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ION. ANT.—57

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

July 1991—December 1991

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 1991. 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 Nankyoku

JUL. 1991 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	A	B	A	B	X 59	X 76	X 76	X 86	O X 96	X 76	X 80	X 68	B	40	B	B	O X 51	A
2	A	A	A	A	A	A	X 56	X 67	X 54	B	B	B	B	82	80	B	140	O X 106	74	46	B	B	B	B
3	B	B	A	A	S	A	A	A	B	B	B	B	B	B	O X 86	O X 86	X 110	X 88	70	A	A	B	A	A
4	A	A	A	A	A	B	A	A	A	A	A	65	B	O X 90	X 106	X 84	X 84	X 88	72	X 41	B	B	A	A
5	S	40	X 62	R	X 57	X 58	O X 63	X 71	80	73	72	78	X 98	X 105	X 108	X 84	X 91	X 88	X 62	42	B	B	B	B
6	A	A	F	O X 51	A	S	A	70	71	72	83	O X 91	X 90	O X 116	O X 112	105	X 116	104	F	50	B	B	B	A
7	A	A	A	A	A	S	S	A	B	B	X 90	X 100	O X 119	S	X 120	X 106	X 86	X 86	38	B	B	B	B	A
8	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	X 106	B	B	A	A	B	B	B
10	B	A	A	B	B	A	B	B	B	B	B	B	S	B	X 96	B	B	B	B	B	B	A	A	A
11	A	A	A	A	A	A	B	B	O X 56	A	B	B	B	B	B	B	X 126	O X 103	X 90	B	A	B	A	A
12	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	105	X 108	X 108	X 68	B	A	A	A
13	A	A	A	A	A	A	S	A	S	B	B	B	B	A	B	X 105	F	F	F	O X 85	A	A	A	A
14	A	B	A	A	S	B	B	A	A	B	B	B	B	B	66	B	X 65	A	B	A	S	A	S	A
15	A	A	A	B	A	B	B	A	B	B	B	B	B	B	B	B	X 68	O X 56	B	B	B	B	B	A
16	A	A	A	A	A	A	A	A	A	A	47	72	X 92	X 92	X 94	F	X 88	82	X 86	38	A	A	A	A
17	A	A	A	A	A	A	B	B	B	B	B	A	B	B	B	B	F	F	S	A	S	X 38	A	B
18	A	A	A	A	A	A	A	A	A	B	B	B	B	X 62	X 73	X 84	62	O X 50	X 42	X 31	A	A	A	A
19	B	A	A	A	B	A	A	B	B	B	B	B	B	X 80	X 100	X 96	X 120	O X 102	S	A	A	S	A	A
20	A	A	B	A	A	S	A	A	S	A	B	B	B	B	B	S	B	X 72	60	A	A	A	A	A
21	A	S	B	B	B	B	B	B	A	A	B	B	B	B	B	75	X 90	118	S	A	B	A	A	S
22	A	A	A	A	A	B	B	A	A	B	B	B	U S 76	B	S	78	X 84	S	B	B	B	A	A	A
23	A	A	A	B	A	A	39	B	48	A	B	B	O X 74	X 100	X 100	X 96	O X 96	S	B	S	A	A	A	A
24	A	A	A	A	A	A	A	F	60	70	O X 53	B	O X 78	X 84	100	X 96	F	82	S	S	A	A	A	A
25	A	A	A	A	A	A	45	57	54	45	B	70	B	X 102	X 101	X 96	91	F	X 78	S	B	A	S	A
26	A	S	A	R	A	A	A	52	A	B	A	71	86	X 96	S	X 94	X 84	O X 84	70	B	B	B	A	A
27	A	O X 40	O X 38	O X 44	A	S	S	A	64	A	A	78	O X 106	X 108	X 108	X 96	X 80	O X 88	48	34	B	S	A	A
28	A	X 39	A	A	A	A	S	A	X 42	54	68	84	X 90	X 92	X 100	X 96	X 86	S	O X 75	O X 41	30	B	B	O X 24
29	A	A	A	S	A	A	A	X 68	70	F	X 63	X 84	O X 100	X 110	O X 131	X 115	X 91	X 80	F	X 51	O X 26	B	A	A
30	A	A	A	A	X 40	A	A	R	B	X 5	X 56	68	O X 76	X 96	O X 106	X 102	X 96	78	X 54	O X 56	B	A	S	A
31	A	A	B	A	A	A	X 60	61	62	66	72	X 82	X 90	X 106	X 112	X 110	X 90	X 90	X 79	50	27	S	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		3	2	2	2	1	5	7	11	7	10	13	14	17	20	20	25	21	16	14	3	1	1	1
MED		40	50	48	48	58	56	67	60	66	66	78	90	96	100	96	90	88	71	44	27	38	51	24
U Q		40					62	70	70	72	72	84	98	106	108	104	106	102	78	51	30			
L Q		39					42	57	54	45	56	70	76	85	95	84	84	79	57	40	26			

IONOSPHERIC DATA STATION Nankyoku

JUL. 1991 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	A	B	A	B	53	F 62	70	80	90	F 70	74	62	B	F 34	B	B	45	A
2	A	A	A	A	A	A	50	45	48	B	B	B	B	F 76	F 74	B	F	100	F 67	F 40	B	B	B	B
3	B	B	A	B	S	A	A	A	B	B	B	B	B	B	80	D S 80	104	82	F 60	A	A	B	A	A
4	A	A	A	A	A	B	A	A	A	A	A	F 55	B	84	100	78	78	J R 82	F 63	34	B	B	A	A
5	S	F 34	46	R	45	44	57	65	F 70	F	F 64	F 72	92	99	102	78	85	82	J R 56	F 35	B	B	B	B
6	A	A	F 32	U S 45	A	S	A	F 60	F 62	F 64	J F 77	U R 85	84	110	106	F 100	110	F 96	F	F 42	B	B	B	A
7	A	A	A	A	A	S	S	A	B	B	84	94	113	S	114	100	80	80	F 32	B	B	B	B	A
8	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	100	B	B	A	A	B	B	B
10	B	A	A	B	B	A	B	B	B	B	B	B	S	B	90	B	B	B	B	B	B	A	A	A
11	A	A	A	A	A	A	B	B	U R 50	A	B	B	B	B	B	B	120	97	84	B	A	B	A	A
12	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	F 95	J S 102	102	62	B	A	A	A
13	A	A	A	A	A	A	S	A	S	B	B	B	B	A	B	J R 99	F	F	F	79	A	A	A	A
14	A	B	A	A	S	B	B	A	A	B	B	B	B	B	F 41	B	59	A	B	A	S	A	S	A
15	A	A	A	B	A	B	B	A	B	B	B	B	B	B	B	B	62	D S 50	B	B	B	B	B	A
16	A	A	A	A	A	A	A	A	A	A	F 41	F 66	86	J S 86	88	F	J S 82	F 76	80	F 32	A	A	A	A
17	A	A	A	A	A	A	B	B	B	B	B	A	B	B	B	B	F	F	S	A	S	J R 32	A	B
18	A	A	A	A	A	A	A	A	A	B	B	B	B	56	67	78	F 56	44	36	25	A	A	A	A
19	B	A	A	A	B	A	A	B	B	B	B	B	B	74	94	90	J S 114	96	S	A	A	S	A	A
20	A	A	B	A	A	S	A	A	S	A	B	B	B	B	B	S	B	66	F 54	A	A	A	A	A
21	A	S	B	B	B	B	B	B	A	A	B	B	B	B	B	F 65	84	99	S	A	B	A	A	S
22	A	A	A	A	A	B	B	A	A	B	B	B	70	B	S	F 72	78	S	B	B	B	A	A	A
23	A	A	A	B	A	A	F 33	B	F 42	A	B	B	68	94	94	90	90	S	B	S	A	A	A	A
24	A	A	A	A	A	A	A	F	F 46	F	U R 47	B	72	78	F 94	90	F	F 76	S	S	A	A	A	A
25	A	A	A	A	A	A	F 35	F 48	F 45	F 38	B	F 60	B	96	J S 95	90	F 85	F	72	S	B	A	S	A
26	A	S	A	R	A	A	A	F 40	A	B	A	F 65	F 80	90	S	88	78	78	F 64	B	B	B	A	A
27	A	34	32	38	A	S	S	A	F 58	A	A	F 72	U S 100	102	102	90	74	82	F 42	F 28	B	S	A	A
28	A	33	A	A	A	A	S	A	36	F 48	F 62	F 78	84	86	94	90	80	S	69	35	24	B	B	18
29	A	A	A	S	A	A	A	62	F 62	F	57	78	94	104	125	106	85	74	F	45	20	B	A	A
30	A	A	A	A	34	A	A	R	B	44	50	F 62	70	90	100	96	90	F 72	48	U S 50	B	A	S	A
31	A	A	B	A	A	A	54	F 55	F 55	F 60	F 66	76	84	100	106	104	84	84	73	F 44	F 21	S	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		3	3	2	2	1	5	7	11	5	10	13	14	17	20	20	24	21	16	14	3	1	1	1
MED		34	32	42	40	44	50	55	50	48	60	72	84	90	94	90	84	82	64	38	21	32	45	18
U Q		34	46				56	62	62	62	66	78	92	100	102	98	92	96	72	45	24			
L Q		33	32				34	45	45	41	50	62	70	79	89	78	78	73	51	34	20			

JUL. 1991 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

JUL. 1991 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	43	27	44	44	44	31	25	B	37	B	E B 30	E B 29	E B 30	E B 24	E B 23	E B 20	E B 29	E B 25	B	E B 20	B	B	E B 40	30
2	31	33	33	34	34	32	E B 30	E B 30	31	B	B	B	B	E B 50	E B 30	B	E B 27	E B 30	E B 29	E B 30	B	B	B	B
3	B	B	46	B	55	51	34	42	B	B	B	B	B	B	E B 60	E B 50	E B 18	E B 29	E B 21	32	38	B	45	31
4	70	71	32	110	42	B	36	48	60	62	41	E B 24	B	E B 54	E B 30	E B 23	E B 20	E B 27	E B 18	E B 19	B	B	26	28
5	32	36	31	27	30	32	28	32	32	15	E B 19	32	57	37	E B 20	E B 19	E B 23	E B 15	16	34	B	B	B	B
6	31	32	32	42	45	45	42	45	40	27	16	22	16	E B 18	18	E B 20	E B 20	32	32	E B 24	B	B	B	30
7	85	80	36	34	38	70	36	40	B	B	16	E B 26	E B 56	E B 60	E B 25	E B 24	E B 20	E B 15	E B 19	B	B	B	B	32
8	52	42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	39	B	B	B	B	B	B	E B 30	B	B	122	95	B	B	B
10	B	78	73	B	B	70	B	B	B	B	B	B	E B 56	B	E B 53	B	B	B	B	B	B	32	27	27
11	32	30	70	60	45	40	B	B	E B 35	60	B	B	B	B	B	B	E B 56	E B 31	E B 30	B	28	B	32	28
12	36	40	45	40	B	B	B	45	45	B	B	B	B	B	B	B	E B 30	E B 35	E B 24	E B 19	B	40	33	40
13	50	36	72	89	100	47	71	32	35	B	B	B	B	22	B	E B 25	32	23	21	32	90	45	55	35
14	90	B	95	38	34	B	B	33	40	B	B	B	B	B	E B 24	B	32	23	B	42	43	57	37	38
15	40	45	42	B	36	B	B	25	B	B	B	B	B	B	B	B	E B 30	E B 29	B	B	B	B	B	32
16	31	36	35	42	46	40	45	42	34	37	37	27	E B 30	32	52	21	26	44	E B 18	E B 16	32	115	50	45
17	42	95	80	45	42	45	B	B	B	B	B	52	B	B	B	B	E B 50	E B 47	E B 25	45	35	43	69	B
18	90	47	70	95	32	75	47	37	45	B	B	B	B	E B 31	E B 30	22	24	E B 30	E B 18	26	16	45	42	80
19	B	41	37	42	B	41	40	B	B	B	B	B	B	E B 51	E B 30	E B 25	E B 19	E B 40	21	32	39	35	90	94
20	52	32	B	41	46	36	50	45	40	34	B	B	B	B	B	E B 52	B	E B 20	36	37	36	57	45	45
21	42	70	B	B	B	B	B	B	33	45	B	B	B	B	B	E B 30	E B 30	E B 24	E B 30	E B 14	B	33	41	46
22	90	70	52	75	90	B	B	57	57	B	B	B	E B 40	B	E B 50	E B 24	E B 30	E B 45	B	B	B	35	40	42
23	40	41	65	B	37	32	32	B	45	40	B	B	E B 50	E B 30	E B 21	E B 26	E B 17	E B 30	B	E B 20	40	20	45	43
24	38	35	36	34	32	32	43	31	25	25	E B 37	B	E B 55	26	E B 25	34	38	18	30	32	12	14	30	32
25	34	35	41	45	45	37	28	12	E B 10	34	B	E B 19	B	E B 24	E B 40	21	28	E B 20	E B 17	23	B	27	41	41
26	45	45	85	50	46	42	46	32	38	B	32	E B 25	E B 23	16	16	16	E B 15	E B 30	E B 18	B	B	B	27	26
27	27	31	31	41	44	45	51	46	32	12	12	E B 20	E B 22	22	E B 19	E B 16	26	36	E B 17	E B 15	B	11	28	48
28	58	70	42	45	36	37	47	41	51	46	34	E B 23	32	26	E B 23	E B 17	E B 18	16	E B 15	E B 13	E B 10	B	B	14
29	17	28	35	38	27	36	41	E B 23	E B 13	E B 15	20	23	22	27	35	30	20	17	E B 18	E B 18	E B 15	B	12	34
30	45	120	46	45	36	70	60	35	B	41	27	E B 22	E B 40	E B 35	E B 30	E B 18	E B 19	E B 15	E B 15	E B 10	B	32	43	40
31	38	45	B	45	48	41	27	12	11	E B 13	E B 20	22	26	31	22	E B 18	11	E B 15	E B 17	16	12	27	22	35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	26	24	25	23	21	22	22	16	13	14	15	19	22	22	28	28	23	24	15	17	23	26
MED	42	41	43	43	42	41	41	36	36	36	U 24	23	U 27	U 26	U 23	U 19	U 22	U 22	18	23	35	35	40	35
U Q	52	70	70	48	46	47	47	45	45	43	36	27	55	37	35	26	30	32	29	32	40	45	45	43
L Q	32	34	35	39	35	36	31	31	32	20	18	22	23	24	22	19	20	19	17	17	15	27	28	30

JUL. 1991 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

JUL. 1991 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	25	21	24	24	29	24	23	B	23	B	30	29	30	24	23	20	29	25	B	20	B	B	40	29
2	29	30	29	30	30	25	30	30	30	B	B	B	B	50	30	B	27	30	29	30	B	B	B	B
3	B	B	30	B	25	25	23	25	B	B	B	B	B	B	60	50	18	29	21	23	21	B	24	24
4	21	28	24	25	24	B	28	24	24	23	28	24	B	54	30	23	20	27	18	19	B	B	21	18
5	14	14	20	23	24	24	24	19	15	10	19	24	17	14	20	19	23	15	10	10	B	B	B	B
6	14	14	14	14	20	20	17	19	17	18	10	14	14	18	15	20	20	20	19	24	B	B	B	15
7	24	22	20	23	20	18	18	28	B	B	14	26	56	60	25	24	20	15	19	B	B	B	B	22
8	40	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	30	B	B	B	B	B	B	30	B	B	61	40	B	B	B
10	B	30	30	B	B	55	B	B	B	B	B	B	56	B	53	B	B	B	B	B	B	23	20	19
11	23	18	23	25	23	23	B	B	35	30	B	B	B	B	B	B	56	31	30	B	24	B	20	20
12	17	17	19	24	B	B	B	37	29	B	B	B	B	B	B	B	30	35	24	19	B	25	23	24
13	24	18	24	23	50	23	18	25	24	B	B	B	B	20	B	25	13	17	10	12	18	20	9	10
14	20	B	18	11	10	B	B	15	13	B	B	B	B	B	24	B	14	14	B	10	9	10	14	18
15	25	30	20	B	20	B	B	18	B	B	B	B	B	B	B	B	30	29	B	B	B	B	B	10
16	9	11	10	10	10	18	12	12	18	18	18	18	30	20	18	15	16	17	18	16	10	18	23	18
17	10	25	10	24	17	18	B	B	B	B	B	24	B	B	B	B	50	47	25	9	15	9	10	B
18	11	17	20	19	23	16	17	23	18	B	B	B	B	31	30	17	17	30	18	8	10	8	8	9
19	B	30	18	19	B	18	28	B	B	B	B	B	B	51	30	25	19	40	18	20	10	9	15	24
20	14	14	B	25	24	15	15	18	15	22	B	B	B	B	B	52	B	20	8	24	8	17	10	8
21	15	15	B	B	B	B	B	B	24	27	B	B	B	B	B	30	30	24	30	14	B	9	9	9
22	15	20	10	23	12	B	B	18	17	B	B	B	40	B	50	24	30	45	B	B	B	8	8	10
23	8	8	30	B	17	23	9	B	19	23	B	B	50	30	21	26	17	30	B	20	8	8	8	8
24	10	20	9	8	15	28	12	8	8	10	37	B	55	23	25	17	17	17	9	11	8	8	8	8
25	9	10	13	16	17	16	10	10	10	18	B	19	B	24	40	17	10	20	17	23	B	16	16	17
26	16	15	24	18	17	18	17	10	23	B	26	25	23	14	14	9	15	30	18	B	B	B	20	17
27	17	14	10	15	18	17	14	10	10	9	10	20	22	17	19	16	9	10	17	15	B	8	14	9
28	8	15	25	20	33	24	17	20	17	17	15	23	22	22	23	17	18	10	15	13	10	B	B	8
29	8	8	10	10	18	18	15	23	13	15	13	14	18	17	18	15	15	15	18	18	15	B	8	8
30	20	20	15	9	15	20	18	15	B	20	22	22	40	35	30	18	19	15	15	10	B	8	8	8
31	17	10	B	25	15	14	9	10	9	13	20	17	20	17	18	18	8	15	17	9	10	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	17	18	20	23	23	23	23	23	23	30	B	B	B	50	30	24	20	25	19	20	B	23	20	17
U Q	25	30	30	30	33	B	B	B	B	B	B	B	B	B	B	B	30	31	B	61	B	B	B	24
L Q	11	14	14	16	17	18	15	15	15	18	20	23	30	20	21	17	16	15	17	12	10	9	9	9

JUL. 1991 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

JUL. 1991 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	A	A	A	A	B	A	B	E A 320	265	230	215	215	225	265	250	B 265		B	B	A	A
2	A	A	A	A	A	A	E A 375	340	B	B	B	B	B	E A 325	E A 255	B	245	250	245	E A 350	B	B	B	B
3	B	B	A	B	S	A	A	A	B	B	B	B	B	B	E A 310	300	260	240	260	A	A	B	A	A
4	A	A	A	A	A	B	A	A	A	A	A	250	B	250	240	215	225	220	245	250	B	B	A	A
5	250	265	325	280	200	A	A	350	330	270	250	240	240	220	220	210	240	220	220	225	B	B	B	B
6	A	A	A 250		A	S	A	A 320	275	245	210	210	250	215	200	240	230	230	250	B	B	B	A
7	A	A	A	A	A	A	A	A	B	B 265	225	E A 260	A	230	215	250	210	290	B	B	B	B	A
8	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	305	B	B	A	A	B	B	B
10	B	A	A	B	B	A	B	B	B	B	B	B	310	B	E A 250	B	B	B	B	B	B	A	A	A
11	A	A	A	A	A	A	B	B	E A 400	A	B	B	B	B	B	B	E A 300	255	245	B	A	B	A	A
12	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	280	255	230	230	B	A	A	A
13	A	A	A	A	A	A	S	A	S	B	B	B	B	A	B	B	400	395	305	280	A	A	A	A
14	A	B	A	A 210		B	B	A	A	B	B	B	B	B	350	B	250	A	B	A	230	A	225	A
15	A	A	A	B	A	B	B	A	B	B	B	B	B	B	B	B	235	240	B	B	B	B	B	A
16	A	A	A	A	A	A	A	A	A	A 295	245	210	230	200	200	240	200	225	240		A	A	A	A
17	A	A	A	A	A	A	B	B	B	B	B	A	B	B	B	B	E A 310	265	E A 250	A	220	225	A	B
18	A	A	A	A	A	A	A	A	A	B	B	B	B 260	250	230	210	E A 250	250	240		A	A	A	A
19	B	A	A	A	B	A	A	B	B	B	B	B	B	E A 225	255	260	200	230	255	A	A	220	A	A
20	A	A	B	A	A 230		A	A 230		A	B	B	B	B	B	E A 250	B	250	275	A	A	A	A	A
21	A	A	B	B	B	B	B	B	A	A	B	B	B	B	B	275	250	220	260	A	B	A	A	S
22	A	A	A	A	A	B	B	A	A	B	B	B	E A 260	B	E A 260	220	250	S	B	B	B	A	A	A
23	A	A	A	B	A	A 230		B 330		A	B	B	A 225	230	250	210	240		B 250		A	A	A	A
24	A	A	A	A	A	A	A 360	330	270		B	B	A 280	210	200	250	200	205		A	A	A	A	A
25	A	A	A	A	A	A 370	310	250		A	B 250		B 245	250	250	230	240	230	225		B	A 230		A
26	A 230		A 230		A	A	A 380		A	B	A 240	240	230	220	200	210	250	220		B	B	B	A	A
27	A 230	230	240		A	230	230	A 350		A	A 220	230	225	225	205	200	210		A	A	B	250	A	A
28	A 310		A	A	A	A 210		A	A 300	270	240	245	230	230	210		A	200	205	250	200		B	B	A
29	A	A	A 230		A	A	A 370	310	230	250	250	220	230	230	200	170	210	E A 200	205		A	B	A	A
30	A	A	A	A 250		A	A 310		B	350	E A 300	255	E A 250	250	E A 210	215	210	200	200	230	B	A	230	A
31	A	A	B	A	A	A 375	310	270	250	240	220	215	210	210	200	205	200	205	200		A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	4	2	5	3	2	6	8	10	7	9	13	13	17	22	21	27	26	22	15	3	3	3	
MED	250	248	278	240	210	230	U 265	345	320	270	258	240	230	230	225	215	240	232	234	240	220	225	230	
U Q		288		265	250		375	365	330	300	298	250	255	250	250	250	260	250	255	250	230	250	230	
L Q		230		230	200		230	310	270	250	248	222	218	225	215	200	210	210	220	225	200	220	225	

IONOSPHERIC DATA STATION Nankyoku

AUG. 1991 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	F	B	62	70	70	68	B	70	84	X 88	X 96	X 106	X 116	X 112	X 100	80	O X 80	A	A	A	A
2	A	S	A	A	A	F	A	F	70	B	B	B	B	B	94	105	X 96	A	A	A	A	A	A	A
3	A	A	A	B	A	37	B	A	B	B	B	B	79	B	91	110	X 104	B	A	B	A	A	S	A
4	B	A	A	B	F	B	B	A	B	A	A	B	B	X 68	81	B	80	X 85	74	B	A	A	A	A
5	A	A	A	A	A	A	38	B	B	A	B	B	B	B	B	80	X 96	X 88	78	S	A	A	A	O X 36
6	A	A	B	B	A	A	A	A	A	A	B	B	X 74	B	B	84	100	125	B	B	B	A	A	A
7	A	A	A	A	A	A	A	B	B	B	B	B	74	86	94	X 92	X 98	92	79	51	F	A	A	A
8	A	A	A	A	A	A	B	B	B	A	A	B	B	B	X 108	X 100	S	B	F	B	O X 29	B	A	A
9	A	A	A	A	A	O X 43	A	B	B	A	70	B	85	S	S	O X 111	X 108	O X 116	X 96	B	A	A	A	A
10	A	A	A	A	A	A	A	A	39	A	B	B	B	B	84	X 87	X 89	79	68	38	A	A	B	A
11	A	A	X 43	A	A	F	A	A	A	X 71	70	80	84	108	116	X 106	X 100	X 96	A	A	A	A	S	A
12	O X 36	A	A	A	A	A	A	A	B	B	B	B	B	B	B	X 95	X 104	A	A	A	O X 78	A	A	A
13	A	A	A	A	A	A	A	A	X 36	X 45	X 53	58	X 64	X 55	X 85	X 80	80	85	62	48	A	A	A	S
14	B	A	33	S	A	37	40	39	45	51	X 66	X 70	X 89	85	109	100	X 90	X 91	90	70	35	60	A	A
15	A	A	A	A	A	A	A	A	B	B	B	B	B	B	X 65	69	X 59	X 66	44	A	A	A	A	A
16	A	A	B	A	A	A	B	B	B	B	B	B	B	O X 65	70	O X 70	71	75	68	X 44	S	A	A	S
17	A	A	S	B	S	A	A	A	B	B	B	64	73	B	B	X 110	110	100	X 96	R 75	40	A	A	A
18	O X 36	B	B	B	B	45	A	B	50	60	X 61	B	B	X 90	X 110	X 112	111	X 110	110	70	B	A	R	A
19	A	A	A	49	A	A	A	B	B	A	B	39	75	B	64	86	82	X 59	70	48	28	A	O X 32	A
20	60	44	50	75	O X 55	A	O X 66	69	X 60	78	75	90	O X 80	90	96	101	77	74	60	X 36	A	A	A	A
21	A	B	A	A	A	A	A	49	X 60	B	A	B	B	59	62	B	82	O X 88	71	72	A	A	A	A
22	A	A	37	A	A	A	A	A	B	B	B	B	B	O X 55	70	70	75	X 79	63	X 45	A	A	A	A
23	A	A	A	A	A	B	B	A	B	B	B	B	B	90	B	B	B	B	O X 81	74	44	B	A	B
24	B	A	A	A	A	A	A	70	68	75	83	98	120	X 120	120	X 130	130	X 115	105	76	X 45	x 32	26	A
25	A	56	A	A	60	A	B	A	60	79	80	90	90	115	120	X 120	X 122	X 120	A	X 84	X 46	A	A	A
26	A	A	A	A	A	A	A	72	B	70	O X 97	X 102	X 112	X 120	X 125	X 125	X 130	X 130	X 120	X 81	56	B	A	A
27	A	A	A	A	A	A	B	A	B	B	B	B	O X 86	80	105	X 110	111	120	X 110	80	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	70	70	71	79	80	80	80	47	A	A	A	A
29	A	B	B	A	A	A	39	45	B	B	O X 75	S	O X 106	X 105	X 105	120	110	X 122	100	S	A	A	S	A
30	A	S	78	B	A	A	S	A	A	B	B	71	72	75	X 95	X 110	110	B	A	A	A	S	S	A
31	S	S	70	S	S	S	A	A	O X 49	A	A	B	B	O X 54	99	X 120	X 120	68	S	64	R	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	2	6	2	2	5	5	7	11	8	11	11	18	20	25	28	29	25	22	19	9	2	2	1
MED	36	50	46	62	58	43	40	69	60	70	70	80	82	86	95	103	100	91	80	70	44	46	29	36
U Q	60		70			54	68	70	68	76	80	90	89	100	108	112	110	116	96	76	51			
L Q	36		37			37	38	45	45	56	66	64	74	66	76	85	81	79	68	47	32			

