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IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1949

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Prepared by THE ELECTRICAL COMMUNICATION LABORATORY

(Denki-Tushin Kenkyujo)

MINISTRY OF TELECOMMUNICATIONS

TOKYO, JAPAN

THE ELECTRICAL COMMUNICATION LABORATORY
(Denki-Tushin Kenkyujo)

MINISTRY OF TELECOMMUNICATIONS

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FOREWORD

Although we have had long period of experience on the ionospheric observations in Japan since 1931, it was unable to publish the results of the observations as restricted by the military officials of the past.

Japan is not allowed to become a member of the International Telecommunication Conference. However, in accordance with the Recommendation of C.C.I.R., we send our results of the ionospheric observations and on radio propagation to the main organizations concerned with radio propagation hereafter.

Symbols and presentation in this report were used in accordance with the Recommendation No. 6 of C.C.I.R. Stockholm 1948: Standardization of Symbols and presentation of Results of Ionospheric Soundings Annex 1-5.

We will be very much appreciated to receive the similar publications from the organizations concerned with radio propagation in the world.

June, 1949

Goro Yoshida, Dr. Eng.
Director of
The Electrical Communication Laboratory,
Ministry of Telecommunications,
Tokyo, Japan

SITE OF THE IONOSPHERIC STATIONS

Ionospheric observation is carried out at five stations in Japan.

The stations are situated as follows :

	longitude	latitude	site
Wakkanai	141° 41.1' E	45° 28.6' N	Wakkanai-machi, Soya-gun, Hokkaido
Fukaura	139° 54.1' E	40° 36.6' N	Fukaura-machi, Nishitugaru-gun, Aomori-ken
Shibata	139° 15.8' E	37° 75.0' N	Seiro-mura, Kitakanbara-gun, Niigata-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

Except both $f_{\min} E$ and $f_{\min} F$, other symbols are used in accordance with recommendation of C.C.I.R. $f_{\min} E$ and $f_{\min} F$ in the table are defined as follows :

$f_{\min} E$ Minimum frequency, on which echo reflected from E-layer begins to appear by use of the observation equipment on routine work.

$f_{\min} F$ Minimum frequency, on which echo reflected from F-layer begins to appear by use of the observation equipment on routine work.

IONOSPHERIC DATA

Feb. 1919		135° E															Wakkanai		45° 23.6' N						
		Mecn Time																	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	3.7	C	C	C	C	C	C	C	C	(10.8)	10.8 ^P	B	11.2	(10.9) ^C	11.0 ^J	10.6 ^J	8.9 ^P	7.1 ^P	5.7	4.5	3.6	2.8	2.7	2.7	
2	3.7	C	C	C	C	C	C	C	C	B	10.8	10.8	11.1	(10.4) ^C	9.6	9.7	8.1	7.4	B	6.5	4.9	4.1	3.8	4.0 ^F	
3	4.0 ^F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	(8.0)	7.7	B	5.6	4.4	3.7	3.3	3.5	
4	3.3	C	C	C	C	C	C	C	C	BF	B	B	12.6	12.4	12.5	12.3	11.3	9.5 ^H	9.1	7.7	6.4	6.3	6.3	6.1	
5	6.0 ^P	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	7.5	(6.3) ^C	5.0	3.7	3.5	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	9.9 ^P	8.0	6.6	5.3	4.9	4.6	4.8 ^H	
8	5.0	4.7	4.7	4.7	4.5	4.5	4.5	4.2 ^F	B	B	11.7	11.5	11.6	B	11.2 ^P	11.2 ^P	B	9.0	8.8	7.4	6.4 ^J	5.6	5.2	5.0	
9	5.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	6.5	5.8 ^J	4.7	3.7
10	4.5	C	C	C	C	C	C	C	C	12.5	12.7	B	12.3	11.0 ^H	B	10.8	10.3	B	B	8.2 ^J	6.5	5.2	5.3	B	
11	B	4.9	4.7	4.6	4.4	4.5	4.6	C	B	(13.3) ^P	C	C	C	C	C	11.7	11.1	10.2	B	B	5.9	6.2	5.2	5.3 ^F	
12	4.8 ^F	B	4.4	4.7	4.6	4.6	5.0	(7.9) ^C	10.7	(12.0) ^C	(13.3) ^P	11.4	11.7	(11.3) ^C	10.9	10.1	9.7	10.0	7.4	6.7	6.6	6.7	6.7	5.3	
13	5.2	5.4	(5.3) ^C	6.0	5.1	5.1	5.2	(8.7) ^C	12.2	12.6	(12.8) ^P	12.5	12.5	(11.8) ^C	B	B	C	C	7.2	B	5.3	5.0	4.6	4.4 ^F	
14	BF	4.5	4.8	4.5	4.3	4.3	4.7	C	B	12.3	13.5 ^P	12.0 ^F	12.4	C	C	C	10.0	(9.3) ^C	8.1	6.5	6.4	6.1	5.7	5.6	
15	5.6	4.7	4.8	(4.8) ^C	4.7 ^P	C	C	C	C	12.0	B	12.3	12.1 ^P	(11.1) ^C	10.1	9.9	9.8	9.7	9.0 ^P	8.3	7.1	7.3 ^P	6.3	6.5	(6.2) ^C
16	6.1	6.5 ^H	(6.1)	5.8	5.6 ^J	5.9	5.9 ^P	(8.2) ^C	10.5	10.5 ^P	C	C	C	C	C	10.0	10.0	10.0	8.3	7.2	7.2	6.5	5.8 ^J	5.4	
17	5.3 ^J	B	5.4	4.8	4.7	4.5	4.6	8.3 ^J	11.9	B	C	C	12.5	11.2	11.1 ^P	10.8 ^P	10.2	10.2 ^P	10.0	8.7	7.3 ^P	6.8	6.7	6.2	
18	5.1 ^J	5.2	5.2	5.0	5.3	(6.3)	5.7 ^P	9.4	C	C	C	C	12.8	12.3 ^F	11.8 ^J	12.0	12.8 ^F	B	10.2	B	C	C	C	C	
19	C	4.4	5.1	5.5	5.0	4.8	5.2	9.1	B	C	C	C	C	(12.1) ^F	(12.3) ^C	12.5	(11.8) ^C	11.1 ^J	9.5	9.1	C	C	C	C	
20	(5.4) ^C	5.0	4.7	4.8	4.9	5.0	5.5	4.2	C	C	C	C	C	C	C	10.3	10.3	B	8.8	(7.4) ^P	B	B	5.5	5.2 ^F	
21	5.0	5.0 ^F	5.0	4.9	4.5	(4.6)	5.0	(8.2) ^C	(12.5) ^C	B	12.2 ^F	12.3 ^P	12.4	(11.6) ^C	(11.7) ^P	B	B	9.9	8.3	B	7.3 ^P	6.5	5.4	5.5	
22	5.2	5.2	4.9	5.1	5.2	5.0	5.0	(8.7) ^C	12.4	(13.4) ^P	C	C	C	C	(11.8) ^P	11.5	10.7	B	B	B	6.8	6.8	6.6	6.4	
23	5.6	5.5	4.7	(4.7) ^C	(4.6) ^P	C	C	C	10.9	S	C	13.4 ^P	(13.8) ^C	(13.9) ^C	12.3	11.0 ^P	12.1 ^P	B	9.7	B	6.2	5.9 ^J	(4.9) ^F	4.9 ^P	
24	4.9	(4.7) ^C	4.6	5.0	4.7	4.7 ^P	C	C	C	C	C	C	12.5	(12.3) ^C	12.1	11.4	10.6	9.2	6.2 ^S	7.4 ^P	6.9	7.0	5.9 ^J	5.3 ^J	
25	5.2	5.3	5.3	5.3	4.9	4.7	4.9	(7.7) ^C	10.5	12.8	13.4	13.3	13.5 ^P	(12.7) ^C	(11.3) ^C	10.8 ^P	10.8 ^P	10.0	8.8	7.6	6.8 ^P	6.9	6.9	5.7 ^J	
26	4.8	5.3	5.7	4.9	5.0	5.0	5.0	(8.4) ^C	11.8	12.0	11.6	12.6	12.4	(12.2) ^C	(11.9) ^C	11.6	10.6	9.4	8.0 ^B	7.2	(6.3) ^C	6.3	5.9	5.8 ^P	
27	6.4	(5.8) ^C	5.4 ^J	5.2	4.7	5.3 ^P	C	C	11.2	12.1	13.3	13.6	13.3	(12.9) ^C	11.7	11.2	11.6	10.6	9.6 ^S	9.1	8.7	6.7	6.4	5.4	
28	5.6	5.5 ^H	5.3	5.6	5.4	5.5	6.2	(9.0) ^C	11.7	13.0	13.9	(13.6) ^C	13.3	C	C	C	C	C	8.9	B	7.6	6.8	6.5	5.9 ^J	
29																									
30																									
31																									
Mecn Time	5.1	5.2	5.0	4.0	4.7	4.8	5.0	(8.7)	11.6	12.3	12.8	12.4	12.5	(12.0)	11.7	11.2	10.3	9.6	8.3	7.2	6.5	6.3	5.7	5.3	
Count	23	17	19	19	19	17	15	13	11	13	12	12	15	16	17	17	20	18	21	19	24	24	24	24	

Sweep 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

hp F₂

Wakkanai

Lat. 45°23.6'N
Long. 141°41.7'E

IONOSPHERIC DATA

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	420	C	C	C	C	C	C	C	C	(280)	260 ^P	B	290	(300) ^C	290	270	260	240 ^P	290	270	300	310	390	330	
2	390	C	C	C	C	C	C	C	C	B	290	290	290	C	B	B	240	310	B	280	250	320	360 ^F	(490) ^F	
3	(480) ^F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	(290)	290	B	260	330	310	330 ^F	400	
4	400	C	C	C	C	C	C	C	C	C	BF	B	B	290	320	340	310	300 ^P	320	300	320	360	310	360	
5	370 ^P	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	250	(280) ^C	300	320	300	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	280	270	280	280	250	320	360	
8	320	350	360	350	350	370	320	240 ^J	B	B	300 ^J	280	300	B	310 ^F	290 ^F	B	290	300	290	280 ^J	350	320	330	
9	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	330	290 ^J	290	310	
10	330	C	C	C	C	C	C	C	C	C	280	B	300	400 ^H	B	330	300	B	B	270	340	300	350	B	
11	B	400	400	430	420	430	420	C	B	(300) ^F	C	C	C	C	320	320	310	B	B	B	350	340	290	370 ^F	
12	280 ^F	B	430	390	320	420	310	(360) ^C	280	(290) ^C	(300) ^F	250	260	(290) ^C	310	280	300	290	320	270	400	340	360	360	
13	S	420	(380) ^C	340	320	360	350	(320) ^C	290	290	(280) ^F	310	300	(310) ^C	B	B	C	C	260	B	250	340	360	360	
14	BF	350	360	360	430	380	360	C	B	300	320 ^P	300 ^F	300	C	C	C	320	(330) ^C	310	290	300	350	350	350	
15	350	320	320	(320) ^F	310	C	C	C	C	C	300	B	300	290	(300) ^C	300	280	250	340	280 ^F	300	340 ^P	330	(350) ^C	
16	360	BH	B	B	J	B	B	C	C	250	300 ^F	C	C	C	C	C	C	300	340	320	310	310	320	J	
17	370 ^J	B	(350)	310	330	370	320	290 ^J	260	B	C	C	C	290	290	340 ^P	330 ^P	300	340	330	350	310	310	B	
18	(440) ^F	430	450	450	380	(330)	330 ^P	270	C	C	C	C	C	330	340 ^J	300 ^J	320	320 ^P	B	360	C	C	C	C	
19	C	330	400	390	370	410	360	300	B	C	C	C	C	(310) ^F	(320) ^C	320	(310) ^C	290 ^J	280	290	C	C	C	C	
20	(330) ^F	310	360	380	330	370	390	230	C	C	C	C	C	C	C	C	300	B	330	(320) ^P	B	B	350	340 ^F	
21	410	410 ^F	410	350	330	(380)	310	(310) ^C	300	B	290 ^P	300 ^F	310	(310) ^C	(310) ^F	B	B	330	310	B	320 ^P	270	340	330	
22	380	320	400	440	410	380 ^H	360	(360) ^F	350	(300) ^F	C	C	C	C	(300) ^F	310	300	B	B	300 ^F	320	320	B	330	
23	350	310	340	(360) ^C	(370) ^F	C	C	C	290	S	C	290 ^P	(300) ^F	(300) ^C	290	290 ^P	320 ^P	B	(290) ^B	B	300	300 ^J	JF	420 ^F	
24	380	(360) ^C	380	320	280	290 ^P	C	C	C	C	C	C	C	(290)	(300) ^C	300	280	260	310	280 ^J	320	320	J	360 ^J	
25	410	410	410	360	320	320	380	(320) ^C	260	310	290	290	290	(310) ^C	(300) ^H	(300) ^P	300 ^P	300 ^P	290	300	300 ^P	300 ^P	290	320 ^J	
26	340	360	350	390	330	320	310	(310) ^C	310	280	360	330	330	(320) ^C	(300) ^C	290	290	290	310	(310) ^C	320	320	330	320 ^J	
27	350	(320) ^C	320	340	390	310 ^J	C	C	290	280	300 ^P	300	300	(300) ^C	290	310	300 ^J	300 ^J	300 ^J	300 ^J	310	310	420	330	
28	340	420 ^H	390	390	340	330	290	(290) ^C	280	300	320	(310) ^J	300	C	C	C	C	C	320	B	310 ^P	320	330	320 ^J	
29																									
30																									
31																									
Median Value	370	360	380	360	330	370	340	(300)	290	300	300	300	300	(310)	300	310	300	300	300	300	300	310	320	330	340
Count	21	16	18	18	18	16	14	12	11	12	12	12	18	15	15	16	20	18	21	18	24	24	19	24	

Sweep 1.0-Mc to 17.0-Mc in 15-min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 45°23.6'N
Long. 141°41.1'E

Wakkanai

h'p:

Feb. 1949

Day	135°E Mean Time											Wakkanai											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
1	320	C	C	C	C	C	C	C	(220)	200	250	230	(280) ^c	250	250	210	200	200	200	210	270	350	300
2	300	C	C	C	C	C	C	C	200	270	280	240	(250) ^c	210	220	210	220	220	210	220	(250) ^A	(260) ^A	A
3	320	C	C	C	C	C	C	C	C	C	C	C	C	C	C	200	200	(210) ^A	200 ^A	210	A	A	300
4	A	C	C	C	C	C	C	C	210	210	200	200	300	310	220	230	210 ^H	230	210	220	260	(230) ^A	270
5	230	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	210	210	250	270	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	200	210	210	250	260	260 ^H
8	250	360	270	270	250	280	250	200	200	210	210	220	220	260	250	260	240	200	200	200	220	250	250
9	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	220	230	240
10	230 ^A	C	C	C	C	C	C	C	C	210	210	200	270	290 ^H	280	250	260	220	220	220	210	220	A
11	(300) ^A	300	300	310	310	300	290	(290) ^c	290	270	220	210	(210) ^c	230	220	210	210	210	220	220	270	220	270
12	270	290	300	300	240	260 ^E	230	(230) ^c	220	210	210	200	210	(240) ^c	270	280	210	270	290	220	210	260	250
13	280	300	(280) ^c	240	220	(200)	270	(240) ^c	210	230	200	220	270	(250) ^c	220	220	280	(260) ^c	240	210	230	260	270
14	270	280	280	260	300	290	270	(240) ^c	210	240	280	250	270	(290) ^c	C	C	300	(240) ^c	220	210	240	250	250
15	240	250	220	(220) ^c	220	230	C	C	280	250	260	270	(260) ^c	250	230	210	210	210	210	240	230	240	250
16	250	290 ^H	300	310	290	270	220	(220) ^c	210	210	C	C	C	C	C	C	200	240	200	220	220	220	270
17	290	280	260	230	220	220	230	230	210	210	280	270	210	200	200	260	220	220	220	210	230	220	300
18	350	330	330	320	300	280	200	200	(230) ^c	210	240	210	220	220	210	250	270	290	200	250	210	C	C
19	C	300 ^A	300 ^A	290	250	300	290	280	210	210	220	280	200	230	210	290	230	220	210	200	C	C	260
20	(250) ^c	250	230	290	250	260	230	200	C	C	C	C	C	C	C	C	280	220	200	210	220	220	260
21	300	310 ^F	310	250	220	300	250	(230) ^c	210	210	210	240	230	(240) ^c	250	230	230	200	250	210	210	200	270
22	290	230	300	250	280	240 ^H	280	(260) ^c	230	230	270	(280) ^c	210	(270) ^c	210	220	200	210	230	230	240	230	250
23	240	240	250 ^A	(280) ^c	300	(270) ^c	240	(230) ^c	220	200	220	200	210	(210) ^c	210	210	200	220	200	210	220	240	300
24	300	(280) ^c	290	240	210	220	210	C	C	200	220	(220) ^c	210	(240) ^c	220	220	210	210	290	220	200	220	300
25	300	300	300	260	230	230	210	(220) ^c	220	200	220	210	220	(230) ^c	210	(220) ^c	220	220	220	210	210	200	220
26	270	270	250	280	260	250	220	(220) ^c	220	220	300	270 [*]	260	(210) ^c	200	210	200	200	200	230	(230) ^c	220	240
27	270	(250) ^c	250	280	300	240	C	C	210	210	230	210	240	(240) ^c	220	220	220	220	210	210	200	220	240
28	250	290 ^H	300	270	260	240	200	(210) ^c	220	220	210	(240) ^c	260	C	C	C	C	C	200	210	220	240	240
29																							
30																							
31																							
Median Value	280	290	270	250	260	230	(230)	220	210	220	220	230	(240)	220	220	220	220	220	210	210	210	230	240
Count	23	19	19	19	19	17	16	16	22	21	21	21	21	19	19	19	23	25	27	26	24	22	23

Sweep -1.0 Mc to 11.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denkikatsushin Kenkyujo) Gotanda, Shinagawa-ku Tokyo, Japan

Feb. 1949

if_h

Wakkanai

Lat. 45°23.6'N
Long 141°41.1'E

IONOSPHERIC DATA

Day	135° E Mean Time																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
1																												
2																												
3																												
4																												
5																												
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30																												
31																												
Mean Value																												
Count																												

Sweep 1.0 Mc To 17.0 Mc in 15 min Manual

Feb, 1949

h_{F1}

Lat. 45°23.6N
Long. 141°41.1E

Wakkanai

IONOSPHERIC DATA

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								C	C	A	A	200	A	C	230	A	A	A						
2							C	C	C	A	200	220	A	C	A	A	A	A						
3							C	C	C	C	C	C	C	C	C	C	C	C						
4							C	C	C	A	A	A	A	210	A	A	A	A						
5							C	C	C	C	C	C	C	C	C	C	C	C						
6							C	C	C	C	C	C	C	C	C	C	C	C						
7							C	C	C	C	C	C	C	C	C	C	C	C						
8							A	A	A	A	200	A	B	B	B	B	B	A						
9							C	C	C	C	C	C	C	C	C	C	C	C						
10							C	C	C	A	A	A	B	B	B	B	A	A						
11							C	A	A	A	A	A	A	C	A	A	A	A						
12							C	200	A	A	A	A	A	C	200	220	A	A						
13							C	A	A	A	A	220	C	A	A	A	220 ^B	220 ^C						
14							C	A	A	A	210	A	A	C	C	C	220	220 ^C	200					
15							C	C	230	220	210	210	C	A	A	A	A	A						
16							C	A	A	C	C	C	C	C	C	C	C	A						
17							A	A	A	A	A	A	A	A	A	A	230	A						
18							A	C	A	A	A	A	A	A	A	A	A	A						
19							250	A	A	A	200	A	A	A	A	A	A	A						
20							A	C	C	C	C	C	C	C	C	C	250	A						
21							C	A	A	A	A	A	A	C	A	250	220	A						
22							C	A	A	220	C	C	A	A	A	A	A	A						
23							C	A	A	A	200	A	A	C	A	A	A	A						
24							C	C	A	A	A	C	A	C	A	A	A	A						
25							C	A	A	A	A	C	A	C	A	A	A	A						
26							C	A	A	A	A	A	A	C	A	A	A	A						
27							C	A	A	A	230	230	C	A	A	A	A	A						
28							C	A	A	A	A	220	(220) ^C	A	A	A	A	A						
29							C	200	A	A	A	C	A	C	C	C	C	C						
30																								
31																								
Mean Layer Count								1	2	3	3	7	4	2	2	4	4	4	2	1				

Sweep 1.0 Mc to 1.0 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotsada, Shinagawa-ku, Tokyo, Japan

Lat. 45°23.6'N
Long. 141°41.1'E

Wakkanai

fE

Feb. 1949

IONOSPHERIC DATA

Day	135°E Mean Time												16	17	18	19	20	21	22	23
	00	01	02	03	04	05	06	07	08	09	10	11								
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
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11																				
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27																				
28																				
29																				
30																				
31																				

Mean Value
Count

Sweep 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

h'F

Wakkanai

Lat. 45°23.6'N
Long. 141°41.1'E

Day	155°E Mean Time												19	20	21	22	23					
	00	01	02	03	04	05	06	07	08	09	10	11						12	13	14	15	16
1							C	C	B	B	A	C	B	B	A	B	A					
2							C	C	A	B	B	C	A	A	A	100	B					
3							C	C	C	C	C	C	C	C	C	(100)	A					
4							C	C	(100)	(100)	B	B	A	(110) ^B	B	A						
5							C	C	C	C	C	C	C	C	C	(100) ^A						
6							C	C	C	C	C	C	C	C	C	C	C					
7							C	C	C	C	C	C	C	C	C	C	C					
8							100 ^H	B	100	100	A	100	100	100	100	100	(100)					
9							C	C	C	C	C	C	C	C	C	C	C					
10							C	C	100	(100) ^A	100	B	B	100	110	B						
11							C	(100)	100	(100)	(100)	(100)	C	A	(110)	100	A					
12							C	(100)	100	(100)	(100)	(100)	C	A	(110)	100	A					
13							C	100	B	B	(100)	B	C	B	B	B	C					
14							C	100	B	B	B	C	C	C	C	B	C					
15							C	C	B	B	B	C	C	B	B	B	90					
16							C	100	100	C	C	C	C	C	C	A	100					
17							100	A	100	100	100	100	A	100	100	100	A					
18							A	C	100	110	110	B	B	B	110	100						
19							100	110	B	B	110	B	B	110	B	B	B					
20							110	C	C	C	C	C	C	C	C	C	B	B				
21							C	(100)	(100)	100	100	(100) ^C	100	100	100	100	A					
22							C	100	100	100	(100) ^C	100	(100) ^C	100	A	100	A					
23							A	C	100	100	A	A	100	(100) ^C	100	100	100					
24							C	C	(100)	B	C	100	(100) ^C	100	100	100	100					
25							C	100	100	A	A	120	(110) ^C	100	(90) ^C	90	110					
26							C	110	100	100	A	100	(100) ^C	100	100	100	A					
27							C	100	100	(100)	100	100	(100) ^C	100	100	100	A					
28							C	100	(100)	100	(100) ^C	100	C	C	C	C	C					
29																						
30																						
31																						
							1	100	100	100	100	100	(100)	100	100	100	100	100	100	100	100	100
							4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

^A Sweep 1.0 Mc to 17.0 Mc in 15 min

^H annual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 45°23.6'N
Long. 141°41.7'E

Wakkanai

fs

Feb. 1949

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	C	C	C	C	C	C	C	C	3.8 (3.7)	3.2	B	C	B	B	B	A	(1.4)	E	E	E	E	E	E
2	E	C	C	C	C	C	C	C	C	A	B	B	B	C	C	C	<E	B	E	E	E	9.1	3.6	3.5
3	3.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	1.8	2.9	5.2F	2.3	2.6	2.5	2.2
4	3.2	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	1.9	E	E	1.9	2.6	2.5
5	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	(1.4)	2.4	2.4	2.4	1.4	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	<E	1.2	E	E	2.0	E	2.7
8	1.4	E	E	E	E	E	E	<E	<E	B	<E	<E	3.9	<E	<E	<E	<E	B	E	1.3	E	E	E	2.2
9	5.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.1	2.0	E	2.0	E	E
10	E	C	C	C	C	C	C	C	C	<E	B	<E	B	B	B	<E	<E	B	B	2.4	E	E	4.2	4.0F
11	3.0	2.0	2.0F	E	E	E	E	C	B	B	(3.4)B	<E	B	C	B	B	<E	2.5	B	E	E	E	E	E
12	E	1.7	2.4	E	E	E	E	C	B	<E	B	B	4.0	C	B	B	B	2.0	1.7	3.5	E	E	3.0	(2.0)
13	E	1.5	C	E	E	E	E	C	2.9	B	B	B	B	B	B	B	B	C	2.7	4.1F	2.0F	E	E	E
14	2.0	2.0	1.6	2.0	1.8	1.8	B	C	<E	B	B	B	B	C	C	C	C	C	E	E	E	E	E	E
15	E	E	E	C	E	E	C	C	C	C	C	C	C	C	C	C	C	B	B	E	E	E	E	E
16	E	E	E	E	E	E	E	C	<E	C	C	C	C	C	C	C	4.1	<E	1.6	E	E	E	E	E
17	2.0	E	E	E	E	E	E	<E	2.8	3.1	<E	B	B	B	B	B	B	2.0	2.5	E	E	E	E	E
18	2.6	E	E	E	E	2.1	2.1	3.5	C	3.6	B	B	B	B	B	B	B	3.1	4.8	1.8	2.5	1.9	C	C
19	C	2.8	3.0	1.9	1.6	E	E	E	<E	<E	B	B	B	B	B	B	B	B	E	E	E	C	C	1.5
20	C	(1.9)	1.6F	B	1.7	E	E	E	2.3	C	C	C	C	C	C	C	C	B	B	E	E	E	E	E
21	E	E	E	E	E	E	E	C	B	B	<E	B	B	C	<E	<E	<E	2.6	2.2	E*	E	E	E	E
22	E	E	E	E	E	E	E	C	<E	<E	<E	C	<E	C	B	3.1	<E	1.9	2.6	2.5	E	E	E	B
23	B	E	E	2.6	C	E	C	1.3	C	<E	<E	3.9	(4.1)	B	C	<E	<E	1.6	E	E	1.8	1.8	1.8	E
24	E	C	(1.3)	B	E	2.0	E	C	C	B	B	B	B	C	B	B	<E	B	B	E	E	E	E	E
25	E	E	E	1.5	1.9	(1.3)	E	C	3.0	2.6	3.3	3.6	3.6	C	(3.7)	C	<E	B	1.9	1.7	1.7	1.5	E	E
26	1.7	2.0	B	2.2	2.4	1.4	E	C	<E	3.4	4.1	4.4	4.4	C	3.7	<E	3.3	1.8	B	1.5	C	(2.2)	E	E
27	E	C	E	E	E	E	C	C	<E	<E	B	<E	B	C	B	<E	<E	<E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	C	<E	3.3	<E	C	<E	C	C	C	C	C	E	E	E	E	E	E
29																								
30																								
31																								
Mean Value																								
Count	23	17	17	15	19	18	15	5	12	12	10	9	7	1	5	7	13	14	23	27	25	25	24	24

Sweep 1.0-Mc To 17.0-Mc In 1.5-min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

F₂-M3000

Wakkanai

Lat. 45°23.6'N
Long. 141°41.1'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	2.7	C	C	C	C	C	C	C	C	(3.1)	J P	B	3.2	C	J	J	3.2	J P	3.2	3.3	3.0	3.1	2.7	3.1	
2	2.6	C	C	C	C	C	C	C	C	B	(3.5)	3.2	3.5	(3.5) ^C	3.3	3.3	3.4 ^P	2.9	B	3.3	3.5	3.1	2.7 ^F	J F	
3	J F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	(3.5)	3.2	B	3.4	2.9	3.1	3.0 ^F	2.7	
4	2.7	C	C	C	C	C	C	C	C	P F	B	B	3.2	2.9	2.8	3.0	2.9	3.1 ^H	2.9	3.2	2.9	2.8	3.0	2.8	
5	2.8 ^P	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.3	(3.2) ^C	3.2	3.0	3.2	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.2 ^P	3.2	3.3	3.2	2.8	3.0	2.9 ^H	
8	3.0	2.8	2.7	2.8	2.8	2.8	3.0	J	B	B	J	3.2	3.1	B	3.1 ^P	3.1 ^P	B	3.3	2.9	3.3	J	2.8	3.0	3.0	
9	2.7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.0	J	3.3	3.0
10	3.0	C	C	C	C	C	C	C	C	C	3.4	B	3.1	2.8 ^H	B	2.8	3.0	B	B	J	2.9	3.1	2.8	B	
11	B	2.6	2.6	2.6	2.5	2.4	2.5	C	B	(3.3) ^P	C	C	C	C	C	2.8	2.9	3.1	B	B	2.8	2.9	3.2	2.7	
12	2.7 ^F	B	2.6	2.7	3.0	2.7	3.0	(3.0) ^C	3.1	(3.1) ^C	(3.1) ^P	3.4	3.2	(3.1) ^C	3.0	3.3	3.1	3.2	3.0	3.3	2.7	2.8	2.7	3.2	
13	2.8	2.6	(2.8) ^C	2.8	3.1	2.8	2.8	(2.9) ^C	3.1	3.2	(3.3) ^P	3.0	3.2	C	B	B	C	C	3.4	B	3.3	3.0	2.8	2.9	
14	3.0	2.8	2.9	2.8	2.5	2.7	2.9	C	B	3.0	3.0 ^P	3.2 ^P	3.1	C	C	C	2.9	(2.9) ^C	3.2	3.3	3.1	2.7	2.9	2.9	
15	2.8	3.1	2.9	(3.0) ^C	3.1 ^P	C	C	C	C	3.1	B	3.1	3.1	(2.1) ^C	3.1	3.2	3.1	2.9	3.2 ^P	3.1	2.9 ^P	2.5	2.9	(2.8) ^C	
16	2.7	2.6 ^H	(2.6)	2.5	J	2.7	3.3 ^P	(3.3) ^C	3.3	3.1 ^P	C	C	C	C	C	C	3.1	2.8	3.0	3.0	3.0	2.9	J	3.1	
17	J	B	2.9	3.1	2.9	2.7	3.0	J	3.3	B	C	C	3.1	3.3	2.9 ^P	2.9 ^P	3.1	2.9	2.9 ^P	2.8	3.0 ^P	3.0	2.6	2.6	
18	2.5 ^F	2.5	2.5	2.8	2.7	(2.8)	2.9 ^P	3.4	C	C	C	C	2.9	J	J	2.9	J	B	2.7	B	C	C	C	C	
19	C	3.0	2.7	2.7	2.9	2.6	2.8	3.2	B	C	C	C	C	C	C	3.2	C	J	3.2	3.2	C	C	C	3.1	
20	(2.9) ^C	3.1	2.9	2.8	2.9	2.7	3.1	3.4	C	C	C	C	C	C	C	C	3.2	B	2.8	(3.0) ^P	B	B	2.7	2.8 ^F	
21	2.6	2.6 ^F	2.6	2.8	2.8	(2.8)	3.1	(3.1) ^C	(3.1)	B	3.3 ^P	3.1 ^P	3.1	(3.1) ^C	(3.2) ^P	B	B	3.0	3.1	B	3.1 ^P	3.2	2.9	2.9	
22	(2.7) ^C	3.0	2.6	2.4	2.6	2.8 ^H	2.8	(2.8) ^C	2.9	(3.2) ^C	C	C	C	C	J	3.0	3.2	B	B	B	3.2 ^P	2.9	2.4	3.0	
23	2.8	3.0	3.3	(2.8) ^C	(2.8) ^P	C	C	C	3.3	S	C	3.2 ^P	(3.1) ^C	(3.1) ^C	3.0	3.1	2.9 ^P	B	3.4	B	3.0	J	J F	2.6 ^P	
24	2.7	(2.6) ^C	2.8	3.0	3.3	3.1 ^P	C	C	C	C	C	C	3.3	(3.1) ^C	3.1	3.4	3.0	J S	2.8 ^P	2.9	3.0	J	J		
25	2.8	2.7	2.6	2.9	3.0	3.0	2.6	(2.9) ^C	3.3	3.2	3.3	3.3	3.0 ^F	(3.0) ^C	(3.0) ^P	(3.0) ^C	3.0 ^P	3.2	3.2	3.1	3.2	3.1 ^P	3.2 ^P	3.1	
26	3.1	2.8	2.8	2.7	2.9	3.0	3.1	(3.1) ^C	3.1	3.2	2.8	3.0	3.0	(3.0) ^C	3.0 ^C	3.1	3.2	3.2	J	3.1	(3.1) ^C	3.0	2.9	3.0 ^P	
27	2.8	(2.8) ^C	J	2.8	2.7	J	C	3.3	3.3	3.3	3.1 ^P	3.1	3.2	(3.1) ^C	3.3	3.0	3.1	J	3.1 ^S	3.0	3.0	3.1	3.0	2.9	
28	2.8	2.6 ^H	2.7	2.6	2.9	2.9	3.1	(3.1) ^C	3.2	3.2	3.0	(3.1) ^C	3.2	C	C	C	C	C	3.0	B	3.0 ^P	3.0	3.0	J	
29																									
30																									
31																									
Mean Value	2.8	2.8	2.7	2.8	2.9	2.8	3.0	(3.1)	3.2	3.2	3.2	3.2	3.1	(3.1)	3.0	3.1	3.1	3.1	3.1	3.1	3.2	3.0	3.0	2.9	2.9
Count	21	17	13	19	18	16	15	11	11	12	10	12	18	12	13	16	18	15	19	18	23	22	21	20	

