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IONOSPHERIC DATA IN JAPAN

FOR MARCH 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)

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CONTENTS

	Page
Foreword	2
Site of the Ionospheric Stations	3
Remarks on Symbols	3
Ionospheric Data for Every Day and Hour at Wakkanai	4
Ionospheric Data for Every Day and Hour at Fukaura	15
Ionospheric Data for Every Day and Hour at Shibata	26
Ionospheric Data for Every Day and Hour at Kokubunji	37
Ionospheric Data for Every Day and Hour at Yamagawa	48

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.

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

IONOSPHERIC DATA

Lat. 35° 22.6' N
Long. 139° 41' E

Wakkanai

$f_o F_2$

Mar. 1949

Day	00	01	02	03	04	05	06	07	08	09	10	135° E Mean Time												
												12	13	14	15	16	17	18	19	20	21	22	25	
1	5.7	5.8	5.9	5.6	5.7	5.5	5.3	[8.8]c	12.0 ^P	13.5 ^P	14.0	13.8	13.3	13.0	12.2	12.2 ^P	10.2 ^J	7.6	J	7.1	6.4	6.2	5.8	
2	B	5.7 ^P	B	(4.9) ^J	4.1 ^J	4.4	5.3	c	c	12.8 ^J	13.7	13.5	12.8	12.0	B	10.8	10.1	8.8	6.8	5.7	5.4	5.4	5.4	
3	5.5	5.6	c	c	c	5.5	c	[7.9]c	10.3	12.4 ^M	B	12.4 ^M	12.2	12.5	11.8	J	8.8	7.5	[7.3]c	6.8	(5.2) ^P	5.2	4.6	
4	5.5 ^P	5.3	5.5	4.2	4.1	c	c	c	9.8	10.5	12.2	12.5	12.7	12.2	11.7	B	9.8	8.5	[7.3]c	6.8	5.8 ^J	6.0 ^J	5.7	
5	5.8	5.5	5.9 ^M	5.4	5.4	5.5	c	c	c	12.8 ^J	12.8 ^M	12.5 ^M	12.4 ^M	12.0 ^M	11.6 ^J	11.5 ^J	10.1	9.3	[7.8]c	6.8	6.5	6.5	7.0	
6	6.8	6.4 ^F	6.0 ^F	5.2 ^F	5.3 ^F	5.9 ^F	5.4	c	c	c	c	c	c	c	c	B	9.6 ^P	8.4	7.4	7.1	6.1	6.3	6.4	
7	6.2 ^F	6.8 ^F	7.4 ^F	6.0 ^F	5.6 ^F	5.8 ^F	c	c	12.1 ^J	12.7	12.6 ^J	12.9	11.7	11.8	11.9 ^J	11.3 ^J	10.1	9.2	7.2	6.5	6.4	6.4	6.4	
8	6.5	5.8	5.7	5.8	5.8 ^F	5.8 ^F	c	c	c	13.2	13.5	13.9	13.5	12.5 ^J	12.1	11.8 ^P	10.5	9.2	7.4	7.1	6.6	6.5	6.3	
9	5.8	6.3	5.9	6.1	6.0	6.0	c	c	c	B	B	B	c	12.5	c	c	c	c	c	c	c	c	c	
10	6.0	5.8 ^J	5.8	5.6	5.5	5.6	6.1	[7.8]c	12.0	12.2	12.1	12.3	12.3	11.0	12.0	9.6	9.9	J	9.2	9.6	J	8.8	6.7	
11	6.6	6.4	6.4	6.3 ^F	5.6	5.4	6.9 ^S	c	c	B	c	c	13.3	c	12.1	12.2	11.2	9.5	9.4	8.7	8.3 ^J	6.5	6.6	
12	7.0	6.6	6.5	6.3	6.3	6.4	7.8	[10.3]c	12.8	c	c	12.6 ^P	B	(12.1) ^J	11.5	10.3	(10.0) ^P	9.3	8.6	8.0 ^J	B	7.2 ^P		
13	6.9 ^J	c	c	c	6.8	5.0	7.2 ^P	c	c	c	5	13.8 ^P	c	c	B	12.6 ^P	10.5	9.2	7.0	7.0 ^J	6.9 ^P	6.7		
14	6.5	B	7.0	6.6	6.6	7.0	8.3	c	5	12.8 ^J	13.0	13.3	13.4	[12.8]c	12.5	[11.9]c	10.8 ^J	9.6	7.3	7.3	6.8	6.8		
15	6.6	6.5 ^M	6.3 ^M	5.8 ^M	5.1 ^M	5.7	6.8	[7.3]c	12.7	c	c	c	13.4	13.3 ^P	12.3 ^P	10.7	10.2 ^J	10.7	10.2 ^J	8.6	6.9	6.7	6.8	
16	6.7	6.6	6.2	6.1	6.1	6.3	7.2	[8.9]c	10.3	10.8	10.3	11.5 ^J	11.9 ^J	10.2	10.9 ^J	10.7	9.9 ^J	9.2	6.8	6.6	6.5	5	6.7	
17	6.8 ^F	6.7	6.9	6.1 ^F	5.8 ^F	5.9 ^F	5.6	[6.9]c	8.2	8.3 ^J	7.7	(11.2)	12.2	[11.3]c	10.3	9.6	8.3	6.5	6.4	6.4	6.1	6.6		
18	6.5 ^F	c	c	6.7	6.3	6.2	6.7	[6.8]k	6.1 ^K	7.4 ^K	7.9 ^K	10.0 ^K	9.8 ^K	7.9 ^K	9.2 ^K	8.8 ^J	7.6	6.9	6.2	6.1	6.0	5.8		
19	6.8	6.8	6.7	6.1	5.1 ^F	4.5	6.9	c	c	c	c	12.3	12.4	[12.8]c	12.3	10.7	[11.0]c	5	6.9	9.0	6.5 ^P	6.5		
20	6.4	6.3	6.9	5.9	6.6 ^M	6.3 ^M	7.3	c	c	c	c	c	c	12.7	[12.7]c	12.6	11.8	11.2	9.8	7.2	6.2	7.1	7.4	
21	6.2 ^P	(6.8) ^P	6.7	6.2	5.5	5.8 ^M	7.4	[7.1]c	11.8	B	12.3	12.7	B	c	12.1	5	11.8	11.2	10.0	5	7.5	7.1	6.9	
22	7.4	7.2	7.2 ^P	6.1	5.8 ^F	c	c	c	12.3	12.3	12.9 ^P	5	12.4	B	12.4	12.4	12.2	11.6	(10.0) ^J	7.1	5	7.7	5	
23	5	(7.0) ^P	6.8	6.8 ^K	6.2 ^K	6.1 ^K	6.2	[7.0]c	7.9 ^K	7.1 ^K	8.4 ^K	9.4 ^K	c	c	10.5 ^K	9.8 ^K	10.1 ^K	9.7 ^K	6.6 ^K	5.7 ^K	5.7 ^K	5.7 ^K		
24	6.4 ^K	5.3 ^K	5.3 ^K	5.1 ^K	5.0 ^K	5.6	7.1 ^J	[9.3]c	12.4 ^J	12.5	13.3 ^P	12.6	14.2 ^P	11.8	11.5	11.5	11.5	10.1	10.1 ^K	9.4	6.7	6.5	6.5	
25	6.3	6.4	6.3	6.0	6.0	6.2	7.5	[9.7]c	11.8	12.3	13.2	13.2	13.8 ^P	c	B	5	11.6 ^P	11.7	9	8	6.9	(6.3) ^J	6.7 ^P	
26	6.7	6.6	6.9	6.1	5.9	6.6	7.2 ^J	[7.0]c	12.9	12.9	13.0	12.8	12.8	12.7	12.7	11.8 ^P	5	12.4	11.8 ^P	8.7	6.8	6.6	6.7	
27	6.7	6.7	6.7	6.4	6.4	7.0	7.1 ^M	[9.1]c	10.3 ^M	(11.4) ^M	11.7	12.8	12.7	10.8	10.7	11.8 ^J	11.2	10.7	B	7.4	6.9	6.5	6.6	
28	6.3	6.4	6.4	6.1	6.1	6.2	c	c	11.7	[12.4]c	12.1	12.2	12.3	[12.6]c	11.8 ^J	11.9	11.1	8.7	9.1	8.5 ^P	7.1 ^P	R		
29	6.7	7.3	6.7	7.0	6.8	7.1	c	c	c	12.5	12.7	12.9	12.4	12.2	12.1	12.4	12.1 ^M	11.3	9.1	9.3 ^J	[12.2]c	6.7	6.4	
30	6.8	7.4 ^F	6.7 ^F	6.3 ^F	5.8	6.6	7.7	[10.0]c	12.2	12.8	[12.9]c	12.9	12.3	12.8	12.5	11.9	11.6	11.6 ^J	9.2	8.0	7.2	7.4	7.1	
31	6.9	7.1	6.6	5.9	6.3	6.7	7.1	[11.3]c	13.2	B	c	12.8	12.5	[12.4]c	12.3	11.8 ^M	B	11.2	c	B	B	7.6 ^P	7.2	
Mean	6.4	6.3	6.0	5.6	5.8	6.2	7.2	(7.1)	11.8	12.5	12.8	12.9	12.7	12.6	12.3	11.8	11.3	11.6	9.6	8.5	7.2	6.7	6.5	6.6
Count	29	28	27	30	29	23	16	20	21	21	23	23	23	25	25	25	27	26	26	26	26	28	27	

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

IONOSPHERIC DATA

Mar. 1949

hpFz

Wakkanai

Lat. 45°23.6'N
Long. 141°41'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	310 ^F	330 ^F	330 ^F	340 ^F	340 ^F	320 ^F	220 ^F	2300 ^F	280 ^F	290 ^F	300 ^F	300 ^F	300 ^F	300	320	310	290	320	300	300	310	280	300	320	360
2	B	380 ^F	B	B	(340) ^F	(430) ^F	(350) ^F	C	C	300	300	B	310	(310) ^F	340	310	310	320	300	300	310	340	340	410	
3	370	370	C	C	C	360	(320) ^F	280	300	310	300	300	320	330	300	320	B	290	(300) ^F	(320) ^F	220 ^F	(330) ^F	350	450	
4	410 ^F	320	360	410	460	460	C	C	300	310	300	300	320	330	300	320	B	290	(300) ^F	(320) ^F	320	310 ^F	350 ^F	360	
5	390	370	400 ^F	400	350	370	C	C	C	280 ^F	300 ^F	290 ^F	300 ^F	330 ^F	320 ^F	330 ^F	300 ^F	310	310	(290) ^F	310	360	320	330	
6	310	310 ^F	310 ^F	310 ^F	320 ^F	320 ^F	290	C	C	C	C	C	C	C	C	C	B	310 ^F	340	340	350	340	350	340	
7	370	350 ^F	360 ^F	330 ^F	360 ^F	400 ^F	C	C	310 ^F	280	300 ^F	290	300	350 ^F	310	320	290 ^F	290	320	200	310	350	330	330	
8	320	350	420	430	430 ^F	440 ^F	C	C	C	300	290	340	330	B	340 ^F	320	320 ^F	300	310	330	310	310	320	330	
9	350	(440) ^F	410	420	380	390	C	C	C	B	B	B	C	340	C	C	C	C	C	C	C	C	C	C	
10	450	440 ^F	500	430	400	350	370	(360) ^F	340	300	300	300	300	310	310	(340) ^F	320 ^F	320 ^F	320 ^F	(320) ^F	310	S	300	370	
11	340	350	380	360 ^F	400	430	410	360 ^F	C	B	C	C	340	B	(310) ^F	B	(350) ^F	310	310	(330) ^F	400	360	330 ^F	B	380 ^F
12	380	350	360	310	400	430	270 ^F	(340) ^F	300	C	C	C	B	310 ^F	C	C	300 ^F	360	310 ^F	360	400 ^F	390 ^F	340 ^F	400	
13	340 ^F	B	C	C	240	280	270 ^F	C	C	C	B	310 ^F	C	C	C	C	C	300 ^F	310 ^F	(320) ^F	310 ^F	400 ^F	390 ^F	400	
14	400	B	330	440	430	380	360	C	S	330 ^F	330	320	320	(360) ^F	400	340	(350) ^F	360 ^F	340	320	310	310	310	330	300
15	430	430 ^F	490 ^F	(530) ^F	500 ^F	500	380	(320) ^F	310	C	C	C	C	C	380	370 ^F	(310) ^F	(310) ^F	300	320	340	310	350	400	400
16	340	380	400	450	470	390	280	(280) ^F	280	360	310	320 ^F	360 ^F	300 ^F	340	310 ^F	350	330	300	330	340	340	S	340	
17	380 ^F	390	330	560 ^F	530 ^F	540 ^F	370	(360) ^F	340	(330) ^F	360	(400) ^F	(380) ^F	(390) ^F	400 ^F	300	280 ^F	320	300	420	450	390	420	280	
18	340 ^F	C	C	460	440	360	380	(330) ^F	270 ^F	400 ^F	320 ^F	390 ^F	350 ^F	340 ^F	340 ^F	320	310	310 ^F	320	400	440	430	400	390	
19	440	370	350	410	420 ^F	420	260	C	C	C	C	360	310	(310) ^F	310	290	(300) ^F	310	S	300	300	340 ^F	350	400	
20	360	340	350	310	320 ^F	320 ^F	250	C	C	C	C	C	C	350	(340) ^F	330	340	340	300	310	300	320	320	320	
21	380	320	300	410	430	500	270	(320) ^F	360	B	300	330	B	C	310	S	300	320	290	S	310	340	370	400	
22	400	330	340 ^F	380	420 ^F	C	C	C	340	290	370 ^F	S	390	B	380	340	300	290	310	310	B	310	S	410 ^F	
23	S	(550) ^F	360	310 ^F	460	470	460	(420) ^F	370 ^F	280	310	330	C	C	C	320	310	310	320	(340) ^F	360 ^F	310 ^F	370 ^F	360 ^F	400 ^F
24	420	410	420	340	400	360	320	(320) ^F	310 ^F	310	300 ^F	300	290 ^F	320	320	300	300	280	290	270	320	360	350	390	
25	410	370	370	340	360	400	320	(310) ^F	290	310 ^F	300	320	320	300 ^F	C	B	S	290 ^F	310 ^F	B	B	360	350	390	
26	370	390	390	390	420	410	320 ^F	(310) ^F	300	290	320	320	330 ^F	340	350	340 ^F	S	320	310 ^F	(340) ^F	370	360	360	400	
27	380	380	350	420	450	410	300 ^F	(300) ^F	300 ^F	310 ^F	300	300	320	300	320	330 ^F	310	320 ^F	B	280	B	300	340	380	
28	360	400	390	360	340	340	C	C	300	(340) ^F	370	300	310	370	(360) ^F	350 ^F	310	290	310	350	320	300 ^F	320 ^F	R	
29	340	400	430	420	400	430	C	C	C	280	320	330	330	330	340	320	360 ^F	360	380	(360) ^F	(340) ^F	310	290	300	
30	400	390 ^F	360 ^F	360 ^F	410 ^F	430	320	(320) ^F	320	320	340	350	300	340	340	320	310	300	320 ^F	310	300	320	300	310	330
31	320	350	340	350	410	380	390	(350) ^F	310	B	C	330	310	(340) ^F	370	280 ^F	B	310	C	C	B	B	370 ^F	310	
Mean Values	370	370	360	400	410	400	320	(320)	310	300	300	320	320	340	340	320	310	310	310	320	320	340	350	370	
Count	29	28	27	28	30	29	23	16	20	21	21	25	23	23	25	25	25	25	27	24	26	26	28	27	

Sheep 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. 35° 23.6' N
Long. 139° 41.1' E

Wakkanai

h'p
h'z

Nov. 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	250	250	260	260	260	280	260	[240]°	260	200	220	220	220	210	200	210	210	230	270	230	220	230	280	300
2	320	270	280	270	270	310	280	C	C	270	220	220	200	220	280	210	220	220	210	250	210	210	240	300
3	270	260	C	C	C	C	C	[250]°	220	260	280	250	230	240	210	210	210	240	210	210	210	210	270	300
4	350	270	290	300	310	350	C	C	210	210	200	280	260	290	200	200	200	220	200	[210]°	220	250	250	280
5	270	300	300	280	290	230	270	C	C	280	200	250	200	200	270	200	230	230	210	210	210	250	250	280
6	240	220	230	230	230	280	230	C	C	220	200	200	200	200	200	200	200	210	210	210	210	260	260	280
7	270	260	250	260	250	270	C	C	220	220	200	210	200	200	230	210	220	210	220	210	210	240	240	250
8	270	250	270	300	300	300	240	C	C	210	240	240	290	300	C	C	C	C	C	C	C	C	C	C
9	250	310	300	300	300	250	290	[240]°	250	260	200	210	250	210	210	220	230	220	220	220	220	230	250	260
10	270	260	280	270	280	310	370	[240]°	210	200	210	200	220	200	200	200	220	210	210	210	210	210	210	210
11	270	270	280	270	270	270	280	[280]°	240	250	280	280	280	280	280	280	280	280	280	280	280	280	280	280
12	270	270	280	270	270	270	280	C	240	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
13	270	C	C	C	190	190	200	C	200	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
14	270	300	260	300	340	290	280	[240]°	200	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
15	270	270	270	270	270	270	270	[280]°	250	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
16	270	270	270	270	270	270	270	[220]°	220	220	200	290	300	300	300	300	300	300	300	300	300	300	300	300
17	270	270	270	270	270	270	270	[240]°	300	230	230	270	300	300	300	300	300	300	300	300	300	300	300	300
18	270	270	270	270	270	270	270	[240]°	280	360	300	300	300	300	300	300	300	300	300	300	300	300	300	300
19	270	270	270	270	270	270	270	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	270	270	270	270	270	270	270	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	270	270	270	270	270	270	270	[250]°	300	250	270	270	270	270	270	270	270	270	270	270	270	270	270	270
22	270	270	270	270	270	270	270	[240]°	260	260	300	290	300	300	300	300	300	300	300	300	300	300	300	300
23	270	270	270	270	270	270	270	[280]°	250	200	280	280	280	280	280	280	280	280	280	280	280	280	280	280
24	270	270	270	270	270	270	270	[220]°	220	210	200	200	200	200	200	200	200	200	200	200	200	200	200	200
25	270	270	270	270	270	270	270	[220]°	200	230	200	230	230	230	230	230	230	230	230	230	230	230	230	230
26	270	270	270	270	270	270	270	[210]°	220	220	280	270	270	270	270	270	270	270	270	270	270	270	270	270
27	270	270	270	270	270	270	270	[210]°	200	200	280	260	250	280	280	280	280	280	280	280	280	280	280	280
28	270	270	270	270	270	270	270	C	200	290	280	270	230	300	[290]°	280	290	220	270	200	220	240	280	300
29	270	270	270	270	270	270	270	C	C	280	260	300	280	300	300	300	300	300	300	300	300	300	300	300
30	270	270	270	270	270	270	270	[220]°	220	280	280	300	270	300	300	300	300	300	300	300	300	300	300	300
31	270	270	270	270	270	270	270	[240]°	230	220	280	280	290	300	280	280	280	280	280	280	280	280	280	280
Mean Value	270	270	270	270	270	270	270	(280)	220	230	230	227	227	227	227	227	227	227	227	227	227	227	227	227
Comm.	27	28	28	29	30	30	26	19	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

Sweep 4.0 Mc to 7.2 Mc in 7.5 min Manual

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

IONOSPHERIC DATA

Lat. $35^{\circ}23.6'N$
 Long. $139^{\circ}51.1'E$

Wakkanai

f_oF₂

Mar. 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					
2							Q	C	Q	L	Q	L	Q	L	Q	Q	Q	Q	Q					
3							Q	C	Q	L	Q	L	Q	Q	Q	Q	Q	Q	Q					
4							C	C	Q	Q	Q	L	L	L	Q	Q	Q	Q	Q					
5							L	C	C	L	Q	L	Q	Q	L	L	L	Q	Q					
6							Q	C	C	C	C	C	C	C	C	C	C	Q	Q					
7							C	C	Q	L	Q	Q	L	Q	Q	Q	Q	Q	Q					
8							Q	C	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
9							C	C _h	C	C	Q	L	L	Q	C	C	C	C	C					
10							Q	C	Q	L	Q	Q	L	Q	Q	Q	Q	Q	Q					
11							Q	C	Q	Q	Q	Q	Q	Q	C	Q	Q	Q	Q					
12							Q	C	L	Q	Q	Q	Q	L	L	Q	L	Q	Q					
13							Q	C	C	Q	Q	Q	Q	C	L	Q	Q	Q	Q					
14							J _h	C	Q	Q	Q	Q	Q	C	L	L	Q	Q	Q					
15							Q	C	L	Q	Q	Q	Q	Q	L	L	Q	C	Q	Q				
16							Q	C	Q	Q	Q	L	L	L	L	Q	Q	Q	Q					
17							Q	C	L	Q	Q	L	L	C	Q	L	Q	Q	Q					
18							Q	C	Q	L	L	(4.7)	(4.7)	L	Q	Q	Q	Q	Q					
19							Q	C	C	C	C	Q	Q	C	Q	L	C	Q	Q					
20							Q	C	C	C	C	C	Q	C	L	L	Q	Q	Q					
21							Q	C	L	Q	Q	Q	L	C	Q	L	L	Q	Q					
22							Q	C	L	L	Q	L	L	L	L	Q	L	Q	Q					
23							Q	C	Q	Q	Q	Q	Q	C	L	L	L	Q	Q					
24							Q	C	Q	Q	Q	Q	Q	Q	Q	Q	L	Q	Q					
25							Q	C	Q	Q	Q	L	Q	C	Q	L	Q	Q	Q					
26							Q	C	Q	Q	L	L	L	L	L	Q	Q	Q	Q					
27							Q	C	Q	Q	L	L	L	L	L	L	L	L	L					
28							C	C	Q	L	L	L	L	L	L	C	L	L	Q					
29							C	C	C	Q	L	L	L	L	L	L	L	L	L					
30							Q	C	Q	L	L	L	L	L	L	L	L	L	Q					
31							Q	C	L	Q	C	L	L	L	L	L	L	L	Q					
Median Value							-																	
Count							1				1		1											

Lat. 35° 23.6' N
 Long. 139° 41.1' E

Wakkanai

h.F.

Mar. 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							Q	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
2							C	C	C	230	Q	200	Q	200	210	Q	Q	Q	Q	Q				
3							C	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
4							C	C	Q	Q	Q	210	210	210	Q	Q	Q	Q	Q	Q				
5							210	C	C	200	Q	200 ^H	Q	Q	210	200	200	Q	Q	Q				
6							Q	C	C	C	C	C	C	C	C	C	C	Q	Q	Q				
7							C	C	Q	210	Q	Q	200	Q	Q	Q	Q	Q	Q	Q				
8							Q	C	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
9							C	C	C	C	Q	200	200	Q	Q	Q	Q	Q	Q	Q				
10							Q	C	Q	210	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
11							Q	C	Q	Q	Q	Q	Q	200	210	Q	210	Q	Q	Q				
12							C	C	220	210	Q	Q	Q	C	220	Q	Q	Q	Q	Q				
13							Q	C	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
14							240	C	Q	Q	Q	Q	Q	Q	C	230	210	Q	Q	Q				
15							Q	C	200	Q	Q	Q	Q	Q	220	220	Q	Q	Q	Q				
16							Q	C	Q	Q	Q	Q	200	210	210	Q	Q	Q	Q	Q				
17							Q	C	220	Q	Q	Q	Q	Q	Q	210	Q	Q	Q	Q				
18							Q	C	Q	220	A	210	200 ^A	220	Q	Q	Q	Q	Q	Q				
19							Q	C	C	C	C	Q	Q	Q	Q	210	Q	Q	Q	Q				
20							Q	C	C	C	C	C	Q	Q	Q	200	Q	Q	Q	Q				
21							Q	C	220	Q	Q	Q	200	C	Q	220	220	Q	Q	Q				
22							Q	C	220	220	Q	Q	210	200	200	Q	200	Q	Q	Q				
23							Q	C	Q	Q	Q	Q	Q	C	210	230	210	Q	Q	Q				
24							Q	C	Q	Q	Q	Q	Q	Q	Q	230	230	Q	Q	Q				
25							Q	C	Q	Q	Q	210	Q	Q	Q	230	Q	Q	Q	Q				
26							Q	C	Q	Q	200	210	210	220	230	Q	Q	Q	Q	Q				
27							Q	C	Q	Q	200	220	200	210	220	210	230	230	230 ^A	Q				
28							C	C	Q	210	Q	210	200	200	210 ^C	210	230	Q	Q	Q				
29							C	C	C	Q	210	220	210	200	210	210	230	230	230	Q				
30							Q	C	Q	220	230	210	200	200	230	230	230	230	Q	Q				
31							Q	C	210	Q	C	200	230	230	230	230	220	220	Q	C				
Mean							220	210	-	210	200	210	200	210	210	210	210	210	210	210				
Min							6	10	4	10	13	13	13	13	16	13	13	13	13	13				
Max							2	2	2	2	2	2	2	2	2	2	2	2	2	2				

