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ION.ANT.—75

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

January — December 2008

CONTENTS

NiCT 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 2008. The observations were conducted by the National Institute of Information and Communications Technology under the sponsorship of the National Institute of Polar Research of Japan. 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	- 70.4	83.5

* Geomagnetic latitude and longitude were calculated using IGRF-10 (2005).

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: N. Nagahama

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.

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2008 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 44	R	R	O X 40	A	A	O X 45	O X 49	X 51	O X 53	O X 53	X 56	O X 55	O X 52	O X 52	R	O X 49	O X 49	O X 50	X 48	X 48	50	X 47	X 49
2	50	42	42	X 48	X 53	X 58	67	72	X 70	X 70	X 66	X 63	X 58	X 56	O X 54	O X 53	A	O X 52	O X 52	X 52	X 51	X 51	X 51	X 46
3	X 39	39	42	46	58	57	66	X 66	X 63	X 62	X 61	X 62	X 65	X 62	A	O X 52	O X 51	O X 53	X 54	X 51	X 48	X 48	X 45	X 50
4	X 50	46	47	51	57	66	71	74	78	78	78	73	X 60	X 60	O X 57	O X 56	X 56	X 59	X 53	X 52	X 49	X 48	X 48	52
5	48	42	47	48	X 56	R	X 58	A	A	O X 48	X 64	65	X 64	B	R	R	X 48	R	R	R	O X 44	X 44	A	A
6	A	A	B	B	A	41	O X 40	A	R	R	O X 53	R	B	B	B	B	B	B	B	B	B	X 43	O X 38	X 40
7	X 45	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	X 44	X 43	X 40	O X 43	36
8	X 39	B	B	R	B	R	R	R	B	B	R	R	B	B	B	B	B	B	A	O X 48	R	O X 42	R	58
9	B	B	B	O X 42	B	B	B	R	R	R	R	B	B	B	R	B	B	B	B	B	O X 45	X 43	38	43
10	44	44	X 43	39	B	B	O X 45	O X 51	O X 48	O X 48	R	R	R	R	R	R	B	B	O X 51	O X 50	O X 45	O X 46	X 46	50
11	X 38	39	O X 42	R	R	X 47	X 51	X 52	X 48	X 57	R	B	R	R	R	R	B	R	B	O X 52	O X 51	X 44	39	37
12	37	41	X 42	X 44	48	57	X 55	X 56	X 56	O X 54	R	X 57	O X 56	R	R	Y	R	R	O X 52	O X 47	B	R	O X 42	O X 45
13	R	40	60	42	R	B	R	R	R	B	R	R	R	R	O X 56	O X 60	X 62	X 68	O X 48	R	115	43	A	A
14	A	O X 42	40	40	A	B	R	B	R	B	B	B	R	B	O X 52	B	B	B	B	R	X 40	A	X 44	O X 42
15	R	R	A	B	B	A	B	B	R	R	B	B	B	B	R	R	B	B	O X 44	O X 44	O X 43	X 42	X 40	X 34
16	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	O X 42	X 40	X 39	R
17	88	B	R	B	B	B	B	X 48	O X 50	O X 52	X 55	O X 55	B	B	R	O X 49	B	O X 50	B	O X 46	X 45	X 40	X 37	B
18	A	38	A	B	B	B	B	A	R	B	B	B	B	B	B	O X 50	B	B	O X 42	O X 43	X 39	X 39	46	40
19	40	A	X 39	B	B	R	O X 48	X 50	X 53	O X 48	B	B	B	B	B	B	B	B	R	X 43	X 39	O X 39	38	R
20	O X 40	A	B	B	R	R	R	R	R	R	R	R	B	B	B	B	B	B	R	B	A	O X 44	X 42	39
21	B	B	O X 43	41	X 42	O X 49	O X 51	O X 54	O X 51	O X 52	O X 54	R	R	B	B	O X 52	R	R	O X 49	X 42	X 45	X 37	X 36	X 35
22	33	X 40	R	41	R	R	X 48	X 48	O X 48	X 50	O X 52	O X 53	R	O X 50	O X 49	R	R	O X 49	O X 45	X 46	X 46	X 46	X 45	44
23	39	41	X 44	X 46	X 46	X 50	X 57	X 60	X 60	X 58	R	R	X 60	X 60	A	R	R	O X 47	A	X 48	X 51	X 49	44	R
24	R	38	40	44	41	A	R	X 53	62	62	64	X 66	X 67	O X 59	R	O X 55	O X 54	B	B	O X 44	X 44	X 38	O X 39	37
25	R	A	R	X 40	B	R	R	A	R	B	B	O X 50	O X 52	X 55	B	R	B	B	O X 47	X 51	X 50	X 46	X 40	A
26	B	R	B	B	R	A	A	R	R	B	B	X 54	R	O X 50	O X 50	X 56	O X 46	O X 45	O X 47	O X 46	X 41	X 48	O X 48	O X 40
27	O X 41	O X 41	38	41	44	44	R	61	61	C	C	O X 50	O X 51	R	B	R	O X 50	X 43	X 48	X 46	X 49	X 49	46	27
28	A	B	A	B	R	O X 44	O X 49	X 53	R	X 53	X 54	O X 54	R	R	O X 55	O X 55	O X 55	B	O X 54	O X 50	X 44	X 44	46	39
29	32	R	A	41	43	X 48	R	R	O X 63	X 52	X 52	O X 50	O X 52	R	O X 54	O X 54	O X 54	O X 54	O X 54	X 46	O X 44	O X 46	X 42	X 43
30	X 48	X 50	51	51	51	X 50	60	X 59	B	B	X 56	O X 56	R	O X 47	O X 54	O X 55	O X 51	O X 50	O X 52	O X 50	O X 48	O X 45	O X 46	51
31	51	44	44	X 48	X 50	O X 53	X 58	O X 52	O X 63	X 57	X 63	X 60	X 63	X 57	O X 54	O X 53	O X 50	X 50	X 50	O X 47	X 48	X 44	B	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	19	16	16	19	12	13	16	17	16	17	14	16	12	11	11	13	12	13	18	24	27	29	27	23
MED	41	41	42	42	49	X 50	X 53	X 53	X 58	X 53	X 56	X 56	X 59	X 56	O X 54	O X 54	O X 51	O X 50	O X 50	X 47	X 45	X 44	X 43	42
U Q	48	43	46	48	54	57	59	60	X 63	X 60	64	X 62	X 64	X 60	O X 55	O X 56	X 54	X 54	O X 52	X 50	X 49	X 47	X 46	49
L Q	39	40	41	41	44	46	O X 48	X 50	O X 50	O X 51	O X 53	O X 54	O X 54	O X 50	O X 52	O X 52	O X 50	O X 48	O X 47	X 45	X 43	X 41	X 39	37

JAN. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2008 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

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

JAN. 2008 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2008 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	40	38	36	29	40	43	40	38	34	G 26	29	33	37	38	29	29	31	27	25	35	26	27	27	14
2	34	31	28	62	55	27	32	28	32	39	46	41	49	41	48	51	58	50	53	47	44	26	25	30
3	30	39	59	32	30	30	32	30	32	29	41	84	48	58	68	70	51	56	36	34	26	40	45	70
4	33	26	66	44	31	36	32	35	43	66	106	46	46	48	48	42	60	45	42	44	42	46	79	31
5	24	19	41	30	30	34	31	57	43	41	39	35	E B 51	B	31	28	33	31	40	42	30	28	45	42
6	38	42	B	B	40	31	35	45	36	30	30	30	B	B	B	B	B	B	B	B	B	K 29	39	30
7	57	B	B	B	B	B	B	B	B	B	B	31	B	B	B	B	B	B	B	41	40	E B 22	E B 26	23
8	33	B	B	30	B	34	30	G 28	B	B	32	30	B	B	B	B	B	B	40	32	35	36	32	E B 29
9	B	B	B	57	B	B	B	40	37	33	33	B	B	B	26	B	B	B	B	B	K 22	27	26	26
10	33	26	27	31	B	B	30	25	31	31	G 23	32	30	31	33	25	B	B	24	21	E B 28	E B 22	18	18
11	18	22	28	35	39	25	25	28	25	64	27	B	34	G 21	33	26	B	E B 29	B	E B 26	E B 23	K 20	20	17
12	22	40	21	66	40	22	26	28	29	E B 29	G 21	50	49	35	G 27	27	G	36	K 26	21	B	32	42	39
13	32	39	51	39	36	B	G 35	32	40	B	32	32	29	33	33	30	33	G	E B 30	31	43	66	56	94
14	42	34	70	71	70	B	35	B	30	B	B	B	30	B	30	B	B	B	B	37	23	42	30	73
15	36	G 33	37	B	B	53	B	B	31	E B 32	B	B	B	B	E B 35	E B 29	B	B	E B 28	31	40	31	28	25
16	68	69	67	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	35	E B 24	K 21	K 20	34
17	E B 48	B	G 26	B	B	B	B	38	G 24	24	G 21	E B 41	B	B	G	E B 32	B	G 22	B	22	59	29	25	B
18	70	57	95	B	B	B	B	41	33	B	B	B	B	B	B	26	B	B	21	33	24	26	35	28
19	K 30	40	E B 32	B	B	42	31	31	32	34	B	B	B	B	B	B	B	B	E B 26	26	K 24	K 23	34	33
20	40	44	B	B	34	36	G 24	41	41	34	32	G 26	B	B	B	B	B	B	E B 28	B	42	E B 25	20	22
21	B	B	32	24	24	22	22	30	22	30	30	28	30	B	B	28	27	27	E B 29	24	23	22	25	14
22	E B 13	27	34	25	37	36	32	26	31	30	G 24	28	G 26	29	29	27	27	G 23	26	23	26	21	24	14
23	25	28	17	16	17	G	G 18	33	28	32	32	31	39	66	67	40	50	30	58	32	33	24	26	26
24	35	36	32	30	33	46	39	40	33	G 22	35	29	30	30	38	28	28	B	B	30	24	25	29	38
25	33	39	35	37	B	30	44	49	43	B	B	E B 34	26	26	B	E B 33	B	B	E B 26	36	32	17	33	40
26	B	37	B	B	39	43	41	38	27	B	B	G 22	G 22	33	29	E B 31	E B 30	E B 31	E B 31	E B 26	26	34	E B 18	E B 19
27	37	66	47	34	32	34	32	28	32	C	C	32	E B 29	E B 33	B	E B 29	29	24	28	24	25	20	36	28
28	41	B	41	B	30	36	60	42	44	28	31	30	36	39	29	34	28	B	E B 29	E B 30	21	23	23	E B 13
29	22	32	37	42	39	38	G 36	33	38	31	25	30	30	31	31	28	24	27	24	23	23	31	41	79
30	70	47	46	33	30	E B 25	40	27	B	B	24	26	E B 30	28	27	E B 30	23	24	33	28	27	31	30	25
31	66	68	40	E B 16	18	20	E B 26	27	29	35	30	39	42	38	38	38	33	32	31	25	35	22	B	70
	00	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	25	25	21	21	23	25	27	27	21	22	24	21	18	21	23	17	17	23	28	29	31	30	30
MED	34	38	37	33	34	34	32	33	32	31	30	31	30	33	31	28	30	28	28	30	26	26	28	28
U Q	42	43	49	43	40	38	38	40	38	34	33	37	44	39	38	34	42	34	36	35	38	31	36	39
L Q	30	30	30	30	30	25	28	28	29	29	G 25	30	30	30	29	28	27	G 24	26	24	24	22	25	22

JAN. 2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2008 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	21	26	12	24	20	13	13	15	13	12	14	13	14	12	14	14	14	12	11	12	12	12	12
2	12	12	11	13	13	12	11	13	12	13	13	13	13	15	14	16	12	14	12	13	13	12	11	12
3	12	12	12	13	13	12	12	12	12	12	13	13	15	18	14	14	14	13	12	12	13	12	13	13
4	12	12	12	12	11	12	12	13	14	12	12	11	13	11	14	13	12	13	13	12	12	12	12	12
5	11	12	12	12	12	21	12	12	12	13	12	12	51	B	17	20	14	17	22	21	21	12	12	14
6	16	20	B	B	23	13	20	25	24	17	12	14	B	B	B	B	B	B	B	B	B	13	13	12
7	14	B	B	B	B	B	B	B	B	B	B	23	B	B	B	B	B	B	B	28	28	22	26	14
8	13	B	B	18	B	24	19	18	B	B	20	19	B	B	B	B	B	B	33	25	14	13	16	29
9	B	B	B	20	B	B	B	23	15	15	16	B	B	B	20	B	B	B	B	B	19	13	12	19
10	12	16	17	14	B	B	16	22	13	14	16	14	12	14	16	14	B	B	20	17	28	22	14	13
11	13	12	12	27	20	18	13	13	14	14	13	B	20	16	16	23	B	29	B	26	23	12	11	12
12	12	12	12	12	12	12	14	14	12	29	16	14	14	15	22	20	20	28	15	14	B	17	12	13
13	20	14	12	12	14	B	24	22	15	B	22	18	18	12	16	12	12	14	30	20	14	14	14	13
14	16	19	14	13	14	B	13	B	16	B	B	B	20	B	18	B	B	B	B	13	12	14	13	14
15	20	26	13	B	B	20	B	B	16	32	B	B	B	B	35	29	B	B	28	15	27	13	14	12
16	13	17	12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	24	15	13	20
17	48	B	15	B	B	B	B	13	17	14	17	41	B	B	22	32	B	16	B	16	14	12	12	B
18	21	12	15	B	B	B	B	26	19	B	B	B	B	B	B	21	B	B	15	15	13	13	13	14
19	13	17	32	B	B	23	14	14	20	20	B	B	B	B	B	B	B	B	26	15	14	15	14	14
20	14	13	B	B	27	27	16	14	20	20	16	23	B	B	B	B	B	B	28	B	37	25	12	13
21	B	B	14	13	12	13	12	13	15	16	22	17	16	B	B	18	19	17	29	12	13	14	12	12
22	13	13	14	19	23	20	20	14	14	14	14	13	16	15	18	13	13	15	14	12	13	13	12	12
23	12	11	11	12	12	12	11	14	13	16	29	23	21	15	19	20	16	19	14	13	14	13	11	20
24	13	14	13	12	15	13	22	15	14	14	14	13	18	23	23	20	20	B	B	20	15	14	16	12
25	12	12	12	12	B	16	14	15	17	B	B	34	18	14	B	33	B	B	26	22	18	13	14	14
26	B	15	B	B	27	15	13	16	18	B	B	17	17	16	18	31	30	31	30	26	16	16	18	19
27	24	21	13	13	14	13	18	14	14	C	C	14	29	32	B	29	17	14	12	14	12	13	11	12
28	12	B	16	B	21	12	14	13	20	13	13	13	14	20	16	18	20	B	29	30	18	15	12	13
29	12	21	17	16	14	12	23	21	16	15	14	15	14	20	14	18	20	13	14	14	19	17	14	15
30	14	12	12	12	14	25	15	20	B	B	20	20	30	18	18	30	15	18	25	21	20	19	20	14
31	14	13	13	16	13	16	26	20	20	21	19	20	13	15	13	13	13	13	13	12	12	15	B	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	15	14	16	21	20	16	15	16	16	16	18	20	20	19	21	20	29	26	16	15	13	13	13
U Q	20	B 21	B 26	B	B	B	B 24	22	20	B	B	B 41	B	B	B	B	B	B	B	26	23	15	14	15
L Q	12	12	12	12	13	13	13	13	14	14	13	14	14	15	16	16	14	14	14	13	13	13	12	12

JAN. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2008 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	A	200	198	198	182	198	188	188	198	178	178	178	184	200	188	214	214	202	202
2	Q 216	Q 234	Q 254	Q 212	196	Q 196	196	182	176	184	A	A	A	A	A	A	A	A	A	A	220	Q 198	Q 206	Q 224
3	Q 214	Q 240	A 246	Q 218	218	Q 212	Q 188	184	180	180	198	A	A	A	A	A	196	202	212	212	204	214	Q 228	252
4	Q 232	Q 222	Q 210	232	Q 212	Q 192	218	178	208	200	A	216	A	A	196	206	238	182	190	214	Q 222	230	228	Q 224
5	Q 224	Q 214	Q 214	Q 212	Q 220	A	Q 188	A	A	190	A	196	B	B	A	A	176	202	A	A	244	E A 258	A	A
6	A	A	B	B	A	212	222	A	A	A	216	182	B	B	B	B	B	B	B	B	B	252	256	246
7	190	B	B	B	B	B	B	B	B	B	B	212	B	B	B	B	B	B	B	236	228	256	240	Q 260
8	A	B	B	A	B	A	A	A	B	B	A	A	B	B	B	B	B	B	A	238	A	210	A	188
9	B	B	B	A	B	B	B	A	A	212	214	B	B	B	238	B	B	B	B	B	212	H 190	234	250
10	E A 270	268	A	A	B	B	204	190	204	200	192	198	182	178	224	224	B	B	210	204	204	212	212	Q 212
11	242	Q 270	E A 268	A	A	A 268	224	204	186	182	184	B	A	H 170	H 170	192	B	194	B	202	202	186	214	Q 218
12	Q 230	E A 234	Q 236	236	244	Q 200	212	188	188	188	196	A	198	200	196	Y	218	A	H 190	204	B	A	E A 218	274
13	A	A	184	234	A	B	A	A	A	B	A	202	194	200	216	182	190	208	232	A	A	Q 218	A	A
14	A	A	204	220	A	B	A	B	234	B	B	B	180	B	212	B	B	B	B	A	212	A	282	236
15	A	A	A	B	B	A	B	B	A	210	B	B	B	B	226	194	B	B	204	220	E A 248	Q 218	238	Q 244
16	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	230	Q 216	216	A
17	B	B	A	B	B	B	B	262	204	H 172	188	B	B	B	188	200	B	202	B	196	Q 208	Q 234	218	B
18	A	226	A	B	B	B	B	A	A	B	B	B	B	B	B	196	B	B	210	198	198	272	230	A
19	230	A	226	B	B	A	A	H 178	176	192	B	B	B	B	B	B	B	B	224	216	206	248	222	A
20	232	A	B	B	A	A	A	A	A	A	H 168	A	B	B	B	B	B	B	212	B	A	250	Q 226	260
21	B	B	A	A	254	220	192	H 176	H 174	196	190	176	194	B	B	Q 202	188	202	218	204	210	Q 220	Q 234	Q 222
22	Q 190	254	A	A	A	A	A 228	192	198	180	200	182	186	184	204	190	188	196	192	208	H 192	218	202	Q 218
23	Q 236	Q 236	Q 218	Q 206	214	Q 204	H 180	204	192	192	A	188	A	A	A	200	A	200	A	212	224	Q 214	Q 224	A
24		232	A	A	A	A	A	Q 218	230	200	198	186	182	200	A	210	202	B	B	220	Q 204	A	A	226
25	A	A	A	226	B	A	A	A	A	B	B	250	192	206	B	216	B	B	226	A 230	A 222	222	Q 242	A
26	B	A	B	B	A	A	A	A	A	B	B	184	184	222	192	198	210	210	218	202	Q 192	242	232	256
27	E A 262	E A 252	A 264	A 264	E A 272	208	A	214	Q 190	C	C	190	190	180	B	194	190	182	Q 198	Q 198	Q 218	Q 214	Q 226	238
28	A	B	A	B	A	A	A 214	196	A	190	194	194	198	204	180	188	198	B	246	226	194	226	Q 226	Q 226
29	Q 242	A	A	A	A	260	A	A	206	206	182	H 162	H 162	212	206	H 174	196	196	196	200	222	234	234	274
30	248	246	262	Q 284	238	228	200	216	B	B	206	194	180	H 172	194	188	190	202	218	208	216	242	230	Q 208
31	Q 228	Q 228	Q 258	Q 250	216	218	218	202	202	A	184	A	210	210	192	196	182	H 168	204	198	246	248	B	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	16	14	13	12	10	12	15	17	17	18	16	17	15	14	16	19	15	15	19	23	26	28	26	22
MED	Q 230	234	231	229	218	212	204	196	198	191	195	190	188	200	196	196	190	200	210	208	212	220	227	228
U Q	242	252	260	243	244	224	218	209	205	200	199	200	194	206	214	202	202	202	218	220	222	245	234	252
L Q	Q 220	Q 228	212	Q 215	214	Q 202	192	183	183	182	186	183	182	180	190	188	188	184	198	200	204	214	218	Q 218

JAN. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2008 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	B	A	A	A	R	A	A	B	R	O X 48	R	O X 48	B	B	O X 48	O X 47	X 46	X 44	X 41	40	34
2	41	32	B	O X 34	R	42	B	B	B	B	R	R	B	B	B	B	O X 49	B	B	O X 44	O X 42	X 39	R	X 34
3	O X 38	R	B	B	R	B	B	R	R	B	R	B	B	B	B	O X 53	B	B	B	R	O X 41	X 38	R	R
4	B	A	R	B	37	A	R	B	R	R	B	B	B	B	B	B	B	B	O X 48	B	B	O X 43	O X 38	33
5	35	A	A	A	B	B	B	R	R	O X 49	X 52	O X 55	O X 55	O X 46	O X 51	O X 48	O X 48	O X 49	O X 47	O X 44	X 42	X 41	30	A
6	O X 30	X 30	X 33	X 38	X 42	X 45	X 49	X 50	O X 52	O X 52	O X 57	X 57	O X 52	O X 48	R	A	O X 48	O X 48	X 47	X 46	X 43	X 38	A	A
7	A	A	O X 37	B	Y	R	B	B	X 44	O X 48	R	X 49	O X 58	O X 56	O X 50	O X 50	X 47	X 46	O X 46	X 47	B	X 36	O X 39	X 36
8	X 33	33	78	A	A	O X 48	R	A	R	R	O X 50	O X 51	O X 54	X 49	R	O X 51	O X 51	X 50	X 46	X 43	X 41	X 38	R	R
9	A	O X 42	X 33	X 41	O X 42	R	X 38	X 44	X 47	X 49	O X 50	O X 50	X 52	X 52	X 55	X 52	X 53	X 51	X 49	X 49	X 46	X 43	X 39	O X 43
10	87	85	A	58	X 44	51	X 53	59	B	A	X 44	O X 48	O X 49	X 52	X 58	X 62	B	64	O X 47	R	R	A	117	R
11	A	R	82	A	O X 41	B	B	B	B	B	B	B	B	B	B	B	B	X 48	45	X 41	X 40	34	28	X 30
12	A	A	B	B	A	B	A	B	B	R	O X 53	B	O X 49	O X 56	B	B	B	O X 50	X 42	X 42	X 38	X 33	X 30	A
13	A	A	B	R	B	A	B	B	X 34	R	R	R	B	B	O X 54	B	B	X 52	B	O X 43	O X 39	O X 30	A	A
14	A	A	A	A	A	B	A	B	O X 47	O X 48	O X 49	O X 50	B	B	B	O X 55	B	B	B	B	O X 41	42	R	107
15	A	B	59	X 42	A	B	R	B	B	O X 50	B	B	B	B	B	B	B	B	O X 44	O X 46	R	X 30	O X 28	R
16	O X 34	A	A	A	A	R	B	A	X 45	O X 48	O X 48	O X 52	O X 52	B	B	B	B	O X 47	B	O X 44	O X 45	X 40	Y	B
17	B	30	32	X 30	X 31	O X 40	X 45	O X 44	O X 50	O X 50	B	O X 52	B	B	B	B	B	B	B	B	B	O X 41	X 40	40
18	36	X 34	X 32	32	37	43	O X 51	X 52	X 51	O X 52	R	B	B	B	B	B	A	X 57	R	O X 40	A	X 33	X 24	A
19	A	A	O X 38	B	B	R	R	O X 46	O X 48	B	B	B	B	B	B	O X 48	B	B	O X 47	B	O X 36	R	71	A
20	A	A	A	A	B	39	B	B	B	A	O X 47	B	B	B	B	B	B	B	B	B	B	O X 40	O X 35	40
21	39	36	58	68	41	43	X 45	X 51	58	R	O X 49	O X 52	O X 56	O X 54	X 58	X 60	B	B	O X 53	X 41	X 41	X 36	B	A
22	34	32	32	O X 34	O X 35	O X 41	X 45	X 48	X 50	B	O X 55	B	B	B	B	R	B	X 47	O X 48	O X 48	X 47	X 44	X 36	X 31
23	29	30	36	X 34	34	R	46	O X 56	X 55	X 60	X 62	X 63	X 63	X 64	R	O X 53	X 53	X 48	X 45	X 46	X 40	X 37	29	R
24	R	B	A	A	R	O X 38	X 43	X 48	X 52	O X 56	X 57	X 60	O X 55	O X 54	O X 51	O X 45	X 54	O X 49	X 52	X 48	X 48	X 42	X 27	30
25	A	A	X 33	36	35	A	X 48	X 52	X 53	X 57	O X 56	X 60	B	O X 66	X 69	C	C	O X 52	O X 51	O X 48	X 45	X 45	X 47	44
26	36	31	X 25	24	45	43	50	X 50	B	B	B	R	X 59	R	R	X 58	O X 53	X 50	X 47	O X 45	O X 43	42	X 27	58
27	A	A	X 26	29	X 30	X 38	R	A	O X 51	O X 51	X 53	O X 53	X 56	X 58	O X 54	O X 54	O X 51	O X 51	X 46	X 44	B	34	118	A
28	A	A	A	34	42	41	B	R	R	A	A	R	B	B	R	B	O X 49	B	X 46	X 39	90	R	A	A
29	A	A	A	A	A	B	B	R	A	B	B	B	B	B	R	B	B	B	O X 38	B	A	A	A	A
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	12	11	15	14	14	13	11	12	15	13	15	14	14	12	10	13	11	18	21	21	20	25	19	13
MED	36	32	X 33	34	39	42	X 46	X 50	X 50	O X 50	O X 52	O X 52	O X 54	O X 54	O X 54	O X 53	O X 51	X 50	O X 47	X 44	X 42	X 39	X 36	36
U Q	38	36	58	41	X 42	44	X 50	X 52	X 52	X 54	X 56	X 57	X 56	X 57	X 58	X 56	X 53	X 51	O X 48	X 46	X 45	X 42	40	44
L Q	34	30	32	32	35	X 40	X 45	X 47	X 47	O X 48	O X 49	O X 50	O X 52	X 50	O X 51	O X 49	O X 48	X 48	X 46	X 42	X 40	X 35	X 28	32

FEB. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2008 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	B	A	A	A	R	A	A	B	R	R 42	R	42	B	B	R 42	R 41	40	38	35	F 30	F 26
2	F 28	F 24	B	28	R	F 29	B	B	B	B	R	R	B	B	B	B	R 43	B	B	R 38	36	33	A	28
3	32	A	B	B	A	B	B	A	R	B	R	B	B	B	B	R 47	B	B	B	R	R 35	32	A	R
4	B	A	R	B	E G 31	A	A	B	A	R	B	B	B	B	B	B	B	B	R 42	B	B	37	R 32	Z 27
5	F 26	A	A	A	B	B	B	R	R	R 43	46	R 49	R 49	R 40	R 45	R 42	R 42	R 43	R 41	R 38	36	35	F 21	A
6	24	24	27	32	36	39	43	44	46	46	R 51	51	R 46	R 42	R	A	R 42	42	41	40	37	32	A	A
7	A	A	R 31	B	Y	A	B	B	38	R 42	R	43	R 52	R 50	R 44	R 44	41	40	R 40	41	B	30	33	30
8	27	F 23	27	A	A	R 42	R	A	R	R	R 44	R 45	R 48	43	R	45	R 45	44	40	37	35	32	R	A
9	A	R 36	27	35	R 36	A	E G 32	38	41	43	R 44	R 44	46	46	49	46	47	45	43	43	40	37	33	37
10	A	R 52	A	42	38	F 39	47	F 47	B	A	38	R 42	R 43	46	52	56	B	F 51	R 41	R	A	A	A	A
11	A	A	R 28	A	R 35	B	B	B	B	B	B	B	B	B	B	B	B	42	F 35	35	34	F 23	F 19	24
12	A	A	B	B	A	B	A	B	B	R	R 47	B	R 43	R 50	B	B	B	R 44	36	36	32	27	24	A
13	A	A	B	A	B	A	B	B	E G 28	R	R	R	B	B	R 48	B	B	46	B	R 37	R 33	R 24	A	A
14	A	A	A	A	A	B	A	B	41	R 42	R 43	R 44	B	B	B	R 49	B	B	B	B	35	F 31	A	A
15	A	B	A	36	A	B	R	B	B	R 44	B	B	B	B	B	B	B	B	R 38	40	R	24	R 22	A
16	R 28	A	A	A	A	A	B	A	38	R 42	R 42	46	46	B	B	B	B	41	B	R 38	R 39	34	Y	B
17	B	F 20	F 24	24	25	R 34	39	R 38	R 44	R 44	B	R 46	B	B	B	B	B	B	B	B	B	R 35	34	F 25
18	F 24	28	26	F 22	F 26	F 32	S 45	46	45	R 46	R	B	B	B	B	B	A	J R 51	R	34	A	27	18	A
19	A	A	R 32	B	B	R	R	R 40	R 42	B	B	B	B	B	B	R 42	B	B	R 41	B	R 30	R	A	A
20	A	A	A	A	B	F 26	B	B	B	A	R 41	B	B	B	B	B	B	B	B	B	B	R 34	R 29	F 29
21	F 29	F 26	R 28	A	F 30	F 33	39	45	F 47	R	R 43	R 46	R 50	R 48	52	54	B	B	R 47	35	35	30	B	A
22	F 24	F 21	F 20	R 28	R 29	R 35	39	42	44	B	R 49	B	B	B	B	R	B	41	R 42	R 42	41	38	30	25
23	F 19	F 20	F 24	28	F 24	A	F 36	R 50	49	54	56	57	57	58	R	R 47	47	42	39	40	34	31	F 18	A
24	A	B	A	A	A	32	37	42	46	R 50	51	54	R 49	R 48	R 45	R 39	48	R 43	46	42	42	36	21	F 22
25	A	A	27	F 26	F 26	A	42	46	47	51	R 50	54	B	R 60	63	C	C	U R 46	R 45	R 42	39	39	41	F 34
26	F 26	F 20	18	F 15	F 35	F 30	F 38	44	B	B	B	R	J R 53	R	R	J R 52	R 47	44	41	R 39	R 37	F 30	21	A
27	A	A	20	F 18	24	32	A	A	R 45	45	47	47	J R 50	J R 52	R 48	48	R 45	R 45	40	38	B	F 24	A	A
28	A	A	A	F 23	F 28	F 22	B	R	A	A	A	R	B	B	R	B	R 43	B	40	33	Y	R	A	A
29	A	A	A	A	A	B	B	A	A	B	B	B	B	B	R	B	B	B	R 32	B	A	A	A	A
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	11	11	14	13	14	13	11	12	15	13	15	14	14	12	10	13	11	18	21	21	19	25	16	11
MED	F 26	F 24	27	28	29	F 32	39	44	44	R 44	R 46	46	R 48	R 48	48	R 47	R 45	44	R 41	38	36	32	26	27
U Q	28	R 28	R 28	34	35	37	43	46	46	48	50	51	R 50	R 51	52	50	47	R 45	R 42	40	39	35	32	30
L Q	F 24	F 20	24	F 22	26	F 30	37	41	41	R 42	R 43	R 44	R 46	44	R 45	R 43	R 42	42	40	36	34	28	21	25

FEB. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2008 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	72	50	38	B	42	40	43	22	46	47	B	35	30	31	G 23	B	B	E B 28	E B 34	24	21	60	22	63
2	78	30	B 34		33	31	B	B	B	B	32	24	B	B	B	B	27	B	B	E B 28	33	18	39	23
3	33	36	B	B	39	B	B	39	36	B	32	B	B	B	B	29	B	B	B	30	26	24	38	32
4	B	41	35	B	35	40	38	B	36	34	B	B	B	B	B	B	B	B	42	B	B	32	E B 24	24
5	34	35	39	33	B	B	B	38	36	E B 30	26	26	26	28	41	32	E B 38	E B 27	30	E B 24	22	15	26	77
6	22	37	28	22	70	25	26	27	29	40	31	35	34	32	42	84	39	27	37	23	K 18	K 17	40	36
7	46	48	36	B	26	37	B	B	31	25	28	26	31	26	30	26	29	24	E B 24	24	B	15	17	16
8	26	29	33	G 43	44	34	40	51	38	31	28	30	30	31	29	28	24	26	24	22	27	23	26	K 37
9	88	41	28	G 22	32	G 32	27	22	26	29	50	47	42	60	47	30	36	28	30	23	30	73	69	K 37
10	K 43	K 41	58	44	36	31	43	38	B	59	48	34	31	30	34	38	B	25	E B 25	34	K 41	47	K 35	40
11	41	K 33	33	75	37	B	B	B	B	B	B	B	B	B	B	B	B	30	34	26	K 26	K 16	15	15
12	37	39	B	B	44	B	40	B	B	40	30	B	E B 29	E B 30	B	B	B	30	27	22	18	16	K 17	40
13	94	56	B	39	B	39	B	B	38	28	G 26	E B 31	B	B	E B 28	B	B	24	B	E B 23	32	33	41	K 40
14	K 40	45	38	40	39	B	46	B	33	34	34	E B 29	B	B	B	E B 28	B	B	B	B	20	31	37	91
15	57	B	37	25	91	B	40	B	B	30	B	B	B	B	B	B	B	B	31	26	32	14	E B 13	32
16	32	39	33	40	52	34	B	34	G	31	38	25	G 24	B	B	B	B	E B 26	B	E B 24	E B 27	E B 17	18	B
17	B	23	31	16	14	16	18	G	32	E B 27	B	E B 29	B	B	B	B	B	B	B	B	B	41	54	55
18	17	29	29	23	17	18	19	20	22	33	30	B	B	B	B	B	61	E B 25	E B 27	25	41	26	21	76
19	82	46	62	B	B	G 30	G 33	29	37	B	B	B	B	B	B	E B 29	B	B	E B 26	B	K 31	30	41	72
20	40	K 37	37	37	B	32	B	B	B	42	30	B	B	B	B	B	B	B	B	B	B	E B 24	18	44
21	32	E B 13	35	35	29	31	37	37	31	E B 29	E B 31	32	38	40	32	40	B	B	27	28	20	30	B	40
22	31	32	24	34	56	31	G 22	24	24	B	E B 28	B	B	B	B	42	B	23	E B 22	E B 19	17	19	32	E B 12
23	E B 12	42	32	30	20	38	G 24	G	G	G 20	28	E B 29	31	38	47	32	26	26	22	19	16	E B 13	16	28
24	34	B	K 39	41	36	G 21	18	G 17	24	26	26	26	29	30	25	28	33	E B 25	21	29	16	E B 12	E B 13	28
25	32	K 40	31	16	24	39	35	31	34	36	25	30	B	E B 47	29	C	C	E B 26	20	E B 22	19	28	30	27
26	32	29	26	20	E B 13	16	29	22	B	B	B	36	28	26	28	E B 27	E B 26	23	22	26	E B 24	70	21	32
27	44	40	24	E S 15	21	46	37	40	26	32	27	27	30	39	38	26	25	E B 26	18	27	B	38	91	38
28	48	43	41	72	38	30	B	36	46	64	48	30	B	B	26	B	E B 30	B	21	29	37	32	74	82
29	36	39	39	30	43	B	B	38	71	B	B	B	B	B	E B 29	B	B	B	E B 23	B	118	38	42	65
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	27	27	25	23	25	22	19	20	22	22	21	19	14	14	16	15	12	18	22	23	24	29	28	28
MED	37	39	35	34	36	32	35	30	32	32	30	30	30	30	30	29	29	26	25	24	26	26	28	38
U Q	48	42	38	40	44	38	40	38	37	40	33	34	31	39	40	38	37	27	30	28	32	36	40	59
L Q	32	32	30	22	25	30	24	22	26	29	28	26	29	30	28	28	26	25	22	23	20	16	18	28

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2008 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	14	23	B	29	17	12	14	18	25	B	25	19	16	16	B	B	28	34	16	12	18	14	13
2	12	12	B	14	23	15	B	B	B	B	25	20	B	B	B	B	19	B	B	28	19	13	12	13
3	20	18	B	B	21	B	B	20	17	B	26	B	B	B	B	20	B	B	B	24	14	16	13	18
4	B	16	12	B	15	28	20	B	19	29	B	B	B	B	B	B	B	B	19	B	B	17	24	11
5	12	15	25	28	B	B	B	19	19	30	16	19	16	15	14	15	38	27	13	24	15	11	12	13
6	13	14	12	12	12	12	12	12	12	14	17	13	16	15	15	15	13	12	13	13	13	13	13	19
7	13	13	13	B	12	18	B	B	17	13	12	12	12	14	13	14	12	12	24	13	B	12	13	12
8	11	12	12	19	19	25	26	17	20	20	16	13	14	15	15	12	13	11	12	12	12	12	16	12
9	27	13	12	13	16	17	14	13	12	12	12	11	13	12	13	12	12	14	15	14	14	12	13	12
10	12	14	12	11	14	13	12	13	B	12	13	12	13	16	14	12	B	15	25	25	13	14	16	18
11	12	20	11	12	13	B	B	B	B	B	B	B	B	B	B	B	B	18	15	15	12	12	11	12
12	12	13	B	B	24	B	24	B	B	17	14	B	29	30	B	B	B	18	14	16	13	11	12	13
13	12	17	B	22	B	25	B	B	16	18	17	31	B	B	28	B	B	14	B	23	14	13	12	12
14	12	14	13	27	23	B	27	B	14	19	14	29	B	B	B	28	B	B	B	B	17	13	22	16
15	18	B	12	21	47	B	20	B	B	20	B	B	B	B	B	B	B	B	26	18	24	11	13	11
16	12	12	18	20	21	17	B	23	14	19	17	12	16	B	B	B	B	26	B	24	27	17	12	B
17	B	12	12	11	12	12	12	13	26	27	B	29	B	B	B	B	B	B	B	B	B	23	14	12
18	13	13	12	13	12	12	14	13	14	15	24	B	B	B	B	B	30	25	27	18	14	12	12	14
19	11	14	12	B	B	24	23	24	14	B	B	B	B	B	B	29	B	B	26	B	19	13	13	14
20	22	12	13	14	B	14	B	B	B	20	17	B	B	B	B	B	B	B	B	B	B	24	13	12
21	12	13	11	12	13	14	13	12	14	29	31	16	25	27	14	25	B	B	19	15	13	12	B	12
22	14	13	13	12	12	19	12	13	13	B	28	B	B	B	B	27	B	14	22	19	13	12	13	12
23	12	12	12	12	12	16	12	13	13	13	16	29	26	28	24	24	16	21	12	12	13	13	13	11
24	12	B	15	12	14	13	13	15	13	14	13	14	15	19	16	19	13	25	16	12	13	12	13	12
25	12	14	13	12	13	15	17	19	13	13	20	19	B	47	24	C	C	26	16	22	14	12	12	12
26	12	12	12	13	13	13	12	12	B	B	B	22	14	23	18	27	26	16	13	19	24	13	12	12
27	14	12	13	E S 15	11	15	23	17	13	13	14	13	13	14	16	15	17	25	12	13	B	11	12	13
28	19	17	21	12	13	13	B	19	20	21	18	20	B	B	13	B	30	B	14	12	32	19	13	18
29	12	21	14	15	21	B	B	28	51	B	B	B	B	B	29	B	B	B	23	B	52	13	12	13
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	29	29
MED	12	14	13	14	15	17	23	19	17	20	18	25	B	B	28	28	B	26	22	19	14	13	13	12
U Q	16	16	20	B 28	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 26	B 30	15	14	14
L Q	12	12	12	12	12	14	12	13	14	14	15	14	16	16	15	17	18	16	14	14	13	12	12	12

FEB.2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2008 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	B	A	A	A	A	A	A	B	A	184	222	204	B	B	204	B	226	228	198	188	180
2	212	212	B	A	A	Q 258	B	B	B	B	A	A	B	B	B	B	198	B	B	E B 250	272	Q 228	A	294
3	204	A	B	B	A	B	B	A	A	B	A	B	B	B	B	222	B	B	B	A	218	268	A	A
4	B	A	A	B	216	A	A	B	A	A	B	B	B	B	B	B	B	B	E A 224	B	B	E A 240	E A 254	E A 304
5	216	A	A	A	B	B	B	A	A	200	196	200	196	188	218	188	B	194	E A 232	210	216	234	E A 268	A
6	E A 304	E B 252	254	E A 248	238	226	196	200	200	192	200	194	190	190	178	A	210	192	208	214	198	236	A	A
7	A	A	248	B	A	A	B	B	218	H 162	204	H 166	196	208	198	202	194	194	208	218	B	234	244	232
8	256	250	212	A	A	244	A	A	A	A	192	208	198	182	182	180	192	192	200	196	222	232	A	A
9	A	218	A	294	A	A	246	198	198	206	202	202	210	192	A	210	188	182	204	212	228	E A 246	234	192
10	A	196	A	216	272	A	A	200	B	A	204	230	220	226	194	208	B	208	228	A	A	A	A	A
11	A	A	A	A	202	B	B	B	B	B	B	B	B	B	B	B	B	202	236	226	226	250	A	276
12	A	A	B	B	A	B	A	B	B	236	190	B	202	198	B	B	B	206	A	212	212	236	290	A
13	A	A	B	A	B	A	B	B	G	222	196	190	B	B	188	B	B	228	B	214	E A 298	E A 358	A	A
14	A	A	A	A	A	B	A	B	222	E A 244	196	H 184	B	B	B	204	B	B	B	B	E A 222	Q 230	A	192
15	A	B	A	188	A	B	A	B	B	E A 222	B	B	B	B	B	B	B	B	208	E A 242	A	E A 228	292	A
16	A 218	A	A	A	A	A	B	A	252	E A 230	A	H 168	200	B	B	B	B	E B 236	B	216	236	222	Y	B
17	B	E A 288	E A 266	268	E A 268	228	216	196	200	210	B	202	B	B	B	B	B	B	B	B	B	A 254	Q 226	242
18	Q 252	A 258	264	A	210	190	H 190	202	198	198	216	B	B	B	B	B	A	232	256	A 234	A	270	E A 280	A
19	A	A	194	B	B	A	A	A	A	B	B	B	B	B	B	218	B	B	206	B	A	A	A	A
20	A	A	A	A	B	238	B	B	B	A	212	B	B	B	B	B	B	B	B	B	B	E B 258	242	Q 250
21	Q 246	258	A 284	A	288	A	228	242	190	212	194	192	218	A	218	214	B	B	226	216	224	Q 228	B	A
22	A	A	A	A	214	A	200	188	192	B	210	B	B	B	B	A	B	190	202	216	222	206	228	242
23	268	A 274	Q 262	Q 280	E A 306	A	A	254	194	H 174	204	196	196	A	A	200	200	200	216	214	224	218	234	A
24	A	B	A	A	A	A	236	210	198	H 186	H 164	210	212	206	198	198	198	206	200	210	204	202	212	E A
25	A	A	198	Q 314	A	A	A	208	226	220	196	H 176	B	B	202	C	C	202	206	216	216	216	Q 214	Q 220
26	Q 224	Q 254	258	E A 310	Q 256	224	212	198	B	B	B	A	192	182	174	202	192	192	H 180	212	228	216	A	222
27	A	A	A	E S 282	E A 276	210	A	A	224	206	194	210	186	212	196	196	196	220	H 164	Q 214	B	Q 246	A	A
28	A	A	A	A	A	A	B	A	A	A	A	220	B	B	H 182	B	238	B	222	E A 252	A	A	A	A
29	A	A	A	A	A	B	B	A	A	B	B	B	B	B	228	B	B	B	238	B	A	A	A	A
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	10	10	10	9	11	8	8	11	13	16	17	16	14	11	14	13	10	18	20	21	18	25	14	12
MED	228	252	254	U 264	U 235	227	214	200	200	204	196	198	197	198	197	202	197	202	208	215	222	231	232	232
U Q	256	A 258	A 264	302	E A 276	241	232	210	223	E A 222	204	209	210	212	204	212	200	208	227	226	228	248	268	263
L Q	216	218	212	232	214	217	198	198	196	H 195	194	H 187	192	188	182	197	192	192	203	212	216	220	226	206

FEB. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2008 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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 49	O X 46	O X 42	O X 36	28	A	A
2	A	A	A	A	A	B	B	B	R	O X 41	R	B	B	B	B	B	B	B	O X 43	B	R 30	R	R	R
3	X 28	A	O X 35	O X 35	R	B	B	R	B	B	B	B	R	R	B	B	B	B	O X 43	X 43	O X 35	O X 26	B	B
4	R	R	R	B	R	O X 32	O X 41	O X 42	X 42	B	B	B	B	B	B	B	O X 50	O X 50	B	O X 44	O X 44	O X 38	X 36	32
5	28	O X 24	X 24	36	A	A	B	A	X 42	O X 46	X 47	B	O X 54	X 67	O X 71	O X 67	X 63	O X 50	B	B	X 36	30	A	A
6	A	A	A	A	R	R	O X 39	X 42	O X 47	O X 48	O X 48	O X 50	O X 51	O X 53	O X 53	O X 54	R	X 44	X 44	X 42	X 39	34	30	B
7	B	A	A	A	A	A	A	A	A	B	B	B	O X 50	O X 52	O X 50	O X 56	O X 53	X 49	X 43	X 44	38	34	26	A
8	A	O X 33	A	B	A	A	44	41	X 42	O X 46	O X 46	O X 50	O X 54	O X 54	O X 55	X 53	X 52	X 49	B	B	36	56	46	A
9	A	A	30	30	A	B	B	B	B	B	B	B	B	B	B	R	O X 44	O X 36	39	X 36	O X 36	24	29	A
10	O X 28	A	A	B	A	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	A	A	A
11	A	S	B	A	A	A	R	40	X 42	43	B	B	B	B	O X 51	X 50	B	O X 46	O X 41	O X 37	B	Y	A	A
12	A	A	A	R	R	A	A	B	B	O X 43	R	B	B	B	B	B	B	B	B	B	B	O X 32	A	A
13	A	B	R	A	R	B	B	B	R	O X 42	O X 42	B	B	B	O X 52	B	O X 52	B	B	B	B	O X 31	A	A
14	A	A	O X 30	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	Y	B	A	A
15	A	B	A	R	A	B	B	R	B	B	B	R	B	B	B	B	B	X 48	O X 43	O X 37	B	A	A	Y
16	A	A	45	R	A	B	B	B	B	O X 43	B	B	B	B	R	O X 50	X 46	X 44	B	O X 43	O X 35	O X 31	B	Y
17	52	A	A	A	A	R	R	O X 41	X 41	X 44	X 45	O X 48	R	O X 54	O X 53	O X 49	X 49	X 45	X 45	X 41	31	B	R	Y
18	R	A	A	A	63	42	B	B	R	B	R	B	B	B	B	O X 56	X 54	O X 55	O X 46	O X 40	B	B	Y	Y
19	Y	B	R	R	81	38	41	38	O X 44	O X 51	O X 52	O X 50	B	X 61	X 62	O X 58	X 53	X 51	B	X 36	R	A	A	A
20	A	B	A	A	A	A	A	R	R	O X 41	42	O X 48	O X 45	X 59	X 62	X 70	B	B	O X 48	O X 37	B	O X 24	B	O X 34
21	Y	A	A	A	A	B	B	R	R	X 43	O X 47	O X 48	X 48	X 48	O X 47	X 45	O X 51	X 48	X 43	X 37	X 35	34	A	30
22	A	A	B	A	A	O X 39	O X 30	O X 38	R	X 42	O X 47	O X 47	O X 52	O X 52	O X 52	O X 52	O X 53	O X 49	O X 42	O X 34	X 29	O X 26	22	B
23	O X 29	A	41	A	A	B	B	A	X 42	O X 43	B	B	B	O X 55	O X 54	O X 52	O X 51	O X 47	O X 43	O X 39	O X 31	B	O X 37	R
24	A	28	A	R	28	R	Y	B	O X 39	B	B	R	O X 52	X 57	X 56	X 54	O X 50	O X 48	X 44	X 38	36	X 30	R	B
25	A	Y	A	36	X 33	37	R	O X 39	X 46	O X 48	O X 52	O X 55	X 64	X 67	X 64	60	X 54	X 49	O X 45	O X 41	O X 31	B	23	R
26	A	40	A	A	A	A	A	X 41	O X 44	X 44	B	B	B	69	66	X 60	B	O X 66	R	69	A	58	69	86
27	42	A	A	64	B	B	R	B	B	B	B	B	B	B	B	B	B	B	O X 36	B	A	A	60	B
28	A	B	B	B	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	A	A
29	B	B	B	A	A	A	B	R	B	B	B	B	B	B	B	B	B	O X 44	B	R	R	B	B	A
30	B	R	B	A	B	B	B	B	B	B	B	B	B	B	B	B	O X 49	B	B	B	B	B	O X 30	R
31	51	A	A	B	A	A	R	O X 42	R	O X 46	R	O X 47	R	O X 55	X 57	O X 53	O X 51	O X 46	O X 42	O X 38	B	B	A	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	4	6	5	4	5	5	10	11	17	10	9	9	14	16	17	17	21	18	20	16	16	11	4
MED	29	30	32	36	48	38	O X 41	X 41	X 42	O X 43	O X 47	O X 48	O X 52	X 55	O X 54	O X 54	O X 51	O X 48	O X 43	O X 40	X 36	31	30	33
U Q	51	36	41	50	72	40	42	O X 42	O X 44	O X 46	O X 48	O X 50	O X 54	X 61	X 62	X 59	X 53	O X 50	O X 45	X 42	O X 36	34	46	60
L Q	28	26	30	32	30	34	O X 34	O X 39	X 42	O X 42	X 45	O X 48	O X 49	O X 53	O X 52	O X 51	O X 50	X 46	O X 42	X 37	X 31	O X 27	26	31