AUG. 1991 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

AUG. 1991 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	F	B	F 56	F 60	F 64	F 62	B	F 64	F 76	82	90	100	110	J S 106	94	F 74	74	A	A	A	A
2	A	S	A	A	A	F	A	F	F 62	B	B	B	B	B	F 42	F	90	A	A	A	A	A	A	A
3	A	A	A	B	A	F 31	B	A	B	B	B	B	72	B	F 84	V 99	98	B	A	B	A	A	S	A
4	B	A	A	B	F	B	B	A	B	A	A	B	B	62	F 75	B	F 74	79	F 68	B	A	A	A	A
5	A	A	A	A	A	A	F 32	B	B	A	B	B	B	B	B	F 74	90	82	F 72	S	A	A	A	30
6	A	A	B	B	A	A	A	A	A	A	B	B	68	B	B	F 76	F 94	J F 119	B	B	B	A	A	A
7	A	A	A	A	A	A	A	B	B	B	B	B	F 68	F 80	F 88	86	92	J F 86	F 73	F 45	F	A	A	A
8	A	A	A	A	A	A	B	B	B	A	A	B	B	B	102	94	S	B	F	B	23	B	A	A
9	A	A	A	A	A	37	A	B	B	A	F 64	B	F 79	S	S	U S 105	102	110	90	B	A	A	A	A
10	A	A	A	A	A	A	A	A	F 33	A	B	B	B	B	F 78	81	83	F 72	F 59	F 32	A	A	B	A
11	A	A	37	A	A	F	A	A	A	65	F 62	F 72	F 78	F 102	J S 110	100	94	J S 90	A	A	A	A	S	A
12	30	A	A	A	A	A	A	A	B	B	B	B	B	B	B	F 69	90	A	A	A	72	A	A	A
13	A	A	A	A	A	A	A	A	30	40	46	51	57	59	69	72	F 70	79	F 55	F	A	A	A	S
14	B	A	F	S	A	F 26	F 37	F 32	F	46	60	64	80	79	U R 100	J F 94	82	J F 85	F	F	F	F	S	A
15	A	A	A	A	A	A	A	A	B	B	B	B	B	B	60	63	51	U S 48	F 35	A	A	A	A	A
16	A	A	B	A	A	A	B	B	B	B	B	B	B	59	F	64	F 63	70	F 60	39	S	A	A	S
17	A	A	S	B	S	A	A	A	B	B	B	F 58	J S 69	B	B	100	F	F	F 90	J R 68	H 37	A	A	A
18	30	B	B	B	B	F	A	B	F 45	F 50	55	B	B	81	100	104	F 105	J F 94	99	F 50	B	A	R	A
19	A	A	A	F 34	A	A	A	B	B	A	B	S 32	F 59	B	S 49	F 55	63	52	55	F 42	S 23	A	26	A
20	F 34	S 39	F 41	F	49	A	60	F 59	52	59	68	S 81	74	80	F	J F 90	F 71	62	F 51	J F 30	A	A	A	A
21	A	B	A	A	A	A	A	F	47	B	A	B	B	52	56	B	F 70	82	60	F 56	A	A	A	A
22	A	A	S 31	A	A	A	A	A	B	B	B	B	B	49	61	61	70	J F 73	F 46	J F 36	A	A	A	A
23	A	A	A	A	A	B	B	A	B	B	B	B	B	83	B	B	B	B	75	F 65	34	B	A	B
24	B	A	A	A	A	A	A	60	F 61	F 60	73	90	110	J F 105	112	J F 119	121	105	98	F 60	35	J F 26	J F 20	A
25	A	S 50	A	A	S 52	A	B	A	53	65	70	85	85	105	111	111	J F 116	J F 114	A	J F 78	43	A	A	A
26	A	A	A	A	A	A	A	F 52	B	F 61	F 91	92	J F 108	J F 114	J F 119	120	J F 124	J F 124	J F 114	J F 75	50	B	A	A
27	A	A	A	A	A	A	B	A	B	B	B	B	80	S 76	100	100	F	110	99	70	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	64	62	65	70	73	72	70	40	A	A	A	A
29	A	B	B	A	A	A	F 34	F 38	B	B	69	D S 70	100	100	100	102	S 103	116	F 90	S	A	A	S	A
30	A	S	F	B	A	A	S	A	A	B	B	Z 65	F 64	F 60	85	95	100	B	A	A	A	S	S	A
31	S	S	F	S	S	S	A	A	43	A	A	B	B	48	70	114	109	F 52	S	F	R	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	2	3	1	2	4	5	6	10	8	11	12	18	20	23	27	27	24	21	16	8	1	2	1
MED	30	44	37	34	50	34	37	56	50	60	64	72	76	80	85	94	90	84	72	53	36	26	23	30
U Q	34		41			46	60	60	61	63	70	83	82	95	100	104	103	108	90	69	46			
L Q	30		31			28	33	38	43	48	60	61	68	60	65	72	71	72	57	40	28			

IONOSPHERIC DATA STATION Nankyoku

AUG.1991 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	71	57	45	40	B	34	26	21	20	B	32	31	25	22	32	24	E B 18	E B 19	E B 19	E B 15	28	56	60	60
2	70	37	42	100	45	36	43	41	38	B	B	B	B	B	E B 23	70	35	52	43	33	97	37	41	46
3	50	42	70	B	41	34	B	50	B	B	B	B	E B 50	B	E B 40	E B 50	66	B	28	B	37	38	36	44
4	B	55	60	B	70	B	B	35	B	41	45	B	B	E B 40	E B 40	B	E B 30	E B 20	E B 17	B	23	34	90	80
5	36	36	100	90	46	65	36	B	B	45	B	B	B	B	E B 24		E B 25	E B 25	E B 16	E B 18	31	26	22	35
6	45	46	B	B	56	45	70	45	45	56	B	B	27	B	E B 29		E B 20	E B 20	B	B	B	28	33	36
7	46	90	42	46	45	75	45	B	B	B	B	B	E B 29	E B 29	E B 35	E B 25	E B 20	E B 17	E B 15	E B 19	E B 15	32	30	37
8	39	45	45	45	33	32	B	B	B	46	45	B	B	B	E B 56	E B 40	E B 30	B	E B 54	B	E B 18	B	29	39
9	36	67	50	45	36	42	45	B	B	59	34	B	E B 50	E B 32	E B 56	E B 55	E B 32	E B 40	E B 50	B	30	29	45	45
10	44	56	42	45	37	41	51	45	36	35	B	B	B	B	E B 40	E B 25	24	E B 25	E B 20	E B 11	29	35	B	29
11	33	36	91	90	45	45	48	60	E B 66	30	36	E B 29	24	22	E B 24	35	16	14	35	40	42	46	60	42
12	40	46	37	27	51	32	46	E B 30	B	B	B	B	B	B	B	E B 40	E B 20	30	43	47	70	38	42	70
13	100	60	45	45	38	38	36	37	22	16	21	23	31	27	41	31	E B 19	E B 15	26	14	13	33	43	35
14	B	70	33	46	37	31	20	14	14	15	E B 24	E B 26	E B 29	E B 27	24	E B 21	18	E B 15	15	E B 14	26	84	49	47
15	45	55	35	48	37	42	40	35	B	B	B	B	B	B	E B 29	E B 30	E B 24	E B 24	E B 18	38	45	44	58	92
16	42	42	B	45	35	31	B	B	B	B	B	B	B	E B 34	E B 29	E B 32	E B 29	E B 18	E B 18	E B 20	19	27	31	35
17	40	90	50	B	33	45	37	38	B	B	B	E B 27	E B 30	B	B	E B 30	E B 40	E B 28	E B 17	E B 15	E B 28	31	38	41
18	36	B	B	B	B	32	60	B	32	40	E B 40	B	B	E B 29	25	16	12	E B 24	E B 21	20	B	20	25	45
19	108	50	40	33	50	39	60	B	B	27	B	E B 25	26	B	31	30	E B 23	29	26	25	30	32	27	38
20	35	32	49	31	36	32	31	35	25	32	E B 26	E B 40	E B 48	27	E B 40	E B 25	65	35	39	37	37	46	60	50
21	50	B	54	60	63	44	45	38	27	B	37	B	B	E B 29	E B 25	B	E B 20	21	E B 20	35	23	16	32	43
22	60	62	90	55	65	48	73	46	B	B	B	B	B	E B 30	E B 50	E B 29	21	E B 20	20	30	35	41	31	48
23	50	32	51	105	70	B	B	45	B	B	B	B	B	E B 30	B	B	B	B	E B 55	E B 27	E B 19	B	26	B
24	B	30	34	38	90	41	45	38	37	E B 30	E B 36	E B 30	E B 30	E B 29	E B 48	E B 31	E B 24	E B 18	E B 18	E B 12	E B 16	12	12	29
25	36	41	50	51	36	39	B	40	43	E B 32	E B 30	E B 40	E B 29	E B 30	E B 34	E B 25	E B 20	E B 18	E B 18	E B 15	30	40	45	45
26	79	56	60	43	35	33	60	35	B	E B 30	E B 30	E B 29	E B 29	E B 30	E B 29	E B 27	E B 24	E B 20	E B 18	E B 18	E B 18	B	34	45
27	75	45	45	33	35	65	B	50	B	B	B	B	E B 40	E B 50	E B 40	E B 50	E B 30	E B 29	E B 24	25	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	E B 45	E B 30	E B 30	E B 30	E B 30	E B 28	E B 37	E B 25	32	58	41	40
29	74	B	B	45	43	32	E B 28	E B 25	B	B	E B 53	E B 48	E B 50	E B 33	E B 40	E B 50	E B 50	E B 25	E B 25	31	46	47	42	40
30	45	42	E B 18	B	45	44	47	40	40	B	B	E B 30	E B 30	E B 27	E B 30	E B 35	E B 34	B	25	50	52	48	110	47
31	60	48	41	35	52	70	33	38	42	45	50	B	B	E B 30	E B 29	E B 30	27	25	46	41	45	45	32	45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	26	24	28	28	23	23	14	16	15	12	18	21	26	28	30	27	30	26	28	27	29	29
MED	45	46	45	45	44	40	45	38	36	34	34	28	28	28	U 28	U 28	22	U 21	20	24	30	37	38	44
U Q	70	57	54	53	52	45	51	45	42	45	45	36	45	31	40	38	30	28	37	35	40	46	47	47
L Q	39	41	41	39	36	32	36	35	25	30	30	26	29	27	29	25	20	18	18	15	21	29	30	38

AUG.1991 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

AUG. 1991 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	9	9	9	9	B	21	15	13	14	B	20	20	20	19	18	15	18	19	19	15	18	10	10	9
2	10	10	18	10	9	10	10	15	10	B	B	B	B	B	23	25	20	15	14	10	23	10	10	17
3	10	8	14	B	23	14	B	29	B	B	B	B	50	B	40	50	52	B	24	B	19	19	14	10
4	B	9	9	B	9	B	B	30	B	29	30	B	B	40	40	B	30	20	17	B	19	9	20	20
5	15	9	8	25	15	20	15	B	B	17	B	B	B	B	B	24	25	25	16	18	10	10	10	8
6	10	10	B	B	17	15	8	18	30	15	B	B	25	B	B	29	20	20	B	B	B	10	8	10
7	17	18	18	20	17	10	23	B	B	B	B	B	29	29	35	25	20	17	15	19	15	8	28	9
8	18	14	15	18	15	19	B	B	B	18	30	B	B	B	56	40	30	B	54	B	18	B	9	8
9	10	10	15	24	28	27	18	B	B	18	20	B	50	32	56	55	32	40	50	B	10	8	10	18
10	15	18	9	25	15	15	15	15	14	30	B	B	B	B	40	25	19	25	20	11	18	15	B	8
11	8	10	9	10	18	14	10	19	18	30	31	29	19	19	24	17	10	8	10	9	10	9	15	9
12	10	17	8	13	17	17	15	30	B	B	B	B	B	B	B	40	20	18	14	18	9	8	8	18
13	19	15	9	19	12	8	15	10	9	8	14	15	20	17	24	19	19	15	14	8	8	8	8	8
14	B	24	14	19	9	10	11	10	10	10	24	26	29	27	19	21	14	15	8	14	8	8	18	18
15	19	16	20	20	16	19	18	15	B	B	B	B	B	B	29	30	24	24	18	6	7	13	15	8
16	29	18	B	19	18	15	B	B	B	B	B	B	B	34	29	32	29	18	18	20	16	10	7	7
17	10	10	18	B	8	18	17	16	B	B	B	27	30	B	B	30	40	28	7	15	28	7	7	20
18	14	B	B	B	B	8	32	B	19	16	40	B	B	29	20	8	7	24	21	8	B	14	19	18
19	23	20	18	8	20	7	9	B	B	25	B	25	20	B	24	21	23	10	18	16	10	7	7	7
20	10	10	7	8	7	8	10	8	8	18	26	40	48	19	40	25	14	15	7	8	7	8	9	15
21	8	B	18	18	10	24	23	10	19	B	19	B	B	29	25	B	20	16	20	10	9	9	7	15
22	8	9	9	10	20	18	27	19	B	B	B	B	B	30	50	29	19	20	19	9	9	8	8	10
23	10	14	36	20	18	B	B	24	B	B	B	B	B	30	B	B	B	B	55	27	19	B	15	B
24	B	17	9	13	28	23	18	18	25	30	36	30	30	29	48	31	24	18	18	10	16	9	6	9
25	9	15	19	10	7	17	B	20	18	18	30	40	29	30	34	25	20	18	18	15	8	6	7	7
26	15	17	20	20	20	17	19	18	B	30	30	29	29	30	29	27	24	20	18	18	18	B	15	17
27	18	24	28	20	29	19	B	20	B	B	B	B	40	50	40	50	30	29	24	21	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	45	30	30	30	30	28	37	25	25	24	20	22
29	23	B	B	25	24	19	28	25	B	B	53	48	50	33	40	50	50	25	25	18	23	20	19	24
30	19	19	18	B	28	20	18	20	25	B	B	30	30	27	30	35	34	B	19	24	18	18	18	18
31	15	17	18	9	9	18	18	20	20	28	27	B	B	30	29	30	19	19	17	9	13	10	15	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	16	18	20	17	18	18	20	B	30	B	B	50	30	35	30	23	20	18	16	16	10	10	15
U Q	19	19	20	25	24	20	B	B	B	B	B	B	B	B	50	40	30	28	24	24	19	18	18	18
L Q	10	10	9	10	10	14	15	15	18	18	30	30	29	29	25	25	19	17	15	10	9	8	8	8

AUG. 1991 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

AUG. 1991 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	A	B	405	350	330	330	B	260	245	210	220	230	240	210	270	220	300	A	A	A	A
2	A 280	A	A	A	A	A	A	A	A	B	B	B	B	B	Q 330	300	320	A	A	A	A	A	A	A
3	A	A	A	B	A	A	B	A	B	B	B	B	B	B	260	E B 280	290	B	A	B	A	A	275	A
4	B	A	A	B	A	B	B	A	B	A	A	B	B	E A 300	A	B	260	260	300	B	A	A	A	A
5	A	A	A	A	A	A	E A 240	B	B	A	B	B	B	B	B	250	230	E A 240	230	210	A	A	A	210
6	A	A	B	B	A	A	A	A	A	A	B	B	265	B	B	260	270	280	B	B	B	A	A	A
7	A	A	A	A	A	A	A	B	B	B	B	B	250	260	240	225	245	210	210	245	260	A	A	A
8	A	A	A	A	A	A	B	B	B	A	A	B	B	B	A	240	210	B	A	B	A	B	A	A
9	A	A	A	A	A	E A 230	A	B	B	A	280	B	275	210	E A 270	270	280	250	280	B	A	A	A	A
10	A	A	A	A	A	A	A	A	380	A	B	B	B	B	250	210	200	240	220	250	A	A	B	A
11	A	A 210		A	A	220	A	A	A	340	E A 330	245	250	250	200	220	255	230	A	A	A	A	210	A
12	230	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	310	A	A	A	350	A	A	A
13	A	A	A	A	A	A	A	A	A	A 300	250	270	240	225	210	200	200	200	205		A	A	A	A
14	B	A	A	B	A	A	A 380	E A 350	300	250	245	230	235	205	235	230	200	210	225	200	E A 270	A	A	A
15	A	A	A	A	A	A	A	A	B	B	B	B	B	B	345	280	310	310	345	A	A	A	A	A
16	A	A	B	A	A	A	B	B	B	B	B	B	B	E A 300	280	250	250	240	245	245	E A 300	A	A	345
17	A	A 300		B	S	A	A	A	B	B	B	250	250		B	B 220	250	250	240	245	E A 310	A	A	A
18	220	B	B	B	B	400	A	B	370	260	B	B	B	245	250	230	230	230	240	250	B	A	A	A
19	A	A	A 260		A	A	A	B	B	A	B 310		270	B	250	280	300	300	270	250	E A 370	A	A	A
20	320	E A 360	300	220	A	A	A	E A 400	305	250	255	250	280	250	340	340	250	270	320	390	A	A	A	A
21	A	B	A	A	A	A	A	320	345	B	A	B	B	260	280	B	300	230	260	300	A	A	A	A
22	A	A 420		A	A	A	A	A	B	B	B	B	B	280	360	290	310	270	255	300	A	A	A	A
23	A	A	A	A	A	B	B	A	B	B	B	B	B	270	B	B	B	B 300	250	240	B	A	B	A
24	B	A	A	A	A	A	A	400	280	250	280	245	245	235	250	240	230	215	210	210	210	220	310	A
25	A 260		A	A	330	A	B	A	B	260	250	300	240	250	240	230	230	210	A	220	280	A	A	A
26	A	A	A	A	A	A	A	400	B	270	240	220	230	230	250	230	200	200	230	230	240	B	A	A
27	A	A	A	A	A	A	B	A	B	B	B	B	E A 250	E A 300	E A 260	250	250	230	230	240	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	E A 300	250	270	270	250	250	295	E A 350	A	A	A	A
29	A	B	B	A	A	A	E A 450	380	B	B	E A 250	280	250	250	250	250	250	270	250	390	A	A	S	A
30	A 230		250	B	A	A	S	A	A	B	B	280	280	250	255	260	320	B	A	A	A	S	S	A
31	S	S 360	280	280	280	280	A	A	E A 550	A	A	B	B	250	270	250	280	330	S	220	300	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	4	6	3	2	5	4	7	8	7	10	12	17	21	24	27	30	25	22	21	11	1	3	2
MED	230	U 258	300	260	305	280	U 330	U 365	328	260	255	250	250	250	251	250	250	240	242	245	U 260	220	275	278
U Q	320	320	360	280		402	415	400	375	270	280	280	272	265	275	270	290	270	280	300	310		310	
L Q	220	245	250	220		225	295	330	302	250	250	245	242	238	245	230	230	222	225	220	240		210	

AUG. 1991 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

SEP.1991 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	D R 35	B	B	70	B	B	41	B	B	B	B	B	B	85	O X 110	105	80	72	31	A	O X 39	A	S
2	A	34	50	B	A	S	60	B	B	B	B	B	B	72	120	120	105	120	120	80	39	A	A	A
3	A	A	A	A	52	59	48	A	B	B	B	B	O X 76	B	120	135	140	100	X 75	44	O R 51	A	A	A
4	A	A	B	A	A	A	O X 44	B	B	A	B	B	B	B	X 100	104	104	112	X 110	90	75	A	A	A
5	A	A	45	B	A	45	B	B	B	B	A	B	O X 48	70	72	B	90	90	X 80	A	A	A	A	A
6	A	A	70	48	S	55	S	B	B	B	B	B	B	75	X 81	85	X 90	X 82	80	B	S	A	A	A
7	A	S	45	A	A	43	46	B	A	A	65	75	B	120	122	X 130	130	X 120	O X 97	75	60	B	A	40
8	A	A	50	56	O X 46	51	A	B	B	B	A	74	X 75	X 90	100	110	X 119	X 120	75	S	R	S	A	A
9	60	45	R	A	A	A	42	52	55	B	B	43	B	O X 51	X 72	90	90	70	A	A	R	S	O X 64	R
10	B	A	A	A	A	A	A	A	O X 48	B	A	A	O X 67	O X 64	X 68	64	60	X 55	51	A	A	A	A	A
11	A	A	A	A	40	45	A	48	60	60	64	65	69	69	70	X 90	X 97	X 90	70	A	A	A	A	A
12	50	A	A	A	A	S	A	45	O X 51	O X 51	81	90	O X 101	X 100	X 117	X 110	111	105	95	90	O X 76	35	A	A
13	46	A	B	56	41	A	A	O X 51	60	A	72	O X 81	X 99	103	110	X 109	O X 115	109	100	O X 95	75	58	S	51
14	A	B	B	B	A	41	B	B	B	A	B	B	O X 64	O X 64	100	128	110	X 100	X 67	50	A	A	A	A
15	B	A	A	A	60	B	B	60	X 73	X 75	X 80	90	X 95	X 100	X 104	X 105	X 108	105	98	X 84	X 58	O R 32	A	A
16	A	A	53	42	O X 50	A	A	B	68	74	80	O X 85	X 105	111	X 110	127	X 120	120	110	101	88	80	58	A
17	A	S	O X 61	A	S	45	O X 46	60	H 61	H 64	100	111	X 125	X 129	X 130	X 128	120	120	110	100	X 70	44	28	S
18	A	A	A	A	S	O X 51	60	60	X 70	X 81	X 90	101	X 110	X 118	C	120	120	120	X 110	O S 101	96	70	52	38
19	C	A	A	A	A	A	C	70	C	O X 76	C	C	100	X 105	C	C	X 108	C	102	C	C	B	S	C
20	A	58	A	C	C	C	C	C	B	71	O X 68	C	C	X 120	X 130	120	120	125	O S 112	110	X 60	45	35	45
21	46	45	42	A	S	68	O X 70	S	80	90	X 101	X 108	X 110	115	X 112	X 113	110	110	100	X 90	X 70	60	50	S
22	S	45	S	S	72	71	71	V 82	90	92	98	106	115	115	X 111	X 118	120	114	X 110	O S 96	X 86	60	60	47
23	45	S	S	69	O X 51	59	62	75	80	80	90	98	99	100	100	X 96	91	91	95	81	72	60	O X 52	R
24	A	O X 76	A	S	O X 65	O X 54	A	R 47	R	76	85	91	X 105	110	111	108	115	109	100	98	70	R	A	A
25	A	S	S	49	60	A	68	60	A	A	A	69	B	70	V 84	85	X 82	71	A	S	A	59	S	A
26	A	72	A	60	54	46	B	A	A	A	O X 51	B	B	75	H 82	83	62	48	A	34	S	S	R	A
27	R	O X 44	65	50	B	70	S	A	B	B	B	B	B	B	O X 74	70	B	O X 55	A	56	R	S	S	A
28	45	A	A	40	B	A	B	B	B	B	B	B	B	B	73	X 80	59	R	45	O X 46	S	S	S	S
29	B	50	70	B	A	B	B	60	S	69	70	X 69	X 71	70	72	72	X 79	80	80	61	A	A	38	A
30	A	A	B	R	R	S	A	B	A	B	S	82	B	B	B	O X 66	120	90	V 70	45	A	A	S	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	10	10	9	12	15	11	14	12	13	15	17	18	24	27	28	29	28	26	22	15	12	9	5
MED	46	46	52	50	53	51	60	60	64	75	80	85	99	100	100	108	108	102	96	82	70	58	52	45
U Q	50	58	65	58	62	59	68	60	76	80	90	100	105	113	112	120	120	117	110	96	76	60	59	49
L Q	45	44	45	45	48	45	46	48	58	66	68	72	71	70	74	85	90	81	75	50	60	42	36	39