Sweep 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 45°23.6'N
Long. 141°41'12"E

Wakkanai

f_r min

Feb. 1949

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	C	C	C	C	C	C	C	3.5	3.8	3.4	4.5	(3.2) ^c	3.4	3.2	2.8	1.7	E	E	E	E	E	E	E
2	E	C	C	C	C	C	C	C	3.3	4.0	5.1	3.9	(3.4) ^c	3.4	2.0	2.2	1.6	1.3	1.3	A	A	A	A	A
3	1.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.5	A	A	A	A	A	A	A	A
4	A	C	C	C	C	C	C	C	3.4	3.8	3.9	4.1	4.0	3.5	3.0	2.4	(2.2)	1.3	1.2	1.1	1.3	A	A	A
5	1.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.6	A	1.3	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.9	1.2	1.2	E	1.4	1.3	1.3	1.3
8	1.2	E	E	E	E	E	E	2.0	2.4	3.2	3.4	3.8	4.5	5.2	4.9	4.6	1.9	1.1	A	1.2	1.1	1.4	A	
9	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.3	1.3	1.2	1.1	E	E
10	E	C	C	C	C	C	C	C	C	3.2	3.4	3.9	5.0	5.0	5.0	3.3	2.8	1.8	1.3	1.3	1.3	1.3	A	A
11	A	1.3	1.3	1.5	1.3	1.3	1.4	(2.2) ^c	2.9	3.2	3.8	3.7	3.9	(2.0) ^c	4.1	3.3	2.6	2.1	1.4	E	1.2	1.3	1.3	1.2
12	1.2	E	E	E	E	E	E	C	3.0	3.3	3.5	4.0	3.6	(3.7) ^c	3.8	3.3	3.1	2.0	1.4	A	1.3	1.4	1.6	1.6
13	1.3	1.2	E	E	E	E	E	C	2.9	3.8	3.8	4.0	4.0	(4.1) ^c	4.1	4.1	4.0	C	A	1.3	1.2	1.3	1.3	1.3
14	1.2	1.1	1.1	1.2	1.2	1.2	1.4	(2.2) ^c	2.9	4.2	5.3	5.2	5.3	(5.2) ^c	C	C	4.9	(2.5) ^c	1.3	E	1.2	E	E	E
15	E	1.1	E	C	C	1.2	1.2	C	C	4.1	4.0	4.2	5.1	(5.1) ^c	5.0	3.4	3.0	2.0	E	E	1.1	1.3	1.3	E
16	F	E	E	1.1	E	E	1.2	(2.1) ^c	2.9	3.6	C	C	C	C	C	C	A	1.9	A	1.5	1.2	1.2	1.2	1.2
17	1.2	E	E	E	E	E	1.3	1.9	2.9	3.1	3.6	4.0	4.0	4.0	4.0	3.3	2.9	2.0	A	1.2	1.3	1.2	1.2	1.2
18	A	E	F	E	E	A	A	A	C	2.3	3.5	3.9	5.2	4.1	4.1	3.4	A	2.1	1.6	1.3	1.2	C	C	C
19	C	E	A	E	E	E	E	1.2	2.0	3.4	5.9	3.7	3.8	5.4	3.6	3.4	3.0	2.3	1.3	1.2	C	C	C	1.2
20	(1.2) ^c	1.2	1.2	1.2	1.2	1.2	1.4	2.3	6	C	C	C	C	C	C	C	3.0	2.6	1.1	1.1	E	E	E	E
21	E	E	E	1.2	1.1	1.2	1.3	(2.2) ^c	3.0	3.5	3.9	4.1	(4.0) ^c	3.6	3.3	3.3	2.9	2.0	1.5	1.2	1.2	1.2	1.2	1.2
22	E	E	1.1	E	E	F	1.3	(2.1) ^c	2.9	3.4	(3.5) ^c	3.6	(3.4) ^c	3.9	3.1	2.6	1.9	A	A	1.3	1.3	1.3	1.3	1.2
23	1.2	1.2	A	C	E	C	1.5	(2.4) ^c	3.4	3.3	A	3.8	4.0	(3.8) ^c	3.6	3.1	2.8	1.9	1.2	E	E	E	1.2	E
24	E	C	(2.2)	1.3	E	1.4	1.2	C	C	4.0	3.0	(3.3) ^c	3.5	(3.5) ^c	3.6	3.3	2.6	3.4	1.5	E	1.3	1.4	1.4	1.3
25	E	E	E	E	E	E	1.1	(2.0) ^c	2.9	3.2	A	A	3.8	(3.6) ^c	3.4	(3.3) ^c	2.6	2.1	1.4	A	1.5	1.3	1.3	1.4
26	1.3	1.3	1.2	1.4	1.2	1.2	1.2	(2.1) ^c	2.9	3.2	3.5	3.9	3.8	(3.6) ^c	3.4	3.2	2.9	1.8	2.0	A	C	1.2	E	1.2
27	1.3	C	E	E	E	E	C	C	2.9	3.2	3.8	4.0	(3.9) ^c	3.8	3.2	2.8	2.0	1.1	E	E	E	E	E	E
28	F	E	E	E	E	E	E	C	2.9	3.2	3.6	(3.6) ^c	3.6	C	C	C	C	C	1.3	1.2	1.3	1.2	1.2	1.2
29																								
30																								
31																								
Mean Value	1.2	E	E	E	E	E	1.2	(2.1)	2.9	3.3	3.5	3.9	4.0	(4.0)	3.8	3.3	2.8	2.0	1.3	1.2	1.2	1.2	1.2	1.2
Count	21	17	16	17	19	17	16	12	15	22	19	20	21	20	19	19	21	23	21	21	24	23	20	29

Sweep: L.O. - Mc to H.O. - Mc in .15 - min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

f₃₀₀₀ min

Wakkanai

Lat. 45°23.6'N
Long. 141°41.1'E

IONOSPHERIC DATA

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	C	C	C	C	C	C	C	C	C	3.2 (3.6)	2.8 (3.3) ^c	2.8 (3.4)	2.2 (3.1) ^c	2.2 (3.5)	1.8 B	B (1.2)	E	E	E	E	E	E	E
2	E	C	C	C	C	C	C	C	C	C	1.9 B	2	2	2	3.5	1.8 B	B	E	E	E	E	E	E	E
3	1.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.8 C	1.8 E	E	E	E	E	E	E	E
4	1.2	C	C	C	C	C	C	C	C	C	2.3 B	2.3 B	(2.2) (3.0)	3.0 (2.5)	B	1.2 B	1.3 E	E	E	E	E	E	E	
5	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.1 E	1.1 E	E	E	E	E	E	E
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E	E	E
8	1.2	E	E	E	E	E	E	E	2.2 1.7	1.9 2.1	2.1 2.1	2.1 2.2	1.9 1.8	1.9 1.8	1.9 1.8	1.8 1.1	1.1 E	E	E	E	E	E	E	
9	1.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.3 E	E	E	E	E	E	E
10	E	C	C	C	C	C	C	C	C	1.8 C	2.0 2.1	2.0 2.1	2.0 2.1	2.0 2.1	1.8 B	1.8 B	1.4 B	B	B	1.3 E	E	E	E	
11	1.3	1.2	1.2	E	E	E	E	E	1.8 1.8	2.4 3.0	3.0 3.0	3.0 2.8	2.1 2.8	2.1 2.8	2.1 1.8	1.8 E	B	B	E	E	E	E	E	
12	E	1.2	E	E	E	E	E	E	1.2 1.9	2.3 3.0	3.0 2.4	(2.7) ^c 2.3	(2.3) 2.3	(2.3) 2.3	1.8 B	1.2 B	1.2 E	1.4 E	1.3 E	E	E	E	E	
13	E	1.2	C	E	E	E	E	E	1.7 1.8	B 3.0	3.0 B	C B	C B	C B	B B	B B	C	1.2 B	1.3 E	1.2 E	E	E	E	
14	1.2	1.1	1.3	1.8	1.2	1.2	B	C	2.0 B	B B	B B	B B	B B	B B	B B	B B	B	C	E	E	E	E	E	
15	E	E	E	E	E	E	E	E	C	C	C	C	C	C	C	C	B	1.2 E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	2.0 2.1	C C	C C	C C	C C	C C	C C	C C	1.8 B	1.1 E	1.1 E	E	E	E	E	
17	1.2	E	E	E	E	E	E	E	1.4 1.4	1.8 1.8	1.8 1.9	1.9 2.1	1.8 1.8	1.8 1.6	1.8 B	1.6 E	E	E	E	E	E	E	E	
18	1.2	E	E	E	E	E	E	E	(1.5) ^c 1.9	2.0 2.3	2.3 2.4	B B	B B	B B	B B	1.8 B	1.1 E	1.3 E	1.1 E	1.2 C	C	C	C	
19	C	E	E	E	E	E	E	E	1.2 1.9	(3.0) B	2.9 B	3.2 2.3	B B	2.1 B	2.1 B	2.1 B	B	E	E	E	E	E	E	
20	(1.3) ^c	(1.7)	1.3	B	1.3	E	E	1.4	C	C	C	C	C	C	C	C	B	B	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	1.5 2.3	2.2 2.7	2.8 (2.7) ^c	2.9 2.7	2.7 2.7	2.7 2.7	2.7 2.7	1.9 B	1.1 E	1.5 E	E	E	E	E	E	
22	E	E	E	E	E	E	E	E	1.3 1.4	1.4 (1.8) ^c	(1.5) ^c 1.5	1.5 1.4	1.5 1.4	1.5 1.4	1.5 1.4	1.5 1.4	1.2 E	1.2 E	1.8 E	E	E	E	E	
23	B	E	E	E	E	E	E	E	1.5 1.5	2.0 1.8	2.1 (2.1) ^c	1.5 1.3	1.3 1.3	1.3 1.3	1.3 1.3	1.3 B	1.2 E	1.2 E	E	E	E	E	E	
24	E	C	(2.2)	B	E	1.7	E	C	C	1.6 (2.2)	(1.9) ^c	1.6 (1.5) ^c	1.5 1.3	1.4 1.3	1.4 B	1.3 E	1.3 E	E	E	E	E	E	E	
25	E	E	E	1.2	1.6	(1.2)	E	C	1.2 1.3	1.5 1.9	2.2 (2.0) ^c	1.9 (1.8) ^c	1.9 (1.8) ^c	1.9 (1.8) ^c	1.9 (1.8) ^c	1.2 B	1.2 E	1.1 E	E	E	E	E	E	
26	1.3	E	B	1.2	E	1.2	E	C	1.4 1.4	1.6 1.9	1.8 (1.8) ^c	1.5 1.3	1.3 1.2	1.2 1.2	1.2 1.2	1.2 1.2	E	B	1.2 E	(1.4) ^c	1.5 E	E	E	
27	E	C	E	E	E	E	E	C	1.2 1.4	1.5 1.9	2.0 (1.8) ^c	1.4 1.4	1.4 1.4	1.4 1.4	1.4 1.3	1.3 E	1.2 E	E	E	E	E	E	E	
28	E	E	E	E	E	E	E	C	1.4 1.4	1.5 (1.7) ^c	1.8 C	C C	C C	C C	C C	C C	E	E	E	E	E	E	E	
29																								
30																								
31																								
Median Value	E	E	E	E	E	E	E	(1.2)	1.5	1.8	2.0	2.1	2.2	(2.5)	2.2	1.8	1.8	1.1	E	E	E	E	E	E
Count	24	17	17	15	18	15	5	5	16	20	16	17	16	15	14	14	17	19	23	27	26	25	24	24

Sweep 1.0 Mc to 17.0 Mc in 15 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 40°36'N
Long. 139°54'E

Fukaura

ff.

Feb. 1949

135°E Mean Time

Dev	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
1	32	35	38	36	34	31	32	56	85	104	118	B	B	11.5 J	11.3	11.5	9.3	7.4	6.2	5.4	4.2	3.7	3.2	3.1											
2	34	36	37	38	25	35	35	56	84	99	116	108	110.0 P	10.5	10.5	9.9	9.0	7.6	7.1	7.1	5.1	4.2	3.8	3.6											
3	39	50	44	44	37	30	34	83	91	113	116	118	120	11.6	11.0	11.1	10.3	9.1	7.8	7.2	5.0	3.9	3.5	3.4											
4	33	32	34	36	36	31	35	60	C	C	C	C	C	C	12.0	11.8	10.9	10.7	7.9	8.0	6.5	6.2	6.1	5.1											
5	52	52	51	52	50	46	48	67	97	C	C	C	11.3	11.4	11.1	10.8	10.0	8.3	8.0	6.1	4.3	4.3	4.3	4.2											
6	42	49	42	41	38	37	48	72	96	113	118	(11.1)	10.3	10.6	10.6	10.5	10.1	9.3	7.8	8.0	6.7	5.8	5.0	4.7											
7	47	50	43	41	41	C	C	C	11.6 (12.1)	12.6	B	B	B	11.9	12.0	10.8	10.5	10.0	10.0	8.1	6.5	5.8	5.4	5.3											
8	51	46	48	49	45	44	45	89	113	112	123	120	11.3	11.6	11.4	11.5	10.8	10.0	10.0	7.8	5	6.2	5.6	5.5											
9	55	49	48	46	50	51	43	73	98	122	116	122	11.9	11.7	11.5	10.8	10.5	9.2	8.2	8.1	7.4	6.6	5.5	5.2											
10	50	51	50	50	48	48	50	82	95	112	B	12.2	12.0	11.6	11.2	10.4	10.6	9.8	8.4	5	7.4	5.8	5.5	5.3											
11	52	52	52	(5.0) C	48	49	47	80	C	C	C	C	C	C	C	C	C	1.2	8.0	7.8	5.8	6.6	6.2	5.8											
12	51	50	50	(4.9) C	47	45	48	86	104	117	123	11.7	11.8	10.6	10.4	10.5	10.4	10.0	9.1	7.5	7.3	7.2	6.9	6.0											
13	59	57	53	55	62	65	68	81	116	118	124	11.9	(12.2)	12.0	11.1	10.5	10.2	9.8	8.7	7.4	6.2	5.4	5.0	5.0											
14	50	50	48	45	42	44	51	85	103	119	123	125	12.5	11.0	10.4	10.6	10.1	9.8	8.7	7.9	7.2	6.6	C	C											
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	8.1	7.6	7.2	6.9	6.5										
16	62	57	56	60	58	58	66	79	100	119	117	123	120	11.2	11.5	11.6	11.0	10.2	8.8	7.9	7.4	7.0	6.2	6.0											
17	55	53	53	58	50	49	50	78	100	120 P	B	B	12.0 P	11.3 P	11.0	11.2	11.0	10.6	10.0	8.8	8.2	7.8	7.2	6.7											
18	63	63	62	68	71	75	70	84	C	C	C	C	C	C	C	C	C	C	10.1	8.8	8.3	7.1	6.2	6.0											
19	61	60	57	57	55	56	59	113	113	B	B	B	B	12.5 B	B	12.5 P	12.5	11.8	10.6	9.2	8.8	6.9	6.7	6.0											
20	57	56	53	52	52	51	58	90	102	(11.1) P	12.1	(12.0) P	11.8	12.0	11.6	11.7	11.5	10.7	9.5	8.9	8.1	7.2	5.6	4.8											
21	48	54 P	50	52	50	47	75	93 P	113	123	11.9	122	12.6	12.3	(12.2) C	12.0	11.1	10.7	9.5	8.6	8.1	7.0	6.6	6.2											
22	60	58	58	47	52	53	52	72	C	C	C	C	C	C	C	C	C	C	C	9.1	8.4	6.8	6.2	6.8											
23	63	57	54	51	51	52	58	84	C	C	C	C	C	C	C	C	C	11.5	10.6	9.4	7.5	6.4	5.8	5.2											
24	56	53	47	54	53	53	61	63	C	C	C	C	C	C	C	C	C	C	C	8.6	7.9	7.0	6.2	5.0											
25	58	55	56	58	54	47	50	79	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C											
26	C	C	5.6	5.1	5.2	5.0	5.3	8.3	10.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C											
27	56	53	55	51	48	52	58	90	C	C	C	C	C	C	C	C	C	C	C	C	8.9	8.4	7.6	6.7	6.1										
28	63	61	63	62	60	60	70	93	C	C	C	C	C	C	C	C	C	11.2	C	C	C	C	C	C											
29																																			
30																																			
31																																			
Median Value	55	53	51	51	50	49	51	83	101	117	119	120	120	11.6	11.2	11.2	10.6	10.0	9.7	8.0	7.4	5.8	6.1	5.7											
Count	26	25	27	27	26	26	26	26	18	13	12	12	14	16	17	18	18	21	22	26	25	26	25	26	26										

Sweep 10 Mc to 17.0 Mc in 15 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 40°36.6'N
Long. 139°04.1'E

Fukaura

hp F₂

Feb. 1949

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	400	400	390	300	310	300	320	270	270	300	290	B	B	300 ^J	300	300	300	280	270	330	280	290	320	350	410
2	430	400	380	370	330	330	300	250	250	290	290	280	300	290	300	280	280	280	320	270	280	310	340	440	440
3	440	390	380	370	290	350	320	250	250	290	280	300	270	310	310	300	270	290	240	260	300	320	320	380	380
4	430	420	400	350	350	320	370	350	C	C	C	C	C	C	C	C	350	310	350	290	380	(370)	340	420	420
5	450	410	410	400	360	390	350	290	290	C	C	C	250	310	320	310	270	310	290	280	310	410	370	340	340
6	400	400	420	410	360	390	340	300	270	280	280	(270)	250	300	310	300	310	280	350	320	310	350	410	470	470
7	490	440	400	460	450	C	C	C	290	(290)	290	B	B	B	370	370	320	330	300	330	320	350	400	470	470
8	360	320	390	370	350	380	340	290	270	280	290	300	320	330	350	320	300	240	(310)	320	S	350	340	370	370
9	330	390	450	470	410	310	310	280	270	290	270	310	310	320	330	300	350	290	360	310	340	320	340	370	370
10	380	400	400	390	360	380	320	270	250	300	B	320	310	(330)	340	320	310	300	370	320	310	330	410	380	380
11	410	390	400	(430)	450	450	420	320	C	C	C	C	C	C	C	C	320	340	320	320	350	320	310	380	380
12	400	410	410	(380)	340	430	380	280	300	290	290	330	340	330	350	320	320	320	350	340	350	350	320	350	350
13	440	410	430	430	390	440	350	300 ^J	280	310	300	320	(320)	320	330	330	320	310	310	310	330	350	370	340	440
14	370	330	350	380	420	430	370	250	270	280	310	320	300	320	360	350	330	320	340	290	320	360	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	390	390	410	430	430	410	300	270	300	300	300	320	330	330	370	350	350	340	320	350	330	350	370	370	330
17	380	400	380	340	340	380	340	270	270	300 ^P	B	B	310 ^P	320 ^P	320	370	340	330	350	350	370	320	320	380	420
18	340	450	500	470	440	330	330	290	C	C	C	C	C	C	C	C	C	C	C	C	350	310	310	390	390
19	400	380	390	380	370	420	350	260	260	260	B	B	B	350	B	330	330	320	340	330	310	350	350	350	
20	380	370	330	340	350	370	320	270	270	(290)	290	(300)	310	330	300	370	320	310	330	320	330	300	360	350	350
21	330	450 ^F	430	350	350	420	320	300 ^F	300	300	300	310	330	340 ^P	350	350	350	340	320	320	310	370	400	420	420
22	430	390	410	420	430	350	370	350	C	C	C	C	C	C	C	C	C	C	C	C	350	330	360	390	350
23	330	320	390	450	440	350	380	320	C	C	C	C	C	C	C	C	C	C	300	310	330	370	340	420	420
24	390	370	440	350	360	340	320	340	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	430	400	410	380	340	330	340	290	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	350	350	350	340	310	270	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	350
27	390	350	340	380	410	330	320	290	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	380
28	410	370	420	370	350	370	340	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	350
29																									350
30																									
31																									
Median Value	400	400	400	380	360	370	340	290	270	290	290	310	310	330	330	330	320	310	330	320	320	350	350	350	380
Comit	26	26	27	27	27	26	26	26	18	15	13	12	14	16	17	18	18	21	22	26	25	26	25	26	26

Sweep - 1.0 Mc to 1.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

hr:

Fukaura

Lat 40°36'N
Long 139°54'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	330	330 ^A	300 ^A	250 ^A	260	270	260	220	210	220	230	240	230	240	250	250	240	220	230	240	250	250	250	A	330
2	340	340	300	280	280	270	230	220	220	230	230	230	230	240	240	240	230	220	270	220	230	270	240	300	
3	380	360	300	270	230	270	280	220	210	220	230	220	240	240	260	260	230	220	220	220	240	240	270	320	
4	(340)	(350)	340 ^A	320	290	310	310	280	C	C	C	C	C	C	280	250	240	220	230	(230)	230	(230)	270	290	
5	310	320	290	270	240 ^E	250 ^E	280	260	260	C	C	C	250	250	250	250	230	220 ^H	240	210	240	300	300	290	
6	300	310	320	300	300	300	300	240	230	230	240	(240)	230	220	230	230	250	230	230	250	230	270	310	360	
7	360	340	300	290	280	C	C	240	(250)	250	230	250	300	300	300	280	220	230	230	220	220	300	300	300	
8	290	280	280	280	260	270	300	240	230	220	220	230	230	290	270	280	240	250	(240)	220	230	250	270	280	
9	290	290	330	350	310	230	240	230	220	230	220	230	230	220	210	230	220	220	270	260	240	240	270	280	
10	280	280	310	300	280	280	260	230	220	220	220	230	230	(330)	230	(280)	220	230	210	250	230	230	280	300	
11	320	300	300	(320)	340	330	300	270	C	C	C	C	C	C	C	C	250	240	250	240	250	(280)	290	290	
12	290	310	310	(290)	270	300	300	240	230	230	240	230	270	280	260	300	240	230	240	230	240	250	240	240	
13	300	300	310	320	330	300	290	260	230	260	240	230	250	270	290	300	270	240	230	230	240	270	300	300	
14	290	280	280	280	280	280	220	220	220	230	230	240	250	220	230	250	250	250	230	250	250	240	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	250	240	270	270	
16	260	290	300	310	290	290	240	230	230	240	230	290	280	230	300	280	240	250	220	250	240	260	260	270	
17	270	300	290	250	250	290	270	220	220	220	240	220	220	230	230	220	250	240	250	240	260	260	300	300	
18	330	320	360	350	320	260	210	240	C	C	C	C	C	C	C	C	C	C	230	230	250	250	290	290	
19	310	300	280	280	260	320	280	230	220	230	220	220	220	230	230	230	220	240	220	230	240	240	250	250	
20	280	270	280	290	280	240	250	220	210	(230)	240	(250)	260	230	260	260	250	240	220	250	250	230	260	280	
21	280	380	320	280	230	310	280	220	230	240	250	240	240	240	240	240	230	240	240	260	240	250	290	290	
22	300	300	300	320	310	250	290	300	C	C	C	C	C	C	C	C	C	C	C	C	220	230	240	280	
23	260	270	270	330	340	270	280	250	C	C	C	C	C	C	C	C	C	230	230	230	220	220	260	310	
24	300	280	270	290	300	290	270	290	C	C	C	C	C	C	C	C	C	C	220	240	240	260	280	290	
25	320	300	300	280	280	260	280	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
26	C	C	260	260	260	250	250	230	C	C	C	C	C	C	C	C	C	C	C	C	250	260	270	280	
27	290	290	260	260	310	260	260	220	C	C	C	C	C	C	C	C	C	C	C	C	250	260	230	290	
28	290	290	280	290	260	240	230	220	C	C	C	C	C	C	C	C	C	260	C	C	C	C	C	250	
29																									
30																									
31																									
Median Values	300	300	300	290	280	270	280	240	230	230	230	240	240	240	250	250	240	230	230	230	240	250	270	290	
Cont'd	26	26	27	27	27	26	26	26	18	16	16	16	17	17	18	18	18	21	22	26	26	26	24	26	

Sweep 1.5-Mc to 1.5-Mc in 1.5 min

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
 (Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Day	Feb. 1949		f _o F ₂		135°E Mean Time																	Fukaura					Lat. 40°36'N Long. 139°54'E	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
1						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
2						Q	Q	Q	L	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
3						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
4						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
5						Q	Q	Q	L	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
6						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
7						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
8						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
9						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
10						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
11						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
12						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
13						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
14						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
15						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
16						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
17						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
18						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
19						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
20						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
21						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
22						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
23						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
24						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
25						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
26						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
27						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
28						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
29						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
30						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
31						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
Median Value																												
Count																												

Sweep 10 Mc to 17.0 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
 (Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 40°35'N
 Long. 139°54'E

Fukaura

h Fr

Feb. 1949

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	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
2						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
3						Q	Q	Q	Q	Q	Q	Q	Q	Q	220	230	Q	Q	Q	Q					
4						Q	Q	Q	Q	Q	Q	Q	Q	Q	240	Q	Q	Q	Q	Q					
5						Q	Q	Q	Q	Q	Q	Q	Q	220	Q	Q	Q	Q	Q	Q					
6						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
7						Q	Q	Q	Q	Q	Q	Q	Q	220	250	230	Q	Q	Q	Q					
8						Q	Q	Q	Q	Q	Q	Q	Q	220	230	230	Q	Q	Q	Q					
9						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
10						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	230	Q	Q	Q	Q					
11						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
12						Q	Q	Q	Q	Q	Q	Q	Q	220	230	220	230	Q	Q	Q					
13						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	250	Q	Q	Q					
14						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	230	Q	Q	Q	Q					
15						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
16						Q	Q	Q	Q	Q	Q	230	240	Q	Q	240	Q	Q	Q	Q					
17						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
18						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
19						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
20						Q	Q	Q	Q	Q	220	Q	Q	Q	220	230	Q	Q	Q	Q					
21						Q	Q	Q	Q	Q	230	Q	Q	Q	Q	Q	Q	Q	Q	Q					
22						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
23						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
24						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
25						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
26						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
27						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
28						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
29						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
30						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
31						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
Media																									
Value																									
Count																									