MAR. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2008 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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	43	R 40	R 36	R 30	22	A	A
2	A	A	A	A	A	B	B	B	R	R 35	R	B	B	B	B	B	B	B	R 37	B	24	R	R	R
3	22	A	R 29	R 29	R	B	B	R	B	B	B	B	R	R	B	B	B	B	R 37	37	R 29	R 20	B	B
4	R	R	R	B	A	R 26	R 35	R 36	36	B	B	B	B	B	B	B	U R 44	R 44	B	R 38	R 38	32	30	F 22
5	F 17	R 18	18	F 25	A	A	B	A	36	R 40	J R 41	B	R 48	61	R 65	R 61	57	R 44	, B	B	30	F 20	A	A
6	A	A	A	A	A	R	R 33	36	R 41	R 42	R 42	R 44	U R 45	R 47	R 47	R 48	R	38	38	36	33	F 24	F 21	B
7	B	A	A	A	A	A	A	A	A	B	B	B	R 44	R 46	R 44	R 50	R 47	43	37	38	32	F 24	F 14	A
8	A	R 27	A	B	A	A	F 33	F 30	36	R 40	R 40	R 44	R 48	R 48	R 49	47	46	43	B	B	F 27	F 30	F 32	A
9	A	A	F 21	F 17	A	B	B	B	B	B	B	B	B	B	B	R	R 38	R 30	F 30	30	R 30	F 15	F 16	A
10	22	A	A	B	A	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	A	A	A
11	A	S	B	A	A	A	R	F 31	36	F 35	B	B	B	B	R 45	44	B	R 40	35	R 31	B	Y	A	A
12	A	A	A	A	R	A	A	B	B	R 37	R	B	B	B	B	B	B	B	B	B	B	R 26	A	A
13	A	B	R	A	R	B	B	B	R	R 36	R 36	B	B	B	R 46	B	R 46	B	B	B	B	R 25	A	A
14	A	A	24	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	Y	B	A	A
15	A	B	A	A	A	B	B	A	B	B	B	R	B	B	B	B	B	42	37	R 31	B	A	A	Y
16	A	A	A	A	A	B	B	B	B	R 37	B	B	B	B	R	R 44	40	38	B	R 37	R 29	25	B	Y
17	R 22	A	A	A	A	A	A	R 35	35	38	39	R 42	R	R 48	R 47	R 43	43	39	39	35	F 21	B	R	Y
18	A	A	A	A	A	F 22	B	B	R	B	R	B	B	B	B	R 50	48	R 49	R 40	R 34	B	B	Y	Y
19	Y	B	R	R	A	F 26	F 22	F 29	R 38	R 45	R 46	R 44	B	55	56	R 52	47	45	B	30	R	A	A	A
20	A	B	A	A	A	A	A	A	R	R 35	36	R 42	R 39	53	56	64	B	B	R 42	31	B	R 18	B	R 28
21	Y	A	A	A	A	B	B	A	R	37	R 41	R 42	42	J R 42	R 41	J R 39	R 45	42	37	31	29	F 24	A	F 20
22	A	A	B	A	A	R 33	R 24	R 32	R	36	R 41	R 41	U R 46	R 46	R 46	R 46	R 47	R 43	R 36	R 28	23	R 20	F 12	B
23	R 23	A	F 21	A	A	B	B	A	36	R 37	B	B	B	R 49	R 48	R 46	R 45	41	R 37	R 33	25	B	R 31	R
24	A	F 20	A	R	F 19	R	Y	B	R 33	B	B	R	R 46	51	50	48	R 44	42	38	32	30	24	A	B
25	A	Y	A	F 26	27	F 27	R	R 33	40	R 42	R 46	R 49	58	61	58	F 50	48	42	R 39	R 35	24	B	F 14	R
26	A	F 27	A	A	A	A	A	35	38	38	B	B	B	F 57	F 56	54	B	R 60	R	A	A	F 25	F 30	F 33
27	F 21	A	A	A	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R 30	B	A	A	F 21	B
28	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A
29	B	B	B	A	A	A	B	R	B	B	B	B	B	B	B	B	B	R 38	B	R	R	B	B	A
30	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R 43	B	B	B	B	B	R 24	A
31	A	A	A	B	A	A	A	R 36	R	R 40	R	R 41	R	R 49	51	U R 47	R 45	R 40	R 36	R 32	B	B	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	4	5	4	2	5	5	10	11	17	10	9	9	14	16	17	17	21	18	19	16	16	11	4
MED	22	24	21	F 26	23	F 26	R 33	34	36	R 37	R 41	R 42	R 46	R 49	R 48	R 48	R 45	42	R 37	R 33	29	24	F 21	F 25
U Q	R 22	27	26	28		30	R 34	R 36	R 38	R 40	R 42	R 44	R 48	55	56	R 51	47	R 44	R 39	R 36	R 30	25	F 30	30
L Q	F 21	19	20	F 21		F 24	23	F 31	36	R 36	39	R 42	R 43	R 47	R 46	R 45	R 44	40	R 36	31	24	R 20	F 14	F 21

MAR. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2008 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	87	36	59	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	E B 27	K 29	E B 22	24	34	K 36
2	42	41	42	34	32	B	B	B	33	24	30	B	B	B	B	B	B	B	E B 21	B	29	23	25	25
3	33	37	32	33	29	B	B	26	B	B	B	B	35	27	B	B	B	B	E B 27	E B 19	E B 19	E B 13	B	B
4	16	21	23	B	34	19	E B 27	19	22	B	B	B	B	B	B	B	E B 24	K 28	B	E B 30	E B 24	E B 18	23	18
5	E B 12	E B 12	20	37	39	42	B	40	32	30	E B 30	B	30	E B 50	E B 54	28	40	E B 27	B	B	15	16	K 38	K 38
6	32	43	41	40	28	19	G 18	18	G	G 17	34	34	26	25	27	24	20	20	30	27	28	E B 12	E B 12	B
7	B	K 32	32	40	57	48	38	56	38	B	B	B	27	27	27	24	K 23	19	19	16	E B 14	15	E B 12	36
8	K 44	38	31	B	33	66	30	19	20	30	34	28	42	48	48	37	25	K 19	B	B	36	41	70	43
9	36	43	38	29	37	B	B	B	B	B	B	B	B	B	B	29	E B 24	E B 20	30	31	34	K 23	K 28	41
10	70	43	46	B	56	B	B	B	B	E B 28	B	B	B	B	B	B	B	B	B	B	B	32	43	39
11	44	68	B	38	51	44	29	E B 29	29	27	B	B	B	B	E B 37	22	B	E B 24	24	E B 19	B	14	36	36
12	33	40	38	31	23	37	40	B	B	E B 30	E B 29	B	B	B	B	B	B	B	B	B	B	32	35	68
13	36	B	21	34	32	B	B	B	32	G	E B 27	B	B	B	E B 28	B	29	B	B	B	B	31	31	37
14	41	32	28	G 24	36	44	B	B	42	B	B	B	B	B	B	B	B	B	B	B	17	B	94	79
15	59	B	48	K 33	57	B	B	40	B	B	B	31	B	B	B	B	B	22	E B 20	17	B	34	58	18
16	31	34	36	30	68	B	B	B	B	24	B	B	B	B	30	30	23	34	B	E B 27	E B 19	E B 15	B	18
17	35	66	69	63	48	31	34	25	29	28	27	22	28	28	29	23	29	22	15	21	21	B	16	16
18	K 35	43	35	57	K 33	19	B	B	36	B	G	B	B	B	B	E B 26	24	E B 24	E B 26	43	B	B	15	16
19	15	B	28	24	E B 40	E B 20	E B 12	16	E B 20	E B 25	E B 27	26	B	26	22	E B 28	22	E B 15	B	E B 12	35	42	39	94
20	71	B	37	42	43	45	44	34	31	21	27	24	28	24	22	23	B	B	E B 25	E B 17	B	17	B	32
21	16	44	78	45	42	B	B	36	22	32	26	25	30	28	E B 29	E B 25	21	17	18	E B 13	E B 12	18	35	31
22	48	67	B	40	54	41	23	15	18	22	29	22	23	26	27	E B 23	E B 21	E B 21	E B 19	E B	E B 13	E B	E B 11	B
23	35	72	70	57	51	B	B	42	26	24	B	B	B	27	26	28	28	E B 28	E B 20	E B 24	E B 15	B	19	28
24	36	30	31	26	20	27	18	B	E B 25	B	B	E B 28	29	28	28	30	E B 26	27	32	37	43	22	26	B
25	26	15	29	20	16	18	E B 13	E B 18	19	E B 22	24	27	27	28	25	25	21	E B 18	E B 20	29	E B 15	B	16	26
26	32	41	45	46	47	44	48	35	21	23	B	B	B	E B 28	24	21	B	E B 35	E B 22	38	44	59	102	64
27	68	40	36	34	B	B	31	B	B	B	B	B	B	B	B	B	B	B	28	B	41	69	E B 13	B
28	72	B	B	B	B	36	34	B	B	B	B	B	B	B	B	B	B	B	B	30	38	71	47	68
29	B	B	B	34	30	40	B	34	B	B	B	B	B	B	B	B	B	28	B	29	27	B	B	K 34
30	B	32	B	31	B	B	B	B	B	B	B	B	B	B	B	B	E B 31	B	B	B	B	B	31	24
31	36	43	35	B	35	41	31	E B 21	E B 20	E B 23	E B 24	E B 29	E B 25	E B 27	E B 26	E B 29	E B 25	E B 26	E B 26	E B 19	B	B	30	22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	25	26	25	27	19	16	18	20	18	14	11	12	15	17	18	18	21	19	21	22	22	27	26
MED	36	40	36	34	36	40	30	27	26	24	27	26	28	27	26	25	24	22	E B 24	26	22	23	31	35
U Q	46	43	45	41	51	44	36	36	32	28	30	29	30	28	30	29	28	28	27	30	35	34	39	41
L Q	32	32	31	30	32	20	20	19	20	22	26	24	26	26	26	23	22	20	20	E B 18	E B 15	16	E B 16	24

MAR. 2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2008 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	32	25	13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	27	20	22	12	12	12
2	18	13	16	20	22	B	B	B	19	13	21	B	B	B	B	B	B	B	21	B	12	15	12	12
3	12	13	14	14	22	B	B	15	B	B	B	B	26	23	B	B	B	B	27	19	19	13	B	B
4	11	12	11	B	15	13	27	16	18	B	B	B	B	B	B	B	24	23	B	30	24	18	14	12
5	12	12	12	12	16	18	B	22	15	14	30	B	22	51	54	21	16	27	B	B	12	11	10	12
6	28	13	12	13	12	12	13	13	13	13	16	15	22	15	17	15	14	13	13	12	12	12	12	B
7	B	12	26	14	15	19	16	17	18	B	B	B	17	17	17	15	13	13	12	12	14	11	12	12
8	12	11	12	B	13	14	14	12	13	12	14	12	13	13	12	12	14	13	B	B	13	14	12	13
9	29	14	12	12	21	B	B	B	B	B	B	B	B	B	B	20	24	20	16	14	12	11	12	12
10	12	22	16	B	14	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	16	12	13
11	22	E S 46	B	30	14	15	14	29	14	13	B	B	B	B	37	13	B	24	20	19	B	11	11	11
12	12	15	22	13	16	19	19	B	B	30	29	B	B	B	B	B	B	B	B	B	B	14	12	20
13	24	B	13	15	25	B	B	B	22	18	27	B	B	B	28	B	24	B	B	B	B	13	12	11
14	12	12	12	12	19	20	B	B	22	B	B	B	B	B	B	B	B	B	B	B	12	B	14	18
15	12	B	14	24	35	B	B	22	B	B	B	25	B	B	B	B	B	18	21	14	B	22	12	12
16	11	12	12	18	15	B	B	B	B	18	B	B	B	B	24	22	13	13	B	27	19	15	B	12
17	12	13	23	18	18	20	18	14	15	18	11	15	13	16	18	21	13	16	11	12	12	B	13	12
18	12	12	13	19	13	13	B	B	20	B	13	B	B	B	B	26	14	24	26	25	B	B	14	13
19	12	B	12	12	40	20	12	13	20	25	27	20	B	22	15	28	13	15	B	12	12	12	13	12
20	25	B	23	18	16	17	20	13	26	18	14	16	27	16	16	13	B	B	25	18	B	12	B	11
21	12	28	28	14	19	B	B	25	17	14	17	13	13	18	29	25	14	12	13	13	12	12	13	13
22	17	22	B	14	20	15	13	14	15	14	14	14	16	16	14	23	22	21	19	15	13	12	12	B
23	12	14	12	14	14	B	B	25	16	14	B	B	B	24	23	20	22	28	21	24	15	B	12	11
24	14	11	13	12	12	12	13	B	25	B	B	28	18	12	21	18	26	22	17	12	13	12	11	B
25	15	13	12	12	12	12	13	18	17	22	19	19	19	13	14	15	14	18	20	23	15	B	11	12
26	14	13	14	14	13	13	16	13	13	15	B	B	B	28	18	16	B	34	22	12	15	11	12	14
27	13	30	19	16	B	B	27	B	B	B	B	B	B	B	B	B	B	B	23	B	13	20	12	B
28	17	B	B	B	B	16	28	B	B	B	B	B	B	B	B	B	B	B	B	16	12	12	18	13
29	B	B	B	23	22	24	B	28	B	B	B	B	B	B	B	B	B	24	B	24	13	B	B	11
30	B	22	B	15	B	B	B	B	B	B	B	B	B	B	B	B	31	B	B	B	B	B	12	12
31	11	14	21	B	22	16	14	21	20	23	24	29	25	27	26	29	25	26	26	19	B	B	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	14	14	15	18	20	28	25	20	25	B	B	B	B	37	26	25	24	26	20	15	14	12	12
U Q	24	B 30	B 23	B 24	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	B 14
L Q	12	12	12	13	14	15	14	15	16	14	19	20	22	17	18	18	14	18	20	14	12	12	12	12

MAR. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2008 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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	244	E B 262	E A 316	E B 274	250	A	A
2	A	A	A	A	A	B	B	B	A	216	216	B	B	B	B	B	B	B	248	B	E A 246	A	A	A
3	224	A	240	254	254	B	B	A	B	B	B	B	246	200	B	B	B	B	E B 242	226	236	E B 284	B	B
4	A	A	A	B	A	A	B	218	212	B	B	B	B	B	B	B	212	236	B	226	222	234	236	230
5	264	B	A	214	A	A	B	A	A 244	212	E B 230	B	188	B	298	216	E A 236	236	B	B	220	E A 268	A	A
6	A	A	A	A	236	A	A	H 210	202	214	214	A	188	182	206	206	206	206	214	218	Q 210	208	Q 282	B
7	B	A	A	A	A	A	A	A	A	B	B	B	204	200	212	216	206	212	206	Q 224	206	230	Q 304	A
8	A	222	A	B	A	A	258	218	218	210	196	190	A 234	A 314	E A 280	208	220	Q 208	B	B	224	Q 222	226	A
9	A	A	234	F	A	B	B	B	B	B	B	B	B	B	B	234	234	E A 284	248	260	218	184	188	A
10	250	A	A	B	A	B	B	B	B	E B 264	B	B	B	B	B	B	B	B	B	B	B	A	A	A
11	A	S	B	A	A	A	A	B	A 238	234	B	B	B	B	B	H 174	B	234	268	250	B	Y	A	A
12	A	A	A	A	A	A	A	B	B	278	236	B	B	B	B	B	B	B	B	B	B	254	A	A
13	A	B	A	A	A	B	B	B	A	216	224	B	B	B	206	B	228	B	B	B	B	238	226	A
14	A	A	H 174	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	Y	B	A	A
15	A	B	A	A	A	B	B	A	B	B	B	E A 248	B	B	B	B	B	228	226	A 242	B	A	A	A
16	A	A	A	A	A	B	B	B	B	E A 260	B	B	B	B	E A 266	E A 276	A 202	230	B	234	E B 240	248	B	Y
17	196	A	A	A	A	A	A	214	208	H 172	210	204	204	204	204	204	216	226	208	206	A 264	B	A	Y
18	238	A	A	A	A	E A 232	B	B	A	B	218	B	B	B	B	222	216	228	218	238	B	B	Y	Y
19	Y	B	A	A	238	E B 300	E B 238	216	230	230	218	206	B	208	208	216	194	152	B	Q 222	210	A	A	A
20	A	B	A	A	A	A	A	A	A	208	232	196	224	220	H 180	214	B	B	206	218	B	A	B	214
21	Y	A	A	A	A	B	B	A	A	230	230	206	204	216	226	212	222	Q 202	210	218	240	Q 252	A	208
22	A	A	B	A	A	A 230	216	238	238	220	220	216	200	200	200	210	210	212	206	224	244	238	E B 286	B
23	224	A	218		A	B	B	A	240	236	B	B	B	230	212	220	198	226	198	226	244	B	196	228
24	A	200	204	A	A	A	Y	B	E B 276	B	B	222	210	210	210	216	218	214	210	224	226	226	A	B
25	A	Y	A	A	A	A	E B 278	242	226	210	230	206	212	212	198	Q 204	Q 210	Q 208	210	218	210	B	A	A
26	A	200	A	A	A	A	A	224	198	178	B	B	B	230	212	Q 212	B	222	E B 262	A	A	F	182	192
27	F	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	284	B	A	A	F 158	B
28	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A
29	B	B	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	252	B	A	A	B	B	A
30	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	240	B	B	B	B	B	242	A
31	A	A	A	B	A	A	A	B	238	222	230	214	214	236	A 228	228	216	216	228	228	B	B	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	3	5	2	3	3	4	8	13	18	14	10	12	14	16	18	18	21	19	19	17	14	11	5
MED	231	200	218	234	238	E A U 232	238	218	228	216	220	206	207	211	209	214	215	224	214	225	223	235	226	214
U Q	250	222	237		254	E B 300	268	231	239	234	230	216	219	230	A 227	220	222	235	248	238	244	252	Q 282	229
L Q	224	200	189		236	A 230	227	215	210	210	216	204	202	200	205	208	206	210	208	218	214	226	188	200

MAR. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2008 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	A	A	A	B	B	B	B	B	B	B	B	O X 43	X 45	X 46	B	B	O X 27	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	X 49	X 56	B	B	B	B	O X 46	B	B	Y	B	B	B
3	B	B	B	X 28	A	R	O X 30	32	X 39	X 49	O X 54	X 57	X 60	X 70	X 59	X 64	X 58	X 46	X 40	X 26	X 23	X 22	X 20	B
4	B	61	B	36	36	40	43	X 30	X 43	X 51	X 57	X 58	R	X 76	X 74	O X 72	O X 52	X 52	X 46	X 39	30	A	A	A
5	O X 34	A	A	A	A	A	O X 32	X 33	X 38	X 44	X 44	O X 49	O X 52	O X 56	X 58	X 65	X 53	X 46	B	A	62	A	A	A
6	A	B	B	B	B	A	A	O X 38	B	B	B	B	B	B	B	B	O X 48	B	O X 35	B	B	B	A	A
7	O X 40	A	A	A	R	B	B	B	B	B	B	B	O X 52	O X 50	B	B	B	O X 52	O X 43	B	B	B	A	R
8	A	S	A	B	R	R	A	R	B	X 42	O X 44	O X 46	B	B	B	B	B	B	B	B	O X 34	X 31	X 32	R
9	A	A	R	R	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
10	A	O X 35	A	A	A	R	B	A	R	O X 39	B	B	B	B	B	B	B	B	B	B	B	B	B	A
11	A	A	R	B	R	R	B	R	O X 37	X 41	O X 48	O X 46	O X 49	O X 49	A	X 56	X 56	X 48	O X 36	O X 30	B	B	B	A
12	Y	R	O X 38	A	B	R	R	R	B	B	B	R	B	B	B	B	B	B	B	B	B	R	R	B
13	Y	R	B	R	R	R	R	B	O X 35	B	O X 42	O X 44	O X 47	X 50	O X 54	B	B	X 39	33	O X 28	A	A	B	A
14	O X 29	R	X 32	R	R	B	R	O X 26	X 35	O X 37	X 47	X 48	X 49	O X 52	X 54	X 51	X 52	X 38	29	O X 23	22	B	B	B
15	B	Y	B	B	B	O X 40	B	B	36	42	X 45	X 54	X 58	X 58	X 66	X 59	X 59	38	27	O X 24	B	A	A	O X 24
16	A	X 39	A	A	B	A	A	A	A	A	B	B	B	B	O X 48	O X 48	X 48	O X 41	B	A	A	A	A	A
17	A	A	B	B	B	A	A	O X 36	A	B	B	O X 44	X 48	X 49	O X 48	O X 41	O X 40	B	B	B	A	A	B	B
18	X 29	O X 31	A	A	A	A	O X 37	R	31	B	B	B	X 49	X 53	X 52	X 60	O X 45	B	O X 28	O X 25	B	B	B	B
19	A	A	A	A	R	A	A	A	O X 35	X 40	X 42	X 50	O X 54	X 57	O X 57	X 56	X 46	O X 37	B	B	B	B	R	60
20	A	A	B	A	A	A	R	R	O X 36	X 42	X 48	O X 53	X 58	X 56	X 61	X 66	X 50	X 32	X 28	X 23	B	A	A	A
21	O X 34	O X 28	A	O X 36	A	A	O X 34	R	B	R	X 49	44	X 55	X 59	X 57	X 63	51	40	26	O X 21	B	B	B	Y
22	A	B	A	B	B	B	Y	B	O X 37	X 47	X 60	O X 63	X 66	68	X 73	X 74	X 50	O X 34	A	A	R	A	A	R
23	A	A	A	A	X 42	B	B	A	B	B	B	B	B	B	B	B	O X 47	X 42	32	A	69	X 30	A	A
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	O X 28	A
25	A	A	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R
26	X 34	B	A	B	A	A	A	B	A	B	B	B	B	B	X 71	B	B	O X 42	B	B	R	X 28	B	B
27	B	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	O X 24	A	A	B	A
28	A	A	R	A	A	O X 35	O X 36	X 24	X 31	X 36	X 41	X 48	B	B	B	B	O X 49	37	A	B	A	61	B	A
29	A	A	B	A	A	A	B	A	R	B	B	O X 42	O X 48	R	X 47	X 45	X 38	X 26	A	B	B	B	B	A
30	O X 32	A	Y	O X 33	Y	A	R	R	R	O X 38	X 48	X 48	X 56	O X 63	61	O X 46	42	R	B	B	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	7	5	2	4	2	3	6	7	12	13	14	17	16	15	16	16	19	19	12	10	7	5	3	2
MED	O X 34	O X 35	X 35	X 34	39	O X 40	O X 35	X 32	X 36	X 42	X 48	X 48	X 53	X 56	X 58	X 58	X 49	X 41	X 32	O X 24	30	X 30	X 28	42
U Q	O X 34	50		36		O X 40	37	O X 36	X 38	X 46	X 49	X 54	X 57	X 63	X 64	X 64	X 52	X 46	X 38	O X 28	62	46	X 32	
L Q	X 29	O X 30		X 30		O X 35	O X 32	X 26	X 35	O X 38	X 44	O X 45	X 49	X 50	X 53	O X 47	X 45	X 37	28	O X 23	23	X 25	X 20	

APR. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2008 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	A	A	A	B	B	B	B	B	B	B	B	R 37	J R 39	40		B	B	R 21	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	J R 43	J R 50	B	B	B	B	40	B	B	Y	B	B	B
3	B	B	B	22	A	A	R 24	F 22	33	43	R 48	51	J R 54	64	53	58	52	40	34	20	17	16	14	B
4	B	B	B	F 26	F 26	F 28	F 33	24	37	45	51	J R 52	D R 42	70	68	R 66	R 46	46	40	J R 33	F 17	A	A	A
5	R 28	A	A	A	A	A	R 26	27	32	38	38	43	R 46	R 50	52	59	47	40	B	A	Y	A	A	A
6	A	B	B	B	B	A	A	R 32	B	B	B	B	B	B	B	B	R 42	B	R 29	B	B	B	A	A
7	R 34	A	A	A	R	B	B	B	B	B	B	B	R 46	R 44	B	B	B	R 46	R 37	B	B	B	A	R
8	A	S	A	B	R	R	A	R	B	36	R 38	R 40	B	B	B	B	B	B	B	B	R 28	J R 25	J R 26	R
9	A	A	R	R	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
10	A	29	A	A	A	R	B	A	R	R 33	B	B	B	B	B	B	B	B	B	B	B	B	B	A
11	A	A	R	B	A	R	B	R	R 31	35	R 42	R 40	R 43	R 43	A	50	50	42	R 30	R 24	B	B	B	A
12	Y	R	R 32	A	B	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	R	R	B
13	Y	R	B	R	R	A	A	B	R 29	B	R 36	R 38	R 41	44	R 48	B	B	33	F 24	R 22	A	A	B	A
14	R 23	A	26	A	A	B	A	R 20	29	R 31	41	42	43	R 46	48	45	46	32	F 20	R 17	F 14	B	B	B
15	B	Y	B	B	B	R 34	B	B	F 26	F 34	J R 39	J R 48	52	52	60	53	53	F 28	F 18	R 18	B	A	A	R 18
16	A	J R 33	A	A	B	A	A	A	A	A	B	B	B	B	42	R 42	42	R 35	B	A	A	A	A	A
17	A	A	B	B	B	A	A	R 30	A	B	B	R 38	42	43	R 42	R 35	34	B	B	B	A	A	B	B
18	J R 23	R 25	A	A	A	A	R 31	R	F 21	B	B	B	43	47	46	54	R 39	B	R 22	R 19	B	B	B	B
19	A	A	A	A	A	A	A	A	29	34	36	44	R 48	J R 51	R 51	50	40	R 31	B	B	B	B	A	A
20	A	A	B	A	A	A	A	A	R 30	36	42	R 47	52	50	55	60	44	26	22	17	B	A	A	A
21	R 28	R 22	A	R 30	A	A	R 28	A	B	A	43	R 34	49	53	51	57	F 40	F 29	F 14	R 15	B	B	B	Y
22	A	B	A	B	B	B	Y	B	R 31	41	54	R 57	60	F 58	67	68	44	28	A	A	A	A	A	A
23	A	A	A	A	36	B	B	A	B	B	B	B	B	B	B	B	R 41	J R 36	F 22	A	A	J R 24	A	A
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	R 22	A
25	A	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R
26	28	B	A	B	A	A	A	B	A	B	B	B	B	B	65	B	B	R 36	B	B	R	22	B	B
27	B	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	R 18	A	A	B	A
28	A	A	A	A	A	R 29	R 30	18	25	30	35	42	B	B	B	B	R 43	F 31	A	B	A	A	B	A
29	A	A	B	A	A	A	B	A	R	B	B	R 36	R 42	R	41	39	32	20	A	B	B	B	B	A
30	R 26	A	Y	R 27	Y	A	R	A	R	32	42	42	50	57	F 50	40	F 30	R	B	B	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	7	4	2	4	2	3	6	7	12	13	14	17	17	15	16	16	19	19	12	10	5	4	3	1
MED	R 28	R 27	29	26	31	R 29	R 29	24	30	35	42	R 42	R 47	50	51	52	42	35	23	R 18	17	23	R 22	R 18
U Q	R 28	31		R 28		R 34	31	R 30	32	40	43	R 48	51	57	58	58	46	40	32	R 22	R 24	J R 24	J R 26	
L Q	R 23	R 24		24		F 28	R 26	20	28	32	38	R 39	R 42	44	47	R 41	39	29	F 21	R 17	16	19	14	

APR. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2008 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	35	38	38	38	40	58	43	B	B	B	B	B	B	B	B	E B 27	E B 23	E B 19	B	B	E B	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	E B 28	E B 32	B	B	B	B	E B 26	B	B	16	B	B	B
3	B	B	B	29	37	28	21	18	20	24	29	28	24	26	24	22	19	15	15	E B 12	E B 12	21	E B 11	B
4	B	E B 48	B	23	E B 23	E B 23	E B 19	28	16	19	22	24	26	26	E B 38	E B 54	E B 23	E B 14	E B 13	E B 20	E B 13	94	70	71
5	54	66	44	44	43	46	35	15	18	24	19	23	21	22	22	E B 29	E B 20	E B 20	B	94	28	43	41	51
6	71	B	B	B	B	50	40	40	B	B	B	B	B	B	B	B	E B 27	B	E B 20	B	B	B	36	39
7	67	43	37	42	32	B	B	B	B	B	B	B	E B 30	E B 26	B	B	B	E B 22	E B 18	B	B	B	32	25
8	43	60	80	B	34	34	69	31	B	E B 25	E B 28	E B 18	B	B	B	B	B	B	B	B	32	27	38	34
9	47	69	30	32	36	B	B	58	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	40
10	34	34	43	44	35	K 27	B	38	29	G	B	B	B	B	B	B	B	B	B	B	B	B	B	32
11	41	39	K 32	B	32	K 30	B	E B 15	17	28	G	E B 23	E B 23	E B	47	32	27	E B 18	E B 19	E B 16	B	B	B	28
12	16	26	36	42	B	37	32	32	B	B	B	E B 26	B	B	B	B	B	B	B	B	B	19	24	B
13	16	34	B	33	26	31	32	B	20	B	E B 26	E B 21	E B 20	20	E B	B	B	E B 14	28	E B 13	36	31	B	26
14	25	25	26	30	22	B	25	26	E B 14	E B 15	E B 20	19	22	E B 20	38	39	E B 17	E B 16	E B 13	E B 11	30	B	B	B
15	B	16	B	B	B	29	B	B	E B 13	E B 18	E B 21	21	22	22	22	18	E B 16	E B 13	E B 13	E B 12	B	26	27	29
16	28	71	44	72	B	56	51	48	51	58	B	B	B	B	E B 29	E B 23	E B 23	E B 22	B	33	32	47	50	70
17	70	63	B	B	B	47	44	K 26	42	B	B	E B 30	28	E B 24	E B 30	E B 29	E B 28	B	B	B	25	29	B	B
18	21	35	30	36	36	43	38	24	18	B	B	B	26	22	25	E B 22	E B 23	B	E B 13	16	B	B	B	B
19	32	40	40	64	30	32	32	39	E B 21	18	21	16	20	E B 25	E B 34	E B 22	22	E B 18	B	B	B	B	23	38
20	76	36	B	37	57	37	27	24	16	18	18	18	G	24	21	E B 19	E B 14	16	22	E B 12	B	38	39	38
21	32	32	33	40	93	48	49	31	B	34	30	19	19	21	21	18	41	33	E B 12	17	B	B	B	19
22	39	B	28	B	B	B	17	B	E B 24	E B 18	21	25	E B 24	20	E B 22	E B 20	E B 19	E B 19	32	28	24	31	40	28
23	42	46	41	44	32	B	B	35	B	B	B	B	B	B	B	B	E B 27	E B 24	25	82	35	71	68	63
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	30	33	34	34
25	71	34	B	B	B	B	B	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	16	18
26	G 24	B	39	B	35	42	41	B	32	B	B	B	B	B	E B 40	B	B	E B 24	B	B	K 22	33	B	B
27	B	33	81	B	B	B	B	40	B	B	B	B	B	B	B	B	B	B	B	E B 12	35	40	B	26
28	32	34	30	38	43	36	21	13	E B 15	16	16	18	B	B	B	B	E B 22	32	37	B	41	30	B	42
29	46	39	B	36	36	57	B	36	K 26	B	B	E B 29	29	E B 19	19	E B 18	E B 15	14	29	B	B	B	B	30
30	36	34	17	22	17	30	27	34	28	E B 24	27	E B 20	E B 20	22	22	E B 19	E B 20	32	B	B	33	40	57	41
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	24	19	19	20	21	19	21	19	15	14	18	17	15	16	16	19	20	15	15	16	17	16	22
MED	38	36	37	38	35	37	32	31	19	18	20	20	22	22	23	E B 22	E B 22	E B 19	E B 19	E B 16	30	33	37	34
U Q	50	47	43	44	38	48	43	38	29	25	27	E B 26	27	25	E B 36	E B 29	E B 27	24	28	29	34	42	46	41
L Q	30	34	30	32	31	30	25	24	E B 16	18	19	19	20	20	22	E B 19	E B 19	E B 16	E B 13	E B 12	23	28	26	28

APR. 2008 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2008 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	14	20	22	21	24	B	B	B	B	B	B	B	B	27	23	19	B	B	14	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	28	32	B	B	B	B	26	B	B	13	B	B	B
3	B	B	B	12	15	13	13	13	14	15	17	20	14	18	17	16	14	13	11	12	12	11	11	B
4	B	48	B	12	23	23	18	13	13	14	17	19	14	15	38	54	23	14	13	20	13	20	15	13
5	12	12	15	20	18	16	18	12	12	12	12	14	14	13	14	29	20	20	B	13	24	22	23	26
6	16	B	B	B	B	23	19	13	B	B	B	B	B	B	B	B	27	B	20	B	B	B	12	12
7	14	15	29	15	25	B	B	B	B	B	B	B	30	26	B	B	B	22	18	B	B	B	11	12
8	12	12	19	B	22	20	16	14	B	25	28	18	B	B	B	B	B	B	B	B	18	12	11	23
9	24	19	22	13	27	B	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	11
10	12	11	19	20	23	16	B	23	19	18	B	B	B	B	B	B	B	B	B	B	B	B	B	12
11	12	17	18	B	16	16	B	15	13	14	13	23	23	22	16	15	14	18	19	16	B	B	B	13
12	12	12	12	12	B	20	14	16	B	B	B	26	B	B	B	B	B	B	B	B	B	13	13	B
13	12	21	B	23	21	13	14	B	13	B	27	21	20	18	26	B	B	14	11	13	11	16	B	11
14	13	13	13	24	15	B	12	12	14	15	19	16	16	20	15	15	17	16	13	11	12	B	B	B
15	B	13	B	B	B	21	B	B	13	18	21	15	16	14	14	13	16	13	13	12	B	11	12	11
16	11	18	24	16	B	46	24	22	20	20	B	B	B	B	29	23	23	22	B	12	15	12	12	17
17	23	21	B	B	B	20	20	15	15	B	B	30	23	24	30	29	28	B	B	B	16	12	B	B
18	14	12	12	14	14	17	12	13	13	B	B	B	19	18	22	22	23	B	13	13	B	B	B	B
19	12	13	13	16	26	14	13	14		14	15	12	14	25	34	22	17	18	B	B	B	B	12	13
20	14	19	B	26	17	18	14	13	14	15	14	14	12	15	15	19	14	10	11	12	B	11	12	11
21	11	12	12	13	19	18	13	18	B	19	13	13	13	12	12	15	13	13	12	11	B	B	B	14
22	15	B	12	B	B	B	13	B	24	18	18	19	24	13	22	20	19	19	13	12	14	13	12	12
23	12	12	18	14	23	B	B	23	B	B	B	B	B	B	B	B	27	24	20	12	16	14	13	12
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	17	12	28
25	14	28	B	B	B	B	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	11	12
26	13	B	17	B	24	22	26	B	24	B	B	B	B	B	40	B	B	24	B	B	14	13	B	B
27	B	23	20	B	B	B	B	14	B	B	B	B	B	B	B	B	B	B	B	12	13	16	B	12
28	13	12	13	16	12	15	13	13	15	13	14	15	B	B	B	B	22	12	26	B	12	12	B	13
29	15	18	B	27	30	25	B	23	19	B	B	29	22	19	13	18	15	12	12	B	B	B	B	11
30	11	13	13	13	13	12	18	19	15	24	16	20	20	18	17	19	20	17	B	B	14	12	14	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	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	18	20	22	24	21	20	18	20	B	B	27	27	26	36	42	23	21	B	B	17	18	19	13
U Q	B 23	B 28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
L Q	12	12	13	14	18	16	14	13	14	15	17	18	16	18	17	19	17	14	13	12	13	12	12	12

APR. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2008 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	A	A	B	B	B	B	B	B	B	B	226	242	210	B	B	E B 246	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	220	E B 254	B	B	B	B	208	B	B	Y	B	B	B
3	B	B	B	A	A	A	A	200	Q 238	220	204	204	192	216	202	206	Q 200	Q 188	Q 194	B 218	E B 254	E A 232	E B 246	B
4	B	B	B	A	B	B	E B 362	234	214	204	206	204	Q 204	220	220	E B 236	204	200	Q 226	288	202	A	A	A
5	228	A	A	A	A	A	A	A	A 238	228	212	200	210	210	216	250	214	232	B	A	A	A	A	A
6	A	B	B	B	B	A	A	A	B	B	B	B	B	B	B	B	E B 242	B	E B 282	B	B	B	A	A
7	E A 242	A	A	A	A	B	B	B	B	B	B	B	E B 268	218	B	B	B	226	206	B	B	B	A	A
8	A	A	A	B	A	A	A	A	B	E B 250	240	224	B	B	B	B	B	B	B	B	A	200	212	A
9	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
10	A	A	A	A	A	A	B	A	A	E A 278	B	B	B	B	B	B	B	B	B	B	B	B	B	A
11	A	A	A	B	A	A	B	E B 312	242	226	230	222	210	224	A	258	222	206	E B 226	E B 236	B	B	B	A
12	Y	218	212	A	B	A	A	A	B	B	B	E B 246	B	B	B	B	B	B	B	B	B	A	A	B
13	A	A	B	A	A	A	A	B	E B 284	B	E B 244	Q 194	202	212	234	B	B	Q 206	A 238	B	A	A	B	A
14	202	A	204	A	A	B	A	A	204	H 184	216	206	204	204	Q 216	Q 202	206	Q 196	Q 196	E B 264	E A 264	B	B	B
15	B	Y	B	B	B	A	B	B	Q 216	Q 204	204	Q 204	194	Q 200	206	192	Q 180	Q 182	210	210	B	A	A	196
16	224	230	A	A	B	A	A	A	A	A	B	B	B	B	E B 264	228	208	E B 230	B	A	A	A	A	A
17	A	A	B	B	B	A	A	230	A	B	B	B	E A 240	220	248	E B 246	218	B	B	B	A	A	B	B
18	172	218	A	A	A	A	212	A	A	B	B	B	212	226	228	220	202	B	E B 238	E A 254	B	B	B	B
19	A	A	A	A	A	A	A	A	B	232	220	224	200	216	232	196	196	206	B	B	B	B	A	A
20	A	A	B	A	A	A	A	A	246	238	212	222	222	200	202	192	178	178	198	E B 220	B	A	A	A
21	208	E B 294	A	212	A	A	212	A	B	A	228	200	H 182	182	208	202	Q 190	Q 184	Q 156	E A 230	B	B	B	A
22	A	B	A	B	B	B	Y	B	E B 268	210	204	188	208	Q 196	196	192	184	210	A	A	A	A	A	A
23	A	A	A	A	244	B	B	A	B	B	B	B	B	B	B	B	B	228	E A 316	A	A	E A 294	A	A
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	216	A
25	A	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
26	210	B	A	B	A	A	A	B	A	B	B	B	B	B	234	B	B	246	B	B	A	248	B	B
27	B	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	E B 310	A	A	B	A
28	A	A	A	A	A	210	A	E B 354	286	228	200	216	B	B	B	B	214	E A 272	A	B	A	A	B	A
29	A	A	B	A	A	A	B	A	262	B	B	B	242	206	214	208	206	258	A	B	B	B	B	A
30	A	A	Y	200	Y	A	A	A	A	E B 240	Q 212	208	230	Q 204	Q 198	Q 192	Q 192	A	B	B	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	7	4	2	2	1	1	3	5	11	13	14	16	17	16	16	16	18	19	12	9	4	4	3	1
MED	209	221	208	206	244	210	212	U 217	240	219	212	206	207	211	216	204	204	207	U 206	E B 236	E 250	U 228	214	196
U Q	228	262					E B 362	E B 333	E B 268	E B 239	228	222	E 235	219	233	232	214	230	E 238	E B 276	E 259	271	E B 246	
L Q	202	218					212	215	216	207	204	202	201	202	204	194	Q 192	Q 196	Q 197	B 219	224	216	212	

APR. 2008 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2008 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		X			O X				O X		X	X					B	B	B	Y		O X
			46	34	59	71	37	32	31	36	47	60	58	59	62	55	44	31					35	23
2		A	B	A	B	B	A	R	O X	B	B	B	B	O X	X	X	X	O X	B	B	B	B	B	B
	57								37					47	47	49	48	38						
3	B	O X	O X			A	B	A	B	B	A	O X	X	B	B	O X	X	O X	B	B	B	A	O X	A
		35	39	41							41	45	45			50	45	37					29	
4	A	A	A	O X		A	A	A	A	B	O X	O X	B	B	B	B	B	B	B	B	B	A	R	R
				35	52						38	43												
5	R	A	A	A	A	A	A	B	A	O X	B	B	B	B	B	B	O X	O X	X	B	Y	R	A	A
										36							39	32	28					
6	B	A	O X	B	B	B	B	R	B	B	B	B	B	B	B	O X	B		B	B	B	B	B	X
			40													55		31						30
7	O X	A	A	R	A	A	A	A	Y	X	X	R		O X	X	X				R	B	A	A	A
	30									35	42		47	52	47	47	38	31	24					
8	A	A	A	B	A	A	B	R	B	B	X	O X	X	O X	X	X	X	B	B	B	B	B	B	R
											42	48	59	59	58	53	37							
9	R	O X	O X	O X	A	O X	B	R	R			X	X		X	X	X	O X	B	B	B	B	B	B
		29	38	38		35				32	42	53	59	52	52	52	36	23						
10	Y	Y	A	A	O X	X	O X	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
					35	27	33	31																
11	A	R	R	A	A		A	A	B	B	O X	X	X	X	O X	X	X	Y	B	B	B	B	B	A
						33					43	49	60	49	48	44	28							
12	A	A	A	A	O X		B		B		X		X	X	X	X	X	B	B	B	B	B	B	B
					28	34		42		31	38	51	53	54	46	42	28							
13	B	A	A	A	O X	A	B	B	B			X	X	X	X				O X	B	B	A	R	A
					33					38	43	47	47	49	47	42	34	26	22					
14	Y	B	Y	R	Y	A	A	X	B	A	O X	X	X	X	X	X	O X		B	Y	Y	B	Y	R
								30			36	51	53	50	47	40	32	24						
15	B	A	R	A	B	A	R	B	A		O X	X	O X	X	X	X			B	B	B	B	B	B
										28	34	48	56	49	48	39	30	23						
16	B	R	A		A					O X	X	X	X	O X	X	X		B	B	B	B	R	B	R
				58		37	42	33	34	27	39	48	48	52	49	42	34							
17	R	A	A	O X	O X	O X	R	B	B	O X		X	X	X	X			B	B	B	B	R	B	B
				32	33	33				28	44	48	45	51	44	38	28							
18	B	B	R	B	B	Y	B	B	B	B			X		X	X		B	B	B	B	B	Y	A
											41	43	46	45	42	31	39							
19	A	A	R	A	A	A	A		X	X	X		X	X	X	B		B	O X	B	B	A	A	R	O X
								31	30	28	35	47	57	51	48				33					25
20	O X	A		A	A	A	A	A	A	R	B	B	O X			X		B	B	B	B	B	A	A
	21		45										51	52	48	39	32							
21	O X	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	X	A
	40																						26	
22	A	A	A	A	O X	B	B	B	A	B	B	B	B	O X	O X	X	X	B	B	B	A	A	A	A
					40									49	44	42	27							
23	R	B	A	B	A	A	A	B	R	X	X	X	X	X	X	X		B	B	B	Y	B	A	A
										25	36	44	47	49	53	47	34							
24	A	X	B	B	B	A	R	Y	Y	O X	X	O X	B	O X	B	B	X	B	B	B	B	R	B	A
		42								26	32	40		47			38							
25	A	O X	A	A	A	B	B	Y	B	A		X	X	X	O X	R	X	B	B	B	B	B	B	B
		38									37	40	51	50	40		25							
26	B	R		A	R	R	X	B	R	O X	X	O X	X	O X	B	B	B	B	B	B	B	B	B	B
			30				22			24	31	40	48	48										
27	A	A	O X	O X	R	R	R	B	B			X	X	X			O X	B	B	B	B	A	Y	Y
			38	41						24	33	39	45	56	44	35	22							
28	R	A	A	O X	A	A	A	A	A		R	B	O X	B	X	O X	B	B	B	A	A	A	A	A
				35						50			44		41	38								
29	A	B	A	A	A	A	A	B	R	Y	B	O X	O X	O X	X	O X	X	O X	B	B	B	A	A	A
					37							41	44	46	38	34	24	22						
30	A	A	A		A	A	A	A	R		X	X	X	X	X		O X	X	O X	B	A	A	B	R
				62						25	32	40	44	45	40	40	25	21	23					
31	A	A	R	A	A	A	R	B	B	B	B	B	B	B	X	B	B	B	B	B	R	A	A	A
															49									

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	4	7	9	8	7	4	6	4	16	21	21	22	23	23	22	23	13	4				3	3
MED	O X	O X	O X	O X	O X		X				X	X	X	X	X	X	X	X	X				X	O X
	35	36	39	38	36	34	35	32	32	28	38	47	48	50	47	42	34	31	24				29	25
U Q	48	X	45	50	46	37	40	33	36	36	X	X	X	X	X	X	X	O X	26				35	X
		40									42	48	56	52	49	49	38	32						30
L Q	O X	O X		O X	O X		X			X	X	X	X	O X	X	X	X	X	O X				X	O X
	26	32	38	34	33	33	28	31	30	26	34	40	45	48	44	39	28	23	22				26	23

MAY 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2008 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	R 31	28	A	34	R 31	F 20	F 20	F 25	R 41	F 50	52	53	F 52	F 43	F 34	F 22	B	B	B	Y	F 26	R 17
2	A	A	B	A	B	B	A	R	R 31	B	B	B	B	R 41	41	43	42	R 32	B	B	B	B	B	B
3	B	R 29	R 33	F 29	A	B	A	B	B	A	R 35	39	R 39	B	B	R 44	39	R 31	B	B	B	A	R 23	A
4	A	A	A	R 29	A	A	A	A	A	B	32	R 37	B	B	B	B	B	B	B	B	B	A	A	A
5	R	A	A	A	A	A	A	B	A	R 30	B	B	B	B	B	B	R 33	R 26	22	B	Y	A	A	A
6	B	A	R 34	B	B	B	B	A	B	B	B	B	B	B	B	R 49	B	F 22	B	B	B	B	B	24
7	R 24	A	A	R	A	A	A	A	Y	29	36	R	41	R 46	41	41	F 30	F 22	F 15	A	B	A	A	A
8	A	A	A	B	A	A	B	A	B	B	36	42	J R 53	R 53	52	47	31	B	B	B	B	B	B	R
9	R	R 23	R 32	R 32	A	R 29	B	A	R	F 25	35	47	J R 53	F 42	46	46	30	R 17	B	B	B	B	B	B
10	Y	Y	A	A	R 29	20	R 27	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	A	R	R	A	A	F 22	A	A	B	B	R 37	43	54	43	R 42	38	22	Y	B	B	B	B	B	A
12	A	A	A	A	R 22	F 23	B	R 27	B	F 19	32	F 40	F 43	48	40	36	22	B	B	B	B	B	B	B
13	B	A	A	A	R 27	A	B	B	B	F 29	F 33	41	41	43	41	F 30	F 24	F 13	R 16	B	B	A	A	A
14	Y	B	Y	R	Y	A	A	24	B	A	30	45	47	44	41	34	R 26	F 14	B	Y	Y	B	Y	A
15	B	A	R	A	B	A	A	B	A	F 18	R 28	42	R 50	43	42	33	F 20	F 13	B	B	B	B	B	B
16	B	R	A	A	A	F 28	F 24	F 23	F 24	R 21	33	42	42	46	42	36	28	B	B	B	R	B	B	R
17	A	A	A	26	R 27	R 27	A	B	B	R 22	F 29	42	39	45	38	F 27	F 18	B	B	B	B	A	B	B
18	B	B	A	B	B	Y	B	B	B	B	F 30	F 34	40	F 33	36	25	F 25	B	B	B	B	B	Y	A
19	A	A	R	A	A	A	A	Z 25	24	22	29	F 37	51	45	42	B	B	R 27	B	B	A	A	R	R 19
20	15	A	A	A	A	A	A	A	A	A	B	B	R 45	F 41	F 37	33	26	B	B	B	B	B	A	A
21	R 34	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	20	A
22	A	A	A	A	R 34	B	B	B	A	B	B	B	B	R 43	38	36	21	B	B	B	A	A	A	A
23	A	B	A	B	A	A	A	B	R	19	30	38	41	43	47	41	F 24	B	B	B	Y	B	A	A
24	A	36	B	B	B	A	R	Y	Y	R 20	26	R 34	B	R 41	B	B	32	B	B	B	B	R	B	A
25	A	R 32	A	A	A	B	B	Y	B	A	F 27	34	45	44	34	R	19	B	B	B	B	B	B	B
26	B	R	F 19	A	A	A	16	B	A	R 18	25	R 34	42	R 42	B	B	B	B	B	B	B	B	B	B
27	A	A	R 32	R 35	A	A	R	B	B	F 14	F 23	33	39	50	F 34	F 24	R 16	B	B	B	B	A	Y	Y
28	A	A	A	R 29	A	A	A	A	A	F 40	R	B	R 38	B	35	R 32	B	B	B	A	A	A	A	A
29	A	B	A	A	A	A	A	B	R	Y	B	R 35	R 38	R 40	32	R 28	18	R 16	B	B	B	A	A	A
30	A	A	A	A	A	A	A	A	R	F 15	26	34	38	39	34	F 25	R 19	15	R 17	B	A	A	B	R
31	A	A	A	A	A	A	R	B	B	B	B	B	B	B	43	B	B	B	B	B	R	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	4	6	7	5	7	4	6	4	16	21	21	22	23	23	22	23	13	4				3	3
MED	R 24	R 30	R 32	R 29	R 27	27	26	24	24	22	30	39	42	43	41	36	25	22	16				23	R 19
U Q	R 34	34	R 33	R 32	R 32	29	R 29	25	28	F 27	35	42	50	46	42	43	31	R 26	20				F 26	24
L Q	15	R 26	31	28	R 24	22	20	F 23	22	F 18	28	34	39	41	36	F 30	20	F 14	16				20	R 17

MAY 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2008 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	42	35	33	40	43	39	27	30	30	E B 27	E B 23	E B 20	E B 21	41	35	22	16	B	B	B	16	E B 26	16
2	50	84	B 44		B	B	40	23	33	B	B	B	B	E B 24	E B 20	17	E B 14	E B 21	B	B	B	B	B	B
3	B	36	38	52	59	B	44	B	B	33	24	21	E B 23	B	B	E B 23	E B 19	29	B	B	B	37	43	38
4	64	39	61	36	48	47	46	42	48	B	E B 19	E B 25	B	B	B	B	B	B	B	B	B	38	28	28
5	23	41	42	44	50	42	44	B	36	22	B	B	B	B	B	B	E B 16	E B 15	E B 13	B	17	27	72	66
6	B	35	41	B	B	B	B	29	B	B	B	B	B	B	B	E B 30	B	E B 14	B	B	B	B	B	33
7	30	44	32	30	38	36	41	33	17	16	15	E B 18	E B 19	22	17	19	E B 14	14	E B 12	22	B	26	30	31
8	38	40	33	B	35	24	B	20	B	B	21	18	21	20	E B 22	E B 18	E B 15	B	B	B	B	B	B	19
9	25	34	35	36	41	33	B	31	22	19	24	E B 22	19	17	E B 16	E B 14	E B 12	E B 12	B	B	B	B	B	B
10	16	18	42	66	30	41	22	E B 14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	31	18	15	30	31	40	44	44	B	B	E B 16	E B 18	E B 20	E B 23	E B 19	E B 18	E B 19	16	B	B	B	B	B	35
12	38	31	35	27	20	E B 19	B	E B 24	B	E B 11	19	29	22	20	E B 16	E B 13	E B 12	B	B	B	B	B	B	B
13	B	28	31	26	24	48	B	B	B	31	E B 16	E B 18	20	E B 18	17	E B 12	E B 12	E B 12	20	B	B	36	21	30
14	16	B	16	20	17	32	57	58	B	42	31	18	30	18	E B 16	16	15	23	B	15	17	B	16	24
15	B	44	29	32	B	28	27	B	31	E B 13	E B 17	E B 16	18	E B 17	17	E B 12	14	E B 12	B	B	B	B	B	B
16	B	21	30	34	48	31	28	E B 19	E B 14	E B 14	21	17	18	18	16	21	E B 14	B	B	B	17	B	B	29
17	32	31	28	39	31	30	28	B	B	31	21	21	17	20	31	21	E B 12	B	B	B	B	24	B	B
18	B	B	26	B	B	18	B	B	B	B	E B 16	22	26	28	E B 13	14	E B 14	B	B	B	B	B	17	29
19	30	31	23	44	58	53	48	26	E B 14	24	39	32	22	22	29	B	B	E B 20	B	B	38	43	20	26
20	22	29	36	50	48	44	42	40	37	29	B	B	E B 24	17	30	E B 13	E B 12	B	B	B	B	B	32	41
21	56	98	43	34	42	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	36	33	42
22	46	44	48	52	38	B	B	B	39	B	B	B	B	E B 33	E B 20	E B 16	E B 14	B	B	B	36	36	35	31
23	25	B	32	B	35	41	41	B	16	E B 13	E B 13	16	E B 19	14	E B 14	16	E B 16	B	B	B	16	B	42	43
24	43	30	B	B	B	39	18	18	16	29	14	E B 14	B	E B 27	B	B	E B 13	B	B	B	B	16	B	42
25	33	37	48	47	44	B	B	16	B	35	E B 17	E B 19	E B 21	E B 22	20	E B 19	E B 14	B	B	B	B	B	B	B
26	B	31	33	37	30	23	16	B	26	15	E B 20	E B 20	E B 21	E B 28	B	B	B	B	B	B	B	B	B	B
27	42	38	38	47	40	28	20	B	B	E B 12	16	16	18	28	28	E B 12	E B 12	B	B	B	B	32	19	15
28	25	41	47	38	42	47	56	57	51	18	18	B	E B 23	B	E B 15	E B 18	B	B	B	32	41	36	38	38
29	40	B	67	57	36	35	41	B	22	16	B	E B 28	E B 24	E B 22	E B 17	E B 16	E B 12	E B 12	B	B	B	34	28	29
30	42	36	36	42	73	52	41	34	21	16	E B 13	15	17	E B 16	E B 14	E B 13	28	15	E B 12	B	35	42	B	21
31	38	43	27	34	31	32	22	B	B	B	B	B	B	B	E B 18	B	B	B	B	B	17	34	30	42
	00	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	27	29	26	26	25	23	18	17	21	22	22	22	23	23	23	23	14	4	3	9	16	17	23
MED	36	36	35	38	39	36	41	28	26	19	17	17	19	19	E B 17	E B 16	E B 14	E B 15	E B 12	22	17	35	30	31
U Q	42	42	42	47	48	44	44	40	36	30	21	22	E B 23	E B 24	22	19	E B 16	20	16	32	37	36	36	41
L Q	25	31	30	33	31	29	27	20	16	E B 14	E B 16	17	19	18	E B 16	E B 13	E B 12	E B 12	E B 12	15	17	26	20	26