IONOSPHERIC DATA STATION Nankyoku

SEP.1991 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	J R 29	B	B	F	B	B	F 35	B	B	B	B	B	B	F 62	104	90	F 65	F	F	A	U F 33	A	S
2	A	F	F 42	B	A	S	F	B	B	B	B	B	B	F 58	F 90	85	99	F 102	F	F	F	A	A	A
3	A	A	A	A	U R 48	F	F 40	A	B	B	B	B	70	B	F 110	F 120	F 130	91	F	F 32	U F 45	A	A	A
4	A	A	B	A	A	A	S 38	B	B	A	B	B	B	B	J F 94	F 84	S 98	J F 108	J F 104	F	F 34	A	A	A
5	A	A	F	B	A	F	B	B	B	B	A	B	42	F 56	F 64	B	F 75	F	F	A	A	A	A	A
6	A	A	F 29	F 38	S	F	S	B	B	B	B	B	B	68	75	80	J F 84	70	F 65	B	S	A	A	A
7	A	S	F	A	A	F	F	B	A	A	60	69	B	101	110	122	F 120	J F 114	91	F	F 45	B	A	F 30
8	A	A	F	U H 47	S 40	F 45	A	B	B	B	A	F 64	70	80	J S 80	101	105	111	F	S	R	S	A	A
9	U F 40	U H 40	R	A	A	A	F 35	43	43	B	B	S 38	B	U R 45	67	79	F 79	H 56	A	A	R	S	S 58	R
10	B	A	A	A	A	A	A	A	U S 42	B	A	A	61	58	60	58	54	46	F 40	A	A	A	A	A
11	A	A	A	A	F	F	A	F	F 53	54	55	59	61	61	U W 61	84	90	75	F 54	A	A	A	A	A
12	A 43	A	A	A	A	D S 34	A	40	45	45	F E 59	Y 80	95	92	110	99	99	99	F	J F 84	D S 70	F 25	A	A
13	F 38	A	B	F	F 35	A	A	S 45	54	A	F 65	79	89	H 98	102	98	109	U R 95	U R 92	89	J F 69	F 48	S	F
14	A	B	B	B	A	F 34	B	B	B	A	B	B	H 58	58	90	118	100	90	61	F 40	A	A	A	A
15	B	A	A	A	F 40	B	B	H 54	65	69	71	80	84	93	J F 98	100	U R 100	U R 96	90	78	52	U F 26	A	A
16	A	A	U F 28	U F 30	44	A	A	B	F 56	F 65	71	79	100	U R 102	100	U R 110	110	110	U R 92	J F 95	80	F 60	F 52	A
17	A	S	55	A	S	U F 39	F 42	E Y 49	H 55	H 54	90	104	120	120	J F 124	U R 120	U S 100	110	J S 104	U R 92	J S 64	F	F	S
18	A	A	A	A	S	45	F	F 50	F 65	60	80	97	101	109	C	110	110	F 110	F 95	95	F 84	J F 64	J F 46	H 32
19	C	A	A	A	A	A	C	U F 58	C	70	C	C	J F 94	98	C	C	F 92	C	F 94	C	C	B	S	C
20	A	F	A	C	C	C	C	C	B	Z 65	62	C	C	110	119	115	110	118	108	93	F	F 38	F 30	F 27
21	F 32	F	F 31	A	S	U H 60	U R 64	S	72	Z 85	90	100	100	105	102	103	105	F	F	J F 84	62	F	J F 44	S
22	S	F 40	S	S	F 60	F 60	F	V 70	F 60	F 82	Z 84	F 100	110	109	105	110	J F 114	J F 108	J F 104	90	F 60	J F 54	F	J F 41
23	F	S	S	51	U W 45	51	F 54	H 60	F 70	J H 72	F 82	90	90	J F 94	92	89	83	U R 85	88	J F 75	F	J F 54	H 46	R
24	A	H 70	A	S	U F 59	H 48	A	R 42	R	F 63	H 75	U S 81	99	99	102	F 98	108	S 101	92	90	J F 64	R	A	A
25	A	S	S	43	F	A	H 60	F	A	A	A	F 58	B	63	V 75	Z 74	75	F 61	A	S	A	F	S	A
26	A	F	A	F	F	F	B	A	A	A	45	B	B	58	H 70	H 78	H 54	41	A	F 28	S	S	R	A
27	R	F 38	F	F	B	F	S	A	B	B	B	B	B	B	H 68	F 58	B	49	A	F	R	S	S	A
28	F	A	A	F 31	B	A	B	B	B	B	B	B	B	B	J S 64	H 75	H 54	R	F 35	H 40	S	S	S	S
29	B	45	F	B	A	B	B	55	S	F 51	H 64	61	66	H 65	H 68	H 68	71	69	71	F 55	A	A	30	A
30	A	A	B	R	R	S	A	B	A	B	S	75	B	B	B	60	110	F 62	V 59	F 39	A	A	S	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	6	5	6	8	9	7	12	12	13	15	17	18	24	27	28	29	26	19	17	12	9	7	4
MED	39	40	31	40	44	46	42	50	56	65	71	79	90	92	90	98	99	93	91	84	63	48	46	31
U Q	42	45	48	47	U 54	56	60	56	65	71	82	94	100	102	102	110	110	108	95	91	70	57	52	36
L Q	35	38	28	31	40	36	38	42	49	54	60	62	66	60	68	78	81	65	61	40	48	U 30	30	28

SEP.1991 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

SEP.1991 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	30	B	B	32	B	B	26	B	B	B	B	B	B	E B 28	E B 60	33	E B 25	31	30	46	20	39	70
2	70	42	47	B	40	40	34	B	B	B	B	B	B	E B 30	29	E B 28	E B 50	E B 30	E B 19	35	26	33	36	40
3	80	57	34	42	40	36	40	70	B	B	B	B	E B 35	B	E B 50	E B 24	E B 40	E B 24	E B 24	34	31	37	38	39
4	80	46	B	55	57	43	33	B	B	50	B	B	B	B	E B 30	E B 25	E B 52	E B 40	E B 50	E B 30	E B 15	40	40	80
5	65	56	33	B	38	36	B	B	B	B	40	B	E B 30	E B 28	E B 40	B	E B 50	E B 22	36	23	45	70	40	70
6	60	45	38	38	38	34	80	B	B	B	B	B	B	E B 40	E B 30	E B 40	E B 25	E B 20	E B 19	B	37	44	40	37
7	42	85	55	45	45	34	28	B	50	50	E B 50	E B 30	B	E B 55	E B 53	E B 29	27	E B 25	E B 50	E B 20	E B 18	B	31	34
8	43	63	71	68	30	34	75	B	B	B	58	33	32	30	E B 30	E B 53	E B 30	38	32	25	50	47	45	45
9	39	65	27	64	45	45	38	30	E B 25	B	B	35	B	E B 30	E B 30	E B 25	33	37	38	45	92	70	58	70
10	B	90	85	45	60	40	40	60	27	B	36	43	E B 40	E B 40	32	E B 28	30	E B 20	35	38	48	45	45	46
11	55	43	70	46	32	33	32	33	39	34	26	26	26	27	26	26	13	E B 29	32	35	38	35	38	90
12	80	45	45	48	40	29	40	44	41	45	33	32	34	E B 50	32	27	E B 29	21	E B 14	18	32	E B 18	33	38
13	39	47	B	40	40	63	70	48	28	39	E B 30	E B 30	E B 30	28	27	30	27	E B 25	E B 19	28	E B 18	12	41	44
14	45	B	B	B	40	35	B	B	B	34	B	B	31	E B 50	E B 50	E B 58	E B 32	23	40	33	23	49	39	45
15	B	95	45	65	42	B	B	47	31	26	25	30	33	30	30	30	27	E B 24	E B 18	E B 14	E B 19	11	12	33
16	43	42	26	33	33	45	55	B	32	27	29	E B 45	30	30	27	26	26	E B 31	E B 20	E B 24	E B 18	E B 19	30	35
17	35	28	35	37	45	45	45	28	23	24	30	34	31	31	27	26	E B 25	23	16	11	30	28	33	35
18	40	48	37	32	32	36	31	21	21	25	26	28	21	29	23	36	31	25	25	11	12	E B 14	E B 10	12
19	C	35	45	74	50	51	30	45	C E B 50		C	C	36	30	C	26	24	C	20	C	C	B	30	C
20	34	37	70	C	C	C	C	C	B E B 40	E B 50		C	C	30	27	E B 30	E B 30	E B 29	E B 30	E B 17	16	15	35	25
21	29	29	35	60	52	45	27	55	55	45	45	35	36	45	35	33	27	25	22	E B 15	17	E B 15	12	39
22	46	68	71	90	48	48	45	44	45	35	29	35	36	36	35	35	38	20	17	E B 19	23	E B 19	28	28
23	30	32	48	47	40	36	34	24	26	34	35	40	37	38	35	29	26	27	E B 19	E B 14	12	E B 7	11	32
24	45	40	58	47	37	37	51	44	45	41	30	E B 35	31	37	35	35	26	23	19	13	E B 9	32	45	47
25	45	38	50	48	46	45	41	25	45	40	50	35	B E B 50	32	28		26	32	36	60	47	50	40	71
26	45	42	45	45	35	32	B	36	40	33	45	B	B E B 32	31	34		33	25	10	36	47	45	45	46
27	45	45	34	36	B	38	35	45	B	B	B	B	B	B E B 31	33		B E B 29	45	20		35	58	33	58
28	42	65	41	46	B	42	B	B	B	B	B	B	B	B E B 30	E B 32		E B 33	E B 28	E B 24	26	35	50	80	45
29	B	40	38	B	350	B	B	33	41	26	29	31	28	32	35	29	25	E B 25	E B 25	18	35	32	38	60
30	46	45	B	33	E B 50	31	65	B	36	B	E B 55	E B 53	B	B	B E B 53		E B 30	27	29	35	25	37	91	38
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	29	25	24	27	26	22	19	18	19	20	18	18	24	28	29	29	29	30	28	29	28	30	29
MED	45	45	45	46	40	38	40	44	38	34	32	33	32	31	30	29	28	24	22	24	30	34	38	44
U Q	55	60	56	58	48	45	51	47	45	45	48	35	36	40	35	35	33	29	35	34	42	46	41	59
L Q	39	39	35	39	37	34	33	28	27	27	29	30	30	30	28	26	26	23	19	18	18	18	31	35

SEP.1991 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

SEP.1991 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	6	10	B	B	9	B	B	18	B	B	B	B	B	B	28	60	23	25	8	10	7	7	9	8
2	29	10	17	B	20	19	8	B	B	B	B	B	B	30	25	28	50	30	19	15	8	7	7	19
3	8	13	14	18	15	14	14	24	B	B	B	B	35	B	50	24	40	24	24	9	9	18	8	13
4	9	15	B	10	25	25	24	B	B	25	B	B	B	B	30	25	52	40	50	30	15	10	8	18
5	6	7	15	B	25	19	B	B	B	B	25	B	30	28	40	B	50	22	9	18	8	18	15	9
6	15	19	18	19	25	15	11	B	B	B	B	B	B	40	30	40	25	20	19	B	18	17	18	15
7	20	19	18	28	25	18	20	B	30	25	50	30	B	55	53	29	24	25	50	20	18	B	15	10
8	17	10	14	10	20	14	55	B	B	B	23	26	24	20	30	53	30	18	15	19	10	7	24	25
9	8	10	18	10	25	15	19	10	25	B	B	25	B	30	30	25	25	15	9	9	13	7	9	15
10	B	19	20	19	19	15	25	20	20	B	22	29	40	40	24	28	21	20	8	8	8	10	8	15
11	15	15	9	19	8	9	19	15	16	18	18	19	18	17	19	19	9	29	9	8	8	8	8	10
12	9	13	17	14	19	18	24	18	20	20	24	20	20	50	18	20	29	19	14	8	8	18	7	7
13	9	14	B	17	9	17	15	17	18	24	30	30	30	23	20	19	19	25	19	17	18	9	6	9
14	19	B	B	B	23	10	B	B	B	26	B	B	22	50	50	58	32	19	10	13	18	7	20	18
15	B	20	10	30	17	B	B	17	20	19	20	20	24	20	19	18	19	24	18	14	19	8	7	7
16	7	18	18	17	29	31	29	B	19	19	20	45	24	25	20	20	24	31	20	24	18	19	15	8
17	9	18	23	29	25	14	14	18	15	18	16	19	19	19	19	19	25	15	14	7	7	19	8	8
18	14	18	20	20	21	24	9	15	15	15	18	19	19	19	19	19	15	15	13	9	8	14	10	8
19	C	25	19	19	15	15	18	25	C	50	C	C	19	18	C	20	20	C	15	C	C	B	14	C
20	24	6	25	C	C	C	C	C	B	40	50	C	C	19	18	30	30	29	30	17	9	12	10	15
21	9	9	7	20	19	17	19	18	18	20	19	13	14	19	24	15	15	16	19	15	10	15	8	7
22	7	7	7	20	15	15	14	19	17	15	17	14	15	15	17	15	15	15	13	19	18	19	12	8
23	7	11	14	14	9	14	10	14	15	15	14	14	18	16	15	15	15	15	19	14	9	7	7	7
24	10	10	8	15	8	8	18	18	19	17	17	35	8	16	15	17	17	17	18	10	9	8	7	9
25	8	10	14	8	8	7	10	15	19	20	25	19	B	50	20	18	8	20	25	8	18	8	7	19
26	25	17	19	16	10	15	B	25	25	20	20	B	B	32	24	24	20	17	7	7	24	7	17	14
27	7	10	7	18	B	20	23	24	B	B	B	B	B	B	31	29	B	29	15	15	7	7	7	7
28	15	17	7	4	B	24	B	B	B	B	B	B	B	B	30	32	33	28	24	19	8	7	13	18
29	B	15	8	B	19	B	B	20	20	19	18	19	22	30	29	20	23	25	25	15	7	8	9	18
30	20	20	B	25	50	15	25	B	29	B	55	53	B	B	B	53	30	23	23	29	15	10	10	23
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	29	29	29	29	29	30	29	28	29	30	29	30	30	29	30	29	29	30	30	29
MED	10	14	18	19	19	15	20	20	25	25	25	30	30	30	24	24	24	22	18	15	9	10	9	10
U Q	20	18	20	28	25	22	B	B	B	B	B	B	B	50	30	30	30	26	23	19	18	18	14	18
L Q	8	10	10	14	12	14	14	18	18	19	18	19	19	19	19	19	19	17	13	9	8	7	7	8

SEP.1991 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

SEP. 1991 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	E A 300	B	B	400	B	B	400	B	B	B	B	B	B	250	270	230	270	Q 340	A	A	345	A	A
2	A	A 250	E A 400	B	A	A	345	B	B	B	B	B	B	270	260	250	E B 300	250	260	350	300	A	A	A
3	A	A	A	A	455	455	420	A	B	B	B	B	250	B	300	240	240	270	300	E A 400	A 370	A	A	A
4	A	A	B	A	A	A	E A 360	B	B	A	B	B	B	B	250	250	E B 260	245	245	230	250	410	A	A
5	A	A	370	B	A	350	B	B	B	B	A	B	280	260	E B 400	B	E B 300	250	300	A	A	A	A	A
6	A	A	A	A	A	310	A	B	B	B	B	B	B	E B 300	260	250	250	240	240	B	A	A	A	A
7	A	S	240	A	A	E A 450	E A 400	B	A	A	E B 350	250	B	260	250	240	240	230	E B 250	240	260	B	A	390
8	A	A	A	290	330	330	A	B	B	B	A	270	250	270	267	280	260	250	230	S	290	340	A	A
9	E A 350	350	350	A	A	A	E A 520	360	320	B	B	270	B	245	260	270	330	350	A	A	270	S	A	250
10	B	A	A	A	A	A	A	A	A 360	B	A	A	B	B	260	250	260	270	310	A	A	A	A	A
11	A	A	A	A	A	A	A	A	A	Y	245	H 230	H 230	H 245	250	280	270	240	260	A	A	A	A	A
12	E A 250	A	A	A	A	E A 300	A	A	E A 350	A	240	240	245	E B 260	240	220	210	210	220	210	210	250	A	A
13	280	A	B	A	E A 400	A	A	A	300	A	260	240	230	240	240	230	230	210	200	230	210	235	S	A
14	A	B	B	B	A	410	B	B	B	A	B	B	250	E B 300	300	E B 260	230	250	330	300	A	A	A	A
15	B	A	A	A	A 400	B	B	385	270	245	250	250	245	240	240	230	230	230	220	210	240	260	A	A
16	A	A	Y	Y	370	A	A	B	A	240	245	A	250	240	245	240	210	220	240	240	210	220	250	A
17	A	280	250	A	A	Y	Y	300	250	240	230	230	240	240	240	230	210	240	220	220	250	260	240	A
18	A	A	A	A	S	E A 450	370	280	250	250	230	240	240	240	240	230	240	220	210	200	210	210	220	260
19	C	A	A	A	A	A	C	Y	C	E B 350	C	C	240	240	C	240	245	C	240	C	C	B	S	C
20	A	250	A	C	C	C	C	C	B	300	270	C	C	250	240	250	240	230	210	210	240	230	310	300
21	270	300	360	A	S	340	360	S	E A 400	300	250	230	230	230	240	240	230	220	240	220	210	240	230	E A 400
22	S	445	S	S	350	300	250	345	270	245	240	240	230	240	240	245	230	240	230	210	220	240	270	240
23	355	S	S	330	350	A	380	180	270	250	245	240	240	220	240	240	245	240	240	210	210	210	210	400
24	A	260	A	S	370	456	A	A	R	260	200	250	210	245	240	240	245	240	210	240	230	290	A	A
25	A	S	S	A	400	A	480	210	A	A	A	250	B	B	270	270	300	340	A	360	A	245	250	A
26	A	360	A	A	340	350	B	A	A	A	E A 300	B	B	270	270	295	280	E A 350	A	A	S	S	E A 320	A
27	280	340	340	440	B	460	S	A	B	B	B	B	B	B	280	300	B	245	A	A	290	S	S	A
28	330	A	A	400	B	A	B	B	B	B	B	B	B	B	250	E A 280	E A 350	330	280	330	S	S	S	S
29	B	A	260	B	A	B	B	A	S	270	270	240	240	250	250	250	260	250	245	245	A	A	240	A
30	A	A	B	E A 480	450	340	A	B	A	B	S	E B 430	B	B	B	280	250	260	260	370	A	A	S	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	10	8	5	12	14	10	8	10	11	15	16	17	22	28	29	29	29	26	20	18	15	10	7
MED	280	300	U 322	U 365	378	345	368	322	278	250	245	240	240	242	250	248	242	242	240	232	240	245	242	U 280
U Q	350	350	365	460	400	450	420	372	350	300	270	250	250	260	264	270	265	265	260	315	270	290	270	400
L Q	270	260	255	310	350	330	360	245	270	245	240	240	230	240	240	240	230	230	220	210	210	230	230	250

SEP. 1991 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

OCT. 1991 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	O X 46	49	59	48	71	B	A	B	A	B	B	B	B	B	B	O X 101	B	B	70	B	B	A	A	A
2	80	A	R	A	B	B	B	B	B	B	B	B	B	B	71	B	B	B	B	A	A	S	A	A
3	S	A	A	A	A	A	42	O X 50	B	B	B	69	B	B	O X 84	B	85	X 85	X 82	74	56	40	48	Y
4	A	A	60	A	70	B	B	O X 65	A	B	B	S	B	B	93	122	120	R	82	70	65	R	R	S
5	B	R	R	S	B	A	S	R	A	70	70	B	B	B	O X 66	X 68	X 67	X 69	X 69	X 64	55	53	35	55
6	R	60	50	56	O X 61	R	O X 51	70	70	75	H 85	98	95	90	102	O X 98	88	99	90	70	70	R	A	A
7	49	48	A	B	A	B	B	B	B	R	B	B	B	B	65	69	74	65	X 58	X 56	X 53	40	R 32	R
8	35	A	A	A	A	B	B	A	B	A	B	B	B	B	R	S	75	70	X 30	55	R	48	42	B
9	A	60	47	65	B	B	59	B	B	B	B	B	B	80	90	X 94	87	85	80	78	73	65	55	S
10	60	45	S	S	59	80	R	B	B	A	O X 50	B	B	B	S	X 74	75	68	A	S	50	36	O X 33	36
11	R	S	60	A	71	R	R	73	O X 68	80	85	88	90	O X 86	X 90	89	X 89	85	89	81	61	S	45	40
12	48	S	B	A	B	B	71	74	85	90	97	100	102	X 99	102	100	105	99	91	85	X 80	69	48	34
13	R	A	A	A	51	R	72	80	85	90	90	89	89	H 93	90	91	90	90	89	X 80	80	75	70	O X 51
14	R	S	A	A	60	A	A	O X 51	70	80	83	85	89	H 92	92	92	93	93	90	X 80	80	70	A	R
15	50	50	S	A	A	61	70	S	70	X 76	X 78	81	X 80	X 80	84	85	85	X 85	X 80	O S 76	O S 76	X 70	X 70	74
16	60	48	60	60	68	70	80	90	90	O X 106	108	106	116	119	X 115	109	X 109	101	100	X 90	X 85	X 80	72	71
17	70	70	70	56	80	72	80	93	105	110	110	110	X 105	103	99	98	93	90	80	X 80	80	80	64	58
18	60	46	S	A	O X 66	O X 86	93	100	103	105	X 105	X 102	105	104	O S 104	O S 104	O S 104	98	X 85	75	73	63	55	R
19	A	S	A	50	S	A	A	A	O X 47	O X 48	50	71	73	80	90	90	92	89	85	X 79	X 70	X 58	R	R
20	A	S	60	S	58	68	70	59	S	R	B	B	B	B	81	R	76	75	X 69	61	S	A	A	A
21	A	56	50	S	S	S	A	B	B	S	A	46	S	61	70	80	A	A	S	49	S	55	S	R
22	S	O X 51	53	O X 36	46	R	A	R	A	O X 50	O X 49	B	B	70	70	69	B	X 59	X 55	A	S	60	58	A
23	46	O X 51	58	70	70	70	S	69	72	A	80	68	72	70	80	X 76	75	65	X 65	X 65	X 59	S	O X 46	O X 51
24	A	B	70	S	70	A	A	S	49	A	A	A	B	B	O X 66	O X 66	65	X 63	X 56	45	R	O X 46	A	A
25	R	45	46	O X 45	S	A	A	A	O X 44	O X 48	B	B	R	O X 51	S	R	O X 69	A	B	A	A	55	Y	R
26	A	44	43	R	44	60	A	B	B	B	A	B	O X 50	B	R	70	R	A	A	A	A	A	S	S
27	A	48	60	A	B	Y	B	A	A	B	A	B	B	B	B	R	B	A	A	Y	50	A	Y	45
28	50	45	60	R	O X 60	A	B	B	A	B	B	B	R	70	B	B	B	B	B	B	A	A	A	A
29	A	A	A	B	B	A	A	B	B	R	A	A	B	B	S	O X 50	A	O X 50	56	B	S	O X 56	S	O X 50
30	B	58	90	60	75	65	65	69	69	74	B	B	B	B	B	B	B	B	B	B	B	B	B	A
31	R	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	R	R	O X 46	O X 46	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	17	17	10	17	9	11	13	14	14	14	13	12	16	21	22	21	21	22	21	19	19	15	11
MED	50	49	60	56	66	70	70	70	70	78	84	88	90	83	90	90	87	85	80	74	70	58	48	51
U Q	60	57	60	60	70	76	80	85	85	90	97	101	104	96	96	98	93	92	89	80	80	70	64	58
L Q	47	46	50	48	58	63	59	62	68	70	70	70	76	70	70	70	75	66	65	58	55	48	42	40

OCT. 1991 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

OCT.1991 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	40	F 41	F	F 42	F	B	A	B	A	B	B	B	B	B	B	95	B	B	60	B	B	A	A	A
2	F 61	A	R	A	B	B	B	B	B	B	B	B	B	B	65	B	B	B	B	A	A	S	A	A
3	S	A	A	A	A	A	J H 36	U W 44	B	B	B	63	B	B	78	B	79	78	75	61	51	F	F	Y
4	A	A	F	A	F	B	B	59	A	B	B	S	B	B	F 80	85	J F 114	R	F	F	J H 59	R	R	S
5	B	R	R	S	B	A	S	R	A	55	64	B	B	B	60	62	60	61	61	56	J F 49	J F 47	F	J S 48
6	R	J F 54	F	J F 52	F 55	R	U H 45	U W 52	J F 64	68	H 79	90	Z 90	80	J F 96	92	80	91	J F 84	F	F	R	A	A
7	F 37	F	A	B	A	B	B	B	B	R	B	B	B	B	J S 60	63	F 65	60	51	J F 50	45	F	J R 26	R
8	F 29	A	A	A	A	B	B	A	B	A	B	B	B	B	R	S	F 65	F 60	45	U F 41	R	F	F 33	B
9	A	F	43	F	B	B	51	B	B	B	B	B	B	74	79	J F 90	80	J F 79	73	70	66	J F 59	44	S
10	F	J F 39	S	S	52	F	R	B	B	A	44	B	B	B	S	68	70	60	A	S	F 44	U F 30	R 27	29
11	R	S	F	A	F 45	R	R	F 63	62	72	75	80	83	80	83	81	80	80	80	75	57	S	F 22	F 20
12	F 40	S	B	A	B	B	68	F 65	F J 71	F J 84	85	95	99	91	98	92	J F 99	90	83	79	72	J F 56	U F 43	F 24
13	R	A	A	A	U F 45	R	65	59	79	81	81	80	U R 80	H 85	J F 84	89	J F 84	J F 84	80	J F 74	70	J F 69	F	H 45
14	R	S	A	A	U F 46	A	A	H 45	F 60	F 68	H 75	H 79	H 80	H 82	85	85	85	J F 87	J F 84	72	71	60	A	R
15	F	F	S	A	A	F	F 60	S	F	70	70	74	73	74	78	79	F 78	79	72	70	70	64	F 64	F 63
16	F	F	F	F	F	F	F	F 78	F 80	100	99	U R 94	110	J F 110	J F 109	100	98	U R 95	91	82	J F 79	71	J F 66	F 59
17	F 50	F 54	F 52	F 48	F 59	F 60	F 60	F 70	F 95	100	J F 104	J F 104	99	99	92	90	J F 87	J F 84	F	72	J F 74	J F 74	F 55	J H 52
18	F	F	S	A	60	S 80	J H 86	90	F 84	96	99	98	H 99	H 99	98	H 98	H 98	90	79	F 69	68	Z 59	F 45	R
19	A	S	A	F	S	A	A	A	F 41	42	F 45	F 58	F 59	70	J F 64	H 82	83	81	S 80	70	63	J F 52	R 30	R
20	A	S	F 54	S	F	F	F 58	H 52	S	R	B	B	B	B	F	R	F 60	67	61	53	S	A	A	A
21	A	F 42	F 45	S	S	S	A	B	B	S	A	E G 43	S	54	F 60	55	A	A	S	F 40	S	J F 49	S	R 38
22	S	45	F	S 30	F	R	A	R	A	44	43	B	B	F 60	60	60	B	J F 53	47	A	S	49	F	A
23	40	46	F 47	F	F	F	S	U F 55	F 60	A	F 71	F 50	F 60	F 61	70	70	65	59	59	59	51	S	U S 40	D S 45
24	A	S	F	S	F	A	A	S	41	A	A	A	B	B	60	61	59	55	49	37	R	D S 40	A	A
25	R	J F 39	F 35	39	S	A	A	A	38	42	B	B	R	S 45	S	R	64	A	B	A	A	F	Y	R
26	A	38	38	R	39	F 33	A	B	B	B	A	B	E G 44	B	R	F 60	R	A	A	A	A	A	S	S
27	A	F 39	F	A	B	Y	B	A	A	B	A	B	B	B	B	R	B	A	A	Y	34	A	Y	40
28	F 40	F 40	54	R	H 54	A	B	B	A	B	B	B	R	F 54	B	B	B	B	B	B	A	A	A	A
29	A	A	A	B	B	A	A	B	B	R	A	A	B	B	S	44	A	44	50	B	S	U S 50	S	F 44
30	B	J F 52	F	J F 54	F	H 55	H 58	60	63	68	B	B	B	B	B	B	B	B	B	B	B	B	B	A
31	R	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	R	R	S 40	S 40	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	12	8	6	9	4	10	13	13	14	14	13	12	16	20	22	21	21	20	19	18	15	12	12
MED	40	42	46	45	52	58	59	59	63	69	75	80	82	77	78	82	80	79	72	69	61	58	42	44
U Q	45	49	53	52	57	70	65	68	80	84	85	94	99	88	88	90	86	86	80	72	70	64	50	50
L Q	38	39	40	39	45	44	51	52	50	55	64	60	66	60	62	62	65	60	55	50	49	49	28	34

