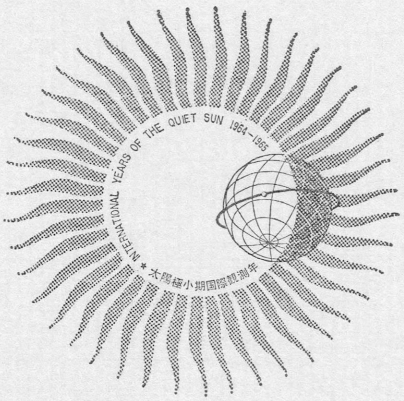
F—195

IONOSPHERIC DATA IN JAPAN

FOR MARCH 1965

Vol. 17 No. 3



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Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
KOKUBUNJI, TOKYO, JAPAN

IONOSPHERIC DATA IN JAPAN

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Vol. 17 No. 3

THE RADIO RESEARCH LABORATORIES

KOKUBUNJI TOKYO, JAPAN

CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES

Ionospheric observation is carried out at the following four observatories in Japan.

	Latitude	Longitude	Site
Wakkanai	45°23.6′N.	141°41.1′E.	Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°08.2′E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Koganei-shi, Tokyo-to
Yamagawa	31°12.1′N.	130°37.1′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission and radio propagation conditions are observed at Hiraiso Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction," 1961.

Terminology

f_0F2, f_0F1, f_0E — The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.

f_0E_s — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

f_bE_s — The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

f-min — The frequency below which no echoes are observed.

$M(3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$ — The lowest virtual height of the trace used to give the f_0E_s.

$hpF2$ — The virtual height of the $F2$ layer measured on the ordinary

wave branch at a frequency equal to $0.834 f_0F2$.

ypF2 The semi-thickness of the *F2* layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed *h'f* trace. (The difference between *hpF2* and the virtual height at $0.969 f_0F2$).

a. Descriptive Letters

The following letters are entered after or used to replace a numerical value on the monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *f*-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Letters

The following letters are entered in the first column before a numerical

value on the monthly tabulation sheets.

D greater than.

E less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-ionic component.

c. Description of Standard Types of E_s

The eight standard types of E_s are identified by corresponding lower case letters: *f, l, c, h, q, r, a, s.* These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. It is strongly emphasized that these names are not restrictive. The letter '*n*' is used to designate any E_s trace that does not correspond to any of the eight types.

f An E_s trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual hight: *h* or *l*.

l A flat E_s trace at or below the normal *E* layer minimum virtual height in the day or below the night *E* layer minimum virtual height at night.

c An E_s trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal *E* trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)

h An E_s trace showing a discontinuity in height with the normal *E* layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

r An E_s trace showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick *E* layer) by the lack of group retardation in the *F* layer traces at corresponding frequencies and the lack of complete blanketing.

a An E_s having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These

sometimes extend over several hundred kilometers of virtual height.

s A diffuse E_s trace which rises steadily with frequency and usually emerges from another type E_s trace. The rising trace alone is classified as '*s*'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace such as E_s-*l* or E_s-*f*, at frequencies which grealy exceed the E layer critical frequency, whereas at low latitudes it usually rises from E_s-*q*, E_s-*c*, or E_s-*h* at frequencies near the regular E critical frequency. Type *s* is never used to determine f_0E_s and $h'E_s$. The slant trace is sometimes observed to start at f_0E without echoes clearly identifiable as E_s echoes being seen.

n The designation '*n*' is used to denote an E_s trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. '*n*' should be used sparingly.

d. Multiple Reflections from E_s

When the ionogram shows the presence of multiple reflections from E_s the number of traces seen should be recorded after the letter indicating the type.

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 200 and 500 Mc/s at Hiraiso Radio Wave Observatory.

Antennas are a broadside array of 6×4 doublets for 200 Mc/s and a parabolic reflector of 5 meter for 500 Mc/s, each having the total power receiver.

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

The unit is 10^{-22} $W \cdot m^{-2} \cdot (c/s)^{-1}$ for both components of polarization.

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

The three-hourly and daily mean values are given at 200 Mc/s only.

Variability is expressed in the following four grades:

0=Quiet or no burst,
1=A few bursts,
2=Many bursts,
3=Very many bursts.

The number of bursts exceeding the flux level is counted.

c. Distinctive Events

The phenomena are picked up on the following criteria:

1. Distinct from the prevailing kind of activity,
2. Correlated with other known solar phenomena,
3. Remarkable change-over from one situation to another.

Starting time and *Time of maximum* are given to nearest minute in general, but to nearest a tenth minute for short intense occurrences or clear commencements.

Duration is given in minutes and to nearest a tenth minute, if short or clear.

Descriptive type is denoted by the following symbols:

S =Simple rise and fall of intensity;
C =Complex variation of intensity,
C+=Prolonged broad-band enhancement of radiation, generally of spectral type IV;
F =Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;
RF=More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;
e =Sudden beginning of burst with steep rise of intensity;
E =Steep rise of intensity of continuum background;
p.i.=post-burst increase;
onset storm=clear-cut beginning of a noise storm.

Peak intensity is the flux density of the highest peak reached during the occurrence, measured above the pre-burst level.

Mean intensity is the flux density averaged over the burst's duration, measured above the pre-burst level; therefore, multiplying the duration, the total energy of the occurrence can be estimated.

C. RADIO PROPAGATION CONDITIONS

a. Field Intensities of WWV and WWVH

Field intensity observations of WWV and WWVH transmitted from Washington D.C. and Hawaii, respectively, are carried out at Hiraiso Radio Wave Observatory. In order to avoid interferences with several standard frequency waves on the same frequency, the upper side-band of 440 c/s is picked up by the use of a narrow band pass filter of ± 40 c/s bandwidth.

Tabulated *field intensity* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. Tne *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

Transmitter

	WWV	WWVH
Location	Washington, D.C. Long. 76°51′ W Lat. 39°00′ N	Naui, Hawaii Long. 156°28′ W Lat. 20°46′ N
Power	3 kW for the upper side-band	0.5 kw* for the upper side-band
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	10050 km	6270 km

* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

Receiver

Antenna	4.5 m vertical rod
Bandwidth	±40 c/s for the upper side-band
Calibration	each half hour

Descriptive symbols are as follows:

C: Measurement influenced by, or impossible because of, any non-propagational reasons.

S: Measurement influenced by, or impossible because of, interferences or atmospherics.

( ): Unaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.

<: Less than the following figure.

b. Radio Propagation Quality Figures

Radio propagation quality figures are usually expressed on the scale that ranges from one to five as follows:

1=very poor (very disturbed)
2=poor (disturbed)
3=rather poor (unstable)
4=normal
5=good

The tabulated circuits contain London (commercial circuit), WWV (frequencies 10, 15, 20 Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15 Mc broadcast from Hawaii), which are received at Hiraiso Radio Wave Observatory near Tokyo.

Warnings of radio propagation broadcast from JJY station are expressed in three grades:

N=normal
U=unstable
W=disturbed

The letter W expresses disturbed condition expected to be during the following 12 hours after issue. The letter U and N means also unstable or normal conditions, respectively.

Whole day radio quality indices are the averages of the 6-hourly indices of London, WWV and S. F.

Start- and end-time of principal geomagnetic storms closely correlated to radio propagation conditions are tabulated from observations at Kakioka.

c. Sudden Ionospheric Disturbance (S. I. D.)

The data of short wave fade-out (SWF) are preparated from the field intensity records on following circuits received at Hiraiso. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensity

WS.....WWV 20 Mc, 15 Mc and 10 Mc (Washington)
SF.....Various commercial circuits (San Francisco)
HA.....WWVH 15 Mc and 10 Mc (Hawaii)
TO.....JJY 15 Mc and 10 Mc (Tokyo)
SH.....BPV 15 Mc and 10 Mc (Shanghai)
LN.....Various commercial circuits (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10 Mc ('), 15 Mc (none) and 20 Mc ('').

Start-times and Durations

Types

S : sudden drop-out and gradual recoverly
Slow: slow drop-out taking 5 to 15 minutes and gradual recoverly
G : gradual disturbances; fade irregular in both drop-out and recoverly

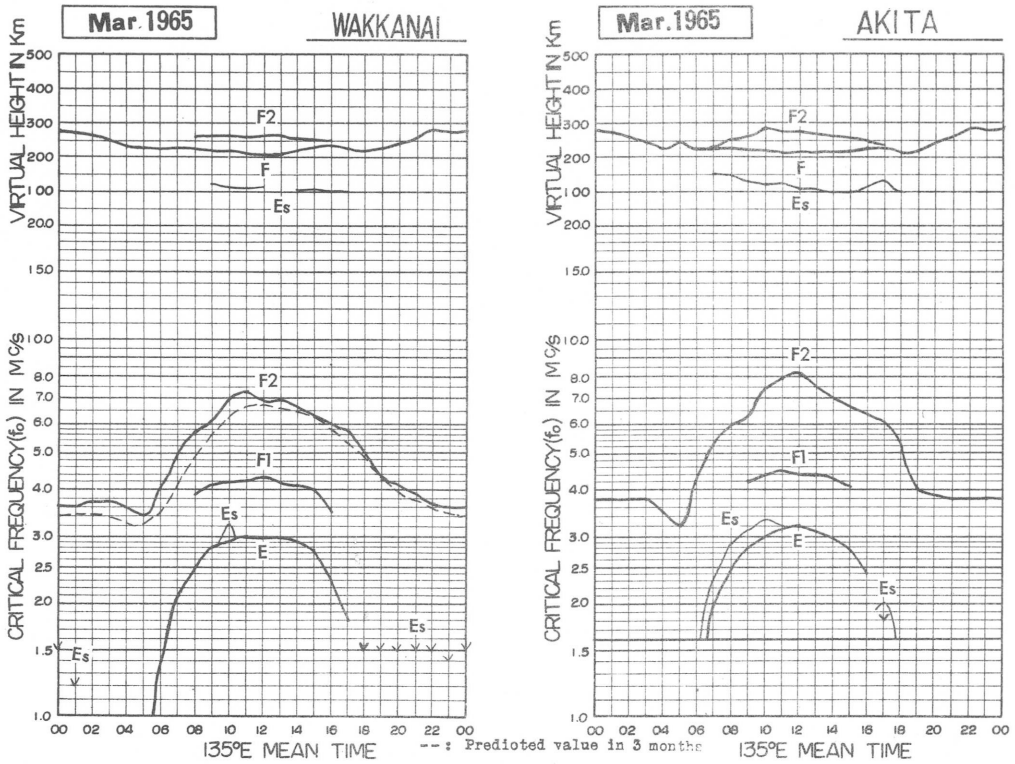
Importances

Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

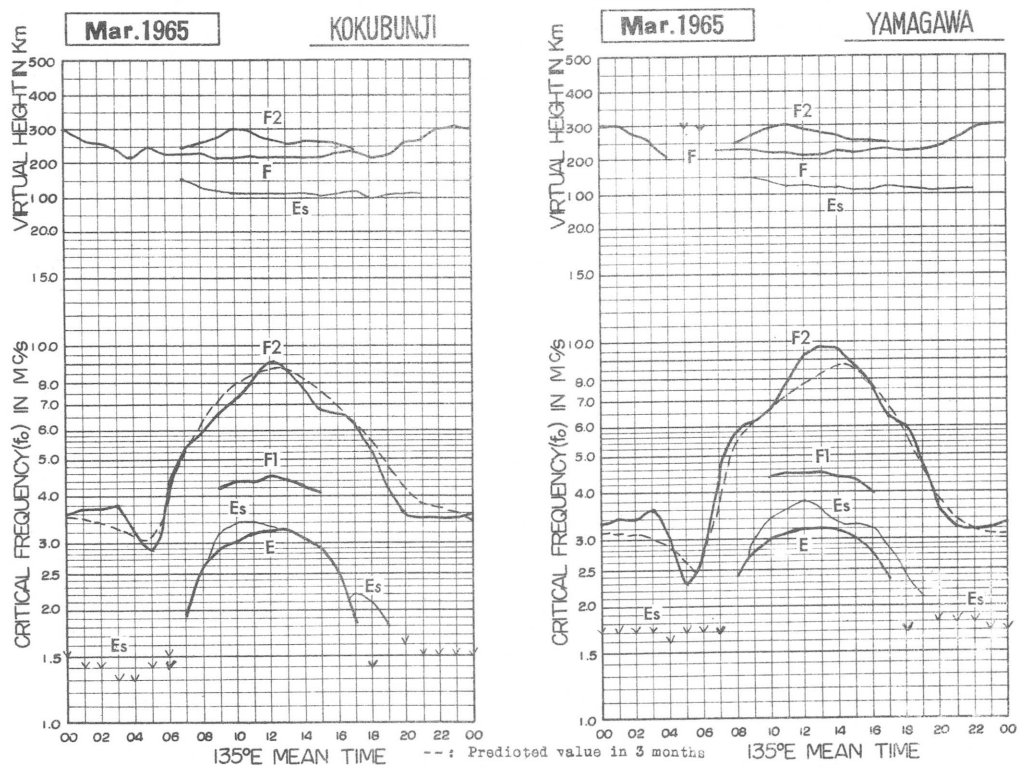
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA

Mar. 1965 | foF2 | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U036S	036S	037	037S	032	034S	036S	046S	056	063	070	076	079	063	I062S	063	059	055S	034	033	U033S	033S	035S	036
2	036	U037S	U037S	037	036	SF	033	050	060	060	063	077	076	073	U071S	060	I054C	I048C	041	036S	036	034	034S	I037S
3	U038S	U035S	U045S	041	045	050	U047S	054	056	052	062	073	087	084	068	C	C	C	C	S	S	S	S	S
4	S	S	052S	S	SF	FS	S	048	058	051H	074	083	090S	091	078	U073S	062	056	042	036S	I039S	I040S	S	S
5	SF	SF	036F	038F	I040S	U041S	037	050	057H	068	U070S	077	081	076	U065R	064	061	057	041	036	U031S	U031S	I032C	I033C
6	035	I036S	034S	035	036	032	036	054	054	058	070	077S	059	077	073	069	060	058	044	035S	033	U031S	SF	035F
7	035S	036S	034S	033	035	035	U043S	052	058	060	080	081	086	073	073	068	058	055	043S	039	U036S	U033S	S	S
8	S	U036S	038S	U038S	036S	027S	I037S	049	060	066	081	083	077	073	068	067	064	053	U045S	038S	I036S	038S	I042S	043
9	I044S	I044S	044S	I040S	036S	SF	040	050	053	064	071	077	068	068	063	I064C	060	054	040	036	034S	033	U030S	U035S
10	U035S	U036S	033S	033S	032S	025	039	050	056	058	068	071	070	070	U066S	063	058	058	048	036S	029	028S	031	U029S
11	032	032S	032S	032	U035S	032	037	048	050	054	063	069	065	063	061	061	063	056	046S	038	U037S	032	032	033
12	033	032S	032	032S	031	029	041	050	058	063	063	068	066	063	066	061	061	059	048S	I042S	S	S	S	S
13	S	S	S	S	S	S	U050S	060	068	058	I072S	073	078	063	058	I069S	U067S	057	054	053	051	044S	U044S	S
14	S	S	U051S	044	039	031	040	057	U065R	077	070	066	J068R	062	069	059	063	060	051	047	U046S	U044S	U043S	U043S
15	I045S	S	S	S	S	U032S	040	045	056	061	I071S	U065S	064	063	U066S	058	058	062	050	037	039	U036S	S	S
16	S	S	S	S	S	S	046S	050	055	059	061	U065R	071	068	068	067	059	056	052	I042S	U037S	SF	SF	SF
17	U043S	U044S	U043S	U041S	037	041	045	050	053	061	073	077	073	069	070	063	056	057	050	I046S	U042S	U043S	S	S
18	S	I044S	U043S	043S	044	044	050	049	057	I068S	072	073	067	I072S	067	061	063	059	U050S	U043S	S	S	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	070	059	061	057	055	052	050	U044S	U046S	U044S	U042S	SF
20	SF	SF	U038F	037F	036F	033	045	056	055	060	068	080	069	064	062	058	058	055	046	035S	I034C	I033C	I033S	035S
21	035F	SF	035F	SF	035F	028F	041	049	055	059	064	064	U066R	073R	069	U065R	057	056	057	042	041S	U043S	I042S	040S
22	038F	SF	SF	SF	036S	033S	035	054	058	U053S	069	080	084	084	071	C	C	C	C	C	C	C	C	C
23	C	C	038S	SF	U041S	037	046	059	U066R	073	079	075	074	070	065	069	065S	I064C	U065S	U063S	049	041	038S	038S
24	U041S	041	041	U040S	036	U035S	U037S	042	053	055	066R	U065R	065	076	073	U068S	058	050	053	050	050	I047S	044S	045S
25	U043S	043S	036	033	028	029S	040	050	057H	U071S	070	077	084	074	064	062	061	066	U066S	055	U053S	036	035S	U032S
26	U033S	I034S	036	036	033	C	044	054	061	072	065	063S	U060S	I072S	077	067	061	061	057	053	051	043	U044S	U043S
27	SF	SF	SF	SF	SF	SF	044	050	055	U065S	074	070	064	J068S	066	J066S	050	063	060	055	050	043S	038	036
28	036	036	036	036S	036	036	047	053	058	065	078	073	064	058	058	063	054S	064S	061	048	044	033S	037	038
29	037	SF	037F	037F	038	038	043	053	061	064	073	074	064	U067S	065	J066S	055S	061	056	048	U046S	U043S	U043S	039
30	041	043	041	041	042	038	048	055H	058	061	067	063	057	U065S	061	063	062	063	063S	054	048	040	034	034
31	036S	036	036	036	036	038	051	053	063	U069S	068	065	060	060	067	063S	060	058	055	054S	050	U040S	I037S	I038S
No.	20	18	25	22	25	23	29	30	30	30	30	30	31	31	31	29	29	29	29	29	27	26	21	20
Median	036S	U036S	037S	037	036	034	041	050	057	062	070	073	069	069	066	063	060	057	050	042	041S	U039S	U037S	036S
U. Q.	041	043	042	040	038	038	046	054	060	066	073	077	078	073	070	067	063	061	056	052	049	U043	U042	040
L. Q.	035	036	036	035	035	031	037	049	055	059	066	066	064	063	063	061	058	055	044	036	036	033	034	034
Q. R.	006	007	006	005	003	007	009	005	005	007	007	011	014	010	007	006	005	006	012	016	013	010	008	006

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

foF2

W 1

IONOSPHERIC DATA

Mar 1965 | foF1 | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										400	420	420	420	410H	400	400H								
2										400L	410	420	430	400	400	U390L	C							
3										400	420	I420A	420	420	400	C	C							
4											420	420	430	410	400	370	L							
5										400	410	420	420	420	400L									
6										U390L	410	420	410	410	410	400L	U330L							
7										400L	420	430	430	420	400H	390								
8										U410L	420	430	420	420	410L	400								
9										400H	420	420	430H	420H	400	I400C								
10									360	400L	410	420H	430H	420	400	360								
11										400L	430	420H	430H	440	400H	400H	U340L							
12										400L	420	410	420	420H	400	400L								
13									380L		410	I420A	410	410	400	400L	350							
14								330	390	410	410	420	420	420	400	U400L								
15									390	400	420	420	410	420	400H	U390L	A							
16										390	400	420H	420	410	410	400								
17									360L	410H	410	430	420	410	410	380	350L							
18										410	420	420	420	420H	410	370								
19								C	C	C	C	C	430H	420	410	390L	U350L							
20									390	410	430	430H	430H	420	400	390	U340L							
21									380H	410H	420H	430	U430C	420	410	390	U330L							
22										410	430	430H	430	430H	420	C	C							
23									400L	420H	430	420	400	420	410	400	U360L							
24									400	400	420	410	430	430H	420H	410	330							
25										420H	420	430	430	420	410	380	U370L							
26									400	I420A	420	430	430	I430S	430	390	U360L							
27									380L	U420L	430	430	430H	420	420	400								
28									390	410	420	430H	410L	420	410	400								
29									400	420L	410	430H	430	420	430	400	380L							
30									380	410H	430	430	400	420H	420H	400	U380L							
31									400	410	430	430	430H	U420L	420	400	380L							
No.								1	15	28	30	30	31	31	31	28	14							
Median								330	390	410	420	420	430	420	410	400	U350L							
U. Q.																								
L. Q.																								
Q. R.																								

foF1

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 2

IONOSPHERIC DATA

Mar. 1965 | foE | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							E150S	180	245	275	280	295	300	300	285	265	210	E170S						
2							E160S	205	230	250	I275B	300	295	I280R	285	E260C	C	C						
3							E120S	195	I225S	255	285	290	295	300	285	C	C	C	C		E140S			
4			E	E		E	E150S	200	240	275	290	300	300	300	285	260	210	E150S	E110S				E130S	E140S
5					E		E150S	180	240	265	270	275	300	300	I290A	I255A	I210A	E170S	E150S					
6			E			E	E150S	195H	240H	260	285	295	300	290	290	260	210	E180S	E150S			E140S		
7			E				E150S	190	250	285	300	300	300	295	285	260	215	E160S	E150S			E160S		E160S
8						E120S	E150S	195	240	275	285	I290A	300	295	I275A	I255A	A	A	E150S					
9							E150S	200H	245	280	I300A	300	300	300	285	I265C	230	170	E150S					
10							E140S	200	245	275	295	305	300	300	285	250	225	170	E140S			E120S		
11							E150S	195	245	260	I280R	290	300	295	285	270	I230R	175	E150S					
12						E	130	215	260	290	I290A	300	305	300	290	265	220	E160S	E120S					
13						E	E160S	210	250	280	A	A	A	300	I280A	260	225	A	E120S				E150S	E120S
14	E150S					E120S	130	I215A	250	A	A	A	305	300	280	265	230	E190S	E130S					
15						E120S	170	200	240	270	300	285	290	I295S	280	A	A	A	E110S					
16						E	E150S	200	245	265	285	I285A	I290R	290	I280S	I270A	245	A	E170S					
17						E120S	140	205	240	I260A	275	295	300	290	290	265	220	A	A					
18				E		E	150	220	255	285H	295	300	300	300	290	275	235	185	E150S					
19						C	C	C	C	C	C	C	I300R	300	290	275	240	185	E150S					
20						E	180	220	260	285	295	305	305	I300B	290	275	250	185	E140S					
21						E	E140S	225	260	285	I290A	295	I305R	300	295	265	235	R	E150S					
22						E	120	215	270	290	295	300	300	R	R	C	C	C	C					
23					E	E	150	225	260	I275R	I290A	R	R	R	290	280	235	C	E120S			E120S	E120S	E150S
24	E150S					E	155	225	265	I280A	I300A	305	300	300	290	275	250	A	S					
25						E120S	180	200	250	285	290	I300A	300	300	290	270	235	190	E120S					
26	E150S					C	150	220	255	270	285	I285S	285	I300S	300	290	240	190	E150S					
27						E170S	130	225	265	280	285	A	A	R	295	270	230	190	E150S					
28						E120S	155	230	275	290	I275A	I300R	305	300	295	I270R	I235A	A	E160S					
29						E	180	225	255	285	I290R	295	300	I295A	I290R	I280R	I250A	190	E140S					E120S
30						E110S	190	225	265	290	295	300	305	300	I290R	275	245	185	E140S					
31		E				E	200	230	280	295	300	300	305	310	295	285	245	195	E140S					
No.	3	1	3	2	2	21	30	30	30	29	28	26	28	28	30	28	26	19	25		1	4	3	5
Median	E150S	E	E	E	E	E	U140	210	250	280	290	300	300	300	290	275	230	180	E150S		E140S	E130S	E130S	E140S
U. Q.																								
L. Q.																								
Q. R.																								

foE

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 3

IONOSPHERIC DATA

Mar. 1965 | foEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	E012S	E013S	E	E	E015S	E012S	022	G	G	G	022G	G	G	G	G	G	E017S	E016S	E015S	E012S	E015S	E015S	E015S
2	E016S	E013S	013	J025	J025	E013S	023	G	G	G	E030B	G	033	G	G	E026C	C	C	E015S	E015S	E017S	E014S	E015S	E015S
3	E015S	E013S	E	018	013	E013S	E012S	G	E028S	G	G	J043	G	G	G	C	C	C	C	E015S	E014S	E015S	E015S	E018S
4	E015S	E012S	E	E	E	E	E015S	G	G	G	034	G	G	G	G	018G	G	E015S	E011S	E015S	E016S	E015S	E013S	E014S
5	E012S	E	015	016	E	E012S	E015S	015G	G	G	034	036	025G	033	J033	J035	025	E017S	E015S	E015S	E011S	E015S	C	C
6	E012S	E	E	E	E	E	E015S	G	G	G	037	034	G	G	G	G	G	E018S	E015S	E015S	E013S	E014S	E015S	E015S
7	E016S	E013S	E	E	E	E011S	E015S	023	G	G	035	G	G	G	G	G	G	E016S	E015S	E015S	019	E016S	E015S	E016S
8	E015S	E012S	E	E	E	E012S	E015S	G	G	033	039	033	G	026G	033	031	024	J023	024M	021	E016S	E016S	E017S	E015S
9	E014S	E	E	E	E	E	E015S	G	G	G	033	G	033	J036	020G	C	020G	G	E015S	E015S	E014S	E012S	E015S	E012S
10	E013S	E012S	E	E	E	E	E014S	G	G	G	G	G	040	G	023G	015G	G	G	E014S	E012S	E015S	E012S	E015S	E012S
11	E015S	E	E	015	E	E	E015S	G	G	G	G	033	G	G	G	024G	020G	G	E015S	E015S	E016S	E014S	E016S	E012S
12	E015S	E	E	E	E	E	G	G	G	G	033	G	G	G	G	015G	030	031	020	021	E014S	E015S	E012S	E015S
13	E015S	E	E	E	E	E	E016S	G	G	035	035	048	041	G	030	G	G	042	028	032	022	E016S	E015S	E012S
14	E015S	024	023	021	016	023	G	031	035	038	J063	043	G	G	G	022G	020G	E019S	E013S	E012S	E014S	E015S	023	E015S
15	E017S	E013S	E	E	E	E012S	G	024	G	G	G	G	G	022G	018G	J035	044	J033	015	E015S	E015S	E012S	E015S	E014S
16	E015S	E012S	016	E	E	E	021	G	G	G	033	032	G	020G	024G	030	018G	023	E017S	E016S	E015S	E015S	E012S	E012S
17	E013S	E	E	E	E	E012S	G	G	G	J034	031	G	G	G	018G	015G	015G	028	026	E015S	E015S	E011S	E012S	E013S
18	E012S	E	E	E	E	E	G	G	G	032	G	G	G	G	018G	G	G	G	E015S	020	E012S	E015S	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	027G	G	G	G	G	G	E015S	E015S	E012S	E012S	E013S	E014S
20	E012S	E	E	E	E	E	G	G	G	G	G	G	020G	E031B	020G	017G	G	G	E014S	E015S	C	C	E012S	E012S
21	020	E012S	E	E	E	E	G	G	G	031	033	033	G	G	G	021G	015G	015G	E015S	E011S	E013S	E016S	E015S	E011S
22	E012S	E013S	E	E	E	E	021	027	035	032	033	G	G	G	024G	C	C	C	C	C	C	C	C	C
23	C	C	E	E	E	E	G	026	G	G	030	G	G	025G	G	015G	017G	C	E012S	E012S	E015S	E012S	E012S	E015S
24	E015S	022	J020	018	020	E	G	G	G	031	032	G	G	G	G	G	015G	J022	020	J020	E013S	020	E012S	E015S
25	E012S	E	E	E	E	E012S	G	G	030	G	G	033	G	G	G	G	G	G	E012S	E012S	E012S	E015S	E015S	E012S
26	E015S	E012S	E	E	E	C	G	025	G	043	034	G	G	S	G	G	G	G	E015S	E011S	E012S	024	E012S	022
27	E012S	E013S	015	021	E	E017S	020	G	G	034	037	033	032	027G	020G	019G	020G	015G	E015S	E018S	E015S	028	E015S	E011S
28	E015S	E	E	E	E	E012S	G	G	G	G	034	G	G	G	G	021G	025	021	E016S	E013S	E015S	E015S	E015S	E012S
29	021	E	020	E	E	E	G	G	G	G	G	G	021G	033	025G	025G	J035	018G	E014S	E013S	E013S	E012S	E012S	E012S
30	E013S	E012S	E	E	E	E011S	G	G	G	G	G	G	G	G	026G	G	G	G	E014S	E012S	E015S	E014S	E012S	E012S
31	E015S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	015G	G	E014S	E012S	E015S	E015S	E015S	E015S
No.	29	29	30	30	30	29	30	30	30	30	30	30	30	30	31	28	28	27	29	30	29	29	28	28
Median	E015S	E012S	E	E	E	E	G	G	G	G	032	G	G	G	G	G	G	G	E015S	E015S	E015S	E015S	E015S	E014S
U. Q.	E015	E013	E013	E	E	E012	E015	G	G	032	034	033	G	G	G	G	G	022	E016	E015	E015	E016	E015	E015
L. Q.	E012	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E014	E012	E013	E013	E012	E012
Q. R.																								

