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IONOSPHERIC DATA IN JAPAN

FOR DECEMBER 1951

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PREPARED BY THE CENTRAL RADIO WAVE OBSERVATORY
THE RADIO REGULATORY COMMISSION

KOKUBUNJI, TOKYO, JAPAN

CRWO—F 36

THE CENTRAL RADIO WAVE OBSERVATORY
THE RADIO REGULATORY COMMISSION

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CONTENTS

PREFACE

The radio administration in Japan has hitherto been carried out by the Radio Regulatory Agency. With the reorganization of part of the government offices effective on June 1, 1950, the Radio Regulatory Commission was established and the work of researches on radio propagation has become to fall under the charge of the radio wave observatories, auxiliary organs of the Radio Regulatory Commission.

The radio wave observatories are composed of the Central Radio Wave Observatory located at Kokubunji, Tokyo, and five local radio wave observateries established at Wakkanai, Akita, Hiraiso, Inubo and Yamagawa respectively.

The Central Radio Wave Observatory has the following four sections:

Ionospheric Propagation Section which shall carry on researches on ionosphere and wave propagation;

Tropospheric Propagation Section which shall carry on researches on troposphere and wave propagation;

Data Coordination Section which shall conduct the collection and arrangement of observational results, supply of operational data relating to radio propagation, preparation of radio propagation forecasts and radio disturbance warnings, and physical basic studies of wave propagation in general; and

Administrative Section which shall conduct the general affairs of the observatory.

The ionospheric sounding is as heretofore being carried out by the four observatories at Wakkanai, Akita, Kokubunji (Tokyo) and Yamagawa.

This report provides the results of ionospheric sounding with symbols determined and in the form established on an international basis in the same way as followed by the Radio Regulatory Agency and it is hoped that it will make any contribution toward the progress in world-wide short wave communications.

This report is intended for distribution on request to the largest possible number of organizations concerned all over the world, and any and every information that the organizations concerned might forward to us in exchange therefor would be highly appreciated.

Uyeda Hiroyuki
Chief, Central Radio Wave Observatory,
Radio Regulatory Commission

January, 1952.

SITE OF THE IONOSPHERIC STATIONS

Ionospheric observation is carried out at four stations in Japan.
The stations are situated as follows:

	longitude	latitude	site
Wakkanai	141° 41.1′ E	45° 23.6′ N	Wakkanai-shi, Hokkaido
Akita	140° 08.2′ E	39° 43.5′ N	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	139° 29.3′ E	35° 42.4′ N	Koganei-machi, Kitatama-gun, Tokyo-to
Yamagawa	130° 37.7′ E	31° 12.5′ N	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

REMARKS ON SYMBOLS

All symbols in the table are used in accordance with "Production and Reduction of Ionospheric Information" of "RESOLUTION OF THE IX GENERAL ASSEMBLY OF URSI SEPTEMBER 1950" (CRWO-F25) except f_{min} E and f_{min} F for E and F regions respectively instead of f_{min}, taken as f_{min} s in the above Resolution, in order to avoid the interruption of preceding form of dada.

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1951 | foF2 | 135° E Mean Time

Day	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	3.2	3.0	3.0	2.8	3.6 J	3.4 J	2.5	5.5 P J	9.3	9.6	9.9	9.3	8.4	8.5	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	10.3	[9.8] C	9.3	8.0 J	8.0 J	7.8 J	7.2	6.0	3.5	3.4	3.0 F	3.2 P	3.6 J F	3.3 J F	3.5 J F
3	3.2	3.2	3.2	3.3	3.2 H	2.9	A	4.6 J H	(8.5) P J	SH	9.2	C	C	C	C	C	C	4.5	C	C	C	C	2.8	3.3
4	3.6	3.4 J V	3.6	3.2	3.5	3.5	4.5	5.5	(7.5) P	8.8 J	10.1 J	10.4 J	8.3 J	S	S	S	5.8 P	4.5	4.1	4.0	S	(3.6) P S	3.6	(3.0) P S
5	3.0 P J	3.0 P	S	3.2	3.7 P	4.6 P J	2.8	5.2	7.7	8.7 P J	S	7.6	8.6	9.1 P J	8.4 J	7.7	7.4	[5.4] C	3.4	3.1	3.3 J	S	3.5 F J	S
6	4.9 J F	5.2	5.3	4.7 J F	4.7 J F	5.1 J F	S	5.5 F	6.6	9.0	9.2	9.3 P	8.9	8.0	7.4	C	C	C	3.3	[3.4] S	3.4	3.2	2.5	3.3
7	2.7 F	(3.5) G F	3.6 F	[4.0] S	4.3	4.3	2.7	4.2	6.2	S	S	7.3 Z	7.9	6.4	6.5	6.1	5.9	[4.4] C	3.0	3.3	[3.2] S	3.2	3.3	(3.2) P
8	3.1 F	4.0 J F	3.8 J F	4.1 J F	3.5 P F	S	4.0	4.3	7.0	S	C	8.5 P	C	C	C	C	C	C	3.8 P	3.0 P S	3.0	3.1	(3.2) C	3.4 P J
9	S	S	S	S	2.8	A	2.1	4.6	6.9	7.3	9.1	8.0	7.3	8.4	8.2	7.1	6.2	4.6	S	S	3.0	3.1	2.8	3.0
10	3.1	S	S	3.6	3.8	3.0	A	5.1	6.9	8.2 Z	9.1	8.2	[7.6] C	7.0	8.2	6.5	5.7	4.4	3.1	3.4	A	3.1	3.1 J F	3.8 F
11	4.7 J F	SF	5.0 J F	5.1 J F	5.3 J F	3.6 F	4.2 F	5.7	7.4	8.1 H	8.4 Z	9.5	7.8	7.9	7.1	C	C	C	C	C	C	C	S	3.5
12	3.2 P S	3.1 S	3.2	(3.2) P S	3.3	3.0	S	4.5	6.9	7.0	8.6	(8.1) P J	7.6	8.0	7.2	6.2	5.0	3.2	3.2	3.3	2.4	S	S	S
13	2.6	3.0	3.2	2.5	3.0	3.4 J	3.0 P	3.4 P	5.1	C	C	C	C	C	C	C	6.3	4.7 P J	3.9	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	6.2	6.6	6.8	6.4	6.3	6.5	5.7	[4.6] C	3.6	A	3.3	3.2	3.0 F	C	C
15	2.4 P	C	C	C	C	C	C	C	5.8	7.3	[8.0] C	8.8	7.9	8.3 J	6.9	6.5	5.0	5.0	5.8	4.0 J	2.2 F	2.5	2.6 F	3.5
16	3.6 H	4.2 F	3.0 F	3.4	3.7 P J	C	C	C	C	C	C	C	C	7.3	8.3 P	B	5.0	4.0	4.0	3.0	2.7	2.2	3.0 J	2.6 P J
17	2.6 J P	C	C	C	C	C	C	C	C	C	8.3 J	B	B	7.0 J	7.3 J	6.8	4.4	3.4 J	3.0	2.6	2.9	2.8	3.0	2.8 J
18	3.3	3.2	3.0	2.9	2.9	3.2	3.1	4.8	B	B	7.8	7.0	7.1	7.3	(7.1) P	6.6	5.7	5.5 P	3.0	3.3	3.3	3.9 J F	3.8 J F	4.1
19	C	C	C	C	C	C	C	C	C	C	B	B	B	C	8.6 P J H	(6.2) P S	5.1	4.4 J	S	S	2.7 S	3.3	4.8 J	4.6
20	3.8 J	3.7 J	3.9 J	4.4 J	2.6	2.2	C	C	5.2	7.4 P	8.9	[7.9] C	6.9	6.1	C	C	C	C	C	C	C	C	C	C
21	3.2 F	3.3 P F	3.0 F	3.2 F	3.0 F	3.3 F	2.3 H	4.6	5.3	7.7	8.9 P	[8.4] C	8.0	8.4	6.6	6.2 J	5.6	3.9	3.3	2.7	2.5	2.8	2.6	3.1
22	C	C	C	C	C	C	C	C	C	C	7.7	[7.4] B	(7.0) P B	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	9.0 J	8.7	7.6	8.2	[7.8] C	7.3	5.9	4.5	4.0	4.5	4.3 P	3.1	3.3	3.6
24	3.3	3.2	2.8	3.0	A	3.0	3.5	4.5	5.9	[6.9] C	7.9 P S	S	S	C	S	6.3	5.2	5.7	3.2 J	A	(3.0) P J	3.0	3.2	3.2
25	3.4	3.0	3.4	3.3	3.0	3.0	3.2	3.8	5.3	[7.1] C	8.9	8.1	6.9	[7.2] C	7.5	7.0	6.2	[5.4] C	4.5	4.3 J	2.7	2.8	3.0	3.0
26	3.2	3.2	3.5	3.2	3.2	A	A	A	S	C	8.1	6.1	6.3	[6.2] C	6.2	6.0 P	5.4	4.3	4.1	C	C	C	2.7	2.6
27	2.6	2.8	3.2	3.3	3.2	2.8	2.2	3.5	C	C	C	C	C	C	C	C	6.7	(5.2) P	(4.2) P	3.3 J	A	A	A	3.0
28	2.7 P	2.7	[2.6] S	(2.6) J	A	3.1 J P	A	4.5	6.3	C K	C K	S K	(8.7) K P J	[8.0] K C	7.2 K	[7.2] S K	7.2 P K	7.4 K	7.4 K	6.2 K	6.9 F J K	5.4 J K	5.6 K	S K
29	S K	2.9 K	A K	A K	A K	A K	A K	A K	S K	8.5 K	7.5 H K	8.2	7.2 H	8.4 J H	8.5 J H	6.9	6.0 J	4.2 J	4.0 J	2.8	2.9	2.9	A	A
30	2.8	2.8	2.9	3.1	4.4 J	2.8	2.8	4.3	[4.4] S	4.6	S	8.0	6.7	8.0	7.1	[6.3] G	5.5	3.3	2.8	2.3	1.7	2.8 J F	3.4 F	3.2
31	2.6	2.6 F	2.7 F	2.6 F	2.6 J F	2.9 F	3.1 F V	3.6	5.7	7.1	8.2	8.3 J	8.1	8.7 Z	[7.6] G	6.4	5.7	4.5	5.1	4.3 F	5.0 F	4.7 F	3.5 F J	3.6 J F
Mean Value	3.2	3.3	3.4	3.4	3.5	3.3	3.1	4.6	6.5	7.8	8.6	8.2	7.6	7.6	7.3	6.5	5.6	4.5	3.8	3.5	3.2	3.3	3.3	3.3
Median Value	3.2	3.2	3.2	3.2	3.3	3.1	3.0	4.6	6.4	7.6	8.6	8.2	7.6	8.0	7.4	6.5	5.7	4.5	3.8	3.3	3.0	3.1	3.2	3.3
Count	24	21	20	22	21	19	15	20	20	18	22	23	23	23	22	20	24	25	23	21	21	21	22	22

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 1

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1951

foF2

135° E Mean Time

Day	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	410	400	400	400	(390)J	(290)J	290	(310)PJ	290	280	290	300	310	290	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	270	[280]C	290	(290)J	(300)J	(290)J	280	270	240	300	300F	340P	(360)JF	(480)JF	(400)JF
3	400	430	450	430	420H	430	A	(300)JH	(300)PJ	S H	270	C	C	C	C	C	C	310	C	C	C	C	370	460
4	430	(440)JV	430	430	410	370	330	320	(270)P	(280)J	(260)J	(270)J	(270)J	S	S	S	310P	290	330	380	S	(400)PS	350	(350)PS
5	(330)PJ	400P	S	400	390P	(290)PJ	280	320	300	(290)PJ	S	280	320	(300)PJ	(300)J	290	310	[310]C	310	330	(350)J	S	(330)JF	S
6	(360)JF	370	400	(310)JF	(380)JF	(330)JF	S	310F	310	290	290	290P	310	310	290	C	C	C	330	[310]S	290	340	320	340
7	380F	(380)JF	360F	[350]S	340	280	290	300	280	S	S	310Z	290	260	250	270	330	[360]C	400	330	[340]S	360	360	(340)P
8	360F	(370)JF	(360)JF	(350)JF	(410)PJ	S	S	320	280	S	C	320P	C	C	C	C	C	C	340P	380PS	400	410	[360]C	(310)PJ
9	S	S	S	S	320	A	480	310	290	300	300	310	320	300	320	320	300	280	S	S	340	400	410	380
10	330	S	S	410	300	350	A	310	290	320Z	300	280	[280]C	280	280	270	300	310	350	360	A	400	(380)JF	340F
11	C	SF	(350)JF	(380)JF	(310)JF	350F	330F	330	280	320H	280Z	300	250	260	260	C	C	C	C	C	C	C	S	350
12	360PS	400S	420	(380)PS	360	A	S	340	290	280	330	(300)PJ	300	320	280	310	280	340	360	330	320	S	S	S
13	410	400	410	390	400	(310)J	310P	300P	330	C	C	C	C	C	C	C	330	(290)PJ	300	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	290	290	300	280	290	310	280	[310]C	340	A	300	290	300F	C	C
15	340P	C	C	C	C	C	C	C	280	300	(310)J	320	310	(310)J	250	280	290	410	350	A	350F	360F	370F	340
16	400H	430F	420F	390	(460)JP	C	C	C	C	C	C	C	C	300	310P	B	320	350	320	310	320	350	(370)J	(370)JP
17	(340)JP	C	C	C	C	C	C	C	C	C	(300)J	B	B	(290)J	(300)J	270	270	(260)J	300	350	340	380	380	(380)J
18	450	380	350	400	380	360	320	300	B	B	340	300	290	310	(290)P	280	300	300P	370	440	430	(430)JF	(430)JF	410
19	C	C	C	C	C	C	C	C	C	C	B	B	B	C	(350)PH	(280)PS	300	(270)J	S	S	330S	350	(390)J	390
20	(360)J	(340)J	(350)J	(330)J	300	310	C	C	260	270P	280	[270]C	270	280	C	C	C	C	C	C	C	C	C	C
21	380F	400PF	400F	370F	340F	310F	340H	310	270	310	310P	[300]C	290	300	320	(290)J	290	310	310	380	410	410	410	460
22	C	C	C	C	C	C	C	C	C	C	270	[280]B	(300)PB	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	(270)J	300	330	300	[320]C	340	290	310	320	340	300P	380	400	360
24	350	350	370	350	A	300	290	300	260	[270]C	280PS	S	S	C	S	290	270	300	(280)J	A	(320)PJ	350	340	360
25	340	350	380	410	400	340	340	310	260	[270]C	290	340	300	[290]C	280	280	270	[290]C	310	(310)J	350	370	420	390
26	450	440	400	410	370	A	A	A	S	C	290	290	B	C	B	280P	280	260	340	C	C	C	320	400
27	400	350	410	400	380	370	300	310	C	C	C	C	C	C	C	C	280	(310)P	(370)P	A	A	A	A	350A
28	410P	400	[370]S	(340)J	A	(360)JP	A	320	260	C K	C K	S K	K(280)PJ	K[300]C	310K	[320]SK	340PK	420K	310K	350K	K(440)JF	K(390)J	310K	SK
29	SK	430K	AK	AK	AK	AK	AK	AK	SK	320K	300HK	300	300H	(290)JH	(300)JH	300	(290)J	(300)J	A	320	A	A	A	A
30	A	300	310	320	(310)J	310	S	320	[300]S	280	S	300	[300]C	300	340	[310]C	280	330	390	A	390	(350)JF	420F	350
31	410	380F	380F	370F	(410)JF	330F	300FV	310	280	300	300	(290)J	300	330Z	[320]C	310	310	360	350	270F	350F	320F	(400)JF	(350)JF
Mean Value	380	380	390	380	370	330	320	310	280	290	290	300	300	300	300	290	300	310	340	340	350	370	380	370
Median Value	380	400	380	380	380	330	310	310	280	290	290	300	300	300	300	290	300	310	340	340	340	360	380	360
Count	22	21	20	22	21	18	13	20	20	18	22	23	22	22	21	20	24	25	22	18	20	20	22	22

foF2

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 2

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'F2 | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	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	400	390	390	390	380	290	280	280	270	250	250	270	260	270	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	250	[250]C	250	260	280	280	260	230	230	260	230	270	290	370	400
3	390	400	390	390	340H	380	A	260H	280	250H	230	C	C	C	C	C	C	270	C	C	C	C	360	390
4	330	350	350	360	330	300	270	280	230	230	220	240	250	240	230	260	270	230	280	320	(300)S	340	310	300
5	300	380	330	390	360	260	250	290	270	260	250	260	250	260	280	250	250	(260)C	270	300	300	S	300	330
6	310	300	300	270	320	200	260	270	260	270	260	270	270	270	280	C	C	C	280	[280]S	290S	290	270	280
7	330	370F	310	310	280	220	260	260	230	S	S	250	250	250	250	230	240	(320)C	400A	300	300	310	320	320
8	330	350F	340	300	380	350	(330)S	250	250	270	(260)C	260	C	C	C	C	C	C	300	350	370	380	(340)C	300
9	350	320	A	350	310	A	480A	280	250	280	280	270	260	260	270	260	260	250	270	320S	320	370	380	360
10	310	380	390	380	300	310	A	290	250	270	280	260	270	270	270	240	250	280	300	340	A	370	370	310
11	(310)C	310	290	320	290	300	290	290	260	260H	250	270	240	240	250	C	C	C	C	C	C	C	S	300
12	320	370	380	360	300	400A	A	310A	270	260	300	270	280	280	270	270	250	300	330A	300S	300	S	S	S
13	380	370	380	360	370	300	290	280	270	C	C	C	C	C	C	C	260	240	260	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	260	270	270	270	270	270	250	[280]C	310	A	290	280	290	C	C
15	310	C	C	C	C	C	C	C	260	280	(280)C	270	270	300	220	250	270	320	300	300A	300F	300F	350F	300
16	330H	340	400	330	360	C	C	C	C	C	C	C	C	280	270	250	250	300	270	270	270	330	300	320
17	300	C	C	C	C	C	C	C	C	260	290	270	260	270	260	250	230	230	270	300	300	350	350	370
18	390	340	340	350	370	320	300	230	A	260	270	270	270	270	260	240	260	220	310	350	380	360	330	350
19	C	C	C	C	C	C	C	C	C	C	290	B	250	[250]C	250H	230	250	250	270	280	300	310	300	320
20	320	310	310	300	250	300	C	C	240	260	270	[260]C	250	280	C	C	C	C	C	C	C	C	C	C
21	330	330	330	300	280F	270	(270)H	270	260	260	280	[280]C	280	270	270	260	220	240	270	300	340	360	340	370
22	C	C	C	C	C	C	C	C	C	C	250	260	280	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	260	270	(320)B	290	[270]C	250	260	270	300	300	270	310	370	300
24	300	270	300	330	A	290	270	250	220	[240]C	260	270	S	C	S	270	240	250	280	A	300	300	300	310
25	300	320	340	390	370	300	300	260	250	[260]C	280	280	260	[260]C	270	270	230	[260]C	280	260	290	300	370	320
26	400	370	330	320	300	A	A	A	250	(260)C	280	280B	B	C	B	270	260	250	270	C	C	C	260A	360
27	350	310	320	320	310	300A	(300)A	290	C	C	C	C	C	C	C	C	230	(290)A	300	A	A	A	A	350 A
28	360	370	300	300A	A	310A	A	280	230	CK	CK	270K	250K	[260]C	270K	260K	320K	330K	250K	250K	380K	300K	300K	290K
29	SK	400K	AK	AK	AK	AK	AK	AK	330K	290K	260HK	300	260H	250H	270H	270	260	300A	300A	300	300A	300 A	A	A
30	A	300	300	300	300	260	(350)S	280	[270]S	260	280	270	[280]C	280	C	C	260	280	330	A	390A	320	380	300
31	380	350	310	320	320	300	280	280	270	300	300	270	270	290	(280)C	280	300	290	290	310	290	280	310	320
Mean Value	340	350	340	340	320	300	300	290	260	260	270	270	260	270	270	260	260	270	290	300	310	320	330	330
Median Value	330	350	330	330	320	300	280	280	260	260	270	270	260	270	270	260	260	270	280	300	300	310	340	320
Count	24	24	22	23	21	20	16	20	22	23	26	26	24	24	21	21	24	25	25	21	22	21	22	24

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 3

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foF1 | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	Q	Q	Q	Q	Q	C	C	C							
2								C	C	L	C	L	Q	Q	Q	Q	Q							
3								Q	Q	B	Q	C	C	C	C	C	C							
4								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
5								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
6								Q	Q	Q	Q	Q	Q	Q	Q	C	C							
7								Q	Q	S	S	Q	Q	Q	Q	Q	Q							
8								Q	Q	Q	C	Q	C	C	C	C	C							
9								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
10								Q	Q	Q	Q	Q	Q	Q	3.6	Q	Q							
11								Q	Q	Q	Q	Q	3.8	Q	Q	C	C							
12								A	Q	Q	Q	Q	Q	Q	Q	Q	Q							
13								Q	Q	C	C	C	C	C	C	C	Q							
14								C	C	Q	Q	Q	Q	Q	Q	Q	C							
15								C	Q	Q	C	Q	Q	Q	Q	Q	Q							
16								C	C	C	C	C	C	Q	Q	Q	Q							
17								C	C	Q	Q	Q	Q	Q	Q	Q	Q							
18								Q	A	Q	Q	Q	Q	Q	Q	Q	Q							
19								C	C	C	Q	B	Q	C	Q	Q	Q							
20								C	Q	Q	Q	C	Q	Q	C	C	C							
21								Q	Q	Q	Q	C	Q	Q	Q	Q	Q							
22								C	C	C	B	B	B	C	C	C	C							
23								C	C	C	Q	Q	B	Q	C	Q	Q							
24								Q	Q	C	Q	Q	S	C	S	Q	Q							
25								Q	Q	C	Q	B	Q	C	Q	Q	Q							
26								C	C	C	Q	Q	B	C	B	Q	Q							
27								Q	Q	C	C	C	C	C	C	C	Q							
28								Q	Q	C	C	Q	Q	C	Q	Q	Q							
29								A	A	Q	Q	Q	Q	Q	Q	Q	Q							
30								Q	C	Q	Q	Q	C	Q	C	C	Q							
31								Q	Q	B	Q	4.0	Q	Q	C	Q	Q							
Mean Value												4.0	3.8		3.6									
Median Value												4.0	3.8		3.6									
Count												1	1		1									

foF1

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 4

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

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IONOSPHERIC DATA

Dec. 1951 | h'F1 | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	Q	Q	Q	Q	Q	C	C	C							
2								C	C	230	(240)	250	Q	Q	Q	Q	Q							
3								Q	Q	2508	Q	C	C	C	C	C	C							
4								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
5								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
6								Q	Q	Q	Q	Q	Q	Q	Q	C	C							
7								Q	Q	S	S	Q	Q	Q	Q	Q	Q							
8								Q	Q	Q	C	Q	C	C	C	C	C							
9								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
10								Q	Q	Q	Q	Q	Q	Q	260	Q	Q							
11								Q	Q	Q	Q	Q	B	Q	Q	C	C							
12								A	Q	Q	Q	Q	Q	Q	Q	Q	Q							
13								Q	Q	C	C	C	C	C	C	C	Q							
14								C	C	Q	Q	Q	Q	Q	Q	Q	C							
15								C	Q	Q	C	Q	Q	Q	Q	Q	Q							
16								C	C	C	C	C	C	Q	Q	Q	Q							
17								C	C	Q	Q	Q	Q	Q	Q	Q	Q							
18								Q	A	Q	Q	Q	Q	Q	Q	Q	Q							
19								C	C	C	Q	B	Q	C	Q	Q	Q							
20								C	Q	Q	Q	C	Q	Q	C	C	C							
21								Q	Q	Q	Q	C	Q	Q	Q	Q	Q							
22								C	C	C	B	B	B	C	C	C	C							
23								C	C	C	Q	Q	B	Q	C	Q	Q							
24								Q	Q	C	Q	Q	S	C	S	Q	Q							
25								Q	Q	C	Q	B	Q	C	Q	Q	Q							
26								C	C	C	Q	Q	B	C	B	Q	Q							
27								Q	Q	C	C	C	C	C	C	C	Q							
28								Q	Q	C	C	Q	Q	C	Q	Q	Q							
29								A	A	Q	Q	Q	Q	Q	Q	Q	Q							
30								Q	C	Q	Q	Q	C	Q	C	C	Q							
31								Q	Q	B	Q	B	Q	Q	C	Q	Q							
Mean Value										240	240	250			260									
Median Value										240	240	250			260									
Count										2	1	1			1									

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 5

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foE | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	2.2	2.6	B	B	B	2.5	C	C	C							
2								C	C	S	C	B	B	B	2.5	A	B							
3								B	1.9	B	B	C	C	C	C	C	C							
4								A	2.3	2.5	2.7[J]	A	B	B	B	B	B							
5								B	A	B	B	B	2.8	2.5	2.4	B	B							
6								B	B	A	B	2.7	2.7	2.5	2.5	C	C							
7								B	(1.9)[B]	S	S	2.7	2.8	2.9	B	B	B							
8								E	2.2	2.8	C	B	C	C	C	C	C							
9								E	A	A	A	B	A	B	2.5	B	E							
10								E	B	2.2	2.6	A	B	(2.6)[B]	2.6	2.4	E							
11								B	B	B	B	B	B	B	2.6	C	C							
12								B	B	B	B	B	B	B	B	B	E							
13								B	B	C	C	C	C	C	C	C	B							
14								C	C	2.4	2.7	2.7	2.8	2.6	2.5	2.1	C							
15								C	2.1	B	C	2.4[B]	B	B	B	B	B							
16								C	C	C	C	C	C	2.4	2.5	2.2	B							
17								C	C	2.7	2.8	3.0	B	2.8	2.6	B	B							
18								B	A	2.5	2.7	2.8	2.7	2.7	2.5	1.9	E							
19								C	C	C	2.8	B	2.7	(2.3)[C]	1.9	B	B							
20								C	2.0	2.6	A	C	2.8	2.6	C	C	C							
21								B	1.8	2.4	2.6[PJ]	C	B	B	2.3	2.2	B							
22								C	C	C	B	B	B	C	C	C	C							
23								C	C	C	B	B	B	B	C	B	B							
24								B	2.2	C	B	B	S	C	S	B	B							
25								B	B	C	B	B	B	C	B	B	B							
26								A	A	C	B	B	B	C	B	B	1.5							
27								B	C	C	C	C	C	C	C	C	A							
28								1.7	2.0	C	C	B	B	C	B	B	A							
29								A	A	A	B	B	B	2.6	2.6	B	B							
30								B	S	B	B	B	C	B	C	C	B							
31								A	B	B	B	B	B	B	C	B	B							
Mean Value								1.7	2.1	2.5	2.7	2.7	2.7	2.6	2.5	2.2	1.5							
Median Value								E	2.0	2.5	2.7	2.7	2.8	2.6	2.5	2.2	E							
Count								4	10	9	7	6	7	12	13	5	5							

foE

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

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The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | f'E | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1 E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	120	120	B	B	130	120	C	C	C							
2								C	C	S	C	B	B	B	100	A	100							
3								B	130	120	B	C	C	C	C	C	C							
4								A	110	110	110	A	110	110	110	B	B							
5								B	A	120	120	120	130	120	110	B	B							
6								B	B	A	120	120	120	120	120	C	C							
7								B	B	S	S	120	110	110	110	B	B							
8								E	130B	150B	[140]C	130	C	C	C	C	C							
9								E	A	A	A	B	A	B	130	B	E							
10								E	130	120	120	B	B	B	130	130	E							
11								B	B	B	B	B	B	B	140	C	C							
12								B	B	B	B	B	B	B	B	B	E							
13								B	B	C	C	C	C	C	C	C	B							
14								C	C	120	130	120	120	120	130	130	C							
15								C	130	120	[120]C	120	B	B	B	B	B							
16								C	C	C	C	C	C	130	130	140	B							
17								C	C	140B	140B	130	140	140B	130	B	B							
18								B	A	130B	130B	140B	130B	130B	130B	130	E							
19								C	C	C	130	B	130	[120]C	120	B	B							
20								C	150B	120	A	C	120	120	C	C	C							
21								B	150B	110	110	C	B	B	120	130	B							
22								C	C	C	B	B	B	C	C	C	C							
23								C	C	C	B	B	B	B	C	B	B							
24								B	150B	C	B	B	S	C	S	B	B							
25								B	B	C	B	B	B	C	B	140	B							
26								A	A	C	B	B	B	C	B	B	120							
27								B	C	C	C	C	C	C	C	C	A							
28								120	110	C	C	B	B	C	130	B	A							
29								A	A	A	B	B	B	B	B	B	B							
30								B	S	B	B	B	C	B	C	C	B							
31								A	E	B	B	B	B	B	C	B	B							
Mean Value								120	130	120	120	130	130	120	120	130	110							
Median Value								120	130	120	120	120	130	120	130	130	110							
Count								1	10	12	11	8	10	11	15	6	2							

