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ION.ANT.—59

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

July 1992—December 1992

CONTENTS

COMMUNICATIONS RESEARCH LABORATORY

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

INTRODUCTION

This data book gives summarized results for vertical soundings of the ionosphere at Syowa Station, Antarctica in 1992. The observations were conducted by the Communications Research Laboratory under the sponsorship of the National Institute of Polar Research of Japan. The location of the station, specifications of the ionosonde and symbols used in this data book are as follows:

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 Range	400 kHz–15 MHz
Transmitting Power	10 kW (peak value)
Duration of Sweep	20 sec
Transmitted Pulse Width	80 μ sec
Recurrence Frequency of Transmitted Pulse	50 Hz (by power source frequency)
Frequency Scale	every I MHz
Height Range	900 km
Height Scale	every 50 km
Total Receiver Gain	120 dB
Recording Method	35 mm film and video fax for ionograms
Power Supply	1000 volt AC, 2.0 kVA
Transmitting Antenna and Receiving Antenna	30 m height vertical delta terminated by 600 Ω respectively

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. Ionograms data are printed in the quarter hourly of every days.

c. 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

(1) 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 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.

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 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.

JUL. 1992 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	A	B	A	B	A	B	A	B	B	B	B	58	S	50	39	55	O X 36	A	A	A	A	B
2	A	A	A	A	A	41	45	A	B	B	40	B	B	B	B	B	B	O X 51	B	B	B	B	B	A
3	A	A	A	A	A	A	B	33	33	28	O X 45	B	B	B	74	52	O X 36	B	B	B	B	B	B	B
4	A	S	A	26	25	42	65	30	B	B	S	60	65	60	72	70	42	33	B	B	B	B	B	B
5	A	A	A	A	A	A	A	A	B	B	B	B	71	70	O X 73	76	B	B	B	B	B	B	A	A
6	A	A	A	A	A	A	A	A	A	48	X 47	64	X 69	83	75	62	46	S	B	B	B	B	A	B
7	A	A	39	A	A	O X 33	40	B	B	B	O X 44	O X 48	O X 52	68	72	X 47	33	A	29	B	B	B	B	B
8	A	A	A	A	A	30	40	59	34	34	40	49	70	70	80	O X 49	41	B	26	B	B	B	A	A
9	A	A	A	A	A	A	A	48	44	70	65	75	74	70	76	55	O X 47	O X 45	B	B	A	B	B	B
10	A	A	S	S	40	B	B	B	A	A	45	76	74	80	70	64	49	36	39	27	B	A	A	R
11	A	A	A	A	A	32	40	37	33	46	49	55	69	X 81	X 61	O X 72	54	38	S	B	B	B	B	B
12	B	B	A	A	S	70	69	70	B	70	72	72	74	90	78	99	80	80	B	B	A	A	A	A
13	A	A	A	A	A	A	A	B	A	A	B	B	57	B	80	80	B	B	B	B	A	A	A	A
14	B	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
15	A	A	A	A	B	B	B	B	B	38	B	59	70	X 75	81	S	69	40	40	27	B	A	A	B
16	A	A	A	S	33	41	42	S	B	B	O X 48	X 49	69	70	104	B	X 109	B	B	A	B	A	A	A
17	A	A	A	A	A	A	A	29	29	X 37	O X 47	53	69	78	X 69	62	49	49	B	B	A	B	B	B
18	A	A	A	A	A	34	39	S	B	S	O X 45	S	B	X 70	90	80	39	40	48	29	B	A	B	A
19	S	A	A	A	A	A	A	38	39	40	45	X 59	X 60	73	70	65	40	S	O X 29	B	B	B	A	A
20	A	A	A	A	A	A	B	A	S	40	O X 49	66	X 69	69	72	X 69	B	B	X 68	O X 40	B	A	A	A
21	A	A	A	A	A	A	32	30	28	33	O X 44	55	70	X 66	X 70	80	70	X 72	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	80	97	A	A	A	A	A	O X 34	A
23	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
24	B	A	A	B	B	A	A	B	A	A	44	S	S	S	80	O X 75	B	B	B	B	A	A	A	A
25	A	A	A	A	A	B	A	A	A	39	B	B	X 69	B	71	76	O X 49	O X 51	48	B	B	A	A	A
26	A	A	A	A	A	40	40	33	30	X 34	X 44	55	X 59	X 64	90	74	40	X 40	B	A	B	B	B	A
27	B	29	31	A	A	A	A	40	39	A	46	64	A	69	70	S	O X 41	O X 34	A	A	A	A	A	A
28	A	A	A	A	A	A	A	38	B	B	B	64	O X 52	65	63	O X 52	O X 51	X 46	29	A	A	A	A	A
29	B	B	A	A	A	A	33	28	A	45	A	B	S	89	75	O X 39	O X 43	X 55	S	A	A	A	A	B
30	A	A	A	B	B	B	A	35	42	44	45	55	S	83	74	O X 50	73	51	40	33	A	A	A	A
31	A	A	A	A	A	A	A	35	A	A	53	58	64	B	76	O X 43	B	42	47	33	B	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1	2	1	3	9	11	15	10	15	20	19	20	22	26	25	23	18	12	6			1	
MED		29	35	26	33	40	40	35	34	40	45	59	69	70	74	65	47	46	40	31			O X 34	
U Q					40	42	45	40	39	46	48	64	70	80	80	76	69	X 51	48	33				
L Q					25	32	39	30	30	34	44	55	X 62	68	70	O X 51	40	40	29	27				

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 1992 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	A	B	A	B	A	B	B	B	B	50	D S 44	F 39	F 33	Z 49	U S 30	A	A	A	A	B
2	A	A	A	A	A	F	F 34	A	B	B	F 34	B	B	B	B	B	B	45	B	B	B	B	B	A
3	A	A	A	A	A	A	B	F	F 27	F	39	B	B	B	62	U R 47	32	B	B	B	B	B	B	B
4	A	D S 34	A	F	F	F 23	F	F 24	B	B	D S 37	F 43	52	F	F	F 55	J F 36	J F 27	B	B	B	B	B	B
5	A	A	A	A	A	A	A	A	B	B	B	B	F 60	F 60	67	J F 70	B	B	B	B	B	B	A	A
6	A	A	A	A	A	A	A	A	A	40	39	F 51	64	U R 75	69	F 47	F 38	D S 33	B	B	B	B	A	B
7	A	A	33	A	A	F 27	F	B	B	B	38	42	U R 46	F	J F 66	40	F 26	A	F 23	B	B	B	B	B
8	A	A	A	A	A	F 24	F 23	F	F	F	F 30	F 42	F 58	64	U R 74	44	U R 35	B	F 20	B	B	B	A	A
9	A	A	A	A	A	A	A	F	F 33	F	J F 59	F 59	J F 68	F 58	F J 70	J F 49	41	39	B	B	A	B	B	B
10	A	A	S	S	F	B	B	B	A	A	39	F 50	F 50	J F 74	J F 64	54	J F 43	F 30	F 22	F	B	A	A	R
11	A	A	A	A	A	F 26	F 23	F 27	F	F 28	J F 43	46	59	75	55	66	46	31	S	B	B	B	B	B
12	B	B	A	A	D S 27	F	F	F	B	F	F	F	F 50	F 70	F 64	F 80	F	F	B	B	A	A	A	A
13	A	A	A	A	A	A	A	B	A	A	B	B	U R 47	B	F 67	F 70	B	B	B	B	A	A	A	A
14	B	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
15	A	A	A	A	B	B	B	B	B	F 29	B	50	F 60	69	J R 75	S	F 50	F	J F 34	F 20	B	A	A	B
16	A	A	A	S	F	F	F	S	B	B	42	60	60	F 60	J F 98	B	72	B	B	A	B	A	A	A
17	A	A	A	A	A	A	A	F 23	F 20	33	41	U R 57	62	69	60	J F 56	43	F 40	B	B	A	B	B	B
18	A	A	A	A	A	29	33	S	B	D S 28	39	D S 48	B	62	U R 82	J F 74	33	31	41	23	B	A	B	A
19	S	A	A	A	A	A	A	F	F	F 30	39	51	53	U R 63	F 56	F 50	34	D S 23	23	B	B	B	A	A
20	A	A	A	A	A	A	B	A	U S 33	F 33	42	58	60	60	66	60	B	B	62	34	B	A	A	A
21	A	A	A	A	A	A	F 28	F 23	F	28	39	49	F 59	59	64	73	F 60	66	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	F 60	J F 91	A	A	A	A	A	28	A
23	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
24	B	A	A	B	B	A	A	B	A	A	37	S	S	S	F 69	69	B	B	B	B	A	A	A	A
25	A	A	A	A	A	B	A	A	A	F	B	B	60	B	F 60	70	44	45	J F 42	B	B	A	A	A
26	A	A	A	A	A	F	F	F	F	29	38	U R 48	53	58	F 79	J F 68	F	33	B	A	B	B	B	A
27	B	F	F	A	A	A	A	F	F	A	40	F	A	F 59	F	D S 42	U S 35	27	A	A	A	A	A	A
28	A	A	A	A	A	A	A	F	B	B	B	F 51	U S 46	F 55	F 51	46	45	40	F 23	A	A	A	A	A
29	B	B	A	A	A	A	27	F	A	F	A	B	S	U R 82	J S 69	33	37	47	S	A	A	A	A	B
30	A	A	A	B	B	B	A	F 29	F	F	40	F 44	S	77	F 64	44	F 61	F 39	F 29	F	A	A	A	A
31	A	A	A	A	A	A	A	F 27	A	A	F 47	U R 52	F 58	B	R 70	37	B	F	F 39	F 26	B	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1	1		1	5	6	6	4	9	20	18	20	20	25	26	21	17	12	4			1	
MED		D S 34	33		D S 27	F 26	F 28	F 26	F 30	30	39	50	58	62	66	55	41	40	F 30	24			28	
U Q						28	33	F 27	33	33	42	52	60	72	R 70	F 69	F 48	45	40	30				
L Q						F 24	F 23	F 23	F 24	28	38	F 46	51	59	61	44	34	30	F 23	22				

JUL. 1992 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 1992 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	29	B	75	B	36	B	40	B	35	B	B	B	B	E B 25	E B 30	E B 19	E B 14	18	23	28	36	32	60	B
2	44	47	45	42	28	37	39	44	B	B	23	B	B	B	B	B	B	E B 24	B	B	B	B	B	16
3	28	39	43	41	43	40	B	18	12	29	22	B	B	B	E B 24	E B 24	E B 20	B	B	B	B	B	B	B
4	29	28	28	26	28	17	16	E B 19	B	B	E B 20	E B 19	40	30	31	E B 15	E B 19	E B 19	B	B	B	B	B	B
5	33	39	29	41	51	45	59	54	B	B	B	B	24	E B 19	E B 35	E B 20	B	B	B	B	B	B	25	22
6	29	31	35	31	31	37	49	54	35	25	18	16	16	E B 23	E B 20	18	20	E B 19	B	B	B	B	28	B
7	34	42	33	38	39	35	21	B	B	B	E B 19	E B 20	E B 23	22	27	18	E B 19	21	E B 16	B	B	B	B	B
8	29	30	32	33	45	27	19	33	E B 10	26	16	E B 18	E B 17	19	E B 21	E B 17	E B 17	B	E B 17	B	B	B	30	29
9	26	29	64	70	15	40	42	31	31	26	33	26	26	18	18	29	11	12	B	B	16	B	B	B
10	21	29	31	30	21	B	B	B	45	40	30	29	21	E B 19	21	E B 16	E B 10	14	11	E B 9	B	16	33	28
11	15	27	29	27	51	29	18	12	E B 15	E B 13	11	10	19	18	E B 17	16	17	E B 13	E B 14	B	B	B	B	B
12	B	B	26	26	E B 18	E B 18	15	E B 18	B	60	51	30	30	E B 35	E B 30	E B 40	E B 40	E B 43	B	B	24	30	24	39
13	41	33	45	47	46	46	76	B	40	69	B	B	26	B	E B 45	E B 54	B	B	B	B	19	42	43	45
14	B	48	28	30	74	B	B	B	39	B	B	B	B	B	B	B	B	B	B	B	B	32	45	23
15	50	39	27	36	B	B	B	B	B	25	B	E B 20	27	E B 20	E B 20	E B 21	E B 19	22	18	13	B	16	16	B
16	24	33	28	35	27	26	29	23	B	B	E B 19	E B 20	E B 18	E B 20	E B 60	B	E B 45	B	B	32	B	35	70	60
17	70	33	52	110	40	38	31	28	30	43	40	33	21	27	E B 25	E B 20	17	E B 19	B	B	31	B	B	B
18	34	39	39	40	37	27	15	E B 21	B	E B 21	E B 20	E B 20	B	26	17	31	E B 19	E B 16	E B 16	E B 14	B	10	B	21
19	20	21	21	33	38	39	32	24	12	E B 13	E B 15	E B 18	22	E B 19	E B 19	10	E B 14	E B 18	E B 18	B	B	B	15	23
20	32	42	39	35	33	25	B	33	32	16	E B 18	E B 19	E B 19	22	E B 19	E B 18	B	B	E B 19	E B 19	B	45	60	42
21	40	46	46	44	46	33	26	27	25	15	20	E B 29	28	25	16	14	14	E B 9	34	46	40	54	51	40
22	69	46	42	90	70	42	46	40	B	B	B	B	B	B	B	E B 35	35	39	45	95	37	43	28	70
23	48	38	70	B	60	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	36	40	40
24	B	80	60	B	B	59	47	B	27	34	33	23	E B 40	E B 50	E B 30	E B 30	B	B	B	B	35	20	39	39
25	40	45	42	41	45	B	45	41	50	17	B	B	E B 24	B	E B 30	E B 25	21	26	27	B	B	40	31	34
26	39	40	38	47	39	32	31	40	21	E B 11	16	16	16	21	35	27	15	E B 15	B	35	B	B	B	25
27	B	32	41	34	30	33	29	E B 10	11	21	32	71	110	35	32	33	32	E B 19	33	33	34	34	30	28
28	54	90	60	60	60	43	45	46	B	B	B	E B 35	E B 30	21	E B 19	E B 20	E B 24	E B 19	17	34	34	42	34	42
29	B	B	46	46	38	42	27	32	23	12	26	B	51	72	46	38	E B 19	38	25	34	70	73	72	B
30	25	39	50	B	B	B	56	50	33	52	26	E B 24	E B 50	E B 30	E B 30	E B 30	E B 24	E B 19	32	28	33	21	42	41
31	43	48	45	45	33	46	35	26	35	34	21	25	E B 30	B	E B 55	E B 20	B	E B 20	E B 15	11	B	33	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	26	28	31	27	28	25	25	23	20	21	22	21	24	23	27	27	23	22	17	14	12	19	22	21
MED	34	39	41	40	38	37	32	31	30	25	20	E B 20	24	21	E B 27	E B 20	E B 19	E B 19	18	30	34	34	34	34
U Q	43	46	46	46	46	42	46	41	35	37	30	29	30	30	E B 32	E B 30	E B 24	22	30	34	36	42	45	42
L Q	28	32	29	33	30	28	24	E B 21	18	16	18	18	20	19	E B 19	E B 18	15	E B 16	E B 16	14	28	21	28	24

JUL. 1992 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 1992 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	B	14	B	24	B	35	B	24	B	B	B	B	25	30	19	14	13	14	10	23	10	15	B
2	20	10	10	20	19	14	13	14	B	B	19	B	B	B	B	B	B	24	B	B	B	B	B	10
3	10	11	20	23	14	25	B	14	8	10	14	B	B	B	24	24	20	B	B	B	B	B	B	B
4	10	14	9	9	9	9	10	19	B	B	20	19	16	15	9	15	19	19	B	B	B	B	B	B
5	9	8	8	9	19	25	19	21	B	B	B	B	16	19	35	20	B	B	B	B	B	B	8	17
6	8	8	13	8	9	15	19	18	16	13	13	14	14	23	20	8	8	19	B	B	B	B	9	B
7	10	13	13	13	9	8	8	B	B	B	19	20	23	18	8	14	19	17	16	B	B	B	B	B
8	8	8	9	8	9	13	10	8	10	8	9	18	17	15	21	17	17	B	17	B	B	B	8	9
9	8	9	8	7	9	8	16	9	18	18	15	11	14	14	9	11	8	8	B	B	8	B	B	B
10	9	9	9	9	9	B	B	B	14	16	10	17	16	19	14	16	10	9	9	9	B	8	9	9
11	9	9	9	15	14	15	10	9	15	13	9	9	14	16	17	9	10	13	14	B	B	B	B	B
12	B	B	8	10	18	18	7	18	B	18	9	18	14	35	30	40	40	43	B	B	19	9	8	9
13	14	9	14	19	14	15	19	B	19	19	B	B	21	B	45	54	B	B	B	B	9	8	9	8
14	B	8	20	14	23	B	B	B	19	B	B	B	B	B	B	B	B	B	B	B	B	12	15	18
15	15	13	14	19	B	B	B	B	B	19	B	20	19	20	20	21	19	18	14	9	B	11	14	B
16	14	17	10	13	8	10	10	17	B	B	19	20	18	20	60	B	45	B	B	8	B	14	20	8
17	19	18	19	37	19	19	15	11	10	9	9	14	19	19	25	20	13	19	B	B	18	B	B	B
18	8	8	9	9	9	8	8	21	B	21	20	20	B	18	14	11	19	16	16	14	B	8	B	6
19	8	8	6	7	14	8	13	8	7	13	15	18	15	19	19	8	14	18	18	B	B	B	8	8
20	8	19	19	15	17	20	B	24	19	10	18	19	19	14	19	18	B	B	19	19	B	19	19	23
21	8	11	13	14	14	14	8	8	8	8	8	29	18	13	14	11	9	9	18	9	9	16	14	14
22	9	9	8	8	8	8	19	24	B	B	B	B	B	B	B	35	17	20	19	13	10	11	8	8
23	9	8	13	B	19	8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	9	8	11
24	B	19	19	B	B	20	24	B	19	19	14	18	40	50	30	30	B	B	B	B	8	10	9	9
25	14	8	9	19	20	B	10	10	12	10	B	B	24	B	30	25	15	10	8	B	B	9	9	7
26	7	9	9	10	11	8	8	8	8	11	8	13	9	19	19	9	9	15	B	15	B	B	B	8
27	B	8	9	8	8	8	8	10	8	16	15	10	14	14	19	19	19	19	19	14	10	8	8	8
28	8	13	15	14	23	14	15	15	B	B	B	35	30	17	19	20	24	19	9	8	8	8	9	9
29	B	B	15	15	17	10	9	8	8	9	19	B	19	19	16	16	19	15	19	14	13	8	8	B
30	9	9	13	B	B	B	14	10	9	10	14	24	58	30	30	30	24	19	10	9	9	10	9	11
31	14	18	19	15	20	17	11	9	19	20	18	19	30	B	55	20	B	20	15	8	B	9	8	9
	00	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	10	9	13	14	14	15	14	17	19	18	18	20	19	19	21	20	19	19	19	B	B	12	9	11
U Q	B 15	17	15	19	20	B 25	B 24	B	B	B	B	B	B 58	B	35	30	B	B	B	B	B	B	B	B
L Q	8	8	9	9	9	8	10	9	10	10	13	18	16	17	17	14	14	15	15	10	10	9	8	8

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 1992 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

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	B	A	B	A	B	A	B	A	B	B	B	B	E B 245	B	230	E B 260	275	A	A	A	A	A	B
2	A	A	A	A	A	A	E A 350	A	B	B	300	B	B	B	B	B	B	245	B	B	B	B	B	A
3	A	A	A	A	A	A	B	A	A	A	E A 310	B	B	B	200	200	B	B	B	B	B	B	B	B
4	A	A 240	A	A	E A 350	E A 350	A	B	B	B	E B 310	E B 250	235	215	210	200	210	200	B	B	B	B	B	B
5	A	A	A	A	A	A	A	A	B	B	B	B	250	250	E B 260	240	B	B	B	B	B	B	A	A
6	A	A	A	A	A	A	A	A	A	290	250	230	220	240	235	200	200	235	B	B	B	B	A	B
7	A	A	250	A	A	A	350	B	B	B	240	220	240	210	210	220	E B 290	A	E B 230	B	B	B	B	B
8	A	A	A	A	A	A	E A 350	E A 300	270	260	220	210	200	230	215	210	200	B	B	B	B	B	A	A
9	A	A	A	A	A	A	A	A	350	250	250	240	225	220	200	200	200	220	B	B	A	B	B	B
10	A	A	A	A	E A 330	B	B	B	A	A	290	220	210	210	220	210	200	200	200	200	B	A	A	300
11	A	A	A	A	A	A	A	330	B	250	210	220	200	215	200	210	200	210	B	B	B	B	B	B
12	B	B	A	A	B	Q 400	A	B	B	E A 350	E A 300	290	285	250	250	B	B	250	B	B	A	A	A	A
13	A	A	A	A	A	A	A	B	A	A	B	B	310	B	B	B	B	B	B	B	A	A	A	A
14	B	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
15	A	A	A	A	B	B	B	B	B	275	B	230	210	240	200	210	245	235	235	230	B	A	A	B
16	A	A	A	E A 300	A	A	E A 350	A	B	B	250	240	250	260	B	B	B	B	B	A	B	A	A	A
17	A	A	A	A	A	A	A	A	E A 350	260	230	210	205	240	250	200	240	245	B	B	A	B	B	B
18	A	A	A	A	A	A 350	A 320	B	B	B	250	240	B	230	220	200	E B 200	210	230	210	B	A	B	A
19	A	A	A	A	A	A	A	E A 300	270	250	210	220	225	205	200	200	200	B	B	B	B	B	A	A
20	A	A	A	A	A	A	B	A	A	250	240	230	210	200	230	210	B	B	235	230	B	A	A	A
21	A	A	A	A	A	A	A	A	A	350	270	E B 260	235	230	250	210	240	250	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	S	E A 300	A	A	A	A	A	220	A
23	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
24	B	A	A	B	B	A	A	B	A	A	240	230	B	E B 235	E B 240	E B 245	B	B	B	B	A	A	A	A
25	A	A	A	A	A	B	A	A	A	285	B	B	215	B	225	210	240	260	E A 245	B	B	A	A	A
26	A	A	A	A	A	A	310	E A 300	275	210	235	235	210	235	Q 200	200	200	240	B	A	B	B	B	A
27	B	A	E A 320	A	A	A	A	B	A	A	E A 240	250	A	200	200	220	E A 245	250	A	A	A	A	A	A
28	A	A	A	A	A	A	A	A	B	B	B	B	270	250	250	220	250	215	260	A	A	A	A	A
29	B	B	A	A	A	A	E A 320	A	A	250	A	B	A 260	235	210	E A 220	250	230	235	A	A	A	A	B
30	A	A	A	B	B	B	A	A	320	275	230	E B 245	B	240	215	B	230	200	230	250	A	A	A	A
31	A	A	A	A	A	A	A	A	A	A	240	245	250	B	B	200	B	Q 210	230	230	B	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1	2	1	2	3	7	4	6	14	21	20	21	23	23	23	20	19	10	6			1	1
MED		A 240	285	E A 300	E A 340	A 350	E A 350	E A 300	U 285	258	240	231	225	232	212	210	U 218	235	231	230			220	300
U Q						Q 400	350	315	350	285	280	245	250	240	240	220	248	250	235	230				
L Q						E A 350	320	E A 300	270	250	232	220	210	215	200	200	200	210	230	210				

JUL. 1992 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG.1992 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	A	A	B	A	A	B	B	B	O X 44	O X 51	X 69	X 75	C	C	90	X 49	34	B	B	B	B	B
2	A	A	A	A	A	B	B	A	A	40	49	X 63	X 70	X 70	76	80	O X 52	45	60	34	B	A	A	A
3	A	A	42	A	A	A	39	32	33	40	60	79	80	71	75	67	X 49	X 57	49	31	B	A	B	A
4	A	A	A	A	40	43	40	41	41	47	59	72	78	X 79	O X 78	70	60	X 65	51	39	A	A	A	A
5	70	A	A	A	A	A	B	A	A	B	B	B	B	B	B	48	73	B	B	B	A	A	A	A
6	A	A	B	A	A	A	A	A	34	44	51	O X 53	S	69	B	B	B	73	B	A	A	B	A	A
7	B	A	S	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A
8	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
9	A	A	A	A	A	A	A	A	29	O X 46	B	O X 54	B	82	B	B	B	B	B	B	B	A	A	A
10	A	A	A	A	A	A	A	32	40	B	B	X 68	A	70	X 75	B	B	B	80	B	B	B	A	A
11	A	A	A	A	A	B	A	B	B	B	B	B	B	71	81	B	B	B	B	B	A	A	A	A
12	A	A	B	B	A	A	A	B	B	B	B	60	B	B	B	77	B	B	B	B	B	B	B	B
13	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	68	B	B	B	B	B	A	A
14	B	B	A	B	B	B	B	B	B	O X 44	B	O X 63	B	O X 84	85	B	85	B	B	B	A	A	A	A
15	A	A	A	A	A	A	A	A	B	B	A	59	90	92	X 80	X 65	X 69	59	55	B	B	B	A	A
16	A	A	A	B	B	A	B	B	B	B	B	B	B	71	88	73	71	70	B	B	B	A	A	A
17	A	A	A	A	A	A	A	35	42	X 57	68	79	89	86	X 78	68	64	61	50	S	B	B	B	A
18	A	A	A	A	A	A	A	48	38	X 50	X 61	X 79	X 79	X 89	75	X 69	79	X 60	60	S	A	B	A	A
19	S	A	A	A	A	A	A	A	58	60	64	80	75	76	70	70	70	X 64	X 65	O X 50	A	A	A	A
20	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	S	B	B	A	A	A
21	A	A	A	A	49	S	A	B	B	B	60	68	71	80	X 74	81	92	S	80	B	A	A	A	A
22	B	A	A	A	B	A	A	A	A	B	B	B	74	89	72	X 80	B	B	B	A	A	A	B	A
23	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	X 40	B	B	A	A	A	A
24	B	B	B	B	B	B	A	A	B	B	B	B	B	B	O X 48	S	S	40	O X 36	O X 31	B	A	B	A
25	68	A	B	B	B	B	B	B	B	O X 45	57	X 69	X 75	X 73	O X 67	66	71	64	69	S	B	A	B	A
26	A	A	A	A	A	B	B	A	A	B	B	B	B	B	S	69	70	78	O X 66	O X 53	B	A	A	A
27	A	A	A	A	A	A	A	A	A	B	B	68	71	B	B	80	85	B	B	B	A	A	A	A
28	A	A	A	A	A	A	A	39	45	49	55	X 65	X 70	X 69	63	S	66	65	64	48	B	B	A	A
29	A	A	A	A	B	B	A	A	A	B	B	65	71	X 74	S	X 81	74	65	O X 49	S	B	B	A	A
30	A	A	A	A	A	A	27	34	O X 41	O X 51	X 64	69	O X 65	80	81	X 80	X 79	B	80	60	S	A	A	A
31	A	A	A	A	A	35	47	33	B	B	B	S	74	85	X 74	75	O X 66	61	O X 61	O X 53	39	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2		1		2	2	4	8	10	12	12	19	16	21	18	18	20	17	17	9	1			
MED	69		42		44	39	40	34	40	46	60	68	74	76	75	72	70	61	60	48	39			
U Q							44	40	42	X 50	62	72	78	84	80	X 80	79	65	68	O X 53				
L Q							33	32	34	44	53	O X 60	X 70	71	72	68	66	X 53	50	32				