Manual

Sweep 1.0 Mc to 1.8 Mc in 1.5 min

Mean
Min
Max

Q_{min}

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

IONOSPHERIC DATA

f_oF_2

Mar. 1989

Lat. 35°22'N
Long. 139°51'E

Wakkanai

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							B	C	2.5 (40)A	2.2	2.0	2.5	2.7	2.7	(44) E										
2							1.5	C	3.1P	E	3.0	B	B	2.2	3.1	2.9	2.0	E							
3							1.4	[2.9]C	2.8 (50)	3.4	2.8	(2.9) A	(2.9) A	2.6	1.8	A									
4							C	C	2.9	A	2.5	2.6	2.8	2.8	2.8	A	A	E							
5							1.5	C	C	3.1	3.1	3.0	A	2.8	A	3.3	A	2.1	A						
6							1.2	C	C	C	C	C	C	C	C	C	C	1.9	B						
7							C	C	A	1.1	A	1.6	2.1	2.2	(2.9)A	2.0	B								
8							B	C	C	3.4	B	3.9	A	3.0	3.8	3.2	2.8	2.3	1.3						
9							C	C	C	A	3.3	3.6	B	A	C	C	C	C	C						
10							B	C	2.0	2.2	A	B	B	A	A	2.8	2.9	1.9	B						
11							1.3	[2.8]C	3.3	3.8	A	2.6	3.1	3.9	[2.8]C	3.5	2.9	2.8	1.5						
12							1.6	C	C	3.0	3.8	3.9	2.9	3.9	[2.9]C	3.6	3.3	(3.3) 2.2	A						
13							1.8	[2.8]C	3.2	A	A	A	B	C	2.6	3.3	[2.9]C	2.3	1.6						
14							1.8	C	A	A	A	A	A	A	A	B	(3.2)E	2.4	A						
15							1.8	[2.8]C	3.9	3.4	A	A	A	A	A	A	2.2	2.9	1.5						
16							1.6	[2.2]C	2.9	A	A	A	A	A	A	A	2.9	2.4	1.6						
17							1.8	[2.8]C	3.2	A	A	A	A	A	A	(3.4) 2.9	2.3	1.9							
18							1.6	C	C	C	C	A	A	A	C	2.2	[2.9]C	2.2	1.6						
19							1.9	C	C	C	C	C	C	C	B	A	3.3	2.9	2.3	2.0					
20							A	C	2.1	2.3 (45)	(45)	B	C	A	A	A	A	2.5	1.6						
21							1.9	C	A	2.5	B	B	B	A	2.5	2.2	A	2.4	(1.6)						
22							1.9	[2.8]C	3.0	3.3	3.5	A	A	C	3.3	3.2	2.1	2.8	B						
23							2.0	[2.9]C	3.4	(3.7)	A	A	A	A	A	A	2.8	2.3	(1.9)						
24							2.1	[2.8]C	3.0	3.5	3.9	3.7	B	C	3.5	(3.6)B	A	2.5	A						
25							2.0	[2.9]C	3.3	3.8	3.9	(3.5)	A	(3.8)	A	A	A	(2.3) A							
26							B	C	3.3	3.5	3.5	B	A	2.5	3.3	3.3	A	2.5	A						
27							C	C	3.3	3.3	3.3	3.8	B	3.6	C	B	S	2.4	1.8						
28							C	C	C	3.8	3.8	B	B	B	A	B	2.9	2.4	A						
29							1.9	[2.8]C	3.1	3.6	3.5	B	D	B	3.3	3.3	3.0	2.8	(1.9)						
30							2.3	[2.8]C	3.3	(2.9)	C	A	B	B	A	3.2	2.9	2.4	C						
31							1.8 (2.5)	3.1	3.3	3.5	3.5	3.6	3.5	3.5	3.5	3.3	2.9	2.3	1.6						
Mean							2.1	1.3	1.9	2.3	1.5	1.5	1.1	1.5	2.1	2.1	2.9	2.3	1.6						
Count																									

Sweep 1.0 Mc to 12.0 Mc in 1.0 min Manual

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

Lat. 35° 25.8' N
Long. 139° 42.1' E

Wakkanai

IONOSPHERIC DATA

AE

Mar. 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							B	C	100	100	100	100	100	100	100	100	100	100	E					
2							B	C	C	100	(100)	100	100	100	100	100	100	100	E					
3							E	C	100	100	100	100	100	100	100	100	100	100	A	E				
4							C	C	100	A	100	100	100	100	100	100	100	100	A	E				
5							B	C	C	100	100	100	A	100	A	100	A	100	A	A				
6							E	C	C	C	C	C	C	C	C	C	C	C	B	B				
7							C	C	A	100	A	100	100	100	100	100	100	A	100	B				
8							B	C	C	100	B	100	A	100	100	110	100	100	100	E				
9							C	C	C	A	100	100	A	A	C	C	C	C	C	C				
10							B	C	100	100	A	A	A	A	A	100	100	100	100	B				
11							E	C	100	110	110	100	100	100	100	100	100	100	100	B				
12							E	C	100	100	100	100	100	100	100	100	100	100	100	A				
13							100	C	C	100	100	100	100	100	100	100	100	100	100	A				
14							A	C	100	A	A	A	A	100	100	100	100	100	100	B				
15							B	C	A	A	A	A	A	100	100	100	100	100	A	A				
16							100	[100]c	110	100	A	A	A	A	A	100	100	100	100	A				
17							100	[100]c	100	A	A	A	A	A	A	A	A	A	A	A				
18							100	[100]c	100	100	A	A	A	A	A	A	A	100	100	100				
19							F	C	C	C	C	A	A	A	A	A	A	C	100	B				
20							(100)	C	C	C	C	C	C	C	100	A	A	100	100	100				
21							A	C	100	100	100	A	(100)	C	A	A	A	100	(100)					
22							(100)B	[100]c	100	100	(100)	(100)	(100)	A	100	100	100	100	100	B				
23							A	C	100	A	100	A	C	100	100	100	100	100	100	B				
24							110	B	[100]c	100	100	A	A	A	A	A	100	100	100	A				
25							100	[100]c	100	100	100	100	(100)	(100)	[100]c	100	(100)	100	100	A				
26							100	[100]c	100	100	100	100	A	A	A	A	A	100	100	A				
27							A	C	A	100	100	(100)	A	100	100	100	100	100	100	A				
28							A	C	100	100	100	100	100	100	100	100	100	100	100	100				
29							C	C	C	100	100	100	100	100	100	100	100	100	100	100				
30							110	F	[100]c	100	100	100	100	100	100	100	100	100	100	100				
31							110	[100]c	100	100	C	A	(100)	(100)	A	100	100	100	100	C				
Mean Value							100	(100)	100	100	100	100	100	100	100	100	100	100	100	100				
Count							11	9	19	22	18	18	16	17	16	18	15	25	4					

Sweep - 10 Mc to 2.5 Mc in 1.5 min

Manual

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

IONOSPHERIC DATA

Mon. 1949

f_{ES}

Wakkanai

Lat. $40^{\circ}22.6'N$
Long. $141^{\circ}41.1'E$

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	24	25
1	E	2.0	2.0	2.1	E	E	E	C	<fE	2.6	<fE	2.7	<fE	<fE	<fE	<fE	<fE	<fE	2.0	2.0	2.0	2.1	2.0	2.0	E	E
2	E	1.6	2.0	2.6	2.4	1.5	<fE	C	C	B	B	B	B	B	B	B	<fE	B	E	E	E	2.5	E	E	E	E
3	E	2.3	2.3	C	C	C	2.5	C	B	<fE	A	B	B	B	B	2.2	A	<fE	B	1.8	B	2.7	2.3	2.5	E	E
4	2.2	2.9	1.6	E	E	1.6	C	C	<fE	2.3	<fE	2.7	<fE	2.7	2.7	B	4.6	2.6	1.5	C	E	E	E	E	E	E
5	1.5	1.5	E	1.7	E	1.8	<fE	C	C	B	<fE	<fE	2.6	<fE	2.5	2.7	2.8	<fE	2.5	2.0	1.6	1.7	E	E	E	E
6	E	E	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	<fE	B	D	B	1.7	B	B	B	B
7	2.0	2.0	E	E	E	E	C	C	2.4	<fE	2.7	<fE	<fE	<fE	<fE	2.6	2.8	2.4	D	B	B	B	B	B	B	B
8	B	B	E	2.2	2.0	E	B	C	C	<fE	B	<fE	2.6	<fE	<fE	<fE	<fE	<fE	B	B	E	E	E	E	E	E
9	E	2.0	2.5	E	E	2.7	C	C	C	1.1	<fE	2.9	B	2.8	C	C	C	C	C	C	C	C	C	C	C	C
10	E	E	2.6	E	E	E	E	C	<fE	<fE	2.0	B	B	2.7	2.8	2.8	<fE	<fE	B	E	E	E	E	E	E	E
11	2.4	2.4	2.4	2.5	2.7	B	<fE	C	<fE	<fE	2.8	<fE	<fE	<fE	C	B	<fE	<fE	B	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	C	<fE	B	B	<fE	<fE	<fE	<fE	B	<fE	<fE	2.0	B	E	E	E	E	E	E
13	E	C	C	C	E	E	E	C	C	<fE	B	<fE	<fE	<fE	C	<fE	2.8	<fE	2.5	1.6	E	E	E	E	E	E
14	E	E	E	E	E	E	E	C	<fE	B	B	4.1	B	C	B	1.5	C	<fE	B	E	E	E	E	E	E	2.4
15	1.8	1.5	2.0	E	E	E	E	C	2.9	4.0	3.3	4.0	B	B	B	B	C	2.1	4.1	2.4	2.0	E	E	E	E	2.4
16	3.0	2.4	2.0	2.3	2.2	B	<fE	C	B	<fE	4.0	4.2	B	2.6	2.6	2.4	<fE	<fE	2.0	2.0	2.8	4.8	4.2	4.2	4.2	2.2
17	2.8	1.8	2.0	1.3	E	E	2.0	C	2.5	B	B	B	B	C	2.6	2.3	2.7	2.2	2.0	E	E	E	E	E	E	2.5
18	2.0	C	C	E	1.6	2.0	<fE	C	2.5	4.3	4.2	3.3	4.1	B	B	2.4	<fE	<fE	B	B	E	E	E	E	E	E
19	E	E	E	2.0	2.0	E	B	C	C	C	C	2.6	B	C	2.5	2.3	C	2.3	B	E	E	E	E	E	E	E
20	E	E	1.2	E	E	E	E	C	C	C	C	C	C	B	2.6	2.2	<fE	B	2.4	1.5	2.0	E	E	E	E	E
21	E	2.6	E	E	E	E	E	C	4.0	2.4	B	2.5	B	C	2.6	4.2	4.8	<fE	B	2.1	E	E	E	E	E	E
22	2.0	2.2	B	2.0	E	E	C	<fE	B	<fE	B	B	B	4.1	2.6	2.5	4.1	2.6	2.0	2.0	2.0	2.0	E	E	E	E
23	E	1.2	B	1.2	B	2.0	1.8	C	4.1	2.7	2.7	1.5	B	C	<fE	2.5	<fE	<fE	B	E	E	E	E	2.4	4.1	4.1
24	2.4	2.8	2.2	3.0	2.0	1.1	B	C	<fE	4.8	4.8	4.8	2.7	B	2.3	2.3	<fE	<fE	2.4	2.5	2.5	2.0	B	2.3	2.3	2.3
25	4.0	2.2	2.2	3.1	2.4	2.1	<fE	C	2.4	2.8	B	B	B	C	B	B	2.8	<fE	2.7	2.6	2.6	1.5	E	E	E	E
26	E	E	4.5	3.1	3.1	2.0	<fE	C	<fE	3.7	4.0	4.0	2.2	4.0	4.8	4.0	4.2	<fE	2.7	2.7	2.7	2.7	E	E	E	E
27	1.5	3.0	1.2	E	2.2	2.2	B	C	2.2	<fE	B	B	B	B	2.6	2.6	2.4	2.4	2.3	2.2	2.4	2.1	B	B	B	B
28	2.0	2.4	2.0	2.6	2.1	2.4	C	C	4.1	2.5	B	B	B	<fE	C	B	2	<fE	<fE	E	E	E	E	E	E	E
29	E	E	E	(1.6)	1.9	1.9	C	C	C	2.5	B	B	B	B	2.6	B	4.8	<fE	2.3	2.4	2.4	1.6	E	E	E	E
30	E	E	2.0	2.4	E	E	<fE	C	<fE	<fE	2.7	B	B	B	B	B	<fE	2.6	2.0	2.5	2.1	2.1	E	E	E	E
31	E	2.0	2.0	2.0	2.4	2.0	2.5	C	B	2.2	C	2.8	B	B	B	B	<fE	B	C	C	E	E	E	E	E	E
Mean Value	E	1.9	2.0	1.3	E	E	<fE		<fE	2.3	2.8	2.9	<fE	<fE	2.6	2.5	<fE	1.7	2.2	2.0	E	E	E	E	E	E
Count	30	28	26	29	29	29	19		18	23	16	18	11	14	19	20	23	28	18	23	29	29	26	27	27	27

Sweep—1.0 Mc to 7.0 Mc in 1.5 min

Manual

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

IONOSPHERIC DATA

Lat. 35° 23.6' N
Long. 141° 57.1' E

Wakkanai

F₂-M3000

Nov. 1959

155°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	
1	J	J	JOP	J	J	J	J	[M3000]	JJP	J/P	J/P	J/P	J/P	J/P	J/P	J/P	JOP	J	J	J	J	J	J	J	J	J	
2	B	2.8P	P	JB	2.6	2.8	C	C	C	J	B	B	J/P	J/P	J/P	B	J	J	J	J	J	(2.9)P	2.8	2.7	2.6	2.6	
3	2.8	2.6	C	C	C	C	C	[2.9]C	2.2	J	B	B	J/P	J/P	J/P	B	J	J	J	J	J	(3.0)C	J	J	J	2.8	
4	2.1P	3.0	2.7	2.6	2.4	2.8	C	C	2.0	J	J	J	J	J	J	J	J	J	J	J	J	(3.0)	2.1	2.8	3.0	3.0	
5	2.9	2.9	2.8P	2.7	2.9	2.7	C	C	C	J	J	J	J	J	J	J	J	J	J	J	J	(3.0)	2.1	2.8	3.0	3.0	
6	2.2	2.2F	2.1F	3.1P	3.0F	3.0F	3.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.9	
7	2.8F	2.8F	2.8P	2.8F	2.8F	2.8F	C	C	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.9	
8	2.9	2.9	2.6	2.6	2.5F	2.8F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	2.9	2.4	2.7	2.5	2.6	2.7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	2.4	2.7	2.8	2.8	2.6	2.8	2.6	[2.9]C	2.9	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.8	
11	2.8	2.8	2.7	2.7	2.7	2.6	2.7S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
12	2.7	2.9	2.8	2.7	2.6	2.8	[2.9]C	2.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
13	2.9P	C	C	C	2.1	2.4	2.8P	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
14	2.9	2.9	2.0	2.8	2.5	2.9	2.9	C	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.8	
15	2.3	2.6	2.9	2.8	2.8	2.8	2.7	[2.9]C	2.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
16	2.9	2.7	2.5	2.4	2.5	2.6	2.2	[2.9]C	2.1	2.8	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.8	
17	2.4	2.9	2.9	2.5	2.1F	2.1F	2.8	[2.9]C	2.8	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.8	
18	2.9F	C	C	2.8	2.5	2.1	2.1	[2.9]C	2.1	2.9	3.0	2.1	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19	2.8	2.8	2.8	2.5	2.5F	2.6	2.4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
20	2.8	2.9	2.9	2.1	2.5B	2.9P	2.4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
21	(2.9)P	(2.8)P	2.2	2.5	2.5	2.8	2.2	[2.9]C	2.3	B	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.8	
22	2.6	2.9	2.9P	2.6	2.8F	C	C	C	2.8	2.2	2.8P	J	J	J	J	J	J	J	J	J	J	J	J	J	J	2.8	
23	J	(2.8)P	2.8	2.2K	2.5K	2.4K	2.5K	[2.9]C	2.8	2.2	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
24	2.6K	2.5K	2.5K	2.8K	2.7K	2.8	J	C	J	2.2	2.1P	2.2	2.1P	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
25	2.7	2.7	2.9	2.0	2.8	2.1	2.1	[2.9]C	2.0	2.0P	2.1	2.0	2.0P	C	C	C	C	C	C	C	C	C	C	C	C	2.8	
26	2.8	2.9	2.9	2.7	2.5	2.5	J	C	2.2	2.2	2.0	2.0	2.9F	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	
27	2.8	2.8	2.9	2.5	2.5	2.6	2.1M	[2.9]C	2.2	(2.9)M	2.1	2.2	2.9	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
28	2.8	2.6	2.7	2.8	2.9	2.9	C	C	2.1	[2.9]C	2.9	2.2	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
29	2.9	2.6	2.8	2.3	2.6	2.5	C	C	C	2.2	2.9	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	
30	2.9	2.1F	2.8F	2.6	2.4	2.0	2.4	[2.9]C	2.0	2.0	[2.9]C	2.8	2.1	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
31	2.0	2.7	2.8	2.6	2.6	2.8	2.6	[2.9]C	2.0	B	C	2.1	2.0	[2.9]C	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
Median Value	2.8	2.8	2.8	2.6	2.6	2.6	2.8	(2.9)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Count	2.8	2.6	2.7	2.9	2.8	2.8	2.1	1.4	1.8	1.6	1.9	2.4	2.2	1.9	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	

Sweep 1.0 Mc to 1.8 Mc in 1.5 min

Manual

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

IONOSPHERIC DATA

Mar 1949

f. F. Min.

Wakkanai

Lat. 30° 23.8' N
Long. 127° 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	25
1	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Median Value																									
Count	29	24	22	23	29	28	25	16	20	25	21	20	25	25	22	26	23	29	22	20	26	29	27	27	25

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

IONOSPHERIC DATA

Lat. 35°23.5'N
Long. 139°52.1'E

Wakkanai

F min.

Mar. 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	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Median Value																								
Count	30	28	26	27	29	29	29	29	28	27	27	27	29	29	27	27	28	27	30	29	26	29	26	28

Manual

Sweep 4.0 Mc to 7.0 Mc in 1.0 min

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

IONOSPHERIC DATA

Mar. 1949

f^oF_2

Fukuoka

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	c	c	c	c	c	c	c	10.2	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
2	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
3	c	c	c	5.1	5.0	5.2	6.4	c	c	c	c	c	c	c	c	c	c	c	c	c	5.8	5.5	6.0	c
4	5.6	5.8	5.8	4.7	4.6	4.4	5.4	c	c	c	c	c	c	c	c	c	c	11.0	9.7	8.1	6.9	6.0	5.8	5.3
5	5.9	c	c	c	c	c	6.6	c	c	c	c	c	c	c	c	c	c	c	c	8.0	6.5	6.7	6.4	5.8
6	7.1	7.2	6.4	5.8	5.7	5.7	6.5	c	c	c	c	c	c	c	c	c	c	c	10.6	8.4	7.2	7.0	7.2	7.1
7	6.9	7.2	7.1	6.0	5.4	5.8	6.8	9.5	c	c	c	c	c	c	c	c	c	c	c	8.8	7.7	7.7	7.8	7.2
8	7.4	7.1	6.0	5.7	5.7	6.0	8.0	c	c	c	c	c	c	c	c	c	c	c	c	7.8	7.5	7.1	7.8	7.4
9	6.4	6.4	6.2	6.0	6.5	6.0 ^F	7.5	c	c	c	c	c	c	c	c	c	c	c	c	c	10.1	9.1	8.0	7.7
10	7.0	6.6	6.0	6.5	6.0	5.2	7.5	9.6	12.1	S	S	S	S	S	S	S	S	S	S	10.0	9.9	9.2	8.5	7.8
11	7.4	7.6	6.7	6.6	5.8	5.8	7.2	c	c	c	c	c	c	c	c	c	c	c	c	9.6	9.2	7.5	8.7	8.0
12	7.5	7.2	7.0 ^H	6.7	6.5	7.2	8.0	11.7	B	(13.5)	B	B	B	B	B	B	B	11.7	11.4	10.6	9.4	9.2	8.4	8.2
13	8.0	8.4	7.9	7.0 ^H	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	11.6 ^T	10.8	8.7	8.6	8.2
14	8.0	8.4	7.9	7.0 ^H	7.4	7.8	9.3	B	B	B	B	B	B	B	B	B	B	B	B	11.9 ^S	11.5	10.4	10.0	9.0
15	7.2	7.6	7.2	6.4	6.4	6.6	9.4	B	B	B	B	12.8 ^P	12.5	12.1	12.4	12.4	11.4	11.8	11.2	9.2	8.4	8.1	7.4	8.1
16	8.4	7.8	7.0	6.6	6.7	6.8	9.5	11.6	12.4	B	12.0 ^T	B	B	B	B	B	B	B	B	11.9	11.9	11.1	10.0	8.3
17	7.3	7.0	6.5	5.8	4.7	5.0	6.2	7.4	c	c	c	c	B	12.2 ^S	S	B	12.0	10.9	9.5 ^H	7.1	7.2	7.0	6.9	7.3
18	6.9	6.6	6.6	5.9	6.0	6.4	7.4	7.2	c	c	c	c	c	c	c	c	c	c	c	9.8	7.0	6.2	6.8	6.4
19	6.3	6.4	6.1	5.0	4.9	4.9	6.7	9.2	11.4	11.4	11.9	B	B	B	B	B	B	B	B	11.0	9.4	8.0	7.4	7.4
20	7.3	7.2	6.9	6.7	6.4	6.2	7.9	10.4	12.2	11.6 ^T	11.7	11.8	12.0	12.4	12.5 ^H	12.5 ^H	12.1	11.1	9.7	8.2	8.5	7.9	7.9	7.9
21	7.9	8.1	8.0	6.1	6.2	6.2	7.8	11.1	B	B	B	B	B	B	B	B	11.8 ^T	11.5	11.1	9.5	8.4	8.4	7.9	7.9
22	8.1	7.3	7.6	7.0	5.8	6.0	7.7	10.2	B	B	B	B	B	B	B	B	B	B	B	11.3	9.1	S	10.5	9.3
23	10.6	10.6	7.4	7.2	6.2	6.6	7.3	10.3	11.2	11.4	11.7	B	B	B	12.0	11.8	11.5	11.1	10.0	7.0	6.8	6.2	6.7	5.9
24	6.0	6.4	6.2	6.1	5.5	6.2	7.8	11.0	B	B	B	B	B	B	B	B	B	B	B	12.3	11.8	11.2	9.4	7.0
25	7.0	7.1	7.3	6.3	6.0	6.9	8.7	11.0	c	c	c	c	c	c	c	c	c	c	c	10.8	9.2	7.8	7.0	7.1
26	7.4	7.5	6.9	6.8	6.6	6.8	9.8	11.7	B	B	12.3	B	12.2	B	B	12.3	11.9 ^T	11.0	11.5	10.2	8.4	8.2	7.3	7.4
27	7.2	7.4	7.3	6.7	6.8	7.4	10.6	11.5	12.1	12.5	B	B	B	B	c	c	12.0	12.2	11.8	10.3	8.9	7.4	7.3	7.6
28	7.4	7.2	7.1	7.2	6.6	6.7	8.7	10.5	11.9	12.7	B	B	(13.1)	12.9	12.4	12.2	12.1	12.2	11.1	9.6	9.4 ^S	8.0 ^S	9.1	9.0
29	7.8	7.6	6.0	6.5	7.1	7.3	9.6	11.6	B	13.3 ^P	13.2	13.1	12.9	13.3	B	B	12.7	12.8	12.1	10.2	9.1	8.4	8.4	8.4
30	7.9	8.0	7.8	7.4	(7.3) ^C	7.2	9.0	11.5	12.3	12.9	13.1	B	13.2	13.2	12.9 ^P	12.1	12.5	12.5	11.7	10.4	8.6	8.2	7.9	7.6
31	7.6	7.9	7.6	6.4 ^F	6.5	6.2	9.6	11.8	B	B	B	11.6	B	B	11.7	11.5	11.5	11.7	11.2	10.1	8.8	8.4	8.4	8.4
Median Value	7.4	7.2	6.9	6.5	6.2	6.2	7.8	10.8	(12.1)	(12.6)	(12.0)	-	(12.7)	(12.6)	(12.4)	(12.1)	12.0	11.7	11.1	9.4	8.4	7.8	7.7	7.6
Count	28	27	27	28	27	27	28	20	8	8	7	4	6	6	6	9	14	17	21	27	29	30	30	29

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

Fukuoka

R.P.F.2

Mar. 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	C	C	C	C	C	C	C	260	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	320	340	380	C	
3	C	C	C	370	430	410	320	C	C	C	C	C	C	C	C	C	320	310	300	300	320	390	420	470		
4	430	390	420	430	450	470	360	C	C	C	C	C	C	C	C	C	C	C	C	C	330	330	360	390	400	
5	390	C	C	C	C	C	360	C	C	C	C	C	C	C	C	C	C	C	C	C	320	370	350	330		
6	320	310	310	330	400	390	310	C	C	C	C	C	C	C	C	C	C	C	C	C	360	350	360	380	350	
7	380	370	310	290	400	430	370	290	C	C	C	C	C	C	C	C	C	C	C	C	330	370	370	390	320	
8	330	320	370	410	410	400	300	C	C	C	C	C	C	C	C	C	C	C	C	C	330	340	390	350		
9	410	440	420	400	410	380	350	C	C	C	C	C	C	C	C	C	C	C	C	C	330	310	320	370		
10	400	430	480	440	410	400	350	310	300	S	S	S	S	S	C	310 ⁷	C	C	C	C	330	360	350	310	370	
11	340	340	340	340	380	410	330	C	C	C	C	C	C	C	C	C	C	C	C	C	320	340	320	350	310	
12	360	330	350	350	400	340	340	290	B	300	B	B	B	B	B	B	B	B	B	B	330	340	340	480	360	
13	350	350	400	400	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	320	320	330	360	430	
14	360	400	360	510	390	420	320	B	B	B	B	B	B	B	B	B	B	B	B	B	330	330	340	390	360	
15	400	470	470	340	400	430	360	B	B	B	B	300 ^P	300	300	310	320	300	320	340	310	330	340	400	390	360	
16	370	380	420	430	430	430	320	270	B	B	B	330 ⁷	B	B	B	B	360	340	320	320	350	380	360	380	410	
17	400	390	310	310	520	510	350	340	C	C	C	C	B	B	310	S	B	330	300	320	300	380	360	360	290	
18	360	400	420	440	480	430	420	310	C	C	C	C	C	C	C	C	C	C	C	C	310	420	380	410	420	400
19	410	370	360	410	430	460	360	320	300	310	320	B	B	B	B	B	B	B	B	B	310	320	320 ^S	380	340	370
20	380	350	380	390	380	420	360	280	300	290	270	300	300	320	300	330	320	340	340	340	340	340	340	340	380	
21	400	370	360	380	420	440	320	280	B	B	B	B	B	B	B	B	B	320 ⁷	320	300	330	350	380	390	390	
22	400	320	320	350	430	460	340	290	B	B	B	B	B	B	B	B	B	B	B	B	330	400	S	370	360	350
23	390	280	400	360	440	480	420	340	340 ⁷	320	330	B	B	B	350	340	320	330	290	300	300	370	400	420	440	
24	500	420	420	400	410	410	320	300	B	B	B	B	B	B	B	B	B	310	330	300	290	300	360	340	400	400
25	400	420	360	320	400	360	310	280	C	C	C	C	C	C	C	C	C	C	C	C	B	280	350	360	440	
26	380	370	380	400	430	400	310	290	B	B	310	B	320	B	B	B	380	340	310	300	270	340	360	370	420	
27	410	390	400	430	410	430	290	280	290	300	B	B	B	B	C	B	C	310	320	300	300	310	320	390	320	
28	330	380	360	350	330	390	300	280	320	340	B	B	340	340	360	340	350	310	320	330	380	320	410	350		
29	380	390	400	400	420	400	320	290	B	300	310	340	380	350	B	B	B	330	320	320	290	340	360	350	350	
30	400	360	350	390	(400)	400	300	300	300	320	320	B	370	350	340	340	330	330	300	310	370	380	360	400		
31	400	380	370	410 ⁷	440	400	300	290	B	B	B	310 ⁷	B	B	320 ⁷	320 ⁷	330 ⁷	310	310	300	330	350	360	350		
Mean Value	390	380	370	400	410	410	330	290	(300)	(310)	(320)	--	(330)	(330)	(310)	(340)	330	320	320	330	340	360	360	380		
Count	28	27	27	28	27	27	28	20	8	8	7	4	6	6	7	9	14	17	21	27	29	30	30	29		