OCT.1991 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

OCT. 1991 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	42	38	91	40	35	B	35	B	43	B	B	B	B	B	B	E B 58	B	B	E B 30	B	B	40	45	45
2	E B 25	45	45	60	B	B	B	B	B	B	B	B	B	B	E B 43	B	B	B	B	34	33	42	34	38
3	50	38	130	45	37	35	E B 25	28	B	B	B	E B 35	B	B	E B 38	B	26	25	E B 24	21	27	36	40	45
4	60	45	43	73	35	B	B	36	44	B	B	E B 35	B	B	E B 50	E B 33	26	E B 35	36	26	48	54	60	45
5	B	44	33	37	B	72	45	35	64	46	E B 50	B	B	B	E B 34	30	27	29	23	16	16	13	30	34
6	33	32	30	30	60	43	70	38	30	35	50	35	35	E B 35	10	32	30	27	25	37	70	75	45	42
7	41	34	140	B	41	B	B	B	B	35	B	B	B	B	E B 33	E B 30	27	E B 29	25	28	26	30	35	45
8	38	92	70	80	70	B	B	48	B	26	B	B	B	B	E B 45	E B 55	E B 40	34	27	35	36	48	58	B
9	44	68	45	56	B	B	27	B	B	B	B	B	B	E B 35	C	30	26	26	22	24	26	13	36	41
10	70	100	70	70	34	71	40	B	B	34	63	B	B	B	E B 24	31	27	27	34	35	80	36	35	39
11	75	45	26	40	28	27	45	40	33	E B 33	33	31	33	E B 50	20	E B 34	30	25	22	E B 20	14	35	E B 19	20
12	35	40	B	45	B	B	40	54	40	30	30	32	32	37	32	30	34	27	25	21	13	14	40	31
13	36	40	45	48	47	E B 35	40	26	28	29	32	36	32	31	31	35	28	27	23	20	19	E B 17	21	35
14	38	40	48	45	40	45	22	46	32	35	37	34	33	32	33	38	30	32	23	11	15	11	60	44
15	21	26	36	70	45	33	45	39	43	43	38	38	35	33	38	36	29	26	25	18	E B 18	19	16	11
16	22	25	30	37	38	24	41	46	34	31	34	35	38	38	33	29	30	21	E B 28	20	20	E B 20	E B 19	15
17	11	19	28	27	46	46	38	26	33	30	33	32	33	32	33	44	30	20	43	30	32	32	14	41
18	37	60	49	48	47	43	30	26	28	30	39	32	33	33	32	40	43	46	34	34	45	44	36	40
19	33	60	43	45	45	45	45	48	35	33	33	30	37	35	32	31	29	40	46	35	39	40	45	60
20	80	80	24	68	30	48	26	33	60	38	B	B	B	B	31	E B 40	35	35	45	37	40	45	48	50
21	45	38	27	26	31	38	45	B	B	72	45	35	35	31	31	E B 35	27	45	45	30	14	31	105	98
22	42	34	45	60	70	30	48	35	34	36	38	B	B	E B 50	32	31	B	30	34	46	38	45	49	48
23	45	40	25	40	39	36	45	46	55	45	40	35	35	40	34	32	28	27	26	39	31	41	45	50
24	80	B	34	45	35	70	44	55	32	32	38	42	B	B	34	32	36	32	35	33	45	60	58	45
25	45	40	35	45	35	60	45	65	33	39	B	B	35	32	34	32	38	35	B	60	40	30	60	51
26	62	70	38	48	36	34	38	B	B	B	44	B	31	B	32	31	30	34	40	40	45	39	50	55
27	48	45	34	60	B	40	B	44	44	B	45	B	B	B	B	E B 35	B	26	37	35	35	40	33	42
28	45	44	44	35	46	37	B	B	32	B	B	B	E B 40	E B 35	B	B	B	B	B	B	40	38	38	30
29	36	34	26	B	B	38	46	B	B	32	45	35	B	B	33	38	45	37	26	B	90	41	48	93
30	B	90	60	45	40	21	35	34	36	E B 50	B	B	B	B	B	B	B	B	B	B	B	B	B	30
31	29	B	B	B	B	B	B	B	B	B	B	E B 35	B	B	B	B	B	E B 36	E B 35	E B 36	E B 35	B	B	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	24	23	24	21	21	22	19	17	15	16	25	26	24	27	27	27	29	29	29	30
MED	42	40	43	45	40	38	40	39	34	34	38	35	34	34	32	32	30	28	27	32	32	38	40	43
U Q	49	60	48	60	46	46	45	47	44	39	45	35	35	38	34	38	34	35	36	36	40	43	50	48
L Q	34	36	30	40	35	34	35	34	32	31	33	32	33	32	32	31	27	26	25	21	20	25	34	35

OCT. 1991 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

OCT. 1991 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	18	18	15	15	B	25	B	30	B	B	B	B	B	B	58	B	B	30	B	B	25	23	24
2	25	25	25	25	B	B	B	B	B	B	B	B	B	B	43	B	B	B	B	24	18	18	23	15
3	15	18	15	20	30	24	25	24	B	B	B	35	B	B	38	B	20	18	24	15	10	10	14	15
4	18	30	15	25	10	B	B	25	29	B	B	35	B	B	50	33	24	35	18	18	14	17	14	9
5	B	17	13	15	B	23	20	24	20	19	50	B	B	B	34	22	19	18	17	11	7	6	8	9
6	9	15	7	7	7	15	14	15	15	19	20	19	22	35	7	25	19	20	18	23	7	25	23	9
7	9	7	37	B	30	B	B	B	B	30	B	B	B	B	33	30	18	29	19	11	7	7	7	14
8	7	9	7	10	20	B	B	30	B	24	B	B	B	B	45	55	40	18	20	14	7	7	9	B
9	19	9	17	10	B	B	24	B	B	B	B	B	B	35	33	20	19	19	19	14	8	8	7	8
10	14	9	7	7	8	20	29	B	B	22	20	B	B	B	24	20	19	18	29	15	8	9	7	8
11	18	10	8	19	14	25	20	20	19	33	26	20	23	50	19	34	19	20	17	20	8	7	19	10
12	7	18	B	20	B	B	30	19	19	20	19	19	18	15	15	15	18	18	13	15	10	7	7	8
13	9	18	24	18	12	35	18	15	15	20	19	15	15	15	19	18	19	18	8	10	7	17	7	8
14	7	10	13	19	15	8	15	7	15	15	15	18	12	18	20	19	15	14	15	10	9	10	15	7
15	10	15	15	20	19	15	17	17	15	20	19	15	15	19	19	17	18	8	15	14	18	11	9	9
16	8	19	9	14	8	19	19	15	20	18	20	28	19	24	25	18	18	19	28	18	18	20	19	10
17	7	10	8	8	19	16	14	13	16	17	18	18	17	18	18	17	14	18	7	7	7	8	7	8
18	9	7	15	19	15	19	19	17	18	15	15	15	15	18	18	8	19	9	7	14	15	7	7	13
19	8	7	20	8	18	19	17	19	15	20	19	19	30	24	20	19	20	20	20	11	19	7	10	7
20	8	18	8	19	10	17	15	12	19	19	B	B	B	B	24	40	18	15	17	19	10	8	15	19
21	23	10	7	8	9	15	18	B	B	24	30	20	20	18	18	35	19	17	9	8	9	7	7	10
22	9	7	7	9	8	10	18	18	19	17	20	B	B	50	29	17	B	18	14	25	10	7	9	14
23	7	9	7	9	7	14	19	17	19	23	19	20	19	25	25	25	19	20	24	15	15	14	7	8
24	8	B	8	14	6	27	19	18	18	19	23	23	B	B	19	18	17	18	15	18	15	7	8	25
25	20	7	7	18	15	29	18	18	18	19	B	B	20	21	29	25	23	18	B	25	10	7	8	11
26	15	8	19	21	20	19	30	B	B	B	30	B	19	B	25	20	29	18	31	15	29	15	19	7
27	17	8	8	18	B	19	B	28	20	B	23	B	B	B	B	35	B	19	30	8	14	18	10	10
28	10	16	15	25	18	25	B	B	19	B	B	B	40	35	B	B	B	B	B	B	30	28	24	23
29	23	19	18	B	B	25	20	B	B	20	30	20	B	B	20	19	18	19	19	B	19	20	15	14
30	B	18	15	18	15	15	18	15	20	50	B	B	B	B	B	B	B	B	B	B	B	B	B	25
31	20	B	B	B	B	B	B	B	B	B	B	35	B	B	B	B	B	36	35	36	35	B	B	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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	15	15	18	15	23	20	20	20	22	30	35	B	50	25	25	19	18	19	15	10	10	10	10
U Q	19	18	18	20	30	B	30	B	B	B	B	B	B	B	43	40	40	20	30	24	18	18	19	15
L Q	8	9	8	10	10	16	18	17	18	19	19	19	19	21	19	18	18	18	15	11	8	7	7	8

OCT. 1991 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

OCT.1991 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	450	400	380	A	330	B	A	B	A	B	B	B	B	B	B	450	B	B	280	B	B	A	A	A
2	300	A	R	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	S	A	A
3	245	A	A	A	A	A	330	240	B	B	B	E B 250	B	B	270	B	245	250	245	240	310	350	240	Y
4	A	A	270	A	300	B	B	310	A	B	B	250	B	B	B	250	260	300	240	345	340	250	220	S
5	B	250	370	S	B	A	S	E A 380	A	Y	B	B	B	B	250	250	240	250	250	245	240	250	230	250
6	260	250	300	250	E A 200	300	230	250	200	220	245	250	240	250	260	250	240	250	240	330	300	R	A	A
7	A 370	A 410	A	B	A	B	B	B	B	E A 300	B	B	B	B	250	250	250	270	280	270	295	E A 360	230	R
8	250	A	A	A	A	B	B	A	B	A	B	B	B	B	B	350	300	300	310	420	A	250	E A 330	B
9	A	295	420	490	B	B	310	B	B	B	B	B	B	C	C	250	295	240	240	240	240	245	350	345
10	250	370	S	370	E A 300	340	R	B	B	A	E A 350	B	B	B	S	250	250	240	A	A	340	Y	210	230
11	250	S	350	A	300	300	R	Y	280	250	240	240	240	400	240	250	230	250	250	240	250	360	E B 400	E A 350
12	230	240	B	A	B	B	Y	Y	260	230	240	240	230	240	240	240	240	250	240	230	230	245	340	400
13	350	A	A	A	Y	R	350	300	250	250	230	240	220	230	230	240	240	240	240	250	250	240	260	250
14	240	S	A	A	Y	A	A	380	250	230	200	240	240	230	240	240	240	250	240	230	240	230	A	R
15	A	A 360	270	A	A	380	Y	300	220	230	245	245	240	250	235	240	240	250	240	240	240	245	250	250
16	E A 305	A	A	A	A	A	E A 290	E A 260	270	240	245	240	230	220	245	230	235	240	235	230	240	245	245	245
17	250	295	A 340	A 350	E A 390	Y	A	250	235	230	230	230	230	230	230	230	240	250	245	240	240	240	300	A 370
18	A 250	Q 200	230	A	450	E A 480	270	250	240	240	240	240	240	E A 240	240	230	250	250	240	250	250	260	310	E A 250
19	A	S	A	410	S	A	A	A	230	250	250	245	E A 250	E A 250	245	250	250	250	270	250	245	280	A	A
20	A	S	230	270	370	E A 310	340	270	E A 280	R	B	B	B	B	260	E A 300	250	300	290	290	310	A	A	A
21	A	Y	260	S	S	S	A	B	B	S	A	250	E A 260	240	250	280	A	A	S	290	S	280	S	B
22	S	240	410	300	350	E B 360	A	E B 300	A	220	270	B	B	B	240	250	B	270	300	A	300	290	395	A
23	400	400	350	380	300	E A 370	S	Y	Y	A	250	245	260	Y	250	250	240	250	260	270	270	S	250	A
24	A	B	350	310	260	A	A	S	245	A	A	A	B	B	260	250	260	260	260	370	300	270	A	A
25	300	Y	330	Y	S	A	A	A	Y	Y	B	B	250	260	S	270	270	A	B	A	A	340	Y	R
26	A	350	Y	R	Y	350	A	B	B	B	A	B	260	B	260	250	280	A	A	A	A	A	S	S
27	A	Y	400	A	B	Y	B	A	A	B	A	B	B	B	B	260	B	A	A	Y	Y	A	Y	Y
28	E A 300	A 400	350	400	350	A	B	B	A	B	B	B	E A 300	250	B	B	B	B	B	B	A	A	A	A
29	A	A	A	B	B	A	A	B	B 270		A	A	B	B	S	280	A 240		A	B	250	240	S	E B 450
30	B	410	E A 350	450	E A 450	270	300	250	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
31	360	B	B	B	B	B	B	B	B	B	B	200	B	B	B	B	B	200	200	B	200	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	15	18	11	13	10	8	13	12	13	13	15	15	13	19	26	22	23	22	20	22	20	16	11
MED	U 265	350	350	370	U 315	U 322	305	260	245	235	242	240	240	240	245	250	248	250	245	250	250	250	252	250
U Q	350	400	370	410	380	370	335	305	265	250	250	250	260	250	260	260	260	260	270	290	300	285	335	370
L Q	250	250	270	300	300	300	280	250	232	230	235	240	230	230	240	240	240	240	240	240	240	245	235	250

OCT.1991 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

NOV.1991 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	A	S	O X 46	A	O X 46	O X 44	S	O X 45	R	A	O X 49	O X 51	80	R	O X 46	R	R	A	40	B	40	40	40
2	R	S	S	O X 46	S	R	A	R	R	S	B	45	R	O X 51	R	B	O X 64	60	58	57	60	52	45	S
3	R	R	S	B	R	54	O X 64	S	70	70	75	72	71	72	75	O X 86	X 80	80	X 73	X 69	X 60	X 56	Y	50
4	A	O X 49	A	O X 50	A	68	Y	A	B	B	R	R	S	B	B	70	70	71	71	X 59	55	52	A	B
5	O X 51	O X 48	A	B	S	B	70	50	B	A	A	B	71	70	71	66	O X 61	H 63	X 62	X 59	50	60	44	50
6	O X 51	B	60	Y	R	B	B	B	O X 48	A	B	B	R	R	O X 67	69	H 63	68	X 65	59	O X 48	42	50	O X 50
7	50	S	56	A	A	O X 51	S	70	O S 50	A	70	B	68	69	69	70	H 69	70	H 70	X 72	X 69	X 69	X 60	44
8	54	O X 56	O X 51	59	59	A	A	A	69	A	76	B	69	71	72	69	69	A	B	R	A	S	A	A
9	B	B	B	A	S	O X 41	A	A	B	B	A	A	A	B	S	O X 50	O X 50	80	A	A	S	48	S	39
10	B	A	48	49	51	A	B	A	A	S	B	R	O X 63	O X 65	O X 75	S	H 65	H 65	X 69	X 62	50	O X 49	O X 51	S
11	B	B	B	B	B	A	S	70	80	90	80	80	80	80	79	X 79	R	71	X 71	61	52	59	A	A
12	S	60	70	A	S	A	A	50	A	80	S	X 80	78	79	X 72	X 73	73	X 70	X 69	X 69	X 68	X 65	60	60
13	50	O S 65	O X 65	70	80	80	80	X 100	100	X 105	X 101	106	X	X	X 85	X 89	81	80	69	75	X 61	O S 62	49	49
14	47	60	60	60	70	70	70	70	71	O R 74	O X 65	80	O X 75	72	79	79	79	X 76	72	X 69	X 69	X 70	57	45
15	48	58	60	S	A	A	O X 50	O X 52	70	A	B	B	R	69	B	R	A	O X 52	S	A	59	S	O X 52	43
16	60	H 49	58	S	B	A	40	A	A	A	B	B	R	O X 50	O X 65	A	O X 60	52	S	S	S	R	A	A
17	40	A	A	50	A	A	S	A	S	S	A	B	B	A	O X 65	A	A	A	B	R	R	58	O X 41	A
18	A	R	47	O X 49	A	51	R	A	A	A	A	O X 50	R	R	78	70	A	O X 51	70	70	69	A	60	A
19	S	50	S	A	51	O X 55	A	A	A	A	B	B	O X 66	O X 61	80	H 79	O S 54	S	A	50	49	40	A	R
20	O X 48	A	O X 51	46	O X 46	45	O X 59	66	O X 66	O X 76	71	S	72	71	B	O X 74	72	74	61	61	X 59	60	A	A
21	A	B	59	78	60	70	70	B	A	B	B	B	B	B	80	B	60	O X 65	60	H 58	51	A	45	60
22	A	A	R	O X 45	A	R	O X 54	B	B	A	B	A	B	B	O X 65	B	B	A	R	O X 56	X 60	60	S	O X 48
23	O X 54	45	52	A	60	A	B	A	A	B	B	B	B	B	79	O X 64	A	64	X 58	X 60	X 53	O X 56	50	O X 49
24	A	A	A	70	B	A	R	A	A	70	B	B	90	O X 81	90	S	72	H 68	H 58	R	B	52	O X 51	50
25	B	70	A	R	70	80	70	72	B	B	90	R	B	O X 86	O S 81	80	H 74	O X 71	71	X 65	61	O S 56	46	X 59
26	51	A	A	A	B	80	S	B	O X 65	A	O X 71	70	O X 81	O X 85	O X 80	80	O X 86	O X 79	76	X 79	X 61	61	X 56	X 59
27	69	X 68	X 70	70	O X 76	B	B	90	101	100	100	100	90	X 90	90	83	H 82	80	O X 76	O X 60	49	53	S	B
28	B	A	A	R	A	70	80	X 89	X 100	100	106	100	99	96	O X 102	90	80	80	80	72	X 69	X 69	70	O X 81
29	59	60	60	54	59	A	O X 65	A	O X 64	69	68	70	60	71	68	73	71	H 65	60	O X 55	X 60	X 60	S	O X 51
30	55	O X 50	A	A	S	60	O X 49	R	A	A	A	O X 55	50	50	R	R	R	X 65	64	62	68	X 60	60	X 59
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	14	15	15	11	15	14	11	14	10	12	13	17	21	23	21	22	25	22	24	24	25	19	19
MED	51	57	59	50	60	60	64	70	70	78	76	72	71	71	78	73	70	70	69	61	60	58	51	50
U Q	55	60	60	70	70	70	70	89	80	100	95	90	80	80	80	80	79	78	71	69	64	60	60	59
L Q	48	49	51	46	51	51	50	52	64	70	70	52	64	67	69	69	63	64	61	58	52	52	45	45

NOV.1991 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

NOV. 1991 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	A	S	U S 40	A	S 40	U F 38	S	39	R	A	43	U S 45	F	R	40	R	R	A	33	B	34	F	F 33
2	R	S	S	S 40	S	R	A	R	R	S	B	40	R	S 45	R	B	58	52	50	H 50	50	F 43	F 30	D S 60
3	R	R	S	B	R	47	H 58	S	H 64	H 65	H 69	68	65	68	69	H 80	74	70	65	J F 63	J F 54	50	Y	H 42
4	A	F 43	A	F 44	A	A	Y	A	B	B	R	R	S	B	B	H 64	H 62	F 60	F 61	J F 53	49	45	A	B
5	U S 46	42	A	B	S	B	F 54	44	B	A	A	B	F 60	61	65	59	H 55	H 55	54	J F 53	F 40	F 40	U F 38	F
6	S 45	B	H 50	Y	R	B	B	B	S 42	A	B	B	R	R	U R 61	H 59	H 58	H 59	60	49	42	35	44	44
7	F	S	J F 50	A	A	45	S	F 60	42	A	F 60	B	F 58	F 61	H 62	63	61	H 62	62	65	60	60	J F 54	38
8	46	U S 50	R 45	F 48	F	A	A	A	H 60	A	H 59	B	F	H 60	H 64	60	U F 63	A	B	R	A	S	A	A
9	B	B	B	A	S	35	A	A	B	B	A	A	A	B	S	44	44	F 68	A	A	S	U F 42	S	U F 32
10	B	A	U F 30	U F 42	U F 45	A	B	A	A	S	B	R	57	59	69	S	H 59	H 58	61	57	F 43	43	45	S
11	B	B	B	B	B	A	S	H 60	U F 71	F 80	F 71	F 74	F 72	72	70	71	R	H 67	65	58	47	J F 53	A	A
12	S	F	F	A	S	A	A	F 43	A	73	D S 71	74	70	70	69	68	65	64	61	61	60	59	F 51	F
13	F 44	59	R 59	F 59	F	F 70	F 70	90	90	99	93	89	B	B	J F 79	80	U R 74	F 72	U R 61	66	54	55	F 43	F 40
14	F	F	F	F 54	F	F	F 69	F 69	E G 65	R 68	59	72	69	67	71	H 73	H 71	70	H 68	61	J F 63	J F 64	F 46	F 39
15	F	J R 52	F	S	A	A	R 44	R 46	F 60	A	B	B	R	J F 63	B	R	A	46	S	A	F 49	S	U S 46	U S 40
16	F 50	J F 43	J F 52	S	B	A	F 35	A	A	A	B	B	R	44	59	A	54	46	S	S	S	R	A	A
17	F	A	A	F 44	A	A	S	A	S	S	A	B	B	A	59	A	A	A	B	R	R	F 40	35	A
18	A	R	41	43	A	H 48	R	A	A	A	A	44	R	R	71	F	A	46	F	F	F	A	F 44	A
19	S	F	S	A	44	49	A	A	A	A	B	B	60	55	F 67	H 70	48	S	A	43	40	F	A	R
20	42	A	D S 45	F	H 40	F 35	H 53	60	H 60	70	66	S	68	66	B	H 68	65	69	55	H 58	51	F	A	A
21	A	B	F 45	F	H 47	H 60	H 55	B	A	B	B	B	B	B	70	B	J H 54	59	F	J H 52	J F 54	A	J F 39	F
22	A	A	R	39	A	R	48	B	B	A	B	A	B	B	59	B	B	A	R	S 50	44	44	S 45	42
23	H 48	39	F 42	A	F	A	B	A	A	B	B	B	B	B	70	58	A	58	49	J S 54	46	50	H 44	43
24	A	A	A	F	B	A	R	A	A	64	B	B	H 69	U S 75	H 70	S	65	H 60	H 52	R	B	45	45	F
25	B	F	A	R 48	F 55	J F 74	F	68	B	B	F	R	B	80	S 75	J F 74	H 69	H 65	65	60	55	U S 50	40	50
26	45	A	A	A	B	F	S	B	59	A	65	65	S 75	79	74	H 74	80	U S 73	70	71	55	57	49	50
27	J F 63	J F 62	61	J F 64	70	B	B	79	H 90	J F 94	H 90	J F 94	J F 84	J F 84	82	H 79	H 79	72	70	52	H 44	45	S	B
28	B	A	A	R	A	64	70	79	J F 84	J F 94	H 100	J F 94	H 90	H 90	H 96	80	H 72	H 74	J F 74	65	60	60	J F 64	S 75
29	F	F	F	H 48	F 49	A	H 59	A	H 58	58	H 59	F 59	F 51	H 67	61	H 68	H 65	H 57	H 54	49	J F 54	51	S	45
30	J H 49	44	A	A	S	F	43	R	A	A	A	R 49	R 44	R 44	R	R	R	59	59	55	Z 62	54	J F 54	J F 43
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	9	11	13	7	11	13	11	14	10	12	13	16	20	23	20	22	25	20	23	23	23	19	16
MED	46	44	45	44	47	48	54	60	60	72	68	68	66	66	69	68	64	60	61	55	51	50	45	42
U Q	49	56	52	51	55	64	64	79	71	94	80	82	71	74	71	74	71	70	65	61	55	55	49	48
L Q	45	42	42	41	44	40	44	46	58	65	60	46	58	60	62	60	58	58	54	50	44	43	40	40

