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ION.ANT.—71

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

January 2004 — December 2004

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NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This data book gives summarized results for vertical soundings of the ionosphere at Syowa Station, Antarctica in 2004. 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 the symbols used in this data book are as follows:

LOCATION of SYOWA STATION

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
69° 00.4' S	39°35.4'E	- 69.8°	78.2°

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specifications
Frequency Rang	500kHz - 15MHz
Transmitting Power	10kW (peak value)
Duration of Sweep	20 s
Transmitted Pulse Width	80 μs
Pulse Repetition Frequency	50 Hz
Height Range	0 - 900km
Recording Media	8mm digital tape
Power Supply	100V-AC, 2.0kVA
Transmitting Antenna and Receiving Antenna	30-m-high vertical delta antennas terminated by 600Ω

OBSERVERS

Observer: S. Kawana

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 showing vertical ionospheric reflection.
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, a numerical value 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 by or impossible because the trace has no sufficiently definite cusp between layers.
M	Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
N	Conditions are such that the measurement cannot be interpreted.
O	Measurement refers to the ordinary component.
P	Man-made perturbation of parameters - Presence of polar spur traces.
Q	Range spread present.
R	Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
S	Measurement influenced by, or impossible because of, interference or atmospherics.
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V	Forked trace which may influence the measurement.
W	Measurement influenced or impossible because the echo lies outside the height range recorded.
X	Measurement refers to the extraordinary component.
Y	Lacuna phenomena, severe layer tilt .
Z	Third magneto- electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets.

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.
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 the CNT, MED, UQ and LQ

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

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

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

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	R	58	B	A	R	A	B	B	B	B	B	B	O X 69	O X 70	R	B	B	X 55	O X 44	X 61	A	R
2	54	B	X 62	O X 52	A	B	R	O X 48	O X 65	X 63	X 60	X 60	X 59	R	B	B	X 60	B	B	B	O X 50	A	O X 51	O X 48
3	A	B	A	59	66	A	A	A	X 58	R	O X 60	B	R	B	B	B	B	B	O X 64	X 57	X 53	X 48	O X 49	O X 50
4	A	B	B	64	A	A	R	B	R	B	R	B	B	B	B	O X 74	B	R	R	O X 47	A	O X 48	118	R
5	B	55	41	R	49	B	B	B	B	B	B	B	B	B	B	B	B	A	B	O X 42	O X 46	A	R	R
6	B	38	B	O X 38	R	B	O X 44	R	R	B	B	B	B	B	B	B	B	B	X 60	X 58	O X 49	O X 48	A	X 43
7	B	45	A	Y	40	R	R	B	B	B	B	B	B	B	B	B	B	B	R	O X 50	O X 45	47	A	R
8	A	B	O X 39	54	B	B	R	X 61	X 62	X 64	X 60	X 62	R	R	X 67	X 64	X 56	R	R	X 49	O X 52	X 50	O X 46	O X 44
9	O X 48	B	B	B	62	B	B	R	R	B	B	B	B	B	B	B	X 73	B	O X 44	B	R	A	A	A
10	A	O X 42	42	44	A	A	O X 42	B	R	B	R	B	B	B	B	B	R	R	X 56	R	O X 42	X 66	B	R
11	B	B	O X 44	44	45	48	O X 48	O X 49	X 49	O X 49	R	B	B	B	B	B	B	B	B	O X 41	92	94	O X 46	R
12	R	A	B	48	50	O X 44	X 58	X 64	69	O X 72	X 63	X 67	X 64	O X 69	O X 69	X 69	X 73	X 72	X 62	B	O X 50	O X 46	94	A
13	A	B	R	O X 38	O X 43	66	B	B	R	R	B	B	B	B	B	R	B	B	O X 46	R	R	X 46	O X 49	A
14	57	92	A	68	R	R	R	R	R	B	B	B	R	R	R	O X 64	B	B	O X 48	O X 54	O X 40	O X 45	X 41	O X 46
15	B	A	38	B	A	A	A	O X 48	R	B	R	R	R	R	R	R	X 57	O X 67	B	B	B	R	R	R
16	A	A	O X 40	54	B	B	R	X 42	R	B	B	R	B	B	B	B	B	R	O X 50	O X 52	Y	X 42	R	B
17	B	B	B	O X 42	O X 40	O X 46	67	B	R	R	B	B	B	B	B	B	B	B	O X 48	B	X 44	R	O X 47	O X 43
18	B	O X 40	B	O X 47	B	B	B	B	B	B	B	B	B	B	R	R	O X 63	R	B	B	O X 51	X 54	O X 50	A
19	B	B	A	B	O X 44	B	B	B	R	B	B	O X 65	O X 64	B	B	B	O X 66	B	O X 46	B	R	A	A	A
20	49	A	B	A	A	O X 44	B	B	B	B	B	B	B	B	B	R	R	B	B	A	O X 44	X 51	R	O X 40
21	O X 40	A	A	A	B	A	R	R	R	R	R	B	B	B	B	B	O X 68	O X 46	O X 45	O X 45	O X 48	X 48	O X 46	R
22	B	R	O X 42	B	B	B	B	B	B	B	B	B	B	B	R	B	B	R	R	R	R	A	X 42	B
23	A	A	A	O X 38	O X 43	R	B	B	B	B	B	R	B	B	O X 70	B	R	R	O X 45	59	62	47	R	44
24	R	O X 47	A	O X 43	B	B	B	B	B	R	B	O X 64	X 56	B	B	B	O X 63	X 62	B	O X 64	O X 54	B	A	R
25	O X 44	R	A	O X 39	A	B	R	B	R	O X 54	R	B	R	B	B	B	R	O X 47	Y	Y	B	93	43	O X 40
26	A	O X 38	O X 40	B	A	A	O X 42	X 42	R	R	B	B	B	B	B	R	B	X 47	O X 46	O X 46	X 43	O X 42	O X 39	A
27	A	R	R	O X 40	R	36	A	X 40	R	R	R	R	B	R	Y	B	O X 64	X 46	B	X 44	O X 46	O X 46	O X 42	A
28	A	94	55	A	B	B	R	R	B	B	R	B	B	B	B	O X 48	B	B	B	O X 47	A	R	O X 43	A
29	A	B	B	O X 39	B	R	B	R	B	R	B	R	O X 61	R	X 64	B	O X 73	B	B	X 55	O X 55	X 52	50	X 49
30	51	57	39	A	B	41	A	A	A	A	R	R	B	X 60	X 68	O X 72	B	X 66	X 49	O X 48	X 48	O X 43	X 49	A
31	A	A	A	R	B	B	B	O X 48	O X 48	O X 50	O X 54	B	B	B	B	X 60	X 58	B	O X 52	X 50	X 51	X 53	52	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	10	11	19	10	7	6	9	6	6	5	5	5	2	6	8	12	8	15	19	22	22	19	10
MED	49	46	X O 41	X O 44	44	44	O X 46	X 48	X O 60	X O 58	X 60	X 64	X 61	X 64	X 68	O X 66	X 64	X 54	X O 48	X O 50	O X 48	X 48	X O 47	O X 44
U Q	54	57	X 44	54	50	48	58	X 55	65	X 64	X 62	X 66	X 64		O X 69	O X 71	X 70	X 66	X 56	X 55	X 52	X 53	50	O X 48
L Q	O X 44	O X 40	39	X O 39	O X 43	41	O X 42	X 42	X 49	O X 50	X 57	X 61	X 58		X 67	X 62	X 59	X O 46	X O 46	O X 46	O X 44	O X 46	X 43	O X 43

JAN. 2004 fxI (0.1MHz)

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IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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

JAN. 2004 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	35	33	B	95	35	71	B	B	B	B	B	B	E B 54	E B 33	27	B	B	28	39	43	42	34
2	37	B	38	38	64	B	39	39	32	29	32	34	32	30	B	B	30	B	B	B	24	45	48	44
3	60	B	42	30	30	66	42	47	47	E B 34	31	B	30	B	B	B	B	B	34	31	26	34	45	81
4	46	B	B	30	43	48	45	B	36	B	29	B	B	B	B	E B 55	B	E B 31	22	30	47	40	40	37
5	B	89	41	33	42	B	B	B	B	B	B	B	B	B	B	B	B	36	B	E B 30	35	96	37	33
6	B	42	B	28	36	B	29	36	40	B	B	B	B	B	B	B	B	B	24	G	E B 26	23	40	31
7	B	46	33	16	28	32	38	B	B	B	B	B	B	B	B	B	B	B	35	28	38	43	61	34
8	41	B	36	29	B	B	G 31	27	21	28	29	28	27	34	31	30	29	28	31	41	39	32	32	30
9	33	B	B	B	32	B	B	41	38	B	B	B	B	B	B	B	E B 54	B	32	B	35	50	42	59
10	43	43	28	26	102	48	41	B	33	B	E B 33	B	B	B	B	B	36	28	24	36	37	42	B	40
11	B	B	32	31	22	27	30	27	27	28	28	B	B	B	B	B	B	B	B	22	20	38	42	42
12	51	49	B	34	32	31	36	37	28	27	30	31	30	34	E B 60	39	48	58	26	B	33	38	41	42
13	65	B	35	32	34	G 193	B	B	38	G	B	B	B	B	B	50	B	B	E B 31	G	30	40	38	44
14	35	38	74	56	G	G	34	38	42	B	B	B	36	36	28	G	B	B	E B 30	28	23	33	40	38
15	B	40	66	B	38	40	42	30	38	B	31	40	33	32	36	35	34	G	B	B	B	38	G 36	37
16	38	68	37	65	B	B	40	27	44	B	B	E B 36	B	B	B	B	B	33	38	57	95	34	33	B
17	B	B	B	54	27	34	33	B	36	36	B	B	B	B	B	B	B	B	24	B	G 19	37	32	39
18	B	62	B	31	B	B	B	B	B	B	B	B	B	B	E B 37	25	31	27	B	B	E B 30	23	21	42
19	B	B	50	B	54	B	B	B	38	B	B	E B 55	30	B	B	B	E B 54	B	G	B	30	38	68	38
20	27	43	B	36	35	28	B	B	B	B	B	B	B	B	B	G 23	G 27	B	B	37	G 24	41	38	36
21	48	105	31	41	B	38	39	32	36	32	36	B	B	B	B	B	E B 54	28	E B 32	31	G 23	34	35	40
22	B	38	22	B	B	B	B	B	B	B	B	B	B	B	28	B	B	40	27	23	35	54	61	B
23	47	41	104	70	31	31	B	B	B	B	B	34	B	B	E B 34	B	27	28	E B 34	32	32	62	38	36
24	34	34	35	42	B	B	B	B	B	36	B	32	34	B	B	B	E B 31	27	B	31	29	B	40	38
25	56	22	64	39	93	B	28	B	31	G 31	38	B	39	B	B	B	E B 32	31	22	21	B	26	50	69
26	34	73	35	B	58	G 41	30	29	38	G	B	B	B	B	B	30	B	27	27	E B 30	27	36	G 24	44
27	43	46	35	K 37	32	59	92	G 24	34	40	G 34	G	B	26	G 24	B	35	27	B	G 22	28	G 30	42	44
28	K 44	75	66	G 35	B	B	40	41	33	B	29	B	B	B	B	28	B	B	B	27	40	36	45	80
29	39	B	B	28	B	G 35	B	34	B	32	B	27	26	G 28	39	B	32	B	B	E B 28	35	24	28	42
30	Q 66	67	76	45	B	36	34	34	G 33	G 28	38	25	B	31	35	E B 57	B	E B 33	27	24	31	30	30	44
31	47	39	47	34	B	B	B	38	30	28	G 24	B	B	B	B	25	G 23	B	32	40	40	39	27	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	21	20	23	26	20	18	20	18	22	15	14	11	10	8	11	13	17	16	20	24	29	30	30	28
MED	43	44	37	34	34	39	37	35	36	G	30	30	31	32	U 32	U 28	31	28	26	28	31	38	40	40
U Q	50	68	64	41	48	59	40	39	38	34	34	E B 36	34	34	E B 39	44	E B 42	33	32	32	38	42	42	44
L Q	36	40	35	30	30	32	32	29	32	28	29	27	30	29	28	25	28	27	24	24	26	33	33	36

JAN. 2004 ftEs (0.1MHz)

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IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	11	10	B	26	15	22	B	B	B	B	B	B	54	33	18	B	B	16	12	11	16	28
2	16	B	16	12	26	B	20	13	15	15	12	11	10	16	B	B	11	B	B	B	16	12	10	12
3	12	B	13	11	11	20	10	14	14	34	22	B	20	B	B	B	B	B	19	14	12	11	10	12
4	20	B	B	10	26	26	22	B	22	B	20	B	B	B	B	55	B	31	10	14	11	12	16	33
5	B	10	10	19	11	B	B	B	B	B	B	B	B	B	B	B	B	16	B	29	15	51	32	25
6	B	12	B	11	13	B	12	28	19	B	B	B	B	B	B	B	B	B	20	17	26	20	17	12
7	B	11	26	11	12	29	20	B	B	B	B	B	B	B	B	B	B	B	16	17	12	12	29	19
8	19	B	12	16	B	B	17	13	17	14	15	20	16	16	26	11	16	20	27	14	12	16	10	15
9	15	B	B	B	12	B	B	31	21	B	B	B	B	B	B	B	54	B	22	B	29	17	20	15
10	15	17	12	11	19	14	12	B	28	B	33	B	B	B	B	B	26	14	10	11	11	15	B	10
11	B	B	15	10	11	16	19	10	10	10	12	B	B	B	B	B	B	B	B	15	11	18	12	16
12	17	20	B	10	11	20	17	16	12	25	14	14	12	29	60	14	12	22	16	B	15	12	13	20
13	E B 36	B	30	20	20	10	B	B	19	26	B	B	B	B	B	20	B	B	31	19	11	13	18	10
14	10	12	14	10	16	26	12	22	19	B	B	B	25	18	18	26	B	B	30	19	13	12	11	19
15	B	20	13	B	13	12	13	10	18	B	14	12	15	16	16	20	14	12	B	B	B	10	21	21
16	11	25	14	15	B	B	15	11	20	B	B	36	B	B	B	B	B	13	12	11	12	10	20	B
17	B	B	B	9	17	11	19	B	20	26	B	B	B	B	B	B	B	B	16	B	14	30	12	14
18	B	18	B	20	B	B	B	B	B	B	B	B	B	B	37	20	28	21	B	B	30	13	15	22
19	B	B	19	B	14	B	B	B	16	B	B	55	21	B	B	B	54	B	25	B	20	14	38	16
20	20	20	B	15	18	12	B	B	B	B	B	B	B	B	B	18	18	B	B	12	10	13	25	12
21	11	16	16	21	B	24	12	13	18	21	16	B	B	B	B	B	54	20	32	15	15	18	18	18
22	B	25	19	B	B	B	B	B	B	B	B	B	B	B	12	B	B	10	10	10	14	10	13	B
23	13	20	19	10	11	20	B	B	B	B	B	29	B	B	34	B	12	12	34	13	12	15	14	14
24	19	14	16	15	B	B	B	B	B	20	B	15	15	B	B	B	31	20	B	16	13	B	10	22
25	20	10	10	15	11	B	18	B	18	12	15	B	18	B	B	B	32	19	14	15	B	11	11	12
26	29	12	10	B	10	12	15	12	20	24	B	B	B	B	B	27	B	16	11	30	24	10	8	17
27	12	12	12	16	14	15	12	11	17	17	16	19	B	19	18	B	16	15	B	11	24	9	10	20
28	9	14	12	20	B	B	14	21	30	B	20	B	B	B	B	19	B	B	B	13	11	21	12	24
29	15	B	B	11	B	31	B	27	B	17	B	25	18	24	21	B	29	B	B	28	26	14	E S 10	9
30	10	15	10	14	B	17	22	26	20	17	17	19	B	16	12	57	B	33	12	16	11	9	11	11
31	15	27	26	18	B	B	B	16	13	12	14	B	B	B	B	19	15	B	19	12	12	10	10	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	20	16	15	18	26	19	27	20	B	B	B	B	B	B	B	54	33	27	16	13	13	13	17
U Q	B	B	B	B 20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 30	24	17	20	22
L Q	13	14	12	11	12	16	14	13	17	17	16	25	20	29	34	20	18	16	16	13	12	11	10	12

JAN. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	A 182		B	A	A	A	B	B	B	B	B	B	B	204	A	B	B	A 226	E A 254	A	A	A
2	A	B	A 208		A	B	A	A	204	194	A 226	E A 242	E A 226	198	B	B	A 210	B	B	B	200	A	216	228
3	204	B	A 200	200	A	A	A	A 256	198	186	B	202	B	B	B	B	B	B	A 302	216	224	234	228	216
4	A	B	B 224		A	A	A	B	A	B 224	B	B	B	B	B	B	B	208	248	192	A	A	A	A
5	B 194		A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	B	E B 266	E Y 270	A	A	A
6	B	A	B	A 328	A	B	192	A	A	B	B	B	B	B	B	B	B	B	188	210	208	E A 260	A	E A 300
7	B 226		A	Y	228	A	214	B	B	B	B	B	B	B	B	B	B	B	A	262	A	222	A	A
8	A	B	A 198		B	B	A	222	Y 230	204	192	214	A	206	206	A 212	196	208	220	E A 284	E A 226	250	E B 292	A 242
9	278	B	B	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	E A 270	B	A	A	A	A
10	A	E A 254	A	E A 272	A	A	E A 246	B	A	B	202	B	B	B	B	B	A	224	232	A	A	A 270	B	A
11	B	B	A 210		206	202	A	216	216	204	E Y 234	B	B	B	B	B	B	B	B	E Y 274	E Y 298	A	E A 244	A
12	A	A	B 230		266	224	A	A	190	218	200	212	220	A	B	A 226	A	A	214	B	A	A	A 256	A
13	E B 262	B	A	A	A 230		B	B	A	A	B	B	B	B	B	232	B	B	E B 254	A	A	A 236	A	A
14	A 222	218	A 210		A	E A 282	A	A	A	B	B	B	198	216	A	216	B	B	E B 232	232	E B 228	286	A 268	A
15	B	A 226		B	A	A	A	A 230	A	B	A	A	A	A	A	206	204	204	B	B	B	A	A	A
16	A	A	A 232	242	B	B	A	E A 240	A	B	B	E B 228	B	B	B	B	B	198	E A 250	E A 266	A	A	A	B
17	B	B	B	E A 300	A	E A 290	A	B	A	A	B	B	B	B	B	B	B	B	174	B	E A 246	A	A	A
18	B	A	B	A	B	B	B	B	B	B	B	B	B	B	E B 202	196	210	210	B	B	E B 250	E A 240	E A 248	A
19	B	B	A	B	A	B	B	B	A	B	B	B	Y	B	B	B	B	B	226	B	A	A	A	A
20	E A 294	A	B	A	A	222	B	B	B	B	B	B	B	B	B	202	220	B	B	A	224	A 248	A	190
21	E A 294	A	A	A	B	A	A	A	A	A	A	B	B	B	B	B	B	232	E B 222	E A 280	E A 258	E A 268	E A 240	A
22	B	A	182	B	B	B	B	B	B	B	B	B	B	B	Y 254	B	B	230	A	A	A	A	A	B
23	A	A	A 204		A	A	B	B	B	B	B	A 216	B	B	E B 238	B	B 238	238	308	236	200	E A 320	198	198
24	A	A	A	E A 248	B	B	B	B	B	A	B	A 230	E A 240	B	B	B	228	192	B	226	228	B	A	A
25	160	A	A	A	A 212	B	A	B	A	204	A	B	A	B	B	B	222	216	Y	Y	B	Y	200	196
26	A	A	E A 266	B	A	A	A	202	A	A	B	B	B	B	B	208	B	204	170	E B 240	E B 264	E A 246	E A 226	A
27	A 232		A	A	A 216		A	E A 242	A	A	A	222	B	A 216	Y	B	A 212	214	B	192	A	A	224	A
28	A	A 238		A	B	B	A	A	A	B	202	B	B	B	B	200	B	B	B	186	A	A	226	A
29	A	B	B	E A 280	B	A	B	A	B	A	B	208	200	200	220	B	230	B	B	E B 242	E A 296	248	Q 260	232
30	214	A 204		A	B	A	A	A	A	A	A	Y 218	B	192	204	B	B	E B 256	A 244	E A 270	238	216	E A 264	A
31	A	A	A	A	B	B	B	246	212	206	186	B	B	B	B	224	206	B	E A 232	E A 238	E A 242	A 256	Q 272	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	5	7	15	5	7	3	7	6	7	9	9	6	6	6	11	11	14	17	19	18	15	16	8
MED	U 233	224	222	214	212	220	U 203	223	214	204	201	216	205	203	209	208	212	210	227	U 215	E 240	A 244	234	214
U Q	E A 294	243	238	E A 272	247	E A 282	E A 246	242	230	206	225	E A 229	E A 226	216	238	224	228	230	E A 252	E A 266	E 258	A 268	262	A 237
L Q	204	208	204	204	203	216	192	216	204	198	189	213	200	198	204	202	206	204	217	216	224	236	225	197

JAN. 2004 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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																								
MED																								
U Q																								
L Q																								

FEB. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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																								
MED																								
U Q																								
L Q																								

FEB. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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																								
MED																								
U Q																								
L Q																								

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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																								
MED																								
U Q																								
L Q																								

FEB. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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																								
MED																								
U Q																								
L Q																								

FEB.2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	O X 38	38	53	50	41	48	58	61	X 57	O X 64	O X 72	X 80	O X 84	X 86	X 81	X 84	X 84	67	R	R	R	A	A
27	B	R	R	48	R	A	B	O X 48	O X 54	X 58	X 61	X 67	X 74	X 78	O X 72	X 84	X 78	X 74	O X 56	X 54	A	A	A	A
28	A	A	B	B	A	O X 40	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 62	R	X 32	A	O X 39
29	O X 38	O X 34	B	B	R	R	B	B	B	B	O X 52	O X 65	B	B	B	O X 86	78	X 77	O X 74	47	A	Y	R	R
30	O X 36	R	O X 40	O X 38	R	54	O X 46	B	B	O X 56	B	B	X 67	X 67	B	B	B	X 65	B	B	X 37	X 32	O X 28	R
31	O X 28	O X 34	A	A	B	A	B	A	X 41	O X 50	X 62	O X 66	B	B	B	B	O X 82	O X 84	O X 70	42	30	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	3	2	3	1	3	2	2	3	4	4	4	3	3	2	3	4	5	4	4	2	2	1	1
MED	O X 36	O X 34	39	48	50	41	47	53	X 54	X 56	X 62	O X 66	X 74	X 78	X 79	X 84	X 80	X 77	O X 68	50	34	X 32	O X 28	O X 39
U Q	O X 38	O X 38		53		54			61	X 58	X 63	X 70	X 80	O X 84		O X 86	X 83	X 84	O X 72	X 58				
L Q	O X 28	O X 34		O X 38		O X 40			X 41	O X 53	X 56	O X 66	X 67	X 67		X 81	78	X 70	62	44				

MAR. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	R 32	F 21	F 24	F 27	F 29	F 22	F 34	55	J R 51	58	R 66	74	78	80	75	78	78	F 56	R	R	R	A	A
27	B	R	R	F 34	R	A	B	R 42	R 48	52	55	61	68	J R 72	R 66	78	J R 72	68	R 50	48	A	A	A	A
28	A	A	B	B	A	R 34	B	B	B	B	B	B	B	B	B	B	B	B	B	56	R	26	A	R 33
29	R 32	R 28	B	B	R	R	B	B	B	B	R 46	R 59	B	B	B	R 80	F 69	J F 71	R 68	F 38	A	Y	R	R
30	R 30	R	R 34	R 32	R	F 45	R 40	B	B	R 50	B	B	61	61	B	B	B	59	B	B	31	26	R 22	A
31	R 22	28	A	A	B	A	B	A	35	R 44	56	60	B	B	B	B	R 76	78	64	F 30	F 20	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	3	2	3	1	3	2	2	3	4	4	4	3	3	2	3	4	5	4	4	2	2	1	1
MED	R 30	R 28	28	F 32	F 27	F 34	31	38	48	R 50	56	60	68	72	73	78	74	71	60	43	26	26	R 22	R 33
U Q	R 32	R 32		F 34		F 45			55	52	57	64	74	78		R 80	77	78	66	52				
L Q	R 22	28		F 24		F 29			35	R 47	50	60	61	61		75	70	64	53	F 34				

MAR. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	39	51	35	70	49	30	E B 15	E B 24	22	23	E B 29	27	24	28	27	22	21	23	33	32	23	36	44
27	B	38	38	40	36	43	B	40	22	G	E B 28	E B 30	E B 28	G	E B 55	E B 54	E B 53	E B 55	E B 30	E B 14	93	41	40	38
28	55	40	B	B	54	E B 29	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 15	32	34	41	39
29	36	35	B	B	29	32	B	B	B	B	G	E B 26	B	B	B	26	22	E B 29	E B 57	E B 16	41	18	20	22
30	33	29	40	39	31	26	47	B	B	27	B	B	28	E B 52	B	B	B	E B 25	B	B	45	38	31	27
31	32	41	36	38	B	32	B	35	23	E B 24	E B 28	E B 26	B	B	B	B	E B 56	E B 30	E S 50	E B 17	E B 12	40	43	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	6	4	4	5	6	2	3	3	4	4	4	3	3	2	3	4	5	4	5	6	6	6	6
MED	34	38	39	38	36	32	38	35	22	E G 23	26	E B 28	28	E G 24	42	26	38	E B 29	E 40	E B 16	36	36	38	32
U Q	46	40	46	40	62	43		40	E B 24	26	E B 28	E B 30	28	E B 52		E B 54	E B 54	E B 42	E 54	25	45	40	41	39
L Q	32	35	37	36	30	29		E B 15	22	G	G	E B 26	27	G		26	22	23	26	E B 14	32	23	31	24

MAR. 2004 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	21	E S 12	13	12	13	E S 13	14	24	16	18	29	20	18	16	16	19	16	13	12	12	14	13	16
27	B	17	30	13	26	26	B	13	16	19	28	30	28	20	55	54	53	55	30	14	15	13	13	18
28	30	22	B	B	27	29	B	B	B	B	B	B	B	B	B	B	B	B	B	15	14	10	20	11
29	14	12	B	B	25	17	B	B	B	B	19	26	B	B	B	22	19	29	57	16	13	12	13	14
30	13	26	15	14	13	13	19	B	B	22	B	B	26	52	B	B	B	25	B	B	11	11	10	12
31	11	13	30	17	B	16	B	26	16	24	28	26	B	B	B	B	56	30	E S 50	17	12	11	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	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
MED	14	19	30	16	26	16	B	B	B	23	28	30	B	B	B	B	54	30	54	16	12	12	13	13
U Q	B	22	B	B	27	26	B	B	B	B	B	B	B	B	B	B	B	55	B	17	14	13	13	16
L Q	12	13	15	13	13	13	19	14	16	19	19	26	26	20	55	22	19	25	30	14	12	11	12	12

MAR. 2004 fmin (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	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	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	A	F	200	200	232	212	186	258	234	226	E B 220	210	208	214	224	224	220	248	A	216	A	A	A
27	B	A	A	202	A	A	B	A 240	E A 272	218	220	228	220	A 242	B	B	E B 260	E B 254	E B 226	E B 248	A	A	A	A
28	202	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Q 246	A	212	A	A 226
29	220	216	B	B	A	A	B	B	B	B	218	206	B	B	B	E B 246	218	222	E B 270	276	A	Y	A	A
30	214	A	248	224	222	A	A	B	B	E A 236	B	B	224	B	B	B	B	230	B	B	E A 270	240	214	A
31	216	232	A	A	B	A	B	A	E A 256	E B 248	E B 242	222	B	B	B	B	E B 254	220	S	E B 232	E B 276	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	2	1	3	2	1	1	2	3	4	4	4	3	2	1	2	4	5	3	4	3	2	1	1
MED	215	224	248	202	211	232	212	213	E A 258	235	221	221	220	225	214	235	239	221	E B 248	243	E 270	226	214	A 226
U Q	218			224					E A 272	E 242	234	225	224				E B 257	242	E B 270	262	E B 276			
L Q	208			200					E A 256	226	219	213	210				221	220	E B 226	239	216			

MAR. 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	O X 37	O X 31	O X 28	29	36	43	O X 46	O X 48	O X 66	X 67	O X 70	X 75	X 79	X 82	X 86	75	X 54	X 48	X 37	X 26	E G 24	O X 24
2	A	O X 28	A	O X 36	O X 47	53	55	57	X 62	65	O X 72	X 71	X 78	X 80	X 83	X 78	85	X 74	X 50	48	36	X 28	27	26
3	25	18	37	20	40	O X 28	B	B	B	B	B	B	O X 71	O X 73	X 89	O X 83	X 82	X 73	R	A	48	A	O X 41	A
4	A	66	A	A	A	41	A	A	A	X 48	O X 50	B	B	O X 45	O X 54	B	O X 47	O X 47	O X 44	X 36	X 32	O X 28	O X 24	B
5	B	R	R	53	51	60	44	55	X 39	O X 45	R	X 70	X 78	X 90	X 86	X 82	X 78	X 64	X 56	44	O X 28	60	A	A
6	A	53	B	A	A	B	A	B	B	B	B	B	B	B	B	O X 49	B	B	B	B	O X 24	A	A	A
7	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	O X 28	A	A	B
8	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	O X 51	X 56	O X 38	A	X 37	A	A
9	A	A	A	A	A	A	B	40	B	B	B	B	B	B	B	B	B	R	O X 52	38	B	R	A	R
10	B	A	B	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	O X 37	B	O X 24	B	A
11	A	A	B	B	B	A	A	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 45	O X 44	O X 30	B	A	A
13	A	A	A	X 78	A	A	A	B	B	O X 43	B	B	B	B	B	X 78	B	B	B	B	B	B	B	R
14	Y	R	R	B	Y	A	B	B	O X 38	X 46	B	O X 61	X 66	X 76	O X 72	X 70	O X 66	O X 54	44	36	31	O X 24	B	B
15	B	37	A	24	O X 29	O X 30	O X 28	34	O X 44	O X 50	65	X 74	O X 85	X 86	X 86	X 89	X 82	X 55	X 49	O X 48	29	A	93	A
16	A	A	A	A	59	A	38	A	B	B	B	B	B	B	O X 79	B	O X 71	O X 60	56	O X 29	Y	A	A	B
17	A	A	52	B	A	A	A	A	B	B	B	O X 65	O X 49	O X 66	X 74	X 75	X 63	X 65	O X 52	B	B	A	A	O X 38
18	A	A	A	B	O X 44	O X 33	A	A	B	B	B	B	B	O X 78	B	O X 74	B	B	X 56	O X 39	A	A	A	A
19	34	A	A	A	B	R	A	A	A	A	O X 49	B	R	28	O X 68	O X 67	B	O X 63	O X 45	38	26	A	28	O X 28
20	A	O X 34	O X 44	A	A	R	R	R	43	O X 49	X 49	R	X 68	X 78	X 83	X 74	X 68	59	41	36	26	O X 22	A	O X 28
21	O X 53	O X 45	A	A	38	41	56	66	A	X 62	B	77	91	X 90	84	X 92	84	62	47	50	34	O X 23	A	O X 23
22	O X 23	A	O X 40	A	O X 32	41	44	34	39	X 53	O X 69	X 76	X 86	X 98	X 98	X 102	X 79	X 76	47	34	O X 22	O X 22	O X 22	A
23	A	R 28	A	58	59	A	A	A	X 48	B	65	68	O X 68	B	O X 102	92	O X 86	B	A	A	O X 48	A	A	A
24	A	72	87	O X 40	41	O X 38	A	X 42	B	B	B	O X 63	B	X 79	80	96	75	X 62	O X 46	B	B	B	A	A
25	41	A	B	A	A	A	44	B	B	B	B	B	B	B	B	B	B	B	B	X 41	B	A	A	40
26	A	O X 35	A	O X 40	A	A	B	A	36	X 42	B	B	B	X 66	X 67	X 64	X 53	X 40	X 41	O X 33	B	B	B	A
27	X 29	O X 36	A	O X 33	O X 28	31	32	32	36	X 44	X 57	O X 67	O X 73	X 81	X 79	X 85	X 64	X 45	X 47	X 33	28	X 22	O X 31	B
28	A	A	33	O X 42	O X 42	A	36	37	40	X 44	O X 55	O X 63	O X 74	X 73	X 79	X 85	X 60	X 41	42	X 29	34	31	A	A
29	A	A	O X 35	R	A	X 28	33	33	B	O X 44	X 59	X 63	O X 75	X 79	O X 80	X 74	68	41	42	35	O X 26	R	R	X 16
30	A	A	O X 27	O X 25	22	35	B	B	B	B	B	B	B	X 78	74	X 62	O X 55	O X 44	O X 35	O X 30	O X 25	B	B	70
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	11	9	12	14	13	11	11	11	14	11	13	14	19	20	21	19	20	22	22	19	12	8	9
MED	32	36	O X 37	O X 38	40	35	38	40	X 40	X 47	O X 59	X 67	O X 74	X 78	X 80	X 78	X 71	X 60	X 47	X 38	X 29	X 25	28	O X 28
U Q	41	53	48	48	47	41	44	55	X 46	X 50	O X 66	X 72	X 78	X 81	X 85	X 87	X 82	X 64	X 52	44	34	30	O X 36	39
L Q	25	28	O X 34	28	O X 29	X 30	33	34	38	X 44	O X 50	O X 63	X 68	X 73	X 74	X 72	X 63	X 46	44	X 34	O X 26	O X 22	O X 24	O X 24

APR. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	R 25	R 22	F 18	F 24	F 30	R 40	R 42	R 60	61	64	J R 69	73	76	80	F 65	48	42	31	20	E G 18	E G 18
2	A	22	A	R 30	R 41	F 38	F 40	F 44	56	F 56	R 66	65	72	74	77	72	F 74	68	44	F 38	F 28	22	F 17	F 17
3	F 15	F	F 14	F	19	22	B	B	B	B	B	B	R 65	R 67	J R 83	R 77	76	67	R	A	F 21	A	R 35	A
4	A	F 29	A	A	A	F 30	A	A	A	42	R 44	B	B	R 39	R 48	B	R 41	R 41	R 38	30	26	22	R 18	B
5	B	R	R	F 30	F 32	34	F 30	F 27	33	R 39	R	64	J R 72	J R 84	80	76	72	58	50	28	R 22	R 34	A	A
6	A	F 30	B	A	A	B	A	B	B	B	B	B	B	B	B	R 43	B	B	B	B	R 18	A	A	A
7	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R 22	A	A	B
8	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	R 45	50	R 32	A	31	A	A
9	A	A	A	A	A	A	B	F 29	B	B	B	B	B	B	B	B	B	R	R 46	F 29	B	R	A	R
10	B	A	B	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	R 31	B	18	B	A
11	A	A	B	B	B	A	A	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 39	38	R 24	B	A	A
13	A	A	A	J R 72	A	A	A	B	B	R 37	B	B	B	B	B	72	B	B	B	B	B	B	B	R
14	Y	R	R	B	Y	A	B	B	R 32	40	B	R 55	60	J R 70	R 66	64	R 60	R 48	F 34	F 26	22	18	B	B
15	B	F 26	A	F 16	23	R 24	22	F 23	38	R 44	F 57	68	79	80	80	83	76	49	43	42	F 20	A	A	A
16	A	A	A	A	R 50	A	F 26	A	B	B	B	B	B	B	R 73	B	R 65	R 54	F 46	23	Y	A	A	B
17	A	A	F 20	B	A	A	A	A	B	B	B	R 59	R 43	60	J R 68	69	57	59	R 46	B	B	A	A	R 32
18	A	A	A	B	R 38	R 27	A	A	B	B	B	B	B	R 72	B	R 68	B	B	J R 50	R 33	A	A	A	A
19	F 26	A	A	A	B	R	A	A	A	A	R 43	B	R	25	R 62	R 61	B	R 57	39	F 28	F 17	A	F 18	22
20	A	R 28	R 38	A	A	A	A	A	F 33	R 43	J R 43	R	62	72	77	68	62	F 46	F 30	F 27	F 16	R 16	A	R 22
21	R 47	R 39	A	A	F 26	F 28	F 28	F 24	A	56	B	F 66	F 80	J R 84	F 74	J R 86	F 78	F 50	F 38	F 38	F 25	17	A	R 17
22	R 17	A	R 34	A	26	F 26	F 26	F 25	F 28	47	63	70	80	J R 92	92	J R 96	J R 73	70	F 38	F 25	16	R 16	R 16	A
23	A	22	A	F 30	F 26	A	A	A	42	B	F 53	F 60	62	B	R 96	F 79	80	B	A	A	R 42	A	A	A
24	A	F 57	54	R 34	F 32	32	A	36	B	B	B	57	B	73	F 68	F 90	F 64	56	R 40	B	B	B	A	A
25	F 32	A	B	A	A	A	F 34	B	B	B	B	B	B	B	B	B	B	B	B	35	B	A	A	F 30
26	A	R 29	A	R 34	A	A	B	A	F 26	36	B	B	B	60	61	58	47	34	35	R 27	B	B	B	A
27	23	R 30	A	R 27	R 22	F 20	F 22	F 22	F 26	38	51	61	R 67	J R 75	73	79	58	39	41	27	F 18	16	R 25	B
28	A	A	F 22	R 36	R 36	A	F 23	F 21	F 28	38	R 49	57	68	67	73	79	54	35	F 32	23	F 26	F 21	A	A
29	A	A	R 29	A	A	22	F 23	F 20	B	R 38	53	J R 57	R 69	73	74	68	F 61	F 33	F 27	F 26	R 20	R	R	J R 10
30	A	A	R 21	R 19	F 16	F 26	B	B	B	B	B	B	B	J R 72	F 62	56	R 49	R 38	R 29	R 24	R 19	B	B	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	10	9	11	14	13	11	11	11	14	11	13	14	19	20	21	19	20	22	22	19	12	7	8
MED	24	29	R 29	R 30	26	F 26	F 26	F 25	33	41	R 53	61	68	R 72	73	72	64	50	40	28	22	19	R 18	20
U Q	32	R 30	R 36	R 34	R 36	31	F 30	F 30	40	44	R 60	66	72	J R 75	78	79	76	58	46	35	26	22	R 25	R 26
L Q	17	26	F 20	R 25	22	22	F 23	F 22	F 28	38	R 44	57	62	67	67	66	57	40	F 35	26	F 18	16	17	R 17

APR. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	K 27	27	32	32	23	17	22	14	E B 18	21	24	E B 27	28	30	26	24	21	18	15	16	16	17	E S 13	22
2	27	16	34	41	36	34	21	15	18	22	23	22	26	24	24	23	22	20	14	13	26	27	27	19
3	20	E S 13	16	22	26	29	B	B	B	B	B	B	E B 37	E B 55	E B 39	E B 55	E B 25	E B 26	36	58	Q 31	89	48	78
4	43	71	38	101	37	20	35	35	40	G	G 26	B	B	E B 30	E B 26	B	E B 26	E B 20	E B 26	E S 13	E S 12	16	16	B
5	B	21	37	34	33	31	18	19	E B 16	23	22	27	26	26	28	23	23	21	17	24	31	44	72	68
6	41	34	B	42	37	B	37	B	B	B	B	B	B	B	B	E B 26	B	B	B	B	29	38	39	35
7	35	B	B	B	B	B	B	37	B	B	B	B	B	B	B	B	B	B	B	B	E B 12	29	39	B
8	34	47	B	B	B	40	38	B	B	B	B	B	B	B	B	B	B	E B 31	29	E B 17	23	38	40	40
9	35	46	39	38	36	38	B	20	B	B	B	B	B	B	B	B	B	E B 30	E B 16	E B 20	B	24	26	22
10	B	36	B	38	46	36	B	B	B	34	B	B	B	B	B	B	B	B	B	E B 21	B	E S 12	B	36
11	96	59	B	B	B	36	30	34	69	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 29	E B 25	E B 19	B	39	40
13	30	K 35	34	40	41	41	36	B	B	32	B	B	B	B	B	E B 21	B	B	B	B	B	B	B	22
14	20	27	28	B	19	35	B	B	33	22	B	E B 37	27	26	E B 28	E B 31	E B 21	22	22	E B 19	E B 12	E S 13	B	B
15	B	33	29	18	32	32	24	28	17	E B 25	24	23	20	G	24	23	18	E S 13	E B 12	E B 18	E B 16	48	54	45
16	46	44	64	34	24	38	28	34	B	B	B	B	B	B	E B 56	B	E B 54	E B 31	E B 14	39	15	29	42	B
17	38	34	E S 46	B	49	46	48	35	B	B	B	E B 34	E B 27	E B 29	E B 30	E B 30	18	23	E B 26	B	B	36	40	42
18	56	50	47	B	42	34	32	43	B	B	B	B	B	E B 54	B	E B 56	B	B	E B 26	42	K 30	K 31	K 31	K 32
19	J A 59	77	40	64	B	34	36	40	34	38	E B 27	B	E B 31	A 28	E B 53	E B 30	B	E B 24	E B 20	E S 12	E S 13	37	33	30
20	32	37	47	42	38	34	38	40	32	16	15	E B 26	E B 25	E B 26	E B 29	20	16	E S 13	E S 12	E S 12	E S 12	18	34	18
21	41	49	43	42	37	20	22	19	35	E B 18	B	22	E B 24	E B 29	E B 25	E B 22	E B 18	E B 14	E S 13	E S 13	23	E S 12	34	20
22	18	33	K 37	K 41	33	37	E S 14	E S 13	15	15	17	E B 25	22	E B 25	22	E B 20	27	E S 12	16	17	E S 13	17	16	31
23	32	34	35	64	38	K 51	51	41	48	B	E B 29	22	E B 26	B	E B 54	E B 35	K 18	B	42	39	46	51	43	40
24	76	79	100	43	67	50	43	42	B	B	B	E B 26	B	E B 52	E B 30	E B 26	28	32	E B 29	B	B	B	23	33
25	37	39	B	64	52	51	40	B	B	B	B	B	B	B	B	B	B	B	B	22	B	32	30	26
26	35	36	38	42	35	44	B	36	30	28	B	B	B	E B 27	E B 26	E B 26	E B 16	E B 16	E B 19	E B 18	B	B	B	38
27	37	42	K 36	36	34	27	27	18	E S 12	24	20	17	23	E B 25	36	29	17	16	E S 13	E S 13	E S 13	E S 12	33	B
28	28	31	42	51	43	42	27	18	19	16	21	23	E B 25	23	21	18	16	30	30	27	22	31	42	85
29	46	88	48	37	35	30	E S 14	E S 13	B	31	E B 21	E B 33	E B 26	22	22	E B 18	E B 16	E S 14	E S 13	E S 13	E B 15	23	20	17
30	32	40	32	28	18	23	B	B	B	B	B	B	B	E B 52	E B 25	E B 24	E B 21	E B 20	E B 15	E B 14	E B 16	B	B	42
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	23	23	25	27	22	21	15	17	12	14	15	19	20	21	19	21	24	24	22	24	24	24
MED	35	36	38	41	36	35	31	34	30	22	22	24	E B 26	E B 27	E B 27	E B 24	20	E 20	E 18	E 18	16	29	34	34
U Q	43	48	46	43	42	41	38	38	35	32	25	E B 27	27	E B 30	E B 33	E B 30	E B 25	E B 28	28	24	26	38	41	41
L Q	30	33	34	34	32	30	22	18	17	17	20	22	24	25	24	E B 22	17	E S 15	E S 14	E S 13	E S 13	E S 17	26	22