Sheep 1.0 Mc to 17.0 Mc in 1.5 min Manual

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

IONOSPHERIC DATA

Mar. 1949

f_oF_2

Fukuoka

Lat. 40° 35.5' 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	24	25
1	C	C	C	C	C	C	C	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	300	300	310	300	300	300	300	280	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	300	C	C	C	C	C	C	230	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	270	270	240	240	270	300	280	280	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	280	280	240	220	230	310	270	220	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	240	250	300	320	310	310	260	(220)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	220	310	310	310	310	280	280	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	300	340	370	350	350	280	270	250	270	240	240	250	260	270	260	C	C	C	C	C	C	C	C	C	C	C
11	270	270	270	270	270	280	280	220	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	270	270	270	270	300	270	270	250	280	280	280	280	280	280	280	250	280	240	240	240	240	240	240	240	240	240
13	280	270	270	270	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	300	300	300	300	270	300	280	240	250	240	240	220	230	250	250	240	240	240	240	240	240	240	240	240	240	240
15	290	340	300	290	300	300	280	240	240	220	220	210	200	200	200	200	210	210	210	210	210	210	210	210	210	210
16	300	290	(240)	300	320	310	270	220	250	240	240	250	250	250	(260)	240	240	230	230	230	230	230	230	230	230	230
17	A	300	250	280	270	400	210	230	220	C	C	260	230	280	250	250	240	230	230	230	230	230	230	230	230	230
18	290	300	A	A	A	350	280	250	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	300	310	270	250	320	350	250	240	250	250	240	230	230	230	270	240	250	250	250	250	250	250	250	250	250	250
20	290	280	290	270	250	240	230	220	230	240	220	200	250	280	240	240	240	240	240	240	240	240	240	240	240	240
21	310	290	290	290	300	400	270	230	220	250	260	270	270	260	270	380	280	280	280	280	280	280	280	280	280	280
22	290	250	260	230	260	360	260	230	230	230	260	260	270	270	260	240	250	240	240	240	240	240	240	240	240	240
23	250	230	230	250	270	400	290	250	230	230	240	250	A	260	240	240	230	230	230	230	230	230	230	230	230	230
24	A	320	300	250	300	300	240	220	240	240	230	260	240	240	250	240	250	250	250	250	250	250	250	250	250	250
25	310	340	250	230	300	310	230	220	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	290	260	260	270	290	310	240	240	240	230	240	240	250	260	270	240	250	240	240	240	240	240	240	240	240	240
27	300	300	290	300	320	320	250	250	230	230	230	230	250	260	C	C	250	250	250	250	250	250	250	250	250	250
28	290	280	280	260	240	250	230	220	230	230	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
29	280	280	280	300	320	320	240	230	250	250	250	210	200	240	260	240	240	240	240	240	240	240	240	240	240	240
30	280	280	250	250	270	300	230	220	220	220	230	250	260	260	300	300	250	240	240	240	240	240	240	240	240	240
31	300	280	250	250	290	300	260	220	230	230	220	220	220	220	220	220	210	210	210	210	210	210	210	210	210	210
Mean Value	290	280	270	270	300	310	260	230	240	240	240	250	250	260	260	240	250	250	240	240	250	270	280	280	280	280
Count	26	27	26	27	26	27	28	28	18	17	17	18	17	18	17	17	18	19	22	25	30	30	30	30	30	30

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

IONOSPHERIC DATA

Lat. 40° 36.6' N
 Long. 139° 54.1' E

Fukuiwa

f_oF₁

Mar 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																		
2																									
3																									
4																									
5																									
6																									
7																									
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25																									
26																									
27																									
28																									
29																									
30																									
31																									

Median
 Virtual
 Height
 Count

Sweep 1.0 Mc to 17.6 Mc in 15 min Manual

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

IONOSPHERIC DATA

Mar. 1949

RF

Izumiura

Lat 40°35.5'N
 Long 139°57'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							C	Q	C	C	C	C	C	C	C	C	C	C	C					
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
3							Q	C	C	C	C	C	C	C	C	C	C	C	Q	Q				
4							Q	Q	C	C	C	C	C	C	C	C	C	C	C	C				
5							Q	Q	C	C	C	C	C	C	C	C	C	C	C	C				
6							Q	Q	C	C	C	C	C	C	C	C	C	C	C	C				
7							Q	Q	C	C	C	C	C	C	C	C	C	C	C	C				
8							Q	C	C	C	C	C	C	C	C	C	C	C	C	C				
9							Q	220	C	C	C	C	C	C	C	C	C	C	C	C				
10							Q	Q	Q	Q	Q	Q	Q	S	Q	C	C	C	C					
11							Q	C	C	C	C	C	C	C	C	C	C	C	C					
12							Q	230	Q	Q	230	Q	Q	Q	220	220	250	Q	Q					
13							C	C	C	C	C	C	C	C	C	Q	Q	Q	Q					
14							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
15							Q	Q	Q	Q	Q	230	Q	Q	Q	Q	Q	Q	Q					
16							Q	Q	Q	Q	Q	Q	Q	Q	(220)	210	Q	Q	Q					
17							Q	Q	Q	C	Q	Q	Q	Q	Q	Q	Q	Q	Q					
18							Q	Q	C	C	C	C	C	C	C	C	C	C	Q					
19							Q	Q	Q	Q	Q	Q	Q	230	Q	Q	Q	Q	Q					
20							Q	Q	Q	Q	Q	230	230	240	Q	Q	Q	Q	Q					
21							Q	Q	Q	S	S	S	S	S	B	B	Q	Q	Q					
22							Q	Q	Q	S	S	S	S	S	Q	Q	Q	Q	Q					
23							Q	Q	B	Q	Q	B	A	B	B	Q	Q	Q	Q					
24							Q	Q	B	Q	B	B	B	B	B	B	200	Q	Q					
25							Q	Q	C	S	S	C	C	C	C	C	C	C	Q					
26							Q	Q	Q	Q	B	B	B	B	B	Q	Q	Q	210	Q				
27							Q	Q	Q	Q	Q	B	B	B	C	C	Q	Q	Q					
28							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
29							Q	Q	Q	220	230	210	210	210	230	Q	Q	Q	Q					
30							Q	Q	Q	230	Q	240	220	220	240	250	Q	Q	Q					
31							Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q					
Median Value																								
Count								2	1	2	2	4	3	4	4	3	2	1						

Sweep 1.0 Mc to 17.0 Mc in 15 min

Manual

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

IONOSPHERIC DATA

Mar 1949

f_E

Irukaura

Lat. 40° 35.6' 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							C	22	C	C	C	C	C	C	C	C	C	C	C						
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3							B	C	C	C	C	C	C	C	C	C	C	B	B	C					
4							B	B	C	C	C	C	C	C	C	C	C	C	C	C					
5							B	21	C	C	C	C	C	C	C	C	C	C	C	C					
6							(16) ^B	20 ^H	C	C	C	C	C	C	C	C	C	C	C	C					
7							16 ^J	25	C	C	C	C	C	C	C	C	C	C	C	C					
8							(17) ^B	C	C	C	C	C	C	C	C	C	C	C	C	C					
9							E	23	C	C	C	C	C	C	C	C	C	C	C	C					
10							16 ^J	19	30	32	A	A	S	S	S	S	C	C	C	C					
11							19	23 ^B	C	C	C	C	C	C	C	C	C	C	C	C					
12							(17)	28	31	S	B	B	B	B	B	35	35	23	18						
13							C	C	C	C	C	C	C	C	C	35	32	B	20						
14							19	26	32	33	33	A	B	B	B	B	B	A	17						
15							19	28	A	A	A	A	A	A	A	A	A	24	A						
16							19	27	31	33	35	B	B	B	B	B	A	25	16						
17							A	(28)	B	C	34	S	S	S	S	33	B	A	18						
18							(18)	23	C	C	C	C	C	C	C	C	C	C	C						
19							18	26	S	A	A	B	A	B	B	S	S	A	(15)						
20							14	26	A	B	A	A	A	B	B	B	B	24	17						
21							21 ^J	A	S	A	B	B	B	B	B	B	A	20	18						
22							B	(22)	30	A	B	B	B	B	B	32	26 ^J	20 ^J	17						
23							20	26	31	34	B	B	A	A	35	32	28	23	15						
24							21	26	32	A	B	B	B	B	B	A	A	A	A						
25							20	26	C	C	C	C	C	C	C	C	C	C	A						
26							15 ^H	25	B	B	B	B	A	B	A	A	A	A	B	A					
27							14 ^H	25	32	33	S	S	A	A	C	C	30	24	19						
28							16	(27)	29	B	36	B	(36) ^J	B	(34)	32	(30) ^H	26	A						
29							18	(27)	A	34	(32) ^B	A	B	35	B	33	30	21	(20)						
30							22	26	32	34	B	37	36	36	36	30	A	A	A						
31							22	27	33 ^J	B	A	A	A	A	A	30	A	24	17						
Median Value							18	26	31	33	34	-	-	-	-	32	30	24	18						
Count							23	25	11	7	5	1	2	2	3	9	7	11	14						

Sweep 1.0 Mc to 17.0 Mc in 1.5 min Manual

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

IONOSPHERIC DATA

Mar 1949

A-E

Fukuoka

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	24	25	
1							C	E	C	C	C	C	C	C	C	C	C	C	C								
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C							
3							B	C	C	C	C	C	C	C	C	C	C	C	B	B							
4							E	B	C	C	C	C	C	C	C	C	C	C	C	C							
5							E	120	C	C	C	C	C	C	C	C	C	C	C	C							
6							B	110 ^H	C	C	C	C	C	C	C	C	C	C	C	C							
7							E	(115)	C	C	C	C	C	C	C	C	C	C	C	C							
8							B	130 ^B	C	C	C	C	C	C	C	C	C	C	C	C							
9							E	(120) ^B	C	C	C	C	C	C	C	C	C	C	C	C							
10							130	110	110	A	A	S	S	S	S	C	C	C	C	C							
11							B	120	C	C	C	C	C	C	C	C	C	C	C	C							
12							B	120	110	100	100	110	(110)	110	110	110	110	100	100	100							
13							C	C	C	C	C	C	C	C	C	C	110	110	110	B							
14							E	120	110	110	110	A	(110)	(110)	(110)	110	(110)	A	E								
15							120	A	A	A	A	A	A	A	A	A	A	A	A	A							
16							110	110	110	100	120	(110)	(120)	(120)	A	A	A	110	A								
17							A	120	(110)	(110)	110	(110)	(110)	(100)	(110)	110	110	A	100								
18							B	110	C	C	C	C	C	C	C	C	C	C	C								
19							E	120	S	A	A	(100)	A	110	(110)	(110)	(110)	A	E								
20							E	A	A	(110)	A	A	(110)	A	(110)	A	100	B	100	A							
21							100	A	S	A	(110)	(110)	(110)	B	(110)	(110)	A	110	100								
22							B	130	110	A	(110)	(110)	(110)	(110)	(110)	110	110	110	110								
23							120	120	110	110	A	A	A	A	110	110	110	100	100								
24							A	100	100	A	(110)	(110)	(110)	(110)	(110)	A	A	A	A								
25							110	110	C	C	C	C	C	C	C	C	C	C	C								
26							110 ^H	110	(110)	(110)	(110)	(110)	A	B	A	A	A	(110)	A								
27							140 ^H	110	110	110	(110)	(110)	A	A	C	C	110	110	110								
28							100	110	110	110	100	100	110	100	100	100	100	110 ^H	A								
29							110	110	A	110	110	A	110	110	(110)	(100)	110	100	100								
30							110	120	A	100	100	100	110	110	100	100	A	A	A								
31							A	110	100	(110)	A	A	A	A	A	110	A	110	110								
Mean							110	110	110	110	(110)	(110)	(110)	(110)	110	110	110	110	100								
Count							11	23	12	13	13	11	10	11	11	13	10	11	8								

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

fE_s

Year 1949

Irukaura

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	C	C	C	C	C	C	C	29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	26	25	C	C
3	C	C	C	44	22	30	24	C	C	C	C	C	C	C	C	C	C	30	B	B	B	26	24	32	
4	30	B	22	E	E	B	B	B	C	C	C	C	C	C	C	C	C	C	C	B	B	B	22	21	
5	21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	26	E	E	23	
6	3	28	E	E	E	E	B	<E	C	C	C	C	C	C	C	C	C	C	C	C	B	23	E	E	
7	E	20	E	E	E	E	<E	<E	C	C	C	C	C	C	C	C	C	C	C	C	B	20	20	20	
8	20	20	B	24	B	B	<E	<E	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	
9	E	13	E	E	23	E	E	<E	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	
10	E	20	24	20	(20)	<E	<E	<E	B	42	40	S	S	S	S	C	C	C	C	S	S	E	S	S	
11	E	E	20	E	E	E	19	B	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	
12	E	E	B	B	B	B	22	B	B	S	B	B	B	B	B	B	B	<E	<E	E	F	F	E	F	
13	E	E	12	E	C	C	C	C	C	C	C	C	C	C	C	C	<E	B	B	E	E	E	E	E	
14	20	22	E	E	E	22	<E	<E	B	B	B	45	B	B	B	B	B	31	24	16	26	20	B	21	
15	22	16	E	12	E	E	<E	<E	34	48	68	104	62	46	40	52	30	29	32	46	30	28	28	B	
16	30	44	20	26	16	20	24	<E	40	61	49	B	B	B	20	30	32	26	27	24	20	28	46	36	
17	50	20	24	21	20	B	19	<E	B	C	48	S	S	S	S	B	B	30	<E	26	20	E	E	E	
18	30	28	36	18	24	30	<E	30	C	C	C	C	C	C	C	C	C	C	30	25	E	E	F	E	
19	E	24	20	19	19	E	B	<E	S	38	48	B	34	B	B	S	S	32	<E	E	E	E	E	E	
20	E	E	24	E	E	18	23	B	37	B	30	45	36	B	B	B	34	29	27	22	B	E	E	E	
21	B	B	E	E	B	S	<E	28	S	B	B	B	B	B	B	B	32	28	18	23	E	B	E	18	
22	E	E	24	22	21	30	28	<E	33	36	B	B	B	B	B	<E	<E	<E	<E	B	28	26	22	24	
23	30	20	18	E	E	14	<E	31	42	<E	40	60	107	B	<E	<E	31	<E	<E	B	B	E	B	B	
24	41	29	30	38	25	28	25	30	37	38	B	B	B	B	B	B	26	38	28	34	E	E	E	E	
25	22	36	30	20	20	16	20	<E	C	C	C	C	C	C	C	C	C	C	C	25	23	20	20	E	
26	E	23	E	E	E	31	33	<E	B	B	B	B	40	B	39	38	54	B	34	20	B	20	22	20	
27	20	18	36	30	20	19	<E	<E	B	B	B	B	40	40	C	C	38	<E	<E	30	34	20	15	24	
28	20	22	20	30	25	29	23	36	32	B	<E	B	B	B	B	B	<E	36	34	30	27	18	E	E	
29	E	E	E	E	E	20	B	B	30	46	B	38	B	B	B	B	34	<E	<E	24	22	20	26	27	
30	26	23	E	12	B	24	<E	30	32	37	B	B	B	<E	35	36	46	32	32	26	21	19	E	E	
31	E	E	24	25	24	26	22	38	<E	B	38	38	38	40	42	<E	40	30	23	B	20	E	E	E	
Measure Value	20	20	20	12	20	20	<E	<E	33	(38)	(42)	(45)	(40)	-	(39)	(30)	32	29	24	24	20	F	E	E	
Count	26	25	25	27	23	23	23	23	12	9	9	7	7	4	5	7	14	17	19	19	23	27	25	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

IONOSPHERIC DATA

Mar 1949

F2-M3000

Izuka

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	C	C	C	C	C	C	C	34	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	30	28	28	C	
3	C	C	C	27	26	25	30	C	C	C	C	C	C	C	C	C	C	30	31	32	29	26	25	24	C	
4	25	27	26	25	24	24	27	C	C	C	C	C	C	C	C	C	C	C	C	C	28	29	27	26	C	
5	27	C	C	C	C	C	27	C	C	C	C	C	C	C	C	C	C	C	C	C	27	28	27	28	28	
6	28	30	31	28	26	26	30	C	C	C	C	C	C	C	C	C	C	C	C	C	28	29	27	28	29	
7	30	27	30	32	26	24	27	31	C	C	C	C	C	C	C	C	C	C	C	C	29	28	28	30	30	
8	30	30	26	24	25	26	31	C	C	C	C	C	C	C	C	C	C	C	C	C	30	28	27	28	C	
9	26	25	24	26	25	26 ^F	28	C	C	C	C	C	C	C	C	C	C	C	C	C	29	28	28	27	28	
10	27	24	24	25	26	25	27	31	32	S	S	S	S	S	S	S	C	C	C	C	28	28	29	27	C	
11	28	28	28	27	26	25	29	C	C	C	C	C	C	C	C	C	C	C	C	C	28	28	29	27	C	
12	28	29	28 ^H	27	26	28	28	31	B	(31) ^B	B	B	B	B	B	B	29	29	29	28	28	30	27	30	C	
13	28	28	27	26	C	C	C	C	C	C	C	C	C	C	C	C	C	B	J	27	26	27	27	24	C	
14	27	26	27	22 ^H	27	25	28	B	B	B	B	B	B	B	B	B	B	28 ^S	27 ^S	28	29	26	26	27	24	C
15	26	25	24	28	24 ^H	23	28	B	B	B	B	32 ^P	32	32	32	31	33	30	30	30	29	26	26	25	C	
16	27	27	25	24	25	25	29	30	34	B	J	B	B	B	B	B	28	28	30	28	26	27	26	25	C	
17	27	27	30	31	22	22	25	29	C	C	C	C	C	C	C	C	30	31	29 ^H	30	27	28	27	27	C	
18	28	25	24	24	23	23	25	30	C	C	C	C	C	C	C	C	C	C	C	C	26	25	25	26	C	
19	26	26	27	26	25	25	31	29	32	31	30	B	B	BS	BS	B	B	B	B	28	28 ^S	27	28 ^S	28	C	
20	27	27	27	26	26	27	29	32	30	J	J	J	32	32	33	32 ^H	(30) ^F	28	27	29	28	26	27	27	C	
21	26	27	31	27	25	24	29	32	B	B	B	B	B	C	B	B	J	30	30	29	28	27	27	27	C	
22	26	29	29	29	25	24	28	31	B	B	B	B	B	B	B	B	B	B	B	26	28	28	28	27	C	
23	28	33	25	28	24	23	25	25	J	28	29	B	B	B	B	B	29	29	32	29	28	25	26	24	C	
24	23	25	25	26	26	26	30	31	B	B	B	B	B	B	B	B	31	28	31	32	30	28	26	28	C	
25	26	26	28	28	26	27	30	33	C	C	C	C	C	C	C	C	C	C	B	22	28	27	26	25	C	
26	27	28	26	26	24	26	29	31	B	B	30	B	29	B	B	B	J	31	33	35	28	27	26	26	C	
27	26	28	27	25	25	25	32	32	31	33	B	B	B	B	C	C	30	30	30	32	29	28	27	26	C	
28	29	26	27	27	29	27	31	32	29	29	B	(29) ^F	28	28	28	28	28	28	30	32	29	27 ^S	30	26	27	C
29	28	26	25	26	26	26	29	28	B	33 ^P	31	30	29	29	B	B	29	30	29	31	27	27	27	29	C	
30	27	28	28	26	(26) ^S	26	30	31	J	29	30	B	28	28	30 ^P	30	29	29	31	27	27	26	27	26	C	
31	26	26	27	26 ^F	25	26	31	32 ^F	B	B	B	J	B	B	J	J	J	J	30	31	27	27	27	28	28	C
Median Value	27	27	27	26	25	25	29	31	(31)	(31)	(30)	-	(29)	(30)	(30)	(29)	29	30	30	29	28	27	27	27	27	C
Count	28	27	27	28	27	27	28	20	6	7	5	2	6	6	5	8	11	16	21	27	29	30	30	30	29	C

Sweep 1.0 Mc to 10.6 Mc in 15 min

Manual

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

Lat. 40°36'N
 Long. 139°54'E

Inakama

f F min

Mar 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	C	C	C	C	C	C	C	25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	14	14	14	14	C	C	C	C	C	C	C	C	C	28	30	30	20	20	20	20	20
4	20	20	E	12	E	E	16	26S	C	C	C	C	C	C	C	C	C	C	C	18	19	18	18	18
5	18	C	C	C	C	C	18	22	C	C	C	C	C	C	C	C	C	C	C	22S	16	19	16	14
6	16	16	18	18	18	18	17	25	C	C	C	C	C	C	C	C	C	C	C	14	16	15	14	15
7	15	14	E	E	E	E	18	25	C	C	C	C	C	C	C	C	C	C	C	18	20	A	16	19
8	16	16	17	14	14	14	20	24	C	C	C	C	C	C	C	C	C	C	C	30S	30S	28	18	14
9	E	12	12	12	18	17	14	26	C	C	C	C	C	C	C	C	C	C	C	C	15	18	16	16
10	E	18	18	18	18	20	20	(19)	32	42	45	52	52	56	50	C	C	C	C	38	20	20	40	30
11	E	E	E	E	E	E	E	30	C	C	C	C	C	C	C	C	C	C	C	C	17	16	14	15
12	E	E	18	18	17	18	17	34	36	37S	40	40	40	40	42	40	42	23	18	11	16	16	15	15
13	E	12	E	E	C	C	C	C	C	C	C	C	C	C	C	45	32	28	20	16	15	16	16	15
14	A	A	E	E	E	E	19	28	42	58	50	A	44	58	44	42	40	A	17	14	15S	15	15	15
15	E	E	E	E	E	E	12	28	46S	A	A	A	A	A	A	A	A	24	20	18	20	18	23	25
16	18	19	E	E	E	E	19	30	31	A	51	55S	54	52	A	A	A	25	16	A	15	A	A	A
17	A	E	15	E	E	E	A	28	A	C	C	55	58	46S	46S	42	40	A	18	15S	A	14	15	15
18	E	E	A	A	A	E	18	23	C	C	C	C	C	C	C	C	C	C	18	16	16	16	16	E
19	E	12	E	E	E	E	18	28	46S	A	A	37	A	42	50	45S	52S	A	20	12	12	16	16	16
20	12	E	E	E	E	E	11	36	A	42	A	A	A	A	40	36	38	A	27	17	11	20	16	19
21	19	18	E	E	E	16	(30S)	22	28	59S	56S	58S	60S	58S	54S	56S	42	30	19	11	12	17	E	19
22	11	13	12	E	E	E	18	22	31	53S	56S	56S	52S	52S	42	35	30	26	19	16	17	22	18	17
23	12	11	12	12	12	11	20	30	54	40	52	54	A	55	54	36	33	26	18	16	15	15	16	15
24	A	A	A	A	A	A	12	21	34	38	38	54	54	50	53	54	26	24	A	A	14	15	14	14
25	14	A	16	E	E	E	11	20	C	C	C	C	C	C	C	C	C	C	25	16	15	16	16	16
26	11	E	11	11	E	E	11	28	38	54	53	50	56	54	67	40	42	20	16	16	18	16	15	15
27	14	14	16	18	E	E	22	29	33	38	38	48	50	50	C	C	30	26	19	A	16	16	16	16
28	E	E	11	11	E	E	11	20	32	53	38	40	37	40	34	35	32	26	A	18	16	15	18	18
29	15	15	E	E	E	E	30	30	A	37	40	40	40	40	40	36	30	21	20	A	16	15	17	12
30	E	E	E	E	E	E	22	A	32	36	40	40	40	39	36	A	A	A	A	A	15	15	15	13
31	11	11	E	14	E	A	22	A	30	30	34	38	37	35	28	A	32	26	19	14	14	15	14	14
Mean Value	12	12	11	E	E	11	19	28	33	41	43	50	51	50	44	40	33	26	19	16	16	16	16	16
Count	25	24	25	26	25	26	27	25	14	14	14	15	14	17	15	13	14	15	14	23	29	28	29	28