Sweep 1.0 Mc to 11.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

fE

Lat. 40°36'N
Long. 139°54.1'E

Fukaura

Day	135° E Mean Time											Fukaura													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	25
1							A	B	2.6	3.0	B	B	B	B	3.3	(3.0)	B	(1.3) ^J	B						
2							E	2.0	2.5	3.2	3.4	B	B	(3.4)	A	2.5	1.4 ^J	A							
3							E	1.8	2.6	A	A	3.4	B	A	3.2	3.1	2.5	A	A						
4							B	1.7	C	C	C	C	C	C	C	3.0	1.4	B	B						
5							B	1.4	A	3.2	C	C	3.5	B	3.3	A	2.5	1.5	A						
6							E	1.7	2.5	A	A	C	A	A	B	3.2	2.6	2.1	E						
7							C	C	2.6	(3.0) ^G	3.4	3.5	A	3.7	A	A	A	(1.8) ^J	B						
8							B	2.2	2.7 ^H	2.9	3.2	3.6	3.4	3.5	3.5	A	2.6	2.0	C						
9							E	1.9	2.4	3.0	B	B	B	A	B	A	2.7	2.0	B						
10							E	2.1	2.7	3.2	3.5	3.5	3.5	C	A	A	A	2.1	A						
11							E	2.1	C	C	C	C	C	C	C	C	C	2.0	E						
12							E	2.2	2.3	A	A	B	B	3.4	A	A	A	2.0	E						
13							1.5	2.1	2.6	3.2	B	3.7	B	B	3.5	3.2	2.9	2.2	E						
14							E	1.8	2.7	3.0	3.2	B	B	B	A	3.2 ^J	3.0	2.6	1.6	E					
15							C	C	C	C	C	C	C	C	C	C	C	C	C						
16							1.1	2.0	2.7	3.2	B	B	B	B	3.4	3.0	2.6	1.7	B						
17							E	1.8	2.5	3.2	A	A	B	B	3.4	3.3	2.8	2.0	E						
18							E	1.6	C	C	C	C	C	C	C	C	C	C	A						
19							E	2.0	3.1	B	B	B	B	B	B	B	A	A	E						
20							E	1.9	2.8 ^H	(3.0) ^C	3.2	C	B	3.4	3.1	3.0	2.8	2.1	B						
21							E	2.3	2.4	A	3.3	A	A	(3.2) ^J	A	3.0	2.7	2.2	(1.4) ^J						
22							(1.2) ^J	2.1	C	C	C	C	C	C	C	C	C	C	C						
23							A	2.1	C	C	C	C	C	C	C	C	C	C	C						
24							E	E	C	C	C	C	C	C	C	C	C	2.1	E						
25							E	(2.0)	C	C	C	C	C	C	C	C	C	C	(1.7) ^B						
26							E	2.2	2.7	C	C	C	C	C	C	C	C	C	C						
27							E	2.4	C	C	C	C	C	C	C	C	C	C	C						
28							1.2	2.2	C	C	C	C	C	C	C	C	C	C	C						
29																									
30																									
31																									
Mean Value							E	2.0	2.6	3.1	3.3	3.6	-	3.4	3.4	3.0	2.6	2.0	-						
Count							21	25	17	12	7	5	3	6	10	10	13	18	10						

Sweep 1.0 Mc to 17.2 Mc in 15 min Manual

critical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shibagawaku, Tokyo, Japan

Lat. 40°36.6 N
Long. 139°54.1 E

Fukaura

h'e

Feb. 1949

IONOSPHERIC DATA

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							A	B	110 ^B	110 (110)	(110)	B	B	B	100	100	B	A	B					
2							E	B	110	110	110	B	B	130	120	A	A	B	A					
3							E	120	110	A	A	110	(110)	A	110	A	110	A	A					
4							B	B	C	C	C	C	C	C	120	120	120	(120)	B					
5							B	(110)	A	110	C	C	110	110	110	A	120	B	A					
6							E	B	110	A	A	C	A	A	A	120	120	120	E					
7							C	C	110 (110)	(110)	110	A	110	A	A	A	B	B						
8							B	(170)	120 ^H	110	110	110	110	110	110	A	110	B	C					
9							E	B	120	120	A	A	A	A	(110)	A	110	(110)	B					
10							E	B	120	110	110	120	110	C	A	A	A	A						
11							E	170	C	C	C	C	C	C	C	C	C	B	E					
12							E	160	120	A	A	A	(120)	110	A	A	A	(120)	E					
13							B	A	110	100	(100)	110	(110)	110	110	110	A	B	E					
14							E	B	110	120	110	A	(120)	A	110	100	110	110	E					
15							C	C	C	C	C	C	C	C	C	C	C	C	C					
16							E	B	120	110	(110)	A	(100)	100	100	100	110	(110)	B					
17							E	(180)	120	110	A	A	(110)	(110)	110	110	120	E						
18							E	130	C	C	C	C	C	C	C	C	C	C	A					
19							E	110	110	(110)	(110)	(110)	(110)	(110)	(110)	(110)	A	A	E					
20							E	110	110 ^H	(110)	110	(110)	(110)	(110)	110	110	A	A	B					
21							E	B	110	A	120	A	A	120	A	120	120	(110)	B					
22							B	B	C	C	C	C	C	C	C	C	C	C	C					
23							A	B	C	C	C	C	C	C	C	C	C	120	E					
24							E	E	C	C	C	C	C	C	C	C	C	C	B					
25							E	B	C	C	C	C	C	C	C	C	C	C	C					
26							F	110	120	C	C	C	C	C	C	C	C	C	C					
27							E	110	C	C	C	C	C	C	C	C	C	C	C					
28							E	B	C	C	C	C	C	C	C	C	C	A	C					
29																								
30																								
31																								
	Station Value								110	110	110	110	110	110	110	110	110	120						
	Count							11	17	13	11	8	11	11	13	10	10	9						

Sweep 100 Mc to 170 Mc in 15 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

fts

Fukaura
Lat. 40°36'N
Long. 139°34'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	27	19	24	20	24	30	25	B	<E	B	B	B	B	B	B	<E	B	24	B	3.2	B	28	3.2	B
2	33	28	28	E	E	E	E	<E	28	33	B	B	B	B	B	34	28	<E	27 (1.6)	B	28	33	E	E
3	28	28	23	1.2	E	E	E	<E	<E	34	B	B	B	B	B	<E	<E	3.2	3.6	2.4	2.4	33	3.6	2.6
4	24	28	3.2	3.0	B	2.6	2.6	B	C	C	C	C	C	C	B	<E	<E	<E	2.6	1.8	1.8	E	1.7	
5	5.6	2.6	2.3	E	E	E	E	<E	3.0	B	C	C	C	C	B	<E	<E	2.4	4.0	E	E	E	E	2.4
6	E	3.0	2.8	2.6	E	2.2	E	<E	3.0	4.0	C	C	4.2	4.2	B	<E	2.8	<E	E	E	E	E	E	E
7	E	E	E	E	E	C	C	C	<E	C	5.0	5.6	5.2	4.1	5.0	3.6	3.2	2.0	B	E	3.0	2.7	3.0	2.6
8	2.0	4.0	3.8	3.2	5.0	3.2	2.6	3.0	<E	<E	5.0	5.6	5.0	5.0	5.0	3.4	<E	B	C	E	E	E	E	E
9	E	E	E	E	E	E	E	B	3.4	3.1	B	B	B	B	B	3.2	<E	B	C	E	E	E	E	E
10	E	E	E	E	E	E	E	<E	<E	4.8	4.8	4.8	4.4	C	3.6	4.6	3.2	2.7	3.0	2.6	2.2	1.9	2.2	2.2
11	2.6	3.0	2.2	C	E	E	E	<E	C	C	C	C	C	C	C	C	C	3.1	2.0	E	E	E	3.5	2.0
12	2.3	E	E	E	E	E	E	E	3.3	2.0	3.2	B	B	<E	3.2	3.2	3.2	<E	E	E	E	2.8	E	E
13	E	3.1	3.2	E	E	E	<E	2.2	<E	<E	B	3.8	B	B	<E	2.9	2.9	B	2.4	E	3.0	3.0	5.0	E
14	2.3	B	2.2	4.4	4.4	3.4	E	B	<E	4.0	3.8	B	B	3.8	<E	<E	<E	<E	E	E	E	2.5	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	2.8	2.6	C	E
16	E	E	E	E	E	E	E	B	<E	<E	B	B	B	B	<E	<E	<E	2.3	2.8	E	3.0	E	E	2.9
17	2.2	2.7	E	2.8	2.6	E	E	E	3.1	3.3	3.4	3.5	B	B	<E	<E	3.3	<E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	<E	C	C	C	C	C	C	C	C	C	C	C	3.8	2.8	4.0	3.1	4.0
19	2.6	2.8	2.4	E	E	3.2	E	<E	<E	B	B	B	B	B	B	B	3.2	2.9	1.8	E	E	E	E	2.4
20	E	2.3	3.2	3.1	2.2	E	2.2	<E	<E	<E	C	<E	C	B	<E	<E	3.0	2.6	2.6	E	2.8	2.2	E	2.6
21	E	E	E	3.2	2.8	2.8	B	<E	2.8	B	B	3.7	B	3.8	4.0	3.8	3.0	<E	2.1	2.3	2.3	2.0	E	E
22	E	E	E	E	2.8	E	2.0	2.8	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E
23	1.1	E	E	E	3.0	B	2.2	2.3	C	C	C	C	C	C	C	C	C	C	3.0	B	2.8	B	(3.8)	(2.0)
24	2.2	2.4	2.8	2.0	2.1	2.2	3.0	2.0	C	C	C	C	C	C	C	C	C	C	2.4	B	2.8	B	2.4	E
25	E	E	E	E	E	E	E	<E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	2.1	2.2	2.2	2.4	2.0	<E	3.0	C	C	C	C	C	C	C	C	C	C	2.4	2.3	E	E	E
27	E	E	3.4	E	E	E	E	<E	C	C	C	C	C	C	C	C	C	C	C	B	3.4	2.9	2.5	E
28	2.0	E	E	E	E	E	E	<E	C	C	C	C	C	C	C	C	C	1.8	C	C	C	C	C	2.2
29																								
30																								
31																								
Median Value	1.6	1.9	2.2	E	E	E	E	<E	3.1	(3.6)	(4.3)	-	3.8	<E	3.7	2.8	2.2	2.6	E		2.3	2.0	E	E
Count	2.6	2.5	2.7	2.6	2.6	2.5	2.5	2.1	1.8	1.1	8	6	4	10	11	1.7	1.7	1.8	1.8	2.3	2.4	2.3	2.5	2.5

Sweep 1.0 Mc to 1.7 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

F₂-M3000

Fukaura

Lt. 40°36.6'N
Long. 139°34.1'E

Day	135°E Mean Time												19	20	21	22	23							
	00	01	02	03	04	05	06	07	08	09	10	11						12	13	14	15	16	17	18
1	2.6	2.6	2.6	3.1	3.0	3.1	3.0	3.2	3.3	3.1	3.3	B	B	I	3.1	3.2	3.2	3.2	2.9	3.3	3.1	2.8	2.5	
2	2.5	2.7	2.7	3.0	2.9	3.0	3.1	3.4	3.5	3.3	3.2	3.2	3.1	3.2	3.2	3.3	3.2	3.2	3.0	3.4	3.3	2.9	2.8	2.7
3	2.4	2.7	2.7	3.0	3.3	2.3	3.0	3.4	3.1	3.2	3.1	3.3	3.1	3.1	3.0	3.0	3.3	3.0	3.1	3.4	3.1	3.0	3.0	2.7
4	2.6	2.7	2.7	2.8	2.8	2.7	2.6	2.7	C	C	C	C	C	C	C	3.0	3.0	3.0	2.8	3.0	2.9	(2.7)	2.9	2.5
5	2.5	2.6	2.5	2.6	2.8	2.7	2.9	3.1	3.3	C	C	C	3.4	3.1	3.0	3.1	3.3	3.0	3.1	3.1	3.2	2.6	2.7	2.6
6	2.6	2.7	2.5	2.5	2.8	2.7	2.8	3.1	3.3	3.4	3.3	(3.2)	3.2	3.1	3.1	3.1	3.1	3.1	2.8	3.0	3.0	2.8	2.6	2.3
7	2.3	2.4	2.6	2.4	2.4	C	C	C	3.2	(3.3)	3.4	B	B	B	2.7	2.7	2.9	2.8	3.1	3.0	3.0	2.7	2.6	2.7
8	2.8	3.0	2.7	2.8	2.8	2.7	2.6	3.3	3.2	3.3	3.2	3.1	3.0	3.0	2.8	3.0	3.2	3.2	(3.0)	2.9	5	2.7	2.9	2.8
9	2.9	2.6	2.5	2.4	2.6	3.0	3.0	3.2	3.2	3.2	3.3	3.0	3.0	2.9	3.1	3.0	2.8	3.1	2.5	3.1	2.8	J	2.9	2.7
10	2.3	2.7	2.7	2.7	2.8	2.7	3.0	3.2	3.3	3.1	B	3.0	3.0	(3.0)	3.0	3.0	3.0	3.1	2.7	2.9	3.0	2.9	2.5	2.6
11	2.6	2.6	2.6	(2.5)	2.8	2.4	2.5	2.9	C	C	C	C	C	C	C	C	C	2.9	2.9	2.9	2.8	2.7	3.0	2.7
12	2.6	2.6	2.6	(2.7)	2.8	2.6	2.7	3.3	3.0	3.2	2.9	3.0	(3.0)	2.9	2.9	2.9	2.9	3.0	3.0	3.0	2.9	2.7	2.7	2.7
13	2.4	2.5	2.6	2.6	2.7	2.9	2.8	J	3.2	3.0	3.1	(3.0)	3.0	2.9	2.8	2.9	2.8	2.9	2.8	3.1	3.0	2.7	C	C
14	2.8	2.7	2.8	2.6	2.6	2.7	2.8	3.4	3.2	3.1	3.0	2.9	3.0	2.9	2.8	2.9	2.8	2.9	2.8	3.1	3.0	2.7	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.0	2.9	2.8	2.8
16	2.6	2.7	2.5	2.4	2.5	2.6	3.1	3.4	3.2	3.2	3.1	3.0	2.7	2.7	2.7	2.8	2.8	2.8	2.9	2.8	2.9	2.8	2.7	2.8
17	2.7	2.6	2.7	2.8	2.8	2.7	2.9	3.2	3.3	3.1	P	B	3.1	2.9	2.9	2.7	2.8	3.0	2.8	2.8	2.8	2.9	2.6	2.5
18	2.4	2.3	2.3	2.3	2.4	2.9	2.9	3.1	C	C	C	C	C	C	C	C	C	C	C	2.7	2.7	2.9	2.6	2.6
19	2.6	2.6	2.6	2.6	2.7	2.5	2.8	3.4	3.4	P	B	B	B	3.0	B	3.0	3.0	3.0	2.9	3.0	3.0	2.8	2.8	2.8
20	2.6	2.8	2.8	2.5	2.8	2.7	3.0	3.3	(3.2)	3.2	(3.2)	3.2	2.9	3.0	2.8	3.0	3.0	3.0	2.9	3.0	3.0	2.9	2.7	2.9
21	3.0	JF	2.5	2.8	2.7	2.5	3.0	J5	3.2	3.1	3.1	2.9	2.9	P	(2.8)	2.9	2.8	2.8	2.9	2.9	3.0	2.7	2.6	2.6
22	2.5	2.6	2.5	2.3	2.5	2.8	2.7	2.7	C	C	C	C	C	C	C	C	C	C	C	C	2.8	2.7	2.6	2.7
23	2.9	2.9	2.6	2.4	2.4	2.8	2.7	2.9	C	C	C	C	C	C	C	C	C	3.0	2.9	3.1	2.9	2.7	2.9	2.6
24	2.7	2.8	2.6	2.7	2.8	2.9	2.9	2.9	C	C	C	C	C	C	C	C	C	C	C	2.8	2.8	2.9	2.8	2.7
25	2.5	2.5	2.5	2.7	2.9	2.9	2.9	3.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	2.8	2.7	2.8	3.0	3.3	3.2	C	C	C	C	C	C	C	C	C	C	C	C	2.8	2.9	2.8	2.7
27	2.6	2.7	2.7	2.9	2.6	2.8	2.9	3.0	C	C	C	C	C	C	C	C	C	C	C	C	3.0	2.9	2.8	2.6
28	2.6	2.7	2.5	2.5	2.9	2.7	2.8	3.2	C	C	C	C	C	C	C	C	C	C	3.3	C	C	C	C	2.9
29																								
30																								
31																								
Median Value	2.6	2.7	2.6	2.6	2.8	2.7	2.9	3.2	3.2	3.2	3.0	3.0	2.9	2.9	2.9	3.0	3.0	3.0	3.0	2.9	2.9	2.8	2.8	2.7
Count	26	25	27	26	27	26	24	18	15	13	12	14	15	17	18	18	18	21	22	26	25	25	25	26

Sweep 1.0 Mc to 17.5 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

f_oF min

Feb. 1949

Fukaura
Lat. 40°36.6'N
Long. 139°54.1'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	1.1	1.4	1.4	1.4	1.4	1.8	1.4	1.8	2.7	3.8	3.5	4.0	3.9	3.6	3.5	3.1	2.8	2.0	1.6	1.7	1.4	1.6	1.4	1.6	
2	1.6	1.4	E	E	E	E	E	2.0	2.6	3.2	3.6	4.0	4.0	3.8	A	A	2.5	2.0	A	1.6	A	A	1.4	1.6	
3	1.8	2.4	1.2	1.2	1.2	1.4	1.4	1.9	2.7	3.0	3.5	3.8	3.8	3.8	3.4	3.1	2.5	A	A	A	1.6	1.8	1.8		
4	A	A	A	1.6	1.6	1.4	1.6	1.7	C	C	C	C	C	C	3.8	3.1	2.5	2.2	1.4	A	1.4	(1.5)	1.8	1.5	
5	1.3	A	E	E	E	E	E	(1.4)	2.4	4.0	C	C	3.9	4.0	3.8	3.2	3.0	1.5	1.4	1.6	1.4	1.4	1.6	1.4	
6	1.4	1.6	1.4	1.5	1.6	1.7	1.6	1.7	2.5	2.8	A	A	A	A	3.5	3.2	2.8	2.1	1.6	1.5	1.5	1.5	1.2	1.2	
7	1.2	1.1	1.1	E	E	C	C	C	2.6	C	A	A	A	A	A	A	A	1.8	1.5	1.6	1.5	1.5	1.5	1.4	
8	1.5	1.4	1.4	1.4	1.4	1.6	1.4	2.3	2.8	3.1	3.3	A	3.9	A	A	3.6	2.8	2.0	(2.2)	2.3	1.4	1.4	1.5	1.4	
9	1.4	1.4	1.3	1.5	1.2	1.4	1.4	1.9	2.6	3.2	3.8	3.7	3.5	3.2	3.8	3.8	2.8	2.1	1.6	1.5	1.5	1.5	1.4	1.5	
10	E	E	1.4	1.6	1.4	1.6	1.5	2.1	2.8	3.4	3.6	3.6	3.5	C	A	A	3.0	2.1	1.6	1.4	1.4	1.4	1.4	1.4	
11	1.4	1.4	1.5	(1.3)	1.1	1.1	1.1	2.1	C	C	C	C	C	C	C	C	C	2.1	1.3	1.5	1.4	1.4	A	A	
12	1.5	1.4	1.4	1.4	1.6	1.4	1.6	2.2	2.9	3.1	3.8	3.8	3.8	3.8	3.8	3.8	2.8	2.0	1.3	1.3	1.4	1.4	1.3	1.4	
13	E	1.2	E	1.2	1.1	1.6	1.6	2.1	2.8	3.6	3.8	4.0	4.0	4.0	4.0	3.4	2.9	2.2	1.4	1.4	1.6	1.6	A	1.4	
14	1.4	1.6	1.4	E	E	E	E	2.1	2.7	3.1	3.7	3.8	3.8	A	A	3.5	2.8	2.0	1.4	1.4	1.4	1.4	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.4	1.4	C	C	
16	1.8	1.8	E	E	E	E	1.1	2.0	2.8	3.2	3.5	3.7	3.5	3.7	3.5	3.2	2.8	2.1	1.5	1.5	1.4	1.4	1.6	1.6	
17	E	E	1.2	1.5	1.4	1.5	1.4	1.8	2.8	3.3	A	A	C	C	C	3.5	2.8	2.2	1.4	1.4	1.4	1.4	1.4	1.4	
18	1.4	1.1	E	E	E	E	1.1	1.4	2.0	C	C	C	C	C	C	3.5	2.8	2.2	1.4	1.4	1.4	1.4	1.4	1.4	
19	1.6	1.3	1.2	E	E	E	E	2.0	3.1	3.8	3.8	3.8	3.8	4.0	3.8	3.4	2.8	2.1	1.4	1.4	1.4	1.4	1.2	1.3	
20	1.1	E	E	E	E	E	E	2.3	3.0	(3.4)	3.7	(3.9)	4.0	3.8	3.7	3.2	2.8	2.1	A	1.4	1.6	1.6	2.0	1.7	
21	1.8	1.7	E	E	E	E	1.3	2.3	3.0	3.7	3.8	A	3.8	A	A	A	2.7	2.2	1.7	1.8	1.6	1.6	1.6	E	
22	E	E	1.4	E	1.4	E	1.3	2.1	C	C	C	C	C	C	C	C	C	C	C	1.4	1.4	1.4	1.4	1.4	
23	E	E	1.1	1.1	1.2	1.4	A	2.1	C	C	C	C	C	C	C	C	C	2.1	1.2	1.4	1.4	1.4	1.5	1.4	
24	1.5	E	E	1.1	1.2	1.4	1.4	(1.5)	C	C	C	C	C	C	C	C	C	C	1.9	1.8	1.8	1.8	1.7	1.8	
25	1.8	2.0	E	E	E	E	E	2.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
26	C	C	E	E	E	E	E	2.2	2.9	C	C	C	C	C	C	C	C	C	C	C	A	1.4	1.4	1.3	
27	1.4	1.6	E	E	E	E	E	2.4	C	C	C	C	C	C	C	C	C	C	C	1.2	A	1.5	1.5	1.4	
28	E	E	E	E	E	E	E	2.2	C	C	C	C	C	C	C	C	C	2.0	C	C	C	C	C	1.4	
29																									
30																									
31																									
Mean Value	1.4	1.4	1.1	E	1.1	1.7	1.4	2.1	2.8	3.3	3.1	3.8	3.8	3.8	3.7	3.3	2.8	2.1	1.5	1.4	1.4	1.5	1.5	1.4	
Count	25	24	26	27	27	26	25	26	18	16	13	11	15	11	13	14	17	19	19	19	23	24	21	23	

Sweep 1.0 Mc to 17.0 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

f_oF min

Fukaura

Lat. 40°36.6'N
Long. 139°34.1'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	E	E	E	E	E	E	1.8	B	2.0	2.0	1.6	B	2.4	2.4	2.4	B	1.6	B	1.7	B	1.3	1.2	B		
2	1.8	2.2	2.0	E	E	E	E	1.9	1.8	2.0	2.2	2.2	(3.0)	2.2	2.4	1.8	1.8	1.6	E	(1.4)	B	1.4	E	E	
3	1.5	2.4	2.0	E	E	E	E	1.5	1.6	1.6	1.8	1.8	2.0	1.9	1.5	1.5	1.6	1.4	1.2	1.2	1.2	1.4	1.4	1.2	
4	1.4	1.2	E	E	B	1.5	1.8	B	C	C	C	C	C	1.8	1.8	1.8	1.5	1.3	1.4	1.3	1.3	C	E	1.4	
5	1.3	E	E	E	E	2.4	E	2.4	1.4	1.8	(1.8)	1.8	1.6	1.6	1.6	1.7	1.5	2.0	1.4	E	E	E	E	2.1	
6	E	1.6	1.4	1.7	E	2.0	E	1.6	1.8	1.4	1.8	(1.7)	1.6	1.8	1.8	1.6	1.6	1.5	E	E	E	E	E	E	
7	E	E	E	E	E	C	C	C	1.8	(1.9)	2.0	1.8	2.6	2.2	2.0	1.6	1.6	1.5	B	E	1.4	1.4	1.4	1.4	
8	1.4	1.4	1.4	2.0	2.0	1.4	2.0	1.9	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.8	B	C	E	E	E	E	E	
9	E	E	E	E	E	E	E	B	1.5	1.8	2.0	2.2	2.2	2.5	1.8	1.8	1.4	1.5	B	E	E	E	E	E	
10	E	E	E	E	E	E	E	1.8	1.4	2.0	2.0	2.0	2.0	(2.1)	2.2	2.0	1.8	1.8	1.6	1.8	1.8	1.6	1.6	1.4	
11	1.4	1.4	1.1	C	E	E	E	1.4	C	C	C	C	C	C	C	C	C	1.8	1.8	E	E	1.4	1.2		
12	1.4	E	E	E	E	E	E	1.4	1.9	1.8	1.8	2.8	2.6	1.8	1.8	1.8	1.8	1.4	E	E	E	1.3	E	E	
13	E	E	1.8	E	E	E	E	1.4	1.6	1.8	1.8	2.0	2.6	2.6	2.0	1.8	1.8	B	1.8	E	2.0	1.5	1.3	E	
14	1.8	B	E	E	E	3.2	E	1.2	1.5	1.2	2.0	2.4	2.0	2.0	2.0	1.8	1.8	1.2	E	E	1.4	1.4	C	C	
15	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.4	1.4	1.8	E	E	
16	E	E	E	E	E	E	E	B	1.8	1.8	1.8	1.9	1.7	1.6	1.6	1.5	1.6	1.5	2.0	E	1.8	E	E	1.5	
17	1.8	1.8	E	1.8	2.0	E	E	2.0	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.4	E	E	E	E	E	E	
18	E	E	E	E	E	E	E	E	1.2	C	C	C	C	C	C	C	C	C	1.3	1.2	1.4	1.4	1.3	1.4	
19	1.6	1.3	E	E	E	1.4	E	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.6	1.6	1.2	1.4	E	E	E	1.6	
20	E	E	E	E	1.4	E	E	1.7	1.7	(1.9)	2.0	(2.1)	2.2	2.2	1.8	1.6	1.6	1.6	1.4	E	1.5	1.6	E	1.7	
21	E	E	E	1.9	1.9	1.8	B	1.6	1.8	1.8	1.8	2.0	2.0	2.0	1.8	1.7	1.7	1.8	1.8	1.8	1.5	1.6	E	E	
22	E	E	E	2.1	2.0	E	1.8	1.6	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E	
23	E	E	E	E	1.1	B	E	1.8	C	C	C	C	C	C	C	C	C	1.7	1.8	B	2.0	B	1.8	1.8	
24	1.7	E	E	E	1.4	1.4	1.5	1.4	C	C	C	C	C	C	C	C	C	C	1.8	B	1.8	B	1.8	E	
25	E	E	E	E	E	E	E	1.7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	E	E	1.8	1.8	E	1.4	2.1	C	C	C	C	C	C	C	C	C	C	1.5	1.4	E	E	E	
27	E	E	2.0	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	C	B	1.3	2.0	2.1	E	
28	E	E	E	E	E	E	E	1.8	C	C	C	C	C	C	C	C	C	1.4	C	C	C	C	C	1.2	
29																									
30																									
31																									
Mean Value	E	E	E	E	E	E	E	1.6	1.8	1.8	2.0	2.0	2.0	2.0	1.9	1.8	1.6	1.5	1.4	E	1.3	1.3	E	E	
Count	26	25	27	26	26	25	25	22	18	17	17	17	16	16	18	18	17	19	18	23	24	23	25	25	

Sweep 1.0 MC to 15.0 MC in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki Tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

ff.