foEs

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 4

IONOSPHERIC DATA

Mar. 1965 | f_bEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45°23.6′N | Long. 141°41.1′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S			S	S	G				021G						S	S	S	S	S	S	S
2	S	S	E	022	020	S	E016S				B		G			C	C	C	S	S	S	S	S	S
3	S	S		013	013	S	S		S			043				C	C	C	C	S	S	S	S	S
4	S	S					S				G					G		S	S	S	S	S	S	S
5	S		E	012		S	S	015G			G	G	025G	021	030	032	023	S	S	S	S	S	C	C
6	S						S				G	G						S	S	S	S	S	S	S
7	S	S				S	S	G			G							S	S	S	017	S	S	S
8	S	S				S	S			G	G	031		024G	033	029	023	020	020	018	S	S	S	S
9	S						S				031		027	023	020G	C	018G		S	S	S	S	S	S
10	S	S					S						G		022G	015G			S	S	S	S	S	S
11	S			E			S					G				023G	E020R		S	S	S	S	S	S
12	S										030					015G	014G	029	016	016	S	S	S	S
13	S						S			G	031	047	040		029			040	026	030	E012S	S	S	S
14	S	013	016	012	013	E012S		023	G	031	035	036				020G	018	S	S	S	S	S	E016S	S
15	S	S				S		G						021G	018G	030	040	030	015	S	S	S	S	S
16	S	S	012				E015S				G	031		020G	E024S	028	018G	023	S	S	S	S	S	S
17	S					S				030	G				017G	015G	015G	027	019	S	S	S	S	S
18	S									G					018				S	E015S	S	S	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	E027R						S	S	S	S	S	S
20	S												E020R	B	020G	E017R			S	S	C	C	S	S
21	E015S	S								016G	031	G				020G	015G	E015R	S	S	S	S	S	S
22	S	S					G	G	G	G	G				024G	C	C	C	C	C	C	C	C	C
23	C	C						G			030			025G		015G	017G	C	S	S	S	S	S	S
24	S	016	018	016	E					030	031						015G	020	018	020	S	E015S	S	S
25	S					S			G			032							S	S	S	S	S	S
26	S	S				C		G		042	G			S					S	S	S	E015S	S	E017S
27	S	S	E	E		S	G			G	036	032	032	E027R	020G	019G	017G	015G	S	S	S	021	S	S
28	S					S					033					E021R	025	020	S	S	S	S	S	S
29	E017S		E012S										020G	032	E025R	E025R	027	015G	S	S	S	S	S	S
30	S	S				S									E026R				S	S	S	S	S	S
31	S																015G		S	S	S	S	S	S
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

f_bEs

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 5

IONOSPHERIC DATA

Mar. 1965 | f-min | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	E012S	E013S	E	E	E015S	E015S	015	019	016	020	017	017	017	019	020	018	E017S	E016S	E015S	E012S	E015S	E015S	E015S
2	E016S	E013S	E	E	E	E013S	E016S	016	018	018	030	017	020	020	017	E026C	C	C	E015S	E015S	E017S	E014S	E015S	E015S
3	E015S	E013S	E	E	E	E013S	E012S	E014S	E028S	012	020	020	021	019	020	C	C	C	C	E015S	E014S	E015S	E015S	E018S
4	E015S	E012S	E	E	E	E	E015S	015	012	013	017	017	016	017	018	012	015	E015S	E011S	E015S	E016S	E015S	E013S	E014S
5	E012S	E	E	E	E	E012S	E015S	012	012	012	012	016	017	018	016	011	011	E017	E015S	E015S	E011S	E015S	C	C
6	E012S	E	E	E	E	E	E015S	011	015	017	017	018	016	017	017	011	015	E018S	E015S	E015S	E013S	E014S	E015S	E015S
7	E016S	E013S	E	E	E	E011S	E015S	015	012	017	017	017	016	016	018	017	017	E016S	E015S	E015S	E011S	E016S	E015S	E016S
8	E015S	E012S	E	E	E	E012S	E015S	E015S	011	011	011	015	017	017	015	011	011	011	E015S	E015S	E016S	E016S	E017S	E015S
9	E014S	E	E	E	E	E	E015S	011	011	012	016	018	017	017	017	C	011	012	E015S	E015S	E014S	E012S	E015S	E012S
10	E013S	E012S	E	E	E	E	E014S	012	011	015	018	018	020	016	011	011	015	E012S	E014S	E012S	E015S	E012S	E015S	E012S
11	E015S	E	E	E	E	E	E015S	011	012	011	011	021	018	018	019	011	011	E014S	E015S	E015S	E016S	E014S	E016S	E012S
12	E015S	E	E	E	E	E	011	011	011	011	012	016	011	017	017	011	011	E016S	E012S	E015S	E014S	E015S	E012S	E015S
13	E015S	E	E	E	E	E	E016S	011	011	015	017	012	020	018	016	012	011	E	E012S	E011S	E012S	E016S	E015S	E012S
14	E015S	E	E	E	E	E012S	012	012	012	016	017	018	017	016	016	016	011	E019S	E013S	E012S	E014S	E015S	E016S	E015S
15	E017S	E013S	E	E	E	E012S	011	011	011	012	018	020	017	017	012	012	011	011	E011S	E015S	E015S	E012S	E015S	E014S
16	E015S	E012S	E	E	E	E	E015S	012	012	016	016	019	018	013	013	011	012	016	E017S	E016S	E015S	E015S	E012S	E012S
17	E013S	E	E	E	E	E012S	011	011	012	015	018	018	017	016	012	011	011	011	E011S	E015S	E015S	E011S	E012S	E013S
18	E012S	E	E	E	E	E	E012S	011	012	018	016	017	019	017	012	015	012	011	E015S	E015S	E012S	E015S	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	017	023	020	017	013	011	E015S	E015S	E012S	E012S	E013S	E014S
20	E012S	E	E	E	E	E	012	016	012	018	023	013	013	031	012	011	018	015	E014S	E015S	C	C	E012S	E012S
21	E015S	E012S	E	E	E	E	E014S	011	011	011	018	020	021	018	025	012	011	011	E015S	E011S	E013S	E016S	E015S	E011S
22	E012S	E013S	E	E	E	E	011	011	011	020	012	020	022	E025C	013	C	C	C	C	C	C	C	C	C
23	C	C	E	E	E	E	011	011	011	012	012	019	020	017	023	011	011	C	E012S	E012S	E015S	E012S	E012S	E015S
24	E015S	E015S	E	E	E	E	E012S	011	012	016	017	022	019	020	018	017	011	011	E012S	E012S	E013S	E015S	E012S	E015S
25	E012S	E	E	E	E	E012S	012	010	011	011	012	019	016	017	011	012	011	012	E012S	E012S	E012S	E015S	E015S	E012S
26	E015S	E012S	E	E	E	C	012	011	012	018	014	E020S	017	S	020	020	012	011	E015S	E011S	E012S	E015S	E012S	E017S
27	E012S	E013S	E	E	E	E017S	011	011	013	012	013	020	017	017	012	011	011	011	E015S	E018S	E015S	E015S	E015S	E011S
28	E015S	E	E	E	E	E012S	012	011	012	012	014	020	020	018	020	011	011	011	E016S	E013S	E015S	E015S	E015S	E012S
29	E017S	E	E012S	E	E	E	E015S	011	011	015	017	020	018	016	013	011	011	011	E014S	E013S	E013S	E012S	E012S	E012S
30	E013S	E012S	E	E	E	E011S	E015S	011	012	015	018	019	018	018	020	016	018	012	E014S	E012S	E015S	E014S	E012S	E012S
31	E015S	E	E	E	E	E	E012S	011	015	012	020	020	025	020	017	017	011	E014S	E014S	E012S	E015S	E015S	E015S	E015S
No.	29	29	30	30	30	29	30	30	30	30	30	30	31	30	31	28	28	27	29	30	29	29	28	28
Median	E015S	E012S	E	E	E	E	E013S	011	012	015	017	018	017	017	017	012	011	012	E015S	E015S	E014S	E015S	E015S	E014S
U. Q.																								
L. Q.																								
Q. R.																								

f-min

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 6

IONOSPHERIC DATA

Mar. 1965 | M(3000) F2 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U315S	320S	320	340S	315	325S	335S	365S	355	335	345	355	350	355	I360S	365	325	380S	345	335	U310S	305S	295S	305
2	310	U310S	U325S	350	320	SF	335	350	365	355	335	325	350	340	U365S	365	I360C	I355C	350	320S	315	325	300S	I305S
3	U295S	U325S	U335S	310	320	315	U340S	350	365	350	305	315	335	350	345	C	C	C	C	S	S	S	S	S
4	S	S	325S	S	SF	FS	S	370	345	320H	310	305	320S	340	320	U340S	355	340	325	335S	I300S	I300S	S	S
5	SF	SF	315F	325F	I325S	U330S	345	350	330H	310	U345S	325	335	345	U345R	330	360	355	355	315	U335S	U290S	I290C	I295C
6	295	I320S	320S	315	335	315	340	370	355	345	340	350S	335	335	340	350	355	370	340	330S	305	U305S	SF	315F
7	315S	335S	310S	335	315	325	U335S	345	335	335	320	315	335	335	340	355	360	365	350S	335	U330S	U310S	S	S
8	S	U295S	305S	U315S	335S	335S	I350S	345	345	320	335	330	340	340	355	350	360	355	U365S	350S	I330S	295S	I290S	290
9	I300S	I315S	330S	I355S	360S	SF	345	350	360	345	350	340	350	370	350	I345C	355	370	360	320	330S	320	U310S	U310S
10	U295S	U305S	310S	305S	320S	325	360	360	370	345	345	340	345	345	U355S	370	365	350	355	340S	315	330S	305	U310S
11	305	290S	315S	315	U345S	355	360	375	360	355	340	350	340	325	340	360	350	365	350S	340	U340S	315	290	320
12	295	290S	305	315S	325	305	350	370	375	340	345	355	345	335	350	355	360	375	350S	I330S	S	S	S	S
13	S	S	S	S	S	S	U340S	350	340	330	I340S	340	355	345	360	I345S	U350S	350	330	320	320	335S	U320S	S
14	S	S	U305S	340	345	300	350	350	U340R	340	355	350	J345R	340	350	340	360	355	335	320	U310S	U320S	U325S	U305S
15	I305S	S	S	S	S	U320S	355	360	340	335	I340S	U340S	345	335	U350S	345	345	355	345	325	310	U315S	S	S
16	S	S	S	S	S	S	350S	350	345	340	335	U340R	330	340	340	350	355	360	335	I340S	U325S	SF	SF	SF
17	U310S	U325S	U350S	U330S	345	325	360	365	350	315	330	340	335	350	345	350	355	370	340	I340S	U310S	U295S	S	S
18	S	I315S	U325S	325S	320	320	355	345	340	I345S	340	340	345	I335S	350	350	350	350	U350S	U330S	S	S	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	340	345	350	365	360	355	335	U330S	U320S	U320S	U280S	SF
20	SF	SF	U315F	330F	330F	305	355	355	360	335	325	335	350	345	350	360	350	365	350	325S	I320C	I330C	I305S	285S
21	305F	SF	320F	SF	335F	320F	365	355	345	340	340	335	U320R	330R	350	U355R	350	345	345	310	295S	U285S	I290S	300S
22	310F	SF	SF	SF	330S	325S	375	355	350	U335S	325	315	325	335	340	C	C	C	C	C	C	C	C	C
23	C	C	315S	SF	U320S	360	350	355	U335R	330	320	320	315	345	330	335	330S	I330C	U325S	U350S	325	315	315	315S
24	U295S	290	295	U300S	335	U335S	U350S	315	330	320	335R	U340R	315	330	330	U355S	360	345	325	305	310	I310S	295S	290S
25	U295S	300S	305	295	320	310S	335	340	315H	U330S	335	320	335	340	330	340	330	345	U335S	310	U335S	310	310S	U315S
26	U305S	I305S	305	310	320	C	325	335	340	345	340	335S	U310S	I310S	340	345	350	345	340	320	335	300	U290S	U300S
27	SF	SF	SF	SF	SF	SF	355	340	345	U325S	340	345	330	J345S	340	J350S	335	350	335	320	320	325S	325	315
28	315	305	310	330S	335	335	345	340	345	330	350	355	330	360	335	335	345S	345S	350	335	340	305S	310	305
29	310	SF	310F	320F	335	330	360	360	345	340	340	340	330	U330S	340	J340S	355S	360	355	325	U305S	U310S	U300S	310
30	310	285	300	310	335	320	360	360H	350	345	345	335	320	U325S	330	335	335	340	350S	335	335	325	325	310
31	310S	300	305	315	310	325	365	345	340	U340S	350	355	350	305	330	335S	345	345	345	335S	325	U325S	I320S	I305S
No.	20	18	25	22	25	23	29	30	30	30	30	30	31	31	31	29	29	29	29	29	27	26	21	20
Median	305S	U305S	315S	320	330	325	350	350	345	340	340	340	335	340	345	350	355	355	345	330	320S	U310S	U305S	305S
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

M(3000) F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 7

IONOSPHERIC DATA

Mar. 1965 | M(3000) F1 0.01 | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										380	380	390	385	390H	390	380H								
2										385L	375	380	370	380	380	U385L	C							
3										400	370	I375A	375	365	390	C	C							
4											365	365	365	370	365	375	L							
5										375	370	380	375	365	385L									
6										U410L	390	380	395	375	380	380L	U375L							
7										395L	365	380	365	380	380H	385								
8										U390L	380	370	385	380	380L	380								
9										380H	380	375	380H	375H	380	I380C								
10									390	400L	390	375H	370H	370	385	390								
11										385L	375	380H	380H	370	375H	385H	U380L							
12										400L	385	390	380	380H	380	395L								
13									395L		410	I395A	I395A	390	400	375L	385							
14								380	385	365	395	380	385	385	380	U390L								
15									385	380	365	380	390	375	375H	U385L	A							
16										390	390	380H	375	385	385	385								
17									390L	380H	370	370	380	380	370	395	370L							
18										385	370	380	400	375H	375	405								
19								C	C	C	C	C	380H	395	375	390L	U385L							
20									385	390	370	370H	375H	370	385	390	U390L							
21									395H	375H	365H	375	U370C	380	375	385	U390L							
22										375	365	370H	370	365H	370	C	C							
23									375L	365H	370	380	365	370	380	375	U390L							
24									365	375	355	385	370	365H	370H	380	405							
25										365H	375	370	370	365	380	395	U380L							
26									375	I365A	380	370	395	I365S	350	385	U390L							
27									395L	U380L	370	375	395H	375	380	375								
28									385	390	375	375H	395L	380	375	375								
29									395	375L	395	375H	395	380	390	390	375L							
30									395	380H	380	390	405	380H	380H	370	U370L							
31									375	385	390	385	385H	U385L	355	385	395L							
No.								1	15	28	30	30	31	31	31	28	14							
Median								380	385	380	375	380	380	375	380	385	U385L							
U. Q.																								
L. Q.																								
Q. R.																								

M(3000) F1

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 8

IONOSPHERIC DATA

Mar. 1965 | h'F2 km | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										270	250	255	250	240	250	250								
2										250	270	260	260	260	240	245	C							
3										260	325	265	260	250	250	C	C							
4											300	290	295	260	275	250	245							
5										285	260	265	265	250	250									
6										250	275	250	270	270	260	250	235							
7										260	290	270	260	260	260	240								
8										275	250	265	250	260	250	260								
9										265	260	260	250	250	260	I250C								
10									250	265	260	270	265	255	250	240								
11										260	300	265	260	295	260	250	250							
12										265	260	250	265	270	260	255								
13									260		235	260	255	260	250	260	240							
14								260	260	260	240	265	250	275	260	260								
15									270	270	260	270	260	275	260	250	250							
16										250	275	270	280	260	265	250								
17									250	295	270	260	265	265	260	250	250							
18										260	260	255	270	280	260	250								
19								C	C	C	C	C	265	260	270	260	250							
20									250	265	300	265	260	265	260	260	250							
21									265	275	275	295	300	280	265	255	250							
22										285	290	280	270	265	260	C	C							
23									275	280	270	270	300	260	290	275	260							
24									300	300	280	270	305	280	265	250	245							
25										270	265	275	265	270	270	260	260							
26									265	265	265	280	295	I300S	260	260	250							
27									260	280	260	265	255	270	270	260								
28									260	275	250	250	265L	260	280	275								
29									260	260	265	260	265	280	280	270	260							
30									260	260	260	275	260	295	280	290	260							
31									265	260	260	260	270	U300L	290	270	270							
No.								1	15	28	30	30	31	31	31	28	16							
Median								260	260	265	265	265	265	265	260	255	250							
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 9

19

IONOSPHERIC DATA

Mar. 1965 | h'F | km | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	270	250	225	235	235	225	220	235H	215	230	210	220	210H	210	215H	225	210	225	250	245	300	300	300
2	300	265	260	250	250	260	250	230	245	235	225	225	225	220	215	225	I225C	I225C	225	250	265	250	300	300
3	275	270	230	240	250	250	215	235	230	220	225	I225A	245	225	220	C	C	C	C	250	245	250	275	285
4	280	280	250	210	250	300	225	225	245	235H	225	210	220	225	220	240	240	240	230	230	285	275	300	270
5	265	250	250	250	250	225	220	220	230H	215	230	230	210	230	225	240A	240	220	220	245	225	280	I285C	I295C
6	300	260	260	250	230	250	245	225	230	220	215	220	210	210	225	230	230	225	220	240	270	275	310	270
7	290	250	250	250	250	240	235	225	225	220	220	220	210	220	200H	225	225H	220	215	235	240	265	300	300
8	305	300	260	230	225	230	220	220	235	235	240	235	220	210	250	230	240	215	220	225	245	265	275	295
9	275	265	250	220	220	250	225	230	230	210H	230	225	200H	200H	210	I220C	235	220	210	260	250	250	300	300
10	300	275	275	260	225	225	210	220	220	225H	205	200H	200H	200	250	215	240	225	210	220	245	260	290	275
11	300	295	270	260	235	205	210	220	225	240	200	205H	210H	210	200H	200H	240	220	215	240	230	250	290	265
12	300	300	270	260	240	250	225	220	230	210	210	210	210	200H	200	240	230	220	210	240	250	250	250	250
13	265	265	250	245	250	260	220	240	235	225	225	I205A	I200A	215	200	215	230	I220A	250	U260A	245	235	260	270
14	280	275	250	220	215	225	225	245	235	245	225	215	225	210	210	215	240	230	210	230	260	250	265	270
15	260	275	280	250	220	240	240	225	245	225	235	210	215	210	200H	230	I240A	230	215	250	260	260	265	280
16	275	275	275	250	240	240	220	225	230	205	205	210H	235	225	225	240	245H	240	220	220	225	270	285	270
17	265	250	230	230	240	225	220	230	200	200H	205	220	210	210	210	230	235	225	225	220	250	275	265	250
18	250	250	245	250	250	250	215	225	225H	235	220	200	210	200H	230	225	245	235	215	230	250	255	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	205H	210	200	240	240	230	220	240	245	240	300	290
20	270	250	250	230	225	235	225	240	225	220	200	200H	210H	210	210	240	235	225	215	225	C	C	290	280
21	295	270	250	250	230	215	225	230	210H	205H	205H	210	220	200	230	245	235	235	225	235	265	275	295	285
22	295	275	270	250	210	230	225	230	240	240	215	210H	215	225H	230	C	C	C	C	C	C	C	C	C
23	C	C	260	250	245	205	220	225	205L	185H	225	200	210	215	215	245	240	I240C	240	220	225	215	250	265
24	280	300	290	265	240	230	225	235	230	215	205	225	245	185H	190H	230	225	225	240	265	260	265	280	280
25	260	250	260	260	230	250	220	230	225H	240H	210	225	215	210	230	215	240	245	230	235	230	235	235	275
26	295	275	250	240	230	I235C	250	240	225	I240A	215	235	205	I200S	210	240	240	240	230	230	240	265	270	275
27	290	260	260	275	230	225	220	230	215	210	250	210	200H	205	235	225	235	250	225	230	235	260	250	260
28	275	290	275	250	240	225	230	240	230	230	215	210H	200	230	220	245	250H	245	225	215	230	260	280	295
29	280	300	260	260	235	225	210	235	230	200	210	210H	210	200	235	250	250	240H	220	225	250	250	260	275
30	275	285	260	250	220	250	215	230H	220	180H	235	200	200	200H	205H	230	250	250H	225	220	225	225	250	260
31	270	275	275	255	250	235	225	225	230	210	215	210	190H	200	190	245	245	240	230	225	240	250	265	275
No.	29	29	30	30	30	30	30	30	30	30	30	30	31	31	31	29	29	29	29	30	29	29	29	29
Median	280	275	260	250	235	235	225	230	230	220	220	210	210	210	215	230	240	230	220	230	245	260	280	275
U. Q.																								
L. Q.																								
Q. R.																								

h'F

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W10

IONOSPHERIC DATA

Mar. 1965 | h'Es | km | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	E	E	S	S	160	G	G	G	110	G	G	G	G	G	S	S	S	S	S	S	S
2	S	S	110	105	105	S	105	G	G	G	B	G	120	G	G	C	C	C	S	S	S	S	S	S
3	S	S	E	110	110	S	S	G	S	G	G	115	G	G	G	C	C	C	C	S	S	S	S	S
4	S	S	E	E	E	E	S	G	G	G	125	G	G	G	G	105	G	S	S	S	S	S	S	S
5	S	E	105	105	E	S	S	115	G	G	115	110	110	105	105	105	115	S	S	S	S	S	C	C
6	S	E	E	E	E	E	S	G	G	G	120	120	G	G	G	G	G	S	S	S	S	S	S	S
7	S	S	E	E	E	S	S	155	G	G	125	G	G	G	G	G	G	S	S	S	110	S	S	S
8	S	S	E	E	E	S	S	G	G	125	115	105	G	105	105	100	100	100	100	100	S	S	S	S
9	S	E	E	E	E	E	S	G	G	G	110	G	110	105	105	C	105	G	S	S	S	S	S	S
10	S	S	E	E	E	E	S	G	G	G	G	G	120	G	105	105	G	G	S	S	S	S	S	S
11	S	E	E	100	E	E	S	G	G	G	G	115	G	G	G	100	100	G	S	S	S	S	S	S
12	S	E	E	E	E	E	G	G	G	G	110	G	G	G	G	105	150	120	125	115	S	S	S	S
13	S	E	E	E	E	E	S	G	G	120	110	105	105	G	105	G	G	105	105	105	105	S	S	S
14	S	110	110	105	105	105	G	115	120	110	110	110	G	G	G	105	105	S	S	S	S	S	110	S
15	S	S	E	E	E	S	G	155	G	G	G	G	G	105	105	105	100	100	100	S	S	S	S	S
16	S	S	105	E	E	E	105	G	G	G	120	110	G	105	100	100	100	100	S	S	S	S	S	S
17	S	E	E	E	E	S	G	G	G	110	115	G	G	G	105	105	105	100	100	S	S	S	S	S
18	S	E	E	E	E	E	G	G	G	125	G	G	G	G	105	G	G	G	S	100	S	S	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	105	G	G	G	G	G	S	S	S	S	S	S
20	S	E	E	E	E	E	G	G	G	G	G	G	105	B	105	105	G	G	S	S	C	C	S	S
21	110	S	E	E	E	E	G	G	G	120	115	110	G	G	G	105	105	105	S	S	S	S	S	S
22	S	S	E	E	E	E	150	150	130	135	120	G	G	G	105	C	C	C	C	C	C	C	C	C
23	C	C	E	E	E	E	G	160	G	G	110	G	G	105	G	105	100	C	S	S	S	S	S	S
24	S	105	105	105	100	E	G	G	G	110	110	G	G	G	G	G	105	105	105	105	S	100	S	S
25	S	E	E	E	E	S	G	G	135	G	G	105	G	G	G	G	G	G	S	S	S	S	S	S
26	S	S	E	E	E	C	G	145	G	110	115	G	G	S	G	G	G	G	S	S	S	110	S	110
27	S	S	105	105	E	S	175	G	G	115	110	110	110	105	105	105	105	100	S	S	S	110	S	S
28	S	E	E	E	E	S	G	G	G	G	110	G	G	G	G	100	100	100	S	S	S	S	S	S
29	100	E	100	E	E	E	G	G	G	G	G	G	105	105	105	105	100	105	S	S	S	S	S	S
30	S	S	E	E	E	S	G	G	G	G	G	G	G	G	110	G	G	G	S	S	S	S	S	S
31	S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	100	G	S	S	S	S	S	S
No.	2	2	7	7	4	1	4	8	3	10	18	12	9	8	14	16	16	11	6	5	2	3	1	1
Median	105	110	105	105	105	105	130	150	130	120	115	110	110	105	105	105	100	100	100	105	110	110	110	110
U. Q.																								
L. Q.																								
Q. R.																								

h'Es

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 11

IONOSPHERIC DATA

Mar. 1965 | Types of Es | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								h				1												
2			f	f4	f3		1						c											
3				f	f							c												
4											c					1								
5			f	f				1			c	c	1	1	1	13	c 1							
6											c	c												
7								h			c										f			
8										c	c	1		1	1	14	1	1	1	f				
9											1		1	1	1		1							
10													c		1	1								
11				f								c				1	1							
12											1					1	h 1	c	c	f				
13										c	1	13	12		1			13	1	f2	f			
14		f	f	f	f	1		1	c	1	1	1				1	1						f	
15								h						1	1	1	1	1	1					
16			f				1				c	1		1	1	12	1	1						
17										1	c				1	1	1	1	1					
18										c					1					f				
19													1											
20													1		1	1								
21	f									c 1	1	c				1	1	1						
22							h	h	h	c	c				1									
23								h			1			1		1	1							
24		f	f	f2	f					1	1						1	1	1	f		f		
25									h			1												
26								h		c	c											f		f
27			f	f			h			c	c	1	1	1	1	1	1	1				f2		
28											1					1	1	1						
29	f		f										1	12	1	1	1	1						
30															1									
31																	1							
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

