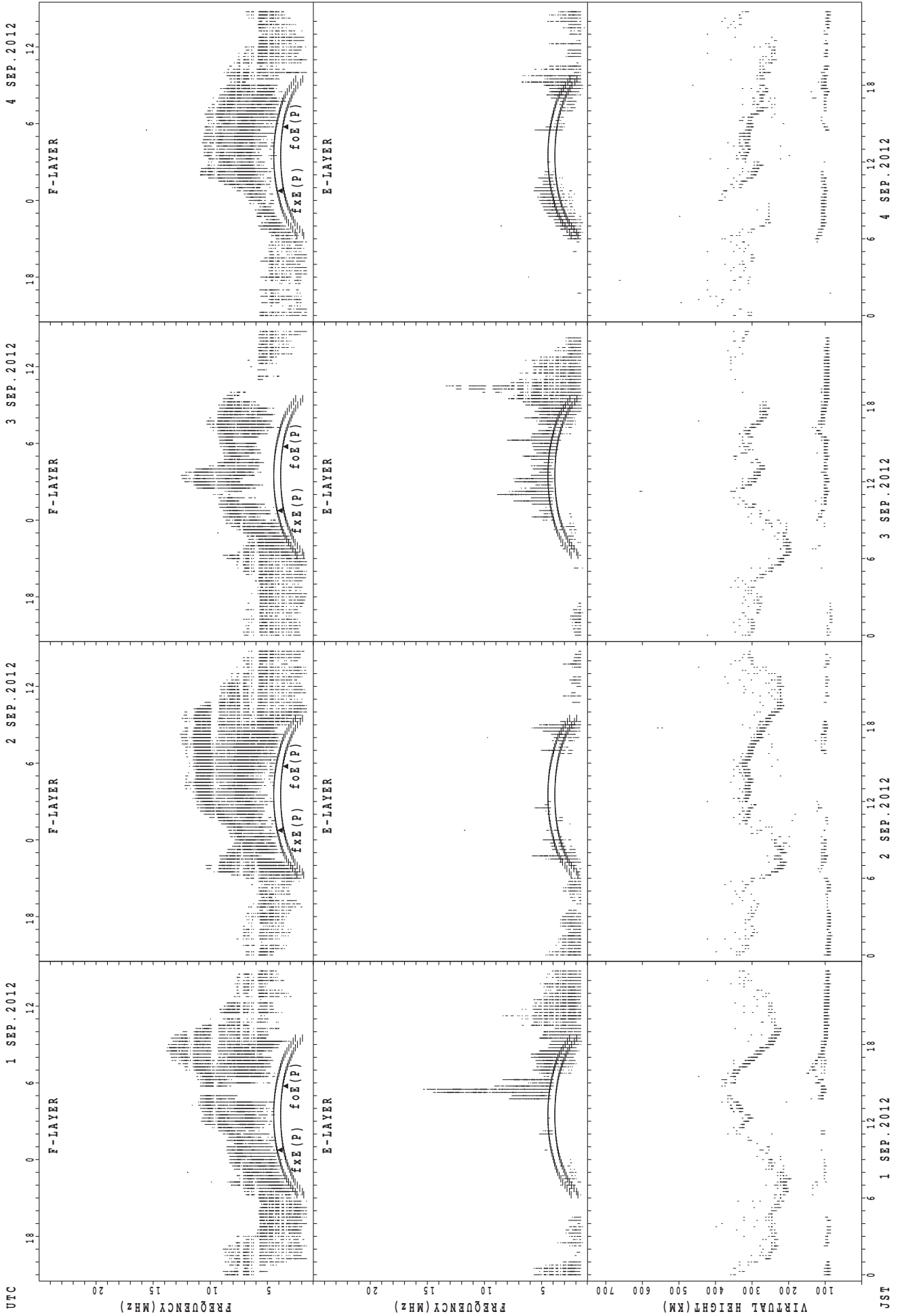
### SUMMARY PLOTS AT Yamagawa



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

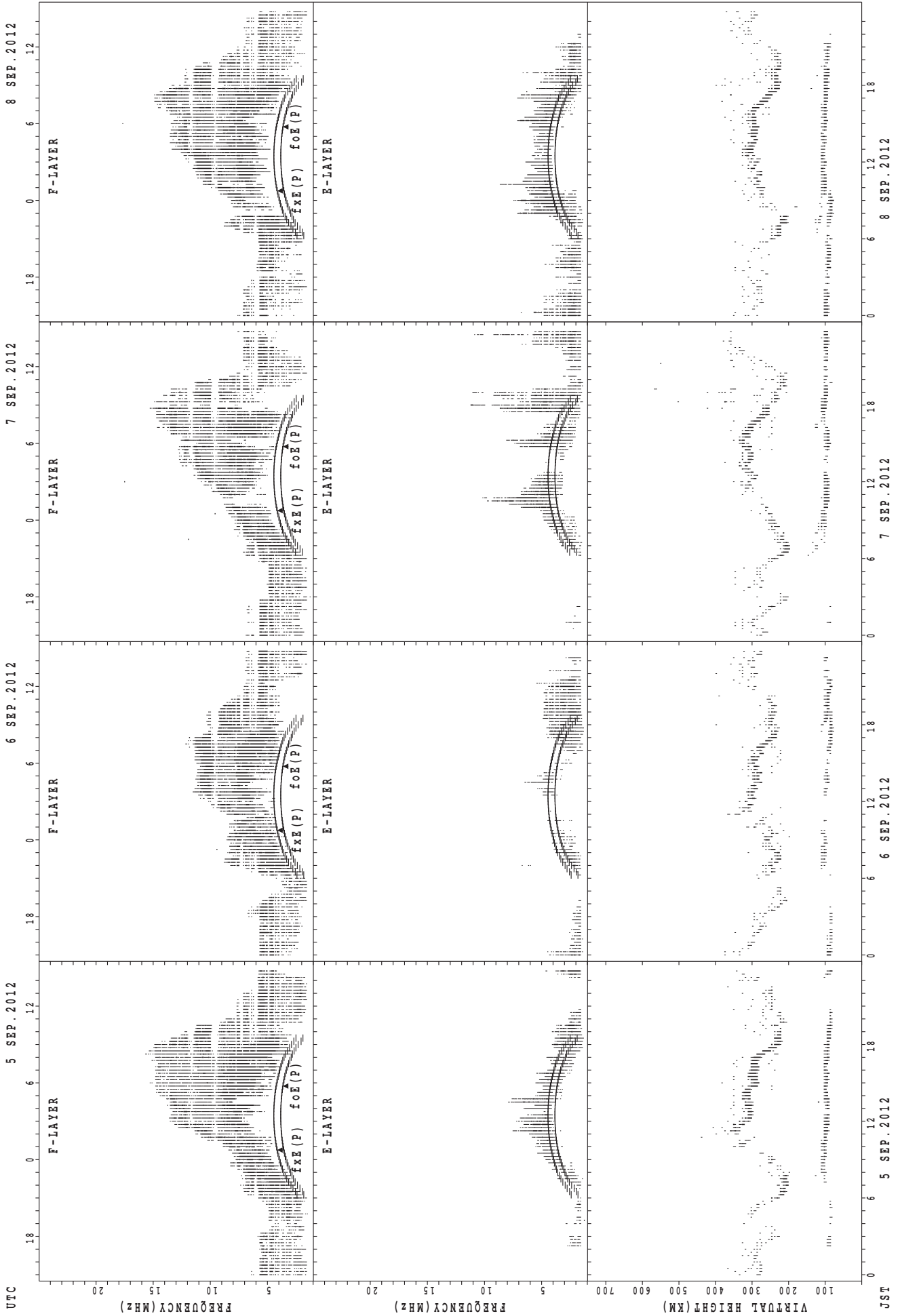


SUMMARY PLOTS AT Okinawa



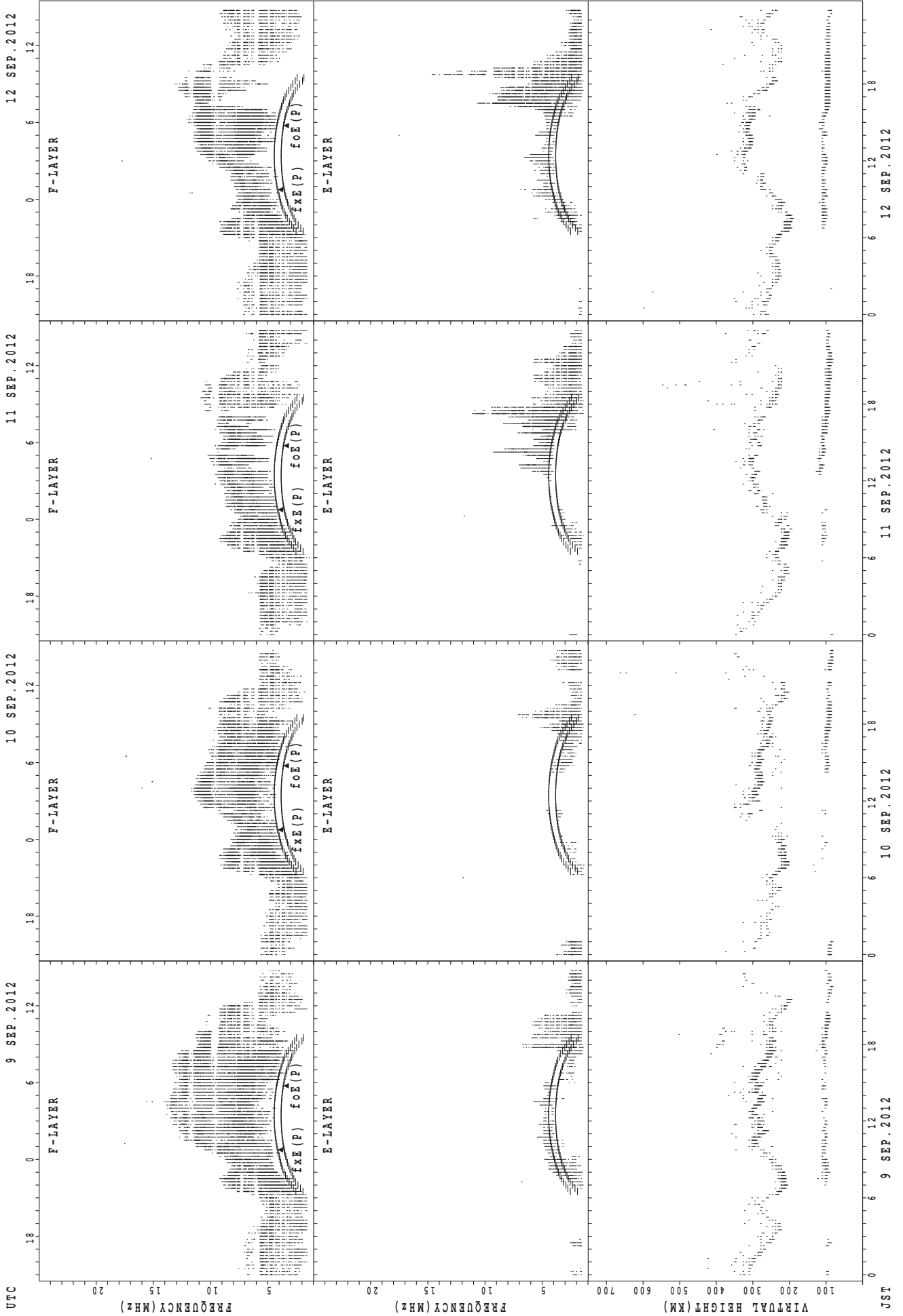
$f_{xE}(P)$ ; PREDICTED VALUE FOR  $f_{xE}$   
 $f_{oE}(P)$ ; PREDICTED VALUE FOR  $f_{oE}$

SUMMARY PLOTS AT Okinawa



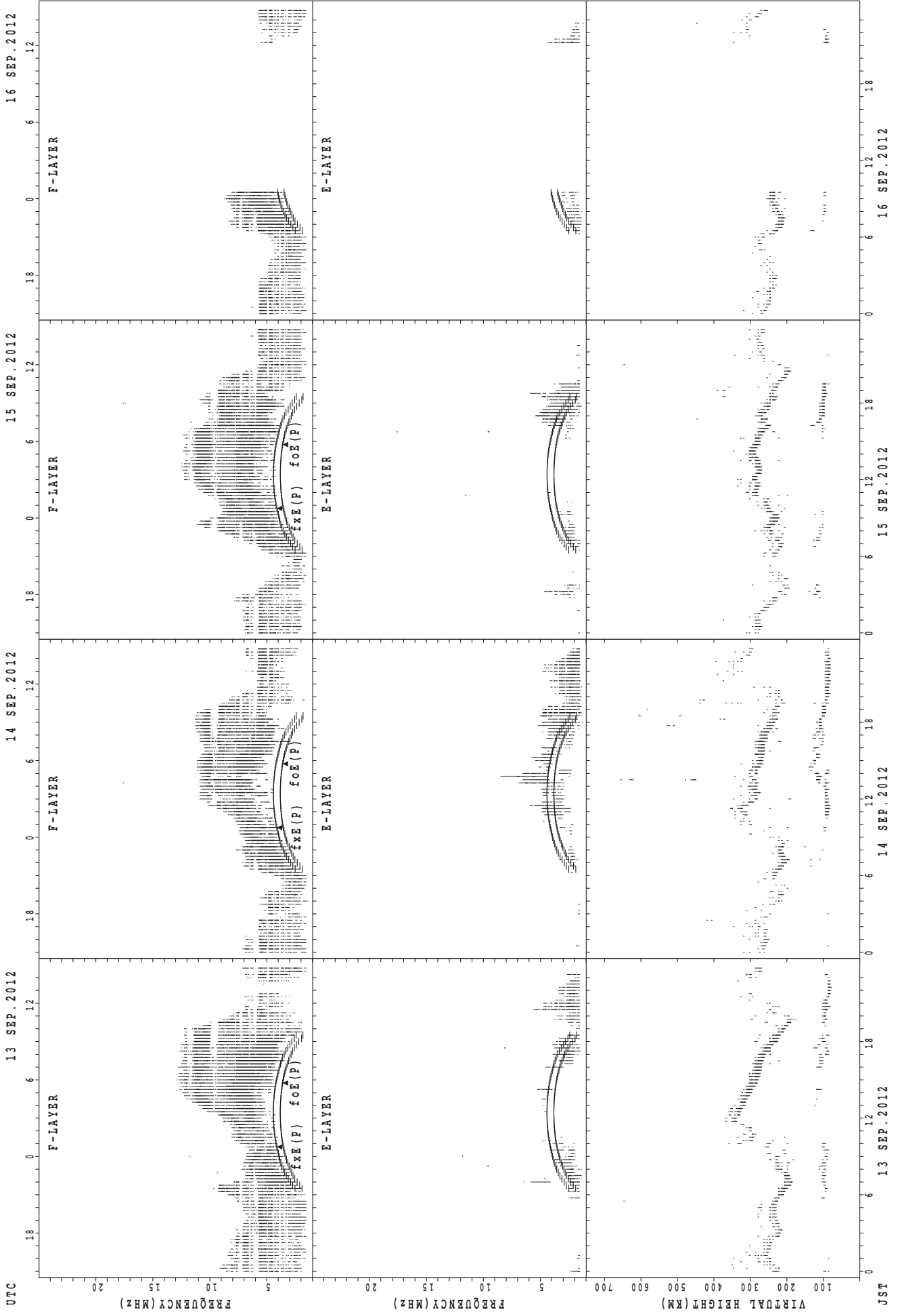
$f_{x E}(P)$ ; PREDICTED VALUE FOR  $f_{x E}$   
 $f_{o E}(P)$ ; PREDICTED VALUE FOR  $f_{o E}$

SUMMARY PLOTS AT Okinawa



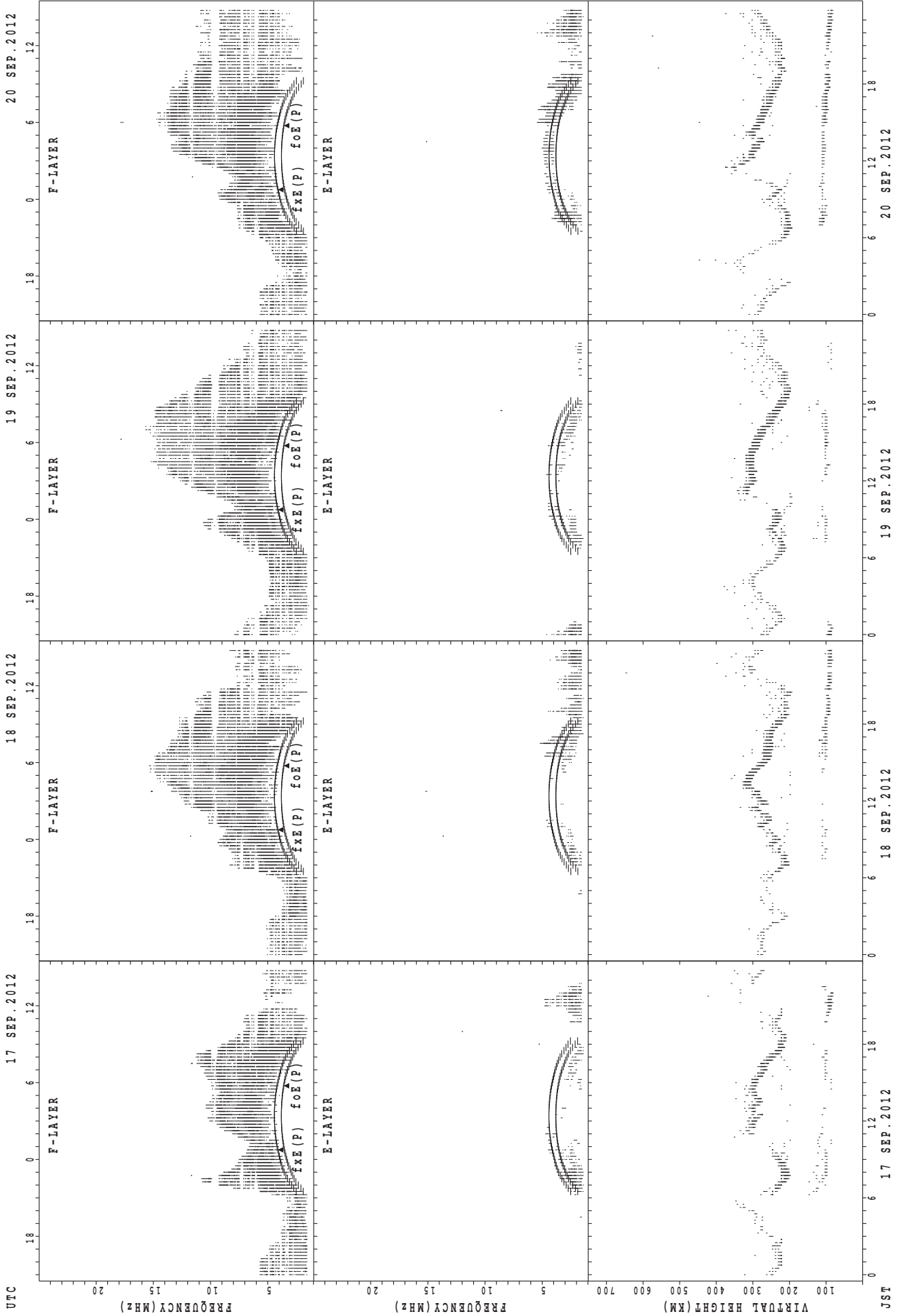
f<sub>xe</sub>(P); PREDICTED VALUE FOR f<sub>xe</sub>  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

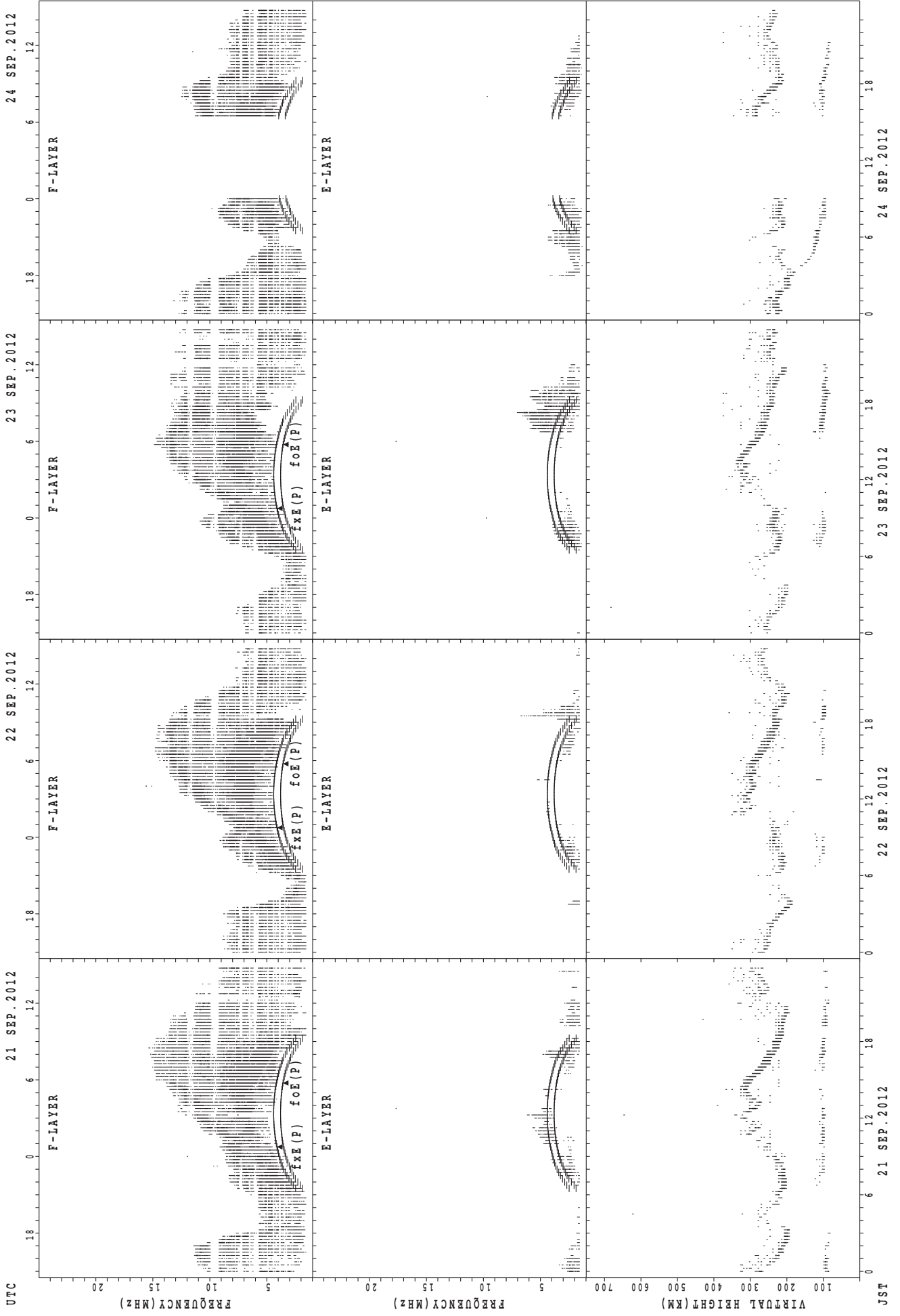
SUMMARY PLOTS AT Okinawa



JST  
 17 SEP.2012  
 18 SEP.2012  
 19 SEP.2012  
 20 SEP.2012

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

SUMMARY PLOTS AT Okinawa



UTC  
 21 SEP. 2012  
 22 SEP. 2012  
 23 SEP. 2012  
 24 SEP. 2012

F-LAYER  
 F-LAYER  
 F-LAYER  
 F-LAYER

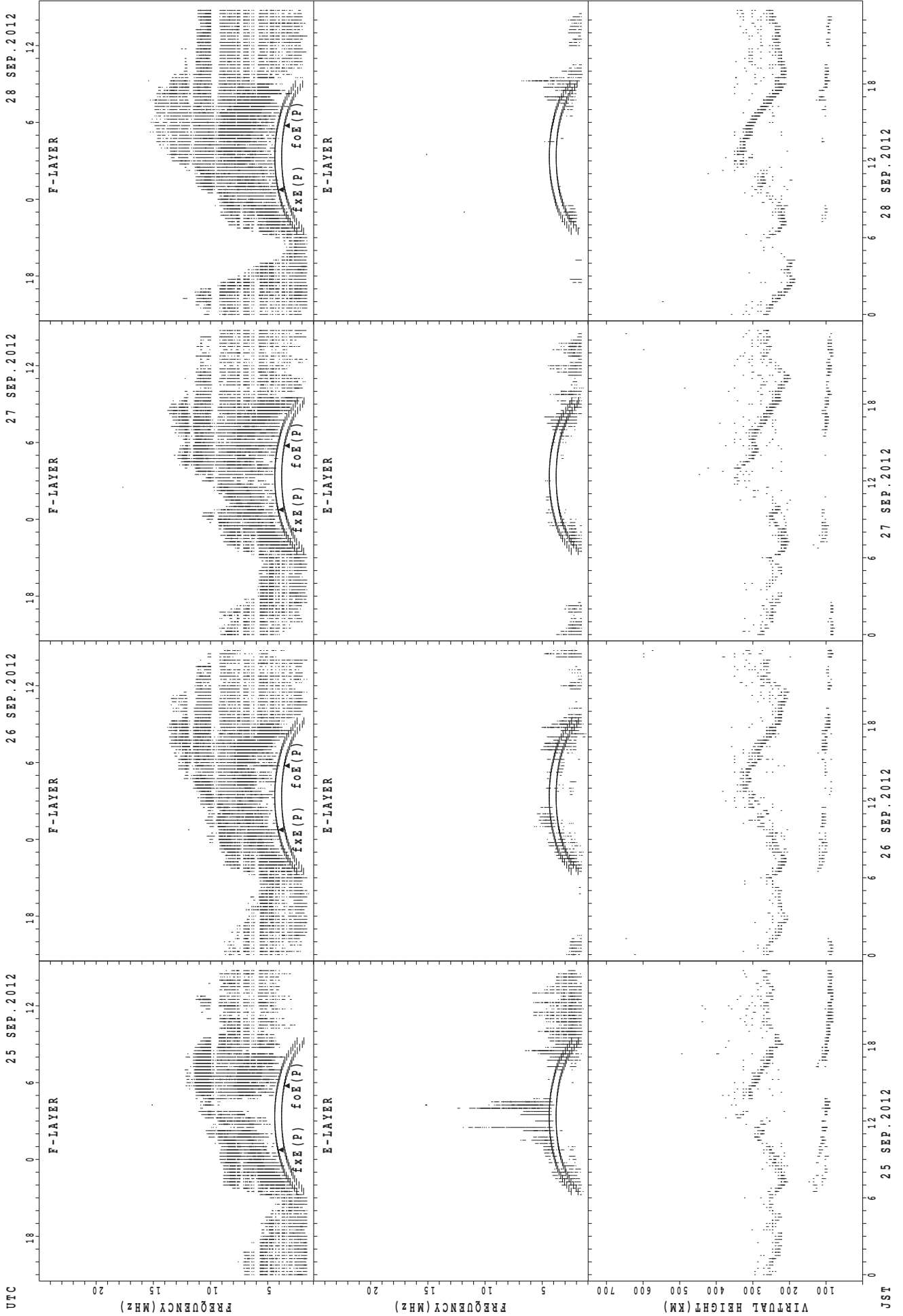
E-LAYER  
 E-LAYER  
 E-LAYER  
 E-LAYER

VIRTUAL HEIGHT (KM)  
 FREQUENCY (MHz)  
 FREQUENCY (MHz)

JST  
 21 SEP. 2012  
 22 SEP. 2012  
 23 SEP. 2012  
 24 SEP. 2012

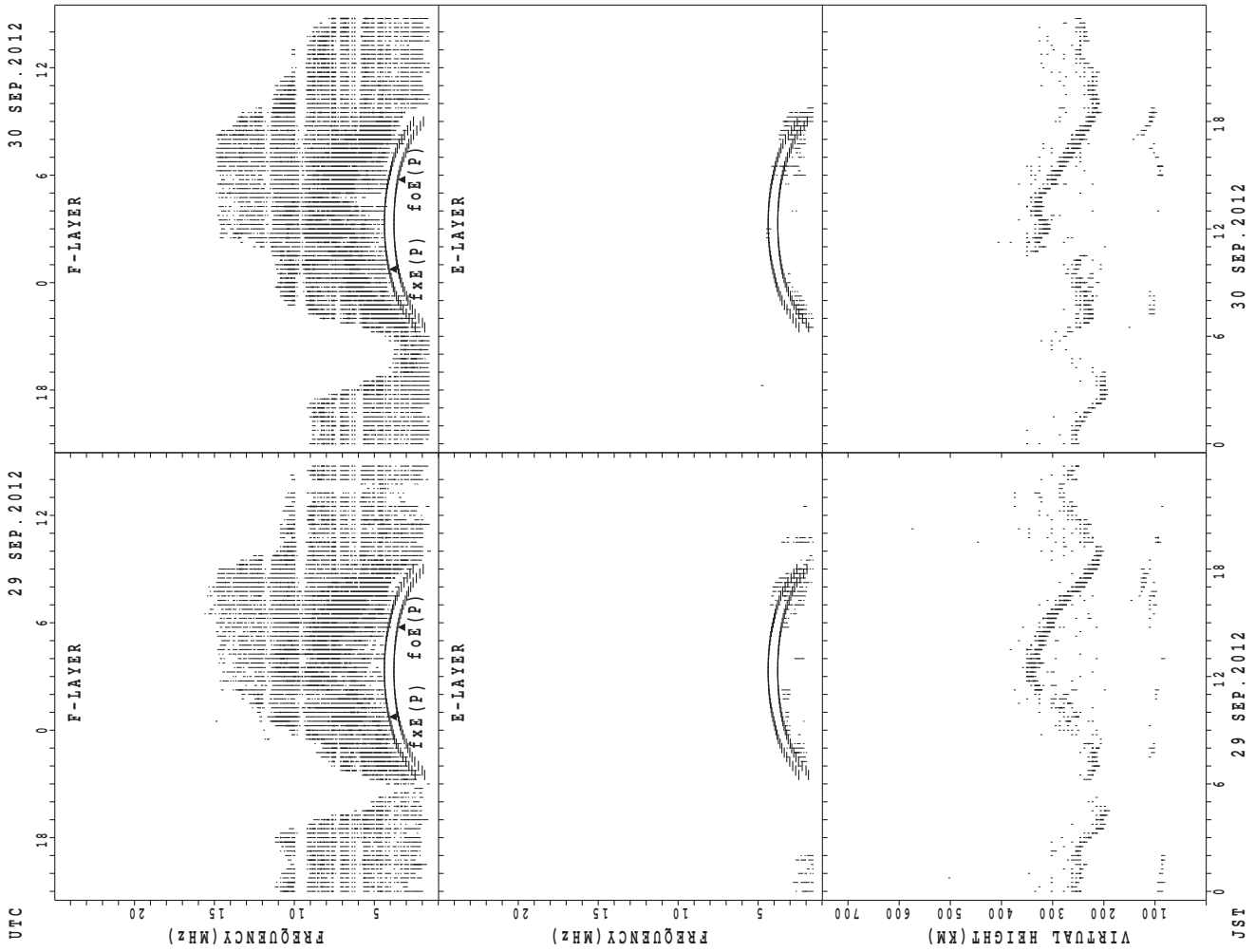
fxe(P); PREDICTED VALUE FOR fxe  
 foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



UTC  
25 SEP. 2012  
26 SEP. 2012  
27 SEP. 2012  
28 SEP. 2012  
JST  
foE(P); PREDICTED VALUE FOR f\_xE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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



MONTHLY MEDIANS OF h'F AND h'Es  
 SEP. 2012 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	13	20	24	5					8	26	27	25	17	10	8	2		
MED						296	234	240	247	240					256	262	264	254	256	276	283	297		
U Q						148	251	249	253	247					265	274	280	264	265	288	289	302		
L Q						148	232	231	235	235					256	254	256	247	250	272	275	292		

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	8	5	5	6	6	10	18	21	10	7	3	7	7	4	6	6	13	16	20	18	14	15	18	8
MED	95	93	95	95	103	103	107	107	104	95	99	97	97	102	99	103	105	103	98	102	99	99	95	95
U Q	96	95	108	95	105	105	113	109	111	107	109	101	103	109	103	103	119	110	104	107	103	103	99	97
L Q	91	90	92	93	103	99	101	103	95	95	91	91	89	97	89	99	99	96	94	95	95	95	91	90

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							12	24	24	5					1	29	28	27	24	13	2			
MED							245	229	236	246					272	272	256	246	260	254	275			
U Q							257	238	247	273					136	288	284	256	267	259	282			
L Q							230	222	229	234					136	263	254	244	247	246	268			

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	4	5	5	5	3	3	2	4	8	7	4	2	2		4	7	12	14	14	13	10	12	8
MED	93	96	95	93	97	95	107	105	105	103	105	105	106	96		113	105	107	103	98	97	97	97	99
U Q	96	101	97	107	107	121	113	107	109	108	109	107	107	97		115	115	109	105	103	100	99	100	101
L Q	91	95	95	91	95	95	103	103	99	101	103	101	105	95		107	103	103	99	97	95	95	93	96

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	1		2			2	23	26	25						14	30	28	28	22	5		1	
MED	302	284		259			251	224	224	238						281	267	254	242	246	250		314	
U Q	312	142		296			258	242	236	248						286	278	264	249	264	276		157	
L Q	292	142		222			244	220	216	231						274	256	245	238	240	233		157	

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	8	6	2	3	3	3	2	18	10	15	10	7	10	8	7	7	16	20	22	18	19	15	15	13
MED	95	97	91	93	91	99	105	112	107	105	104	111	105	104	97	99	103	103	104	97	95	95	93	95
U Q	96	101	91	97	115	111	119	119	107	111	105	181	111	106	111	107	105	113	109	103	97	97	95	97
L Q	94	93	91	91	87	93	91	107	103	103	99	97	97	97	93	95	99	97	97	95	93	93	91	91

MONTHLY MEDIANS OF h'F AND h'Es  
 SEP. 2012 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	8	11	10	7	1		3	27	25	27						8	29	29	29	28	22	13	9	12
MED	291	280	248	240	224		238	216	230	238						292	274	254	232	240	245	272	282	286
U Q	304	292	276	254	112		248	228	238	250						297	286	268	246	248	276	301	289	312
L Q	284	262	220	222	112		230	214	222	230						285	266	243	226	230	230	254	266	272

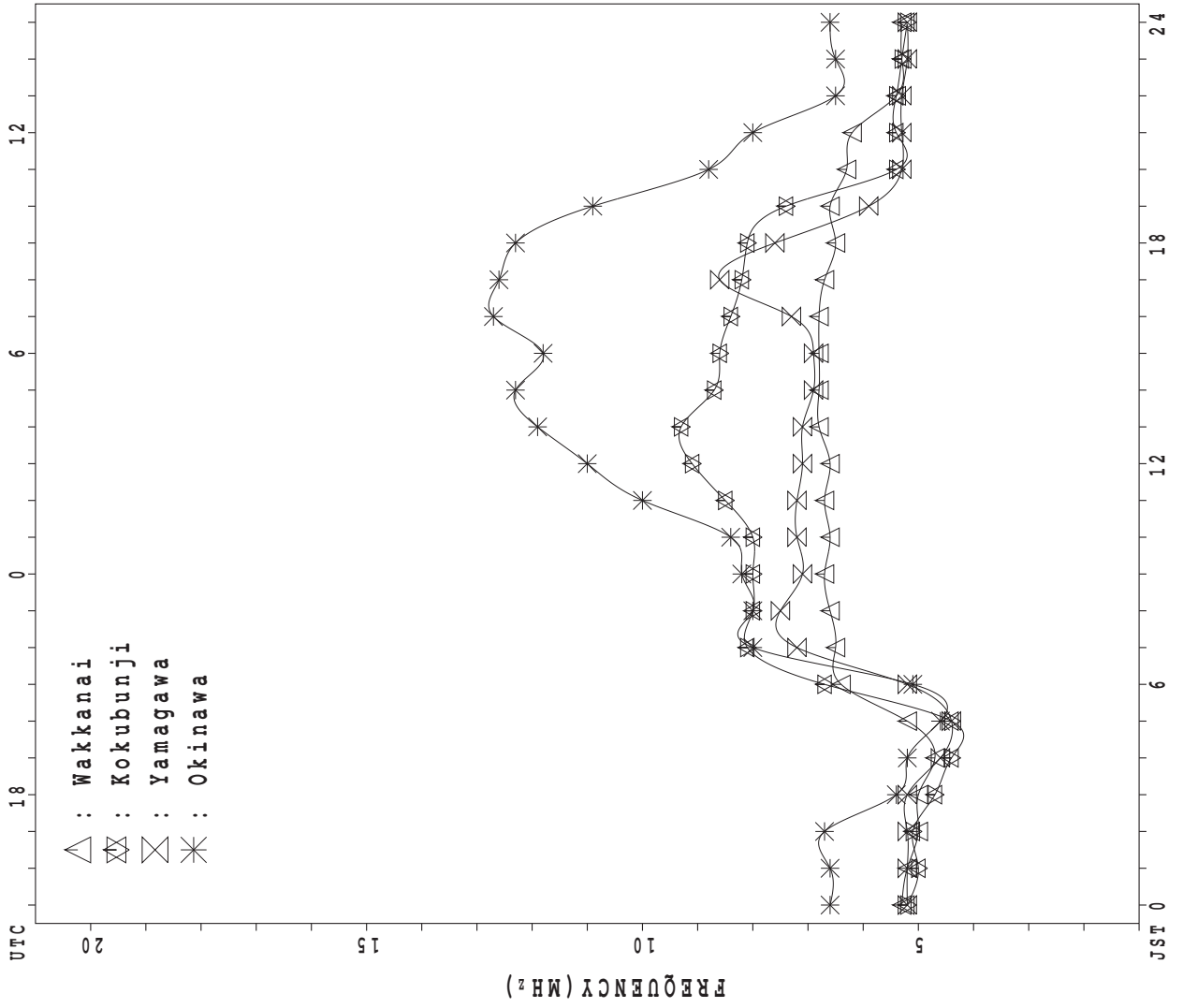
h'Es

	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	13	10	7	4	2	3	4	10	14	12	10	14	13	10	9	12	15	22	26	20	17	18	16	16
MED	91	91	89	96	123	91	109	120	108	107	108	105	103	105	105	103	107	103	102	97	95	94	91	94
U Q	95	95	95	109	151	129	121	125	113	109	113	109	110	109	112	113	119	113	105	101	97	97	96	96
L Q	90	89	87	93	95	89	93	113	105	105	103	99	96	97	97	99	99	101	97	96	93	91	90	89

MONTHLY MEDIANS PLOT OF fOF2

SEP. 2012

AUTOMATIC SCALING



- △ : Wakkanai
- ⊠ : Kokubunji
- ⊗ : Yamagawa
- \* : Okinawa

UTC

JST



**IONOSPHERIC DATA STATION Wakkanai**  
**SEP.2012 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	55	53	<sup>R</sup> 50	51	51	53	71	J <sup>R</sup> 81		<sup>Y</sup> J <sup>R</sup> 90	74	74	74	69	74	74	72	71	72	76	<sup>R</sup> 73	<sup>R</sup> U <sup>R</sup> 77	<sup>R</sup> 76	<sup>F</sup> 67	
2	<sup>F</sup> 62	<sup>F</sup> 58	<sup>F</sup> 55	<sup>F</sup> 56	52	51	60	63	68	74	68	75	<sup>R</sup> 76	72	<sup>A</sup> U <sup>A</sup> 73	70	72	80	77	78	77	69	66	66	
3	59	59	53	50	49	47	52	59	<sup>Z</sup> 55	<sup>R</sup> 55	<sup>G</sup> 48	58	<sup>J</sup> 57	60	60	57	59	59	60	60	61	56	58	54	
4	38	38	36	36	33	32	39	<sup>U</sup> 46	<sup>R</sup> 41	<sup>E</sup> 43	<sup>G</sup> 55	<sup>U</sup> 56	<sup>R</sup> 66	66	68	68	69	68	68	64	63	62	60	55	
5	53	51	52	46	44	48	54	59	61	61	63		74	70	76	73	71	72	67	64	66	62	62	42	
6	40	40	40	39	34	33		<sup>A</sup> J <sup>R</sup> 57	<sup>U</sup> 53	<sup>R</sup> 53	60	58	64	<sup>V</sup> 69	66	72	66	64	62	61	62	<sup>F</sup> 56	<sup>F</sup> 56	<sup>F</sup> 58	
7	57	52	51	49	44	44	53	64	61	71	62	73	<sup>U</sup> 77	<sup>U</sup> 76	80	76	76	74	63	62	63	63	63	62	
8	56	56	50	46	44	42	55	60	71	67	70	72	<sup>J</sup> 80	<sup>U</sup> 82	76	76	75	76	75	63	67	66	64	62	
9	61	62	55	47	47	47	54	64	65	72	73	71	75	<sup>R</sup> 76	74	71	70	<sup>R</sup> 66	69	69	70	64	62	58	
10	<sup>R</sup> 51	48	48	46	46	47	62	70	74	74	70	72	71	73	70	68	66	68	72	71	70	68	62	57	
11	<sup>R</sup> 52	49	49	48	46	48	64	<sup>R</sup> U <sup>Y</sup> 78	<sup>Y</sup> 77	72	71	68	69	71	69	66	66	72	74	73	73	70	66	62	
12	54	50	50	49	48	52	66	68	75	75	70	64	72	74	72	71	70	70	74	71	70	64	64	58	
13	58	54	51	50	49	51	<sup>R</sup> 76	69	69	68	65	67	72	73	75	<sup>R</sup> 80	78	81	<sup>R</sup> 82	71	69	60	53	51	
14	49	46	46	46	49	54	68	62	<sup>U</sup> 67	68	68	72	72	69	74	73	72	74	<sup>J</sup> 81	70	66	64	56	50	
15	50	48	46	50	50	48	65	68	72	74	76	<sup>U</sup> 78	<sup>U</sup> 80	<sup>U</sup> 79	73	68	63	71	71	70	72	68	62	55	
16	52	48	48	48	47	49	64	69	<sup>U</sup> 74	75	74	72	75	76	75	72	70	72	64	68	69	57	57	53	
17	51	50	50	46	42	43	67	71	74	85	76	<sup>U</sup> 76	<sup>U</sup> 76	<sup>U</sup> 77	75	66	73	72	72	67	68	66	62	56	
18	53	50	50	52	51	50	63	71	<sup>J</sup> 85	<sup>R</sup> 87	74	75	77	76	77	70	70	76	77	70	65	56	54	51	
19	52	51	50	47	50	51	60	69	73	96	<sup>U</sup> 99	<sup>R</sup> 92	<sup>U</sup> 82	<sup>U</sup> 80	<sup>U</sup> 80	78	76	78	69	56	58	58	56	52	
20	50	50	50	48	48	45	<sup>R</sup> 56	63	64	66	68	75	<sup>R</sup> 73	76	74	<sup>R</sup> 82	72	<sup>R</sup> 75	<sup>R</sup> 75	62	65	60	58	54	
21	<sup>R</sup> 54	54	<sup>R</sup> 53	50	46	46	58	58	65	64	72	75	74	73	<sup>U</sup> 75	74	73	73	71	64	62	61	58	56	
22	53	50	50	49	49	49	62	66	65	74	<sup>U</sup> 76	<sup>U</sup> 89	<sup>U</sup> 75	74	75	76	75	69	68	66	66	64	62	61	
23	58	52	51	50	50	52	70	69	64	<sup>U</sup> 83	92	92	<sup>R</sup> 89	74	74	<sup>R</sup> 78	77	81	72	66	62	60	56	54	
24	53	52	52	52	42	42	61	68	73	75	77	77	79	79	76	76	77	<sup>R</sup> 78	72	70	67	64	58	56	
25	55	52	51	51	46	50	68	73	<sup>U</sup> 74	<sup>R</sup> 88	82		80	81	85	81	77	<sup>U</sup> 79	77	75	68	66	56	56	
26	56	<sup>R</sup> 54	56	58	52	51	74	<sup>J</sup> 78	<sup>J</sup> 84	90	<sup>U</sup> 80	<sup>U</sup> 84		<sup>Y</sup> J <sup>R</sup> 88	<sup>J</sup> 84	88	82	88	78	72	72	66	65	60	
27	61	60	60	60	63	67	76	<sup>R</sup> 85	<sup>R</sup> 76	92	95	91	94	88	86	<sup>J</sup> 91	93	90	82	78	74	69	64	61	
28	62	62	62	63	62	54	63	71	<sup>R</sup> 77	92	97	99	<sup>U</sup> 99	<sup>U</sup> 90	<sup>U</sup> 92	92	86	<sup>R</sup> 84	85	85	76	72	70	65	
29	64	62	61	61	58	60	71	74	76	88	<sup>J</sup> 92	<sup>R</sup> 105	<sup>R</sup> 92	<sup>R</sup> 92	90	<sup>J</sup> 84	<sup>R</sup> 86	78	86	75	72	62	60	55	
30	56	54	52	51	51	52	74	73	<sup>J</sup> 96	<sup>Y</sup> 104	<sup>U</sup> 92	<sup>Y</sup> 86	<sup>U</sup> 78	<sup>U</sup> 79	<sup>R</sup> 77	79	76	83	76	75	64	59	55	52	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	29	30	29	30	30	28	28	30	29	30	30	30	30	30	30	30	30	30	30
MED	54	52	50	50	48	49	63	68	72	74	74	75	75	76	75	74	72	74	72	70	68	64	61	56	
U Q	58	54	53	51	51	52	69	71	76	88	80	85	<sup>R</sup> 80	<sup>R</sup> 79	<sup>R</sup> 78	<sup>R</sup> 79	77	78	77	73	72	66	64	61	
L Q	52	50	50	47	46	46	57	63	64	68	68	72	72	72	74	71	70	71	69	64	64	60	56	54	

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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								A	L	A	L	L	A	LU	L	L	L								
2						L	A	A	L	A	L	LU	L	L	A	A									
3							U	L	R						A	U	L	L	L						
4							388	408	428	440	496	488			L	L	L								
5							L		L	L	L	A	L	L	L	A	L	L							
6							A		L	R					LU	LU	L	L							
7							396	440	460	456	528	516	512	500	480			L	L						
8							L	U	L	L	L	L	U	L	L	L	L	L	L						
9							U	L	L	L	L	L	L	L	L	L	L	L	L						
10							L	L	A	L	L	A	U	LU	L	L		L							
11							L	U	L	L	L	A	A	U	LU	L	L		L						
12							L	L	L				L	U	LU	LU	L	L							
13							L	L	U	L	L	L	U	LU	L	L	L	L	L						
14								R	L				U	L	L	L	L	L	L						
15								416		464	484	472		464											
16							L	L	L	L	L	L	U	LU	L	L	L	L	L						
17							L	L	L	L	L	L	U	L	L	L	L	L	L						
18							L	L	L	L	L	L	U	U	L	L	L	L	L						
19								L	U	L	L	L	L	L	U	L	L	L	L						
20								L	L			L	U	R	L	L	A		L						
21								A			U	L	L	U	L	R	L	L							
22							L		U	LU	LU	LU	L	L	L	L	L	L							
23								L	L	L	L	L	L	L	L	L	L	L	L						
24								L	L	L	L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L	L	L	L	L	L						
26								L	L	L	L	L	L	L	L	L	L	L	L						
27								L	L	L	L	L	L	L	L	L	L	L	L						
28								L		L	L	L	L	L	L	L	L	L	L						
29								328		L	L	484		L	L										
30								L	L	L	L	L	L	L	L	L	L	L	L						
31									460																
	00	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	5	10	14	13	14	19	14	12	3									
MED							U	L	L	L	L	L	U	LU	LU	LU	L								
U Q							364	396	434	456	476	492	488	482	470	480									
L Q									L	L	L	L	U	LU	LU	LU	L								
							358	416	452	462	484	476	476	458	464										

SEP. 2012 foF1 (0.01MHz)

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## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	248	304	328	340	344	A	A	A	A	332	304	268	A					
2						A	228	284	324	340	356	R	376	A	A	A	A	240	A					
3						180	220	284	312	336	356	364	A	A	A	316	292	232	A					
4	J 136	K					200	272	300	332	A	A	344	340	328	312	288	240	A					
5						184	A	288	328	332	A	A	A	A	A	324	284	216	A					
6							A	A	300	A	336	A	A	344	340	316	328	A						
7							U	A	A	U	A	U	A	A	A	352	320	A	224	A				
8							A	U	A	U	A	U	A	360	364	368	336	324	284	A				
9						B	U	A	U	A	U	A	R	R	340	328	308	276	224	164	U	R		
10						B	A	A	A	A	A	A	A	A	A	300	264	216	A					
11						B	212	288	296	336	344	A	A	U	R	A	A	A	A					
12						B	A	U	A	R	356	A	352	340	328	308	264	176	A					
13							216	256	304	320	344	348	356	352	332	308	268	224	B					
14							A	A	A	A	340	344	352	336	320	304	256	204	B					
15						B	212	260	300	328	336	344	352	340	316	284	260	A						
16							192	260	296	316	340	344	352	332	328	A	240	192	B					
17							A	264	316	328	324	348	352	344	328	288	264	188	A					
18							216	272	296	320	340	324	348	340	328	296	256	A						
19						B	A	U	A	A	348	340	332	324	316	A	256	A						
20						B	A	264	296	A	348	340	332	324	320	308	248	A						
21						B	220	264	304	324	336	348	U	R	A	A	R	324	292	260	A			
22							A	256	296	320	348	R	A	348	340	320	304	272	200					
23						B	220	284	316	344	352	364	364	348	316	300	272	192						
24						B	A	188	276	316	340	352	360	364	352	316	308	252	192					
25						B	220	256	316	336	352	364	R	356	344	344	A	A	204					
26						B	216	264	308	328	336	344	348	328	320	308	A	A						
27							U	A	196	268	296	312	344	368	U	R	356	348	324	304	260	A		
28							216	264	296	340	356	356	U	A	A	A	A	A	184					
29							192	268	292	304	368	364	A	352	320	A	A	204	A					
30							216	268	300	332	340	340	U	R	U	R	U	R	348	340	324	308	256	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1					2	22	28	28	26	26	20	20	22	23	23	24	19	1					
MED	J 136	K				182	216	268	300	328	344	348	352	340	324	308	264	204	164	U	R			
U Q						220	280	314	336	352	362	356	348	328	316	280	224							
L Q						196	264	296	320	336	344	348	340	320	300	256	192							

SEP. 2012 foE (0.01MHz)

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## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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 B 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
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	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	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	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	E B E B			E B 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	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
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	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A	E B J A
14	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
15	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
16	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
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	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	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	E B	J A	E B	E B	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	J A	J A	J A	J A	J A
21	J A	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
23	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
24	J A	E B	J A	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B
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	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B
27	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
28	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
29	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B
30	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B
31																								
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	16	15	16	14	16	16	24	30	34	36	38	36	37	35		G	32	30	24	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
LQ	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B

SEP. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN





## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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

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

SEP. 2012 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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

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	295	294	289 <sup>R</sup>	284	292	310	358				343	309	335	301	314	317	315	322	336	299	328 <sup>R</sup>	312 <sup>R</sup>	306 <sup>R</sup>	301 <sup>F</sup>	
2	320 <sup>F</sup>	299 <sup>F</sup>	288 <sup>F</sup>	280 <sup>F</sup>	270	277	296	329	289	337	320	326	336 <sup>R</sup>	301			309	300	320	311	310	296	284	275	
3	294	293	274	268	271	285	317	292	308	304		301		291	299	284	298	305	303	291	295	278	274	291	
4	266	258	260	260	281	288	281	257 <sup>U</sup>	257 <sup>R</sup>		309	286 <sup>U</sup>	324 <sup>R</sup>	302	315	318	314	320	324	296	289	293	286	290	
5	282	279	295	291	281	286	334	307	323	331	292		298		331	328	301	329	309	282	292	286	305	310	
6	278	281	286	294	289	273			332	288	299	234	287	313	309	320	329	330	319	307	291	269 <sup>F</sup>	273 <sup>F</sup>	262 <sup>F</sup>	
7	278	290	294	299	298	301	344	351	340	332	331	301	340	347	331	321	340	340	311	283	280	280	280	286	
8	281	291	264	282	275	289	313	342	353	364	346	338		311	338	334	340	337	339	278	280	280	282	283	
9	282	294	312	294	294	293	335	335	312	306	365	314	323	339	343	332	340	320	316	299	308	298	307	294	
10	295	293	291	299	302	293	330	347	350	338	328	332	326	324	336	316	323	320	340	342	317	311	326	299	
11	303	290	289	291	300	312	349	345	367	351	340	318	319	326	341	334	332	330	321	320	311	305	314	303	
12	300	284	282	284	298	304	331	343	350	357	351	313	336	325	341	342	331	330	314	326	314	319	315	320	
13	307	297	310	294	299	316	363	369	375	331	346	330	308	331	322	324	327	340	357	316	323	316	287	298	
14	300	291	279	286	298	337	354	394		349	352	323	349	308	323	327	333	325	362 <sup>J</sup>	317	310	317	310	303	
15	291	296	300	303	327	325	350	341	356	349	334	352	351	355	336	334	315	321	321	324	319	318	314	303	
16	312	287	285	303	306	311	349	352	368	360	337	339	343	342	343	341	327	336	312	307	324	312	305	297	
17	305	300	308	308	311	302	326	365	351	352	357	353	349	365	337	324	331	337	340	316	312	295	310	312	
18	308	302	302	308	311	312	339	337			349	346	349	340	339	339	324	323	330	324	302	302	293	294	
19	289	293	294	283	295	308	354	343	347	332	340	346		325	330	333	338	344	330	305	286	286	295	282	
20	277	275	293	299	291	304	330	322	321	342	302	351	337	335	342	334	329	330	343	298	306	301	293	294	
21	297	295	292	300	278	303	364	363	345	341	317	353	346	318	352	327	324	325	323	307	316	304	288	296	
22	294	294	296	295	299	306	366	347	348	343	341	330	368	328	335	337	339	340	310	302	306	289	296	302	
23	310	303	308	303	306	312	358	373	365	312	325	346	335	340	343	339	340	321	332	309	308	298	290	288	
24	285	288	294	308	342	317	355	355	354	360	351	339	340	336	347	347	350	345	326	315	306	305	298	292	
25	293	303	303	309	300	299	357	343	364	351	332		332	341	325	332	327	328	336	305	311	317	291	287	
26	290	300	286	294	306	301	359		347	374	346					318	339	350	337	314	315	304	302	291	
27	285	284	284	292	299	306	355	339	377	334	348		324	324	310		315	328	325	322	323	308	301	280	
28	274	289	299	315	323	327	372	343	357	334	329	341	343		328	318	324	323	319	319	322	304	303	305	
29	294	304	304	306	307	313	352	367	363	338		343	341		312		329	339	319	332	319	314	303	289	
30	290	288	282	287	287	304	352	351	329		360		347	321	329	332	327	324	343	337	322	300	295	286	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	29	27	26	27	29	26	26	26	28	27	30	30	30	30	30	30	30	30	
MED	294	293	292	294	298	304	350	343	350	338	340	335	336	326	333	332	328	328	324	310	310	303	297	294	
U Q	300	297	300	303	306	312	358	355	363	351	350	346	346	340	341	334	338	337	337	320	319	312	306	302	
L Q	282	288	285	286	289	293	330	337	329	331	322	314	324	313	322	320	323	322	319	299	302	293	288	287	

SEP. 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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								A	L	A	L	L	A	U	L	L	L								
2						L	A	A	L	A	L	U	L	L	A	A									
3							A	A	352	346	358	401	377	319	379	367	A	U	L	L	L				
4								365	384	389	411	365	371			L	L	L							
5							L		373	355	352		A	A	L	L	A	L	L						
6							A		370	382	389	405	350	332	346	353	351								
7							L	U	L	U	L	L	L	U	L	L	L	L	L						
8							L	L	L	L	L	U	L	L	L	L	L								
9							U	L	L	L	L	L	L	L	L	L	L								
10							L	L	A	L	L	A	U	L	L	L		L							
11							L	U	L	L	L	A	A	U	L	L	L								
12							L	L	L	409	402		406	383	376	357		L							
13							L	L	L	L	L	L	U	L	L	L	L	L	L						
14								R	L	L	L	U	L	L	L	L	L	L	L						
15								394		375	378	373		355											
16							L	L	L	L	L	L	U	L	L	L	L	L	L						
17							L	L	L	L	L	L	U	L	L	L	L	L	L						
18							L	L	L	L	L	L	U	L	L	L	L	L	L						
19								L	L	L	L	L	L	U	L	L	L	L	L						
20							L	L	L	L	L	L	U	R	L	L	A		L						
21								A		L	L	L	U	L	L	R	L	L							
22							L		U	L	L	L	L	L	L	L	L	L							
23								L	L	L	L	L	L	L	L	L	L	L							
24								L	L	L	L	L	L	L	L	L	L	L							
25									L	L	L	L	L	L	L	L	L	L							
26								L	L	L	L	L	L	L	L	L	L	L							
27								L	L	L	L	L	L	L	L	L	L	L							
28							L		L	L	L	L	L					L							
29								408		L	L	395		L	L										
30								L	L	L	L	L	L	L											
31									385																
	00	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	5	10	14	13	14	18	14	12	3									
MED							A	352	365	383	389	377	364	374	372	372	351								
U Q								389	394	400	404	377	381	383	384	357									
L Q								348	373	380	366	361	369	362	360	329									

SEP. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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								244	244	248	248	280 <sup>L</sup>	282	324 <sup>L</sup>	320	292	286								
2						310	310 <sup>A</sup>	278 <sup>A</sup>	302	280	280	294	294	328		320 <sup>A</sup>	292 <sup>A</sup>								
3							302	358	358	376		376 <sup>G</sup>	548 <sup>E Y</sup>	398	348 <sup>E A</sup>	368	326	316							
4								480			384	430	298		298	298	296								
5							294		294	294	384		352 <sup>A</sup>	312	290	290	290	262							
6							308 <sup>A</sup>	324	350	364	602	400	320	320	286	284									
7								242	248	272	282	326	288	288	288	282 <sup>L</sup>	262	250							
8								260	258	246	260	282	282	282	274	272									
9								280	300	306	266	266	290	284	272	262									
10							268	254	254	256	266	280	280	280	276		276								
11								250	234	244	244	268 <sup>A</sup>	276 <sup>A</sup>	276	264	264		254							
12								246	246	246	246	246		266	276	276	268	268							
13								238	232	232	246	250	260	274	274	282	270	270	248						
14									<sup>A</sup>	266	266	286	256	256	276	276	252	252							
15									252	250	266	266	266	262	258	246									
16									232	232	236	246	246	270	270	270	256	266							
17									220	238	240	240	260	260	260	260									
18									248	248	244	244	264	264	268	268	264	264							
19									246	260	260	252	252	252	266	260									
20									276	276	322	274	278	278	278	260		260							
21									252		314	270	272	294	274	268	254								
22									252		252	282	274	238	278	270	270								
23										232	288	282	274	260	256	256	256								
24										244	244	244	246	246	270	270	260								
25										250	250	254	254	254	254	254									
26										240	240	240	262	262	262	262									
27										230	238	240	240	252	252	252	252								
28									224	224	232	240	240	244				244							
29									214		220	250	250		258	260									
30										236	240	238	234	234	240										
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT						1	6	19	26	29	30	28	29	27	27	25	14	7							
MED						310	281	248	247	250	260	267	268	276	271	264	269	254							
U Q						302	278	276	278	282	281	285	288	282	279	286	262								
L Q						246	232	238	242	244	253	255	260	262	260	262	250								

SEP. 2012 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

D	00	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	262	270	270	270	250	234	A	234	A	210	196	H	A	E	A	200	200	208	224	264	264	264	264
2	256	256	264	O	280	302	276	A	A	A	228	A	E	Y	A	E	A	A	A	272	260	260	260	272
3	282	282	282	298	298	302	E	A	A	264	210	210	A	226	232	A	232	232	240	260	E	A	290	260
4	318	354	348	348	326	304	244	244	222	222	222	442	202	202	214	214	220	248	264	E	A	308	284	278
5	278	280	280	274	288	288	258	230	230	212	240	A	A	E	A	A	A	240	240	246	254	254	266	232
6	298	298	298	E	A	328	318	A	242	228	228	210	H	E	A	228	228	228	228	238	240	262	294	314
7	280	292	292	290	266	264	232	232	H	192	206	206	212	214	174	210	210	H	214	222	228	A	312	292
8	290	282	282	282	290	290	264	224	224	224	218	214	216	216	216	216	224	232	232	232	232	256	276	284
9	306	266	230	230	272	272	254	240	232	226	198	210	210	210	208	208	214	220	240	240	240	240	262	262
10	252	262	262	256	256	260	238	236	A	A	226	208	A	A	216	216	210	210	218	232	234	234	238	238
11	246	288	288	272	270	248	236	224	224	220	208	A	A	208	208	214	244	244	244	244	244	244	244	244
12	258	270	282	282	250	250	236	218	222	220	176	230	190	190	190	198	198	226	226	226	226	262	274	274
13	256	256	254	254	254	270	228	214	206	206	188	188	188	188	198	224	224	224	224	238	238	236	242	242
14	258	274	280	280	264	250	242	214	228	240	198	188	H	188	194	194	212	228	228	228	228	248	248	248
15	254	268	268	268	246	240	240	236	218	218	218	190	H	190	190	190	H	218	240	240	240	252	252	234
16	262	262	262	262	262	262	230	218	218	218	218	218	200	200	200	206	H	206	226	226	232	232	238	244
17	250	250	250	250	250	270	240	226	216	202	202	202	202	H	198	198	230	230	230	230	246	256	254	254
18	258	258	258	258	258	258	234	224	224	210	208	H	192	H	192	184	210	210	230	230	230	230	230	266
19	268	268	268	268	268	246	212	212	216	H	218	H	218	226	184	184	196	218	224	224	240	276	276	262
20	294	294	292	290	290	262	248	248	216	216	216	A	228	228	A	A	228	228	248	248	248	248	248	256
21	278	278	264	262	262	256	224	224	A	224	222	224	222	222	198	H	200	200	234	234	234	234	246	266
22	264	286	286	280	262	254	222	202	218	208	208	208	218	200	200	200	220	220	226	246	246	252	252	252
23	252	252	252	258	258	258	220	220	202	202	208	208	208	208	208	208	H	220	222	222	232	232	242	246
24	272	272	262	258	226	248	216	216	216	216	216	190	216	216	216	222	222	224	224	226	226	230	240	250
25	256	256	256	256	270	270	220	220	220	214	214	214	214	214	214	218	218	220	220	232	232	232	236	262
26	264	264	278	266	234	250	230	230	214	214	200	200	188	206	206	206	H	214	226	226	226	226	228	234
27	278	280	280	280	266	264	226	226	204	202	200	206	206	206	206	206	H	220	A	246	246	246	240	252
28	280	280	276	252	224	224	216	194	194	194	202	202	206	206	230	230	230	230	230	232	232	236	236	236
29	266	266	266	256	256	244	220	218	218	218	216	214	228	212	212	H	212	234	234	234	248	248	248	248
30	270	270	270	274	274	274	228	204	204	204	204	204	204	204	204	220	222	230	230	230	230	230	232	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	28	27	28	28	30	25	27	30	27	27	30	30	30	29	30	30	30	30
MED	265	270	270	268	264	261	232	224	218	216	209	208	209	206	206	210	220	229	231	236	246	248	248	259
U Q	280	282	282	280	274	272	241	232	226	221	218	218	222	216	214	218	228	234	244	247	260	266	266	270
L Q	256	262	262	258	256	250	223	216	215	207	202	198	H	200	198	198	200	214	224	226	231	232	238	240

SEP. 2012 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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	110	110	110	110	110	108	108		A		108	108	108					
2						A	108	108	108	108	108		A		A				112					
3							112	112	112	112	112	112			A	A		112	112	112				
4	B						106	106	106	106			A				106	106	106					
5							A	112	112	112		A					112	112	112					
6							A		116		A				114	114	114	114						
7							114	114	110	110	110		A			110	110		126					
8								114	114	114	114	114	114	114	116	116	116							
9						B	116	116	116	114		A	102	106	106	108	108	108	122	126				
10						B		A	A						A	A		114	114	114				
11						B	128	122	122	122	112			A				112						
12						B		112	112	112	112			112	112	112		A		112	112			
13							126	126	126	108	108	108	108	112	112	112	112	112	126					
14							A	A	A		114	114	114	112	112	114	114	114						
15						B	116	118	118	118	118	110	110	110	122	104	104							
16							136	136	136	136	B	114	114	114	114	114		A	114	114				
17							A	114	114	114	106	106	106	106	106	110	110	110						
18							116	116	116	116	114	112	112	112	112	112	122		A					
19						B		122	116		A	116	116	116	112	112		A	116					
20						B		112	112	112	116	112	112	112	112	112	112							
21						B	118	118	110	110	110	110			A		110	116	122					
22							A	114		A	114	114			114	114	112	112	112	124				
23						B	124	124	122	118	114	114	114	114	114	116	116	152						
24						B		126	110	110	110	110	110	110	110	110	116	116						
25						B	118	118	118	112	110	108	106	106	106				146					
26						B	130	130	118	106	106	106	106	106	122	126		A						
27							114	114	114	114	114	114	114	110	110	110	110							
28							144	124	122	118	118	116		116						128				
29							122	124	124		A	124	122		122	124			A	E	A			
30							142	120	120	118	116	106	108	114	114	114	114							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	19	28	27	25	26	21	21	23	23	22	24	19	1					
MED						112	118	117	116	112	114	112	110	112	112	112	112	114	126					
U Q						128	124	120	117	114	114	114	114	114	114	114	115	126						
L Q						114	113	112	110	110	108	107	110	110	110	110	111	112						

SEP. 2012 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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

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	B	104	104	104	B	122	116	116	114	114	114	106	106	106	128	128	128	102	102	102	102	102	102
2	106	102	102	102	102	102	108	108	108	108	108	102	112	110	110	112	118	98	98	98	98	B	B	B
3	98	98	98	98	98	98	118	118	118	118	118	112	112	112	112	130	130	120	120					166
4	B	138	128	128	128	128	128	122	G	122	114	114	G	G	G	124	124	122	112	112	112	112	106	B
5	102	B	102	102	102	G	102	G	G	102	102	102	102	102	102	102	112	112	112	112	B	B	B	102
6	98	98	98	98	98	98	100	110	110	110	G	110	104	104	104	104	100	100	100	100	108	108	108	108
7	104	104	104	104	104	112	112	112	112	112	112	112	110	110	202	202	98	98	98	98	106	106	106	106
8	110	110	B	B	110	110	110	110	110	110	110	108	108	108	124	G	130	130	B	B	110	106	106	106
9	104	98	96	96	B	B	118	118	118	118	102	G	102	102	102	102	G	102	G	B	B	102	102	102
10	B	B	98	B	B	B	150	144	94	94	94	94	94	94	94	158	142	134	94	94	94	B	94	94
11	94	94	94	94	94	94	108	G	G	G	176	96	96	96	96	96	110	110	110	98	B	98	98	98
12	100	100	100	98	B	124	124	122	116	196	G	96	182	100	100	100	118	118	110	110	104	102	102	102
13	B	102	B	B	114	112	112	108	182	G	180	180	G	100	100	116	116	116	114	120	B	B	B	102
14	B	B	B	B	110	110	110	108	100	100	G	100	G	100	100	100	122	G	92	106	106	106	106	B
15	B	B	B	104	104	116	112	112	112	196	190	98	98	98	98	190	G	120	86	90	102	102	102	B
16	B	B	B	B	B	104	104	104	102	152	88	B	G	180	104	106	106	222	B	B	B	108	B	100
17	100	100	100	100	100	B	134	134	98	98	118	178	92	176	G	98	178	130	92	98	B	98	98	98
18	102	102	102	102	118	114	106	130	130	130	94	94	192	92	182	184	94	118	102	102	B	102	96	96
19	96	96	96	96	96	96	116	116	116	100	196	116	134	162	104	102	102	136	128	110	110	110	110	104
20	B	102	102	B	B	B	132	132	100	104	104	104	104	112	118	118	118	118	110	110	B	120	120	96
21	92	92	B	B	92	124	G	124	114	114	114	G	114	114	110	186	104	120	B	B	B	B	B	B
22	B	B	B	B	B	B	132	138	170	190	196	96	96	96	96	G	G	96	112	98	98	B	B	B
23	B	B	B	B	B	B	G	100	112	G	G	G	108	102	G	102	102	106	B	B	106	106	106	B
24	102	B	100	96	96	B	182	194	194	194	194	186	G	152	124	G	112	G	B	B	102	102	B	B
25	104	B	104	104	B	B	G	148	190	138	G	G	G	G	G	100	100	100	B	B	100	100	100	B
26	100	B	B	100	B	100	100	164	148	136	136	116	112	118	118	118	118	112	104	B	B	104	98	98
27	B	B	B	B	B	B	G	G	112	112	180	102	102	G	G	134	134	108	108	108	B	108	108	B
28	B	B	B	B	B	B	G	G	156	176	138	120	120	116	114	114	114	168	114	114	104	102	102	102
29	100	B	B	100	100	100	164	98	200	118	198	100	100	168	G	120	112	112	106	106	102	102	B	102
30	98	B	98	B	B	98	98	G	190	192	196	G	186	108	108	G	G	110	110	98	98	B	B	B
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	15	18	18	18	18	25	25	27	27	25	24	24	27	24	26	26	28	23	22	18	22	21	21
MED	100	100	100	100	102	107	112	118	116	118	118	106	107	108	105	113	115	117	108	104	103	102	102	102
U Q	104	102	102	104	110	114	130	133	156	152	185	115	113	116	116	128	124	129	112	110	106	108	106	105
L Q	98	98	98	98	98	98	107	109	110	108	106	99	101	100	100	102	104	107	98	98	100	102	98	98

SEP. 2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



## IONOSPHERIC DATA STATION Wakkanai

SEP. 2012 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	F1	F1		C1	C3	C1	C1	C1	C1	C2	C1	C1	H1	H1	C2	L3	FQ51	FQ31	F3	F6	F2	
2	F3	F2	F2	F2	F1	LC21	C3	C2	C1	C2	C1	L1	C1	C1	L2	CLO12	CLO12	L2	L3	F2	F3	F6	F5	F4	
3	F3	F3	F1	F2	F2	L1	C1	C2	C2	C1	C1	C1	C1	C1	C1	C1	HL11	C2	C7	F8				F1	
4	K1	F1	F2	F1	F1	F2	C2	C2		C1	C1	C1				C1	C2	C3	C4	C4	F2	F2	F2		
5	F2		F1	F1	F1		C2			C1	L2	L3	L2	L1	L1	C2	CL11	C2	C6	F2				F2	
6	F2	F2	F2	F2	F3	F3	C2	C1	C1	C2		C2	L2	L1	L1	L2	L3	L3	F2	F1	FF22	FQ31	FQ21	F3	
7	FQ31	FQ31	F2	F1	F1	FF22	CL32	C2	C1	C1	C1	L2	L2	L2	HL11	HL11	L2	L2	L3	F4	FF81	FQ21	F3	F1	
8	F2	F1			F1	FF21	C2	C1	C1	C1	C1	L1	L1	L1	CL11		CL11	CL21			F3	F4	F2	F4	
9	F2	F2	F1	F1			C1	C2	C1	CL11	L1		L1	L1	L2	L2		L2				L5	F4	F1	
10			F1				HL12	HL12	L2	L2	L2	L3	L2	L2	L3	HL13	HL13	CL21	C1	F2	F1		F1	F1	
11	F1	F1	F1	F1	F1	L1	L1				H1	L2	L2	L1	L1	L2	CL32	CL32	L2	L2		F1	F2	F1	
12	F1	F1	F4	F3		L1	C2	C2	C2	H1		L2	HL11	L1	L1	L2	CL21	C2	C4	FQ11	FQ31	F2	F3	F3	
13		F1			F1	F3	L2	L1	HL11		HL11	HL11		L1	L1	H1	L1	H2	L2	FF13				F1	
14					F2	F3	L3	L2	L3	L2		L1		L1	L1	L1	C1		L1	F1	F1	F2	F3		
15			F1	F3	CL11	L1	L2	L1	HL11	HL11	L1	L1	L1	L1	L1	HL11		C2	F1	F1	FF21	F2	F1		
16					F1	LH21	L2	L2	HL12	L1				H1	L1	L1	L2	H1				F2		F1	
17	F1	F2	F1	F1	F1	HL12	CL12	L3	L2	CL11	H1	L1	L1	HL11		L2	HL11	CL11	FF21	FF21		F2	F2	F2	
18	F1	F1	F1	F1	F2	L2	HL12	HL22	HL12	L1	L1	HL11	L2	HL12	HL12	HL12	L2	CL13	FF31	FQ11		F1	F6	F1	
19	F1	F1	F2	F2	F2	L1	C2	C1	C2	L2	HL12	CL12	HL12	HL12	L2	L2	L1	CL21	F1	F3	F3	F1	F2	F1	
20		F1	F1			CL11	C1	LC11	CL12	CL12	CL12	CL12	CL12	C1	C2	C2	C3	C3	F2	FQ31		F2	F1	F1	
21	F2	F1			F1	CL11		C1	C2	C1	C1		C1	C2	L1	HL12	L2	C2							
22						CL22	HL11	HL11	HL11	HL11	L1	L2	L2	L2				L2	F1	F1	F2				
23							L1	C2					L1	L1		L1	L1	L1			F1		F2	F2	
24	F1		F1	F1	F1	HL12	H1	H1	H1	H1	H1			H1	C1		L2				F2	F1			
25	F1		F1	F1			H1	H1	HL12							L2	F3	L1			F1	F1	F2		
26	F1		F1		L1	L1	HL11	H1	H1	HL11	HL11	HL11	CL11	HCL11	L1	L2	L2	L3	F2			F1	F1	F1	
27								C1	C1	H1	L1	L1	L1			H1	C1	C3	F3	F1		F1	F2		
28								H1	HL11	HL11	HL11	C1	C1	C1	L2	L2	L2	H1	F3	FQ11	F2	F3	F2	F2	
29	F1		F1	F1	F1	HL11	L1	HL11	CL21	HL11	L1	L2	HL11			CL11	L2	L2	FQ41	F3	F2	F1		F1	
30	F1		F1		F3	L1		HL11	H1	HL11			HL11	L1	L1			L3	FQ21	F1	F1				
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 f<sub>XI</sub> (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 58	X 60	X 58	X 57	X 56															X 97	X 88	X 78	X 76	X 73	
2	X 72	X 65	X 64	X 65	X 63															X 95	X 84	X 71	X 66	X 62	
3	X 63	X 63	X 61	X 63	X 62															X 69	X 69	X 67	X 67	X 65	
4	X 55	X 56	X 52	X 51	X 55															X 74	X 75	X 72	X 69	X 70	
5	X 63	X 62	X 61	X 56	X 54															X 73	X 73	X 72	X 69	X 61	
6	X 42	X 56	X 56	X 57	X 44															X 71	X 67	X 60	X 60	X 58	
7	X 59	X 68	X 68	X 57	X 55															X 70	X 70	X 70	X 71	X 71	
8	X 69	X 58	X 57	X 58	X 58														X 90	X 73	X 68	X 67	X 69	X 70	
9	X 70	X 61	X 60	X 60	X 56	X 56													X 81	X 82	X 75	X 72	X 70	X 65	
10	X 65	X 60	X 56	X 55	X 54															X 91	X 81	X 74	X 67	X 63	
11	X 62	X 60	X 57	X 57	X 56															X 98	X 83	X 75	X 68	X 67	
12	X 60	X 62	X 59	X 60	X 57															X 87	X 78	X 76	X 69	X 73	
13	X 61	X 58	X 57	X 55	X 54															X 86	X 60	X 56	X 55	X 58	
14	X 52	X 52	X 51	X 54	X 52															X 89	X 69	X 65	X 67	X 62	
15	X 62	X 59	X 60	X 61	X 50															X 88	X 82	X 73	X 69	X 66	
16	X 62	X 59	X 57	X 55	X 50															X 73	X 71	X 64	X 63	X 66	
17	X 61	X 51	X 50	X 49	X 46															X 81	X 68	X 66	X 68	X 66	
18	X 62	X 63	X 61	X 61	X 51															X 80	X 67	X 63	X 61	X 62	
19	C	C	C	C	C	C	C	C	C	C										X 73	X 57	X 61	X 66	X 65	
20	X 60	X 57	X 59	X 54	X 53															X 84	X 66	X 71	X 70	X 73	
21	X 69	X 71	X 66	X 51	X 51	X 49														X 83	X 67	X 65	X 62	X 64	
22	X 63	X 63	X 63	X 60	X 57															X 70	X 68	X 67	X 68	X 68	
23	X 64	X 65	X 62	X 58	X 56															X 75	X 71	X 67	X 69	X 71	
24	X 67	X 65	X 68	X 54	X 40	X 44													X 90	X 76	X 68	X 67	X 66	X 67	
25	X 61	X 60	X 57	X 54	X 54														X 88	X 84	X 77	X 68	X 68	X 64	
26	X 62	X 62	X 65	X 56	X 51														X 104	X 87	X 72	X 72	X 71	X 70	
27	X 65	X 63	X 60	X 60	X 60	X 60													X 105	X 92	X 82	X 68	X 71	X 72	
28	X 71	X 71	X 74	X 74	X 48	X 44													X 86	X 83	X 80	X 72	X 70	X 69	
29	X 70	X 67	X 67	X 65	X 60														X 94	X 81	X 67	X 64	X 62	X 64	
30	X 64	X 65	X 64	X 60	X 58														X 102	X 90	X 75	X 63	X 61	X 60	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	5													9	30	30	30	30	30	
MED	X 62	X 62	X 60	X 57	X 54	X 49													X 90	X 82	X 71	X 68	X 68	X 66	
U Q	X 66	X 65	X 64	X 60	X 57	X 58													X 103	X 88	X 78	X 72	X 69	X 70	
L Q	X 60	X 58	X 57	X 54	X 51	X 44													X 87	X 73	X 68	X 65	X 66	X 63	

SEP. 2012 f<sub>XI</sub> (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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

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	52	54	52	51	50	51	76	84	88	78	82	84	86	89	82	79	82	87	94	91	82	72	69	66
2	66	59	58	58	57	56	77	83	85	85	80	85	90	90	87	85	83	83	94	89	78	64	60	56
3	57	57	55	56	56	56	58	62	66	64	58	64	78	70	70	70	72	73	70	63	63	61	61	59
4	49	50	46	45	49	45	50	51	58	71	82	78	81	74	73	84	80	72	69	68	69	66	62	64
5	57	56	55	50	48	47	66	87	81	71	82	101	110	106	108	97	82	94	A	67	67	66	63	55
6	36	50	50	51	38	34	42	56	A	59	A	65	71	76	89	89	84	72	73	65	60	54	54	52
7	53	F	F	50	F	50	75	74	64	68	75	82	90	97	95	94	93	88	82	64	64	64	64	65
8	62	52	50	52	52	50	68	78	76	86	79	88	86	92	91	86	88	83	83	67	62	61	63	64
9	64	55	54	54	50	49	70	79	87	80	98	110	105	97	86	81	73	72	74	76	70	66	64	59
10	59	54	50	49	48	50	72	76	92	89	82	72	80	81	79	76	74	77	81	85	75	68	61	57
11	56	54	51	51	50	51	76	87	82	76	71	78	80	81	79	74	71	75	86	92	77	69	62	61
12	54	56	53	54	51	52	75	101	78	71	70	66	76	85	87	84	81	78	79	81	72	70	63	67
13	55	52	51	49	48	48	82	88	67	63	72	77	77	82	92	97	100	97	98	80	54	50	49	52
14	46	46	45	48	46	47	62	67	73	78	81	77	83	88	82	78	84	91	88	82	63	59	61	56
15	56	53	54	55	44	44	60	71	80	91	93	87	92	93	85	69	66	76	86	82	76	66	63	60
16	55	53	51	49	44	44	68	83	73	71	70	84	84	80	76	81	84	79	75	67	65	58	57	59
17	55	45	44	43	40	38	60	85	84	75	76	75	85	83	82	80	71	80	79	74	62	60	62	60
18	56	57	55	55	45	45	60	90	96	80	79	82	90	80	75	79	87	76	82	74	61	57	55	56
19	C	C	C	C	C	C	C	C	C	C	95	104	111	97	87	84	84	78	73	67	50	54	F	58
20	54	51	53	48	47	46	60	86	98	104	93	102	101	96	104	98	86	80	87	77	60	F	F	F
21	63	66	59	45	45	43	61	70	69	83	81	86	96	97	88	85	86	90	88	77	60	58	56	57
22	56	56	57	53	50	49	67	72	75	80	85	85	98	104	96	95	84	78	73	64	62	61	62	62
23	58	59	56	52	50	44	58	80	92	86	88	104	99	102	98	90	90	92	86	69	65	61	63	65
24	61	59	62	48	34	38	70	81	77	78	86	90	94	89	86	92	95	90	84	70	61	61	60	61
25	55	54	51	48	48	49	73	79	80	84	92	97	96	84	87	95	92	90	82	78	71	62	62	58
26	56	56	58	50	45	46	68	85	85	86	92	94	94	100	97	97	100	98	98	81	66	66	65	64
27	59	57	54	53	54	54	75	94	98	88	92	86	97	99	96	100	100	99	98	86	76	62	65	66
28	65	65	68	68	42	38	68	79	84	86	100	109	107	103	99	106	109	98	80	77	74	66	64	63
29	64	60	61	59	54	50	68	78	82	96	104	105	114	106	100	100	102	98	87	75	61	58	56	58
30	58	59	58	54	52	49	68	93	107	102	93	99	102	100	92	85	87	92	96	84	69	57	55	54
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	29	28	29	29	29	28	29	29	30	30	30	30	30	30	30	29	30	30	29	28	29
MED	56	56	54	51	48	48	68	80	82	80	82	86	91	91	87	85	84	83	83	76	65	61	62	59
U Q	60	58	58	54	50	50	74	86	88	86	92	99	99	99	96	95	92	92	88	82	72	66	63	64
L Q	54	52	51	48	45	44	60	73	74	71	78	78	83	82	82	80	81	77	77	67	61	58	58	56

SEP. 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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	L	A	A	U L	U L	U L	L	L	A							
2						A			L	A	A	U L	L	U L	U L	L	L	L							
3							L	L	U L	A	U L	A	U L	U L	U L	L	L	L							
4						A	A	U L	U L	A	L	L	L	L	U L	A	A	A							
5								L	L	L	U L	U L	L	L	A	A	A	A	A						
6						U L	A	A	A	A	A	U L	U L	U L	U L	A	L	A							
7						324				A	L	U L	U L	U L	L	A	L								
8							L	L	A	A	A	L	L	L	L	A	A	A							
9									A	L	U L	U L	U L	L	L	L	L								
10									A	L	U L	U L	A	U L	L	L	L	L	L						
11								L	L	U L	U L	U L	U L	L	U L	A	A	A	A						
12								A	L	U L	U L	U L	U L	U L	U L	A	A								
13									L	L	U L	U L	U L	U L	U L	L	L								
14									L	L	L	L	U L	U L	U L	L	L	L							
15								L	L	L	U L	L	L	L	A	L	A								
16									L	L	U L	L	L	L	L	U L	L								
17									L	L	L	U L	U L	L	L	L	A	A							
18								L	L	L	U L	U L	U L	U L	U L	L	A								
19						C	C	C	C	C	U L	U L	U L	U L	L	L	L								
20								A	L	A	A	L	U L	U L	U L	U L	U L								
21									L	L	L	U L	L	L	L	L	A								
22									L	A	A	U L	U L	L	L	L	A								
23									L	L	L	U L	L	L	L	L	A								
24									L	L	L	L	U L	L	L	L									
25									A	L	L	L	L	L	U L	L	A	A							
26								A	A	A	A	L	L	U L	L	L	L								
27									L	A	L	L	L	L	L	L									
28								A			L	L	L	L	L	L	A								
29									L	L	L	U L	U L	L	L	L	L								
30									L	L	L	L	L	L	L	L									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							1	1	3	3	10	13	18	12	11	2									
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							408	444	464	502	512	516	526	504	448										
L Q																									