APR. 2004 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	10	12	12	13	11	11	10	18	16	16	27	20	24	20	18	17	11	10	11	10	13	E S 13	12
2	12	12	12	12	17	12	11	11	12	14	16	18	18	19	15	12	12	11	10	10	12	13	12	12
3	12	E S 13	13	14	11	10	B	B	B	B	B	B	37	55	39	55	25	26	31	16	12	13	14	14
4	29	11	29	15	12	12	12	20	29	16	18	B	B	30	26	B	26	20	26	E S 13	E S 12	12	12	B
5	B	12	13	13	12	12	12	13	16	19	20	17	16	15	18	18	16	11	12	10	10	10	16	16
6	10	10	B	22	27	B	15	B	B	B	B	B	B	B	B	25	B	B	B	B	11	10	10	19
7	15	B	B	B	B	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	12	10	10	B
8	25	29	B	B	B	21	16	B	B	B	B	B	B	B	B	B	B	31	14	17	12	10	10	10
9	26	19	17	19	26	19	B	12	B	B	B	B	B	B	B	B	B	30	16	20	B	16	12	14
10	B	22	B	28	16	18	B	B	B	26	B	B	B	B	B	B	B	B	B	21	B	E S	B	13
11	14	12	B	B	B	25	19	14	29	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	25	19	B	25	14
13	15	15	13	29	20	19	25	B	B	27	B	B	B	B	B	21	B	B	B	B	B	B	B	14
14	12	13	13	B	12	15	B	B	18	17	B	37	22	21	28	31	21	18	13	19	12	E S 13	B	B
15	B	13	19	12	12	14	13	13	12	25	13	12	16	19	14	14	14	E S 12	12	18	16	13	13	12
16	13	12	29	30	18	18	13	19	B	B	B	B	B	B	56	B	54	31	14	13	13	12	16	B
17	24	16	13	B	13	19	16	25	B	B	B	34	27	29	30	30	15	13	26	B	B	13	13	14
18	13	18	20	B	17	E B 13	15	12	B	B	B	B	B	54	B	56	B	B	26	13	7	7	6	11
19	12	27	19	16	B	26	30	21	30	26	27	B	31	28	53	30	B	24	20	E S 12	E S 13	13	E S 13	13
20	14	14	15	14	22	15	14	12	13	12	10	26	25	26	29	15	13	E S 13	E S 12	E S 12	E S 12	12	16	13
21	12	14	19	19	13	13	16	12	28	18	B	19	24	29	25	22	18	14	E S 13	E S 13	12	E S 12	13	14
22	14	13	13	22	14	13	E S 14	E S 13	12	13	12	25	19	25	19	20	13	E S 12	12	12	E S 13	12	14	13
23	14	E S 12	13	13	13	16	13	14	13	B	29	18	26	B	54	35	E S 14	B	13	12	12	13	13	16
24	14	13	14	13	14	13	12	12	B	B	B	26	B	52	30	26	22	12	29	B	B	B	15	13
25	14	13	B	12	21	15	14	B	B	B	B	B	B	B	B	B	B	B	B	13	B	14	12	12
26	13	13	15	16	14	17	B	13	11	12	B	B	B	27	26	26	16	16	19	18	B	B	B	12
27	14	12	12	13	13	12	12	13	E S 12	14	17	12	16	25	21	18	13	13	E S 13	E S 13	E S 13	E S 12	12	B
28	E S 12	E S 12	12	13	13	14	12	12	11	12	12	17	25	19	18	16	12	12	12	12	12	12	14	12
29	13	21	14	30	20	15	E S 14	E S 13	B	15	21	33	26	19	18	18	16	E S 14	E S 13	13	15	15	13	14
30	E S 14	14	13	13	14	13	B	B	B	B	B	B	B	52	25	24	21	20	15	14	16	B	B	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	29	30	30
MED	14	13	15	18	15	15	15	14	B 26		B	B	B 41		30	28	22	20	16	14	13	13	13	14
U Q	24	18	B 29	B 30	B 22	19	B	B	B	B	B	B	B	B	B	B	B	B	B 29	B 21	B	B 16	B 16	B 16
L Q	12	12	13	13	13	13	13	12	13	16	18	25	24	25	21	18	15	13	13	12	12	12	12	12

APR. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	224	214	A	A	A	A 220	E B 248	220	222	220	232	220	218	220	214	Q 198	190	194	210	A 260	S 252	A
2	A	A	A 212		218	332	232	182	236	226	214	210	200	214	Q 214	200	212	200	186	192	202	S 222	216	S 250
3	S	S	S	S	E A 252	A	B	B	B	B	B	B	E B 260	B	270	E B 264	242	230	A	A	F	204	238	224
4	A	A	A	A	A	A	A	A	A	E A 276	A 250	B	B	E B 252	240	B	E B 252	E B 248	E B 262	E S 228	240	S 248	A	B
5	B	A	A	222	220	228	A	A	192	252	218	E A 234	216	222	228	A 230	Q 222	Q 228	250	A 276	188	A 216	A	A
6	A	204	B	A	A	B	A	B	B	B	B	B	B	B	B	E B 268	B	B	B	B	A 282	A	A	A
7	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E B 246	A	A	B
8	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	E B 274	276	E B 272	A	E A 268	A	A
9	A	A	A	A	A	A	B	278	B	B	B	B	B	B	B	B	B	228	224	E B 228	B	A	A	A
10	B	A	B	A	A	E A 232	B	B	B	A	B	B	B	B	B	B	B	B	B	E B 262	B	E S 252	B	A
11	A	A	B	B	B	A	A	204	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 260	E B 238	E B 270	B	A	A
13	A	A	A	200	A	A	A	B	B	E A 290	B	B	B	B	B	232	B	B	B	B	B	B	B	A
14	Y	A	A	B	Y	A	B	B	A	E A 246	B	E B 258	234	234	216	214	202	A 202	212	E B 222	220	E S 232	B	B
15	B	220	A	S	A 228	A 228	A	A 250	Q 240	234	212	218	216	212	220	200	192	178	206	218	E B 280	A	A	A
16	A	A	A	A	E A 232	A	A	A	B	B	B	B	B	B	E B 288	B	E B 244	E B 246	232	232	Y	224	A	B
17	A	A	Q 170	B	A	A	A	A	B	B	B	E B 270	E B 242	E B 258	244	218	206	240	218	B	B	A	A	A
18	214	A	A	B	216	230	A	A	B	B	B	B	B	E B 268	B	E B 252	B	B	E B 240	224	A	A	A	A
19	A 308	A	A	A	B	A	A	A	A	A	E B 260	B	E B 272	A	E B 280	228	B	E B 228	E B 224	S 222	E S 230	A	A	A
20	A	A 262	E A 232	A	A	A	A	A	E A 286	232	224	224	228	224	222	204	196	Q 196	208	Q 194	S 214	S	A	A
21	A 226	218	A	A	226	S	S	A	A	Q 234	B	Q 216	Q 216	212	200	196	198	198	Q 214	204	A 248	E S 248	A	E S 230
22	A	A	A	A	A	212	S	S	258	226	216	210	210	220	204	196	190	196	Q 192	212	E S 208	S	S	A
23	A	212	A	E A 230	204	A	A	A	A	B	E B 236	246	E B 232	B	E B 250	E B 222	238	B	A	A	226	A	A	A
24	A	236	230	230	196	A	A	A	B	B	B	E B 226	B	E B 272	234	218	206	218	234	B	B	B	A	228
25	A 268	A	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	242	B	A	A	A
26	A	E A 258	A	222	A	A	B	A	A	274	B	B	B	E B 242	216	212	200	200	212	B 218	B	B	B	A
27	224	A 234	A	A 248	E A 272	208	206	A	282	232	226	218	218	208	202	210	184	A 222	S 208	194	S	S	A	B
28	A	A	216	226	204	208	A	A	200	226	226	218	224	208	204	200	190	178	206	A	230	A	A	A
29	A	A	E A 222	A	A	A	S	E S 308	B	E A 290	228	E B 234	E B 224	E B 218	200	194	Q 188	S 182	Q 222	E B 222	E B 274	A	A	E A 278
30	A	A	238	A 200	A	A	B	B	B	B	B	B	B	E B 262	210	200	204	214	208	224	E B 226	B	B	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	5	8	7	10	11	8	2	6	8	14	12	14	15	17	20	21	19	21	22	21	17	10	3	5
MED	A 226	223	223	220	212	224	219	U 224	U 231	230	222	218	220	217	217	207	202	206	212	217	222	U 230	238	229
U Q	A 288	A 247	232	A 230	E A 232	231		278	270	E A 274	232	E B 234	E B 234	E B 255	242	229	222	229	234	235	E B 259	E A 252	S 252	264
L Q	219	215	216	212	204	210		204	218	226	217	218	216	213	207	200	192	197	208	208	212	222	216	226

APR. 2004 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	48	O X 48	O X 44	X 35	B	B	B	A	B	B	B	B	B	B	B	B	B	R	B	R	X 40	O X 26
2	B	O X 41	58	B	B	B	O X 45	B	B	B	X 48	O X 56	X 67	X 69	X 74	68	X 55	36	X 28	22	B	B	B	A
3	A	A	A	B	A	A	A	B	A	X 42	X 58	X 68	B	B	B	O X 80	B	49	B	B	B	A	A	A
4	A	A	B	A	A	B	A	B	A	A	B	B	B	B	B	O X 58	X 64	B	B	B	B	B	A	A
5	A	A	A	B	A	B	A	B	B	B	43	B	B	B	B	B	B	O X 50	X 40	B	89	A	A	A
6	A	O X 38	A	A	A	B	A	O X 38	B	B	B	B	B	X 78	B	B	O X 49	B	B	B	B	B	64	X 33
7	O X 37	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
8	54	A	B	B	A	B	A	B	B	B	B	B	X 57	B	B	B	B	B	X 34	B	A	A	A	A
9	A	A	B	B	A	B	B	B	B	B	B	B	O X 73	X 103	X 80	X 77	O X 69	B	B	B	A	B	Y	O X 23
10	B	A	A	32	30	32	B	B	O X 32	X 40	O X 54	74	X 80	X 82	X 86	56	O X 44	O X 33	O X 31	B	Y	B	A	A
11	O X 40	42	O X 44	B	A	A	B	B	B	O X 40	O X 44	X 56	X 61	O X 56	X 67	X 54	O X 46	X 38	O X 34	O X 27	B	Y	A	A
12	O X 40	A	B	A	A	A	B	B	77	A	B	B	B	B	B	O X 51	O X 48	B	B	B	B	B	R	A
13	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R	O X 30
14	B	A	A	R	R	R	A	A	R	B	B	B	B	X 64	O X 73	O X 47	X 48	X 48	O X 33	B	B	B	R	O X 30
15	53	55	F	86	O X 88	B	B	R	A	O X 42	R	B	79	X 74	B	B	B	O X 43	B	B	B	O X 24	A	X 40
16	A	55	R	X 48	A	A	A	A	B	A	B	B	59	X 70	B	B	O X 49	B	B	B	B	31	O X 36	X 38
17	A	B	A	O X 52	57	R	B	A	O X 38	45	52	69	O X 84	77	X 74	52	44	X 33	B	B	B	B	B	B
18	B	O X 34	B	A	O X 41	X 38	39	B	40	47	X 50	X 68	X 73	X 76	69	60	43	30	O X 24	B	B	Y	B	B
19	B	Y	B	32	O X 36	38	37	O X 45	B	B	X 47	65	X 65	X 77	66	X 59	O X 46	B	35	29	A	A	A	O X 30
20	A	O X 40	54	54	A	X 38	48	56	48	53	B	B	O X 54	X 58	B	X 103	B	B	B	A	A	O X 27	A	A
21	49	A	36	A	A	A	A	B	B	B	B	B	B	O X 50	B	78	43	O X 46	O X 32	B	B	B	B	B
22	B	A	A	56	O X 40	A	40	44	O X 35	B	B	O X 49	B	B	76	68	X 42	B	B	B	B	B	B	B
23	A	A	43	42	A	B	B	B	B	B	O X 48	O X 58	O X 66	68	B	49	50	X 44	O X 35	B	B	A	A	A
24	O X 39	A	O X 42	B	A	A	A	O X 41	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	R	R	O X 37	O X 37	A	A	B	A	O X 38	38	40	65	B	B	B	O X 49	B	O X 34	B	B	B	B	B	B
26	B	33	26	26	A	A	A	X 28	30	33	A	O X 58	X 62	66	X 60	49	X 36	B	B	B	B	B	B	B
27	B	A	32	24	O X 24	O X 24	X 39	43	43	40	41	B	B	B	B	B	B	B	B	B	B	B	B	B
28	R	A	X 28	O X 29	O X 24	A	42	44	41	36	X 44	X 46	X 66	53	O X 52	59	43	O X 37	B	O X 29	B	A	A	A
29	A	X 46	X 43	O X 33	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	A	Y	Y	A	40
30	A	A	B	B	R	O X 20	B	B	B	R	O X 42	O X 53	62	O X 66	O X 73	B	B	B	B	B	B	A	72	A
31	A	A	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	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	7	9	12	14	9	7	7	8	11	11	13	13	15	17	12	18	17	13	10	4	1	3	4	9
MED	O X 40	X 41	42	40	O X 40	X 35	40	44	38	40	X 47	X 58	X 66	X 69	X 73	58	X 46	X 38	O X 34	28	89	O X 27	52	O X 30
U Q	53	50	46	52	O X 50	X 38	45	44	43	45	X 51	68	X 73	X 77	X 75	X 68	X 50	X 47	X 35	29		31	68	X 39
L Q	O X 39	O X 36	34	32	O X 27	O X 24	39	O X 40	O X 35	38	42	X 54	X 61	X 61	X 66	O X 51	43	X 34	O X 31	24		O X 24	X 38	O X 28

MAY 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	F 30	R 42	38	F 27	B	B	B	A	B	B	B	B	B	B	B	B	B	R	B	A	34	R 20
2	B	R 35	R 32	B	B	B	R 39	B	B	B	42	R 50	61	63	68	F 58	J R 49	F 26	22	F 17	B	B	B	A
3	A	A	A	B	A	A	A	B	A	36	J R 52	62	B	B	B	R 74	B	F 41	B	B	B	A	A	A
4	A	A	B	A	A	B	A	B	A	A	B	B	B	B	B	R 52	58	B	B	B	B	B	A	A
5	A	A	A	B	A	B	A	B	B	B	F 34	B	B	B	B	B	B	R 44	34	B	A	A	A	A
6	A	R 32	A	A	A	B	A	R 32	B	B	B	B	B	72	B	B	R 43	B	B	B	B	B	33	27
7	R 31	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
8	F 48	A	B	B	A	B	A	B	B	B	B	B	J R 51	B	B	B	B	B	28	B	A	A	A	A
9	A	A	B	B	A	B	B	B	B	B	B	B	R 67	J R 97	74	J R 71	R 63	B	B	B	A	B	Y	R 17
10	B	A	A	F 20	F 18	F 23	B	B	R 26	34	R 48	F 64	74	J F 76	80	F 47	R 38	R 27	R 25	B	Y	B	A	A
11	R 34	31	R 38	B	A	A	B	B	B	R 34	R 38	50	J R 55	R 50	61	48	R 40	32	R 28	R 21	B	Y	A	A
12	R 34	A	B	A	A	A	B	B	A	A	B	B	B	B	B	R 45	R 42	B	B	B	B	B	R	A
13	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R	R 24
14	B	A	A	A	A	R	A	A	A	B	B	B	B	58	R 67	R 41	42	42	R 27	B	B	B	R	R 24
15	A	F 29	F	F 34	R 82	B	B	A	A	R 36	A	B	F 68	68	B	B	B	R 37	B	B	B	R 18	A	34
16	A	R 40	A	42	A	A	A	A	B	A	B	B	F 50	64	B	B	R 43	B	B	B	B	R 19	R 30	32
17	A	B	A	R 46	A	A	B	A	R 32	F 33	F 44	F 57	78	F 65	J R 68	F 42	F 30	27	B	B	B	B	B	B
18	B	R 28	B	A	R 35	32	F 28	B	F 31	F 33	44	62	67	70	F 57	F 48	F 34	F 20	R 18	B	B	Y	B	B
19	B	Y	B	F 23	R 30	F 28	F 26	R 39	B	B	R 41	F 61	59	J R 71	F 56	53	R 40	B	F 25	F 17	A	A	A	R 24
20	A	R 34	F 38	F 34	A	32	F 32	F 32	F 29	F 18	B	B	R 48	J R 52	B	97	B	B	B	A	A	R 21	A	A
21	F 28	A	F 27	A	A	A	A	B	B	B	B	B	B	R 44	B	F 69	F 32	R 40	R 26	B	B	B	B	B
22	B	A	A	R 32	R 34	A	F 25	F 27	R 29	B	B	R 43	B	B	F 63	F 55	36	B	B	B	B	B	B	B
23	A	A	A	F 34	A	B	B	B	B	B	R 42	R 52	R 60	F 60	B	F 41	F 44	38	R 29	B	B	A	A	A
24	R 33	A	R 36	B	A	A	A	R 35	F 26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	R	A	R 31	R 31	A	A	B	A	R 32	F 28	33	F 57	B	B	B	R 43	B	R 28	B	B	B	B	B	B
26	B	F 19	F 16	F 15	A	A	A	22	F 20	F 23	A	R 52	56	F 56	J R 54	F 38	30	B	B	B	B	B	B	B
27	B	A	F 18	F 15	R 18	R 18	33	F 22	F 26	F 19	F 31	B	B	B	B	B	B	B	B	B	B	B	B	B
28	R	A	22	R 23	R 18	A	F 34	F 26	F 25	F 21	38	40	60	F 41	R 46	F 48	F 34	R 31	B	R 23	B	A	A	A
29	A	J R 40	37	R 27	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	A	Y	Y	A	F 30
30	A	A	B	B	R	R 14	B	B	B	R	R 36	R 47	56	R 60	R 67	B	B	B	B	B	B	A	F 32	A
31	A	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	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	9	11	14	8	7	7	8	10	11	13	13	15	17	12	18	17	13	10	4		3	4	9
MED	R 34	R 32	31	32	R 32	27	F 32	30	F 28	F 33	41	52	60	63	65	48	40	32	R 26	19		R 19	32	R 24
U Q	34	R 38	37	34	R 36	32	34	R 34	R 31	R 34	44	62	67	J 70	68	58	R 44	40	R 28	R 22		R 21	34	31
L Q	31	F 28	F 22	F 23	R 18	R 18	F 26	F 24	F 26	F 21	35	48	R 55	R 54	56	F 43	F 34	27	25	F 17		R 18	31	R 22

MAY 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	43	32	27	40	36	B	B	B	40	B	B	B	B	B	B	B	B	B	23	B	23	42	35
2	B	42	38	B	B	B	31	B	B	B	19	22	21	21	27	17	32	28	E B 13	E B 13	B	B	B	36
3	40	44	48	B	36	42	34	B	36	26	23	21	B	B	B	E B 57	B	E B 15	B	B	B	23	44	43
4	44	38	B	57	33	B	43	B	40	38	B	B	B	B	B	E B 27	E B 16	B	B	B	B	B	27	39
5	84	40	42	B	37	B	38	B	B	B	E B 21	B	B	B	B	B	B	E B 25	E B 22	B	50	49	49	43
6	92	67	48	49	43	B	46	38	B	B	B	B	B	E B 25	B	B	E B 31	B	B	B	B	B	39	36
7	40	43	B	B	B	B	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	42	30	33
8	56	92	B	B	43	B	39	B	B	B	B	B	E B 27	B	B	B	B	B	E B 18	B	36	40	40	34
9	42	33	B	B	38	B	B	B	B	B	B	B	E B 52	E B 33	E B 26	E B 55	E B 32	B	B	B	K 35	B	21	E S 13
10	B	35	23	27	27	K 24	B	B	23	K 19	E B 20	E B 20	E B 18	E B 19	E B 25	E B 19	E B 28	E B 15	E B 16	B	16	B	32	39
11	43	33	48	B	40	38	B	B	B	E B 28	21	E B 20	E B 25	E B 25	E B 26	19	E B 16	E B 14	E B 15	E B 14	B	22	37	43
12	37	87	B	39	44	37	B	B	40	39	B	B	B	B	B	E B 32	E B 25	B	B	B	B	B	26	39
13	42	43	44	44	42	40	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	42	K 30	74
14	B	31	30	40	29	26	43	60	36	B	B	B	B	E B 27	E B 29	E B 29	E S 13	E B 19	20	B	B	B	26	37
15	37	50	66	52	88	B	B	35	42	49	37	B	E B 34	E B 30	B	B	B	E B 30	B	B	B	31	K 40	41
16	45	48	39	32	42	41	47	58	B	46	B	B	E B 25	E B 22	B	B	E B 28	B	B	B	B	30	36	40
17	60	B	33	40	39	38	B	35	34	38	16	20	19	20	15	26	34	19	B	B	B	B	B	B
18	B	42	B	43	50	26	22	B	39	17	25	24	26	21	18	E B 16	26	18	16	B	B	19	B	B
19	B	18	B	E B 16	16	E B 14	21	E B 28	B	B	E B 21	16	23	26	21	E B 15	E B 24	B	E S 13	24	44	41	40	32
20	42	43	36	42	31	43	20	E S 16	22	E S 12	B	B	E B 26	E B 22	B	E B 56	B	B	B	36	33	31	40	50
21	87	64	38	129	35	41	47	B	B	B	B	B	B	E B 34	B	E B 33	E B 18	E B 21	E B 18	B	B	B	B	B
22	B	31	40	37	45	44	37	33	40	B	B	E B 26	B	B	E B 25	E B 26	E B 14	B	B	B	B	B	B	B
23	31	42	52	38	52	B	B	B	B	B	E B 27	E B 25	E B 22	K 19	B	E B 20	E B 12	E B 16	E B 19	B	B	42	43	37
24	42	38	42	B	36	67	41	43	E B 19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	23	26	38	56	38	42	B	32	41	30	28	E B 47	B	B	B	E B 28	B	E B 17	B	B	B	B	B	B
26	B	29	26	28	49	36	34	36	31	23	30	31	E B 26	E B 25	E B 26	17	E B 14	B	B	B	B	B	B	B
27	B	31	21	49	32	40	44	23	28	24	38	B	B	B	B	B	B	B	B	B	B	B	B	B
28	22	29	57	24	32	46	41	28	24	27	30	28	27	36	E B 25	E B 16	20	34	B	21	B	35	48	64
29	32	48	50	33	42	66	B	B	B	34	35	B	B	B	B	B	B	B	B	39	22	14	38	42
30	74	35	B	B	32	37	B	B	B	38	E B 22	24	22	E B 52	E B 56	B	B	B	B	B	B	34	53	58
31	42	45	42	40	41	B	B	B	39	B	B	B	B	B	B	B	B	B	B	B	B	B	35	47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	30	23	22	29	21	18	14	16	17	16	13	15	17	12	18	17	13	10	7	7	16	22	23
MED	42	42	40	40	39	40	38	34	36	30	23	22	E B 25	E B 25	E B 26	E B 26	E B 24	E B 19	E B 17	23	35	32	38	39
U Q	60	45	48	49	43	42	43	38	40	38	30	27	E B 27	E B 32	E B 26	E B 32	E B 30	26	E B 19	36	44	42	42	43
L Q	37	33	33	32	32	36	34	28	26	24	E B 21	20	22	21	23	E B 17	E B 15	E B 16	E B 15	E B 14	22	23	30	36

MAY 2004 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	13	15	12	12	B	B	B	29	B	B	B	B	B	B	B	B	B	15	B	12	12	13
2	B	13	13	B	B	B	18	B	B	B	16	16	13	15	16	16	16	13	13	13	B	B	B	13
3	16	13	16	B	16	20	22	B	15	14	18	16	B	B	B	57	B	15	B	B	B	E S 14	14	13
4	21	22	B	28	26	B	16	B	20	19	B	B	B	B	B	27	16	B	B	B	B	B	14	14
5	14	18	31	B	30	B	16	B	B	B	21	B	B	B	B	B	B	25	22	B	13	13	13	13
6	14	14	14	23	14	B	14	13	B	B	B	B	B	25	B	B	31	B	B	B	B	B	14	13
7	14	16	B	B	B	B	B	29	B	B	B	B	B	B	B	B	B	B	B	B	B	13	17	16
8	16	29	B	B	19	B	31	B	B	B	B	B	27	B	B	B	B	B	18	B	9	9	8	27
9	8	18	B	B	20	B	B	B	B	B	B	B	52	33	26	55	32	B	B	B	13	B	13	13
10	B	13	13	13	13	13	B	B	15	16	20	20	18	19	25	19	28	15	16	B	12	B	14	14
11	14	13	14	B	27	16	B	B	B	28	18	20	25	25	26	14	16	14	15	14	B	E S 14	13	13
12	19	22	B	20	15	16	B	B	19	18	B	B	B	B	B	32	25	B	B	B	B	B	12	12
13	12	20	12	18	16	24	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13	20	12
14	B	25	14	27	18	14	26	14	18	B	B	B	B	26	29	29	E S 13	19	18	B	B	B	13	13
15	13	13	14	14	19	B	B	25	17	15	29	B	34	30	B	B	B	30	B	B	B	13	13	12
16	19	21	26	14	29	26	25	20	B	29	B	B	25	22	B	B	28	B	B	B	B	E S 13	13	13
17	24	B	18	16	20	26	B	24	15	14	13	15	15	14	12	14	12	13	B	B	B	B	B	B
18	B	13	B	15	14	15	14	B	17	12	14	12	12	14	14	17	12	12	11	B	B	12	B	B
19	B	12	B	16	12	14	12	28	B	B	21	13	14	13	12	15	24	B	E S 13	13	13	14	14	13
20	13	13	16	13	16	14	14	E S 16	13	E S 13	B	B	26	22	B	56	B	B	B	19	12	13	13	14
21	14	14	14	28	26	25	15	B	B	B	B	B	B	34	B	33	18	21	18	B	B	B	B	B
22	B	16	14	14	13	16	13	13	13	B	B	26	B	B	25	26	14	B	B	B	B	B	B	B
23	13	13	14	14	16	B	B	B	B	B	27	25	22	15	B	20	12	16	19	B	B	14	14	19
24	14	15	14	B	26	25	14	14	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	14	15	14	14	22	16	B	15	14	14	15	47	B	B	B	28	B	17	B	B	B	B	B	B
26	B	14	14	12	13	18	14	14	14	12	25	24	26	25	26	13	14	B	B	B	B	B	B	B
27	B	14	12	15	15	16	13	13	15	13	13	B	B	B	B	B	B	B	B	B	B	B	B	B
28	13	13	14	14	14	14	13	13	12	13	12	12	10	12	25	16	11	14	B	12	B	9	10	10
29	11	12	14	11	20	16	B	B	B	26	18	B	B	B	B	B	B	B	B	15	11	10	9	16
30	19	10	B	B	24	29	B	B	B	15	22	13	15	52	56	B	B	B	B	B	B	8	12	10
31	15	20	13	26	16	B	B	B	12	B	B	B	B	B	B	B	B	B	B	B	B	B	10	10
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	14	14	18	18	24	26	B	20	29	29	B	B	34	B	55	31	B	B	B	B	14	14	13
U Q	B	20	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
L Q	14	13	14	14	14	16	14	15	15	14	18	20	22	22	26	19	16	16	18	B	B	13	13	13

MAY 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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 234	250	226	238	B	B	B	A	B	B	B	B	B	B	B	B	B	A	B	A	220	224
2	B	216	A 236	B	B	B	204	B	B	B	240	E A 238	226	208	Q 222	190	Q 198	210	242	198	B	B	B	E S 216
3	A	A	A	B	A	A	A	B	A	E A 256	230	A 206	B	B	B	E B 236	B	Q 200	B	B	B	A	A	A
4	A	A	B	A	A	B	A	B	A	A	B	B	B	B	B	E B 230	216	B	B	B	B	B	A	A
5	A	A	A	B	A	B	A	B	B	B	E B 296	B	B	B	B	B	B	E B 244	E B 252	B	A	A	A	A
6	A	A 228	A	A	A	B	A	208	B	B	B	B	B	216	B	B	214	B	B	B	B	B	S 216	214
7	E A 230	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
8	236	A	B	B	A	B	A	B	B	B	B	B	E B 252	B	B	B	B	B	E B 242	B	A	A	A	A
9	A	A	B	B	A	B	B	B	B	B	B	B	E B 248	204	204	230	224	B	B	B	E A 228	B	Y	S
10	B	A	A	A 316	360	E A 380	B	B	A	254	206	222	Q 194	Q 198	198	Q 198	226	232	E B 272	B	Y	B	A	A
11	232	A 222	222	B	A	A	B	B	B	B	E B 256	238	224	208	216	206	216	200	210	214	B	A	A	A
12	E A 270	A	B	A	A	A	B	B	A	A	B	B	B	B	B	226	234	B	B	B	B	B	A	A
13	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A 268
14	B	A	A	A	A	A	A	A	A	B	B	B	B 218	204	200	196	214	E A 240	B	B	B	B	A	220
15	A	A	F	198	208	B	B	A	A	A	A	B	226	224	B	B	B	E B 220	B	B	B	A 226	A	E A 246
16	A	E A 272	A	A	A	A	A	A	B	A	B	B	228	216	B	B	E B 226	B	B	B	B	A	220	E A 232
17	238	B	A	A	A	A	B	A	A	Q 252	Q 210	200	190	194	182	Q 182	Q 182	E S 214	B	B	B	B	B	B
18	B	216	B	A	A 236	A 378	A 350	B	A	Q 240	Q 226	214	224	Q 186	Q 192	Q 194	196	A 204	A	B	B	A	B	B
19	B	Y	B	258	A	E B 360	A	B	B	B	224	186	206	196	196	196	E B 218	B	218	E A 286	A	A	A	E A 322
20	A	E A 224	236	A 220	A	A	A	E S 310	194	S	B	B	268	E B 260	B	242	B	B	B	A	A	220	A	A
21	206	A	218	A	A	A	A	B	B	B	B	B	B	E B 238	B	220	E B 242	E B 252	E B 266	B	B	B	B	B
22	B	A	A	210	A 218	A	216	A	214	B	B	258	B	B	210	204	210	B	B	B	B	B	B	B
23	A	A	A	210	A	B	B	B	B	B	E B 250	222	218	202	B	206	216	230	230	B	B	A	A	A
24	E A 224	A	264	B	A	A	A	A	E B 314	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	A	A	A 238	256	A	A	B	A	E A 322	284	236	E B 294	B	B	B	E B 220	B	E B 230	B	B	B	B	B	B
26	B	238	E B 266	A 230	A	A	A	E A 332	E A 322	A 282	A	226	214	222	202	Q 192	Q 214	B	B	B	B	B	B	B
27	B	A	A 204	A	A	A	210	A	A 254	A 230	Q 222	B	B	B	B	B	B	B	B	B	B	B	B	B
28	A	A	A	A 380	A	A	A 338	F 302	F 228	A 222	202	190	F 208	Q 194	206	Q 214	206	E A 250	B	E A 272	B	A	A	A
29	A	238	220	214	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	A	A	Y	A	252
30	A	A	B	B	A	390	B	B	B	A	268	220	244	B	B	B	B	B	B	B	B	A	200	A
31	A	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	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	7	8	10	11	5	5	5	4	7	8	13	13	15	16	11	18	17	13	9	4	1	2	4	9
MED	231	224	232	230	226	369	216	306	U 224	250	226	218	221	206	204	202	213	212	E 242	243	E A 228	223	218	226
U Q	238	238	238	A 258	298	385	A 344	E 321	E A 322	A 269	E B 253	238	244	220	210	226	225	E 238	E B 259	E A 279			220	A 260
L Q	224	219	220	210	213	299	207	255	214	A 235	216	203	208	Q 197	196	Q 196	202	207	224	206			208	218

MAY 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	B	B	O X 37	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 38	A	A	A
2	A	A	B	B	B	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
3	B	B	B	B	B	B	B	B	B	O X 36	B	B	X 64	64	O X 49	43	O X 30	B	B	B	B	B	B	Y
4	O X 40	A	A	A	B	B	B	A	B	B	B	B	X 60	O X 55	B	B	B	B	B	B	B	B	B	O X 40
5	A	A	B	B	B	A	B	R	O X 36	X 32	X 44	X 45	X 57	X 67	X 74	57	34	O X 34	B	B	A	A	A	A
6	41	B	B	A	A	R	B	B	B	B	B	B	B	B	O X 54	B	B	B	B	B	B	O X 21	O X 25	A
7	A	A	B	O X 44	B	B	R	R	O X 28	28	O X 38	B	B	X 59	O X 56	B	X 33	B	B	B	B	A	O X 40	B
8	A	A	B	A	40	B	B	B	B	B	38	X 50	X 50	O X 51	B	B	B	B	B	B	B	O X 31	A	A
9	A	A	A	A	B	A	A	30	30	B	B	B	B	B	B	B	B	B	B	A	A	O X 34	A	43
10	A	A	A	A	B	B	B	B	B	B	B	B	B	O X 47	O X 46	X 41	40	38	O X 22	O X 20	B	B	A	66
11	O X 45	A	B	B	B	B	A	A	A	B	O X 37	B	B	B	B	O X 54	A	B	B	Y	R	O X 20	B	B
12	Y	Y	A	Y	A	33	30	B	B	O X 36	B	B	B	O X 52	42	38	O X 27	B	B	B	B	R	B	B
13	R	R	A	O X 30	O X 27	28	O X 21	32	24	O X 30	34	46	56	57	49	42	28	Y	O X 24	O X 23	B	B	B	Y
14	Y	O X 25	O X 40	A	A	38	43	56	A	56	48	50	55	X 61	66	68	89	B	B	B	A	A	A	A
15	A	A	A	A	43	68	O X 40	41	A	A	B	B	B	X 60	B	B	O X 40	O X 44	B	R	A	A	A	A
16	A	A	A	A	A	A	A	A	A	R	B	B	B	B	O X 44	B	B	36	O X 30	B	B	B	B	A
17	A	A	A	A	A	X 26	29	27	A	B	39	49	O X 54	64	66	X 42	B	B	B	B	B	B	Y	A
18	A	O X 33	A	A	O X 38	35	42	B	A	B	B	B	O X 52	B	B	B	B	B	X 23	B	B	R	R	A
19	A	O X 40	O X 37	O X 37	A	A	A	X 32	34	29	35	X 42	O X 48	X 50	49	58	O X 36	B	O X 32	B	R	A	A	B
20	R	A	B	A	A	A	O X 39	A	A	B	B	B	O X 47	O X 45	O X 62	35	O X 26	A	B	B	B	Y	Y	O X 20
21	R	Y	A	A	A	R 32	B	X 16	31	36	39	O X 40	B	B	B	53	O X 26	R	R	A	R	B	A	A
22	A	32	30	24	24	23	26	23	30	27	36	46	43	45	42	47	A	A	X 23	Y	A	A	A	A
23	A	40	A	A	A	30	29	23	X 24	28	35	48	54	54	46	38	30	O X 27	A	A	R	A	A	R
24	A	A	30	24	X 23	O X 27	25	30	28	22	B	X 42	X 60	54	45	36	32	Y	B	Y	B	B	R	R
25	A	R	R	A	A	A	O X 33	Y	Y	O X 21	O X 30	42	X 48	X 42	O X 49	O X 34	O X 25	O X 20	O X 21	O X 22	R	R	A	B
26	B	B	A	57	52	46	50	A	28	O X 32	34	X 43	X 54	X 46	X 46	X 36	O X 38	22	23	O X 22	O X 27	A	31	A
27	A	A	A	A	A	A	38	38	37	32	38	44	61	60	X 42	X 36	O X 30	B	B	B	R	B	A	A
28	X 40	A	A	A	A	A	A	B	A	R	42	O X 44	X 53	X 48	X 60	B	B	B	B	B	B	R	O X 24	72
29	92	O X 64	B	A	Y	R	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	O X 30	A	A
30	A	A	X 34	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	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	5	6	5	6	8	11	13	11	11	14	15	14	17	20	19	17	16	7	8	4	2	5	4	5
MED	X 41	O X 36	X 34	34	38	32	33	30	30	31	38	44	X 54	X 54	X 49	42	O X 31	O X 34	O X 23	O X 22	O X 32	O X 30	O X 28	43
U Q	68	O X 40	O X 38	44	42	38	41	38	34	36	39	48	X 58	60	X 60	54	O X 37	38	O X 27	O X 22		O X 32	36	69
L Q	X 40	32	30	24	X 26	X 27	28	23	28	28	35	X 42	X 49	X 48	45	X 36	O X 28	22	O X 22	O X 21		O X 20	O X 24	O X 30

JUN. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	B	B	R 31	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R 32	A	A	A
2	A	A	B	B	B	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
3	B	B	B	B	B	B	B	B	B	R 30	B	B	58	F 54	R 43	F 34	R 24	B	B	B	B	B	B	Y
4	R 34	A	A	A	B	B	B	A	B	B	B	B	J R 54	R 49	B	B	B	B	B	B	B	B	B	R 34
5	A	A	B	B	B	A	B	R	R 30	26	38	38	J R 51	61	J F 68	F 42	F 23	R 28	B	B	A	A	A	A
6	F 34	B	B	A	A	R	B	B	B	B	B	B	B	B	R 48	B	B	B	B	B	B	R 15	R 19	A
7	A	A	B	R 38	B	B	A	R	R 22	F 18	32	B	B	J R 53	R 50	B	27	B	B	B	B	A	R 34	B
8	A	A	B	A	A	B	B	B	B	B	F 30	44	44	R 45	B	B	B	B	B	B	B	R 25	A	A
9	A	A	A	A	B	A	A	F 20	F 20	B	B	B	B	B	B	B	B	B	B	A	A	R 28	A	F 36
10	A	A	A	A	B	B	B	B	B	B	B	B	B	R 41	R 40	35	F 30	F 27	R 16	R 14	B	B	A	F 56
11	R 39	A	B	B	B	B	A	A	A	B	R 31	B	B	B	B	R 48	A	B	B	Y	R	R 14	B	B
12	Y	Y	A	Y	A	F 21	F 19	B	B	R 30	B	B	B	R 46	F 34	F 27	R 21	B	B	B	B	R	B	B
13	R	A	A	R 24	R 21	F 16	R 15	F 23	F 16	R 24	F 22	F 36	F 38	F 47	F 38	F 30	F 19	Y	R 18	R 17	B	B	B	Y
14	Y	R 19	R 34	A	A	F 25	F 18	F 18	A	F 46	F 30	F 40	F 44	J R 55	F 55	F 56	F 66	B	B	B	A	A	A	A
15	A	A	A	A	F 26	A	R 34	F 33	A	A	B	B	B	54	B	B	R 34	R 38	B	R	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	B	B	B	B	R 38	B	B	F 27	R 24	B	B	B	B	A
17	A	A	A	A	A	20	F 18	F 19	A	B	F 29	F 38	48	F 56	F 56	36	B	B	B	B	B	B	Y	A
18	A	R 27	A	A	R 32	F 26	F 31	B	A	B	B	B	R 46	B	B	B	B	B	17	B	B	A	A	A
19	A	R 34	R 31	R 31	A	A	A	26	F 22	F 20	F 26	36	42	44	F 39	F 45	R 30	B	R 26	B	R	A	A	B
20	R	A	B	A	A	A	R 33	A	A	B	B	B	41	R 39	U R 56	F 26	R 20	A	B	B	B	Y	Y	R 14
21	R	Y	A	A	A	26	B	J F 10	F 12	F 16	F 21	R 34	B	B	B	F 43	R 20	R	A	A	A	B	A	A
22	A	F 20	F 19	F 15	F 15	F 12	F 14	F 14	F 18	F 16	F 26	F 36	F 35	F 34	F 31	F 39	A	A	17	Y	A	A	A	A
23	A	A	A	A	A	F 19	F 20	F 11	J F 18	F 16	F 22	F 39	F 46	F 42	F 37	F 29	F 20	R 21	A	A	A	A	A	R
24	A	A	F 13	F 12	F 13	R 21	F 14	F 20	F 16	F 12	B	36	J F 54	F 42	F 34	F 25	F 20	Y	B	Y	B	B	R	R
25	A	R	A	A	A	A	R 27	Y	Y	R 15	R 24	F 34	42	J R 36	R 43	R 28	R 19	R 14	R 15	R 16	A	R	A	B
26	B	B	A	A	F	F 28	F 32	A	F 10	R 26	F 26	37	48	40	40	30	R 32	F 14	16	R 16	R 21	A	R 22	A
27	A	A	A	A	A	A	F 29	F 28	F 25	F 21	F 29	F 35	F 51	F 46	J F 36	30	R 24	B	B	B	A	B	A	A
28	34	A	A	A	A	A	A	B	A	A	F 32	R 38	J R 47	42	J R 54	B	B	B	B	B	B	A	R 18	A
29	A	R 58	B	A	Y	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	R 24	A	A
30	A	A	J R 28	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	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	4	5	5	5	6	10	13	11	11	14	15	14	17	20	19	17	16	7	8	4	2	5	4	4
MED	34	R 27	R 28	R 24	24	F 21	F 20	F 20	F 18	F 20	F 29	36	46	46	F 40	F 34	R 24	R 27	R 17	R 16	R 26	R 24	R 20	35
U Q	R 36	R 46	R 32	R 34	R 31	F 26	32	F 26	R 22	R 26	31	38	J 51	54	F 54	F 42	R 30	R 28	R 21	R 16		R 26	R 28	F 46
L Q	34	20	F 16	F 14	F 15	F 19	F 16	F 14	F 16	F 16	F 24	36	42	42	F 37	F 28	F 20	14	R 16	R 15		R 14	R 18	R 24

