ISSN 0389-8237

ION.ANT.– 81

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

January – December 2014

CONTENTS

Page

Introduction 1

Tables 4

Monthly plots of *foF2, fmin, ftEs,* and *h'F* 64

Monthly median plots of *foF2* 76

Monthly median plots of *ftEs* 88

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

TOKYO, JAPAN

INTRODUCTION

This data book summarizes the results for vertical soundings of the ionosphere at Syowa Station, Antarctica in 2014. The observations were conducted by the National Institute of Information and Communications Technology. The location of the station, specifications of the ionosonde, and symbols used in this data book are as follows:

Geographic		Geomagnetic *	
Latitude	Longitude	Latitude (Deg.)	Longitude (Deg.)
69°00.4'S	39°35.4'E	- 70.5	85.9

* Geomagnetic latitude and longitude were calculated using IGRF-12 (2014).

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specifications
Frequency Range	1MHz - 15MHz
Transmitting Power	10kW (peak value)
Duration of Sweep	15 s
Transmitted Pulse Width	80 μs
Pulse Repetition Frequency	100 Hz
Height Range	0 - 1000km
Recording Media	Hard drive
Power Supply	100V-AC, 2.0kVA
Transmitting Antenna and Receiving Antenna	30-m-high vertical delta antennas terminated by 600Ω

OBSERVERS

Observer: T. Kondo

Scaler: K. Fukushima

DESCRIPTION

a. All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the *URSI Handbook of Ionogram Interpretation and Reduction* (second edition 1972)

b. Characteristics of Ionosphere

fxI	Top frequency of spread *F* traces or oblique traces.
foF2	Ordinary wave critical frequency for the *F2* layer.
fEs(ftEs)	Top frequency of *Es* layer as reflected overhead
fmin	Lowest frequency of the vertical ionospheric reflections.
h'F	Minimum virtual height of the ordinary wave *F* trace as a whole.

Symbols

(i) Descriptive Letters.

The following letters are entered after, or used to replace, numerical values on the monthly tabulation sheets.

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.

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

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

G Measurement influenced 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 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 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 Spur type spread present.

Q Range spread present.

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

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

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

V Forked trace that may influence the measurement.

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

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 numerical values on the monthly tabulation sheets.

D Greater than.
E Less than.
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) Definitions of CNT, MED, UQ, and LQ

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

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

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

LQ (lower quartile) is the median value of the lower half.

Acknowledgment
Ionospheric observation at Syowa Station is based on the consignment study from the Ministry of Internal Affairs and Communications.

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	59	X 54	O X 62	X 58	R	X 57	X 63	X 69	X 70	O X 72	X 77	X 86	X 80	X 71	X 74	O X 70	X 78	R	R	A	X 59	X 56	X 62	X 54
2	49	63	54	52	50	R	R	B	B	R	R	B	B	B	O X 68	O X 71	O X 66	B	B	O X 50	X 44	O X 54	X 53	X 53
3	O X 50	57	R	R	56	X 59	X 63	X 72	X 73	X 73	B	B	O X 74	O X 75	O X 73	X 74	B	O X 64	B	X 59	R	112	O X 50	O X 48
4	O X 50	O X 48	B	O X 56	O X 56	69	76	X 80	X 86	X 90	X 85	X 82	X 79	X 79	X 73	O X 72	X 67	O X 68	X 64	X 63	X 65	O X 56	X 48	X 50
5	X 60	X 59	67	X 69	71	O X 70	70	80	81	X 82	X 86	R	O X 86	O X 80	X 75	X 73	X 72	X 74	O X 71	X 69	X 68	X 66	X 62	X 63
6	O X 61	X 63	71	X 74	X 80	X 93	X 99	X 106	108	X 105	O X 97	X 91	A	R	R	B	B	B	B	B	B	B	B	B
7	R	B	B	B	B	O X 67	X 76	B	B	B	76	O X 82	X 79	O X 83	B	X 77	O X 74	O X 71	X 71	O X 63	B	B	R	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	O X 73	O X 72	B	B	B	B	B	B	B	B	B	B
11	B	B	B	O X 72	O X 73	O X 73	O X 76	O X 86	O X 88	O X 93	O X 92	X 83	X 76	X 72	O X 71	O X 71	X 64	X 64	X 64	X 66	X 68	X 67	O X 55	B
12	O X 43	O X 48	X 50	O X 62	X 66	O X 70	X 81	X 81	O X 86	O X 86	O X 87	90	X 80	R	X 76	O X 71	X 71	O X 72	X 74	X 72	O X 70	X 68	O X 64	R
13	R	A	R	B	O X 50	B	R	R	B	X 66	X 62	X 60	X 66	O X 65	X 66	X 70	X 61	X 61	X 61	X 60	X 64	X 61	X 61	X 56
14	X 60	X 62	X 57	X 62	B	R	O X 68	O X 69	O X 70	X 67	X 72	X 76	X 78	X 72	X 68	R	X 65	X 62	B	B	56	X 48	X 48	52
15	62	O X 49	X 50	O X 53	O X 54	R	R	O X 67	O X 68	X 72	X 69	X 72	X 71	O X 72	X 66	O X 64	R	O X 63	X 62	X 60	X 60	X 59	X 56	X 55
16	X 50	V 52	X 54	X 55	65	X 72	X 79	X 84	X 91	X 92	X 92	X 86	O X 86	O X 84	X 78	X 76	O X 71	X 67	X 69	X 66	X 60	X 63	X 61	X 58
17	X 61	X 63	X 69	X 74	78	84	90	91	X 101	X 109	X 104	X 98	X 92	X 82	X 77	X 75	X 75	X 73	O X 71	X 68	X 66	65	X 60	54
18	O X 59	53	65	O X 52	X 53	X 59	68	69	75	82	X 84	X 80	X 75	O X 70	X 68	X 66	X 65	X 62	X 64	X 63	X 61	X 66	X 62	X 58
19	X 57	X 57	X 58	66	70	X 81	X 95	X 100	X 98	O X 91	X 90	X 89	O X 87	X 78	X 76	X 76	X 78	X 73	O X 67	X 66	X 67	X 62	X 61	X 62
20	62	66	70	77	X 85	O X 88	X 100	X 103	X 100	X 105	O X 99	O X 104	O X 98	O X 91	O X 88	X 86	X 74	X 79	X 78	X 69	X 67	60	X 55	X 56
21	X 57	X 54	X 56	X 59	66	R	X 66	X 76	X 93	X 90	X 106	X 102	O X 100	X 86	X 86	O X 86	X 82	X 80	X 72	X 61	X 59	X 58	O X 49	X 53
22	O X 45	X 48	X 59	59	X 62	67	A	X 66	70	71	X 77	B	B	X 76	B	B	O X 67	X 63	B	X 58	X 60	X 55	X 47	X 49
23	X 51	O X 52	X 52	58	70	B	R	X 67	X 66	X 72	X 76	X 76	X 79	X 76	X 72	O X 71	X 70	X 72	X 68	O X 74	X 65	70	65	40
24	55	56	X 57	X 55	B	R	R	X 63	X 71	X 74	X 76	X 72	X 74	X 74	X 72	X 74	X 73	X 69	X 68	X 63	X 68	X 59	X 61	X 58
25	68	72	72	74	X 74	X 55	R	X 70	76	X 82	94	93	X 85	X 76	X 73	X 70	X 69	X 66	X 66	X 61	X 63	X 50	X 48	X 49
26	R	49	R	A	B	B	B	A	R	R	R	B	X 64	X 63	O X 68	X 65	X 62	X 57	X 60	X 60	X 57	X 53	X 41	44
27	X 45	50	C	C	C	C	C	C	C	C	C	C	X 85	X 82	X 75	X 74	X 72	X 69	X 65	X 64	X 67	70	67	X 59
28	X 56	53	50	60	72	80	X 90	X 98	X 96	X 98	X 99	X 96	X 95	X 89	O X 87	X 81	X 74	X 74	X 73	X 70	X 66	53	X 50	R
29	R	53	R	O X 49	R	R	X 60	65	70	X 72	X 83	X 98	X 94	X 81	O X 81	X 80	X 74	X 74	X 64	X 59	B	X 56	X 53	X 46
30	X 45	48	X 49	X 50	X 56	X 63	R	R	68	78	X 75	X 74	X 76	X 77	O X 73	X 68	X 67	X 65	X 67	X 66	X 63	X 60	X 64	X 58
31	67	68	69	X 70	X 75	X 84	X 86	O X 100	O X 104	O X 103	92	X 99	X 94	X 91	X 88	X 84	X 78	X 74	X 71	X 72	X 66	X 66	X 63	57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	25	20	23	21	18	18	22	23	24	24	22	26	26	25	25	25	25	22	25	24	26	26	23
MED	X 57	54	X 58	X 59	X 66	X 70	X 76	X 78	X 81	X 82	X 86	X 86	X 80	X 76	X 73	X 73	X 71	X 69	X 68	X 63	X 64	X 60	X 58	X 54
U Q	61	62	68	X 70	X 74	X 81	X 90	X 91	X 96	X 92	X 93	X 96	X 87	X 82	X 78	X 76	X 74	X 74	X 71	X 68	X 67	X 66	X 62	X 58
L Q	X 50	X 50	X 53	X 55	X 56	X 63	X 68	X 69	70	X 72	X 76	X 76	X 75	X 72	X 70	X 70	X 66	X 64	X 64	X 60	X 60	X 56	X 50	X 49

JAN. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 49	48	56	J R 52	A	52	57	63	64	R 66	71	80	74	65	68	R 64	72	R	A	A	53	50	56	48
2	42	F 45	F 40	F 37	F 38	R	R	B	B	R	R	B	B	B	62	65	R 60	B	B	R 44	38	48	47	47
3	R 44	F 38	A	R	F 39	53	57	66	67	67	B	B	R 68	69	67	68	B	R 58	B	53	R	43	R 44	42
4	44	R 42	B	50	R 50	F 57	F 64	74	80	84	79	J R 76	73	73	67	R 66	J R 61	62	58	57	59	R 50	42	44
5	54	53	F 57	63	F 59	64	F 60	F 63	F 65	76	80	U R 80	80	74	69	67	66	68	65	63	62	60	56	57
6	55	57	F 62	68	74	87	93	100	102	99	U R 91	J R 85	A	U R 78	U R 78	B	B	B	B	B	B	B	B	B
7	U R 47	B	B	B	B	U R 61	J R 70	B	B	B	F 65	U R 76	J R 73	R 77	B	J R 71	R 68	65	65	U R 57	B	B	R	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	R 67	66	B	B	B	B	B	B	B	B	B	B
11	B	B	B	R 66	R 67	U R 67	R 70	R 80	82	R 87	U R 86	77	70	66	R 65	65	58	58	J R 58	60	62	61	R 49	B
12	37	R 42	J R 44	56	60	64	75	75	80	80	81	F 80	R 74	R	J R 70	R 65	65	66	68	66	64	62	58	R
13	R	A	R	B	R 44	B	R	R	B	60	56	54	60	59	60	64	55	J R 55	55	54	58	55	55	50
14	54	56	51	56	B	R	R 62	63	R 64	61	66	J R 70	R 71	66	62	R	59	56	B	B	F 48	42	42	F 40
15	F 50	R 43	44	47	48	R	R	61	62	66	63	66	65	R 66	60	58	R	57	56	J R 54	54	53	50	48
16	44	V 46	48	49	F 56	66	73	78	J R 85	J R 86	J R 86	80	80	78	J R 72	70	65	61	63	60	54	57	55	52
17	55	57	63	68	F 65	F 74	F 78	F 80	95	103	J R 98	92	J R 86	76	J R 71	69	69	67	65	62	60	F 56	54	F 42
18	53	F 42	F 54	46	47	53	F 58	F 57	F 63	Z 76	78	74	69	R 64	62	60	59	56	58	57	55	60	56	52
19	51	51	52	F 56	F 59	75	89	94	J R 92	85	84	J R 83	R 81	72	70	J R 70	72	67	61	60	61	56	55	56
20	F 53	57	F 59	F 65	79	R 82	94	97	J R 94	J R 99	R 93	R 98	R 92	U R 85	82	80	68	J R 73	72	63	61	54	49	50
21	51	48	50	53	F 53	R	60	70	87	84	100	96	94	80	80	80	76	74	66	55	53	52	R 43	47
22	39	42	53	F 46	56	F 53	A	60	Z 64	F 62	J R 71	B	B	J R 70	B	B	R 61	57	B	52	54	49	41	43
23	45	R 46	46	F 49	F 56	B	R	61	60	66	70	70	73	70	66	65	64	66	62	68	59	F 59	F 55	F 29
24	F 39	F 44	51	49	B	R	R	57	Z 65	68	70	66	68	68	66	68	67	63	62	57	62	53	54	52
25	F 58	F 64	F 64	F 64	68	J R 49	R	J R 64	F 65	76	Z 85	F 81	79	70	67	64	63	60	60	55	57	44	42	43
26	R	F 36	R	A	B	B	B	A	R	R	R	B	58	57	62	59	56	51	54	54	51	47	35	F 32
27	39	F 41	C	C	C	C	C	C	C	C	C	C	79	76	69	68	66	63	59	58	61	64	F 57	53
28	50	F 39	44	F 46	F 54	F 69	84	92	90	J R 92	J R 93	J R 90	89	R 83	81	75	68	68	67	64	60	F 43	44	A
29	R	F	R	R 43	R	R	54	59	F 61	66	77	92	88	J R 75	75	J R 74	68	68	58	53	B	50	47	40
30	39	F 38	43	44	50	57	R	R	F 57	F 66	69	68	70	71	67	62	61	59	61	60	57	54	58	52
31	F 55	F 56	F 59	64	69	78	80	94	R 94	97	J R 86	93	88	85	82	78	72	68	65	66	60	60	57	51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	20	23	21	18	18	22	23	24	24	23	26	27	26	25	25	25	22	25	24	26	26	23
MED	50	46	52	52	56	64	70	68	67	76	80	80	74	71	68	67	65	63	62	57	58	54	52	48
U Q	54	54	F 58	64	66	74	80	80	90	R 86	J R 86	90	81	R 77	72	70	68	68	65	62	61	59	56	52
L Q	43	F 42	45	46	49	53	60	61	64	66	70	70	69	66	65	64	60	58	58	54	54	49	44	F 42

JAN. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz 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	32	41	36	47	48	47	48	47	41	39	34	38	33	32	32	B	38	34	44	44	44	46	39	66
2	44	33	41	30	32	34	42	B	B	38	33	B	B	B	E B 55	E B 54	G 26	B	B	42	34	47	34	43
3	38	36	42	36	32	36	39	G 27	38	31	B	B	E B 56	E B 58	E B 56	G 27	B	E B 54	B	31	G 32	40	38	34
4	38	35	B	30	G 28	34	G 32	32	35	G	41	46	74	40	35	35	E B 37	G 32	32	33	38		31	31
5	32	50	42	35	40	35	34	42	36	G 23	32	33	41	40	39	39	32	37	64	26	G 23	39	31	32
6	24	22	G 21	32	38	76	48	38	48	41	45	40	100	69	E B 59	B	B	B	B	B	B	B	B	B
7	E B 31	B	B	B	B	E B 56	E B 56	B	B	B	E B 55	E B 55	G 28	E B 57	B	E B 57	38	E B 38	36	E B 31	B	B	33	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	E B 57	E B 56	B	B	B	B	B	B	B	B	B	B
11	B	B	B	E B 48	E B 56	E B 58	E B 56	E B 54	E B 54	E B 55	E B 54	G 33	E B 53	39	Y	E B 37	40	39	39	48	50	39	E B 26	B
12	E B 26	E B 28	E B 26	E B 27	E B 27	E B 28	E B 30	G 26	E B 59	E B 60	33	Y 31	G 32	66	41	E B 56	E B 56	E B 58	E B 54	E B 34	41	E B 28	E B 34	32
13	29	58	40	B	G	B	33	42	B	G 30	Y 25	G	G 23	33	33	41	34	38	32	G 18	30	G 20	G 19	E B 22
14	26	G 16	23	23	B	G 32	G	32	37	G 25	36	G 20	37	35	G 28	31	34	G	B	B	34	35	G 20	32
15	34	40	34	50	36	39	32	35	G	G 25	G 27	G 22	35	35	31	G 28	G	G 22	36	29	26	23	20	29
16	25	26	27	33	G	49	44	32	32	38	40	36	36	38	43	48	39	34	34	G	27	27	26	39
17	17	29	23	26	28	46	43	34	35	34	35	69	66	45	100	90	43	65	75	38	27	25	20	26
18	28	31	32	41	35	42	37	33	35	30	37	37	36	36	33	37	42	32	32	44	59	40	64	68
19	40	24	75	32	39	31	32	34	36	35	46	36	40	35	46	38	44	43	38	34	G 21	G	G 18	24
20	30	22	30	30	28	35	32	68	37	G 24	32	35	E B 57	E B 56	32	G 29	34	31	G 24	28	32	24	20	25
21	26	25	25	25	31	47	42	30	G	38	36	39	G	34	36	G 32	31	32	30	G	31	31	39	44
22	40	36	36	72	42	35	54	58	37	34	35	B	B	30	B	B	E B 56	32	B	50	40	40	28	31
23	40	50	42	G	40	B	37	35	36	36	E B 56	E B 56	38	42	32	32	G	36	37	28	26	22	22	G
24	31	36	35	29	B	40	40	40	44	37	37	36	33	40	G 25	32	34	34	33	44	37	60	32	41
25	42	29	33	39	25	60	43	43	40	37	G 22	37	37	39	43	G	G 27	28	33	28	29	25	29	19
26	34	70	41	58	B	B	B	58	47	46	42	B	34	G	E B 36	E B 34	32	34	37	36	32	32	25	30
27	28	27	C	C	C	C	C	C	C	C	C	C	37	G 27	36	36	38	G 24	33	30	G	28	20	24
28	26	42	38	26	29	31	G 28	G 19	22	36	G 35	35	G	G	35	33	33	37	34	35	31	34	42	48
29	37	66	46	42	48	43	37	39	35	Y	G 31	24	G	G	E B 56	36	G 25	31	G 24	E B 26	B	E B 24	30	31
30	28	88	33	43	33	35	40	43	43	38	G 23	G	36	36	49	G 28	31	37	G 29	G 24	G 18	25	23	40
31	28	32	30	25	30	27	39	42	G 24	35	35	38	36	36	36	39	39	35	35	36	G 20	41	23	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	24	25	23	24	26	25	24	25	26	23	27	28	25	25	26	26	23	26	25	25	27	25
MED	31	34	34	32	32	36	38	36	36	36	34	36	36	36	36	34	34	34	34	32	32	31	27	31
U Q	38	42	41	42	40	47	43	43	42	38	41	39	E B 53	44	E B 48	40	39	38	38	38	38	40	34	40
L Q	26	27	28	26	28	34	32	32	35	G	G 32	G	G 33	34	32	G	G 31	G	32	G 28	G 26	24	20	24

JAN.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	14	16	12	14	14	14	14	13	14	22	14	18	16	14	14	58	14	14	14	13	12	13	14	13
2	12	12	13	12	12	26	26	B	B	16	17	B	B	B	55	54	16	B	B	14	12	12	12	13
3	20	12	31	19	14	14	15	14	13	24	B	B	56	58	56	22	B	54	B	22	17	12	14	22
4	14	21	B	26	15	12	12	14	13	14	15	14	14	24	18	18	37	23	13	12	16	21	14	14
5	13	13	12	12	12	21	15	16	14	14	19	19	28	23	18	20	16	16	16	21	20	16	17	14
6	13	12	12	12	13	12	12	12	14	13	17	20	56	62	59	B	B	B	B	B	B	B	B	B
7	31	B	B	B	B	56	56	B	B	B	55	55	23	57	B	57	27	38	26	30	B	B	29	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	57	56	B	B	B	B	B	B	B	B	B	B
11	B	B	B	48	56	58	56	54	54	55	54	26	53	36	20	37	20	18	31	26	28	20	26	B
12	26	28	26	27	27	28	30	23	59	60	24	25	28	29	24	56	56	58	54	34	29	28	33	19
13	24	31	26	B	20	B	20	24	B	23	18	18	16	19	20	14	15	16	14	15	13	16	16	22
14	13	12	12	15	B	19	21	16	17	15	13	16	21	17	16	13	14	20	B	B	18	13	15	13
15	14	17	18	18	23	23	24	15	15	15	24	21	20	24	18	23	22	19	15	13	13	12	12	14
16	13	12	13	13	12	12	12	12	12	13	16	17	17	18	24	25	20	20	16	22	24	20	15	12
17	12	12	12	12	12	12	12	12	13	13	17	13	18	19	14	14	13	15	16	16	12	14	14	13
18	24	12	14	14	14	16	14	12	14	13	16	20	19	20	20	20	17	16	14	14	13	12	13	13
19	13	12	12	12	13	12	13	13	12	13	16	14	15	16	17	15	13	13	14	12	13	12	12	12
20	12	12	12	12	12	12	11	14	12	14	18	19	57	56	24	23	18	13	17	13	13	13	13	13
21	12	12	12	14	13	17	13	14	13	14	13	18	19	17	14	16	19	16	13	13	12	13	14	14
22	14	13	13	13	14	13	12	13	14	20	16	B	B	24	B	B	56	18	B	13	17	15	14	13
23	14	20	13	14	15	B	16	14	14	14	56	56	24	19	22	26	15	18	12	18	15	15	14	13
24	11	14	16	18	B	22	15	13	16	14	13	18	15	17	15	12	12	13	14	13	14	15	14	12
25	12	12	12	12	16	14	18	19	12	12	15	15	15	18	16	16	18	12	14	13	17	15	13	14
26	25	14	19	20	B	B	B	36	17	17	17	B	19	16	36	34	14	14	14	12	12	12	12	12
27	12	12	C	C	C	C	C	C	C	C	C	C	15	14	19	14	14	14	14	12	14	17	14	12
28	12	13	13	13	13	12	11	12	14	13	16	13	19	21	14	14	14	15	14	14	14	13	12	14
29	26	12	16	14	14	14	14	13	13	28	21	14	14	18	56	32	20	15	19	26	B	24	13	12
30	12	12	15	17	15	14	26	19	16	14	19	23	24	19	20	16	13	13	12	16	12	12	11	13
31	12	13	12	11	13	12	13	12	16	15	13	20	19	20	20	14	14	15	15	17	13	14	13	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	13	14	14	14	16	15	14	14	15	17	20	20	20	20	23	18	16	16	16	15	15	14	13
U Q	25	B 21	B 26	B 26	B 56	B 56	26	B 24	B 54	24	24	B 56	56	56	B 56	B 56	B 37	B 38	B	B 26	B 28	B 21	17	B 22
L Q	12	12	12	12	13	12	13	13	13	14	16	17	16	18	17	15	14	14	14	13	13	13	13	13

JAN.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz 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	Q 242	E A 268	A	196	A	A	208	E A 250	A 224	A	212	200	200	200	208	B	214	A	A	A	216	226	226	204
2	232	232	232	192	194	A	A	B	B	A	198	B	B	B	B	B	208	B	B	210	202	A	202	204
3	A	234	A	A	A	E A 278	E A 270	236	240	202	B	B	B	B	B	202	B	B	B	204	A	E A 238	216	A
4	A	A 216	B	A	A	E A 274	240	210	206	200	214	E A 290	214	210	E A 236	Y	214	204	204	A 214	228	228	E A 250	E A 278
5	E A 294	E A 312	E A 300	202	E A 258	298	210	A 264	200	190	224	204	A 222	204	206	200	202	202	A	E Y 234	224	232	A 236	Q 240
6	E A 238	E A 266	276	248	222	232	206	A 238	A	A 220	E A 220	A	A	B	B	B	B	B	B	B	B	B	B	B
7	E B 250	B	B	B	B	B	B	B	B	B	B	B	Y	B	B	B	A	E B 226	220	220	B	B	A	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	380	B	B	Y	B	232	Y	198	A 236	A 234	A	E A	260	A 238	228	B
12	B	B	E B 286	B 270	E B 258	E B 258	226	194	B	B	Y	Y	Y	A	A	B	B	B	B	E B 248	A	E B 248	E B 238	A
13	A	A	A	B	A	B	A	A	B	218	Y	200	214	200	204	194	200	202	202	220	220	224	E A 240	236
14	E A 266	E A 254	E A 288	278	B	A	A	228	A	200	A	206	206	214	208	192	198	202	B	B	196	200	198	232
15	E A 244	A	A	234	234	A	A	H 248	214	194	202	E A 258	212	200	Y	202	192	E A 214	E A 214	208	226	218	A 216	A 238
16	E A 242	A 238	226	A 248	260	222	222	210	196	H 176	202	208	202	202	A 240	A 208	200	210	210	220	212	212	226	212
17	A 238	E A 258	254	228	228	232	A 220	206	194	194	232	196	A	E A 244	A		206	208	A	224	204	204	Q 242	Q 238
18	E B 262	A 248	E A 234	A	A	A	264	198	206	210	210	200	204	196	218	208	204	198	198	218	218	236	Q 220	220
19	232	232	256	260	212	202	202	210	202	198	198	198	E A 246	198	A	200	196	196	A 216	192	202	218	214	218
20	232	200	200	234	234	232	202	220	196	204	198	208	B	B	224	194	206	206	212	200	214	226	230	230
21	Q 214	Q 232	220	E A 302	Q 242	A	222	210	196	200	200	200	200	192	212	212	198	198	198	196	208	204	244	E A 244
22	A	244	A 242	A 256	A	226	A	A	200	Y	200	B	B	Y	B	B	B	200	B	200	230	208	212	226
23	226	A	A	A	226	B	A	222	230	230	B	B	200	212	214	194	194	202	202	208	220	230	230	216
24	224	A	A	A	B	A	A	A	A	212	204	198	192	192	192	200	200	192	200	212	224	A 236	Q 226	Q 246
25	Q 254	Q 250	Q 262	266	Y	A	A	A	234	200	202	202	192	194	A 212	202	202	202	204	200	200	248	Q 234	Q 252
26	A	Q 200	A	A	B	B	B	A	A	A	A	B	E Y 224	204	202	210	210	200	218	216	Q 218	218	H 170	228
27	198	Q 234	C	C	C	C	C	C	C	C	C	C	224	200	198	202	202	208	196	208	244	Q 240	Q 216	Q 238
28	230	228	192	A	230	230	A 222	208	194	194	218	198	202	218	218	202	202	202	208	208	226	202	A	A
29	A	F	A	A	A	A	200	202	200	Y	A 228	H 202	220	202	B	Y	202	218	216	230	B	248	Q 256	Q 250
30	A 264	240	A	A	A	A 276	A	A	E A 282	214	Y	200	A 202	E A 224	E A 264	196	206	206	200	228	228	E A 226	230	242
31	Q 232	Q 252	Q 264	A 234	250	228	210	210	200	206	196	E A 238	224	202	202	210	198	202	202	234	228	236	220	220
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	15	15	13	13	15	18	19	19	18	18	19	21	17	19	23	23	18	24	23	25	25	22
MED	233	236	U 243	241	231	230	215	210	201	200	202	200	204	201	210	202	202	202	204	211	220	226	223	232
U Q	E 252	E A 253	E 276	266	254	A 275	226	A 236	230	212	218	E A 208	222	213	A 221	208	206	208	214	222	228	237	237	242
L Q	231	232	226	228	224	227	206	208	196	194	200	200	200	199	203	196	198	200	200	206	208	215	216	220

JAN. 2014 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 58	X 62	60	65	73	X 72	X 82	90	X 98	X 96	X 99	X 96	X 96	X 92	X 86	X 82	X 82	X 76	X 71	X 71	X 69	X 54	X 42	68
2	A	B	R	R	R	O X 64	X 71	O X 63	X 64	X 76	X 93	90	X 88	X 84	X 84	X 74	X 72	X 72	X 68	X 64	X 62	X 65	X 58	54
3	47	53	55	X 59	X 60	X 63	68	76	X 80	O X 73	X 82	X 93	X 88	X 81	75	X 72	X 70	X 72	X 67	X 67	X 64	X 62	67	X 57
4	X 54	X 42	X 54	R	R	X 58	X 71	R	X 75	X 85	X 86	X 85	X 84	X 83	X 80	X 74	X 69	X 69	X 67	X 65	X 65	X 66	X 64	X 58
5	X 58	X 66	73	78	X 81	X 87	X 89	X 98	X 102	X 102	X 99	X 96	X 90	X 86	X 84	77	X 73	X 71	X 73	X 71	X 73	X 66	X 66	70
6	67	66	62	60	X 64	78	84	92	79	R	67	72	81	X 84	91	X 94	X 84	X 68	O X 46	X 49	X 53	X 59	X 54	48
7	X 44	40	47	X 51	64	X 67	X 64	70	X 82	X 86	X 88	X 90	X 88	X 85	X 78	X 75	X 75	O X 71	X 68	X 64	X 64	X 57	X 50	X 56
8	R	50	62	56	R	O X 66	X 66	B	B	B	R	X 64	X 68	X 65	X 64	X 66	X 65	X 61	X 64	X 57	O X 36	A	O X 40	R
9	O X 42	R	X 54	B	47	43	R	A	R	B	R	B	B	B	R	X 58	X 63	X 58	O X 54	X 55	X 43	A	B	R
10	X 48	54	R	R	47	R	B	R	R	O X 55	B	O X 66	O X 70	O X 70	X 65	O X 70	O X 70	X 65	X 62	X 58	X 57	X 56	44	A
11	43	53	R	R	R	R	R	A	X 60	X 63	O X 70	O X 67	X 71	X 76	X 75	X 78	X 71	X 75	X 72	X 67	X 70	X 72	69	52
12	A	A	R	O X 48	O X 55	X 63	B	X 72	X 79	B	B	O X 86	X 82	X 82	X 81	X 75	X 73	X 74	X 72	X 68	X 60	X 57	X 55	47
13	39	42	51	47	X 52	X 57	X 63	X 76	X 82	X 80	X 82	O X 83	X 83	X 82	X 72	X 73	X 68	X 67	X 67	X 66	X 64	X 61	X 60	X 62
14	X 64	X 66	X 70	X 74	X 75	X 75	X 84	X 92	X 93	X 97	X 104	X 98	X 99	X 91	X 94	X 88	X 83	X 80	X 76	X 75	X 66	X 65	X 65	X 64
15	X 69	X 71	X 73	X 76	X 83	X 82	X 85	X 88	X 94	X 95	X 97	X 96	X 98	X 96	X 89	X 87	X 80	X 75	X 75	X 73	X 70	X 64	X 58	54
16	X 43	59	59	70	A	O X 48	77	X 74	76	X 85	91	X 86	X 81	X 77	X 82	X 75	X 77	X 70	X 61	X 41	O X 42	A	O X 52	R
17	A	A	O X 46	O X 48	O X 56	R	R	X 56	X 61	X 64	X 64	C	C	C	C	C	C	64	X 62	X 58	X 56	X 52	X 46	40
18	43	49	X 59	R	72	72	82	X 88	X 98	X 97	98	X 101	O X 102	X 101	X 96	X 86	X 78	X 75	X 72	X 64	X 56	X 44	O X 41	A
19	A	A	71	71	B	B	R	R	B	B	B	B	B	B	B	B	B	R	O X 52	O X 50	O X 49	O X 51	O X 54	43
20	X 33	53	35	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 56	O X 46	O X 50	O X 40	A	O X 52
21	X 30	A	A	57	A	A	X 44	O X 44	B	X 62	B	O X 68	76	B	O X 74	O X 71	O X 58	O X 58	X 55	X 49	O X 46	O X 40	R	A
22	O X 38	43	A	X 40	57	A	B	R	R	B	R	B	B	B	O X 66	O X 66	B	B	X 60	X 58	O X 48	X 33	X 33	X 29
23	R	O X 37	X 43	A	A	72	A	O X 62	X 58	X 68	X 70	X 73	X 70	O X 71	X 69	X 68	X 74	X 73	X 61	B	70	43	39	R
24	42	58	52	55	R	57	44	X 63	X 74	X 82	X 81	X 82	X 80	X 81	X 78	X 71	X 70	X 68	X 62	X 62	X 57	X 48	40	36
25	36	39	52	56	63	70	76	X 74	O X 86	X 96	X 96	X 97	X 92	X 91	X 93	O X 102	X 97	X 83	X 76	X 71	X 68	X 63	X 56	58
26	48	R	55	X 60	R	B	B	O X 84	X 90	O X 93	X 100	X 103	X 98	X 96	X 93	X 83	X 80	X 78	X 74	O X 70	X 67	X 62	X 55	X 51
27	X 49	X 56	43	X 51	72	O X 73	O X 75	R	O X 76	O X 86	O X 90	O X 91	O X 93	O X 93	Y	O X 92	O X 87	X 92	O X 85	X 75	B	B	R	38
28	A	76	X 65	70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	22	20	16	19	17	18	20	20	19	22	22	21	22	24	23	24	27	26	26	23	23	20
MED	X 44	53	55	58	64	X 67	X 75	X 75	X 80	X 85	X 90	X 88	X 86	X 84	X 80	X 75	X 73	X 72	X 67	X 64	X 61	X 57	X 54	53
U Q	X 56	X 64	62	70	X 72	X 73	X 83	X 88	X 92	X 96	X 98	X 96	X 93	X 92	X 89	X 84	X 80	X 75	X 72	X 70	X 67	X 64	X 60	58
L Q	40	42	51	X 51	X 56	X 58	X 65	O X 63	X 74	X 70	X 81	X 73	X 80	X 79	X 74	X 71	X 70	X 68	X 61	X 57	O X 50	X 48	X 42	45

FEB.2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz 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	52	56	F 46	50	F 56	66	76	F 80	92	90	93	90	90	J R 86	80	76	76	70	65	65	63	48	36	A
2	A	B	A	A	R	R 58	65	R 57	58	70	87	84	82	78	78	68	66	66	62	58	56	59	52	F 42
3	F 34	F 34	A 38	53	54	57	F 57	F 64	74	R 67	76	87	82	75	69	66	64	66	61	61	58	56	F 58	51
4	48	36	48	R	R	52	65	R	69	79	80	79	78	77	74	68	63	63	61	59	59	60	58	52
5	52	60	F 63	F 65	J R 76	81	83	92	96	96	93	90	J R 84	80	78	R 71	67	65	66	65	67	60	60	S 60
6	F 55	F 56	F 45	38	58	F 63	F 69	F 82	F 66	R	F 58	F 62	F 70	78	F 79	88	78	62	R 40	43	47	53	48	F 40
7	38	F 30	F 31	45	F 50	61	58	F 60	76	80	82	84	J R 82	79	72	69	69	65	62	58	58	51	44	50
8	R	F 38	F 26	F 40	A	R 60	60	B	B	B	R	58	62	59	58	60	59	55	58	51	30	A	R 34	R
9	R 36	A	48	B	F 36	F 32	R	A	A	B	R	B	B	B	R	52	57	52	48	49	37	A	B	A
10	42	F 33	A	A	34	A	B	A	A	R 49	B	R 60	64	64	59	64	64	59	56	52	51	50	F 30	A
11	F 31	F 38	R	A	R	R	R	A	54	57	64	61	65	70	69	72	65	69	66	61	64	66	F 58	F 148
12	A	A	A	R 42	49	57	B	66	73	B	B	80	76	76	74	69	67	68	66	62	54	51	49	F 30
13	F 24	F 24	F 38	F 37	46	51	57	70	76	74	76	77	77	76	66	67	62	61	61	60	58	55	54	56
14	58	60	64	68	69	69	78	J R 86	J R 87	91	94	92	93	85	88	82	77	74	70	69	60	59	59	58
15	63	65	67	70	77	76	79	82	88	89	91	J R 90	92	J R 90	R 83	81	74	69	69	67	64	58	52	F 35
16	37	F 39	F 33	F 52	A	42	F 56	68	F 56	79	F 80	80	75	71	76	69	71	64	55	35	R 36	A	U R 46	R
17	A	A	R 40	R 42	R 50	R	R	50	55	58	58	C	C	C	C	C	C	58	56	52	50	46	40	F 29
18	F 29	F 31	53	R	F 57	F 58	F 68	82	92	J R 91	92	95	96	96	J R 90	80	72	69	66	58	50	38	35	A
19	A	A	F 41	F 50	B	B	R	R	B	B	B	B	B	B	B	B	B	R	U R 46	44	R 43	45	R 48	F 30
20	27	R 35	F 23	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	50	40	R 44	R 34	A	46
21	24	A	A	F 32	A	A	38	R 38	B	56	B	R 62	F 66	B	R 68	65	52	52	49	43	40	R 34	R	A
22	R 32	F 33	A	34	F 37	A	B	R	R	B	R	B	B	B	R 60	60	B	B	54	52	42	27	27	23
23	R	R 31	37	A	A	F 65	A	56	52	62	64	67	64	65	63	62	68	67	55	B	F 57	F 27	F 23	A
24	F 28	25	F 30	F 34	A	F 47	F 34	57	68	76	75	76	74	J R 75	72	65	64	62	56	56	51	42	F 24	F 20
25	F 20	F 23	F 23	F 24	F 40	F 59	F 63	68	80	90	J R 90	J R 91	86	85	87	96	91	77	70	65	62	57	50	F 45
26	F 38	A	F 29	54	R	B	B	78	J R 84	R 87	J R 94	J R 97	92	90	J R 87	77	74	J R 72	68	64	61	56	49	45
27	43	50	F 30	45	F 57	67	R 69	R	U R 70	R 80	R 84	R 85	R 87	87	U Y 81	86	R 81	86	79	69	B	B	R	F 30
28	A	F 65	59	F 35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	22	20	16	19	17	18	20	20	19	22	22	21	23	24	23	24	27	26	26	23	23	19
MED	37	F 36	F 39	44	52	59	65	68	74	79	82	82	80	78	74	69	67	66	61	58	55	51	48	F 45
U Q	50	56	48	52	58	66	72	82	86	90	92	90	87	86	81	78	74	69	66	64	60	58	54	52
L Q	F 28	F 31	F 30	F 36	F 43	52	F 57	57	62	64	75	67	70	73	68	65	64	62	55	51	44	42	35	F 30

FEB.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E {SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	33	32	24	24	30	30	36	41	G 24	36	41	48	48	49	36	G 34	43	37	41	G 14	26	26	36
2	105	B	40	40	33	G	E B 56	50	72	33	G 24	27	G 28	38	G 25	G 20	35	35	G 23	31	32	30	34	26
3	30	30	30	42	46	50	44	41	46	E B 64	G 26	G 24	G 24	G 26	G 24	G 24	28	G 23	G 18	G 16	30	G 18	18	16
4	21	40	37	39	33	41	45	40	G	G 21	G 21	G 28	G	G	34	37	30	24	30	G 18	69	28	22	25
5	28	24	E B 16	24	24	25	32	33	33	G	34	41	42	38	37	32	35	35	43	45	41	33	30	24
6	30	E B 12	32	41	46	44	32	43	G 33	39	41	36	32	G 28	E B 51	37	G	G 33	E B 33	38	33	28	31	28
7	34	36	36	37	40	46	42	40	32	32	35	36	33	33	33	32	42	G 23	32	26	34	29	18	23
8	44	46	66	55	42	41	57	B	B	B	39	36	G	G	G 24	35	40	34	33	33	32	72	71	36
9	39	40	35	B	32	26	37	68	41	B	36	B	B	B	G	G	35	50	E B 30	30	37	92	B	40
10	87	40	40	40	33	38	B	35	42	36	B	E B 54	E B 49	E B 52	G	G	E B 34	E B 33	28	33	G	G	30	54
11	40	65	36	42	37	40	40	51	40	G 24	E B 56	36	33	G 26	22	31	33	24	31	35	E B 26	E B 23	E B 18	27
12	51	72	34	42	65	41	B	41	37	B	B	E B 56	Y 32	32	G	E B 29	G 26	G 21	26	26	G 21	E B 20	E B 18	28
13	22	24	32	25	G	22	25	29	33	40	36	40	43	32	31	G 26	31	32	40	30	30	31	18	24
14	24	31	30	21	21	22	G 15	20	32	43	49	45	56	43	53	G 30	40	35	58	36	42	42	38	32
15	31	24	E B 12	E B 12	G	E B 20	22	18	G 24	G 24	34	42	41	44	45	30	G 28	42	18	25	28	E B 20	34	34
16	46	42	34	58	56	50	37	46	41	E B 57	35	G	G 24	44	35	G 28	37	G 23	32	34	42	69	50	40
17	82	41	34	29	36	40	41	44	34	32	34	C	C	C	C	C	C	32	G 23	26	20	16	16	43
18	33	31	34	38	31	32	28	G 24	30	G 17	37	34	34	G	G 27	G 20	G 21	27	26	24	G	22	44	48
19	72	42	42	42	B	B	30	30	B	B	B	B	B	B	B	B	B	32	30	36	31	30	E B	25
20	25	27	40	49	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 26	G	37	24	42	47
21	69	70	60	34	73	42	32	G	B	G 28	B	E B 56	E B 37	B	E B 58	E B 57	G	32	27	35	31	37	34	36
22	34	41	39	33	28	72	B	G	41	B	40	B	B	B	E B 56	E B 54	B	B	32	28	K 40	18	26	25
23	37	70	44	99	42	41	48	54	40	G 24	33	33	G	G 26	32	G	G	33	33	B	48	29	73	37
24	47	39	32	84	39	22	G	G 23	32	32	G	32	33	35	35	E B 54	G	G 23	26	22	E B 20	26	16	22
25	30	24	29	39	28	30	G 18	28	30	30	G 32	42	42	38	41	44	39	G 28	E B 29	E B 26	E B 20	E B 16	E B 13	33
26	36	43	34	34	41	B	B	E B 57	E B 30	E B 34	E B 54	36	35	34	37	40	47	36	E B 28	29	27	E B 20	23	33
27	44	28	34	106	G	E B 54	E B 56	E B 56	E B 54	E B 56	E B 56	E B 56	E B 37	E B 56	33	40	37	E B 30	E B 50	E B 53	B	B	53	25
28	47	38	35	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	33
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	27	25	24	22	25	23	21	22	22	22	21	24	24	23	25	27	26	26	26	26	28
MED	36	39	34	39	33	40	33	U 38	34	30	35	36	33	33	33	E G 32	G	32	30	30	31	27	30	32
U Q	47	42	40	42	42	43	44	48	41	40	40	E B 42	42	44	43	38	37	35	33	35	37	31	38	36
L Q	30	28	32	33	26	26	28	G	32	G 24	G 33	33	G	G	G	G 30	31	G 24	26	26	G	20	18	25

FEB.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E ;SWEEP 1.0MHz TO 15.0MHz 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	13	12	12	12	12	12	13	13	13	14	13	15	15	13	13	13	13	13	12	12	11	13	14	17
2	16	B	20	20	24	26	56	18	24	14	14	20	21	20	16	16	14	12	13	13	13	13	12	12
3	12	12	12	15	14	14	14	14	14	64	20	16	20	17	18	16	20	18	13	12	12	16	12	12
4	12	12	23	26	14	14	14	24	13	13	15	15	14	22	13	18	15	18	15	13	12	12	12	12
5	12	14	16	11	11	11	12	13	13	16	13	18	14	20	18	15	14	14	13	13	12	12	12	12
6	12	12	11	13	18	13	12	12	16	14	14	14	13	24	51	20	19	19	31	14	12	14	13	12
7	12	11	12	13	14	17	13	13	15	13	12	14	15	15	15	19	16	14	14	12	13	14	13	12
8	14	13	12	13	16	21	16	B	B	B	19	13	27	24	20	16	13	14	14	13	19	13	13	20
9	13	18	30	B	14	14	25	20	23	B	20	B	B	B	23	25	18	14	30	18	13	13	B	13
10	12	12	24	12	12	16	B	20	20	19	B	54	49	52	20	22	34	33	16	15	12	15	13	13
11	168	13	29	24	22	20	23	18	14	14	56	20	19	20	14	16	14	17	13	13	26	23	18	12
12	12	14	24	18	20	17	B	16	21	B	B	56	29	12	23	22	16	17	15	19	18	20	18	12
13	11	12	12	12	14	13	12	12	14	14	14	14	20	28	23	18	14	14	13	13	11	11	12	12
14	12	13	12	11	12	12	13	14	12	18	14	14	15	18	19	15	17	13	14	12	12	12	12	12
15	13	12	12	12	12	20	13	16	14	14	15	19	19	19	17	22	20	14	13	12	13	13	12	12
16	13	13	11	24	40	15	12	14	12	57	12	28	18	13	14	18	13	16	12	13	13	14	12	12
17	12	13	24	23	23	19	22	15	14	12	13	C	C	C	C	C	C	13	14	13	13	13	11	12
18	12	12	23	17	16	14	12	13	12	12	14	13	13	19	20	13	15	14	14	13	13	13	12	14
19	12	12	14	18	B	B	22	22	B	B	B	B	B	B	B	B	B	28	23	22	21	21	23	16
20	15	14	14	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	20	16	14	14	13
21	13	19	12	15	29	25	20	23	B	23	B	56	37	B	58	57	22	22	14	18	14	12	20	14
22	13	14	13	18	14	38	B	22	27	B	24	B	B	B	56	54	B	B	24	16	13	13	11	11
23	13	14	14	23	22	16	20	20	20	18	18	20	22	20	20	25	18	21	12	B	20	11	12	12
24	12	12	12	12	15	13	14	13	14	16	16	14	16	23	29	54	23	20	13	14	20	12	12	11
25	12	12	12	12	12	14	14	15	14	14	14	15	18	22	20	20	19	20	29	26	20	16	13	12
26	11	13	12	14	26	B	B	57	30	34	54	29	30	31	21	20	27	28	28	23	20	20	12	12
27	12	11	12	14	15	54	56	56	54	56	56	56	37	56	28	26	21	30	50	53	B	B	23	15
28	25	18	23	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	20
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	28	28	28	28	28	28	28
MED	12	13	12	15	16	16	18	17	16	18	17	20	20	22	20	20	18	18	14	14	13	13	12	12
U Q	13	14	23	22	24	26	B 56	22	B 28	B	B 56	B 56	B 37	B 56	29	26	B 23	25	25	20	20	16	16	14
L Q	12	12	12	12	14	14	13	14	14	14	14	14	15	19	17	16	14	14	13	13	12	12	12	12

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	Q 234	Q 246	Q 246	274	248	224	212	202	192	200	214	E A 252	214	E A 232	A	196	200	A 224	206	A 222	E A 214	214	208	A
2	176	B	A	A	A	Y	B	A	E A 292	212	228	222	Y	232	210	202	202	202	212	200	228	226	238	252
3	A 284	E A 278	E A 270	E A 254	220	A	A	232	224	B	Y	200	202	202	210	206	212	216	224	204	A 228	224	216	Q 228
4	Q 238	226	216	A	A	A	A	A	196	200	190	206	226	Y	208	196	200	208	208	230	H 184	236	220	226
5	234	264	260	A 236	252	232	234	234	226	226	210	222	A	208	204	216	206	216	A 226	E A 230	E A 220	212	Q 232	Q 230
6	Q 254	Q 240	238	198	A	A	202	202	A	A	222	188	212	A	B	230	220	226	B	198	238	248	224	234
7	226	242	E A 236	E A 260	A	E A 270	240	A 246	E A 246	204	212	212	212	212	212	206	206	214	218	218	234	E A 238	E A 250	206
8	A	A	A	198	A	A	A	B	B	B	A	198	H 192	226	214	204	220	212	220	232	216	A	216	A
9	A	A	A	B	A	A	A	A	A	B	A	B	B	B	198	236	222	208	B	228	A	A	B	A
10	236	224	A	A	A	A	B	A	A	A	B	B	B	B	210	224	224	230	230	226	E A 250	E A 250	Q 284	220
11	A	226	A	A	A	A	A	A	H 194	200	B	232	238	198	202	202	202	202	Q 214	Q 216	242	236	Q 224	Q 238
12	A	A	A	A	A	A	B	202	A	B	B	B	Y	214	Y	216	208	208	216	236	232	232	236	Q 260
13	Q 316	Q 316	Q 254	Q 310	E B 276	E A 276	246	238	232	222	232	222	220	Y	212	204	208	224	208	204	216	212	228	222
14	242	248	264	272	278	242	238	228	204	228	A	A	A	212	A	200	212	212	224	Q 228	A 224	224	214	222
15	230	Q 234	Q 260	Q 260	274	250	208	218	204	208	202	198	214	216	210	202	202	A 228	206	Q 216	A 214	218	Q 228	Q 244
16	226	Q 246	Q 236	Q 304	A	234	A 236	236	200	B	216	212	200	212	204	220	214	218	228	A	A	A	242	264
17	A	A	A	A	A	A	A	232	232	192	192	C	C	C	C	C	C	212	212	E A 232	206	220	Q 236	Q 288
18	Q 296	Q 296	A	A	A	A 280	222	218	206	206	198	214	226	220	216	200	206	208	224	A 216	E A 260	252	E A 290	A
19	A	A	Q 292	A	B	B	A	A	B	B	B	B	B	B	B	B	B	E A 312	A 260	E A 266	E A 288	E A 260	280	A 294
20	A	212	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	270	296	A	230	A	218
21	A	A	A	220	A	A	192	A	B	A 252	B	B	E B 250	B	B	B	E A 242	208	254	244	A 262	238	A	A
22	A	A	A	A	A 298	A	B	A	A	B	A	B	B	B	B	B	B	B	E A 246	Q 238	E A 320	230	298	226
23	A	232	A	A	A	A	A	E A 250	A	E A 286	208	210	232	E A 226	216	216	232	A 260	228	B	192	266	200	A
24	232	210	A	Q 310	A	E A 280	220	220	220	226	218	204	218	228	238	B	230	A 214	200	230	226	Q 246	A 288	A
25	246	A	A	A	Q 358	322	Q 250	232	222	230	218	A 218	A	224	224	A	228	214	230	216	232	Q 214	Q 214	Q 214
26	E A 272	A	A	A	A	B	B	B	226	230	B	Y	E Y 246	210	A	Y	A	236	B	E A 224	Y	212	224	228
27	A 276	252	A 252	A	204	B	B	B	B	B	B	B	E B 218	B	226	E A 240	228	E B 218	E B 280	E B 306	B	B	A	A
28	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	17	12	12	9	10	12	15	16	16	14	16	16	16	17	19	22	25	24	25	22	23	23	19
MED	237	241	251	260	U 263	U 246	228	230	213	214	213	212	216	214	210	205	211	214	222	223	223	227	226	228
U Q	A 274	258	262	Q 289	288	A 280	239	236	229	229	218	222	229	226	216	220	224	A 225	230	234	E A 242	246	250	252
L Q	231	226	237	228	234	234	210	218	202	202	202	202	212	211	206	202	206	208	212	216	216	218	216	222

FEB.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR.2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E +SWEEP 1.0MHz TO 15.0MHz 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	R 46	B X 42	X 40	O X 46	B X 40	B	B	B	B	B	B	B	B	B	B	B	O X 83	B	B	B	O X 74	O X 64	X 39	67
2	R	X 42	R	X 40	B	B	B	B	B	O X 77	O X 82	O X 83	O X 82	O X 86	X 97	O X 89	O X 86	O X 86	X 78	X 73	O X 66	X 59	X 57	X 49
3	46	X 42	X 43	47	A	B	B	B	B	O X 68	X 75	B	X 82	O X 89	X 99	O X 93	X 89	X 97	X 86	X 83	X 73	X 73	X 62	X 54
4	X 47	40	O X 44	A	X 60	O X 73	O X 74	X 81	X 98	X 94	X 89	94	X 96	X 94	X 95	X 112	X 106	X 98	X 88	X 84	X 78	X 69	X 51	36
5	X 34	54	O X 52	R	70	73	71	76	X 76	X 83	94	X 96	X 100	X 108	X 96	X 104	X 105	105	X 93	X 86	X 90	77	68	O X 47
6	O X 39	X 36	40	46	68	69	81	X 74	X 80	92	X 97	X 95	X 96	X 99	X 96	X 104	X 100	X 104	91	71	X 68	43	B	34
7	28	X 44	44	42	53	57	X 76	69	X 76	O X 84	X 92	X 96	X 100	X 98	X 97	O X 101	X 93	X 86	X 84	X 80	X 71	66	57	45
8	40	37	39	45	60	71	82	92	105	X 106	X 110	O X 112	O X 112	X 106	X 100	X 100	X 96	O X 100	X 85	X 86	X 72	X 62	60	44
9	40	28	70	70	75	X 64	77	X 80	87	X 96	X 97	X 102	X 108	X 101	X 100	X 97	X 94	X 87	X 78	X 74	X 65	X 62	X 52	X 47
10	X 39	V 40	38	51	54	68	67	X 75	82	X 85	X 87	X 94	X 96	X 106	X 106	X 108	X 100	X 96	X 96	X 92	X 83	X 59	42	39
11	X 33	X 45	X 45	X 40	X 45	57	67	76	84	X 96	X 103	O X 109	109	X 111	X 115	X 114	X 106	X 110	X 95	X 81	X 68	60	58	34
12	O X 40	47	68	A	A	A	X 52	R	X 68	X 77	X 85	X 88	X 93	X 96	X 93	X 90	X 89	X 83	81	X 77	74	72	60	38
13	A	O X 35	48	56	B	74	B	B	R	R	68	B	X 71	X 72	X 72	X 72	X 70	X 67	X 70	X 67	62	X 48	42	O X 32
14	51	42	44	56	52	52	X 42	X 61	69	X 70	X 80	99	X 110	X 104	O X 104	X 101	O X 92	X 94	X 90	X 75	X 68	X 56	54	40
15	31	40	X 40	42	R	A	64	X 69	84	X 86	X 96	X 96	O X 108	X 102	X 96	X 100	O X 90	X 85	X 76	X 70	X 61	X 52	X 47	X 27
16	58	40	42	56	59	53	57	70	X 70	76	X 96	X 99	O X 108	X 106	X 106	O X 104	X 94	X 78	X 71	O X 74	X 64	X 57	55	X 37
17	41	36	35	48	68	72	71	X 63	X 78	X 96	X 100	X 100	110	X 120	O X 114	X 114	X 105	X 92	X 91	X 85	X 71	X 58	X 43	X 30
18	52	91	59	A	X 62	70	83	91	X 99	X 99	100	X 101	O X 110	X 110	X 117	X 114	X 116	X 110	X 108	X 98	78	67	X 44	39
19	X 37	R	58	51	A	A	A	X 56	69	X 74	X 77	X 93	X 110	X 111	X 111	X 108	X 108	X 96	X 91	X 80	X 69	X 58	39	R
20	R	R	A	43	A	O X 46	60	X 61	73	X 74	X 76	X 83	X 93	X 110	X 112	X 116	X 110	105	X 94	78	70	X 46	X 39	X 32
21	87	60	A	A	A	R	A	B	R	O X 64	X 65	O X 68	X 70	76	82	X 86	O X 88	X 82	X 78	X 59	X 34	R	X 27	31
22	X 34	58	O X 34	X 37	58	49	54	O X 70	B	X 69	X 77	X 80	O X 85	X 86	X 88	X 93	X 92	X 87	X 93	X 86	X 66	X 45	X 40	X 35
23	34	X 27	69	45	46	54	63	72	O X 75	75	B	O X 82	O X 111	O X 111	X 113	X 109	X 104	X 98	X 87	X 78	70	68	39	A
24	A	A	A	O X 48	69	72	75	77	X 71	X 81	X 83	X 97	X 104	X 101	X 104	O X 96	X 96	X 93	X 82	X 77	70	60	50	39
25	28	O X 25	25	44	54	68	82	82	78	83	X 98	O X 112	X 112	X 124	X 125	X 122	X 129	X 114	O X 101	X 83	X 60	X 53	40	R
26	A	A	70	A	B	O X 70	65	O X 64	X 78	O X 85	X 88	B	X 71	95	100	X 95	87	X 78	X 76	76	69	X 52	41	R
27	29	41	41	X 44	X 38	R	45	69	X 57	X 67	X 79	X 90	O X 104	X 111	X 104	X 104	X 106	X 91	X 104	X 89	70	R	O X 43	A
28	R	O X 34	A	X 31	X 31	44	42	X 44	X 62	X 77	X 97	O X 110	X 116	X 132	X 126	X 124	X 122	X 115	O X 99	X 94	X 81	X 72	56	X 67
29	R	A	A	A	67	B	B	A	X 61	X 68	X 69	X 77	X 89	X 96	X 105	X 101	X 114	X 102	O X 98	77	71	66	57	35
30	X 26	O X 24	O X 44	O X 59	B	R	R	62	X 69	X 76	X 82	X 96	X 110	X 108	X 92	X 95	X 108	X 109	X 91	69	56	X 50	42	63
31	56	40	X 57	X 28	X 39	B	X 31	O X 45	B	B	X 94	X 108	X 110	X 117	X 129	X 130	X 131	O X 116	X 110	X 91	67	70	X 36	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	25	25	24	20	20	23	24	24	28	29	27	30	30	30	30	31	30	30	30	31	29	30	26
MED	39	40	44	46	58	68	67	X 70	X 76	X 79	X 88	X 96	X 104	X 105	X 102	X 102	X 100	X 96	X 90	X 79	X 70	X 60	46	39
U Q	47	44	58	51	68	72	76	76	83	X 89	X 97	O X 101	X 110	X 111	X 112	X 112	X 108	X 105	X 95	X 86	X 73	68	57	X 47
L Q	33	O X 36	40	X 42	X 49	54	54	X 62	X 69	X 74	X 78	X 88	X 93	X 96	X 96	X 95	X 90	X 86	X 81	X 74	X 66	X 52	X 40	X 34