MAY 2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2008 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	20	22	16	14	12	12	14	13	27	23	20	21	21	13	12	12	B	B	B	11	26	13
2	12	17	B	29	B	B	15	12	13	B	B	B	B	24	20	13	14	21	B	B	B	B	B	B
3	B	12	12	12	30	B	16	B	B	19	19	16	23	B	B	23	19	13	B	B	B	12	12	12
4	17	12	20	12	20	20	14	12	15	B	19	25	B	B	B	B	B	B	B	B	B	12	12	12
5	13	13	24	17	16	17	29	B	23	13	B	B	B	B	B	B	16	15	13	B	13	12	50	23
6	B	22	14	B	B	B	B	13	B	B	B	B	B	B	B	30	B	14	B	B	B	B	B	11
7	12	13	14	24	29	28	16	12	12	12	12	18	19	14	15	13	14	12	12	11	B	12	11	11
8	13	18	29	B	16	13	B	12	B	B	15	14	16	18	22	18	15	B	B	B	B	B	B	11
9	12	13	14	14	14	14	B	12	11	12	13	22	14	14	16	14	12	12	B	B	B	B	B	B
10	12	12	11	12	13	14	13	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	12	12	11	12	11	11	23	23	B	B	16	18	20	23	19	18	19	12	B	B	B	B	B	13
12	12	11	12	11	11	19	B	24	B	11	12	14	16	14	16	13	12	B	B	B	B	B	B	B
13	B	11	12	12	12	18	B	B	B	11	16	18	12	18	11	12	12	12	11	B	B	25	12	11
14	12	B	12	12	12	12	12	13	B	19	16	12	14	12	16	12	12	11	B	11	12	B	12	12
15	B	12	12	11	B	13	12	B	12	13	17	16	12	17	13	12	11	12	B	B	B	B	B	B
16	B	12	12	13	12	12	11	19	59	14	13	12	12	12	12	12	14	B	B	B	12	B	B	20
17	12	12	12	12	13	14	16	B	B	14	11	12	13	13	12	12	12	B	B	B	B	11	B	B
18	B	B	12	B	B	14	B	B	B	B	16	13	12	13	14	14	14	B	B	B	B	B	12	12
19	11	11	12	13	13	12	12	12	14	12	15	12	11	14	12	B	B	20	B	B	13	12	13	12
20	12	12	12	26	14	19	19	14	20	22	B	B	24	15	12	13	12	B	B	B	B	B	13	12
21	14	14	24	19	22	B	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	12
22	12	13	17	20	12	B	B	B	17	B	B	B	B	33	20	16	14	B	B	B	11	12	14	27
23	16	B	24	B	25	15	22	B	13	13	13	12	19	12	14	12	16	B	B	B	11	B	12	14
24	18	13	B	B	B	14	13	14	11	11	11	14	B	27	B	B	13	B	B	B	B	12	B	12
25	13	14	14	26	14	B	B	14	B	17	17	19	21	22	17	19	14	B	B	B	B	B	B	B
26	B	12	12	18	13	13	13	B	14	12	20	20	21	28	B	B	B	B	B	B	B	B	B	B
27	11	12	12	18	11	11	12	B	B	12	12	12	14	13	13	12	12	B	B	B	B	13	12	11
28	12	14	14	12	11	13	22	16	14	12	12	B	23	B	15	18	B	B	B	14	11	18	12	11
29	12	B	27	25	14	22	25	B	14	12	B	28	25	22	17	16	12	12	B	B	B	12	11	12
30	12	12	12	12	36	13	13	12	14	10	13	12	15	16	14	13	11	11	12	B	12	13	B	14
31	14	12	20	20	16	15	12	B	B	B	B	B	B	B	18	B	B	B	B	B	12	12	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	12	12	14	18	14	14	16	19	23	14	16	18	20	21	17	16	14	B	B	B	B	25	26	12
U Q	B 18	14	20	B 26	B 29	B 22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
L Q	12	12	12	12	12	13	13	12	14	12	13	13	14	14	14	13	12	12	B	B	13	12	12	12

MAY 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2008 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	232	A	A	222	226	210	Q 282	Q 244	238	226	Q 214	Q 194	Q 198	Q 192	Q 190	E A 222	B	B	B	A	B	E A 262
2	A	A	B	A	B	B	A	A	232	B	B	B	B	232	236	216	204	230	B	B	B	B	B	B
3	B	220	E A 248	A	A	B	A	B	B	A	E A 260	254	226	B	B	204	226	226	B	B	B	A	212	A
4	A	A	A	224	A	A	A	A	A	B	258	260	B	B	B	B	B	B	B	B	B	A	A	A
5	A	A	A	A	A	A	A	B	A	E A 290	B	B	B	B	B	B	188	224	218	B	A	A	A	A
6	B	A	224	B	B	B	B	222	B	B	B	B	B	B	B	212	B	208	B	B	B	B	B	A
7	238	A	A	A	A	A	A	A	A	234	224	218	202	194	216	198	214	Q 206	206	A	B	A	194	A
8	A	A	A	B	A	A	B	A	B	B	Q 218	208	216	208	192	188	200	B	B	B	B	B	B	A
9	A	226	198	222	A	236	B	A	A	232	218	198	Q 210	Q 194	Q 186	Q 190	Q 188	E B 232	B	B	B	B	B	B
10	Y	A	A	A	E A 244	A	A	E B 296	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	A	A	A	A	A	206	A	A	B	B	214	212	196	190	194	194	212	Y	B	B	B	B	B	A
12	A	A	A	A	A	B	B	B	B	Q 202	Q 198	Q 202	Q 210	180	190	184	176	B	B	B	B	B	B	B
13	B	A	A	A	198	A	B	B	B	Q 256	Q 220	196	210	202	Q 182	Q 170	Q 172	182	A	B	B	A	A	A
14	A	B	A	A	A	A	A	A	B	A	222	Q 190	Q 196	Q 188	194	Q 188	184	208	B	Y	Y	B	Y	A
15	B	A	268	A	B	A	A	B	A	216	198	Q 190	192	186	188	192	196	E B 254	B	B	B	B	B	B
16	B	A	A	A	A	A	A	B	E B 324	E B 284	216	H 172	190	198	194	186	190	B	B	B	A	B	B	A
17	A	A	A	A	278	210	A	B	B	A	Q 200	200	184	Q 188	184	178	182	B	B	B	B	A	B	B
18	B	B	A	B	B	Y	B	B	B	B	202	Q 188	178	Q 188	Q 182	204	194	B	B	B	B	B	A	A
19	A	A	A	A	A	A	A	218	E B 260	256	252	Q 218	Q 190	Q 180	Q 212	B	B	238	B	B	A	A	A	238
20	A	A	A	A	A	A	A	A	A	A	B	B	E B 234	Q 184	Q 184	194	198	B	B	B	B	B	A	A
21	218	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	218	A
22	A	A	A	A	216	B	B	B	A	B	B	B	B	232	212	Q 212	212	B	B	B	A	A	A	A
23	A	B	A	B	A	A	A	B	A	264	210	210	196	200	Q 204	Q 198	230	B	B	B	Y	B	A	A
24	A	196	B	B	B	A	A	Y	Y	A	246	234	B	226	B	B	Q 216	B	B	B	B	A	B	A
25	A	230	A	A	A	B	B	Y	B	A	248	226	224	192	212	200	E B 228	B	B	B	B	B	B	B
26	B	214	A	A	A	A	A	B	A	A	226	220	210	238	B	B	B	B	B	B	B	B	B	B
27	A	A	A	216	A	A	A	B	B	282	Q 214	Q 200	Q 206	Q 184	Q 200	Q 182	A	B	B	B	B	A	A	Y
28	A	A	A	216	A	A	A	A	A	A	E A 274	B	220	B	E B 230	220	B	B	B	B	A	A	A	A
29	A	B	A	A	A	A	A	B	A	Y	B	E B 260	214	210	194	200	E B 232	E B 250	B	B	B	B	A	A
30	A	A	A	A	A	A	A	A	A	A	222	198	198	212	196	Q 192	240	E A 274	E B 334	B	B	A	A	B
31	A	A	A	A	A	A	A	B	B	B	B	B	B	B	220	B	B	B	B	B	B	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	5	5	4	4	4	1	4	4	11	22	22	22	23	23	23	22	13	3				3	2
MED	228	220	228	219	U 218	216	226	217	U 258	U 245	220	207	206	194	194	194	197	217	212				212	250
U Q		228	258	223	261	229		259	303	E 282	246	226	214	210	212	204	216	E 244	E B 334				218	
L Q		205	211	216	207	208		214	246	232	214	198	196	Q 188	Q 188	188	188	208	206				194	

MAY 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2008 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	B	A	A	A	A	A	A	R	R	R	34	B	B	O X 45	X 39	B	B	O X 27	B	B	A	B	R	A
2	A	A	A	A	O X 39	R	R	B	R	R	36	X 37	X 39	X 42	O X 38	X 25	A	B	O X 30	A	A	B	B	O X 36
3	A	O X 28	A	A	R	R	S	B	A	A	34	X 37	X 38	43	40	30	Y	B	B	A	R	R	B	21
4	25	O X 30	49	A	B	O X 36	A	R	O X 25	R	29	X 38	X 38	44	37	32	A	Y	B	R	B	B	B	Y
5	R	A	R	A	A	R	B	R	Y	A	28	40	X 39	48	34	O X 28	B	B	B	B	B	Y	B	Y
6	B	Y	A	A	A	A	A	A	B	B	B	B	O X 39	44	O X 36	O X 30	B	Y	R	A	R	28	A	A
7	A	A	A	A	O X 42	30	Y	B	X 21	O X 22	28	X 33	B	B	X 45	34	21	B	B	O X 38	A	O X 36	R	A
8	A	B	A	B	B	B	O X 35	A	B	R	O X 29	34	B	O X 42	A	B	B	B	B	B	B	B	B	B
9	O X 33	R	A	A	R	B	B	B	B	Y	28	36	X 37	X 39	40	O X 32	B	O X 25	B	B	B	B	Y	B
10	B	R	A	A	A	A	R	B	B	B	X 26	36	X 39	38	X 37	O X 24	R	B	R	B	B	B	B	R
11	B	B	A	A	A	X 28	B	B	B	B	B	O X 32	X 37	X 41	O X 35	O X 24	Y	B	B	B	B	B	B	B
12	A	A	A	A	S	A	B	B	A	R	O X 28	35	X 34	X 34	X 32	R	B	B	R	A	B	B	B	B
13	R	A	A	O X 31	O X 32	R	A	B	B	B	28	33	39	36	35	29	R	A	A	B	B	B	B	R
14	A	O X 32	O X 23	A	X 33	O X 34	O X 35	O X 35	R	R	O X 29	36	O X 28	X 41	35	R	R	R	R	O X 33	R	R	31	A
15	A	A	A	91	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	O X 29	A
16	B	A	B	B	B	A	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	A	92	O X 40
17	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 23	O X 32	A
18	A	A	A	A	B	B	A	X 32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	A	B	A	A	A	O X 33	R	R	A	R	R	32	B	B	B	B	B	B	B	B	B	A	X 28	A
20	A	A	A	A	A	A	O X 48	38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 33
21	A	A	18	A	A	A	O X 33	Y	R	B	B	32	37	X 40	O X 38	B	B	R	Y	Y	Y	B	B	R
22	O X 26	O X 29	O X 32	A	A	A	B	A	R	R	O X 37	34	X 38	39	42	X 30	Y	B	Y	R	R	R	B	B
23	Y	A	A	A	A	A	O X 33	B	A	A	A	33	38	38	40	27	B	B	B	B	B	A	A	A
24	O X 27	A	A	A	O X 35	O X 35	A	R	A	A	O X 28	X 30	X 38	40	30	X 26	B	Y	B	B	R	B	B	R
25	A	A	X 36	A	B	A	A	A	A	A	B	B	O X 38	O X 38	O X 37	B	O X 34	B	B	R	R	O X 28	A	A
26	A	72	A	A	A	O X 35	B	A	A	B	R	R	B	B	B	B	B	B	B	B	A	R	R	A
27	A	A	O X 36	A	B	B	A	A	B	B	B	B	35	C	C	C	B	B	B	R	O X 32	B	B	R
28	A	A	A	A	A	R	38	X 31	A	B	B	O X 34	O X 38	B	B	B	B	B	B	B	B	B	A	A
29	A	O X 29	A	O X 32	A	A	A	A	A	B	A	O X 33	O X 37	O X 38	B	B	B	B	R	R	B	B	O X 23	A
30	A	A	A	B	A	A	A	A	B	A	X 28	X 32	O X 39	O X 36	X 32	X 30	R	B	O X 33	B	B	B	B	X 26
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	4	6	6	3	5	7	6	4	2	1	15	20	20	20	19	14	2	2	2	2	1	4	6	5
MED	O X 26	O X 30	X 34	O X 32	O X 35	O X 34	O X 35	X 34	X 23	O X 22	28	34	X 38	X 40	X 37	X 30	28	O X 26	O X 32	O X 36	O X 32	O X 28	X 30	O X 33
U Q	O X 30	32	36	91	O X 40	O X 35	38	36			34	36	X 39	42	40	30						O X 32	32	O X 38
L Q	26	O X 29	23	O X 31	X 32	30	O X 33	X 32			28	32	X 37	38	35	X 26						26	X 28	24

JUN. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2008 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	B	A	A	A	A	A	A	A	A	A	F 24	B	B	R 39	33	B	B	R 21	B	B	A	B	A	A
2	A	A	A	A	R 33	R	R	B	R	R	F 25	31	32	36	R 32	19	A	B	R 24	A	A	B	B	R 30
3	A	R 22	A	A	A	A	S	B	A	A	F 22	31	32	F 32	F 30	F 18	Y	B	B	A	A	A	B	F 12
4	F 13	R 24	R	A	B	R 30	A	R	R 19	A	F 19	32	32	F 34	F 27	F 20	A	Y	B	A	B	B	B	Y
5	A	A	R	A	A	A	B	R	Y	A	F 18	F 30	33	F 36	F 24	R 22	B	B	B	B	B	Y	B	Y
6	B	Y	A	A	A	A	A	A	B	B	B	B	R 33	F 36	R 30	R 24	B	Y	A	A	R	F 16	A	A
7	A	A	A	A	R 36	F 19	Y	B	15	R 16	F 19	27	B	B	39	F 24	F 12	B	B	R 32	A	R 30	A	A
8	A	B	A	B	B	B	R 29	A	B	A	R 23	F 23	B	R 36	A	B	B	B	B	B	B	B	B	B
9	R 27	A	A	A	A	B	B	B	B	Y	F 20	F 25	31	33	F 28	R 26	B	R 19	B	B	B	B	Y	B
10	B	A	A	A	A	A	R	B	B	B	20	F 27	33	F 27	31	R 18	R	B	R	B	B	B	B	R
11	B	B	A	A	A	22	B	B	B	B	B	26	31	35	R 29	R 18	Y	B	B	B	B	B	B	B
12	A	A	A	A	A	A	B	B	A	R	R 22	F 26	28	28	26	R	B	B	R	A	B	B	B	B
13	R	A	A	R 25	R 26	R	R	B	B	B	F 17	F 23	F 29	F 25	F 23	F 17	R	A	A	B	B	B	B	R
14	A	R 26	17	A	27	R 28	R 29	R 29	A	R	R 23	F 27	22	35	F 25	R	A	A	A	R 27	R	A	F	A
15	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R 23	A
16	B	A	B	B	B	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R 34
17	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 17	27	A
18	A	A	A	A	B	B	A	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	A	B	A	A	A	R 27	A	R	A	A	R	F 24	B	B	B	B	B	B	B	B	B	A	22	A
20	A	A	A	A	A	A	R 42	F 28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 27
21	A	A	18	A	A	A	R 27	Y	R	B	B	F 22	F 27	34	R 32	B	B	A	Y	Y	Y	B	B	R
22	R 20	R 23	R 26	A	A	A	B	A	R	R	R 31	F 24	32	F 28	F 31	24	Y	B	Y	R	R	A	B	B
23	Y	A	A	A	A	A	R 27	B	A	A	A	F 25	F 27	F 28	F 28	F 15	B	B	B	B	B	A	A	A
24	R 21	A	A	A	29	R 29	A	R	A	A	R 22	24	32	F 30	F 21	20	B	Y	B	B	R	B	B	R
25	A	A	J R 30	A	B	A	A	A	A	A	B	B	R 32	R 32	R 31	B	R 28	B	B	R	R	R 22	A	A
26	A	A	A	A	A	R 29	B	A	A	B	R	R	B	B	B	B	B	B	B	B	A	R	R	A
27	A	A	R 30	A	B	B	A	A	B	B	B	B	F 24	C	C	C	B	B	B	R	R 26	B	B	A
28	A	A	A	A	A	R	F 28	25	A	B	B	R 28	32	B	B	B	B	B	B	B	B	B	A	A
29	A	R 23	A	R 26	A	A	A	A	A	B	A	R 27	R 31	R 32	B	B	B	B	R	A	B	B	R 17	A
30	A	A	A	B	A	A	A	A	B	A	22	26	R 33	R 30	26	24	R	B	R 27	B	B	B	B	20
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	4	5	5	2	5	7	6	4	2	1	15	20	20	20	19	14	2	2	2	2	1	4	4	5
MED	R 20	R 23	R 26	R 26	R 29	R 28	R 28	27	17	R 16	F 22	F 26	32	32	29	20	20	R 20	R 26	R 30	R 26	R 20	22	R 27
U Q	R 24	R 25	R 30		R 34	R 29	R 29	28			23	28	32	36	R 31	24						R 26	25	R 32
L Q	16	R 22	18		26	22	R 27	26			F 19	F 24	F 28	F 29	F 26	F 18						16	20	16

JUN. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2008 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	B	44	44	47	48	42	42	37	29	32	E B 12	B	B	28	30	B	B	E B 14	B	B	41	B	25	33
2	31	40	43	44	40	26	21	B	31	32	23	36	37	35	E B 18	35	32	B	26	69	40	B	B	16
3	42	30	30	30	25	25	16	B	40	34	E B 14	E B 15	E B 14	17	16	33	22	B	B	32	26	25	B	28
4	28	30	21	38	B	35	37	18	26	24	E B 12	35	31	34	36	42	30	16	B	23	B	B	B	14
5	24	48	22	31	31	25	B	19	18	32	53	71	49	21	30	E B 14	B	B	B	B	B	16	B	16
6	B	20	33	59	70	42	30	36	B	B	B	B	41	41	70	E B 16	B	18	34	57	16	43	42	40
7	46	38	52	56	42	42	15	B	30	28	E B 12	16	B	B	E B 21	18	E B 12	B	B	37	35	34	32	39
8	48	B	43	B	B	B	34	31	B	26	E B 15	20	B	E B 24	42	B	B	B	B	B	B	B	B	B
9	22	32	33	37	32	B	B	B	B	14	15	E B 16	E B 14	E B	E B 13	E B 13	B	E B 12	B	B	B	B	17	B
10	B	27	31	33	36	29	16	B	B	B	28	32	15	27	14	14	16	B	21	B	B	B	B	24
11	B	B	38	40	30	30	B	B	B	B	B	E B 18	E B 16	24	18	18	16	B	B	B	B	B	B	B
12	30	24	28	38	26	32	B	B	40	20	35	E B 13	E B 14	E B 20	E B 20	20	B	B	23	41	B	B	B	B
13	23	31	32	32	29	22	21	B	B	B	22	16	18	16	21	E B 13	21	25	41	B	B	B	B	20
14	28	26	29	28	28	21	20	29	32	29	E B 14	E B 19	E B 18	32	40	20	29	30	30	28	26	29	43	48
15	60	57	56	53	B	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	32	44
16	B	42	B	B	B	41	B	29	30	B	B	B	B	B	B	B	B	B	B	B	B	48	46	40
17	66	B	41	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 12	31	97
18	34	32	37	38	B	B	34	48	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	25	B	52	51	35	37	28	28	31	19	20	22	B	B	B	B	B	B	B	B	B	40	32	31
20	30	41	39	43	43	43	120	40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33
21	45	40	58	33	43	36	21	18	17	B	B	20	20	30	E B 20	B	B	27	19	17	15	B	B	23
22	29	41	41	34	38	37	B	40	17	K 19	26	28	28	27	28	E B 15	17	B	17	21	22	27	B	B
23	17	31	32	38	44	38	35	B	42	42	32	30	36	29	17	14	B	B	B	B	B	31	34	32
24	32	55	47	48	59	82	52	26	58	72	40	38	32	32	29	E B 13	B	15	B	B	17	B	B	18
25	32	35	49	34	B	56	58	36	41	62	B	B	E B 28	E B 23	20	B	26	B	B	22	18	28	33	48
26	72	51	52	48	58	38	B	45	68	B	32	27	B	B	B	B	B	B	B	B	32	24	24	30
27	35	42	72	75	B	B	35	33	B	B	B	B	22	C	C	C	B	B	B	17	29	B	B	29
28	32	32	32	34	30	19	21	16	62	B	B	E B 14	28	B	B	B	B	B	B	B	B	B	46	30
29	36	30	38	37	37	43	64	66	41	B	34	E B 18	15	32	B	B	B	B	28	30	B	B	16	32
30	87	98	64	B	37	56	48	34	B	33	15	E B 16	E B 21	22	17	E B 12	15	B	18	B	B	B	B	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	25	26	29	26	22	24	22	19	18	16	19	21	20	19	20	16	11	8	10	12	12	13	14	24
MED	32	36	39	38	37	37	34	33	32	30	22	20	21	27	20	16	21	17	24	29	26	29	32	30
U Q	46	42	50	48	43	42	42	40	41	34	32	31	32	32	30	20	29	26	30	39	34	37	42	40
L Q	28	30	32	34	30	28	21	26	29	22	E B 14	E B 16	E B 16	22	18	E B 14	16	E B 14	19	22	18	24	25	24

JUN. 2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2008 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	B	21	25	20	22	24	26	19	15	12	12	B	B	24	12	B	B	14	B	B	12	B	12	12
2	12	12	15	13	14	14	12	B	16	15	17	12	12	15	18	13	12	B	12	12	11	B	B	12
3	12	12	13	13	12	12	11	B	15	12	14	15	211	12	12	12	14	B	B	14	13	17	B	11
4	12	12	11	14	B	12	14	12	12	11	12	12	12	12	12	12	12	11	B	12	B	B	B	12
5	12	12	12	12	12	12	B	12	12	12	12	12	14	13	16	14	B	B	B	B	B	12	B	11
6	B	12	12	12	12	14	12	12	B	B	B	B	23	14	13	16	B	14	13	13	12	12	12	12
7	12	28	15	13	13	12	12	B	12	11	12	12	B	B	21	12	12	B	B	12	17	12	12	12
8	18	B	14	B	B	B	16	12	B	13	15	14	B	24	16	B	B	B	B	B	B	B	B	B
9	12	11	13	25	14	B	B	B	B	12	13	16	14	14	13	13	B	12	B	B	B	B	11	B
10	B	12	11	12	19	14	12	B	B	B	12	12	12	12	11	11	12	B	13	B	B	B	B	11
11	B	B	14	15	12	13	B	B	B	B	B	18	16	15	14	14	13	B	B	B	B	B	B	B
12	12	12	11	11	12	12	B	B	13	12	15	13	14	20	20	14	B	B	15	13	B	B	B	B
13	11	12	12	13	12	12	12	B	B	B	12	11	12	12	11	13	10	12	11	B	B	B	B	16
14	12	11	12	12	12	12	13	15	12	12	14	19	18	13	13	13	12	13	13	12	13	12	12	12
15	12	18	23	16	B	B	17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	12	13
16	B	31	B	B	B	26	B	14	14	B	B	B	B	B	B	B	B	B	B	B	B	12	12	13
17	12	B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	14	12
18	19	18	19	19	B	B	18	13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	12	B	15	13	12	14	20	14	13	13	14	15	B	B	B	B	B	B	B	B	B	11	12	12
20	14	12	12	11	14	18	18	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14
21	13	12	18	18	15	13	12	12	11	B	B	14	14	14	20	B	B	13	14	13	13	B	B	11
22	12	14	16	14	14	15	B	13	14	13	12	12	12	13	15	15	13	B	14	13	11	13	B	B
23	13	12	11	12	11	12	12	B	14	14	14	13	12	12	12	12	B	B	B	B	B	16	18	13
24	12	12	12	12	15	13	12	12	13	12	12	12	13	12	14	13	B	12	B	B	14	B	B	12
25	12	12	13	16	B	22	39	22	23	18	B	B	28	23	17	B	16	B	B	13	14	13	12	13
26	13	14	12	12	17	14	B	21	27	B	16	17	B	B	B	B	B	B	B	B	13	12	12	12
27	11	12	13	11	B	B	16	15	B	B	B	B	16	C	C	C	B	B	B	13	12	B	B	12
28	12	12	11	11	12	12	11	12	14	B	B	14	18	B	B	B	B	B	B	B	B	B	11	11
29	12	10	11	13	19	15	20	18	12	B	14	18	12	28	B	B	B	B	11	14	B	B	12	12
30	11	12	20	B	29	21	13	14	B	12	11	16	21	18	14	12	12	B	13	B	B	B	B	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	29	29	29	30	30	30	30	30	30	30	30
MED	12	12	13	13	14	14	16	16	16	16	14	16	18	18	16	15	B	B	B	B	B	B	B	12
U Q	B 14	18	16	18	B	B 24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 14
L Q	12	12	12	12	12	12	12	13	13	12	12	12	13	13	13	13	13	14	14	13	13	12	12	12

JUN. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2008 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	B	A	A	A	A	A	A	A	A	220	240	B	B	208	208	B	B	208	B	B	A	B	A 212	A
2	A	A	A	A	200	A	A	B	A	A	A 266	A 216	214	194	214	192	A	B	210	A	A	B	B	202
3	A	A	A	A	A	A	S	B	A	A	242	192	Q 188	194	Q 176	190	Y	B	B	A	A	A	B	E A 292
4	A	190	A	A	B	214	A	A	258	A	Q 222	Q 210	Q 198	Q 184	Q 192	220	A	Y	B	A	B	B	B	Y
5	A	A	A	A	A	A	B	A	Y	A	224	198	Q 198	Q 198	218	184	B	B	B	B	B	Y	B	A
6	B	Y	A	A	A	A	A	A	B	B	B	B	A	192	232	212	B	Y	A	A	A	222	A	A
7	A	A	A	A	214	190	Y	B	206	182	242	Q 214	B	B	Q 214	200	B	B	B	220	A	236	A	A
8	A	B	A	B	B	B	A	A	B	A	E B 258	228	B	222	A	B	B	B	B	B	B	B	B	B
9	A	A	A	A	A	B	B	B	B	Y	212	200	196	218	182	182	B	210	B	B	B	B	A	B
10	B	A	A	A	A	A	A	B	B	B	E A 240	192	192	Q 174	Q 174	206	A 248	B	A	B	B	B	B	A
11	B	B	A	A	A 218	E A 286	B	B	B	B	B	E B 248	Q 194	194	198	198	A	B	B	B	B	B	B	B
12	A	A	A	A	A	A	B	B	A	A	226	198	176	182	210	A	B	B	A	A	B	B	B	B
13	A	A	A	220	212	A	A	B	B	B	A 228	Q 206	Q 194	Q 180	Q 166	202	236	A	A	B	B	B	B	A
14	A	A	228	A	A	A	A	A	A	A	B 240	190	258	Q 200	208	A	A	A	A	198	A	A	F	A
15	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	200	206	A
16	B	A	B	B	B	A	B	A	206	B	B	B	B	B	B	B	B	B	B	B	B	A	A	216
17	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	196	200	A
18	A	A	A	A	B	B	A	194	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	A	B	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	198	A
20	A	A	A	A	A	A	194	190	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	178
21	A	A	198	A	A	A	A	A	230	B	B	224	206	222	196	B	B	A	Y	Y	Y	B	B	A
22	256	286	A	A	A	A	B	A	A	A	240	230	222	212	Q 188	196	Y	B	Y	A	A	A	B	B
23	Y	A	A	A	A	A	204	B	A	A	A	230	Q 194	Q 184	Q 194	236	B	B	B	B	B	A	A	A
24	252	A	A	A	244	216	A	A	A	A	248	206	Q 214	Q 204	178	208	B	Y	B	B	A	B	B	A
25	A	A	E A 276	A	B	A	A	A	A	A	B	B	E B 282	226	210	B	E A 272	B	B	A	A	234	A	A
26	A	A	A	A	A	230	B	A	A	B	A	A	B	B	B	B	B	B	B	B	A	A	A	A
27	A	A	230	A	B	B	A	A	B	B	B	B	238	C	C	C	B	B	B	A	214	B	B	A
28	A	A	A	204	214	A	A	A	A	B	B	228	234	B	B	B	B	B	B	B	B	B	A	A
29	A	176	A	234	A	A	A	A	A	B	A	234	206	240	B	B	B	B	A	A	B	B	200	208
30	A	A	A	B	A	A	196	A	B	A	A 246	236	216	E B 262	Q 216	184	198	B	A	B	B	B	B	248
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	3	4	3	6	5	3	2	4	2	15	19	19	20	19	14	4	2	1	2	1	5	5	6
MED	254	190	221	220	214	215	196	192	218	201	240	212	202	198	198	199	U 230	209	210	209	214	222	200	208
U Q		286	253	234	218	258	204		244		246	230	222	220	214	208	A 260					235	209	248
L Q		176	213	204	212	202	194		206		226	198	Q 194	Q 188	Q 182	190	217					198	199	202

JUN. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2008 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	B	A	A	O X 33	A	A	B	R	A	R	B	B	O X 40	38	X 32	33	O X 28	B	B	B	B	B	B	B
2	B	A	A	A	A	O X 36	A	A	A	A	A	X 31	37	35	O X 30	O X 27	Y	Y	A	A	B	R	A	R
3	R	Y	Y	R	R	R	R	A	A	R	28	34	36	37	32	O X 29	B	Y	B	A	R	B	B	B
4	B	R	O X 34	A	O X 37	A	B	B	B	B	B	B	B	O X 39	B	B	B	B	B	B	B	B	B	A
5	A	O X 30	A	A	A	A	34	A	O X 35	R	O X 30	37	X 36	X 38	O X 35	B	B	R	B	B	R	R	A	30
6	O X 30	A	A	A	A	A	A	B	B	B	B	B	B	33	35	30	24	R	R	A	A	B	B	B
7	B	R	R	54	O X 36	A	A	A	A	R	28	36	38	36	42	29	R	R	A	R	B	B	R	A
8	A	O X 36	R	A	R	R	R	R	Y	R	29	X 31	36	37	32	X 33	25	A	Y	A	B	B	B	O X 26
9	O X 30	X 30	49	A	A	A	A	B	R	B	28	36	38	38	37	X 31	R	B	B	B	B	B	B	B
10	O X 36	O X 33	R	A	A	A	B	B	B	B	B	35	36	43	35	32	B	B	R	B	Y	B	A	R
11	A	A	A	A	A	R	Y	B	B	R	29	35	40	41	40	X 35	O X 25	R	B	B	R	B	Y	A
12	A	A	69	O X 34	A	A	47	A	B	A	B	B	B	B	B	B	B	B	A	R	B	R	R	A
13	B	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	O X 33	A	A	A
14	A	B	A	B	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A
15	R	A	B	A	B	B	A	A	B	B	O X 32	X 37	B	B	B	B	B	B	B	B	B	R	Y	B
16	R	A	A	A	A	A	A	B	B	R	R	O X 36	O X 40	41	O X 38	O X 32	B	B	B	B	B	B	B	A
17	A	A	A	B	A	B	B	A	B	R	X 30	X 36	X 37	X 39	X 38	B	B	B	B	B	B	B	B	B
18	A	A	B	R	A	A	O X 36	R	Y	B	B	O X 36	B	B	B	O X 36	B	B	B	B	Y	B	B	R
19	B	A	A	A	O X 35	A	A	A	Y	23	X 30	37	X 44	X 40	X 42	33	23	O X 34	A	A	B	B	B	Y
20	A	A	A	O X 34	O X 41	R	56	42	R	R	X 31	40	X 39	X 39	X 37	X 37	A	B	B	Y	B	B	Y	R
21	A	O X 34	R	42	B	A	O X 38	R	R	R	X 31	X 37	B	B	B	B	B	B	B	B	B	B	X 30	27
22	A	A	A	O X 34	O X 35	A	O X 35	A	A	R	A	O X 40	O X 40	X 42	X 40	O X 36	B	O X 27	R	B	36	A	A	O X 31
23	A	A	A	R	B	A	B	A	R	R	B	B	B	O X 38	B	B	31	B	B	A	A	R	A	A
24	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	O X 32	R	R	A	A	A	R	R	B	B	34	O X 42	O X 38	A	B	B	O X 40	B	B	B	B	O X 33	R	R
26	B	R	R	58	A	O X 36	O X 40	R	R	28	X 36	41	O X 46	O X 45	O X 43	B	B	B	B	R	R	R	R	X 27
27	A	B	A	B	B	R	B	B	B	30	32	X 36	X 41	O X 44	O X 37	O X 34	X 30	R	R	R	R	R	R	R
28	A	69	B	R	A	A	R	O X 36	B	B	B	O X 40	B	B	B	O X 38	B	B	B	R	B	B	B	B
29	B	A	A	R	B	B	B	B	B	B	B	O X 41	O X 40	O X 40	O X 40	B	B	B	B	R	B	R	R	R
30	B	R	O X 34	A	A	A	A	B	R	R	O X 35	O X 43	X 46	O X 44	X 38	X 36	O X 28	O X 26	B	B	B	B	B	A
31	R	O X 32	A	A	A	B	O X 36	B	Y	28	X 34	X 43	X 46	B	X 39	O X 37	O X 33	B	B	R	R	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	7	4	7	5	2	8	2	1	4	16	23	20	21	20	18	10	3			2	1	1	5
MED	O X 31	O X 33	42	O X 34	O X 36	O X 36	O X 37	39	O X 35	28	X 30	X 37	X 40	X 39	X 38	X 33	X 28	O X 27			34	O X 33	X 30	X 27
U Q	O X 34	36	59	54	O X 39		44			29	X 33	O X 40	X 40	X 42	X 40	O X 36	O X 31	O X 34						30
L Q	O X 30	X 30	O X 34	O X 34	O X 35		O X 36			26	29	36	37	38	35	X 31	25	O X 26						26

JUL. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2008 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	B	A	A	R 27	A	A	B	A	A	R	B	B	R 34	32	26	F 23	22	B	B	B	B	B	B	B
2	B	A	A	A	A	R 30	A	A	A	A	A	25	F 27	F 24	24	R 21	Y	Y	A	A	B	A	A	A
3	A	Y	Y	A	A	A	A	A	A	A	F 18	F 24	F 25	F 24	F 21	R 23	B	Y	B	A	A	B	B	B
4	B	R	R 28	A	R 31	A	B	B	B	B	B	B	B	R 33	B	B	B	B	B	B	B	B	B	A
5	A	R 24	A	A	A	A	F 24	A	R 29	A	R 24	F 25	30	32	R 29	B	B	A	B	B	R	A	A	F 20
6	R 24	A	A	A	A	A	A	B	B	B	B	B	B	F 23	F 26	F 18	F 13	R	R	A	A	B	B	B
7	B	A	A	A	R 30	A	A	A	A	A	F 18	F 23	F 26	F 24	F 27	F 16	R	R	A	A	B	B	A	A
8	A	R 30	A	A	A	R	R	R	Y	R	F 19	25	F 26	F 27	F 20	27	F 14	A	Y	A	B	B	B	R 20
9	R 24	24	A	A	A	A	A	B	R	B	F 17	F 26	F 26	F 26	F 26	25	A	B	B	B	B	B	B	B
10	R 30	R 27	A	A	A	A	B	B	B	B	B	F 25	F 26	F 29	F 23	F 23	B	B	R	B	Y	B	A	A
11	A	A	A	A	A	R	Y	B	B	R	F 19	F 27	F 30	F 30	F 30	29	R 19	R	B	B	A	B	Y	A
12	A	A	A	R 28	A	A	F 20	A	B	A	B	B	B	B	B	B	B	B	A	R	B	R	R	A
13	B	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	R 27	A	A	A
14	A	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A
15	A	A	B	A	B	B	A	A	B	B	R 26	31	B	B	B	B	B	B	B	B	B	R	Y	B
16	R	A	A	A	A	A	A	B	B	A	R	30	34	Z 35	R 32	R 26	B	B	B	B	B	B	B	A
17	A	A	A	B	A	B	B	A	B	R	24	30	31	33	32	B	B	B	B	B	B	B	B	B
18	A	A	B	R	A	A	R 30	R	Y	B	B	30	B	B	B	R 30	B	B	B	B	Y	B	B	R
19	B	A	A	A	R 29	A	A	A	Y	F 13	24	F 27	38	34	36	F 23	F 14	R 28	A	A	B	B	B	Y
20	A	A	A	R 28	R 35	R	A	A	R	R	25	F 29	33	33	31	31	A	B	B	Y	B	B	Y	R
21	A	R 28	A	A	B	A	R 32	R	R	A	25	31	B	B	B	B	B	B	B	B	B	B	24	F 18
22	A	A	A	R 28	R 29	A	29	A	A	A	A	R 34	R 34	36	34	R 30	B	21	R	B	F 25	A	A	R 25
23	A	A	A	R	B	A	B	A	R	A	B	B	B	32	B	B	F 22	B	B	A	A	R	A	A
24	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	R 26	R	A	A	A	A	R	R	B	B	F 24	36	32	A	B	B	R 34	B	B	B	B	R 27	R	R
26	B	R	R	R	A	R 30	R 34	A	R	F 19	30	F 31	R 40	R 39	37	B	B	B	B	R	R	R	R	21
27	A	B	A	B	B	R	B	B	B	F 19	F 22	30	35	R 38	R 31	R 28	24	R	R	R	R	R	R	R
28	A	F 24	B	A	A	A	A	R 30	B	B	B	R 34	B	B	B	R 32	B	B	B	R	B	B	B	B
29	B	A	A	A	B	B	B	B	B	B	B	R 35	R 34	34	R 34	B	B	B	B	A	B	R	R	R
30	B	R	R 28	A	A	A	A	B	A	R	R 29	R 37	40	38	32	30	R 22	R 20	B	B	B	B	B	A
31	R	R 26	A	A	A	B	R 30	B	Y	F 18	28	38	40	BJ	R 33	31	R 27	B	B	R	A	B	B	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	7	2	4	5	2	7	1	1	4	16	23	20	21	20	18	10	3			2	1	1	5
MED	R 25	R 26	R 28	R 28	R 30	R 30	R 30	R 30	R 29	F 18	24	30	32	32	30	26	22	R 21			26	R 27	24	20
U Q	R 28	R 28		R 28	R 33		R 32			F 19	26	R 34	34	34	32	R 30	R 24	R 28						23
L Q	R 24	24		R 28	R 29		F 24			F 16	F 19	F 25	F 26	F 26	F 26	F 23	F 14	R 20						F 19

JUL. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2008 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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B 25	42	82	41	43	55	B	32	31	28	B	B	E B 28	18	E B 12	E B 12	19	B	B	B	B	B	B	B
2	B 25	37	27	61	55	36	40	29	44	32	32	42	32	42	E B 16	43	17	18	32	41	B 23	25	34	25
3	25	20	18	24	26	27	22	34	32	22	26	24	42	21	E B 13	E B 14	B	16	B	32	23	B	B	B
4	B 35	20	36	51	22	59	B	B	B	B	B	B	B	E B 22	B	B	B	B	B	B	B	B	B	29
5	35	73	68	59	72	41	35	30	24	32	E B 13	39	43	E B 14	E B 23	B	B	22	B	B	28	29	66	32
6	35	40	44	43	39	34	32	B	B	B	B	B	B	21	32	18	28	22	30	36	26	B	B	B
7	B 21	20	32	43	46	35	51	47	28	32	29	34	30	31	21	21	22	31	21	B	B	24	28
8	27	25	32	40	28	28	20	23	20	25	21	23	22	24	24	23	31	39	16	40	B	B	B	E B 15
9	29	45	31	37	43	31	25	B	18	B	E B 13	15	32	28	26	19	25	B	B	B	B	B	B	B
10	22	25	30	33	43	58	B	B	B	B	B	E B 13	28	25	25	16	B	B	25	B	16	B	29	25
11	32	34	48	41	42	25	18	B	B	20	E B 12	18	17	33	29	E B 14	E B 12	18	B	B	24	B	16	34
12	40	52	34	37	44	35	30	32	B	140	B	B	B	B	B	B	B	B	38	23	B	24	28	38
13	B 24	47	45	44	54	47	49	42	42	33	B	B	B	B	B	B	B	B	B	B	24	40	40	48
14	39	B	46	B	B	B	B	29	32	B	B	B	B	B	B	B	B	B	B	B	B	16	16	34
15	30	66	B	42	B	B	44	33	B	B	26	E B 15	B	B	B	B	B	B	B	B	B	22	14	B
16	25	34	43	42	40	40	46	B	B	32	22	20	22	E B 17	E B 24	18	B	B	B	B	B	B	B	33
17	40	40	35	B	39	B	B	34	B	17	15	15	18	18	E B 17	B	B	B	B	B	B	B	B	B
18	40	32	B	24	38	46	40	23	17	B	B	E B 19	B	B	B	E B 28	B	B	B	B	16	B	B	21
19	B 24	35	30	41	24	67	64	34	14	E B 12	32	24	27	16	16	18	17	28	39	29	B	B	B	16
20	28	29	28	25	31	16	42	38	28	20	18	E B 15	16	18	17	22	32	B	B	18	B	B	17	24
21	35	25	28	41	B	38	40	24	16	30	E B 12	17	B	B	B	B	B	B	B	B	B	B	31	34
22	42	41	44	40	33	42	40	32	34	G 31	32	32	E B 28	16	16	E B 20	B	17	20	B	E B 12	48	48	41
23	49	44	63	35	B	37	B	42	20	30	B	B	B	E B 24	B	B	E B 13	B	B	49	29	17	42	91
24	48	37	40	B	B	B	41	47	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	37	30	31	50	29	39	22	24	B	B	16	E B 22	E B 20	42	B	B	E B 25	B	B	B	B	29	20	21
26	B 25	20	24	32	40	40	40	36	17	29	17	19	E B 25	E B 26	E B 23	B	B	B	B	25	23	19	26	21
27	30	B	37	B	B	26	B	B	B	E B 12	23	32	21	E B 22	32	E B 14	19	16	18	18	15	16	16	29
28	44	68	B	34	50	46	30	26	B	B	B	E B 26	B	B	B	E B 15	B	B	B	16	B	B	B	B
29	B 25	32	66	29	B	B	B	B	B	B	B	E B 25	E B 19	E B 22	29	B	B	B	B	31	B	21	19	27
30	B 25	25	33	44	53	47	49	B	33	22	E B 19	E B 20	22	22	E B 17	16	E B 12	E B 14	B	B	B	B	B	34
31	16	29	40	70	45	B	E B 26	B	15	E B 12	E B 14	17	E B 16	B	E B 23	E B 19	E B 19	B	B	22	33	B	B	30
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	29	28	27	24	25	23	21	18	20	19	23	20	22	20	18	14	11	9	14	12	12	17	23
MED	35	34	36	41	41	40	40	32	26	28	19	20	23	22	23	17	19	18	30	27	24	23	26	29
U Q	40	43	44	44	44	46	42	37	33	32	26	26	30	26	28	21	25	22	35	36	27	29	37	34
L Q	28	25	30	33	32	32	26	28	17	20	E B 14	17	20	18	E B 16	E B 15	E B 17	16	19	21	16	18	16	24

JUL. 2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2008 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	B	25	12	11	15	14	B	14	13	16	B	B	28	12	12	12	13	B	B	B	B	B	B	B
2	B	20	12	12	12	13	12	14	14	13	12	13	12	13	16	14	13	13	13	14	B	12	20	12
3	12	12	14	12	12	11	11	12	12	12	12	12	12	13	13	14	B	12	B	11	13	B	B	B
4	B	12	12	12	14	13	B	B	B	B	B	B	B	22	B	B	B	B	B	B	B	B	B	13
5	11	12	11	12	12	10	13	12	14	15	13	12	11	14	23	B	B	12	B	B	22	16	12	12
6	12	12	18	12	13	12	12	B	B	B	B	B	B	14	12	11	12	12	12	14	14	B	B	B
7	B	14	11	12	11	14	12	11	12	12	12	12	14	12	12	12	12	12	12	12	B	B	12	12
8	11	12	11	13	12	12	12	12	16	12	14	10	12	11	11	11	14	11	12	12	B	B	B	15
9	11	12	11	14	12	12	13	B	12	B	13	12	12	12	12	12	12	B	B	B	B	B	B	B
10	12	12	11	12	11	12	B	B	B	B	B	13	12	12	12	12	B	B	16	B	11	B	12	12
11	12	13	12	20	12	13	12	B	B	12	12	12	12	12	12	14	12	12	B	B	14	B	14	13
12	13	12	22	13	12	12	13	22	B	56	B	B	B	B	B	B	B	B	21	14	B	11	12	13
13	B	14	15	15	14	15	17	15	13	12	B	B	B	B	B	B	B	B	B	B	13	11	14	13
14	22	B	16	B	B	B	B	20	13	B	B	B	B	B	B	B	B	B	B	B	B	13	12	12
15	12	12	B	23	B	B	17	15	B	B	16	15	B	B	B	B	B	B	B	B	B	12	11	B
16	15	12	12	22	17	18	12	B	B	22	17	14	14	17	24	15	B	B	B	B	B	B	B	12
17	20	13	16	B	20	B	B	19	B	12	12	13	15	14	17	B	B	B	B	B	B	B	B	B
18	16	16	B	14	14	13	14	12	12	B	B	19	B	B	B	28	B	B	B	B	13	B	B	13
19	B	13	12	14	12	13	12	12	11	12	12	12	12	11	13	12	12	12	12	13	B	B	B	10
20	11	12	12	11	11	13	13	10	12	14	12	15	12	12	11	11	11	B	B	12	B	B	12	12
21	12	12	13	13	B	18	11	11	13	12	12	13	B	B	B	B	B	B	B	B	B	B	15	12
22	11	12	12	13	12	12	12	12	12	24	23	23	28	13	13	20	B	14	14	B	12	12	11	12
23	13	11	18	29	B	25	B	18	13	26	B	B	B	24	B	B	13	B	B	14	13	12	12	28
24	14	23	18	B	B	B	18	13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	11	12	12	12	12	12	11	13	B	B	14	22	20	20	B	B	25	B	B	B	B	23	14	12
26	B	12	12	12	13	14	12	12	12	13	12	13	25	26	23	B	B	B	B	14	15	13	12	11
27	11	B	12	B	B	19	B	B	B	12	11	12	14	22	24	15	13	13	12	12	13	12	11	24
28	15	11	B	23	18	14	13	13	B	B	B	26	B	B	B	15	B	B	B	12	B	B	B	B
29	B	13	13	13	B	B	B	B	B	B	B	25	19	22	24	B	B	B	B	19	B	18	16	14
30	B	12	12	18	12	12	14	B	22	16	19	20	15	15	17	12	12	14	B	B	B	B	B	12
31	12	11	11	11	13	B	26	B	11	12	14	12	16	B	23	19	19	B	B	15	15	B	B	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	13	12	12	13	13	13	13	15	14	16	16	15	19	17	23	19	B	B	B	B	B	B	16	13
U Q	B	14	16	22	B 20	B 19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
L Q	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	16	14	14	13	12	12

JUL. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2008 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	B	A	A	198	A	A	B	A	A	A	B	B	E B 240	192	200	Q 214	A 226	B	B	B	B	B	B	B
2	B	A	A	A	A	194	A	A	A	A	A	212	222	Q 218	218	A 230	Y	A	A	A	B	A	A	A
3	A	Y	A	A	A	A	A	A	200	A	E A 242	A 192	204	Q 190	188	198	B	A	B	A	A	B	B	B
4	B	A 236		A	A	A	B	B	B	B	B	B	B	192	B	B	B	B	B	B	B	B	B	A
5	A	204	A	A	A	A	200	A	A	A	E B 246	Q 198	Q 232	188	226	B	B	A	B	B	A	A	A	206
6	A	A	A	A	A	A	A	B	B	B	B	B	B	216	204	188	208	A	A 200	A	A	B	B	B
7	B	A	A	198	210	A	A	A	A	A	E A 278	Q 222	Q 184	Q 190	Q 198	198	A	A	A	A	B	B	A	A
8	A	E A 254	A	A	A	198	A	A	Y	A	224	Q 200	Q 206	Q 202	Q 186	Q 178	A 178	A	Y	A	B	B	B	196
9	184	242		A	A	A	A	A	B	A	B	E B 244	Q 200	Q 188	Q 198	Q 178	194	216		B	B	B	B	B	B
10	212	190	198	A	198		A	B	B	B	B	192	200	Q 196	Q 216	Q 190	B	B	A	B	Y	B	A	A
11	A	A	A	A	A	A	Y	B	B	A	E B 232	Q 202	Q 194	Q 194	Q 194	196	240		A	B	B	A	B	A	A
12	A	A	A	E A 228	A	A	A 236	A	B	A	B	B	B	B	B	B	B	B	A	A	B	194	210		A
13	B	A	A	A	A	A	A	A	A	206		B	B	B	B	B	B	B	B	B	A 198	204		A	A
14	A	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
15	A	A	B	A	B	B	A	A	B	B	E A 262	218		B	B	B	B	B	B	B	B	A	Y	B
16	A	A	A	A	A	A	A	B	B	A	A	236	204	190	E B 264	208		B	B	B	B	B	B	A
17	A	A	A	B	A	B	B	A	B	A	224	200	216	204	192	B	B	B	B	B	B	B	B	B
18	A	A	B	A	A	200	212	212	Y	B	B	234		B	B	B	E B 238	B	B	B	B	Y	B	B	A
19	B	202		A	A	202	A	A	A	Y	E B 270	206	186	212	Q 200	196	H 180	204		A	A	A	B	B	B	Y
20	A	A	A	A	E A 264	A	A	A	A	A	226	184	206	188	198	186		A	B	B	Y	B	B	Y	A
21	A	A	210	210		B	A	200	214	A	A	228	Q 226	B	B	B	B	B	B	B	B	B	B	218	A
22	A	A	A	216	198		A	206	A	A	A	A	228	224	Q 202	Q 184	216		B	A 238	A	B	190	A	A	A
23	A	A	A	A	B	A	B	A	A	A	A	B	B	B	226	B	B	E B 248	B	B	B	A	A	204	A	A
24	A	A	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	204	202		A	A	A	A	A	A	B	B	220	208	196	A	B	B	236		B	B	B	B	222	A	A
26	B	A	A	222		A	A	200	A	224	A 244	Q 196	Q 194	226	218	226	B	B	B	B	B	A	A	A	234
27	A	B	A	B	B	A	B	B	B	E B 248	216	224	216	192	222	206	210		A	A	A	A	A	A	A
28	A	A	B	A	A	A	A	202	B	B	B	E B 258	B	B	B	216	B	B	B	B	A	B	B	B	B
29	B	A	A	A	B	B	B	B	B	B	B	218	188	204	204	B	B	B	B	B	A	B	A	A	A
30	B	A	204	A	A	A	A	B	A	A	E B 246	208	192	192	202	190	190	220		B	B	B	B	B	A
31	A	E A 260	A	A	A	B	B	B	Y	E B 242	198	196	208	B	220	196	E B 238	B	B	B	A	A	B	B	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	4	6	5	3	6	3	2	5	16	23	20	21	20	18	11	2	1		2	4	2	3
MED	204	203	207	208	200	198	203	212	212	E B 244	U 212	205	206	196	200	196	212	229	A 200		194	204	214	206
U Q	212	E A 254	223	222	237	200	212	214		E B 259	E B 245	224	219	204	219	214	E B 238					213		234
L Q	184	202	201	198	198	194	200	202		224	218	196	195	191	Q 193	190	204					199		196