SEP. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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						BUR	R	A	A	A	A	R	R	A	R	A	A	B						
2						B	A	A	A	A	A	A	R	A	R	A	A	UR	176					
3						BUR	A	A	A	A	A	A	A	A	A	A	A	A	A					
4						B	A	A	A	A	A	R	A	A	A	A	A	A	B					
5						B	A	A	A	R	A	A	R	R	A	A	A	A	B					
6						B	A	A	A	A	A	A	R	R	A	A	A	B						
7						B	A	A	A	A	A	R	A	A	A	R	R	B						
8						B	R	R	A	A	A	R	R	R	R	A	A	A						
9							A	A	A	A	R	R	A	A	R	R	A	A						
10						B	A	A	R	A	R	A	R	R	A	A	A	A	B					
11						BUR	A	A	R	R	A	R	R	R	R	A	A	A	B					
12						B	A	A	A	R	A	R	R	A	R	A	A	A	B					
13						B	A	A	A	A	A	R	R	R	R	A	R	R	B					
14						BUR	A	A	A	A	A	A	R	R	R	R	A	B						
15						B	A	R	R	R	R	R	R	A	A	A	AUR	220	B					
16						B	R	R	R	R	R	R	R	R	R	R	R	R	B					
17						BUR	R	R	A	R	R	R	R	R	R	R	A	A	B					
18						BUR	A	A	R	A	R	R	R	A	R	A	A	A	B					
19						C	C	C	C	C	A	R	R	R	R	R	RUR	208	B					
20						B	A	A	A	A	A	A	A	A	R	R	R	A	B					
21							192	A	A	A	A	R	R	R	R	R	A	A	B					
22						B	176	A	R	A	A	A	R	R	R	R	A	A	B					
23						BUR	A	R	R	R	R	A	R	A	R	A	A	B						
24						UR	212	R	A	R	R	R	R	R	R	R	R	R						
25						B	196	A	A	A	R	A	R	R	R	R	A	A						
26						B	B	A	A	A	A	A	A	A	R	R	R	A						
27							196	R	A	A	R	R	R	A	A	R	A	B						
28							176	A	A	R	R	R	R	R	R	R	A	B						
29						B	B	R	R	R	R	R	R	R	R	R	R	192						
30						B	196	R	A	R	R	R	R	R	R	R	A	A						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							15											3	1					
MED							U											URUR						
UQ							UR											UR						
LQ							192											192						

SEP. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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	20	20	G	G		40	45	47	J A	G	G		G J	A J	A J	A J	A	22	23	E B	E B
2	E B	J A	J A	J A	J A	J A				J A				G			G 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	J A	J A
4		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
5	E B	E B	E B	E B	E B	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
6	J A	J A		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
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			G	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
9		J A			E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
10	E B	E B	E B	E B	E B	E B					G	J A	J A	J A					J A	J A	J A	J A	J A	J A	J A
11	E B	E B	J A		E B	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
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
13				E B	E B	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				J A	J A	J A	J A	J A	J A	J A
15	J A	E B	E B	E B	E B	E B								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				J A	J A	J A	J A	J A	J A	J A
17	E B	E B	J A		E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
18	E B	E B	E B	E B	E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
19	C	C	C	C	C	C	C	C	C	C	C	C	C						J A	J A	J A	J A	J A	J A	J A
20	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
21		E B	E B	E B		E B								J A					J A	J A	J A	J A	J A	J A	J A
22			E B	E B	E B	E B				J A				J A					J A	J A	J A	J A	J A	J A	J A
23	E B	E B	E B	E B	E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
24	E B	E B	E B	E B	E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
25	E B	E B	E B	E B	E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
26	E B	E B	E B	E B	E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
27	E B	E B	E B	E B	E B	E B								J A					J A	J A	J A	J A	J A	J A	J A
28		E B	E B	E B	E B	E B								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
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
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	20	19	19	E B	E B	E B													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
L Q	E B	E B	E B	E B	E B	E B									J A				E B	E B	E B	E B	E B	E B	E B

SEP. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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

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	E 15	E 15	E 16	E 15	19	G	G	39	40	44	45	G	G	40	G	35	32	18	16	E 14	E 15	E 15	E 16	
2	E 14	E 32	E 18	E 25	E 19	E 17	23	30	40	52	48	44	43	G	40	G	35	26	17	G	36	41	43	20	18
3	E 20	E 23	E 20	E 32	E 20	E 15	24	31	42	46	40	45	43	41	39	35	32	26	20	E 15	E 15	E 15	E 15	E 22	
4	E 15	E 15	E 29	E 18	E 16	E 17	27	30	36	48	40	40	36	40	40	45	63	60	E 16	E 16	E 32	E 32	E 17	E 21	E 16
5	E 15	E 15	E 14	E 15	E 14	E 15	24	31	34	G	39	40	G	G	43	45	40	30	A 130	A 44	26	20	32	29	
6	E 20	E 15	E 15	E 15	E 17	E 16	22	37	A 60	A 52	A 77	44	42	G	G	36	30	34	30	35	34	E 15	37	28	
7	E 30	E 26	E 28	E 21	E 19	E 15	24	36	54	57	44	40	42	40	42	37	G	G	22	28	34	20	25	20	
8	E 18	E 32	E 34	E 33	E 37	E 20	20	G	44	41	42	41	G	G	G	40	32	39	42	34	17	18	E 15	E 15	
9	E 15	E 16	E 15	E 15	E 15	E 17	22	30	38	38	G	G	40	39	G	G	29	31	23	25	17	E 15	E 15	E 16	
10	E 15	E 15	E 14	E 15	E 16	E 15	22	34	G	40	G	40	G	G	40	38	33	26	20	E 15	17	18	E 15	E 15	
11	E 16	E 16	E 14	E 16	E 16	E 15	G	26	35	G	G	39	G	G	G	46	51	57	58	E 16	18	26	26	29	
12	E 38	E 23	E 26	E 18	E 15	E 15	28	34	35	G	40	G	G	G	38	G	48	37	40	38	19	19	17	E 15	E 15
13	E 15	E 15	E 15	E 15	E 14	E 18	23	29	33	34	G	G	G	G	G	36	G	G	E 16	E 16	16	18	36	22	
14	E 15	E 16	E 19	E 16	E 15	E 15	G	26	34	32	36	36	37	G	G	G	G	23	14	16	19	30	23	17	
15	E 15	E 15	E 14	E 15	E 14	E 15	17	G	G	G	G	G	G	G	38	34	32	33	G	18	15	14	14	18	19
16	E 19	E 17	E 15	E 15	E 15	E 15	G	G	G	G	G	G	G	G	22	19	G	G	E 15	E 15	14	15	15	16	
17	E 15	E 14	E 15	E 15	E 15	E 15	G	G	23	37	G	G	G	G	G	G	33	28	E 15	E 14	15	15	15	18	
18	E 15	E 14	E 15	E 15	E 15	E 15	22	30	G	39	G	G	G	G	36	G	35	32	22	E 15	17	18	17	E 15	E 14
19	C	C	C	C	C	C	C	C	C	C	41	G	G	G	G	G	25	20	G	18	22	20	30	25	20
20	E 15	E 15	E 15	E 15	E 15	E 15	22	31	35	38	44	45	43	37	G	G	G	G	26	31	32	18	16	E 15	E 15
21	E 15	E 15	E 15	E 15	E 15	E 15	23	31	34	37	38	G	G	G	G	G	31	20	E 14	E 14	31	22	17	18	16
22	E 18	E 15	E 15	E 14	E 15	E 15	20	31	G	38	46	43	G	G	G	G	28	21	18	14	14	14	15	15	
23	E 14	E 14	E 15	E 15	E 14	E 15	G	32	G	G	G	G	41	G	39	G	33	24	20	E 15	14	14	15	15	
24	E 15	E 15	E 15	E 14	E 14	E 14	G	G	34	G	G	G	G	G	G	G	G	G	E 15	E 15	14	15	14	15	
25	E 15	E 14	E 14	E 14	E 15	E 15	22	34	37	38	G	37	G	G	G	G	56	76	17	14	15	15	14	14	
26	E 15	E 15	E 16	E 14	E 15	E 15	21	35	38	54	46	43	39	39	G	G	G	26	E 14	E 14	15	14	15	14	
27	E 15	E 14	E 15	E 14	E 15	E 14	21	G	33	40	G	G	G	G	39	34	G	34	26	E 15	30	15	26	16	15
28	E 16	E 15	E 14	E 15	E 15	E 15	G	33	34	G	G	G	G	G	G	G	34	22	31	19	E 15	E 14	18	17	
29	E 18	E 20	E 19	E 14	E 15	E 16	16	G	26	G	G	G	G	G	G	G	G	G	22	E 14	E 15	15	16	19	20
30	E 20	E 19	E 15	E 14	E 15	E 15	22	G	37	G	G	G	G	G	G	G	32	30	E 15	E 15	14	23	E 15	E 15	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E 15	E 15	E 15	E 15	E 15	E 15	22	30	34	38	G	G	G	G	G	G	32	26	18	16	16	16	E 15	16	
U Q	18	18	18	16	16	16	23	32	38	40	42	41	39	38	39	36	34	31	23	30	19	20	21	20	
L Q	E 15	E 15	E 15	E 14	E 15	E 15	G	G	G	G	G	G	G	G	G	G	G	G	E 21	E 15	E 15	E 15	E 15	E 15	

SEP. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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

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

SEP. 2012 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



# IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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	287	294	286	294	290	310	344	350	358	329	327	315	316	308	309	300	307	300	317	321	311	300	284
2	298	279	274	273	269	284	311	346	340	329	300	305	302	312	310	314	313	308	308	321	323	300	292	274
3	269	266	280	274	273	322	323	324	296	316	319	277	321	309	303	313	314	327	317	276	276	273	272	291
4	258	259	251	249	271	263	293	297	308	305	336	312	329	323	315	318	327	328	304	287	286	290	276	303
5	286	280	293	294	279	283	325	334	344	298	298	289	305	285	298	318	312	334	A	313	282	277	291	293
6	326	275	286	307	304	255	280	294	A	322	A	326	322	306	313	326	342	328	324	320	293	279	287	284
7	266	F	F	307	F	309	364	367	364	326	317	322	298	303	313	307	324	328	333	295	274	287	258	276
8	314	277	272	274	271	293	343	362	332	329	309	331	308	311	328	320	334	340	322	322	287	275	280	283
9	302	281	283	283	284	281	351	331	347	305	325	316	321	315	319	329	329	326	313	318	306	308	290	289
10	296	307	289	296	289	301	353	337	349	368	339	321	330	323	314	336	325	335	325	325	312	320	310	289
11	292	291	299	302	307	305	361	353	372	349	323	334	325	323	333	326	337	313	313	340	331	322	302	302
12	301	287	283	305	296	304	350	375	371	360	345	330	310	318	328	328	327	326	322	316	338	311	295	322
13	287	294	291	297	300	317	364	380	395	336	325	327	305	308	311	313	326	334	343	367	298	304	301	290
14	299	295	282	299	325	344	368	348	364	343	329	327	320	323	330	324	335	337	342	346	317	287	302	294
15	308	285	294	335	321	327	353	355	346	335	339	318	314	327	335	332	326	330	326	329	320	303	290	307
16	304	289	300	312	307	317	355	375	370	350	317	334	325	322	315	317	340	344	338	323	338	292	287	309
17	311	311	309	318	305	291	340	369	366	357	343	339	327	328	323	352	336	336	332	341	330	287	304	308
18	293	297	302	320	310	303	350	350	365	359	335	330	334	341	320	317	337	344	324	329	309	299	276	292
19	C	C	C	C	C	C	C	C	C	C	C	307	313	327	314	323	325	330	349	326	345	293	F	307
20																					F	F	F	
21	292	294	301	298	285	290	317	343	325	351	328	309	319	302	325	332	327	328	327	348	295			
22	295	305	341	304	293	299	365	367	360	349	316	310	320	320	314	314	322	332	339	329	306	282	277	278
23	285	289	308	297	310	324	374	373	349	343	329	318	317	315	315	327	324	329	331	313	297	291	287	305
24	301	309	314	322	330	313	340	354	351	338	302	320	312	314	318	317	327	338	328	321	290	284	295	295
25	293	300	326	354	299	297	353	377	366	353	339	319	326	327	313	321	328	336	337	328	310	297	300	309
26	314	287	298	301	297	303	368	368	346	345	324	329	328	310	310	320	321	336	317	318	313	296	294	287
27	299	296	305	310	291	306	355	352	351	325	330	326	307	309	309	312	321	322	330	328	295	299	295	301
28	294	292	278	286	294	299	332	344	355	340	330	300	309	309	308	312	316	320	319	322	308	287	295	297
29	289	301	317	344	332	306	356	371	356	312	325	314	313	306	297	308	321	339	319	306	308	293	293	294
30	284	297	304	310	325	311	364	354	333	337	330	300	305	310	297	305	322	322	340	331	302	288	281	279
31	292	297	307	300	301	292	337	357	352	347	313	309	305	304	315	308	311	326	326	340	328	302	296	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	29	28	28	29	28	29	29	29	28	29	29	30	30	30	30	30	30	30	29	30	30	29	28	29
MED	294	293	296	301	298	303	351	354	352	338	325	318	318	313	314	318	326	330	326	322	307	292	292	293
U Q	302	297	306	311	308	312	362	368	364	350	332	327	325	323	323	326	330	336	332	331	317	301	296	304
L Q	287	283	283	294	287	292	334	344	345	326	316	310	308	308	310	313	321	326	318	318	293	286	282	286

SEP. 2012 M(3000)F2 (0.01)

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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	L	A	A	U	L	U	L	L	L	A						
2						A			L	A	A	U	L	U	L	L	L	L							
3							L	L	U	L	A	U	L	A	U	L	L	L							
4						A	A	U	L	L	A	L	L	L	U	L	A	A	A						
5								L	L	L	U	L	L	L	L	A	A	A	A	A					
6						U	L	A	A	A	A	U	L	U	L	L	A	L	A						
7									A	L	U	L	U	L	U	L	A	L							
8							L	L	A	A	A	L	L	L	L	A	A	A							
9									A	L	U	L	U	L	L	L	L	L							
10									A	L	L	U	L	A	U	L	L	L	L						
11								L	L	U	L	U	L	U	L	L	A	A	A	A					
12								A	L	U	L	U	L	U	L	U	L	A	A						
13									L	L	U	L	U	L	U	L	L	L							
14									L	L	L	L	U	L	U	L	L	L							
15								L	L	L	U	L	L	L	L	A	L	A							
16									L	L	U	L	L	L	L	U	L	L							
17									L	L	L	U	L	U	L	L	L	A	A						
18								L	U	L	L	U	L	U	L	U	L	L	A						
19						C	C	C	C	C	U	L	L	L	L	L	L								
20								A	L	A	A	L	U	L	U	L	U	L							
21									L	L	L	U	L	L	L	L	A								
22									L	A	A	U	L	U	L	L	A								
23									L	L	L	U	L	L	L	L	A								
24									L	L	L	L	U	L	L	L									
25									A	L	L	L	L	L	U	L	A	A							
26								A	A	A	A	L	U	L	L	L									
27									L	A	L	L	L	L	L	L									
28								A		L	L	L	L	L	L	A									
29									L	L	L	U	L	U	L	L	L								
30									L	L	L	L	L	L	L	L									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							1	1	3	3	10	13	18	12	11	2									
MED							U	L	U	L	U	L	U	L	U	L	U	L							
U Q							367	352	384	416	387	390	382	360	371	370									
L Q							U	L	U	L	U	L	U	L	U	L									
							408	429	398	400	389	380	377												
							U	L	U	L	U	L	U	L	U	L									
							356	407	379	373	365	358	359												

SEP. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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									236	258	272	278	288	314	308	310	306	288						
2					328				252	272	252	290	312	302	308	300	290	280						
3						284	288	330	318	316	412	E A	312	314	344	324	298	280						
4					368	332	374	346	336	260	332	288	294	304	298	E A	E A	E A						
5								264	266	290	290	330	300	320	284	274	292	250		A				
6						424	342		E A	E A	A	316	320	318	292	272	252	244						
7									E A	A	292	284	288	312	296	288	286	260						
8						260	238	232	258	242	266	288	292	284	272	256	240							
9									244	250	260	286	258	264	270	258	244							
10								240	246	232	264	258	282	290	288	276	266	260						
11									234	234	240	256	284	290	284	266	262	270	E A	E A	A			
12									224	232	234	254	268	304	294	282	274	258						
13									214	242	290	272	310	296	300	284	260							
14									246	264	292	274	296	288	278	272	262							
15								238	256	256	258	266	270	276	262	264	250							
16									232	254	286	264	278	282	278	292	258							
17									236	242	274	264	284	278	272	246	258	242						
18								242	228	232	260	266	264	262	304	296	250							
19					C	C	C	C	C		278	272	258	268	264	282								
20								246	266	240	256	298	264	280	272	254								
21									256	274	272	286	276	274	270	248								
22									248	262	240	296	274	270	270	234								
23									254	250	268	274	284	276	274	260								
24									238	262	280	270	266	280	276									
25									228	248	266	276	268	260	296	278	258	E A						
26								230	224	256	262	268	292	292	280	270	262							
27									230	230	264		296	286	298	280								
28								224			262	272	266	290	280	268	256							
29									248	248	254	266	270	284	284	262								
30									244	240	242	268	286	286	272	272								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	4	13	21	28	29	29	30	30	30	30	25	11	1					
MED					348	308	240	236	250	262	272	287	286	281	274	259	262	282	E A					
U Q						378	276	254	261	276	287	296	294	296	284	268	286							
L Q						272	232	231	240	256	266	270	276	272	270	254	244							

SEP. 2012 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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	118	112	116	A	A	A	116	116	A	118	122	A	B						
2						B	A	116	112	A	A	A	A	118	A	118	A	A	124						
3						B	124	114	A	A	A	A	A	A	A	A	A	118	118						
4						B	120	116	116	A	A	A	118	A	A	A	A	A	B						
5						B	126	A	A	126	A	A	114	118	A	A	A	A	B						
6						B	A	A	A	A	A	A	A	112	116	A	A	A	B						
7						B	A	A	A	A	A	A	A	A	A	A	114	116	B						
8						B	120	116	A	A	116	A	116	122	126	124	114	A							
9							120	120	120	A	120	116	A	A	116	116	116								
10						B	120	112	126	124	124	122	116	120	120	120	118	114	B						
11						B	112	A	A	118	118	A	122	122	122	122	A	A	B						
12						B	A	A	A	128	A	128	128	A	124	A	A	A	B						
13						B	122	122	A	A	116	118	122	122	122	118	118	118	B						
14						B	114	A	A	A	A	A	A	118	126	124	110	110	B						
15						B	120	122	122	122	122	116	116	A	112	A	116	110	B						
16						B	120	116	112	120	126	126	126	120	110	110	112	108	B						
17						B	120	114	118	A	114	124	112	120	116	112	A	A	B						
18						B	120	112	116	A	118	114	114	A	118	118	114	A	B						
19						C	C	C	C	C	A	124	120	120	122	116	108	110	B						
20						B	116	116	114	116	A	A	A	A	124	124	120	120	B						
21							120	118	112	116	116	118	118	126	126	116	A	A	B						
22						B	116	A	124	126	A	A	122	124	124	122	A	A	B						
23						B	118	118	118	116	120	120	A	122	A	122	A	A	B						
24							122	116	A	112	120	120	122	126	122	118	118	118							
25						B	122	112	112	A	114	A	118	118	118	118	120	118							
26						B	B	124	122	A	A	A	A	A	124	120	120	124							
27							126	116	A	A	120	120	120	A	A	120	A	B							
28							118	116	116	120	126	126	126	126	128	124	124	B							
29						B	B	112	116	116	112	112	114	114	118	118	120	118							
30						B	122	116	122	126	122	120	120	120	120	116	116	A							
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							23	22	18	14	17	16	21	20	22	23	17	14	2						
MED							120	116	116	120	120	120	118	120	122	118	118	117	121						
U Q							122	118	122	126	122	124	122	122	124	122	120	118							
L Q							118	114	114	116	116	117	116	118	118	116	114	110							

SEP. 2012 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

### IONOSPHERIC DATA STATION Kokubunji

SEP.2012 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	104	100	94	96	100	100		G	G	112	106	106	108		G	G	106		G	122	108	108	102	102	102		B	B											
2		B	100	96	94	92	92	100	120	112	106	106	106	106		G	102		G	104	104	104	98	98	94	92	96	96											
3	90	92	98	94	94	100	126	128	106	104	104	104	102	106	106	106	100	124	116	104	108	104	110	104															
4	96		B	114	116	114	118	116	120	120	104	104	110	98	100	104	104	106	106		B	104	102	102	96	96													
5		B	B	B	B		114	122	108	106		G		G		G	102	106	106	106	94	92	92	92	90	92													
6	94	94	88		B		B	106	106	106	98	98	98	102	106		G	G		96	94	94	102	100	102	96	100	100											
7	98	96	96	94	94	96	102	104	104	104	102	100	104	104	100	100		G	G			112	106	106	104	102	102												
8	100	102	98	98	98	98	98		B	B	118	118	112	104		G	G		G	116	122	108	100	100	100	96	96	96											
9	100	90	90	88		B	B		B	B	118	118	112	104		G	G		G	100	122	112	106	104	104		104												
10		B	B	B	B	B	B		B	B	128	132		122		G	G		G	124	130	120	122	108	102	96	96	96	104										
11		B	B	96	94		B	B		G		G		G		G		G		G	118	102	106	106	114	96	96	96	96										
12	96	96	96	96	96	104	108	106	106		104		G	G		G		G		G	108	108	106	98	98	100	98	100	100										
13	90	90	90		B	B		B	G		106	134	126	104	102		G	G		G	110		G	B	B		94	88	96	96									
14	96	96	96		B	B	B		G		96	96	94	94	92	90		G	G		G			B	B		96	90	92	98									
15	102		B	B	B	B	B		B	B	104		G	G	G	G		G		G	106	118	102	124		92	90	88		100	98								
16	98	98	96	96	96		B	G	G	G	G	G	G	G	G	G		G		G	88	90		G	90		B	B	B	B	B								
17		B	B	94		B	B		B	G	G		102	110		G	G		G		G	106	104		B	B	B	B		96	96								
18		B	B	B	B		B		B	G		G		G		G		G		G	124	130	116	98	98	92	92			B	B								
19		C	C	C	C	C	C	C	C	C	C	C		106		G	G		G		G	96	94		G	104	104	104	104	104	100								
20		B			B		B		B		B		138	126	124	112	104	106	104	108		G	G	G	G		118	106	106	106	106	100	100						
21	100		B	B	100	96		B	B		B		148	122	122	120	120		G	G	G	G		G	106	102		100	100	100	94	94							
22	92	92		B	B	B		B	B		B		150	104		122	108	104		G	G	G	G		G	102	112	100		B	B	B	92	92					
23		B	B	B	B	B	B		B		B		G		G	G		G		G	102	100		G	106	108	102		B	B	B	B	102						
24		B	B	B	B	B	B		G		G		G		G	G		G		G	102	100		G	106	108	102		B	B	B	B	102						
25		B	B	B	B	B	B		G		G		G		G	G		G		G	120	112	106		B	B	B	B		96	B	B	B						
26		B	B	B	B	B	B		B		B		138	128	116	104	102	106	106	106		G	G		G	124		B	B	B	B		94	92					
27		B	B	B	B	B	B		B		B		146		108	104		G	G		G	98	98		G	106	100	100	98	102	100	100		B					
28	102		B	B	B	B	B		B		B		G		G	G		G		G	122	122		G	G	G	G	G	G	G	G	G	96	96					
29	94	94	88		B	B	B		B		B		G		100		G	G		G	G	G	G	G	G	G	152		B	B	B	B		98	96				
30	92	92		B	B	B	B		B		B		G		156		128		G	G	G	G	G	G	G	G		124	106	98		B	B		98	B	B		
31																																							

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	15	16	12	12	9	20	20	23	19	15	16	10	10	11	14	22	24	22	19	22	22	22	23
MED	96	94	96	95	96	100	124	119	106	104	104	105	103	102	102	106	106	108	102	100	100	98	96	96
U Q	100	98	96	97	99	110	138	124	116	110	106	106	106	106	106	116	122	117	106	104	102	102	100	100
L Q	93	92	92	94	94	97	107	106	104	104	102	103	102	98	100	100	102	105	98	98	96	96	94	96

SEP.2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Kokubunji

SEP. 2012 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	F1	F1	F1	F1	F1	L2			C2	L2	L2	L2			L1		C2	L2	L2	F2	F2	F2			
2		F4	F3	F4	F4	L3	L2	C1	C1	L2	L2	L1	L2		L2		L2	L2	L2	F2	F3	F3	F3	F2	
3	F1	F2	F3	F3	F4	L1	CL12	CL12	L2	L2	L2	L2	L2	L2	L2	L2	L2	CL22	C1	F1	F1	F2	F2	F3	
4	F1		F3	F3	F3	C2	C2	C2	CL11	L2	L2	L2	L2	L2	L2	L2	L2	L3		F3	F4	F2	F3	F2	
5						C1	C1	L1	L2		L2	L2			L2	L2	L2	L2	L3	F3	F3	F3	F3	F2	
6	F2	F2	F2		F1	L2	L2	L2	L2	L2	L2	L2	L2			L2	L2	L2	L2	F2	F2	F1	F2	F2	
7	F3	F3	F4	F3	F4	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2			C3	F3	F3	F3	F3	F3	F2	
8	F2	F3	F3	F4	F3	L3	L2		L2	L2	C2	L2				C2	C2	L2	F3	F3	F2	F2	F2	F2	
9	F2	F2	F2	F1			C2	C2	C2	L2			L2	L2			L2	CL21	F3	F5	F2	F1		F1	
10							C2	C2		C2		C2			C2	C2	C2	C1	C2	F3	F3	F3	F2	F1	
11			F2	F1			L2	L2			L2					C2	L2	L2	L4	F3	F3	F3	F3	F3	
12	F4	F2	F2	F2	F1	L1	L2	L2	L2		L2			L2		L2	L2	L2	L3	F2	F2	F2	F1	F1	
13	F2	F2	F1			L2	C1	C2	L1	L2						C2					F2	F1	F2	F2	
14	F1	F2	F2					L2	L2	L2	L2	L2	L2					C1			F2	F3	F2	F1	
15	F1					L2								L2	C2	L2	C2		L1	F1	F1		F2	F2	
16	F2	F2	F1	F1	F1										L2	L2			L1						
17			F1						L1	L2							L2	L2					F2	F2	
18				F1			C2	C2		L2		L2		L2		C1	C2	C2	L1	F3	F3	F2			
19											L2					L1	L1		L1	F3	F2	F3	F3	F3	
20		F2	F1	F2	F2		H2	C2	C2	C2	L2	L2	L2	L2				C1	L3	F3	F4	F2	F2	F2	
21	F2			F2	F2		H1	C1	C1	C1	C1						L2	L1		F3	F3	F3	F3	F1	
22	F3	F2					H1	L2		C1	L2	L2					L2	L1	L1				F1	F2	
23								C1					L2		L2		L2	L2	L2					F2	
24									L2													F1			
25							H1	C1	C1	L2		L2					C3	C3	F3		F1				
26							C1	C2	C2	L2	L2	L2	L2	L2				C1					F2	F2	
27							H1		L2	L2				L2	L2		L1	L2	F3	F3	F1	F2	F2		
28	F1							C2	C2								C2	L1	F2	F3	F1	F1	F2	F2	
29	F3	F2	F1						L1									H1					F3	F2	
30	F2	F1					H2		C2								C2	L2	F1			F2			
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 f<sub>XI</sub> (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	X 62	X 64	X 62	X 57	X 52	X 52														X 114	X 92	X 78	X 73	X 70
2	X 70	X 70	X 67	X 67	X 65	X 62														0 108	X 87	X 70	X 66	X 64
3	X 65	X 65	X 63	X 60	X 61	X 62														X 75	X 68	X 69	X 65	X 68
4	X 63	X 60	X 63	X 60	X 60	X 57														X 80	X 80	X 68	X 68	X 72
5	X 66	X 63	X 64	X 62	X 54	X 53														X 92	X 70	X 72	X 65	X 61
6	X 60	X 60	X 61	X 58	X 58	X 48														X 78	X 71	X 64	X 64	X 60
7	X 65	X 62	X 64	X 56	X 52	X 53														0 93	X 76	X 73	X 74	X 75
8	X 74	X 68	X 62	X 60	X 57	X 55														X 89	X 72	X 71	X 71	X 74
9	X 72	X 66	X 70	X 68	X 62	X 58														X 88	X 87	X 76	X 66	X 64
10	X 65	X 63	X 58	X 57	X 56	X 52														X 96	X 88	X 71	X 65	X 62
11	X 62	X 61	X 61	X 60	X 58	X 52														X 92	X 98	X 68	X 68	X 70
12	X 68	X 68	X 66	X 62	X 60	X 58														X 94	X 96	X 78	X 77	X 77
13	X 72	X 64	X 62	X 59	X 56	X 54														102	X 64	X 58	X 56	X 57
14	X 56	X 54	X 52	X 52	X 50	X 42														X 92	X 69	X 63	X 62	X 62
15	X 62	X 62	X 61	X 62	X 48	X 42														X 90	X 83	X 68	X 65	X 62
16	X 61	X 60	X 58	X 55	X 50	X 49														X 74	X 69	X 63	X 61	X 64
17	X 62	X 55	X 51	X 46	X 43	X 41														X 82	X 76	X 59	X 60	X 61
18	X 59	X 59	X 58	X 58	X 45	X 46														X 86	X 74	X 58	X 61	X 60
19	X 58	X 60	X 54	X 49	X 50	X 50														X 79	X 64	X 61	X 61	X 62
20	X 62	X 59	X 62	X 48	X 50	X 47														X 100	X 78	X 76	X 71	X 71
21	X 71	X 78	X 71	X 57	X 52	X 52														0 101	X 84	X 66	X 65	X 65
22	X 66	X 63	X 61	X 62	X 51	X 43														X 90	X 73	X 72	X 66	X 65
23	X 66	X 62	X 66	X 60	X 48	X 42														X 98	X 84	X 74	X 76	X 75
24	0 78	X 82	X 96	X 74	X 59	X 54														X 79	X 70	X 72	X 72	X 70
25	X 64	X 63	X 60	X 58	X 54	X 52														X 88	X 81	X 80	X 78	X 69
26	X 67	X 66	X 65	X 59	X 56	X 54														X 105	X 88	X 80	X 78	X 76
27	X 71	X 68	X 64	X 62	X 60	X 57														X 110	X 87	X 78	X 79	X 81
28	X 81	X 83	X 89	X 78	X 52	X 39														X 86	X 83	X 79	X 73	X 72
29	X 72	X 70	X 69	X 74	X 65	X 54														X 95	X 74	X 73	X 70	X 70
30	X 68	X 69	X 72	X 64	X 55	X 50														X 100	X 80	X 71	X 66	X 65
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30														30	30	30	30	30
MED	X 66	X 63	X 62	X 60	X 54	X 52														X 92	X 79	X 71	X 66	X 66
U Q	X 71	X 68	X 66	X 62	X 59	X 54														100	X 87	X 76	X 73	X 72
L Q	X 62	X 60	X 61	X 57	X 50	X 47														X 86	X 71	X 66	X 65	X 62





## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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									L	LU	L	LU	R	524	552	U	LU	L	L					
2								L	L	L	L	L	560	556	L	548	520	L	L	L				
3								L	L	A	A	A	A	A	A	A	A	L						
4								400	436	JR	L	L	544	556	552	532	472	A						
5								L	L	LU	L	L	576	528	524	R	U	L	L	L				
6								L	436	480	484	524	540	540	536	512	472	L	L					
7								272	A	A	L	A	U	A	A	U	L	A	L					
8									L	L	L	L	L	L	U	L	L	L	L					
9									L	L	LU	L	L	L	540	L	L	L	L					
10								L	L	L	LU	LU	LU	L	L	U	L	L	L					
11								L	L	L	L	L	L	U	L	A	L	A	L					
12								L	L	L	L	L	U	L	A	U	L	L	L	A	L			
13								L	L	L	LU	L	R	R	U	LU	L	L	L					
14									L	L	L	L	U	R	R	U	U	L	L	L				
15									L	L	L	L	U	L	L	L	L	L	L					
16									L	452	480	500	508	504	L	492	L	L	L					
17								L	L	L	L	L	L	L	L	U	L	L	L					
18								L	L	L	L	L	U	U	L	L	L	L	L					
19									L	472	492	544	532	508	540	500	L	L	L					
20									L	U	L	U	L	L	L	L	L	L	L					
21									L	L	LU	L	L	L	U	L	L	L						
22									L	LU	L	L	U	R	U	L	L	L	L					
23									L	L	L	L	U	U	L	L	L	L	L					
24									L	L	L	U	U	L	L	L	U	L	L					
25									L	L	L	U	U	U	U	L	A	A						
26									L	L	L	L	L	U	L	L	L	L	L					
27									L	L	L	L	L	U	L	L	L	L	L					
28									L	L	L	L	L	U	U	L	L	L	L					
29								284	L	L	L	LU	LU	LU	L	L	L	L	L					
30								L	L	L	L	L	U	U	L	L	L	L	L					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	2	6	9	17	22	20	18	16	7			1				
MED								284	436	474	484	532	532	532	534	500	456			208				
U Q								400		480	506	550	556	556	552	526	472							
L Q								272		472	480	520	508	504	512	486	448							

SEP. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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							B	272	320	356	368	U R	U R	B	B	396	348	312	A U	A					
2							168	240	A U	A U	A U	A	A	B	B	360	332	296	A U	A U	A				
3							B	244	296	332	368	U A	U A	U A	U A	A	A	A	A	A					
4							U A	244	A	A	312	336	360	384	U A	R U	A U	A	A	U A					
5							B	256	A U	A U	A U	A U	A	A	A U	A	A	A U	A U	A					
6							A U	236	A U	A	332	352	A	U A	U A	A	A	320	348	288	U A				
7							B	248	304	324	356	U A	U A	A	A	A	A	A	A	A U	A				
8							A	A	304	332	356	U R	U A	A	A	A	A	A	A U	A	A				
9							A	244	A	A	328	356	360	376	392	344	320	336	284	B					
10							B	244	A	U A	U A	A	R	R U	R	R	R	316	256	B					
11							B	240	A U	A U	A U	A	A	U R	U R	B	352	324	A	B					
12							B	244	A U	A	A U	A	B	A U	A	360	360	340	312	U A	A				
13							A	236	A U	A U	A	A	U A	A	A	364	344	308	268	A					
14							B	244	284	A	A	A	A	A	R	R	R	R	A						
15							B	248	296	336	364	U R	R	B	U R	340	324	296	256	B					
16							B	228	292	316	340	348	360	360	352	324	296	248	A						
17							J	236	A U	A	320	336	352	352	356	352	340	300	240	B					
18							B	204	A	A	324	348	356	380	372	356	324	292	256	A	B				
19							B	236	296	324	348	U R	A U	U R	A	A	A	A	248	A					
20							B	244	A U	A	324	360	368	368	372	356	320	276	216	176					
21							B	236	A	336	340	356	332	A	A U	A U	A U	A	A	A					
22							A	240	A U	A U	A	R	364	368	360	356	320	256	B						
23							B	228	296	336	364	U R	U R	R U	R	R	R	R	B						
24							B	236	300	340	340	364	376	364	364	352	316	252	B						
25							B	232	300	340	364	A U	R	A U	A U	A	368	332	312	260	B				
26							B	252	312	340	360	376	A	R	364	364	340	308	252	B					
27							B	240	292	316	A	U R	A	R	R	364	348	296	224	A					
28							B	240	A	300	348	364	380	380	A	A U	A	304	312	256	B				
29							B	224	304	348	356	R U	R	A	R	R	376	364	316	264	A	B			
30							B	232	308	340	360	R	A	A U	R U	R	356	316	252	B					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							3	29	30	29	28	19	19	18	23	26	28	28	8						
MED							168	240	296	332	354	U A	U A	U	U	356	342	314	256	202					
U Q							U A	168	244	304	338	360	376	380	372	364	356	322	268	208					
L Q							J R	140	236	292	322	340	356	360	360	344	324	298	248	184					

SEP. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	00	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	21	17	J A	20	20	31	36	41	J A	40	49	41	E B	42	40	J A	J A	J A	J A	J A	J A	J A	J A	
2	J A	J A	E B	E B	E B	19	19	18	31	34	37	36	31	26	E B	E B	38	J A	J A	32	28	J A	18	20	J A	E B
3	J A	J A	J A	20	20	E B	E B	28	35	56	74	81	83	70	77	72	56	45	41	54	34	22	19	26		
4	J A	J A	20	25	20	23	25	32	J A	J A	J A	J A	J A	G	38	40	36	37	37	J A	J A	J A	J A	E B	20	
5	J A	J A	18	21	18	18	E B	J A	J A	J A	J A	J A	39	40	44	39	44	37	J A	J A	J A	J A	20	J A	40	
6	J A	20	J A	J A	21	20	17	26	33	J A	40	38	42	J A	45	44	45	G	G	J A	J A	J A	J A	E B	J A	
7	J A	J A	J A	18	20	19	18	28	37	72	64	74	60	108	69	66	97	59	24	30	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	J A	
9	J A	J A	19	20	E B	E B	J A	28	38	41	41	40	40	41	36	35	G	G	J A	J A	J A	J A	J A	J A	J A	
10	E B	E B	E B	E B	E B	J A	26	17	27	J A	J A	J A	G	G	G	G	G	J A	J A	J A	J A	J A	J A	J A	J A	
11	J A	19	E B	E B	E B	E B	E B	J A	G	G	G	G	G	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
12	22	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	
13	E B	E B	E B	E B	E B	E B	J A	25	34	41	39	40	38	24	38	38	40	J A	J A	J A	J A	J A	J A	J A	J A	
14	J A	J A	J A	18	21	22	18	19	28	31	38	51	42	29	38	32	32	20	27	36	23	44	26	22	40	
15	18	J A	E C	E B	E B	E B	E B	J A	27	31	21	40	40	G	E B	G	G	G	30	22	18	E B	E B	E B	J A	
16	J A	J A	J A	20	E B	E B	18	26	32	G	G	G	G	G	G	G	G	30	G	20	18	E B	E B	E B	E B	
17	E B	E B	E B	E B	E B	18	17	G	J A	36	30	36	38	40	40	G	G	G	32	26	18	J A	J A	J A	E B	
18	21	E B	E B	E B	E B	18	16	24	32	37	35	41	50	48	38	34	G	28	20	31	26	37	29	22		
19	J A	E B	E B	E B	E B	E B	E B	27	37	38	42	39	38	35	43	40	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	J A	
21	J A	E B	22	22	E B	E B	E B	26	34	43	43	42	54	54	42	J A	J A	J A	J A	J A	J A	J A	J A	E B	J A	J A
22	20	E B	E B	E B	E B	E B	E B	J A	26	34	34	34	32	38	G	G	G	35	27	20	16	20	16	16	16	
23	E B	E B	E B	E B	E B	E B	E B	28	31	32	38	34	G	G	G	G	G	G	J A	J A	J A	J A	J A	J A	J A	
24	20	E B	E B	E B	E B	E B	E B	26	32	28	38	38	G	G	G	36	34	32	22	16	21	E B	E B	E B	E B	
25	E B	E B	E B	E B	E B	E B	J A	28	33	G	G	J A	25	46	40	42	66	61	31	27	64	40	74	27	20	
26	E B	E B	E B	E B	E B	E B	E B	27	34	40	39	46	32	G	G	26	19	G	J A	J A	J A	J A	J A	J A	J A	
27	E B	22	E B	E B	E B	E B	E B	J A	33	32	34	G	G	29	29	38	26	34	38	33	31	33	33	17	16	
28	E B	19	E B	E B	E B	E B	E B	28	34	36	40	45	42	38	44	33	36	37	J A	J A	J A	J A	J A	J A	J A	
29	20	J A	22	22	E B	E B	E B	E B	G	G	G	G	G	G	G	42	39	35	32	32	19	16	16	16	16	
30	E B	E B	E B	E B	E B	E B	E B	26	G	G	G	G	G	G	G	G	J A	J A	J A	E B	E B	E B	E B	E B	E B	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	20	18	E	E	E	E	E	G	28	34	37	39	40	38	G	38	36	35	32	J A	J A	J A	J A	J A	J A	
U Q	J A	J A	20	20	20	19	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	
L Q	E B	E B	E B	E B	E B	E B	E B	G	G	G	G	G	G	G	G	G	G	35	27	22	19	20	E B	E B	E B	

SEP. 2012 foEs (0.1MHz)

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## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012  $f_{min}$  (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

$\begin{matrix} H \\ \diagdown \\ D \end{matrix}$	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	16	16	16	16	16	16	16	20	20	27	27	29	40	40	22	16	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	17	26	18	30	26	52	41	20	20	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	20	23	27	30	30	22	24	20	16	16	16	16	16	16	16
4	16	16	16	16	16	16	16	17	17	20	21	28	33	24	26	20	17	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	19	18	32	36	37	30	31	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	24	20	36	24	26	21	16	14	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	19	20	28	28	31	28	23	22	16	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	17	17	27	25	30	30	31	21	19	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	16	20	16	16	25	22	20	24	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	20	16	18	20	22	23	21	16	16	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	24	21	29	29	17	38	24	17	16	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	22	24	36	36	30	28	19	20	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	17	20	24	21	21	26	20	16	17	16	16	16	16	16	16
14	16	16	16	16	16	16	19	16	16	16	20	20	22	20	16	20	17	16	15	16	16	16	16	16
15	16	16	<sup>E</sup> 23 <sup>C</sup>	16	16	16	16	16	16	16	16	21	20	41	28	24	16	16	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	16	22	24	24	24	20	17	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	16	15	16	22	25	20	19	15	15	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	19	20	24	29	25	22	21	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	16	16	24	23	21	20	18	17	14	14	16	16	16	16	16
20	16	16	16	16	16	16	16	16	17	19	21	21	21	21	26	16	16	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	16	20	22	24	24	23	20	20	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	17	20	20	24	26	22	20	19	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	17	20	28	22	28	24	20	16	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	20	24	30	29	26	26	20	19	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	20	23	21	37	28	21	17	16	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	16	17	20	20	24	22	18	16	16	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	20	23	20	24	22	20	21	17	16	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	24	17	19	31	30	30	18	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	17	22	22	24	25	30	24	21	18	16	16	16	16	16	16	16
30	16	16	16	16	16	16	20	16	16	19	27	29	29	24	25	17	16	16	16	16	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	16	19	20	24	24	26	24	20	17	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	17	20	23	28	29	30	28	21	19	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	16	18	20	22	23	22	19	16	16	16	16	16	16	16	16

SEP. 2012  $f_{min}$  (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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

Table with columns 00-23 and rows 1-31. Each cell contains numerical values and letters (R, U, J, A, V, F) indicating ionospheric data points.

SEP. 2012 M(3000)F2 (0.01)

## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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									L	LU	L	LU	R	348	395	367	U	LU	L	L					
2									L	L	L	L	L	384	362	370	360	L	L	L					
3									L	L	A	A	A	A	A	A	A	L							
4								331	342	344	R	L	L	370	348	347	359	374	A						
5								L	L	L	LU	L	L	351	385	389	337	360	L	L					
6								L	377	381	405	373	367	366	358	357	369	L	L	L					
7								499	A	A	L	A	A	A	A	A	U	L	A	L					
8									L	L	L	L	L	LU	L	L	L	L	L						
9									L	L	L	LU	L	L	L	L	L	L	L						
10								L	L	L	L	HU	L	L	LU	L	L	L	L						
11								L	L	L	L	L	L	LU	L	A	L	A	L						
12								L	L	L	L	L	LU	L	A	LU	L	L	A	L					
13								L	L	L	L	L	LU	L	R	RU	LU	L	L	L					
14								L	L	L	L	L	LU	R	RU	RU	LU	L	L						
15								L	L	L	L	L	LU	L	L	L	L	L	L	L					
16								L	L	L	L	L	LU	L	L	L	LU	L	L	L					
17								L	L	L	L	L	L	L	L	L	LU	L	L	L	458				
18								L	L	L	L	L	A	A	L	L	L	L	L	L					
19								L	392	405	372	380	404	352	365	L	L	L	L	L					
20								L	LU	LU	LU	L	L	L	L	L	L	L	L	L					
21								L	L	L	L	L	LU	L	L	L	L	L	L	L					
22								L	L	L	L	L	LU	R	LU	L	L	L	L	L					
23								L	L	L	L	L	L	LU	L	L	L	L	L	L					
24								L	L	L	L	L	LU	L	L	L	L	L	L	L					
25								L	L	L	L	L	L	LU	L	L	L	L	L	L					
26								L	L	L	L	L	L	LU	L	L	L	L	L	L					
27								L	L	L	L	L	L	LU	L	L	L	L	L	L					
28								L	L	L	L	L	L	LU	L	L	L	L	L	L					
29								408	L	L	L	L	L	LU	L	L	L	L	L	L					
30								L	L	L	L	L	L	LU	L	L	L	L	L	L					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								3	2	6	9	17	20	19	18	16	7			1					
MED								408	360	386	405	373	380	374	360	360	370			458					
U Q								499		398	411	387	388	392	370	364	374								
L Q								331		376	390	369	364	360	352	358	368								

SEP. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



# IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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									218	254	256	276	326	308	334	310	328	286						
2								250	216	252	262	316	294	298	308	294	298	278	264					
3								220	256	254		A	A	308	300	A	308	300	272					
4								364	310		R	306	298	284	306	312	298	266	228					
5								216	226	262	326	324	284	302	314	274	272	260						
6								318	280	326	312	298	350	328	298	274	260	252	228					
7								208	204	250	262	284	310	300	268	304	288	264						
8								220	232	276	264	294	294	286	284	278	244							
9								222	236	288	266	262	250	280	254	262	252							
10								228	212	232	228	352	312	290	272	252	258	250						
11								218	216	216	236	298	284	288	288	280	258	278						
12								200	206	222	244	318	346	284	286	270	288	288	238					
13								198	210	228	286	290	338	304	286	278	262	240						
14								222	242	242	306	276	288	264	264	268	246							
15								238	244	248	256	290	272	274	278	288	256	244						
16								210	232	242	302	274	270	298	286	268	242							
17								220	208	214	244	302	272	276	272	264	260	244	224					
18								238	208	238	242	284	270	276	296	280	238	252						
19								242	228	254	308	288	264	284	272	252	232							
20								216	232	226	310	292	282	272	260	252	240							
21								224	222	262	274	268	276	272	280	256								
22								226	228	252	292	280	294	268	270	242	228							
23								228	232	256	258	276	288	288	276	248	256							
24								212	228	246	286	264	258	288	286	262	246							
25								224	232	236	284	260	274	304	282	258								
26								218	232	262	262	266	298	296	280	266	244							
27								226	220	308	302	282	292	278	286	276	248							
28								218	246	240	286	288	312	296	296	260	234							
29								208	226	240	266	258	286	290	294	282	272	240						
30								230	238	236	232	252	284	284	274	276	278	244						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								14	30	29	29	29	30	30	29	30	30	28	5					
MED								220	221	232	254	290	284	289	286	280	264	247	238					
U Q								238	226	245	271	304	294	300	297	286	278	258	254					
L Q								208	212	228	242	270	274	276	273	272	258	241	226					

SEP. 2012 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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							B	106	114	108	102	102	102	B	B	102	104	104	104					
2							124	104	100	106	94	A	A	B	B	98	104	98	A					
3							B	102	104	104	A	100	102	104	98	A	98	A	108					
4							B	108	100	102	98	104	110	100	98	96	100	98	120					
5							B	100	102	98	96	108	A	A	104	A	98	98	116					
6							A	116	100	102	96	A	98	98	A	98	110	104	104					
7							B	104	98	100	100	102	102	A	A	A	A	A	110					
8							A	A	110	94	106	102	108	108	110	102	96	102	A					
9							A	102	106	104	92	108	104	104	98	98	104	100	B					
10							B	100	98	96	94	96	94	106	106	110	96	96	B					
11							B	118	96	102	98	A	104	106	B	102	94	100	B					
12							B	100	100	102	102	B	A	106	108	102	100	98	A					
13							A	118	98	96	104	A	104	A	A	102	104	104	A					
14							B	110	112	A	A	A	A	A	102	112	104	102	A					
15							B	112	100	102	106	A	90	B	106	102	102	102	B					
16							B	104	106	92	90	102	102	102	102	102	98	102	A					
17							B	112	98	98	100	100	100	100	100	100	100	104	B					
18							B	106	104	102	108	A	104	104	100	100	96	96	B					
19							B	120	100	96	96	102	100	98	A	A	A	A	A					
20							B	106	106	104	102	98	A	106	110	104	104	102	B					
21							B	104	104	102	102	98	98	A	102	100	100	102	A					
22							A	108	100	98	98	98	98	100	108	102	102	102	B					
23							B	102	108	106	106	106	98	102	104	102	102	102	B					
24							B	118	98	102	100	102	106	98	100	98	100	102	B					
25							B	104	96	96	96	A	102	A	102	98	98	104	B					
26							B	104	100	98	98	98	A	96	102	98	100	100	B					
27							B	110	108	98	100	100	A	A	104	106	100	102	A					
28							B	106	100	104	96	92	108	A	A	98	104	106	B					
29							B	108	100	102	96	A	98	108	108	108	104	102	B					
30							B	106	98	104	102	A	A	104	96	100	104	104	B					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	29	30	29	28	19	22	19	23	26	28	28	6					
MED							124	106	100	102	99	102	102	104	102	102	100	102	109					
U Q							111	106	104	102	102	104	106	106	102	104	104	116						
L Q							104	98	98	96	98	98	100	100	98	98	100	104						

SEP. 2012 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

## IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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

$\begin{matrix} H \\ D \end{matrix}$	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	94	90	92	92	92	94	124	128	122	114	104	118	108	122	B	162	148	118	100	96	96	92	92	94	
2	94	94	B	B	90	90	138	104	106	98	106	100	94	B	B	132	106	106	110	100	108	96	90	B	
3	90	90	88	88	88	B	B	112	116	100	98	98	98	96	92	94	94	96	106	98	100	102	100	96	
4	96	108	96	100	112	110	114	106	106	102	106	104	G	106	96	112	102	114	108	100	102	102	B	96	
5	96	96	94	84	86	90	B	114	110	100	98	108	102	102	98	100	98	94	152	90	88	86	86	86	
6	90	84	88	86	106	86	124	122	108	102	102	102	98	98	92	88	88	120	104	104	100	96	B	96	
7	98	100	96	92	90	94	176	136	112	100	100	96	98	92	92	92	92	92	108	102	98	98	96	96	
8	96	98	90	90	90	92	92	88	114	108	104	106	106	102	106	104	100	98	98	96	92	92	94	96	
9	92	90	90	90	B	B	92	108	102	102	104	104	110	170	106	104	G	G	106	100	96	94	88	90	
10	B	B	B	B	B	94	136	116	110	112	102	G	G	88	96	98	108	102	98	94	98	92	88	88	
11	84	86	B	B	B	110	B	102	102	98	98	176	G	138	108	116	102	100	96	94	90	94	90	92	
12	88	90	90	92	84	86	112	102	102	104	106	102	102	104	110	104	104	96	120	94	92	90	92	92	
13	B	B	B	B	B	B	104	136	104	98	104	94	104	88	122	110	102	98	94	94	94	94	94	92	
14	102	92	84	102	88	84	B	146	102	90	90	92	94	90	88	90	92	116	102	144	90	104	88	106	
15	90	94	C	B	B	B	B	106	158	94	88	130	G	B	G	G	G	118	100	84	B	B	B	100	
16	92	88	88	96	B	B	120	138	138	G	G	G	G	G	G	G	130	G	84	118	B	B	B	B	
17	B	B	B	B	136	138	G	94	116	108	106	106	106	G	G	G	142	190	112	124	108	92	90	B	
18	92	B	B	B	B	108	120	118	136	110	102	116	108	108	110	110	G	122	100	92	90	86	92	90	
19	92	B	B	B	B	B	B	124	112	106	104	104	98	104	96	94	92	120	94	96	96	100	100	100	
20	96	98	98	96	94	94	112	114	110	120	110	108	106	104	112	104	102	102	86	100	94	90	92	96	
21	94	B	96	90	B	B	B	116	112	102	100	104	96	98	98	98	100	98	96	92	94	B	92	92	
22	92	B	B	B	B	B	90	160	108	106	106	104	130	G	100	G	198	156	104	B	96	B	B	B	
23	B	B	B	B	B	B	B	136	142	100	188	98	G	G	G	G	G	G	90	92	100	88	88	82	
24	84	B	B	B	B	B	B	150	108	98	102	104	G	G	G	114	140	114	112	98	90	90	B	B	B
25	B	B	B	B	B	B	B	120	130	G	G	90	112	120	112	96	114	112	108	122	92	90	92	90	
26	B	B	B	B	B	B	B	164	144	114	112	110	94	G	88	88	G	112	96	94	92	92	88	102	
27	B	84	B	B	B	B	B	90	116	110	G	G	94	96	98	94	98	96	96	94	90	90	90	B	
28	B	92	B	B	B	B	B	118	118	126	114	112	112	108	98	102	146	118	102	98	98	98	92	90	
29	92	90	90	B	B	B	B	G	178	G	G	98	G	G	188	162	142	120	106	92	B	B	B	B	
30	B	B	B	B	B	B	B	156	G	G	G	98	98	98	G	166	90	120	110	84	B	B	B	B	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	21	18	14	13	12	14	14	29	29	26	25	27	22	23	22	25	25	27	30	29	26	23	23	22	
MED	92	91	90	92	90	94	117	118	112	102	104	104	102	104	98	104	102	112	101	96	95	92	92	93	
U Q	96	96	96	96	100	108	124	136	126	110	106	108	108	114	110	114	122	120	108	100	98	98	94	96	
L Q	90	90	88	89	88	90	104	106	107	100	100	98	98	96	96	94	96	98	96	92	92	90	88	90	

SEP. 2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2012 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	F2	F2	F2	F1	F1	F1	C2	CL11	CL11	CL11	C1	C1	C1		H1	H1	C4	C3	F5	F8	F6	F4	F3	
2	F2	F2		F1	F1	H1	C1	C1	C1	C1	L1	L1			H1	C1	C1	CL12	F1	F1	F1	F3		
3	FQ31	F1	F2	F2	F2			C2	CL11	CL31	CL21	C2	C2	C2	L2	C2	L3	C6	F7	FF32	F2	F1	F4	
4	F5	FF12	F1	FF32	FF21	F5	C2	C3	C2	C2	C1	C1		C1	C1	C1	C2	C2	F5	F3	F1		F1	
5	F1	F1	F1	F1	F1	F1		C2	CL11	C1	C2	C1	C1	C1	C1	L1	C2	C12	HL9	F4	F2	F1	F3	
6	F1	F1	F1	F1	FF11	F1	LL11	CL11	C1	C1	C1	C1	C1	C1	L1	L1	CL1	CL33	FF22	FF11	F3		F2	
7	F1	F1	F1	F1	F1	FF11	H1	H1	C1	C2	C2	C2	C2	LO21	L2	L2	LO51	L3	C2	F6	F5	FQ31	FQ31	FQ41
8	FQ41	F3	F4	F3	F3	F4	LO21	L4	CL22	C1	C1	C1	C1	C1	C2	C2	CL21	L3	F2	FQ31	FQ31	F1	F1	
9	F1	F2	F1	F1			L1	C2	CL11	CL21	C1	CL11	CL11	H1	C1	C1		C6	F6	F4	F4	F5	F4	
10					F1	H1	C1	C1	C1	C2				L1	L1	L1	C1	C3	C4	FF33	F4	F4	F4	
11	F2	F1			F1		LC21	C1	C1	C1	HL11			HL11	C2	C2	C2	C6	F3	FQ31	FQ31	F2	F2	
12	F2	F3	F1	F1	F5	F3	C1	C2	C1	C1	C1	C1	L1	C1	C1	C1	C2	L1	F2	FQ31	FQ21	FQ11	F1	
13							L1	HC11	C2	C1	CL11	L1	CL11	CL11	CL11	CL11	CL11	C2	L3	F6	FF33	F3	F3	
14	FF11	F2	F1	FF11	F1	F1		HL11	L1	L2	L1	L1	L1	L2	L1	L1	CL11	L3	FF11	F3	FF12	FQ11	FF22	
15	F1	F1						LC11	H1	L1	L2	HL11					C1	C3	F2				F1	
16	F3	F5	F2	F1			C1	H1	HL11					H1		H1		LL11	F1			F1		
17				F1	F1		LC12	C1	C1	CL11	CL11	C1				H1		HL11	C1	FF11	FF11	F1	F1	
18	FQ21				F1	C1	C1	HC11	C1	L1	CL11	C2	C1	C1	C1	C1	C1	C2	F5	F4	F4	FQ31	F2	
19	FQ11						CL11	C2	C1	C1	C1	C1	C1	L1	L1	L3	CL12	LL21	F1	F1	F1	F1	F2	
20	F4	F2	F1	F3	F2	F2	C1	C2	C2	C1	C1	C1	CL11	CL11	C1	CL11	CL12	C2	L1	F3	F4	F3	F3	
21	F3		F1	F1				C2	CL11	CL11	C1	C1	C2	L2	C1	C1	C4	L8	F7	F4		F4	F2	
22	F1						L1	HC11	C1	C1	C1	C1	C1		L1		H1	H1	C2		F1			
23								HC12	HL11	L1	HL11	L1						C1	F3	FF11	F3	F2	F1	
24	F1							HL11	C1	L1	C1	C1		C1		H1	C1	C1	C3	F1	F1			
25						C1	C3	C1			L1	CL11	C1	C1	C2	C4	C1	C2	FF12	F3	F4	F4	F1	
26		F1						H1	H1	C1	C1	C1	L1	L1	L1	L1	C1	C41	F5	F5	F7	F5	F1	
27			F1					LC11	CL11	C1			L1	L1	L1	L1	C2	C3	F3	F3	F4	F2		
28		F1						C1	C1	C1	C1	C1	C1	L1	L1	C1	HL11	C2	C3	F5	F2	F2	F2	
29	F1	F2	F1					H1			L1				HL11	HL11	HL11	C2	C2	F2				
30							H1				L1	L1	L1			HL11	LH11	CL11	CL21	F1				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

## IONOSPHERIC DATA STATION Okinawa

SEP. 2012 f<sub>XI</sub> (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 92	X 97	X 94	X 78	62	63	64													X 131	X 102	X 94	X 80	X 80	
2	X 76	X 81	X 80	X 72	X 69	X 65														X 127	X 104	X 98	X 86	X 78	
3	X 75	X 74	X 72	X 67	X 66	X 74														X 86	X 72	X 69	X 68	X 66	
4	X 66	X 57	X 62	X 61	X 58	X 54														X 90	X 83	X 75	X 66	X 70	
5	X 69	X 66	X 64	X 62	X 50	X 52														X 131	X 99	X 84	X 73	X 68	
6	X 66	X 66	X 65	X 70	X 63	X 48														X 106	X 86	X 76	X 72	X 74	
7	X 74	X 70	X 72	X 54	X 52	X 51														X 159	X 111	X 79	X 76	X 75	
8	X 78	X 75	X 74	X 65	X 64	X 60														X 133	X 116	X 83	X 74	X 75	
9	X 74	X 73	X 74	X 72	X 60	X 57														X 117	X 109	X 92	X 64	X 60	
10	X 60	X 60	X 56	X 54	X 49	X 50														X 103	X 93	X 69	X 64	X 63	
11	X 62	X 63	X 65	X 70	X 66	X 57														X 110	X 99	X 72	X 68	X 69	
12	X 74	X 77	X 80	X 74	X 66	X 64														X 122	X 93	X 86	X 90	X 96	
13	X 92	X 92	X 90	X 82	X 72	X 74														X 128	X 92	X 82	X 78	X 88	
14	X 74	X 71	X 61	X 56	X 58	X 48														X 110	X 88	X 70	X 66	X 70	
15	X 71	X 74	X 77	X 76	X 54	X 40														X 105	X 92	X 62	X 64	X 66	
16	X 68	X 65	X 65	X 55	X 51	X 46					C	C	C	C	C	C	C	C	C	C	C	C	X 58	X 60	
17	X 62	X 61	X 52	X 42	X 40	X 39														X 77	X 76	X 55	X 57	X 46	
18	X 55	X 54	X 54	X 47	X 39	X 39														X 124	X 118	X 92	X 87	X 84	
19	X 84	X 73	X 55	X 51	X 53	X 53														X 124	X 112	X 95	X 86	X 70	
20	X 62	X 60	X 57	X 44	X 45	X 48														X 132	X 127	X 125	X 121	X 113	
21	X 120	X 126	X 121	X 80	X 58	X 61	X 66													X 162	X 152	X 132	X 130	X 111	
22	X 100	X 100	X 86	X 92	X 52	X 36	X 43													X 145	X 118	X 94	X 86	X 75	
23	X 74	X 76	X 78	X 60	X 42	X 41	X 48													X 148	X 159	X 128	X 138	X 142	
24	X 143	X 140	X 124	X 92	X 70	X 58	X 57				C	C	C	C	C	C				X 92	X 98	X 98	X 92	X 82	
25	X 75	X 78	X 71	X 61	X 59	X 49	X 51													X 105	X 113	X 123	X 126	X 107	
26	X 95	X 91	X 81	X 69	X 70	X 61	X 64													X 156	X 164	X 140	X 138	X 127	
27	X 110	X 101	X 98	X 66	X 66	X 61	X 61													X 134	X 138	X 137	X 137	X 125	
28	X 113	X 132	X 120	X 79	X 59	X 40	X 46													X 141	X 138	X 130	X 125	X 121	
29	X 119	X 113	X 111	X 120	X 93	X 54	X 46													X 128	X 119	X 114	X 115	X 110	
30	X 102	X 99	X 105	X 72	X 44	X 43	X 47													X 127	X 118	X 109	X 109	X 100	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	11													29	29	29	30	30	
MED	X	X	X	X	X	X	X													X	X	X	X	X	
U Q	X	X	X	X	X	X	X													X	X	X	X	X	
L Q	X	X	X	X	X	X	X													X	X	X	X	X	
	68	66	64	56	51	46	46													106	92	76	68	69	

SEP. 2012 f<sub>XI</sub> (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



# IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	LU	L	LU	L		A		A							
2										LU	L	LU	L	LU	L	536	528	L	L					
3									L	LU	L	A	A	A	L	A	L	A	A					
4								L	LU	LU	L	U	L	U	LU	LU	L	L						
5										LU	LU	L	A	A	L	L	L	L						
6								L	L	L	L					U	L	L						
7										L	L	LU	L	LU	L	L	LU	L	L					
8										A	A	A	A	LU	L	L	L	L	L					
9										L	LU	L	LU	L	LU	L	L	L	L					
10									L	L	LU	L	U	L	U	L	U	L	L					
11									L	LU	L	L	L	A	A	L	L	A						
12										L	L	L		A	L	L		A						
13									L	LU	L	536	532	528	508	500	504	472	L					
14									L	L	L	A	L	L	U	A	L	L	L					
15									L	LU	LU	L	U	L	U	L	U	L	A					
16									LU	L	C	C	C	C	C	C	C	C	C	C	C			
17								L	L	LU	LU	LU	L		LU	LU	LU	LU	L					
18								L	L	LU	L	U	LU	L	L	L	L	L	L					
19									L	L	LU	L	U	L	LU	LU	L	L	L					
20										L	L	L	LU	L	L	L	A	L						
21										LU	LU	LU	L	LU	L	LU	L	L	L					
22									L	L	LU	LU	LU	L	LU	L	L	L	L					
23									L	L	L	L	LU	LU	LU	L	A	A						
24										C	C	C	C	C	C	C	L	L						
25										L	LU	LU	L	A	LU	L	L	L						
26									L	L	LU	L	LU	LU	L	LU	L	L	L					
27									L	L	LU	LU	LU	L	L	L	L	L						
28										L	L	LU	L	L	LU	L	L	L						
29										L	L	L	L	L	L	L	L	L						
30										U	L	LU	LU	LU	LU	L	L	L						
31								252		504		588	580	632	636									
	00	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		5	10	18	21	21	19	20	12	1						
MED								252		U	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU
U Q										476	504	534	548	548	544	526	504	404						
L Q										512	536	556	568	572	576	548	514							
										LU	LU	LU	L	L	LU	LU	L							
										460	480	520	512	526	520	504	464							

SEP. 2012 foF1 (0.01MHz)



IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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							B	256	308	360	B	B	B	B	B	R	384	356	304	A				
2							A	A	A	A	A	B	B	B	B	U R	380	340	312	A				
3							B	216	300	340	U R	A	A	A	A	A	340	304	220					
4							A	A	U A	A	A	A	A	U R	R	A	A	U A	296	212				
5							B	240	284	320	A	A	A	A	A	A	A	A	A					
6							B	252	A	340	368	404	R U R	A	A	A	A	336	A	A				
7							B U A	244	296	A	A	A	A	A	A	A	A	A	292	A				
8							A	244	A	A	U A	A	A	A	U R	R	A	A	A					
9							B	240	U A	A	A	A	A	A	U R	U R	364	336	348	280				
10							B	224	304	312	U A	356	A U R	B	R	A	332	A	A					
11							B	244	288	A	U A	A	B	A	R	380	356	328	A	A				
12							B	240	A	A	A	A	A	A	A	360	348	U A	A	A				
13							B	244	280	328	A	U R	B	A	B	376	324	A	A					
14							B	228	296	R	R	A	A	A	A	A	320	260	U A	188				
15							B	A	284	336	344	372	400	B	U R	372	336	316	264	A				
16							B	244	H	288	324	R	C	C	C	C	C	C	C	C	C			
17							B	240	U A	280	320	336	356	368	368	364	352	304	260	B				
18							B	228	284	320	344	372	U R	B	A	U R	R	336	264	A				
19							B	228	288	320	336	R	A	A	A	A	308	276	A					
20							B	A	U A	208	284	328	356	A	A	U A	U A	A	A	A				
21								224	U A	280	316	328	R	A	A	A	360	324	A	A				
22								228	A	A	A	356	376	U R	B	B	A	352	316	264	188			
23								240	U A	292	316	340	R	A	B	B	U R	360	332	A	A			
24								228	A	R	336	C	C	C	C	C	C	R	344	268	A			
25								228	296	348	364	388	R	A	A	A	368	324	A	A				
26								236	288	A	U A	356	A	A	A	A	A	324	260	A				
27								244	U A	292	340	384	384	R	R	A	R	A	A	A	A			
28								240	U A	296	352	364	R	B	R	B	U R	372	340	268	A			
29								224	A	R	336	A	R	U R	416	432	396	380	332	256	A			
30								224	300	344	A	B	B	B	R	B	A	U R	316	252	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								27	23	21	16	8	4	5	10	17	23	17	4					
MED								240	288	336	356	380	392	392	368	356	332	268	200					
U Q								244	296	342	364	390	408	416	372	374	340	294	216					
L Q								228	284	320	342	372	376	366	364	348	320	260	188					

## IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	E	B	J	A	J	A	E	B	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
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
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
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
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
7	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
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
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
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
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
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
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
14	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
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
16	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
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
18	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
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
20	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
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
22	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
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
24	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
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
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
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
28	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
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
30	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
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	30	28	28	28	28	28	28	29	29	29	29	29	29	30	30		
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
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
LQ	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

SEP. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

### IONOSPHERIC DATA STATION Okinawa

SEP.2012 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		23	21	E B	E B	E B	E B	E B		28	33	G E	B	E B	E B	E B	47	50	47	39	42	41	30	24	20	
2		28	19	21	23	17	21	18	26	32	42	42	E B	E B	E B	44	G	43	35	26	15	E B	E B	E B	E B	
3		E B	E B	E B	E B	E B	E B	E B	28	32	42	42	82	65	54	60	52	47	55	55	60	32	40	E B	E B	
4		E B	E B	E B	E B	E B	E B	E B	29	38	44	46	44	44	G U	G	36	40	36	36	41	E B	E B	E B	E B	
5		E B	E B	E B	E B	E B	E B	E B	G	33	40	43	48	55	58	48	46	37	40	32	37	19	E B	E B	E B	
6		E B	E B	E B	E B	E B	E B	E B	G	31	G	G	G	44	44	47	39	G	35	32	36	42	29	E B	E B	
7		E B	E B	E B	E B	E B	E B	E B	26	33	40	47	44	45	43	40	46	37	G	57	40	18	18	20	30	
8		E B	E B	E B	E B	E B	E B	E B	G	50	50	51	56	58	48	48	51	46	40	26	27	16	21	E B	E B	
9		E B	E B	E B	E B	E B	E B	E B	G	35	39	41	42	45	43	40	40	G	32	32	31	40	18	23	18	
10		22	18	E B	E B	E B	E B	E B	25	32	35	G	E B	E B	G	G	G	28	30	41	E B	E B	E B	E B		
11		31	14	E B	E B	E B	E B	E B	G	G U	Y	E B	E B	46	65	61	46	42	49	23	21	36	19	20	E B	
12		E B	E B	E B	E B	E B	E B	E B	G	G	32	39	42	44	62	45	50	40	G	83	47	42	18	E B	E B	
13		E B	E B	E B	E B	E B	E B	E B	G	G	24	40	G E	B	42	43	44	23	41	32	30	20	20	24	22	16
14		E B	E B	E B	E B	E B	E B	E B	26	G	G U	G	48	44	41	42	47	44	40	32	39	20	24	22	22	
15		E B	E B	E B	E B	E B	E B	E B	26	31	24	G	23	G E	B	43	G	G	34	48	38	29	E B	E B	E B	
16		E B	E B	E B	E B	E B	E B	E B	G	31	28	C	C	C	C	C	C	C	C	C	C	C	C	C	E B	E B
17		E B	E B	E B	E B	E B	E B	E B	24	32	36	39	41	42	G	G	G	G	G	19	E B	E B	E B	E B	E B	
18		E B	E B	E B	E B	E B	E B	E B	24	30	35	38	G E	B	42	42	G	G	32	20	40	21	21	17	18	
19		E B	E B	E B	E B	E B	E B	E B	G	30	36	39	38	U Y	U Y	36	38	36	G	G	20	E B	E B	E B	E B	
20		E B	E B	E B	E B	E B	E B	E B	24	33	36	40	42	43	44	42	48	48	32	38	E B	E B	E B	E B	E B	
21		19	20	E B	E B	E B	E B	E B	24	30	35	41	46	44	42	42	G	G	39	22	E B	E B	E B	E B	E B	
22		E B	E B	E B	E B	E B	E B	E B	24	32	36	G	G E	E B	E B	E B	G	G	G	22	22	14	14	14	14	
23		E B	E B	E B	E B	E B	E B	E B	G	31	34	27	42	E B	E B	E B	E B	G	54	54	45	50	26	E B	E B	
24		E B	E B	E B	E B	E B	E B	E B	25	31	31	C	C	C	C	C	C	G	30	28	20	17	E B	E B	E B	
25		E B	E B	E B	E B	E B	E B	E B	27	35	39	44	43	45	84	40	40	36	36	37	42	30	30	36	33	
26		23	19	E B	E B	E B	E B	E B	G	33	36	40	43	41	40	40	39	46	34	32	16	E B	E B	E B	E B	
27		29	19	19	E B	E B	E B	E B	G	31	G	G	G	42	G	44	38	36	41	27	25	E B	E B	E B	E B	
28		E B	E B	E B	E B	E B	E B	E B	G	31	G	G E	B	40	G E	E B	E B	G	40	37	32	19	E B	E B	E B	
29		19	19	18	17	E B	E B	E B	26	32	G	40	U G	36	45	34	G	40	36	34	22	E B	E B	E B	E B	
30		E B	E B	E B	E B	E B	E B	E B	24	G	G E	E B	E B	G	G E	E B	E B	G	G	31	28	E B	E B	E B	E B	
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		30	30	30	30	30	30	30	30	30	30	28	28	28	28	28	28	29	29	29	29	29	29	30	30	
MED		E B	E B	E B	E B	E B	E B	E B	24	32	35	40	42	44	42	42	40	36	35	32	25	17	18	16	E B	
U Q		20	18	E B	E B	E B	E B	E B	26	33	39	42	44	45	44	46	46	44	40	38	40	24	24	22	20	
L Q		E B	E B	E B	E B	E B	E B	E B	G	31	G	G	G	42	G	G	G	G	32	24	14	14	14	14	E B	

## IONOSPHERIC DATA STATION Okinawa

SEP.2012 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

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

SEP.2012 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	LU	L	LU	L		A		A							
2										LU	L	LU	L	LU	L	L	L	L	L					
3									L	LU	L	A	A	A	L	A	L	A	A					
4								L	LU	LU	L	U	L	U	LU	LU	L	L						
5										LU	LU	L	A	A	L	L	L	L						
6								L	L	L	L	H			U	L	L	L						
7										L	L	LU	L	LU	L	L	LU	L	L					
8										A	A	A	A	LU	L	L	L	L						
9										L	LU	LU	LU	LU	L	L	L	L						
10									L	L	LU	L	U	L	U	L	U	L	L					
11									L	LU	L	L	L	A	A	L	L	A						
12									L	L	L		A	L	L			A						
13									L	L	H	U	L	B	U	L	A	L						
14									L	L	L	A	L	H		A	L	L						
15									L	LU	LU	LU	L	L	U	L	A							
16									LU	L	C	C	C	C	C	C	C	C	C	C	C			
17								L	L	LU	LU	LU	L	LU	LU	LU	L	L	L					
18								L	L	LU	L	U	LU	L	H	L	L	L						
19									L	L	LU	LU	L	LU	LU	L	L	L						
20										L	L	L	LU	L	L	L	A	L						
21										LU	LU	LU	L	LU	L	LU	L	L						
22									L	L	LU	LU	LU	L	LU	L	L	L						
23									L	L	L	L	LU	LU	LU	L	A	A						
24										C	C	C	C	C	C	C	L	L						
25										L	LU	LU	L	A	LU	L	L	L						
26									L	L	LU	L	LU	LU	L	L	L	L						
27									L	L	LU	LU	LU	L	L	L	L	L						
28										L	L	LU	L	L	LU	L	L							
29										L	L	L	L	L	L	L	L	L						
30										U	L	LU	LU	LU	LU	L	L	L						
31									508	389	359	366	326	322										
	00	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		5	10	18	21	20	19	19	11	1						
MED								508		389	390	380	378	362	355	350	363	378						
U Q										412	394	389	386	377	374	358	366							
L Q										366	365	370	358	348	340	344	349							

SEP. 2012 M(3000)F1 (0.01)

## IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	252	258	342	316	332	352	350	338	290							
2									212	240	298 <sup>L</sup>	314	318	314	314	318	302	282	262						
3									218	258	298	380 <sup>A</sup>	296	272	346	308	312	268	264						
4								272	368 <sup>L</sup>	390	328	294	290	310	314	302	276	282							
5									248	326	344	314	310	314	288	290	280								
6								250	230	258	298	336	316	290	288	302	284	240							
7											260	308	312	314	306	318	302	274							
8									256	268 <sup>A</sup>	280	288	304	298	296	296	260								
9									242	300 <sup>L</sup>	276	280	296	272	294	282	260								
10									216	220	240	308	290	286	276	284	276	262							
11									208	216	264	296	302	302	292	288	286	276							
12									212	230	278	272	316	310	308	312		296							
13									222	232	330	304	342	320	306	284	278	266							
14									224	246	306	310	286	290	284	274	270	262							
15									252	232	258	288	288	278	294	282	260	274							
16									228	240	C	C	C	C	C	C	C	C	C	C	C				
17								228	208	236	260	306	296	300	294	294	268	246							
18								208	230	234	276	264	270	308	306	270	260	254							
19									244	234	252	320	298	306	302	286	276	248							
20										260	244	326	316	286	302	276	264	252							
21										236	250	290	320	284	312	302	264	242							
22									236	234	244	322	308	292	292	284	258	244							
23									238	232	258	290	308	318	316	286	266	254							
24											C	C	C	C	C	C		292	264						
25										242	264	274	242	338 <sup>A</sup>	312	294	278	250							
26									232	254	282	266	296	322	320	296	288	256							
27									220	252	232	268	320	340	304	302	294	270							
28									248	284	284	332	326	314	304	276									
29									278	264	280	346	336	322	308	286	248								
30								228		240	256	322	314	332	318	296	270	248							
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								5	19	28	28	28	28	28	28	28	28	28	2						
MED								228	226	241	264	300	308	309	306	295	278	261	263						
U Q								261	236	253	298	321	316	321	314	303	291	274							
L Q								218	216	234	257	280	290	291	294	285	269	249							

SEP. 2012 h'F2 (KM)

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IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	294	278	236	236	238	234	220	212	212	200	200	226	204	188	AE	A	A	A	250	228	232	240	246	286		
2	296	290	278	286	274	306	268	218	218	206	182	184	234	214	B	216	210	250	256	246	234	218	212	220	284	
3	300	284	270	270	288	246	220	202	208	228	200			A	A	A	A	A	A	A	292	280	EA	304	300	
4	300	368	320	290	304	308	342	256	224	EA	EA	212	216	212	204	214	212	238	272	254	234	238	268	328		
5	282	272	278	230	262	272	234	208	196	208	198	EA	EA	EA	EA	EA	218	266	232	228	212	242	242	280		
6	312	284	272	262	218	220	272	232	212	212	EA	EA	206	202	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	288	
7	272	292	252	202	268	260	238	204	218	226	EA	EA	202	198	192	264	212	208	258	222	212	242	304	314		
8	280	266	272	266	268	278	246	226	220		A	A			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	296	
9	300	290	264	234	222	260	258	214	216	216	210	204	216	200	198	208	242	236	240	234	238	212	256	286		
10	310	260	248	250	236	226	252	208	210	190	198	170	192	196	212	222	206	196	258	254	208	206	264	308		
11	314	288	268	236	218	206	234	212	202	208	206	196	252		A	A	A	EA	EA	EA	EA	EA	EA	EA	270	
12	260	258	246	222	228	252	232	206	208	206	206	210		A	A	A	232	288		248	230	204	212	264	264	
13	226	246	246	216	222	234	216	192	198	196	194	190	206	206	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	276	
14	262	250	262	234	214	192	236	204	216	198	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	302	
15	272	268	252	198	204	224	232	214	216	198	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	272	
16	260	242	232	218	236	258	260	214	214	204	C	C	C	C	C	C	C	C	C	C	C	C	C	C	284	290
17	244	220	226	220	256	280	264	224	214	210	200	196	200	190	206	244	196	224	222	222	222	226	220	320	288	
18	266	268	256	204	236	246	250	212	206	206	200	186	190	198	186	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	296
19	258	220	232	270	288	268	234	220	212	210	200	184	186	192	190	198	EA	EA	EA	EA	EA	EA	EA	EA	EA	262
20	278	260	230	226	322	280	214	204	212	214	208	202	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	264
21	272	230	212	196	242	240	224	210	210	202	194	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	266
22	264	252	238	218	186	212	246	210	210	210	198	182	182	198	204	210	214	EA	EA	EA	EA	EA	EA	EA	EA	266
23	252	250	216	202	196	258	EA	258	224	216	204	194	188	190	232	212	222			240	240	224	202	EA	EA	244
24	228	EA	204	190	214	210	272	210	222	204	C	C	C	C	C	C										236
25	250	242	228	222	238	230	246	222	222	216	216	200	208		EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	256
26	250	244	222	EA	224	222	254	222	212	212	202	204	202	184	194	216										256
27	270	246	248	220	EA	244	222	252	214	210	204	178	182	188	226	220	218	EA	EA	EA	EA	EA	EA	EA	EA	260
28	260	238	204	192	194	234	258	216	220	210	198	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	246
29	248	244	248	230	204	210	226	216	214	200	202	208	202	216	230	224	232	244	218	204	228	246	254	256	256	
30	248	246	218	194	192	242	274	168	224	206	206	192	180	180	226	220	230	236	226	214	212	216	240	234	234	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	29	27	25	24	24	25	24	22	21	28	29	29	29	30	30		
MED	268	255	247	222	236	241	246	213	213	207	200	194	202	198	214	218	221	234	234	226	214	226	256	274		
UQ	294	278	264	236	262	260	258	220	218	212	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	290
LQ	252	244	228	204	214	222	232	208	210	203	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	260

SEP. 2012 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN



IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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							B	114	112	108	B	B	B	B	B	114	114	112	A					
2							A	A	A	A	A	B	B	B	B	112	112	112	A					
3							B	114	112	112	A	A	A	A	A	A	108	108	108					
4							A	A	110	110	A	A	A	110	A	A	A	108	116					
5							B	112	108	108	A	A	A	A	A	A	A	A	A					
6							B	112	A	110	110	110	A	A	A	A	110	A	A					
7							B	110	110	A	A	A	A	A	A	A	A	A	110	A				
8							A	122	A	A	114	A	A	A	114	112	A	A	A					
9							B	108	108	A	A	A	A	A	110	110	110	110	A					
10							B	110	110	110	110	A	110	B	112	A	110	A	A					
11							B	110	110	A	112	B	A	A	112	110	110	A	A					
12							B	110	A	A	A	A	A	A	108	108	108	A	A					
13							B	108	108	108	A	114	B	A	B	112	110	A	A					
14							B	128	116	108	A	A	A	A	A	A	110	110	120					
15							B	A	114	108	108	110	110	B	116	110	108	108	A					
16							B	110	110	110	C	C	C	C	C	C	C	C	C	C	C			
17							B	108	110	110	108	108	108	108	108	108	108	108	B					
18							B	112	110	110	110	110	B	A	110	110	110	110	A					
19							G	110	110	110	110	A	A	A	A	A	106	110	A					
20							B	112	110	110	110	A	A	110	110	112	A	A	A					
21								112	110	110	110	A	A	A	A	108	110	A	A					
22								116	A	A	110	110	B	B	110	110	110	110	116					
23								116	110	110	112	A	B	B	B	112	110	A	A					
24								110	A	108	C	C	C	C	C	C	110	110	A					
25								110	108	108	112	112	A	A	A	110	110	A	A					
26								112	112	A	110	A	A	A	A	A	110	108	A					
27								110	110	110	110	110	A	108	A	A	A	A	A					
28								120	112	114	114	B	108	B	B	112	112	112	A					
29								112	A	110	A	A	110	112	112	112	112	112	A					
30								112	108	108	B	B	B	112	B	A	114	110	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								27	23	22	16	8	5	6	11	17	23	17	4					
MED								112	110	110	110	110	110	110	110	110	110	110	116					
U Q								114	112	110	112	111	110	112	112	112	110	111	118					
L Q								110	110	108	110	110	108	108	110	110	110	108	112					

SEP. 2012 h'E (KM)

## IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	102	98	B	100	96	96	B	128	128	G	B	108	B	B	116	120	134	122	108	106	106	104	102	100	
2	100	96	96	96	96	96	100	108	108	104	112	B	120	B	150	G	108	116	106	106	102	102	112	100	
3	98	96	94	96	94	120	138	118	144	122	116	104	104	104	104	118	114	108	108	100	100	102	100		
4	90	B	96	B	B	116	120	108	108	108	108	108	108	G	108	108	110	124	114	126	B	110	102	100	
5	98	B	96	92	94	92	98	98	110	108	108	104	104	100	100	102	102	98	102	96	94	94	B	140	
6	96	92	90	88	90	98	94	106	106	G	G	G	106	104	100	98	98	94	104	104	98	104	108	104	
7	B	96	96	96	B	B	B	122	118	110	106	104	100	102	102	98	100	G	110	106	106	104	104	104	
8	106	104	104	100	100	100	98	98	96	94	110	110	108	112	108	108	106	104	104	102	98	98	100	100	
9	98	104	102	98	B	B	B	G	108	108	108	104	106	106	112	110	G	134	112	108	104	102	98	98	
10	94	94	100	B	B	B	B	122	120	120	G	106	G	B	106	102	G	106	102	98	96	96	100	94	
11	92	B	92	B	B	B	118	108	G	108	174	B	130	118	116	112	112	108	104	102	100	100	98	100	
12	100	94	94	B	94	B	B	108	110	110	110	110	110	110	110	110	106	104	104	104	102	102	98	98	
13	98	94	94	B	B	B	106	G	G	96	102	G	B	120	116	96	110	108	112	100	102	100	92	92	
14	B	96	96	88	B	B	B	134	102	100	100	98	98	100	120	122	122	122	116	106	96	94	96	96	
15	96	96	96	124	94	116	B	124	116	98	G	98	98	B	G	G	148	108	106	106	92	92	92	92	
16	B	B	B	B	B	B	B	G	144	118	C	C	C	C	C	C	C	C	C	C	C	C	C	B	
17	100	B	B	B	B	B	B	130	122	118	114	114	114	G	G	94	G	G	B	132	104	96	94	B	
18	B	B	B	B	B	114	B	166	124	118	116	G	B	112	G	G	G	110	106	102	100	100	96	94	
19	94	94	B	B	B	B	B	G	124	116	112	112	110	100	104	102	G	G	124	104	96	98	98	96	
20	B	B	B	B	B	B	B	116	108	114	114	108	108	106	108	108	106	106	102	102	B	98	100	96	
21	96	98	94	92	92	92	B	118	112	110	110	108	104	108	114	G	G	106	104	106	96	92	B	106	
22	B	98	B	B	B	B	B	130	108	116	G	G	B	B	120	G	G	G	126	102	102	100	100	94	
23	94	B	B	B	B	B	156	G	110	110	104	100	B	B	B	94	114	108	106	102	100	100	B	B	
24	B	B	B	B	154	130	128	156	106	110	C	C	C	C	C	C	G	126	110	98	96	94	B	B	
25	112	B	B	B	B	B	B	128	120	120	110	114	110	114	108	158	134	110	108	102	98	96	96	94	
26	94	92	B	96	114	B	B	G	112	116	112	108	110	104	104	108	110	106	104	94	100	98	94	94	
27	94	94	92	98	98	B	B	G	110	G	G	G	110	G	104	104	102	102	106	100	100	96	94	94	
28	96	B	B	B	B	B	B	G	114	G	G	B	G	B	B	G	136	116	106	104	B	100	96	96	
29	96	96	92	98	B	88	B	160	112	G	110	104	172	92	G	170	150	122	114	B	96	94	94	94	
30	92	B	B	B	B	B	B	150	G	G	B	B	G	B	98	B	94	94	130	118	B	B	B	B	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	23	18	17	14	11	13	10	22	27	24	20	19	20	18	21	22	21	25	29	26	25	28	25	25	
MED	96	96	96	96	94	100	112	122	112	110	110	108	108	105	108	106	110	108	106	103	100	99	98	96	
U Q	100	98	96	98	98	116	128	130	120	117	113	110	110	112	116	110	128	122	113	106	102	101	101	100	
L Q	94	94	93	92	94	94	98	108	108	108	108	104	104	100	104	98	104	106	104	102	96	96	95	94	

SEP. 2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2012 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	F4	F2		F2	F1	F2		C1	C1			C1			C2	C1	C2	C5	C3	F8	F4	F4	F5	F7	
2	F7	F6	F3	F4	F3	F4	L2	C1	C1	C1	C1		C1		H1		C1	C1	C2	F1	F2	F1	F1	F2	
3	F2	F2	F2	F1	F1	FF11	H1	C1	H1	C1	C1	L3	L2	L2	L2	L2	C1	C4	C8	F9	F8	F6	F5	F2	
4	F1		F1			F1	C3	C2	C2	C2	C2	C1	C1		L1	L1	CL11	C1	CL41	FF12		F1	F1	F4	
5	F1		F1	F2	F2	F2	L1	L1	C1	C1	C1	L2	L2	L1	L1	L1	L1	L2	L2	F8	F5	F1		F1	
6	F2	F2	F2	F2	F2	F1	L1	C1	C1						C1	L1	L2	L1	LC21	CL12	FF32	F9	FF33	F2	F1
7		F2	F1	F1				C1	C1	C1	C2	CL11	L1	L1	L1	L2	L1		C6	F7	FF11	F2	F3	F3	
8	FQ31	F3	F2	F5	F6	F6	L4	L1	L4	L4	CL21	C1	C2	C1	C2	C2	C2	L2	L2	F3	F3	F3	F1	F1	
9	F1	F1	F1	F1					C1	C1	C1	C1	C1	C1	C1	C1		H1	C3	F6	F4	F2	F4	F2	
10	F2	F3	F1					C1	C1	C1		C1			L1	L1		L1	L3	F5	F1	F3	F1	F4	
11	F1		F1				C1	C1		C1	HL11		H1	C1	C2	CL11	C2	C3	C3	F3	F5	FQ31	FQ21	F1	
12	F1	F2	F2		F1			C1	C1	C1	C1	C1	C1	C1	C1	C2	C6	C9	F4	F3	F2	F2	F2	F2	
13	FQ11	F1	F1				C1			L1	CL11			C1	C1	L1	L1	CL11	CL11	F2	F2	F3	F5	F1	
14		F1	F1	F1				H1	C1	L1	L1	L1	L2	L1	CL22	C1	C1	C2	C3	F4	F4	F4	F4	F3	
15	F1	F1	F1	FF21	F1	F1		C1	C1	L1		L1	L1				H1	C3	C4	F6	F1	F1	F1	F2	
16									H1	CL11													F2		
17	F1							HC21	C1	C1	C1	C1	C1			L1			H1		F1	F3	F4		
18					F1			H1	C1	C1	C1			C1				C1	C1	F3	F5	F5	F2	F4	
19	F2	F1							C1	C1	C1	C1	C1	L1	L1	L1			C1	F1	F1	F2	F2	F1	
20								C1	C1	C1	C1	C1	C1	C1	C1	C2	C2	C1	L3	F3		F1	F3	F3	
21	F2	F3	F1	F1	F1	F1		C1	C1	C1	C1	C2	C1	C1	C1			C2	C3	F1	F2	F4		F1	
22		F1						H1	C1	C1					C1				C1	F4	F1	F1	F1	F1	
23	F1					F1		C1	C1	L1	L1					L1	C2	C4	CL41	FF51	F5	F1			
24				F1	F2	F6	HC11	C1	C1									C2	C3	F1	F2	F2			
25	F1							C1	C1	C1	C1	C1	C1	CL13	C1	H1	H1	C2	C5	F9	F5	F4	FF24	F3	
26	F2	F3		F1		F1		C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	CL21	L2	F1	F1	F4	F2	F1	
27	F4	F2	F2	F1	F1				C1				C1		L1	L1	L1	L2	L3	F2	F1	F3	F3	F2	
28	F1								C1								H1	C2	L1	F4		F3	F2	F2	
29	F2	F2	F2	F1		F1		H1	C1		C1	L1	H1	L1		H1	H1	C1	C1		F1	F1	F1	F1	
30	F1							H1					L1			L1	L1	H1	C3						
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

## f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
◊	f <sub>o</sub> F <sub>2</sub> , f <sub>o</sub> F <sub>1</sub> , f <sub>o</sub> E
×	f <sub>x</sub> F <sub>2</sub>
*	DOUBTFUL f <sub>o</sub> F <sub>2</sub> , f <sub>o</sub> F <sub>1</sub> , f <sub>o</sub> E
⊗	f <sub>b</sub> E <sub>s</sub>
└	ESTIMATED f <sub>o</sub> F <sub>1</sub>
†,‡	f <sub>min</sub>
^	GREATER THAN
∨	LESS THAN

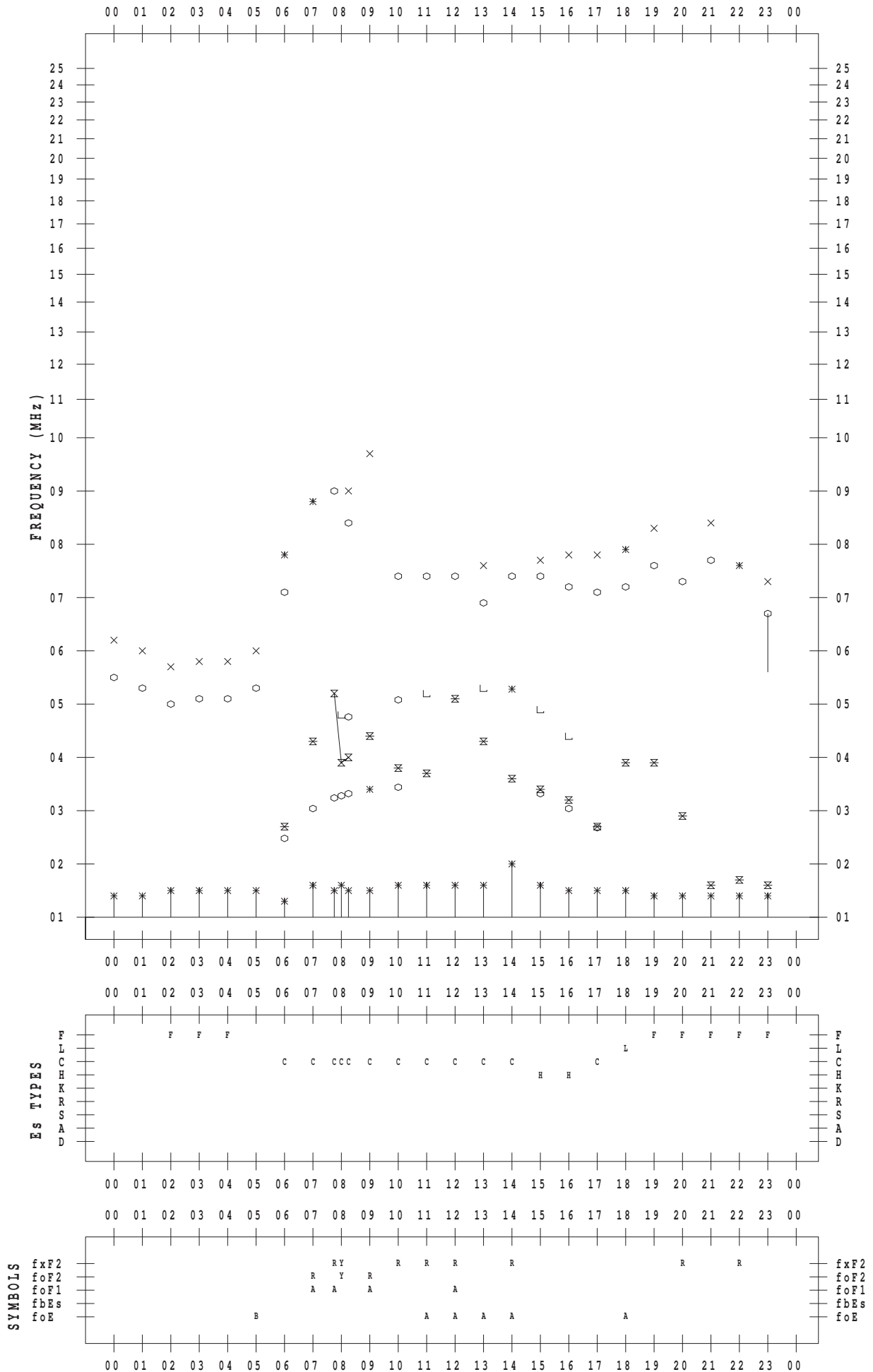
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 1

135 ° E MEAN TIME



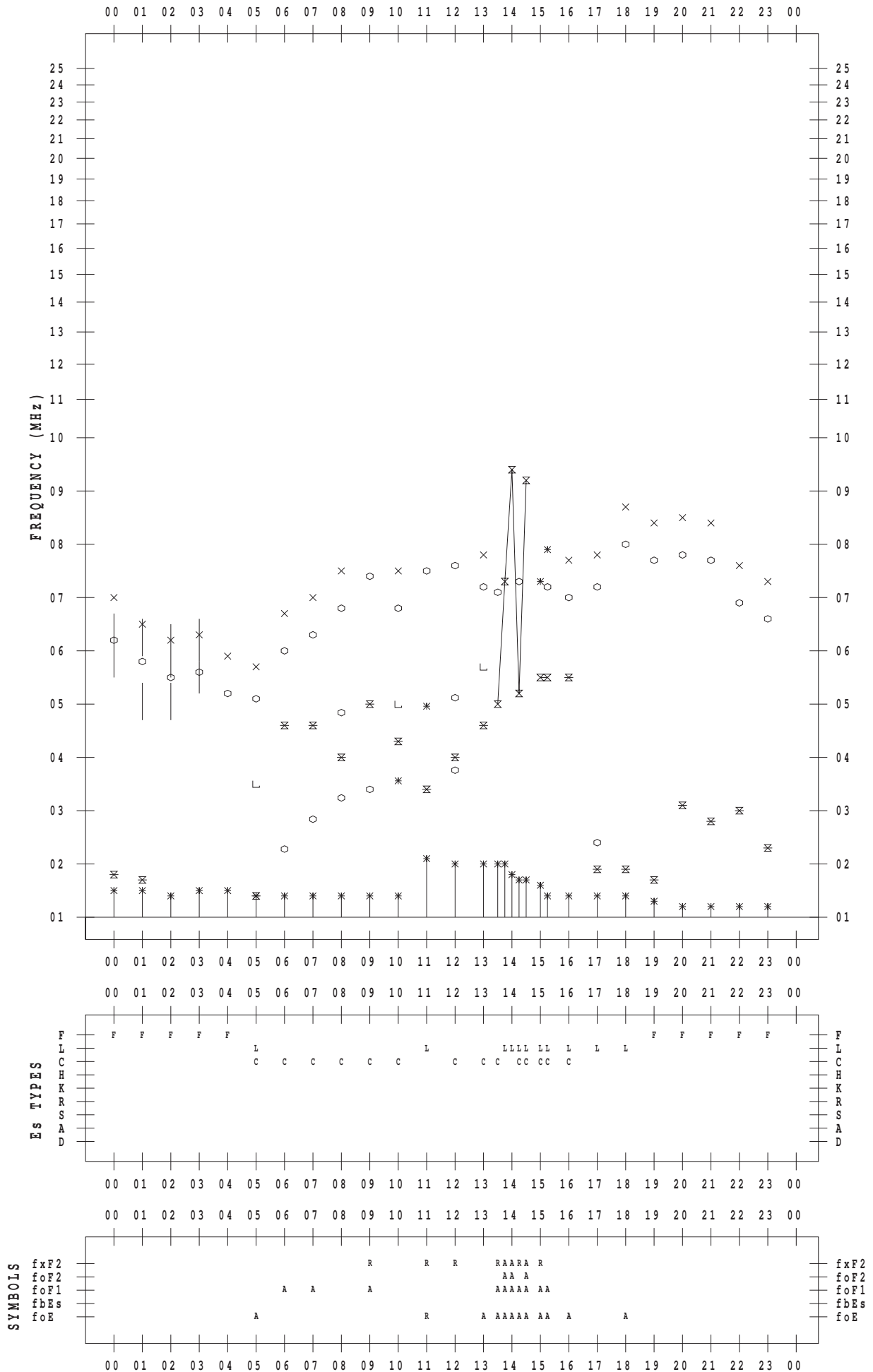
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 2

135 ° E MEAN TIME



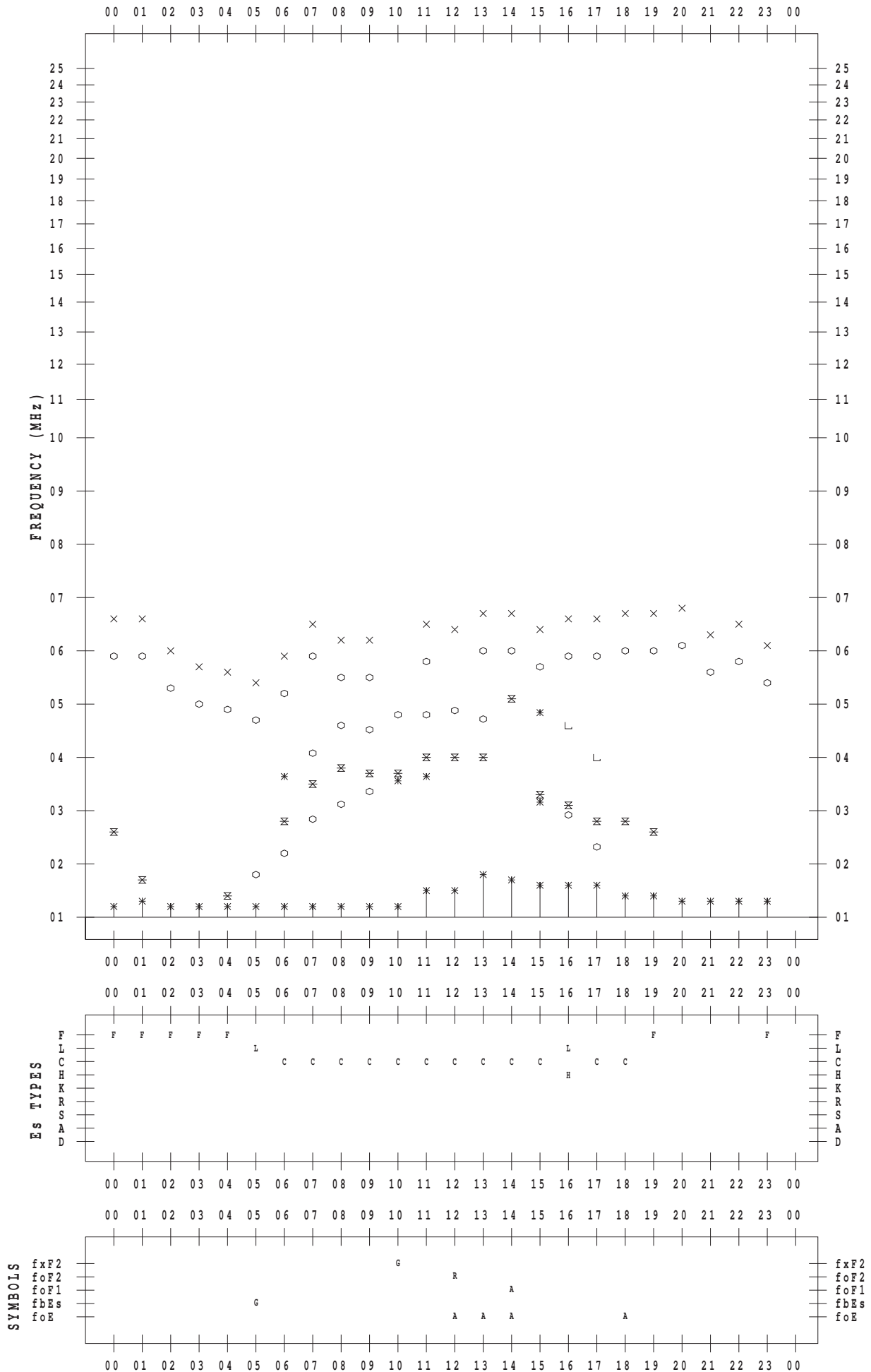
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 3

135 ° E MEAN TIME



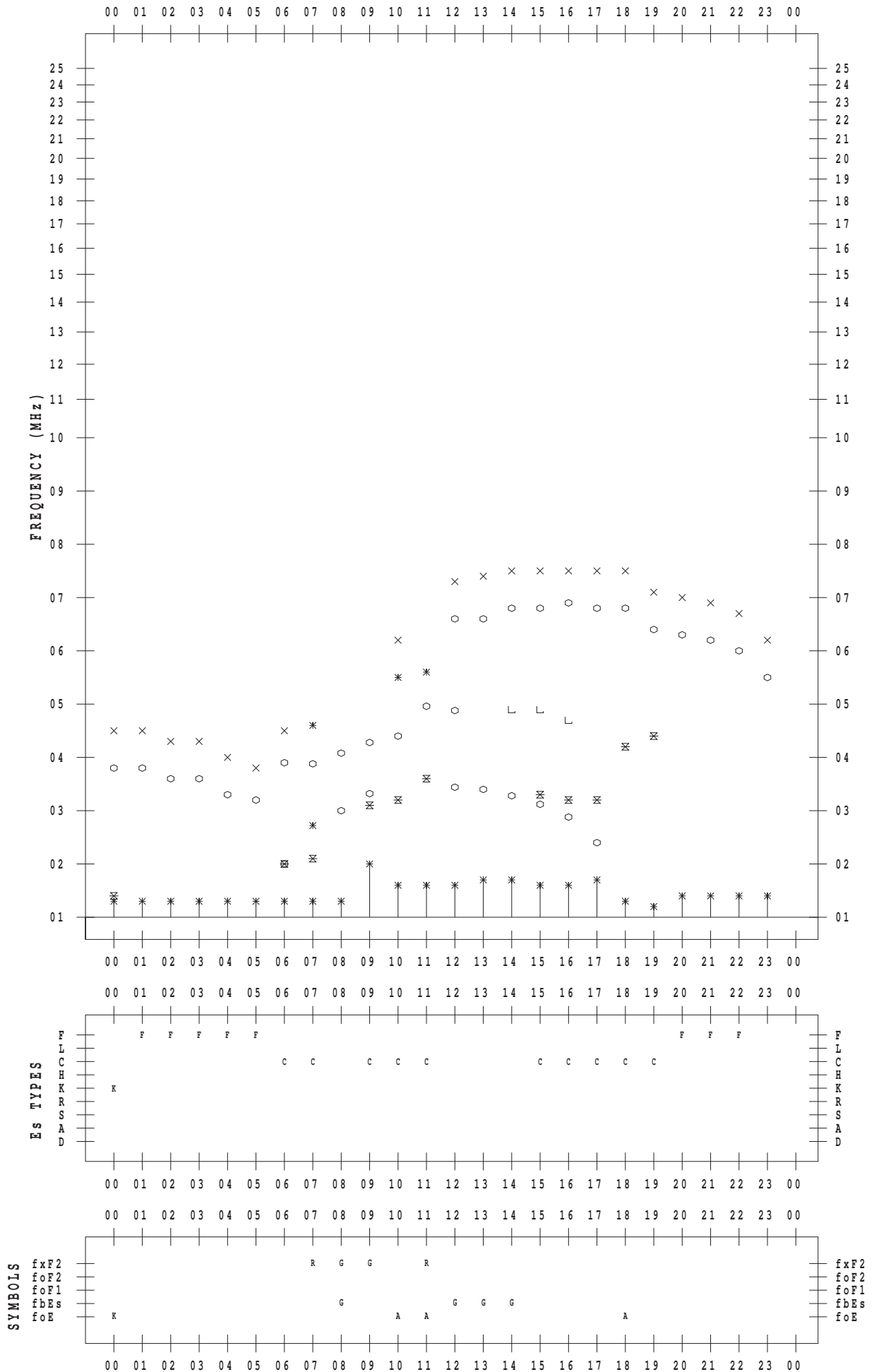
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 4

135 ° E MEAN TIME





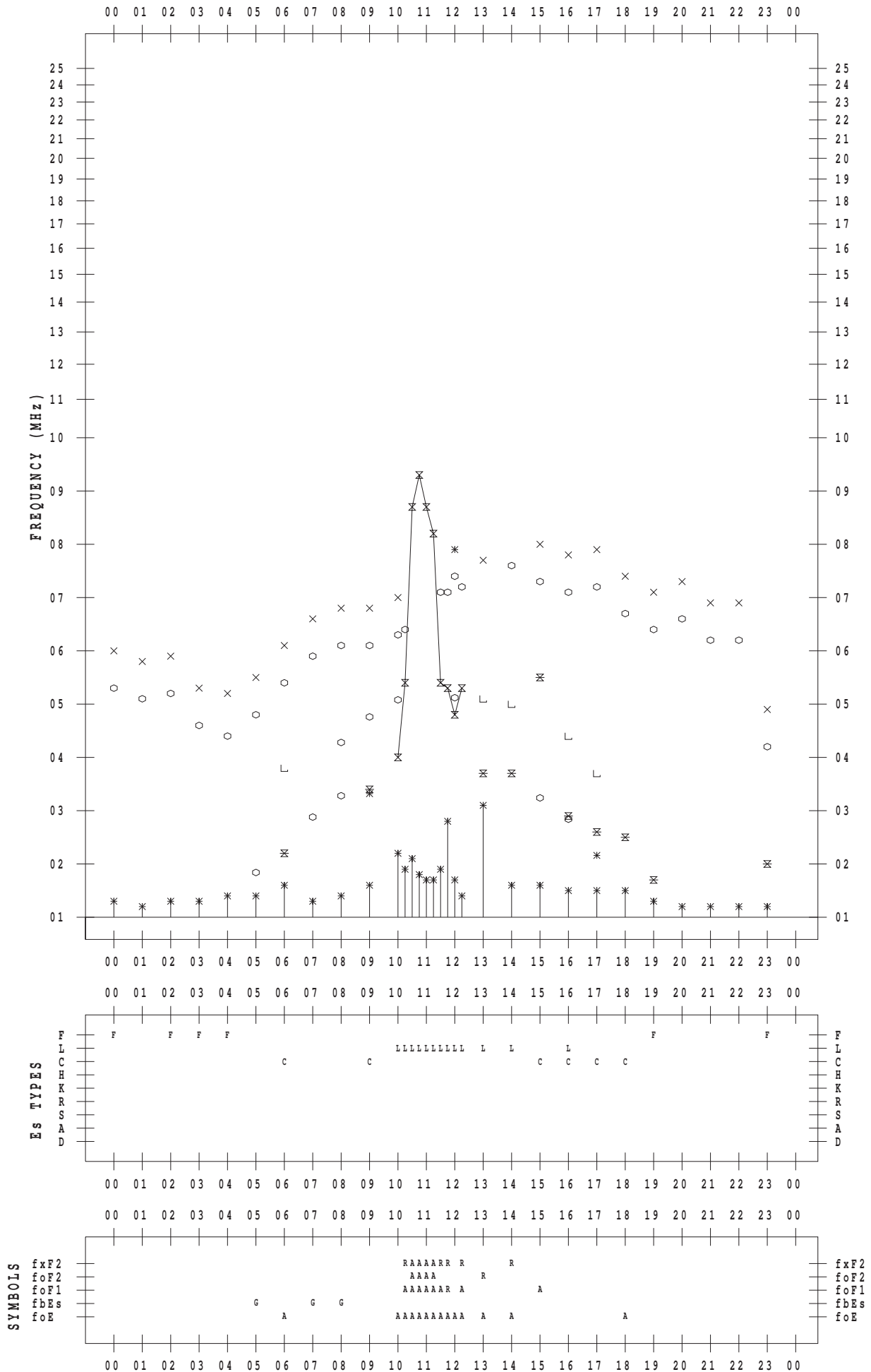
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 5

135 ° E MEAN TIME



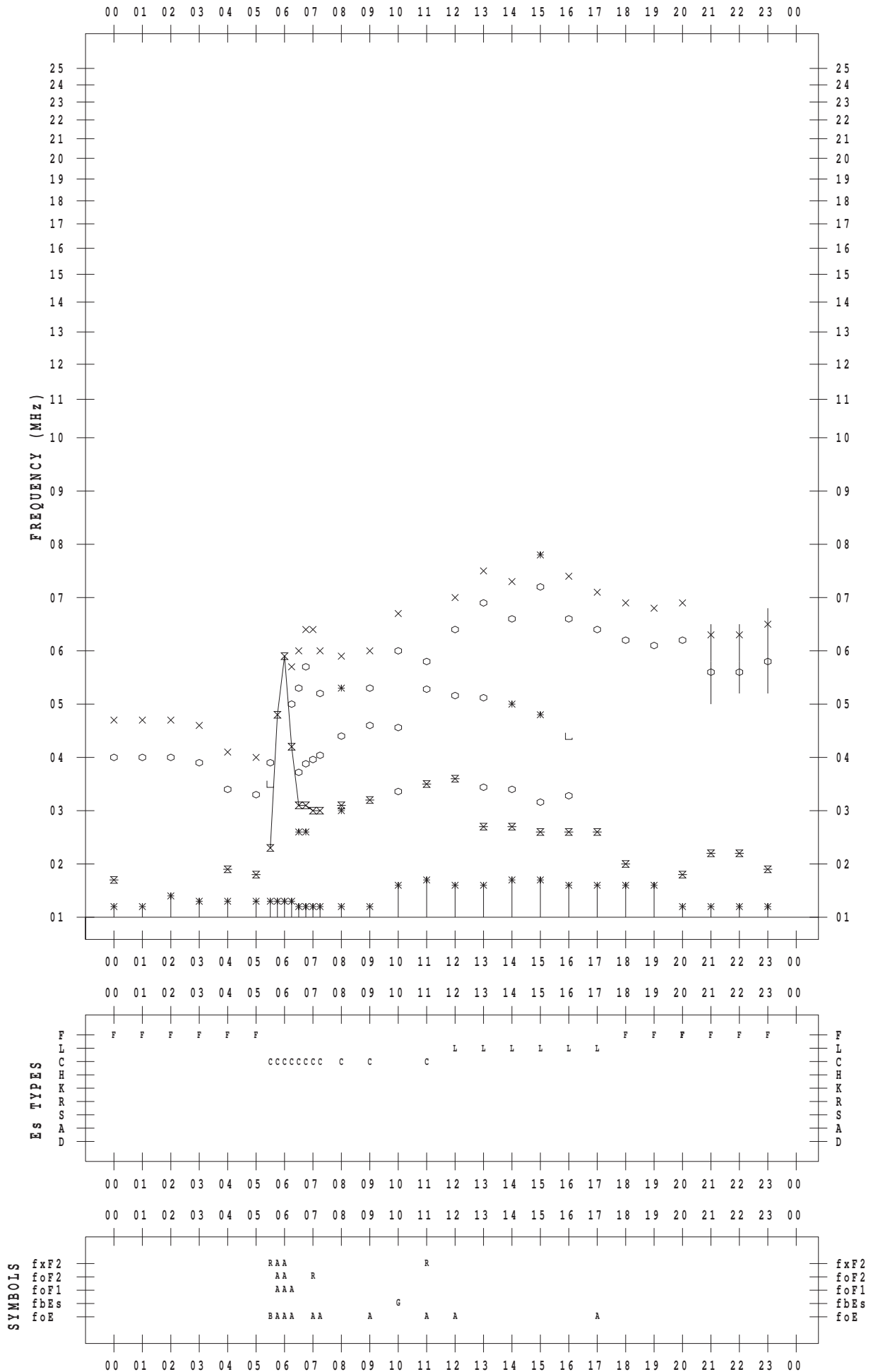
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 6

135 ° E MEAN TIME



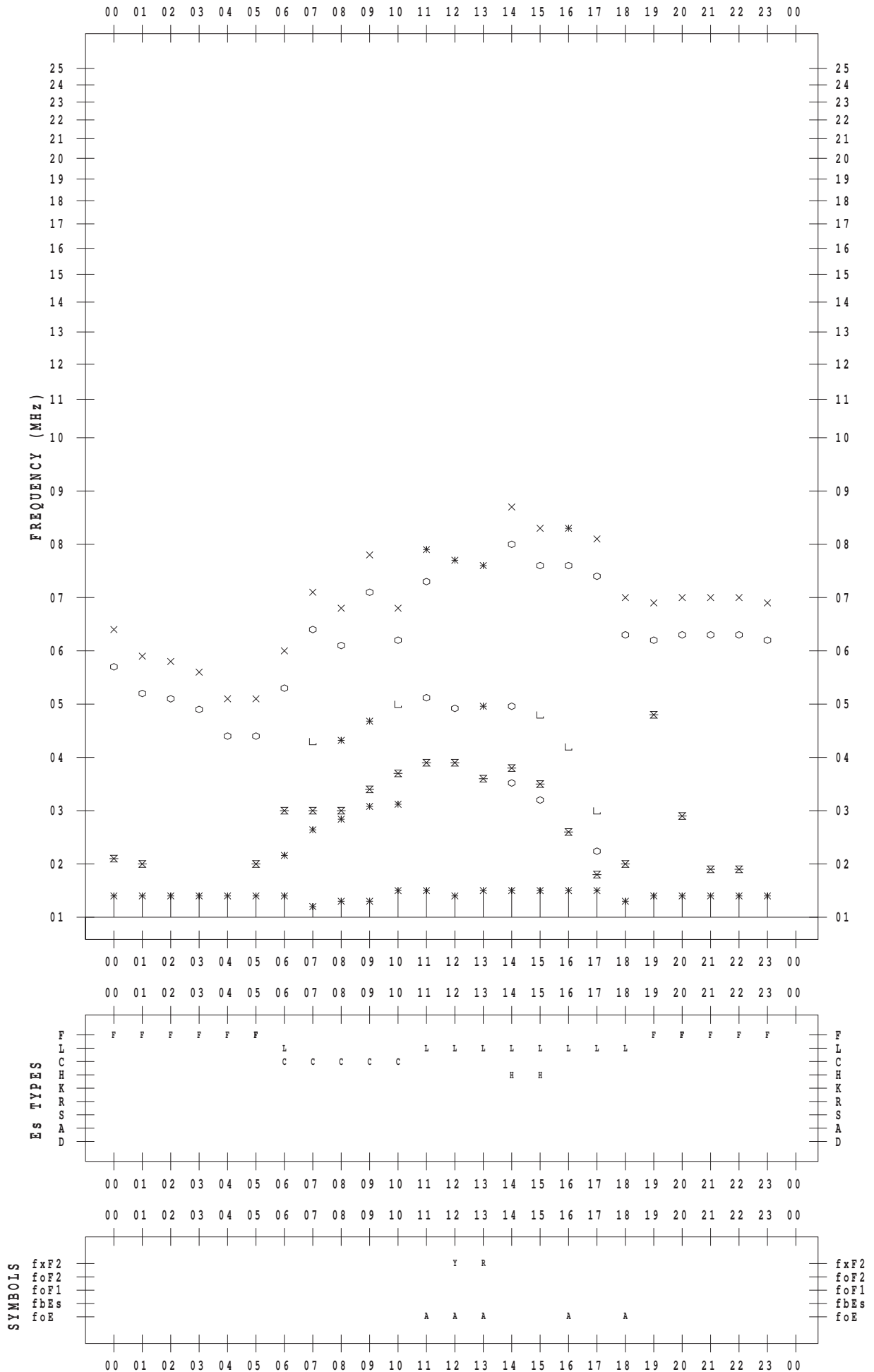
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 7

135 ° E MEAN TIME



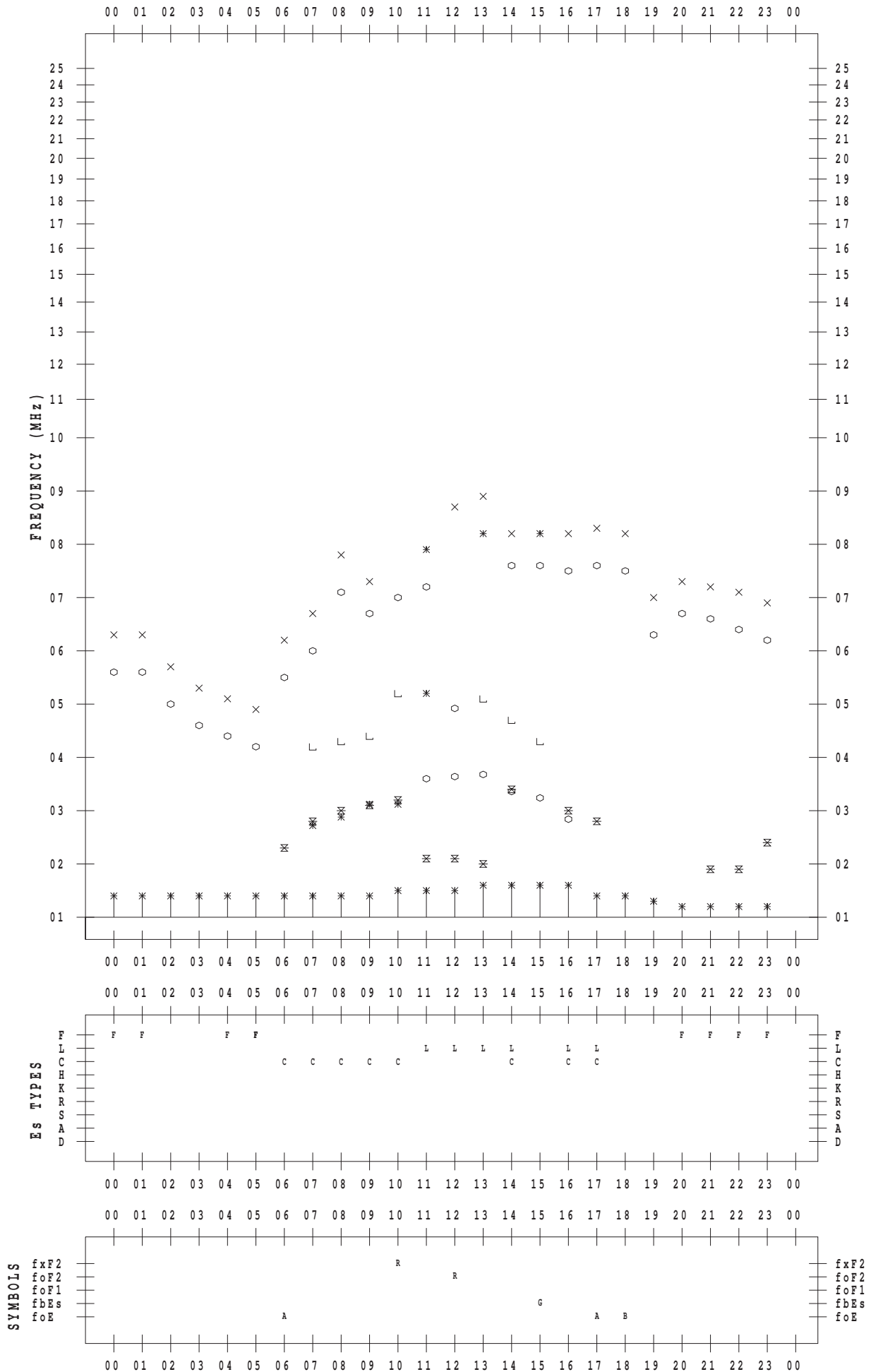
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 8

135 ° E MEAN TIME



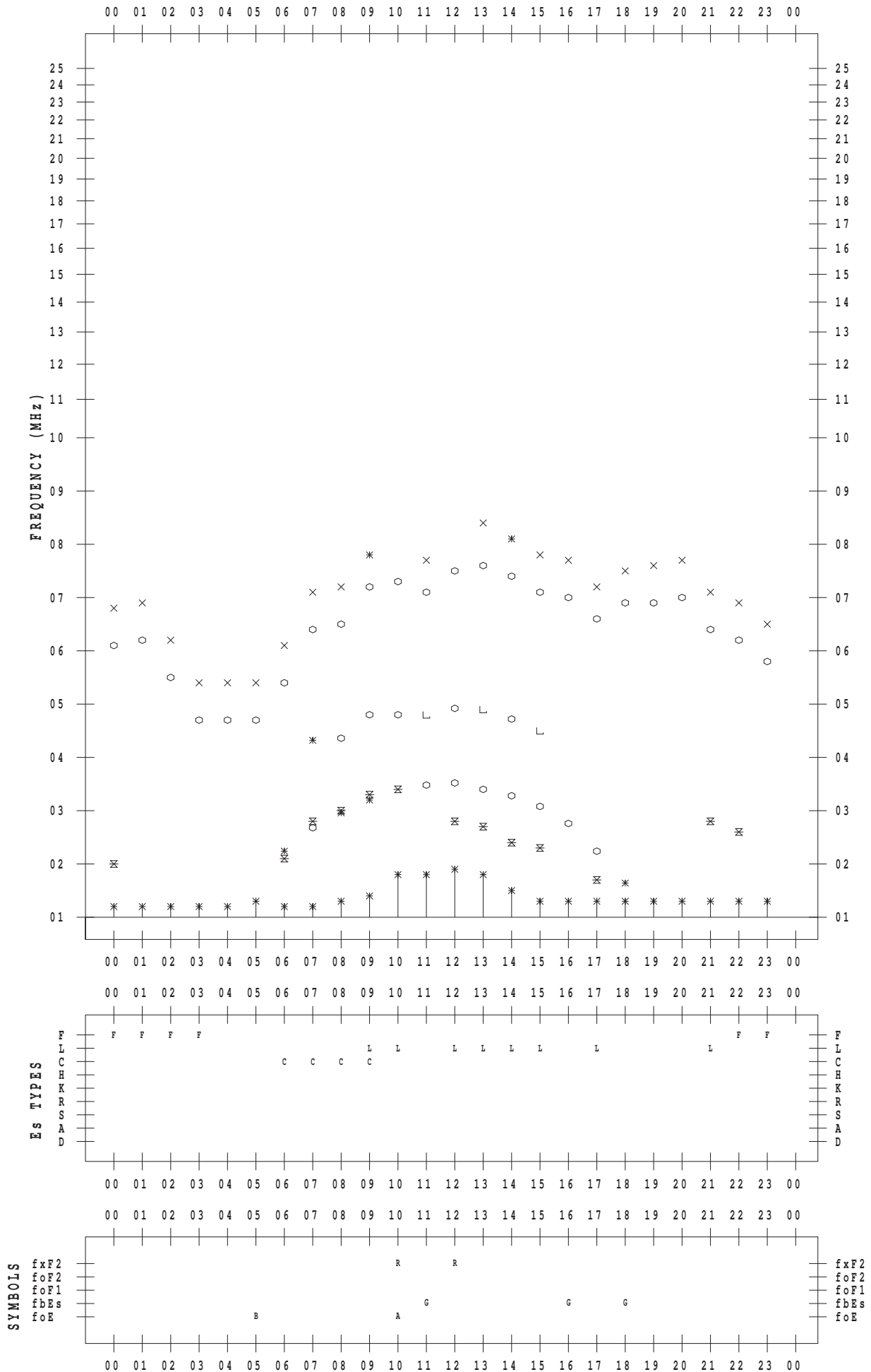
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 9

135 ° E MEAN TIME



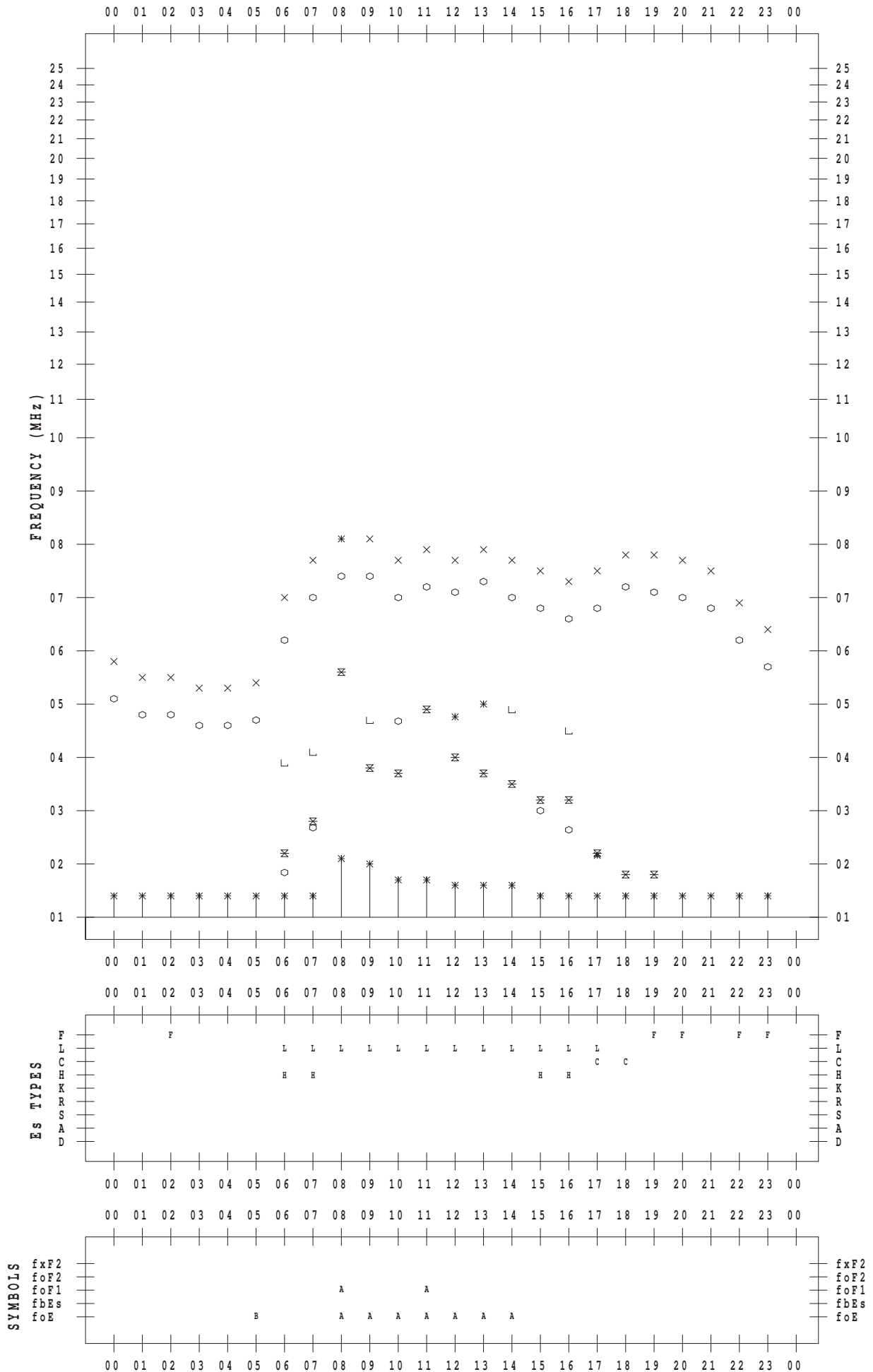
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 10

135 ° E MEAN TIME



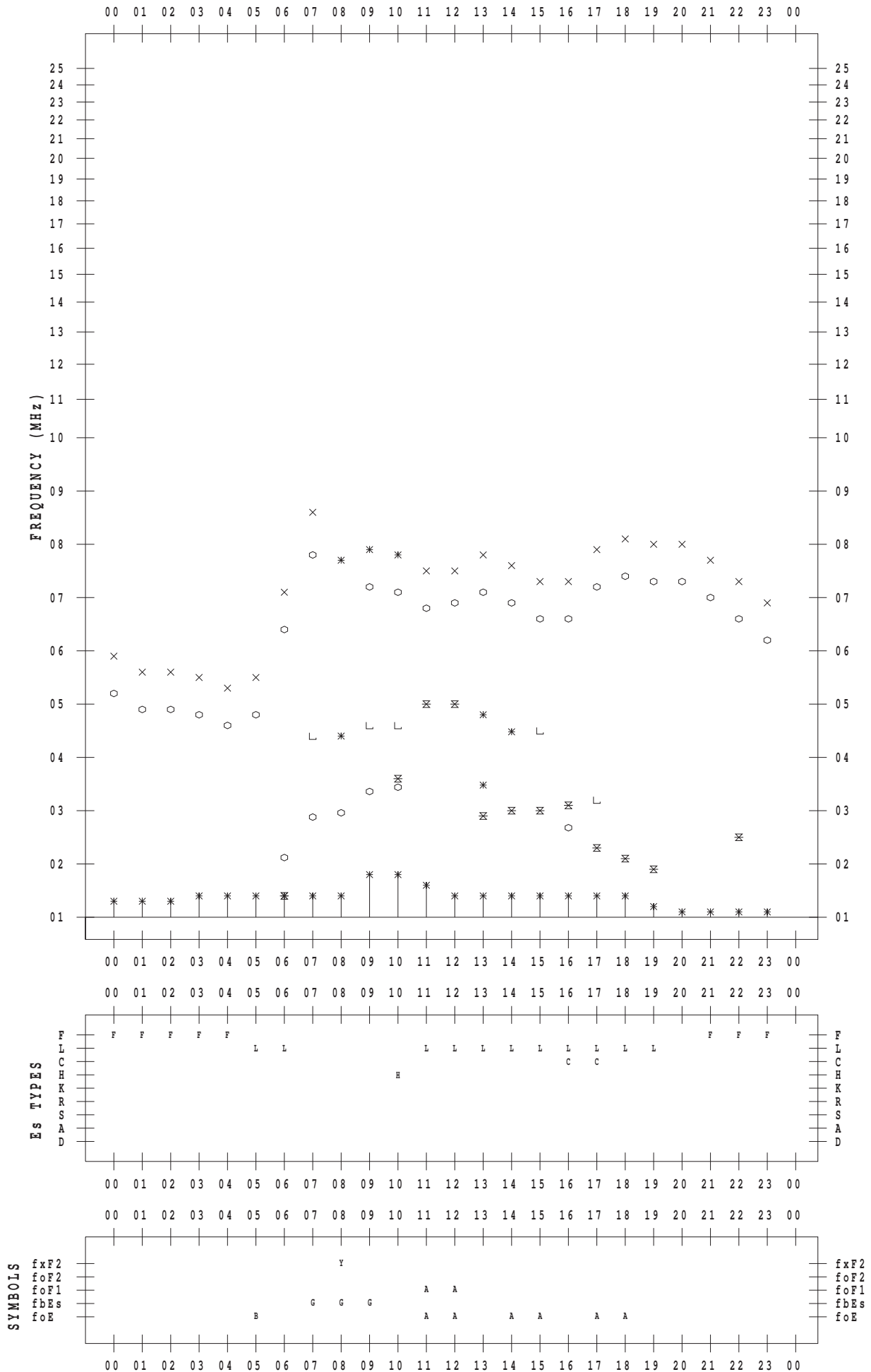
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 11

135 ° E MEAN TIME



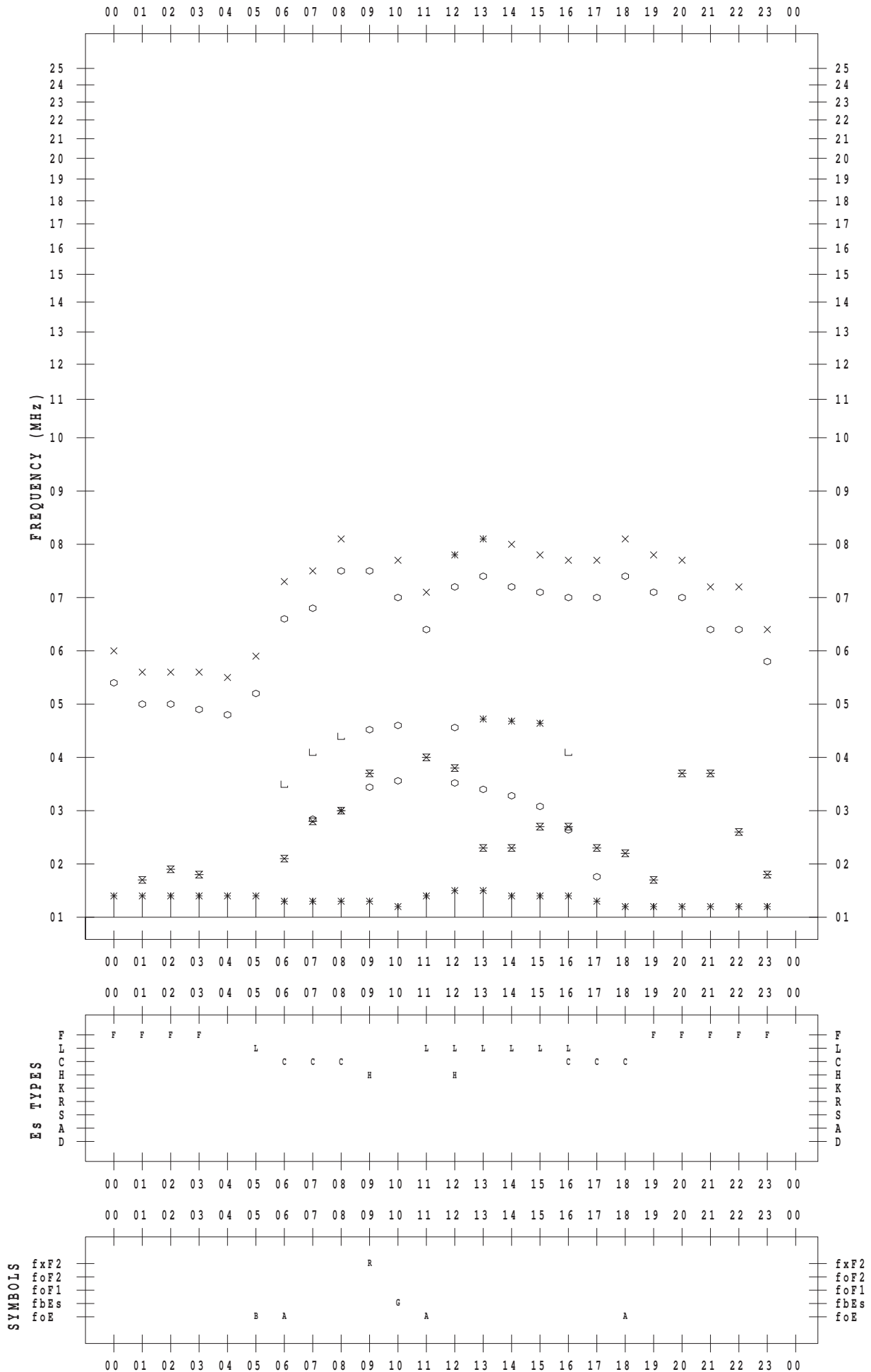
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 12

135 ° E MEAN TIME





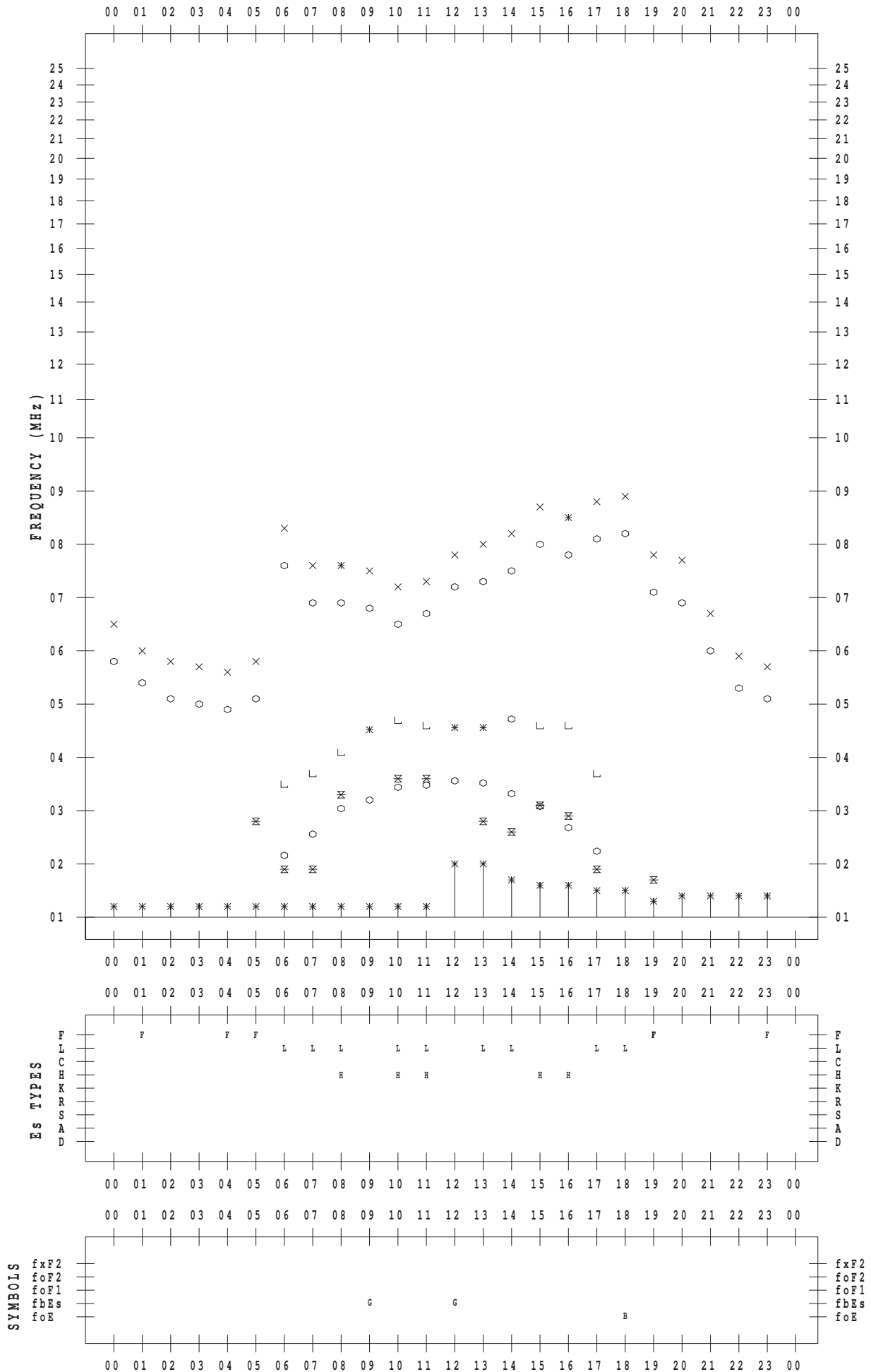
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 13

135 ° E MEAN TIME



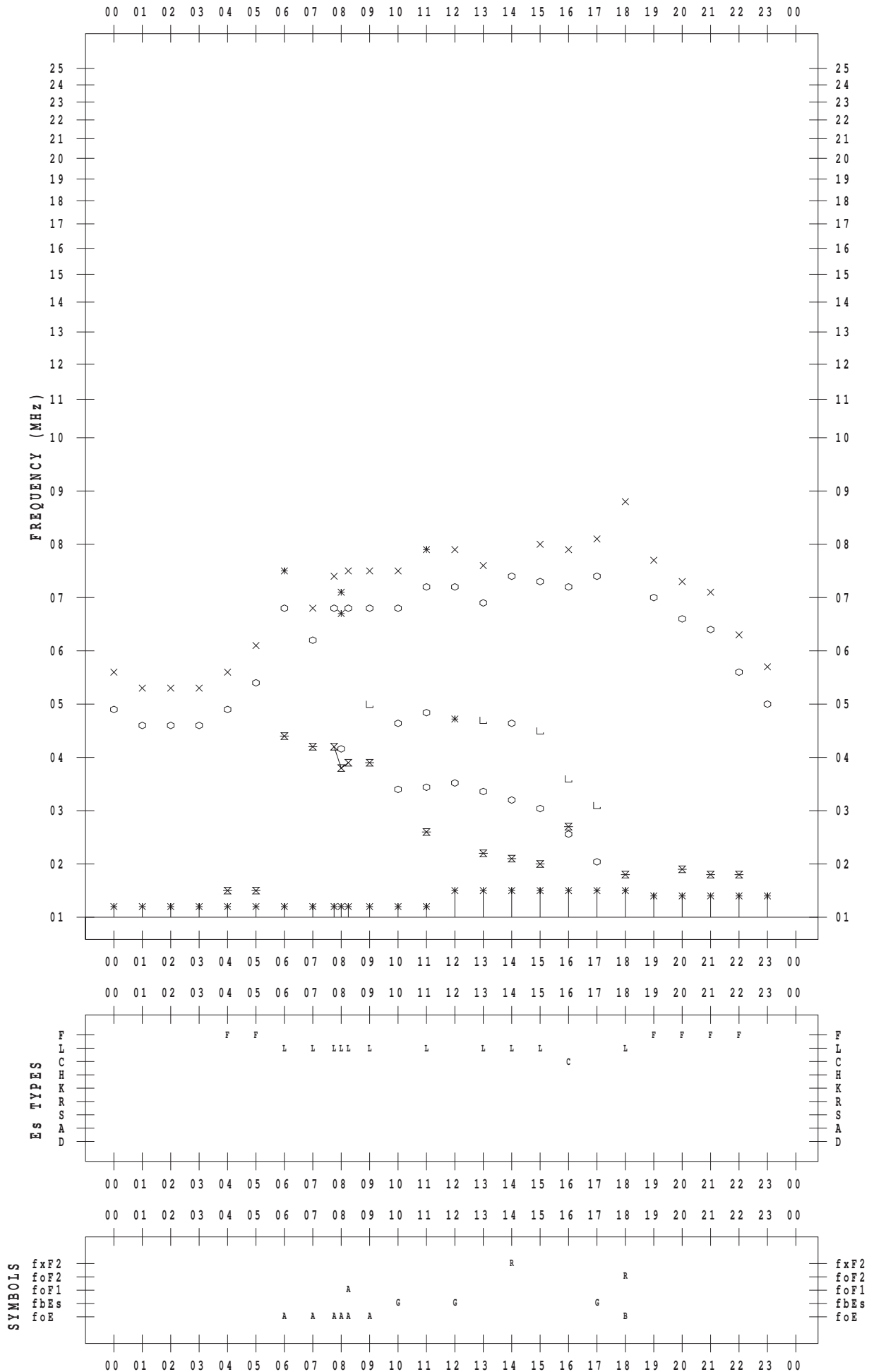
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 14

135 ° E MEAN TIME



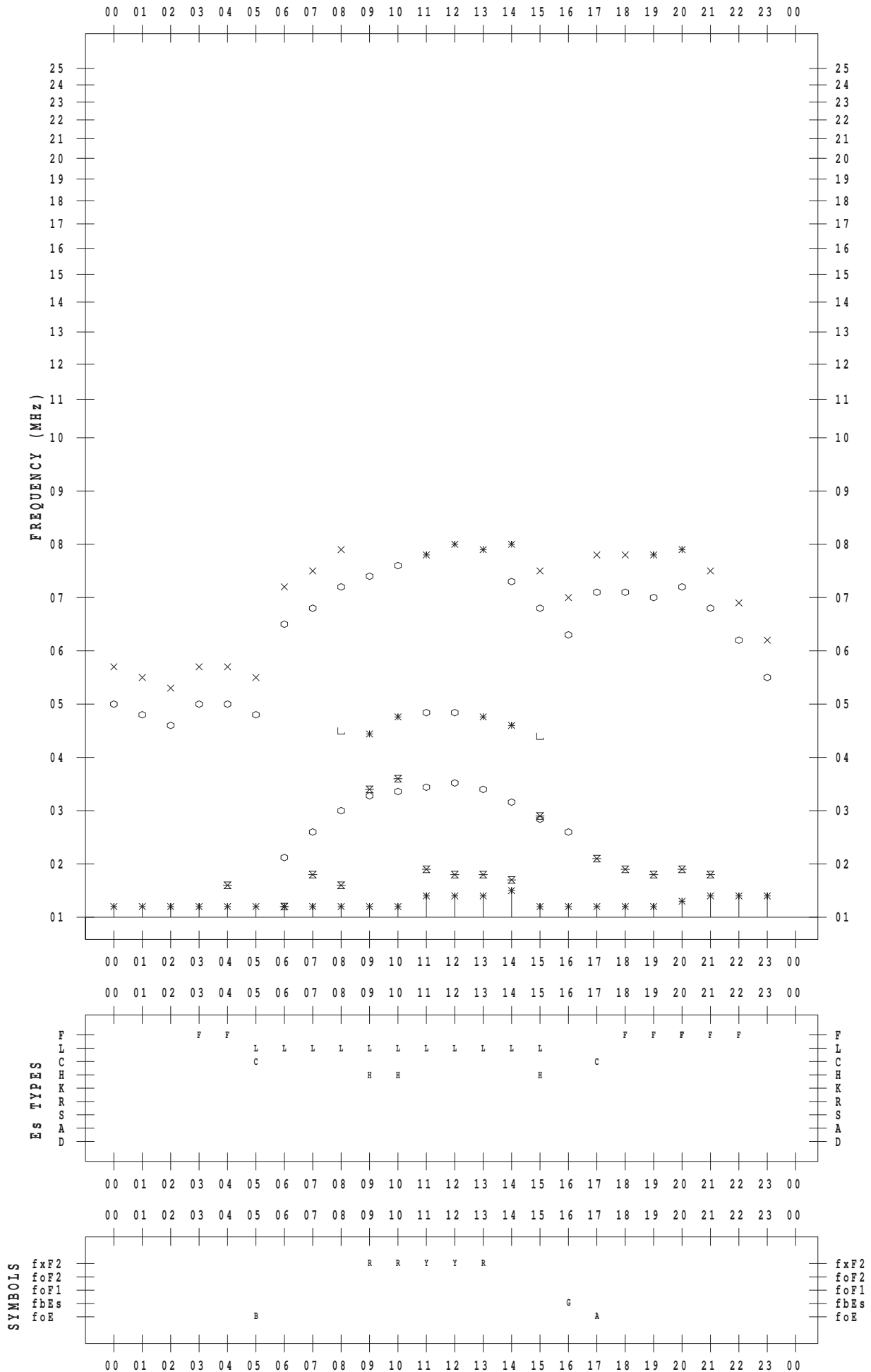
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 15

135 ° E MEAN TIME



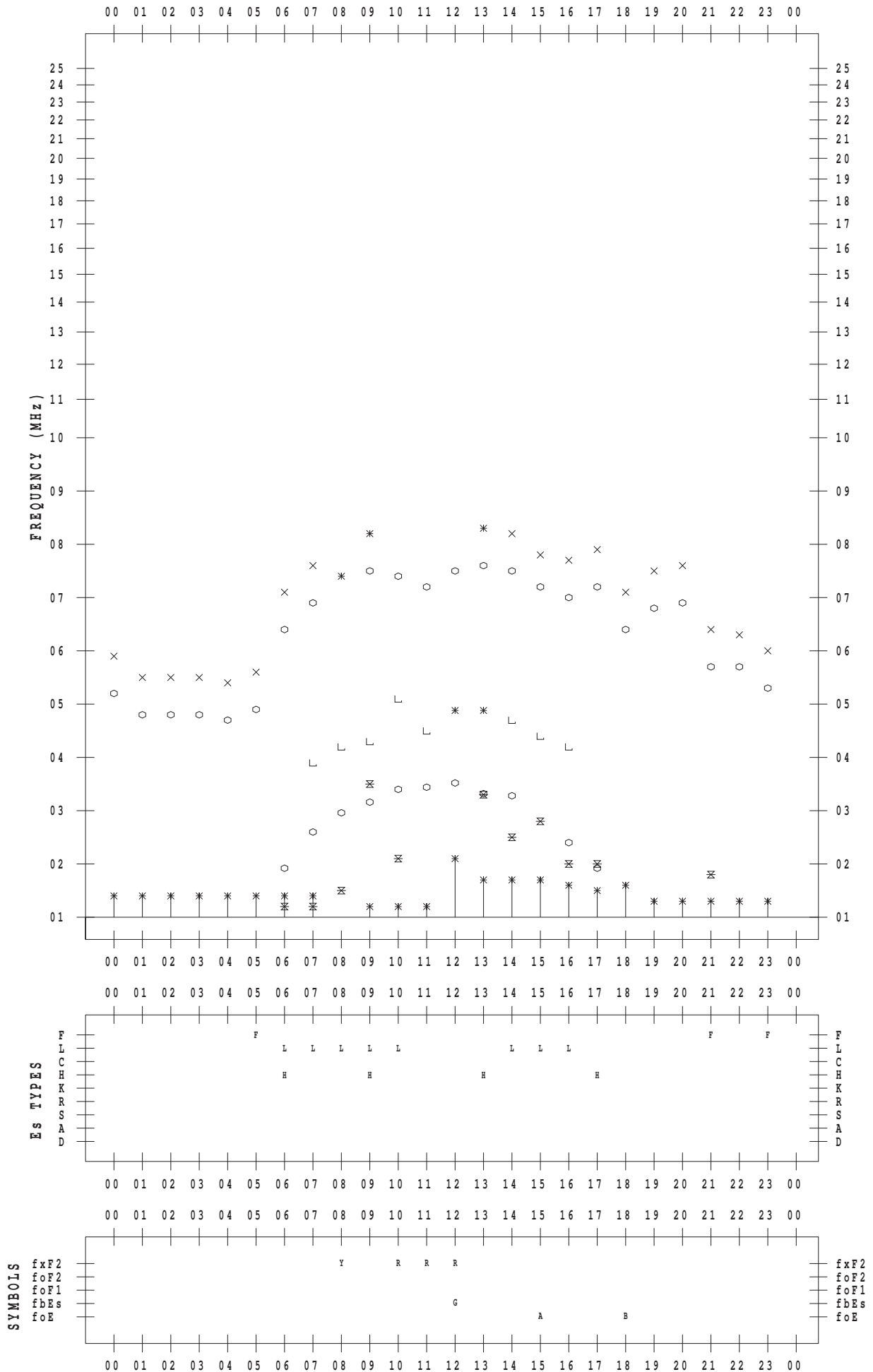
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 16

135 ° E MEAN TIME



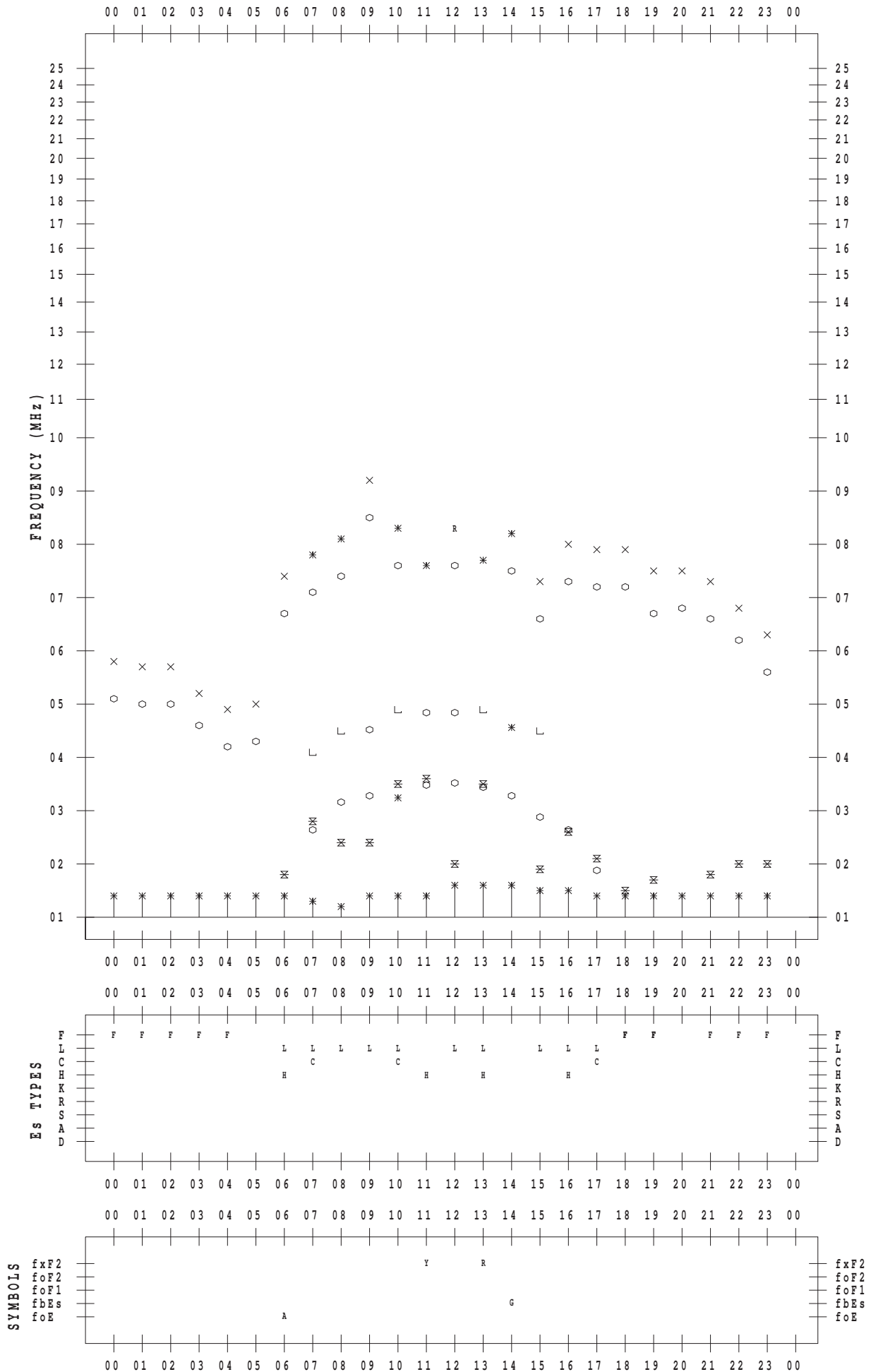
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 17

135 ° E MEAN TIME



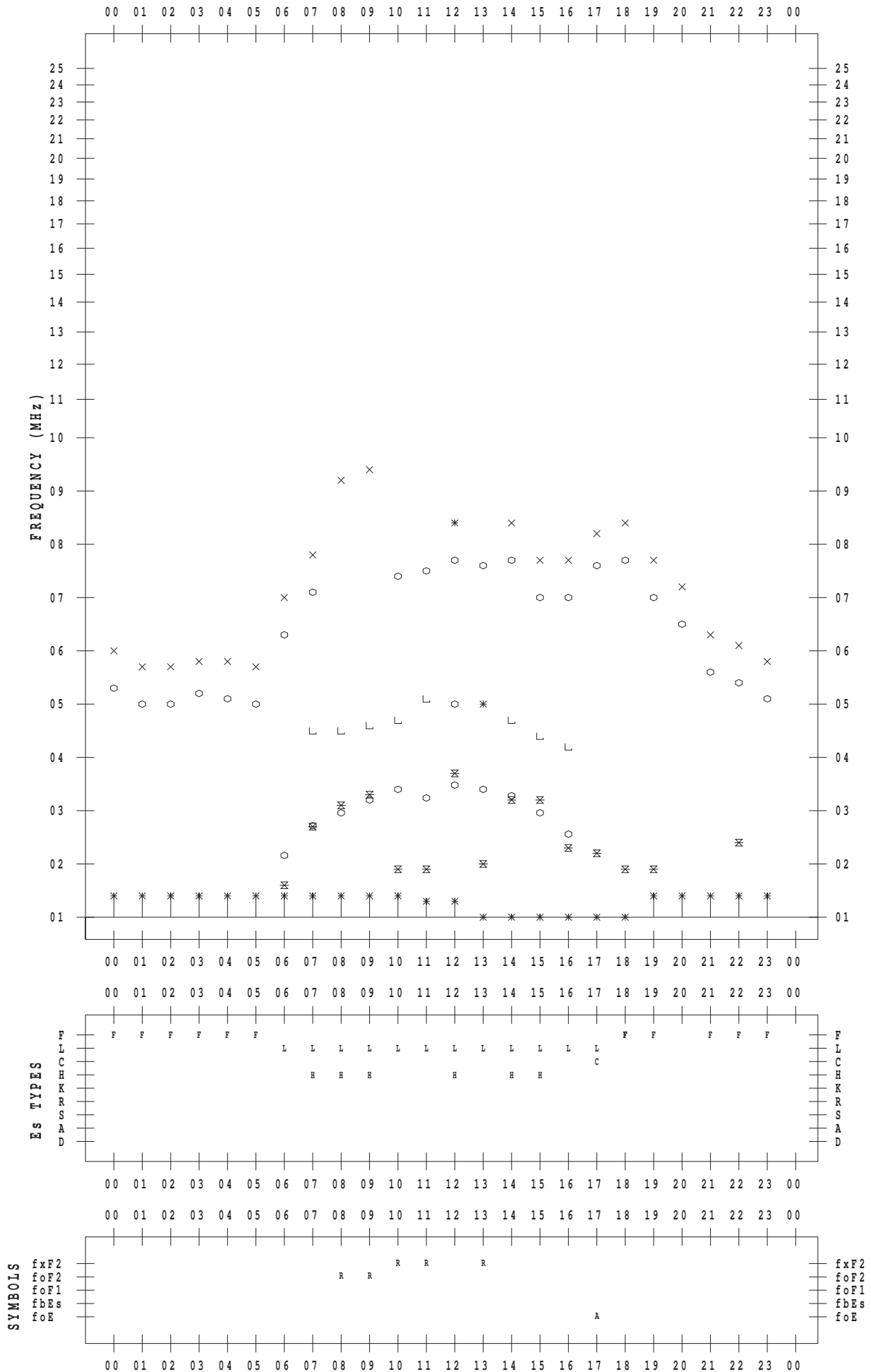
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 18

135 ° E MEAN TIME



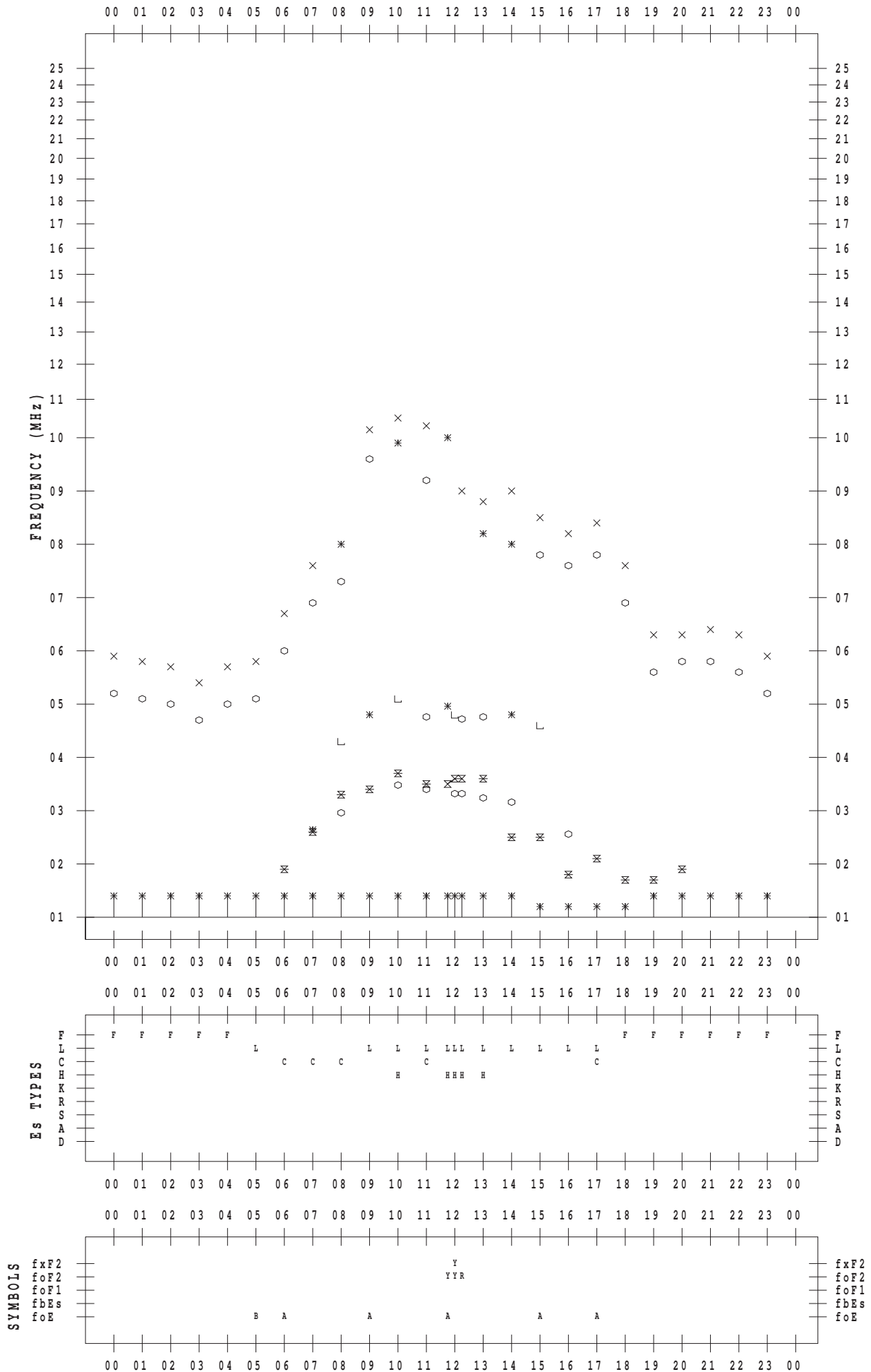
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 19

135 ° E MEAN TIME



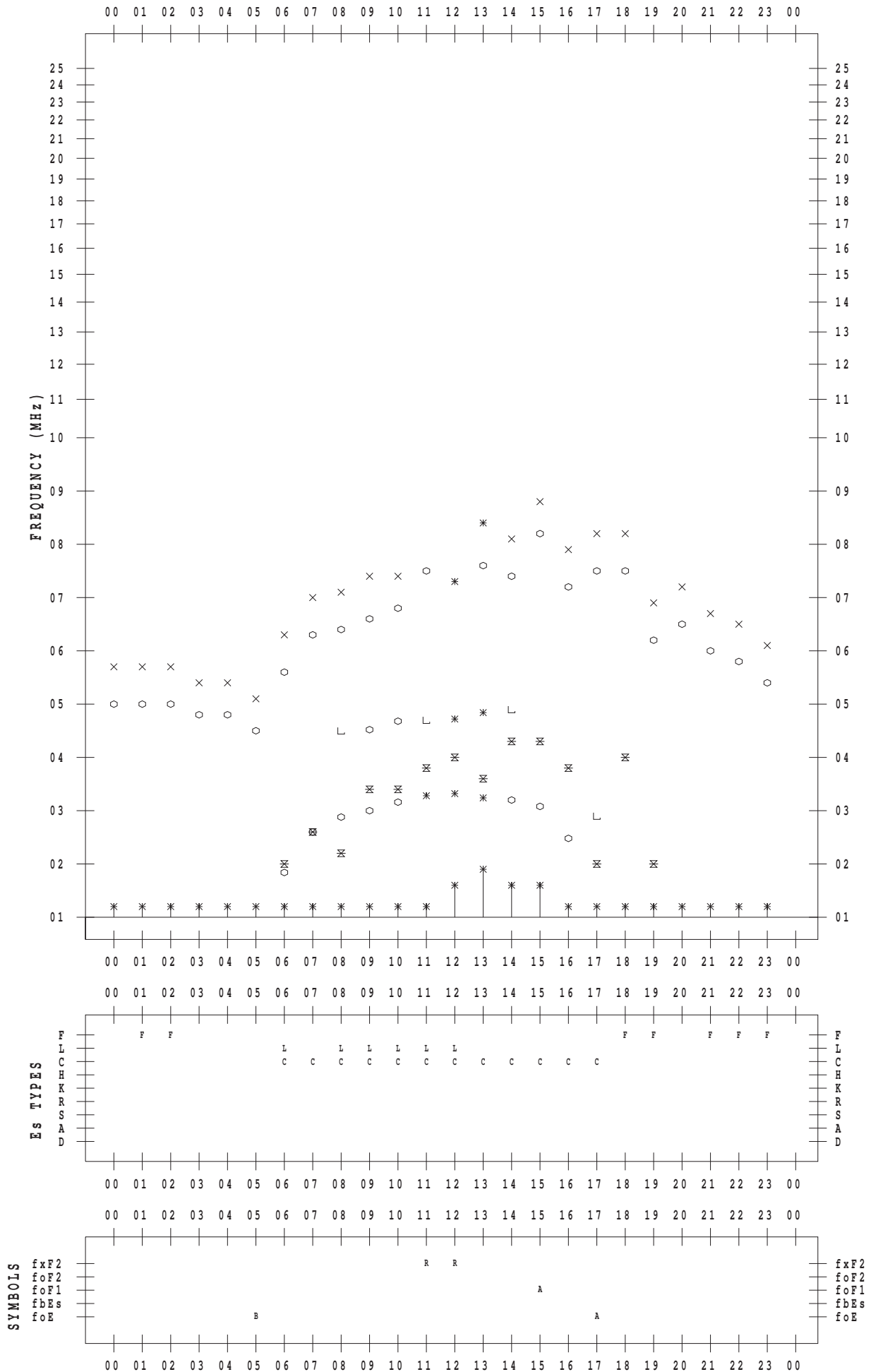
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 20