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

Mar 1949

fE min

Yokohama

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	C	C	C	C	C	C	C	1.9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	4.1	1.4	1.6	1.8	C	C	C	C	C	C	C	C	C	C	2.0	E	B	B	2.0	1.8	C
4	2.0	B	2.0	E	E	E	B	1.8	C	C	C	C	C	C	C	C	C	C	C	B	B	1.8	1.8	
5	1.8	C	C	C	C	C	C	B	1.8	C	C	C	C	C	C	C	C	C	C	E	E	E	E	2.0
6	B	1.8	E	E	E	E	B	1.8	C	C	C	C	C	C	C	C	C	C	C	B	2.0	E	E	2.0
7	E	1.6	E	E	E	E	E	1.8	C	C	C	C	C	C	C	C	C	C	C	C	2.0	E	E	E
8	1.6	1.6	B	1.9	B	B	1.9	1.8	C	C	C	C	C	C	C	C	C	C	C	B	1.8	1.6	1.6	1.8
9	E	E	E	E	E	E	E	1.8	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B
10	E	1.8	1.8	1.8	1.6	1.6	1.8	1.8	1.7	1.7	1.9	S	S	S	S	C	C	C	C	S	S	S	S	S
11	E	E	E	E	E	E	B	1.2	C	C	C	C	C	C	C	C	C	C	C	C	S	S	S	S
12	E	E	B	B	B	B	1.7	1.7	1.7	E	E	E	1.6	2.4	2.0	1.5	1.2	E	E	E	E	E	E	E
13	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	2.0	1.7	1.7	1.5	E	E	E	E	E
14	1.1	1.1	E	E	E	1.4	E	1.2	E	E	E	E	1.8	1.8	1.8	1.7	1.5	E	E	E	E	E	E	E
15	1.1	1.1	E	E	E	E	E	1.4	1.3	1.6	1.8	1.8	1.7	1.8	1.7	1.7	1.5	E	E	E	E	E	E	E
16	1.7	E	E	E	E	E	E	E	1.1	E	E	E	E	E	E	E	E	E	E	E	1.4	1.4	1.5	1.4
17	E	1.2	1.5	E	E	B	E	1.4	1.6	(1.7)	1.8	1.9	2.4	2.0	1.8	1.5	1.2	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	1.6	1.6	C	C	C	C	C	C	C	C	C	C	1.5	1.6	E	E	E
19	E	E	1.7	1.4	1.7	E	(1.5)	1.5	2	E	E	E	E	E	2.2	1.8	2.3	1.1	1.2	E	E	E	E	E
20	E	E	E	E	E	E	1.1	1.1	E	1.2	1.2	1.4	1.6	1.6	1.6	1.6	1.6	E	E	E	E	E	E	E
21	B	B	E	E	B	S	1.8	1.6	S	1.1	2.0	2.1	2.0	2.2	2.0	1.8	1.8	E	E	E	E	E	E	E
22	E	E	E	E	2.0	E	1.8	1.2	1.8	2.0	1.9	1.8	2.5	2.1	1.8	1.7	1.8	1.6	1.5	B	1.6	1.8	1.8	1.6
23	1.1	1.1	1.3	E	E	E	E	1.6	E	E	E	E	E	1.1	1.1	1.1	1.1	1.1	1.3	B	B	E	B	B
24	E	1.1	E	E	E	E	1.5	1.5	1.6	1.7	1.6	1.6	1.1	1.1	1.1	1.1	1.1	E	1.1	E	E	E	E	E
25	2.0	1.4	E	E	1.1	1.1	1.1	1.4	C	C	C	C	C	C	C	C	C	C	E	1.6	1.6	1.6	E	E
26	E	2.1	E	E	E	E	E	2.0	1.5	1.7	1.8	1.9	2.8	2.8	2.3	1.6	1.5	E	E	1.1	1.6	1.6	1.4	1.4
27	1.6	1.2	1.6	1.6	1.6	1.1	E	1.2	1.3	1.2	1.4	1.4	1.4	1.6	C	C	1.2	E	E	1.1	1.1	1.1	1.1	
28	E	E	1.1	1.1	1.2	E	1.1	1.1	1.1	1.1	1.1	E	E	1.1	1.5	E	1.1	E	E	1.8	1.6	1.4	E	E
29	E	E	E	E	E	E	1.4	E	1.6	1.7	E	E	E	E	E	E	E	E	E	E	E	E	1.4	E
30	E	E	E	E	E	E	E	1.5	1.1	E	1.1	1.1	1.1	1.1	E	E	1.8	E	1.2	1.5	1.7	1.7	E	E
31	E	E	1.8	1.4	E	E	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.6	1.5	1.5	E	1.4	B	1.7	E	E	E
Mean Value	1.1	E	E	E	E	E	E	1.5	1.5	1.2	1.3	1.4	1.4	1.6	1.7	1.5	1.5	E	E	E	1.4	E	E	E
Count	26	25	25	27	23	23	24	28	16	18	18	18	17	17	16	17	18	19	20	19	23	27	26	25

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

IONOSPHERIC DATA

Lat. 37° 57'0N
Long. 139° 15'8E

Shibata

fo F2

Mar. 1949

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	25	
1	68	67	67	67	59	56	66	95	119	128	133	141 ^S	138 ^S	135	134	124	118	114	103	89	81	75	69	66	
2	67	64	63	58	58	58	58	(9.3)	C	C	C	C	C	B	C	C	C	119	109	87	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	121	141	C	C	147	143	137 ^P	C	114 ^H	103	88	70	63 ^P	60	55	
4	59	60	53	51	50	49	60	93	119	132	B	B	8H	153	147 ^H	138	127	120	114	(83) ^S	77	68	66	61	
5	61	58	59	59 ^J	54	50	57	91	C	C	C	C	C	C	C	C	C	119	110	90	78	74	74	73	
6	74	74	67	58	51	50	60	95	111	B	134	B	143	B	129	125	125	119	101 ^P	92	84	(77) ^S	81	76	
7	73	73	77	70	51	50	63	103	122	B	141	(139) ^S	B	138	132	132	125	S	108	90	S	76	74 ^P	77 ^P	
8	73	68	61	57	58	59	73	104	C	C	134 ^P	138 ^P	C	134	(131) ^P	127	118	118	96 ^P	89	81	73	68	68	
9	65	61	60	60	62	60	74	115	129	44.6	147	144	140	132	129	127	122	118	112	107	107	93	84	77	
10	73	73	60	68	68	56	66	105	145	B	166	B	B	B	147	136	B	127 ^P	115	104	106	95	94	88	
11	81	82	73	68	56	56	70	119	130	138	144	147	146 ^P	148 ^P	138	139	129	B	S	B	C	95	92	87	
12	81 ^P	77	73	(64) ^S	62	62	82	119	C	C	C	C	C	C	C	C	C	124	115	103	97	93	92	89	
13	85	82	73	72	68	64	76 ^P	112	140	B	S	153	S	147	147 ^P	142	138 ^P	C	123	S	94	88	93	76 ^J	80
14	75	81	74	66	68	74	91	128	132	131	C	C	C	C	C	C	C	114	108	101	101	90	89	8	
15	25 ^P	76	75	69	71	73	91	124	143 ^P	146 ^P	166 ^S	157	155	154	B	143	134	124	124	116	100	90	(77) ^S	B	S
16	90	83	73	68	72	71	90	128	144	144	145	145	145	148	139	133	120	115	S	84	68	73	78	81	
17	S	78 ^P	74	54	51	58 ^F	55	73	99 ^H	132	140	140	148	154	145	138	128	114	101	83	(77) ^S	80	74	(79) ^S	
18	76 ^P	70	67	63	60	62	72	89	115	120	134	139	138	(132) ^L	128 ^P	119	110	104 ^P	94	63	68	67	68	65	
19	66	65	63	51	48	48	B	93	C	C	C	C	C	140	138	134	134	120	(119) ^S	102	84 ^J	85	83	82	
20	77	74	73	70	S	62	83	113	128	139	139	145	144	146	141	138	134	120	119	102	84 ^J	85	83	82	
21	83	82	84	61	57	B	79 ^J	113	117	137	134	140	139	142	136	135	126	124	113	100	90	89	84	84	
22	83	85	81	67	57	55	74	107	124	119	141 ^P	142	133	145	135	130	124	131	117	97	107	116	94	102	
23	100 ^S	112	64 ^F	72 ^P	60	S	74	114	127	127	136	144	(141) ^S	145	132	125	125	116	S	(77) ^S	66	65	70	63	
24	60	65	62	64	57	61	77	106	135	146	142 ^J	146	145	140	134	126	125	123	112	94	73	75	71	71	
25	71	73	73	64	60	62	83	109	129	134	138	134	137	139 ^P	141	135	134	128	130	110	88	(26) ^J	71	73	
26	77	77	68	66	66	68	93	120	C	C	C	C	C	C	C	C	C	133	132	S	80	76	76	77	
27	80	79	77	71	71	75	104	117	126	134	138	(146) ^S	148	147	145	139	129	129	126	S	92	78	74	79	
28	84	80	76	77	69	68	90	104	119	129	135	147	136	134	130	125	121	121	112	100	90	(89) ^P	87	89	
29	79	77	72	68	71	72	92	120	128	138	134	135	140	143	147	141	132	127	124	102	93	88	85	83	
30	84	82	80	72	69	73	89	114	128	133	139	136	137	142	139	134	130	130	116	101	86	85	(83)	78	
31	76	79	76	63	68	71	94	117	126	131	138	136	136	135	135	133	126	S	S	96	91	82	84	86	
Mean Value	76	77	73	66	60	62	76	111	127	133	139	142	140	144	138	135	127	121	113	95	86	78	77	78	
Count	29	30	30	30	29	28	29	30	23	21	23	21	19	22	25	26	24	27	25	28	28	29	28	28	

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

Mar. 1949

hpfz

Shibata

Lat. 37° 57.0' N
Long. 139° 45.8' 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
1	350	310	330	310	300	330	300	240	270	280	280	290	300	290	310	290	290	280	280	310	330	290	300	360
2	390	350	360	410	420	470	340	370	C	C	C	C	C	B	C	C	C	290	280	290	C	C	C	C
3	C	C	C	C	C	C	C	C	290	290	290	C	C	300	300	290	S	290	290	310	290	(260)	370	430
4	380	380	400	420	470	480	360	(280)	290	280	B	B	BH	300	320	300	C	270	300	(280)	300	350	320	340
5	370	380	380	360	310	330	370	270	C	C	C	C	C	C	C	C	C	310	280	310	310	350	320	330
6	(310)	270	290	320	380	370	300	240	240	B	B	B	320	B	330	340	310	310	290	320	330	(300)	320	320
7	340	330	300	240	400	420	330	300	270	B	B	300	(310)	B	330	330	350	S	310	330	S	320	320	320
8	300	320	340	410	420	410	320	270	C	C	300	300	C	C	350	340	370	300	290	330	310	320	310	310
9	350	370	370	390	410	360	310	300	290	290	300	330	350	350	380	380	340	310	310	310	320	(310)	330	330
10	360	(440)	440	440	360	350	390	330	310	B	B	B	B	B	360	380	B	330	330	350	340	330	340	310
11	330	320	330	310	330	420	360	280	280	290	320	330	360	350	370	370	(350)	B	S	B	C	340	340	340
12	(340)	330	330	(330)	400	340	310	300	C	C	C	C	C	C	C	C	C	320	340	330	360	380	390	370
13	330	340	370	380	340	340	310	300	290	B	S	340	S	360	370	340	340	330	S	380	(40)	370	370	420
14	380	400	340	460	460	380	320	290	300	310	C	C	C	C	C	C	C	C	C	320	330	390	370	B
15	330	420	400	400	(460)	460	350	350	290	270	(300)	310	370	350	B	360	340	300	330	310	330	390	B	S
16	360	330	370	410	420	390	330	310	S	290	300	340	320	340	340	320	300	290	S	330	300	350	360	370
17	S	360	300	450	480	430	290	270	330	310	310	340	360	340	330	(360)	310	310	330	350	(400)	380	380	(390)
18	(370)	400	420	470	460	450	(370)	320	300	290	320	320	340	(340)	330	310	290	290	300	370	400	420	390	410
19	420	400	330	340	440	430	B	280	C	C	C	C	C	C	370	360	340	320	B	320	360	S	S	340
20	370	330	350	350	S	340	320	(290)	280	300	320	320	340	360	370	340	340	300	(380)	310	370	360	390	360
21	360	340	280	290	400	B	340	290	320	300	290	310	320	340	370	360	(320)	330	320	340	(370)	390	370	390
22	370	330	320	290	330	430	430	290	300	320	310	310	370	350	380	390	360	360	340	420	380	360	390	410
23	340	260	320	380	430	S	420	300	320	300	300	330	(300)	330	340	330	340	300	S	(300)	390	400	380	400
24	510	440	440	400	400	410	360	290	300	280	300	330	330	340	320	340	320	300	300	320	310	(360)	(360)	(400)
25	410	400	320	300	420	370	330	300	290	300	320	330	340	380	340	350	340	370	310	310	330	(340)	370	410
26	400	340	330	410	410	390	290	280	C	C	C	C	C	C	C	C	C	340	310	S	340	370	390	420
27	380	390	390	410	430	420	300	290	300	310	(360)	360	370	370	370	370	320	320	300	S	320	360	390	390
28	360	350	370	240	340	370	300	300	400	300	330	320	340	340	360	370	360	340	300	S	350	(370)	340	(310)
29	(340)	390	400	460	390	420	340	290	290	300	330	330	370	370	370	340	330	330	320	300	370	330	390	380
30	390	360	370	360	400	410	310	290	290	320	(320)	320	370	360	370	380	350	330	270	320	360	390	(370)	400
31	(400)	390	340	340	400	380	400	290	330	300	320	320	340	380	380	340	360	S	S	320	350	340	380	(370)
Median Value	360	360	350	380	400	400	320	290	290	300	310	320	340	350	350	340	360	310	310	320	340	350	370	370
Count	29	30	30	30	29	28	29	30	23	21	23	21	19	22	25	26	24	27	25	28	28	29	28	28

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

IONOSPHERIC DATA

Lat 37° 57.0'N
Long 139° 15.8'E
Shibata

155° E

Mean Time

1949

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	250	260	260	240	220	250	270	190	210	210	230	220	260	210	240	230	200	200	210	220	240	220	230	270	
2	290	240	280	270	320	360	280	260	C	C	C	C	C	190	C	C	210	210	200	220	C	C	C	C	
3	C	C	C	C	300	200	220	220	230	230	220	220	230	230	240	220	210	220	230	220	220	240	250	270	
4	290	290	270	290	330	370	290	220	210	200	220	200	200	200	220	200	210	220	230	220	240	250	270	270	
5	280	300	290	280	210	220	230	210	C	C	C	C	C	C	C	C	220	220	210	220	240	260	260	260	
6	350	230	230	230	220	250	250	210	200	220	250	220	260	280	230	230	240	250	210	220	240	240	260	250	
7	260	260	240	210	220	300	280	220	220	210	240	260	210	250	220	210	210	220	220	200	220	240	250	230	
8	230	230	260	280	290	290	260	220	200	1210	210	210	210	270	290	210	210	220	220	200	230	210	240	240	
9	240	280	280	260	270	260	270	230	210	210	210	210	260	290	300	230	220	230	250	250	250	220	240	250	
10	290	280	260	310	250	280	200	220	250	210	230	240	240	300	230	230	230	220	220	230	250	230	250	250	
11	260	260	230	230	220	290	280	220	200	220	240	240	280	250	280	250	270	230	230	210	220	240	280	270	
12	240	240	240	250	250	260	240	200	C	C	C	C	C	C	C	C	240	210	240	210	260	240	280	270	
13	250	240	250	240	270	270	270	220	220	220	230	230	240	260	300	230	240	230	260	260	260	260	260	250	
14	280	290	240	240	350	300	260	230	230	230	C	C	C	C	C	C	C	C	C	250	240	220	300	270	
15	270	280	280	270	320	320	260	250	270	270	270	220	220	220	220	220	230	200	230	210	220	250	280	280	
16	270	280	230	280	320	290	260	250	200	230	240	200	220	230	230	220	230	230	220	220	240	280	290	290	
17	300	290	260	400	440	280	250	210	210	210	220	260	240	240	220	220	220	230	220	220	220	290	210	200	
18	270	270	270	290	330	340	270	220	220	220	270	270	210	1240	270	230	240	230	210	220	220	240	260	270	
19	300	300	250	220	280	330	260	210	C	C	C	C	C	C	C	250	270	240	230	220	230	250	290	270	
20	270	270	270	260	230	230	250	220	210	230	220	210	250	290	260	230	240	220	240	210	230	250	290	270	
21	280	260	220	220	260	340	260	230	220	220	210	230	260	230	230	230	230	240	220	240	250	280	280	290	
22	280	260	230	210	240	370	250	220	230	280	250	280	290	260	300	300	240	240	230	270	200	270	260	280	
23	280	200	190	210	280	360	280	270	230	220	240	260	300	260	250	230	240	230	230	220	280	280	300	290	
24	290	290	290	290	300	310	300	250	240	230	220	280	250	240	220	220	230	260	230	220	230	250	260	270	
25	300	290	260	220	300	290	260	220	240	220	230	230	220	260	260	220	240	260	260	220	200	250	280	280	
26	300	280	260	280	290	310	250	230	C	C	C	C	C	C	C	C	C	240	250	210	210	240	290	300	
27	290	280	270	290	320	320	240	250	220	220	250	240	270	250	300	230	270	260	250	230	220	220	290	290	
28	280	260	270	260	230	250	260	210	320	270	260	250	240	250	300	260	240	260	230	250	240	250	260	270	
29	260	270	280	320	290	300	240	260	230	240	250	200	240	240	230	230	220	240	240	220	230	240	270	270	
30	290	270	250	230	240	320	230	220	220	220	270	250	290	270	220	250	260	230	220	220	210	230	260	280	
31	260	270	230	220	300	310	250	220	220	220	250	260	270	240	220	220	220	220	250	250	230	220	250	290	280
Mean Value	280	270	260	260	280	300	260	220	220	240	240	250	250	260	260	260	230	230	230	220	230	250	270	280	280
Count	30	30	30	30	25	26	25	25	25	26	25	26	26	26	26	26	26	26	26	26	26	26	26	26	26

Sweep 100 Mc to 720 Mc in 10 min

Manual

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

IONOSPHERIC DATA

Mar. 1949

FFI

Shibata

Lat. 37° 57' N
 Long. 139° 45' 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	24	25
1							Q	Q	Q	Q	L	L	L	L	L	Q	Q	Q	Q							
2						L	Q	Q	Q	C	C	C	C	Q	C	C	C	Q	Q							
3						C	C	C	Q	Q	Q	Q	Q	Q	L	Q	Q	Q	Q							
4						Q	Q	Q	Q	Q	Q	Q	Q	(47)	Q	Q	Q	Q	Q							
5						Q	Q	Q	Q	C	C	C	C	C	C	C	C	Q	Q							
6						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	Q							
7						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
8						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
9						Q	Q	Q	Q	Q	Q	Q	L	L	L	L	L	L	L							
10						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
11						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
12						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
13						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
14						L	L	L	L	L	L	L	L	L	L	L	L	L	L							
15						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
16						Q	Q	Q	Q	A	A	A	Q	Q	Q	Q	Q	Q	Q							
17						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
18						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
19						Q	Q	Q	Q	C	C	C	C	C	C	C	C	C	C							
20						Q	Q	Q	Q	Q	Q	L	L	L	L	L	L	L	L							
21						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
22						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
23						Q	Q	Q	Q	A	L	L	A	A	L	L	L	L	L							
24						L	Q	Q	Q	Q	Q	L	L	L	L	L	L	L	L							
25						Q	Q	Q	Q	Q	Q	Q	Q	Q	L	L	L	L	L							
26						Q	Q	Q	Q	C	C	C	C	C	C	C	C	C	C							
27						Q	Q	Q	Q	Q	L	L	L	L	L	L	L	L	L							
28						L	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
29						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
30						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
31						Q	Q	Q	Q	L	L	L	L	L	L	L	L	L	L							
Mean Value																										
Count																										

Sweep 40 Mc to 1.2 Mc in 4E min

Manual

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

IONOSPHERIC DATA

Mar. 1949

R.F.I.

Shibata

Lat 39° 57.0'N
Long 139° 58.8' 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
1							Q	Q	Q	Q	200	200	210	190	200	Q	Q	Q	Q					
2							210	Q	C	C	C	C	C	Q	C	C	C	Q	Q	Q				
3							C	C	Q	Q	Q	Q	C	Q	200	Q	Q	Q	Q	Q				
4							Q	Q	Q	Q	Q	Q	Q	200	Q	Q	Q	Q	Q	Q				
5							Q	Q	C	C	C	C	C	C	C	C	C	Q	Q	Q				
6							Q	Q	Q	Q	220	Q	200	230	Q	Q	220	230	Q	Q				
7							Q	Q	Q	Q	210	220	Q	210	200	Q	Q	Q	190	Q				
8							Q	Q	Q	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q				
9							Q	Q	Q	Q	Q	Q	220	200	Q	Q	(200)	Q	230	Q				
10							Q	230	Q	210	220	220	220	B	210	Q	Q	Q	Q					
11							Q	Q	Q	Q	220	220	Q	200	Q	Q	220	Q	Q	Q				
12							Q	Q	C	C	C	C	C	C	C	C	C	Q	220	Q				
13							Q	Q	Q	200	210	210	210	Q	210	210	230	Q	Q	Q				
14							230	220	Q	C	C	C	C	C	C	C	C	C	Q	Q				
15							Q	Q	Q	Q	200	200	210	Q	210	Q	Q	Q	210	Q				
16							Q	Q	Q	Q	A	A	Q	Q	Q	Q	Q	Q	Q	Q				
17							Q	Q	Q	Q	200	200	220	200	200	Q	Q	A	Q	Q				
18							Q	Q	Q	Q	220	240	Q	Q	220	200	Q	Q	Q	Q				
19							Q	Q	C	C	C	C	C	C	200	220	Q	Q	Q	Q				
20							Q	Q	Q	Q	Q	Q	220	230	220	210	220	Q	Q	Q				
21							Q	Q	Q	Q	Q	200	210	Q	Q	Q	Q	Q	Q	Q				
22							Q	210	Q	Q	210	200	Q	210	230	Q	Q	Q	Q	Q				
23							Q	240	Q	Q	A	220	A	A	230	Q	(200)	Q	Q	Q				
24							260	Q	220	Q	Q	220	220	200	Q	Q	Q	Q	Q	Q				
25							Q	Q	Q	Q	Q	Q	Q	210	210	Q	Q	Q	Q	Q				
26							Q	Q	C	C	C	C	C	C	C	C	C	A	Q	Q				
27							Q	230	Q	Q	230	220	230	220	Q	Q	Q	Q	230	Q				
28							240	Q	Q	Q	230	220	210	210	210	230	Q	Q	Q	Q				
29							Q	Q	210	210	230	Q	210	200	Q	Q	Q	Q	Q	Q				
30							Q	Q	Q	Q	210	200	210	200	Q	Q	250	Q	Q	Q				
31							230	Q	Q	Q	220	200	210	200	Q	Q	Q	Q	Q	Q				
Mean							230	-	220	-	210	220	210	200	210	210	220	-	220					
Count							5	4	5	3	15	16	15	16	14	5	7	1	5					

Sweep 2.0 Mc to 7.2 Mc in 1.5 min Manual

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

IONOSPHERIC DATA

Mar. 1949

SE

Shibata

Lat 37° 57' N
Long 139° 15' 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	24	25
1							E	2.2 ^H	3.1	3.3	(3.4)	3.8	(4.2)	3.8	3.6	3.2	2.9	2.4	1.4							
2							(1.3)	2.3	C	C	C	C	C	B	C	C	C	(2.2)	(1.6)							
3							C	C	(3.3)	3.4	3.6	C	A	3.7	A	(2.2)	(1.8)	B								
4							(1.4)	2.4	3.0 ^F	A	(3.8)	A	3.9	3.7	A	3.4	2.8	(2.4)	A							
5							(1.3)	2.6 ^H	C	C	C	C	C	C	C	C	C	2.3	A							
6							1.3	2.1	3.1	3.4	3.8	(3.9)	(3.8)	(3.8)	B	3.4	3.2	(2.7)	(1.7)							
7							1.3	2.3	3.2	3.3 ^F	3.2	3.8	3.8	3.8	S	A	3.0	2.4	(1.6)							
8							(1.3)	2.4	3.0	(3.5)	3.9	4.0	3.8	3.9	3.8	3.5	3.1	(2.6)	A							
9							(1.5)	2.7	B	B	3.7	B	B	3.8	3.8	3.6	A	(2.6)	(1.8)							
10							1.7	2.3	2.9	(3.4)	3.8	3.9	3.9	B	3.9	B	B	(2.3)	(1.7)							
11							1.5	2.5	3.2	3.4	3.8	3.7	4.0	4.0	3.9	3.6	3.2	(2.3)	1.7							
12							1.7	2.7	C	C	C	C	C	C	C	C	C	2.4	1.9							
13							1.7	2.4	B	(3.2)	3.8	(3.9)	4.1	A	4.0	3.6	B	2.4	1.7 ^F							
14							1.7	2.4	3.0	3.3 ^F	C	C	C	C	C	C	C	C	1.9							
15							1.8	2.7	2.9	A	A	A	A	A	A	A	A	A	1.8							
16							1.7	2.4	3.2	3.7	(3.5)	(3.5)	A	A	A	A	A	(2.5)	(1.9)							
17							1.5	2.4	2.9	3.4	A	(3.9)	A	3.9	(3.9)	B	(2.5)	A	(1.9)							
18							1.6	2.5	3.0	3.3	(3.6)	B	A	C	4.0	B	2.9	2.4 ^F	1.8							
19							1.8	2.6	C	C	C	C	C	C	3.7	3.4	(3.2)	2.6	1.8							
20							(2.1)	2.8	3.3	3.6	3.9	3.9 ^F	4.0	3.9 ^F	4.0	3.6	3.3	2.4 ^F	(1.9)							
21							2.1	(2.0)	(3.2)	3.4	3.7	A	A	(3.5)	A	A	3.2	2.7 ^F	1.9							
22							1.9	(2.7)	3.3 ^F	3.7 ^F	(3.7)	3.7	3.9	3.7	A	3.4 ^J	3.1	2.4	A							
23							(2.1)	2.5	3.6	3.6	3.5	(3.6)	B	(3.2)	3.3	3.0	A	A	A							
24							A	2.6	3.1	3.6	3.6	A	B	A	A	A	A	A	A							
25							2.0	2.7	3.0	(3.4)	A	3.7	(3.9)	A	A	3.5	(3.2)	2.2 ^H	1.7							
26							2.2 ^H	2.6	C	C	C	C	C	C	C	C	C	A	A							
27							1.9	2.6	A	3.4	3.7	(3.3)	A	3.7	3.5	A	A	A	(1.8)							
28							2.1	A	A	3.3	3.5	A	(3.3)	3.6	3.5	3.4	A	A	A							
29							1.6	2.7	3.1 ^F	3.4 ^F	3.4	3.7	(3.9)	(3.9)	3.3	3.2	3.0	2.6 ^F	1.8							
30							2.2	2.8 ^F	3.1	3.3	3.6	3.7	3.7	3.8	3.5	3.5	3.0	A	A							
31							2.2 ^F	2.8	3.2	3.3	3.5	3.8	B	3.8	3.5	3.4 ^F	3.0 ^F	A	A							
							1.7	2.6	3.1	3.4	3.7	3.8	3.9	3.8	3.7	3.4	3.0	2.4	1.8							
							2.0	2.9	3.1	2.3	2.2	1.8	1.4	1.7	1.7	1.6	1.7	2.1	2.0							