JUN. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	37	B	B	36	B	38	B	B	B	B	B	B	B	B	B	B	B	B	B	35	41	42	43
2	37	58	B	B	B	B	47	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	48	34
3	B	B	B	B	B	B	B	B	B	41	B	B	E B 22	E B 25	E B 21	28	E B 20	B	B	B	B	B	B	18
4	41	35	42	42	B	B	B	41	B	B	B	B	E B 27	E B 26	B	B	B	B	B	B	B	B	B	42
5	41	43	B	B	B	32	B	16	33	22	17	E B 15	31	18	22	36	12	E B 19	B	B	41	43	40	45
6	50	B	B	64	40	35	B	B	B	B	B	B	B	B	E B 25	B	B	B	B	B	B	20	31	40
7	39	41	B	44	B	B	34	24	E B 14	E B 12	16	B	B	E B 25	E B 20	B	E B 20	B	B	B	B	32	38	B
8	34	43	B	34	36	B	B	B	B	B	21	26	26	30	B	B	B	B	B	B	B	30	36	42
9	24	23	33	30	B	38	36	26	26	B	B	B	B	B	B	B	B	B	B	42	46	30	42	42
10	41	45	42	74	B	B	B	B	B	B	B	B	B	E B 25	E B 19	E B 18	20	15	13	11	B	B	28	42
11	46	42	B	B	B	B	49	46	27	B	18	B	B	B	B	E B 33	36	B	B	17	17	26	B	B
12	17	22	38	16	24	K 16	12	B	B	22	B	B	B	E B 26	22	22	21	B	B	B	B	17	B	B
13	17	24	33	31	31	K 16	33	32	28	28	32	18	21	26	23	18	13	12	12	31	B	B	B	13
14	12	24	50	46	42	23	24	22	37	39	33	22	23	E B 26	E B 26	42	46	B	B	B	48	34	36	K 42
15	46	48	44	50	42	K 39	44	38	42	48	B	B	B	E B 25	B	B	E B 18	K 31	B	28	34	32	37	84
16	44	74	58	52	72	38	44	43	39	27	B	B	B	B	E B 25	B	B	20	E B 16	B	B	B	B	27
17	31	35	39	32	38	28	31	31	38	B	24	20	22	E B 16	E B 18	E B 15	B	B	B	B	B	B	20	41
18	42	32	32	30	37	30	40	B	40	B	B	B	E B 25	B	B	B	B	B	15	B	B	19	21	23
19	39	37	38	35	51	46	42	23	18	E B 15	16	22	22	E B 16	17	17	E B 18	B	E B 15	B	22	34	44	B
20	18	27	B	43	47	78	59	69	26	B	B	B	E B 20	28	20	21	E B 12	50	B	B	B	19	14	13
21	18	16	30	40	44	16	B	17	17	16	E B 11	E B 29	B	B	B	E B 17	E B 14	20	23	40	22	B	20	28
22	36	35	26	42	30	36	39	31	44	30	21	21	19	50	34	68	41	46	20	17	23	38	37	40
23	37	40	39	42	67	38	40	31	39	33	35	64	30	17	21	E B 10	28	13	43	35	22	33	27	22
24	27	32	28	31	67	48	15	E B 16	21	17	B	E B 20	32	20	28	23	18	19	B	17	B	B	17	17
25	33	19	24	41	41	35	39	12	16	14	E B 16	E B 16	30	E B 18	E B 22	E B 16	E B 15	28	14	16	18	22	22	B
26	B	B	29	33	45	33	30	29	17	29	E B 10	18	26	25	17	E B 10	22	20	32	E B 10	14	30	40	42
27	43	59	58	42	42	48	28	27	13	18	14	19	19	22	E B 18	E B 17	E B 18	B	B	B	22	B	27	33
28	40	43	52	83	46	40	43	B	39	34	16	E B 22	23	17	20	B	B	B	B	B	B	19	34	42
29	42	71	B	44	23	34	B	B	36	B	B	B	B	B	B	B	B	B	B	B	35	30	79	45
30	34	47	41	B	B	B	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	17	22	31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	20	24	21	21	21	20	22	17	15	14	17	20	19	17	18	12	10	11	14	20	24	25
MED	38	37	38	42	42	35	39	30	30	27	17	20	22	23	20	18	18	20	16	17	22	30	35	40
U Q	42	45	43	45	46	40	44	38	39	34	24	22	28	26	E B 25	30	22	30	23	35	35	34	40	42
L Q	29	27	31	32	36	29	30	22	18	16	E B 16	18	22	18	E B 19	E B 16	E B 15	17	14	16	22	20	22	25

JUN. 2004 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	24	B	B	12	B	17	B	B	B	B	B	B	B	B	B	B	B	B	B	10	8	8	8
2	26	28	B	B	B	B	20	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	8	18
3	B	B	B	B	B	B	B	B	B	15	B	B	22	25	21	18	20	B	B	B	B	B	B	15
4	10	25	15	26	B	B	B	20	B	B	B	B	27	26	B	B	B	B	B	B	B	B	B	10
5	8	10	B	B	B	26	B	9	19	11	10	15	10	9	8	10	8	19	B	B	8	8	9	8
6	10	B	B	25	26	21	B	B	B	B	B	B	B	B	25	B	B	B	B	B	B	10	9	6
7	20	11	B	14	B	B	17	14	14	12	12	B	B	25	20	B	20	B	B	B	B	7	12	B
8	26	13	B	17	11	B	B	B	B	B	10	12	10	10	B	B	B	B	B	B	B	8	8	10
9	12	11	10	25	B	18	11	12	10	B	B	B	B	B	B	B	B	B	B	8	10	10	15	11
10	27	10	13	25	B	B	B	B	B	B	B	B	B	25	19	18	14	10	9	9	B	B	7	13
11	13	22	B	B	B	B	24	14	14	B	13	B	B	B	B	33	29	B	B	10	10	7	B	B
12	11	10	10	12	14	10	9	B	B	12	B	B	B	26	11	9	12	B	B	B	B	10	B	B
13	11	8	8	8	12	11	7	8	9	9	12	11	9	10	12	10	10	8	9	9	B	B	B	8
14	9	9	10	10	11	8	8	7	10	9	10	8	13	26	26	15	19	B	B	B	9	8	7	8
15	10	12	11	10	9	10	13	9	19	16	B	B	B	25	B	B	18	26	B	10	8	7	8	11
16	10	8	16	7	26	27	25	11	9	10	B	B	B	B	25	B	B	15	16	B	B	B	B	12
17	10	10	7	7	12	9	10	10	21	B	15	16	16	16	18	15	B	B	B	B	B	B	9	8
18	9	11	11	9	10	10	10	B	11	B	B	B	25	B	B	B	B	B	10	B	B	12	10	8
19	8	9	12	17	16	14	16	9	10	15	10	13	15	16	14	15	18	B	15	B	10	15	16	B
20	11	10	B	13	10	10	10	10	12	B	B	B	20	24	13	11	12	12	B	B	B	14	8	9
21	10	12	15	16	13	10	B	10	7	8	11	29	B	B	B	17	14	13	12	12	15	B	8	10
22	9	9	9	10	8	8	7	7	8	7	9	8	10	12	12	12	12	12	9	12	11	13	13	8
23	8	8	8	8	8	7	16	9	9	8	8	8	8	8	8	10	11	8	10	10	8	14	13	17
24	8	7	8	8	8	7	8	16	16	8	B	20	12	10	8	10	9	11	B	10	B	B	11	9
25	15	11	12	10	9	7	8	9	11	9	16	16	11	18	22	16	15	7	10	8	8	9	7	B
26	B	B	8	8	6	8	7	8	8	6	10	9	11	7	9	10	8	7	6	10	6	8	8	9
27	21	12	13	25	20	16	8	8	8	8	8	10	9	8	18	17	18	B	B	B	16	B	8	9
28	12	16	12	20	15	15	18	B	18	18	12	22	11	8	11	B	B	B	B	B	B	10	8	9
29	9	14	B	18	18	10	B	B	18	B	B	B	B	B	B	B	B	B	B	B	10	8	21	14
30	17	11	7	B	B	B	B	10	B	B	B	B	B	B	B	B	B	B	B	B	B	11	10	9
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	11	11	12	16	14	14	16	12	15	16	B	B	24	25	22	18	20	B	B	B	B	12	10	10
U Q	19	16	B	B 25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 16	B 15
L Q	9	10	10	10	10	10	9	9	10	9	10	13	11	10	12	12	12	12	12	10	10	8	8	8

JUN. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	B	B	E A 226	B	E A 234	B	B	B	B	B	B	B	B	B	B	B	B	B	220	A	A	A
2	A	A	B	B	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
3	B	B	B	B	B	B	B	B	B	A	B	B	226	216	200	216	E B 252	B	B	B	B	B	B	Y
4	214	A	A	A	B	B	B	A	B	B	B	B	236	208	B	B	B	B	B	B	B	B	B	214
5	A 270	B	B	B	B	A	B	A	A	A 234	212	208	226	Q 206	Q 200	214	Q 196	E B 258	B	B	A	A	A	A
6	220	B	B	A	A	A	B	B	B	B	B	B	B	B	204	B	B	B	B	B	B	A 266	210	A
7	A	A	B	216	B	B	A	A	E B 294	E B 264	272	B	B	Q 210	220	B	202	B	B	B	B	A	A 230	B
8	A	A	B	A	A	B	B	B	B	B	Q 246	236	218	222	B	B	B	B	B	B	B	212	A	A
9	A	A	A	A	B	A	A	E A 310	A 310	B	B	B	B	B	B	B	B	B	B	A	A	A 294	A	A
10	A	A	A	A	B	B	B	B	B	B	B	B	B	E B 232	210	E B 240	Q 240	Q 214	A 276	208	B	B	A	204
11	210	A	B	B	B	B	A	A	A	B	E A 300	B	B	B	B	222	A	B	B	Y	A	190	B	B
12	A	A	A	Y	A	E A 292	A 296	B	B	A	B	B	B	212	206	208	A	B	B	B	B	A	B	B
13	A	A	A	A 294	A	A	A	A	A	A 294	Q 262	Q 214	Q 192	Q 200	Q 200	180	192	Y	A 238	A 210	B	B	B	A
14	Y	244	210	A	212	E A 344	A 328	A 336	A	Q 296	206	Q 246	Q 258	E B 268	E B 238	Q 240	Q 238	B	B	B	A	A	A	A
15	A 226	212	A	A	A 230	A	220	220	A	A	B	B	B	228	B	B	A	E A 270	B	E A 222	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	B	B	B	B	E B 226	B	B	222	206	B	B	B	B	A
17	A	A	A	A	A	A 226	A	A	A	B	A 264	Q 240	210	Q 224	Q 184	214	B	B	B	B	B	B	A	A
18	A	A	A	A	A 212	A	A 344	B	A	B	B	B	212	B	B	B	B	B	A 320	B	B	A	A	A
19	A	A	A 214	204	A	A	A	220	A	E B 284	A 240	E A 252	210	200	194	206	E B 234	B	E B 210	B	A	A	A	B
20	A	A	B	A	A	A	A	A	A	B	B	B	204	202	Q 212	204	E B 220	A	B	B	B	Y	Y	252
21	A	A	A	A	A	A	B	A	A 322	E A 280	Q 246	E B 246	B	B	B	198	E B 234	A	A	A	A	B	A	A
22	A	A 256	A 268	A	A 300	A	A	A 294	A	A 262	Q 222	Q 192	Q 200	Q 200	A 242	Q 206	A	A	A 230	A	A	A	A	A
23	A	A 248	A	A	A	A	A	A	A 248	250	Q 244	Q 212	Q 190	Q 198	188	180	214	226	A	A	A	A	A	A
24	A	A	244	A 326	218	A	A	210	210	A 280	B	224	Q 200	Q 200	Q 186	Q 186	Q 186	A	B	Y	B	B	A	A
25	A	A	A	A	A	A	A	Y	Y	A	240	206	Q 204	210	212	190	218	A	A 266	A 240	A	A	A	B
26	B	B	A	A	A	244	A	A	A	A	E B 226	Q 214	210	190	194	196	196	240	A 224	E B 292	252	A	Q 218	A
27	A	A	A	A	A	A	E A 332	F 264	E A 270	E A 288	Q 238	Q 196	Q 192	Q 218	200	E B 224	E B 288	B	B	B	A	B	A	A
28	224	A	210	A	A	A	A	B	A	A	Q 234	212	230	190	210	B	B	B	B	B	B	A	222	A
29	A	216	B	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	218	A	A
30	A	214	200	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	204	200
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	7	6	4	6	4	6	7	6	10	15	14	17	20	19	17	14	6	8	5	2	5	5	4
MED	220	244	212	255	A 218	268	U 288	U 242	U 270	A 272	240	213	210	206	202	205	U 206	226	A 234	A 216	236	218	218	209
U Q	225	256	244	A 310	A 230	E A 318	A 332	A 310	A 310	A 288	262	240	226	220	212	219	238	E 258	A 271	266		A 280	226	233
L Q	212	214	210	210	212	235	234	220	248	A 262	226	208	Q 200	200	194	193	196	222	217	209		201	207	202

JUN. 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	A	A	A	A	A	O X 41	O X 27		B	B	B	B	B	B	B	B	B	B	Y	O X 20	A	O X 26
2	A	X 40	A	A	A	R	O X 35	B	B	R	X 32	42	O X 40	B	B	O X 44	X 35	29	32	B	A	Y	O X 24	R
3	A	A	B	B	A	A	O X 41	O X 28	27	O X 26	B	Y	O X 46	O X 46	66	X 40	B	B	B	B	A	R	A	33
4	O X 29	A	A	O X 44	A	A	A	A	A	R	O X 35	O X 44	B	O X 48	O X 42	42	B	B	B	Y	Y	Y	O X 29	Y
5	R	Y	Y	42	A	A	B	B	A	R	O X 30	42	X 46	X 44	X 44	X 46	34	26	A	R	R	B	23	33
6	A	A	B	A	A	A	O X 31	A	B	B	B	O X 38	O X 48	O X 52	O X 52	B	B	Y	Y	Y	B	B	B	R
7	A	A	O X 24	O X 25	20	A	A	R	O X 26	B	B	B	O X 42	O X 43	O X 50	O X 36	B	Y	A	A	B	B	B	B
8	A	A	A	A	A	O X 31	A	R	R	R	O X 31	O X 48	X 45	X 36	43	O X 44	R	B	B	B	B	R	R	R
9	A	A	A	Y	O X 28	O X 37	A	O X 37	B	R	C	38	B	B	38	37	R	B	Y	B	B	B	B	Y
10	Y	R	B	R	A	X 29	A	A	A	35	37	O X 43	B	49	54	36	O X 24	O X 24	B	O X 20	Y	B	B	A
11	X 32	O X 32	40	58	A	O X 50	A	A	42	37	38	X 48	49	X 46	B	O X 60	B	B	B	B	R	R	O X 28	A
12	A	41	A	A	B	B	B	B	R	B	B	B	X 58	O X 48	B	O X 42	O X 30	O X 39	B	B	B	B	B	R
13	38	A	A	A	B	B	A	A	A	B	B	B	B	B	50	O X 50	O X 38	32	36	B	B	A	A	A
14	B	A	A	O X 40	A	A	X 34	30	B	B	B	B	B	B	B	B	O X 38	B	B	B	B	B	B	B
15	B	A	O X 30	A	O X 41	A	O X 27	O X 28	X 27	X 28	O X 45	O X 44	X 59	B	O X 56	X 42	O X 32	A	O X 27	A	O X 22	Y	O X 36	O X 29
16	A	A	A	O X 45	A	A	36	X 28	X 28	O X 30	X 40	O X 54	X 54	O X 66	X 50	X 60	X 55	O X 28	O X 30	Y	22	A	A	A
17	A	A	B	B	O X 40	A	O X 32	O X 38	O X 58	B	O X 40	B	B	B	O X 54	O X 50	B	B	B	B	B	Y	O X 38	O X 39
18	O X 42	A	A	O X 40	O X 45	A	O X 31	O X 31	B	B	B	O X 48	B	B	B	B	B	B	B	B	B	R	A	X 39
19	A	O X 47	A	A	O X 42	A	R	B	B	O X 40	O X 43	X 50	B	B	B	O X 68	O X 40	O X 32	O X 28	25	B	Y	B	46
20	A	A	B	A	A	A	B	A	A	B	B	B	64	63	66	X 54	O X 49	B	X 36	B	Y	B	A	A
21	X 30	A	O X 37	A	O X 34	30	33	34	31	B	B	B	O X 64	X 68	X 55	O X 56	X 39	O X 34	O X 34	B	B	B	B	B
22	Y	Y	O X 28	Y	B	R	X 22	X 24	X 26	36	X 45	X 60	X 62	59	X 67	X 63	X 61	O X 42	X 43	X 36	X 30	O X 24	A	X 34
23	B	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	O X 42	A	63	A	B	B	O X 42	A
24	A	B	B	A	A	A	B	R	B	B	B	O X 41	O X 48	X 48	X 67	O X 72	X 59	82	B	B	B	122	74	O X 40
25	A	A	O X 42	B	A	A	B	R	B	B	B	O X 32	B	B	O X 48	O X 29	29	A	O X 41	A	A	96	X 36	B
26	A	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	A	R	R	93	A	B
28	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	Y	B	Y	O X 32	O X 38
29	A	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	35	B	B	B	B	B	B
30	B	A	O X 34	A	A	A	B	A	O X 38	32	O X 44	O X 44	O X 57	O X 58	X 64	O X 52	B	O X 33	A	Y	R	B	B	Y
31	A	A	A	A	A	R	27	A	B	B	O X 42	O X 49	X 47	B	O X 50	X 48	B	B	B	O X 32	R	A	R	O X 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	5	4	7	7	7	5	11	10	10	8	13	17	16	15	19	22	15	12	10	4	3	5	10	11
MED	X 32	X 40	O X 34	O X 42	O X 40	O X 31	O X 32	O X 30	X 28	34	O X 40	O X 44	X 48	X 48	X 52	O X 47	O X 38	O X 32	X 35	X 28	X 22	93	O X 34	O X 34
U Q	40	44	40	45	O X 42	O X 44	O X 35	O X 37	O X 38	36	O X 44	O X 48	X 58	59	X 64	O X 56	X 49	37	X 41	X 34	X 30	109	O X 38	O X 39
L Q	X 30	X 36	O X 28	O X 40	28	30	X 27	X 28	X 27	O X 29	O X 34	O X 42	O X 46	X 46	X 48	42	O X 32	28	O X 30	22	22	O X 22	O X 28	O X 32

JUL. 2004 fxI (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	A	A	A	A	A	R 35	21	B	B	B	B	B	B	B	B	B	B	B	Y	R 14	A	R 20
2	A	34	A	A	A	A	R 29	B	B	R	26	33	R 34	B	B	R 38	29	F 19	F 23	B	A	Y	R 18	A
3	A	A	B	B	A	A	R 35	R 22	A	R 20	B	Y	R 40	R 40	F 58	34	B	B	B	B	A	A	A	F 26
4	R 23	A	A	R 38	A	A	A	A	A	A	R 29	R 38	B	R 42	R 36	F 30	B	B	B	Y	Y	Y	R 23	Y
5	A	Y	Y	F 32	A	A	B	B	A	A	R 24	F 34	40	R 38	38	40	F 25	F 16	A	A	A	B	A 11	28
6	A	A	B	A	A	A	R 25	A	B	B	B	R 32	R 42	R 46	R 46	B	B	Y	Y	Y	B	B	B	R
7	A	A	R 18	R 19	F 11	A	A	A	R 20	B	B	B	R 36	R 37	R 44	R 30	B	Y	A	A	B	B	B	B
8	A	A	A	A	A	R 25	A	R	R	R	R 25	R 42	39	J R 30	F 32	R 38	R	B	B	B	B	A	A	R
9	A	A	A	Y	R 22	R 31	A	R 31	B	R	C	F 30	B	B	F 30	F 27	A	B	Y	B	B	B	B	Y
10	Y	R	B	A	A	23	A	A	A	F 21	F 24	37	B	F 39	F 40	F 27	R 18	R 18	B	R 14	Y	B	B	A
11	J F 26	R 26	F 28	A	A	R 44	A	A	F 30	F 26	F 31	J R 42	F 42	40	B	R 54	B	B	B	B	R	A	R 22	A
12	A	F 26	A	A	B	B	B	B	R	B	B	B	J R 52	R 42	B	R 36	R 24	R 33	B	B	B	B	B	A
13	F 27	A	A	A	B	B	A	A	A	B	B	B	B	B	F 41	R 44	R 32	F 23	F 26	B	B	A	A	A
14	B	A	A	R 34	A	A	28	F 20	B	B	B	B	B	B	B	B	R 32	B	B	B	B	B	B	B
15	B	A	R 24	A	R 35	A	R 21	R 22	21	22	R 39	R 38	J R 53	B	R 50	J R 36	R 26	A	R 21	A	R 16	Y	R 30	R 23
16	A	A	A	R 39	A	A	F 21	22	22	R 24	34	R 48	48	R 60	44	J F 54	49	R 22	R 24	Y	F 13	A	A	A
17	A	A	B	B	R 34	A	R 26	R 32	R 52	B	R 34	B	B	B	R 48	R 44	B	B	B	B	B	Y	R 32	R 33
18	R 36	A	A	R 34	R 39	A	R 25	R 25	B	B	B	R 42	B	B	B	B	B	B	B	B	B	R	A	33
19	A	R 41	A	A	R 36	A	R	B	B	R 34	R 37	44	B	B	B	R 62	R 34	R 26	R 22	F 16	B	Y	B	A
20	A	A	B	A	A	A	B	A	A	B	B	B	F 53	F 54	F 54	48	R 43	B	30	B	Y	B	A	A
21	24	A	R 31	A	R 28	F 20	F 20	F 22	F 20	B	B	B	R 58	62	49	R 50	33	R 28	R 28	B	B	B	B	B
22	Y	Y	R 22	Y	B	R	16	18	20	F 25	39	54	56	F 47	61	57	55	R 36	37	30	J R 24	R 18	A	J R 28
23	B	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	R 36	A	F 38	A	B	B	R 36	A
24	A	B	B	A	A	A	B	A	B	B	B	R 35	R 42	42	61	R 66	53	F 65	B	B	B	A	R 32	R 34
25	A	A	R 36	B	A	A	B	R	B	B	B	R 26	B	B	R 42	R 23	F 19	A	R 35	A	A	A	30	B
26	A	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	R	R	A	A	B
28	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	Y	B	Y	R 26	R 32
29	A	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	F 23	B	B	B	B	B	B
30	B	A	R 28	A	A	A	B	A	R 32	F 22	R 38	R 38	R 51	R 52	J R 58	46	B	R 27	A	Y	A	B	B	Y
31	A	A	A	A	A	A	F 18	A	B	B	R 36	U R 43	J R 41	B	R 44	42	B	B	B	R 26	A	A	A	R 26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	4	7	6	7	5	11	10	9	8	13	17	16	15	19	22	15	12	10	4	3	2	10	10
MED	26	30	R 28	R 34	R 34	R 25	R 25	R 22	21	23	R 34	R 38	R 42	R 42	44	R 41	R 32	R 24	27	21	R 16	R 16	R 28	R 28
U Q	32	38	R 31	R 38	R 36	R 38	R 28	R 31	R 31	F 26	R 38	R 42	R 52	52	54	R 50	43	R 30	35	28	J R 24		R 32	R 33
L Q	24	26	R 22	32	22	22	F 20	22	20	22	26	34	R 40	R 39	F 40	34	25	20	R 23	15	F 13		R 22	R 26

JUL. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	39	44	42	48	36	38	28	B	B	B	B	B	B	B	B	B	B	B	12	24	36	28
2	39	40	38	38	40	30	34	B	B	22	20	15	E B 26	B	B	E B 20	E B 12	E B 10	E B 12	B	24	16	23	23
3	35	41	B	B	37	50	44	30	22	28	B	24	32	E B 26	E B 16	E B 14	B	B	B	B	60	36	37	32
4	28	28	26	34	40	44	42	58	46	34	23	E B 20	B	E B 30	22	18	B	B	B	18	18	11	24	18
5	23	14	16	40	35	48	B	B	34	27	E B 19	17	15	16	12	E B 10	14	13	35	27	26	B	32	39
6	36	46	B	35	36	33	32	42	B	B	B	E B 25	E B 21	E B 18	E B 26	B	B	21	18	18	B	B	B	22
7	42	26	28	29	41	37	31	21	20	B	B	B	E B 22	E B 26	32	E B 19	B	17	27	34	B	B	B	B
8	36	44	43	43	41	30	28	22	22	19	E B 15	E B 15	E B 16	19	19	K 24	24	B	B	B	B	33	33	23
9	34	72	42	26	34	51	57	58	B	23	C	E B 22	B	B	E B 17	20	22	B	18	B	B	B	B	20
10	17	23	B	23	49	79	46	35	42	42	30	E B 21	B	30	35	22	E B 12	15	B	18	17	B	B	28
11	41	54	44	45	50	42	58	58	40	19	16	16	18	20	B	28	B	B	B	B	23	30	31	42
12	52	108	41	40	B	B	B	B	28	B	B	B	E B 20	E B 27	B	E B 22	E B 16	E B 25	B	B	B	B	B	22
13	39	49	37	42	B	B	45	47	48	B	B	B	B	B	E B 19	E B 19	E B 25	17	E B 12	B	B	41	45	41
14	B	35	38	39	49	42	17	33	B	B	B	B	B	B	B	B	E B 21	B	B	B	B	B	B	B
15	B	30	36	40	42	35	28	40	14	17	14	E B 17	20	B	E B 18	E B 20	31	60	29	42	13	14	17	37
16	49	54	38	52	39	34	22	54	48	31	46	44	21	E B 21	22	29	44	35	17	17	21	32	31	40
17	48	52	B	B	51	43	30	38	50	B	27	B	B	B	E B 28	E B 24	B	B	B	B	B	16	41	59
18	41	68	45	43	45	42	34	49	B	B	B	E B 25	B	B	B	B	B	B	B	B	B	22	37	41
19	55	49	50	49	46	71	32	B	B	E B 24	39	24	B	B	B	E B 33	E B 25	E B 19	E B 14	18	B	23	B	39
20	37	46	B	46	43	43	B	39	37	B	B	B	K 19	E B 25	20	19	E B 28	B	E B 15	B	20	B	36	30
21	42	41	41	40	38	21	22	22	13	B	B	B	E B 21	21	18	E B 25	E B 16	E S 13	E B 18	B	B	B	B	B
22	18	19	27	20	B	24	E S 13	E S 12	30	E S 14	E B 15	23	21	21	19	28	23	30	27	22	18	E S 13	31	39
23	B	44	45	33	68	B	31	B	B	B	B	B	B	B	B	B	E B 28	52	78	90	B	B	38	37
24	40	B	B	40	40	36	B	32	B	B	B	E B 26	E B 25	E B 25	E B 25	E B 26	16	E B 52	B	B	B	35	42	81
25	76	88	94	B	40	39	B	23	B	B	B	18	B	B	E B 21	E B 16	E S 13	66	67	51	74	88	38	B
26	80	B	B	B	B	B	B	B	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	34	B	B	B	B	B	B	B	B	B	B	41	30	32	37	95	B
28	B	B	68	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	20	B	18	30	47
29	66	B	B	34	B	B	35	B	B	B	B	B	B	B	B	B	B	E B 15	B	B	B	B	B	B
30	B	32	34	32	33	38	B	33	38	16	22	E B 25	E B 25	E B 25	E B 29	22	B	E B 19	38	19	27	B	B	21
31	38	37	38	34	38	27	22	34	B	B	E B 24	E B 25	E B 29	B	E B 26	E B 17	B	B	B	E B 16	23	32	27	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	25	25	22	25	24	24	22	23	18	13	13	18	16	15	19	22	17	17	17	15	15	18	20	24
MED	40	44	38	40	40	40	32	35	34	22	21	E B 22	E B 21	E B 25	E B 21	E B 21	E B 22	18	23	20	23	27	34	36
U Q	48	53	44	43	46	46	42	47	42	30	28	E B 25	E B 25	E B 26	E B 26	25	E B 26	44	36	34	27	35	38	40
L Q	36	31	36	34	38	34	28	30	22	18	16	17	20	20	E B 18	E B 19	E B 15	E 15	E B 16	18	18	16	30	23

JUL. 2004 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	C	16	16	25	16	12	12	13	B	B	B	B	B	B	B	B	B	B	B	8	7	8	8
2	8	9	28	19	11	15	10	B	B	18	12	12	26	B	B	20	12	10	11	B	9	8	9	9
3	10	8	B	B	22	19	10	10	9	9	B	20	15	26	16	14	B	B	B	B	28	26	8	7
4	8	8	8	10	29	17	17	11	16	7	12	20	B	30	19	10	B	B	B	14	12	8	7	10
5	8	10	9	14	25	30	B	B	20	18	19	12	9	9	9	10	7	7	7	9	7	B	7	8
6	10	9	B	25	20	17	9	10	B	B	B	25	21	18	25	B	B	16	14	11	B	B	B	13
7	8	10	9	9	6	8	10	9	10	B	B	B	22	26	19	19	B	14	16	16	B	B	B	B
8	12	9	9	10	9	7	8	10	10	10	15	15	16	15	13	15	14	B	B	B	B	10	11	11
9	10	10	10	11	8	19	9	10	B	12	C	22	B	B	17	11	9	B	14	B	B	B	B	12
10	9	11	B	13	10	8	9	12	11	10	8	21	B	14	9	6	12	11	B	10	10	B	B	8
11	8	8	8	11	17	25	22	13	8	9	10	9	9	14	B	26	B	B	B	B	11	6	8	7
12	10	10	27	29	B	B	B	B	18	B	B	B	20	27	B	22	16	25	B	B	B	B	B	9
13	10	16	25	28	B	B	10	15	16	B	B	B	B	B	19	19	25	9	12	B	B	9	11	20
14	B	24	19	12	10	7	8	9	B	B	B	B	B	B	B	B	21	B	B	B	B	B	B	B
15	B	12	9	16	13	10	9	9	9	9	9	17	15	B	18	20	12	11	11	10	8	7	8	8
16	12	14	14	11	15	10	8	8	8	9	10	15	10	21	14	12	9	8	9	12	9	9	6	9
17	9	10	B	B	11	11	12	9	13	B	18	B	B	B	28	24	B	B	B	B	B	11	8	10
18	11	13	11	14	14	14	15	10	B	B	B	25	B	B	B	B	B	B	B	B	B	13	12	13
19	12	13	14	12	12	14	24	B	B	24	13	15	B	B	B	33	25	19	14	11	B	14	B	12
20	16	15	B	27	20	14	B	16	13	B	B	B	12	25	13	12	28	B	15	B	15	B	13	13
21	12	13	13	20	11	10	7	6	8	B	B	B	21	16	13	25	16	E S 13	18	B	B	B	B	B
22	12	14	14	13	B	14	E S 13	E S 12	12	E S 14	15	16	15	15	15	18	13	20	11	13	12	E S 13	12	13
23	B	16	21	13	15	B	20	B	B	B	B	B	B	B	B	B	29	16	13	17	B	B	18	26
24	28	B	B	24	16	18	B	24	B	B	B	26	25	25	25	26	12	52	B	B	B	13	11	11
25	15	14	13	B	12	29	B	12	B	B	B	15	B	B	21	16	E S 13	12	13	12	20	13	12	B
26	16	B	B	B	B	B	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	27	B	B	B	B	B	B	B	B	B	B	15	17	19	19	16	B
28	B	B	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	15	B	12	14	14
29	26	B	B	28	B	B	26	B	B	B	B	B	B	B	B	B	B	15	B	B	B	B	B	B
30	B	13	13	16	14	14	B	13	12	13	17	25	25	25	29	15	B	18	13	14	14	B	B	12
31	14	29	34	18	25	15	13	13	B	B	24	25	29	B	26	17	B	B	B		13	14	12	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	30	31	31	31	31
MED	12	13	19	16	16	16	13	12	18	B	B	25	29	B	25	20	28	25	18	B	B	14	12	12
U Q	B 26	B 16	B	B 28	B 29	B 30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 26
L Q	10	10	11	12	11	11	9	10	11	12	15	16	16	21	16	15	13	13	13	13	12	10	8	9

JUL. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	C	A	216	A	A	A	208	A	B	B	B	B	B	B	B	B	B	B	B	Y	218	A	E A 250
2	A	206	A	A	A	A	198	B	B	A	Q 272	210	222	B	B	Q 222	200	Q 256	Q 212	B	A	Y	E A 270	A
3	A	A	B	B	A	A	206	206	A	230	B	A	198	E B 230	Q 228	Q 208	B	B	B	B	A	A	A	174
4	192	A	A	A	A	A	A	A	A	A	A	222	B	E B 246	206	Q 198	B	B	B	Y	Y	202	A 264	Y
5	A	Y	Y	Q 242	A	A	B	B	A	A	E B 274	206	206	190	190	Q 190	Q 204	Q 180	A	A	A	B	A	A 234
6	A	A	B	A	A	A	212	A	B	B	B	E B 236	226	214	224	B	B	A	A	A	B	B	B	198
7	A	A	E A 264	A 264	A 244	A	A	A	228	B	B	B	198	E B 232	204	210	B	A	A	A	B	B	B	B
8	A	A	A	A	A	194	A	A	A	A	E B 248	206	192	202	226	222	A	B	B	B	B	A	A	A
9	A	A	A	A	A 204	204	A	186	B	A	C	E B 248	B	B	218	198	A	B	A	B	B	B	B	A
10	Y	A	B	A	A	A	A	A	A	200	198	E B 250	B	Q 198	Q 210	Q 184	E B 256	A 318	B	A 250	A	B	B	A
11	208	208	214	218	A	214	A	A	206	258	220	196	Q 224	212	B	208	B	B	B	B	A	208	208	A
12	210	A	A	A	B	B	B	B	A	B	B	B	218	212	B	232	E B 282	242	B	B	B	B	B	A
13	224	A	A	A	B	B	A	A	A	B	B	B	B	B	192	234	E B 256	266	Q 226	B	B	A	208	A
14	B	A	A	208	204	212	A	A 368	B	B	B	B	B	B	B	B	218	B	B	B	B	B	B	B
15	B	A	208	A	198	A	200	A	288	A 238	212	194	206	B	196	204	E A 218	A	244	A	236	Y	192	216
16	A	212	A	206	A	212	208	A	A 282	A	E A 302	E A 252	218	218	Q 208	190	194	A 268	E A 244	Y	256	A	A	A
17	A	A	B	B	232	A	A	218	218	B	A	B	B	B	E B 256	Q 232	B	B	B	B	B	Y	A	226
18	218	A	210	224	204	214	194	212	B	B	B	234	B	B	B	B	B	B	B	B	B	A	A	A 258
19	220	230	A	210	220	A	A	B	B	B	E B 274	222	B	B	B	E B 224	E B 238	E B 322	E B 254	234	B	A	B	A
20	A	A	B	A	A	A	B	A	A	B	B	B	210	206	Q 208	Q 190	212	B	Q 226	B	Y	B	A	A
21	A	A	226	A	212	212	A	E A 292	E A 286	B	B	B	210	196	206	198	200	E S 242	E B 234	B	B	B	B	B
22	Y	Y	A	Y	B	A	S	S	A	E S 226	200	206	Q 202	208	230	A 238	Q 214	E A 288	Q 230	202	248	S	A	202
23	B	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	A	A	A	B	B	A 222	A
24	A	B	B	A	A	A	B	A	B	B	B	E B 228	214	232	228	218	E B 278	E B 266	B	B	B	A	224	A
25	A	A	A 224	B	A	A	B	A	B	B	B	E B 332	B	B	B	B	E S 278	A	206	A	A	A	226	B
26	A	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	B
28	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	Y	220	A 228
29	A	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	230	B	B	B	B	B	B
30	B	A	214	A	A	A	B	A	204	Q 248	234	222	202	206	204	Q 194	B	E B 240	226	Y	A	B	B	Y
31	A	A	A	A	A	A	A	A	B	B	208	212	222	B	212	Q 208	B	B	B	E B 284	A	A	A	E A 232
	00	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	7	8	8	7	6	7	7	6	11	17	16	15	18	21	14	12	10	4	3	3	9	10
MED	214	210	214	217	208	212	203	210	223	234	U 217	214	210	209	208	208	U 208	251	224	U 230	248	208	221	218
U Q	220	221	226	233	226	214	208	A 292	286	248	E B 274	E B 242	220	E B 230	226	223	E B 256	A 278	E 244	267	256	218	A 245	A 234
L Q	208	207	210	209	204	204	198	206	206	226	208	206	202	202	204	Q 196	204	241	226	218	236	202	208	202

JUL. 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	O X 40	A	A	R	A	B	B	R	O X 44	B	X 49	R	O X 72	O X 49	X 48	O X 37	O X 31	B	O X 23	B	B	B
2	60	A	A	A	A	A	A	B	R	O X 33	X 40	X 48	B	B	O X 68	B	B	O X 63	X 27	X 26	B	B	B	R
3	A	A	B	B	A	A	A	R	A	B	O X 46	O X 56	X 56	O X 70	R	X 50	42	X 34	X 41	B	B	Y	Y	B
4	R	A	B	B	Y	B	B	B	O X 26	O X 39	X 51	X 58	O X 74	B	B	O X 55	X 34	X 34	42	29	B	Y	Y	A
5	A	A	A	R	A	O X 38	A	44	B	O X 36	O X 49	X 61	O X 66	X 62	O X 54	59	O X 54	B	B	B	B	B	Y	A
6	A	A	R	R	B	B	A	X 32	X 30	X 40	X 49	O X 50	O X 53	O X 48	X 59	X 48	49	38	37	A	B	A	O X 20	Y
7	O X 39	O X 40	A	B	B	O X 44	B	A	B	B	A	B	B	B	O X 70	X 62	O X 53	B	Y	Y	O X 38	A	A	A
8	O X 40	A	A	B	R	R	R	Y	B	R	O X 47	O X 60	X 62	B	B	O X 66	X 43	41	X 32	X 27	Y	Y	A	Y
9	O X 24	A	A	O X 32	A	A	A	O X 33	O X 32	40	B	B	B	B	O X 79	O X 57	X 54	O X 49	O X 40	R	B	A	A	A
10	A	A	A	A	A	38	A	A	A	O X 46	X 48	X 46	R	B	B	B	O X 46	X 42	O X 48	B	A	A	A	O X 42
11	A	A	A	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	R	B	R	R	35
12	A	A	A	B	A	A	B	B	X 33	X 43	O X 55	B	O X 57	O X 66	O X 68	X 60	O X 48	B	B	B	B	B	B	Y
13	A	A	A	B	B	R	R	B	B	O X 48	B	B	O X 77	O X 73	R	O X 66	X 53	O X 53	O X 39	B	O X 31	B	R	B
14	R	A	A	A	A	A	A	50	51	X 50	O X 56	B	B	B	O X 74	X 67	O X 50	O X 48	O X 40	O X 32	B	B	B	B
15	B	B	B	28	30	31	O X 37	O X 28	X 36	O X 52	X 62	X 66	X 67	O X 71	O X 85	X 63	O X 55	X 60	30	O X 24	B	B	B	B
16	R	R	Y	40	B	38	34	30	34	X 44	X 56	R	68	X 74	X 71	O X 68	O X 62	X 44	X 48	O X 27	B	B	B	R
17	O X 44	A	A	32	A	A	A	A	40	X 48	O X 51	X 63	X 64	O X 71	X 72	X 66	R	X 58	X 62	X 40	R	A	A	O X 44
18	49	A	O X 40	A	A	O X 43	A	A	A	A	B	B	B	O X 46	O X 46	X 49	X 48	O X 48	40	X 33	B	B	Y	A
19	A	54	A	A	A	O X 40	34	38	40	X 44	X 53	X 58	X 61	R	X 66	X 46	X 65	X 45	39	33	33	B	B	R
20	A	O X 41	O X 47	X 50	A	B	A	A	B	B	B	B	B	B	X 72	B	X 63	X 63	R	R	R	A	O X 46	O X 39
21	A	O X 37	A	A	O X 44	O X 42	B	B	B	B	B	B	B	B	B	B	B	B	O X 38	B	B	O X 36	A	A
22	B	A	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	O X 43	R	B	B	Y	O X 37
23	R	R	A	B	R	A	R	26	B	B	B	B	B	B	B	R	R	O X 46	O X 41	O X 33	O X 26	B	Y	A
24	A	A	A	A	A	R	A	A	O X 39	R	R	B	B	B	R	O X 68	B	66	B	O X 45	R	B	R	B
25	B	R	Y	B	Y	B	B	R	R	B	B	O X 72	B	O X 72	O X 72	O X 81	X 57	X 65	X 48	41	30	B	R	A
26	A	R	A	O X 44	R	A	O X 34	38	O X 42	O X 46	O X 50	O X 55	O X 71	X 73	X 61	X 67	X 57	X 53	45	41	36	O X 24	B	53
27	69	61	A	A	B	A	O X 41	X 31	40	B	B	O X 51	O X 55	O X 40	O X 51	X 63	O X 60	50	X 44	35	B	B	A	B
28	A	A	A	A	A	O X 30	A	O X 38	B	B	O X 51	O X 56	B	B	O X 71	O X 69	R	O X 46	41	X 29	26	A	A	A
29	O X 33	R	B	R	B	A	R	B	O X 42	O X 46	O X 51	O X 54	R	R	X 62	O X 61	X 61	X 48	O X 41	O X 32	B	B	B	Y
30	B	Y	A	A	O X 38	A	O X 45	A	50	X 48	B	B	B	B	B	O X 74	O X 62	B	39	X 31	X 38	A	50	89
31	A	A	A	O X 29	A	A	B	R	B	B	B	B	B	B	B	B	B	B	O X 37	O X 34	A	A	A	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	5	3	7	3	9	6	11	14	16	17	15	14	12	19	23	22	23	25	18	9	2	3	7
MED	O X 42	O X 41	O X 40	X 32	O X 38	O X 38	O X 36	33	X 40	X 45	O X 51	O X 56	X 63	O X 70	O X 70	X 63	X 54	X 48	X 40	X 32	X 31	O X 30	O X 46	O X 42
U Q	54	58	O X 47	X 44	O X 44	O X 42	O X 41	38	42	X 48	X 54	X 61	O X 68	X 72	O X 72	O X 67	X 60	X 58	X 44	35	X 37		50	53
L Q	O X 36	O X 38	O X 40	29	30	34	34	30	X 33	O X 40	O X 48	X 51	X 56	O X 55	O X 61	X 55	X 48	X 42	X 38	X 29	O X 26		O X 20	37

AUG. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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 34	A	A	A	A	B	B	A	R 38	B	J R 43	R	R 66	R 43	42	31	R 25	B	R 17	B	B	B
2	A	A	A	A	A	A	A	B	R	R 27	34	J R 42	B	B	R 62	B	B	R 57	21	J R 20	B	B	B	A
3	A	A	B	B	A	A	A	R	A	B	R 40	R 50	J R 50	R 64	R	44	F 32	28	35	B	B	Y	Y	B
4	R	A	B	B	Y	B	B	B	R 20	33	J R 45	J R 52	R 68	B	B	R 49	28	28	F 30	F 20	B	Y	Y	A
5	A	A	A	R	A	R 32	A	F 33	B	R 30	R 43	55	R 60	56	R 48	F 48	U R 48	B	B	B	B	B	Y	A
6	A	A	R	R	B	B	A	26	24	34	43	R 44	R 47	R 42	J R 53	J R 42	F 33	F 26	F 24	A	B	A	R 14	Y
7	R 33	R 34	A	B	B	R 38	B	A	B	B	A	B	B	B	R 64	56	R 47	B	Y	Y	R 32	A	A	A
8	R 34	A	A	B	A	A	R	Y	B	A	R 41	R 54	J R 56	B	B	R 60	R 37	F 32	26	21	Y	Y	A	Y
9	R 18	A	A	R 26	A	A	A	R 27	26	F 30	B	B	B	B	R 73	R 51	48	R 43	R 34	R	B	A	A	A
10	A	A	A	A	A	F 25	A	A	A	42	42	J R 40	R	B	B	B	R 40	J R 36	R 42	B	A	A	A	R 36
11	A	A	A	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	A	B	R	A	F 25
12	A	A	A	B	A	A	B	B	27	37	R 49	B	R 51	R 60	R 62	J R 54	R 42	B	B	B	B	B	B	Y
13	A	A	A	B	B	A	A	B	B	R 42	B	B	R 71	R 67	R	R 60	47	R 47	R 33	B	R 25	B	R	B
14	R	A	A	A	A	A	A	F 42	F 37	J R 44	R 50	B	B	B	R 68	61	R 44	R 42	R 34	R 26	B	B	B	B
15	B	B	B	F 18	F 19	F 22	R 31	R 22	30	R 46	56	60	61	R 65	R 79	57	R 49	J R 54	F 22	R 18	B	B	B	B
16	R	A	Y	F 29	B	F 31	F 26	F 21	F 23	38	50	R	F 58	68	65	62	R 56	38	42	R 21	B	B	B	A
17	R 38	A	A	F 21	A	A	A	A	F 32	42	R 45	57	58	R 65	66	60	R	J R 52	56	34	R	A	A	R 38
18	35	A	R 34	A	A	R 37	A	A	A	A	B	B	B	R 40	40	43	42	R 42	F 30	27	B	B	Y	A
19	A	F 44	A	A	A	R 34	F 22	F 24	F 30	38	J R 47	J R 52	J R 55	R	60	J R 40	J R 59	39	F 28	F 23	F 25	B	B	A
20	A	R 35	R 41	44	A	B	A	A	B	B	B	B	B	B	66	B	57	J R 57	R	R	A	A	R 40	R 33
21	A	R 31	A	A	R 38	R 36	B	B	B	B	B	B	B	B	B	B	B	B	R 32	B	B	R 30	A	A
22	B	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R 37	A	B	B	Y	R 31
23	A	A	A	B	A	A	R	F 18	B	B	B	B	B	B	B	R	R	R 40	R 35	R 27	R 20	B	Y	A
24	A	A	A	A	A	A	A	A	R 33	R	R	B	B	B	R	62	B	F 56	B	R 39	R	B	R	B
25	B	R	Y	B	Y	B	B	A	A	B	B	R 66	B	R 66	R 66	R 75	51	J R 59	42	F 31	F 21	B	A	A
26	A	R	A	R 38	A	A	R 28	F 23	R 36	R 40	R 44	R 49	65	67	55	61	J R 51	47	F 36	F 31	F 26	R 18	B	A
27	A	A	A	A	B	A	R 35	25	F 30	B	B	R 45	R 49	R 34	R 45	57	54	F 38	38	F 25	B	B	A	B
28	A	A	A	A	A	R 24	A	R 32	B	B	R 45	U R 50	B	B	R 65	R 63	R	R 40	F 29	23	F 16	A	A	A
29	R 27	R	B	R	B	A	A	B	R 36	R 40	R 45	R 48	R	R	56	R 55	J R 55	42	R 35	R 26	B	B	B	Y
30	B	Y	A	A	R 32	A	R 39	A	F 40	42	B	B	B	B	B	R 68	R 56	B	F 22	25	32	A	F 38	A
31	A	A	A	R 23	A	A	B	A	B	B	B	B	B	B	B	B	B	B	R 31	R 28	A	A	A	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	4	3	7	3	9	6	11	14	16	17	15	14	12	19	23	22	23	25	18	9	2	3	5
MED	R 34	R 34	R 34	26	R 32	R 32	R 30	F 25	30	39	R 45	R 50	R 57	R 64	R 64	R 57	R 48	R 42	33	26	25	R 24	R 38	R 33
U Q	35	40	R 41	38	R 38	R 36	R 35	F 32	36	R 42	R 48	55	61	66	R 66	61	R 54	J R 52	36	28	29		R 40	R 37
L Q	R 27	R 32	R 34	F 21	F 19	F 24	F 26	F 22	26	34	R 42	R 45	R 50	R 49	R 55	48	42	36	F 27	R 21	R 18		R 14	28