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 7

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1951

fEs

135° E Mean Time

Day	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	2.4	2.5	2.4	2.6	E	E	E	B	G	G	B	B	G	G	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	S	C	B	B	B	5.0	2.2	G	3.3	E	E	2.8	2.1	2.2	E
3	E	2.6	E	E	E	3.0	5.8	2.4	G	G	B	C	C	C	C	C	C	1.8	C	C	C	C	2.4	E
4	E	E	E	E	E	E	2.8	4.8	G	G	G	4.8	G	G	G	B	B	E	E	E	S	2.2	2.3	E
5	E	E	E	E	E	2.3	E	B	5.6	G	G	G	G	G	G	B	B	C	E	E	2.4	S	1.6	E
6	2.8	E	E	E	E	E	E	B	B	5.5	G	G	G	G	G	C	C	C	E	S	S	E	E	E
7	E	E	E	E	E	E	E	B	3.6	S	S	4.0	G	G	G	G	3.0	C	2.8	2.7	2.6	2.7	E	E
8	E	E	E	E	2.7	E	S	E	2.8	G	C	G	C	C	C	C	C	C	E	E	E	E	C	E
9	E	E	2.8	2.8	E	2.7	2.7	E	2.7	3.0	5.0	5.0	3.3	4.6	G	B	E	E	E	S	E	E	E	E
10	E	E	E	E	E	3.4	3.2	E	G	G	G	3.0	B	G	3.0	G	3.2	3.8	2.4	4.2	3.6	2.2	2.8	2.6
11	C	3.2	2.8	4.8	3.8	8.0	6.0	B	B	B	B	B	B	B	G	C	C	C	C	C	C	C	S	E
12	E	E	E	E	2.8Y	5.7	2.2	5.0	B	B	B	B	B	B	B	B	2.0	4.0	3.0S	S	E	S	S	S
13	E	E	E	E	E	E	E	B	B	C	C	C	C	C	C	C	4.0	E	E	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	C	E	3.2	E	E	E	C	C
15	E	C	C	C	C	C	C	C	G	G	C	G	B	B	B	B	5.0	3.8	3.1	5.0	E	E	E	E
16	E	E	E	E	E	C	C	C	C	C	C	C	C	G	G	G	B	E	E	2.5	2.5	2.2	2.6	2.5
17	2.1	C	C	C	C	C	C	C	C	G	G	G	G	G	G	B	B	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	B	5.5	3.0	3.4	3.3	G	3.2	3.0	2.4	E	3.0	E	E	E	E	E	E
19	C	C	C	C	C	C	C	C	C	C	G	B	G	C	2.8	2.1	B	2.2	2.5	E	E	E	E	E
20	E	E	E	E	E	E	C	C	2.2	G	3.2	C	G	G	C	C	C	C	C	C	C	C	C	C
21	E	E	E	E	E	E	E	B	G	G	G	C	B	B	G	3.2	B	6.2	3.2	3.4	E	2.4	2.2	E
22	C	C	C	C	C	C	C	C	C	C	B	B	B	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	B	5.0	B	B	C	B	B	E	E	E	E	E	3.8	2.0
24	E	E	E	E	4.3	3.8	2.8	3.2	G	C	B	B	S	C	S	B	B	E	E	5.1	4.8	2.8	3.7	3.0
25	3.0	2.4	2.4	2.2	E	E	E	B	B	C	B	B	B	C	B	G	B	C	E	E	E	2.2	E	(5.0)S
26	E	E	E	3.0	5.0	7.5	7.5	5.0	4.0	C	B	B	B	C	B	B	G	5.8	5.6	C	C	C	2.2	5.2
27	3.6	4.2	2.2	5.2	3.8	2.4	2.0	B	C	C	C	C	C	C	C	C	6.0	7.5	4.6	4.6	4.6	6.0	5.8	3.0
28	2.2	1.6	E	3.0	5.0	6.0	3.9	3.0	3.0	C	C	B	B	C	G	B	5.9	E	E	E	E	E	E	E
29	S	3.1	4.6	6.2	8.3	6.2	5.8	6.2	6.2	3.0	B	B	5.0	4.7	4.6	4.5	9.5	9.0	5.0	E	5.5	3.0	4.0	5.6
30	3.0	1.6	1.6	1.6	1.6	E	S	B	S	B	B	B	C	B	C	C	B	E	E	3.8	7.2	E	3.0	2.4
31	3.8	2.2	1.8	1.8	1.8	1.6	2.6	2.4	G	B	B	B	B	B	C	G	B	E	S	S	E	E	E	E
Mean Value	3.0	2.6	2.6	3.3	3.9	4.4	4.0	4.0	4.0	3.6	3.9	4.2	4.2	4.2	3.7	2.9	4.6	4.4	3.4	3.9	4.0	2.8	3.0	3.6
Median Value	E	E	E	E	E	1.6	2.4	3.0	2.2	G	G	G	G	G	G	2.1	3.1	E	E	E	E	E	2.2	E
Count	24	24	24	24	24	23	20	11	17	15	11	12	12	13	16	11	12	22	25	20	22	22	23	25

fEs

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 8

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1951

(M3000)F2

135° E Mean Time

Day	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	2.6	2.8	2.8	2.8	(2.7)J	(3.2)J	3.2	(3.1)$^{P}_{J}$	3.1	3.3	3.3	3.2	3.0	3.2	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	3.3	(3.2)^{C}	3.2	(3.2)^{J}	(3.2)^{J}	(3.3)^{J}	3.2	3.2	3.4	3.1	3.1F	2.9P	(2.8)$^{F}_{F}$	(2.4)$^{F}_{F}$	(2.5)$^{F}_{F}$
3	2.8	2.5	2.4	2.6	2.5H	2.5	A	(3.1)$^{J}_{H}$	(3.2)$^{P}_{J}$	SH	3.2	C	C	C	C	C	C	3.0	C	C	C	2.8	2.5
4	2.5	(2.4)$^{J}_{V}$	2.5	2.5	2.6	2.7	3.0	3.0	(3.2)P	(3.3)J	(3.4)J	(3.3)^{J}	(3.2)J	S	S	S	3.1P	3.1	2.9	2.7	S	(2.6)$^{P}_{S}$	2.7	(2.8)$^{P}_{S}$
5	(3.0)$^{J}_{P}$	2.7P	S	2.8	2.8P	(3.1)$^{P}_{J}$	3.1	3.0	3.1	(3.2)$^{P}_{J}$	S	3.1	2.9	(3.2)$^{P}_{J}$	(2.9)J	3.2	3.1	[3.0]^{C}	3.0	3.0	(2.8)^{J}	S	(2.9)$^{J}_{F}$	S
6	(2.9)$^{J}_{F}$	2.6	2.6	(3.0)$^{J}_{F}$	(2.6)$^{J}_{F}$	(2.9)$^{J}_{F}$	S	3.0F	3.0	3.2	3.2	3.2P	3.0	3.1	3.2	C	C	C	3.0	(3.1)S	3.2	2.9	3.0	3.0
7	2.9F	(2.7)$^{P}_{F}$	2.8F	(2.9)S	3.0	3.1	3.2	3.1	3.3	S	S	3.2Z	3.2^{L}	3.2	3.4	3.2	2.8	[2.8]^{C}	2.7	3.0	(2.9)S	2.8	2.8	(2.8)$^{P}_{S}$
8	2.8F	(2.8)$^{J}_{F}$	(2.8)$^{J}_{F}$	(2.8)$^{J}_{F}$	(2.6)$^{P}_{F}$	S	(3.1)S	2.9	3.1	S	C	3.0P	C	C	C	C	C	C	2.9P	2.8$^{P}_{S}$	2.7	2.6	(2.8)^{C}	(3.1)$^{P}_{J}$
9	S	S	S	S	3.1	A	2.4	3.1	3.1	3.2	2.9	3.0	2.9	3.0	3.0	3.3	3.0	3.2	S	S	2.9	2.6	2.6	2.7
10	3.0	S	S	2.7	3.1	3.0	A	3.0	3.1	3.0Z	3.1	3.3	(3.2)C	3.2	3.1	3.2	3.2	3.2	3.0	2.9	A	2.6	(2.9)$^{J}_{F}$	2.9F
11	C	SF	(2.8)$^{J}_{F}$	(2.7)$^{J}_{F}$	(2.9)$^{F}_{J}$	2.8^{F}	3.0F	2.9	3.2	2.8H	3.2Z	3.0	3.3	3.3	3.3	C	C	C	C	C	C	C	S	2.8
12	2.9$^{P}_{S}$	2.7^{S}	2.5	(2.8)$^{P}_{S}$	2.8	2.7	S	2.9	3.2	3.2	2.9	(3.1)$^{P}_{J}$	3.1	3.0	3.2	3.0	3.2	2.9	2.8	3.0	2.9	S	S	S
13	2.6	2.7	2.7	2.8	2.6	(3.0)J	3.1P	3.1P	3.0	C	C	C	C	C	C	C	2.9	(3.1)$^{P}_{J}$	3.2	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	3.1	3.1	3.1	3.3	3.2	3.0	3.2	[3.0]C	2.9	A	3.3	3.2	3.1F	C	C
15	2.9^{P}	C	C	C	C	C	C	C	3.2	3.2	(3.0)^{C}	2.9	3.0	(3.1)^{J}	3.4	3.2	3.2	2.6	2.9	A	2.7F	2.8F	2.8F	2.9
16	2.7H	2.5F	2.7F	2.7	(2.5)$^{J}_{P}$	C	C	C	C	C	C	C	C	3.1	3.0^{P}	B	3.0	3.0	2.9	3.0	3.0	2.8	(2.7)^{J}	(2.7)$^{J}_{P}$
17	(2.8)$^{J}_{P}$	C	C	C	C	C	C	C	C	C	(3.1)J	B	B	(3.3)J	(3.2)J	3.5	3.3	(3.2)J	3.3	2.8	2.8	2.8	2.7	(2.7)J
18	2.5	2.6	2.9	2.7	2.8	2.8	3.0	3.1	B	B	2.9	3.0	3.1	3.1	(3.2)P	3.2	3.0	3.0P	2.8	2.5	2.6	(2.4)$^{J}_{F}$	(2.5)$^{J}_{F}$	2.5
19	C	C	C	C	C	C	C	C	C	C	B	B	B	C	(3.0)$^{P}_{H}$	(3.2)$^{P}_{S}$	3.1	(3.3)J	S	S	3.0S	2.9	(2.7)^{J}	2.6
20	(2.8)J	(2.8)J	(2.8)J	(2.9)J	3.1	3.0	C	C	3.2	3.2P	3.2	(3.2)C	3.3	3.3	C	C	C	C	C	C	C	C	C	C
21	2.8F	2.6$^{F}_{P}$	2.7F	2.8F	2.9F	3.0F	2.8H	3.1	3.3	3.0	3.1P	(3.1)C	3.2	3.1	2.9	(3.1)J	3.1	3.1	3.1	2.7	2.5	2.5	2.6	2.3
22	C	C	C	C	C	C	C	C	C	C	3.3	(3.2)B	(3.1)$^{P}_{B}$	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	(3.3)$_{J}$	3.3	2.9	3.2	(3.0)C	2.8	3.2	3.0	3.0	2.8	3.1P	2.7	2.8	2.7
24	2.8	2.8	2.7	2.8	A	3.2	3.1	3.1	3.3	(3.3)C	3.3$^{P}_{S}$	S	S	C	S	3.2	3.2	3.1	(3.3)J	A	(3.0)$^{P}_{J}$	2.8	2.9	2.8
25	2.9	2.8	2.7	2.7	2.7	3.0	2.9	3.0	3.3	[3.2]^{S}	3.2	3.2	3.0	(3.1)C	3.2	3.4	3.2	[3.2]^{S}	3.1	(3.1)J	2.9	2.8	2.5	2.6
26	2.5	2.5	2.5	2.6	2.7	A	A	A	S	C	3.2	3.2	30	C	B	3.2	3.2	3.3	3.1	C	C	C	2.9	2.8
27	2.6	2.8	2.6	2.6	2.6	2.6	3.1	3.1	C	C	C	C	C	C	C	C	3.2	(3.1)P	(2.8)P	(3.3)J	A	A	A	2.8
28	2.7^{P}	2.8	(2.8)S	(2.9)J	A	(2.8$^{P}_{J}$	A	2.9	3.5	C^{K}	C^{K}	S^{K}	(3.1)$^{K}_{J}$	(3.0)^{K}C	3.0^{K}	(2.9)^{K}S	2.8P$_{K}$	2.5^{K}	3.1^{K}	2.7^{K}	(2.4)$^{K}_{F}$	(2.9)$^{K}_{J}$	2.8^{K}	S^{K}
29	S^{K}	2.6^{K}	A^{K}	A^{K}	A^{K}	A^{K}	A^{K}	A^{K}	S^{K}	3.0^{K}	3.0$^{H}_{K}$	3.1	3.1^{H}	(3.2)J_{H}	(3.2)$^{J}_{H}$	3.0	(3.2)J	(3.0)J	(3.2)J	2.9	3.3	3.2	A	A
30	3.3	3.1	3.1	3.0	(3.1)J	3.1	(3.0)S	3.1	[3.2]^{S}	3.2	S	3.1	3.1	3.1	2.8	(3.0)^{C}	3.2	2.9	2.6	2.6	2.8	(2.9)$^{J}_{F}$	25F	2.8
31	2.7	2.7F	2.8F	2.8F	(2.6)$^{J}_{F}$	3.0F	3.1$^{V}_{F}$	3.0	3.3	3.2	3.1	(3.1)J	3.1	2.8Z	(2.9)C	3.0	3.0	2.8	2.9	2.6F	2.8F	2.9F	(2.6)$^{J}_{F}$	(2.8)$^{J}_{F}$
Mean Value	2.8	2.7	2.7	2.8	2.8	2.9	3.0	3.0	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	2.9	2.9	2.8	2.7	2.7
Median Value	2.8	2.7	2.7	2.8	2.7	3.0	3.1	3.1	3.2	3.2	3.2	3.1	3.1	3.2	3.1	3.2	3.2	3.0	3.0	2.8	2.9	2.8	2.8	2.8
Count	23	21	20	22	21	19	15	20	20	18	22	23	23	22	21	20	24	25	23	20	21	21	22	22

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 9

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1951

fminF

135° E Mean Time

Day	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	2.0	2.0	2.0	2.0	2.0	1.9	1.8	2.0	2.2	2.8	3.2	3.2	2.6	3.2	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	3.6	[3.6]S	3.6	3.6	3.6	3.5	2.2	2.2	1.6	E	1.6	1.6	1.7	1.7	1.8
3	2.0	2.3	2.0	2.0	2.0	2.0	A	1.7	2.6	3.7	3.7	C	C	C	C	C	C	2.2	C	C	C	C	1.6	E
4	E	E	E	E	E	E	1.8	2.7A	2.3	3.7	3.5	3.6	3.0	2.8	3.0	2.0	2.0	1.9	2.0	1.8	(2.0)S	1.8	1.8	1.6
5	1.6	1.8	2.0	2.1	1.9	1.9	2.0	2.0	3.3	3.0	3.0	3.2	3.0	2.8	2.5	2.1	1.7	[1.8]S	2.0	E	E	S	E	E
6	E	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	3.0	2.8	3.0	3.0	3.0	2.8	C	C	C	1.8	S	2.8S	1.8	1.8S	1.8
7	1.6	1.8	E	1.8	1.8	1.6	1.8	1.6	2.8	S	S	3.0	3.3	3.4	2.9	2.5	2.2	[2.4]S	2.5A	2.0	2.0	2.1	1.8	2.1
8	2.0	2.0	1.8	2.0	2.0	1.9	3.7S	1.7	2.5	3.4	[3.3]S	3.2	C	C	C	C	C	C	1.8	1.8	1.8	2.0	[1.9]S	1.8
9	2.0	2.0	A	1.8	2.0	A	1.8	2.0	2.4	2.9	4.0A	3.0	3.3	3.4	3.3	2.2	2.0	2.0	2.0	2.6S	2.0	2.0	2.0	2.0
10	1.7	1.8	2.0	1.7	2.0	1.8	A	2.0	2.3	3.4	3.2	3.7	3.6	3.4	2.8	2.4	1.8	1.6	1.8	2.2	A	1.8	1.8	2.0
11	[1.9]S	1.8	1.8	2.0	1.8	1.8	1.8	1.7	2.0	3.2	3.6	3.7	3.0	4.0	3.2	C	C	C	C	C	C	C	S	2.0
12	2.0	2.0	2.0	1.8	1.9	2.6A	A	3.6A	3.3	3.9	4.0	4.0	4.0	3.0	3.2	2.8	1.6	2.2	2.0	2.2S	1.6	S	S	S
13	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	N	C	C	C	C	C	C	C	1.6	1.6	1.6	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	2.6	3.1	3.4	3.1	3.0	2.7	2.2	(2.0)C	1.8	A	1.8	1.8	1.8	C	C
15	1.8	C	C	C	C	C	C	C	2.4	2.8	[3.1]S	3.4	3.8	5.6	3.4	3.7	2.4	2.2	1.8	3.7A	1.6F	E	1.8F	1.8
16	1.8	1.8	1.8	1.6	1.8	C	C	C	C	C	C	C	C	3.3	3.0	2.2	1.9	1.6	1.7	2.0	E	1.6	1.7	E
17	1.7	C	C	C	C	C	C	C	C	2.9	3.6	3.2	3.8	2.8	2.7	2.2	2.0	1.6	E	1.8	1.8	1.8	1.8	1.8
18	1.8	1.8	1.7	E	1.8	1.8	1.8	1.7	A	2.8	3.8	3.4	3.4	3.0	2.6	2.2	1.6	1.8	1.6	E	E	2.0	E	E
19	C	C	C	C	C	C	C	C	C	C	3.4	B	2.8	(2.8)C	2.9	1.7	2.0	1.7	1.8	2.0	1.7	1.7	1.6	1.8
20	1.6	1.7	1.7	1.8	1.6	1.6	C	C	2.0	2.8	3.6	(3.5)C	3.4	2.8	C	C	C	C	C	C	C	C	C	C
21	1.6	1.6	E	E	1.8	1.8	E	2.0	2.6	3.2	3.9	(3.8)C	3.8	2.8	2.8	2.6	1.6	1.6	1.8	E	1.6	1.8	E	*1.6
22	C	C	C	C	C	C	C	C	C	C	4.3	4.2	4.2	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	3.7	4.2A	5.7	3.7	(3.2)C	2.8	1.7	1.7	1.7	1.6	1.6	1.8	1.9	1.8
24	1.8	1.7	1.6	1.7	A	1.8	1.7	1.8	2.5	(3.2)C	3.9	4.0	S	C	S	3.2	2.0	1.8	2.4	A	1.8	1.8	1.9	1.8
25	1.8	1.9	1.8	1.9	1.6	1.7	2.0	1.7	2.2	(3.1)C	4.0	6.0	4.0	(4.0)C	4.0	3.0	2.0	(2.0)C	2.0	E	E	E	1.8	1.8
26	1.6	1.6	1.7	1.7	E	A	A	A	2.4	[3.2]S	4.0	4.5	5.8	(5.9)C	6.0	2.4	1.8	E	E	C	C	C	1.8	E
27	1.6	E	E	E	E	1.7A	1.8A	2.2	C	C	C	C	C	C	C	C	E	3.6A	2.0	3.8A	A	A	A	2.0
28	E	E	E	2.0	A	2.0	A	1.9	2.3	C	C	3.7	3.8	(3.4)C	2.9	3.7	2.1	2.3	1.6	1.6	1.6	1.6	1.6	1.6
29	S	E	A	A	A	A	A	A	4.5A	2.0	2.8	3.4	4.0	3.6	3.5	2.5	1.8	3.4A	3.6A	2.0	2.6A	2.5A	A	A
30	2.6A	2.2	2.1	2.2	2.0	E	2.6S	2.0	(2.8)S	3.6	3.6	3.7	[3.6]S	3.4	<5.8	C	E	E	E	(2.0)A	E	E	2.0	1.7
31	E	1.8	E	E	E	E	1.8	1.8	2.5	4.0	4.0	3.8	3.5	3.9	(3.4)C	2.9	3.7	2.0	2.0S	2.5S	E	E	E	E
Mean Value	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.6	3.2	3.6	3.6	3.7	3.5	3.2	2.6	2.0	2.0	2.0	2.2	1.9	1.9	1.8	1.8
Median Value	1.7	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.4	3.2	3.6	3.6	3.6	3.4	3.0	2.4	2.0	1.8	1.8	1.9	1.6	1.8	1.8	1.8
Count	25	24	22	23	21	20	16	20	21	23	26	26	25	24	21	20	24	25	25	22	22	21	22	24

fminF

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 10

13

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | fminE | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	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	2.0	2.0	2.0	1.6	E	E	E	B	1.9	2.0	B	B	2.3	2.0	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	S	C	B	B	B	1.6	E	E	1.6	E	E	E	1.9	1.7	E
3	E	E	E	E	E	2.2	2.0	1.7	1.7	1.6	B	C	C	C	C	C	C	1.6	C	C	C	C	E	E
4	E	E	E	E	E	E	E	E	E	E	E	1.7	1.7	1.7	1.7	B	B	E	E	E	S	1.9	1.9	E
5	E	E	E	E	E	2.0	E	B	2.0	2.0	2.0	2.0	2.4	2.0	E	B	B	C	E	E	E	S	E	E
6	E	E	E	E	E	E	E	B	B	1.8	1.8	2.2	1.8	1.8	E	B	C	C	E	S	S	E	E	E
7	E	E	E	E	E	E	E	B	1.9	S	S	2.2	2.2	2.2	2.1	2.0	2.0	[2.2]^{s}	2.5	2.0	2.5	2.0	E	E
8	E	E	E	E	2.0	E	S	E	1.7	2.2	[2.2]^{s}	2.2	C	C	C	C	C	C	E	E	E	E	C	E
9	E	E	2.0	E	E	1.8	1.9	E	1.8	2.0	2.0	3.0	2.2	3.0	2.0	B	E	E	E	S	E	E	E	E
10	E	E	E	E	E	2.0	1.6	E	1.8	1.8	2.0	2.8	B	2.6	2.2	2.2	1.8	E	1.6	1.8	1.6	1.8	1.8	1.8
11	(1.8)^{c}	1.8	1.8	1.8	1.8	E	1.8	B	B	B	B	B	B	B	2.0	C	C	C	C	C	C	C	S	E
12	E	E	E	E	E	E	E	2.0	B	B	B	B	B	B	B	B	1.7	1.6	1.6	S	E	S	S	S
13	E	E	E	E	E	E	E	B	B	C	C	C	C	C	C	C	1.6	E	E	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	1.7	1.8	1.8	1.8	1.8	1.8	1.8	C	E	1.8	E	E	E	C	C
15	E	C	C	C	C	C	C	C	1.7	2.2	[2.2]^{c}	2.2	B	B	B	B	1.8	1.6	E	1.6	E	E	E	E
16	E	E	E	E	E	C	C	C	C	C	C	C	C	E	1.6	1.6	B	B	B	2.2	2.2	1.8	1.9	2.2
17	1.8	C	C	C	C	C	C	C	C	2.3	2.2	2.2	2.2	2.6	2.0	B	B	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	B	1.8	2.1	2.3	2.2	2.4	2.4	2.1	1.6	E	1.7	E	E	E	E	E	E
19	C	C	C	C	C	C	C	C	C	C	2.4	B	2.0	(1.8)^{c}	1.6	1.9	B	1.9	1.6	E	E	E	E	E
20	E	E	E	E	E	E	C	C	1.7	1.8	1.8	(1.8)^{c}	1.8	1.8	C	C	C	C	C	C	C	C	C	C
21	E	E	E	E	E	E	E	1.6	1.6	1.8	2.2	C	B	B	1.8	1.7	B	1.6	1.8	1.8	E	1.8	1.8	E
22	C	C	C	C	C	C	C	C	C	C	B	B	B	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	B	3.7	B	B	C	B	B	E	E	E	E	E	1.8	1.8
24	E	E	E	E	1.7	1.6	1.6	1.7	1.8	C	B	B	S	C	S	B	B	E	E	1.8	1.6	1.6	1.6	1.7
25	1.7	1.8	1.8	1.9	E	E	E	B	B	C	B	B	B	C	B	1.8	B	C	E	E	E	1.8	E	(1.6)^{s}
26	E	E	E	E	1.7	1.6	1.6	1.6	1.6	C	B	B	B	C	B	B	E	E	E	C	C	C	1.6	E
27	E	E	E	E	E	E	E	B	C	C	C	C	C	C	C	C	E	E	E	E	1.6	E	E	1.6
28	E	E	E	E	E	E	E	E	E	C	C	B	B	C	2.2	B	E	E	E	E	E	E	E	E
29	S	E	E	E	E	E	E	E	1.6	2.0	B	B	3.4	2.6	2.6	2.0	1.8	2.0	2.0	E	1.8	2.0	2.0	2.0
30	E	E	E	E	E	E	S	B	S	B	B	B	C	B	C	C	B	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	E	3.4	B	B	B	B	C	2.5	B	E	S	S	E	E	E	E
Mean Value	1.8	1.9	1.9	1.8	1.8	1.9	1.8	1.7	1.8	2.0	2.1	2.3	2.1	2.2	2.0	1.9	1.8	1.8	1.8	1.8	1.9	1.8	1.7	1.8
Median Value	E	E	E	E	E	E	E	E	1.7	2.0	2.0	2.2	2.2	2.0	1.9	1.8	E	E	E	E	E	E	E	E
Count	25	24	24	24	24	23	20	12	17	16	13	13	12	14	16	11	12	22	24	20	22	22	23	25

Sweep 1.5 Mc to 15.5 Mc in 2 min ☐ Manual ☒ Automatic

W 11

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foF2 | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	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	4.2 JF	4.2 JF	4.4 JF	4.2 JF	3.4 F	3.2	2.7	5.9	9.5	10.5	9.2	9.7	8.2	8.0	8.1	6.9	5.6	4.6	4.6	3.7	2.7	2.6 F	2.4 PF	2.8 JF
2	3.3 V	3.5 JF	3.3 V	3.2	3.0	3.3	3.5	6.4	9.2	10.0	9.2	9.4	8.4	8.1	7.2 H	7.6	5.5	4.6	3.3	3.2	(3.3) PF	3.4 JF	3.1	2.9 V
3	3.3	3.4	3.4 H	3.4	3.3	3.4	3.0	6.6	9.7	11.0	9.9	9.1	8.6	9.0	8.4	7.0	6.7	3.5	4.1	4.2	4.0	2.8	3.1	3.4
4	3.5	3.2	3.2	3.2	3.5	3.9	4.3	5.7	6.7	C	C	C	C	C	C	C	C	5.9	4.5	3.4	3.5	3.7	3.7	3.6
5	2.7	2.6	2.8	2.6	2.9	3.2	3.0 F	4.7	7.6	8.9	9.6	9.7	9.2	9.5	8.3	7.6	5.8	5.5 S	4.9 S	4.0	4.5	3.7	4.3 JF	3.7 JF
6	4.2 F	3.9 JF	4.0 JF	4.3 JF	3.7 PJ	3.3 JF	3.2	6.2	7.0	8.3	9.4	8.6	8.6	8.6 V	8.1	6.3	5.0	3.7	3.6 S	2.9 V	3.2 V	3.0 V	3.0 ZF	3.5
7	3.6	3.6 VF	(3.7) PFH	3.7 JF	3.9 JF	4.1	3.1 F	5.8	7.2	7.8	7.3	B	B	6.8	6.4 V	B	5.1	4.7 V	4.1 H	3.4 V	3.3	3.3	3.4 JF	3.2 F
8	3.2 JF	3.0 JF	3.1 F	3.8	3.2	3.3	3.3	4.5	6.7	7.4	7.7	7.6	7.6	7.9	8.6	7.6	5.1	3.4 JZF	4.0	2.8	3.4	3.3	3.5	3.6
9	3.3	3.2	3.1	3.0	3.4	3.1	2.6	4.7	8.1	7.6	9.0	9.3	8.3	8.2 H	8.2	7.9	A	5.2	3.4	3.1 H	3.7 H	3.1	3.2 H	3.4
10	3.6 J	3.1	3.1	3.2	3.4	2.7	2.8	5.7	8.2	7.9	8.0	9.6	8.0	7.8	7.4	A	5.6	4.0	3.4	3.7	3.1	3.2	3.5	3.5 VF
11	3.5	A	4.1	4.5	4.6 V	4.2 F	4.8	5.8	8.0	9.0	9.0	8.6	(8.6) P	7.6 H	6.6	6.5	S	3.8	3.6	4.1 J	2.8	2.7	3.4	2.9
12	3.1	3.2	3.3	3.2	3.4	2.7 H	2.8	A	6.3	9.0	7.9	(10.0) P	8.0	7.5	7.0	6.6	5.9	3.5	4.0	3.8	3.1	2.0	2.4	2.5
13	2.6	2.9	3.0	3.2	3.3	3.6 H	4.1	5.3	7.2	6.3	7.5	7.6	6.7 Z	7.1	7.6	6.0	6.2	4.2	3.7	2.9	2.8 H	2.3 JF	2.8 F	F
14	2.9 F	3.2 F	3.3 VF	3.2	3.2	3.4	3.1	4.5	5.2	7.1	7.5	7.7	6.6	7.1	7.2	7.1	5.0	(4.6) PJ	4.3 V	A	3.0	3.1 V	3.1 V	3.3
15	3.2	3.4	3.5	3.1	3.3	3.5	3.0	4.6	6.3	7.3 H	7.4	8.7	8.4	7.3	7.2	7.5	5.9	4.1	3.7	4.4	4.1	3.1	2.8	3.1
16	3.2	3.6	3.5	3.3 JF	3.9	3.0	3.1	4.8	6.2	7.4	7.7	8.2	8.2	7.8	7.4 PJ	7.2 J	5.2	3.9 Z	3.3	2.9	2.6	3.0	3.2	3.4
17	3.4	3.7	3.7	3.8	3.7	3.5	3.8	4.6	5.4	6.0	7.8	8.1	7.6	6.1	7.2 P	6.8	5.2	3.6	3.6	3.1	2.9	2.6	2.9	3.0
18	3.0	3.2	3.3	3.2	3.2	3.0	3.0	4.7	5.6	C	C	C	C	C	C	C	C	5.0	5.0	2.7	3.1	2.9	3.2 JF	3.4 F
19	3.4	3.6	3.5	3.1	2.7	3.3	3.5	4.6	5.1	6.5	8.8	11.3	7.6	6.7	7.7	7.5	6.5	5.1	4.5	3.7	3.0	2.6	3.3	3.3
20	3.5	3.7	3.6	3.5	3.6	2.4	2.4	4.4 H	8.1	6.6	7.8	8.5	7.6	7.0	7.7	6.9	6.2 P	5.2	2.9	2.9	2.6 V	2.7	3.4 JF	2.8 F
21	2.9 F	3.1	3.1 H	3.0	3.0 F	2.6 F	2.6	4.4	6.8	6.4	7.8	7.8	7.0	7.0	6.5	6.6 H	6.1 H	4.7	3.6	2.5	2.6	2.6	2.9	3.1
22	3.0	3.0	3.5	3.2	3.6	2.5	2.7	5.1	5.9	6.6	7.1 H	7.9	7.7	8.1	C	C	5.8	4.9	3.5	2.4	2.5	2.7	2.9	3.0
23	3.1	3.2	3.2	2.8	2.9	3.0 JF	3.9 JS	4.4	7.1	9.8	10.1	9.3	8.9	7.8	8.5	9.0	6.3	4.8	4.4	4.0	(4.8) PF	4.9	F	3.9 ZF
24	F	3.1 VJF	2.8	2.7	3.1	3.0	3.4	4.5	5.7	6.3	9.1	7.4	8.8 Z	7.9	7.5	7.1 H	5.7	5.4	5.0	2.7	2.7	2.6	A	3.1 Z
25	2.8 V	3.3 Z	3.3 JF	3.2	3.4	3.1	2.4	3.8	5.6	6.5	S	9.7	7.2	6.6	8.2 V	6.9	5.3	4.8	4.8	4.4	3.2	2.4 F	3.0	3.2
26	3.3	3.5	3.5	3.4	3.6	3.5	3.5	4.3	5.6	5.7	10.2	9.4	7.4	6.7	9.2	6.9	6.0 JH	4.7	4.0	3.4	3.0	A S	A S	3.1
27	3.1	3.2	3.3	3.1	3.3	3.2	2.8	4.2	5.7	6.0	8.6	9.0	C	B	8.1	8.0	6.3	4.6	4.1	3.1	2.1	A	2.9	3.0
28	3.0	3.1	3.3	3.3	2.9	2.6	2.8	4.6	6.6	5.7 K	10.0 JK	11.3 K	8.2 K	6.9 K	6.2 K	7.2 K	6.5 K	B K	B K	5.0 KH	3.3 KHF	4.8 KF	4.5 K	3.1 K
29	B K	2.9 K	2.9 K	2.7 K	A K	2.2 K	2.5 K	4.6 K	A K	A K	9.8 K	B	B	6.7	6.7	7.1	6.1 S	5.0	A	A	A	3.0	2.6	3.0
30	3.5 JF	2.8 F	F	3.2 JF	3.8 JF	3.4 JF	4.3 JF	F	6.4	6.1	9.5	7.6	7.0	5.9	7.7	7.0	4.4	4.0	3.6	3.1	2.3 VF	2.4	A	3.1 JF
31	3.0 ZF	3.0 ZF	3.4 JF	3.1 JZF	3.1 JF	2.7	2.8	4.1	6.3	7.8	9.4 H	9.2	7.4	6.8	6.5	6.1	5.7	4.5	4.8	4.0	4.1	3.8	2.7	3.1
Mean Value	3.3	3.3	3.4	3.3	3.4	3.2	3.2	4.9	6.8	7.6	8.7	8.9	7.9	7.4	7.6	7.1	5.7	4.5	4.0	3.4	3.2	3.0	3.2	3.2
Median Value	3.2	3.2	3.3	3.2	3.4	3.2	3.0	4.6	6.6	7.4	8.9	9.0	8.0	7.4	7.6	7.0	5.8	4.6	4.0	3.4	3.1	3.0	3.1	3.1
Count	29	30	30	31	30	31	31	29	30	28	28	27	26	28	28	26	27	30	29	29	30	29	27	30

foF2

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

A 1

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1951 | **h_pF2** | 135° E Mean Time