MAR.2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	R	B	34	R 40	B	B	B	B	B	B	B	B	B	B	B	B	R 77	B	B	B	68	58	33	R
2	R	36	R	34	B	B	B	B	B	R 71	76	77	76	R 80	91	83	80	80	72	67	60	53	51	43
3	40	36	37	F 34	A	B	B	B	B	R 62	69	B	76	U R 83	93	R 87	83	91	80	77	67	67	56	48
4	41	F 30	38	A	54	67	R 68	J R 74	92	J R 88	83	J R 88	90	J R 88	J R 89	106	J R 100	92	82	78	72	63	45	22
5	28	F 39	R 46	A	F 56	F 64	F 57	F 66	70	77	F 83	U R 90	J R 94	102	90	98	J R 99	F 93	J R 87	80	R 84	F 68	F 56	R 41
6	R 33	30	F 30	F 33	F 50	F 58	F 67	68	74	F 82	J R 91	J R 89	J R 90	J R 93	J R 90	J R 98	J R 94	J R 98	F 80	65	62	F 18	B	F 21
7	F 18	38	F 25	F 32	F 39	F 42	70	F 57	70	78	86	90	94	92	91	S 95	87	80	78	74	65	F 56	F 49	F 34
8	F 26	F 22	F 21	F 23	F 38	F 58	F 69	F 77	F 95	100	104	106	106	100	R 94	94	90	S 94	79	80	66	56	F 47	F 32
9	F 22	F 20	F 49	F 27	F 47	58	F 61	74	F 74	90	91	96	102	J R 95	94	91	88	81	72	68	59	56	46	41
10	33	V 34	F 22	F 29	F 29	F 55	F 57	69	F 71	79	81	88	J R 90	100	100	102	94	90	90	86	77	53	F 18	F 18
11	27	39	39	34	39	F 39	F 49	F 64	F 74	90	97	R 103	F 100	105	109	108	J R 100	104	89	75	62	F 49	F 48	F 24
12	R 34	F 32	F 33	A	A	A	46	A	62	71	79	82	87	90	J R 87	84	83	77	F 71	71	F 64	F 58	F 40	F 25
13	A	R 29	F 26	F 30	B	F 58	B	B	R	R	F 61	B	65	66	66	66	64	61	64	61	F 49	42	F 32	R 26
14	A	F 30	F 30	F 26	F 40	F 27	36	55	F 59	64	J R 74	F 89	104	J R 98	R 98	95	R 86	J R 88	J R 84	69	62	50	F 38	F 27
15	F 20	F 20	F 20	F 25	A	A	F 53	F 63	F 73	80	90	90	102	96	90	94	R 84	79	70	64	55	46	41	21
16	R 24	F 19	F 24	F 39	F 38	F 26	F 39	F 57	64	F 61	90	93	R 102	100	100	R 98	J R 88	72	65	68	58	51	F 43	31
17	F 24	F 22	F 18	F 18	F 46	F 28	F 41	57	72	90	94	J R 94	J R 104	J R 114	108	108	J R 99	86	85	79	65	52	37	24
18	A	R 32	F 42	A	56	F 50	F 71	F 80	93	93	F 89	95	104	104	J R 111	108	110	104	J R 102	92	F 68	F 56	38	F 24
19	31	A	A	F 31	A	A	A	50	F 57	68	71	J R 87	104	105	105	102	J R 102	90	85	74	63	52	F 24	A
20	A	A	A	F 32	A	R 40	F 44	55	F 59	68	70	77	87	104	106	110	F 99	F 91	88	F 69	F 56	40	33	26
21	A	F 23	A	A	A	A	A	B	A	R 58	59	R 62	64	F 62	F 71	R 80	82	76	72	53	28	R	21	F 18
22	28	A	R 28	31	R 34	F 32	F 31	R 64	B	63	71	74	79	80	82	87	86	81	87	80	60	39	34	29
23	F 23	21	F 30	F 30	F 30	F 26	F 30	F 59	R 69	F 61	B	R 76	105	R 105	107	103	J S 98	92	81	72	F 59	F 58	F 23	A
24	A	A	A	R 42	F 50	F 50	F 56	F 57	65	75	77	91	98	R 95	98	90	90	87	76	71	F 58	F 48	F 37	F 22
25	F 16	R 19	F 16	F 21	F 30	F 39	F 56	F 54	64	F 76	92	106	106	J R 118	J R 119	J R 116	J R 123	108	S 95	J R 77	54	47	F 26	A
26	A	A	F 57	A	B	R 64	F 52	R 58	72	79	82	B	65	F 80	F 89	89	F 74	72	70	F 64	F 57	46	F 26	R
27	F 19	F 19	R 21	38	32	R	F 27	41	51	61	73	J R 84	98	105	J R 98	J R 98	100	J R 85	J R 98	89	F 52	R	R 37	A
28	R	R 28	A	R 25	25	F 24	F 23	38	56	71	91	104	J R 110	J R 126	J R 120	J R 118	116	109	S 93	88	75	66	F 40	S 61
29	R	A	A	A	F 56	B	B	A	55	62	63	71	83	J R 90	J R 99	J R 95	108	S 96	92	F 67	F 58	F 48	F 36	F 23
30	20	18	R 38	53	B	R	R	F 52	63	70	76	90	104	J R 102	86	89	102	103	85	F 60	F 46	44	F 31	F 20
31	F 20	F 20	51	22	33	B	25	R 39	B	B	88	102	104	111	J R 123	124	J R 125	110	104	85	F 45	R	30	F 24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	24	24	24	20	20	23	24	24	28	29	27	30	30	30	30	31	30	30	30	31	28	30	25
MED	25	28	F 30	F 31	F 39	F 46	F 52	58	70	73	82	90	98	99	96	96	94	90	83	73	60	52	F 37	F 25
U Q	32	33	38	34	F 50	F 58	F 61	67	F 74	81	90	95	104	105	106	106	100	96	89	80	66	57	45	33
L Q	F 20	F 20	F 23	F 26	32	F 30	F 36	54	60	64	72	82	87	90	90	89	84	80	72	67	F 56	46	F 31	F 22

MAR. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	32	B	48	60	B	B	B	B	B	B	B	B	B	B	B	B	E B 56	B	B	B	E B 45	65	E B 21	26
2	K 26	88	32	E B 28	B	B	B	B	B	E B 56	E B 58	E B 58	E B 57	E B 55	E B 55	E B 56	E B 33	E B 30	E B 29	E B 30	E B 26	E B 23	19	E B 15
3	E B 16	E B 13	E B 17	26	94	B	B	B	B	38	E B 56	B	G	G	G 21	E B 39	E B 33	30	E B 56	E B 33	E B 27	E B 20	17	
4	31	31	67	45	42	G	E B 56	G	E B 28	G 22	G 18	G	33	34	G 32	E B 29	G 22	G 22	E B 25	E B 19	E B 17	44	33	33
5	33	70	41	44	44	25	E B 21	23	G 21	30	31	G 26	G 22	35	41	36	E B 37	E B 28	G	E B 32	16	25	32	45
6	44	36	34	32	28	39	31	31	G 19	30	32	32	34	42	34	45	38	26	24	26	20	33	B	E B 12
7	21	42	18	18	18	E B 17	G 16	G 17	G 22	30	32	34	37	49	45	34	34	34	25	30	35	28	E B 12	16
8	37	35	40	24	K 30	32	26	31	34	36	37	34	34	42	31	33	35	24	24	30	32	28	42	28
9	36	42	40	65	49	77	44	36	32	34	G	39	39	31	29	34	G 22	G 19	G 19	G 17	25	33	22	E B 12
10	24	28	42	30	21	31	36	28	30	G	33	33	33	35	32	32	G 22	G 19	G 19	16	G 15	14	25	31
11	34	32	46	36	G	G 19	30	16	30	29	37	40	42	41	35	31	G 20	32	G 17	G	E B 13	E B 14	30	34
12	41	41	83	58	57	46	44	48	42	31	G 22	35	39	35	34	32	32	G 17	21	G 16	41	21	16	42
13	44	40	39	32	B	38	B	B	39	46	50	B	E B 54	31	E B 31	E B 30	G	35	24	E B 27	E B 16	E B 14	26	37
14	35	35	32	30	24	28	34	35	32	E B 31	E B 57	G	34	E B 49	36	42	26	26	E B 30	E B 19	E B 27	36	37	34
15	30	18	25	32	39	64	47	36	31	31	25	E B 39	31	30	30	32	E B 31	G	G 9	18	E B 17	E B 12	E B 12	E B 12
16	35	27	30	25	18	E B 13	E B 14	G 19	G	E B 52	E B 38	30	30	28	G	G 21	G	G	G	30	27	24	32	E B 11
17	18	27	E B 12	E B 12	32	E B 12	E B 14	G 17	24	G 23	G	35	34	35	30	28	34	32	57	29	33	26	21	27
18	30	39	33	47	51	43	45	40	29	29	36	33	E B 56	G 28	G	E B 29	G 24	G 18	33	19	30	41	39	31
19	36	35	34	40	48	43	43	38	32	33	35	36	42	30	36	G	G	22	G	G 15	E B 12	32	29	30
20	27	36	43	38	51	42	36	34	38	E B 55	E B 36	42	34	44	42	E B 31	E B 28	E B 30	32	31	29	31	24	26
21	37	31	40	42	42	29	43	B	36	40	G	G	E B 37	E B 31	E B 30	E B 52	E B 52	G 20	E B 24	G 26	35	27	21	27
22	31	33	33	37	42	33	E B 26	E B 24	B	E B 27	E B 53	31	35	47	57	60	42	65	40	51	37	32	18	23
23	29	34	33	33	28	27	36	E B 20	G	G 16	B	E B 68	E B 35	E B 35	G	G 24	G 18	R 20	E B 23	E B 14	E B 14	28	32	42
24	41	34	40	36	34	17	E B 15	G	31	G 19	G	G 25	G	G	G	G 25	38	66	32	29	28	26	24	26
25	20	E B 13	E B 13	20	21	29	G	G	G 17	G 15	G 19	G 19	G 23	G 23	G	27	G	G	22	18	16	15	16	31
26	43	50	38	38	B	E B 55	G	34	39	33	30	B	G	31	G 23	E B 27	28	27	G 21	E B 20	E B 19	E B 13	E B 15	28
27	17	18	22	30	30	23	E B 14	E B 15	G	G 21	G	27	G	E B 38	E B 30	E B 30	G 22	32	E B 22	E B 32	E B 16	K 34	K 34	39
28	31	31	32	K 30	19	21	E B 14	38	34	35	32	32	G	E B 31	36	E B 27	32	E B 31	E B 24	31	45	21	31	57
29	36	33	48	42	34	B	B	56	34	25	27	30	30	G	G 22	E B 29	E B 27	E B 23	E B 24	K 18	E B 15	E B 13	E B 14	E B 13
30	E B 13	E B 14	K 30	40	B	40	40	G	G	G	G 23	28	G 27	G 24	G 23	G	G	G	G	E B 13	26	E B 13	27	17
31	25	17	35	17	E B 20	B	E B 16	E B 27	B	B	G	50	33	34	G	G	G 20	E B 38	E B 30	E B 18	30	41	41	33
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	26	26	26	26	26	29	29	27	30	30	30	30	31	30	30	30	31	31	30	30
MED	31	34	34	33	33	30	29	28	30	30	E G 32	32	32	32	G	30	E G 28	E G 26	23	G	U 23	26	24	28
U Q	36	39	41	42	44	42	43	36	34	36	E B 37	39	37	41	36	34	34	32	30	30	32	33	32	34
L Q	25	27	30	28	21	21	E B 16	G	G	G	G	G 27	G	G 30	30	G 27	G 24	G	G	18	E B 16	E B 15	18	E B 17

MAR.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	20	B	26	22	B	B	B	B	B	B	B	B	B	B	B	B	56	B	B	B	44	38	21	16
2	17	20	23	28	B	B	B	B	B	56	58	58	57	55	55	56	33	30	29	30	R 26	23	14	15
3	14	13	17	13	30	B	B	B	B	29	56	B	28	23	15	38	34	26	56	33	27	20	13	15
4	13	13	15	16	20	25	56	26	28	17	16	13	14	17	20	16	19	15	25	19	17	12	12	13
5	11	12	13	16	15	18	21	12	16	14	15	19	19	16	13	16	37	28	14	32	14	12	12	12
6	15	14	14	16	22	14	13	12	15	15	13	13	16	16	16	14	14	18	14	13	12	12	B	12
7	13	13	14	13	14	17	14	13	14	13	14	14	16	14	14	13	15	13	13	12	11	10	12	12
8	13	10	11	12	16	17	14	13	11	12	15	20	19	28	16	17	20	14	14	12	11	12	13	13
9	13	13	13	11	12	16	11	13	13	14	18	12	15	17	14	14	18	15	13	12	12	11	12	12
10	12	12	13	12	12	13	13	12	12	13	13	14	15	14	15	18	16	14	13	12	12	12	12	12
11	12	12	13	12	13	12	13	14	14	13	14	14	16	18	14	16	14	12	14	13	12	14	12	12
12	14	13	13	15	13	13	13	14	13	14	16	16	12	13	14	12	14	12	12	13	14	12	12	12
13	13	13	12	12	B	15	B	B	24	24	20	B	54	19	31	30	18	22	19	27	16	14	12	12
14	11	11	11	13	14	12	17	18	18	31	57	26	20	49	29	23	18	18	30	19	27	18	12	14
15	14	12	12	13	15	14	14	14	15	14	18	39	19	23	20	22	31	18	13	13	17	12	12	12
16	12	11	12	12	12	13	14	15	18	52	38	22	18	16	19	16	17	15	15	14	12	12	11	11
17	11	12	12	13	12	12	14	13	16	14	24	23	20	25	15	19	16	15	12	12	11	13	12	12
18	12	12	14	14	12	12	13	12	12	20	19	13	56	24	23	29	14	13	12	12	11	14	11	12
19	11	11	11	13	12	14	13	14	13	14	14	14	14	14	14	13	14	12	13	11	12	12	12	12
20	11	13	14	12	13	14	12	13	12	55	36	26	21	15	20	31	28	30	21	20	17	13	13	13
21	12	11	14	16	16	13	16	B	30	29	31	29	37	31	30	52	52	12	24	16	13	12	14	11
22	12	12	13	14	12	13	26	24	B	27	53	27	27	22	22	12	16	16	12	15	15	12	13	11
23	12	12	14	13	12	12	13	20	19	12	B	68	35	35	22	17	15	17	23	13	14	12	13	12
24	12	13	14	20	13	13	15	14	16	14	16	16	17	17	18	18	15	14	12	12	12	12	12	13
25	12	13	13	13	13	13	13	14	14	12	14	15	14	19	21	17	16	19	14	11	12	11	11	13
26	16	17	18	14	B	55	20	25	19	20	19	B	28	23	17	27	13	14	17	20	19	13	15	13
27	15	13	12	14	12	12	14	15	14	14	17	16	16	38	30	30	14	13	22	32	16	13	12	12
28	12	12	14	13	12	12	14	13	12	14	14	22	23	31	25	27	18	31	24	26	20	15	13	14
29	14	12	13	19	19	B	B	24	19	13	16	19	20	25	20	29	27	23	23	13	15	13	14	13
30	13	14	12	26	B	21	16	15	15	15	17	16	18	16	16	19	16	15	13	13	12	13	12	13
31	12	13	22	12	20	B	16	27	B	B	24	45	23	23	20	19	16	38	30	18	11	12	12	11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	12	13	13	13	14	14	14	14	16	14	18	20	19	22	20	19	16	15	14	13	14	12	12	12
U Q	14	13	14	16	B 20	B 21	B 21	B 25	B 24	29	36	39	28	28	23	29	27	23	24	20	17	14	13	13
L Q	12	12	12	12	12	13	13	13	13	14	15	14	16	16	15	16	15	14	13	12	12	12	12	12

MAR.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E {SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E B 276	B	B	B	E B 268	E B 276	E B 262	A
2	A 254		A	B	B	B	B	B	B	B	B	B	B	B	B	254	226	226	226	226	E B 226	226	234	Q 236
3	262	290	304	326	A	B	B	B	B	Y	B	B	E Y 254	E A 234	A 234	240	230	216	E B 246	224	224	226	220	232
4	238	238	232	A	A	A	B	Y	232	208	208	224	222	222	234	E A 226	218	216	230	218	208	218	218	216
5	230	218	A	A	A	A	B 248	E A 238	214	230	226	214	216	216	216	212	E B 234	Q 228	200	214	218	Q 204	Q 224	236
6	216	A	A	A	A	A	230	242	224	206	206	210	210	A 212	216	202	222	222	214	218	218	A	B	E B 280
7	216	A	E A 314	E A 368	A	E B 358	278	240	220	212	212	212	212	218	224	210	210	Q 216	218	208	Q 208	Q 206	Q 206	Q 232
8	274	A 316	A 326	358	A	A	E A 266	234	218	210	212	H 212	202	Y	224	200	226	Q 220	216	216	Q 198	Q 220	Q 232	Q 228
9	A 234	A	234	A	224	A	A	226	226	210	234	222	222	212	212	208	216	E A 228	206	206	208	214	198	210
10	230	A 270	Q 320	A	Q 370	A	252	236	236	236	214	214	214	214	214	214	228	E A 224	206	202	Q 204	Q 206	Q 250	348
11	A	282	A 244	240	228	210	Q 264	250	240	222	222	204	204	204	202	202	E A 216	A 222	196	A 200	210	Q 226	Q 236	A
12	A 268	240	A	A	A	A	A	A	E A 234	224	224	224	224	232	228	214	214	Q 214	210	198	Q 198	Q 216	Q 226	A
13	226	A	236	220	B	A	B	B	A	A	A	B	B	220	222	238	E A 240	196	E A 228	E B 242	212	Q 232	Q 242	228
14	A	228	228	242	262	A	A	A	256	242	B	236	202	B	244	E A 244	E A 224	A 208	B 202	Q 210	232	238	Q 250	278
15	A 350	204	240	226	A	A	218	218	230	222	H 204	E B 260	210	A 218	224	224	224	208	198	218	210	210	210	E B 244
16	A	E A 328	290	338	E A 356	E B 308	Q 266	Q 234	234	E B 320	246	212	H 212	220	202	208	218	204	204	204	Q 198	Q 198	Q 212	214
17	Q 228	E A 262	E B 306	E B 328	A 328	E B 298	258	234	218	212	220	208	210	210	210	210	210	204	E A 216	202	198	192	192	208
18	194	A	A	A	A	A	226	220	200	224	224	210	B	222	222	222	216	214	206	206	234	Q 248	A	A 220
19	A 234	A	A	A	A	A	A	224	224	226	210	214	214	214	214	214	220	206	206	206	206	Q 206	E B	A
20	A	A	A	A	A	A	A	E A 284	208	B	236	E A 266	234	E A 230	236	228	208	216	216	216	Q 216	236	236	A 258
21	A	A 262	A	A	A	A	A	B	A	Y	Y	Y	E B 268	234	234	B	E B 270	E A 228	228	E A 268	256	218	A	A
22	A	A	A	242	A	240	B	E B 286	B	234	B	224	E Y 258	A	E A 238	E A 244	E A 230	E A 220	204	218	212	E A 234	A 254	A 272
23	A 314	A	238	A	A	196	E A 332	E B 274	238	226	B	B	226	228	216	222	E A 214	210	210	210	210	Q 224	210	A
24	A	A	A	A	Q 346	Q 320	Q 304	Q 246	230	224	224	210	202	214	214	E A 214	216	202	Q 202	202	196	Q 216	228	228
25	A	B	E B 358	E A 292	A	A 270	310	Q 244	210	200	214	200	212	212	226	212	212	200	200	200	210	208	218	A
26	A	A	E A 276	A	B	B	A	Y	A	A 228	A 242	B	E A 230	204	208	E B 230	202	212	218	Q 218	Q 218	Q 226	E B 258	A
27	A	A	A	A	A	A	B	210	A	226	206	216	212	E B 254	E B 232	B 226	210	A 224	200	248	Q 242	A	242	A
28	A	A	A	A	A	232	E B 328	A	A	A	A	E A 222	230	B 230	A	230	220	208	218	218	218	Q 218	Q 228	A
29	A	A	A	A	A	B	B	A	E A 324	226	218	228	228	228	224	E B 224	212	212	228	198	Q 206	Q 222	Q 222	222
30	E B 296	B	E A 246	A	B	A	A	E A 282	230	234	226	216	224	236	212	208	206	Q 200	Q 200	Q 192	Q 200	Q 218	Q 218	Q 254
31	A 216	A 302	A	A	B	B	B	B	B	B	232	E A 248	E B 234	216	224	220	208	208	210	210	Q 230	A 222	222	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	16	11	7	9	14	19	21	23	22	24	27	26	28	29	31	30	30	30	31	29	27	20
MED	232	260	U 249	U 267	U 295	U 240	258	236	227	224	221	214	214	218	221	216	216	212	208	210	210	218	224	230
U Q	A 271	A 290	E 310	338	356	E B 314	304	E 250	235	230	226	224	E 230	230	230	229	E 226	A 222	218	218	224	226	242	256
L Q	221	238	237	240	228	221	248	226	218	212	212	211	210	214	214	210	212	208	202	202	Q 206	Q 209	218	221

MAR. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz 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	36	30	O X 24	X 24	52	52	58	X 42	X 64	X 76	X 88	X 106	O X 114	X 129	X 128	X 130	X 118	X 108	O X 98	X 80	X 81	56	40	34
2	30	52	A	44	54	57	59	59	X 61	X 72	X 84	O X 92	X 100	O X 110	X 110	X 114	X 116	X 103	X 84	71	66	41	28	O X 20
3	44	X 34	34	33	X 30	X 30	A	72	72	84	X 100	X 110	X 111	X 112	O X 99	X 130	X 135	X 113	X 97	X 86	70	40	42	29
4	A	X 44	A	A	X 34	46	69	82	X 58	69	78	X 82	100	X 105	X 114	X 112	X 111	110	100	78	58	32	30	30
5	37	24	42	48	A	A	65	72	71	77	X 81	X 105	X 113	X 117	X 131	115	O X 136	X 137	X 130	89	R	45	A	A
6	50	A	O X 46	70	57	100	54	70	80	X 90	92	X 103	O X 94	O X 99	X 104	X 101	X 100	X 85	X 76	X 63	X 41	X 37	31	X 27
7	X 27	O X 25	71	70	O X 63	A	O X 48	A	80	X 87	X 81	X 101	X 113	X 116	X 115	X 122	X 118	X 107	90	80	R	X 32	R	A
8	A	55	51	A	A	A	R	X 43	61	X 70	X 76	X 87	X 96	X 93	X O 106	X O 110	X O 105	O X 98	92	74	55	40	31	X 26
9	27	O X 22	X 23	36	39	40	52	41	57	X 69	X 82	X 84	X 108	X 106	X 114	X 110	X 110	110	X 106	X 69	39	26	A	A
10	28	57	52	42	X 30	X 33	X 33	53	X 52	X 64	X 82	X 93	X 113	X 113	X 128	X 122	X 122	X 94	X 84	X 67	X 48	X 35	X 34	O X 25
11	B	B	B	B	B	B	B	X 33	56	X 68	X O 76	X O 82	X 111	X 114	X 126	X 112	X 118	X 118	X 102	X 80	44	O X 36	71	A
12	71	50	74	56	74	R	B	B	B	B	B	B O X 38	B	B	B	78	71	71	48	O X 40	A	O X 48	A	A
13	X 32	57	52	B	B	56	R	R	X 68	R	R	B	X 44	B	B	B	X 58	O X 63	X 60	X 50	R	R	71	A
14	A	A	O X 42	40	O X 36	A	A	43	X 45	X 48	B	B	B	O X 87	O X 85	91	X 72	X 71	B	X 53	X 32	B	R	A
15	A	B	A	R	B	A	58	B	X 52	X 61	X 74	O X 76	X 100	X 106	X 98	X 107	X 98	X 94	X 86	X 59	34	B	B	A
16	A	X 32	O X 25	25	29	40	42	33	X 47	X 63	O X 74	X 81	X 96	O X 98	O X 112	X 133	X 102	X 101	80	63	X 46	B	B	A
17	O X 32	53	44	A	A	A	A	61	A	73	X 82	X 95	X 107	O X 111	O X 112	114	X 110	O X 98	X 92	88	46	45	A	A
18	A	A	O X 37	36	50	X 35	58	X 69	O X 69	O X 73	70	X 84	O X 88	X 92	X 90	R	X 93	X 96	X 81	65	40	X 32	O X 24	B
19	A	O X 36	O X 48	A	O X 34	B	71	71	B	B	B	O X 96	X 104	O X 89	B	X 98	X 103	X 98	80	B	O X 47	B	B	B
20	B	B	B	B	B	B	B	B	B	O X 74	O X 85	X 100	O X 104	X 104	X 106	X 101	X 95	X 112	84	B	X 34	A	A	A
21	A	44	A	B	A	A	B	R	B	69	X 73	X 82	X 82	B	X 82	87	O X 77	83	X 77	66	41	B	A	A
22	A	A	O X 35	42	43	49	57	62	70	X 65	X 72	X 106	X 112	X 113	O X 113	X 109	X 95	X 80	X 72	67	50	30	B	A
23	30	A	O X 22	X 21	X 21	41	42	44	50	X 64	X 71	X 95	X 104	114	X 129	X 111	X 108	X 97	92	81	66	X 28	A	51
24	36	X 29	28	B	B	O X 44	44	52	58	X 58	B	74	O X 74	X 96	90	X 101	R	O X 95	90	71	X 45	R	A	A
25	A	O X 43	B	B	B	B	B	R	55	66	X 63	X 71	X 76	X 86	X 85	X 90	X 83	X 70	O X 66	X O 30	O X 25	A	A	A
26	B	B	A	A	A	A	A	A	R	B	B	R	X 88	X 95	X 113	X 106	X 94	O X 99	X 75	B	42	55	42	58
27	A	A	B	A	R	A	O X 30	39	X 43	X 57	X 70	X 78	X 90	X 91	O X 98	X 94	X 75	X 58	X 53	40	32	O X 22	R	B
28	O X 21	43	B	A	32	36	30	A	O X 44	X 56	68	79	X 92	O X 110	B	O X 114	X 109	94	88	72	46	38	O X 35	R
29	40	O X 40	A	A	A	R	33	33	38	X 44	X 64	X 74	X 80	X 85	X 80	V 82	72	65	42	X 30	X 25	O X 23	B	22
30	23	40	66	A	89	B	B	B	B	B	B	B	B	B	B	96	92	O X 46	R	94	119	99	59	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	16	20	19	14	17	14	18	20	23	25	23	26	27	26	25	28	29	30	28	27	26	21	13	10
MED	32	42	42	41	39	42	53	52	58	X 69	X 76	X 86	X 100	X 106	X 110	X 110	X 102	X 96	X 84	69	46	37	35	28
U Q	38	51	52	48	56	52	58	70	69	X 74	X 82	X 100	X 111	X 113	X 114	X 114	X 114	X 107	X 92	80	55	45	50	34
L Q	28	X 31	O X 28	33	X 31	X 36	42	42	X 50	X 62	X 71	X 79	X 88	X 93	X 94	97	X 88	X 80	X 76	X 59	X 39	31	30	O X 25

APR. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E kSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 23	F 20	R 18	18	F 30	F 16	F 24	36	58	71	82	100	108	J R 123	J R 122	J R 124	112	102	92	J R 74	J R 75	F 38	F 23	15
2	F 20	A	A	F 36	F 39	F 28	F 31	F 42	54	66	78	86	J R 94	104	104	108	110	J R 96	78	F 59	F 56	F 23	F 16	R 14
3	A	28	F 23	F 20	24	24	A	F 56	F 56	F 75	94	104	105	106	R 93	J R 124	129	107	91	80	F 58	F 27	F 18	F 21
4	A	38	A	A	28	F 34	F 46	R 36	52	61	F 68	76	F 89	99	107	106	105	F 101	F 88	F 68	F 47	F 20	F 16	F 14
5	F 21	F 16	F 15	F 26	A	A	F 29	F 56	F 60	F 65	75	99	107	111	125	F 105	R 130	131	J R 124	F 59	R	F 32	A	A
6	F 39	A	40	F 56	F 38	30	F 40	F 48	F 60	84	F 81	97	88	R 93	98	J R 95	94	79	70	57	35	31	F 22	21
7	21	R 19	F 40	F 57	R 57	A	R 42	A	F 65	81	75	R 95	107	110	109	R 116	J R 112	101	F 76	F 63	R	26	R	A
8	A	A	F 30	A	A	A	A	37	F 49	64	70	81	90	J R 87	J R 100	104	J R 99	92	F 82	F 64	F 42	F 28	F 20	20
9	F 18	R 16	17	F 19	F 18	F 18	F 21	F 32	F 47	63	76	78	102	100	108	104	104	F 100	100	63	F 21	F 15	A	A
10	F 18	F 20	F 28	F 21	24	27	27	F 30	46	58	76	87	107	107	J R 122	116	116	88	78	61	42	29	28	19
11	B	B	B	B	B	B	B	27	F 44	62	70	76	105	108	J R 120	106	112	112	J R 96	F 70	F 32	R 30	A	A
12	A	F 28	F 57	F 39	F 56	R	B	B	B	B	B	R 32	B	B	B	F 66	F 56	F 58	F 32	R 34	A	R 42	A	A
13	26	A	F 41	B	B	A	R	R	62	R	R	B	38	B	B	B	J R 52	R 57	54	44	R	A	A	A
14	A	A	R 36	F 21	R 30	A	A	F 32	39	42	B	B	B	81	79	F 81	66	65	B	J R 47	26	B	A	A
15	A	B	A	R	B	A	A	B	46	55	68	R 70	J R 94	100	J R 92	101	92	88	80	53	F 24	B	B	A
16	A	26	R 19	F 16	F 17	F 17	F 17	F 22	41	57	R 68	75	J R 90	92	106	127	J R 96	95	F 65	F 50	40	B	B	A
17	R 26	A	F 30	A	A	A	A	F 49	A	F 64	76	89	101	R 105	106	J R 108	104	R 92	86	A	F 30	A	A	A
18	A	A	R 31	F 24	F 23	29	F 30	63	U R 63	67	F 60	78	82	J R 86	J R 84	R	87	90	75	F 53	F 28	26	R 18	B
19	A	30	R 42	A	28	B	F 59	F 60	B	B	B	R 90	98	R 83	B	J R 92	J R 97	92	F 67	B	R 41	B	B	B
20	B	B	B	B	B	B	B	B	B	R 68	79	94	R 98	98	100	J R 95	89	106	F 68	B	28	A	A	A
21	A	F 30	A	B	A	A	B	A	B	F 57	67	76	76	B	76	F 76	R 71	F 70	71	F 56	F 30	B	A	A
22	A	A	R 29	F 32	F 30	F 27	F 24	F 26	F 36	59	J R 66	R 100	106	107	107	103	89	74	66	F 56	F 36	F 21	B	A
23	F 14	A	R 16	15	15	F 17	F 18	F 19	F 37	58	65	89	98	108	J R 123	J R 105	102	91	F 80	F 70	F 56	F 18	A	A
24	F 24	23	F 20	B	B	38	F 28	F 28	F 33	52	B	F 63	R 68	90	J R 84	95	R	R 89	R 76	F 57	39	A	A	A
25	A	R 37	B	B	B	B	B	R	F 41	F 55	57	65	R 70	80	78	84	77	64	60	24	R 19	A	A	A
26	B	B	A	A	A	A	A	A	A	B	B	R	82	J R 89	107	100	J R 88	S 93	69	B	F 31	A	A	A
27	A	A	B	A	A	A	R 24	F 25	37	51	64	U R 72	J R 84	J R 85	92	88	69	52	47	F 28	F 20	R 16	A	B
28	R 15	A	B	A	F 22	F 21	F 20	A	R 38	50	F 58	F 70	J R 86	104	B	108	R 103	F 80	F 64	F 56	F 36	F 24	R 29	R
29	A	R 34	A	A	A	A	F 21	F 20	F 24	38	58	68	74	79	74	V 76	F 64	F 50	F 32	24	19	R 17	B	F 13
30	F 14	F 30	F 39	A	A	B	B	B	B	B	B	B	B	B	B	F 88	F 76	R 40	R	A	A	A	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	13	15	19	14	16	13	17	20	23	25	23	26	27	26	25	28	29	30	28	25	25	18	9	8
MED	F 21	28	F 30	F 22	F 28	F 27	F 27	F 34	F 46	61	70	80	94	100	104	104	96	90	76	F 57	F 35	F 26	F 20	17
U Q	25	30	F 40	F 36	F 34	30	F 36	F 48	58	66	76	94	105	107	J R 108	108	108	100	84	F 64	F 42	30	26	20
L Q	F 16	20	R 19	19	F 22	F 18	F 21	F 26	F 38	55	65	72	82	R 87	88	90	76	70	66	48	27	F 20	F 17	F 14

APR. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz 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	31	31	34	31	28	25	28	G	E B 16	26	27	28	33	33	35	31	G 18	19	27	14	E B 14	32	27	31
2	30	32	45	41	26	E B 14	E B 13	29	19	32	32	35	34	G 24	32	G 19	G 17	G 15	32	31	24	22	26	17
3	34	30	30	31	18	28	44	38	38	31	27	34	35	G	E B 60	G	24	19	E B 16	20	E B 14	22	28	32
4	34	32	60	57	41	33	26	32	40	33	33	G 26	28	G	27	30	28	R 16	27	E B 12	E B 12	28	25	E B 13
5	E B 13	18	29	25	42	38	33	G	25	G 18	G 22	35	31	G	28	E B 23	E B 30	21	E B 29	32	42	27	46	51
6	42	92	82	58	33	31	42	33	32	35	38	38	36	40	32	32	23	24	23	16	E B 13	E B 13	E B 13	31
7	E B 14	17	45	42	46	58	66	52	40	31	E B 50	E B 43	24	G 22	G 22	G 21	38	39	25	31	37	24	25	35
8	35	36	E B 24	42	44	49	34	40	20	22	25	25	32	32	G 22	28	G	G	30	21	E B 15	E B 13	E B 14	16
9	15	18	29	E B 14	16	15	65	G	G	G	E B 29	E B 35	26	E B 27	E B 28	G	28	E B 28	E B 20	G	17	21	30	37
10	19	16	17	16	E B 21	31	23	E B 14	G 14	G	G	G 20	G 22	E B 26	G 20	24	G	21	E B 14	E B 12	E B 13	E B 12	E B 12	E B 12
11	B	B	B	B	B	B	B	E B 20	E B 20	E B 24	E B 28	E B 54	E B 55	E B 30	G	G	E B 23	E B 20	12	16	22	36	71	83
12	47	84	66	58	34	42	B	B	B	B	B	27	B	B	B	G 28	42	42	34	41	44	44	50	53
13	70	54	40	B	B	42	31	38	E B 43	42	G	B	G	B	B	B	E B 32	E B 40	E B 23	24	30	K 35	45	42
14	68	42	47	32	21	42	44	39	24	G	B	B	B	E B 55	E B 48	E B 54	E B 31	E B 51	B	E B 23	E B 15	B	21	51
15	80	B	34	24	B	39	36	B	34	E B 26	E B 37	E B 60	E B 51	E B 32	E B 54	E B 36	E B 16	E B 22	E B 13	E B 13	E B 14	B	B	25
16	38	34	24	14	30	E B 12	E B 12	E B 13	E B 17	E B 28	E B 56	E B 31	26	E B 26	E B 29	E B 37	E B 54	E B 33	E B 21	E B 19	E B 24	B	B	32
17	35	33	70	44	43	42	47	41	48	E B 32	27	28	G	G	32	G	G	G	E B 13	42	40	42	38	46
18	41	38	42	33	33	32	32	32	32	E B 38	27	27	31	G	G 18	G 16	G	G	E B 12	E B 15	E B 12	E B 12	E B 12	B
19	31	42	93	49	31	B	27	E B 30	B	B	B	E B 52	E B 30	E B 60	B	E B 57	E B 58	E B 20	E B 23	B	E B 22	B	B	B
20	B	B	B	B	B	B	B	B	B	E B 56	E B 55	E B 29	E B 27	E B 26	G	23	23	18	E B 16	B	E B 19	K 33	76	43
21	39	39	43	B	41	42	B	42	B	42	K	G 21	E B 26	B	E B 24	E B 26	E B 57	E B 39	E B 39	31	K 19	B	26	30
22	37	K 34	38	35	33	27	18	14	G	G	G 17	G 22	G	G	36	36	29	39	29	E B 15	E B 14	E B 14	B	29
23	31	28	21	E B 14	16	16	E B 14	E B 12	E B 13	G 16	G	E B 27	G	G	E B 55	E B 56	E B 56	E B 30	E B 22	E B 18	E B 14	E B 14	33	36
24	36	17	24	B	B	37	34	22	G	E B 20	B	E B 53	E B 51	E B 51	50	E B 54	E B 56	E B 24	E B 18	35	39	36	40	35
25	35	32	B	B	B	B	B	30	G	G	G E B 17	25	G	G	E B 28	E B 26	E B 58	E B 26	E B 34	E B 19	E B 13	40	32	36
26	B	B	39	47	46	42	45	42	40	B	B	E B 58	E B 54	E B 24	G	E B 27	E B 30	E B 22	E B 35	B	E B 16	33	39	42
27	68	39	B	34	33	49	36	30	E B 16	29	G 16	G	G 21	25	20	47	22	E B 13	E B 12	E B 13	16	E B 12	22	B
28	16	37	B	37	20	67	38	34	46	E B 20	29	E B 26	E B 23	E B 58	B	E B 52	E B 49	E B 50	E B 28	E B 24	E B 14	22	E B 20	25
29	36	43	73	50	43	32	30	E B 14	29	G	G 18	G 16	28	28	34	G	G	E B 12	E B 12	E B 12	E B 12	E B 13	B	E B 13
30	E B 12	27	63	58	45	B	B	B	B	B	B	B	B	B	B	31	44	33	33	38	61	52	56	42
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	25	24	24	25	24	26	25	26	23	27	27	26	25	29	30	30	29	27	30	25	25	27
MED	35	34	40	36	33	37	34	30	22	U 23	E G 27	26	26	E G 26	E G 28	G	E G 28	E G 22	E B 23	18	E B 16	24	28	35
U Q	41	39	62	48	42	42	43	38	39	32	E B 33	E B 38	E B 34	E B 32	E B 36	E B 36	E B 44	33	30	31	24	36	42	42
L Q	30	28	29	28	24	28	26	G	G	G	G	G 26	G	G	G	26	G	18	E B 15	E B 14	E B 14	E B 14	E B 22	25

APR. 2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E +SWEEP 1.0MHz TO 15.0MHz 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	12	12	11	12	11	11	13	13	16	17	20	16	14	16	13	14	13	14	12	12	14	12	12	11
2	12	13	14	14	12	14	13	13	12	14	12	15	12	14	14	13	13	12	10	12	12	12	12	12
3	11	12	12	12	12	12	14	13	18	14	18	14	15	14	60	20	14	13	16	14	14	12	14	12
4	11	23	23	15	14	14	12	18	16	17	18	14	20	22	19	15	13	13	12	12	12	11	12	13
5	13	13	12	12	14	15	12	12	14	12	14	16	14	18	15	23	30	14	29	14	14	13	20	13
6	13	22	20	13	14	13	16	13	16	20	14	13	15	14	11	13	12	12	12	12	13	13	13	12
7	14	12	13	14	14	17	22	17	17	14	50	43	13	11	12	15	14	13	12	13	14	15	14	13
8	13	14	24	24	14	14	13	15	14	14	19	17	13	14	14	14	14	12	12	12	15	13	14	12
9	12	12	12	14	12	11	11	13	14	16	29	35	15	27	28	20	17	28	20	15	13	12	12	12
10	12	12	12	12	21	12	11	14	12	16	13	14	18	26	16	16	15	12	14	12	13	12	12	12
11	B	B	B	B	B	B	B	20	20	24	28	54	55	30	18	19	23	20	12	12	12	12	28	13
12	14	12	14	13	12	24	B	B	B	B	B	15	B	B	B	20	20	12	13	12	15	14	12	13
13	13	12	13	B	B	14	25	28	43	23	28	B	21	B	B	B	32	40	23	15	24	11	13	13
14	12	12	16	14	12	22	14	12	12	15	B	B	B	55	48	54	32	51	B	23	15	B	12	24
15	20	B	27	20	B	16	18	B	19	26	37	60	51	32	54	36	16	22	13	13	14	B	B	12
16	12	12	11	12	12	12	12	13	17	28	56	31	18	26	29	37	54	33	21	19	24	B	B	12
17	12	12	12	14	16	25	19	12	20	32	20	14	18	20	18	14	12	12	13	12	12	12	11	12
18	14	19	14	12	12	16	12	15	20	38	17	15	14	18	16	13	15	12	12	15	12	12	12	B
19	13	13	15	20	19	B	22	30	B	B	B	52	30	60	B	57	58	20	23	B	22	B	B	B
20	B	B	B	B	B	B	B	B	B	56	55	29	27	26	26	17	16	12	16	B	19	22	20	20
21	20	14	24	B	14	24	B	32	B	21	20	16	26	B	24	26	57	39	39	12	13	B	12	15
22	12	13	12	13	13	12	13	11	12	14	14	17	17	18	14	14	12	12	13	15	14	14	B	12
23	11	12	12	14	12	11	14	12	13	12	18	27	14	18	55	56	56	30	22	18	14	14	12	12
24	12	12	12	B	B	14	14	12	12	20	B	53	52	51	44	54	56	24	18	12	13	11	12	12
25	12	16	B	B	B	B	B	22	18	13	14	24	18	20	28	26	58	25	34	19	13	12	12	13
26	B	B	20	21	24	24	16	18	15	B	B	58	54	24	18	27	30	22	35	B	16	12	12	12
27	24	13	B	15	19	16	12	12	16	13	12	14	16	15	16	14	11	13	12	13	11	12	12	B
28	12	12	B	12	13	12	13	19	20	20	29	26	23	58	B	52	49	50	28	24	14	15	20	14
29	13	22	12	12	13	11	15	14	14	13	13	12	13	14	12	12	12	12	12	12	12	13	B	13
30	12	21	12	14	19	B	B	B	B	B	B	B	B	B	B	23	19	21	13	13	26	19	12	13
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	12	13	14	14	14	14	14	14	16	18	20	20	18	23	22	20	16	14	14	13	14	13	12	13
U Q	14	21	B 24	B 21	B 21	B 24	B 22	22	B 20	28	B 55	52	30	51	B 54	36	32	25	23	18	15	B 15	B 20	13
L Q	12	12	12	12	12	12	13	13	14	14	14	15	14	16	15	14	13	12	12	12	13	12	12	12

APR.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR.2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E +SWEEP 1.0MHz TO 15.0MHz 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	208	226	222	A 244	238	224	A	A 248	204	204	210	210	210	210	202	212	198	198	198	Q 216	Q 212	Q 228	Q 228	A 242
2	E A 316	A	A	A	A	354	Q 300	222	232	E A 222	222	222	212	212	204	218	192	192	Q 182	194	Q 206	Q 224	A	A
3	A	260	Q 282	A 318	A	A 368	A	E A 314	E A 270	Q 232	220	Q 212	202	218	B	212	200	200	200	200	218	Q 230	A 304	220
4	A	A	A	A	A	A	A	A	Q 264	232	Q 216	216	220	A 230	Q 222	Q 212	Q 210	G	Q 210	Q 190	Q 202	A 266	E A 298	E B 304
5	E B 290	E A 310	E A 326	E A 280	A	A	E A 278	E A 300	A 224	A 222	214	220	212	226	Q 224	242	216	Q 214	214	Q 224	224	A	A	A
6	A	A	A	240	258	206	244	A	204	A	238	A 238	212	222	A 214	210	208	196	Q 196	196	196	212	234	A 252
7	E B 294	E A 338	244	A	A	A	A	A	A 222	196	B	B	A	208	E A 228	A	202	196	214	Q 294	A	282	A	A
8	A	E A 266	234	A	A	A	A	A	260	240	218	236	220	224	218	218	200	196	Q 204	198	Q 208	Q 220	E B 240	E A 298
9	302	A	E A 402	B	E A 392	E A 366	E A 338	A 274	E A 246	218	E B 238	230	222	228	228	E B 222	Q 200	208	208	220	A 256	A	A	A
10	A 286	A 280	E A 286	220	B	A	A	E B 260	198	204	200	200	204	210	210	202	196	192	198	196	196	204	214	B 250
11	B	B	B	B	B	B	B	E B 288	Q 230	224	E B 232	E B 270	E B 246	E B 220	E A 220	200	200	200	190	218	Q 248	A	A	A
12	A	202	A	A 250	284	A	B	B	B	B	B	E A 292	B	B	B	E A 284	Q 260	E A 294	A	A 228	A	E A 260	A	A
13	202	A	246	B	B	A	A	A	218	A	A	B	A	B	B	B	E B 260	B	232	E A 242	A	A	A	A
14	A	A	194	204	204	A	A	A	206	A	B	B	B	230	244	E B 234	E B 212	B	B	220	E B 240	B	A	A
15	A	B	A	A	B	A	A	B	A	240	240	E B 288	E B 270	E B 226	226	210	200	212	202	Q 202	216	B	B	A
16	A	A	A	A	A	E B 370	E B 334	E B 296	Q 246	228	E B	B 218	E A 210	E B 212	228	B 218	E B 212	210	Q 210	Q 214	232	B	B	A
17	220	A 244	232	A	A	A	A	A	A	E B 248	230	222	E A 228	212	198	198	198	198	Q 208	A	A	A	A	A
18	A	A	A	A	208	A	A	A	A	E B 266	210	196	E A 218	218	200	192	192	Q 202	202	202	202	E B 232	E B 268	B
19	A	A	A	A	A	B		E B 320	B	B	B	E B 252	248	B	B	222	E B 222	206	226	B	E B 264	B	B	B
20	B	B	B	B	B	B	B	B	B	E B 292	B	B	218	230	230	216	222	A 210	244	B	E B 246	A	A	A
21	A	A	A	B	A	A	B	A	B	A	A 226	236	E B 260	B	236	E B 244	B	E B 252	B 286	Q 286	240	B	A 262	A
22	A	A	E A	A	A	Y	Q	Q 324	E A 258	212	194	222	204	204	204	204	Q 186	Q 200	206	206	Q 206	Q 252	B	A
23	210	A	A	B	A	A	E B 340	E B 322	Q 250	202	Q 212	216	216	206	E B 232	232	232	202	222	204	194	E B 250	A	A
24	244	270	238	B	B	228	A	E A 360	A	258	B	B	B	E B 276	E B 276	E B 238	238	Q 214	Q 194	A 222	236	A	A	A
25	A	242	B	B	B	B	B	A	A	220	206	232	232	E A 232	E B 230	E B 230	E B 264	208	226	256	E B 318	A	A	A
26	B	B	A	A	A	A	A	A	A	B	B	256	238	226	218	216	E B 216	218	218	B	Q 234	A	A	A
27	A	A	B	A	A	A	218	240	234	196	196	222	198	202	202	202	200	184	Q 192	Q 188	Q 204	E B 242	A	B
28	A 232	A	B	A	A	E A 370	A	A	A	Q 262	222	222	E B 236	236	B	236	E B 232	248	212	Q 224	Q 226	Q 256	E B	A
29	A	204	A	A	A	A	E A 310	E B 344	E B 302	206	204	214	196	196	196	200	Q 188	Q 192	206	E B 216	216	E B 216	B	B
30	E B 254	E A 258	F 196	A	A	B	B	B	B	B	B	B	B	B	B	E A 228	A	A	A	A	A	A	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	12	12	12	7	6	8	8	14	18	22	20	24	24	25	24	28	28	26	27	25	25	15	8	6
MED	U 229	U 246	234	A 242	U 236	U 288	E 305	E 298	226	221	215	220	214	216	216	212	202	201	208	215	213	228	241	241
U Q	E 292	A 275	E A 284	A 280	284	E A 369	E B 336	E 322	E 258	240	228	E 237	E B 234	229	229	E 231	222	212	218	Q 224	E B 240	256	E A 283	E 298
L Q	215	234	227	220	208	226	261	260	218	206	208	216	210	210	204	207	199	196	Q 198	199	205	220	231	242

APR.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	58	75	54	A	93	69	A	A	X 56	B	X 52	O X 57	70	X 77	X 88	V 72	X 58	X 52	X 42	X 32	B	B	B	A
2	58	60	57	57	43	X 32	A	R	X 48	57	66	74	88	83	96	77	66	54	32	35	O X 20	O X 20	20	22
3	O X 20	X 21	42	42	42	51	54	X 24	36	X 54	X 72	X 78	X 95	107	X 99	99	62	61	38	36	27	23	82	F
4	58	A	64	A	A	A	54	55	A	R	R	R	B	79	108	93	76	X 68	X 44	33	X 26	X 30	A	A
5	68	A	A	A	A	R	36	A	A	82	B	B	72	82	82	79	X 83	68	X 44	26	56	42	50	R
6	A	R	A	A	X 29	X 28	X 29	34	32	X 42	X 56	X 64	X 73	X 80	X 76	X 70	55	X 41	36	X 33	X 25	O X 21	O X 22	B
7	O X 22	X 22	X 24	X 30	42	50	50	53	53	72	76	X 89	X 102	X 101	X 86	X 93	X 65	X 52	X 49	X 37	O X 24	B	B	B
8	A	A	A	A	A	69	55	A	B	B	B	B	X 57	O X 74	O X 106	X 98	89	86	69	R	A	A	A	A
9	46	A	A	B	A	A	A	A	O X 44	R	B	B	B	X 68	X 66	X 59	O X 53	X 42	B	B	B	B	B	O X 22
10	O X 23	56	50	59	R	A	A	B	B	B	O X 49	O X 48	X 66	81	X 71	64	66	60	O X 34	B	B	B	29	68
11	A	A	A	50	A	A	50	B	B	O X 50	64	X 59	X 64	X 71	X 68	B	B	B	X 31	B	O X 28	A	70	A
12	A	61	B	A	R	A	A	A	O X 39	B	B	B	O X 81	B	O X 102	X 82	R	X 64	B	O X 34	B	B	A	49
13	42	A	X 34	X 29	X 28	40	50	44	52	52	70	X 88	X 94	104	101	X 81	65	55	X 39	B	B	B	B	B
14	X 22	A	X 33	52	47	54	67	66	65	42	X 71	X 81	X 100	X 98	X 87	X 81	X 63	71	52	43	X 37	B	B	O X 21
15	62	56	32	32	29	O X 36	57	64	56	60	75	X 91	X 102	X 107	X 100	81	71	61	59	34	O X 23	O X 21	A	28
16	36	29	28	X 23	55	87	A	49	68	74	73	X 80	X 92	X 86	X 91	X 88	66	62	52	57	X 27	X 20	A	A
17	28	X 30	X 30	X 31	77	A	O X 50	59	58	59	69	X 86	X 93	X 86	X 92	X 91	X 71	X 55	X 36	28	X 20	X 21	B	O X 21
18	B	A	56	41	57	A	42	44	58	69	75	X 81	X 93	X 102	X 83	X 84	67	X 45	45	41	30	28	B	A
19	55	72	O X 39	A	43	45	49	48	O X 38	58	72	81	96	90	X 90	O X 72	68	66	X 41	43	30	B	B	B
20	B	O X 30	X 50	X 39	44	43	46	X 34	A	66	69	82	X 101	X 94	81	X 66	X 60	51	34	O X 27	B	B	B	B
21	B	B	A	Y	B	B	B	B	A	X 32	52	X 72	X 87	X 104	X 79	53	X 48	41	O X 26	B	B	B	B	B
22	R	33	36	72	X 39	42	47	50	50	50	66	78	86	X 82	77	68	56	58	58	42	31	A	A	R
23	O X 39	X 37	34	B	A	A	B	A	39	47	58	X 58	X 70	X 76	X 81	71	X 50	X 33	X 32	B	R 61	A	A	A
24	A	A	B	R	A	R	B	R	R	33	B	B	B	X 80	80	68	36	X 32	42	X 38	B	B	B	B
25	A	54	X 29	A	A	A	R	35	B	B	O X 46	X 66	80	X 81	X 74	X 74	57	O X 30	X 29	26	O X 21	O X 21	R	B
26	B	R	A	32	A	A	A	A	A	X 34	X 48	X 65	X 63	67	75	67	44	O X 26	O X 26	B	Y	B	A	A
27	32	37	O X 26	A	O X 27	29	30	30	30	41	50	54	66	76	61	44	X 36	O X 28	B	O X 23	O X 21	B	X 21	O X 39
28	A	A	A	A	O X 34	46	52	57	B	O X 30	X 42	70	75	69	69	56	O X 38	32	32	X 23	O X 23	B	O X 22	A
29	B	O X 22	O X 27	55	36	33	37	43	54	42	67	72	X 72	B	X 84	O X 68		R	A	R	A	B	O X 39	O X 36
30	X 35	X 34	59	X 35	35	42	42	40	36	43	52	67	80	X 73	70	X 55	X 40	X 38	34	28	A	A	A	A
31	A	A	A	58	A	A	31	43	46	43	X 44	X 51	X 61	X 66	64	X 54	O X 34	R	R	A	A	A	R	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	17	20	17	18	17	20	19	20	24	25	25	28	29	31	30	28	28	26	21	18	10	9	9
MED	39	37	35	41	42	43	50	44	49	50	66	X 72	X 80	X 81	X 82	X 72	61	53	38	34	X 26	X 21	29	O X 28
U Q	58	58	52	56	47	52	53	55	56	60	72	X 81	X 94	X 96	X 92	X 82	66	62	45	40	30	28	60	44
L Q	O X 26	X 30	X 30	X 32	X 34	X 34	40	35	38	42	X 51	X 62	X 70	X 75	74	66	X 49	X 40	X 32	28	O X 23	X 21	X 22	O X 22