Types of Es

W 12

IONOSPHERIC DATA

Mar. 1965 | foF2 | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	044S	041	U046R	043	039S	033	036	054	059	068	076	073	068	073	063	060	061	056	039	033	035	035	035	035S
2	035	038	U038R	037	031	030	033	050	064	067	068	073	075	075	070	059	055	054	038	033	034	035	034	035
3	035	036	035	035	037S	FS	038S	048	057	063	063	082	087	088	069	063	062	058	043	043	048	044S	040	RS
4	RS	I043R	048S	040	I040R	I046R	U052R	058	061	068	078S	I093R	102	105	081	076	068	064	056	049	048	046S	FS	I046R
5	U049R	052	045	043	035	038S	038	051S	058	062	084R	088	089R	084	063	064	065	067	048	033H	034	033R	033F	U035R
6	035S	035S	033	033S	032S	025	035	052	059	059	063	079	076	065	077	075	067	058	040	031	033	034	033	033F
7	038R	035S	034S	033	032S	033S	040	053	062	060	075	U093R	105	091R	075	070	063	052	042	035	039	034	037	036F
8	038	035	037	038S	035	026	035	053	061	066	079	089	090R	079	070	065	066	061	042	035	035	034R	035	036S
9	036F	041	J036R	036	033	028	036	051S	060	056	066	088	085	080	071	062	063	060	043	029	033	031	030	033
10	033	033	033	032	031	028	038	050	055	059	068	071R	083	075	065	068	061	055	053	035	031	028	031	030
11	030	028	028	030	032	022	036	049	054	052R	059	075	075	072R	065	068	066	062	045	036	036	033	032	033S
12	035	033	032	031	031	029	043	050	060	058	067	075	080	071	071	065	067	061R	050	035	037	037	038	039
13	038	036R	036	034	033	033	048	058H	078R	065	075	082	083	071	063	064	085	060	048	050	048	045	041	043R
14	043	J044R	047	042	036	032	041	055	070	080	085R	080	075	070	065	065	065	066	053	042	042S	041S	U039R	040
15	040	038	037	038	036	028	037S	054	056	063	073	079	075	072R	067	067	065	067	058	036	039S	038	037	U038S
16	038	038	038	U040R	036	033	045	050	053	060	062	071	079	083	072	066	063	065	060	038	029	FS	FS	036S
17	036S	040R	046	I038R	036R	U035R	045	053	053	058	070	083	082	078	075	068	062	058	050	041	038	039	I038R	042R
18	042R	045	I048R	048	043	041	048	054	058	063	076	087	083	077	074	062	058	059	054	035	U040R	040S	I040R	J038S
19	038S	038	039	040	037	032	046	058	060	070	075	072	072	070	060	060	058	058	052	039S	J038R	I042R	043	042S
20	U044R	I044R	I045R	U044R	037	033F	043	053	061	069	073	085	084	075	066	058	060	058	049	036	033	033	033	035
21	035R	035	035	033	030	029	040	049	052	061	062	061	070	076	079	069	061	055	054	045	038	038R	038R	038
22	038	036	036	037	035	028	043	052	055	063	076	085	089	086R	085	068	063	061	053	048	041R	039	U038R	I038R
23	FS	038R	J038R	038S	034R	032	043	051	059	073	074	090	085	077	070	074	077R	076	063	060	045	043	038	040
24	041	040	040	042	040	032	045	049	070	062	082	077	070	082	089	076	061	054	050	054	052	050	048R	046
25	044S	044	039	036	035	032	039	050	055	070	079	083	090R	J085R	084	069	064	068	071S	053	049	041	037	036
26	037	036	036	036	033	028	047	061	070	067	068	070	073	072	089R	075R	065	063	057	056	048	040	041	044
27	043	044R	I040R	038R	J036R	033S	043	053	060	069	078	084R	086	073	070	062	068	069	069	055	043	040	039	039
28	039	038	038S	040	037R	032F	048	057	061	070	076	076	068	070	066	059	063	070	065	052	041	037	036	036R
29	037	037R	036	036	035	032	047	053	060	066	069	079	087	075	069	072	073	067	054	040	039S	040	040	039
30	038	039	040	039	035	036	048	051	060	063	075	068H	062	061	074	071	067	073	073	054	043	034	034S	035
31	037	039	040	039	036	036	050	055	058	072	078	066	066	066	071	072	064	064	061	055	038	040	U038R	FS
No.	29	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	29
Median	038	038	038	038	035	032	043	053	060	063	075	079	082	075	070	067	064	061	053	040	039	038	038	038
U. Q.	042	041	040	040	037	033	047	054	061	069	078	085	087	082	075	071	067	067	058	052	043	041	039	040
L. Q.	036	036	036	035	033	028	038	050	056	060	068	073	073	071	066	062	061	058	045	035	035	034	034	035
Q. R.	006	005	004	005	004	005	009	004	005	009	010	012	014	011	009	009	006	009	013	017	008	007	005	005

foF2

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 1

23

IONOSPHERIC DATA

Mar. 1965 | foF1 | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										410L	420	430	430L	430L	420L	L	L							
2									L	L	430L	430	440L	430L	430	L	L							
3										L	440L	440	450	430H	L	L	L							
4									L	L	440L	450	440L	440L	420L	L	L							
5									LH	400L	420	440L	440	430	L	L	L							
6									L	L	440L	450	440	430	L	L	L	L						
7									L	400	450	LH	440	450L	420	400L	LH							
8									L	L	440	450	440H	440L	430	L	L							
9									L	420L	440	440	440	440	L	L	L							
10									L	LH	460L	440L	440	420	440L	LH	L							
11									L	370	420L	LH	440L	LH	410L	L	L							
12									L	L	430	450	440	440H	410	L	L							
13									L	400	430	LH	440L	440L	430L	400L	L	L						
14									L	L	430	440L	440	430	420	L	L							
15									LH	420	440	440	440	440L	420	L	L							
16									LH	LH	LH	450	450	430	420L	410L	L	L						
17									LH	420L	440	440	440	440	420	L	L	L						
18									L	430L	430	430	440H	430	420	L	L							
19								L	390	430	440	440	460	440	450L	410L	L							
20									L	420	440	440	440	440H	420L	L	LH							
21									L	420	430	450H	450	440	430	L	L	L						
22										L	I440A	I450A	450	440	430	390L	L							
23									L	450	450L	470	LH	450	L	400L	L	L						
24									L	400L	450	450L	470	440	430	L	L							
25									L	430L	440H	450L	440	450L	430L	L	L							
26								L	380L	450R	450L	480L	450	440	420	L	L	L						
27									LH	430L	430L	LH	460	440	430L	L	L							
28									LH	L	430	450L	450H	LH	420L	L	L	L						
29								L	370	420L	450	450	LH	440	430	420L	L	L						
30								L	LH	LH	LH	450	450	450	430	420L	L	L						
31								L	420	430	440L	420	460	460	430	420L	L	L						
No.									4	19	29	27	29	29	26	9								
Median									385	420	440	450	440	440	425	410L								
U. Q.																								
L. Q.																								
Q. R.																								

foF1

Sweep 1.6 Mc to 16.9 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 2

IONOSPHERIC DATA

Mar. 1965 | foE | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	240	I270A	290	305	315	U305R	295	275	230	E180B						
2								E170B	225	265	285R	305	310	310	U295R	275	235R	E180B						
3								E170B	225	I260A	295	310A	I310A	310R	300	275	230	E180B						
4								A	A	270A	295	I305A	315	310	I295A	275	235R	E190B						
5								180	230	280A	295A	I300A	I305A	300	295	A	A	E						
6								E	225	265	A	A	A	I310A	300	270	235	E180A						
7								190	235A	275	295	305	I310R	310	295	270	230	E180B						
8								A	235A	275	A	A	R	A	I295A	275R	230	A						
9								195	240	275	I295A	I305R	U315R	305R	I290R	270	230	A						
10								195	245	280	300	I310R	U315R	310R	290	270	225	E170B						
11								195	240A	A	A	R	U315R	305	290	270	225	A						
12								I195A	240	A	A	A	315	A	A	I270A	230	A						
13								A	255A	I280A	I300A	I315A	320	I310A	I280A	I265A	225	E						
14								A	A	290	A	A	R	I310A	300	270	220	E170B						
15								190	I250A	I290A	I310A	I320A	325R	315	300	I270A	240	A						
16								R	250H	290	A	A	320R	315	300	280A	A	E170B						
17								180	240A	A	A	I315R	320R	305R	295	275	225	E170B						
18								190A	250	285	295A	310A	315R	315	300	285	250	195A						
19								A	I270A	I290A	305	315	320	315	305	285	250	R						
20								E380S	265	285	305	310	320	315	300	285	250	190						
21								210A	255	A	A	315	I320R	315	300A	280	240	A						
22							E	215	260	285	305	310	A	A	A	A	A	A						
23							E	230	I270A	295	310	325	U325R	320	310R	285	245	A						
24							E	225	260	295A	I310A	320R	325R	320	305	290	250	200						
25							E	215	265	290	I310A	I320R	325R	315R	300	I280A	245	A						
26							E	225	270A	290A	A	A	325R	I320A	310	295A	I250A	200						
27							E	195A	250A	280A	A	R	I320R	320	305	285	250	180						
28							E	220	A	A	A	A	R	I320A	305R	285	245	185						
29							E	A	260A	I290A	A	A	R	R	300R	285	260	200						
30							E180B	230	265R	280A	I300R	U315R	320R	I310R	300	280	245	195						
31							E	225	265H	290	305A	315	320R	I320R	U305R	280A	I245A	A						
No.							10	23	28	26	19	21	25	27	29	29	28	20						
Median							E	195	250	280	300	310	320	310	300	275	240	E180						
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

foE

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

A 3

IONOSPHERIC DATA

Mar. 1965 | foEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	022	029	031	034	032	G	G	G	G	G	E018B	E	E	E	E	E	E
2	E	E	J012E	E	E	E	E	025	029	031	033	036	033	G	G	G	G	E018B	E	E	E	E	E018B	E
3	E	E	J017	J018	J013E	J013E	E	E017B	G	029	032	034	032	J034	G	G	G	E018B	E	E	E	E	E	E
4	E	J020	E	E	E	E	E018B	023	027	031	036	035	G	J028G	J031	G	G	E019B	E	E	E	E	E	E
5	E	E	E	E	E	E	E	G	027	029	032	033	030G	030G	J027G	J043	J028	024H	J017	E	E	E	E	E
6	E	E	E	E	E	E	E	E	G	G	J038	034	032	033	029G	021G	G	J015B	J016E	J013E	J013E	J013E	E	E
7	E	E	E	E	J013E	E	J011E	G	025	G	035	034	028G	026G	021G	G	G	E018B	J028	J018	J014E	E	E	E
8	J012E	E	E	J013E	J013E	E	E	025	028	032	J032	J035	031G	033	J036	019G	G	019	E	E	E	E	E	E
9	E	E	E	E	E	E	E	023	028	035	J033	G	030G	J025G	022G	028	G	020	E	E	E	E	E	E
10	E	E	E	E	E	E	E	024	030	G	G	J032S	028G	023G	G	020G	J022G	023	E	E	E	E	E	E
11	E	E	E	E	E	E	E	025	025	029	036	036	028G	024G	020G	G	028	025	018	019	J019	J019	E	E
12	E	E	E	E	E	E	E	020	028	037	J035	032	G	J038	033	028	G	026	J026	J029	J020	E	E	E
13	E	E018B	E	E	E	E	E	022	028	030	J033	032	G	J036	033	028	G	E	E	E	E	E	E	E
14	J014E	E	E	J020	J017	J019	J019	027	J036	036	J036	J049	G	J036	024G	J027G	026	020	E	E	E018B	E	E	E
15	E	E	E	E	E	J013E	E018B	025	029	J034	034	033	025G	023G	021G	J026	J026	J032	J033	J020	E	E	E	E
16	E	E	E	E	J020	J012E	J013E	G	G	G	032	J033	G	G	034	036	030	020	E	E	E	E	E	E
17	E	E	E	E	E	E	E	021	027	032	033	G	030G	022G	019G	019G	G	020	E	E	E	E	E	E
18	E	E	E018B	E	E	E	E	022	029	033	035	035	027G	023G	G	G	027	021	J024	J023	E	J015E	J016E	J017
19	E	E	E	E	E	E	J013E	023	028	031	G	G	G	G	019G	G	G	G	E	E	E	E	E	E
20	J012E	E	E	E	E	E	E	E038S	029	032	G	G	G	033	018G	G	J017N	J015E	J018	J013E	E	E	E	E
21	E023S	E	E	E	E	E	E	025	G	033	032	032	032G	G	032	020G	028	023	E	E	E	E	E	E
22	E	E	E	E	E	E	020	028	035	042	043	044	036	034	J036	033	028	021	J016E	J028	J018	J058	J028	E
23	E	E	J018	E	E	E	J015E	024	028	030	J033	J030G	J031G	G	025G	G	G	019	E	E	E	E	E	E
24	E	J013E	J013E	E	E	E	019	025	029	033	033	J031G	023G	023G	024G	020G	021G	023	E	J015E	E	E	E	J013E
25	E	E	J018	J016E	E	E	J018	026	029	031	033	029G	J030G	J025G	G	J034	G	022	J014E	E	E	E	E	E
26	E	J013E	E	E	J013E	E	019	024	029	J038	J043	J057	029G	033	G	030	J028	020G	J025	J019	J013E	J012E	E	J012E
27	J012E	J016E	E	E	E	E	J016E	023	029	J037	036	029G	G	024G	022G	019G	G	022	J023	J020	E	J020	J020	E
28	E	E	J015E	E	E	E	E	G	032	033	033	J032	032G	033	J031	G	019G	023	J018N	E	E	E	E	E
29	E	J015E	E	J015E	E	E	019	026	030	033	032	034	025G	G	021G	J021G	J027	023	E	J017N	E	E	E	E
30	E	E	E	E	E	E	E018B	G	029	030	G	032	G	024G	G	030	G	023	J020	J012E	E	E	E	E
31	E	E	E	E	E	E	022	025	029	031	032	032	G	G	G	J031	027	023	J016E	E	E	E	E	E
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	023	029	031	033	032	G	G	G	G	G	020	E	E	E	E	E	E
U. Q.	E	E	E	E	E	E	018	025	029	033	035	035	G	033	031	028	027	023	018	018	E	E	E	E
L. Q.	E	E	E	E	E	E	E	020	027	030	032	G	G	G	G	G	G	018	E	E	E	E	E	E
Q. R.								005	002	003	003							005						

foEs

Sweep 1.6 Mc to 16.9 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 4

IONOSPHERIC DATA

Mar. 1965 | f_bEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								021	028	031	033	E032R						E018B						
2								024	029	031	033	035	033					E018B					E018B	
3			E	E				E017B		027	032	034	U032R	028				E018B						
4		E					E018B	023	027	030	035	034		028G	031			E019B						
5									027	029	U032R	032	E030R	027G	023G	029	026	E	E					
6											033	033	E032R	032	028G	021G		B						
7									025		034	033	E028R	026G	021G			E018B	E	E				
8								025	028	031	032	032	E031R	033	035	019G		018						
9								023	028	032	032		028G	024G	022G	028		020						
10								024	030			E032R	027G	022G		019G	U020R	022						
11								025	025	029	036	036	028G	024G	020G		028	025	018	019	019	017		
12								020	028	032	034	U032R		037	033	028		024	024	E	018			
13		E018B						022	028	U030R	033	U032R		034	033	027								
14				E	E	E	E	024	030	034	035	034		033	023G	022G	026	020			E018B			
15							E018B	025	029	033	034	033	024G	023G	021G	U026R	023	023	026	018				
16					017						E032R	033			033	033	029	020						
17								021	027	030	033		028G	022G	019G	019G		U020R						
18			E018B					022	029	033	034	035	027G	023G			026	020	E	E				E
19								023	028	031					U019R									
20								E038S	029	032				033	018G		017		018					
21	E023S							U025R		033	E032R	031	U032R		031	019G	027	023						
22							020	028	034	042	043	043	036	034	035	033	027	021		E028R	E	022	E	
23			E					024	027	028	028	028G	029G		U025R			019						
24							019	025	029	033	033	030G	023G	022G	020G	017G	018G	023						
25			E				E	026	028	031	033	E029R	024G	021G		030		021						
26							019	E024R	029	036	035	035	029G	033		030	026	017G	018	E				
27								023	028	036	035S	029G		024G	021G	019G		022	022	020		E	E	
28									031	032	E033R	E032R	U032R	033	025		018G	023	E					
29							019	026	030	033	E032R	U034R	025G		020G	018G	022	022		E				
30							E018B		U029R	U030R		E032R		024G		G		023	U020R					
31							022	E025R	U029R	E031R	E032R	E032R				030	027	023						
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

f_bEs

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 5

IONOSPHERIC DATA

Mar. 1965 | f-min | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5′N | Long. 140° 08.2′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	E	E	018	017	017	017	023	018	017	017	018	E	E	E	E	E	E
2	E	E	E	E	E	E	E	017	017	017	017	018	020	019	018	017	017	018	E	E	E	E	018	E
3	E	E	E	E	E	E	E	017	E	017	017	018	017	018	017	017	017	018	E	E	E	E	E	E
4	E	E	E	E	E	E	018	E	017	E	018	017	018	017	017	017	017	019	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	017	017	017	017	017	018	017	E	017	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	017	017	017	017	017	018	017	019	017	018	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	017	017	018	017	017	017	017	017	018	E	E	E	E	E	E
8	E	E	E	E	E	E	E	017	017	017	017	017	017	018	017	017	017	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	017	E	017	017	017	019	018	E	017	017	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	017	017	018	018	E025S	017	017	017	017	017	017	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	017	017	017	017	018	017	017	017	017	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	017	017	017	017	017	018	018	017	018	E	017	E	E	E	E	E	E
13	E	018	E	E	E	E	E	017	017	017	017	018	018	018	019	017	017	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	017	017	018	017	018	018	017	E	017	017	E	E	018	E	E	E
15	E	E	E	E	E	E	018	E	017	018	017	018	018	017	017	E	017	E	E	017	E	E	E	E
16	E	E	E	E	E	E	E	017	E	017	017	018	018	017	E	017	018	017	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	017	017	020	017	017	E	E	017	017	E	E	E	E	E	E
18	E	E	018	E	E	E	E	E	017	018	017	018	017	E	018	017	017	017	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	017	017	017	018	017	017	017	017	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E038S	017	018	017	017	017	017	E	017	017	E	018	E	E	E	E	E
21	E023S	E	E	E	E	E	E	017	017	017	017	017	018	017	017	E	017	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	017	017	018	019	019	017	017	017	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	017	017	017	018	018	019	017	018	017	017	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	017	017	017	018	018	017	017	E	017	017	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	017	018	018	017	017	017	018	017	E	017	E	E	E	E	E	E
26	E	E	E	E	E	E	E	017	E	018	017	018	017	019	018	018	017	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	017	017	E026S	017	017	017	017	E	017	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	017	017	017	019	018	018	017	018	017	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	017	E	017	018	022	018	017	018	018	017	017	E	E	E	E	E	E
30	E	E	E	E	E	E	018	017	017	018	018	018	017	018	017	018	017	E	017	E	E	E	E	E
31	E	E	E	E	E	E	E	017	018	017	019	021	E	018	017	019	018	017	E	E	E	E	E	E
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	E	017	017	017	018	018	018	017	017	017	017	E	E	E	E	E	E
U. Q.																								
L. Q.																								
Q. R.																								

f-min

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 6

IONOSPHERIC DATA

Mar. 1965 | M(3000) F2 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	305S	300	U325R	330	345S	325	325	370	355	355	345	355	340	365	350	365	355	375	350	300	315	295	285	290S
2	290	320	U315R	345	305	305	325	345	365	360	345	345	350	355	350	365	360	370	345	305	300	315	290	285
3	305	290	330	305	325S	FS	370S	350	365	350	325	330	330	350	350	340	355	365	330	315	315	330S	300	RS
4	RS	I300R	315S	355	I290R	I295R	U325R	360	330	335	285S	I310R	320	335	335	345	340	360	350	305	280	315S	FS	I290R
5	U300R	310	320	325	330	330S	340	355S	330	335	340R	340	350R	355	345	345	340	345	360	310H	320	305R	290F	U285R
6	290S	300S	320	310S	345S	310	320	360	365	355	335	330	355	340	340	350	360	360	355	295	290	305	295	285R
7	315R	295S	320S	305	320S	320S	350	360	340	325	305	U325R	335	340R	360	355	375	365	345	300	335	295	285	275F
8	290	295	300	325S	345	320	345	360	345	335	320	335	340R	345	355	350	360	375	355	315	315	310R	285	305S
9	305F	330	J360R	320	335	315	335	370S	350	340	325	345	335	340	340	340	350	365	350	310	305	305	300	290
10	290	305	295	280	335	330	345	360	365	355	310	315R	350	345	335	340	355	360	360	335	340	285	300	295
11	290	300	305	315	360	345	360	355	370	365R	315	345	335	335R	355	355	350	370	355	325	335	325	285	305S
12	310	305	300	320	320	310	360	380	370	335	345	335	340	345	355	370	365	375R	360	300	310	310	310	305
13	300	305R	315	305	295	305	355	320H	360R	325	335	355	350	350	340	330	355	350	330	300	315	310	310	300R
14	300	J305R	330	340	335	315	340	325	330	335	355R	355	345	350	355	355	350	365	335	320	310S	320S	U310R	300
15	300	290	295	325	340	320	350S	355	345	335	325	345	345	340R	345	345	355	350	360	290	290S	295	300	U300S
16	305	300	305	U330R	330	305	345	360	360	345	325	325	325	350	355	335	340	355	355	360	310	FS	FS	305S
17	305S	330R	330	I335R	310R	U315R	355	370	355	330	325	325	325	335	345	355	355	365	345	330	315	295	I290R	310R
18	310R	310	I315R	330	325	305	335	370	345	325	330	335	330	340	350S	340	350	365	360	330	U295R	300S	I290R	J315R
19	305S	310	295	325	325	355	345	360	335	345	340	345	340	360	350	350	345	360	350	345S	J310R	I310R	305	305S
20	U300R	I305R	I320R	U345R	345	305F	350	340	345	340	325	330	345	335	350	360	355	350	350	335	305	290	290	300
21	295R	305	315	335	320	315	350	365	350	350	345	330	315	330	340	355	355	350	345	335	305	290R	290R	290
22	290	300	305	325	345	320	355	355	330	315	315	320	325	330R	340	355	350	355	340	320	315R	310	U300R	I305R
23	FS	300R	J305R	315S	325R	315	350	355	325	315	310	335	340	325	325	325	335R	345	335	335	330	325	305	300
24	305	300	300	310	350	330	335	345	345	310	330	325	315	315	340	345	360	355	320	315	310	310	295R	295
25	295S	310	310	290	295	315	360	365	330	330	325	315	335R	J330R	345	335	340	340	355S	340	310	330	290	300
26	300	305	310	310	330	305	340	345	355	355	340	315	315	320	335R	350R	355	350	340	325	325	315	290	300
27	315	310R	I310R	320R	J330R	335S	350	360	335	340	335	330R	340	335	345	350	340	350	350	335	335	300	310	295
28	295	295	290S	325	325R	315F	355	355	345	360	345	345	325	335	350	335	335	345	355	345	320	325	305	310R
29	295	295R	295	320	330	345	360	380	350	350	330	320	335	335	335	335	350	365	355	340	310S	310	305	305
30	300	300	300	325	315	335	355	355	350	350	345	310H	340	310	325	340	340	345	360	350	350	295	295S	310
31	295	305	305	325	330	320	360	380	345	340	360	335	335	335	325	340	345	345	345	360	315	285	U290R	FS
No.	29	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	29
Median	300	305	310	325	330	315	350	360	345	340	330	330	335	340	345	345	350	360	350	325	315	310	295	300
U. Q.																								
L. Q.																								
Q. R.																								