135 ° E MEAN TIME





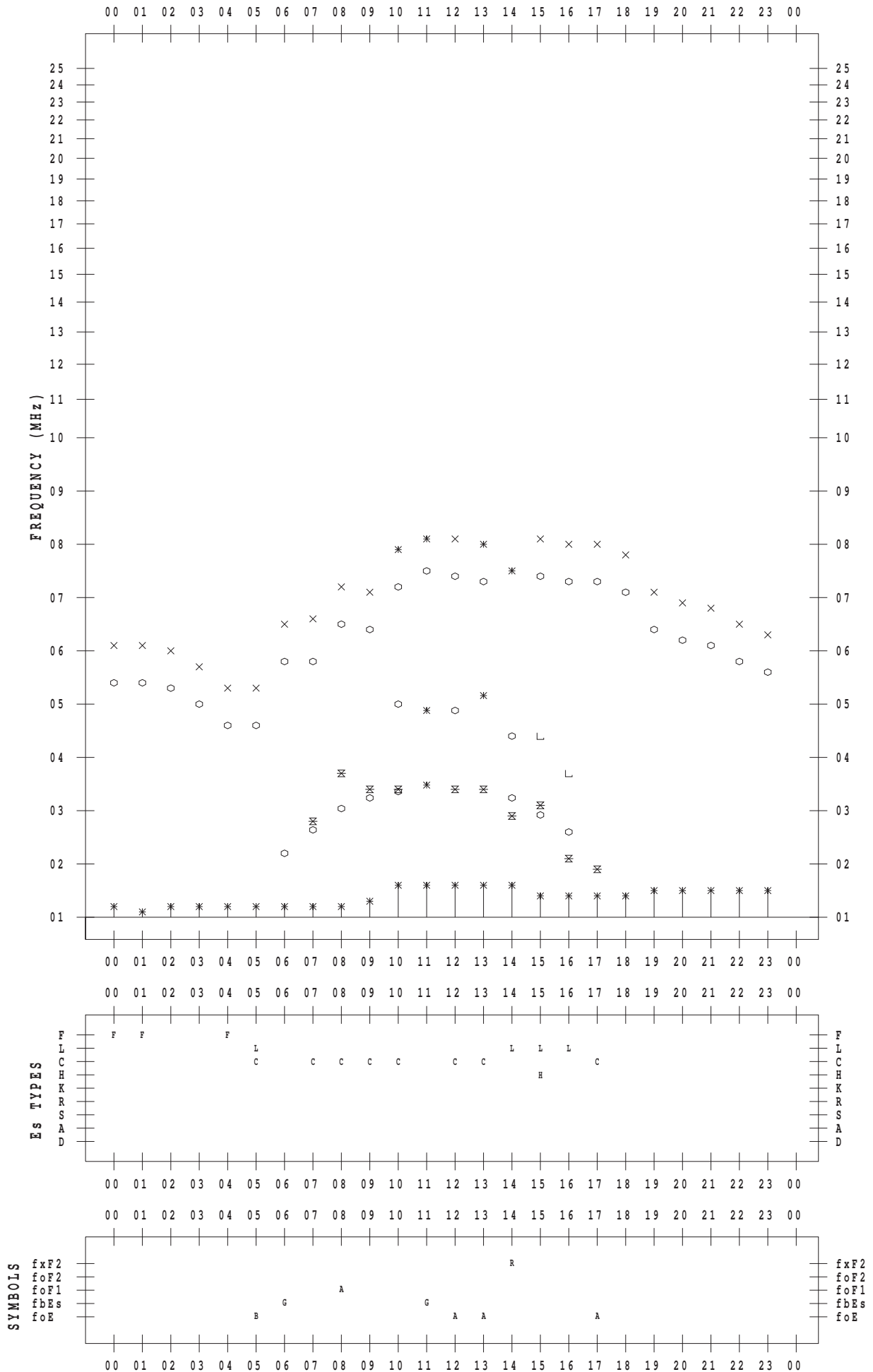
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 21

135 ° E MEAN TIME



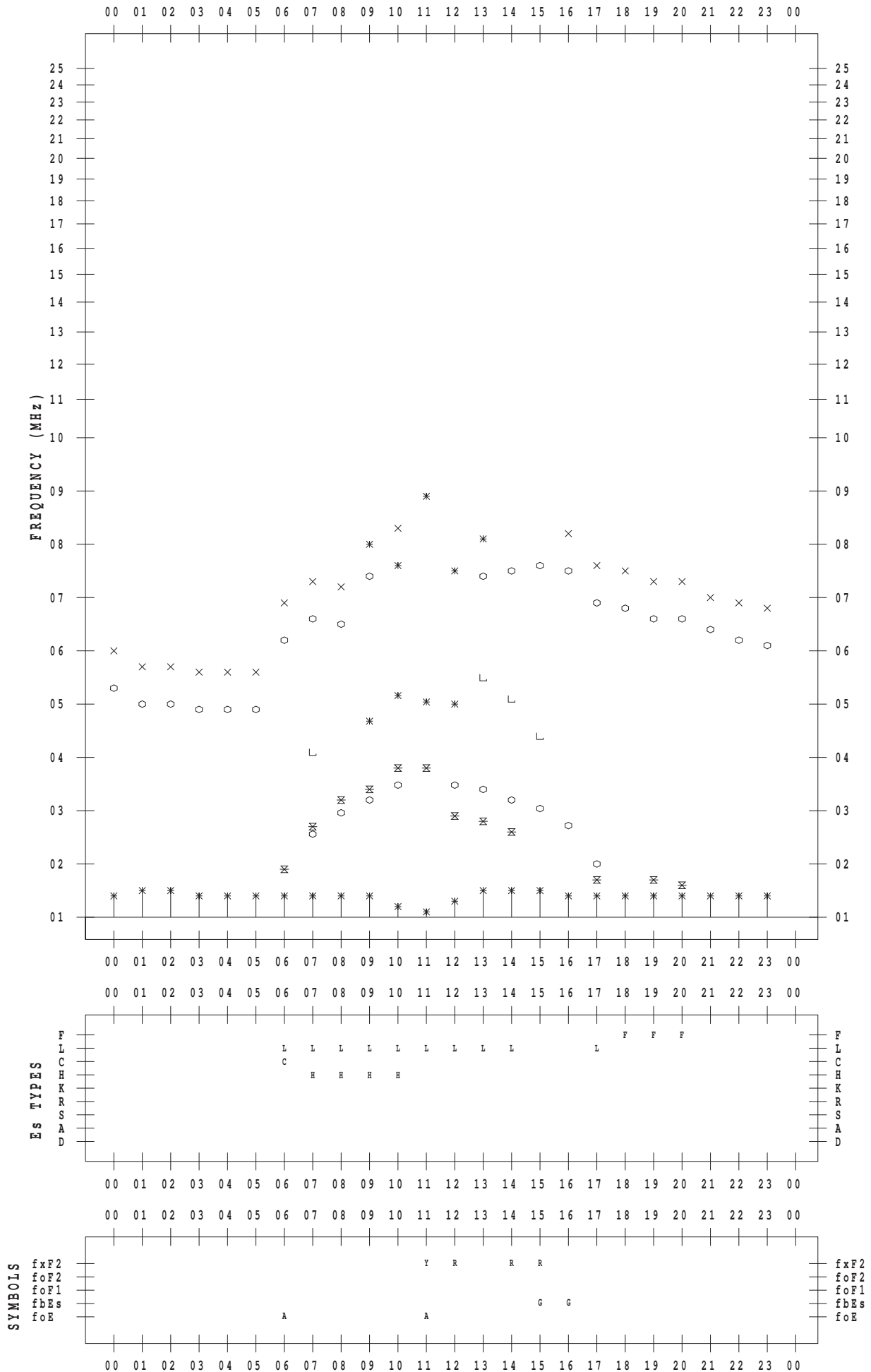
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 22

135 ° E MEAN TIME



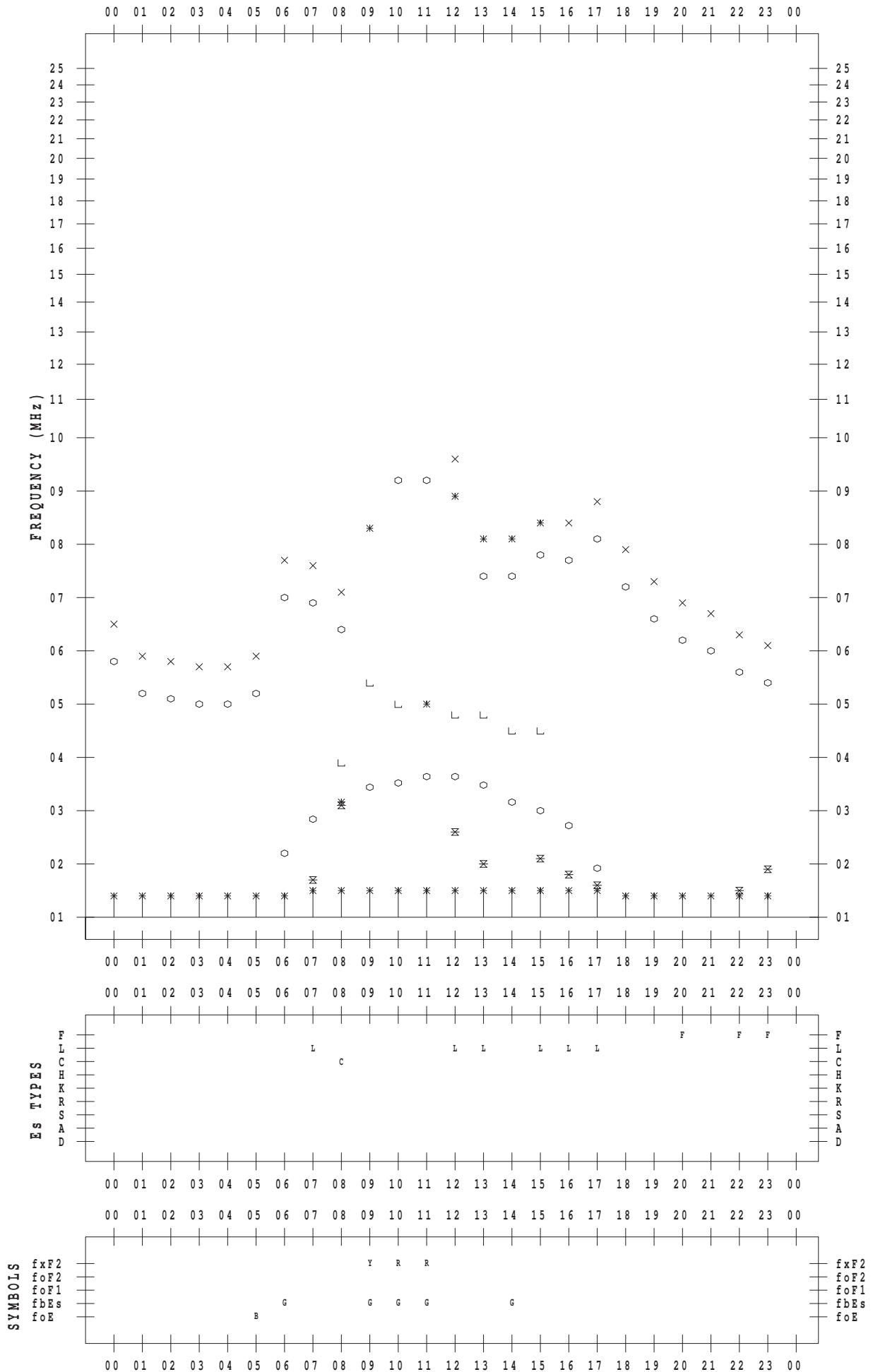
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 23

135 ° E MEAN TIME



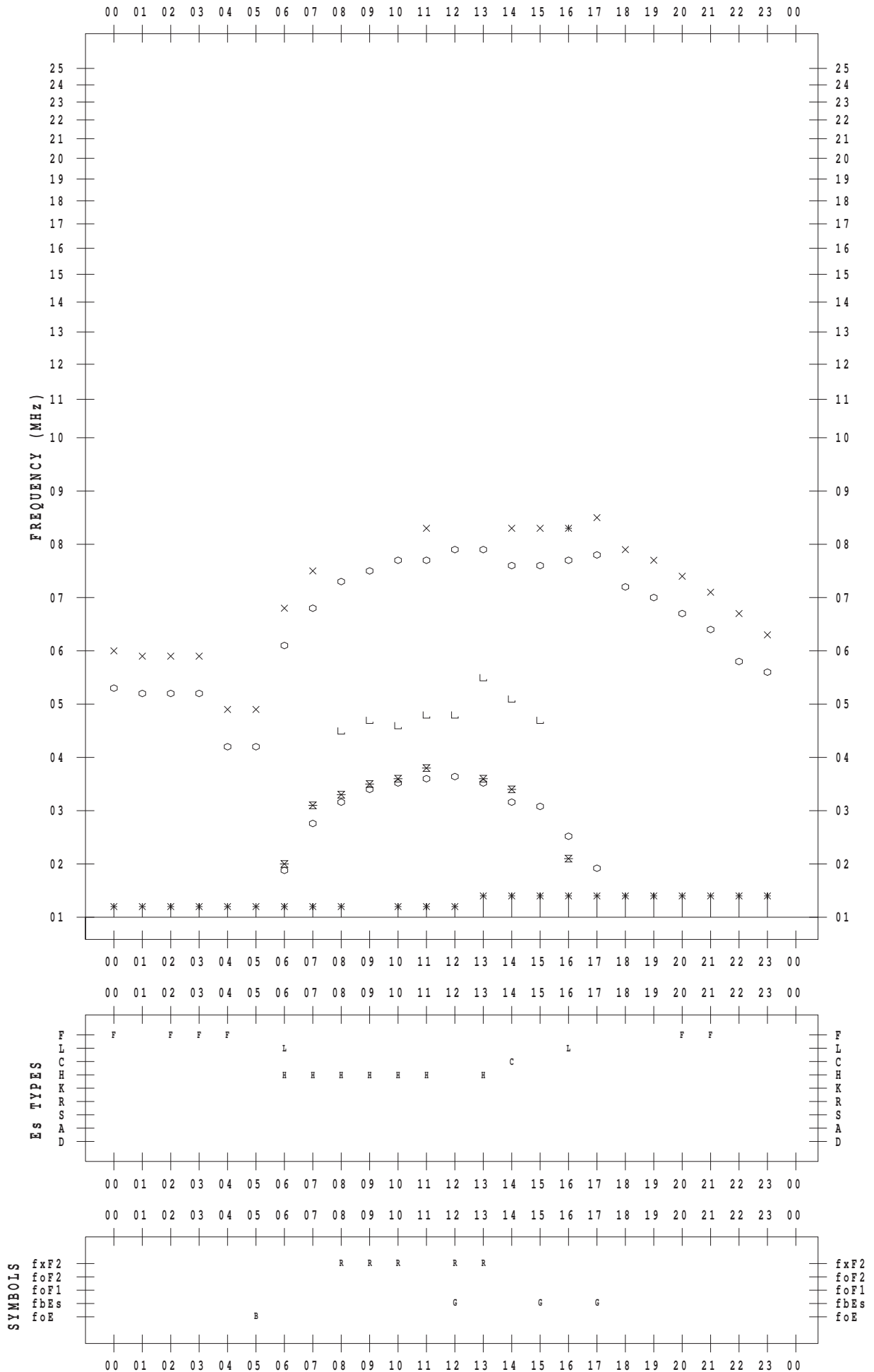
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 24

135 ° E MEAN TIME



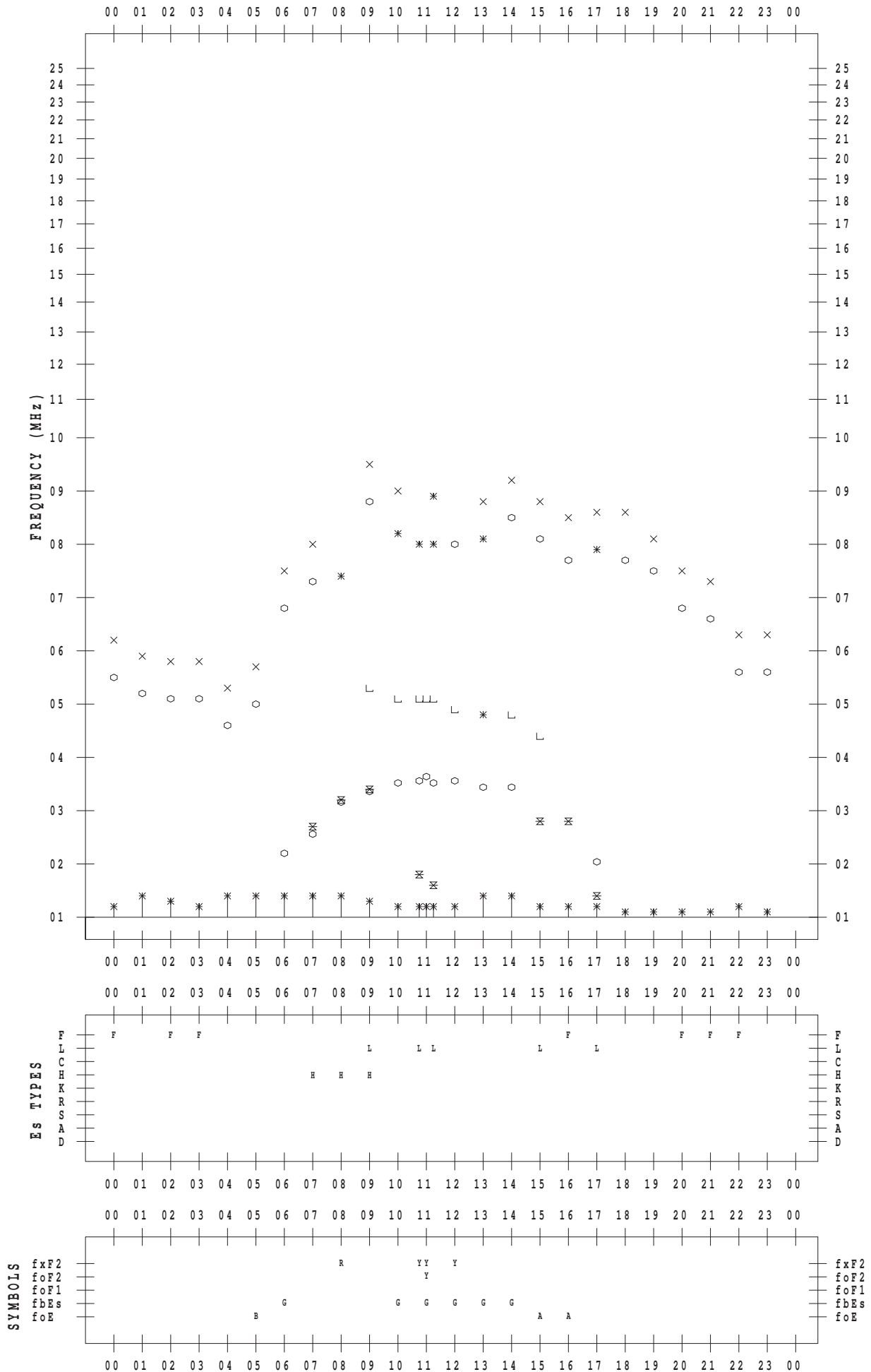
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 25

135 ° E MEAN TIME



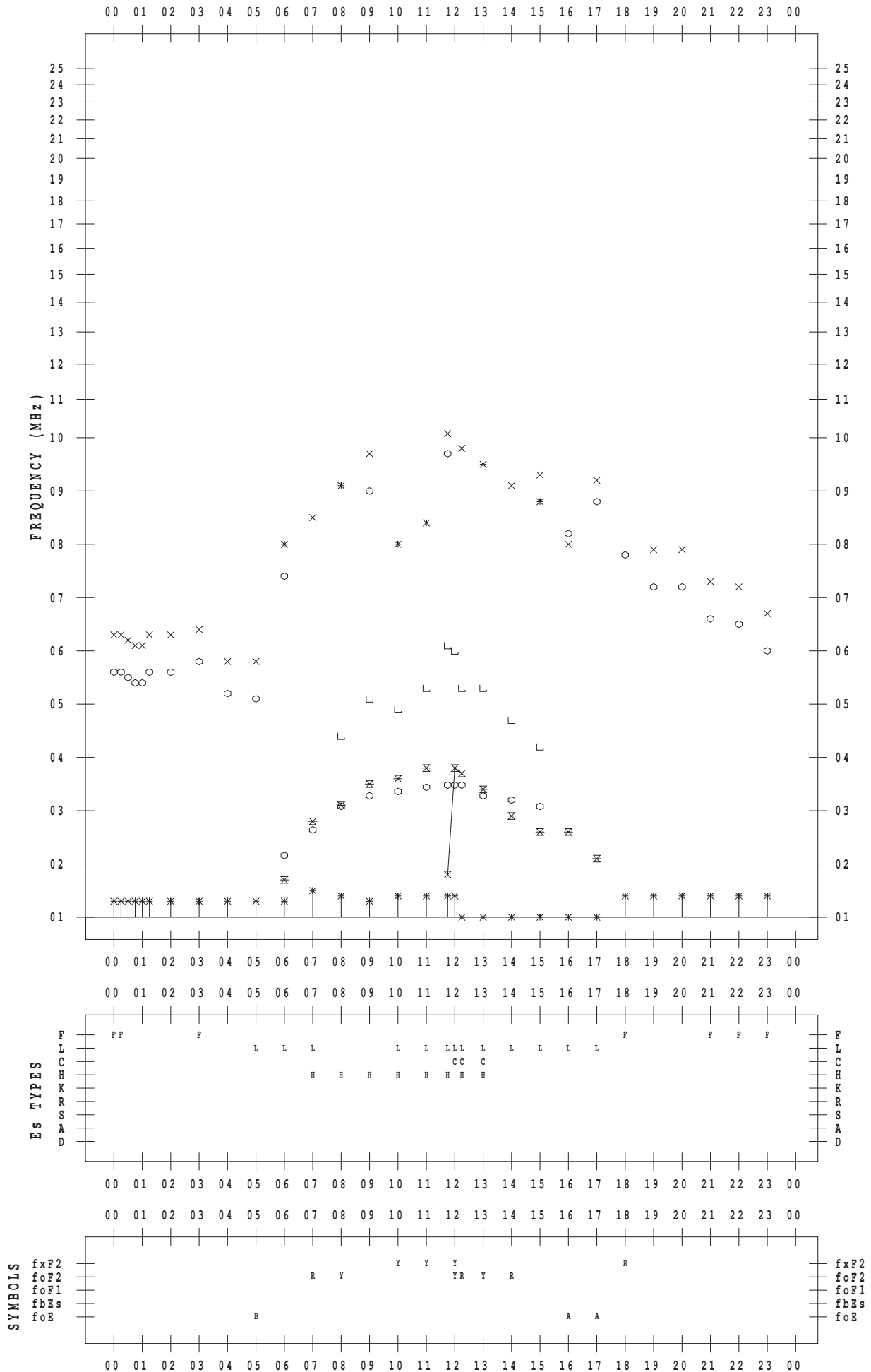
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 26

135 ° E MEAN TIME



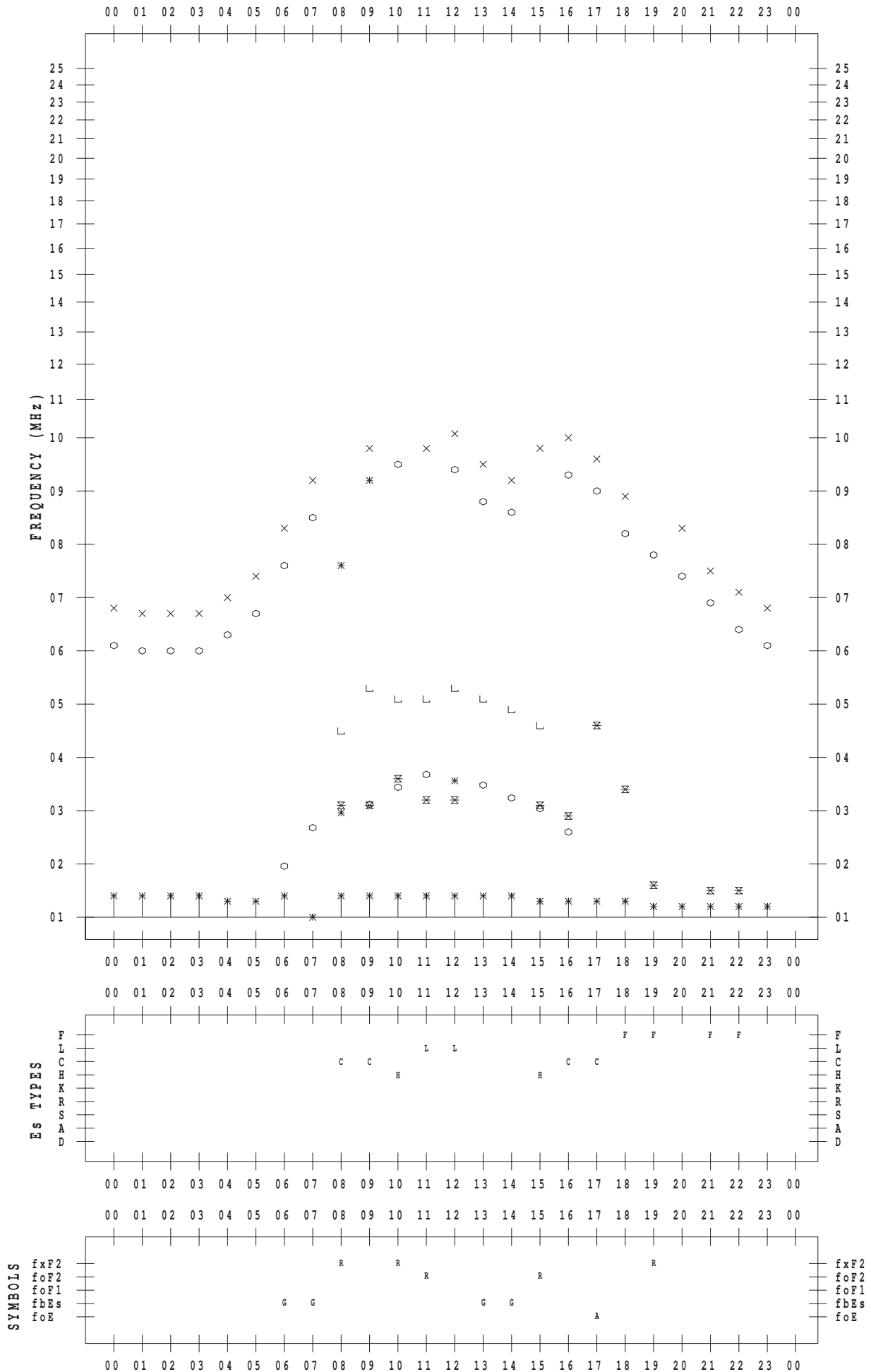
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 27

135 ° E MEAN TIME



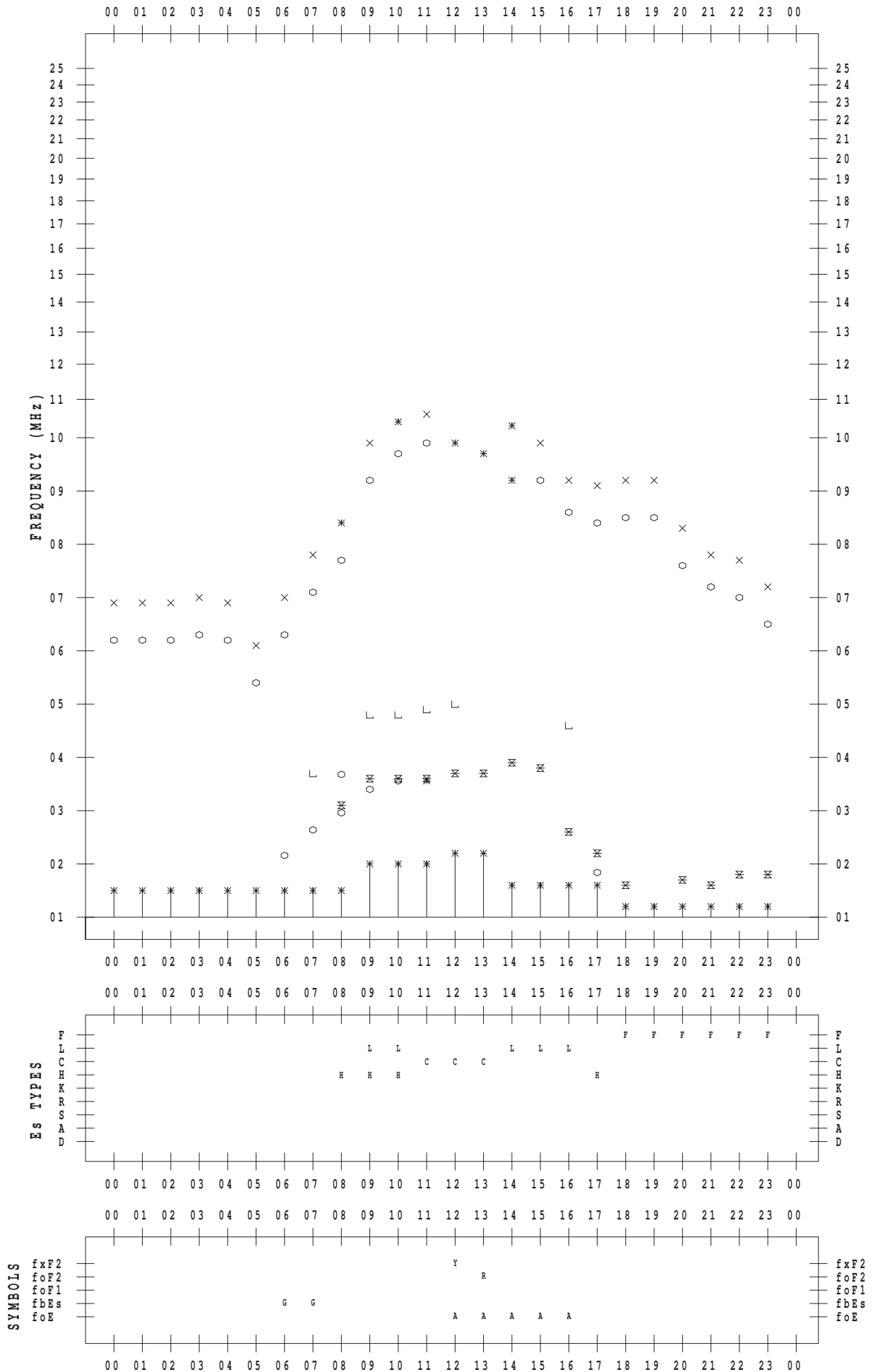
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 28

135 ° E MEAN TIME





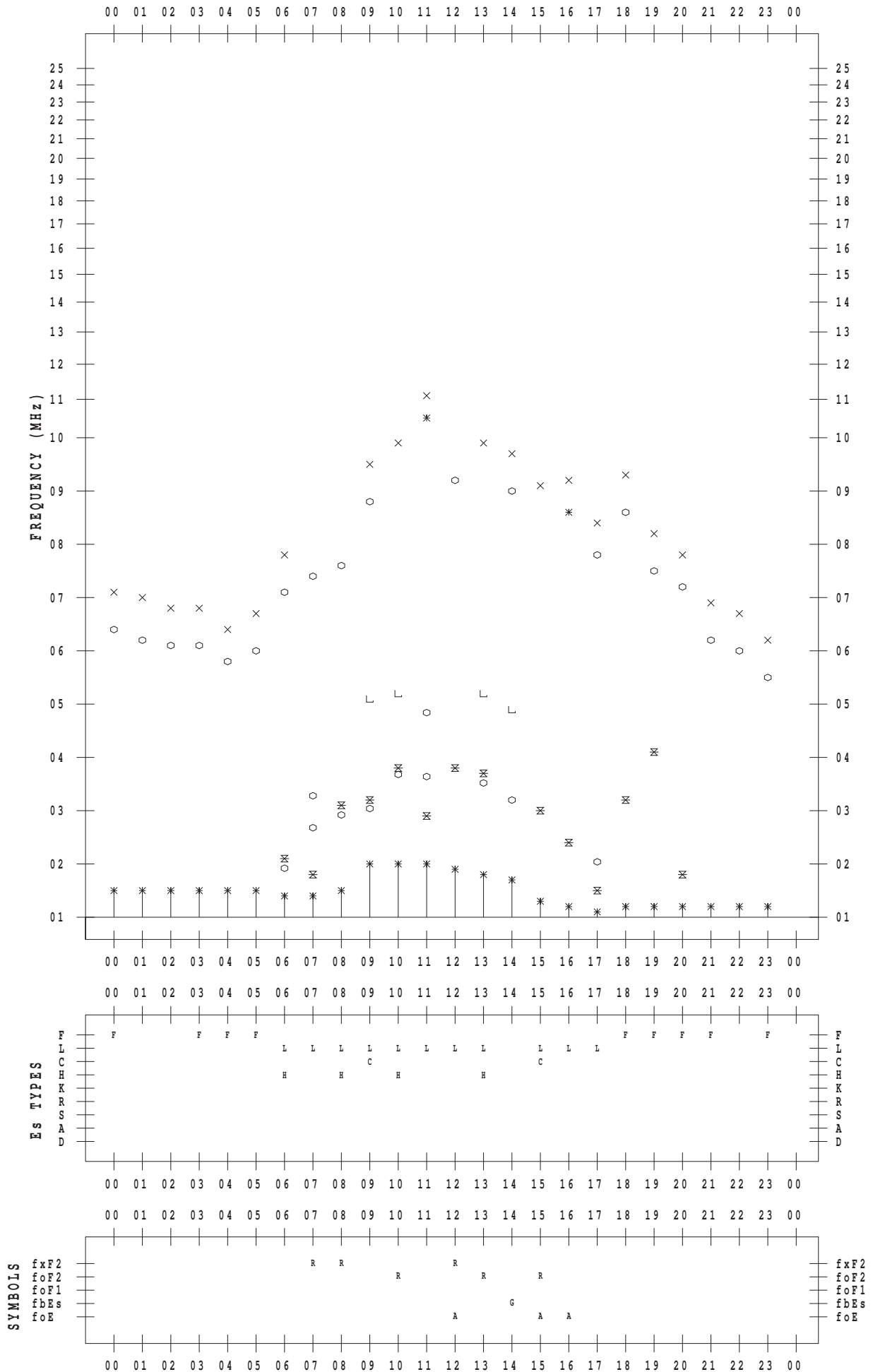
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 29

135 ° E MEAN TIME



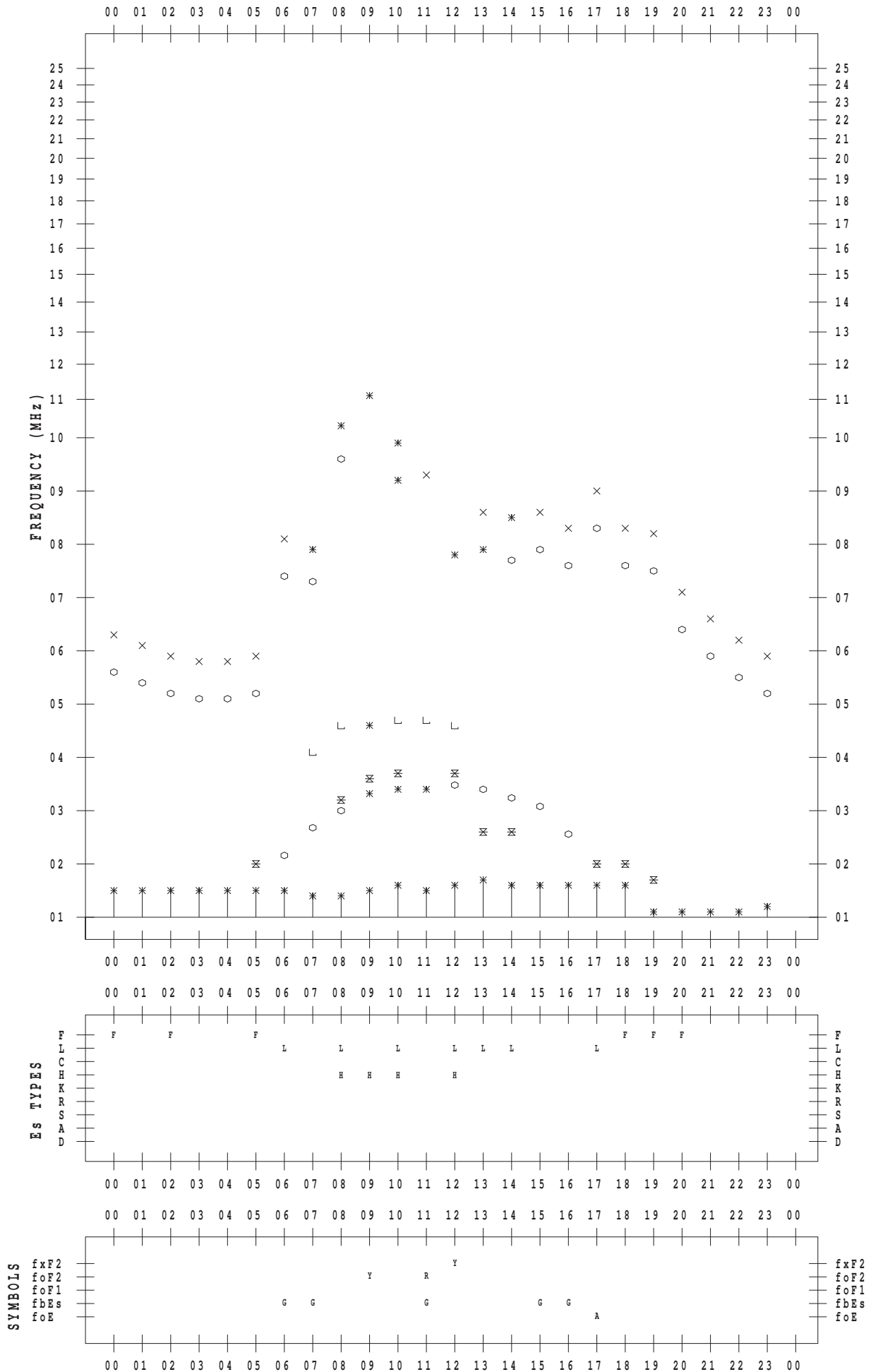
# f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012 / 9 / 30

135 ° E MEAN TIME



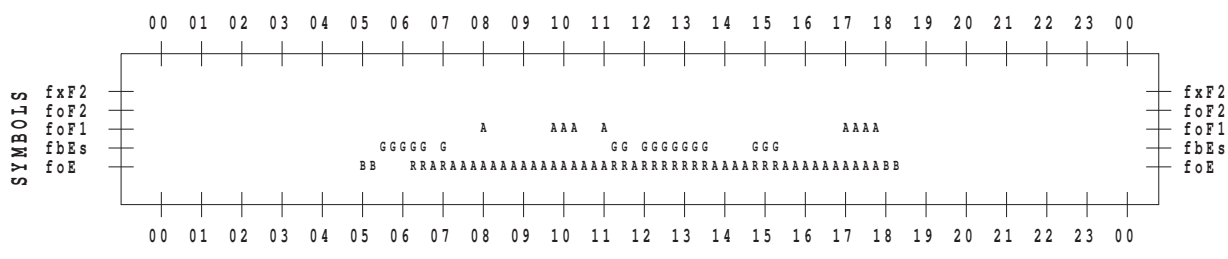
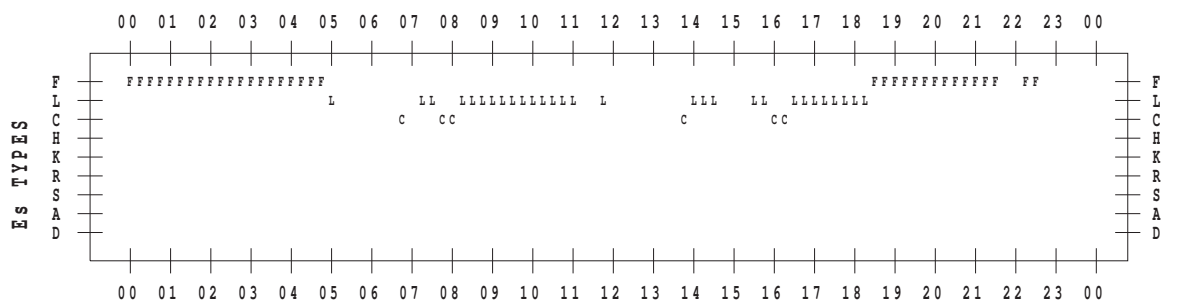
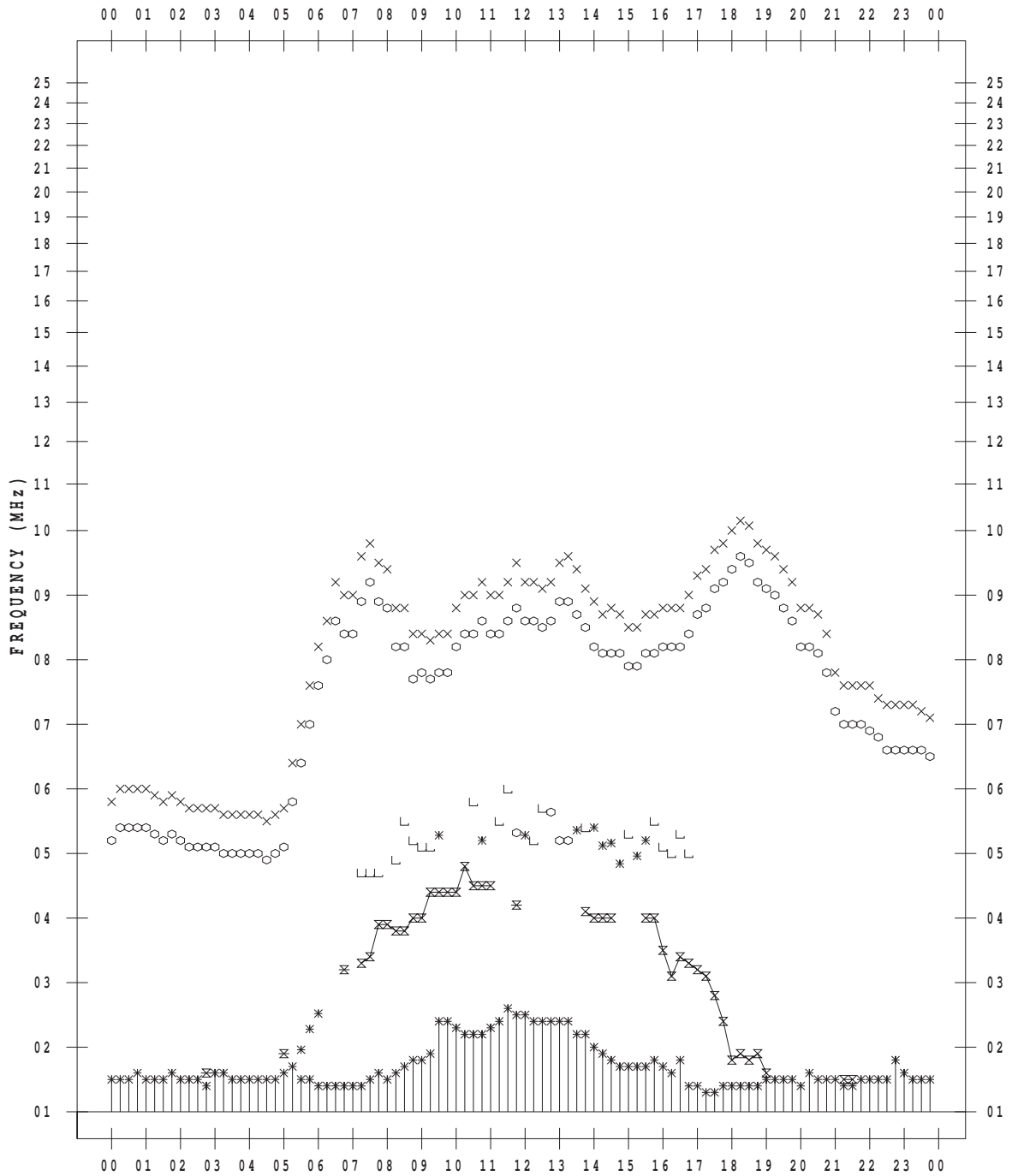
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 9/ 1

135 ° E MEAN TIME



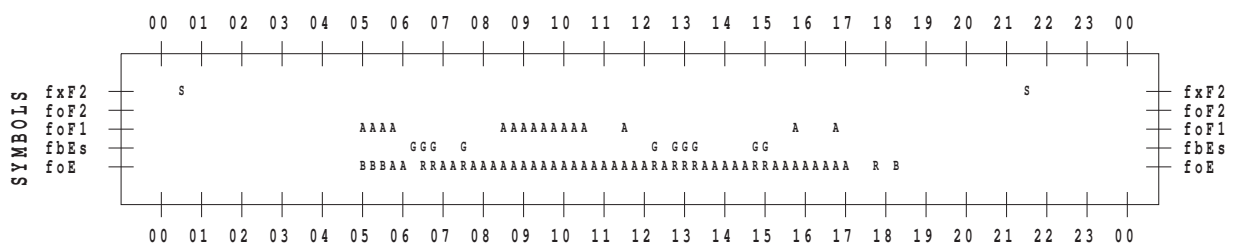
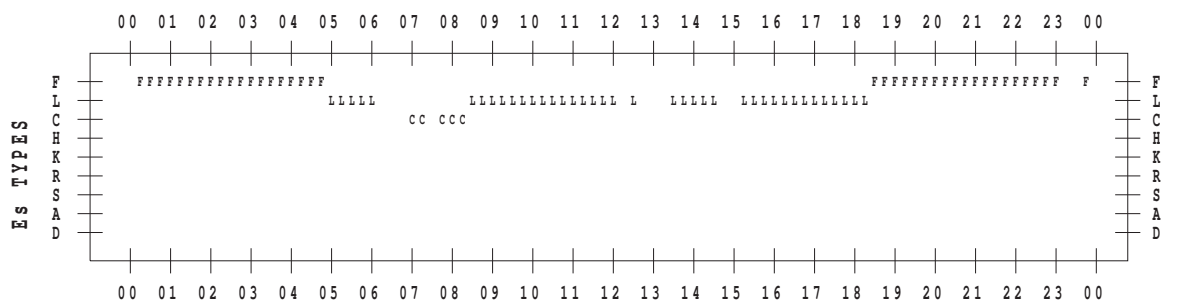
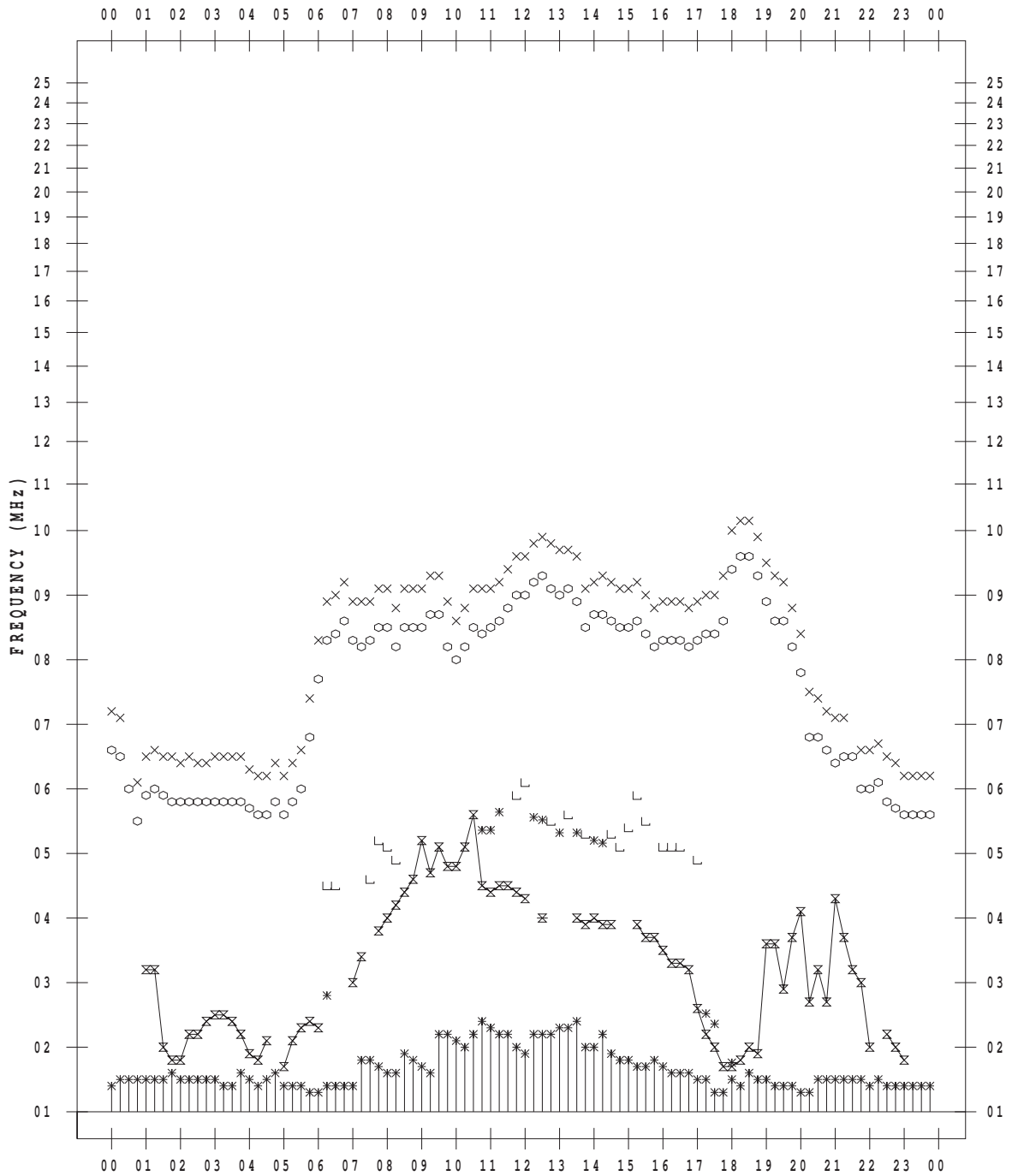
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 2

135 ° E MEAN TIME



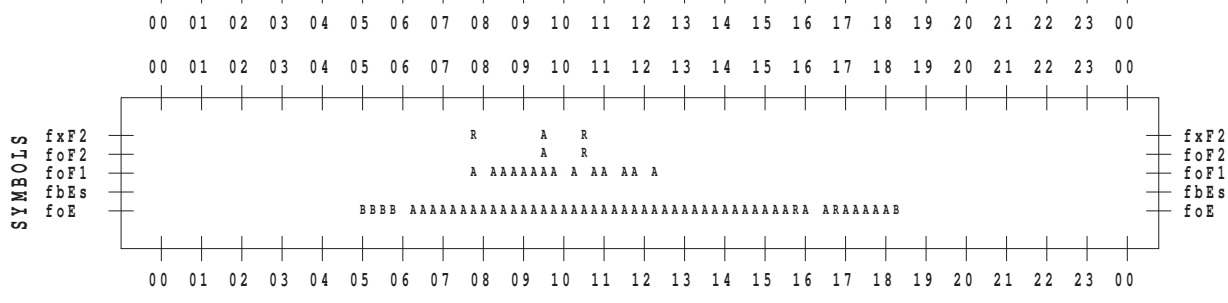
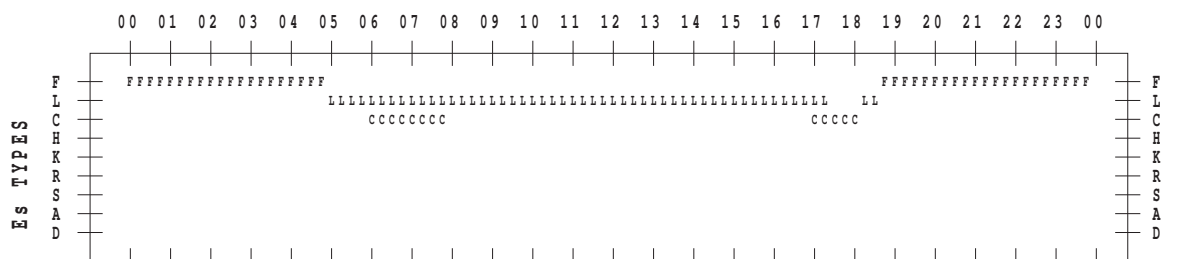
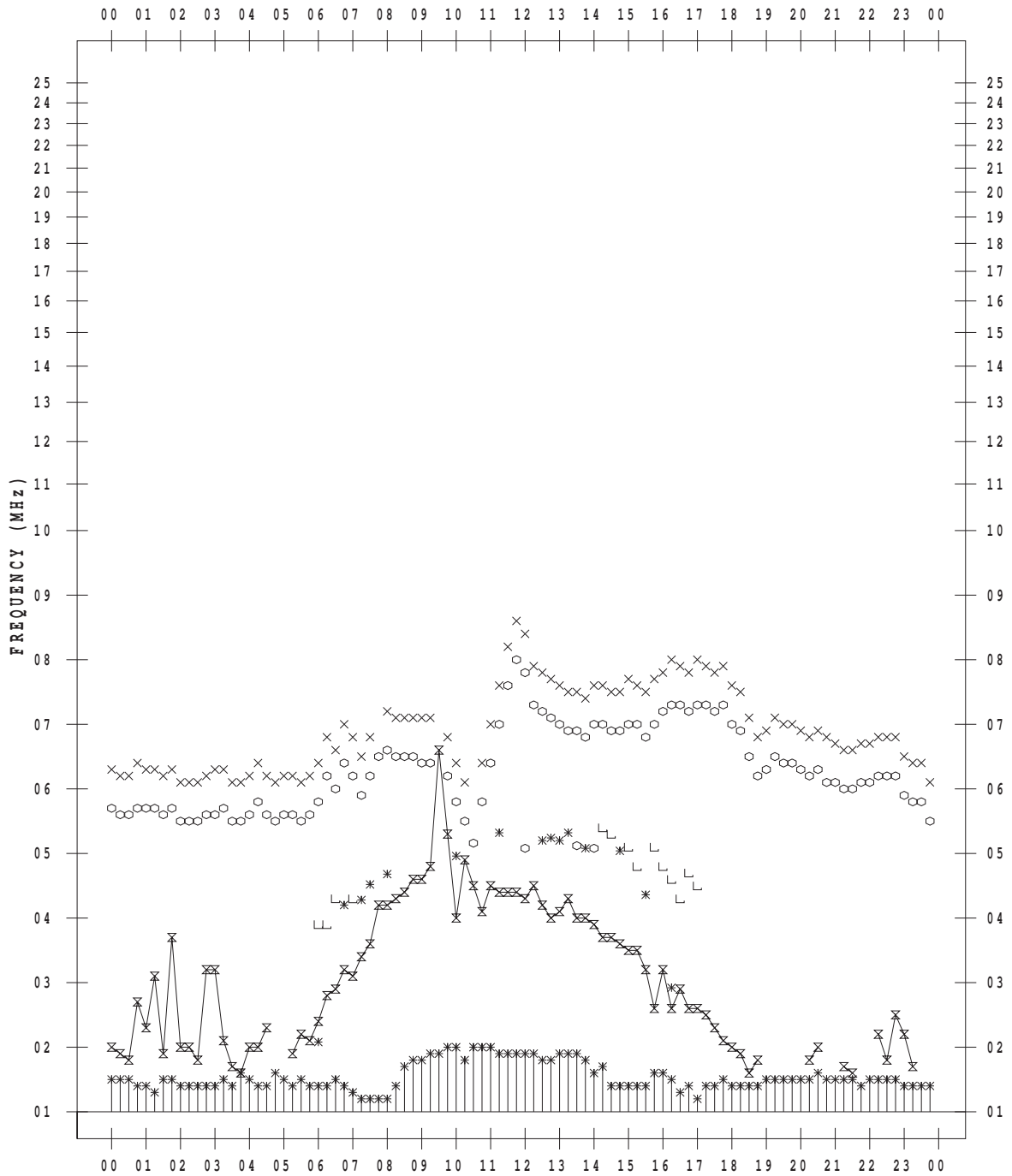
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 3

135 ° E MEAN TIME



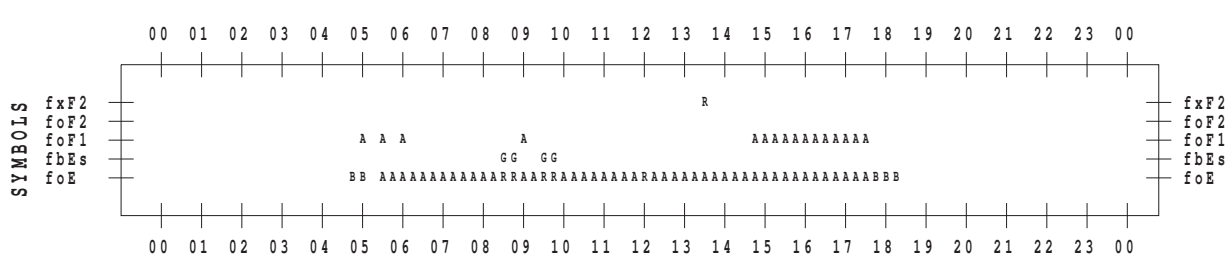
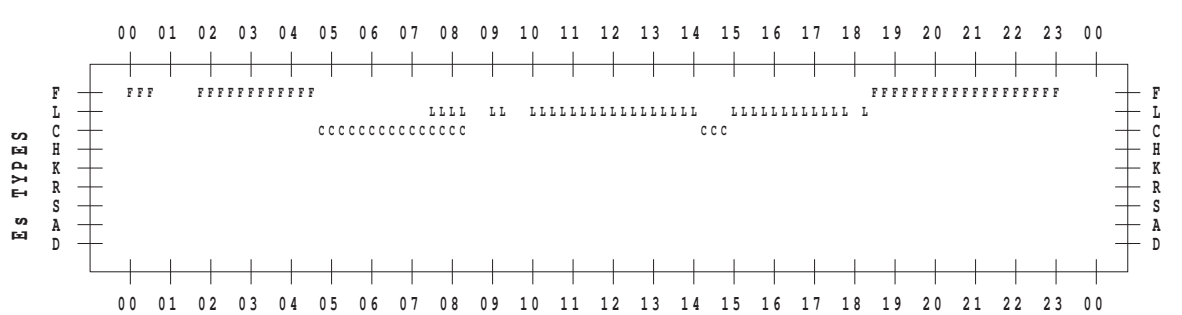
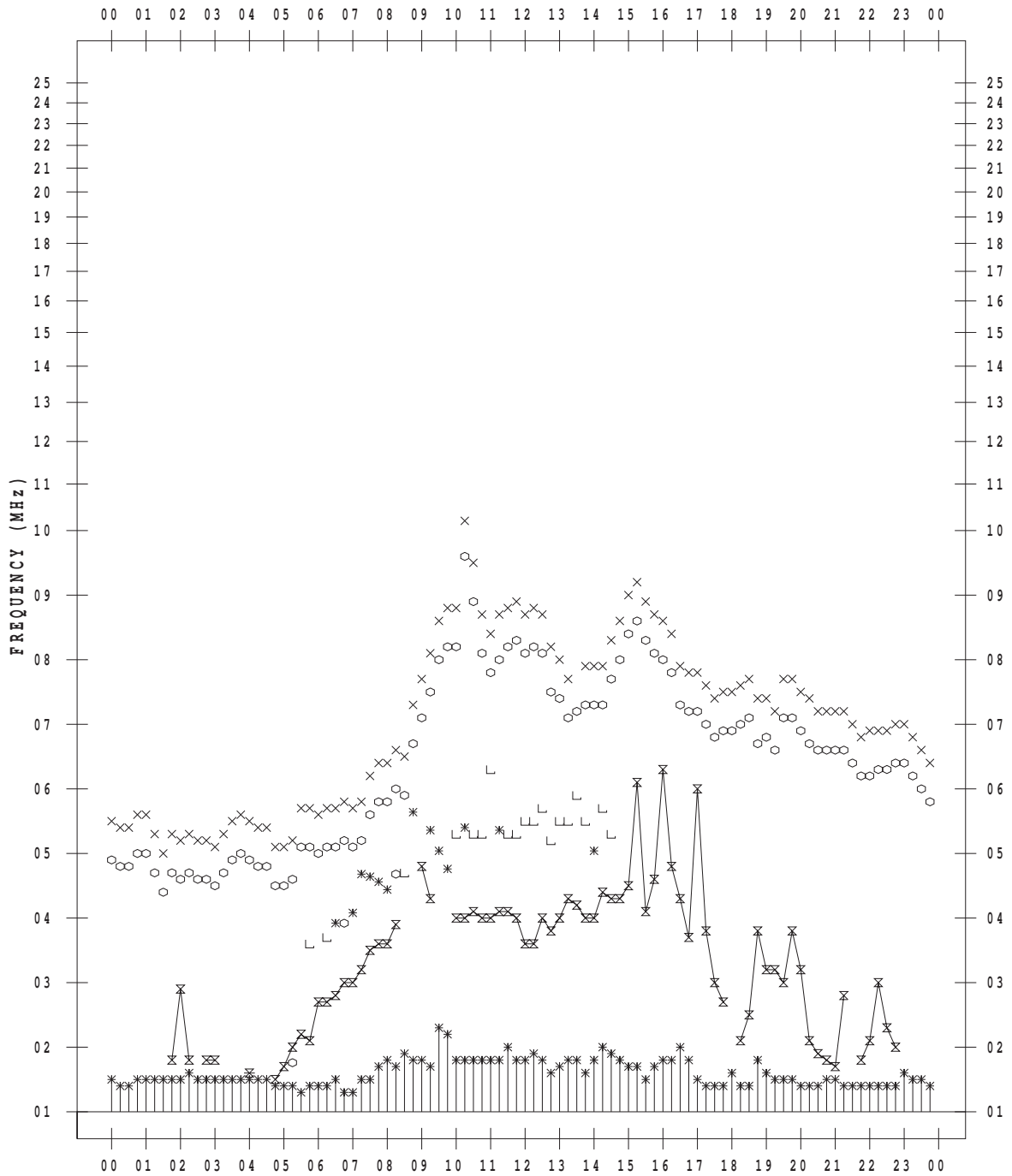
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 4

135 ° E MEAN TIME



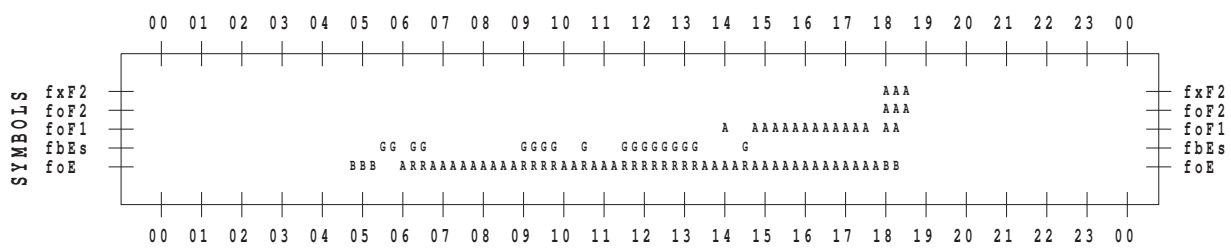
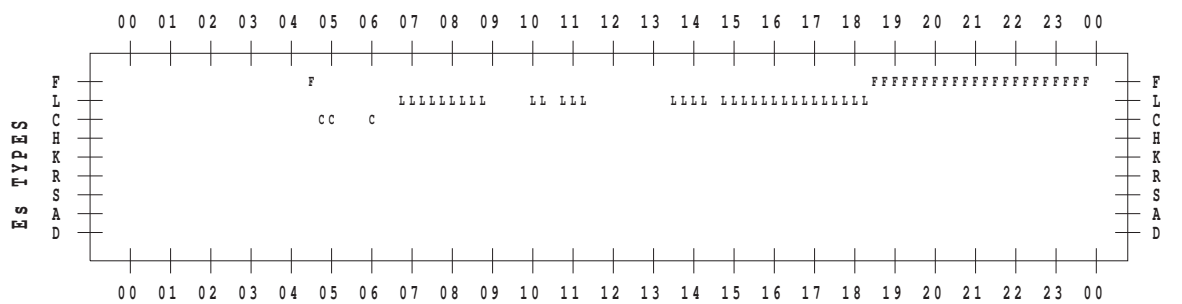
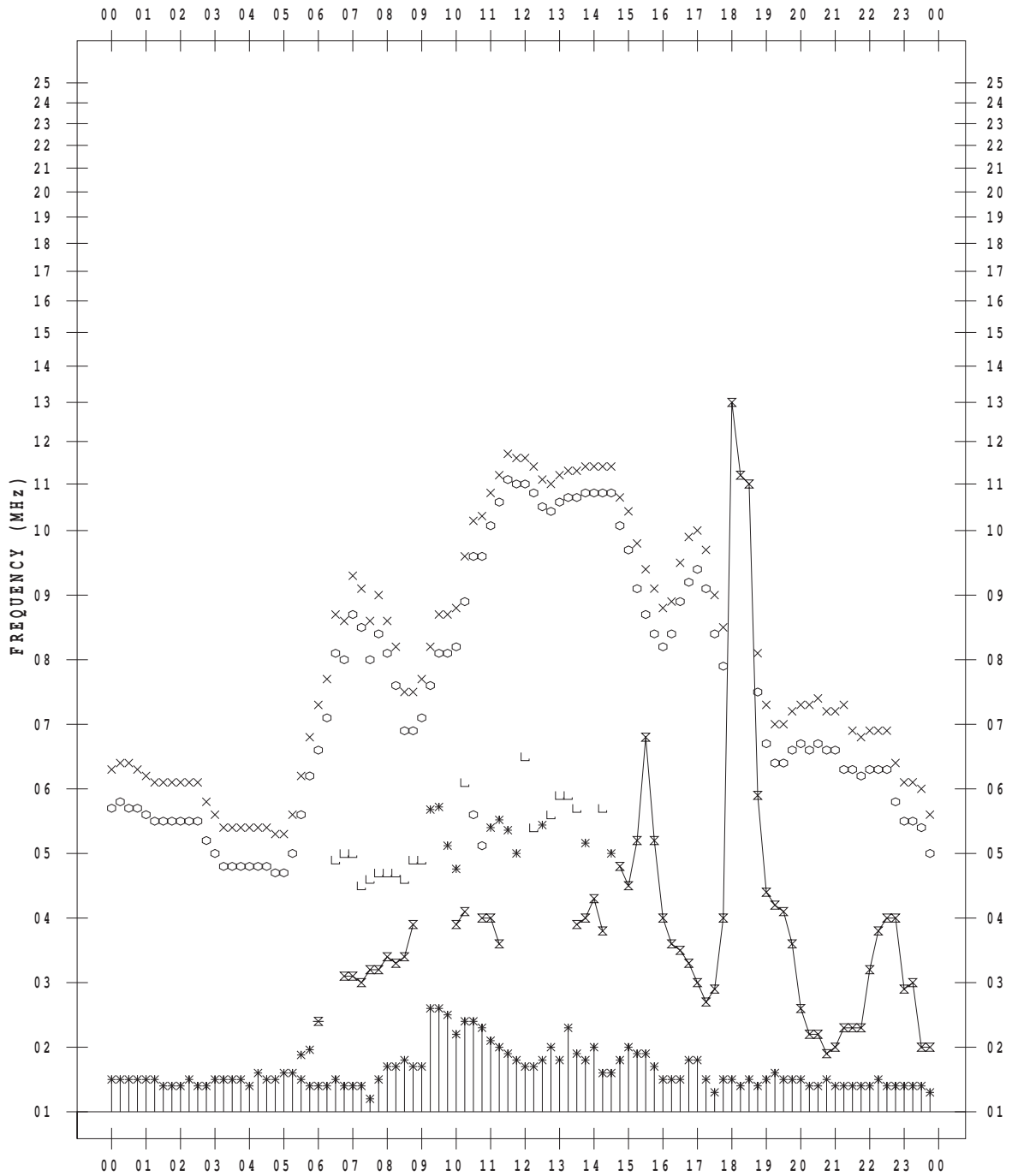
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 5

135 ° E MEAN TIME



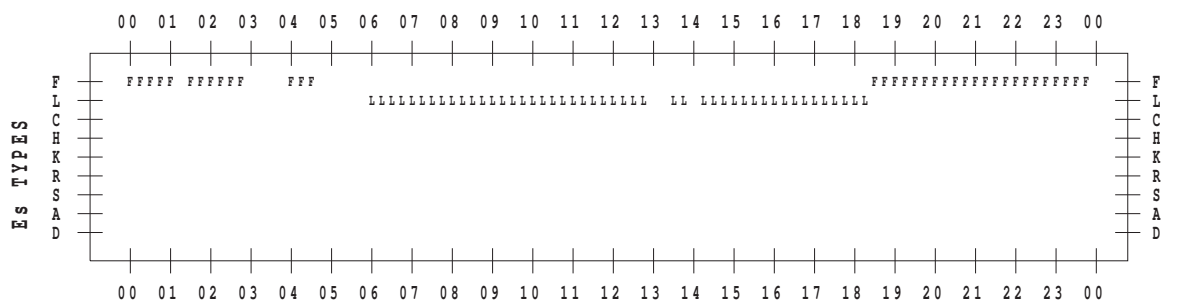
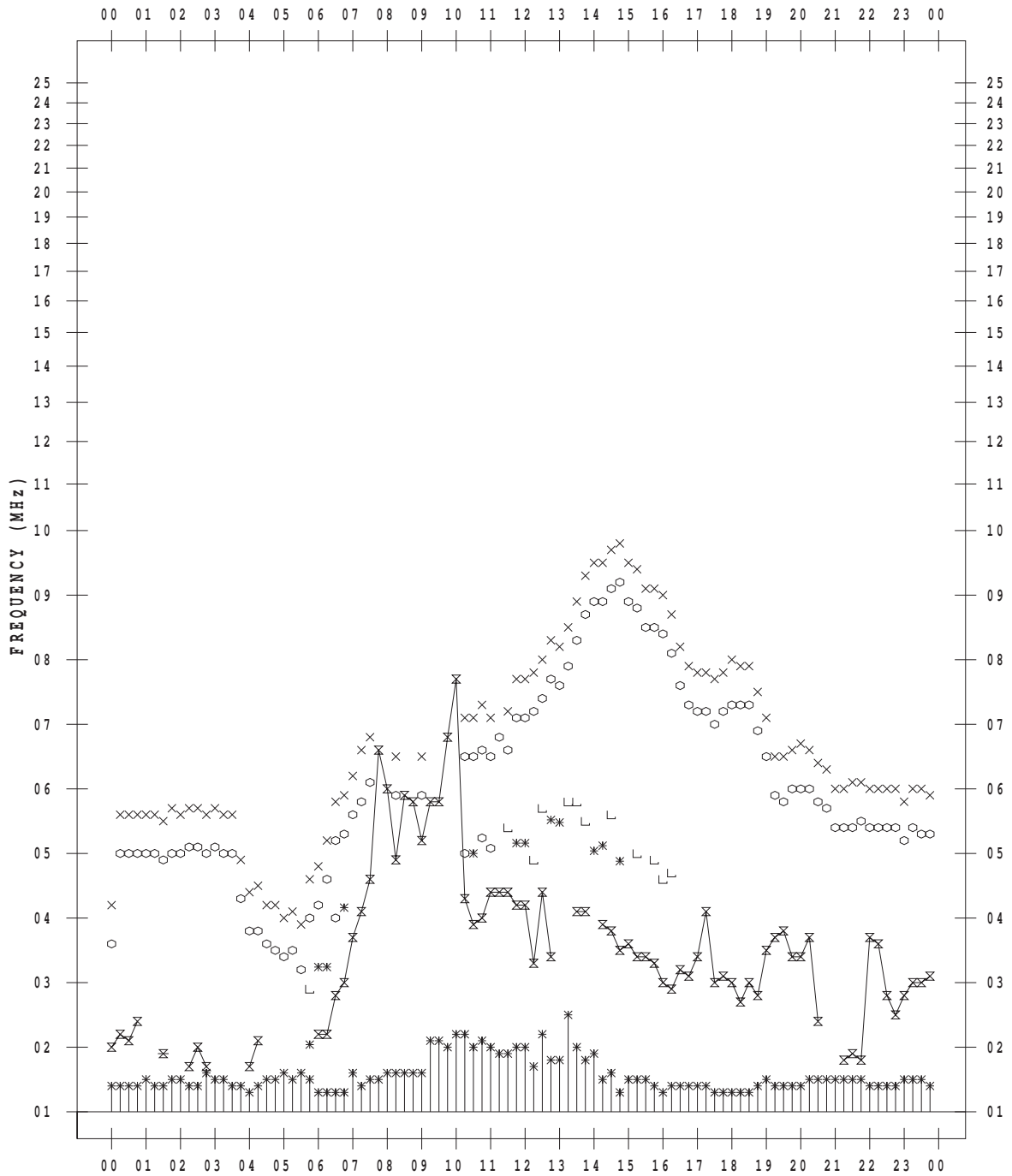
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 6

135 ° E MEAN TIME





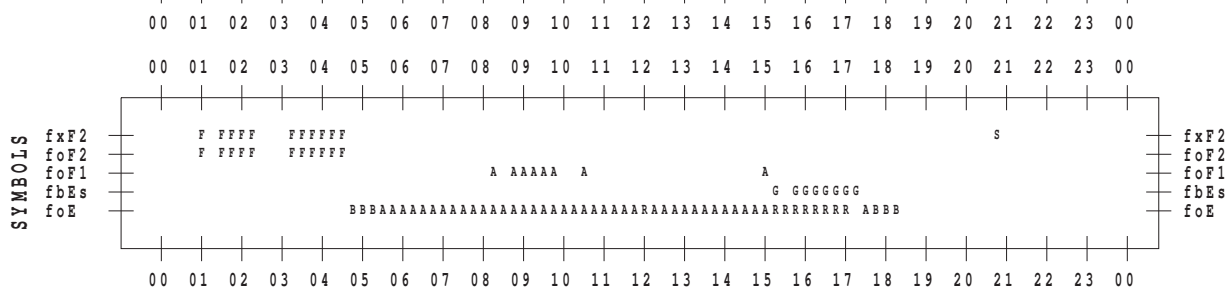
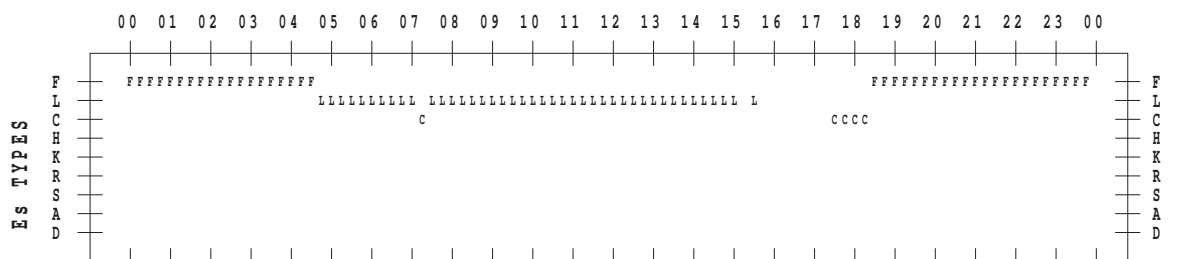
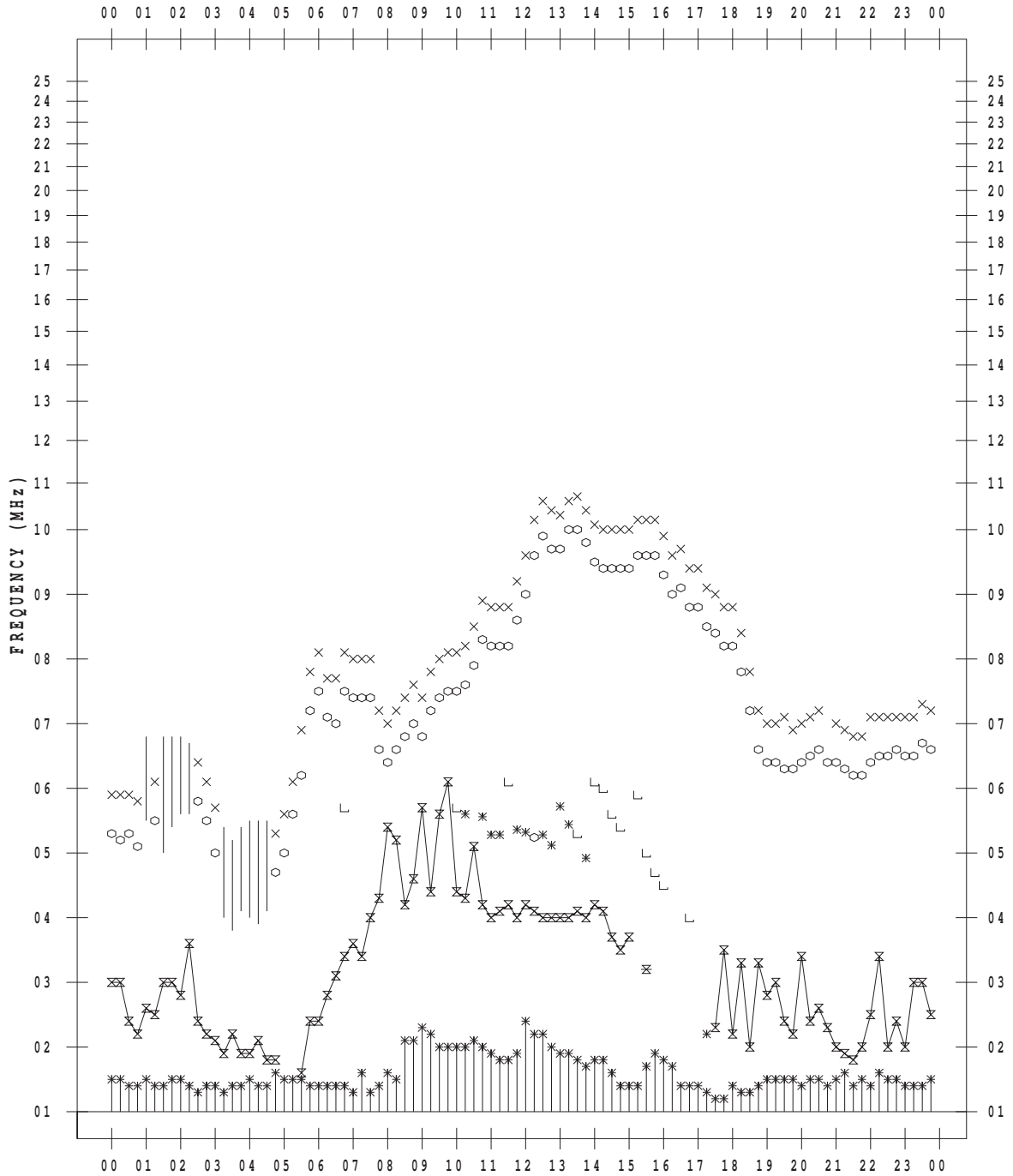
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 7

135 ° E MEAN TIME



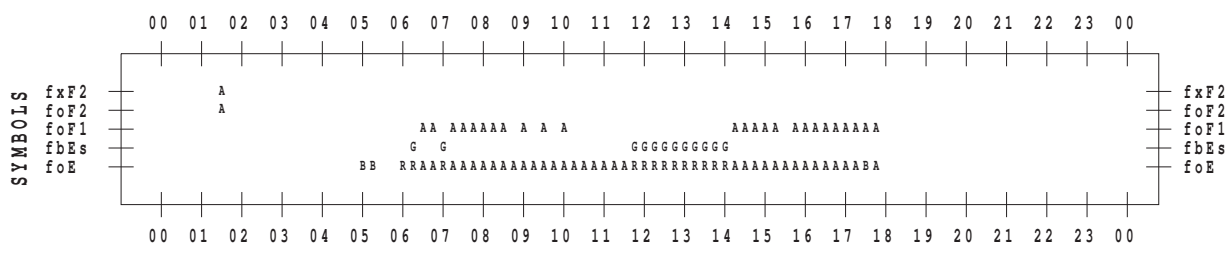
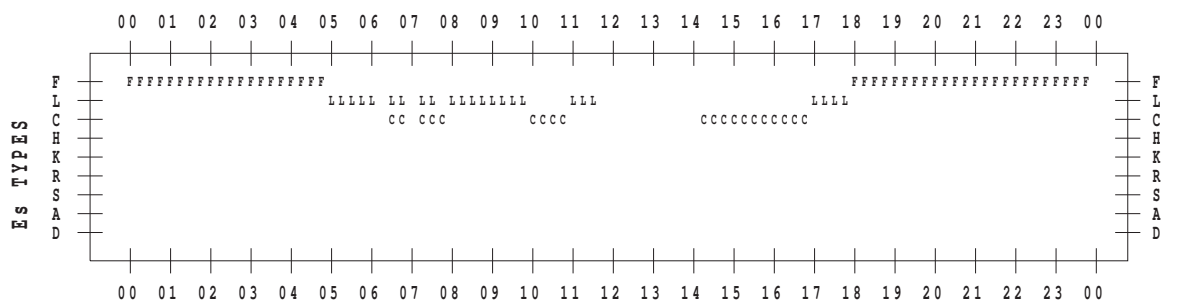
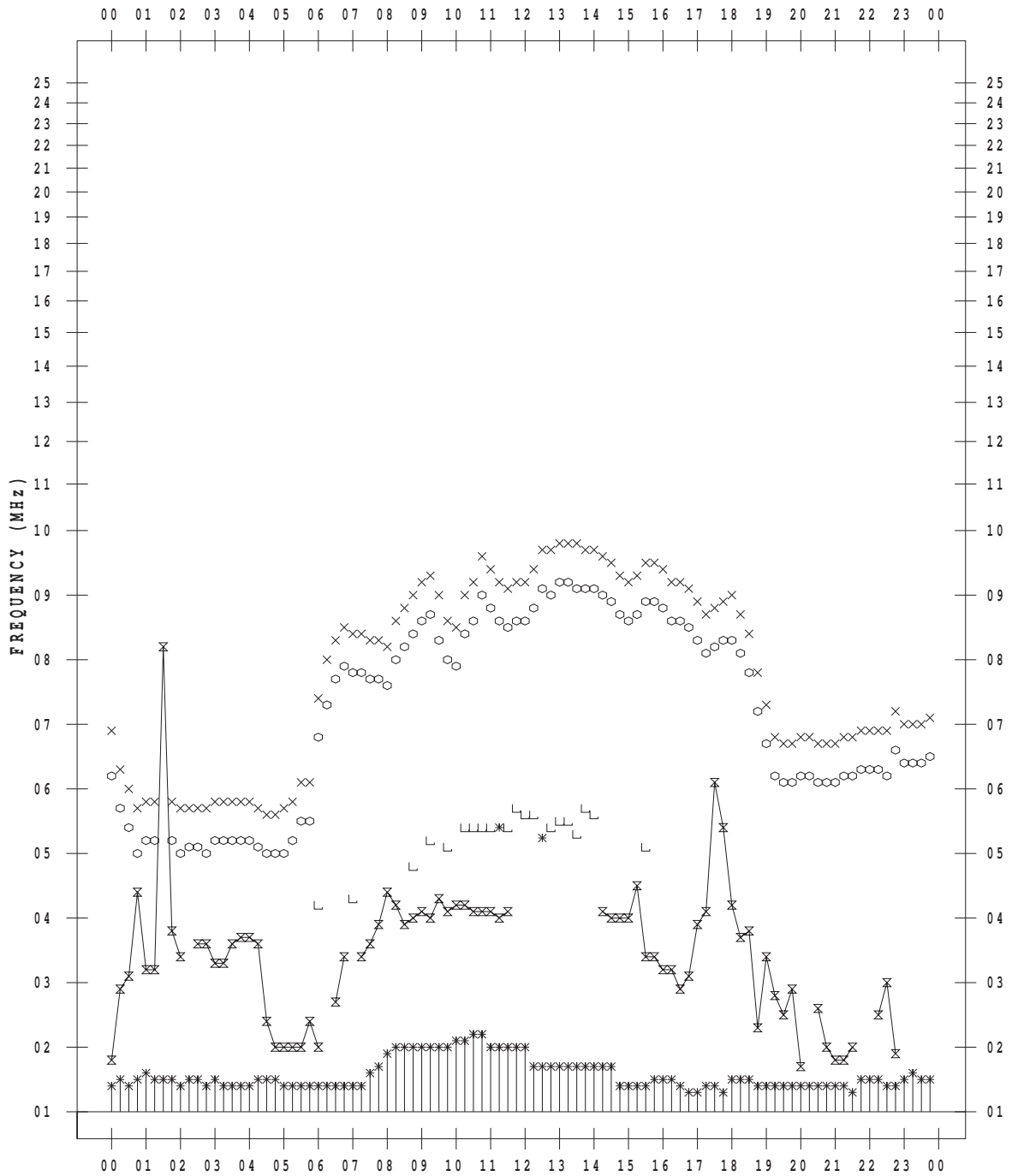
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 8