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	41	A	A	50	B	46	51	F 60	71	82	V 66	52	46	36	26	B	B	B	A
2	A	A	19	R 20	R 24	26	A	A	R 42	F 47	F 56	F 63	F 75	F 76	F 88	F 66	F 55	F 44	26	F 23	R 14	R 14	F 12	F 13
3	R 14	15	R 16	F 16	F 19	F 19	F 19	18	F 24	48	66	72	89	F 95	R 93	F 90	F 51	F 52	F 29	F 24	F 16	F 12	B	F
4	F 45	A	F 29	A	A	A	F 31	F 23	A	A	R	R	B	F 66	F 89	F 72	F 61	62	38	F 24	20	24	A	A
5	F 26	A	A	A	A	A	F 26	A	A	A	B	B	F 62	F 70	F 71	F 64	77	F 56	38	F 16	R 38	F 28	26	A
6	A	A	A	A	23	22	23	F 22	F 23	36	50	58	67	74	70	64	49	35	30	27	19	15	16	B
7	16	16	18	24	F 29	F 26	F 26	F 29	F 31	F 56	F 66	83	96	J R 95	80	87	59	46	43	31	18	B	B	B
8	A	A	A	A	A	F 58	35	A	B	B	B	B	51	R 68	100	92	F 68	F 69	F 58	R	A	A	A	A
9	F 24	A	A	B	A	A	A	A	R 38	A	B	B	B	62	60	53	47	R 35	B	B	B	B	B	16
10	R 17	R	F 32	R 31	A	A	A	B	B	B	43	R 42	60	F 70	65	F 56	F 56	F 46	28	B	B	B	F 15	F 56
11	A	A	A	F 32	A	A	R	B	B	R 44	F 53	53	58	65	62	B	B	B	25	B	R 22	A	A	A
12	A	A	B	A	A	A	A	A	R 33	B	B	B	U R 75	B	96	76	R 70	58	B	R 28	B	B	A	A
13	F 29	A	28	23	22	F 27	F 26	F 27	F 27	F 34	F 57	82	88	F 93	F 83	75	Z 56	F 40	33	B	B	B	B	B
14	16	A	27	F 26	F 25	F 31	F 27	F 17	F 22	F 33	R 65	75	94	92	81	75	57	F 58	F 40	F 30	31	B	B	15
15	A	F 24	F 17	F 22	23	30	F 36	F 27	F 27	F 37	F 61	85	96	101	94	F 68	F 59	F 49	F 38	F 23	R 17	R 15	A	F 15
16	F 23	F 20	F 14	17	R 27	F 36	A	F 38	F 46	F 46	F 60	74	86	J R 80	J R 84	82	F 56	F 52	F 41	F 38	21	14	A	A
17	F 19	24	24	25	F 24	A	R 44	F 42	F 40	F 40	F 57	80	87	80	86	85	65	49	30	F 17	14	15	B	R 15
18	B	A	A	28	R 41	A	F 32	F 33	F 37	F 43	F 60	75	87	S 96	77	78	F 56	39	F 32	F 28	F 21	F 15	B	A
19	A	A	R 33	A	F 30	F 26	F 23	F 29	32	F 34	F 56	F 65	F 86	F 81	71	66	F 56	F 47	35	F 28	F 19	B	B	B
20	B	24	44	33	F 23	F 23	F 23	28	A	F 36	F 44	F 67	95	88	F 70	60	54	F 40	F 24	F 18	B	B	B	B
21	B	B	A	Y	B	B	B	B	A	26	F 40	66	81	98	73	Z 46	42	F 30	20	B	B	B	B	B
22	A	F 24	F 20	F 21	33	F 27	F 33	F 32	F 32	F 34	F 45	F 64	F 70	76	F 67	F 54	F 42	F 44	F 32	F 23	F 19	A	A	R
23	33	31	F 22	B	A	A	B	A	F 27	F 30	F 45	52	64	70	75	62	44	27	26	B	55	A	A	A
24	A	A	B	A	A	A	B	R	A	F 24	B	B	B	74	F 65	F 58	30	26	36	32	B	B	B	B
25	A	A	23	A	A	A	A	F 23	B	B	R 40	R 60	F 63	75	68	68	F 68	24	23	F 18	R 15	15	R	B
26	B	R	A	F 17	A	A	A	A	A	28	42	59	57	F 57	F 60	F 55	F 30	20	R 20	B	Y	B	A	A
27	A	A	R 20	A	21	F 19	F 21	F 20	F 20	F 25	F 40	F 44	F 54	F 62	F 47	F 33	30	U R 22	B	17	R 15	B	15	R 33
28	A	A	A	A	28	F 21	F 24	F 16	B	24	36	F 57	F 64	F 60	F 59	F 41	R 32	F 21	F 21	17	R 17	B	R 16	A
29	B	R 16	21	F 25	F 24	F 22	F 24	F 24	F 27	F 21	F 41	F 55	66	B	78	R 62	U R 44	R 44	A	R	A	B	R 33	30
30	29	28	R 28	29	F 23	F 24	F 23	F 23	F 24	F 23	F 34	F 51	F 68	67	F 60	49	34	32	F 21	F 17	A	A	A	A
31	A	A	A	A	A	A	F 20	F 24	F 26	F 24	38	45	55	60	F 55	48	R 28	R	A	A	A	A	A	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	10	18	16	17	17	19	19	20	23	25	25	28	29	31	30	30	29	26	21	18	10	7	8
MED	24	24	22	24	24	F 26	F 26	F 24	F 29	F 34	F 46	63	69	74	73	65	54	44	31	F 24	19	15	16	16
U Q	29	24	28	28	28	F 30	F 32	F 29	38	F 43	F 58	74	87	90	84	75	59	F 50	F 38	28	21	15	26	32
L Q	16	16	19	F 20	23	F 22	F 23	F 22	F 25	F 25	F 40	52	61	66	F 65	55	42	31	25	F 18	R 16	14	15	F 15

MAY 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	39	31	32	77	69	30	42	41	42	B	E B 23	E B 40	E B 27	E B 26	E B 23	34	G	E B 16	K 20	E B 13	B	B	B	28
2	29	29	29	37	39	32	53	32	40	27	25	G 21	G 21	32	32	32	33	E B 12	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12
3	E B 12	E B 12	E B 12	E B 12	E B 12	33	E B 14	E B 12	E B 12	16	G 16	G 18	G	25	G	22	23	E B 12	E B 12	E B 12	E B 12	E B 12	E B 46	81
4	49	50	94	42	56	38	58	G	57	41	36	36	B	E B 38	E B 31	E B 53	E B 18	E B 38	E B 16	E B 13	32	37	42	39
5	47	94	42	49	42	K 38	40	46	52	63	B	B	E B 46	E B 24	E B 27	28	E B 23	24	30	E B 12	40	64	66	42
6	46	30	46	38	K 19	24	E B 13	30	E B 12	E B 14	18	20	29	29	38	28	G	31	30	28	E B 14	E B 12	27	B
7	E B 12	16	33	27	32	32	32	E B 13	E B 14	E B 15	G 17	G 17	G 19	E B 24	E B 24	E B 19	G	E B 12	18	E B 12	E B 14	B	B	B
8	33	44	64	46	46	47	36	93	B	B	B	B	44	E B 55	E B 62	E B 38	E B 24	31	E B 14	39	44	46	40	43
9	84	106	64	B	36	39	40	50	50	38	B	B	B	E B 42	E B 23	29	E B 24	E B 19	B	B	B	B	B	16
10	30	32	34	K 24	45	52	58	B	B	B	32	E B 35	E B 34	E B 52	E B 56	E B 19	E B 16	E B 22	E B 25	B	B	B	32	85
11	39	42	34	32	43	40	24	B	B	35	31	E B 21	E B 20	E B 32	E B 44	B	B	B	E B 22	B	22	37	50	72
12	42	36	B	43	26	44	44	41	E B 24	B	B	B	E B 56	B	E B 75	E B 57	E B 56	E B 28	B	E B 24	B	B	30	35
13	35	34	34	28	26	26	23	E B 12	E B 12	30	G	G	G 28	32	24	32	34	34	25	B	B	B	B	B
14	23	25	31	31	29	23	E B 13	E B 13	E B 17	B 17	E B 22	E B 22	E B 23	E B 23	59	28	32	E B 13	26	E B 13	E B 13	B	B	18
15	27	37	40	29	42	50	34	25	18	52	32	G	32	G 22	22	30	44	E B 12	E B 13	E B 12	E B 12	E B 13	29	29
16	24	46	42	38	39	39	54	52	52	40	30	20	20	34			E B 12	E B 13	17	17	25	14	30	41
17	33	34	63	29	40	48	50	K 35	32	24	26	19	31	32	28	G 14	E B 12	E B 12	14	19	E B 12	12	B	E B 12
18	B	30	50	28	44	45	38	41	40	32	25	24	G 18	G	32	32	32	E B 13	E B 12	E B 12	E B 12	31	B	30
19	39	40	45	54	40	K 23	31	30	58	32	44	G	G	G 20	24	33	29	E B 11	E B 12	21	31	B	B	B
20	B	34	43	41	35	42	32	43	51	32	22	17	22	27	G	G 15	32	E B 13	29	E B 13	B	B	B	B
21	B	B	31	16	B	B	B	B	36	23	22	22	40	25	40	24	32	31	30	B	B	B	B	B
22	22	32	43	55	43	51	31	30	23	23	46	34	27	25	25	31	E B 13	23	E B 12	34	36	44	46	46
23	44	38	68	B	41	55	B	41	53	17	G	E B 27	E B 31	E B 20	E B 27	E B 20	E B 20	G	33	B	43	72	70	60
24	70	74	B	33	37	34	B	32	37	30	B	B	B	E B 55	E B 28	B	E B 20	E B 15	E B 17	20	B	B	B	B
25	31	56	31	40	42	48	43	22	B	B	E B 25	E B 23	E B 19	G 19	E B 19	E B 19	E B 15	E B 14	E B 13	E B 12	E B 13	E B 11	16	B
26	B	20	35	29	50	42	36	36	39	32	19	20	E B 19	32	18	16	E B 144	E B 16	23	B	19	B	32	32
27	32	31	35	36	27	28	32	28	28	38	22	26	27	25	E B 13	30	E B 14	E B 14	B	E B 12	E B 12	B	33	41
28	44	46	45	40	50	32	E B 12	24	B	60	E B 18	E B 25	E B 27	E B 20	18	G	E B 16	17	E B 13	E B 13	E B 12	B	22	29
29	B	17	30	26	28	31	29	28	G	E B 13	32	32	70	B	E B 25	E B 54	E B 36	E B 26	37	22	31	B	39	37
30	35	35	35	42	35	30	34	E B 12	E B 12	E B 13	30	E B 14	E B 18	E B 20	E B 14	E B 12	G	16	E B 13	E B 12	40	40	94	76
31	42	42	42	40	40	35	30	42	37	35	G	32	68	42	32	24	E B 20	25	31	73	56	45	29	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	30	29	29	30	30	28	28	26	26	26	26	28	29	30	28	30	30	28	24	23	16	20	22
MED	35	34	40	37	40	38	34	31	36	31	23	G	26	25	U 23	U 26	E B 23	E B 16	17	E B 13	19	34	32	38
U Q	44	44	46	42	43	45	42	41	50	38	31	27	33	E B 33	32	32	32	25	28	22	36	44	46	46
L Q	29	30	32	28	32	31	30	E B 23	G	E B 17	G 18	20	20	G	22	19	E B 18	E B 13	E B 13	E B 12	E B 12	E B 12	29	29

MAY 2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	11	11	10	12	11	14	19	14	112	B	23	40	26	26	23	18	14	16	14	13	B	B	B	12
2	12	12	12	12	13	12	12	18	13	15	16	15	17	15	12	12	13	12	13	12	12	12	12	12
3	12	12	12	13	12	12	14	12	12	12	14	14	14	12	14	14	12	12	12	12	12	12	46	12
4	12	12	12	23	22	13	14	13	16	22	29	29	B	38	32	53	17	38	16	13	12	11	13	12
5	12	16	14	15	12	14	13	14	14	16	B	B	46	24	27	19	23	12	19	12	13	12	12	14
6	13	13	15	13	14	11	12	13	12	14	13	14	17	14	17	14	12	12	12	12	14	12	12	B
7	12	12	12	12	12	12	14	13	14	15	12	13	13	24	24	19	13	12	13	12	14	B	B	B
8	12	12	19	19	14	16	12	23	B	B	B	B	20	55	62	38	24	16	14	15	12	12	12	12
9	14	14	20	B	14	12	16	14	14	20	B	B	B	42	23	29	24	19	B	B	B	B	B	12
10	12	12	12	14	16	17	13	B	B	B	20	34	34	52	56	19	16	22	25	B	B	B	12	23
11	15	15	22	12	14	22	17	B	B	20	21	21	20	32	44	B	B	B	22	B	12	12	18	14
12	12	13	B	24	14	16	16	17	24	B	B	B	57	B	75	57	56	28	B	24	B	B	14	12
13	11	12	12	14	14	13	13	12	12	13	13	13	16	16	14	13	12	12	12	B	B	B	B	B
14	12	12	12	12	12	11	14	13	17	17	22	22	23	23	18	13	12	13	13	13	13	B	B	12
15	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	12	12	12	13	12	12	13	12	12
16	10	12	12	11	12	12	13	12	12	14	12	13	15	15	13	12	12	13	12	12	12	12	12	10
17	12	11	11	12	11	14	13	13	12	11	12	14	15	12	13	12	12	12	11	12	12	12	B	12
18	B	14	14	13	14	14	14	11	12	12	12	14	14	13	13	12	12	12	12	12	12	12	B	14
19	12	14	16	13	14	12	11	11	11	13	14	17	16	13	12	12	11	11	13	13	13	B	B	B
20	B	12	12	13	12	12	115	13	16	13	13	12	13	12	12	12	12	13	14	13	B	B	B	B
21	B	B	13	13	B	B	B	B	13	13	18	15	16	20	15	13	12	12	11	B	B	B	B	B
22	12	11	11	11	14	11	12	12	12	13	12	110	12	12	12	11	13	11	12	12	12	12	12	12
23	12	11	12	B	17	25	B	20	12	12	13	27	30	20	27	20	20	16	14	B	12	26	13	12
24	15	52	B	24	19	25	B	18	13	13	B	B	B	55	28	24	20	15	17	13	B	B	B	B
25	15	12	16	16	20	14	223	13	B	B	26	23	19	17	19	19	15	14	13	13	13	11	13	B
26	B	13	12	12	15	15	14	12	12	12	12	12	19	13	13	13	13	16	15	B	14	B	13	12
27	12	12	12	12	12	11	12	12	13	11	10	12	12	12	13	13	14	14	B	12	12	B	12	15
28	12	15	15	12	12	11	12	12	B	18	18	25	27	20	13	14	16	13	13	13	12	B	11	11
29	B	12	10	12	12	13	12	14	13	13	12	12	13	B	25	54	36	26	16	14	25	B	12	10
30	10	12	12	14	12	12	10	12	12	13	12	14	18	20	14	12	12	13	13	12	12	13	14	13
31	15	12	12	12	13	12	11	12	12	12	13	13	12	12	13	14	20	18	16	17	14	15	15	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	12	12	12	13	14	13	13	13	13	13	14	15	17	20	15	14	13	13	13	13	13	26	14	12
U Q	B 15	14	15	15	14	15	16	17	B 17	B 20	B 23	B 34	27	32	27	20	20	16	16	B 24	B	B	B	B
L Q	12	12	12	12	12	12	12	12	12	12	12	13	14	13	13	12	12	12	12	12	12	12	12	12

MAY 2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	204	A	A	A	B	276	E B 302	256	228	210	198	210	210	232	216	B	B	B	200
2	A	A	240	226	200	E A 370	A	A	A	Q 216	Q 222	208	Q 208	Q 204	Q 204	Q 192	Q 186	Q 190	Q 190	Q 202	208	E B 280	E B 278	E B 290
3	E B 290	E B 302	E B 308	E B 318	E B 318	E B 324	E B 332	E B 292	E B 260	Q 202	194	Q 190	Q 198	Q 198	Q 188	Q 188	Q 182	182	192	Q 220	198	E B 242	B	Q 196
4	218	A	A	A	A	A	A	198	A	A	A	A	B	B	238	E B 268	230	E B 276	246	Q 272	A	224	A	A
5	A	A	A	A	A	A	204	A	A	A	B	B	B	252	218	Q 218	218	Q 208	Q 222	198	198	A	156	212
6	A	A	A	A	A	210	E B 338	E A 328	E B 300	E B 258	E B 242	E A 208	E A 226	A 214	196	208	192	204	204	220	E B 246	E B 284	A 220	B
7	E B 308	E A 318	E A 318	E A 338	A 256	A	E A 294	284	274	228	216	198	206	206	198	200	198	194	202	208	E B 242	B	B	B
8	A	A	A	A	A	A	A	A	B	B	B	B	A	B	274	242	242	Q 230	Q 266	A	A	212	A	A
9	206	A	A	B	A	A	A	A	A	A	B	B	B	E B 256	228	236	E B 228	214	B	B	B	B	B	A
10	216	A	254	A	A	A	A	B	B	B	A	B	B	E B 258	E B 258	Q 230	Q 220	220	236	B	B	B	F	196
11	A	A	A	250	A	A	A	B	B	A	E A 246	E B 242	204	E B 252	E B 268	B	B	B	252	B	200	A	A	A
12	A	202	B	A	A	A	A	A	B	B	B	B	B	B	E B 244	244	264	238	B	254	B	B	A	A
13	228	A	A	A	A	A	Q 336	Q 304	Q 304	Q 264	E A 228	Q 208	208	202	200	200	204	Q 204	Q 210	B	B	B	B	B
14	202	A	A	A	346	A	E B 334	E B 310	E B 348	242	212	202	202	202	198	Q 198	Q 206	Q 206	194	208	216	B	B	A
15	A	A	A	228	220	210	220	A	Q 256	Q 244	210	210	210	196	190	Q 190	204	Q 198	Q 206	Q 216	E B 216	E B 278	A	A
16	Q 260	A 248	E A 248	A	A 238	A	A	A	A	Q 224	212	204	204	190	198	196	Q 186	Q 200	Q 200	Q 210	230	A 274	A	220
17	198		A	A	210	A	A	A	E A 282	Q 234	208	Q 208	Q 200	200	202	Q 196	Q 196	Q 196	Q 196	196	B 250	238	B	E B 290
18	B	A	A	A	A	A	A	A	A	Q 284	Q 210	210	196	196	196	Q 196	Q 192	Q 192	Q 214	Q 204	B 220	220	B	A
19	A	A	224	A	A	Q 334	A	Q 356	A	306	Q 222	Q 208	Q 214	Q 196	196	Q 196	Q 204	194	Q 206	Q 212	212	B	B	B
20	B	230	230	218	A	218	A	A	A	274	Q 214	Q 242	212	Q 180	Q 192	Q 192	Q 194	Q 194	202	E B 264	B	B	B	B
21	B	B	A	Y	B	B	B	B	A	A 244	204	216	208	204	204	204	204	Q 196	E A 258	B	B	B	B	B
22	A	A	A	A	A	198	240	Q 286	Q 302	Q 302	A 222	Q 208	Q 208	Q 188	Q 188	Q 204	Q 178	Q 206	Q 206	Q 234	218	A	A	218
23	A	236	194	B	A	A	B	A	214	Q 270	224	224	218	208	208	196	196	226	A 246	B	A	A	A	A
24	A	B	B	A	A	A	B	A	A	A 298	B	B	B	E B 226	226	192	E B 302	E B 236	E B 236	Q 224	B	B	B	B
25	A	A	A	A	A	A	A	E A 318	B	B	E B 284	218	218	198	196	202	190	218	246	E B 246	E B 268	B 246	A	B
26	B	A	A	230	A	A	A	A	A	220	E A 240	200	200	204	Q 204	204	194	E B 286	E A 236	B	Y	B	A	A
27	A	A	A 312	A	A	E A 358	A 336	E A 308	E A 298	Q 210	Q 210	Q 188	Q 200	Q 200	186	190	194	210	B	224	A 220	B	198	A 226
28	A	A	A	A	238	A 342	F 336	312	B	E A 338	E B 256	E A 246	210	210	Q 194	208	208	250	236	E B 242	E B 230	B	A	A
29	B	A	E A 270	A	A	230	206	Q 290	Q 270	Q 274	Q 212	Q 202	224	B	224	E B 244	276	226	A	A	A	B	216	222
30	222	218	234	A	198	198	Q 328	Q 288	276	E B 300	Q 240	Q 206	206	202	Q 190	Q 198	198	230	218	254	A	A	A	A
31	A	A	A	A	A	A	A	A	A	A 298	240	228	Q 200	208	208	196	E B 258	A	A	A	A	A	A	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	7	11	7	9	12	12	13	12	22	24	24	24	27	31	30	30	29	26	21	16	10	5	10
MED	216	227	239	228	229	216	U 280	295	U 268	252	216	208	208	202	200	198	200	206	211	216	214	U 233	207	212
U Q	E B 260	E 302	E A 308	E 318	287	A 338	336	315	301	298	E 240	221	213	E B 214	224	208	220	228	236	244	E B 236	E B 278	249	E B 226
L Q	206	218	230	226	205	207	230	287	265	Q 228	211	203	Q 201	198	Q 196	196	Q 194	Q 196	202	208	210	224	177	200

MAY 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz 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	O X 22	O X 32	37	50	53	39	X 29	O X 24	O X 24	O X 30	X 46	R	X 64	X 153	X 153	X 60	O X 36	X 30	O X 26	X 28	O X 23	B	R	B
2	B	A	39	50	40	42	42	46	42	39	68	68	X 73	69	60	50	X 31	34	B	Y	B	X 22	A	O X 23
3	42	51	A	A	A	A	A	X 59	X 63	56	54	X 50	X 63	X 71	63	63	42	X 24	X 24	R	B	R	27	A
4	A	32	X 30	X 32	X 33	58	64	X 50	63	60	66	70	71	X 80	X 59	51	X 41	32	O X 28	B	B	B	28	A
5	A	A	A	R	A	A	A	A	O X 44	B	B	X 59	X 64	72	72	O X 51	B	B	B	B	B	B	A	A
6	58	A	B	A	A	B	A	A	X 40	40	46	X 55	X 56	X 55	X 59	48	40	30	21	B	B	B	B	65
7	R	X 24	O X 27	A	43	40	50	58	A	X 42	X 68	58	X 63	70	64	O X 48	X 42	39	B	B	O X 39	R	O X 32	A
8	77	68	A	B	A	A	A	38	B	B	B	B	X 46	X 54	X 50	71	69	X 41	46	B	A	R	A	X 35
9	53	A	A	A	R	R	X 25	33	X 30	30	O X 39	O X 48	74	69	X 70	B	X 43	X 44	B	B	Y	A	A	A
10	A	51	A	A	A	R	O X 24	O X 26	O X 25	X 30	X 43	X 54	O X 72	X 78	X 68	X 53	X 40	36	32	X 23	O X 23	X 21	B	R
11	50	B	A	29	O X 33	X 27	A	A	44	39	50	57	61	76	B	B	B	B	X 34	X 22	B	B	R	R
12	R	R	R	O X 22	A	A	B	A	O X 38	42	52	X 64	X 66	X 68	X 69	X 48	X 36	O X 29	O X 27	B	B	O X 21	B	O X 22
13	R	B	O X 22	39	42	43	52	59	54	X 29	44	X 54	X 64	71	X 62	53	X 30	X 30	X 27	O X 22	O X 21	A	A	B
14	41	41	38	58	A	A	58	56	50	B	X 40	A 50	O X 65	O X 70	X 76	B	O X 38	X 31	R	B	35	A	A	A
15	A	A	A	A	B	A	39	43	43	41	X 45	X 58	X 60	67	68	70	42	34	X 30	Y	R	O X 21	B	B
16	Y	R	R	89	51	43	55	56	56	60	O X 35	O X 54	68	76	71	X 58	X 36	X 40	X 31	O X 26	A	A	A	A
17	A	A	A	A	A	A	A	O X 41	R	R	B	66	72	X 71	76	X 58	B	R	B	B	B	B	B	O X 23
18	A	58	B	A	R	A	A	A	39	X 30	B	B	B	B	B	B	B	B	B	R	A	A	A	A
19	X 37	X 42	B	A	A	B	B	A	A	O X 32	B	B	B	B	B	B	O X 45	O X 37	B	B	B	B	A	A
20	O X 38	A	A	A	B	A	A	B	A	X 29	B	B	B	O X 80	78	B	41	B	R	R	R	A	R	A
21	A	70	70	67	A	39	50	45	45	46	46	54	B	B	B	B	B	O X 36	B	A	A	R	O X 21	O X 21
22	O X 23	O X 24	A	A	A	A	O X 32	B	B	B	B	O X 49	X 56	O X 50	O X 50	O X 37	B	R	R	R	A	A	A	A
23	A	48	A	O X 36	O X 25	X 30	29	25	X 27	27	33	X 43	50	50	50	55	27	R	R	A	A	A	A	A
24	A	A	A	O X 34	O X 38	35	A	A	A	X 41	B	B	61	72	O X 47	44	X 28	O X 24	B	Y	A	A	A	R
25	A	A	A	38	A	30	40	30	34	44	34	O X 43	B	64	O X 56	B	B	R	A	A	R	Y	Y	A
26	O X 40	62	O X 31	32	29	X 33	A	A	O X 27	O X 26	36	45	X 58	X 65	X 59	O X 37	X 28	31	B	B	B	B	B	A
27	B	A	A	A	R	A	R	R	R	O X 23	40	51	X 46	X 54	O X 54	R	O X 32	B	B	B	B	B	B	R
28	A	R	X 22	O X 27	O X 47	70	51	48	47	43	46	53	58	70	X 72	B	O X 33	X 34	B	B	Y	A	A	A
29	A	A	A	A	71	A	56	44	47	40	45	X 53	X 57	71	66	62	X 32	O X 28	A	A	B	A	B	R
30	A	O X 48	66	89	A	A	A	51	57	48	53	58	X 61	64	55	X 55	47	32	29	B	B	B	O X 22	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	11	14	10	15	12	13	16	19	22	25	22	24	25	27	26	20	23	21	12	5	5	4	5	6
MED	41	48	34	38	41	39	46	45	44	40	46	X 54	X 63	70	X 64	53	X 38	X 32	X 28	X 23	O X 23	X 21	O X 27	O X 23
U Q	53	58	39	58	49	43	54	56	50	44	52	58	67	X 72	71	59	42	X 36	32	X 27	37	X 22	30	35
L Q	O X 37	X 32	O X 27	32	X 33	X 32	X 30	33	X 34	X 30	40	X 50	X 58	X 64	O X 56	X 48	X 32	X 30	X 26	X 22	O X 22	X 21	O X 22	O X 22

JUN. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	R 16	R 26	F 28	F 29	F 27	F 16	23	18	18	24	40	R	58	64	55	54	30	R 24	24	22	R 17	B	A	B
2	B	A	F 23	F 20	F 22	F 22	F 22	F 25	F 24	F 26	F 40	F 51	67	F 57	F 50	F 37	25	F 24	B	Y	B	16	A	R 17
3	A	A	A	A	A	A	A	52	57	F 39	F 39	44	57	65	F 55	F 54	F 32	18	18	A	B	A	F 15	A
4	A	F 19	24	26	27	A	42	R 44	F 48	F 44	F 47	F 52	F 58	74	53	F 38	35	F 24	22	B	B	B	A	A
5	A	A	A	A	A	A	A	A	R 38	B	B	53	58	F 58	F 60	R 45	B	B	B	B	B	B	A	A
6	R	A	B	A	A	B	A	A	J R 34	F 30	F 34	F 49	50	49	53	F 39	F 26	F 20	20	B	B	B	B	A
7	R	18	R 21	A	R	F 21	F 28	F 30	A	36	J R 62	F 48	57	F 60	F 50	42	36	F 28	B	B	R 33	A	R 26	A
8	F 29	F 24	A	B	A	A	A	32	B	B	B	B	40	48	44	F 56	F 53	35	F 36	B	A	A	A	29
9	A	A	A	A	A	A	19	F 19	24	24	R 32	R 42	F 54	F 57	64	B	37	38	B	B	Y	A	A	A
10	A	A	A	A	A	A	R 18	R 20	19	24	37	48	66	J R 72	62	47	34	F 27	F 24	17	R 17	15	B	R
11	A	B	A	F 19	R 26	R 21	A	A	F 26	F 28	F 38	F 48	55	F 63	B	B	B	B	27	16	B	B	R	A
12	A	A	A	R 16	A	A	B	A	R 32	F 27	F 38	58	60	62	63	R 42	30	23	21	B	B	R 15	B	R 16
13	R	B	R 16	F 18	F 16	F 16	F 18	F 20	18	23	F 33	48	58	F 58	56	F 38	24	24	21	16	R 15	A	A	B
14	A	F 26	F 22	F 43	A	A	F 39	F 37	F 34	B	34	44	R 59	R 64	70	B	32	25	R	B	R	A	A	A
15	A	A	A	A	B	A	F 26	F 26	F 29	F 30	39	52	54	F 57	F 57	F 58	F 29	F 22	24	Y	A	15	B	B
16	Y	R	A	41	F 24	F 24	F 24	F 26	F 28	F 29	R 29	R 48	F 56	F 55	F 59	52	30	34	25	R 20	A	A	A	A
17	A	A	A	A	A	A	A	R 35	R	A	B	F 56	F 59	65	F 64	52	B	R	B	B	B	B	B	17
18	A	39	B	A	A	A	A	A	F 27	24	B	B	B	B	B	B	B	B	B	R	A	A	A	A
19	J R 31	36	B	A	A	B	B	A	A	26	B	B	B	B	B	B	39	R 31	B	B	B	B	A	A
20	R 32	A	A	A	B	A	A	B	A	23	B	B	B	R 74	F 68	B	F 31	B	R	A	A	A	A	A
21	A	A	F 59	F 54	A	F 30	F 33	F 30	F 30	F 29	F 28	F 34	B	B	B	B	B	R 30	B	A	A	A	R 15	R 15
22	R 17	R 18	A	A	A	A	R 26	B	B	B	B	R 43	J R 50	R 44	R 44	R 31	B	R	R	R	A	A	A	A
23	A	F 33	A	R 30	R 19	24	F 18	F 18	21	F 16	F 24	37	F 40	F 40	F 40	F 41	F 17	A	R	A	A	A	A	A
24	A	A	A	R 28	R 32	F 22	A	A	A	35	B	B	F 46	F 55	41	F 34	22	R 18	B	Y	A	A	A	R
25	A	A	A	F 24	A	F 21	F 20	F 20	F 24	F 21	F 23	37	B	F 56	R 50	B	B	R	A	A	R	Y	Y	A
26	R 34	R 39	25	F 20	F 20	27	A	A	R 21	R 20	F 26	F 32	J R 52	59	53	R 31	22	F 20	B	B	B	B	B	A
27	B	A	A	A	R	A	A	A	A	17	F 26	F 40	40	48	R 48	R	R 26	B	B	B	B	B	B	A
28	A	R	16	R 21	R 41	A	F 36	F 28	F 28	F 28	F 37	F 37	F 49	F 55	66	B	R 27	28	B	B	Y	A	A	A
29	A	A	A	A	A	A	A	F 30	F 30	F 26	F 32	47	51	F 58	F 46	F 41	R 26	R 22	A	A	B	A	B	R
30	A	R 42	A	B	A	A	A	F 38	F 39	F 37	F 37	F 48	55	58	F 44	49	F 26	F 22	F 20	B	B	B	R 16	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	6	11	9	14	10	11	15	19	22	25	22	24	25	27	26	20	23	21	12	5	4	4	4	5
MED	R 30	26	23	F 25	25	F 22	F 24	F 28	F 28	F 26	F 36	48	55	58	54	42	30	24	23	17	R 17	15	R 16	R 17
U Q	R 32	R 39	F 26	30	R 27	F 24	F 33	35	34	30	39	F 50	58	64	62	52	34	29	24	21	R 25	16	R 21	23
L Q	R 17	19	R 18	F 20	F 20	F 21	19	F 20	24	24	F 29	F 41	50	55	48	F 38	26	F 22	20	16	R 16	15	15	R 16

JUN. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	33	46	E B 13	E B 13	E B 13	18	G 16	E B 14	17	E B 14	32	E B 22	25	22	14	E B 14	E B 21	E B 15	E B 11	E B 12	B	24	B
2	B	33	50	66	32	35	30	31	32	28	35	37	26	34	57	36	30	26	B	18	B	29	31	34
3	31	35	77	44	71	59	55	53	30	E B 12	E B 12	G 16	33	29	28	25	25	16	E B 13	24	B	23	30	37
4	36	32	42	32	32	42	42	51	44	40	32	28	23	34	G	30	30	24	E B 16	B	B	B	26	48
5	44	69	59	38	51	48	56	44	40	B	B	23	26	18	22	E B 25	B	B	B	B	B	B	30	41
6	32	49	B	39	41	B	41	57	50	38	18	28	20	32	E B 12	E B 13	16	E B 13	E B 13	B	B	B	B	32
7	32	20	43	34	23	16	E B 13	27	51	42	K 24	E B 15	G 18	G 18	E B 21	E B 26	E B 13	E B 17	B	B	39	31	26	48
8	70	74	68	B	41	43	42	36	B	B	B	B	G 24	28	E B 14	E B 18	29	26	30	B	33	K 29	36	37
9	38	47	42	39	34	K 32	25	30	22	16	E B 22	E B 31	E B 23	E B 20	E B 42	B	E B 17	E B 19	B	B	14	32	42	32
10	34	42	41	41	38	26	33	16	16	E B 14	E B 14	G	E B 49	G 23	40	E B 19	18	17	18	31	20	14	B	G 17
11	35	53	42	30	40	44	35	43	43	33	30	G	G 17	32	B	B	B	B	E B 15	E B 12	B	B	18	K 31
12	33	33	29	25	32	44	B	35	38	24	18	G	G 18	G	E B 14	E B 15	E B 14	E B 14	E B 12	B	B	E B 11	B	E B 12
13	17	B	21	17	22	E B 11	E B 13	E B 12	E B 12	E B 12	18	40	19	32	18	18	E B 12	15	E B 13	30	32	32	25	32
14	30	20	18	59	59	38	49	30	34	B	29	E B 24	E B 27	E B 54	E B 27	B	E B 14	31	22	B	17	30	K 36	K 39
15	37	38	43	58	B	51	44	28	K 16	E B 12	E B 14	G	G	G	28	31	27	67	40	18	25	18	B	B
16	16	21	34	37	34	30	30	E B 13	32	29	56	E B 30	46	38	34	28	32	E B 13	E B E B 15	E B 16	31	32	32	34
17	31	36	37	78	44	52	52	40	34	39	B	E B 19	E B 20	E B 22	E B 26	E B 24	B	32	B	B	B	B	B	33
18	48	41	B	67	41	65	58	29	26	40	B	B	B	B	B	B	B	B	B	21	41	44	81	44
19	47	40	B	40	38	B	B	42	44	33	B	B	B	B	B	B	E B 23	E B 24	B	B	B	B	32	33
20	40	40	40	43	B	59	45	B	49	32	B	B	B	E B 63	E B 27	B	28	B	31	33	29	36	31	52
21	41	46	62	86	48	38	33	48	31	E B 14	30	E B 16	B	B	B	B	B	28	B	42	33	29	24	24
22	36	42	42	52	71	31	28	B	B	B	B	E B 28	35	E B 29	E B 27	24	B	21	21	21	34	51	34	27
23	34	38	44	37	22	E B 13	21	28	33	E B 13	E B 13	20	32	29	26	26	22	26	16	34	46	32	32	38
24	29	28	54	33	39	32	52	35	65	44	B	B	E B 24	27	E B 24	E B 18	E B 14	24	B	18	70	35	32	19
25	24	29	32	41	51	33	25	45	35	33	32	E B 22	B	27	E B 26	B	B	31	34	29	18	18	16	28
26	40	37	40	26	23	E B 13	68	44	32	E B 13	17	19	32	E B 19	E B 13	E B 20	24	18	B	B	B	B	B	30
27	B	30	49	27	18	44	27	34	33	E B 13	31	21	E B 15	E B 16	35	52	22	B	B	B	B	B	B	29
28	29	22	E B 12	28	53	43	49	40	40	29	30	30	34	38	E B 31	B	K 27	16	B	B	18	41	41	58
29	31	36	31	37	92	58	36	40	32	27	25	E B 22	20	32	38	57	40	27	31	30	B	39	B	17
30	30	K 34	K 41	107	69	56	56	48	35	30	30	G 29	29	32	18	E B 13	30	29	E B 12	B	B	B	32	22
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	27	29	28	28	28	28	28	26	22	25	25	27	26	21	23	25	18	16	17	20	22	28
MED	34	36	42	39	40	40	38	36	34	28	24	26	24	28	24	22	23	24	16	22	31	32	32	32
U Q	39	42	49	55	51	50	50	44	42	33	30	G	32	32	31	29	29	28	30	30	36	36	34	38
L Q	30	31	34	31	32	30	28	28	30	E B 14	E B 17	20	20	E B 23	E B 18	E B 18	E B 14	E B 16	E B 13	E B 18	18	26	26	28

JUN. 2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz 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	12	13	11	13	13	13	12	12	14	13	14	19	22	15	14	14	14	20	15	11	12	B	12	B
2	B	12	12	12	12	12	12	11	12	12	11	11	12	11	12	11	12	11	B	11	B	11	11	11
3	11	14	18	19	20	18	20	12	12	12	14	11	11	12	13	10	11	11	13	12	B	12	12	12
4	12	12	12	11	11	12	12	12	12	12	12	12	12	12	14	14	16	13	16	B	B	B	12	12
5	11	11	14	22	15	21	32	20	15	B	B	15	14	14	14	25	B	B	B	B	B	B	11	11
6	23	14	B	23	23	B	24	21	12	14	12	12	13	13	12	13	12	13	13	B	B	B	B	12
7	13	12	13	13	14	13	13	14	16	18	13	15	13	12	21	26	13	17	B	B	12	12	12	13
8	12	13	28	B	30	23	17	13	B	B	B	B	18	17	14	19	12	18	15	B	13	11	11	12
9	12	13	13	12	14	12	10	12	12	13	22	31	23	20	42	B	18	19	B	B	12	12	119	12
10	11	12	13	18	12	11	12	12	12	14	14	13	49	20	18	19	15	13	13	13	12	12	B	13
11	12	34	13	12	12	13	20	14	13	16	13	12	12	12	B	B	B	B	15	12	B	B	12	12
12	11	11	12	13	13	11	B	16	16	12	12	12	13	12	14	15	14	14	12	B	B	11	B	12
13	12	B	13	12	12	11	13	12	12	12	12	12	13	13	12	12	12	12	13	12	12	12	12	22
14	12	13	12	14	14	15	18	11	12	B	16	24	27	54	27	B	14	15	14	B	14	13	12	12
15	11	12	12	16	B	14	13	12	12	12	14	10	12	13	16	20	15	15	13	14	13	13	B	B
16	12	13	12	12	11	12	12	13	11	13	15	30	21	14	13	13	12	13	15	16	12	12	12	11
17	12	12	12	17	14	13	14	15	14	22	B	19	20	22	26	24	B	15	B	B	B	B	B	12
18	12	13	B	24	24	22	21	16	12	13	B	B	B	B	B	B	B	B	B	12	12	11	12	13
19	15	11	B	26	21	B	B	14	13	13	B	B	B	B	B	B	23	24	B	B	B	B	13	11
20	14	19	19	22	B	25	15	B	18	15	B	B	B	63	27	B	23	B	20	16	12	13	18	12
21	11	13	10	13	14	11	11	11	11	14	13	16	B	B	B	B	B	16	B	12	11	12	11	10
22	12	12	10	12	11	12	15	B	B	B	B	28	20	29	27	22	B	13	14	16	12	12	10	12
23	12	12	13	12	12	13	12	12	12	13	13	13	12	12	12	11	13	12	12	12	12	11	12	11
24	11	13	13	12	12	12	14	18	28	13	B	B	24	13	24	18	14	14	B	13	12	12	12	11
25	12	12	12	12	12	12	12	12	12	12	11	22	B	22	26	B	B	21	14	13	12	14	12	12
26	12	11	12	11	11	13	13	12	13	13	12	13	14	19	13	20	12	12	B	B	B	B	B	12
27	B	12	12	12	12	13	16	12	13	12	13	12	15	16	13	14	15	B	B	B	B	B	B	12
28	11	11	12	12	12	12	14	12	12	10	12	12	8	11	31	B	14	13	B	B	15	12	18	12
29	11	11	12	12	22	13	19	12	12	12	12	22	12	13	12	21	16	13	12	12	B	20	B	12
30	12	11	12	46	18	14	21	12	13	12	13	12	12	13	13	13	11	12	12	B	B	B	12	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	12	12	12	13	14	13	14	12	12	13	14	15	14	14	15	20	14	14	15	16	14	12	12	12
U Q	12	13	13	19	20	15	20	15	14	15	B	B 28	B 24	22	27	B	B 23	B 20	B	B	B	B	B	12
L Q	11	12	12	12	12	12	12	12	12	12	12	12	12	12	13	14	12	13	13	12	12	12	12	12

JUN.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 308	A	A	B	B	B	A 354	A 336	E B 322	E A 288	218	208	216	194	208	192	186	E B 276	E B 276	216	E B 278	B	A	B
2	B	A	216	218	A	A	200	Q 210	Q 242	242	Q 228	Q 200	Q 188	Q 196	202	202	A 208	222	B	Y	B	206	A	A
3	A	A	A	A	A	A	A	204	Q 246	Q 224	224	198	210	Q 198	Q 194	Q 194	Q 186	200	B 234	A	B	A	F	A
4	A	212	212	A	A	A	A	A	A	Q 280	Q 242	Q 214	Q 204	204	Q 204	204	224	A 258	E B 258	B	B	B	A	A
5	A	A	A	A	A	A	A	A	A	B	B	Q 224	Q 196	Q 214	Q 196	236	B	B	B	B	B	B	A	A
6	200	A	B	A	A	B	A	A	A	Q 270	Q 240	206	194	180	Q 200	Q 198	Q 206	240	216	B	B	B	B	A
7	A	E A 256	E A 246	A	A	A	Q 326	Q 302	A	A	276	Q 220	Q 204	Q 218	208	224	Q 204	222	B	B	222	A	A	A
8	A	212	A	B	A	A	196	196	B	B	B	B	A	E A 256	234	294	Q 248	278	Q 244	B	A	A	A	244
9	A	A	A	A	A	A	A	202	196	A 364	E B 288	E B 288	276	216	254	B	194	230	B	B	Y	A	A	A
10	A	A	A	A	A	A	A	A 242	A	E B 272	252	212	B	200	200	212	Q 218	218	Q 256	A	E A 270	E A 250	B	A
11	A	B	A	A	214	220	A	A	A 288	E A 332	Q 250	194	202	Q 204	B	B	B	B	E B 250	E B 264	B	B	A	A
12	A	A	A	A	A	A	B	A	A	A	Q 230	196	210	204	198	188	198	216	216	B	B	B 226	B	B
13	A	B	A	E A 316	330	E B 314	E B 326	E B 318	E B 298	E B 284	Q 240	Q 220	Q 196	Q 190	Q 196	Q 196	188	Q 214	E B 204	A 244	A 240	A	A	B
14	A	270	202	A 262	A	A	A	Q 274	Q 246	B	246	Q 286	252	252	274	B	204	222	A	B	R	A	A	A
15	A	A	A	A	B	A	250	Q 310	264	E B 264	Q 224	210	214	Q 210	Q 228	Q 228	206	A 250	E A 260	Y	A	E A 278	B	B
16	Y	A	A	A	A	Q 332	Q 302	Q 268	Q 256	Q 208	A 272	242	E A 242	Q 216	Q 200	194	E A 228	228	206	E B 306	A	A	A	A
17	196	A	A	A	A	A	A	A	A	A	B	Q 246	Q 220	220	220	220	B	A	B	B	B	B	B	A
18	A	202	B	A	A	A	A	A	E A 292	304	B	B	B	B	B	B	B	B	B	194	A	A	A	A
19	E A 258	214	B	A	A	B	B	A	A	A	B	B	B	B	B	B	226	E B 268	B	B	B	B	A	208
20	226	A	A	A	B	A	A	B	A	A	B	B	B	E B 278	B 228	B	B	B	A	A	A	A	A	A
21	A	A	Q 208	194	A	A	Q 310	Q 304	Q 304	Q 252	A 268	Q 234	B	B	B	B	B	A 288	B	A	A	A	A 302	A 208
22	262	A	A	A	A	A	A	B	B	B	B	E B 218	196	220	E B 238	A 242	B	A	A	A	A	A	A	A
23	224	224	A	A 214	202	B	202	E A 294	E A 268	E B 248	230	Q 194	Q 194	Q 194	Q 200	Q 190	186	A	A	A	A	A	A	A
24	204	A	A	A	212	E A 336	A	A	A	E A 316	B	B	212	208	218	Q 200	E B 220	E A 292	B	Y	A	A	A	A
25	A	A	A	A 250	204	A	A	E A 302	A 218	248	E A 272	E B 242	B	Q 222	204	B	B	A	A	A	A	Y	Y	A
26	222	222	A 246	Q 246	E A 290	330	A	A	E A 322	B	Q 236	190	Q 206	230	Q 206	E B 246	A 208	A 242	B	B	B	B	B	A
27	B	A	A	A	A	A	A	A	A	E B 302	Q 214	Q 194	194	204	200	Q 200	E A 266	B	B	B	B	B	B	A
28	A	A	E B 282	A	206	A	206	228	A	Q 278	Q 242	Q 198	Q 210	Q 210	218	B	A	218	B	B	Y	A	A	A
29	A	A	A	A	A	A	A	A	244	Q 216	Q 242	200	Q 200	Q 214	200	248	222	A 254	214	A	B	A	B	A
30	A	208	218	B	A	A	A	A	B 314	Q 302	Q 272	Q 198	Q 198	Q 200	Q 210	194	Q 220	192	200	B	B	B	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	9	9	8	7	7	5	10	15	16	20	22	25	23	27	26	21	21	21	13	5	4	4	1	3
MED	223	213	214	U 232	209	322	U 252	U 251	U 254	U 262	Q 241	205	204	207	204	201	206	226	U 220	U 219	255	238	A 302	208
U Q	A 260	240	E A 246	A 262	A 290	334	326	304	E B 301	302	268	Q 229	214	220	220	232	223	263	E 257	E B 285	E 274	E A 264		244
L Q	202	210	210	214	204	267	202	210	245	248	230	198	196	Q 200	200	194	196	218	210	205	231	216		208

JUN. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	O X 23	A	A	A	A	43	44	46	60	60	56	63	70	77	X 56	46	30	O X 27	X 24	B	Y	Y	R	R
2	56	R	37	30	40	43	43	43	43	36	44	60	X 57	74	66	45	32	R 31	O X 24	B	B	B	Y	A
3	54	51	X 30	32	52	39	52	66	A	B	B	B	74	74	B	B	B	B	B	B	A	A	A	A
4	A	A	A	A	A	A	A	40	45	50	58	62	66	X 70	X 70	66	O X 35	42	X 34	O X 23	A	A	A	A
5	A	O X 27	58	X 31	30	32	41	41	44	44	48	60	70	61	68	55	36	36	36	X 27	O X 25	A	Y	B
6	52	58	43	34	34	34	39	39	40	43	54	62	65	66	78	X 63	X 48	X 32	O X 24	O X 23	O X 25	B	B	Y
7	A	39	76	87	A	A	A	46	X 52	59	64	X 58	70	70	75	55	59	57	32	32	A	A	A	A
8	25	A	X 26	X 28	X 28	32	X 41	71	66	34	X 46	X 53	92	88	73	70	66	55	O X 36	B	B	B	B	41
9	67	A	A	A	A	A	50	52	53	56	52	66	78	83	76	76	70	66	X 30	O X 24	A	B	B	A
10	A	43	50	A	A	A	A	42	A	B	B	B	B	X 68	71	64	X 55	60	X 35	X 32	B	R	B	A
11	O X 28	A	A	A	A	B	A	X 39	48	44	X 42	O X 63	X 68	O X 74	78	66	62	X 56	X 41	O X 21	B	A	A	A
12	A	A	A	A	O X 27	O X 35	A	A	A	A	50	V 58	B	B	89	81	X 73	B	B	R	R	X 24	A	A
13	A	A	A	A	93	A	A	A	37	43	56	64	X 66	B	O X 76	B	X 38	X 39	O X 37	B	B	R	A	35
14	X 22	A	O X 37	A	X 37	39	42	44	40	40	49	67	64	66	X 67	O X 64	43	42	A	A	A	A	X 22	X 22
15	49	92	56	52	57	46	71	71	68	54	53	B	B	71	X 81	O X 76	X 34	B	O X 28	R	B	A	A	X 26
16	52	X 34	A	A	A	A	X 32	X 32	X 31	X 30	B	B	63	X 62	66	57	O X 34	O X 38	B	R	A	B	Y	O X 24
17	38	X 26	X 23	A	A	X 30	42	42	42	32	B	B	69	71	64	64	A	X 32	A	B	A	B	32	X 28
18	A	O X 27	47	O X 24	O X 24	A	36	36	32	32	39	X 48	64	62	X 51	47	32	36	X 28	A	A	B	A	A
19	A	R	O X 32	A	32	32	33	34	33	32	42	58	X 52	X 69	O X 47	O X 37	O X 29	B	B	B	Y	A	A	R
20	A	A	R	O X 36	40	X 55	52	28	O X 32	32	X 40	X 56	X 49	X 46	66	X 46	X 42	O X 24	A	X 24	B	B	R	R
21	A	A	A	A	A	A	C	51	B	37	X 38	X 52	X 52	X 50	X 50	50	33	O X 24	X 24	O X 24	48	A	A	A
22	71	65	53	71	A	A	A	A	35	33	X 38	X 48	55	56	75	70	40	O X 25	O X 25	A	B	B	B	A
23	A	52	A	A	X 26	40	37	42	36	33	X 42	55	X 50	X 61	X 61	52	38	O X 24	O X 24	O X 23	B	Y	A	A
24	56	A	65	A	A	A	25	X 26	40	O X 30	48	52	70	50	56	68	38	X 31	39	O X 28	B	B	Y	A
25	A	A	A	A	49	A	A	A	O X 37	38	X 42	X 57	X 63	87	87	X 46	O X 33	X 32	X 30	B	B	Y	B	R
26	O X 30	52	70	52	A	A	A	A	X 32	A	O X 47	B	O X 50	X 78	100	B	X 49	47	O X 30	R	A	A	A	A
27	A	A	44	70	A	A	A	A	O X 29	A	47	X 56	X 63	70	78	X 48	50	50	O X 30	A	R	Y	B	B
28	A	A	60	69	A	44	44	45	43	33	X 56	X 63	X 58	100	88	62	68	67	42	A	A	A	A	A
29	64	62	O X 32	A	A	A	X 30	B	38	42	X 50	X 57	X 72	94	85	62	58	42	X 31	A	A	B	A	A
30	A	A	O X 28	67	A	A	A	A	48	46	60	70	70	89	84	58	69	57	42	Y	Y	R	A	A
31	B	Y	A	X 34	X 32	A	43	56	41	X 37	X 56	74	X 72	93	X 82	X 73	X 49	49	40	X 27	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	13	19	15	15	14	19	23	27	26	27	25	28	29	30	28	29	27	24	12	3	1	2	6
MED	52	51	44	36	34	39	42	42	40	38	48	58	66	70	74	62	42	39	X 30	O X 24	O X 25	X 24	27	X 27
U Q	56	60	58	69	49	43	44	51	48	44	56	63	70	80	81	67	58	55	36	X 28	48			35
L Q	X 28	X 30	X 32	X 31	X 28	32	36	39	X 35	33	X 42	X 56	X 58	62	X 66	49	34	O X 31	O X 26	O X 23	O X 25			X 24