AUG. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	K 39	K 38	40	42	41	37	41	B	B	35	24	B	E B 25	20	E B 26	19	E B 15	24	E B 15	B	E S 14	B	B	B
2	32	40	41	40	42	57	48	B	23	27	18	E B 21	B	B	E B 57	B	B	E B 30	E B 16	E B 15	B	B	B	26
3	38	41	B	B	41	48	54	26	34	B	E B 25	E B 28	22	20	22	16	E B 15	E S 12	E B 13	B	B	22	26	B
4	23	28	B	B	23	B	B	B	E S 13	E S 13	E B 17	E B 24	32	B	B	25	22	34	45	32	B	18	17	28
5	26	31	33	23	41	38	40	36	B	36	E B 20	E B 27	29	22	E B 24	22	E B 25	B	B	B	B	B	18	46
6	41	52	43	35	B	B	40	34	E B 17	E B 16	E B 15	20	E B 20	E B 28	E B 26	19	20	14	17	32	B	28	17	15
7	39	42	74	B	B	41	B	44	B	B	38	B	B	B	E B 28	E B 15	E B 34	B	17	20	K 40	35	32	36
8	40	41	74	B	31	22	20	17	B	34	E B 16	E B 25	45	B	B	E B 28	27	26	22	E B 16	18	17	30	19
9	26	34	60	32	61	39	39	44	39	26	B	B	B	B	E B 57	E B 19	22	E B 25	23	23	B	41	44	55
10	54	63	60	36	41	26	71	42	38	33	23	K 25	B	B	B	E B 29	E B 19	E B 25	B	44	35	45	40
11	41	42	39	B	B	38	48	36	40	B	B	B	B	B	B	B	B	B	B	23	B	16	32	31
12	32	38	32	B	37	48	B	B	20	22	E B 25	B	E B 35	E B 26	E B 27	16	E B 16	B	B	B	B	B	B	20
13	33	42	45	B	B	37	36	B	B	E B 20	B	B	E B 33	E B 28	E B 29	22	E B 19	E B 17	E B 28	B	E B 13	B	E B 12	B
14	23	58	48	40	41	34	56	36	16	20	27	B	B	B	E B 56	E B 21	E B 25	E B 26	E B 18	E B 17	B	B	B	B
15	B	B	B	20	E S 13	E S 13	E S 13	E S 14	E S 14	K 18	22	22	26	23	21	22	K 20	E B 15	E S 13	E S 12	B	B	B	B
16	23	31	23	23	B	E B 19	E S 13	21	E S 16	19	E B 25	24	28	24	E B 30	E B 22	E B 20	E S 15	E S 13	E S 13	B	B	B	29
17	53	45	47	33	52	70	40	32	32	16	22	24	22	E B 27	27	18	E B 20	23	E B 12	13	33	38	48	48
18	42	54	42	57	53	47	46	42	50	37	B	B	B	E B 33	E B 26	20	18	E B 21	E B 17	E B 16	B	B	13	35
19	34	58	48	42	46	42	29	18	E B 14	20	22	21	26	20	22	20	19	14	15	E S 10	E S 11	B	B	23
20	38	48	48	42	59	B	62	45	B	B	B	B	B	B	E B 50	B	E B 30	E B 22	31	44	34	44	45	45
21	44	41	96	39	43	36	B	B	B	B	B	B	B	B	B	B	B	B	E B 26	B	B	37	41	41
22	B	67	30	B	B	B	39	B	B	B	B	B	B	B	B	B	B	B	E B 31	36	B	B	24	37
23	34	38	42	B	38	42	21	E S 13	B	B	B	B	B	B	B	E B 25	E B 19	E B 26	E B 25	E B 15	E B 13	B	E B 12	26
24	43	34	38	38	41	30	44	30	22	21	24	B	B	B	E B 28	E B 31	B	E B 20	B	E B 20	35	B	24	B
25	B	22	18	B	12	B	B	41	33	B	B	E B 39	B	E B 26	E B 26	21	18	15	E B 12	15	E B 11	B	34	31
26	32	38	40	48	35	48	39	18	15	18	22	24	26	26	23	20	19	33	39	E S 11	28	E S 12	B	30
27	37	42	43	38	B	47	41	34	30	B	B	23	G	27	23	40	38	19	E S 12	17	B	B	42	B
28	34	43	42	52	38	27	48	37	B	B	E B 25	23	B	B	E B 55	E B 57	17	E B 18	E B 15	E S 12	16	28	32	33
29	K 35	20	B	21	B	42	35	B	30	23	22	23	G 22	24	24	38	48	22	34	E B 15	B	B	B	20
30	B	22	35	41	49	54	48	42	33	23	B	B	B	B	B	E B 58	E B 30	B	32	28	30	61	81	77
31	62	65	38	17	45	42	B	35	B	B	B	B	B	B	B	B	B	B	E B 25	36	39	41	52	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	27	30	27	21	23	26	25	23	20	20	19	15	16	15	22	24	25	23	27	24	15	15	22	23
MED	37	41	42	38	41	40	40	35	26	22	22	23	26	24	E B 26	21	E B 20	E 21	E B 18	16	28	35	32	31
U Q	41	48	48	42	46	47	48	42	34	30	E B 25	E B 25	30	E B 27	E B 30	E B 26	E B 28	26	28	26	35	41	44	41
L Q	32	34	38	28	37	34	36	21	E 16	18	E B 20	22	22	22	24	19	E B 18	15	E B 15	E S 14	E B 13	18	18	26

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	13	16	23	18	21	25	B	B	16	20	B	25	14	26	15	15	14	15	B	E S 14	B	B	B
2	13	16	26	20	24	17	13	B	14	15	16	21	B	B	57	B	B	30	16	15	B	B	B	13
3	14	14	B	B	27	16	14	17	13	B	25	28	18	17	16	13	15	E S 12	13	B	B	13	13	B
4	13	13	B	B	13	B	B	B	E S 13	E S 13	17	24	24	B	B	18	12	12	13	13	B	12	12	12
5	13	14	12	13	12	14	13	13	B	13	20	27	27	17	24	15	25	B	B	B	B	B	13	12
6	13	16	19	30	B	B	26	12	17	16	15	15	67	28	26	14	12	12	11	18	B	10	10	11
7	12	12	12	B	B	13	B	18	B	B	24	B	B	B	28	15	34	B	10	10	15	10	11	10
8	10	12	10	B	15	14	12	12	B	16	16	25	25	B	B	28	15	11	10	16	10	9	12	12
9	12	10	11	11	12	12	12	11	16	12	B	B	B	B	57	19	12	25	15	14	B	11	12	13
10	16	13	31	30	18	11	11	19	14	15	17	17	25	B	B	B	29	19	25	B	12	15	15	16
11	16	21	25	B	B	24	12	12	13	B	B	B	B	B	B	B	B	B	B	10	B	12	11	10
12	11	10	25	B	20	28	B	B	10	13	25	B	35	26	27	12	16	B	B	B	B	B	B	12
13	13	12	26	B	B	29	20	B	B	20	B	B	33	28	29	19	19	17	28	B	13	B	12	B
14	12	13	12	12	14	12	17	12	10	11	11	B	B	B	56	21	25	26	18	17	B	B	B	B
15	B	B	B	13	E S 13	E S 13	E S 13	E S 14	E S 14	12	16	15	16	17	12	15	15	15	E S 13	E S 12	B	B	B	B
16	13	13	15	12	B	19	E S 13	14	E S 16	12	25	17	16	16	30	22	20	15	13	E S 13	B	B	B	13
17	13	14	12	12	12	18	21	15	19	11	15	21	16	27	15	11	20	10	12	10	10	10	11	10
18	14	12	11	10	13	13	15	27	15	12	B	B	B	33	26	15	12	21	17	16	B	B	10	12
19	12	12	16	13	16	14	12	16	14	16	16	12	16	15	15	14	14	12	11	E S 10	E S 11	B	B	11
20	12	12	13	12	12	B	14	13	B	B	B	B	B	B	50	B	30	22	25	12	11	11	11	13
21	17	11	13	20	12	12	B	B	B	B	B	B	B	B	B	B	B	B	26	B	B	11	10	11
22	B	51	24	B	B	B	21	B	B	B	B	B	B	B	B	B	B	B	31	12	B	B	10	11
23	20	18	16	B	26	16	12	E S 13	B	B	B	B	B	B	B	25	19	26	25	15	13	B	12	12
24	13	12	14	21	12	24	16	12	16	17	20	B	B	B	28	31	B	20	B	19	18	B	11	B
25	B	13	10	B	11	B	B	19	25	B	B	39	B	26	26	18	14	12	12	10	11	B	24	16
26	9	20	26	14	21	12	10	12	11	15	16	16	17	15	16	14	15	11	11	E S 11	10	E S 12	B	12
27	12	13	18	20	B	18	12	12	12	B	B	19	16	18	17	16	12	10	E S 12	12	B	B	13	B
28	12	13	21	16	20	13	20	14	B	B	25	20	B	B	55	57	14	18	15	E S 12	12	13	12	12
29	14	12	B	12	B	13	27	B	20	18	15	16	18	15	15	14	14	12	16	15	B	B	B	13
30	B	13	13	13	13	12	15	13	13	14	B	B	B	B	B	58	30	B	11	13	13	12	12	15
31	14	12	17	13	12	20	B	14	B	B	B	B	B	B	B	B	B	B	25	11	11	12	13	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	16	20	18	16	15	14	16	16	25	39	67	B	29	19	19	19	15	14	B	B	12	13
U Q	16	14	26	B	B	B 24	B 26	B	B	B	B	B	B	B	B	B 58	B 30	B	25	B 19	B	B	B	B
L Q	12	12	12	13	12	13	12	12	13	13	16	19	18	17	24	15	14	12	12	12	12	12	11	12

AUG. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	222	A	A	A	A	B	B	A	A 248	B	204	202	234	190	196	244	204	B	E S 216	B	B	B
2	A	A	A	A	A	A	A	B	A	A	226	216	B	B	E B 248	B	B	E B 236	E B 208	E B 244	B	B	B	A
3	A	A	B	B	A	A	A	A	A	B	E B 252	E B 218	194	212	186	182	Q 210	182	218	B	B	A	A	B
4	A	A	B	B	A	B	B	B	S	220	208	216	216	B	B	200	180	E A 266	E A 230	E A 204	B	Y	Y	A
5	A	A	A	A	A	A	A	A	B	E A 252	212	212	202	202	198	200	208	B	B	B	B	B	Y	A
6	A	A	A	A	B	B	A	A 220	E B 294	242	222	218	202	212	202	186	Q 220	192	Q 192	A	B	A	A	Y
7	224	208	A	B	B	226	B	A	B	B	A	B	B	B	E B 238	226	E B 254	B	Y	A	E A 244	A	A	A
8	224	A	A	B	A	A	A	Y	B	A	196	220	208	B	B	200	204	E A 230	E A 238	E B 244	A	A	A	A
9	E A 256	A	A	E A 254	A	A	A	A	E A 334	Q 252	B	B	B	B	E B 246	204	Q 204	E B 234	A 242	A 256	B	A	A	A
10	A	A	A	A	A	212	A	A	A	E A 258	228	216	214	B	B	B	E B 260	E B 244	E B 234	B	A	A	A	230
11	A	A	A	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	A 220	B	A	A	E A 252
12	A	A	A	B	A	A	B	B	E A 308	256	E B 226	B	E B 260	204	206	196	190	B	B	B	B	B	B	A
13	A	A	A	B	B	A	A	B	B	246	B	B	228	214	198	196	196	208	E B 212	B	E B 232	B	E B 232	B
14	A	A	A	A	A	A	A	214	Q 246	236	246	B	B	B	260	222	226	212	212	E B 236	B	B	B	B
15	B	B	B	A	S	S	S	S	S 254	218	226	214	208	200	220	204	196	222	196	S	B	B	B	B
16	A	A	A	A	B	E B 356	S	A	S 236	212	224	206	Q 216	216	210	208	202	218	214	190	B	B	B	A
17	216	A	212	A	A	A	A	A	E A 302	204	204	224	E A 210	E B 230	214	214	196	246	214	214	A 230	A	A	230
18	230	A	216	A	A	228	A	A	A	A	B	B	B	E B 278	E B 256	E A 234	E A 230	254	Q 226	236	B	B	Y	A
19	A	Q 198	A	A	A	224	214	E S 272	224	E B 256	238	218	212	E A 220	A 218	198	202	212	190	204	Q 208	B	B	A
20	A	202	208	A	A	B	A	208	B	B	B	B	B	B	E B 292	B	260	E B 232	A	214	A	A	210	E A 234
21	A	A	A	A	226	210	B	B	B	B	B	B	B	B	B	B	B	B	E B 258	B	B	A	A	A
22	B	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	E B 276	A	B	B	A	216
23	A	A	A	B	A	A	A	S	B	B	B	B	B	B	B	E B 232	206	244	E B 230	E B 224	E B 216	B	A	A
24	A	A	A	A	A	A	A	A	E A 290	234	232	B	B	B	234	200	B	Q 202	B	226	A	B	A	B
25	B	A	A	B	Y	B	B	A	A	B	B	E B 258	B	E B 222	208	198	198	198	202	210	240	B	A	A
26	A	A	A	214	A	A	218	A 290	A 256	236	226	220	226	E A 234	210	198	Q 206	190	Q 202	194	Q 200	S	B	A
27	A	A	A	A	B	A	212	214	A	B	B	E A 252	210	E A 232	210	E A 236	208	Q 218	198	Q 208	B	B	A	B
28	A	A	A	A	A	220	A	214	B	B	218	218	B	B	E B 284	E B 250	Q 190	192	192	210	216	A	A	A
29	218	A	B	A	B	A	A	B	A	E A 266	E A 230	188	202	216	Q 222	210	Q 212	192	A 252	218	B	B	B	Y
30	B	Y	A	218	216	214	218	A	232	A 238	B	B	B	B	B	E B 260	E B 242	B	A	206	224	A	202	A
31	A	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	A 230	A	A	A	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	3	4	3	2	8	4	7	11	16	18	16	16	15	22	24	25	23	23	20	10		3	5
MED	222	202	214	216	221	220	216	214	U 240	234	226	217	210	209	213	200	204	208	208	212	218		206	223
U Q	230	208	219	E A 254		227	218	272	E A 302	E 254	232	220	216	E 230	E B 246	E 224	E 223	244	E 234	233	E 232		E B 232	E A 243
L Q	218	Q 198	210	214		213	213	214	236	227	218	215	203	204	208	198	196	198	202	207	Q 216		202	223

AUG. 2004 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	B	B	R	B	B	O X 35	O X 37	O X 42	O X 41	B	B	B	O X 45	B	B	O X 39	X 29	R	B	Y	O X 32
2	O X 37	A	A	B	A	A	A	A	O X 38	B	B	B	B	B	B	B	O X 48	R	O X 45	O X 43	B	B	B	B
3	R	O X 38	R	O X 28	Y	B	B	B	B	O X 47	O X 52	X 62	67	X 70	X 68	X 66	O X 62	B	B	O X 34	B	Y	R	B
4	B	Y	62	B	B	R	O X 38	O X 40	O X 47	O X 53	O X 63	76	R	O X 78	X 78	X 74	X 62	57	O X 50	O X 36	31	O X 25	B	B
5	A	40	A	A	A	A	40	46	R	X 60	X 65	X 74	X 78	X 83	X 84	79	77	77	69	38	O X 45	A	O X 38	O X 36
6	A	60	A	A	A	A	O X 32	X 40	O X 40	O X 42	B	B	B	O X 54	X 66	X 67	B	B	B	R	A	O X 32	O X 40	A
7	O X 52	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 49	O X 38	Y	54	A
8	A	R	R	O X 38	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	Y	Y	Y	O X 29	B	B	B	B	B	B	B	B	B	B	O X 46	X 46	X 49	X 34	O X 28	B	Y
10	O X 33	A	B	A	A	O X 34	44	44	O X 46	O X 56	R	X 60	R	68	X 74	O X 68	O X 69	X 68	O X 54	X 50	38	35	29	B
11	B	B	B	B	B	B	B	O X 44	R	X 60	X 65	B	B	X 77	R	X 63	O X 70	X 65	X 61	X 55	X 36	28	B	A
12	A	O X 40	O X 43	A	A	42	43	41	O X 49	R	X 60	O X 67	O X 69	O X 74	X 66	X 68	O X 70	X 73	X 50	X 50	43	36	30	O X 24
13	B	B	B	R	B	B	28	38	X 45	O X 51	X 67	X 65	R	O X 86	R	O X 86	X 64	O X 68	X 52	O X 49	O X 41	O X 28	O X 27	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
16	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A
17	A	A	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	R	R
18	42	A	A	B	B	A	B	B	B	B	B	O X 49	R	O X 42	B	B	B	B	B	B	O X 43	O X 36	O X 31	O X 25
19	Y		R	A	A	X 28	X 33	O X 43	X 50	R	X 74	X 81	75	X 78	X 78	O X 74	X 72	X 66	51	X 48	X 43	29	A	A
20	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	R	B	O X 52	O X 41	O X 40	B	B	O X 27
21	O X 25	R	B	A	R	B	B	B	B	B	B	B	B	B	B	B	R	O X 54	O X 48	O X 48	X 38	X 34	X 29	O X 26
22	71	A	O X 34	A	A	A	R	O X 42	X 44	O X 47	O X 44	O X 44	B	B	O X 46	X 63	X 71	B	R	B	R	A	A	A
23	R	A	B	B	R	R	B	B	B	B	B	B	R	B	O X 52	O X 49	O X 51	O X 48	B	B	O X 36	38	O X 24	C
24	A	O X 38	A	A	A	B	B	A	A	O X 47	R	R	R	X 62	X 62	R	B	R	O X 48	X 48	X 38	B	B	R
25	44	B	A	R	A	O X 37	O X 42	O X 47	X 50	X 62	R	O X 70	X 65	X 65	O X 70	O X 70	O X 69	B	R	X 47	40	24	O X 29	A
26	O X 42	A	A	O X 31	B	O X 34	O X 42	X 45	O X 48	O X 52	R	R	B	R	O X 72	X 72	O X 71	X 58	X 52	X 50	X 39	32	R	O X 36
27	R	A	A	A	O X 39	X 40	X 44	O X 45	R	O X 45	O X 48	X 57	X 62	O X 69	X 72	X 78	X 82	O X 73	R	O X 48	32	A	A	A
28	A	O X 38	R	R	R	R	B	B	R	O X 44	R	R	O X 66	O X 68	R	O X 67	O X 67	X 62	X 58	X 48	X 41	X 35	29	O X 24
29	O X 37	A	A	A	A	38	44	O X 50	O X 44	R	O X 62	O X 52	O X 64	X 62	X 66	X 64	X 63	X 61	X 57	X 48	42	28	17	A
30	A	A	A	A	A	37	X 44	X 50	X 46	R	O X 67	X 73	X 78	O X 74	X 75	X 64	O X 68	O X 66	X 58	X 56	O X 46	X 34	X 28	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	6	3	3	1	8	13	14	13	14	12	14	9	16	15	18	17	15	17	21	20	16	13	8
MED	O X 42	O X 39	O X 43	O X 31	O X 39	X 37	X 42	X 44	O X 46	O X 49	O X 62	X 64	X 67	X 70	X 70	X 68	O X 69	X 65	X 52	X 48	X 40	32	X 29	O X 26
U Q	48	40	62	O X 38		39	44	X 46	X 48	X 56	X 66	X 73	X 76	X 78	X 75	X 74	X 71	X 68	X 58	X 50	X 42	35	O X 34	O X 34
L Q	O X 35	O X 38	O X 34	O X 28		O X 34	X 32	41	O X 42	O X 45	O X 50	O X 52	X 64	X 64	X 66	X 64	O X 62	O X 57	O X 48	O X 42	37	28	X 28	O X 24

SEP. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	B	B	A	B	B	R 29	R 31	36	R 35	B	B	B	R 39	B	B	R 33	23	R	B	Y	R 26
2	R 31	A	A	B	A	A	A	A	32	B	B	B	B	B	B	B	R 42	R	39	R 37	B	B	B	B
3	A	R 32	A	22	Y	B	B	B	B	R 41	U R 46	J R 56	F 57	J R 64	62	J R 60	56	B	B	R 28	B	Y	A	B
4	B	Y	Y	B	B	A	R 32	R 34	R 41	R 47	57	F 66	R	R 72	J R 72	J F 68	56	F 47	44	R 30	F 21	R 19	B	B
5	A	28	A	A	A	A	F 30	F 36	R	J R 54	59	68	J R 72	77	78	F 64	F 64	F 64	F 57	F 21	U R 39	A	R 32	R 30
6	A	A	A	A	A	A	R 26	34	R 34	R 36	B	B	B	R 48	60	61	B	B	B	R	A	R 26	R 34	A
7	R 46	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 43	R 32	Y	A	A
8	A	R	A	R 32	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	Y	Y	Y	R 23	B	B	B	B	B	B	B	B	B	B	R 40	40	43	28	R 22	B	Y
10	R 27	A	B	A	A	R 28	F 34	F 35	R 40	U R 50	R	J R 54	R	R 41	68	R 62	R 63	62	R 48	44	F 29	F 26	F 19	B
11	B	B	B	B	B	B	B	R 38	R	J R 54	J R 59	B	B	J R 71	R	57	R 64	59	55	49	30	F 17	B	A
12	A	R 34	R 37	A	A	F 32	F 30	F 32	R 43	R	J R 54	61	R 63	R 68	60	62	R 64	67	44	44	F 35	F 26	F 21	R 18
13	B	B	B	R	B	B	F 18	F 28	39	R 45	61	J R 59	R	R 80	R	R 80	J R 58	R 62	J R 46	R 43	R 35	R 22	R 21	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
16	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A
17	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	R	R
18	F 30	A	A	B	B	A	B	B	B	B	B	R 43	R	R 36	B	B	B	B	B	B	R 37	30	R 25	R 19
19	Y	R	R	A	A	22	27	R 37	44	R	J R 68	J R 75	F 65	J R 72	J R 72	R 68	66	60	F 41	42	37	F 16	A	A
20	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	D R 40	B	R 46	R 35	R 34	B	B	R 21
21	R 19	A	B	A	R	B	B	B	B	B	B	B	B	B	B	B	R	R 48	R 42	R 42	32	28	23	R 20
22	A	A	R 28	A	A	A	R	R 36	38	R 41	R 38	R 38	B	B	R 40	J R 57	65	B	R	B	A	A	A	A
23	R	A	B	B	R	A	B	B	B	B	B	B	R	B	R 46	R 43	R 45	R 42	B	B	R 30	F 20	R 18	C
24	A	R 32	A	A	A	B	B	A	A	U R 41	R	R	R	56	56	R	B	R	U R 42	42	32	B	B	R
25	A	B	A	A	A	R 31	36	U R 41	J R 44	56	R	R 64	59	59	64	R 64	63	B	R	41	F 30	F 16	R 23	A
26	R 36	A	A	R 25	B	R 28	36	39	R 42	R 46	R	R	B	R	R 66	J R 66	R 65	52	46	44	33	F 22	R	R 30
27	R	A	A	A	33	34	38	R 39	R	R 39	R 42	J R 51	56	63	66	J R 72	J R 76	R 67	R	R 42	F 22	A	A	A
28	A	R 32	R	R	R	R	B	B	R	R 38	R	R	R 60	R 62	R	R 61	R 61	J R 56	J R 52	42	35	29	F 19	R 18
29	R 31	A	A	A	A	F 29	F 33	R 44	R 38	R	R 56	R 46	R 58	J R 56	60	58	57	55	51	42	F 34	F 18	F	A
30	A	A	A	A	A	F 28	38	44	40	R	R 61	J R 67	J R 72	R 68	J R 69	J R 58	R 62	R 60	J R 52	J R 50	R 40	28	22	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	5	2	3	1	8	13	14	13	14	12	14	9	16	15	18	18	15	17	21	20	16	11	8
MED	R 31	R 32	R 32	R 25	33	28	32	36	R 40	R 43	R 56	R 58	R 60	R 64	64	R 62	R 62	59	46	42	32	22	R 22	R 20
U Q	R 36	R 33		R 32		32	36	R 39	R 42	R 50	R 60	66	J R 68	R 72	J R 69	J R 66	R 64	62	52	44	R 35	27	R 25	R 28
L Q	R 27	30		22		28	26	34	36	R 39	R 44	R 46	58	R 56	60	R 58	R 56	R 48	42	R 36	F 30	F 18	F 19	R 18

SEP.2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	K 31	39	23	B	B	31	B	B	21	E B 22	23	E B 25	B	B	B	E B 28	B	B	E B 18	18	22	B	17	31
2	38	48	32	B	30	43	41	35	20	B	B	B	B	B	B	B	E B 25	E B 30	E B 20	E B 25	B	B	B	B
3	31	40	34	24	18	B	B	B	B	E B 33	E B 29	E B 32	E B 28	27	22	E B 24	G 19	B	B	19	B	20	27	B
4	B	22	K 18	B	B	32	K 23	E B 20	E B 26	E B 26	E B 30	27	28	29	24	E B 25	23	18	E B 15	E B 15	E S 12	E B 13	B	B
5	33	39	44	35	38	42	31	18	19	20	24	30	28	G 22	28	26	23	E B 25	E B 16	17	44	44	40	47
6	42	44	73	94	39	44	34	K 21	22	E B 20	B	B	B	E B 26	22	E B 26	B	B	B	26	43	32	43	44
7	67	B	B	B	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 29	E B 21	K 22	39	40
8	42	K 30	35	42	39	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	22	20	21	17	B	B	B	B	B	B	B	B	B	B	E B 25	E B 21	E S 12	E S 12	E B 16	B	K 20
10	35	34	B	39	40	34	26	20	19	21	E B 28	23	27	22	27	22	G	G	E B 16	E S 12	E S 12	E S 12	E S 12	B
11	B	B	B	B	B	B	B	E B 30	E B 27	E B 31	E B 29	B	B	E B 54	E B 30	E B 26	E B 26	21	E B 13	E B 12	E B 12	E B 12	B	32
12	42	44	49	43	45	33	38	17	21	24	28	30	30	27	E B 26	27	24	22	18	13	E B 12	E S 11	E S 10	E S 12
13	B	B	B	22	B	B	E S 12	18	20	25	27	31	33	33	38	24	G 21	20	E B 21	E B 16	E S 18	E B 16	E S 11	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33
16	35	B	B	33	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	36	B	32	36
17	32	54	B	B	27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	B	23	21
18	27	42	36	B	B	38	B	B	B	B	B	E B 38	30	E B 30	B	B	B	B	B	B	E B 21	E B 14	18	E S 12
19	18	26	32	33	30	E B 16	E S 13	17	21	21	23	E B 29	28	37	G	E B 30	E B 26	E B 26	E B 15	E B 14	E B 12	E B 12	39	43
20	42	75	88	58	39	B	34	B	B	B	B	B	B	B	B	B	E B 29	B	E B 26	E B 25	E B 26	B	B	E B 14
21	E S 12	22	B	41	22	B	B	B	B	B	B	B	B	B	B	B	E B 30	E B 26	E B 30	E B 16	E B 14	E B 15	E S 12	22
22	56	40	36	37	36	43	30	28	23	22	23	23	B	B	28	23	22	B	31	B	38	46	36	87
23	37	49	B	B	34	40	B	B	B	B	B	B	29	B	25	E B 28	E B 27	E B 31	B	B	E B 20	14	E B 14	C
24	38	38	37	43	39	B	B	41	34	26	23	26	G 23	24	24	20	B	E B 28	E B 31	E B 16	E B 15	B	B	23
25	36	B	42	34	40	32	E B 16	E B 18	24	24	30	30	29	28	26	E B 30	E B 29	B	E B 28	E B 17	E B 11	E S 10	31	35
26	37	40	33	42	B	34	23	20	21	24	E B 30	24	B	E B 32	26	26	24	E B 20	18	E B 13	E B 12	E B 12	23	37
27	23	45	39	36	34	24	34	20	G 22	23	24	28	32	28	24	23	G 23	21	E B 20	E B 19	16	42	42	K 40
28	42	38	30	34	33	30	B	B	42	28	E B 28	31	G	29	27	31	24	22	17	E B 14	E B 16	E B 11	E B 11	18
29	Q 39	80	41	45	K 32	37	16	19	22	K 27	33	33	28	33	34	32	28	23	18	14	E S 12	E S 12	23	31
30	34	38	37	34	35	24	18	27	28	29	31	30	32	30	35	32	31	22	17	14	23	35	32	35
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	22	19	20	21	19	16	16	18	18	17	17	15	17	18	19	19	17	20	22	25	21	21	22
MED	36	40	36	36	35	34	24	20	22	23	26	29	28	28	26	25	23	20	E B 18	E B 16	E 16	E 14	23	32
U Q	42	45	42	42	39	40	34	28	26	27	30	31	30	32	28	30	E B 28	E B 26	E B 24	E B 19	24	27	38	40
L Q	32	38	32	34	30	30	E 16	18	21	22	24	26	28	26	24	24	G	20	E B 16	E 14	E B 12	E B 12	E S 13	21

SEP.2004 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	12	18	B	B	25	B	B	13	22	17	25	B	B	B	28	B	B	18	12	13	B	12	12
2	15	20	26	B	24	14	17	12	14	B	B	B	B	B	B	B	25	30	20	25	B	B	B	B
3	12	13	14	13	14	B	B	B	B	33	29	32	28	20	18	24	15	B	B	16	B	13	12	B
4	B	13	13	B	B	20	15	20	26	26	30	19	25	20	20	25	20	10	15	15	E S 12	E S 13	B	B
5	13	12	25	20	19	15	11	12	12	16	16	18	19	20	19	16	15	25	16	12	13	12	12	13
6	14	13	13	14	16	16	12	12	16	20	B	B	B	26	20	26	B	B	B	17	11	12	12	12
7	12	B	B	B	27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	21	14	11	10
8	12	22	14	13	24	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	12	11	11	11	B	B	B	B	B	B	B	B	B	B	25	21	E S 12	13	16	B	13
10	13	15	B	16	14	15	12	12	15	14	28	18	18	18	17	18	18	14	16	E S 12	E S 12	E S 12	E S 12	B
11	B	B	B	B	B	B	B	30	27	31	29	B	B	54	30	26	26	16	13	12	12	12	B	E S 13
12	12	13	12	12	11	11	9	12	14	18	15	19	16	15	26	17	15	15	10	10	12	E S 11	E S 10	E S 12
13	B	B	B	12	B	B	E S 12	11	14	15	19	19	18	18	22	20	14	16	21	16	E S 17	E B 16	E S 11	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25
16	29	B	B	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	16	B	18	27
17	26	15	B	B	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	B	12	12
18	24	22	20	B	B	20	B	B	B	B	B	38	26	30	B	B	B	B	B	B	21	14	12	E S 12
19	12	14	12	12	12	16	E S 13	15	18	16	20	29	20	18	18	30	26	26	15	14	12	12	E S 11	11
20	12	16	24	19	27	B	28	B	B	B	B	B	B	B	B	B	29	B	26	25	26	B	B	14
21	E S 12	14	B	18	14	B	B	B	B	B	B	B	B	B	B	B	30	26	30	16	14	15	E S 12	12
22	25	16	12	12	19	15	15	19	16	18	17	19	B	B	20	14	17	B	20	B	10	16	16	11
23	25	12	B	B	22	25	B	B	B	B	B	B	25	B	19	28	27	31	B	B	20	9	14	C
24	10	21	26	19	21	B	B	25	15	14	14	19	18	14	15	17	B	28	31	16	15	B	B	10
25	12	B	12	27	15	11	16	18	14	15	14	15	13	14	14	30	29	B	28	17	11	E S 10	E S 10	10
26	11	12	10	9	B	12	11	14	11	12	30	18	B	32	15	18	13	20	12	13	12	12	E S 10	10
27	10	10	16	16	16	10	9	12	18	12	14	16	14	12	15	15	14	16	20	19	10	10	26	19
28	12	15	18	16	16	21	B	B	19	12	28	25	24	16	16	15	12	12	13	15	16	11	11	10
29	10	16	17	16	12	11	10	12	11	11	12	12	14	13	12	13	12	12	10	10	E S 12	E S 12	E S 12	12
30	12	16	24	15	29	15	11	13	12	11	11	12	11	12	12	12	13	12	13	10	11	12	12	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29
MED	13	16	24	18	22	20	22	28	18	24	30	30	B	31	21	27	26	29	21	16	14	14	12	13
U Q	B 26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 21	B	B	B
L Q	12	13	14	13	15	15	12	12	14	15	17	19	18	18	17	17	15	16	15	12	12	12	E S 12	12

SEP. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	B	B	A	E B 206	214	200	B	B	B	E B 246	B	B	E B 232	E A 242	A	B	Y	A 228
2	234	A	A	B	A	A	A	A	E A 280	B	B	B	B	B	B	B	224	214	206	230	B	B	B	B
3	A	222	A	200	A	B	B	B	B	E B 252	E B 234	256	214	218	208	204	204	B	B	A 242	B	Y	A	B
4	B	A	Y	B	B	A	E A 282	E B 270	E B 246	222	230	218	214	Q 204	212	218	202	Q 194	198	198	S 210	210	B	B
5	A	S 226	A	A	A	A	A	260	226	220	222	218	226	222	208	Q 208	E A 224	Q 212	Q 206	S	214	A	A	220
6	A	206	A	A	A	A	214	208	A	E B 234	B	B	B	224	E B 220	236	B	B	B	A	A	212	A	A
7	222	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 260	E B 250	A	A	A
8	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	208	196	206	212	E B 284	B	A
10	212	A	B	A	204	216	A	238	E A 242	206	224	210	226	234	216	212	212	206	198	Q 198	Q 228	Q 216	E S 232	B
11	B	B	B	B	B	B	B	E B 256	E B 232	E B 236	228	B	B	E B 250	214	206	212	212	194	Q 194	206	214	B	A
12	A	E A 242	A 220	220	A	212	A	A 236	218	226	228	228	218	204	210	206	208	198	198	Q 206	216	196	206	E S 246
13	B	B	B	A	B	B	E S 274	232	204	204	208	A 208	222	214	A	224	204	200	204	B 218	184	E B 256	E S 218	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
16	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A
17	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A
18	210	A	A	B	B	A	B	B	B	B	B	B	228	E B 228	B	B	B	B	B	B	232	E B 234	E S 226	E S 274
19	A	A	A 280	A	A	E B 338	E S 272	238	210	204	E A 240	212	208	208	204	224	214	204	Q 198	220	194	S	A	A
20	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	230	B	218	E B 272	E B 276	B	B	E B 304
21	E S 312	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	E B 230	232	E B 232	214	226	E B 230	E S 230	E S 244
22	A	A	212	A	A	A 224	A	A	240	196	200	180	B	B	210	Q 222	222	B	A	B	A	A	A	A
23	A	A	B	B	A	A	B	B	B	B	B	B	236	B	E A 248	216	E B 228	E B 232	B	B	E B 286	E A 256	E B 338	C
24	A	202	A	A	A	B	B	A	A	244	202	202	206	196	208	194	B	220	E B 224	210	B 212	B	B	A
25	A	B	A	A	A	220	256	208	222	218	208	218	226	212	208	E B 222	228	B	210	210	208	S	210	A
26	A 242	A	A	216	B	216	A	230	230	202	E B 228	214	B	212	220	212	212	200	200	196	192	208	A	234
27	A	A	A	A	208	A	202	226	206	200	202	188	198	194	210	202	220	220	206	196	272	A	A	A
28	A	E A 254	A	202	196	A	B	B	A	E A 230	226	224	218	218	218	214	212	228	214	204	Q 220	222	E B 256	E S 270
29	234	A	A	A	A	A	198	202	A 218	204	190	190	192	200	204	202	Q 202	220	208	Q 198	Q 210	246	S	A
30	A	A	A	A	A	A	E A 262	212	200	196	212	214	214	214	200	200	196	214	202	202	198	A	A	S 196
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	6	3	4	3	6	8	13	14	18	17	16	15	17	17	19	19	17	19	20	20	13	8	9
MED	228	214	A 220	209	204	217	259	229	216	208	215	213	218	213	209	210	212	212	203	206	212	215	E 228	E S 244
U Q	242	E A 242	A 280	218	208	224	E S 273	247	E 240	E B 230	228	218	226	223	217	222	224	220	E B 214	225	230	E 251	E B 244	E S 272
L Q	212	206	212	201	196	216	208	210	210	204	205	201	208	204	208	204	204	202	198	198	207	211	214	224

SEP. 2004 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	O X 45	37	45	43	B	X 48	X 48	X 59	X 66	B	X 65	X 76	O X 70	O X 71	X 64	X 61	X 60	O X 56	44	39	31	32
2	A	30	26	X 28	O X 40	A	R	R	R	X 58	B	B	X 64	X 72	X 79	O X 76	76	77	X 52	R	32	A	O X 33	O X 39
3	O X 36	A	A	B	X 34	43	X 50	O X 59	X 57	R	B	R	O X 57	X 62	72	B	X 70	B	X 44	O X 34	A	A	A	R
4	36	A	O X 39	B	B	B	O X 40	X 37	B	A	O X 45	B	B	B	B	X 42	B	B	O X 50	O X 44	O X 38	A	54	A
5	A	O X 45	B	B	B	B	A	A	B	B	O X 54	O X 64	O X 43	O X 45	O X 45	B	B	O X 54	O X 52	O X 51	X 44	39	X 33	A
6	O X 36	A	A	A	A	A	A	B	R	B	O X 57	B	B	O X 71	B	B	B	B	B	B	O X 47	X 43	X 38	30
7	R	O X 41	X 52	A	B	O X 41	A	B	B	O X 63	O X 72	X 75	O X 74	O X 81	X 75	O X 72	X 66	O X 66	X 64	O X 52	X 53	O X 47	49	47
8	44	C	C	C	C	C	C	C	C	C	B	B	O X 84	X 80	X 75	X 64	O X 72	X 69	X 60	O X 62	O X 39	41	32	31
9	X 54	O X 40	91	R	B	A	R	B	B	O X 46	R	O X 66	O X 66	R	X 68	O X 67	X 62	X 57	O X 52	X 53	48	39	31	R
10	R	O X 32	A	O X 48	A	38	A	R	R	O X 54	R	B	R	R	B	B	B	B	O X 55	O X 49	X 40	39	38	O X 39
11	A	40	O X 42	A	A	B	B	B	B	B	B	B	B	B	B	R	X 60	X 56	O X 56	B	B	R	B	O X 37
12	B	A	A	B	B	O X 44	B	B	B	B	B	B	B	B	B	B	B	B	O X 52	O X 49	O X 44	O X 43	X 41	X 36
13	X 28	O X 29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	A	85	A	A	A
14	A	O X 30	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 41	A	O X 32	O X 29	O X 39	B
15	B	A	A	B	B	B	B	B	R	O X 51	R	B	R	B	B	O X 70	O X 72	O X 67	B	B	O X 44	R	X 36	39
16	A	A	A	A	B	B	R	O X 50	O X 51	R	B	B	B	R	B	B	X 60	X 60	X 58	O X 53	X 44	X 42	O X 40	X 43
17	42	43	41	41	46	42	O X 63	X 64	O X 70	B	B	O X 72	X 67	X 62	R	X 64	O X 69	X 65	O X 66	O X 56	R	O X 45	46	48
18	46	50	50	52	X 53	X 58	X 65	X 78	X 78	O X 84	O X 85	O X 85	O X 86	O X 86	O X 86	O X 85	O X 69	O X 64	X 63	O X 66	X 60	O X 40	O X 33	A
19	A	A	A	O X 44	50	52	54	60	O X 68	B	R	R	R	R	R	B	X 66	X 64	X 61	62	X 52	X 47	51	48
20	35	A	A	O X 40	A	A	A	B	B	B	B	O X 70	R	O X 68	B	O X 69	X 61	O X 63	B	R	O X 44	O X 43	A	O X 48
21	54	49	48	B	R	R	R	B	B	B	B	B	B	B	O X 45	R	O X 52	O X 48	B	O X 52	X 47	X 48	X 43	44
22	37	O X 29	41	X 48	R	O X 54	O X 42	R	B	O X 68	O X 73	O X 70	O X 51	O X 70	X 62	O X 68	O X 67	X 65	X 65	X 60	X 52	42	33	33
23	40	32	39	52	O X 46	X 60	68	B	R	B	O X 85	O X 86	O X 74	B	O X 72	O X 67	B	X 63	X 64	O X 66	X 56	X 58	X 51	X 50
24	52	52	41	R	A	O X 62	68	O X 73	X 78	X 83	X 80	O X 72	X 78	X 76	O X 73	O X 72	O X 70	O X 70	X 68	X 64	X 55	X 62	56	A
25	O X 48	36	O X 38	40	A	A	A	B	O X 42	R	O X 48	B	B	B	B	B	B	B	B	O X 50	X 48	O X 36	O X 29	A
26	A	A	A	O X 43	O X 47	B	R	O X 56	R	O X 64	O X 63	R	B	B	O X 73	O X 68	R	O X 52	O X 52	X 59	X 58	X 57	X 56	X 58
27	X 62	X 62	59	55	57	66	X 74	O X 83	X 82	X 81	O X 85	R	R	O X 87	O X 84	O X 80	X 75	X 74	O X 69	X 60	X 55	X 42	40	41
28	O X 38	A	A	B	O X 51	R	R	X 64	X 76	B	X 78	X 78	X 80	O X 81	X 76	O X 75	O X 77	X 72	O X 72	X 68	63	62	64	58
29	66	A	X 54	O X 50	X 70	X 70	78	78	X 79	X 81	X 80	O X 84	X 86	R	R	Y	B	O X 88	X 72	X 64	R	A	X 36	A
30	A	42	47	48	A	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	R	O X 40	O X 45	O X 42
31	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 70	R	O X 55	O X 50	O X 43	A	O X 47	O X 40	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	17	16	14	11	13	10	12	11	12	14	11	14	14	15	17	18	22	24	23	25	24	27	20
MED	42	40	44	46	X 47	X 52	X 64	X 62	X 70	O X 64	O X 72	O X 72	O X 70	O X 74	O X 73	O X 70	X 68	X 64	X 59	O X 56	X 47	X 42	X 40	42
U Q	53	47	51	50	X 53	X 61	68	X 76	X 78	X 81	O X 80	O X 84	X 80	O X 81	X 76	O X 74	O X 72	X 69	X 64	X 62	X 55	X 47	49	48
L Q	X 36	O X 31	40	40	X 45	42	O X 50	X 53	O X 51	O X 56	O X 57	O X 70	O X 64	X 68	X 68	X 67	X 62	O X 57	O X 52	O X 50	X 44	40	33	36