Day	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	(370)JF	(400)JF	(350)JF	(370)JF	370F	290	280	250	250	250	240	270	240	260	280	230	240	310	270	360	260	(350)F	370PF	(370)JF
2	380V	(350)JF	350V	360	350	340	340	270	270	250	260	250	250	260	250H	230	240	250	280	260	(350)PF	(320)JF	310	350V
3	440	360	390H	390	320	400	350	250	270	260	270	230	260	290	260	240	240	270	290	270	300	310	290	360
4	380	370	340	350	340	310	270	240	250	C	C	C	C	C	C	C	C	290	290	290	310	320	300	270
5	290	400	310	360	360	290	370F	260	250	240	250	230	230	260	260	240	220	290S	280S	300	270	240	(320)JF	(310)JF
6	340F	(340)JF	(290)JF	(260)JF	(290)JPF	(280)JF	320	260	250	240	250	240	240	240V	240	230	240	230	260S	280V	260V	280V	260EF	330
7	360	380VF	(400)PFH	(350)JF	(300)JF	280	300F	260	250	240	210	B	B	230	240V	B	220	270V	280H	270V	260	320	(320)JF	310F
8	(300)JF	(330)JF	350F	350	350	310	340	300	250	250	240	250	250	260	260	280	270	(310)JEF	290	300	380	360	410	350
9	320	300	320	370	320	360	410	300	270	270	270	260	230	270H	280	230	A	240	240	300H	310H	370	380H	330
10	(340)J	380	360	310	300	320	330	290	240	250	260	260	250	280	270	A	A	260	340	240	250	310	380	310VF
11	350	A	370	280	350V	330F	340	280	260	250	250	260	(290)P	270H	250	240	S	270	300	(260)J	230	300	320	290
12	350	390	370	380	280	320H	290	A	250	260	250	(270)P	260	260	240	240	230	250	300	280	240	290	360	360
13	350	350	360	340	350	340H	310	260	260	250	280	240	260Z	270	260	230	230	280	250	240	390H	(370)JF	370F	F
14	380F	340F	370VF	300	290	300	240	230	230	260	270	240	240	250	280	240	250	(250)PJ	280V	A	280	300V	320V	340
15	360	390	360	320	330	290	250	230	250	290H	240	280	250	250	260	260	230	300	290	310	270	280	400	370
16	380	390	390	(420)JF	320	280	290	240	240	250	300	260	260	260	(230)PJ	(250)J	220	260Z	250	250	300	330	290	310
17	350	320	310	320	330	270	270	270	250	250	240	240	260	270	270P	260	260	250	330	270	300	290	370	350
18	380	370	360	380	360	360	270	280	220	C	C	C	C	C	C	C	C	260	240	320	310	320	(390)JF	380F
19	390F	390	260	330	350	360	240	220	220	290	280	280	240	260	270	240	280	240	260	280	270	310	350	350
20	380	370	350	350	320	310	270	270H	230	260	250	270	240	270	270	240	240P	260	250	260	300V	370	(300)JF	380F
21	360F	340	330H	300	300F	280F	260	250	250	250	230	250	240	260	240	270H	270H	260	270	280	330	350	310	320
22	350	330	350	320	270	300	330	260	240	270	260H	270	230	250	C	C	260	230	260	260	330	380	420	410
23	410	340	310	380	360F	(390)JF	(260)JS	260	300	280	270	260	280	290	270	250	260	260	300	260	(320)PF	290	F	320EF
24	F	(300)VJF	320	320	330	290	270	240	250	260	270	240	260Z	270	270	290H	270	280	250	260	220	360	A	330Z
25	350V	390Z	(360)JF	360	320	290	270	250	260	250	S	250	230	250	250V	240	250	240	240	240	210	250F	240	300
26	360	360	350	340	360	320	260	280	230	240	300	230	230	250	260	230	(300)JH	240	250	240	A	AS	AS	A
27	360	340	310	340F	330	320	260	250	240	260	240	230	C	B	260	260	230	250	250	270	220	A	370	380
28	400	390	330	300	310	330	280	280	260	250K	(300)KJ	270K	240K	260K	250K	300K	350KH	BK	BK	240KH	430KEH	390KF	350K	230K
29	BK	320K	320K	320K	AK	350K	380K	310K	AK	AK	270K	B	B	250	240	240	240S	250	A	A	A	A	290	320
30	(400)JF	360F	F	(290)JF	(300)JF	(300)JF	(350)JF	F	220	240	260	220	240	270	260	240	230	250	260	260	330VF	320	A	(350)JF
31	330ZF	350F	(360)JF	(320)JZF	(330)JF	310	290	260	280	280	270H	250	240	250	250	260	270	290	310	320	310	290	290	350
Mean Value	360	360	340	340	330	320	300	260	250	260	260	250	250	260	260	250	250	260	270	270	290	320	340	340
Median Value	360	360	350	340	330	310	290	260	250	250	260	250	240	260	260	240	240	260	270	270	300	320	320	340
Count	29	30	30	31	30	31	31	29	30	28	28	27	26	28	28	26	26	30	29	29	29	28	27	29

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

A 2

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'F2 | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	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	290	350	290	290	300A	230	250	220	230	240	220	210	220	220	260	220	200	220	230	330	210	300	340	350F
2	320	270	260	300	280	270	250	230	240	230	220	220	220	250	230H	230	200A	200A	220	250	260	280	290	310
3	340	320	310H	310	290	310	300	230	230	230	250	220	230	240	230	220	220	220A	240	240	240	240	270	280
4	300	300	300	280	270	250	230	220	230	C	C	C	C	C	C	C	C	240	220	230	260	280	240	240
5	260	320	290	280	290	280	260	250	230	220	220	230	230	230	220	230	210	210	230	230	230	220F	250F	290F
6	230	270F	240	230	230	220	270	220	220	210	220	230	200	200	220	210	210	220	220	220	220	240	230	290
7	270	290	280H	290F	250	210	230	230	230	210	210	230	230	220	220	220	200	220	220H	220	220	230	270	260
8	270	270	290	300A	300	280	290	250	240	240	240	240	230	250	230	220	220	250	240	240	300	290	340	290
9	270	260	260	300	260	300	360	250	220	230	240	240	220	220H	230	210	230	210A	230	270H	260H	300	330H	280
10	310A	300	310	270	260	280	300	230	210	230	240	240	240	250	220	A	A	210	280	230	230	270	320	290
11	300	A	240	240	250	240	280	250	240	230	250	260	240	230H	220	220	220	250	290A	240	220	300	250	250
12	280	320	310	310	250	210H	260	260	220	240	230	240	250	260	230	220	220	200	240	250	200	290	320	310
13	300	290	300	290	300	280H	250	220	220	210	220	240	250	270	230	220	210A	240	220	220	300H	300F	300	310
14	300	290	290	270	270	250	200	220	210	220	230	220	230	220	250	230	210	210	250	A	250	240	270	300
15	300	310	290	280	260	250	220	220	220	210H	220	270	240	240	230	230	220	210	250	240	230	240	320	320
16	310	320	300	290	270	230	250	210	210	230	210	240	250	240	230	230	200	220	230	220	240A	280	230	250
17	290	260	270	260	270	230	230	230	220	230	220	230	250	200	220	250	210	210	270	240	240	260	300	300
18	310	300	300	310	300	300	230	200	210	C	C	C	C	C	C	C	C	220	200	260	280	260	330	300
19	300	300	230	270	300	280	220	210	210	220	240	250	230	230	240	220	220	210	210	240	240	270	300	300
20	300	300	290	290	280	290	260	220H	220	220	220	230	220	260	240	220	220	210	230	220	280	320	280F	300
21	300	280	270H	250	250	230	230	210	220	220	210	240	230	240	220	220H	230H	230	220	260	280	300	290	290
22	300	300	300	290	240	260	290	240	220	260	220H	220	220	230	C	C	220	210	230	230	280	310	360	360
23	310	290	280	300	310	310	220	250	280	260	250	240	240	260	260	230	220	230	290	240	230	240	340	290
24	300	280	280	270	270	250	230	210	200	220	220	220	230	250	230	220H	220	240	230	220	210	300	A	300
25	280	300	300	280	260	250	230	220	250	230	260	250	220	240	240	230	210	210	210	210	200	210	200	260
26	310	300	300	300	300	260	220	220	210	220	270	230	220	220	250	210	230A	200	210	230	A	A	A	A
27	320	290	260	260	260	250	240	210	210	220	240	220	(220)F	230H	230	250	210A	220	210	230	220	A	310	330
28	340	320	280	250	260	290	260	240	230	220K	260K	240K	220K	210K	200K	230K	270K	300K	220K	200KH	280KH	300KF	320K	220K
29	240K	310K	270K	310KA	AK	330K	350K	280K	AK	AK	240K	260	260	230	220	220	220	200	A	250	A	A	250	290A
30	350F	300	320	270F	250F	260F	270	250	210	220	240	220	240	250	240	230	210	230	240	230	270	300	A	330
31	300	300	300	280	280	290	270	250	260	250	250H	240	230	240	220	230	230	220	230	270	270	260	260	310
Mean Value	300	300	290	280	270	260	260	230	230	230	230	240	230	240	230	220	220	220	230	240	250	270	290	290
Median Value	300	300	290	280	270	260	250	230	220	220	230	240	230	240	230	220	220	220	230	240	240	280	300	300
Count	31	30	31	31	30	31	31	31	30	28	29	29	29	29	28	27	28	31	30	30	29	28	28	30

h'F2 | Sweep 1.0 Mc to 17.0 Mc in 15 min | ☒ Manual | ☐ Automatic

A 3

17

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1951

f_oF1

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	L	Q	Q	Q	Q	Q	Q	Q							
2								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
3								A	Q	Q	L	4.0	L	Q	L	Q	Q							
4								Q	A	C	C	C	C	C	C	C	C							
5								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
6								Q	Q	Q	Q	L	Q	Q	Q	Q	Q							
7								Q	Q	Q	Q	Q	Q	B	Q	Q	2							
8								Q	Q	L	L	L	3.8	L	Q	Q	Q							
9								Q	Q	Q	Q	Q	Q	Q	Q	Q	A							
10								Q	Q	L	L	L	Q	L	Q	A	A							
11								Q	Q	Q	4.0	3.8	B	4.0	3.5	Q	Q							
12								Q	Q	Q	Q	4.0	B	B	Q	Q	Q							
13								Q	Q	Q	Q	L	L	L	Q	Q	A							
14								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
15								Q	Q	Q	Q	L	Q	Q	Q	Q	Q							
16								Q	Q	Q	Q	B	L	Q	Q	Q	Q							
17								Q	Q	L	Q	L	L	Q	Q	Q	Q							
18								Q	Q	C	C	C	C	C	C	C	C							
19								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
20								Q	Q	Q	Q	Q	Q	L	Q	Q	Q							
21								Q	Q	Q	Q	B	B	B	Q	Q	Q							
22								Q	Q	3.7^J	L	B	Q	Q	C	C	Q							
23								Q	L	L	Q	Q	B	B	Q	Q	Q							
24								Q	Q	Q	A	Q	Q	Q	Q	Q	Q							
25								Q	L	Q	B	4.5	B	B	Q	Q	Q							
26								Q	Q	A	B	Q	Q	Q	Q	Q	Q							
27								Q	Q	Q	Q	B	C	Q	Q	Q	A							
28								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
29								Q	A	A	4.0	A	Q	Q	Q	Q	Q							
30								Q	Q	Q	Q	Q	B	B	Q	Q	Q							
31								L	L	L	Q	Q	Q	Q	Q	Q	Q							
Mean Value										3.7	4.0	4.1	3.8	4.0	3.5									
Median Value										3.7	4.0	4.0	3.8	4.0	3.5									
Count										1	2	4	1	1	1									

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

A 4

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'F1 | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	220	Q	Q	Q	Q	Q	Q	Q							
2								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
3								A	Q	Q	230	220	220	Q	220	Q	Q							
4								Q	A	C	C	C	C	C	C	C	C							
5								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
6								Q	Q	Q	Q	200	Q	Q	Q	Q	Q							
7								Q	Q	Q	Q	Q	Q	220	Q	Q	Q							
8								Q	Q	220	220	220	190	230	Q	Q	Q							
9								Q	Q	Q	Q	Q	Q	Q	Q	Q	A							
10								Q	Q	220	230	220	Q	210	Q	A	A							
11								Q	Q	Q	200	220	200	220	200	Q	Q							
12								Q	Q	Q	Q	210	B	B	Q	Q	Q							
13								Q	Q	Q	Q	220	230	220	Q	Q	A							
14								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
15								Q	Q	Q	Q	210	Q	Q	Q	Q	Q							
16								Q	Q	Q	Q	220	220	Q	Q	Q	Q							
17								Q	Q	210	Q	210	220	Q	Q	Q	Q							
18								Q	Q	C	C	C	C	C	C	C	C							
19								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
20								Q	Q	Q	Q	Q	Q	220	Q	Q	Q							
21								Q	Q	Q	Q	B	B	B	Q	Q	Q							
22								Q	Q	B	200	B	Q	Q	C	C	Q							
23								Q	220	240	Q	Q	B	B	Q	Q	Q							
24								Q	Q	Q	A	Q	Q	Q	Q	Q	Q							
25								Q	230	Q	B	B	B	B	Q	Q	Q							
26								Q	Q	A	B	Q	Q	Q	Q	Q	Q							
27								Q	Q	Q	Q	B	C	Q	Q	Q	A							
28								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
29								Q	A	A	230	A	Q	Q	Q	Q	Q							
30								Q	Q	Q	Q	Q	B	B	Q	Q	Q							
31								220	230	230	Q	Q	Q	Q	Q	Q	Q							
Mean Value								220	230	220	220	220	210	220	210									
Median Value								220	230	220	220	220	220	220	210									
Count								1	3	6	6	10	6	6	2									

h'F1 | Sweep 1.0 Mc to 17.0 Mc in 15 min | ☒ Manual ☐ Automatic | A 5

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1951

foE

135° E Mean Time

Day	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								1.7	2.2	2.8	3.0	3.1	3.0	3.1	2.7	2.5	1.8							
2								1.8	2.2	A	2.8	2.6	3.1	2.9	2.8	2.5	A							
3								A	A	2.6	A	A	2.9	2.9	2.5	2.2	A							
4								A	A	C	C	C	C	C	C	C	C							
5								A	A	B	A	A	2.9	B	2.6	A	1.8							
6								1.8	2.3	A	A	2.9	2.9	2.9	2.7	2.3	1.7							
7								1.8	2.0	2.6	2.9	3.2	3.2	2.8	2.8	2.5	1.9							
8								2.0	2.2	2.6	2.7	2.9	2.8	2.8	2.6	2.5	1.6J							
9								B	2.3	2.5	2.8	2.9	2.9	2.7	2.5	A	A							
10								B	2.0	2.5	2.7	2.8	2.9	2.8	2.5	A	A							
11								B	1.9	2.5	2.6	2.8	2.8	2.6	2.6	2.4	B							
12								A	A	B	B	B	B	B	A	2.2	A							
13								A	B	2.2	2.6	2.8	2.7	2.8	2.5	2.2	A							
14								B	1.9	2.2	2.8	2.8	3.0	2.8	2.7	2.2	B							
15								B	2.2	2.5	3.1	2.9	3.1	B	2.7	2.2	A							
16								B	2.0	2.5	2.8	2.8	2.9	2.9	2.6	2.6	B							
17								A	A	2.4	3.0	2.9	2.8	3.0	2.8	2.4	B							
18								B	2.4	C	C	C	C	C	C	C	C							
19								B	1.9	2.5	2.7	2.9	3.0	2.7	2.4	2.3	B							
20								B	1.9	2.6	A	3.0	3.1	2.9	2.7	2.3	A							
21								B	2.0	2.5	B	B	B	B	2.7	2.3	A							
22								A	A	2.5	B	B	B	B	C	C	A							
23								1.7	1.9	2.6	A	A	A	A	A	A	A							
24								1.6	2.2	A	B	B	B	B	B	2.3	B							
25								1.7	2.1	A	B	B	B	B	B	2.3	A							
26								A	2.2	2.7	A	B	B	B	B	B	A							
27								B	2.1	2.5	B	B	C	B	B	B	A							
28								B	2.1	2.8	A	3.0	3.0	2.9	2.6	2.3	A							
29								B	1.8	A	A	A	A	A	2.9	B	A							
30								B	2.0	2.6	2.6	B	B	B	2.6J	2.6	1.9							
31								B	A	2.4	2.9	3.3	3.0	2.7	2.6	2.4	A							
Mean Value								1.8	2.1	2.5	2.8	2.9	2.9	2.8	2.6	2.4	1.8							
Median Value								1.8	2.1	2.5	2.8	2.9	2.9	2.8	2.6	2.3	1.8							
Count								8	23	22	15	17	19	17	22	21	6							

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

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The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'E | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	110	110	110	110	110	110	110	110	B							
2								B	110	A	110	110	110	110	110	110	A							
3								A	A	110	A	A	110	110	110	110	A							
4								A	A	C	C	C	C	C	C	C	C							
5								A-	A	110	A	A	120	100	110	A	110							
6								130B	110	A	A	110	110	110	110	100	B							
7								B	110	110	110	110	100	100	100	110	110							
8								130A	120	110	110	110	110	110	110	120	B							
9								B	120	120	120	110	110	110	110	A	A							
10								B	110	110	110	110	110	120	110	A	A							
11								B	110	120	110	120	120	110	110	110	B							
12								A	A	B	B	B	B	B	A	110	A							
13								A	110	120	100	110	110	110	110	110	A							
14								B	120	110	110	110	110	110	120	120	B							
15								B	130B	110	110	110	110	120	120	120	A							
16								B	110	110	110	110	110	110	110	110	B							
17								A	A	110	110	120	110	110	110	110	B							
18								B	130	C	C	C	C	C	C	C	C							
19								B	120	110	110	110	120	110	110	110	B							
20								B	120B	120	A	110	110	110	110	110	A							
21								B	120	110	B	B	B	B	110	110	A							
22								A	A	110	B	B	110	B	C	C	A							
23								150B	120	120	A	A	A	A	A	A	A							
24								110	B	A	B	B	B	B	B	120B	B							
25								B	110	A	B	B	B	B	B	110	A							
26								A	120	110	110	B	B	B	B	B	A							
27								B	130B	120	B	B	C	B	B	B	A							
28								B	110	110	A	110	110	110	120	110	A							
29								B	120B	A	A	A	A	A	110	B	A							
30								B	120	120	110	B	B	B	B	120	120							
31								B	A	110	110	110	110	110	110	110	A							
Mean Value								130	120	110	110	110	110	110	110	110	110							
Median Value								130	120	110	110	110	110	110	110	110	110							
Count								4	23	23	16	17	20	19	21	21	3							

h'E | Sweep 1.0 Mc to 17.0 Mc in 15 min | ☒ Manual ☐ Automatic | A 7

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1951

fEs

135° E Mean Time

Day	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	2.2	2.8	2.5F	2.2	2.4	2.0	E	2.6	3.6	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	G	2.6	3.8	3.3	3.8	G	G	G	G	3.4	3.4	3.2	3.4	3.2	2.3	2.9	3.3
3	2.6	2.3	2.2Y	E	E	E	E	5.2	2.6	G	3.0	3.0	G	G	G	G	2.0	2.6	3.0	2.6	2.4	2.0	2.0	2.4
4	2.0	2.2	1.4	E	1.3	E	E	3.0	5.8	C	C	C	C	C	C	C	C	E	2.2	E	E	E	E	3.3
5	2.3	1.9	2.0	2.1	2.5	2.4	2.2	2.4	3.4	G	3.6	4.0	2.8	G	3.5	3.2	3.0	3.4	2.2	E	E	2.7	E	2.6
6	E	E	E	E	E	E	E	G	G	3.5	4.1	3.7	G	G	G	3.0	2.1	3.6	2.6	2.4	2.4	E	E	E
7	E	1.4	E	E	E	E	E	G	G	3.0	G	G	G	G	G	G	G	2.4	E	E	2.6	3.0	2.8	E
8	2.2	2.6	2.4	2.0	3.0	2.6	2.4	2.3	G	G	G	G	G	G	G	G	G	2.2	E	E	E	E	E	2.4
9	E	1.4	1.6	1.9	E	E	E	1.9	G	G	G	4.8	5.8	3.8	7.6	5.2	13.3	3.6	3.3	2.8	2.4Y	2.5	2.5	E
10	2.9	2.4	3.2	2.4	3.6	3.6	E	G	G	G	G	G	G	G	3.2	7.2	7.1	3.1	E	3.0	E	2.4	2.4F	3.0
11	2.6	5.2	2.8	3.0	2.0	3.0	3.0	G	G	G	G	G	G	G	G	3.6	B	2.6	6.4	2.4	2.1	2.6	2.7	2.4
12	2.1	E	E	1.3	2.6	1.3	3.8	5.7	3.6	B	B	B	B	B	2.8	G	3.0	E	2.6	2.5	E	E	2.2	2.3
13	E	E	E	E	E	E	2.0	2.0	G	G	G	G	G	G	G	3.2	4.0	3.2	2.2	E	2.4	E	E	E
14	E	E	E	E	E	E	E	B	G	G	3.5	G	G	G	G	G	B	E	2.2	4.8F	E	E	2.6	E
15	2.4	1.8	E	E	E	E	E	G	G	G	3.3	G	G	G	3.4	G	1.9	E	E	2.8	2.8	3.0	2.8	2.8
16	2.0	2.4	E	E	E	E	E	G	G	G	G	G	3.8	G	G	G	B	E	E	3.4	2.8	E	2.4	E
17	E	E	E	E	1.8	2.0	2.2	2.8	2.4	G	G	G	G	G	G	G	B	E	2.4	1.9	E	E	E	2.4
18	E	E	E	E	E	E	E	B	G	C	C	C	C	C	C	C	C	2.4	2.4	2.2	3.0	2.4	E	E
19	E	2.4	2.1	E	E	E	E	B	G	G	3.4Y	G	G	G	G	3.4	B	E	E	3.4	E	E	E	E
20	E	E	E	E	E	E	E	B	G	G	3.1	G	G	G	G	G	2.6	2.4	2.6	E	2.3	E	E	E
21	E	E	E	E	E	E	E	2.4	G	G	B	B	B	B	G	2.4	5.0	3.8	2.8	2.4	2.2	2.0	1.9	1.6
22	1.8	2.2	2.4	2.2	1.6	1.3	E	2.2	2.2	G	B	B	G	G	C	C	3.3Y	1.8	E	E	1.9	E	E	E
23	E	E	E	E	E	E	E	G	G	3.7	3.2	3.2	3.2	3.4	3.0	3.4	3.3	3.1	3.2	2.6	2.7	2.2	3.4	3.0
24	3.0	2.6	2.4	E	1.9	2.6	2.6	2.6	G	3.1	5.5	3.5	B	B	B	G	2.2	3.0	2.4	E	E	E	9.2	E
25	E	E	E	2.1	E	E	E	G	2.7	3.6	B	B	B	B	B	G	2.5	E	E	E	E	E	E	2.4
26	2.2	1.3	E	E	E	E	E	1.8	3.0	4.6	3.6	4.8	B	B	B	B	3.7	2.5	3.5	2.2	3.2	3.2	3.8	3.6
27	3.2	E	E	1.2	E	E	E	B	G	G	B	B	C	B	B	B	2.6	2.4	2.4	3.0	2.6	3.6	2.4	1.9
28	1.8	E	2.3	3.0	3.2	3.4	2.6	2.6	2.4	G	3.2	G	G	G	G	G	3.5	3.4	3.7	E	2.4	E	E	E
29	2.4	3.4	2.4	3.8	4.7	2.4	2.2	B	7.2	6.5	7.9	7.4	8.6	3.1	G	B	3.2	3.6	6.2	4.9	5.1	3.9	3.2	3.4
30	3.9	3.2	3.4	2.6	2.4	3.0	2.0	2.6	G	G	G	B	B	B	G	G	G	2.6	2.2	2.0	2.4	2.8	4.8	2.3
31	E	E	2.3Y	2.6	1.4	E	E	B	2.7	G	G	G	G	G	G	G	3.2Y	2.4	2.6	1.9	E	2.5	E	E
Mean Value	2.4	2.4	2.4	2.3	2.5	2.5	2.5	2.8	3.4	4.0	3.9	4.2	4.8	3.4	3.9	3.8	3.7	2.9	3.0	2.8	2.7	2.7	3.2	2.7
Median Value	1.8	1.4	E	E	E	E	E	2.1	G	G	3.0	G	G	G	G	G	3.0	2.4	2.4	2.2	2.3	2.0	2.0	1.9
Count	31	31	31	31	31	31	31	24	31	28	24	23	22	22	24	25	24	31	31	31	31	31	31	31