M(3000) F2

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 7

IONOSPHERIC DATA

Mar. 1965 | M(3000) F1 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5′N | Long. 140° 08.2′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										360L	375	385	370L	360L	360L	L	L							
2									L	L	375L	375	365L	370L	355	L	L							
3										L	360L	360	355	370	L	L	L							
4									L	L	360L	350	345L	355L	355L	L	L							
5									LH	355L	360	355L	365	370	L	L	L							
6									L	L	350L	355	365	375	L	L	L	L						
7									L	380	350	LH	360	360L	370	375L	LH							
8									L	L	355	345	365H	365L	360	L	L							
9									L	380L	365	355	365	365	L	L	L							
10									L	LH	345L	365L	360	385	365L	LH	L							
11									L	430	380L	LH	360L	LH	390L	L	L							
12									L	L	370	360	365	375H	385	L	L							
13									L	370	370	LH	365L	380L	370L	350L	L	L						
14									L	L	370	365L	370	375	360	L	L							
15									LH	355	360	365	365	350L	370	L	L							
16									LH	LH	LH	355	355	365	360L	365L	L	L						
17									LH	350L	360	365	365	360	365	L	L	L						
18									L	355L	370	370	370H	370	365	L	L							
19								L	385	370	365	380	360	365	355L	365L	L							
20									L	360	365	365	375	365H	365L	L	LH							
21									L	360	365	365H	355	365	360	L	L	L						
22										L	I360A	I355A	345	365	370	380L	L							
23									L	355	360L	350	LH	360	L	360L	L	L						
24									L	375L	360	360L	355	365	350	L	L							
25									L	350L	365H	360L	365	345L	350L	L	L							
26								L	375L	385R	375L	340L	375	365	380	L	L	L						
27									LH	350L	370L	LH	365	365	365L	L	L							
28									LH	L	390	365L	365H	LH	360L	L	L	L						
29								L	405	360L	375	380	LH	380	360	355L	L	L						
30								L	LH	LH	LH	380	370	360	375	355L	L	L						
31								L	370	375	365L	405	370	350	355	345L	L	L						
No.									4	19	29	27	29	29	26	9								
Median									380	360	365	365	365	365	360	360L								
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

M(3000) F1

A 8

IONOSPHERIC DATA

Mar. 1965 | h'F2 km | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										260	250	255	250	250	265	245	230							
2									245	250	260	265	255	255	265	250	235							
3										225H	295	270	265	250	250	255	245							
4									275	255	300	290	275	260	260	250	250							
5									255	270	275	260	255	255	250	250	250							
6									245	250	290	280	250	265	270	250	250	230						
7									255	265	320	280	270	255	250	250	230							
8									255	260	295	265	265	260	255	265	245							
9									250	275	300	255	265	270	255	250	245							
10									245	265	310	270	270	260	290	265	240							
11									245	245	290	270	275	255	270	255	250							
12									230	255	265	285	270	275	255	245	245							
13									245	260	275	250	270	250	275	280	245	215						
14									255	260	250	255	270	260	250	250	250							
15									255	270	290	255	275	265	250	260	245							
16									250	250	295	295	290	250	250	260	250	230						
17									250	275L	290	280	275	265	260	250	245	230						
18									260	290	275	265	260	265	260	260	245							
19								230	255	265	260	260	275	250	270	260	255							
20									265	270	280	280	265	270	250	255	245							
21									245	270	265	300	300	280	265	250	250	240						
22										305	280	280	275	275	260	250	250							
23									295	295	280	280	260	280	285	280	265	245						
24									265	250	280	275	300	295	260	250	240							
25									290	290	275	260	270	265	265	260	250							
26								235	250	250	275	305	285	285	280	245	250	245						
27									250	270	275	270	265	270	275	260	260							
28									270	250	265	250	280	295	260	270	260	250						
29								225	250	255	290	295	270	275	280	275	250	230						
30								230	260	260	270	285	280	300	300	265	265	250						
31								230	275	270	250	275	280	295	295	275	260	255						
No.								5	28	31	31	31	31	31	31	31	31	11						
Median								230	255	260	280	270	270	265	260	255	250	240						
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 9

IONOSPHERIC DATA

Mar. 1965 | h'F | km | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	265	275	245	245	220	245	245	230	240	200	230	220	220	215	205	225	225	215	205	250	255	280	305	300
2	295	255	255	235	230	280	245	230	245	235	230	220	220	210	210	205	225	230	210	270	265	275	295	295
3	280	255	245	255	250	275	225	230	240	225H	230	230	235	200H	225	215	225	220	220	255	250	240	270	300
4	300	280	245	210	290	290	250	230	245	235	230	220	215	230	215	230	245	220	210	240	300	245	265	280
5	285	255	240	240	225	235	235	225	205H	200	230	210	220	205H	215	220	240	230	205	210H	245	275	315	315
6	300	285	255	265	240	275	250	230	230	225	220	225	225	215	205	205H	240	225	205	250	295	275	300	305
7	250	255	250	255	250	250	225	235	230	205	225	195H	215	230H	205	215	205H	205	215	250	240	255	295	325
8	300	305	285	250	225	250	235	230	230	210	210	205	200H	225H	225	225	230	225	205	230	250	255	295	290
9	280	250	230	245	220	260	240	230	230	200H	205	250	230	215	205	205	235	225	210	245	255	260	300	315
10	300	290	295	265	230	235	220	225	225	215H	200H	220S	205H	220	225	215	225	225	215	205	225	285	295	310
11	300	300	290	270	225	245	210	225	220	195	235	A	235	210H	200	255	245	225	215	235	250	245	285	300
12	275	295	295	265	250	270	230	220	230	220	225	210	200	220	215	200H	240	215	210	245	260	275	255	280
13	285	295	255	255	275	290	230	230	215	215	210	220H	200	225	200	200	250	220	220	250	240	235	260	275
14	275	280	240	220	225	255	245	240	230	220	215	200	210	210	205	220H	230H	230	205	230	255	245	270	280
15	280	300	290	250	225	240	230	240	235H	205	220	220	220	210	225	210	245	245	225	220	280	270	295	275
16	280	275	275	240	245	260	225	230	220H	200H	195H	210	235	220	215	230	240	235	210	205	270	300	325	295
17	260	250	230	215	230	245	215	200H	230	225	225	230	200	200	220	240	235	235	225	220	250	290	285	270
18	255	260	250	250	240	250	235	230	230	230	225	215	200H	225	235	245	235	230	215	225	265	275	280	280
19	280	280	270	250	230	235	230	230	205	220	200	200H	210	190	225	230	235	230	215	220	255	270	270	280
20	265	250	255	230	215	250	230	245S	230	230	210	210	200	200H	225	210	200H	230	220	205	265	295	305	290
21	1290S	280	260	245	240	250	230	235	225	225	200	200H	200	210	210	250	240	235	225	220	265	295	300	295
22	295	295	280	250	220	255	225	230	240	1250A	1230A	1230A	235	225	240	230	220	235	220	1230A	245	275	285	275
23	290	290	270	250	245	235	215	220	200H	230	250	215	220	235	230	210	245	240	220	215	215	245	255	270
24	270	295	290	260	225	230	235	235	230	205	200	200H	230	200	220	230	225	235	230	245	250	260	260	295
25	295	255	250	280	245	250	230	230	220	215	195H	200H	200	200	200H	235	235	250	225	215	250	225	285	280
26	295	285	260	250	235	255	240	225	220	220	200	200H	210	200	200	250	245	240	230	235	235	240	300	280
27	260	270	245	245	230	240	220	235	205H	225A	210	190H	220	200	215	200H	250	245	230	210	215	250	265	275
28	295	295	295	250	235	245	230	235	220H	220	205	200	195	200H	215	235	235	240	215	215	245	245	275	275
29	295	285	300	260	235	220	210	225	200	225H	220	200	195H	215	200	205	245	240	210	210	255	255	260	280
30	300	290	280	250	250	235	215	225	210H	205H	200H	205	225	200	200	250	230	245	220	210	205	250	290	275
31	290	275	265	250	230	250	215	230	220	220	205	200	200H	195	200	235	245	240	230	210	225	290	300	300
No.	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
Median	285	280	260	250	230	250	230	230	230	220	215	210	215	210	215	225	235	230	215	225	250	260	285	280
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

h'F

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

A 10

IONOSPHERIC DATA

Mar. 1965 | **h'Es** km | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	155	165	165	150	E150G	G	G	G	G	G	B	E	E	E	E	E	E
2	E	E	E	E	E	E	E	150	155	155	150	130	135	G	G	G	G	B	E	E	E	E	B	E
3	E	E	110	105	E	E	E	B	G	130	145	125	120	105	G	G	G	B	E	E	E	E	E	E
4	E	105	E	E	E	E	B	150	150	140	125	120	G	110	105	G	G	B	E	E	E	E	E	E
5	E	E	E	E	E	E	E	G	170	140	130	120	110	105	100	100	100	100	100	E	E	E	E	E
6	E	E	E	E	E	E	E	E	G	G	130	130	125	125	115	110	G	B	E	E	E	E	E	E
7	E	E	E	E	E	E	E	G	140	G	135	130	110	105	105	G	G	B	110	115	E	E	E	E
8	E	E	E	E	E	E	E	155	150	135	115	110	110	105	100	100	G	100	E	E	E	E	E	E
9	E	E	E	E	E	E	E	150	150	130	120	G	105	105	100	145	G	150	E	E	E	E	E	E
10	E	E	E	E	E	E	E	160	150	G	G	115	105	105	G	100	100	135	E	E	E	E	E	E
11	E	E	E	E	E	E	E	155	130	120	160	155	110	105	105	G	155	135	125	120	120	115	E	E
12	E	E	E	E	E	E	E	140	E165G	130	120	120	G	110	115	125	G	140	120	115	115	E	E	E
13	E	B	E	E	E	E	E	125	140	130	125	125	G	110	110	105	G	E	E	E	E	E	E	E
14	E	E	E	105	110	110	110	140	120	115	115	110	G	105	105	100	100	130	E	E	B	E	E	E
15	E	E	E	E	E	E	B	155	155	110	110	105	105	105	100	100	100	100	100	100	E	E	E	E
16	E	E	E	E	105	E	E	G	G	G	125	130	G	G	130	125	120	115	E	E	E	E	E	E
17	E	E	E	E	E	E	E	140	140	125	125	G	105	100	100	100	G	145	E	E	E	E	E	E
18	E	E	B	E	E	E	E	145	150	130	120	120	105	100	G	G	155	130	100	115	E	E	E	115
19	E	E	E	E	E	E	E	145	150	130	G	G	G	G	100	G	G	G	E	E	E	E	E	E
20	E	E	E	E	E	E	E	S	150	130	G	G	G	140	100	G	N	E	100	E	E	E	E	E
21	E	E	E	E	E	E	E	170	G	150	115	115	105	G	125	100	155	140	E	E	E	E	E	E
22	E	E	E	E	E	E	155	150	140	130	120	115	115	115	110	120	120	115	E	115	115	110	110	E
23	E	E	105	E	E	E	E	140	130	110	105	105	105	G	100	G	G	130	E	E	E	E	E	E
24	E	E	E	E	E	E	150	145	130	120	115	105	105	105	100	100	100	135	E	E	E	E	E	E
25	E	E	100	E	E	E	110	165	145	130	115	110	105	105	G	125	G	150	E	E	E	E	E	E
26	E	E	E	E	E	E	155	160	135	115	110	110	110	105	G	135	125	105	100	100	E	E	E	E
27	E	E	E	E	E	E	E	140	130	115	110	105	G	100	100	100	G	155	100	100	E	110	110	E
28	E	E	E	E	E	E	E	G	145	110	120	105	105	105	105	G	100	145	N	E	E	E	E	E
29	E	E	E	E	E	E	150	E170G	145	130	120	110	105	G	100	100	100	150	E	N	E	E	E	E
30	E	E	E	E	E	E	B	G	E165G	130	G	125	G	105	G	135	G	150	100	E	E	E	E	E
31	E	E	E	E	E	E	155	160	140	130	125	130	G	G	G	125	130	135	E	E	E	E	E	E
No.		1	3	2	2	1	7	23	27	27	27	27	20	23	22	20	14	22	10	8	3	3	2	1
Median		105	105	105	110	110	150	150	145	130	120	120	105	105	100	100	110	135	100	115	115	110	110	115
U. Q.																								
L. Q.																								
Q. R.																								

h'Es

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 11

IONOSPHERIC DATA

Mar. 1965 | Types of Es | 135° E Mean Time (G. M. T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								h2	h	h h	h	h												
2								h2	h	h	h	h	h											
3			f	f2						h	h	h	h	12										
4		f2						h2	h	h 12	h2	h		1	12									
5									h	h	h	h	1	12	12	12	12	1	f					
6											h	h	h	h	1	1		1						
7									h		h	h	1	1	1				f	f				
8								h2	h	h	h	c2	12	12	13	12		1						
9								h	h	h	h		12	12	1	h 12		h2						
10								h	h			h	12	1		12	1	h2						
11								h2	h	h	h h	h c	1	1	1		h2	h3 1	f2	f	f	f2		
12								h	h	h2	h	h		c2	h	h		h2	f5	f	f2			
13								h2	h	h	h	h		12	12	13								
14				f2	f2	f2	f f	h h	c3	c2	c	c		12	12	1	h	h						
15								h2	h c2	c2	c2	12	12	1	12	12	12	12	f3	f2				
16					f2						h	h			h 12	h2 1	c	1						
17								h	h	h	h		12	1	1	1		h						
18								h	h	h2	h	h2	1	1			h .	h2	f	f				f2
19								h 12	h	h					1									
20									h2	h				h	1		1		f					
21								h h		h h	h	h2	12		h 1	1	h	h3						
22							h2	h2	h2	h2	h2	h3	h2	c2	c2	h2	c2	12		f2	f3	f2	f2	
23			f2					h2	h	1	12	12	12		12			h						
24							h2	h2	h	h2	h	1	12	1	1	1	1	h2						
25			f2				1	h	h	h	c	c	12	1		h		h						
26							h2	h	h2	h	c3	c2	12	1		h	h	1	f2	f				
27								h	h	h2	c	1		12	1	1		h	f2	f2		f2	f2	
28									h	c	h	1	12	12	12		1	h3	f					
29							h	h	h	h	h	c	1		1	1	12	h2 12		f				
30									h	h		h		1		h		h	f					
31							h2	h	h	h	h	h				h	h	h						
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Types of Es

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Mar. 1965 | foF2 | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	043	041	044	047	047R	030	037	060	060	068	084	075	071	071	068	067	058	056	042	031	034	032	032	031
2	033	034	033	035	024	026	032	052	062	073R	070	078R	086	072	069	066	057	058	038	033	037	038	035R	034
3	036	038R	034	037	033	031	037	050	057	068	080R	086	093	086	073	069	065	057	045	043	045	042	035	034
4	035R	037	038	035	U030F	034F	U053R	064R	063	076R	083R	102	U104R	112	U089R	071	072S	066	052	049R	049	051	048	047
5	U047F	051S	051	047	032	030	036	051	060	072S	084	102R	098R	079	073R	066	066	071	051	037	035R	035	035	035R
6	035	036	037	033	029	027	033	054	058	067	065	071	093R	U076R	074R	U081R	073R	065R	039	031	033	034	033	035F
7	U035F	034R	032	035	030	030	037	053	061	067	U076R	U103R	114	119	088R	071	068	056	042	034	035	034	033	034
8	034R	033R	035	038	035	025	034	054	066	075	073	102R	097R	100	U082R	067	064	053	040	035	033	033	033	U034F
9	036R	038	034	036	026	026	037	055	062	059	067	087R	102R	U100R	089	076R	064	059	051	030	028	029	030	031
10	031	030	030	033	030	023	033	049	056	063	060	081	084	081	073S	066	071S	063	053	038	027	024	028	U031F
11	028F	029	029	032	033	021	034	050	059	063	056	067	085	083	074R	071	065	064R	043	039	033R	034	U031R	032
12	033	033	033	033	033	031	044	053R	059	063	065	J080R	093	088R	U077R	065	062	068	046	033	A	U033R	034R	035R
13	036	033	035	033	030	031	045	057	U077R	066	075	092R	088	091	067	069	080R	073R	047	044	046R	040R	036	037
14	040	041	U048R	045F	031F	030	040	053	U075R	U080R	077R	U079R	C	C	C	063	066	068	057	042R	041R	042R	043F	042
15	043	J040R	040	040	036	029	039	056	063	068	072R	088	083R	080R	J079R	068	068	066	068	035	036	035	036	035R
16	036	038	043	U049R	031	030	042	052	056	C	063	078R	087	094	074	065	066	075R	060	032	C	030	028	030F
17	032	U037R	041R	025	022	025	040	051	057	059	068	081	086R	085	U078R	U073R	066	056	051	041	036	036	034	U040R
18	U041R	044R	U047R	J046R	033	033R	046	057	058	066	078	089R	103R	089R	078R	J066R	064	063R	052	I040A	034	032R	U036R	036R
19	035R	036R	037	040	037	032	044	057	060	072	073R	072R	U078R	075R	061	059	060	063	053	036	033	035	U036R	037R
20	U045R	047	U045R	046	036	029	043	052	061	073R	082	087	091	094	082	064	059	059	051	042	032	030	032	033
21	035	035	U035R	038	027	026R	043	049	057	057	064	063	U074R	086	079R	U074S	068	060	052	049	036	036	036	036R
22	U036R	035	035	036	033	024	043	051	057	063R	077R	088	096	086	096	U074R	068	062	058	044	040	U044R	U037R	U036R
23	036R	U036R	038	039	030	033	041	054	057	067	U073R	095S	093	087	081	079	087	R	062S	053	040S	039	035S	U038R
24	040	036	038	039	035R	025	043	056	066	U073S	078R	083	085R	086	099R	086	072S	060	050	055	049	047	047	043
25	044S	U046R	040R	035	033	029	049	054	055	065	081	091	098	J101R	089	U085R	I079R	U074S	U077R	059S	038S	040	037	037
26	036	037R	037	039	028	026	051	071S	U068R	059R	067	U074R	087	U084R	U085R	R	072R	067	060	055R	043	038	035R	U034R
27	040	043	036R	037	031	029	048S	053R	064R	066	077	089	103	090	U072R	C	C	I073R	U072R	059	038	U034S	036	038
28	038	J033S	J036F	J040S	029	029	049	060	061	072	C	C	C	C	C	066	063	U071S	066	054	038	039	034	J036F
29	J037R	I038R	037F	036	036	028	049	057	055	061	U073R	080	095R	C	C	U076R	U076R	R	056	043	034	037	036	036
30	035	037	036	040R	032	033	047	056	054	067	071	073	072	065	073	088	U080R	U076R	U075R	064R	035	030	031	033
31	035	035	038	043	035	034	049	053	059	068	077	073	081R	080	080R	075	073	070S	068	U055R	031	035	U033F	U033S
No.	31	31	31	31	31	31	31	31	31	30	30	30	29	28	28	29	30	29	31	31	29	31	31	31
Median	036	037	037	038	032	029	043	054	060	067	073	082	091	086	078R	069	067	064	052	042	036	035	035	035
U. Q.	040	040	040	040	035	031	047	057	063	072	078	089	098	092	084	076	072	070	060	053	040	039	036	037
L. Q.	035	035	035	035	030	026	037	052	057	063	067	075	084	080	073	066	064	059	047	035	033	033	033	033
Q. R.	005	005	005	005	005	005	010	005	006	009	011	014	014	012	011	010	008	011	013	018	007	006	003	004

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

Mar. 1965 | foF1 | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	440L	L	450L	L	L	L								
2										L	L	440L	L	L	L	L	L							
3									L	L	440L	440L	L	L	430L	L	L	L						
4									L	L	460L	440L	L	440L	420L	L	L							
5										L	450L	L	L	440L	L	L	L							
6										L	L	460L	450L	440L	L	L	L							
7									L	410L	440L	L	S	440L	430L	L	L							
8									L	420L	L	450L	450L	L	L	L	L							
9									L	L	L	440L	A	450L	440L	L	L	L						
10										L	440L	L	L	440L	L	L	L	L						
11									L	L	L	440L	L	L	430L	L	A							
12									L	L	L	460L	460L	L	410L	L	L	L						
13								L	L	L	L	L	L	L	L	410L	L	L						
14								L	L	L	L	450L	C	C	C	440L	L	L						
15									L	L	L	L	L	L	430L	L	L	L						
16									L	C	420L	L	440L	L	L	L	L	L						
17									L	L	430L	440L	460L	440L	L	L	L	L						
18									L	420L	430L	L	L	L	430L	L	L							
19									L	430L	L	L	450L	440L	L	L	L	L						
20									L	L	L	L	460L	440L	L	L	L	A						
21									L	L	L	L	R	S	420L	L	L	L						
22								L	L	L	A	A	L	L	L	L	L	A						
23								L	L	L	L	R	L	L	L	L	L	L						
24								L	L	L	L	L	S	L	L	400L	L	L						
25										L	L	L	460L	L	L	410L	R							
26								L	L	L	L	L	L	460L	L	L	L	A						
27									L	L	L	L	450L	L	L	C	C	L						
28									L	U420L	C	C	C	C	C	410L	L	L						
29										L	L	L	450L	C	C	L	L	A						
30										420L	L	L	L	L	S	L	L	L						
31								L	L	L	L	450L	S	460L	440L	S	L	L						
No.										6	9	11	11	11	10	5								
Median										420L	440L	440L	450L	440L	430L	410L								
U. Q.																								
L. Q.																								
Q. R.																								

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 2

IONOSPHERIC DATA

Mar. 1965 | foE | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							E130S	170	240	280	310	300	290R	310	310	285	250	175						
2							E130S	170	240	275	295	310	320	300R	285	285	245	180						
3							E140S	170	235	270R	295	320	300R	325	310	290	245	160						
4							E150S	175R	220	280	300	300	I305A	315	300	I275A	250R	155R						
5							E140S	170	235R	275	295	A	315R	320	315	285A	255R	A						
6							E130S	165	240	275	300	I315A	325A	325A	I315A	300	255R	A						
7							E140S	180	240R	290	300	325A	I320A	320A	I310A	I290A	250	E150B						
8							E150S	175	245	275	295	A	A	A	315	280	240	150						
9							E150S	180	255R	290A	I305A	I310A	I320A	320R	310R	280	245	175R						
10							E150S	160	255	285	300	I320R	325	325	305	290R	240	185						
11							E160S	200	260R	230R	300	290R	A	A	300	290	230R	A						
12							E150S	200	260R	285	A	A	A	A	300	280R	250	190						
13							E150S	170	260	A	A	A	A	325	305	290	250	155R						
14							E140S	220	A	A	A	A	C	C	C	A	A	180						
15							E170S	190	270R	290	A	A	A	315R	305	285	240R	A						
16							E130S	180R	250	C	305	325	325R	330R	310	295	260R	190	E130B					
17							E140S	190	230R	285	280	I320A	335	325	310	I280A	250R	A	E130B					
18							E140S	200	A	300R	I300A	310R	330	325	310R	A	A	A	E150S					
19							E160S	230	I270A	I290A	335R	340R	330	310	310	285	260R	205	E160S					
20							E140S	I210A	255R	300	315R	325	330R	320	315	290	255R	200	E160S					
21							E140S	210	260R	310R	A	A	325	325	305	290	255	205	E140S					
22							E140S	195	270R	305	310	325R	310	300	305	280	255	A	E130B					
23							E140S	180	270R	305R	315R	I330R	340R	330	320	290	250R	175	E140S					
24							E150S	205	270R	295	305	A	330	330R	315	300	265	200	E130B					
25							E140S	200	270R	295	305R	A	A	I330R	315	A	A	215	E160S					
26							E150S	200	270	300	A	A	R	A	A	A	A	A	E150S					
27							E150S	200	270	285	285	A	A	335	300	C	C	A	E150S					
28							E150B	245	280	A	C	C	C	C	C	I300A	270R	220	E140S					
29							E150B	245	U290A	315R	A	A	325R	C	C	290	255	A	E150S					
30							E140B	225R	285	300R	I320A	R	R	R	320	300	255R	210	E140S					
31							E150B	215	280R	275	315	315	I320R	320	310	300	255R	205	E140S					
No.							31	31	29	27	23	17	20	23	27	26	26	21	16					
Median							E140S	195	260	290	300	320	325	325	310	290	250R	185	E140S					
U. Q.																								
L. Q.																								
Q. R.																								

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 3

IONOSPHERIC DATA

Mar. 1965 | foEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	E013B	E016B	E013B	E011B	E013B	E013S	026	G	034	033	036	031	G	G	G	G	G	E014S	E013S	E015S	E015S	E015S	E015S
2	E015S	E013B	E011B	E013B	E011B	E014B	E013S	G	030	032	035	035	035	033	032	G	G	G	J017	E013S	E015S	E015S	E014S	017
3	E015S	E013B	E014B	020	024	018	E014S	G	G	G	034	035	035	G	G	G	G	G	E015S	E015S	E014S	E013S	E014S	E016S
4	017	019	E013B	E014B	E014B	E014B	E015S	025	G	032	036	035	040	G	G	034	G	G	E014S	E014S	E014S	E015S	E013S	E015S
5	E015S	023	E011B	E011B	E012B	E014B	E014S	G	G	G	035	034	030G	025G	034M	032	J026	025	024	E015S	E016S	E014S	E014S	E012S
6	E013S	E013B	E015B	E015B	E013B	E015B	E013S	G	G	031	035	036	035	036	033	G	G	020	J024	024	020	021	019	E015S
7	E015S	E014B	E013B	E014B	021	019	E014S	G	G	G	G	040	036	036	036	038	G	J025	E014S	E015S	E016S	E015S	E015S	E016S
8	E015S	024	E013B	021	E011B	E013B	E015S	G	G	032	034	J038	036	034	032	030	G	G	J024	J024	019	E013S	E015S	E014S
9	E011B	E013B	E013B	E013B	E011B	E014B	E015S	G	G	J028G	032	032	J048	035	J030G	017G	024	G	024	017	E016S	022	E015S	E016S
10	E017S	E015S	018	E013B	E013B	E015S	E015S	G	020G	J027G	035	J029G	G	G	J025G	017G	029	023	022	E014S	E016S	022	020	E013S
11	E015S	017	E012B	E013B	E012B	018	020	035	024G	G	032	031	033	J033	035	033	036	024	021	024	J041	022	J020	021
12	J024	E014B	E011B	E015B	E014B	E013B	E015S	028	030	032	J040	035	034	032	032	G	G	G	022	J030	J043	J025	J024	J028
13	021	021	E014B	E014B	E013B	E014B	E015S	G	029	033	J043	036	035	G	G	G	G	G	E015S	E015S	E014S	E014S	E016S	E013S
14	E015S	E014B	017	024	E013B	023	025	G	025G	034	036	036	C	C	C	J041	J029	021	E014S	E015S	E014S	E015S	E015S	E014S
15	E016S	E014B	018	E013B	E013B	E015S	E017S	025	030	032	036	J040	035	G	033	035	030	022	J024	J018	018	E015S	E014S	E016S
16	E013S	E015S	E016B	E012B	E011B	E014B	E013S	G	G	C	033	034	036	G	033	018G	G	018G	E013B	J026	C	E016S	E014S	E015S
17	024	022	E014B	E011B	E013B	E014B	E014S	025	G	034	035	035	G	G	G	J026G	031	J022	J018	J018	020	019	E013S	E014S
18	E015S	E013B	E015B	E011B	E013B	018	019	G	030	035	036	035	G	G	G	J038	J033	J030	J024	J049	J045	J024	023	J026
19	017	E015S	E013B	E013B	E011B	E013B	E016S	018G	J026	J029	G	G	G	G	G	G	G	G	E016S	E014S	018	018	E016S	E015S
20	E015S	E013B	E013B	E013B	E014B	E013B	029	J025	G	035	G	G	G	G	G	G	G	031	018	018	E016S	022	E015S	E017S
21	E015S	E013B	E015B	E012B	E016B	E015B	E014S	027	031	036	032	032	G	G	J023G	J024G	029	035	015	018	E014S	020	E015S	E015S
22	E015S	E014B	E013B	018	E015B	018	E014S	G	032	J048	J053	J044	J043	J045	J038	033	033	J030	J024	021	J033	J030	J026	018
23	E015S	E015S	E014B	E013B	E014B	E015B	E014S	G	J025G	031	033	G	G	G	019G	J028G	G	024	E014S	017	E014S	E015S	E015S	E015S
24	E015S	E013B	E014B	E013B	E013B	E015B	020	025	J026G	032	038	J038	G	J025G	G	G	G	024	022	019	E015S	E015S	E014S	E015S
25	E015S	E015S	E014B	017	018	E014B	E014S	025	033	032	033	035	J043	G	G	033	J028	G	021	E016S	019	E015S	E015S	E016S
26	E015S	E013B	016	E012B	E011B	E015S	018	024	035	G	J030	035	032	J039	J042	036	033	J051	021	020	019	E014S	E015S	E016S
27	022	023	018	018	E012B	E014B	E015S	G	030	032	036	033	036	J026G	028G	C	C	025	030M	024	023	J019	030M	024
28	019	E015S	E015B	E013B	E014B	E015B	E015B	028	031	035	C	C	C	C	C	031	G	G	J030	J024	019M	E015S	E015S	E015S
29	E015S	E015S	E013B	E014B	E014B	E014B	E015B	G	033	J030G	032	034	030G	C	C	G	033	J047	J051	J025	021	E014S	E013S	E014S
30	E015S	E014B	E013B	E012B	E014B	E014B	E014B	G	031	032	035	G	G	G	G	G	030	024	021	019	E016S	E015S	E016S	E016S
31	E016S	E014B	E013B	E013B	E013B	E013B	E015B	J013G	J027G	035	G	G	G	G	G	025G	031	026	J020	J024	E013S	E015S	E015S	E016S
No.	31	31	31	31	31	31	31	31	31	30	30	30	29	28	28	30	30	31	31	31	30	31	31	31
Median	E015S	E014B	E014B	E013B	E013B	E014B	E015S	G	G	032	034	034	033	G	G	G	G	022	021	018	E016S	E015S	E015S	E015S
U. Q.	017	E015	E015	E015	E014	E015	E016	025	030	034	036	036	036	033	033	033	030	025	024	024	020	021	E016	E016
L. Q.	E015	E013	E013	E013	E012	E014	E014	G	G	G	032	032	G	G	G	G	G	G	E015	E015	E015	E015	E014	E015
Q. R.	D002										004	004							D009	D009	D005	D006		