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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 39	F 22	F 36	F 30	B	J F 42	42	J R 53	60	B	J R 59	70	R 64	65	58	J R 55	J R 54	R 50	F 34	F 30	F 19	F 20
2	A	F 21	F 16	22	R 34	A	R	R	R	52	B	B	J R 58	66	J R 73	R 70	F 62	F 73	46	R	F 22	A	R 27	R 33
3	R 30	A	A	B	J R 28	F 34	J R 44	R 53	J R 51	R	B	R	R 51	56	F 62	B	64	B	38	R 28	A	A	A	A
4	F 28	A	R 33	B	B	B	R 34	31	B	A	R 39	B	B	B	B	J R 36	B	B	R 44	R 38	R 32	A	A	A
5	A	R 39	B	B	B	B	A	A	B	B	R 48	R 58	R 37	R 39	R 39	B	B	R 48	R 46	R 45	38	F 30	27	A
6	R 30	A	A	A	A	A	A	B	R	B	R 51	B	B	R 65	B	B	B	B	B	B	R 41	37	32	F 18
7	R	R 35	J R 46	A	B	R 35	A	B	B	R 57	R 66	69	R 68	R 75	J R 69	R 66	60	R 60	J R 58	R 46	47	R 41	F 39	F 40
8	F 34	C	C	C	C	C	C	C	C	C	B	B	R 78	J R 74	J R 69	J R 58	R 66	63	54	R 56	R 33	F 30	F 22	F 19
9	48	R 34	A	R	B	A	A	B	B	R 40	R	R 60	R 60	R	62	R 61	J R 56	J R 51	R 46	47	F 37	F 29	F 21	R
10	R	R 26	A	R 42	A	F 27	A	A	A	R 48	R	B	R	R	B	B	B	B	R 49	R 43	34	F 32	F 29	R 33
11	A	F 30	R 36	A	A	B	B	B	B	B	B	B	B	B	B	R	J R 54	50	R 50	B	B	R	B	R 31
12	B	A	A	B	B	R 38	B	B	B	B	B	B	B	B	B	B	B	B	R 46	R 43	38	R 37	35	30
13	22	R 23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	A	A	A	A	A
14	A	R 24	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 35	A	R 26	23	R 33	B
15	B	A	A	B	B	B	B	B	R	R 45	R	B	R	B	B	R 64	R 66	R 61	B	B	R 38	R	30	33
16	A	A	A	A	B	B	A	R 44	R 45	R	B	B	B	R	B	B	J R 54	54	J R 52	R 47	38	36	R 34	37
17	F 32	F 31	F 26	F 29	F 36	F 29	57	58	R 64	B	B	R 66	J R 61	J R 56	R	58	R 63	59	R 60	R 50	R	R 39	F 37	F 37
18	F 32	F 40	F 39	F 37	47	J R 52	59	J R 72	J R 72	R 78	R 79	R 79	R 80	U R 80	R 80	R 79	R 63	R 58	J R 57	60	54	R 34	R 27	A
19	A	A	A	R 38	41	46	35	38	62	B	R	R	R	R	R	B	60	58	J R 55	56	46	41	F 40	F 32
20	F 24	A	A	R 34	A	A	A	B	B	B	B	R 64	R	R 62	B	R 63	J R 55	R 57	B	R	R 38	R 37	A	R 42
21	R 32	F 30	F 29	B	R	R	R	B	B	B	B	B	B	B	R 39	R	R 46	R 42	B	R 46	41	42	37	F 34
22	F 26	R 23	F 29	J R 42	R	R 48	R 36	R	B	R 62	R 67	R 64	R 45	R 64	J R 56	R 62	R 61	59	59	J R 54	46	36	F 25	F 25
23	F 16	26	F 27	F 42	R 40	J R 54	F 61	B	R	B	R 79	R 80	R 68	B	R 66	R 61	B	J R 57	58	R 60	50	52	45	44
24	F 40	F 41	F 26	R	A	R 56	F 59	R 67	J R 72	R 77	J R 74	R 66	J R 72	J R 70	R 67	R 66	R 64	64	62	58	49	J R 56	F 36	A
25	R 42	F 22	R 32	F 28	A	A	A	B	R 36	R	R 42	B	B	B	B	B	B	B	B	R 44	42	R 30	23	A
26	A	A	A	37	R 41	B	R	R 50	R	R 58	R 57	R	B	B	R 67	R 62	R	U R 46	R 46	J R 53	J R 52	49	J R 50	J R 52
27	56	56	F 41	F 40	F 40	F 56	J R 68	R 77	J R 76	J R 75	R 79	R	R	R 81	R 78	R 74	J R 69	J R 68	63	54	49	36	F 30	F 30
28	R 32	A	A	B	R 45	A	R	R 58	J R 70	B	J R 72	J R 72	J R 74	R 75	J R 70	R 69	R 71	66	R 66	62	F 54	F 54	F 55	F 49
29	F 33	A	J R 48	R 44	J R 64	64	F 63	F 67	J R 73	J R 75	J R 74	R 78	80	R	R	Y	B	R 82	66	58	R	A	30	A
30	A	F 29	F 30	38	A	B	B	B	A	R	B	B	B	B	B	B	B	B	B	B	A	R 34	R 39	R 36
31	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 64	R	R 49	R 44	R 37	A	R 41	R 34	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	17	15	14	11	13	10	12	11	12	14	11	14	14	15	17	18	22	24	23	24	24	26	20
MED	F 32	30	F 32	38	R 40	46	58	R 56	J R 64	R 58	R 66	R 66	R 64	R 68	R 67	R 64	R 62	R 58	R 53	R 50	40	36	32	33
U Q	37	37	R 39	R 42	R 45	55	F 61	R 67	J R 72	R 75	R 74	R 78	R 74	R 75	R 70	R 68	R 64	63	58	56	48	41	F 37	38
L Q	F 27	R 24	F 27	F 29	R 36	F 32	R 36	43	R 45	R 50	R 51	R 64	R 58	R 62	R 62	R 61	J R 56	R 51	R 46	R 44	36	F 31	F 27	F 30

OCT. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	22	22	24	22	17	E B 13	B	22	27	23	26	B	24	27	26	31	22	23	18	16	E B 16	E S 12	E S 12	16
2	32	28	17	33	43	41	34	37	35	32	B	B	E B 32	27	32	E B 28	22	26	26	32	K 32	K 39	35	40
3	35	37	56	B	36	19	18	20	23	32	B	G	30	E B 31	28	B	24	B	26	22	43	80	73	39
4	44	66	51	B	B	B	27	32	B	36	27	B	B	B	B	24	B	B	E B 21	24	36	45	58	82
5	68	44	B	B	B	B	38	40	B	B	G	E B 29	E B 30	E B 30	E B 28	B	B	E B 24	20	16	E B 12	E S 12	E S 12	30
6	43	46	39	32	48	42	42	B	31	B	E B 31	B	B	E B 35	B	B	B	B	B	B	E B 26	E B 15	16	31
7	37	43	38	39	B	30	41	B	B	28	E B 31	32	31	G	E B 28	23	24	22	25	E B 29	E B 21	E B 16	E B 14	16
8	17	C	C	C	C	C	C	C	C	C	B	B	30	28	G 28	26	E B 29	23	21	33	E B 21	31	30	23
9	34	K 42	36	22	B	41	39	B	B	31	31	31	G 30	27	28	28	25	22	20	18	14	13	33	21
10	21	32	40	48	44	58	37	36	40	23	24	B	27	26	B	B	B	B	E B 25	E B 22	E B 18	13	26	38
11	36	69	48	40	39	B	B	B	B	B	B	B	B	B	B	25	23	G	E B 28	B	B	23	B	38
12	B	40	34	B	B	E B 31	B	B	B	B	B	B	B	B	B	B	B	B	E B 29	E B 20	E B 18	E B 15	E B 15	E B 14
13	15	62	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33	B	39	40	42	40	63	40
14	39	39	95	67	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 27	40	16	18	38	B
15	B	33	K 34	B	B	B	B	B	31	28	E B 33	B	E B 31	B	B	E B 50	27	E B 29	B	B	E B 30	22	37	40
16	43	38	K 36	K 34	B	B	32	31	G 28	26	B	B	B	E B 30	B	B	26	22	20	E B 19	E B 15	E B 15	E B 18	19
17	E B 12	18	19	20	38	22	22	24	26	B	B	E B 56	33	E B 33	32	30	E B 28	24	E B 26	E B 25	E B 29	E B 20	E B 12	15
18	15	E B 10	E B 11	E S 12	E S 14	19	G	27	29	29	24	32	41	36	37	34	28	E B 29	21	19	17	E B 14	24	43
19	50	43	39	37	22	26	27	28	30	B	28	27	31	32	32	B	G 24	23	G 18	20	19	15	K 16	15
20	33	71	47	43	41	34	42	B	B	B	B	33	31	28	B	26	25	28	B	40	44	43	42	38
21	38	32	41	B	31	44	41	B	B	B	B	B	B	B	E B 31	E B 30	E B 28	E B 26	B	K 24	17	14	12	23
22	36	36	32	42	37	30	37	35	B	E B 55	29	30	G	30	28	30	28	24	23	25	17	14	20	15
23	22	15	14	16	K 18	18	23	B	26	B	E B 56	G	32	B	E B 59	E B 34	B	25	22	22	20	14	13	13
24	E B 10	14	60	35	40	32	22	31	32	29	29	31	33	G	32	29	32	22	23	28	31	66	64	40
25	38	36	36	23	40	41	70	B	32	G 24	30	B	B	B	B	B	B	B	B	23	26	39	24	30
26	36	42	40	33	38	B	35	31	26	27	30	29	B	B	31	35	28	24	21	19	19	15	17	20
27	14	E B 11	20	20	18	22	G	32	27	30	27	35	35	34	37	E B 32	E B 31	23	23	22	21	22	14	22
28	38	66	35	B	32	44	37	33	31	B	G 24	G	33	32	30	K 31	27	22	29	22	20	15	15	22
29	40	42	38	32	27	30	30	30	27	29	34	30	31	28	G	29	B	E B 30	G	28	41	42	60	37
30	36	30	30	34	64	B	B	B	38	38	B	B	B	B	B	B	B	B	B	B	33	24	21	42
31	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 36	25	30	G	E B 25	39	22	37	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	27	21	20	20	22	16	18	17	18	15	19	19	18	20	21	22	25	27	30	31	30	30
MED	36	38	36	33	38	30	34	31	30	29	28	30	31	29	29	29	26	24	22	22	20	17	22	30
U Q	38	44	41	40	40	41	39	34	32	32	E B 31	32	33	32	32	E B 33	28	26	26	28	32	39	37	40
L Q	20	29	30	22	24	22	23	28	27	26	26	G 27	G	27	G	27	24	22	20	20	17	14	E 15	19

OCT. 2004 ftEs (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	13	13	13	B	12	11	12	16	B	19	12	16	12	12	11	12	12	16	E S 12	E S 12	12
2	14	12	14	12	12	16	25	20	16	12	B	B	32	16	10	28	14	15	17	29	10	9	9	11
3	10	10	15	B	12	10	11	15	13	25	B	20	18	31	12	B	16	B	13	16	14	10	12	12
4	10	17	14	B	B	B	13	29	B	27	21	B	B	B	B	22	B	B	21	13	10	15	10	10
5	10	10	B	B	B	B	26	19	B	B	24	29	30	30	28	B	B	24	15	11	12	E S 12	E S 12	E S 11
6	10	12	11	21	26	16	26	B	19	B	31	B	B	35	B	B	B	B	B	B	26	15	10	12
7	11	10	12	13	B	21	18	B	B	24	31	28	12	16	28	20	13	14	12	29	21	16	14	10
8	10	C	C	C	C	C	C	C	C	C	B	B	26	22	20	18	29	12	11	9	21	9	11	9
9	14	14	19	10	B	21	20	B	B	16	18	28	20	19	16	14	14	15	12	9	8	9	12	10
10	10	10	19	12	12	14	28	26	19	18	16	B	24	14	B	B	B	B	25	22	18	9	12	8
11	24	8	9	16	12	B	B	B	B	B	B	B	B	B	B	21	18	17	28	B	B	12	B	10
12	B	13	20	B	B	31	B	B	B	B	B	B	B	B	B	B	B	B	29	20	18	15	15	14
13	10	10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	16	14	21	26	11	11
14	11	13	20	18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	27	16	11	10	11	B
15	B	29	29	B	B	B	B	B	28	24	33	B	31	B	B	50	20	29	B	B	30	11	10	10
16	19	25	19	26	B	B	25	16	18	18	B	B	B	30	B	B	19	14	16	19	15	15	18	11
17	12	10	10	15	12	15	12	16	16	B	B	56	22	33	29	19	28	19	26	25	29	20	12	10
18	9	10	11	E S 12	E S 14	12	18	16	15	25	18	19	36	30	26	15	12	29	14	13	12	14	12	12
19	10	15	15	14	12	12	13	12	12	B	18	16	14	13	16	B	12	11	10	12	10	11	11	11
20	12	25	20	12	15	19	14	B	B	B	B	19	16	18	B	16	12	10	B	15	13	12	12	12
21	10	14	9	B	26	20	16	B	B	B	B	B	B	B	31	30	28	26	B	13	12	10	10	10
22	10	10	13	26	21	16	19	20	B	55	15	19	17	19	18	18	14	14	15	12	10	9	10	10
23	10	9	10	13	15	14	10	B	20	B	56	24	20	B	59	34	B	20	18	10	12	11	9	8
24	10	10	12	20	16	10	12	10	11	12	12	13	15	14	14	15	13	10	10	11	10	10	9	12
25	10	9	10	10	19	19	18	B	16	18	19	B	B	B	B	B	B	B	B	17	12	12	11	10
26	12	15	13	11	18	B	22	16	15	18	11	12	B	B	16	12	14	16	14	12	12	10	9	9
27	12	11	9	11	10	11	10	12	16	16	18	31	26	28	22	32	31	12	12	10	11	10	9	10
28	14	16	24	B	26	24	25	29	22	B	15	14	24	20	15	14	17	12	13	12	10	10	9	8
29	11	11	11	11	10	10	12	10	12	12	15	24	20	17	16	20	B	30	11	9	29	11	10	11
30	11	11	10	11	10	B	B	B	21	20	B	B	B	B	B	B	B	B	B	B	29	12	12	12
31	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	36	22	18	18	25	12	11	10	28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	11	12	14	16	18	20	21	29	20	26	31	B	30	30	29	30	20	19	16	14	12	11	11	11
U Q	14	15	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 28	25	21	14	12	12
L Q	10	10	11	12	12	14	13	16	16	18	18	20	20	18	16	18	14	14	12	12	11	10	10	10

OCT. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	196	A	A	A	A	S	B	220	198	188	192	B	A 208	208	198	210	210	210	214	204	Q 208	196	212	252
2	A	S	S	E S 256	A	A	A	A	A	192	B	B	E B 218	196	196	E B 214	Q 220	Q 246	Q 232	A	E A 252	A	A	218
3	E A 226	A	A	B	A	A	E A 254	212	210	A 230	B	A 212	Q 202	E B 242	216	B	218	B	E B 244	A	A	A	A	A
4	210	A	190	B	B	B	A	E A 256	B	A	196	B	B	B	B	E A 224	B	B	250	250	220	A	A	A
5	A	208	B	B	B	B	A	A	B	B	210	200	218	B 218	218	B	B	230	E B 228	220	228	224	248	A
6	228	A	A	A	A	A	A	B	A	B	228	B	B	E B 244	B	B	B	B	B	B	E B 226	Q 240	S 242	A
7	234	E A 256	E A 268	A	B	A	A	B	B	256	226	Y	226	200	206	206	214	214	216	E B 224	216	Q 228	Q 232	Q 222
8	Q 240	C	C	C	C	C	C	C	C	C	B	B	182	214	196	224	220	230	226	198	234	244	212	A 236
9	Q 202	228	A	A	B	A	A	B	B	198	238	226	218	A 222	210	210	208	208	Q 230	214	Q 218	Q 232	A 254	A
10	A	220	A	214	A	A	A	A	A	218	E B 214	B	214	224	B	B	B	B	230	224	228	Q 258	232	226
11	A	A	208	A	A	B	B	B	B	B	B	B	B	B	B	208	216	222	248	B	B	A	B	228
12	B	A	A	B	B	E B 266	B	B	B	B	B	B	B	B	B	B	B	B	E B 238	208	228	228	228	Q 256
13	E A 280	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A	A	A
14	A	E A 294	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 282	A	E A 364	A	204	B
15	B	A	A	B	B	B	B	B	A	216	226	B	E B 224	B	B	E B 276	226	E B 242	B	B	E B 242	A	218	214
16	A	A	A	A	B	B	A	A	224	190	B	B	B	E B 222	B	B	Q 212	Q 216	216	218	208	Q 230	E B 262	Q 246
17	Q 232	Q 274	A	A	A	276	218	218	196	B	B	E B 284	222	202	A	202	B 210	224	220	210	216	Q 224	220	Q 224
18	Q 224	Q 232	Q 240	Q 250	Q 250	E A 250	A 226	222	204	204	204	204	208	Y	236	222	206	212	210	214	216	234	A	A
19	A	A	A	222	A	A 282	E A 246	210	220	B	E A 220	202	198	226	232	B	196	214	214	214	220	Q 220	Q 236	Q 236
20	224	A	A	212	A	A	228	B	B	B	B	Y	204	204	B	216	222	222	B	A	218	218	A	244
21	230	A	192	B	A	A	A	B	B	B	B	B	B	B	198	220	224	214	B	E A 244	230	238	236	248
22	A	220	A 232	A	A	Y	200	A	B	B	Y	210	A 206	202	210	220	202	200	224	238	222	258	242	S 232
23	A	270	Q 274	Q 284	E A 266	218	232	B	204	B	B	198	204	B	B	214	B	208	Q 222	230	Q 222	220	Q 208	Q 226
24	Q 246	Q 264	180	A	A	208	230	222	206	190	188	200	214	210	230	210	204	208	Q 228	216	Q 220	216	A	A
25	A	A	A	238	A	A	A	B	198	222	212	B	B	B	B	B	B	B	B	E A 252	252	A	E A 318	A
26	A	240	A	214	A	B	A	256	222	224	202	A	B	B	A	214	218	208	226	Q 230	Q 234	Q 222	Q 222	Q 232
27	Q 234	Q 254	292	308	272	250	236	226	208	218	216	Y	A	Y	222	204	E B 216	212	226	214	214	Q 244	Q 248	Q 250
28	E A 248	A	A	B	A	A	A	E A 260	238	B	210	196	Y	226	202	192	212	212	E A 230	220	216	Q 222	Q 222	Q 236
29	E A 314	A	238	A	292	Q 240	230	220	204	204	240	Y	Y	Y	A	Y	B	226	220	234	A	A	A	A
30	A	E A 226	Q 244	200	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	A	266	E A 262	A 258
31	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 230	240	E A 246	E A 268	E B 294	A	E A 258	228	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	13	11	10	4	8	10	11	13	14	16	10	16	16	14	19	20	22	24	22	25	22	22	19
MED	228	234	235	224	269	248	228	221	206	210	212	202	209	211	210	212	214	214	224	217	220	228	228	236
U Q	E A 243	267	268	256	282	271	E A 236	E A 256	221	222	226	212	218	225	222	E 222	220	226	E 235	234	232	244	248	248
L Q	224	223	192	214	258	229	226	218	201	192	203	200	204	203	198	208	209	210	220	214	216	222	220	226

OCT. 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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

NOV. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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

NOV. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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 36	B	37	B	B	32	30	23	23	31	B	B	B	B	B	B	B	B	B	B	B	B	E B 25	E B 18
2	E B 20	E B 22	E B 30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 27	E B 26	G	38	42	35
3	40	32	39	39	36	36	33	28	28	30	30	31	B	41	74	E B 56	B	B	B	B	20	36	41	66
4	B	36	B	36	31	25	37	23	B	G	32	B	B	B	B	B	B	24	23	23	34	41	42	38
5	33	32	B	B	43	33	B	35	26	28	30	29	28	32	31	B	28	25	27	24	18	25	14	26
6	27	27	18	27	24	E B 30	G	G	E B 60	29	30	31	G 25	34	30	E B 32	28	G 28	24	24	24	17	14	E S 13
7	E B 12	17	27	24	24	34	E B 26	33	B	30	30	B	35	B	B	28	27	34	E B 28	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 26	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	28	28	22	B	B	27	E B 26	E B 25	E B 26	22
16	E B 25	E B 21	E B 25	E B 29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	26	B	27	37
17	B	B	37	33	35	28	B	32	32	29	B	B	B	B	B	B	B	B	E B 29	28	E B 28	E B 25	18	20
18	36	B	B	38	33	32	24	23	E B 58	29	27	29	B	32	60	46	59	39	28	31	23	23	18	24
19	16	E B 20	E B 20	20	21	23	22	27	B	B	B	B	B	34	31	B	29	26	24	22	25	33	39	23
20	37	122	34	42	31	39	38	27	31	B	B	B	B	B	B	B	B	B	31	47	28	40	70	38
21	40	34	41	37	33	20	26	39	38	26	B	B	B	B	B	B	B	B	28	25	25	40	77	36
22	40	64	B	B	B	B	32	B	B	B	B	B	B	B	B	B	B	B	B	37	34	22	E B 20	23
23	B	B	B	B	B	36	35	34	B	28	B	32	B	33	B	B	30	26	23	30	G	19	20	24
24	31	41	B	B	B	36	B	B	32	26	B	30	B	30	B	B	28	E B 40	E B 36	28	37	35	38	39
25	40	B	B	34	B	37	B	32	B	B	B	B	B	B	B	B	B	B	24	30	39	30	27	36
26	32	B	B	B	B	31	B	B	B	B	C	B	B	B	B	B	B	B	B	B	E B 29	40	39	42
27	B	39	B	B	B	30	36	32	22	B	B	B	B	B	B	B	B	22	23	B	23	31	26	34
28	50	34	58	26	B	B	B	B	35	B	B	B	B	B	B	B	B	B	23	44	43	41	45	40
29	42	44	40	B	43	21	39	41	B	B	B	B	B	B	33	37	31	27	24	27	36	42	35	B
30	36	38	33	B	B	32	33	34	B	B	B	B	B	28	B	B	B	B	27	26	B	24	40	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	16	13	12	11	18	14	16	11	11	6	6	3	8	7	6	9	10	18	17	20	20	23	21
MED	36	34	34	34	33	32	32	32	30	29	30	30	28	32	31	32	28	26	25	27	26	32	27	34
U Q	40	40	40	38	36	36	36	34	E B 38	30	30	31	35	34	60	46	30	34	28	30	34	40	41	38
L Q	E B 27	E B 24	26	26	24	28	26	25	26	26	30	29	G 25	31	30	28	28	25	23	24	23	24	20	22

NOV. 2004 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	21	B	29	B	B	18	18	18	17	19	B	B	B	B	B	B	B	B	B	B	B	B	25	18
2	20	22	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	27	26	15	15	14	16
3	15	13	15	17	11	16	13	21	16	16	15	19	B	15	20	56	B	B	B	B	12	24	10	10
4	B	25	B	10	11	14	14	15	B	19	19	B	B	B	B	B	B	19	12	12	14	13	12	10
5	12	15	B	B	18	21	B	22	13	14	19	15	15	18	24	B	18	12	11	11	12	12	10	10
6	10	10	10	14	20	30	15	16	60	19	20	24	20	23	21	32	18	16	13	12	12	12	9	E S 13
7	12	14	11	15	19	20	26	30	B	14	26	B	19	B	B	18	14	12	28	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	20	20	B	B	18	26	25	26	18
16	25	21	25	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	20	B	18	14
17	B	B	22	15	26	19	B	14	16	19	B	B	B	B	B	B	B	B	29	19	28	25	14	13
18	11	B	B	21	26	16	13	14	58	17	19	18	B	15	18	11	16	12	12	10	10	19	11	10
19	9	20	20	14	15	12	12	12	B	B	B	B	B	29	28	B	14	13	12	12	14	20	12	10
20	13	11	13	15	25	14	12	11	21	B	B	B	B	B	B	B	B	B	27	16	22	12	12	12
21	12	12	21	15	13	12	13	13	15	15	B	B	B	B	B	B	B	B	19	12	12	10	11	12
22	18	27	B	B	B	B	19	B	B	B	B	B	B	B	B	B	B	B	B	27	21	12	20	12
23	B	B	B	B	B	19	20	32	B	16	B	24	B	24	B	B	20	15	12	11	14	15	12	12
24	20	15	B	B	B	19	B	B	21	16	B	26	B	19	B	B	24	40	36	14	12	16	14	12
25	15	B	B	12	B	16	B	21	B	B	B	B	B	B	B	B	B	B	18	9	10	13	12	18
26	12	B	B	B	B	18	B	B	B	B	C	B	B	B	B	B	B	B	B	B	29	14	12	18
27	B	20	B	B	B	15	28	29	18	B	B	B	B	B	B	B	B	19	15	B	15	12	12	11
28	10	13	17	17	B	B	B	B	25	B	B	B	B	B	B	B	B	B	12	19	16	25	25	19
29	14	18	11	B	14	13	15	13	B	B	B	B	B	B	20	19	11	17	16	12	13	12	13	B
30	16	21	28	B	B	11	18	18	B	B	B	B	B	24	B	B	B	B	15	12	B	13	26	27
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	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	20	26	B	B	B	20	B	31	B	B	B	B	B	B	B	B	B	B	28	22	20	20	14	17
U Q	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 26	B
L Q	12	15	21	15	20	16	15	16	21	19	B	B	B	29	B	B	20	19	15	12	13	13	12	12

NOV. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	B	A	B	B	A	E A 248	210	200	E A 264	B	B	B	B	B	B	B	B	B	B	B	B	E B 240	244
2	252	272	E B 312	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 236	240	A	E A 256	A	A
3	A	A	A	A	A 236	A	A	A	196	230	E A 212	A 214	B	Y	A	B	B	B	B	B	234	A	242	A
4	B	A	B	A	A	E A 262	A	Y	B	A	E A 262	B	B	B	B	B	B	E A 226	226	232	E A 296	E A 266	A	A
5	A	A 292	B	B	A	A	B	A	256	214	206	A	A	200	216	B	212	214	Q 220	222	222	226	238	242
6	254	270	294	276	E A 294	E B 286	E A 268	220	B	A	E A 222	Y	Y	A	212	212	210	212	216	220	228	Q 234	Q 224	Q 240
7	Q 254	Q 290	296	282	E A 262	E A 272	E B 234	A	B	212	200	B	212	B	B	220	220	216	E B 226	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	244	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	E Y 222	B	B	E A 238	E B 236	E B 244	E B 244	E A 260
16	E B 256	E B 238	E B 282	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E A 232	B	E A 242	B	E A 242	A
17	B	B	A	A	A	A	B	A	A 226	E A 240	B	B	B	B	B	B	B	B	218	220	E B 248	E B 252	258	248
18	Q 254	B	B	A	A	A	E A 244	212	B	E A 240	A	A	B	214	A	A	A	202	204	224	A 216	224	236	242
19	Q 236	254	270	260	236	214	214	226	B	B	B	B	B	A	A	B	206	200	200	212	E A 238	E A 250	E A 244	Q 276
20	E A 258	A 236	A	A	A	A	A	220	A	B	B	B	B	B	B	B	B	B	A	A	E A 244	244	A	A 246
21	A	A	A	A	252	Y	E A 248	A	A	208	B	B	B	B	B	B	B	B	A	208	E A 252	210	A	A
22	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	E A 252	240	250	250
23	B	B	B	B	B	A	A	A	B	200	B	A	B	A	B	B	A	A	216	E A 250	224	246	246	276
24	A	A	B	B	B	A	B	B	A	A	B	A	B	A	B	B	A 220	B	E B 238	A 220	A	E A 292	A	224
25	A	B	B	A	B	E A 274	B	A	B	B	B	B	B	B	B	B	B	B	216	E A 264	A	242	222	A
26	A	B	B	B	B	A	B	B	B	B	C	B	B	B	B	B	B	B	B	B	E B 240	A	E A 240	A
27	B	A	B	B	B	E A 252	A	A	206	B	B	B	B	B	B	B	B	214	E Y 254	B	Y	A	A	A
28	A	E A 278	A	E A 294	B	B	B	B	A	B	B	B	B	B	B	B	B	B	E A 236	A	A	A	A	A
29	A	A	A	B	A	E A 232	A	A	B	B	B	B	B	B	A	A	218	216	232	222	A	A	A	B
30	A	A	A	B	B	A	A	A	B	B	B	B	B	A	B	B	B	B	212	228	B	E A 256	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	8	5	4	5	7	6	5	5	8	5	1	1	2	2	2	7	8	16	14	14	15	14	11
MED	253	266	288	274	A 244	E A 262	E A 246	220	206	216	E A 212	A 214	212	207	214	216	215	214	216	222	E 239	234	241	245
U Q	E 256	A 284	304	288	E A 278	E A 274	E A 248	223	241	E A 240	E A 242						220	216	E 234	E A 238	E A 248	E A 256	244	260
L Q	252	246	276	268	236	232	234	211	198	210	203						210	207	216	220	228	234	238	242

NOV. 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2004 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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

DEC. 2004 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2004 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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

DEC. 2004 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2004 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	30	25	24	25	24	B	24
2	B	35	29	34	B	38	32	25	23	24	34	E B 56	E B 57	36	36	36	30	28	25	27	B	E B 26	19	19
3	18	17	17	42	82	65	45	23	28	E B 35	E B 75	B	36	34	B	31	30	26	B	B	E B 26	E B 25	E B 25	E B 30
4	B	B	B	B	E B 24	B	B	E B 33	28	E B 58	B	E B 57	E B 58	B	34	32	32	41	25	19	36	38	24	25
5	E B 17	E B 16	E B 20	18	32	66	27	30	31	28	32	E B 56	36	45	34	42	33	26	22	28	24	40	E B 21	E B 21
6	E B 30	B	B	B	B	41	B	E B 29	B	B	32	28	B	B	B	B	B	B	B	B	35	68	B	B
7	35	27	64	B	22	B	B	G	32	B	B	B	B	B	B	B	B	B	B	27	G 26	36	36	G
8	40	68	B	B	B	B	B	35	36	B	B	B	B	B	B	B	B	22	24	19	34	38	22	22
9	B	65	32	B	B	B	B	31	24	26	28	24	B	24	B	E B 57	B	B	E B 30	E B 28	24	38	30	35
10	42	B	32	57	B	B	31	B	B	B	32	39	B	30	32	B	E B 58	26	B	B	34	35	39	46
11	46	45	38	48	36	B	36	22	22	21	E B 58	B	B	B	B	B	B	B	E B 30	B	E B 30	36	44	39
12	35	34	61	39	66	35	B	B	B	B	B	B	B	B	B	B	B	E B 24	B	B	28	32	48	32
13	B	34	36	31	31	B	B	B	B	B	31	B	B	B	B	B	26	24	28	G	24	22	40	33
14	32	18	17	21	23	26	20	28	21	B	B	B	B	33	37	65	30	B	B	35	B	B	29	32
15	45	40	38	58	44	39	36	37	35	26	B	B	B	30	B	B	B	B	G	30	23	23	23	34
16	46	40	41	35	38	29	26	36	B	27	23	30	22	27	32	27	29	26	22	B	31	27	38	42
17	B	78	32	B	B	38	B	30	B	B	B	B	B	B	B	B	B	E B 33	28	39	B	39	36	B
18	B	35	B	B	33	B	B	B	B	B	B	16	B	B	B	B	B	B	B	B	B	B	27	22
19	28	G	32	B	B	B	27	42	23	22	28	B	B	B	B	B	36	31	E B 30	26	22	26	19	19
20	18	21	27	23	B	B	B	G 34	B	21	B	E B 62	B	38	30	32	31	G	22	B	21	22	41	22
21	G	42	35	B	B	32	36	B	23	30	27	35	32	31	B	B	B	B	34	40	37	40	38	39
22	B	B	40	36	35	39	28	38	B	B	B	31	28	B	B	B	B	B	B	31	35	38	33	36
23	35	56	40	B	B	B	B	42	B	B	B	B	B	30	E B 55	B	B	B	23	B	B	41	B	23
24	54	32	B	B	B	30	G	26	30	26	30	36	32	34	27	B	30	28	23	35	22	24	31	G
25	32	31	36	32	B	33	23	30	B	B	B	29	B	B	28	25	28	B	23	29	23	22	38	38
26	40	B	39	21	32	33	36	31	33	B	B	22	B	31	28	B	B	B	29	22	33	21	23	34
27	38	32	B	B	B	32	B	B	G	B	B	B	B	B	B	30	B	34	30	26	27	22	22	B
28	42	28	30	34	31	38	34	21	35	B	B	B	B	B	B	B	B	B	B	B	40	B	25	39
29	39	B	32	B	56	26	B	B	27	B	B	B	B	B	B	B	B	B	B	B	32	34	38	44
30	40	43	37	38	B	33	36	B	B	B	B	B	B	B	B	B	27	B	33	27	34	23	34	33
31	31	35	48	B	35	33	C	34	B	26	27	B	B	B	30	34	B	B	B	28	22	36	21	23
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	24	16	16	19	17	22	17	13	13	14	8	13	12	11	13	15	20	20	26	28	28	28
MED	35	34	36	34	34	33	31	30	28	26	30	U 30	32	31	32	32	30	26	24	28	27	33	30	32
U Q	42	42	40	40	41	39	36	35	32	29	33	E B 56	E B 46	35	35	42	32	31	30	30	34	38	38	37
L Q	30	28	31	27	31	32	26	28	23	23	28	28	30	30	29	30	28	24	23	25	24	24	23	22

DEC. 2004 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2004 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	E A 256	B	B	B	B	B	B	B	B	B	B	216	E A 238	224	250	E A 242	B	E A 272
2	B	A	A	A	B	A	A	206	206	Y	194	B	B	A	A	A	A	206	232	214	B	E B 244	E A 240	E A 246
3	248	252	242	E A 284	A	A	A	A 212	212	198	B	B	E Y 334	A	B	Y	E Y 312	200	B	B	212	B 224	E B 236	E B 236
4	B	B	B	B	210	B	B	B 218	196	B	B	B	B	B	A	A	A	A 234	208	208	E A 220	E A 244	226	224
5	E B 240	238	248	222	E A 248	A	222	210	238	202	194	B	Y	Y	E A 208	A	220	218	222	222	E A 230	E A 236	E B 236	E B 254
6	E B 242	B	B	B	B	A	B	196	B	B	A	A	B	B	B	B	B	B	B	B	A	E A 236	B	B
7	A	A	A	B	Y	B	B	A	A	B	B	B	B	B	B	B	B	B	B	A	E A 244	A	A	A
8	A	A	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	222	222	E A 240	274	A	234	E A 250
9	B	A	A	B	B	B	B	A	Y 232	A	A	A	B	A	B	B	B	B	200	220	E A 238	A	A	238
10	A	B	A	214	B	B	A	B	B	B	216	Y	B	E A 240	E A 238	B	B	216	B	B	A	A	A	A
11	230	256	214	A	A	B	A	190	E Y 230	Y	B	B	B	B	B	B	B	B	E B 218	B	E B 244	A	E A 258	A
12	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	222	B	B	E A 270	204	228	A
13	B	A 226	A	248	A	B	B	B	B	B	A	B	B	B	B	B	198	E A 220	228	214	224	E A 244	E A 260	208
14	248	E A 286	214	266	250	232	214	198	Y	B	B	B	B	A	A	A	A	B	B	A	B	B	226	A
15	214	A	A	A	A	A	A	A	A	A	B	B	B	A	B	B	B	B	208	254	214	E A 226	E A 234	A
16	232	A	A	A	244	202	214	A	B	A	210	A	A	A	182	A	222	216	198	B	248	E A 244	E A 250	A
17	B	A	Q 252	B	B	A	B	202	B	B	B	B	B	B	B	B	B	198	200	A	B	A	A	B
18	B	A	B	B	A	B	B	B	B	B	B	Y	B	B	B	B	B	B	B	B	B	B	200	246
19	240	A	A	B	B	B	E A 296	E A 250	190	Y	Y	B	B	B	B	B	A	A	198	A 216	218	218	208	240
20	E A 254	E A 250	A	E A 260	B	B	B	A	B	Y	B	B	B	A	A	E A 222	204	A	200	B	216	224	E A 232	246
21	268	A	A	B	B	A	A	B	180	204	Y	Y	A	A	B	B	B	B	A	A	A	A	A	A
22	B	B	216	A	A	A	188	A	B	B	B	A	A	B	B	B	B	B	B	A 232	A	E A 272	266	A
23	A	A	202	B	B	B	B	A	B	B	B	B	B	A	B	B	B	B	210	B	B	260	B	228
24	A	E A 292	B	B	B	A	A	182	A	200	196	206	A	A	Y	B	A	A	194	256	204	236	E A 248	228
25	E A 254	A	228	Q 212	B	A	A	202	B	B	B	A	B	B	A	204	A	B	A	A 246	214	216	A	A
26	236	B	A	A	A	A	A	A	A	B	B	192	B	A	A	B	B	B	220	192	A	230	208	218
27	A	A	B	B	B	A	B	B	A	B	B	B	B	B	B	A	B	A	210	206	222	230	230	B
28	A	A	A	A	E A 290	A	A	Y	A	B	B	B	B	B	B	B	B	B	B	B	A	B	Y	232
29	A	B	202	B	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
30	A	198	A	A	B	A	A	B	B	B	B	B	B	B	B	B	206	B	220	A	A	232	E A 258	A
31	A	A	A	B	A	A	C	A 224	B	A	A	B	B	B	A	212	B	B	B	222	202	226	A 226	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	8	9	7	5	2	6	12	8	4	5	2	1	1	3	3	6	11	18	15	18	20	20	15
MED	238	242	216	U 231	246	217	210	203	205	201	196	199	E Y 334	E A 240	E A 208	208	209	216	209	221	218	226	U 221	233
U Q	251	E A 271	245	266	270		E A 256	A 215	Y 231	203	213				E A 238	E A 222	222	222	222	240	244	E A 244	E A 249	E 246
L Q	234	232	208	214	227		214	197	193	199	194				182	204	204	206	200	214	214	225	226	228

DEC. 2004 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2004 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	14	B	B	B	B	B	B	B	B	B	B	22	19	14	15	18	B	13
2	B	17	18	25	B	20	16	12	15	12	15	56	57	32	30	24	25	16	19	24	B	26	12	11
3	11	12	11	13	11	16	13	12	9	35	75	B	32	16	B	26	26	20	B	B	26	25	25	30
4	B	B	B	B	24	B	B	33	20	58	B	57	58	B	18	18	16	18	15	15	12	12	13	13
5	17	16	20	12	14	12	15	14	15	18	14	56	18	15	14	12	12	12	18	10	11	12	21	21
6	30	B	B	B	B	24	B	29	B	B	21	17	B	B	B	B	B	B	B	B	29	26	B	B
7	14	15	53	B	15	B	B	16	20	B	B	B	B	B	B	B	B	B	B	12	12	11	18	12
8	19	14	B	B	B	B	B	16	12	B	B	B	B	B	B	B	B	19	16	12	11	12	15	17
9	B	15	29	B	B	B	B	26	12	20	24	18	B	18	B	57	B	B	30	28	9	15	24	14
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12	11	14	19	20	22	23	B	B	B	B	B	B	B	B	B	B	B	24	B	B	23	12	12	21
13	B	10	12	9	21	B	B	B	B	B	19	B	B	B	B	B	15	18	13	16	11	14	16	10
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18	B	28	B	B	20	B	B	B	B	B	B	12	B	B	B	B	B	B	B	B	B	B	14	15
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22	B	B	15	19	17	14	11	19	B	B	B	22	15	B	B	B	B	B	B	28	16	12	10	9
23	22	19	16	B	B	B	B	25	B	B	B	B	B	24	55	B	B	B	18	B	B	17	B	17
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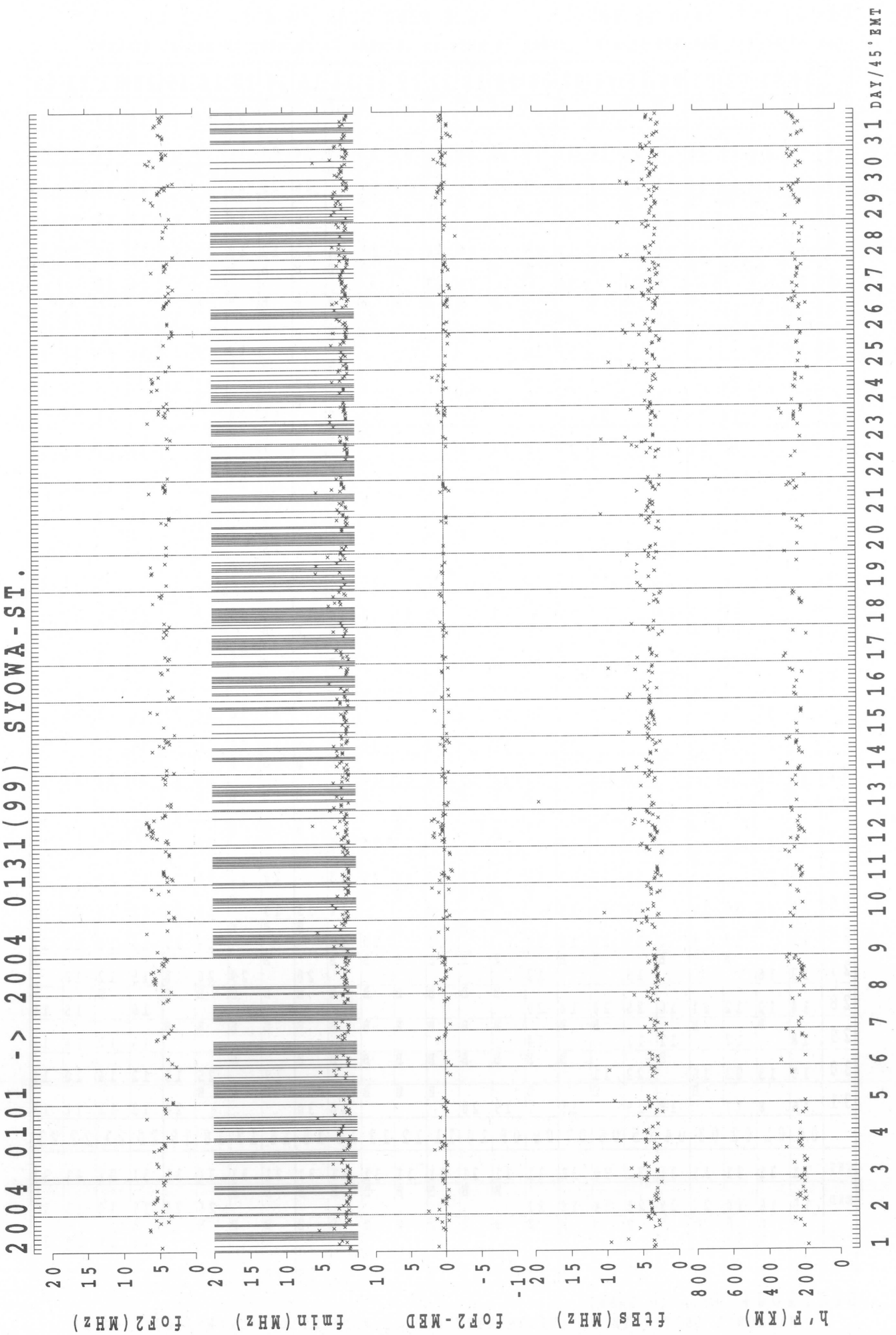
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	16	18	25	29	23	24	18	22	B	B	B	B	B	B	B	B	B	26	24	15	14	13	15
U Q	B	B 28	B 53	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 26	21	18	20
L Q	11	12	12	12	16	16	14	14	13	18	20	19	58	20	21	26	20	18	16	15	12	12	12	12