JUL. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2008 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	R	R	A	A	O X 34	35	O X 36	Y	27	X 34	X 42	X 41	X 44	X 45	X 39	X 28	R	R	A	A	A	27	R
2	A	O X 27	A	49	A	A	B	B	B	29	37	X 43	X 43	X 40	X 42	X 36	X 26	A	B	B	B	B	B	A
3	A	A	60	X 36	O X 35	R	B	R	R	R	X 37	X 44	X 42	X 39	X 39	X 39	B	G	R	B	B	B	A	A
4	A	A	A	O X 33	A	R	R	B	B	X 26	34	43	43	46	39	41	36	O X 26	R	B	B	B	R	X 29
5	A	A	O X 32	R	A	52	A	A	A	31	39	41	X 45	X 48	X 38	X 34	X 33	A	Y	R	B	B	B	R
6	Y	A	A	59	Y	X 35	X 38	B	B	X 28	O X 35	O X 44	O X 41	X 46	40	37	33	O X 26	A	A	A	A	A	B
7	A	A	A	A	A	48	A	R	R	X 27	35	X 38	X 41	X 41	C	C	C	C	C	B	R	A	R	R
8	A	A	A	A	O X 34	46	R	B	B	X 30	X 38	X 38	X 46	43	X 42	X 45	X 31	O X 23	R	A	A	A	A	A
9	A	A	A	A	A	Y	R	R	A	A	35	X 36	X 36	40	46	40	37	X 30	A	A	A	A	A	A
10	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	R	B	B	A	A	A
11	A	A	B	B	B	B	A	B	R	B	O X 36	O X 44	O X 45	X 46	B	B	O X 50	B	B	B	B	B	B	O X 36
12	R	O X 31	A	A	A	A	B	A	A	R	O X 40	B	O X 46	44	O X 41	O X 45	B	B	B	R	B	B	B	O X 34
13	R	R	A	R	B	B	R	A	R	B	O X 42	O X 40	O X 44	X 48	X 44	X 45	X 42	X 32	B	B	B	B	B	B
14	B	R	A	A	A	B	A	A	B	B	A	B	B	B	X 39	X 45	X 40	X 26	O X 26	B	B	B	B	B
15	B	Y	B	R	Y	A	A	A	B	R	X 37	O X 39	X 44	X 43	O X 42	X 39	X 40	X 30	R	B	B	B	B	Y
16	R	A	B	B	B	B	B	B	O X 28	X 34	O X 38	O X 42	X 47	O X 48	X 42	X 36	X 34	X 27	O X 28	X 25	B	O X 26	B	A
17	A	A	A	A	A	B	A	A	A	O X 35	O X 38	O X 41	O X 44	O X 50	X 43	X 44	X 36	O X 32	O X 25	B	B	R	O X 32	O X 30
18	X 30	X 32	X 31	A	A	A	A	A	B	R	O X 39	X 42	X 43	B	O X 48	O X 44	B	B	B	O X 41	A	A	A	A
19	38	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	O X 41	B	B	B	Y	R	B	O X 33
20	A	O X 36	R	R	B	B	A	R	A	O X 34	B	B	X 46	O X 47	O X 46	X 44	X 38	O X 35	B	B	B	B	B	B
21	B	R	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	R
22	R	A	O X 32	O X 33	O X 34	R	O X 35	O X 36	O X 31	X 37	X 43	B	B	B	B	B	B	B	B	R	B	B	B	B
23	R	R	A	A	A	R	R	A	X 28	X 39	X 39	O X 43	O X 44	X 43	O X 43	O X 44	O X 43	B	B	B	B	B	B	B
24	O X 32	A	O X 34	O X 34	A	58	R	X 32	32	X 39	X 43	X 42	O X 46	O X 47	O X 45	X 45	X 38	X 34	X 27	R	Y	Y	B	B
25	B	O X 30	A	X 34	A	O X 33	O X 35	O X 35	33	38	X 43	O X 44	O X 44	O X 48	O X 44	O X 38	X 42	X 35	R	B	B	B	B	B
26	B	X 30	O X 32	O X 32	R	O X 33	O X 34	B	X 32	X 38	X 44	X 45	X 46	X 44	X 44	X 44	X 44	X 38	X 24	A	B	B	B	B
27	R	O X 34	A	68	A	A	A	A	A	X 37	X 41	X 43	X 44	X 46	X 47	46	43	38	31	22	B	B	B	R
28	B	O X 31	O X 32	O X 33	66	O X 35	O X 35	O X 31	O X 33	40	X 44	X 45	X 48	X 47	X 43	X 43	X 43	38	25	O X 22	O X 22	B	O X 34	A
29	R	O X 31	A	O X 34	A	R	R	30	X 33	X 40	40	X 49	X 48	O X 46	O X 53	X 47	X 46	X 34	X 27	B	B	B	B	B
30	R	R	A	R	O X 34	R	R	B	X 34	X 41	X 42	X 46	O X 48	X 47	X 49	X 43	42	X 37	X 31	X 26	B	B	B	B
31	B	Y	O X 31	B	Y	R	B	30	X 36	X 39	X 46	X 46	X 50	X 48	X 46	X 45	X 43	X 34	30	27	O X 26	B	B	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	3	9	8	11	5	9	6	7	10	20	26	24	26	25	25	25	24	18	10	6	2	1	3	5
MED	X 32	O X 31	O X 32	O X 34	O X 34	X 35	O X 35	O X 32	X 32	X 36	X 39	X 43	X 44	X 46	X 43	X 44	X 40	X 33	X 27	X 26	O X 24	O X 26	O X 32	O X 33
U Q	38	O X 33	O X 33	49	50	50	X 35	O X 36	X 33	X 39	X 42	X 44	X 46	O X 48	X 46	X 45	X 43	X 35	30	27			O X 34	O X 35
L Q	X 30	O X 30	O X 32	O X 33	O X 34	O X 34	35	30	O X 31	X 30	37	X 41	X 43	X 43	X 42	X 39	X 35	O X 27	X 25	22			27	X 30

AUG. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2008 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	R	A	A	A	R 28	F 25	R 30	Y	F 18	28	36	35	38	39	33	22	R	R	A	A	A	21	R
2	A	R 21	A	A	A	A	B	B	B	F 18	F 27	37	37	34	36	30	20	A	B	B	B	B	B	A
3	A	A	A	30	R 29	A	B	R	A	R	31	38	36	33	33	33	B	E G 16	A	B	B	B	A	A
4	A	A	A	R 27	A	A	R	B	B	20	F 25	F 34	F 35	F 37	F 28	F 31	F 26	R 20	R	B	B	B	A	23
5	A	A	R 26	R	A	A	A	A	A	F 18	F 28	F 30	39	42	32	28	27	A	Y	A	B	B	B	A
6	Y	A	A	Y	Y	29	32	B	B	22	29	R 38	R 35	40	F 30	F 23	F 24	20	A	A	A	A	A	B
7	A	A	A	A	A	A	A	A	R	21	F 26	32	35	35	C	C	C	C	C	B	A	A	A	A
8	A	A	A	A	R 28	Y	R	B	B	24	32	32	40	F 30	36	39	25	17	A	A	A	A	A	A
9	A	A	A	A	A	Y	A	A	A	A	F 24	30	30	34	F 36	F 30	F 24	24	A	A	A	A	A	A
10	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	A	B	B	A	A	A
11	A	A	B	B	B	B	A	B	R	B	30	R 38	39	J R 40	B	B	R 44	B	B	B	B	B	B	R 30
12	R	R 25	A	A	A	A	B	A	A	R	R 34	B	R 40	A	R 35	R 39	B	B	B	R	B	B	B	R 28
13	A	R	A	A	B	B	A	A	A	B	R 36	R 34	38	42	38	39	36	26	B	B	B	B	B	B
14	B	R	A	A	A	B	A	A	B	B	A	B	B	B	33	39	34	20	R 20	B	B	B	B	B
15	B	Y	B	R	Y	A	A	A	B	A	31	R 33	37	37	36	33	34	24	R	B	B	B	B	Y
16	A	A	B	B	B	B	B	B	R 22	28	32	R 36	41	R 42	36	30	28	21	22	19	B	R 20	B	A
17	A	A	A	A	A	B	A	A	A	R 29	R 32	R 35	38	R 44	37	38	30	R 26	R 19	B	B	R	R 26	R 24
18	24	26	25	A	A	A	A	A	B	A	33	36	37	B	R 42	R 38	B	B	B	R 35	A	A	A	A
19	Z 32	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	35	B	B	B	Y	A	B	R 27
20	A	R 30	R	R	B	B	A	R	A	28	B	B	40	41	40	38	32	29	B	B	B	B	B	B
21	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	R
22	A	A	R 26	R 27	R 28	A	R 29	R 30	R 25	31	37	B	B	B	B	B	B	B	B	A	B	B	B	B
23	R	R	A	A	A	A	R	A	22	33	33	R 37	R 38	J R 37	R 37	R 38	R 37	B	B	B	B	B	B	B
24	R 26	A	R 28	R 28	A	Y	R	26	F 22	33	37	36	R 40	40	R 39	39	32	28	21	R	Y	Y	B	B
25	B	R 24	A	28	A	R 27	R 29	R 29	F 22	F 29	37	R 38	R 38	R 42	R 38	R 32	36	29	R	B	B	B	B	B
26	B	24	R 26	R 26	R	R 27	R 28	B	26	32	38	39	40	38	38	38	38	32	18	A	B	B	B	B
27	R	R 28	A	A	A	A	A	A	A	31	35	37	38	40	41	F 35	F 32	F 28	F 18	F 13	B	B	B	R
28	B	R 25	R 26	R 27	R 28	R 29	R 29	R 25	R 27	F 31	38	39	42	41	37	37	37	F 26	F 15	R 16	R 16	B	R 28	A
29	R	R 25	A	R 28	A	R	R	F 20	27	34	F 28	43	42	R 40	R 47	41	40	28	21	B	B	B	B	B
30	R	R	A	R	R 28	A	R	B	28	35	36	40	R 42	41	43	37	F 32	31	25	20	B	B	B	B
31	B	Y	R 25	B	Y	R	B	F 20	30	33	40	40	44	42	40	39	37	28	F 20	F 18	20	B	B	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	3	9	7	8	5	5	6	7	10	20	26	24	26	24	25	25	24	19	10	6	2	1	3	5
MED	26	R 25	R 26	R 28	R 28	R 28	R 29	R 26	26	29	32	36	38	40	37	37	32	26	20	18	18	R 20	R 26	R 27
U Q	Z 32	R 27	R 26	R 28	R 28	29	29	R 30	27	32	36	38	40	42	40	39	36	28	21	20			R 28	R 29
L Q	24	R 24	25	R 27	R 28	R 27	28	F 20	F 22	22	F 28	34	37	37	36	32	26	20	F 18	16			21	24

AUG. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2008 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	19	21	28	46	58	25	E B 24	16	16	E B 13	33	28	21	20	20	16	15	18	15	30	28	28	27	20
2	29	32	38	40	34	32	B	B	B	E B 13	E B 12	20	24	17	K 17	K 16	29	29	B	B	B	B	B	34
3	30	26	30	32	59	35	B	23	32	E B 12	26	35	30	25	31	17	B	E B 12	28	B	B	B	38	40
4	31	36	48	44	41	28	25	B	B	E B 12	E B 13	26	30	34	30	31	26	E B 12	20	B	B	B	29	31
5	56	32	28	24	58	33	36	37	58	52	41	95	37	22	E B 16	22	42	69	17	30	B	B	B	25
6	18	48	31	17	16	22	19	B	B	E B 12	33	42	E B 21	31	31	18	42	30	51	33	37	57	30	B
7	29	25	34	44	47	31	32	31	22	24	22	33	28	19	C	C	C	C	C	B	28	34	23	29
8	32	44	42	35	K 27	22	24	B	B	E B 14	19	20	31	28	28	17	37	31	17	29	29	30	33	33
9	33	30	28	32	40	16	24	27	50	39	38	29	22	20	25	22	31	42	40	32	50	47	47	47
10	72	75	B	B	B	43	37	B	B	B	B	B	B	B	B	B	B	B	24	B	B	26	24	44
11	44	49	B	B	B	B	51	B	23	B	24	E B 23	E B 20	E B 26	B	B	E B 30	B	B	B	B	B	B	24
12	24	27	K 40	41	58	41	B	35	35	29	E B 29	B	E B 30	E B 27	E B 27	E B 26	B	B	B	17	B	B	B	24
13	29	27	39	35	B	B	32	40	32	B	E B 20	E B 22	19	21	20	16	E B 16	E B 12	B	B	B	B	B	B
14	B	16	32	31	46	B	36	59	B	B	34	B	B	B	E B 21	17	E B 12	E B 14	E B 12	B	B	B	B	B
15	B	14	B	23	20	42	36	38	B	28	19	24	23	20	E B 20	18	16	E B 11	15	B	B	B	B	21
16	26	29	B	B	B	B	B	B	E B 12	E B 14	E B 19	E B 21	25	25	23	24	E B 14	20	15	E B 12	B	15	B	33
17	41	56	68	66	58	B	35	42	41	21	19	24	24	22	E B 20	23	16	E B 17	E B 12	B	B	16	40	34
18	39	40	40	36	64	65	42	89	B	31	21	28	26	B	E B 20	E B 31	B	B	B	43	32	46	43	41
19	43	35	40	57	42	42	B	45	B	B	B	B	B	B	B	B	E B 28	B	B	B	17	K 28	B	33
20	33	35	22	24	B	B	38	34	34	E B 17	B	B	24	E B 24	E B 30	E B 22	23	E B 16	B	B	B	B	B	B
21	B	28	B	B	B	B	32	30	B	B	B	B	B	B	B	B	B	B	36	B	B	B	B	24
22	26	69	17	33	35	32	30	32	26	23	24	B	B	B	B	B	B	B	B	27	B	B	B	B
23	26	20	39	37	39	35	17	34	17	18	25	24	E B 24	E B 26	24	E B 24	E B 27	B	B	B	B	B	B	B
24	32	40	40	32	30	E B 20	24	24	28	20	24	23	25	E B 23	E B 21	24	18	23	E B 12	19	16	16	B	B
25	B	25	41	44	40	46	29	22	E S 16	31	20	E B 24	E B 24	E B 28	E B 24	26	E B 20	E B 16	E B 12	B	B	B	B	B
26	B	28	28	E B 12	21	22	22	B	E B 16	19	21	29	24	24	29	27	20	15	E B 11	35	B	B	B	B
27	22	37	44	45	52	52	44	38	42	27	22	23	23	30	24	23	22	23	15	15	B	B	B	24
28	B	22	22	24	29	40	30	E B 17	E B 18	40	30	32	30	34	30	27	30	E B 12	E B 13	E B 12	E B 14	B	20	31
29	25	31	36	32	42	28	23	32	21	25	34	33	33	22	26	18	18	17	15	B	B	B	B	B
30	21	24	30	23	28	29	21	B	20	17	22	32	35	38	35	22	18	17	E B 12	E B 12	B	B	B	B
31	B	17	18	B	17	20	B	E B 12	16	28	42	34	34	28	30	26	28	E B 12	E B 12	E B 12	E B 12	B	B	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	24	31	26	26	25	24	25	22	21	25	27	24	26	25	25	25	24	22	21	15	10	11	11	19
MED	30	30	35	34	40	32	30	33	23	21	23	27	24	24	24	22	20	17	15	27	28	28	30	31
U Q	36	40	40	44	55	42	36	38	34	28	33	32	30	28	30	26	30	23	22	32	32	46	40	34
L Q	26	25	28	24	28	24	24	24	16	E B 14	E B 20	23	23	22	E B 20	18	17	E B 12	E B 12	E B 12	E B 16	16	24	24

AUG. 2008 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2008 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	11	24	12	11	13	14	12	14	12	13	12	12	11	12	12	12	12	11	11
2	12	11	11	12	12	20	B	B	B	13	12	12	14	12	12	12	11	11	B	B	B	B	B	17
3	11	11	12	11	12	13	B	12	14	12	12	13	12	15	14	12	B	12	12	B	B	B	12	12
4	11	12	12	12	12	11	11	B	B	12	13	12	11	13	13	11	12	12	14	B	B	B	12	12
5	12	11	12	12	11	14	10	12	11	12	11	12	13	14	16	12	13	12	12	14	B	B	B	12
6	12	13	12	11	12	13	12	B	B	12	17	20	21	12	12	12	14	15	12	12	12	12	12	B
7	12	11	12	17	13	12	16	13	13	12	12	12	12	13	C	C	C	C	C	B	12	11	12	12
8	12	12	12	13	12	13	11	B	B	14	12	13	13	13	14	12	11	12	12	12	12	11	12	13
9	12	12	12	12	12	12	11	12	16	12	13	13	13	12	13	12	11	12	12	12	12	12	12	12
10	19	12	B	B	B	19	20	B	B	B	B	B	B	B	B	B	B	B	12	B	B	12	12	11
11	22	14	B	B	B	B	18	B	12	B	20	24	20	26	B	B	30	B	B	B	B	B	B	13
12	12	12	12	22	18	15	B	14	20	18	29	B	30	27	27	26	B	B	B	13	B	B	B	12
13	12	12	15	24	B	B	25	23	22	B	20	22	14	17	15	13	16	12	B	B	B	B	B	B
14	B	11	14	12	19	B	20	12	B	B	22	B	B	B	21	14	12	14	12	B	B	B	B	B
15	B	11	B	12	12	14	14	13	B	16	14	16	16	18	20	14	12	11	11	B	B	B	B	12
16	12	12	B	B	B	B	B	B	12	14	19	21	18	18	18	15	14	12	12	12	B	11	B	12
17	12	21	25	14	20	B	22	18	14	14	15	18	14	13	20	14	14	17	12	B	B	11	12	13
18	11	11	12	12	13	25	14	29	B	20	16	20	20	B	20	31	B	B	B	14	146	11	11	18
19	12	13	13	22	28	20	B	16	B	B	B	B	B	B	B	B	27	B	B	B	12	12	B	12
20	13	14	13	18	B	B	26	28	17	17	B	B	22	24	30	22	15	16	B	B	B	B	B	B
21	B	12	B	B	B	B	14	12	B	B	B	B	B	B	B	B	B	B	21	B	B	B	B	12
22	11	12	12	11	12	14	12	12	14	12	13	B	B	B	B	B	B	B	B	20	B	B	B	B
23	13	12	12	13	13	14	12	14	12	14	18	20	24	26	19	24	27	B	B	B	B	B	B	B
24	12	12	11	12	11	20	16	16	E S 16	12	16	16	21	23	21	16	12	12	12	11	12	13	B	B
25	B	12	12	13	12	16	16	16	E S 16	13	14	24	24	28	24	18	20	16	13	B	B	B	B	B
26	B	12	13	12	12	13	14	B	16	12	12	13	12	14	12	12	12	13	11	14	B	B	B	B
27	12	12	13	12	13	12	12	12	14	12	12	14	12	14	12	12	12	12	12	11	B	B	B	15
28	B	12	12	12	12	13	12	17	18	12	14	12	12	12	11	13	12	12	13	12	14	B	12	11
29	11	11	11	12	12	11	15	14	12	12	12	16	14	12	14	12	12	12	12	B	B	B	B	B
30	12	15	17	15	14	12	12	B	13	13	12	13	12	14	12	14	12	13	12	12	B	B	B	B
31	B	12	15	B	12	13	B	12	12	12	12	12	12	14	12	12	12	12	12	12	12	B	B	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	30	30	30	30	30	31	31	31	31	31
MED	12	12	12	12	12	14	16	16	16	13	14	16	14	15	17	14	14	12	12	B	B	B	B	13
U Q	B 22	12	B 15	B 22	B 20	B 25	B 25	B	B	B 18	20	B 24	B 24	B 27	B 24	B 24	B 27	B	B	B	B	B	B	B
L Q	12	11	12	12	12	13	12	12	13	12	12	13	12	13	13	12	12	12	12	12	12	12	12	12

AUG. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2008 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	E A 246	208	196	A	E B 254	216	216	198	200	Q 216	Q 194	198	A	A	A	A	A	192	A
2	A	A	A	A	A	A	B	B	B	Q 222	Q 210	Q 202	Q 196	Q 186	Q 196	194	200	A	B	B	B	B	B	A
3	A	A	A	192	A	A	B	A	A	222	196	Q 192	Q 202	Q 194	204	204	B	G	A	B	B	B	A	A
4	A	A	A	A	A	A	A	B	B	238	Q 204	Q 204	182	Q 200	Q 200	Q 204	Q 188	198	A	B	B	B	A	188
5	A	A	196	A	A	A	A	A	A	212	198	196	Q 214	Q 202	194	194	206	A	Y	A	B	B	B	A
6	Y	A	A	Y	Y	A	A	B	B	210	232	220	212	Q 202	182	Q 182	E A 240	E A 228	A	A	A	A	A	B
7	A	A	A	A	A	A	A	A	A	226	Q 186	212	Q 188	Q 174	C	C	C	C	C	B	A	A	A	A
8	A	A	A	A	204	A	218	B	B	212	192	Q 192	Q 212	Q 188	Q 204	Q 184	Q 190	210	A	A	A	A	200	A
9	A	A	A	A	A	Y	A	A	A	A	200	190	196	196	Q 228	Q 198	Q 192	Q 220	A	A	A	A	A	A
10	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	A	B	B	A	A	A
11	A	A	B	B	B	B	A	B	A	B	E A 264	218	218	224	B	B	216	B	B	B	B	B	B	200
12	A	194	A	A	A	A	B	A	A	A	232	B	208	A	E B 248	228	B	B	B	A	B	B	B	A
13	A	A	A	A	B	B	A	A	A	B	230	212	222	222	186	200	Q 220	206	B	B	B	B	B	B
14	B	A	A	A	A	B	A	A	B	B	A	B	B	B	194	192	200	E B 242	198	B	B	B	B	B
15	B	Y	B	A 198	A	A	A	A	B	A	208	208	208	196	202	206	194	166	A	B	B	B	B	A
16	A	A	B	B	B	B	B	B	E B 258	210	220	236	216	220	172	Q 218	194	190	200	194	B	198	B	A
17	A	A	A	A	A	B	A	A	A	E A 266	230	230	212	180	206	Q 204	192	224	238	B	B	A	246	198
18	A 250	A 250	232	A	A	A	A	A	B	A	E A 230	238	256	B	204	282	B	B	B	208	A	A	A	A
19	204	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	226	B	B	B	Y	A	B	204
20	A	226	A	A	B	B	A	A	A	234	B	B	220	220	204	206	182	236	B	B	B	B	B	B
21	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	A
22	A	A	208	212	200	A	212	E A 240	E A 280	196	Q 208	B	B	B	B	B	B	B	B	A	B	B	B	B
23	A	A	A	A	A	A	A	A	A	228	216	212	202	210	210	210	208	B	B	B	B	B	B	B
24	236	A	226	204	A	E B 258	A	A	S 214	194	194	206	214	214	200	218	190	190	208	A	Y	Y	B	B
25	B	E A 264	A	218	A	180	192	E A 264	Q 228	Q 196	202	202	204	236	212	194	202	190	212	B	B	B	B	B
26	B	208	198	204	A	A	272	B	228	A 206	H 188	212	198	194	194	208	208	210	184	A	B	B	B	B
27	A	E A 262	A	A	A	A	A	A	A	222	200	190	Q 194	192	Q 198	Q 190	Q 198	Q 196	Q 212	A 220	B	B	B	A
28	B	204	208	212	196	A	202	200	E B 264	202	202	224	Q 196	216	198	Q 206	206	186	E B 246	E B 248	228	B	A	A
29	A	236	A	196	A	A	A	A	Q 230	Q 214	202	224	224	210	220	198	200	210	192	B	B	B	B	B
30	A	A	A	A	194	A	A	B	226	218	202	214	224	Q 202	Q 206	186	Q 192	210	214	E B 214	B	B	B	B
31	B	Y	A	B	Y	A	B	240	Q 206	206	214	Q 214	200	200	198	Q 198	Q 198	Q 202	202	216	216	B	B	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	3	8	6	8	4	3	6	5	9	21	26	24	26	24	25	25	24	18	11	6	2	1	3	4
MED	236	U 218	208	204	198	E 246	210	U 220	221	213	204	212	208	201	201	200	198	204	205	213	222	198	200	199
U Q	A 250	E A 256	226	212	202	E B 258	218	252	E B 261	227	220	219	216	215	208	207	207	220	214	220			246	202
L Q	204	206	198	197	195	180	202	198	220	206	200	202	Q 198	Q 194	195	194	Q 192	190	198	208			192	193

AUG. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2008 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	A	A	A	X 28	35	X 36	X 41	X 42	X 50	X 43	X 46	X 43	X 40	40	X 28	X 24	X 21	A	A	O X 28
2	51	A	A	R	A	R	R	A	35	X 39	X 44	O X 46	X 47	X 43	X 44	O X 44	X 40	X 39	X 32	O X 26	Y	B	R	43
3	A	A	A	A	A	X 30	A	29	36	O X 38	O X 40	X 47	X 45	X 48	57	X 44	X 40	46	32	X 27	X 24	B	A	A
4	A	A	O X 43	A	A	B	B	B	B	B	B	B	B	B	B	R	B	B	O X 39	R	R	R	A	A
5	A	A	A	B	B	A	A	B	B	A	R	R	R	R	R	X 42	B	B	B	B	B	B	B	O X 32
6	A	R	B	B	R	A	A	A	B	O X 36	X 38	X 44	X 45	O X 50	X 45	X 45	O X 44	O X 43	B	X 28	B	B	R	O X 26
7	O X 33	O X 35	A	O X 35	A	B	R	A	X 33	X 36	X 37	X 38	X 42	O X 43	X 43	X 42	X 42	X 42	O X 36	O X 27	B	R	O X 30	Y
8	R	A	A	R	A	R	R	B	B	B	O X 42	B	B	B	B	B	B	B	B	B	A	B	A	A
9	A	A	A	A	A	A	O X 33	R	O X 34	B	B	B	B	B	B	O X 46	O X 45	O X 43	O X 34	O X 34	B	B	Y	B
10	B	43	R	A	R	A	O X 32	X 33	X 38	X 42	X 42	X 44	O X 56	O X 53	X 48	O X 47	X 44	X 40	X 38	X 31	24	B	B	B
11	29	O X 33	R	R	A	R	R	X 32	X 38	O X 42	O X 46	O X 48	O X 53	O X 53	O X 47	O X 49	O X 46	O X 38	O X 38	O X 30	B	B	B	B
12	R	32	O X 32	A	O X 35	O X 35	R	34	X 38	X 40	X 42	O X 50	O X 50	X 48	X 48	X 46	X 45	X 41	X 37	X 26	X 20	X 21	B	B
13	B	B	B	R	B	B	X 24	X 33	X 40	X 42	X 43	O X 48	O X 49	O X 48	X 47	X 47	O X 46	X 41	X 36	X 27	B	B	B	B
14	36	A	60	A	B	B	B	X 34	X 41	O X 40	B	R	B	B	O X 47	X 49	O X 49	O X 44	O X 40	X 32	O X 23	B	B	70
15	40	A	A	A	O X 39	47	36	A	A	X 42	X 42	O X 41	B	B	B	O X 52	O X 46	B	B	R	O X 24	O X 29	A	83
16	B	A	O X 46	O X 35	O X 34	R	X 26	O X 43	R	B	B	B	B	B	R	B	B	B	B	O X 35	B	O X 24	A	A
17	B	A	A	A	A	B	A	B	B	B	X 43	O X 48	X 50	O X 52	O X 53	O X 50	O X 44	O X 43	X 37	X 31	34	25	B	B
18	57	A	A	A	R	A	A	B	O X 38	A	B	O X 53	B	71	B	B	B	B	B	B	O X 28	R	A	A
19	A	A	A	A	A	A	X 28	X 35	B	X 39	O X 44	O X 48	O X 51	B	O X 46	B	O X 52	B	B	O X 38	31	25	A	A
20	X 36	A	A	A	A	O X 36	B	B	B	O X 43	O X 51	O X 48	X 50	O X 51	O X 50	X 54	X 46	X 49	X 42	39	32	28	23	A
21	R	B	R	B	B	50	40	X 41	X 45	X 48	X 47	X 50	X 52	X 51	X 55	X 52	X 47	X 44	40	X 43	41	35	O X 21	A
22	A	A	A	A	A	A	A	X 43	X 42	X 42	X 42	O X 45	O X 51	X 50	X 49	X 47	X 48	48	X 43	36	31	25	25	R
23	B	O X 33	B	A	A	31	36	X 40	X 39	X 42	X 46	X 52	X 52	X 55	X 51	X 53	X 50	X 50	X 44	X 38	X 30	X 28	B	B
24	59	29	R	A	O X 32	R	B	O X 37	X 41	O X 42	O X 44	O X 46	O X 54	O X 53	O X 54	X 53	O X 49	X 48	X 44	42	35	24	B	B
25	Y	Y	B	62	A	34	33	X 44	O X 48	O X 49	O X 52	O X 55	X 59	X 62	X 62	X 54	O X 50	X 46	X 46	X 38	X 30	23	O X 32	87
26	A	A	A	A	X 31	A	A	X 41	X 43	X 46	X 48	X 50	X 58	X 58	X 57	X 56	X 52	X 48	X 47	X 39	32	28	R	B
27	Y	B	B	X 35	36	32	36	X 43	X 51	X 54	O X 52	X 54	X 62	X 62	X 71	X 62	X 49	X 48	X 43	X 38	30	27	X 22	28
28	O X 35	A	O X 38	X 27	30	31	X 36	X 44	X 48	X 47	X 50	X 52	X 60	X 64	X 59	X 60	X 58	X 52	X 47	X 35	34	31	X 27	O X 28
29	R	B	R	B	B	X 25	X 34	X 40	X 44	X 48	X 53	B	O X 76	73	66	X 61	X 56	X 50	47	X 40	32	O X 28	O X 25	B
30	B	A	O X 34	B	X 30	30	X 33	X 36	X 36	X 40	40	X 46	X 49	X 51	X 51	X 50	X 52	X 52	X 46	X 40	X 34	X 31	X 26	R
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	6	6	5	8	11	13	19	21	23	24	23	22	22	23	25	25	23	23	25	20	16	9	9
MED	36	33	O X 40	X 35	X 33	32	X 33	X 37	X 39	X 42	X 44	O X 48	X 51	X 52	X 50	X 49	X 46	X 44	X 40	X 35	30	28	X 25	32
U Q	54	35	46	48	O X 36	36	36	X 43	X 44	X 46	X 48	X 50	X 56	X 58	X 57	X 54	X 50	X 48	X 44	X 38	33	X 28	O X 28	76
L Q	O X 34	32	O X 34	X 31	X 30	X 30	X 30	X 33	36	X 39	X 42	X 45	X 49	X 48	X 47	X 46	X 44	X 41	X 36	X 28	X 24	24	X 22	O X 28

SEP. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2008 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	A	A	A	22	F 25	30	35	36	44	37	40	38	34	F 28	22	18	15	A	A	R 22
2	A	A	A	A	A	A	A	A	F 25	33	38	R 40	41	37	38	R 38	34	33	26	R 20	Y	B	R	A
3	A	A	A	A	A	24	A	19	F 26	R 32	34	41	40	42	F 43	38	34	F 37	F 22	21	18	B	A	A
4	A	A	R 37	A	A	B	B	B	B	B	B	B	B	B	B	R	B	B	R 33	R	R	R	A	A
5	A	A	A	B	B	A	A	B	B	A	R	R	R	R	R	36	B	B	B	B	B	B	B	R 26
6	A	A	B	B	A	A	A	A	B	30	32	38	39	44	39	39	R 38	R 37	B	22	B	B	R	R 20
7	R 27	29	A	R 29	A	B	R	A	27	30	31	32	36	R 37	37	36	36	36	R 30	21	B	R	R 24	Y
8	A	A	A	A	A	R	R	B	B	B	R 36	B	B	B	B	B	B	B	B	B	A	B	A	A
9	A	A	A	A	A	A	R 27	A	28	B	B	B	B	B	B	R 40	R 39	R 37	R 28	28	B	B	Y	B
10	B	28	A	A	A	A	R 26	27	32	36	36	38	R 50	R 47	42	R 41	38	34	32	25	F 13	B	B	B
11	F 18	27	A	A	A	R	R	26	32	R 36	R 40	R 42	R 47	R 47	U R 41	R 43	R 40	R 32	32	24	B	B	B	B
12	A	F 20	R 26	A	R 29	R 29	R	F 24	32	34	36	R 44	R 44	42	42	40	39	35	31	20	14	15	B	B
13	B	B	B	R	B	B	18	27	34	36	37	R 42	R 43	42	41	41	40	35	30	21	B	B	B	B
14	F 26	A	R 30	A	B	B	B	28	35	R 34	B	R	B	B	R 41	43	R 43	U R 38	R 34	26	R 17	B	B	A
15	F 26	A	A	A	R 33	A	F 24	A	A	36	36	R 35	B	B	B	R 46	R 40	B	B	R	R 18	R 23	A	B
16	B	A	R 40	R 29	R 28	A	20	37	R	B	B	B	B	B	R	B	B	B	B	29	B	R 18	A	A
17	B	A	A	A	A	B	A	B	B	B	37	42	44	R 46	R 47	R 44	R 38	R 37	31	25	F 24	F 13	B	B
18	B	A	A	A	A	A	A	B	32	A	B	R 47	B	F 56	B	B	B	B	B	B	R 22	R	A	A
19	A	A	A	A	A	A	22	29	B	33	38	R 42	R 45	B	R 40	B	R 46	B	B	R 32	F 21	F 14	A	A
20	30	A	A	A	A	R 30	B	B	B	37	R 45	42	44	R 45	R 44	48	40	43	36	F 28	F 22	F 19	F 13	A
21	A	B	A	B	B	B	F 25	35	39	42	41	44	46	45	J R 49	46	41	38	F 30	37	30	F 24	R 15	A
22	A	A	A	A	A	A	A	37	36	36	36	39	R 45	44	43	41	42	F 40	37	F 26	F 20	F 15	F 14	A
23	B	R 27	B	A	A	F 20	F 24	34	33	36	40	46	46	49	45	47	44	44	38	32	24	F 18	B	B
24	R	F 20	A	A	26	R	B	R 31	35	R 36	R 38	40	48	R 47	R 48	47	R 43	42	38	F 32	F 23	F 14	B	B
25	Y	Y	B	B	A	F 22	F 23	38	R 42	R 43	R 46	R 49	J R 53	56	56	48	R 44	40	40	32	24	17	R 26	A
26	A	A	A	A	25	A	A	35	37	40	42	44	52	52	J R 51	50	46	42	41	33	F 21	F 18	R	B
27	Y	B	B	29	F 25	F 22	F 26	37	J R 45	48	R 46	48	J R 56	56	65	56	43	42	37	32	F 19	F 16	16	F 18
28	R 29	A	R 32	21	F 20	F 21	30	38	42	41	44	46	J R 54	58	54	54	52	46	41	29	F 24	F 19	21	R 22
29	R	B	R	B	B	19	28	34	38	42	47	B	R 70	F 62	F 55	55	50	44	41	34	A 26	22	R 19	B
30	B	A	R 28	B	24	F 21	27	30	30	34	34	40	43	45	45	44	46	46	40	34	28	26	20	R
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	6	6	4	8	9	13	19	21	23	24	23	22	22	23	25	25	23	23	25	20	16	9	5
MED	26	27	R 31	29	26	F 22	25	31	33	36	38	42	45	46	43	43	40	38	33	28	22	F 18	19	R 22
U Q	29	28	R 37	R 29	R 28	R 26	27	37	38	40	42	44	R 50	52	49	48	44	42	38	32	24	20	R 22	R 24
L Q	F 26	F 20	R 28	25	24	F 20	22	27	29	33	36	39	43	42	41	40	38	35	30	22	18	F 15	F 14	19

SEP. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2008 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	42	33	33	43	35	31	24	16	24	29	31	34	30	30	28	25	30	21	33	28	28	31	30
2	40	30	34	26	30	27	22	40	51	44	24	40	25	25	26	22	18	E B 16	16	16	15	B	17	22
3	30	30	30	38	40	41	30	24	23	30	E B 22	32	30	30	30	30	22	30	19	24	E B 12	B	29	30
4	30	73	52	48	57	B	B	B	B	B	B	B	B	B	B	E B	B	B	46	18	18	K 26	34	46
5	50	50	34	B	B	42	42	B	B	29	29	22	24	22	22	33	B	B	B	B	B	B	B	25
6	34	31	B	B	32	50	42	32	B	26	25	25	23	33	21	29	25	E B 18	B	E B 14	B	B	16	26
7	40	39	47	40	56	B	31	41	17	17	20	31	24	23	22	23	28	E B 19	E B 21	E B 15	B	18	34	15
8	28	31	34	31	40	22	20	B	B	B	E B 27	B	B	B	B	B	B	B	B	B	29	B	42	33
9	44	33	42	38	40	38	38	32	G 25	B	B	B	B	B	B	E B 29	E B 21	E B 26	E B 20	E B 19	B	B	16	B
10	B	K	35	43	32	51	33	17	E B 16	19	18	26	26	26	24	E B 22	E B 22	18	E B 16	E B 12	E B 12	B	B	B
11	33	22	28	26	32	24	24	E S 16	E B 18	E B 22	24	27	28	E B 27	E B 28	26	E B 26	E B 20	E B 18	E B 14	B	B	B	B
12	25	32	35	50	40	31	24	E S 16	18	24	33	27	26	32	32	24	22	22	22	E B 11	16	E B 12	B	B
13	B	B	B	20	B	B	22	E S 15	17	23	25	28	28	29	27	24	24	20	15	E B 13	B	B	B	B
14	E B 20	34	16	33	B	B	B	E S 16	E B 20	E B 27	B	E B 12	B	B	E B 26	26	E B 22	E B 30	E B 24	E B 14	E B 14	B	B	44
15	92	53	52	45	73	38	36	48	42	28	31	27	B	B	B	E B 20	E B 29	B	B	30	28	29	40	E B 46
16	B	44	52	35	32	31	17	19	35	B	B	B	B	B	E B 26	B	B	B	B	E B 23	B	24	28	39
17	B	42	39	39	44	B	43	B	B	B	22	26	28	E B 31	24	E B 24	E B 22	E B 20	E B 15	E B 12	E B 13	E B 12	B	B
18	E B 46	30	42	29	28	39	48	B	32	42	B	31	B	E B 21	B	B	B	B	B	B	32	20	29	40
19	39	38	42	48	45	27	E B 15	18	B	22	E B 24	25	26	B	E B 28	B	E B 32	B	B	E B 20	16	16	44	41
20	71	41	41	35	46	47	B	B	B	25	25	26	26	36	37	31	31	29	22	33	41	25	30	34
21	26	B	26	B	B	B 35	27	16	22	33	37	35	33	33	30	30	24	26	19	E B 11	E B 12	E B 12	E B 11	29
22	34	44	47	42	43	42	44	39	32	29	26	30	28	25	31	27	22	22	16	E B 12	31	16	23	16
23	B	E B 12	B	44	46	42	E B 16	17	31	28	30	36	32	25	24	25	22	22	17	E B 16	E B 14	E B 13	B	B
24	18	30	26	33	21	20	B	26	42	31	32	31	28	33	28	25	E B 24	23	E B 18	E B 13	E B 14	E B 12	B	B
25	16	16	B	E B 55	35	E B 16	E B 15	18	23	24	33	31	32	26	32	28	24	21	17	E B 13	E B 11	17	22	41
26	58	39	47	45	36	72	57	36	29	28	32	32	33	33	31	31	27	25	33	23	16	E B 12	21	B
27	16	B	B	16	E B 22	E B 12	18	18	24	33	32	34	34	33	33	30	26	22	16	E B 10	E B 12	E B 12	18	31
28	39	44	42	30	E B 15	E S 16	E B 13	25	28	28	30	31	32	31	31	29	28	22	17	E B 13	E B 14	17	E B 13	E B 16
29	15	B	21	B	B	E B 14	E B 14	21	21	24	31	B	E B 29	28	26	29	24	24	30	E B 16	15	E B 15	E B 13	B
30	B	E B 20	31	B	E B 19	E S 16	24	27	28	29	30	32	32	33	32	32	29	27	17	14	E B 12	23	24	21
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	25	25	25	25	25	26	24	23	25	25	25	23	23	25	25	25	23	23	27	23	20	21	20
MED	34	34	35	36	40	35	26	22	24	28	29	31	28	30	28	28	24	22	18	E B 14	15	16	24	30
U Q	42	43	44	44	44	42	38	32	32	30	32	32	32	33	31	30	28	26	22	20	28	24	32	40
L Q	26	30	30	30	31	E 21	E B 18	E S 17	18	24	24	26	26	25	25	24	E B 22	E B 20	16	E B 13	E B 12	E B 12	16	24

SEP.2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2008 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	13	12	11	12	11	11	11	12	12	12	12	13	12	12	13	12	12	18	12	12
2	11	12	13	11	12	12	14	15	13	12	13	12	13	14	14	20	14	16	13	12	11	B	12	12
3	14	12	13	12	13	12	12	12	12	11	23	13	13	13	12	12	12	12	12	11	210	B	14	11
4	15	14	12	12	14	B	B	B	B	B	B	B	B	B	B	20	B	B	12	12	12	12	12	12
5	13	26	24	B	B	15	26	B	B	17	15	15	17	14	15	14	B	B	B	B	B	B	B	12
6	11	18	B	B	21	18	14	13	B	18	14	12	16	14	15	12	16	18	B	14	B	B	14	12
7	13	13	14	13	14	B	24	17	12	12	12	13	13	13	13	12	14	19	21	15	B	12	12	12
8	12	14	12	14	15	12	13	B	B	B	27	B	B	B	B	B	B	B	B	B	12	B	12	13
9	12	16	22	20	15	13	14	15	15	B	B	B	B	B	B	29	21	26	20	19	B	B	12	B
10	B	15	20	16	18	13	14	12	16	14	14	14	12	16	15	22	22	15	16	12	12	B	B	B
11	12	12	13	12	11	12	16	ES 16	18	22	22	16	21	27	28	20	26	20	18	14	B	B	B	B
12	12	12	13	14	12	12	13	ES 16	12	12	13	12	12	13	16	14	13	14	11	11	12	12	B	B
13	B	B	B	13	B	B	15	ES 15	13	11	13	14	18	22	12	13	19	12	12	13	B	B	B	B
14	19	12	11	21	B	B	B	ES 16	20	27	B	12	B	B	26	13	22	30	24	14	14	B	B	14
15	14	12	12	12	14	15	13	17	21	18	17	20	B	B	B	20	29	B	B	25	13	13	12	46
16	B	14	20	13	14	12	12	12	20	B	B	B	B	B	26	B	B	B	B	23	B	12	12	12
17	B	12	21	28	18	B	24	B	B	B	17	16	18	31	22	24	22	20	15	12	13	12	B	B
18	46	12	12	14	12	16	12	B	18	20	B	27	B	21	B	B	B	B	B	B	13	14	12	10
19	13	14	30	16	13	12	15	12	B	18	24	16	18	B	28	B	32	B	B	20	11	12	11	20
20	11	22	13	12	14	21	B	B	B	17	15	16	16	14	14	13	14	14	14	12	12	12	12	12
21	12	B	12	B	B	35	14	12	13	12	12	14	12	12	12	12	14	12	12	11	12	12	11	12
22	11	20	20	28	15	25	32	12	13	13	14	16	16	12	12	14	12	14	12	12	14	12	11	11
23	B	138	B	12	12	12	16	11	12	12	13	13	12	14	14	16	15	14	12	16	14	13	B	B
24	12	12	10	12	12	12	B	23	13	19	21	19	13	14	20	20	24	17	18	13	14	12	B	B
25	12	11	B	55	14	16	15	15	11	14	13	13	13	12	12	12	12	13	11	13	11	12	14	12
26	12	25	14	13	13	19	13	14	12	13	12	13	11	12	12	11	11	12	13	12	12	12	12	B
27	13	B	B	13	22	12	12	12	12	13	14	14	12	12	12	14	13	13	13	10	12	12	14	12
28	13	13	12	12	15	ES 16	13	12	12	12	12	12	12	12	13	12	12	11	12	14	14	13	13	16
29	12	B	19	B	B	14	14	14	12	14	12	B	29	14	20	20	16	16	12	16	12	15	13	B
30	B	20	20	B	19	16	12	12	12	12	14	13	13	13	13	12	12	11	12	12	12	11	12	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	13	14	14	14	14	14	14	14	13	14	14	14	16	14	15	14	16	16	14	13	13	13	12	14
U Q	B 19	22	B 22	B 28	B 19	B 21	24	B 17	B 21	B 20	B 23	B 19	B 29	B 31	B 26	20	B 26	B 30	B 24	16	B 210	B	B	B
L Q	12	12	12	12	13	12	13	12	12	12	13	13	12	13	12	12	13	13	12	12	12	12	12	12

SEP. 2008 fmin (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2008 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	A	A	A	172	180	198	Q 192	Q 220	Q 182	204	190	186	Q 200	204	E A 218	214	A	A	204
2	A	A	A	A	A	A	A	A	204	188	208	202	H 176	192	202	214	190	206	218	A	Y	B	A	A
3	A	A	A	A	A	206	A	202	Q 202	250	E B 228	196	190	198	Q 204	200	200	Q 198	Q 214	E A 238	226	B	A	A
4	A	A	A 220	A	A	B	B	B	B	B	B	B	B	B	B	E B 238	B	B	204	200	A	A	A	A
5	A	A	A	B	B	A	A	B	B	A	200	212	212	194	210	216	B	B	B	B	B	B	B	194
6	A	A	B	B	A	A	A	A	B	194	198	228	200	212	196	192	210	196	B	236	B	B	A	200
7	210	210	A	222	A	B	A	A	226	206	202	220	198	198	200	210	220	216	216	222	B	A	194	Y
8	A	A	A	A	A	224	A	B	B	B	244	B	B	B	B	B	B	B	B	B	A	B	A	A
9	A	A	A	A	A	A	198	A	A	B	B	B	B	B	B	E B 244	196	220	E B 228	218	B	B	Y	B
10	B	A	A	A	A	A	214	248	H 168	208	198	206	194	200	198	208	194	200	208	202	E B 276	B	B	B
11	Q 204	A	A	A	A	A	A	S 214	224	E B 218	198	198	198	214	208	204	204	186	212	204	B	B	B	B
12	A	Q 190	196	A	204	230	A	206	208	192	218	188	Q 176	198	194	192	194	202	Q 196	196	A 254	E A 262	B	B
13	B	B	B	A	B	B	E S 250	Q 204	200	210	216	216	212	198	216	200	Q 204	204	200	202	B	B	B	B
14	212	A	212	A	B	B	B	184	204	E B 242	B	E B 266	B	B	196	202	214	214	244	208	232	B	B	A
15	Q 192	A	A	214	E A 264	A	A	A	A	190	204	232	B	B	B	198	E B 276	B	B	A	E A 260	A	A	B
16	B	A	226	208	216	A	A	234	A	B	B	B	B	B	244	B	B	B	B	E B 278	B	198	A	A
17	B	A	A	A	A	B	A	B	B	B	198	218	192	244	204	214	208	198	198	204	Q 186	B 214	B	B
18	B	A	A	A	A	A	A	B	E A 262	A	B	A	B	198	B	B	B	B	B	B	198	A	A	A
19	A	A	A	A	A	A	234	H 204	B	212	208	196	212	B	208	B	230	B	B	Q 234	230	E A 246	A	A
20	252	A	A	A	A	178	B	B	B	246	212	186	208	208	194	214	204	194	200	Q 200	224	218	A 246	A
21	A	B	A	B	B	B	222	Q 188	190	224	Q 194	194	216	206	186	202	192	192	Q 212	Q 204	Q 200	200	E B 230	A
22	A	A	A	A	A	A	A	E A 284	204	176	174	210	224	210	180	176	210	Q 220	Q 184	Q 188	Q 212	E A 248	A	A
23	B	216	B	A	A	A	Q 248	Q 200	198	186	172	Q 234	200	220	198	206	206	206	196	220	214	242	B	B
24	A	204	A	A	A	A	B	E A 260	196	200	232	208	216	200	200	200	200	208	200	Q 200	212	E B 252	B	B
25	Y	Y	B	B	A	E B 290	224	210	206	194	190	190	186	186	198	198	198	198	208	194	202	A 218	200	A
26	A	A	A	A	E A 232	A	A	218	210	192	190	190	218	212	204	208	Q 198	Q 204	Q 192	Q 200	Q 204	212	A	B
27	Y	B	B	Y	B	E B 252	208	212	212	208	196	200	200	192	208	194	198	206	196	190	224	E B 218	E B 260	A
28	222	220	230	230	A	E S 288	208	Q 208	198	Q 194	194	190	190	198	194	196	196	202	190	196	236	E A 252	E B 234	B
29	A	B	A	B	B	E B 262	212	212	184	202	218	B	234	198	212	212	204	214	200	198	228	E B 254	E B 274	B
30	B	212	194	B	B	S 260	Q 224	192	192	192	192	H 170	194	196	196	196	Q 208	Q 208	Q 196	Q 202	Q 202	218	232	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	6	6	4	4	9	11	18	20	23	25	24	23	23	25	26	25	23	23	25	20	15	8	3
MED	211	211	216	218	224	U 229	218	207	202	197	198	200	200	198	200	201	202	204	200	201	216	209	U 215	200
U Q	222	216	226	226	E A 248	E B 275	234	218	209	212	214	217	216	210	208	212	209	208	212	219	231	E 252	E B 253	204
L Q	Q 204	204	196	211	210	215	208	202	194	192	194	191	192	196	196	196	196	198	196	199	Q 203	214	215	194