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

foEs

K 4

IONOSPHERIC DATA

Mar. 1965 | f_bEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	B	B	B	B	B	S	025		034	033	E036S	E031S						S	S	S	S	S	S
2	S	B	B	B	B	B	S		029	030	032	035	034	033	031				016	S	S	S	S	E
3	S	B	B	E	017	E	S				033	034	034						S	S	S	S	S	S
4	016	E	B	B	B	B	S	023		030	032	034	E040S			028			S	S	S	S	S	S
5	S	E	B	B	B	B	S				E035S	E034R	028G	025G	025	022	021	020	016	S	S	S	S	S
6	S	B	B	B	B	B	S			031	034	033	034	033	032			019	021	017	E	E	E	S
7	S	B	B	B	E	E	S					040	E036S	028	035	031		018	S	S	S	S	S	S
8	S	016	B	E	B	B	S			030	E034S	033	E036S	E034S	027	029			022	017	E	S	S	S
9	B	B	B	B	B	B	S			026G	030	031	E048S	034	026G	016G	017		017	E	S	015	S	S
10	S	S	E	B	B	S	S		019G	026G	034	028G			025G	017G	028	020	S	S	S	S	S	S
11	S	E	B	B	B	E	S	E035R	022G		025	025	E033R	033	034	031	034	023	015	019	025	E	015	E
12	S	B	B	B	B	B	S	022	029	032	039	034	034	032	026				019	017	A	S	017	016
13	E	E	B	B	B	B	S		028	030	034	036	033						S	S	S	S	S	S
14	S	B	E	015	B	E	016		020G	030	033	036	C	C	C	030	027	020	S	S	S	S	S	S
15	S	B	E	B	B	S	S	G	029	031	035	038	033		033	030	020	019	017	018	E	S	S	S
16	S	S	B	B	B	B	S			C	032	034	035		033	016G		016G	B	026	C	S	S	S
17	E	E	B	B	B	B	S	025		033	034	033				023G	023	020	015	015	E	E	S	S
18	S	B	B	B	B	E	018		028	033	034	035				032	030	025	019	A	017	016	015	016
19	E	S	B	B	B	B	S	018G	026	E029R									S	S	E	E	S	S
20	S	B	B	B	B	B	019	E025R		034								030	S	S	S	E	S	S
21	S	B	B	B	B	B	S	025	030	035	030	032R			023G	024G	028	025	S	E	S	E	S	S
22	S	B	B	E	B	015	S		031	042	052	044	040	038	037	031	027	030	024	E	026	026	017	E
23	S	S	B	B	B	B	S		025G	031	032				019G	028G		021	S	E	S	S	S	S
24	S	B	B	B	B	B	018	022	026G	E032R	036	038		025G				017	016	E	S	S	S	S
25	S	S	B	E	016	B	S	E025R	030	032	E033R	E035R	035			030	027		S	S	E	S	S	S
26	S	B	016	B	B	S	018	024	030		E030R	E035R	E032R	038	039	034	028	041	S	E	E	S	S	S
27	E	E	E	E	B	B	S		029	031	E036R	E033R	E036R	026G	028G	C	C	025	021	017	E	E	016	017
28	017	S	B	B	B	B	B	027	031	034	C	C	C	C	C	030			028	024	E	S	S	S
29	S	S	B	B	B	B	B		032	030G	032	E034R	030G	C	C		028	040	040	016	E	S	S	S
30	S	B	B	B	B	B	B		030	032	033						029	023	015	E	S	S	S	S
31	S	B	B	B	B	B	B	018G	025G	033						025G	028	025	018	020	S	S	S	S
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

f_bEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 5

IONOSPHERIC DATA

Mar, 1965 | f-min | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	013	016	013	011	013	E013S	014	014	014	014	016	014	019	014	017	016	013	E014S	E013S	E015S	E015S	E015S	E015S
2	E015S	013	011	013	011	014	E013S	014	014	014	014	016	016	016	016	015	014	014	E014S	E013S	E015S	E015S	E014S	E013S
3	E015S	013	014	011	011	014	E014S	013	014	015	016	016	017	016	015	015	014	013	E015S	E015S	E014S	E013S	E014S	E016S
4	E015S	014	013	014	014	014	E015S	013	014	015	014	016	017	016	015	015	014	013	E014S	E014S	E014S	E015S	E013S	E015S
5	E015S	014	011	011	012	014	E014S	012	014	014	015	015	016	015	015	014	014	011	011	E015S	E016S	E014S	E014S	E012S
6	E013S	013	015	015	013	015	E013S	013	014	014	014	015	016	015	014	015	014	012	011	E014S	E015S	E015S	E015S	E015S
7	E015S	014	013	014	015	013	E014S	013	014	014	016	016	015	015	014	014	015	015	E014S	E015S	E016S	E015S	E015S	E016S
8	E015S	013	013	011	011	013	E015S	013	015	015	015	015	016	017	015	015	014	013	E015S	E015S	E015S	E013S	E015S	E014S
9	011	013	013	013	011	014	E015S	014	014	015	015	016	016	016	016	012	013	014	E015S	E015S	E016S	011	E015S	E016S
10	E017S	E015S	014	013	013	E015S	E015S	014	014	015	015	017	016	017	015	013	014	015	E016S	E014S	E016S	E015S	E015S	E013S
11	E015S	014	012	013	012	014	E016S	013	014	016	015	015	016	016	016	016	013	012	011	E014S	E015S	E012S	011	E015S
12	E016S	014	011	015	014	013	E015S	014	014	015	016	016	016	016	015	014	014	014	E014S	E015S	E013S	E014S	E013S	E014S
13	E016S	013	014	014	013	014	E015S	014	014	014	016	019	016	012	016	015	015	014	E015S	E015S	E014S	E014S	E016S	E013S
14	E015S	014	015	013	013	013	E014S	014	015	015	014	016	C	C	C	015	014	015	E014S	E015S	E014S	E015S	E015S	E014S
15	E016S	014	015	013	013	E015S	E017S	014	015	014	015	016	015	015	015	016	013	014	011	E014S	E016S	E015S	E014S	E016S
16	E013S	E015S	016	012	011	014	E013S	014	013	C	015	016	016	017	015	011	015	013	013	011	C	E016S	E014S	E015S
17	E013S	014	014	011	013	014	E014S	014	014	015	015	015	016	015	015	014	015	015	013	E013S	E015S	E016S	E013S	E014S
18	E015S	013	015	011	013	011	E014S	013	014	015	015	016	016	014	013	012	014	015	E015S	E013S	E013S	E015S	E014S	E015S
19	E014S	E015S	013	013	011	013	E016S	013	014	015	016	017	017	016	017	015	014	013	E016S	E014S	E015S	E014S	E016S	E015S
20	E015S	013	013	013	014	013	E014S	015	014	015	015	018	016	016	017	016	015	014	E016S	E016S	E016S	E015S	E015S	E017S
21	E015S	013	015	012	016	015	E014S	014	014	015	015	016	016	017	014	013	015	015	E014S	E013S	E014S	E016S	E015S	E015S
22	E015S	014	013	013	015	014	E014S	013	014	015	015	019	020	016	016	018	015	014	013	E015S	E014S	E016S	E015S	E015S
23	E015S	E015S	014	013	014	015	E014S	013	013	014	016	016	017	016	014	016	014	013	E014S	E014S	E014S	E015S	E015S	E015S
24	E015S	013	014	013	013	015	E015S	013	014	015	016	016	019	016	017	017	015	014	013	E014S	E015S	E015S	E014S	E015S
25	E015S	E015S	014	014	014	014	E014S	014	014	015	016	016	018	015	015	017	015	014	E016S	E016S	E015S	E015S	E015S	E016S
26	E015S	013	014	012	011	E015S	E015S	014	014	015	016	016	025	021	019	017	017	014	E015S	E015S	E015S	E014S	E015S	E016S
27	E016S	E015S	013	012	012	014	E015S	015	015	015	016	016	017	016	015	C	C	013	E015S	E015S	E015S	E015S	E015S	E015S
28	E015S	E015S	015	013	014	015	015	015	015	015	C	C	C	C	C	018	016	015	E014S	E015S	E015S	E015S	E015S	E015S
29	E015S	E015S	013	014	014	014	015	013	015	014	016	020	017	C	C	015	015	016	E015S	E014S	E015S	E014S	E013S	E014S
30	E015S	014	013	012	014	014	014	014	014	014	016	016	017	018	018	016	017	014	E014S	E016S	E016S	E015S	E016S	E016S
31	E016S	014	013	013	013	013	015	014	013	016	015	020	019	017	016	014	015	014	E014S	E012S	E013S	E015S	E015S	E016S
No.	31	31	31	31	31	31	31	31	31	30	30	30	29	28	28	30	30	31	31	31	30	31	31	31
Median	E015S	014	014	013	013	014	E014S	014	014	015	015	016	016	016	015	015	014	014	E014S	E014S	E015S	E015S	E015S	E015S
U. Q.																								
L. Q.																								
Q. R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 6

IONOSPHERIC DATA

Mar. 1965 | M(3000) F2 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	295	290	305	330	345R	300	320	345	350	345	335	345	330	325	350	350	340	345	335	320	305	315	290	285
2	285	310	315	330	285	295	305	340	350	340R	325	340R	335	330	335	345	340	345	330	300	305	300	290R	290
3	295	315R	320	320	325	285	325	345	335	320	315R	310	325	325	325	330	335	350	320	295	305	315	315	285
4	280R	300	305	300	U295F	290F	U300R	330R	335	320R	265R	295	U315R	320	U335R	320	335S	340	325	280R	265	300	275	280
5	U260F	295S	310	320	315	300	335	330	325	305S	295	315R	325R	325	335R	330	345	345	355	315	310R	300	290	275R
6	285	305	315	305	320	290	325	345	340	330	335	305	315R	U330R	315R	U340R	335R	340R	355	305	290	310	280	255F
7	U270F	320R	310	310	315	310	340	355	320	320	U305R	U300R	310	340	335R	335	355	355	350	310	310	310	285	285
8	290R	275R	295	320	335	310	320	335	320	320	300	320R	320R	325	U340R	340	340	355	360	305	310	290	300	U275F
9	305R	325	310	330	300	310	320	345	345	345	305	300R	315R	U320R	320	335R	340	350	330	310	290	305	295	285
10	285	290	290	320	340	340	340	345	325	330	310	315	315	335	335S	325	345S	365	340	350	310	285	280	U270F
11	275F	290	305	330	345	345	330	340	365	335	315	305	315	330	325R	330	350	345R	345	335	305R	320	U280R	285
12	290	290	295	305	305	290	340	360R	345	335	310	J300R	315	330R	U330R	350	345	365	360	315	A	U290R	295R	280R
13	290	300	305	320	300	285	330	345	U330R	325	325	315R	315	330	335	330	325R	335R	355	295	300R	305R	290	285
14	285	270	U295R	305F	285F	310	320	320	U320R	U325R	320R	U305R	C	C	C	330	340	350	330	310R	290R	290R	280F	285
15	275	J275R	290	315	310	295	325	345	345	315	305R	325	330R	310R	J340R	340	340	345	360	360	290	290	300	285R
16	305	295	300	U325R	340	295	325	355	355	C	310	300R	305	320	330	330	340	340R	350	340	C	280	260	265F
17	310	U315R	330R	325	320	305	345	345	345	330	315	310	330R	320	U320R	U330R	345	340	340	315	305	275	275	U270R
18	U280R	280R	U295R	J315R	320	275R	310	350	335	330	310	300R	330R	310R	320R	J320R	335	330R	335	I310A	290	295R	U285R	290R
19	290R	280R	295	300	320	315	325	345	335	330	330R	315R	U320R	335R	335	335	340	345	355	320	305	285	U300R	290R
20	U290R	300	U315R	330	345	305	335	340	320	315R	325	310	320	325	325	335	345	340	325	310	295	295	305	290
21	295	300	U300R	330	305	325R	335	345	355	325	330	310	U305R	315	310R	U340S	355	355	325	320	305	285	280	280R
22	U285R	295	305	330	340	305	345	330	330	310R	310R	290	320	320	320	U335R	345	345	340	305	315	U295R	U290R	U310R
23	275R	U295R	295	315	310	300	355	330	325	310	U295R	310S	315	310	320	310	315	R	335S	340	320S	295	285S	U275R
24	285	290	290	295	330R	300	330	325	310	U335S	315R	310	320R	300	320R	345	345S	335	320	320	300	295	290	280
25	295S	U280R	310R	310	305	295	330	330	340	305	295	305	305	J325R	310	U325R	I315R	U330S	U340R	355S	290S	300	275	275
26	280	280R	300	310	310	310	345	340S	U340R	320R	310	U290R	310	U315R	U325R	R	320R	335	325	335R	300	300	280R	U285R
27	290	305	275R	330	320	305	345S	330R	330R	315	310	310	325	335	U330R	C	C	R	U345R	355	320	U305S	305	290
28	290	J290S	J280F	J310S	345	310	340	350	345	345	C	C	C	C	C	350	330	U340S	345	330	320	320	295	J295F
29	J295R	R	295F	310	330	320	365	360	345	325	U325R	300	310R	C	C	U310R	U330R	R	350	335	290	290	310	290
30	280	275	290	295R	310	325	335	350	305	330	315	310	325	300	295	320	U330R	U340R	U335R	340R	325	280	275	280
31	275	285	295	310	325	315	345	350	330	320	325	300	310R	305	305R	305	325	335S	350	U345R	280	285	U275F	U275S
No.	31	30	31	31	31	31	31	31	31	30	30	30	29	28	28	29	30	28	31	31	29	31	31	31
Median	285	290	300	315	320	305	330	345	335	325	310	310	315	325	325R	330	340	345	340	320	305	295	290	285
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

M(3000) F2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 7

IONOSPHERIC DATA

Mar. 1965 | M(3000) F1 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	355L	L	355L	L	L	L								
2										L	L	360L	L	L	L	L	L							
3									L	L	340L	355L	L	L	355L	L	L	L						
4									L	L	335L	360L	L	335L	360L	L	L							
5										L	340L	L	L	355L	L	L	L							
6										L	L	345L	340L	350L	L	L	L							
7									L	345L	345L	L	S	355L	355L	L	L							
8									L	365L	L	340L	345L	L	L	L	L							
9									L	L	L	360L	A	350L	355L	L	L	L						
10										L	355L	L	L	360L	L	L	L	L						
11									L	L	L	355L	L	L	375L	L	A							
12									L	L	L	340L	345L	L	375L	L	L	L						
13								L	L	L	L	L	L	L	L	355L	L	L						
14								L	L	L	L	350L	C	C	C	365L	L	L						
15									L	L	L	L	L	L	360L	L	L	L						
16									L	C	375L	L	355L	L	L	L	L	L						
17									L	L	350L	345L	350L	350L	L	L	L	L						
18									L	360L	360L	L	L	L	345L	L	L							
19									L	345L	L	L	370L	360L	L	L	L	L						
20									L	L	L	L	350L	360L	L	L	L	A						
21									L	L	L	L	R	S	350L	L	L	L						
22								L	L	L	A	A	L	L	L	L	L	A						
23								L	L	L	L	R	L	L	L	L	L	L						
24								L	L	L	L	L	S	L	L	370L	L	L						
25										L	L	L	350L	L	L	360L	R							
26								L	L	L	L	L	L	340L	L	L	L	A						
27									L	L	L	L	350L	L	L	C	C	L						
28									L	U380L	C	C	C	C	C	370L	L	L						
29										L	L	L	370L	C	C	L	L	A						
30										370L	L	L	L	L	S	L	L	L						
31								L	L	L	L	350L	S	360L	345L	S	L	L						
No.										6	9	11	11	11	10	5								
Median										360L	350L	350L	350L	355L	355L	365L								
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

M(3000) F1

IONOSPHERIC DATA

Mar. 1965 | h'F2 | km | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									260	260	260	255	260	270	260	250								
2										260	275	260	260	260	265	250	260							
3									245	280	270	230	260	260	265	260	255	225						
4									265	275	310	300	275	260	260	260	260							
5										280	310	275	260	260	260	260	260							
6										255	270	310	285	260	280	260	245							
7									275	275	310	305	270	245	245	255	240							
8									265	270	300	280	265	260	255	255	245							
9									255	260	310	300	270	260	255	250	245	230						
10										260	300	280	280	260	255	270	250	230						
11									250	280	300	310	270	260	270	265	250							
12									250	255	305	305	275	255	255	250	250	230						
13								240	250	250	285	295	260	265	265	265	255	230						
14								270	260	260	280	285	C	C	C	280	255	235						
15									260	275	310	275	260	270	260	260	260	250						
16									245	C	300	300	295	275	260	270	255	245						
17									260	295	300	280	270	265	260	255	250	245						
18									255	280	300	305	275	275	275	275	265							
19									255	275	270	305	280	265	275	270	260	235						
20									295	275	280	275	265	260	255	260	250	245						
21									255	295	280	310	305	280	270	265	250	240						
22								250	275	330	280	300	275	275	270	255	255	245						
23								240	255	275	310	295	270	275	280	280	265	250						
24								230	270	260	300	295	275	300	265	255	250	245						
25										295	305	290	275	260	275	265	240							
26								250	245	255	305	335	280	280	275	260	255	250						
27									260	275	300	290	275	260	280	C	C	250						
28									260	260	C	C	C	C	C	260	270	250						
29										265	280	305	295	C	C	295	255	235						
30										275	280	295	275	340	315	270	260	250						
31								250	280	300	275	300	285	300	280	300	265	255						
No.								7	24	30	30	30	29	28	28	30	29	21						
Median								250	260	275	300	295	275	260	265	260	255	245						
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 9

IONOSPHERIC DATA

Mar. 1965 | h'F | km | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	255	260	255	245	200	250	250	240	235	245	225	245	210	205	245	215	230	225	205	230	260	280	315	315
2	300	250	245	235	210	300	245	230	245	240	225	220	210	225	215	215	215	225	205	260	275	265	265	290
3	280	250	245	245	260	300	230	230	250	250	245	230	210	205	210	220	230	230	220	250	260	230	250	310
4	305	265	240	210	290	300	255	230	245	240	245	210	250	225	230	225	225	230	215	250	270	245	255	280
5	305	265	245	225	210	260	230	230	245	255	235	245	245	225	205	230	230	230	210	220	270	260	305	310
6	310	270	250	260	245	280	250	230	235	230	225	230	210	205	210	210	230	230	210	260	300	270	290	350
7	305	245	260	255	230	245	240	225	245	210	215	250	220	225	240	210	210	210	210	255	255	250	310	320
8	310	310	280	250	210	250	250	230	250	225	240	215	210	210	240	240	230	220	210	250	250	270	280	310
9	265	230	245	230	205	250	250	230	240	230	245	215	I220A	225	215	200H	215	240	215	210	290	265	300	310
10	310	310	300	250	210	250	230	230	245	240	210	210	255	205	200H	210	250	240	220	205	250	275	310	270
11	315	300	270	245	210	225	230	230	230	195H	195H	210	250	255	225	220	I220A	230	205	225	260	250	310	310
12	305	300	280	275	255	275	225	225	225	225	240	210	210	205	210	195H	230	240	205	230	I235A	260	290	305
13	295	290	260	250	265	300	240	230	235	220	225	250	210	205	225	210	240	230	210	260	250	250	300	295
14	280	275	255	220	210	220	245	240	235	230	205	210	C	C	C	220	235	245	220	205	255	265	275	285
15	300	300	295	250	210	250	245	240	245	220	210	215	255	240	215	210	205H	245	225	225	300	275	270	265
16	260	260	260	220	210	250	235	230	220	C	200	200H	215	250	225	215	205H	240	210	250	C	300	350	315
17	270	225	215	205	235	265	215	230	220H	225	215	200	200	200	200	245	225	225	215	205	250	300	310	305
18	270	265	260	240	210	270	245	235	235	230	210	205	245	210	225	230	260	250	225	I240A	290	300	300	310
19	305	300	280	250	225	250	230	250	215	210	200	180	180H	200	195H	215	210H	200H	210	210	260	300	260	300
20	270	250	250	220	210	255	230	230	230	215H	205	205	220	210	205	205	200H	I225A	230	215	270	295	310	305
21	280	270	260	210	260	290	230	235	235H	215	225	250	I230R	S	205	200H	240	240	220	215	235	300	305	305
22	305	275	260	240	210	255	225	235	240	255	A	I240A	270	260	250	215	235	I240A	220	210	270	285	295	300
23	300	290	265	240	250	250	215	200	200H	205H	240	I260R	250	245	245	220	230	245	210	210	210	255	275	305
24	270	290	300	260	210	280	225	225	220H	210	215	230	I245S	215	235	225	230	240	230	240	245	265	270	300
25	275	270	250	255	260	235	220	225	230	205	205H	255	200	205	205H	225	I235R	245	225	205	255	250	275	305
26	295	270	265	235	225	250	230	245	225	210	200	255	255	230	240	230	240	I235A	230	230	260	245	325	305
27	265	245	275	225	225	250	225	225	225	210	210	265	220	245	215	C	C	250A	225	210	245	280	300	300
28	305	300	305	250	210	255	240	240	240	230	C	C	C	C	C	210	240	245	220A	245	210	255	295	300
29	295	295	300	260	225	245	210	240	210	210	200H	230	205	C	C	215	250	A	230	230	265	230	275	295
30	315	305	300	255	240	235	215	230	230	215	200	205	220	205	200	200H	245	250	230	205	210	285	300	305
31	300	280	270	240	210	250	215	220	240H	215	230	245	250	235	210	205H	250	250	225	205	215	300	305	310
No.	31	31	31	31	31	31	31	31	31	30	29	30	29	27	28	30	30	30	31	31	30	31	31	31
Median	300	270	260	245	210	250	230	230	235	220	215	225	220	215	215	215	230	240	220	225	260	270	300	305
U. Q.																								
L. Q.																								
Q. R.																								

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 10

IONOSPHERIC DATA

Mar. 1965 | h'Es | km | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	B	B	B	B	B	S	155	G	160	150	115	120	G	G	G	G	G	S	S	S	S	S	S
2	S	B	B	B	B	B	S	G	160	155	130	130	125	130	115	G	G	G	105	S	S	S	S	120
3	S	B	B	105	100	105	S	G	G	G	140	130	120	G	G	G	G	G	S	S	S	S	S	S
4	105	105	B	B	B	B	S	155	G	130	125	115	110	G	G	110	G	G	S	S	S	S	S	S
5	S	125	B	B	B	B	S	G	G	G	125	110	110	110	110	105	105	100	100	S	S	S	S	S
6	S	B	B	B	B	B	S	G	G	155	125	115	115	110	110	G	G	115	105	105	105	105	105	S
7	S	B	B	B	110	110	S	G	G	G	G	125	115	150	105	105	G	115	S	S	S	S	S	S
8	S	110	B	110	B	B	S	G	G	130	110	110	110	110	105	130	G	G	100	110	110	S	S	S
9	B	B	B	B	B	B	S	G	G	110	110	110	110	155	110	100	100	G	100	100	S	110	S	S
10	S	S	100	B	B	S	S	G	110	110	155	110	G	G	100	100	165	140	120	S	S	110	110	S
11	S	100	B	B	B	110	110	160	110	G	130	120	110	110	160	155	160	150	100	100	110	110	110	110
12	100	B	B	B	B	B	S	160	E180G	155	110	110	110	110	110	G	G	G	110	110	110	110	110	105
13	110	110	B	B	B	B	S	G	135	110	110	110	110	G	G	G	G	G	S	S	S	S	S	S
14	S	B	110	110	B	110	110	G	110	110	110	110	C	C	C	105	105	130	S	S	S	S	S	S
15	S	B	110	B	B	S	S	125	160	150	110	110	110	G	130	125	100	160	100	105	105	S	S	S
16	S	S	B	B	B	B	S	G	G	C	140	140	130	G	140	100	G	110	B	110	C	S	S	S
17	115	130	B	B	B	B	S	160	G	115	110	110	G	G	G	100	100	105	100	105	105	105	S	S
18	S	B	B	B	B	110	110	G	155	125	110	115	G	G	G	110	105	100	110	110	110	110	110	110
19	110	S	B	B	B	B	S	110	110	110	G	G	G	G	G	G	G	G	S	S	125	115	S	S
20	S	B	B	B	B	B	160	110	G	120	G	G	G	G	G	G	G	130	100	100	S	105	S	S
21	S	B	B	B	B	B	S	170	155	145	110	110	G	G	100	100	155	140	115	125	S	110	S	S
22	S	B	B	105	B	105	S	G	150	125	115	110	110	115	120	115	115	110	110	115	110	110	105	105
23	S	S	B	B	B	B	S	G	105	125	115	G	G	G	100	110	G	115	S	115	S	S	S	S
24	S	B	B	B	B	B	150	150	110	150	115	105	G	100	G	G	G	100	100	125	S	S	S	S
25	S	S	B	105	105	B	S	155	125	130	120	105	105	G	G	110	110	G	100	S	115	S	S	S
26	S	B	105	B	B	S	110	140	145	G	105	105	105	105	105	100	100	110	100	125	110	S	S	S
27	110	110	105	105	B	B	S	G	130	120	110	105	100	105	100	C	C	150	100	100	110	110	110	110
28	105	S	B	B	B	B	B	155	150	110	C	C	C	C	C	110	G	G	110	105	110	S	S	S
29	S	S	B	B	B	B	B	G	150	110	105	105	105	C	C	G	150	115	110	110	110	S	S	S
30	S	B	B	B	B	B	B	G	155	145	110	G	G	G	G	G	155	130	100	100	S	S	S	S
31	S	B	B	B	B	B	B	110	110	120	G	G	G	G	G	100	150	150	120	115	S	S	S	S
No.	7	7	5	6	3	6	6	14	20	25	26	25	19	12	16	19	15	20	22	20	14	12	7	6
Median	110	110	105	105	105	110	110	155	135	125	110	110	110	110	110	105	110	115	100	110	110	110	110	110
U. Q.																								
L. Q.																								
Q. R.																								