DEC. 2004 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN


2004 0101 -> 2004 0131(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT
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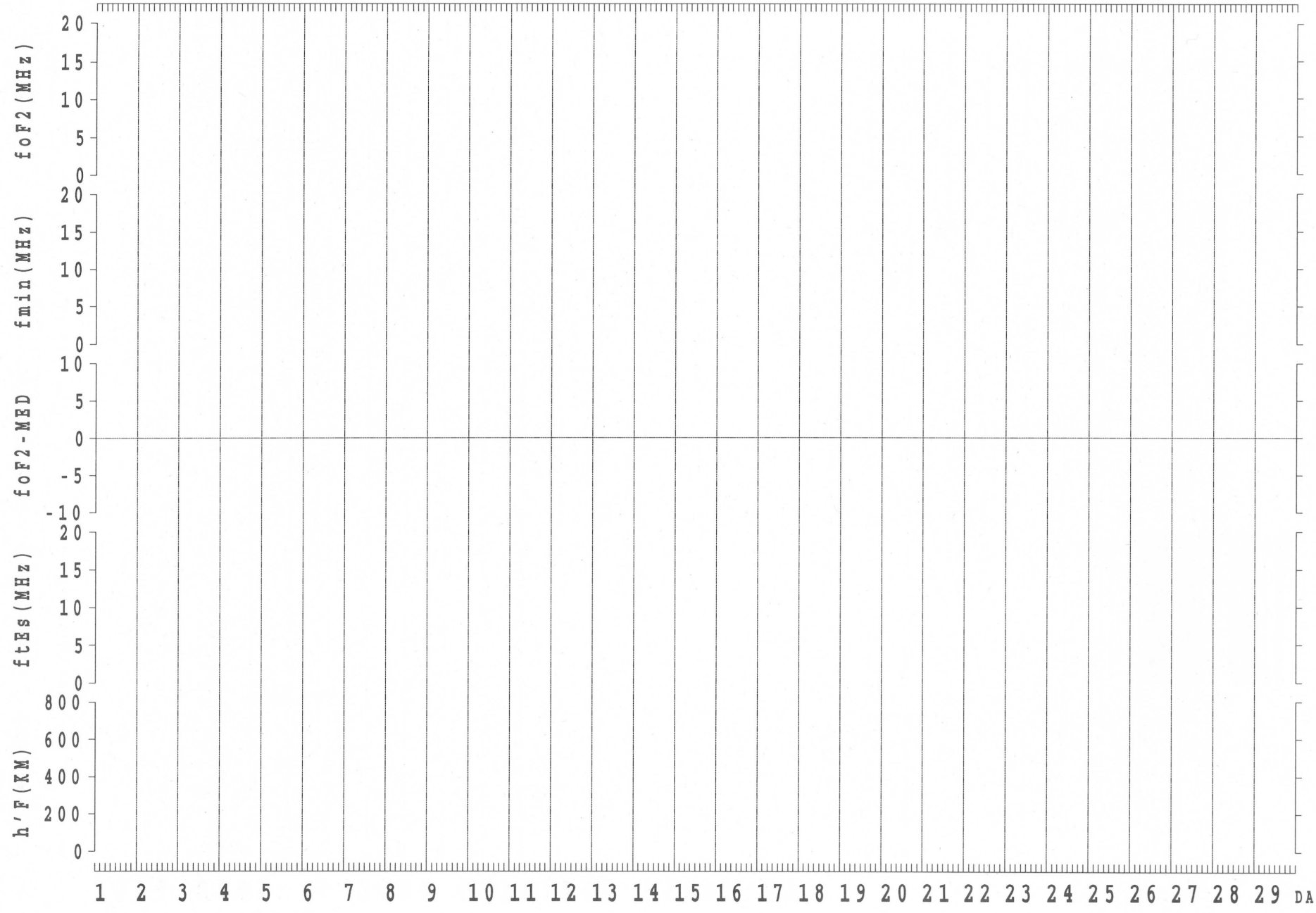
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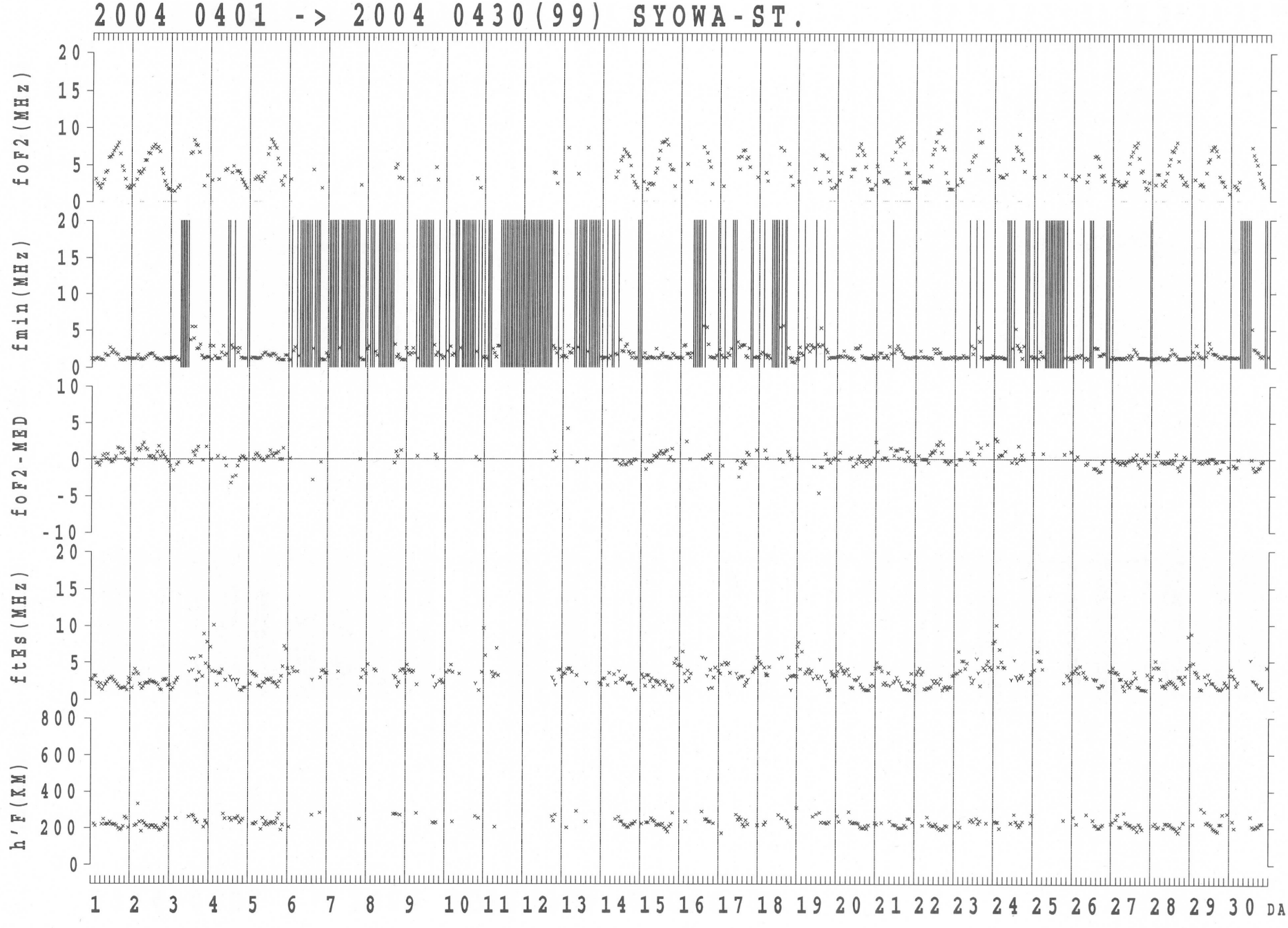
15
10
5
0
fmin(MHz)
20
15
10
5
0
foF2-MED
10
5
0
-5
-10
ftEs(MHz)
20
15
10
5
0
h'F(KM)
800
600
400
200
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
DAY/45'EMT

2004 0301 -> 2004 0331(99) SYOWA-ST.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45'EMT
h'F(KM)
ftEs(MHz)
foF2-MED
fmin(MHz)
foF2(MHz)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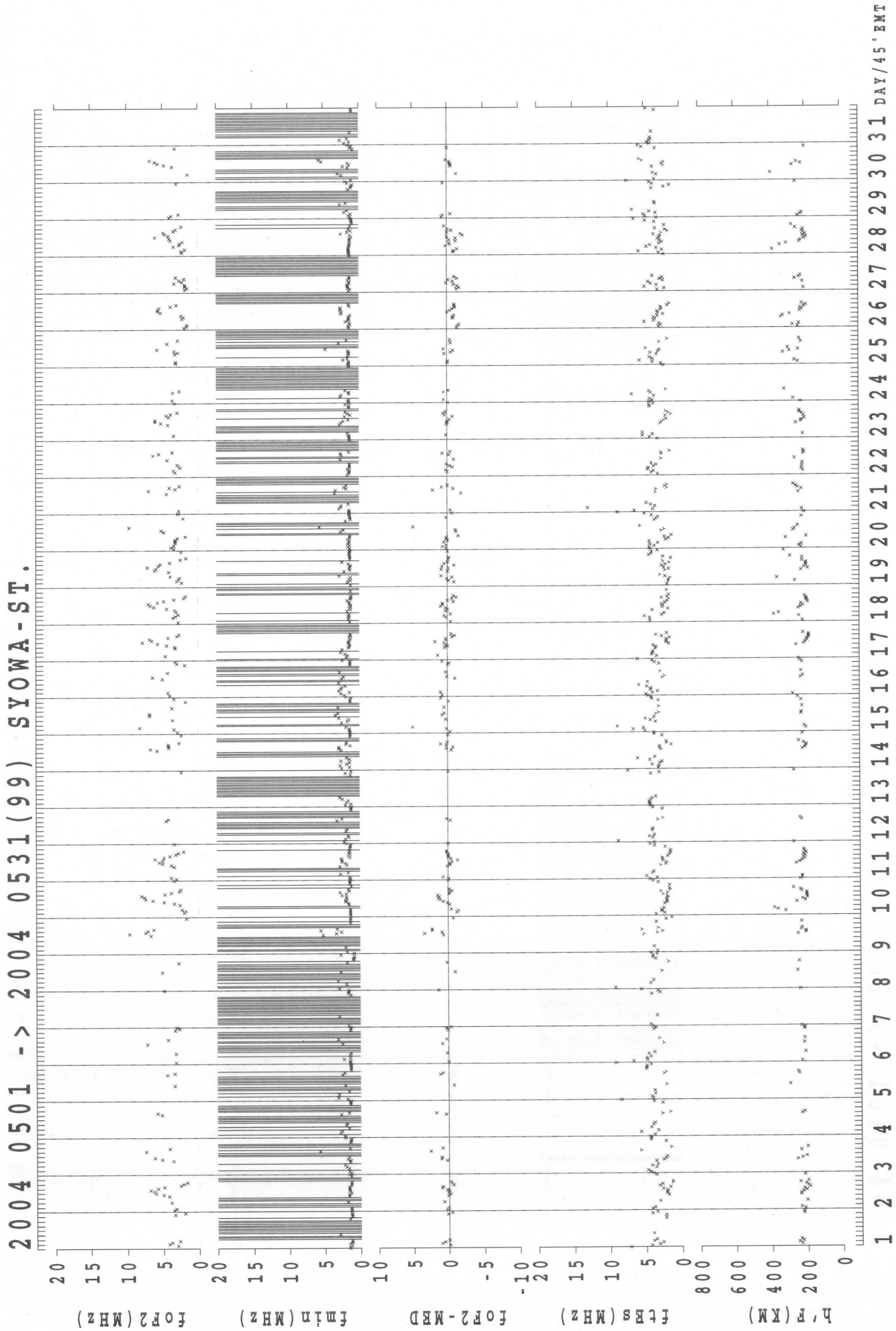
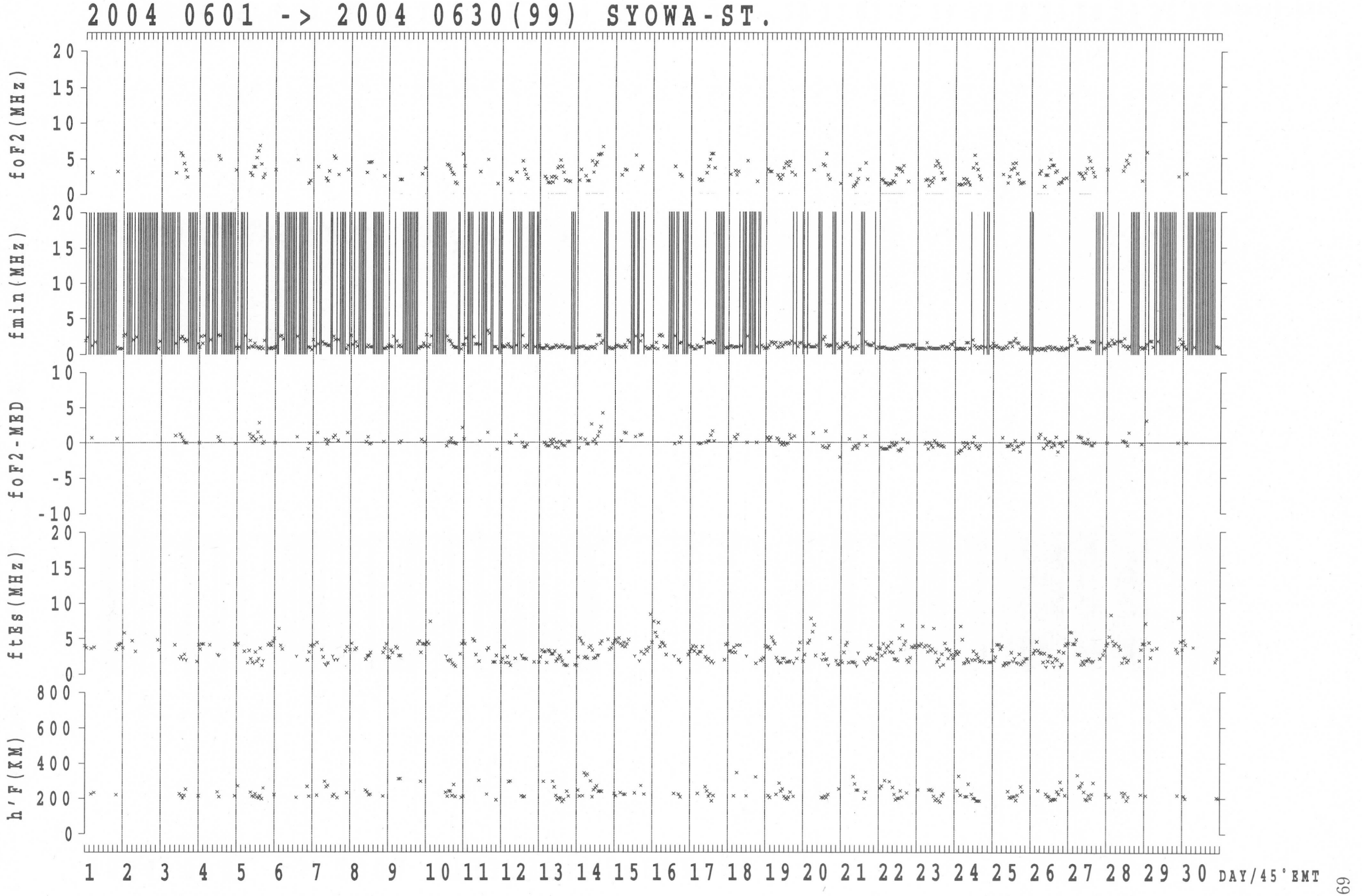
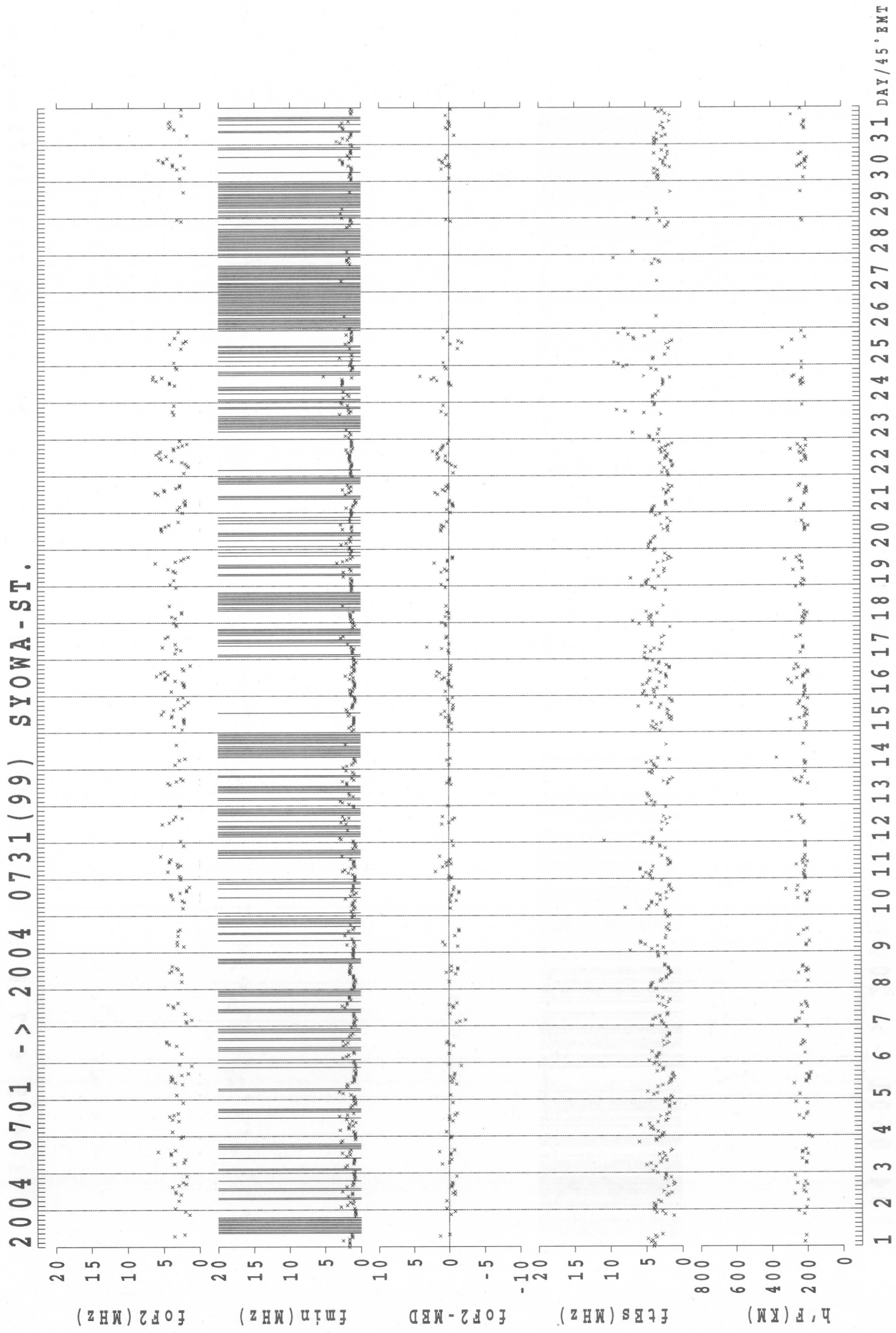
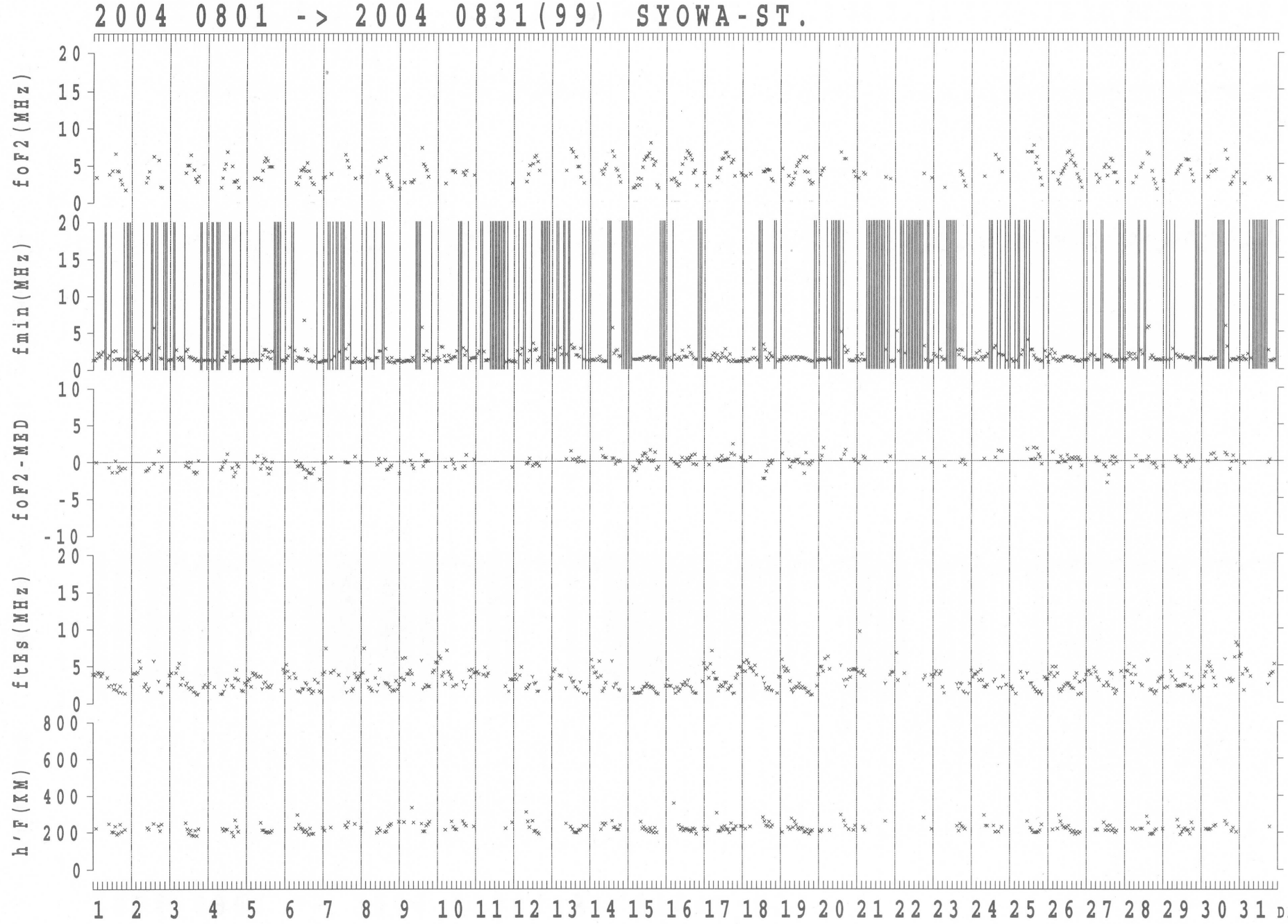
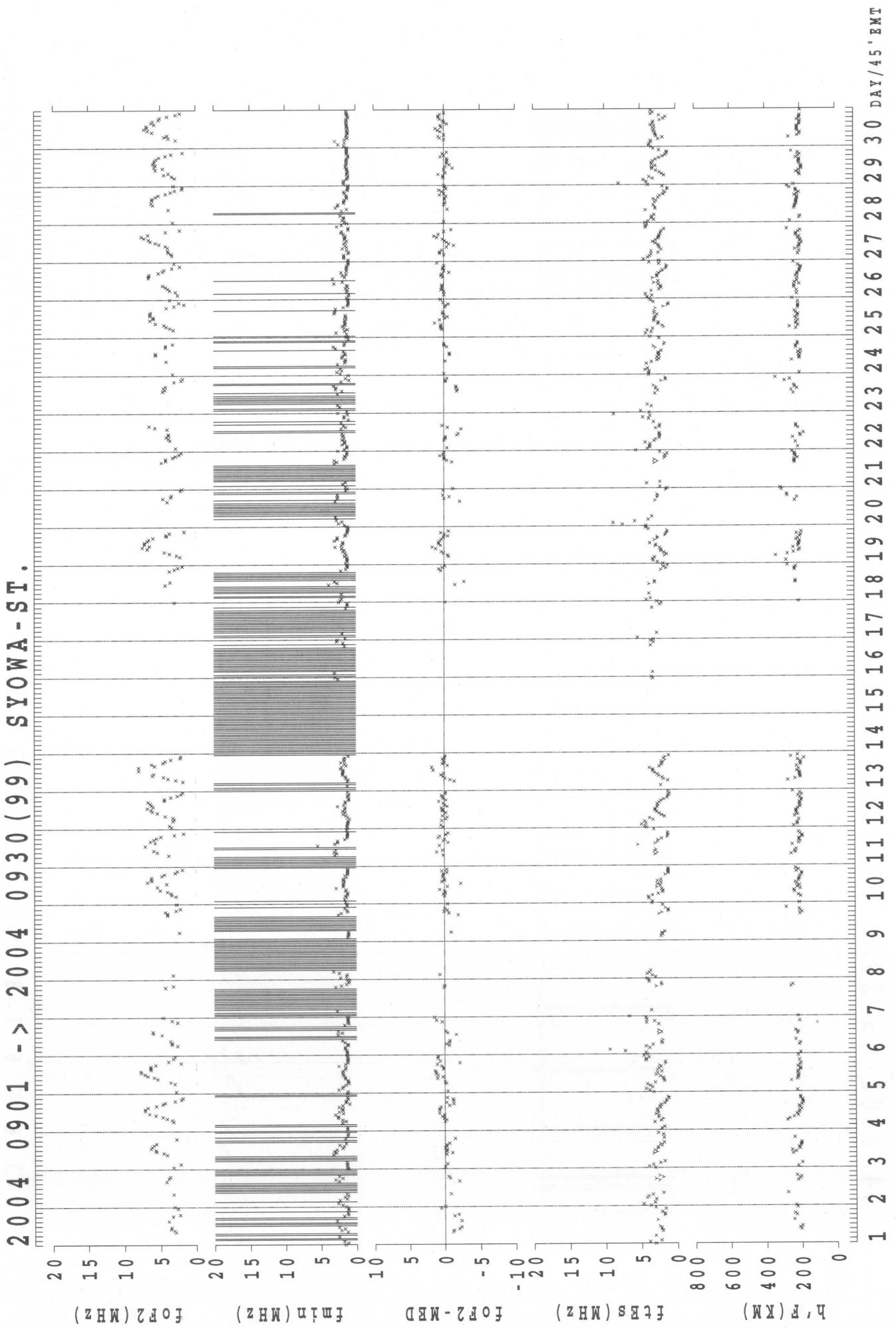
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT


2004 0501 -> 2004 0531(99) SYOWA-ST.
h'F(KM)
ftEs(MHz)
foF2-MED
fmin(MHz)
foF2(MHz)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45'EMT


2004 0601 -> 2004 0630(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT


2004 0701 -> 2004 0731(99) SYOWA-ST.
h'F(KM)
ftEs(MHz)
foF2-MED
fmin(MHz)
foF2(MHz)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45'EMT


2004 0801 -> 2004 0831(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT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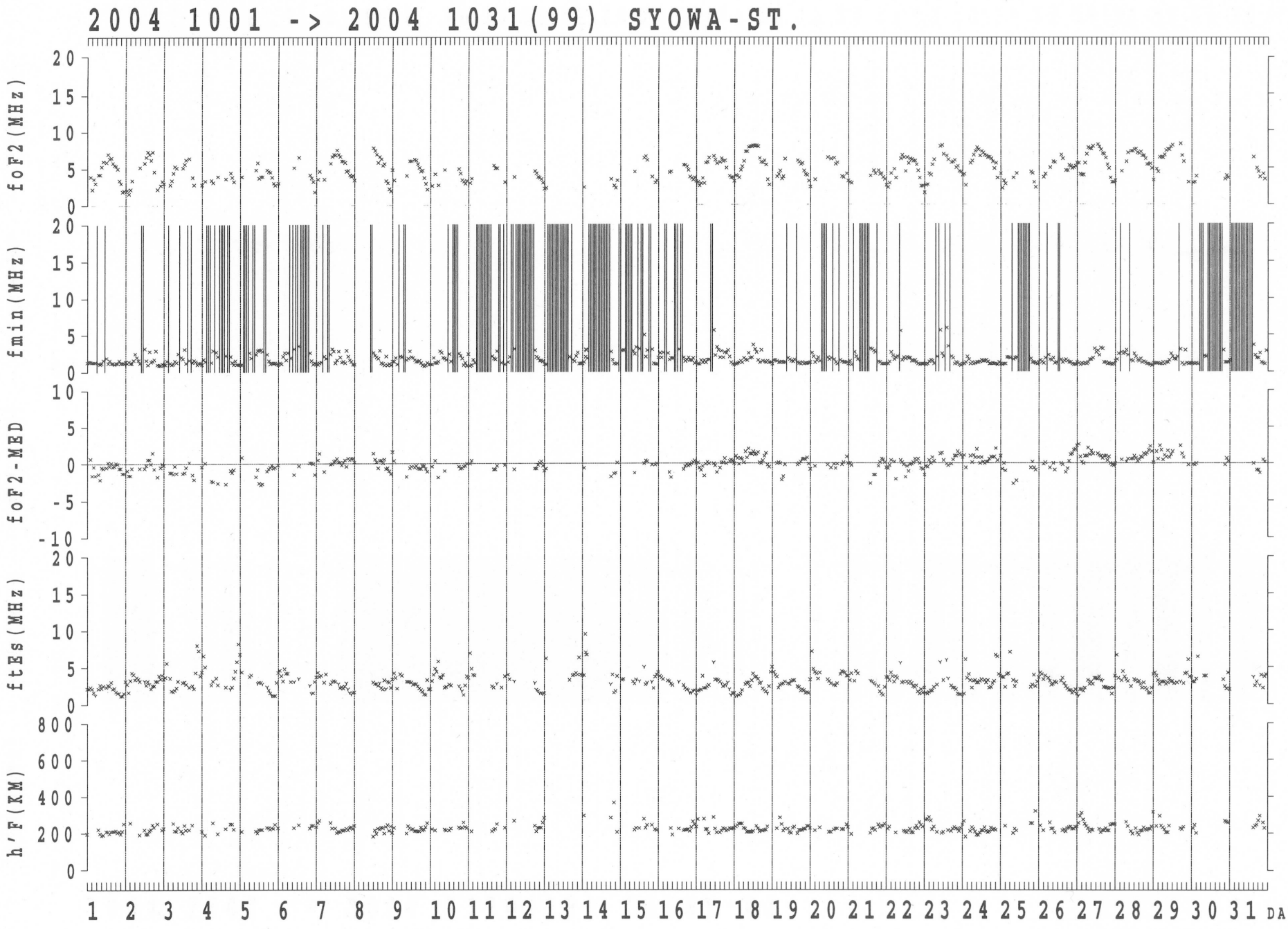
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT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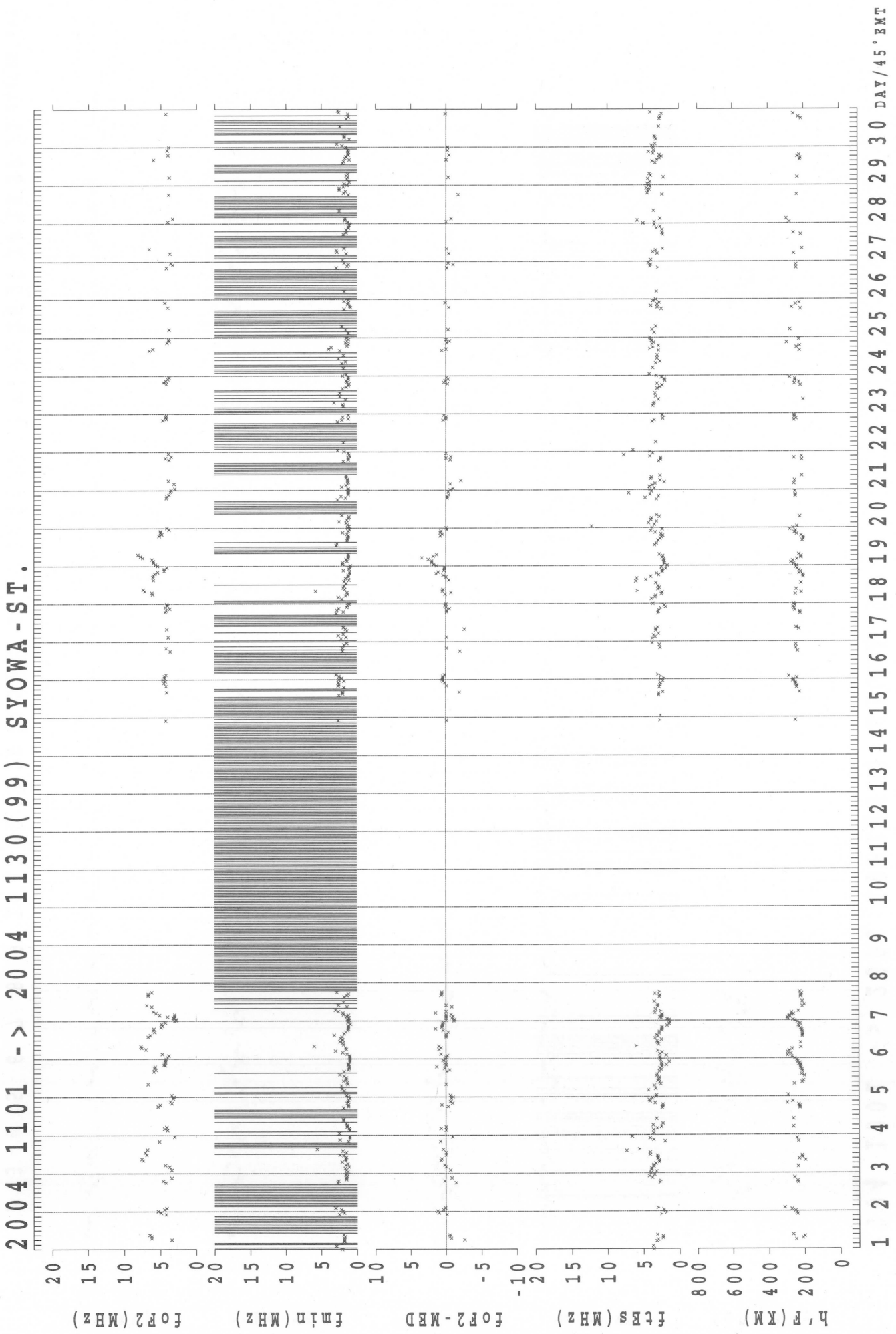
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT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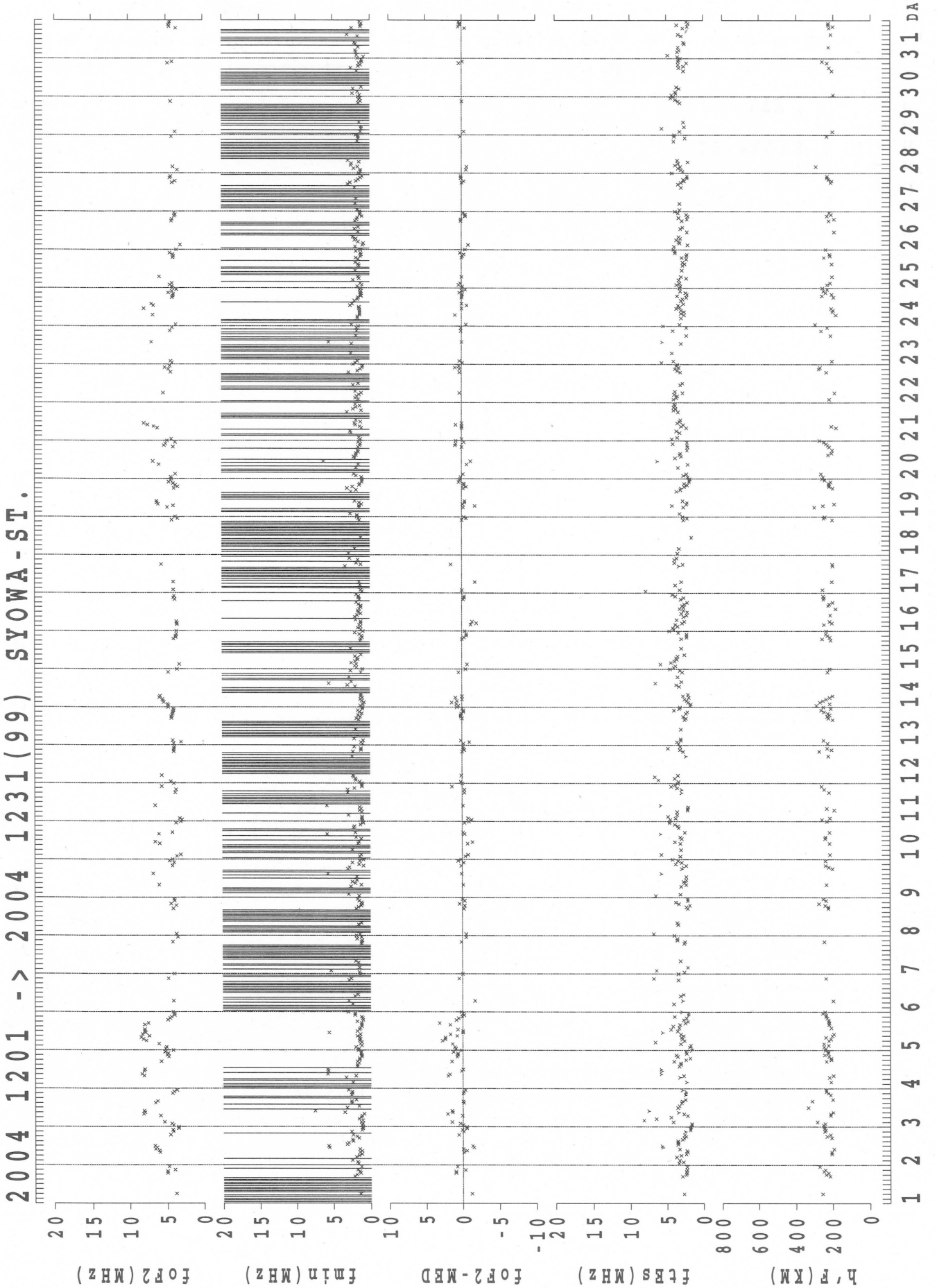
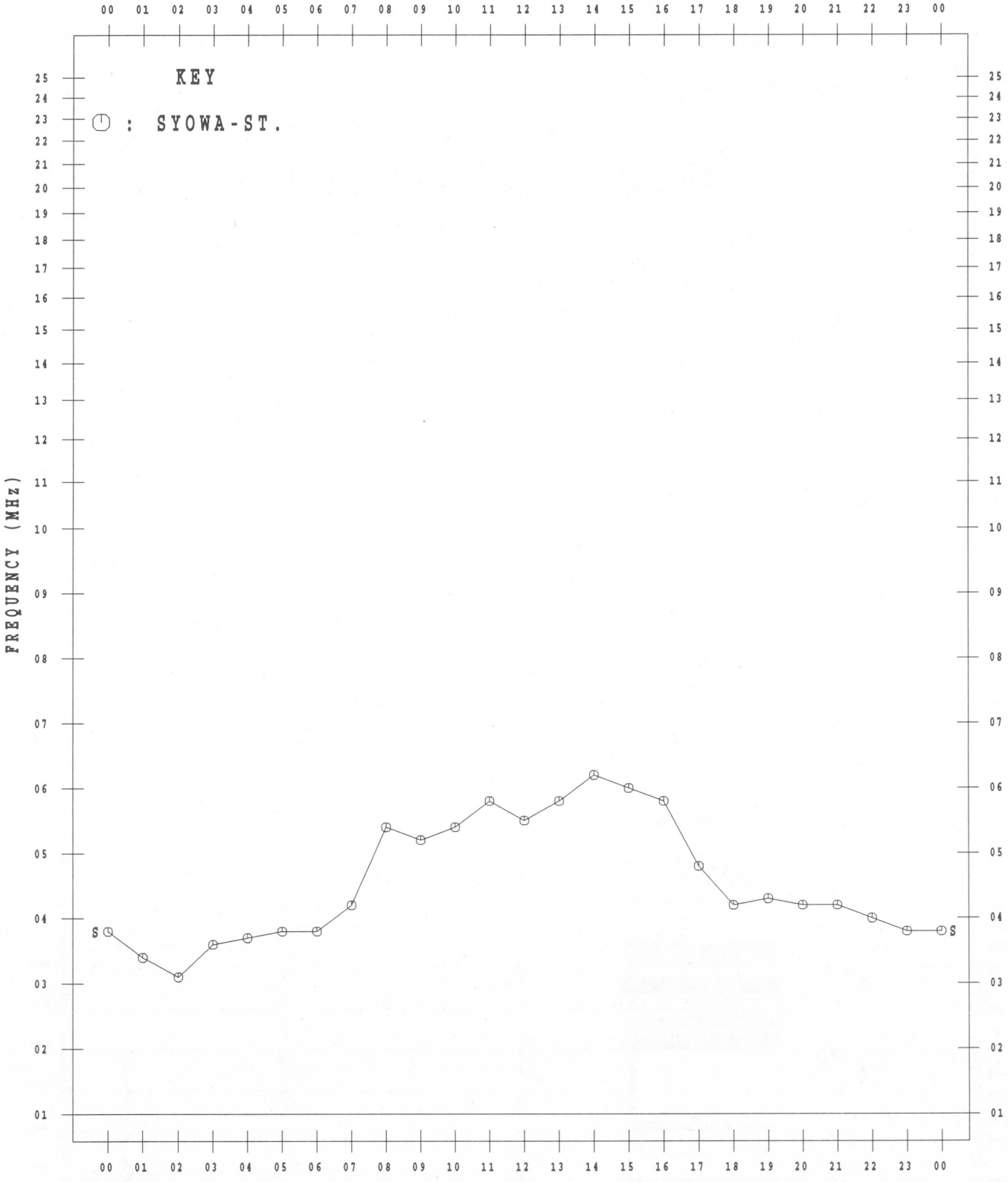
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT


2004 1201 -> 2004 1231(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45°EMT

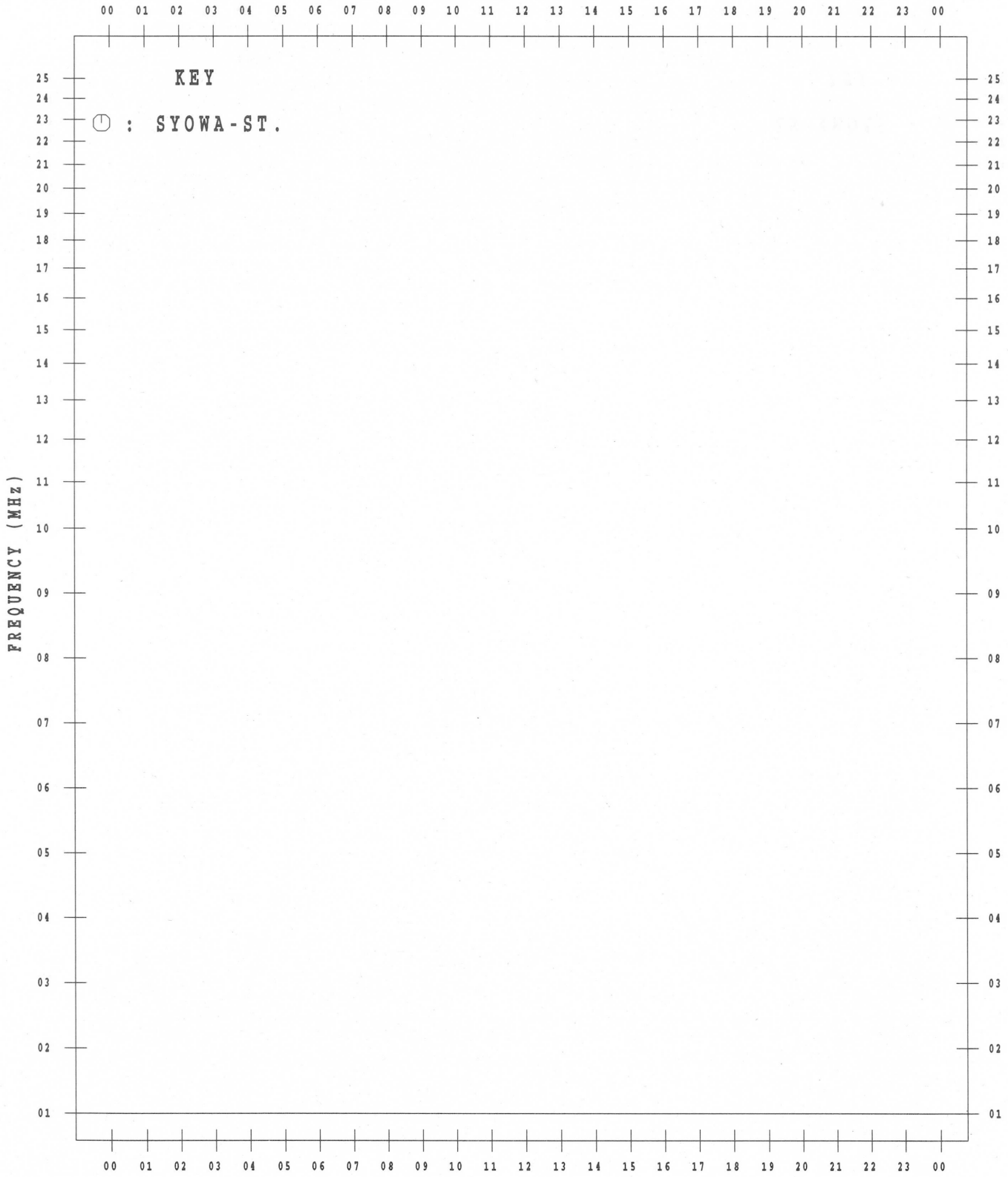
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JAN. 2004



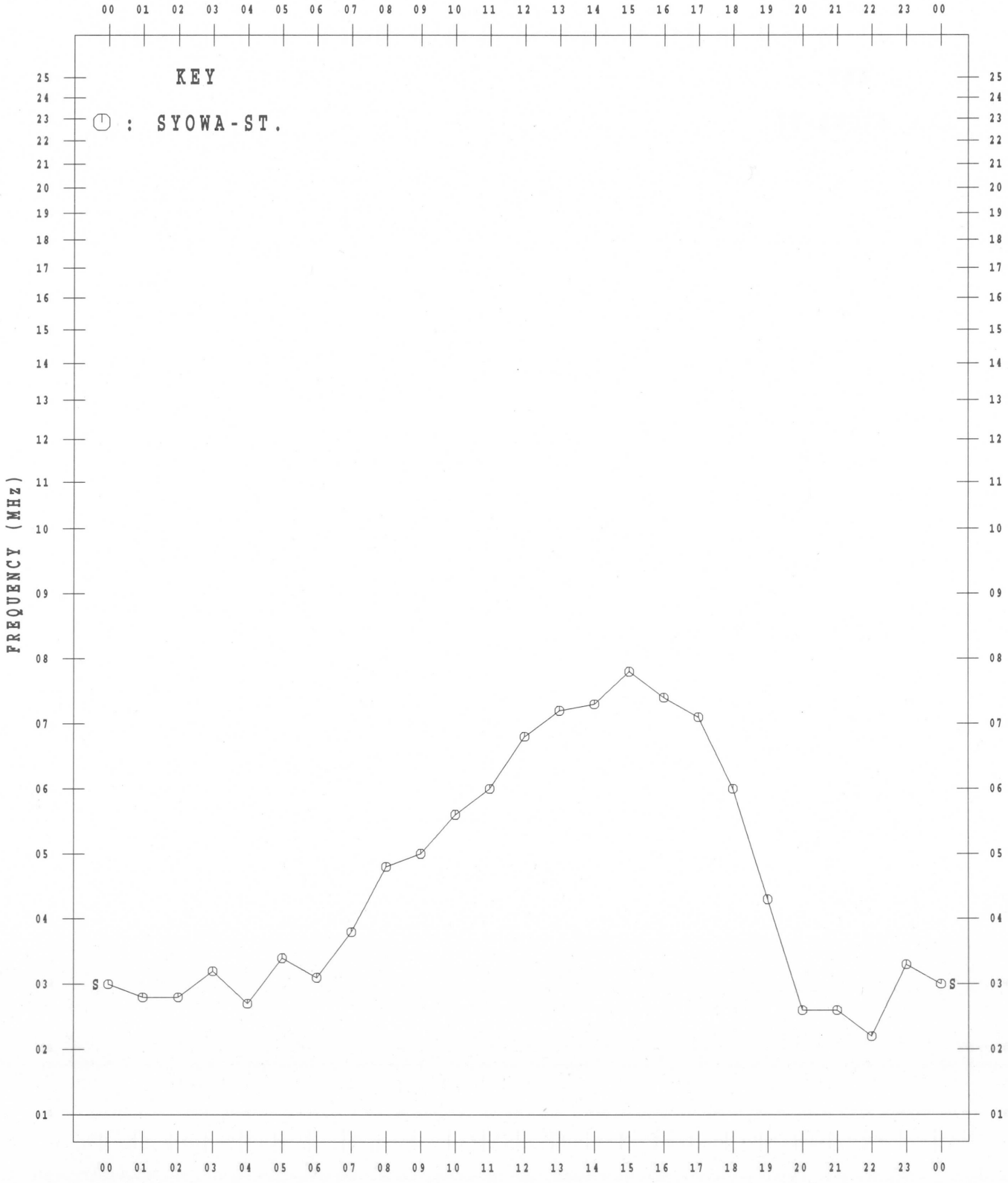
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME FEB. 2004



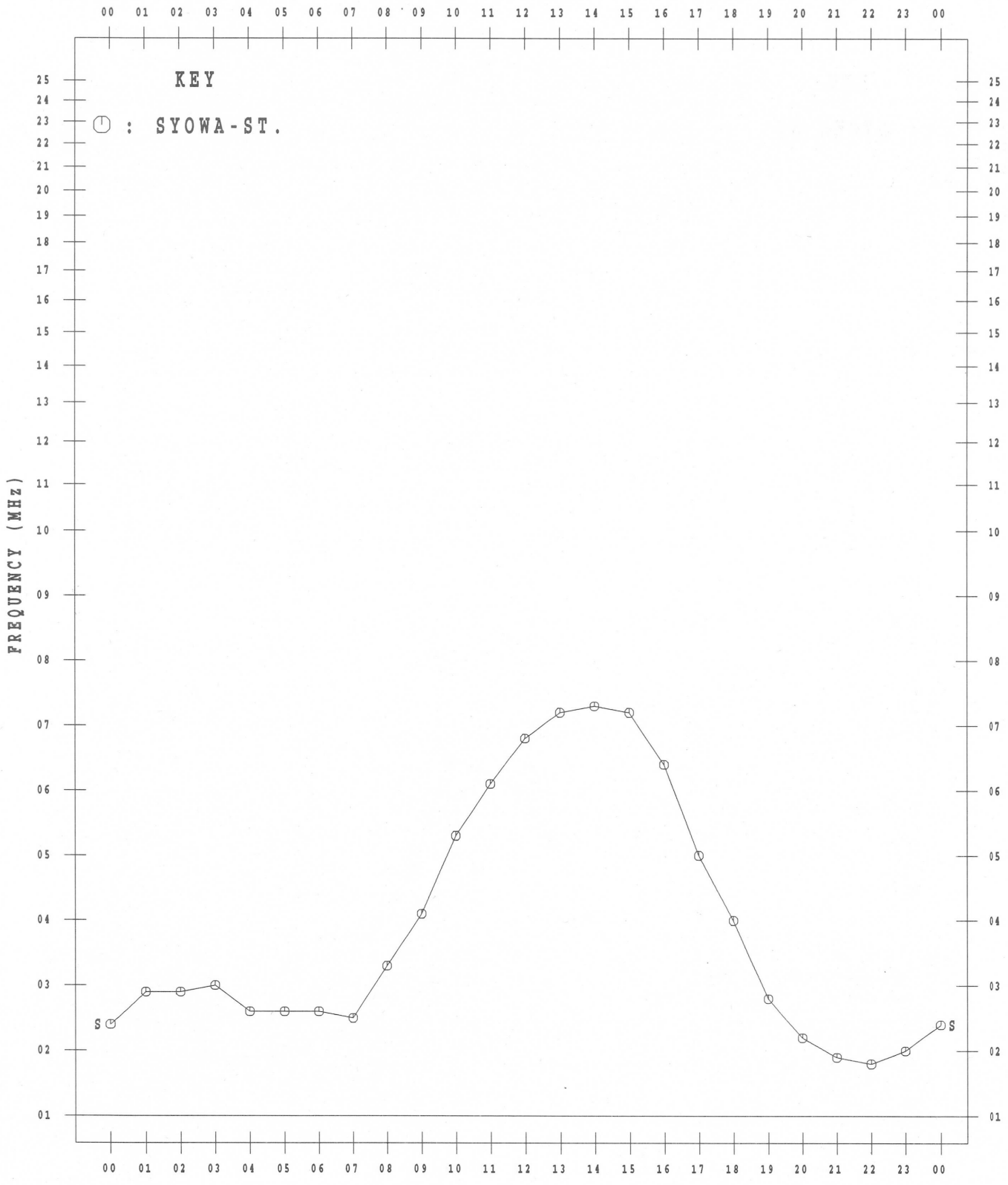
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAR. 2004



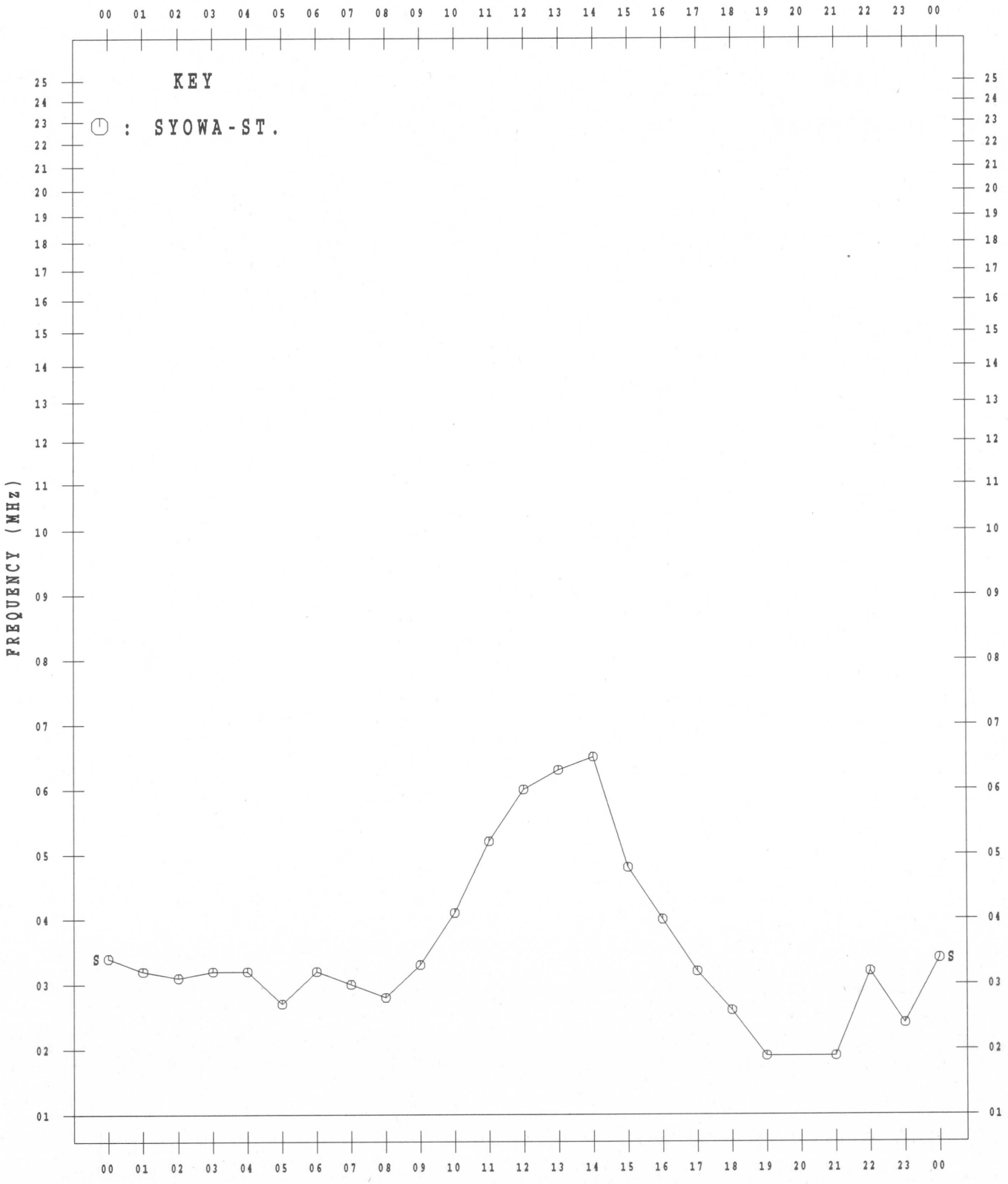
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME APR. 2004



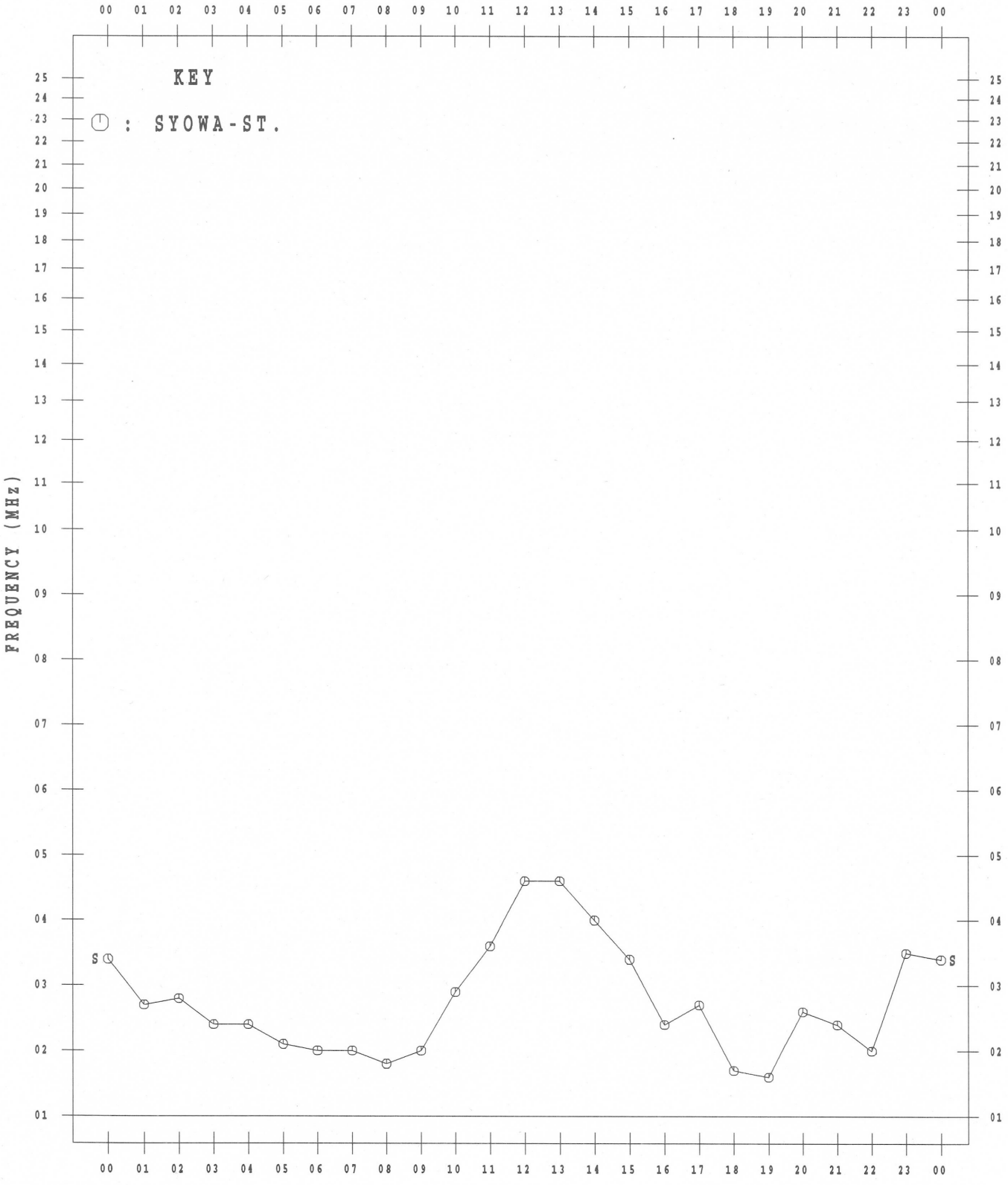
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAY 2004



MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUN. 2004



MONTHLY MEDIAN VALUES OF foF2

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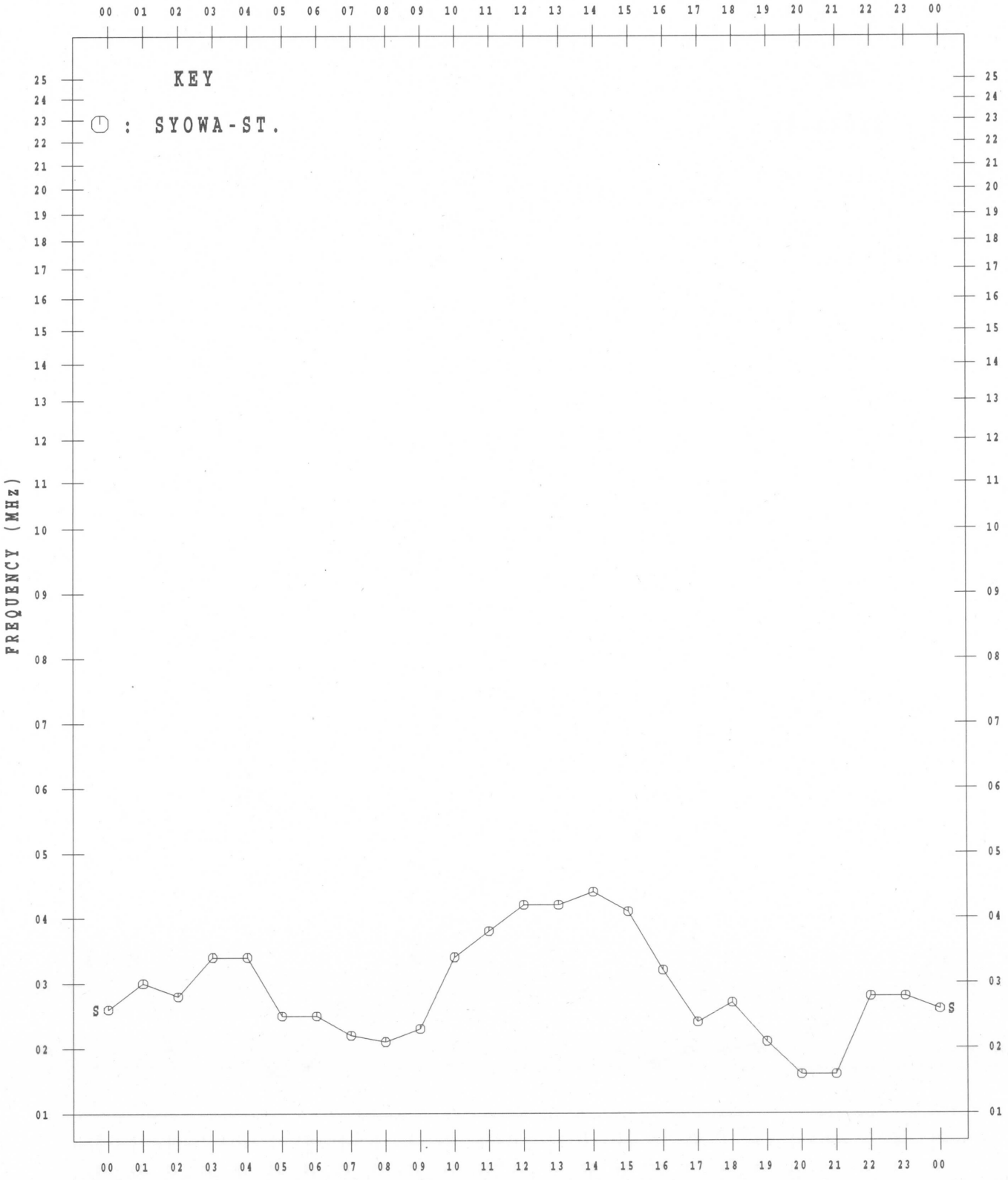
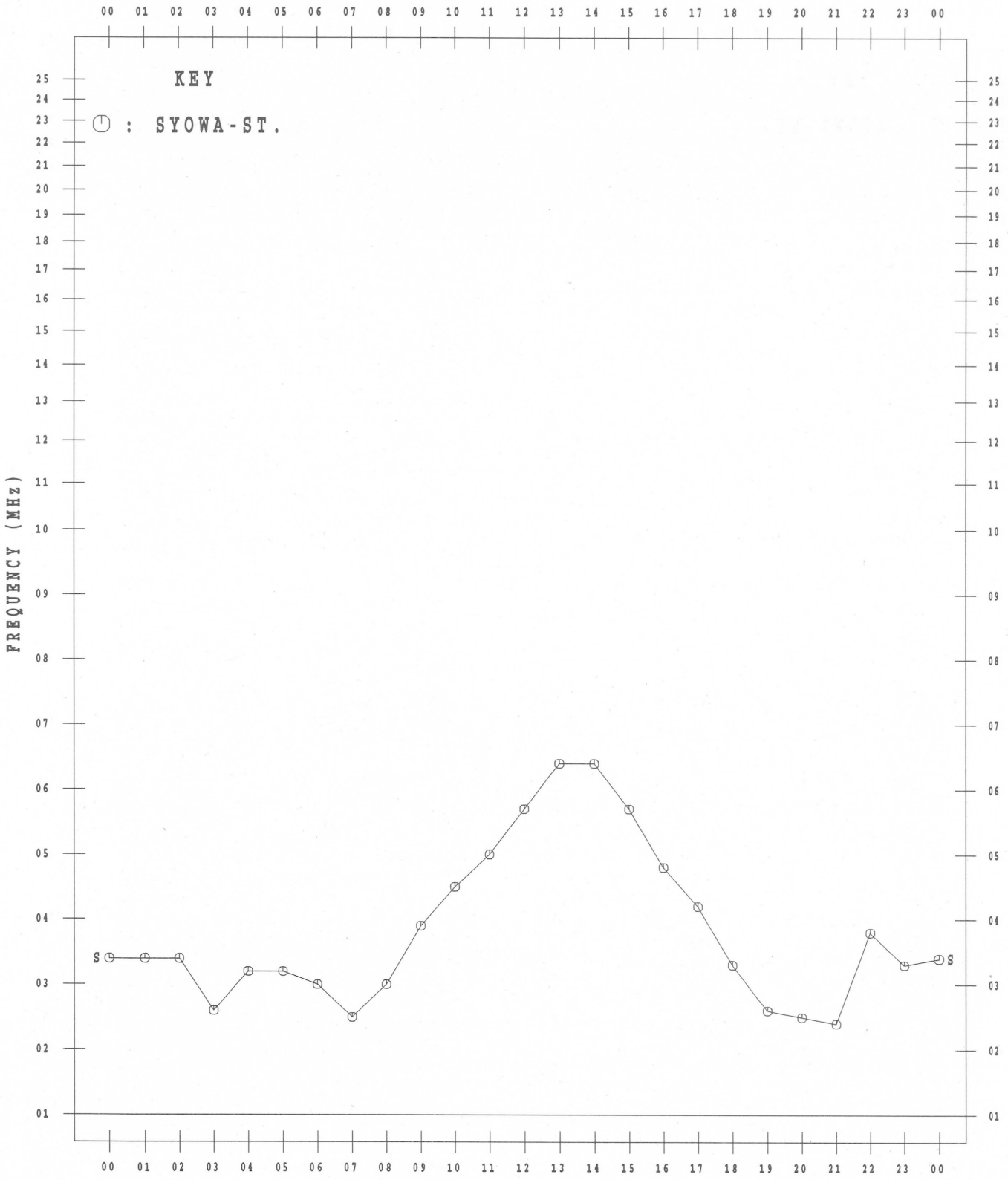


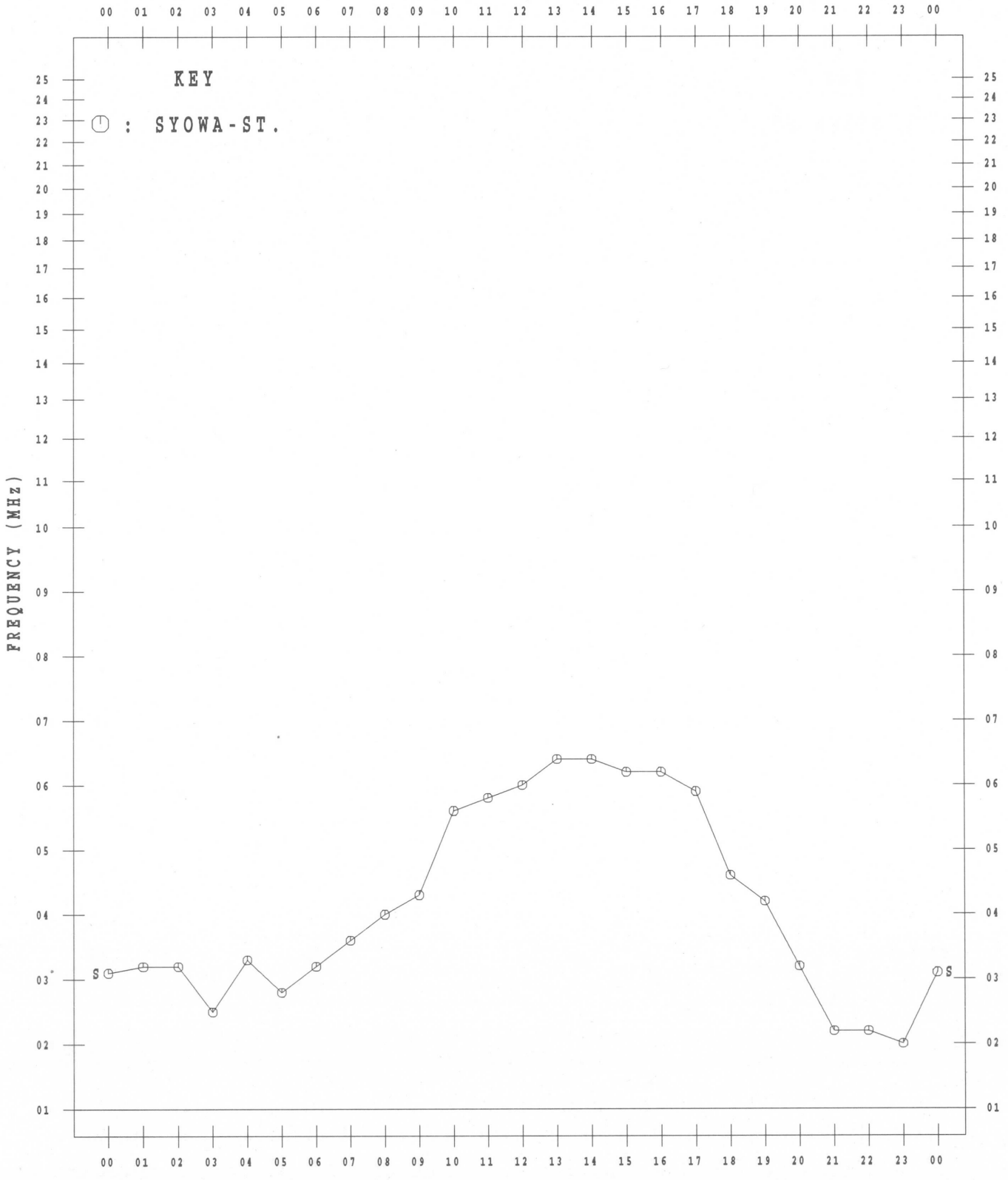
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME AUG. 2004



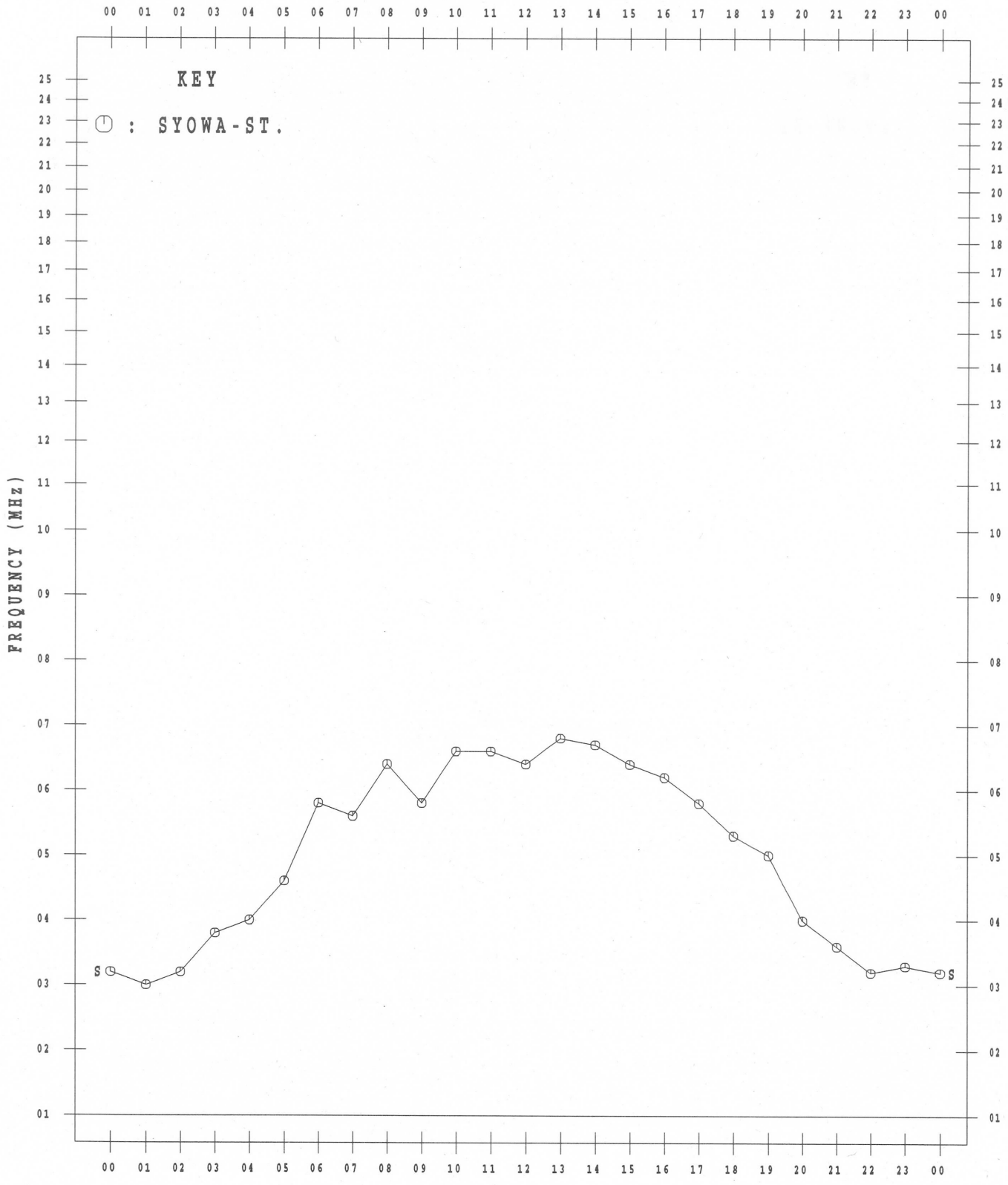
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME SEP. 2004



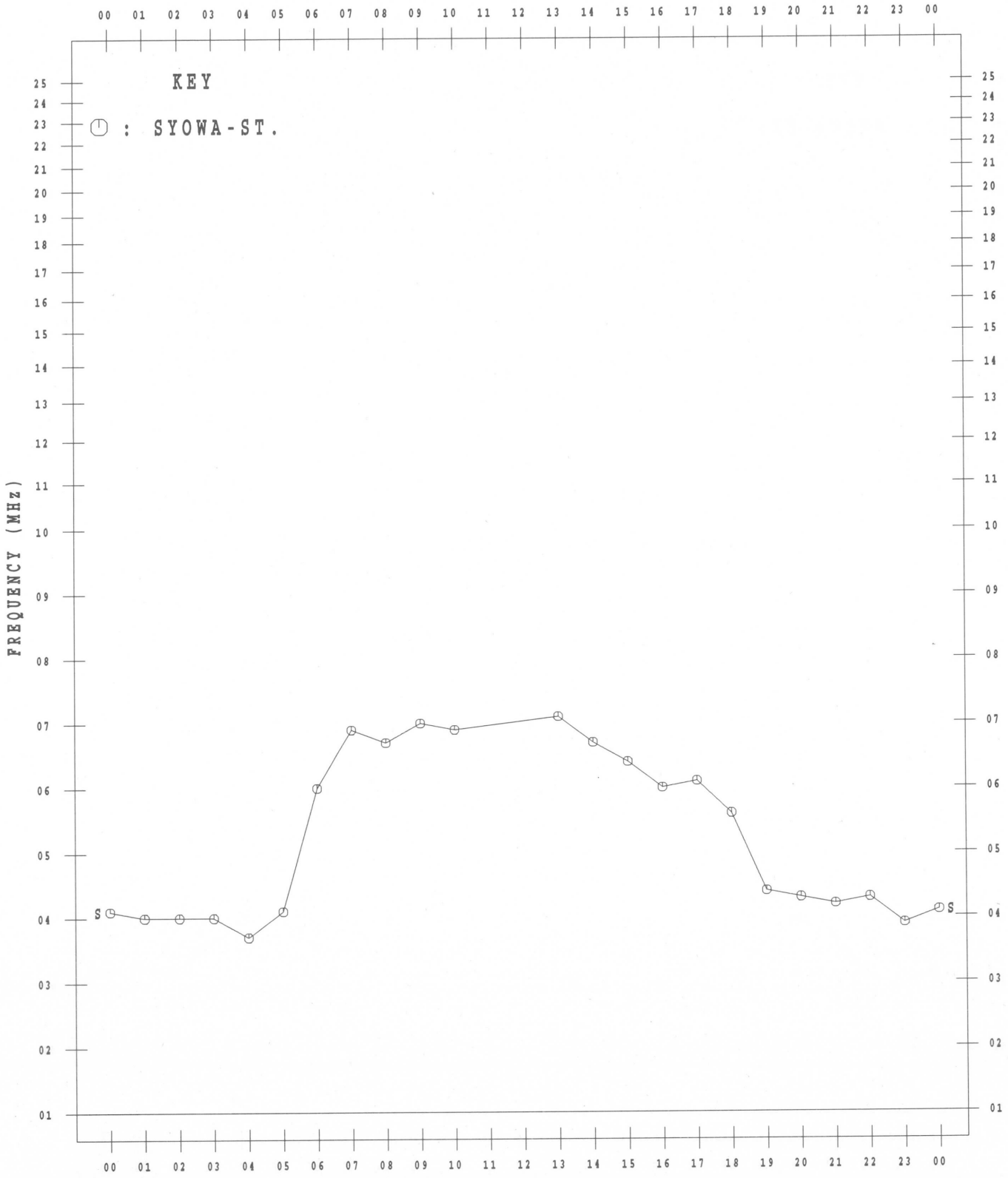
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME OCT. 2004

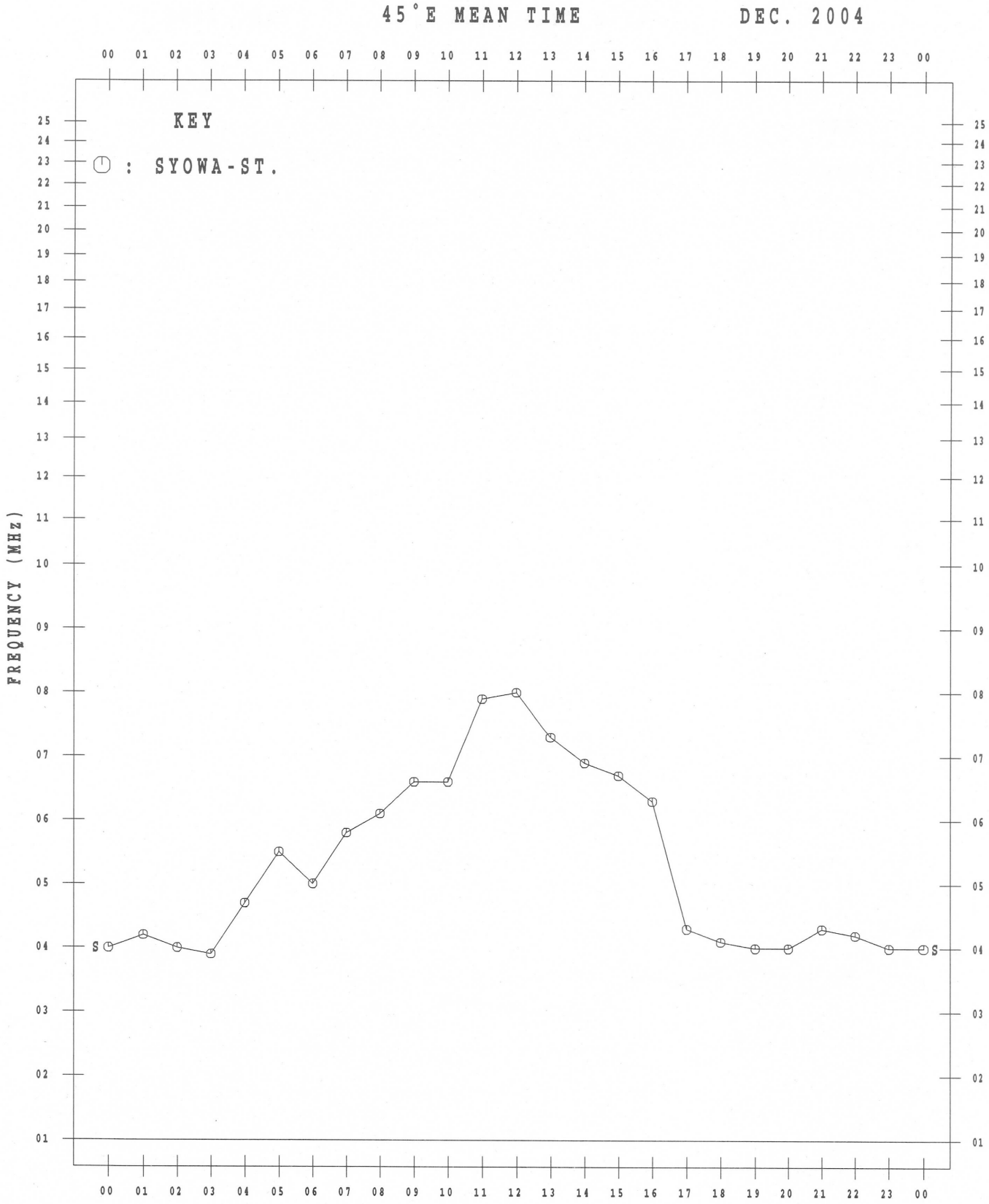


MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME NOV. 2004



MONTHLY MEDIAN VALUES OF foF2



MONTHLY MEDIAN VALUES OF ftEs

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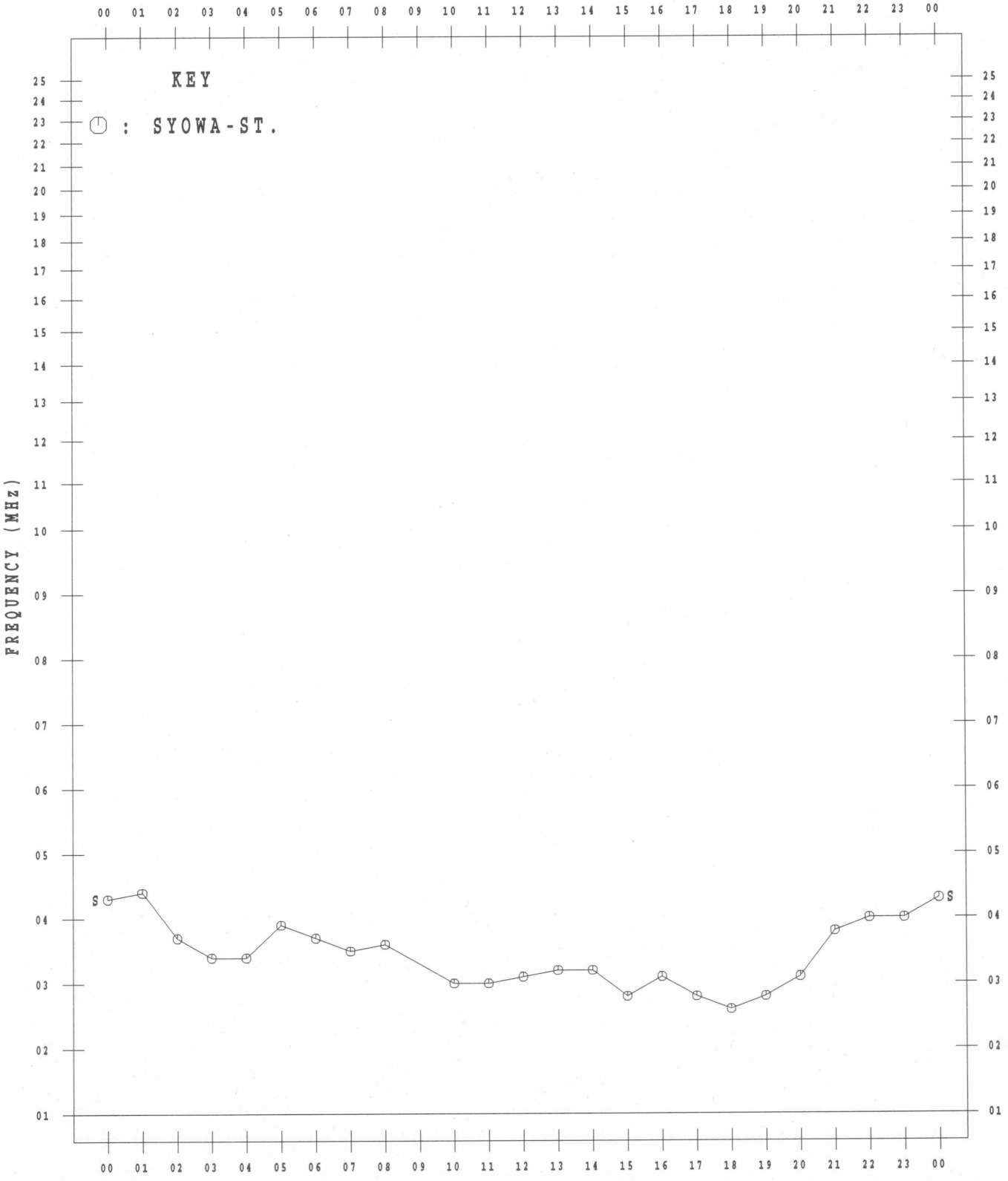