AUG.1992 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 1992 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	A	B	A	A	B	B	B	U S 39	45	62	69	C	C	71	42	F	B	B	B	B	B
2	A	A	A	A	A	B	B	A	A	F 30	U R 43	57	64	64	F 69	70	46	36	F	F 27	B	A	A	A
3	A	A	F	A	A	A	F	F	F	F	F 48	J F 73	F	F 56	J F 69	59	43	49	U R 43	U S 25	B	A	B	A
4	A	A	A	A	F	F	F	F	F	F 39	J F 53	F	69	71	72	62	F 52	59	U R 46	J F 33	A	A	A	A
5	F	A	A	A	A	A	B	A	A	B	B	B	B	B	B	F 39	F	B	B	B	A	A	A	A
6	A	A	B	A	A	A	A	A	F	39	46	48	S	J F 63	B	B	B	F 60	B	A	A	B	A	A
7	B	A	S	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A
8	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
9	A	A	A	A	A	A	A	A	F	40	B	48	B	75	B	B	B	B	B	B	B	A	A	A
10	A	A	A	A	A	A	A	F	F	B	B	60	A	60	69	B	B	B	J F 74	B	B	B	A	A
11	A	A	A	A	A	B	A	B	B	B	B	B	B	65	F 75	B	B	B	B	B	A	A	A	A
12	A	A	B	B	A	A	A	B	B	B	B	54	B	B	B	71	B	B	B	B	B	B	B	B
13	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	60	B	B	B	B	B	A	A
14	B	B	A	B	B	B	B	B	B	38	B	57	B	U R 78	78	B	F	B	B	B	A	A	A	A
15	A	A	A	A	A	A	A	A	B	B	A	U R 50	F 69	81	71	59	61	U R 51	F	B	B	B	A	A
16	A	A	A	B	B	A	B	B	B	B	B	B	B	65	F	F	65	F 59	B	B	B	A	A	A
17	A	A	A	A	A	A	A	F 26	F	50	61	U R 71	U R 81	U R 80	70	J F 62	58	F 55	F 39	D S 24	B	B	B	A
18	A	A	A	A	A	A	A	F	F 30	F 40	55	71	70	70	69	60	70	54	F 47	U S 34	A	B	A	A
19	S	A	A	A	A	A	A	A	F	F 49	56	U R 72	U R 69	70	F	U R 64	61	58	59	44	A	A	A	A
20	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	S	B	B	A	A	A
21	A	A	A	A	F 41	S	A	B	B	B	F 51	F 60	F 61	F 70	68	F 70	80	S	69	B	A	A	A	A
22	B	A	A	A	B	A	A	A	A	B	B	B	F 68	F 70	63	70	B	B	B	A	A	A	B	A
23	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	34	B	B	A	A	A	A
24	B	B	B	B	B	B	A	A	B	B	B	B	B	B	42	D S 34	D S 35	U R 33	S 30	H 25	B	A	B	A
25	F 51	A	B	B	B	B	B	B	B	39	50	62	70	J S 67	S 61	F 55	U R 54	Z 56	J F 63	D S 39	B	A	B	A
26	A	A	A	A	A	B	B	A	A	B	B	B	B	B	S	Z 63	F 61	69	U S 60	U S 47	B	A	A	A
27	A	A	A	A	A	A	A	A	A	B	B	F 61	65	B	B	F 65	F 73	B	B	B	A	A	A	A
28	A	A	A	A	A	A	A	33	39	44	49	59	64	63	56	U S 48	F 59	F 49	F 41	F	B	B	A	A
29	A	A	A	A	B	B	A	A	A	B	B	F 54	62	68	D S 75	74	65	F 59	43	S	B	B	A	A
30	A	A	A	A	A	A	F	F 25	U R 35	46	59	63	S 59	U R 71	71	72	70	B	69	J F 56	D S 31	A	A	A
31	A	A	A	A	A	F	F 38	F	B	B	B	S	F 65	J F 79	69	69	U S 60	U R 55	S 55	U R 47	32	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1				1		1	3	3	11	12	18	15	21	17	19	19	17	14	11	2			
MED	F 51				F 41		F 38	F 26	35	40	50	60	65	70	69	64	61	55	51	U 36	32			
U Q								33	39	46	56	63	69	73	72	70	70	F 59	63	U 47				
L Q								F 25	F 30	39	47	54	62	64	66	59	54	46	43	S 25				

AUG. 1992 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG.1992 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	45	B	37	45	B	42	40	B	B	B	E B 31	E B 25	27	33	C	C	E B 51	E B 19	E B 20	B	B	B	B	B
2	33	37	40	40	39	B	B	33	21	E B 15	E B 19	E B 23	E B 24	E B 23	E B 25	E B 25	16	22	15	E B 15	B	12	32	20
3	28	31	28	38	44	39	26	12	16	16	E B 19	26	24	27	E B 24	20	12	13	23	15	B	31	B	30
4	23	32	48	34	47	28	26	27	27	21	17	28	21	20	E B 19	E B 19	16	12	26	27	32	48	48	48
5	90	44	39	43	45	17	B	45	33	B	B	B	B	B	B	23	E B 30	B	B	B	33	23	33	42
6	23	38	B	41	47	40	33	23	16	20	E B 19	E B 20	26	22	B	B	B	E B 30	B	28	23	B	25	33
7	B	37	39	38	B	B	B	33	49	45	B	B	B	B	B	B	B	B	B	B	40	40	39	48
8	41	33	34	65	31	69	32	46	B	B	B	B	B	B	B	B	B	B	B	B	23	39	39	80
9	80	29	32	42	33	36	38	26	26	26	B	E B 39	B	E B 31	B	B	B	B	B	B	B	35	40	42
10	30	33	32	37	47	46	47	31	E B 17	B	B	E B 25	46	30	E B 25	B	B	B	E B 25	B	B	B	28	39
11	41	40	43	43	42	B	47	B	B	B	B	B	B	E B 55	E B 50	B	B	B	B	B	39	39	70	43
12	80	45	B	B	60	40	34	B	B	B	B	E B 25	B	B	B	E B 44	B	B	B	B	B	B	B	B
13	B	B	61	24	20	B	B	B	B	B	B	B	B	B	B	B	E B 19	B	B	B	B	B	27	41
14	B	B	70	B	B	B	B	B	B	33	B	E B 30	B	B E B 40	E B 53	B	E B 40	B	B	B	40	43	48	40
15	39	46	33	27	41	47	33	27	B	B	39	E B 26	E B 27	E B 28	E B 35	E B 23	46	E B 19	E B 20	B	B	B	39	60
16	38	38	40	B	B	45	B	B	B	B	B	B	B	E B 40	E B 55	E B 43	E B 39	E B 30	B	B	B	B	19	15	31
17	33	45	42	45	46	39	39	15	14	13	E B 23	24	25	25	E B 23	27	33	27	E B 20	E B 18	B	B	B	20
18	14	25	41	46	47	47	34	20	E B 18	E B 19	20	E B 29	E B 25	30	E B 24	21	20	E B 14	E B 17	21	30	B	28	32
19	33	39	55	55	46	50	48	48	31	20	24	E B 40	E B 39	E B 30	E B 30	E B 24	E B 20	13	E B 16	E B 19	32	33	40	30
20	35	39	46	41	48	31	60	70	B	B	B	B	B	B	B	B	B	B	32	B	B	30	32	20
21	20	26	34	38	35	25	23	B	B	B	E B 35	E B 40	E B 38	E B 30	E B 37	26	E B 23	E B 50	E B 39	B	27	47	37	39
22	B	80	37	25	B	37	45	48	45	B	B	B	E B 40	E B 30	23	E B 23	B	B	B	27	50	41	B	37
23	71	65	68	62	B	59	B	B	B	B	B	B	B	B	B	B	B	19	B	B	28	28	38	39
24	B	B	B	B	B	B	34	33	B	B	B	B	B	B	E B 30	E B 24	E B 23	E B 22	E B 20	27	B	12	B	25
25	51	44	B	B	B	B	B	B	B	E B 24	E B 20	E B 25	E B 35	E B 30	25	E B 30	E B 30	E B 17	E B 20	E B 25	B	34	B	33
26	44	45	44	37	55	B	B	40	65	B	B	B	B	B	E B 50	E B 22	E B 19	E B 40	E B 40	E B 30	B	22	38	41
27	85	39	35	40	35	41	45	61	40	B	B	E B 30	E B 44	B	B	E B 35	E B 20	B	B	B	25	39	85	90
28	45	44	35	75	40	40	45	23	10	25	24	E B 30	E B 26	25	33	27	E B 24	E B 19	E B 14	E B 14	B	B	15	37
29	46	70	45	70	B	B	53	45	45	B	B	E B 30	E B 55	E B 35	E B 59	E B 36	E B 45	E B 39	E B 30	E B 25	B	B	26	40
30	32	75	50	46	46	34	20	E B 14	12	E B 25	E B 30	E B 28	E B 30	E B 35	E B 35	E B 35	E B 21	B	E B 20	E B 17	E B 20	26	41	29
31	38	45	100	50	35	25	17	23	B	B	B	E B 40	E B 33	33	34	E B 31	E B 40	E B 25	E B 21	E B 18	E B 18	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	26	22	22	22	22	17	13	13	20	18	21	20	20	21	18	18	15	15	20	23	28
MED	38	39	40	42	44	40	36	32	26	20	E B 23	E B 28	E B 28	E B 30	E B 32	E B 26	E B 23	E B 20	E B 20	E B 21	30	34	38	39
U Q	46	45	48	46	47	46	45	45	42	26	E B 30	E B 30	E B 39	E B 34	E B 44	E B 33	E B 40	E B 30	E B 26	E B 27	39	40	40	42
L Q	32	33	35	38	35	34	32	23	16	18	E B 19	E B 25	25	26	E B 24	E B 23	20	17	E B 20	E B 17	23	24	28	30

AUG.1992 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 1992 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	8	B	19	20	B	19	18	B	B	B	31	25	19	20	C	C	51	19	20	B	B	B	B	B
2	14	8	20	19	20	B	B	19	16	15	19	23	24	23	25	25	14	9	9	15	B	8	15	10
3	8	9	9	14	13	9	9	9	9	10	19	16	14	15	24	14	9	9	15	10	B	9	B	8
4	8	8	8	8	9	8	8	8	7	8	14	16	14	16	19	19	14	9	9	8	7	9	9	10
5	16	9	9	9	19	9	B	24	20	B	B	B	B	B	B	15	30	B	B	B	22	9	9	9
6	14	9	B	24	19	14	11	13	10	14	19	20	17	19	B	B	B	30	B	20	19	B	19	19
7	B	19	19	15	B	B	B	19	19	19	B	B	B	B	B	B	B	B	B	B	15	14	15	15
8	17	10	18	19	13	19	20	18	B	B	B	B	B	B	B	B	B	B	B	B	10	10	11	10
9	15	15	16	23	24	20	19	14	10	10	B	39	B	31	B	B	B	B	B	B	B	9	10	9
10	18	17	17	15	20	19	19	17	17	B	B	25	30	19	25	B	B	B	25	B	B	B	9	8
11	10	10	14	19	23	B	19	B	B	B	B	B	B	55	50	B	B	B	B	B	8	9	34	20
12	16	17	B	B	24	20	15	B	B	B	B	25	B	B	B	44	B	B	B	B	B	B	B	B
13	B	B	9	10	9	B	B	B	B	B	B	B	B	B	B	B	19	B	B	B	B	B	8	15
14	B	B	16	B	B	B	B	B	B	19	B	30	B	40	53	B	40	B	B	B	19	13	8	9
15	8	7	9	10	30	19	9	11	B	B	25	26	27	28	35	23	18	19	20	B	B	B	8	20
16	14	10	20	B	B	30	B	B	B	B	B	B	B	40	55	43	39	30	B	B	B	9	9	8
17	7	10	13	31	19	13	10	10	8	9	23	20	19	18	23	21	20	18	20	18	B	B	B	7
18	8	8	9	13	19	14	11	9	18	19	17	29	25	20	24	18	16	14	17	17	8	B	10	17
19	8	9	13	14	15	16	15	15	13	15	19	40	39	30	30	24	20	8	16	19	17	11	7	8
20	10	10	20	20	20	14	23	20	B	B	B	B	B	B	B	B	B	B	22	B	B	18	10	18
21	10	9	8	13	13	13	9	B	B	B	35	40	38	30	37	20	23	50	39	B	14	15	19	20
22	B	17	17	13	B	13	14	13	16	B	B	B	40	30	20	23	B	B	B	16	10	9	B	19
23	17	51	24	20	B	20	B	B	B	B	B	B	B	B	B	B	B	10	B	B	8	7	9	8
24	B	B	B	B	B	B	20	21	B	B	B	B	B	B	30	24	23	22	20	9	B	7	B	9
25	13	20	B	B	B	B	B	B		24	20	25	35	30	14	30	30	17	20	25	B	15	B	8
26	15	14	10	20	17	B	B	30	22	B	B	B	B	B	50	22	19	40	40	30	B	13	8	10
27	18	9	10	11	8	8	15	19	17	B	B	30	44	B	B	35	20	B	B	B	8	8	13	15
28	16	16	13	19	24	14	16	8	8	18	19	30	26	19	20	20	24	19	14	14	B	B	10	24
29	10	8	9	30	B	B	17	20	23	B	B	30	55	35	59	36	45	39	30	25	B	B	10	8
30	19	19	19	18	15	14	14	14	10	25	30	28	30	35	35	35	21	B	20	17	20	9	9	8
31	9	9	40	19	19	10	8	8	B	B	B	40	33	24	25	31	40	25	21	18	18	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31
MED	14	10	16	19	20	19	18	19	21	B	B	30	40	31	44	33	30	39	30	B	B	13	10	10
U Q	B 18	19	20	B 24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19
L Q	9	9	9	13	15	13	11	13	13	18	20	25	26	20	25	22	20	18	20	17	14	9	9	8

AUG. 1992 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 1992 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	A	B	A	A	B	B	B	E B 260	220	240	210	C	C	250	200	E B 240	B	B	B	B	B
2	A	A	A	A	A	B	B	A	A	250	240	225	220	210	210	210	200	200	220	Q 210	B	A	A	A
3	A	A	A	A	A	A	A 330	A 280	260	240	210	240	200	200	200	200	200	205	220	E A 210	B	A	B	A
4	A	A	A	A	A	A 350	A 340	A 300	A 270	250	240	235	230	230	205	200	E A 210	210	245	230	A	A	A	A
5	A 200	A	A	A	A	A	B	A	A	B	B	B	B	B	B	300	E B 280	B	B	B	A	A	A	A
6	A	A	B	A	A	A	A	A	A	270	240	240	250	250	B	B	B	E B 250	B	A	A	B	A	A
7	B	A	B	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A
8	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
9	A	A	A	A	A	A	A	A	A	260	B	E B 260	B	250	B	B	B	B	B	B	B	A	A	A
10	A	A	A	A	A	A	A	A	300	B	B	235	A	240	250	B	B	B	250	B	B	B	A	A
11	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
12	A	A	B	B	A	A	A	B	B	B	B	240	B	B	B	E B 250	B	B	B	B	B	B	B	B
13	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	230	B	B	B	B	B	A	A
14	B	B	A	B	B	B	B	B	B	270	B	240	B	260	B	B	E B 250	B	B	B	A	A	A	A
15	A	A	A	A	A	A	A	A	B	B	A	275	250	235	210	230	210	240	200	B	B	B	A	A
16	A	A	A	B	B	A	B	B	B	B	B	B	B	B	E B 250	E B 250	E B 230	E B 245	B	B	B	A	A	A
17	A	A	A	A	A	A	A	A	255	235	240	240	220	220	220	E A 200	E A 200	220	210	B	B	B	B	A
18	A	A	A	A	A	A	A	340	290	250	H 210	235	230	205	210	210	210	205	210	230	A	B	A	A
19	A	A	A	A	A	A	A	A	A	250	245	260	250	210	230	220	210	240	210	215	A	A	A	A
20	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	E A 250	B	B	A	A	A
21	A	A	A	A	A	A	A	B	B	B	250	B	A 240	230	A 250	250	235	B	B	B	A	A	A	A
22	B	A	A	A	B	A	A	A	A	B	B	B	B	240	240	205	B	B	B	A	A	A	B	A
23	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	260	B	B	A	A	A	A
24	B	B	B	B	B	B	A	A	B	B	B	B	B	B	E B 250	220	220	220	270	A 260	B	A	B	A
25	A	A	B	B	B	B	B	B	B	250	245	250	245	240	205	205	230	210	245	230	B	A	B	A
26	A	A	A	A	A	B	B	A	A	B	B	B	B	B	B	225	240	E 250	E B 250	E B 250	B	A	A	A
27	A	A	A	A	A	A	A	A	A	B	B	E B 275	E B 250	B	B	250	245	B	B	B	A	A	A	A
28	A	A	A	A	A	A	A	E A 240	270	260	A	B	B	230	230	240	205	220	200	200	B	B	A	A
29	A	A	A	A	B	B	A	A	A	B	B	B	B	250	B	250	B	B	E B 240	E B 240	B	B	A	A
30	A	A	A	A	A	A	A	280	240	250	B	B	B	250	B	B	220	B	240	240	B	A	A	A
31	A	A	A	A	A	A	A	A	B	B	B	B	E B 240	240	220	220	B	B	205	205	210	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1					1	2	5	7	12	10	15	13	19	15	19	19	15	17	12	1			
MED	A 200					A 350	A 335	A 280	270	250	240	240	240	235	215	220	215	E 215	B 230	221	210			
U Q								320	290	260	245	260	250	250	250	250	240	E B 245	248	240				
L Q								260	255	250	240	235	225	210	210	205	210	205	210	210				

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.1992 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	Y	S	S	S	S	S	O X 62	47	O X 52	S 52	X 59	X 63	X 68	O X 76	X 76	X 64	X 66	X 64	X 50	S	S	S	B	A
2	B	B	S	S	S	S	70	61	60	X 69	S	X 69	X 80	89	S 76	X 67	O X 86	X 77	S 76	S 80	A	A	S	S
3	S	S	S	S	S	S	37	S	B	B	B	B	B	B	B	B	B	B	S	A	A	A	A	B
4	S	B	S	S	B	S	B	B	B	B	B	B	B	B	B	O X 71	B	B	B	B	B	S	S	S
5	S	S	B	B	S	S	B	B	S	B	B	B	B	S	B	B	B	B	B	B	B	B	B	S
6	B	B	B	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	S
7	S	B	B	B	B	B	S	B	B	B	B	B	B	B	B	B	F	B	80	B	B	S	A	S
8	B	S	S	A	B	B	A	B	B	B	B	B	B	B	B	B	80	B	B	S	S	S	S	B
9	S	S	S	S	B	B	B	B	B	B	B	B	B	B	B	B	B	S	S	B	S	S	A	A
10	A	A	S	A	B	B	B	S	B	B	B	B	B	B	B	B	B	B	O X 42	61	64	53	70	B
11	S	B	A	S	B	B	B	B	B	B	B	B	B	B	S	B	B	B	C	S	A	A	A	S
12	A	S	A	28	Y	B	A	A	B	B	B	R	S	S	51	62	X 66	60	O X 50	50	B	B	B	Y
13	A	S	B	S	S	S	O S 39	X 46	45	B	B	B	82	X 69	71	O X 81	O X 85	70	80	S	X 43	S	B	B
14	S	S	A	O X 60	70	Y	B	Y	B	B	70	F	X 76	81	85	81	X 78	X 70	65	S	36	S	S	A
15	B	S	67	S	S	B	B	B	B	B	66	X 63	B	S	O X 72	S	X 70	X 70	V 71	X 62	S	S	A	A
16	Y	S	A	A	A	A	S	A	B	B	B	B	X 72	X 72	X 72	X 70	X 70	X 70	X 72	70	B	A	A	A
17	S	Y	S	A	Y	B	B	B	B	B	B	B	B	B	B	Y	B	Y	Y	B	S	Y	A	A
18	A	S	B	B	S	S	Y	B	B	C	B	C	B	B	B	B	B	B	B	S	B	S	A	A
19	S	S	S	B	B	B	Y	B	B	B	S	S	S	X 60	X 60	B	B	B	S	48	S	Y	A	A
20	S	A	B	B	S	S	Y	S	S	50	B	B	V 71	X 70	70	70	X 71	X 65	70	69	S	B	B	A
21	A	B	A	B	S	S	51	X 50	S	S	X 61	X 70	78	81	84	X 80	76	S	S	X 64	X 55	40	29	Y
22	A	A	A	B	B	S	B	B	Y	B	B	B	S	B	X 57	61	B	B	B	X 45	X 33	S	S	64
23	S	A	A	A	A	S	B	B	B	B	B	X 59	B	64	X 60	X 61	B	S	X 60	54	X 50	X 37	B	Y
24	O X 32	S	A	S	Y	Y	S	45	X 52	X 56	O X 67	X 71	80	82	82	F	80	F	80	67	50	40	S	A
25	Y	S	A	A	C	A	Y	C	57	C	C	X 76	X 87	X 98	107	O X 96	O X 91	91	90	S	S	R	A	A
26	A	A	A	S	A	B	Y	X 56	65	74	90	X 104	X 95	X 96	X 93	F	X 85	88	O X 76	S 60	S	B	B	A
27	B	A	Y	S	Y	Y	46	75	70	78	O X 96	O X 106	X 102	108	X 98	X 94	O X 96	O X 89	75	X 68	O X 53	55	S	B
28	B	A	Y	Y	Y	B	B	B	B	80	98	92	90	X 94	O X 88	O X 96	X 90	X 90	S	S	S	S	S	S
29	B	A	A	A	S	90	S	B	B	B	B	B	B	B	B	B	B	S	Y	Y	Y	S	A	A
30	A	S	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	S	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1		1	2	1	1	6	7	7	7	8	10	12	14	17	14	15	12	15	13	8	5	2	1
MED	O X 32		67	44	70	90	48	50	57	69	68	X 70	X 80	X 81	X 76	X 70	X 80	X 70	72	62	X 50	40	50	64
U Q							62	61	65	78	93	X 92	X 88	X 94	X 86	O X 81	O X 86	88	80	68	X 54	54		
L Q							39	46	52	52	X 64	X 63	X 74	X 70	X 65	64	X 70	68	X 60	52	X 40	38		