NOV. 1991 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

NOV.1991 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	36	60	33	45	35	27	29	27	31	32	34	35	31	32	30	30	35	25	58	25	B	25	105	47
2	45	38	42	40	45	33	37	36	39	35	B	34	33	33	32	B	29	28	30	34	24	30	23	40
3	45	33	58	B	35	36	40	37	29	22	38	42	41	61	35	36	30	E B 34	70	45	31	30	38	41
4	40	40	40	30	44	35	40	31	B	B	35	35	32	B	B	32	32	30	60	26	40	44	72	B
5	46	70	38	B	51	B	38	34	B	50	44	B	34	E B 35	33	33	E B 31	34	25	34	22	25	56	33
6	E B 35	B	45	35	43	B	B	B	33	40	B	B	E B 40	E B 40	33	31	38	28	25	27	35	32	38	33
7	32	33	70	43	40	43	32	35	37	38	38	B	34	32	33	31	30	28	33	36	31	40	22	37
8	36	38	45	35	30	40	45	44	50	43	35	B	35	34	33	27	29	27	B	36	48	84	32	60
9	B	B	B	44	36	35	72	45	B	B	33	37	43	B	39	33	33	90	47	48	35	85	70	70
10	B	70	38	33	42	44	B	31	35	35	B	35	34	35	63	36	30	E B 33	27	30	45	32	34	70
11	B	B	B	B	B	35	50	30	35	34	34	33	33	E B 55	33	32	E B 52	28	40	38	25	36	45	70
12	60	59	35	60	36	51	52	33	35	39	E B 59	35	31	37	34	33	32	38	31	36	31	13	14	35
13	40	38	40	45	44	41	41	33	36	33	39	36	B	B	37	38	B 31	B 34	39	39	26	30	41	40
14	39	38	32	32	35	48	51	45	45	38	35	36	E B 52	E B 35	34	31	38	29	27	40	32	30	38	40
15	28	37	30	32	45	47	50	49	49	37	B	B	32	E B 36	B	E B 36	40	26	26	46	49	52	50	50
16	36	28	32	46	B	60	40	33	31	32	B	B	38	33	32	40	38	37	33	35	44	48	49	40
17	42	51	45	37	51	40	44	37	37	34	35	B	B	59	32	31	28	26	B	30	46	33	50	50
18	45	35	90	52	50	40	60	30	46	48	90	39	E B 40	36	34	32	30	36	40	41	48	65	38	59
19	46	60	90	50	40	40	48	30	45	36	B	B	33	35	30	26	37	26	40	45	45	40	70	45
20	60	70	45	30	27	60	30	45	39	30	30	E B 52	E B 54	27	B	28	25	28	25	E B 30	31	60	49	45
21	56	B	60	30	47	26	36	B	37	B	B	B	B	B	E B 50	B	33	31	38	29	35	60	32	45
22	91	80	48	28	28	33	26	B	B	75	B	33	B	B	34	B	B	28	27	39	45	30	38	39
23	59	40	38	89	33	56	B	41	35	B	B	B	B	B	27	29	30	32	31	40	37	27	40	44
24	41	51	37	43	B	41	40	40	37	E B 50	B	B	32	E B 39	E B 35	E B 40	E B 34	40	31	E B 29	B	29	41	35
25	B	31	54	26	E B 27	44	50	41	B	B	E B 55	E B 54	B	E B 55	E B 55	31	30	28	31	26	34	41	40	39
26	47	44	41	34	B	32	70	B	37	39	33	35	E B 55	E B 55	E B 60	30	E B 35	E B 35	E B 35	22	34	31	27	38
27	31	40	34	37	37	B	B	38	32	35	36	38	40	37	32	38	31	28	25	40	40	40	40	B
28	B	48	49	44	46	34	38	33	36	31	31	23	33	33	36	33	36	34	32	33	E B 30	34	31	45
29	46	38	80	50	48	57	33	70	39	41	35	31	33	32	32	33	33	34	32	27	36	35	43	40
30	39	45	90	47	28	38	38	38	47	39	39	31	32	E B 37	E B 40	32	31	29	36	35	65	39	22	42
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	28	27	26	27	26	26	25	25	20	19	24	24	27	27	29	30	28	30	28	30	30	28
MED	42	40	44	40	40	40	40	36	37	36	35	35	34	34	34	32	32	29	32	35	35	34	40	42
U Q	46	59	56	46	45	47	50	41	42	40	39	38	40	40	37	36	36	34	40	40	45	44	49	48
L Q	36	38	38	32	35	35	37	33	35	34	34	33	32	33	32	31	30	28	27	29	31	30	32	39

NOV.1991 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

NOV. 1991 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	20	20	25	35	19	20	19	24	19	18	25	20	19	19	18	18	20	19	18	18	B	15	15	15
2	28	20	19	15	17	18	19	17	18	18	B	19	24	25	19	B	18	19	19	17	20	15	9	8
3	22	24	11	B	18	17	17	18	18	13	18	18	18	23	18	17	17	34	15	18	17	9	9	10
4	18	15	19	20	18	10	18	20	B	B	25	20	25	B	B	24	23	18	16	9	13	13	10	B
5	9	18	18	B	19	B	9	18	B	25	30	B	21	35	25	20	31	18	19	18	9	15	14	10
6	35	B	10	10	18	B	B	B	19	29	B	B	40	40	25	20	18	18	20	21	10	8	8	18
7	9	9	8	20	19	17	18	14	15	23	25	B	20	20	30	29	19	15	7	18	15	15	7	8
8	14	20	14	8	19	30	20	20	19	30	20	B	25	25	25	24	19	19	B	9	19	15	22	15
9	B	B	B	15	9	9	25	19	B	B	19	20	20	B	20	19	18	19	15	19	21	19	14	7
10	B	10	10	14	19	30	B	25	23	20	B	20	18	29	24	34	18	33	19	15	14	7	19	17
11	B	B	B	B	B	23	18	20	19	18	28	28	29	55	25	20	52	18	9	9	19	8	21	19
12	19	18	10	20	19	18	19	15	18	19	7	23	20	22	19	19	19	19	19	19	10	8	7	8
13	16	19	20	19	18	19	16	16	19	19	19	19	B	B	33	20	19	18	19	8	19	16	19	8
14	9	9	8	9	15	19	19	20	29	29	29	29	52	35	21	19	18	18	15	15	8	8	8	11
15	7	8	10	7	18	19	8	18	19	25	B	B	30	36	B	36	20	19	19	13	19	16	10	8
16	8	9	8	18	B	20	15	18	20	28	B	B	20	25	19	20	32	20	18	15	18	15	19	19
17	8	18	10	17	16	19	19	19	19	20	19	B	B	23	20	19	19	21	B	19	20	18	17	20
18	20	19	19	10	19	19	18	18	19	20	20	20	40	25	20	19	19	15	10	10	9	8	8	8
19	8	8	28	18	8	19	18	19	20	25	B	B	20	20	19	22	18	19	19	19	19	19	19	9
20	8	8	7	15	18	15	15	20	19	19	20	52	54	24	B	20	20	19	20	30	20	23	9	18
21	24	B	25	19	20	19	19	B	30	B	B	B	B	B	50	B	20	19	19	21	19	19	19	19
22	19	20	15	18	19	19	20	B	B	20	B	20	B	B	20	B	B	19	19	18	19	21	19	19
23	19	15	8	17	9	30	B	30	20	B	B	B	B	B	22	19	20	19	19	10	8	7	8	8
24	19	20	30	7	B	20	30	25	23	50	B	B	24	39	35	40	34	10	9	29	B	9	10	28
25	B	24	25	20	20	44	19	20	B	B	55	54	B	55	55	19	19	19	15	9	19	19	8	15
26	15	25	21	29	B	10	20	B	24	29	30	29	55	55	60	18	35	35	35	20	19	19	19	9
27	9	9	10	12	18	B	B	20	18	14	19	20	19	19	17	19	19	20	20	20	19	22	23	B
28	B	20	15	20	30	20	18	18	28	21	20	21	25	19	20	22	18	18	10	18	30	9	7	7
29	8	9	18	19	19	19	10	19	19	19	19	19	19	19	20	20	20	12	16	25	19	19	15	18
30	8	18	20	29	17	15	19	19	19	20	25	21	22	37	40	19	19	20	25	29	23	18	9	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	18	18	16	18	19	19	19	20	19	22	26	28	25	32	23	20	19	19	19	18	19	15	12	15
U Q	24	20	21	20	19	23	20	24	28	29	B	B	54	55	35	24	20	19	19	20	20	19	19	19
L Q	9	9	10	14	18	18	18	18	19	19	20	20	20	23	20	19	18	18	15	13	14	9	8	8

IONOSPHERIC DATA STATION Nankyoku

NOV.1991 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	E A 200	A	B	E A 240	A	E A 250	250	B	250	300	A	280	E B 200	240	E A 200	E A 200	B	B	A	310	B	320	E A 260	B
2	B	B	B	E A 250	B	B	A	B	B	A	B	E A 250	B	E A 200	260	B	245	245	260	300	300	320	A	350
3	B	B	B	B	E A 400	450	E A 350	B	270	250	230	E A 250	E A 230	E A 230	250	240	240	250	250	250	270	240	Y	240
4	A	420	A	400	A	270	Y	A	B	B	250	250	B	B	B	240	240	250	250	300	400	A 360	A	B
5	E A 430	450	A	B	B	B	245	240	B	A	A	B	250	A	230	240	245	250	250	280	350	350	Y	345
6	E B 400	B	345	Y	320	B	B	B	250	A	B	B	E A 250	B	230	245	245	245	250	270	400	E A 400	360	350
7	380	B	290	A	A	E A 250	A	250	250	A	250	B	E A 200	E A 200	250	245	240	245	260	260	260	260	280	A
8	340	410	390	360	350	A	A	A	330	A	240	B	B	240	245	245	250	A	B	E A 350	A	360	A	A
9	B	B	B	A	B	230	A	A	B	B	A	A	A	B	B	B	E A 280	Y	A	A	E B 390	Y	E B 390	Y
10	B	A	Y	Y	Y	A	B	A	A	B	B	E B 220	C	C	A	250	240	250	250	260	280	250	370	B
11	B	B	B	B	B	A	300	E A 250	Y	250	Y	B	B	B	230	240	B	250	260	E A 340	270	310	A	A
12	A	Y	270	A	B	A	A	E A 200	A	260	B	240	230	225	220	215	235	245	250	250	260	235	275	A 335
13	A 365	A	A	A 400	310	A	295	250	H 230	H 200	230	A	B	B	A	230	230	250	A	280	250	250	A	A
14	A	A 360	A 360	300	A	A	A	E A 300	A	B	B	210	B	Y	240	240	230	240	245	250	260	260	335	A
15	330	240	245	200	A	A	220	250	E A 330	A	B	B	230	E A 230	B	260	A	B	330	A	350	260	B	250
16	340	250	240	Y	B	A	260	A	A	A	B	B	230	240	250	A	E A 240	230	360	S	300	390	A	A
17	330	A	A	A	A	A	B	A	E A 280	A	A	B	B	A	240	A	A	A	B	240	R	260	300	A
18	A	480	450	320	A	E A 350	250	A	A	A	A	245	E A 200	E A 200	E A 240	Y	A	250	250	340	300	A	A	A
19	A	330	Y	A	Y	360	A	A	A	A	B	B	E A 230	250	250	230	260	270	A	280	250	E A 300	A	280
20	380	A	400	380	E A 350	290	250	Y	Y	E A 450	Y	B	B	245	B	240	240	250	240	250	260	E A 220	A	A
21	A	B	A	220	190	200	230	B	A	B	B	B	B	B	B	B	220	230	220	260	280	A	340	400
22	A	A	390	E A 350	A	360	E A 250	B	B	A	B	A	B	B	250	B	B	A	250	250	270	270	290	E A 350
23	380	310	270	A	295	A	B	A	A	B	B	B	B	B	E A 250	E A 250	A	220	230	250	340	270	280	Y
24	A	A	A	350	B	A	240	A	A	B	B	B	220	250	240	B	220	230	250	260	B	200	340	300
25	B	330	A	B	300	360	210	Y	B	B	B	B	B	370	360	230	230	230	230	240	260	330	Y	290
26	E A 350	A	A	A	B	250	A	B	E A 245	A	Y	Y	E A 420	380	B	230	E A 230	E A 250	250	250	245	260	270	295
27	295	295	320	300	310	B	B	270	230	210	210	200	220	210	210	240	240	230	240	245	300	E A 350	300	B
28	B	A	A	A	A	B	H 250	250	A	A	200	200	210	210	230	230	230	230	250	240	260	260	270	280
29	340	E A 200	Y	260	E A 370	A	250	A	E A 230	E A 250	210	210	240	230	230	230	230	230	270	250	270	270	E A 250	E A 250
30	250	Y	A	A	300	240	240	R	A	A	A	B	E A 250	B	R	230	240	240	250	260	250	260	270	240
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	12	12	14	11	13	16	9	11	8	8	11	16	17	21	22	23	24	24	27	26	27	17	15
MED	335	330	332	305	305	260	250	250	248	250	230	U 225	225	230	240	240	240	245	250	255	270	265	285	292
U Q	380	415	390	360	350	360	255	260	280	280	245	250	245	248	250	245	245	250	255	280	300	330	340	350
L Q	330	272	270	250	300	245	240	245	230	230	210	210	215	210	230	230	230	230	248	250	260	260	270	250

NOV.1991 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

DEC.1991 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	58	X 55	B	A	A	A	A	71	O X 76	75	75	O X 76	78	B	B	B	H 70	69	A	64	62	52	O S 50	60
2	59	60	68	B	A	54	A	68	B	78	72	70	A	B	B	B	X 70	B	59	59	70	X 55	O X 50	O X 54
3	B	50	A	A	O X 50	48	72	A	A	S	S	S	70	71	S	58	R	H 64	O X 50	H 54	59	O X 66	R	O X 51
4	51	57	48	A	B	B	56	A	A	B	A	S	59	60	O X 61	A	60	O X 65	H 60	H 56	X 59	51	A	S
5	B	59	A	R	A	A	A	A	S	B	B	B	S	B	S	B	70	H 69	69	X 65	66	O X 65	X 58	O X 56
6	X 58	R	R	A	A	A	B	70	72	O X 82	89	80	O X 83	O X 76	S	69	71	H 70	H 70	O X 71	X 69	X 65	A	O X 65
7	O X 65	59	R	A	68	70	60	O X 51	70	71	74	O X 78	O X 74	74	80	X 80	80	X 78	79	H 72	X 69	X 69	O X 65	59
8	X 56	60	O X 65	72	61	65	74	S	A	S	A	S	S	B	S	O X 67	70	71	65	66	X 65	65	X 60	O X 66
9	67	S	S	S	70	72	80	R	O S 87	O S 85	80	R	O X 82	A	O X 74	O X 69	O X 69	A	71	68	X 59	O X 47	55	O X 51
10	A	S	58	A	60	A	A	O X 63	A	69	A	B	B	A	A	R	A	68	H 68	64	61	A	A	A
11	60	A	O X 50	S	61	O X 58	60	70	S	70	A	A	A	A	R	O X 64	52	O X 63	58	H 51	51	57	O X 64	S
12	A	B	58	A	O X 54	A	A	B	R	71	R	70	70	A	A	R	R	X 68	H 67	H 57	A	A	S	62
13	O X 55	A	A	61	A	A	R	A	O X 77	79	79	81	83	83	70	O X 76	S	60	60	62	60	S	60	A
14	O X 66	A	60	B	S	70	O X 60	S	A	A	B	B	B	B	80	B	80	65	R	S	A	A	O X 51	A
15	54	50	60	A	A	B	B	A	A	S	69	B	B	B	O X 53	70	X 69	X 69	68	X 65	61	O X 64	X 60	59
16	O X 64	R	B	71	75	70	80	100	104	B	O X 101	105	95	89	90	79	A	76	O X 66	A	A	70	57	60
17	A	A	59	56	B	B	B	O X 51	A	A	B	B	B	B	O X 51	70	O X 65	O X 64	A	A	A	A	A	B
18	56	B	B	B	A	O X 51	B	B	O X 48	B	B	B	B	B	81	85	79	65	61	60	61	X 60	X 69	64
19	X 69	71	70	71	78	X 81	84	90	90	O X 95	95	S	O X 79	B	O X 66	B	O X 64	A	A	57	O X 50	78	59	R
20	O X 54	57	53	58	60	60	65	74	R	S	S	S	71	A	B	O X 59	60	65	R	A	47	S	A	O X 51
21	48	O R 52	55	60	60	S	A	B	A	A	B	B	B	B	B	R	66	R	59	58	59	61	58	O X 53
22	A	55	B	B	59	67	B	B	A	B	79	84	R	O X 85	R	79	71	70	70	X 69	68	65	X 68	X 69
23	68	X 70	70	B	68	B	B	A	A	B	73	70	B	75	79	B	R	68	64	R	X 58	56	S	O X 55
24	O X 51	S	60	A	60	A	A	A	B	A	S	S	69	B	B	O X 76	70	X 69	63	O S 56	O X 57	65	O S 65	59
25	S	B	48	A	S	69	79	X 89	X 90	X 89	91	O S 86	79	73	74	76	X 79	X 80	71	61	S	R	52	58
26	O X 64	S	70	S	A	O X 66	A	61	A	70	B	S	74	71	72	72	72	71	H 69	X 69	70	70	68	O X 55
27	B	A	A	S	S	S	S	A	A	O X 51	R	70	78	82	B	B	R	B	59	A	A	R	A	A
28	A	A	A	O X 51	A	60	S	64	S	B	B	B	A	R	O X 68	O X 56	B	O X 50	A	O X 50	A	A	60	48
29	A	A	O X 51	57	O X 52	O X 53	S	S	68	B	A	A	B	S	A	S	63	62	63	61	R	B	A	A
30	R	A	B	A	70	B	A	A	A	S	S	A	B	A	S	S	S	52	55	X 60	X 59	X 59	X 59	X 41
31	55	A	54	55	59	X 67	X 70	75	X 75	X 76	79	74	X 78	O X 74	X 74	X 72	X 69	X 68	64	X 61	O X 51	52	59	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	20	13	18	10	17	17	12	14	11	14	13	12	16	12	15	18	22	26	25	25	23	21	21	22
MED	58	57	58	59	60	66	71	70	76	76	79	77	78	74	74	71	70	68	64	61	60	64	59	57
U Q	64	60	65	71	69	70	80	75	90	82	90	82	80	82	80	76	71	70	69	66	66	66	64	60
L Q	54	54	53	56	59	56	60	63	70	70	74	70	70	72	66	67	65	64	60	57	58	56	56	52

DEC.1991 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

DEC. 1991 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	J F 52	J F 49	B	A	A	A	A	63	H 70	69	70	70	70	B	B	B	H 65	60	A	58	56	H 41	44	45
2	51	53	F	B	A	48	A	J F 62	B	69	66	64	A	B	B	B	65	B	J F 53	52	F	49	44	48
3	B	F 41	A	A	44	J F 42	F	A	A	S	S	S	65	65	S	J F 52	R	H 59	U R 44	H 48	49	60	R	45
4	F 43	F	F	A	B	B	J F 50	A	A	B	A	S	J F 53	J F 54	56	A	J F 54	H 59	H 55	H 49	J F 53	F 45	A	S
5	B	J F 53	A	R	A	A	A	A	S	B	B	B	S	B	S	B	64	H 61	62	59	60	59	J F 52	50
6	49	R	R	A	A	A	B	60	68	76	J F 83	72	77	70	S	62	67	H 63	H 65	65	J F 63	59	A	59
7	59	J F 53	R	A	59	F	J F 54	S 45	F 60	F 67	F 68	72	68	69	71	71	H 72	70	70	H 66	60	60	59	J F 53
8	J F 50	J F 54	59	F 65	J F 55	J F 59	F	S	A	S	A	S	S	B	S	60	65	65	60	59	58	58	53	S 60
9	60	S	S	S	J F 64	J F 66	J F 74	R	80	78	J F 74	R	R 76	A	68	63	E G 63	A	66	61	52	41	F 45	45
10	A	S	53	A	F	A	A	U W 57	A	62	A	B	B	A	A	R	A	J F 62	H 61	J H 58	56	A	A	A
11	F	A	F 44	S	55	U W 52	U W 51	F	S	F 59	A	A	A	A	R	58	U W 58	58	J H 52	H 47	46	J F 51	S 58	S
12	A	S	49	A	48	A	A	B	R	U F 62	R	59	64	A	A	R	R	60	H 60	H 50	A	A	S	Z 57
13	S 49	A	A	J H 52	A	A	R	A	H 71	71	J F 73	74	75	75	63	70	S	53	H 54	56	F 49	S	51	A
14	60	A	F	B	S	F	54	S	A	A	B	B	B	B	J F 74	B	74	59	R	S	A	A	45	A
15	F 45	F	F	A	A	B	B	A	A	S	62	B	B	B	R 47	F 60	60	61	H 60	59	55	58	53	J F 53
16	58	R	B	F	F	J F 63	70	Z 94	95	B	95	F 90	F 80	79	80	J F 73	A	69	60	A	A	64	49	F
17	A	A	52	J F 50	B	B	B	45	A	A	B	B	B	B	46	F 60	59	58	A	A	A	A	A	B
18	F 34	B	B	B	A	45	B	B	R 42	B	B	B	B	B	F 69	F 78	F 68	58	58	55	55	50	51	59
19	60	F 59	F 56	F 59	F 60	75	78	U F 80	80	89	79	S	73	B	60	B	U W 58	A	A	51	46	F	J H 53	R
20	48	F 51	H 48	F	F	F 53	59	F	R	S	S	S	F 60	A	B	53	54	59	R	A	40	S	A	F 45
21	F	R 46	F 44	F 50	J F 54	S	A	B	A	A	B	B	B	B	B	R	57	R	J F 53	51	J F 53	55	J F 52	47
22	A	J F 49	B	B	52	F 52	B	B	A	B	71	78	R	79	R	70	65	63	65	62	61	60	60	60
23	60	60	60	B	F	B	B	A	A	B	F 60	F 55	B	68	69	B	R	60	59	R	49	S 50	S	49
24	46	S	F 51	A	F	A	A	A	B	A	S	S	F 60	B	B	S 70	64	62	58	S 50	51	59	59	J F 53
25	S	B	44	A	S	F 60	71	79	80	J F 83	84	80	72	69	69	69	71	70	65	55	S	R	48	50
26	58	S	F 55	S	A	60	A	56	A	F 60	B	S	69	65	68	65	65	65	H 63	61	60	62	60	49
27	B	A	A	S	S	S	S	A	A	45	R	F	68	72	B	B	R	B	J F 53	A	A	R	A	A
28	A	A	A	46	A	F	S	F 54	S	B	B	B	A	R	62	U S 50	B	R 44	A	S 44	A	A	F	J F 42
29	A	A	45	49	46	47	S	S	F 58	B	A	A	B	S	A	S	58	58	59	H 55	R	B	A	A
30	R	A	B	A	F	B	A	A	A	S	S	A	B	A	S 48	U S 48	S 48	45	47	54	52	53	52	44
31	F 46	A	48	48	J F 53	59	F 64	69	70	71	74	S 70	71	S 68	68	65	64	61	58	54	H 45	46	54	45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	11	14	8	11	14	10	12	11	14	13	11	16	12	16	19	23	26	25	25	22	20	20	21
MED	50	53	50	50	54	56	62	61	70	69	73	72	70	69	68	63	64	60	59	55	53	56	52	49
U Q	59	54	55	56	59	60	71	74	80	76	81	78	74	74	69	70	65	63	62	59	58	60	56	55
L Q	46	49	45	48	48	48	54	55	60	62	67	64	64	66	58	58	58	58	54	50	49	50	48	45

DEC. 1991 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

DEC.1991 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	44	60	B	41	41	40	40	45	31	E B 55	44	E B 53	40	B	B	B	31	30	30	30	35	30	60	45
2	47	35	35	B	43	34	35	37	B	50	37	39	37	B	B	B	30	B	41	31	37	35	70	47
3	B	35	48	32	26	34	51	70	43	32	33	38	35	34	33	33	31	32	E B 31	38	30	40	49	39
4	37	75	23	49	B	B	36	38	45	B	34	31	31	35	34	35	33	31	36	33	35	38	45	46
5	B	32	38	39	46	40	38	43	40	B	B	B	E B 53	B	E B 52	B	33	31	36	26	26	21	25	40
6	30	33	27	38	45	38	B	40	38	34	37	33	32	36	33	38	33	31	31	40	26	42	60	31
7	35	89	46	38	45	46	29	38	39	37	33	33	33	33	44	70	33	33	28	43	45	40	22	36
8	49	70	44	45	49	35	36	38	36	45	38	E B 55	32	B	36	35	32	28	31	45	43	47	37	35
9	37	42	40	36	35	33	31	42	35	33	33	44	42	78	52	53	33	33	30	30	30	37	31	45
10	80	43	40	45	38	70	46	45	46	50	36	B	B	33	34	36	33	39	45	40	36	34	46	48
11	35	65	70	46	43	37	33	33	37	35	32	34	37	34	32	36	31	32	E B 31	32	39	40	40	48
12	55	B	37	40	38	38	27	B	40	39	35	33	33	32	33	35	33	33	32	26	39	90	48	40
13	34	90	42	50	46	47	51	46	36	45	43	37	33	34	E B 55	E B 55	E B 55	38	30	37	35	43	43	49
14	60	80	37	B	34	33	42	45	58	44	B	B	B	B	37	B	E B 55	35	32	37	42	43	38	39
15	44	70	31	50	37	B	B	50	31	45	36	B	B	B	36	36	33	45	46	31	33	33	32	32
16	39	40	B	32	35	36	E B 35	35	E B 55	E B 60	E B 59	E B 56	E B 56	41	38	32	34	39	31	27	50	45	46	39
17	39	45	43	35	B	B	B	39	29	38	B	B	B	B	35	37	E B 35	33	35	49	51	34	45	B
18	35	B	B	B	41	36	B	B	31	B	B	B	B	B	E B 55	E B 35	E B 51	38	33	34	E B 30	30	29	40
19	59	39	60	59	70	60	60	60	41	49	40	E B 57	37	B	E B 40	B	34	29	27	25	90	59	70	41
20	39	34	24	22	44	34	36	31	34	43	40	38	41	41	B	33	33	30	E B 35	27	37	36	46	45
21	61	95	34	32	33	60	41	B	46	45	B	B	B	B	B	E B 26	39	28	28	41	33	40	38	34
22	70	58	B	B	31	37	B	B	45	B	E B 55	32	27	E B 58	35	33	33	27	29	40	42	70	38	27
23	30	28	27	B	31	B	B	51	69	B	33	35	B	E B 51	E B 55	B	33	34	35	31	30	36	35	41
24	45	E B 35	45	45	35	45	38	53	B	75	35	32	34	B	B	E B 52	E B 51	31	33	E B 30	29	27	34	36
25	34	B	36	40	45	41	35	37	33	35	33	46	48	38	40	34	35	31	35	37	90	41	39	42
26	51	60	90	45	42	42	41	41	52	37	B	E B 55	37	37	35	38	45	45	32	36	26	25	21	27
27	B	39	43	37	35	E B 30	36	34	42	58	36	38	37	36	B	B	E B 35	B	32	50	51	90	52	38
28	45	42	36	34	45	42	41	35	35	B	B	B	35	34	34	34	B	38	27	38	34	35	35	70
29	35	70	38	27	27	28	28	34	45	B	43	42	B	33	34	34	33	31	28	26	E B 30	B	50	40
30	38	45	B	53	29	B	44	41	45	35	33	36	B	36	34	35	35	34	30	36	30	39	44	37
31	44	46	46	45	38	30	33	32	35	39	43	42	37	38	50	34	33	33	32	31	26	44	48	45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	26	26	29	26	25	27	29	24	24	23	22	20	25	24	30	29	31	31	31	30	31	30
MED	42	45	39	40	38	38	36	40	40	U 42	36	36	36	35	35	35	33	33	32	34	35	40	43	40
U Q	50	70	45	45	45	42	42	45	45	50	42	46	40	40	47	38	35	36	35	40	42	43	48	45
L Q	35	37	35	35	34	34	34	35	35	36	33	33	33	34	34	34	33	31	30	30	30	34	35	36