SEP. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2008 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	54	52	A	A	A	A	X 37	X 43	X 40	X 43	O X 49	X 50	O X 52	O X 52	X 53	O X 49	X 50	X 50	47	44	30	X 33	X 34	44
2	A	O X 38	A	A	A	A	A	O X 37	B	B	B	R	X 41	O X 41	B	B	B	R	O X 39	X 32	29	A	A	A
3	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	O X 38	B	B	R	O X 38	A	A
4	A	B	A	B	A	B	B	B	B	B	R	R	B	R	B	B	B	B	R	O X 40	X 31	O X 26	B	Y
5	A	A	A	A	A	X 32	A	B	B	A	R	B	B	B	O X 51	X 49	X 49	X 45	X 42	X 39	X 32	28	25	B
6	29	R	R	A	R	37	R	B	B	O X 42	O X 46	O X 46	O X 46	R	O X 50	O X 51	O X 49	O X 49	X 47	X 40	37	32	27	28
7	28	32	27	30	37	33	O X 42	O X 44	X 42	O X 48	R	O X 50	O X 53	O X 51	O X 49	O X 49	O X 49	O X 51	X 53	X 45	X 41	O X 32	O X 29	R
8	B	R	68	X 27	A	O X 37	X 42	X 43	X 46	O X 47	X 47	O X 52	O X 54	X 51	X 55	X 53	X 54	O X 51	O X 48	X 45	X 42	36	34	32
9	30	31	41	31	32	35	39	X 42	X 46	X 48	X 50	X 51	O X 55	X 56	X 59	X 59	X 54	X 48	X 49	X 45	X 35	37	35	31
10	25	30	28	36	34	X 34	B	B	B	R	O X 54	O X 47	X 57	O X 57	B	B	B	B	O X 48	X 42	X 38	X 30	25	X 26
11	30	X 24	A	A	A	45	44	X 48	A	B	O X 50	O X 54	B	B	B	B	X 55	69	B	A	68	A	A	37
12	A	A	A	A	B	B	R	B	R	B	B	B	B	B	B	B	B	B	O X 43	O X 42	O X 39	B	R	A
13	A	A	B	B	B	R	O X 37	B	B	R	R	R	B	B	B	B	B	B	B	X 42	X 37	O X 28	O X 30	B
14	Y	O X 28	O X 34	A	A	X 38	X 41	X 42	O X 46	O X 46	O X 49	B	O X 55	X 57	X 56	B	B	O X 49	X 48	B	O X 42	X 30	X 27	R
15	R	R	R	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
16	A	A	A	A	A	O X 38	X 42	X 42	X 42	O X 43	O X 46	B	O X 48	O X 51	O X 49	O X 49	O X 48	O X 45	O X 44	X 43	O X 41	O X 33	32	28
17	A	A	26	33	40	X 41	X 45	X 48	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	R	O X 50	O X 50	O X 49	X 50	X 51	X 50	X 45	X 40	36	X 35	36
21	48	A	33	35	A	A	A	O X 46	X 46	X 47	R	R	R	X 50	O X 54	X 51	X 49	X 48	X 50	O X 47	X 44	43	44	41
22	34	28	X 28	X 32	37	45	X 47	O X 53	X 50	X 50	X 51	O X 51	O X 54	X 58	X 58	X 55	X 58	X 59	O X 54	X 47	X 38	83	A	30
23	A	A	A	A	B	B	A	O X 52	X 48	B	B	B	B	B	O X 52	O X 51	O X 48	X 48	X 49	X 44	X 39	X 38	X 37	X 34
24	30	32	30	38	38	O X 45	X 48	O X 50	O X 49	O X 49	O X 51	O X 50	O X 53	O X 53	O X 50	X 50	O X 52	X 51	X 47	O X 44	X 39	X 38	38	38
25	42	42	44	41	46	X 46	X 50	O X 52	X 54	O X 57	X 58	X 57	X 57	X 60	X 60	X 59	X 54	X 50	X 48	X 46	X 42	O X 39	37	35
26	39	40	38	36	O X 40	43	A	B	R	O X 49	O X 50	O X 52	O X 54	O X 55	X 58	O X 60	O X 56	O X 46	X 46	X 46	X 40	36	40	41
27	40	X 32	X 29	A	X 37	X 43	X 47	X 47	O X 47	O X 46	X 50	O X 52	O X 53	O X 51	O X 50	X 50	X 47	X 46	X 44	X 44	X 42	X 42	51	52
28	46	44	44	41	45	49	O X 46	O X 48	X 49	X 49	X 53	O X 54	X 60	O X 58	O X 58	X 57	X 49	X 51	X 49	X 48	X 46	X 43	X 39	O X 42
29	A	A	A	39	A	B	A	A	X 40	B	B	B	R	R	O X 51	B	X 48	X 47	X 47	X 39	R	X 40	A	37
30	A	B	B	A	B	B	R	R	X 46	B	B	B	B	B	B	B	B	R	O X 44	R	B	A	A	A
31	A	A	B	A	B	A	R	R	B	B	B	B	B	B	B	B	B	O X 48	O X 46	O X 44	X 42	X 39	28	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	13	13	13	12	10	16	14	16	15	14	14	13	15	16	18	16	18	21	23	23	24	23	19	18
MED	34	32	33	36	38	X 40	X 43	X 46	X 46	O X 48	O X 50	O X 51	O X 54	O X 52	O X 52	X 51	X 50	X 49	X 47	X 44	X 40	X 36	34	36
U Q	44	41	42	38	40	45	X 47	O X 49	X 49	O X 49	X 51	O X 53	X 55	X 57	X 58	X 56	X 54	X 51	X 49	X 45	X 42	X 39	38	41
L Q	30	29	28	32	37	36	X 41	X 42	X 42	O X 46	O X 49	O X 50	O X 52	O X 51	O X 50	O X 49	X 49	X 46	O X 44	X 42	X 37	X 32	28	31

OCT. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2008 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 23	F 30	A	A	A	A	31	37	34	37	R 43	44	R 46	R 46	47	R 43	44	44	F 37	F 32	F 20	27	28	R 30
2	A	R 32	A	A	A	A	A	31	B	B	B	R	35	R 35	B	B	B	R	R 33	26	F 18	A	A	A
3	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R 32	B	B	R	R 32	A	A
4	A	B	A	B	A	B	B	B	B	B	R	R	B	R	B	B	B	B	R	R 34	25	R 20	B	Y
5	A	A	A	A	A	26	A	B	B	A	R	B	B	B	R 45	43	43	39	36	33	26	F 21	F 14	B
6	F 22	A	R	A	A	F 27	R	B	B	R 36	R 40	R 40	R 40	R	R 44	R 45	R 43	43	41	34	F 28	F 20	F 17	F 18
7	F 18	F 18	F 17	F 21	F 27	F 22	R 36	38	36	R 42	R	R 44	R 47	R 45	R 43	R 43	R 43	45	47	39	35	R 26	R 23	R
8	B	R	A	21	A	R 31	36	37	40	41	41	R 46	R 48	J R 45	49	47	48	R 45	R 42	39	36	F 26	F 23	F 23
9	F 19	F 18	F 28	F 20	F 22	F 24	F 28	36	40	42	44	45	R 49	J R 50	53	53	48	42	43	39	29	F 27	F 26	F 20
10	F 14	F 20	F 14	F 20	F 20	28	B	B	B	R	R 48	R 41	J R 51	U R 51	B	B	B	B	42	36	32	24	F 14	20
11	F 20	18	A	A	A	F 34	F 30	42	A	B	R 44	R 48	B	B	B	B	J R 49	Y	B	A	F 54	A	A	F 22
12	A	A	A	A	B	B	R	B	A	B	B	B	B	B	B	B	B	B	R 37	36	R 33	B	A	A
13	A	A	B	B	B	R	R 31	B	B	R	R	R	B	B	B	B	B	B	B	36	31	F 19	R 24	B
14	Y	R 22	R 28	A	A	32	35	36	R 40	R 40	R 43	B	U R 49	J R 51	50	B	B	R 43	42	B	R 36	24	21	A
15	A	A	A	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
16	A	A	A	A	A	32	36	36	36	R 37	R 40	B	R 42	R 45	R 43	R 43	R 42	R 39	R 38	37	35	27	F 24	F 16
17	A	A	F 19	F 24	F 28	35	39	42	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	R	R 44	R 44	44	44	45	44	39	34	F 27	29	F 26
21	A	A	F 23	F 24	A	A	A	R 40	40	41	R	R	R	44	R 48	45	43	42	44	R 41	38	F 32	F 28	F 27
22	F 22	F 18	22	F 22	F 28	F 34	41	47	44	44	45	R 45	R 48	J R 52	52	49	52	53	R 48	41	32	A	A	F 20
23	A	A	A	A	B	B	A	R 46	42	B	B	B	B	B	R 46	R 45	R 42	42	43	38	33	33	31	28
24	F 21	F 20	F 17	F 20	F 28	R 39	42	R 44	R 43	R 43	R 45	R 44	R 47	R 47	R 44	44	R 46	45	41	R 38	33	32	F 28	F 27
25	F 28	F 30	F 33	F 30	F 34	40	44	R 46	48	R 51	J R 52	51	51	J R 54	54	J R 53	48	44	42	40	36	R 33	F 28	F 24
26	F 28	F 24	F 25	F 24	R 34	F 30	A	B	R	R 43	R 44	R 46	R 48	R 49	J R 52	R 54	R 50	R 40	40	40	34	F 26	F 27	F 30
27	F 30	26	23	A	31	37	41	41	41	40	44	R 46	R 47	R 45	R 44	44	41	40	38	38	36	36	F 34	F 38
28	F 32	F 27	F 26	F 30	F 35	F 38	40	42	43	43	47	48	54	R 52	R 52	51	43	45	43	42	40	37	33	R 36
29	A	A	A	F 27	A	B	A	A	34	B	B	B	R	R	U R 45	B	42	J R 41	41	33	R	34	A	F 23
30	A	B	B	A	B	B	A	A	40	B	B	B	B	B	B	B	B	R	R 38	A	B	A	A	A
31	A	A	B	A	B	A	A	R	B	B	B	B	B	B	B	B	B	R 42	R 40	38	36	33	F 18	F 20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	12	12	10	16	14	16	15	14	14	13	15	16	18	16	18	20	23	23	24	22	19	18
MED	F 22	F 22	F 23	F 23	F 28	32	36	40	40	42	R 44	R 45	R 48	R 46	R 46	45	44	42	41	38	34	27	F 26	F 24
U Q	F 28	F 28	F 27	F 26	F 34	36	41	R 43	43	R 43	R 45	47	49	J R 51	52	50	48	45	43	39	36	33	28	28
L Q	F 20	F 18	F 18	F 20	F 27	F 28	31	36	36	40	R 43	R 44	R 46	R 45	R 44	R 44	43	R 40	38	34	30	24	F 21	F 20

OCT. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2008 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	70	70	52	47	40	42	40	40	29	33	30	35	27	31	30	27	30	24	30	41	26	41	39	36
2	43	44	39	40	35	31	37	31	B	B	B	25	26	27	B	B	B	34	E B 22	18	16	34	36	36
3	70	B	42	B	52	B	B	B	B	B	B	B	B	B	B	B	B	E B 29	B	B	22	38	46	34
4	43	B	65	B	38	B	B	B	B	B	27	28	B	E B 24	B	B	B	B	E B 21	E B 24	E B 12	E B 13	B	15
5	33	36	40	34	31	21	41	B	B	33	29	B	B	B	G 26	24	22	19	29	15	E B 14	E B 13	E B 12	B
6	17	28	24	32	26	21	28	B	B	26	24	30	26	25	28	25	22	20	21	E B 14	14	E B 12	E B 12	E B 12
7	E B 12	E B 12	E B 13	E B 12	E B 13	E B 12	18	22	23	26	29	30	30	28	28	E B 29	23	20	K 18	14	E B 12	E B 16	E B 13	16
8	B	16	30	29	34	35	35	29	30	28	30	32	33	31	36	34	33	23	18	E B 17	E B 12	E B 12	E B 12	E B 12
9	E B 12	E B 12	25	20	22	23	25	29	31	32	32	34	32	39	33	33	30	25	25	E B 14	E B 12	E B 12	E B 12	E B 12
10	E B 12	E B 12	E B 12	20	E B 12	E B 13	B	B	B	E B 29	27	32	32	30	B	B	B	B	E B 20	E B 21	E B 13	E B 12	E B 13	E B 13
11	E B 12	22	47	90	58	34	26	29	54	B	27	28	B	B	B	B	35	34	B	42	77	83	57	42
12	64	44	41	74	B	B	33	B	37	B	B	B	B	B	B	B	B	B	E B 26	E B 28	35	B	27	36
13	102	37	B	B	B	28	37	B	B	30	26	30	B	B	B	B	B	B	B	E B 20	E B 15	E B 13	32	B
14	15	33	40	41	30	23	22	22	G 18	28	G 19	B	25	E B 30	26	B	B	E B 30	E B 24	B	E B 23	34	27	22
15	28	25	26	B	45	B	B	61	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	68
16	57	64	37	39	32	24	24	30	32	31	24	B	26	28	29	E B 28	E B 27	E B 28	E B 23	22	E B 22	E B 18	E B 16	E B 12
17	32	31	30	29	E B 18	16	30	24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	28	26	26	28	26	28	22	24	28	E B 12	19	29
21	G 27	44	38	30	40	43	51	40	32	32	30	31	32	32	32	30	32	28	26	20	E B 16	E B 14	30	16
22	22	30	25	30	29	23	29	31	32	26	28	29	30	36	38	34	31	29	21	20	24	40	47	28
23	41	52	40	39	B	B	51	31	29	B	B	B	B	B	24	25	25	24	22	17	14	E B 12	E B 12	E B 12
24	26	26	24	22	18	30	23	E B 24	E B 26	27	25	28	31	31	28	27	23	24	21	E B 20	E B 19	E B 14	E B 14	E B 12
25	E B 12	E B 12	E B 12	E B 12	22	24	30	30	29	25	29	27	28	27	28	26	26	29	22	E B 20	16	E B 18	E B 13	E B 12
26	32	26	18	22	23	44	51	B	32	32	29	29	26	30	28	29	27	24	31	28	15	E B 16	E B 14	15
27	E B 13	36	48	48	28	28	30	30	30	32	32	31	31	32	33	30	30	28	26	28	22	E B 12	22	20
28	E B 11	E B 12	E B 13	E B 12	23	25	43	42	32	31	31	32	32	32	33	32	32	29	30	29	24	16	40	44
29	53	44	40	40	40	B	44	53	G 24	B	B	B	28	28	26	B	26	E B 22	31	32	26	27	44	58
30	70	B	B	41	B	B	34	36	32	B	B	B	B	B	B	B	B	E B 28	E B 24	36	B	37	37	43
31	45	38	B	32	B	43	41	34	B	B	B	B	B	B	B	B	B	E B 26	E B 25	E B 23	E B 17	E B 14	E B 12	E B 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	27	25	25	24	23	21	24	20	18	17	19	17	18	19	18	16	18	23	24	25	26	26	26	26
MED	32	31	37	32	30	25	34	30	30	30	29	30	29	30	28	28	27	26	23	20	16	E B 15	20	18
U Q	53	44	40	40	40	34	41	38	32	32	30	32	32	32	33	31	31	29	26	28	24	34	37	36
L Q	E B 13	E B 19	E B 24	22	22	22	27	29	29	26	26	28	26	27	26	26	25	24	21	18	E B 14	E B 12	E B 13	E B 12

OCT. 2008 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2008 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	17	16	20	14	12	13	14	12	13	12	19	17	18	15	14	14	12	13	16	12	12	12
2	12	17	26	23	29	15	14	15	B	B	B	22	13	12	B	B	B	22	22	10	11	11	12	12
3	16	B	33	B	40	B	B	B	B	B	B	B	B	B	B	B	B	29	B	B	14	12	12	12
4	19	B	40	B	26	B	B	B	B	B	23	20	B	24	B	B	B	B	21	24	12	13	B	11
5	12	12	20	25	20	14	27	B	B	22	22	B	B	B	21	12	13	13	16	12	14	13	12	B
6	12	16	12	14	13	11	20	B	B	12	14	14	14	14	17	14	14	16	14	14	12	12	12	12
7	12	140	13	12	13	12	15	14	12	16	18	19	19	21	20	29	18	12	12	12	12	16	13	12
8	B	11	12	12	18	19	15	12	12	13	12	12	15	13	14	13	14	13	14	17	12	12	12	12
9	12	12	16	13	10	12	12	12	13	14	14	13	13	14	14	13	13	12	12	14	12	12	12	12
10	12	12	12	12	12	13	B	B	B	29	18	14	13	26	B	B	B	B	20	21	13	12	13	13
11	12	12	15	21	16	14	13	13	21	B	19	14	B	B	B	B	29	13	B	13	13	17	12	12
12	12	21	18	13	B	B	26	B	27	B	B	B	B	B	B	B	B	B	26	28	12	B	12	12
13	26	18	B	B	B	19	27	B	B	23	21	20	B	B	B	B	B	B	B	20	15	13	13	B
14	12	12	15	15	15	15	12	12	13	14	14	B	18	30	22	B	B	30	24	B	23	13	12	11
15	20	12	12	B	19	B	B	27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13
16	12	22	20	24	14	12	12	16	18	20	18	B	16	23	25	28	27	28	23	17	22	18	16	12
17	12	12	12	12	18	12	12	11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	18	18	18	13	14	13	12	13	11	12	12	12
21	12	13	14	12	13	18	14	13	12	13	13	12	12	12	14	12	13	14	12	16	16	14	12	12
22	12	12	12	12	12	12	12	11	12	12	12	13	12	13	13	13	13	13	11	11	12	12	13	11
23	21	20	21	15	B	B	19	12	14	B	B	B	B	B	18	17	14	15	16	12	12	12	12	12
24	12	11	12	12	11	16	20	24	26	14	16	20	16	14	20	14	14	14	14	20	19	14	14	12
25	12	12	12	12	11	12	12	13	13	12	20	20	19	16	14	12	13	12	16	20	14	19	13	12
26	12	14	14	12	14	12	13	B	20	15	14	14	14	14	13	13	14	14	12	12	13	16	14	13
27	13	12	12	14	12	13	12	12	13	12	13	13	12	15	12	12	12	12	13	12	12	12	12	16
28	11	12	13	12	12	12	17	18	14	12	12	13	14	14	14	12	14	12	12	13	13	12	12	14
29	13	18	14	14	12	B	15	15	14	B	B	B	20	17	15	B	13	22	14	12	16	12	14	12
30	11	B	B	29	B	B	19	19	17	B	B	B	B	B	B	B	B	28	24	15	B	11	14	28
31	22	24	B	12	B	22	21	20	B	B	B	B	B	B	B	B	B	26	25	23	17	14	12	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	28	28	28	28	28	28	28	28	27	27	27	27	28	28	28	28	28	28	28	28	28	28	28	28
MED	12	12	14	14	16	14	15	16	18	20	18	20	18	20	20	22	14	14	16	14	13	12	12	12
U Q	14	20	20	24	B 28	B	24	B	B	B	B	B	B	B	B	B	B	B 28	24	20	16	15	14	13
L Q	12	12	12	12	12	12	12	12	13	13	14	13	14	14	14	13	14	13	12	12	12	12	12	12

OCT. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2008 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	F 230	F 212	A	A	A	A	A	A	Q 206	190	206	206	206	206	216	212	Q 220	226	Q 210	230	A	224	212	212
2	A	220	A	A	A	A	A	E A 272	B	B	B	192	206	E A 220	B	B	B	A	E B 282	E A 236	A	A	A	A
3	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E B 258	B	B	A	212	A	A
4	A	B	A	B	A	B	B	B	B	B	222	238	B	200	B	B	B	B	242	E B 248	E B 248	E B 258	B	Y
5	A	A	A	A	A	E B 286	A	B	B	A	234	B	B	B	222	H 158	200	Q 200	Q 214	Q 202	226	E B 248	E B 280	B
6	210	A	A	A	A	204	A	B	B	192	186	186	194	182	206	206	214	214	214	206	Q 206	222	E B 248	E B 260
7	E B 242	E B 256	E B 290	B	E B 280	226	222	206	186	206	202	196	226	210	186	224	216	218	210	210	202	226	232	A
8	B	A	A	202	A	A	A 272	212	198	192	216	208	196	196	218	204	Q 210	Q 204	206	204	Q 208	Q 208	Q 208	Q 238
9	Q 244	Q 262	E A 246	E A 270	A	212	212	202	Q 190	200	188	H 180	196	196	186	192	Q 192	192	Q 196	202	188	Q 212	Q 202	212
10	E B 250	E B 250	E B 254	E B 270	E B 248	230	B	B	B	212	202	202	198	198	B	B	B	B	198	196	204	224	B	E B 266
11	E B 248	A	A	A	A	A 230	Q 214	204	A	B	196	196	B	B	B	B	216	A	B	A	196	A	A	A
12	A	A	A	A	B	B	A	B	A	B	B	B	B	B	B	B	B	B	232	238	206	B	206	A
13	A	A	B	B	B	A	A	B	B	216	200	230	B	B	B	B	B	B	B	224	212	E B 270	A	B
14	Y	218	200	A	A	A	224	212	202	222	200	B	194	206	202	B	B	232	236	B	B 240	A 254	A	204
15	A	A	204	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
16	A	A	A	A	A	A	E A 246	230	A	230	200	B	176	192	192	214	212	230	218	232	232	E B 272	E B 282	E B 286
17	A	A	A	A	E B 302	222	214	190	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	202	192	180	204	204	210	218	H 188	Q 210	216	232	Q 270
21	A	A	210	202	A	A	A	A	202	180	180	180	192	Q 190	178	Q 198	Q 198	194	Q 204	214	212	Q 222	Q 222	Q 224
22	Q 228	A	E A 306	A 288	244	212	208	218	208	202	194	194	194	194	194	194	202	202	202	202	Q 236	A	A	E A 332
23	A	A	A	A	B	B	A	232	212	B	B	B	B	B	212	212	190	212	212	208	214	222	222	240
24	E A 292	A	A	E A 278	240	220	230	198	208	196	196	202	204	204	182	182	204	Q 206	206	216	210	220	220	Q 238
25	Q 238	Q 240	234	234	226	212	224	194	206	H 174	218	200	192	192	202	214	210	198	206	200	208	220	220	Q 244
26	A 250	E A 284	E S 282	E B 284	A	222	A	B	216	H 174	184	192	192	192	186	200	202	202	216	Q 226	216	234	234	Q 234
27	Q 228	A	A	A	228	224	202	202	Q 194	194	194	210	186	206	180	188	184	194	194	Q 206	Q 218	Q 218	Q 220	Q 212
28	Q 224	Q 228	Q 228	Q 230	Q 212	236	220	E A 244	178	198	178	188	192	Q 182	Q 208	200	196	Q 208	Q 208	Q 216	Q 218	Q 230	224	230
29	A	A	A	E A 278	A	B	A	A	210	B	B	B	A 226	200	214	B	208	228	228	Q 222	Q A	218	A	F
30	A	B	B	A	B	B	A	A	212	B	B	B	B	B	B	B	B	218	E B 228	A	B	A	A	A
31	A	A	B	A	B	A	A	A	B	B	B	B	B	B	B	B	B	210	210	238	228	228	B	E B 294
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	9	10	10	8	13	12	14	15	16	19	17	18	19	18	16	18	21	24	23	22	22	16	17
MED	233	U 229	240	U 243	U 230	222	219	206	206	197	200	196	195	196	198	202	204	209	210	211	212	222	221	U 225
U Q	E 249	E 259	E 282	E A 278	E B 264	230	227	230	210	209	206	207	204	206	212	212	212	222	223	230	226	E B 234	E B 233	E B 268
L Q	Q 228	219	210	230	227	212	213	202	194	191	188	190	192	192	186	193	198	201	206	202	206	218	216	218

OCT. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2008 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	30	A	A	R	O X 41	O X 42	X 46	X 52	X 55	O X 56	O X 56	R	O X 56	R	R	O X 53	O X 52	O X 48	X 47	X 47	X 42	X 41	X 39	41
2	38	32	35	40	44	X 47	X 53	X 52	O X 53	O X 54	O X 54	O X 55	X 56	R	R	B	O X 56	B	O X 48	O X 45	O X 44	X 43	X 40	40
3	R	A	A	38	X 45	X 48	X 52	X 53	O X 54	X 55	R	O X 55	O X 56	O X 56	O X 53	O X 52	O X 50	O X 50	X 48	X 45	A	X 43	46	46
4	45	43	42	48	X 42	O X 41	X 46	X 50	X 55	O X 56	O X 56	O X 56	O X 57	O X 59	O X 59	O X 56	X 55	X 51	X 48	X 48	X 44	X 44	44	47
5	47	45	42	46	51	X 52	O X 57	X 57	X 59	R	O X 51	O X 55	O X 55	X 57	O X 56	O X 54	O X 52	X 51	X 50	X 48	X 46	X 43	X 46	53
6	50	50	49	49	X 50	X 52	X 58	X 62	X 63	X 65	X 65	X 66	X 70	X 68	O X 65	O X 63	X 53	X 51	X 56	X 52	X 48	X 44	X 41	38
7	X 33	O X 33	50	41	X 56	X 56	O X 56	B	X 65	X 67	B	B	X 73	O X 72	X 70	R	R	O X 50	X 48	X 48	X 43	X 42	40	X 56
8	51	A	A	42	A	B	B	B	R	B	B	B	B	B	B	B	B	B	O X 44	O X 44	X 42	X 38	O X 38	O X 37
9	B	B	O X 39	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	O X 46	X 44	O X 43	X 38	O X 37	44
10	R	B	B	O X 41	B	B	B	B	B	B	R	O X 53	O X 54	B	B	B	O X 51	O X 50	O X 48	O X 47	O X 44	O X 44	X 41	X 40
11	X 43	X 41	X 42	X 47	X 48	X 50	X 53	X 53	B	B	B	R	O X 56	R	B	B	B	B	R	X 47	X 47	X 44	X 42	X 42
12	48	X 48	X 48	46	X 46	X 50	X 57	X 62	64	X 62	X 66	X 62	X 62	X 60	X 60	O X 56	B	O X 53	O X 49	O X 49	O X 47	O X 45	O X 40	X 35
13	44	42	B	A	O X 42	X 49	X 53	O X 55	O X 55	X 55	X 59	X 58	X 62	X 66	X 63	O X 57	O X 54	O X 51	X 49	X 51	O X 46	X 47	X 46	X 49
14	52	X 50	52	51	56	X 60	X 60	X 62	X 62	X 60	X 58	X 59	X 60	X 56	X 56	X 56	O X 53	O X 52	X 50	X 48	O X 48	X 46	X 41	47
15	X 50	51	49	58	51	53	X 50	X 56	X 62	68	R	O X 56	X 60	X 60	X 58	O X 55	O X 54	O X 54	X 50	X 50	X 47	X 44	X 43	X 41
16	42	R	A	A	B	R	R	B	B	R	R	R	R	R	R	O X 54	O X 53	R	B	O X 45	X 46	X 42	41	36
17	R	A	A	A	B	R	R	R	X 52	X 51	O X 51	O X 52	O X 52	R	O X 53	O X 53	O X 53	O X 52	O X 49	O X 46	X 46	X 46	X 45	50
18	47	42	41	45	46	54	X 52	X 54	X 57	X 56	O X 55	O X 54	O X 54	O X 53	O X 53	O X 52	X 50	X 48	X 48	X 47	X 47	X 48	50	50
19	49	49	49	52	53	57	X 54	X 57	X 63	X 62	X 60	R	X 59	X 57	R	X 55	O X 54	O X 51	X 48	X 46	X 45	X 45	46	44
20	X 46	46	46	55	X 50	52	X 52	O X 51	B	B	O X 53	R	R	O X 54	X 58	R	O X 50	X 49	X 47	X 44	X 44	X 44	46	44
21	42	38	X 43	X 50	X 54	X 62	64	X 65	63	X 59	X 57	O X 54	R	A	X 56	O X 53	X 47	X 48	X 49	X 48	X 50	X 47	X 46	45
22	48	47	48	X 48	X 50	X 56	X 57	62	68	X 68	X 64	X 65	X 64	X 59	O X 56	O X 54	O X 52	R	X 49	X 49	X 46	X 46	X 49	51
23	47	46	49	49	51	53	51	X 55	56	B	B	B	X 59	X 58	X 60	R	O X 52	O X 52	O X 48	X 48	X 48	X 46	X 46	X 46
24	41	42	X 40	X 47	X 47	X 49	O X 53	O X 54	X 59	X 62	R	O X 59	X 58	X 58	O X 57	O X 53	O X 52	O X 50	X 47	X 46	X 45	X 46	X 46	O X 47
25	45	50	52	64	49	B	A	A	R	R	B	X 60	O X 57	O X 55	R	R	O X 46	X 49	X 44	X 41	X 43	R	O X 42	A
26	A	A	A	A	A	A	B	R	R	R	B	B	B	O X 50	R	R	R	R	O X 48	X 46	X 38	O X 41	O X 41	A
27	A	X 41	A	A	B	B	R	R	R	R	R	R	R	R	R	O X 53	O X 52	O X 51	R	O X 46	X 44	39	X 38	X 33
28	A	O X 38	X 41	X 44	X 43	O X 44	A	R	R	R	R	R	R	R	R	O X 50	O X 46	X 46	X 45	X 44	X 44	X 42	X 39	X 36
29	A	B	A	O X 44	X 44	X 49	X 52	O X 53	O X 54	O X 55	R	O X 53	O X 52	R	O X 52	O X 51	O X 48	O X 48	O X 47	O X 45	X 43	X 42	X 44
30	X 45	X 45	45	A	X 40	X 46	X 52	X 54	O X 54	X 54	X 56	X 57	R	O X 50	O X 50	O X 50	O X 49	O X 48	X 47	X 44	X 44	X 47	X 49	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	22	21	20	22	23	22	21	20	20	18	15	18	21	18	18	20	24	23	27	30	29	28	30	28
MED	46	45	46	47	X 48	X 51	X 53	X 54	X 58	X 58	X 56	O X 56	X 57	X 58	O X 56	O X 54	O X 52	O X 50	X 48	X 46	X 45	X 44	X 42	44
U Q	48	48	49	50	51	X 54	X 57	X 60	63	X 62	X 60	X 59	X 61	X 60	X 60	O X 56	O X 53	O X 51	X 49	X 48	X 47	X 46	X 46	47
L Q	42	X 41	42	44	X 44	X 48	X 52	X 53	O X 54	X 55	O X 54	O X 54	O X 56	O X 55	O X 53	O X 52	O X 50	X 48	X 47	X 45	X 44	X 42	X 40	X 40

NOV. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2008 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 20	A	A	A	R 35	R 36	40	46	49	R 50	U R 50	R	R 50	R	R	R 47	U R 46	R 42	41	41	36	35	33	F 32
2	F 26	F 21	F 23	F 27	F 33	41	47	46	R 47	R 48	R 48	R 49	50	R	R	B	R 50	B	R 42	R 39	R 38	37	34	F 22
3	A	A	A	F 29	39	42	46	47	48	49	R	R 49	R 50	R 50	R 47	R 46	R 44	44	42	39	A	37	F 35	F 35
4	F 32	F 32	F 30	F 38	36	R 35	40	44	49	R 50	R 50	R 50	U R 51	R 53	R 53	R 50	49	45	42	42	38	38	F 35	F 38
5	F 36	F 32	F 30	Z 40	F 40	46	R 51	51	J R 53	R	R 45	R 49	R 49	J R 51	R 50	R 48	R 46	45	44	42	40	37	40	F 38
6	F 35	F 34	F 36	F 39	44	46	52	56	57	59	59	60	64	62	59	R 57	J R 47	45	J R 50	46	42	38	35	F 29
7	27	R 27	29	F 29	50	50	R 50	B	59	61	B	B	67	66	64	R	R	R 44	42	42	37	36	F 25	50
8	F 23	A	A	F 23	A	B	B	B	R	B	B	B	B	B	B	B	B	B	R 38	R 38	36	32	32	31
9	B	B	R 33	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	R 40	38	37	32	R 31	A
10	A	B	B	R 35	B	B	B	B	B	B	R	R 47	U R 48	B	B	B	R 45	R 44	R 42	41	38	R 38	35	34
11	37	35	36	41	42	44	J R 47	47	B	B	B	R	R 50	R	B	B	B	B	R	41	41	38	36	36
12	F 38	42	42	F 35	40	44	51	56	F 52	56	60	56	56	J R 54	J R 54	R 50	B	47	R 43	R 43	41	R 39	R 34	29
13	F 30	F 30	B	A	R 36	43	47	R 49	R 49	J R 49	J R 53	52	56	60	57	U R 51	R 48	45	43	45	R 40	41	40	F 39
14	F 42	44	F 39	F 40	F 45	54	54	56	56	54	J R 52	J R 53	J R 54	50	50	50	47	R 46	44	42	R 42	40	35	F 37
15	44	F 39	F 39	F 47	F 40	F 44	44	50	56	F 57	R	R 50	J R 54	54	J R 52	R 49	R 48	R 48	44	44	41	38	37	36
16	F 28	A	A	A	B	R	R	B	B	R	R	R	R	R	R	U R 48	R 47	R	B	R 39	40	36	F 32	F 26
17	A	A	A	A	B	A	A	A	46	45	R 45	R 46	R 46	R	R 47	R 47	R 47	R 46	43	40	40	40	39	F 40
18	F 36	F 28	F 30	F 34	F 39	F 42	46	48	51	50	49	R 48	R 48	U R 47	47	R 46	44	42	42	41	41	42	F 40	F 40
19	F 38	F 38	F 38	F 40	F 43	F 47	48	51	57	56	J R 54	R	J R 53	51	R	J R 49	R 48	45	42	40	39	39	40	F 34
20	40	F 35	F 36	F 38	44	46	46	R 45	B	B	R 47	R	R	R 48	J R 52	R	R 44	43	82	38	38	38	F 36	F 34
21	F 32	F 24	37	44	48	56	F 54	59	F 53	53	51	48	R	A	50	R 47	41	42	43	42	44	41	40	F 34
22	F 36	F 36	F 38	42	44	50	51	J F 56	F 56	62	58	59	58	J R 53	R 50	R 48	R 46	R	43	43	40	40	43	F 39
23	F 36	F 36	F 38	F 38	F 38	F 43	F 43	49	50	B	B	B	53	J R 52	J R 54	R	R 46	R 46	42	42	42	40	40	40
24	F 31	F 32	34	41	41	43	47	R 48	J R 53	56	R	R 53	J R 52	J R 52	R 51	47	R 46	R 44	41	40	39	40	40	R 41
25	F 33	F 36	F 41	F 50	F 38	B	A	A	R	R	B	54	R 51	R 49	R	R	R 40	43	38	35	37	A	36	A
26	A	A	A	A	A	A	B	R	A	R	B	B	B	R 44	R	R	R	R	R 42	40	32	R 35	R 35	A
27	A	35	A	A	B	B	R	R	R	R	R	R	R	R	R	U R 47	R 46	R 45	R	R 40	38	F 29	32	27
28	A	R 32	35	38	37	R 38	A	R	R	R	R	R	R	R	R	R 44	R 40	40	39	38	38	36	33	30
29	A	B	A	R 38	38	43	46	R 47	R 48	R 49	R	R 47	R 46	R	R 46	R 45	R 42	R 42	R 41	R 39	37		36	38
30	39	39	F 35	A	34	40	46	48	48	48	50	51	R	R 44	R 44	R 44	R 43	R 42	41	38	38	41	43	41
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	22	21	20	22	23	22	21	20	20	18	15	18	21	18	18	20	24	23	27	30	29	28	30	27
MED	F 36	F 35	F 36	F 38	40	44	47	48	52	52	R 50	R 50	R 51	R 52	R 50	R 48	R 46	44	42	40	39	38	36	F 36
U Q	38	37	F 38	41	44	46	51	54	56	56	54	53	55	54	54	R 50	R 47	R 45	43	42	41	40	40	39
L Q	F 30	F 31	F 32	F 35	37	42	46	47	48	49	R 48	R 48	R 50	R 49	R 47	R 46	R 44	42	41	39	38	36	34	31

NOV. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2008 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	E B 13	31	38	32	32	22	24	31	24	25	25	29	29	25	26	23	22	E B 26	24	24	16	16	29	31
2	19	E B 13	E B 13	22	16	23	22	22	26	32	43	44	44	32	34	B	34	B	E B 30	E B 21	32	24	32	E S 13
3	31	34	40	27	32	19	30	32	33	33	34	33	27	28	28	38	26	32	32	28	50	46	83	70
4	40	50	E B 14	32	41	35	30	29	28	30	32	32	32	32	29	29	28	24	24	21	28	19	16	16
5	E B 12	E B 12	E B 12	34	32	32	27	32	30	36	30	41	41	38	39	32	32	29	24	26	18	16	E B 14	E B 12
6	E B 12	E B 11	E B 13	E B 13	32	28	30	30	28	28	31	34	44	48	28	32	32	28	28	28	18	22	E B 13	30
7	E B 18	28	E B 26	E B 28	32	24	E B 26	B	34	30	B	B	30	32	32	28	28	26	34	30	31	36	37	57
8	Z 35	48	42	57	72	B	B	B	32	B	B	B	B	B	B	B	B	B	E B 25	E B 22	22	G	K 18	34
9	B	B	42	G 24	B	B	B	B	30	B	B	B	B	B	B	B	B	B	E B 35	24	E B 19	E B 25	E B 20	31
10	37	B	B	40	B	B	B	B	B	B	30	28	27	B	B	B	29	E B 28	E B 28	E B 20	E B 26	E B 19	E B 17	E B 15
11	E B 12	14	15	15	G	20	27	G	B	B	B	26	30	32	B	B	B	B	E B 28	E B 20	17	16	E B 13	E B 12
12	E B 12	E B 12	E B 14	27	43	28	30	30	33	33	31	31	27	E B 30	E B 41	E B 30	B	E B 24	G	28	E B 25	E B 23	E B 21	E B 16
13	E B 12	21	B	39	38	24	29	29	29	31	40	30	30	39	38	29	G	25	25	24	24	38	E B 14	E B 13
14	E B 14	E B 12	16	20	G	32	32	34	33	39	36	32	40	38	45	30	43	25	26	39	20	26	15	E B 12
15	E B 12	E B 12	E B 13	24	40	34	40	46	31	27	30	27	30	37	28	27	25	E B 25	24	24	24	20	14	E B 13
16	22	32	44	66	B	32	24	B	B	34	34	29	28	24	29	28	26	E B 26	B	E B 26	24	27	22	31
17	34	47	44	40	B	36	33	31	32	30	30	27	28	29	29	29	26	27	30	28	20	18	21	E B 12
18	E B 12	E B 13	24	28	30	30	28	27	32	32	32	34	33	38	34	36	32	32	28	31	33	26	26	17
19	E B 13	E B 14	24	30	27	28	30	30	31	33	34	38	32	32	34	32	31	30	28	28	22	18	E B 16	16
20	18	28	31	30	21	28	30	27	B	B	E B 40	39	45	35	32	27	30	32	32	25	25	35	39	25
21	E B 12	43	39	32	29	31	33	34	34	38	35	70	44	54	56	45	37	36	43	42	62	59	35	69
22	65	38	37	38	27	28	29	32	32	32	37	32	40	34	32	34	36	41	35	37	30	25	17	20
23	E S 16	24	30	28	42	41	30	40	32	B	B	B	62	30	38	42	38	38	37	47	43	24	23	13
24	17	18	16	27	24	30	24	29	32	31	35	40	40	37	37	36	38	45	37	37	33	31	49	49
25	36	26	26	30	33	B	62	58	40	44	B	31	30	35	35	33	29	29	27	30	34	41	40	42
26	46	40	J G 37	43	41	46	B	34	40	30	B	B	B	28	27	26	26	26	33	24	32	32	39	44
27	48	58	42	48	B	B	32	36	28	28	29	27	27	32	30	28	26	22	E B 29	24	30	18	G	32
28	38	G	18	42	39	33	42	34	26	30	31	27	30	31	30	29	36	25	25	28	26	20	23	16
29	38	B	34	30	31	27	27	28	31	26	34	30	34	34	30	30	33	24	21	25	21		17	18
30	16	E B 14	31	41	32	32	42	34	31	33	36	32	33	36	30	38	31	30	36	35	32	32	20	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	29	27	28	30	25	25	26	25	26	24	23	25	27	27	26	25	26	26	29	30	30	29	30	30
MED	18	24	28	30	32	30	30	31	32	32	33	32	32	32	32	30	30	28	28	27	26	24	20	19
U Q	36	38	38	40	40	32	32	34	33	33	36	36	40	37	37	35	34	32	34	30	32	32	32	32
L Q	E B 12	E B 13	E B 16	27	27	26	27	29	29	30	30	28	29	30	29	28	26	25	25	24	21	18	E B 16	E B 13

NOV. 2008 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2008 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	14	14	28	18	14	11	12	12	12	15	15	15	18	18	20	20	26	19	15	11	12	12	12
2	13	13	13	12	12	12	12	13	12	11	12	14	13	27	27	B	23	B	30	21	20	13	13	E S 13
3	21	12	14	12	14	12	12	12	13	13	13	14	14	16	14	16	13	13	12	12	12	11	12	12
4	11	12	14	12	12	14	12	12	12	14	13	14	14	13	20	19	14	14	12	12	12	14	11	12
5	12	12	12	12	12	12	12	13	13	12	13	12	12	12	12	13	11	13	11	12	13	12	14	12
6	12	11	13	13	12	12	12	12	13	16	19	19	14	13	14	12	12	12	13	12	12	11	13	12
7	18	17	26	28	17	16	26	B	13	18	B	B	25	26	20	26	24	20	13	12	14	11	11	12
8	11	12	14	11	21	B	B	B	24	B	B	B	B	B	B	B	B	B	22	22	14	12	14	13
9	B	B	32	15	B	B	B	B	14	B	B	B	B	B	B	B	B	B	35	14	19	25	20	20
10	23	B	B	16	B	B	B	B	B	B	21	20	21	B	B	B	19	28	28	19	26	19	17	15
11	13	11	12	12	12	13	12	26	B	B	B	22	16	28	B	B	B	B	28	20	12	12	13	12
12	12	12	14	12	13	12	13	12	12	12	13	13	17	30	41	30	B	24	22	19	25	23	21	16
13	12	12	B	19	13	13	12	13	13	16	14	13	13	13	18	22	17	21	13	13	19	14	14	13
14	14	13	12	12	12	12	11	12	12	12	14	14	14	12	16	16	13	13	13	13	18	12	12	12
15	12	12	13	12	12	12	12	13	14	13	16	17	14	19	19	17	19	25	14	13	14	14	11	13
16	12	23	16	25	B	24	19	B	B	27	28	18	22	20	16	19	17	26	B	26	15	13	10	13
17	19	16	16	26	B	19	21	20	20	14	13	18	16	16	16	14	14	12	12	12	12	12	10	12
18	12	13	12	12	12	11	12	12	12	13	12	13	12	14	13	14	15	13	13	13	12	12	12	12
19	13	14	12	11	12	12	12	13	12	14	14	13	13	12	13	13	13	12	12	12	12	12	16	14
20	13	12	12	12	12	12	12	23	B	B	40	31	24	19	18	20	13	14	13	13	13	13	12	13
21	12	14	12	13	12	12	12	11	12	12	13	14	14	13	13	12	12	12	12	12	12	12	11	12
22	12	13	12	12	12	12	12	12	13	12	13	13	13	14	12	12	12	12	12	13	12	12	12	12
23	E S 16	11	11	13	12	11	12	12	13	B	B	B	18	18	14	14	14	13	13	12	14	14	12	12
24	12	12	12	12	12	12	13	14	13	13	12	14	13	13	12	12	12	12	12	12	12	14	12	12
25	12	15	12	13	11	B	25	20	14	13	B	20	19	13	14	14	12	12	13	15	14	12	12	11
26	12	17	18	18	23	21	B	14	14	18	B	B	B	16	20	18	16	14	13	13	15	19	13	12
27	18	16	24	25	B	B	23	16	15	21	16	18	12	13	14	13	19	13	29	16	18	14	13	12
28	13	14	12	12	13	12	13	21	18	26	19	12	13	14	13	13	13	13	12	12	12	12	12	12
29	15	B	16	13	12	12	12	13	12	13	14	12	13	13	12	16	16	16	15	13	12		12	12
30	12	14	12	14	12	12	13	13	13	13	13	13	13	14	17	13	14	12	12	12	13	12	14	19
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	29	30	30
MED	12	13	13	12	12	12	12	13	13	14	14	14	14	15	16	16	14	14	13	13	13	12	12	12
U Q	15	16	16	16	B 18	B 19	21	B 21	15	B 26	B 40	B 20	19	20	20	B 22	19	25	22	15	15	14	14	13
L Q	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	12	12	12	12	12	12	12

NOV. 2008 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2008 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	B	A	A	A	A	E A 248	218	198	H 188	188	182	186	188	228	190	192	192	200	200	218	H 210	Q 216	Q 228	Q 230
2	Q 246	E B 278	Q 278	A 258	226	212	212	210	200	204	202	202	204	A	A	B	A 226	B	230	198	234	222	238	E S 242
3	A	A	A	A	E A 288	208	212	192	192	186	196	182	200	184	184	210	204	212	200	200	A	A 248	Q 216	Q 226
4	Q 232	Q 232	Q 242	Q 218	E A 272	A	232	196	196	184	184	184	184	194	194	194	Q 204	196	196	Q 212	Q 212	220	228	228
5	Q 228	Q 230	Q 244	230	Q 218	Q 214	206	200	190	190	190	230	202	H 186	204	204	204	182	202	204	218	202	222	Q 208
6	214	Q 230	224	210	210	216	206	206	198	206	204	204	A	204	182	192	190	186	202	212	206	202	212	Q 260
7	E B 296	A	B	B	E A 264	218	226	B	198	198	B	B	198	218	E A 256	222	208	208	Q 210	Q 200	Q 204	Q 252	E A 282	E A 276
8	Q 258	A	A 226		A	B	B	B	A	B	B	B	B	B	B	B	B	B	E A 256	222	252	A 272		A
9	B	B 292		A	B	B	B	B	240	B	B	B	B	B	B	B	B	B	B	210	226	E B 252	E B 284	A
10	A	B	B	A	B	B	B	B	B	B	196	206	194	B	B	B	194	E B 268	226	202	228	222	228	228
11	228	228	E A 248	222	208	206	208	218	B	B	B	198	176	A	B	B	B	B	E B 234	198	212	214	218	Q 234
12	Q 234	Q 244	Q 240	Q 230	Q 222	196	208	Q 198	186	190	186	206	182	188	B	212	B	198	220	210	228	224	238	238
13	Q 232	Q 280	B	A	A	244	H 196	196	H 162	220	218	184	184	218	206	206	198	198	204	212	216	224	230	Q 218
14	Q 222	Q 234	Q 248	226	Q 232	Q 198	202	196	192	204	200	186	200	196	A	196	216	H 200	H 172	214	214	Q 214	Q 220	Q 226
15	Q 212	Q 214	220	Q 236	224	212	214	198	194	192	170	206	224	196	192	202	198	198	208	206	Q 206	214	Q 226	Q 242
16	Q 268	A	A	A	B	A	A	B	B	A	A	H 174	192	206	H 164	168	204	206	B	E B 218	220	216	Q 202	Q 256
17	A	A	A	A	B	A	A	A	216	198	174	H 184	168	198	188	196	190	194	H 186	192	210	210	Q 228	Q 224
18	Q 222	Q 232	Q 234	226	210	206	202	208	196	184	176	206	178	H 180	H 180	194	190	196	218	208	216	Q 216	Q 224	Q 220
19	Q 218	Q 232	Q 236	Q 272	Q 206	194	204	194	186	186	192	198	212	212	186	184	212	196	196	198	208	208	236	Q 232
20	Q 226	Q 224	230	Q 232	238	216	216	202	B	B	B	A	A	A	192	198	190	200	200	198	220	220	228	Q 240
21	Q 258	Q 270	E A 314	A 228	230	224	218	190	192	188	200	198	A	A	200	200	200	202	204	E A 220	E A 246	E A 214	Q 202	Q 244
22	Q 218	Q 228	234	E A 256	Q 212	206	206	H 172	198	192	186	192	208	198	H 184	H 182	210	A	198	210	200	208	Q 220	Q 210
23	Q 236	Q 230	238	230	220	200	Q 194	194	180	B	B	B	A	222	198	198	198	200	200	220	220	220	Q 232	210
24	222	Q 234	Q 234	228	208	196	188	H 184	H 190	202	182	188	206	216	H 170	192	H 180	A	192	204	230	208	224	E A 268
25	226	Q 218	Q 222	Q 224	212	B	A	A	200	A	B	H 186	H 178	A 188	206	206	H 184	210	190	180	Q 188	A	E A 274	A
26	A	A	A	A	A	A	B	A	A	A 224	B	B	B	194	206	184	196	204	204	202	Q 228	A	A	A
27	A	A 202	A	A	B	B	A	230	212	206	H 172	188	182	H 180	204	H 180	198	198	208	H 178	212	206	236	Q 256
28	A	A	E A 272	A	E A 266	A	A	A	230	A	212	190	190	188	H 168	178	H 176	190	190	198	202	214	Q 220	238
29	A	B	A	E A 284	220	206	206	202	184	190	H 168	198	198	A 198	202	188	196	196	202	200	210		E A 210	218
30	234	234	Q 244	A	E A 270	206	208	192	192	186	186	H 226	190	196	192	H 188	198	198	H 170	184	222	A 236	230	A 242
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	19	19	18	21	20	21	21	24	21	21	24	23	23	23	25	26	24	28	30	29	26	29	26
MED	228	Q 231	Q 237	228	217	206	208	198	193	192	186	195	192	196	192	194	198	198	201	203	215	216	226	Q 230
U Q	Q 241	Q 234	248	A 236	E A 251	216	215	204	199	204	200	205	202	212	204	203	204	203	209	212	227	222	236	Q 242
L Q	Q 222	Q 228	234	226	211	203	203	193	189	187	179	186	182	188	H 184	186	190	196	196	198	209	210	Q 220	Q 224

NOV. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2008 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	46	43	48	X 48	X 49	X 52	X 56	X 59	X 57	O X 54	O X 55	O X 54	O X 55	O X 53	O X 55	O X 54	O X 51	O X 51	X 51	X 50	X 47	X 45	X 45	48
2	46	X 47	X 49	X 50	X 57	X 64	X 64	X 64	X 65	X 65	X 62	X 60	X 58	O X 56	R	R	X 51	X 49	X 49	X 47	X 46	X 42	X 43	X 44
3	X 45	X 45	X 46	58	X 52	59	70	70	71	X 64	O X 58	X 56	X 57	R	X 57	O X 52	O X 50	O X 52	O X 51	O X 53	X 51	X 52	46	X 38
4	B	O X 63	44	A	42	43	A	R	A	R	O X 54	R	R	O X 51	R	O X 53	X 55	X 52	O X 48	X 41	X 45	X 42	40	X 39
5	R	R	A	A	R	A	R	R	R	R	R	O X 55	R	B	B	B	B	R	R	R	O X 37	A	A	X 40
6	X 41	A	39	R	R	B	R	B	B	R	B	B	B	R	B	B	B	B	B	B	R	O X 41	X 38	B
7	R	R	B	B	R	R	B	R	B	B	B	R	O X 53	R	B	B	B	O X 52	B	R	R	O X 41	X 40	X 37
8	X 35	X 38	X 38	X 38	R	O X 45	O X 47	X 48	B	R	60	O X 55	R	R	R	R	O X 52	R	R	X 46	X 47	X 46	X 39	X 39
9	X 38	X 40	X 42	X 46	X 50	X 56	X 62	X 63	X 59	X 58	O X 56	X 56	R	O X 54	O X 54	O X 51	R	R	R	X 47	X 47	X 45	O X 48	X 50
10	X 50	X 46	X 48	X 53	X 58	O X 63	X 66	X 68	X 70	X 67	X 65	X 67	O X 72	O X 68	O X 67	X 57	O X 53	R	O X 50	X 49	X 52	46	B	X 40
11	R	40	43	R	59	R	O X 51	X 56	X 60	X 61	R	O X 62	X 67	X 63	O X 56	X 58	X 57	O X 54	O X 51	X 53	B	B	B	O X 41
12	O X 40	40	X 43	R	A	O X 48	47	X 48	O X 54	X 58	O X 59	R	R	R	R	R	O X 52	O X 51	O X 49	X 48	X 46	X 46	O X 45	X 44
13	B	X 45	X 40	X 44	O X 44	R	O X 52	B	X 54	X 57	X 58	R	X 56	O X 54	R	O X 52	O X 52	O X 49	X 49	X 48	X 48	X 46	X 44	X 41
14	X 41	X 43	X 46	52	X 49	R	60	65	64	60	64	65	65	X 58	O X 57	R	R	A	X 49	X 48	X 48	X 48	51	X 46
15	X 46	X 42	O X 50	X 50	X 52	X 56	X 57	O X 57	O X 57	X 57	O X 58	R	R	O X 56	O X 55	X 56	O X 52	X 49	O X 48	X 48	X 51	X 47	X 46	X 49
16	43	44	44	50	X 53	X 54	X 58	X 57	B	X 56	O X 55	O X 55	O X 56	O X 55	A	A	O X 48	X 48	X 50	X 50	X 48	X 46	X 41	R
17	46	R	72	A	R	R	68	A	O X 48	61	50	O X 50	R	R	O X 53	O X 52	X 51	X 53	O X 52	X 42	O X 44	X 40	X 37	O X 39
18	O X 42	O X 42	X 40	X 43	A	O X 46	X 48	X 51	X 53	O X 58	O X 50	R	R	R	O X 54	O X 52	O X 49	O X 49	O X 47	X 48	X 47	X 48	47	44
19	35	X 37	X 40	O X 44	X 46	X 49	X 51	X 50	X 50	O X 52	R	R	O X 56	X 59	O X 60	O X 58	O X 50	O X 50	O X 50	O X 53	X 46	O X 45	X 43	X 42
20	O X 44	X 44	R	A	R	O X 52	X 54	O X 55	X 57	O X 58	X 58	R	A	R	O X 54	X 51	X 51	O X 50	O X 49	X 50	X 47	X 48	X 46	X 46
21	47	50	X 48	X 51	X 52	X 52	X 57	X 57	X 52	X 54	X 56	R	R	A	A	O X 52	A	A	O X 48	A	X 48	X 45	X 46	X 46
22	X 42	X 44	46	X 44	X 49	X 58	X 62	X 63	X 64	X 64	X 56	X 58	R	R	R	R	X 46	X 45	O X 48	X 48	X 44	R	X 37	54
23	X 40	O X 42	O X 50	R	X 38	A	A	A	A	R	R	R	R	R	R	O X 52	O X 51	O X 51	O X 49	X 40	X 41	O X 42	O X 43	O X 42
24	A	B	A	B	B	R	B	B	R	R	R	R	R	R	R	R	O X 52	R	O X 49	O X 46	O X 46	X 46	O X 41	O X 40
25	42	O X 37	R	O X 42	R	O X 44	O X 44	O X 45	R	O X 52	O X 54	R	R	R	R	R	R	R	O X 46	O X 47	O X 46	X 48	X 42	37
26	O X 38	X 42	X 39	X 40	R	R	O X 49	O X 51	O X 55	O X 54	X 57	O X 57	R	R	R	R	O X 50	O X 48	O X 48	O X 47	X 46	A	X 46	X 43
27	B	X 40	X 44	O X 46	O X 48	R	O X 48	O X 52	O X 53	O X 54	O X 54	R	O X 57	O X 57	R	O X 54	O X 51	O X 50	X 47	X 47	X 45	X 46	X 46	X 42
28	43	X 38	43	A	R	O X 49	R	X 56	X 57	X 58	X 60	X 60	X 60	X 59	O X 54	O X 50	O X 50	O X 48	O X 48	O X 50	X 47	X 45	X 45	X 48
29	O X 49	X 49	46	44	X 46	X 52	52	X 49	X 61	X 60	X 58	A	R	R	O X 54	R	R	O X 52	R	O X 49	X 46	X 46	X 47	X 46
30	48	48	X 47	X 48	X 53	58	62	68	68	X 66	X 63	X 60	O X 59	R	O X 57	X 57	R	O X 49	O X 49	O X 48	O X 46	X 47	X 49	52
31	44	B	R	48	58	R	X 62	R	68	68	R	O X 63	R	R	B	B	B	O X 53	O X 50	O X 46	X 43	X 39	X 40	X 38
	00	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	25	25	20	19	19	24	22	22	24	23	16	13	13	14	17	21	22	25	27	28	27	28	29
MED	X 43	X 43	X 44	X 47	X 50	X 52	X 56	X 56	X 57	X 58	X 58	X 58	O X 57	O X 56	O X 55	O X 52	O X 51	O X 50	O X 49	X 48	X 46	X 46	X 44	X 42
U Q	46	X 46	X 48	X 50	X 53	X 58	X 62	63	64	X 62	X 60	X 61	X 62	X 59	O X 57	X 56	O X 52	O X 52	O X 50	X 50	X 48	X 47	X 46	X 46
L Q	X 40	X 40	X 41	X 44	X 46	O X 48	O X 50	X 51	X 54	O X 55	O X 55	O X 55	O X 56	O X 54	O X 54	O X 52	O X 50	X 49	O X 48	X 47	X 46	X 42	X 40	X 40