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

A 8

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | (M3000)F2 | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	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	(2.7)	(2.6)	(2.7)	(2.7)	2.7	3.2	3.3	3.3	3.5	3.6	3.5	3.4	3.4	3.2	3.3	3.6	3.4	3.0	3.3	2.8	3.3	2.8	2.8	(2.8)
2	2.8	(2.9)	2.8	2.7	2.8	2.8	2.8	3.2	3.3	3.6	3.3	3.4	3.4	3.4	3.4	3.7	3.4	3.3	3.3	3.4	(2.8)	(2.9)	3.0	2.8
3	2.5	2.8	2.6	2.6	3.0	2.6	2.8	3.5	3.3	3.3	3.3	3.6	3.3	3.1	3.4	3.4	3.6	3.2	3.2	3.2	3.1	2.9	3.1	2.7
4	2.6	2.7	2.9	2.8	2.8	3.0	3.3	3.5	3.4	C	C	C	C	C	C	C	C	3.2	3.1	3.2	3.0	3.0	3.1	3.3
5	3.2	2.6	3.1	2.6	2.7	3.1	2.7	3.4	3.4	3.6	3.4	3.6	3.7	3.5	3.4	3.7	3.7	3.4	3.2	3.2	3.3	3.5	(3.0)	(3.0)
6	2.9	(2.9)	(3.1)	(3.3)	(2.9)	(3.2)	3.1	3.4	3.4	3.4	3.4	3.4	3.5	3.6	3.5	3.6	3.4	3.5	3.3	3.2	3.2	3.2	3.3	2.9
7	2.8	2.7	(2.7)	(2.8)	(3.1)	3.2	3.1	3.4	3.4	3.6	3.7	B	B	3.6	3.4	B	3.6	3.3	3.2	3.2	3.4	3.0	(2.9)	3.1
8	(3.1)	(2.9)	2.9	2.8	2.9	3.1	2.9	3.1	3.4	3.6	3.5	3.5	3.3	3.3	3.3	3.2	3.2	(3.0)	3.1	3.0	2.6	2.7	2.6	2.8
9	3.0	3.1	3.1	2.7	3.0	2.7	2.5	3.1	3.2	3.2	3.3	3.4	3.5	3.2	3.2	3.5	A	3.6	3.5	3.0	3.1	2.7	2.9	3.0
10	(2.8)	2.7	2.7	3.0	3.0	3.0	2.8	3.2	3.5	3.6	3.5	3.3	3.6	3.3	3.3	A	A	3.3	2.9	3.5	3.4	3.1	2.7	3.0
11	2.9	A	2.8	3.2	2.8	3.0	2.9	3.1	3.4	3.4	3.4	3.4	(3.2)	3.2	3.4	3.5	S	3.4	3.1	(3.3)	3.6	3.1	3.0	3.2
12	2.8	2.7	2.8	2.7	3.2	3.0	3.2	A	3.4	3.3	3.5	(3.3)	3.4	3.5	3.5	3.5	3.6	3.4	3.0	3.1	3.4	3.1	2.9	2.8
13	2.9	2.8	2.8	2.9	2.8	2.8	3.0	3.3	3.3	3.3	3.3	3.6	3.7	3.5	3.4	3.7	3.6	3.3	3.5	3.5	2.8	(2.6)	2.7	F
14	2.7	2.9	2.8	3.0	3.1	3.2	3.5	3.5	3.5	3.3	3.2	3.5	3.5	3.4	3.3	3.6	3.4	(3.4)	3.3	A	3.1	3.0	3.0	2.9
15	2.8	2.6	2.8	3.0	3.0	3.2	3.3	3.5	3.4	3.2	3.5	3.4	3.5	(3.3)	3.4	3.3	3.7	3.0	3.2	3.0	3.2	3.1	2.6	2.7
16	2.7	2.7	2.6	(2.5)	3.0	3.2	3.1	3.5	3.6	3.5	3.3	3.4	3.4	3.4	(3.7)	(3.6)	3.6	3.3	3.3	3.5	3.1	3.0	3.1	3.1
17	3.3	3.0	3.0	2.9	2.9	3.3	3.2	3.2	3.3	3.3	3.4	3.5	3.3	3.7	3.3	3.5	3.3	3.4	2.9	3.3	3.1	3.0	2.7	2.8
18	2.7	2.8	2.8	2.6	2.7	2.8	3.3	3.2	3.7	C	C	C	C	C	C	C	C	3.3	3.6	2.9	3.0	2.9	(2.6)	2.7
19	2.7	2.6	3.4	2.9	2.8	2.7	3.6	3.8	3.7	3.2	3.3	3.3	3.6	3.4	3.4	3.5	3.3	3.5	3.3	3.2	3.3	3.2	2.8	2.8
20	3.1	2.7	2.8	2.8	3.0	3.1	3.3	3.3	3.6	3.4	3.4	3.3	3.7	3.5	3.3	3.6	3.5	3.3	3.4	3.4	3.0	2.7	(3.0)	2.8
21	2.8	2.6	2.9	3.0	3.2	3.3	3.3	3.5	3.5	3.4	3.6	3.5	3.5	3.4	3.5	3.3	3.3	3.3	3.2	3.2	2.9	2.8	3.1	3.0
22	2.8	3.0	2.8	3.0	3.3	3.1	3.0	3.3	3.6	3.3	3.6	3.2	3.6	3.5	C	C	3.3	3.5	3.5	3.3	3.0	2.7	2.5	2.6
23	2.6	2.9	3.0	2.7	2.7	(2.6)	(3.4)	3.3	3.2	3.3	3.3	3.2	3.3	3.2	3.4	3.4	3.4	3.3	3.1	3.3	3.0	3.1	F	3.2
24	F	(3.1)	3.0	3.0	3.0	3.2	3.2	3.3	3.4	3.2	3.3	3.4	3.4	3.3	3.3	(3.3)	3.2	3.3	3.4	3.3	3.7	2.7	A	2.9
25	2.8	2.7	(2.8)	2.7	3.0	3.2	3.3	3.5	3.4	3.6	S	3.6	3.7	3.5	3.5	3.6	3.4	3.5	3.6	3.6	3.8	3.5	3.5	3.2
26	2.8	2.8	2.8	2.9	2.8	3.0	3.4	3.3	3.5	3.4	3.0	3.6	3.5	3.5	3.3	3.6	(3.2)	3.6	3.5	3.6	3.6	A	A	2.8
27	2.9	2.8	3.1	2.8	2.9	3.0	3.3	3.4	3.5	3.3	3.3	3.6	C	B	3.3	3.4	3.5	3.4	3.4	3.4	3.8	A	2.7	2.7
28	2.7	2.7	2.9	3.0	3.0	2.9	3.2	3.2	3.4	3.4	(3.1)	3.3	3.6	3.3	3.3	3.3	2.9	B	B	3.4	2.5	2.7	2.8	3.6
29	B	3.1	3.1	3.0	A	2.9	2.6	3.0	A	A	3.4	B	B	3.4	3.6	3.5	3.4	3.4	A	A	A	3.6	3.1	3.1
30	(2.6)	2.8	F	(3.1)	(2.9)	(3.0)	(2.8)	F	3.8	3.6	3.5	3.8	3.6	3.2	3.3	3.5	3.5	3.6	3.3	3.2	3.1	2.9	A	(2.9)
31	2.9	2.8	(2.7)	(2.9)	(2.9)	3.1	3.2	3.3	3.3	3.3	3.2	3.4	3.5	3.5	3.5	3.2	3.3	3.1	3.0	3.1	3.1	3.1	3.2	2.8
Mean Value	2.8	2.8	2.9	2.9	2.9	3.0	3.1	3.3	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.5	3.4	3.3	3.3	3.3	3.2	3.0	2.9	2.9
Median Value	2.8	2.8	2.8	2.9	2.9	3.0	3.2	3.3	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.5	3.4	3.3	3.3	3.2	3.1	3.0	2.9	2.9
Count	29	30	30	31	30	31	31	29	30	28	28	27	26	28	28	26	26	30	29	29	30	29	27	30

(M3000)F2 | Sweep 1.0 Mc to 17.0 Mc in 15 min | ☒ Manual ☐ Automatic

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1951

$f_{min}F$

135° E Mean Time

Day	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	1.2	1.2	E	E	A	1.1	1.4	1.8	2.5	2.9	3.0	3.2	3.0	3.1	3.1	2.6	2.0	1.6	1.6	2.2	1.4	1.3	1.4	1.4
2	1.4	E	E	E	E	E	1.6	2.8	2.9	3.1	3.4	3.4	3.4	3.5	2.9	2.5	A	A	1.5	2.2[A]	1.5	1.4	1.9	1.7
3	1.7	1.9	1.2	E	E	E	1.4	4.1[A]	2.7	3.1	3.0	3.0	3.4	3.3	2.7	2.7	2.0	1.8	1.6	1.6	1.6	1.6	1.6	1.4
4	1.4	1.4	E	E	E	E	1.5	1.8	4.6[A]	C	C	C	C	C	C	C	C	1.6	1.6	1.6	1.5	1.5	1.5	2.3[A]
5	1.6	1.2	E	E	1.2	2.4[A]	1.6	2.0	3.0	2.8	3.0	3.2	3.0	N	2.8	2.4	1.9	1.5	1.5	1.5	1.5	1.6	1.5	1.5
6	1.4	E	E	E	E	E	1.6	1.8	2.3	2.9	3.1	3.2	3.0	2.9	2.7	2.4	1.9	2.4[A]	2.0[A]	1.6	1.6	1.6	1.6	1.6
7	E	E	E	E	E	E	E	1.8	2.6	2.8	3.0	3.4	3.2	3.0	2.8	2.5	1.9	1.6	1.6	1.5	1.5	1.5	1.5	1.5
8	1.5	1.2	1.2	A	1.4	1.4	1.8	2.1	2.4	3.1	2.8	3.0	2.9	3.2	3.0	2.5	1.9	1.5	1.6	1.5	1.6	1.6	1.6	1.5
9	1.2	E	E	E	E	E	1.5	1.6	2.4	2.8	2.8	3.0	4.0[A]	3.4	2.8	2.2	4.3[A]	A	2.4[A]	1.6	1.6	1.6	1.6	1.4
10	2.0[A]	1.2	1.4	1.4	1.2	1.4	1.4	1.8	2.9	3.3	3.1	3.1	3.5	3.1	3.1	A	5.5[A]	1.5	1.5	1.5	1.5	1.5	1.5	1.7
11	1.3	A	E	2.0[A]	E	1.6	1.6	1.6	2.6	2.5	2.8	3.0	3.1	3.0	2.6	2.7	1.9	1.7	2.7[A]	1.5	1.5	1.9	1.5	1.5
12	E	E	E	E	1.2	E	1.8	2.6	2.6	2.7	2.8	3.0	5.2	4.2	2.8	2.5	1.9	1.7	1.7	1.6	1.6	1.5	1.5	1.9
13	1.4	E	E	1.2	1.2	1.4	1.6	1.6	2.1	3.2	3.2	3.2	3.5	3.0	3.1	2.4	A	2.2[A]	1.6	1.6	1.6	1.5[F]	1.5	1.5
14	1.3	E	E	E	E	E	1.4	1.6	2.6	2.4	3.0	3.4	3.5	3.3	2.9	2.8	2.2	1.7	2.2[A]	A	1.4	1.4	1.6	1.4
15	1.1	E	E	E	E	1.2	1.4	1.6	2.7	3.0	3.2	3.1	3.1	3.0	2.8	2.5	1.8	1.5	1.5	1.6	1.6	1.6	1.6	1.6
16	1.6	1.6	E	E	E	E	1.5	2.1	2.4	3.3	3.3	3.2	3.0	3.2	2.7	2.6	2.0	1.6	1.6	1.8	1.6	1.5	1.5	1.5
17	1.2	1.2	1.2	1.2	1.2	1.4	1.6	2.4	2.4	2.9	3.0	3.5	3.4	3.2	2.9	2.8	1.8	1.5	1.5	1.5	1.7	1.6	1.7	1.6
18	1.2	E	E	E	E	E	1.5	1.5	2.6	C	C	C	C	C	C	C	C	2.4[A]	2.0[A]	1.6	1.6	1.6	1.6	1.6
19	1.2	E	E	E	E	E	1.4	1.7	2.5	2.9	3.2	3.8	3.4	3.2	3.0	2.6	2.1	1.6	1.6	1.6	1.4	1.4	1.4	1.4
20	1.2	E	E	E	E	1.6	1.6	1.6	2.4	2.8	3.4	3.1	3.2	3.0	3.2	2.4	1.9	1.6	1.6	1.5	1.7	1.5	1.5[F]	1.5
21	1.2	1.2	E	E	E	E	1.5	1.7	2.7	2.8	3.8	4.4	4.4	4.0	2.9	2.8	3.3[A]	3.2[A]	2.0[A]	1.6	1.4	1.4	1.4	1.4
22	1.4	1.2	1.2	1.2	1.3	1.1	1.4	1.7	2.5	3.6	3.1	4.1	4.3	3.6	C	C	1.9	1.5	1.5	1.5	1.6	1.5	1.5	1.6
23	1.2	E	E	E	E	E	1.4	2.0	2.5	3.3	3.8	4.2	4.8	5.2	4.0	3.3	2.7	2.4[A]	2.6[A]	1.8	1.7	1.6	1.7	1.8
24	1.5	1.6	1.3	E	E	1.4	1.4	1.6	2.4	3.5	5.0[A]	4.0	4.3	4.3	2.8	2.5	2.1	1.6	1.8	1.6	1.7	1.7	A	1.6
25	E	E	E	1.4	E	E	1.5	1.8	2.8	3.2	4.2	4.0	4.2	4.0	3.0	2.5	2.1	1.4	1.5	1.5	1.5	1.5	1.5	1.5
26	1.5	E	E	1.2	1.2	1.4	1.4	1.6	2.4	4.2[A]	4.6	4.1	4.2	3.3	4.1	3.0	2.7	1.6	2.1[A]	2.0[A]	2.6[A]	A	A	2.8[A]
27	1.9	E	E	E	E	E	1.5	1.6	2.5	3.0	3.2	5.0	(4.2)[C]	4.2	3.0	2.8	A	1.8	1.6	1.5	1.6	A	1.5	1.4
28	1.4	1.2	E	E	E	E	1.5	1.5	2.5	2.8	3.2	3.2	3.0	2.9	2.7	2.4	2.3	1.6	2.5[A]	1.6	1.6	1.6[F]	1.6	1.6
29	1.6	1.4	1.2	2.1[A]	A	1.4	1.8	1.6	A	A	3.1	6.3[A]	4.1[A]	3.2	3.2	2.9	1.9	1.7	A	3.4[A]	A	2.6[A]	1.5	2.2[A]
30	1.6[F]	1.2	1.6	1.8	1.6	2.2[A]	1.5	1.5	2.1	3.1	3.2	4.0	4.6	4.4	3.1	2.6	1.9	1.4	1.4	1.4	1.4	1.4	A	1.8
31	E	E	1.2	1.5	E	E	1.4	1.5	2.7	3.0	3.4	3.3	3.2	3.8	2.9	2.6	2.1	1.5	1.5	1.5	1.5	1.6	1.5	1.5
Mean Value	1.4	1.3	1.3	1.5	1.3	1.5	1.5	1.9	2.6	3.0	3.3	3.6	3.7	3.5	3.0	2.6	2.3	1.7	1.8	1.7	1.6	1.6	1.5	1.6
Median Value	1.4	E	E	E	E	E	1.5	1.7	2.5	3.0	3.2	3.3	3.4	3.2	2.9	2.6	2.0	1.6	1.6	1.6	1.6	1.5	1.5	1.5
Count	31	30	31	30	29	31	31	31	30	28	29	29	29	28	28	27	26	29	30	30	30	29	28	31

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

A 10

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | fminE | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

135° E Mean Time

Day	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	1.4	E	E	E	E	E	E	1.7	1.5	1.6	1.6	1.7	1.7	1.6	1.8	1.8	1.7	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.4	1.5	1.5	1.5	1.5	1.9	1.5	1.5
3	1.2	E	E	E	E	E	E	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.4	1.4	1.4
4	1.4	1.4	E	E	E	E	E	1.5	1.5	C	C	C	C	C	C	C	C	E	2.0	E	E	E	E	1.5
5	1.5	E	E	E	E	E	1.6	1.6	1.6	1.8	1.6	1.8	1.8	1.8	1.5	1.5	1.5	1.5	1.8	E	E	1.5	E	1.5
6	E	E	E	E	E	E	E	1.6	1.6	1.7	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	E	E	E
7	E	E	E	E	E	E	E	1.7	1.6	1.7	1.7	1.8	1.8	1.6	1.8	1.8	1.6	1.6	E	E	1.5	1.5	1.5	E
8	E	E	1.2	1.2	1.2	1.4	1.6	1.6	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.5	E	E	E	E	E	1.5
9	E	E	E	E	E	E	E	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.6	E
10	E	E	1.4	1.4	E	E	E	1.5	1.5	1.7	1.7	1.9	1.9	1.9	1.9	1.6	1.6	1.5	E	1.5	E	1.5	1.6F	1.5
11	E	E	E	E	E	E	1.6	1.6	1.6	1.7	1.9	1.9	2.1	1.7	1.7	1.6	B	1.5F	1.5	1.5	1.5	1.5	1.5	1.8
12	E	E	E	E	E	E	1.5	1.5	2.0	B	B	B	B	B	2.2	1.8	1.7	E	1.7	1.6	E	E	1.5	1.9
13	E	E	E	E	E	E	1.4	1.4	1.4	1.8	1.8	2.0	2.1	2.0	1.7	1.6	1.6	1.6	1.6	E	1.9	E	E	E
14	E	E	E	E	E	E	E	B	1.6	1.6	1.8	1.8	1.8	2.0	1.9	1.6	1.7	E	1.6	1.4F	E	E	1.6	E
15	1.8	E	E	E	E	E	E	1.5	1.8	1.7	1.9	2.1	2.3	2.1	1.9	1.8	1.5	E	E	1.6	1.6	1.6	1.6	1.6
16	1.6	1.6	E	E	E	E	E	2.0	1.6	1.6	1.8	1.9	1.8	1.8	1.7	1.6	1.9	E	E	1.5	1.5	E	1.5	E
17	E	E	E	E	1.2	1.4	1.4	1.4	1.6	1.6	1.6	1.8	1.8	1.8	2.0	1.8	B	E	1.9	1.7	E	E	E	2.0
18	E	E	E	E	E	E	E	B	1.7	C	C	C	C	C	C	C	C	1.6	1.6	1.6	1.6	1.8	E	E
19	E	E	E	E	E	E	E	B	1.6	1.8	1.9	2.1	2.2	2.0	1.9	1.6	B	E	E	1.6	E	E	E	E
20	E	E	E	E	E	E	E	B	1.6	1.8	2.6	2.2	2.2	2.2	1.7	1.6	1.6	1.6	1.5	E	1.9	E	E	E
21	E	E	E	E	E	E	E	1.9	1.5	1.8	B	B	B	B	2.2	1.8	1.8	1.6	1.6	1.6	1.4	1.4	1.4	1.2
22	1.2	1.2	1.2	E	E	E	E	1.6	1.7	2.1	B	B	2.4	3.1	C	C	1.5	1.5	E	E	1.5	E	E	E
23	E	E	E	E	E	E	E	1.6	1.6	1.8	2.0	2.4	2.8	3.0	2.6	1.9	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
24	1.4	1.2	E	E	E	E	1.6	1.5	2.1	2.1	3.0	2.9	B	B	B	2.1	2.1	1.6	1.6	E	E	E	1.5	E
25	E	E	E	E	E	E	E	1.5	1.6	1.9	B	B	B	B	B	1.9	1.6	E	E	E	E	E	E	1.5
26	1.5	E	E	E	E	E	E	1.4	1.6	1.6	2.2	4.3	B	B	B	B	1.8	1.6	1.5	1.7	1.6	1.5	1.5	1.6
27	1.2	E	E	E	E	E	E	B	1.8	2.0	B	B	C	B	B	B	1.8	1.8	1.4	1.4	1.5	1.4	1.5	1.6
28	1.6	E	E	E	E	E	1.6	1.5	1.5	1.8	1.8	1.9	2.0	1.9	2.1	1.9	1.6	1.6	1.6	E	1.6	E	E	E
29	1.2	E	E	E	E	E	1.6	B	1.6	1.7	1.6	1.8	1.7	2.5	1.8	B	1.8	1.6	1.5	1.5	1.5	1.5	1.5	1.5
30	1.2	1.2	E	E	E	E	1.5	1.5	1.7	1.9	2.2	B	B	B	3.0	2.0	1.7	1.4	1.4	1.3	1.4	1.4	1.4	1.4
31	E	E	E	E	E	E	E	B	1.6	1.8	2.0	2.2	2.1	1.9	1.9	1.9	1.5	1.5	1.5	1.5	E	1.5	E	E
Mean Value	1.4	1.3	1.3	1.3	1.2	1.4	1.5	1.6	1.6	1.8	1.9	2.0	2.0	2.0	1.9	1.7	1.7	1.6	1.6	1.5	1.6	1.5	1.5	1.6
Median Value	E	E	E	E	E	E	E	1.6	1.6	1.8	1.8	1.9	1.8	1.8	1.8	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4
Count	31	31	31	31	31	31	31	24	31	28	24	23	22	22	24	25	26	31	31	31	31	31	31	31

fminE

Sweep 1.0 Mc to 17.0 Mc in 15 min ☒ Manual ☐ Automatic

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Dec. 1951 — f_0F2 — 135° E Mean Time

Day	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	3.2	3.1	A	3.3	3.4	3.4	4.7	5.5	(8.5)	(10.6)	(9.9)	(9.5)	9.2	8.6	(7.8)	7.6	6.2	[5.4]	4.5	3.6	2.5	2.4	2.8	2.9
2	3.1	3.3	3.3	2.8	2.6	2.8	3.6	C	C	(10.0)	11.2	(11.0)	(10.2)	8.4	7.9	7.5	6.2	[4.8]	3.3	3.3	3.0	2.9	2.7	2.9
3	3.0	3.1	3.1	3.2	3.3	3.6	3.5	8.1	8.6	9.4	C	C	8.6	9.4	9.3	B	5.9	4.5	3.9	B	A	3.1	2.8	2.9
4	3.0	2.9	2.9	3.2	3.2	3.7	4.4	6.8	(7.8)	9.0	9.7	9.3	9.7	8.5	8.5	7.7	7.4	6.0	6.0	2.9	3.3	3.5	3.6	(4.4)
5	2.2	2.2	2.5	2.3	2.4	2.5	2.8	5.9	(8.7)	9.1	8.6	9.8	8.3	8.5	B	B	6.6	6.5	5.1	(4.3)	4.7	3.7	3.8	(3.9)
6	4.1	(3.4)	3.4	3.7	4.1	3.5	[4.8]	6.1	8.7	8.7	B	8.7	9.1	8.8	8.1	7.9	5.7	4.4	3.2	3.0	(2.8)	2.7	2.8	2.9
7	3.2	3.0	3.1	3.1	3.3	3.1	2.9	6.0	7.8	7.7	7.8	B	7.3	8.6	7.6	7.3	7.2	4.3	C	3.1	3.1	3.1	3.0	3.1
8	3.2	3.0	3.0	3.5	3.3	3.3	3.5	5.7	6.0	7.7	10.0	8.7	8.9	7.9	8.6	7.4	5.5	3.2	B S	3.6	3.2	3.4	3.3	3.6
9	3.1	2.9	2.9	2.9	3.0	3.1	3.4	5.7	7.4	9.4	(8.7)	B S	8.7	[8.5]	(8.3)	B	5.7	4.6	3.9	3.1	3.7	3.0	3.8	4.1
10	3.9	3.6	3.7	3.9	2.8	2.6	2.8	6.2	8.4	7.9	B S	9.2	B S	B	B	7.3	5.5	A	M	M	M	3.1	3.0	3.3
11	3.6	A	3.0	3.0	4.3	4.1	4.2	5.9	8.5	8.7	9.3	8.6	9.2	7.8	6.7	5.8	5.8	4.9	3.6	3.9	3.2	2.6	3.1	2.9
12	2.9	3.0	3.1	2.8	2.9	2.1	2.9	5.7	7.3	9.1	9.6	(8.3)	8.9	7.1	(7.2)	(7.6)	5.7	5.0	(3.6)	3.9	3.3	2.8	2.2	2.4
13	2.6	2.7	2.7	2.9	3.0	3.2	3.6	5.6	6.3	5.8	7.9	8.3	6.7	7.0	7.0	7.9	6.4	3.9	3.9	2.9	2.4	2.1	2.6	2.8
14	2.9	3.0	3.6	3.0	2.7	2.6	2.7	C	C	C	C	C	5.8	7.0	7.3	7.8	5.5	3.9	3.2	A	2.6	2.6	2.5	3.2
15	3.2	3.1	3.0	3.1	3.3	2.9	3.1	4.8	6.4	(6.7)	7.3	7.7	9.2	8.0	(7.9)	7.5	6.0	4.6	4.2	(4.3)	3.8	2.5	2.6	3.1
16	3.2	3.4	3.5	3.6	4.0	2.7	3.2	5.5	6.4	7.5	B	8.9	9.9	8.3	7.7	7.6	5.6	4.9	3.7	2.8	3.1	2.7	2.8	2.9
17	3.1	3.2	3.3	3.3	3.5	[3.2]	2.9	5.3	6.0	7.2	7.8	8.2	7.6	7.9	7.5	6.5	5.6	4.1	3.0	(3.8)	3.1	2.7	2.6	2.7
18	2.8	2.9	3.0	3.0	3.1	3.0	3.6	5.0	6.1	6.0	7.1	9.6	8.7	7.4	6.9	7.5	6.7	4.8	4.2	2.4	3.1	2.8	3.1	3.1
19	3.1	3.1	3.4	3.0	2.9	2.9	3.2	4.4	6.1	6.5	9.2	10.0	(9.0)	7.7	7.8	7.6	6.9	4.7	4.2	3.6	2.7	2.6	2.6	2.5
20	2.9	3.0	3.0	3.1	3.0	2.5	2.6	4.9	7.0	6.7	[7.6]	8.6	8.2	7.1	(7.2)	8.7	6.2	6.2	4.0	2.9	2.4	2.7	2.9	2.9
21	2.8	3.0	3.0	3.4	3.0	2.8	3.7	6.1	6.1	7.7	9.3	8.9	7.5	6.9	7.6	7.7	6.0	5.9	3.8	3.6	2.1	2.5	2.8	2.8
22	3.0	2.8	3.1	3.1	3.7	2.3	2.6	5.3	7.4	6.8	7.4	BH	7.4	7.5	B	B	6.8	5.0	3.8	3.0	2.8	2.5	2.6	2.9
23	3.1	3.2	3.3	3.0	2.9	2.9	2.9	4.9	6.8	9.6	11.3	PH (10.0)	8.5	7.5	9.3	8.5	6.5	5.1	4.9	4.8	5.5	3.9	2.7	3.1
24	3.0	2.8	2.8	2.7	2.9	3.0	3.4	5.0	6.1	6.6	10.9	(10.6)	(8.7)	[8.6]	8.6	7.4	6.7	5.4	5.8	3.5	2.7	2.3	2.4	A
25	2.6	2.9	2.7	3.6	3.2	3.1	3.0	5.0	5.9	6.5	6.9	9.4	8.9	8.5	7.3	6.7	6.5	5.0	4.5	4.2	3.3	2.7	2.9	3.0
26	3.3	3.4	3.4	3.3	3.2	3.2	3.3	5.3	6.0	6.5	7.7	B	8.7	(6.9)	7.3	7.7	5.3	5.4	4.3	2.9	2.8	2.3	2.8	3.1
27	3.1	3.2	3.5	2.9	2.9	2.8	3.0	4.6	6.1	7.1	8.4	9.2	9.1	7.0	6.7	(8.0)	5.9	4.7	4.8	3.6	2.6	2.8	2.7	3.0
28	3.0	3.1	3.1	3.0	2.7	2.6	3.1	5.0	6.8	6.6	9.7	12.3	8.3	6.8	7.0	6.3	6.5	8.1	(7.9)	5.3	3.6	4.2	4.1	6.2
29	2.7	3.3	A	2.9	2.6	3.0	4.4	5.3	7.7	(12.5)	11.1	7.6	8.5	6.8	7.4	(8.1)	6.2	5.8	4.9	3.3	2.3	2.4	A	3.1
30	2.8	2.8	2.6	2.9	2.7	2.9	3.5	4.7	7.8	6.8	8.9	8.7	6.2	6.5	6.7	7.8	5.4	4.3	3.7	2.5	2.3	2.5	2.8	2.8
31	2.7	3.0	C	C	C	C	C	5.7	6.2	6.6	8.9	10.5	7.9	6.5	6.3	6.4	6.0	4.9	5.0	4.0	3.7	3.2	A	A
Mean Value	3.0	3.0	3.1	3.1	3.1	3.0	3.4	5.5	7.1	7.9	8.9	9.3	8.4	7.7	7.6	7.5	6.1	5.0	4.3	3.5	3.1	2.8	2.9	3.2
Median Value	3.0	3.0	3.1	3.0	3.0	3.0	3.7	5.5	6.8	7.6	8.9	9.2	8.7	7.8	7.6	7.6	6.0	4.9	4.1	3.6	3.1	2.7	2.8	3.0
Count	31	30	28	30	30	30	30	29	29	30	26	25	30	30	28	27	31	30	28	28	29	31	29	29