SEP.1992 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.1992 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	Y	S	S	S	S	S	56	F	46	46	51	57	60	70	70	58	60	58	44	F	S	S	B	A
2	B	B	S	S	S	S	F 60	F	F	63	D S 52	63	74	J S 83	70	61	70	71	70	J F 74	A	A	S	S
3	S	S	S	S	S	S	R 23	S	B	B	B	B	B	B	B	B	B	B	S	A	A	A	A	B
4	S	B	S	S	B	S	B	B	B	B	B	B	B	B	B	65	B	B	B	B	B	S	S	S
5	S	S	B	B	S	S	B	B	S	B	B	B	B	S	B	B	B	B	B	B	B	B	B	S
6	B	B	B	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	S
7	S	B	B	B	B	B	S	B	B	B	B	B	B	B	B	B	U R 77	B	F 60	B	B	S	A	S
8	B	S	S	A	B	B	A	B	B	B	B	B	B	B	B	B	F 70	B	B	S	S	S	S	B
9	S	S	S	S	B	B	B	B	B	B	B	B	B	B	B	B	B	S	S	B	S	S	A	A
10	A	A	S	A	B	B	B	S	B	B	B	B	B	B	B	B	B	B	U R 36	R	F 53	R	R	B
11	D S 71	B	A	S	B	B	B	B	B	B	B	B	B	B	S	B	B	B	C	S	A	A	A	S
12	A	S	A	F 22	Y	B	A	A	B	B	B	U R 36	S	42	J F 45	J F 56	60	J F 54	44	F 38	B	B	B	Y
13	A	S	B	S	S	S F	33	40	J S 39	B	B	B	Z 66	63	F 64	75	79	J F 64	F 61	S 47	36	S 33	B	B
14	S	S	A	54	S	Y	B	Y	B	B	F 61	66	70	F 70	F 75	F 75	70	64	F 59	S 48	F 30	S 29	S	A
15	B	S	F	S	S	B	B	B	B	B	F 60	55	B	D S 70	66	D S 65	64	63	V 64	56	S	S	A	A
16	Y	S	A	A	A	A	S	A	B	B	B	B	66	65	66	64	64	65	65	J F 64	B	A	A	A
17	S	Y	S	A	Y	B	B	B	B	B	B	B	B	B	B	Y	B	Y	Y	B	S	Y	A	A
18	A	S	B	B	S	S	Y	B	B	C	B	C	B	B	B	B	B	B	B	S 33	B	S	A	A
19	S	U S 33	S	B	B	B	Y	B	B	B	S 47	S 48	S 39	53	54	B	B	B	S 51	S 40	S 24	Y	A	A
20	S	A	B	B	S	S	Y	D S 31	D S 40	F 43	B	B	V 66	66	F 60	F 61	65	58	J F 64	F 56	U S 39	B	B	A
21	A	B	A	B	S	S	F 42	45	D S 46	55	61	64	71	J F 75	70	74	68	S 70	S 70	55	47	S 34	F 23	Y
22	A	A	A	B	B	S	B	B	Y	B	B	B	50	B	51	J R 55	B	B	B	39	28	S	S	F 58
23	S	A	A	A	A	D S 33	B	B	B	B	B	52	B	58	54	55	B	S 50	54	48	42	31	B	Y
24	U S 26	D S 26	A	S 35	Y	Y	S	F 40	44	50	S 61	65	F 72	F 73	F 71	F 80	F 74	F 69	J F 74	F 60	F 44	F S	S 32	A
25	Y	D S 34	A	A	C	A	Y	C	F	C	C	70	80	85	Z 101	90	85	F 85	F 80	D S 62	D S 40	R 30	A	A
26	A	A	A	U S 51	A	B	Y	50	59	68	F 80	98	89	90	88	F 90	78	D S 80	70	52	S 30	B	B	A
27	B	A	Y	D S 33	Y	Y	F 41	J F 69	F 59	65	90	100	96	J F 102	92	88	90	S 83	J F 69	60	47	F 45	S 31	B
28	B	A	Y	Y	Y	B	B	B	B	F	F 80	F 80	F 80	88	82	90	82	81	S 60	S	S	S	S	S
29	B	A	A	A	S	F 60	S	B	B	B	B	B	B	B	B	B	B	S	Y	Y	Y	S	A	A
30	A	S	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	S	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	3		5		2	6	6	7	7	10	13	14	16	17	17	16	15	18	16	12	6	3	1
MED	S 48	D S 34		U 43		46	42	U 45	46	55	61	64	70	70	70	65	70	65	62	54	40	32	S 31	F 58
U Q		D S 34		52			56	50	59	65	F 80	75	80	84	78	84	78	80	70	F 60	46	34	S 32	
L Q		D S 26		28			33	40	S 40	46	S 52	54	66	64	57	60	64	58	54	S 44	30	30	F 23	

SEP.1992 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.1992 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	20	27	47	46	45	46	37	30	E B 20	E B 20	E B 30	27	27	27	27	24	E B 24	E B 18	36	E B 14	E S 17	E B 14	B	26
2	B	B	13	21	25	26	22	37	31	E B 22	E B 35	27	28	28	28	24	23	17	E B 15	37	71	46	45	47
3	59	60	38	37	48	76	39	38	B	B	B	B	B	B	B	B	B	B	20	75	110	110	80	B
4	65	B	41	37	B	31	B	B	B	B	B	B	B	B	B	E B 45	B	B	B	B	B	25	39	32
5	75	72	B	B	23	28	B	B	S	B	B	B	B	S	B	B	B	B	B	B	B	B	B	33
6	B	B	B	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	44	84	47
7	31	B	B	B	B	B	E B 40	B	B	B	B	B	B	B	B	B	11	B	E B 24	B	B	27	40	32
8	B	26	38	70	B	B	70	B	B	B	B	B	B	B	B	B	E B 35	B	B	33	40	35	25	B
9	32	72	47	33	B	B	B	B	B	B	B	B	B	B	B	B	B	26	28	B	35	32	47	70
10	80	100	48	13	B	B	B	27	B	B	B	B	B	B	B	B	B	B	28	34	72	46	49	B
11	36	B	33	32	B	B	B	B	B	B	B	B	B	B	20	B	B	B	C	22	75	94	32	47
12	62	70	65	28	26	B	46	34	B	B	B	27	27	27	27	28	E B 30	E B 25	E B 24	E B 19	B	B	B	23
13	40	39	B	27	33	27	26	E B 23	E B 25	B	B	B	E B 28	30	28	26	23	27	E B 19	E B 19	E B 19	17	B	B
14	35	E B 19	52	38	30	30	B	34	B	B	32	25	26	27	E B 29	E B 30	E B 24	E B 23	E B 23	E B 24	E B 13	9	34	35
15	B	75	58	60	45	B	B	B	B	B	25	26	B	E B 45	E B 40	E B 54	E B 31	E B 32	E B 24	E B 18	33	32	40	30
16	35	45	70	45	50	52	47	60	B	B	B	B	E B 55	E B 45	E B 31	E B 39	27	E B 25	E B 24	E B 31	B	70	77	75
17	45	33	32	70	28	B	B	B	B	B	B	B	B	B	B	31	B	32	34	B	39	32	36	79
18	62	40	B	B	46	19	31	B	B	C	B	C	B	B	B	B	B	B	B	E B 19	B	29	40	90
19	61	42	32	B	B	B	28	B	B	B	E B 30	E B 30	E B 32	20	E B 28	B	B	B	E B 44	E B 25	15	27	43	39
20	33	60	B	B	32	34	27	E B 28	E B 22	22	B	B	22	E B 50	27	31	E B 37	E B 24	E B 20	E B 16	E B 13	B	B	33
21	60	B	42	B	46	33	27	E B 23	E B 24	24	20	29	26	E B 37	E B 30	18	24	21	19	E B 14	12	10	E B 13	20
22	80	49	74	B	B	36	B	B	33	B	B	B	E B 36	B	E B 28	E B 38	B	B	B	E B 17	15	26	26	60
23	70	80	66	70	32	30	B	B	B	B	B	E B 30	B	E B 50	26	E B 29	B	E B 39	E B 24	E B 24	E B 15	E B 17	B	29
24	30	33	33	32	33	21	40	E B 20	E B 24	22	E B 30	E B 46	E B 31	E B 35	28	32	27	26	30	E B 15	12	E B 9	12	24
25	26	35	50	59	C	50	25	C	25	C	C	32	30	27	30	26	26	23	E B 25	E B 50	E B 30	31	26	39
26	42	39	69	41	42	B	40	33	32	E B 50	31	26	32	32	29	31	25	22	19	12	28	B	B	33
27	B	26	33	30	32	27	E B 20	E B 21	26	31	32	28	32	26	E B 30	28	25	24	E B 22	E B 30	E B 19	E B 20	E B 19	B
28	B	32	27	27	22	B	B	B	B	33	28	E B 58	E B 50	26	26	27	24	E S 50	26	41	46	56	47	46
29	83	60	46	40	37	32	60	B	B	B	B	B	B	B	B	B	B	28	43	33	36	40	81	36
30	35	29	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	42	46	95	90	59	110
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	23	22	20	17	17	13	10	8	10	13	15	16	18	18	16	18	23	24	23	26	23	25
MED	44	41	46	37	32	31	U 34	30	25	22	30	27	28	28	28	28	24	24	E B E B 24	24	30	32	40	36
U Q	64	65	58	46	45	41	43	36	31	32	32	E B 31	E B 32	E B 41	E B 30	E B 32	E B 28	E B 28	30	34	46	46	49	54
L Q	34	32	33	30	27	27	26	E B 23	E B 24	E B 22	28	26	27	27	27	26	24	23	20	E B 18	15	E B 20	26	31

SEP.1992 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.1992 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	8	8	10	18	20	19	13	13	20	20	30	24	19	26	15	E S 21	24	18	E S 17	14	E S 17	14	B	8
2	B	B 7	9	9	9	13	13	19	22	35	23	19	20	18	18	18	12	15	12	8	8	E S 18	13	
3	8	23	18	13	23	17	8	24	B	B	B	B	B	B	B	B	B	B 18	20	18	17	10	B	
4	13	B	25	24	B	19	B	B	B	B	B	B	B	B	B	45	B	B	B	B	B 8	9	15	
5	17	21	B	B	13	13	B	B	S	B	B	B	B	S	B	B	B	B	B	B	B	B	B 19	
6	B	B	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 11	13	18	
7	18	B	B	B	B	B	40	B	B	B	B	B	B	B	B	B	9	B	24	B	B 13	9	16	
8	B	19	20	19	B	B	20	B	B	B	B	B	B	B	B	B	35	B	B	14	19	11	14	B
9	17	17	20	18	B	B	B	B	B	B	B	B	B	B	B	B	B	19	12	B	11	9	8	15
10	16	18	19	14	B	B	B	24	B	B	B	B	B	B	B	B	B	B	12	18	14	9	14	B
11	19	B	14	17	B	B	B	B	B	B	B	B	B	B	17	B	B	B	C	19	15	18	19	9
12	19	19	14	9	15	B	20	18	B	B	B	19	20	16	25	22	30	25	24	19	B	B	B	8
13	10	13	B	18	18	13	19	23	25	B	B	B	28	19	19	20	18	23	19	19	19	9	B	B	
14	14	19	9	9	9	9	B	21	B	B	19	20	23	21	29	30	24	23	23	24	13	7	9	8
15	B	18	9	9	10	B	B	B	B	B	18	18	B	45	40	54	31	32	24	18	19	10	18	18
16	8	9	24	18	18	18	22	20	B	B	B	B	55	45	31	39	19	25	24	31	B	20	12	9
17	8	17	12	19	9	B	B	B	B	B	B	B	B	B	B	24	B	24	9	B	18	9	18	11
18	25	14	B	B	21	9	20	B	B	C	B	C	B	B	B	B	B	B	B	19	B	8	9	9
19	9	9	14	B	B	B	19	B	B	B	30	30	32	19	28	B	B	B	44	25	13	9	13	16
20	13	25	B	B	19	16	19	28	22	19	B	B	19	50	20	11	37	24	20	16	13	B	B	8
21	16	B	23	B	23	14	13	23	24	20	19	24	19	37	30	15	19	14	16	14	9	8	13	8
22	14	19	19	B	B	24	B	B	23	B	B	B	36	B	28	38	B	B	B	17	9	8	8	13
23	18	25	14	14	9	16	B	B	B	B	B	30	B	50	19	29	B	39	24	24	15	17	B	8
24	6	10	8	13	8	13	18	20	24	20	30	46	31	35	19	18	19	15	10	15	8	9	8	8
25	8	13	20	8	C	20	19	C	17	C	C	19	19	19	19	17	15	17	25	50	30	14	9	8
26	13	13	16	10	20	B	19	16	19	50	19	19	14	19	19	19	18	16	14	9	8	B	B	15
27	B	18	13	17	14	18	20	21	20	11	19	19	24	25	30	19	18	21	22	30	19	20	19	B
28	B	19	8	9	7	B	B	B	B	19	20	58	50	24	24	19	10	50	24	16	19	19	9	13
29	30	19	30	15	14	16	19	B	B	B	B	B	B	B	B	B	B	17	17	20	9	14	19	19
30	18	15	B	B	8	B	B	B	B	B	B	B	B	B	B	B	B	B	22	14	23	20	13	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	29	30	30	29	29	28	29	29	30	29	30	30	30	30	29	30	30	30	30	30
MED	16	19	19	18	19	20	21	B	B	B	B	B	B	50	30	38	36	28	23	19	18	12	14	14
U Q	B 25	B 25	B 30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 34	B 31	B 30	19	B 19	B 18
L Q	10	14	13	13	10	16	19	21	24	36	30	24	23	22	19	19	19	19	16	16	13	9	9	8

SEP.1992 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.1992 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	S	S	A	A	305	250	210	245	230	230	240	230	215	210	220	230	210	230	230	B	A
2	B	B	S	S	A	A	230	200	275	240	250	230	230	230	220	220	240	240	260	275	A	A	S	S
3	A	A	A	A	A	A	A 235	A	B	B	B	B	B	B	B	B	B	B	S	A	A	A	S	B
4	A	B	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
5	A	A	B	B	A	A	B	B	S	B	B	B	B	S	B	B	B	B	B	B	B	B	B	A
6	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
7	A	B	B	B	B	B	230	B	B	B	B	B	B	B	B	B	E S 260	B	245	B	B	A	A	A
8	B	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	300	B	B	A	A	A	A	B
9	250	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	S	S	B	S	S	A	A
10	A	A	A	A	B	B	B	S	B	B	B	B	B	B	B	B	B	B	295	225	205	200	200	B
11	200	B	A	A	B	B	B	B	B	B	B	B	B	B	S	B	B	B	C	S	A	A	A	280
12	A	225	A	225	A	B	A	A	B	B	B	245	S	240	225	240	230	215	220	230	B	B	B	Y
13	A	A	B	S	S	E A 390	E A 335	280	250	B	B	B	220	210	230	240	235	305	225	225	220	210	B	B
14	280	300	A	255	210	Y	B	Y	B	B	250	245	230	250	230	235	230	220	225	230	225	245	A	A
15	B	S	220	225	S	B	B	B	B	B	245	235	B	300	280	300	260	250	240	240	S	S	A	A
16	Y	200	A	A	A	A	A	A	B	B	B	B	280	280	240	250	245	250	230	250	B	A	A	A
17	355	Y	260	210	Y	B	B	B	B	B	B	B	B	B	B	Y	B	Y	Y	B	210	Y	A	A
18	A	200	B	B	A	E S 205	Y	B	B	C	B	C	B	B	B	B	B	B	B	250	B	Y	A	A
19	240	250	260	B	B	B	Y	B	B	B	230	250	245	240	215	B	B	B	E B 280	240	275	Y	A	A
20	A	A	B	B	A	A	Y	305	235	230	B	B	200	220	220	205	245	235	235	220	210	B	B	A
21	A	B	A	B	A	A	310	250	230	E A 240	200	E S 230	Y	245	220	225	220	220	205	210	200	200	250	Y
22	A	A	A	B	B	A	B	B	Y	B	B	B	E A 250	B	260	295	B	B	B	240	240	A	A	250
23	S	A	A	A	A	305	B	B	B	B	B	E B 250	B	B	240	235	B	E B 235	230	235	210	215	B	Y
24	300	230	A	240	Y	Y	S	235	220	200	220	220	220	250	210	200	230	200	210	205	210	200	245	A
25	Y	235	A	A	C	A	Y	C	200	C	C	320	240	230	220	205	210	230	215	E B 250	250	250	A	A
26	A	A	A	240	A	B	Y	240	E S 225	B	220	230	225	200	200	235	210	220	215	225	A	B	B	A
27	B	A	Y	E B 350	Y	Y	S	E B 255	E B 265	200	220	200	210	225	210	210	210	215	210	230	205	245	250	B
28	B	A	Y	Y	Y	B	B	B	B	220	200	E B 270	E B 295	200	200	E S 220	210	270	250	S	S	S	S	S
29	B	A	A	A	U S 200	235	S	B	B	B	B	B	B	B	B	B	B	Y	Y	Y	Y	S	A	A
30	A	S	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	270	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	7	3	7	2	4	5	8	9	7	10	13	13	15	17	16	16	15	18	19	13	9	4	2
MED	265	230	260	232	205	U 245	232	248	232	215	225	232	228	240	220	230	230	225	229	230	210	215	248	265
U Q	300	250	260	255		348	322	292	258	240	245	250	248	250	235	240	245	250	245	250	235	245	250	
L Q	240	200	220	225		220	230	238	222	200	220	230	220	220	212	212	210	220	215	225	208	200	222	

SEP.1992 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 1992 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	S	B	B	B	B	B	B	B	B	B	B	B	64	B	B	B	S	B	S	B	Y	Y	B
2	A	A	Y	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S	S	Y	Y
3	B	A	S	S	O X 36	Y	Y	B	O S 54	B	O X 66	B	B	B	B	C	B	B	B	B	B	B	B	Y
4	Y	Y	Y	B	B	B	B	B	B	O X 47	B	X 65	72	X 72	X 67	X 67	63	X 67	V 70	X 58	X 59	X 53	50	X 48
5	X 40	X 39	X 39	O X 33	Y	B	Y	B	B	82	75	X 79	X 80	80	X 76	X 76	X 70	74	70	76	58	46	B	B
6	A	A	A	A	Y	B	B	B	B	O X 65	75	X 71	B	O X 74	X 79	X 81	X 81	X 78	X 71	S	Y	Y	A	A
7	A	Y	Y	A	A	Y	Y	B	B	X 67	75	77	O X 81	B	O X 86	O X 86	80	X 70	X 70	X 62	59	B	Y	S
8	A	Y	O X 50	S	B	B	B	B	B	76	V 72	S 78	84	O X 86	85	O X 86	X 76	X 80	X 71	O X 65	X 60	54	S	A
9	A	S	Y	Y	Y	S	Y	68	O X 74	70	O X 72	80	X 90	X 80	O X 96	X 103	B	A	B	Y	A	Y	S	A
10	A	A	A	Y	Y	53	Y	S	X 59	O X 66	X 64	O X 69	O X 65	X 69	X 70	X 66	69	O X 59	B	60	X 54	46	Y	S
11	O X 32	A	B	B	B	B	B	B	76	72	X 72	X 80	X 84	X 80	O X 86	X 90	89	S	B	Y	Y	O X 63	A	A
12	B	Y	O X 38	S	B	B	B	B	B	B	B	B	B	B	X 80	72	Y	B	X 46	S	Y	Y	Y	S
13	S	Y	S	O X 40	O X 39	B	B	B	Y	60	S	X 59	X 60	X 63	X 67	X 61	X 63	X 66	X 62	O X 52	Y	Y	S	S
14	B	S	S	B	B	B	A	S	Y	B	B	B	B	B	B	O X 50	X 53	B	57	O X 56	X 45	O X 33	S	A
15	A	B	S	B	B	B	B	B	Y	B	B	B	B	B	B	X 69	61	B	O X 50	O X 46	O S 37	X 29	A	A
16	A	A	B	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S	B	Y	S
17	A	S	A	B	Y	X 42	Y	Y	O X 50	B	B	B	B	B	73	B	83	O X 59	X 57	S	43	S	S	A
18	A	A	B	A	B	Y	Y	Y	S	B	B	B	B	B	B	58	X 65	X 62	52	B	37	S	S	S
19	A	A	B	A	Y	B	B	Y	O X 42	S	O X 51	O X 44	O X 46	O X 52	O X 44	O X 60	X 54	58	A	S	X 33	A	A	A
20	O X 39	A	O X 38	A	Y	B	B	B	O X 42	S	O X 43	S	O X 46	X 40	S	B	B	B	S	B	X 51	X 49	46	49
21	A	A	S	A	Y	Y	O X 48	O X 52	63	X 58	X 61	X 66	X 67	X 67	X 69	X 67	X 70	X 64	66	X 59	X 56	50	45	X 38
22	O X 32	A	Y	Y	B	B	X 65	O X 76	V 74	X 76	X 72	O X 70	X 68	X 69	X 69	X 66	O X 64	X 61	59	X 59	X 54	X 46	44	A
23	A	X 55	52	Y	Y	A	Y	X 60	73	O X 86	C	X 80	X 81	X 77	X 75	X 71	X 70	X 65	O X 66	64	X 58	X 59	X 59	X 59
24	O X 45	58	O X 50	O X 51	X 57	X 67	70	78	X 80	X 86	X 90	X 90	X 92	O X 91	O X 96	90	X 77	74	68	X 67	X 60	O X 61	S	64
25	O X 66	68	60	Y	Y	55	68	X 72	X 80	O X 85	O X 86	O X 86	X 89	X 88	O X 84	X 80	O X 86	X 80	X 73	X 70	X 62	X 59	X 58	O X 50
26	S	S	S	Y	Y	S	B	O X 74	B	82	O X 74	X 80	X 77	X 76	O X 73	X 73	71	O X 74	X 64	X 63	X 63	59	Y	A
27	Y	B	70	B	B	S	B	B	B	Y	B	B	B	B	O X 74	O X 76	91	B	B	A	A	A	S	S
28	A	A	X 60	S	S	Y	B	B	B	B	B	B	B	B	B	B	B	B	O X 44	O X 49	A	A	A	S
29	A	A	B	Y	O X 49	Y	B	B	B	B	B	B	B	B	B	B	B	B	O X 51	B	O X 59	S	O X 58	B
30	Y	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	X 63	B	O X 50	O X 49	Y	Y	Y	B
31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	4	9	3	4	4	4	7	12	15	15	16	16	17	19	21	21	16	20	16	18	14	7	6
MED	O X 40	56	X 50	O X 40	O X 44	54	66	X 72	X 68	X 72	X 72	X 78	X 78	X 74	X 75	X 72	X 70	X 66	X 63	X 60	X 57	X 52	50	X 50
U Q	O X 45	63	60	O X 51	X 53	61	69	76	X 75	X 82	75	X 80	X 84	X 80	O X 85	X 84	80	X 74	X 70	X 64	X 59	X 59	X 58	59
L Q	O X 32	X 47	O X 38	O X 33	O X 38	48	X 56	X 60	O X 52	X 65	X 64	X 68	O X 66	X 66	X 69	X 66	X 63	X 62	O X 52	O X 54	45	46	45	X 48

OCT. 1992 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 1992 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	S	B	B	B	B	B	B	B	B	B	B	B	F	B	B	B	U S 39	B	U R 45	B	Y	Y	B
2	A	A	Y	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	U S 22	S	Y	Y
3	B	A	S	S	30	Y	Y	B	S 48	B	60	B	B	B	B	C	B	B	B	B	B	B	B	Y
4	Y	Y	Y	B	B	B	B	B	B	41	B	59	J S 66	66	61	61	F 56	61	V 64	52	53	47	F 44	42
5	34	33	34	S 27	Y	B	Y	B	B	F 63	F 69	72	73	F 71	70	70	64	J F 68	J F 64	Z 70	Z 52	J F 40	B	B
6	A	A	A	A	Y	B	B	B	B	S 59	F 66	65	B	68	71	75	75	72	64	U S 76	Y	Y	A	A
7	A	Y	Y	A	A	Y	Y	B	B	62	F 60	F 66	75	B	U S 80	S 80	F 72	64	64	56	F 49	B	Y	S
8	A	Y	S 44	D S 34	B	B	B	B	B	F 59	V 65	70	J S 78	80	J S 79	80	70	74	64	59	53	F 47	U S 38	A
9	A	S	Y	Y	Y	S	Y	J F 62	68	J F 64	66	F 70	J F 84	74	R 90	J R 97	B	A	B	Y	A	Y	S	A
10	A	A	A	Y	Y	F 48	Y	S	53	R 60	58	R 63	59	63	64	60	F 58	F 53	B	F 53	46	S 40	Y	S
11	U S 28	A	B	B	B	B	B	B	F 58	F 59	65	74	78	75	80	S 84	J F 83	S	B	Y	Y	R 57	A	A
12	B	Y	F 32	S	B	B	B	B	B	B	B	B	B	B	73	F 62	Y	B	40	S	Y	Y	Y	S
13	S	Y	S	S 34	S 33	B	B	B	Y	Z 56	S	J R 53	54	56	60	55	56	60	56	U S 46	Y	Y	S	S
14	B	S	S	B	B	B	A	S	Y	B	B	B	B	B	B	S 44	47	B	J S 51	S 50	37	U S 27	S	A
15	A	B	S	B	B	B	B	B	Y	B	B	B	B	B	B	62	F 53	B	U R 44	40	31	25	A	A
16	A	A	B	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	U S 28	B	Y	S
17	A	S	A	B	Y	36	Y	Y	R 44	B	B	B	B	B	J F 67	B	F 67	F 53	S 50	U S 35	F 36	S	S	A
18	A	A	B	A	B	Y	Y	Y	S	B	B	B	B	B	B	J S 52	58	56	F 45	B	F 32	S	S	S
19	A	A	B	A	Y	B	B	Y	S 36	U S 37	45	S 38	40	46	38	R 54	48	F 52	A	S	J A 27	A	A	A
20	S 33	A	F 32	A	Y	B	B	B	U R 36	S	R 37	U S 38	S 40	34	S	B	B	B	D S 43	B	45	43	J F 40	F 43
21	A	A	S	A	Y	Y	S 42	46	F 52	52	55	60	61	61	63	61	64	58	F 56	53	50	F 44	F 37	S 28
22	S 26	A	Y	Y	B	B	J S 59	70	V 67	70	66	64	62	63	63	60	58	55	J F 53	J S 53	47	40	J F 38	A
23	A	J S 49	F 41	Y	Y	A	Y	54	F 65	80	C	74	75	70	69	65	64	58	60	F 58	52	53	53	53
24	U S 39	F 45	44	R 45	47	52	F 59	F 70	73	80	83	84	86	85	90	F 74	70	F 66	F 59	60	53	55	S	F 58
25	U S 60	F 58	F 54	Y	Y	J F 49	F 59	66	J S 74	79	80	80	81	81	78	73	80	74	67	64	56	53	J S 52	S 44
26	S	S	S	Y	Y	S	B	U R 68	B	F 71	R 68	76	70	70	67	67	J F 65	U R 68	58	54	56	J F 53	Y	A
27	Y	B	F 64	B	B	S	B	B	B	Y	B	B	B	B	S 68	F 70	J F 85	B	B	A	A	A	S	S
28	A	A	54	S	S	Y	B	B	B	B	B	B	B	B	B	B	B	B	S 38	S 43	A	A	A	U S 33
29	A	A	B	Y	S 43	Y	B	B	B	B	B	B	B	B	B	B	B	B	S 45	B	S 53	S	52	B
30	Y	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	57	B	44	S 43	Y	Y	Y	B
31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	4	9	4	4	4	4	7	12	16	15	17	16	16	19	21	21	17	21	19	20	14	8	7
MED	S 34	47	F 44	S 34	38	48	59	66	56	61	65	66	72	69	69	65	64	60	56	53	48	46	42	43
U Q	U S 39	54	F 54	40	45	50	59	70	68	70	68	74	78	74	79	74	71	68	64	59	53	53	52	53
L Q	S 28	39	F 33	S 30	32	42	50	54	46	58	58	60	60	62	63	60	56	F 54	44	S 45	34	40	F 38	S 33