MONTHLY MEDIAN VALUES OF ftEs

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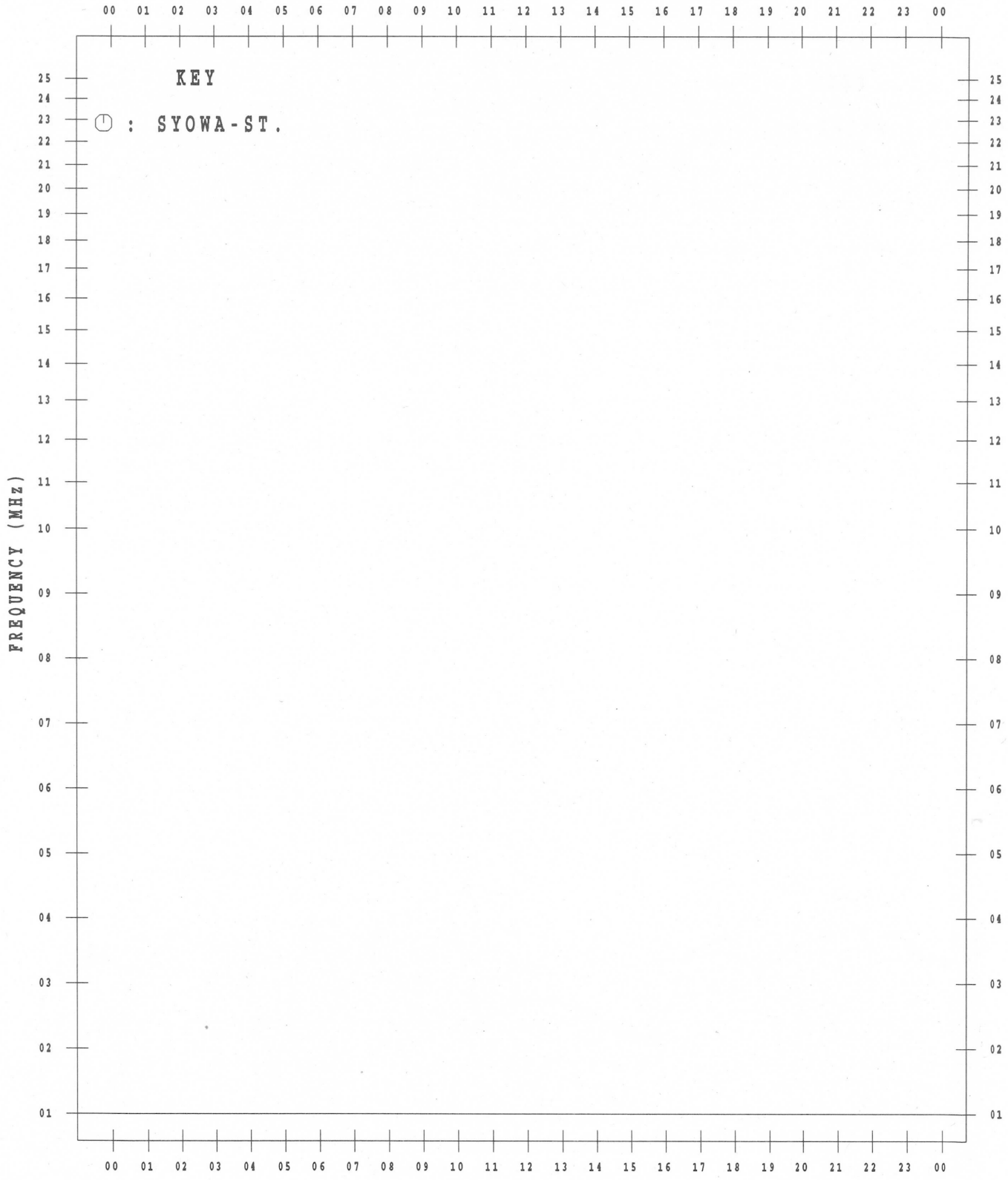
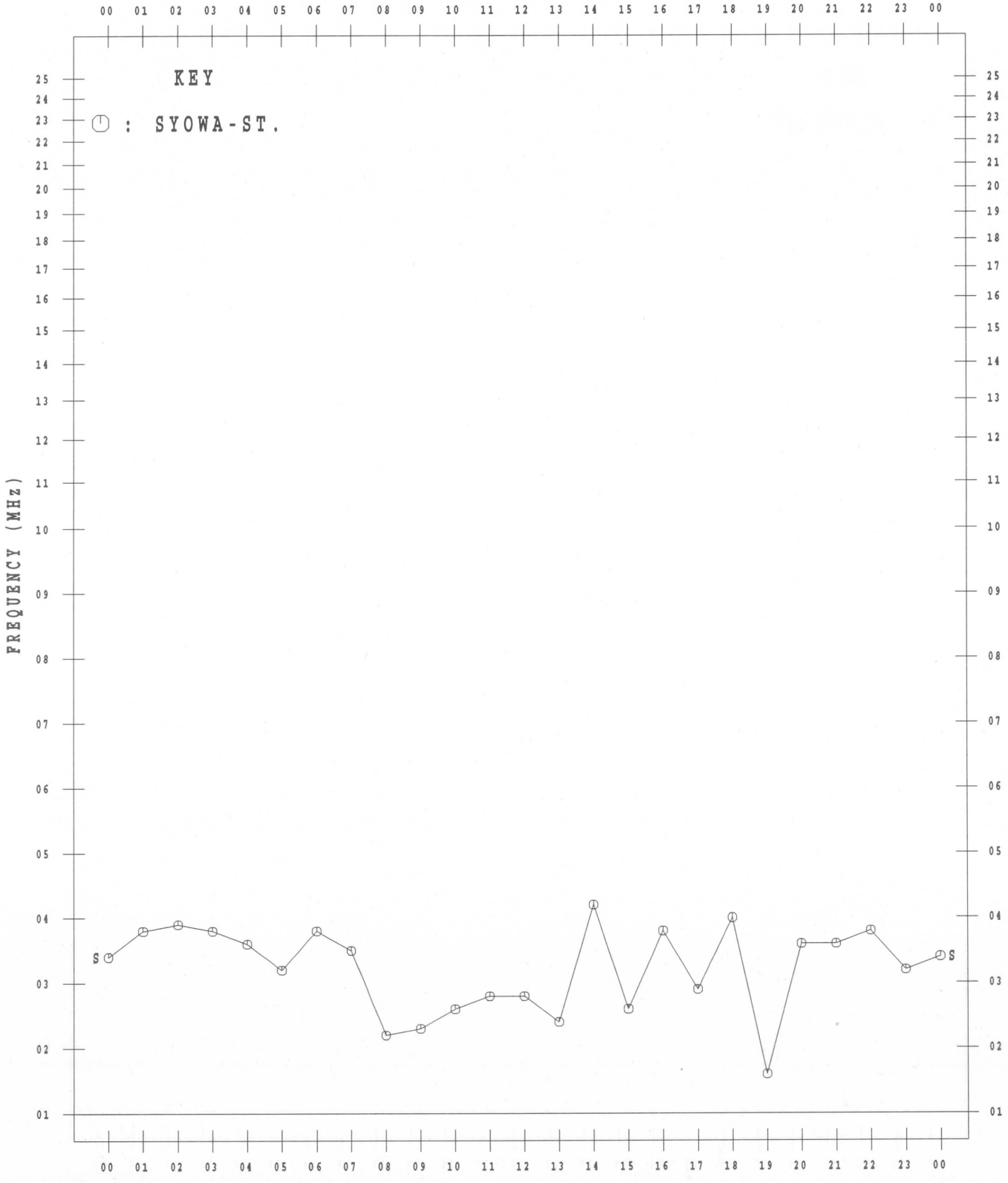


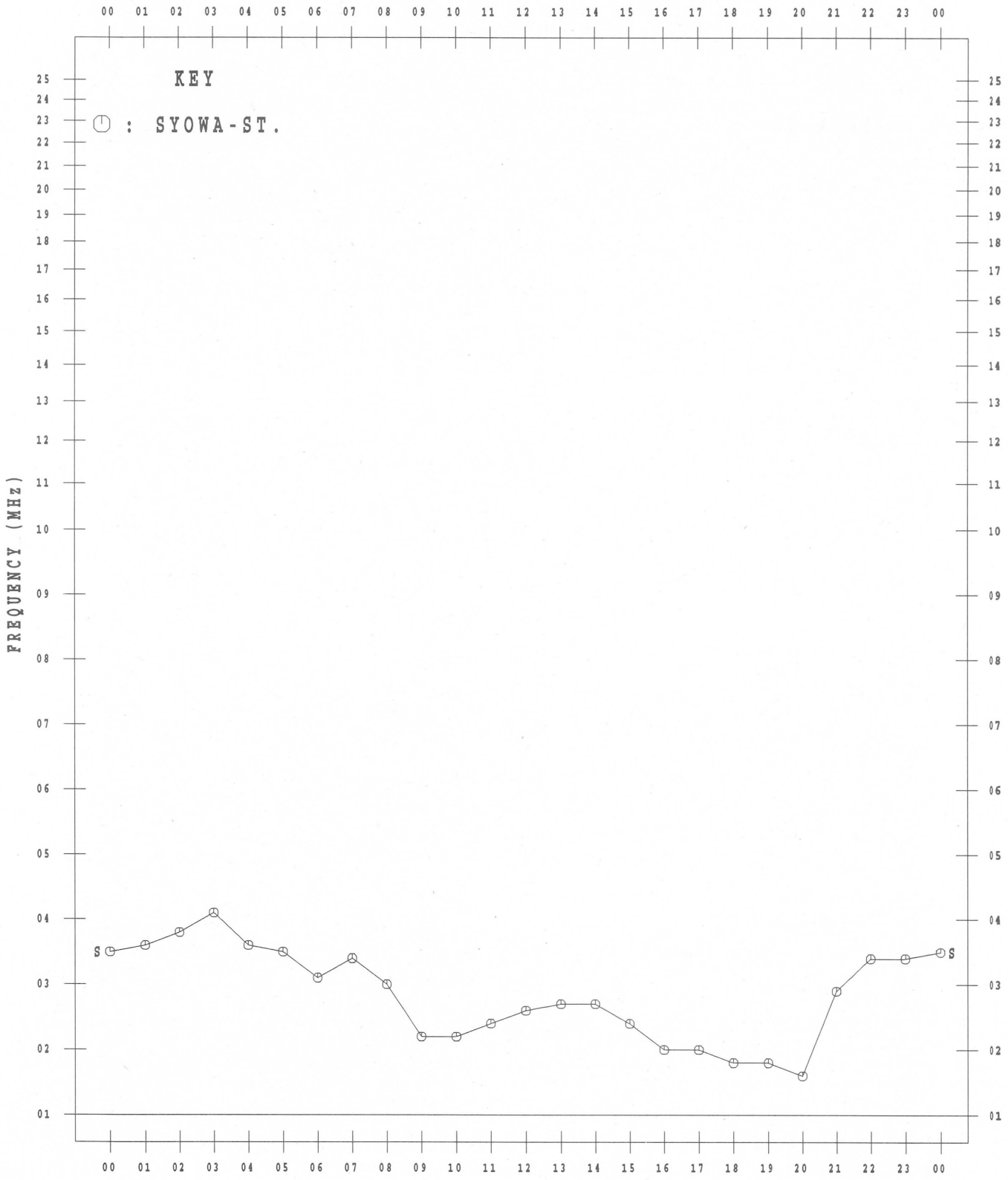
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAR. 2004



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME APR. 2004



MONTHLY MEDIAN VALUES OF ftEs

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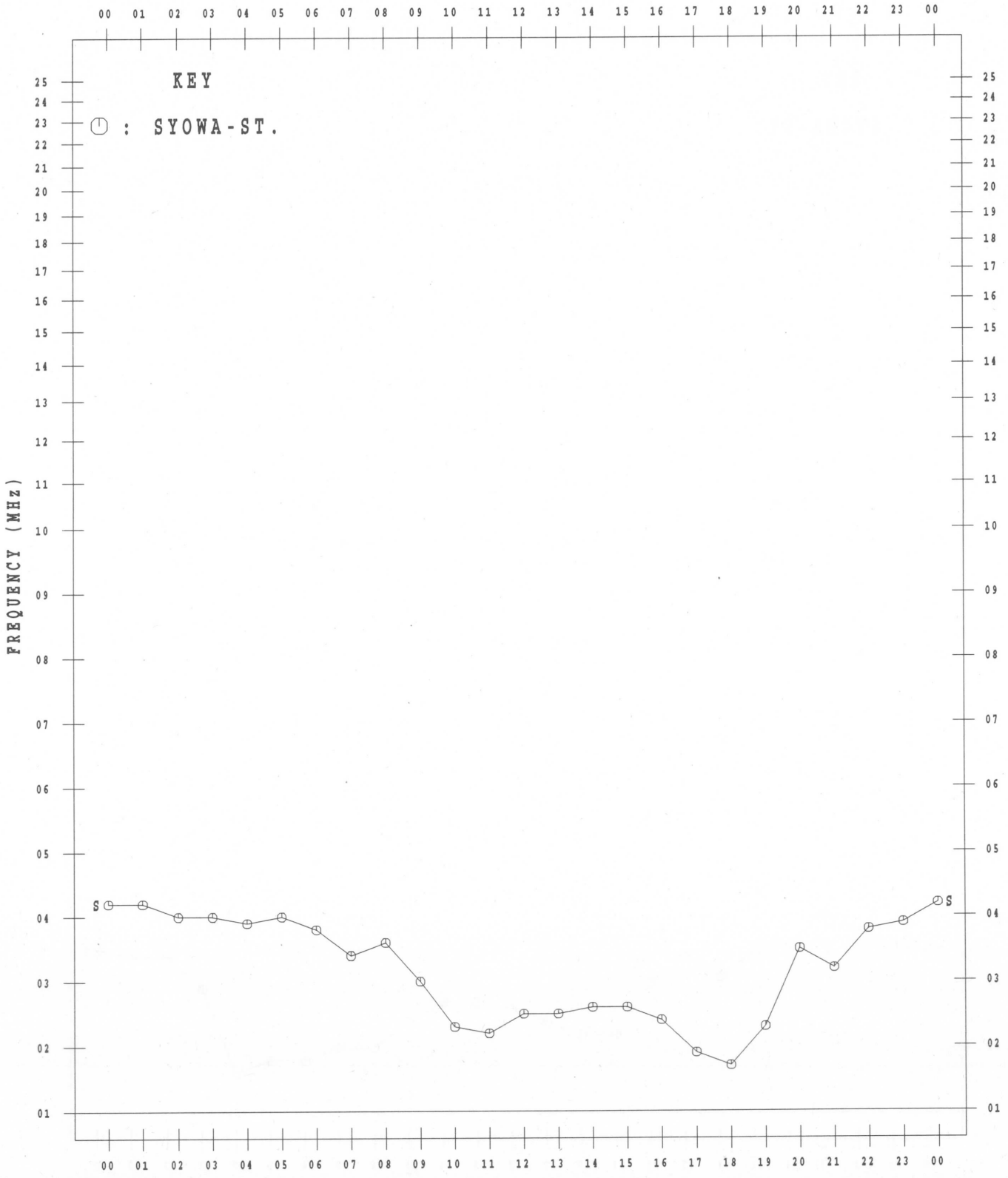

MONTHLY MEDIAN VALUES OF ftEs

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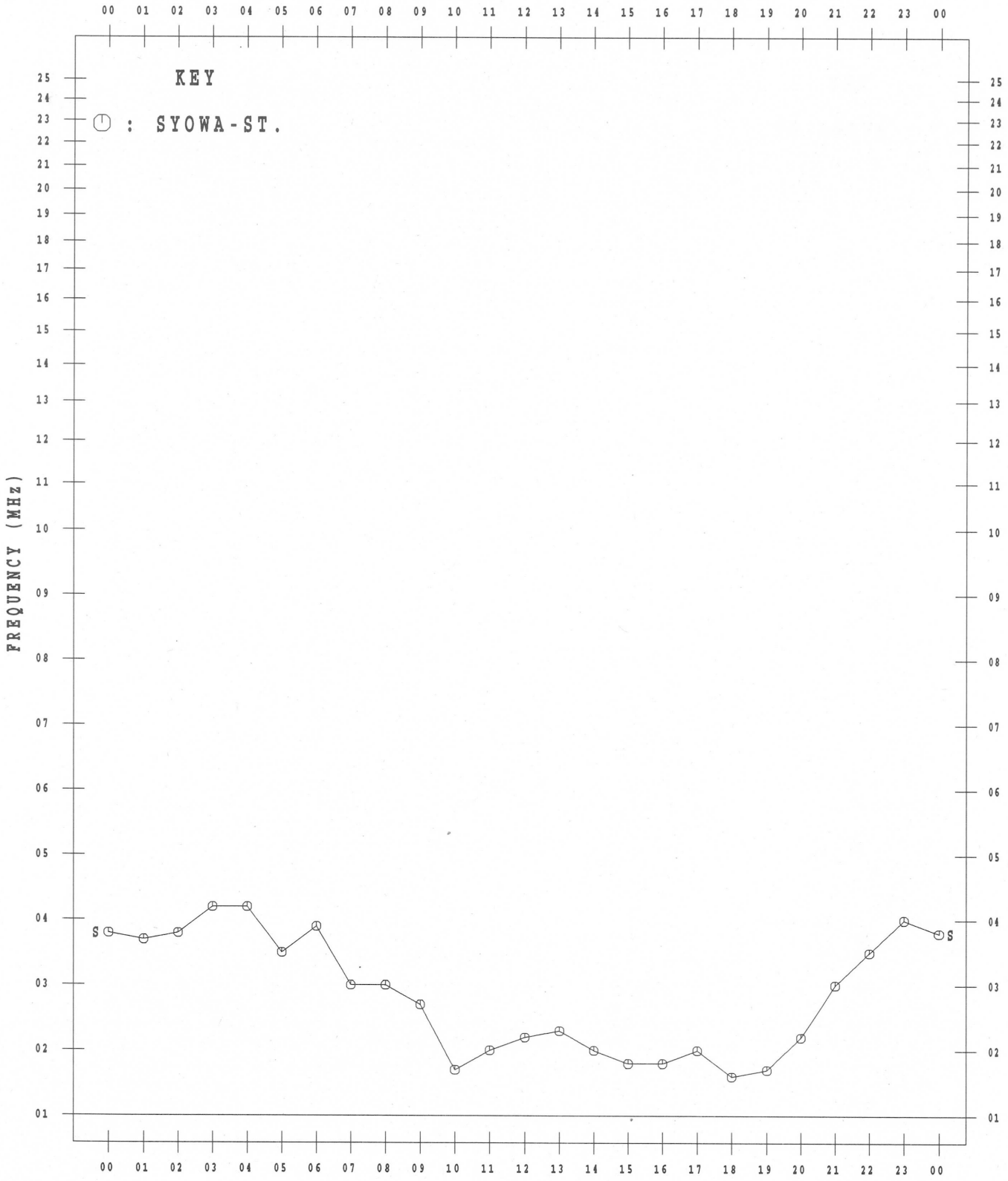

MONTHLY MEDIAN VALUES OF ftEs

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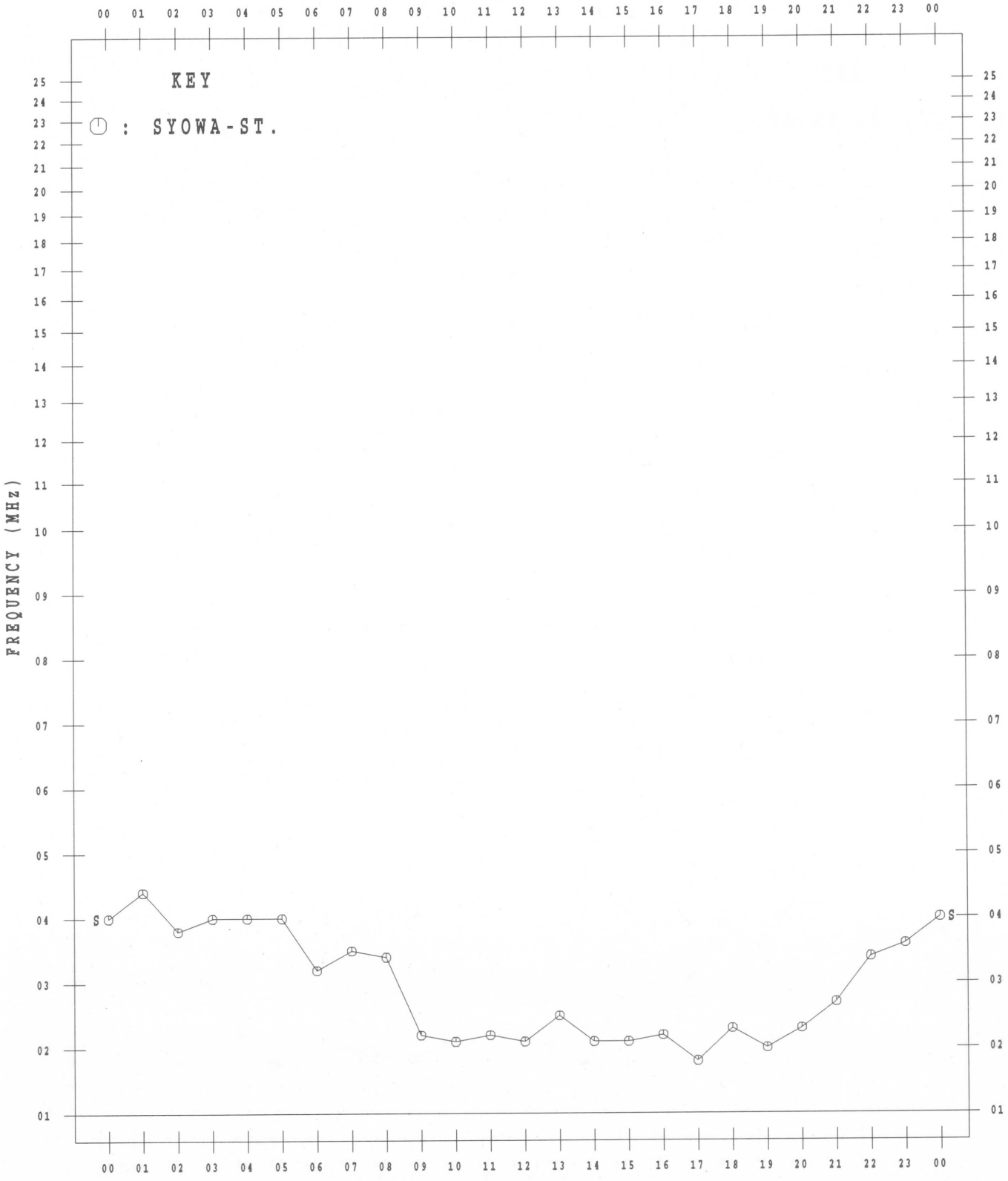
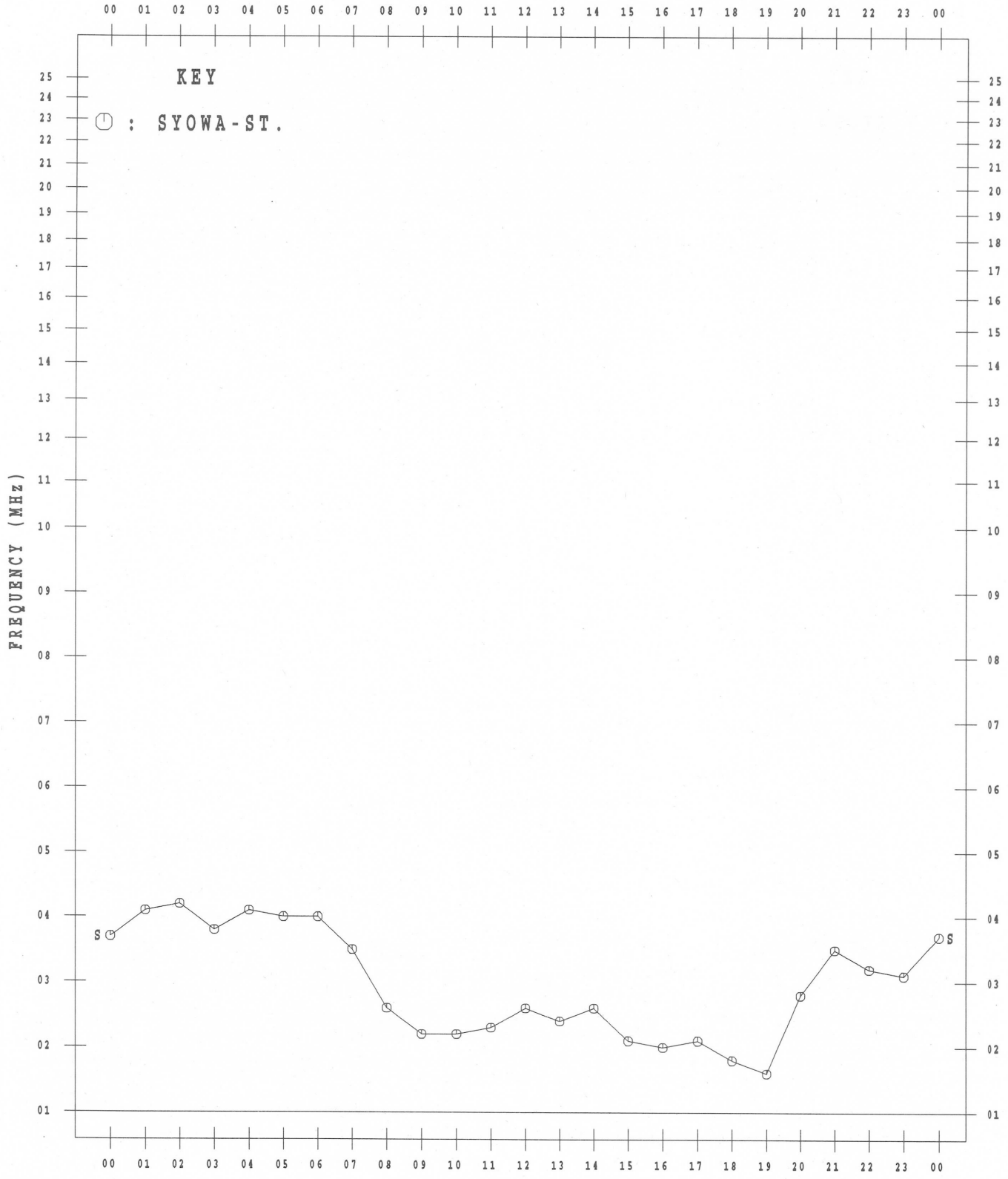


MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME AUG. 2004



MONTHLY MEDIAN VALUES OF ftEs

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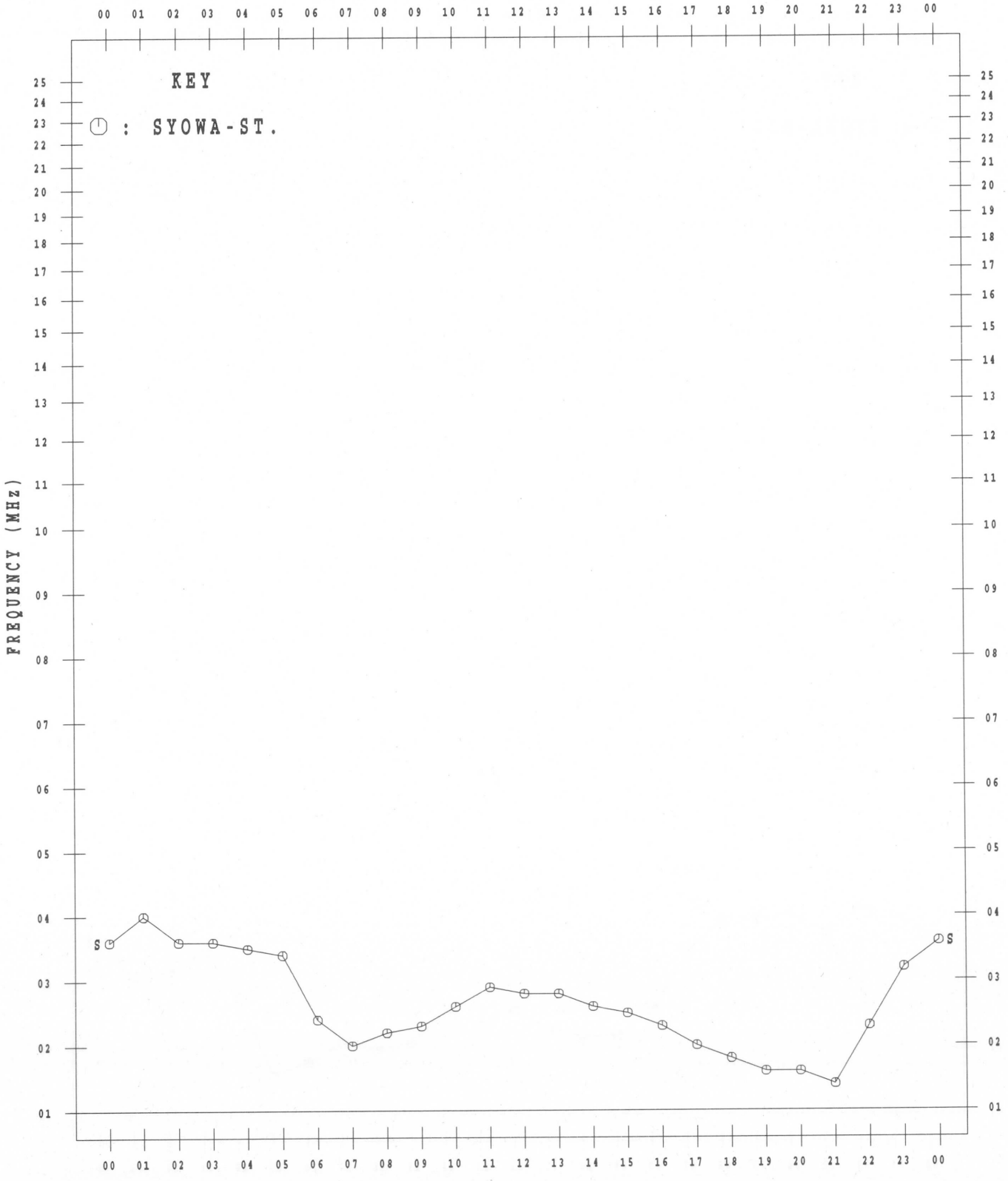

MONTHLY MEDIAN VALUES OF ftEs

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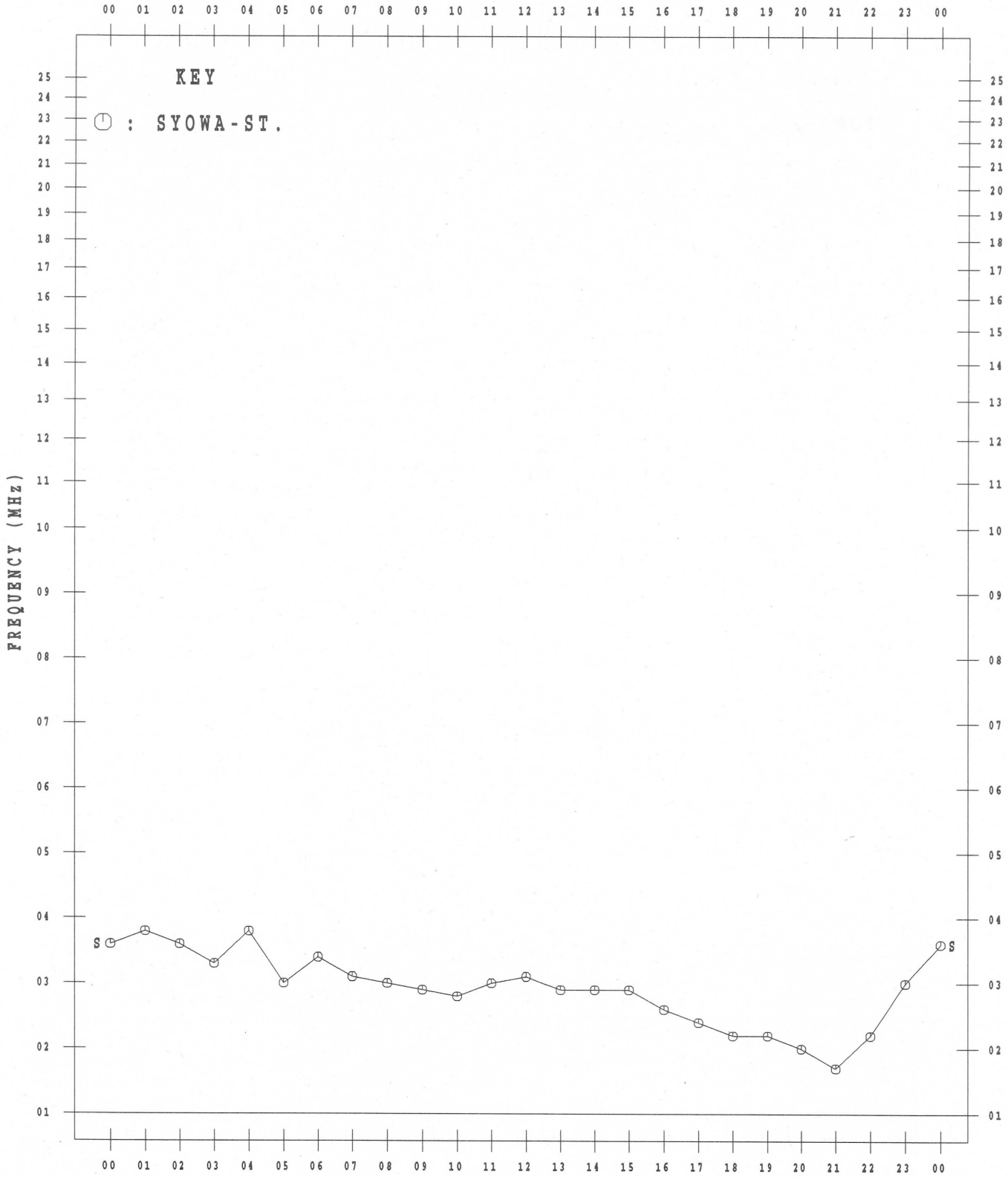

MONTHLY MEDIAN VALUES OF ftEs

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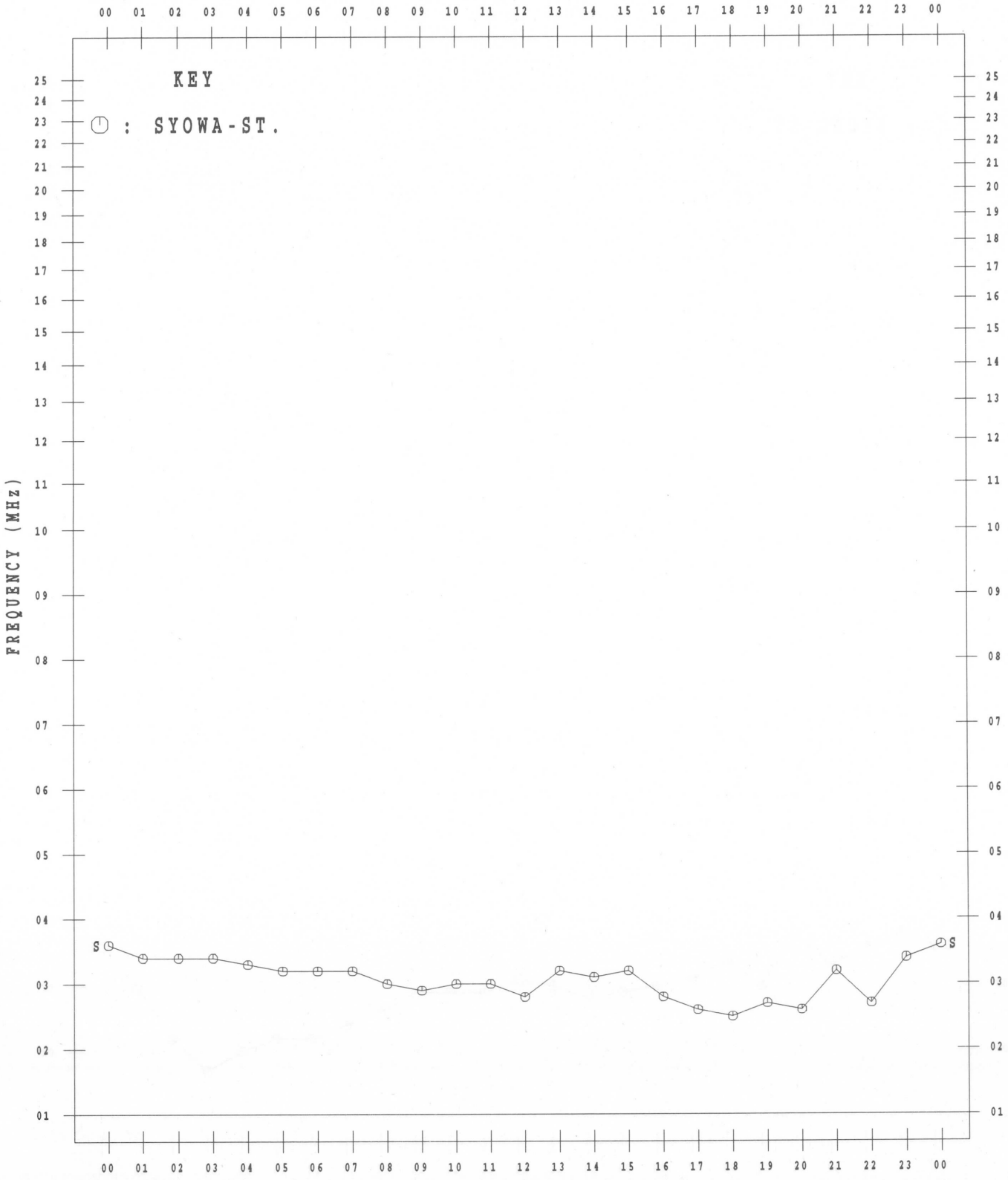

MONTHLY MEDIAN VALUES OF ftEs

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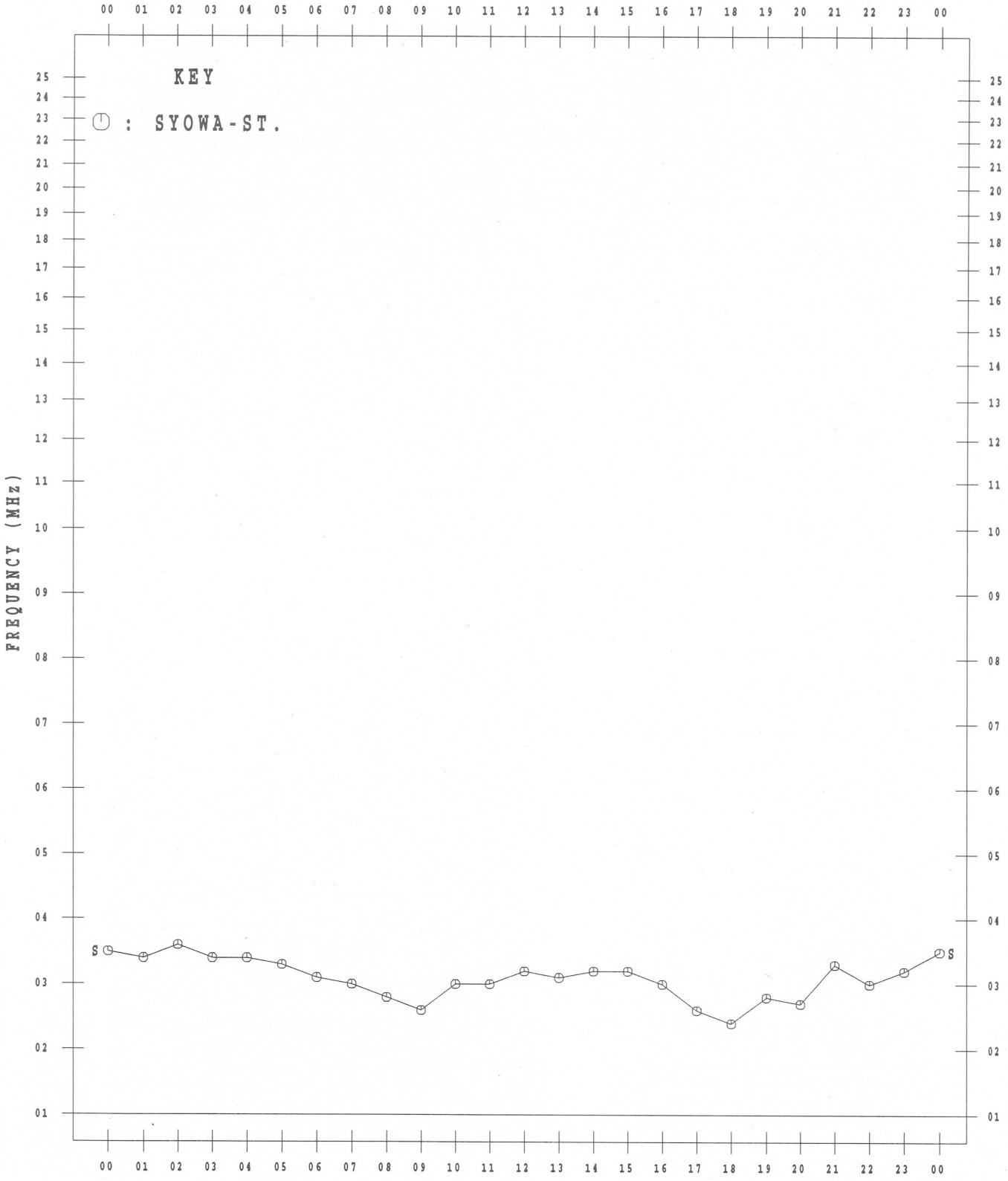

IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.—71 January 2004 — December 2004 (Not for Sale)

昭和基地電離層資料（南極）
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