Lat. 37°57.0' N
Long. 139°15.9' E

Shibata

IONOSPHERIC DATA

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	A	3.6	3.8 ^F	3.6 ^F	3.3 ^F	A	C3.6 ^F	4.6	9.1	10.1	12.4	B	13.5	13.0	12.5	12.6	10.9	5.7	6.5 ^P	6.0	4.3	3.8	3.5	3.2
2	3.2	3.4	3.7	3.7	3.4	3.5	3.5	5	8.7	9.2	11.8	11.5	11.2	11.1	11.3	10.4	9.0	8.0	7.0	7.0	5.2	4.2	4.2	3.8
3	3.9	4.0	4.4	4.7	4.1	3.3	3.6	7.2	8.9	10.5	12.1	13.3	13.1	12.9	11.7	12.0	11.5	9.7	8.1	9.1 ^F	5.2	4.4	4.0	3.5
4	3.5	3.5	3.7	3.7	3.3	3.6	3.6	4.4	11.2	12.2	12.8	S	11.3	11.4	12.5	11.9	11.2	10.1	8.4	8.7 ^F	(7.3)	5.7	4.9 ^F	5.2
5	4.9	5.1	5.0	5.0	4.7	4.6	4.6	6.2	C	C	C	C	C	11.7	11.6	11.3	10.3	8.1	8.5	7.0	4.8	4.5 ^S	4.5 ^F	4.4
6	3.9	4.9 ^S	4.4	C	C	C	3.2 ^B	9.8	11.3	12.8	13.8	11.6	11.4	11.0	10.3	10.5	(13.1)	(8.0)	8.2	C	C	6.0	5.2	4.8
7	4.8	5.0	4.9	4.4	4.2	2.5	4.3	S	12.5	13.3 ^B	15.4	14.0 ^S	14.0 ^S	12.8 ^S	12.3	11.5	10.9	C	C	C	C	C	5.4	5.3
8	5.3	4.8	4.9	4.8	4.3	4.0	4.0	4.0	12.1	12.7	13.0	12.6 ^H	12.2	11.7 ^H	12.0	11.8	11.6	10.7 ^H	9.8	8.6	7.9 ^P	(6.6)	6.0 ^F	5.9 ^F
9	5.9	5.4	4.9	4.8	5.0	5.1	4.0	7.6 ^S	C	C	C	C	C	12.1	11.9	11.5	10.1	10.7	8.4	8.4	8.0	6.7	6.0	5.4
10	5.4	5.4	5.2	5.2	4.9	4.8	4.9	8.2	9.9	11.8	13.5	12.8 ^H	12.9	12.7	11.5 ^H	10.7	11.0	10.1	9.1	8.5	8.0	S	5.6	5.9
11	5.3	5.7	5.6	5.0	4.9	4.9	4.9	8.2	12.5	13.8	14.0	14.8	13.2	12.7	12.2 ^H	11.5	10.9	9.9	8.8	8.4	7.6	6.6	6.7 ^S	6.0
12	(2.5)	5.3	5.2	5.1	4.9	4.4	4.6	8.5	C	C	C	C	C	C	C	C	10.7	10.2	9.0	7.8	7.2	7.2	7.1	6.3
13	5.6	5.6	5.6	5.5	4.5	4.2	4.3	8.9	11.5	12.7	12.8	12.7	13.5 ^H	13.7	12.7 ^H	11.4 ^H	10.9	10.5	9.0	7.8	6.0	5.7	5.3	5.2
14	5.2	5.2	4.9	4.6	4.3	4.4	4.8	8.8	10.2	11.8	12.5	13.4	12.9	11.3	10.5 ^H	10.6	10.8	9.0	8.3	9.4	(6.8)	6.5 ^S	(6.3)	(6.3)
15	6.2	5.7	5.1	5.2	5.0	4.3	4.2	8.1	11.0	13.1	13.1	11.9	12.0	11.5	11.0	10.8	10.7	10.3	9.7	8.5	8.0	7.1	7.0	5.7 ^S
16	6.4	5.6	5.6	5.6	5.7	5.7	6.3	8.8	C	C	C	C	C	C	12.3	12.2	12.2	11.7	10.4	9.6	7.7	6.7	6.0	5.8
17	5.4	5.5	5.7	5.3	4.8	4.7	5.2	8.4	10.3	12.4	12.8	12.6	13.1 ^H	12.6 ^H	11.9 ^H	11.4 ^H	11.5	10.4	10.2	9.1	8.5	7.7	7.2	6.9
18	6.2	6.2	6.1	6.1	6.7	7.3	7.1	8.9	11.4	13.9 ^S	13.3	13.8 ^H	13.3	13.1	13.0	12.5	12.1	12.4	11.1	9.4	8.6	S	5.7	6.3 ^F
19	4.1	6.1	5.7 ^P	5.6	5.5	5.5	6.1	10.6	C	C	C	C	C	C	C	C	C	12.3	11.4	10.3	8.6	7.5	6.7	6.4
20	5.7	5.6	5.4	5.1	5.3	4.9	5.0	8.4	10.6	12.0	12.7	13.0 ^H	12.9	12.5 ^H	12.1 ^H	12.0	12.3	11.2	10.0	9.1	8.5	8.2	6.2	5.7
21	4.9	5.0 ^F	5.0	5.2 ^F	4.8	4.6	5.4	9.1 ^S	10.4	12.0 ^F	13.0	13.5	13.7	13.4	13.3	12.7 ^H	12.0	11.5	10.2	9.3	9.1	7.9	6.8	6.7
22	6.2	6.1 ^S	5.8	5.8	5.0	5.6	5.3	6.9	11.4	13.7	13.5	13.8	13.5 ^H	13.3 ^H	12.8 ^H	12.4	11.5	11.0	10.6	9.1 ^S	7.6 ^S	5	6.7	5
23	6.2	6.1	5.4	5.2	5.1	5.6	5.6	9.8	C	C	C	C	C	13.9	13.6 ^S	13.0	12.1	10.9	10.1 ^S	8.6	6.7	6.1	5.4	
24	5.9	5.5	5.0	5.5	4.9	4.4	4.8	8.5	11.1	11.2	12.2	13.5	13.8	13.4	12.8	12.7	10.8	9.9	8.7	8.4	8.2	6.8	6.2	5.9
25	5.7	5.6 ^S	5.4	5.7	5.0	4.6	4.8	7.3	10.3	12.2	13.8	13.6 ^F	13.8	13.3	13.5	12.9	12.0	11.3	10.0	C	C	6.4	6.2	5.7
26	5.6	5.7	5.8	5.4	5.1	4.8	5.1	8.2	C	C	C	C	C	C	12.7	C	C	9.7	8.6	7.0	7.0	6.4	C	C
27	5.5	5.7	5.3	5.0	4.8	5.0	5.3	8.6	10.7	11.7	B	13.7	13.1	12.5	12.2	11.8	11.0	8	C	C	8.1	6.1	5.8	
28	6.2	6.3	6.0	6.2	6.0	5.7	6.3	(4.2)	11.6	12.1	13.8	13.4	C	C	C	11.4	11.3	11.2	9.5	7.6	8.2	7.8 ^P	7.1	6.6
30																								
31																								
Mean Value	5.5	5.6	5.2	5.1	4.0	4.7	4.8	8.4	10.9	12.2	12.8	13.4	13.2	12.5	12.2	11.9	11.3	10.5	9.1	8.4	7.8	6.7	6.1	5.7
Cont.	3.7	2.8	2.8	2.7	2.7	2.6	2.7	2.6	2.1	2.1	2.0	1.8	2.0	2.3	2.5	2.5	2.6	2.8	2.6	2.4	2.4	2.4	2.7	2.5

Observer J.D. Mc TO J.T.Q. Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyūjo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

37°57'0"N
139°15'8"E

Shibata

hp F₁

Feb. 1949

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	A	360	350	340	330	A	A	230	250	260	260	B	320	310	320	300	290	260	200	260	240	240	230	260	
2	400	430	400	360	360	340	280	S	230	260	300	270	310	300	290	280	270	270	310	270	300	300	350	360	
3	440	440	370	320	290	310	330	260	260	270	300	290	300	310	320	320	280	300	300	220	320	310	330	400	
4	470	430	430	390	370	370	410	320	260	280	220	S	320	340	360	330	350	240	340	320	S	350	360	330	
5	420	380	390	360	320	350	330	290	C	C	C	C	300	300	300	300	300	320	310	270	270	320	340	360	
6	320	340	390	C	C	C	C	260	250	270	290	310	300	300	310	330	300	320	320	320	320	310	420	450	
7	480	440	420	430	430	430	410	S	280	220	290	220	310	330	370	370	310	220	C	C	C	C	380	360	
8	350	330	370	360	300	330	400	270	260	270	240	300	360	340	330	340	310	330	300	310	320	340	320	360	
9	350	330	410	430	420	350	310	290	C	C	C	C	320	320	300	300	310	280	330	320	240	300	320	370	
10	370	350	370	350	320	350	320	270	230	290	300	290	350	340	310	300	320	320	300	340	280	S	360	370	
11	400	390	380	400	450	470	420	310	230	310	300	320	330	370	370	350	340	350	330	310	300	350	320	350	
12	370	400	390	430	340	410	390	300	C	C	C	C	C	C	C	C	330	330	310	370	310	240	350	330	
13	450	380	400	420	420	400	370	290	260	290	300	350	320	320	350	320	330	310	310	300	220	340	350	390	
14	360	320	310	320	370	420	420	320	260	250	320	310	300	320	350	320	310	300	320	350	310	330	320	330	
15	330	340	340	330	340	350	350	260	250	290	250	300	300	320	330	310	310	300	300	340	320	330	340	330	
16	390	340	380	410	410	370	290	260	C	C	C	C	C	C	350	320	320	320	310	300	320	310	360	310	
17	320	340	330	270	380	350	340	270	270	270	280	310	340	330	360	340	360	320	310	350	360	330	330	360	
18	410	430	450	430	420	310	230	280	290	310	290	330	350	340	350	330	320	330	310	320	350	350	350	360	
19	350	350	300	400	380	430	330	250	C	C	C	C	C	C	C	C	C	290	250	310	300	310	300	310	
20	300	340	330	380	350	330	300	270	260	290	300	310	270	320	330	310	290	320	320	300	310	290	350	320	
21	340	410	420	340	390	420	380	280	260	220	280	330	320	320	330	340	320	250	310	300	300	310	330	370	
22	370	360	360	460	400	330	370	310	270	290	300	320	310	320	360	330	330	300	300	320	310	S	370	S	
23	320	350	340	400	420	340	350	270	C	C	C	C	C	C	310	310	310	300	310	280	240	320	310	330	
24	370	310	410	320	270	330	310	290	240	260	300	300	300	300	300	300	310	200	220	220	300	270	220	350	
25	390	380	400	360	320	380	320	270	220	280	300	290	300	300	280	290	290	270	270	270	C	C	290	340	
26	350	340	310	320	300	300	300	250	C	C	C	C	C	C	C	C	C	270	270	230	310	300	C	C	
27	370	350	310	320	400	370	310	270	230	270	B	B	290	330	310	330	300	280	B	C	C	280	310	360	
28	380	360	350	340	300	350	330	310	280	280	270	300	C	C	C	280	290	290	290	300	310	300	320	310	
29																									
30																									
31																									
Median Value	360	380	380	360	370	370	320	270	260	280	300	310	310	320	330	320	310	300	310	310	300	310	310	330	360
Count	27	29	28	27	27	26	26	26	21	21	20	18	20	23	25	25	26	28	28	26	23	24	27	25	

Sweep 1.0-Mc to 17.0-Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Lat. 37°57.0'N
Long. 139°15.8'E

Shibata

hr.

Feb. 1949

IONOSPHERIC DATA

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	A 310	290	230	(280)	A 210	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	
2	320	330	300	270	220	230	240	230	200	230	260	230	250	270	220	230	230	230	(250)	220	220	230	230	280	
3	340	360	(300)	230	280	270	230	270	220	270	230	230	230	230	220	240	210	220	240	220	230	250	270	280	
4	370	330	370	(300)	280	230	(310)	260	220	200	230	230	240	230	240	240	230	210	230	270	240	240	270	280	
5	240	240	300	280	260	280	270	260	C	C	C	C	C	230	210	220	200	240	230	210	220	230	240	280	
6	270	270	300	280	C	C	C	C	230	210	220	280	220	270	300	220	280	(250)	220	260	240	250	300	350	
7	300	330	290	280	300	330	330	260	240	240	230	240	250	230	230	230	210	220	C	C	C	C	280	290	
8	300	240	270	280	230	240	280	230	200	220	220	220	240	220	230	220	210	220	210	220	210	240	260	270	
9	280	260	300	310	300	230	220	220	C	C	C	C	C	210	250	240	200	220	230	230	240	220	230	260	
10	280	260	300	270	250	220	220	220	200	220	230	210	240	230	220	210	210	220	210	260	220	230	230	240	
11	300	280	280	250	320	320	290	250	220	220	240	220	260	270	230	230	230	230	250	230	220	210	260	240	
12	250	290	290	300	240	230	280	260	C	C	C	C	C	C	C	C	230	220	210	250	210	260	260	240	
13	300	300	290	290	300	280	310	270	220	230	270	240	270	230	230	230	210	220	210	250	260	270	270	270	
14	270	250	240	270	260	280	260	220	200	210	250	230	250	200	230	260	250	220	220	220	220	250	260	290	
15	250	250	230	240	220	220	240	220	210	230	210	210	200	210	210	210	220	220	220	210	200	220	240	270	
16	270	260	270	300	280	270	230	210	C	C	C	C	C	290	300	270	210	220	220	220	240	230	220	220	
17	260	280	260	210	220	260	250	210	220	220	200	200	200	200	210	200	240	220	220	240	230	220	270	240	
18	290	300	320	300	300	270	210	200	210	230	200	210	230	220	220	210	230	230	230	210	200	230	210	240	
19	270	260	230	230	250	300	280	210	C	C	C	C	C	C	C	C	C	C	210	220	210	220	240	270	
20	220	270	260	270	270	250	230	220	210	210	210	230	200	200	210	200	230	210	210	220	220	230	220	230	
21	270	320	310	260	220	280	290	220	210	220	250	260	230	240	300	240	290	210	200	210	220	230	220	270	
22	280	270	270	320	290	220	250	230	210	230	210	290	230	210	240	220	230	220	220	210	220	210	220	270	
23	250	250	250	280	300	280	250	220	C	C	C	C	C	C	230	220	230	210	240	220	220	230	250	260	
24	290	260	300	250	200	220	240	210	220	210	230	240	240	230	230	230	220	210	240	220	200	210	220	300	
25	300	280	260	220	220	200	260	250	220	210	210	210	200	240	260	210	230	210	(210)	C	C	210	230	250	
26	230	250	230	220	220	240	220	220	C	C	C	C	C	C	200	C	C	200	(200)	240	230	260	C	C	
27	260	270	240	260	290	270	230	230	210	(200)	220	210	220	260	210	210	210	210	220	C	C	210	230	250	
28	270	270	240	230	230	230	250	220	210	210	220	210	220	C	C	220	210	190	220	220	230	220	230	240	
29																									
30																									
31																									
Median Values	280	270	280	270	260	270	250	220	210	220	230	230	230	230	230	230	220	230	220	220	220	230	230	250	270
Cont.	27	28	23	28	27	26	26	28	21	21	21	21	21	21	23	25	25	26	28	27	25	25	27	27	27

Sweep 1.0 Mc to 17.0 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 37°37.0' N
Long. 139°15.8' E

Shibata

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Feb. 1949

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	Q	L	Q	Q	L	Q	Q	Q	L	Q	Q	Q					
2						Q	Q	Q	Q	Q	L	Q	Q	Q	Q	Q	Q	Q	Q					
3						Q	Q	Q	Q	Q	L	L	L	L	L	L	Q	Q	L					
4						Q	Q	Q	Q	Q	Q	Q	L	L	L	L	Q	Q	Q					
5						Q	Q	Q	C	C	C	C	Q	Q	Q	Q	Q	(3.6)	Q					
6						C	Q	Q	Q	Q	L	Q	L	L	L	Q	L	C	Q					
7						Q	Q	Q	Q	Q	L	L	Q	Q	Q	Q	Q	Q	C					
8						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
9						Q	Q	Q	Q	Q	C	C	C	C	L	L	Q	Q	Q					
10						Q	Q	Q	Q	Q	L	Q	Q	Q	Q	Q	Q	Q	Q					
11						Q	Q	Q	Q	Q	L	Q	L	L	Q	A	Q	Q	Q					
12						Q	Q	Q	C	C	C	C	C	C	C	C	Q	Q	Q					
13						Q	Q	Q	Q	L	L	Q	Q	Q	Q	Q	Q	Q	Q					
14						Q	Q	Q	Q	Q	L	Q	L	Q	Q	Q	L	Q	Q					
15						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
16						Q	Q	Q	C	C	C	C	C	C	Q	Q	Q	Q	Q					
17						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
18						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
19						Q	Q	Q	C	C	C	C	C	C	C	C	C	Q	Q					
20						Q	Q	Q	Q	Q	L	Q	Q	Q	Q	Q	L	Q	Q					
21						Q	Q	Q	Q	Q	Q	Q	L	L	L	L	Q	Q	Q					
22						Q	Q	Q	Q	L	Q	L	Q	L	Q	Q	Q	Q	Q					
23						Q	Q	Q	C	C	C	C	C	C	Q	Q	Q	Q	L					
24						Q	Q	Q	Q	Q	L	L	L	L	L	L	Q	Q	Q					
25						Q	L	Q	Q	Q	Q	Q	Q	L	L	Q	Q	Q	Q					
26						Q	Q	Q	C	C	C	C	C	C	Q	C	C	Q	Q					
27						Q	Q	Q	Q	A	Q	Q	Q	L	Q	Q	Q	Q	A					
28						Q	Q	Q	Q	Q	Q	Q	Q	Q	C	Q	Q	Q	Q					
29																								
30																								
31																								
Mean Value																								
Count																								

Sweep 1.0 Mc to 17.0 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

h'F₁

Shibata

Lat. 37°57.0'N
Long. 139°15.8'E

IONOSPHERIC DATA

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	Q	Q	Q	230	240	Q	Q	240	Q	Q	Q					
2							Q	Q	Q	Q	240	Q	Q	Q	Q	Q	Q	Q	Q					
3							Q	Q	Q	Q	220	200	210	210	200	230	Q	Q	(220)					
4							Q	Q	Q	Q	Q	Q	Q	Q	220	220	Q	Q	Q					
5							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	200	Q					
6							Q	Q	Q	Q	220	Q	Q	230	200	Q	230	C	Q					
7							Q	Q	Q	Q	220	220 ^A	Q	Q	Q	Q	Q	Q	C					
8							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
9							Q	Q	Q	Q	C	C	C	C	200	220	Q	Q	Q					
10							Q	Q	Q	Q	220	Q	B	Q	Q	Q	Q	Q	Q					
11							Q	Q	Q	Q	220	Q	Q	220	Q	A	Q	Q	Q					
12							Q	Q	Q	Q	C	C	C	C	C	C	Q	Q	Q					
13							Q	Q	Q	210	230	Q	240	Q	Q	Q	Q	Q	Q					
14							Q	Q	Q	Q	220	Q	220	Q	210	220	220	Q	Q					
15							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
16							Q	Q	Q	Q	C	C	C	C	Q	Q	Q	Q	Q					
17							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
18							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
19							Q	Q	Q	Q	C	C	C	C	C	C	C	Q	Q					
20							Q	Q	Q	Q	Q	210	Q	Q	Q	Q	200	Q	Q					
21							Q	Q	Q	Q	Q	Q	220	210	(210)	210	Q	Q	Q					
22							Q	Q	Q	210	Q	220	210	Q	220	Q	Q	Q	Q					
23							Q	Q	Q	C	C	C	C	C	Q	Q	Q	Q	220					
24							Q	Q	Q	Q	200	(200) ^A	210	210	220	220	Q	Q	Q					
25							Q	Q	Q	Q	Q	Q	210	220	220	Q	Q	Q	Q					
26							Q	Q	Q	C	C	C	C	C	Q	C	C	Q	Q					
27							Q	Q	Q	A	Q	Q	Q	210	Q	Q	Q	Q	A					
28							Q	Q	Q	Q	Q	Q	Q	Q	C	Q	Q	Q	Q					
29							Q	Q	Q	Q	Q	Q	Q	Q	C	Q	Q	Q	Q					
30																								
31																								
Median value										220	220	220	210	210	210	220								
Count								1	1	2	8	6	9	8	9	7	3	1	2					

Sweep—1.0 Mc to 1.7 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 37°57.0'N
Long. 139°15.5'E

Shibata

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Feb. 1949

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	25
1							A (4.7)	(2.7)	A B	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)
2							E (2.1)	(2.6)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)	B (3.7)
3							E (1.8)	(2.8)	3.3 ^H	(3.6)	(3.7)	3.7	3.6	3.5	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6
4							B (1.4)	(3.0)	(3.3)	3.7	A	A	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5
5							1.2 ^J	1.8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6							C	2.1	(2.7)	3.2	(3.5)	B	3.7	(3.7)	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5
7							E (2.1)	2.7 ^F	D	3.5 ^A	3.3	A	B	B	B	B	B	B	B	B	B	B	B	B	B
8							E (2.4)	3.0	3.3	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
9							1.5 ^J	2.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10							1.2 ^J	2.2	2.8	3.3	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
11							B (2.1)	2.5 ^F	3.3	3.6	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
12							E (2.3)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13							(1.3) ^J	(2.4)	3.0	3.2	3.6	3.9	(3.3)	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8
14							(1.2) ^J	1.9	2.7	3.3	3.6	3.9	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6
15							E (2.4)	2.9	3.2	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16							(1.3) ^J	2.4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17							E (2.1)	2.9	3.2	(3.7)	3.7	3.7	3.8	3.8	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5
18							E (2.0)	2.3	3.2	3.5	3.3	B	3.9	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19							E (2.1)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20							E (2.3)	2.9	(3.6)	3.7	3.8	3.8	3.8	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7
21							E (2.3)	2.9	3.3	(3.5)	3.8	3.8	3.8	3.8	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4
22							1.3 ^J	2.4 ^J	2.8	3.4	3.6	3.7	3.8	3.7	(3.5)	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4
23							E (2.3)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24							E (2.3)	2.9	3.3	(3.6)	A	3.8	(3.7)	3.7	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4
25							E (2.1)	(3.1)	3.3	(3.5)	3.8	3.8	3.8	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7
26							B (2.3)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27							E (2.1)	(2.8)	A	3.3	3.4	3.3	3.3	3.3	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3
28							E (2.1)	2.8	(3.3)	B	3.7	A	C	C	C	C	C	C	C	C	C	C	C	C	C
29																									
30																									
31																									
Median Value							E	2.1	2.8	3.3	3.6	3.7	3.8	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7
Count							23	28	21	17	19	16	15	20	22	19	25	26	22	22	22	26	26	26	26

Sweep 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denkitusshin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

h_E

Shibata

Lat. 37°57.0'N
Long. 139°15.6'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																								
2								A B (170) ^B (100)	(100)	(100)	A B (100)	B (100)	B (100)	B (100)	B (100)	B (100)	A A (100)	A A (100)	B B (100)					
3								E B A (100) ^H (100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	A A (100)	A A (100)	A A (100)					
4								B B 100	A 120	A 120	A 120	A 120	A 120	A 120	A 120	A 120	A 120	A 120	A 120					
5								B B C	C C	C C	C C	C C	C C	C C	C C	C C	100 100	150 150	E E					
6								C (100)	100 100	100 100	B 120	B 120	B 120	B 120	B 120	B 120	110 110	C C	B B					
7								E B (150)	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
8								E (100)	(110)	C C	C C	C C	C C	C C	C C	C C	100 100	(150) ^H B	A A					
9								B B 100	100 110	100 100	100 100	100 100	100 100	100 100	100 100	100 100	(100) 130	B B	A A					
10								B A 100	100 110	100 100	100 100	100 100	100 100	100 100	100 100	100 100	(100) 100	A A	A A					
11								E A 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
12								E A 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
13								B (140)	120 100	100 100	(130)	B 100	B 100	B 100	B 100	B 100	A 140	B B	A A					
14								B BH 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
15								E 150	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
16								B 140	C C	C C	C C	C C	C C	C C	C C	C C	100 100	A B	E E					
17								E BH 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	(100) 100	B B	A A					
18								E (120)	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	A A	B B					
19								E A 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	C C	A A					
20								E B 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	A A	B B					
21								E (160)	A 100	100 ^H 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
22								B 130	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100					
23								E 100	C C	C C	C C	C C	C C	C C	C C	C C	100 100	A 100 ^H	B B					
24								E 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	A A	B B					
25								E 130 ^H	A 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	A A	100 100					
26								B 110 ^H	C C	C C	C C	C C	C C	C C	C C	C C	100 100	A A	B B					
27								E (110) ^H	110 ^F A	100 100	100 100	100 100	100 100	100 100	100 100	100 100	100 100	A A	B B					
28								E A 100	A B (100)	A C	C C	C C	C C	C C	C C	100 100	A 100	B B						
29																								
30																								
31																								
Median Value																								
Count																								

Sweep 1.0- Mc to 12.0 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyūjo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

37°57.0'N
139°15.8'E

Shibata

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Feb. 1949

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	24	25
1	4.7 ^F	2.9 ^F	3.1	2.4	5.4 ^F	5.2 ^F	4.4 ^F	(2.3)	<E	(5.2)	B	B	B	B	B	B	B	2.5	2.7	2.3	2.1	2.0	2.4	2.3	2.4	2.5
2	2.4	E	(2.3)	2.2	E	E	E	2.4 ^F	<E	B	B	B	5.2	3.9	3.9	3.1	2.8 ^F	2.2	3.3	2.9	2.7	2.4	2.3	2.4	2.3	1.7
3	3.4	3.0	3.0	2.4	2.5	2.5	2.4 ^F	2.1	<E	5.3	(4.9)	4.5	4.8	3.9	5.3 ^F	(5.0)	4.1 ^F	3.2	3.1	2.4	2.5	2.1 ^F	E	E	E	E
4	E	1.3	3.1	2.4 ^F	2.3	2.5	2.4 ^F	2.1	<E	4.9 ^F	<E	(4.8)	5.2	<E	<E	<E	3.0	3.8	4.0 ^F	1.8	2.0	2.7 ^F	2.0	E	E	E
5	2.6	2.6 ^F	2.8	3.5 ^F	2.3 ^F	2.0	2.2	<E	C	C	C	C	C	<E	<E	5.4	<E	<E	2.8	2.4	2.4	B	B	B	2.2	
6	B	1.8	2.8	1.5	C	C	C	<E	3.8	<E	3.6	B	<E	<E	<E	3.9	<E	C	B	3.1	B	3.0	E	E	E	
7	E	E	E	E	E	E	E	<E	<E	5.9	5.1	5.5	5.5	5.1	D	4.5	3.5	<E	C	C	C	C	C	E	B	3.2
8	(3.0)	2.2	2.7	B	E	E	E	<E	5.4	<E	5.4	<E	6.1	5.6	4.9	4.2	4.2	2.7	B	B	2.4	2.4	2.3	2.4	B	
9	2.6	2.5	2.4	2.4 ^F	5.3	E	B	<E	C	C	C	C	3.8	<E	4.5	2.5	<E	<E	2.9	E	E	E	E	E	E	
10	E	E	E	E	2.8	2.8	E	<E	<E	3.6	4.0	6.7	B	B	4.0	4.2	3.4	<E	B	B	1.9	2.6	2.4 ^F	E	E	
11	E	E	E	2.7 ^F	3.1	2.6 ^F	B	(2.7 ^F)	<E	<E	<E	4.0	<E	4.1	<E	5.9	2.4	3.0	(3.0)	2.9	2.4	E	2.3 ^F	2.0	E	
12	2.3 ^F	E	B	E	(2.8 ^F)	2.4	4.0 ^F	3.0	C	C	C	C	C	C	C	C	<E	3.1	B	(2.9)	2.7 ^F	2.3	1.9	2.4	2.4	
13	2.4	2.2	3.5	1.8	2.4	1.8	(2.4)	2.5	3.8	4.7	3.8	<E	<E	<E	<E	3.7	<E	B	2.6	2.8	E	2.7	4.4	4.5		
14	3.4	2.1	2.7	2.7	3.1	4.2	2.3	2.4	3.0	3.7	<E	<E	<E	<E	<E	<E	<E	<E	B	2.3	2.4	2.4 ^F	2.5	E		
15	E	E	E	E	E	E	E	E	2.1	3.1	3.8	5.1	4.1 ^B	4.1	<E	<E	2.9	(2.7)	B	2.3	B	E	E	E	E	
16	2.4	E	E	2.3	1.9	B	2.1	<E	C	C	C	C	C	C	C	3.5	3.5	2.9	2.9	2.5	E	E	1.9	E		
17	2.3	(5.0 ^F)	(4.5)	2.4 ^F	E	E	E	2.7	<E	4.0	3.7	<E	6.7	5.4	3.9	3.7	3.9	2.8	5.1	2.7	2.6	2.4	E	E		
18	E	E	2.6	2.4	E	E	E	2.2	<E	3.6	6.6	5.9	B	3.4 ^F	<E	<E	3.4	3.1	2.6	2.5	2.5	2.3	2.7	B		
19	2.4	B	(2.4)	2.9 ^F	2.4 ^F	2.5 ^F	B	2.2	C	C	C	C	C	C	C	C	C	2.4	B	(3.0)	B	E	E	E		
20	2.5 ^F	2.5 ^F	2.5 ^F	3.3 ^F	B	E	B	B	(3.0)	B	<E	<E	<E	<E	5.5 ^F	4.1	<E	3.8	2.5	B	2.4	E	E	E		
21	(2.5)	2.5 ^F	2.6 ^F	2.4 ^F	E	2.4	(2.2)	2.3	3.4	4.0	<E	<E	4.0	<E	<E	3.7	3.4	<E	2.1	B	2.8	E	E	E		
22	2.2	2.1	2.5	E	2.0	1.2	2.3	<E	<E	<E	3.8	4.0	C	C	C	3.9	3.5	<E	(2.2)	2.4	F	E	3.2	(2.4)		
23	E	E	E	E	E	E	E	2.2	3.8	4.7	3.9	4.2	<E	<E	<E	4.0	(3.2)	2.4	2.2	E	E	E	E	E		
24	2.5 ^F	2.6	2.4	B	E	1.8	E	2.7	3.8	4.7	3.9	4.2	<E	<E	<E	4.0	(3.2)	2.4	2.2	E	E	E	E	E		
25	E	E	E	E	2.8 ^F	2.4	2.4	2.6	3.6 ^F	4.3	4.5	3.8	<E	<E	<E	4.5	3.5	3.4	2.8	C	C	B	E	E		
26	2.4	2.4	3.4	E	2.4	E	2.8	2.9	C	C	C	C	C	C	(4.4 ^B)	C	(2.7 ^F)	3.1 ^F	2.8	2.2	2.2	C	C	E		
27	B	2.3 ^F	2.4 ^F	E	2.4 ^F	E	B	2.7	3.7 ^F	4.1	4.2	3.9	3.8	4.3	4.1	3.6	3.0	3.7	4.1 ^F	C	C	2.9	2.7	2.1		
28	E	B	2.4	2.9	E	2.4	B	2.3 ^F	<E	4.0	P	3.4	3.7	C	C	3.7	(3.4)	<E	B	E	E	E	E	E		
29																										
30																										
31																										
Median Value	2.4	2.1	2.5	2.4	2.3	1.5	2.2	2.3	<E	4.0	3.8	4.0	3.9	<E	<E	3.9	3.4	2.6	2.8	2.4	2.4	2.3	2.5	2.5	2.5	
Count	2.6	2.6	2.7	2.6	2.6	2.6	2.1	2.7	2.1	1.8	1.8	1.8	1.6	2.0	2.3	2.6	2.5	2.6	1.9	2.8	2.2	2.5	2.5	2.5	2.5	

Sweep JIS Mc to 17.7 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denshi-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 37°57.0'N
Long. 139°15.8'E