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	R 17	A	A	A	A	F 29	F 29	F 32	F 27	F 27	F 35	F 48	F 58	F 64	50	F 34	F 21	21	18	B	Y	Y	R	R
2	A	A	F 24	F 18	F 23	F 23	F 21	F 24	F 23	F 20	F 30	F 49	51	F 63	F 55	F 31	F 24	R 25	R 18	B	B	B	Y	A
3	A	A	24	F 20	F 20	F 20	F 18	F 20	A	B	B	B	F 58	F 58	B	B	B	B	B	B	A	A	A	A
4	A	A	A	A	A	A	A	F 28	F 31	F 31	F 44	F 49	F 56	64	64	F 52	R 29	F 24	28	R 17	A	A	A	A
5	A	R 21	A	25	F 18	F 22	F 18	F 22	F 21	F 21	F 34	F 48	F 58	F 50	F 58	F 42	F 22	F 26	F 24	21	F 18	A	Y	B
6	A	A	A	F 23	F 24	F 23	F 23	F 23	F 23	F 22	F 37	F 49	59	F 53	F 62	57	42	26	R 18	R 17	R 19	B	B	Y
7	A	A	F 57	R 37	A	A	A	F 37	46	F 44	F 38	52	F 57	F 58	F 63	F 44	F 48	F 38	F 22	F 18	A	A	A	A
8	F 16	A	20	22	22	F 22	35	F 24	F 22	F 23	40	47	F 80	F 70	F 56	F 56	F 46	F 39	R 30	B	B	B	B	R 32
9	A	A	A	A	A	A	F 38	F 41	F 42	F 35	F 39	F 56	F 66	F 60	F 58	F 61	F 56	F 47	24	R 18	A	B	B	A
10	A	F 22	F 24	A	A	A	A	F 32	A	B	B	B	B	62	F 60	F 55	49	Z 51	29	26	B	R	B	A
11	R 22	A	A	A	A	B	A	J R 33	F 35	F 30	36	57	62	R 68	F 67	F 56	F 50	50	35	R 15	B	A	A	A
12	A	A	A	A	R 21	R 29	A	A	A	A	F 42	V 48	B	B	F 76	F 68	67	B	B	R	R	J R 18	A	A
13	A	A	A	A	A	A	A	A	F 27	F 28	F 40	F 56	60	B	70	B	J R 32	33	R 31	B	B	A	U A 23	R 17
14	16	A	R 31	A	31	F 30	F 25	F 20	F 24	F 20	F 38	F 57	F 50	F 56	61	R 58	F 32	F 31	A	A	A	A	16	16
15	A	A	A	F 23	F 27	F 21	F 24	F 24	F 26	F 19	F 27	B	B	F 59	75	R 69	28	B	R 22	R	B	A	A	20
16	A	28	A	A	A	A	26	26	25	24	B	B	F 50	56	48	F 41	28	R 32	B	A	A	B	Y	R 18
17	F 24	20	17	A	A	24	F 30	F 23	F 23	F 22	B	B	F 58	F 59	F 47	F 46	A	26	A	B	A	B	F 18	22
18	A	R 21	20	18	18	A	F 23	F 21	F 19	F 20	F 28	42	F 56	F 52	45	F 38	F 23	F 18	22	A	A	B	A	A
19	A	A	R 26	A	F 22	F 22	F 23	F 20	F 20	F 17	F 32	F 48	46	63	R 41	R 31	R 23	B	B	B	Y	A	A	A
20	A	A	A	R 30	F 26	49	A	F 18	R 26	F 20	34	50	43	40	F 56	40	36	18	A	18	B	B	A	A
21	A	A	A	A	A	A	C	F 31	B	F 22	32	46	46	44	44	F 37	F 24	R 18	18	R 18	A	A	A	A
22	A	A	A	26	A	A	A	A	F 18	F 22	32	42	F 45	F 44	F 60	F 56	F 24	R 19	19	A	B	B	B	A
23	A	A	A	A	20	F 21	F 16	F 16	F 16	F 19	36	49	44	55	55	F 43	F 27	R 18	R 18	R 17	B	Y	A	A
24	A	A	A	A	A	A	19	20	F 20	24	42	46	F 56	F 38	F 47	F 58	F 24	25	33	22	B	B	Y	A
25	A	A	A	A	A	A	A	A	R 31	F 25	36	51	57	F 65	F 68	40	27	26	24	B	B	Y	B	A
26	R 24	A	R 41	A	A	A	A	A	26	A	41	B	44	72	F 90	B	43	F 33	R 24	R	A	A	A	A
27	A	A	30	A	A	A	A	A	R 23	A	41	50	57	F 54	F 56	42	F 40	F 39	R 24	A	A	Y	B	B
28	A	A	A	A	A	F 30	F 30	F 23	F 25	F 22	50	57	52	F 82	F 73	F 50	F 50	F 55	F 23	A	A	A	A	A
29	A	A	R 26	A	A	A	24	B	F 24	F 30	44	51	66	F 85	F 71	F 51	F 40	F 34	25	A	A	B	A	A
30	A	A	R 22	A	A	A	A	A	F 22	F 32	F 48	F 57	F 60	F 80	F 74	F 47	F 56	42	F 32	Y	Y	A	A	A
31	B	Y	A	28	26	A	F 27	A	F 30	31	50	F 63	66	F 82	76	67	43	43	F 27	21	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	5	13	11	13	14	18	22	27	26	27	25	28	29	30	28	29	27	24	12	2	1	3	6
MED	20	21	24	23	F 22	F 23	F 24	F 24	F 24	F 22	F 38	49	57	F 59	F 60	F 48	F 32	31	24	18	18	J R 18	18	19
U Q	24	25	30	R 28	26	29	F 29	F 31	F 27	F 30	42	F 56	60	F 66	F 70	56	F 47	39	28	21			U A 23	22
L Q	16	20	21	F 20	20	F 22	F 21	F 20	F 22	F 20	F 34	48	50	F 54	55	F 40	F 24	24	20	R 17			16	17

JUL. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	33	90	52	42	42	31	26	E B 15	E B 13	30	20	G	32	E B 13	31	22	E B 15	16	B	17	17	21	22
2	23	26	32	50	68	68	47	22	28	E B 13	E B 12	26	24	16	17	32	38	30	20	B	B	B	17	37
3	33	36	31	31	31	44	32	18	64	B	B	B	29	E B 21	B	B	B	B	B	B	33	26	29	26
4	31	38	68	K 33	45	44	44	34	38	33	33	G 17	G	E B 29	E B 29	E B 22	E B 16	44	58	32	32	30	35	31
5	30	30	34	40	31	31	E B 13	24	32	26	16	32	27	19	17	14	14	32	38	42	28	32	18	B
6	29	36	33	33	70	74	34	37	17	E B 14	34	22	25	27	27	E B 14	E B 13	E B 13	16	16	E B 13	B	B	18
7	34	31	50	38	51	54	46	42	40	33	32	29	29	29	22	30	23	32	E B 12	29	33	33	31	31
8	31	44	33	23	38	28	53	26	26	E B 15	69	33	33	33	33	26	31	32	32	B	B	B	B	34
9	44	50	47	49	51	62	40	35	26	K 19	32	G	32	24	31	21	E B 12	20	24	32	28	B	B	38
10	34	79	82	50	50	72	43	61	42	B	B	B	B	E B 26	19	E B 16	E B 14	E B 18	E B 13	E B 20	B	27	B	31
11	32	37	43	53	42	B	46	48	31	27	15	17	E B 26	E B 56	E B 27	E B 25	E B 16	24	E B 17	E B 13	B	30	32	36
12	42	72	43	35	29	39	59	59	42	50	36	35	B	B	E B 37	E B 38	E B 55	B	B	28	20	K 33	41	57
13	41	48	53	36	36	37	40	42	34	32	25	25	E B 37	B	E B 56	B	32	32	32	B	B	29	51	E B 13
14	24	36	55	58	68	35	48	40	48	E B 12	26	G	G	26	33	20	16	26	32	32	31	29	29	22
15	32	36	32	32	30	36	E B 12	24	E B 12	15	15	B	B	E B 23	E B 28	E B 57	E B 18	B	32	18	B	25	35	32
16	36	38	49	49	44	47	40	30	26	30	B	B	G	43	31	37	31	31	B	26	34	B	17	34
17	36	65	41	68	44	38	36	E B 13	E B 13	43	B	B	E B 29	33	33	33	65	63	69	B	39	B	35	27
18	32	32	36	31	38	34	34	23	E B 13	E B 13	E B 14	G	G	G	32	32	E B 13	17	27	33	32	B	27	31
19	27	26	30	47	41	34	56	30	E B 14	29	27	30	30	69	34	E B 23	E B 17	B	B	B	18	28	34	26
20	32	32	25	26	35	44	43	33	32	27	E B 15	31	34	32	39	32	E B 12	31	25	E B 12	B	B	20	21
21	32	61	57	57	95	106	C	18	B	E B 13	G	26	32	26	17	30	30	29	30	41	31	36	36	51
22	42	56	40	32	49	50	44	51	38	24	31	29	46	20	28	33	E B 12	25	E B 12	40	B	B	B	40
23	37	32	43	38	42	28	22	22	E B 12	E B 12	22	G 16	G	31	30	30	E B 14	17	17	E B 12	B	21	28	34
24	32	K 45	K 42	42	40	33	31	33	36	30	34	34	34	28	33	21	24	26	E B 18	E B 16	B	B	16	40
25	55	67	70	51	48	35	48	40	58	48	21	E B 23	E B 52	E B 24	31	31	28	32	E B 17	B	B	22	B	22
26	40	42	40	34	38	54	41	50	K 32	49	G 26	B	31	E B 53	E B 38	B	E B 22	E B 18	18	21	37	42	32	32
27	38	33	36	42	48	52	42	38	32	35	32	41	35	48	41	B	E B 17	E B 15	29	29	K 25	16	B	B
28	27	27	31	38	48	32	30	34	34	42	E B 28	E B 24	36	32	24	E B 16	22	25	30	55	36	41	41	41
29	44	39	40	53	46	44	39	B	25	E B 16	18	26	26	26	24	32	22	20	32	32	32	B	25	31
30	28	41	31	36	50	40	47	38	32	27	29	28	36	32	32	K 18	E B 16	E B 14	18	18	18	29	29	30
31	B	16	31	32	26	31	E B 14	42	42	36	32	32	32	G 25	25	20	17	30	E B 12	E B 11	34	40	26	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	30	30	30	29	27	25	28	29	30	27	30	27	27	23	20	20	24	29
MED	32	37	40	38	44	41	40	34	32	27	26	26	30	27	29	U 28	18	26	24	28	32	29	29	31
U Q	38	48	50	50	50	52	46	42	38	34	32	32	34	32	33	32	28	32	32	32	34	33	35	36
L Q	30	32	32	33	38	34	32	24	E B 25	E B 14	18	G 18	G 24	24	24	20	E B 14	E B 18	E B 17	E B 16	22	26	23	26

JUL.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	12	11	11	11	11	12	13	14	15	13	13	12	12	13	13	12	12	15	12	B	12	13	12	12
2	12	11	10	11	12	12	14	16	15	13	12	12	11	11	11	12	10	12	13	B	B	B	13	11
3	12	12	12	12	12	12	12	11	13	B	B	B	19	21	B	B	B	B	B	B	13	13	11	11
4	12	12	11	12	18	12	13	12	12	12	12	12	13	29	29	22	16	12	13	12	14	12	13	12
5	13	11	11	12	12	12	13	10	12	12	12	12	12	12	12	10	13	14	13	12	12	12	13	B
6	12	12	12	12	13	13	13	12	12	13	13	11	13	13	11	14	13	13	12	11	13	B	B	13
7	12	11	13	13	14	12	12	12	11	10	12	12	12	13	12	12	12	12	12	12	13	12	12	12
8	11	12	12	11	12	11	12	13	15	15	12	12	13	13	13	12	12	12	23	B	B	B	B	12
9	12	12	13	12	12	13	12	11	13	11	15	16	14	13	13	12	12	13	14	14	24	B	B	12
10	12	12	13	13	13	20	14	15	17	B	B	B	B	26	13	16	14	18	13	20	B	14	B	14
11	12	10	12	12	18	B	20	13	12	12	12	11	27	56	27	25	16	15	17	13	B	13	12	11
12	12	14	13	11	12	12	12	16	20	13	14	14	B	B	37	38	55	B	B	19	14	12	13	12
13	10	12	12	12	12	14	23	20	10	13	13	13	37	B	56	B	15	19	17	B	B	15	12	13
14	12	12	12	12	12	12	12	12	12	12	12	12	13	12	13	13	12	13	12	12	11	12	13	12
15	12	12	11	12	12	12	12	13	12	12	12	B	B	23	28	57	18	B	15	14	B	12	12	12
16	12	12	13	13	14	12	12	12	11	12	B	B	12	21	16	24	19	24	B	14	13	B	12	12
17	12	12	12	13	12	13	13	13	13	14	B	B	29	16	16	16	16	18	17	B	13	B	12	11
18	12	11	12	13	12	14	12	12	13	13	14	14	12	12	11	12	13	12	12	12	12	B	16	16
19	14	13	11	12	12	12	12	12	14	14	14	13	14	12	16	23	17	B	B	B	12	12	13	12
20	12	12	13	12	13	12	12	11	11	12	14	12	14	14	13	12	11	12	15	12	B	B	12	12
21	12	14	12	12	11	12	C	11	B	14	13	11	14	13	12	12	12	12	11	12	12	11	12	11
22	14	19	13	14	12	19	18	14	12	12	11	13	13	12	12	12	12	12	12	18	B	B	B	12
23	12	12	15	12	11	11	12	12	12	12	12	12	12	13	12	13	14	12	12	12	B	11	12	12
24	13	13	12	18	12	12	13	12	12	12	12	12	12	12	13	10	12	12	18	16	B	B	12	12
25	11	13	12	12	12	16	12	16	11	11	12	23	51	24	14	12	16	13	17	B	B	14	B	13
26	12	12	12	11	11	14	19	13	12	12	20	B	16	52	38	B	22	18	14	14	13	12	12	12
27	12	12	14	12	12	15	12	14	12	14	14	14	20	19	13	20	17	15	12	13	17	11	B	B
28	12	12	11	11	12	12	12	12	13	14	28	24	20	20	17	16	12	12	12	12	13	12	11	12
29	8	15	12	14	20	12	12	B	13	16	15	14	17	15	13	12	13	12	12	13	14	B	12	12
30	12	12	13	12	13	16	12	12	12	12	13	14	14	12	12	13	16	14	12	12	12	12	12	12
31	B	12	12	12	12	12	14	15	12	13	15	12	15	16	14	13	13	12	12	11	12	12	12	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	12	12	12	12	12	12	12	12	12	13	13	13	14	14	13	13	13	13	13	14	14	13	12	12
U Q	12	12	13	13	13	14	13	14	13	14	15	B 23	20	23	17	23	16	18	17	B	B	B	B 16	12
L Q	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

JUL. 2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E +SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	220	A	A	A	A	A	A	Q 240	194	Q 224	Q 202	Q 222	Q 196	186	Q 210	A 220	A 250	A 254	B	Y	Y	A	A
2	A	A	A	242		A	A	A	Q 248	232	Q 232	Q 196	Q 196	Q 196	Q 196	186	A 248	A 234	A 228	B	B	B	Y	A
3	A	A	A 326	A 308	E A 342	A	A	A 318	A	B	B	B	Q 214	226	B	B	B	B	B	B	A	A	A	A
4	A	A	214	A	A	A	A	A	308	E A 264	Q 236	Q 206	Q 198	204	238	228	B 236	A 296	204	242	A	A	A	A
5	A	218	A	238	A	264	322	Q 292	Q 274	A 222	Q 222	Q 192	Q 192	Q 192	Q 182	Q 182	200	Q 236	Q 206	E A 266	E A 246	A	Y	B
6	A	A	A	A	A	E A 362	E A 336	E A 306	Q 264	E B 236	Q 224	Q 192	Q 204	Q 196	Q 210	188	Q 188	244	230	A 270	198	B	B	Y
7	A	A	208	A	A	A	A	A	A	Q 272	Q 238	Q 218	Q 196	Q 202	Q 202	Q 172	Q 212	Q 202	Q 212	Q 232	A	A	A	A
8	A	A	232	A		A	A	306	S 256	276	Q 242	Q 206	Q 218	Q 196	Q 196	Q 204	Q 206	Q 192	254	B	B	B	B	226
9	A	A	A	A	A	A	A	232	Q 278	Q 250	Q 276	Q 196	Q 214	Q 202	Q 202	Q 222	Q 222	Q 210	206	A 246	A	B	B	A
10	A	192	A	A	A	A	A	A 240	A	B	B	B	B	216	196	206	196	226	226	234	B	A	B	A
11	230	A	A	A	A	B	A	A	Q 274	218	252	E A 230	228	242	212	234	Q 210	230	248	E B 224	B	A	A	A
12	A	A	A	A		230	A	A	A	A	E A 268	224	B	B	242	234	266	B	B	A	A	234	A	A
13	A	A	A	A	A	A	A	A	A 234	Q 242	Q 210	Q 204	262	B	232	B	280	E A 250	242	B	B	A	252	B
14	E A 288	A	240	A	232	330	E A 374	302	260	268	Q 210	Q 210	Q 188	Q 206	200	192	230	Q 230	A	A	A	A	A	A
15	A	220	214	214	Q 328	A	196	254	306	A 282	260	B	B	210	238	224	202	B	A	A	B	198	A	A
16	A	206	A	A	A	A	222	308	232	A	B	B	Q 200	204	Q 224	202	274	236	B	A	A	B	A	258
17	A	A	A	A	A	358	Q 304	Q 272	254	284	B	B	218	E A 248	194	A 206	A	236	A	B	A	B	A	236
18	A	220	220	A	E A 340	A	A 334	E A 304	262	Q 262	256	Q 202	Q 194	Q 192	Q 198	Q 198	174	224	202	A	A	B	A	A
19	A	A	A	A	A	A	302	246	318	246	230	Q 210	192	192	202	228	214	B	B	B	Y	A	A	A
20	A	A	A	214	A	200	A	200	200	E A 264	206	206	186	202	208	200	192	A	A	214	B	B	A	A
21	A	A	A	A	A	A	C	E A 306	B	E B 254	202	212	208	204	Q 204	190	190	A	A 246	A 260	A	A	A	A
22	A	A	A	200	A	A	A	A	278	248	Q 232	Q 212	206	Q 194	Q 212	Q 198	Q 198	A	216	A	B	B	B	A
23	A	A	A	A	218	218	222	E A 280	E B 280	238	Q 202	210	186	Q 202	Q 196	Q 182	Q 190	A	216	214	B	Y	A	A
24	A	A	A	A	A	A	A 220	A	240	264	208	194	Q 186	Q 186	Q 196	Q 210	Q 186	242	212	228	B	B	Y	A
25	A	A	A	A	A	A	A	A	210	A	Q 248	244	246	Q 234	Q 198	Q 188	224	224	E B 248	B	B	Y	B	A
26	208	216	A	A	A	A	A	A	A	A	A	B	A	246	210	B	218	210	218	A	A	A	A	A
27	A	A	228	A	A	A	A	A	A	A	236	224	224	Q 224	192	204	Q 232	212	204	A	A	Y	B	B
28	A	A	A	A	A	A	Q 284	Q 228	Q 228	A	252	244	216	234	206	210	Q 232	212	Q 212	A	A	A	A	A
29	A	A	A	A	A	A	A	B	E A 276	238	Q 216	194	Q 216	Q 216	Q 202	Q 184	Q 206	Q 194	A 206	A	A	B	A	A
30	A	A	A	A	A	A	A	A	A	Q 244	Q 218	198	190	Q 212	Q 204	Q 188	Q 206	Q 206	Q 218	Y	Y	A	A	A
31	B	Y	A	E A 276	A	A	E B 326	A	A	A 270	230	Q 208	Q 206	220	200	188	196	198	198	222	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	7	8	7	5	7	12	17	22	23	26	25	27	29	30	28	29	23	23	12	2	2	1	3
MED	U 219	218	224	U 226	U 273	U 247	U 262	U 267	258	247	Q 230	206	Q 206	204	202	201	210	225	216	232	222	216	252	236
U Q	E A 288	220	236	A 276	E A 341	358	E A 330	A 306	278	268	248	215	218	222	210	210	231	236	242	A 253				258
L Q	208	206	214	214	225	218	222	243	240	238	Q 216	Q 197	192	Q 196	196	Q 188	196	Q 210	206	223				226

JUL. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG.2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	65	A	A	47	46	48	61	X 73	82	X 83	X 86	B	101	80	34	O X 24	B	B	A	A
2	A	A	42	A	A	51	A	O X 40	42	A	B	X 69	76	X 77	B	O X 77	B	X 72	O X 45	B	72	R	R	O X 36
3	R	A	A	A	R	O X 28	O X 32	B	O X 39	50	50	X 66	X 70	X 90	X 83	X 63	R	65	44	O X 30	B	Y	70	34
4	A	A	A	33	O X 28	X 28	A	B	A	B	B	X 64	X 72	B	B	B	82	X 75	O X 60	X 30	R	A	A	A
5	A	A	A	A	B	A	A	34	41	B	B	X 66	80	X 75	X 81	X 70	X 67	B	B	B	R	R	A	60
6	X 41	A	B	A	A	52	B	B	R	B	B	X 64	O X 75	X 83	X 70	B	X 65	70	45	B	R	B	R	A
7	A	A	A	A	A	X 32	33	42	40	B	O X 53	70	X 68	X 82	X 77	X 66	X 47	58	53	O X 26	B	B	A	A
8	A	A	A	A	A	94	B	B	A	B	B	X 61	71	X 77	X 75	B	B	B	B	B	B	B	B	B
9	A	A	A	A	A	A	O X 37	A	A	51	X 57	71	B	X 88	76	60	52	48	X 48	X 30	O X 27	B	B	B
10	Y	A	A	A	60	A	43	45	44	57	X 58	O X 70	O X 76	O X 75	X 80	O X 59	X 58	X 48	X 44	X 28	O X 23	B	Y	A
11	A	A	44	X 35	36	39	40	47	55	O X 42	O X 54	72	X 66	X 74	X 65	X 63	X 59	X 56	48	X 35	A	B	A	A
12	A	A	52	A	A	A	A	A	B	X 44	X 60	X 72	X 75	83	75	X 61	64	49	64	32	R	A	A	A
13	B	A	B	A	56	A	A	B	X 31	X 44	X 49	B	O X 72	X 89	X 63	68	B	B	59	54	B	B	B	A
14	52	A	X 31	O X 28	52	A	A	38	42	48	B	66	70	X 77	X 53	X 59	47	X 31	40	X 31	B	Y	B	B
15	A	A	71	A	O X 31	X 31	A	33	38	X 44	X 57	X 65	X 66	X 79	72	68	X 50	X 47	O X 43	X 39	B	A	A	36
16	A	A	30	26	A	26	40	36	35	46	X 62	X 70	66	X 66	82	X 59	X 50	35	31	28	28	B	B	22
17	A	A	O X 29	A	A	A	A	42	42	X 46	X 56	X 63	X 70	X 67	X 67	X 56	X 63	X 48	X 46	X 38	X 29	R	R	A
18	A	A	A	X 31	53	43	51	X 59	54	56	X 59	X 65	X 73	X 75	X 75	X 58	X 55	X 54	X 42	X 37	X 24	X 21	A	A
19	A	A	A	53	60	A	51	59	52	48	59	57	X 66	X 73	X 75	77	59	X 48	39	34	O X 30	R	A	64
20	A	A	R 46	A	A	65	A	X 31	X 36	X 40	O X 43	X 48	X 48	X 52	X 60	X 62	X 63	X 47	41	30	X 21	X 21	R	O X 21
21	87	A	A	108	A	A	A	B	B	B	B	B	B	B	O X 67	O X 66	B	B	O X 51	O X 30	A	A	A	70
22	A	A	A	A	56	87	A	54	B	B	O X 50	X 56	X 57	X 63	X 73	X 62	X 61	O X 51	O X 46	X 31	B	B	B	B
23	R	A	A	37	O X 30	X 30	O X 37	A	50	B	X 66	X 70	81	87	X 67	67	66	52	56	40	X 28	X 19	B	X 20
24	29	O X 35	40	50	56	A	50	50	57	X 56	X 66	X 76	X 94	X 94	X 84	X 72	71	62	X 56	44	32	B	A	A
25	A	A	36	52	42	52	54	60	X 43	X 64	X 73	X 82	X 88	X 83	X 84	X 82	69	X 57	X 49	45	30	O X 19	B	B
26	B	50	58	33	42	52	38	40	42	60	X 70	X 77	X 82	X 78	X 85	O X 71	X 77	X 55	X 56	40	X 26	X 21	B	B
27	A	A	56	76	41	F	51	A	A	A	B	B	B	106	90	B	70	45	A	40	66	O X 32	73	A
28	A	A	77	A	A	A	A	A	B	B	B	B	B	O X 55	B	O X 68	71	B	B	59	A	34	A	42
29	A	A	A	55	52	A	A	A	63	B	B	B	B	B	B	B	B	X 56	X 46	X 27	A	O X 27	A	A
30	A	A	40	A	X 30	A	A	R	B	B	X 54	X 57	X 59	O X 59	O X 66	X 72	B	B	O X 51	47	O X 26	A	A	A
31	A	A	57	X 31	54	36	A	A	A	A	B	B	X 72	X 72	X 74	O X 85	B	O X 69	O X 62	X 33	X 24	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	2	15	14	18	16	13	17	20	17	20	25	26	28	27	25	23	25	27	27	15	8	2	10
MED	46	42	44	36	52	41	40	42	42	48	X 58	X 66	X 72	X 77	X 75	X 66	X 63	X 54	X 46	X 33	X 28	X 21	72	36
U Q	70		57	53	56	52	51	52	51	56	X 62	X 72	X 76	X 83	X 82	X 72	70	64	X 56	40	30	O X 30		60
L Q	35		36	X 31	O X 36	X 30	O X 37	37	40	X 44	X 54	X 64	X 66	X 72	X 67	X 60	X 55	X 48	43	X 30	X 24	X 20		X 22

AUG.2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E ;SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

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

IONOSPHERIC DATA STATION SHOWA-ST.

AUG.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	43	58	61	50	43	81	59	44	29	25	29	51	50	28	G 19	B	E B 19	38	34	E B 13	B	B	26	99
2	43	43	48	51	43	40	39	57	44	40	B	33	E B 27	G	B	E B 58	B	E B 18	E B 20	B	43	20	30	39
3	34	44	42	40	31	20	28	B	41	27	24	G	E B 22	26	G	E B 21	E B 30	E B 20	E B 20	E B 16	B	15	24	41
4	86	43	44	62	71	31	42	69	57	B	B	E B 31	E B 31	B	B	B	E B 36	E B 54	E B 33	E B 19	22	33	41	64
5	66	43	38	40	B	43	47	32	35	B	B	35	E B 25	E B 35	E B 20	G	E B 28	B	B	B	31	35	52	J A 82
6	100	87	B	40	44	41	B	B	36	B	B	E B 53	E B 59	E B 28	E B 20	B	E B 30	E B 19	E B 17	B	24	B	18	36
7	39	34	36	36	40	32	21	16	18	B	27	27	G 22	G	G	40	E B 25	E B 17	E B 19	E B 14	B	B	32	44
8	31	31	43	49	57	72	B	B	45	B	B	30	E B 24	G	E B 26	B	B	B	B	B	B	B	B	B
9	26	26	25	27	41	42	42	45	53	40	32	32	B	E B 57	E B 27	E B 24	E B 18	E B 18	E B 19	E B 20	E B 14	B	B	B
10	16	31	24	32	30	35	31	41	E B 14	E B 16	G	G	E B 56	E B 56	E B 61	E B 24	E B 18	16	29	30	28	B	17	35
11	33	35	35	32	29	26	17	E S 16	Z 15	E B 23	E B 24	24	24	K 22	32	G 16	18	25	25	21	40	B	32	67
12	42	42	36	49	56	50	44	43	B	30	G 18	29	G	G	G 20	31	G	31	E B 12	E B 14	26	42	43	46
13	B	33	B	45	43	43	42	B	42	G 20	G 18	B	E B 56	E B 33	E B 29	E B 26	B	B	E B 14	E B 13	B	B	B	32
14	34	34	33	42	26	40	43	42	30	E B 20	B	E B 26	28	31	E B 28	E B 25	36	E B 20	18	E B 18	B	15	B	B
15	26	38	42	37	34	40	43	30	17	31	29	31	48	39	33	G	G	15	E B 21	E B 22	B	36	36	17
16	28	67	30	64	58	62	68	51	25	26	G	26	38	30	24	G	G	E B 13	E B 13	E B 12	E B 12	B	B	22
17	29	39	40	45	46	49	51	29	33	33	25	31	31	G 20	25	25	26	26	33	30	16	22	27	36
18	32	31	32	26	27	34	32	33	E B 15	G	E B 26	E B 25	32	67	G	G	G	K 16	32	E B 12	E B 13	E B 13	30	30
19	32	42	53	43	57	51	32	28	31	44	37	30	G	G 20	E B 26	E B 19	E B 16	E B 12	E B 16	E B 14	24	40	88	64
20	106	64	47	45	57	57	41	35	21	G	G	G 21	G 22	G 20	33	G	G	G	E B 12	E B 13	E B 12	E B 12	21	21
21	32	43	43	72	101	43	57	B	B	B	B	B	B	B	E B 50	E B 51	B	B	E B 22	E B 16	32	42	71	39
22	65	46	36	43	34	32	40	43	B	B	E B 34	G	G 22	E B 26	26	G	G	E B 15	E B 19	E B 15	B	B	B	B
23	18	32	24	36	42	42	70	58	31	B	E B 39	30	E B 32	30	G	28	28	E B 14	E B 12	E B 12	E B 13	E B 12	B	22
24	K 22	35	35	34	45	57	44	40	G 18	18	32	32	36	32	42	E B 31	E B 30	30	E B 15	E B 14	E B 13	B	29	28
25	29	37	26	41	16	27	26	E B 12	19	31	31	G	34	32	39	40	G	G	29	E B 12	E B 12	E B 12	B	B
26	B	32	K 25	34	33	33	28	28	E B 19	E B 22	E B 25	42	42	57	72	G	E B 21	E B 19	E B 18	E B 13	E B 12	E B 12	B	B
27	21	29	32	60	46	44	44	62	59	57	B	B	B	E B 26	E B 51	B	40	48	58	87	30	81	68	116
28	100	96	71	37	43	38	38	42	B	B	B	B	B	E B 34	B	E B 39	E B 24	B	B	32	75	95	52	58
29	104	58	91	41	24	33	58	50	E B 45	B	B	B	B	B	B	B	B	E B 29	E B 20	E B 16	42	32	48	65
30	40	42	40	52	33	33	57	32	B	B	E B 26	G	E B 29	E B 40	E B 50	E B 26	B	B	E B 28	E B 21	E B 15	32	40	61
31	56	42	32	40	33	72	42	49	54	41	B	B	E B 29	E B 27	E B 32	E B 56	B	E B 52	E B 27	E B 17	33	36	40	72
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	29	31	30	31	29	26	26	20	20	25	26	28	27	25	24	25	28	27	23	20	22	25
MED	34	42	36	41	42	41	42	42	30	26	26	28	U 27	U 26	E G 27	E G 25	E G 20	E B 19	E B 20	E B 16	24	32	34	41
U Q	60	44	44	49	46	50	49	49	44	36	32	32	38	E B 34	E B 39	E B 35	E B 29	30	28	21	32	38	48	64
L Q	28	33	32	36	33	33	32	30	19	G	G	G	G 24	G	G	G	G	G	E B 16	E B 13	E B 13	E B 14	27	31

AUG.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	11	13	12	12	13	13	14	11	12	12	12	12	12	13	16	B	19	19	14	13	B	B	12	12
2	11	14	13	17	12	18	25	14	18	23	B	20	27	15	B	58	B	18	20	B	13	14	12	12
3	12	13	12	12	12	12	12	B	14	14	12	14	22	19	16	21	30	20	20	16	B	11	12	13
4	12	16	14	12	12	14	29	56	18	B	B	31	31	B	B	B	36	54	33	19	12	13	12	11
5	11	19	25	30	B	18	14	13	14	B	B	30	25	35	20	12	28	B	B	B	12	11	11	14
6	13	12	B	20	22	24	B	B	24	B	B	53	59	28	20	B	30	19	17	B	13	B	12	12
7	13	12	12	12	15	13	13	13	12	B	18	14	14	15	16	13	25	17	19	14	B	B	11	12
8	10	12	11	12	26	19	B	B	15	B	B	20	24	20	26	B	B	B	B	B	B	B	B	B
9	12	12	12	11	11	13	13	10	16	12	12	21	B	57	27	24	18	18	19	20	14	B	B	B
10	12	13	13	12	12	12	11	12	14	16	12	17	56	56	61	24	18	12	12	12	12	B	12	10
11	11	11	11	12	12	12	12	16	15	23	24	14	14	12	14	14	12	12	11	12	12	B	12	12
12	11	11	19	15	16	17	23	14	B	20	14	19	17	15	15	15	12	12	12	14	12	11	11	19
13	B	22	B	24	20	12	22	B	15	15	17	B	56	33	28	26	B	B	14	13	B	B	B	12
14	10	12	12	12	13	14	13	12	12	20	B	26	18	20	28	25	18	20	13	18	B	13	B	B
15	11	11	12	12	13	13	13	11	12	11	12	14	14	16	16	14	12	12	21	22	B	14	14	12
16	11	12	11	11	12	12	13	12	12	12	12	12	15	15	14	14	11	13	13	12	12	B	B	11
17	11	12	12	14	12	14	11	12	12	14	12	15	15	16	14	12	12	11	12	12	12	14	14	12
18	12	12	12	12	11	12	15	12	15	13	26	25	17	19	18	14	12	12	12	12	13	13	12	11
19	12	16	12	15	14	12	12	15	14	13	13	14	14	13	26	19	16	12	16	14	11	12	12	12
20	16	24	11	14	18	14	13	12	13	15	14	13	14	16	16	12	12	12	12	13	12	12	11	12
21	12	12	12	12	12	12	15	B	B	B	B	B	B	B	50	51	B	B	22	16	12	13	14	12
22	14	27	13	12	14	13	14	14	B	B	34	20	18	26	18	14	14	15	19	15	B	B	B	B
23	12	12	12	12	12	12	12	13	13	B	39	24	32	19	18	13	13	14	12	12	13	12	B	12
24	12	12	12	12	12	12	12	12	12	12	14	16	19	18	23	31	30	20	15	14	13	B	15	12
25	12	12	11	11	13	12	12	12	12	14	17	18	19	18	15	15	13	12	12	12	12	12	B	B
26	B	12	12	13	12	12	13	13	19	22	25	17	17	15	17	19	21	19	18	13	12	12	B	B
27	12	12	11	12	12	12	12	12	14	14	B	B	B	26	51	B	14	14	12	12	13	15	14	14
28	14	14	12	25	28	24	12	17	B	B	B	B	B	34	B	39	24	B	B	13	13	20	12	12
29	12	12	12	13	10	22	18	16	45	B	B	B	B	B	B	B	B	29	20	16	13	12	12	12
30	12	13	12	24	14	22	21	17	B	B	26	18	29	40	50	26	B	B	28	21	15	13	12	12
31	15	15	13	13	15	14	19	16	18	26	B	B	29	26	32	56	B	52	27	17	12	12	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	12	12	12	12	13	13	13	13	15	20	25	20	22	19	20	24	19	18	17	14	13	14	12	12
U Q	13	14	13	15	15	17	19	B 17	B 19	B	B	B 31	B 56	34	50	B 56	B 36	B 52	21	19	B	B	B	B 14
L Q	11	12	12	12	12	12	12	12	12	14	13	14	15	15	16	14	13	12	12	12	12	12	12	12

AUG. 2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	232	A	A	A 310	Q 258	Q 222	Q 212	198	198	Q 212	212	B	Q 192	Q 192	224	E B 276	B	B	A	A
2	A	A	A	A	A 198	A	198	106	A	B	260	210	A 214	B	E B 260	B	Q 200	B 276	B	A	A	A	244	
3	A	A	A	A	A	A	A	B	A	Q 220	222	210	224	212	208	192	220	228	200	E B 250	B	Y	A	A
4	A	A	A	A	A	A	A	B	A	B	B	258	240	B	B	B	254	244	222	236	A	A	A	A
5	A	A	A	A	B	A	A	A	A	B	B	E A 252	210	210	230	206	212	B	B	B	A	A	A	A
6	A	A	B	A	A	A	B	B	A	B	B	E B 288	E B 284	E B 232	206	B	228	194	204	B	A	B	A	A
7	A	A	A	A	A	A	E A 334	Q 312	Q 298	B	208	198	202	208	190	Q 204	204	Q 218	Q 220	214	B	B	A	A
8	A	A	A	A	A	A	B	B	A	B	B	E A 240	E B 214	214	E B 228	B	B	B	B	B	B	B	B	B
9	A	A	A	A	A	A	A	A	A	208	Q 208	Q 230	B	Q 230	206	206	206	230	214	250	224	B	B	B
10	Y	A	A	A	A	A	A	248	Q 266	224	Q 200	200	E B 282	E B 280	E B 240	198	E B 210	202	Q 218	218	A	B	Y	A
11	A	A	A	220	214	Q 326	344	E S 342	E S 292	E B 272	220	Q 232	198	210	196	200	Q 212	Q 196	196	Q 224	A	B	A	A
12	A	A	198	A	A	A	A	A	B	256	218	218	230	206	206	Q 192	Q 206	Q 188	Q 216	222	A	A	A	A
13	B	A	B	A	A	A	A	B	A	208	192	B	E B 270	224	194	E B 240	B	B	Q 220	Q 220	B	B	B	A
14	A	A	A	A	A	A	A	A	Q 248	Q 224	B	224	224	204	204	210	202	E B 258	238	232	B	Y	B	B
15	A	A	A	A	206	A	A	A	244	192	200	B 204	204	Q 214	194	194	178	214	226	226	B	A	A	Y
16	A	A	A	A	A	A	A	A	Q 232	198	204	Q 214	206	204	216	196	Q 176	190	224	204	218	B	B	A
17	192	A	202	A	A	A	A	A	Q 266	Q 224	Q 222	Q 210	198	202	210	Q 200	210	186	Q 202	246	252	A	A	A
18	A	A	A	218	226	A	A	A	250	250	228	204	220	194	194	204	196	224	194	204	220	226	A	A
19	A	A	A	226	212	A	304	Q 268	Q 268	Q 228	206	214	208	200	208	Q 208	Q 218	202	224	224	A	A	A	204
20	A	A	A	A	A	A	A	A	240	294	254	214	188	200	Q 214	200	Q 200	200	194	218	E B 256	E B 276	A	286
21	A	A	A	A	A	A	A	B	B	B	B	B	B	B	E B 256	256	B	B	232	248	A	A	A	A
22	A	A	A	A	A	A	A	A	B	B	E B 248	E A 230	E A 228	214	E A 218	196	206	206	206	200	B	B	B	B
23	A	A	A	A	208	A	E A	A	Q 250	B	280	206	236	220	200	200	200	Q 186	Q 186	Q 196	196	226	B	A 226
24	A	206	A	A	A	A	A	222	Q 230	208	210	210	210	212	208	208	208	208	198	Q 208	208	B	A	A
25	A	A	202	A	A	A	A	E B 268	Q 234	226	216	200	212	196	196	200	192	192	194	Q 200	Q 202	202	B	B
26	B	A	A	A	A	A	A 316	248	238	218	218	214	218	238	214	198	214	198	210	204	226	212	B	B
27	A 212	A	A	218	A	A	A	A	A	A	B	B	B	236	252	B	E A 320	244	A	256	F	A	A	A
28	A	A	A	A	A	A	A	A	B	B	B	B	B	350	B	278	E B 278	B	B	A	206	186	A	A
29	A	A	A	A	F	A	A	A	E B 310	B	B	B	B	B	B	B	B	E B 244	212	E B 298	A	212	A	A
30	A	A	194	A	A	A	A	240	B	B	E B 250	E A 238	238	B	B	E B 256	B	B	224	E B 254	288	A	A	A
31	A	A	212	202	A	A	A	A	A	A	B	B	E A 234	234	248	E B 270	B	270	206	246	A 322	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	1	5	5	6	2	4	10	17	17	20	25	26	27	26	25	24	25	27	26	12	7		4
MED	202	206	202	218	213	262	318	251	Q 247	223	214	212	212	212	207	202	206	201	214	221	220	212		235
U Q			207	223	226		339	310	Q 267	239	225	E 235	E 234	230	E 218	E B 225	216	229	224	E B 248	254	226		265
L Q			196	210	208		310	240	Q 236	208	207	205	206	204	200	198	200	193	200	208	207	202		215

AUG. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	O X 38	52	B	A	A	A	R	B	B	B	B	B	O X 72	B	B	O X 66	65	O X 42	B	B	B	A	A
2	A	A	36	A	A	A	A	O X 45	O X 47	O X 47	B	O X 66	O X 74	O X 76	X 82	X 85	78	X 73	56	B	X 30	A	A	X 32
3	A	A	A	57	44	A	B	B	B	B	B	B	O X 75	O X 83	B	B	O X 78	X 75	66	61	42	22	R	X 29
4	43	A	A	A	82	B	A	A	B	B	B	B	B	B	X 75	B	O X 73	X 69	64	O X 46	X 36	B	O X 24	A
5	A	38	A	A	A	X 38	46	O X 44	60	X 58	X 64	B	88	X 96	B	B	B	B	76	X 45	R	A	A	A
6	A	X 32	A	A	X 35	O X 39	A	X 50	X 55	O X 61	O X 67	O X 74	X 79	X 103	X 96	X 76	X 76	78	66	X 60	45	B	R	R
7	71	O X 38	89	A	B	B	B	B	B	B	B	O X 62	X 72	X 76	X 81	X 81	X 75	70	X 63	O X 49	O X 31	X 24	O X 24	O X 22
8	B	B	B	O X 22	O X 24	O X 26	X 31	X 46	X 58	X 70	67	X 80	X 90	X 89	O X 102	X 83	O X 86	X 80	X 74	50	X 35	X 27	O X 25	S
9	B	R	O X 36	A	A	A	A	A	X 49	B	B	X 76	X 85	X 99	X 90	X 89	82	X 75	73		46	X 20	O X 22	56
10	A	A	X 39	A	A	X 32	35	X 46	X 56	X 65	O X 70	X 72	X 86	X 92	X 80	79	X 76	X 70	X 63	X 69	X 40	31	A	A
11	A	A	A	A	A	A	52	B	B	B	B	O X 70	X 76	B	B	X 102	O X 102	86	76	71	49	32	A	A
12	A	A	A	X 35	A	A	B	B	B	B	B	X 70	X 66	O X 65	O X 73	O X 74	X 75	B	B	B	B	B	B	A
13	B	A	A	57	X 30	76	A	R	R	O X 41	O X 43	O X 56	O X 49	O X 52	O X 48	X 51	X 60	67	X 62	53	42	32	X 22	X 38
14	X 32	X 42	42	44	44	41	O X 32	O X 36	38	O X 59	X 58	X 58	X 69	X 69	X 72	X 75	X 80	O X 71	X 71	57	43	X 33	31	26
15	X 23	24	29	31	40	36	38	X 49	X 58	X 67	X 76	X 90	X 92	O X 94	O X 94	O X 88	R 82	X 75	X 73	X 61	X 49	X 39	X 29	X 22
16	O X 21	A	32	40	X 56	44	42	43	56	X 56	X 74	X 82	C	C	X 104	X 86	X 86	X 80	X 75	X 64	46	X 32	28	A
17	A	A	B	B	B	A	A	X 50	X 56	X 62	X 68	X 75	X 78	X 82	O X 86	X 81	X 74	X 75	X 65	X 59	X 51	X 39	X 35	X 32
18	32	30	53	47	45	56	68	51	X 64	73	X 81	X 95	X 107	X 101	X 100	X 95	X 83	X 77	X 72	X 64	X 42	32	A	A
19	A	A	44	A	76	A	A	R	R	A	B	X 57	X 57	X 66	X 69	C	X 77	X 67	X 66	X 57	F	54	A	A
20	41	41	90	A	A	X 39	55	A	A	O X 45	O X 48	X 59	X 65	X 73	X 77	X 76	X 73	X 70	77	X 55	X 34	B	B	B
21	A	A	A	A	A	X 36	A	A	B	B	B	X 68	X 77	X 83	X 84	X 83	X 87	X 75	X 61	65	X 54	42	X 27	X 24
22	X 22	51	37	33	A	A	O X 45	A	B	B	B	B	B	X 100	O X 98	B	X 102	X 83	70	70	O X 26	A	A	A
23	A	A	A	A	A	A	B	X 58	70	X 66	X 71	X 82	X 96	X 91	X 92	X 106	X 106	X 101	87	76	X 52	R	A	A
24	A	A	A	R	A	A	82	B	R	B	R	B	B	B	O X 72	X 83	X 75	B	54	43	A	O X 26	A	81
25	A	65	65	B	B	B	B	B	A	B	B	X 70	X 74	O X 83	X 94	X 94	X 84	X 84	X 78	X 58	X 40	R	A	A
26	A	A	B	B	B	B	B	69	B	O X 62	68	X 72	B	X 90	X 98	X 112	X 110	X 53	B	68	84	A	A	58
27	A	57	64	48	B	B	B	B	B	B	B	B	B	B	O X 67	X 79	O X 75	X 75	X 68	X 38	R	A	A	A
28	A	56	42	69	52	X 45	67	X 67	X 70	X 73	X 73	X 80	X 85	X 88	X 88	X 88	X 97	O X 98	81	70	49	R	O X 40	A
29	A	O X 37	A	51	A	A	A	A	X 76	78	X 77	X 81	94	X 93	X 100	B	B	105	X 91	72	58	A	X 58	A
30	A	A	56	A	65	51	B	X 47	B	B	B	X 73	X 74	O X 86	X 88	O X 86	B	X 95	67	X 55	X 39	A	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	8	13	16	12	12	13	12	14	14	16	15	23	23	25	26	23	27	27	28	26	24	15	12	11
MED	32	38	43	46	44	X 39	46	X 48	X 57	X 62	X 68	X 72	X 77	X 86	X 87	X 83	X 78	X 75	X 69	X 60	X 42	X 32	X 28	X 32
U Q	42	54	60	54	60	48	61	51	X 64	X 68	X 74	X 80	X 88	X 94	X 96	X 89	X 86	X 83	76	68	X 49	39	X 33	56
L Q	X 22	34	36	34	X 38	X 36	36	O X 45	X 55	O X 57	X 64	X 66	X 72	X 74	O X 75	X 79	X 75	X 70	X 64	X 53	X 38	X 26	O X 24	X 24

SEP.2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	32	F 38	B	A	A	A	R	B	B	B	B	B	R 66	B	B	60	F 55	36	B	B	B	A	A
2	A	A	F 27	A	A	A	A	R 39	41	41	B	60	68	70	76	79	F 68	67	F 43	B	24	A	A	26
3	A	A	A	F 28	F 24	A	B	B	B	B	B	B	69	77	B	B	R 72	69	60	F 40	34	16	R	A
4	A	A	A	A	A	B	A	A	B	B	B	B	B	B	69	B	67	63	58	40	30	B	18	A
5	A	F 30	A	A	A	32	F 26	R 38	F 50	52	58	B	F 76	90	B	B	B	B	F 66	39	A	A	A	A
6	A	26	A	A	29	33	A	44	49	R 55	61	R 68	73	97	90	70	70	F 68	F 56	54	F 36	B	R	A
7	R 37	R 32	A	A	B	B	B	B	B	B	B	56	66	70	75	75	69	F 60	57	43	R 25	18	R 18	R 16
8	B	B	B	16	R 18	R 20	25	40	52	64	V 62	74	J R 84	83	96	77	80	74	67	F 41	29	21	R 19	S
9	B	R	R 30	A	A	A	A	A	42	B	B	70	79	93	84	83	76	Z 69	Z 65		F 32	14	16	A
10	A	A	33	A	A	26	F 26	39	50	58	64	66	80	86	74	Z 72	70	64	57	63	34	F 20	A	A
11	A	A	A	A	A	A	F 36	B	B	B	B	64	70	B	B	96	96	F 74	F 64	F 59	F 37	F 21	A	A
12	A	A	A	29	A	A	B	B	B	B	B	64	60	R 59	R 67	R 68	69	B	B	B	B	B	B	A
13	B	A	A	F 39	24	F 37	A	R	R	35	R 37	R 50	R 43	R 46	42	45	54	F 57	56	F 43	F 30	F 23	16	32
14	26	36	F 28	F 28	F 29	F 27	R 26	R 30	F 25	53	52	56	63	63	66	69	74	65	65	F 44	F 32	27	F 21	F 16
15	17	F 14	F 14	F 17	F 19	F 20	F 28	43	52	61	70	84	J R 86	R 88	88	R 82	76	69	66	55	43	33	23	16
16	R 15	A	F 23	F 25	50	F 28	F 22	F 31	F 40	50	68	76	C	C	J R 98	J R 80	80	74	69	58	F 35	26	F 16	A
17	A	A	B	B	B	A	A	44	50	56	62	69	72	76	80	75	68	69	58	53	45	33	29	26
18	F 20	F 18	F 18	F 38	F 18	F 22	F 26	F 40	58	F 63	75	89	101	95	94	J R 89	77	71	66	58	36	F 21	A	A
19	A	A	F 24	A	A	A	A	A	A	A	B	51	51	60	63	C	71	61	60	51	F	F 42	A	A
20	F 21	F 21	A	A	A	33	R 32	A	A	39	42	53	59	67	71	70	67	64	71	49	28	B	B	B
21	A	A	A	A	A	30	A	A	B	B	B	62	71	77	78	77	J R 81	69	55	F 54	48	F 32	21	18
22	16	A	F 21	F 21	A	A	39	A	B	B	B	B	B	94	R 92	B	96	77	F 60	F 58	20	A	A	A
23	A	A	A	A	A	A	B	52	F 59	60	65	76	90	J R 85	J R 86	100	100	S 95	F 68	F 66	46	R	A	A
24	A	A	A	A	A	A	F 34	B	R	B	A	B	B	B	R 66	R 77	69	B	F 42	F 27	A	20	A	A
25	A	F 25	F 25	B	B	B	B	B	A	B	B	64	68	77	88	88	78	78	72	52	34	A	A	A
26	A	A	B	B	B	B	B	R 55	B	R 56	F 58	66	B	J R 84	92	106	104	J R 47	B	R 48	A	A	A	A
27	A	F 40	F 49	F 25	B	B	B	B	B	B	B	B	B	B	R 61	73	R 69	69	62	32	R	A	A	A
28	A	F 40	F 27	F 49	F 40	39	F 53	61	64	67	67	74	79	82	82	82	91	92	F 70	F 58	F 34	R	R 34	A
29	A	R 31	A	F 29	A	A	A	A	70	F 66	71	75	F 81	87	94	B	B	F 93	85	F 58	F 46	A	52	A
30	A	A	F 36	A	F 56	F 36	B	41	B	B	B	67	68	80	82	80	B	89	F 56	49	33	A	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	7	12	14	12	10	13	12	14	14	16	15	23	23	25	26	23	27	27	28	26	23	15	12	7
MED	20	F 30	F 27	F 28	F 26	30	F 27	40	50	56	62	66	71	80	81	77	72	69	61	52	34	21	20	18
U Q	26	34	F 33	F 34	F 40	34	F 35	44	58	62	68	74	80	88	90	83	80	74	66	F 58	37	32	26	26
L Q	16	F 23	F 23	F 23	F 19	24	F 26	39	42	51	58	60	66	68	69	72	69	64	56	43	30	20	17	16