135 ° E MEAN TIME



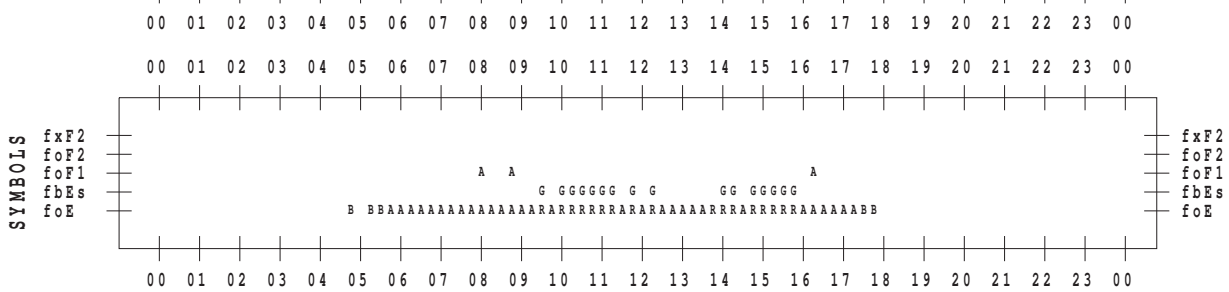
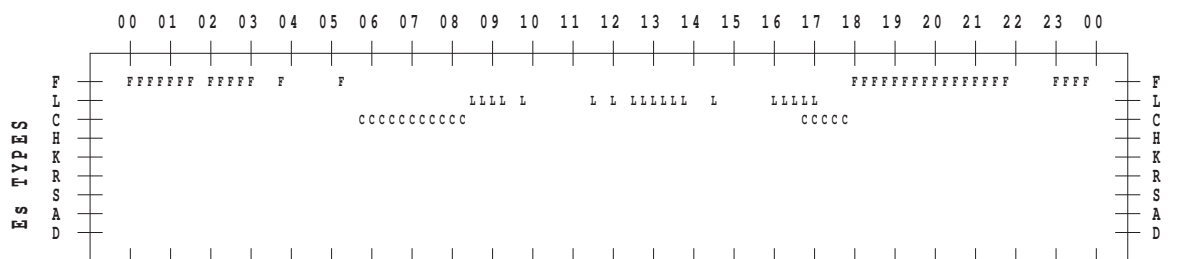
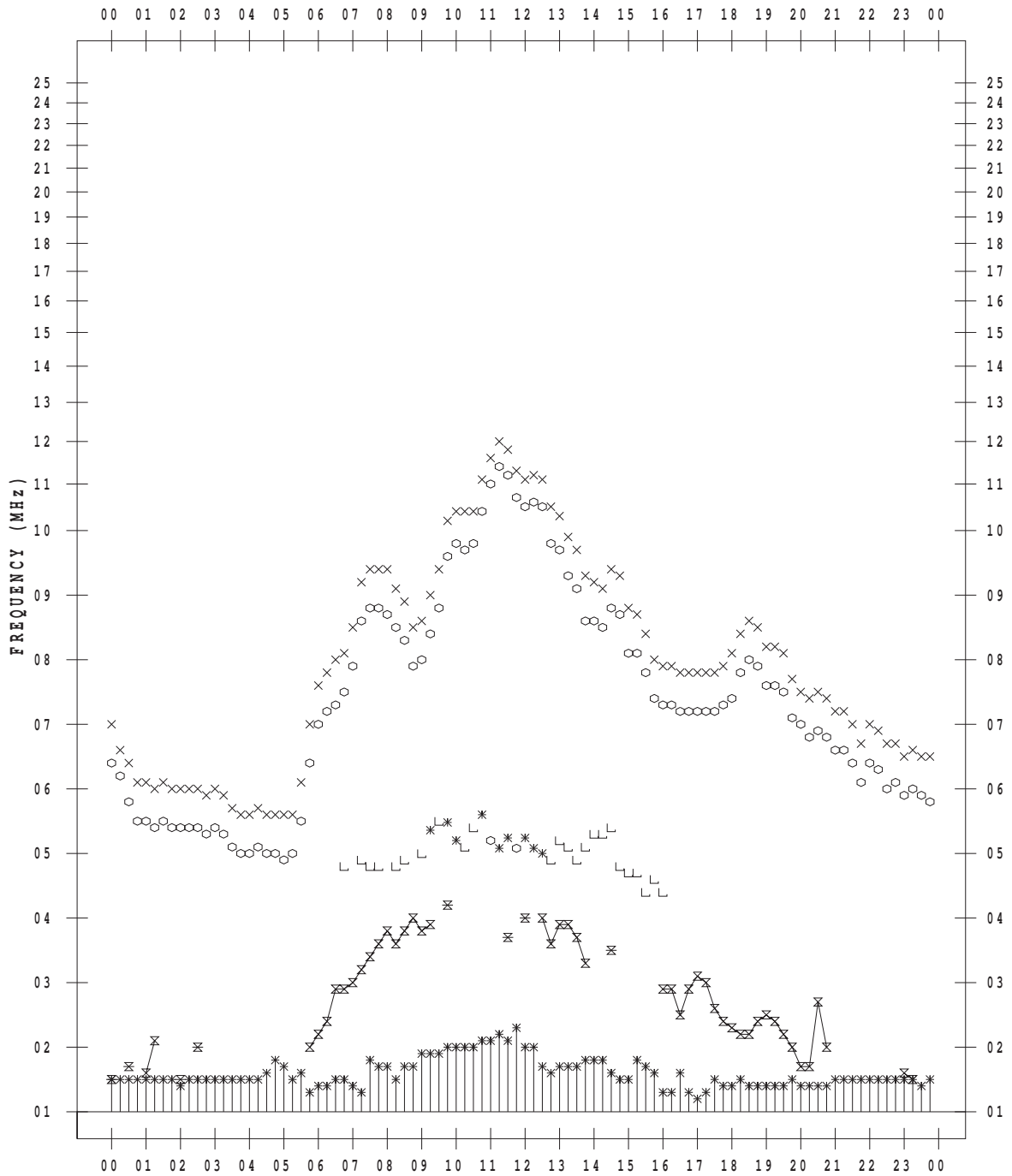
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 9/ 9

135 ° E MEAN TIME



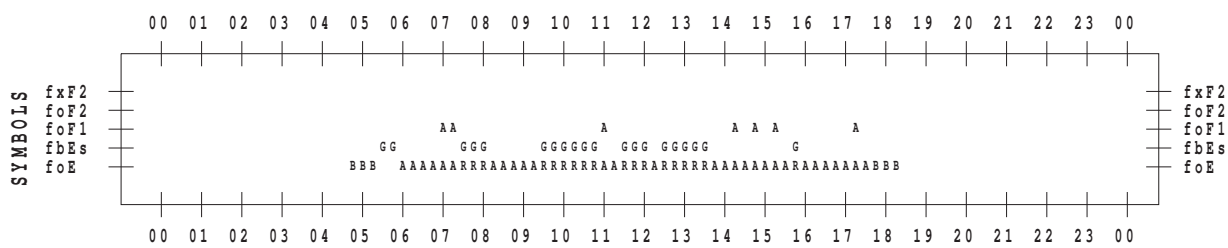
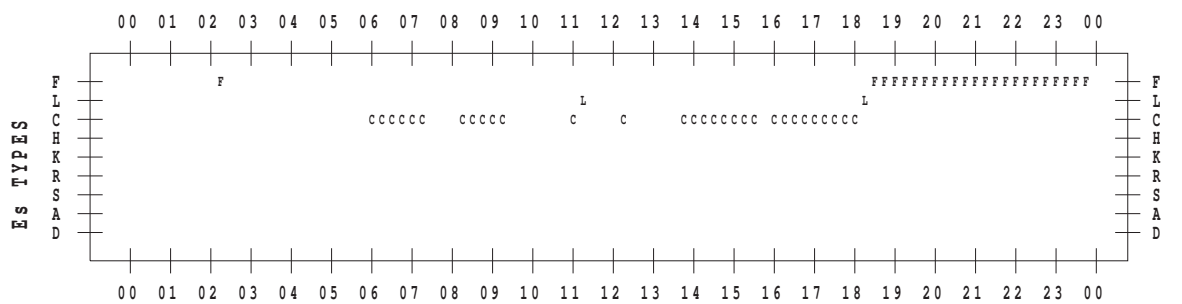
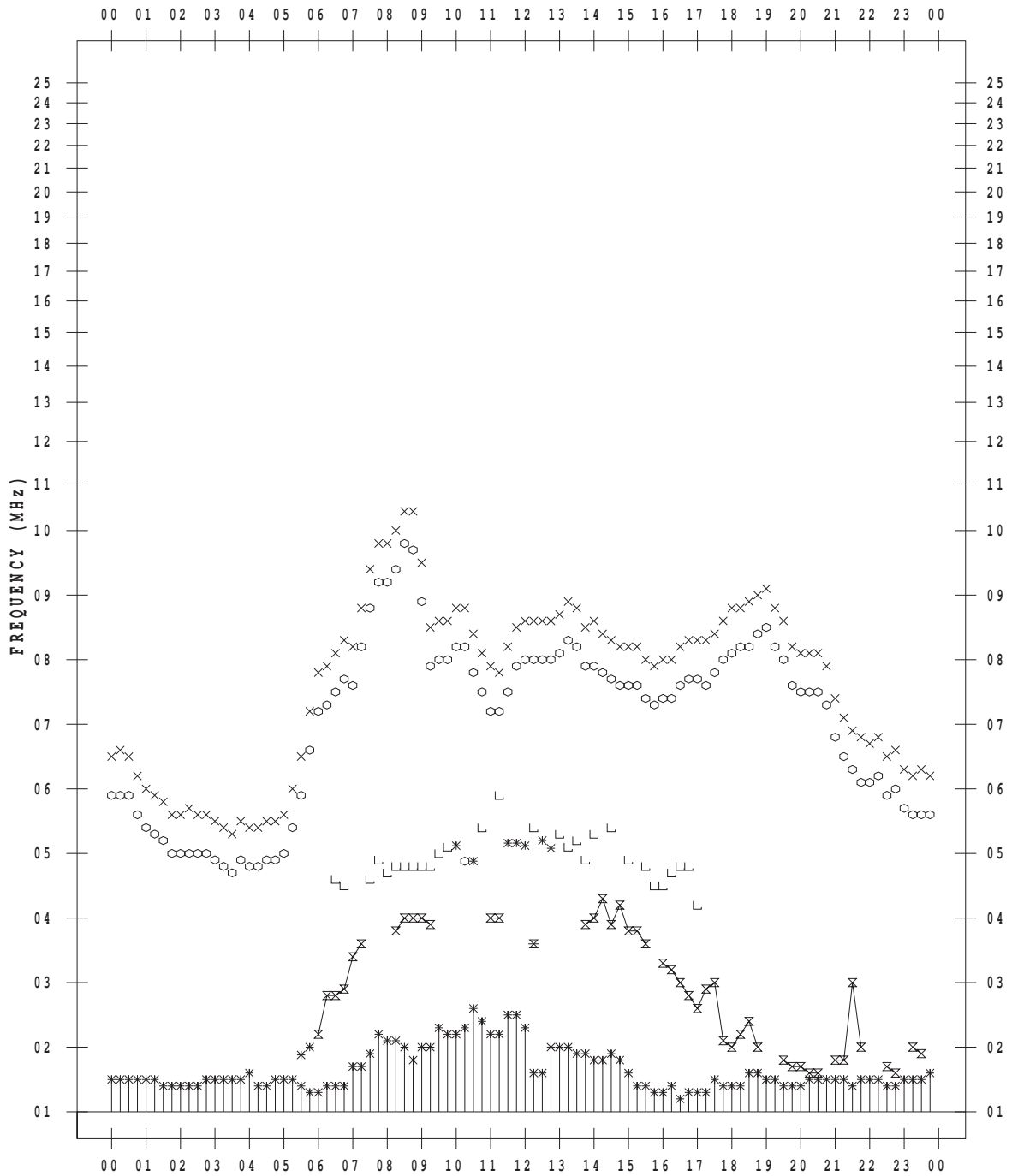
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 10

135 ° E MEAN TIME





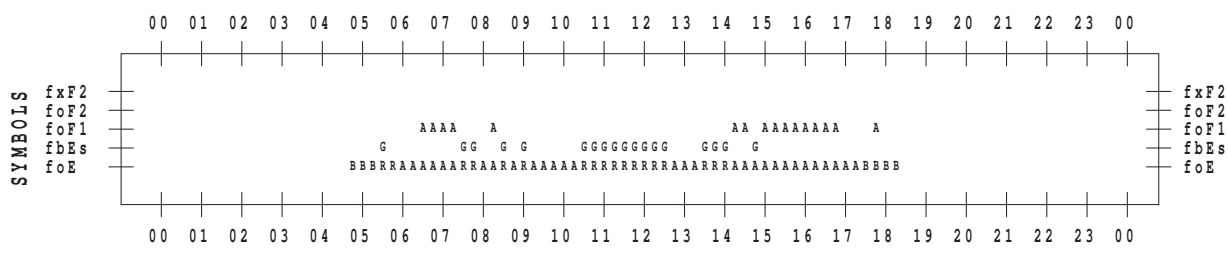
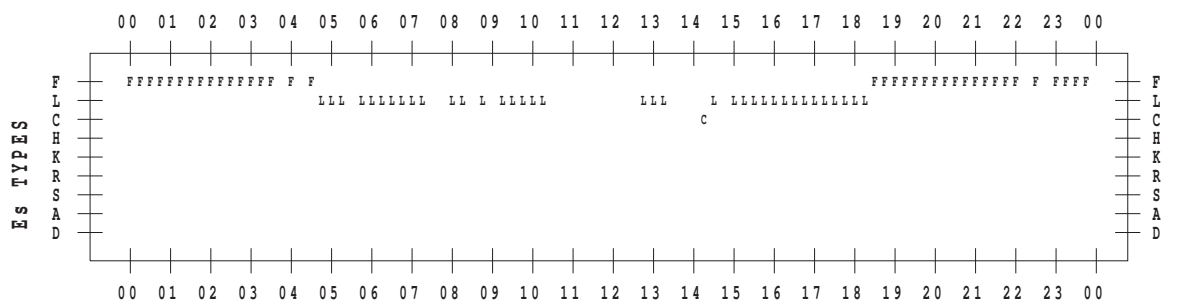
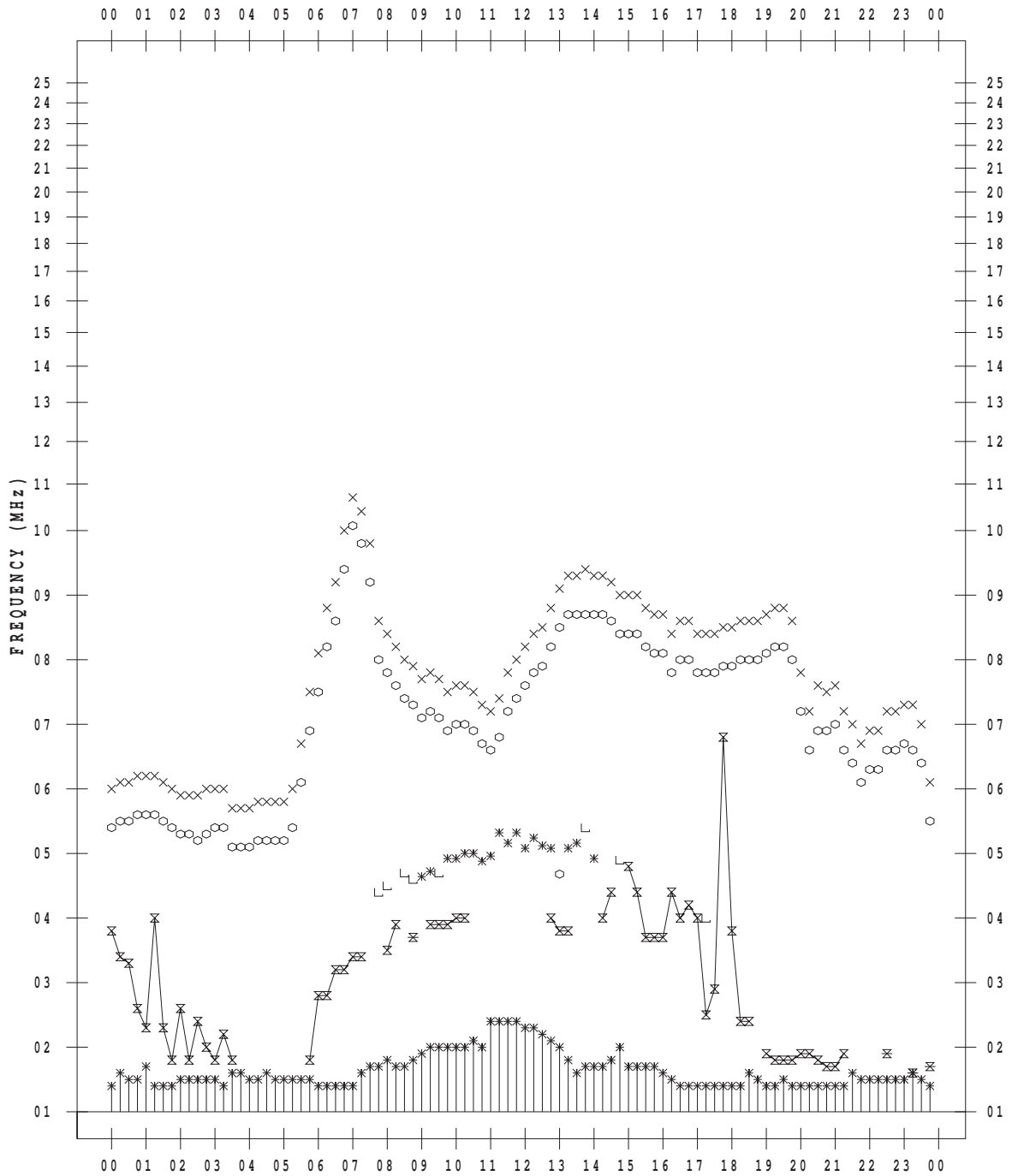
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 12

135 ° E MEAN TIME



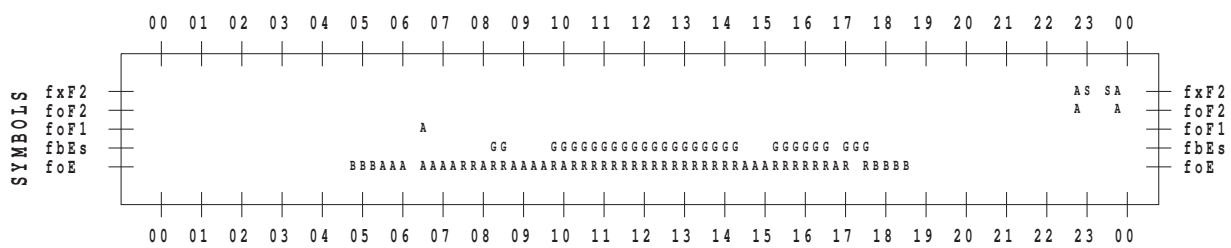
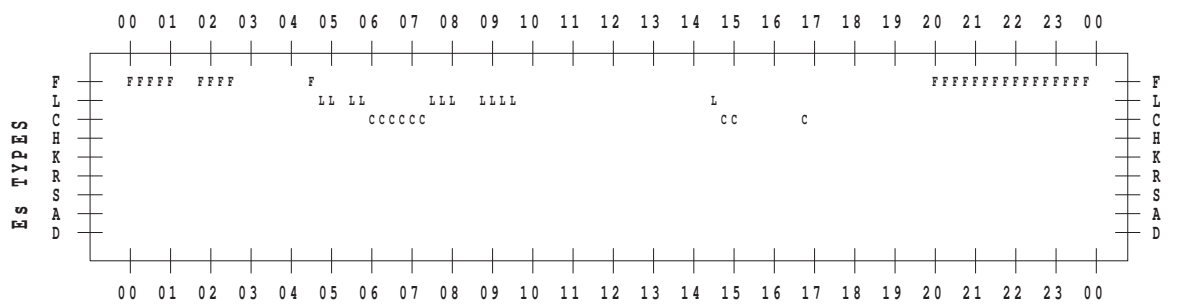
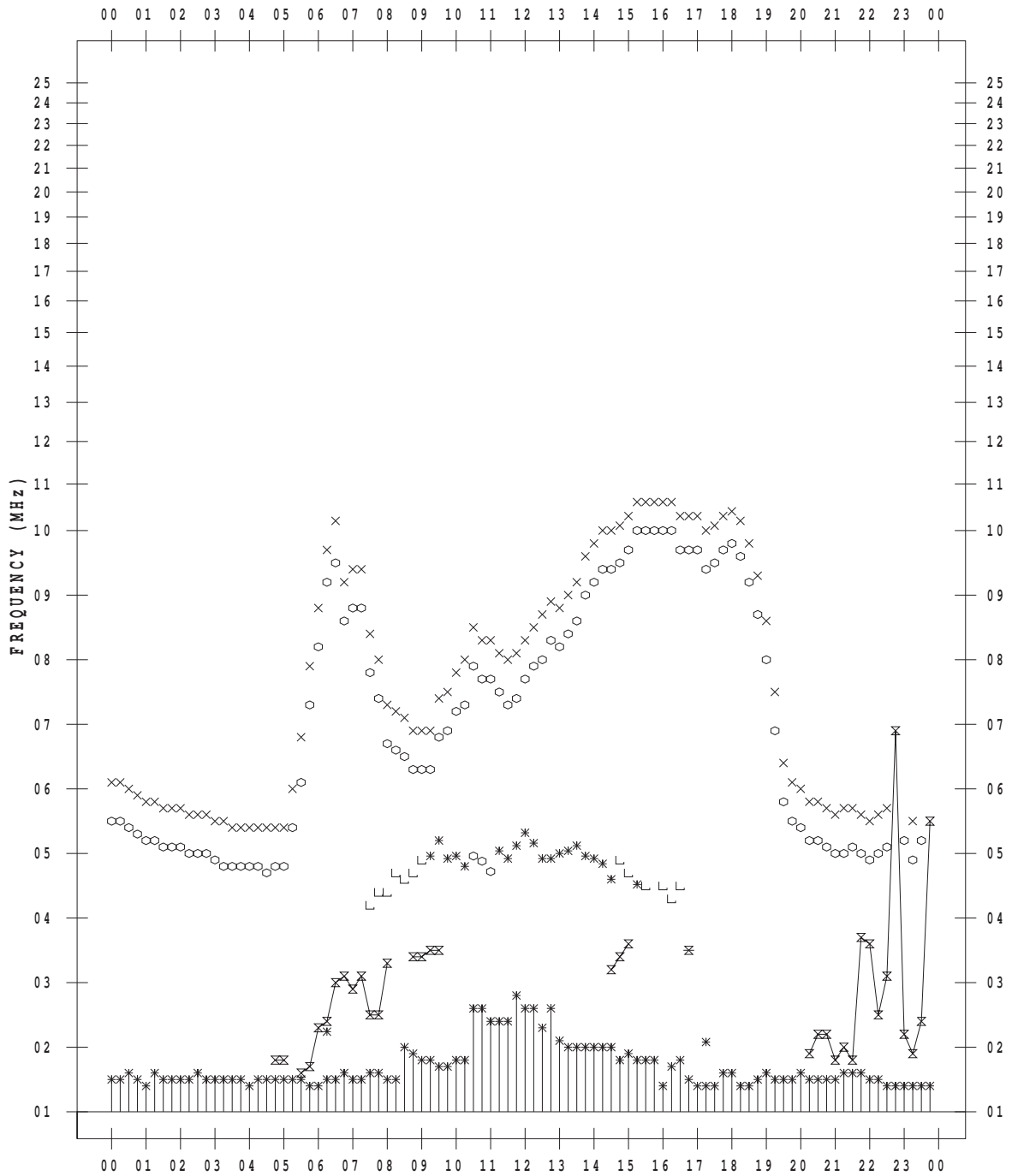
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 13

135 ° E MEAN TIME



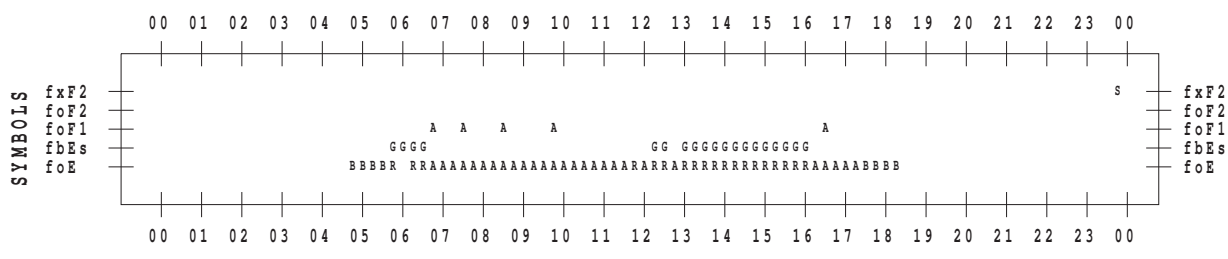
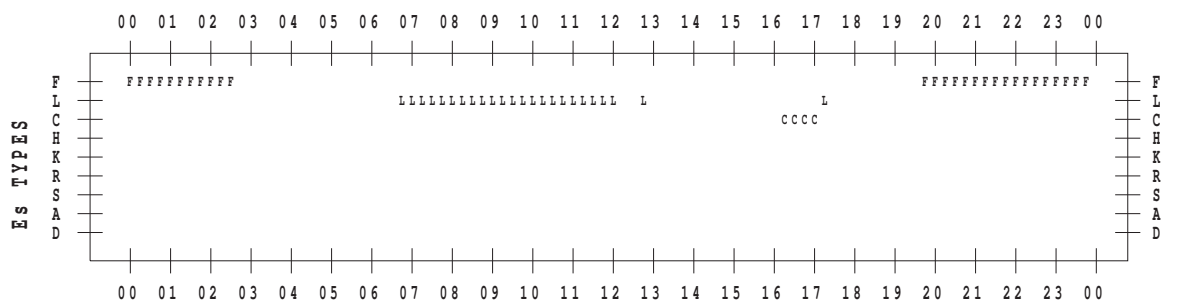
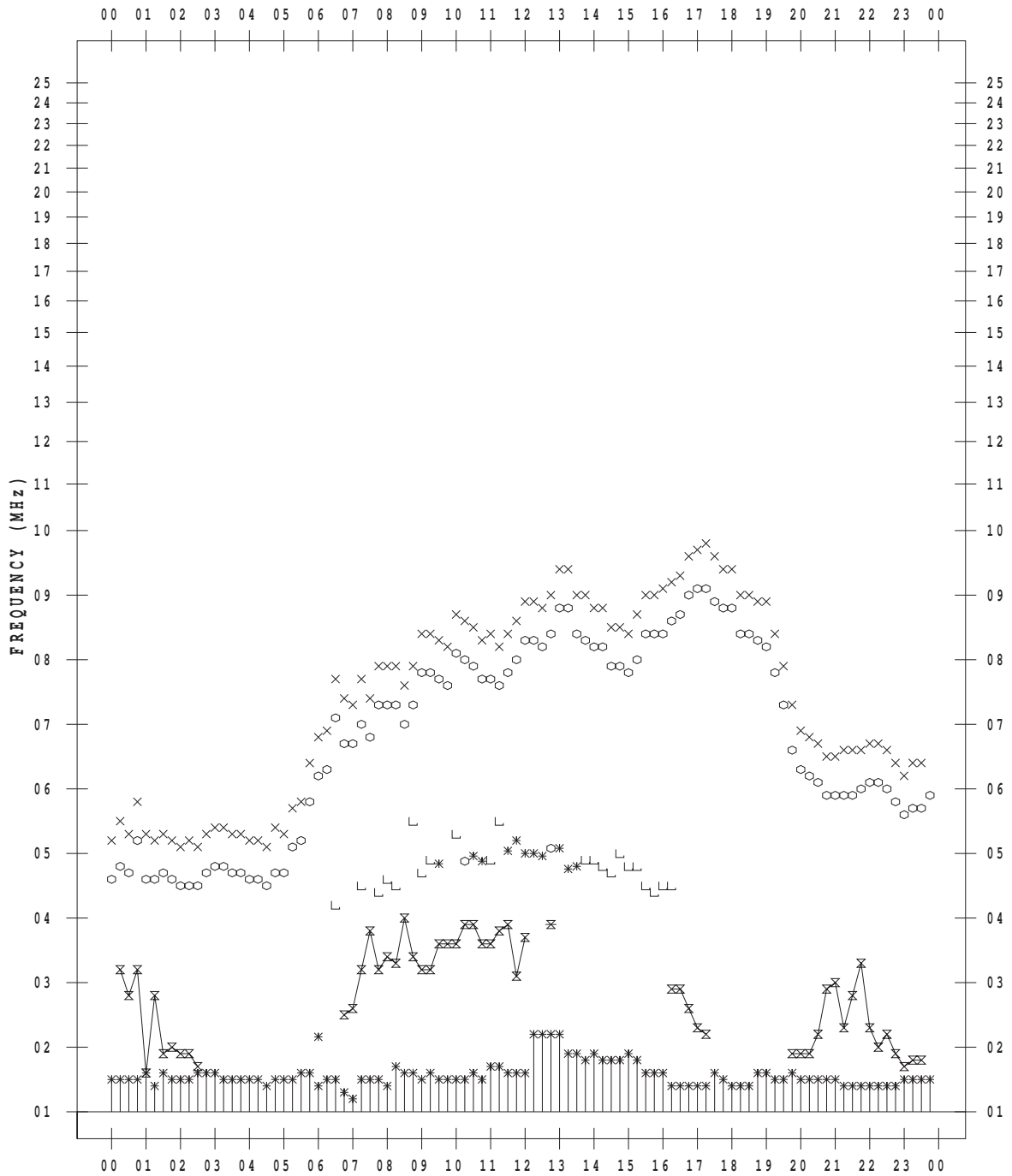
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 14

135 ° E MEAN TIME







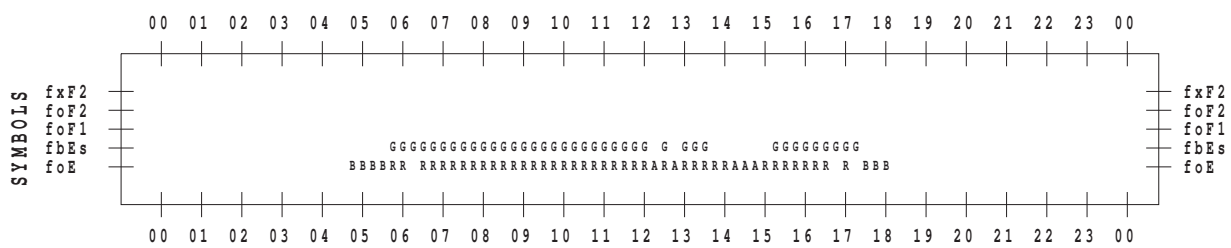
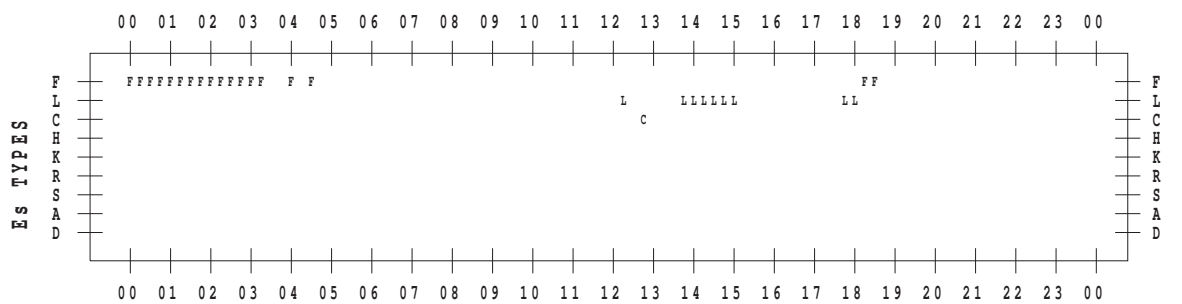
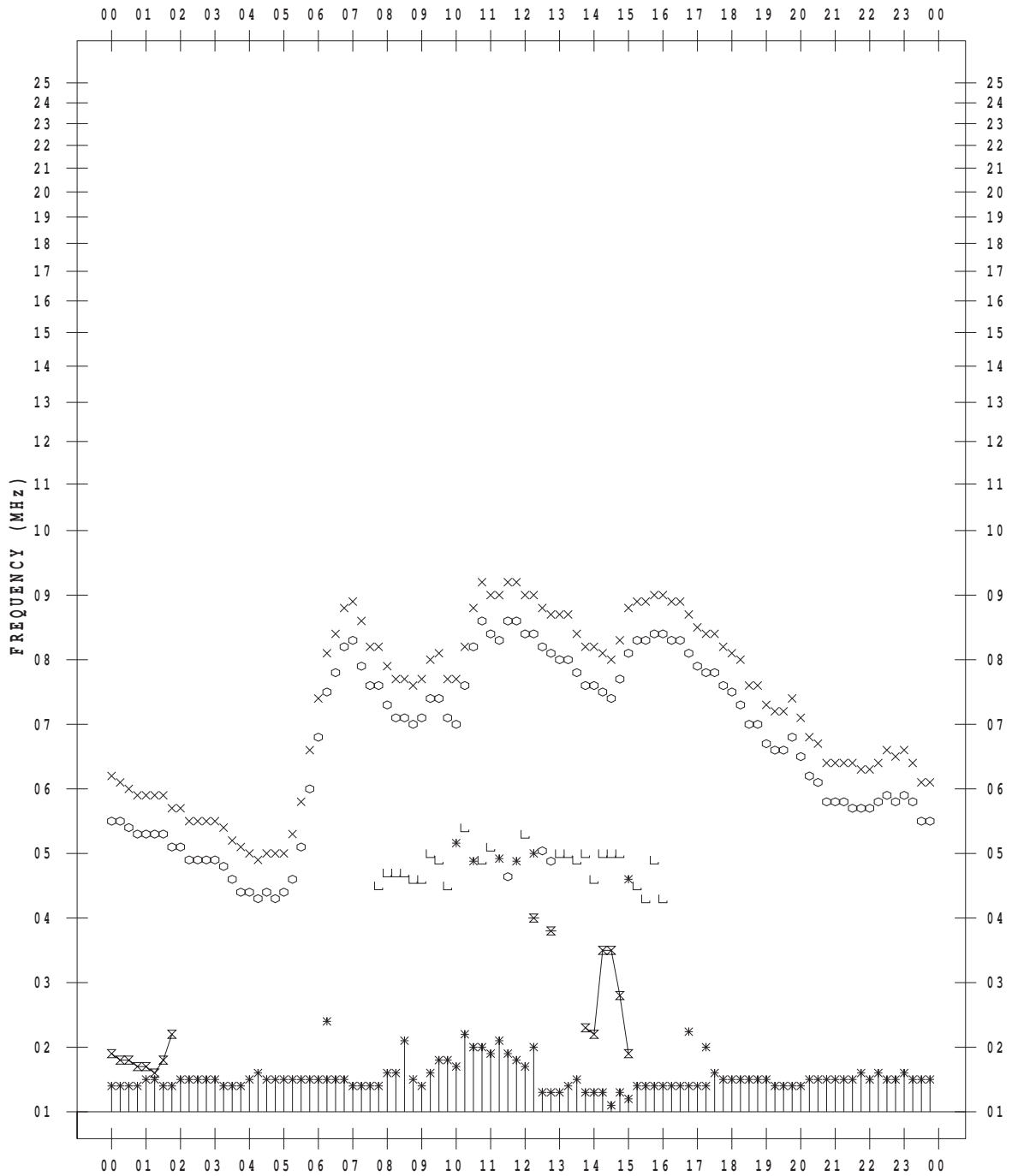
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 16

135 ° E MEAN TIME



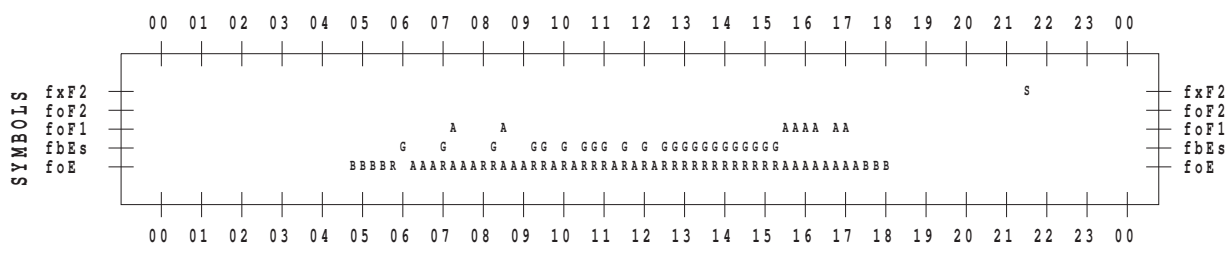
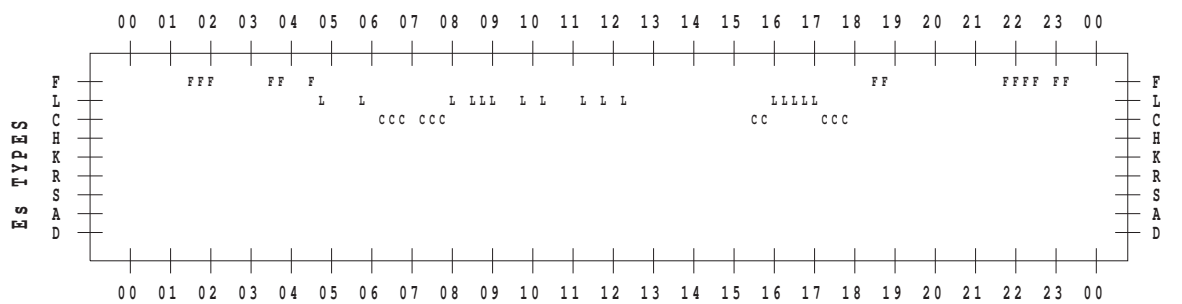
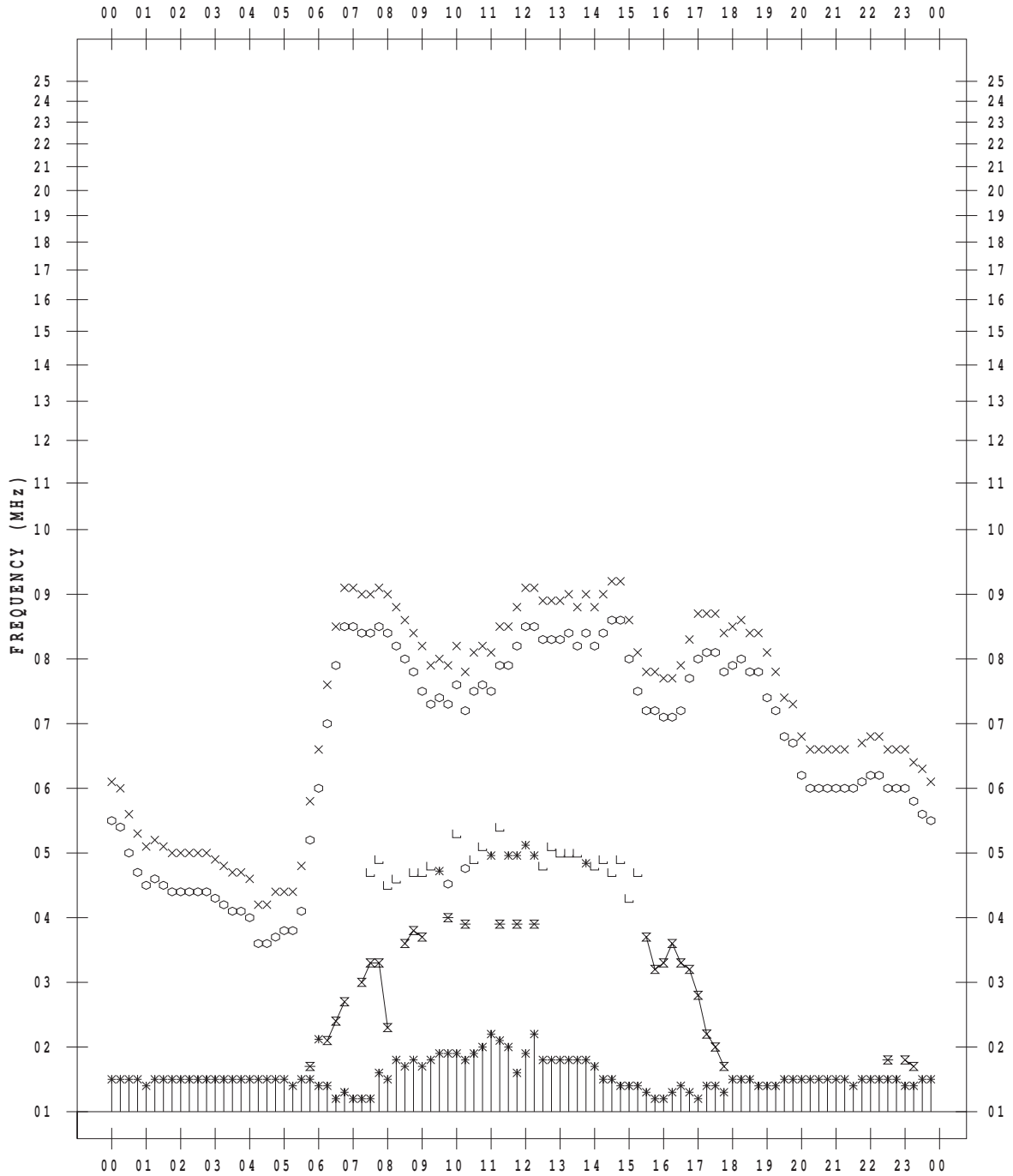
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 9/17

135 ° E MEAN TIME



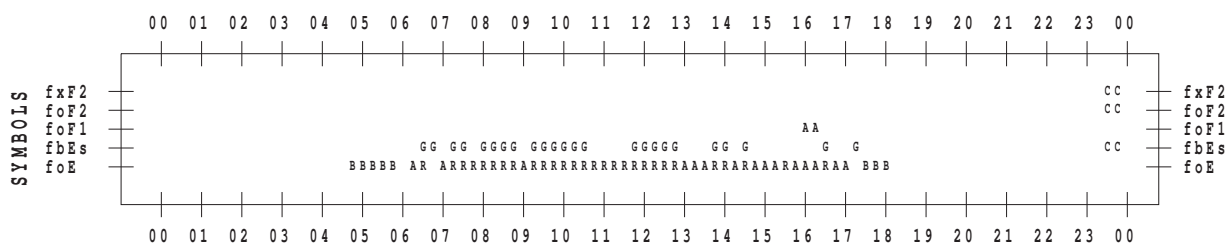
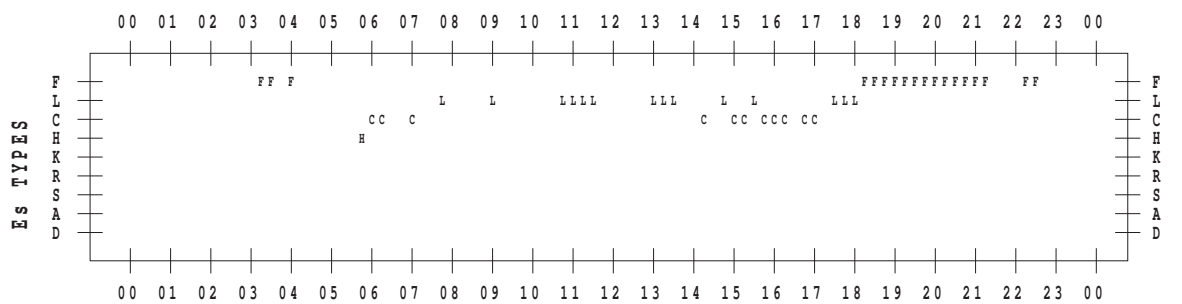
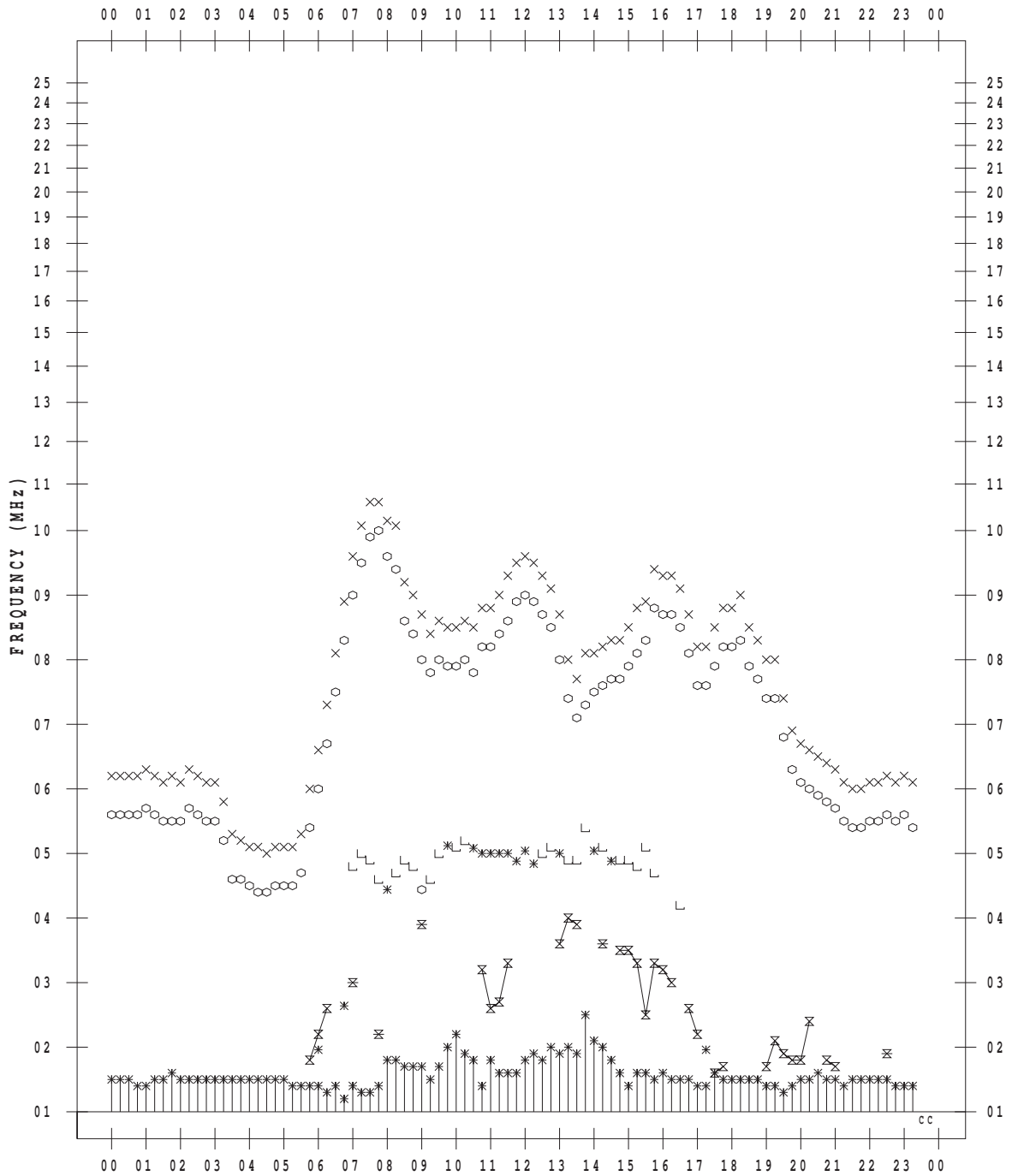
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 9/18

135 ° E MEAN TIME



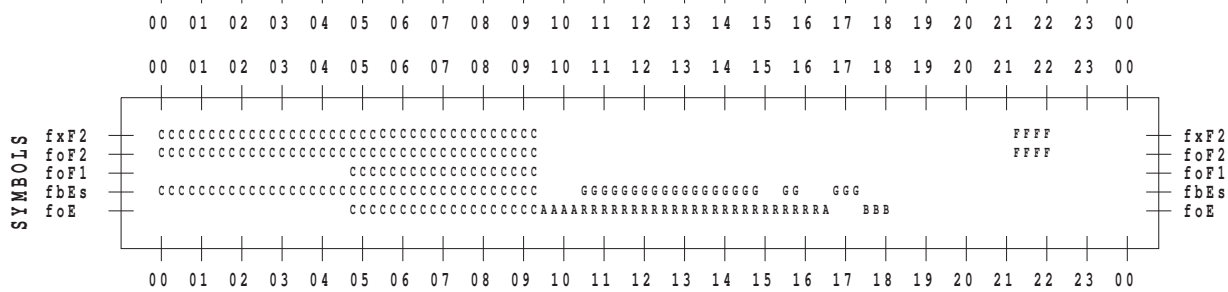
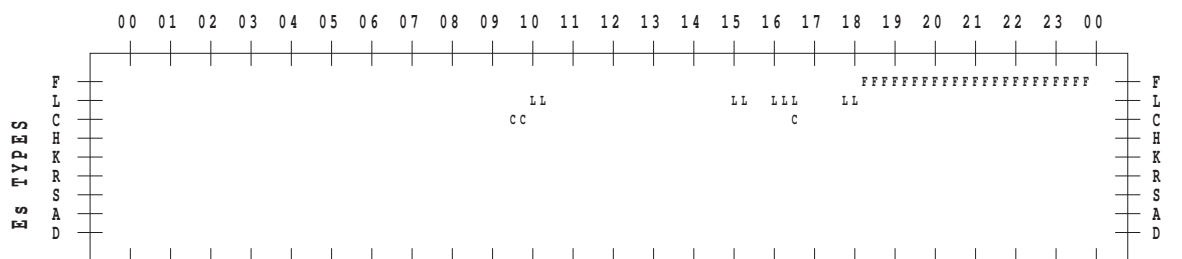
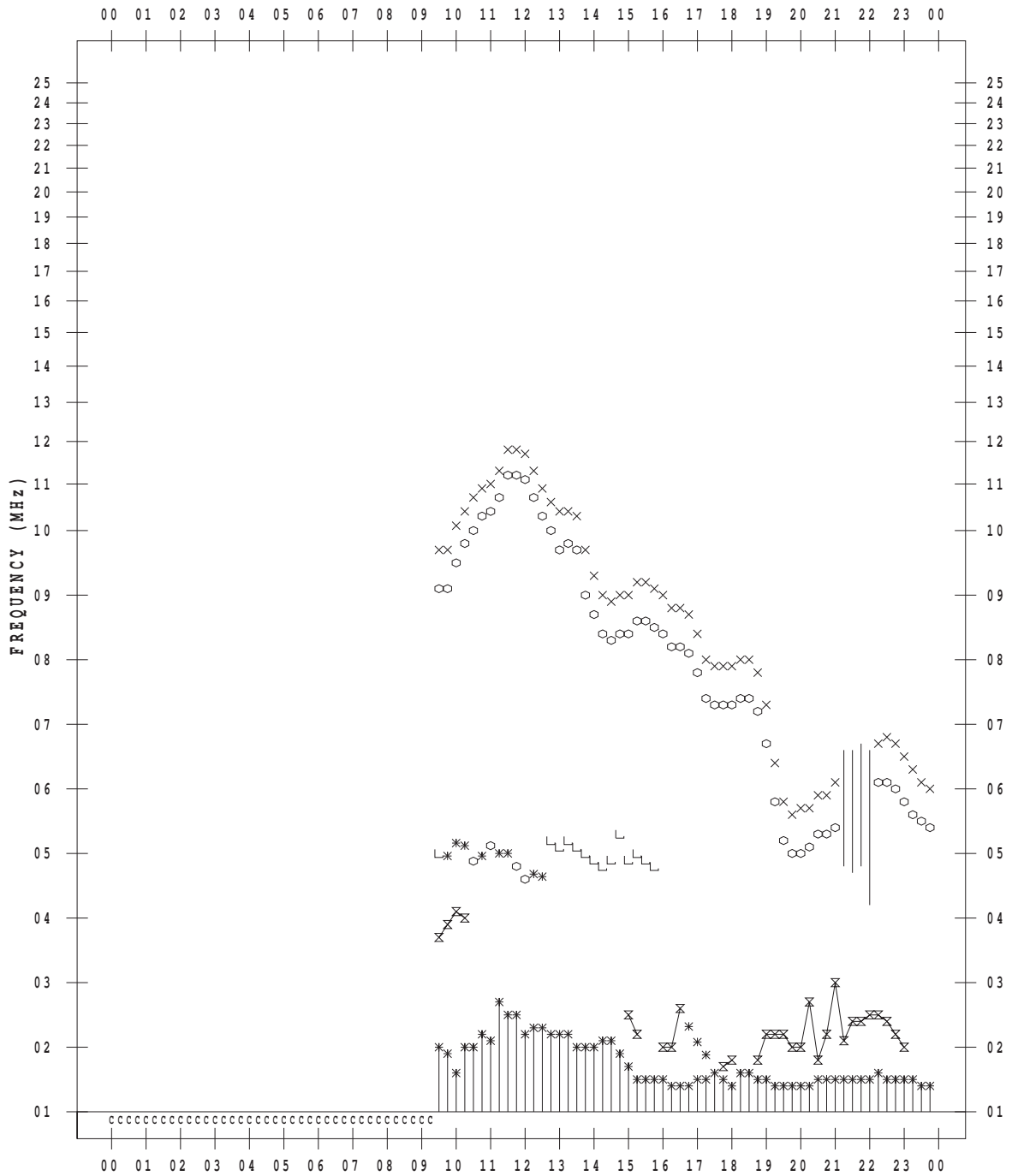
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 19

135 ° E MEAN TIME



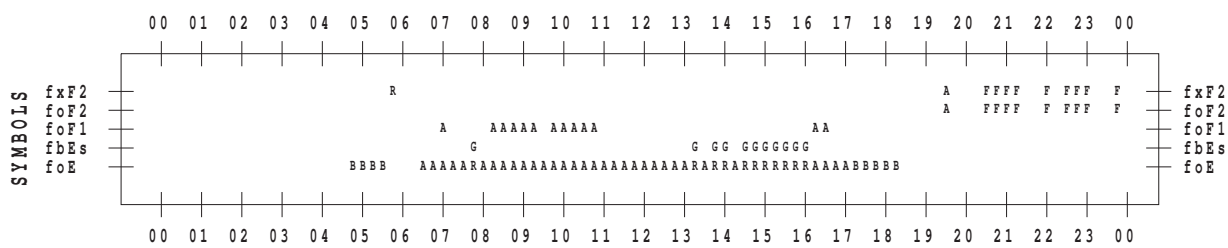
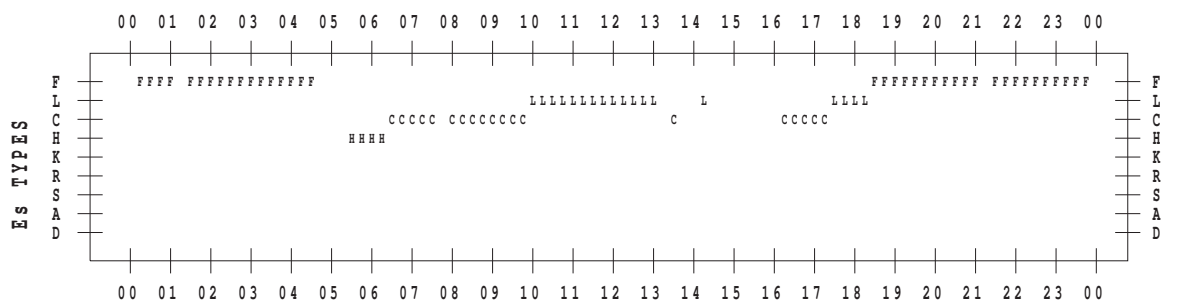
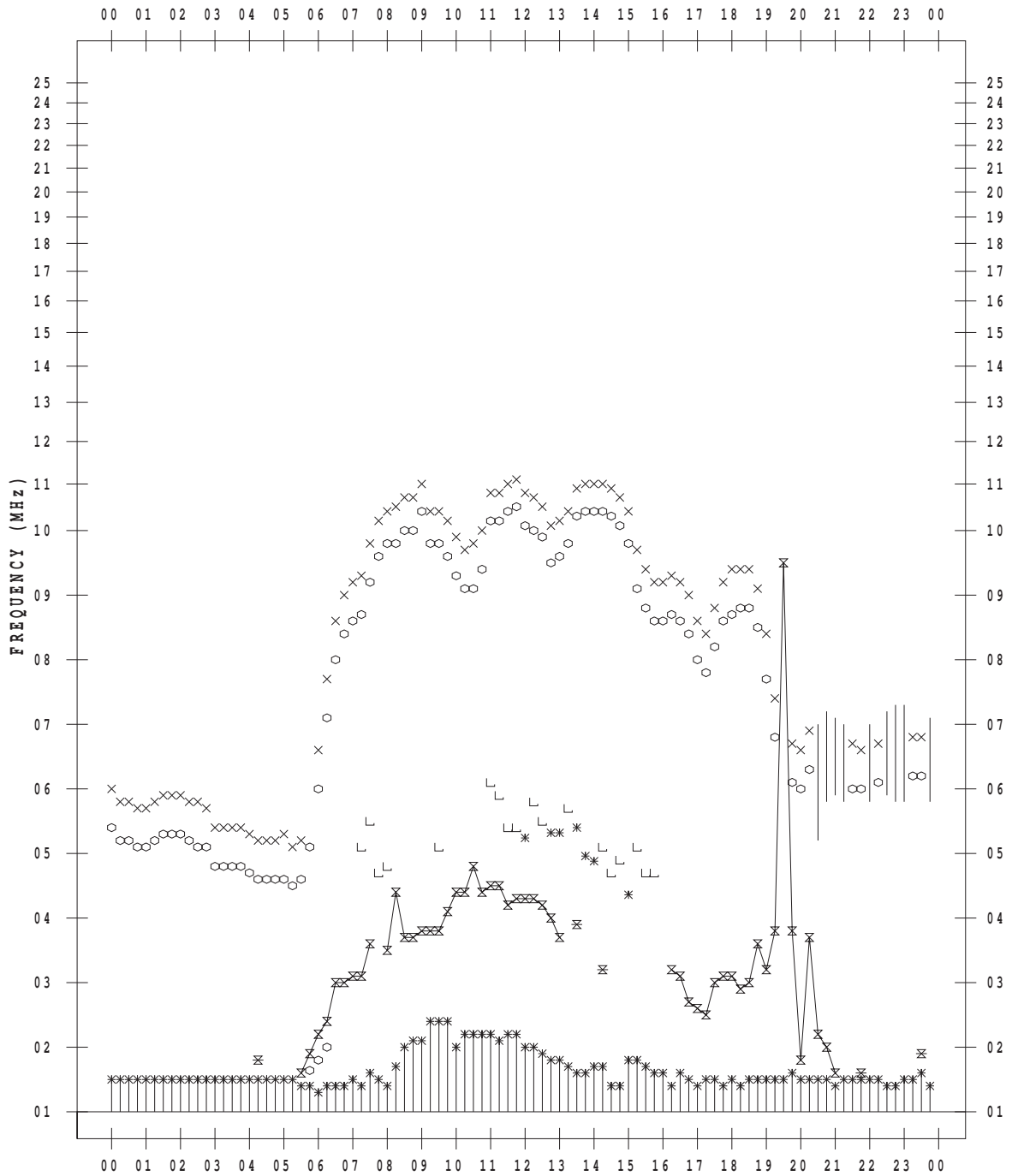
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 20

135 ° E MEAN TIME



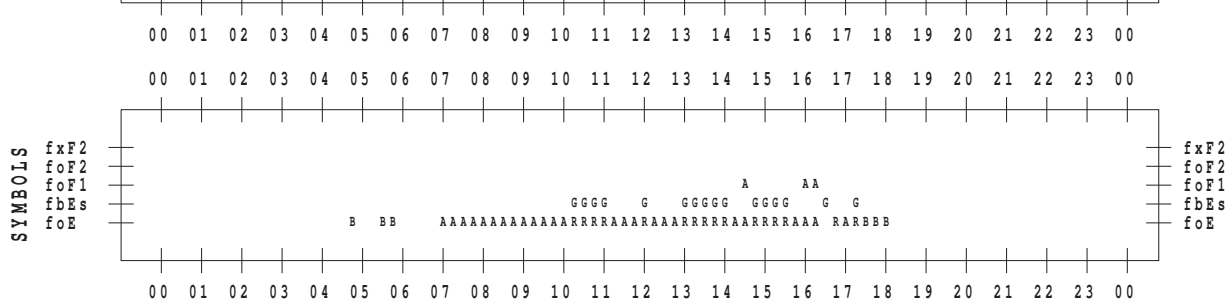
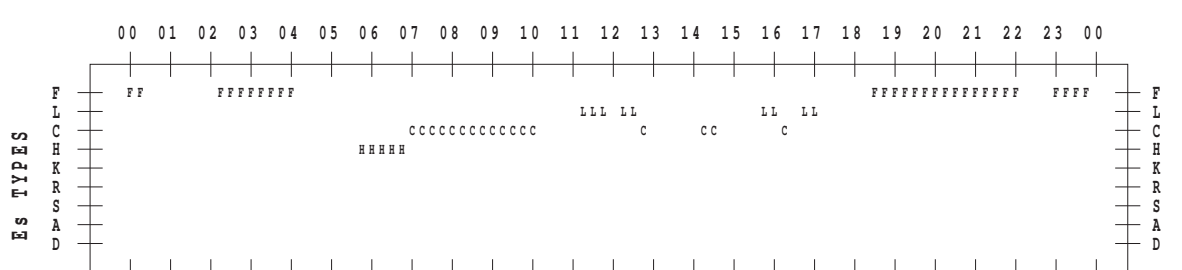
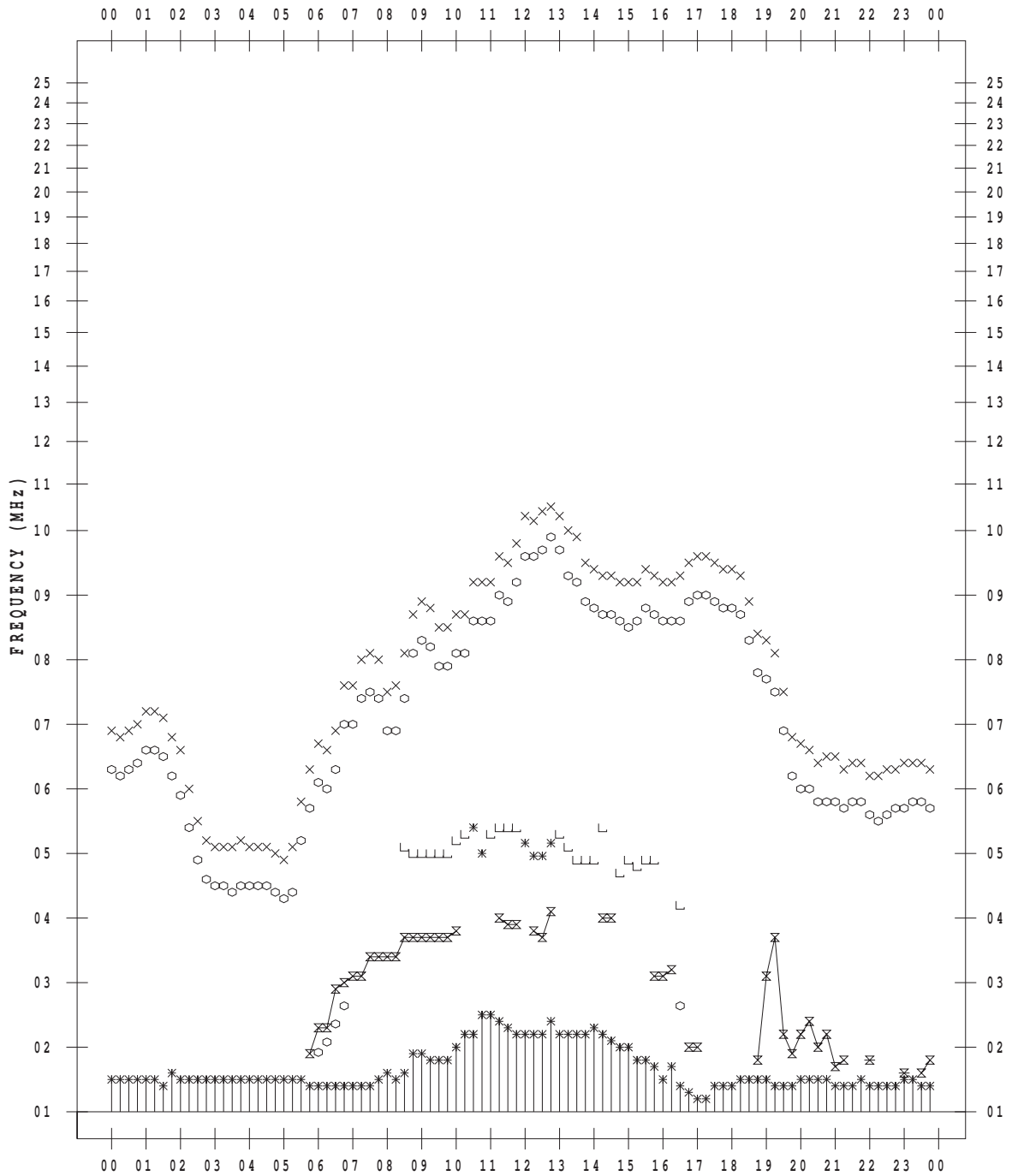
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 21

135 ° E MEAN TIME



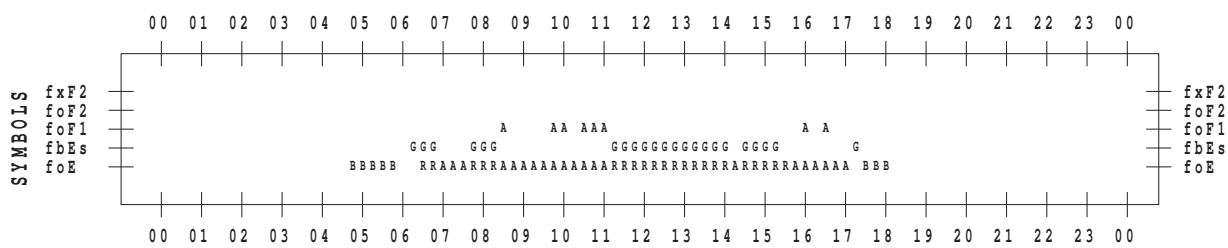
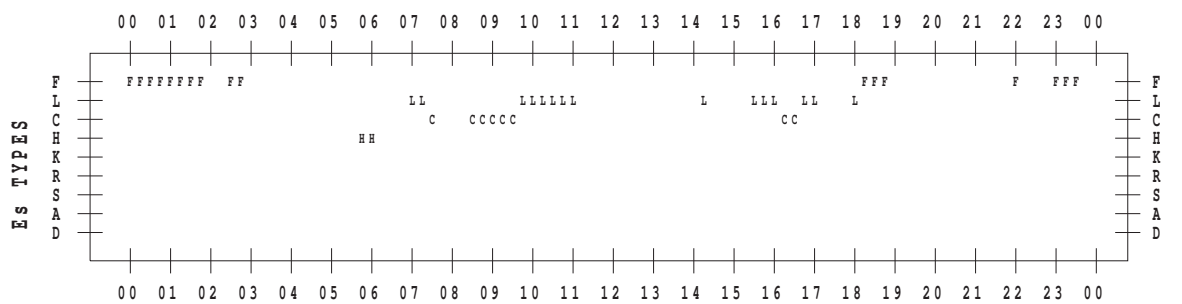
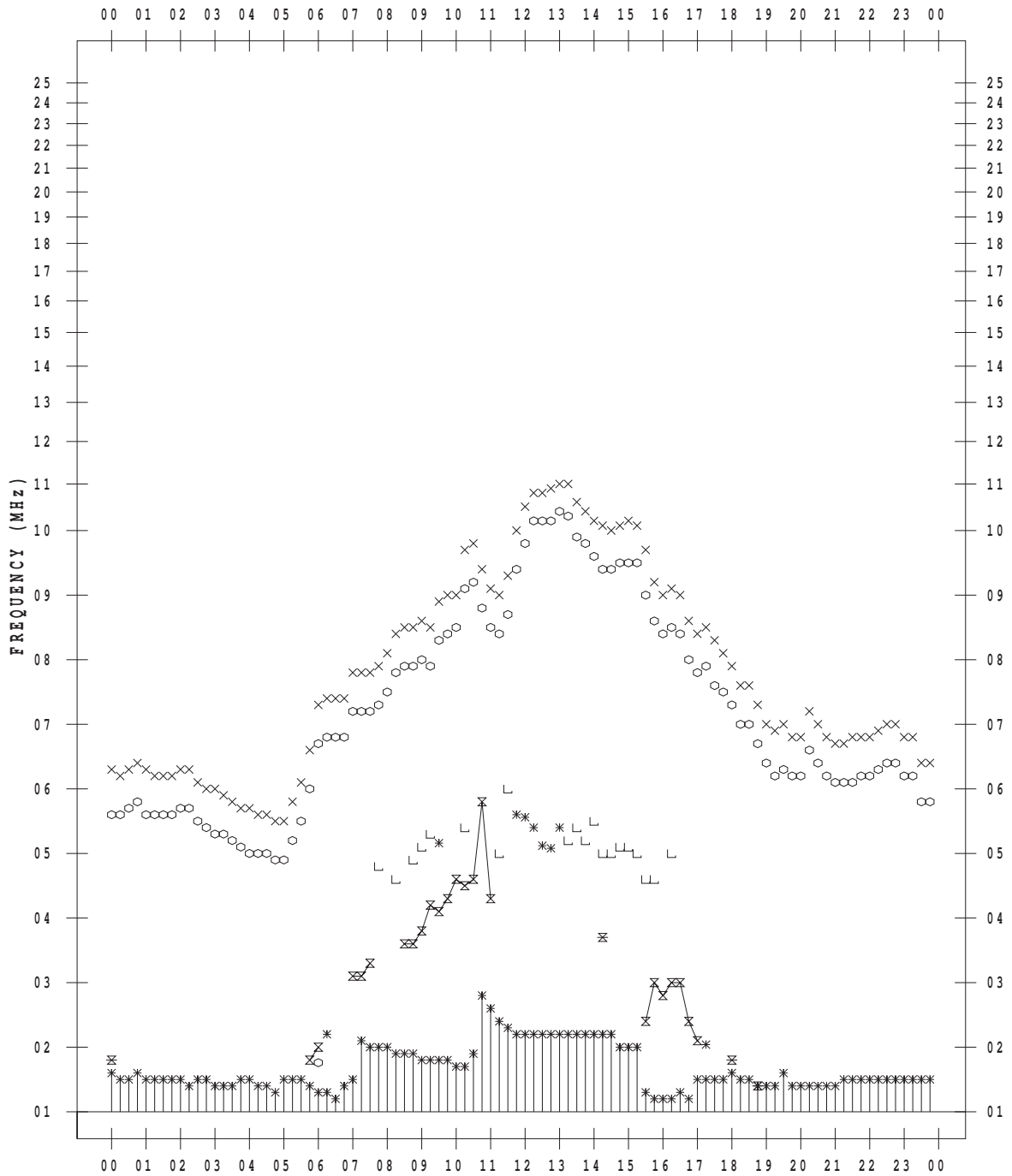
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 22

135 ° E MEAN TIME







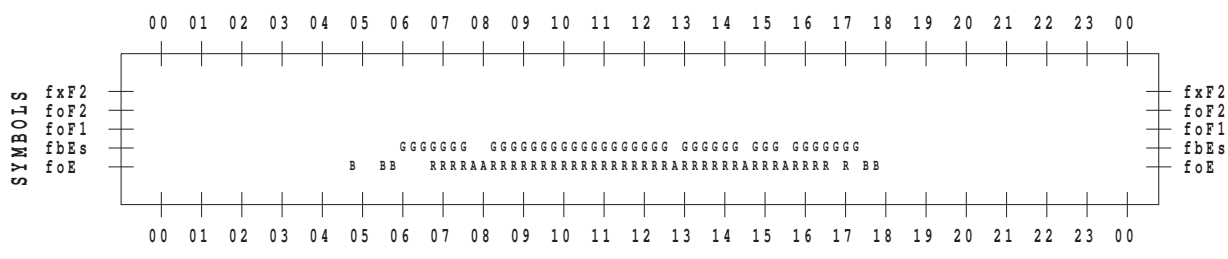
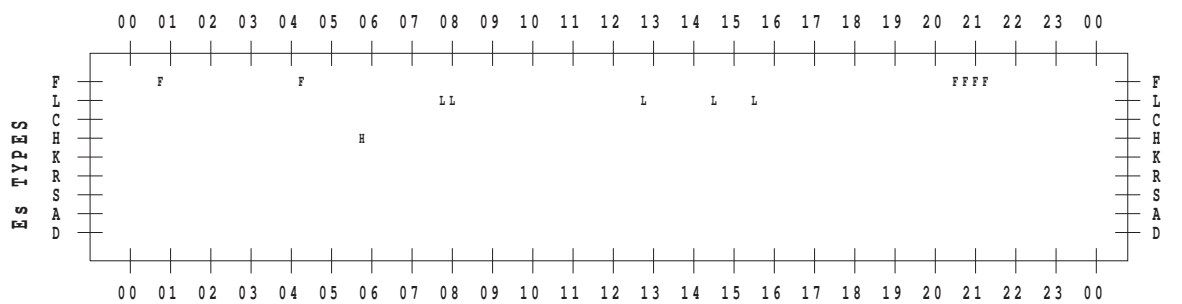
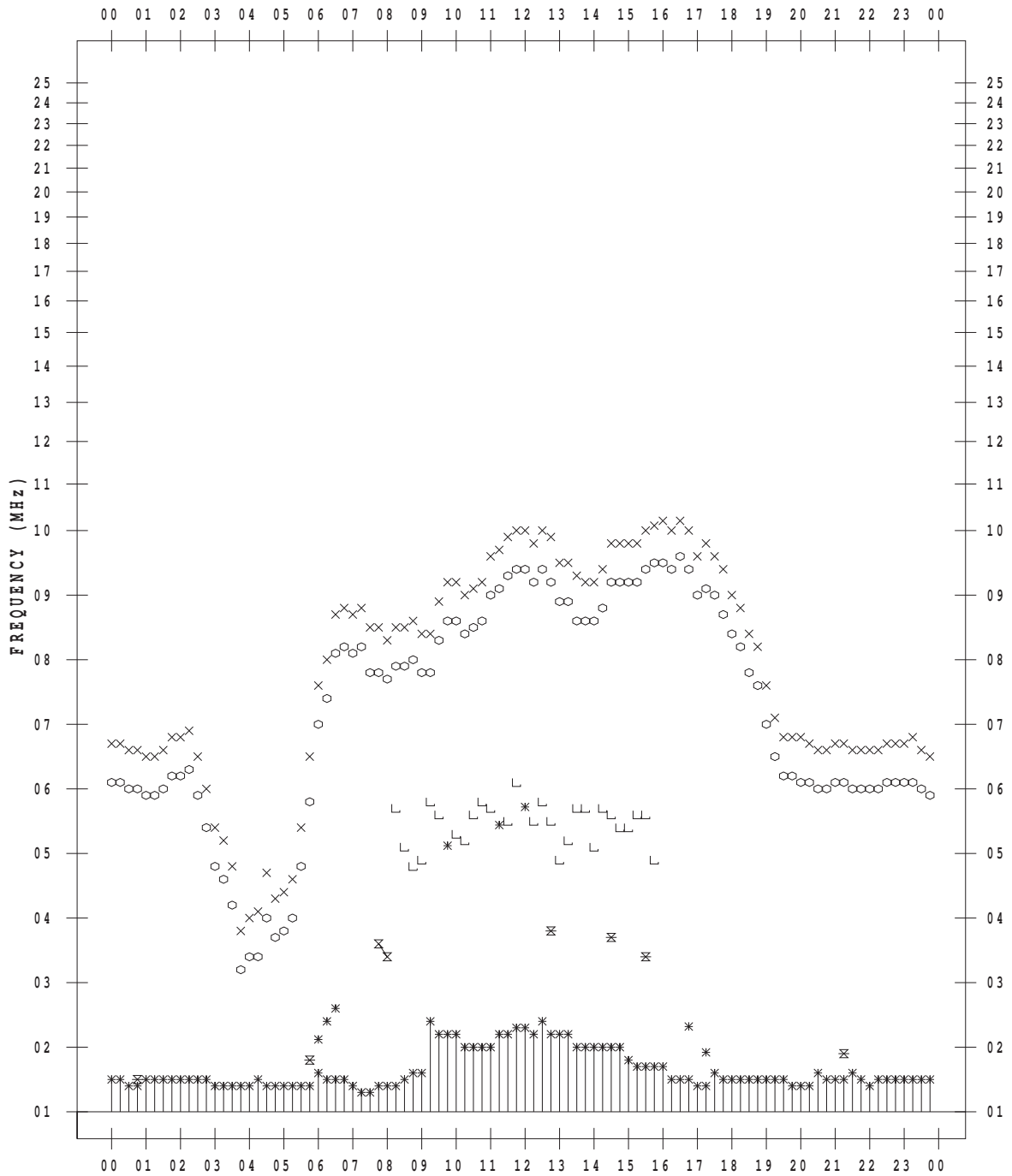
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 24

135 ° E MEAN TIME



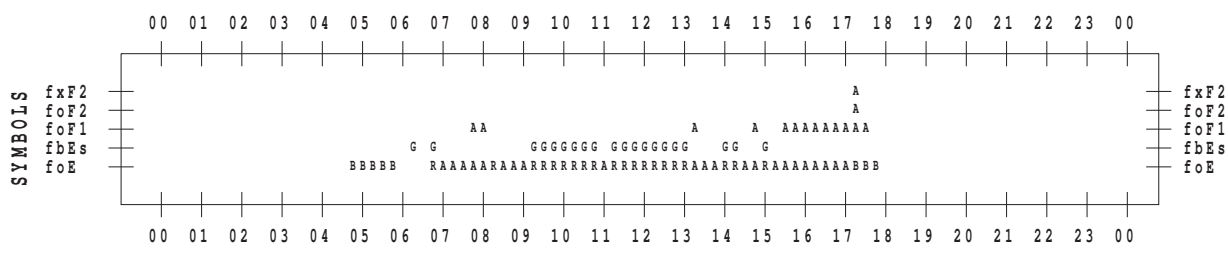
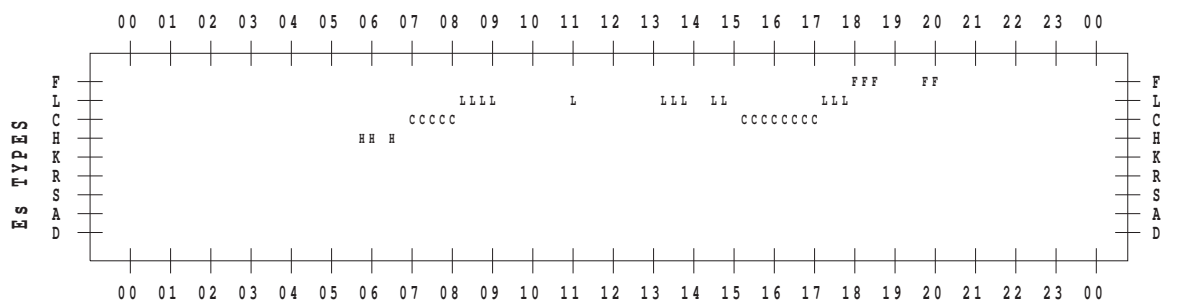
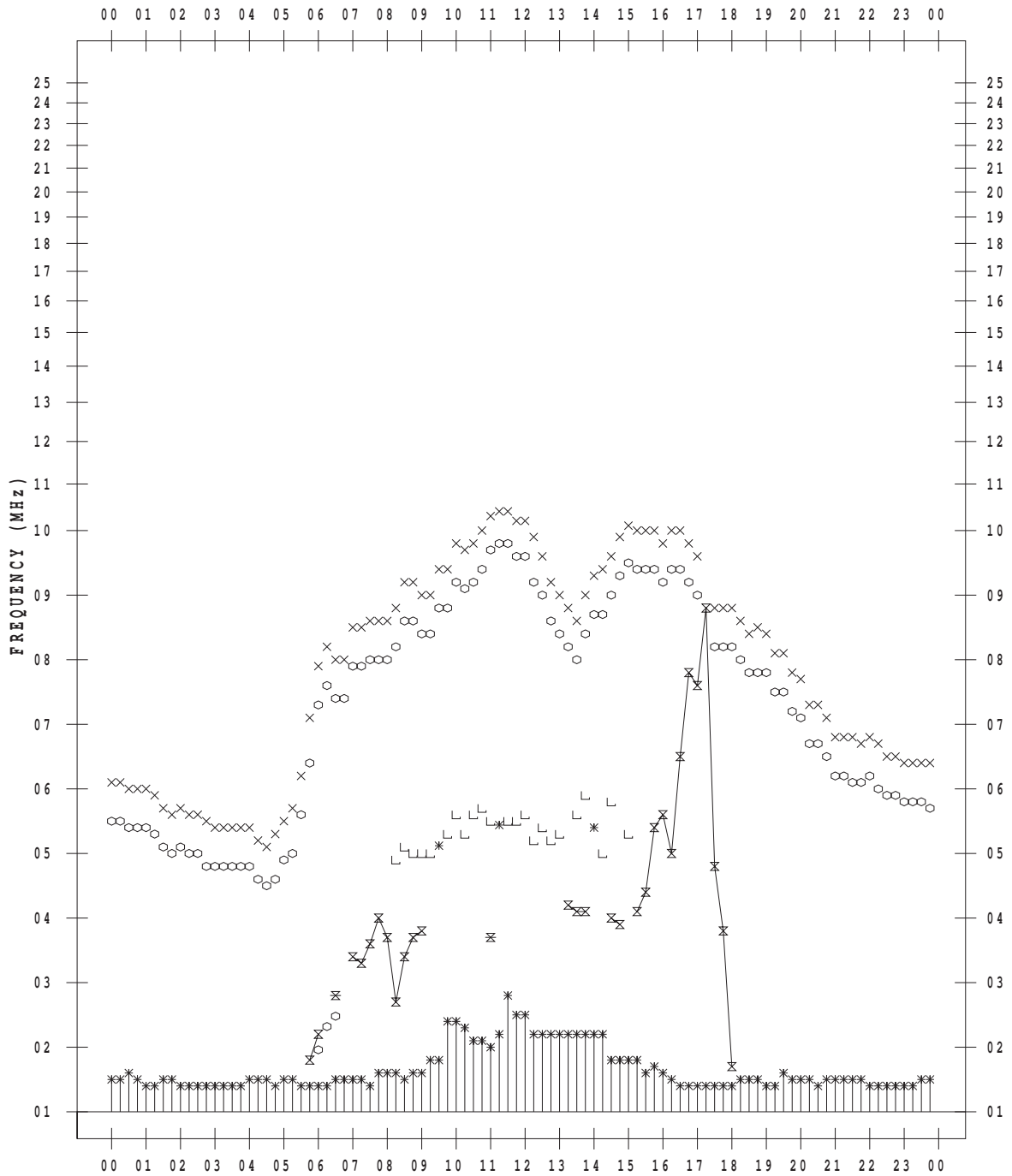
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 25