Shibata

F₂-M3000

Feb. 1949

Day	135°E Meas Time																														
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
1	A	2.9	3.5	3.6	3.0	A	A	3.4	3.4	3.3	B	3.0	3.0	2.9	3.0	3.3	3.3	3.1	3.0	3.2	3.2	3.0	2.9	2.9	2.8						
2	2.5	2.7	2.9	2.9	2.7	3.3	S	3.5	3.3	3.2	3.3	3.0	3.0	3.2	3.2	3.2	3.2	3.2	3.0	3.1	3.1	3.0	3.0	2.8	2.8						
3	2.5	2.8	3.1	3.1	2.7	3.0	3.4	3.4	3.2	3.2	3.3	3.1	2.9	3.0	2.9	3.0	3.2	3.2	3.0	3.1	3.1	3.0	3.0	2.9	2.5						
4	2.3	2.6	2.6	2.7	2.7	3.0	3.4	3.2	2.9	S	3.0	2.8	2.8	2.8	2.9	2.8	2.9	3.1	2.8	3.0	3.0	2.9	2.9	2.9	2.9						
5	2.5	2.7	2.6	2.8	3.0	3.0	3.1	C	C	C	C	C	C	3.1	2.9	3.0	3.2	2.9	3.1	3.2	3.3	3.3	3.0	2.8							
6	3.1	3.0	2.7	C	C	C	3.3	3.4	3.3	3.2	3.2	3.3	3.2	3.2	2.9	3.5	3.1	3.1	3.1	3.0	3.0	3.1	2.6	2.5							
7	2.3	2.5	2.5	2.5	2.5	2.8	2.6	3.2	2.9	3.0	3.0	2.9	2.9	2.8	2.8	3.0	3.0	3.0	C	C	C	C	2.7	2.8							
8	2.9	3.0	2.7	2.8	3.0	2.8	2.5	3.4	3.2	3.1	3.0	2.8	2.8	2.9	2.8	2.9	2.9	2.9	2.9	3.0	2.9	3.0	3.0	2.7	2.8						
9	2.8	2.9	2.6	2.5	2.6	3.1	3.0	C	C	C	C	C	2.9	3.0	3.0	3.0	3.0	3.2	2.8	2.9	3.1	3.1	3.1	2.7	2.7						
10	2.8	2.8	2.8	2.8	3.0	3.0	3.0	3.2	3.3	3.2	3.1	2.8	2.8	2.8	3.0	3.0	3.1	3.1	3.0	3.0	3.2	3.2	3.2	2.9	2.7						
11	2.6	2.6	2.7	2.6	2.5	2.7	3.4	3.0	3.2	3.0	3.0	2.9	2.7	2.7	2.8	2.8	2.8	2.8	2.9	3.0	3.0	3.0	2.6	2.8	2.8						
12	(2.7)	2.6	2.7	2.5	2.4	2.6	2.7	3.2	C	C	C	C	C	C	C	2.9	2.9	2.9	3.0	2.8	2.9	2.9	2.6	2.8	2.9						
13	2.7	2.8	2.7	3.0	2.5	2.6	2.7	3.1	3.3	3.1	3.0	3.0	2.8	2.8	2.9	2.9	3.0	3.1	3.0	3.1	3.0	3.1	2.9	2.7	2.7						
14	2.8	3.0	3.0	3.0	2.7	2.7	3.4	3.3	3.4	3.4	3.0	3.0	3.1	2.9	2.8	2.9	3.0	3.1	3.0	3.0	3.2	3.2	3.2	2.9	2.9						
15	J	2.9	2.9	3.0	2.8	2.8	2.8	3.6	3.2	3.4	3.1	3.1	2.9	2.9	3.0	3.0	3.0	3.1	3.0	2.9	3.1	3.1	2.9	2.8	2.9						
16	2.7	2.9	2.7	2.5	2.6	2.7	3.1	3.3	C	C	C	C	2.8	2.8	2.8	2.9	2.9	2.9	3.0	3.0	2.9	3.1	3.2	3.1	3.1						
17	2.7	2.9	3.1	3.2	2.7	2.8	3.3	3.4	3.2	3.1	2.9	2.9	2.9	2.8	2.8	2.8	2.7	2.7	2.8	2.9	2.9	2.9	2.9	2.7	2.7						
18	2.6	2.6	2.4	2.6	2.4	3.0	3.2	3.1	3.0	3.1	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	3.0	2.9	2.9	2.9	2.9	2.9						
19	2.7	2.8	3.1	2.6	2.7	2.5	2.9	3.4	C	C	C	C	C	C	C	2.8	2.8	2.9	3.0	2.9	2.9	3.1	3.0	2.9	2.9						
20	3.2	2.9	2.9	2.8	2.8	3.0	3.1	3.3	3.4	3.1	3.1	3.1	3.2	2.9	2.9	3.0	3.2	2.9	2.9	3.0	3.0	3.2	3.2	2.9	2.9						
21	2.7	2.5	2.9	2.6	2.7	2.7	3.2	3.2	3.2	3.2	3.1	2.9	2.9	2.9	3.0	2.8	3.0	3.3	3.0	3.1	3.1	3.1	3.0	2.9	2.8						
22	2.8	2.7	2.7	2.4	2.7	2.9	3.0	3.2	3.3	3.1	2.9	3.0	2.9	2.9	2.8	2.8	2.9	2.9	3.0	3.0	3.1	3.1	3.0	2.9	2.8						
23	3.0	2.7	2.9	2.6	2.7	2.8	3.1	C	C	C	C	C	C	2.9	3.0	3.0	3.0	3.1	3.0	3.0	3.1	3.1	3.0	2.9	2.8						
24	2.8	3.2	2.7	3.0	3.2	2.9	3.0	3.4	3.2	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.2	3.1	3.0	3.1	3.1	3.1	2.8	2.9	2.8						
25	2.7	2.8	2.7	2.8	3.0	2.7	3.0	3.2	3.2	3.4	3.1	3.2	3.2	3.0	3.2	3.1	3.0	3.2	3.2	C	C	C	3.2	2.9	2.9						
26	3.0	2.9	3.0	3.0	3.2	3.1	3.1	3.4	C	C	C	C	C	C	3.0	3.0	3.0	3.1	3.2	3.0	3.2	3.0	3.1	C	C						
27	2.8	2.9	3.0	3.0	2.6	2.8	3.0	3.1	3.3	3.2	B	B	3.2	2.9	3.1	2.9	3.0	3.2	3.0	3.2	3.0	3.0	3.1	2.8	2.8						
28	2.7	2.8	2.9	2.9	3.0	2.8	2.9	3.1	3.2	3.2	3.1	3.2	C	C	C	3.1	3.1	3.1	3.2	3.1	3.1	3.1	3.1	2.8	2.8						
29																															
30																															
31																															
Mean	2.7	2.8	2.7	2.8	2.7	2.8	2.9	3.2	3.4	3.2	3.1	3.0	2.9	2.9	2.9	2.9	3.0	3.1	3.0	3.0	3.1	3.0	3.0	2.9	2.8						
Count	2.6	2.7	2.8	2.7	2.7	2.6	2.6	2.5	2.1	2.1	2.0	1.8	2.0	2.3	2.5	2.5	2.6	2.8	2.6	2.4	2.4	2.4	2.2	2.5	2.4						

Sweep 1.0 Mc to 1.0 Mc in 1.5 min

Manual

S 9

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

37°57.0'N
139°15.8'E

Shibata

f min

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	A	A	A	1.5	A	A	A	1.7	2.9	3.7	3.7	3.3	4.6	4.3	3.7	3.5	3.2	2.1	2.0	1.5	1.5	1.5	1.4	1.6	
2	1.2	E	1.1	E	1.1	E	E	2.1	2.6	3.7	3.7	4.7	4.5	4.3	3.9	3.6	2.8	2.2	A	A	A	1.5	1.4	1.5	
3	1.5	1.4	A	1.2	E	E	E	1.8	2.8	3.3	3.6	3.7	3.7	3.7	3.6	A	2.7	2.1	A	A	1.4	1.4	1.4	1.4	
4	1.6	1.3	A	E	1.4	1.3	1.5	1.9	3.0	3.3F	3.7	A	3.9	3.7	3.7	3.3	2.7	2.1	A	1.6	1.6	1.5	1.6	1.4	
5	E	E	A	E	A	E	1.5	1.3	C	C	C	C	C	C	C	C	2.7	1.3	1.4	1.4	1.4	1.3	1.2	1.5	
6	1.4	1.3	1.4	1.4	C	C	C	2.1	2.8	3.4	3.7	2.4	3.3	3.7	3.7	3.4	2.7	1.24	1.4	1.3	3.1	1.5	1.4	1.5	
7	1.1	E	E	E	E	E	E	2.1	2.7	4.4	3.8	4.1	A	5.9	4.4	1.24	2.7	2.2	C	C	C	C	1.5	A	
8	A	F	1.2	1.1	E	E	E	2.5	3.0	3.3	3.6	3.3	A	A	4.1	3.5	2.8	2.1	1.5	1.7	1.6	1.6	1.6	1.6	
9	1.5	E	E	E	E	E	1.5	2.1	C	C	C	C	C	3.3	3.6	3.3F	2.9	1.9	1.6	1.5	1.6	1.5	1.2	1.4	
10	1.1	E	1.4	E	E	E	1.4	2.2	2.9	3.3	3.3	A	4.7	4.6	3.9	3.6	2.8	2.2	1.5	1.5	1.3	1.4	1.4	1.3	
11	1.2	1.1	E	E	E	A	E	1.3	2.8	3.3	3.7	3.8	3.9	4.2	3.6	A	3.0	2.3	1.9	1.6F	1.5	1.4	1.4	1.3	
12	1.1	E	E	E	E	E	E	2.3	2.8	C	C	C	C	C	C	C	2.9	2.3	E	1.9	1.1	1.3	1.6	1.4	
13	1.4	F	E	E	E	1.2	E	2.4F	3.0	3.4	3.7	3.9	4.2	4.2	4.3	3.5	2.9	2.9	1.5	1.3	1.2	1.5	A	1.6	
14	1.6	1.4	1.2	1.1	E	E	1.4	1.9	2.7	3.6	3.7	4.0	4.1	4.2	3.7	3.3	3.1	2.2	1.5	1.4	1.4	1.4	1.4	1.8	
15	E	E	E	E	E	E	E	2.4	2.9	3.3	4.2	4.3	4.0	3.7	3.7	3.3	2.9	2.6	1.6	1.6	1.4	1.4	1.5	1.5	
16	E	E	E	E	E	E	1.4	2.0	C	C	C	C	3.8	3.6	3.5	2.9	2.2	2.2	1.5	1.5	1.2	1.1	E	E	
17	E	E	E	E	E	E	E	2.1	2.9	3.9	3.7	4.2	4.4	4.0	3.7	3.4	3.1	2.2	1.2	1.2	1.3	1.4	1.2	1.3	
18	1.1	E	E	E	E	E	E	2.0	3.0	3.4	A	4.4	4.5	4.4	3.8	3.7	3.3	2.1F	1.6F	A	1.5	1.4	1.3	1.4	
19	1.1	E	E	E	E	E	E	1.1	2.1F	C	C	C	C	C	C	C	2.3	2.3	1.6	1.6	1.5	1.6	1.4	1.4	
20	E	1.4	1.2	E	E	E	E	2.3	3.0	3.6	3.7	3.8	3.9	3.8	A	3.5	2.9	2.6	2.0	1.3	1.6	1.2	1.4	1.3	
21	E	E	E	E	E	E	E	2.3F	2.9	3.3	3.8	3.8	3.8	3.9	3.7	3.3	2.9	2.1	1.4	1.4	1.4	1.4	1.3	1.3	
22	1.1	1.2	E	E	E	E	E	2.5	3.0	3.5	3.6	3.9	4.0	3.9	3.7	3.4	2.9	2.3	1.5	1.5	1.5	1.6	1.4	1.4	
23	1.1	E	E	E	E	E	E	2.3	C	C	C	C	C	C	4.3	3.5	2.9	2.3	1.5	1.3	1.4	1.6	1.5	1.2	
24	E	E	E	E	E	E	E	1.2	2.4	3.3	3.7	A	3.8	3.8	3.7	3.3	2.8	2.6	1.5	1.6	1.5	1.4	1.5	1.5	
25	1.5	1.1	E	E	E	E	1.4	2.1	A	3.4	3.5	A	3.8	3.8	3.8	3.3	2.9	2.3	A	C	C	1.6	1.3	1.4	
26	1.1	E	E	E	E	E	1.4	2.3	C	C	C	C	C	C	*A	C	2.9	2.2F	1.6F	AF	1.5	1.5	C	C	
27	E	E	E	E	E	E	E	2.2	2.3	A	3.5	A	A	3.6	3.4	3.3	2.8	2.3	1.7	C	C	1.6	1.7F	1.4	
28	1.4	E	E	E	E	E	E	2.5F	3.2	3.4	4.3	3.7	4.3	C	C	3.3	2.9	2.5	1.6	1.6	1.4	1.3	1.5	1.4	
29																									
30																									
31																									
Minute	1.1	E	E	E	E	E	E	2.1	2.9	3.4	3.7	3.9	4.0	3.9	3.7	3.4	2.9	2.2	1.0	1.5	1.5	1.4	1.4	1.4	
Max	2.6	2.7	2.4	2.8	2.4	2.6	2.8	2.8	2.0	2.0	1.6	1.8	2.2	2.3	2.3	2.6	2.6	2.8	2.3	2.1	2.4	2.7	2.6	2.6	
Count	26	27	24	28	24	26	28	28	2.0	2.0	1.6	1.8	2.2	2.3	2.3	2.6	2.6	2.8	2.3	2.1	2.4	2.7	2.6	2.6	

Sweep—1.0 Mc to 17.0 Mc in 1.5 min

March

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb, 1949

15 min

Shibata

Lat. 37°57.0'N
Long. 139°15.8'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	25
1	1.4 F	E	E	E	E	E	1.4	1.4	1.3	2.3	B	B	B	B	B	B	1.9	2.2	1.8	2.1	1.3	1.6	E	E	2.2
2	1.2	E	E	E	E	E	1.5	1.5	1.3	1.6	2.3	B	3.2	3.2	2.7	2.1	1.9	1.7	1.6	1.5	1.5	1.5	1.7	1.7	1.5
3	1.5	1.1	E	E	E	E	1.4	1.6 F	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.3	1.6	1.6	1.7	1.5	1.6 F	1.6	E	E	
4	1.1	E	E	E	E	E	1.5 F	1.8	1.9	1.9 F	2.0	2.1	2.2	2.1	2.2	1.9	1.5	1.6 F	1.6	1.6	1.6	1.7 F	1.7	E	
5	2.1	1.8 F	E	E	E	E	1.9	1.6	C	C	C	C	2.0	2.0	1.8	1.8	1.7	1.4	1.7	2.2	1.8	B	B	1.8	
6	B	1.5	E	E	E	E	C	1.4	1.5	2.0	2.0	B	2.2	2.0	2.0	1.8	1.9	C	B	2.2	B	2.3	E	E	
7	E	E	E	E	E	E	E	2.1	1.8	B	2.1	2.4	2.6	2.5	B	2.3	1.8	1.6	C	C	C	C	B	B	1.5
8	E	E	E	E	E	E	E	1.5	1.3	1.8	1.8	2.1	1.9	2.1	2.0	1.7	1.7	1.7	1.7	1.9	2.2	1.9	1.6	B	
9	E	2.0	2.2	2.0 F	E	E	E	1.9	C	C	C	C	1.8	1.8	1.8	2.2	1.8	1.6	1.5	F	E	E	E	E	
10	E	E	E	E	E	E	E	1.6	1.6	1.6	1.6	1.7	B	3.0	3.0	2.2	1.6	1.5	B	1.6	1.7	1.7	1.7	E	
11	E	E	E	E	E	E	E	1.6 F	1.5 F	1.6	1.6	1.9	2.0	2.6	1.7	1.6	1.6	1.4	1.4	1.2	1.6	E	E	1.9	
12	1.7	E	B	E	E	E	E	1.7	C	C	C	C	C	C	C	C	1.8	1.6	B	1.8	1.5	1.3	1.4	1.6	
13	1.6	E	E	E	E	E	E	1.8	1.6	1.6	2.1	2.0	2.4	3.0	2.3	2.1	1.9	1.6	1.5	1.5	E	1.5	1.6	1.3	
14	E	E	E	E	E	E	E	2.0	1.5	1.6	2.0	2.0	1.9	1.8	1.8	1.7	1.6	1.8	B	1.7	1.4	1.6	1.8	E	
15	E	E	E	E	E	E	E	1.7	1.6	1.6	1.8	2.0	B	2.0	2.6	2.1	1.6	1.5	B	1.6	B	E	E	E	
16	E	E	E	E	E	E	E	1.6	1.5	C	C	C	C	C	C	C	1.7	1.8	1.6	F	E	E	E	E	
17	1.7	1.4	1.7	2.2 F	E	E	E	1.6	1.5	1.5	1.8	2.0	2.0	1.8	1.8	1.9	1.7	1.5	1.5	1.5	1.8	1.5	E	E	
18	E	E	E	E	E	E	E	1.4	1.4	1.7	1.9	1.7	B	2.0	1.8	1.9	1.6	1.5	1.7	1.6	1.6	1.8	2.2	B	
19	1.9	B	1.4	E	E	E	E	1.7	C	C	C	C	C	C	C	C	C	1.4	B	2.2	B	E	E	E	
20	1.9 F	E	E	E	E	E	E	1.5	1.6	B	2.0	1.9	1.8	2.1	1.9	1.6	1.8	1.6	2.3	B	1.6	E	E	E	
21	(2.3) F	2.2 F	1.6	2.0	E	E	E	1.5	1.7	1.9	2.1	2.1	2.0	1.7	1.7	1.8	1.6	1.3	2.3	E	2.3	E	E	E	
22	1.1	E	E	E	E	E	E	1.3	1.5	1.6	1.3	1.9	1.9	1.8	1.7	1.6	1.6	1.5	B	1.5	1.7	E	E	E	
23	E	E	E	E	E	E	E	1.8	E	C	C	C	C	C	2.4	1.5	1.7	1.7	(2.1)	(2.2)	E	E	1.8	(2.2) F	
24	1.9 F	2.1	1.5	B	E	E	E	1.5	1.6	1.7	2.0	1.7	1.8	1.8	1.6	1.6	1.6	1.6	1.9	E	E	2.0	E	E	
25	E	E	E	E	E	E	E	2.0	1.6	1.7	1.7	1.7	1.9	2.0	1.9	1.7	1.7	1.6	1.6	C	C	B	E	E	
26	1.8	E	E	E	E	E	E	2.0	1.4	C	C	C	C	C	1.4	C	C	1.6	1.1	1.1	1.3	1.3	C	C	
27	B	1.3 F	2.2 F	E	E	E	E	1.4	1.4	1.6	1.7	1.7	1.7	1.9	1.6	1.7	1.5	1.8	1.7 F	C	C	1.7	1.6	1.8	
28	E	B	1.6	2.3	E	E	E	1.6	1.6	1.8	B	2.5	1.7	1.7	C	C	1.7	1.6	B	E	E	E	E	E	
29																									
30																									
31																									
Median Value	E	E	E	E	E	E	E	1.5	1.6	1.6	1.9	2.0	1.9	2.0	1.9	1.8	1.7	1.6	1.6	1.6	1.6	1.5	E	E	F
Count	2.6	2.6	2.7	2.6	2.6	2.6	2.1	2.8	2.1	1.9	1.9	1.8	1.6	2.1	2.3	2.4	2.1	2.1	2.7	1.9	2.2	2.5	2.5	2.5	2.5

Sweep 1.0 Mc to 1.250 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

35°42.4'N
139°29.3'E

Kokubunji, Tokyo

ft.

Feb. 1949

Day	155°E Mean Time											20	21	22	23								
	00	01	02	03	04	05	06	07	08	09	10					11	12	13	14	15	16	17	18
1	3.5	3.6	4.1	4.1	3.5	A		9.9	10.6	12.9	14.3	14.3	14.0	14.0	13.5	11.7	8.4	6.6	4.9	(4.6) ^P	4.3	3.8	3.3
2	3.2	3.2	3.5	3.3	3.3	3.6	3.8	6.7	8.9	9.0	12.0	10.8	11.4	11.5	12.0	11.0	9.3	8.2	6.9	7.0	5.7	4.3	3.9
3	3.9 ^S	4.0	3.8	5.0	4.2	3.1	3.6	7.6	9.0	11.0	12.9	13.5	13.6	13.0	12.7	12.6	12.4	11.0	8.6	8.4	5.8	4.9	4.5
4	3.4	3.6	3.8	3.8	3.4	3.6	3.5	7.5	11.5	12.5	13.1	12.9	11.7	12.0	12.7	12.1	11.7	11.0	8.3	8.9	7.5	5.9	6.4
5	4.8	5.0	4.9	4.8	4.3	4.3	4.4	8.4	11.0	11.1	C	C	C	C	12.0	10.8	8.6	8.7	8.5	5.2	4.7	4.8	
6	4.5	4.5	4.5	4.7	4.2	3.9	4.0	8.0	10.1	11.3	12.9	13.4	12.7	12.2	11.2	11.1	11.2	8.9	8.7	9.0	6.7	5.2 ^P	5.0
7	(4.4) ^F	5.2	5.1	4.7	4.6	4.4	4.6	8.3	12.1	13.7	15.3 ^P	14.9	13.9	12.9	13.2	13.0	12.6	12.0	10.8	10.1	7.7	5.9	5.6
8	5.1	5.1	4.7	4.8	4.5	3.7	3.8	8.3	11.4	12.5	12.9	12.7	12.5	12.1	11.3	12.0	11.9	10.9	9.6	9.0	8.1	7.3	6.9
9	6.4	5.7	5.0	4.7	5.0	5.3	4.0	7.9	(3.2) ^C	(10.9) ^C	13.1	12.1	12.4	12.3	12.4	11.8	11.6	11.2	9.1	8.7	8.0	6.4	5.3
10	5.9	5.3	5.5	5.1	4.7 ^H	4.7	4.7	8.6	10.9	C	C	C	13.3	13.0	12.1	11.1	11.2	10.6	9.5	8.9	(7.7) ^C	6.5	6.1
11	5.7	5.7	5.9	5.0	5.0	4.7	4.7	8.8	12.1	14.2 ^H	14.5	14.0	13.9	12.9	12.6	12.2	11.5	11.0	9.8	9.2	8.5	7.2	7.5
12	6.1	5.3	5.6	5.1	5.0	4.4	4.6	8.5	11.0	13.0	12.8	11.7	11.6	11.5	10.8	10.7	11.0	10.2	9.0	7.9	7.6	7.3	6.6
13	5.8	6.1	5.4 ^P	5.7 ^J	4.3	3.9	4.0	9.1 ^S	12.6	12.8	12.8 ^H	13.6	14.3	14.3	13.7	12.7	11.8 ^H	11.4	9.0	8.0	6.9	6.2	5.8
14	5.3	5.3	4.8	4.6	4.1	4.2	4.5	C	C	12.1	11.7	12.3	12.8	11.9	10.9	9.9	10.9	10.6	9.5	8.6	8.0	7.2	6.8
15	6.7	5.9	5.7	5.5	4.7	4.0	4.4	8.5	12.0	13.7	14.1	12.4	12.1	12.0	11.7	11.3	10.8	10.5	9.6	8.6	8.6	7.5	7.2
16	6.5	6.1	5.5 ^P	5.4 ^P	5.3 ^P	5.5	6.3	9.1	10.3	12.9	13.8	13.1 ^H	13.9	13.3	13.0	12.6	12.0	11.0	10.0	8.1 ^P	7.6	7.0 ^J	6.2 ^J
17	5.1	5.4	6.2	5.1	4.4	4.3	5.8	8.6	11.0	12.3	12.3	12.5	12.8	12.7	(2.2) ^C	11.7	11.0 ^P	10.8	(10.2) ^S	9.2	7.8 ^S	7.9	6.8
18	6.5	6.3	6.1	6.2	6.8	7.3	8.5	9.4	12.0	13.5	13.5	(13.7) ^C	13.9	13.4	13.2 ^P	13.0	12.5	12.1 ^P	11.6	10.2 ^S	8.9 ^S	9.1 ^S	7.3
19	6.5	6.7	6.2	5.4	5.2	5.0	5.9	10.6	11.6	12.5	12.9	13.6	14.1	13.4	13.6	13.2	13.4	12.6	11.5	10.1	9.1 ^S	8.0	7.3
20	6.1	5.8 ^P	5.6	4.9	5.1	5.8	(7.0) ^C	8.2	11.4	12.4	12.8	12.8	13.3	12.5	12.2	12.1	12.0	11.0	10.7	9.2	8.9	8.9	7.7
21	5.3	5.0	5.0 ^P	5.1	4.7	4.4	6.6	8.8	11.0	11.6	13.6	(13.9) ^C	14.2	13.8	13.0 ^H	13.3	12.8	12.0	11.0 ^P	9.8	9.6	8.9	7.5
22	6.8	6.4	5.7	4.8	4.3	5.2	5.2	7.4	11.9	13.6	13.8	13.8	13.7	12.9	13.2	12.8	11.5	10.3	11.1	9.6	8.3	7.1	6.8
23	6.8	6.2	5.7	5.0	4.9	5.4	5.7	10.0	11.8	13.5	13.8	14.5	14.5	14.6	14.5	14.5	13.5	12.4	11.6	11.0	8.9	7.5	6.4
24	6.0	6.3	4.1	5.8	4.9	4.0	4.6	8.7	11.4	12.5	13.1	13.9	13.7	13.7	13.6	13.3	11.7	9.9	9.1	8.8	8.7	6.7	6.1
25	5.8	5.8	(5.6) ^C	5.4	4.8	4.3	4.9	8.3	11.1	12.7	13.4	14.1	13.9 ^P	14.1	12.9	13.3	12.8	11.9	10.5	8.9	7.9	7.3	6.1
26	5.6 ^J	5.6 ^P	5.5	5.2	4.9	4.4	5.0	8.3	10.5	11.9	12.4	12.6	13.0	13.4	12.8	11.8	10.8	10.0	9.1	7.5	7.6	7.1	7.0
27	6.1	6.0	5.6	5.1	4.8	4.9	5.4	8.9	10.9	12.9	13.6	14.0	14.6	14.1	13.8	12.8	11.5	11.6	9.5	8.3	8.4	8.1	6.1
28	5.9	6.2	5.8	5.9	5.6	5.1	5.8	9.5	11.4	12.7	12.7	12.9	13.1	12.8	12.5	11.3	11.2	10.6	9.2	8.2	8.1	7.6	7.8
29																							
30																							
31																							
Mean Value	5.8	5.7	5.5	5.1	4.8	4.4	4.7	8.5	11.1	12.5	13.0	13.5	13.6	12.9	12.7	12.2	11.7	11.0	9.5	8.8	8.1	7.2	6.5
Count	28	28	28	28	28	27	27	26	27	27	26	26	27	27	28	28	28	28	28	28	28	28	28

Swamp 1.0 Mc to 17.0 Mc in 1.5 min

Manual

IONOSPHERIC DATA

35°42.4'N
139°29.3'E

Kokubunji, Tokyo

hp F₂

Feb. 1949

155°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	340	350	360	320	290	A	B	230	270	270	310	320	320	340	320	300	290	300	290	(280)	260	260	290	290
2	320	320	300	260	290	300	340	220	200	230	260 ^S	250	290	280	270	250	240	250	270	250	240	280	300	350
3	380	410	330 ^F	320	250	390	330	260	240	270	280	300	290	310	320	310	300	260	290	270	290	300	310	340
4	330	340	340 ^F	300	270	330	320	250	210	220	230	260	310	300	290	310	310	310	300	290	310	330	300	290
5	360	330	340	300	300	320	310	250	240	260	C	C	C	C	300	300	270	260	280	250	250	320	330	340
6	310	300	310	310	270	330	310	240	230	240	260	250	260	270	270	340	310	300	280	310	280	290	360	410 ^F
7	(430)	390	360	370	410	400	370	280	290	280	280 ^P	300	330	330	350	380	(360) ^S	310	290	260	250	350	380	300
8	330	290	330	330	330	340	380	270	250	260	290	300	320	330	300	310	310	290	280	290	270	300	290	290
9	320	310	340	370	380	280	300	250	(240) ^C	(240) ^C	250	290	280	290	270	280	270	260	280	270	240	250	250	280
10	310	250	270	270	270	250 ^H	250	(310)	290	C	C	C	280	280	300	290	280	270	260	300	(300) ^S	300	370	340
11	370	340	340	350	390	420	350	300	280	310	310	290	350	400	340	330	300	320	320	300	290	320	340	340
12	350	360	370	390	340	380	360	300	260	280	300	310	320	330	330	360	310	320	310	350	360	330	320	300
13	380	380	380	350	360	360	390	310 ^S	250	270	300 ^H	320	350	330	330	340	300	290	300	310	300	320	360	360
14	360	320	300	320	370	410	370	C	C	300	320	340	340	370	350	370	340	340	320	340	320	350	360	340
15	340	330	340	320	290	320	320	260	270	290	270	300	320	310	320	320	270	290	290	310	280	290	320	330
16	320	330	340 ^S	280 ^P	380 ^P	370	300	240	250	260	270	330 ^S	320	340	350	330	300	320	300	300	290 ^P	300 ^P	310 ^P	310
17	330	320	370	270	310	320	280	240	240	250	310	350	360	330	(350) ^C	360	(300) ^S	(300) ^S	(350) ^S	310	320 ^S	340	370	380
18	460	(460) ^S	360 ^S	370 ^S	410	380	320	280	290	300	290	(320) ^F	340	340	370 ^S	340	350	310 ^P	310 ^S	320 ^S	310 ^S	280 ^S	350	(370) ^S
19	390	330	310	350	340	380	360	270	250	300	300	310	320	360	340	350	330	310	310	290	310 ^S	300	310	310
20	320	350 ^P	320	360	350	310	(300) ^C	280	270	370	260	280	300	300	330	330	300	300	280	280	310	300	320	310
21	390	410	400	350	360	400	330	220	240	280	290	(300) ^C	300	310	320 ^H	310	330	280	280 ^P	260	240	250	280	290
22	390 ^F	300	300	380	330	310	320	270	270	280	260	310	300	320	340	310	330	280	320	300	310	340	360	340
23	320	320	290	380	430	390	330	270	260	270	300	310	340	350	330	360	320	330	330	310	250	330	330	400
24	370	320	420	350	290	380	340	280	280	250	280	310	290	280	280	300	280	280	290	280	270	290	320	350
25	370	390	(390) ^P	380	270	320	330	240	250	270	270	280	300 ^P	300	290	300	290	270	260	270	280	270	300	310
26	310 ^F	330 ^F	310	270	320	300	310	240	260	240	250	270	280	270	270	260	250	260	250	280	290	280	290	280
27	330	310	260	290	340	320	260	250	270	260	290	320	310	310	290	280	280	280	260	310	310	270	310	380
28	350	320	320	300	280	360	320	260	260	270	280	300	310	310	300	310	300	270	330	310	290	330	310	310
29																								
30																								
31																								
Mean Value	350	330	340	330	340	320	260	250	270	270	300	310	310	310	320	320	300	290	290	300	290	300	320	340
Count	28	25	28	28	27	27	26	27	27	26	26	27	27	27	28	28	28	28	28	28	28	28	28	28

Sweep 100-Mc to 1.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawaku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 35°42'41"N
Long. 139°29'3"E