SEP.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz 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	40	78	78	B	41	33	44	36	B	B	B	B	B	E B 57	B	B	E B 28	E B 21	E B 20	B	B	B	36	40
2	37	42	77	47	50	48	47	40	40	E B 34	B	E B 46	E B 54	E B 48	E B 29	E B 60	E B 28	E B 50	E B 23	B	27	35	32	42
3	70	50	44	34	33	50	B	B	B	B	B	B	E B 55	E B 54	B	B	E B 55	E B 56	E B 29	E B 13	E B 15	18	25	30
4	36	80	46	81	40	B	33	62	B	B	B	B	B	B	E B 58	B	E B 55	E B 33	E B 21	E B 19	E B 19	B	E B 16	32
5	35	34	71	46	44	32	21	37	E B 20	33	E B 31	B	G	E B 30	B	B	B	B	E B 42	E B 18	38	43	42	42
6	42	72	81	42	36	41	46	G	E B 24	E B 30	37	E B 46	E B 37	28	G	G	G	E B 32	E B 22	E B 14	E B 13	B	31	35
7	32	44	40	68	B	B	B	B	B	B	B	E B 41	31	E B 30	G 25	G	G	E B 22	E B 29	E B 25	21	16	E B 12	16
8	B	B	B	16	16	E B 12	E B 12	E B 14	G	32	G	E B 54	E B 58	E B 30	E B 33	E B 28	E B 26	E B 27	E B 18	E B 15	E B 20	E B 15	E B 13	26
9	B	K 24	34	51	42	48	53	40	33	B	B	32	21	28	28	28	G 22	E B 19	G		E B 12	E B 13	31	35
10	45	42	37	42	44	K	15	G	19	24	26	G 28	28	G 24	G 21	31	24	22	E B 13	E B 11	E B 12	E B 13	32	39
11	68	65	66	52	57	53	22	B	B	B	B	E B 34	E B 62	B	B	E B 63	E B 56	E B 52	E B 26	E B 16	E B 16	E B 16	31	41
12	37	34	34	42	57	70	B	B	B	B	B	E B 31	E B 37	E B 32	E B 56	E B 63	E B 57	B	B	B	B	B	B	K 41
13	B	60	64	33	38	33	39	34	30	E B 16	E B 32	31	38	34	32	28	28	28	18	18	18	E B 13	E B 12	23
14	34	31	K 27	28	46	31	32	37	32	29	G	G 24	32	G	G	G	G	21	E B 17	E B 12	E B 12	27	E B 12	22
15	21	31	E B 12	18	23	E B 12	E B 13	G 15	24	G 21	G 21	G 24	G 23	21	29	31	G	23	E B 16	E B 12	E B 12	E B 10	E B 12	22
16	21	27	22	E B 21	E B 24	31	24	20	23	G	G	G	C	C	G 26	E B 27	G	E B 22	E B 18	E B 13	E B 13	E B 12	34	38
17	38	42	B	B	B	40	53	32	G 20	G 20	G	G	G	G	G	G	G	G 20	G	E B 12	E B 11	32	E B 12	E B 12
18	21	E B 12	39	25	24	22	E B 17	28	29	33	33	35	35	36	35	33	G	24	16	E B 13	E B 13	E B 12	34	92
19	51	41	42	62	51	56	67	31	44	61	B	35	32	32	32	C	29	27	30	30	61	48	44	56
20	81	30	87	60	39	46	38	46	41	33	32	G	29	G 27	31	G	G	G 18	G	E B 20	E B 20	B	B	B
21	32	37	41	71	44	38	42	38	B	B	B	E B 36	G	G	30	G 23	G	G	E B 17	E B 22	E B 14	E B 12	E B 12	E B 12
22	16	27	27	27	43	41	36	52	B	B	B	B	B	E B 52	E B 62	B	E B 56	E B 55	E B 29	E B 18	31	42	42	50
23	43	43	35	42	42	36	B	40	G	G	G	E B 37	G	G	G	G	E B 26	E B 37	G	E B 20	22	34	76	37
24	40	64	46	32	36	40	36	B	34	B	41	B	B	B	E B 56	G 22	E B 27	B	E B 22	25	36	27	47	52
25	60	78	43	B	B	B	B	B	53	B	B	E B 30	G	E B 41	G 24	E B 34	E B 27	24	E B 22	E B 20	16	33	35	43
26	48	40	B	B	B	B	B	42	B	32	G	E B 31	B	E B 50	E B 33	G 24	32	E B 38	B	39	40	43	70	38
27	44	62	71	44	B	B	B	B	B	B	B	B	B	B	E B 32	E B 47	E B 58	E B 37	E B 25	29	26	47	50	50
28	37	31	33	90	39	34	G	G	G	G 31	G	G	32	33	G	G	37	28	G	38	35	28	44	43
29	41	36	34	31	70	55	41	38	29	G	G	G	G	E B 32	E B 36	B	B	E B 31	E B 28	E B 23	34	39	74	43
30	36	36	33	50	42	38	B	34	B	B	B	E B 56	E B 51	E B 33	E B 30	E B 55	B	G	72	E B 22	39	46	70	48
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	29	27	26	25	24	22	23	19	17	16	23	23	25	26	23	27	27	28	26	28	25	28	29
MED	38	41	41	42	42	39	36	36	29	G	G	E G 31	E G 32	E G 32	E G 30	E G 28	E G 27	E B 27	E B 20	E B 18	20	27	33	39
U Q	45	61	66	52	45	48	44	40	34	33	32	E B 37	E B 38	E B 38	E B 33	E B 34	E B 37	E B 37	E B 27	23	32	40	44	43
L Q	34	31	34	31	36	32	21	G 20	G	26	G	G	G	G	G	G	G	G 21	G	E B 13	E B 13	E B 13	E B 14	28

SEP.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz 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	14	13	13	B	24	16	20	24	B	B	B	B	B	57	B	B	28	21	20	B	B	B	13	11
2	12	12	15	23	23	17	19	19	16	34	B	46	54	48	29	60	28	50	23	B	12	13	12	12
3	14	12	14	14	14	18	B	B	B	B	B	B	55	54	B	B	55	56	29	13	16	13	13	14
4	14	14	13	14	12	B	18	24	B	B	B	B	B	B	58	B	55	33	21	19	19	B	16	12
5	12	12	24	17	12	14	13	16	20	24	31	B	20	30	B	B	B	B	42	18	14	13	12	14
6	15	14	18	15	13	17	15	22	24	30	24	46	37	24	20	18	20	32	22	14	13	B	14	12
7	20	14	19	17	B	B	B	B	B	B	B	41	20	30	20	20	20	22	29	25	13	12	12	12
8	B	B	B	11	13	12	12	14	15	17	20	54	58	30	33	28	26	27	19	15	20	15	13	13
9	B	15	13	15	19	13	14	18	19	B	B	22	17	15	14	15	19	20	12		12	13	12	12
10	13	18	12	22	14	12	12	12	14	14	13	14	13	14	13	13	14	14	13	11	12	13	12	13
11	13	12	28	17	17	24	17	B	B	B	B	34	62	B	B	63	56	52	26	16	16	16	15	15
12	14	19	18	16	22	23	B	B	B	B	B	31	37	32	54	63	57	B	B	B	B	B	B	34
13	B	30	20	20	12	13	15	16	15	16	32	14	14	20	17	14	14	13	11	11	12	13	12	11
14	12	12	12	12	13	12	13	18	17	19	17	23	20	19	19	16	20	19	17	12	12	11	12	12
15	11	10	12	12	13	12	13	13	15	15	15	17	15	18	18	12	14	12	16	12	11	10	12	12
16	12	12	12	21	24	11	13	13	15	17	17	16	C	C	23	27	16	23	18	13	13	12	12	12
17	13	14	B	B	B	18	17	13	13	14	14	16	16	19	18	14	14	11	12	12	11	13	12	12
18	11	12	12	12	12	11	17	12	12	14	13	13	14	17	14	14	12	12	12	13	13	12	12	12
19	11	12	12	16	14	33	25	23	24	40	B	18	25	18	16	C	16	12	13	13	14	12	12	15
20	12	12	18	13	12	12	12	21	13	14	14	15	17	25	14	18	16	12	13	20	20	B	B	B
21	12	13	15	20	17	15	14	21	B	B	B	36	18	19	18	18	17	14	17	22	14	12	12	12
22	12	12	13	13	15	23	19	18	B	B	B	B	B	52	62	B	55	55	29	18	18	12	12	18
23	24	26	20	20	18	29	B	18	17	16	19	37	27	24	22	15	26	37	14	20	12	12	12	13
24	12	29	23	25	21	17	19	B	28	B	24	B	B	B	56	20	27	B	22	12	12	12	19	10
25	13	13	13	B	B	B	B	B	18	B	B	30	20	41	20	34	27	15	22	20	12	11	11	12
26	13	13	B	B	B	B	B	23	B	25	32	31	B	50	33	20	18	38	B	12	12	12	13	13
27	12	12	14	12	B	B	B	B	B	B	B	B	B	B	32	48	58	37	25	18	15	12	13	13
28	12	14	14	24	17	16	15	16	14	22	17	17	16	18	17	17	17	14	14	12	12	13	14	16
29	14	13	20	19	24	18	24	18	14	19	18	16	22	32	36	B	B	31	27	23	12	11	13	18
30	22	17	18	18	19	15	B	17	B	B	B	56	51	33	30	55	B	19	17	22	12	12	12	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	29	29	30	29	30	30	30	29	30	30	30	30
MED	13	13	15	17	17	17	18	18	20	32	32	32	25	30	22	20	23	22	20	16	13	12	12	12
U Q	14	15	20	22	B 24	B 24	B	B 24	B	B	B	B 56	B 60	51	54	B 63	55	38	26	21	16	B 13	13	14
L Q	12	12	13	14	13	13	14	16	15	17	17	17	17	19	18	16	16	14	14	12	12	12	12	12

SEP.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	E A 252	A	B	A	A	A	A	B	B	B	B	B	B	B	B	232	232	244	B	B	B	A	A
2	A	A	202	A	A	A	A	A	E A 268	B 250	B	E B 298	E B 272	E B 290	236	242	E B 228	E B 246	226	B	A	A	A	210
3	A	A	A	214	212	A	B	B	B	B	B	B	E B 310	256	B	B	E B 248	E B 236	218	Q 206	216	A 246	A	A
4	A	A	A	A	A	B	A	A	B	B	B	B	B	B	E B 284	B	E B 250	216	216	216	216	B	B	A
5	A	252	A	A	A	184	E A 348	A	230	E A 286	E B 268	B	214	212	B	B	B	B	228	Q 236	A	A	A	A
6	A	A	A	A	A	A	A	A	254	248	A	E B 340	E B 240	218	Q 208	198	204	232	218	Q 210	Q 192	B	A	A
7	198	212	A	A	B	B	B	B	B	B	B	E B 292	E A 218	228	216	216	206	202	B 230	204	E A 230	A 270	E B 280	A
8	B	B	B	A	A	B	E B 312	246	204	220	E A 230	248	232	218	218	218	218	204	214	202	216	228	B	A
9	B	A	226	A	A	A	A	A	E A 316	B	B	224	206	202	214	208	208	196	202		Q 210	E B 278	204	A
10	A	A	214	A	A	E A 400	E A 322	E A 256	Q 220	H 194	204	204	204	204	202	192	198	198	192	198	194	E B 232	A	A
11	A	A	A	A	A	A	248	B	B	B	B	E B 250	B	B	B	E B 268	E B 268	264	208	Q 208	208	266	A	A
12	A	A	A	242	A	A	B	B	B	B	B	248	E B 278	E B 244	B	B	B	B	B	B	B	B	B	A
13	B	A	A	A	A	A 228	A	A	A	228	B	E A 300	218	A 240	226	224	E A 236	Q 222	Q 216	Q 196	Q 216	216	210	A
14	A	238	226	206	206	A 354	A	A	A	216	194	208	228	198	204	Q 216	210	200	Q 206	194	Q 194	216	236	E A 284
15	E A 300	A	E B 346	E B 338	348	E B 324	E B 282	192	A 212	198	198	198	208	204	198	198	208	Q 208	Q 208	204	198	208	E B 224	256
16	E A 248	A	A	B	E B 316	E A 316	334	Q 234	204	194	216	200	C	C	224	212	216	208	216	214	Q 206	222	E A 272	A
17	A	A	B	B	B	A	A	E A 258	214	200	210	224	224	224	214	206	200	194	208	208	202	202	238	240
18	A 244	E B 338	A	E A 226	242	A	E B 282	Q 238	H 168	202	202	208	202	202	Q 202	202	202	204	Q 196	Q 200	Q 200	206	A	A
19	A	A	A 260	A	A	A	A	A	A	A	B	208	A 234	240	230	C	200	Q 226	212	218	F	258	A	A
20	Q 242	212	A	A	A	212	A 254	A	A	220	E A 232	194	A 230	218	218	E A 220	220	210	210	210	222	B	B	B
21	A	A	A	A	A	A	A	A	B	B	B	B 252	202	212	216	210	212	198	198	212	Q 208	Q 196	204	E B 268
22	E A 296	A	E A 316	A	A	A	316	A	B	B	B	B	B	272	B	B	248	E B 238	B 230	242	A	A	A	A
23	A	A	A	A	A	A	B	A	E A 248	218	228	228	228	220	220	218	220	238	Q 212	Q 226	A	A	A	A
24	A	A	A	A	A	A	226	B	A	B	A	B	B	B	B	Q 218	B 242	B	B	196	A	220	A	A
25	A	A	A	B	B	B	B	B	A	B	B	234	214	B	222	234	208	226	200	200	216	A	A	A
26	A	A	B	B	B	B	B	A	B	E A 266	246	E B 246	B	B	232	218	E A 224	B	B	A	A	A	A	A
27	A	240	A	A	B	B	B	B	B	B	B	B	B	B	232	B	B	B	B	A	A	A	A	A
28	A	A	A	A	A	A	208	236	236	224	224	220	220	E A 232	208	224	206	218	218	210	A	A	A	A
29	A	A	A	A	A	A	A	A	224	228	228	226	214	234	248	B	B	B	216	216	Q 272	A	A	A
30	A	A	A	A	A	A	B	E A 226	B	B	B	B	B	236	236	B	B	E B 218	224	252	A	A	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	6	7	7	5	5	7	11	8	13	16	13	22	21	22	23	20	25	24	26	24	18	15	8	5
MED	246	U 226	220	220	U 227	U 264	U 265	234	218	218	214	218	217	220	218	216	211	212	215	209	208	219	U 218	U 233
U Q	E A 296	252	E 316	290	332	A 354	E A 322	E A 251	E A 251	238	E 231	E B 250	E B 233	240	232	222	E B 234	232	218	216	216	258	E 255	E 276
L Q	242	212	214	210	209	212	248	230	208	201	203	208	211	212	208	207	206	203	208	201	Q 200	208	207	225

SEP.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 54	A 65	42 71	70 57	B 76	B 45	B R	A	B	X 64 88	B	B	X 83	X 87	X 99	B	98	B	X 93	70	R	R	A 44	X 58 41
2	A 59	A 56	83 56	A 48	B 60	A 61	53 71	R 70	68 75	X 75	C	C	X 94	X 98	X 103	O X 111	X 111	O X 98	90	81	80	A	A	45
3	71	62	74	B	B	X 62	69	74	X 77	X 82	X 84	O X 86	X 91	O X 86	X 92	O X 89	O X 86	X 82	X 76	X 72	O X 60	41	X 25	A
4	56	44	62	73	71	72	79	X 70	X 72	76	X 82	X 93	X 96	X 106	X 97	X 88	X 90	X 80	X 74	X 72	O X 63	X 58	X 51	57
5	49	90	52	46	52	44	X 46	56	70	X 72	X 75	X 86	X 97	R	X 96	O X 96	X 92	X 84	X 72	X 71	66	55	45	R
6	33	33	A	A	A	A	A	X 56	X 72	X 72	X 77	O X 87	X 95	O X 94	X 93	X 92	X 91	X 84	X 77	X 70	X 61	X 58	60	X 44
7	68	71	A	A	A	B	R	B	X 69	X 72	X 74	X 85	X 92	X 100	X 109	X 103	X 93	X 82	X 81	X 76	66	64	52	49
8	43	32	43	44	72	57	68	71	82	94	97	X 96	X 109	X 106	X 90	X 117	O X 114	X 126	104	80	41	59	A	A
9	A	74	76	66	B	B	62	B	B	B	B	B	O X 68	B	X 106	X 109	108	O X 98	104	78	82	X 65	X 43	A
10	A	A	X 47	59	59	68	O X 64	B	B	B	X 54	X 65	X 74	X 81	X 85	X 88	X 84	X 80	X 76	X 66	57	42	44	71
11	54	65	71	57	76	45	R	A	B	B	B	B	B	B	X 70	X 80	76	X 68	B	B	B	B	44	41
12	59	56	56	48	60	61	71	70	75	X 88	X 101	X 108	X 110	X 110	X 111	X 108	X 92	X 89	X 75	68	X 54	50	51	A
13	A	44	57	68	70	70	X 70	X 88	94	X 93	X 92	X 98	X 98	X 99	X 99	X 89	X 81	X 76	X 74	X 68	67	X 30	X 36	58
14	A	A	A	B	X 45	70	X 72	75	X 82	X 94	X 98	X 96	X 100	X 97	O X 89	X 83	X 82	X 69	72	92	F	76	81	A
15	61	62	A	X 41	51	B	A	R	X 49	R	O X 50	O X 53	R	O X 62	X 57	R	X 58	X 58	X 56	X 56	X 49	45	44	38
16	A	56	49	54	53	A	A	B	X 57	X 64	X 67	X 76	X 86	X 87	X 87	X 90	X 90	X 84	X 76	66	66	62	X 47	46
17	R	A	A	A	56	X 56	X 64	B	B	O X 50	X 61	X 62	X 67	X 73	X 76	X 76	X 72	X 76	X 68	X 67	X 56	X 55	47	A
18	A	A	54	B	A	R	56	A	R	B	B	B	R	O X 56	B	B	B	X 56	X 56	X 47	A	91	A	A
19	X 35	A	86	A	44	X 41	O X 46	49	B	R	B	B	B	R	O X 65	X 66	X 64	X 64	O X 59	B	O X 53	50	93	R
20	A	O X 52	O X 48	53	50	60	B	X 60	B	B	B	B	B	O X 69	B	77	O X 62	X 54	O X 54	92	A	A	A	40
21	48	B	A	84	51	X 51	X 58	X 67	X 69	O X 69	B	X 69	69	B	B	X 65	X 64	X 47	O X 43	X 44	R	O X 38	A	A
22	B	B	A	B	X 47	X 58	B	B	X 67	B	B	B	B	O X 75	O X 73	O X 75	B	R	X 58	X 42	O X 45	R	R	A
23	A	X 40	X 61	R	R	O X 64	R	R	X 64	X 71	X 72	O X 72	X 77	X 82	O X 87	B	O X 78	X 76	X 72	O X 66	V 59	X 47	104	57
24	47	57	X 49	B	R	R	O X 70	X 83	X 97	X 87	X 92	X 87	O X 91	B	O X 86	X 81	X 71	O X 60	X 60	X 88	82	71	62	A
25	B	X 44	59	59	51	R	X 66	X 75	B	X 75	O X 75	X 69	O X 70	O X 73	X 75	X 78	X 78	B	X 77	X 72	58	42	X 46	43
26	53	54	65	72	66	R	B	O X 64	X 72	X 76	O X 77	B	X 66	X 66	B	X 71	X 68	X 63	X 55	O X 46	X 52	X 49	R	R
27	43	45	X 43	59	O X 53	B	B	R	X 70	X 74	X 80	B	O X 74	O X 79	O X 85	B	X 78	X 72	O X 67	X 61	X 42	X 42	A	X 47
28	A	B	R	80	X 53	54	R	R	A	X 61	67	67	X 70	B	X 84	X 97	X 94	X 81	X 69	O X 48	Y	X 47	50	60
29	R	X 42	X 57	X 56	X 60	R	R	R	70	X 76	X 76	X 77	X 79	B	X 86	X 80	X 76	X 72	X 66	X 60	X 50	O X 40	X 38	44
30	47	X 45	52	60	X 52	X 57	70	X 70	X 76	X 82	X 82	X 81	X 81	X 83	X 86	X 78	X 74	X 71	X 69	X 67	X 66	X 62	62	57
31	R	44	54	68	70	70	68	R	71	X 76	X 83	O X 86	X 82	X 82	X 79	X 76	X 72	X 80	X 72	X 72	X 62	X 59	59	X 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	21	23	20	22	18	18	15	21	23	22	21	25	23	27	26	29	28	30	29	24	26	22	18
MED	49	52	56	59	53	59	67	X 70	X 71	X 75	X 77	X 85	X 83	X 83	X 87	X 86	X 81	X 76	X 72	X 68	X 60	52	48	46
U Q	59	62	65	69	66	68	X 70	X 75	X 76	X 82	X 84	X 90	X 96	X 98	X 97	X 96	X 92	X 83	X 76	74	66	62	60	57
L Q	43	44	49	54	51	54	X 58	60	X 68	X 71	X 72	X 69	X 72	O X 73	X 79	X 77	X 72	X 66	X 60	X 60	X 52	X 42	X 44	43

OCT. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT.2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E +SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	F 31	F 25	B	B	B	A	B	58	B	B	77	81	93	B	92	B	87	F 51	R	A	A	52
2	A	A	A	A	B	A	R	R	F 58	69	C	C	88	92	97	105	105	92	F 81	F 71	A	A	A	F 30
3	F 40	F 42	F 29	B	B	56	F 57	F 65	71	76	78	80	85	80	86	83	80	76	70	66	54	F 28	19	A
4	F 30	F 25	F 38	F 56	F 24	F 23	F 67	64	66	F 63	76	87	90	100	91	82	84	74	68	66	57	52	45	F 43
5	Z 39	F 28	F 28	F 19	F 38	F 26	40	F 47	F 56	66	69	80	91	D R 83	90	90	86	78	66	65	F 58	F 45	Z 39	A
6	F 20	F 20	A	A	A	A	A	50	Z 66	66	71	81	J R 89	U R 88	87	86	85	78	71	64	55	52	F 48	38
7	F 30	A	A	A	A	B	R	B	63	66	68	79	J R 86	J R 94	103	J R 97	87	76	J R 75	70	F 58	F 53	F 40	F 38
8	F 24	F 20	F 18	F 22	F 56	J R 51	F 56	F 56	F 66	F 81	F 88	90	103	R 100	J R 84	111	108	J R 120	F 92	F 64	F 26	A	A	A
9	A	F 32	F 35	F 45	B	B	F 41	B	B	B	B	B	62	B	100	103	F 92	R 92	F 89	F 62	F 69	59	37	A
10	A	A	42	F 44	F 46	F 48	R 58	B	B	B	48	59	68	75	79	82	78	74	70	60	F 46	F 29	F 29	A
11	A	F 41	F 53	F 40	F 42	F 34	A	A	B	B	B	B	B	B	64	U R 70	F 62	62	B	B	B	B	F 35	F 23
12	F 30	F 20	F 24	F 20	F 22	F 46	F 56	F 57	F 65	82	95	102	104	104	105	J R 102	R 86	83	69	F 57	48	F 41	F 36	A
13	A	F 30	F 42	F 50	F 52	F 55	64	82	Z 88	87	J R 86	92	J R 92	93	93	83	75	70	68	62	F 58	24	30	A
14	A	A	A	B	39	F 56	66	F 64	76	88	92	90	94	91	83	77	76	63	F 59	R	F	F	A	A
15	32	A	A	35	F 38	B	A	A	R 43	R	R 44	R 47	R	R 56	51	R	52	52	50	50	43	F 34	F 31	F 19
16	A	F 27	F 25	F 28	F 28	A	A	B	51	58	61	70	80	81	81	84	84	78	70	F 57	F 56	F 51	41	F 24
17	A	A	A	A	Z 50	50	58	B	B	R 44	55	56	61	67	70	70	66	70	62	61	50	49	F 37	A
18	A	A	A	B	A	A	A	A	A	B	B	B	R	R 16	B	B	B	50	50	41	A	A	A	A
19	29	A	A	A	F 24	35	40	A	B	R	B	B	B	R	R 59	60	58	58	R 53	B	47	F 39	26	R
20	A	46	42	F 42	F 39	F 48	B	54	B	B	B	B	B	64	B	F 67	56	48	R 48	R 36	A	A	A	F 36
21	F 38	B	A	A	F 34	45	52	61	63	63	B	J R 63	F 57	B	B	59	58	41	37	38	A	32	A	A
22	B	B	A	B	41	52	B	B	61	B	B	B	B	69	67	69	B	R	52	36	39	A	A	A
23	A	34	55	R	R	R 58	R	R	58	65	66	R 66	71	76	81	B	72	70	66	R 60	V 52	V 41	A	A
24	F 26	F 39	42	B	R	R	63	77	91	81	J R 86	81	R 85	B	80	75	65	53	53	82	R 31	A	A	A
25	B	38	F 47	F 41	F 40	R	60	69	B	69	69	63	64	R 67	69	72	72	B	71	66	F 46	F 30	40	F 30
26	F 40	F 40	F 49	F 58	F 47	A	B	58	66	70	U R 71	B	60	60	B	65	J R 62	57	J R 49	40	46	43	A	A
27	F 32	F 31	37	F 40	47	B	B	R	64	68	74	B	R 68	U R 73	79	B	72	66	R 61	55	36	36	A	41
28	A	B	R	F 67	47	F 42	R	A	A	55	F 57	F 58	64	B	78	91	88	75	63	R 42	Y	41	A	A
29	A	36	51	50	54	A	A	R	F 61	70	70	71	J R 73	B	80	74	R 70	66	60	54	44	R 34	32	F 29
30	F 36	39	F 40	F 48	J R 46	51	F 58	64	70	76	76	75	75	77	80	72	68	65	63	61	60	56	F 50	F 27
31	A	F 31	F 40	F 50	F 55	F 53	F 57	R	F 58	70	77	80	76	76	73	70	66	74	66	66	56	53	F 42	R 37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	19	20	19	22	18	16	14	21	23	22	21	25	24	27	26	29	28	30	28	23	22	18	14
MED	F 31	F 32	F 40	F 42	F 42	F 49	58	62	64	69	71	79	77	78	81	80	75	70	66	60	50	41	37	F 33
U Q	F 38	F 39	F 44	F 50	F 47	F 53	62	65	68	76	78	84	90	92	91	90	86	77	70	66	F 57	52	F 41	38
L Q	F 29	F 27	F 30	F 28	F 38	F 42	54	56	58	63	66	63	66	68	73	70	66	60	53	50	44	F 34	31	F 27

OCT.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	71	69	38	37	B	B	B	47	B	40	B	B	E B 56	E B 54	G	B	E B 80	B	E B 24	33	32	42		44
2	77	44	50	43	B	71	44	42	50	41	C	C	G	37	37	30	G	G 21	22	18	37	42	44	40
3	40	53	46	B	B	47	42	G 21	33	33	G	33	36	33	44	G	G	29	G 15	G	E B 15	K 29	30	43
4	44	67	48	44	33	G	33	42	42	38	36	36	33	36	G	36	32	27	G	G	E B 13	E B 12	E B 10	E B 13
5	30	40	32	25	28	G	32	30	32	33	35	39	G	39	35	35	32	31	26	24	E B 14	E B 15	31	32
6	25	32	42	40	40	36	52	42	32	G 23	34	40	36	36	35	32	32	30	28	26	E B 13	E B 12	E B 12	E B 12
7	33	58	42	42	42	B	46	B	40	G	G	34	G 25	G	32	34	28	25	G 16	17	E B 13	E B 12	E B 13	E B 13
8	29	31	24	26	27	38	47	35	32	G	G	35	36	36	30	G	E B 58	E B 43	E B 28	E B 20	36	39	36	40
9	65	45	104	64	B	B	E B 38	B	B	B	B	B	E B 38	B	E B 50	E B 37	E B 85	E B 53	32	E B 29	29	22	32	37
10	50	48	48	30	21	25	E B 34	B	B	B	G 25	G	G	G	39	G	G 22	G 21	23	21	30	18	E B 17	36
11	57	47	71	60	69	92	41	53	B	B	B	B	B	B	E B 49	E B 49	28	E B 48	B	B	B	B	32	41
12	33	66	64	45	30	30	40	34	G	G	34	G	E B 55	43	38	36	E B 29	G	G	29	E B 14	25	32	46
13	44	42	33	69	51	51	53	35	32	38	34	37	42	39	37	35	33	32	G 17	G	E B 15	32	37	37
14	60	48	65	B	32	32	G	28	32	32	34	G	32	34	38	38	32	32	34	36	58	37	71	66
15	41	40	69	40	33	B	44	G	43	G	G	G	38	G	G 38	G	34	32	25	32	32	32	30	30
16	36	58	87	55	30	36	51	B	40	32	34	35	34	39	33	34	30	31	26	E B 24	E B 22	E B 17	29	34
17	36	52	42	38	34	G 22	40	B	B	41	34	40	31	G 26	E B 34	G	G 26	E B 29	G	G	E B 18	E B 15	27	38
18	57	40	48	B	70	42	53	58	43	B	B	B	G 27	G	B	B	B	G	G	G	71	52	34	50
19	70	70	92	46	71	71	50	42	B	G	B	B	B	G	45	G	G 23	E B 28	E B 34	B	E B 23	G	34	38
20	44	K 39	42	39	34	33	B	G	B	B	B	B	B	E B 57	B	E B 54	E B 30	G	G	43	104	60	48	52
21	45	B	70	42	32	G 19	G	G	G	B	B	G	G	B	B	G	E B 28	31	G	33	40	37	73	69
22	B	B	46	B	G 21	32	B	B	E B 34	B	B	B	B	E B 57	E B 62	E B 54	B	E B 43	32	G	39	39	36	41
23	44	47	27	35	G 36	E B 40	48	42	39	G	E B 55	E B 56	E B 55	E B 56	G	B	E B 56	G	34	29	31	G	42	44
24	30	36	E B 22	B	44	44	38	G	G	G 17	G	G	31	B	E B 55	G	E B 35	G	31	E B 49	42	42	32	42
25	B	36	33	37	52	40	G	42	B	44	E B 66	E B 51	G	E B 55	E B 55	G	G	B	E B 47	E B 35	33	33	41	38
26	37	37	28	65	28	59	B	43	45	37	E B 58	B	G	G	B	52	E B 41	G	34	G 34	40	45	41	38
27	43	40	G	34	44	B	B	43	51	G	G	B	E B 56	E B 60	E B 56	B	E B 55	E B 39	E B 56	32	34	39	42	69
28	55	B	38	31	55	G	41	44	52	52	G	E B 39	E B 55	B	E B 54	E B 62	E B 26	E B 31	36	34	28	28	38	42
29	40	61	39	41	134	57	50	32	40	36	G	G	E B 56	B	E B 56	G	E B 54	E B 32	G	33	29	32	32	25
30	16	22	30	35	G	35	33	44	44	G	G	G 31	E B 33	33	G 24	G	34	32	G	E B 49	26	G	G	33
31	43	43	K 35	32	32	36	33	37	37	33	36	36	G 36	41	36	36	36	33	34	30	G	G	27	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	31	26	27	26	26	25	23	24	22	21	27	25	27	27	29	29	30	29	30	30	30	31
MED	43	44	42	40	34	36	41	42	39	32	E G 34	E G 35	G	E G 36	G	E G 34	E G U 32	28	E G 26	32	30	30	32	40
U Q	56	56	64	45	51	47	48	43	43	38	35	39	E B 42	E B 48	E B 50	E B 37	E B 38	E B 32	34	G	37	39	41	44
L Q	34	40	33	35	30	G 30	33	G 29	32	G	G	G	33	G	35	G	G	G	G	28	E B 18	G	29	34

OCT.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E ;SWEEP 1.0MHz TO 15.0MHz 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	12	13	12	12	B	B	B	17	B	22	B	B	56	54	21	B	80	B	24	14	22	12	21	17
2	19	28	16	18	B	20	18	24	23	17	C	C	20	20	14	19	18	13	14	12	12	12	12	12
3	13	11	15	B	B	15	16	16	15	15	22	19	14	18	16	15	15	13	13	13	15	13	12	11
4	12	13	12	17	12	13	22	23	19	18	12	15	12	17	14	14	12	12	13	11	13	12	10	13
5	12	12	12	12	12	12	12	12	12	14	15	15	13	14	14	13	14	14	13	12	14	15	12	13
6	12	12	13	20	19	25	16	15	15	16	15	14	14	14	13	12	12	12	13	12	13	12	12	12
7	12	17	23	21	21	B	23	B	19	24	18	15	19	21	20	17	14	14	12	13	13	12	13	13
8	12	12	12	12	11	20	14	15	13	19	15	12	15	14	19	29	58	43	28	20	11	12	13	13
9	12	15	13	12	B	B	38	B	B	B	B	B	38	B	50	37	85	53	24	29	16	18	15	12
10	12	14	13	12	14	12	34	B	B	B	18	20	16	18	16	16	19	16	12	13	12	12	17	12
11	15	12	12	12	15	16	26	16	B	B	B	B	B	B	49	49	16	48	B	B	B	B	14	11
12	15	12	12	12	13	13	13	13	18	21	18	18	55	18	14	14	29	17	14	14	14	12	12	12
13	18	13	12	19	13	13	14	13	12	12	15	14	14	14	15	14	14	13	13	13	15	13	13	11
14	18	19	30	B	20	13	12	13	13	12	15	14	12	14	17	12	12	12	11	22	12	11	12	16
15	11	19	31	13	12	B	22	22	19	13	17	19	16	20	13	22	14	14	14	13	13	12	12	12
16	12	12	12	12	12	16	21	B	17	17	17	17	19	16	16	15	21	14	13	24	22	17	14	12
17	12	19	23	22	14	17	14	B	B	20	16	16	15	22	34	20	18	29	15	14	18	15	12	12
18	13	13	16	B	16	16	27	18	114	B	B	B	19	21	B	B	B	20	11	14	16	14	16	12
19	12	12	28	20	14	17	14	16	B	29	B	B	B	22	35	18	18	28	34	B	23	13	12	14
20	13	13	20	12	12	17	B	18	B	B	B	B	B	57	B	54	30	17	20	26	22	13	11	13
21	12	B	15	14	15	14	18	20	25	58	B	20	19	B	B	24	28	16	19	14	12	12	13	12
22	B	B	19	B	16	20	B	B	34	B	B	B	B	57	62	54	B	43	19	20	13	13	24	14
23	12	12	20	25	29	40	25	20	13	16	55	56	55	56	26	B	56	19	16	18	12	12	12	13
24	15	12	21	B	38	19	19	14	14	14	20	22	21	B	55	26	35	23	23	49	26	25	12	14
25	B	14	13	18	14	27	19	19	B	24	66	51	23	55	55	18	17	B	47	35	13	12	12	12
26	20	13	18	20	11	19	B	16	20	35	58	B	21	23	B	24	41	17	14	26	14	13	13	12
27	13	14	19	11	18	B	B	20	17	23	30	B	56	60	56	B	55	39	56	16	17	13	12	12
28	12	B	21	13	14	15	20	20	26	20	20	39	55	B	54	62	26	31	16	19	15	13	13	13
29	16	13	21	16	19	20	28	20	17	16	22	22	57	B	56	24	54	32	20	15	13	20	12	14
30	13	11	13	11	15	20	25	19	19	16	19	18	33	16	16	18	17	14	20	49	12	12	12	12
31	13	13	20	13	13	12	12	12	12	17	14	14	17	16	13	14	13	14	12	12	13	11	11	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	16	16	15	17	21	19	19	20	20	20	20	21	21	20	19	17	15	15	14	13	12	12
U Q	15	17	21	B 21	20	B 25	B 28	B 23	B	B 35	B	B	55	B 57	55	49	54	32	23	26	17	14	13	13
L Q	12	12	12	12	13	14	14	15	15	16	16	15	15	16	15	15	14	14	13	13	13	12	12	12

OCT.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT.2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A 248	228	B	B	B	A	B	228	B	B	E B 326	A 302	226	B	B	B	Q 220	202	A	A	204	A
2	A	A	A	A	B	204	210	A	A	230	C	C	210	222	224	E A 236	222	Q 204	204	Q 204	A	A	A	210
3	216	E A 270	226	B	B	A	A	246	222	200	214	218	218	206	202	208	E A 222	212	A 216	Q 210	210	A 274	232	A
4	A	232	238	244	200	200	A	A	202	E A 226	210	210	210	204	208	208	224	220	200	216	204	204	Q 224	Q 236
5	260	A	E A 252	A	252	A	234	222	222	208	208	216	208	208	208	210	210	222	204	Q 204	Q 216	Q 216	272	A
6	A	A	A	A	A	A	A	A	214	H 198	H 186	226	214	214	200	210	210	210	204	196	194	206	Q 212	232
7	224	A	A	A	A	B	A	B	218	220	230	230	222	202	206	212	216	216	214	202	Q 210	Q 210	Q 212	Q 236
8	Q 284	A	E A 360	E A 338	E A 320	A	A	226	216	198	H 198	206	206	202	200	E A 232	B	232	214	Q 214	A	A	A	A
9	A	A	A	Q 264	B	B	B	B	B	B	B	B	E B 264	B	B	260	E B 320	E B 252	266	246	Q 220	260	A 330	A
10	A	A	A	A	A 334	E A 316	244	B	B	B	216	206	196	232	218	202	214	214	214	208	218	Q 218	E B 254	A
11	A	210	238	A	Q 264	E A 288	A	A	B	B	B	B	B	B	B	E B 294	206	B	B	B	B	B	280	A 338
12	208	238	A	A	256	A	250	208	220	220	212	212	B	220	204	216	E B 228	198	200	200	Q 212	Q 224	Q 252	A
13	A	A	A	A	242	232	A	214	208	218	200	206	208	200	208	210	E A 210	210	198	198	Q 198	A	A	A
14	A	A	A	B	198	214	254	208	216	216	216	206	200	202	202	216	216	216	216	A	202	A	A	A
15	A	A	A	A	A	B	A	A	A	210	192	244	238	198	198	216	216	232	244	E A 240	208	A	246	A
16	A	A	A	A	222	A	A	B	A	238	216	216	214	214	214	214	206	222	212	E B 236	236	Q 234	Q 260	A
17	A	A	A	A	224	A	224	B	B	A	E A 254	236	212	206	224	212	212	250	222	Q 210	226	226	Q 214	A
18	216	A	A	B	A	A	A	A	A	B	B	B	226	216	B	B	B	H 168	246	214	A	A	A	A
19	240	A	A	A	212	224	216	A	B	A	B	B	B	A	E A 246	216	228	250	E B 262	B	E B 244	268	248	234
20	A	A	228	Q 334	E A 334	236	B	A	B	B	B	B	B	B	B	B	224	216	204	210	A	A	A	188
21	208	B	A	A	E A 248	A	A	E A 394	A	B	B	220	238	B	B	228	236	E A 264	256	A	A	A 242	A	A
22	B	B	A	B	A	A	B	B	E B 272	B	B	B	B	B	B	B	B	E B 316	202	A	A	A	A	A
23	A	A 202	260	A	A	B	A	A	216	228	B	B	B	B	E A 244	B	B	228	246	240	240	E A 254	A	A
24	226	A 226	218	B	A	A	A	246	226	214	228	210	234	B	B	224	E B 246	226	236	248	A	A	A	A
25	B	A 302	A 302	208	202	A	A	A	B	A	B	B	224	B	B	232	232	B	270	236	280	226	240	A
26	A	E A	A 274	250	240	A	B	A	A	Y	B	B	222	226	B	242	B	242	A	A	242	A	A	A
27	236	256	A	206	A	B	B	A	A	E A 300	E A 230	B	B	B	B	B	B	B	B	230	A	252	A	232
28	A	B	A	Q 246	A	290	A	A	A	A	E A 242	B	B	B	B	B	242	242	206	A	246	248	A	A
29	A	264	A	A	A 260	A	A	R	A	194	206	232	B 232	B	B	232	B	E B 236	198	A	E A 258	A	242	Q 330
30	246	Q 246	Q 270	230	A	A	Y	218	226	A	226	216	208	208	226	224	216	A 216	226	B	Q 222	Q 222	Q 228	236
31	A	236	A	228	222	226	226	226	212	224	224	202	202	202	202	212	212	220	204	216	214	214	224	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	11	12	11	17	10	8	10	14	18	19	18	23	19	19	24	23	27	28	22	21	18	18	10
MED	226	237	244	237	232	224	230	222	216	217	213	216	213	208	207	214	215	219	214	211	216	226	238	235
U Q	246	A 264	A 272	Q 264	A 262	E A 288	247	246	222	228	E A 228	226	232	220	224	232	228	242	240	236	241	252	254	Q 236
L Q	216	A 226	233	228	217	214	220	214	214	208	206	206	208	202	202	211	212	214	204	204	209	216	Q 224	232

OCT.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E ;SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	53	52	52	53	47	O X 63	X 69	X 72	X 78	X 83	X 81	O X 86	X 91	O X 86	X 88	X 79	X 75	X 71	X 72	X 66	X 57	X 57	X 47
2	X 48	X 43	O X 47	O X 52	R	B	O X 50	B	X 66	X 71	X 80	O X 84	X 93	X 93	X 92	O X 86	X 83	X 82	X 79	X 66	X 54	B	O X 38	X 41
3	B	A	B	X 46	X 65	67	B	B	X 72	X 84	X 84	X 84	X 86	X 85	X 80	O X 74	X 74	X 74	X 72	X 69	X 66	68	67	62
4	68	68	71	71	72	X 72	X 80	O X 93	X 92	X 92	X 93	X 107	O X 107	X 110	O X 109	O X 100	90	X 58	R	X 53	X 56	X 49	O X 50	52
5	42	42	57	56	63	71	X 69	73	X 66	O X 66	X 70	X 71	X 79	X 79	X 75	O X 72	X 67	X 60	X 58	X 57	X 54	52	X 42	X 44
6	V 47	A	A	A		X 66	77	O X 84	X 87	80	X 94	O X 93	X 82	X 78	73	X 71	X 69	X 69	X 67	X 66	X 58	X 60	X 63	X 58
7	62	84	62	64	R	B	O X 65	X 64	X 65	81	81	O X 74	X 80	O X 85	X 83	X 78	X 75	X 70	66	X 60	X 61	X 50	R	R
8	47	42	O X 48	O X 48	65	X 55	67	60	76	78	X 66	X 72	X 73	X 73	X 76	X 75	X 73	X 67	O X 75	X 71	X 63	X 59	X 56	X 52
9	X 48	64	A	R	R	A	R	X 58	69	X 74	X 76	X 78	X 73	X 73	X 69	X 67	66	X 67	X 65	62	X 62	42	55	X 43
10	53	82		A	A	A	O X 45	A	A	X 65	X 70	X 65	X 63	X 63	X 68	B	X 72	O X 48	R	O X 45	52	A 140	X 52	54
11	45	50	50	52	56	50	X 44	C 60	60	X 67	X 64	O X 64	O X 64	O X 51	O X 62	58	X 62	X 64	X 63	X 57	X 59	X 59	56	47
12	X 46	56	42	A	48	69	62	O X 62	69	O X 72	X 70	X 73	X 72	O X 71	O X 68	X 67	O X 68	X 61	X 60	X 59	X 56	X 53	X 54	X 52
13	X 46	56	X 50	X 49	X 53	R	X 62	O X 65	R	O X 69	69	O X 73	X 69	X 69	X 69	X 69	X 67	X 63	63	X 64	X 58	X 60	X 60	X 59
14	X 56	X 56	X 50	O X 58	56	B	B	R	X 68	X 69	X 69	X 67	X 70	X 69	O X 70	O X 72	X 71	X 70	X 60	O X 63	O X 60	X 60	A	O X 61
15	64	R	B	O X 50	B	R	66	A	B	B	R	B	B	X 74	X 80	B	X 71	R	X 67	X 66	X 68	X 60	X 62	65
16	R	R	B	R	B	B	B	O X 76	B	B	B	B	B	O X 73	X 74	B	B	76	O X 48	O X 54	X 51	X 53	57	62
17	A	B	O X 47	51	B	B	X 66	X 70	X 76	X 75	X 74	X 74	X 76	X 74	X 74	X 72	X 70	X 70	X 68	X 55	O X 48	X 58	X 53	A
18	A	O X 50	X 75	B	R	B	R	O X 67	X 92	X 95	B	O X 100	O X 86	77	X 86	X 83	X 78	B	X 57	O X 55	X 56	X 57	X 59	X 53
19	56	56	X 63	R	X 55	R	R	72	X 81	X 83	X 85	X 80	X 76	X 74	X 71	X 70	O X 68	X 67	X 64	X 65	X 56	X 56	55	O X 49
20	O X 46	67	69	X 60	B	R	X 66	X 72	R	X 74	X 69	O X 70	O X 72	O X 75	O X 80	X 81	O X 84	X 80	X 64	O X 49	88	70	58	X 54
21	X 54	X 50	B	A	R	R	R	B	B	R	R	O X 65	R	X 73	O X 71	O X 71	X 67	X 59	X 54	X 48	58	O X 47	63	O X 44
22	43	A	57	B	B	R	76	R	X 61	72	B	O X 70	X 68	O X 74	B	O X 69	O X 67	O X 61	X 59	X 66	X 68	X 57	X 40	X 37
23	56	B	B	74	X 73	X 62	X 63	74	80	X 82	X 87	O X 86	O X 82	O X 84	O X 86	X 84	O X 67	X 63	X 60	X 50	68	63	X 57	B
24	B	O X 48	O X 49	B	60	X 56	C	C	X 69	72	O X 73	X 70	O X 72	O X 72	X 76	76	X 74	X 67	O X 48	A	X 48	X 53	O X 49	X 50
25	X 55	O X 51	X 52	X 57	X 72	X 68	X 68	V 80	X 82	78	76	X 79	X 79	X 79	X 78	X 76	X 72	X 69	X 58	56	X 52	X 51	X 51	X 47
26	X 49	X 48	O X 54	66	X 73	71	O X 75	71	X 74	X 81	X 83	X 84	X 86	X 86	X 83	X 83	X 81	X 72	X 66	X 66	X 62	X 62	O X 63	64
27	X 59	X 57	72	72	77	79	71	R	70	X 72	X 82	74	X 73	X 74	X 80	X 78	X 74	X 74	X 76	67	63	X 60	X 60	X 50
28	62	X 52	X 54	58	65	X 68	X 69	F 77	X 87	X 80	X 73	O X 73	O X 70	O X 70	X 70	O X 70	X 69	X 63	X 68	X 64	X 67	O X 63	X 54	54
29	X 52	X 58	X 62	77	67	67	70	75	79	X 80	O X 76	X 72	O X 70	X 71	X 70	O X 70	O X 71	O X 70	X 70	X 68	X 68	X 60	58	66
30	X 56	69	58	65	R	68	68	76	76	X 81	X 85	X 76	O X 72	X 69	R	X 73	X 71	X 72	X 69	X 67	X 55	O X 48	O X 50	93
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	23	22	20	17	16	22	20	24	27	25	28	27	30	28	27	29	28	28	29	30	29	28	27
MED	52	56	X 54	58	65	68	X 66	X 72	X 73	X 78	X 76	X 74	X 73	X 74	X 76	X 73	X 71	X 68	X 64	X 63	X 58	X 58	X 56	X 52
U Q	56	64	62	66	X 72	70	70	76	X 80	X 81	X 84	X 82	O X 82	X 79	X 82	X 81	X 74	X 72	X 68	X 66	X 66	60	X 60	61
L Q	46	50	O X 50	X 52	56	X 59	X 63	X 66	X 68	X 72	X 70	X 70	X 70	X 71	X 70	X 70	X 68	X 63	X 60	X 55	X 55	X 52	X 52	X 47

NOV. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E kSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	F 44	F 38	F 42	F 40	F 35	S 57	63	66	72	77	J R 74	80	85	80	82	73	69	65	66	60	51	41	41
2	42	37	41	R 46	R	B	R 44	B	60	65	74	78	87	87	J R 86	80	77	76	73	60	48	B	R 32	35
3	B	A	B	40	R 59	F 56	B	B	66	78	78	78	80	79	74	68	68	68	66	63	60	F 57	F 55	F 52
4	F 58	F 56	F 57	F 57	F 64	66	74	R 87	J R 86	J R 86	87	101	R 101	104	103	R 94	Z 80	52	R	47	50	R 43	44	F 37
5	F 27	F 30	F 42	F 36	F 48	F 56	63	F 64	R 60	R 60	64	65	73	73	69	66	61	54	52	51	48	V 42	36	38
6	V 40	A	A	A		60	F 66	78	81	F 68	88	U R 87	76	72	67	65	63	63	61	60	52	54	57	52
7	F 31	F 44	F 41	F 55	R	B	59	58	R 59	F 69	F 68	68	J R 74	79	77	72	69	64	60	54	55	44	A	A
8	41	F 30	42	42	F 55	49	F 53	F 47	F 46	F 68	60	66	67	67	70	69	67	61	69	65	57	53	50	46
9	42	F 45	A	A	R	A	R	52	63	68	70	71	67	67	63	61	60	61	59	56	56	F 32	F 33	37
10	F 25	F 25		A	A	A	39	A	A	59	64	59	57	57	62	B	66	R 42	R	39	F 32	A	46	F 29
11	F 26	F 38	F 35	F 36	F 30	F 34	38	C	F 52	61	58	58	58	R 45	56	J R 52	56	58	57	51	53	53	50	F 35
12	J R 34	F 42	F 26	A	F 32	F 57	52	56	F 60	66	64	67	66	65	R 62	61	62	55	54	53	50	47	48	46
13	40	F 43	44	43	47	R	56	59	R	R 63	F 59	67	63	63	63	63	61	57	57	58	52	54	54	53
14	50	50	44	R 52	F 35	B	B	A	62	63	63	61	64	63	64	66	65	64	54	57	54	54	A	R 55
15	F 55	R	B	R 44	B	R	F 57	A	B	B	R	B	B	68	J R 74	B	65	R	61	60	62	54	56	F 42
16	R	R	B	R	B	B	B	R 70	B	B	B	B	B	67	68	B	B	R	R 42	48	45	47	F 44	F 50
17	A	B	R 41	J R 45	B	B	60	64	70	69	68	68	70	68	68	66	64	64	62	49	42	51	47	A
18	A	R 44	69	B	R	B	R	R 61	J R 86	J R 89	B	R 94	R 80	F 68	80	77	72	B	51	49	50	51	53	47
19	F 47	F 44	57	A	49	R	R	F 61	75	77	79	J R 74	70	68	65	64	62	61	58	59	50	50	F 36	R 43
20	R 43	F 55	F 58	54	B	R	60	66	R	68	63	R 64	66	R 69	74	J R 75	78	74	58	43	R 42	F 56	R 50	48
21	48	44	B	A	R	R	R	B	B	R	R	59	R	67	65	65	61	53	48	42	A	41	A	38
22	F 27	A	F 42	B	B	R	R 50	R	55	Z 66	B	64	62	68	B	R 63	61	R 55	53	60	62	51	34	31
23	F 39	B	B	F 56	67	56	57	F 62	Z 74	76	81	80	76	78	80	78	61	57	54	44	42	F 42	51	B
24	B	R 42	43	B	F 50	50	C	C	F 63	66	67	64	66	66	J R 71	70	68	61	42	A	42	R 47	R 43	44
25	49	R 45	46	51	66	62	62	V 72	76	F 64	F 66	J R 73	J R 73	R 73	72	J R 70	66	63	52	50	46	J R 45	45	41
26	43	42	48	F 56	67	Z 65	69	F 60	68	75	77	77	80	80	77	77	75	66	60	60	56	56	57	F 49
27	53	51	F 57	F 59	F 63	F 67	F 58	R	Z 64	66	76	68	67	68	J R 74	72	68	68	70	F 56	57	54	54	44
28	F 50	46	48	F 42	F 53	62	63	F 68	81	X R 74	67	67	64	64	64	64	63	57	62	58	61	57	48	F 40
29	46	52	56	F	F 54	F 51	F 56	F 62	F 68	J R 74	70	66	64	65	64	64	65	64	64	62	62	54	F 44	F 55
30	50	F 50	F 46	F 51	R	F 58	F 56	F 62	F 62	75	79	70	R 66	63	R	67	65	66	63	61	49	42	R 44	R 47
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	23	22	19	17	16	22	20	24	27	25	28	27	30	28	27	29	27	28	29	29	28	27	27
MED	42	F 44	44	F 46	F 53	56	57	62	65	68	68	68	67	68	70	67	65	61	58	56	52	51	47	44
U Q	50	50	56	F 55	64	62	62	67	74	75	78	76	76	73	76	75	68	66	62	60	57	54	53	F 49
L Q	F 36	F 42	F 41	F 42	F 44	F 50	53	60	60	65	64	64	64	65	64	64	62	57	54	49	47	44	43	38

NOV. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E {SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	46	35	34	43	43	41	40	34	34	37	32	32	36	36	39	33	33	G 21	29	31	G 17	E B 19	E B 20	E B 20
2	18	26	28	G 34	39	B	G	B	G	G 22	38	G	30	36	45	34	G	G	E B 26	E B 30	E B 24	B	G	33
3	B	43	B	E B 29	E B 30	E B 29	B	B	G	G	35	G	35	E B 57	42	36	E B 32	G	G	27	G	E B 20	E B 16	E B 16
4	E B 14	E B 15	24	23	G	33	G	G	E B 29	35	48	G	E B 68	60	G	E B 58	G	G 29	40	34	39	40	44	42
5	29	42	42	71	26	28	35	G	E B 35	E B 54	G 32	G 28	G 35	E B 55	E B 38	E B 35	G	G	G 29	30	32	26	39	32
6	40	69	50	47		G	G	24	23	G	G	G 21	G	G	G	G	33	G 18	G	B	30	16	29	33
7	K 29	86	63	G	31	B	46	Y 46	42	G	G	E B 60	E B 53	E B 53	Y	G 25	G	G 24	G	G	28	33	43	44
8	46	78	70	42	35	32	32	41	34	35	37	36	36	36	G	36	G	32	32	G	G 18	32	38	29
9	32	39	106	43	42	49	42	44	38	38	37	39	E B 51	G	G	G	G	G 21	G 21	29	29	36	88	44
10	117	110		74	46	49	49	59	44	G 25	36	G	37	G	35	B	G 22	31	27	35	G	48	45	87
11	63	41	44	28	37	32	32	C	36	G 27	37	44	41	39	38	41	38	33	41	31	28	31	25	30
12	42	108	73	G	36	34	38	38	35	G	G	35	G 28	G	G	33	30	34	G	34	G	G	G	24
13	26	88	36	33	36	44	33	41	41	G	36	36	37	40	60	35	35	35	41	37	G 18	G 14	G	G
14	26	34	34	40	35	B	B	43	37	36	G 28	G	36	36	36	G	38	36	G	26	E B 47	33	102	41
15	41	39	B	36	B	41	41	71	B	B	38	B	B	E B 56	E B 54	B	33	33	G	41	35	27	28	34
16	34	40	B	40	B	B	B	E B 65	B	B	B	B	B	E B 36	E B 36	B	B	29	38	G	41	36	36	70
17	43	B	G	E B 30	B	B	G	35	G 22	G 21	G	34	35	G 33	G	G	G 24	G 20	G	27	G	27	30	48
18	41	36	G	B	38	B	G	29	33	G	B	E B 59	E B 54	E B 56	G	G 26	G	B	37	34	32	36	38	37
19	37	32	G	58	41	37	43	52	G	31	G 25	36	38	38	48	G	G	29	29	29	23	29	30	G 33
20	52	32	34	93	B	40	43	48	58	48	50	E B 46	E B 58	E B 60	E B 62	E B 56	30	E B 32	G	39	G	104	79	G
21	79	33	B	87	42	43	40	B	B	40	40	G	G	G	E B 56	52	G 26	G	31	G 19	47	G	54	60
22	54	58	46	B	B	G	G	46	49	46	B	B	G	E B 53	B	E B 56	E B 37	E B 33	G	33	36	35	39	67
23	67	B	B	G	G	G	45	41	G	G	E B 36	E B	E B 45	G 29	E B 55	E B 55	G	32	32	41	G	34	38	B
24	B	33	G	B	33	G 22	C	C	35	E B 54	E B 54	E B 39	E B 38	G	G	G 26	G	30	33	36	36	38	44	41
25	38	60	31	56	39	39	35	43	34	24	G	G	G	36	37	40	32	G 24	30	33	32	38	41	34
26	34	34	39	32	42	42	44	G 30	39	35	32	G	37	G 25	41	56	32	G 26	G	39	40	35	70	31
27	31	32	35	44	38	51	34	42	51	56	40	G	G 30	38	37	40	38	G	33	34	34	32	36	30
28	89	44	43	34	33	38	38	36	39	38	G	69	46	35	38	37	35	35	33	G	42	42	38	33
29	41	38	35	36	32	29	42	75	39	39	39	39	39	34	43	38	37	34	34	34	34	34	35	39
30	34	44	44	40	44	44	34	34	G	37	37	41	39	50	40	36	41	37	33	30	34	34	36	43
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	24	27	24	24	26	25	27	28	27	26	28	30	28	27	29	29	30	29	30	29	30	29
MED	40	40	36	40	36	38	36	41	35	E G 35	36	E G 34	E G 37	E G 36	37	34	E G 30	E G 29	29	31	30	33	38	34
U Q	49	59	45	47	42	42	42	47	39	38	38	39	E B 43	E B 53	44	E B 41	35	33	33	34	36	36	44	44
L Q	32	34	G 30	34	32	G 29	G 32	34	G 23	G	G	G	G	G	G	G	G	G 28	G	G 27	G	26	29	32