135 ° E MEAN TIME



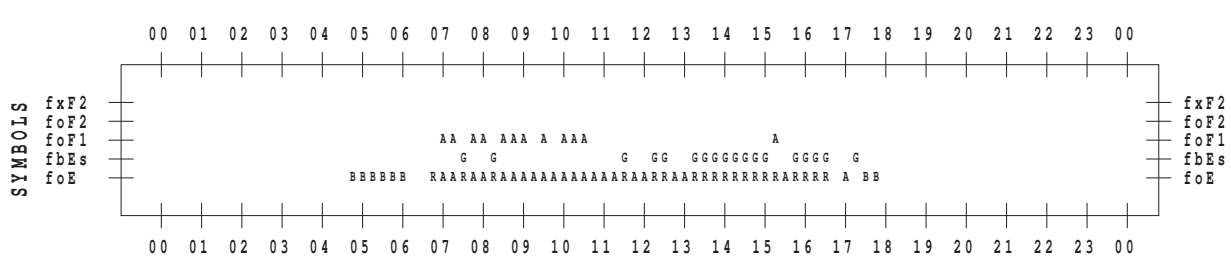
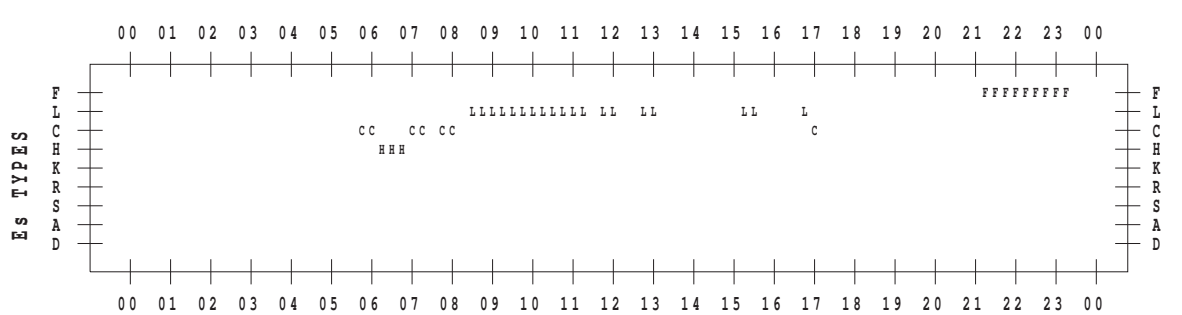
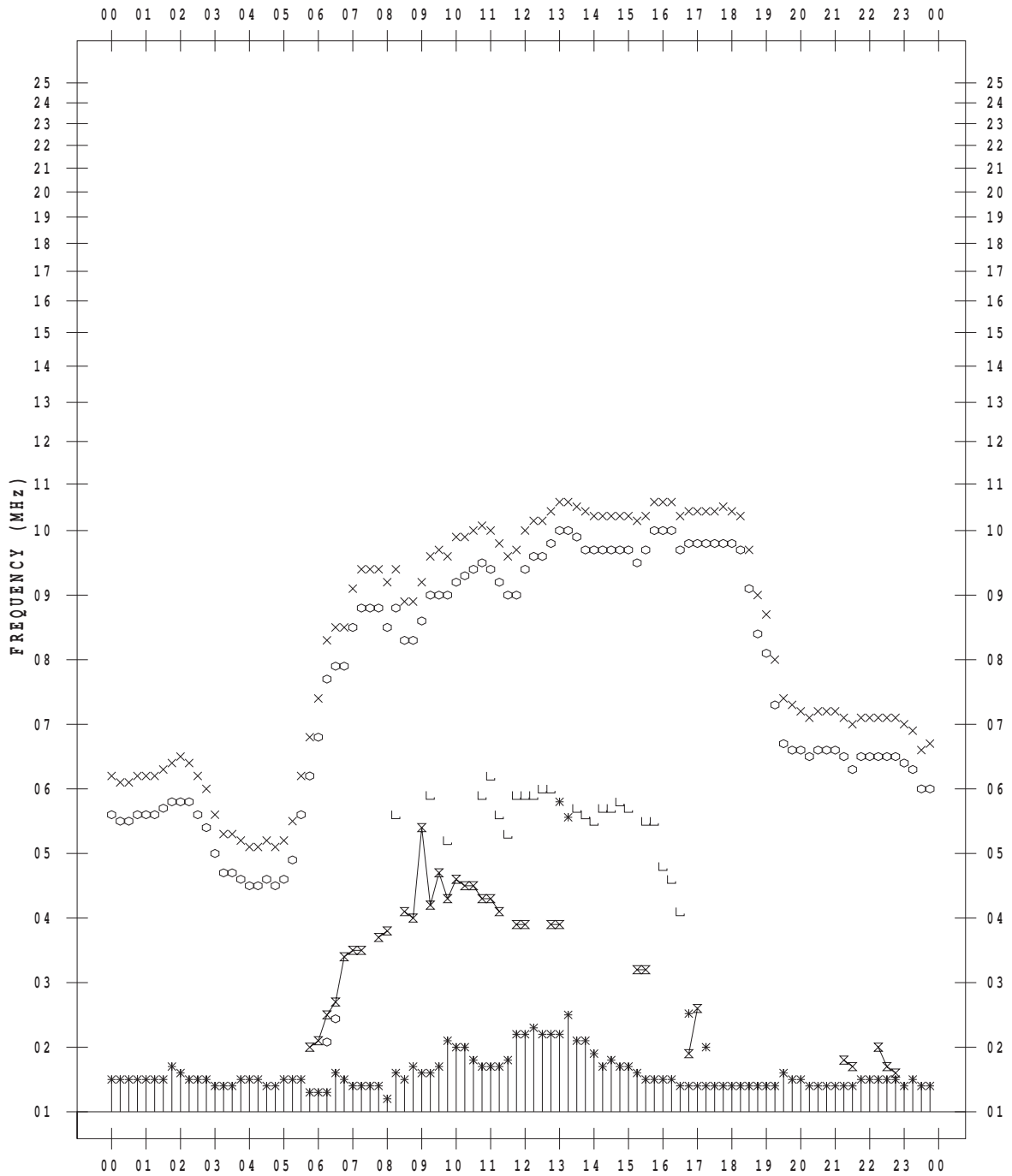
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 26

135 ° E MEAN TIME



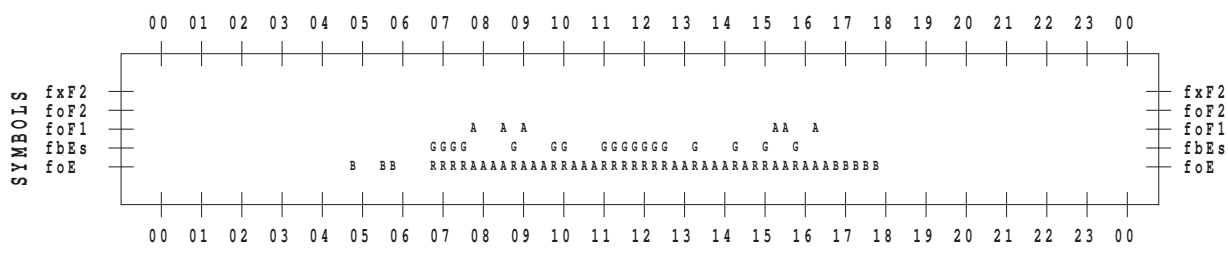
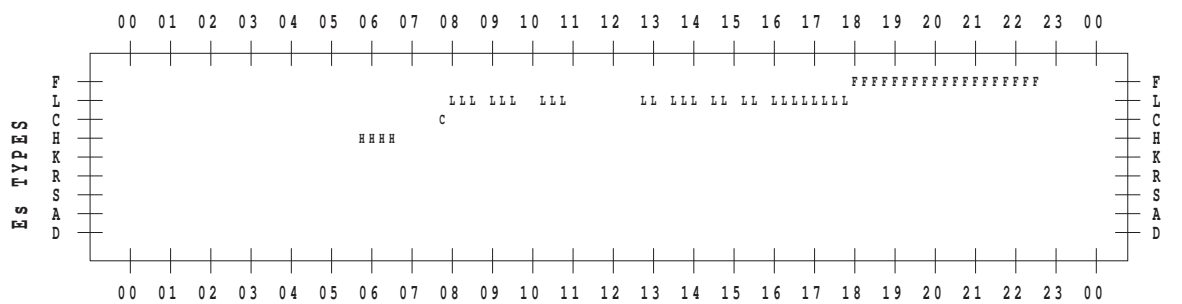
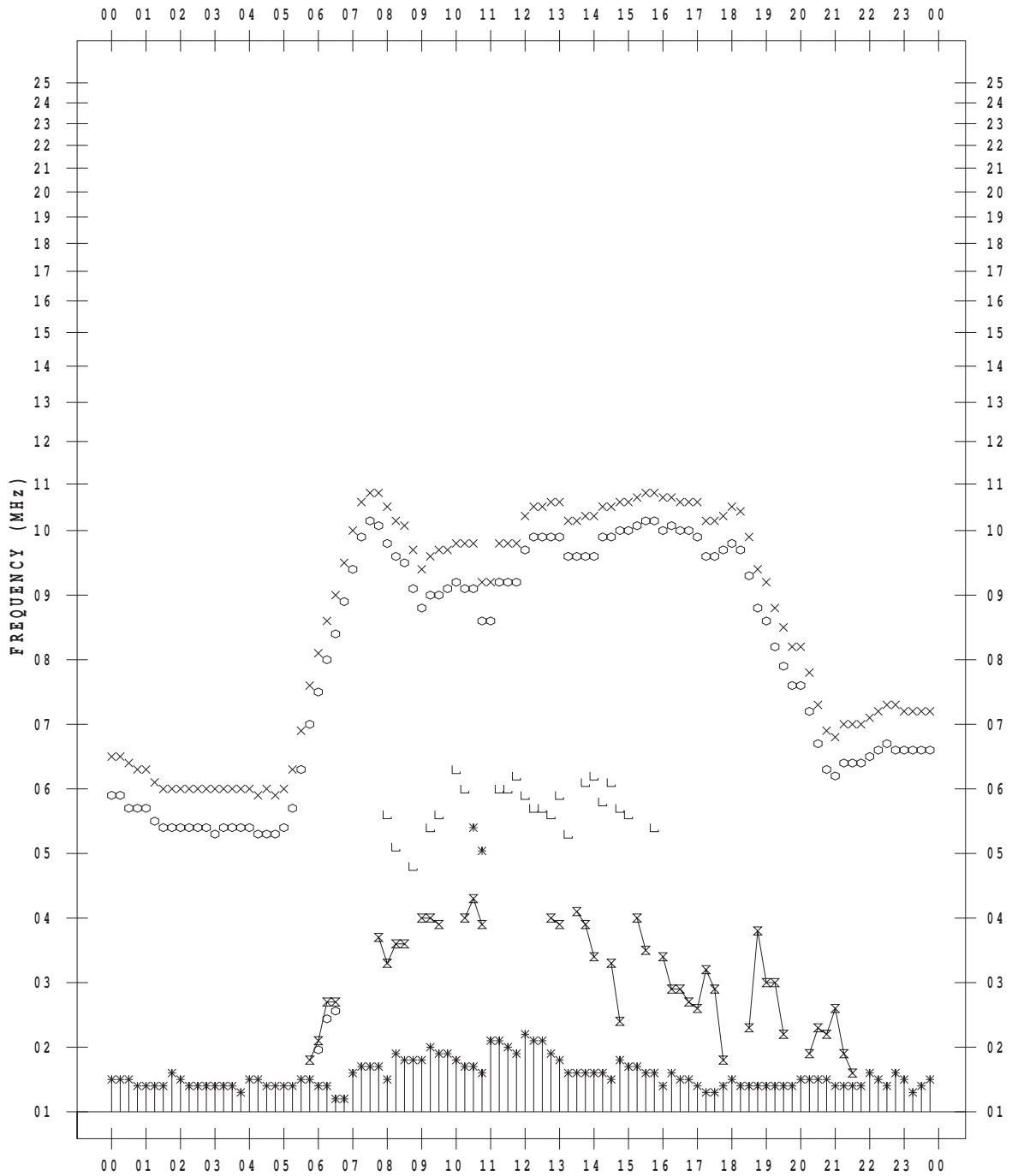
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 27

135 ° E MEAN TIME





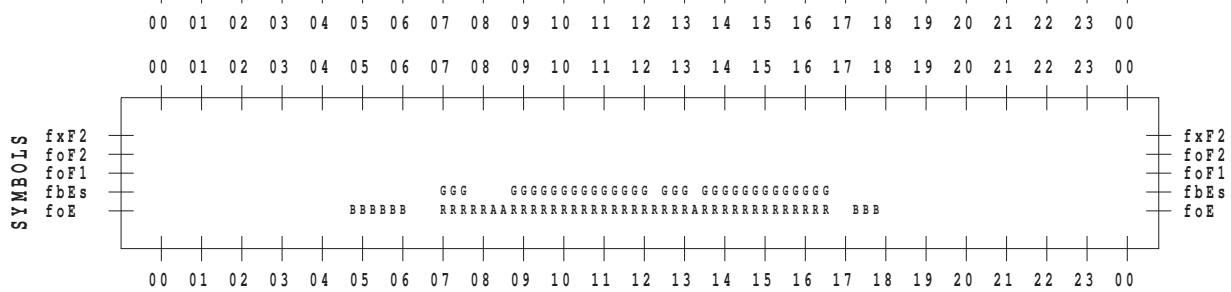
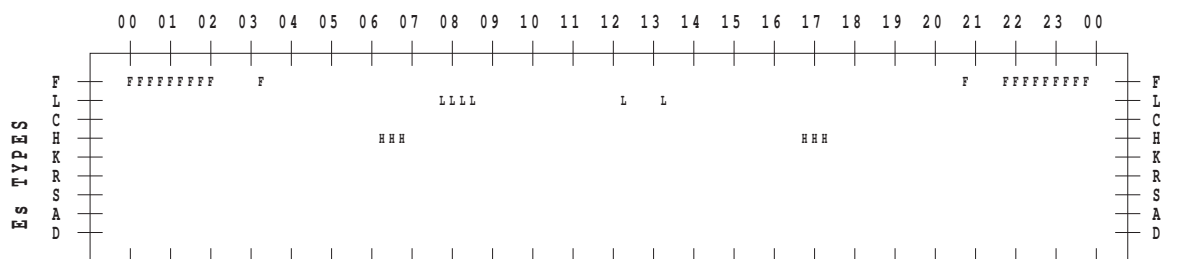
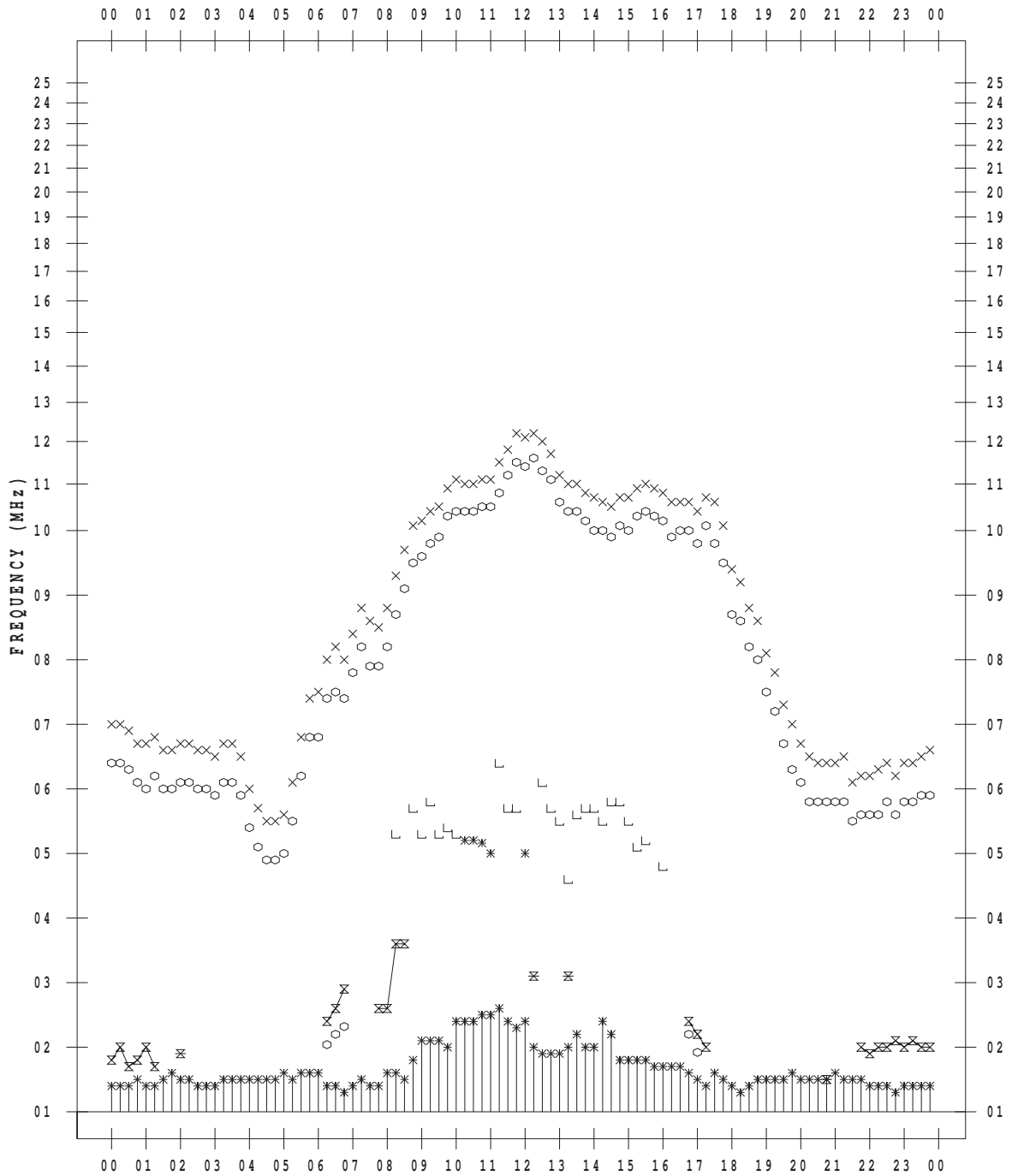
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012 / 9 / 29

135 ° E MEAN TIME



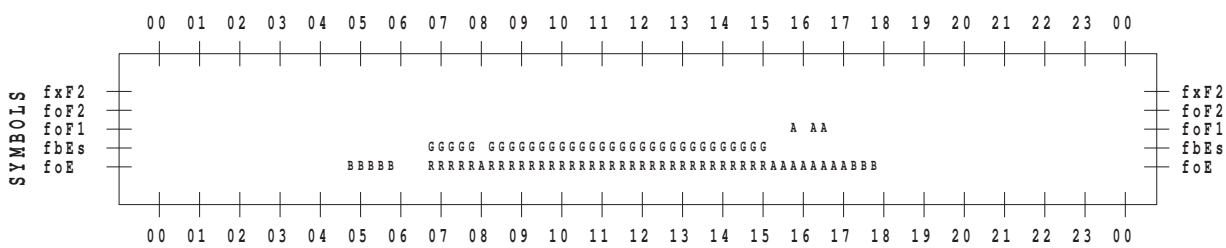
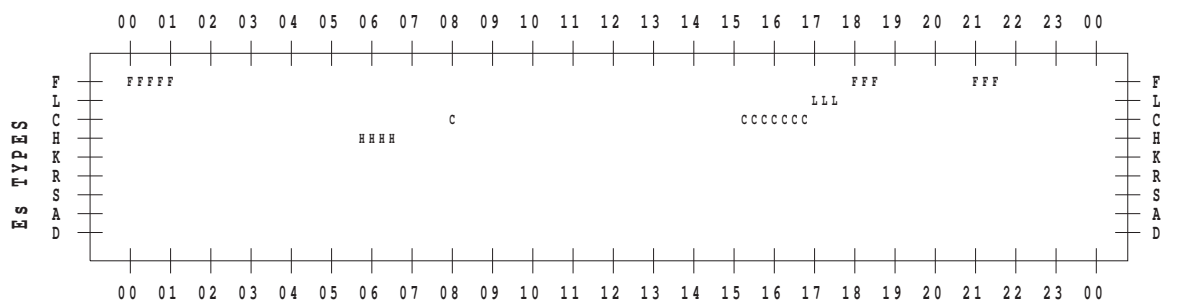
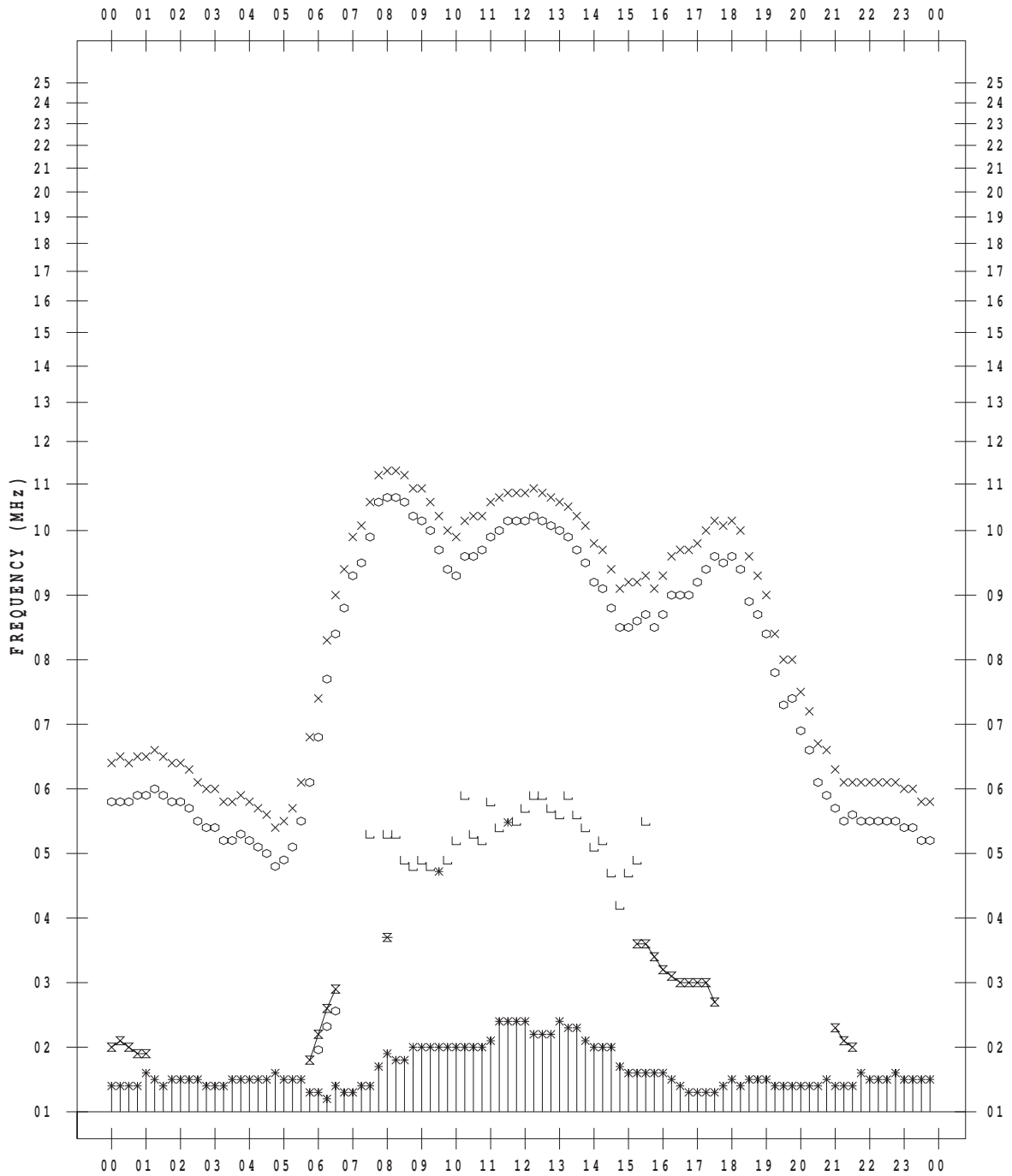
# f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 9/30

135 ° E MEAN TIME





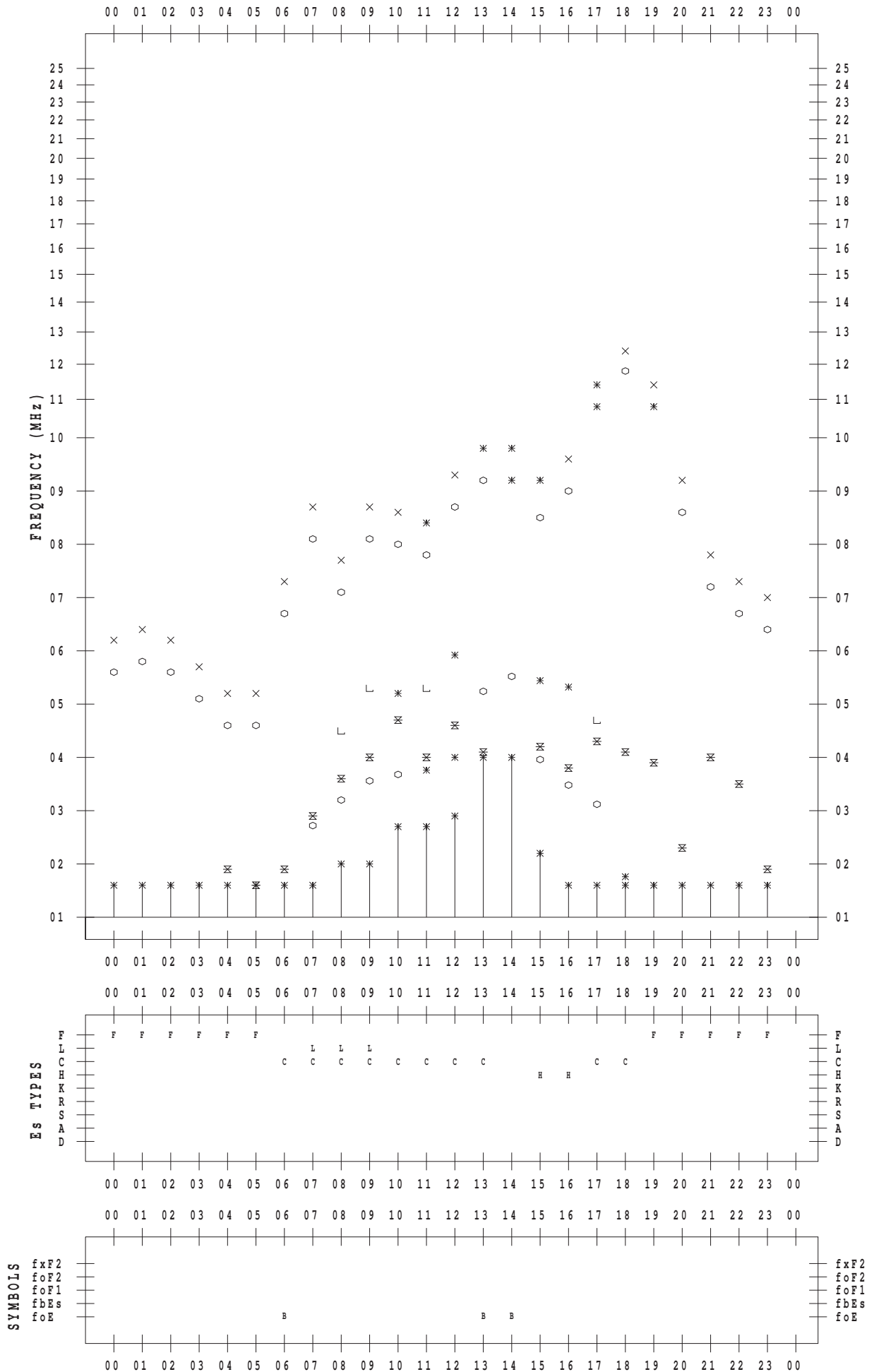
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/ 1

135 ° E MEAN TIME



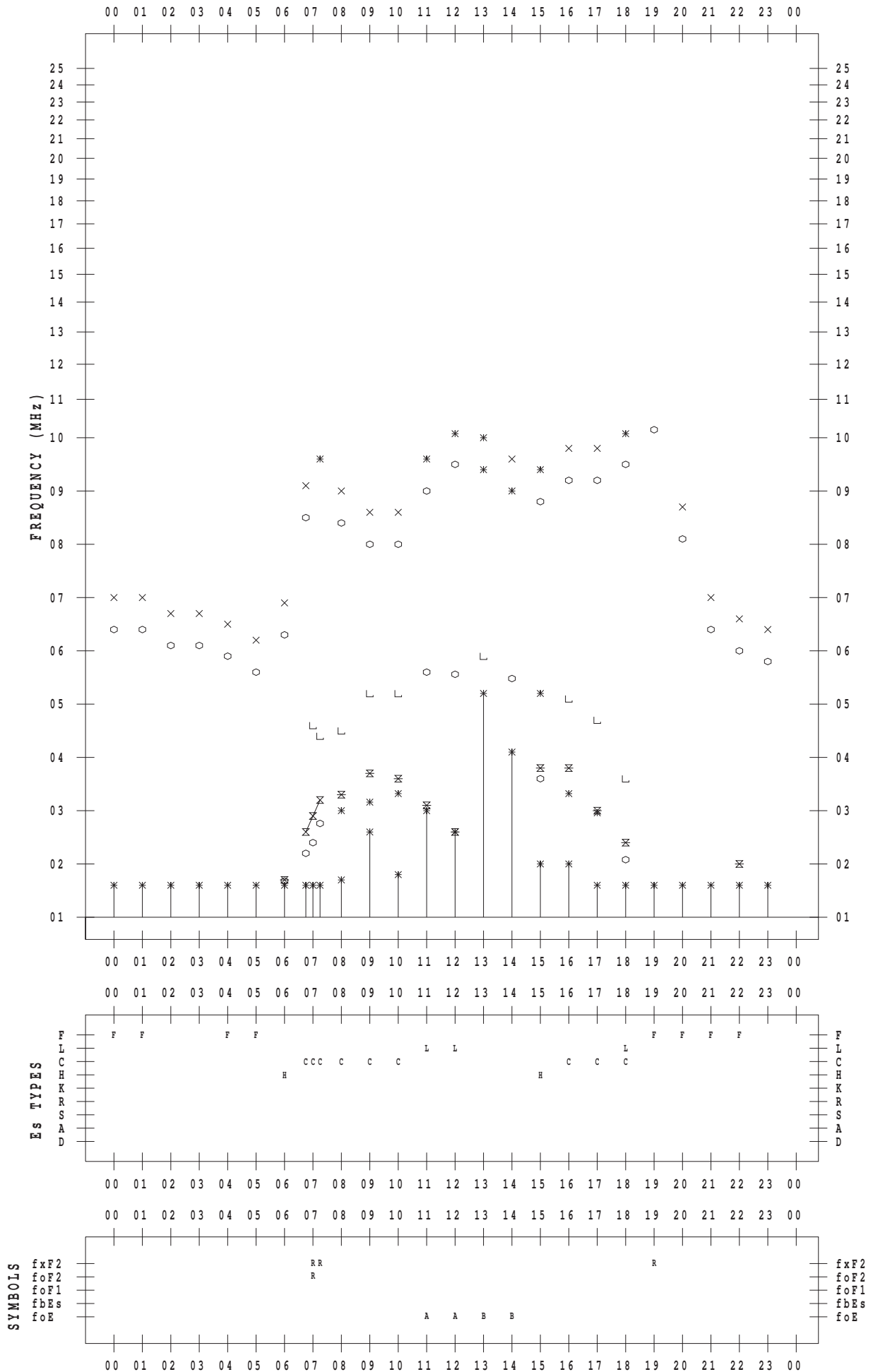
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 2

135 ° E MEAN TIME



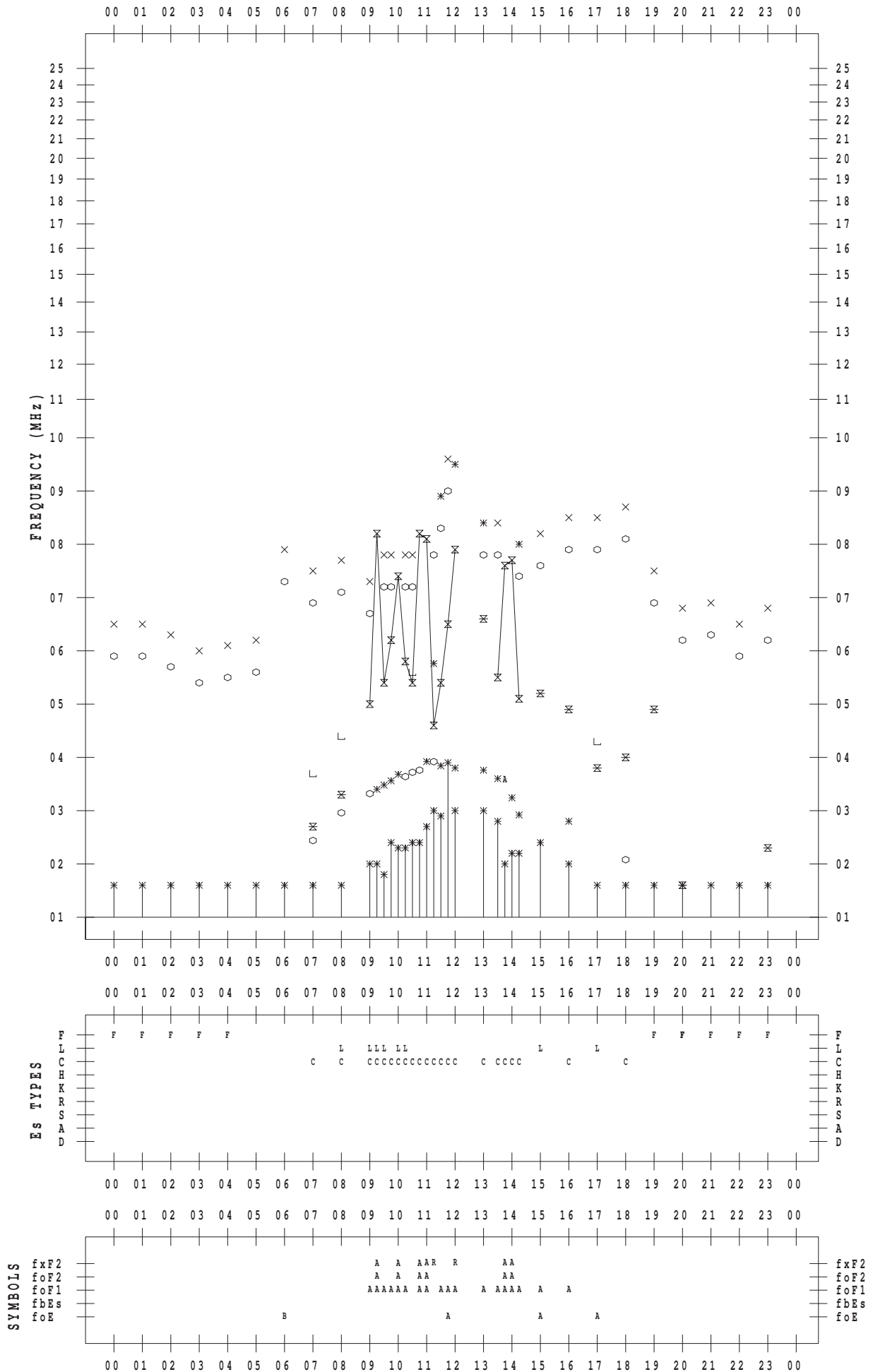
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 3

135 ° E MEAN TIME



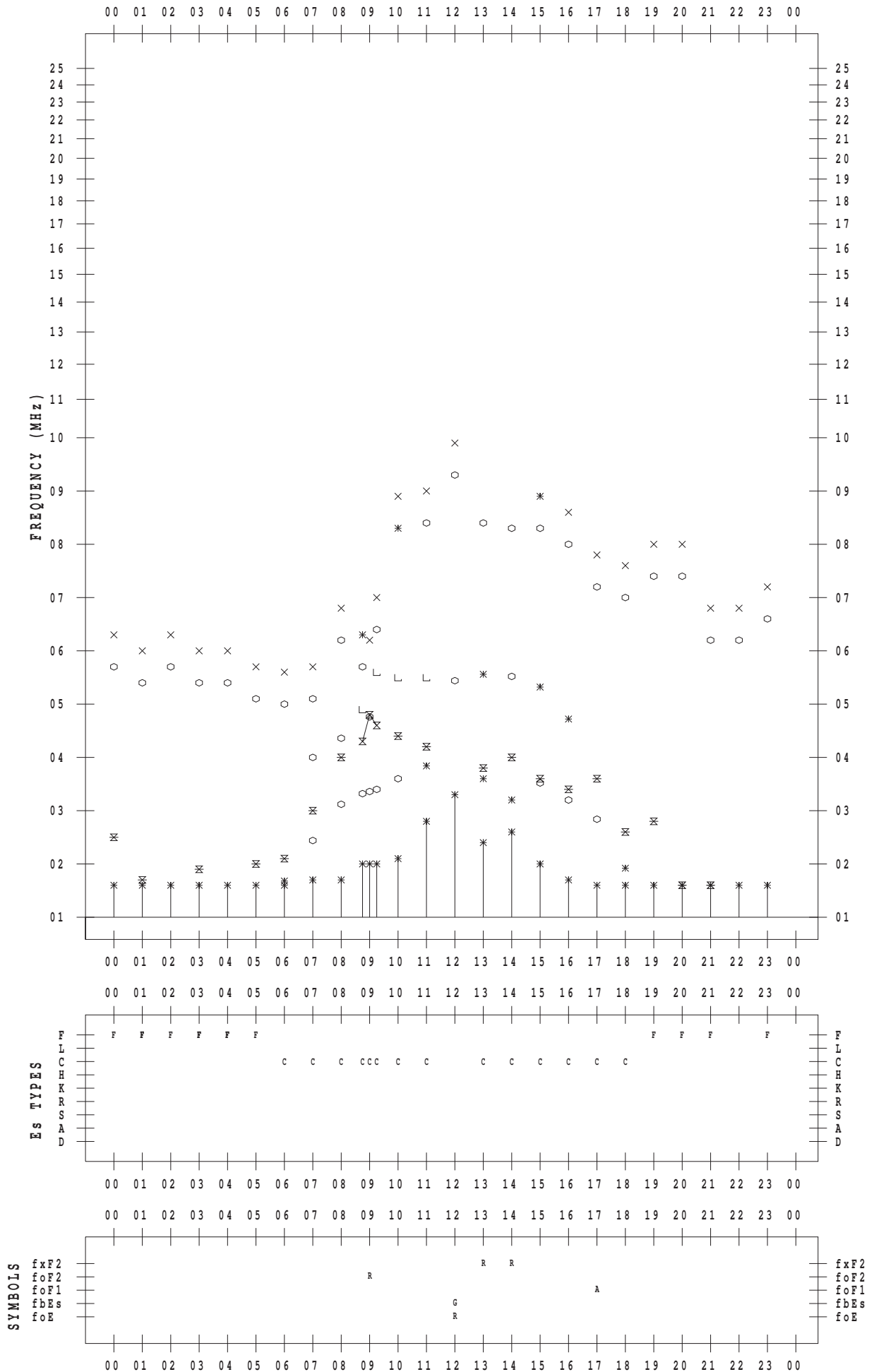
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 4

135 ° E MEAN TIME



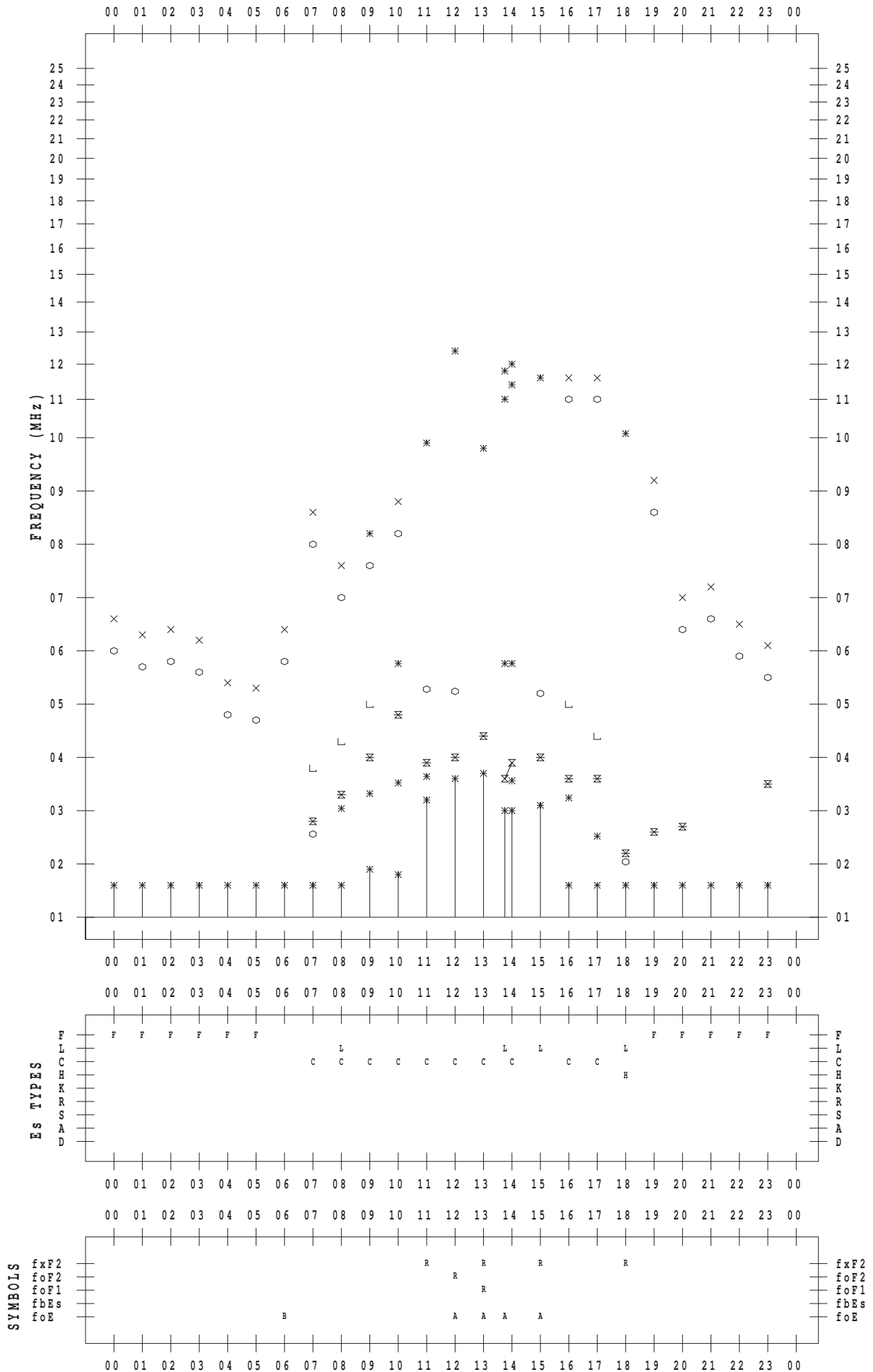
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 5

135 ° E MEAN TIME



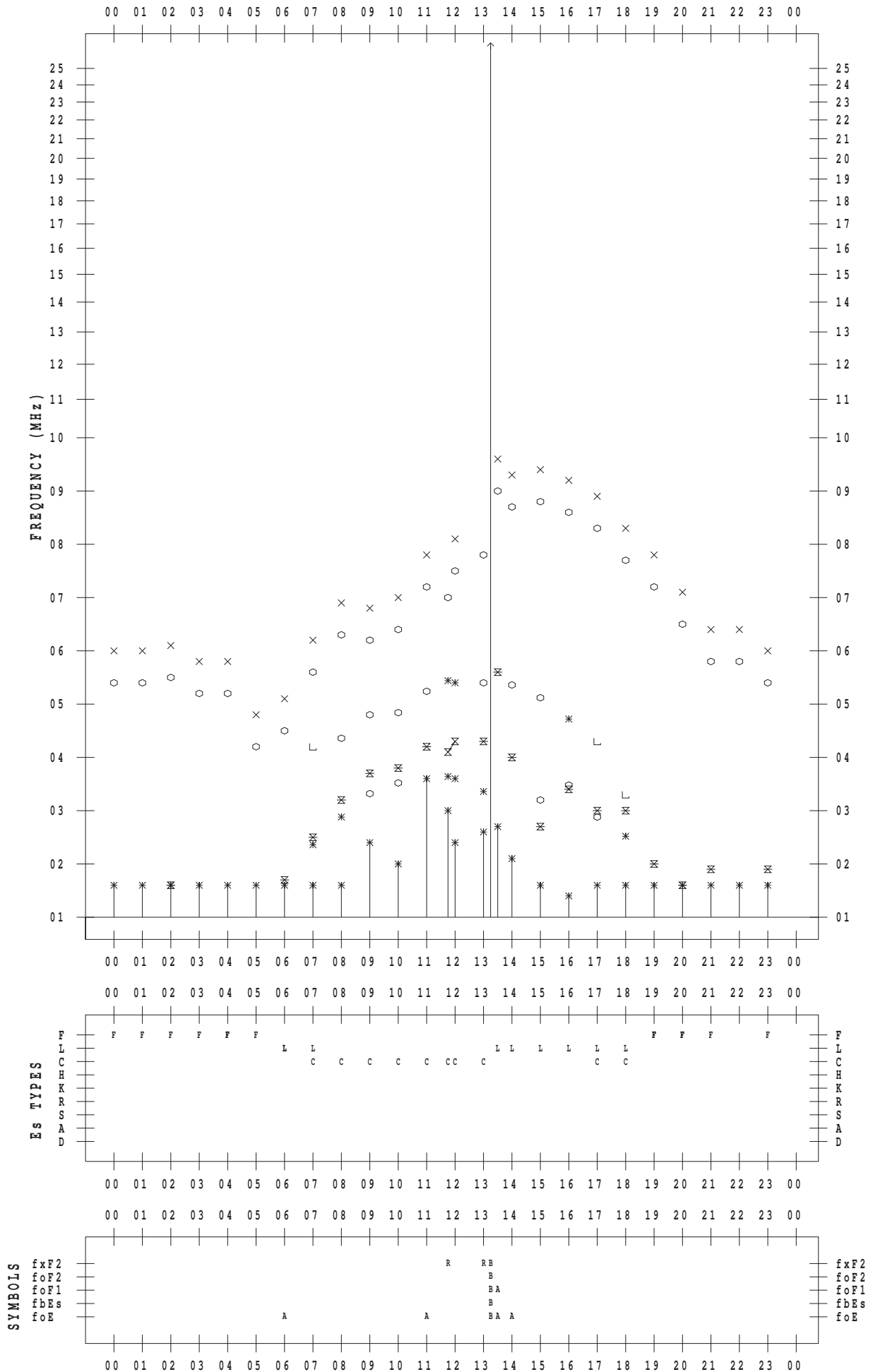
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 6

135 ° E MEAN TIME



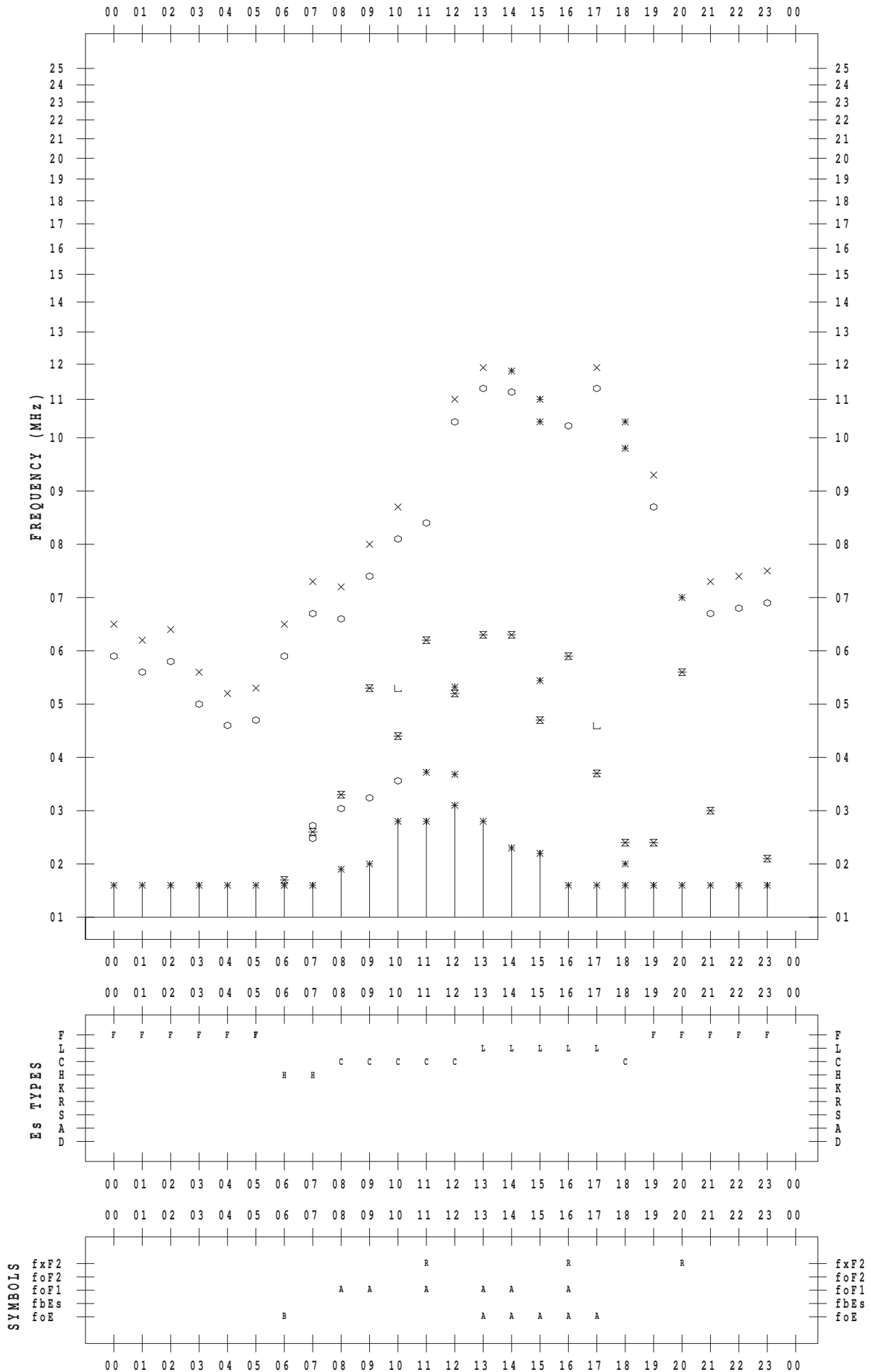
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 7

135 ° E MEAN TIME



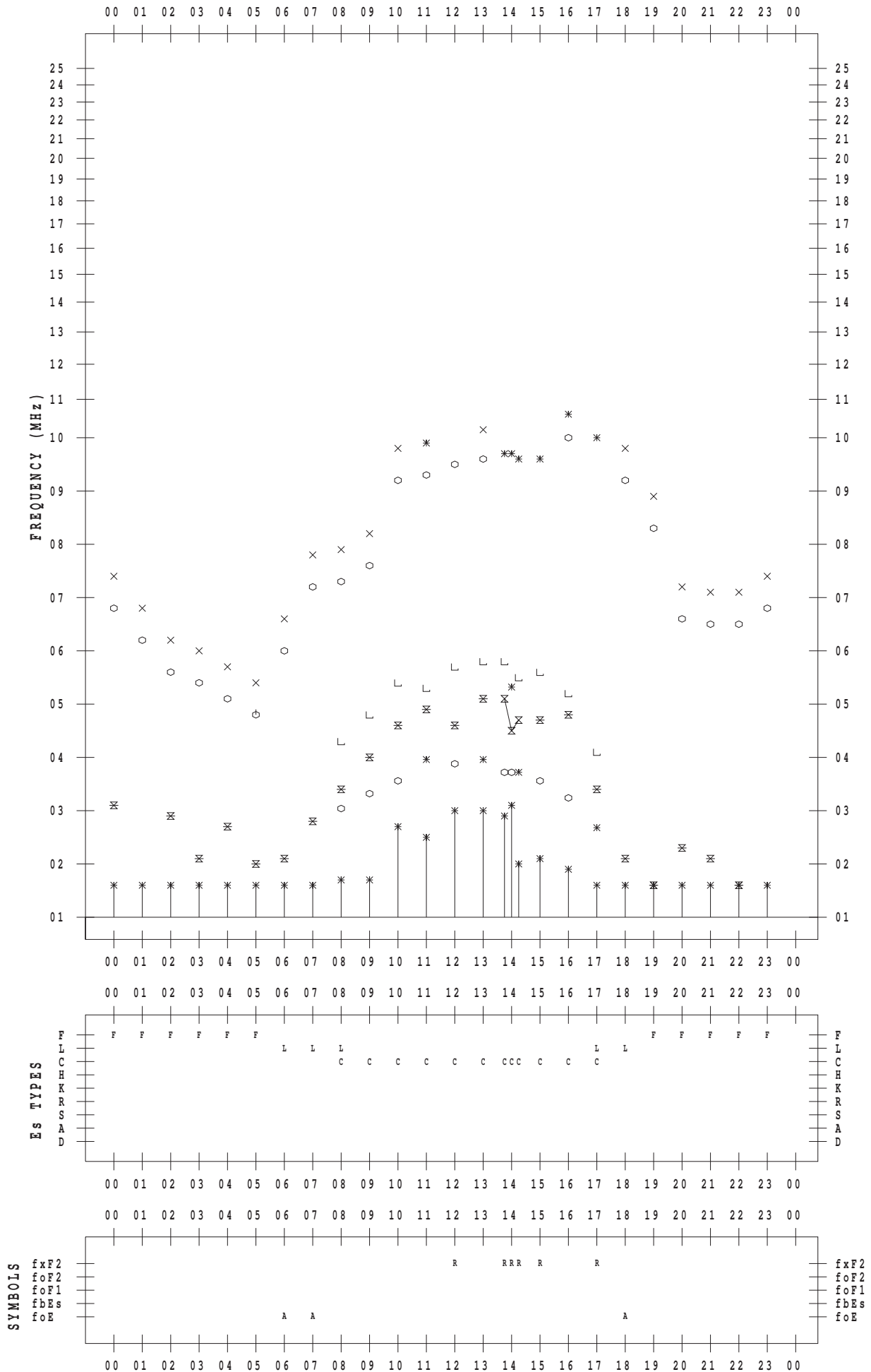
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 8

135 ° E MEAN TIME





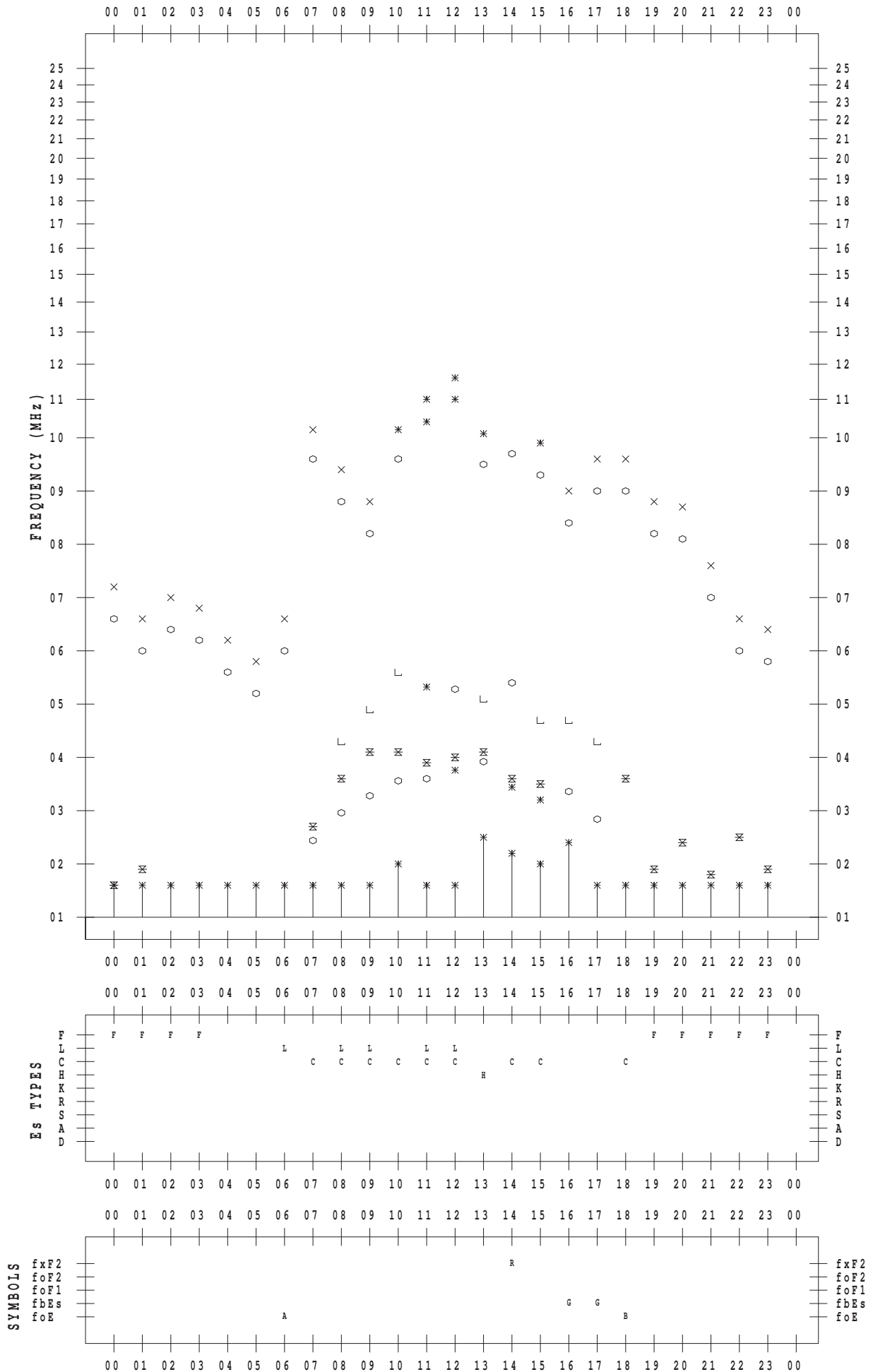
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 9

135 ° E MEAN TIME



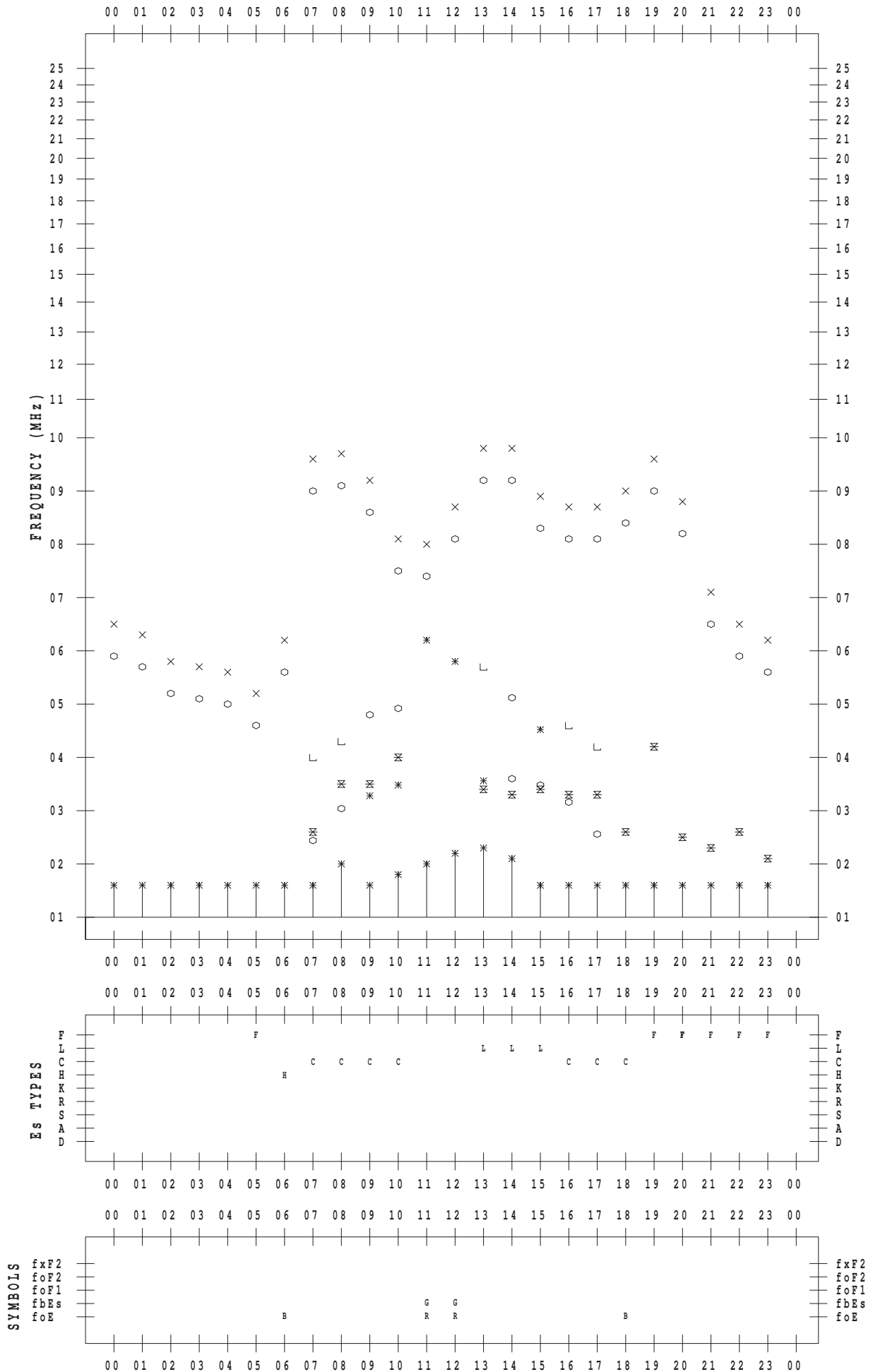
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 10

135 ° E MEAN TIME



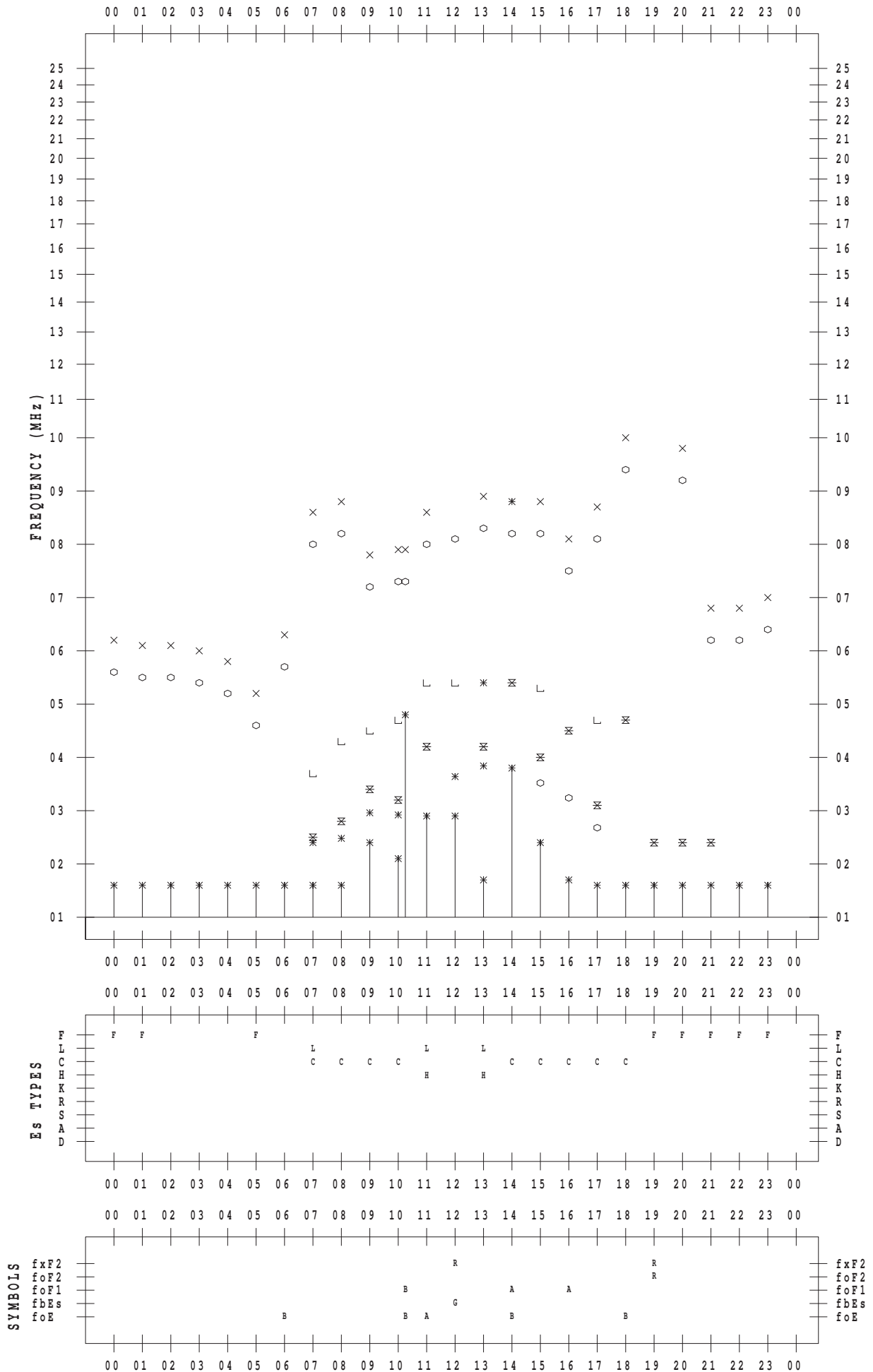
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/11

135 ° E MEAN TIME



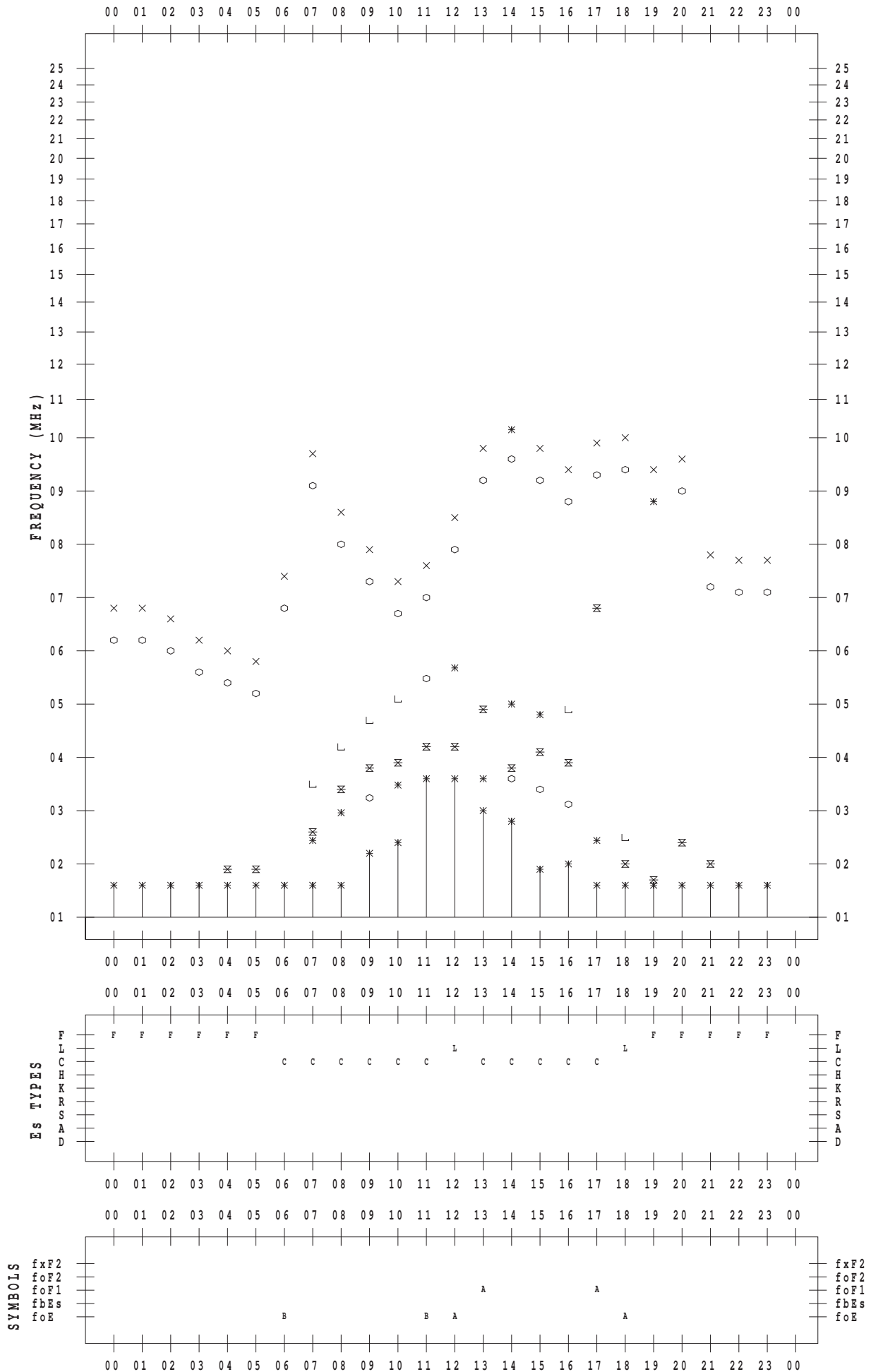
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 12

135 ° E MEAN TIME



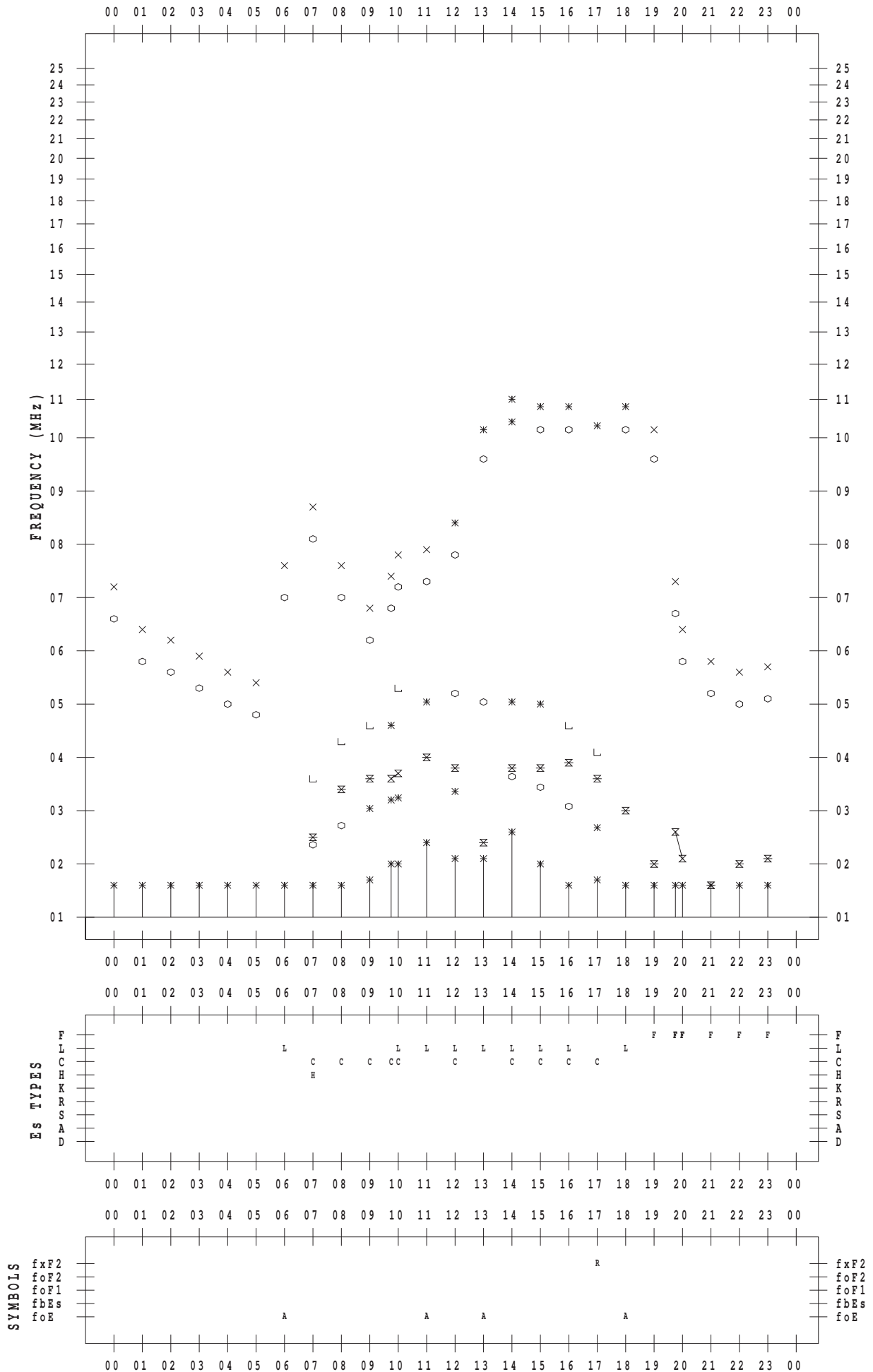
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/13

135 ° E MEAN TIME



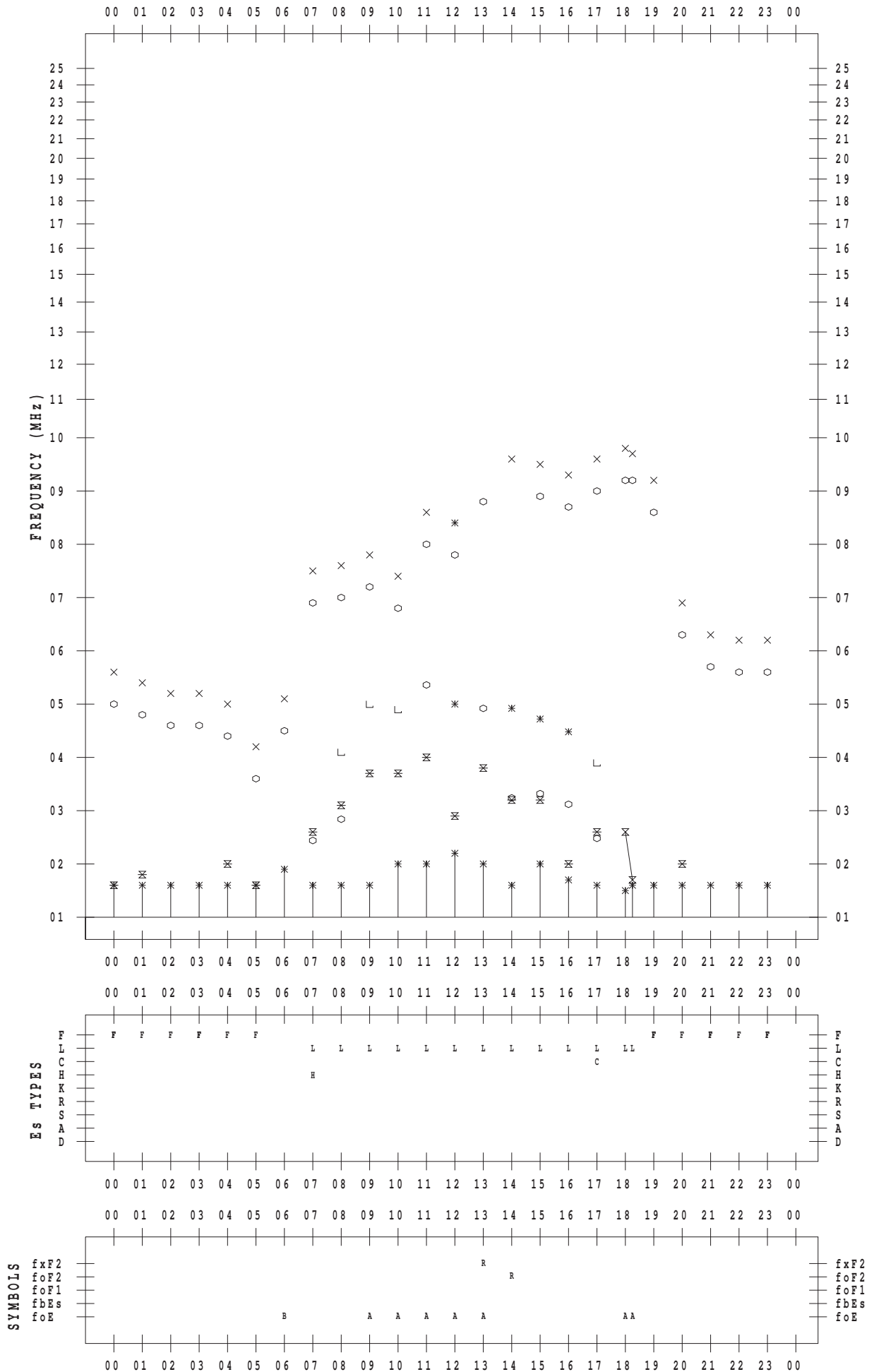
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 14

135 ° E MEAN TIME



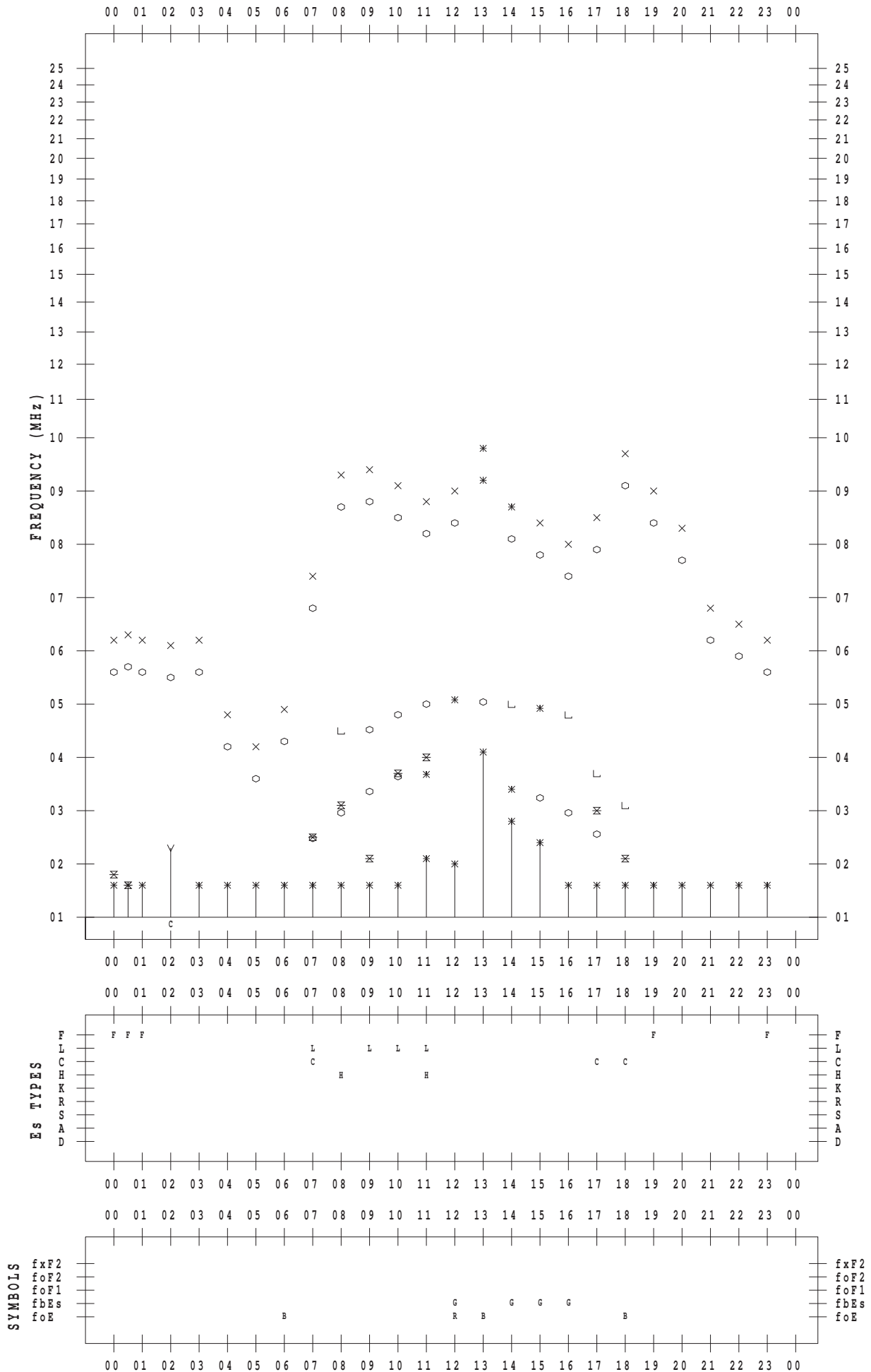
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 15