DEC. 2008 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2008 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 36	F 34	F 37	42	43	46	50	53	51	R 48	R 49	R 48	R 49	R 47	R 49	R 48	R 45	R 45	45	44	41	39	39	F 38
2	F 38	41	43	44	51	58	58	58	59	59	J R 56	J R 54	J R 52	R 50	R	R	45	43	43	41	40	36	37	38
3	39	39	40	43	46	F 49	F 55	F 56	58	58	U R 52	J R 50	J R 51	R.	51	R 46	44	R 46	45	R 47	45	46	F 34	32
4	B	R 57	F 36	A	F 34	F 35	A	R	A	R	R 48	R	R	R 45	R	47	49	46	R 42	35	39	36	F 31	33
5	R	A	A	A	A	A	R	R	R	R	R	R 49	R	B	B	B	B	R	R	R	31	A	A	34
6	35	A	F 27	A	A	B	R	B	B	R	B	B	B	R	B	B	B	B	B	B	R	R 35	32	B
7	R	R	B	B	R	R	B	R	B	B	B	R	R 47	R	B	B	B	R 46	B	R	R	35	34	31
8	29	32	32	32	R	R 39	R 41	42	B	R	F 50	49	R	R	R	R	R 46	A	R	40	41	40	33	33
9	32	34	36	40	44	50	56	57	J R 53	52	R 50	J R 50	R	R 48	R 48	R 45	R	R	R	41	41	39	42	44
10	44	40	42	47	52	S 57	60	62	64	61	59	61	R 66	R 62	R 61	51	R 47	R	R 44	43	46	F 35	B	34
11	A	F 28	F 33	A	46	A	R 45	50	J R 54	56	R	56	61	57	R 50	52	51	R 48	R 45	47	B	B	B	R 35
12	R 34	F 29	37	A	A	R 42	F 38	42	48	52	R 53	R	R	R	R	R	R 46	R 45	43	42	40	40	R 39	38
13	B	39	34	38	R 38	R	R 46	B	48	51	52	R	50	R 48	R	R 46	R 46	43	43	42	42	40	38	35
14	35	37	40	F 42	43	R	F 49	F 56	F 54	F 51	F 54	F 55	F 55	52	R 51	R	R	A	43	42	42	42	F 39	40
15	40	36	44	44	J R 46	50	51	R 51	R 51	51	R 52	R	R	R 50	R 49	50	R 46	43	R 42	42	45	41	40	43
16	F 32	F 32	F 34	F 40	47	48	J R 52	51	B	50	R 49	R 49	R 50	R 49	A	A	R 42	J R 42	44	44	42	40	35	R
17	F 36	A	A	A	R	A	A	A	R 42	55	44	R 44	R	R	R 47	R 46	J R 45	47	R 46	36	R 38	34	31	R 33
18	R 36	R 36	34	37	A	R 40	42	45	47	R 52	R 44	R	R	R	R 48	R 46	R 43	R 43	R 41	42	41	42	F 38	F 33
19	F 25	31	34	R 38	40	43	45	44	J R 44	R 46	R	R	R 50	J R 53	R 54	R 52	R 44	44	R 44	47	40	39	37	36
20	38	38	A	A	R	R 46	J R 48	49	51	R 52	52	R	A	A	R 48	J R 45	J R 45	44	R 43	44	41	42	40	40
21	F 38	F 41	42	45	46	46	51	51	46	49	50	R	R	A	A	R 46	A	A	R 42	A	42	39	40	40
22	36	38	F 36	38	43	52	56	57	58	58	50	J R 52	R	R	R	A	40	39	42	42	38	R	31	A
23	34	R 36	R 44	A	32	A	A	A	A	R	R	R	R	R	R	R 46	R 45	R 45	R 43	34	35	R 36	R 37	R 36
24	A	B	A	B	B	R	B	B	R	R	R	R	R	R	R	R	R 46	R	R 43	R 40	R 40	40	R 35	R 34
25	F 31	31	A	R 36	R	38	R 38	R 39	R	R 46	R 48	R	A	R	R	R	R	R	R 40	R 41	R 40	42	36	F 28
26	32	36	33	34	A	R	R 43	R 45	R 49	R 48	51	R 51	R	R	R	R	R 44	R 42	R 42	41	40	A	40	37
27	B	34	38	R 40	R 42	R	42	R 46	47	48	R 48	R	U R 51	R 51	R	R 48	R 45	R 44	41	41	39	40	40	36
28	F 33	32	Z 35	A	A	43	R	50	51	52	J R 54	J R 54	54	J R 53	R 48	R 44	R 44	R 42	R 42	44	41	39	39	42
29	43	43	F 36	F 33	40	46	F 42	43	55	54	52	A	R	R	R 48	R	R	R 46	R	43	40	40	41	40
30	F 40	F 39	41	42	47	F 49	F 52	F 57	F 57	60	57	J R 54	R 53	R	R 51	51	R	R 43	R 43	R 42	40	41	43	F 44
31	F 33	B	R	F 38	F 48	R	56	R	F 58	F 54	R	57	R	R	B	B	B	R 47	R 44	R 40	J R 37	33	34	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	25	24	20	19	19	23	22	22	24	23	16	13	13	14	17	21	22	25	27	28	27	28	28
MED	36	36	36	40	44	46	49	50	51	52	R 51	R 52	R 51	R 50	R 49	R 46	R 45	R 44	R 43	42	40	40	38	36
U Q	38	39	40	42	47	50	55	56	57	56	53	54	54	R 53	R 51	50	R 46	R 46	R 44	44	42	41	40	40
L Q	F 32	32	34	38	40	R 42	42	45	48	R 50	R 49	R 49	R 50	R 48	R 48	R 46	R 44	43	R 42	41	40	36	34	33

DEC. 2008 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2008 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	17	15	18	28	30	36	36	30	32	36	37	G 26	32	39	44	42	33	31	28	32	25	27	32	32
2	38	21	24	25	27	29	31	31	33	33	33	44	44	38	34	35	35	35	33	27	26	28	32	44
3	25	E B 15	23	30	30	29	29	31	32	36	29	32	34	40	40	34	33	33	28	20	23	40	39	32
4	B	36	45	43	40	39	45	38	40	28	G 20	31	33	32	32	32	32	33	29	42	32	40	41	43
5	31	39	75	49	40	53	42	G 23	33	33	27	30	32	B	B	B	B	33	39	39	25	40	40	38
6	35	45	26	38	37	B	34	B	B	36	B	B	B	G	B	B	B	B	B	B	29	20	24	B
7	G 25	G 26	B	B	33	33	B	37	B	B	B	30	G	28	B	B	B	29	B	E B 24	20	20	19	29
8	16	18	18	17	22	32	42	27	B	29	30	38	30	30	29	42	26	45	41	33	E B 19	20	18	30
9	17	15	16	18	24	29	24	24	G 22	30	31	30	45	32	32	37	28	28	27	30	30	27	18	45
10	29	69	44	42	40	42	31	30	30	33	32	32	33	35	32	59	43	35	30	24	32	28	B	34
11	36	28	31	38	39	48	32	44	32	33	32	31	32	32	33	34	27	27	27	24	B	B	B	24
12	E B 23	27	32	36	40	40	40	38	32	32	32	31	31	30	31	33	28	28	23	37	37	30	40	24
13	B	34	30	28	G 17	G 25	G 16	B	37	30	32	32	43	40	41	34	34	30	30	24	34	32	26	41
14	28	23	30	36	42	32	28	33	35	35	32	32	35	32	40	40	50	70	46	48	48	38	36	38
15	31	32	33	28	28	28	41	40	33	33	34	32	40	43	36	36	32	26	26	27	32	31	29	26
16	32	48	30	32	27	31	35	37	B	33	35	37	44	60	74	66	71	30	30	36	36	26	40	44
17	35	42	47	50	40	46	40	62	32	34	33	37	33	33	35	36	33	32	30	28	31	28	26	33
18	34	33	31	26	44	30	30	30	32	30	36	33	36	35	31	32	31	31	27	26	20	22	24	20
19	26	24	28	32	32	28	30	25	33	32	32	32	33	34	31	33	32	30	28	37	24	35	32	29
20	37	34	40	52	44	30	30	30	33	34	42	46	64	47	41	40	38	42	28	41	51	38	37	47
21	69	40	74	65	55	52	33	42	41	32	30	29	36	70	66	43	63	123	31	65	34	23	21	22
22	27	41	30	46	28	30	30	30	28	32	33	32	42	46	48	48	45	35	31	32	29	36	28	36
23	33	41	48	43	44	52	69	50	65	34	31	35	35	31	26	31	28	30	29	29	30	45	50	36
24	45	B 39	B	B	34	B	B	38	31	30	32	31	G 21	28	28	29	E B 30	27	30	22	27	25	35
25	27	32	33	37	36	33	32	32	30	31	30	32	47	41	30	34	30	24	E B 27	27	39	57	22	26
26	18	32	38	33	45	34	26	30	27	37	35	39	39	47	35	38	30	28	27	39	32	92	34	26
27	B	22	30	31	33	32	25	29	33	34	35	28	29	33	32	32	32	65	26	24	22	28	29	21
28	22	25	31	42	37	22	29	31	32	32	44	32	32	35	40	36	42	37	29	29	64	31	37	22
29	16	24	30	34	69	34	33	44	40	36	43	63	46	40	30	32	32	26	27	28	24	31	33	30
30	33	38	30	21	30	33	32	32	32	34	32	38	37	32	38	32	71	G 23	29	27	29	38	43	43
31	46	B	32	55	38	35	42	34	42	G 23	32	32	30	41	B	B	B	31	E B 26	J A 24	G 23	30	33	42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	30	29	30	30	29	28	27	30	29	30	30	30	27	27	27	30	29	30	30	30	29	30
MED	30	32	31	36	37	33	32	32	33	33	32	32	34	35	34	35	32	31	28	29	30	30	32	32
U Q	35	40	39	43	40	39	40	38	37	34	35	37	42	41	40	40	42	35	30	37	34	38	38	41
L Q	24	24	30	28	30	30	30	30	32	31	30	31	32	32	31	32	30	28	27	26	24	27	24	26

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2008 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	13	13	12	15	13	12	14	13	15	20	16	16	13	15	13	14	13	12	11	13	12	11
2	12	12	12	11	12	12	12	11	13	13	13	14	14	13	12	13	13	12	12	12	12	12	12	12
3	12	15	12	11	12	13	13	12	12	13	15	14	13	15	13	12	13	13	13	14	13	12	13	12
4	B	16	18	20	13	14	19	22	13	14	14	13	14	13	13	13	16	13	14	12	12	15	13	13
5	16	14	20	19	21	19	13	12	12	20	15	14	21	B	B	B	B	22	16	12	12	12	12	12
6	11	13	12	19	25	B	21	B	B	13	B	B	B	24	B	B	B	B	B	B	20	16	13	B
7	16	22	B	B	26	23	B	29	B	B	B	26	20	16	B	B	B	25	B	24	16	14	12	12
8	11	14	14	13	11	12	12	13	B	27	12	13	13	14	15	15	16	16	16	22	19	12	12	13
9	12	12	13	12	12	12	12	12	13	12	13	14	16	16	13	15	13	16	14	12	12	12	12	12
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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	13	13	13	13	13	12	13	13	13	13	14	14	14	14	13	14	13	12	13	13	12	12
U Q	13	13	14	19	13	15	14	18	14	15	15	17	18	16	15	15	16	18	16	14	16	14	13	13
L Q	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	12	12	12	12	12	12

DEC. 2008 fmin (0.1MHz)

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IONOSPHERIC DATA STATION SHOWA-ST.

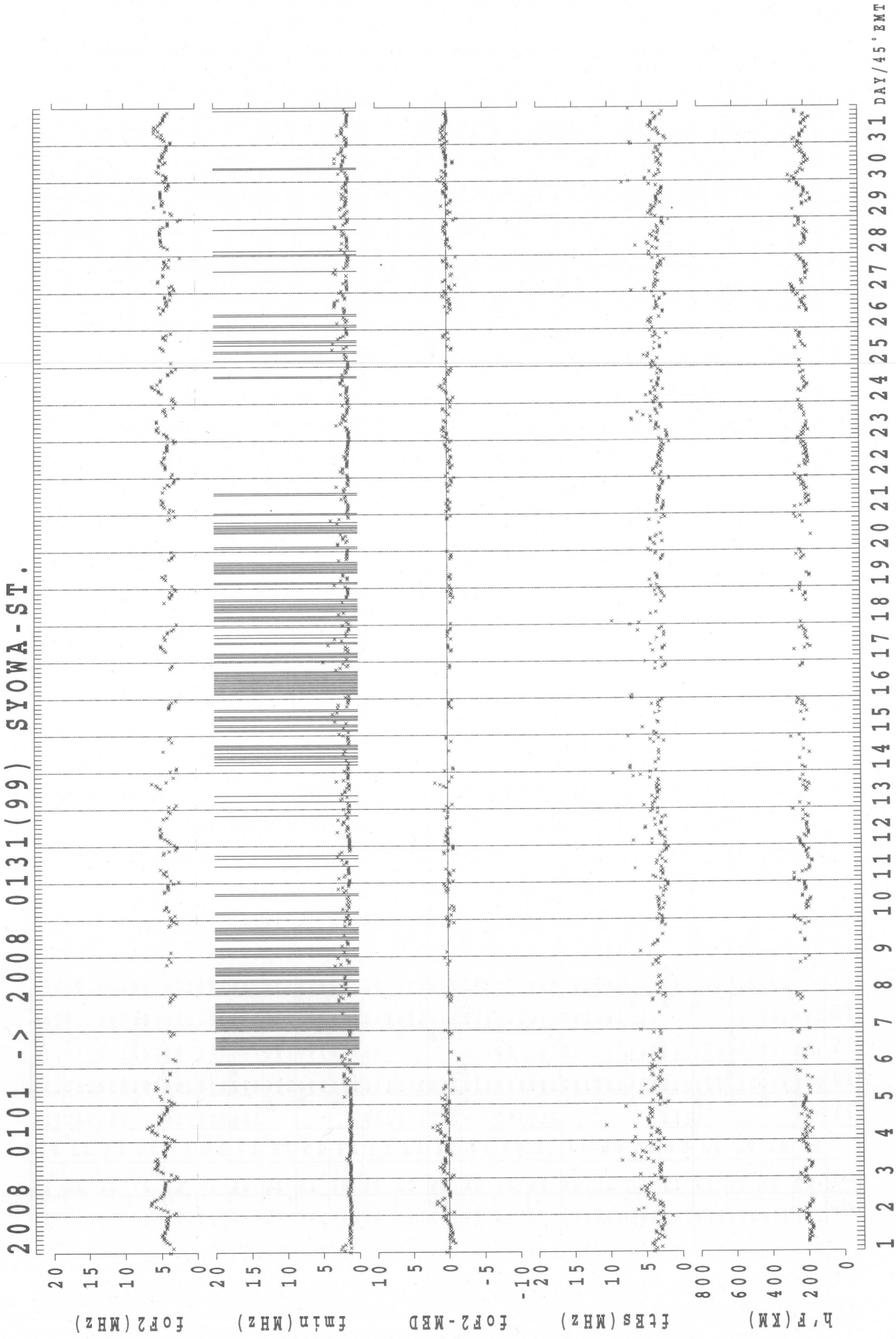
DEC. 2008 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

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 222	Q 234	Q 230	220	Q 208	214	204	190	190	216	210	190	188	210	210	208	180	184	Q 188	188	196	H 186	206	214
2	216	224	222	218	210	210	210	190	190	190	188	220	E A 228	184	184	184	184	194	198	188	198	190	232	E A 242
3	218	208	Q 210	220	206	206	202	202	H 182	190	178	208	208	E A 232	194	178	190	H 174	204	204	204	Q 220	Q 212	Q 218
4	B	196	A	A	A	A 222	A	202	A	192	192	192	H 172	184	H 186	H 186	198	Q 198	198	E A 212	194	Q 212	Q 222	232
5	A	A	A	A	A	A	A	216	204	E A 252	204	196	A	B	B	B	B	220	A	A	H 170	A	A	A
6	A	A	228	A	A	B	A	B	B	212	B	B	B	E A 218	B	B	B	B	B	B	A	180	H 176	B
7	A	A	B	B	A	A	B	A	B	B	B	188	192	H 186	B	B	B	212	B	198	H 194	230	216	H 186
8	194	230	244	242	216	202	202	H 188	B	202	198	H 178	194	184	184	188	204	A	A	A	184	198	H 162	H 160
9	194	240	E A 228	222	202	214	206	190	184	188	188	190	A	H 186	186	182	H 180	190	190	190	214	202	212	230
10	208	228	H 162	A	210	208	204	192	188	H 190	H 172	184	196	214	212	196	A 208	182	H 182	198	224	208	B	E A 292
11	A	E A 288	E A 272	A	A	A	A 172	A 188	210	224	A	218	186	H 186	204	198	208	A	198	206	B	B	B	248
12	E B 246	Q 246	A	A	A	A	A 216	A 242	202	176	192	H 174	190	198	198	198	184	198	H 174	E A 226	208	Q 208	A	238
13	B	A	E A 290	E A 258	A	A	H 210	B	A 260	190	184	196	196	194	194	176	190	190	190	210	218	206	206	210
14	H 184	204	204	218	A 212	A	Q 200	192	186	186	206	198	198	184	206	184	A	A	A 214	A 214	A 238	A 210	Q 216	Q 224
15	236	Q 224	240	220	Q 200	210	210	E A 218	192	180	188	190	190	202	202	182	H 186	190	182	192	202	Q 200	Q 198	Q 218
16	218	Q 226	A	A 228	204	204	204	196	B	180	192	194	214	A	A	A	196	190	190	196	210	200	238	238
17	228	E A 240	A	A	202	A	A	A	194	180	170	H 178	202	A	H 216	192	196	196	208	182	A	194	184	E A 266
18	A	A	224	224	A	200	Q 174	184	184	182	182	182	186	208	180	190	190	190	190	202	204	Q 210	Q 206	Q 208
19	Q 232	216	A	208	202	216	200	178	178	H 158	200	180	194	H 168	190	190	192	192	192	200	Q 196	228	252	Q 220
20	E A 280	E A 256	A	A	A 232	184	208	198	192	192	A	A	A	A	192	206	206	A 218	196	210	204	232	Q 222	Q 242
21	E A 258	Q 232	Q 232	232	E A 226	A	192	214	210	210	188	A	A	A	A	E A 246	A	A	186	A	206	186	Q 200	Q 200
22	Q 200	232	Q 232	218	198	190	204	182	182	H 182	192	206	A	A	A	A	A 198	H 162	H 164	206	202	A	178	A
23	254	222	202	A	238	A	A	A	A	A	206	A	196	208	208	178	202	202	202	A 200	216	238	238	E A 316
24	A	B	A	B	B	A	B	B	A	196	184	H 182	A	200	208	204	204	204	178	198	210	220	A	A
25	232	A	A	A	A	182	178	214	198	194	186	186	A	192	192	192	192	186	198	230	E A 240	230	208	A 216
26	244	254	E A 298	A 208	A	A	208	196	196	192	E A 252	214	A	A	202	202	192	192	192	E A 250	218	A	218	202
27	B	238	E A 256	E A 298	A 248	A	218	198	182	172	H 180	210	H 196	196	190	174	178	186	188	176	208	220	228	224
28	200	Q 240	A 226	A	A	A 218	186	196	196	210	A 222	192	196	196	194	H 172	222	194	206	218	208	202	238	206
29	220	220	A 208	204	164	204	190	186	208	H 180	208	A	A	186	214	190	190	190	192	202	Q 202	198	Q 216	Q 216
30	Q 230	E A 230	Q 218	222	212	190	182	182	190	184	H 172	210	216	196	196	190	206	H 172	178	204	204	230	238	232
31	Q 228	B	A	F	168	A	A	A	A 244	196	A	212	176	182	B	B	B	190	212	216	A	208	242	218
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	20	17	19	17	23	24	24	29	26	26	21	24	24	25	25	26	27	27	27	27	26	27
MED	222	228	224	220	207	206	204	193	192	190	189	192	195	192	195	190	192	190	192	201	204	208	216	218
U Q	236	240	E A 242	A 230	A 216	214	208	202	203	199	204	208	200	205	207	198	204	198	198	A 212	214	220	232	E A 238
L Q	208	222	214	218	202	195	190	188	185	181	184	H 184	189	185	190	182	188	186	186	196	198	198	206	210

DEC. 2008 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN


2008 0101 -> 2008 0131(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
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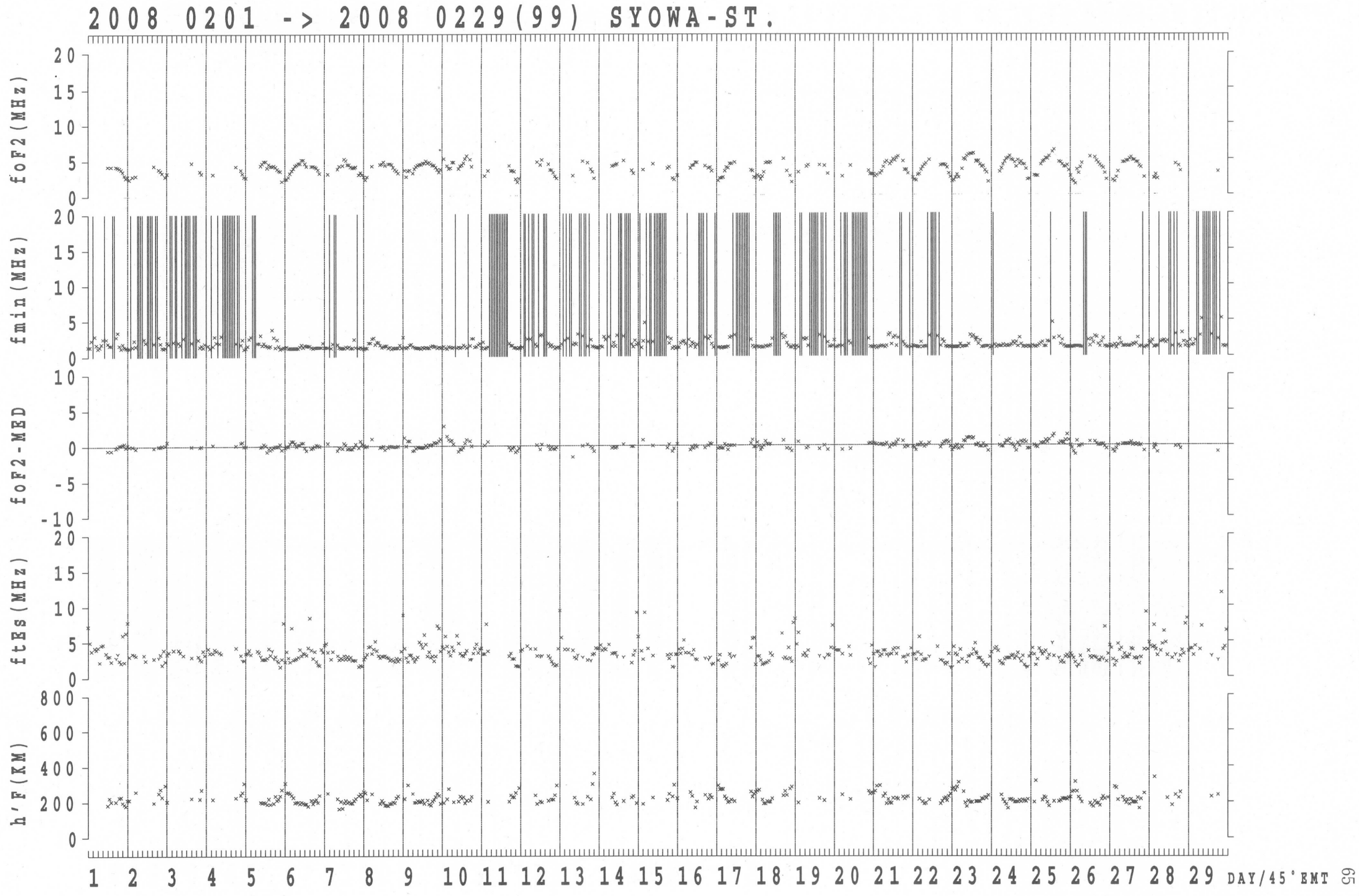
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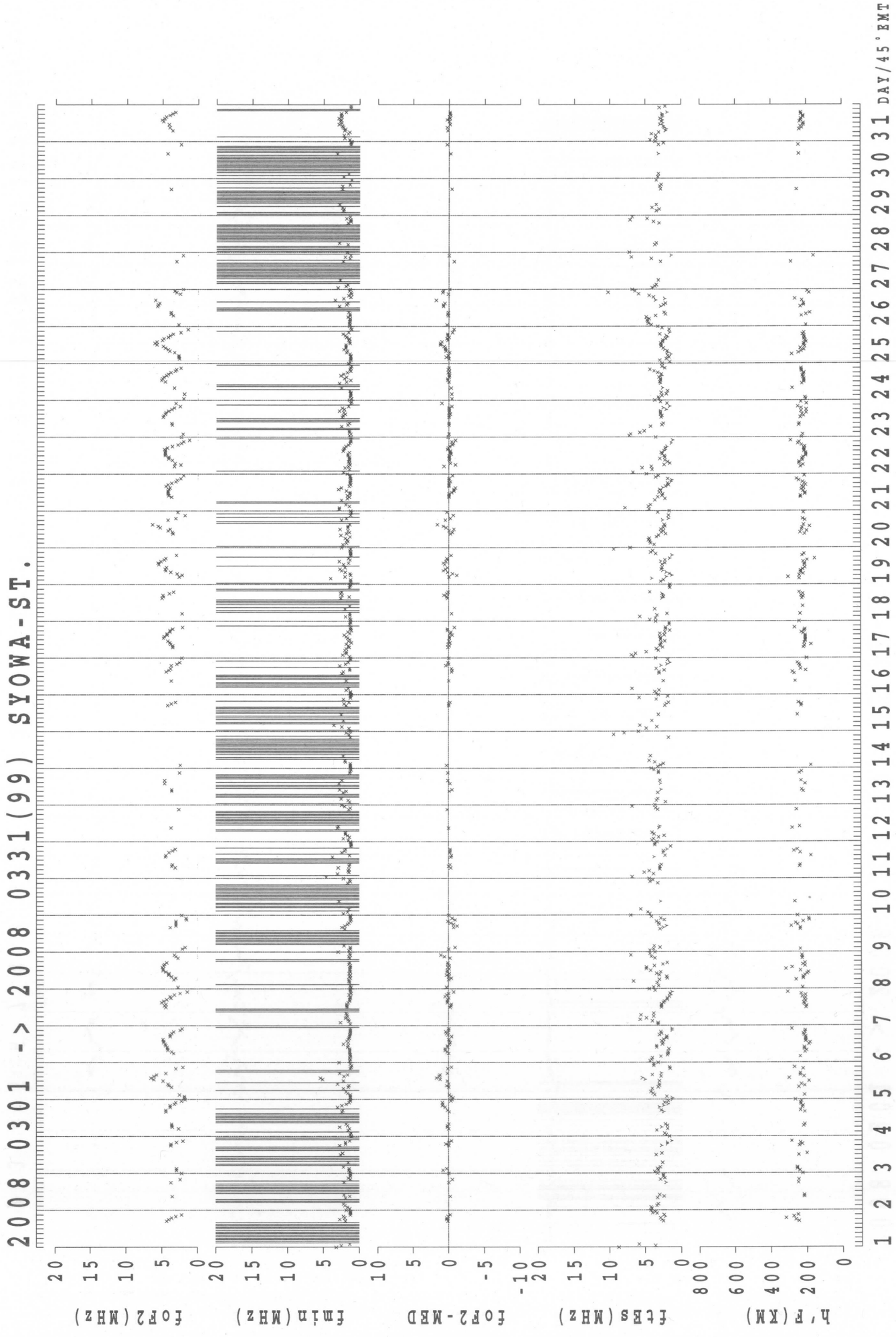
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT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fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
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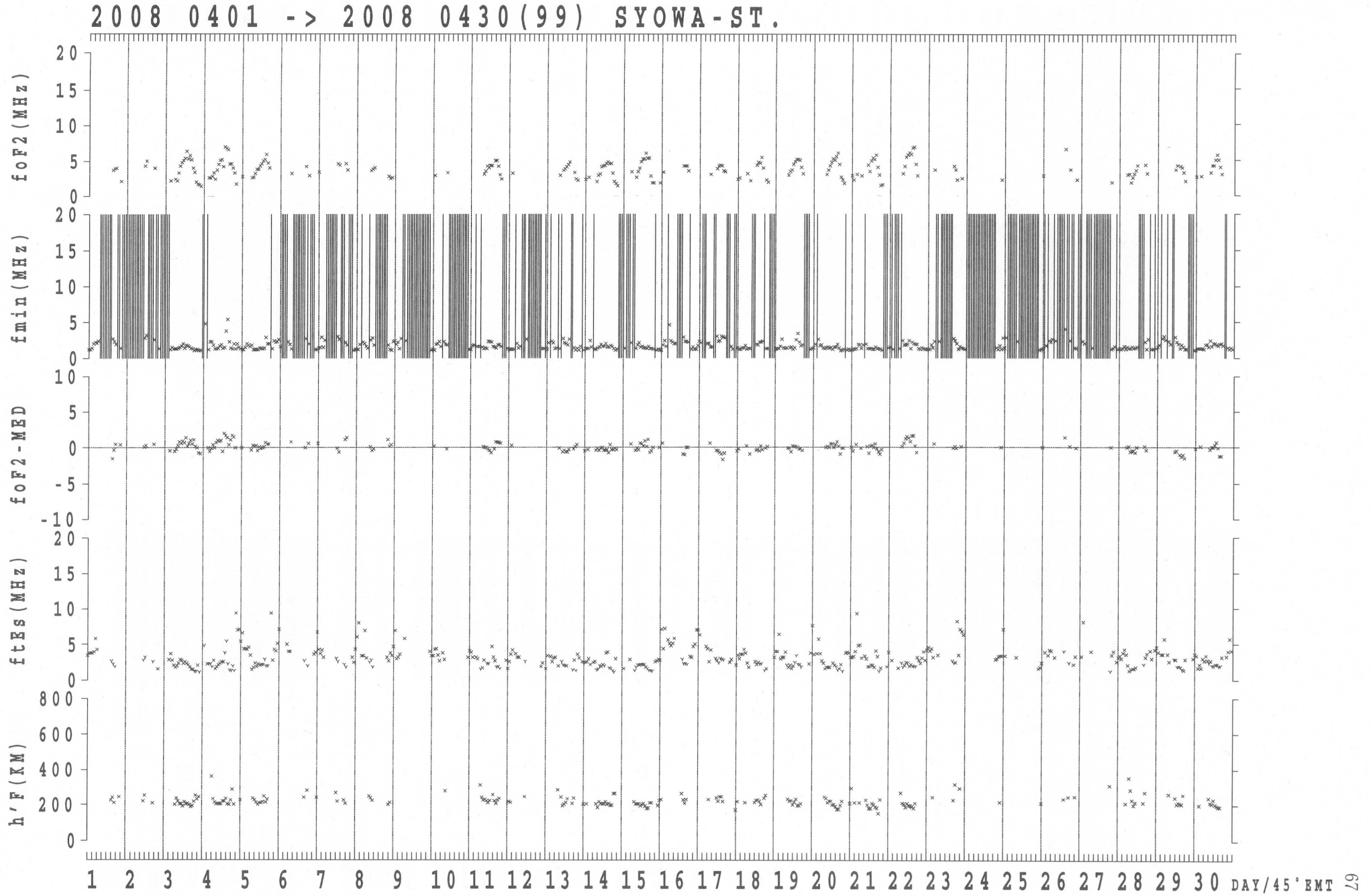
2008 0401 -> 2008 0430(99) SYOWA-ST.
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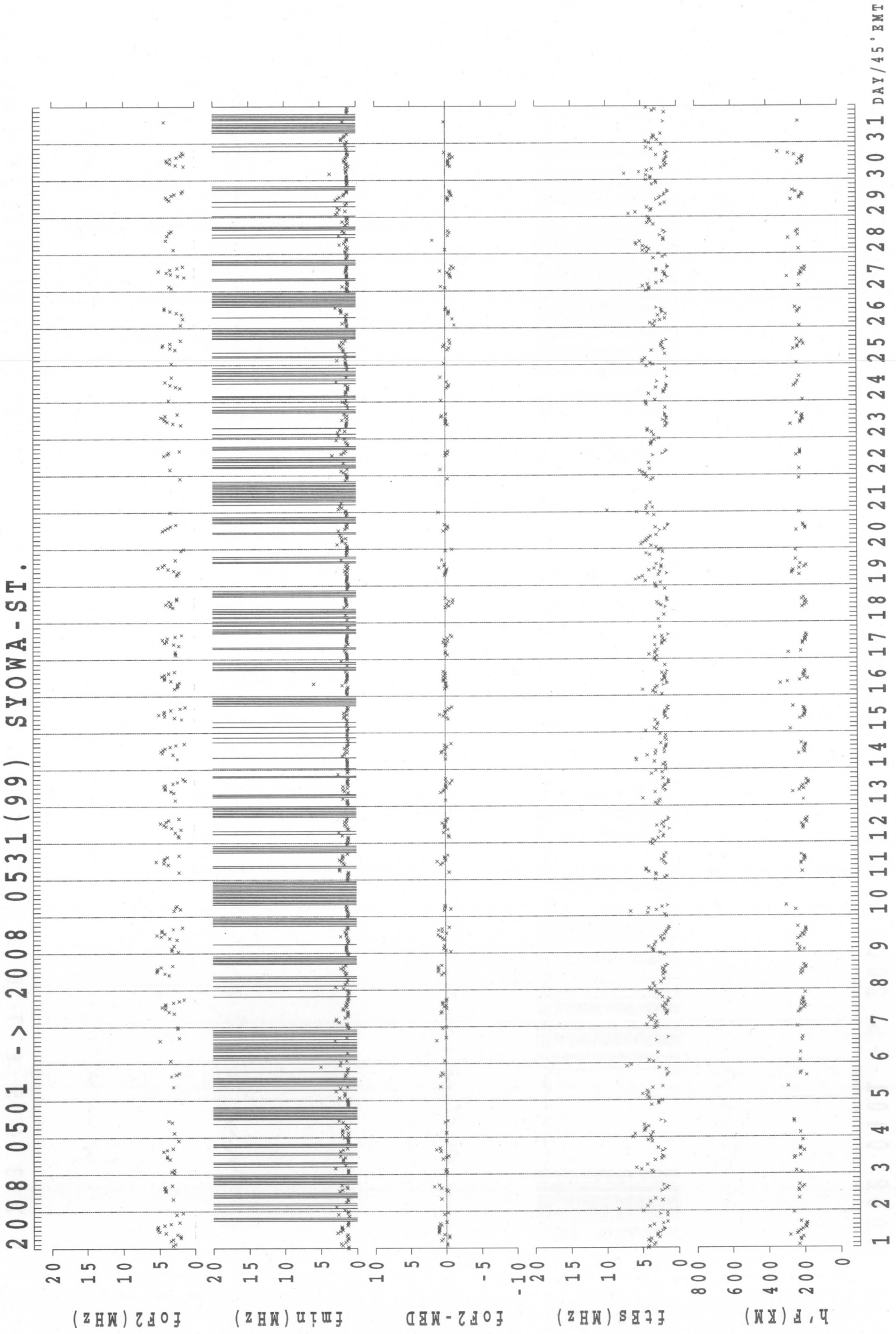
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT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foF2(MHz)
fmin(MHz)
foF2-MED
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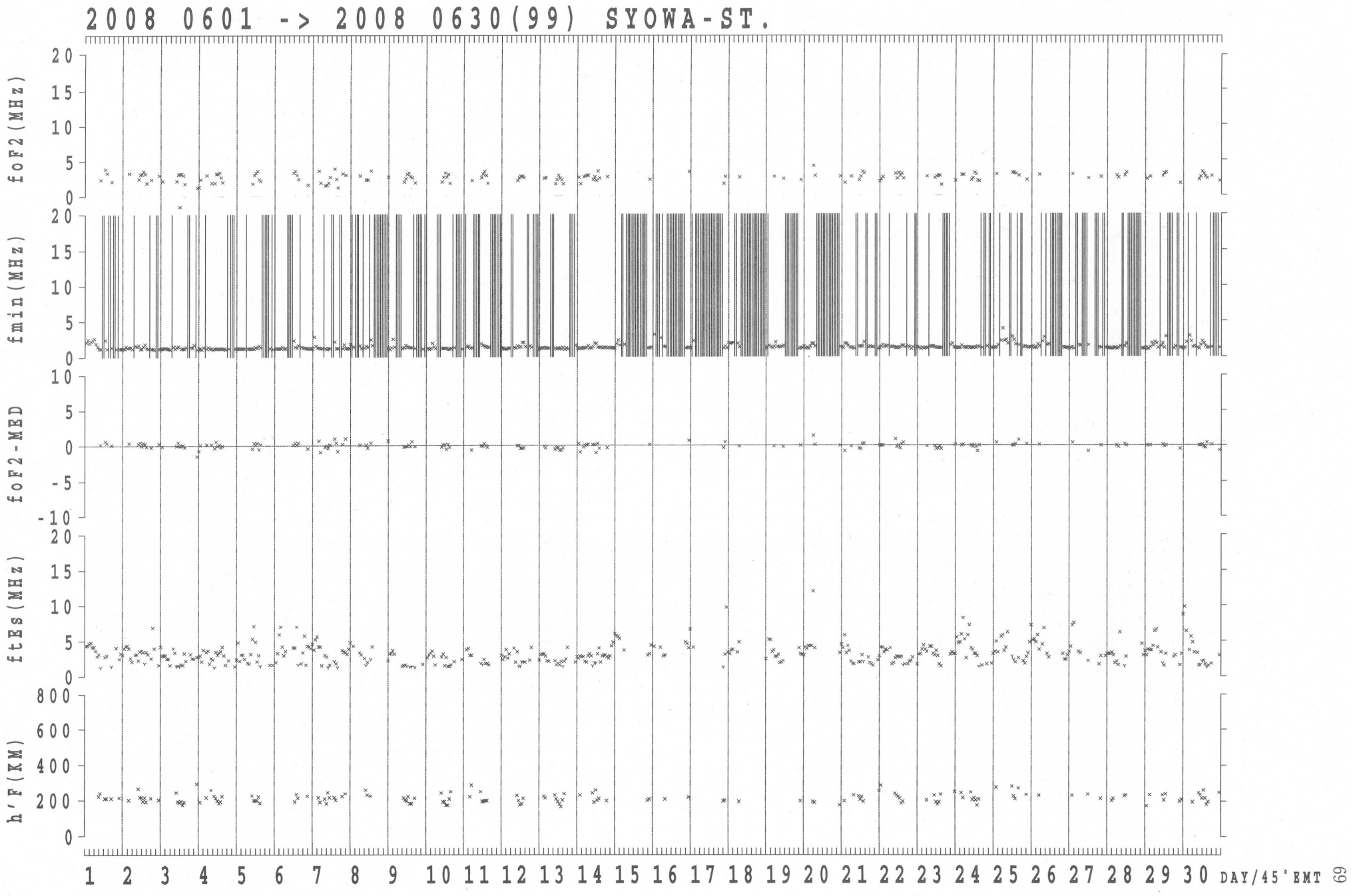
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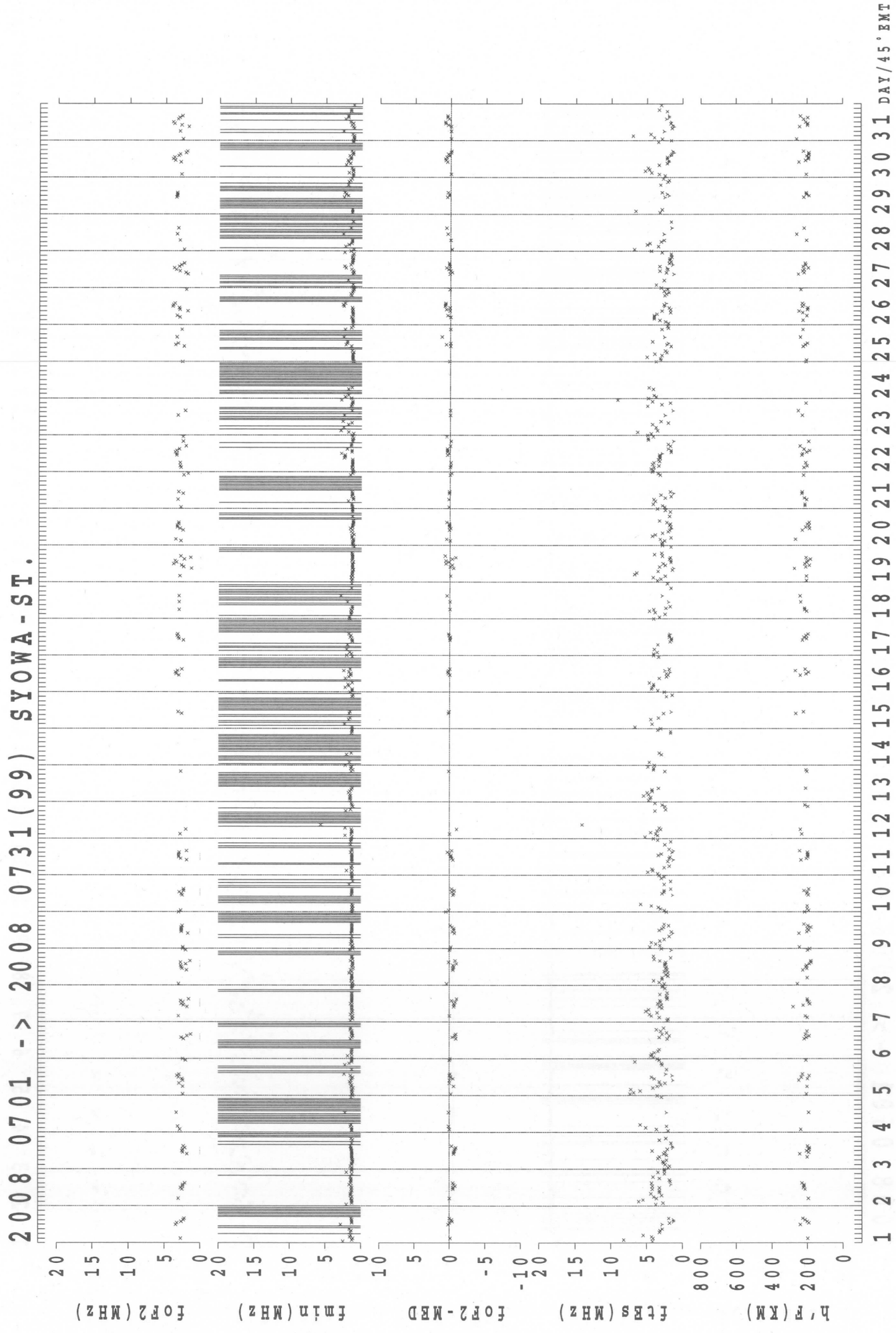
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT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fmin(MHz)
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ftEs(MHz)
h'F(KM)
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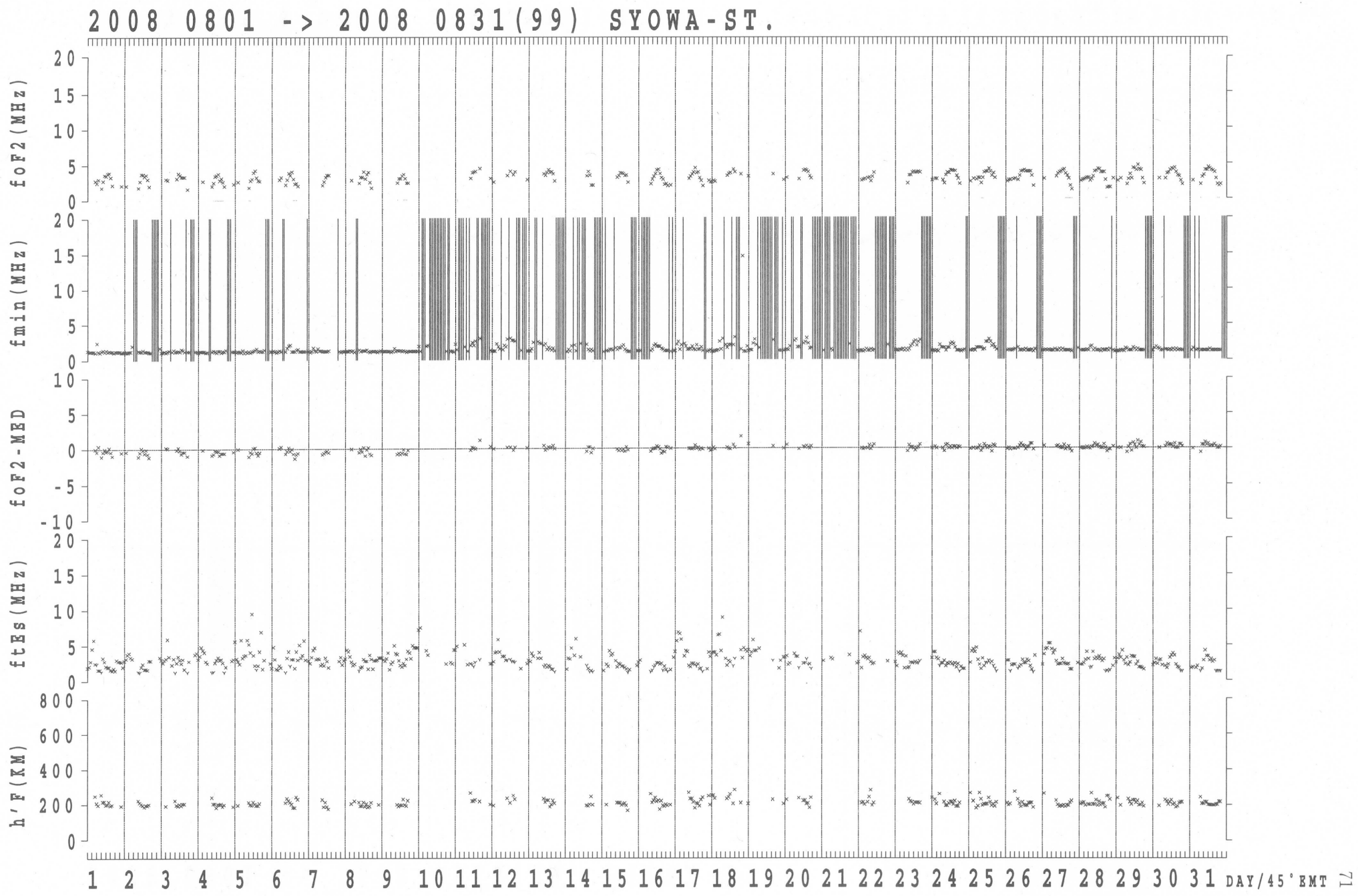
2008 0801 -> 2008 0831(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT
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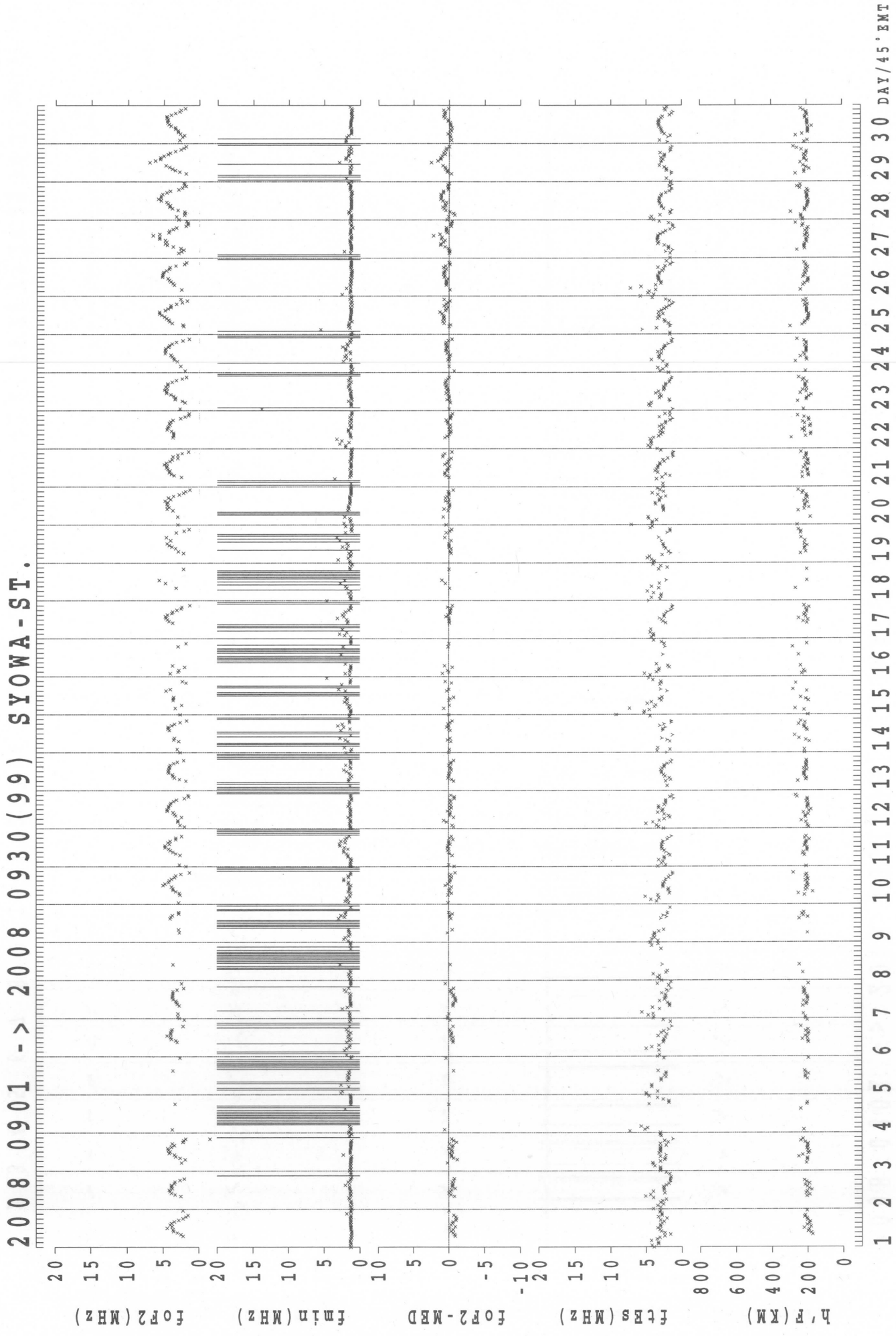
2008 0901 -> 2008 0930(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
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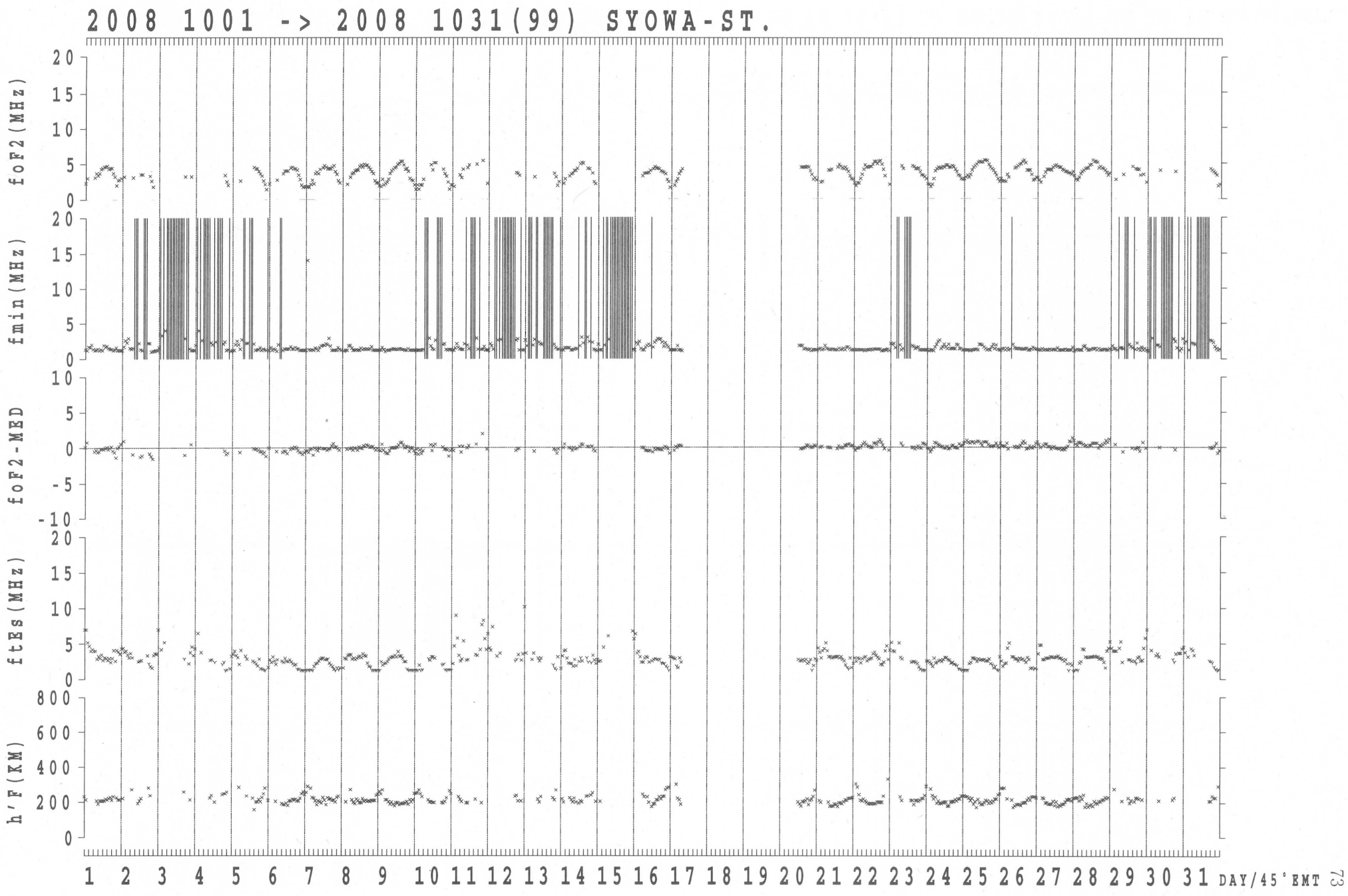
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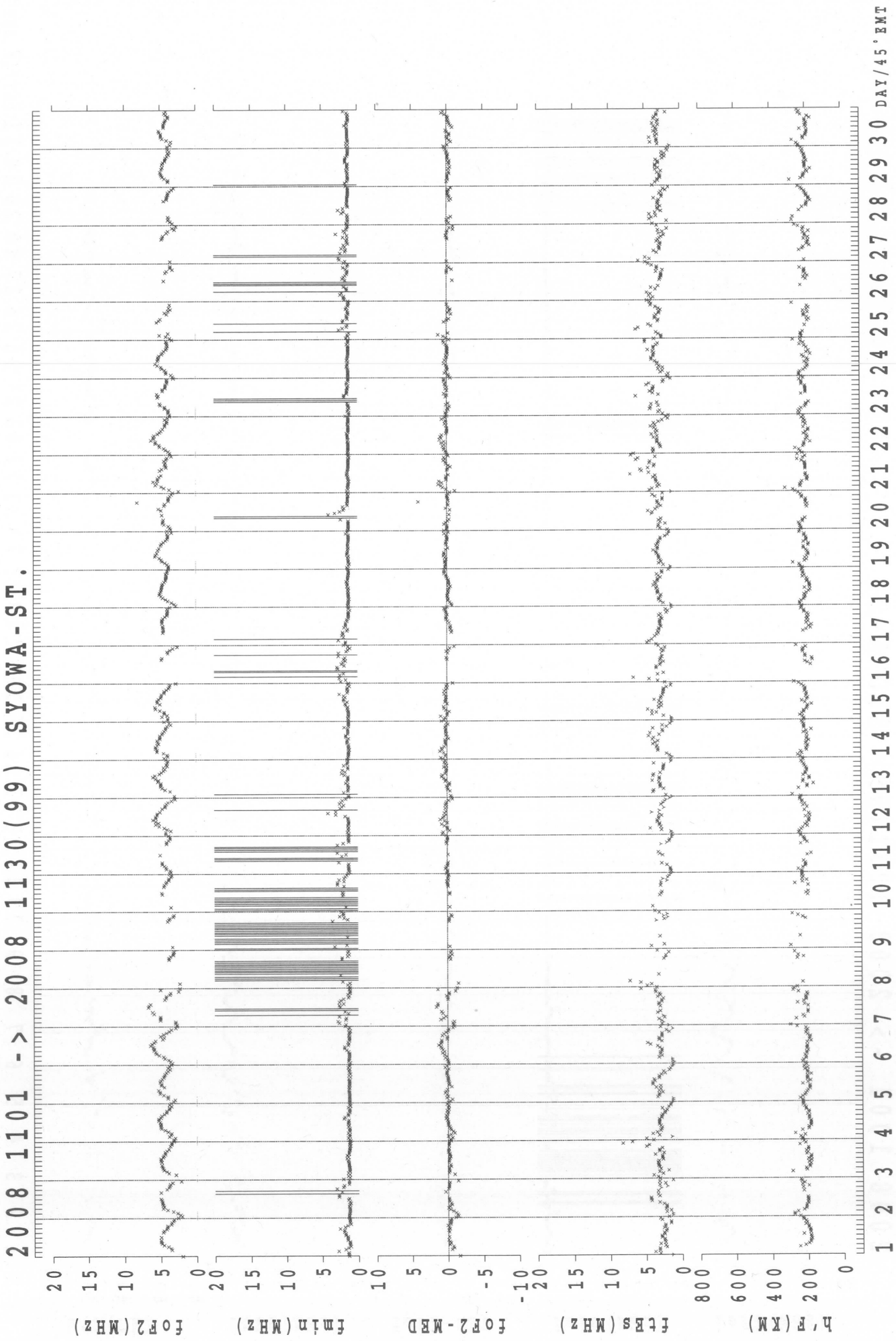
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT


2008 1101 -> 2008 1130(99) SYOWA-ST.
foF2 (MHz)
fmin (MHz)
foF2-MED
ftEs (MHz)
h'F (KM)
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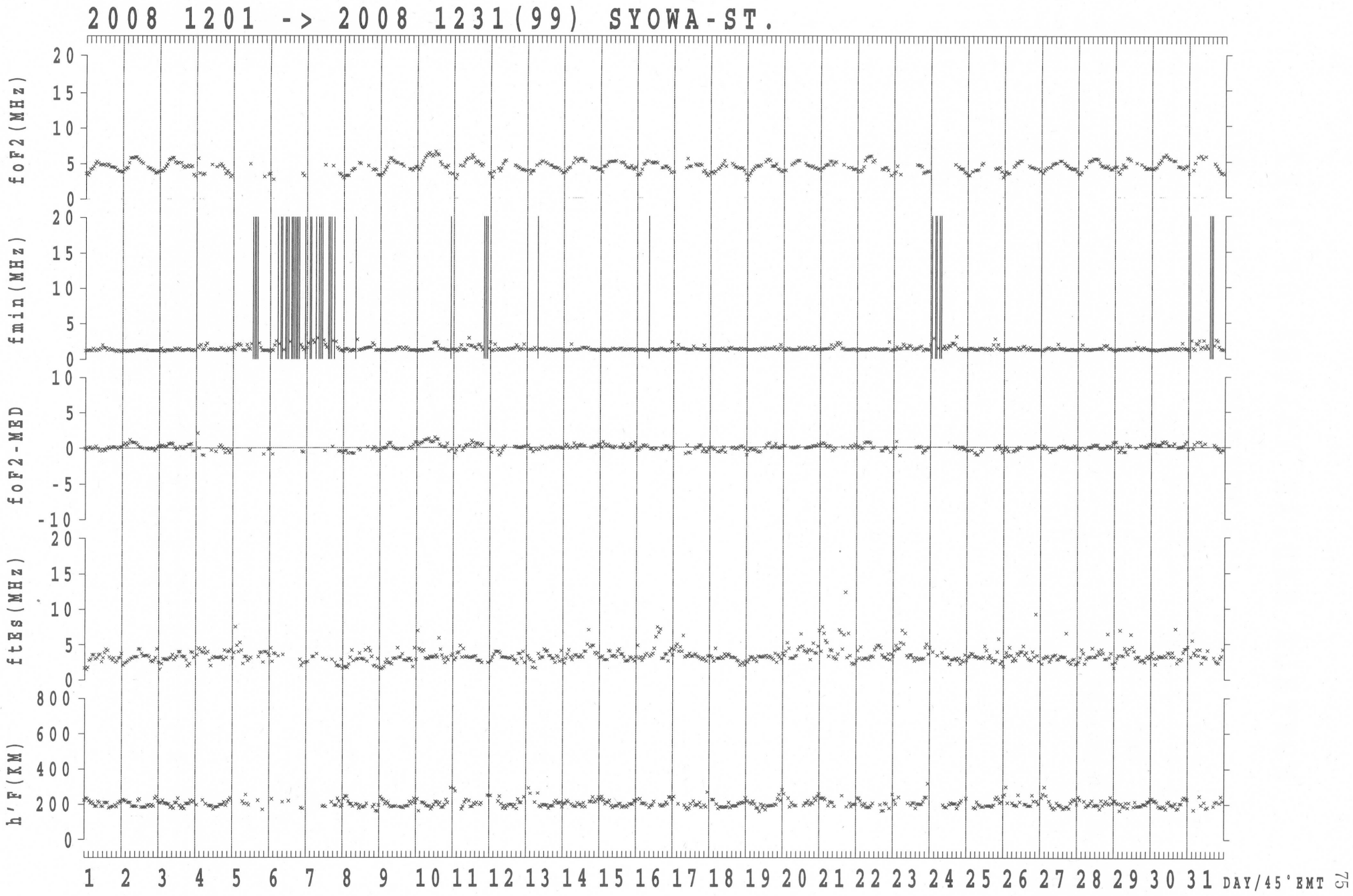
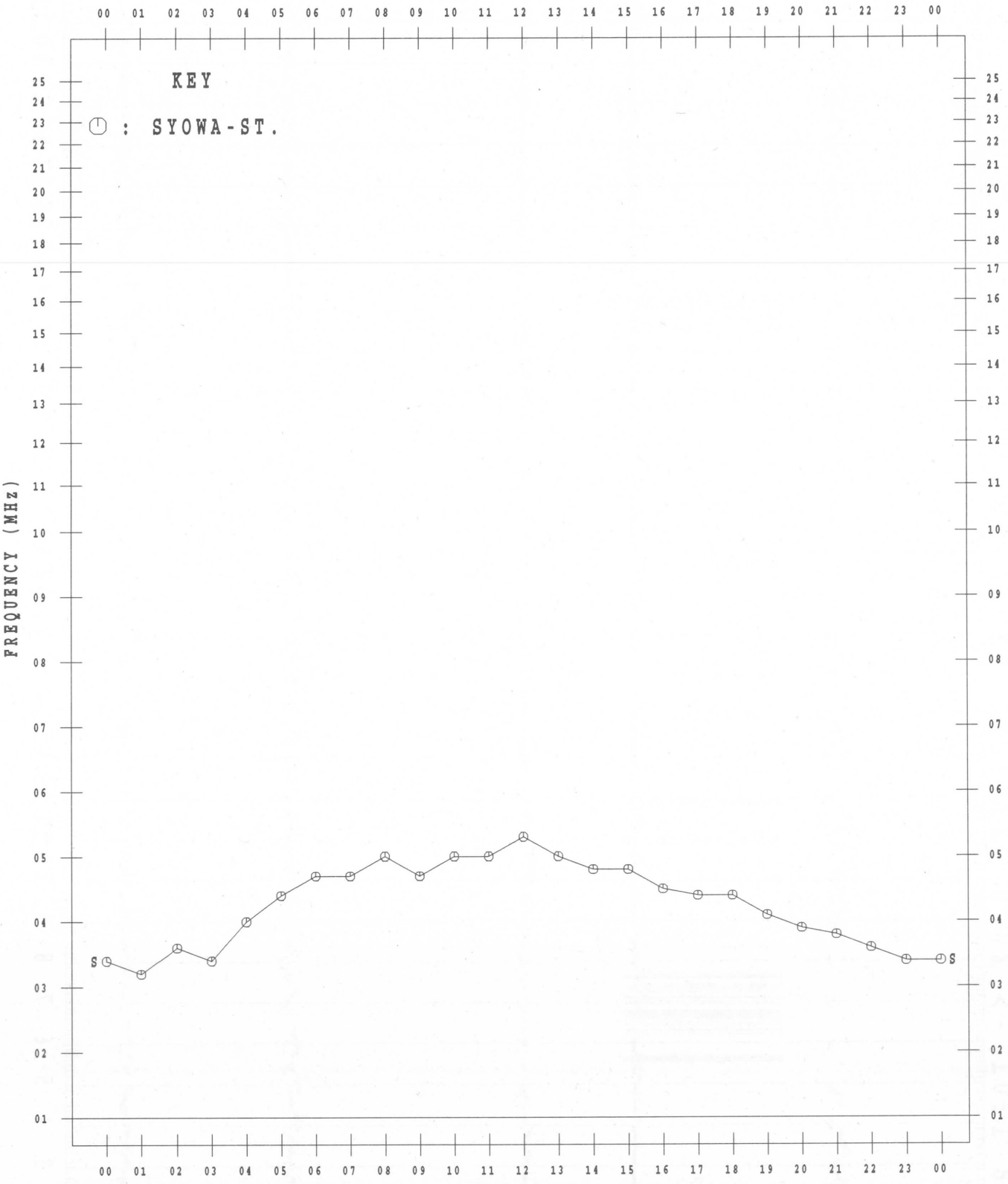

2008 1201 -> 2008 1231(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT

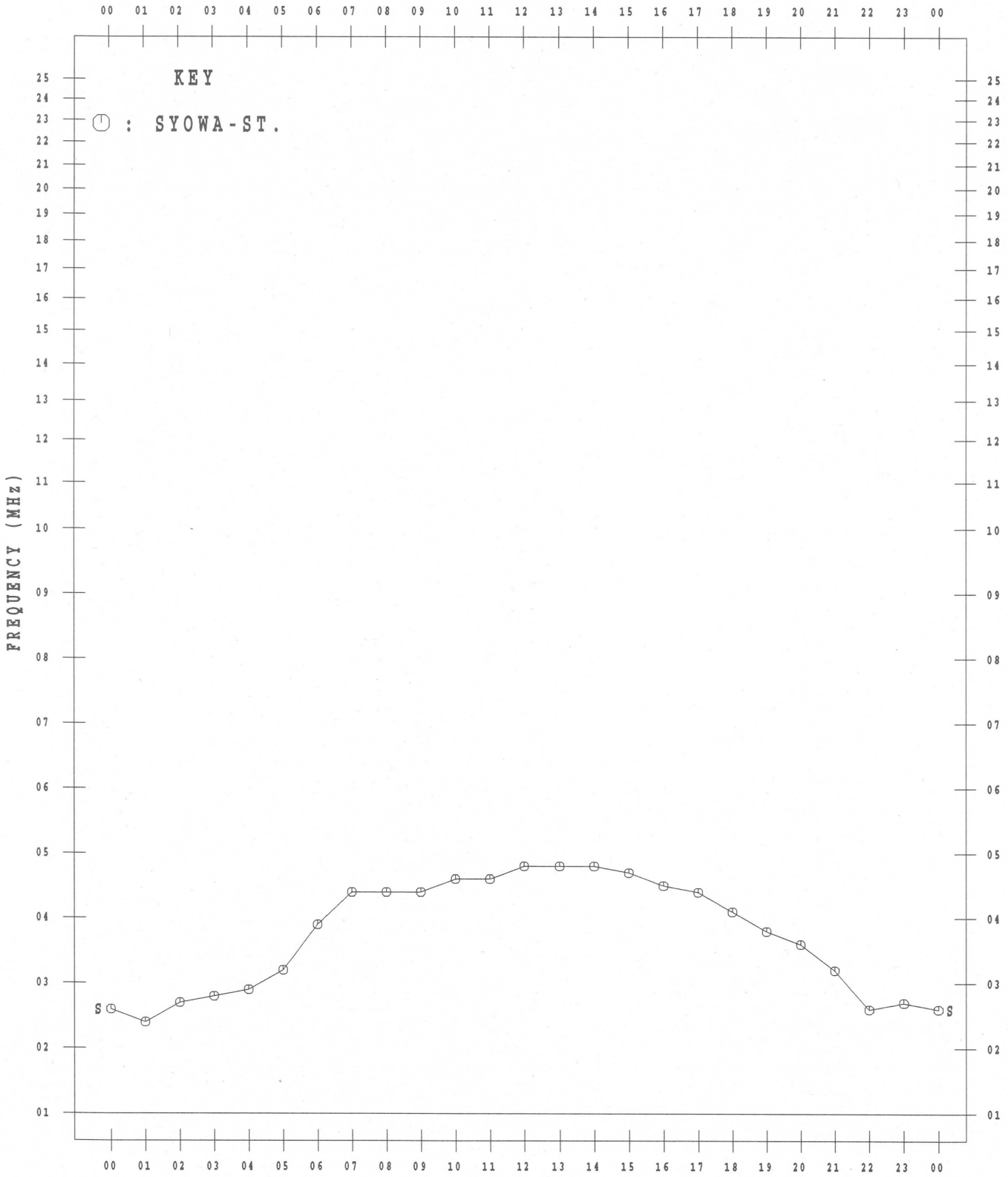
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JAN. 2008



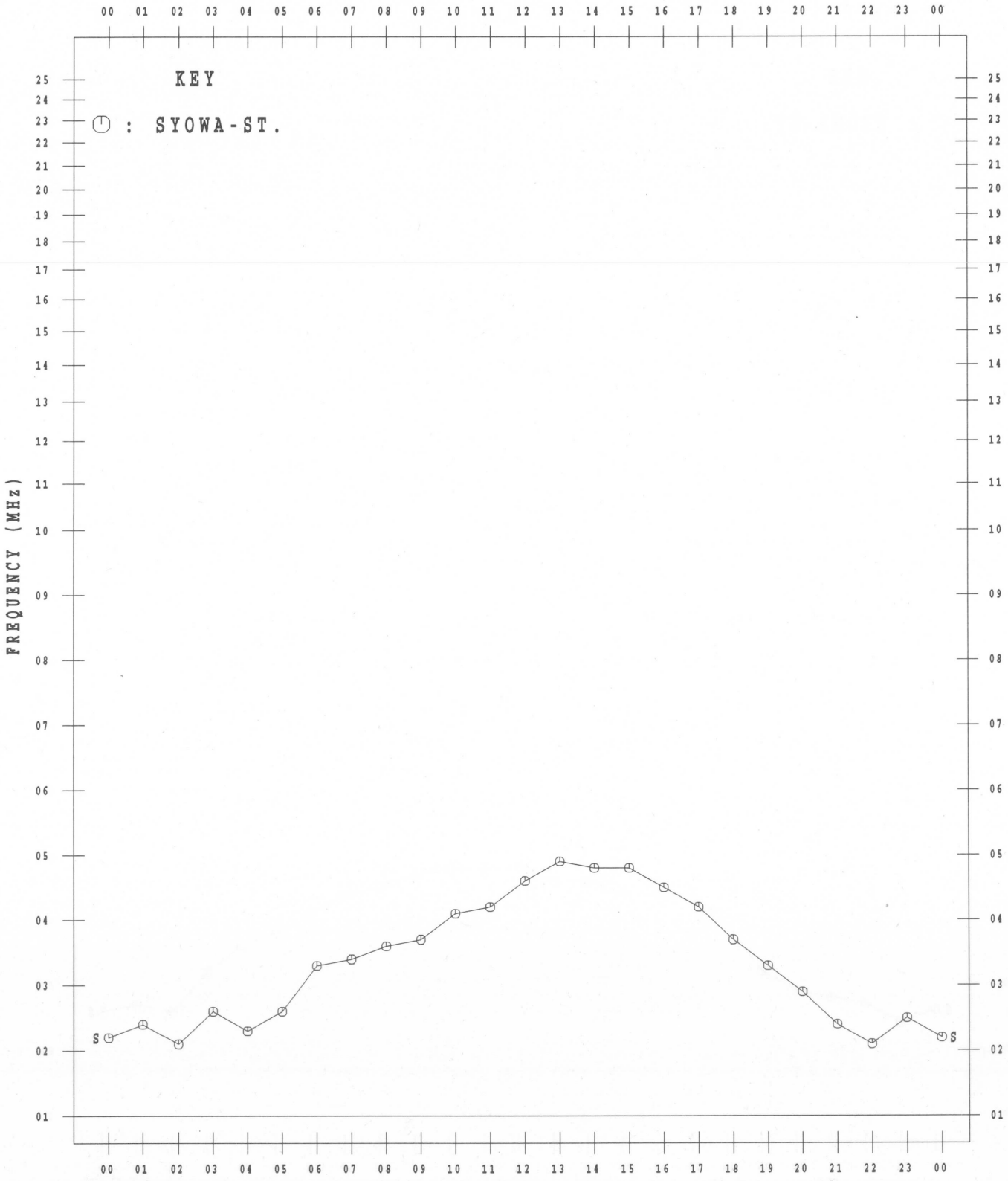
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME FEB. 2008



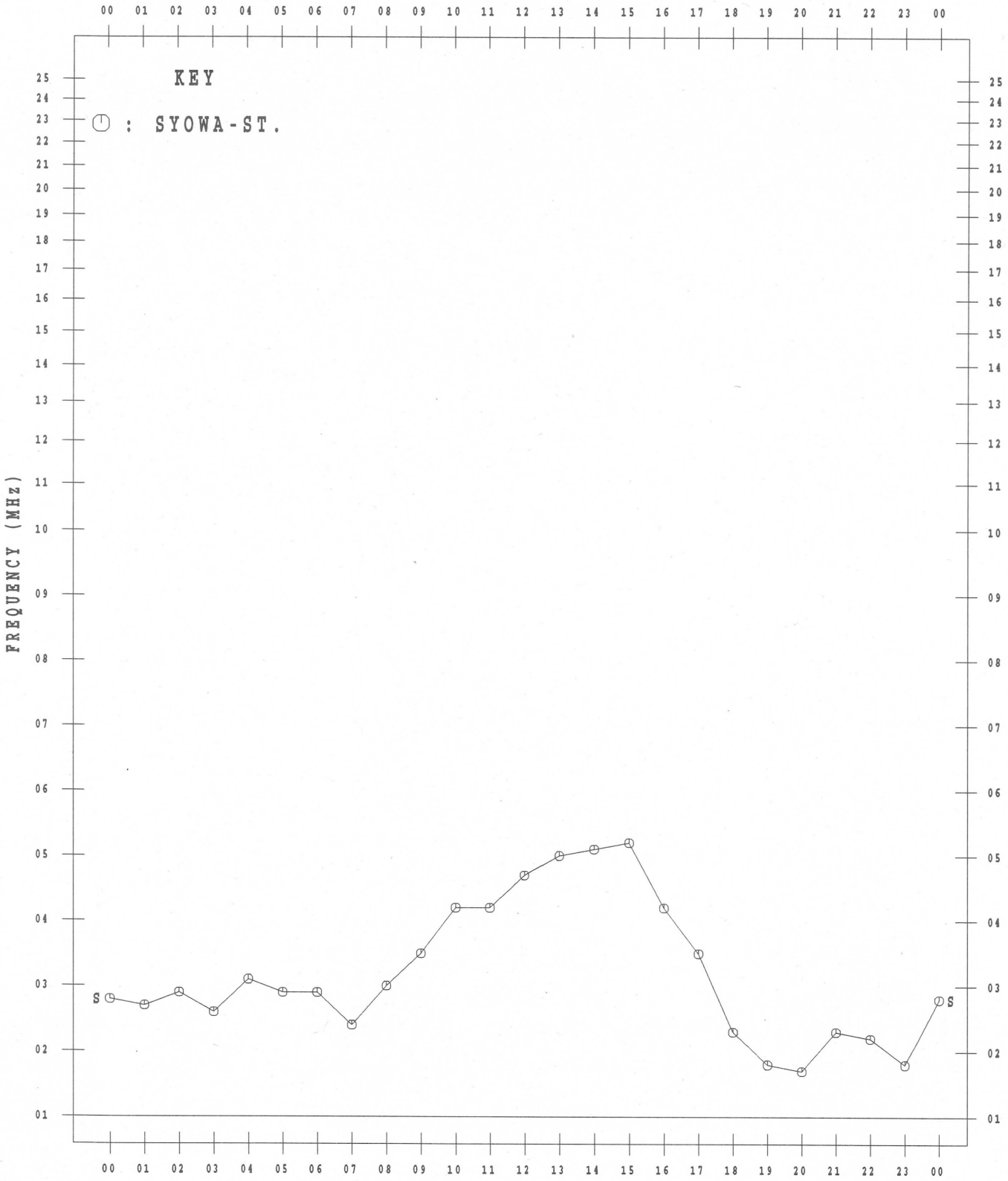
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAR. 2008



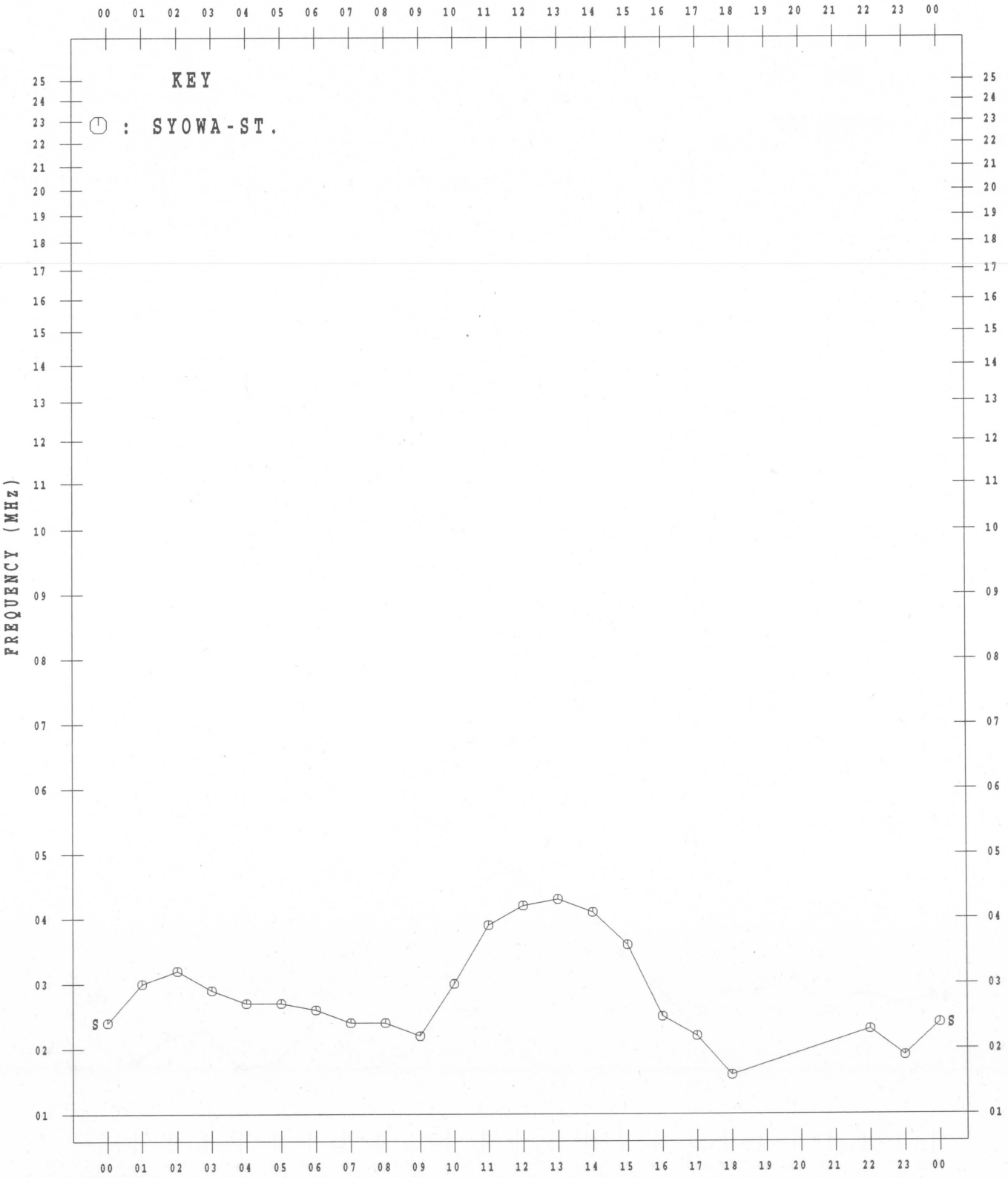
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME APR. 2008



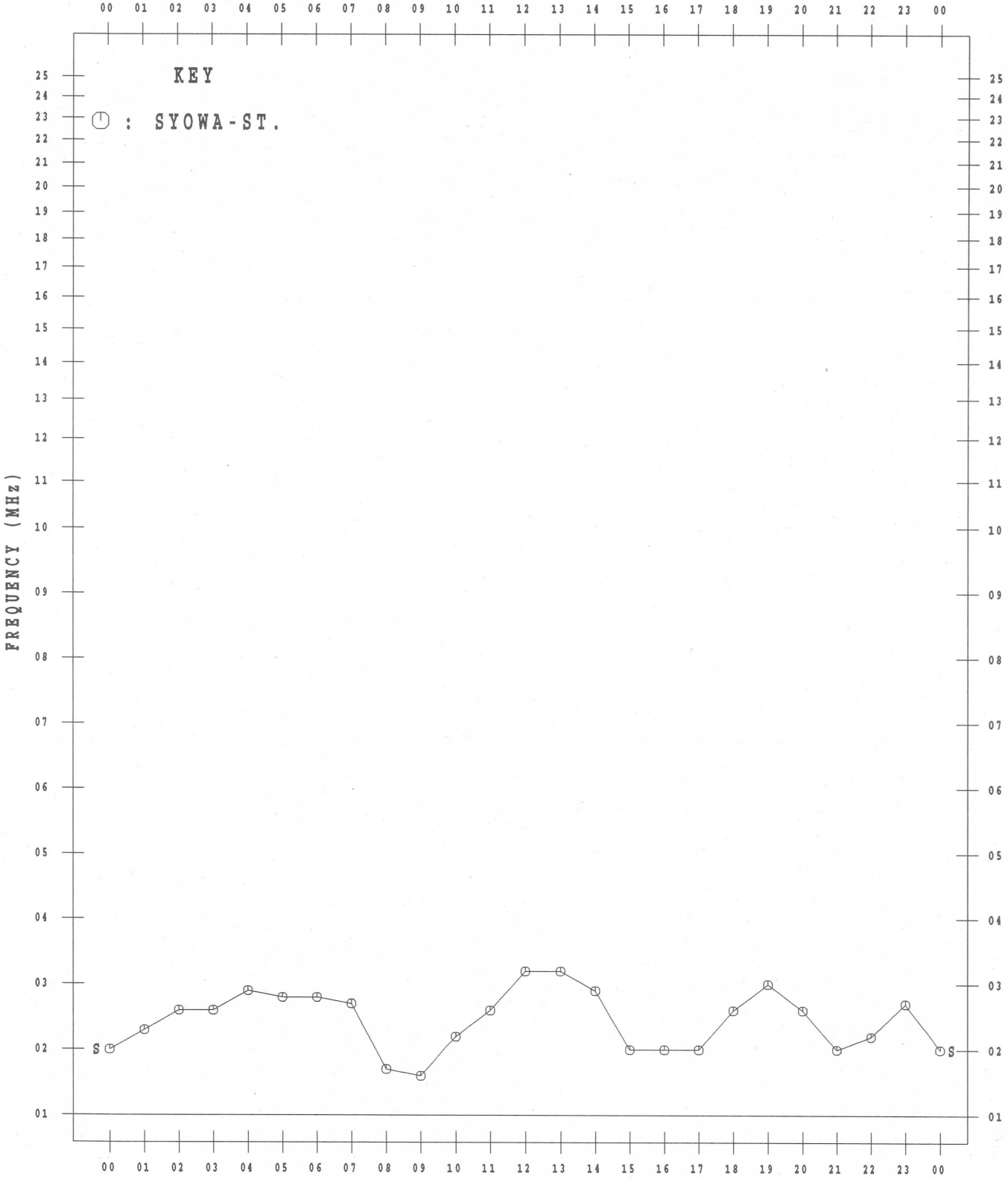
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAY 2008



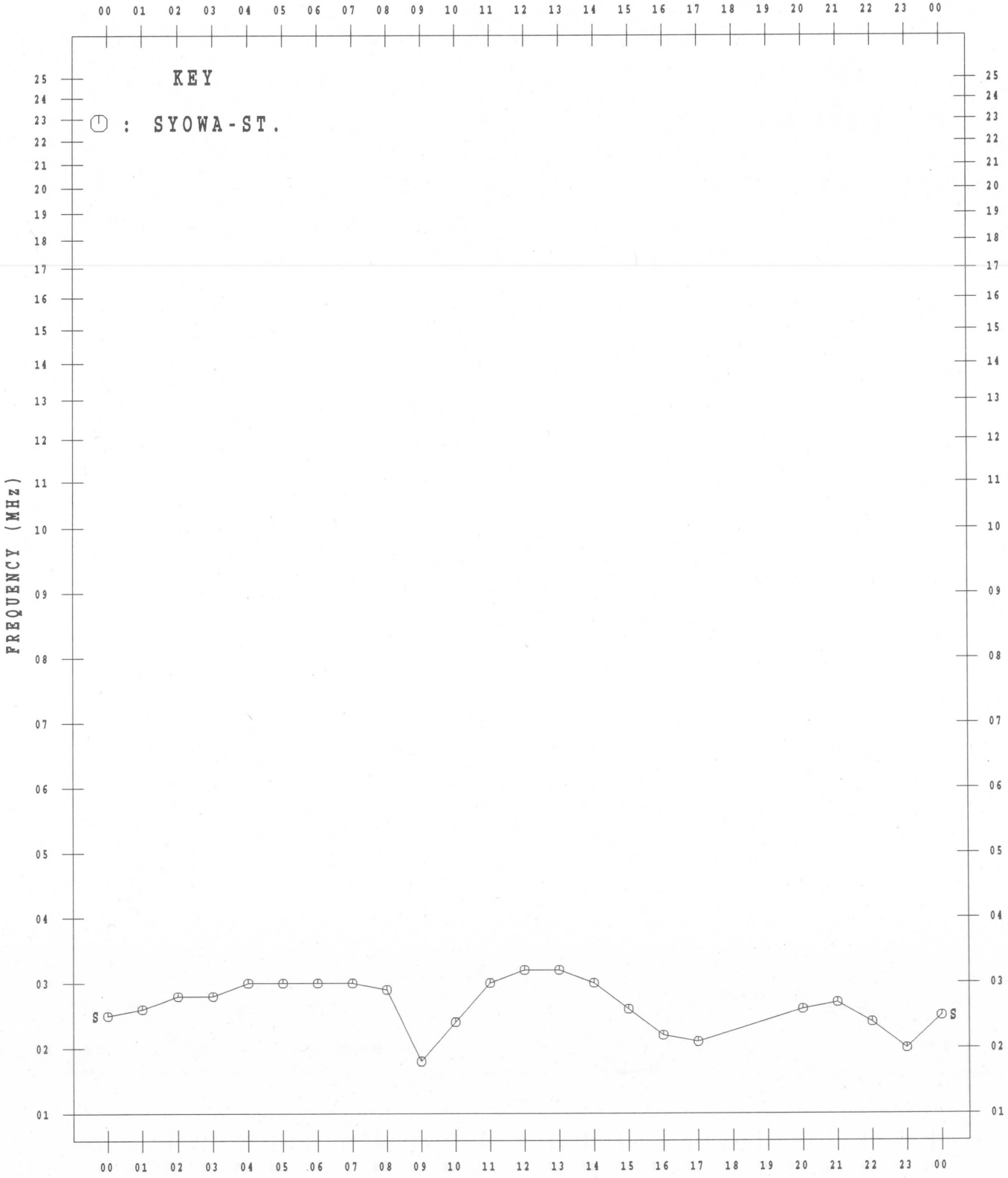
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUN. 2008



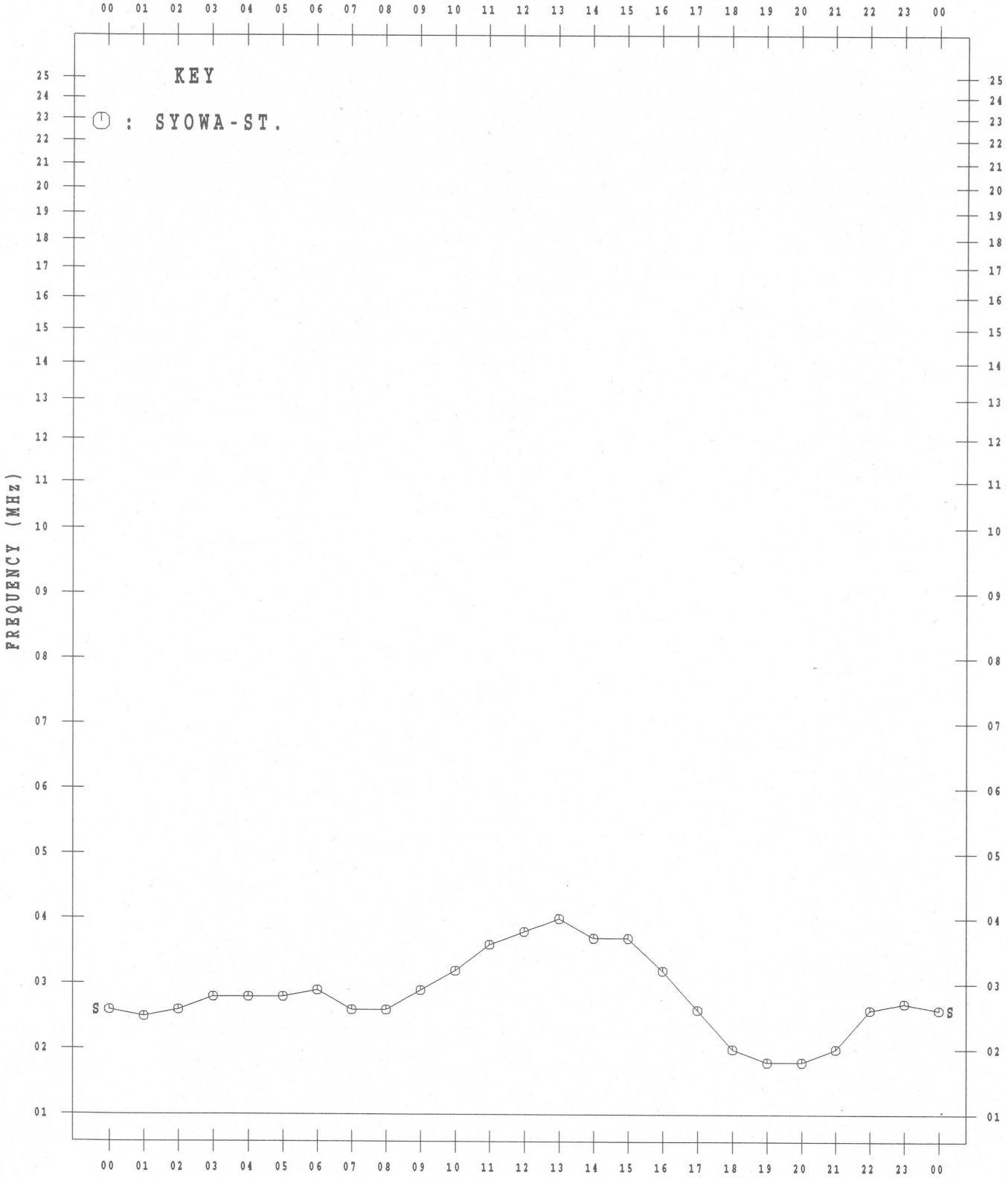
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUL. 2008



MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME AUG. 2008



MONTHLY MEDIAN VALUES OF foF2

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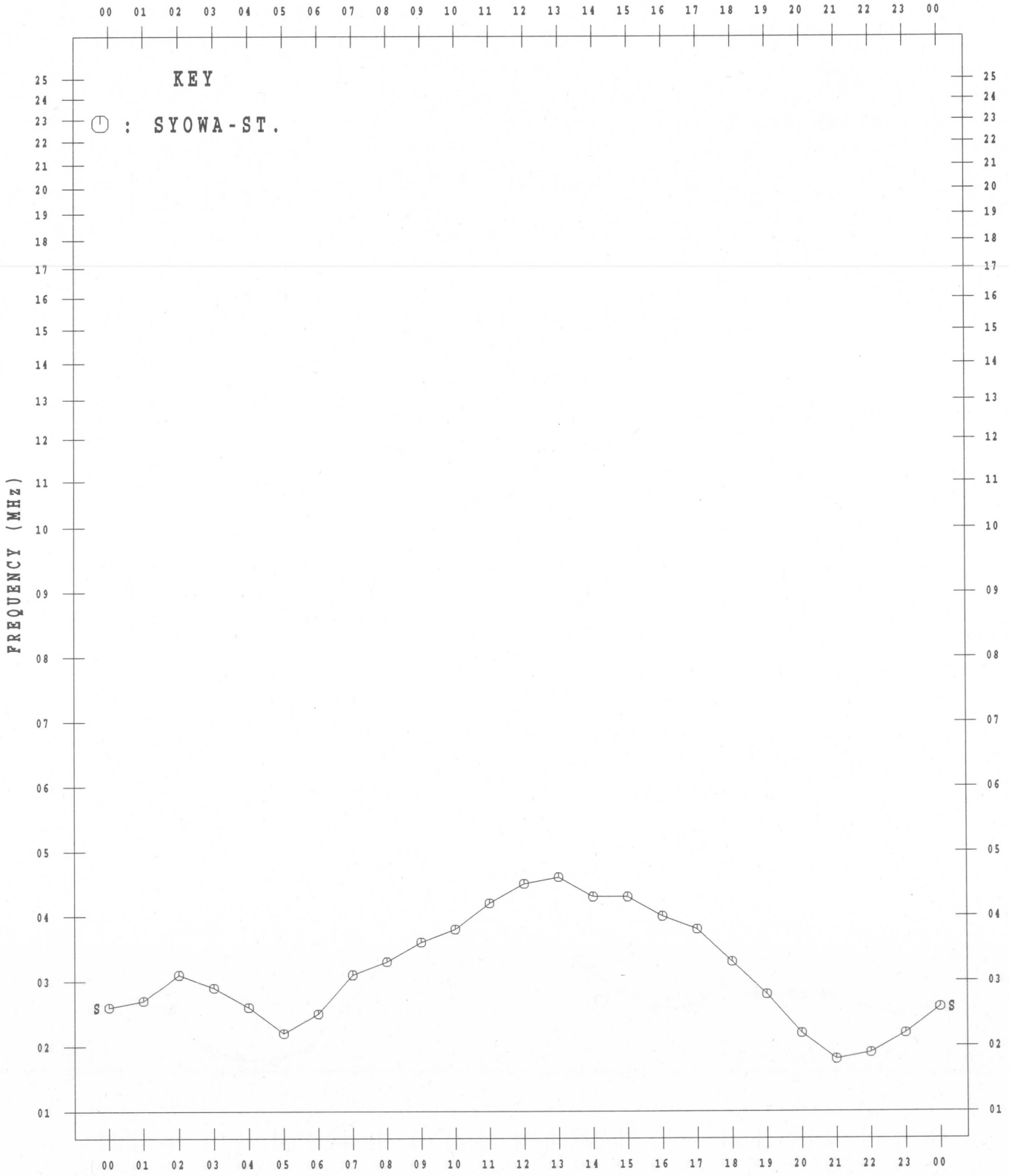
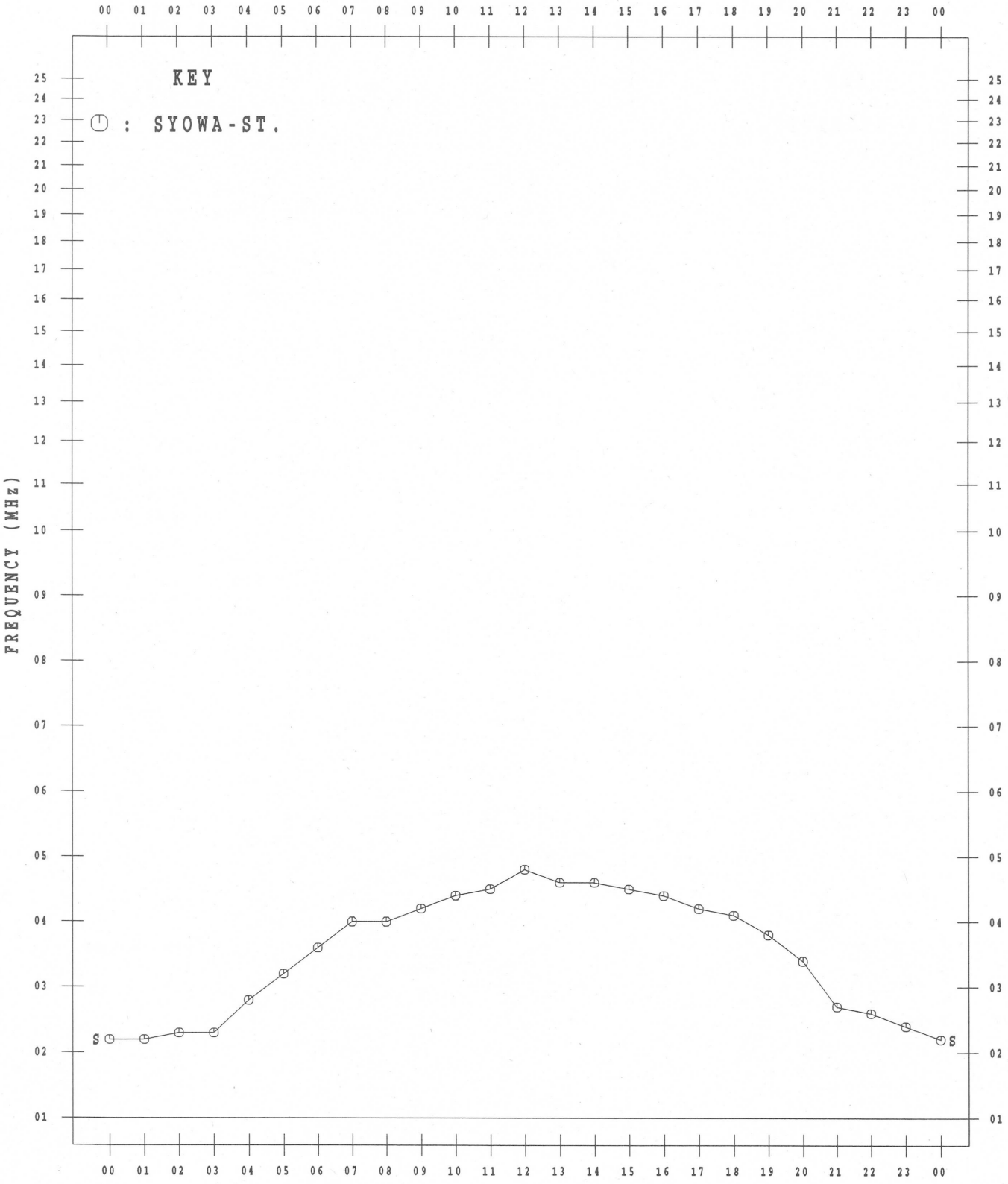