NOV. 2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E kSWEEP 1.0MHz TO 15.0MHz 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	13	18	12	15	13	13	13	13	12	12	14	14	15	17	12	12	12	13	12	13	12	19	20	20
2	14	13	16	22	22	B	24	B	20	18	15	17	18	15	15	15	20	20	26	30	24	B	20	17
3	B	20	B	29	29	29	B	B	22	20	19	16	25	57	15	31	32	17	14	18	16	20	16	16
4	14	15	15	15	20	18	19	27	29	19	19	18	68	30	27	58	21	15	14	14	16	13	13	12
5	14	13	14	14	12	12	14	22	35	54	24	20	14	55	38	35	23	16	24	16	14	13	12	12
6	12	16	18	16		17	15	21	17	28	25	17	23	25	17	17	13	13	19	24	14	12	12	12
7	11	14	13	25	20	B	23	28	22	20	20	59	53	53	26	22	17	20	15	13	14	12	12	13
8	12	12	125	12	14	14	12	14	13	16	14	12	15	20	28	24	26	13	12	23	13	12	13	11
9	12	14	26	22	26	22	25	14	14	15	15	13	51	25	25	15	15	14	14	12	12	13	11	14
10	13	13		20	17	14	14	18	22	22	12	14	14	16	15	B	18	13	14	13	12	12	12	11
11	11	12	12	14	12	13	12	C	14	19	29	25	17	14	15	15	12	12	12	12	12	13	12	12
12	13	13	13	26	13	14	13	12	20	25	15	15	14	30	25	15	13	14	14	12	15	13	12	12
13	11	15	12	12	12	12	13	13	13	15	14	16	16	13	21	14	16	15	12	12	14	12	13	12
14	13	13	13	22	14	B	B	17	14	17	15	15	13	18	18	14	13	12	23	23	47	14	14	12
15	11	26	B	21	B	28	22	32	B	B	22	B	B	56	54	B	18	20	18	18	20	13	14	15
16	26	23	B	18	B	B	B	65	B	B	B	B	B	36	36	B	B	14	12	14	13	22	14	12
17	25	B	20	30	B	B	16	14	12	13	16	14	17	18	12	15	16	19	19	14	19	14	14	16
18	20	20	29	B		B	25	20	24	25	B	59	54	56	21	22	13	B	12	12	12	12	12	12
19	10	13	23	30	14	18	18	16	12	14	17	16	15	16	17	12	15	13	12	12	14	14	14	20
20	18	14	19	39	B	19	14	15	22	16	22	46	58	60	62	56	23	32	13	15	20	14	14	15
21	16	15	B	28	23	23	28	B	B	27	16	18	15	20	56	44	18	15	12	12	12	20	15	13
22	12	24	15	B	B	18	15	16	12	15	B	31	20	53	B	56	37	33	24	19	12	12	12	12
23	12	B	B	16	17	15	16	15	15	15	36	56	45	22	55	55	20	17	17	11	22	13	12	B
24	B	29	20	B	14	16	C	C	14	54	54	39	38	23	30	19	14	14	12	15	13	14	13	14
25	12	11	15	12	13	18	21	15	12	19	26	25	16	13	15	16	18	14	14	14	13	12	12	12
26	12	13	14	12	12	12	16	14	16	14	16	16	15	14	14	15	18	18	16	14	11	11	11	13
27	14	13	13	12	12	16	13	27	18	14	17	14	15	18	19	13	14	12	13	13	13	13	14	13
28	13	13	14	12	12	18	13	12	12	13	12	15	12	13	12	12	13	13	12	12	16	13	12	11
29	11	13	12	12	18	12	12	12	10	13	13	14	14	14	13	13	12	15	11	10	14	12	12	13
30	13	12	13	12	12	12	12	12	13	13	12	12	13	15	13	14	12	12	13	12	12	15	18	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	29	30	28	30	29	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	13	14	15	19	16	18	16	16	16	18	17	16	16	20	20	16	16	14	14	14	14	13	13	13
U Q	14	20	B 28	28	B 24	B 28	24	27	22	25	25	31	45	36	30	44	20	18	17	16	16	14	14	15
L Q	12	13	13	12	12	14	13	14	13	14	15	14	15	15	15	14	13	13	12	12	12	12	12	12

NOV. 2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E +SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	350	240	A	242	232	234	216	198	212	222	236	218	220	204	210	210	210	220	228	228	238	252	272
2	286	A 324	A	A	A	B	A	B	202	200	A 228	208	208	A 212	212	198	198	220	220	226	226	B	A	A
3	B	A	B	B	B	E B 252	B	B	212	196	196	196	206	B	204	Y	206	210	210	210	216	Q 216	Q 216	Q 246
4	Q 256	Q 272	A	A	A	290	226	202	218	206	A	216	B	A	A	B	E A 240	A	A	A	A 224	204	A	A 216
5	228	204	A	198	270	242	E A 278	216	230	B	A 256	208	224	B	E B 236	232	220	198	188	192	192	204	220	194
6	256	A	A	A		A	246	Y	A 236	Y	194	E A 234	206	E A 220	200	200	212	212	212	230	A 222	A 214	A 238	A 250
7	246	A 260	A 290	A	A	B	A	Y	E A 256	A 228	204	B	B	B	E Y 246	214	214	214	222	E A 222	238	E A 266	A	A
8	206	226	A	A	238	212	216	216	204	208	208	196	212	200	Y	A	A 216	202	202	220	220	208	232	226
9	A	A	A	A	A	A	A	A	212	204	196	218	B	218	208	208	216	216	216	228	E A 236	A	A	E A 264
10	A	210		A	A	A	212	A	A	212	230	220	220	220	220	B	H 194	200	A	A	190	A	210	208
11	236	208	208	208	252	216	220	C	206	222	E A 268	A	234	186	212	204	208	208	208	200	230	232	206	246
12	240	204	Q 272	A	A	E A 254	E A 236	212	E A 288	218	198	222	222	226	206	206	206	214	214	226	232	232	218	218
13	224	E A 250	200	236	228	228	E A 248	A	A	218	206	206	200	204	A 240	210	210	208	A 222	232	232	238	238	238
14	238	230	200	A	200		B	B	A	212	206	E A 224	206	206	216	216	216	216	192	E A 244	B	206	A	A
15	A	A	B	A	B	A	A	A	B	B	A	B	B	B	B	B	E A 220	A 220	198	A 248	A	248	248	202
16	202	A	B	A	B	B	B	E B 226	B	B	B	B	B	222	222	B	B	230	216	A	A 216	A	A 240	Q 256
17	A	B	A	206		B	B	A	Y 216	198	210	198	A	A	198	204	220	220	204	204	210	240	184	A
18	A	A	A	B	A	B	A	182	194	Y	B	B	B	B	212	212	E A 256	B	256	E A 240	E A 240	240	232	232
19	220	E A 248	190	A	E A 252	A	A	A	222	192	212	218	A 218	200	A	E A 194	206	220	A 210	210	E A 244	A 234	204	A
20	A	196	206	B	B	B	A	210	A	A	E A 244	B	B	B	B	B	220	220	196	A	192	198	A	A
21	A	A	B	A	A	A	A	B	B	A	A	198	198	Y	B	E A 268	218	188	192	200	A	200	A	E A 272
22	244	A	192	B	B	A	A 252	A	A	A	B	Y	232	B	B	B	232	240	234	234	Q 234	A 240	208	200
23	206	B	B	A	A	A		A	216	216	216	B	B	Y	232	B	228	212	224	212	206	206	220	B
24	B	B	A	B	192	A	C	C	A 226	B	B	E B 220	B 220	Y	Y	212	212	212	212	A		240	A	198
25	A	A	290	A 304	A	A	E A 266	E A 250	216	218	218	216	200	200	212	208	208	208	202	220	210	230	230	230
26	230	264	A	202	A	A	A	A	242	192	196	222	E A 254	216	202	A 224	210	210	210	E A 248	224	234	224	A
27	224	240	254	228	228	244	218	A	A	A	E A 256	210	192	A	212	212	212	212	212	194	194	224	224	254
28	200	A	210	210	214	A	A 232	210	202	202	202	218	210	210	218	212	212	212	212	224	A	A 246	268	264
29	266	226	204	182	208	222	A 274	A	220	200	212	218	200	200	200	216	230	224	224	212	212	232	264	248
30		A	236	236	A	214	214	214	214	214	214	214	214	E A 242	188	214	206	208	210	214	214	A	208	236
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	16	14	10	11	11	15	11	22	20	23	22	21	17	22	21	29	28	28	25	25	25	22	22
MED	233	230	209	209	228	227	226	212	214	207	209	214	211	209	211	211	212	212	212	218	219	232	224	234
U Q	246	262	254	236	252	E 252	A 252	E 216	A 226	217	A 228	220	221	220	220	215	220	220	220	A 231	232	240	238	254
L Q	220	209	200	202	208	216	218	210	206	200	202	208	203	200	204	205	208	208	203	210	210	207	210	216

NOV. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2014 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	53	60	56	57	42	X 59	R	R	R	X 63	64	X 67	A	C	C	C	C	C	C	C	C	A
2	55	50	45	63	O X 65	R	R	R	R	B	B	B	O X 65	B	O X 72	O X 71	O X 68	O X 67	O X 55	O X 48	A	94	R	O X 48
3	O X 53	R	57	57	51	A	R	B	X 71	X 74	X 80	O X 72	X 64	R	O X 63	X 62	X 62	X 63	X 62	X 58	X 60	X 59	R	X 55
4	X 63	R	X 64	R	R	94	R	X 61	X 68	O X 73	X 74	O X 73	O X 74	O X 71	X 68	O X 62	X 62	X 59	X 58	O X 46	X 54	O X 59	50	X 58
5	V 55	63	R	R	61	X 54	57	O X 70	R	59	R	R	R	O X 67	O X 65	O X 64	C	O X 60	R	O X 54	X 53	O X 57	X 51	X 52
6	X 57	A	A	R	R	X 64	R	R	A	O X 56	O X 65	O X 64	O X 69	O X 72	O X 73	X 73	O X 66	X 64	X 64	X 60	X 60	X 61	X 50	A
7	38	O X 44	A	A	B	R	R	R	R	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	B	R	R	O X 64	B	R	B	B	O X 64	X 58	B	X 53	O X 43	X 48	X 48	O X 46
9	X 52	66	X 48	B	R	A	56	O X 73	X 73	O X 81	X 75	B	B	O X 72	X 75	B	B	B	R	X 56	C	C	C	R
10	B	61	A	A	R	R	R	R	R	O X 73	O X 66	X 64	O X 65	B	O X 66	X 65	X 62	64	O X 61	X 58	O X 55	X 55	X 49	51
11	O X 55	O X 56	65	X 43	54	R	58	X 62	X 73	X 74	X 74	X 71	O X 71	O X 70	O X 70	O X 70	O X 67	X 67	X 68	X 68	X 67	X 61	X 54	X 50
12	O X 51	67	67	A	R	O X 63	O X 65	B	B	X 66	X 70	70	O X 73	B	X 76	X 71	R	B	71	72	X 63	X 61	62	57
13	B	X 48	R	R	R	57	X 56	R	R	R	X 63	X 63	X 67	O X 70	O X 68	O X 66	O X 66	X 66	R	O X 56	X 56	X 55	O X 53	X 56
14	X 54	R	52	X 59	O X 68	X 66	O X 68	B	B	B	R	B	O X 70	O X 74	X 76	O X 76	O X 72	O X 61	O X 56	X 55	O X 52	X 54	X 51	A
15	R	O X 58	R	62	53	R	A	R	X 63	76	X 74	X 74	X 80	O X 78	X 80	O X 70	R	R	C	C	C	C	C	C
16	C	C	60	O X 62	X 65	73	78	74	80	X 83	X 83	X 77	X 76	78	X 80	X 80	X 68	R	O X 64	X 62	C	C	O X 55	X 61
17	X 61	58	X 63	R	R	O X 64	X 65	A	B	B	R	O X 65	O X 67	O X 66	O X 69	X 63	X 68	X 70	X 70	X 65	C	X 58	X 57	X 57
18	X 54	X 60	64	70	X 72	72	X 69	X 69	X 72	82	X 83	X 84	O X 85	81	X 77	O X 72	O X 72	X 73	X 65	X 64	X 64	C	X 62	X 60
19	57	70	70	X 71	67	R	X 56	X 64	X 69	X 75	B	80	X 75	X 74	X 78	C	O X 74	C	C	C	C	70	C	C
20	C	C	C	C	C	R	R	C	A	C	C	C	C	C	C	C	X 77	X 76	X 74	X 67	X 57	X 56	X 56	X 56
21	X 64	B	O X 57	O X 67	X 68	X 71	R	R	R	R	R	R	B	O X 65	X 66	X 67	X 73	O X 63	R	61	68	R	R	R
22	R	R	R	R	68	R	R	R	R	R	R	R	B	R	R	O X 64	B	X 61	X 58	X 59	X 59	X 59	X 55	X 52
23	X 59	X 57	O X 53	O X 52	O X 50	R	X 58	B	O X 65	R	R	O X 71	X 73	O X 72	O X 73	X 66	X 71	X 70	X 65	X 60	X 63	X 63	X 60	X 49
24	91	78	X 68	68	R	X 48	X 53	R	R	X 61	O X 67	O X 68	X 67	O X 66	X 64	O X 64	R	O X 54	R	O X 54	O X 47	O X 49	R	A
25	R	64	66	O X 49	B	X 69	76	X 83	X 83	X 74	O X 75	X 76	O X 73	O X 72	O X 69	O X 70	X 64	O X 64	R	R	O X 54	O X 51	X 58	X 57
26	R	R	X 62	X 43	O X 50	X 46	A	R	R	R	R	R	B	B	B	O X 65	X 59	X 62	X 61	X 61	X 57	X 52	A	A
27	R	O X 49	61	O X 63	R	R	O X 49	R	X 64	O X 68	X 66	B	B	X 69	X 68	X 65	X 66	X 65	X 63	X 61	X 57	X 57	X 57	X 56
28	61	X 56	X 64	78	63	A	R	O X 54	R	X 76	X 78	X 70	X 69	X 69	O X 65	X 75	78	X 76	X 72	X 70	X 57	X 57	O X 56	62
29	R	O X 54	O X 53	53	58	X 45	R	R	R	X 68	C	O X 70	X 70	X 65	X 77	X 74	X 72	B	B	X 58	67	57	R	X 52
30	53	B	A	83	42	70	R	R	R	R	B	B	R	B	O X 66	B	O X 66	X 67	R	O X 64	R	O X 54	X 51	X 48
31	O X 44	52	B	O X 54	B	X 66	75	R	R	X 76	80	X 73	O X 74	O X 69	O X 70	O X 70	O X 70	X 64	X 55	R	O X 52	X 52	X 52	X 60
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	19	20	19	17	17	16	10	11	18	16	20	21	21	25	24	23	23	18	25	22	24	20	21
MED	X 55	58	62	X 62	61	X 64	X 58	X 66	X 71	X 74	X 74	X 70	O X 70	O X 70	O X 70	O X 68	X 68	X 64	X 64	X 60	X 57	X 57	X 54	X 56
U Q	X 61	64	64	68	X 68	70	68	X 73	X 73	X 76	X 79	X 74	X 74	X 73	X 76	X 72	X 72	X 67	X 68	X 64	X 63	X 60	X 57	X 58
L Q	X 53	X 52	53	X 53	52	X 56	X 56	X 61	X 65	X 68	O X 66	X 64	X 67	O X 67	O X 66	O X 64	X 64	X 61	X 58	O X 56	O X 54	X 54	X 51	X 50

DEC.2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2014 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E [SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

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

DEC.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2014 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz 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	66	69	45	34	G 33	35	35	39	42	31	34	36	36	57	62	C	C	C	C	C	C	C	C	58
2	45	35	41	31	42	42	42	42	42	B	B	B	E B 52	B	37	39	G 27	G	43	25	60	42	38	32
3	28	38	42	G 26	38	60	41	B	40	G	40	38	38	40	34	34	39	35	29	28	G 18	31	G 41	41
4	40	G	39	39	58	49	49	40	G	36	36	38	36	37	G 19	G 30	31	34	34	32	31	41	34	36
5	40	51	57	43	40	40	32	G 32	32	39	40	31	G	G 24	G 23	32	C	E B 31	G	G	29	33	33	37
6	42	87	58	44	40	G 25	G 31	G 33	64	G	G 31	G 32	E B 56	E B 37	G 29	G	G 26	32	36	28	26	31	42	71
7	40	42	73	64	B	39	42	32	42	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	B	40	38	32	B	G	B	B	G	36	B	37	G	G 17	39	71
9	102	83	70	B	43	43	39	42	G	G 26	E B 54	B	B	E B 38	R 31	B	B	B	31	31	C	C	C	G 36
10	B	43	103	41	41	38	39	39	42	37	40	40	36	B	E B 57	30	32	44	E B 32	G	E B 27	22	32	34
11	34	46	39	56	41	38	G 33	G 25	33	G 30	32	37	38	36	42	37	75	47	36	41	33	32	33	34
12	32	38	38	60	39	39	32	B	B	36	38	G 26	E B 56	B	E B 57	E B 55	34	B	27	42	45	39	47	43
13	B	38	43	43	36	36	35	40	50	38	39	39	G	G	G	32	G 30	G	G	E B 34	G	32	25	37
14	41	41	32	35	28	G	G 28	B	B	B	G	B	G	E B 55	E B 58	E B 56	E B 35	G 26	35	40	43	33	43	46
15	43	36	33	36	47	42	79	44	50	38	G	G 38	E B 56	E B 57	E B 55	G	G	34	C	C	C	C	C	C
16	C	C	36	40	58	33	G 33	42	40	36	31	G 30	G 29	37	34	G 28	G 24	G	G	39	C	C	38	32
17	61	93	42	50	35	39	41	61	B	B	38	37	37	E B 56	33	G	G 26	36	36	G	C	33	25	25
18	37	37	40	37	33	38	39	48	39	G	38	G 30	50	G	G	G 28	G	47	37	32	31	C	40	30
19	38	34	39	41	44	42	50	40	34	40	B	G	G	34	G 29	C	E B 56	C	C	C	C	G	C	C
20	C	C	C	C	C	41	40	C	64	C	C	C	C	C	C	C	G 24	35	32	30	37	34	26	27
21	35	B	41	G	42	52	37	40	35	32	40	G	B	E B 54	36	G	G	G 26	G	G 22	G	35	G	37
22	42	38	35	G 32	40	E B 34	38	34	G 26	33	51	G 34	B	34	G 28	G 26	B	G 26	G	42	62	27	26	26
23	29	32	29	G 31	G	31	G	B	G	G 27	G	39	76	136	37	G	G	40	40	32	46	48	66	36
24	61	43	G	34	39	36	G	36	34	38	G	G	40	40	G	40	G	G	32	G	G	42	43	84
25	36	44	34	G 25	B	G	31	32	G	38	E B 58	E B 62	E B 57	38	G	G 26	G 21	G 25	33	G	41	37	36	36
26	43	40	45	76	40	36	71	38	33	29	36	32	B	B	B	G 25	33	33	33	31	38	36	98	56
27	39	41	26	33	37	34	42	G	36	G	G 18	B	B	G	34	32	G 26	34	G 24	28	26	G	29	35
28	35	35	39	G 27	40	58	34	72	G 38	38	G	G	G 27	30	30	37	35	35	42	32	26	26	50	30
29	48	40	34	27	34	31	43	45	40	41	C	37	39	37	30	G 23	G	B	B	33	35	40	48	48
30	82	B	45	69	33	E B 55	34	35	43	32	B	B	32	B	E B 38	B	33	G	35	38	36	43	33	42
31	73	34	B	39	B	33	40	30	41	G	G 23	G 23	G 25	G 25	G	41	G	G	E B 33	35	27	31	40	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	28	28	26	30	30	25	27	26	25	24	23	24	27	24	26	25	25	27	24	25	26	28
MED	40	40	40	38	40	38	38	39	39	34	35	37	E GU 37	34	E G 33	G	G	33	33	32	31	33	38	36
U Q	48	44	45	44	42	42	42	42	42	38	40	G	E B 52	E B 47	E B 38	37	33	36	36	37	40	40	43	44
L Q	36	36	34	G	35	34	G	G	35	G	G	G 32	G	G	G	G 29	G 27	G	G	G 25	G 26	29	33	33

DEC.2014 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2014 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E ;SWEEP 1.0MHz TO 15.0MHz 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	13	12	11	12	13	12	12	12	13	10	19	19	13	13	13	C	C	C	C	C	C	C	C	12
2	13	14	12	12	24	18	14	13	18	B	B	B	52	B	23	18	17	13	16	15	11	13	25	21
3	16	22	12	13	12	32	14	B	18	14	14	14	17	17	11	13	13	13	15	12	13	12	14	13
4	14	24	13	16	18	16	18	14	26	31	24	18	24	13	12	16	14	12	13	12	14	15	12	12
5	12	13	25	18	14	12	12	18	17	14	20	15	23	14	13	20	C	31	15	24	18	12	12	13
6	20	16	16	14	18	20	27	28	19	23	27	22	56	37	24	23	22	14	20	12	14	13	14	12
7	12	12	29	13	B	15	12	12	14	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	B	26	26	23	B	23	B	B	16	14	B	11	12	12	12	13
9	13	12	13	B	137	13	17	17	18	21	54	B	B	38	22	B	B	B	14	14	C	C	C	18
10	B	15	56	18	30	20	14	13	18	15	17	16	13	B	57	24	19	12	32	21	27	13	12	13
11	16	22	14	13	13	19	13	12	14	13	13	14	18	17	14	15	14	12	12	10	13	13	13	12
12	19	14	13	17	14	20	22	B	B	16	22	14	56	B	57	55	16	B	13	12	12	13	14	12
13	B	12	20	16	22	12	12	22	14	17	14	15	17	23	29	21	17	20	16	34	13	13	12	12
14	13	29	17	13	14	13	22	B	B	B	18	B	24	55	58	56	35	22	14	13	13	12	15	14
15	15	20	20	13	12	20	20	19	12	12	13	16	56	57	55	24	18	18	C	C	C	C	C	C
16	C	C	12	24	15	18	14	13	14	26	24	13	15	15	14	15	13	14	17	14	C	C	12	11
17	11	15	15	15	26	24	15	19	B	B	29	30	28	56	20	18	14	19	16	22	C	15	16	12
18	12	12	14	13	12	13	13	16	13	15	15	16	21	20	22	18	16	16	12	12	13	C	12	13
19	14	20	14	23	12	15	14	14	13	14	B	29	18	20	17	C	56	C	C	C	C	18	C	C
20	C	C	C	C	C	27	30	C	18	C	C	C	C	C	C	C	14	14	20	18	13	13	16	12
21	13	B	22	25	18	14	23	23	30	20	21	20	B	54	23	24	24	16	22	16	16	16	25	20
22	24	23	24	22	23	34	23	23	23	24	24	25	B	24	20	19	B	19	19	20	16	14	14	17
23	18	17	19	17	17	17	19	B	18	20	16	15	15	15	15	19	16	14	12	12	12	13	13	14
24	24	12	14	14	14	14	12	13	15	14	26	23	26	19	15	13	24	14	13	17	14	14	14	16
25	12	24	22	22	B	25	14	13	13	16	58	62	57	23	23	18	13	13	14	15	12	12	13	13
26	23	13	13	14	16	12	24	14	14	16	24	16	B	B	B	20	20	15	24	12	13	13	20	14
27	13	12	13	29	13	16	13	25	15	13	13	B	B	24	16	14	19	13	15	15	16	13	12	12
28	12	16	14	20	12	15	15	14	20	14	14	14	16	20	15	13	13	15	13	13	13	13	16	13
29	17	19	27	12	12	14	14	15	14	13	C	13	13	14	17	15	14	B	B	13	12	12	14	12
30	13	B	13	16	14	55	15	15	18	23	B	B	24	B	38	B	29	17	14	14	16	12	16	14
31	14	12	B	20	B	18	20	16	21	15	14	14	18	14	22	18	14	19	33	16	14	13	12	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	29	29	30	30	29	31	30	29	30	30	30	30	27	28	28	27	27	24	25	26	28
MED	14	16	14	16	15	16	14	16	18	16	22	18	24	23	22	19	16	15	15	14	13	13	14	13
U Q	18	22	22	21	24	20	20	23	21	24	28	B 30	B 57	B 56	38	24	23	19	20	17	15	14	16	14
L Q	13	12	13	13	13	14	13	13	14	14	14	15	17	17	15	15	14	14	13	12	12	12	12	12

DEC.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

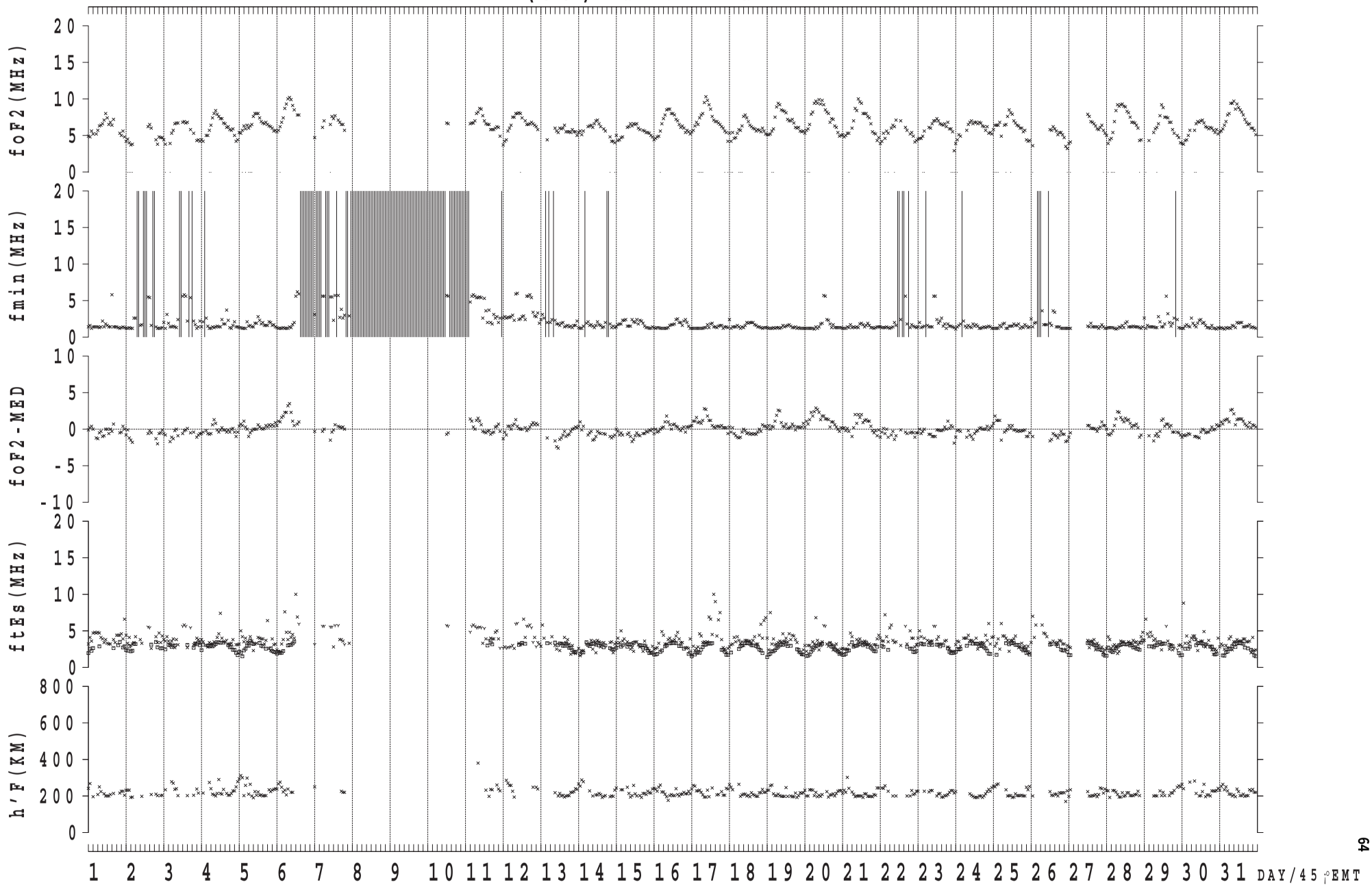
DEC.2014 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

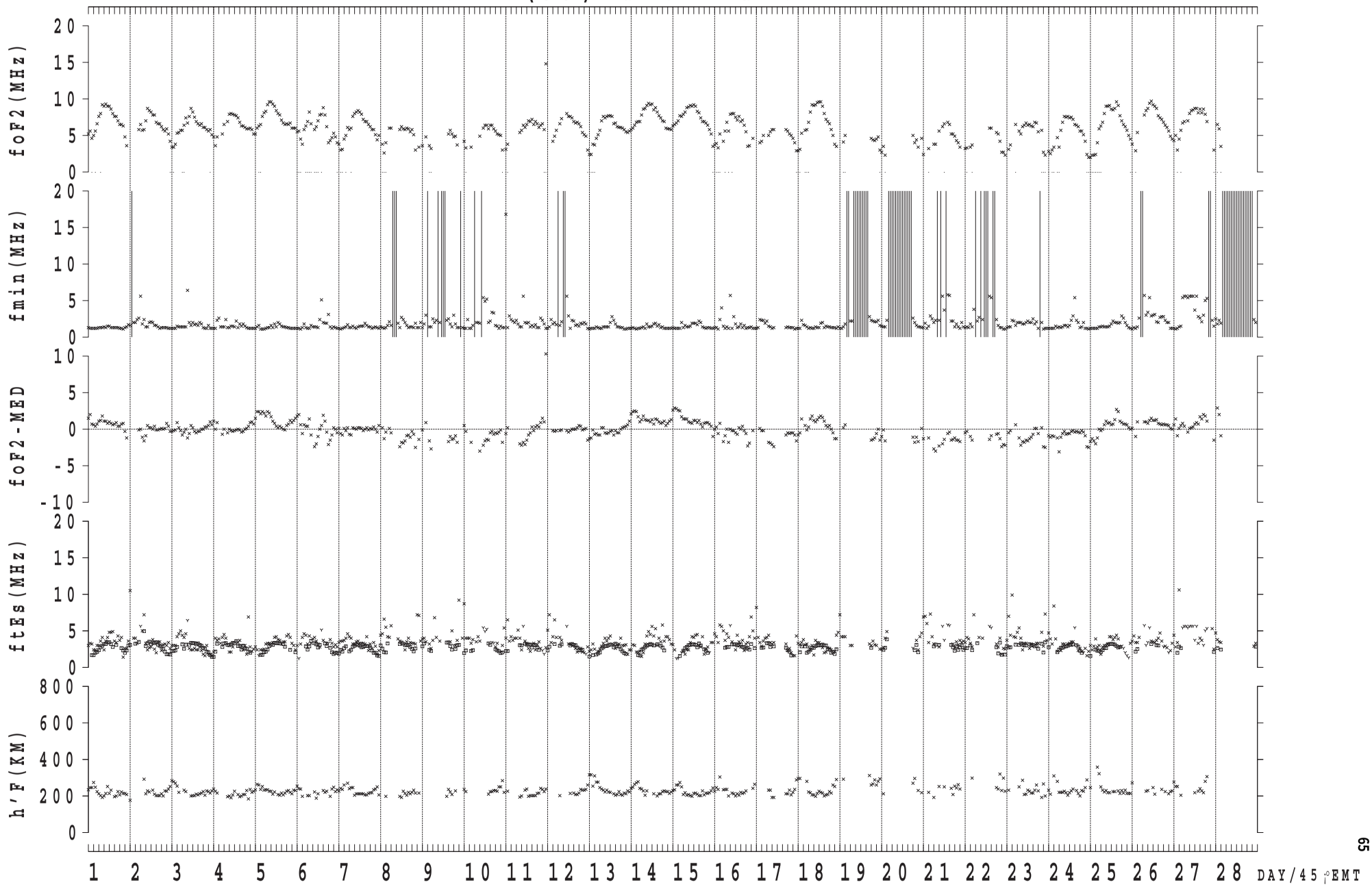
LAT.69°00.4'S LON.039°35.4'E KSWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

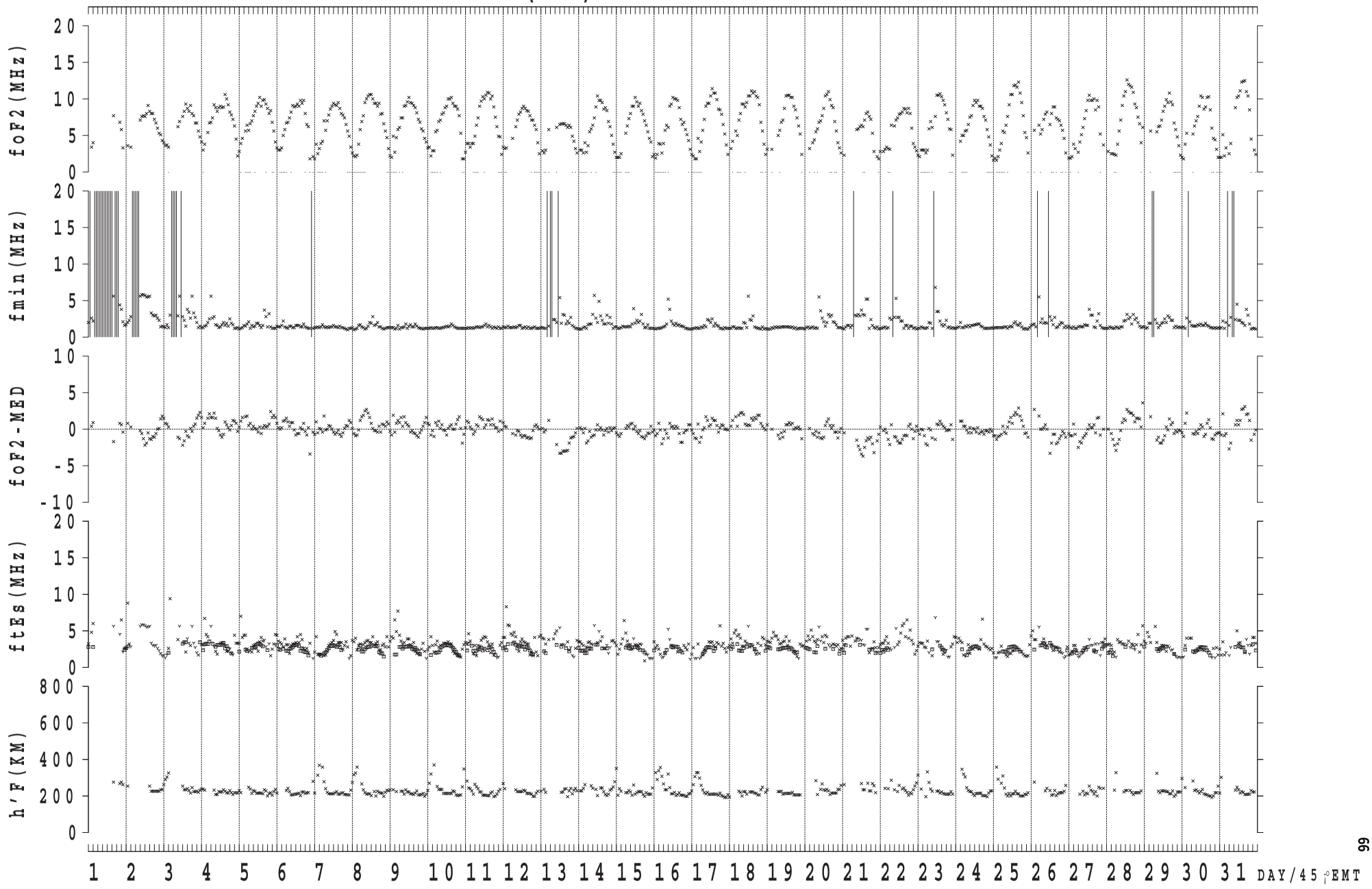
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	202	206	206	220	214	A	A	214	A	190	216	A	A	C	C	C	C	C	C	C	C	A
2	A	242	206	246	202	A	210	A	A	B	B	B	B	B	E A 222	206	206	198	198	230	A	A	A	A
3	A	G	204	204	E A	A	A	B	228	208	208	208	A	220	220	206	206	202	220	206	220	224	A	224
4	224	A	224	A	A	A	A	200	A	A	E A 238	206	E A 224	208	206	198	202	208	206	202	202	198	202	238
5	230	A	A	A	A	A	E A 240	E A 236	A	A	A	A	196	196	224	202	C	218	218	222	234	A	E A 262	238
6	202	A	A	A	A	A	A	A	A	E A 230	A	192	B	244	Y	210	206	216	216	228	236	244	A	A
7	A	A	A	A	B	A	A	A 204	A	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	B	A	A	A	B	196	B	B	208	266	B	214	208	228	200	A
9	186	198	206	B	A	A	A	A	E A 260	A	B 260	B	B	220	96	B	B	B	202	212	C	C	C	A
10	B	A	A	A	A	A	A	E A 248	A	190	A	222	202	B	B	218	202	E A 238	218	218	E B 230	230	250	200
11	A	A	200	200	232	A	E A 286	222	196	196	E A 224	A	200	214	214	200	A	A 210	214	202	232	198	196	204
12	A	200	208	A	A	A	A	B	B	208	A	208	B	B	B	B	A 232	B	A	E A 232	220	224	236	A
13	B	196	A	A	A	208	210	A	A	210	206	192	200	A	E A 220	E Y 202	198	216	226	E B 244	206	200	238	238
14	224	A	E A 316	E A 318	236	220	A	B	B	B	A	B	Y	B	B	B	B 228	E A 240	236	218	218	228	A	A
15	A	A	A	228	224	A	A	A	E A 220	196	E A 224	192	B	B	B	216	A	R	C	C	C	C	C	C
16	C	C	A	A	200	270	A	A	A	A	Y	194	202	216	214	214	214	A	232	236	C	C	236	200
17	228	A	240	A	A	A	212	A	B	B	A	A	E A 244	B	E A 212	204	204	226	226	236	C	A 218	226	232
18	232	226	226	A	218	200	200	A	A	200	194	194	208	A	206	A 206	214	206	214	214	212	C	228	246
19	226	A 242	E A 256	A	A 224	A	A	A 224	198	A	B	A	E A 216	220	210	C	B	C	C	C	C	A	C	C
20	C	C	C	C	C	A	A	C	A	C	C	C	C	C	C	C	204	H 204	204	206	194	198	198	202
21	222	B	A	A	A	228	A	A	A	A	A	A	B	B	A	A	228	A 244	A 220	E A 250	A	A	A	A
22	A	A	A	A	A	E B 236	A	A	R	A	A	A	B	A	E A 222	A 222	B	A 218	222	202	E A 242	E A 238	212	242
23	A	A	A	E A 338	A	236	222	B	196	204	A	202	A	A	202	202	206	208	208	208	208	208	E A 224	196
24	A	A	198	A	A	304	212	202	224	A	A	E A 220	220	E A 222	198	198	224	192	E A 242	216	Y	224	A	A
25	A	196	A	A	B	A	E A 264	A 246	A 234	A	B	B	B	A	Y	202	210	246	246	226	226	E A 234	212	220
26	A	A	E A 230	204	A	204	A	A	A	A	A	A	B	B	B	212	218	218	208	224	A 236	A 220	A	A
27	A	A	198	B	A	A	A	A	210	198	198	B	B	200	200	196	204	204	226	216	208	202	202	232
28	198	196	200	A	206	A	A	206	A	208	196	196	196	A	238	204	194	204	A 236	H 206	H 200	198	194	212
29	224	A	A	224	194	A 228	A	198	214	198	C	210	198	198	242	232	252	B	B	204	208	A	A	A
30	242	B	A	A	198	B	A	A	A	A	B	B	202	B	202	B	210	214	240	240	240	216	A	216
31	A	198	B	A	B	A 228	A	A	A	194	194	204	192	212	200	E A 256	204	208	224	200	200	198	A 218	E A 246
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	9	15	9	11	12	10	10	10	14	10	15	15	13	19	21	23	23	24	27	21	20	17	17
MED	224	198	204	214	206	226	212	208	210	200	201	199	201	213	209	205	206	211	220	215	213	216	215	222
U Q	229	234	E A 230	E A 282	224	236	E A 240	E A 236	228	A 208	E A 224	208	216	220	222	215	218	226	229	230	233	228	236	238
L Q	212	196	200	204	200	214	210	202	198	196	196	192	198	199	202	202	204	204	211	206	207	199	201	203

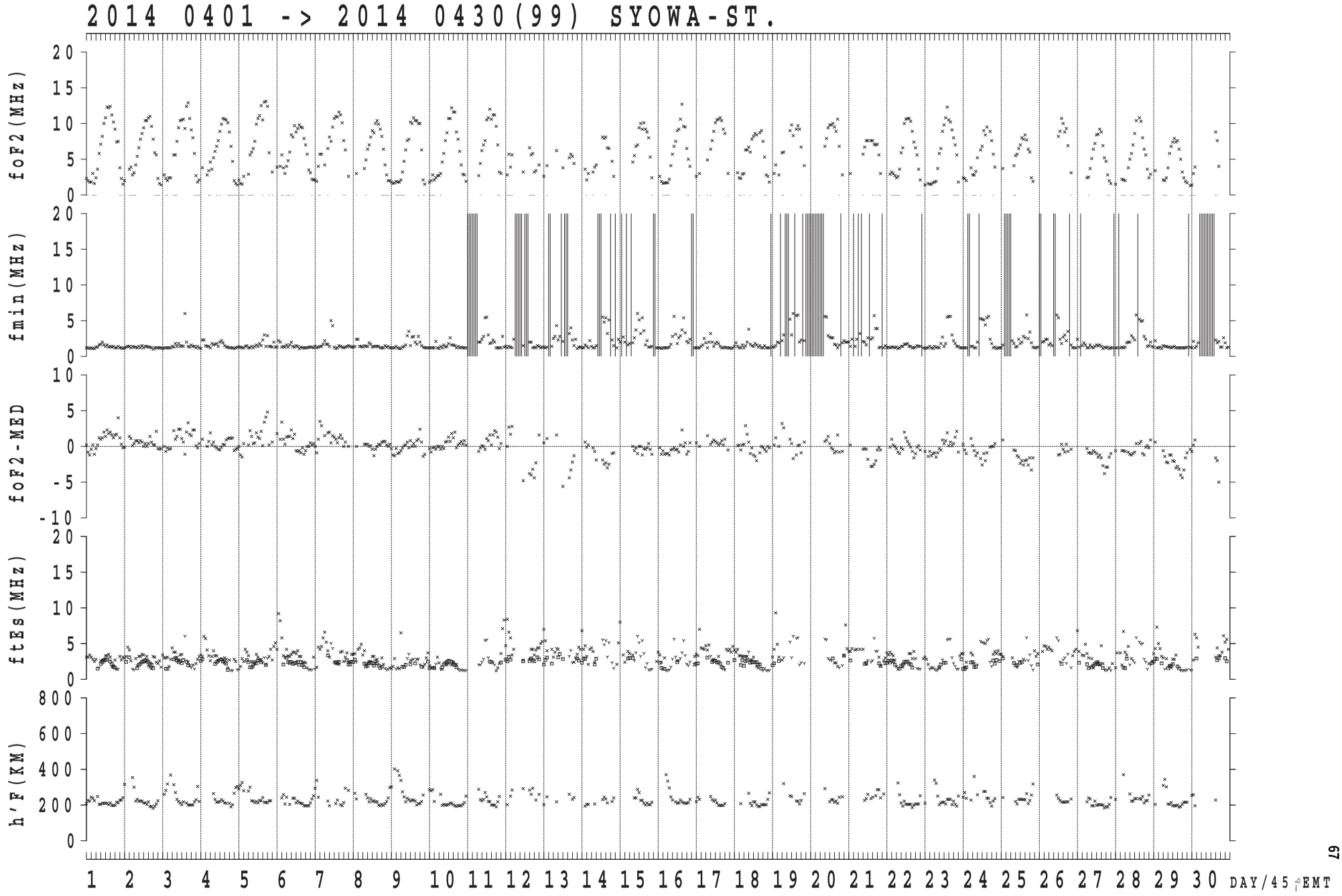
DEC.2014 h'F (KM)

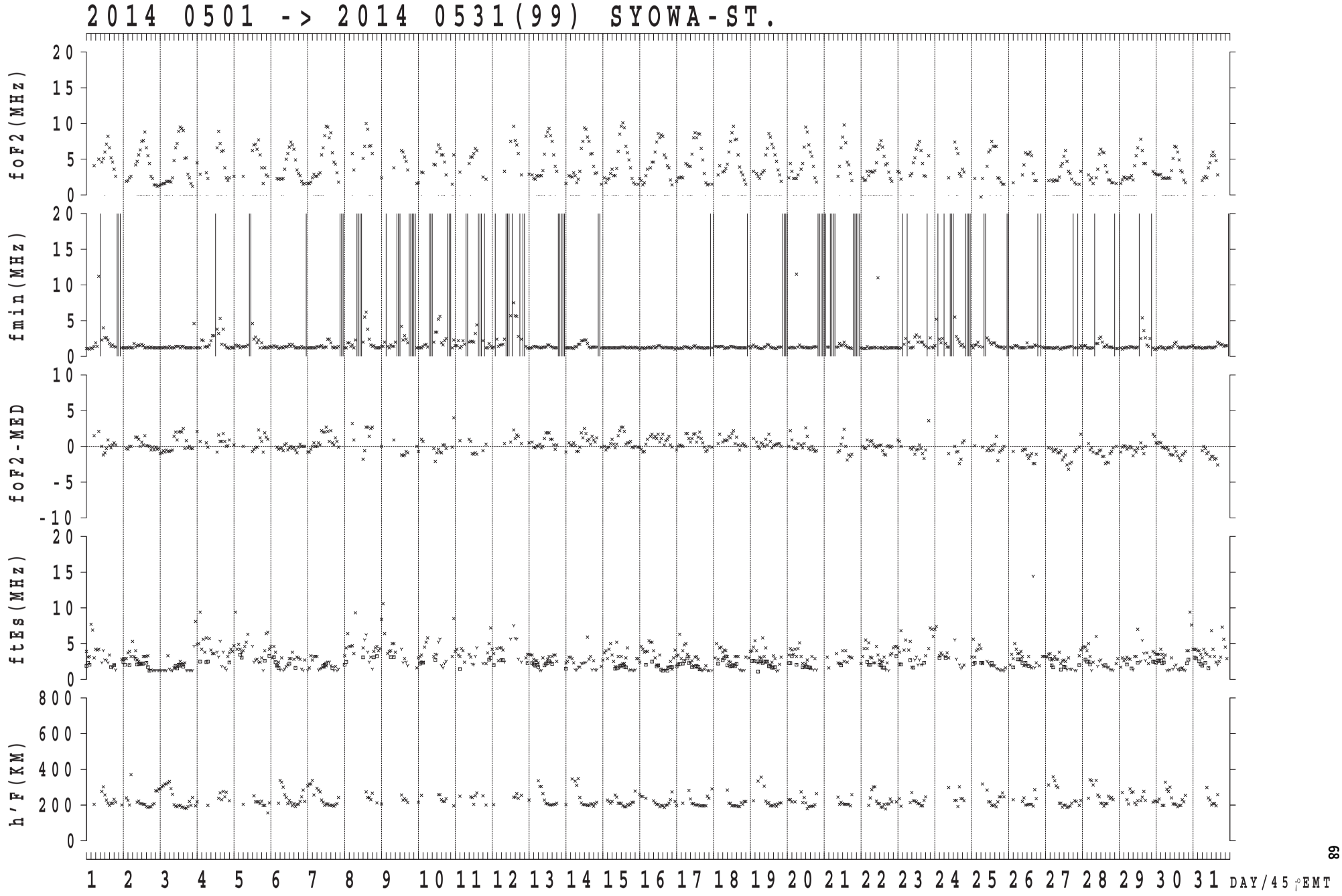
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

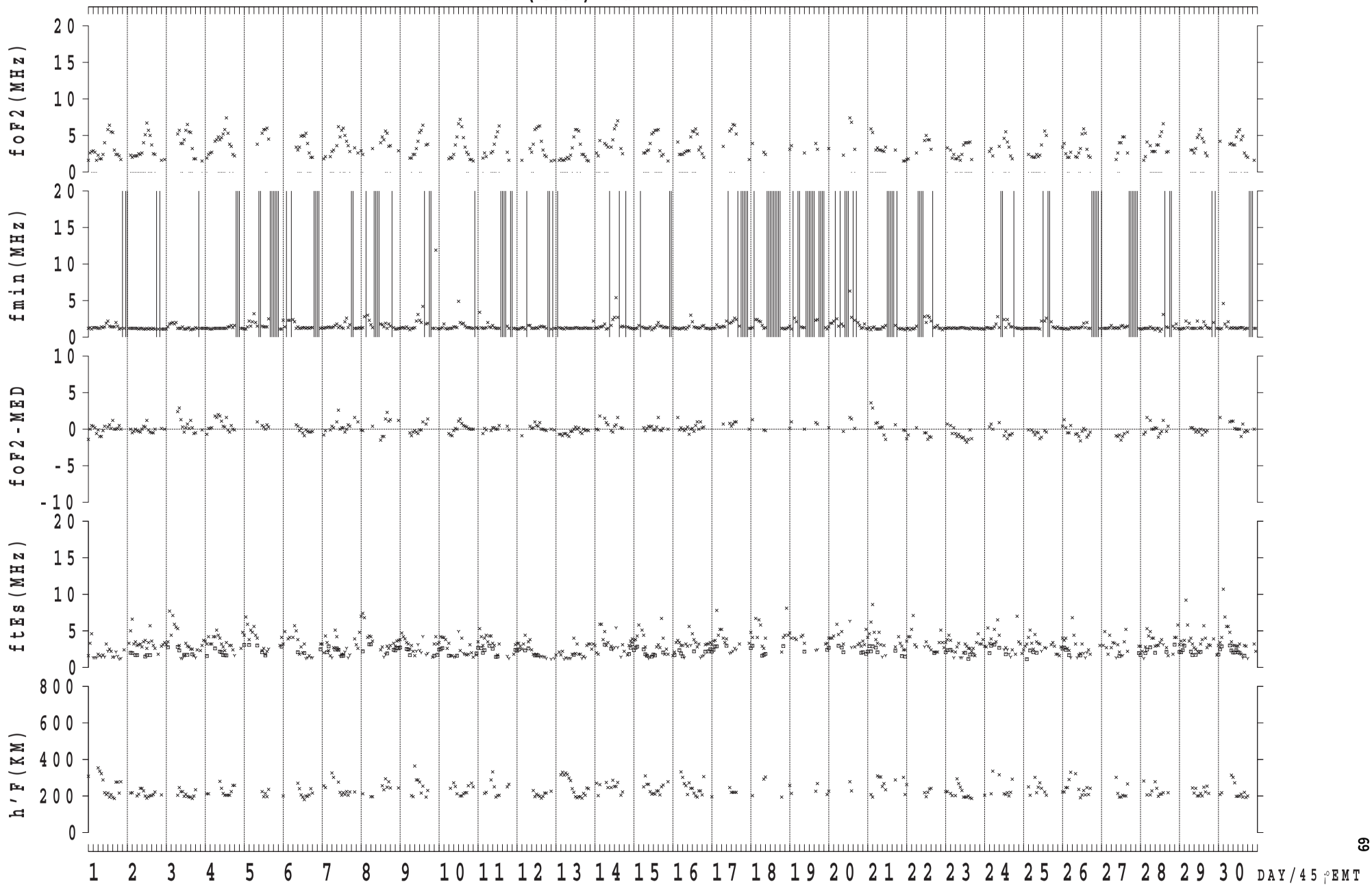

2014 0101 -> 2014 0131(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 JEMT