OCT. 1992 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 1992 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 50	28 41	B 34	B 33	B	B	B	B	B	B	B	B	B	27 B	B	B	B	27 B	B	E B 23	B	37	37	B
2					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B E B	E B 16	19	34	34
3	B	47	32	26	26	29	35	B	34	B	E B 30	B	B	B	B	C	B	B	B	B	B	B	B	26
4	30	34	34	B	B	B	B	B	B	33	B	26	29	26	26	27	26	23	E B 24	E B 19	E B 18	15	11	9
5	10	12	E B 17	27	31	B	34	B	B	27	E B 49	E B 45	32	31	31	31	26	21	21	E B 20	E B 19	E B 13	B	B
6	33	36	43	47	45	B	B	B	B	34	28	E B 50	B	E B 50	E B 39	E B 30	E B 31	23	21	22	31	32	43	46
7	37	33	34	51	70	46	34	B	B	37	E B 31	E B 37	E B 56	B	E B 50	E B 55	E B 36	E B 32	E B 24	E B 24	27	B	33	40
8	38	32	34	24	B	B	B	B	B	32	30	E B 35	32	36	31	30	26	21	17	E B 19	11	E B 10	11	43
9	50	76	33	32	27	26	50	45	32	32	32	32	30	32	E B 55	E B 39	B	56	B	36	95	63	62	69
10	70	49	43	39	26	26	34	31	23	40	60	51	46	32	E B 50	E B 30	E B 30	E B 30	B	E B 31	17	24	33	36
11	33	42	B	B	B	B	B	B	32	27	28	29	30	31	27	27	32	E B 38	B	32	33	65	63	71
12	B	35	32	33	B	B	B	B	B	B	B	B	B	B	E B 40	E B 50	33	B	30	40	33	30	36	42
13	38	33	31	34	E B 25	B	B	B	37	33	32	28	28	32	E B 40	E B 56	32	26	19	33	52	50	34	43
14	B	32	29	B	B	B	37	32	42	B	B	B	B	B	B	E B 30	25	B	E B 24	E B 30	E B 19	21	42	90
15	70	B	S	B	B	B	B	B	32	B	B	B	B	B	B	25	23	B	27	32	21	32	41	51
16	51	70	B	B	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	21	B	22	39
17	35	70	66	B	34	27	33	32	E B 30	B	B	B	B	B	28	B	E B 27	E B 30	26	E B 24	28	41	41	35
18	41	42	B	34	B	46	27	37	38	B	B	B	B	B	B	27	25	27	23	B	26	40	40	32
19	92	48	B	42	32	B	B	32	25	26	28	27	30	30	28	31	26	34	31	36	40	41	34	36
20	40	70	38	85	30	B	B	B	28	34	28	27	29	29	E B 31	B	B	B	E B 24	B	E B 19	E B 18	15	33
21	38	55	68	39	37	40	22	26	32	31	30	27	32	32	29	27	29	24	21	E B 20	17	28	24	27
22	32	47	36	42	B	B	37	28	26	32	32	25	30	32	41	40	26	25	22	26	17	E B 16	31	35
23	37	43	32	41	46	60	52	46	32	29	C	31	31	32	30	34	33	16	23	21	17	16	16	11
24	21	16	40	41	33	29	28	27	32	32	32	33	32	42	35	32	33	31	25	22	46	37	E B 14	32
25	13	26	26	42	36	35	25	31	31	30	32	35	31	31	37	31	31	30	21	20	19	E B 15	20	31
26	28	36	42	41	40	42	B	37	B E 50	E B 56		26	29	31	E B 50	31	29	26	27	23	26	E B 16	26	46
27	33	B	33	B	B	33	B	B	B	33	B	B	B	B	E B 55	E B 51	E B 54	B	B	42	81	34	29	33
28	42	60	76	46	38	36	B	B	B	B	B	B	B	B	B	B	B	B	26	40	36	41	40	54
29	42	90	B	40	45	40	B	B	B	B	B	B	B	B	B	B	B	B E B 30	B		22	46	53	B
30	32	70	B	76	B	B	B	B	B	B	B	B	B	B	B	B	E B 31	B	25	32	35	38	26	B
31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	22	22	17	15	13	12	16	18	16	17	16	17	20	21	22	19	22	24	28	27	28	26
MED	38	42	34	40	34	35	34	32	32	32	31	29	30	32	U 32	30	28	26	24	24	24	32	34	36
U Q	42	58	42	42	42	42	37	37	33	34	32	E B 36	32	32	E B 46	E B 40	32	31	26	32	34	41	40	46
L Q	32	33	32	33	28	29	28	30	29	30	29	27	30	30	30	28	26	23	21	E B 22	18	E B 16	23	32

OCT. 1992 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 1992 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	19	B	B	B	B	B	B	B	B	B	B	B	19	B	B	B	19	B	23	B	14	24	B
2	20	24	19	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	16	13	7	14
3	B	14	23	18	18	19	19	B	19	B	30	B	B	B	B	C	B	B	B	B	B	B	B	7
4	18	20	17	B	B	B	B	B	B	19	B	24	19	24	24	25	19	16	24	19	18	8	7	8
5	9	9	17	8	19	B	19	B	B	24	49	45	19	19	19	19	16	19	19	20	19	13	B	B
6	14	14	19	19	19	B	B	B	B	19	21	50	B	50	39	30	31	19	19	19	21	8	12	19
7	11	24	25	20	19	19	24	B	B	24	31	37	56	B	50	55	36	32	24	24	17	B	14	13
8	14	13	14	15	B	B	B	B	B	30	19	35	20	24	19	16	19	20	15	19	9	10	8	13
9	18	14	16	15	14	14	19	14	16	14	14	19	16	19	55	39	B	15	B	14	15	14	13	14
10	16	16	9	14	19	16	18	16	15	14	16	19	15	22	50	30	30	30	B	31	14	18	9	9
11	14	25	B	B	B	B	B	B	19	19	19	19	25	19	19	25	19	38	B	19	9	19	10	18
12	B	24	19	9	B	B	B	B	B	B	B	B	B	B	40	50	19	B	16	14	8	8	9	15
13	14	19	14	14	25	B	B	B	24	24	19	19	19	24	40	56	19	15	14	24	16	10	10	19
14	B	19	14	B	B	B	19	19	19	B	B	B	B	B	B	30	19	B	24	30	19	10	9	15
15	24	B	S	B	B	B	B	B	30	B	B	B	B	B	B	19	18	B	22	19	19	9	9	19
16	14	16	B	B	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	B	9	8
17	8	19	19	B	9	19	19	25	30	B	B	B	B	B	19	B	27	30	14	24	10	10	9	14
18	31	24	B	16	B	25	19	20	13	B	B	B	B	B	B	19	15	19	15	B	13	10	9	20
19	19	20	B	30	24	B	B	24	19	20	24	19	16	14	19	12	19	19	24	16	19	8	7	19
20	9	19	14	20	22	B	B	B	19	24	19	19	19	19	31	B	B	B	24	B	19	18	8	9
21	10	24	19	19	24	15	18	19	15	15	17	19	16	20	14	19	20	15	14	20	9	18	7	7
22	8	20	19	22	B	B	19	15	19	10	18	19	19	16	19	19	15	14	15	14	15	16	8	9
23	10	14	9	25	19	19	20	15	20	24	C	19	19	19	20	14	13	15	18	19	14	10	9	7
24	7	9	19	15	14	9	10	13	10	14	14	18	18	15	14	19	17	10	10	14	14	16	14	7
25	8	7	7	26	14	15	15	15	16	19	19	19	19	19	19	19	13	10	14	19	14	15	10	9
26	7	13	19	19	20	19	B	16	B	50	56	25	19	19	50	20	19	20	20	19	13	16	13	19
27	24	B	17	B	B	19	B	B	B	24	B	B	B	B	55	51	54	B	B	19	19	20	18	17
28	10	25	19	24	25	16	B	B	B	B	B	B	B	B	B	B	B	B	15	13	18	16	19	8
29	9	7	B	15	15	24	B	B	B	B	B	B	B	B	B	B	B	B	30	B	19	14	13	B
30	19	14	B	39	B	B	B	B	B	B	B	B	B	B	B	B	31	B	13	17	10	19	24	B
31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	14	19	19	22	25	B	B	B	30	24	52	45	56	24	50	30	20	30	22	19	16	14	10	14
U Q	B 24	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 31	19	18	14	B 19
L Q	9	14	16	15	19	19	19	19	19	19	19	19	19	19	19	19	19	16	15	19	13	10	9	9

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 1992 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	S	B	B	B	B	B	B	B	B	B	B	B	235	B	B	B	E S 300	B	270	B	Y	Y	B
2	A	A	Y	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	350	S	Y	Y
3	B	A	S	S	385	Y	Y	B	290	B	215	B	B	B	B	C	B	B	B	B	B	B	B	Y
4	Y	Y	Y	B	B	B	B	B	B	270	B	220	240	E S 240	230	225	225	240	225	250	225	215	235	240
5	250	335	330	A	Y	B	Y	B	B	220	B	B	205	220	225	220	220	230	220	210	215	215	B	B
6	A	E A 240	A	A	Y	B	B	B	B	E B 210	200	B	B	B	270	230	250	250	245	300	Y	Y	A	A
7	A	Y	Y	A	A	Y	Y	B	B	E A 275	E B 250	E B 250	B	B	B	B	250	240	245	230	245	B	Y	250
8	A	Y	200	A	B	B	B	B	B	240	250	E B 240	E S 230	E A 240	230	215	220	230	220	210	215	220	250	A
9	A	E A 230	Y	Y	Y	200	Y	205	E A 270	220	E S 220	200	E A 210	E A 220	B	B	B	A	B	Y	A	A	270	A
10	A	A	A	Y	Y	220	Y	250	240	235	210	E S 260	E S 300	E S 240	E B 260	E B 230	E B 240	E B 250	B	235	245	285	A	A
11	230	A	B	B	B	B	B	B	E S 250	230	245	220	E S 230	215	200	E S 245	S	S	B	Y	Y	S	A	A
12	B	Y	S	A	B	B	B	B	B	B	B	B	B	B	B	B	Y	B	A	S	A	A	A	A
13	A	A	S	A	300	B	B	B	A	260	235	A	230	210	B	B	290	230	E B 245	S	A	A	200	225
14	B	S	A	B	B	B	A	240	Y	B	B	B	B	B	B	245	220	B	270	260	270	E A 295	270	A
15	A	B	S	B	B	B	B	B	Y	B	B	B	B	B	B	240	250	B	300	330	280	A	A	A
16	A	210	B	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	330	B	Y	A
17	A	200	A	B	Y	E S 220	Y	Y	E B 300	B	B	B	B	B	205	B	225	200	250	E B 310	270	A	A	A
18	A	A	B	A	B	Y	Y	Y	A	B	B	B	B	B	B	220	230	270	240	B	A	A	A	200
19	A	A	B	A	Y	B	B	Y	250	200	E S 220	200	230	230	220	250	235	250	A	A	E A 250	A	A	A
20	250	A	250	A	Y	B	B	B	280	S	200	200	E S 245	E S 250	230	B	B	B	240	B	245	250	280	260
21	A	A	220	A	Y	Y	A	255	220	210	235	235	225	S	220	220	S 215	220	240	240	250	280	275	225
22	225	A	Y	S	B	B	A	230	220	210	220	S 230	200	230	210	200	230	230	245	250	245	245	250	A
23	A	A	330	Y	Y	A	Y	A	250	220	C	200	230	220	225	220	220	220	220	245	240	240	240	245
24	310	310	240	230	250	200	250	240	200	220	215	215	200	205	220	205	205	210	215	220	220	235	235	240
25	240	260	250	Y	Y	A	240	230	230	205	E S 240	E S 245	E S 230	220	220	210	230	230	220	235	230	235	E B 245	A
26	340	A	S	Y	Y	S	B	Y	B	B	B	E S 215	240	225	B	205	230	240	225	230	250	210	Y	A
27	A	B	280	B	B	A	B	B	B	Y	B	B	B	B	B	B	B	B	B	A	A	A	A	A
28	A	A	B	A	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	E S 290	245	A	A	A	215
29	A	A	B	S	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	A 280	B	260	230	250	B
30	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	260	B	265	300	A	A	Y	B
31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	7	8	1	3	4	2	7	12	15	14	14	15	15	14	16	19	17	20	18	19	13	12	9
MED	250	240	250	230	300	205	245	240	242	220	219	210	230	222	221	220	230	230	241	244	245	235	250	240
U Q	310	310	305		385	220		250	275	240	240	E 240	240	E S 240	230	235	250	250	258	270	270	265	270	248
L Q	230	210	230		250	200		230	225	210	215	200	210	220	220	212	220	225	222	230	230	218	238	220

OCT. 1992 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 1992 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	C	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	S	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y
5	B	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 74	B	B	B	B	B	B	Y
6	Y	Y	O X 39	B	A	A	B	B	B	B	B	B	B	B	B	O X 72	B	B	B	B	B	B	B	B
7	Y	Y	O X 48	Y	A	B	A	Y	X 71	X 72	X 74	B	X 75	B	O X 74	O X 70	78	66	O X 62	B	Y	B	Y	Y
8	X 38	O X 44	B	B	B	76	70	76	X 76	X 77	X 79	X 79	X 75	X 72	X 77	X 61	O X 66	X 62	O X 61	B	O X 52	X 52	X 45	S
9	A	49	B	B	A	B	A	S	B	B	B	B	B	B	93	B	Y	B	B	A	Y	Y	Y	S
10	S	A	A	A	A	O X 39	O X 41	X 42	O X 48	O X 49	O X 46	O X 47	X 60	O X 68	X 62	O X 65	O X 64	O X 64	55	48	S	Y	Y	Y
11	S	69	53	58	54	S	O X 48	Y	B	Y	B	B	B	B	B	B	B	O X 60	B	X 62	Y	O X 39	X 47	X 62
12	O X 43	X 46	A	48	Y	B	B	B	B	B	O X 48	O X 48	O X 50	X 60	B	B	X 62	B	X 56	B	60	48	O X 42	O X 48
13	A	B	B	B	Y	O X 52	S	X 65	O X 67	X 70	B	B	O X 67	B	X 64	X 62	B	71	X 60	X 55	X 50	X 45	O X 44	O X 46
14	S	B	A	A	X 52	B	B	Y	Y	B	O X 48	O X 48	X 60	X 61	B	O X 68	B	B	B	65	X 43	42	X 47	B
15	50	B	A	A	A	B	O X 46	S	Y	B	B	B	B	B	X 66	X 69	X 69	56	Y	O X 46	O X 49	48	S	O X 43
16	A	B	B	42	B	A	O X 43	Y	61	76	B	B	Y	Y	O X 62	S	X 58	X 57	X 54	O X 50	X 54	X 55	X 51	O X 42
17	S	Y	B	B	B	Y	Y	B	Y	B	B	X 76	89	75	72	71	X 69	X 64	O X 64	B	O X 63	X 54	A	53
18	O X 49	B	S	53	B	Y	X 67	X 71	O X 82	X 83	X 86	O X 86	O X 86	X 80	O X 82	X 74	X 71	X 70	X 70	X 67	65	S	A	S
19	O X 52	60	O X 62	X 69	65	71	80	X 70	Y	62	72	87	X 76	B	X 76	X 74	X 68	B	B	63	X 62	63	60	O X 61
20	50	O X 52	O X 64	O X 62	S	O X 77	87	91	90	O X 96	O X 98	O X 86	O X 87	X 85	X 80	X 78	X 76	X 71	C	X 70	X 78	X 70	X 68	72
21	X 53	O X 51	B	A	Y	Y	B	B	Y	Y	67	Y	Y	Y	B	X 65	X 64	O X 66	58	57	X 60	X 60	59	59
22	O X 60	O X 61	O X 56	S	O X 73	S	S	S	90	X 89	O X 86	X 94	X 84	O X 88	X 80	X 79	71	S	F	O X 66	X 53	S	O X 53	F
23	S	S	S	S	S	S	S	Y	B	B	B	B	B	B	S	B	O X 69	O X 49	O X 53	S	S	S	S	55
24	49	S	B	B	B	X 59	S	Y	X 76	O X 72	B	O X 72	O X 73	O X 71	O X 72	O X 81	X 77	69	60	S	S	S	S	63
25	B	O X 52	X 60	A	B	B	S	71	73	73	O X 76	B	X 76	X 80	O X 83	S	B	B	62	O X 53	X 57	O X 48	O X 49	S
26	64	O X 76	S	O X 64	S	B	B	B	B	B	B	B	O X 74	X 70	O X 76	B	X 86	O X 82	O X 82	X 76	B	B	S	63
27	S	O X 51	B	B	B	S	O X 86	91	86	O X 88	O X 87	X 86	O X 86	X 80	X 77	X 76	81	69	X 67	X 66	X 63	X 66	X 68	X 68
28	X 68	X 58	B	O X 54	S	S	S	70	78	75	X 76	X 76	X 82	88	O X 87	O X 76	B	O X 68	70	X 62	X 62	S	S	O X 63
29	A	S	S	S	66	67	S	O X 64	68	V 77	78	O X 68	X 72	O X 72	X 75	73	X 76	B	B	S	B	S	S	S
30	S	B	S	S	O X 63	77	80	X 80	X 80	X 78	X 80	X 80	90	O X 96	X 96	X 96	O X 99	76	B	B	B	S	70	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	12	7	8	6	8	10	11	14	15	15	14	18	15	19	18	19	17	15	15	15	13	13	14
MED	X 50	O X 52	O X 56	56	64	69	X 68	X 71	76	X 76	X 76	X 78	X 76	X 75	X 76	X 72	X 71	X 66	X 61	X 62	X 60	X 52	X 51	X 60
U Q	X 60	60	O X 62	O X 63	66	76	80	80	82	X 83	O X 86	X 86	O X 86	X 85	O X 82	X 76	X 77	X 70	X 67	X 66	X 63	X 62	64	63
L Q	X 49	X 50	O X 48	50	54	O X 56	O X 46	X 65	68	X 72	O X 67	O X 68	X 72	X 70	X 72	X 68	X 66	X 61	X 56	O X 53	X 52	46	X 46	O X 48

NOV. 1992 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 1992 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	B	B	B	B	C	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	S	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y
5	B	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	68	B	B	B	B	B	B	Y
6	Y	Y	S 33	B	A	A	B	B	B	B	B	B	B	B	B	V 66	B	B	B	B	B	B	B	B
7	Y	Y	F 42	Y	A	B	A	Y	Z 65	68	R 69	B	69	B	S 68	S 64	F 63	F 59	56	B	Y	B	Y	Y
8	J S 32	F 38	B	B	B	F 60	F 63	F 69	70	70	72	73	69	66	71	55	60	56	55	B	S 46	45	J S 39	S
9	A	F 42	B	B	A	B	A	S	B	B	B	B	B	B	F 60	B	Y	B	B	A	Y	Y	Y	S
10	S	A	A	A	A	S 33	O S 35	S 37	42	43	S 40	41	54	R 62	56	59	58	58	F 47	F 42	S	Y	Y	Y
11	S	J F 63	F 46	J F 52	J F 48	S	S 42	Y	B	Y	B	B	B	B	B	B	B	54	B	54	Y	S 33	41	J S 40
12	37	B	A	F 42	Y	B	B	B	B	B	42	42	44	J S 54	B	B	56	B	50	B	F 52	F 42	36	42
13	A	B	B	B	Y	S 46	S	59	61	62	B	B	61	B	58	56	B	F 63	52	J S 49	44	38	38	F 40
14	S	B	A	A	J S 46	B	B	Y	Y	B	R 42	42	55	J S 55	B	62	B	B	B	F 56	37	J F 36	41	B
15	F 41	B	A	A	A	B	40	S	Y	B	B	B	B	B	60	63	63	F 50	Y	40	43	J S 42	S	37
16	A	B	B	J F 36	B	A	37	Y	J F 55	F 56	B	B	Y	Y	56	S	J S 52	J S 51	48	44	47	48	45	36
17	S	Y	B	B	B	Y	Y	B	Y	B	B	70	F 62	F 69	F 63	F 62	62	58	R 58	B	R 57	47	A	F 46
18	43	B	S	F 47	B	Y	60	63	76	77	80	80	80	74	76	68	64	64	64	60	F 46	S	A	S
19	46	J F 54	F 56	J S 63	F 59	F 60	F 68	J S 64	Y	F 53	F 63	F 78	70	B	70	68	62	B	B	F 53	56	F 57	J F 54	55
20	F 44	46	58	56	S	71	F 70	F 80	J F 84	90	92	80	81	J S 79	74	71	70	65	C	64	J S 72	J S 64	60	F 49
21	47	R 45	B	A	Y	Y	B	B	Y	Y	F 57	Y	Y	Y	B	59	58	60	F 52	J F 51	54	54	J F 53	J F 53
22	S 54	S 54	S 50	F	67	F	S	F	J F 84	83	S 80	88	78	82	74	73	J F 65	S	F	F 60	47	S	47	F 40
23	S	S	S	S	S	S	S	Y	B	B	B	B	B	B	S	B	F 63	43	S 47	S	S	S	S	F 46
24	J F 43	S	B	B	B	53	S	Y	70	66	B	S 66	67	S 65	U S 66	F 75	71	J F 63	J S 54	S	S	S	S	J F 57
25	B	S 46	54	A	B	B	S	F 60	F 63	F 66	70	B	70	74	77	S	B	B	F S	S 47	J S 51	S 42	S 43	D S 42
26	F 55	S 70	S	F 58	S	B	B	B	B	B	B	B	F 68	64	F 70	B	80	S 76	U S 76	70	B	B	S	F 52
27	S	45	B	B	B	S	80	F 70	Z 77	F 82	F 81	80	80	J S 74	71	70	F 64	F 62	61	60	57	59	62	J S 62
28	61	52	B	U S 48	S	S	S	J F 64	F 67	J F 69	J S 70	70	J S 76	F 75	U S 81	U S 70	B	62	F 60	56	56	S	S	U S 57
29	A	S	S	S	F 56	F 57	S	U R 58	F 61	V 71	F 68	R 62	66	66	69	F 65	70	B	B	D S 40	B	S	S	S
30	S	B	S	S	S 57	F 60	F 65	74	74	72	J R 74	74	J S 84	90	90	90	93	Z 70	B	B	B	S	F 46	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	11	7	8	6	8	10	11	14	15	15	14	18	15	19	18	19	17	14	16	15	13	13	16
MED	44	46	50	F 50	56	58	62	64	68	69	70	72	69	69	70	66	63	60	54	54	51	45	45	47
U Q	54	J F 54	56	57	59	F 60	F 68	F 70	76	77	80	80	78	75	74	70	70	64	60	60	56	56	54	J 54
L Q	41	F 45	42	F 44	J 48	S 50	40	59	61	62	57	62	62	64	60	62	60	55	50	46	46	40	40	40

NOV. 1992 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 1992 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	C	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 58	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	60	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32
5	B	42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 52	B	B	B	B	B	B	32
6	24	32	26	B	71	71	B	B	B	B	B	B	B	B	B	E B 57	B	B	B	B	B	B	B	B
7	36	26	E B 20	33	79	B	58	34	26	28	E B 60	B	E B 50	B	E B 55	E B 55	27	25	E B 30	B	36	B	36	56
8	90	81	B	B	B	32	42	33	36	28	27	26	E B 53	33	31	28	27	26	26	B	21	20	31	39
9	36	32	B	B	39	B	32	28	B	B	B	B	B	B	26	B	25	B	B	70	35	37	38	36
10	45	60	43	36	38	28	27	26	34	27	32	34	27	28	31	27	28	26	22	26	44	43	46	42
11	47	28	36	20	26	34	32	33	B	33	B	B	B	B	B	B	B	31	B	38	33	24	32	34
12	42	B	46	31	42	B	B	B	B	B	32	32	27	31	B	B	25	B	21	B	28	22	35	41
13	68	B	B	B	33	37	36	E B 50	E B 50	33	B	B	32	B	27	28	B	27	43	33	23	27	42	36
14	24	B	60	90	32	B	B	40	41	B	E B 36	31	32	22	B	E B 55	B	B	B	26	26	21	38	B
15	33	B	70	70	58	B	40	38	42	B	B	B	B	B	28	29	27	26	32	33	30	34	52	52
16	43	B	B	32	B	97	36	40	36	33	B	B	32	32	33	30	30	28	26	32	26	21	27	40
17	58	37	B	B	B	38	36	B	33	B	B	E B 51	31	31	32	29	28	E B 31	E B 50	B	E B 31	20	34	26
18	29	B	37	42	B	40	41	29	30	30	32	32	36	36	33	31	27	29	26	22	32	60	60	47
19	37	32	36	30	32	32	32	E B 57	38	36	31	38	E B 51	B	26	26	26	B	B	70	63	53	32	27
20	26	27	34	32	33	32	26	36	33	36	29	40	70	72	36	68	47	32	C	33	70	59	38	32
21	29	43	B	58	34	44	B	B	38	33	29	31	32	31	B	31	30	30	26	E B 31	26	26	33	19
22	27	32	E B 29	27	32	26	27	30	32	31	33	33	42	41	33	32	32	28	46	37	38	38	40	37
23	70	42	42	40	40	36	33	28	B	B	B	B	B	B	32	B	32	27	E B 39	32	43	43	39	45
24	33	25	B	B	B	E B 40	33	45	26	E B 33	B	E B 62	E B 54	E B 55	E B 57	37	32	27	32	27	39	33	58	71
25	B	34	51	90	B	B	44	38	33	28	E B 55	B	33	34	26	28	B	B	27	37	37	34	31	33
26	43	71	32	33	32	B	B	B	B	B	B	B	26	32	E B 55	B	E B 52	E B 31	E B 60	E B 56	B	B	E B 29	27
27	36	32	B	B	B	38	E B 55	40	31	32	38	41	38	35	33	32	28	28	28	45	30	26	26	18
28	36	E B 21	B	40	43	47	44	37	29	32	36	E B 56	32	E B 55	32	E B 56	B	32	33	33	26	33	40	33
29	71	52	33	34	32	33	33	34	40	36	32	29	42	40	37	33	E B 40	B	B	E B 31	B	33	33	33
30	33	E B 40	34	33	32	26	26	27	27	36	29	29	32	26	33	37	33	36	B	B	B	47	41	36
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	20	16	18	18	18	20	20	19	17	15	15	20	17	20	20	20	18	17	19	21	22	25	25
MED	36	32	36	34	34	36	34	34	33	33	32	32	32	32	32	30	28	28	28	33	32	33	37	36
U Q	52	42	44	42	42	40	42	40	38	34	36	E B 41	E B 46	40	34	E B 46	32	31	E B 41	38	38	43	42	42
L Q	31	30	32	32	32	32	32	30	30	29	29	31	32	31	30	28	27	27	26	31	26	24	32	32