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 11

IONOSPHERIC DATA

Mar. 1965 | Types of Es | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								h		hl	h	c	c											
2									h	h	h	h	h	h	c				f					f
3				f	f4	f					h	h	c											
4	f	f						h		h	h	c	12			1								
5		f									h	1	1	1	1	12	12	12	f2					
6										h	h	c	c	c	1			1	f3	f2	f2	f	f2	
7					f2	f2						h	c	h12	12	13		1						
8		f4		f2						h	c	c	1	1	12	h			f3	f2	f			
9										1	1	1	12	h	1	1	1		f	f		f2		
10			f						1	1	hl	1			1	1	h	h	f			f	f2	
11		f				f	1	h	1		h	c	1	12	h	h	h212	h12	f	f3	f2	f	f3	f
12	f							h	hl	hl	1	1	1	1	1				f	f2	f3	f2	f2	f2
13	f2	f							h	1	1	1	1											
14			f	f		f2	1		1	1	1	1				1	12	h						
15			f					1	h	h	12	12	1		hl	h	12	h	f2	f	f			
16											hl	hl	hl		hl	1		1		f3				
17	f3	f2						h		c	c	1				12	1	1	1	f	f	f		
18						f	1		hl	hl	1	c				12	14	13	12	f2	f2	f3	f2	f2
19	f							1	1	1											f	f		
20							h	1		cl								h	1	f		f		
21								h	h	hl	1	12			1	1	h	h	1	f		f2		
22				f		f2			h	h	c	c	c	c	c	c	c	12	14	f	f6	f3	f3	f
23									1	hl	c				1	1		c		f				
24							h	h	1	h	c	12		1				1	12	f				
25				f	f2			h	h2	h	c	1	12			1	1		1		f			
26			f				1	h	hl		1	1	12	12	12	12	12	12	1	f	f			
27	f2	f	f2	f					h	c	c	1	12	1	1			h12	12	f	f	f	f2	f2
28	f							hl	hl	1						1			13	f2	f			
29									hl	1	1	12	1				h	c3	13	f	f			
30									hl	hl	1						h	h	1	f				
31								1	1	c						1	h	hl	12	f3				
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 12

IONOSPHERIC DATA

Mar. 1965 | h_pF_2 km | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	345	355	310	275	245R	335	280	255	260	265	275	260	275	285	260	250	260	255	260	295	315	315	360	365
2	350	295	290	270	360	345	300	255	260	270R	295	275R	280	280	275	260	265	245	255	315	320	320	335R	340
3	340	295R	295	295	290	360	280	255	270	295	295R	305	290	280	280	265	260	250	280	340	305	290	300	360
4	360R	325	305	315	U345F	345F	U310R	265R	280	290R	400R	340	U305R	295	U275R	280	275S	255	275	355R	380	305	345	355
5	U380F	330S	290	280	295	320	270	255	290	300S	345	305R	290R	275	280R	265	265	255	245	285	310R	315	355	380R
6	360	310	295	310	295	345	280	255	260	270	270	315	295R	U275R	305R	U270R	255R	255R	245	325	345	305	350	445F
7	U390F	290R	305	305	295	300	275	255	295	285	U330R	U330R	300	260	265R	265	250	240	250	295	300	305	355	360
8	355R	350R	325	300	250	295	285	260	280	290	320	305R	295R	290	U275R	265	255	235	245	300	300	340	320	U350F
9	310R	290	295	275	300	285	290	250	260	260	310	310R	300R	U300R	285	255R	255	245	250	295	340	300	345	350
10	355	345	340	295	260	270	260	250	300	275	310	295	300	280	270S	275	260S	245	250	245	300	385	365	U395F
11	390F	345	315	275	250	255	260	255	250	280	305	335	295	280	285R	275	260	245R	240	260	310R	285	U365R	370
12	350	340	325	320	305	335	255	240R	260	275	305	J320R	300	275R	U265R	255	260	245	230	300	A	U340R	335R	350R
13	345	325	310	290	325	350	270	255	U260R	280	300	305R	295	285	270	270	280R	265R	245	340	310R	320R	350	345
14	350	380	U340R	300F	350F	300	295	290	U280R	U275R	290R	U305R	C	C	C	280	260	255	265	295R	335R	335R	350F	345
15	350	J375R	345	295	305	340	265	260	275	295	330R	300	280R	310R	J270R	265	265	255	245	240	340	335	315	355R
16	315	330	310	U275R	250	335	270	250	255	C	305	320R	305	295	280	290	260	255R	245	240	C	335	390	375F
17	300	U290R	255R	275	295	310	245	255	260	295	310	300	290R	290	U280R	U275R	260	255	255	300	310	355	360	U355R
18	U350R	345R	U340R	J300R	290	350R	290	255	290	285	310	325R	295R	300R	290R	J300R	270	265R	255	I280A	335	335R	U350R	345R
19	350R	340R	325	300	290	295	270	255	265	285	280R	315R	U300R	275R	280	275	265	255	250	285	330	360	U330R	345R
20	U340R	305	U305R	265	250	305	260	260	300	295R	300	305	295	295	270	260	255	255	275	280	330	345	310	345
21	325	310	U315R	255	300	290R	260	255	255	295	280	320	U325R	295	310R	U270S	255	250	280	275	305	350	370	355R
22	U340R	325	310	285	260	310	255	260	280	330R	300R	335	295	290	295	U275R	265	255	260	295	325	U330R	U345R	U355R
23	350R	U330R	320	295	305	305	245	260	280	300	U330R	310S	295	300	300	305	300	R	260S	265	275S	315	350S	U395R
24	340	340	350	330	270R	330	255	270	290	U275S	300R	300	300R	325	295R	265	255S	255	280	295	305	345	345	365
25	335S	U345R	280R	305	300	345	255	255	260	305	330	310	310	J300R	300	U290R	I295R	U270S	U260R	245S	330S	320	355	380
26	350	350R	310	290	300	310	250	255S	U255R	280R	305	U350R	295	U300R	U300R	R	275R	260	275	265R	325	325	360R	U350R
27	350	295	350R	260	285	300	250S	260R	270R	310	315	300	280	275	U280R	C	C	R	U250R	240	290	U320S	310	325
28	350	J345S	J350F	J305S	255	305	255	260	265	265	C	C	C	C	C	260	290	U260S	260	275	290	300	325	J340F
29	J325R	R	340F	305	265	290	240	250	255	295	U295R	335	310R	C	C	U305R	U275R	R	250	265	335	345	290	340
30	365	360	340	310R	300	280	255	245	310	285	295	305	295	340	345	290	U290R	U260R	U255R	255R	285	345	345	350
31	350	345	325	285	270	295	245	255	290	300	285	305	300R	305	300R	305	280	275S	260	U245R	350	345	U350F	U360S
No.	31	30	31	31	31	31	31	31	31	30	30	30	29	28	28	29	30	28	31	31	29	31	31	31
Median	350	335	315	295	295	310	260	255	270	285	305	310	295	290	280R	270	260	255	255	285	315	330	350	355
U. Q.																								
L. Q.																								
Q. R.																								

h_pF_2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K13

IONOSPHERIC DATA

Mar.1965 | ypF2 km | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	045	045	045	045	045R	065	045	050	040	035	045	040	040	040	040	045	040	040	040	045	035	040	045	035
2	045	035	035	030	045	050	045	040	045	035R	035	040R	045	045	035	040	035	050	050	035	040	045	045R	040
3	035	045R	045	035	040	040	040	040	035	050	055R	045	060	065	050	060	045	045	050	045	045	050	050	040
4	040R	035	040	040	U055F	055F	U060R	050R	035	050R	065R	075	U070R	055	U065R	060	050S	050	050	065R	060	060	055	045
5	U055F	045S	050	045	045	035	035	045	040	045S	055	085R	060R	050	050R	050	035	045	045	045	040R	040	045	040R
6	045	040	050	040	045	045	040	045	040	055	040	050	055R	U045R	055R	U060R	045R	045R	050	045	045	050	045	045F
7	U040F	040R	045	045	035	045	035	040	040	040	U050R	U075R	065	055	055R	060	045	050	050	050	050	045	045	045
8	045R	050R	045	040	045	055	040	045	045	050	050	085R	060R	075	U060R	045	045	055	045	050	045	035	035	U050F
9	045R	040	035	045	055	060	040	045	040	045	045	045R	070R	U070R	065	050R	045	050	045	040	060	055	040	050
10	050	045	050	035	040	040	040	050	040	045	040	035	050	045	050S	050	040S	045	045	045	055	045	055	U045F
11	050F	045	055	030	040	045	045	045	040	040	045	035	050	045	045R	045	040	045R	050	040	040R	040	U055R	040
12	050	045	040	040	045	040	040	045R	040	050	050	J045R	060	050R	U055R	045	040	045	050	040	A	U040R	040R	050R
13	040	035	040	040	040	040	045	045	U050R	040	045	060R	055	060	045	060	040R	055R	045	050	050R	060R	040	050
14	060	050	U040R	040F	050F	045	045	045	U065R	U055R	045R	U045R	C	C	C	050	040	045	040	045R	040R	035R	045F	055
15	050	J050R	050	050	045	040	040	040	050	035	045R	050	045R	050R	J050R	050	045	045	050	050	045	040	040	045R
16	035	030	045	U045R	045	040	035	045	035	C	045	050R	050	050	045	040	045	045R	055	060	C	045	045	050F
17	050	U040R	055R	050	045	050	050	045	040	035	045	045	050R	050	U050R	U055R	040	045	040	050	040	045	045	U045R
18	U055R	050R	U050R	J045R	050	050R	040	045	040	055	045	045R	060R	050R	050R	J040R	055	055R	045	I045A	040	040R	U040R	040R
19	040R	050R	045	050	050	050	045	045	040	045	045R	055R	U050R	045R	045	040	045	045	040	040	035	040	U040R	045R
20	U040R	055	U040R	045	045	045	045	045	045	045R	045	045	060	055	060	055	045	045	050	045	040	045	050	050
21	040	040	U040R	045	055	040R	040	040	045	035	045	035	U045R	055	050R	U040S	045	045	040	050	045	050	040	045R
22	U045R	035	040	045	040	045	045	040	040	050R	050R	060	080	065	060	U050R	050	045	040	040	045	U040R	U055R	U045R
23	055R	U040R	035	055	045	055	055	050	040	040	U055R	050S	060	055	045	050	055	R	045S	055	040S	040	045S	U045R
24	050	040	050	040	050R	050	045	035	040	U035S	045R	050	050R	045	055R	045	050S	050	045	050	055	035	050	050
25	055S	U055R	055R	045	040	055	040	050	045	055	040	060	070	J050R	050	U050R	I050R	U050S	U045R	050S	045S	040	050	045
26	050	040R	055	050	040	060	045	045S	U050R	065R	045	U050R	060	U050R	U045R	R	055R	050	050	050R	045	045	040R	U050R
27	055	055	055R	045	050	050	055S	050R	045R	040	055	065	055	055	U050R	C	C	R	U050R	055	060	U055S	065	075
28	055	J060S	J060F	J050S	045	055	050	045	045	045	C	C	C	C	C	045	030	U045S	040	045	070	055	070	J065F
29	J070R	R	050F	055	045	065	050	040	065	050	U055R	045	075R	C	C	U045R	U055R	R	045	050	040	045	050	035
30	045	040	040	045R	050	045	045	050	055	050	050	045	050	060	050	050	U050R	U065R	U050R	045R	055	050	055	045
31	050	050	040	045	040	050	050	050	050	050	055	050	040R	050	050R	050	055	050S	040	U055R	050	045	U055F	U050S
No.	31	30	31	31	31	31	31	31	31	30	30	30	29	28	28	29	30	28	31	31	29	31	31	31
Median	050	045	045	045	045	050	045	045	040	045	045	050	055	050	050R	050	045	045	045	045	045	045	045	045
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

ypF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 14

IONOSPHERIC DATA

Mar. 1965 | foF2 | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U032S	I032S	033	035	045	023	I025S	I040S	058S	060S	078S	J075S	070S	I071S	078	J076S	066S	061S	055	037	036S	035	034S	032
2	032	I034S	034S	033S	030	022	021	I040S	057	I065S	J077S	091S	088	088	088	086	067	057	056	I041S	035	I033S	I032S	I032S
3	033S	032	U034S	J040S	030	027S	029S	044	058	069S	087	U094S	087	I095S	I108S	I096S	J078S	064S	056	J052S	044S	I043S	I034S	I031S
4	031S	034	032	028	028	I029S	029S	J048S	054	064S	I073S	I097S	106S	107	098S	083	J076S	I065S	055	I050S	J049S	J052S	J040S	041S
5	040S	J040S	I043S	J049S	S	022S	022S	042S	058	061S	084	099S	J101S	I098S	084	J077S	080	I070S	054	038	I031S	I031S	030S	I033S
6	S	S	J037S	035S	029S	029	I029S	I047S	I058S	060	063	065	085	I092S	081	090	080	I069S	J049S	038S	I036S	036S	I036S	033S
7	033S	I034S	I035S	I036S	J038S	023	I025S	044S	056H	I069S	082S	U092S	106	122S	111S	079	I072S	058	052	039S	I036S	J034S	031	I033S
8	I035S	I036S	I038S	J040S	039S	024	023S	045	062S	I072S	J077S	085	108	J124S	113S	085	I070S	064S	051S	039S	034S	031	032S	I033S
9	U034S	036S	035S	034	028	026	027S	I046S	060S	063	079S	084	104	S	S	S	J105S	I094C	J083S	054	I030S	I029S	030S	I031S
10	032	032S	032	036S	033	022	020	043S	052S	061	I067S	I070S	081S	090S	088S	J077S	065	I064S	I059S	051S	I036A	025	I027A	029
11	I029S	I029S	I031S	I035S	031S	019	020	042	054H	060S	I065S	065	I072S	081S	092	I077S	060	063S	062S	I046A	034	028	I027S	026S
12	031S	032	031S	032	032	028S	030S	049S	055	060	063S	I071S	I097S	I115S	104S	I074S	064S	I063S	054	J039S	I034S	033S	I032S	I033S
13	S	S	S	033S	030	027S	028S	J050S	I059S	J075S	066S	J078S	J101S	114	114	091S	084	J080S	S	I044S	I043S	I041S	J036S	I035S
14	I033S	I034S	036S	040S	021	023S	I027S	044	I068S	J079S	I076S	I077S	095	092S	I071S	I065S	I068S	I069S	I063S	J051S	I044S	S	S	S
15	I039S	J037S	038S	I040S	J033S	023	025S	046S	056H	063S	I068S	082S	083S	087S	J103S	088S	J079S	J079S	085S	052S	028S	I032S	034S	I033S
16	J032S	035S	I036S	040	036S	023S	026	045S	050H	058	061S	I072S	J077S	085	078S	I072S	J078S	082S	J062S	I042S	031	I029S	029S	U030S
17	I031S	032S	032S	031	026	019	022	043	053H	061S	062S	066	J086S	093S	I092S	I089S	066S	064S	059H	042S	033S	031	032S	033S
18	I033S	I034S	J034S	042	029S	023	024S	I047S	053	058	065	084	106	108S	093S	083	J077S	I069S	I062S	049S	036	032S	034S	032S
19	033S	032	032	035S	032	024	026	046S	055	064	I062S	I069S	I079S	S	S	067S	I063S	I063S	I057S	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	092S	I073C	I063C	I059S	C	C	C	C	C
21	C	C	C	C	C	C	C	C	051S	056	061S	062	J083S	I085C	I086C	S	C	061S	I060S	054S	038S	032S	032	031S
22	I032S	J032S	032	I037S	I032S	020	I026S	I044S	056	J064S	066	I085S	098S	J101S	110	I095S	I078S	063	I062S	056	044S	I034S	034S	034S
23	033S	S	S	J040S	I030S	I027S	031S	I046S	057S	058	066S	S	S	097S	J097S	I091S	J084S	S	S	J052S	I042S	030	I033S	I034S
24	I035S	I035S	I034S	036S	S	021	026S	I049S	I059S	S	S	I079S	087	I094S	J096S	S	J077S	I064S	062S	055S	S	S	S	038S
25	I038S	I038S	J038S	I037S	I034S	I028S	029	J049S	058	J059S	J064S	I090S	J103S	J101S	J101S	J100S	S	S	S	S	030	037	I037S	I033S
26	J035S	I036S	I036S	I037S	033S	J029S	032S	056	I060S	058	064	076S	I095S	J104S	J102S	J106S	I090S	S	S	S	045	030	028S	030
27	I032S	J034S	033	033S	026S	021	028	051	055	060	068	S	J094S	J102S	090	073S	S	J080S	S	A	032	I031S	030	I033S
28	036	S	S	037S	J026S	021	I031S	I053S	I059S	064S	065S	J081S	I094S	108	117	J092S	I075S	J063S	I061S	058	044S	I034S	033S	032S
29	032S	033S	S	S	025	I020S	029	J051S	I059S	J063S	065	J084S	J098S	J105S	117S	J097S	J079S	J079S	I065S	047	036	033S	034	032S
30	I032S	033S	032	035S	029S	020	029S	I048S	058S	064	067S	074S	084	U090S	J098S	096S	094S	J081S	J078S	A	A	028S	029	029S
31	U030S	I031S	031	038	J025S	019S	I030S	J046S	058	061S	063	074S	I091S	J097S	J096S	I089S	J082S	J080S	I068S	046S	I033S	U031S	030	I031S
No.	27	25	25	28	27	29	29	29	30	29	29	28	29	28	28	28	28	28	26	25	27	27	27	28
Median	U033S	034S	034S	036S	030S	023	027S	046S	058	061S	066S	078S	094S	097S	096S	087S	077S	064S	060S	047S	036S	032S	032S	U032S
U. Q.	U035	036	036	040	033	027	029	049	059	064	076	085	101	106	106	092	080	079	062	052	043	034	034	U033
L. Q.	U032	U032	032	034	028	021	024	044	055	060	064	072	084	090	088	077	068	063	055	040	033	030	030	031
Q. R.	003	004	004	006	005	006	005	005	004	004	012	013	017	016	018	015	012	016	007	012	010	004	004	002

foF2

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 1

IONOSPHERIC DATA

Mar. 1965 | foF1 | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	440L	440	440	440	440	430L	L	L						
2										L	440	440	440	440	440	430	L	L						
3										L	430	440	440	450	450	430	L	L						
4										L	L	440	450	450H	440	430L	L	L						
5										L	450	450	440	450	440	420	L	L						
6										L	L	440	450	450	440	430	L							
7										L	440	450H	440	440	440	430	390	L						
8										L	450	460	450	460	440	430	LH							
9										L	440	450	450	450	440	430	390L	C						
10										L	430	440	460	460H	450H	430L	L	A						
11										LH	430H	440	440H	440	440	420L	L							
12										L	440L	450	450	440	440	430	L	L						
13									L	420L	430L	450L	450	450	450	420H	400L	L						
14									L	L	L	450H	450H	440	430	420L	420H	L						
15										LH	450L	450	450	450	450	I430A	380L	L						
16										L	460L	440	450	450	440	430	L							
17										L	440	440	440	440	440H	420H	L	L						
18										LH	430	440H	450H	450	420	420	410	L						
19									LH	L	460H	440	440	450	430	LH	L							
20									C	C	C	C	C	C	C	430	L	L						
21										L	A	I450C	440	I440C	I430C	430	C							
22									L	430L	440	450H	450	460	L	440	L	L						
23										L	450H	450	460	460	440	440	L	L						
24										L	450L	460	460	A	450	440	L	A						
25									L	L	440	470	450H	460	440	430	420	L						
26									L	L	460	450	470	460H	450H	440	A	L						
27										L	L	450H	460	I450A	440	L	A	A						
28									L	L	L	450	440	450	440	430	A							
29									L	L	470L	460S	440	460	440	440	L	A						
30									L	L	440	470	450	480	460	I450S	L	L						
31									L	L	450	450	450	450	450	420	L	L						
No.										2	24	30	30	29	29	29	7							
Median										425L	440	450	450	450	440	430	400							
U. Q.																								
L. Q.																								
Q. R.																								

foF1

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 2

50

IONOSPHERIC DATA

Mar. 1965 | foE | 0.01 Mc | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								E160S	210	270H	I300R	I305H	320	320R	310	280	265	220						
2								E160S	205	260	300	315	325	315	305	290	270	210						
3								E160S	215	270	300	310	320	320	315	I300A	265	220						
4								E160S	205	270	290H	310R	310	I310A	I305R	300	275	220						
5								E170S	210	260	300H	310R	310H	I310R	320	300	250	I205A						
6								E170S	220	270	300	310	320	315	I305A	295	270	A						
7								E180S	220	270	300	I305R	310	315	310	295	I255A	225						
8								E160S	230	270	300	310	305	A	A	A	A	230						
9								E160S	220	270	290	310	310	310	310	I300A	I265A	C						
10								E160S	225	270	295H	315R	330	330H	I315R	300H	275H	235						
11								E170S	230	260	275	295	310	315R	310	300	270	240						
12								E160S	235	280	I300A	315	320	I320R	320R	305	275	230						
13								E170S	240	275	295	I310A	A	A	310	300	265	230	E160S					
14								E170S	240	280	I300A	A	A	A	320	300	275	235						
15								E160S	225	270	295	I310R	315	315R	315	I300A	270	I230A						
16								180	240H	275	300R	310H	315R	320	I315R	300	265H	250						
17								E160S	240	275	305	300	I315A	I320R	315	300	275	225S						
18								175	230H	270	R	I295R	I310R	315H	315	300	280	240						
19								E170S	245H	275	300R	R	E390B	E350B	R	300	280	250						
20								C	C	C	C	C	C	C	C	310	275	230	E160S					
21								C	250S	280	310R	320C	C	C	C	305C	I270C	240						
22								200	250H	280H	300	320	325	I320R	315	290	280	240	E170S					
23								E170S	240	275	290	300	I315R	I315R	315R	310	280	250						
24								E170S	250	290	305	R	A	A	R	305R	290	A						
25								210	250	280	305R	R	A	R	A	A	A	240						
26								200	250H	290	I305R	I320R	325R	R	R	A	A	A						
27								205	240	275	300R	310	330R	I330R	325	320H	290	245	170					
28								205	260	290	310	I310R	320	I330R	A	A	A	A	A					
29								200	260	290	310	315S	325	I330R	325	320R	290R	250						
30								210	255	295	310	320	330	330	A	A	A	250	A					
31								210H	255H	290	310	320R	R	R	I320R	305	290	250	E170S					
No.								29	30	30	29	26	24	22	22	26	26	26	5					
Median								E170S	240	275	300	310	320	320R	315	300	275	235	E170S					
U. Q.																								
L. Q.																								
Q. R.																								

foE

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 3

IONOSPHERIC DATA

Mar. 1965 | foEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E018S	E017S	E017S	E010B	E010B	E017S	E019S	E016S	G	030	G	035	036	036	035	033	G	023M	021M	E017S	E017S	E017S	E017S	E017S
2	E017S	E017S	E017S	E017S	E009B	E017S	E017S	E016S	029	032	035	037	040	038	037	033	G	020G	E017S	021	019M	020M	E017S	E017S
3	E016S	E016S	E016S	E017S	E017S	E017S	E016S	E016S	G	029	035	038	J038	036	G	034	G	021G	E018S	E017S	E017S	023M	019M	E017S
4	E017S	024M	E017S	020M	E017S	E017S	E016S	E016S	G	030	033	038	038	035	030G	025G	G	G	E017S	E019S	E017S	E017S	E017S	E016S
5	E017S	E017S	E017S	E017S	E016S	E017S	E017S	E017S	027	031	033	035	034	G	G	022G	033	027	E017S	E017S	E018S	E017S	E019S	E017S
6	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	G	030	033	G	035	034	034	025G	024G	J032	J027	J022	023	E018S	E018S	E017S
7	E017S	E017S	E018S	E018S	E016S	E017S	E018S	E018S	G	G	034	034	038	036	037	033	029	021G	J026	J020	E017S	E018S	E017S	E017S
8	E017S	E017S	021M	E017S	E016S	E017S	E018S	E016S	G	G	G	035	035	038	J038	059	033M	018G	J019	E017S	E016S	E017S	021M	E018S
9	E017S	E017S	E018S	E016S	E016S	E018S	E018S	E016S	G	G	G	035	042	044	033	J034	J034	C	026M	E017S	E020S	E018S	E017S	J026
10	E017S	E018S	E017S	E017S	E011B	E017S	E017S	E016S	G	033	036	042	038	036	G	034	030	J059	J051	J034	J052	E017S	J032	022M
11	E018S	E016S	E017S	J026	E017S	018M	E016S	E017S	G	G	034	034	034	034	033	029G	034	038	J046	085M	020M	E017S	E018S	E018S
12	E017S	E018S	E018S	E017S	E016S	E017S	E018S	E016S	G	031	033	038	039	039	040	025G	021G	G	025M	E018S	E017S	021M	022M	021M
13	E016S	026	022M	021M	021M	022M	021M	E017S	027	029	035	J052	033	J039	021G	021G	021G	021G	023M	E017S	E016S	E017S	019M	E018S
14	E016S	E017S	E017S	E017S	E016S	E017S	E017S	E017S	G	G	031	034	033	034	027G	J039	020G	028	J020	021M	020M	E017S	E018S	E017S
15	E019S	E017S	E017S	E016S	E017S	E017S	E017S	E016S	026	030	032	G	038	039	G	J053	035	028	020	J022	021M	E018S	J020	E018S
16	E018S	E018S	E017S	E014S	E016S	E017S	E017S	G	G	G	032	034	036	036	036	038	033	035	022	E016S	E017S	E017S	E017S	E017S
17	E016S	E016S	E016S	E018S	E016S	E016S	E017S	020	027	035	036	040	J038	027G	024G	026G	G	021G	023M	E018S	E017S	E017S	E017S	E017S
18	E017S	E017S	E016S	E016S	E010B	E016S	E017S	G	G	028	028G	029G	034	036	036	034	031	G	E017S	E017S	E016S	E017S	E017S	E017S
19	E017S	E017S	E017S	022M	E014S	E018S	E017S	E017S	G	G	034	G	E039B	E035B	G	G	035	035	032	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	035	G	G	024	C	C	C	C	C
21	C	C	C	C	C	C	C	C	032	036	044	040	040	C	C	G	C	J053	J051	022M	J025	J025	E019S	E017S
22	023M	E016S	E018S	E017S	E016S	E017S	E016S	G	G	035	039	039	040	036	034	031	030	G	E017S	E016S	E017S	023M	E018S	E017S
23	023M	E017S	020M	021M	E018S	E018S	E018S	E017S	G	030	033	032	029G	029G	027G	G	G	031	E019S	E017S	E017S	E018S	E017S	E018S
24	E017S	E017S	E017S	E017S	E016S	E019S	E017S	020	G	032	034	G	037	J045	030G	033	032	035	032	024M	J027	023M	E018S	E018S
25	E018S	E017S	E018S	E017S	E019S	E018S	E017S	G	028	031	035	038	035	031G	032	J035	J032	027	025M	021M	E018S	023M	E018S	E017S
26	E017S	E017S	E017S	E019S	E017S	E018S	E017S	G	G	032	035	036	G	036	034	035	J043	033	J040	J051	J022	J025	023M	021M
27	E018S	E017S	E017S	E006B	E016S	E017S	E017S	023	028	035	038	036	043	047	037	037	048	068M	J064	067M	028	E016S	023M	023M
28	E017S	E017S	E017S	E016S	022M	E016S	E017S	024	031	039	042	036	041	G	J053	J048	J043	033	J029	032	J026	J026	E017S	E017S
29	E017S	E017S	E017S	E009B	E016S	E017S	E017S	G	029	035	043	039	044	040	037	038	J039	J051	042	025	J026	023	E019S	E017S
30	E017S	E017S	E017S	E017S	E017S	E017S	E018S	024M	029	037	J038	037	037	039	038	042	J039	035	036	125M	058M	J026	019M	E017S
31	E017S	E019S	E017S	E016S	E017S	E018S	E017S	G	030	032	035	036	G	046	025G	033	J037	028	023	024M	E017S	020M	022M	E018S
No.	29	29	29	29	29	29	29	29	30	30	30	30	30	29	29	31	30	30	31	29	29	29	29	29
Median	E017S	E017S	E017S	E017S	E016S	E017S	E017S	G	G	030	034	036	038	036	033	033	032	028	024	021	E018S	E018S	E018S	E017S
U. Q.	E018	E017	E018	E018	E017	E018	E018	E017	028	033	036	038	039	039	037	037	035	035	032	024	024	023	020	E018
L. Q.	E017	E017	E017	E016	E016	E017	E017	E016	G	028	033	034	034	034	G	G	G	G	019	E017	E017	E017	E017	E017
Q. R.										005	003	004	005	005					013	D007	D007	D006	D003	