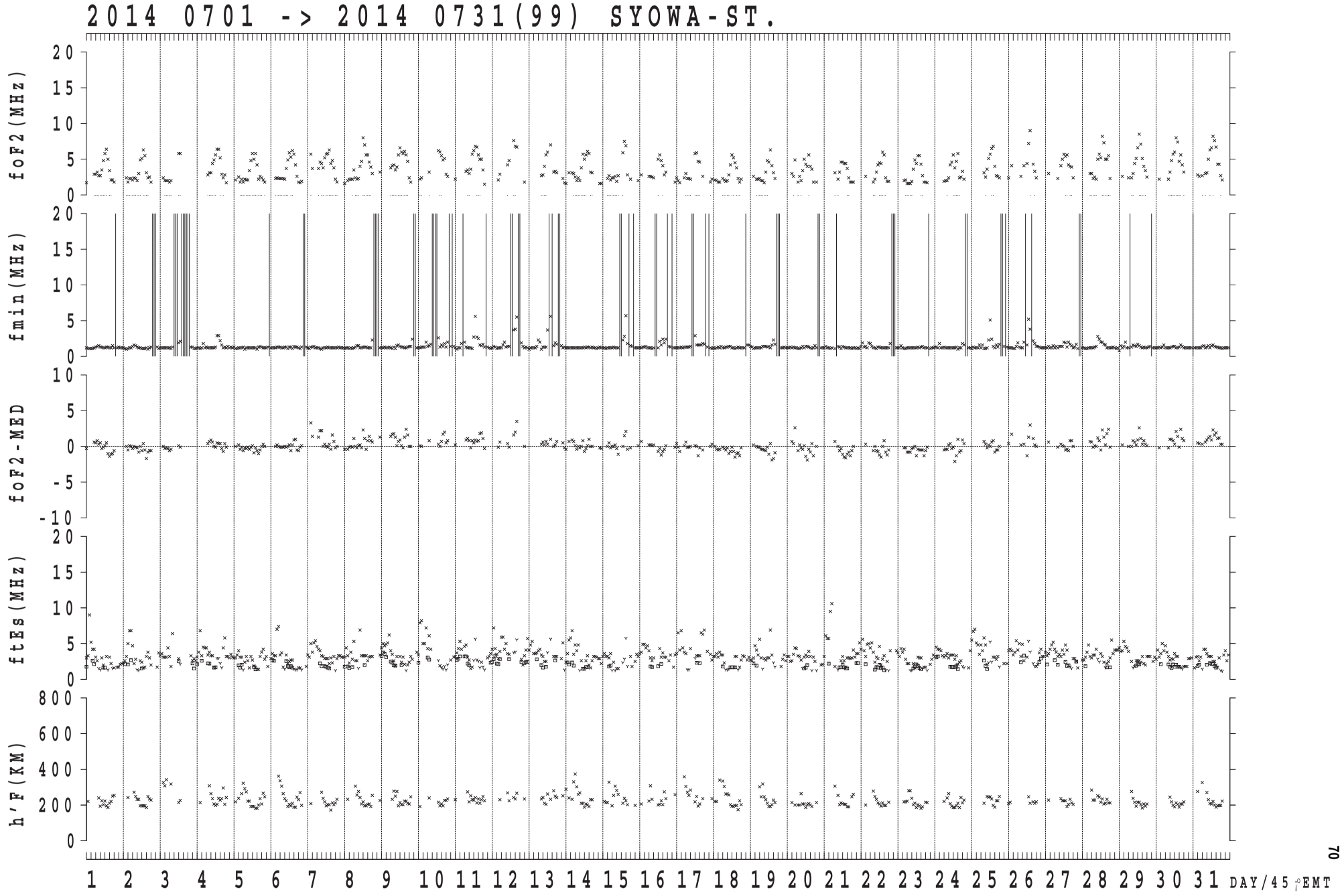

2014 0201 -> 2014 0228(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 °EMT

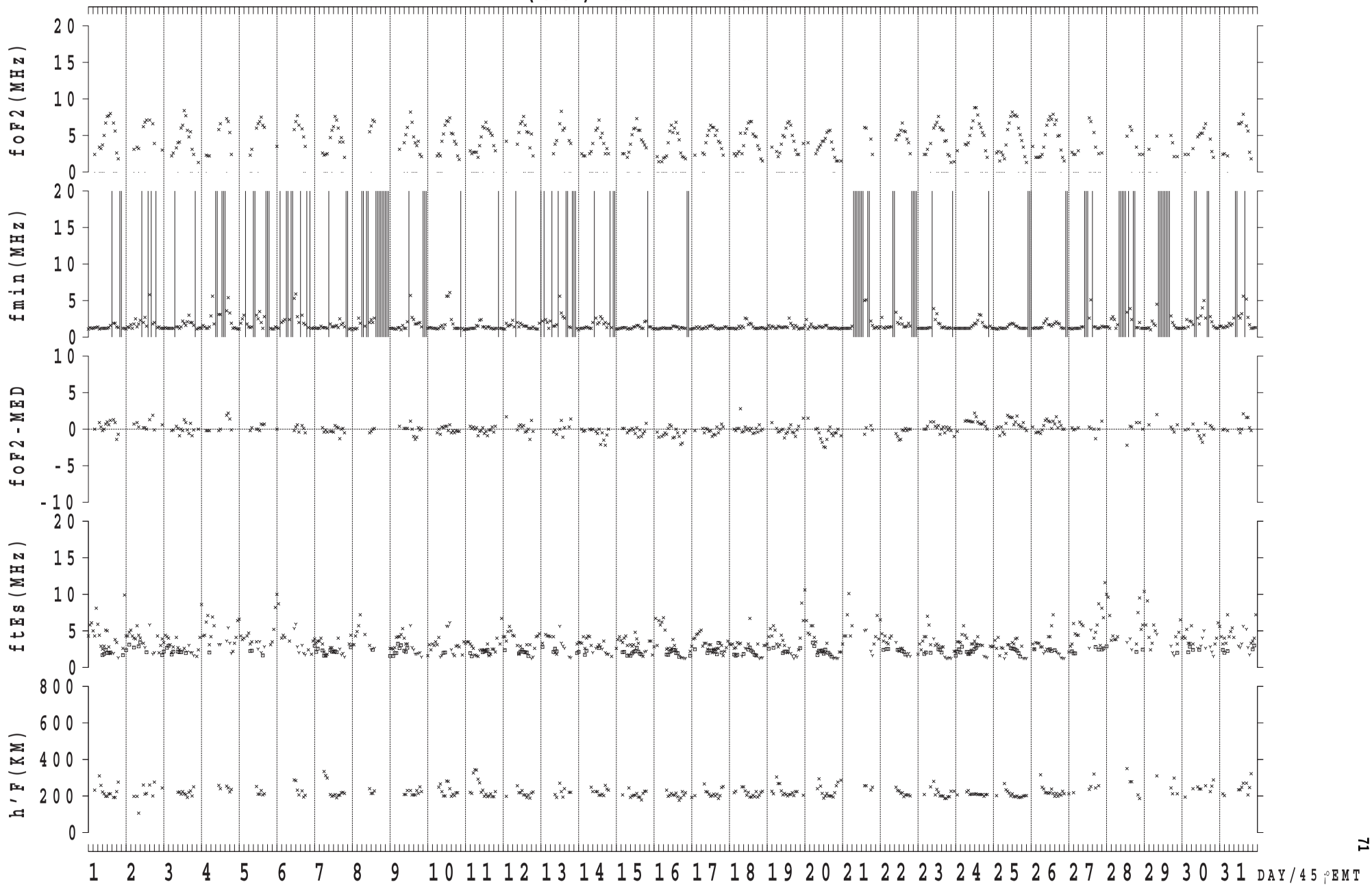

2014 0301 -> 2014 0331(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 °EMT
99

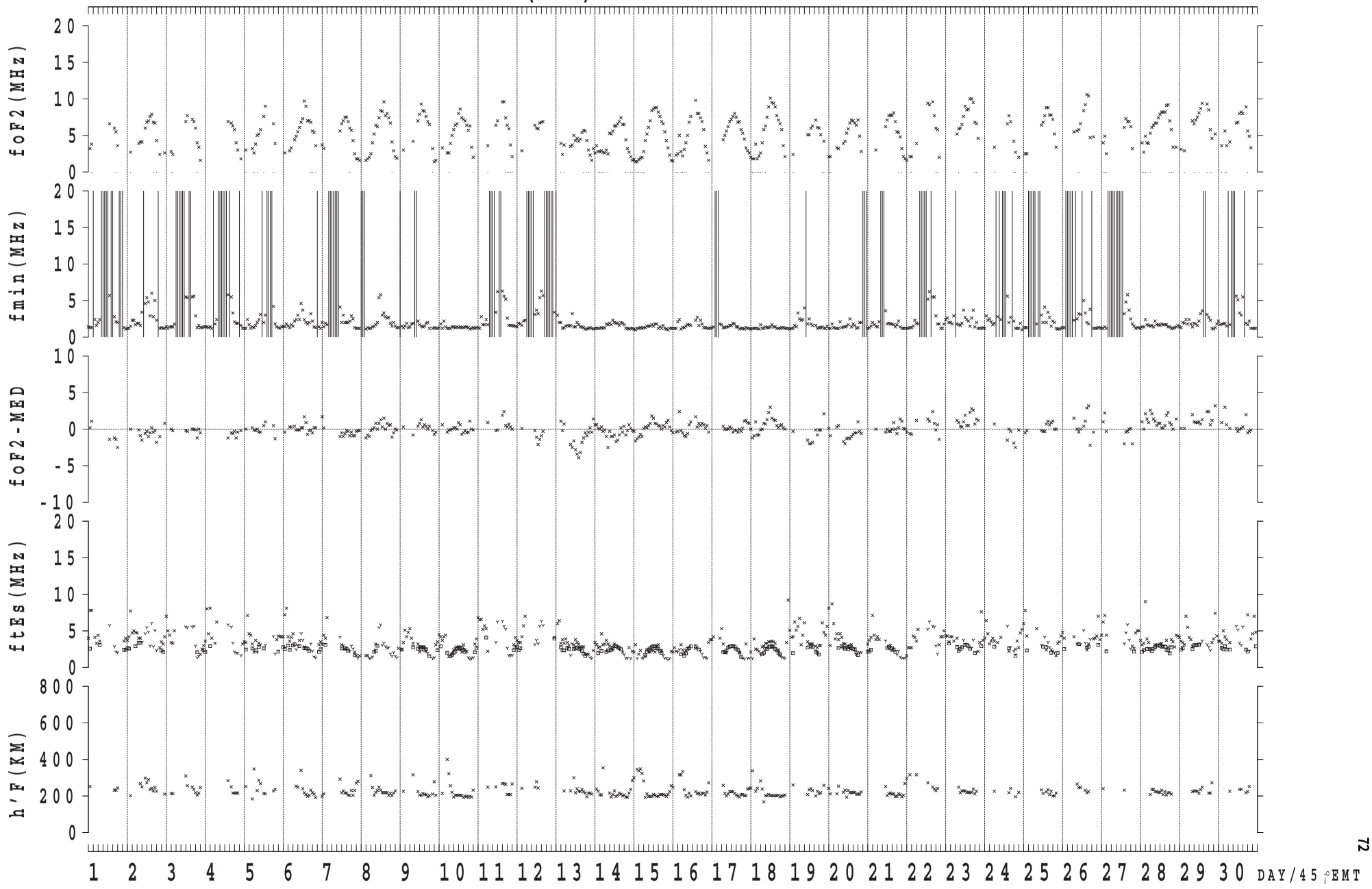

2014 0401 -> 2014 0430(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 EMT

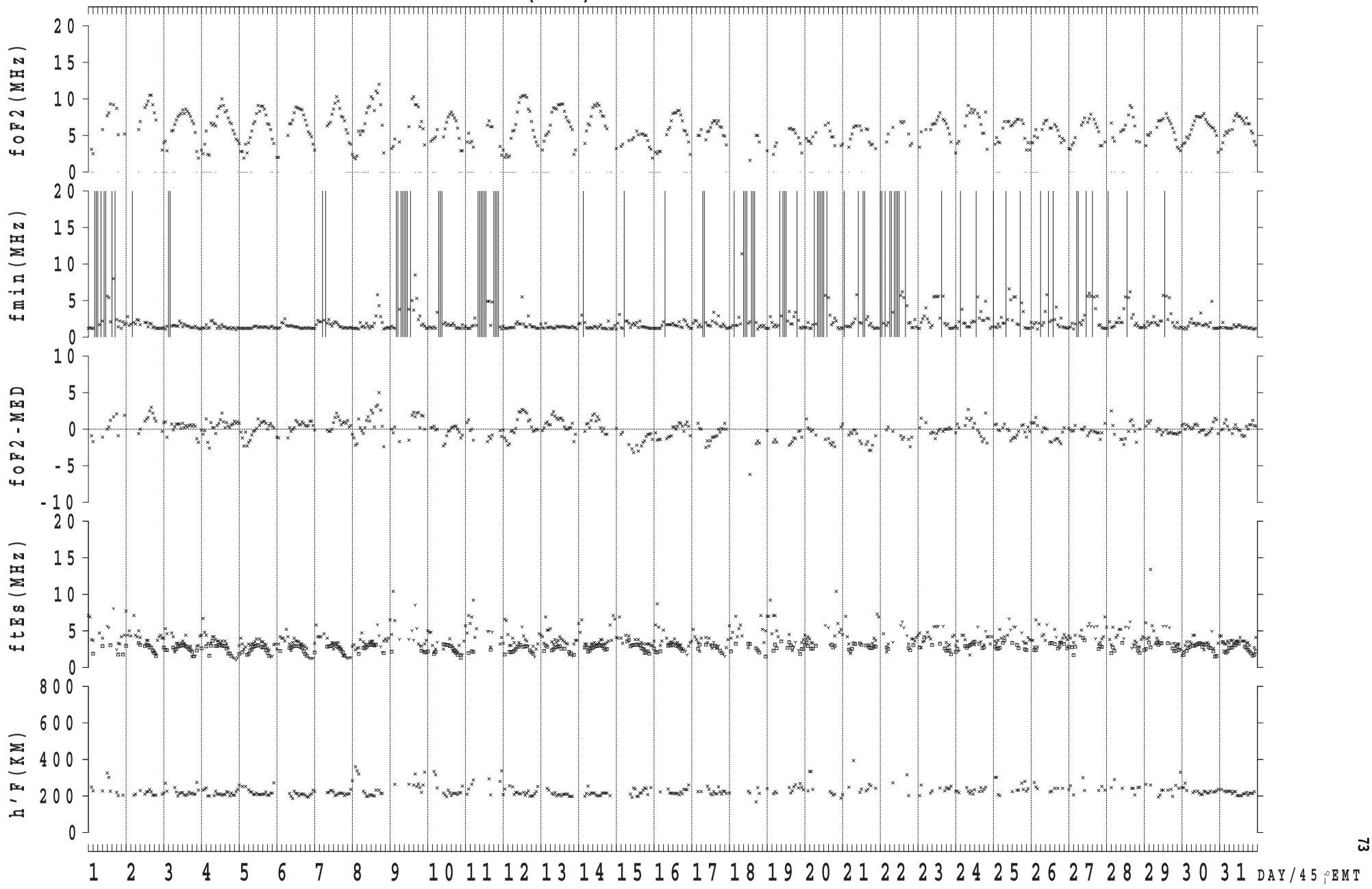

2014 0501 -> 2014 0531(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT

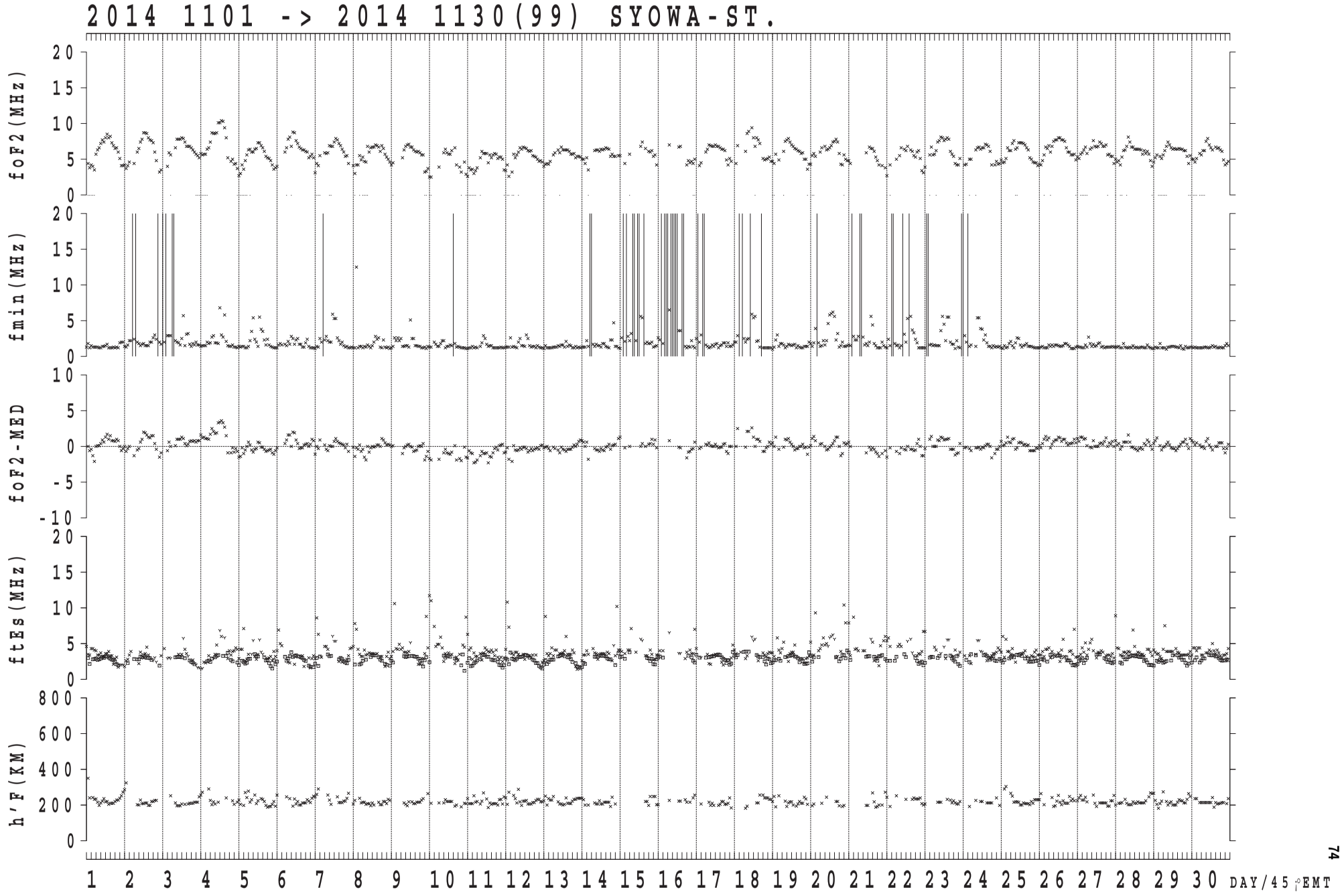

2014 0601 -> 2014 0630(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 EMT

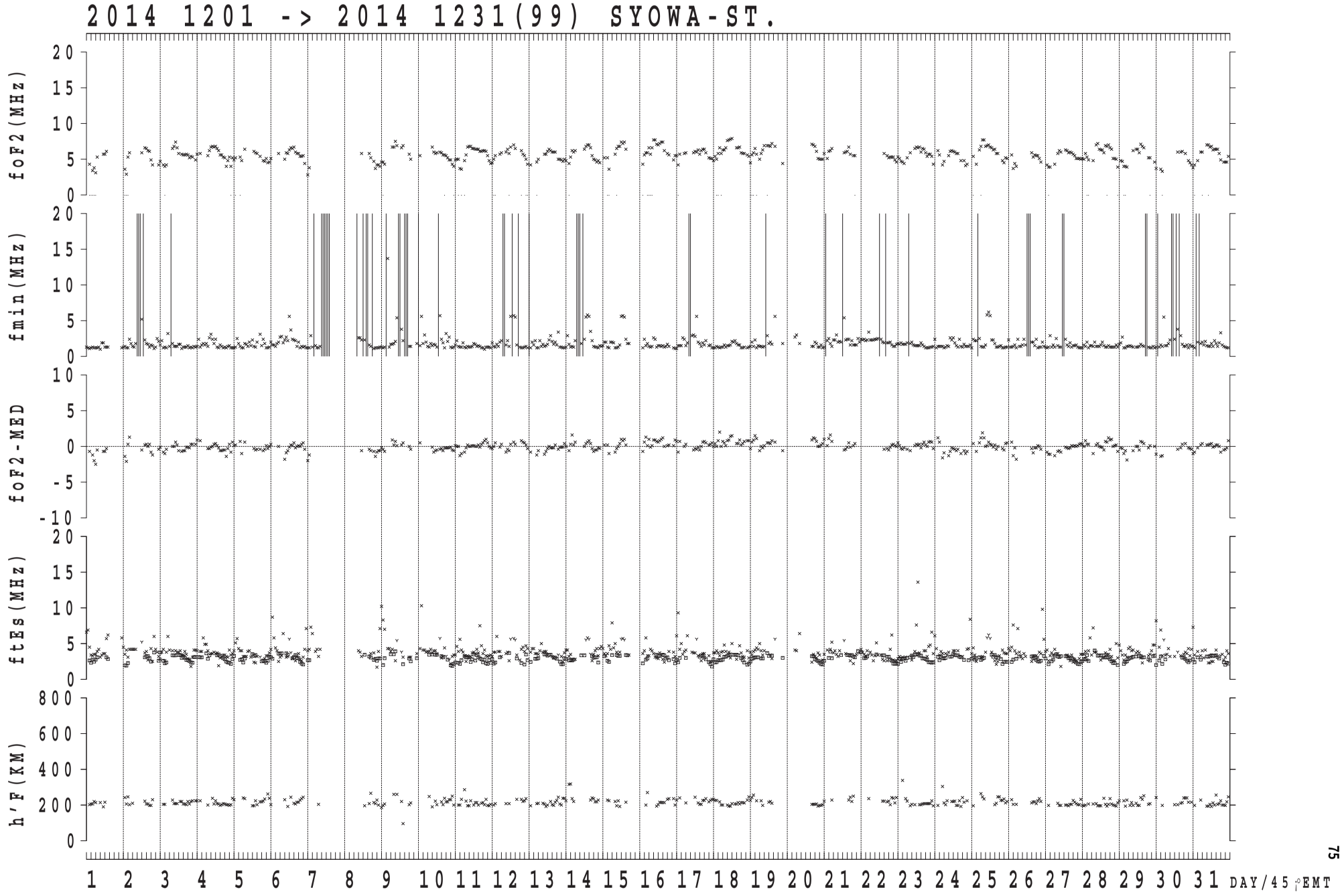

2014 0701 -> 2014 0731(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT


2014 0801 -> 2014 0831(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 EMT


2014 0901 -> 2014 0930(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 JEMT

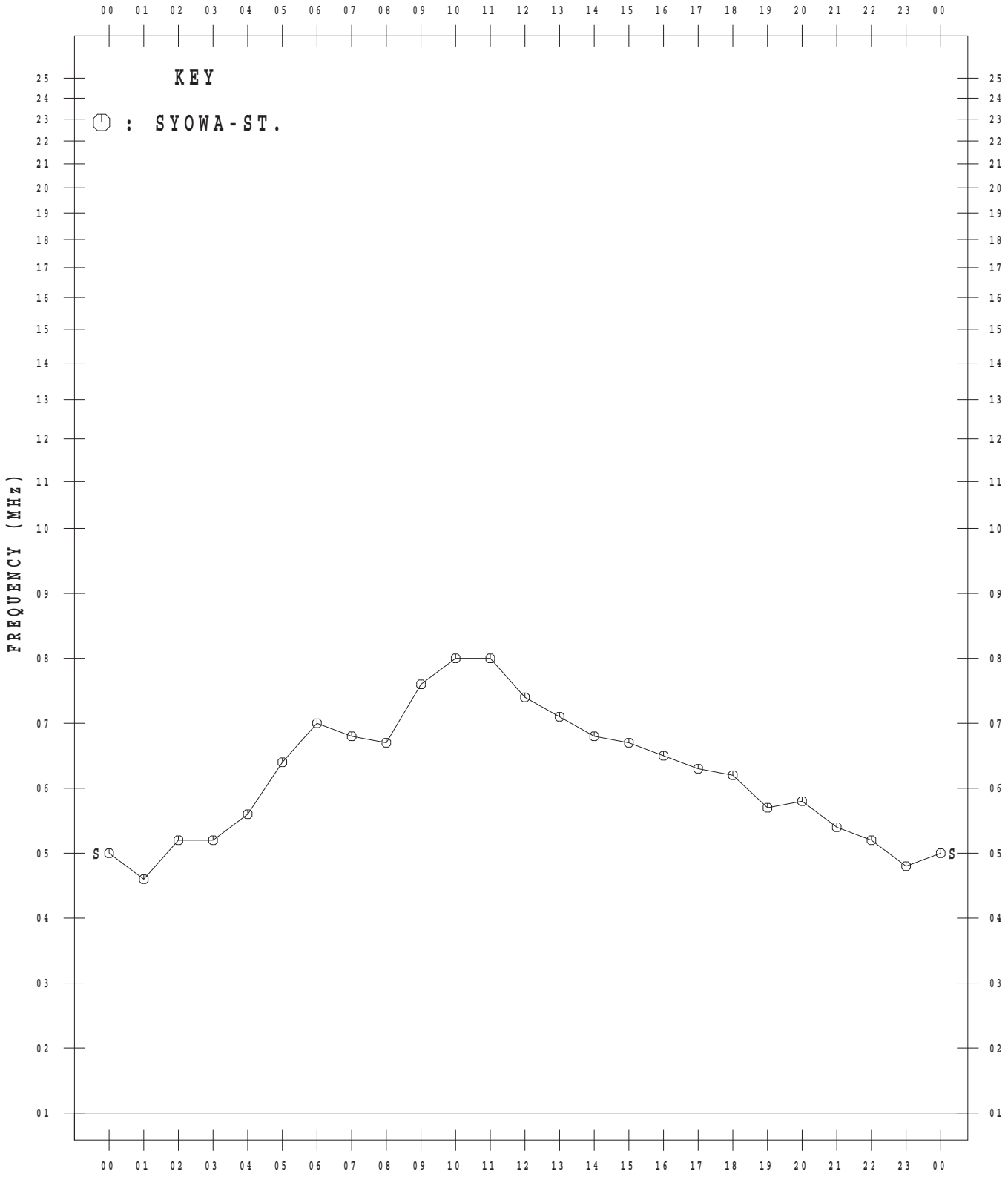

2014 1001 -> 2014 1031(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 EMT


2014 1101 -> 2014 1130(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 EMT


2014 1201 -> 2014 1231(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT

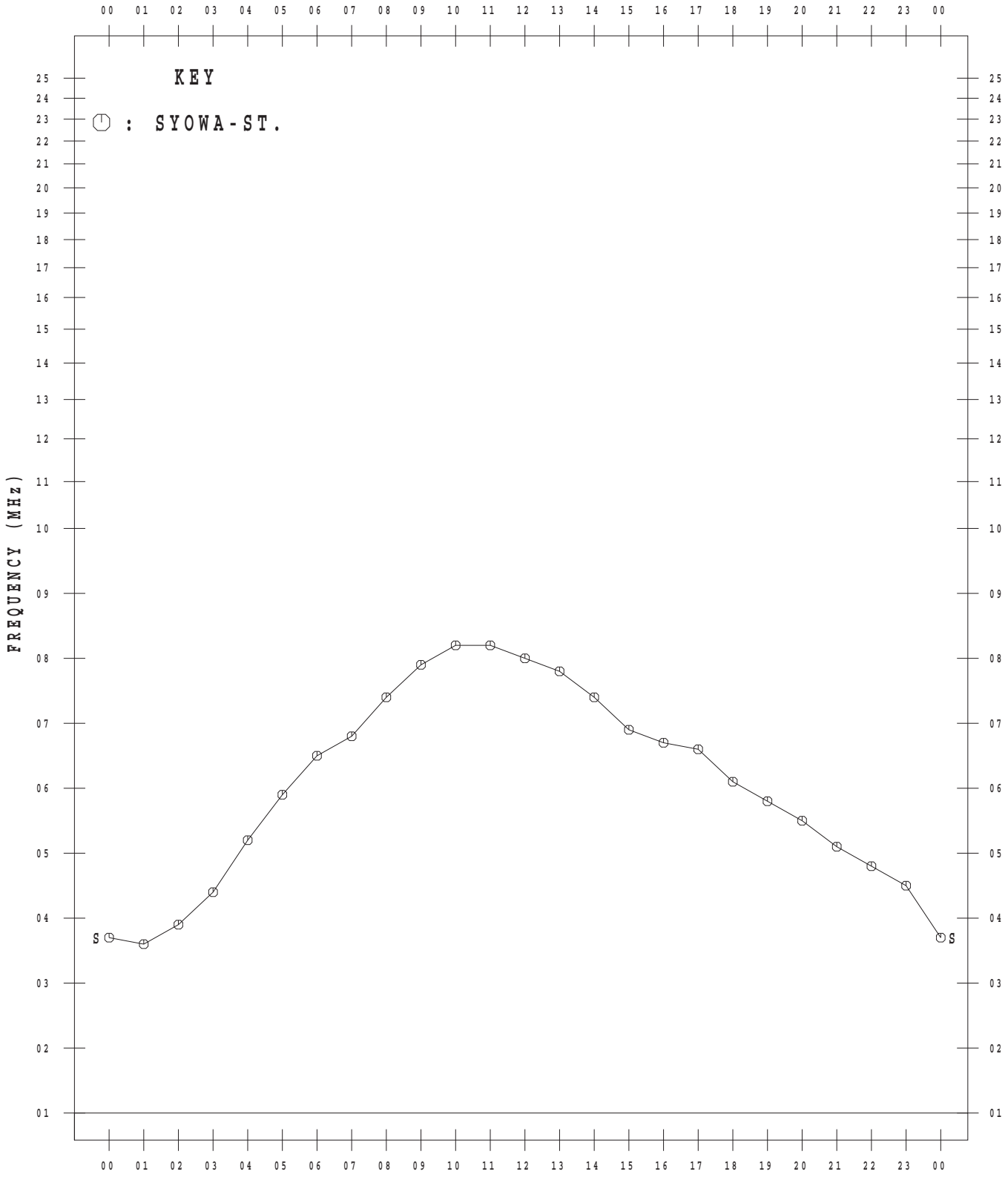
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JAN. 2014



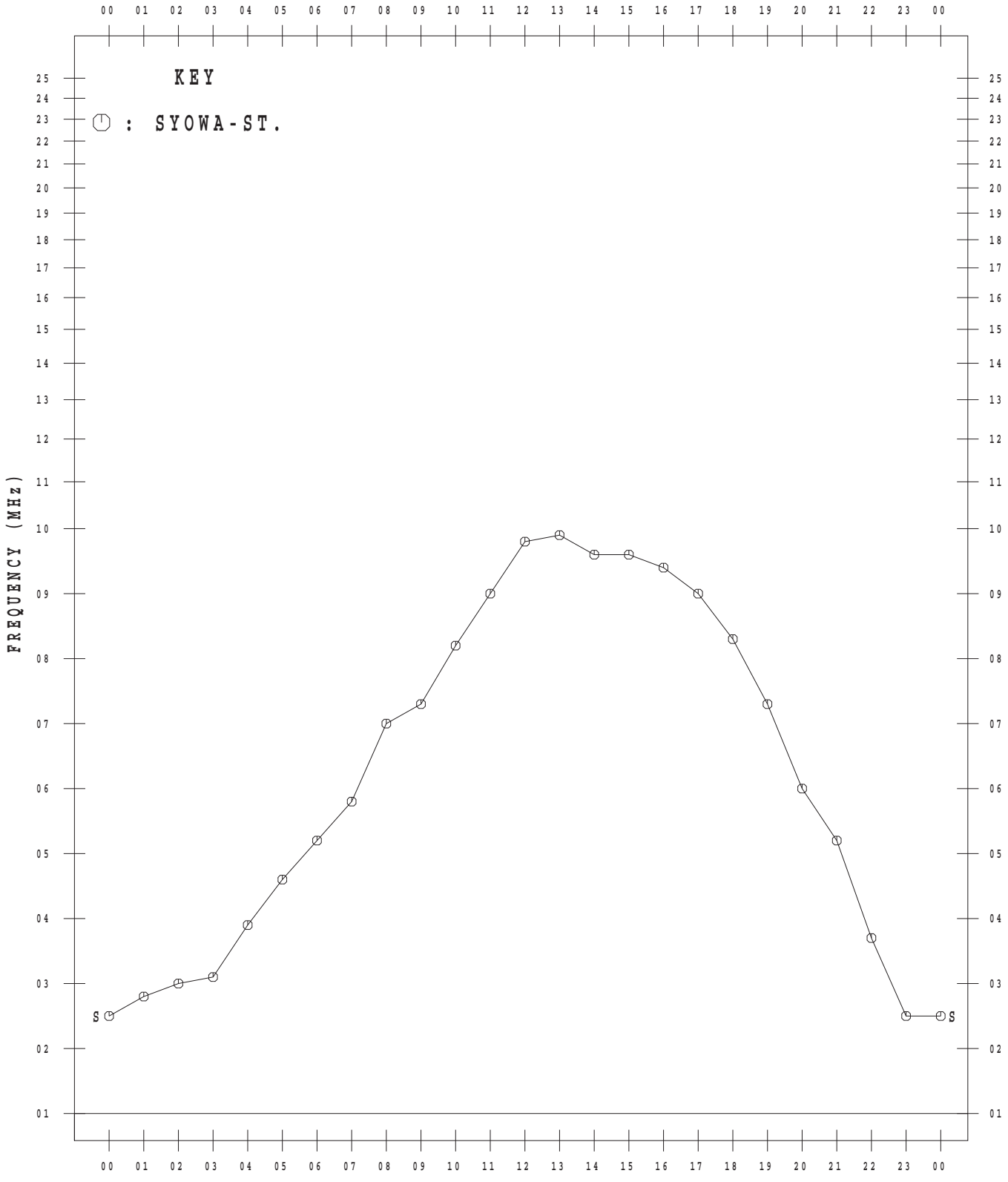
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME FEB. 2014



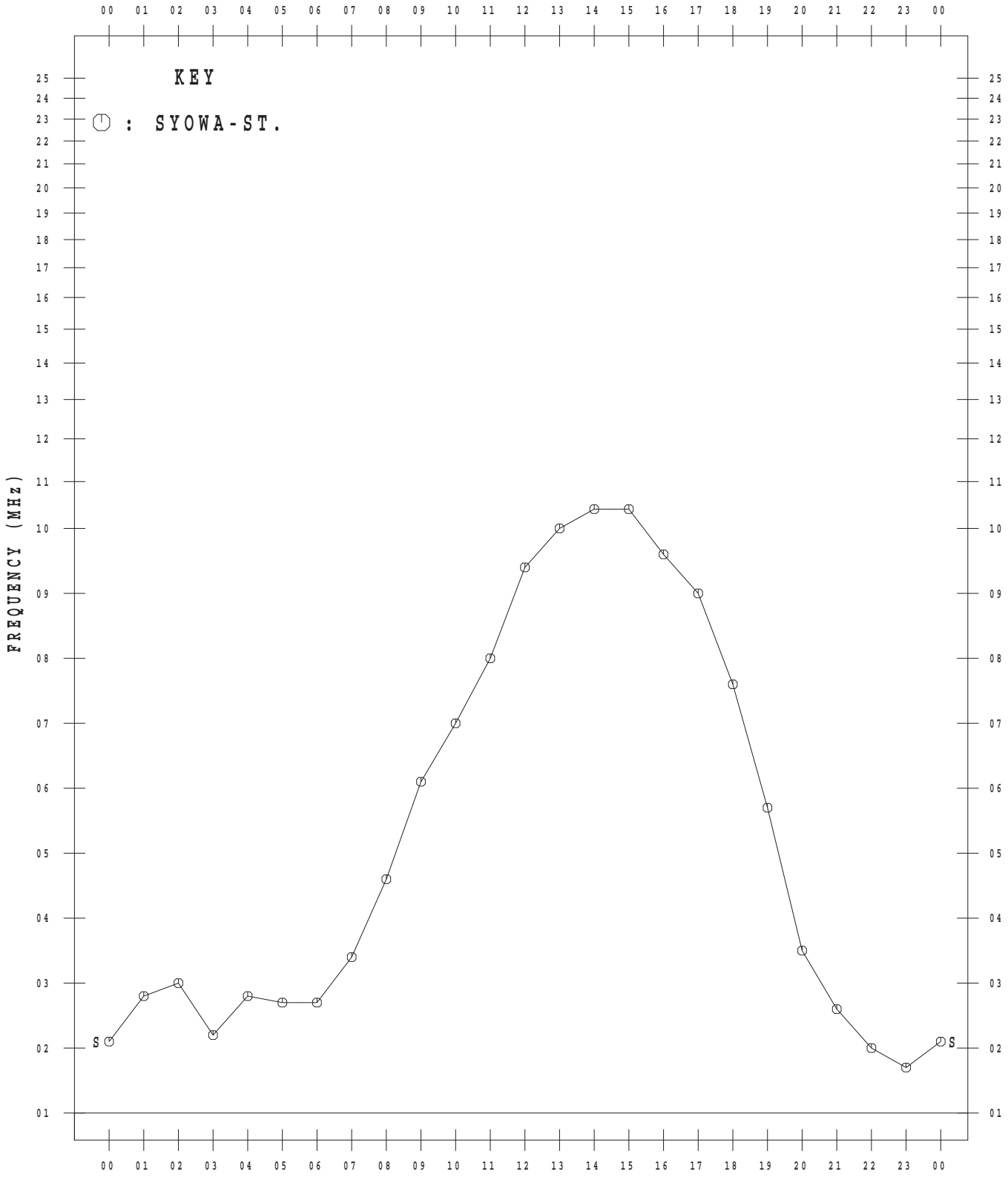
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAR. 2014



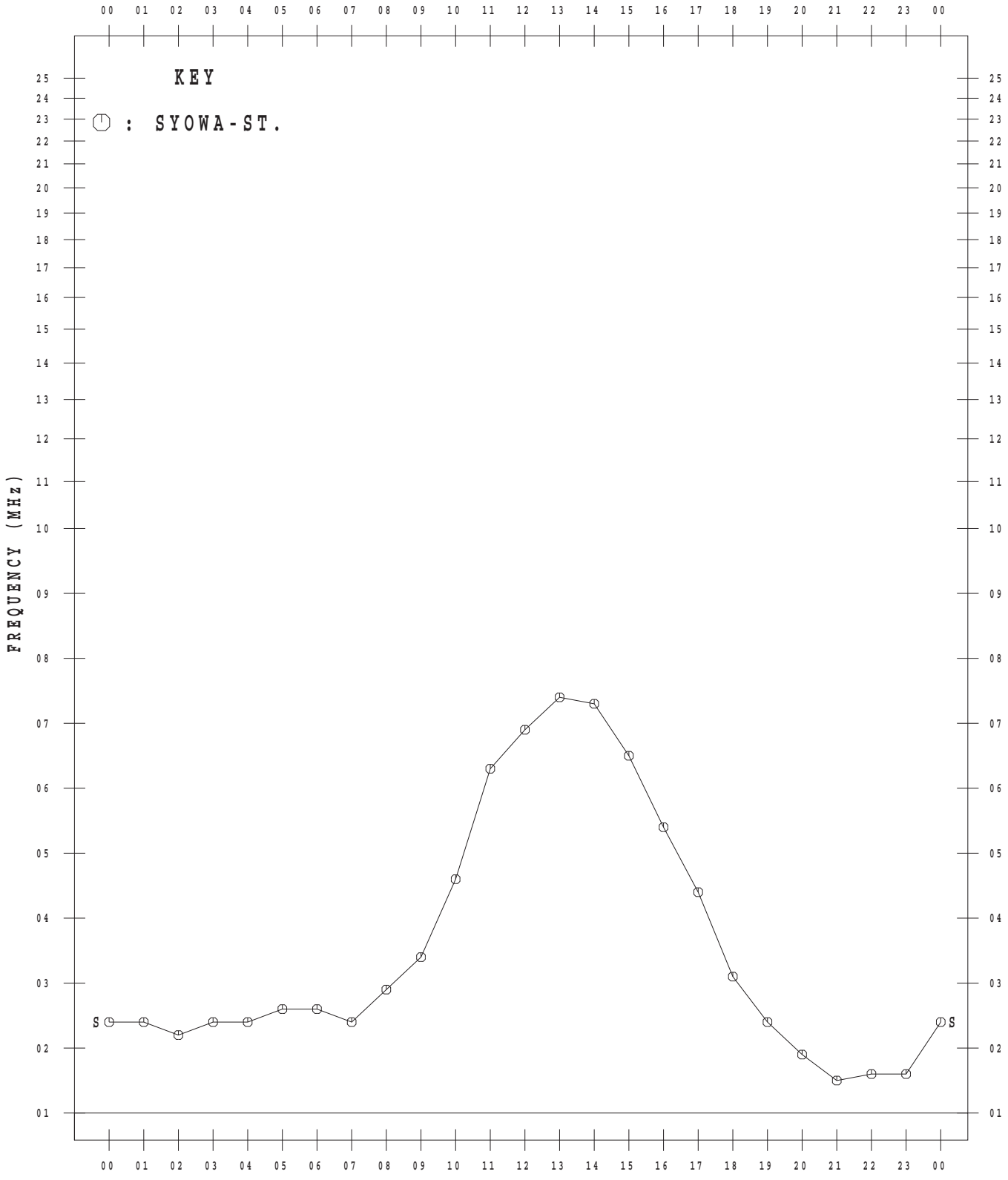
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME APR. 2014



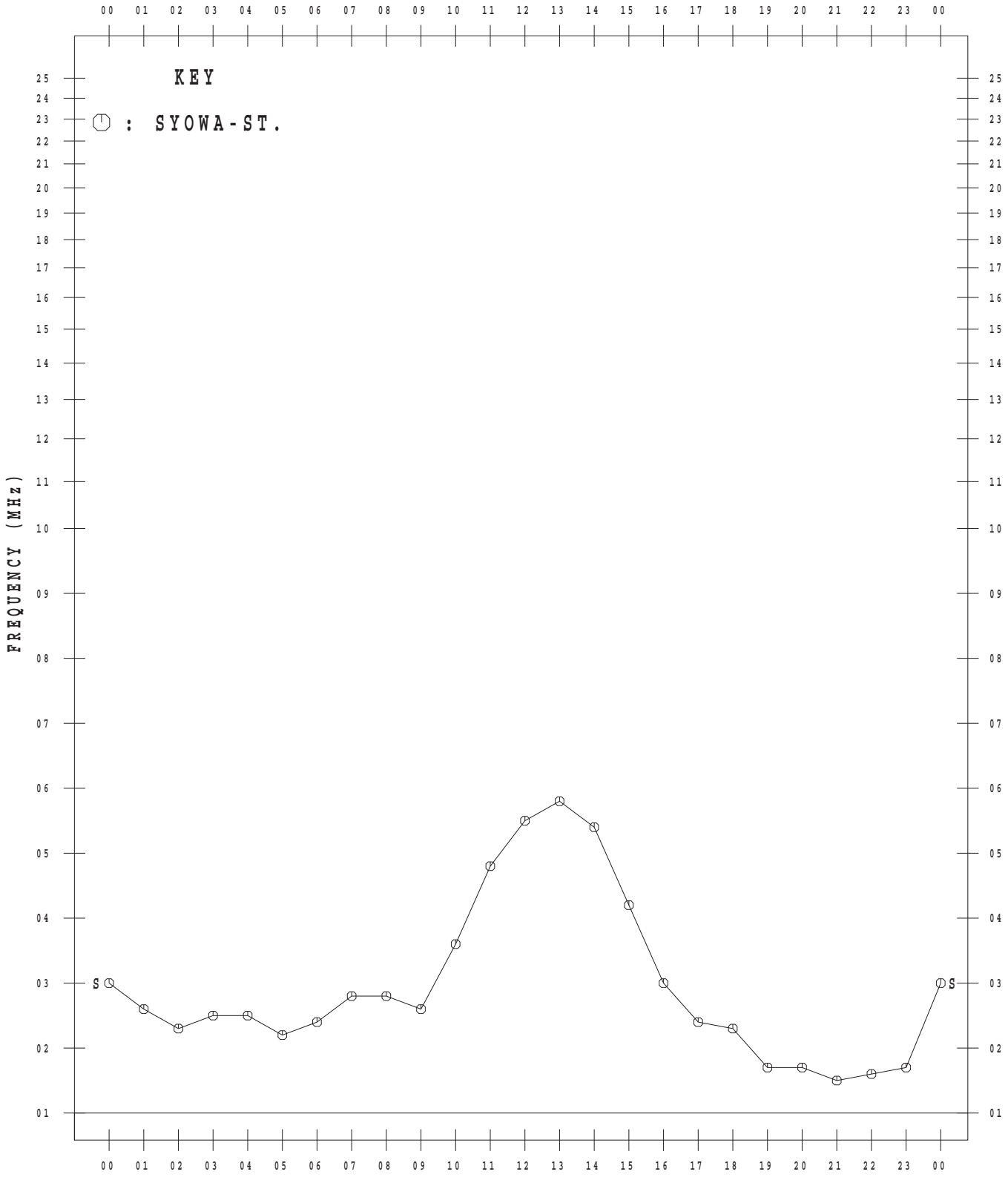
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAY 2014



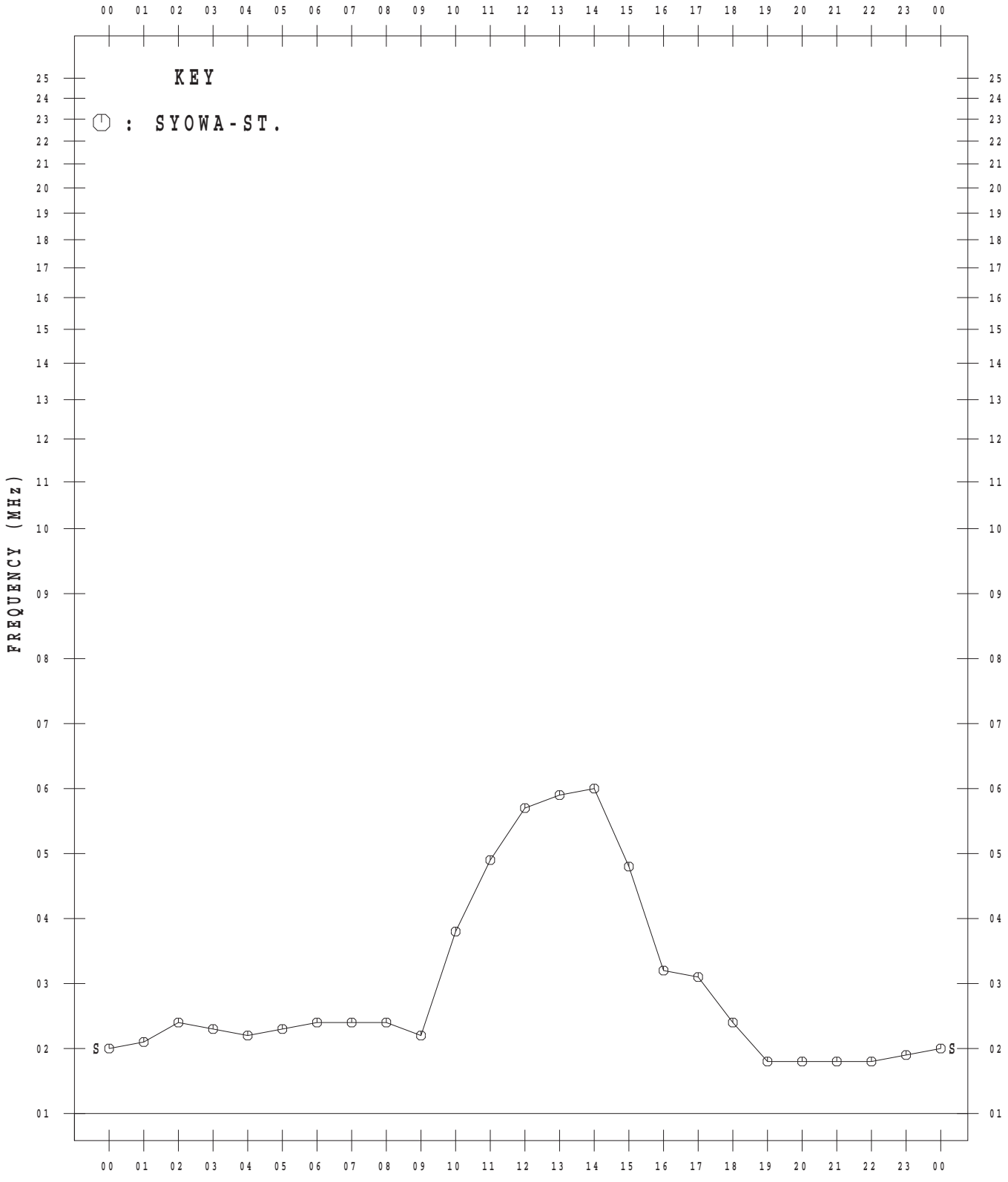
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUN. 2014



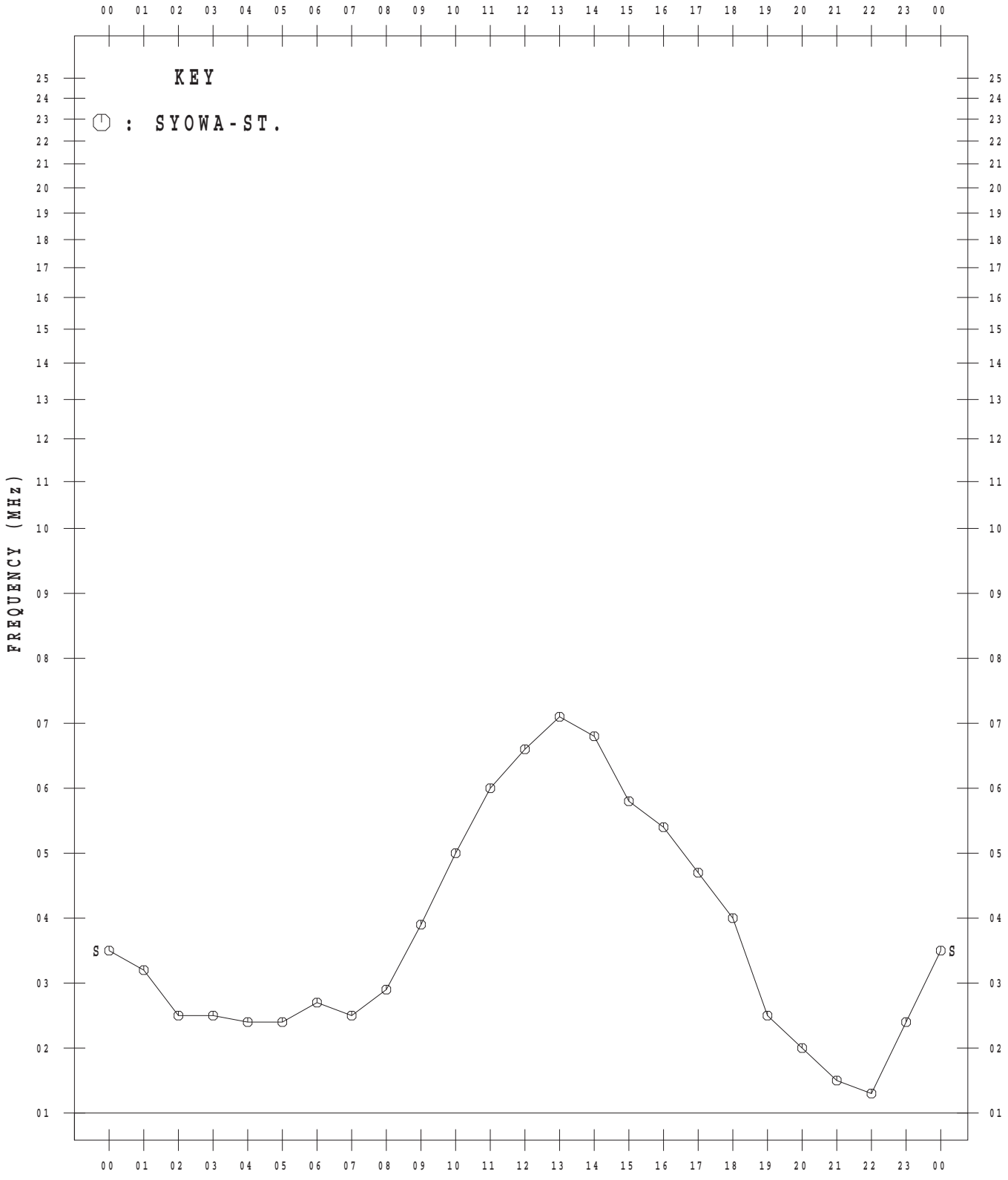
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUL. 2014



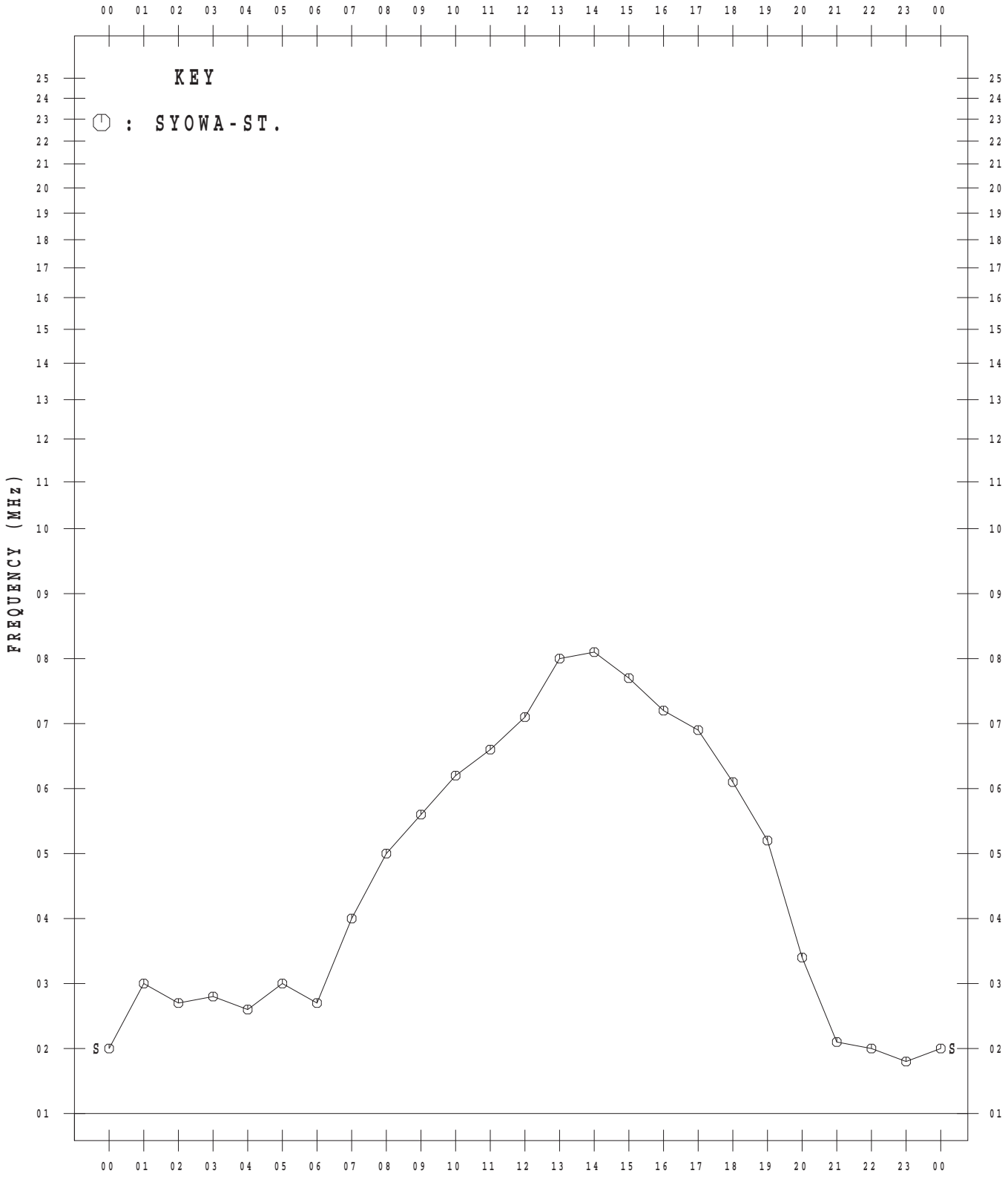
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME AUG. 2014