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

IONOSPHERIC DATA

Mar. 1949

RE

Shibata

Lat. 37° 57' N
Long. 139° 45' 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
1																				
2						E 100 ^H	100	100	100	(100)	100	100	100	100	100	100	A 100	100	S	
3						B 100	C	C	C	C	C	B	C	C	C	C	A	A	B	A
4						C	C	A	(100)	100	C	A	100	A	100	A	100	100	A	A
5						B (110)	100	A	100	A	C	C	C	C	C	C	C	100	A	
6						S (100) ^H	C	C	C	C	C	C	C	C	C	C	C	100	A	
7						140 (100)	100	100	100	(100)	A	B	(100)	100	100	(100)	100	(100)	B	
8						E 110	100	100	100	100	100	100	100	100	100	100	100	100	100	B
9						E 100	100	(100) ^F	(100)	100	100	100	100	100	100	100	100	100	A	A
10						B (120)	(100)	(100)	(100)	(100)	(100)	100	100	100	100	100	100	100	A	B
11						150 100	100	100	100	100	100	B	100	(100)	(100)	(100)	100 ^F	100	A	
12						E 110	100	100	100	100	100	100	100	100	100	100	100	100	A	B
13						B A	C	C	C	C	C	C	C	C	C	C	C	100	B	
14						B 100	(100) ^F	100	100	100	100	100	100	100	100	100	(100)	100	B	
15						150 100	100	100	100	C	C	C	C	C	C	C	C	C	A	
16						B 110	A	A	A	A	A	A	A	A	A	A	A	A	B	
17						B 100	100	100	100	100	100	A	A	A	A	A	A	A	A	
18						B 100	100	100	100	A	A	A	A	A	A	A	(100)	(100)	A	A
19						A 110	100	100	120	(100)	A	C	100	(100)	(100)	(100)	(100)	110	B	
20						A 110	C	C	C	C	C	C	C	C	C	C	100	100	A	S
21						B A	A	100	(100)	100	100	100	100	100	100	100	100	(100)	A	
22						140 A	(100) ^F	100	100	100	A	(100)	100	100	100	100	100	100	(100)	A
23						B 100 ^F	100	100	100	100	100	100	100	100	100	100	100	100	100	A
24						A 100	100	100	100	B	100	100	100	100	100	100	100	100	A	A
25						A 100	100	(120)	100	A	100	A	A	A	A	A	A	A	A	A
26						BH 110	C	C	C	100	A	A	A	A	A	A	100 ^H	A	A	
27						A 100	A	100	110	100	C	C	C	C	C	C	C	A	A	
28						170 A	A	100	A	100	A	100	100	100	100	100	100	A	A	A
29						B 100	100 ^F	100 ^F	100	(100) ^A	A	A	100	100	100	100	100	100	100	B
30						170 100 ^F	100	100	100	90	100	100	100	100	100	100	100	100	A	A
31						120 100	100	100	100	100	(100)	110	100	100	100	100 ^F	100 ^F	100 ^F	A	A
Median Value						150 100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count						8	26	21	22	22	19	15	15	20	18	16	16	13	13	

Sweep 2.0 Mc to 2.0 Mc in 50 min Manual

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

IONOSPHERIC DATA

Lat. 37.57°N
 Long. 139.158°E

Shibata

JES

Mon. 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	E	E	E	2.7	2.4	(1.9)	2.9	B	<FE	3.9	4.7	<FE	B	4.1	<FE	3.5	<FE	3.1	2.5	2.4	2.8	2.5	2.2
2	2.4	2.8	3.0	E	B	B	B	<FE	C	C	C	C	C	C	4.4	4.0	2.2	(2.2)	2.4	2.9	2.4	2.2	2.4	2.2
3	C	C	C	C	C	C	C	C	C	3.7	3.9	5.2	C	4.5	4.4	4.0	3.4	3.8	3.3	3.5	3.1	2.9	2.4	2.2
4	2.2	2.4	2.4	2.5	2.4	(2.4)	B	<FE	<FE	4.4	4.5	6.6	4.9	<FE	(4.3)	4.0	C	3.4	3.3	3.5	3.1	2.9	2.4	2.2
5	2.2	E	E	2.3	1.1	(2.2)	2.2	<FE	C	C	C	C	C	C	C	C	C	<FE	2.4	2.7	1.9	E	E	E
6	E	E	E	E	E	(4.4)	<FE	2.8	4.6	<FE	<FE	B	4.1	B	B	<FE	<FE	<FE	2.8	2.6	E	E	E	E
7	E	E	E	E	E	E	(2.1)	2.5	<FE	3.6	4.0	3.7	<FE	<FE	B	3.7	<FE	<FE	2.8	2.4	E	E	E	2.4
8	B	2.7	E	E	E	2.0	B	<FE	<FE	C	B	<FE	4.5	<FE	4.5	<FE	3.8	3.0	3.1	2.8	E	E	E	E
9	2.4	2.4	3.0	2.4	2.2	B	B	<FE	B	B	4.3	B	B	<FE	<FE	4.7	4.0	3.3	<FE	2.6	E	E	E	E
10	E	1.2	E	E	E	B	3.3	<FE	5.3	(3.2)	3.7	4.2	4.4	B	4.8	B	B	3.0	3.0	E	E	E	E	E
11	E	E	E	E	E	B	B	4.0	<FE	<FE	<FE	4.2	4.4	4.2	<FE	<FE	<FE	3.0	3.0	E	C	E	E	E
12	B	(2.5)	3.0	E	E	2.0	B	3.8	C	C	C	C	C	C	C	<FE	C	3.0	3.0	2.4	2.5	1.9	E	E
13	E	E	E	E	E	E	B	<FE	B	<FE	3.0	<FE	<FE	4.2	<FE	<FE	B	3.0	3.0	2.8	2.8	E	E	E
14	E	E	E	E	2.5	E	<FE	<FE	<FE	<FE	C	C	C	C	C	C	C	3.0	3.0	3.0	3.2	B	E	2.4
15	E	3.0	2.6	2.2	1.7	1.9	2.1	2.8	<FE	4.5	5.1	5.7	4.6	4.6	3.9	4.4	3.3	3.7	1.7	2.6	2.0	(2.3)	2.4	2.2
16	2.9	3.1	4.5	3.0	(2.3)	E	2.5	(2.7)	3.4	5.2	7.5	6.4	4.5	4.9	6.5	5.2	4.6	3.2	2.9	3.0	2.7	2.6	4.7	5.0
17	4.6	4.4	2.5	2.6	1.8	2.8	2.7	<FE	4.1	4.0	4.3	4.8	4.7	4.5	4.2	B	4.4	5.5	4.2	2.2	E	2.7	E	E
18	E	2.8	2.5	2.5	3.3	2.4	2.4	2.9	3.3	3.5	<FE	B	4.7	C	4.6	4.4	3.9	<FE	2.4	1.8	E	E	E	E
19	E	2.2	2.3	2.6	2.2	1.8	(2.0)	2.0	C	C	C	C	C	C	4.3	4.0	<FE	2.9	B	E	E	E	E	B
20	E	2.5	B	2.1	E	E	B	3.5	3.7	3.9	4.4	5.4	(4.2)	(5.0)	4.7	4.1	4.1	2.5	2.6	1.8	E	E	E	E
21	E	4.6	E	E	E	5.7	<FE	2.8	<FE	3.8	3.9	4.5	4.2	4.3	5.2	4.9	4.0	3.3	2.2	1.9	E	E	E	E
22	E	E	E	B	1.4	3.7	B	<FE	4.1	<FE	4.8	5.0	4.7	4.6	4.9	4.8	4.2	<FE	2.8	5.8	2.4	B	2.3	E
23	1.4	2.0	2.0	1.7	2.1	B	B	<FE	3.7	5.2	6.4	5.0	1.0	7.4	2.5	3.4	3.6	4.0	3.9	4.4	2.4	4.5	E	2.0
24	4.1	3.9	3.2	3.1	2.7	3.5	2.1	<FE	(4.3)	4.8	4.1	7.3	5.1	7.0	4.7	4.0	3.8	4.7	3.9	3.6	2.6	2.7	E	2.0
25	E	E	2.8	2.9	3.2	2.7	2.7	2.9	4.0	3.8	4.5	5.6	4.6	4.1	3.7	B	B	<FE	2.7	2.5	2.6	F	2.0	2.3
26	E	E	E	E	E	E	2.3	3.1	C	C	C	C	C	C	C	C	C	C	5.7	4.4	3.7	2.5	B	E
27	E	B	2.4	2.8	3.9	3.7	2.8	(3.8)	4.3	3.9	B	5.4	4.8	4.3	4.0	3.8	4.2	3.1	2.9	2.9	E	1.9	2.0	E
28	E	2.5	2.6	B	3.7	2.6	2.6	3.1	5.0	(4.3)	3.9	5.1	3.9	<FE	<FE	<FE	3.4	4.3	2.3	2.6	2.2	C	E	E
29	E	E	E	E	E	E	2.2	3.1	4.8	4.3	4.6	4.2	3.9	4.0	3.7	3.6	<FE	(2.9)	<FE	2.8	B	E	E	E
30	E	E	E	E	E	E	2.5	2.6	<FE	3.8	2.9	4.0	<FE	<FE	<FE	<FE	3.5	3.2	2.0	2.0	B	E	E	2.3
31	E	B	E	E	(1.7)	2.4	2.8	(4.1)	3.6	4.4	4.2	<FE	<FE	(3.8)	3.5	4.6	4.5	3.1	2.9	2.9	E	E	B	E
Median Value	E	2.1	E	E	1.7	2.4	2.2	2.8	3.7	3.9	4.3	4.9	4.4	4.3	4.2	4.0	3.6	3.0	2.9	2.7	2.0	E	E	E
Count	2.8	2.8	2.9	3.8	3.9	2.5	2.0	3.0	2.2	2.4	2.3	2.2	2.3	2.1	2.4	2.3	2.3	3.0	3.0	2.6	2.7	2.6	2.9	2.9

Sweep 1.2 - MC to 1.22 Mc in 0.1 min Manual

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

IONOSPHERIC DATA

Lat. 37° 57' N
Long. 139° 15' E

Shibata

Fr-M 3000

Mar. 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	2.9	3.0	2.9	3.1	2.8	3.0	3.5	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.0	3.1	3.1	3.2	3.1	3.0	2.9	2.2	3.1	2.7
2	2.7	2.8	2.8	2.5	2.6	2.7	(2.9)	C	C	C	C	C	C	C	C	C	C	3.2	3.2	3.2	C	C	C	C
3	C	C	C	C	C	C	C	C	3.1	3.1	C	C	C	3.1	3.1	3.0	S	3.2	3.2	3.1	3.1	2.8	3.0	2.5
4	2.7	2.7	2.6	2.4	2.4	2.4	2.8	3.1	3.1	3.3	B	B	BH	3.1	3.1	3.0	3.0	3.0	3.2	3.1	(2.9)	3.1	3.0	3.0
5	2.7	2.7	2.6	2.4	2.4	2.4	2.9	3.2	C	C	C	C	C	C	C	C	3.0	3.0	3.2	3.0	3.0	2.8	2.9	2.8
6	3.1	2.8	3.1	2.4	2.6	2.7	3.1	3.4	3.4	B	3.1	B	2.9	B	3.1	2.9	3.0	2.9	3.1	2.9	(2.9)	2.9	2.9	3.1
7	2.9	2.9	3.2	3.5	2.5	2.6	3.1	3.1	3.2	B	3.0	(3.0)	B	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.0	2.9	2.0	2.0
8	3.2	3.5	2.7	2.5	2.5	2.6	3.0	3.2	C	C	3.2	2.8	C	C	2.8	(2.8)	2.9	2.1	2.2	2.9	3.0	3.0	3.0	3.1
9	2.7	2.7	2.7	2.7	2.7	2.7	3.0	3.1	3.1	3.1	3.0	2.9	2.7	2.8	2.7	2.7	2.8	2.9	2.8	2.9	3.0	3.0	2.9	2.9
10	2.5	2.5	2.5	2.5	2.7	2.7	2.7	2.8	3.0	B	3.1	B	B	B	2.8	2.8	2.7	2.8	2.9	2.9	2.9	2.9	2.8	2.8
11	3.0	2.9	2.9	3.1	2.8	2.5	2.7	3.2	3.2	3.2	3.1	3.0	2.8	2.8	2.8	2.7	2.8	B	B	3.0	2.9	2.8	2.8	2.8
12	J	2.9	2.9	(2.9)	2.6	2.9	3.0	3.1	C	C	C	C	C	C	C	C	C	2.9	(2.8)	3.0	2.8	2.7	2.6	2.8
13	2.9	2.7	2.7	2.7	(2.7)	2.8	3.0	3.1	3.1	B	3.1	3.1	3.1	3.1	2.8	2.8	2.8	2.8	2.9	3.0	2.8	2.6	2.7	2.6
14	2.8	(2.6)	2.8	2.3	2.5	2.7	(3.0)	3.1	3.0	3.0	C	C	C	C	C	C	C	C	2.9	3.0	2.9	2.7	2.7	B
15	2.9	2.5	2.6	2.6	2.4	2.4	2.8	2.7	3.1	3.2	(3.0)	2.9	2.7	2.7	B	2.8	2.8	2.8	3.0	2.9	3.0	(2.8)	2.9	S
16	2.8	2.9	2.7	(2.8)	2.5	2.5	2.7	3.0	3.1	3.1	3.1	2.8	2.8	2.8	2.8	2.8	2.9	3.1	3.1	3.1	2.9	2.8	2.8	2.8
17	S	2.8	2.3	2.1	2.1	2.4	3.0	3.1	2.8	2.7	3.0	2.8	2.8	2.8	2.8	2.8	(2.9)	3.0	2.8	2.8	(2.6)	2.7	2.7	S
18	2.8	2.6	2.5	2.3	2.3	2.5	2.7	2.9	3.0	3.1	2.9	2.9	2.9	2.9	(2.9)	2.9	2.9	3.1	3.1	3.0	2.8	2.6	2.6	2.6
19	2.5	2.6	2.8	2.8	3.5	2.5	B	3.2	C	C	C	C	C	C	C	C	2.8	2.8	3.0	B	2.9	2.8	S	2.9
20	2.8	2.9	2.8	2.7	S	2.9	3.0	3.2	3.1	3.0	2.9	3.0	2.9	2.8	2.8	2.8	2.6	2.8	3.1	3.1	J	2.8	2.6	2.7
21	2.7	2.9	3.2	3.1	2.7	B	J	3.1	2.9	3.2	3.1	2.9	3.0	2.9	2.7	2.7	2.9	2.9	2.9	2.8	2.7	2.7	2.7	2.7
22	2.7	2.9	2.9	3.1	2.4	2.9	3.2	3.1	3.1	3.0	3.0	3.1	2.8	2.8	2.6	2.6	2.7	2.8	2.5	2.7	2.8	2.6	2.6	2.6
23	3.2	3.0	2.9	2.5	S	2.5	3.0	2.9	2.9	2.9	2.9	3.0	(2.8)	3.0	2.8	2.9	2.8	3.1	3.1	3.1	2.7	2.6	2.5	3.5
24	(2.4)	2.5	2.6	2.6	2.5	2.5	2.8	3.1	3.1	3.1	J	2.9	2.9	2.9	2.9	2.8	2.9	2.9	3.0	3.1	3.0	2.8	2.9	2.6
25	2.7	2.7	3.0	3.1	2.6	2.7	2.9	3.1	3.1	3.1	2.9	2.9	2.8	2.8	2.9	2.8	2.8	2.8	2.8	3.1	3.0	2.8	J	3.0
26	2.7	2.9	2.8	2.7	2.7	2.6	3.2	3.3	C	C	C	C	C	C	C	C	C	2.9	3.0	3.0	2.8	2.7	2.6	3.6
27	2.7	2.7	2.7	2.5	2.4	2.5	3.0	3.2	3.1	2.9	3.2	(3.0)	3.0	3.0	3.0	2.8	2.9	3.0	3.0	3.0	2.8	2.7	2.8	2.7
28	2.8	2.8	2.7	2.9	2.8	2.8	3.0	3.1	3.1	3.0	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.9	2.8	(2.8)	2.9	2.8
29	2.8	2.7	2.8	2.6	2.1	2.5	2.7	3.1	3.1	3.0	2.9	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.9	3.0	3.1	2.6	2.9	2.8
30	2.7	2.8	2.8	2.6	2.1	2.5	3.1	3.1	3.1	3.0	3.0	2.9	2.7	2.8	2.8	2.8	2.7	2.8	2.9	3.3	2.9	2.7	2.7	(2.8)
31	2.7	2.7	2.9	2.8	2.5	2.7	3.0	3.2	2.9	3.0	2.9	2.8	2.8	2.8	2.7	2.8	2.7	2.9	3.0	3.0	2.7	2.8	2.7	2.8
Median Value	2.8	2.8	2.8	2.7	2.6	2.6	3.0	3.1	3.1	3.1	3.0	2.9	2.8	2.8	2.8	2.8	2.8	2.8	3.0	3.0	2.9	2.8	2.8	2.8
Count	2.8	3.0	3.0	3.9	3.8	2.9	3.0	3.0	2.3	2.1	2.2	2.1	1.9	2.2	2.5	2.6	2.4	2.7	2.4	2.7	2.9	2.8	2.7	2.7

Sweep 60 MC to 222 MC in 1.5 min Manual

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

IONOSPHERIC DATA

Station Shibata
Lat. 37° 57' 0"
Long. 139° 15' 8"

Frequency 5.7

Date Mar. 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	E	E	E	E	E	E	1.3	1.4	2.6	3.2	3.4	3.8	4.2	3.8	3.6	3.3	3.0	2.6	1.4	1.5	A	1.2	1.5	1.4	1.4	1.4	
2	E	E	E	E	E	E	E	1.3	2.4	C	C	C	C	3.8	C	C	C	2.2	1.6	1.3	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	3.3	3.4	A	C	C	3.7	A	2.2	2.4	1.7	A	1.5	1.5	1.5	1.5	1.4	1.4	
4	E	E	E	E	E	E	E	1.4	2.4	3.0F	A	A	3.7	3.9	3.7	3.4	2.8	2.4	1.7	A	1.6	1.5	1.5	1.5	1.5	1.5	
5	E	E	E	E	E	E	E	1.3	2.6	C	C	C	C	C	C	C	C	2.4	1.6	1.6F	1.4	1.4	1.4	1.4	1.4	1.4	
6	E	E	E	E	E	E	E	1.4	2.2	3.2	3.7	3.9	4.1	4.1	4.0	3.8	3.1	2.7	1.7	1.6	1.4	1.4	1.4	1.4	1.4	1.4	
7	E	E	E	E	E	E	E	1.5	2.7	3.2	3.4	3.8	4.2	4.2	4.2	3.8	3.1	2.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	
8	E	E	E	E	E	E	E	1.5	2.6	3.3	3.7	4.0	4.2	4.1	3.8	3.6	3.1	2.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	
9	E	E	E	E	E	E	E	1.5	2.7	A	4.1	4.3	4.7	4.7	4.3	3.8	A	2.3	1.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
10	E	E	E	E	E	E	E	1.6	2.8	3.3	3.9	4.3	4.9	4.2	3.9	C	A	2.7	1.7	1.5	1.5	1.4	1.4	1.4	1.4	1.4	
11	E	E	E	E	E	E	E	1.6	2.8	3.2	3.7	4.2	4.4	4.3	3.9	3.7	3.2	2.5	1.8	1.5	1.5	1.5	1.4	1.4	1.4	1.4	
12	E	E	E	E	E	E	E	1.7	2.7	C	C	C	C	C	C	C	C	2.6	1.9	1.5	1.4	1.4	1.4	1.4	1.4	1.4	
13	E	E	E	E	E	E	E	1.7	2.7	3.5	3.8	4.2	4.2	4.3	4.0	3.7	3.2	2.5	2.1	1.4	A	1.4	1.4	1.4	1.4	1.4	
14	E	E	E	E	E	E	E	1.7	2.5	3.0	3.6	C	C	C	C	C	C	2.4	1.9	A	1.4	1.4	1.4	1.4	1.4	1.4	
15	E	E	E	E	E	E	E	1.8	2.7	3.0	A	A	4.1	A	3.8	A	A	2.4	1.8	A	1.4	1.5	1.4	1.4	1.4	1.4	
16	A	A	A	A	A	A	A	1.7	2.7	3.4	3.9	A	A	A	A	A	A	2.6	1.8	A	1.2	1.6	A	A	A	A	
17	A	A	A	A	A	A	A	1.7	2.4	3.1	3.7	3.9	A	3.7	3.9	3.8	A	A	1.9	1.5	1.4	A	1.4	A	A	A	
18	E	E	E	E	E	E	E	1.4	3.6	3.2	3.4	4.3	A	C	3.9	3.6	3.1	2.5	1.8	1.5	1.5	1.5	1.5	1.5	1.4	1.4	
19	E	E	E	E	E	E	E	1.8	2.6	C	C	C	C	C	3.9	3.7	3.4	2.6	1.8	1.5	1.5	1.5	1.5	1.5	1.4	1.4	
20	E	E	E	E	E	E	E	2.1	2.8	3.4	3.7	4.0	4.2	4.0	4.0	3.7	3.4	2.5	2.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
21	E	E	E	E	E	E	E	2.1	2.7	3.2	3.7	3.8	A	4.3	4.0	A	2.2	2.9	1.9	1.4	1.5	1.5	1.5	1.5	1.4	1.4	
22	E	E	E	E	E	E	E	2.0	2.8	3.2	3.7	3.8	A	4.0	3.8	3.6	3.2	2.4	A	1.7	1.5	1.5	1.5	1.5	1.5	1.5	
23	E	E	E	E	E	E	E	2.0	2.7	3.7	A	A	A	A	3.8	3.7	A	3.2	A	A	1.7	1.5	1.4	1.4	1.4	1.4	
24	E	E	E	E	E	E	E	2.0	2.7	3.4	3.8	A	A	A	3.8	A	A	A	A	A	A	1.5	1.5	1.5	1.5	1.5	
25	E	E	E	E	E	E	E	2.0	2.7	A	3.7	3.8	A	3.9	A	3.5	2.8	2.8	1.8	A	1.4	1.4	1.4	1.4	1.4	1.4	
26	E	E	E	E	E	E	E	2.2	2.9	C	C	C	C	C	C	C	C	A	A	A	1.5	1.4	1.4	1.4	1.4	1.4	
27	E	E	E	E	E	E	E	2.2	2.9	3.6	3.5	3.9	A	3.9	3.8	A	3.3	2.7	1.8	1.7F	1.4	1.4	1.4	1.4	1.4	1.4	
28	E	E	E	E	E	E	E	2.2	2.9	3.3	3.7	4.0	4.0	3.9	3.7	3.7	3.3	A	1.5	1.3	1.4	1.4	1.4	1.4	1.4	1.4	
29	E	E	E	E	E	E	E	2.2	2.9	3.2	3.7	3.8	3.9	3.9	3.8	3.7	3.1	2.7	1.9	1.3	1.4	1.4	1.4	1.4	1.4	1.4	
30	E	E	E	E	E	E	E	2.5	2.9	3.2	3.6	3.8	4.3	3.9	3.7	3.5	3.4	2.7	2.0	A	1.4	1.4	1.4	1.4	1.4	1.4	
31	E	E	E	E	E	E	E	2.5	2.9	3.3	A	3.8	4.5	3.8	3.6	3.5	3.2	2.6	1.9	1.7	1.5	1.4	1.4	1.4	1.4	1.4	
Median Value																											
Count	2.8	2.6	2.7	2.8	2.7	2.9	3.0	3.0	2.3	2.2	2.0	1.7	1.7	2.0	2.4	1.9	1.9	2.6	2.3	2.2	2.5	2.5	2.9	2.8	2.7	2.7	