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 1

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | hpF2 | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	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	360	(440)^{J,F}	A	360	370	320	320	270	(270)^{J,P}	(260)^{J,P}	(270)^{P}	(260)^{P}	270	270	(250)^{P}	260	270	[270]^{C}	270^{B}	(250)^{J}	310	390	400^{H}	350
2	320	360	310	280^{F}	400	400	340	C	C	(260)^{P}	260	(260)^{P}	(260)^{P}	260	270	260	270	[280]^{C}	300	290	270	350^{F}	380^{F}	400^{F}
3	390	400	400^{H}	410	400	400	340	260	270	270	C	C	250	280	(260)^{J}	B	260	260	(360)^{J}	B	A	310	390	360
4	370	410	380	360	360	360	320	270	(250)^{P}	260	260	290	250	260	230	260	230	240	220	280	390	370	330^{S}	(280)^{P,S}
5	380	380	370	380^{F}	400	340^{F}	330^{F}	280	(280)^{J,P}	250	(270)^{J}	280	260^{P}	280	B	B	250	280	S	(320)^{P}	310	270	320^{Z}	(340)^{P,F}
6	390^{P,F}	(330)^{P,F}	310^{F}	360^{F}	410^{F}	420^{F}	[340]^{C}	270	250^{H}	250	B	290	240	250	240	260	220	260	260	300	(230)^{P,S}	340^{F}	330^{V,F}	320
7	380^{V,F}	360	360	350^{F}	310	300	300	290	(220)^{J}	(230)^{J}	260	B	270^{S}	260^{P,S}	290^{S,Z}	250	220^{S}	330	C	330	290	330^{F}	340	330
8	350^{H}	350	390^{Z}	310	340	300	310	240	220	270	260	250	290	240	240	230	240	240	BS	260	340	360	400	350
9	300	360	390	410	350	320	320	330	300^{P}	(260)^{J,P}	(270)^{P}	BS	(300)^{J,F}	(290)^{B,S}	(280)^{J,P}	B	230	300^{H}	280	330	340	340	370	320
10	330	390	340^{S}	(300)^{J}	310	360	350	330^{P}	(250)^{J}	250	BS	260	BS	B	S	250	230^{P}	A	M	M	M	330	370	340
11	400	A	290^{F}	300	340	(340)^{J,F,H}	350	290	280	250	240	230	260	310^{H}	270	290^{V,F}	260	230	290	270	(330)^{Z,F}	320^{Z}	330^{V}	320
12	380	420	430^{F}	380^{F}	340^{F}	280^{F}	400^{F}	280	250	240	(280)^{J}	(240)^{P}	250	250	(260)^{P}	(260)^{P}	250	300	(300)^{P}	300	260	270	400	380
13	400	360	400	430	360	350	320	260	220	220	230	260	240	260	230	240	210	250	270	270	250	420	340	350
14	370	380	400	360	330	280	330	C	C	C	C	C	270	300^{H}	270	280	230	260	(390)^{J,H}	A	350^{F}	300^{Z,F}	330	(380)^{J,F}
15	(410)^{J,F}	400^{F}	370^{F}	360	300	320	360	260	250	(240)^{P}	280	310^{P}	250	(250)^{J,S}	(260)^{P}	(260)^{J,S}	280	280	300^{P}	(310)^{P,S}	280^{P}	310	360	370
16	400^{F}	370^{S}	360	350	290	340^{Z}	310	280	260	270^{P}	B	310	250	270	250	250	230	260	300	260	260^{S}	340	330	390
17	360	400	360	310	270	[300]^{C}	320	240	250	260^{S}	290	(270)^{J}	270	300^{S}	280	260^{F}	260	260	220	(290)^{P}	330	290	390	390
18	380	360^{P}	350	360	330	330	260	220	230	260	320^{P}	300	260	(270)^{J}	260	280	270	280	A	200	310	330	330	340
19	350	350	300	330	380	(350)^{J,F}	260	210	250	280	290	250^{S}	(250)^{J,P,S}	270	300	280	270^{H}	260	290	290	(260)^{J}	300	390	340
20	350	370	390	310	280^{F}	320	260	260	270	240	[260]^{C}	270	260	260	(310)^{P}	280^{P}	270	300	240	280	330	420^{Z}	380^{F}	310^{F}
21	380^{F}	380^{F}	330	290	340	340	320	240^{P}	270	210	240	250	220	280	240	240	250	260	270	300^{F}	310	350	330	310
22	340	360	350	300	260^{P}	240	330	270	280^{S}	260^{P}	280	BH	250	270	B	B	220^{P}	300	270	300	310	410	380	410
23	390	340	320	310	420	330	310	260	250	310	280^{H}	(280)^{PH}	(260)^{J}	310	280	260	240	A	320	370	270^{F}	310^{V}	320^{F}	320^{F}
24	300	330	340	370	380	300	260	260	240	240	290^{P}	(270)^{J,P}	(240)^{J,P}	B	(250)^{J}	240^{P}	290^{H}	250	240	(240)^{J}	270	340	320	A
25	350	380^{F}	(400)^{J,F}	360^{Z,F}	270^{F}	360	270	250	230	250	250	280	250	260^{P}	280	250	220	260	280	260	260	400	300	330
26	360	360	320	310	350	350	280	230^{P}	270	210	290	B	260	(260)^{P}	290	250	230	270	300	240	280	230	380	350
27	360	360	300	240	280	300	250	240	250	240^{B}	290	290	280^{Z}	260^{V}	250^{V}	(290)^{P}	230	250	270	240	260	390	370	350
28	380	360	360^{P}	260	320	320	320	300	270	290^{K}	340^{K}	280^{K}	250^{K}	240^{K}	280^{K}	250^{K}	360^{K}	(360)^{J,K}	(270)^{P,K}	320^{K}	370^{K}	430^{K,F}	(390)^{K,J,F}	320^{K,S}
29	490^{K}	A^{K}	A^{K}	380^{K}	370^{K}	340^{K,F}	320^{K}	320^{K}	250^{K}	(280)^{P,K}	250^{K,P}	260	280	250	260	(270)^{P}	240	310^{H}	270^{H}	310^{H}	250^{F}	390^{F}	A	(430)^{J,F}
30	350	(400)^{J,F}	350^{F}	390	360	380	340	290	270	260	290^{P}	250	240	260	300	260	240	280	280	250	240	310	320^{F}	370^{F}
31	380	300^{F}	C	C	C	C	C	260	250	310	300	290	270	260	290	290	270^{Z}	290	310	290	320	250	A	A
Mean Value	370	370	360	340	340	330	310	270	260	260	270	270	260	270	270	260	250	270	280	280	300	340	360	350
Median Value	370	360	360	360	340	340	320	260	250	260	280	270	260	260	260	260	240	270	280	290	290	340	360	350
Count	31	29	28	30	30	30	30	29	29	30	26	25	30	29	28	27	31	29	26	28	29	31	29	29

hpF2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 2

27

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'F2 | 135° E Mean Time

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Day	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	300	380	A	280	300	270	250	240	250	240	250	240	250	250	220	240	210	[220]^{C}	220	210	210	300	330^{H}	270
2	230	290	260	240	290	300	270	C	C	250	240	250	240	230	230	240	220	[240]^{C}	260	230	220	280	290	310
3	320	320	320^{H}	330	310	320	280	240	230	230	C	C	230	260	250	240	210	200	280	B	A	300	300	330^{A}
4	300	370^{A}	340	300	280	280	240	240	230	220	240	230	230	220	220	210	220	210	200^{A}	200	310	290	280	220
5	290	380	300	280	300	300	300	240	240	240	260	260	250	230	240	240	220	260	240	260	250	210	290	280
6	340^{F}	270	220	270^{F}	280	310^{F}	260	250	240^{H}	240	230	230	230	240	240	240	200	230	210	240	210	210	230	230
7	280	300	300	280	260	220	240	250	220	220	220	240	240	260	250	230	200	290	C	240	230	220	260	270
8	260^{H}	260	300	250	260	240	250	210	210	230	230	240	250	230	240	220	230	210	260	220	290	300	330	260
9	220	280	300	310	300	250	230	290	270	250	240	270	300	250	250	230	200	220^{H}	230	270	300	300	310	280
10	270	320	340^{A}	260	260	310	300	270	230	230	230	230	220	220	220	250	200	A	M	M	M	280	280	290
11	350^{A}	A	260	250^{A}	260	260^{H}	280	250	250	250	240	230	240	220^{H}	220	210	250	200	220	230	240	270	260	240
12	300	320	330	310^{F}	220	230^{F}	270	230	230	210	270	230	210	240	250	240	220	240	270	240	210	210	360	290
13	330	300	300	350	300	290	270	230	210	220	220	230	240	240	230	230	210	210	240	210	230	330^{B}	300	290
14	300^{F}	310	290	290	260	230	250	C	C	C	C	C	250	250^{H}	260	250	210	210	260^{H}	A	250^{F}	250	240	290
15	290	310	310	300	240	270	340	230	240	230	260	280	240	250	220	250	250	210	220	240	220	250	260	280
16	300	300	300	280	230	230	260	210	210	250	250	260	250	260	220	220	210	230	250	220	240	300	280	300
17	290	270	280	260	250	[240]^{C}	220	220	210	230	270	260	250	220	260	210	210	240	200	250	210	210	270	310
18	310	300	300	300	300	300	220	210	210	220	290	290	250	260	250	270	230	220	A	200	230	240	300	280
19	280	290	260	250	290	290	230	210	250	240	250	250	220	260	240	230	220^{H}	210	230	250	230	260	320	290
20	300	300	300	280	220	290	220	250	220	230	(240)^{C}	250	250	250	280	250	250	240	220	250	290	300	310	260
21	300	320	290	240	270	250	230	200	210	210	230	240	210	250	230	240	210	220	240	230	270	310	290	240
22	280	310	280	240	230	210	280	240	240	240	230	230^{H}	240	230	260	240	200	210	220	240	270^{A}	410	340	350^{F}
23	310	270	270	250	320	250	280	230	240	290	250^{H}	240^{H}	260	300	270	240	230	A	280	320	230	230	310^{A}	280
24	250	300	310	300	290	260	230	210	230	210	270	250	240	260	240	220	210^{H}	210	220	220	240	230	300	A
25	300	310	340	280	230	260	230	220	220	220	220	260	250	240	250	220	220	250	250	250	220	380	300	300
26	300	310	260	250	250	290	210	220	220	210	280	250	260	250	260	240	220	220	210	210	260	210	290	290
27	280	310	270	220	230	250	220	220	210	230	250	250	260	250	240	240	210	200	220	210	240^{A}	380	310	310
28	320	300	280	230	270	290	270	260	230	270^{K}	320^{K}	260^{K}	240^{K}	240^{K}	250^{K}	240^{K}	270^{K}	310^{K}	240^{K}	260^{K}	310^{K}	320^{K}	320^{K}	250^{K}
29	410^{K}	A^{K}	A^{K}	340^{K}	310^{K}	300^{K}	300^{K}	300^{K}	250^{K}	260^{K}	220^{K}	250	250	240	250	250	220	(220)^{A,H}	(220)^{A,H}	210^{H}	210	350	A	400
30	330	320^{A}	330	330	330	320	290	260	260	230	260	230	240	260	290	250	220	260	240	220	230	290	280	310
31	320	250	C	C	C	C	C	240	220	280	270	260	260	260	240	250	230	260	250	240	260	220	250	A
Mean Value	300	310	290	280	270	270	260	240	230	240	250	250	240	250	240	240	220	230	240	230	250	280	290	290
Median Value	300	300	300	280	270	270	260	240	230	230	250	250	240	250	240	240	220	220	240	240	240	280	300	290
Count	31	29	28	30	30	30	30	29	29	30	29	29	31	31	31	31	31	29	28	28	29	31	30	29

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 3

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foF1 | 135° E Mean Time

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	B	Q	L	L	L	Q	Q	Q							
2								C	C	L	L	L	L	Q	Q	Q	Q							
3								Q	Q	Q	C	C	L	Q	L	Q	Q							
4								Q	Q	Q	Q	B	L	L	L	Q	Q							
5								Q	A	Q	A	Q	Q	Q	Q	Q	Q							
6								L	Q	Q	Q	4.4	L	L	Q	L	Q							
7								Q	Q	Q	Q	Q	Q	L	Q	Q	A							
8								Q	Q	L	L	Q	B	L	L	L	L							
9								L	Q	Q	Q	Q	L	Q	L	Q	Q							
10								Q	Q	Q	Q	A	BS	Q	A	Q	Q							
11								Q	L	L	L	B	Q	Q	Q	Q	Q							
12								Q	Q	L	L	L	Q	L	L	Q	Q							
13								Q	Q	L	L	L	L	L	L	Q	Q							
14								C	C	C	C	C	Q	Q	L	Q	Q							
15								Q	Q	Q	L	L	Q	L	Q	Q	Q							
16								Q	Q	L	L	L	Q	L	B	L	Q							
17								Q	Q	Q	L	L	L	Q	L	Q	Q							
18								Q	Q	L	L	L	Q	L	L	L	Q							
19								Q	L	Q	Q	Q	Q	L	Q	Q	Q							
20								Q	Q	Q	C	Q	B	Q	L	Q	L							
21								Q	Q	Q	L	L	L	L	L	Q	Q							
22								Q	Q	Q	Q	L	Q	Q	L	L	Q							
23								A	Q	L	Q	Q	L	L	Q	A	A							
24								Q	Q	Q	L	L	L	B	L	L	Q							
25								Q	Q	Q	Q	Q	L	L	L	Q	Q							
26								Q	Q	Q	L	L	Q	Q	L	Q	Q							
27								Q	Q	Q	Q	Q	L	L	L	Q	Q							
28								Q	Q	Q	L	L	L	Q	Q	Q	Q							
29								Q	Q	L	A	L	4.2	4.2	Q	Q	Q							
30								Q	L	L	L	Q	L	L	L	Q	Q							
31								Q	Q	L	Q	L	L	L	Q	Q	Q							
Mean Value												4.4	4.2	4.2										
Median Value												4.4	4.2	4.2										
Count												1	1	1										

foF1

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 4

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'F1 | 135° E Mean Time

Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	B	Q	Z10	Z10	Z00	Q	Q	Q							
2								C	C	Z40	Z20	Z40	Z30	Q	Q	Q	Q							
3								Q	Q	Q	C	C	Z20	Q	Z20	Q	Q							
4								Q	Q	Q	Q	B	Z00	Z20	Z10	Q	Q							
5								Q	A	Q	A	Q	Q	Q	Q	Q	Q							
6								Z20	Q	Q	Q	Z20	Z20	Z30	Q	Z20	Q							
7								Q	Q	Q	Q	Q	Q	Z20	Q	Q	A							
8								Q	Q	190	Z10	Q	B	B	B	Z10	Z20							
9								Z50	Q	Q	Q	Q	Z50	Q	Z00	Q	Q							
10								Q	Q	Q	Q	A	BS	Q	Q	Q	Q							
11								Q	Z30	Z20	Z30[B]	B	Q	Q	Q	Q	Q							
12								Q	Q	180	Z30	Z10	Q	Z20	Z20	Q	Q							
13								Q	Q	Z00	190	Z00	Z10	Z10	Z00	Q	Q							
14								C	C	C	C	C	Q	Q	Z30	Q	Q							
15								Q	Q	Q	Z20	Z20	Q	Z40	Q	Q	Q							
16								Q	Q	Z30	Z30	Z50	Q	Z40	B	Z20	Q							
17								Q	Q	Q	Z20	Z20	Z20	Q	Z30	Q	Q							
18								Q	Q	Z10	Z00	Z60	Q	Z30	Z20	Z50	Q							
19								Q	Z20	Q	Q	Q	Q	Z40	Q	Q	Q							
20								Q	Q	Q	C	Q	B	Q	Z50	Q	Z30							
21								Q	Q	Q	Z10	Z00	190	Z30	Z00	Q	Q							
22								Q	Q	Q	Q	Z00	Q	Q	Z30	Z20	Q							
23								A	Q	Z50	Q	Q	B	Z50	Q	A	A							
24								Q	Q	Q	Z30	Z20	Z20	Z40	Z20	Z10	Q							
25								Q	Q	Q	Q	Q	Z40	Z20	Z30	Q	Q							
26								Q	Q	Q	Z30	Z20	Q	Q	Z30	Q	Q							
27								Q	Q	Q	Q	Q	Z50	Z30	Z10	Q	Q							
28								Q	Q	Q	300	Z30	Z30	Q	Q	Q	Q							
29								Q	Q	Z70	A	Z30	Z20	B	Q	Q	Q							
30								Q	Z40	180	Z40	Q	Z20	Z30	Z40	Q	Q							
31								Q	Q	Z20	Q	Z60	Z40	Z20	Q	Q	Q							
Mean Value								Z40	Z30	Z20	Z30	Z20	Z20	Z30	Z20	Z20	Z30							
Median Value								Z40	Z30	Z20	Z20	Z20	Z20	Z30	Z20	Z20	Z20							
Count								2	3	11	14	16	16	17	16	6	2							

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 5

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foE | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	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								1.7	2.5	2.7	A	3.1	3.2	B	2.8	2.5	2.1							
2								C	C	2.7	3.0	3.1	A	3.2	2.8	2.5	1.9							
3								1.8	A	2.8	C	C	B	2.9	2.8	2.4	A							
4								1.8	2.5	A	A	3.2	B	A	2.7	A	2.0[H]							
5								A	A	A	A	B	A	A	A	2.5	A							
6								2.1	2.5	3.0	A	B	A	3.1	2.8	2.5	1.9							
7								B	B	2.5	3.0	A	3.2	B	2.8	2.8	A							
8								1.7	2.4	A	2.9	3.0[J]	B	B	B	2.4	2.0							
9								B	2.4	2.7	A	3.1	3.1	2.9	B	2.3	1.6							
10								B	2.1	2.5	3.0[H]	3.2[H]	3.1	B	2.7	2.5	A							
11								A	A	A	B	B	B	2.8	2.8	2.5[F]	1.9							
12								1.6	2.1	3.0	2.8	B	3.0	2.8	2.8	2.3	A							
13								B	B	2.6	2.7	2.7	3.0	2.7	2.7	2.4	2.0							
14								C	C	C	C	C	2.9	3.0	2.8	2.4	2.0							
15								A	A	2.8	2.8	A	3.0	A	A	B	A							
16								1.5	2.1	2.6[H]	2.9	B	2.9	2.6	2.5	2.6	B							
17								1.5	2.5	B	B	B	B	B	B	B	1.9							
18								B	2.2	2.7	3.0	3.1	A	3.0	A	2.6	A							
19								1.8	B	2.8	B	B	B	2.8	B	2.5	A							
20								1.7	B	B	C	3.0	B	B	2.8	A	A							
21								1.6	B	2.5	2.8	3.0	3.0	3.0	2.8	2.7	2.0							
22								B	2.0[F]	2.8[H]	3.0	3.1	B	3.2	2.9	A	A							
23								1.5	2.3	2.8	A	A	B	B	B	A	A							
24								B	2.1	3.0	A	2.9	B	B	2.6	2.5	1.9							
25								A	B	B	A	3.0	3.2	B	2.8	2.5	2.1							
26								A	A	A	A	B	B	B	B	A	A							
27								1.4	2.0	2.6	3.2	B	B	B	2.8	B	2.1							
28								B	2.1	2.9	3.0	3.3	2.9	3.4	3.2	2.6	1.8							
29								B	2.0	2.6	A	3.0	3.0	B	2.8	2.3	1.9							
30								A	2.1	2.4	2.8	3.0	3.0	2.8	2.7	2.4	A							
31								1.7	2.2	2.6	3.0	3.1	3.2	3.1	2.7	2.6	B							
Mean Value								1.7	2.2	2.7	2.9	3.1	3.0	3.0	2.8	2.5	2.0							
Median Value								1.7	2.2	2.7	3.0	3.1	3.0	3.0	2.8	2.5	2.0							
Count								14	18	22	15	17	15	16	22	23	16							

foE

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 6

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | f'E | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	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								130	110	110	A	100	100	110	100	110	110							
2								C	C	110	110	110	A	110	100	110	130							
3								B	A	110	C	C	100	110	100	110	A							
4								130	140	100	A	110	110	A	100	A	90H							
5								A	A	A	A	B	A	A	A	100	A							
6								130	110	100	A	100	A	100	100	100	100							
7								B	120	110	110	A	110	100	100	100	A							
8								B	110	120	110	110	100	100	110	110	100							
9								B	120	110	A	110	110	110	110	110	110							
10								B	120	120	100H	100H	110	B	110	110	A							
11								A	A	A	110	110	100	100	100	110	110							
12								120	120	100	110	B	110	110	110	100	A							
13								B	110	100	100	100	100	100	100	100	100							
14								C	C	C	C	C	110	120	120	120	140							
15								A	A	100	110	A	120	A	A	120	A							
16								100	110	120H	120	120	110	110	130B	110	120							
17								100	120	B	B	110	120	110	B	110	140A							
18								100	100	110	110	120	120	120	A	110	A							
19								B	110	120	110	120	110	110	120	130	A							
20								B	120	120	(120)C	120	110	110	110	A	A							
21								130	130	100	100	100	100	120	110	110F	100							
22								B	120	100H	100	100	120	130	130	A	A							
23								100	110	130	A	A	B	110	B	A	A							
24								B	120	100	A	100	100	110	110	110	100							
25								A	110	110	A	110	100	B	120	100	100							
26								A	120	A	A	120	120	120	130	A	A							
27								110	110	110	110	110	B	B	110	110	110							
28								120	120	120	120	120	120	120	120	120	120							
29								130	120	110	A	110	110	110	110	110	120							
30								A	120	110	110	130	110	110	110	120	A							
31								150	120	120	100	120	130	120	120	130	B							
Mean Value								120	120	110	110	110	110	110	110	110	110							
Median Value								120	120	110	110	110	110	110	110	110	110							
Count								13	25	26	18	24	26	25	26	26	17							

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

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The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | **fEs** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N, Long. 139° 29.3' E

Day	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	3.0	3.5	E	E	E	E	G	G	G	3.0	G	G	G	G	G	G	C	E	1.5	E	E	E	E
2	2.3	2.5Y	2.3Y	1.3	1.5	1.2	1.8	C	C	G	G	G	3.7	3.8Y	2.8	3.0	2.5	C	2.4Y	2.5	2.2Y	E	E	2.2
3	2.2	3.0	2.2	2.1	2.2	2.0	E	G	3.3	G	C	C	G	G	G	G	3.0	2.6	2.3	E	3.8	2.8	2.4	2.4
4	E	2.4	2.2	E	E	E	E	G	3.2	3.5	4.4	G	G	3.2	G	2.8	3.3Y	2.7	3.2	2.4	E	E	E	E
5	2.5	2.0	2.4	1.6	E	E	E	3.3	4.8	4.4	6.0	B	6.0	4.6	3.4	3.4	3.2	3.4	2.8	2.6	2.4	2.2	2.4	2.8
6	2.6	E	E	E	E	2.1	2.0	G	3.7	G	3.5	5.4	5.5	4.0	G	G	G	3.1	2.2	2.2	2.4	E	E	E
7	E	E	E	2.1	2.3	2.3	2.1	B	G	4.0	G	3.7	G	G	G	G	3.3	3.0	C	2.9Y	2.7	E	E	E
8	2.2F	2.3	2.3	2.0	E	2.4	2.6	G	G	2.8	G	3.7	G	G	G	G	G	E	1.5	E	E	E	E	E
9	E	2.0	E	E	E	E	E	B	G	G	3.2	G	G	G	G	G	3.0	1.5	1.7	1.8	1.8	1.4	1.3	2.0
10	2.8	3.8	4.2F	1.7	1.7	1.9	E	G	G	G	G	6.0	G	5.6	4.7	5.9	5.2	5.5	M	M	M	E	E	1.9
11	3.2	3.6	2.4	2.4	2.2	2.2	2.4F	4.4	2.9	2.7	G	G	G	3.6	G	G	3.1	E	2.4	2.6	2.8	1.8	E	E
12	2.3	2.1	E	E	2.0	E	1.9	2.4	G	G	G	B	G	G	G	G	1.8	1.8	2.3	E	2.2	1.8	E	E
13	E	E	E	1.5	E	E	2.0	B	G	3.0F	G	G	G	G	G	3.6	G	2.4	2.0	E	E	E	E	E
14	E	E	E	E	E	2.0	1.9	C	C	C	C	C	G	G	G	4.1	G	E	2.4	3.4	2.3	E	E	E
15	E	2.0	1.6	2.2	3.0	2.2	2.2	3.	2.3	G	3.7	3.6	4.8	5.8	3.0	G	2.5	E	E	2.5	2.1	2.1	E	E
16	E	E	E	E	E	E	E	G	2.9	G	G	G	G	G	G	G	G	2.3	E	E	E	E	E	E
17	1.9	E	E	2.4	2.3	C	E	G	2.4	B	B	G	G	G	B	G	1.8	1.9	2.8	E	E	E	E	2.3
18	2.3Y	2.2	1.6	2.3Y	1.4	1.4	1.5	G	G	G	G	G	4.5	G	3.7	3.6	4.0	2.8	4.0	2.5	E	2.4	2.8	2.2
19	E	E	2.8	2.4	E	1.4	E	G	G	G	G	G	G	G	G	3.4Y	2.9Y	2.6	2.2	2.2	E	2.2	E	E
20	E	E	E	E	E	2.3	E	G	G	G	C	G	G	G	4.4	3.2	2.4	3.6	2.6	2.7	2.1	1.7	1.8	E
21	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	3.0Y	2.0	1.9	E	E	1.5	E
22	E	E	E	E	1.2	1.6	2.0F	2.2	G	G	G	G	G	G	4.2	4.0	2.8	E	E	E	2.2	2.1	E	E
23	E	1.9	E	E	E	E	2.0	3.8	G	G	3.5	3.2	B	G	B	6.4	5.9	4.8	2.8	4.7	3.5	3.0Y	2.8	3.0
24	2.8	3.0	2.6	2.0	2.0	2.4	2.2	2.0	G	G	3.3	G	G	G	G	G	G	2.0	1.9	1.5	E	E	2.4	2.4
25	E	E	E	E	E	E	1.7	2.5Y	G	G	3.6	G	G	B	G	G	G	2.6	2.0	2.0	1.5	1.7	2.0	1.8
26	2.0	1.9	2.1	1.6	1.9	2.0	E	2.8	3.0	4.8	7.1	G	G	G	G	4.8	3.3	3.6	E	2.4	2.3	E	E	2.1
27	2.2	2.4	1.6	1.6	E	E	2.0	G	G	G	G	G	B	B	G	G	G	G	E	2.6	2.8	3.0	E	E
28	1.8	E	E	1.3	E	2.1	E	G	3.2	4.7	4.8	G	G	G	G	G	G	3.2	4.0	4.5	3.4	2.2	3.1	2.8
29	1.7	5.3	4.8	3.4	2.6	2.7	E	G	G	G	6.6	G	G	G	G	G	G	3.7	3.4	2.0	E	2.8	6.0	3.7
30	2.6	2.8	2.6	2.8	2.2	2.8	2.4	2.6	G	G	G	G	G	G	G	G	2.9	3.6	1.5	1.3	2.0	2.0	1.6	2.0
31	2.2	1.4	C	C	C	C	C	G	G	G	G	5.0	G	G	G	G	B	3.0	2.3	E	E	2.3	3.2	3.7
Mean Value	2.3	2.6	2.6	2.0	2.0	2.1	2.1	2.9	3.2	3.7	4.4	4.4	4.9	4.3	3.7	4.0	3.2	3.0	2.5	2.5	2.5	2.2	2.6	2.5
Median Value	1.8	2.0	1.6	1.6	E	1.6	1.6	G	G	G	G	G	G	G	G	G	2.4	2.6	2.2	2.1	2.0	1.7	E	E
Count	31	31	30	30	30	29	30	26	29	29	27	27	29	29	29	31	30	29	29	30	30	31	31	31

fEs

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 8

33

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Dec. 1951 (M3000)F2 135° E Mean Time

Day	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	2.8	(2.5)^{J}F	A	2.8	2.7	2.9	2.9	3.3	(3.3)^{J}P	(3.4)P	(3.2)P	(3.3)P	3.3	3.3	(3.4)P	3.4	3.2	[3.2]C	3.3	(3.5)^{J}	3.0	2.7	2.6H	2.8
2	3.0	2.8	3.1	3.1F	2.7	2.6	2.9	C	C	(3.3)P	3.4	(3.3)P	(3.4)P	3.4	3.4	3.4	3.3	[3.2]C	3.1	3.2	3.2	2.8F	2.7F	2.5F
3	2.7	2.6	2.6H	2.6	2.6	2.7	2.9	3.4	3.3	3.4	C	C	3.5	3.3	(3.4)^{J}	B	3.4	3.3	(2.8)^{J}	B	A	3.3	2.7	2.8
4	2.6	2.5	2.6	2.8	2.9	2.8	3.0	3.3	(3.5)P	3.5	3.4	3.1	3.5	3.3	3.7	3.4	3.6	3.6	3.6	3.2	2.6	2.8	3.0S	(3.3)PS
5	2.6	2.5	2.8	2.7F	2.7	2.8F	2.5F	3.2	(3.2)^{J}P	3.5	(3.2)^{J}	3.4	3.3P	3.2	B	B	3.4	3.3	3.0PS	(2.9)P	3.1	3.4	3.0Z F	(2.9)PF
6	2.8PF	(2.9)PF	3.0F	2.9F	2.9F	2.6F	[3.0]C	3.4	3.4H	3.6	B	(3.4)B	3.6	3.5	3.5	3.4	3.7	3.3	3.2	3.2	(3.6)PS	2.8VF	2.9VF	3.0
7	2.8VF	2.7	2.9	2.9F	3.0	3.1	3.1	3.2	(3.8)^{J}	(3.6)^{J}	3.3	B	3.2VS	3.4PS	3.2ZS	3.4	3.6S	2.9	C	3.0	3.3	3.0F	3.0	3.0
8	2.7H	2.8	2.6Z	3.1	2.9	3.1	3.1	3.6	3.8	3.3	3.4	3.5	3.1	3.5	3.5	3.6	3.5	3.4	BS	3.3	2.8	2.7	2.6	2.8
9	3.1	2.8	2.6	2.6	2.9	3.0	2.9	2.9	3.2P	(3.4)^{J}P	(3.3)P	BS	(3.2)^{J}F	(3.2)BS	(3.3)^{J}P	B	3.7	3.1H	3.2	2.8	2.9	2.9	2.7	3.0
10	2.9	2.7	2.9S	(3.2)^{J}	3.0	2.8	2.8	3.0P	(3.5)^{J}	3.5	BS	3.4	BS	B	S	3.6	3.5P	A	M	M	M	2.8	2.6	2.8
11	2.5	A	3.2F	3.1	2.8	(2.9)^{J}FH	2.9	3.1	3.3	3.5	3.6	3.7	3.4	3.1H	3.4	3.2VF	3.4	3.4	3.3	3.3	2.9Z F	2.9Z	2.9V	3.0
12	2.6	2.5	2.5F	2.6F	2.8F	3.2F	2.6F	3.2	3.4	3.7	(3.3)^{J}	(3.4)P	3.3	3.3	(3.4)P	(3.4)P	3.4	3.1	(3.1)P	3.0	3.4	3.2	2.6	2.6
13	2.6	2.8	2.6	2.5	2.7	2.9	3.0	3.4	3.7	3.9	3.8	3.5	3.6	3.4	3.6	3.7	3.7	3.5	3.4	3.3	2.9	2.5	2.9	2.8
14	2.7	2.7	2.7	2.7	2.9	3.2	2.9	C	C	C	C	C	3.3	3.3H	3.4	3.4	3.6	3.4	(2.7)^{J}H	A	2.8F	3.2Z F	2.9	(2.8)^{J}F
15	(2.6)^{J}F	2.7F	2.8F	2.9	3.1	3.1	2.8	3.4	3.5	(3.5)P	3.3	3.1P	3.4	(3.5)^{J}S	(3.4)P	(3.5)PS	3.3	3.2	3.1P	(3.0)PS	3.1P	3.0	2.8	2.9
16	2.7F	2.7S	2.8	2.8	2.6	2.9Z	3.1	3.3	3.3	3.4P	B	3.1	3.7	3.2	3.4	3.5	3.5	3.4	3.1	3.3	3.5S	2.9	3.1	2.6
17	2.8	2.6	2.9	3.2	3.4	[3.2]C	2.9	3.5	3.5	3.4S	3.2	(3.4)^{J}	3.3	3.1S	3.3	(3.3)BF	3.3	3.4	3.6	(3.3)P	3.0	3.1	2.6	2.8
18	2.6	2.8P	2.8	2.7	3.0	2.9	3.3	3.6	3.7	(3.2)B	2.9P	3.4	3.5	(3.3)^{J}	3.4	3.4	3.3	3.3	3.3	4.0	3.1	2.8	3.0	2.9
19	2.9	3.0	3.2	3.0	2.6	(2.8)^{J}F	3.3	3.7	3.6	3.2	3.1	3.6S	(3.5)^{J}PS	3.3	3.2S	3.3	3.4H	3.4	3.3	3.4	(3.4)^{J}	3.1	2.7	3.0
20	2.8	2.8	2.7	3.1	3.3F	3.0	3.4	3.3	3.4	3.6	(3.5)C	3.4	3.3	3.3	(3.0)P	3.2P	3.3	3.1	3.5	3.1	3.0	2.6Z	2.6F	3.0F
21	2.7F	3.0F	3.0	3.2	2.8	3.2	2.9	3.5P	3.2	3.8	3.6	3.7	3.7	3.2	3.6	3.7	3.5	3.3	3.3	3.1F	3.0	2.8	3.0	3.0
22	2.9	2.8	2.9	2.8	3.4P	3.4	2.9	3.2	3.3S	3.4P	3.3	BH	3.5	3.3	B	B	3.7P	3.0	3.4	3.0	3.0	2.7	2.7	2.5
23	2.6	3.0	3.0	3.0	2.5	2.9	3.0	3.3	3.5	3.1	3.2BH	(3.2)PH	(3.4)^{J}	3.2	3.2	3.4	3.6	3.1	3.0	2.8	3.3F	3.1V	3.1F	3.1F
24	3.2	2.9	2.8	2.7	2.7	3.1	3.4	3.4	3.6	3.4	3.3P	(3.3)^{J}P	(3.5)^{J}P	[3.5]B	(3.5)^{J}	3.6P	3.2H	3.4	3.5	(3.6)^{J}	3.3	2.8	3.0	A
25	2.8	2.7F	(2.7)^{J}F	2.8Z F	3.4F	2.8	3.3	3.4	3.6	3.5	3.4	3.4	3.5	3.4P	3.2	3.4	3.6	3.4	3.1	3.3	3.4	2.6	3.1	2.9
26	2.8	2.8	3.0	3.1	2.9	3.0	3.2	3.6P	3.3	3.8	3.3	B	3.5	(3.4)P	3.3	3.4	3.5	3.2	3.1	3.4	3.2	3.7	2.7	2.8
27	2.8	2.8	3.2	3.4	3.3	3.1	3.4	3.5	3.4	3.5	3.2B	3.2	3.1Z	3.3V	3.5V	(3.2)P	3.6	3.4	3.3	3.6	3.3	2.7	2.7	2.8
28	2.7	2.8	3.0P	3.3	3.0	3.0	3.1	3.1	3.3	3.2K	2.9K	3.2K	3.4K	3.7K	3.2K	3.5K	2.7K	(2.8)$^{K}_{J}$	(3.2)$^{K}_{P}$	3.0K	2.6K	2.5KF	(2.7)$^{K}_{J}$F	3.0KS
29	2.3K	(2.8)^{J}K	AK	2.6K	2.7K	2.8KF	2.9K	3.0K	3.5K	(3.3)$^{K}_{P}$	3.5P	3.4	3.3	3.4	3.4	(3.3)P	3.6	3.3H	3.1H	3.0H	3.4F	2.7F	A	(2.6)^{J}F
30	2.9	(2.7)^{J}F	2.9F	2.7	2.7	2.6	2.8	3.3	3.3	3.3	3.3P	3.5	3.6	3.5	3.2	3.4	3.6	3.4	3.2	3.4	3.6	3.1	3.0F	2.7F
31	2.7	3.0F	C	C	C	C	C	3.5	3.3	3.0	3.1	3.3	3.4	3.4	3.1	3.2	3.3Z	3.1	3.0	3.2	2.9	3.4	A	A
Mean Value	2.7	2.8	2.9	2.9	2.9	2.9	3.0	3.3	3.4	3.4	3.3	3.4	3.4	3.3	3.4	3.4	3.5	3.3	3.2	3.2	3.1	2.9	2.8	2.9
Median Value	2.7	2.8	2.8	2.8	2.9	2.9	3.0	3.3	3.4	3.4	3.3	3.4	3.4	3.3	3.4	3.4	3.5	3.3	3.2	3.2	3.1	2.8	2.8	2.8
Count	31	30	28	30	30	30	30	29	29	30	26	25	30	30	28	27	31	30	28	28	29	31	29	29