NOV. 1992 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV.1992 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	C	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	58	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	55	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24
5	B	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	52	B	B	B	B	B	B	20
6	15	20	20	B	45	50	B	B	B	B	B	B	B	B	B	57	B	B	B	B	B	B	B	B
7	24	19	20	24	24	B	25	24	25	20	60	B	50	B	55	55	24	19	30	B	20	B	27	19
8	19	19	B	B	B	25	24	20	19	19	23	24	B	20	24	22	16	18	14	B	20	19	14	10
9	30	10	B	B	24	B	19	15	B	B	B	B	B	B	19	B	19	B	B	25	25	19	19	14
10	10	17	14	15	16	19	19	19	19	25	24	19	19	19	19	19	14	14	18	16	10	16	15	15
11	9	9	13	10	10	16	14	19	B	25	B	B	B	B	B	B	B	30	B	13	19	19	9	9
12	15	B	24	19	20	B	B	B	B	B	20	19	20	15	B	B	24	B	19	B	20	9	10	13
13	15	B	B	B	25	26	19	50	50	24	B	B	24	B	20	19	B	18	14	19	13	14	10	7
14	19	B	19	19	19	B	B	24	24	B	36	19	19	19	B	55	B	B	B	18	24	13	10	B
15	23	B	19	24	19	B	56	15	19	B	B	B	B	B	23	19	20	19	19	14	18	14	8	9
16	9	B	B	16	B	19	10	19	18	24	B	B	30	24	19	19	18	18	19	15	19	14	14	14
17	50	31	B	B	B	25	15	B	20	B	B	51	24	19	19	19	20	31	50	B	31	19	19	8
18	10	B	19	11	B	24	19	19	15	19	20	19	19	19	19	16	16	19	13	10	9	20	15	13
19	19	25	20	19	24	15	15	57	19	20	24	19	51	B	25	24	24	B	B	30	20	19	20	10
20	9	10	14	18	24	14	15	14	15	19	19	19	19	19	19	15	16	15	C	14	10	16	14	14
21	10	20	B	18	24	18	B	B	25	24	19	19	19	19	B	19	19	24	24	31	20	15	16	15
22	14	10	29	15	14	16	18	19	15	14	19	18	19	18	19	19	20	19	16	19	14	14	18	14
23	8	30	30	8	18	20	19	19	B	B	B	B	B	B	20	B	20	19	39	10	18	17	18	7
24	9	18	B	B	B	40	20	30	19	33	B	62	54	55	57	19	19	19	19	18	19	20	20	19
25	B	19	19	30	B	B	20	20	18	15	55	B	19	19	19	19	B	B	19	14	15	9	8	15
26	18	19	15	15	25	B	B	B	B	B	B	B	20	25	55	B	52	31	60	56	B	B	27	16
27	18	14	B	B	B	20	55	18	19	19	19	19	18	18	18	18	23	18	18	18	14	9	9	9
28	24	21	B	19	19	20	24	20	19	18	18	56	24	55	18	56	B	30	30	26	18	22	17	30
29	18	9	9	9	10	9	16	18	17	18	19	18	29	25	20	20	40	B	B	31	B	24	20	18
30	18	40	19	20	19	20	19	19	16	19	19	19	19	19	19	19	19	19	B	B	B	15	14	26
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	30	29	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30
MED	18	20	30	22	24	26	20	22	20	25	B	B	30	40	24	23	24	30	39	28	20	19	18	15
U Q	B 30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B 27	B 24
L Q	10	18	19	16	19	19	18	19	18	19	20	19	19	19	19	19	19	19	19	16	18	14	14	10

NOV.1992 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 1992 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	C	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 290	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y
5	B	E S 210	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y
6	Y	Y	S	B	S	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	Y	Y	E B 285	Y	S	B	A	Y	S	235	S	B	B	B	B	B	220	240	E B 250	B	Y	B	Y	A
8	250	A	B	B	B	Y	Y	230	215	Y	Y	Y	B	235	Y	215	220	230	240	B	250	250	E S 290	A
9	A 300		B	B	A	B	A	210	B	B	B	B	B	B	220	B	Y	B	B	A	Y	Y	Y	A
10	S	A	A	A	A	220	265	210	230	E S 240	230	250	220	230	240	215	235	240	215	200	A	A	Y	Y
11	230	E S 300	E S 310	E S 305	260	A	240	Y	B	Y	B	B	B	B	B	B	B	240	B	250	Y	B	A	A
12	E A 235	B	A	A	Y	B	B	B	B	B	240	250	230	250	B	B	225	B	240	B	260	265	230	235
13	A	B	B	B	Y	B	S	B	B	Y	B	B	Y	B	E S 230	225	B	220	230	E B 260	260	255	E A 350	A
14	S	B	A	A	A	B	B	Y	Y	B	230	200	200	230	B	B	B	B	B	250	310	280	250	B
15	E B 350	B	A	A	A	B	E B 280	A	Y	B	B	B	B	B	230	235	220	245	Y	A	E A 280	280	200	A
16	A	B	B	A	B	A 295		Y	Y	Y	B	B	Y	Y	215	220	220	225	245	250	250	270	220	240
17	205	Y	B	B	B	Y	Y	B	Y	B	B	B	220	E S 230	220	225	225	225	B	B	E B 255	250	A	315
18	E A 330	B	A 290		B	Y	215	220	210	240	220	220	205	200	200	210	220	205	235	E S 250	A	S	A	220
19	E A 260	Y	A	A	A	300	300	B	Y	200	200	230	B	B	230	220	220	B	B	E B 270	250	260	260	270
20	285	E A 350	E A 320	E A 330	A	250	250	230	E S 280	220	240	230	A	A	E A 220	225	260	230	C	240	310	270	250	A
21	E A 290	A	B	A	Y	Y	B	B	Y	Y	205	S	Y	Y	B	E A 210	230	215	235	250	250	260	260	255
22	290	E A 290	B	S 225	E S 240	E S 240	S	195	205	E S 220	210	S	230	S	225	S 235	S	S	A	E A 300	E A 260	E A 320	250	280
23	A 340	A	A	S	S	S	S	Y	B	B	B	B	B	B	E S 240	B	255	E S 250	E B 280	S	S	A	A	E S 310
24	E S 320	S	B	B	B	B	S	Y	S	B	B	S	B	B	B	E A 240	E S 270	230	250	250	A	A	S	S
25	B	S	S	A	B	B	A	A	240	225	B	B	S 220	260	S	Y	B	B	220	245	E S 250	A	A	E S 250
26	230	A	A	A	S	B	B	B	B	B	B	B	240	S 230	B	B	E B 255	230	B	E B 275	B	B	260	300
27	250	235	B	B	B	S	B	E A 240	205	230	210	215	235	200	220	210	235	215	230	250	250	250	255	260
28	255	270	B	A	S	S	A	E A 250	220	215	220	B	S	B	225	E B 260	B	S	S	240	250	S	250	S
29	A	E A 250	A	A	E A 240	250	230	225	E A 300	Y	Y	Y	Y	Y	Y	E S 250	E B 280	B	B	E B 280	B	A	A	A
30	S	B	205	S	Y	E S 265	210	215	200	Y	S	E S 250	230	205	E S 245	225	230	S	B	B	B	A	235	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	8	4	4	3	6	9	10	10	9	10	8	10	10	14	16	17	15	12	16	14	12	15	11
MED	U 248	E 280	E 298	298	E 240	248	245	217	213	222	220	228	225	230	222	222	225	230	235	246	251	261	250	258
U Q	E 320	E 300	E 315	E 318	260	265	288	E A 230	E 240	238	230	250	230	235	230	E 235	E 255	240	248	E B 265	260	275	E 260	300
L Q	235	E 242	245	258	E A 240	240	222	210	205	218	210	218	220	205	220	215	220	220	230	248	250	252	235	240

NOV. 1992 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 1992 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	S	S	S	B	B	Y	Y	Y	Y	Y	B	B	B	B	X 81	B	B	O X 46	B	S	Y	O X 64	O X 63	O X 52
2	A	S	A	B	Y	Y	68	O X 78	Y	Y	70	O X 68	O X 62	B	B	O X 66	O X 66	65	X 60	X 61	S	S	S	S
3	S	O X 58	S	S	S	S	S	X 64	B	B	70	O X 59	O X 64	O X 66	B	75	X 76	X 76	O X 57	O X 50	S	Y	Y	A
4	S	S	S	S	S	O X 55	B	Y	Y	B	B	B	B	O X 59	78	O X 76	78	O X 69	O X 50	B	O X 49	O X 50	S	S
5	S	S	46	B	S	S	B	Y	73	71	70	B	O X 70	B	X 71	71	O X 74	X 68	X 59	X 58	H 57	O X 52	X 52	X 61
6	X 66	71	71	B	Y	Y	X 68	79	91	93	S	B	O X 81	O X 81	X 79	X 74	X 70	X 70	X 66	S	Y	S	O X 52	O X 59
7	S	O X 46	X 58	B	X 67	X 70	O X 74	X 81	80	80	80	X 81	X 91	O X 84	X 80	X 80	O X 80	X 80	O X 66	X 57	O X 66	H 59	64	Y
8	A	A	S	S	A	S	S	Y	Y	Y	Y	B	B	B	B	B	65	S	O X 46	X 58	O X 53	O X 50	S	Y
9	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 52	B	B	X 61	B	B	Y	O X 49	X 53	Y	B
10	O X 49	S	S	O X 53	B	Y	B	B	S	S	X 58	B	B	B	X 76	B	B	B	X 64	H 53	B	X 46	O X 54	B
11	B	S	S	B	B	S	Y	Y	X 63	70	X 70	X 64	X 66	O X 65	X 65	O X 53	X 61	X 60	59	X 54	B	O X 50	X 50	X 52
12	X 52	S	B	B	B	O X 43	Y	X 61	88	80	82	X 77	X 76	76	X 71	X 70	X 73	X 68	O X 68	X 70	X 61	X 60	O X 49	X 52
13	X 57	B	Y	Y	Y	Y	B	B	B	S	Y	Y	Y	B	B	O X 64	X 67	X 65	60	X 63	X 60	X 60	O X 49	O X 48
14	O X 52	X 56	Y	S	B	Y	X 66	O X 66	Y	63	70	X 66	Y	Y	X 64	S	X 65	X 63	X 60	X 60	O X 49	B	S	S
15	B	Y	O X 59	O X 52	43	Y	B	Y	Y	Y	X 61	O X 49	S	B	B	B	S	63	X 62	X 60	S	O X 51	X 53	S
16	S	S	S	X 56	Y	68	O X 73	Y	B	Y	B	X 60	Y	Y	B	S	X 69	O X 71	X 68	X 66	X 67	X 65	X 61	O X 63
17	X 54	54	S	S	82	82	81	X 90	X 90	X 90	X 88	S	O X 86	X 79	X 75	X 71	X 70	X 71	B	Y	O X 65	S	S	S
18	S	O X 55	A	S	S	X 43	O X 44	Y	Y	O X 49	Y	S	S	Y	O X 51	O X 48	O X 52	O X 62	X 61	X 59	O X 53	S	S	A
19	B	Y	X 52	58	58	O X 46	Y	O X 48	70	72	80	X 76	70	Y	O X 68	X 68	X 68	X 74	74	X 68	X 61	X 58	S	Y
20	Y	X 57	O X 64	S	S	S	Y	Y	B	B	S	Y	B	B	B	B	B	O X 66	59	B	X 60	Y	X 52	Y
21	O X 53	B	B	S	X 60	68	78	85	O X 87	91	89	O X 86	O X 91	X 81	X 82	83	B	B	B	66	B	O X 52	67	X 58
22	O X 59	B	O X 53	S	X 53	B	S	O X 59	75	X 78	X 78	X 76	X 76	X 76	X 75	X 78	X 68	B	O X 62	X 61	X 63	O X 62	O X 49	62
23	X 56	O X 64	67	Y	77	77	80	80	O X 71	81	B	79	83	79	B	O X 89	X 79	X 75	X 64	S	O X 63	X 59	X 52	X 56
24	X 55	O X 62	X 61	O X 62	X 72	69	74	88	O X 80	B	B	O X 70	73	X 82	X 75	O X 76	O X 82	X 75	X 74	X 58	B	X 52	O X 48	X 47
25	O X 59	O X 66	X 66	X 70	O X 73	X 78	X 83	O X 86	X 90	O X 94	O X 86	Y	X 80	X 80	X 78	O X 76	X 74	X 70	O X 68	X 64	X 61	X 59	O X 61	O X 63
26	B	B	Y	Y	B	S	67	76	O X 76	84	O X 85	X 81	O X 81	C	C	X 75	X 75	X 75	O X 74	X 76	X 66	O X 61	X 57	X 54
27	X 56	X 55	X 56	63	X 71	X 81	O X 96	O X 102	X 105	O X 96	O X 93	X 89	X 89	O X 85	X 75	X 80	X 75	X 72	X 70	O X 66	X 62	X 68	O X 73	O X 66
28	S	S	S	78	72	S	S	73	O X 78	82	100	98	O X 89	93	X 89	X 81	X 72	Y	B	Y	S	B	Y	S
29	32	S	52	A	S	Y	S	S	Y	B	B	B	B	B	B	B	Y	Y	S	69	S	S	69	S
30	S	O X 49	S	48	S	S	X 48	A	O X 50	70	B	74	B	O X 65	O X 69	X 74	B	B	O X 62	O X 66	X 52	O X 51	O X 51	O X 50
31	60	59	S	63	S	O X 58	O X 60	O X 75	O X 77	76	O X 74	X 75	O X 76	B	B	X 76	70	S	B	O X 43	O X 52	O X 55	O X 58	X 58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	13	12	10	11	13	15	17	17	18	18	18	18	16	19	22	24	22	24	23	20	22	21	16
MED	X 56	O X 57	X 58	60	X 71	X 68	X 73	X 78	X 78	80	79	X 76	X 78	X 79	X 75	X 75	X 70	X 70	X 62	X 61	X 60	X 56	O X 53	X 57
U Q	X 59	O X 63	65	63	73	78	80	X 86	X 89	X 90	X 86	X 81	O X 86	O X 82	X 79	X 78	X 75	X 74	X 68	X 66	X 63	X 60	62	O X 62
L Q	X 52	X 54	52	O X 53	58	O X 50	X 66	O X 65	X 72	71	70	X 66	O X 70	O X 66	O X 69	O X 70	X 66	X 65	X 60	X 58	O X 52	O X 51	O X 50	X 52

DEC. 1992 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 1992 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	S	S	S	B	B	Y	Y	Y	Y	Y	B	B	B	B	75	B	B	S 40	B	S	Y	R 58	57	S 46
2	A	S	A	B	Y	Y	F 62	U R 72	Y	Y	J F 64	S 62	R 56	B	B	R 60	R 60	F 59	J S 54	55	S 42	S	S	S
3	S	U S 52	S	S	S	S	S	J S 58	B	B	F 60	S 53	S 58	60	B	F 66	70	70	S 51	S 44	S	Y	Y	A
4	S	S	S	S	S	U S 49	B	Y	Y	B	B	B	B	U S 53	F 68	F 70	Z 72	R 63	U S 44	B	R 43	R 44	S	S
5	S	S	J F 40	B	S	S	B	Y	F 66	F 60	F 63	B	R 64	B	R 65	J F 65	S 68	62	J S 53	J S 52	H 51	S 46	J S 46	54
6	60	F 60	F 60	B	Y	Y	62	F 69	Z 85	Z 86	S	B	S 75	U S 75	73	68	64	64	60	S	Y	S	S 46	R 53
7	S	S 40	J S 52	B	61	64	68	75	J F 74	J F 74	F 74	J S 75	85	78	73	73	74	J F 74	R 60	J S 51	60	H 53	F 54	Y
8	A	A	S	S	A	S	S	Y	Y	Y	Y	B	B	B	B	B	F 55	D S 43	S 40	J S 52	47	U S 44	S	Y
9	B	B	B	B	B	B	B	B	B	B	B	B	B	46	B	B	55	B	B	Y	43	J S 47	Y	B
10	U S 43	S	S	U S 47	B	Y	B	B	S	S	J S 52	B	B	B	70	B	B	B	58	H 47	B	40	U S 48	B
11	B	S	S	B	B	S	Y	Y	57	F 59	63	58	J S 60	F 59	J S 59	S 47	55	J S 54	F 53	48	B	U S 44	44	J S 46
12	46	S	B	B	B	37	Y	55	F 75	F 74	F 70	71	70	70	65	64	67	62	62	64	55	54	U S 43	J S 46
13	53	B	Y	Y	Y	Y	B	B	B	D S 42	Y	Y	Y	B	B	58	61	59	F 52	57	54	54	U S 43	U S 42
14	46	J S 50	Y	D S 43	B	Y	60	R 60	Y	F 57	F 60	60	Y	Y	J S 58	S	59	57	J S 54	54	43	B	S	S
15	B	Y	S 53	S 46	F 37	Y	B	Y	Y	Y	J S 55	S	S	B	B	B	S	J F 57	56	53	D S 47	S 45	J S 47	D S 45
16	D S 54	S	S	J S 50	Y	F	F 67	Y	B	Y	B	J S 54	Y	Y	B	S	63	S 65	61	60	60	59	55	57
17	48	F 48	F	D S 42	F 70	F 71	J F 75	84	J S 84	84	82	D S 75	R 80	73	69	65	64	65	B	Y	S 59	S	S	S
18	S	J S 49	A	S	S	37	S 38	Y	Y	U S 43	Y	S	D S 42	Y	S 45	S 42	S 46	J S 56	J S 55	J S 53	R 47	S	S	A
19	B	Y	46	F 48	J F 52	U S 40	Y	S 42	F 58	F 63	F 68	70	F 59	Y	R 62	62	62	68	F 63	62	54	52	S	Y
20	Y	51	F 58	S	S	S	Y	Y	B	B	S	Y	B	B	B	B	B	R 60	F 53	B	54	Y	46	Y
21	U R 47	B	B	S	54	J F 62	F 65	F 70	S 81	F 78	F 78	R 80	F 85	J S 75	76	F 73	B	B	B	F 56	B	R 46	F 56	52
22	R 53	B	U S 47	S	J S 47	B	D S 60	S 53	F 69	72	71	J R 70	70	70	J S 69	71	62	B	56	55	57	56	43	J F 56
23	50	58	F 57	Y	F 66	F 67	Z 71	F 66	U S 65	F 72	B	F 65	F 71	F 70	B	S 83	73	69	58	S	S 57	53	46	50
24	49	S 56	55	S 56	66	F 59	F 68	J F 82	U S 74	B	B	64	F 64	76	69	70	76	69	68	52	B	46	S 42	41
25	U R 53	60	60	J S 66	67	72	77	80	J S 84	88	80	Y	J S 74	J S 74	J S 72	70	68	64	62	58	55	53	55	57
26	B	B	Y	Y	B	S	J F 61	F 70	70	F 74	79	75	75	C	C	69	69	69	68	70	60	R 55	J S 51	S 48
27	J S 50	J F 49	50	F 54	65	75	90	96	J S 99	90	87	J S 83	83	79	J R 69	J S 74	69	66	64	60	56	62	67	S 60
28	S	S	S	J F 72	F	S	S	J F 67	72	F 76	F 89	J F 92	S 83	F 82	J S 83	75	66	Y	B	Y	S	B	Y	S
29	F 28	S	F 46	A	S	Y	S	S	Y	B	B	B	B	B	B	B	Y	Y	S	F	S	S	F	S
30	S	S 43	S	F 38	D S 36	D S 33	41	A	44	F 61	B	F 61	B	S 59	S 63	68	B	B	56	60	46	45	45	44
31	J F 54	F 53	D S 42	F	S	U S 52	S 54	69	71	J F 70	S 68	69	70	B	B	70	F 62	S	B	U R 37	S 46	49	S 52	52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	13	13	11	11	13	16	17	17	19	18	18	19	16	19	22	24	23	24	22	22	22	20	17
MED	50	51	52	U 51	63	60	65	69	72	F 73	69	70	70	72	69	68	64	64	56	54	54	50	46	51
U Q	53	57	F 58	J S 56	F 66	69	70	78	J S 82	78	79	J S 75	80	76	73	71	69	68	62	60	57	54	54	55
L Q	46	48	46	D S 43	S 47	38	S 60	S 59	66	F 60	63	61	S 60	60	S 63	64	60	S 57	S 53	52	46	45	44	S 46

DEC. 1992 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.1992 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	38	38	33	B	B	33	26	33	59	42	B	B	B	B	E S 53	B	B	27	B	23	39	39	34	33
2	71	46	80	B	31	38	38	35	26	32	32	29	30	B	B	29	29	27	26	26	20	26	42	43
3	39	33	42	42	46	37	30	32	B	B	26	30	37	33	B	28	E B 32	E S 58	E B 32	40	45	39	38	48
4	38	40	32	70	26	33	B	36	40	B	B	B	B	32	E B 36	26	26	32	32	B	33	37	41	41
5	43	40	52	B	34	42	B	37	32	31	31	B	E B 56	B	E B 56	29	28	28	26	23	32	32	34	22
6	19	28	33	B	43	46	33	33	43	33	E B 56	B	E B 40	43	72	46	42	33	26	36	37	42	46	46
7	44	E B 33	32	B	32	34	43	34	34	E S 52	29	E S 60	36	36	41	33	33	29	27	32	39	34	35	43
8	60	44	71	41	59	27	33	29	32	26	43	B	B	B	B	B	29	E B 32	32	29	32	39	40	38
9	B	B	B	B	B	B	B	B	B	B	B	B	B	32	B	B	29	B	B	26	33	33	36	B
10	34	42	40	33	B	42	B	B	28	35	26	B	B	B	E S 56	B	B	B	37	23	B	E B 30	36	B
11	B	34	27	B	B	34	33	28	30	32	33	33	27	E B 50	E S 51	32	31	32	33	26	B	34	33	24
12	39	42	B	B	B	27	41	33	29	31	37	38	32	37	34	28	39	27	E B 30	33	23	38	35	27
13	30	B	42	40	42	38	B	B	B	33	33	33	32	B	B	16	17	E B 37	29	26	26	23	22	32
14	17	38	43	33	B	38	39	41	41	32	32	32	33	42	32	30	32	27	27	27	28	B	34	34
15	B	44	36	33	33	42	B	26	39	27	33	33	31	B	B	B	31	32	28	31	32	33	33	34
16	70	46	42	25	32	32	27	26	B	40	B	32	33	32	B	67	E B 55	43	32	26	21	26	32	26
17	32	32	39	32	26	33	37	35	33	37	28	E S 55	34	32	E S 59	43	29	E B 40	B	22	21	31	59	70
18	34	38	70	43	33	27	26	31	31	17	32	32	33	32	32	40	27	40	31	27	26	40	37	70
19	B	23	34	37	29	26	36	34	29	29	32	26	26	33	34	33	17	26	33	30	23	25	45	45
20	47	47	32	33	34	43	40	34	B	B	33	29	B	B	B	B	B	E B 33	32	B	28	36	41	37
21	41	B	B	34	28	40	34	32	32	33	34	28	E B 56	43	32	E B 56	B	B	B	41	B	71	27	29
22	33	B	42	37	27	B	40	27	33	32	33	34	33	27	E B 55	32	E B 54	B	90	20	E B 30	27	23	E B 30
23	32	38	36	29	26	27	28	42	41	E S 60	B	E S 53	33	28	B	27	E B 37	27	27	E B 31	26	22	25	E S 20
24	12	32	27	33	37	26	26	27	37	B	B	26	35	31	34	E B 57	27	27	16	E B 30	B	21	40	22
25	23	25	17	21	22	24	26	27	27	34	37	28	39	37	52	33	33	46	26	26	26	23	24	38
26	B	B	32	31	B	42	42	37	28	30	26	29	32	C	C	31	28	26	23	26	28	26	37	27
27	32	32	26	23	26	33	26	36	32	34	28	26	37	36	42	33	28	27	26	42	32	33	27	34
28	36	43	47	34	32	57	46	32	28	28	29	E B 50	E S 60	E S 57	E S 50	28	33	27	B	46	28	B	38	49
29	37	33	33	70	33	26	33	40	33	B	B	B	B	B	B	B	25	26	26	30	33	41	33	46
30	47	46	34	44	46	32	30	71	34	E B 40	B	36	B	27	E B 52	E B 50	B	B	33	33	29	33	59	70
31	42	37	27	46	44	36	34	42	37	26	31	39	32	B	B	29	32	A 27	B	23	38	37	38	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	26	26	28	23	24	29	25	28	26	25	23	23	23	20	19	24	26	26	25	29	27	29	31	29
MED	38	38	35	34	32	34	33	34	32	32	32	30	32	32	U 41	31	29	28	28	26	28	33	36	37
U Q	43	43	42	42	40	41	40	36	37	36	33	E 38	E 37	40	E 55	42	33	33	32	32	33	38	40	46
L Q	32	33	32	32	28	27	28	30	29	30	29	29	32	32	34	28	28	27	26	26	26	26	33	28