Sweep 2 Mc to 22 Mc in 10 min Manual

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

Mar 1949

F_E min

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	E	E	E	E	E	E	(1.8)	1.5	1.5	1.5	1.7	1.8	2.1	1.9	1.7	1.6	1.5	1.5	2.4	2.0	1.2	1.6	1.5	1.6
2	1.2	1.2	E	E	B	B	B	1.5	C	C	C	C	C	B	C	C	C	1.3	1.2	B	C	C	C	C
3	C	C	C	C	C	C	C	C	C	1.7	1.8	2.0	(2.1)	2.1	2.1	2.1	1.9	1.7	1.6	1.4	1.9	1.5	1.4	1.8
4	1.3	1.2	E	1.4	E	E	B	1.5F	1.6	1.6	1.7	1.7	1.9	1.9	1.6	1.7	1.5	1.6	1.4	1.6	1.5	1.5	2.0	1.5
5	1.5	1.7	E	E	E	E	1.1	1.5	C	C	C	C	C	C	C	C	1.7	1.2	1.4	1.4	1.4	E	E	E
6	E	E	E	E	E	(2.2)	1.1	1.6	1.5	1.5	1.8	2.2	2.1	2.3	1.7	2.4	1.9	1.6	1.6	1.5	E	E	E	E
7	E	E	E	E	E	E	E	1.6	1.6	1.7	1.7	1.9	1.9	2.2	2.2	2.2	1.6	1.7	1.6	1.6	E	E	1.5	2.2
8	B	1.5	E	E	E	1.9	B	1.5	1.5	1.8F	2.1	1.9	2.0	1.8	2.0	1.8	1.7	1.6	1.6F	1.5	E	E	E	E
9	2.0	1.5	E	1.1	1.9	B	B	1.5	1.7	2.1	1.9	2.1	2.2	2.1	1.8	1.6	1.6	1.4	1.6	2.1	E	E	E	E
10	E	E	E	E	E	E	1.6	1.5	1.4	1.6	1.8	1.9	1.9	2.2	1.6	1.6	1.6	1.5	1.4	E	E	E	E	E
11	E	E	E	E	E	E	1.1	1.5	1.5	1.7	1.8	1.9	1.9	2.0	1.9	1.7	1.7	1.5	1.4	E	C	E	E	E
12	B	1.7	E	B	E	E	1.4	1.5	C	C	C	C	C	C	C	C	C	E	1.6	1.5	1.5	1.7	E	E
13	E	E	E	E	E	E	E	1.5	1.5	1.8	1.7	2.2	2.2	2.1	1.9	1.8	1.7	1.4	1.5	1.8	1.4	E	2.3	E
14	E	E	E	E	E	E	E	1.3	1.4	1.5	1.6	C	C	C	C	C	C	C	1.5	1.5	1.5	B	1.5	E
15	E	E	1.8	E	E	E	1.6	1.6	1.5	1.6	1.6	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.9	(1.4)	2.1	1.5
16	1.2	1.1	E	E	E	E	1.5	1.5	1.5	1.7	1.7	2.0	2.0	1.9	1.9	1.7	1.4	1.1	1.1	1.4	1.8	1.4	1.4F	1.5F
17	E	E	1.1	E	E	E	E	1.4	1.5	1.6	1.8	1.8	2.2	2.0	1.9	2.0	1.4	E	1.4	1.6	E	1.4	E	E
18	E	E	E	E	E	E	1.6	2.0	1.4	1.5	1.6	1.7	1.7	1.8F	1.8	1.5	1.4	1.1	1.6	1.5	E	E	E	E
19	E	1.6	E	E	E	1.8	1.5	1.7F	1.5	C	C	C	C	C	C	1.9	2.0	1.4	B	E	E	E	E	B
20	E	1.8	B	E	E	E	B	1.5	1.5	1.5	1.7	2.0	2.0	1.9	1.7	2.0	1.6	1.5	1.5	1.4	E	E	E	E
21	E	E	E	E	E	E	1.3	1.5F	1.5	1.6	1.6	1.8	2.0	1.7	1.7	1.7	1.5	1.1	1.4	1.7	E	E	E	E
22	E	E	E	B	E	E	E	1.6	1.4	1.9	1.7	1.5	1.6	1.8	1.8	1.8	1.8	1.6	1.5	1.4	1.8	B	1.5	E
23	1.3	1.7	1.5	1.1	E	B	1.5	1.5	1.5	1.7	2.0	2.4	2.1	2.0	2.0	1.9	1.5	1.5	1.5	1.4	1.4	1.5	E	1.8
24	1.2	E	E	E	E	1.1	E	1.4	1.6	1.6	1.9	2.0	1.8	1.8	2.2	1.8	1.5	1.3	1.3	1.4	1.5	1.4	E	E
25	E	E	E	E	E	E	E	1.4	1.5	1.5	1.6	1.7	1.9	2.1	1.8	1.7	1.9	1.4	1.4	1.4	1.4	E	1.7	2.2
26	E	E	E	E	E	E	E	1.5	1.5	C	C	C	C	C	C	C	C	E	1.4	1.5	1.5	B	E	E
27	E	B	1.5	E	E	E	E	1.4	1.4	1.5	1.9	2.1	2.1	1.9	1.8	1.7	1.5	1.3F	1.5F	1.3	E	1.6	1.5	E
28	E	2.3	2.4	B	E	1.3	1.4	1.5	1.6	1.7	1.9	2.0	2.1	2.0	1.8	1.6	1.4	E	1.1	1.5	1.6	C	E	E
29	E	E	E	E	E	E	E	1.4	1.5	1.6	1.9	1.8	1.9	2.0	1.8	1.9	1.6	1.2	1.4	1.6F	B	E	E	E
30	E	E	E	E	E	E	1.3F	E	1.4	1.4	1.5	1.7	1.8	1.8	1.6	1.6	1.6	E	1.3F	1.5F	B	E	E	2.1
31	E	B	E	E	E	E	E	1.5	1.5	1.5	1.6	1.7	1.8	1.8	1.7	1.6	1.3	E	1.4F	1.4	E	E	B	E
Median Value	E	E	E	E	E	E	1.4	1.5	1.5	1.6	1.7	1.9	2.0	1.9	1.8	1.7	1.6	1.4	1.4	1.5	1.4	E	E	E
Count	27	28	29	27	29	25	25	20	25	26	25	25	25	24	26	26	26	30	30	30	27	26	29	29

Sweep C.P. Mc to 2.2 Mc in 1/5 min Manual

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

IONOSPHERIC DATA

Mar. 1949

f_oF₂

Sakurazawa 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
1	64	65	65	64	51	50	62J	10.1	11.0	12.5	13.1	14.3J	13.5	14.2	13.1	12.5	12.7	12.2	9.8	8.7	8.3	7.9	7.3	6.7
2	67	65	63	59	60	58	60	9.7B	B	11.54J	16.4	16.4	B	15.2	14.9	13.8	12.7	12.2	11.6	9.4	8.3	7.3	6.4	6.3
3	69	65	61	58	54	58	64	9.7B	11.0	12.0	14.4J	15.4J	15.2J	15.3	14.4	13.7	12.8	11.6	10.6	8.9	7.5	6.8	6.5	5.5
4	60	61	5.3	54	50	52	59J	9.8J	12.4	13.6	14.4J	15.3J	14.6	15.7	15.1	14.3	13.7	13.5	11.2J	8.8J	7.9	7.6	7.5	6.7
5	63	63	60	58	55	49	68	9.1	10.0	12.4	13.9	13.8	13.8	13.5	13.1	13.0	12.4	12.4	11.5	9.9	8.1	7.6	B	8.6
6	78	7.7	68	53	45	S	60J	S	11.0	12.6	13.0	13.3	13.8	13.6	13.3	12.3	12.4	11.8	10.1	9.1	8.2	7.9	8.2	7.8
7	72	7.4	7.9	6.6	4.4	4.1	6.0	9.6	12.5	12.5	13.6	13.8J	14.5	14.2	14.2J	13.8J	13.0	12.7	11.9	8.7	8.1	7.8	7.7	8.0
8	7.4	7.4	6.2	5.6	5.6	5.7	6.8	10.6	12.1	12.7	13.7	13.9	13.6	13.6	13.5	13.4	12.8	12.3	11.0	8.7	8.5	7.7	7.2	6.8
9	6.4	6.1	6.0	5.7	5.6	6.0	7.2	11.0	12.5	14.1	14.8	13.8	13.6	12.6	12.8	12.5	12.1	11.6	11.0	10.6	10.2	9.1	8.4	7.9
10	7.4	6.7	6.3	6.7	5.8	5.7	6.7	10.6	14.1	B	B	14.4	14.1	14.1	13.8	13.0	12.5	12.0	11.0	S	S	9.6	9.5	9.0
11	8.5	8.4	7.7	6.7	5.6	5.2H	6.9	10.8	12.6	12.8	13.2	C	C	13.2	12.4	12.7	12.3	11.7	10.3	9.7	9.3	8.9	8.7	8.7
12	8.6	8.1	7.6	6.2	5.8	6.1	7.9	10.8	12.7	13.3	13.5	13.9J	14.2	14.1	13.6	13.3	12.5	12.0	11.3	10.1	S	9.8	9.2	8.8J
13	8.7	8.3	7.1	6.8	6.8	6.3	7.9	10.8	13.0	13.5	14.4	14.5	14.6	14.0	13.9	C	C	10.5	9.6	9.8	9.5	8.5	8.5	8.5
14	8.4	8.2	8.1	6.7	7.0	7.7	C	C	C	13.2	13.5	14.6	14.5	14.4	14.2	13.8	13.3	12.5	12.1	11.4	10.7	9.7	9.3	9.8
15	8.3	7.7	7.8	7.5	7.4	7.7	9.7	12.7	S	15.5J	16.4J	16.2J	14.9	B	15.1	14.5	13.8	12.6	12.2	10.5J	9.9	9.3	8.9	9.1
16	9.3	9.0J	7.5	7.1	7.4	7.6	S	13.3	14.4F	14.9J	15.0	15.0J	15.1	S	15.1	14.7	S	12.0	B	8.6	7.3	7.8	B	8.5
17	8.8J	8.5	8.1	A	B	4.7J	5.5	8.4	9.7	15.0	15.2J	14.7	15.1	S	15.1	14.7	13.4	12.3	10.6	8.8	8.5	8.7	8.3	8.5
18	8.1	7.6	7.1	6.2	5.9	6.5	7.9	9.6	13.1	13.7	14.1	14.6	14.7	15.1	13.9	12.7	11.8	11.4	9.0	6.3	7.0	6.9	7.0	6.9
19	6.9	6.9	6.5	5.1	5.0	5.0	7.2	10.3	11.9	12.6	13.2	14.8	14.8	14.8	14.6	14.0	13.8	13.6	12.0	10.7	9.0	8.7	8.5	8.4
20	8.4	8.2	7.6	7.2	6.4	6.5	8.0	10.8	12.4	13.5	13.7	14.7	14.7	14.7	14.4	14.1	13.6	12.8	11.8	10.9	B	S	8.7	S
21	S	8.7	9.0	6.2	6.1	5.8J	7.6	11.5	12.0	13.7	13.8	14.1	14.2	14.3J	13.5	13.2	13.0	12.3	11.7	10.5	9.5	9.0	8.9	8.8
22	8.8	9.1	8.7	6.6	5.7	6.3	8.0	11.4	12.2	12.7	B	B	14.7	S	14.0	13.4	13.7	13.6	12.2	9.7	8.5	11.3	9.9	10.0
23	11.1	12.5	7.4	7.1	6.5	6.9	8.3	12.4	13.6	13.9	B	D	B	S	14.2	13.6	13.8	12.7	11.4	8.8	7.4	7.0	7.4	7.1
24	6.5	7.0	7.0	6.9	6.2	6.2	8.3	11.9	13.9	15.5J	S	15.0	S	14.9	14.1	13.3	13.1	12.7	11.7	9.2	8.1	8.1	7.5	7.3
25	7.4	7.6	8.0	6.1	6.2	6.6	8.6	11.4	13.1	13.7	14.0	14.1	14.1	14.1	14.8	14.1	14.2	14.0	13.6	11.3	8.6	8.3	7.8	7.6
26	8.1	8.3	7.5	6.7	6.7	7.0	9.4	12.5	12.8	13.1	13.0	12.9	13.4	13.8	13.5	13.5	13.7	13.8	13.3	10.2	8.1	8.8	8.0	18.2
27	8.4	8.4	7.9	7.3	7.1	7.1	10.0	11.8J	12.8	12.5	14.4	14.8	14.7	14.9	S	14.5	13.7	13.5	12.9	10.6	9.1	8.3	8.0	8.6
28	8.0	8.0	8.5	8.3	7.5	6.9	8.9	10.3	11.8	12.9	13.8	14.5	14.2	13.9	12.7	12.8	12.7	12.5	12.0	9.6	9.3	9.5	9.4	9.0
29	8.0	8.1	7.7	7.1	7.3	7.4	10.0	12.5J	12.7	14.1	14.1	13.9	14.5	15.2	15.1	14.9	14.0	13.5	13.0	10.8	9.8	9.5	9.5	9.0
30	8.9	8.6	8.4	7.6	7.0	7.2	9.0	11.7	13.1	13.5	14.0	14.1	14.2	14.6	14.6	14.3	13.9	C	10.5	9.1	8.8	9.0	8.5	
31	8.4	8.3	8.3	7.1	6.9	7.5	10.3	12.3	12.7	13.5	14.2	14.2	14.2	14.1	14.1	13.8	13.5	13.1	12.8	10.9	9.5	9.2	8.7	8.8
Mean Value	8.1	8.1	7.5	6.7	6.4	6.3	7.9	10.8	12.6	13.5	14.0	14.5	14.5	14.4	14.1	13.7	13.2	12.5	11.7	9.9	8.5	8.7	8.4	8.5
Count	30	31	31	30	30	30	29	29	28	30	27	29	27	26	30	30	28	28	29	30	27	30	29	30

Sweep 6.0 Mc to 12.0 Mc in 1.5 min

Manual

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

Lat. 35° 42.4' N
Long. 139° 29.3' E

h_oF₂

Mar. 1949

Kobu-bunji, Tokyo

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	25
1	320	300	320	300	310	340	330	260	250	270	290	310	320	300	280	280	C	C	250	260	260	260	260	260	310
2	340	310	340	360	370	390	380	280	B	270	250	260	B	280	280	260	270	260	270	270	270	270	270	270	300
3	310	290	290	340	340	340	300	210	230	280	300	280	300	290	290	300	280	250	290	280	280	280	280	280	300
4	390	370	350	400	440	460	390	270	300	290	270	275	310	320	320	340	310	300	310	310	320	350	320	360	360
5	380	380	370	360	350	330	320	350	250	280	330	320	370	340	370	340	350	320	310	310	320	340	B	360	360
6	340	280	270	280	S	S	300	S	270	260	280	280	320	330	330	340	340	340	260	290	290	310	290	270	270
7	310	310	240	230	400	410	270	250	270	290	300	300	320	320	340	340	320	320	320	310	300	320	320	320	320
8	260	280	300	390	370	350	300	250	250	290	300	300	340	350	340	320	330	330	320	310	300	350	330	350	390
9	370	400	420	420	490	350	340	280	310	320	340	330	370	390	440	380	380	380	390	340	340	390	340	350	350
10	390	450	420	400	370	320	340	280	300	B	B	320	330	360	370	350	340	320	320	320	S	S	320	320	310
11	380	300	280	280	320	380	350	260	250	270	320	C	C	370	350	350	350	310	300	320	320	320	310	310	310
12	310	300	310	270	370	330	280	260	270	280	290	320	340	340	330	330	320	320	320	310	320	S	260	340	340
13	330	320	350	350	440	350	C	C	270	280	270	280	310	310	320	320	C	C	310	360	340	320	320	320	390
14	360	340	370	430	450	350	C	C	C	310	350	350	370	350	360	380	360	370	330	340	340	380	360	340	340
15	340	430	400	420	540	460	370	330	S	330	340	350	370	B	280	350	370	300	270	280	310	320	350	370	370
16	330	280	320	400	400	350	S	260	260	260	290	300	310	300	300	300	S	270	B	300	330	360	B	370	370
17	340	260	260	A	B	430	270	290	300	320	300	300	340	S	320	330	320	320	290	340	390	360	380	370	370
18	330	360	500	430	430	430	390	290	310	310	350	320	350	340	330	320	330	300	260	350	380	390	360	400	400
19	400	360	330	320	520	450	220	210	290	280	310	300	320	330	350	330	310	290	290	300	330	340	330	310	310
20	320	300	300	300	330	350	280	270	270	270	300	300	310	320	330	310	310	300	300	310	B	S	330	S	S
21	S	320	250	270	390	390	330	230	270	290	300	300	330	310	330	320	310	310	350	350	370	370	340	370	370
22	340	310	290	S	400	300	290	260	270	310	B	B	350	S	350	350	320	320	320	320	320	320	320	320	320
23	320	270	300	350	390	410	380	360	260	280	B	B	B	S	310	310	300	290	270	280	360	390	370	340	340
24	450	490	380	360	370	280	340	290	280	270	S	300	S	320	310	320	340	300	300	270	330	350	350	390	390
25	410	400	340	320	410	390	320	270	270	290	330	350	340	360	360	360	340	320	330	280	340	330	360	350	350
26	320	260	260	390	340	370	270	230	210	280	300	310	330	340	350	350	340	320	290	270	360	370	370	350	350
27	330	340	330	350	370	370	290	270	280	300	300	310	320	320	S	320	300	300	270	260	300	340	370	360	360
28	320	C	C	310	340	320	270	250	290	290	330	330	340	330	330	340	330	300	320	330	370	380	360	340	340
29	340	380	380	420	400	410	330	280	290	310	310	340	350	350	330	330	320	320	310	310	350	340	350	360	360
30	350	330	320	320	380	370	270	270	300	300	310	330	340	340	340	340	330	C	C	310	340	350	310	350	350
31	370	350	310	350	380	360	280	350	300	310	310	300	310	320	340	330	320	310	270	290	300	320	340	320	320
Summary	340	330	320	310	380	360	320	270	280	290	300	300	330	330	330	330	320	320	300	310	330	340	340	350	350
Count	30	30	30	29	29	30	30	29	28	30	27	28	27	26	26	30	28	27	29	30	27	29	29	29	30

Sweep 1.0 Mc to 1.2 Mc in 15 min Manual

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

IONOSPHERIC DATA

Mar. 1949

h'p₃₀₀₀F₂

Lat. 35° 42.4' N
 Long. 139° 29.3' E

Kobunryu, Tokyo

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	250	250	240	230	200	270	260	320	220	210	190	200	200	200	200	210	200	200	200	200	200	210	210	210	240
2	270	270	250	230	270	290	270	270	200	200	210	220	200	210	210	200	200	200	200	200	200	200	200	210	240
3	260	240	210	230	220	250	240	180	180	200	210	240	200	210	210	220	230	220	210	200	200	200	210	210	240
4	310	280	240	280	330	360	300	270	200	210	240	210	230	240	220	210	230	220	210	200	200	200	210	210	240
5	290	290	290	250	230	220	250	270	220	200	210	210	230	230	230	230	230	230	230	230	230	230	230	230	260
6	270	240	220	210	210	210	250	270	210	210	200	220	250	240	240	260	260	260	260	260	260	260	260	260	260
7	230	220	220	200	200	280	270	270	330	210	220	220	210	200	280	270	220	210	200	200	200	210	210	210	260
8	220	220	230	230	240	260	250	200	200	240	270	270	300	300	210	250	230	250	220	200	200	210	210	210	250
9	260	280	300	260	270	280	250	230	230	250	250	270	270	270	270	270	270	270	270	270	270	270	270	270	280
10	270	300	300	270	200	180	240	200	240	210	210	220	260	260	260	260	260	260	260	260	260	260	260	260	280
11	220	220	220	200	210	260	270	210	220	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	260
12	230	220	210	220	220	250	230	210	200	200	240	270	280	280	280	280	280	280	280	280	280	280	280	280	280
13	250	250	260	240	210	210	240	200	200	200	210	200	220	220	210	250	240	240	240	240	240	240	240	240	250
14	260	250	220	220	330	280	270	270	270	230	250	250	270	270	270	270	270	270	270	270	270	270	270	270	280
15	250	260	290	260	320	240	250	230	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	230
16	250	270	220	220	300	270	240	210	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	210
17	280	270	230	280	400	400	240	220	240	270	280	280	270	270	270	270	270	270	270	270	270	270	270	270	280
18	250	260	270	280	320	310	270	230	230	270	280	280	280	280	280	280	280	280	280	280	280	280	280	280	290
19	300	280	280	220	230	340	250	200	210	210	210	220	220	220	220	220	220	220	220	220	220	220	220	220	230
20	280	280	220	220	220	240	220	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	210
21	270	280	210	180	220	320	250	200	200	250	210	260	220	240	210	210	210	210	210	210	210	210	210	210	220
22	270	280	220	190	280	200	210	200	210	240	220	220	240	210	210	210	210	210	210	210	210	210	210	210	220
23	260	220	200	200	270	330	250	220	200	210	210	220	220	220	220	220	220	220	220	220	220	220	220	220	230
24	320	320	270	230	270	280	260	220	200	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
25	320	310	270	210	280	290	250	220	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
26	240	210	200	200	240	270	210	200	200	230	220	240	210	210	210	210	210	210	210	210	210	210	210	210	220
27	260	250	250	250	270	280	230	210	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
28	250	240	230	220	200	240	220	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	210
29	250	280	280	310	300	310	240	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
30	270	250	230	220	250	300	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
31	280	260	230	210	260	280	230	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
Mean Value	250	250	230	230	240	250	210	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	220
Count	31	31	31	30	30	31	30	30	30	31	30	30	30	30	31	30	29	28	30	31	31	31	30	30	30

Sheet 49. MC to 70 MC in 65 min

Kenzai

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

IONOSPHERIC DATA

Station: Kobukuro, Tokyo
 Lat. 35° 42.4' N
 Long. 139° 29.3' E

f^oF_1

Mar. 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	Q	Q	Q	Q
2							Q	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
4							Q	Q	Q	Q	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	Q	Q	Q	Q
6							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
8							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
10							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
12							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
14							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
16							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
18							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
20							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
22							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
24							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
26							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
28							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
30							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
Median Value							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Scale: Mc to 2.0 Mc in 1/2 min Mc. Uo1

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

IONOSPHERIC DATA

Mar. 1949

R.F.

Kanabusa, 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	
1									Q	Q	Q	Q	Q	Q	Q	Q	C	C	Q						
2								Q	Q	Q	Q	Q	Q	Q	Q	Q	C	C	Q						
3								Q	Q	Q	Q	Q	Q	Q	Q	Q	C	C	Q						
4								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						
6								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						
8								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						
10								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						
12								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						
14								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						
16								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						
18								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						
20								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						
22								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						
24								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						
26								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						
28								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						
30								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						
Mean Value									220	210	210	200	210	210	210	210	210	210	210	210	210	210	210	210	210
Count								3	1	8	11	13	18	16	18	16	14	11	7	1	7	2			

Sweep 4.5 Mc to 7.5 Mc in 1.5 min. Manual

IONOSPHERIC DATA

Kobunmiji, Tokyo
Lat 35° 42.4' N
Long 139° 29.3' E

f_oF₂

Mar. 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	14	15	16
1						(13) 2.2	(29)	A	B	B	B	B (37)	B	B	C	C	(14)					
2						(13) 2.4	2.9	(34) AF	F	F	F	B	S	B	A	A	2.2	1.8				
3						(13) 2.4	2.6	B	B	B	B	B	B	B	B	3.0	2.4	1.7				
4						B 2.5	(30)	A	A	A	A	(41)	A	A	A	A	2.4	C				
5						(15) 2.2	3.0	3.5	B	B	B	B	B	B	3.5	3.1	2.3	1.9				
6						E 2.7	B	A	B	B	B	B	B	B	B	S	2.7	1.6				
7						(17) 2.8	3.2	B	(34) 3.4	3.4	B	B	B	B	3.4	3.6	2.1	C				
8						B	A	3.0	C	B	B	B	B	B	B	(34) A	(26) 1.9	A				
9						1.3 2.3	(33)	B	C	(35)	B	B	3.6	3.4	A	3.1	2.6	1.8				
10						B 2.4	3.1	(38)	3.6	S	B	C	C	3.5	B	3.0	(34) 1.8					
11						(24)	A	(38)	(39)	C	C	C	C	3.5	C	(32) 1.8	(33) 1.8					
12						1.5 2.6	(33)	A	B	C	C	B	B	B	A	(33)	(26) A					
13						1.6 2.6	(32)	(35)	(38)	3.9	4.1	(40) 3.9	C	C	C	C	C	1.5				
14						C	C	3.4	S	B	B	3.6	A	3.8	A	A	A	A				
15						1.8 (25)	(34)	(36)	A	A	A	3.7	B	B	A	A	A	A				
16						2.0 (29)	(33)	A	B	C	C	A	A	A	A	A	A	(27) 1.8				
17						1.9 2.7	2.9	3.2	A	A	A	A	A	A	A	3.6	3.2	2.6	1.9			
18						B	B	A	3.4	B	4.0	B	4.0	B	3.2	3.2	2.6	2.1				
19						(23) 2.3	(33)	B	3.5	(39)	A	A	3.8	3.5	3.2	3.4	2.6	1.8				
20						1.9 (22)	3.2	3.6	3.8	4.0	4.0	4.0	4.0	B	(38) A	(32) 2.2	1.8					
21						B 2.6	(34)	3.4	A	4.0	4.0	B	A	A	A	A	2.8	2.0				
22						1.9 2.8	3.4	3.7	B	B	B	3.9	3.9	A	A	A	A	A				
23						2.1 2.8	(30) 3.3	A	A	(38)	A	A	A	A	A	A	A	A				
24						(20) 2.8	3.1	3.5	3.8	A	A	A	A	A	A	A	A	A				
25						1.8 2.8	3.2	3.8	3.7	(38) S	S	S	S	S	S	A	B	1.7				
26						(19) 2.7	3.2	3.5	3.9	B	A	A	A	A	2.9	3.6	(32) 2.0					
27						2.1 2.5	3.4	3.8	3.9	B	(40)	A	A	3.8	(32) 2.3	2.3	2.2					
28						(22) 2.4	(34) A	B	3.5	3.6	B	3.6	(34) 3.0	2.8	2.6	(24) 1.8						
29						1.7 2.2	3.1	3.4	S	B	B	B	3.6	B	3.5	2.6	1.8					
30						(16) 2.2	(30) 3.5	3.8	(40)	(39)	(37)	(35) 3.3	C	C	C	C	C					
31						2.2 2.6	3.4	C	B	B	B	(39) 3.2	B	B	3.2	2.2	2.2	A				
Mean						1.8 2.6	3.2	3.5	3.8	3.9	4.0	3.9	3.6	3.5	3.2	2.6	1.8					
W a u						2.5 2.7	2.5	2.0	1.3	9	8	12	10	14	15	24	21					
Count																						

Sweep 4.0 Mc to 2.0 Mc in 1.5 min Manual

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

IONOSPHERIC DATA

Mar 1949

h'pE

Kobunji, Tokyo
Lot 35-4041
Lots 13929, 3E

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							B (120)	A	A	A	(100)	(100)	(100)	(100)	(100)	(100)	C	C	A						
2							B 110	100	100	100	100	100	100	100	B	100	A	A	A	B					
3							B 120	100	100	100	A	100	A	A	A	A	100	A	A	A					
4							B 100	A	A	A	A	A	A	A	A	A	A	A	B	C					
5							B 110	100	100	100	100	100	100	100	100	100	100	100	100	A					
6							E (120)	B	A	B	B	B	B	B	B	B	B	100	100	B					
7							(100)	100	100	100	100	100	100	100	100	100	100	S	100	C					
8							B A	100	100	100	100	100	100	100	100	100	A	100	B						
9							B 100	110	110	110	110	110	110	110	110	110	A	110	110	A					
10							B 100	100	100	100	100	100	100	100	100	100	B	100	110	(100)					
11							B 110	A	110	110	C	C	C	C	C	C	100	100	110	100	B				
12							B 100	100	100	100	100	100	100	100	100	A	100	100	100	A					
13							B 110	100	100	90	90	90	90	90	90	C	C	C	C	B					
14							C C	100	100	100	100	100	100	100	100	A	100	A	A	B					
15							(90)	100	100	110	A	A	100	100	100	A	A	A	A	A					
16							130	100	100	A	100	C	A	A	A	A	A	100	A	A					
17							B 110	110	110	A	A	A	A	A	A	A	100	100	A	A					
18							B B	110	110	110	110	110	100	100	100	100	100	100	110	110					
19							120	110	100	100	100	B	S	100	100	100	100	100	110	110					
20							B A	100	90	100	100	100	100	100	90	100	100	100	100	100					
21							B 80	100	100	A	100	100	100	100	100	A	100	100	100	100					
22							B 100	100	100	100	100	100	100	100	100	A	A	100	A						
23							A 100	100	100	A	A	A	A	A	A	A	A	A	A	A					
24							A 100	100	100	100	A	A	A	A	A	A	A	A	A	A					
25							110	100	100	100	110	110	100	100	100	100	100	100	100	S					
26							B 90	100	100	100	100	100	100	100	100	100	100	100	100	100					
27							100	110	110	100	120	110	110	110	110	110	110	100	100	100					
28							100	A	100	100	100	100	100	100	100	100	100	100	100	100					
29							140	100	110	100	100	100	100	100	100	100	100	100	100	100					
30							B A	100	100	100	100	100	100	100	100	100	100	100	100	100					
31							120	100	100	100	100	110	110	100	100	100	100	100	100	C					
Median F _{min} C _{min}	110	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
9	25	24	27	24	22	22	21	23	19	19	20	19	20	19	20	19	19	20	19	20	19	20	19	20	19