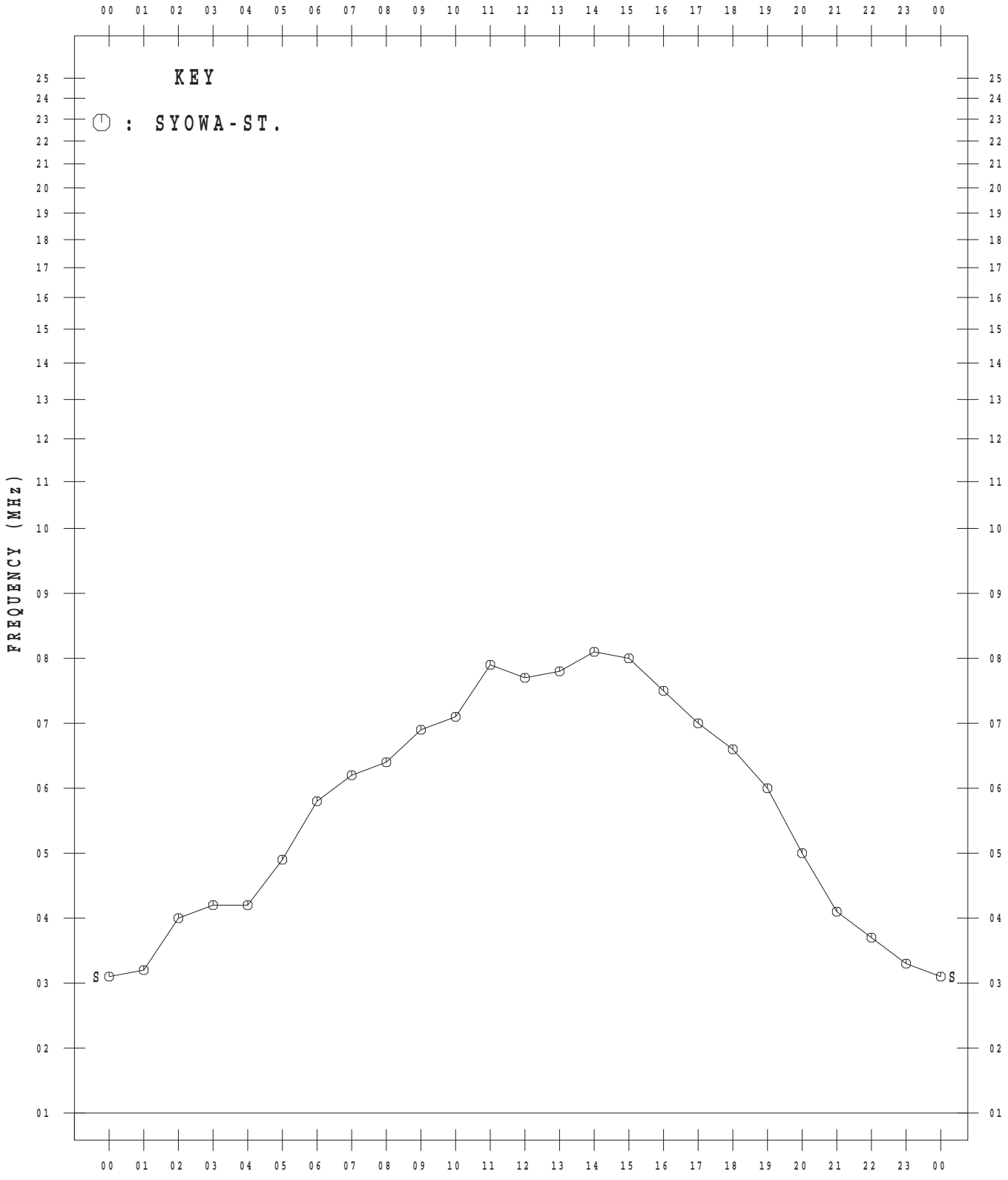
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME SEP. 2014



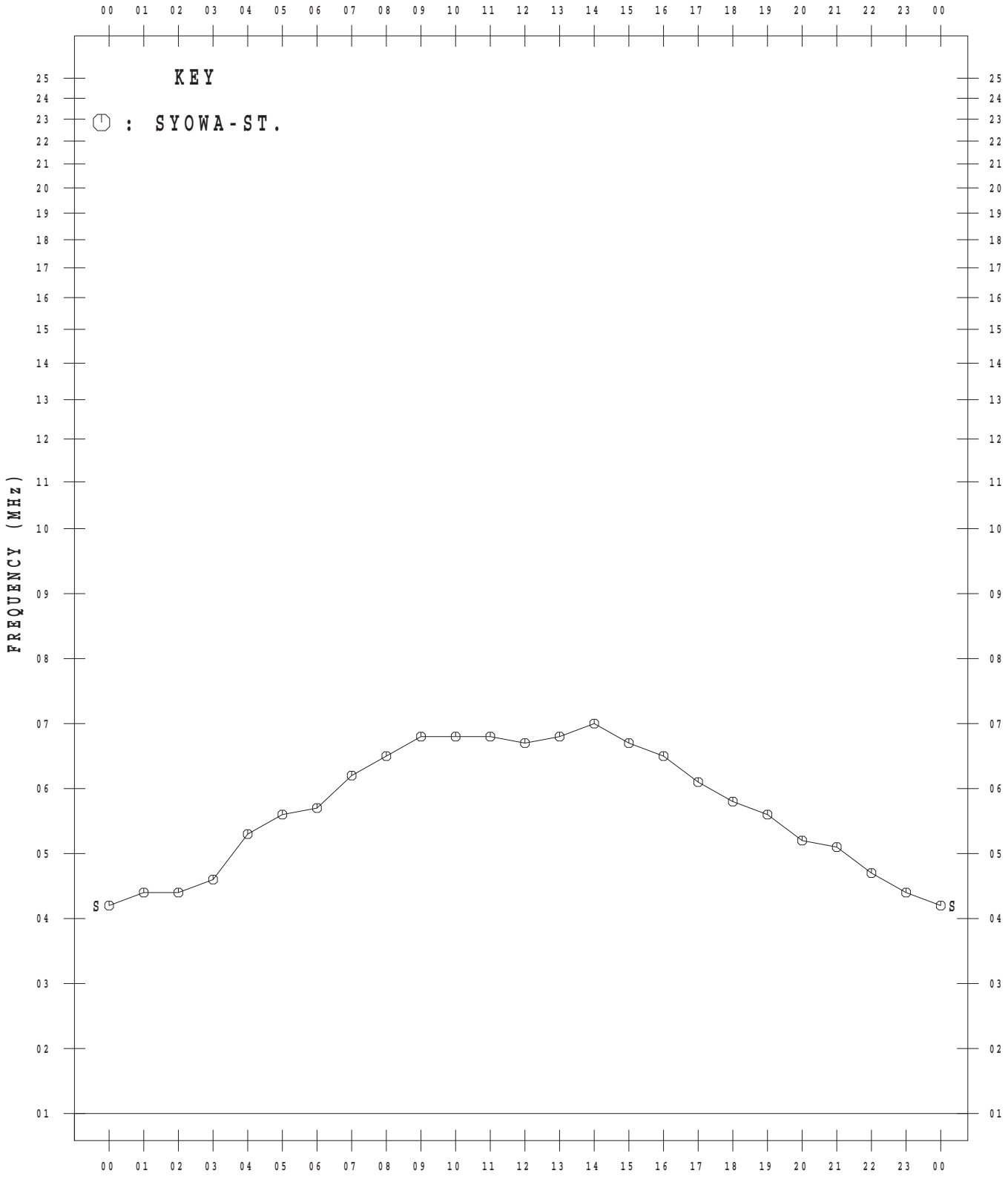
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME OCT. 2014



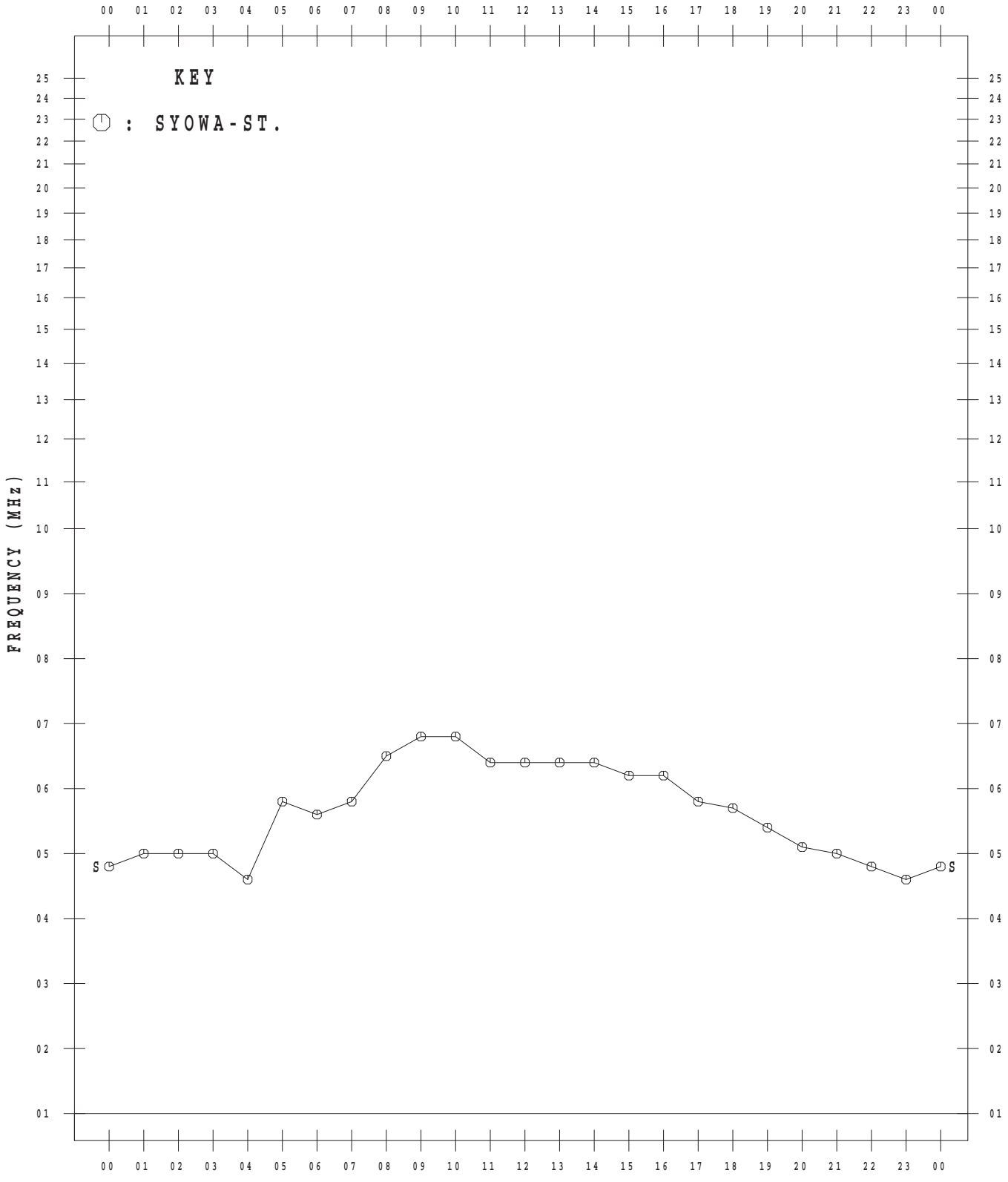
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME NOV. 2014



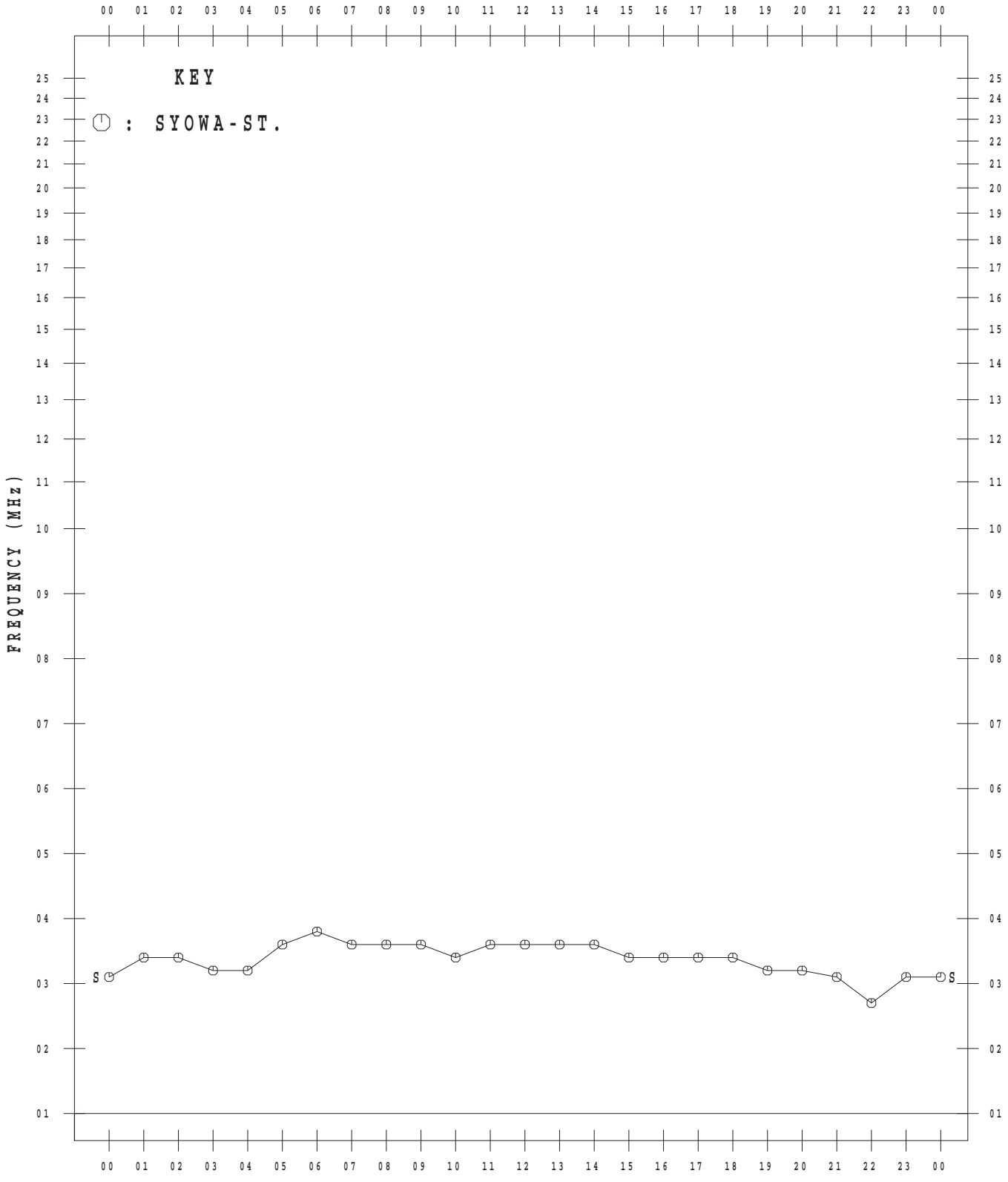
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME DEC. 2014



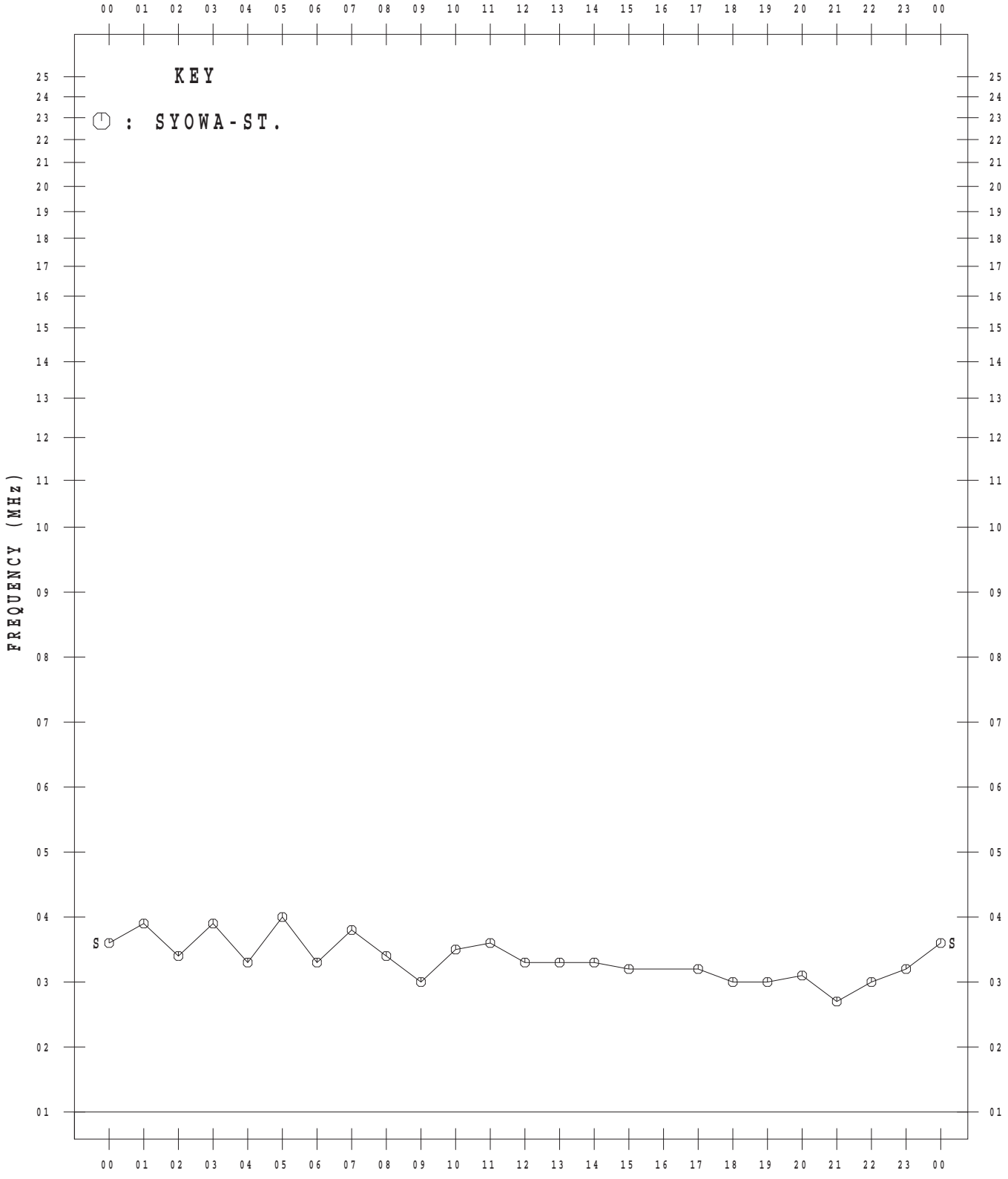
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JAN. 2014



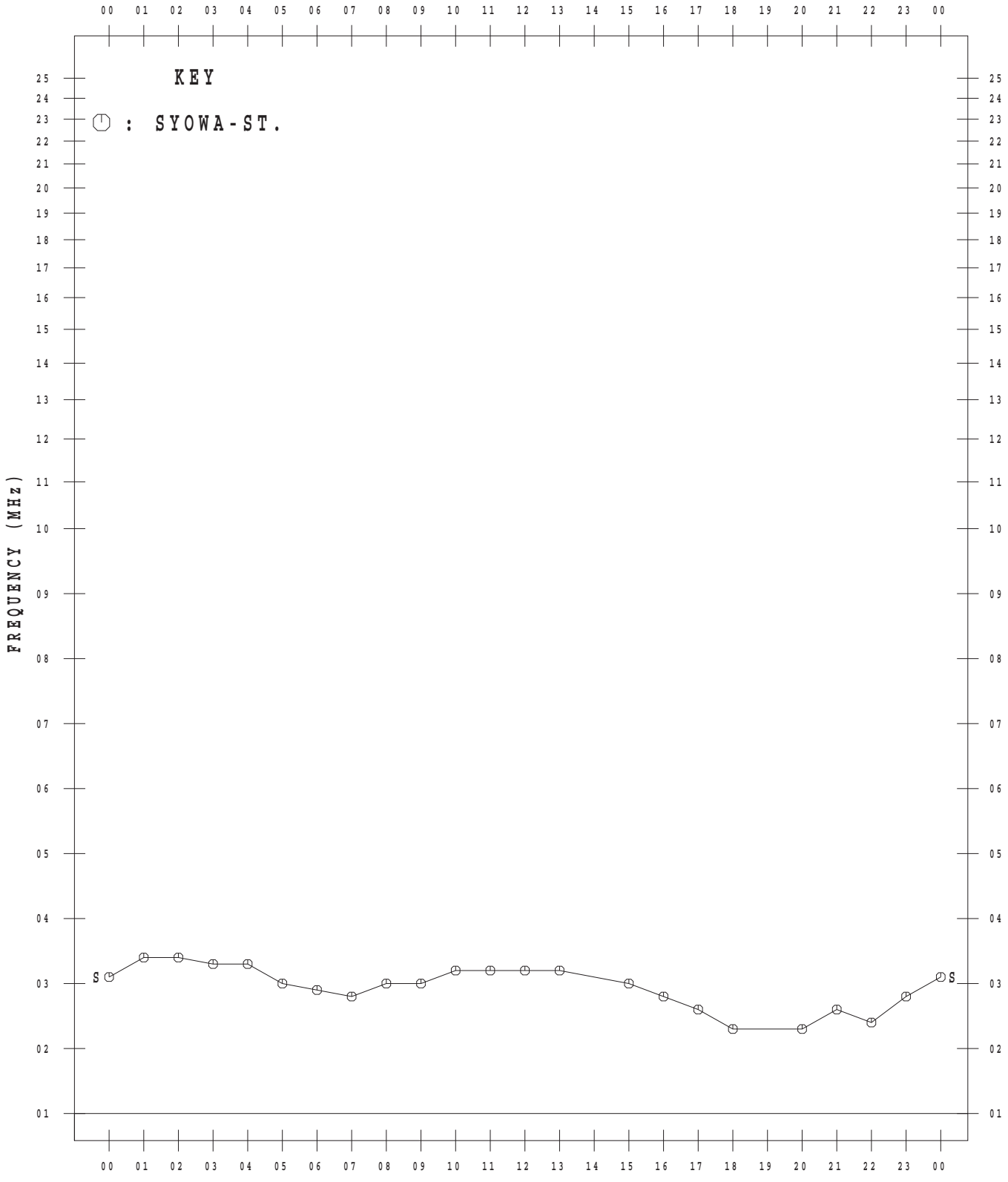
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME FEB. 2014



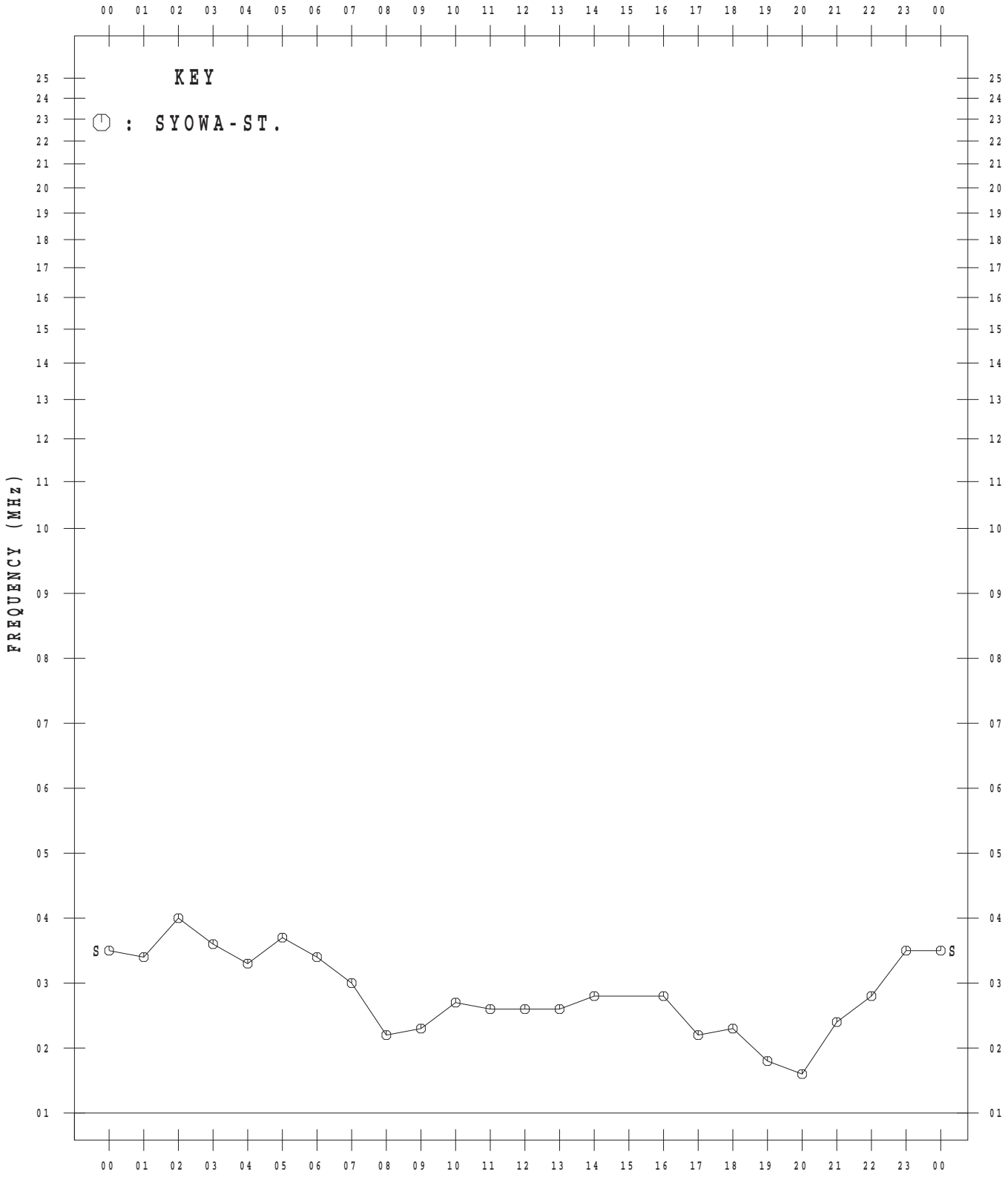
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAR. 2014



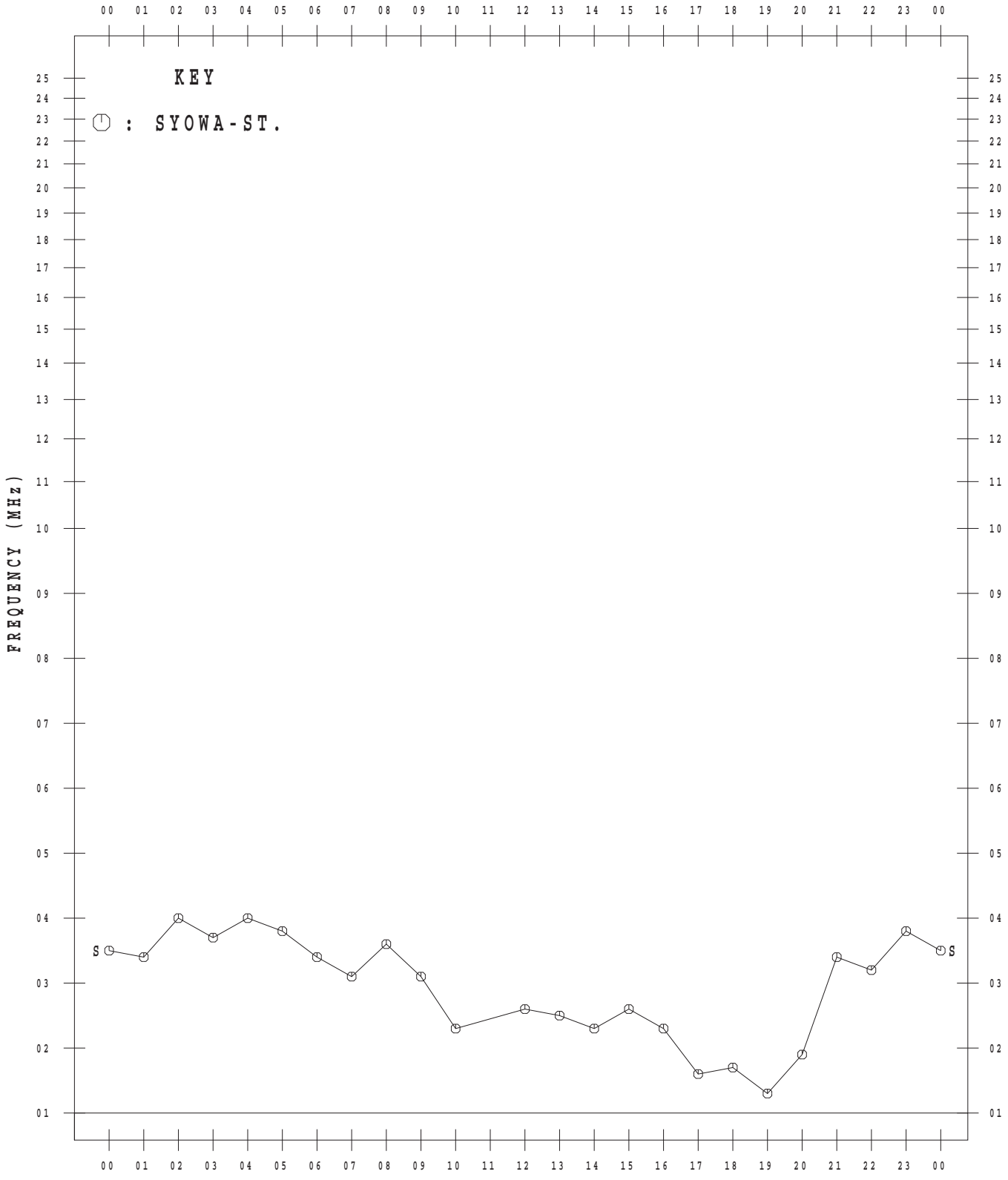
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME APR. 2014



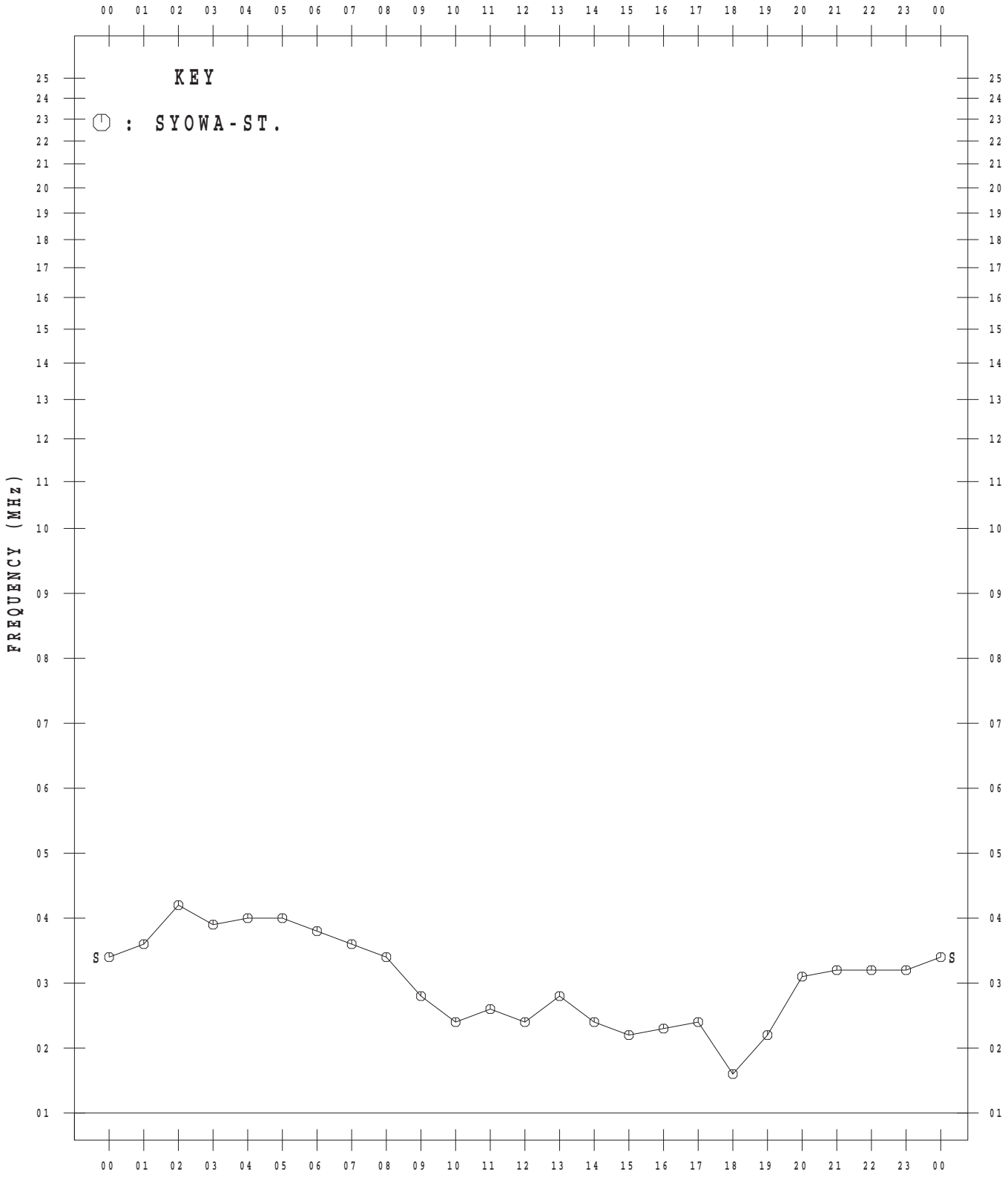
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAY 2014



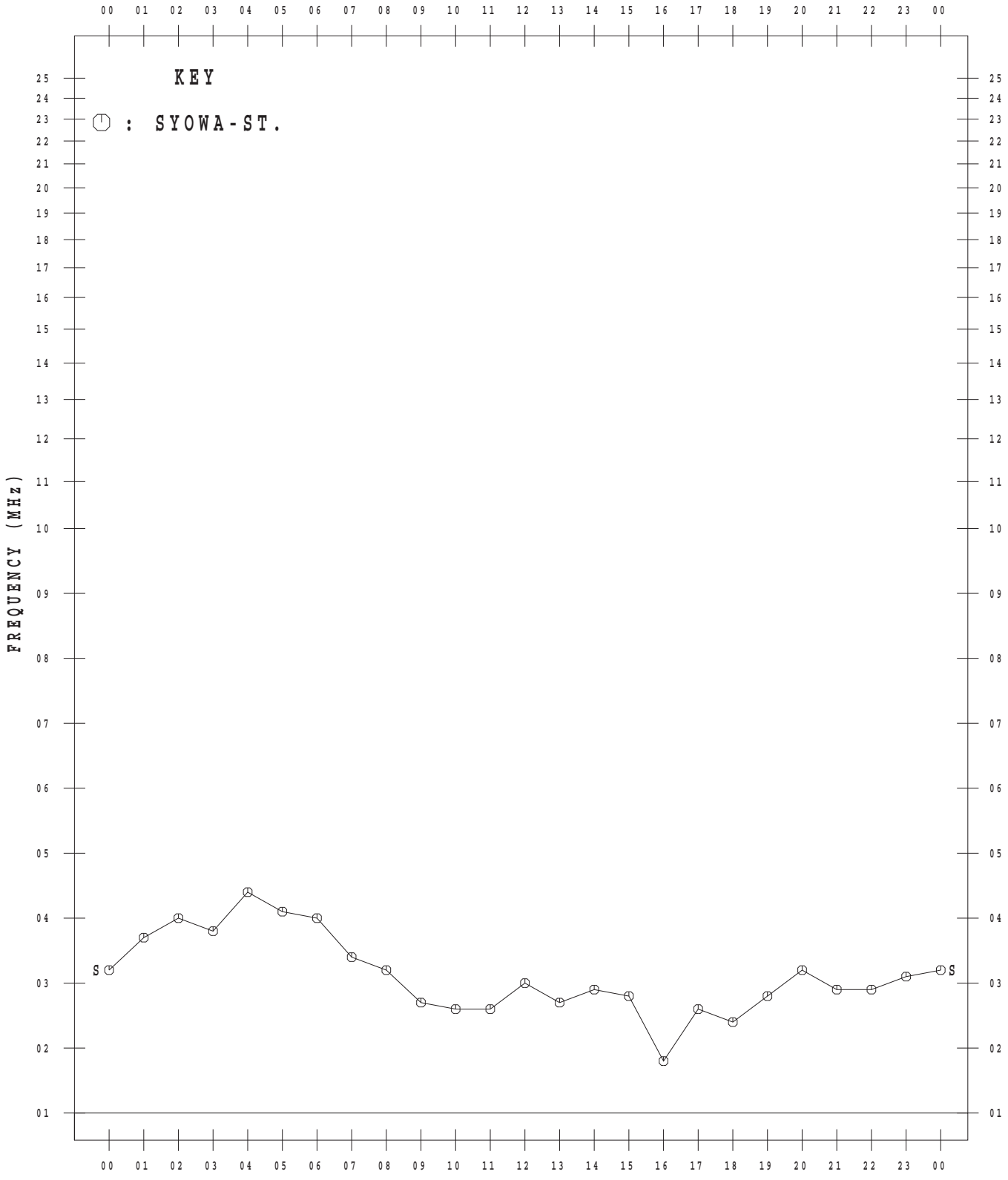
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JUN. 2014



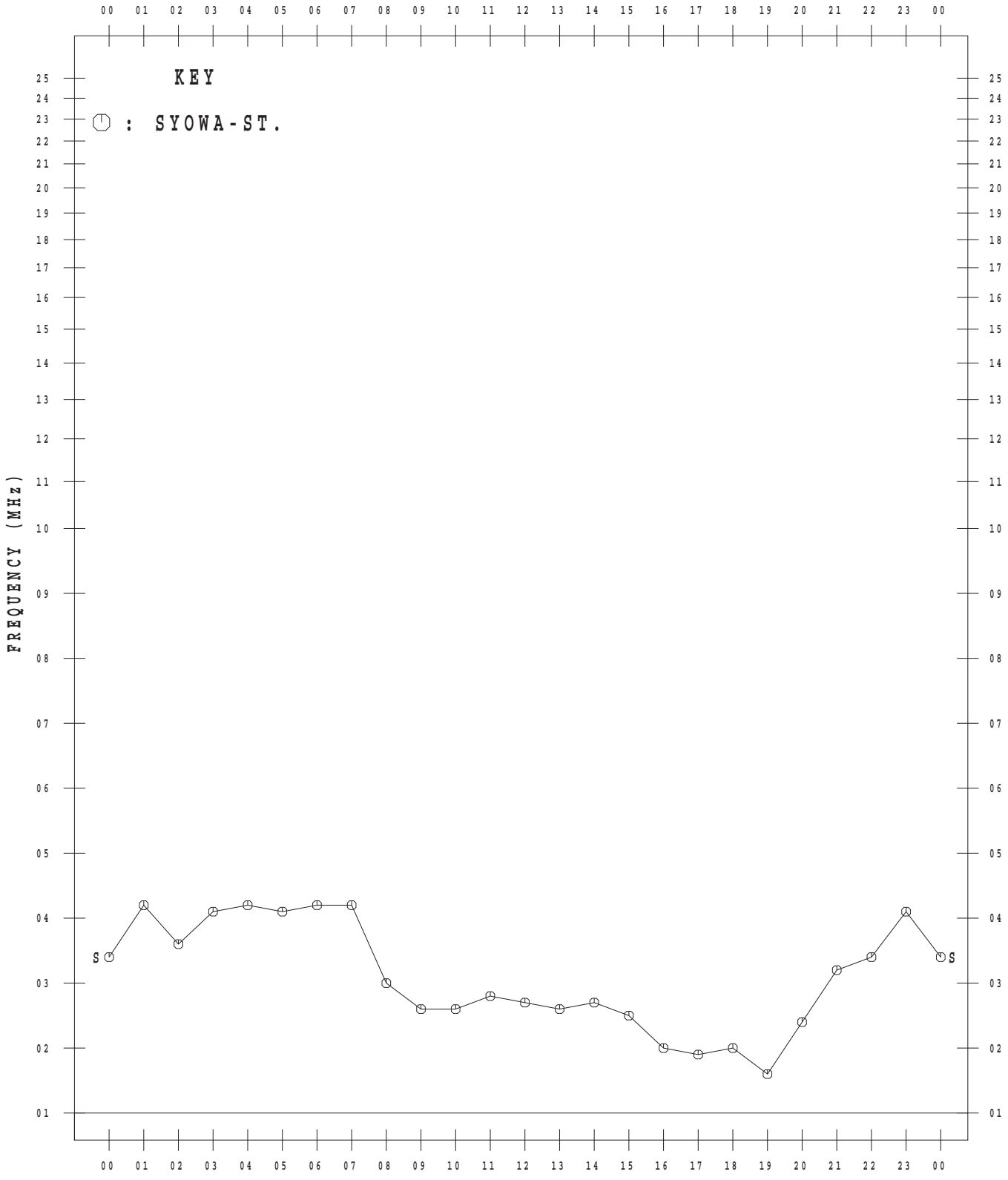
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JUL. 2014



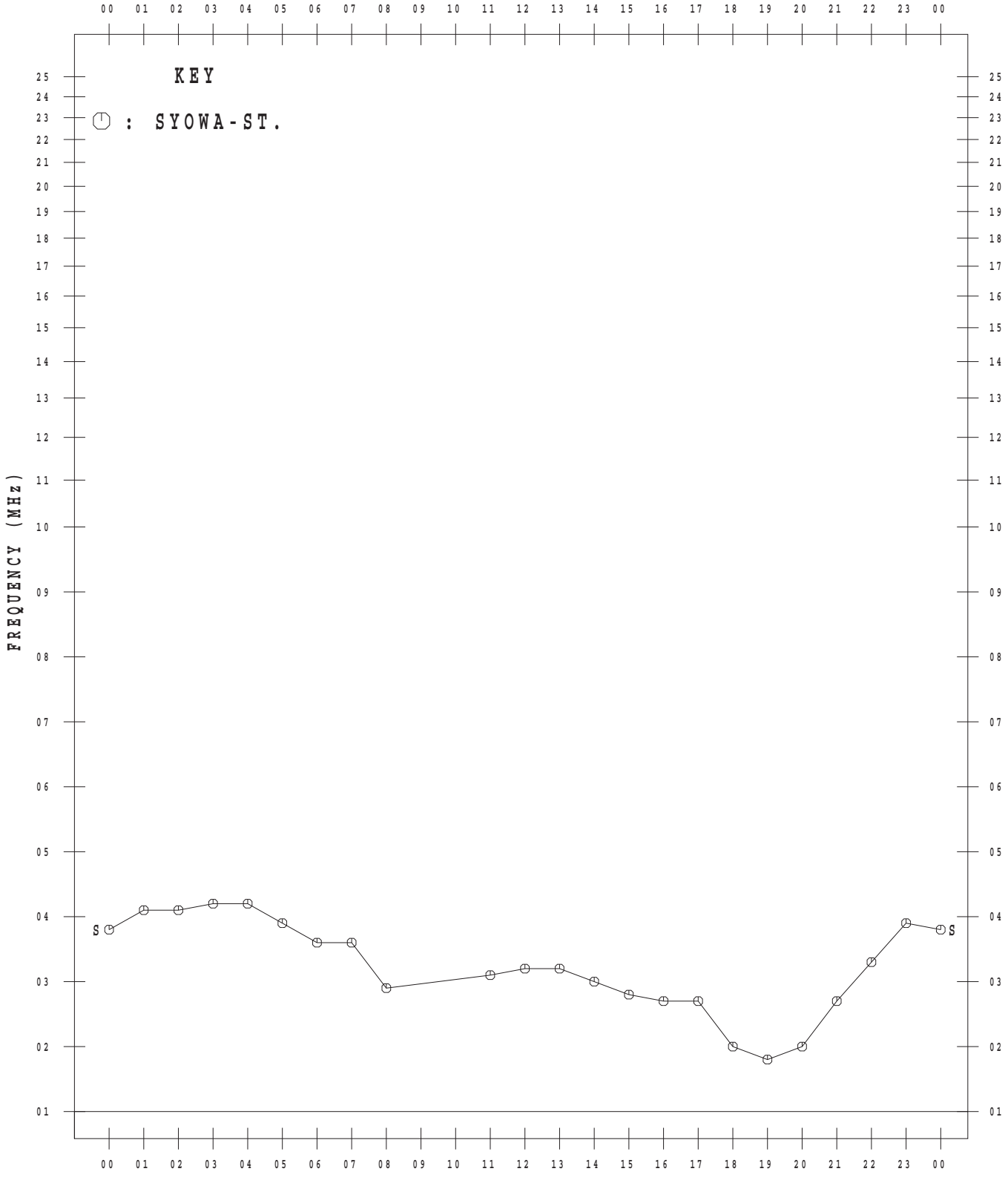
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME AUG. 2014



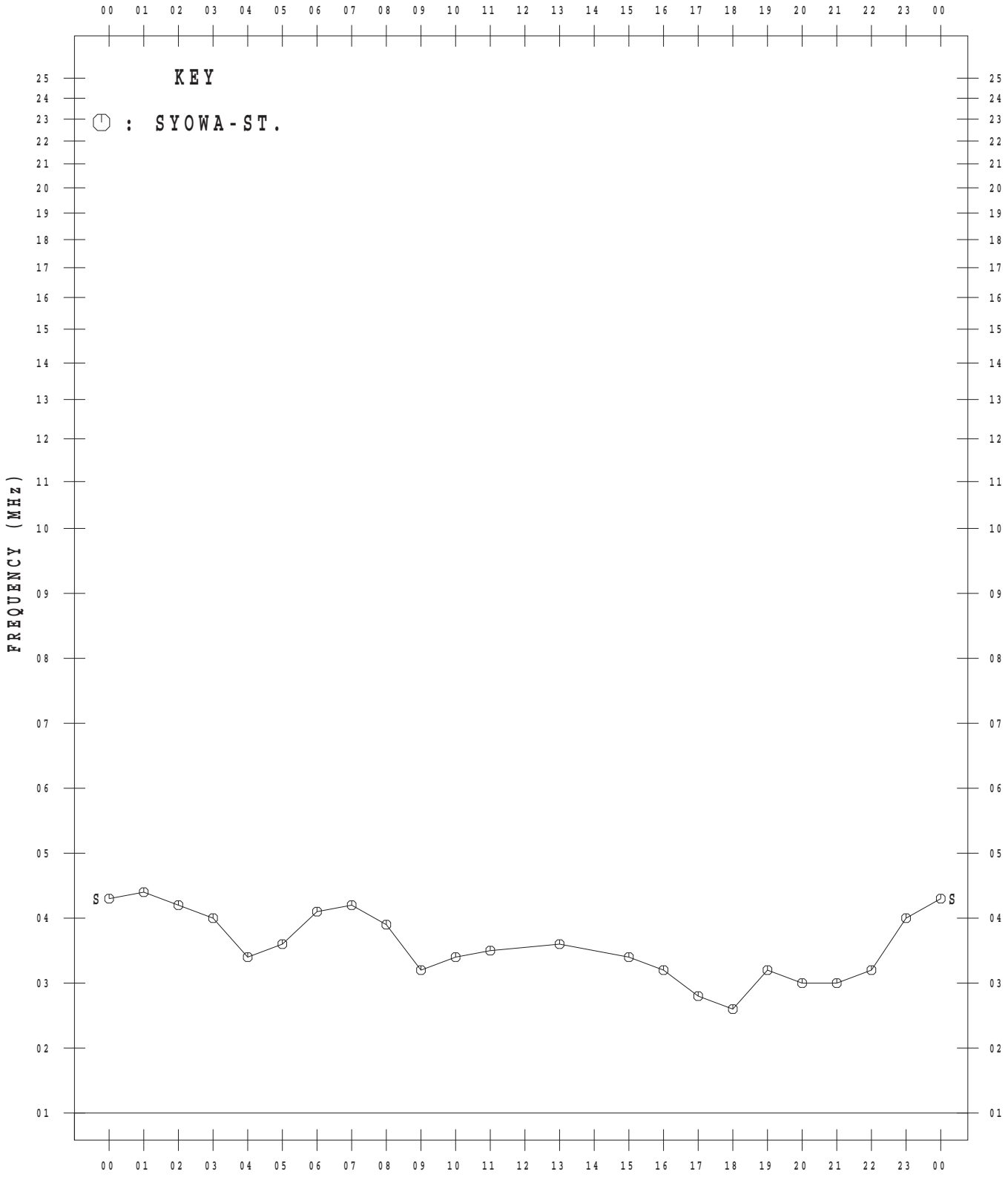
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME SEP. 2014



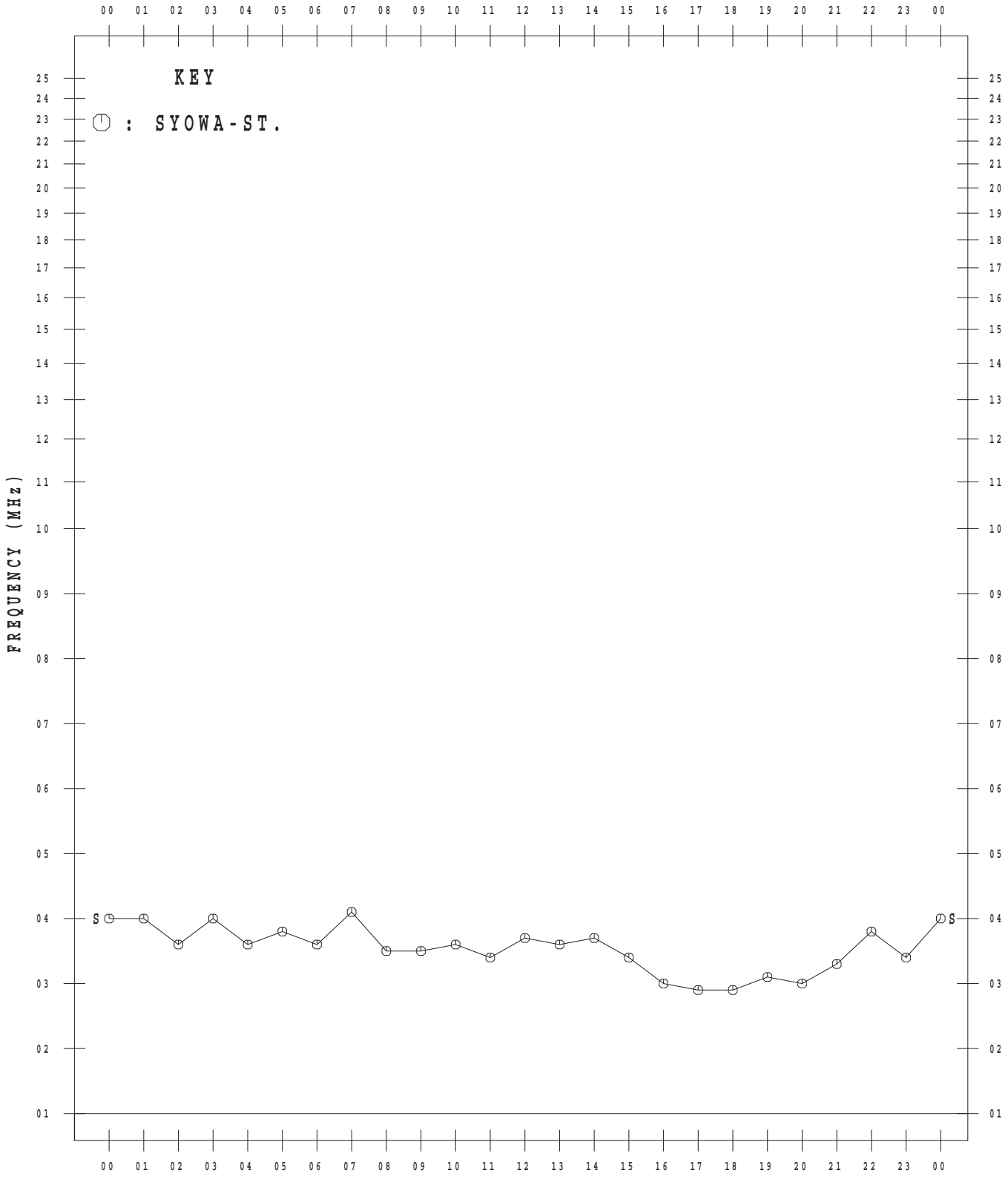
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME OCT. 2014



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME NOV. 2014



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME DEC. 2014