135 ° E MEAN TIME



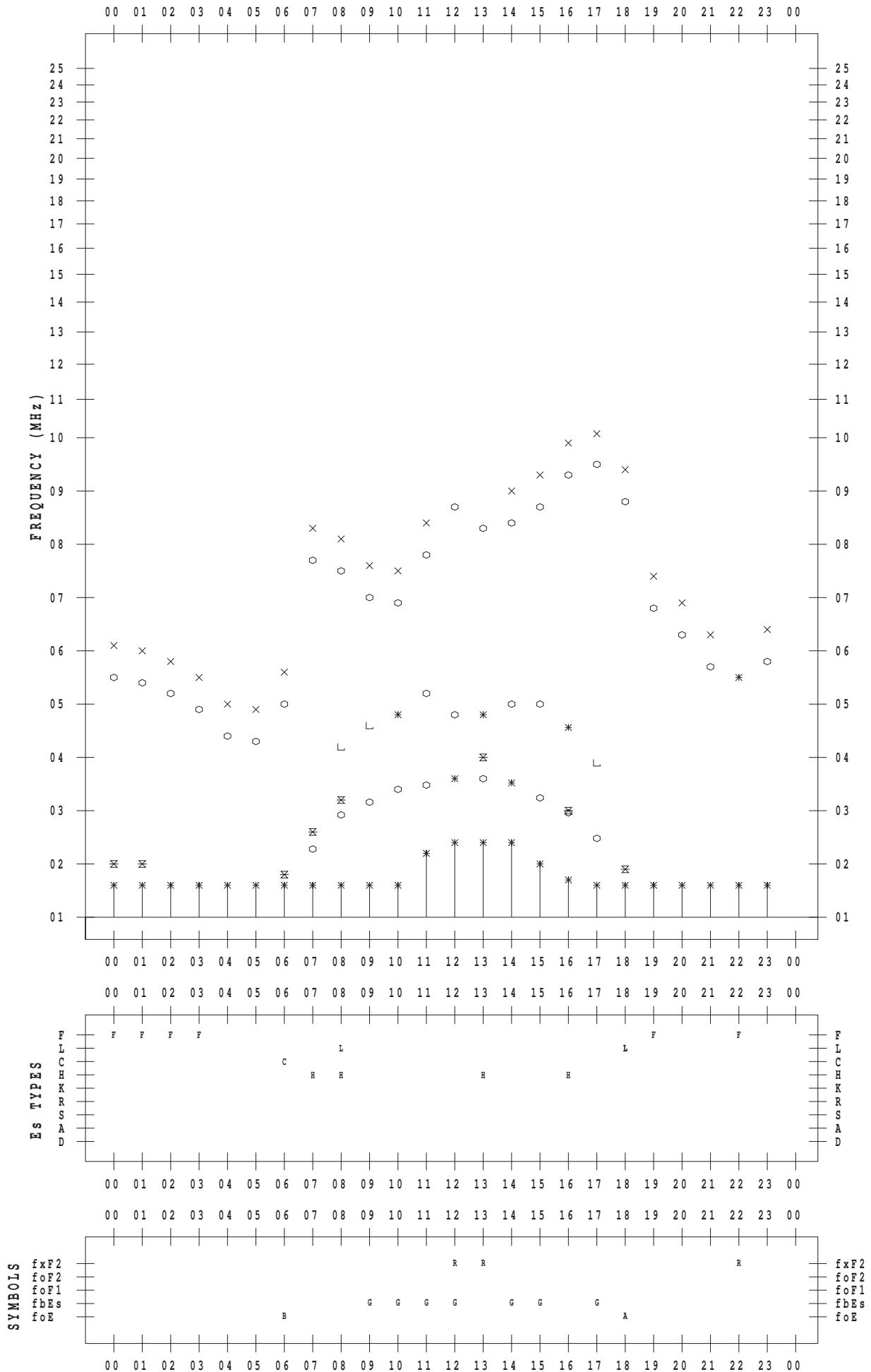
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/16

135 ° E MEAN TIME





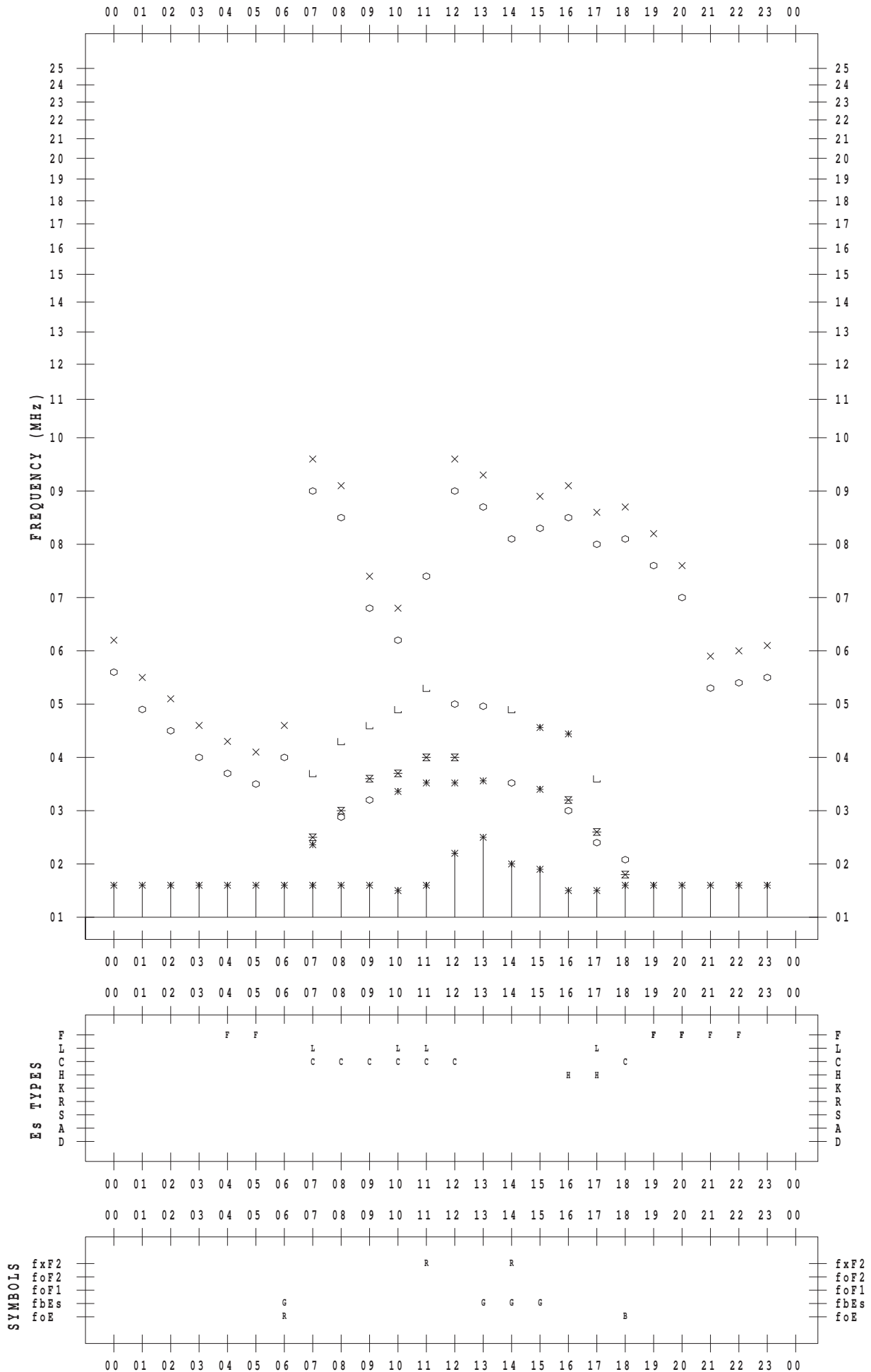
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/17

135 ° E MEAN TIME



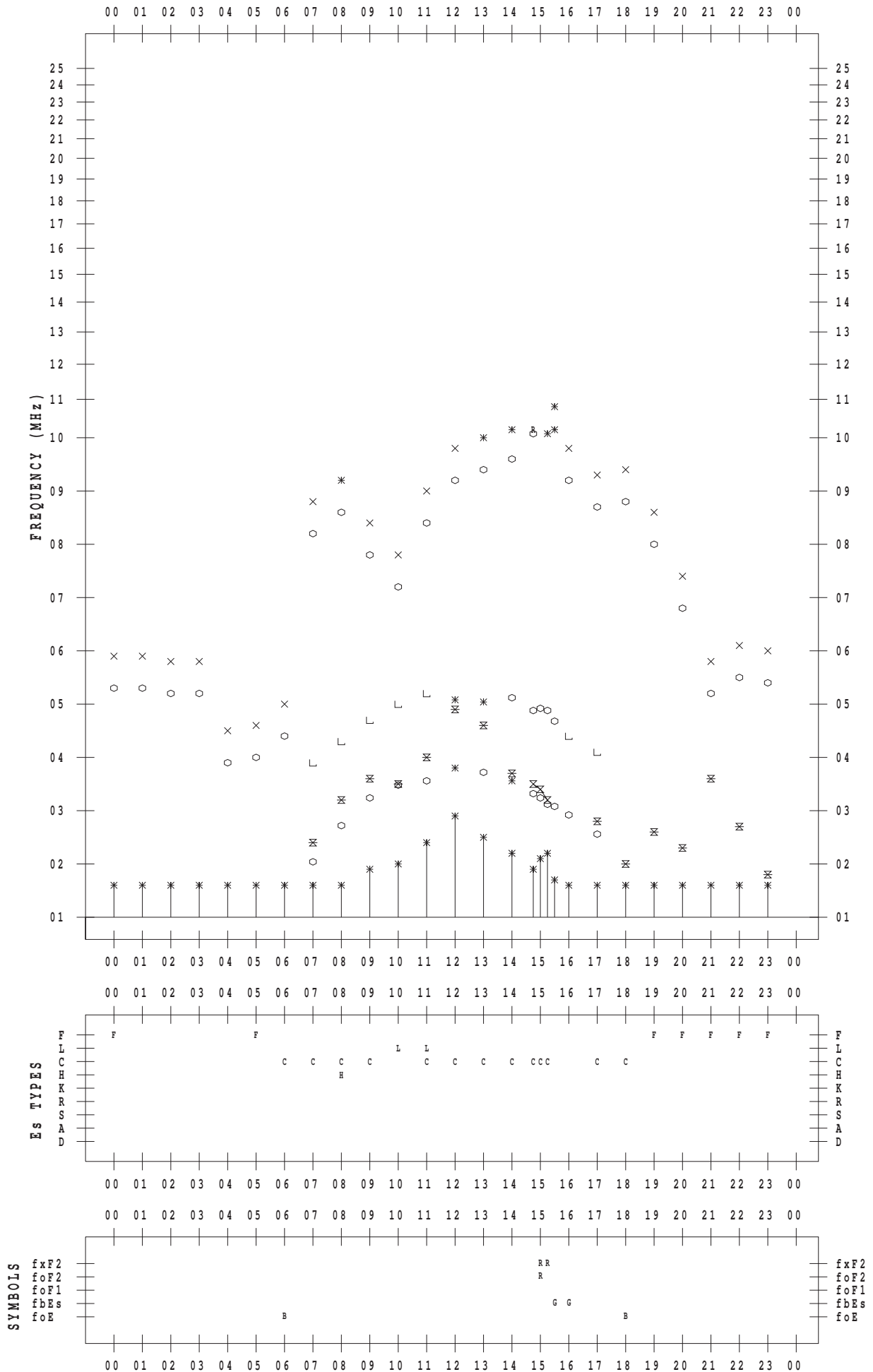
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 18

135 ° E MEAN TIME



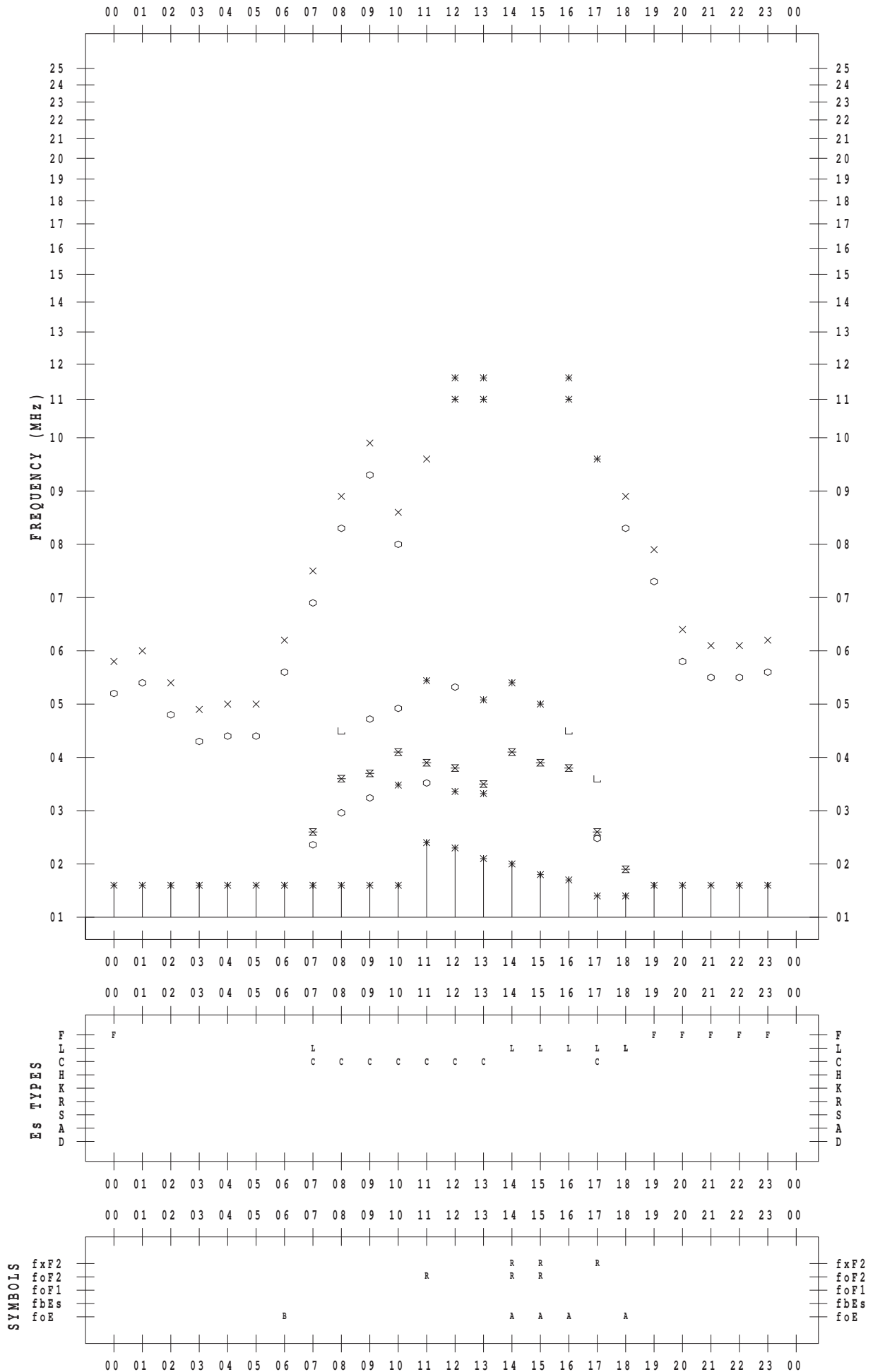
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/19

135 ° E MEAN TIME



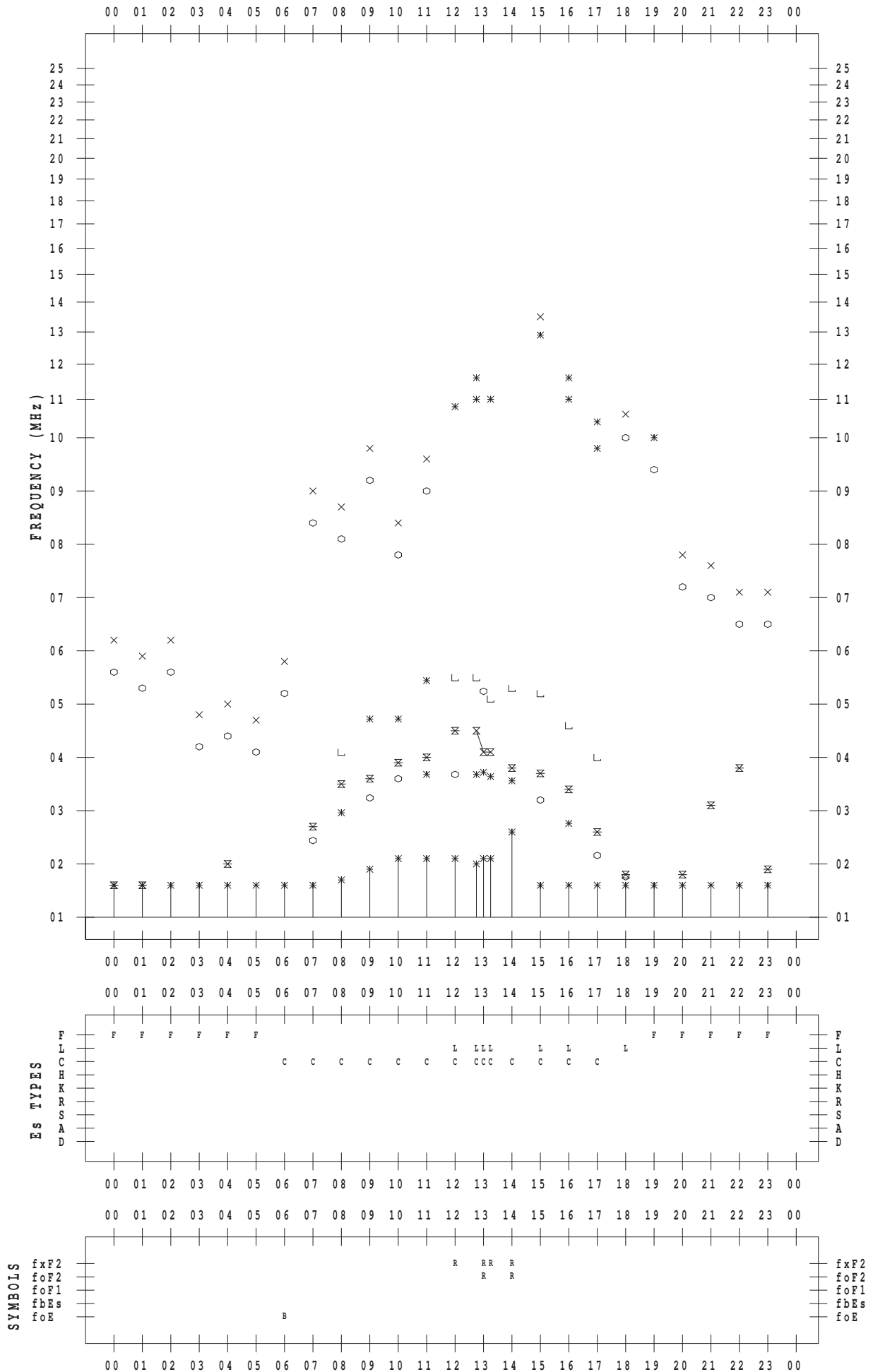
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 20

135 ° E MEAN TIME



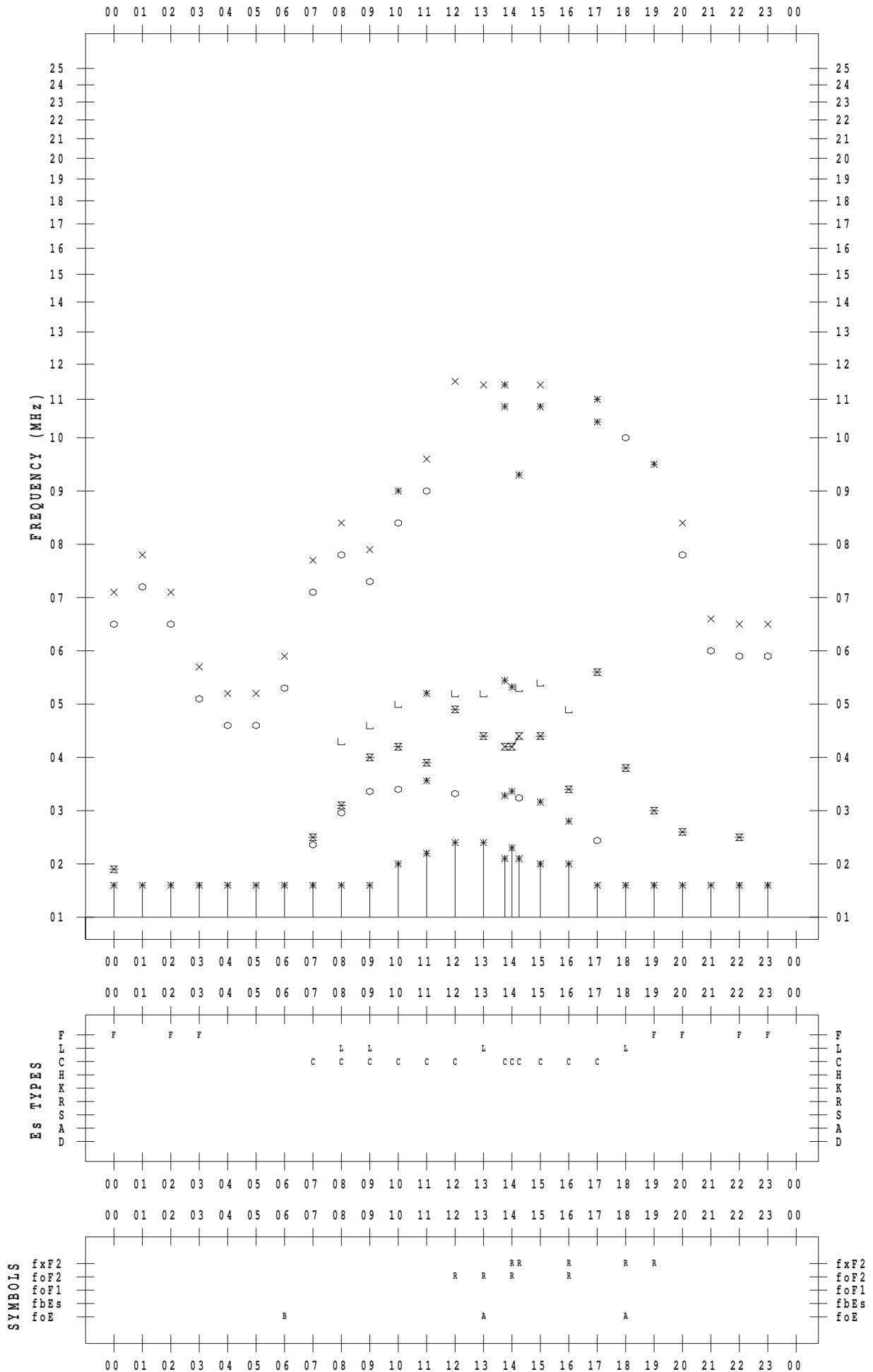
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 21

135 ° E MEAN TIME



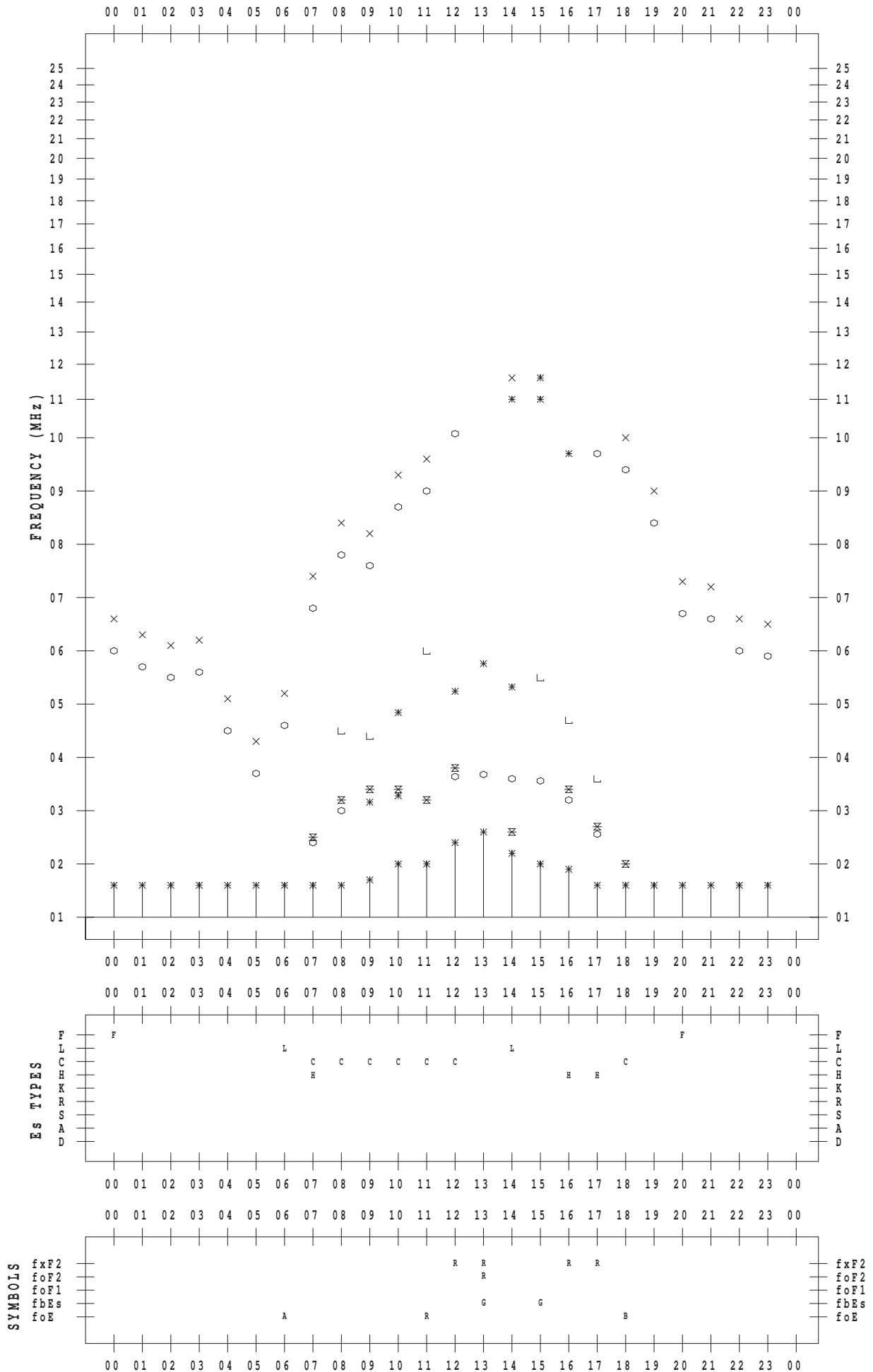
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 22

135 ° E MEAN TIME



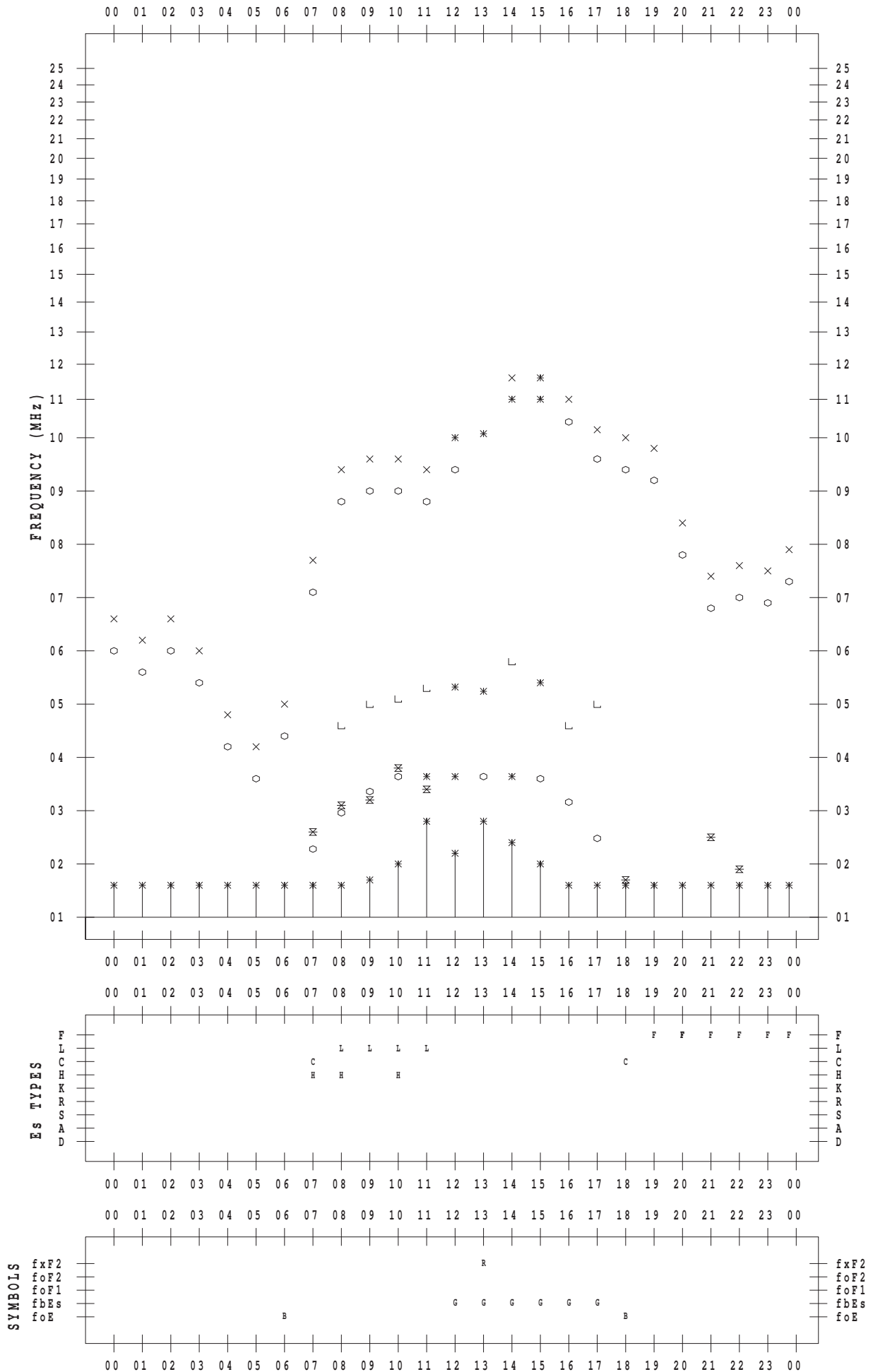
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 23

135 ° E MEAN TIME



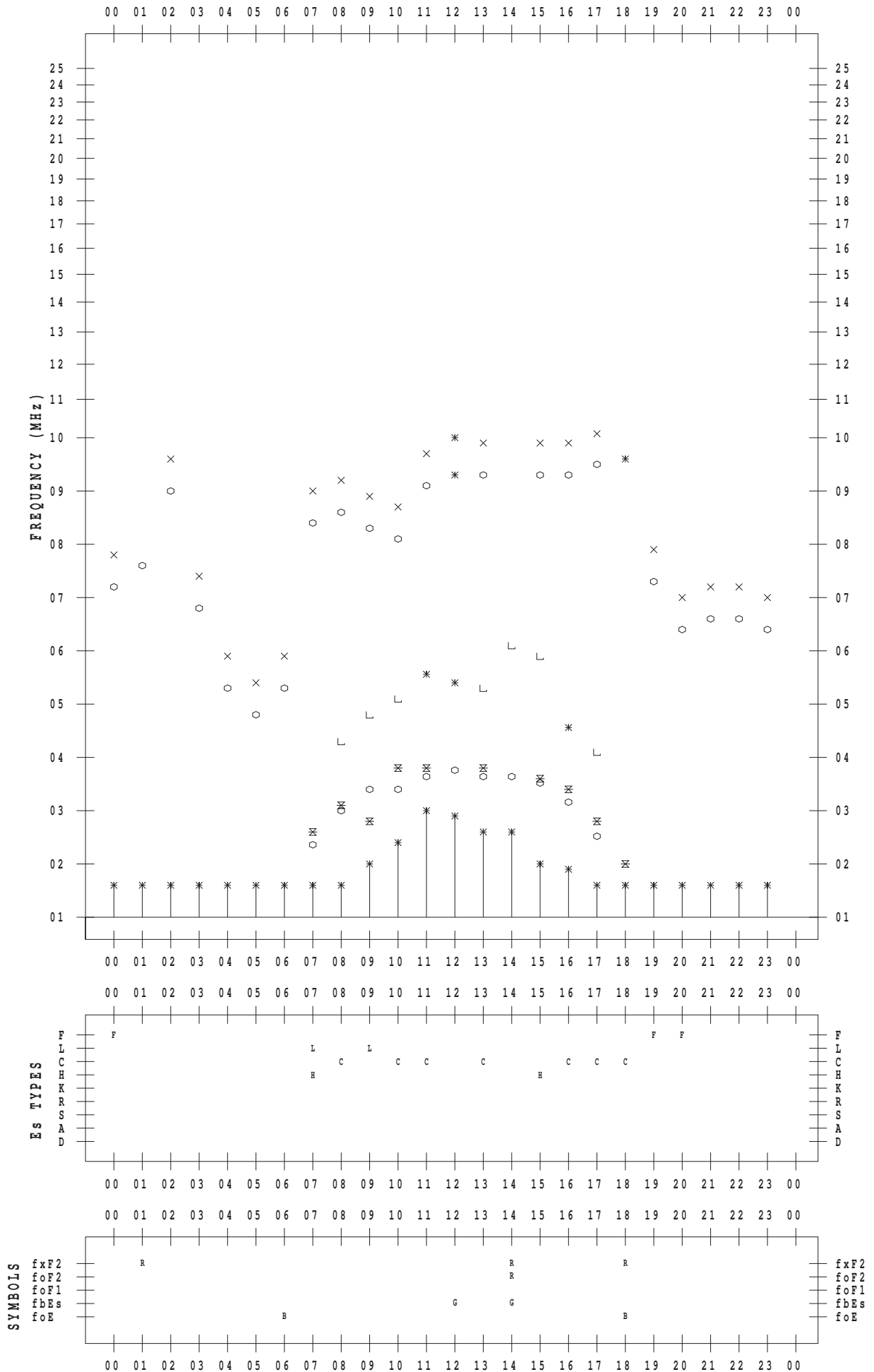
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 24

135 ° E MEAN TIME





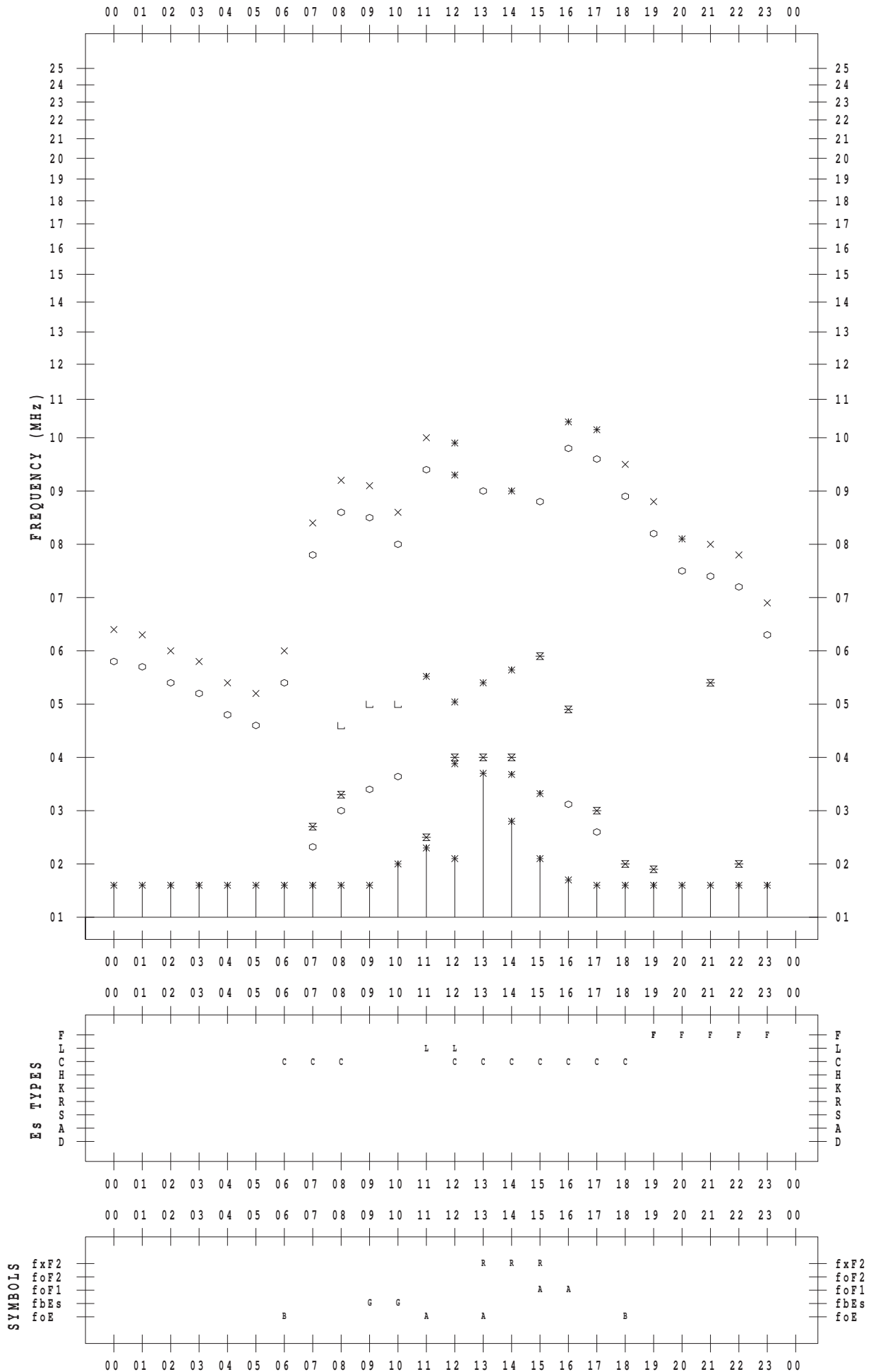
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 25

135 ° E MEAN TIME



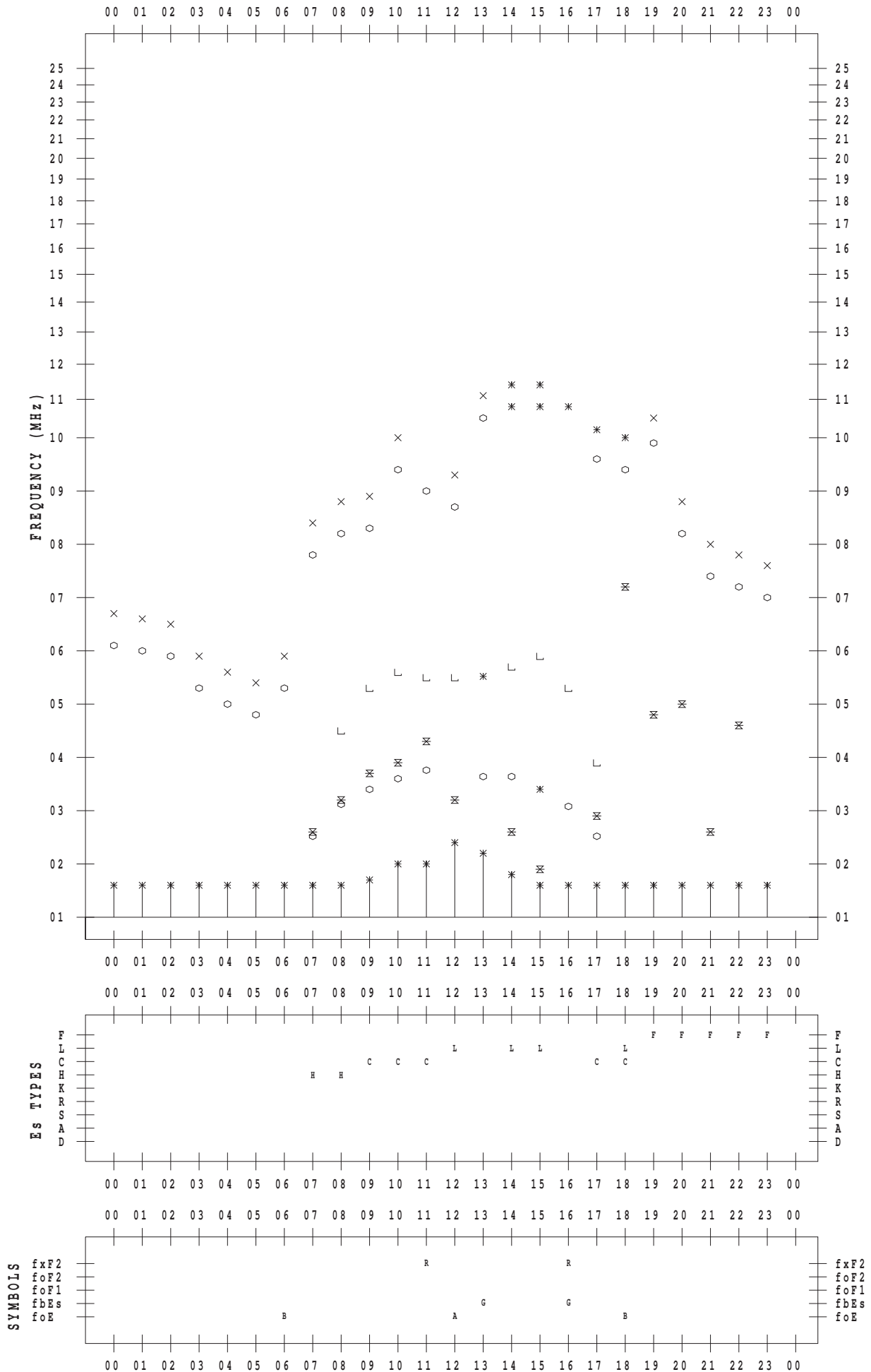
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 26

135 ° E MEAN TIME



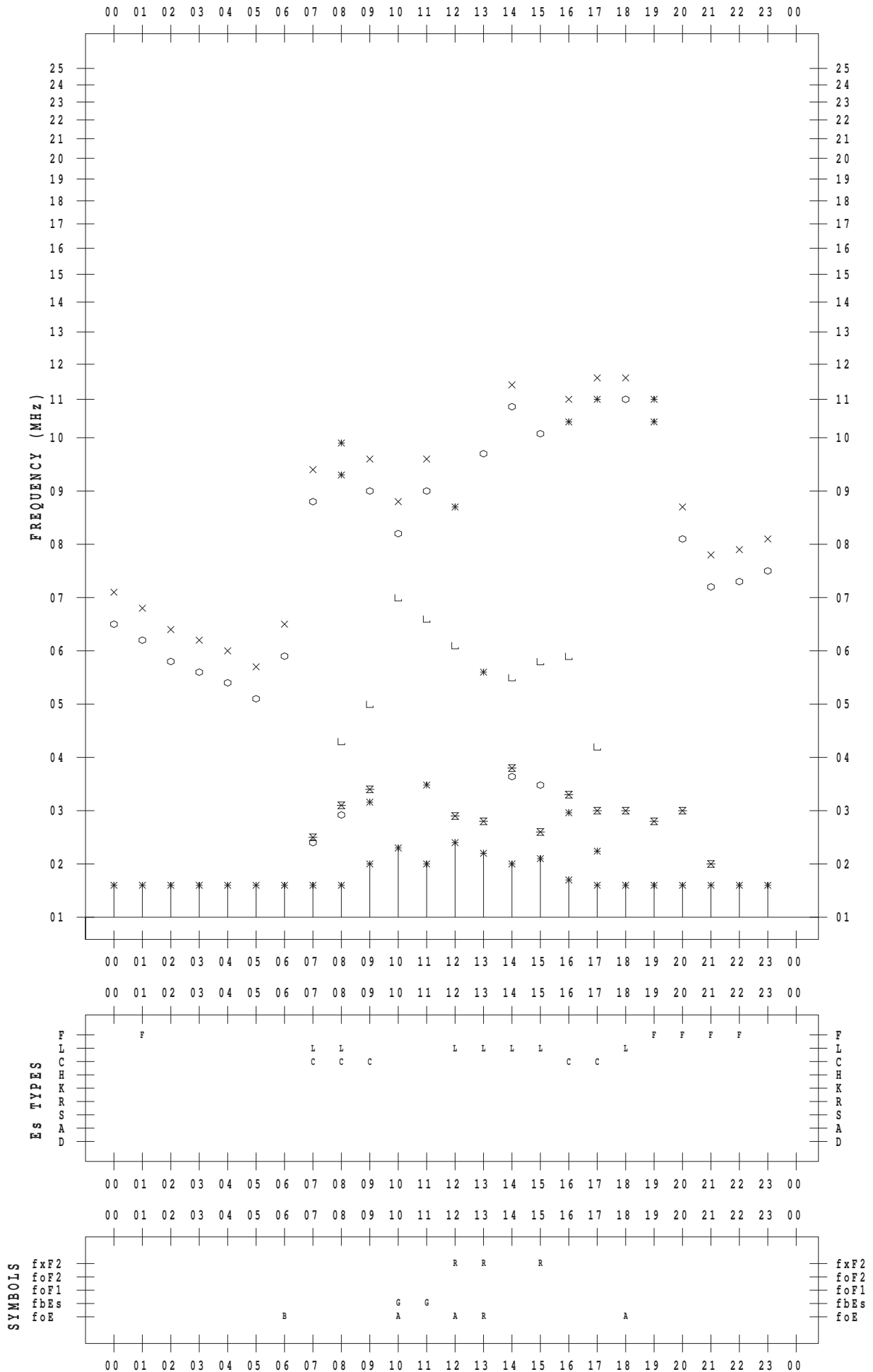
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 27

135 ° E MEAN TIME



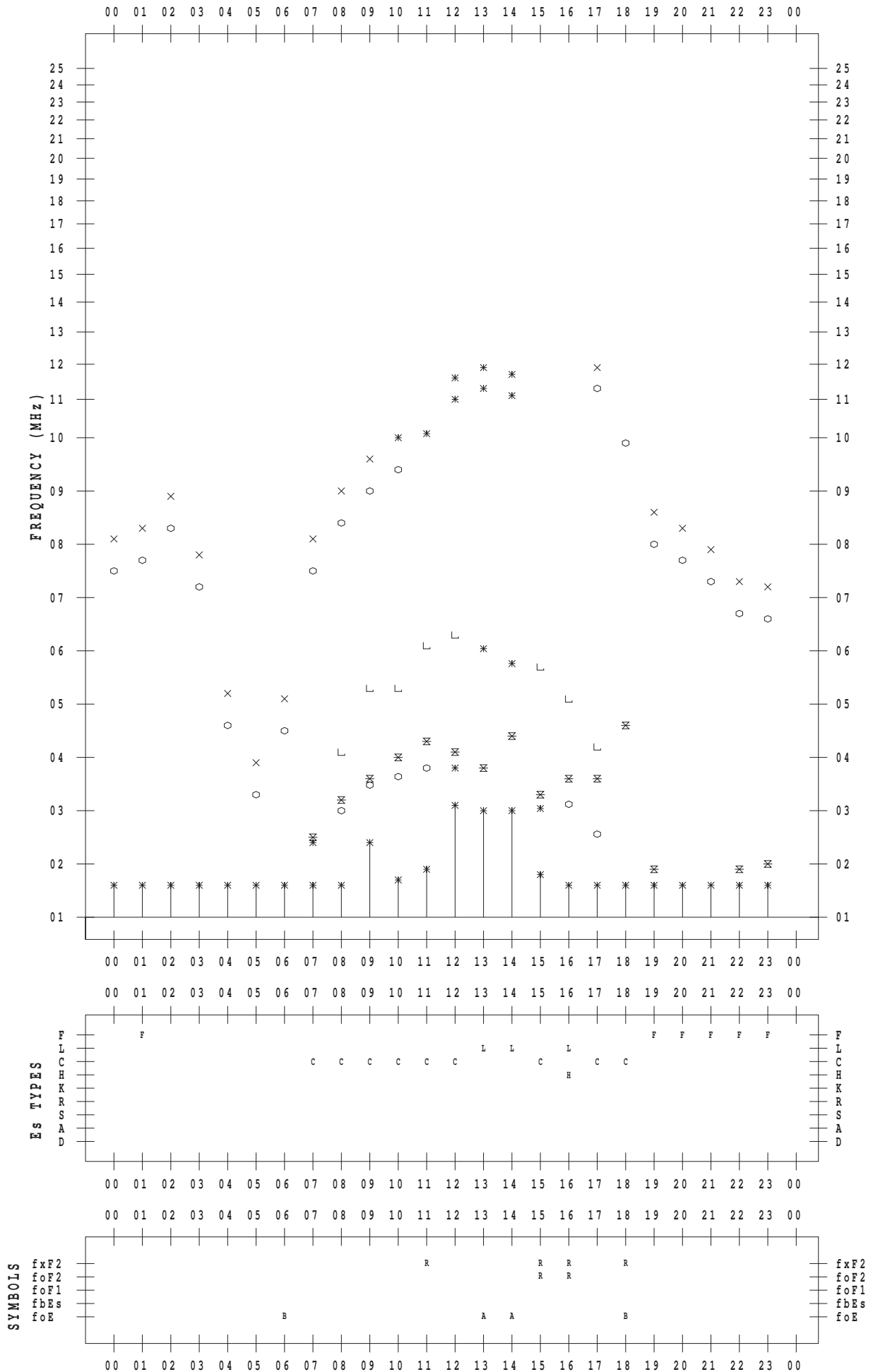
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 9/28

135 ° E MEAN TIME



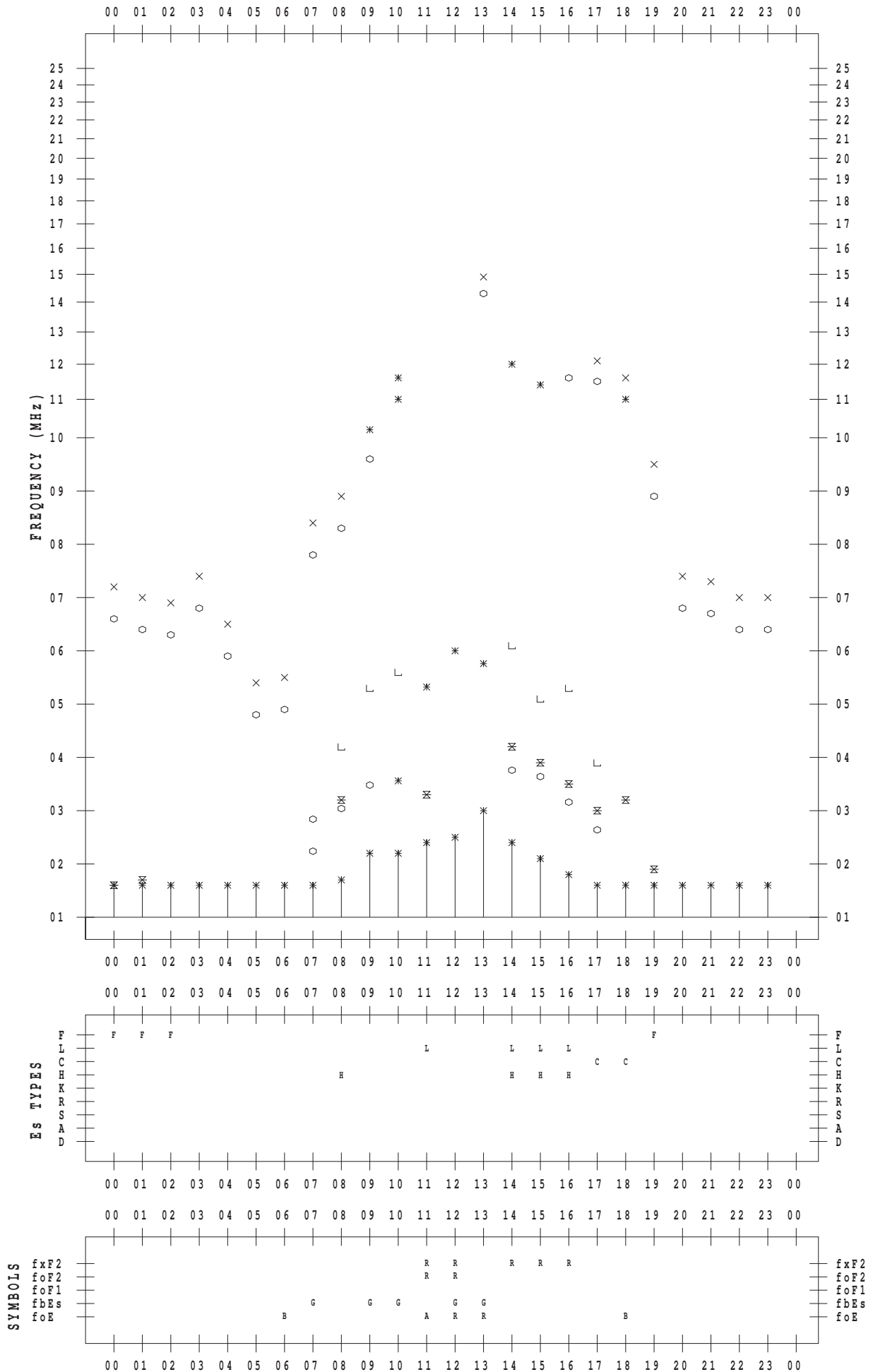
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 29

135 ° E MEAN TIME



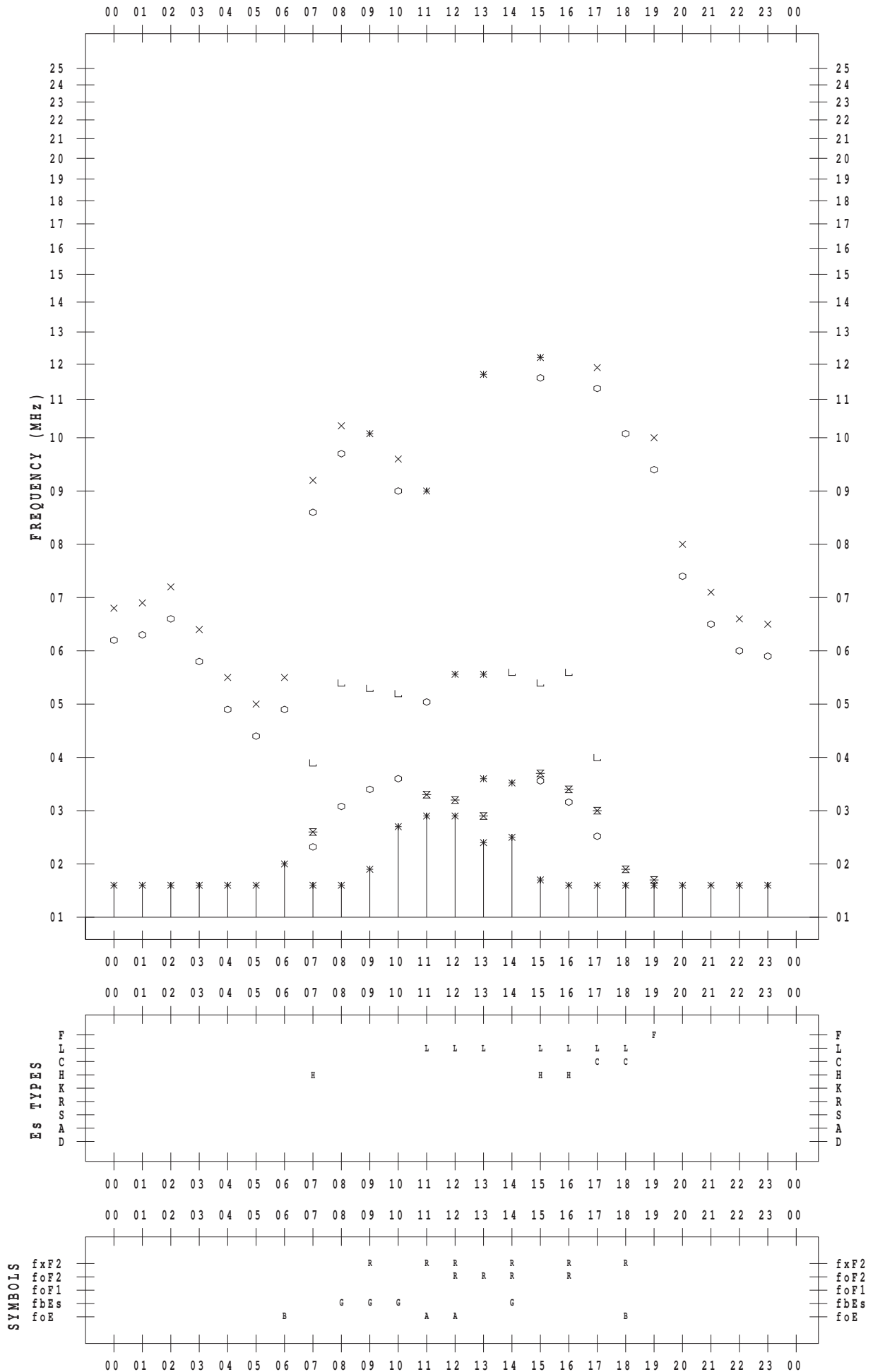
# f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012 / 9 / 30

135 ° E MEAN TIME



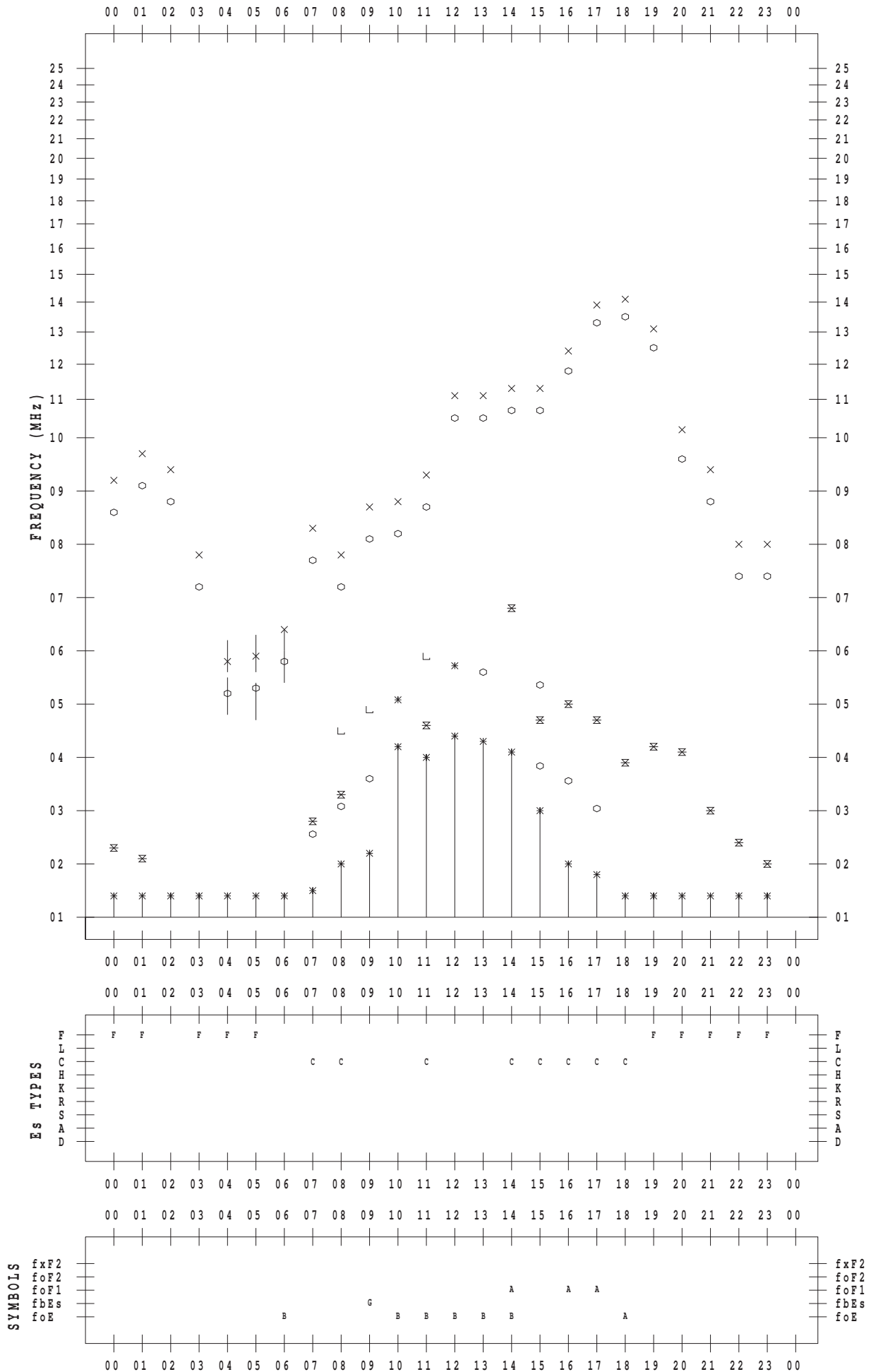
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 1

135 ° E MEAN TIME



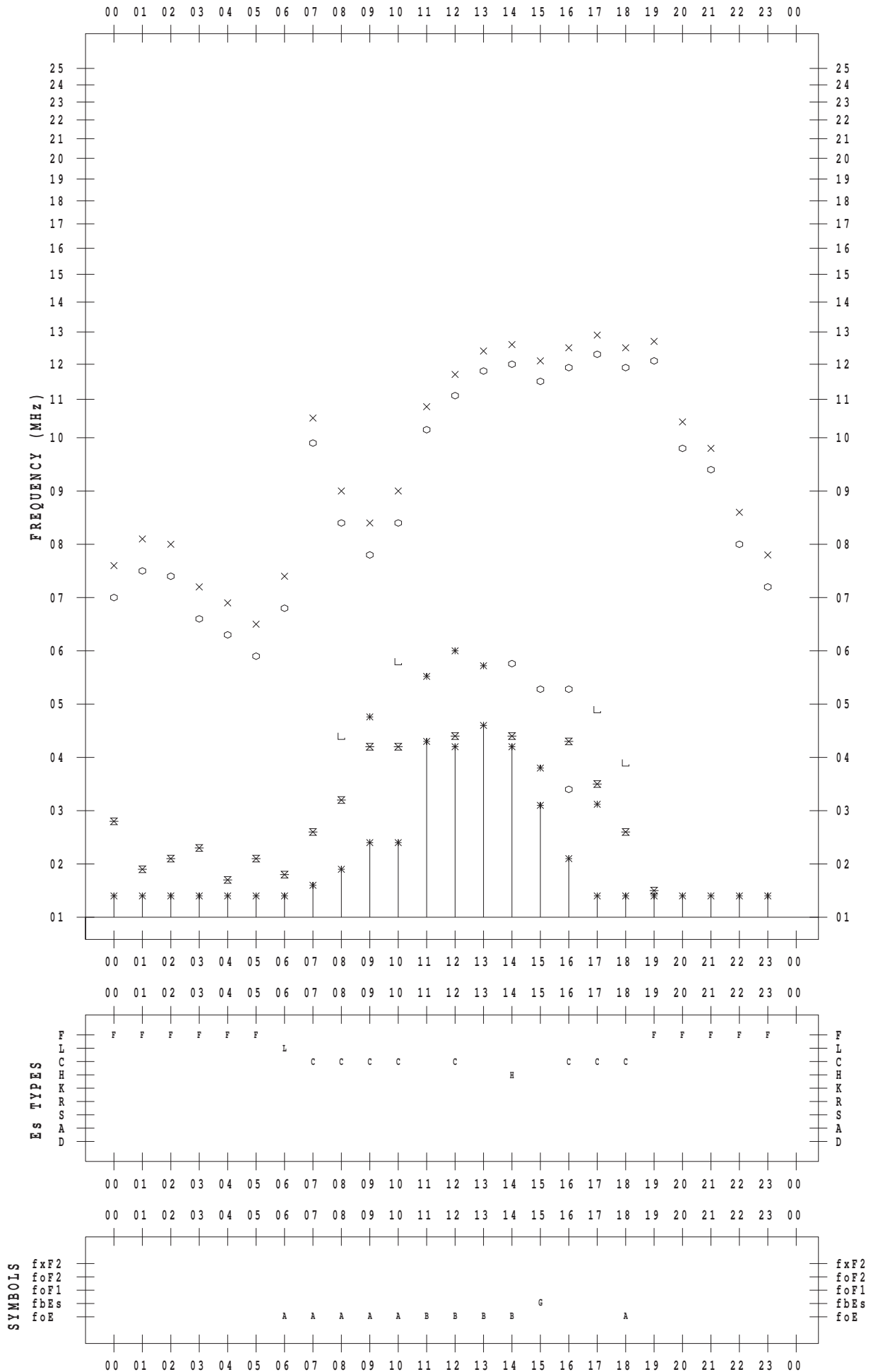
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 2

135 ° E MEAN TIME





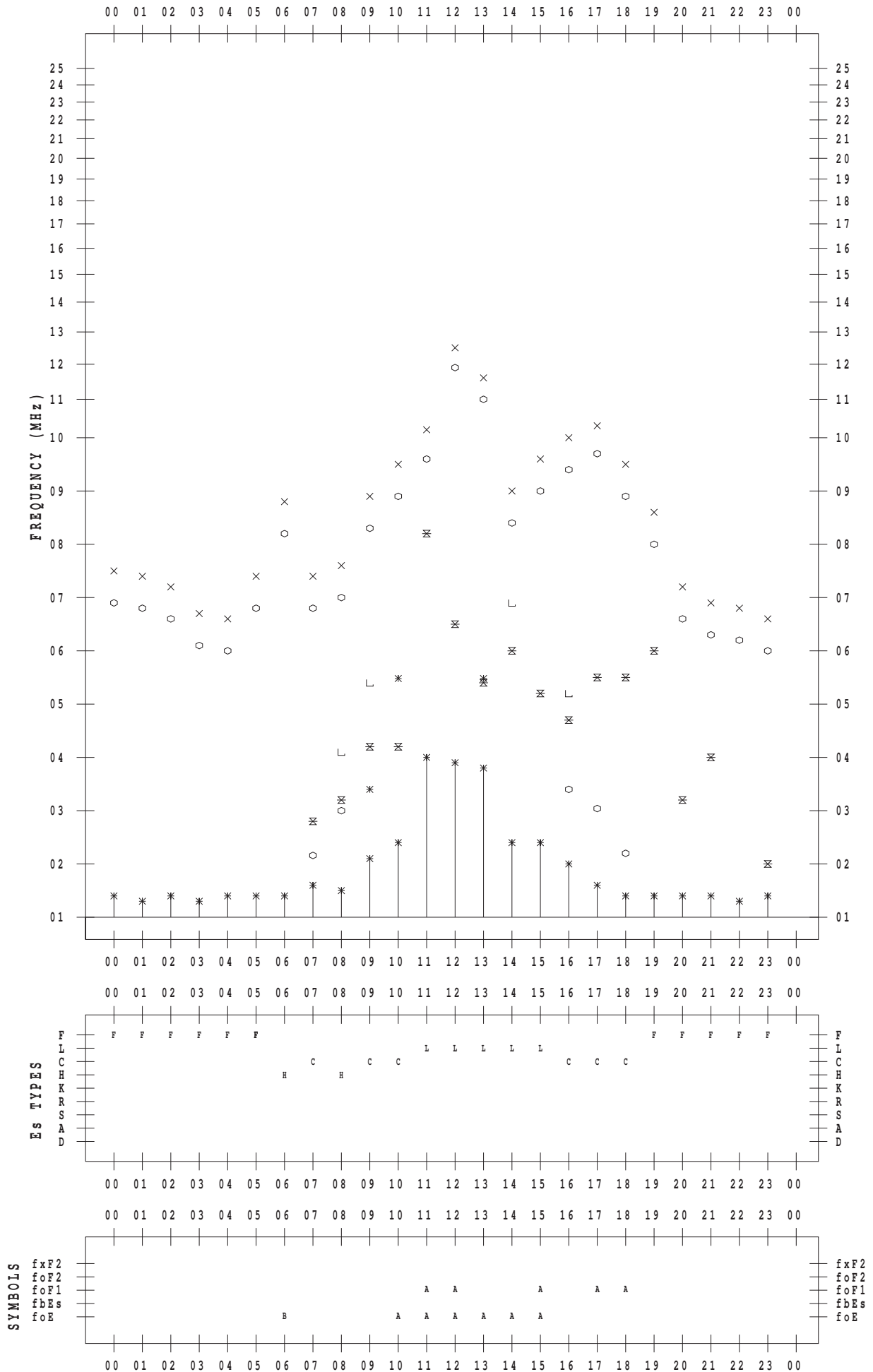
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 3

135 ° E MEAN TIME



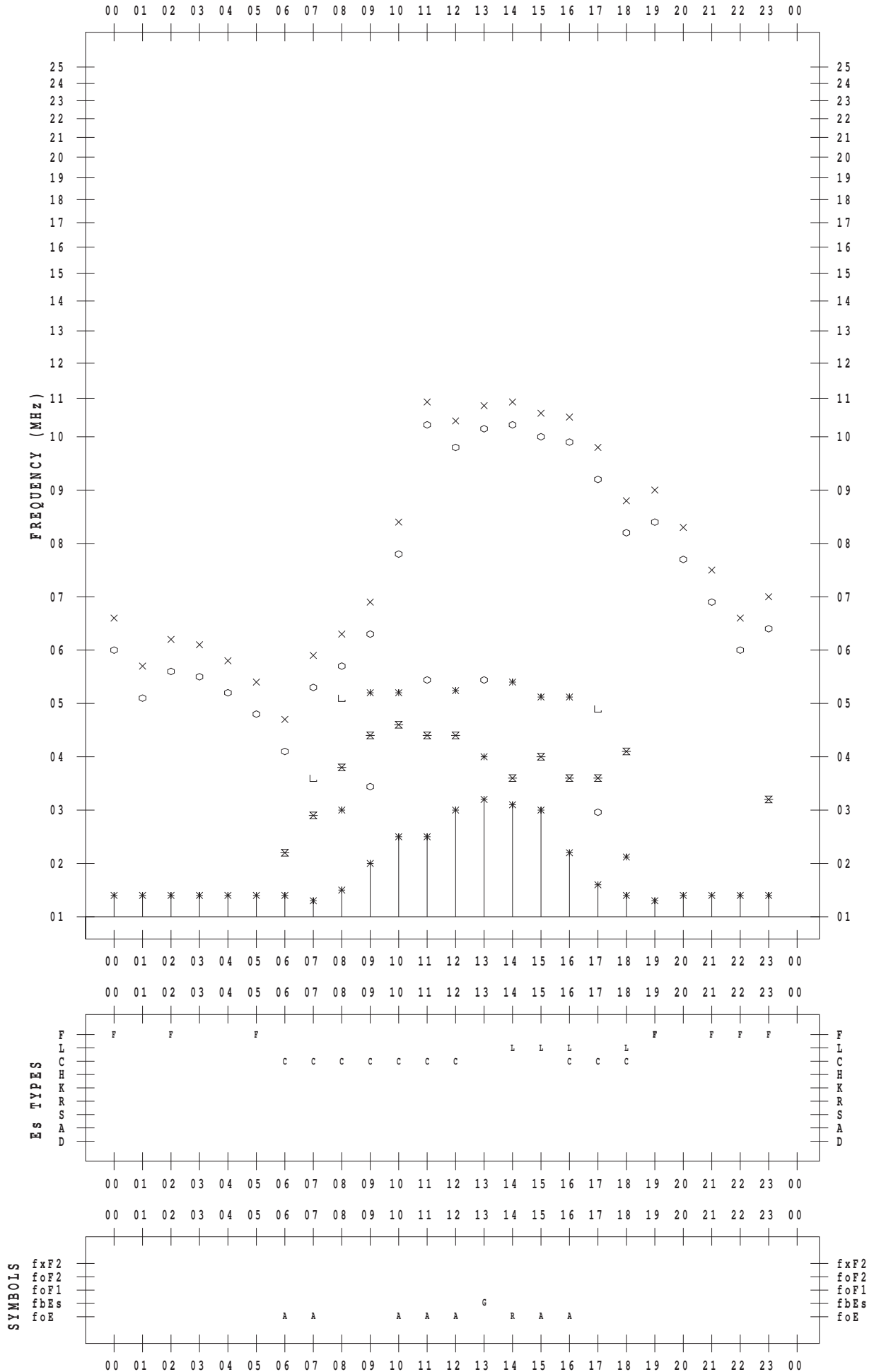
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 4

135 ° E MEAN TIME



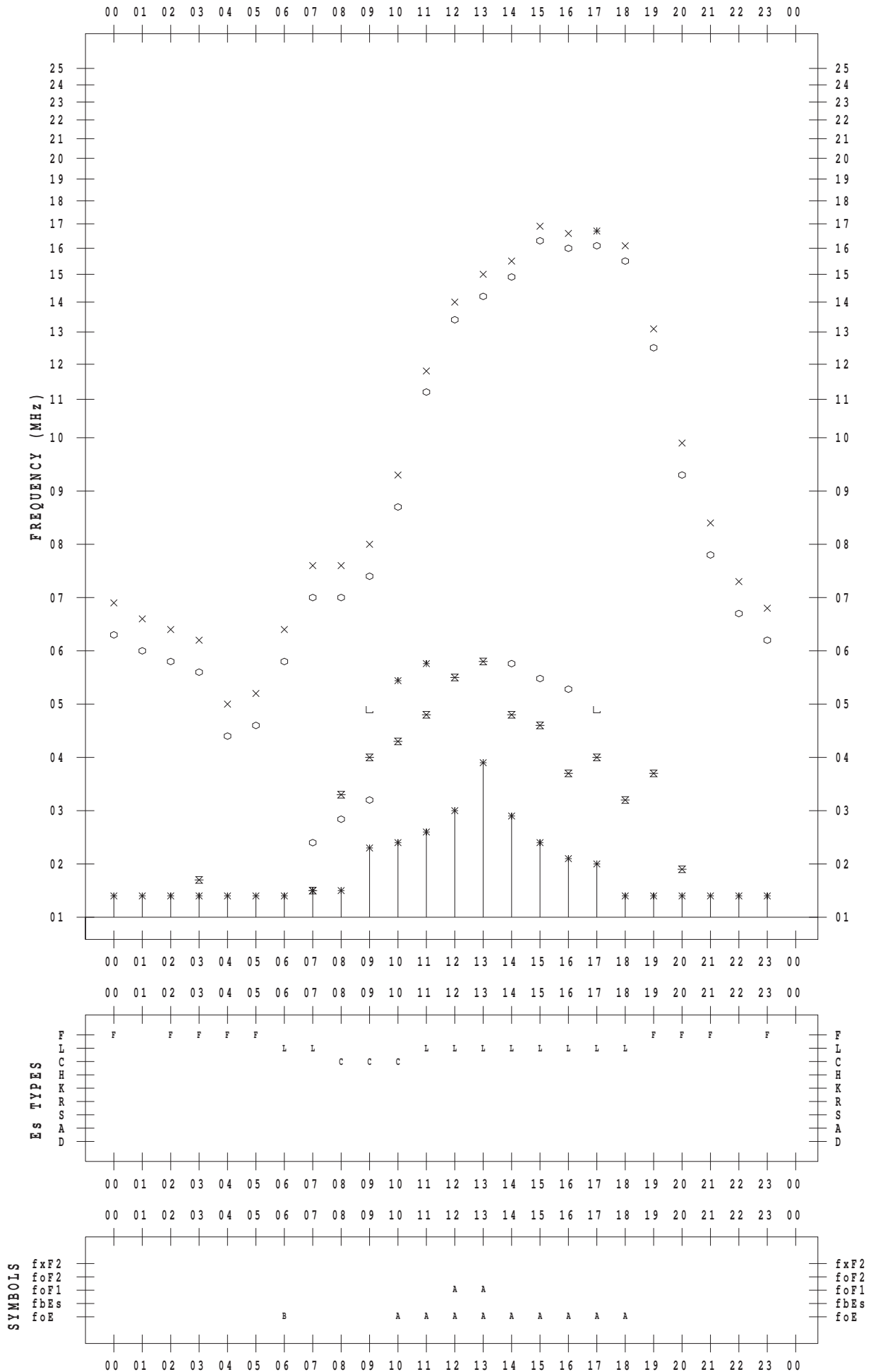
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 5

135 ° E MEAN TIME



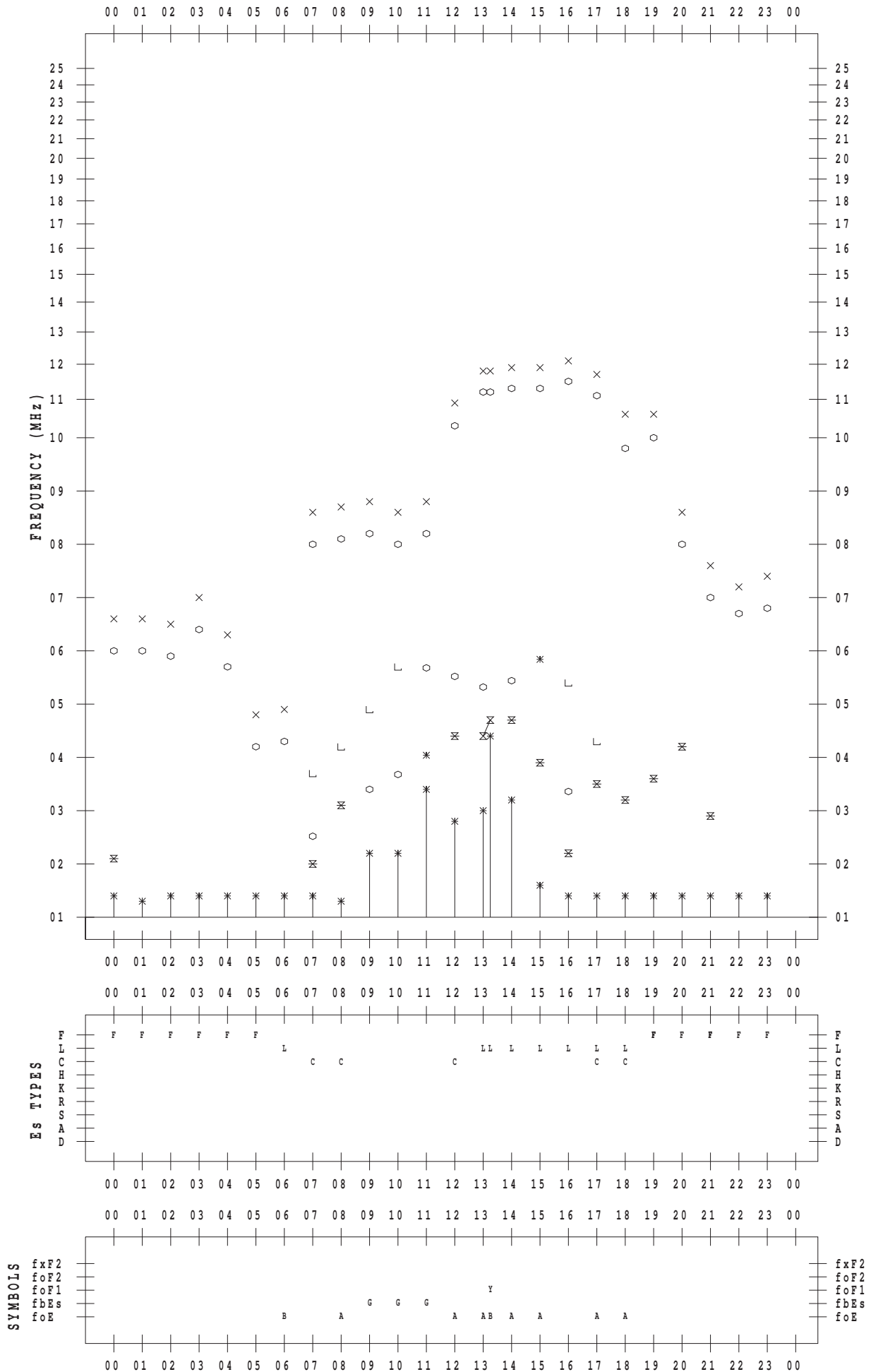
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 6

135 ° E MEAN TIME



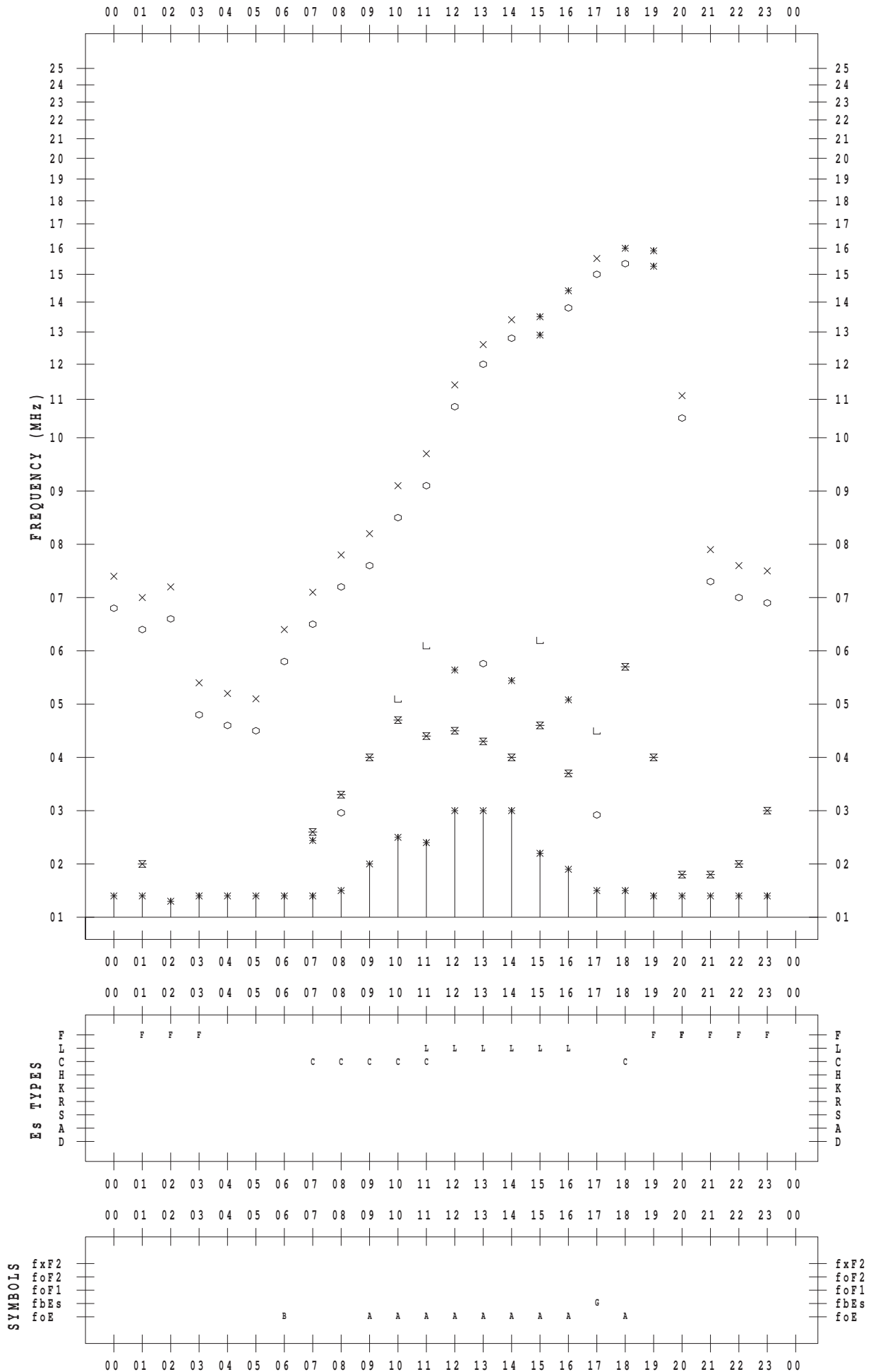
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 9/ 7