Kokuburiji, Tokyo

h_pF₂

Feb. 1949

Day	135° E Mean Time											20	21	22	23											
	00	01	02	03	04	05	06	07	08	09	10					11	12	13	14	15	16	17	18	19		
1	230	280 ^A	A	220 ^A	200	A	240	210	220 ^C	220	270	270	270	280	280	270	240	210	230	230	(220) ^C	210	210	210	230	
2	250	260	260	230	210	230	190	180	210	220	230	190	200	230	220	200	200	200	200	200	200	200	200	200	240	270
3	(300)	330	300	250	(240)	(240)	270	220	220	230	220	230	280	280	240	230	220	180	210	220	200	230	230	250	250	
4	260	270	260	250	200	200	250	200	190	200	220	220	240	240	260	240	240	220	210	240	230	230	230	220	220	
5	270	250	250	240	200	230	250	230	210	220	C	C	C	C	C	C	210	200	200	220	190	230	250	250	250	
6	250	220	230	240	200	250	250	220	200	200	190	200	200	210	200	210	220	220	200	250	220	220	220	260	300	
7	320	300	280	250	300	290	230	230	220	220	210	290	220	270	250	250	220	220	210	210	200	200	200	250	250	
8	270 ^A	230	240	260	210	200	(250)	230	200	210	270	240	240	230	270	240	240	220	200	210	220	210	230	240	240	
9	220	240	250	270	280	210	180	210	(200) ^C	200	200	220	200	200	200	200	200	180	190	190	180	170	170	200	200	
10	200	200	200	210	190	180 ^H	(190)	290	280	C	C	C	200	250	240	190	240	200	190	210	210	200	230	260	260	
11	270	260	250	270	300	330	300	250	230	210 ^H	210	220	270	220	250	240	230	240	200	240	230	240	230	230	230	
12	250	270	270	290	300	260	300	230	230	250	210	220	270	220	250	240	230	240	200	240	230	240	230	230	230	
13	230	260	290	240	200 ^A	270	300	260	220	230	210 ^H	270	300	240	300	270	220 ^H	220	210	220	220	220	220	250	250	
14	270	250 ^A	210	250	250	300	300	C	C	230	240	360	250	240	280	360 ^C	250	250	230	230	230	230	260	250	250	
15	240	230	240	230	220	210	250	230	210	210	210	260	210	240	250	250	250	220	210	220	230	220	250	240	240	
16	240	240	250	260	260	280	220	200	200	210	220	210	250	210	260	300	230	220	210	210	230	220	220	230	230	
17	250	240	230	210	210	210	230	210	200	210	220	230	270	230	(230)	270	240	220	250	220	240	250	260	270	270	
18	250	320	320	350	300	250	230	230	220	210	220	250	240 ^B	220	230	220	250	240	210	210	220	230	220	250	250	
19	260	260	230	230	230 ^A	300	290	230	220	200	(230)	240	230	250	220	220	220	220	210	(200)	200	210	230	230	230	
20	230	240	250	260	250	240	(230)	220	230	270	200	200	200	250	260	180	200	200	230	220	220	230	210	240	240	
21	270	320	310	260	240	270	280	180	210	220	230	(230) ^C	230	220	250	200	200	200	180	190	190	170	190	200	200	
22	300	220	230	(240) ^C	250	230	230	230	230	200	220	190	220	200	190	210	230	230	240	210	200	200	230	250	240	
23	250	240	220	250	290	290	260	220	220	200	210	200	210	220	220	220	220	210	210	210	210	210	210	250	280	
24	290	250	310	270	210	E	260	250	230	230	200	230	220	230	220	200	210	210	220	220	220	200	240	250	250	
25	270	260	(250) ^C	230	(200) ^A	220	260	220	230	220	240	220	220	210	220	220	220	210	200	200	200	210	210	210	230	
26	230	270	230	220	240	220	210	210	200	200	210	200	200	200	210	200	210	200	200	210	220	220	220	220	220	
27	230	240	220	220	250	260	220	210	200	210	200	210	250	250	250	250	220	200	200	210	230 ^H	210	230	230	230	
28	270	250	240	240	210	210	250	230	220	200	220	240	240	220	210	220	200	210	190	220	230	210	220	250	250	
30																										
31																										
Mean value	260	250	250	240	230	250	220	220	210	220	230	230	230	230	240	220	220	220	210	220	220	220	220	230	240	
Count	28	28	27	28	28	26	27	27	27	26	26	27	27	27	27	28	28	28	28	28	28	28	28	28	28	

Sweep 1.0 Mc to 1.7 Mc in 1.5 min

Normal

Electrical Communication Laboratory, Japanese Ministry of Telecommunications.
 (Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

ff₁

Kokubunji, Tokyo

Lat. 35°42.4'N
 Long. 139°28.3'E

Day	135°E Mean Time																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	L	L	L	L	L	L	A	A	A					
2							A	A	A	A	L	L	A	A	L	L	A	A	A					
3							A	A	A	A	L	L	A	A	L	L	A	A	A					
4							A	A	A	A	L	L	L	L	L	L	A	A	A					
5							A	A	A	A	C	C	C	C	B	A	C	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7							A	A	A	A	L	L	A	A	A	A	L	A	A					
8							A	A	A	A	L	L	A	A	A	A	L	A	A					
9							A	A	A	A	L	L	A	A	A	A	L	A	A					
10							A	A	A	A	C	C	C	C	L	L	L	L	A					
11							A	A	A	A	A	A	A	A	L	L	L	L	A					
12							A	A	A	A	A	A	A	A	L	L	L	L	A					
13							A	A	A	A	L	L	A	A	L	L	L	L	A					
14							A	A	A	A	L	L	A	A	L	L	L	L	A					
15							A	A	A	A	L	L	A	A	L	L	L	L	A					
16							A	A	A	A	A	A	A	A	L	L	L	L	A					
17							A	A	A	A	A	A	A	A	L	L	L	L	A					
18							A	A	A	A	L	L	A	A	L	L	L	L	A					
19							A	A	A	A	L	L	A	A	L	L	L	L	A					
20							3.2	A	A	A	L	L	A	A	L	L	L	L	A					
21							A	A	A	L	L	L	L	L	L	L	L	L	A					
22							3.4	A	A	A	L	L	A	A	L	L	L	L	A					
23							A	A	A	L	L	A	A	A	L	L	L	L	A					
24							A	A	A	L	L	A	A	A	L	L	L	L	A					
25							A	A	A	L	L	L	L	L	L	L	L	L	A					
26							A	A	A	A	A	A	A	A	L	L	L	L	A					
27							A	A	A	A	A	A	A	A	L	L	L	L	A					
28							L	A	A	A	L	L	L	L	L	L	L	L	A					
29																								
30																								
31																								
Mean Value																								
Count							2																	

Sweep 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

35°42.4'N
139°28.3'E

Kokubunji, Tokyo

IONOSPHERIC DATA

h'F₁

Feb. 1949

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	A	A	240	220	250	230	250	A	A							
2								Q	A	A	200	210	Q	Q	210	200	Q	Q	Q	Q				
3								Q	A	A	Q	Q	Q	240	210	Q	Q	Q	Q	Q				
4								Q	A	A	180	200	200	210	210	A	120	Q	Q	Q				
5								Q	A	A	Q	Q	Q	Q	Q	Q	210	Q	Q	Q				
6								Q	A	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
7								Q	A	A	210	210	Q	Q	Q	230	220	200	Q	Q				
8								Q	A	A	210	210	200	230	230	Q	Q	Q	Q	Q				
9								Q	A	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
0								250 (250)	Q	Q	Q	Q	Q	210	210	210	190	Q	Q					
1								Q	A	A	Q	Q	Q	Q	220	220	Q	Q	Q					
12								Q	A	A	220	Q	Q	Q	210	230	Q	220	Q					
13								Q	A	A	220	Q	Q	220	230	Q	220	Q	Q					
14								Q	A	A	230	Q	Q	Q	250	240	Q	Q	Q					
15								Q	A	A	Q	Q	Q	Q	200	200	210	200	Q					
16								Q	A	A	Q	Q	Q	200	Q	200	210	210	Q					
17								Q	A	A	Q	Q	Q	240	Q	Q	220	Q	Q					
18								(17.6)	Q	A	Q	Q	220	Q	Q	Q	210	Q	Q					
19								Q	A	A	Q	Q	210	220	210	210	Q	Q	Q					
20								180	Q	A	Q	Q	Q	Q	200	210	Q	Q	Q					
21								Q	A	A	200	210 (21.0)	210	190	210	Q	Q	Q	Q					
22								210	Q	A	Q	Q	210	Q	Q	Q	Q	Q	Q					
23								Q	A	A	210	Q	Q	Q	Q	Q	Q	Q	Q					
24								Q	A	A	200	Q	Q	Q	Q	Q	Q	Q	Q					
25								Q	A	A	210	200	190	200	Q	210	210	Q	Q					
26								Q	A	A	Q	Q	Q	Q	Q	Q	Q	Q	Q					
27								Q	A	A	Q	Q	Q	Q	Q	Q	Q	Q	Q					
28								210	Q	A	200	200	200	220	220	Q	Q	Q	Q					
29									Q	A	200	210	200	200	Q	210	Q	Q	Q					
30																								
31																								
Number Valid Count								210	210	210	210	210	210	200	210	220	210	200						
Sweep	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Mc to	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Mc in	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
min																								

Feb, 1949

fE

Kokubunji, Tokyo

Lat. 35°42.4'N
Long. 139°29.3'E

IONOSPHERIC DATA

155°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						B	A	A	3.0	3.6	B	B	B	B	3.0	B	(2.9) ^J	B	E							
2						E	(2.6)	2.7	A	(3.5)	B	B	A	A	B	A	3.8	2.0	E							
3						E	(1.8)	(2.8) ^A	A	B	B	B	B	B	A	A	B	A	A							
4						B	2.1	3.0	2.1	3.6	A	A	3.2 ^J	B	B	A	A	A	AF							
5						E	2.1	2.7	(3.0) ^A	C	C	C	C	C	C	C	3.4	2.5	2.0	B						
6						B	A	A	A	B	B	A	B	B	B	B	(3.2)	(2.5)	1.9	B						
7						B	(2.0) ^A	2.8	B	3.4 ^J	(3.7)	B	B	3.4 ^J	3.2 ^J	2.9	2.2	E								
8						(1.2) ^J	2.1	2.7	3.3	3.5	3.6	S	3.8	3.7	A	3.0	2.1	E								
9						B	(2.2)	C	C	A	3.8	3.7	3.7	3.7	3.3	A	2.1	A								
10						B	2.0	2.8	C	C	C	B	B	B	3.9	3.5	3.1	2.1 ^H	(1.3) ^B							
11						B	2.4 ^J	2.8	3.3	3.6	3.7	(4.0) ^B	3.8	3.8	3.5	2.9	1.8	B								
12						1.5 ^J	2.2 ^H	2.7 ^H	(3.5)	B	B	S	S	B	3.8	3.4	3.1	2.2	E							
13						B	2.5 ^H	3.0	3.2 ^J	3.7	3.8	B	B	B	B	(3.5)	A	2.0 ^J	B							
14						E	C	C	B	3.4 ^J	B	B	B	B	B	B	A	2.2	1.4							
15						1.2 ^B	1.9	2.5	3.0 ^J	B	B	B	B	B	B	3.1	2.9	2.3	1.4 ^B							
16						1.2 ^J	(2.2) ^A	2.6 ^A	A	2.7	3.8	4.0	3.6	3.2 ^J	B	2.9	2.2	B								
17						1.5 ^J	2.4	2.9	A	B	B	B	B	3.7 ^B	B	3.4	B	2.3	(2.0) ^B							
18						B	A	B	3.3 ^B	3.5 ^B	3.6 ^B	B	(3.4)	B	B	B	3.1	2.3	1.5							
19						1.4 ^B	1.8	(3.0)	(3.4)	(3.7)	(3.7)	B	4.0 ^H	3.7	3.4	3.0	(2.5)	(1.4)								
20						C	2.4	2.8	B	B	B	B	B	3.0	B	A	(3.4)	A	2.0	B						
21						1.6 ^J	2.4 ^J	2.6	3.0 ^J	(3.2)	(3.8) ^B	3.8	3.6	B	(3.0) ^J	2.9	2.1	(1.6) ^J								
22						E	2.5 ^H	2.7	(3.0) ^J	3.6	4.0	3.8	3.7	3.4	3.4	2.9	2.0	B								
23						1.2 ^J	1.9	2.6	3.3	3.9	3.8	(3.6)	3.8	3.7	3.4	2.9	2.2	E								
24						E	2.3	3.0	3.4	3.7	3.7	4.0	A	A	(3.5)	2.9	2.1	B								
25						(1.3) ^J	2.2	2.9	3.2	(3.6) ^F	(3.5) ^J	A	3.9	(3.6) ^F	3.4	3.0	2.3	1.6								
26						B	2.1	3.0	3.5	3.5 ^J	(3.7)	A	A	(3.7)	3.5 ^J	(3.0)	2.2	(1.6)								
27						E	2.3	2.9	A	(3.3) ^A	A	A	A	(3.2)	3.9	(3.4)	(2.3) ^A	A								
28						(1.3) ^J	2.8	B	3.2 ^J	3.5	B	B	B	3.8	B	(3.1)	2.4	A								
29																										
30																										
31																										
Weight																										
Value																										
Count																										
1.2	2.2	2.8	3.2	3.6	3.7	4.0	3.8	3.7	4.0	3.8	3.7	3.4	2.9	2.2	1.4											
17	24	22	17	19	14	8	13	14	8	13	14	19	21	25	15											

Sheep: 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
 (Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949 h_E Kokubunji, Tokyo 35°42.4'N
139°29.3'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							A	A	A	100	100	B	110	B	120	B	100	B	E					
2							B	A	90	A	(110)	B	B	A	B	B	110	A	E					
3							E	B	110	A	B	(100)	B	B	A	A	B	A	A					
4							B	A	100	100	100	A	100	100	A	A	A	B	AF					
5							E	(150)	100	100	C	C	C	C	C	100	100	140	B					
6							B	B	A	100	A	100	100	100	100	100	100	100	B					
7							B	B	120	B	100	110	B	B	100	100	100	110	E					
8							B	120	110	110	100	100	100	100	100	100	110	100	E					
9							B	B	C	C	A	100	90	90	100	90	A	100	A					
10							B	90	100	C	C	C	B	B	110	100	100	100 ^H	B					
11							B	(150)	100	100	100	(100)	110	100	100	100	100	110	B					
12							100	(130) ^H	110 ^H	100	(100)	B	(100)	B	110	100	100	120	E					
13							B	140 ^H	110	100	100	100	B	B	B	100	(100)	110	B					
14							E	C	C	100	110	110	110	110	110	B	A	120	B					
15							B	(100)	100	100	100	100	B	(100)	B	100	100	110	B					
16							B	B	100	A	100	100	100	100	100	100	100	100	B					
17							E	120	A	A	100	(100) ^B	B	B	(100) ^B	100	100	110	B					
18							B	A	100	100	100	B	100	100	100	100	100	100	B					
19							B	130	(120)	100	110	110	110	110 ^H	110 ^H	100	110	110	B					
20							C	B	110	B	(100)	100	100	100 ^B	A	100	A	100	B					
21							B	110	100	100	100	(100)	100	100	100	100	100	100	B					
22							E	100 ^H	100	100	90	100	100	100	100	100	100	100	B					
23							B	B	100	A	100	100	100	100	100	100	100	100	B					
24							E	120	(100)	100	100	100	100	100	100	100	100	110	E					
25							B	(120)	100	100	100	100	100	100	100	100	100	100	B					
26							B	110	100	100	100	100	A	A	100	100	100	100	A					
27							E	110	100	A	A	100	A	100	A	100	100	A	A					
28							A	B	100	100	90	100	100	100	100	110	100	100	A					
29																								
30																								
31																								
Mean Value							120		100	100	100	100	100	100	100	100	100	100	100					
Count							1	15	23	17	23	20	17	16	22	23	22	23	23					

Sweep 1.6 Mc to 17.6 Mc in 1.5 min

IONOSPHERIC DATA

Feb. 1949

fts

Kokubunji, Tokyo

Lat. 35°42.4'N
Long. 139°29.3'E

155°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	3.6	2.8	3.0	2.5	2.2	4.4	4.3	2.3	3.8	<E	<E	B	B	B	3.6	B	B	3.1	E	E	C	E	E	E	E
2	E	E	E	E	E	E	E	2.2	<E	3.2	<E	B	B	B	3.9	B	3.2	<E	3.2	3.0	2.8	3.0	3.0	3.0	4.1
3	2.2	3.2	3.9	1.7	E	E	E	<E	<E	4.1	3.6	B	B	B	6.2	3.8	3.0	4.2	4.5	E	E	2.8	E	E	E
4	E	E	2.4	E	2.4	3.4	E	2.6	3.0	4.1	B	B	B	B	B	4.8	6.5	5.6	3.5 ^F	3.3 ^F	2.9	2.5	2.8	1.6	
5	2.8	1.6	E	E	2.8	2.0	E	<E	<E	4.4	C	C	C	C	C	3.5	C	<E	2.8	2.0	E	E	E	E	
6	E	2.2	3.4	3.0	3.0	3.0	2.8	2.8	3.8	3.8	B	B	B	B	B	B	3.2	2.3	3.4	3.2	2.6	2.4	E	E	
7	1.8	E	2.2	2.4	3.0	4.2 ^F	2.4	3.4	3.4	B	4.4	4.2	5.6	B	<E	<E	<E	<E	E	E	E	3.0	2.6	2.8	
8	3.6 ^F	3.5	2.4	1.8	1.6	E	B	<E	<E	<E	<E	14.0 ^S	5.1	5.6	4.2	3.2	3.2	<E	1.9	E	E	E	E	3.0	
9	2.4	2.0	E	E	E	E	E	B	C	C	3.9	<E	<E	<E	<E	3.6	3.7	<E	2.4	E	E	E	E	E	
10	E	E	E	E	E	E	E	B	3.2	C	C	C	B	B	4.8	4.5	3.7	<E	3	E	E	E	E	E	
11	E	E	E	E	E	2.0	B	<E	<E	<E	<E	<E	4.2	<E	4.6	5.2	3.8	<E	B	E	E	2.0	E	E	
12	E	E	2.0	2.8 ^F	2.2	1.9	3.0 ^F	<E	<E	<E	B	B	4.4	B	<E	4.2	<E	B	E	E	3.2	3.0	3.0	3.0	3.2
13	3.0	3.0	3.0	2.8	2.4	2.4	2.2	<E	2.8	<E	B	B	B	B	B	4.1	3.6	<E	B	E	E	E	E	E	3.0
14	4.2	3.4	3.0	3.0	E	E	E	C	C	B	B	B	B	B	4.2	B	3.2	<E	2.8	2.0	2.4	3.2	2.4	2.2	
15	1.8	2.0	E	E	2.5	E	2.2	3.4	3.2	B	B	B	B	B	B	B	<E	<E	B	B	3.2	2.4	B	B	
16	4.6	2.5	E	E	2.0	1.8	2.0	3.0	3.4	4.2	<E	<E	<E	<E	<E	B	<E	<E	B	1.8	2.0	E	E	1.6	
17	E	3.0	1.9	E	E	3.0	2.4	2.4	3.4	(3.3)	B	B	B	B	B	B	B	<E	2.4	B	3.0	E	E	2.0	
18	3.1	E	E	E	3.0	2.4	B	2.4	B	B	B	B	B	B	B	B	3.2	2.8	2.4	2.2	2.4	B	B	B	
19	B	1.9	E	3.0	3.8	3.6	3.4	2.8	<E	<E	<E	<E	B	<E	<E	<E	<E	<E	B	B	E	E	E	E	
20	E	1.6	2.4	E	E	E	C	<E	<E	B	<E	4.2	<E	B	4.2	<E	3.6	<E	B	2.0	E	E	E	3.0	
21	E	2.8	2.2	2.0	E	1.8	<E	<E	<E	3.6	3.8	C	<E	B	<E	<E	<E	<E	B	E	E	2.2	E	E	
22	1.8	E	3.0	E	E	E	E	<E	3.3	B	<E	4.5	4.4	4.3	<E	4.0	3.3	2.3	B	2.4	2.6	2.4	E	1.9	
23	1.8	E	2.0	2.0	1.7	2.8	1.9	2.8	3.5	5.0	4.0	4.4	4.2	4.4	5.6	4.0	3.6	<E	E	E	E	E	1.8	E	
24	E	E	E	2.0	E	E	E	<E	3.4	4.5 ^F	4.2	<E	5.6	6.2	5.3	3.8	<E	<E	2.6	E	2.0	E	E	E	
25	2.0	1.8	(1.8) ^C	1.8	2.0	1.4	1.9	<E	<E	3.4	4.5	4.4	4.2	<E	4.5	3.4	3.4	<E	<E	E	E	E	E	E	
26	E	E	E	2.4	E	E	B	<E	<E	4.2	<E	4.1	4.4	4.2	<E	<E	<E	<E	2.1	2.8	3.0	E	E	E	
27	E	E	E	1.8	E	2.3	E	<E	3.4	3.6	4.3	4.0	4.1	5.5	<E	<E	3.9	3.2	2.8	2.6	2.9	2.2	4.1	3.0	
28	2.7	2.2	2.6	2.4	2.4	2.8	3.0	B	B	3.9	4.8	B	B	<E	B	<E	<E	<E	2.2	2.4	E	E	E	E	
29																									
30																									
31																									
Mean Value	1.8	1.7	2.0	1.9	1.7	1.8	1.9	<E	2.8	3.6	<E	4.1	4.2	4.2	3.9	3.5	3.2	<E	2.4	1.8	E	E	E	E	E
Count	27	28	28	28	28	28	23	25	24	19	19	16	15	13	18	22	25	27	19	25	27	27	26	26	26

Sweep - 4.2 Mc To 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

F₂-M3000

Kokubunji, Tokyo

Lat. 35°42.4'N
Long. 139°29.3'E

IONOSPHERIC DATA

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	2.9	2.9	2.8	2.9	3.1	A	3.0	3.5	3.6	3.5	3.3	3.0	3.0	2.9	2.9	3.0	3.1	3.1	3.1	3.1	(3.2) ^D	3.3	3.4	3.1
2	3.2	3.2	3.1	3.5	3.2	3.1	3.6	3.7	(4.1)	3.6	3.4	3.4	3.2	3.2	3.3	3.4	3.5	3.5	3.3	3.5	3.5	3.2	3.2	2.8
3	2.8	2.7	2.9	3.0	(3.4)	2.8	3.0	3.3	3.6	3.2	3.2	3.0	3.2	3.0	3.0	3.0	3.1	3.2	3.1	3.3	3.1	3.2	3.1	2.9
4	3.0	2.9	3.0	3.1	3.5	3.1	3.7	3.7	3.6	3.3	3.1	3.1	3.1	3.0	3.0	2.9	3.0	3.0	3.2	3.2	3.1	2.9	3.1	3.1
5	2.9	3.0	2.9	3.1	3.1	3.0	3.1	3.5	3.5	3.3	C	C	C	C	3.2	3.1	3.2	3.3	3.2	3.5	3.5	3.0	3.0	3.0
6	3.1	3.1	3.1	2.9	3.2	2.9	3.0	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2	2.8	3.0	3.0	3.2	3.0	3.2	3.1	2.8	2.7
7	(2.6) ^F	2.7	2.8	2.7	2.6	2.6	2.8	3.2	3.2	3.2	3.3	3.0	3.0	2.9	2.8	2.8	3.0	3.1	3.2	3.3	3.3	2.8	2.7	3.1
8	3.0	3.2	3.0	3.0	3.4	2.8	2.7	3.3	3.5	3.3	3.1	3.1	3.1	2.9	3.1	3.0	3.0	3.1	3.2	3.3	3.2	3.0	3.2	3.2
9	3.0	3.0	3.0	2.9	2.7	3.2	3.2	3.4	(3.5) ^C	3.6	3.5	3.1	3.2	3.2	3.2	3.2	3.3	3.3	3.2	3.3	3.4	3.5	3.5	3.3
10	3.1	3.5	3.2	3.3	3.3	3.4	(3.1)	(3.0)	C	C	C	C	3.2	3.2	3.1	3.2	3.1	3.2	3.2	3.1	(3.1) ^D	3.1	2.7	3.0
11	2.8	2.9	2.8	2.8	2.7	2.6	2.9	3.1	3.2	3.1	3.1	3.1	2.7	2.7	2.8	2.9	3.0	2.9	2.9	2.0	3.2	2.9	2.9	2.8
12	2.9	2.8	2.7	2.7	2.7	2.6	2.7	3.2	3.4	3.3	3.2	3.0	3.0	2.9	2.8	2.7	3.0	2.9	3.1	2.9	2.8	2.8	3.0	3.1
13	2.7	2.7	2.8	J	2.7	2.6	2.7	3.1 ^S	3.5	3.3	3.1 ^H	3.0	2.8 ^S	2.9	2.9	2.8	3.0	3.1	3.2	3.0	3.1	3.0	(2.8) ^S	2.7
14	2.9	3.0	3.0	3.0	2.7	2.6	2.7	C	C	3.0	2.9	3.0	(2.9)	2.7	2.7	2.8	2.8	2.9	3.0	3.0	2.8	2.8	2.8	2.9
15	3.0	2.9	2.9	2.8	3.1	3.0	2.9	3.4	3.5	3.0	3.4	3.0	2.9	2.9	2.9	2.9	3.2	3.0	3.1	3.0	3.2	3.1	3.0	2.9
16	2.9	2.9	2.8	2.7	2.7	2.7	3.1	3.4	3.4	3.4	3.3	2.9	3.0	2.8	2.8	2.9	3.1	2.9	3.1	3.1	3.1	J	J	3.0
17	2.9	2.9	2.7	3.3	3.0	2.9	3.1	2.4	3.6	3.3	3.0	2.8	2.8	2.4	(2.6) ^C	2.8	(3.0) ^F	3.0	3.0	3.0	3.1 ^S	3.0	2.9	2.7
18	2.4	2.4	2.4	2.4	2.6	2.7	2.9	3.2	3.1	3.0	3.2	2.8	2.9	2.8	2.8	2.9	2.8	3.0	3.0	3.0	3.0 ^S	3.0 ^S	3.2 ^S	2.8
19	2.7	2.9	3.1	2.8	2.9	2.9	2.8	3.3	3.4	3.1	3.1	2.9	3.0	2.8	2.9	2.8	2.9	3.0	3.0	3.0	3.0	3.1 ^S	3.1	3.0
20	3.0	2.9 ^P	2.9	2.8	2.9	3.0	(3.2) ^C	3.4	3.2	2.6	3.5	3.2	3.1	3.1	2.8	2.9	3.0	3.0	3.0	3.2	3.1	3.1	3.0	2.9
21	2.7	2.6	2.7	2.8	2.8	2.6	3.0	3.7	3.3	3.2	3.2	(3.1) ^C	3.1	3.1	3.0	3.0	2.9	3.2	3.1	3.3	3.4	3.4	3.3	3.2
22	2.7	3.1	3.1	(3.0) ^C	2.8	3.1	3.0	3.3	3.3	3.3	3.3	3.0	3.2	3.0	2.9	2.9	2.9	3.0	3.0	3.1	3.0	2.9	2.7	2.9
25	3.0	3.0	3.2	3.0	2.6	2.6	2.9	3.3	3.3	3.3	3.1	3.0	2.9	2.9	2.8	2.9	3.0	2.9	3.0	3.2	3.4	3.4	2.9	2.7
24	2.9	3.0	2.6	2.8	3.2	2.7	2.8	3.2	3.3	3.5	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.3	3.2	3.2	3.2	3.1	3.0	2.8
25	2.7	2.7	(2.7) ^F	2.7	3.2	3.0	2.9	3.7	3.3	3.3	3.3	3.2	3.1 ^P	3.2	(3.2)	3.1	3.2	3.2	3.2	3.3	3.3	3.2	3.2	3.2
26	J	2.9 ^P	3.0	3.3	3.0	3.2	3.0	3.5	3.3	3.5	3.5	3.3	3.3	3.3	3.2	3.3	3.3	3.4	3.2	3.2	3.2	3.2	3.1	3.2
27	2.9	3.0	3.3	3.1	2.8	2.9	3.0	3.4	3.4	3.2	3.4	3.2	3.1	3.2	3.2	3.2	3.2	3.1	3.3	3.0	3.1	3.3	3.0	2.7
28	2.8	3.0	3.0	3.1	3.1	2.7	3.0	3.4	3.4	3.2	3.2	3.2	3.2	3.1	3.0	3.1	3.1	3.0	3.3	2.9	3.1	3.1	2.9	3.0
29																								
30																								
31																								
Mean Value	2.9	2.9	2.9	2.9	2.9	2.8	3.0	3.3	3.4	3.3	3.3	3.0	3.1	3.0	2.9	2.9	3.0	3.1	3.2	3.1	3.2	3.1	3.0	3.0
Count	27	28	27	27	28	27	25	27	27	27	26	26	27	27	28	28	28	28	29	27	27	27	27	27