DEC.1991 ftEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Nankyoku

DEC.1991 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	7	18	B	30	20	20	30	18	19	55	19	53	22	B	B	B	19	20	25	18	13	8	18	19
2	18	10	15	B	20	19	25	20	B	20	19	20	31	B	B	B	18	B	19	20	9	7	20	19
3	B	7	20	29	18	19	15	19	20	19	19	19	20	18	20	31	20	15	31	9	16	7	19	18
4	22	9	8	25	B	B	20	20	25	B	21	23	20	19	19	20	19	19	18	9	19	21	17	17
5	B	18	26	18	19	20	31	23	20	B	B	B	53	B	52	B	19	19	19	17	19	19	19	18
6	8	20	21	25	19	25	B	20	39	19	19	20	20	18	20	19	18	18	18	18	20	19	18	18
7	13	19	24	20	19	10	19	20	19	19	19	19	18	19	20	19	19	19	18	18	10	10	18	16
8	15	9	15	9	10	18	19	20	19	24	25	55	25	B	30	20	20	19	20	19	18	20	18	9
9	18	9	9	19	18	19	19	18	20	19	19	20	25	25	19	19	19	30	19	18	19	20	8	19
10	19	18	19	18	19	20	19	19	20	24	20	B	B	22	25	20	20	19	19	19	15	19	19	19
11	8	20	20	18	10	8	9	18	19	20	20	20	25	22	19	19	19	19	31	19	9	9	8	19
12	30	B	19	29	19	19	19	B	24	19	18	22	19	20	20	23	20	20	19	19	19	30	19	18
13	25	19	23	18	20	20	19	35	20	21	19	25	25	20	55	55	55	18	19	30	25	16	16	19
14	19	16	9	B	10	19	18	19	20	25	B	B	B	B	30	B	55	19	19	10	20	25	19	24
15	9	7	24	24	20	B	B	25	19	20	26	B	B	B	23	19	19	19	20	19	9	19	8	19
16	15	19	B	24	24	29	35	9	55	60	59	56	56	30	20	23	23	23	20	19	19	7	19	8
17	24	19	8	9	B	B	B	19	21	30	B	B	B	B	21	19	35	19	15	10	18	23	22	B
18	9	B	B	B	30	9	B	B	19	B	B	B	B	B	55	35	51	20	20	24	30	19	19	16
19	9	10	14	15	9	15	16	20	19	30	25	57	30	B	40	B	19	20	19	15	31	23	9	19
20	17	19	8	12	12	9	15	17	19	19	19	20	20	20	B	19	18	20	35	19	15	14	15	9
21	7	9	9	19	15	19	19	B	19	29	B	B	B	B	B	26	20	20	18	16	15	18	17	29
22	21	19	B	B	20	20	B	B	23	B	55	25	25	58	30	25	19	19	19	18	30	19	9	20
23	20	19	19	B	20	B	B	20	20	B	19	22	B	51	55	B	30	19	19	15	15	15	17	19
24	19	35	15	19	15	19	19	19	B	20	20	20	20	B	B	52	51	18	15	30	18	15	19	19
25	19	B	19	20	20	19	15	17	19	15	15	19	19	19	20	19	25	25	19	18	19	13	15	19
26	19	14	19	19	32	19	21	20	20	19	B	55	20	21	20	18	18	13	9	13	15	19	20	23
27	B	30	20	23	25	30	17	19	20	21	22	19	20	19	B	B	35	B	15	19	15	18	15	15
28	19	29	25	15	19	8	8	18	18	B	B	B	20	20	24	20	B	15	18	15	15	19	8	7
29	15	9	7	19	20	19	15	20	19	B	20	20	B	19	19	16	19	19	20	20	30	B	20	25
30	24	25	B	19	25	B	25	24	20	19	19	20	B	30	20	20	20	20	17	15	17	15	14	18
31	16	14	13	17	16	18	15	19	17	19	19	22	19	19	19	15	16	15	15	20	19	19	19	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	19	19	19	19	19	19	20	20	21	20	23	25	25	24	20	20	19	19	18	18	19	18	19
U Q	22	20	24	29	20	25	31	23	21	60	59	B	B	B	55	55	30	20	20	19	19	20	19	19
L Q	13	10	13	18	16	18	16	19	19	19	19	20	20	19	20	19	19	19	18	15	15	14	15	16

DEC.1991 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

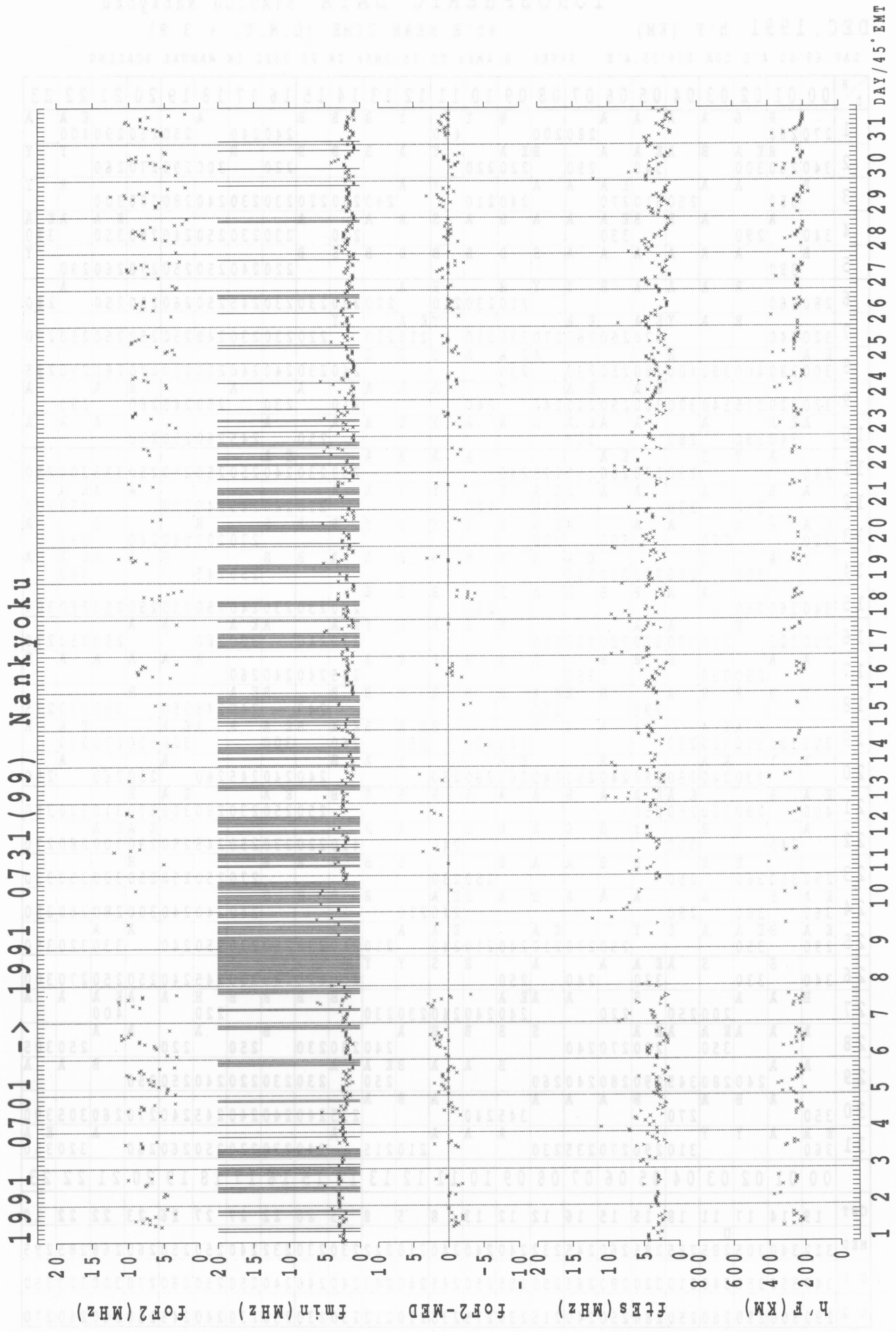
IONOSPHERIC DATA STATION Nankyoku

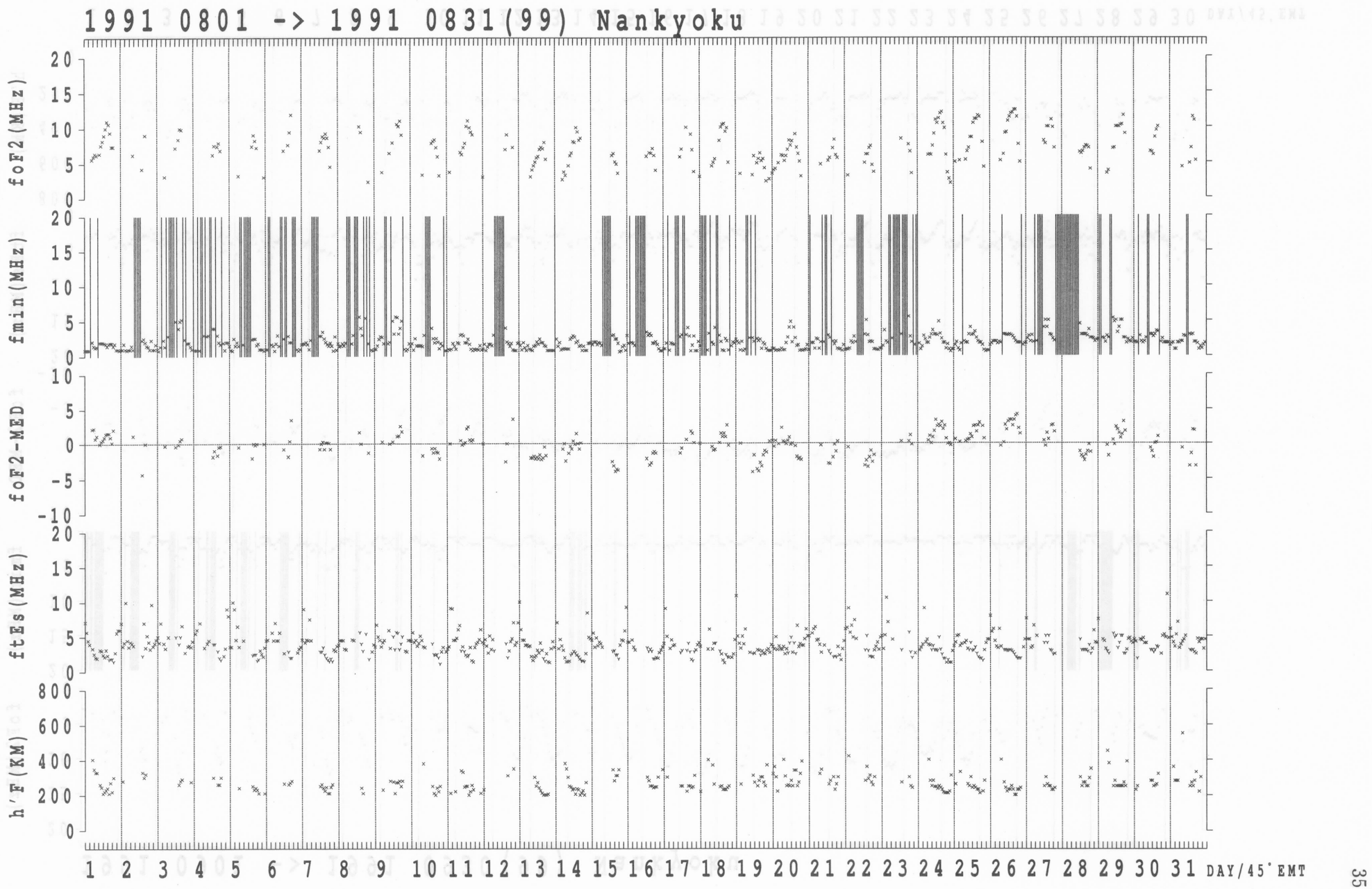
DEC. 1991 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

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	270	H 260	B	A	A	A	A	280	200	B	Y	440	Y	B	B	B	240	240	A	250	250	290	E A 400	A
2	340	H 260	E A 300	B	A	E A 340	A	290	B	E A 220	220	Y	A	B	B	B	220	B	300	290	270	260	Y	Y
3	B	350	A	A	250	310	E A 270	A	A	240	210	Y	A	240	230	220	230	230	240	280	300	300	R	Y
4	340	A	290	A	B	B	E A 330	A	A	B	A	S	A	A	230	A	230	230	250	240	280	E A 350	A	E A 370
5	B	380	A	R	A	A	A	A	S	B	B	B	B	B	S	B	220	240	250	250	270	260	290	Y
6	280	360	R	A	A	A	B	Y	Y	H 210	230	H 210	A	220	230	230	230	245	250	260	250	250	A	290
7	320	340	R	A	Y	E A 320	260	E A 260	270	230	210	Y	E A 210	210	Y	220	230	230	240	250	250	250	250	270
8	E A 300	280	460	390	H 400	280	250	230	A	E A 230	A	S	S	B	240	230	240	240	250	250	270	260	250	295
9	320	320	375	340	300	E A 300	250	E A 240	240	Y	240	A	A	A	210	A	230	A	250	245	H 260	A	290	A
10	A	E A 340	350	A	280	A	A	E A 330	A	A	A	B	B	A	A	250	A	245	260	250	270	A	A	A
11	280	A	Y	S	230	270	E A 280	250	220	240	A	A	A	A	230	230	E A 240	250	250	250	250	335	300	250
12	A	B	310	A	330	A	A	B	E A 310	Y	220	Y	Y	A	A	230	240	245	240	270	A	A	E A 350	330
13	E A 320	A	A	270	A	A	300	A	E A 200	Y	Y	Y	Y	Y	B	B	S	270	H 200	260	260	S	380	A
14	Y	A	300	B	290	290	330	E A 260	A	A	B	B	B	B	A	B	B	250	245	S	A	A	E A 390	A
15	340	360	250	A	A	B	B	A	A	S	250	B	B	B	220	230	230	240	250	250	250	250	260	300
16	310	320	B	260	A 330	A 320	250	220	250	B	B	B	B	Y	E A 230	240	A	E A 300	280	A	A	290	250	270
17	A	A	250	300	B	B	B	250	A	A	B	B	B	B	245	240	240	260	A	A	A	A	A	B
18	Y	B	B	B	A	290	B	B	E A 230	B	B	B	B	B	B	240	B	E A 240	245	250	B	250	290	275
19	305	300	E A 310	E A 315	290	A	A	Y	Y	420	400	B	E A 250	B	E A 260	B	E A 300	A	A	E A 300	330	270	E A 300	R
20	Y	Y	330	E A 240	280	280	H 240	250	240	E A 260	260	250	Y	A	B	240	240	245	260	A	250	260	A	250
21	E A 400	B	290	300	E A 250	E A 250	A	B	A	A	B	B	B	B	B	250	E A 250	230	280	E A 300	H 270	310	320	360
22	A	340	B	B	300	Y	B	B	A	B	B	240	A	B	410	220	230	250	245	250	E A 290	E A 300	280	270
23	290	350	H 380	B	250	B	B	A	A	B	250	230	B	B	B	B	B	270	250	250	H 250	300	350	330
24	E A 360	S	300	A	250	A	A	A	B	A	S	E A 240	210	B	B	B	B	240	240	240	300	280	260	250
25	E A 290	B	E A 350	A	S	Y	250	270	E A 210	240	210	E A 240	A	210	E A 240	230	250	230	250	240	A	A 330	320	350
26	340	S	330	S	A	E A 330	A	240	A	250	B	S	Y	Y	200	220	240	230	245	240	250	250	270	300
27	B	A	A	200	250	S	220	A	A	E A 240	240	240	230	230	B	B	R	B	H 220	A	A	E A 400	A	A
28	A	A	A	E A 350	A	E A 280	270	240	S	B	B	B	A	240	230	230	B	250	A	220	A	A	250	305
29	A	A	240	280	345	290	280	240	260	B	A	A	B	E A 250	A	230	230	220	240	250	250	B	A	A
30	350	A	B	A	270	B	A	A	A	345	240	A	B	A	235	240	240	240	245	240	270	260	305	390
31	E A 360	A	Y	Y	310	290	270	235	230	A	A	A	210	215	A	240	230	270	250	260	260	A	320	E A 350
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	14	17	11	18	15	15	16	12	12	13	8	5	8	15	20	22	27	27	26	23	22	22	19
MED	312	340	305	U 285	285	285	260	245	232	240	240	240	210	222	230	230	232	240	250	250	260	268	285	295
U Q	340	350	350	340	310	320	280	265	255	255	250	245	240	240	240	240	240	250	250	260	270	300	320	350
L Q	290	300	290	260	250	280	250	240	215	230	215	235	210	212	230	230	230	230	240	245	250	260	260	270

DEC. 1991 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN


1991 0701 -> 1991 0731(99) Nankyoku
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45'EMT
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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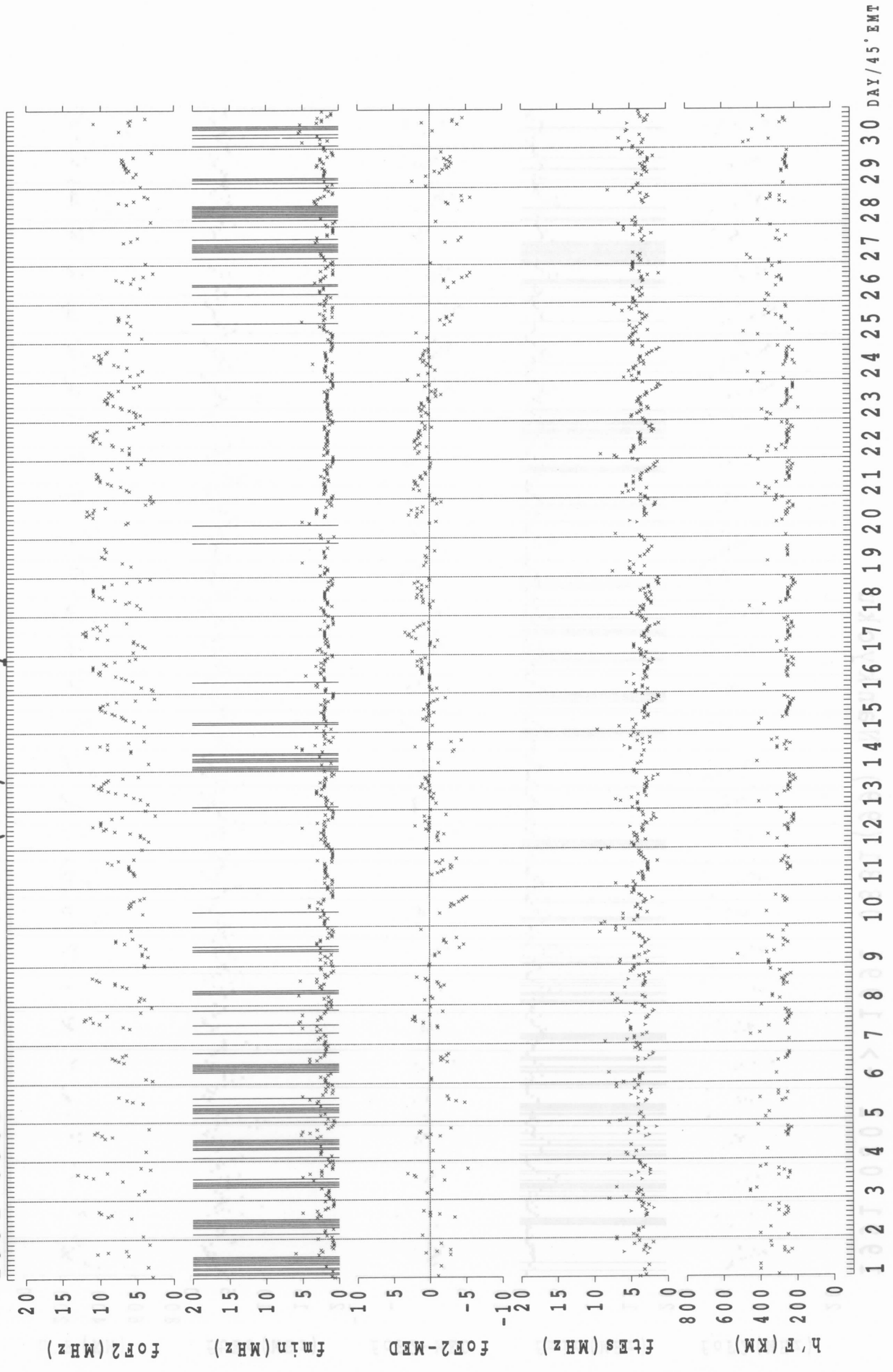
DAY/45'EMT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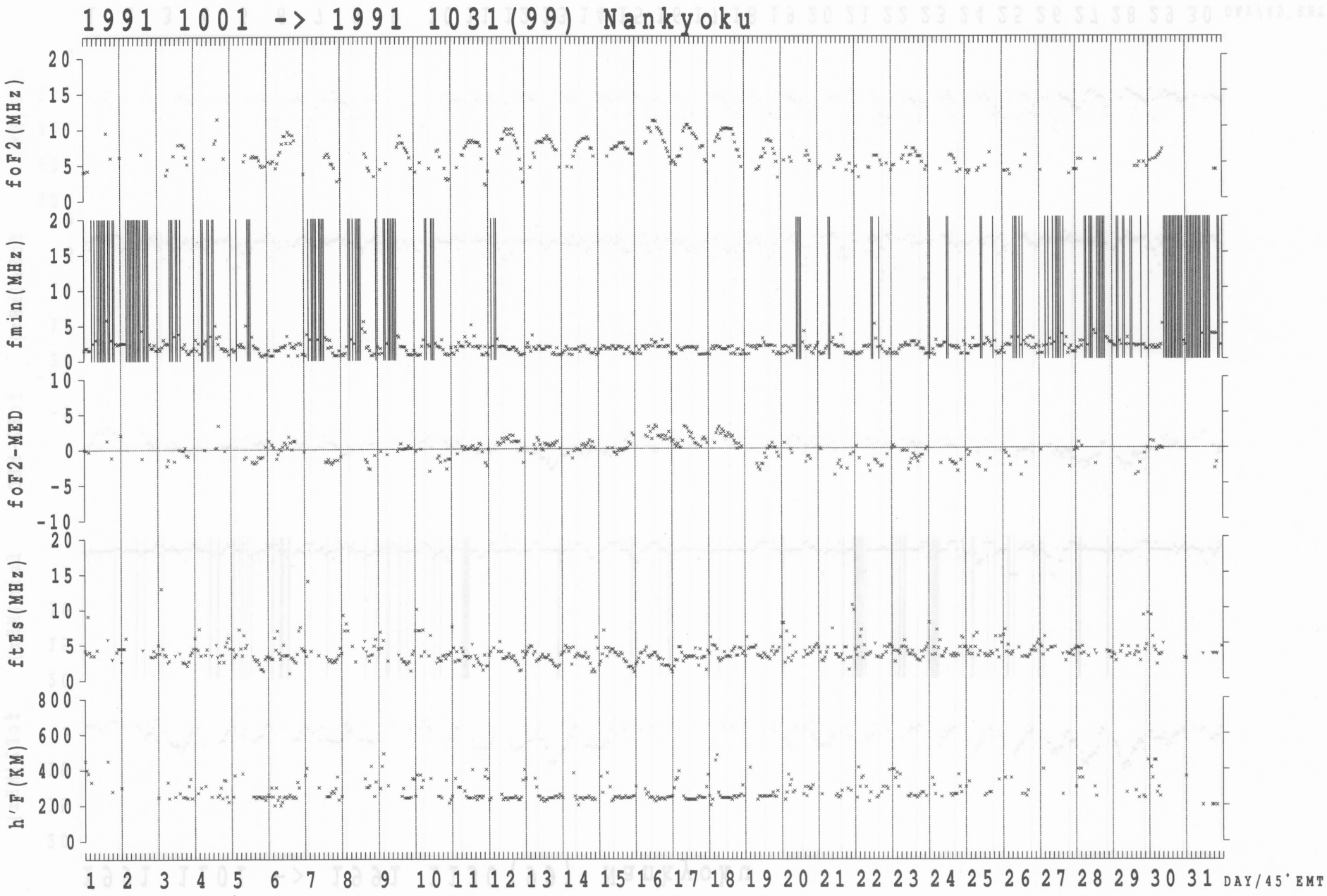
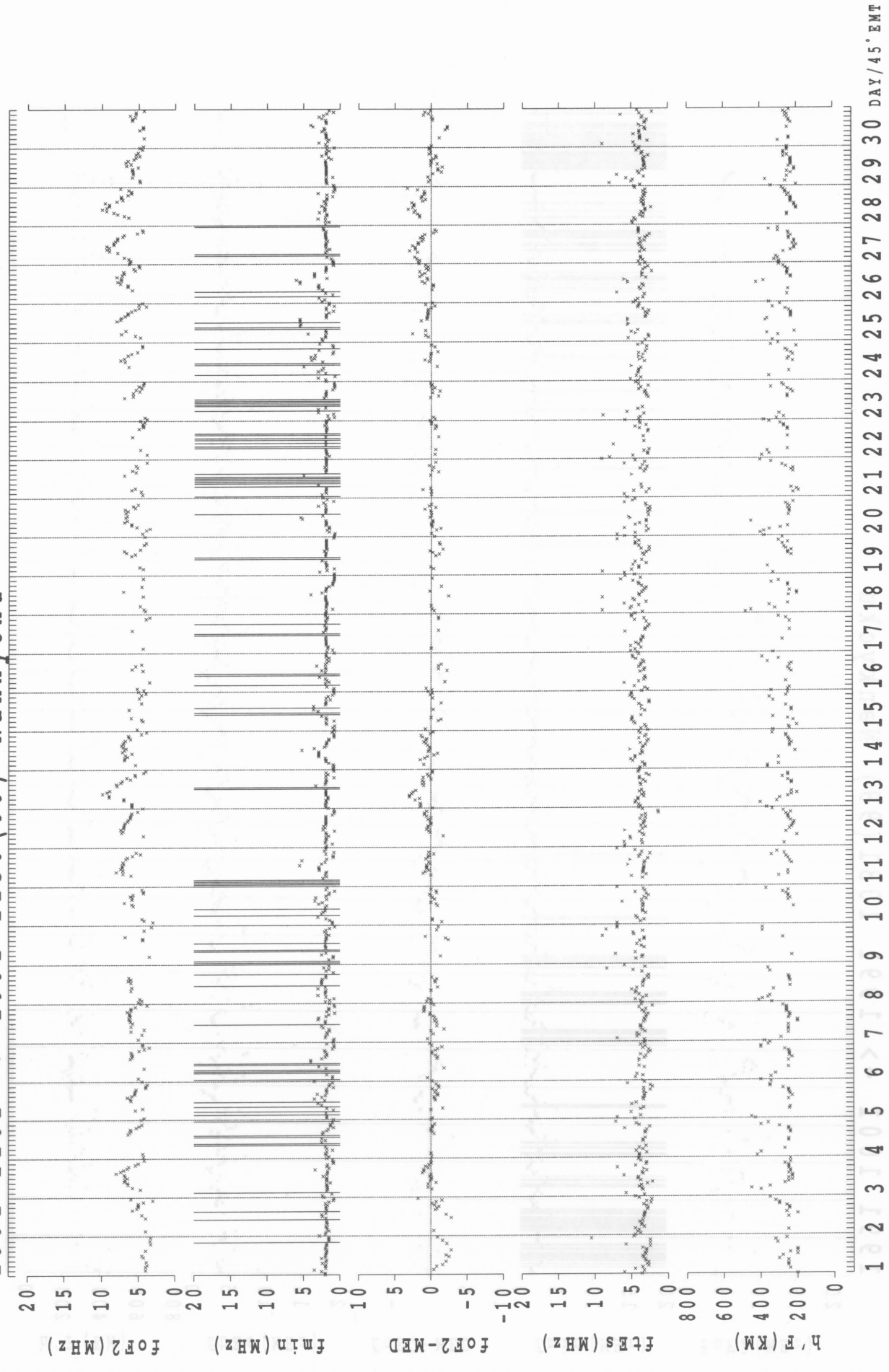
ftEs(MHz)
h'F(KM)
DAY/45'EMT