135 ° E MEAN TIME



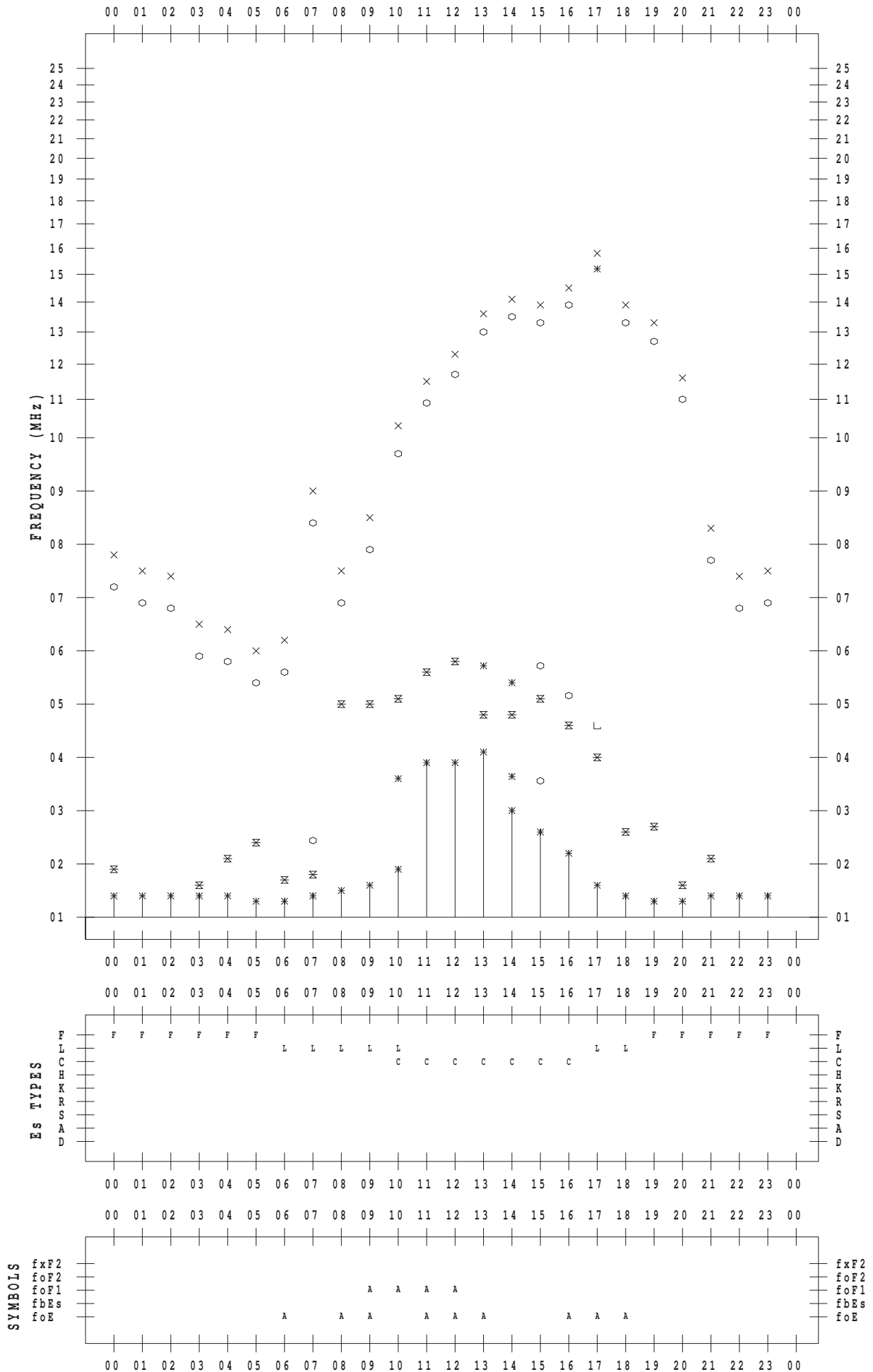
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 8

135 ° E MEAN TIME



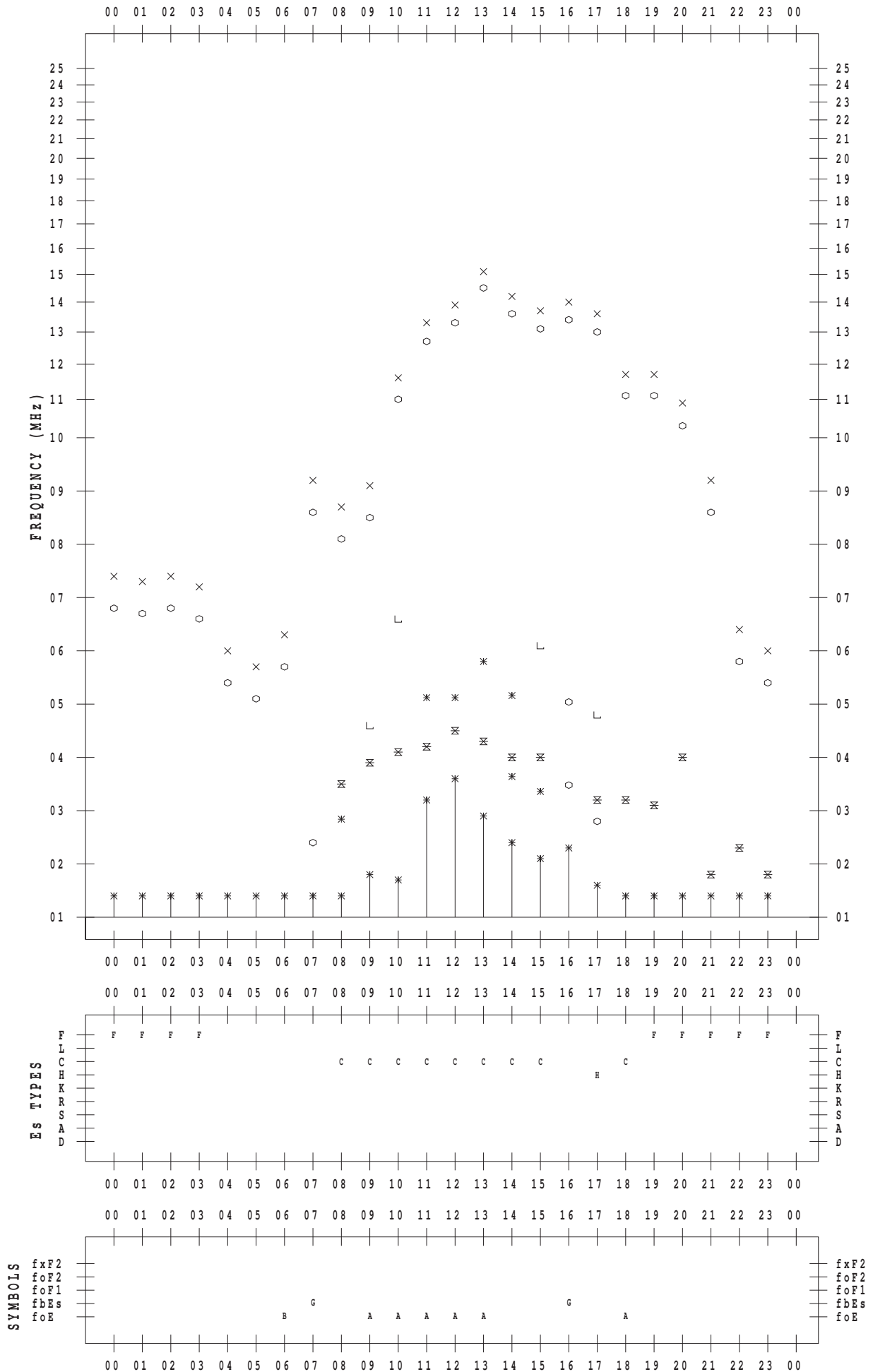
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 9

135 ° E MEAN TIME



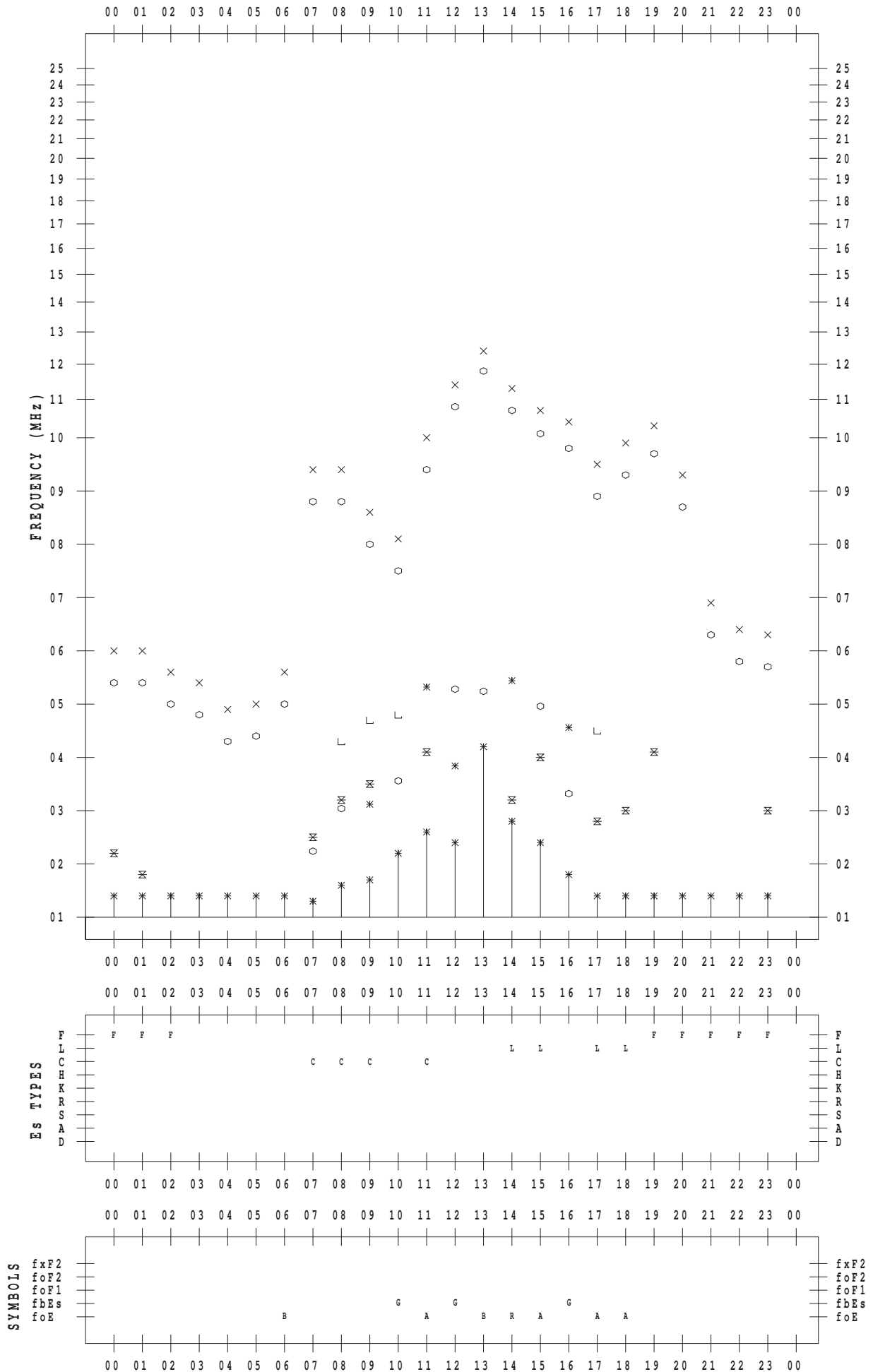
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 10

135 ° E MEAN TIME





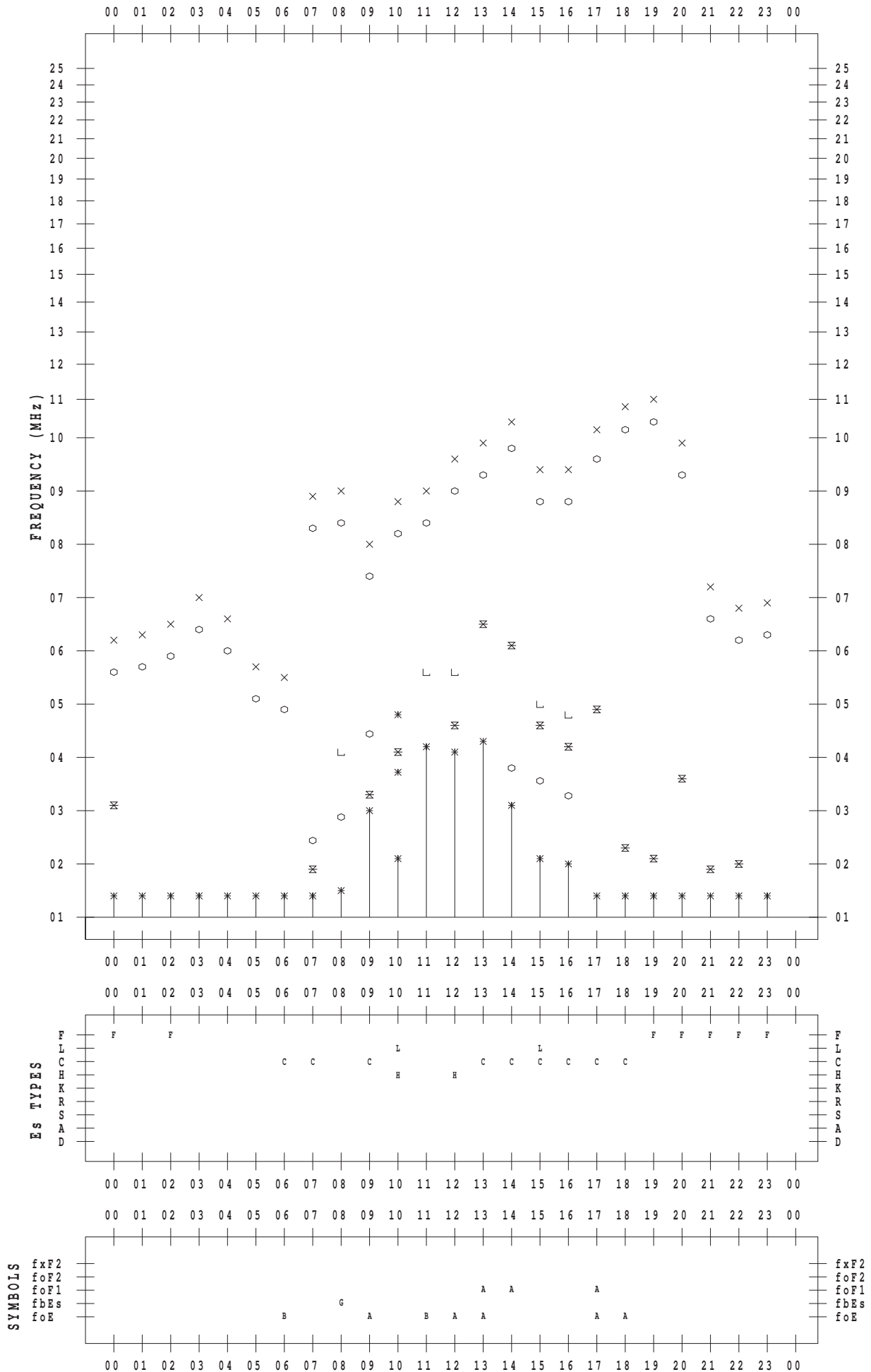
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 11

135 ° E MEAN TIME



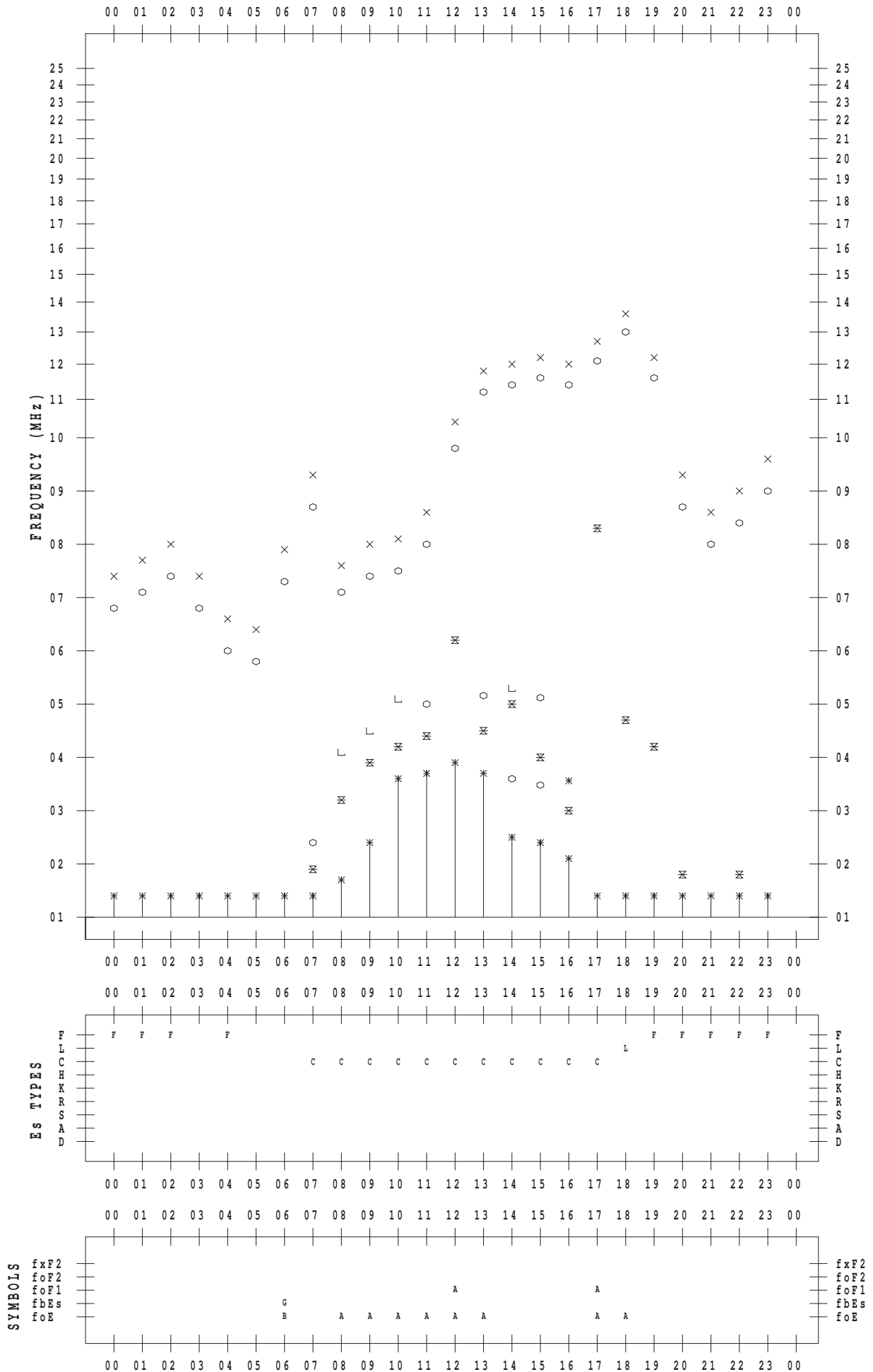
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 9/12

135 ° E MEAN TIME



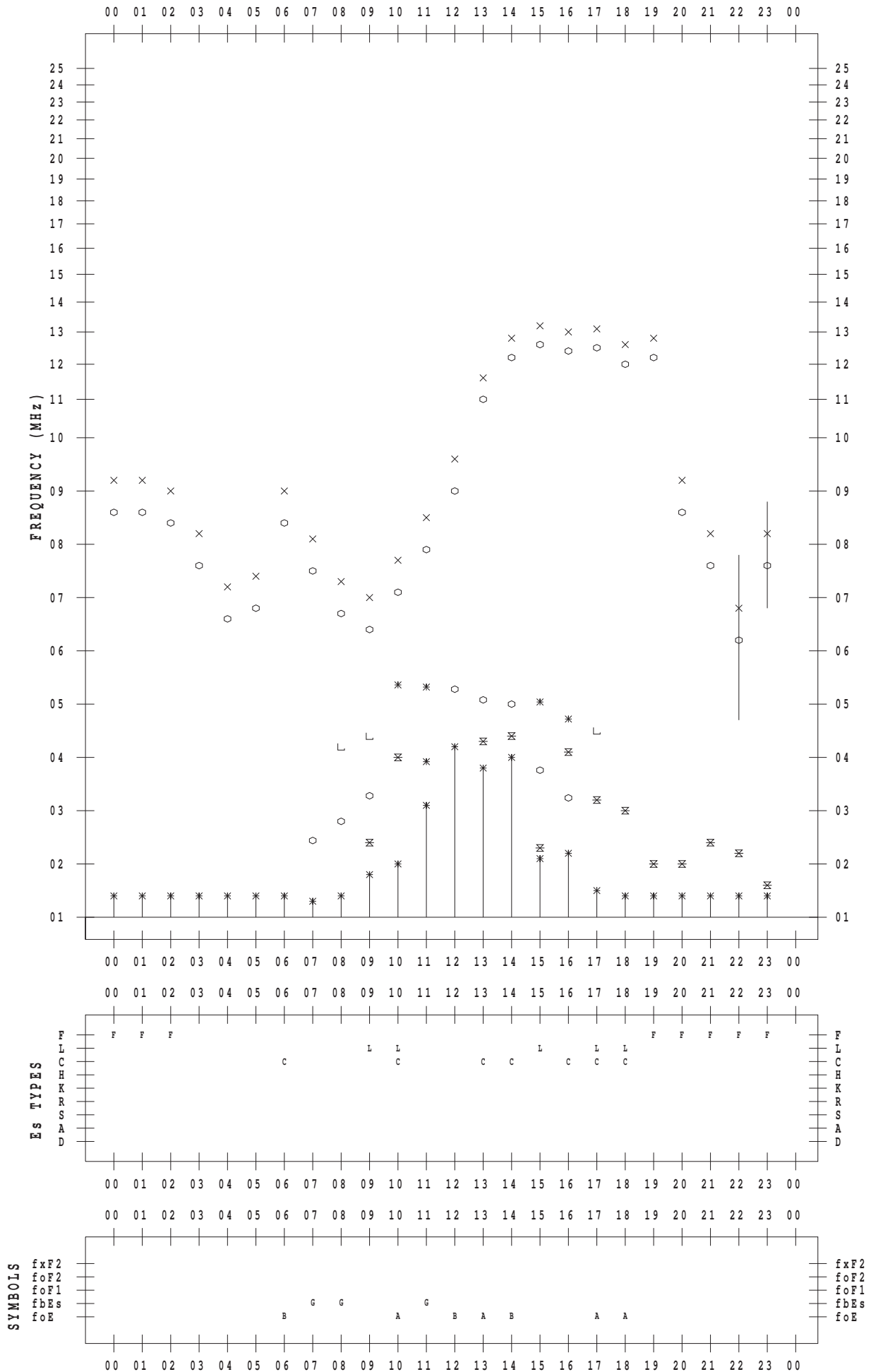
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 9/13

135 ° E MEAN TIME



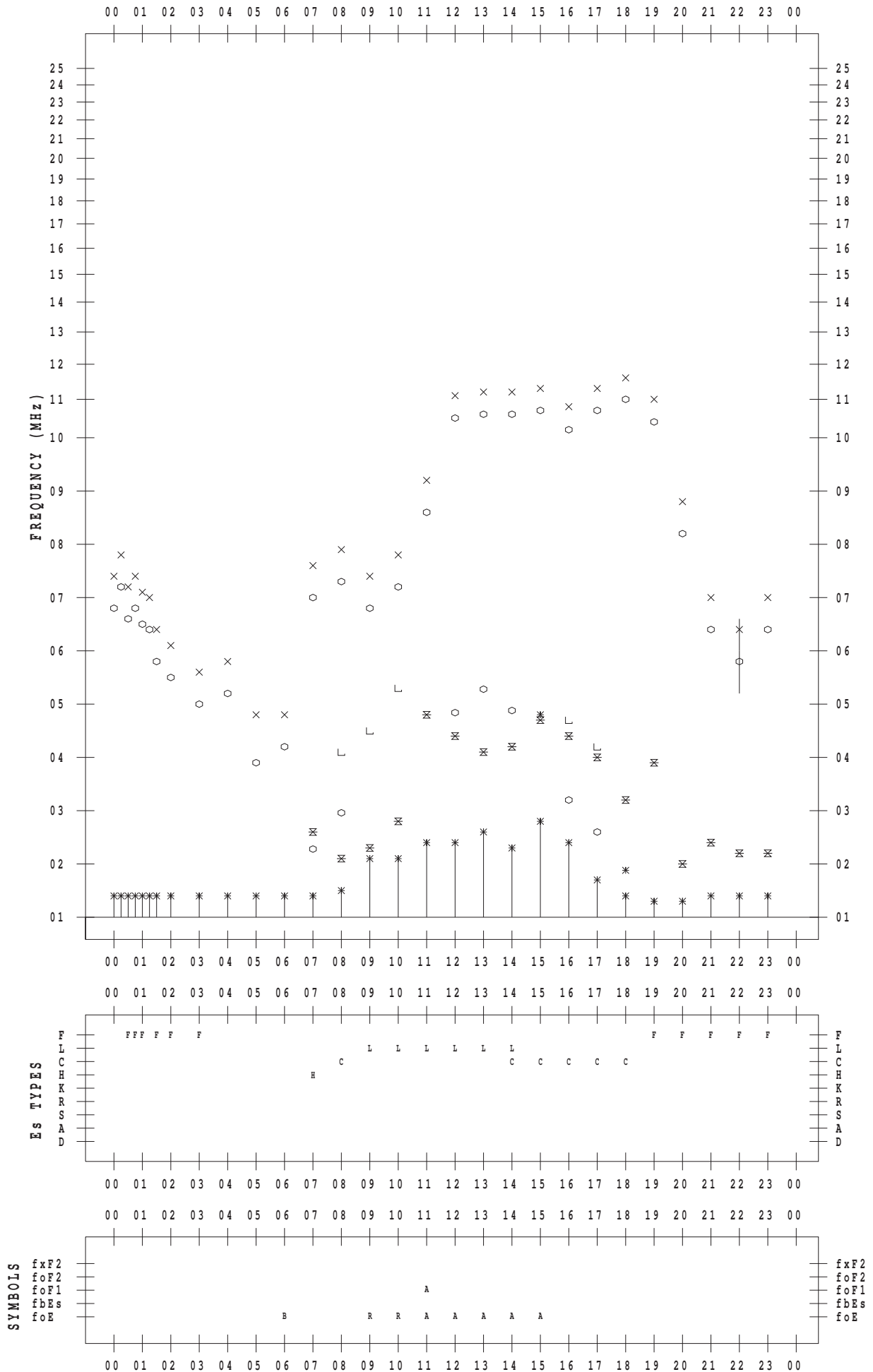
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 14

135 ° E MEAN TIME



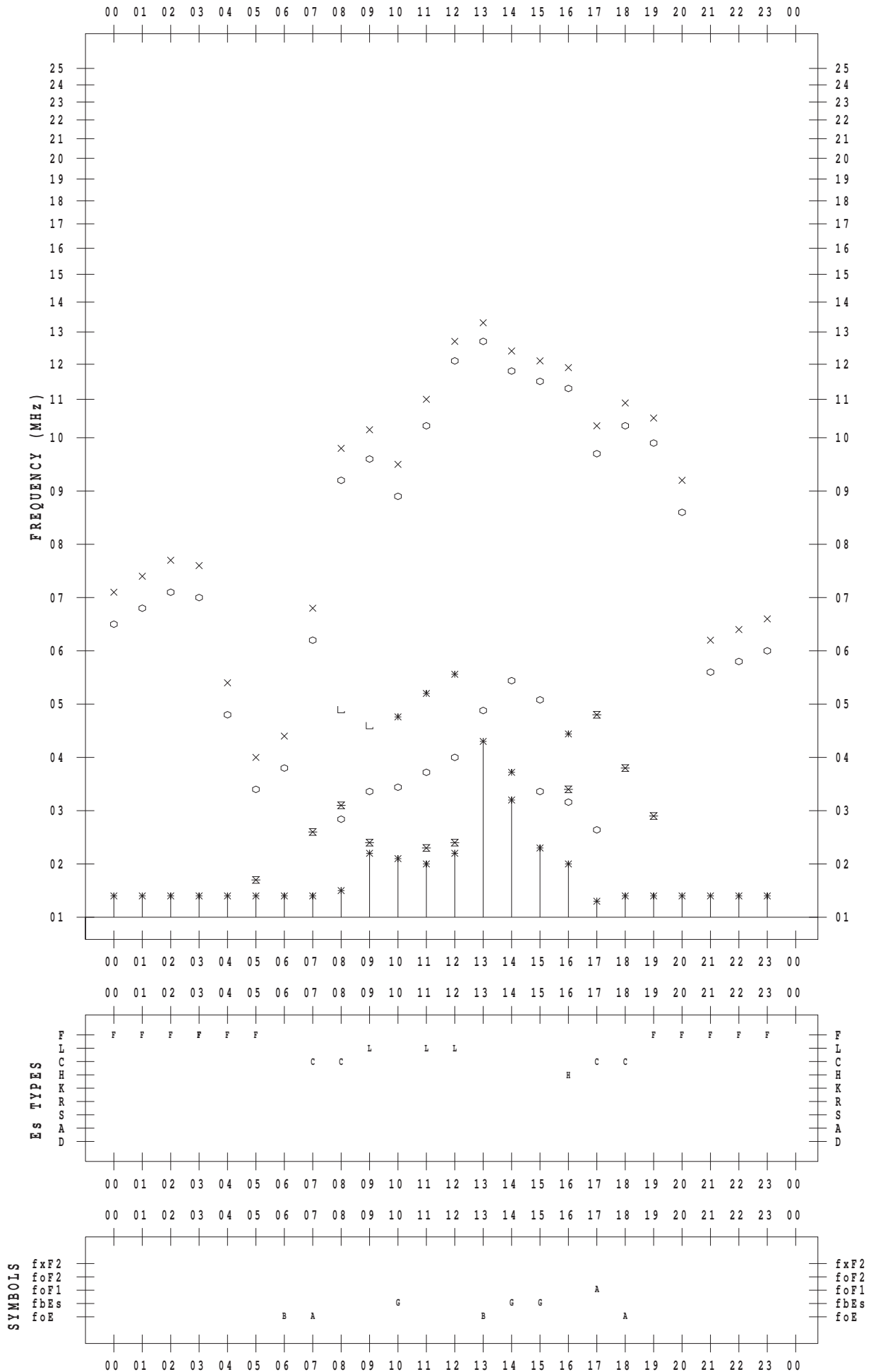
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 15

135 ° E MEAN TIME



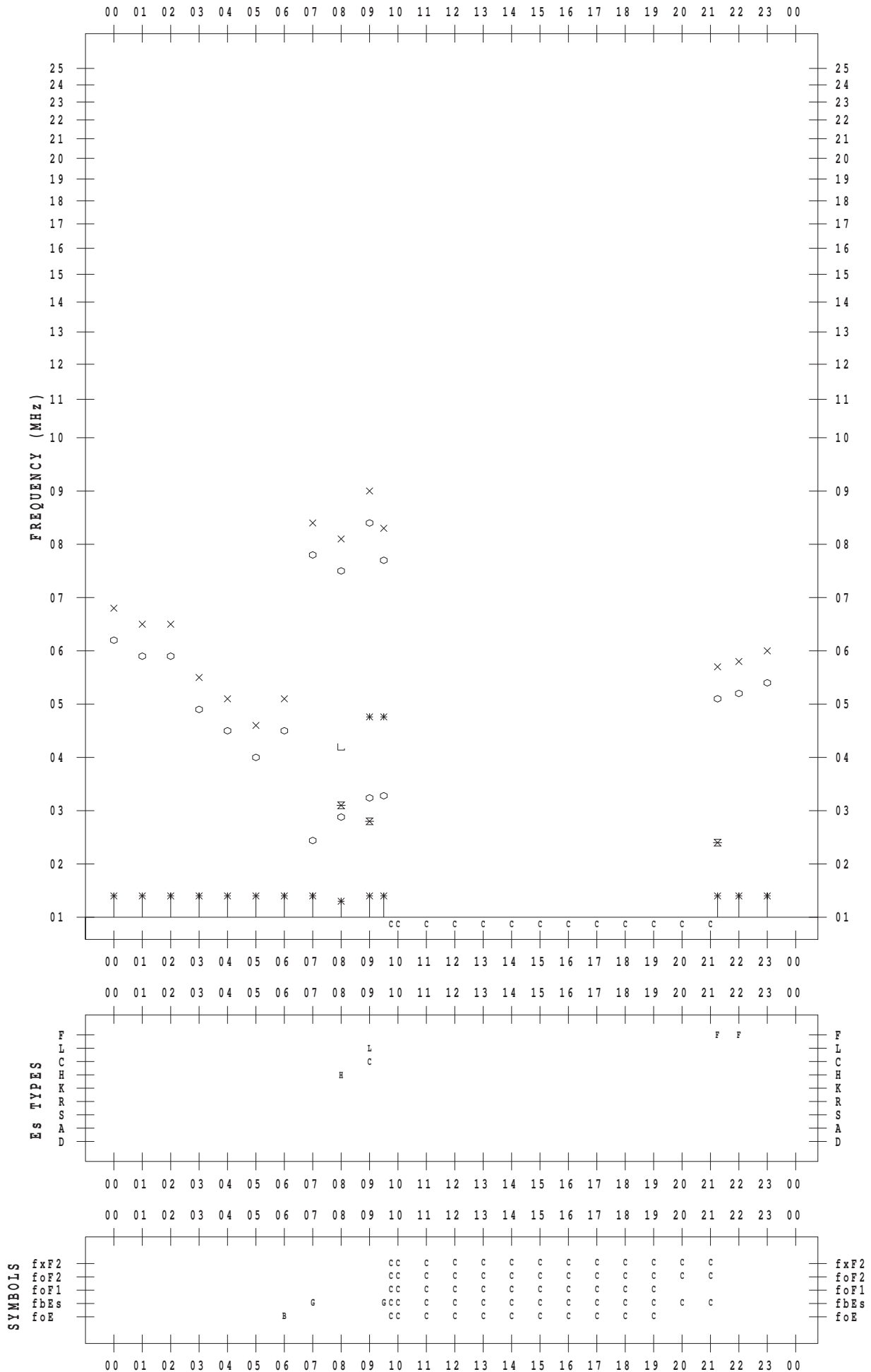
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 9/16

135 ° E MEAN TIME



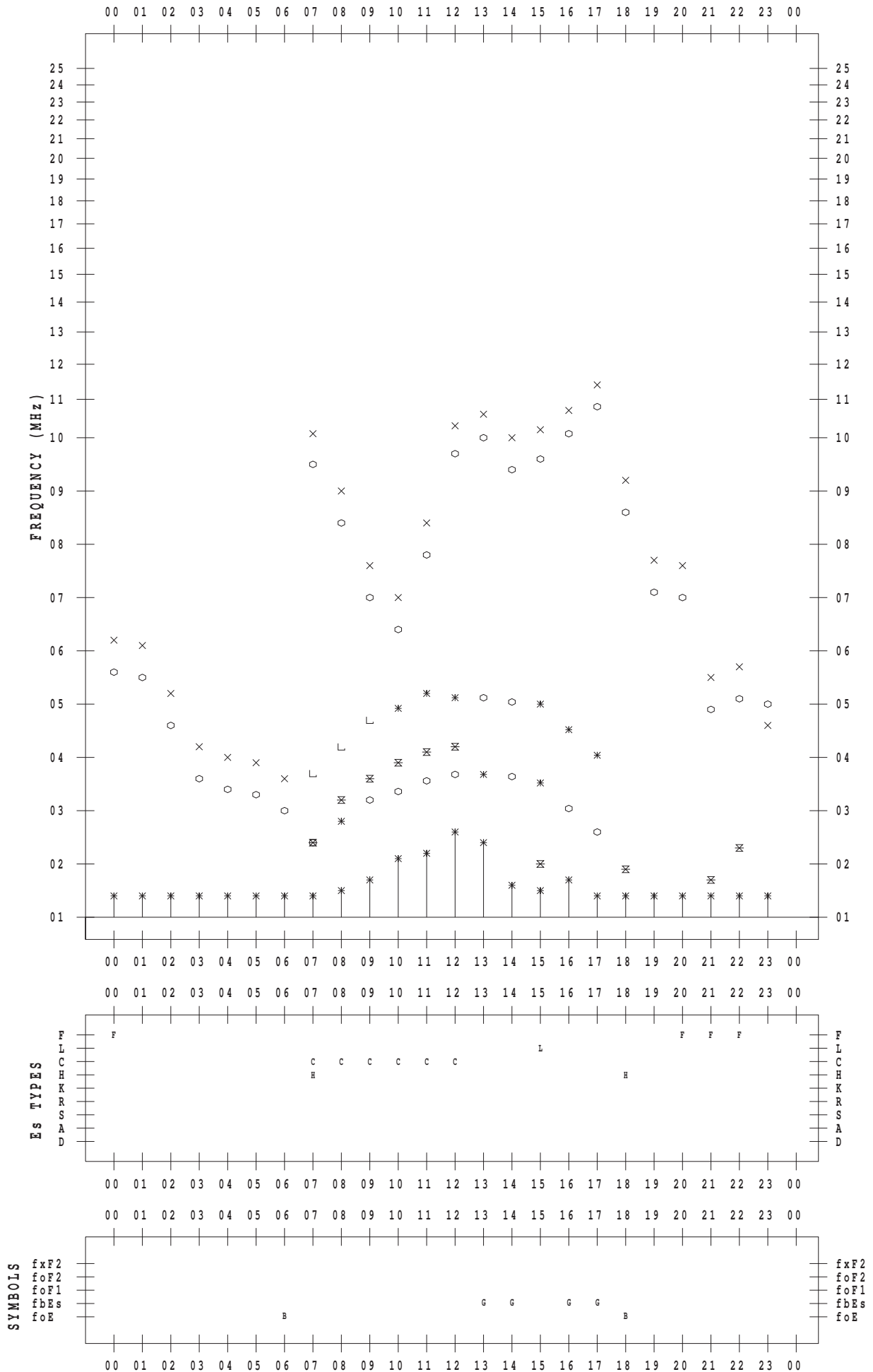
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 9/17

135 ° E MEAN TIME



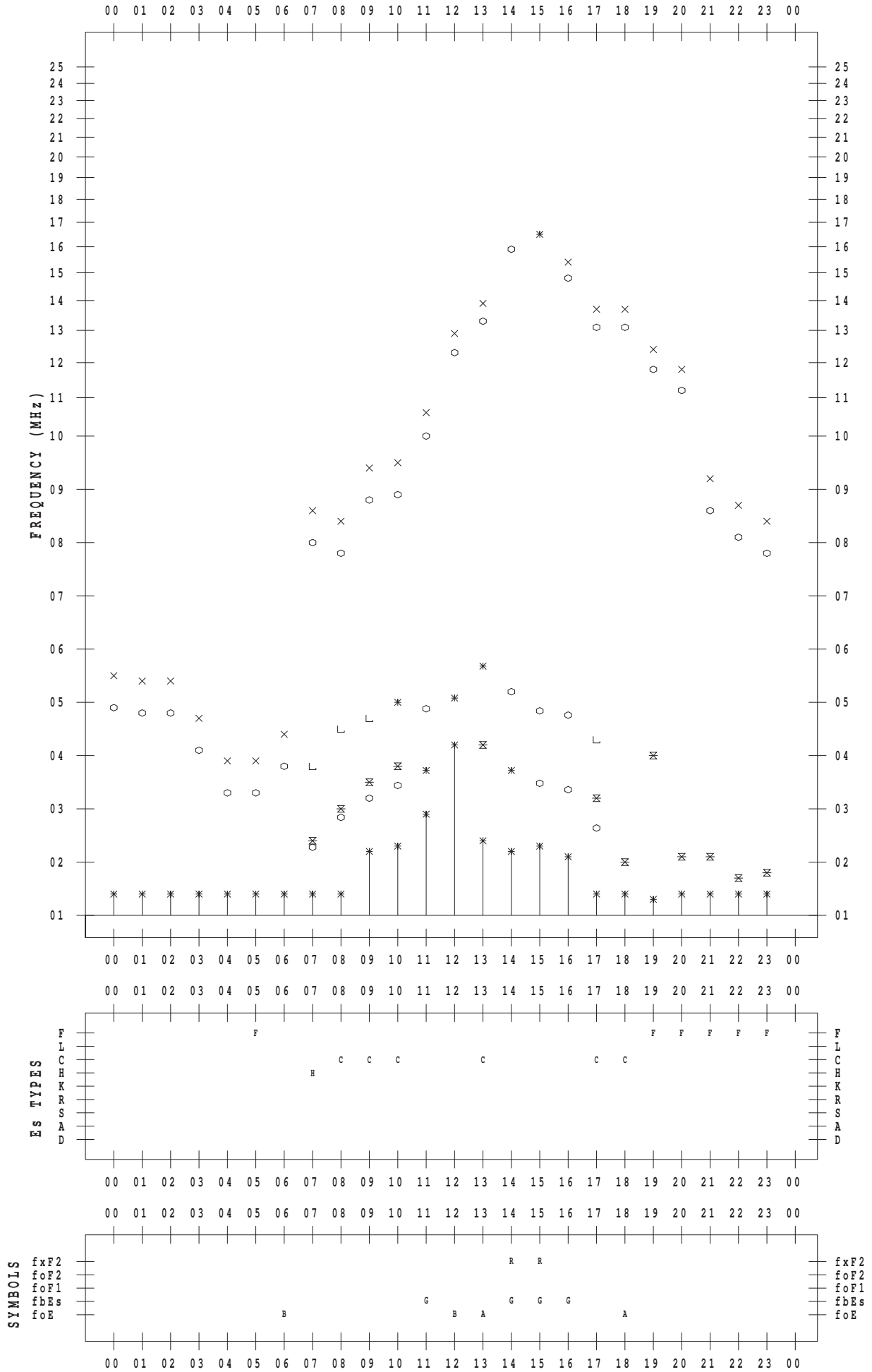
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 9/18

135 ° E MEAN TIME





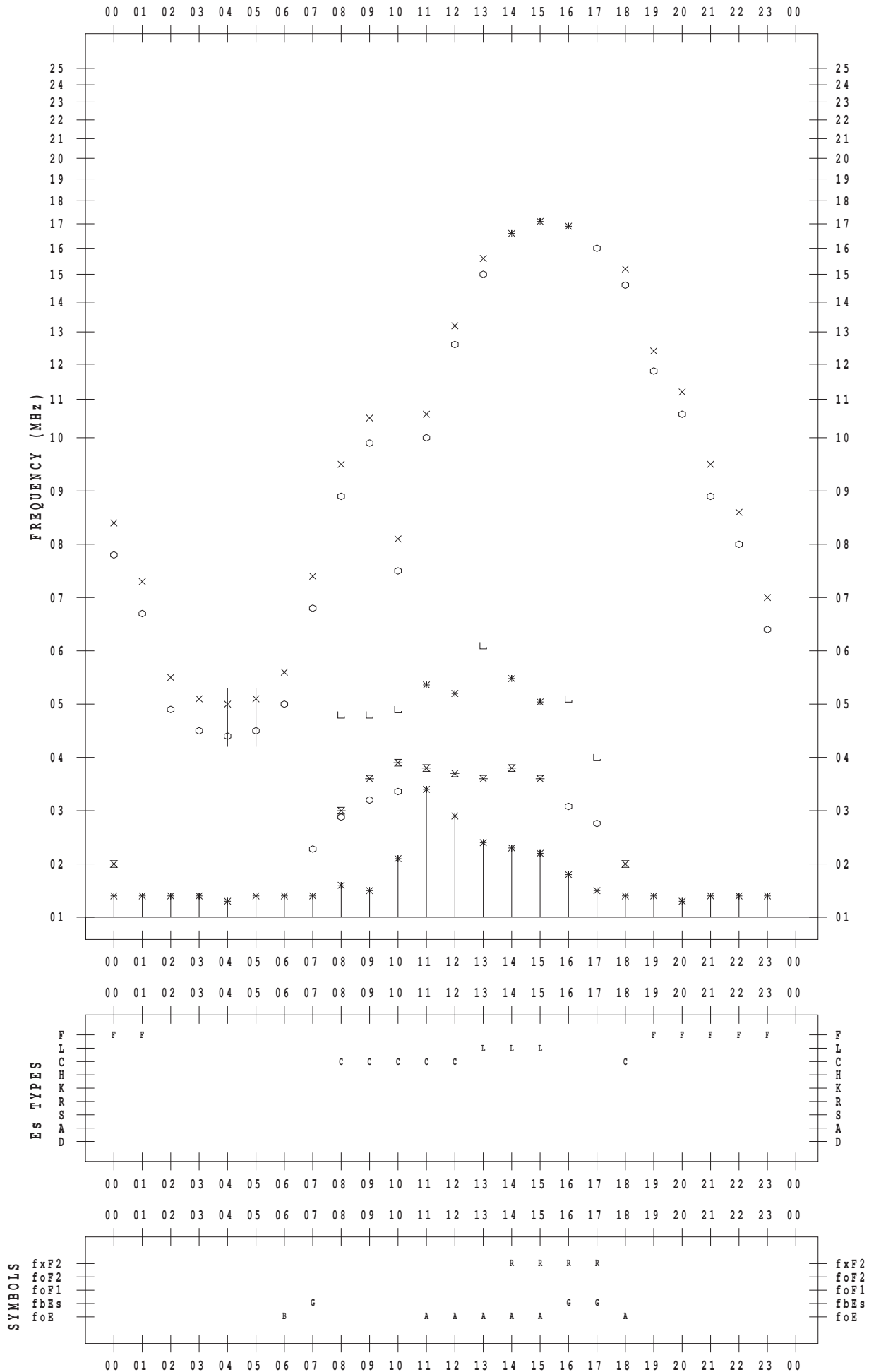
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 19

135 ° E MEAN TIME



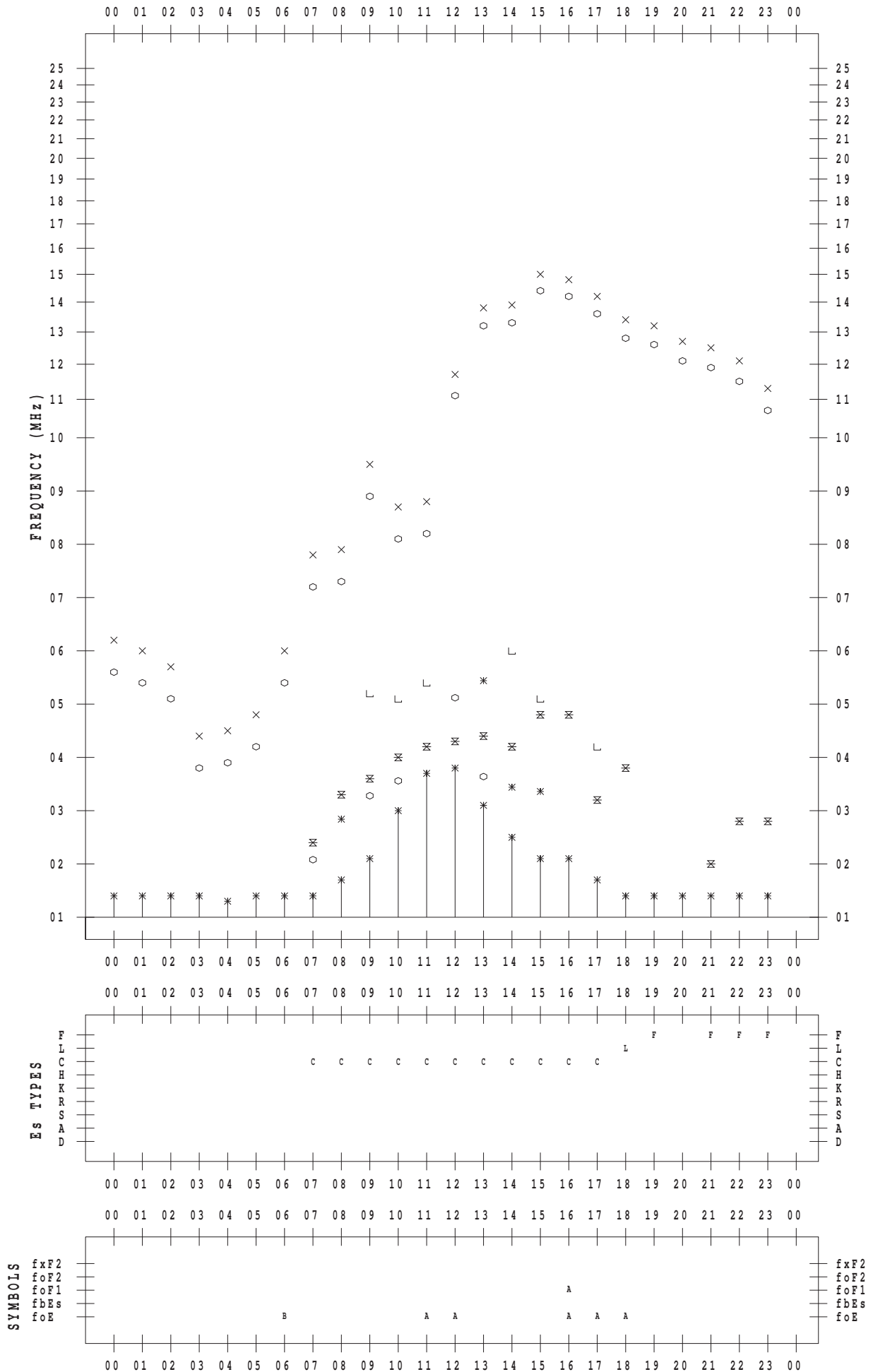
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 20

135 ° E MEAN TIME



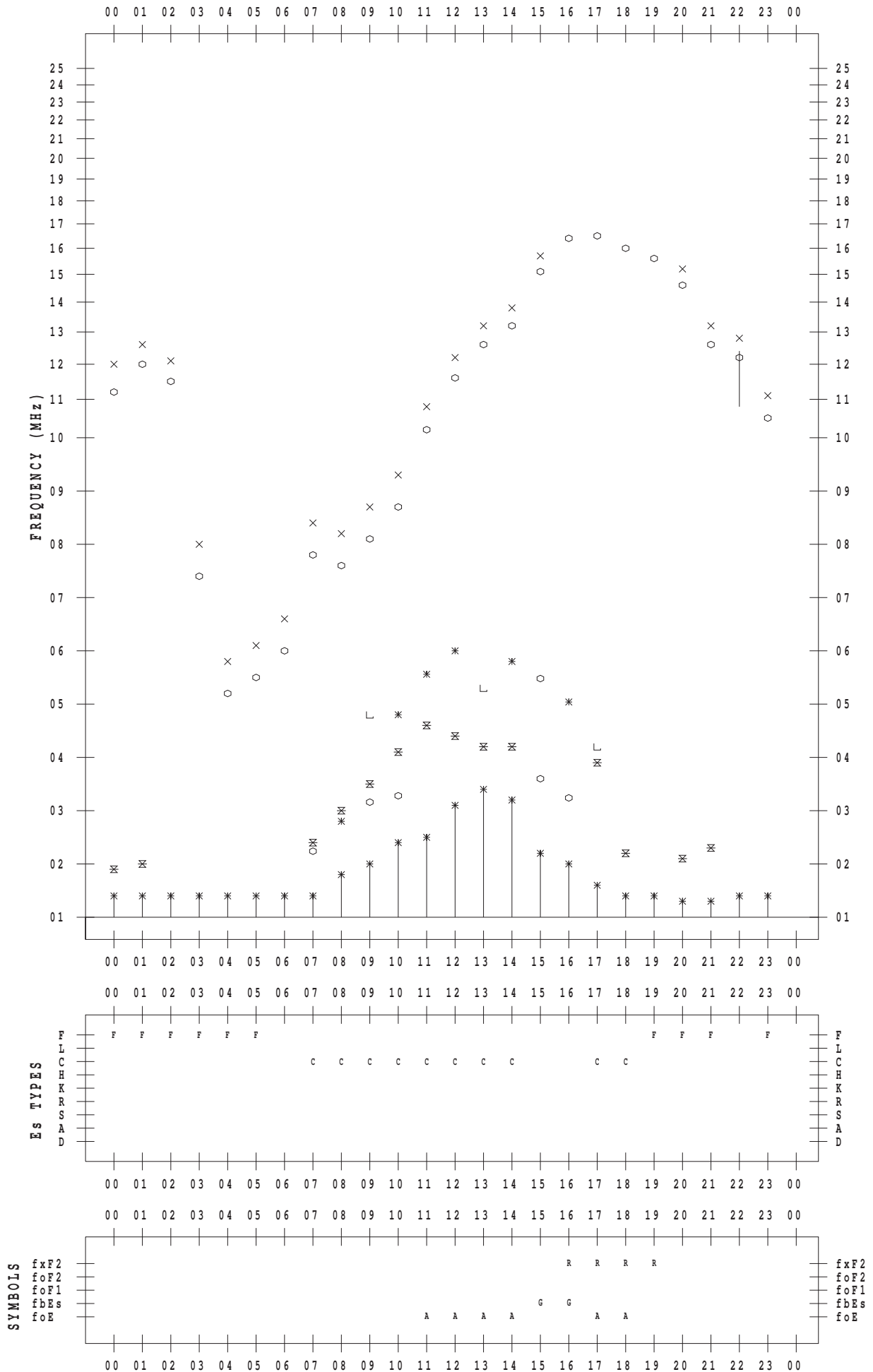
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 21

135 ° E MEAN TIME



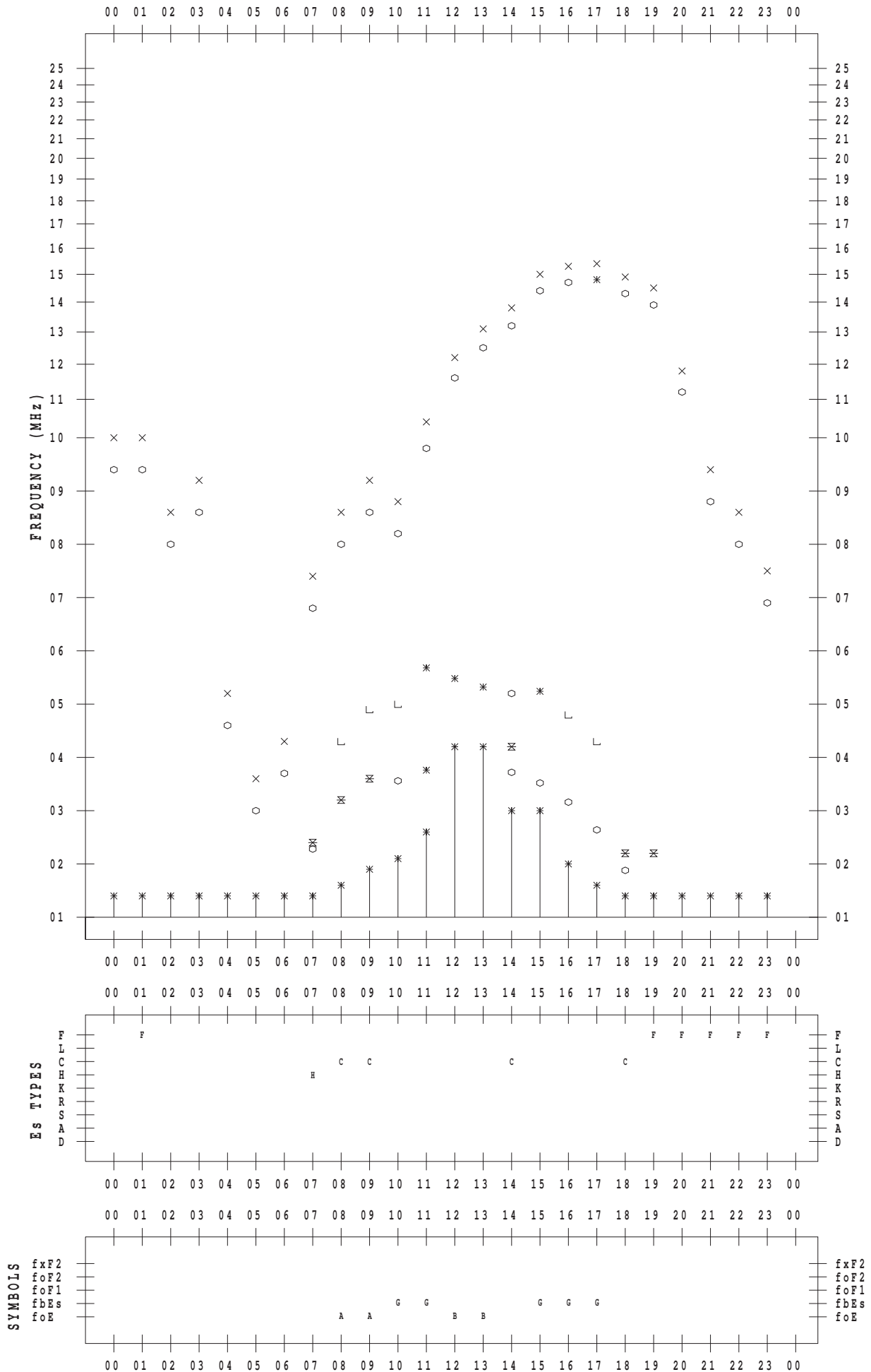
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 22

135 ° E MEAN TIME



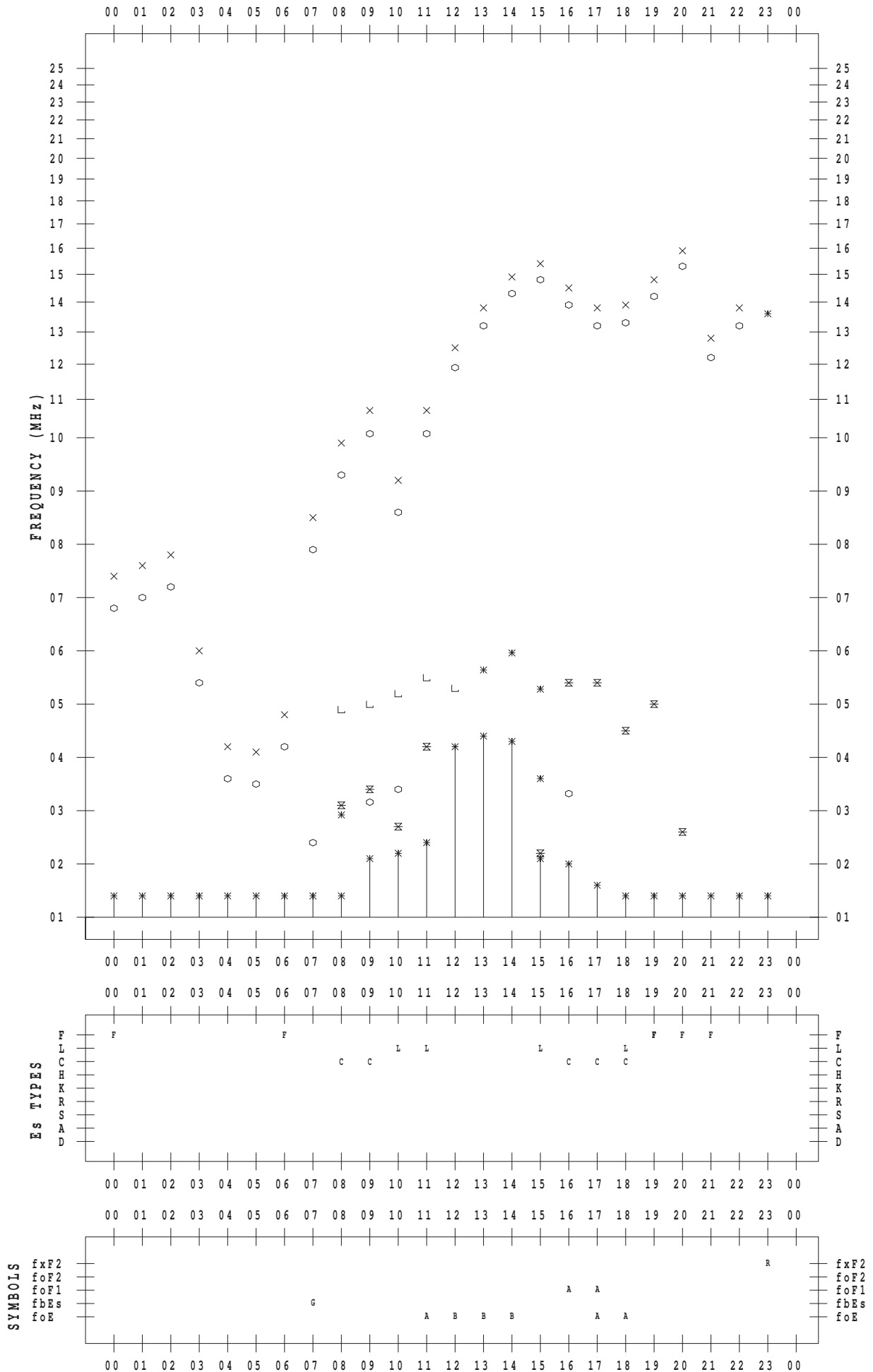
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 23

135 ° E MEAN TIME



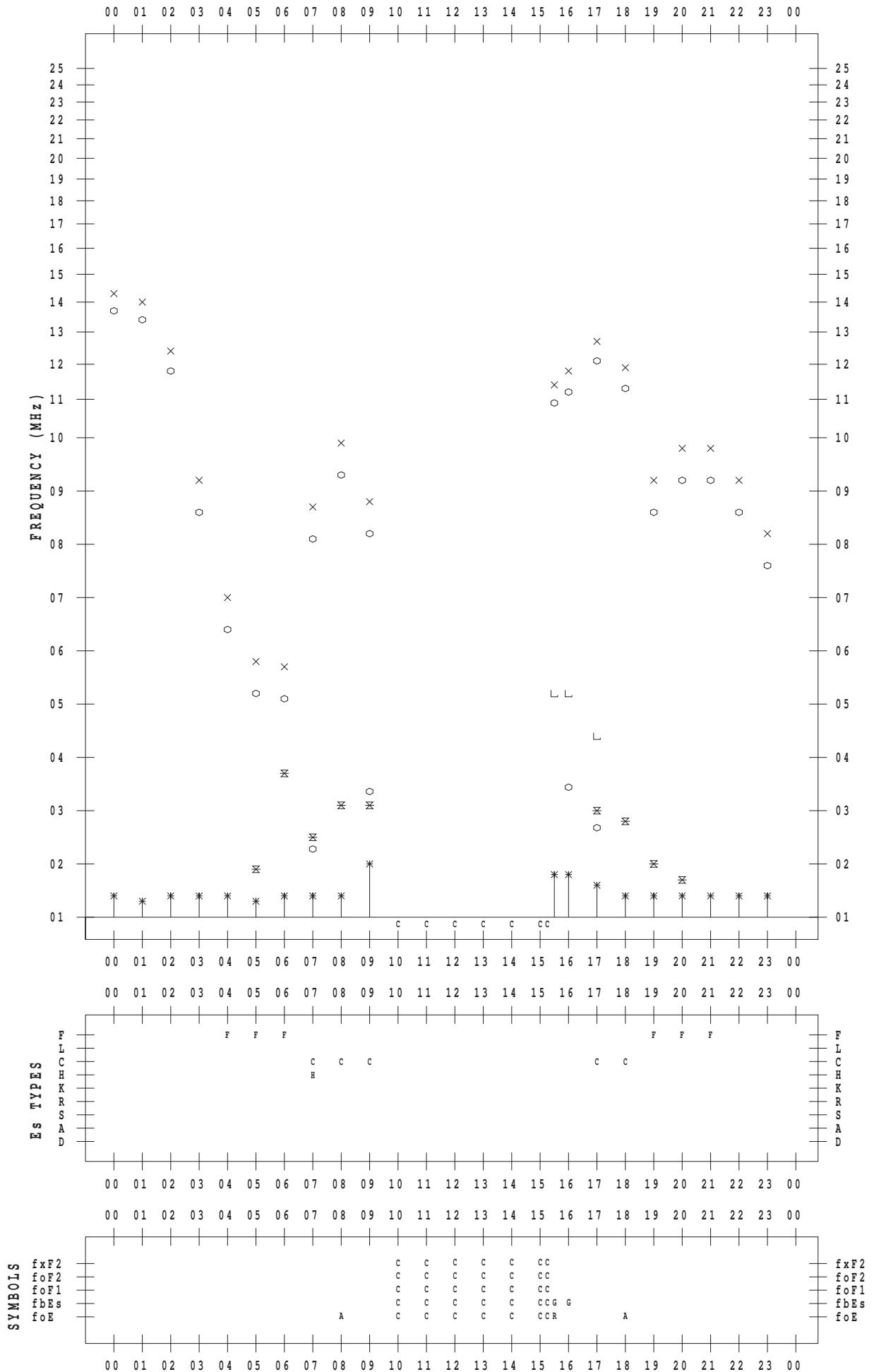
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 24

135 ° E MEAN TIME



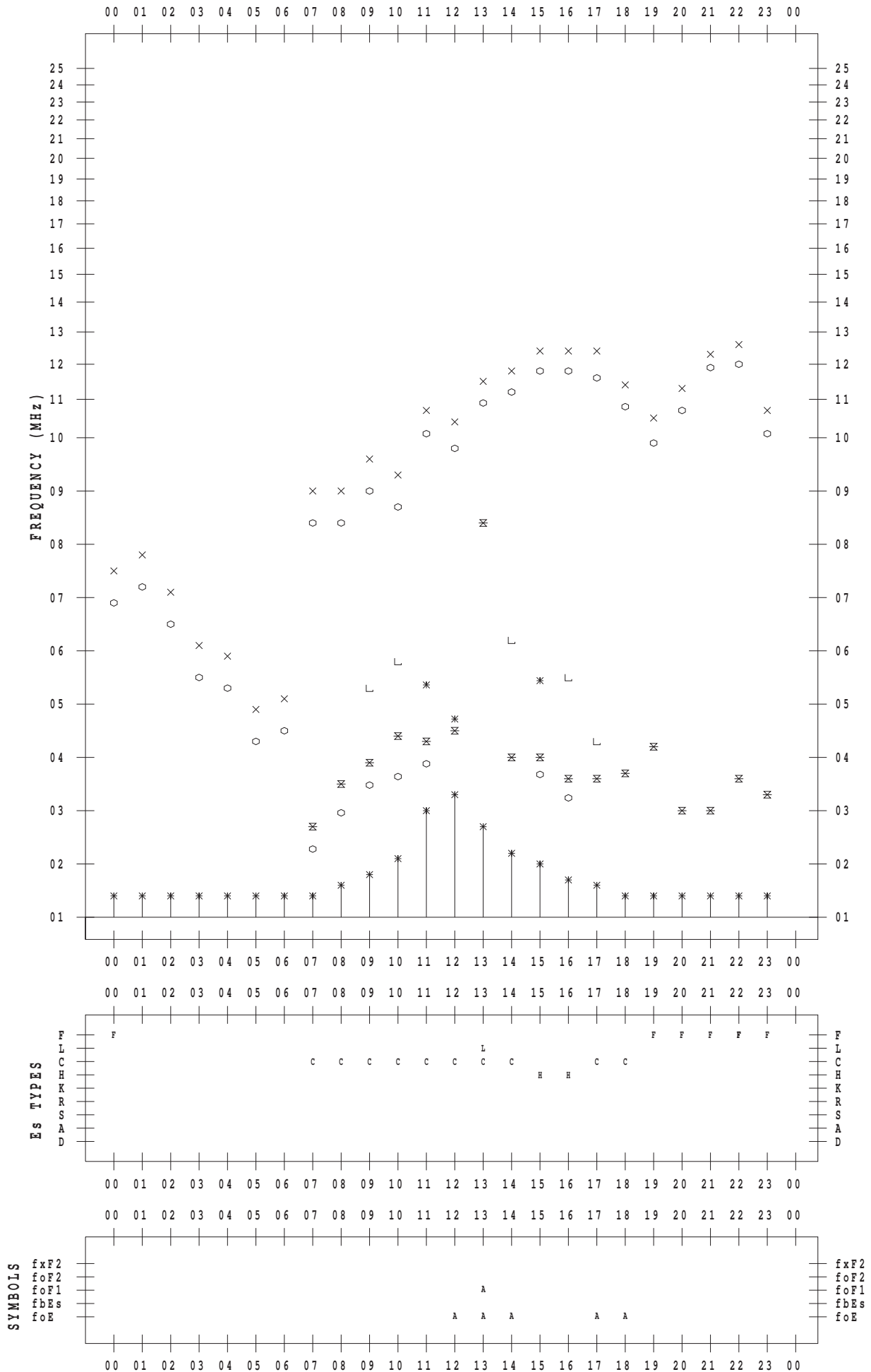
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 25

135 ° E MEAN TIME



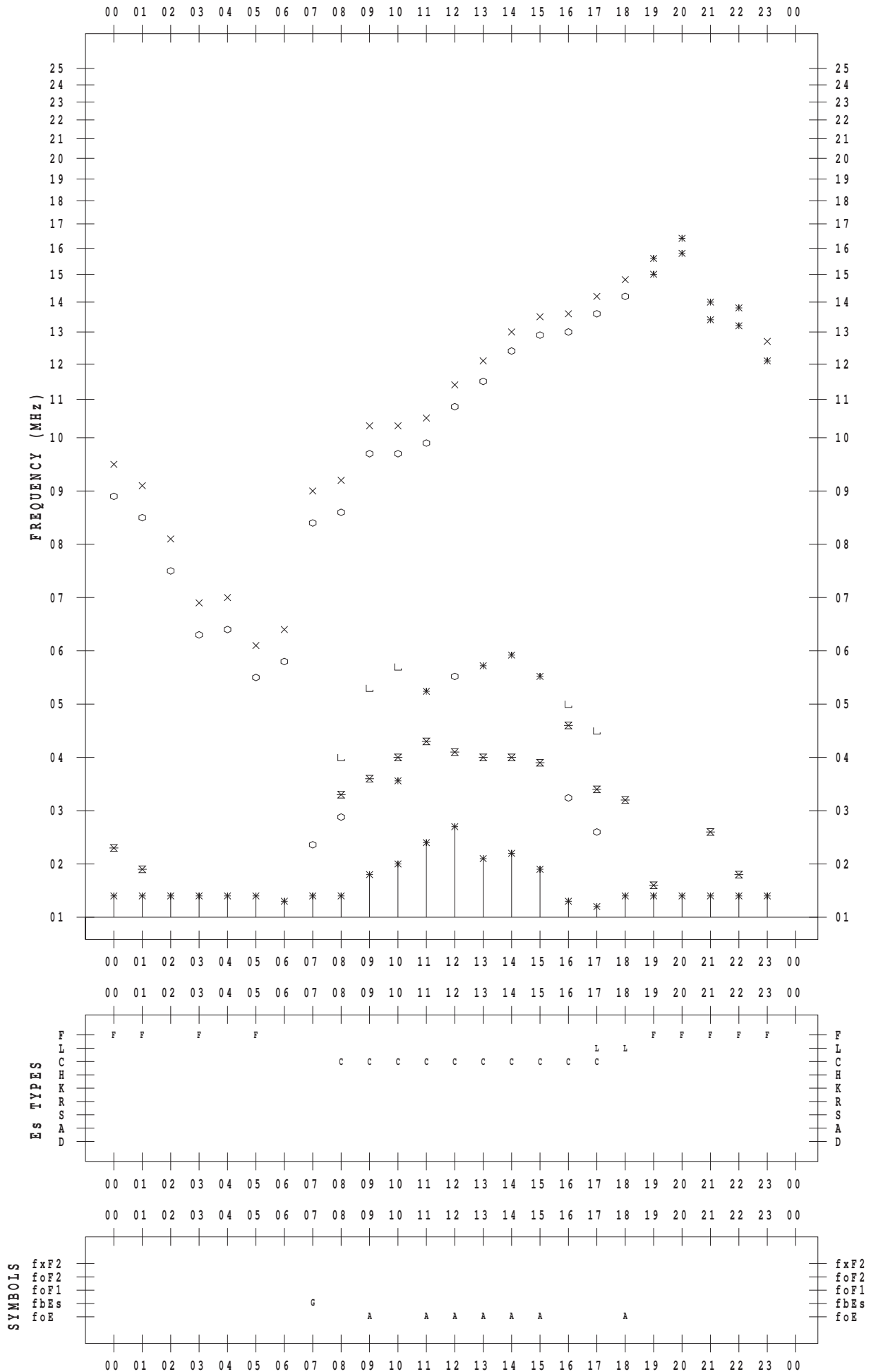
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 26

135 ° E MEAN TIME





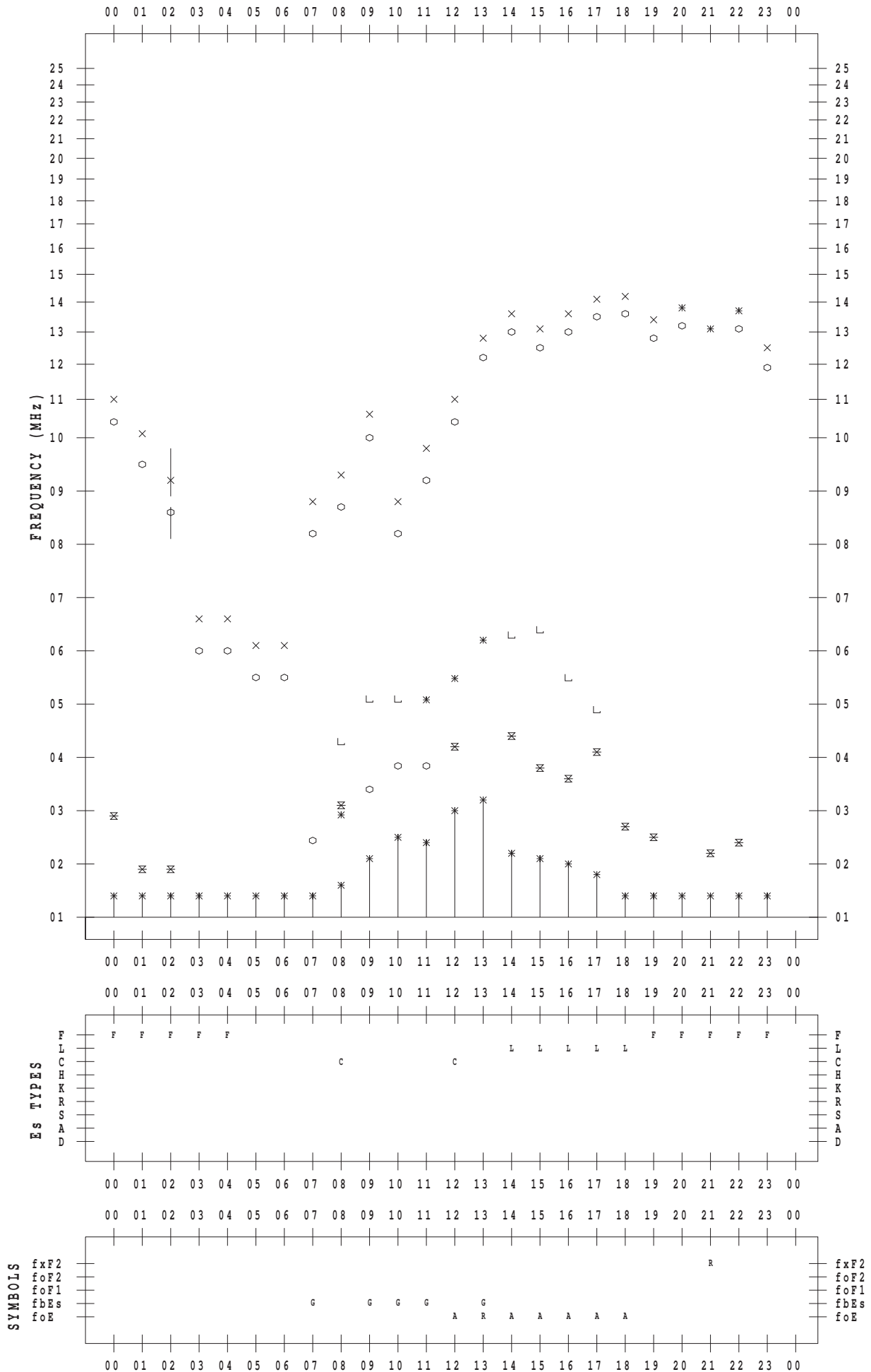
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 27

135 ° E MEAN TIME



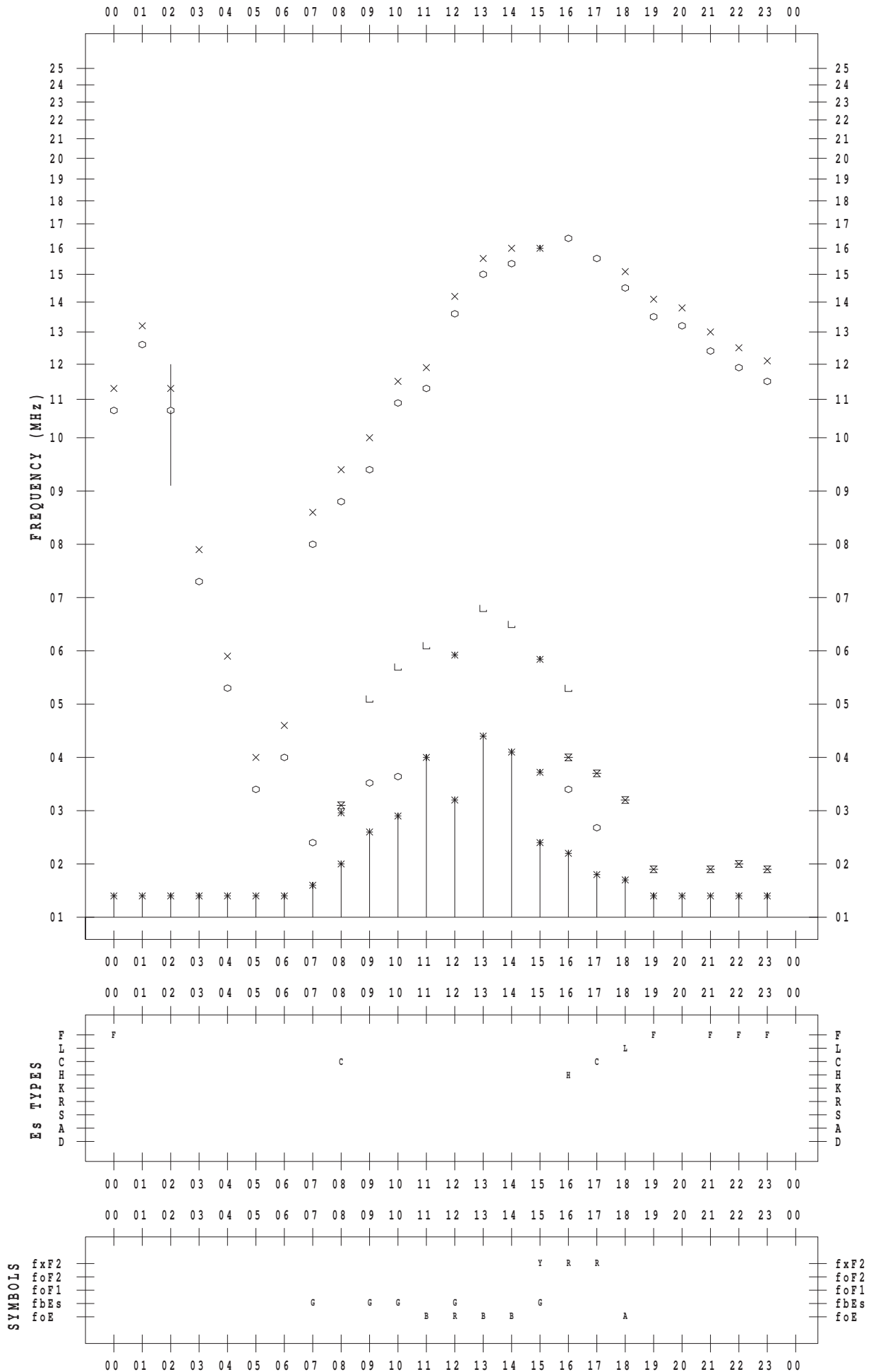
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 28

135 ° E MEAN TIME



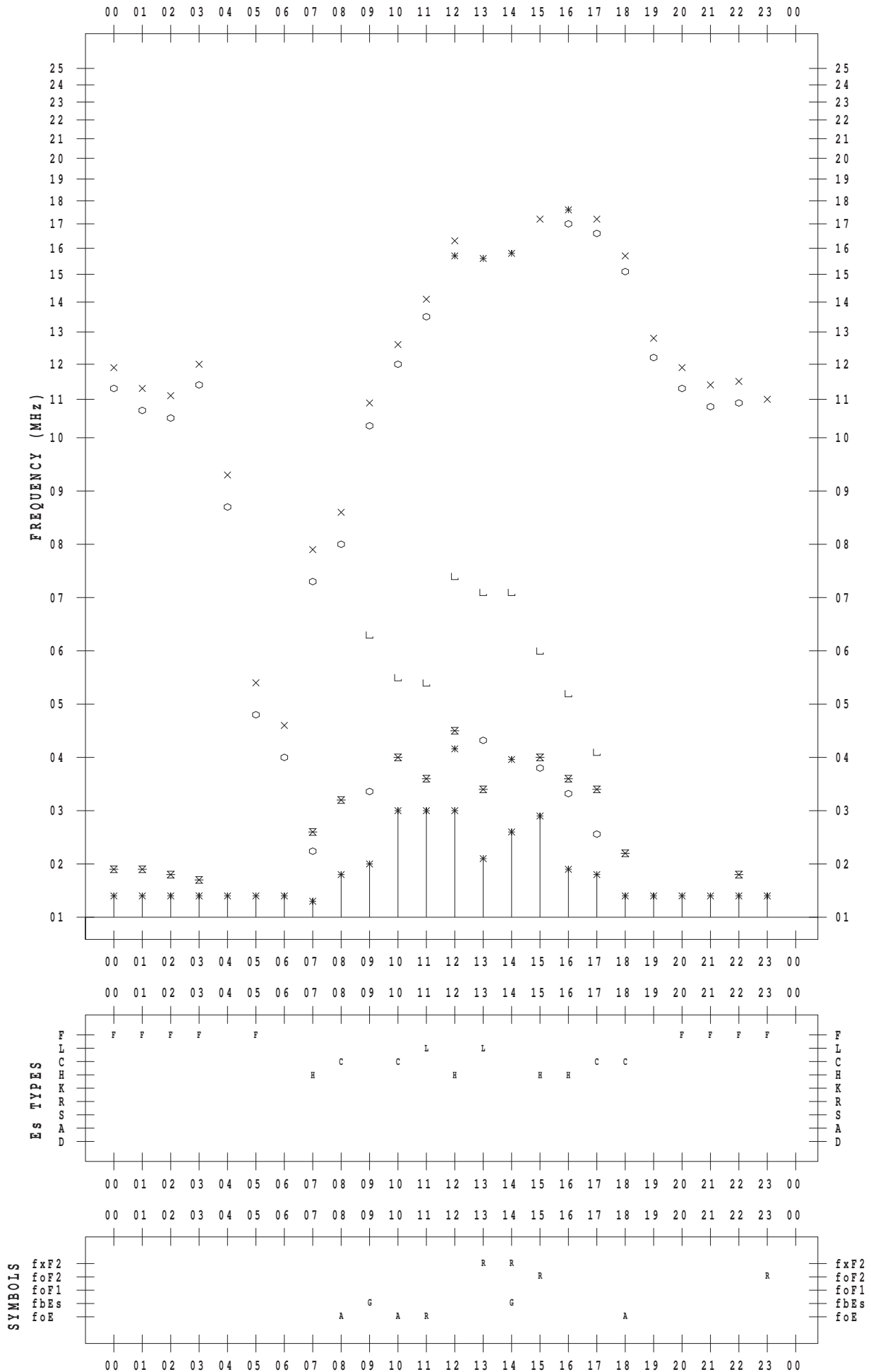
# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 29

135 ° E MEAN TIME



# f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012 / 9 / 30

135 ° E MEAN TIME