DEC.1992 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.1992 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	19	B	B	18	19	20	22	19	B	B	B	B	E S 53	B	B	18	B	16	19	15	24	25
2	10	9	15	B	19	24	24	24	19	19	19	19	19	B	B	19	16	18	19	19	16	20	19	24
3	8	9	9	9	9	15	14	19	B	B	23	18	19	16	B	25	32	E S 58	32	10	13	14	19	14
4	9	14	9	14	19	9	B	19	24	B	B	B	B	20	36	22	20	19	18	B	10	10	10	19
5	9	17	14	B	18	14	B	24	18	8	15	B	56	B	56	19	18	18	14	14	9	18	9	15
6	9	7	8	B	24	19	10	9	16	18	56	B	40	22	24	18	17	19	10	25	25	19	18	19
7	18	33	21	B	24	15	10	20	19	E S 52	19	E S 60	19	20	19	16	18	18	18	20	10	7	7	10
8	9	8	55	8	9	10	16	18	19	19	20	B	B	B	B	B	18	32	18	17	10	9	18	18
9	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	B	20	B	B	16	14	8	17	B
10	23	31	19	9	B	19	B	B	18	19	24	B	B	B	E S 56	B	B	B	23	17	B	30	18	B
11	B	26	24	B	B	16	22	20	19	19	18	19	20	50	E S 51	19	18	18	14	14	B	18	16	17
12	18	24	B	B	B	19	24	16	14	26	19	19	19	19	19	19	19	18	30	30	18	16	18	14
13	18	B	25	25	24	20	B	B	B	18	19	19	24	B	B	14	15	37	18	14	18	15	19	15
14	14	16	14	9	B	19	19	24	24	19	15	19	18	20	19	18	16	18	15	13	14	B	18	8
15	B	9	10	6	13	31	B	19	18	18	19	17	18	B	B	B	18	18	17	10	18	16	18	9
16	17	18	18	9	19	19	19	24	B	25	B	19	20	19	B	50	55	18	20	19	16	20	14	10
17	9	14	15	15	10	10	9	9	18	16	20	E S 55	20	20	E S 59	24	19	40	B	14	9	19	19	18
18	16	16	9	9	18	9	8	10	17	13	15	20	19	19	19	19	17	18	17	18	9	10	18	14
19	B	19	15	16	9	14	19	16	17	17	15	16	24	18	18	16	14	16	16	15	10	10	24	17
20	17	9	9	14	18	18	18	17	B	B	20	18	B	B	B	B	B	33	18	B	10	24	16	20
21	19	B	B	10	14	19	16	16	16	15	19	16	56	30	20	56	B	B	B	13	B	13	14	15
22	18	B	14	24	10	B	19	20	13	16	18	18	19	19	55	20	54	B	55	18	30	9	16	30
23	10	10	14	19	15	15	15	19	20	E S 60	B	E S 53	24	19	B	20	37	20	25	31	19	14	14	20
24	9	10	8	9	10	19	15	16	15	B	B	25	24	19	19	57	24	16	14	30	B	15	14	15
25	18	16	10	10	10	10	10	9	20	20	10	20	20	20	24	24	24	19	16	10	9	9	15	14
26	B	B	19	20	B	19	24	18	15	15	18	19	25	C	C	18	19	19	15	16	16	13	19	14
27	24	14	14	14	10	14	14	15	15	18	16	16	18	19	16	19	19	16	16	14	10	19	9	16
28	25	9	15	10	7	15	15	17	14	16	16	50	E S 60	E S 57	E S 50	20	14	16	B	14	10	B	19	10
29	10	19	13	19	10	19	11	20	24	B	B	B	B	B	B	B	19	16	19	10	16	18	10	18
30	10	9	18	19	15	9	9	19	19	40	B	25	B	21	52	50	B	B	17	20	14	14	13	15
31	10	10	9	9	18	16	17	11	14	19	18	31	30	B	B	20	16	19	B	15	19	9	9	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31
MED	17	16	15	15	18	18	18	19	19	19	19	20	24	20	53	20	19	18	18	16	16	15	17	15
U Q	B 23	B 26	19	B	B 24	19	B 24	20	B 24	B 52	B	B	B	B	B	B 57	B 37	B 37	B 32	20	19	19	19	19
L Q	10	9	10	9	10	14	14	16	16	17	18	19	19	19	20	19	17	18	16	14	10	10	14	14

DEC.1992 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

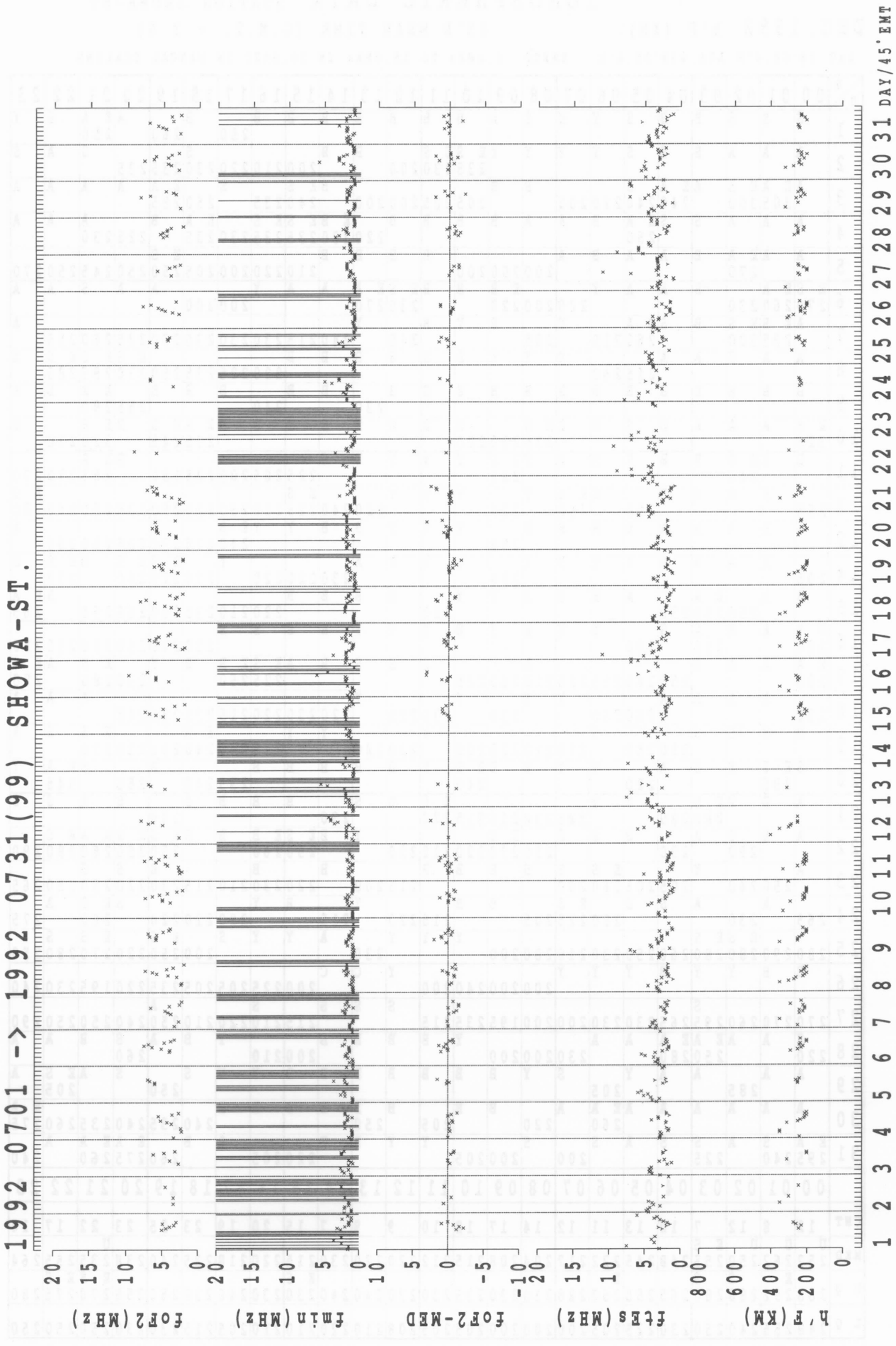
IONOSPHERIC DATA STATION SHOWA-ST.

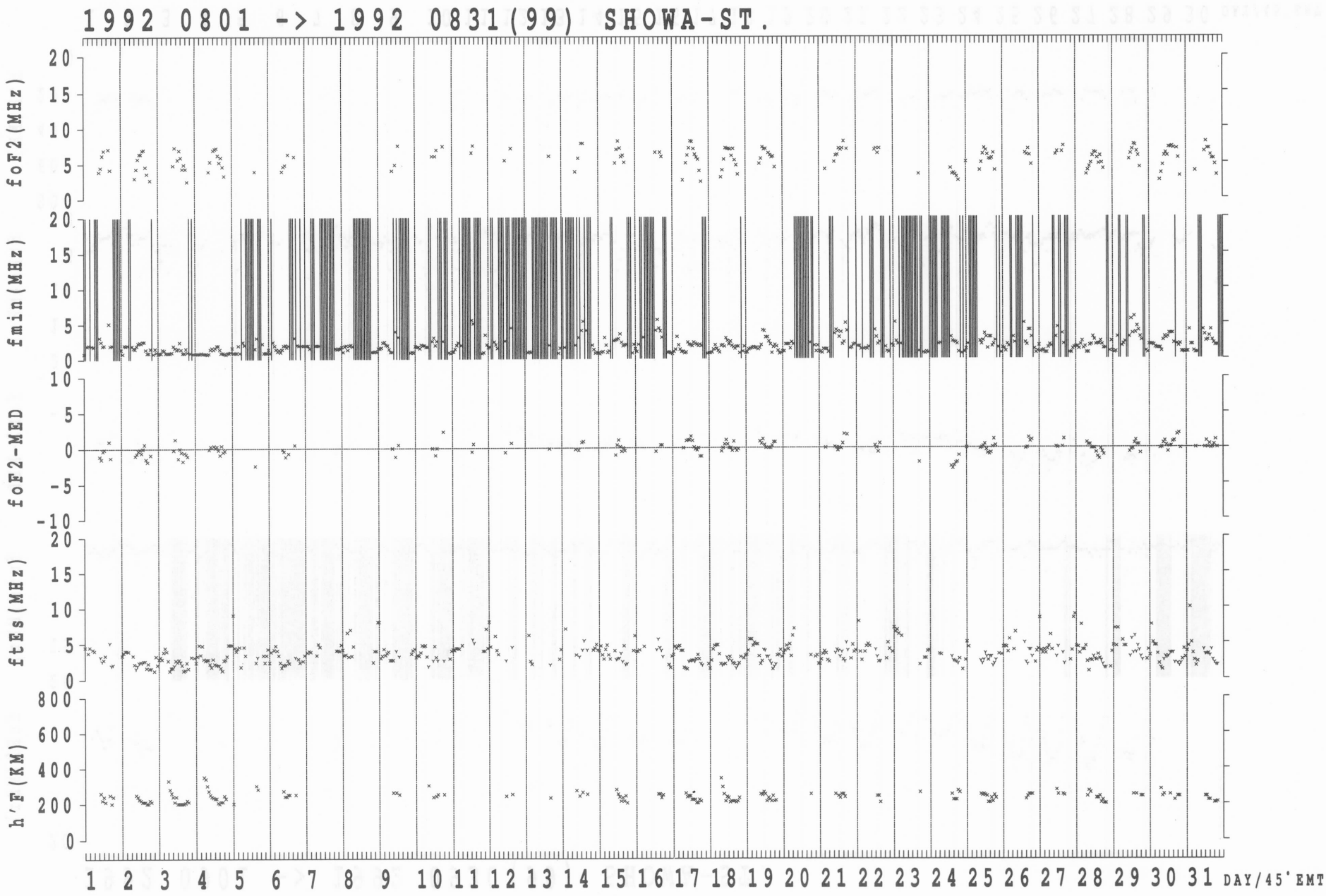
DEC.1992 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

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	S	S	S	B	B	S	Y	S	S	A	B	B	B	B	B	B	B	250	B	260	A	E A 250	S	Y
2	A	A	A	B	S	S	Y	Y	Y	Y	E S 235	E S 230	200	B	B	200	210	220	S 230	235	235	S	A	S
3	A	E A 305	E S 300	A	E A 240	S 240	220	200	B	B	205	205	200	200	B	E S 240	235	S	250	E A 285	A	A	A	A
4	A	A	A	S	S	E A 250	B	A	A	B	B	B	B	220	E B 230	E S 235	E S 235	230	E A 235	B	225	A 230	A	A
5	A	A	E A 270	B	A	A	B	A	200	200	200	B	B	B	B	210	220	200	205	E S 250	250	245	250	270
6	E S 270	E A 260	230	B	A	A	Y	220	200	E B 220	B	B	E S 230	E A 270	A	A	Y	200	200	A	A	S	A	A
7	A	E B 295	E S 300	B	S	E A 260	215	Y	205	B	Y	B	240	Y	240	215	230	230	230	270	225	260	255	A
8	A	A	S	A	A	215	240	Y	Y	Y	S	B	B	B	B	B	220	225	235	250	E S 270	E S 295	E S 285	A
9	B	B	B	B	B	B	B	B	B	B	B	B	B	230	B	B	240	B	B	S	255	E A 290	S	B
10	E S 325	A	A	A	B	S	B	B	E S 235	230	S 220	B	B	B	S	B	B	B	E A 275	E S 245	B	E B 320	270	B
11	B	S	E S 240	B	B	S	S	S	Y	E S 240	Y	Y	Y	B	S	225	205	205	225	180	B	E A 265	270	270
12	225	S	B	B	B	250	S	E S 250	Y	220	Y	Y	Y	220	240	E S 225	210	250	220	250	235	250	240	E S 280
13	S	B	S	A	A	S	B	B	B	200	Y	Y	Y	B	B	Y	Y	E B 240	215	230	235	250	260	A
14	295	A	A	A	B	S	Y	Y	Y	200	Y	Y	Y	A	230	220	220	Y	220	E S 210	E S 260	B	E S 270	S
15	B	A	250	E A 250	230	A	B	Y	S	Y	Y	250	S	B	B	B	220	210	235	260	265	255	A	E A 265
16	E A 280	A	A	A 255	S	260	Y	Y	B	Y	B	Y	Y	Y	B	S	S	S	230	240	250	250	255	250
17	E A 280	A	A	A	255	240	200	220	A 210	260	225	S	S	S	B	A	E S 225	E B 250	B	Y	230	E S 285	A	E S 280
18	230	A	A	A	A	260	250	Y	Y	230	Y	230	220	Y	220	230	220	215	230	235	245	A	A	A
19	B	Y	S	S	250	250	S	270	210	220	200	Y	230	220	Y	Y	220	240	E S 240	215	230	E S 270	S	A
20	S	E S 285	S	S	A	220	Y	Y	B	B	E S 240	Y	B	B	B	B	B	235	240	B	255	S	E A 345	Y
21	A	B	B	E S 280	280	Y	Y	225	230	215	215	E S 220	B	S	230	B	B	B	B	230	B	A	S	S
22	A	B	S 290	A	230	B	S	S	210	E S 270	220	210	220	Y	B	E S 250	E B 260	B	S	E S 250	E B 250	E A 260	E S 280	290
23	A	250	240	Y	205	205	E S 260	S 200	S	B	B	B	215	200	B	220	B 230	210	215	B 230	S 220	S 250	250	265
24	265	A	230	A	S	S	200	E S 225	205	B	B	215	220	Y	215	B	Y	200	220	220	B	E S 260	A	275
25	280	290	E S 280	E S 280	260	250	230	210	200	200	Y	Y	Y	230	A	Y	Y	S	200	E S 250	220	E S 270	S 280	250
26	B	B	Y	Y	B	Y	Y	Y	200	200	240	200	Y	C	C	200	225	205	205	235	220	195	230	240
27	270	270	260	S 295	265	230	230	200	200	195	235	215	S	S	S	215	S 210	220	210	A 250	240	250	250	290
28	S 220	A	A	E A 250	E A 280	A	A	230	200	200	Y	B	B	B	B	200	210	Y	B	A	S 260	B	A	A
29	A	A	285	A	A	Y	205	S	Y	B	B	B	B	B	B	B	Y	Y	S	250	S	A	E S 205	A
30	A	A	A	A	A	A	E A 260	A	220	B	B	205	B	S 250	B	B	B	B	240	235	240	235	260	E A 275
31	E A 295	S 240	A	S 225	S	A	S	200	S	200	205	Y	Y	B	B	220	205	A	B	260	E A 275	E A 260	A	240
	00	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	12	7	10	13	11	12	14	17	12	10	9	9	7	15	20	19	23	25	23	22	17	14
MED	U 252	U 262	U 250	E S 255	248	245	222	212	204	208	215	212	220	220	230	215	220	218	225	240	238	U 235	255	264
U Q	288	E 292	S 288	S 280	265	255	E 250	228	210	230	235	230	230	240	240	E S 230	230	240	235	250	255	E S 270	E S 275	280
L Q	248	255	240	250	230	225	205	200	200	200	205	205	208	210	220	210	210	205	215	230	230	250	250	250

DEC.1992 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN


1992 0701 -> 1992 0731(99) SHOWA-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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fmin(MHz)
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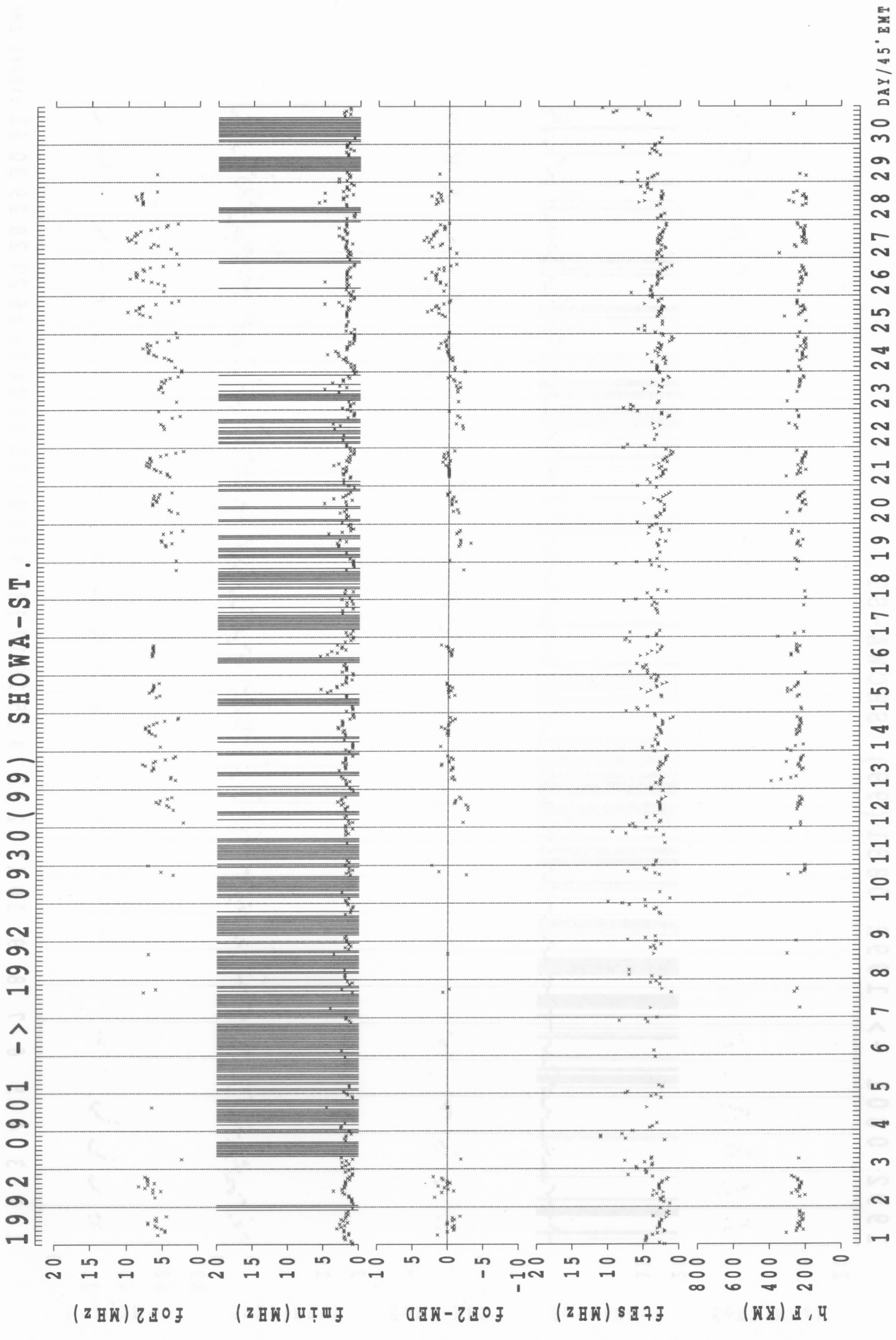
DAY/45'EMT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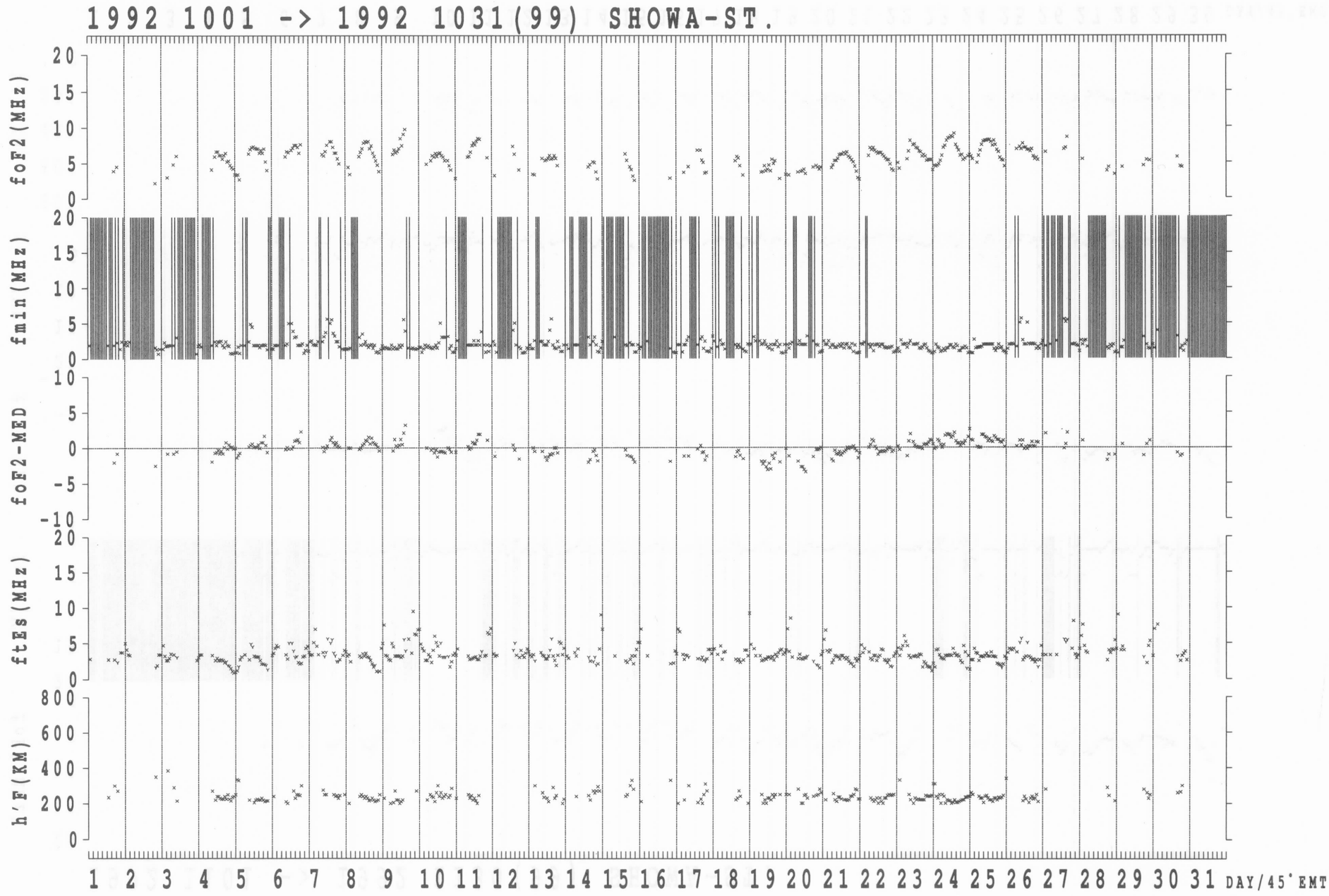
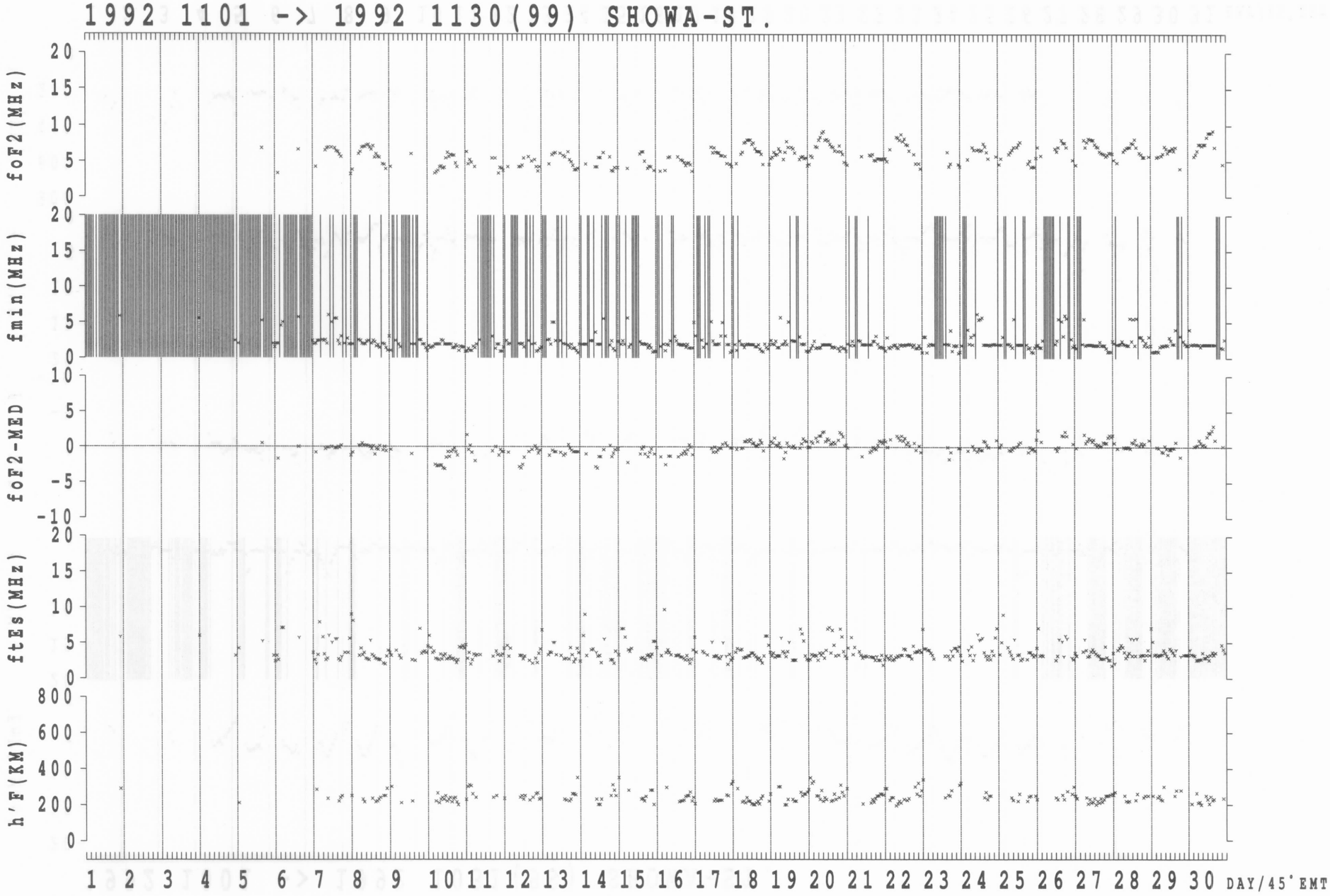
ftEs (MHz)
h'F (KM)
DAY/45' EMT