Sweep 1.0 Mc to 1.5 Mc in 1.5 min

Manual

IONOSPHERIC DATA

Feb. 1949

f_p min

Kokubunji, Tokyo

Lat. 35°42.4'N
Long. 139°29.3'E

Day	135° E Merid Time												17	18	19	20	21	22	23					
	00	01	02	03	04	05	06	07	08	09	10	11								12	13	14	15	16
1	A	A	A	A	A	A	A	A	3.2	3.2	4.1	3.9	4.2	3.7	3.5	3.7	2.2	2.0	1.6	(1.9) ^C	2.1	1.6	1.6	
2	1.6	1.6	1.5	1.4	1.4	1.5	2.0	3.2	A	3.6	3.3	4.3	A	3.7	3.5	2.9	2.2	A	A	A	A	A	1.6	
3	A	A	A	1.4	1.3	1.3	1.8	2.8	A	5.0	4.4	5.0	4.4	3.6	A	3.0	2.2	(2.3) ^A	1.3	1.6	(1.8) ^A	(1.8) ^A	1.6	
4	1.4	1.4	E	1.4	(1.4) ^A	1.4	2.1	3.2	(3.7) ^A	3.9	(4.3) ^A	(4.2) ^A	4.2	4.2	(3.8) ^A	A	(2.4) ^A	AF	AF	A	(1.8) ^A	(1.4) ^A	(1.5) ^A	
5	(1.5) ^A	1.1	E	(1.1) ^A	(1.1) ^A	1.6	2.1	2.8	3.3	C	C	C	C	5.9	3.5	2.8	2.3	A	(1.8) ^A	1.6	1.5	1.3	1.5	
6	1.4	A	E	A	A	A	2.0	A	A	3.9	A	4.0	4.2	4.2	3.4	3.0	2.2	A	A	A	A	A	1.5	
7	1.5	1.3	1.6	1.5	A	A	2.8	5.6	4.0	4.0	A	5.6	4.0	4.0	4.0	3.0	2.3	2.0	1.6	1.6	A	A	A	
8	A	A	1.2	E	E	1.6	2.3	2.9	3.3	3.8	3.8	4.2	(4.6) ^A	(4.4) ^A	A	3.3	2.3	1.4	1.3	1.4	1.5	1.5	2.2	
9	1.4	1.4	1.4	1.4	1.4	1.4	1.8	2.2	(3.0) ^C	C	A	4.0	4.0	3.8	4.1	3.6	3.1	2.2	1.1	1.3	1.4	1.4	1.4	
10	1.4	1.4	1.4	E	E	1.5	2.1	3.0	C	C	C	5.4	4.6	4.2	3.5	3.1	2.1	1.4	1.6	1.6	1.6	1.6		
11	1.4	1.4	1.4	1.4	1.4	1.4	1.4	(3.0)	3.5	3.9	4.0	4.2	4.1	4.0	3.8	3.5	2.2	1.8	1.4	1.4	1.4	1.4	1.5	
12	1.3	1.3	1.4	A	1.4	1.6	2.2	3.0	3.5	4.0	4.2	4.2	4.2	4.3	4.4	4.1	3.2	2.6	2.1	1.8	1.4	1.4	1.4	
13	1.4	1.4	1.5	1.3	A	1.3	1.5	(2.4)	3.0	3.4	3.9	4.0	4.3	4.4	4.1	3.2	2.6	2.1	1.8	1.4	1.4	1.4	1.4	
14	A	A	A	E	E	E	1.2	C	C	3.3	4.0	4.1	4.0	4.2	4.2	3.2	2.4	1.4	1.5	1.4	1.4	1.4	1.4	
15	1.4	1.4	E	E	E	1.5	2.1	3.3	4.0	4.2	4.4	4.2	4.2	4.8	4.1	2.9	2.4	1.8	1.6	1.6	A	1.6	1.6	
16	A	A	1.4	1.4	A	A	1.4	2.0	AF	3.4	3.8	4.2	4.0	3.8	4.0	3.0	2.2	1.8	1.6	1.6	1.6	1.6	1.6	
17	1.4	E	E	E	E	1.4	2.4	2.9	3.6	4.2	4.6	5.4	4.3	4.1	3.5	3.9	2.3	1.7	1.6	1.6	1.6	1.6	1.6	
18	1.6	1.6	1.8	1.8	1.8	1.8	2.0	4.0	4.0	4.5	5.0	5.6	4.6	4.6	4.6	3.1	2.3	1.6	1.4	1.5	1.4	1.5	1.5	
19	1.4	1.4	1.2	1.4	1.4	1.6	2.3	3.0	3.6	3.8	4.1	4.1	3.8	3.6	3.6	3.1	2.5	1.4	1.6	1.6	1.6	1.6	1.5	
20	1.4	1.4	E	E	E	E	C	2.8	3.6	3.8	3.8	A	4.2	4.2	3.6	3.8	2.3	1.8	1.8	1.8	1.8	1.6	1.8	
21	1.8	1.8	1.6	1.6	1.6	2.0	2.0	2.8	3.8	4.0	(3.9) ^C	3.8	4.2	4.0	3.6	3.0	2.1	2.2	1.4	1.6	1.6	2.2	1.6	
22	1.6	1.6	1.5	(1.5) ^C	1.5	1.4	1.5	2.6	3.1	3.7	4.1	4.1	3.9	3.8	3.7	2.9	2.3	1.8	A	1.8	A	1.8	1.4	
23	A	1.6	A	1.4	1.4	1.4	2.0	2.7	3.3	3.9	4.2	4.0	3.6	3.9	3.5	2.9	2.5	1.4	1.4	1.4	1.4	1.6	1.5	
24	1.4	1.5	1.2	E	E	1.4	2.3	3.0	3.4	3.7	3.8	(4.1)	A	A	3.7	2.9	2.3	2.0	2.0	1.5	1.8	1.6	1.6	
25	1.6	1.6	(1.5) ^C	1.4	A	1.4	2.4	3.0	3.3	3.8	3.9	4.1	4.1	3.3	3.4	3.0	2.3	1.6	1.5	1.4	1.6	1.6	1.6	
26	1.4	1.4	1.8	1.6	1.5	1.4	1.6	2.2	3.0	3.5	4.0	4.1	4.2	4.1	3.6	3.0	2.4	1.6	1.8	1.7	1.6	1.5	1.6	
27	1.4	1.6	1.6	A	E	1.4	2.4	3.2	A	3.4	4.2	4.0	3.7	3.8	3.9	3.0	2.3	1.6	1.5	1.4	1.4	1.6	1.4	
28	1.4	1.4	1.8	1.4	1.2	E	1.4	2.6	3.2	3.8	4.1	4.3	4.0	3.9	4.1	3.4	2.4	1.6	1.6	1.6	1.4	1.4	1.4	
29																								
30																								
31																								
Values	1.4	1.4	1.4	1.4	1.3	1.5	2.2	3.0	3.5	3.9	4.1	4.2	4.2	4.0	3.6	3.0	2.3	1.7	1.6	1.6	1.5	1.6	1.5	
Count	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Sweep 1.0 Mc to 17.0 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb., 1949

f_oF min

Kokubunji, Tokyo

Lat. 35°42.4'N
Long. 139°29.3'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	25
1	1.6	1.8	1.3	1.3	1.2	1.3	1.6	1.5	2.0	2.3	2.4	B	2.4	B	2.7	B	2.0	2.2	F	E	C	E	E	E	E
2	F	E	E	E	E	E	E	2.1	1.8	1.8	1.9	B	B	3.1	B	2.8	2.0	1.7	1.9	1.6	1.6	1.5	1.5	1.5	1.6
3	1.6	1.5	1.1	1.1	E	E	E	E	1.6	2.0	2.1	2.4	C	B	2.4	2.0	3.0	1.5	E	E	E	1.8	E	E	E
4	F	E	E	E	1.4	1.2	E	1.8	1.8	1.7	1.7	2.2	2.0	2.2	2.0	1.9	1.9	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3
5	1.3	1.4	E	E	E	E	E	1.5	1.5	1.8	C	C	C	C	2.2	1.8	1.9	1.8	1.8	1.8	E	E	E	E	E
6	F	1.2	2.0	1.8	1.8	1.8	2.0	1.8	1.8	1.8	1.7	2.3	1.9	1.9	1.6	1.6	2.0	1.8	1.6	1.5	1.6	1.5	E	E	E
7	1.5	E	1.8	2.0	1.6	1.6	1.5	1.8	1.8	1.8	2.2	2.4	4.0	B	2.4	2.0	2.0	1.6	E	E	E	1.6	1.5	1.6	1.6
8	1.6	1.5	1.2	1.4	E	E	B	1.6	1.8	1.8	2.0	2.0	2.1	2.0	1.8	1.6	2.0	1.5	1.8	E	E	E	E	E	1.6
9	1.4	1.4	E	E	E	E	E	1.8	1.8	1.8	2.0	1.7	1.7	1.7	1.5	1.6	1.5	1.5	1.7	E	E	E	E	E	E
10	E	E	E	E	E	E	E	1.8	2.0	C	C	C	B	B	2.7	1.8	1.6	1.5	E	E	E	E	E	E	E
11	E	E	E	E	E	E	1.4	1.6	1.6	1.5	2.0	2.4	2.2	2.0	1.7	1.5	1.6	1.4	B	E	E	1.4	E	E	E
12	E	E	1.6	1.4	1.6	1.6	1.6	1.6	1.6	1.7	1.8	B	2.0	B	(2.2)	1.6	1.6	1.6	E	1.5	1.6	1.5	1.5	1.5	1.5
13	1.4	1.4	1.5	1.3	1.4	1.3	1.9	1.3	1.6	1.7	1.8	2.0	B	B	B	1.8	1.8	1.8	B	E	E	E	E	E	1.6
14	1.4	1.2	E	E	E	E	E	C	C	2.0	2.0	2.0	2.0	2.0	2.0	B	2.0	1.9	1.9	1.6	1.4	1.4	1.6	1.6	1.6
15	1.4	1.4	E	E	2.0	E	1.8	1.7	1.4	1.7	1.6	2.0	B	1.8	B	1.7	1.8	1.9	B	B	1.6	1.5	B	B	B
16	1.4	1.4	E	E	1.4	1.4	1.7	1.6	1.6	1.6	1.9	2.3	2.2	2.0	2.0	2.0	1.8	1.5	B	1.6	1.6	E	E	E	E
17	E	1.2	E	E	E	E	2.1	1.6	1.5	1.8	2.0	2.2	B	B	2.1	2.0	1.8	1.6	1.8	B	1.6	E	E	E	1.6
18	1.6	E	E	1.8	1.8	1.8	B	2.2	1.7	1.7	1.8	1.8	E	2.6	2.1	1.7	1.8	1.8	2.1	1.6	1.5	B	B	B	B
19	R	1.4	E	1.4	1.2	1.6	1.6	1.6	1.8	1.8	1.8	2.1	2.0	2.2	2.2	1.8	1.8	1.7	B	B	E	E	E	E	E
20	E	1.4	(1.5)	E	E	E	C	2.0	2.0	B	3.4	1.9	1.8	2.0	1.6	1.5	1.6	1.6	B	1.8	E	E	E	E	1.8
21	E	1.8	1.6	1.5	E	1.6	E	1.6	1.5	2.0	1.8	(1.8)	2.0	2.2	2.0	1.8	2.0	1.5	B	E	E	1.6	E	E	E
22	1.4	E	2.5	E	E	E	E	1.4	1.7	1.7	1.5	1.7	1.7	1.7	1.7	1.7	1.5	1.4	1.8	1.6	1.6	1.6	E	E	1.6
23	1.4	E	1.4	1.4	1.4	1.4	1.5	1.8	1.8	1.6	1.8	1.8	1.8	1.8	1.7	1.6	1.7	1.6	1.7	1.6	E	E	E	E	E
24	F	E	E	1.8	E	E	E	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.8	1.8	1.5	2.0	E	1.8	E	E	E	E
25	1.6	1.6	(1.5)	1.4	1.3	1.2	1.7	1.6	1.6	1.8	2.0	2.0	2.0	1.9	1.7	1.8	1.7	1.5	1.5	E	E	E	E	E	E
26	E	E	E	1.8	E	E	B	1.6	1.8	1.8	1.8	2.0	1.8	1.9	1.8	1.8	1.5	1.4	1.5	1.4	(1.6)	E	E	E	E
27	E	E	E	1.2	E	2.0	E	1.4	1.6	1.6	1.6	2.0	1.6	1.6	1.6	1.6	1.6	1.6	1.4	1.4	1.4	1.4	1.4	1.4	1.4
28	1.4	1.4	1.8	1.4	1.8	1.4	1.8	R	1.6	1.5	1.6	1.7	1.8	1.8	1.8	2.3	1.7	1.4	1.5	1.4	E	E	E	E	E
30																									
31																									
Mean Value	1.4	1.2	E	1.3	E	1.2	1.6	1.6	1.7	1.7	1.8	2.0	2.0	2.0	2.0	1.8	1.8	1.6	1.5	1.4	E	E	E	E	E
Count	27	29	28	28	28	28	22	25	27	25	26	23	2.0	2.0	3.5	2.6	2.0	2.8	2.1	2.5	2.7	2.7	2.7	2.6	2.6

Sweep 1.0-Mc to 1.2-Mc in 1.5 min

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawaku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 31°12.5'N
Long. 130°37.7'E

Yamagawa

ff₃

Feb. 1949

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	25
1	3.8	4.0	4.7	4.9	3.0	3.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
2	4.6	4.7	3.6	3.7	3.3	3.4	3.8	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
3	3.8	3.7	3.9	(4.6)	4.5	3.6	3.8	4.4	(5.0)	9.4	12.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
4	3.9	3.8	4.0	3.8	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5	5.0	4.8	4.4	4.3	4.4	(3.7)	3.6	6.0	10.2	11.1	11.4	13.3	14.0	14.4	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
6	5.9	4.9	4.7	4.4	4.5	3.0	3.0	6.0	11.1	12.3	11.3	12.0	13.0	13.4	11.8	13.5	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
7	4.7	4.0	4.6	5.2	3.5	4.4	4.6	5.6	10.5	13.7	5	5	5	4.1	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
8	6.5	6.5	5.9	5.7	5.6	3.8	2.8	6.5	10.0	11.4	12.5	5	5	13.6	14.3	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
9	11.0	7.7	7.1	5.2	5.6	6.8	5.8	5.5	9.5	14.5	12.7	12.6	11.6	13.4	13.6	13.2	13.3	13.1	13.3	13.1	13.3	13.1	13.3	13.1	13.3
10	B	7.8	7.0	6.3	6.3	4.1	4.1	15.8	7.4	B	B	B	13.0	12.8	12.4	12.4	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
11	8.3	8.0	6.5	6.3	4.4	4.6	5.5	5.3	11.5	15.0	15.0	15.0	11.6	13.0	13.2	14.8	13.5	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
12	8.5	8.6	7.8	6.7	6.3	4.8	4.5	6.7	10.2	12.9	12.6	12.1	11.6	13.0	13.2	15.9	11.5	12.4	10.8	10.2	9.8	9.7	9.7	9.7	9.7
13	7.2	6.9	6.3	6.3	4.4	3.6	4.2	5.1	10.5	12.2	13.9	15.4	15.8	15.8	(15.8)	(15.9)	(15.4)	(14.7)	(13.8)	(13.2)	10.5	9.3	7.5	6.8	6.8
14	6.7	6.6	6.3	5.3	4.7	4.1	4.2	7.3	9.9	12.0	13.0	13.9	14.3	13.1	12.8	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
15	10.2	9.2	8.5	7.9	6.8	3.7	3.1	5.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	7.7	7.3	6.2	5.0	4.8	5.6	5.4	8.1	10.5	11.2	14.4	13.9	14.9	15.1	15.8	C	C	C	C	C	C	C	C	C	C
17	6.0	6.0	5.8	5.4	5.1	4.0	3.4	7.0	10.0	11.2	11.2	11.8	12.1	13.0	13.4	12.9	12.4	12.2	11.5	10.8	10.6	10.5	8.2	7.9	7.9
18	6.9	6.7	6.1	(5.3)	6.0	7.2	6.7	8.3	10.5	13.2	13.5	13.6	13.8	14.9	14.7	14.4	15.3	15.9	15.2	15.4	15.2	15.2	15.2	15.2	15.2
19	9.2	9.2	8.5	6.6	6.1	5.4	5.7	8.5	9.9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	5.5	5.6	5.7	5.7	5.0	4.4	3.3	7.4	9.7	11.8	12.5	13.6	13.5	13.5	13.4	13.4	13.2	12.7	12.9	12.9	12.9	12.9	12.9	12.9	12.9
21	7.2	5.8	6.0	5.5	4.9	4.5	4.6	8.0	9.7	11.5	14.0	14.9	15.5	14.8	13.8	13.9	14.3	13.9	13.9	13.7	13.7	13.7	13.7	13.7	13.7
22	4.1	9.5	10.0	6.9	7.2	6.8	5	6.7	10.7	14.2	14.5	13.3	5	14.3	14.0	13.9	14.3	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
23	6.8	6.5	6.4	5.6	4.8	5.1	4.9	6.7	10.6	12.9	15.1	14.0	14.3	14.8	15.6	16.1	15.4	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
24	9.1	9.0	8.2	7.7	6.8	3.8	3.9	5.5	9.9	11.9	13.2	13.2	15.0	15.2	14.7	13.9	13.4	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
25	6.6	6.0	5.8	8.2	4.4	3.7	3.8	6.4	9.6	10.2	13.1	14.3	14.6	14.6	14.6	14.7	15.1	14.9	13.3	12.8	12.8	12.8	12.8	12.8	12.8
26	7.0	6.5	6.3	5.6	4.2	3.1	2.8	6.6	8.7	11.0	12.0	13.3	13.5	14.0	13.4	13.4	14.7	10.6	10.4	10.4	10.4	10.4	10.4	10.4	10.4
27	6.3	5.8	6.3	5.8	4.6	4.4	4.4	6.3	9.2	11.6	13.6	13.7	14.0	14.8	14.8	14.8	14.7	12.8	10.8	9.8	9.8	9.8	9.8	9.8	9.8
28	5.7	(6.2)	6.6	6.4	5.4	4.6	4.7	7.7	9.8	11.8	13.0	12.9	12.6	13.4	12.1	12.1	11.4	11.9	11.0	9.0	8.4	8.6	7.8	6.6	6.6
29																									
30																									
31																									
Max. Value	6.7	6.5	6.3	5.6	4.8	4.2	4.1	6.4	9.9	11.9	13.0	13.3	13.6	14.3	13.8	13.9	13.6	13.2	12.5	11.5	10.4	9.7	8.3	7.6	7.6
Count	27	28	28	28	28	27	28	26	26	24	22	20	21	24	25	21	23	22	20	24	22	22	26	27	28

Sweep 12 Mc to 18.5 Mc in 1.5 min

Manual

Y 1

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-Isushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949 hp F₂ Yamagawa Lat. 31°25'N Long. 139°37'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	420	480	390	310 ^J	270	(370)	420	310	C	C	C	C	C	C	C	C	C	C	C	290 ^H	300	290	340 ^H	380
2	270	390	390	370	290	380	370	300	280 ^S	250 ^S	300 ^H	300 ^H	290 ^H	330	310	(310) ^S	300	290 ^S	290	310	310	290	340	380
3	450 ^Z	420 ^P	390	(350) ^J	300	290	420	280	(290) ^F	930	300	SH	B	350 ^H	340 ^H	330 ^H	300 ^H	B	SB	B	C	300 ^F	330	310
4	430	420	430	370	310	400	360	350	300	280	340	350 ^H	360 ^H	400 ^H	390	SB	390	390 ^H	360	300 ^S	390 ^H	390 ^H	340	
5	350	350	340	410	(370) ^F	(370) ^F	360	330	300	290	300	310	350	380	390	B	C	C	C	300 ^S	290 ^H	300 ^H	310 ^S	
6	330	350	400	330	310	300	350	310	300 ^S	290	280 ^S	300	330 ^B	320	350	360 ^F	360	330 ^P	290 ^J	300 ^J	360	310	300	350
7	420	390	390	360	(380) ^H	410 ^J	460	(350) ^J	300	310	S	B	B	370	390	B	390 ^J	350	340 ^H	320 ^H	S	(300) ^S	360	
8	370	350	300	320	260	240	390	350	250 ^F	290	300 ^P	B	350 ^J	390 ^S	370 ^J	380	380 ^J	320 ^J	310 ^J	B	B	PS	B	340 ^P
9	350 ^P	300	390	360	360	270	320 ^J	340	220	280	300	310	320	390	400	380	380	370 ^H	370 ^J	340	310 ^P	(290) ^S	310	
10	B	340	310 ^J	320	380	290	280	(290) ^C	290	B	B	B	380	340	370	360	350	350	340	310 ^J	330 ^J	(320) ^S	330	310
11	340	340	320	350	410 ^J	430	450	400	320 ^S	310 ^F	C	C	C	400 ^F	(400) ^C	390 ^H	400 ^F	350 ^H	350	340	340 ^H	330 ^J	340 ^H	350 ^H
12	300 ^H	350	320	370	300	270	370	310 ^F	310	300 ^H	280	(340) ^F	400	400	390	380	370 ^S	370	320 ^S	400 ^S	360 ^S	300 ^S	330	350 ^J
13	320	(380) ^S	340	310	290	410	400	400	320	260 ^J	330	340 ^H	400 ^S	S	(380) ^S	(390) ^S	(380) ^S	(380) ^S	(370) ^S	350	320	340	340	
14	360	320	300	280	310	420	360	300	220	270	(330) ^B	350	390 ^J	390 ^J	370	400	400 ^H	360	350	340	340 ^H	350	310	
15	320 ^H	320 ^H	330 ^S	300	320	350	340	320	C	C	C	C	C	C	C	C	C	C	C	320 ^H	320 ^H	340 ^S	320 ^H	310
16	380 ^H	360 ^H	390 ^H	390	390	340	390	280	220	310	360 ^H	350	410 ^H	360 ^H	390 ^J	C	C	C	C	300 ^S	340 ^S	350 ^H	300	320
17	330	380	360	290	270	290	320	320	260	270	300 ^H	380	390 ^J	410 ^J	400 ^J	400 ^J	390 ^J	370	380 ^S	370	340 ^S	310	360	
18	410	400	430	460	410	390	300	300 ^H	390 ^H	300	330	370 ^H	400 ^H	420 ^B	(380) ^C	360	350	340	340 ^S	310	S	350 ^S	300 ^S	320 ^S
19	380 ^S	330	360	(340) ^F	350 ^H	370	370	260 ^F	240	C	C	C	C	C	C	C	C	C	C	C	C	C	310 ^S	340 ^S
20	340	350	380	230	240	260	420	200	220	300	290	220 ^H	340	360	380	400	290	350 ^H	350 ^H	340	S	340 ^S	310 ^S	340 ^S
21	500	410	380	390 ^H	370	410	(400) ^F	(310) ^F	280 ^F	320	240	240 ^J	360 ^F	350	380	370 ^S	380 ^J	380 ^J	280 ^S	270 ^S	330 ^J	310 ^J	290 ^J	310 ^J
22	370	320	360	390	410	410	S	330	350	370 ^H	330 ^S	320 ^S	360 ^F	430 ^J	410 ^J	(370) ^H	410 ^J	370 ^H	320 ^H	330	(380) ^B	360 ^H	350	
23	(400) ^B	340	(330) ^F	220	270	290	360	330	330	350	360 ^S	340 ^S	370	370 ^S	370 ^J	370 ^J	360	350 ^S	340 ^S	S	320 ^S	320 ^S	340 ^S	
24	310 ^S	310 ^S	320 ^S	280	280	400	300	300	290	300	330	340 ^H	330	370	340 ^J	330 ^J	(360) ^S	280 ^S	280 ^S	350 ^S	350	360	330 ^S	340
25	390	340	380 ^S	310	310 ^H	320	290	210	290	200	240	230	250	260 ^J	240 ^J	240	230 ^J	240 ^J	210	230 ^J	310 ^S	290 ^S	300 ^H	330 ^H
26	340	330	340	310	290	290	380	280	260	270	300 ^H	300	340	360 ^J	350 ^J	340	340	340	310 ^S	350 ^H	340	330 ^H	320	350
27	350	380 ^H	390 ^H	330	410	390	300	300	290	300	320	310 ^H	320 ^F	350 ^J	350 ^J	350 ^H	370 ^H	380	300	320 ^H	300	300	290	400 ^J
28	420 ^J	(380) ^C	330	290	260	270	360	300	280	210	310 ^J	240 ^J	350 ^J	330 ^J	330 ^J	330	360 ^S	360 ^J	360 ^J	320 ^H	320 ^H	340 ^H	300	350 ^H
29																								
30																								
31																								
Mean Value	360	350	360	320	210	320	370	310	290	300	320	340	360	370	370	370	370	360	340	330	340	330	320	340
Count	27	28	28	28	28	28	27	28	26	24	22	20	21	24	25	21	23	22	20	24	28	26	27	29

Sweep 1.5 Mc to 1.85 Mc in 1.5 min

Manual

IONOSPHERIC DATA

Lat. 31°12.5'N
Long. 136°37.7'E

Yamagawa

h f_oF₂

Feb 1949

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	25
1	330	350	330	230	220	(400)	320 ^B	340	C	C	C	C	C	C	C	C	C	C	C	300 ^H	210	230	210 ^H	240	
2	290	300	310	310	240	350	330	280	220	220	250 ^H	270 ^H	270 ^H	300	280	1970 ^C	250	230	230	240	250	210 ^C	210	240	290
3	350	350	300	330 ^A	280 ^A	300	330	330	250 ^C	250	250 ^H	290 ^H	300	300	300	300	260 ^H	270	210	200	1210 ^C	210 ^H	230	230	290
4	310	330	320	310	300 ^A	380	290	300	270	240	220 ^H	220 ^H	300 ^H	300	300	300	290	300 ^H	240	240	220	240 ^H	260 ^H	240	
5	280	290	300	300	290	230	300	270	240	270	270	290	280	280	300	300	C	C	C	C	210	210 ^H	230 ^H	270	
6	270	290	300	290	250	230 ^B	310	300	250	240	250	230	300	240	240	250	250	240	240	1210 ^A	260	250	220	300	
7	320	330	280	280	270	320	320	310	290	260	240	250	290	310	290	290	300	300	230	240 ^H	230 ^H	210	230	250	
8	290	280	260	250	240	290	250	300	230	210	220	290	290	300	300	300	300	270	260	230	240	210	250	230	
9	240	260	290	300	290	230	210	280	240	220	250	290	230	300	270	250	240	230 ^H	230	200	220	220	220	220	
10	(230)	230	240	290	290	290	290	1930 ^C	250	240	220	250	270	260	280	280	240	270	250	230	260	1240 ^C	220	220	260 ^C
11	300	280	300	290	300	230	320	310	250	230	250	300	300	260	260	300 ^H	200 ^H	230 ^H	250	230	250 ^H	250	220	220	230 ^H
12	220 ^H	220	270	240	250	210	290	300	240	240 ^H	230	250	300	230	230	300	300	300	230	230 ^H	230	230	240	240	
13	220	220	280	270	200	260	380	290	300	250	220	250	290	300	300	300	300	300	260	230	230	230	230	230	260
14	230	270	270	240	250	300	230	240	240	230	300	240	300	310	300	300	300 ^H	300	300	230	230	230	230	230	250
15	240 ^H	240 ^H	250	260	210	240	300	290	250	C	C	C	C	C	C	C	C	C	C	230 ^H	230 ^H	230 ^H	230 ^H	230 ^H	250 ^H
16	280 ^H	270 ^H	270 ^H	310	250	300	280	210	220	220	250	290 ^H	230 ^H	230 ^H	220	220	300	300	230	230	230	240	240	240	240
17	280	280	280	240	230	250	310	250	240	230	230	230	230	220	220	300	250	230	230	230	230	240	240	240	290
18	310	300	300	280	300	270	250	230 ^H	240 ^H	240	250	230 ^H	240 ^H	250	1330 ^C	310	300	300	280	230	270	280	280	210	230
19	290	280	270	230	230 ^H	280	200	230	200	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	230
20	230	250	300	(230)	270	210	280	260	230	230	250	250	200	200	300	300	300	240 ^H	240 ^H	240 ^H	240 ^H	240 ^H	240 ^H	240 ^H	240
21	300	300	330	250 ^H	240	250	330	300	230	230	230	230	230	230	300	300	300	300	240	240	240	240	240	240	240
22	280	280	260	300	300	260	290	300	300	270 ^H	270	280	290	300	290	1240 ^C	280	300	300	240	240	240	240	240	240
23	280 ^H	280	280	280	290	300	300	270	250	260	250	260	250	250	300	290	260	240	260	230	230	230	230	230	230
24	240	250	260	270	240	300	280	300	240	250	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230
25	300	290	300	260	260 ^H	280	300	260	230	240	280	270	280	290	240	250	270	250	290	230	230	230	230	230	230
26	270	300	290	270	200	200	300	300	260	240	280	270	300	300	1290 ^C	280	240	260	230	230	230	230	230	230	240
27	260	280 ^H	260 ^H	230	240	290	280	260	240	240	230	230	230	230	300	300	300 ^H	250	260	220	260	260	260	260	290
28	330 ^A	300 ^C	270	290	230	290	300	260	240	220	230	230	300	290	290	230	290	240	220	220	220	220	220	220	240
29																									
30																									
31																									
Mean	280	280	280	290	250	280	300	270	240	240	250	290	290	300	300	300	290	270	250	230	240	240	240	240	250
Standard Deviation	28	28	28	28	28	28	28	28	27	25	25	25	25	25	25	24	23	23	23	23	23	23	23	23	23

Sweep 1.2 Mc to 18.5 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
 (Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Lat. 31 12.5 N
 Long. 139 37.7 E

Yamagawa

f_{min}

Feb. 1949

Day	135°E Mean Time												19	20	21	22	23		
	00	01	02	03	04	05	06	07	08	09	10	11						12	13
1						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
2						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
3						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
4						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
5						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
6						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
7						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
8						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
9						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
10						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
11						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
12						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
13						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
14						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
15						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
16						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
17						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
18						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
19						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
20						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
21						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
22						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
23						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
24						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
25						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
26						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
27						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
28						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
29						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
30						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
31						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Median Value																			
Count																			

Sweep 1.2 Mc to 12.5 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-jisshin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

Feb. 1949

h_m

Yamagawa

Lat. 31°15'N
Long. 139°37'E

IONOSPHERIC DATA

155°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	C	C	C	C	C	C	C	C	C	C	C					
2							Q	Q	Q	Q	220	210	210	210	210	210	210	210	210					
3							Q	Q	Q	230	230	240	240	230	230	230	240	240	240					
4							Q	Q	Q	Q	220	230	230	230	230	240	240	240	240					
5							Q	Q	Q	Q	240	230	230	230	230	230	230	230	230					
6							Q	230	Q	Q	230 ^A	Q	Q	Q	Q	Q	Q	Q	Q					
7							Q	Q	Q	Q	220	220	220	220	220	240	240	240	240					
8							Q	Q	Q	Q	Q	Q	Q	Q	Q	230 ^A	230	230	230					
9							Q	Q	Q	Q	Q	Q	Q	210	250	210	210	210	210					
10							Q	Q	Q	Q	220	220 ^B	240	240	230	230	230	230	230					
11							Q	Q	Q	Q	230	220	220	220	Q	(210 ^A)	230	230	230					
12							Q	250	Q	Q	Q	230	230	230	230	230	230	230	230					
13							Q	310	Q	Q	Q	230	230	230	210	220	230	230	230					
14							Q	200	Q	Q	Q	230	230	230	210	220	220	230	230					
15							Q	Q	Q	Q	C	C	C	C	C	C	C	C	C					
16							Q	Q	Q	Q	Q	230	230	Q	220	C	C	C	C					
17							Q	Q	Q	Q	200 ^A	200 ^B	Q	220	230	240	230	240 ^A	240					
18							Q	Q	Q	Q	230	Q	Q	240	240 ^C	230	250	230	230					
19							Q	Q	Q	Q	Q	Q	Q	C	C	C	C	C	C					
20							Q	Q	Q	Q	220	220	220	220	220	Q	Q	Q	Q					
21							Q	240	Q	Q	Q	Q	230	210	A	220	Q	Q	Q					
22							Q	Q	Q	Q	Q	Q	230	Q	Q	260	C	Q	230	540				
23							Q	Q	Q	Q	230	230	Q	Q	Q	250	230	Q	Q					
24							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	230	Q					
25							Q	Q	Q	Q	Q	240	250	250	240	Q	220	Q	Q					
26							Q	Q	Q	Q	240	230	230	210	230	1330 ^C	220	Q	220					
27							Q	Q	Q	Q	250	Q	(220)	210	(220)	220	(220)	210	220					
28							Q	Q	Q	Q	210	Q	220	(210)	250	Q	230	Q	Q					
29																								
30																								
31																								
Median Value							240		230	230	230	230	230	230	230	220	230	240						
Count							5		3	5	12	13	20	17	17	16	14	10	4					

Sweep 1.2 Mc to 18.5 Mc in 1.5 min. Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
 (Denki Tsushin Kenkyukai) Gosenka Shinagawa-shi, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949 f_oF₂ Yamagawa Lat. 31°12.5'N Long. 130°37.7'E