SWEEP 1.0 MC TO 12.0 MC IN 1.5 MIN

Manual

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

IONOSPHERIC DATA

Lat. 35° 40.5' N
Long. 139° 29.3' E

Kobunryuji, Tokyo

fEs

Mar. 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	E	E	1.8	2.0	2.4	2.0	3.0	3.0	4.0	B	B	B	B	B	B	C	C	2.2	E	E	2.2	2.6	2.4	
2	2.5	E	1.8	E	E	E	E	3.5	3.5	4.5	B	4.2	4.2	5.0	4.3	4.2	3.2	2.8	2.2	2.4	2.6	2.8	2.8	2.8	
3	3.0	3.0	E	E	E	E	B	3.6	3.8	4.5	4.5	5.4	4.1	4.4	4.6	3.6	3.0	3.0	3.0	3.0	C	E	2.4	E	
4	2.7	2.6	3.0	2.4	(3.2)	2.6	B	3.6	3.5	3.5	B	B	B	B	B	3.5	3.6	3.6	2.3	2.3	E	2.0	2.0	3.2	
5	2.4	E	E	1.4	E	E	B	3.4	B	3.4	B	B	B	B	B	B	3.5	3.6	3.6	E	2.2	2.5	E	E	
6	E	1.9	E	E	3.8	E	E	3.4	B	3.4	B	B	B	B	B	3.6	3.6	3.6	3.6	E	E	2.6	3.0	2.9	
7	E	2.4	E	2.2	2.2	(2.8)	3.4	3.4	3.4	3.4	B	B	B	B	B	3.6	3.6	3.6	3.6	E	E	E	E	E	
8	2.8	3.0	2.2	2.8	2.8	2.2	2.6	2.0	3.4	3.4	B	B	B	3.4	3.4	3.4	3.4	3.4	3.4	3.4	1.8	E	E	E	
9	E	E	2.8	3.1	3.6	3.7	3.6	3.6	3.6	3.6	B	B	B	3.4	3.4	3.4	3.6	3.6	3.6	3.6	E	E	E	E	
10	E	E	E	2.6	2.3	3.4	B	3.6	3.6	3.6	B	B	B	B	B	3.4	3.6	3.6	3.6	3.6	E	E	2.4	E	
11	E	(3.0)	E	E	E	2.0	3.4	3.4	3.6	3.6	3.6	C	C	C	C	4.3	3.6	3.6	3.6	3.6	E	E	2.2	E	
12	E	E	2.8	(2.0)	B	2.3	3.4	3.4	3.6	3.6	B	C	(4.4)	4.2	4.6	(4.2)	4.2	3.6	3.6	3.6	2.8	B	B	B	
13	2.2	2.4	2.4	E	E	E	C	3.4	3.4	3.4	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	E	4.2	E	E	
14	2.4	E	2.4	E	2.0	E	C	3.4	3.4	3.4	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.0	2.8	B	3.5	
15	2.4	3.8	(2.2)	E	E	E	3.4	3.4	3.4	3.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	2.8	3.8	(2.8)	3.6	
16	4.2	3.6	3.8	4.7	2.5	2.8	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	2.8	2.8	4.0	3.6	
17	5.0	4.2	3.0	(1.0)	(2.5)	5.6	B	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	E	E	E	E	
18	2.3	B	3.2	(3.3)	3.2	B	B	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	E	E	E	E	
19	2.9	3.5	E	E	E	E	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	E	E	E	E	
20	E	E	E	E	E	E	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	E	E	E	E	
21	1.7	E	E	1.7	1.7	E	B	3.8	3.6	3.9	4.8	B	B	B	4.8	4.8	4.0	2.9	4.0	2.4	B	1.9	2.3	2.5	
22	2.2	2.2	B	E	E	B	B	3.4	3.8	3.8	B	B	B	B	3.9	3.9	3.8	3.8	3.0	3.0	2.2	2.2	2.4	2.8	
23	2.2	2.4	1.7	3.2	3.0	2.2	2.7	3.4	3.6	6.4	5.8	5.8	6.8	9.2	4.4	4.0	3.7	3.8	3.5	3.6	3.9	2.8	4.5	B	
24	2.9	3.0	4.0	3.4	2.4	3.4	2.2	3.2	3.7	5.4	7.2	6.8	6.8	7.4	8.2	7.2	5.6	3.2	3.9	4.8	3.9	2.2	2.2	2.2	
25	2.0	2.2	E	2.5	3.0	2.4	3.2	3.2	3.7	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	2.4	2.3	E	E	
26	E	2.2	E	2.2	E	E	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	2.5	E	E	E	
27	E	2.5	2.9	E	2.0	2.6	3.4	4.0	3.8	5.0	4.0	B	3.4	3.9	4.2	(4.0)	3.5	3.4	2.7	2.6	2.2	2.1	E	2.1	
28	2.1	C	C	E	E	1.7	3.4	(3.0)	3.8	3.8	3.4	3.4	B	B	3.4	3.4	3.4	3.4	3.4	3.4	3.0	2.2	E	E	
29	E	E	1.9	2.4	E	E	3.4	3.4	4.9	(3.8)	3.4	B	B	B	3.4	3.4	3.4	3.4	3.4	3.4	E	E	E	2.1	
30	E	E	(3.2)	3.2	3.0	2.2	3.0	3.9	4.0	3.7	4.0	3.4	B	B	B	3.4	3.4	3.4	3.4	3.4	2.9	2.8	E	E	
31	E	1.6	(2.0)	1.6	1.6	3.4	3.4	3.4	3.4	3.4	B	B	B	4.0	B	5.4	3.8	3.2	3.4	(3.4)	2.4	2.2	2.0	2.4	
Median Value	2.1	2.2	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Count	31	29	29	31	30	29	31	28	25	24	15	17	14	17	16	23	25	28	26	31	27	30	29	29	

SWEEP 4.0 Mc TO 7.0 Mc IN 1.5 min

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

IONOSPHERIC DATA

Mar. 1949

F₂ 13000

Kokubunmu, Tokyo

LOT 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
1	3.0	3.0	3.0	3.1	2.8	2.6	J	3.3	3.4	3.5	3.3	3.3	3.1	3.1	3.1	3.1	C	C	3.4	3.4	3.4	3.4	3.4	3.1
2	2.9	3.0	2.8	2.7	2.7	2.7	3.1	3.4	B	3.4	3.5	3.4	B	3.3	3.3	3.4	3.2	3.3	3.3	3.3	3.3	3.2	3.0	3.1
3	3.0	3.2	3.2	2.9	2.9	2.8	3.2	(3.0) ⁰	3.5	3.3	3.2	3.4	3.2	3.2	3.2	3.1	3.2	3.3	3.3	3.2	3.2	2.9	2.8	2.7
4	2.7	2.7	2.8	2.6	2.5	(2.7) ⁰	3.2	3.1	3.2	3.4	3.3	3.3	3.1	2.9	3.0	3.0	3.1	3.1	(3.0) ⁰	3.1	2.8	2.8	2.9	2.8
5	2.7	2.7	2.8	2.7	2.9	2.9	3.0	3.4	3.5	3.5	3.0	3.0	2.9	2.8	2.8	2.8	2.9	2.9	3.0	2.9	2.9	2.9	3.0	2.8
6	3.1	3.2	3.3	3.2	2.8	S	J	3.5	3.3	3.3	3.1	3.1	3.0	2.8	2.9	2.9	2.8	2.8	3.3	3.1	3.1	3.1	3.2	3.2
7	3.1	3.1	3.2	3.2	2.6	2.4	3.3	3.6	2.8	3.2	3.1	3.2	3.0	3.0	J	2.9	2.9	2.9	2.9	(3.0) ⁰	3.2	3.0	3.0	3.0
8	3.3	3.2	3.1	2.6	2.7	2.8	3.1	3.4	3.4	(3.3) ⁰	3.2	3.0	2.9	2.8	2.8	2.9	2.9	2.8	2.9	3.1	3.1	2.8	2.7	2.8
9	2.7	2.6	2.5	2.5	2.6	2.8	2.9	3.1	3.0	2.9	(2.9) ⁰	2.9	2.7	2.6	2.6	2.6	2.7	2.8	2.9	2.9	J	2.8	2.9	2.8
10	2.6	2.4	2.5	2.6	2.9	2.9	2.8	3.1	3.1	B	3.0	3.0	2.9	2.8	2.7	2.8	2.8	2.9	2.9	(2.9) ⁰	2.8	2.9	3.0	3.1
11	3.2	3.1	3.2	3.2	2.9	(2.5)	2.7	3.3	3.1	3.2	3.0	3.0	2.9	2.8	2.7	2.8	2.8	2.9	3.0	2.9	S	2.9	3.0	3.1
12	3.0	3.0	3.0	2.9	(2.8)	2.9	3.1	3.3	3.3	3.2	3.1	(3.0) ⁰	2.9	2.8	2.9	2.9	(3.0)	2.9	3.0	2.9	2.9	3.0	2.9	2.9
13	2.9	3.0	2.9	2.9	2.9	2.9	3.1	3.2	3.3	3.1	3.3	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.8	2.6	3.0	3.0	2.7
14	2.9	2.8	2.9	2.5	2.5	2.8	3.0	3.1	3.0	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.8	2.9	2.8	2.9	2.6	2.8	2.9
15	2.9	2.6	2.6	2.5	2.5	2.4	2.7	2.9	3.0	2.9	3.1	2.9	2.8	B	2.8	2.8	2.6	3.0	3.2	J	3.0	2.9	2.8	2.8
16	3.0	3.0	3.0	2.6	2.7	2.8	S	3.4	3.1	(3.3) ⁰	3.2	(3.1) ⁰	3.0	3.1	3.0	3.1	3.0	3.2	B	3.0	3.0	2.9	B	2.9
17	2.9	2.9	2.4	A	B	J	3.3	3.2	2.9	3.0	3.0	3.0	2.9	S	2.9	2.9	2.9	3.0	3.1	2.9	2.7	2.8	2.8	2.8
18	3.0	2.8	2.6	2.6	(2.5) ⁰	2.5	2.7	3.1	2.9	3.0	2.8	3.0	2.8	2.9	2.9	2.9	2.9	3.0	3.0	3.5	2.9	2.7	2.7	2.9
19	2.7	2.8	2.8	3.0	2.6	2.6	3.0	3.4	3.3	3.1	3.1	3.1	3.0	2.9	2.9	3.0	3.1	3.1	3.1	3.0	2.9	2.6	2.9	2.6
20	3.0	3.1	3.1	3.1	2.9	2.8	2.2	2.2	2.4	3.3	3.0	3.1	3.0	3.0	2.9	3.0	3.0	3.1	3.1	3.0	B	S	S	S
21	2.5	(3.0) ⁰	(3.5) ⁰	3.3	2.8	J	3.4	3.4	3.3	3.2	3.1	3.1	2.9	3.0	2.9	3.0	3.0	3.0	2.9	2.8	2.8	2.8	2.9	2.8
22	2.9	3.1	3.2	3.0	2.6	3.0	3.1	3.3	3.2	3.0	B	B	2.8	S	3.0	2.8	2.9	2.9	2.9	2.9	2.8	2.8	2.9	2.8
23	3.0	3.3	3.1	2.8	2.6	2.5	2.7	3.3	3.3	3.2	B	B	2.8	S	3.0	2.9	3.0	3.2	3.2	3.1	2.7	2.6	2.8	2.9
24	2.5	2.7	2.8	2.8	2.8	2.7	2.9	3.1	3.1	3.2	S	3.1	2.9	2.9	2.9	2.9	3.0	3.0	3.1	3.2	2.9	2.8	2.8	2.9
25	2.6	2.6	2.9	2.6	2.5	2.7	2.9	3.2	3.2	3.2	2.9	2.9	2.9	2.8	2.8	2.8	2.9	2.9	3.2	3.2	2.9	2.8	2.8	2.6
26	3.1	3.5	3.4	2.9	2.9	2.9	3.2	3.6	3.5	3.2	3.0	3.0	2.9	2.9	2.9	2.8	2.9	2.9	3.2	3.2	2.8	2.8	2.7	(2.8) ⁰
27	2.9	2.8	3.1	2.8	2.8	J	3.0	3.3	3.2	3.3	3.0	3.0	2.8	2.9	S	3.0	3.1	3.2	3.3	3.2	3.1	2.8	2.8	2.8
28	3.0	3.0	3.0	3.0	2.9	3.0	3.3	3.3	3.1	3.1	2.9	2.9	2.8	2.9	2.9	2.9	3.0	3.1	3.1	2.9	2.7	2.7	2.8	2.9
29	3.0	2.7	2.7	2.5	2.7	2.7	J	J	3.1	3.0	2.9	2.8	2.8	2.8	2.8	2.8	2.9	2.9	3.0	2.9	2.8	2.9	2.8	2.8
30	2.8	2.9	3.0	3.0	2.7	2.8	3.2	3.3	3.1	3.1	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.9	2.8
31	2.8	2.9	3.0	2.8	2.7	2.9	3.1	3.3	3.1	3.1	3.0	3.0	2.9	2.9	2.9	2.9	2.9	3.1	3.2	3.1	3.0	2.8	2.9	2.8
Mean	2.9	2.9	3.0	2.8	2.8	2.8	3.0	3.3	3.2	3.2	3.0	3.0	2.9	2.9	2.9	2.9	2.9	3.0	3.1	3.0	2.9	2.9	2.9	2.8
Count	3.0	3.0	3.0	3.0	3.0	2.7	2.8	3.0	2.8	3.0	2.7	2.8	2.6	2.6	2.6	2.9	2.8	2.7	2.9	2.9	2.6	3.0	2.8	3.0

Sweep 6.0 Mc to 2.0 Mc in 15 min

Manuel

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

IONOSPHERIC DATA

Mar 1949
Fmin
Kobunmye Tokyo Lat. 35° 42.4' N Long 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	14	14	13	14	16	15	14	22	A	A	40	40	40	46	42	40	C	C	16	18	14	14	14	17	
2	A	11	E	E	E	14	14	24	29	35	47	42	40	42	41	35	24	24	18	18	16	14	14	16	
3	15	16	14	14	14	14	14	24	30	35	41	44	42	43	41	41	30	24	17	15	16	14	A	A	
4	A	14	16	16	17	13	16	25	30	35	41	41	40	41	A	A	34	24	18	18	18	18	16	16	
5	14	14	14	13	14	13	15	22	30	35	41	41	42	42	40	38	32	24	19	14	14	14	14	A	
6	14	14	12	14	14	14	16	27	42	38	40	44	42	42	42	42	34	27	16	14	16	14	14	14	
7	14	13	12	11	A	12	14	28	34	41	42	42	42	41	41	38	32	25	18	16	16	A	A	A	
8	A	A	14	14	18	14	18	A	32	37	42	42	42	42	42	38	A	27	20	14	18	20	16	13	
9	12	12	12	12	12	12	15	26	33	38	40	42	42	41	42	A	38	25	18	15	14	14	12	12	
10	13	12	12	12	12	12	17	30	33	39	45	45	52	52	54	39	36	24	18	18	18	18	18	16	
11	12	16	12	12	12	12	17	28	A	38	41	C	C	C	42	36	33	25	18	12	12	14	13	13	
12	13	13	12	14	12	12	16	28	33	40	42	43	47	42	40	38	A	30	20	20	16	16	16	14	
13	13	14	14	14	14	14	17	26	33	37	42	43	41	41	41	C	C	15	13	14	14	A	14	14	
14	13	13	13	12	12	12	12	C	C	39	46	44	42	40	40	A	A	28	A	A	15	14	13	13	
15	13	14	12	12	12	11	19	27	34	40	40	38	42	35	42	38	35	A	20	A	12	13	16	A	
16	A	A	A	A	18	18	19	29	34	A	A	C	A	A	A	A	44	27	18	18	18	A	A	A	
17	A	A	A	A	B	20	19	27	40	39	40	40	43	43	40	38	34	26	19	14	14	14	14	14	
18	13	13	12	15	16	20	20	20	A	40	41	42	46	42	44	39	34	26	20	17	16	16	16	15	
19	14	12	12	12	11	12	13	33	34	39	42	A	A	44	40	38	34	27	18	16	15	15	15	14	
20	15	16	16	16	16	16	19	24	34	38	40	42	44	43	42	43	34	28	19	A	16	16	16	16	
21	15	16	13	15	14	18	17	30	36	42	A	46	48	A	A	A	34	29	20	16	15	16	17	16	
22	13	14	14	12	13	19	19	29	34	40	43	43	46	41	A	A	A	29	20	14	16	15	15	18	
23	20	14	16	A	A	13	14	28	36	34	A	A	A	A	A	A	A	A	A	A	A	A	A	15	
24	18	A	A	A	14	18	20	29	37	40	40	A	A	A	A	A	A	28	A	A	22	17	15	14	
25	13	13	13	13	14	18	20	28	33	38	42	48	42	42	42	43	46	34	19	18	16	14	17	13	
26	13	14	13	13	14	13	22	30	34	38	40	42	42	45	40	38	34	22	28	20	A	14	14	13	
27	12	12	11	13	13	16	21	29	39	39	40	41	42	40	35	40	33	30	22	20	15	16	16	16	
28	14	C	C	12	12	14	23	37	34	42	42	36	40	40	38	38	30	28	25	22	26	18	16	15	
29	13	13	13	13	13	13	23	28	33	38	43	40	44	42	40	38	38	27	20	15	E	14	13	13	
30	13	13	11	11	12	12	20	36	32	38	40	41	43	44	38	38	34	C	C	15	18	17	16	16	
31	16	16	13	12	13	12	22	28	36	39	42	42	42	40	40	38	34	26	AF	16	16	16	16	15	
Mean Value	13	14	13	13	14	14	18	28	34	38	40	42	42	42	42	40	38	34	27	19	15	16	15	16	15
Count	26	36	27	27	28	31	30	29	28	29	28	26	26	25	25	22	23	23	26	26	26	29	26	27	26

Sweep 1.0 Mc to 12 Mc in 15 min

Manual

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

IONOSPHERIC DATA

Mar. 1949

f_{min}

Kabunji, Tokyo

Lat. 35° 52.5' 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
1	E	E	E	14	16	15	18	18	18	16	17	18	20	20	20	18	C	C	13	E	E	14	14	16
2	11	E	14	14	E	E	17	16	16	18	17	18	18	B	18	16	18	14	16	14	(1.6)	20	18	16
3	16	16	E	E	E	E	B	18	16	17	18	18	18	22	19	2.6	18	18	14	16	14	14	16	16
4	14	14	16	20	17	16	B	16	14	15	16	18	18	19	20	18	18	20	19	18	C	E	20	E
5	18	E	E	13	E	E	20	14	16	17	20	18	20	20	18	21	20	14	14	19	E	15	16	15
6	E	15	E	E	14	E	E	18	B	18	22	24	22	B	B	B	20	18	14	E	18	18	E	E
7	E	17	E	12	E	11	11	11	16	18	17	17	21	27	23	17	5	17	C	E	E	16	18	16
8	16	16	14	14	18	18	18	14	20	19	18	18	18	20	19	18	17	18	16	E	E	E	E	E
9	E	E	17	12	14	18	B	14	18	20	19	18	17	22	19	17	17	12	14	16	16	E	E	E
10	E	E	E	24	21	12	18	16	16	17	17	22	19	B	22	17	17	15	16	18	E	E	18	E
11	E	17	E	E	E	12	B	18	12	17	18	C	C	C	20	18	18	18	B	E	E	17	E	
12	E	E	18	(19)	B	(14)	13	17	14	18	20	18	18	18	20	18	18	18	13	16	18	18	B	B
13	20	20	(14)	E	E	E	E	C	C	17	22	24	21	19	18	C	C	C	12	16	E	18	E	E
14	E	14	E	E	E	E	E	C	C	17	22	24	21	19	18	18	14	12	12	13	17	14	B	13
15	18	14	12	E	E	E	E	12	12	14	13	18	18	18	17	17	14	13	18	13	B	13	18	13
16	13	12	13	13	18	18	14	13	(13)	17	17	17	19	18	18	18	18	17	13	18	16	18	16	16
17	13	14	E	13	20	20	B	16	18	17	17	17	21	19	18	17	13	12	12	(14)	B	14	21	14
18	13	B	E	13	12	B	B	16	12	15	17	17	18	17	18	17	18	15	17	E	E	E	E	E
19	22	20	E	E	E	22	13	16	17	17	17	38	37	26	21	22	27	17	17	E	E	E	E	E
20	E	E	E	E	E	E	E	16	16	17	17	17	18	20	17	16	16	14	13	14	E	16	E	E
21	15	E	E	16	15	E	16	16	11	14	16	16	18	18	17	16	16	14	15	15	B	18	16	17
22	13	19	B	E	E	B	17	17	16	17	22	21	26	27	29	26	26	14	15	15	19	16	20	20
23	20	14	16	13	12	13	15	14	14	17	17	17	22	18	18	18	17	15	13	14	14	14	14	B
24	18	12	13	12	13	13	14	15	17	17	18	18	22	20	20	18	16	13	13	13	13	13	20	18
25	12	13	E	13	13	12	13	13	17	17	18	18	20	20	19	18	B	18	17	18	17	14	E	E
26	E	18	E	13	E	15	16	16	17	17	16	19	20	30	25	18	17	17	13	13	13	E	E	E
27	E	22	15	E	18	12	13	15	15	16	26	24	33	21	18	18	16	13	14	14	18	16	E	19
28	14	C	C	E	E	14	13	14	14	17	18	18	18	18	17	17	13	14	21	E	18	18	E	E
29	E	E	16	20	E	E	14	15	14	18	18	18	18	18	21	20	20	20	13	13	E	E	E	18
30	E	E	14	18	12	15	13	14	17	17	17	17	17	17	17	18	18	C	C	15	16	17	E	E
31	E	11	E	E	E	E	16	16	16	18	19	18	19	18	19	19	18	18	15	16	16	16	16	18
Median Value	12	13	E	13	12	12	13	16	16	17	18	18	19	20	19	18	18	18	15	14	14	14	14	13
Count	31	29	29	31	30	29	24	29	29	31	31	30	30	26	30	29	27	28	28	31	27	31	29	29

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

IONOSPHERIC DATA

Mar 1949

FF2

Yamagaura

LAT. 31° 12' N
LONG. 130° 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	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
2	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
3	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
4	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
5	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70
6	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63
7	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69
8	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
9	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
10	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
11	113	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90
12	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77
13	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
14	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
15	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69
16	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82
17	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73
18	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83
19	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
20	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71
21	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73
22	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68
23	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105
24	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
25	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71
26	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
27	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
28	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71
29	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78
30	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
31	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
Median Value	92	87	84	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31

Sweep 1.3 Mc to 2.8 Mc in 1.5 min. Manual

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

IONOSPHERIC DATA

Mar 1949

8.5

Yamaguchi

Lat 31° 25' N
Long 130° 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	250	250	250	250	250	300	300	270	230	C	C	C	C	C	C	C	C	C	C	240 ^A	240	220	220	240
2	310 ^A	290 ^A	260 ^A	260 ^A	(260)	320 ^A	320	240	250	240	240 ^A	240 ^A	220 ^A	300	300	300	300	270	250	220	220	220	230	270
3	280	280	290	280	240	310 ^A	340	290	230	240	220	300	300	300	300	300	220	240	280	210 ^A	260	230	290	
4	320	300	250 ^A	300	320	300	400	280	230	230	290	290	290	260	290	300	300	270	280	240	250 ^A	220 ^A	230	240
5	290	270	260	240	220	210	(230)	250	230	230	250	270	240	240	290	290	290	290	260	210 ^A	220	230 ^A	230	240
6	240	240	240	230	230	320	310	210	210	240	210 ^A	230 ^A	300	270	270	300	240	260	230	240	240 ^A	270	270	240
7	270	290	240	220	200	370	370	270	220	240	290	300	300	310	310	300	300	300	240 ^A	230 ^A	(240)	(240)	(240)	
8	270	280	290	290	290	310	300	250	240	230	230	290	(290)	330	330	280	260	260	210 ^A	210	240	240	240	
9	240	300	310	290	270	280	250	270	230	300	280	290	300	320	300	300	290	300	270	240	220	220	220	240
10	240	310	250	310	280	290	320	250	280	240	240	240	250	(300)	340	310	240	240	260	(270 ^A)	270	260	270	
11	260	250	260	230	210	330	390	270	240	270	300	280	270	300	340	300	300	300	250	250	270	240	270	
12	260	280	260	230	250	300	300	250	220	240	240	270	300	310	290	320	220	240	240 ^A	250 ^A	290	(300)	290	
13	250	250	260	250	210	250	260	240	220	240	240	270	280	320	340	(300)	330	250	300	300	280	280	290	290
14	310	280	260	250	380	310	280	300	280	290	290	300	300	250	270 ^A	310	250	280	230	250	240	260	290	240
15	280	320	290	250	290	280	280	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	300
16	300	240	240	250	250	280	280	230	250	240	290	290	300	340	340	280	290	280	260	220 ^A	280	320	280	290
17	300	310	250	300	300	400	320	280	270	260	250	300	300	300	300	290	300	290	240	270	270	280	280	
18	280	280	300	270	280	300	320	250	240	270	280	300	290	300	300	300	300 ^A	330	270	220	250	(260)	270	300
19	300	310	270	210	240	370	330	230	230	280	300	300	290	300	290	300	290	280	230	230	230	240	270	240
20	260	250	250	270	250	290	300	240	220	230	230	260	290	300	250	300	(300)	250	240	240	230	290	300	290
21	290	250	220	210	220	300	370	230	230	230	240 ^A	300	310	300	310	320	250	280	210 ^A	250	250	S	290	300
22	290	290	240	220	230	380	380	230	230	230	230	230	220	280	300	290	290	300	250	260	320	280	240	260
23	300	250	200	210	300	400	390	250	220	300	300	300	220 ^A	300	300	350	300	230	250	210	240	230	290	A
24	A	280	280	(260)	230	250	(220)	250	300	240	250	220 ^A	320	300	280	A	320	250 ^A	230 ^A	240 ^A	220 ^A	240	230	A
25	A	240	240	220	240	250	250	300	300	240	300	250	300	300	300	270	300	250	250 ^A	230	210	260	280	300
26	300	280	260	230	290	300	290	230	240	200 ^A	300	300	300	280	330	350	300	240	260	240	230	310 ^A	220 ^A	300
27	280	280	300	240	A	230 ^A	300	230	C	C	C	C	C	C	C	C	C	C	C	C	270	300	290	300
28	300	270	250	250	240	230	300	260	260	260	300	300	300	300	330	300	300	290	240	(260)	270	250	250	
29	260	250	270	280	270	260	270	230	230	250	300	220	220	270	320	330	300	290	240	240	240	240	240	300
30	300	250	250	210	210	300	300	240	210	270	290	290	290	320	320	320	290	210	240	220	230	230 ^A	240 ^A	240 ^A
31	290	270	260	260	290	300	300	230	220	230	300	300	320	330	340	330	330	300	240	230 ^A	240	240	240	290
Mean Values	280	280	250	250	250	300	300	250	230	240	290	290	300	300	300	300	300	280	250	240	240	260	260	270
Count	29	31	31	31	30	31	31	31	28	28	28	28	28	28	28	27	28	28	27	29	30	30	31	29

Sheep. G.S. MC to G.F. MC in G.F. min Manual

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

IONOSPHERIC DATA

Nov. 1949

FE₁

Yamanagawa

11.21.49
 1435.00-22.00

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

Sweep 1.3 Mc to 1.8 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° 25' N
Long 130° 37' E

Yamagata

R.F.