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | **fmin F** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	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	1.5	1.5	2.7A	1.1	1.2	1.2	1.2	2.0	2.5	4.0	4.1	3.3	3.2	3.1	2.8	2.6	2.2	(1.7)C	1.2	1.3	1.1	1.1	1.1	1.1
2	E	E	E	1.1	E	E	1.2	C	C	2.8	3.2	3.6	3.3	3.5	3.1	2.7	2.0	(1.7)C	1.4	1.5	1.2	1.3	1.4	1.4
3	1.4	1.6	E	1.3	E	E	1.3	1.9	2.5	2.8	C	C	4.1	4.0	2.8	2.6	2.4	1.5	1.6	B	A	2.2A	1.3	2.0A
4	1.3	2.0A	1.2	1.2	E	E	1.2	1.8	2.5	3.3	4.0	4.8	3.3	3.2	2.8	2.6	2.0	2.0A	A	1.4	1.2	1.3	1.2	1.2
5	1.1	1.1	1.3	E	E	1.1	1.3	2.1	4.1A	3.3	4.6A	4.0	3.8	3.8	2.9	2.5	2.3	2.8A	2.2A	2.2	1.2S	E	1.7	1.8
6	1.6	1.6	1.1	1.1	1.1	E	1.1	2.1	3.7A	3.6	3.5A	4.0	3.8	3.5	3.0	2.5	2.0	2.4A	2.0A	1.6	1.6	E	1.3	E
7	E	E	1.1	1.1	1.1	1.1	1.6	1.7	2.9	3.2	3.7	3.5	3.6	3.6	4.0	2.8	2.8	2.9A	C	1.2	1.2	1.2	1.2	1.2
8	E	E	E	E	E	1.3	1.9	2.0	2.5	2.4	3.3	3.6	5.0	3.8	3.8	3.4	2.0	1.5	1.6	1.2	1.1	1.3	1.2	1.3
9	1.4	1.1	E	E	1.1	1.2	1.2	1.6	2.7	3.0	3.3	4.0	4.3	3.4	2.8	2.8	2.6A	1.3	1.3	1.1	1.1	1.1	1.2	E
10	1.1	1.3	3.1A	E	E	1.1	1.1	1.9	2.5	3.1	3.2	5.0A	5.2	4.0	3.5	3.2	2.2	A	M	M	M	1.3	1.2	1.9
11	2.7A	A	1.2	1.8A	1.1	1.1	1.1	1.8	2.2	2.7	3.8	4.0	3.8	3.5	3.6	2.6	2.0	1.4	1.5	1.8	1.9	1.4	1.2	1.2
12	E	E	E	E	E	E	E	1.8	2.6	3.0	3.6	3.4	3.8	3.4	3.2	2.8	1.8	1.7	1.4	1.5	1.5	1.3	1.3	1.2
13	1.2	1.1	E	E	1.1	1.1	1.2	1.7	2.8	2.7	2.8	3.2	3.1	2.8	2.9	2.8	2.0	1.4	1.2	1.2	1.2	1.5	1.2	1.2
14	1.2F	1.2	1.1	1.1	1.1	1.1	1.1	C	C	C	C	C	3.7	3.3	3.4	2.9	2.1	1.6	1.2	A	1.6F	1.2	1.4	1.2
15	E	E	1.2	1.2	1.1	E	1.4	1.7	2.4	3.0	3.4	3.6	3.8	3.6	2.8	2.6	1.8	1.1	1.3	1.5	1.2	1.2	1.2	1.2
16	1.1	E	E	E	E	1.1	1.1	1.8	2.7	3.0	3.3	4.2	4.1	3.5	4.1	3.2	2.2	2.0A	1.3	1.2	1.2	1.2	1.1	1.3
17	1.2	1.1	1.2	1.2	1.4	C	E	2.0	2.5	3.3	3.8	3.3	3.5	3.3	3.3	3.2	1.9	1.8	1.5	1.5	1.3	1.3	1.3	1.5
18	E	1.2	E	1.1	1.1	1.1	1.1	1.7	2.7	3.2	3.2	3.4	4.1	3.2	2.9	3.3	2.9	1.8	3.8A	1.6	1.4	1.4	1.8	1.2
19	1.3	1.2	1.2	1.1	1.1	1.1	1.2	1.8	2.6	3.2	3.5	3.8	3.8	3.3	3.1	2.7	2.4	1.9	1.6	1.3	1.3	1.3	1.4	1.3
20	1.3	1.3	1.3	1.4	E	E	E	1.7	2.6	3.8	(3.8)C	3.8	4.6	3.8	3.6	3.8	2.4	1.9	2.3A	1.8	1.6	1.4	1.3	1.3
21	1.2	1.2	E	E	E	1.1	E	1.6	2.5	3.1	3.6	4.0	3.3	3.2	3.3	2.7	2.0	1.8	2.1A	1.7	1.2	1.1	1.1	1.1
22	1.2	1.1	1.1	E	E	E	1.2	1.7	2.5	3.4	3.5	3.3	3.5	3.5	4.0A	2.8	2.4	1.8	1.1	1.4	1.7	2.0	1.6	1.6
23	1.1	1.1	1.2	1.1	1.2	1.2	2.0A	3.0A	2.8	3.6	4.1	4.1	4.4	3.8	4.1	6.0A	4.3A	4.5A	1.6	1.5	1.7	1.6	2.0AE	1.6
24	1.8	1.8	1.6	1.4	1.6	1.6	1.4	1.4	2.5	3.2	3.5	3.3	3.3	3.2	3.2	2.7	2.2	1.6	1.9	1.5	1.4	1.2	1.7	A
25	1.3	1.2	1.4	1.3	E	E	1.2	2.1	2.6	2.9	3.4	3.5	3.5	4.1	2.8	2.7	2.2	1.6	1.6	1.7	1.5	1.3	1.6	1.6
26	1.3	1.3	E	E	E	1.2	1.2	2.1	2.6	3.8A	3.5	3.2	3.3	3.5	3.1	3.8A	2.3	1.9	1.3	1.6	1.7	1.2	1.2	1.2
27	1.1	1.7	1.2	1.3	1.2	1.3	1.3	1.7	2.5	2.8	3.3	3.8	3.3	3.7	2.9	2.9	2.3	2.4	1.6	1.6	1.9	2.0A	1.3	1.6
28	1.3	E	E	E	E	E	E	1.5	2.5	2.9	3.5	3.3	3.2	3.4	3.8	2.6	2.1	2.4A	2.7A	2.6A	2.3A	1.2	1.6	1.8
29	1.4	2.8A	A	1.5	1.1	1.2	1.4	1.6	2.1	3.4	4.4A	3.1	3.2	3.4	3.1	2.7	3.4	1.4	A	1.2	1.2	1.5	A	2.4A
30	1.9	1.8	1.8	1.6	1.2	1.6	1.8	1.8	2.4	2.6	3.5	3.4	3.4	3.3	3.2	2.6	2.3	2.3	1.5	1.4	1.6	1.3	1.3	1.2
31	1.3	E	C	C	C	C	C	1.8	2.5	2.8	3.5	3.6	3.6	3.2	2.9	2.6	2.4	1.9	1.6	1.3	1.3	1.8	1.6	A
Mean Value	1.4	1.4	1.4	1.3	1.2	1.2	1.3	1.8	2.6	3.1	3.6	3.7	3.7	3.5	3.3	3.0	2.3	1.9	1.7	1.5	1.4	1.4	1.4	1.4
Median Value	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.8	2.5	3.1	3.5	3.6	3.6	3.5	3.1	2.7	2.2	1.8	1.6	1.5	1.3	1.3	1.3	1.3
Count	31	30	29	30	30	29	30	29	29	30	29	29	31	31	31	31	31	30	27	20	29	31	30	29

fmin F

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Dec. 1951 | fminE | 135° E Mean Time

Day	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	1.3	1.6	E	E	E	E	1.2	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	C	E	1.3	E	E	E	E
2	1.1	1.3	1.1	1.1	E	E	1.2	C	C	1.2	1.3	1.3	1.3	1.3	1.2	1.3	1.3	[1.4]C	1.4	1.5	1.2	E	E	1.8
3	2.0	E	E	1.3	1.8	1.8	E	1.6	1.3	1.6	C	C	1.6	1.3	1.3	1.4	1.2	1.5	1.6	E	1.3	1.3	2.0	1.5
4	E	1.4	1.2	E	E	E	E	1.3	1.2	1.3	1.3	1.4	1.4	2.0	1.3	1.3	1.3	1.3	1.3	1.1	E	E	E	E
5	1.1	1.1	1.4	E	E	E	E	1.2	1.4	1.3	1.8	B	1.6	1.8	1.8	1.3	1.6	1.4	1.3	1.2	1.5S	1.6	1.3	1.2
6	E	E	E	E	E	E	1.8	1.5	1.7	1.6	1.3	1.3	1.3	1.2	1.3	1.3	1.3	1.3	1.2	1.6	1.2	E	E	E
7	E	E	E	1.4	1.1	1.1	1.7	B	1.3	1.5	1.6	1.6	1.6	1.6	1.5	1.5	1.3	1.3	C	1.2	1.2	E	E	E
8	E	E	E	E	E	E	1.3	1.6	1.5	1.6	2.0	2.0	2.0	2.0	2.0	2.0	1.2	E	1.2	E	E	E	E	E
9	E	1.7	E	E	E	E	E	B	1.6	1.5	1.6	1.6	2.2	2.2	1.6	1.5	1.2	1.2	1.1	1.1	1.2	1.1	1.1	1.1
10	1.1	1.2	1.2F	1.3	1.6	1.7	E	1.1	1.6	1.2	1.6	1.6	2.4	3.8	1.6	1.6	1.5	1.2	M	M	M	E	E	1.3
11	1.2	E	1.2	1.1	1.1	1.1	1.1F	1.2	1.2	1.4	1.6	1.8	2.0	1.8	1.4	1.3	1.3	E	1.6	1.3	1.3	1.6	E	E
12	1.6	1.9	E	E	E	E	E	1.2	1.6	2.1	2.4	B	2.4	2.0	1.8	1.6	1.4	1.4	1.3	E	1.6	1.2	E	E
13	E	E	E	1.1	E	E	1.2	B	1.4	1.3	1.3	1.5	1.5	1.6	1.3	1.3	1.2	1.2	1.2	E	E	E	E	E
14	E	E	E	E	E	1.4	1.6	C	C	C	C	C	1.6	1.8	2.1	1.6	1.6	E	1.2	1.2	1.9	E	E	E
15	E	E	1.2	1.2	1.2	E	1.1	1.5	1.4	1.4	1.8	2.5	2.7	2.9	1.6	2.0	1.5	E	E	1.1	1.7	1.2	E	E
16	E	E	E	E	E	E	E	1.2	1.4	1.7	1.7	1.8	2.0	2.1	2.3	1.3	1.6	1.3	E	E	E	E	E	E
17	1.6	E	E	E	E	C	E	1.2	1.3	B	B	2.7	2.8	2.6	B	1.8	1.4	1.6	1.2	E	E	E	E	1.3
18	1.1	1.2	E	E	1.1	1.2	1.1	1.1	1.5	1.6	1.8	2.3	2.5	2.0	1.4	1.2	1.2	1.2	1.2	1.2	E	1.2	1.4	E
19	E	E	1.1	1.1	E	1.1	E	1.6	1.4	1.6	1.8	1.7	2.0	1.7	1.7	1.7	1.3	1.3	1.6	1.3	E	1.3	E	E
20	E	E	E	E	E	1.7	E	1.2	1.2	1.2	[1.6]C	2.0	2.1	2.1	1.8	1.6	1.4	1.2	1.1	1.4	1.3	1.2	1.6	E
21	E	E	E	E	E	E	E	1.2	1.5	1.4	1.9	2.2	2.5	2.5	2.4	1.9	1.2	1.2	1.4	1.2	E	E	1.1	E
22	E	E	E	E	E	E	1.8	2.0	1.4	1.6	1.8	1.8	1.8	1.7	1.6	1.8	1.8	E	E	E	1.4	1.9	E	E
23	E	1.1	E	E	E	E	1.2	1.2	1.4	2.7	2.5	2.7	B	2.7	B	2.8	1.8	1.2	1.2	1.2	1.5	1.2	1.3	1.1
24	1.2	E	E	E	1.2	1.6	1.6	1.8	1.8	1.8	2.5	2.0	2.7	2.0	1.8	2.1	1.3	1.1	1.5	1.3	E	E	1.7	1.5
25	E	E	E	E	E	E	1.4	1.3	1.8	1.8	2.1	2.6	2.4	B	2.3	1.9	1.6	1.6	1.3	1.6	1.2	1.3	1.5	1.5
26	1.7	1.3	1.3	1.3	1.3	1.3	E	1.2	1.6	2.5	2.6	2.7	2.6	2.7	2.6	2.3	1.7	1.6	E	1.3	1.2	E	E	1.8
27	1.1	1.1	E	1.2	E	E	1.2	1.2	1.4	1.7	2.2	3.2	B	B	2.0	1.9	1.2	1.4	E	1.3	1.2	1.4	E	E
28	1.1	E	E	E	E	E	E	1.2	1.2	1.8	1.8	1.8	1.9	1.8	1.8	1.4	1.2	1.2	1.2	1.1	1.2	1.7	1.2	1.4
29	1.2	E	E	E	1.1	1.1	E	1.2	1.6	1.2	1.2	1.2	1.3	1.2	1.6	1.6	1.4	1.2	1.2	1.2	E	1.2	1.2	1.1
30	1.3	1.2	1.2	1.3	1.3	1.5	1.3	1.3	1.6	1.6	1.7	2.3	2.0	1.6	2.0	1.9	1.6	1.1	1.1	1.1	1.1	1.9	1.1	1.2
31	1.4	1.2	C	C	C	C	C	1.3	1.8	1.4	1.8	1.8	2.0	2.1	1.8	1.6	B	1.2	1.2	E	E	1.3	1.2	1.2
Mean Value	1.3	1.3	1.3	1.2	1.3	1.4	1.4	1.3	1.5	1.6	1.8	2.0	2.0	2.0	1.7	1.7	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.4
Median Value	E	E	E	E	E	E	E	1.2	1.4	1.6	1.8	1.8	2.0	2.0	1.7	1.6	1.4	1.2	1.2	1.2	1.2	1.2	E	E
Count	31	31	30	30	30	29	30	26	29	29	28	27	29	29	29	31	30	30	29	30	30	31	31	31

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 11

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | ypF2 | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	(80)$^{J}_{F}$	A	90	110	120	110	80	(70)$^{J}_{P}$	(70)^{P}	(90)^{P}	(100)^{P}	90	60	(90)^{P}	60	80	[60]^{C}	50^{B}	(50)^{J}	140	90	120^{H}	120
2	110	80	90	120^{F}	60	70	110	C	C	(80)^{P}	100	(120)^{P}	(110)^{P}	80	70	70	70	[80]^{C}	90	60	100	80^{F}	70^{F}	120^{F}
3	80	100	100^{H}	80	90	70	80	60	70	70	C	C	70	60	(60)^{J}	B	70	70	(80)^{J}	B	A	70	80	70
4	90	90	80	90	70	60	90	60	(50)^{P}	40	80	90	60	70	50	60	60	70	80	130	130	70	70^{S}	(70)$^{P}_{S}$
5	150	70	90	100^{F}	120	140^{F}	170^{F}	80	(70)$^{J}_{P}$	80	(50)^{J}	70	80^{P}	100	B	B	60	50	S	(110)^{P}	110	60	80$^{2}_{F}$	(80)$^{P}_{F}$
6	40$^{P}_{F}$	(70)$^{P}_{F}$	90^{F}	50^{F}	50^{F}	70^{F}	[70]^{C}	70	60^{H}	60	B	60	60	60	70	80	70	80	110	60	(50)$^{P}_{S}$	90$^{V}_{F}$	90$^{V}_{F}$	110
7	70$^{V}_{F}$	90	80	80^{F}	100	90	100	80	(50)^{J}	(50)^{J}	70	B	110$^{V}_{S}$	60$^{B}_{S}$	80$^{2}_{S}$	90	80^{S}	100	C	90	50	70^{F}	60	70
8	120^{H}	110	110^{2}	90	60	80	60	100	50	70	80	50	100	80	80	70	70	100	BS	80	100	90	70	80
9	100	90	110	80	70	110	110	100	50^{P}	(90)$^{J}_{P}$	(90)^{P}	BS	(60)$^{J}_{F}$	[60]$^{B}_{S}$	(60)$^{J}_{P}$	B	60	100^{H}	100	180	80	80	80	130
10	110	90	110^{S}	(70)^{J}	110	70	90	70^{P}	(80)^{J}	90	BS	90	BS	B	S	50	80^{P}	A	M	M	M	100	110	90
11	100	A	40^{F}	80	100	(70)$^{J}_{H}$	60	100	50	70	50	40	50	70^{H}	70	90$^{V}_{F}$	100	90	40	60	(80)$^{2}_{F}$	130^{2}	90^{V}	80
12	120	120	90^{F}	130^{F}	140^{F}	70^{F}	200^{F}	90	100	40	(70)^{J}	(110)^{P}	80	100	(70)^{P}	(70)^{P}	90	100	(80)^{P}	110	60	60	100	120
13	80	80	100	80	140	90	70	90	80	50	40	60	70	90	110	40	70	80	50	90	100	80	60	80
14	100	90	60	140	100	90	120	C	C	C	C	C	80	60^{H}	60	40	60	90	(70)$^{J}_{H}$	A	100^{F}	50$^{2}_{F}$	60	(70)$^{J}_{F}$
15	(70)$^{J}_{F}$	70^{F}	80^{F}	70	70	80	80	90	50	(80)^{P}	70	70^{P}	70	(60)$^{J}_{S}$	(70)^{P}	(50)$^{J}_{S}$	60	100	80^{P}	(90)$^{P}_{S}$	70^{P}	110	90	60
16	70^{F}	90^{S}	100	110	70	80^{2}	70	60	100	60^{P}	B	60	40	110	90	90	60	60	90	80	50^{S}	70	60	90
17	100	120	50	70	50	[80]^{C}	100	50	60	60^{S}	70	(50)^{J}	70	80^{S}	110	100^{F}	70	70	80	(40)^{P}	70	120	130	70
18	100	70^{P}	110	150	160	190	180	110	110	120	100^{P}	30	90	(100)^{J}	70	40	70	90	A	30	70	120	70	80
19	90	50	40	70	140	(70)$^{J}_{F}$	90	70	50	90	90	40^{S}	(70)$^{J}_{P}$	60	50^{S}	50	60^{H}	50^{B}	50	30	(50)^{J}	110	50	50
20	100	80	80	90	60^{F}	60	60	50	50	60	[60]^{C}	50	80	100	(110)^{P}	100^{P}	100	130	130	130	80	100^{2}	120^{F}	100^{F}
21	110^{F}	110^{F}	60	80	140	100	110	80^{P}	100	70	60	30	70	90	60	50	70	60	70	60^{F}	80	90	60	90
22	90	70	80	90	60^{P}	50	80	110	50^{S}	50^{P}	60	BH	60	70	B	B	60^{P}	100	60	130	80	70	70	120
23	110	60	80	100	100	70	80	110	60	70	70^{H}	(70)^{P,H}	(60)^{J}	60	70	40	40	A	80	70	90^{F}	90^{V}	50^{F}	80^{F}
24	50	100	160	100	80	100	80	100	40	100	70^{P}	(50)$^{J}_{P}$	(80)$^{J}_{P}$	B	(80)^{J}	60^{P}	90^{H}	80	80	(50)^{J}	80	130	70	A
25	90	100^{F}	(90)$^{J}_{F}$	100$^{2}_{F}$	70^{F}	80	70	100	70	100	90	50	40	70^{P}	90	100	50	60	140	170	160	100	150	120
26	140	140	110	60	80	50	90	60^{P}	60	50	40	B	40	(80)^{P}	50	80	90	100	90	70	90	40	80	90
27	90	90	80	80	50	80	80	60	70	80^{B}	90	80	80^{2}	90^{V}	80^{V}	(60)^{P}	90	60	50	90	90	60	110	80
28	70	90	100^{P}	110	100	80	80	70	60	70^{K}	80^{K}	70^{K}	70^{K}	40^{K}	70^{K}	80^{K}	110^{K}	(100)$^{J}_{K}$	(80)$^{K}_{P}$	120^{K}	130^{K}	80$^{K}_{F}$	(80)$^{K}_{F}$	90$^{K}_{S}$
29	120^{K}	A^{K}	A^{K}	120^{K}	110^{K}	90$^{K}_{F}$	100^{K}	140^{K}	60^{K}	(60)$^{K}_{P}$	80$^{K}_{P}$	90	60	80	70	(110)^{P}	90	70^{H}	90^{H}	90^{H}	120^{F}	80^{F}	A	(70)$^{J}_{F}$
30	70	(100)$^{J}_{F}$	50^{F}	70	80	110	150	60	90	120	40^{P}	80	60	60	50	80	60	60	120	110	40	60	60^{F}	100^{F}
31	70	110^{F}	C	C	C	C	C	70	80	70	80	60	50	80	90	80	60^{2}	120	90	110	80	100	A	A
Mean Value	90	90	90	90	90	90	100	80	70	70	70	70	70	80	70	70	70	80	80	90	90	80	80	90
Median Value	90	90	90	90	80	80	90	80	60	70	70	60	70	70	70	70	70	80	80	80	80	80	80	80
Count	31	29	28	30	30	30	30	29	29	30	26	25	30	29	28	27	31	29	26	28	29	31	29	29