1992 1001 -> 1992 1031(99) SHOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45°EMT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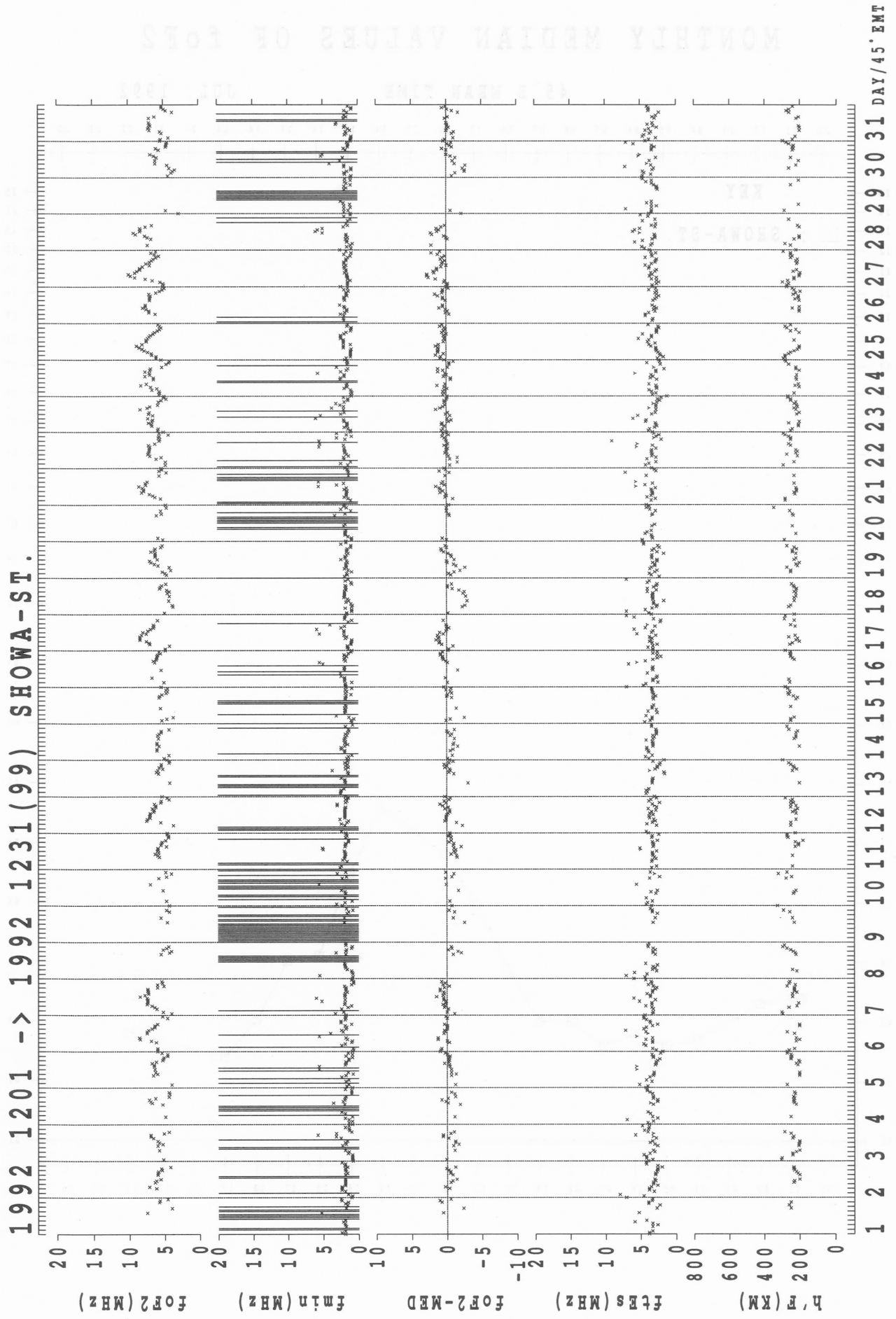
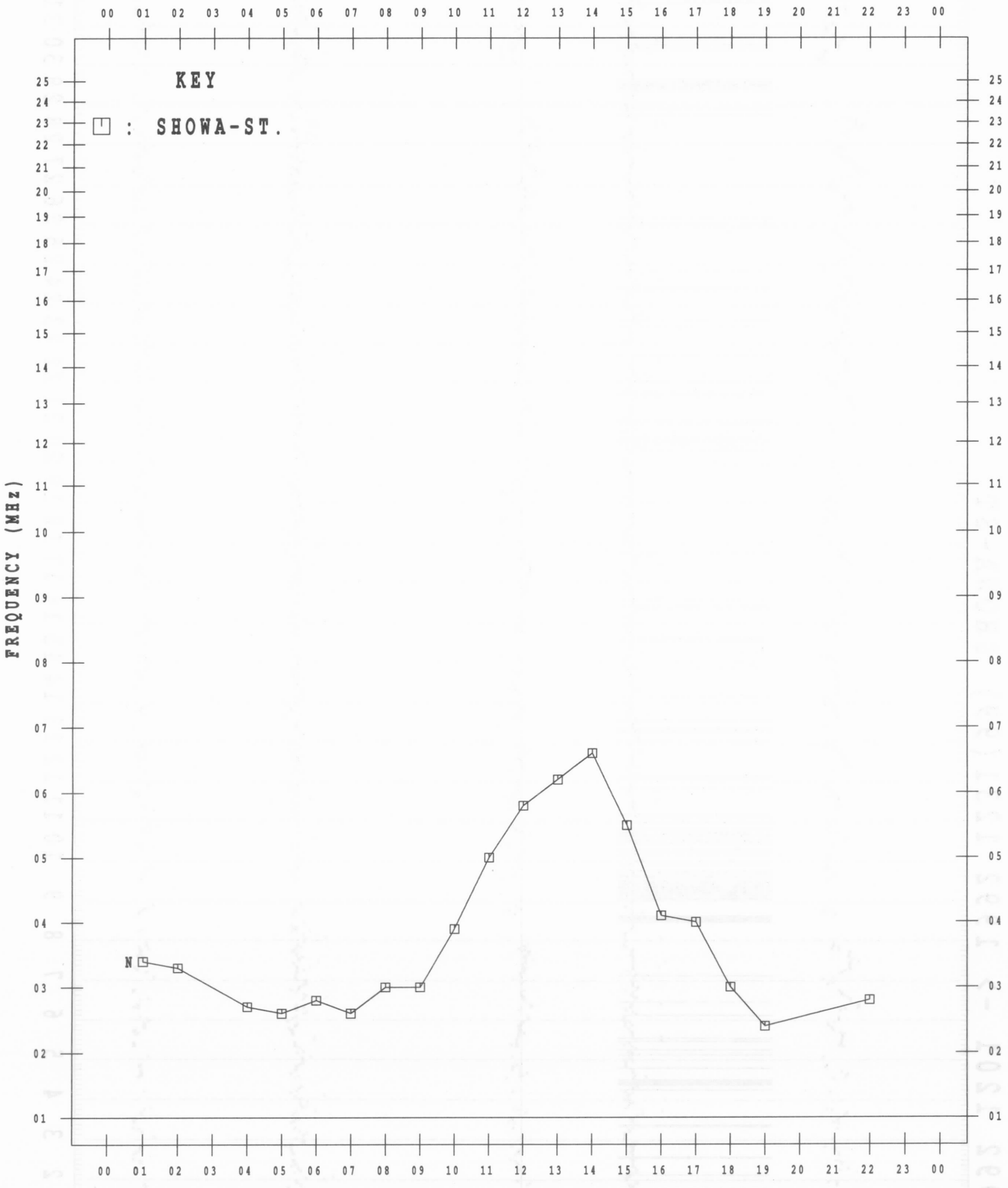
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT


1992 1201 -> 1992 1231(99) SHOWA-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

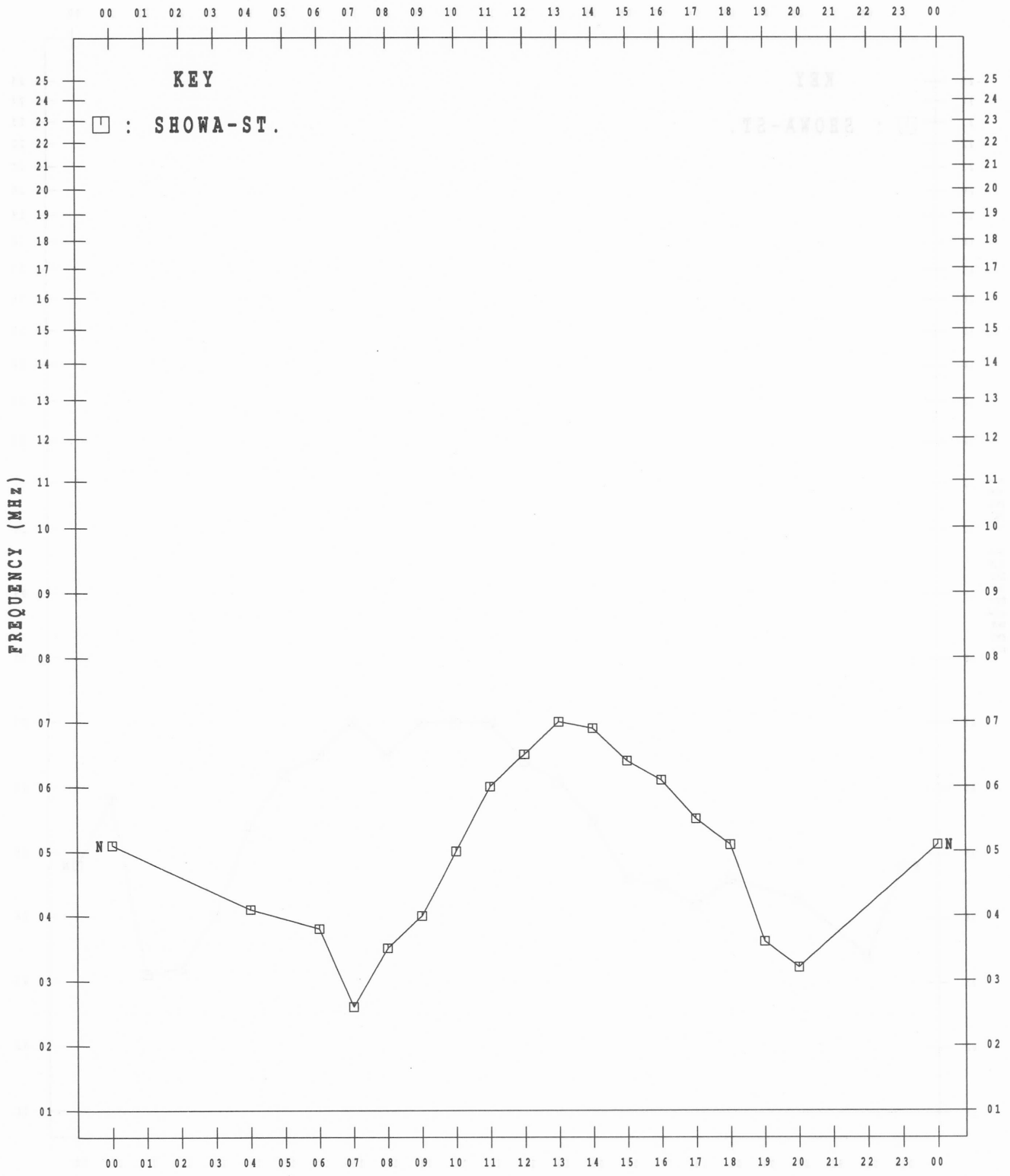
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUL. 1992



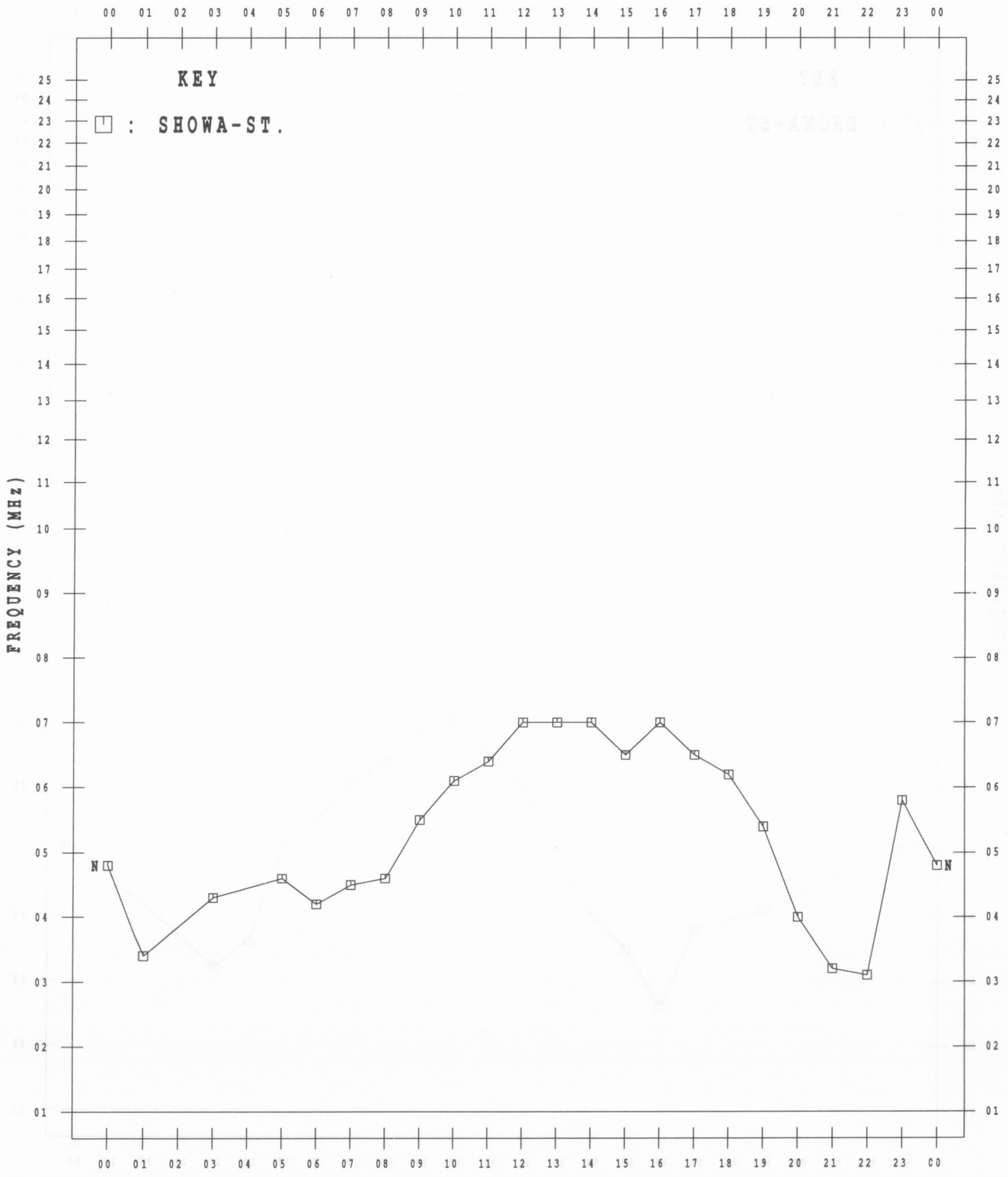
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME AUG. 1992



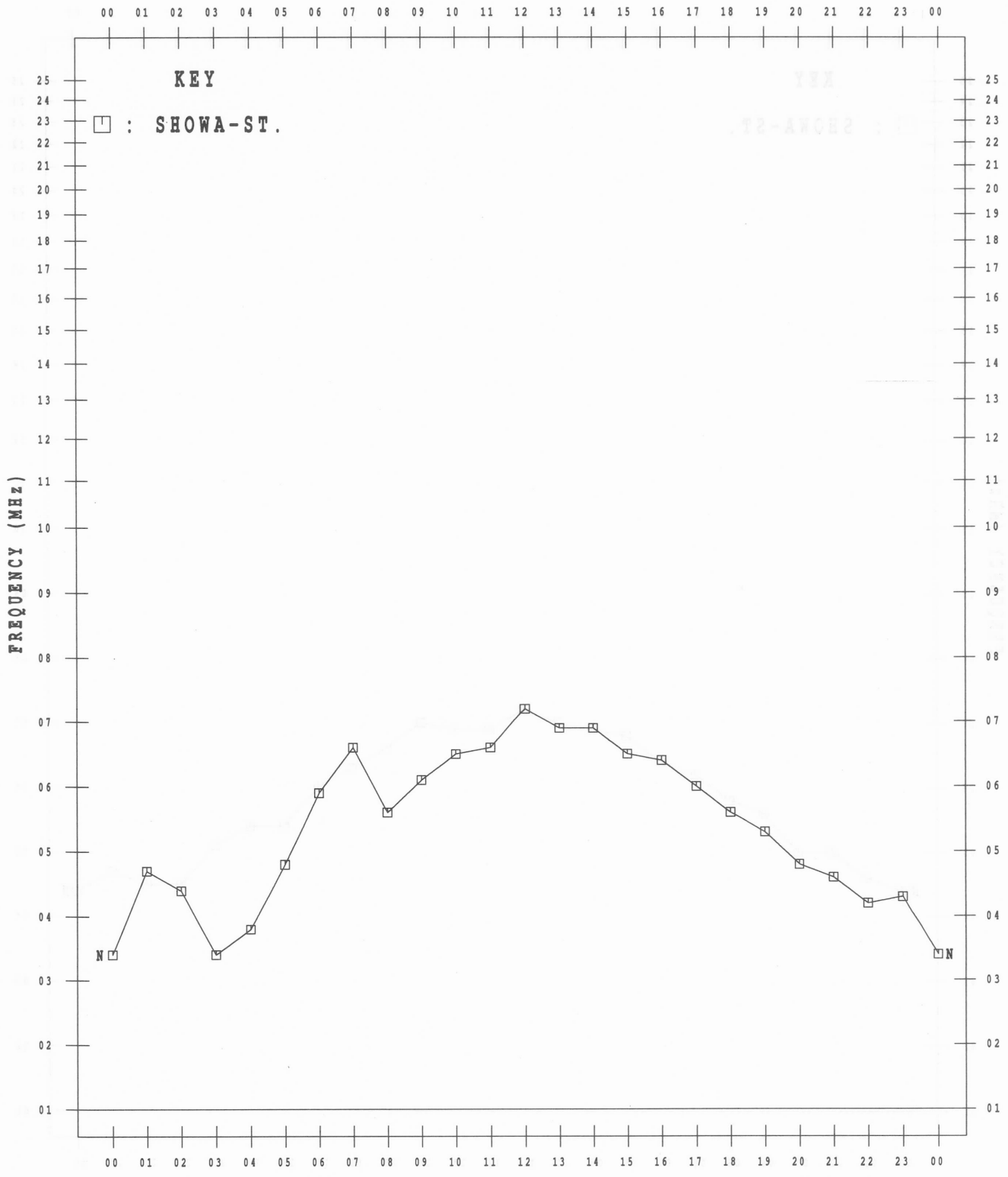
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME SEP. 1992



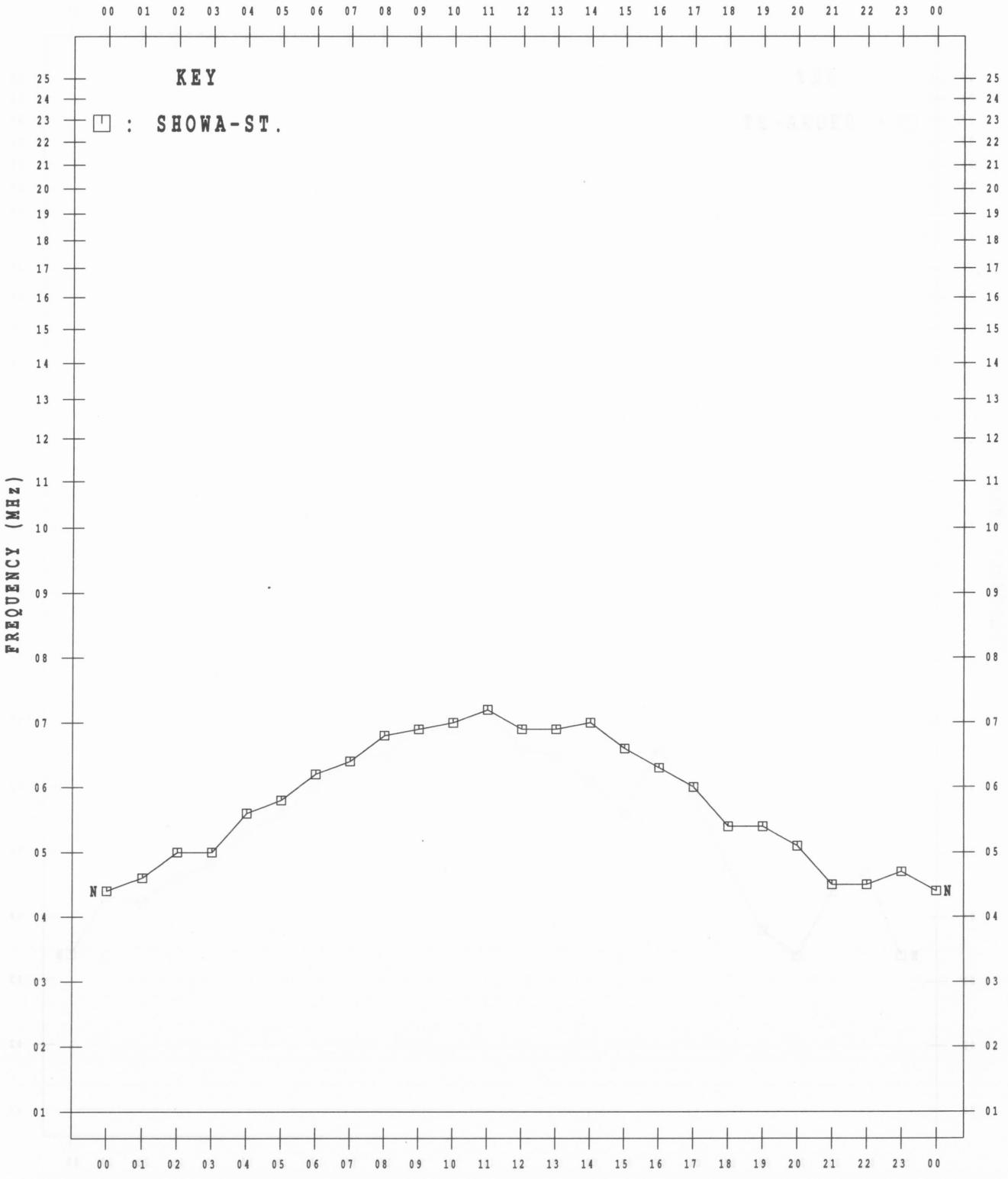
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME OCT. 1992