foEs

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Mar. 1965 | f_bEs | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	B	B	S	S	S		G		035	035	036	035	033		G	018	S	S	S	S	S
2	S	S	S	S	B	S	S	S	G	032	035	037	038	037	034	033		019G	S	E	E	E	S	S
3	S	S	S	S	S	S	S	S		G	034	037	038	036		033		017G	S	S	S	E	E	S
4	S	019	S	017	S	S	S	S		G	032	037	036	034	E030R	024G			S	S	S	S	S	S
5	S	S	S	S	S	S	S	S	G	G	G	G	E034R			022G	032	024	S	S	S	S	S	S
6	S	S	S	S	S	S	S	S		G	G		035	G	033	022G	022G	032	027	021	020	S	S	S
7	S	S	S	S	S	S	S	S			033	E034R	038	036	035	033	028	021G	025	020	S	S	S	S
8	S	S	E	S	S	S	S	S				034	035	036	036	037	029	018G	019	S	S	S	018	S
9	S	S	S	S	S	S	S	S				035	037	038	G	032	032	C	019	S	S	S	S	E026S
10	S	S	S	S	B	S	S	S		033	035	041	036	036		G	G	E059S	022	034	A	S	A	018
11	S	S	S	019	S	017	S	S			032	E034R	034	E034R	E033R	025G	034	038	046	A	E	S	S	S
12	S	S	S	S	S	S	S	S		G	G	036	037	036	036	025G	021G		E	S	S	020	E	E
13	S	019	E	E	018	E	E	S	G	G	033	037	E033R	035	021G	021G	021G	018G	G	S	S	S	E	S
14	S	S	S	S	S	S	S	S			E031R	E034R	E033R	E034R	025G	025	018G	G	018	E	E	S	S	S
15	S	S	S	S	S	S	S	S	G	030	G		037	038		049	034	026	019	022	E	S	018	S
16	S	S	S	S	S	S	S				032	034	035	035	035	034	033	026	022	S	S	S	S	S
17	S	S	S	S	S	S	S	E020S	027	031	035	040	035	027G	024G	026G		018G	E	S	S	S	S	S
18	S	S	S	S	B	S	S			G	E028R	E029R	G	036	035	034	029		S	S	S	S	S	S
19	S	S	S	019	S	S	S	S			G		B	B			034	035	031	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	035			024	C	C	C	C	C
21	C	C	C	C	C	C	C	C	032	036	043	E040C	040	C	C		C	048	038	018	021	019	S	S
22	018	S	S	S	S	S	S			035	038	038	040	036	E034R	E031R	G		S	S	S	019	S	S
23	E	S	018	E	S	S	S	S		E030R	E033R	E032R	E029R	E029R	027G			026	S	S	S	S	S	S
24	S	S	S	S	S	S	S	E020R		E032R	E034R		036	045	E030R	E033R	G	035	E032S	020	027	E023S	S	S
25	S	S	S	S	S	S	S		G	E031R	035	037	035	E031R	E032R	034	E032R	027	024	019	S	E	S	S
26	S	S	S	S	S	S	S			032	035	036		036	E034R	034	042	027	E040S	037	018	022	E	020
27	S	S	S	B	S	S	S	G	G	035	038	036	042	047	E037R	037	048	E068S	E064S	A	026	S	019	019
28	S	S	S	S	017	S	S	G	031	037	041	036	039		034	042	043	033	025	029	019	019	S	S
29	S	S	S	B	S	S	S		G	035	038	037	039	039	036	038	034	051	E042S	022	E	E	S	S
30	S	S	S	S	S	S	S	G	G	035	036	035	036	038	038	E042S	036	033	036	A	A	E	E	S
31	S	S	S	S	S	S	S		029	G	034	036		043	025G	E033R	032	G	023	E	S	018	E	S
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

f_bEs

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Mar.1965 | f-min | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E018S	E017S	E017S	010	010	E017S	E019S	E016S	017	016	016	017	017	017	017	017	018	E018S	E017S	E017S	E017S	E017S	E017S	E017S
2	E017S	E017S	E017S	E017S	009	E017S	E017S	E016S	016	016	016	016	018	018	017	017	016	E016S	E017S	E016S	E016S	E016S	E017S	E017S
3	E016S	E016S	E016S	E017S	E017S	E017S	E016S	E016S	016	016	017	017	016	016	017	017	016	E016S	E018S	E017S	E017S	E016S	E017S	E017S
4	E017S	E016S	E017S	008	E017S	E017S	E016S	E016S	017	016	017	017	017	018	017	017	016	E016S	E017S	E019S	E017S	E017S	E017S	E016S
5	E017S	E017S	E017S	E017S	E016S	E017S	E017S	E017S	016	016	016	018	018	018	017	017	016	E017S	E017S	E017S	E018S	E017S	E019S	E017S
6	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	017	016	017	017	017	017	018	018	017	E017S	E017S	E017S	E017S	E018S	E018S	E017S
7	E017S	E017S	E018S	E018S	E016S	E017S	E018S	E018S	017	017	017	017	017	022	018	017	017	E016S	E016S	E017S	E017S	E018S	E017S	E017S
8	E017S	E017S	E017S	E017S	E016S	E017S	E018S	E016S	016	017	017	017	017	018	018	019	016	E016S	E016S	E017S	E016S	E017S	E017S	E018S
9	E017S	E017S	E018S	E016S	E016S	E018S	E018S	E016S	016	016	017	017	018	022	020	016	016	C	E016S	E017S	E020S	E018S	E017S	E016S
10	E017S	E018S	E017S	E017S	011	E017S	E017S	E016S	016	017	017	018	022	022	022	018	017	E017S	E017S	E016S	E017S	E017S	E016S	E017S
11	E018S	E016S	E017S	E016S	E017S	E016S	E016S	E017S	016	016	017	017	020	023	022	018	018	E016S	E016S	E017S	E016S	E017S	E018S	E018S
12	E017S	E018S	E018S	E017S	E016S	E017S	E018S	E016S	018	017	016	018	018	022	022	022	016	E016S	E018S	E018S	E017S	E017S	E017S	E018S
13	E016S	E017S	E017S	E016S	E017S	E016S	E017S	E017S	016	016	017	016	017	018	018	016	016	E016S	E016S	E017S	E016S	E017S	E017S	E018S
14	E016S	E017S	E017S	E017S	E016S	E017S	E017S	E017S	016	016	018	017	017	018	018	018	016	E016S	E016S	E017S	E016S	E017S	E018S	E017S
15	E019S	E017S	E017S	E016S	E017S	E017S	E017S	E016S	016	016	018	019	019	018	018	016	016	E016S	E014S	E016S	E016S	E018S	E016S	E018S
16	E018S	E018S	E017S	E014S	E016S	E017S	E017S	E016S	015	016	017	017	017	017	020	016	017	E016S	E016S	E016S	E017S	E017S	E017S	E017S
17	E016S	E016S	E016S	E018S	E016S	E016S	E017S	E016S	016	016	016	017	017	017	017	018	018	E016S	E017S	E018S	E017S	E017S	E017S	E017S
18	E017S	E017S	E016S	E016S	010	E016S	E017S	E016S	016	017	016	017	018	018	017	018	018	E016S	E017S	E017S	E016S	E017S	E017S	E017S
19	E017S	E017S	E017S	E017S	E014S	E018S	E017S	E017S	016	016	018	026	039	035	025	026	019	E018S	E017S	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	018	016	E016S	E016S	C	C	C	C	C
21	C	C	C	C	C	C	C	C	017	017	018	019C	018C	C	C	018C	C	E017S	E017S	E017S	E017S	E016S	E019S	E017S
22	E016S	E016S	E018S	E017S	E016S	E017S	E016S	E018S	016	016	018	018	019	019	020	018	018	E017S	E017S	E016S	E017S	E017S	E018S	E017S
23	E017S	E017S	E017S	E017S	E018S	E018S	E018S	E017S	016	016	017	018	018	019	017	018	017	E017S	E019S	E017S	E017S	E018S	E017S	E018S
24	E017S	E017S	E017S	E017S	E016S	E019S	E017S	E017S	016	016	019	018	019	019	019	018	016	E016S	E016S	E017S	E017S	E017S	E018S	E018S
25	E018S	E017S	E018S	E017S	E019S	E018S	E017S	E017S	016	017	018	019	018	018	018	017	018	E017S	E017S	E017S	E018S	E017S	E018S	E017S
26	E017S	E017S	E017S	E019S	E017S	E018S	E017S	E016S	016	018	018	018	019	018	019	019	018	E016S	E016S	E017S	E017S	E017S	E016S	E017S
27	E018S	E017S	E017S	006	E016S	E017S	E017S	E017S	016	014	018	017	018	019	017	018	016	E016S	E016S	E016S	E018S	E016S	E016S	E017S
28	E017S	E017S	E017S	E016S	007	E016S	E017S	E018S	017	016	017	018	018	019	018	017	017	E016S	E016S	E016S	E017S	E016S	E017S	E017S
29	E017S	E017S	E017S	009	E016S	E017S	E017S	E017S	016	017	017	020	018	020	018	016	016	E017S	E017S	E017S	E017S	E018S	E019S	E017S
30	E017S	E017S	E017S	E017S	E017S	E017S	E018S	E017S	016	017	017	018	018	018	019	018	016	013	E016S	E017S	E017S	E016S	E017S	E017S
31	E017S	E019S	E017S	E016S	E017S	E018S	E017S	E017S	016	016	018	018	018	018	018	016	016	E018S	E017S	E017S	E017S	E017S	E017S	E018S
No.	29	29	29	29	29	29	29	29	30	30	30	30	30	29	29	31	30	30	31	29	29	29	29	29
Median	E017S	E017S	E017S	E017S	E016S	E017S	E017S	E017S	016	016	017	018	018	018	018	018	016	E016S	E017S	E017S	E017S	E017S	E017S	E017S
U. Q.																								
L. Q.																								
Q. R.																								

f-min

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 6

IONOSPHERIC DATA

Mar. 1965 | M(3000) F2 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U305S	I315S	315	315	375	305	I320S	I340S	345S	340S	355S	J360S	355S	I345S	345	J355S	355S	360S	365	325	335S	295	295S	295
2	315	I315S	325S	335S	365	305	295	I350S	350	I330S	J340S	340S	340	330	320	345	345	350	355	I335S	315	I310S	I315S	I305S
3	305S	305	U305S	J330S	365	295S	310S	340	345	325S	320	U325S	310	I315S	I325S	I335S	J345S	345S	350	J320S	300S	I320S	I315S	I290S
4	285S	305	320	330	290	I295S	310S	J385S	335	330S	S	I310S	320S	320	340S	335	J340S	I350S	335	I305S	J310S	J315S	J310S	295S
5	285S	J300S	I300S	J345S	S	275S	285S	345S	350	330S	315	325S	J325S	I335S	335	J330S	345	I370S	360	325	I315S	I300S	300S	I280S
6	S	S	J350S	335S	340S	315	I310S	I345S	I350S	350	345	355	325	I330S	325	345	340	I365S	J360S	330S	I320S	310S	I330S	305S
7	305S	I300S	I300S	I320S	J340S	310	I310S	350S	330H	I320S	305S	U295S	310	330S	335S	340	I370S	360	365	355S	I320S	J325S	295	I280S
8	I290S	I295S	I310S	J340S	360S	305	310S	355	340S	I330S	J310S	305	315	J325S	345S	345	I360S	360S	355S	335S	325S	295	315S	I305S
9	U295S	330S	315S	325	350	310	300S	I360S	350S	335	330S	300	315	S	S	S	J325S	I350C	J375S	365	I310S	I295S	300S	I285S
10	295	315S	305	335S	365	365	300	350	350S	330	I335S	I330S	320S	330S	340S	J350S	355	I350S	I360S	390S	I330A	290	I290A	285
11	I300S	I305S	I320S	I375S	385S	370	305	355	350H	335S	I345S	370	I325S	320S	350	I350S	350	350S	370S	I350A	325	305	S	310S
12	295S	305	295S	315	345	325S	305S	385S	365	335	335S	I290S	I310S	I335S	350S	I355S	360S	I360S	370	J350S	I325S	305S	I320S	I295S
13	S	S	S	335S	335	330S	320S	J360S	I350S	J345S	355S	J285S	J315S	320	325	340S	325	J340S	S	I320S	I300S	I330S	J315S	I300S
14	I300S	I295S	305S	375S	380	310S	I300S	330	I340S	S	S	S	330	350S	I345S	I350S	I340S	I350S	I350S	J355S	I310S	S	S	S
15	I305S	J295S	290S	I330S	J395S	310	320S	365S	345H	335S	I325S	320S	325S	320S	J350S	345S	J340S	J340S	355S	345S	320S	I300S	320S	I310S
16	J310S	300S	I310S	345	385S	345S	310	375S	360H	330	320S	I320S	J325S	330	335S	I320S	J335S	365S	J370S	I345S	320	I285S	280S	U280S
17	I295S	325S	345S	370	390	280	320	350	350H	350S	340S	305	J330S	325S	I330S	I345S	350S	360S	355H	355S	335S	295	285S	285S
18	I305S	I300S	J325S	355	380S	280	305S	I355S	360	335	310	310	330	325S	335S	330	I330S	I345S	I360S	360S	350	315S	290S	315S
19	305S	315	315	345S	370	340	325	370S	355	360	I335S	S	S	S	S	345S	I340S	I350S	I365S	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	325S	I345C	I345C	I350S	C	C	C	C	C
21	C	C	C	C	C	C	C	C	355S	355	330S	305	J320S	I345C	I350C	S	C	345S	I350S	350S	325S	295S	295	295S
22	I290S	J280S	315	I335S	I360S	305	I295S	I345S	330	J345S	305	I300S	320S	J315S	320	I335S	I345S	360	I355S	340	325S	I315S	295S	295S
23	280S	S	S	J350S	I335S	I310S	325S	I370S	335S	330	305S	S	S	325S	J320S	I330S	S	S	S	J340S	I330S	305	I310S	I300S
24	I290S	I295S	I300S	320S	S	325	310S	I350S	I340S	S	S	I310S	310	I320S	J325S	E	J350S	I340S	340S	345S	S	S	S	290S
25	I305S	I315S	J315S	I315S	I320S	I335S	315	J345S	345	J340S	J340S	I320S	J315S	J315S	J315S	J320S	S	S	S	S	300	325	I315S	I290S
26	J285S	I325S	I305S	I340S	335S	J325S	330S	355	I360S	345	315	295S	I310S	J310S	J315S	J330S	I340S	S	S	S	375	300	290S	275
27	I300S	J325S	330	340S	325S	290	320	370	355	335	305	S	J315S	J330S	335	325S	S	J340S	S	A	340	I290S	280	I290S
28	305	S	S	325S	J365S	325	I320S	I365S	I365S	360S	315S	J310S	I300S	315	325	J340S	I340S	J355S	I350S	345	340S	I320S	305S	295S
29	305S	305S	S	S	360	I320S	345	J360S	I350S	J335S	310	J300S	J315S	J315S	325S	J330S	J330S	J340S	I370S	360	310	305S	300	305S
30	I300S	290S	295	335S	380S	360	320S	I360S	345S	345	345S	305S	305	U305S	J315S	320S	340S	J345S	J345S	A	A	285S	280	290S
31	U300S	I300S	295	370	J380S	275S	I325S	J370S	345	345S	315	305S	I310S	J310S	J315S	I320S	J320S	J340S	I355S	350S	I330S	U255S	275	I290S
No.	27	25	25	28	27	29	29	29	30	28	27	26	28	28	28	28	27	28	26	25	27	27	26	28
Median	U300S	305S	310S	335S	365S	310	310S	355S	350	335S	325S	310S	320S	325S	330S	340S	340S	350S	355S	345S	325S	305S	300S	U295S
U. Q.																								
L. Q.																								
Q. R.																								

M(3000)F2 | Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 7

IONOSPHERIC DATA

Mar. 1965 | M(3000) F1 | 0.01 | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	365L	385	385	390	385	370L	L	L						
2										L	365	375	390	385	370	365	L	L						
3										L	365	365	385	365	360	370	L	L						
4										L	L	380	355	355H	365	370L	L	L						
5										L	335	355	370	370	380	380	L	L						
6										L	L	380	375	375	365	365	L							
7										L	365	360H	380	380	385	375	385	L						
8										L	370	365	375	365	365	370	LH							
9										L	365	375	375	360	365	370	385L	C						
10										L	370	385	365	370H	375H	350L	L	A						
11										LH	360H	365	370H	375	365	380L	L							
12										L	365L	375	375	365	375	375	L	L						
13									L	380L	370L	375L	375	375	360	375H	375L	L						
14									L	L	L	360H	370H	365	395	360L	355H	L						
15										LH	355L	380	380	360	360	I375A	395L	L						
16										L	350L	370	365	360	365	355	L							
17										L	365	385	375	390	365H	355H	L	L						
18										LH	375	385H	375H	375	400	380	365	L						
19									LH	L	385H	385	410	360	370	LH	L							
20									C	C	C	C	C	C	C	375	L	L						
21										L	A	C	A	I370C	I375C	360	C							
22									L	350L	370	375H	360	370	L	365	L	L						
23										L	355H	375	370	370	375	365	L	L						
24										L	350L	370	350	A	375	365	L	A						
25									L	L	385	360	375H	370	385	370	350	L						
26									L	L	350	375	350	370H	380H	380	A	L						
27										L	L	380H	A	A	A	L	A	A						
28									L	L	L	380	385	375	375	A	A							
29									L	L	360L	390S	385	370	380	365	L	A						
30									L	L	365	375	375	355	350	I355S	L	L						
31									L	L	375	375	390	A	360	380	L	L						
No.										2	24	29	28	27	28	28	7							
Median										365L	365	375	375	370	370	370	375							
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

M(3000)F1

The Radio Research Laboratories, Japan

Y 8

IONOSPHERIC DATA

Mar. 1965 | h'F2 km | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									250	250	255	250	250	255	275	250	250	235						
2										280	265	270	260	275	275	255	250	240						
3										275	280	260	270	295	270	255	250	245						
4										280	285	295	260	280	255	250	255	235						
5										255	300	280	270	260	260	270	250	235						
6										250	275	280	300	265	270	260	250							
7										295	295	305	300	265	250	250	240	230						
8										275	295	300	295	275	250	245	245							
9										280	280	305	295	270	250	240	230	C						
10										275	280	300	275	280	250	250	250	I250A						
11										275	275	250	300	295	260	250	255							
12										255	295	345	300	270	245	235	245	240						
13									250	250	255	315	290	275	260	250	260	245						
14									255	250	270	300	280	255	255	265	255	250						
15										275	270	295	280	295	270	250	255	250						
16										275	300	295	290	275	275	280	275							
17										265	290	335	285	280	275	250	255	250						
18										270	305	305	275	270	260	265	260	245						
19									245	250	280	300	285	280	260	275	260							
20									C	C	C	C	C	C	C	250	250	250						
21										260	290	345	295	I280C	I260C	255	C							
22									255	270	310	310	280	295	280	260	255	250						
23										275	320	300	280	290	275	265	270	255						
24										275	280	300	295	300	280	270	260	250						
25									250	L	300	300	280	280	275	280	260	255						
26									240	250	295	325	300	290	275	270	250	250						
27										270	330	280	295	265	260	275	285	A						
28									250	255	300	295	305	290	265	255	255							
29									250	270	320	310	280	300	270	250	265	250						
30									255	270	280	325	300	310	290	280	255	250						
31									255	265	310	305	305	285	285	280	265	250						
No.									11	29	30	30	30	30	30	31	30	22						
Median									250	270	290	300	290	280	270	255	255	250						
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 9

IONOSPHERIC DATA

Mar. 1965 | h'F | km | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	300	275	250	205	E280S	E300S	240	230	225	230	220	215	210	205	200	200	210	225	220	245	275	295	300
2	300	270	250	250	200	E300S	E325S	245	245	240	230	225	210	200	225	205	205	230	230	235	245	260	300	E310S
3	295	285	260	240	225	E310S	E260S	245	245	245	245	235	225	220	220	200	215	225	230	230	250	245	230	320
4	330	295	245	230	E300S	300	290	225	225	245	235	225	250	200H	225	225	215	225	235	255	250	255	240	E305S
5	300	295	270	245	200	E350S	E320S	240	250	245	245	240	235	220	210	200	225	235	210	225	255	260	295	300
6	330	300	250	240	245	E290S	280	240	240	230	235	210	205	205	210	215	215	235	210	250	250	275	250	255
7	295	300	275	250	230	E250S	E300S	240	210H	240	235	225H	240	220	230	205	205	200	220	230	245	250	300	310
8	330	300	275	245	200	E250S	E295S	245	245	240	230	210	200	210	230	220	205H	240	220	225	250	300	290	295
9	300	245	250	245	225	E300S	300	245	240	230	210	225	230	240	200	220	220	I220C	210	200	E250S	E300S	300	I310A
10	300	300	290	250	205	E230S	E350S	240	240	245	240	250	200	220H	205H	235	220	I230A	220	230	A	E315S	A	E320A
11	305	280	275	250	200	E275A	E300S	220	230H	200H	200H	245	200H	200	230	240	245	250	240	A	235	E260S	260	E310S
12	300	300	300	290	245	250	260	210	225	225	220	205	200	200	240	215	210	230	215	210	250	250	270	300
13	300	300	290	250	255	255	275	230	230	220	215	225	200	200	200	200H	220	230	215	240	250	250	250	295
14	305	300	275	220	205	E300S	E305S	245	240	230	205	210H	195H	240	230	200	200H	235	240	215	240	275	275	295
15	300	300	295	250	200	E290S	E280S	230	225H	230H	200	220	225	235	225	I215A	225	240	235	205	E250S	295	295	300
16	300	305	270	240	205	245	E300S	230	220H	225	205	205	200	200	220	230	250	245	220	205	E250S	305	320	315
17	300F	255	250	225	210	E350S	E300S	230	210H	245	220	235	210	205	195H	200H	240	240	225H	225	225	E300S	310	E310S
18	300	290	275	230	200	E300S	E300S	230	225	205H	230	200H	200H	205	210	220	215	225	230	210	220	E280S	300	300
19	300	295	290	250	205	E240S	255	225	200H	225	195H	215	210	260	250	200H	245	250	225	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	225	225	225	240	C	C	C	C	C
21	C	C	C	C	C	C	C	C	245	250	I235A	I205C	E255A	I205C	I200C	250	C	E260A	250	215	235	E305A	315	325
22	350	320	300	250	210	S	E285S	230	245	250	245	220H	250	225	245	225	220	210	240	215	225	260	300	E300S
23	340	330	260	240	240	300	250	215	230	235	200H	240	195	250	225	245	230	240	225	225	215	E290S	290	335
24	300	295	295	265	200	E315S	E290S	235	250	230	230	240	215	I250A	225	225	240	I250A	240	225	240	I260A	280	300
25	295	275	250	250	255	240	E250S	230	235	220	215	225	195H	210	220	200	230	250	235	205	E230S	E275S	250	300
26	300	300	290	250	240	255	250	235	230	220	205	200	225	200H	240H	225	I230A	240	250	245	200	E300A	E340S	350
27	300	250	250	220	E250S	E300S	E270S	230	225	225	240	200H	E260A	A	A	250	A	A	A	A	E250A	E300S	E320A	300
28	290	300	300	250	200	E300S	265	235	240	E245A	E265A	200	225	230	205	A	I235A	250	240	235	230	265	290	305
29	290	300	290	230	200	E350S	250	225	235	225	220	200	240	210	240	E250A	240	I250A	240	215	250	E290S	295	300
30	300	310	300	250	200	E250S	E250S	225	235	240	220	200	210	225	250	A	275	A	245	A	A	E295S	320	320
31	310	300	295	235	200	E400S	250	225	245	225	205	200	200	I215A	250	220	240	245	235	205	225	E345A	330	305
No.	29	29	29	29	29	28	29	29	30	30	30	30	30	29	29	29	29	29	30	26	27	29	28	29
Median	300	300	275	250	205	E295S	E285S	230	235	230	220	220	210	210	225	220	225	235	230	225	240	260	290	300
U. Q.																								
L. Q.																								
Q. R.																								

h'F

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y10

IONOSPHERIC DATA

Mar. 1965 | h'Es | km | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	B	B	S	S	S	G	E160G	G	150	145	130	125	125	G	100	100	S	S	S	S	S
2	S	S	S	S	B	S	S	S	150	150	140	130	120	120	120	120	G	110	S	105	105	105	S	S
3	S	S	S	S	S	S	S	S	G	E155G	145	135	120	120	G	110	G	105	S	S	S	100	100	S
4	S	100	S	100	S	S	S	S	G	150	135	125	120	110	105	105	G	G	S	S	S	S	S	S
5	S	S	S	S	S	S	S	S	150	150	150	E145G	140	G	G	100	110	115	S	S	S	S	S	S
6	S	S	S	S	S	S	S	S	G	E180G	150	G	125	120	115	100	100	100	100	100	100	S	S	S
7	S	S	S	S	S	S	S	S	G	G	150	145	130	125	120	120	110	105	100	100	S	S	S	S
8	S	S	115	S	S	S	S	S	G	G	G	120	110	105	100	100	100	100	100	S	S	S	105	S
9	S	S	S	S	S	S	S	S	G	G	G	120	110	110	125	100	100	C	100	S	S	S	S	100
10	S	S	S	S	B	S	S	S	G	150	150	140	140	150	G	150	150	115	110	105	105	S	100	100
11	S	S	S	105	S	100	S	S	G	G	105	105	140	140	140	100	150	130	120	110	115	S	S	S
12	S	S	S	S	S	S	S	S	G	E150G	150	140	125	120	120	105	105	G	100	S	S	100	115	115
13	S	105	105	100	100	100	105	S	115	120	110	105	110	105	100	100	100	100	100	S	S	S	115	S
14	S	S	S	S	S	S	S	S	G	G	105	105	105	100	100	100	100	100	100	100	100	S	S	S
15	S	S	S	S	S	S	S	S	150	150	145	G	130	120	G	100	125	125	120	110	100	S	100	S
16	S	S	S	S	S	S	S	G	G	G	150	150	135	130	130	125	150	130	120	S	S	S	S	S
17	S	S	S	S	S	S	S	150	150	145	130	110	105	105	105	110	G	100	100	S	S	S	S	S
18	S	S	S	S	B	S	S	G	G	155	105	105	140	130	135	135	140	G	S	S	S	S	S	S
19	S	S	S	100	S	S	S	S	G	G	145	G	B	B	G	G	150	145	125	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	155	G	G	140	C	C	C	C	C
21	C	C	C	C	C	C	C	C	150	150	135	140	130	C	C	G	C	125	120	100	110	110	S	S
22	105	S	S	S	S	S	S	G	G	135	125	125	125	130	130	130	135	G	S	S	S	110	S	S
23	110	S	100	110	S	S	S	S	G	130	125	120	100	100	100	G	G	140	S	S	S	S	S	S
24	S	S	S	S	S	S	S	145	G	145	140	G	105	100	100	150	140	120	115	110	105	105	S	S
25	S	S	S	S	S	S	S	G	150	145	125	115	115	100	100	100	100	E150G	100	100	S	105	S	S
26	S	S	S	S	S	S	S	G	G	140	130	130	G	130	140	125	100	150	115	110	110	110	105	105
27	S	S	S	B	S	S	S	155	150	130	125	135	125	125	140	145	145	120	120	115	110	S	110	110
28	S	S	S	S	105	S	S	155	140	125	120	120	120	G	105	100	100	140	130	115	110	110	S	S
29	S	S	S	B	S	S	S	G	150	125	120	120	120	130	135	150	140	130	120	115	115	120	S	S
30	S	S	S	S	S	S	S	120	155	145	125	125	125	120	105	105	105	130	125	115	115	115	115	S
31	S	S	S	S	S	S	S	G	150	150	140	140	G	125	100	130	130	160	140	130	S	120	120	S
No.	2	2	3	5	2	2	1	5	12	23	27	26	27	26	24	28	23	25	24	16	13	12	10	5
Median	110	100	105	100	100	100	105	150	150	150	135	125	125	120	120	110	110	120	115	110	110	110	110	105
U. Q.																								
L. Q.																								
Q. R.																								