ypF2

Sweep 1.0 Mc to 17.3 Mc in 2 min ☐ Manual ☒ Automatic

K 12

37

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1951

foF2

135° E Mean Time

Day	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	3.1	3.1	3.4	3.3	3.4	3.3^{J}	3.3	5.5	8.2	9.7	10.3	11.2	11.0^{P}	10.7^{P}	10.6	9.6^{P}	7.8^{P}	6.5	5.1	3.9	3.7	3.3	3.0	3.4
2	3.4	3.7	3.7	3.1	3.3	2.9	3.0	(5.2)^{S}	8.8^{P}	B	B	12.1	12.7^{P}	S	(8.2)^{S}	8.1	8.0	[6.7]^{M}	5.4	4.8	4.5	4.7^{P}	3.9	4.0
3	3.7	3.7	3.7^{P}	3.2	3.0	3.0	4.2	(6.4)$^{J}_{P}$	8.0^{J}	8.6	S	10.5	10.7	11.4^{P}	9.6^{P}	[8.0]^{C}	6.8^{P}	6.7	5.6	4.5	S	3.9^{P}	3.1	3.0
4	3.1	3.1	3.0	3.3	3.6	3.0^{F}	2.9	4.5	8.7	8.2^{P}	8.3^{J}	9.9	9.8	S	9.0^{P}	7.1	(8.3)^{P}	8.0	6.3^{P}	4.0	3.6	4.2	3.9	4.0
5	2.6	2.8	3.1	3.9	3.8^{F}	3.2^{F}	2.5	3.9	S	S	7.3	8.8	8.3	8.8	9.6	8.4$^{J}_{P}$	[8.0]^{C}	7.5	(6.1)^{P}	5.3^{P}	4.0	3.7	2.7	2.8
6	3.0	3.0	3.3	3.4	3.3^{F}	F	3.1^{F}	4.5	8.5	8.0^{P}	9.0^{P}	S	9.8	B	8.9	8.9^{P}	7.6^{P}	6.4^{J}	[5.2]^{C}	3.9	3.0^{Z}	2.8	2.6	2.3
7	2.3	2.5	2.6	2.8	3.0	3.1	2.6	4.5	7.2	6.5	7.1	(8.5)^{P}	(8.5)$^{P}_{H}$	(10.8)$^{J}_{P}$	8.3^{P}	8.5^{P}	8.2	6.5	7.2	4.9	5.0^{P}	4.3	3.9	3.5
8	M	M	M	M	M	M	M	M	6.6	7.3	10.1	8.6	8.3^{J}	9.4$^{J}_{P}$	7.8^{Z}	9.5	8.0	5.6	5.2	4.5	4.8^{P}	4.5	3.7	3.9
9	3.3	2.5	2.7	2.9	3.5	2.2	3.0	4.1	6.5	8.1$^{J}_{P}$	7.5	9.7	10.3^{P}	8.8	8.9^{P}	7.9^{P}	S	(7.0)^{P}	4.5	4.8^{P}	5.4	(6.2)^{P}	4.9	5.5
10	3.5	3.5	3.9	4.5	4.0^{F}	3.5	3.2$^{V}_{F}$	4.2	6.7	B	9.2	[9.6]^{C}	9.9	7.0	7.1	7.0	7.0	6.4^{J}	4.7	3.8	4.5	3.6	3.3	3.2
11	3.9	2.8	2.7	3.0	2.9	(3.3)^{F}	(3.9)^{F}	4.2	7.7	7.8	9.2	10.3^{J}	8.9	8.1	7.7	6.7	B	8.1^{P}	4.7	4.4	4.7	3.0	2.3^{F}	2.4
12	2.5	2.9^{F}	2.8	3.0^{F}	3.4	2.1	2.2	4.1	6.4	7.3	8.6^{J}	8.8	8.9	8.3^{P}	(8.2)$^{J}_{P}$	8.3^{P}	9.0	6.0^{P}	5.7	4.4	4.8	4.1	2.1	2.3
13	2.5	2.6	2.8	3.0	3.1	2.7	3.0	4.0	7.1	7.3	6.5	(8.5)^{P}	8.0	7.7	7.5	7.5	B	6.5^{J}	3.7	4.8	3.5^{V}	2.6^{H}	C	C
14	C	C	C	C	C	C	C	C	6.2^{P}	6.6^{P}	7.4	6.8^{J}	7.0	6.6	8.1^{P}	7.7	7.5	5.5^{J}	4.1	4.5	(3.3)^{P}	2.7	2.9	2.7
15	3.0	3.2	3.1	3.2^{F}	3.5	3.2	2.7	4.1	C	C	C	C	C	C	C	C	C	C	C	C	3.9	2.8	2.7	2.9
16	3.0	3.2	3.3	3.4	4.0	3.0	3.0	C	C	6.7	7.6	9.8^{P}	12.0^{P}	10.7	C	C	C	C	C	C	C	2.9	3.0	2.9
17	3.1	3.2	3.0	3.1	3.8	2.8^{F}	2.6	3.5	6.5^{P}	(6.7)^{P}	6.7	7.7^{P}	9.0^{P}	[8.0]^{C}	7.0	6.6^{P}	7.8^{P}	6.4^{P}	4.8	4.2	4.5	4.6	3.3	2.7
18	2.8	3.0	3.1	3.0	3.4	2.7	3.1	4.7	5.6	6.0^{P}	8.2	9.5	10.6^{P}	10.2^{J}	7.7	(7.5)^{P}	S	S	4.6	3.8	3.4	3.4	3.2	2.8^{P}
19	[2.9]^{C}	3.0	3.1	3.3	2.9	C	C	C	C	6.4^{P}	9.3	9.4	10.3	9.0^{J}	7.1^{V}	9.2$^{J}_{P}$	9.6^{P}	6.4^{P}	4.8^{P}	4.2	3.7	M	M	C
20	2.7	2.7^{P}	2.9	3.7	2.6	2.0^{H}	2.1	4.0	5.2	6.7	7.0	7.5	7.4^{J}	7.8^{P}	7.7	9.3^{P}	8.0^{P}	7.8	[5.9]^{C}	4.0	3.1^{J}	2.9	2.5	[2.6]^{C}
21	2.7	2.8	3.2	3.3^{F}	C	C	2.5^{F}	3.7	6.1^{J}	6.1	8.3	9.0^{P}	9.3	(8.5)^{P}	7.7	8.3^{P}	7.2	7.0	4.7	4.0	3.2	3.1	2.8	3.1
22	2.8	2.9	C	C	C	C	C	C	S	7.0	6.7	9.6	S	8.0	S	B	B	(7.4)^{P}	5.3	5.2	4.3	3.9	3.3	3.1
23	3.4	2.7	3.6^{F}	3.7	2.3	2.7	3.0	3.8	5.8^{P}	7.3	B	S	10.1	8.4^{P}	(11.0)$^{T}_{S}$	9.3	7.9	7.2	5.4^{P}	5.8	5.5	3.1	2.3	2.7
24	3.2	2.4	2.4	2.5	2.6	2.6	2.5	3.8	5.7	6.5	7.2	10.2^{J}	10.7	10.7	11.2^{Z}	9.6	B	B	6.7	S	4.0	2.7	2.2	2.6
25	2.6	2.8^{F}	3.2	3.7	3.8	2.7	2.6	3.7	5.8	6.2	7.3	8.3	8.6^{J}	9.0^{J}	(10.7)^{P}	7.5	7.9^{P}	6.1	4.7	4.5	3.3	3.2	2.4	3.0^{F}
26	3.2	3.5	3.6	3.7	3.7	3.3^{F}	3.4	4.3	6.8	6.6	6.4^{P}	8.9	11.3$^{J}_{P}$	(10.4)^{P}	B	7.2	(8.0)^{P}	5.1	5.6^{P}	3.8	4.0	3.3	2.8^{P}	2.6
27	3.1	3.2	3.8	3.3	3.3	C	C	C	C	7.2	6.2	B	B	B	8.1^{P}	7.7	(9.1)$^{T}_{P}$	6.2	4.6	5.2^{P}	3.4	2.7	2.7	2.9
28	3.1	3.3^{F}	3.4	3.4	2.9	2.9	3.0	3.3	6.3^{P}	7.8	7.3^{K}	B^{K}	11.4^{K}	8.8^{K}	(9.0)$^{P}_{K}$	7.7^{K}	8.0$^{K}_{P}$	9.8$^{P}_{K}$	11.2$^{J}_{K}$	7.2^{K}	6.1$^{P}_{K}$	4.9^{K}	5.0^{K}	6.5^{K}
29	4.5^{K}	6.1$^{P}_{K}$	6.0^{K}	4.3^{K}	4.0^{K}	3.8^{K}	2.8^{K}	5.4^{K}	7.0^{K}	B^{K}	B^{K}	7.0^{K}	9.1	8.1	7.2	7.7	7.6	7.0	6.6	3.1	3.2	2.7	2.8	2.4$^{V}_{F}$
30	C	C	C	C	C	C	C	3.3	(7.8)^{P}	7.7	7.5	7.5	9.0	6.6	6.8	C	C	C	4.7	4.7	3.3	3.1$^{V}_{F}$	2.4^{F}	2.6
31	2.5	2.6	2.7^{V}	3.1	3.2	2.6	2.6	3.6	6.2^{J}	B	B	B	B	6.4^{P}	6.8	7.5	7.3	6.1^{P}	5.8	5.7^{Z}	4.4	3.6	2.6	2.9
Mean Value	3.1	3.1	3.3	3.3	3.3	2.9	2.9	4.3	6.9	7.2	7.8	9.1	9.7	8.8	8.4	8.1	7.9	6.8	5.5	4.6	4.1	3.6	3.0	3.1
Median Value	3.0	3.0	3.1	3.3	3.4	2.9	3.0	4.1	6.6	7.2	7.5	9.0	9.8	8.6	8.1	7.9	8.0	6.5	5.2	4.5	4.0	3.3	2.8	2.9
Count	28	28	27	27	26	23	25	25	25	25	25	25	27	26	27	27	22	26	29	28	29	30	29	29

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 1

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h_pF2 | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	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	400	390	370	300	360	(370)^{J}	300	260	250	250	280	270	270^{P}	300^{P}	280	260^{P}	270^{P}	260	250	250	320	350	400	350
2	370	350	310	360	310	370	310	(280)^{S}	270^{P}	B	B	280	260^{P}	S	(260)$^{P}_{S}$	280	260	[270]^{M}	280	270	270	310^{P}	350	350
3	350	350	320^{P}	380	320	370	380	(270)$^{J}_{P}$	(250)^{J}	250	S	280	280	260^{P}	260^{P}	[260]^{C}	250^{P}	250	250	320	S	340^{P}	350	340
4	350	350	380	350	330	300^{F}	350	300	260	240^{P}	(250)^{J}	260	280	S	260^{P}	240	(280)^{P}	260^{P}	250^{P}	250	390	300	300	250
5	310	370	390	310	310^{F}	450^{F}	390	260	S	S	250	290	250	270	300	(260)$^{J}_{P}$	[260]^{C}	260	(280)^{P}	260^{P}	280	320	290	330
6	320	320	310	350	290^{F}	F	360^{F}	260	260	270^{P}	260^{P}	S.	270	B	290	250^{P}	230^{P}	(240)^{J}	[270]^{C}	300	220$^{\overline{X}}$	320	260	300
7	350	360	360	370	320	240	270	270	230	220	250	(260)^{P}	(330)$^{P}_{H}$	(250)$^{J}_{P}$	280^{P}	240^{P}	250	270	250	300	280^{P}	270	310	300
8	M	M	M	M	M	M	M	M	260	290	250	250	(280)^{J}	(260)$^{J}_{P}$	260$^{\overline{X}}$	280	290	260	270	320	300^{P}	370	390	340
9	260	320	410	380	250	240	260	280	240	(260)$^{J}_{P}$	270	270	260^{P}	300	250^{P}	260^{P}	S	(270)^{P}	230	310^{P}	370	(320)^{P}	350	270
10	300	400	400	270	350^{F}	350	450$^{F}_{V}$	300	250	B	280	[270]^{C}	260	230	260	250	250	(250)^{J}	230	330	290	340	320	400
11	310	260	400	370	370	(370)^{F}	(350)^{F}	280	250	250	250	(250)^{J}	250	250	250	290	B	260^{P}	210	350	270	270	320^{F}	330
12	370	400^{F}	380	370^{F}	250	400	340	300	240	250	(270)^{J}	250	260	270^{P}	(250)$^{J}_{P}$	270^{P}	280	240^{P}	230	300	260	240	350	370
13	390	380	340	300	300	280	290	290	250	250	240	(270)^{P}	270	260	250	250	B	(260)^{J}	290	230	300^{V}	320^{H}	C	C
14	C	C	C	C	C	C	C	C	260^{P}	270^{P}	290	(260)$^{J}_{P}$	250	270	250^{P}	250	230	(290)^{J}	280	250	(320)^{P}	300	300	350
15	320	390	380	390^{F}	300	280	250	270	C	C	C	C	C	C	C	C	C	C	C	C	270	300	300	390
16	390	360	370	360	290	350	340	C	C	250	280	300^{P}	290^{P}	260	C	C	C	C	C	C	C	290	300	360
17	350	350	350	350	290	370^{F}	300	280	240^{P}	(250)^{P}	250	(340)^{P}	250^{P}	[260]^{C}	280	270^{P}	260^{P}	260^{P}	270	270	270	290	250	400
18	380	380	340	350	320	350	300	260	230	250^{P}	340	330	290^{P}	(310)^{J}	250	(290)^{P}	S	S	280	260	330	290	300	390^{P}
19	[380]^{C}	380	340	300	350	C	C	C	C	270^{P}	260	300	300	(260)^{J}	270^{V}	(290)$^{J}_{P}$	250^{P}	230^{P}	290^{P}	290	350	M	M	C
20	390	390^{P}	380	260	250	370^{H}	340	[300]^{C}	250	250	250	270	(270)^{J}	260^{P}	260	270^{P}	250^{P}	270	[270]^{C}	270	(290)^{J}	260	370	[360]^{C}
21	350	380	360	320^{F}	C	C	330^{F}	280	(250)^{J}	240	300	250^{P}	280	(280)^{P}	250	250^{P}	260	250	250	280	300	310	350	300
22	310	350	C	C	C	C	C	C	S	250	300	280	S	300	S	B	B	(250)^{P}	280	270	320	310	340	400
23	290	370	300^{F}	260	270	440	300	290	250^{P}	260	B	S	260	300^{P}	(300)$^{P}_{S}$	290	270	250	240^{P}	300	250	250	270	370
24	280	260	400	370	330	300	340	250	240	250	290	(260)^{J}	260	310	290$^{\overline{X}}$	260	B	B	250	S	210	270	340	350
25	370	400^{F}	310	260	250	280	340	290	250	260	250^{B}	290	(290)^{J}	(270)^{J}	(250)^{P}	270	250^{P}	220	260	280	310	290	250	400^{F}
26	350	350	320	300	300	350^{F}	310	250	240	250	250^{P}	300	(280)$^{J}_{P}$	(260)^{P}	B	280	(250)^{P}	250	270^{P}	250	350	300	260^{P}	380
27	350	350	300	290	250	C	C	C	C	270	250	B	B	B	240^{P}	250	(250)$^{J}_{P}$	250	280	260$^{P}_{S}$	250	340	370	360
28	340	350^{F}	340	290	290	370	310	340	300^{P}	290	360^{K}	B^{K}	260^{K}	280^{K}	(280)$^{K}_{P}$	330^{K}	310$^{P}_{K}$	330$^{P}_{K}$	(290)$^{K}_{J}$	290^{K}	350^{KP}	400^{K}	400^{K}	300^{K}
29	480^{K}	350$^{P}_{K}$	300^{K}	420^{K}	390^{K}	340^{K}	420^{K}	280^{K}	270^{K}	B^{K}	B^{K}	A^{K}	280	260	250	270	260	260	250	350	280	260	300	290$^{V}_{F}$
30	C	C	C	C	C	C	C	310	(240)^{P}	250	230	270	240	250	250	C	C	C	260	260	340	300$^{V}_{F}$	320^{F}	350
31	340	350	350^{V}	330	250	360	320	290	(250)^{J}	B	B	B	B	240^{P}	280	270	250	250^{P}	300	240$^{\overline{X}}$	290	270	310	380
Mean Value	350	360	350	330	300	340	330	280	250	260	270	280	270	270	260	270	260	260	260	280	300	300	320	350
Median Value	350	360	350	350	300	350	330	280	250	250	260	270	270	260	260	270	260	260	270	280	290	300	320	350
Count	28	28	27	27	26	23	25	25	25	25	25	24	27	26	27	27	22	26	29	28	29	30	29	29

h_pF2

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 2

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1951

h'F2

135° E Mean Time

Day	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	300	300	300	250	270	290	250	240	230	240	230	250	250	250	250	240	220	210	210	230	230	250	330	270
2	300	270	250	300	250	310	260	250	240	240	250	260	240	250	230	200^{A}	210^{A}	220	210	220	210	220	250	270
3	290	280	250	300	280	330	290	250	240	230	250	250	250	250	250	[220]^{C}	200	220	210	250	230	230	270	280
4	280	290	300	300	260	220	290	240	250	220^{A}	240	250	250	260	250	220	230	220	200	210	320	260	250	220^{A}
5	260	340	310	250	250	310^{F}	270	240	230	220	230	250	220^{A}	250	270	250	[240]^{C}	230^{A}	230^{A}	230^{A}	260^{A}	200^{A}	250	280
6	280	240	260	250	240	300	290	210^{A}	240	230	240^{A}	240	260	250	240	240	220	210	[200]^{C}	200	200	260	240	270
7	300	300	300	300	270	210	250	240	210	210	210	250	290^{H}	240	250	230	200	210	200	240	210	210	250	250
8	M	M	M	M	M	M	M	M	240	220	240	230	270	250	240	250	210	210	210	250	230	280	280	270
9	200	300	290	330	240	230	250	250	230	230	250	250	240	M	M	250	220	200	200	250	280	240	250	240
10	240	300	310	240	230	310	300	250	210	200	260	[250]^{C}	240	220	250	250	220	210	210	260	230^{A}	260	260	340^{A}
11	230^{A}	240	320	300	270	290	300	260	220	230	240	230	240	230	250	220	250	200	200	270	210	250	300^{F}	290
12	300	330^{F}	310	250^{F}	230	350	300	250	220	240	250	240	250	250	240	220	240	200	200^{A}	220	220	200	310	350
13	340	320	290	250	250	240	250	250	220	220	230	240	240	250	250	230	230	200	230	210	200	250^{H}	C	C
14	C	C	C	C	C	C	C	C	220	240	230	240	240	240	250	240	220	220	200	220	220	210	260	280
15	300	320	310	320	250	210	210	240	C	C	C	C	C	C	C	C	C	C	C	C	220	240	250	310
16	330	290	300	290	240	200	280	C	C	220	250	270	260	240	C	C	C	C	C	C	C	280	260	290
17	290	270	270	290	240	220	240	250	220	240	230	250	240	[220]^{C}	210	220	220	210	220	250	230	230	210	350
18	330	300	270	300	260	240	250	230	210	230	270	310	250	280	240	250	240	210	220	220	250	240	250	300
19	[300]^{C}	300	280	250	290	C	C	C	C	240	250	270	250	250	240	260	230	200	200	210	250	M	M	C
20	330	320	300	230	200	260^{H}	300	290	230	220	210	240	260	240	250	250	220	230	220^{A}	220^{A}	250	240	340	[320]^{C}
21	300	300	300	270	C	C	270	230	230	210	280	240	250	240	240	240^{A}	230	210	200	240	250	250	300	250
22	260	290	C	C	C	C	C	C	230	220	210	260	250	230	290	280	230	200	200	220	240	240	250	340
23	250	260	260	230	250	350	250	240	240	250	270	250	250	300	270	240	220	220	200	250	210	220	250	310
24	250	240	330	330	270	250	290	230	220	230	210	240	250	280	250	230	230	210	210	200	200	200	300	310
25	310	350^{F}	260	230	230	220	270	240	220	220	240	280	250^{A}	250	240^{A}	250	220	200	220	250^{A}	250^{A}	240	220	300
26	290	300	260	240	250	260	250	230	220	230	230	270	260	250^{A}	250	230	240	210	200	200	260	230	200^{A}	330
27	290	250	250^{F}	220	220	C	C	C	C	230	210	290	250	250	230	240	230	210	220	220	200	290	300	300
28	270	290	270	210	250	260	250	280	240	240	350^{K}	250^{K}	240^{K}	250^{K}	250^{K}	250^{K}	250^{K}	250^{K}	230^{K}	200$^{KA}_{F}$	240^{K}	300^{K}	300^{K}	260^{K}
29	350^{K}	300^{K}	240^{K}	300^{K}	300^{K}	260^{K}	330^{K}	250^{K}	250^{K}	250^{K}	230^{K}	400^{KA}	270^{A}	250	240	220^{A}	210^{A}	220	210^{A}	300$^{A}_{F}$	250^{A}	230	240	300	260	250^{F}
30	C	C	C	C	C	C	C	260	220	230	220	250	230	250	230	C	C	C	200^{A}	250^{A}	230^{A}	240	300	260
31	290	320	300	270	240	340	300	260	230	230	250	260	240	230	250	250	230	210	240	200^{A}	240	220	250	300
Mean Value	290	290	280	270	250	270	270	250	230	230	240	260	250	250	250	240	230	210	210	230	230	240	270	290
Median Value	290	300	290	270	250	260	270	250	230	230	240	250	250	250	250	240	220	210	210	220	230	240	260	290
Count	28	28	27	27	26	24	25	25	27	30	30	30	30	29	28	28	28	28	29	29	30	30	29	29

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foF1 | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	45	45	A	L	L	L	Q	Q	Q						
2								Q	Q	L	L	L	L	L	Q	A	Q	Q						
3								Q	Q	Q	L	L	L	L	L	C	Q	Q						
4								Q	Q	A	42	45	L	L	L	Q	Q	Q						
5								Q	Q	Q	Q	L	Q	45	L	L	C	Q						
6								Q	Q	Q	Q	45	45	45	L	L	Q	Q						
7								Q	Q	Q	Q	41	L	45	L	Q	Q	Q						
8								M	Q	Q	L	45	L	45	L	L	Q	Q						
9								Q	Q	Q	L	45	L	M	45	40	Q	Q						
10								Q	Q	Q	L	C	Q	40	Q	Q	Q	Q						
11								Q	Q	L	L	41	43	L	L	Q	Q	Q						
12								Q	Q	L	L	L	45	L	L	Q	Q	Q						
13								Q	Q	Q	L	L	Q	L	L	Q	Q	Q						
14								C	Q	L	Q	L	L	Q	40	40	Q	Q						
15								Q	C	C	C	C	C	C	C	C	C	C						
16								C	C	Q	L	L	L	44	C	C	C	C						
17								Q	Q	Q	Q	L	45	C	Q	Q	Q	Q						
18								Q	Q	Q	L	44	L	L	L	L	Q	Q						
19								C	C	Q	L	L	L	L	L	L	Q	Q						
20								Q	Q	Q	Q	L	L	Q	Q	Q	Q	Q						
21								Q	Q	Q	L	L	L	L	L	A	Q	Q						
22								C	Q	Q	Q	L	L	Q	L	L	Q	Q						
23								Q	Q	Q	L	46	L	L	L	L	Q	Q						
24								Q	Q	Q	Q	L	L	L	L	Q	Q	Q						
25								Q	Q	Q	L	L	A	47	A	L	Q	Q						
26								Q	Q	Q	Q	L	L	A	L	Q	Q	Q						
27								C	C	Q	Q	L	L	L	L	Q	Q	Q						
28								Q	Q	Q	L	L	L	L	L	L	Q	A						
29								A	Q	L	L	A	A	L	L	Q	Q	Q						
30								Q	Q	Q	40	L	L	L	40	C	C	C						
31								Q	Q	Q	L	40	51	42	L	L	Q	Q						
Mean Value										45	42	44	46	44	42	40								
Median Value										45	42	45	45	45	40	40								
Count										1	3	9	5	8	3	2								

foF1

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 4

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The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'F1 | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	210	200	A	200^{A}	200^{A}	200	Q	Q	Q						
2								Q	Q	220	200	210	210	220	Q	A	Q	Q						
3								Q	Q	Q	210	200	200	210	220	C	Q	Q						
4								Q	Q	A	230	210^{A}	240	210^{A}	230	Q	Q	Q						
5								Q	Q	Q	Q	220	Q	230^{A}	250	200^{A}	C	Q						
6								Q	Q	Q	Q	230^{A}	220^{A}	200^{A}	220^{A}	240	Q	Q						
7								Q	Q	Q	Q	210	200	240	240	Q	Q	Q						
8								M	Q	Q	210	200	210	200^{H}	220	210	Q	Q						
9								Q	Q	Q	210	230	230	M	M	220	Q	Q						
10								Q	Q	Q	230	C	Q	200	Q	Q	Q	Q						
11								Q	Q	220	210	210	230	210	240	Q	Q	Q						
12								Q	Q	220	210	230	210	200	200	Q	Q	Q						
13								Q	Q	Q	200	220	Q	220	230	Q	Q	Q						
14								C	Q	200	Q	210	230	Q	250	230	Q	Q						
15								Q	C	C	C	C	C	C	C	C	C	C						
16								C	C	Q	200	240	250	230	C	C	C	C						
17								Q	Q	Q	Q	210	240	C	Q	Q	Q	Q						
18								Q	Q	Q	240	200	240	210	220	220	Q	Q						
19								C	C	Q	200	220	240	240	230	240	Q	Q						
20								Q	Q	Q	Q	220	220	Q	Q	Q	Q	Q						
21								Q	Q	Q	210	230	200	230	230	A	Q	Q						
22								C	Q	Q	Q	240	230	Q	220	220	Q	Q						
23								Q	Q	Q	240	240	250	230	230	210	Q	Q						
24								Q	Q	Q	Q	230	200	230	230	Q	Q	Q						
25								Q	Q	Q	220	200	A	230	A	200	Q	Q						
26								Q	Q	Q	Q	210	220	A	250	Q	Q	Q						
27								C	C	Q	Q	240	250	230	210	Q	Q	Q						
28								Q	Q	Q	210	220^{A}	210^{A}	210^{A}	230^{A}	220	Q	A						
29								A	Q	240	220	A	A	220^{A}	210	Q	Q	Q						
30								Q	Q	Q	220	210	240	210	230	C	C	C						
31								Q	Q	Q	220	240	220	210	210	210	Q	Q						
Mean Value										220	210	220	220	220	230	220								
Median Value										220	210	220	220	220	230	220								
Count										6	20	27	25	24	23	12								

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 5

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | foE | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	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								1.7	2.3[J]	2.8	3.0[F]	A	A	A	3.0	2.8	2.5	B						
2								B	2.4	2.7	3.0	3.2	3.0	3.2	3.1	2.9	A	1.9[H]						
3								B	2.2	2.7	3.0	3.2	3.3	3.2	A	C	2.2	A						
4								B	2.4	A	2.9	A	A	3.0	3.0	3.0	2.5	1.7						
5								B	2.4	2.9	2.7	2.9	3.5	3.5[F]	A	A	C	A						
6								B	2.3	2.7	A	A	A	A	A	3.0	2.6	2.0						
7								B	2.2	2.2	3.0	3.1	3.1	3.2	3.0	2.7	2.4	1.8						
8								M	2.2	2.5	2.9	3.0	3.1	3.0	2.9[F]	2.6[F]	2.3	1.7						
9								B	1.8	2.5	M	M	M	M	M	2.6	A	1.8						
10								B	1.8	2.5[F]	2.8	C	A	3.0	2.7	2.5	2.5[H]	A						
11								B	2.1[F]	2.5	2.9	3.1	3.1	3.0	3.0[F]	2.7	2.1	1.8						
12								B	2.0	2.4	2.8[F]	3.1[F]	A[F]	3.0	2.9	2.7	2.2	1.7						
13								B	1.9	2.6	2.8	3.1	3.2	3.1	3.0	2.6	A	1.6						
14								C	2.0	2.6	2.9	3.0	3.1[F]	3.1	3.0	2.6	2.3	2.0						
15								B	C	C	C	C	C	C	C	C	C	C						
16								C	C	2.7	2.9	3.0	3.2	3.2	C	C	C	C						
17								1.6[J]	2.0	2.6	2.9	3.0	3.3	[3.2][C]	3.0	2.9	2.3	1.9						
18								B	2.0	2.5	3.0	3.1	3.1	3.2	2.9	2.8	2.4	B						
19								C	C	2.5	A	2.6	3.0	3.1	3.0	2.6	A[F]	B						
20								C	1.8	2.0	2.6	3.0	3.1	3.2	3.0	2.8	2.3	1.7						
21								B	2.2	2.6	3.2	3.2	3.2	3.2	3.0	A	2.3	1.8						
22								C	2.0	2.5	2.9	3.1	3.1	3.2	3.1	2.8	2.5	1.7						
23								B	2.2	2.6	3.0	3.2	3.2	3.2	3.1	2.7	2.5	2.0						
24								B	2.0	2.6	3.0	3.0	3.3	A	3.0	A	A	1.8						
25								C	2.3	2.6	3.0	A	A	3.3	A	2.9	2.4	1.8						
26								B	2.0	2.5	2.6	3.0	3.3	A	3.3	3.0	2.5	1.7						
27								C	C	2.7[F]	3.0[F]	3.2	3.3	3.3	3.0	2.7	A	1.9						
28								B	1.9	A	A	2.6	2.8	3.0	3.2	3.0	2.4	1.7						
29								B	1.7	2.5	2.9	A	A	A	A	2.6	A	A						
30								B	2.0[F]	2.4[F]	2.8[F]	3.1	3.1	3.3	3.0	C	C	C						
31								B	1.9	2.6[F]	2.9[F]	3.0	3.1	3.2[F]	3.0[F]	2.8[F]	2.3[F]	1.9						
Mean Value								1.7	2.1	2.6	2.9	3.0	3.2	3.2	3.0	2.8	2.4	1.8						
Median Value								1.6	2.0	2.6	2.9	3.1	3.1	3.2	3.0	2.8	2.4	1.8						
Count								2	27	28	26	23	22	24	23	24	20	21						

foE

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 6

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | h'E | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	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								100	100	100	100^{F}	A	A	A	100	100	100	B						
2								B	110	110	100	100	100	100	100	100	100	B^{H}						
3								B	110	110	110	100	100	110	100	(100)^{C}	100	100						
4								B	100	A	100	A	A	100	100	110	100	100						
5								B	120	A	100	100	100	110^{F}	110	A	C	A						
6								B	100^{A}	100	A	110	100	100	100	100	100	100						
7								B	120	110	100	100	100	110	100	100	100	100						
8								M	100	100	100	100	100	100	100^{F}	100^{F}	100	B						
9								B	120	M	M	M	M	M	M	100	A	160^{A}						
10								B	110	110	100	C	A	100	100	110	100^{H}	A						
11								B	100^{F}	100	100	110	100	100	100^{F}	100	110	150^{S}						
12								B	120	120	100^{F}	100^{F}	100^{F}	100	100	100	110	150						
13								B	120	100	100	100	100	100	100	100	A	100						
14								C	120	110	100	110	100^{F}	100	110	100	120	150						
15								B	C	C	C	C	C	C	C	C	C	C						
16								C	C	110	110	110	110	100	C	C	C	C						
17								B	140	110	100	100	110	(100)^{C}	100	100	100	100						
18								B	110	110	100	110	100	100	110	110	100	B						
19								C	C	100	100	100	100	100	100	100	100^{F}	B						
20								C	B	110	110	110	120	100	100	100	100	130						
21								B	110	100	110	110	110	110	110	A	120	B						
22								C	110	110	110	110	100	100	110	110	120	140						
23								B	120	110	110	110	110	110	110	110	120	B						
24								B	130	110	100	100	110	A	100	A	A	100						
25								C	120	110	110	110	A	100	A	110	110	100						
26								B	120	120	110	120	110	A	110	100	100	140						
27								C	C	100^{F}	100^{F}	100	100	100	100	100	100	100						
28								B	110	A	A	100	100	100	100	110	110	B						
29								B	120	110	100	A	A	100	100	100	A	A						
30								B	100^{F}	100^{F}	100^{F}	100	100	100	100	C	C	C						
31								B	140	100^{F}	100^{F}	100	100	100^{F}	100^{F}	100^{F}	100^{F}	150						
Mean Value								100	110	110	100	100	100	100	100	100	110	120						
Median Value								100	120	110	100	100	100	100	100	100	100	100						
Count								1	26	26	27	25	24	26	27	25	23	17						