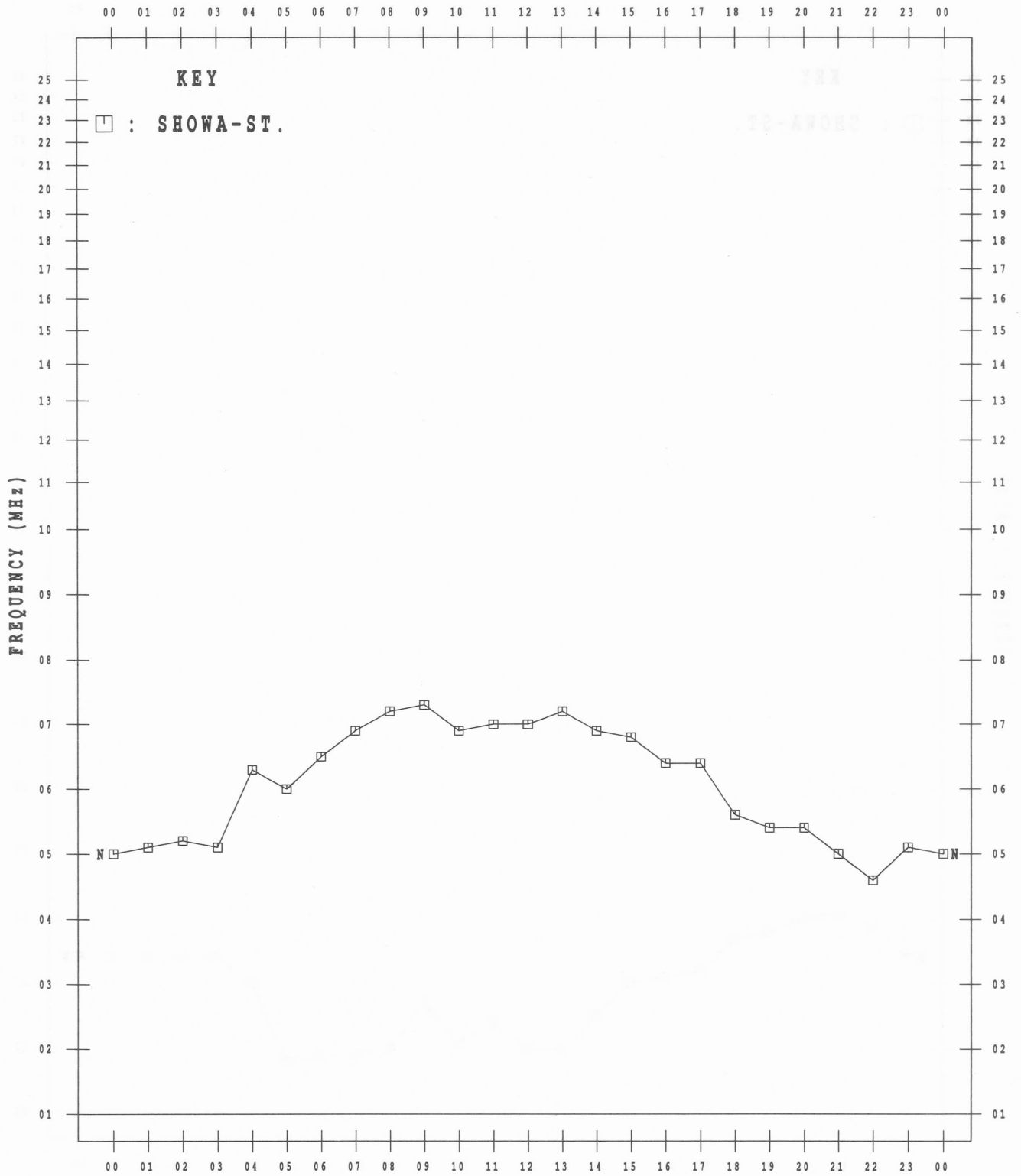
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME NOV. 1992



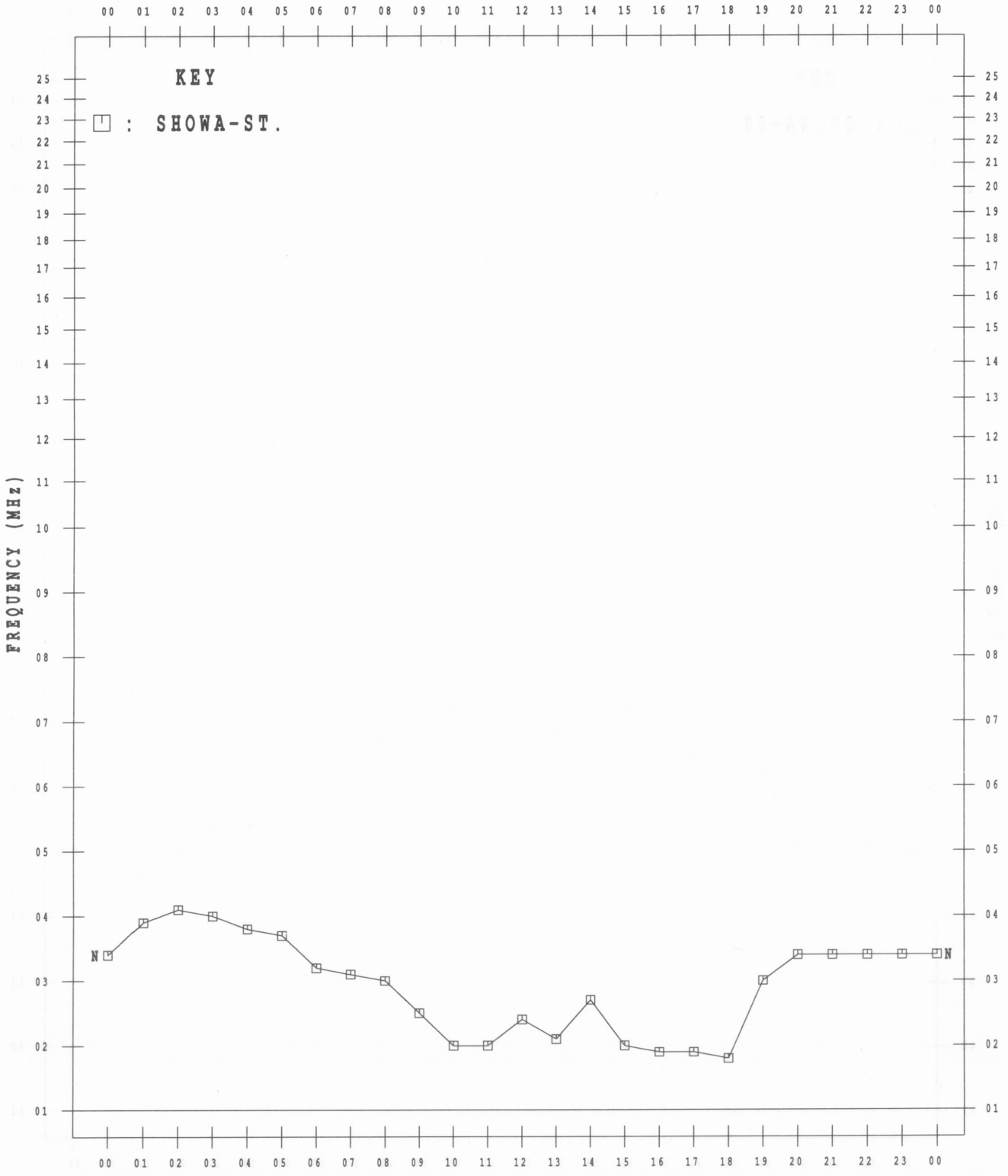
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME DEC. 1992



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JUL. 1992



MONTHLY MEDIAN VALUES OF ftEs

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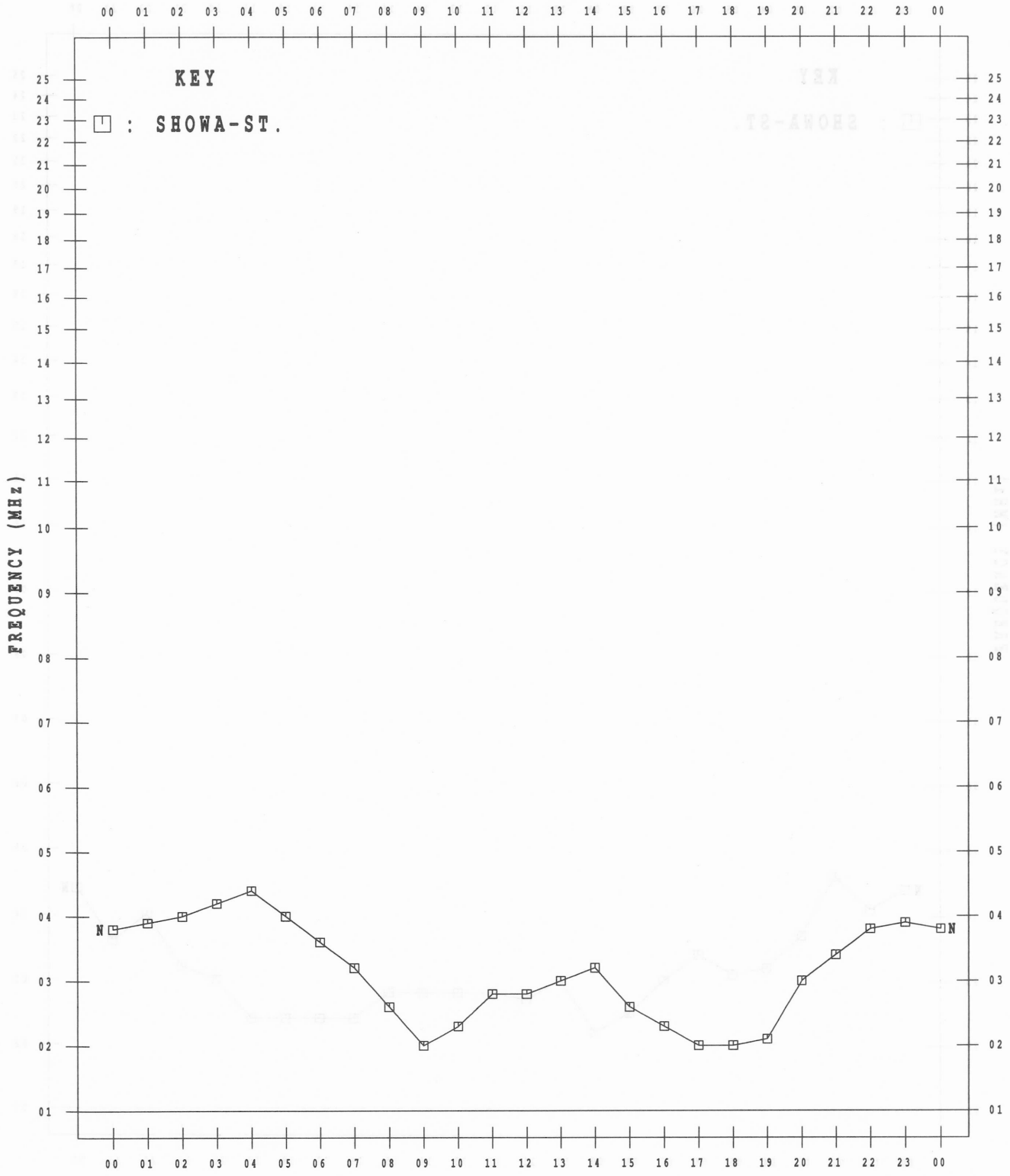

MONTHLY MEDIAN VALUES OF ftEs

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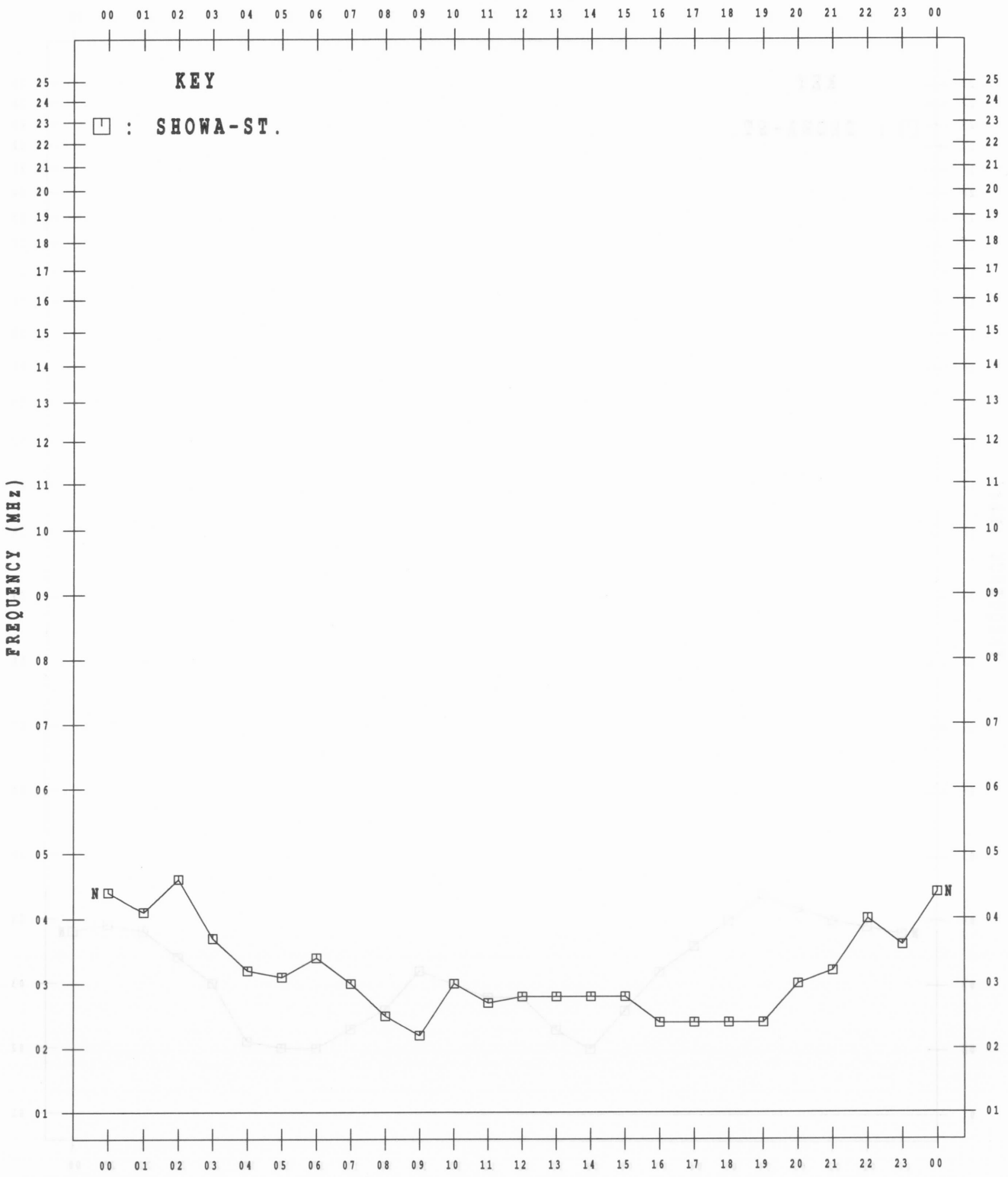

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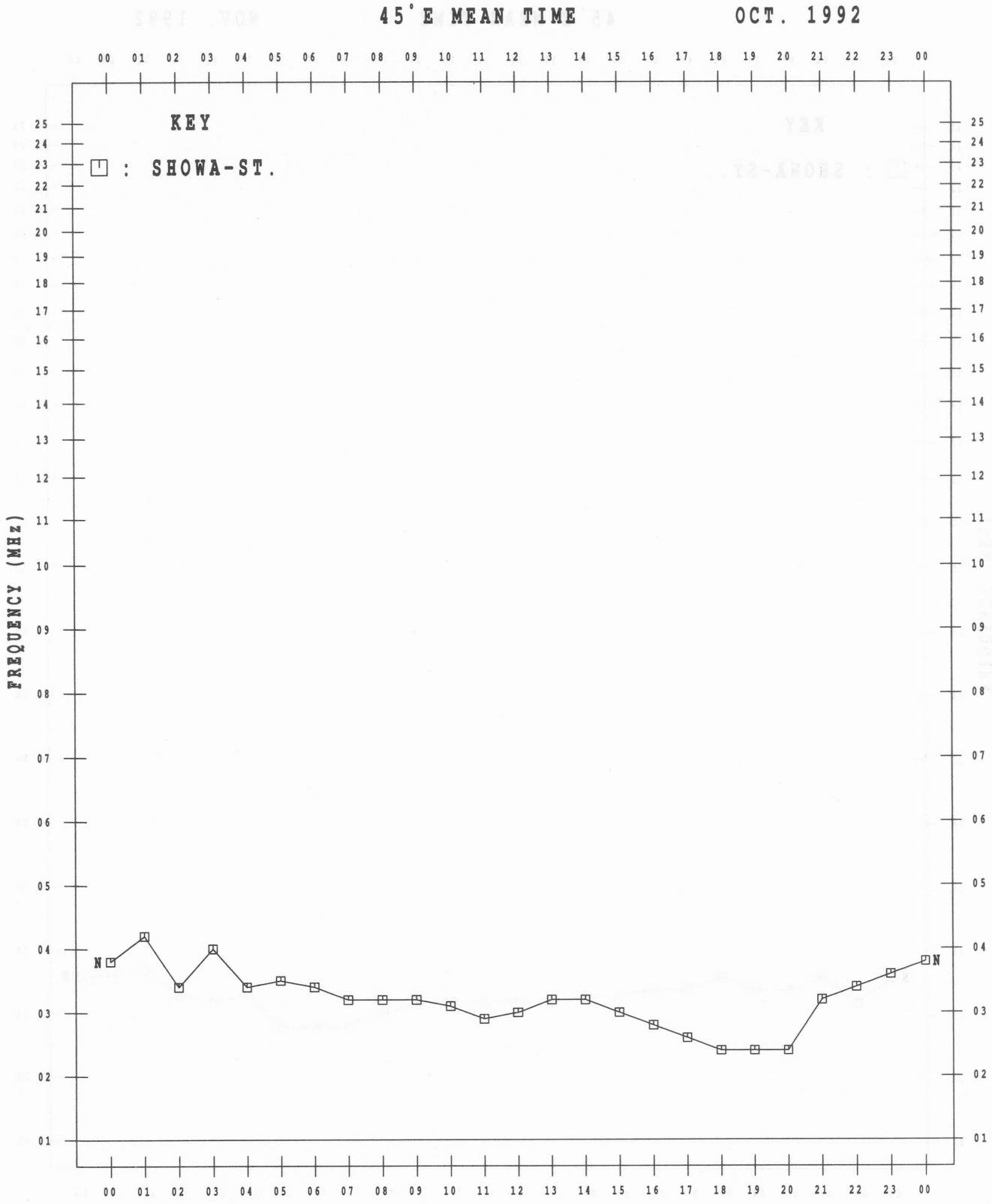

MONTHLY MEDIAN VALUES OF ftEs

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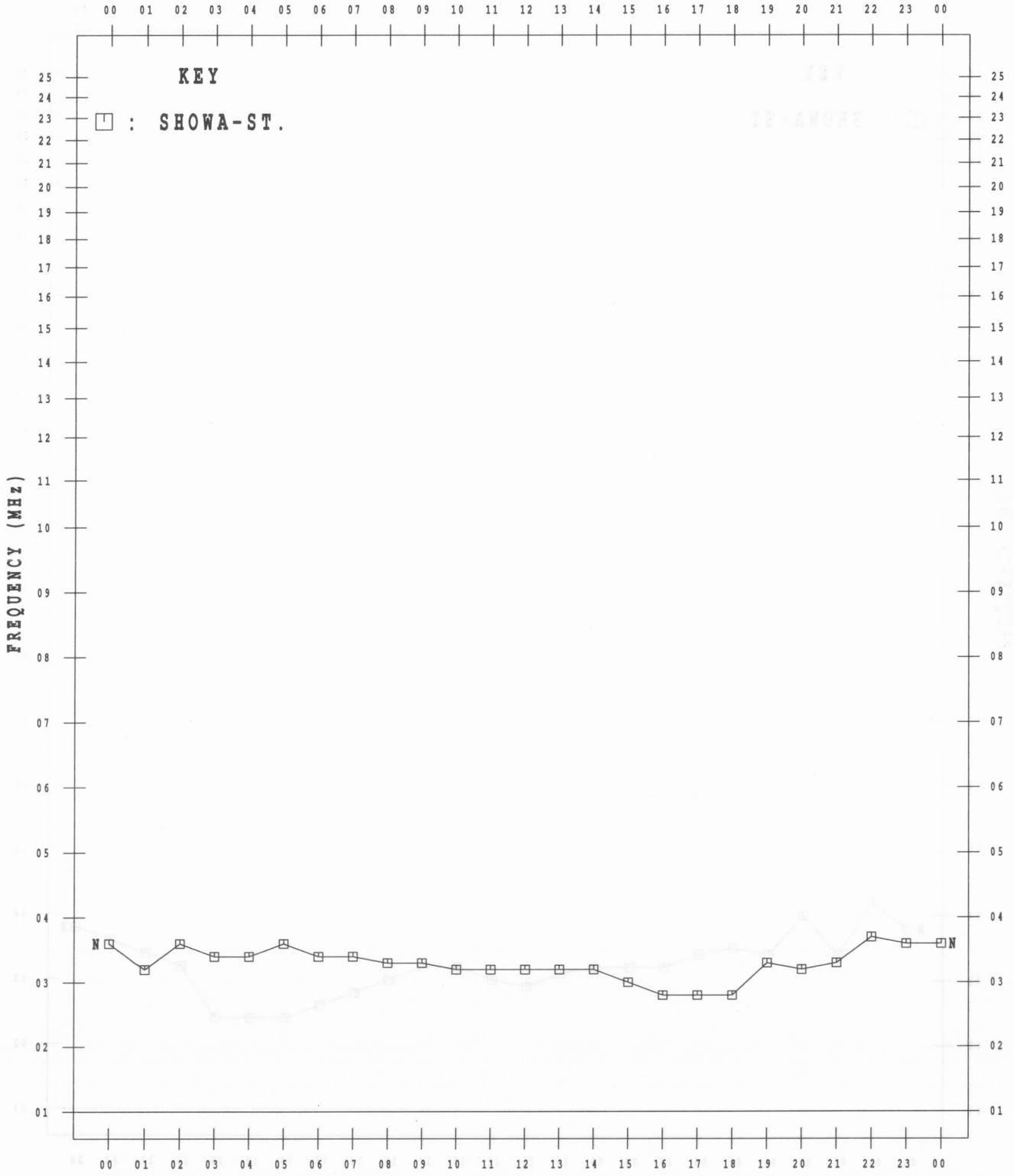

MONTHLY MEDIAN VALUES OF ftEs

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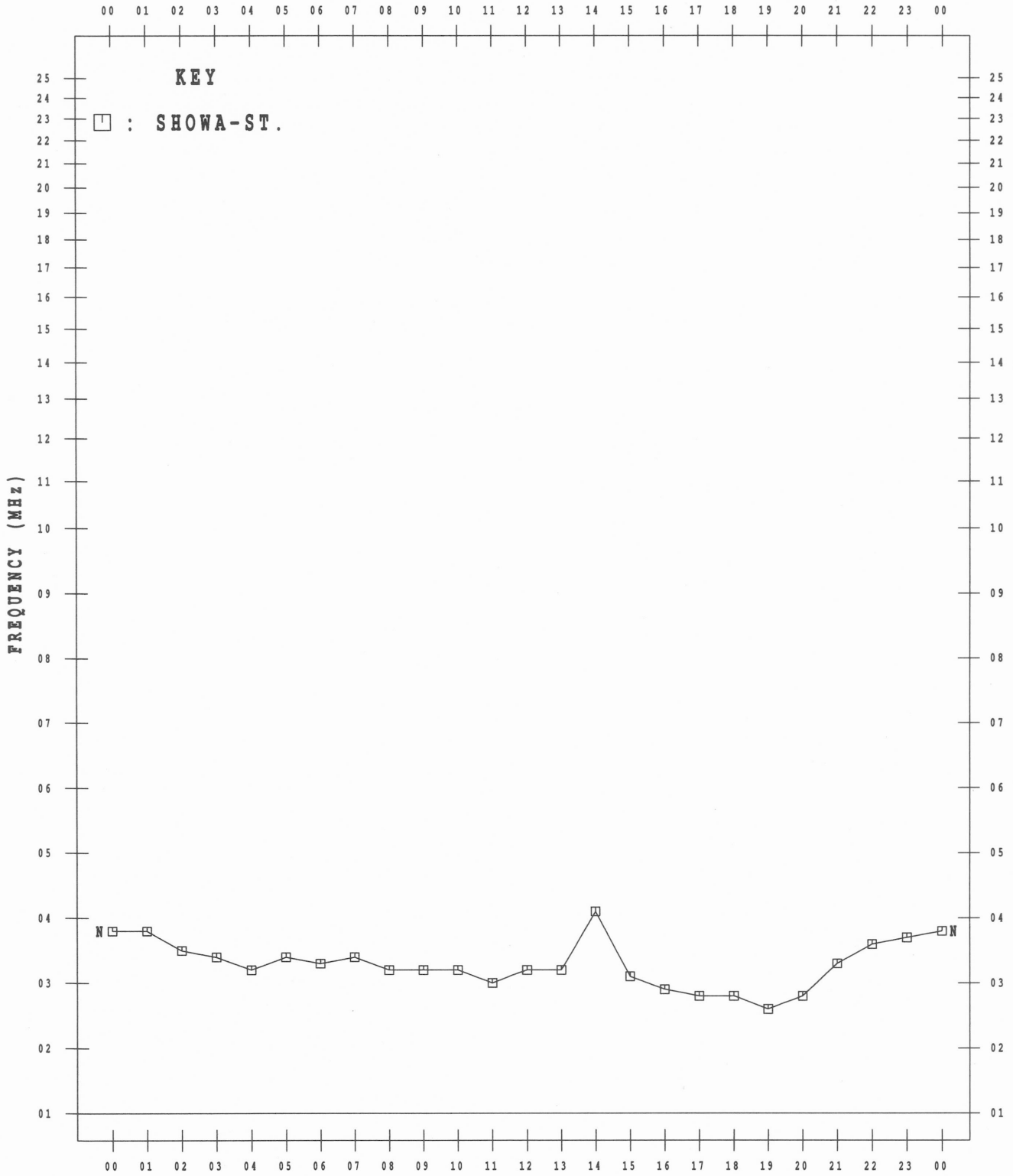

IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.—59 July 1992—December 1992 (Not for Sale)

昭和基地電離層資料（南極）

（1992年7月—1992年12月）

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