1991 1001 -> 1991 1031(99) Nankyoku
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45' EMT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foF2-MED
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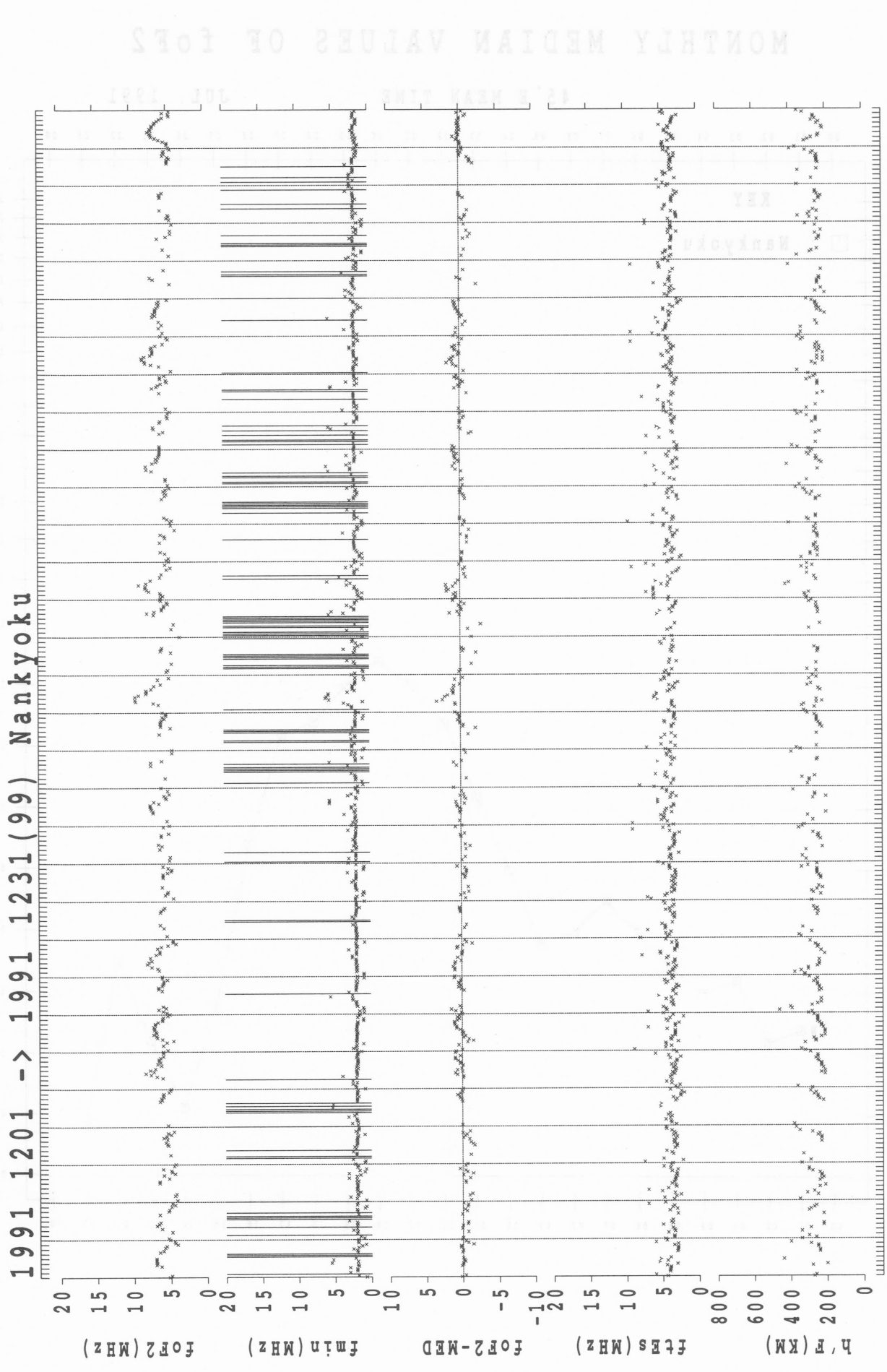
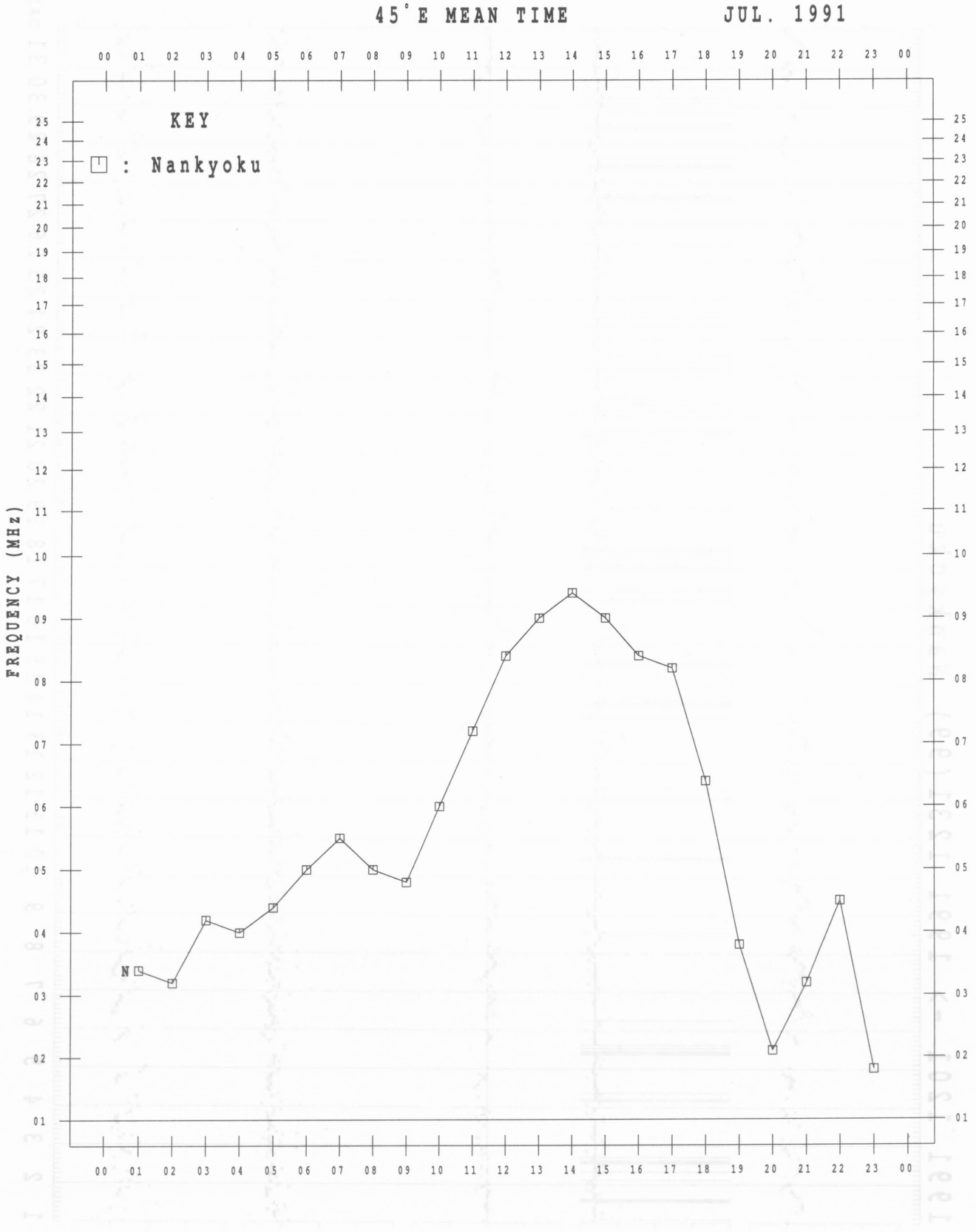
h'F(KM)
DAY/45'EMT

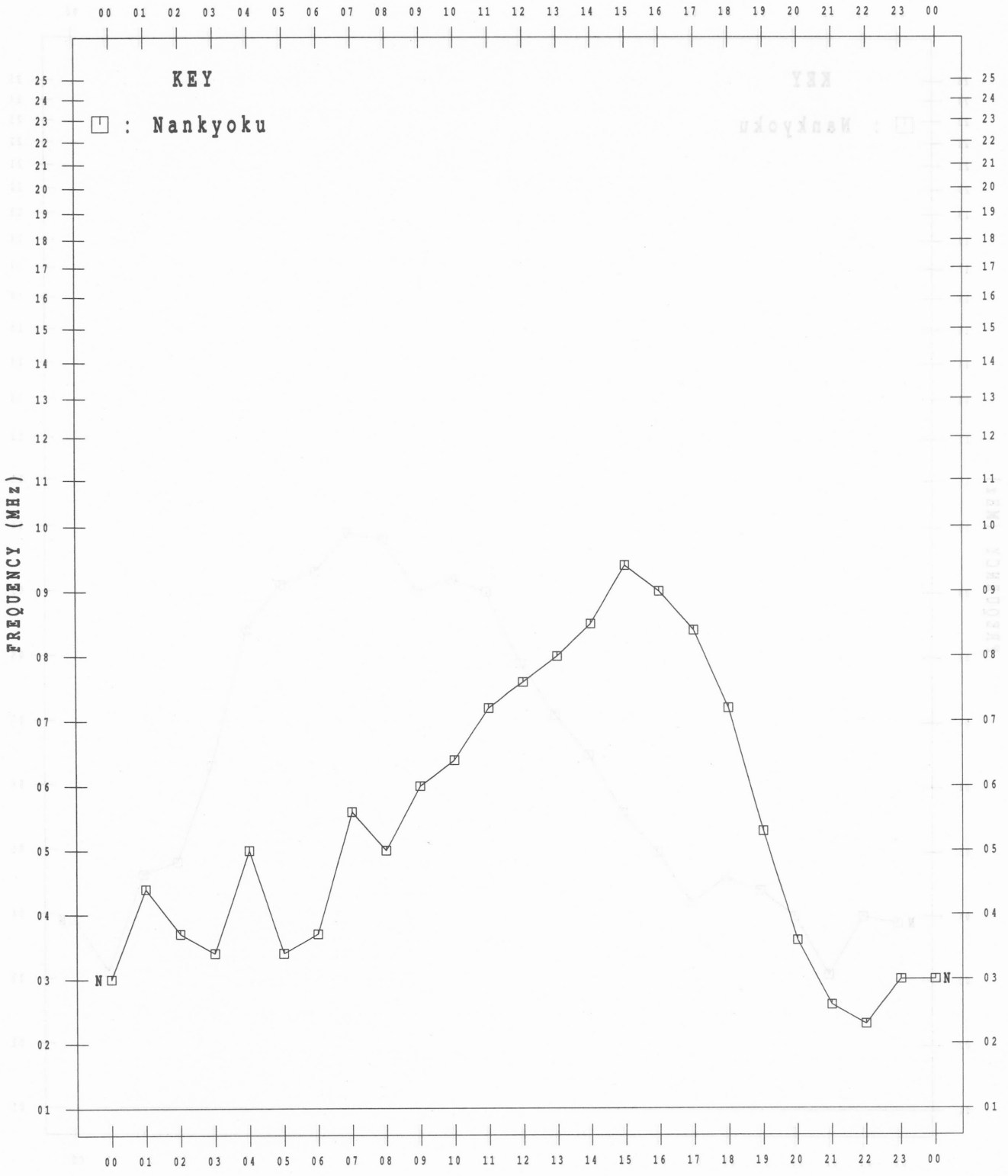

1991 1201 -> 1991 1231(99) Nankyoku
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45' EMT

MONTHLY MEDIAN VALUES OF foF2



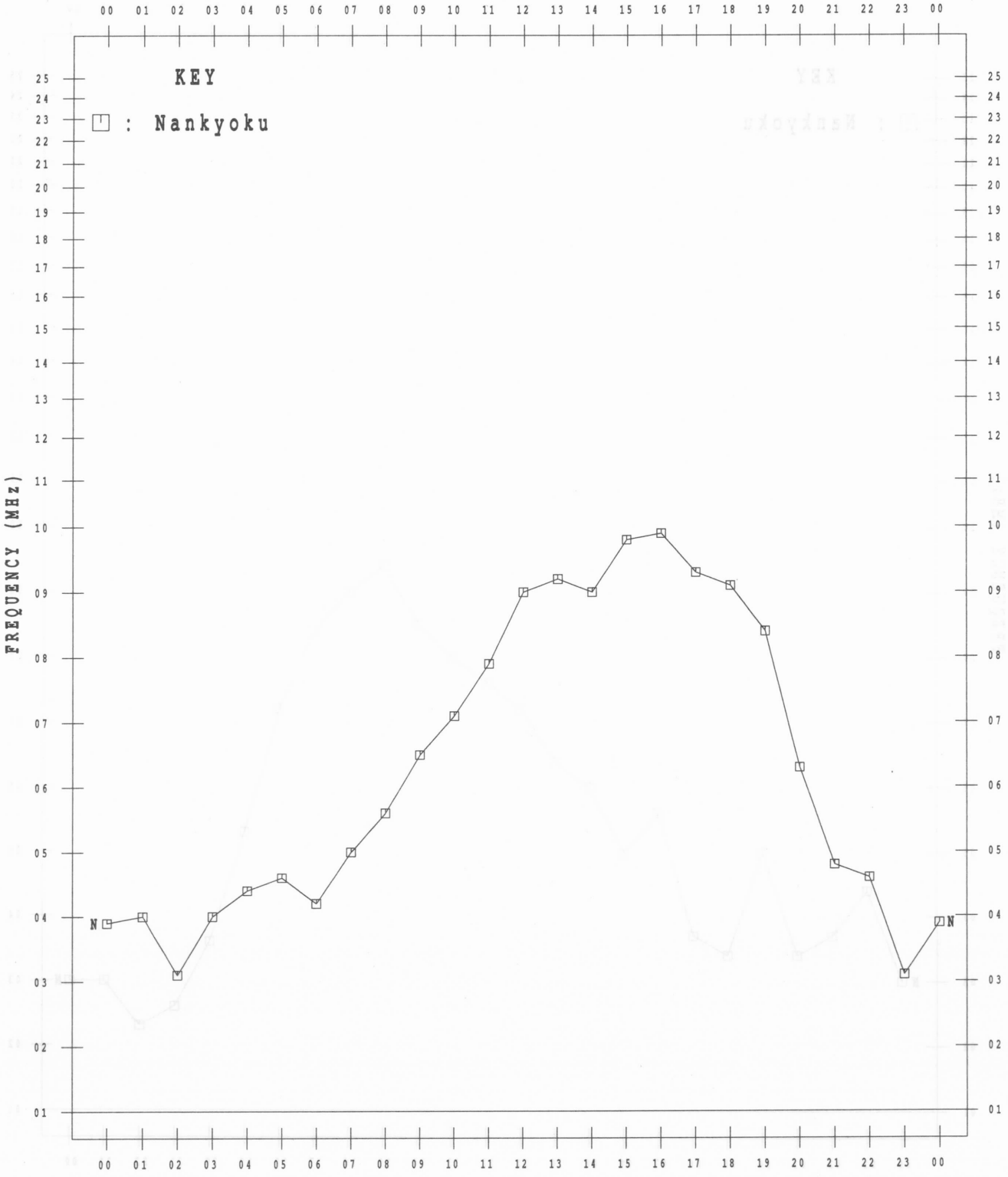
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME AUG. 1991



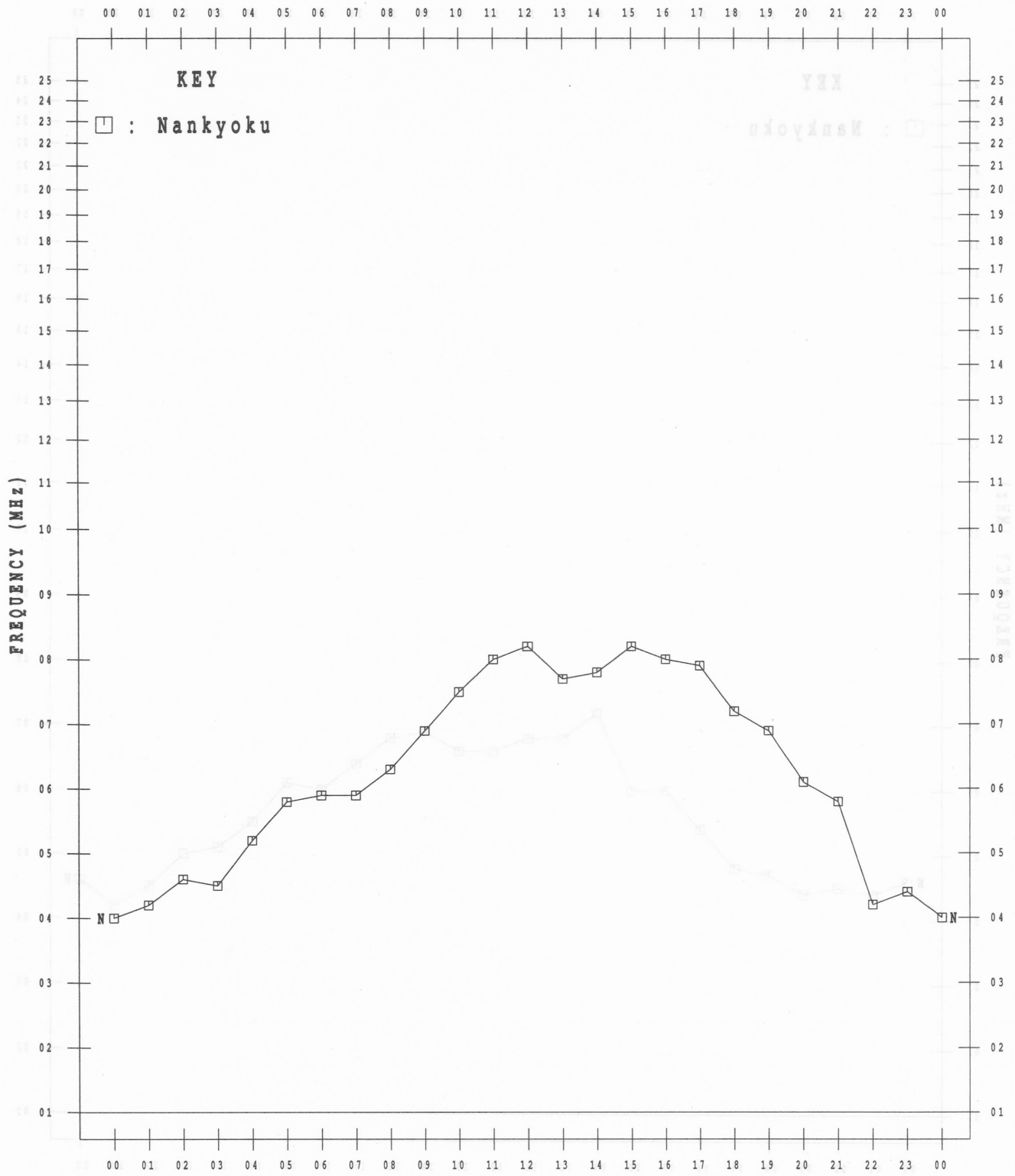
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME SEP. 1991



MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME OCT. 1991



MONTHLY MEDIAN VALUES OF foF2

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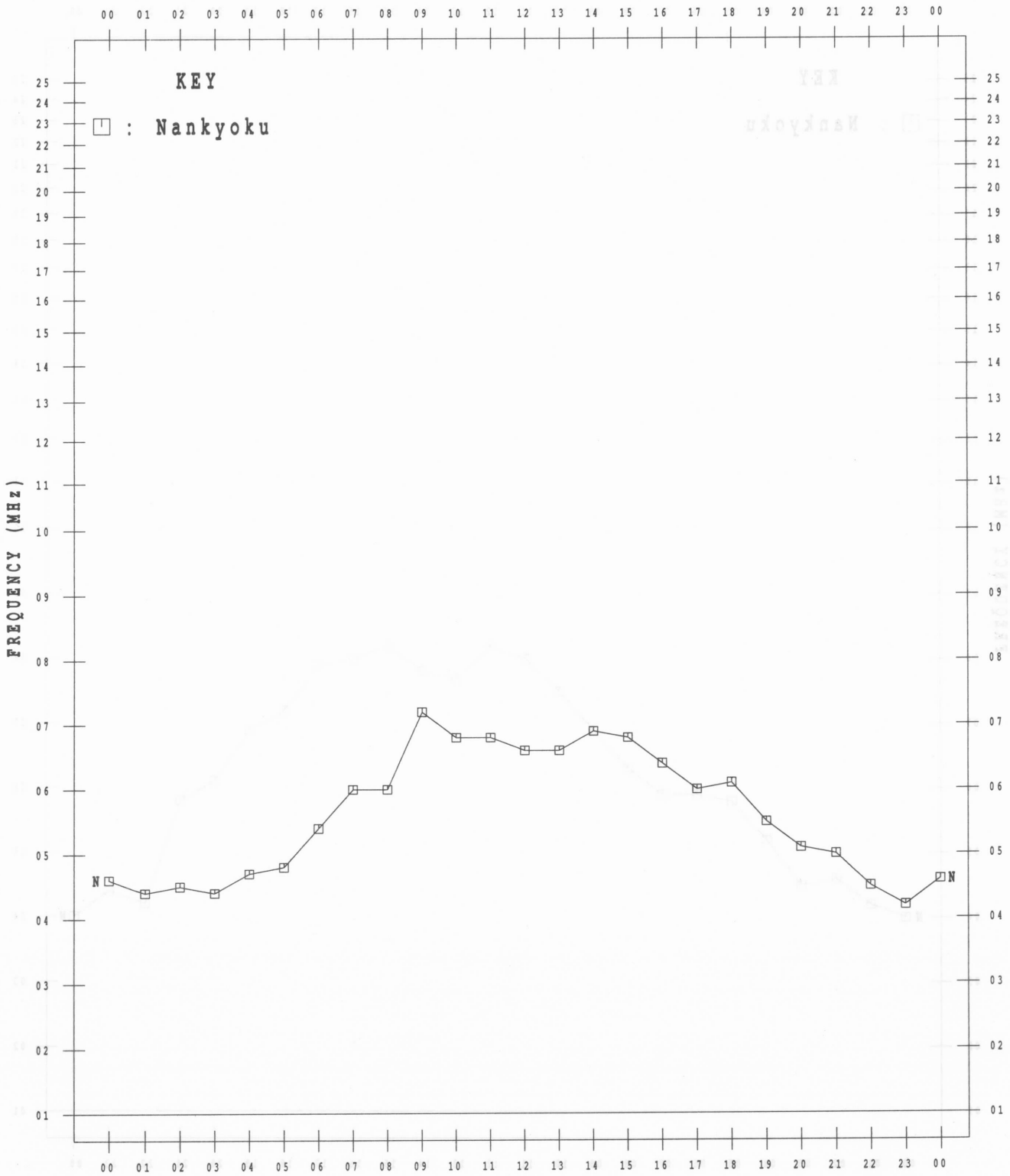