Day	155°E Mean Time																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1							E	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2							E	B	C	3.0 ^H	3.4	3.8 ^H	(3.9) ^B	(3.8) ^A	B	B	3.1 ^A	3.1 ^A	3.1 ^A	3.1 ^A	3.1 ^A	3.1 ^A	3.1 ^A	3.1 ^A	3.1 ^A
3							E	B	C	3.1	3.3	A	3.8	A	A	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J	3.2 ^J
4							E	B	C	(3.3)	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A
5							E	E	C	A	(2.9)	A	B	B	B	A	A	A	A	A	A	A	A	A	A
6							E	1.6	2.6	3.2	A	3.3 ^A	A	A	A	3.4 ^J	A	A	A	A	A	A	A	A	A
7							B	1.6	2.4	B	3.5	A	A	A	A	A	A	A	A	A	A	A	A	A	A
8							E	1.8	2.6	(3.1)	A	(3.5)	3.7	B	B	A	A	A	A	A	A	A	A	A	A
9							B	1.8	2.5	3.4 ^H	(3.4)	3.6	3.7	3.8	3.8	3.5	A	A	A	A	A	A	A	A	A
10							B	C	(2.8)	(3.0)	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B
11							E	1.7	2.2	2.9	(3.2)	(3.5) ^B	A	A	A	A	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
12							E	1.7	2.5	3.2	3.6	B	B	B	B	3.7	(3.7)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
13							E	B	2.6 ^H	3.1	A	B	B	B	B	A	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
14							E	B	2.5	(3.1)	(3.5)	B	B	B	B	B	3.7	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
15							E	1.7	2.7	3.7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16							E	1.9	2.4	2.8	3.2	A	A	B	B	C	C	C	C	C	C	C	C	C	C
17							E	2.1	2.6	A	3.4	A	3.7 ^J	(3.8) ^J	B	B	B	B	B	B	B	B	B	B	B
18							E	2.1	2.7	3.1	3.5	3.9	B	B	C	A	A	A	A	A	A	A	A	A	A
19							E	1.6	2.6 ^H	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20							E	2.0	2.4	B	3.4	3.7	A	B	3.8	3.7	(3.8)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
21							E	2.0	2.5	3.0	3.5	3.6	(3.7)	A	A	A	3.5	3.3 ^J	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22							E	1.9 ^J	2.5	(3.4)	(3.6)	(3.9)	B	B	B	B	C	B	B	B	B	B	B	B	B
23							E	1.9	2.7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
24							E	B	2.7	3.2	3.5	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25							E	1.9	2.7	3.1	B	3.6 ^J	A	A	A	A	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
26							E	2.0	2.6 ^H	3.2	B	B	A	A	A	A	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
27							E	2.0	2.7	3.3	3.7	B	B	B	3.7	3.8	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
28							E	1.8	2.4	A	A	A	B	B	B	3.5	B	B	B	B	B	B	B	B	B
29																									
30																									
31																									
Median Value							E	1.9	2.6	3.1	3.5	3.6	3.7	3.8	3.8	3.5	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Count							25	20	26	19	16	10	5	6	5	9	11	11	11	11	11	11	11	11	11

Sweep 1.2 Mc to 18.5 Mc in 1.5 min Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb., 1949

h'fE

Yamagawa

Lat. 31°12.5'N
Long. 139°37.7'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							E	E	C	C	C	C	C	C	C	C	C	C	C	C				
2							E	B	B	100 ^H	110	100 ^H	110	110	110	110	100 ^C	100	A	A				
3							E	B	C	110	110	A	110	110	A	100	A	A	B	B				
4							E	B	B	110	B	A	A	B	A	B	A	100	A	B				
5							E	E	E	120	A	120	A	B	A	A	C	C	C	C				
6							E	B	B	110	100	A	110	A	A	A	A	110	B	B				
7							E	B	B	110	B	110	(110)	B	A	A	100	A	120	B				
8							E	B	B	140	110	A	110	(120)	100	A	A	A	B	B				
9							E	B	B	(120)	110 ^H	110	110	100	110	100	100	A	110	B				
10							E	B	C	110	A	A	(110)	B	A	A	(120)	110	B	B				
11							E	B	B	100	110	100	110	A	A	B	110	A	B					
12							E	B	B	110	100 ^A	110	B	B	B	110	B	110	110	100				
13							E	B	B	110 ^H	100	A	B	B	B	B	A	110	110	B				
14							E	B	B	130	110	110	B	B	B	110	B	110	110	(100)				
15							E	B	B	130	C	C	C	C	C	C	C	C	C	C				
16							E	120	100	110	110	A	A	B	B	C	C	C	C	C				
17							E	(160) ^F	140	110	110	A	B	(120)	B	B	B	A	A	A				
18							E	B	110	110	120	110	B	B	C	A	A	110	A	A				
19							E	B	B	100 ^H	C	C	C	C	C	C	C	C	C	C				
20							E	140	110	B	100	110	A	B	110	110	110	110	B	B				
21							E	B	110	110	110	110	B	A	A	A	110	A	B					
22							E	(170)	130	120	120	150	B	B	B	C	B	B	B					
23							E	B	100	A	A	A	B	A	A	B	C	B	B					
24							E	B	120	110	100	110	B	B	110	110	110	100	100					
25							E	(180)	120	110	(120)	120	A	A	A	A	110	110	120	B				
26							E	150	110 ^H	110	110	120	A	A	A	C	110	A	(100)					
27							E	B	110	110	110	110	110	110	110	110	110	110	110					
28							E	B	110	110	A	A	100	100	110	110	110	110	110	B				
29							E	B	110	A	A	A	100	100	110	110	110	110	110					
30																								
31																								
Median Value							160	110	110	110	110	110	110	110	110	110	110	110	110	100				
Count							6	25	19	18	15	6	9	8	13	13	13	15	6					

Sweep 1 x 2 Mc to 18.5 Mc in 1.5 min

Manual

Y 7

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo Japan

IONOSPHERIC DATA

Feb. 1949

fes

Yamagawa

Lat. 31°12.5'N
Long. 130°37.7'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	E	E	E	E	2.8	E	E	2.6	C	C	C	C	C	C	C	C	C	C	C	5.0	E	E	2.6	E	
2	E	E	E	E	2.2	B	E	B	B	3.5	<E	<E	4.7	B	3.6	C	3.8	3.8	3.8	2.8	3.0	2.0	E	B	
3	E	E	3.0	4.2	3.9	2.6	2.0	2.9	C	3.6	2.6	3.6	4.2	4.2	4.2	4.2	3.4	3.0	2.3	E	C	E	E	E	
4	F	E	E	E	3.2	E	E	B	<E	4.0	3.4	4.2	4.0	B	3.8	B	7.6	4.6	4.0	4.0	4.2	E	E	E	
5	E	E	E	E	E	E	E	E	<E	3.0	<E	4.0	5.4	B	4.2	4.2	C	C	C	C	E	3.2	E	E	
6	E	E	E	E	(2.0)	E	E	E	4.0	4.0	3.8	4.4	4.6	<E	<E	B	3.8	3.5	3.4	3.4	E	E	E	E	
7	E	E	E	E	E	E	E	B	4.0	4.0	4.6	4.6	4.8	3.9	4.2	<E	3.6	<E	B	E	E	E	E	E	
8	E	E	E	E	E	E	E	B	<E	(3.8)	4.4	5.2	4.5	(4.8)	4.5	3.8	4.2	2.4	B	2.6	2.2	2.2	2.2	5.2	
9	E	E	E	E	E	E	E	B	<E	3.2	4.0	4.0	4.4	(4.6)	(4.6)	4.0	4.0	4.0	B	2.4	E	E	E	E	
10	E	E	E	E	E	E	E	2.4	<E	3.2	4.2	B	B	4.4	4.2	3.7	B	3.7	B	E	E	C	E	C	
11	E	E	E	E	E	E	E	E	<E	3.2	4.0	B	4.2	4.2	4.2	4.2	<E	3.8	<E	E	E	E	E	(2.0)	
12	E	E	E	E	E	E	E	E	<E	3.2	B	B	B	B	B	4.2	3.6	<E	4.0	4.2	E	E	E	E	
13	E	E	E	E	E	E	E	E	4.0	4.2	7.0	B	B	B	3.8	<E	B	B	B	E	E	E	E	E	
14	E	E	E	E	E	E	E	E	<E	4.0	4.2	B	B	B	B	B	<E	4.0	4.0	2.0	4.8	2.4	E	E	
15	E	E	E	E	E	E	E	E	<E	C	C	C	C	C	C	C	C	C	C	C	4.0	2.0	E	E	
16	E	E	E	E	E	E	E	E	4.0	3.2	4.2	4.2	4.2	4.2	B	C	C	C	C	E	E	E	E	E	
17	E	E	E	E	E	E	E	E	<E	3.6	4.0	4.2	B	5.4	4.0	3.8	4.2	4.8	2.4	2.2	E	E	E	E	
18	E	E	E	E	E	E	E	E	<E	4.2	4.4	5.2	4.6	(4.8)	C	3.8	3.2	4.0	3.6	4.2	2.9	2.0	3.0	E	
19	E	E	E	E	E	E	E	E	<E	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	
20	E	E	E	E	E	E	E	2.8	4.0	(4.2)	5.2	4.2	4.6	3.9	4.0	4.0	3.6	4.0	4.0	(3.0)	E	E	E	E	
21	E	E	E	E	3	(3.0)	E	<E	<E	3.5	(3.5)	4.8	4.8	4.4	B	B	<E	3.8	4.0	B	E	E	E	E	
22	E	E	E	E	E	E	E	E	<E	B	4.0	B	B	B	B	C	B	B	3.0	3.0	E	E	E	E	
23	E	E	E	E	E	E	E	E	3.2	3.0	4.0	5.0	B	4.4	4.2	4.2	B	4.0	(3.8)	E	E	E	E	E	
24	E	E	E	E	E	E	E	E	<E	3.8	4.6	B	B	B	B	B	B	4.0	3.8	3.2	4.2	3.4	E	(3.8)	
25	B	E	E	E	E	E	E	E	<E	3.8	4.6	B	4.2	4.4	3.7	<E	4.0	4.0	4.0	E	E	E	E	E	
26	E	E	E	E	E	E	E	E	4.0	4.0	B	5.2	4.8	4.4	4.2	C	3.9	3.9	B	E	E	E	E	E	
27	E	E	E	E	E	E	E	E	<E	3.4	5.2	B	B	B	B	B	3.6	3.8	4.0	E	E	E	E	E	
28	3.2	C	3.0	E	E	E	E	E	3.7	3.2	3.8	4.2	B	B	B	B	B	B	B	E	E	E	E	E	
29																									
30																									
31																									
Mean Value	E	E	E	E	E	E	E	E	<E	3.5	3.9	4.2	4.6	4.4	4.2	3.8	3.6	2.4	4.0	2.2	E	E	E	E	
Count	27	25	28	27	27	26	26	15	25	22	22	18	16	15	16	14	17	2.1	1.6	2.5	2.6	2.7	2.8	2.6	

Sweep 1.2 Mc to 1.25 Mc in 15 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

F₂-M3000

Yamagawa

Lat. 31°12.5'N
Long. 139°37.7'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	2.5	2.5	2.7	J	3.2	S	2.5	3.0	C	C	C	C	C	C	C	C	C	C	C	C	3.1	3.1	2.8 ^H	2.6	
2	2.6	2.6	2.7	2.8	3.1	2.7	2.7	3.0	3.3 ^E	J	3.2 ^H	3.1 ^H	3.2 ^H	2.8	3.0	[3.0] ^C	3.1 ^P	3.1 ^E	3.2	2.9	3.1	3.1	3.0	2.6	
3	2.4 ^E	2.5 ^P	2.6	J	3.2	2.7	2.6	3.3	[3.2] ^C	3.2	3.0 ^H	3.1 ^H	B	J	J	J	J	B	B	C	C	3.0 ^H	(2.8)	(3.0)	
4	2.5	2.5	2.5	2.7	3.1	2.5	2.7	2.7	3.3	2.4	3.0	3.0 ^H	2.8 ^H	J	J	2.9 ^S	2.8	2.8 ^H	S	2.8	3.0 ^S	3.0 ^H	3.1 ^H	2.8	
5	2.7	2.8	2.8	2.6	(2.7) ^P	2.8	3.0	3.0	3.8	3.3	(3.1)	3.0	2.9	2.9	2.9	BH	C	C	C	C	3.3 ^S	3.3 ^H	3.1 ^H	J	
6	2.9	2.8	2.6	3.0	3.1	3.0	3.0	3.0	J	3.2	3.1 ^S	3.1	3.0 ^B	2.8	2.8	2.7 ^P	2.8	3.0 ^P	J	J	(2.8)	3.2	3.2 ^P	2.9	
7	2.7	2.7	2.7	2.8	J	J	2.4	J	3.0	3.1	S	B	B	2.8	2.9	2.7 ^P	2.8	2.9	J	J	3.1 ^H	S	(2.9) ^S	2.8	
8	2.7	2.8	3.1	3.0	3.5	(3.4)	2.7	2.8	3.4	3.2	3.1 ^P	B	J	J	J	J	J	J	J	B	B	B	B	3.1 ^P	
9	2.8 ^P	3.1	2.7	2.7	2.8	3.2	J	2.8	3.3	3.5	3.2	3.1	2.9	2.8	2.7	2.7	2.8	2.7	J	2.7	3.0 ^P	J	J	3.1	
10	B	2.9	J	3.0	2.7	3.0	3.2	[3.0] ^C	3.1	B	B	B	2.8	3.0	2.9	2.8	2.7	2.9	3.0	J	J	C	J	C	
11	3.0	3.0	3.0	2.8	J	2.5	2.4	2.5	2.9 ^S	J	C	C	C	J	J	J	2.7	2.7	2.9	3.0	2.9 ^H	J	2.9 ^H	2.9 ^H	
12	3.3 ^H	2.9	2.9	3.0	3.1	2.7	2.7	3.1 ^F	3.0	3.1 ^F	(3.1)	[2.3] ^C	2.6	2.8	2.7	2.7	2.7	2.7	2.9	3.0	2.9 ^H	J	2.9	J	
13	(2.9)	2.7	2.9	3.0	3.1	2.6	2.6	3.1	J	J	3.0	2.9 ^H	2.7 ^S	S	2.9 ^S	2.8 ^S	2.9 ^S	J	2.8	2.9 ^S	2.9 ^S	J	2.9	2.8	
14	2.8	2.9	3.2	3.2	2.9	2.5	2.8	3.1	3.3	3.2	2.8	2.8	J	J	2.8	2.6	2.7 ^H	2.8 ^S	2.8	2.9	2.8	2.9 ^H	2.8	3.0	
15	2.9 ^H	3.0 ^H	2.9 ^S	3.2	3.0	2.8	2.9	2.9	C	C	C	C	C	C	C	C	C	C	C	C	2.9 ^H	(3.1) ^H	3.0	2.7 ^H	
16	2.7 ^H	2.8 ^H	2.7 ^H	2.6	2.8	(2.7)	2.9	3.1	3.3	3.1	2.9 ^H	2.8	2.7 ^H	2.9 ^H	J	C	C	C	C	C	2.9 ^S	2.9 ^S	2.8	2.8	
17	2.9	2.7	2.7	3.1	3.2	3.1	2.6	3.0	3.5	3.3	3.1 ^H	2.9	2.9	J	J	J	J	2.8	2.9 ^S	2.8	2.8	2.9 ^S	3.0	2.8	
18	2.6	2.6	2.5	2.5	2.6	2.7	2.1	3.3 ^H	3.1 ^H	3.1	3.1	2.8 ^H	2.7 ^H	2.8 ^H	C	J	2.8	2.8	3.1 ^S	3.1	S	(2.9) ^S	3.2	3.0 ^S	
19	J	2.9	2.7	2.8	J	2.7	2.6	3.2 ^P	3.4	C	C	C	C	C	C	C	C	C	C	C	C	2.9 ^S	3.0	2.9	
20	2.9	2.8	2.7	2.9	3.2	3.4	2.7	3.2	3.3	3.2	3.2	3.0 ^H	2.8	2.8	2.8	2.7	2.7	2.8 ^H	(2.9) ^H	2.9 ^H	S	2.8 ^H	3.0 ^S	2.9 ^S	
21	2.7	2.5	2.7	3.0 ^H	2.9	2.7	J	J	3.1 ^F	3.0	3.0	J	2.9 ^S	2.8	2.6	J	J	J	J	J	J	J	J	J	
22	2.8	3.0	2.8	2.7	2.7	2.6	S	3.1	2.8	J	J	S	S	J	J	C	J	J	J	(2.9) ^H	2.9	2.7	2.8 ^H	2.8	
23	2.7 ^H	2.8	2.9	2.8	2.7	2.7	2.8	2.9	2.9	3.0	2.9 ^H	3.0 ^S	2.9	2.9 ^S	JPH	J	2.9	J	J	J	5	J	2.7 ^S	2.9	
24	3.1 ^S	3.1 ^S	2.9 ^S	3.2	3.4	(2.6)	3.2	2.8	3.3	3.1	2.9	3.1 ^H	2.9	2.8	J	3.0 ^P	(2.7)	J	2.8 ^S	2.9 ^H	3.2	(3.0) ^S	2.8	2.7 ^S	
25	2.6	2.8	2.8	3.0	3.0 ^H	2.9	2.7	3.0	3.3	3.2	3.0	3.0	2.9	J	J	J	J	J	(3.0)	2.9 ^H	3.1 ^S	3.0 ^S	2.9 ^H	3.0 ^H	
26	2.8	2.9	2.8	3.0	(3.9)	3.1	2.7	3.2	3.4	3.3	3.1 ^H	3.2	(2.9)	J	J	C	2.9	3.1	3.0 ^S	J	3.0 ^H	3.0 ^H	3.0	2.9	
27	2.8	2.9 ^H	3.0 ^H	3.5	2.9	2.6	2.6	3.0	3.2	3.1	3.0	3.1 ^H	3.0 ^P	J	J	J	2.9 ^H	2.9	3.0	J	J	3.2	3.1	J	
28	J	C	2.8	2.9	3.4	2.7	2.8	3.3	3.3	3.2	J	J	J	J	J	2.8	J	C	J	J	2.9	2.8 ^H	3.1 ^H	2.8	
29																									
30																									
31																									
Median Value	2.8	2.8	2.7	2.9	3.1	2.7	2.7	3.0	3.2	3.2	3.0	3.0	2.9	2.8	2.8	2.9	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.0	2.9
Count	2.5	2.7	2.6	2.5	2.5	2.6	2.5	2.6	2.5	2.0	2.0	1.8	1.8	1.3	1.2	1.1	1.5	1.4	1.4	1.5	1.9	2.0	2.0	2.4	2.3

Sweep 1.2 Mc to 18.5 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

ff min

Yamagawa

Lat. 31°25'N
Long. 139°37.7'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	1.8	1.8	1.8	1.6	2.0	2.0	2.0	1.4	C	C	C	C	C	C	C	C	C	C	C	C	2.0	1.6	1.6	1.6
2	1.5	1.6	1.6	1.6	1.8	2.0	1.6	2.0	1.3	3.0	3.4	4.1	4.0	4.1	4.2	3.7	3.2	2.9	A	2.0 ^A	A	A	1.6	2.0
3	1.6	1.8	A	A	1.8	1.8	1.8	1.8	2.5	2.5	3.8	3.6 ^A	4.2 ^A	4.2 ^A	4.2 ^A	3.8 ^A	3.5	3.2	1.9	1.8	4.7	1.5	1.7	1.6
4	1.6	1.5	1.5	1.6	A	1.4	1.6	1.8	2.6	3.4	3.8	3.8	3.8	4.0	3.8 ^A	4.6	A	2.8	2.2 ^A	1.6	A	1.8	1.6	1.6
5	1.6	1.6	1.5	1.6	1.6	1.6	1.6	1.6	2.6	A	3.6	4.2	A	4.2	A	A	C	C	C	C	1.6	2.0	1.8	1.8
6	1.8	1.8	1.8	1.6	A	1.8	1.8	1.6	2.6	A	3.8	4.0	4.2	4.2 ^A	4.1	3.6	3.8	2.6	2.2	A	1.8	1.7	1.6	1.6
7	1.4	1.4	1.6	1.4	1.5	1.6	1.5	1.6	2.4	4.6	4.0	4.2	4.2	4.2	4.5	4.0	3.6	2.7	2.0	1.8	2.0	1.8	1.6	1.6
8	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	2.6	3.1	A	4.6	4.4	4.5	4.2	3.6	A	2.2	2.0	1.7	A	A	A	1.6
9	1.6	1.5	1.6	1.5	1.6	1.8	1.8	1.8	2.5	3.4	3.8	4.1	4.1	4.2	4.1	3.7	3.6	2.8	2.0	A	1.6	1.6	1.6	1.6
10	1.6	1.6	1.6	1.6	1.6	A	A	C	3.0	3.0	A	4.0	5.3	4.2	A	A	3.0	2.8	2.0	1.8	1.6	1.5	1.6	1.5
11	1.6	1.4	1.6	1.7	1.5	1.5	1.8	2.0	2.7	3.0	3.8	4.2	A	A	3.8	A	3.4	A	2.0	2.0	2.0	2.0	1.8	A
12	1.8	1.8	1.8	1.6	1.6	1.6	1.6	1.8	2.8	3.2	4.0	5.2	4.2	4.4	4.2	3.8	3.4	2.9	2.0	2.0	1.6	1.5	1.5	1.5
13	1.5	1.5	1.5	1.6	1.4	1.4	1.4	1.6	2.5	3.1	3.8 ^A	4.1	4.4	4.8	4.6	4.0	3.4	3.1	2.0	1.8	1.8	1.6	1.6	1.6
14	1.6	1.6	1.6	1.8	1.7	2.0	1.8	1.8	2.5	3.2	3.8	4.2	4.0	4.3	4.1	3.8	3.4	3.0	2.0	1.8	A	2.0	1.8	1.6
15	1.6	1.6	1.6	1.6	1.6	1.7	1.6	1.7	2.7	C	C	C	C	C	C	C	C	C	C	C	C	1.6	A	1.7
16	1.5	1.6	1.5	1.6	1.4	1.4	1.6	2.0	2.8	3.4	4.0 ^A	4.0 ^A	3.8	3.4	3.6	C	C	C	C	1.6	1.8	1.6	1.6	1.6
17	1.6	1.6	2.0	1.5	1.8	1.8	1.8	2.1	2.9	A	4.2	A	4.6	4.4	3.8	A	A	A	2.8	1.6	1.8	1.7	1.8	1.8
18	1.8	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.7	3.3	4.1	4.2	4.4	4.4	4.3	4.1	3.6	2.8	2.2 ^A	2.0	A	2.0 ^A	1.8	1.6
19	1.4	1.6	1.4	1.6	1.6	1.4	1.5	1.7	2.6	C	C	C	C	C	C	C	C	C	C	C	C	1.8	1.5	1.8
20	1.7	1.6	1.5	1.4	1.6	1.5	1.5	2.1	2.6	3.8	3.8	4.0	4.1	4.2	4.1	4.1	A	2.6	2.0	1.6	1.6	1.6	1.6	1.6
21	1.6	1.6	1.7	1.5	1.5	1.5	1.6	2.0	2.5	3.1	3.7	4.1	4.1	4.1 ^A	A	3.8	3.5	3.2 ^A	2.2	2.0	1.8	1.8	1.8	1.6
22	1.6	1.6	1.6	1.6	1.6	1.3	1.8	(2.8)	2.9	3.8	4.2	4.2	4.2	4.2	4.4	4.4	4.3	3.2	2.0	1.8	1.8	1.6	1.6	1.8
23	1.6	1.8	1.6	1.6	1.6	1.6	1.6	1.9	2.7	2.4 ^A	3.8	3.6 ^A	4.5	3.6 ^A	A	3.8	3.2	2.8	2.1	1.6	1.8	1.6	1.6	1.6
24	1.6	1.5	1.5	1.6	1.4	1.4	1.6	1.8	2.7	3.2	3.6	3.8	3.8	4.4	4.2	3.6	3.4	2.9	2.0	2.0	1.7	1.8	1.7	2.0
25	1.6	1.6	1.5	1.6	1.5	1.5	1.6	1.9	2.7	3.2	A	4.2	A	4.2 ^A	3.7	3.6	3.4	2.8	2.1	1.6	1.6	1.6	1.6	1.4
26	1.6	1.4	1.4	1.4	1.6	1.5	1.6	2.0	2.8	3.4	3.8	4.4 ^A	4.4 ^A	4.1	4.1 ^A	3.7	3.3	2.6	2.1	2.0	1.8	1.6	1.6	1.6
27	1.5	1.6	1.5	1.5	1.6	1.6	1.6	2.0	2.7	3.3	3.8	4.4	4.2	4.2	4.2	4.2	A	3.0	2.0	1.6	1.8	1.5	1.5	1.5
28	A	C	1.8 ^A	1.6	1.5	1.5	1.5	1.8	2.8	3.2	3.4	3.5	4.4	(4.2)	3.8	4.0	3.6	2.8	2.0	1.8	1.6	1.6	1.6	1.6
29																								
30																								
31																								
Median Value	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.8	2.7	3.2	3.8	4.1	4.2	4.2	4.1	3.8	3.4	2.8	2.0	1.8	1.8	1.6	1.6	1.6
Count	27	27	27	27	25	28	27	27	26	22	22	24	21	24	20	20	18	21	22	24	21	25	27	27

Sheep 1.2 Mc to 1.8.5 Mc in 1/5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Telecommunications
(Denki-tsushin Kenkyujo) Gotanda, Shinagawa-ku, Tokyo, Japan

IONOSPHERIC DATA

Feb. 1949

f_oF min

Yamagawa

Lat. 31°12.5'N
Long. 139°37.7'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	E	E	E	E	2.0	E	E	2.0	C	C	C	C	C	C	C	C	C	C	C	2.0	F	F	1.6	F	
2	E	E	E	E	2.0	0	E	B	2.0	1.8	2.2	2.0	2.2	2.0	2.2	2.0	1.8	1.7	1.6	1.6	1.8	1.6	E	B	
3	E	E	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.2	2.6	3.0	3.0	2.8	2.2	2.0	1.9	E	C	E	E	E	
4	E	E	E	E	1.6	E	E	B	1.8	3.0	3.0	3.0	3.4	B	B	B	3.2	2.0	2.0	1.6	1.6	E	E	E	
5	E	E	E	E	E	E	E	E	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.0	C	C	E	2.6	E		
6	E	E	E	E	(1.6)	E	E	B	1.7	2.2	2.2	2.2	2.2	2.8	3.0	2.8	2.0	1.9	1.8	E	E	E	E	E	
7	E	E	E	E	E	E	E	B	1.6	B	2.2	3.0	3.6	3.0	3.2	2.2	2.2	2.0	E	E	E	E	E	E	
8	E	E	E	E	E	E	E	B	1.8	2.1	2.8	3.2	3.3	3.1	2.2	2.2	2.2	1.9	B	1.6	1.6	1.6	1.6	E	
9	E	E	E	E	E	E	E	B	2.0	2.2	2.2	2.2	2.1	2.1	2.5	2.0	2.2	2.1	B	2.2	E	E	E	E	
10	E	E	E	E	E	E	E	1.8	1.8	2.0	2.0	2.4	B	3.6	3.6	3.0	2.3	2.0	B	E	C	E	E	C	
11	E	E	E	E	E	E	E	B	1.7	2.2	2.2	2.2	2.2	3.8	B	2.6	2.0	2.0	B	E	E	E	E	(1.8)	
12	E	F	E	E	4.4	E	E	B	1.7	2.0	2.1	B	B	3.0	B	2.4	2.0	2.1	1.6	1.6	E	E	E	E	
13	E	E	E	E	E	E	E	B	1.6	2.2	2.4	2.7	2.4	B	B	2.1	2.5	2.2	2.0	E	E	E	E	E	
14	E	E	E	E	E	E	E	B	1.7	1.9	2.2	B	2.8	2.8	B	2.6	2.2	1.7	B	1.8	2.0	2.0	E	E	
15	E	E	E	E	E	E	E	B	1.8	C	C	C	C	C	C	C	C	C	C	E	1.6	1.8	E	E	
16	E	E	E	E	E	E	E	E	1.6	1.8	2.0	2.0	3.3	3.6	2.2	C	C	C	C	E	E	E	E	E	
17	E	E	E	E	E	E	E	E	1.6	1.8	2.2	2.1	2.2	3.8	3.6	3.6	3.2	2.2	2.0	1.6	E	E	E	E	
18	E	E	E	E	E	E	E	B	1.6	1.8	2.5	3.0	4.4	3.2	(3.1) ^c	3.0	2.4	1.8	2.0	1.8	1.8	1.6	1.6	E	
19	E	E	E	E	E	E	E	E	2.1	1.6	C	C	C	C	C	C	C	C	C	E	E	E	E	E	
20	E	E	E	E	E	E	E	E	1.6	1.8	B	2.2	2.1	2.3	2.1	2.7	2.5	2.3	2.0	(2.4)	E	E	E	E	
21	E	E	E	E	B	(2.8)	E	1.8	1.7	2.0	2.4	2.6	3.7	3.7	3.1	2.8	2.0	2.0	B	E	E	E	E	E	
22	E	E	E	E	E	E	E	1.8	1.8	2.2	2.2	2.2	B	B	B	C	B	B	1.8	2.0	E	E	E	E	
23	E	E	E	E	E	E	E	1.6	1.6	2.0	2.0	1.8	B	2.6	2.2	4.0	2.0	2.0	1.7	(2.5)	E	F	E	E	
24	E	E	E	E	E	E	E	B	1.8	2.0	2.2	2.2	B	2.2	2.2	2.0	2.0	2.0	1.6	1.6	2.4	F	(2.2)	E	
25	B	B	E	E	E	E	E	E	1.5	2.0	2.2	3.0	3.4	2.8	2.4	2.5	2.6	2.0	1.8	E	E	E	E	E	
26	E	E	E	E	E	E	E	E	1.6	2.0	3.2	3.1	3.0	3.4	2.9	(2.6) ^c	2.2	1.8	(2.2)	E	E	E	E	E	
27	E	E	E	E	E	E	E	E	1.8	1.8	2.2	2.4	3.0	3.0	2.4	2.4	2.4	1.8	1.6	E	E	E	E	E	
28	1.6	(1.5) ^c	1.4	E	E	E	E	E	1.7	1.8	2.0	2.2	2.1	2.6	2.4	2.4	2.4	2.0	B	E	E	E	E	E	
29																									
30																									
31																									
Median Value	E	E	E	E	E	E	E	1.7	1.8	2.0	2.2	2.2	3.3	3.0	2.8	2.5	2.3	2.0	1.6	1.8	1.6	E	E	E	E
Count	27	27	28	27	27	26	26	15	27	23	25	23	20	20	20	22	21	22	15	24	26	27	28	26	

Sweep 1.2 Mc to 18.5 Mc in 1.5 min Manual

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