Mar. 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	C	C	C	C	C	C	C	C	C	C					
2								Q	Q	Q	220	220	Q	220	230	240 ^P	240	240	Q	Q				
3								290	260	Q	Q	220	220	Q	220	C	Q	Q	240					
4								Q	Q	Q	240	A	220 ^A	220	210	230	230	230	Q	Q				
5								Q	Q	Q	230	Q	220	Q	Q	250	C	Q	Q					
6								Q	Q	Q	210	210	220	230	230	Q	Q	Q	Q					
7								Q	Q	Q	220	220	220	220	220	220	210	230	Q	Q				
8								220	220	Q	220	Q	Q	Q	220	220	220	220	Q	Q				
9								Q	Q	Q	230	210	220	220	220	220	220	230	Q	Q				
10								Q	Q	Q	230	240	230	240	230	230	230	Q	Q					
11								Q	Q	Q	220	240	220	220	230	210	220	230	Q	Q				
12								Q	Q	Q	220	220	220	Q	220	220	Q	Q	Q					
13								Q	Q	Q	Q	Q	220	220	220	240	240	240	Q	Q				
14								Q	Q	Q	240	240	250	230	230	Q	Q	Q	Q					
15								Q	Q	C	C	C	C	C	C	C	C	C	C					
16								Q	230	220	230	230	A	230	220	Q	Q	230	220					
17								Q	230	240	230	220	210	240	220	220	220	230	230	Q				
18								Q	250	240	240	240	240	210	220	210	230	220	240					
19								Q	240	230	220	210	210	210	230	220	240	230	Q					
20								Q	Q	Q	2200 ^P	240	A	200	B	200	200	200	Q					
21								Q	240	240	220	A	210	240	Q	Q	Q	Q	Q					
22								Q	Q	Q	240	Q	230	220	220	220	250	Q	Q					
23								330	Q	Q	Q	Q	Q	Q	210	240	240	Q	Q					
24								Q	Q	Q	Q	Q	A	Q	A	A	Q	Q	Q					
25								Q	Q	Q	220	220	220	240	220	A	240	Q	Q					
26								Q	Q	Q	Q	Q	220	220	240	240	240	Q	Q					
27								Q	Q	C	C	C	C	C	C	C	C	C	C					
28								Q	Q	230	240	230	230	220	230	Q	A	Q	Q					
29								Q	Q	Q	220	Q	Q	230	220	Q	230	Q	Q					
30								Q	Q	230	220	220	230	240	230	240	230	Q	Q					
31								Q	Q	Q	210	230	Q	240	230	Q	Q	Q	Q					
Median Value								240	230	220	220	220	220	220	220	220	230	230						
Count			3	2				3	8	15	21	21	18	21	21	19	19	11						3

Sheet 2. M to 2.5 M in 1/2 min Manual

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

IONOSPHERIC DATA

Lat. 31° 13' N
 Long. 139° 37' E

Yamaguchi

fE

Mar. 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							E 20		28	C		C	C	C	C	C	C	C	C						
2							E 20	28	32	37	37	(39)	(42)	42	39	37	34	26	24						
3							B 19	27	33	(36)	38	(40) ^A	(40) ^A	A	A	A	A	A	A						
4							E 20	28	A	35	B	A	A	A	A	A	A	A	A						
5							E 20	24 ^H	(34)	(38)	A	B	B	B	B	B	34 ^B	28 ^C	22						
6							E 18 ^J	26 ^H	32 ^H	B	B	B	B	B	B	B	(34)	31	24						
7							E B	(29)	B	36	B	B	B	B	B	B	32	A	A						
8							E 22	29	32	B	B	B	B	B	B	B	A	(21)	(21)						
9							E 23	29	B	B	B	B	B	B	B	B	34	30	24						
10							E 27	31	34	37	(37)	(41)	(41)	B	B	B	37	(31)	32 ^H						
11							B 21	28	28	36	B	B	B	B	B	B	36	A	30	22	15				
12							E 21	29	33	37	B	B	38	B	B	B	A	A	28	23					
13							E 21	25	31	B	B	B	B	B	(40)	36	A	29	23						
14							B 27	30	32	B	C	C	C	C	C	C	A	A	C						
15							E 24	C	C	C	C	C	C	C	C	C	C	C	C						
16							E 21	30	A	A	42	41	41	B	A	A	33	A	24						
17							E 27	31	A	A	34	34	A	A	38	A	A	A	A						
18							E 22	27	31	A	B	B	B	B	B	B	35	27	23						
19							B 24	28	32	A	B	B	B	B	B	B	A	(29) ^A	23						
20							E 23	30	34	37	A	38 ^J	(38)	(38)	(37)	B	32	30	24						
21							B 21	(27)	31	A	BH	B	B	B	B	B	34	A	(25)						
22							E 25	31	34	A	36	36	B	B	B	B	34	(30)	23						
23							E 22	(26) ^J	(32)	B	B	B	B	B	B	B	(33)	29	24						
24							B 24	27	A	(36) ^A	A	B	B	B	B	B	A	(29)	24						
25							E 21	30	(34)	35 ^A	(40)	B	B	B	B	B	B	31	24	20					
26							E 21	29	(31)	35	B	B	B	B	B	B	35	(31)	A						
27							E (23)	C	C	C	C	C	C	C	C	C	C	C	C						
28							16	24	28	34	B	B	42	39	37		A	A							
29							E 22	28	A	35	B	(39)	B	B	B	A	(35)	29	22						
30							E 20	28	A	A	(28)	B	B	B	B	B	(33)	B	21						
31							E 25	A	A	A	B	(38)	B	(38)	B	38	33 ^J	30	(22)						
Mean Value	E 22	28	32	36	38	40	40	39	37	34	30	33	33	33	33	33	34	30	33	-					
Count	21	30	28	19	13	9	7	5	6	6	6	6	6	6	6	6	16	18	22	2					

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

IONOSPHERIC DATA

Mar 1949

RE

Yamagawa

Lat. 31° 12.5' N
 Long 130° 37.1' 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	B	100	C	C	C	C	C	C	C	C	C	C					
2							E	B	110	110	110	110	110	110	110	110	110	110	110	B				
3							B	B	120	110	A	A	A	A	A	A	A	A	A	A				
4							E	B	110	A	110	B	B	B	B	B	110	C	B					
5							E	120 ^B	110 ^H	110	A	A	B	B	B	B	110	C	B					
6							E	180	110 ^H	110 ^H	B	B	B	B	B	B	100	A	A					
7							E	B	100	110	110	110	130	B	B	120	110	110	A	A				
8							E	B	110	110	B	B	B	B	B	B	A	A	A	B				
9							E	B	110	B	110	B	B	B	100	B	B	110	110	B				
10							E	110 ^B	110	110	110	110	B	B	120	110	110	110	110	B				
11							B	170	110	100	110	110	B	B	110	B	110	A	110	110	B			
12							E	B	120	110	110	110	110	B	B	110	B	A	110	110				
13							E	B	120	120	120	B	110	B	110	B	A	120	120	120				
14							B	110	100	110	120	110	B	B	110	A	A	A	110	110				
15							E	B	C	C	C	C	C	C	C	C	C	C	C					
16							E	B	110	A	A	110	110	120	A	A	110	A	110	110				
17							E	100	100	A	A	A	A	A	A	A	A	A	A	A				
18							E	B	120	110	A	B	B	B	B	100	110	100	100	A				
19							B	110	110	110	A	110	B	B	B	A	A	A	120 ^B	A				
20							E	120 ^B	100	110	110	A	110	110	B	A	120	110	A	110				
21							B	B	100	110	A	110 ^H	110 ^B	B	B	110	110	110	120	120				
22							E	B	110	110	120	110	110	110	110	120	110	120	120	110				
23							E	120	100	110	110	110	110	110	120	120	110	110	110	120				
24							B	130	110	A	120	B	B	B	B	B	A	B	B	120				
25							E	120	120	110	110	110	110	110	110	B	B	B	110	110				
26							E	110	110	100	110	110	B	B	B	B	110	110	100	A				
27							E	B	C	C	C	C	C	C	C	C	C	C	C					
28							E	120	100	110	110	110	120	110	120	110	A	A	A					
29							E	120	110	110	110	B	110	B	B	110	110	100	100					
30							E	120	110	A	110	A	110	B	B	100	110	110	110	120				
31							E	120	A	A	100	100	110	120	110	100	100	100	100	110				
Mean Value	120	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
Count	16	38	21	19	18	15	10	13	15	16	15	16	15	16	15	16	15	16	15	16	15	16	15	16

SPEED 1.2 Mc to 2.2 Mc in 15 min Manual

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

IONOSPHERIC DATA

Lat. $31^{\circ} 12' N$
Long. $130^{\circ} 37' E$

Yamagawa

fEs

Max. 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	E	E	E	E	E	E	<E	<E	C	C	C	C	C	C	C	C	C	C	22	E	E	E	E
2	E	E	E	E	E	E	E	<E	<E	40	<E	46	48	<E	B	C	38	34	B	36	38	40	E	E
3	E	B	E	E	E	E	E	<E	42	<E	<E	B	50	46	46	C	46	38	32	32	26	E	E	E
4	E	E	E	28	E	E	E	<E	<E	B	<E	40	52	52	54	B	54	48	50	46	22	32	E	E
5	E	E	E	E	E	E	E	<E	<E	<E	<E	42	B	B	B	B	B	C	<E	22	E	E	E	E
6	E	E	E	E	E	E	E	<E	40	B	B	B	B	B	B	B	B	42	42	28	C	E	E	E
7	E	E	E	E	E	E	E	<E	<E	B	B	(46) ^B	B	B	B	(42)	38	56	38	40	E	28	E	E
8	E	E	E	E	E	E	22	<E	<E	B	B	B	B	B	B	B	32	32	B	28	E	E	E	E
9	E	E	E	E	E	E	E	B	<E	B	B	B	B	B	B	B	<E	<E	<E	E	E	E	E	E
10	E	E	E	E	E	E	E	<E	<E	<E	<E	<E	<E	<E	<E	<E	B	<E	<E	E	C	E	E	E
11	E	E	E	B	E	E	E	<E	<E	<E	B	B	44	B	B	<E	42	36	<E	B	E	E	E	E
12	E	E	E	E	E	E	E	<E	<E	B	B	B	50	52	48	B	32	34	<E	E	E	40	36	E
13	E	E	E	E	E	E	E	<E	<E	37	B	B	B	50	48	B	36	36	<E	E	E	E	E	E
14	E	E	E	E	E	E	E	<E	<E	(37)	B	B	B	50	B	52	40	40	<E	B	E	E	E	E
15	E	E	E	E	E	E	E	B	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E
16	(38)	E	26	E	E	E	E	<E	38	40	B	44	54	58	50	42	38	34	<E	E	20	42	28	28
17	32	78	46	42	28	E	E	<E	<E	52	44	52	52	52	<E	43	48	42	36	28	22	20	E	28
18	E	E	E	30	30	E	E	<E	<E	38	B	B	B	B	B	B	<E	36	24	24	E	C	E	E
19	E	30	E	E	E	E	E	<E	32	<E	52	B	48	B	44	48	B	46	29	20	E	E	E	E
20	E	E	E	E	E	E	E	<E	42	38	39	44	48	B	48	B	36	34	<E	E	24	E	24	E
21	E	E	E	E	E	E	E	<E	(44)	(52)	42	50	54	B	52	B	<E	42	B	24	E	E	20	20
22	E	E	E	E	E	E	E	<E	33	B	38	B	B	B	B	B	37	36	<E	B	E	E	E	E
23	B	E	E	E	E	E	E	<E	<E	B	52	52	(48)	44	B	B	38	33	<E	22	18	48	34	44
24	54	28	(25)	42	26	28	20	<E	(46)	56	64	64	52	58	62	90	74	36	<E	82	50	38	40	48
25	(41)	24	B	F	E	E	E	<E	<E	<E	46	<E	B	B	B	42	40	<E	<E	<E	E	E	40	48
26	E	E	E	E	E	E	E	<E	<E	36	B	B	B	B	51	B	36	38	46	40	66	46	42	38
27	34	E	E	E	24	30	E	<E	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E
28	E	E	E	E	E	E	E	<E	52	44	44	48	B	<E	48	54	28	48	50	56	74	E	E	E
29	E	E	E	E	E	E	E	<E	38	44	48	46	B	48	43	43	39	<E	<E	22	24	B	E	E
30	E	E	E	E	E	E	(22)	<E	(38)	38	40	B	B	B	B	42	<E	B	<E	E	E	E	E	E
31	F	E	E	E	E	E	E	<E	34	36	B	B	B	B	B	42	<E	<E	<E	34	20	21	E	E
Mean value	30	30	30	29	30	28	26	25	28	27	39	44	50	50	48	43	38	36	<E	23	E	E	E	E
Count	30	30	30	29	30	28	26	25	28	22	19	15	14	11	13	13	24	26	25	23	28	29	21	21

Sweep 2.2 Mc to 2.5 Mc in 0.1 min

Fig. 101

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

IONOSPHERIC DATA

Mar 1949

F2-M3000

Yamanashi

Lat. 31° 12' N
Long 130° 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	27	27	27	28 ^S	28 ^M	27	26	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	
2	27 ^H	27 ^H	27 ^H	28 ^M	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	
3	27	28	J	30	30	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	
4	24	25	27 ^M	29	26	20	25	20	21	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
5	26 ^S	29	31	30	31	32	25	29	31 ^H	30	30	29	28	28	28	28	28	28	28	28	28	28	28	28	
6	29 ^H	32	(30)	31	30	28	26	31	34	31	31	30	29	28	28	28	28	28	28	28	28	28	28	28	
7	28	29	29	31	35	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	
8	31	29	27	26	27	24	27	(29)	32	31	31	29	29	29	29	29	29	29	29	29	29	29	29	29	
9	29	26	26	27	27	28	27	20	32	29	29	28	28	28	28	28	28	28	28	28	28	28	28	28	
10	27	28 ^F	(29)	24	27	28	28	31	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
11	28	29	30	32	32	23	24	30	31	31	29	28	28	28	28	28	28	28	28	28	28	28	28	28	
12	(28)	33	32	32	28	27	28	30	31	29	28	(28)	28	28	28	28	28	28	28	28	28	28	28	28	
13	28	27	27	26	25	20	27	29	30	29	29	28	28	28	28	28	28	28	28	28	28	28	28	28	
14	26	28	27	28	25	28	J	32	32	29	27	28	28	28	28	28	28	28	28	28	28	28	28	28	
15	27	25	26	26	24	25	26	27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	27	28	29	27	J	J	J	29	30	28	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
17	J	29	J	28	28	23	26	28	28	B	31	29	B	J	29	B	26 ^H	S	S	S	J	27	27	27	
18	29	28	J	26	24	25	23	28	27	J	S	29	28	28	28	28	28	28	28	28	28	28	28	28	
19	25	28	29	31	21	25	27	22	32	30 ^C	29	28	30	30	29	S	S	S	S	S	S	S	S	S	
20	J	29	29	31	28	27	27	21	30	29	31	29	29	29	29	29	29	29	29	29	29	29	29	29	
21	28	J	(26)	(22)	26	25	24	28	29	30 ^H	29	29	28	28	28	28	28	28	28	28	28	28	28	28	
22	(26)	29	30	32	28 ^S	(24)	25	30	32	28 ^S	27 ^S	S	28	26	27 ^F	J	26	27	27	28	28	28	28	28	
23	27	J	34	32	26	25 ^S	25 ^S	28	30	29	28	31	BH	29	J	29	29	29	29	29	29	29	29	29	
24	24	29	25	28	27	26	25	28	30	J	JH	J	J	29	J	28	28	28	28	28	28	28	28	28	
25	27	J	29	31	30	27 ^M	30	31	32	31	28	30	J	29	J	J	28	28	28	28	28	28	28	28	
26	28	30	J	30	26	J	J	32	32	32 ^H	J	J	28	28	26	27 ^S	28 ^P	S	J	29	J	(26)	27	31	
27	28	29	29	28	25	(22)	26	31	C	C	C	C	C	C	C	C	C	C	C	C	C	(26)	(28)	(26)	
28	29	31	(30)	31	31	27	27	31	32	31	28	28	S	J	27 ^F	29	29 ^S	28 ^S	28 ^S	28 ^S	27	JSP	28	29	
29	29	28 ^P	29	28	27	27	27	32	29	J	28	28	J	J	J	28	28	28	28	28	28	28	28	28	28
30	30 ^S	32	31	32	28	25	27	32	32	29	28	29 ^S	S	29	J	28	28	28	28	28	28	28	28	28	28
31	26	26	(28)	29	27	26	26	22	32	31	J	J	28	28	28	28	28	28	28	28	28	28	28	28	28
Month Value Count	27	28	29	30	27	26	26	30	32	30	28	29	28	28	27	28	28	28	28	28	28	28	28	28	28
Count	29	28	27	31	30	29	28	30	29	22	16	20	13	13	16	16	16	13	19	19	19	20	20	28	29

Sheet 23. HC-TO-28. MC in. 41.5 min. Manual

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

IONOSPHERIC DATA

Max. 1949

f_{min}

Yamaguchi

Lat. 31° 13.1'N
 Long. 130° 39.7'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	2.0	1.5	1.4	1.5	1.6	1.7	1.6	2.0	2.9	C	C	C	C	C	4.1	3.8	3.4	C	C	1.8	1.6	1.6	1.6	1.6
2	1.5	1.4	1.5	1.5	1.5	1.5	1.5	2.1	2.8	3.3	3.7	4.2	4.2	4.2	A	C	3.4	2.7	2.6	A	1.6	1.6	1.6	1.6
3	1.6	1.6	1.8	1.5	1.5	1.5	1.5	1.9	2.7	3.3	3.8	4.0	A	A	A	C	A	2.8	2.0	A	1.6	1.6	1.6	1.6
4	1.6	1.7	1.6	1.5	1.8	1.7	1.4	2.1	2.8	A	3.5	3.4	A	A	3.8	3.7	A	A	A	A	1.6	1.6	1.6	1.6
5	2.8	1.6	1.6	1.6	1.4	1.5	1.6	2.0	3.0	3.4	3.8	4.2	4.2	4.2	4.2	3.8	3.5	2.9	2.2	2.0	1.8	1.8	1.6	1.6
6	1.6	1.6	1.6	1.6	1.4	1.6	1.4	2.4	3.0	3.4	4.3	4.2	4.1	4.2	4.4	4.4	3.9	3.1	2.4	2.2	2.0	2.0	2.0	2.0
7	1.6	1.6	1.6	1.6	1.6	1.7	1.4	1.8	3.0	3.8	3.8	4.2	4.2	4.2	4.2	4.2	3.6	A	A	A	2.0	1.6	1.6	1.6
8	1.5	1.5	1.5	1.5	1.4	1.3	1.6	2.2	2.9	3.6	3.8	3.7	3.5	3.8	3.8	3.8	3.3	3.0	2.1	1.8	1.6	2.0	1.6	1.6
9	1.6	1.6	1.6	1.5	1.6	1.5	1.5	2.3	2.9	4.1	4.1	4.2	4.4	4.4	4.5	4.1	3.6	3.0	3.4	1.8	1.5	1.6	1.5	1.6
10	1.5	1.5	1.5	1.4	1.4	1.6	1.5	2.7	3.1	3.5	4.0	4.1	4.5	4.2	4.2	4.2	3.6	3.0	2.3	1.8	1.5	1.6	1.5	1.6
11	1.7	1.6	1.5	1.5	1.4	1.4	1.5	2.1	2.9	3.4	4.1	4.7	A	4.4	4.2	4.1	A	2.3	1.6	1.6	1.6	1.6	1.6	1.6
12	1.5	1.5	1.4	1.5	1.5	1.5	1.5	2.1	2.9	3.8	4.1	4.2	A	4.2	4.2	3.8	3.3	2.7	2.4	1.6	1.6	A	1.6	1.6
13	1.6	1.6	1.6	1.5	1.5	1.5	1.5	2.1	2.7	3.3	4.0	4.5	4.6	A	4.4	4.2	3.7	3.0	2.4	1.8	1.5	1.5	1.6	1.6
14	1.6	1.4	1.6	1.6	1.4	1.6	1.6	2.7	3.0	3.4	4.1	4.2	4.5	4.6	4.4	A	A	C	2.4	2.0	1.6	1.5	1.6	1.6
15	1.6	1.4	1.5	1.5	1.4	1.5	1.6	2.4	C	C	C	C	C	C	C	C	C	C	C	1.6	1.5	1.6	1.5	1.6
16	A	1.5	1.5	1.6	1.6	1.5	1.5	2.1	3.0	3.2	4.0	4.4	4.6	A	4.4	4.0	3.6	A	2.4	1.8	1.7	1.6	A	1.6
17	1.8	A	A	A	A	1.6	1.4	2.7	3.1	A	A	A	4.1	4.6	4.3	3.8	A	A	2.8	2.2	1.9	1.6	1.6	1.6
18	1.5	1.4	1.4	1.4	1.6	1.6	1.6	2.2	2.8	3.4	3.8	4.2	4.2	4.4	4.4	4.1	3.6	3.0	2.3	A	1.6	1.6	1.6	1.6
19	1.6	1.6	1.6	1.4	1.5	2.0	1.7	2.4	2.8	3.4	A	4.4	4.4	4.4	A	4.2	4.2	3.0	2.3	A	1.6	1.6	1.6	1.6
20	1.6	1.5	1.4	1.6	1.4	1.5	1.5	2.3	3.0	3.6	4.1	A	4.4	4.6	A	5.0	A	3.0	2.4	1.6	1.6	1.6	1.6	1.6
21	1.6	1.5	1.4	1.5	1.6	1.4	1.6	2.1	2.8	3.7	4.2	4.3	A	4.4	4.5	4.1	3.8	A	2.6	2.0	1.6	1.6	1.6	1.6
22	1.5	1.5	1.5	1.5	1.6	1.6	1.6	2.5	3.1	4.2	4.1	4.0	4.2	4.2	4.2	4.0	4.0	3.0	2.3	2.2	1.6	1.5	1.8	1.5
23	2.1	1.7	1.8	1.4	1.6	1.4	1.6	2.2	3.2	(3.6)	4.4	4.6	(4.8)	4.5	4.2	4.2	3.4	2.9	2.4	A	2.0	1.7	1.6	A
24	A	1.6	1.5	A	A	A	A	2.4	3.0	4.0	A	A	A	A	A	A	A	(3.0)	2.4	A	A	2.2	2.1	A
25	A	1.5	1.8	1.6	1.5	1.5	1.5	2.4	3.0	3.4	4.1	4.1	4.3	4.3	4.2	A	4.1	3.1	2.5	2.0	1.6	1.6	1.6	1.5
26	1.5	1.4	1.4	1.4	1.4	1.5	1.4	2.6	3.0	3.5	4.0	4.4	4.4	4.4	A	4.2	3.6	3.2	2.2	4.4	2.0	A	A	A
27	A	1.4	1.5	1.6	1.6	A	1.8	2.6	C	C	C	C	C	C	C	C	C	C	C	C	1.6	1.7	1.6	1.6
28	1.5	1.5	1.4	1.5	1.5	1.4	1.6	2.4	3.2	3.5	4.1	4.2	4.4	4.4	4.4	4.4	A	A	C	A	1.6	1.6	1.6	1.6
29	1.4	1.5	1.4	1.5	1.4	1.5	(2.2)	2.9	A	A	4.0	A	4.2	A	4.1	4.1	3.5	2.9	2.2	1.8	1.7	1.9	1.9	1.8
30	1.9	1.8	1.7	1.6	1.5	1.6	1.6	2.3	3.1	3.4	3.8	3.8	4.3	4.1	3.8	4.2	3.6	3.0	2.4	1.7	1.6	1.6	1.6	1.5
31	1.5	1.5	1.5	1.6	1.4	1.5	1.6	2.5	A	A	4.0	4.3	4.2	4.2	4.3	4.3	4.0	3.0	2.2	A	A	1.6	1.5	1.6
Mean	1.6	1.5	1.5	1.5	1.5	1.5	1.6	2.3	3.0	3.5	4.0	4.2	4.2	4.4	4.2	4.1	3.6	3.0	2.4	1.8	1.6	1.6	1.6	1.6
Count	37	30	30	38	38	38	30	31	28	24	35	32	31	32	32	23	30	19	25	20	25	27	28	26

Sweep 4.2 Mc to 2.8 Mc in 1.5 min

Manual

Electrical Communication Laboratory, Japanese Ministry of Communications
(Denshi Tsushin Kenkyujo) Gotanda, Saitama-ken, Tokyo, Japan

IONOSPHERIC DATA

Lat. 35° 12' N
Long. 139° 37' E

Yamanashi

Japan

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

Speed 6.2 Mc to 18.5 Mc in 1.5 min Manual

IONOSPHERIC DATA IN JAPAN FOR MARCH 1949

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