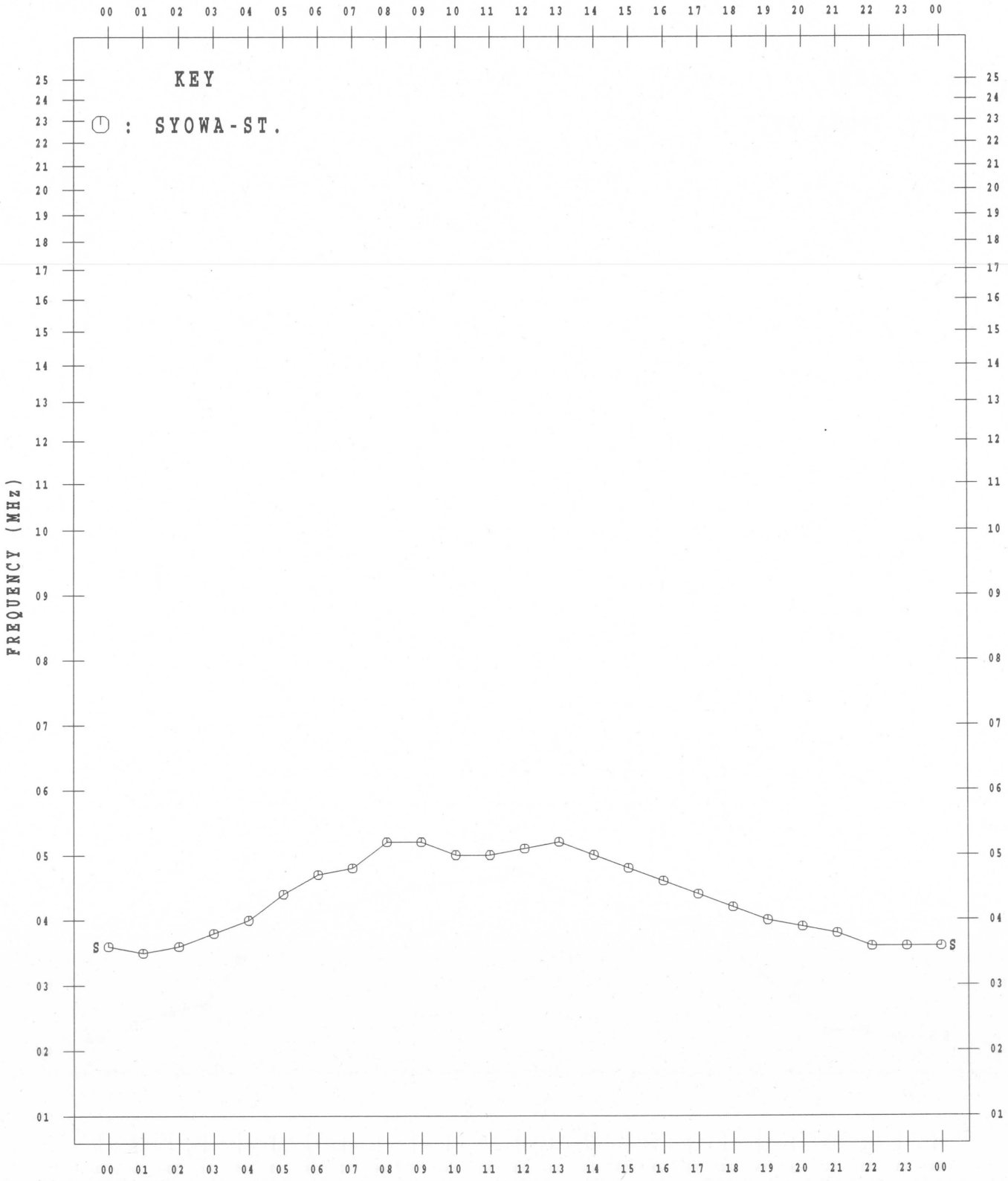
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME OCT. 2008

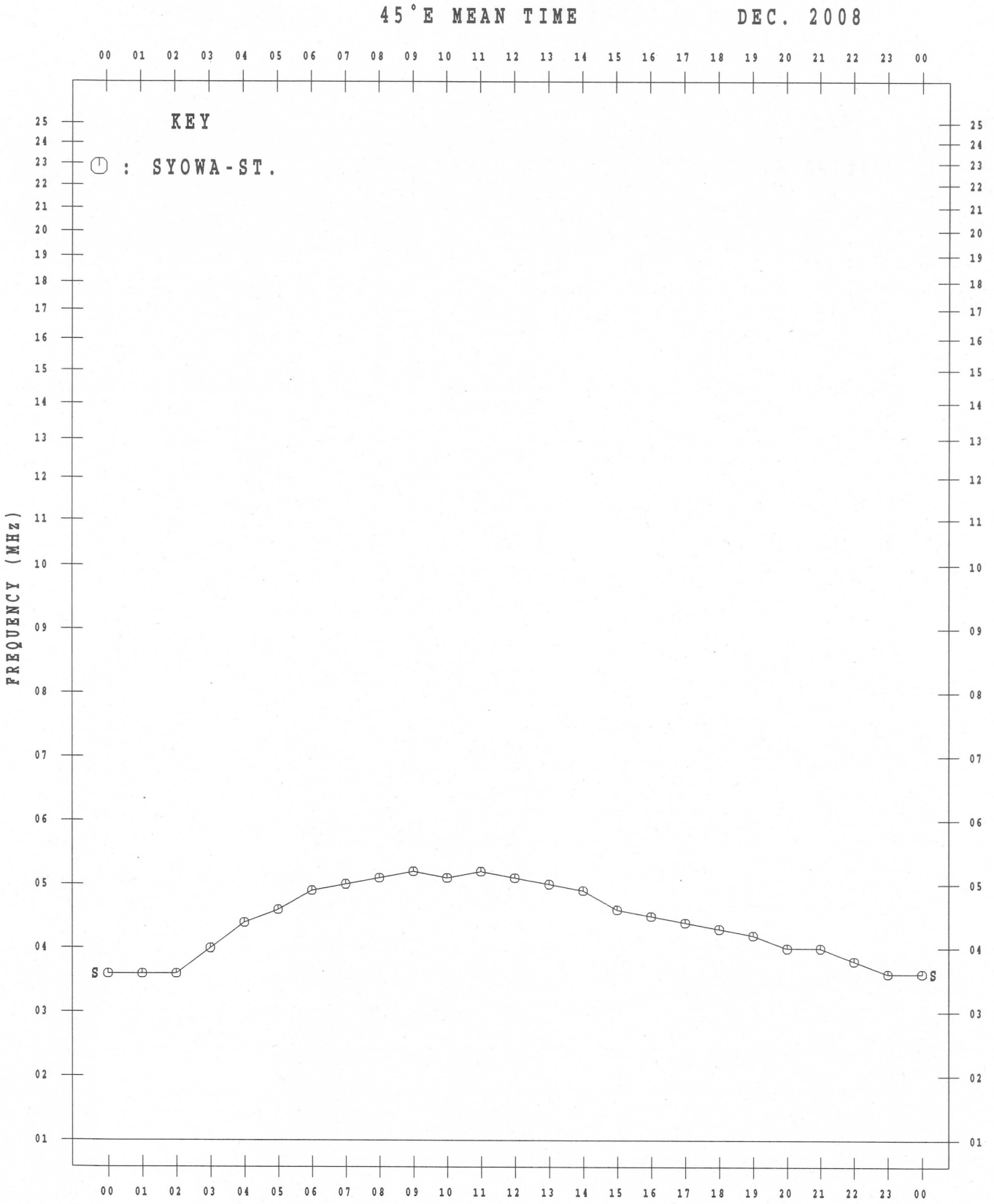


MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME NOV. 2008

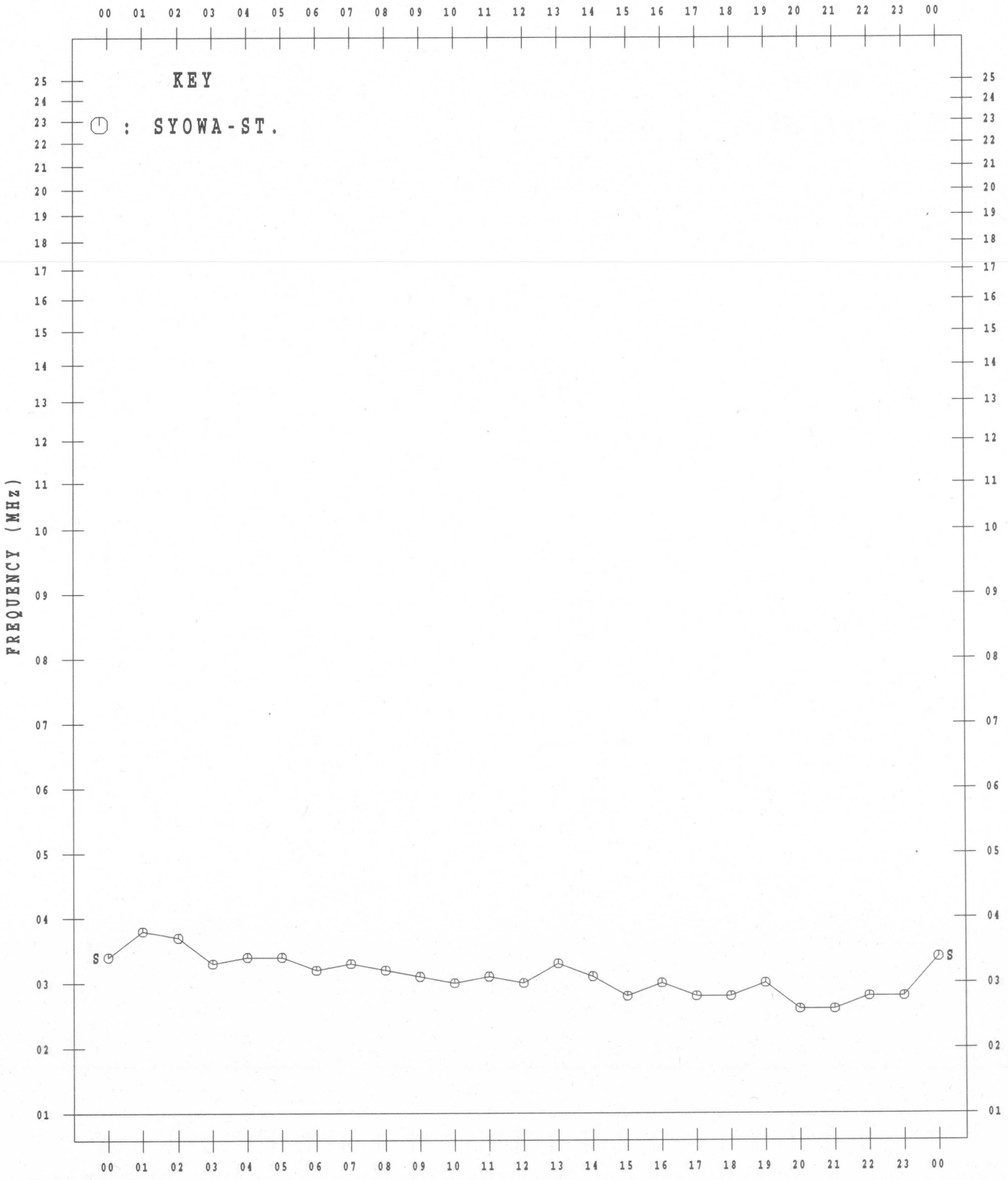


MONTHLY MEDIAN VALUES OF foF2



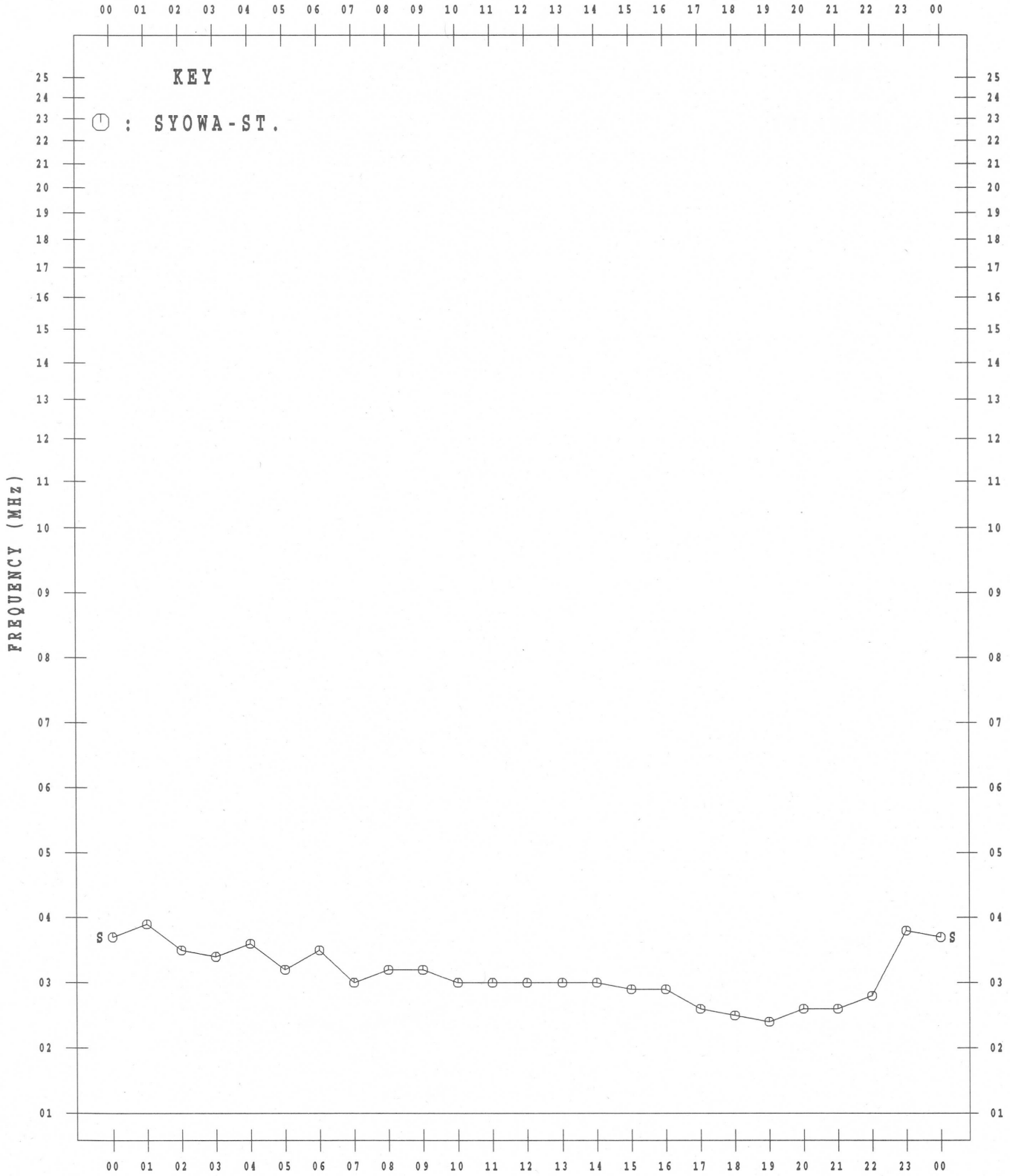
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JAN. 2008



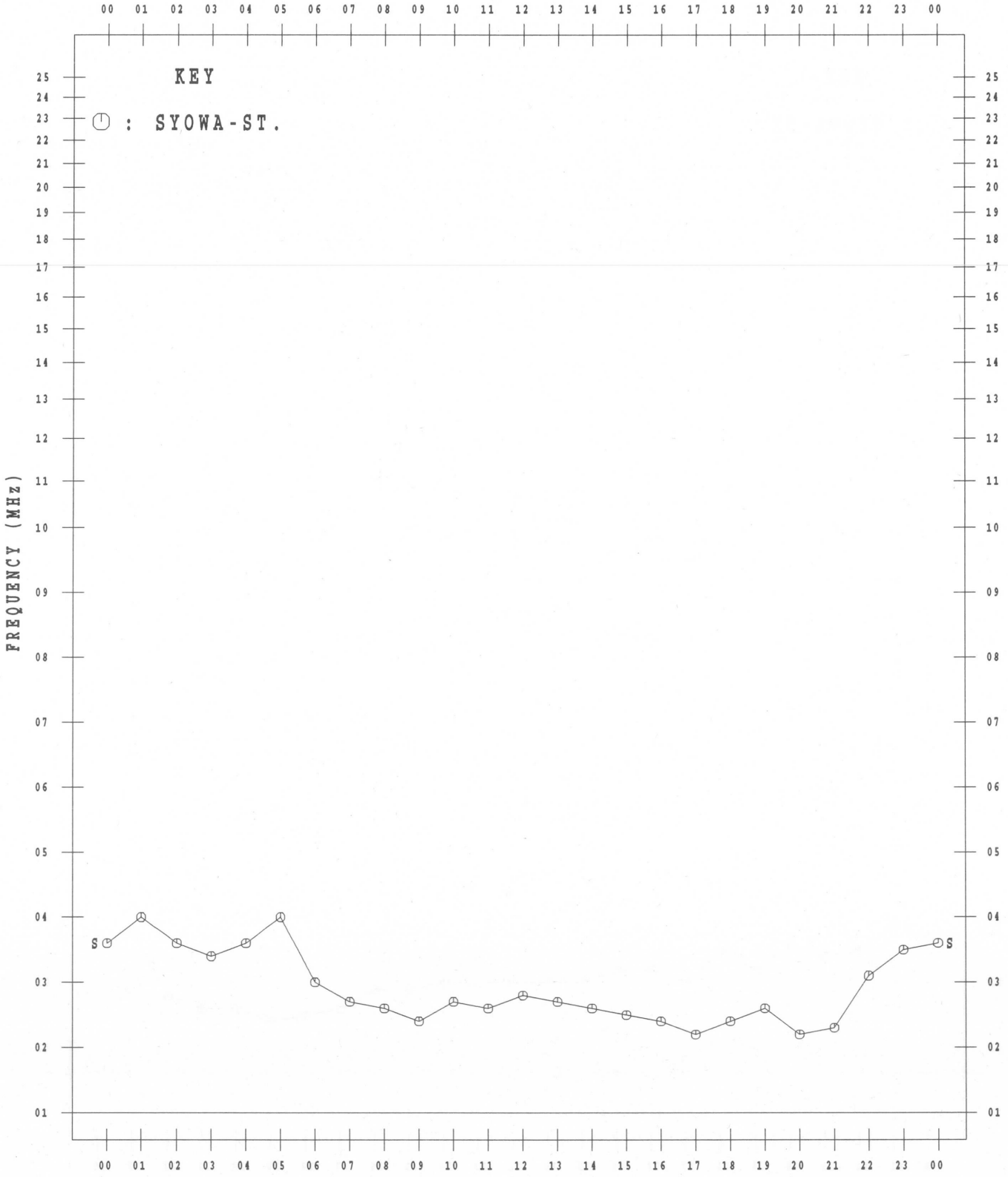
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME FEB. 2008



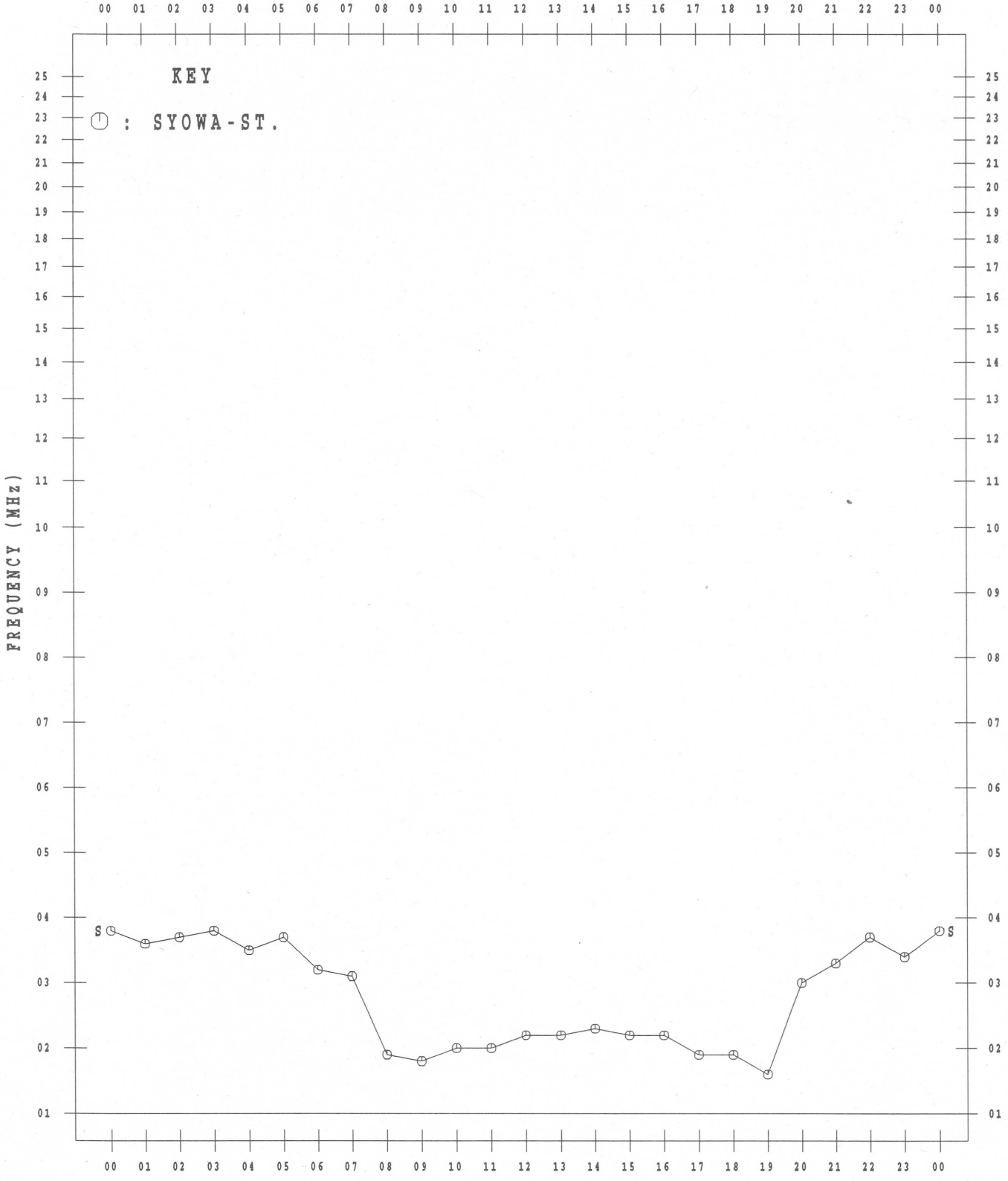
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAR. 2008



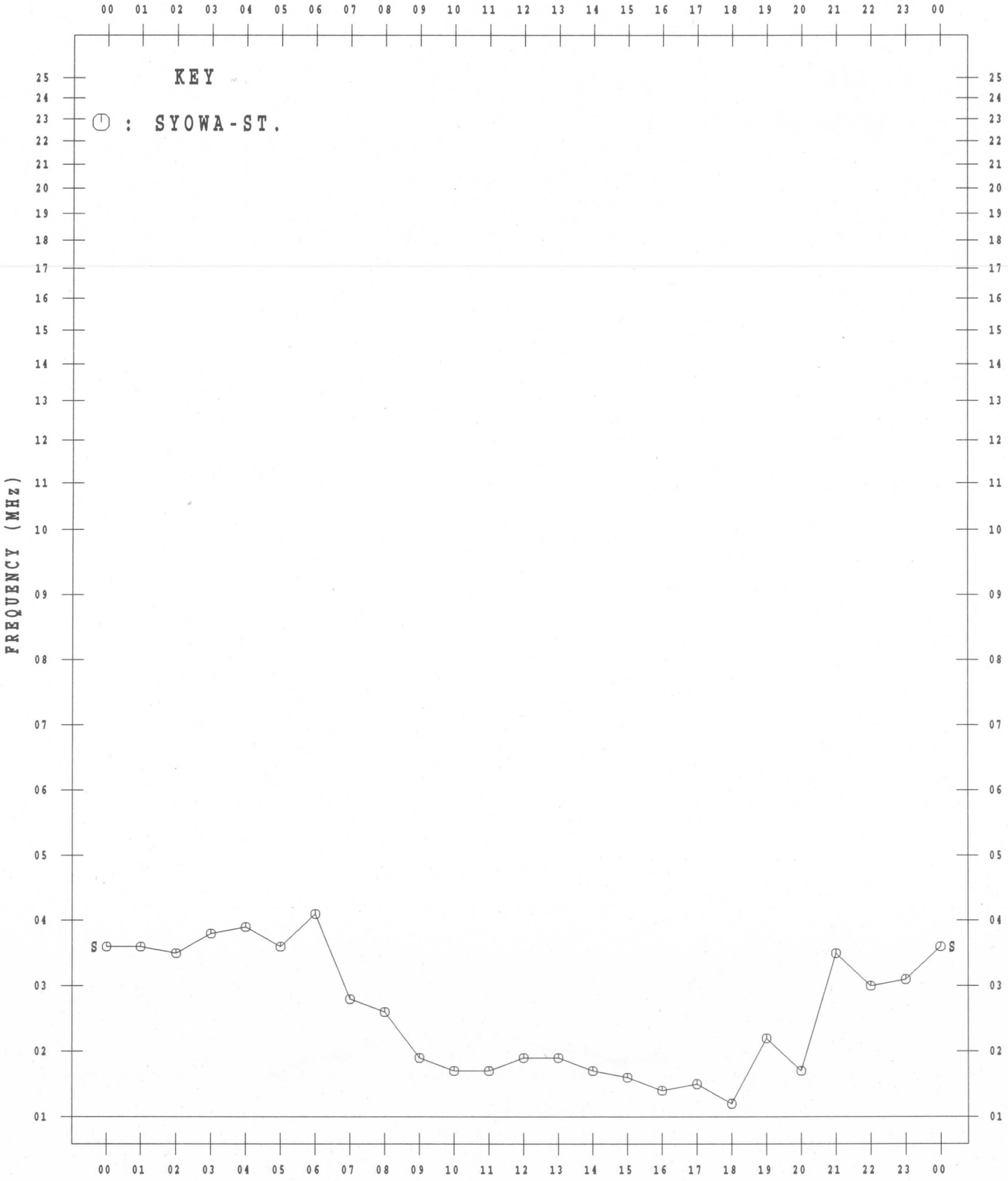
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME APR. 2008



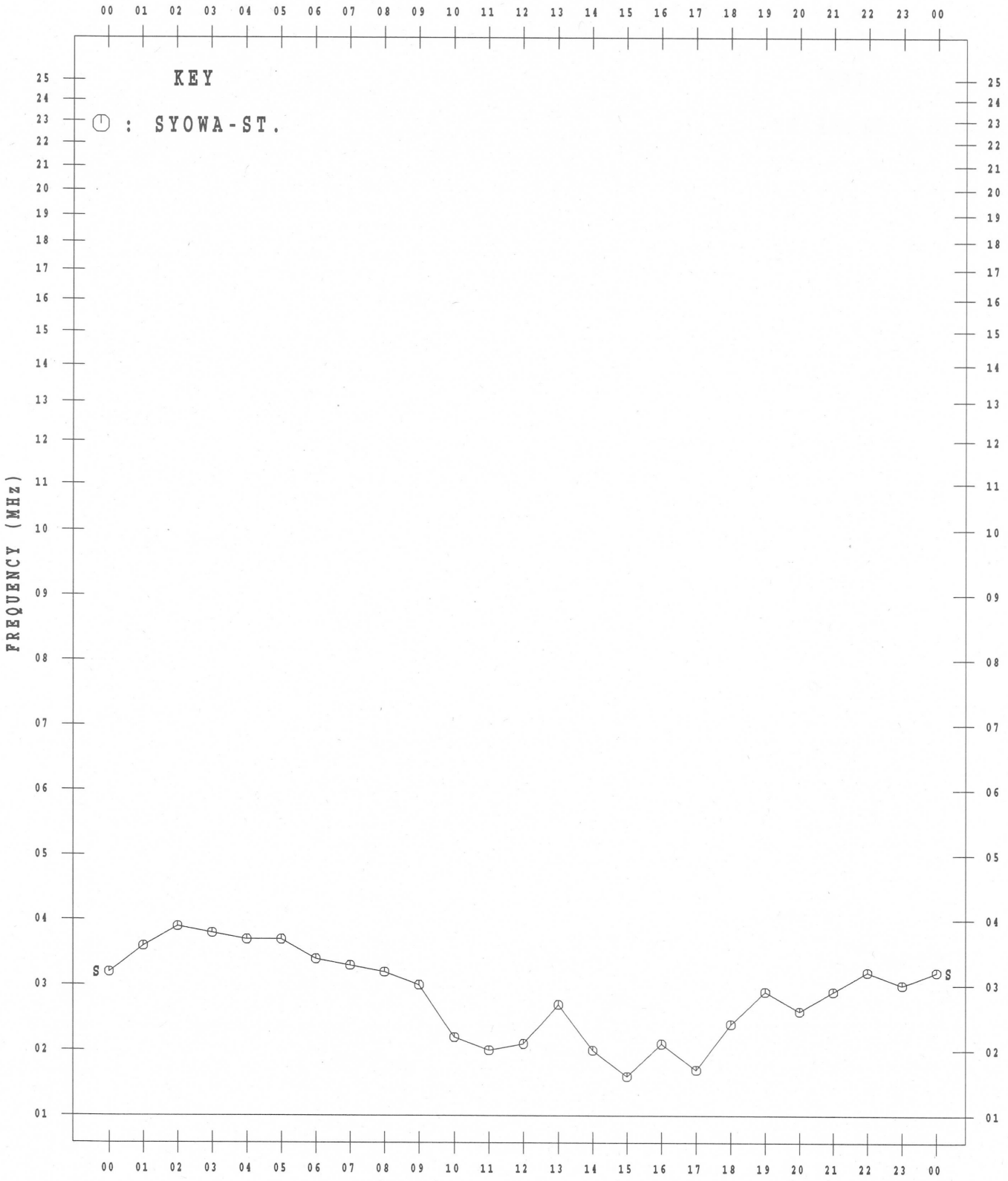
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAY 2008



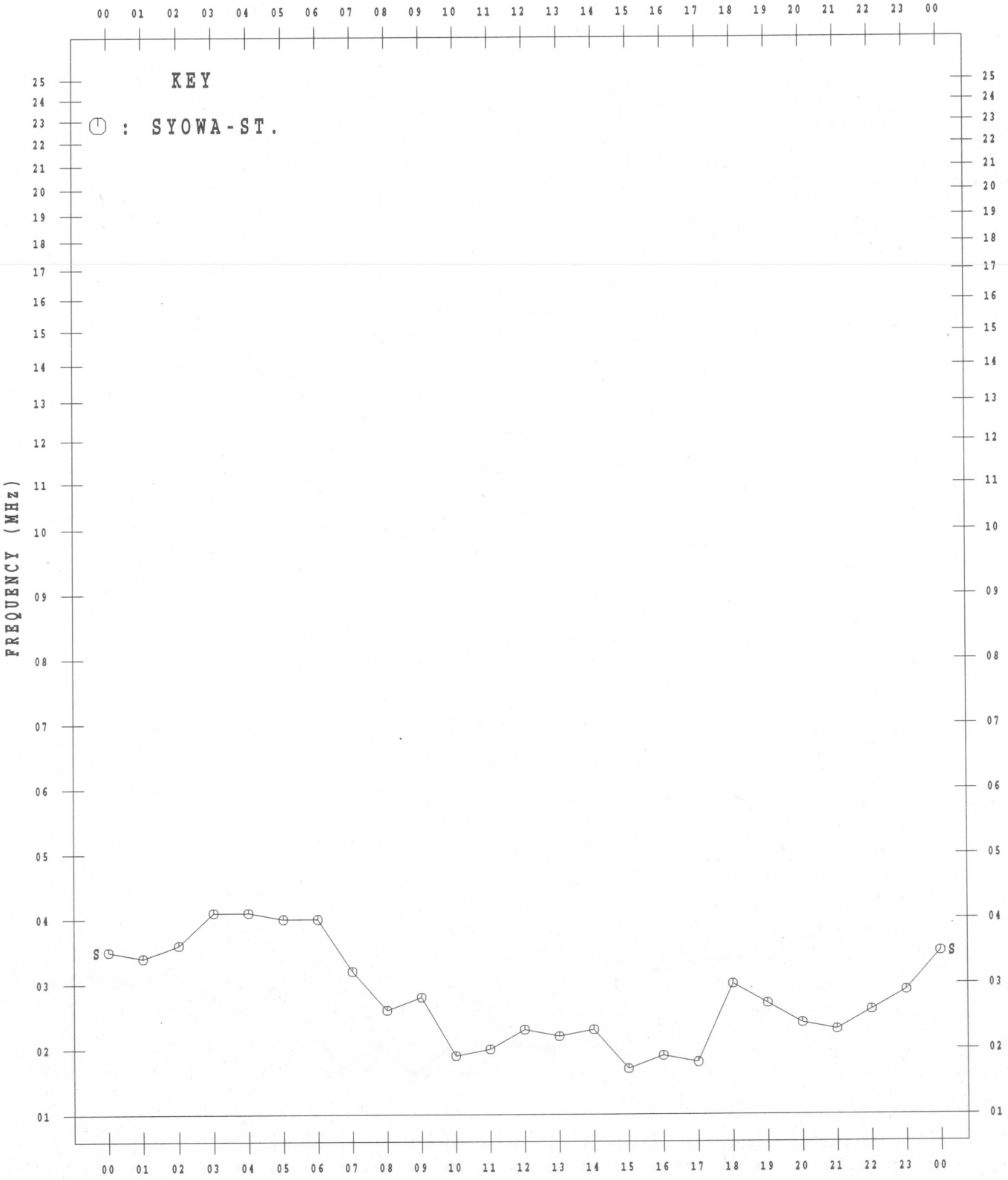
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JUN. 2008



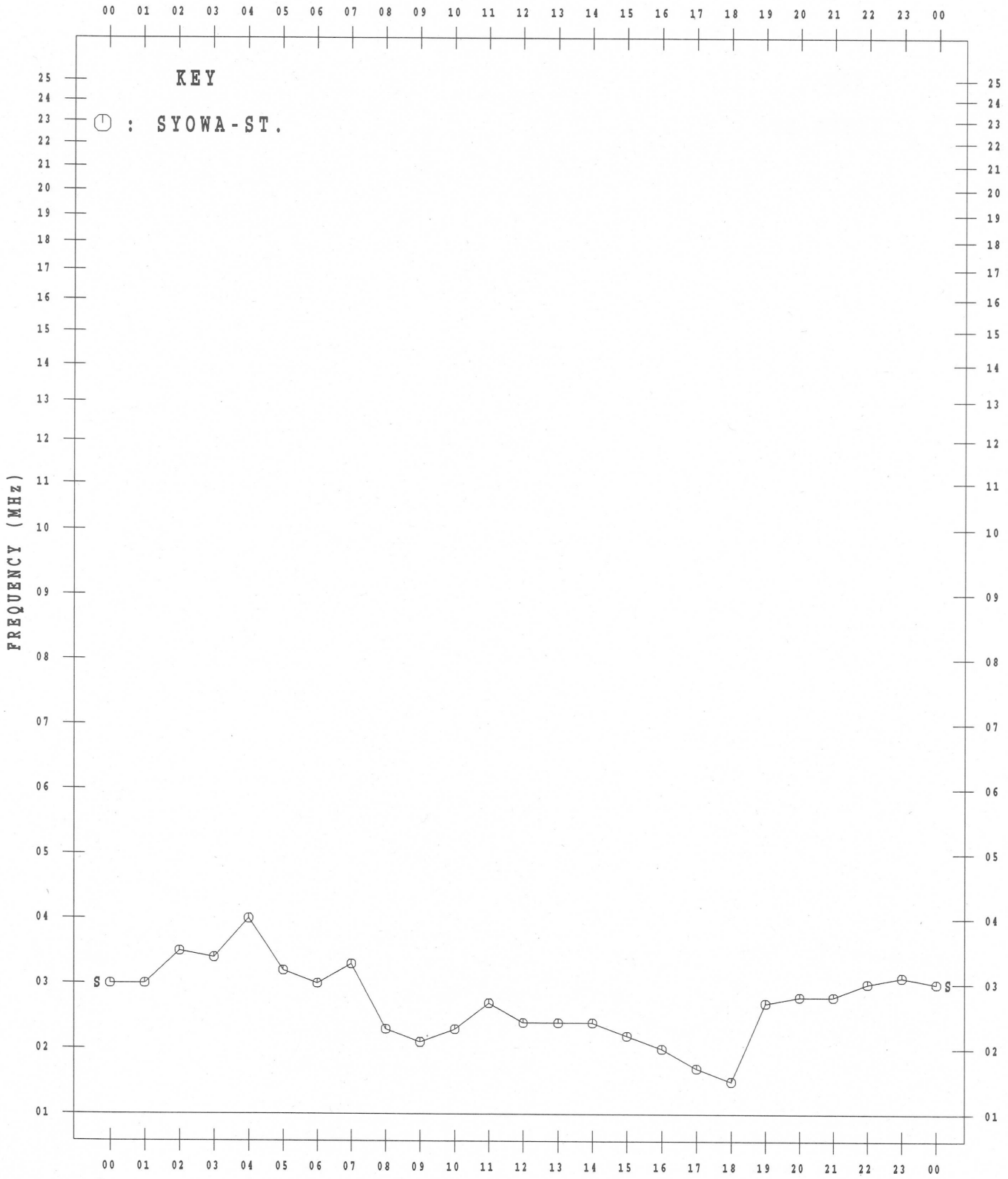
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JUL. 2008



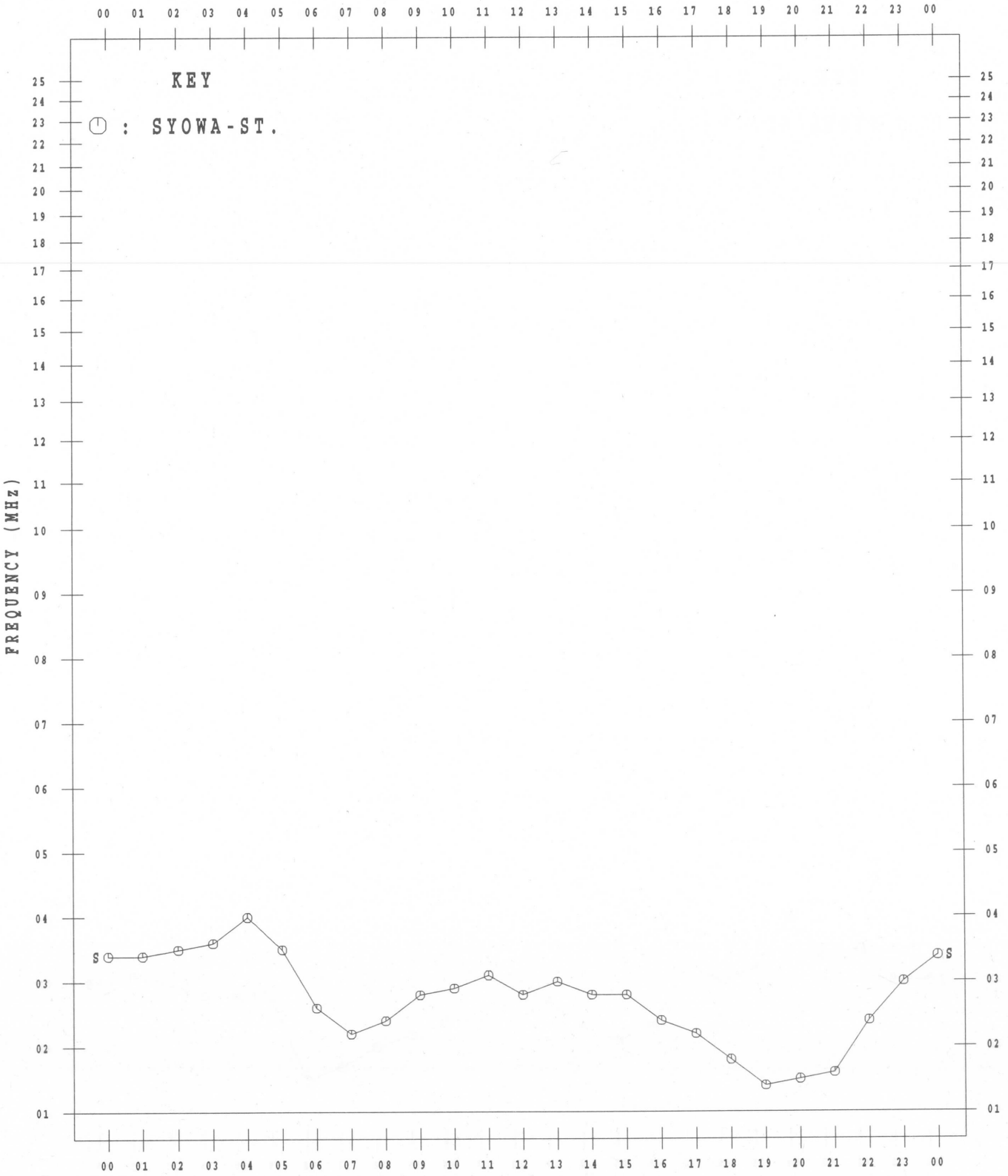
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME AUG. 2008



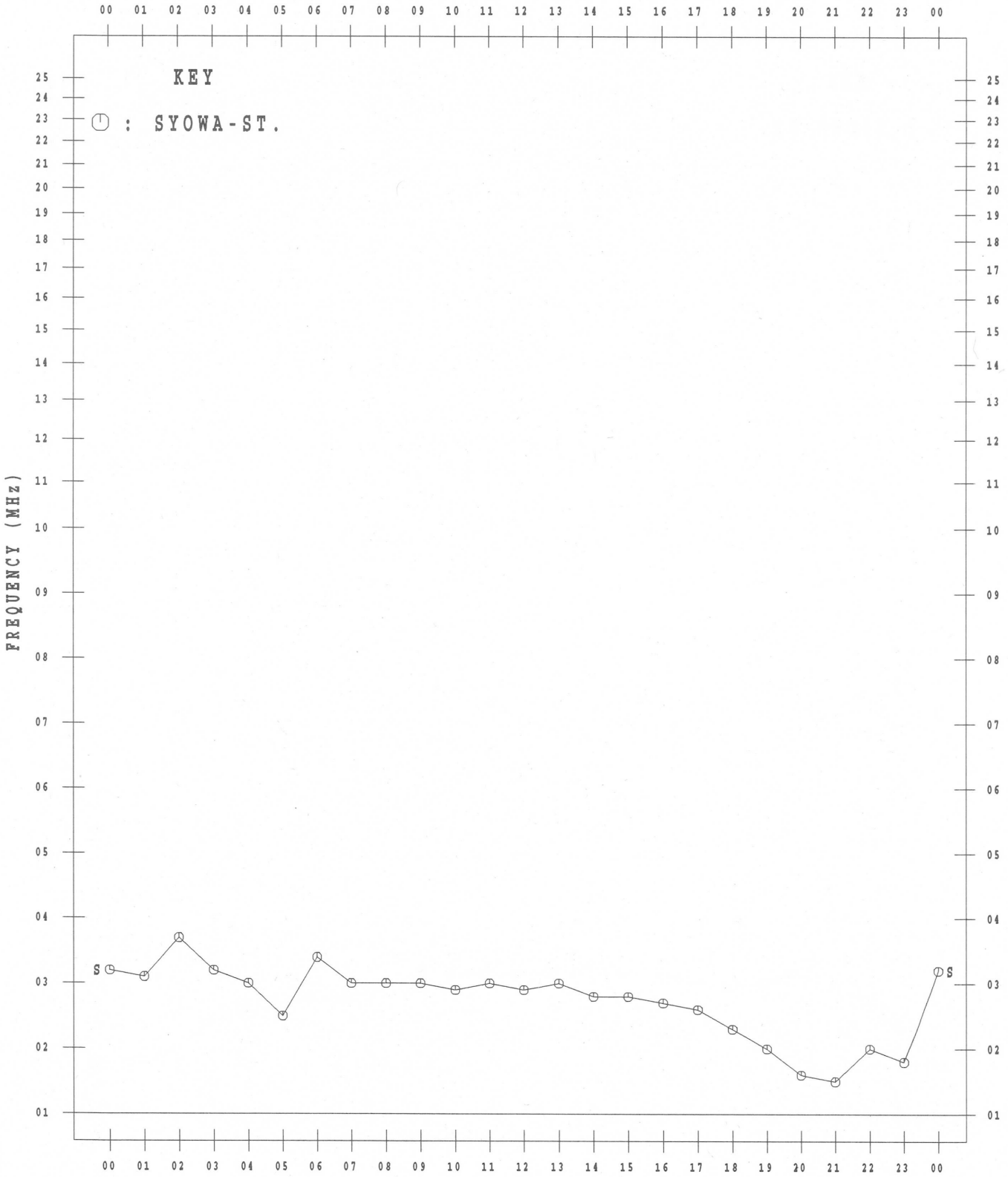
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME SEP. 2008



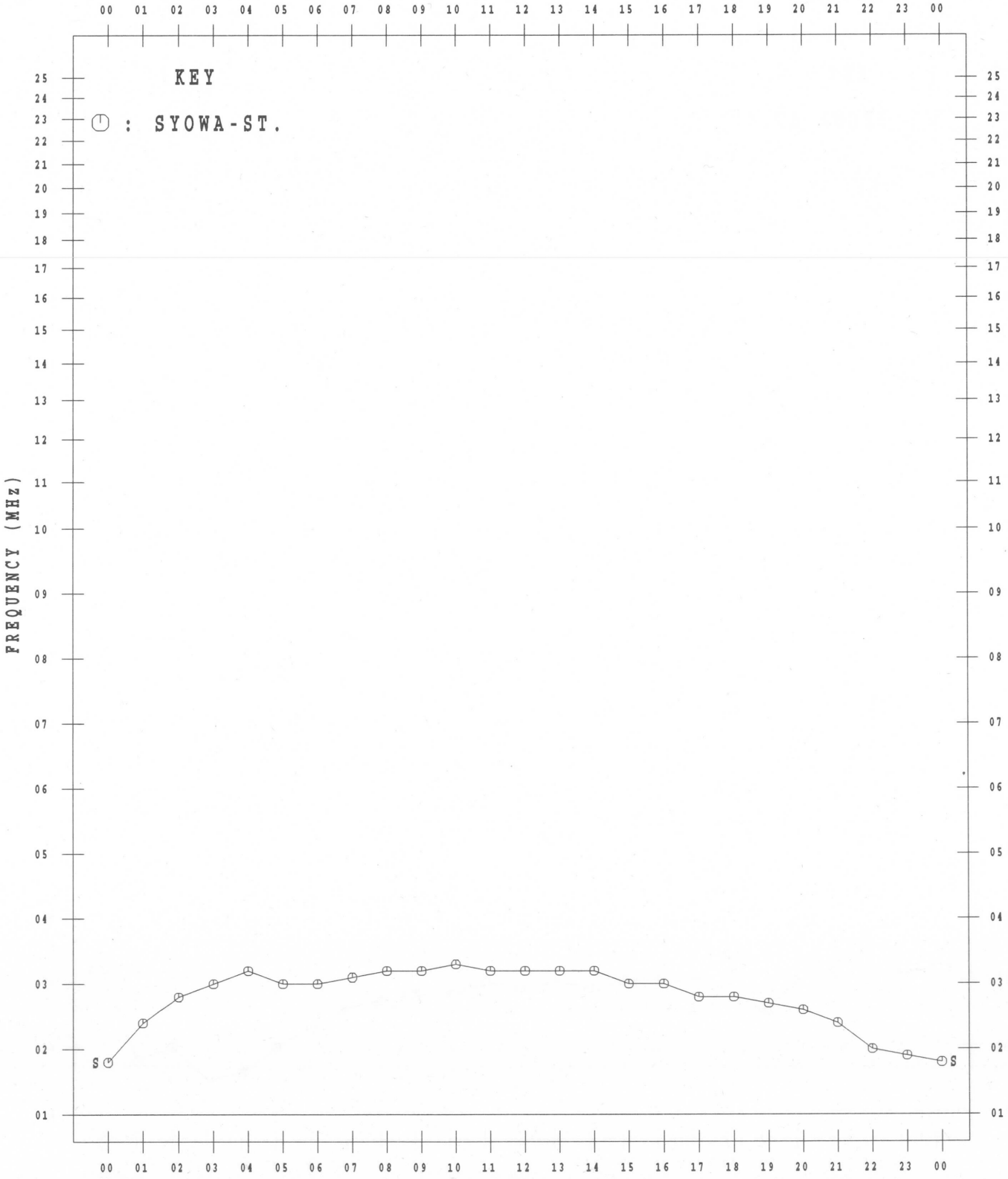
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME OCT. 2008



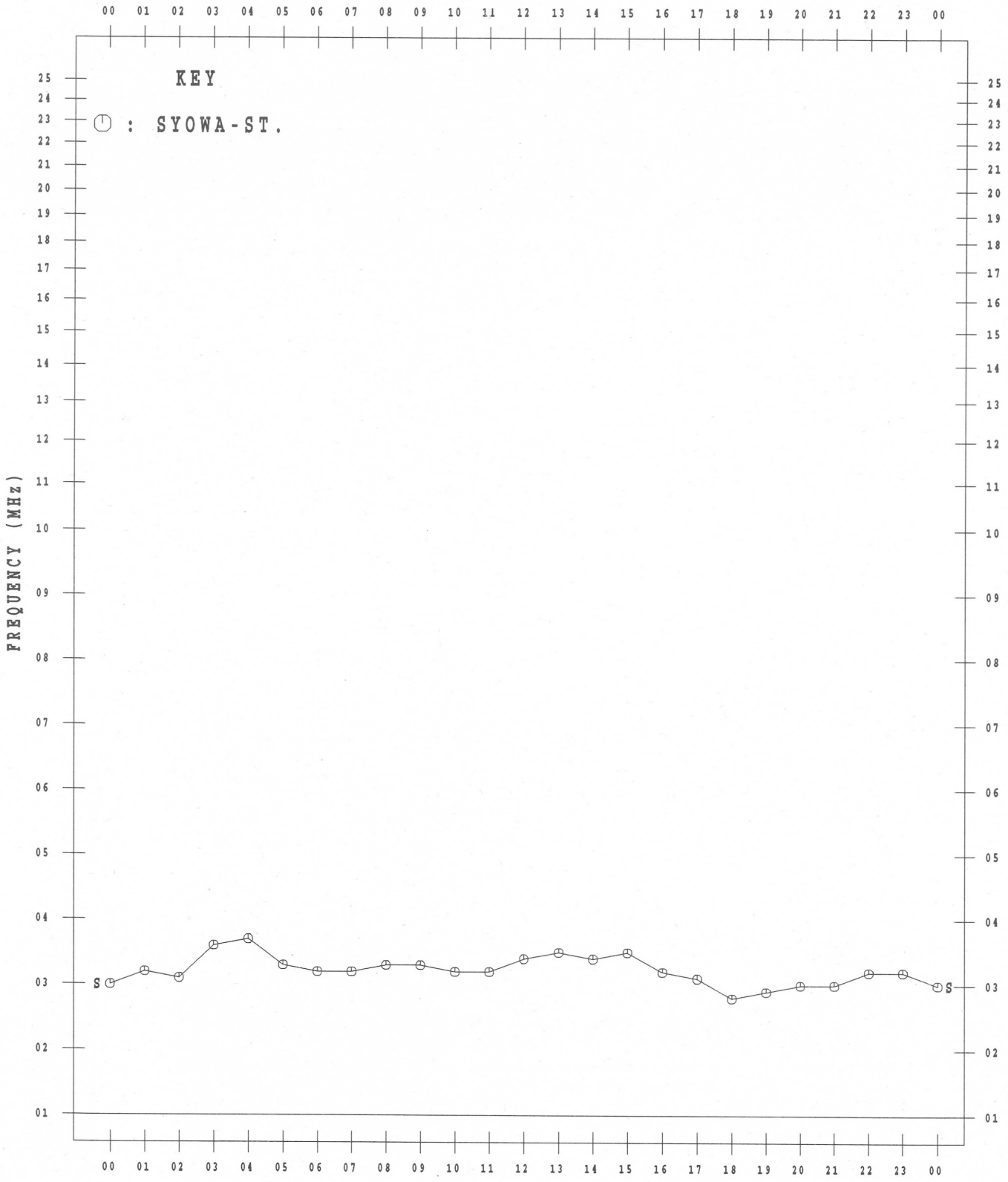
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME NOV. 2008



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME DEC. 2008



IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.—75 January — December 2008 (Not for Sale)

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