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

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The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1951

fEs

135° E Mean Time

Day	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	3.1	2.5	E	2.3	E	E	2.3	2.7	G	G	G	4.3	4.4	4.3	4.0	G	G	B	E	E	E	2.1	2.3	E
2	2.3	E	E	2.3	E	E	E	2.5	3.1	G	4.0	G	4.0	4.0	4.4	5.5	3.9	3.1	E	E	2.5	2.5	2.3	E
3	E	2.7	2.1	E	2.4	1.8	E	B	G	G	G	4.0	4.0	3.9	4.0	C	3.1	2.9	2.1	2.9	2.6	2.9	2.3	E
4	E	E	E	E	E	E	2.0	3.0	3.1	5.0	4.1	5.6	5.0	4.0	4.5	4.0	4.0	3.5	2.7	3.3	3.0	3.1	E	3.1
5	2.3	2.2	2.1	2.5	2.5	2.0	2.0	2.6	G	4.3^{F}	4.0	4.5	5.0	4.6^{F}	7.7	5.1	C	4.2	4.0	3.4	4.8	3.4	2.5	2.3
6	4.0	2.5	E	E	2.5	2.3	2.5	3.0	3.3	4.4	5.5	4.5	5.7	4.5	4.5	4.3	4.4	4.2	C	E	E	E	E	E
7	E	E	E	E	E	E	E	2.4	G	G	4.4	5.0	5.5	3.9	G	4.3	3.2^{Y}	3.1^{Y}	2.5	2.5	E	E	2.7	2.5
8	M	M	M	M	M	M	M	M	3.3	4.1	4.5	4.0	4.0	3.8	4.4^{F}	4.0^{F}	3.9^{Y}_{F}	3.1^{F}	2.9^{Y}	2.5	E	2.3	E	E
9	2.3^{Y}	E	2.2	2.2	2.3	2.5	E	B	G	M	M	M	M	M	M	4.0	3.2^{F}	3.2	2.3	2.5	E	2.3	E	E
10	E	2.5	E	2.3	3.1	3.0	E	B	G	4.3	4.0	C	4.0	4.1	4.0	3.9^{Y}	3.9	3.1	2.7^{F}	2.7	3.1	3.4	4.5	3.0
11	4.7	E	2.1^{Y}	2.5	2.6	4.3^{F}	2.6	2.9	4.4^{Y}	4.5	4.3	3.9	4.6^{Y}	4.4	3.9	3.5	3.3	2.9^{F}	2.3	2.5^{F}	2.6	2.8^{Y}	2.5	2.5
12	2.2^{Y}	E	1.9	2.1	2.5	2.5^{F}	2.3	2.3	G	3.9	4.0	4.0	4.0^{F}	3.9	4.5	G	3.9	G	2.5	2.5	2.5	2.5	E	E
13	E	E	E	E	2.5	2.9^{Y}	E	2.6^{F}	G	G	4.2	4.4	4.5	4.3	4.2	4.3	4.5	3.1	2.5	2.5	2.5^{F}	2.5	C	C
14	C	C	C	C	C	C	C	C	4.0	4.2	7.2^{Y}	G	4.2^{F}	4.3	G	4.1^{Y}	G	2.8^{F}	2.4	3.2	2.5	2.5	E	2.3^{Y}
15	E	2.5	E	2.5	E	2.5	2.5	B	C	C	C	C	C	C	C	C	C	C	C	C	2.5	2.5	2.3	2.4
16	2.3	E	E	2.5	E	E	2.0	C	C	4.0^{F}	4.1	G	G	4.3	C	C	C	C	C	C	C	2.4	2.3	E
17	2.5	2.3	2.5^{F}	2.5^{F}	E	2.5	2.4	2.5	3.0^{Y}	3.3	4.1	4.0^{Y}	G	C	G	4.1	3.3	3.2	2.5	3.2	2.5	E	2.5	2.3
18	2.4^{Y}	E	E	E	E	E	2.5	2.7	G	3.2	4.4	4.7	4.3	G	G	3.8	G	2.8^{F}	E	E	2.4^{F}	2.5	2.3	E
19	C	2.3	2.5	E	E	C	C	C	C	G	3.9	4.2	4.0	4.0	4.1	4.2	3.2^{F}	B	2.3	2.3	M	M	M	C
20	E	E	E	2.3	E	2.5	2.5	C	2.2	G	4.5	G	G	G	3.9	4.3	G	2.4	4.5	2.9	2.5	2.3	3.4	C
21	2.5	2.5	E	2.3^{Y}	C	C	2.5	2.5	3.1	G	G	G	G	G	3.9	4.6	G	G	E	2.0	2.4	2.2	2.1	E
22	E	E	C	C	C	C	C	C	G	G	G	G	G	G	G	G	G	3.0	3.1^{Y}	E	E	2.5	E	E
23	E	E	E	E	E	E	E	2.2	G	4.0	G	G	G	G	G	G	G	G	E	E	E	2.2	E	2.0
24	E	E	2.3	1.5	E	E	E	B	G	G	G	4.3	4.1	4.8	G	4.7	3.9	3.2	4.3	M	M	M	M	M
25	M	M	M	M	M	M	M	M	G	4.5	4.5	4.0	5.0	G	4.8	G	G	2.9^{Y}	2.5	4.5	2.6	2.6	E	E
26	E	E	E	E	E	2.2^{Y}	E	B	G	G	G	4.0	4.2	5.2^{Y}	G	G	3.7^{Y}	G	3.1^{F}	3.1^{F}	2.5	2.3	2.5^{F}	E
27	2.3^{F}	2.5^{F}	2.9^{F}	2.5^{F}	E	C	C	C	C	4.0^{F}	4.0	4.0	G	4.0	4.2	4.1	3.7	4.5	3.2	3.2^{F}	2.7^{F}	2.1	2.1	2.6
28	2.5	2.4	E	2.5	2.5^{F}	E	2.6^{Y}	2.4^{Y}	3.2	3.9	4.5^{F}	5.4^{F}	5.5	5.5	4.1	4.0	G	2.1^{Y}	3.1^{Y}_{F}	3.5	2.5	2.6	2.5	2.5
29	2.3	2.5	E	2.5^{Y}	E	2.3	E	2.5^{F}	G	G	4.2	11.3^{Y}	5.4	4.7	4.0	3.8	4.2	3.1^{Y}	3.1	4.7^{F}	4.3^{F}	2.5	2.6^{F}	2.3
30	C	C	C	C	C	C	C	2.3	3.3^{F}	4.0^{Y}_{F}	4.2^{F}	4.0^{Y}	4.0	4.3	4.5	C	C	C	4.8	5.4	3.1	2.5	2.3^{F}	E
31	2.5^{Y}	E	E	2.0	2.5	2.9	2.5^{F}	2.1	G	G	4.0^{F}	3.9	G	4.4	4.0	G	G	2.6^{F}	2.3	3.5	3.0	2.5	E	E
Mean Value	2.7	2.4	2.3	2.3	2.5	2.5	2.4	2.5	3.3	4.1	4.4	4.7	4.5	4.3	4.4	4.2	3.7	3.1	2.9	3.1	2.8	2.5	2.6	2.5
Median Value	2.3	E	E	2.2	E	2.2	2.0	2.5	G	3.3	4.1	4.0	4.0	4.0	4.0	4.0	3.2	3.0	2.5	2.6	2.5	2.5	2.3	E
Count	26	27	26	26	25	23	24	17	27	29	29	28	29	28	28	27	27	26	28	28	28	29	28	27

fEs

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 8

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1951

(M3000)F2

135° E Mean Time

Day	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	2.6	2.6	2.9	3.1	2.8	(2.7)^{J}	3.1	3.3	3.1	3.6	3.5	3.3	3.2^{P}	3.2^{P}	3.3	3.3^{P}	3.2^{P}	3.3	3.5	3.2	2.9	2.7	2.6	2.8
2	2.8	2.9	3.1	2.8	3.0	2.7	3.0	(3.2)^{S}	3.4^{P}	B	B	3.3	3.4^{P}	S	(3.4)$^{P}_{S}$	3.3	3.3	[3.3]^{M}	3.3	3.4	3.3	2.9^{P}	2.9	2.9
3	2.7	2.9	2.8^{P}	2.7	3.0	2.7	2.6	(3.2)$^{J}_{P}$	(3.5)^{J}	3.6	S	3.4	3.3	3.4^{P}	3.3^{P}	[3.4]^{C}	3.4^{P}	3.4	3.3	3.0	S	2.9^{P}	2.9	2.9
4	2.9	2.8	2.8	3.0	3.0	3.1^{F}	2.8	3.2	3.5	3.4^{P}	(3.4)^{J}	3.4	3.1	S	3.4^{P}	3.6	(3.1)^{P}	3.1^{P}	3.3^{P}	3.4	2.7	3.2	3.0	3.3
5	3.0	2.7	2.7	3.0	3.0^{F}	2.5^{F}	3.1	3.3	S	S	3.5	3.2	3.5	3.2	3.2	(3.3)$^{J}_{P}$	[3.2]^{C}	3.1	(3.2)^{P}	3.3^{P}	3.2	2.9	3.1	3.0
6	3.0	3.0	3.0	2.9	3.1^{F}	F	2.8^{F}	3.3	3.4	3.2^{P}	3.3^{P}	S	3.4	B	3.3	3.6^{P}	3.6^{P}	(3.5)^{J}	[3.3]^{C}	3.1	3.6^{Z}	3.0	3.4	3.2
7	2.9	2.8	2.7	2.7	3.1	3.4	3.2	3.4	3.7	3.8	3.5	(3.4)^{P}	(3.2)$^{P}_{H}$	(3.6)$^{J}_{P}$	3.3^{P}	3.6^{P}	3.4	3.5	3.1	3.1	2.8^{P}	3.2	3.1	3.1
8	M	M	M	M	M	M	M	M	3.5	3.2	3.3	3.4	(3.3)^{J}	(3.4)$^{J}_{P}$	3.4^{Z}	3.2	3.5	3.3	3.2	3.0	3.1^{P}	2.7	2.7	3.0
9	3.3	2.9	2.5	2.7	3.4	3.5	3.4	3.3	3.5	(3.4)$^{J}_{P}$	3.3	3.4	3.5^{P}	3.1	3.3^{P}	3.4^{P}	S	(3.4)^{P}	3.4	3.0^{P}	2.7	(2.9)^{P}	2.9	3.2
10	3.0	2.7	2.7	3.2	2.8^{F}	2.9	2.8$^{V}_{F}$	3.2	3.5	B	3.4	[3.4]^{C}	3.4	3.7	3.5	3.5	3.5	(3.5)^{J}	3.7	2.9	3.3	3.0	3.0	2.7
11	3.0	3.4	2.5	2.8	2.7	(2.7)^{F}	(2.8)^{F}	3.3	3.5	3.5	3.4	(3.5)^{J}	3.3	3.4	3.5	3.2	B	3.3^{P}	3.6	2.9	3.4	3.3	3.1^{F}	3.0
12	2.7	2.6^{F}	2.7	3.2^{F}	3.6	2.6	2.9	3.1	3.6	3.5	(3.3)^{J}	3.5	3.4	3.2^{P}	(3.5)$^{J}_{P}$	3.3^{P}	3.2	3.5^{P}	3.6	3.2	3.4	3.0	3.0	2.7
13	2.7	2.7	3.0	3.1	3.2	3.3	3.2	3.2	3.5	3.5	3.6	(3.3)^{P}	3.3	3.3	3.4	3.4	B	(3.3)^{J}	3.2	3.5	3.1^{V}	3.0^{H}	C	C
14	C	C	C	C	C	C	C	C	3.3^{P}	3.4^{P}	3.1	(3.4)^{J}	3.6	3.4	3.5^{P}	3.6	3.7	(3.2)^{J}	3.2	3.3	(2.9)^{P}	3.1	3.2	2.9
15	3.0	2.7	2.8	2.7^{F}	3.1	3.2	3.5	3.2	C	C	C	C	C	C	C	C	C	C	C	C	3.3	3.2	3.0	2.6
16	2.7	2.8	2.8	2.7	3.2	2.8	3.0	C	C	3.5	3.4	3.2^{P}	3.0^{P}	3.5	C	C	C	C	C	C	C	3.1	3.1	2.7
17	2.9	2.9	2.8	2.9	3.4	2.6^{F}	3.0	3.2	3.5^{P}	(3.4)^{P}	3.6	(2.9)^{P}	3.4^{P}	[3.3]^{C}	3.2	3.3^{P}	3.3^{P}	3.2^{P}	3.2	3.3	3.3	3.2	3.5	2.7
18	2.8	2.8	3.0	3.0	3.0	2.8	3.1	3.3	3.8	3.5^{P}	2.9	3.1	3.2^{P}	(3.2)^{J}	3.4	(3.2)^{P}	S	S	3.3	3.4	3.0	3.2	3.5	2.7^{P}
19	(2.7)^{C}	2.7	3.0	3.1	2.9	C	C	C	C	3.2^{P}	3.4	3.1	3.3	(3.4)^{J}	3.2^{V}	(3.2)$^{J}_{P}$	3.6^{P}	3.6^{P}	3.2^{P}	3.2	2.8	M	M	C
20	2.8	2.7^{P}	2.7	3.4	3.4	2.9^{H}	2.9	3.1	3.5	3.5	3.5	3.4	(3.5)^{J}	3.4^{P}	3.3	3.3^{P}	3.5^{P}	3.2	[3.2]^{C}	3.2	(3.3)^{J}	3.4	2.7	[2.8]^{C}
21	2.8	2.7	2.7	3.0^{F}	C	C	2.9^{F}	3.3	(3.6)^{J}	3.6	3.2	3.3^{P}	3.3	(3.1)^{P}	3.5	3.4^{P}	3.4	3.7	3.5	3.2	3.1	3.0	2.8	3.1
22	3.1	2.9	C	C	C	C	C	C	S	3.5	3.2	3.4	S	3.2	S	B	B	(3.5)^{P}	3.1	3.2	3.1	2.9	2.9	2.7
23	3.2	2.8	3.1^{F}	3.4	3.4	2.5	3.1	3.3	3.4^{P}	3.2	B	S	3.2	3.1^{P}	(3.2)$^{JP}_{S}$	3.2	3.3	3.4	3.4^{P}	3.1	3.4	3.5	3.4	2.8
24	3.2	3.3	2.7	2.8	3.0	3.0	2.9	3.4	3.6	3.4	3.2	(3.5)^{J}	3.4	3.1	3.2^{Z}	3.4	B	B	3.5	S	3.7	3.3	3.0	2.8
25	2.8	2.6^{F}	3.1	3.5	3.6	3.3	2.9	3.2	3.5	3.3	3.6	3.2	(3.3)^{J}	(3.3)^{J}	(3.5)^{P}	3.4	3.4^{P}	3.6	3.4	3.3	3.0	3.2	3.4	2.7^{F}
26	2.9	2.9	3.1	3.1	3.1	2.9^{F}	3.0	3.4	3.7	3.7	3.5^{P}	3.1	(3.3)$^{J}_{P}$	(3.3)^{P}	B	3.2	(3.5)^{P}	3.4	3.3^{P}	3.5	2.8	3.1	3.3^{P}	2.7
27	2.8	2.9	3.1	3.3	3.5	C	C	C	C	3.4	3.5	B	B	B	3.5^{P}	3.3	(3.5)$^{J}_{P}$	3.5	3.3	3.3$^{P}_{S}$	3.5	2.8	2.7	2.9
28	3.0	2.8^{F}	2.9	3.2	3.2	2.7	3.0	3.3	3.1^{P}	3.2	2.8^{K}	B^{K}	3.4^{K}	3.3^{K}	(3.2)$^{P}_{K}$	3.0^{K}	3.0$^{P}_{K}$	2.8$^{P}_{K}$	(3.3)$^{J}_{K}$	3.2^{K}	2.7$^{P}_{K}$	2.7^{K}	2.7^{K}	3.2^{K}
29	2.4^{K}	2.8$^{P}_{K}$	3.0^{K}	2.5^{K}	2.7^{K}	2.9^{K}	2.5^{K}	3.2^{K}	3.4^{K}	B^{K}	B^{K}	2.7^{K}	3.3	3.4	3.4	3.3	3.4	3.5	3.6	2.8	3.3	3.4	3.2	3.1$^{V}_{F}$
30	C	C	C	C	C	C	C	3.0	(3.6)^{P}	3.7	3.7	3.4	3.7	3.4	3.6	C	C	C	3.4	3.5	2.9	3.2$^{V}_{F}$	3.0^{F}	3.1
31	3.0	2.8	2.9^{V}	3.0	3.7	2.7	3.0	3.2	(3.5)^{J}	B	B	B	B	3.5^{P}	3.3	3.4	3.5	3.4^{P}	3.1	3.5^{Z}	3.3	3.2	3.1	2.7
Mean Value	2.9	2.8	2.9	3.0	3.2	2.9	3.0	3.2	3.5	3.4	3.4	3.3	3.3	3.4	3.4	3.3	3.4	3.4	3.3	3.2	3.1	3.1	3.0	2.9
Median Value	2.9	2.8	2.8	3.0	3.1	2.8	3.0	3.2	3.5	3.5	3.4	3.4	3.3	3.3	3.4	3.3	3.4	3.4	3.3	3.2	3.1	3.1	3.0	2.9
Count	28	28	27	27	26	23	25	25	25	25	25	25	27	26	27	27	22	26	29	28	29	30	29	29

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 9

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1951

f_{min}F

135° E Mean Time

Day	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	1.3	1.4	1.4	1.2	1.1	1.2	1.5	1.7	2.4	2.8	3.0	3.9[A]	A	A	3.3	2.9	2.5	1.9	1.6	1.5	1.6	1.6	1.6	1.5
2	1.6	1.3	1.5	1.5	1.7[F]	1.3	1.5	1.5	2.4	2.8	3.0	3.2	3.1	3.3	3.2	2.9	A	2.0	1.5	1.5	1.6	1.6	1.5	1.5
3	1.3	1.4	1.3	1.6	1.3	1.2	1.5	1.6	2.5	2.7	3.0	3.2	3.3	3.2	3.1	[2.7][C]	2.3	2.3	1.7	1.5	1.5	1.5	1.5	1.5
4	1.4	1.1	1.0	1.4	1.1	1.2	1.6	1.5	2.5	A	3.2	A	3.6[A]	A	3.6	3.0	2.5	1.7	1.5	1.8	1.9	2.0[A]	1.6	A
5	1.5	1.5	E	1.6	1.1	1.2	1.6	1.7	2.4	2.9	2.8	2.9	A	A	3.5	A	C	3.2[A]	A	2.5[A]	2.7[A]	A	1.5	1.6
6	1.6	1.1	E	E	E	E	1.5	A	2.3	2.7	A	A	A	A	A	3.1	2.6	2.0	[1.8][C]	1.5	1.5	1.5	1.3	1.6
7	1.5	1.3	1.3	1.3	1.3	1.3	1.6	1.5	2.3	2.3	3.1	3.3	3.5	3.5	3.5	2.9	2.4	1.9	1.5	1.5	1.6	1.5	1.6	1.5
8	M	M	M	M	M	M	M	M	2.3	2.7	3.0	3.4	3.2	3.1	3.4	2.7	2.3	1.8	1.6	1.3	1.5	1.5	1.5	1.5
9	1.6	1.6	1.3	1.3	1.3	1.5	1.3	1.5	2.2	2.6	2.9	3.4	3.2	M	M	2.8	2.4	1.8	1.5	1.6	1.5	1.5	1.6	1.5
10	1.3	1.1	1.4	1.3	1.2	1.8	1.4	1.6	2.6	2.5	3.2	[3.4][C]	3.7	3.2	3.6	3.1	2.6	1.8	1.7	1.5	A	1.6	1.7	1.6
11	A	1.1	1.3	E	1.0	1.1	1.5	1.5	2.1	2.5	2.9	3.3	3.7	3.5	3.5	2.7	2.3	1.9	1.6	1.5	1.5	1.6	1.6	1.6
12	1.5	1.2[F]	1.1	1.1[F]	1.3	1.4	1.5	1.6	2.5	2.8	3.1	3.4	3.0	3.1	3.0	3.0	2.6	1.9	A	1.7	1.6	1.5	1.5	1.6
13	1.3	1.2	1.3	1.0	1.4	1.4	1.5	1.5	2.2	2.6	3.0	3.2	3.2	3.3	3.0	2.6	2.3	1.8	1.5	1.6	1.5	1.5	C	C
14	C	C	C	C	C	C	C	C	2.2	2.6	3.2	3.1	3.5	3.7	3.4	2.9	2.5	2.2	1.6	1.6	1.6	1.1	1.5	1.5
15	1.5	1.8	1.4	1.2	1.2	1.4	1.4	1.5	C	C	C	C	C	C	C	C	C	C	C	C	1.6	1.5	1.5	1.5
16	1.5	1.2	1.4	1.3	1.2	1.2	1.5	C	C	2.7	2.9	3.4	3.5	3.2	C	C	C	C	C	C	C	1.4	1.4	1.5
17	1.4	1.2	1.2	1.2	1.2	1.1	1.5	1.6	2.3	3.0	3.5	3.1	3.3	[3.2][C]	3.0	3.0	2.3	2.1	1.4	1.6	1.5	1.5	1.6	1.6
18	1.4	1.2	1.2	1.2	1.2	1.2	1.5	1.4	2.5	2.8	3.0	3.7	3.5	3.2	3.1	2.8	2.5	1.8	1.6	1.5	1.5	<1.6	<1.5	1.6
19	[1.4][C]	1.2	1.2	1.2	1.3	C	C	C	C	3.0	3.3	3.4	3.7	3.6	3.4	2.7	2.5	1.8	1.5	1.6	1.5	M	M	C
20	1.2	1.2	1.2	1.0	1.0	1.2	1.5	<3.5	1.8	2.3	2.9	3.1	3.3	3.2	3.2	3.5	2.5	2.1	A	A	1.7	1.7	1.7	[1.6][C]
21	1.5	1.3	1.3	1.2	C	C	1.5	1.5	2.2	2.4	3.2	3.5	3.6	3.3	3.1	4.0[A]	2.4	2.1	1.5	1.5	1.6	1.5	1.5	1.5
22	1.5	1.2	C	C	C	C	C	C	2.5	3.0	3.3	3.7	3.6	3.6	3.1	3.0	2.6	2.0	1.5	1.5	1.6	1.5	1.5	1.6
23	1.6	1.4	1.3	1.4	1.2	1.3	1.5	1.5	2.2	3.1	3.2	3.3	3.5	3.4	3.1	2.8	2.5	2.0	1.5	1.5	1.5	1.5	1.6	1.5
24	1.5	1.1	1.1	1.3	1.2	1.2	1.5	1.5	2.3	2.9	3.1	3.1	3.3	3.0	3.1	3.5	2.7	1.9	1.6	1.5	1.6	1.7	1.4	1.7
25	1.5	1.6	1.5	1.3	1.6	1.3	1.6	1.5	2.4	3.1	3.1	3.3	4.5[A]	3.3	4.0[A]	2.9	2.5	1.9	1.6	3.0[A]	1.7	1.6	1.5	1.5
26	1.5	1.3	1.4	1.2	1.3	1.3	1.4	1.5	2.4	2.9	3.1	3.4	3.5	A	3.5	3.1	3.0	1.9	1.5	1.6	1.6	1.5	A	1.5
27	1.5	1.1	1.4	1.4	1.4	C	C	C	C	2.8	3.0	3.4	3.4	3.3	3.0	3.2	2.7	2.1	2.3	1.5	1.5	1.5	1.5	1.5
28	1.5	1.2	1.3	1.3	1.4	1.2	1.5	1.5	2.3	2.8	3.1	A	A	A	A	3.1	2.6	1.8	1.5	A[F]	1.6	1.5	1.5	1.5
29	1.4	1.3	1.3	1.4	1.4	1.2	1.4	1.5	2.0	2.8	3.0	6.5[A]	4.5[A]	A	3.1	A	A	2.1	A	A	2.0[A]	1.5	1.4	1.5[F]
30	C	C	C	C	C	C	C	1.5	2.4	2.9	3.1	3.5	3.5	3.3	3.5	C	C	C	A	3.5[A]	2.1[A]	1.6	1.5	1.5
31	1.4	1.5	1.3	1.3	1.7	1.8	1.6	1.6	2.2	2.9	3.1	3.3	3.6	3.6	3.2	2.8	2.7	1.9	1.5	A	1.8	1.5	1.5	1.5
Mean Value	1.5	1.3	1.3	1.3	1.3	1.3	1.5	1.5	2.3	2.8	3.1	3.5	3.5	3.3	3.3	3.0	2.5	2.0	1.6	1.7	1.7	1.5	1.5	1.5
Median Value	1.5	1.2	1.3	1.3	1.2	1.2	1.5	1.5	2.3	2.8	3.1	3.4	3.5	3.3	3.2	2.9	2.5	1.9	1.5	1.5	1.6	1.5	1.5	1.5
Count	27	28	27	27	26	24	25	23	27	29	29	27	26	22	26	26	25	28	24	25	29	28	28	28

f_{min}F

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

Y 10

The Central Radio Wave Observatory
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1951 | fmin E | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	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	1.6	1.8	E	1.6	E	E	1.7	1.6	1.4	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.4	B	E	E	E	1.6	1.6	E
2	1.8	E	E	1.8	E	E	E	1.7	1.4	1.4	1.5	1.6	1.5	1.4	1.5	1.5	1.4	1.5	E	E	1.5	1.6	1.6	E
3	E	1.3	1.4	E	1.3	1.6	E	B	1.4	1.4	1.5	1.6	1.6	1.5	1.4	[1.3]^{C}	1.2	1.6	1.8	1.5	1.5	1.5	1.7	E
4	E	E	E	E	E	E	1.8	1.6	1.5	1.5	1.6	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.5	E
5	1.5	1.7	1.6	1.1	1.5	1.3	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	[1.5]^{C}	1.5	1.6	1.5	1.5	1.6	1.6	1.6
6	1.6	1.8	E	E	1.7	1.8	1.6	1.5	1.5	1.5	1.5	1.7	1.6	1.7	1.7	1.7	1.6	1.6	C	E	E	E	E	E
7	E	E	E	E	E	E	E	1.7	1.4	1.6	1.7	1.5	1.8	1.8	1.7	1.5	1.5	1.5	1.6	1.7	E	E	1.7	1.5
8	M	M	M	M	M	M	M	M	1.4	1.5	1.5	1.5	1.6	1.6	1.5	1.5^{F}	1.5	1.5^{F}	1.6	1.5	E	1.6	E	E
9	1.9	E	1.1	1.6	1.4	1.6	E	B	1.5	M	M	M	M	M	M	1.5	1.5	1.6	1.6	1.6	E	1.8	E	E
10	E	1.8	E	1.8	1.2	1.1	E	B	1.6	1.5	1.6	[1.6]^{C}	1.5	1.5	1.5	1.4	1.4	1.5	1.4	1.4	1.5	1.5	1.5	1.5
11	1.1	E	1.0	1.6	1.4	1.1^{F}	1.5	1.6	<1.4	1.5	1.5	1.7	1.8	1.6	1.5	1.4	1.5	1.5	1.7	1.5^{F}	1.5	1.5	1.6	1.6
12	1.8	E	1.8	1.7	1.6	1.4	1.7	1.8	1.7	1.7	1.5	1.6	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.5	E	E
13	E	E	E	E	1.3	1.3	E	1.5	1.5	1.4	1.5	1.6	1.7	1.7	1.5	1.4	1.4	1.4	1.0	1.5	1.8^{F}	1.9	C	C
14	C	C	C	C	C	C	C	C	1.5	1.5	1.4	1.8	1.6	1.6	1.6	1.6	1.5	1.5	1.2	1.5	1.6	1.8	E	1.8
15	E	1.7	E	1.4	E	1.7	1.8	B	C	C	C	C	C	C	C	C	C	C	C	C	1.4	1.5	1.6	1.8
16	1.8	E	E	1.6	E	E	1.8	C	C	1.5	1.6	1.8	1.8	1.7	C	C	C	C	C	C	C	1.9	1.8	E
17	1.6	1.8	1.8^{F}	1.4	E	1.8	1.8	1.6	1.5	1.5	1.7	2.1	1.8	[1.7]	1.6	1.5	<2.1	1.5	1.6	1.5	1.6	E	1.6	1.8
18	1.8	E	E	E	E	E	1.9	1.6	1.4	1.5	1.5	1.5	1.7	1.8	1.5	1.6	1.5	1.6	E	E	1.7^{F}	<1.6	1.6	E
19	C	1.8	1.8	E	E	C	C	C	C	1.5	1.4	1.4	1.6	1.7	1.5	1.5	1.4	B	1.6	1.6	M	M	M	C
20	E	E	E	1.8	E	1.6	1.5	C	1.5	1.4	1.6	2.1	1.9	1.9	1.5	1.5	1.4	1.5	<2.4	1.5	1.5	1.5	1.6	[1.6]^{C}
21	1.6	1.3	E	1.1	C	C	1.8	1.6	1.5	1.6	1.8	2.0	2.1	2.3	2.2	2.0	1.8	1.4	E	1.8	1.8	1.6	1.8	E
22	E	E	C	C	C	C	C	C	1.5	1.5	1.6	1.9	1.9	2.0	2.2	2.0	1.9	1.5	1.6	E	E	1.6	E	E
23	E	E	E	E	E	E	E	1.7	1.5	2.0	2.2	2.2	2.3	2.3	2.3	2.2	1.8	1.5	E	E	E	1.8	E	1.8
24	E	E	1.7	1.4	E	E	E	B	1.5	1.4	1.6	1.7	1.8	1.7	1.5	1.6	1.4	1.4	1.6	C	M	M	M	M
25	M	M	M	M	M	M	M	M	1.4	1.6	1.6	1.9	1.8	1.8	1.8	1.7	1.6	1.5	1.8	1.5	1.6	1.5	E	E
26	E	E	E	E	E	1.3	E	B	1.6	2.2	2.3	2.7	2.6	3.0	1.5	2.4	2.2	1.6	1.6^{F}	1.5	1.6	1.6	1.6^{F}	E
27	1.7	1.8	1.2^{F}	1.4	E	C	C	C	C	1.5	1.6	1.8	1.9	2.0	1.8	1.5	1.4	1.5	1.5	1.5^{F}	1.7^{F}	1.8	1.8	1.6
28	1.6	1.9	E	1.6	1.8^{F}	E	1.9	1.7	1.5	<1.6	1.4	1.7	1.6	1.8	1.6	1.7	1.5	1.5	1.5	1.5	1.5	1.4	1.7	1.6
29	1.8	1.8	E	1.4	E	2.0	E	1.5	1.4	1.5	1.5	1.5	1.5	1.6	1.7	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.6
30	C	C	C	C	C	C	C	1.8	1.5^{F}	1.5	1.5	1.8	1.7	1.9	1.5	C	C	C	1.5	1.5	1.4	1.5	1.6	E
31	1.6	E	E	1.7	1.4	1.4	1.6^{F}	1.6	1.5	1.5	1.4	1.4	1.8	1.6	1.6	1.5	1.4	1.5	1.7	1.0	1.3	1.5	E	E
Mean Value	1.7	1.7	1.5	1.5	1.5	1.5	1.7	1.6	1.5	1.5	1.6	1.7	1.7	1.8	1.6	1.6	1.5	1.5	1.6	1.5	1.6	1.6	1.6	1.7
Median Value	1.6	E	E	1.4	E	1.3	1.6	1.6	1.5	1.5	1.5	1.7	1.7	1.7	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.6	1.6	E
Count	26	27	26	26	25	23	24	17	27	28	29	29	29	29	28	28	27	26	27	28	28	28	28	28

Sweep 1.0 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

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IONOSPHERIC DATA IN JAPAN FOR DECEMBER 1951

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