MONTHLY MEDIAN VALUES OF foF2

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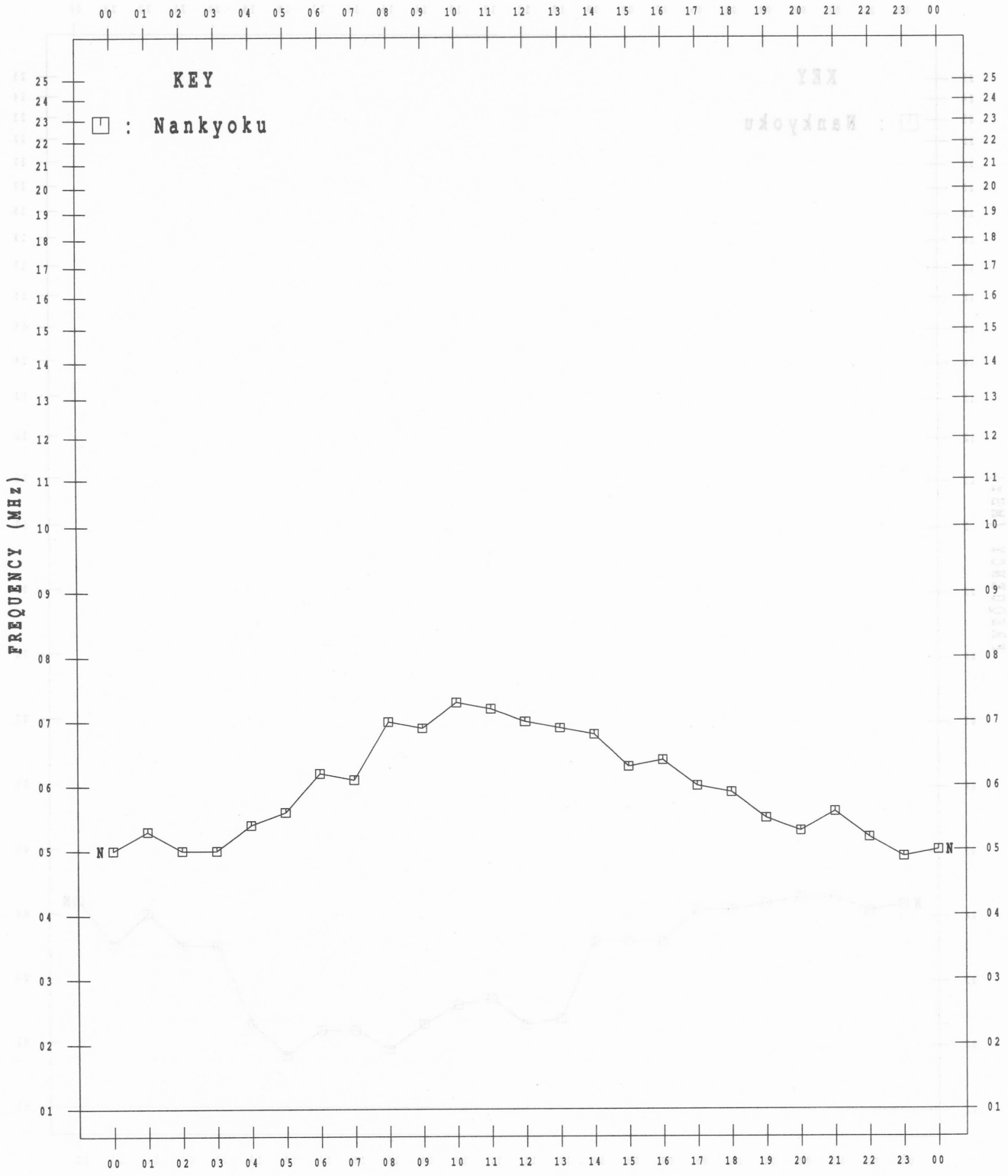
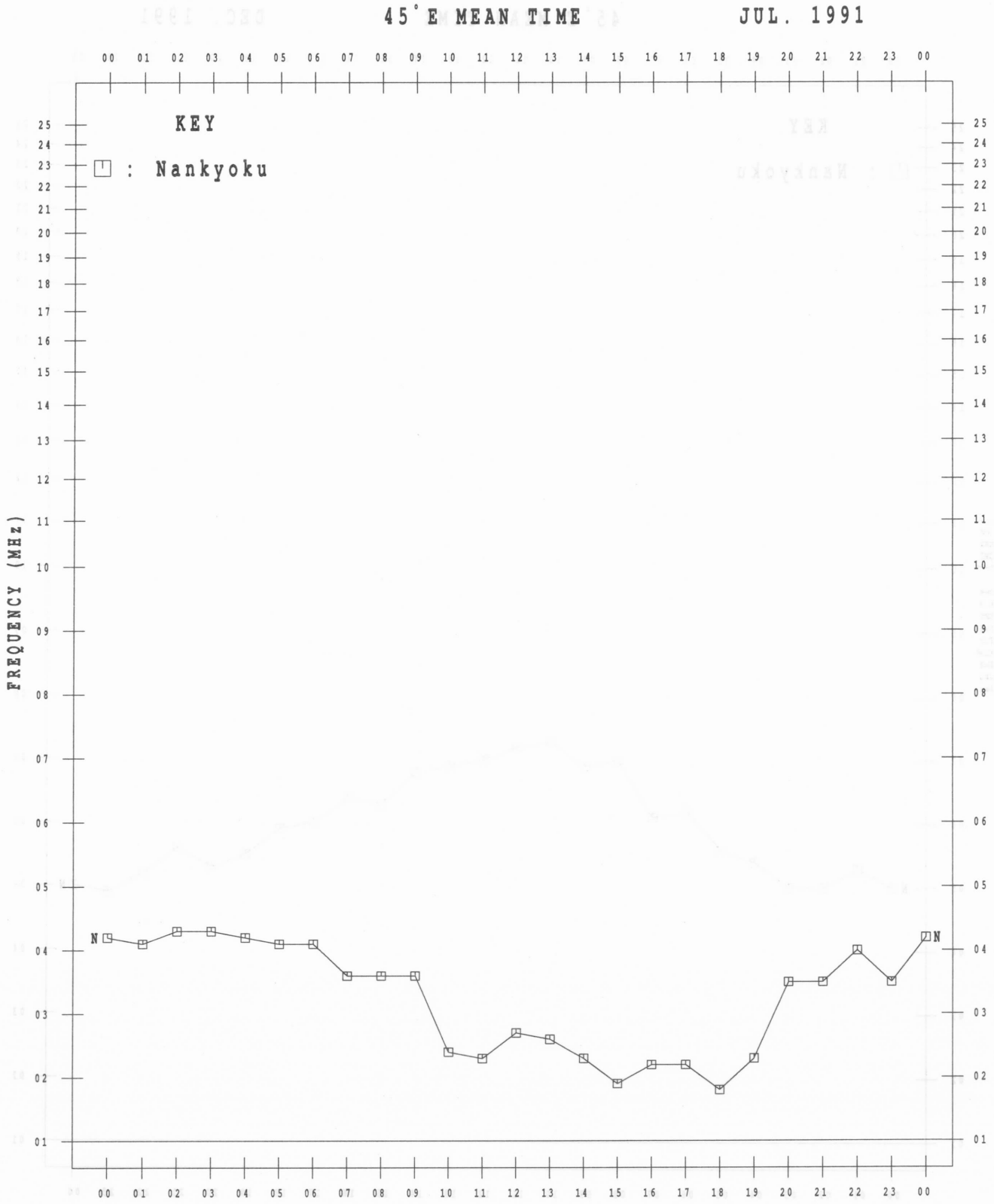


MONTHLY MEDIAN VALUES OF ftEs



MONTHLY MEDIAN VALUES OF ftEs

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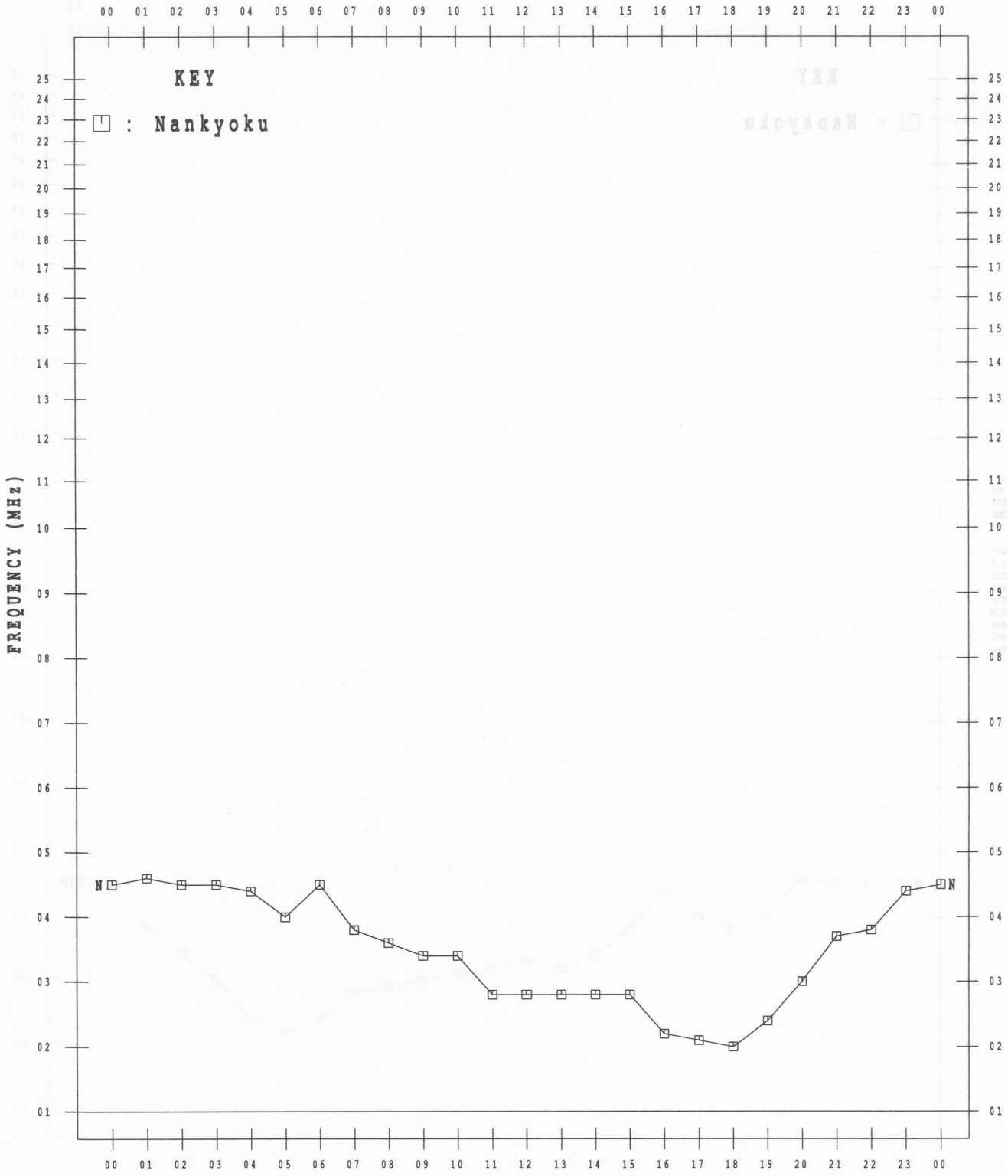

MONTHLY MEDIAN VALUES OF ftEs

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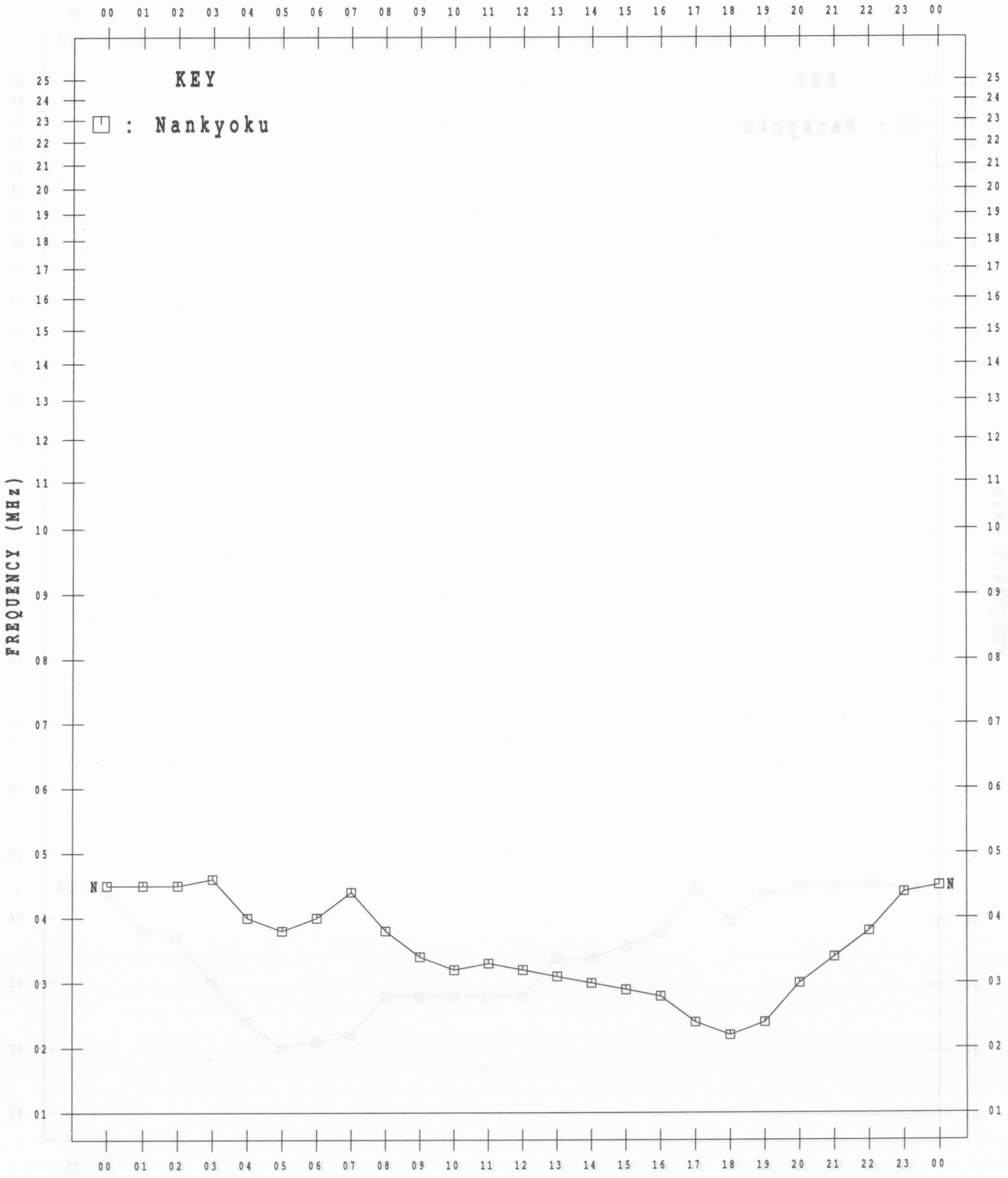

MONTHLY MEDIAN VALUES OF ftEs

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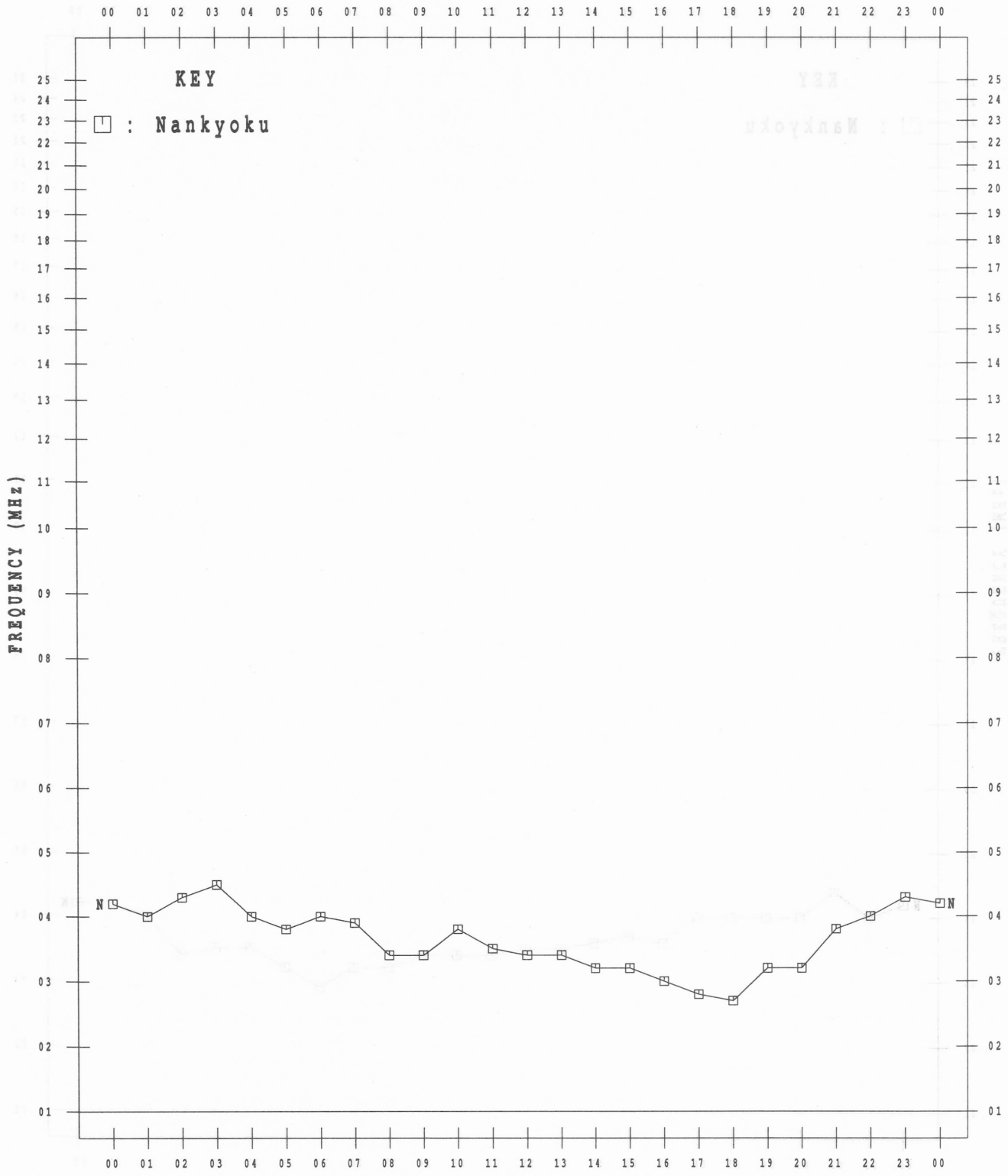

MONTHLY MEDIAN VALUES OF ftEs

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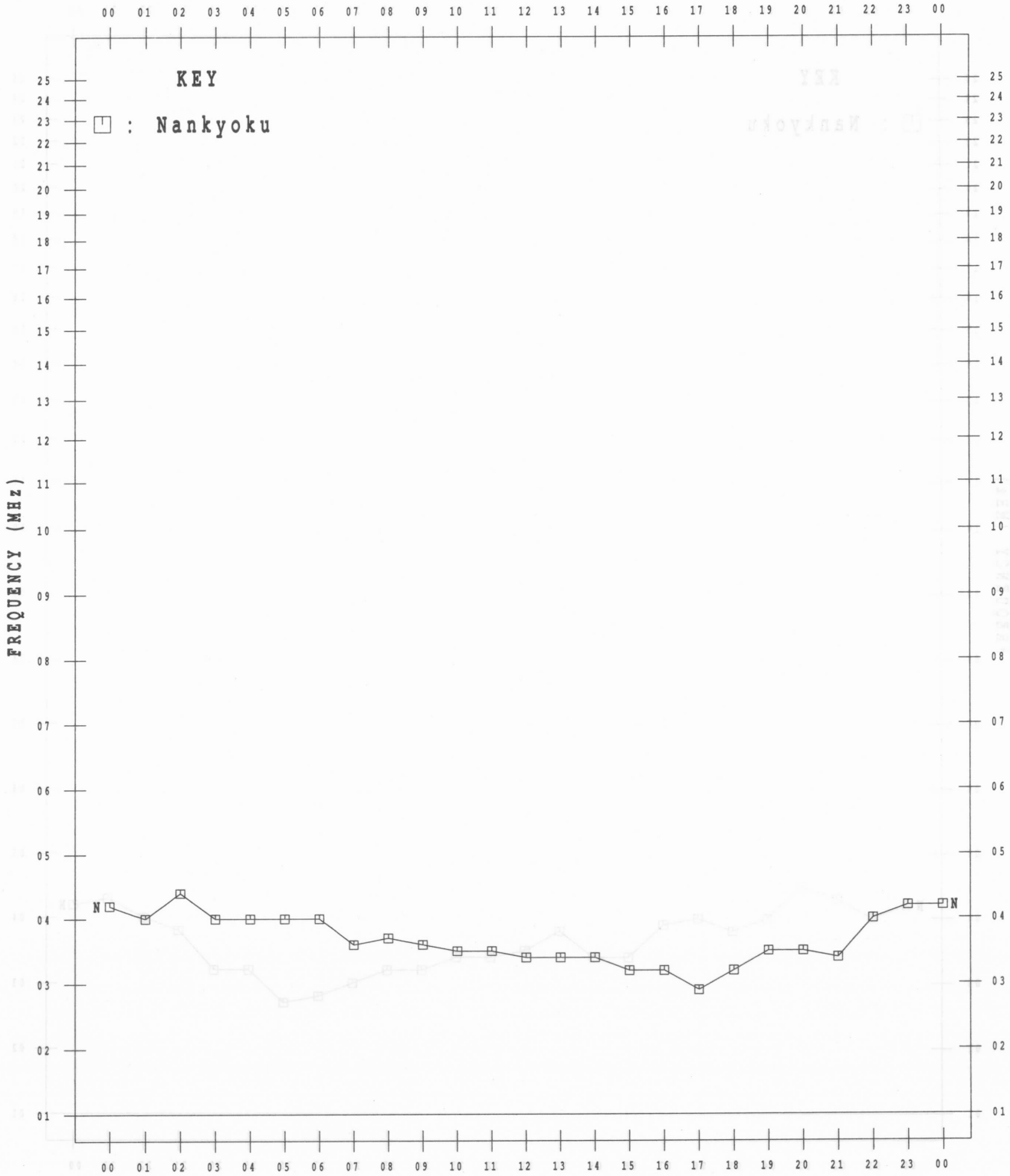

MONTHLY MEDIAN VALUES OF ftEs

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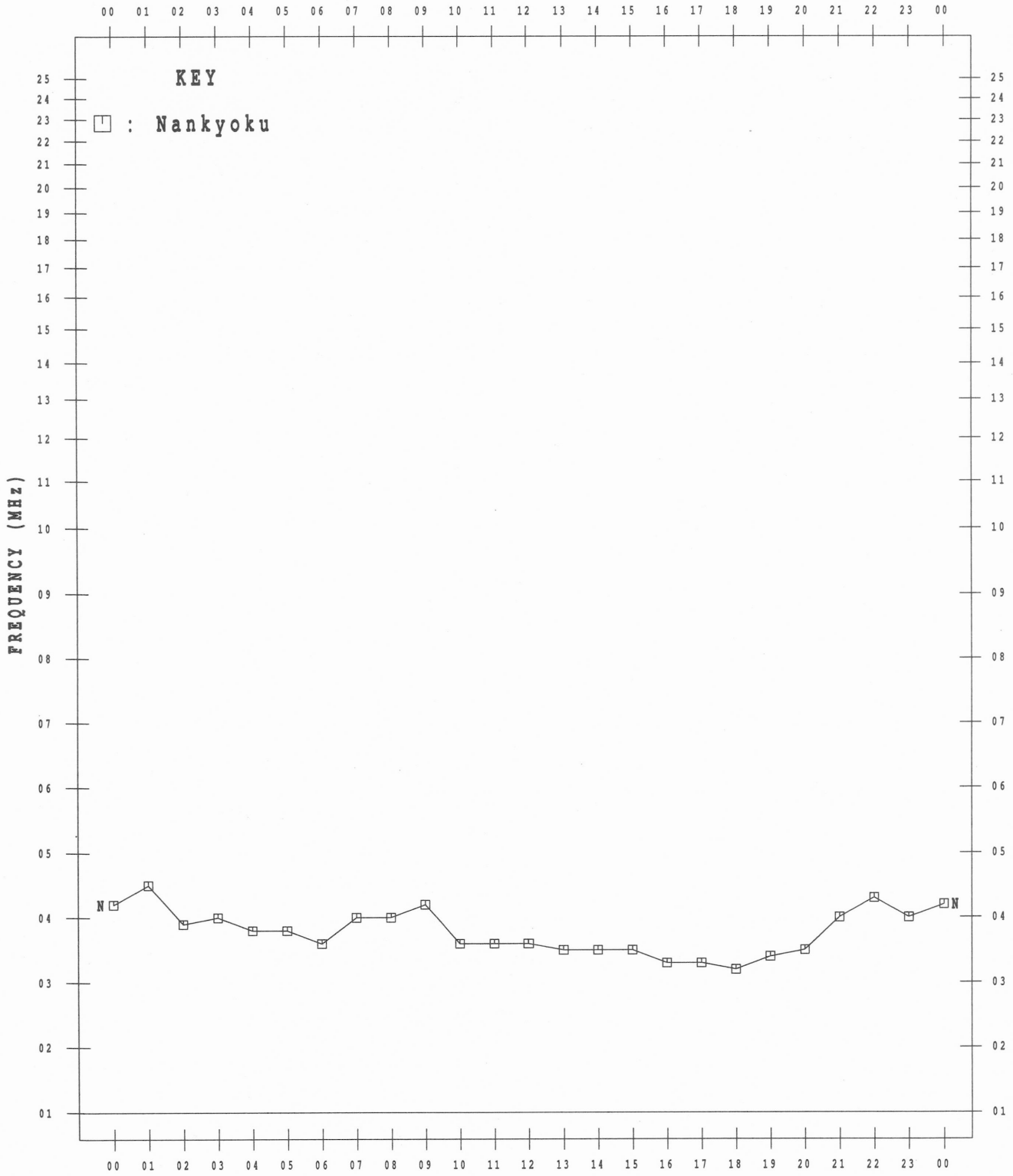

IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION. ANT.－57 July 1991—December 1991 (Not for Sale)

昭和基地電離層資料（南極）

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