h'Es

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

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Y 11

IONOSPHERIC DATA

Mar. 1965 | Types of Es | 135° E Mean Time (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										h		h	h	h	h	h		1	f					
2									h	h	h	h2	h	h	h	h		1		f	f	f		
3										h	h	h2	h	h		1		12				f	f	
4		f2		f2						h2	h	h	h	1	1	1								
5									h	h	h	h	h			1	c 1	12						
6										h	h		h	h	1	1	1	14	f2	f2	f			
7											h	h	h	h	h	c	1	1	f2	f				
8			f									h	c	12	12	12	12	1	f				f	
9												h	c	c 1	h 1	12	12		f					f2
10										h	h	h	h	h		h	h	c3	f	f2	f2		f2	f
11				f2		f					c	c	h	h	h	1	h	h2	f6	f2	f			
12										h 1	h 1	h 1	h	h 1	h 1	1	1		f			f	f2	f
13		f2	f	f	f	f2	f		c	c	c	c2	1	1	1	1	1	1	1				f	
14											1	1	1	1	1	1	1	12	f	f	f			
15									h	h	h		h	h		12	h 12	h 12	f f	f2	f		f2	
16											h	h	h	h	h	h	h h	h3	f					
17								h2	h	h	h	c2	1	1	1	1		1	f					
18										h	1	1	h 1	h	h 1	h	h							
19				f							h						h	h	f2					
20																h			h4					
21									h2	h	h2	h	h					c2	f2	f	f2	f2		
22	f2									h	h	h	h	h	h	h	h					f2		
23	f2		f	f						h	h	c	1	1	1			h						
24								h		h	h		c	1	1	h 12	h 1	c 12	f2f	f f	f4	f		
25									h	h	h	c	c	1	12	12	12	h 1	f2	f		f		
26										h	h	h		h	h	h 1	12	h 13	f2f2	f2f	f	f2	f2	f
27								h	h	h	h	h	h 1	h 1	h 1	h	h2	c5	c2	f	f2		f2	f2
28					f			h	h	h	h3	h	h		1	12	12	h 13	h21	f f2	f	f2			
29									h	h	h	h	h	h	h 12	h 1	h 12	h212	f3f2	f f2	f f	f		
30								1	h	h	h	h	h	h	1	1	12	h21	c41	f2f	f f	f	f	
31									h	h	h	h		h2	1	h 12	h 1	h	h2	f		f	f	
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Types of Es

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

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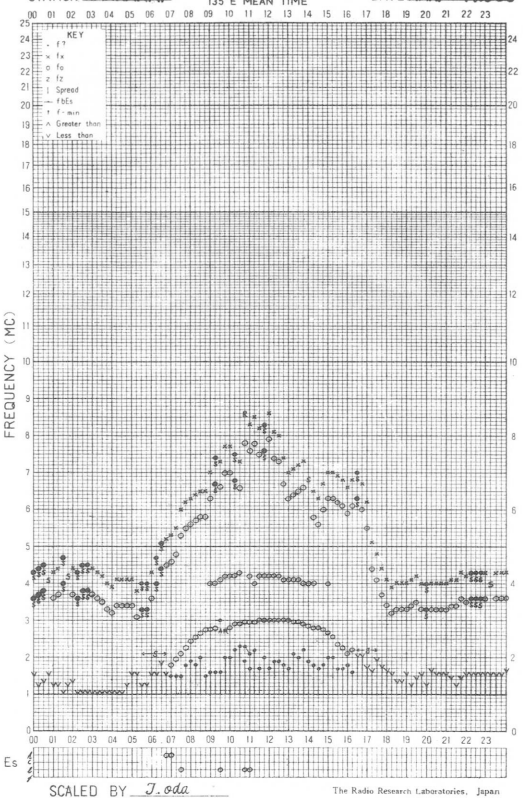
Y 12

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE MAR. 1, 1965



SCALED BY T. Oda

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f-PLOT OF IONOSPHERIC DATA

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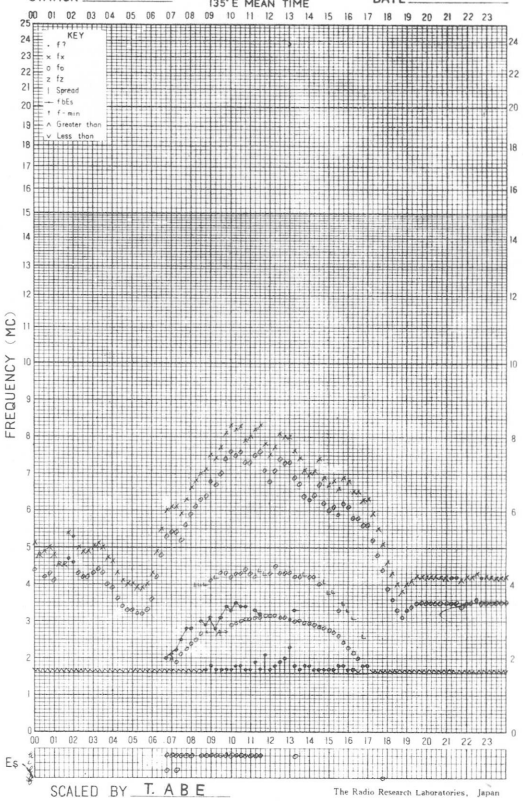

SCALED BY T. A B E

The Radio Research Laboratories, Japan

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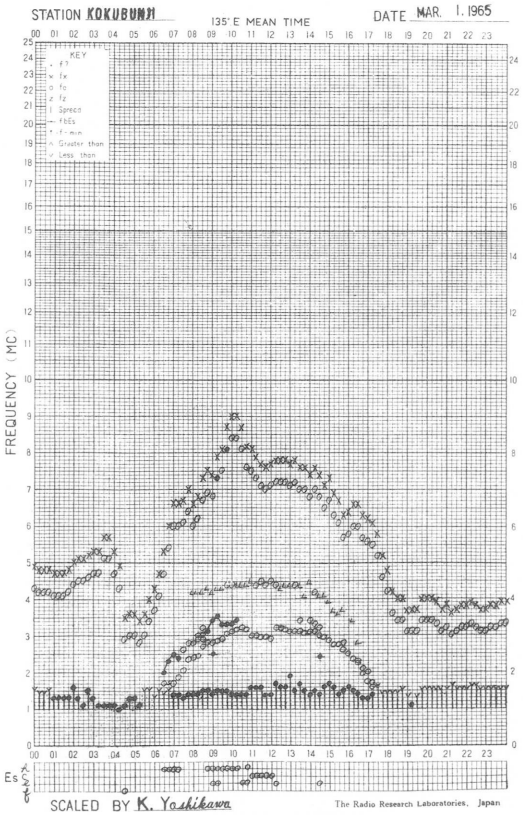

SCALED BY K. Yoshikawa

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f-PLOT OF IONOSPHERIC DATA

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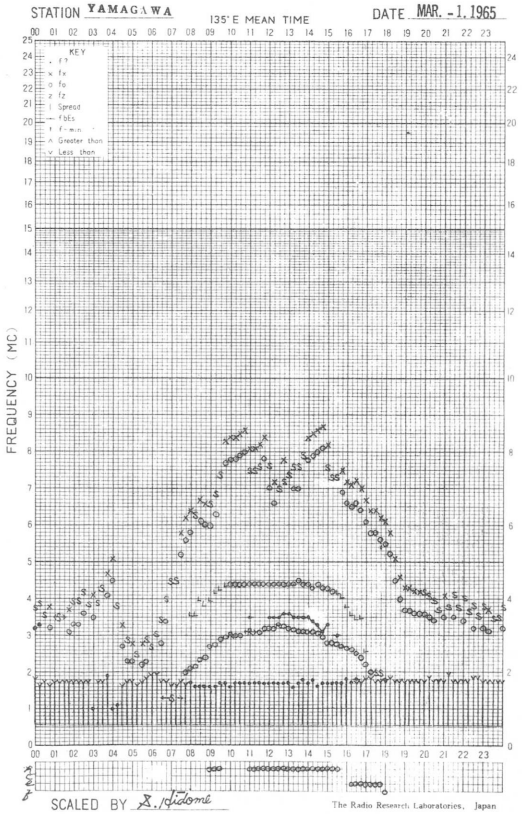

SCALED BY S. Kidomé

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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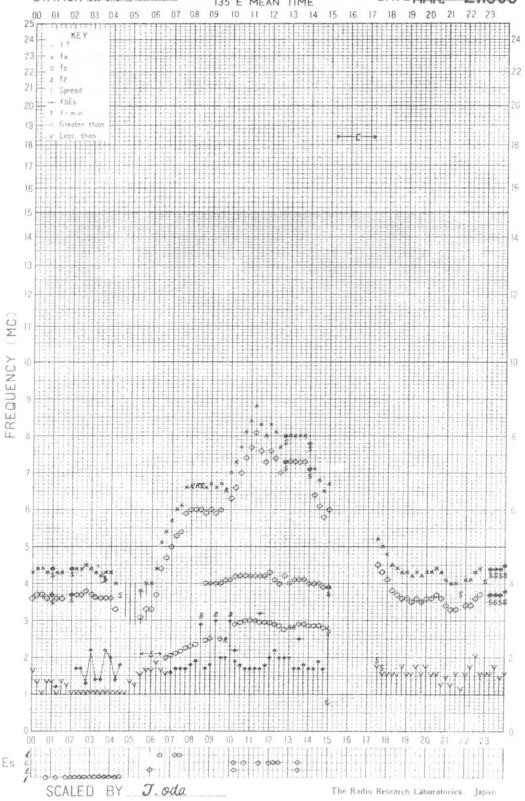

SCALED BY J. oda

The Radio Research Laboratories, Japan

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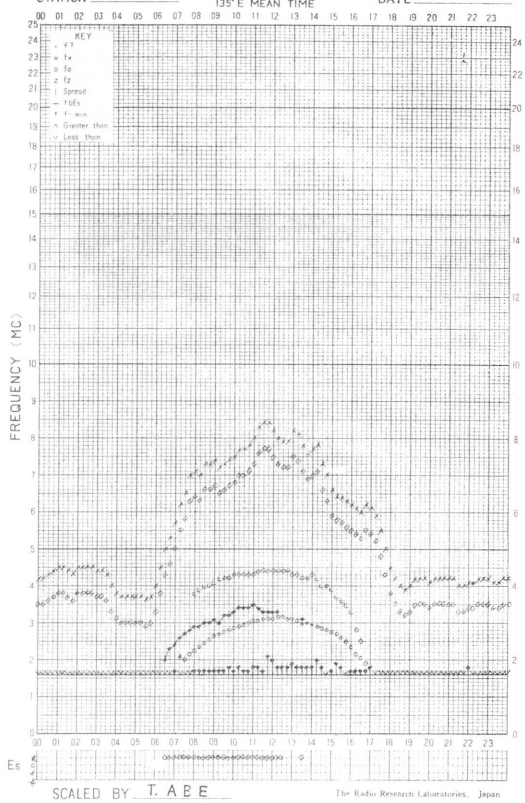

SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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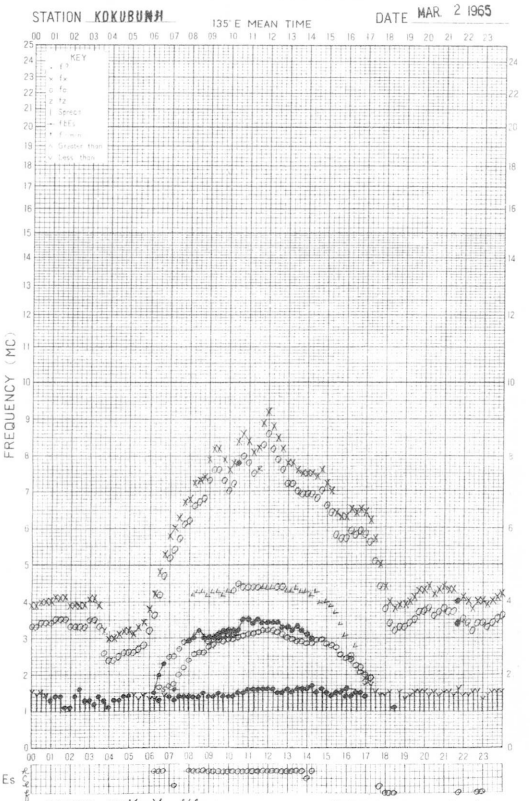

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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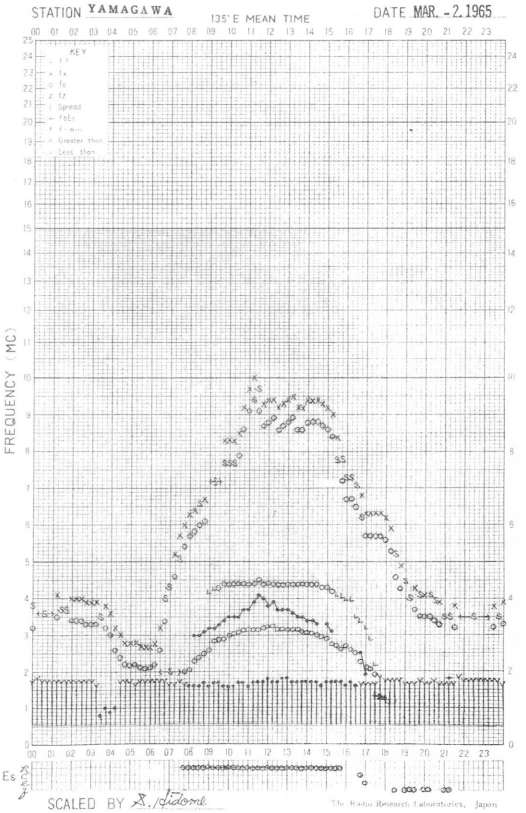

SCALED BY S. Tidoni

The Radio Research Laboratories, Japan

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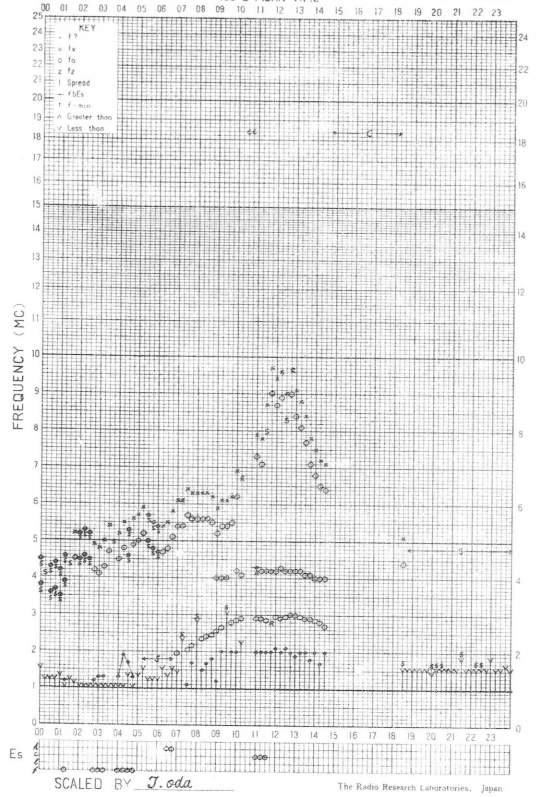

SCALED BY J. oda

The Radio Research Laboratories, Japan

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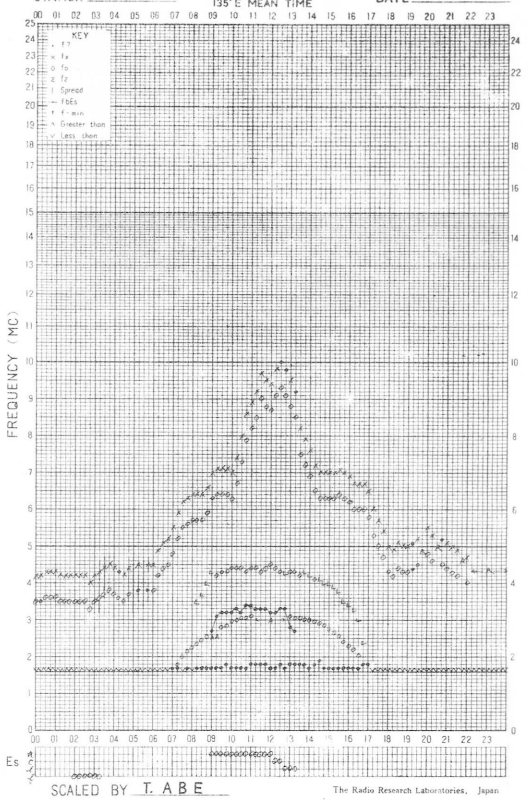

SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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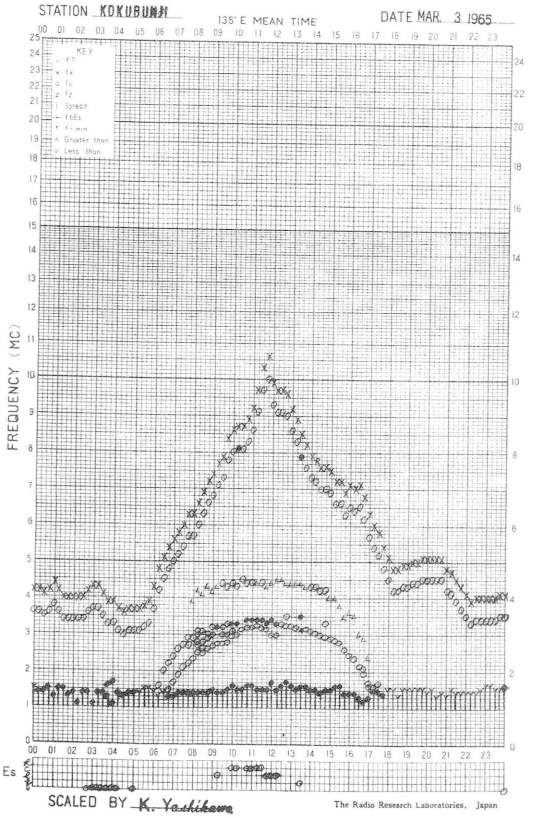

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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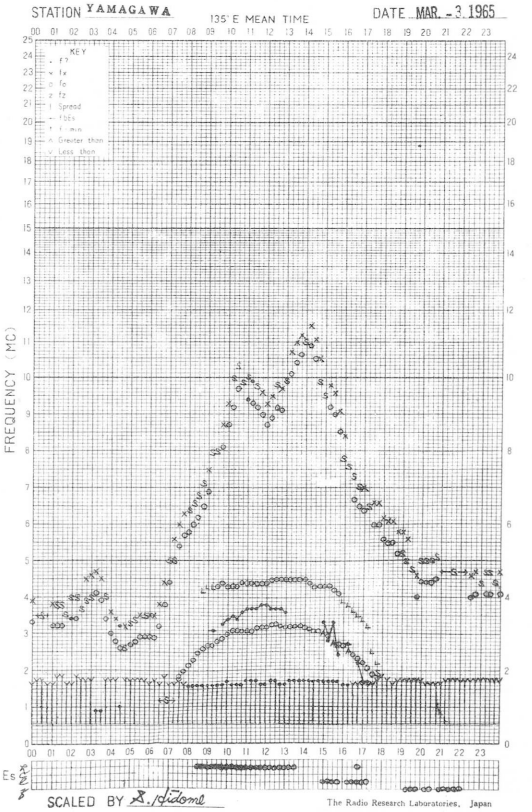

SCALED BY S. Fidomi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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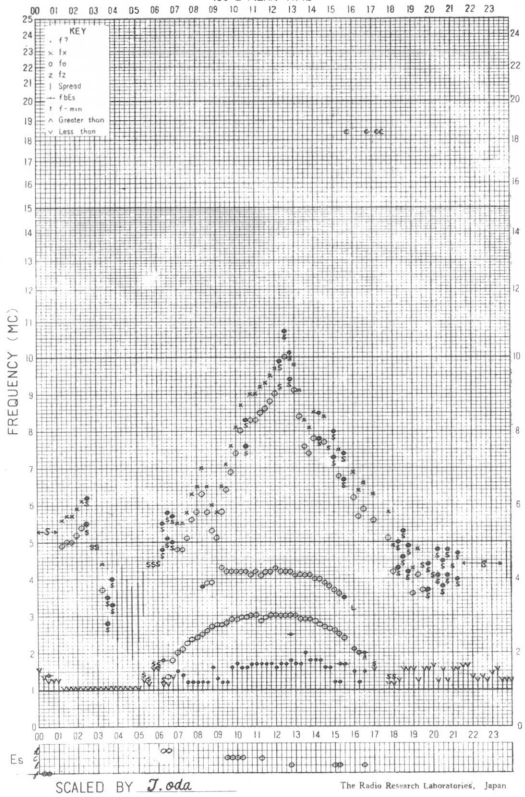

SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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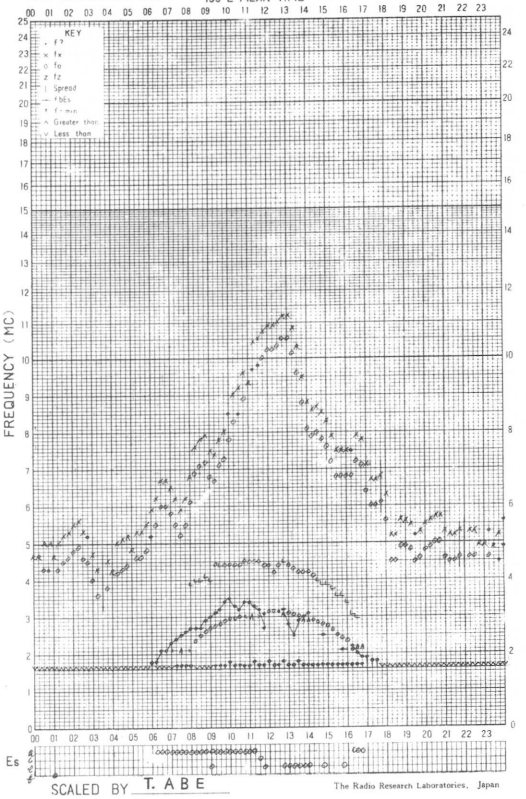

SCALED BY T. ABE

The Radio Research Laboratories, Japan

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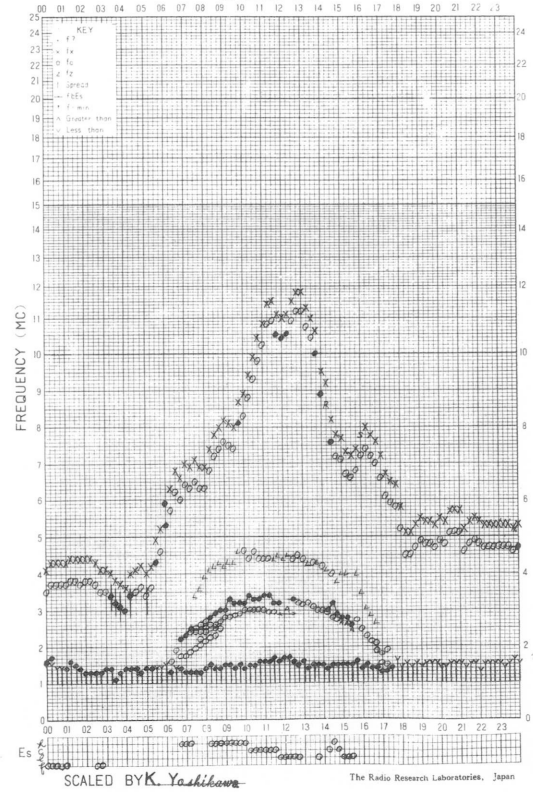

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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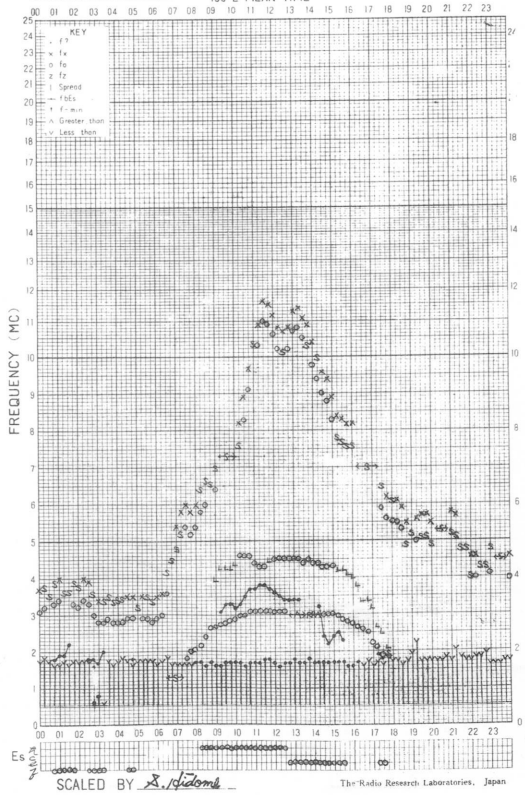

SCALED BY S. Ichiomi

The Radio Research Laboratories, Japan

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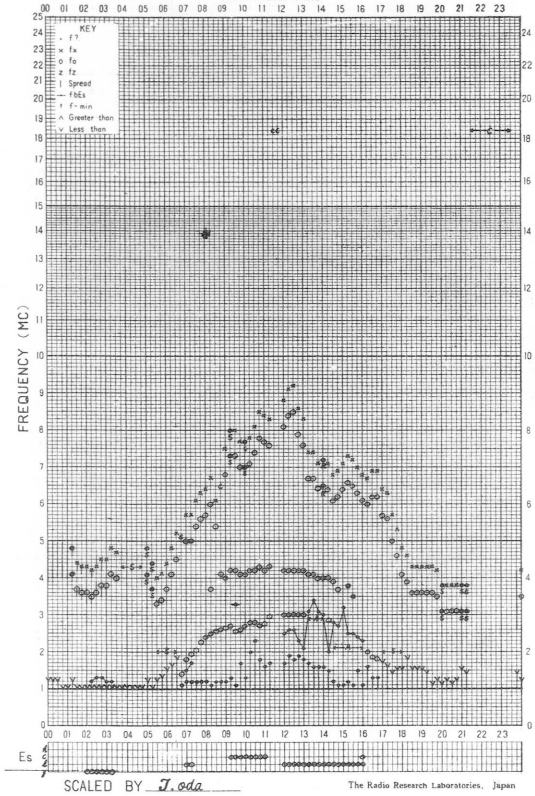

SCALED BY T. Oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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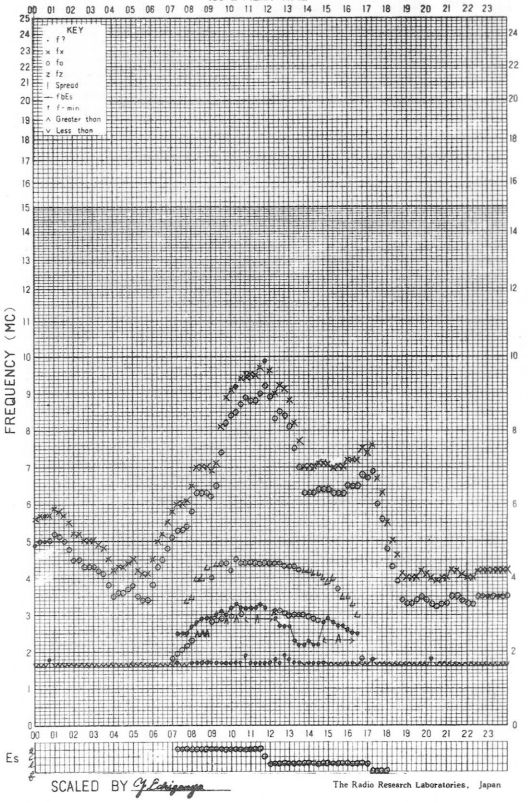

SCALED BY G. Ichinose

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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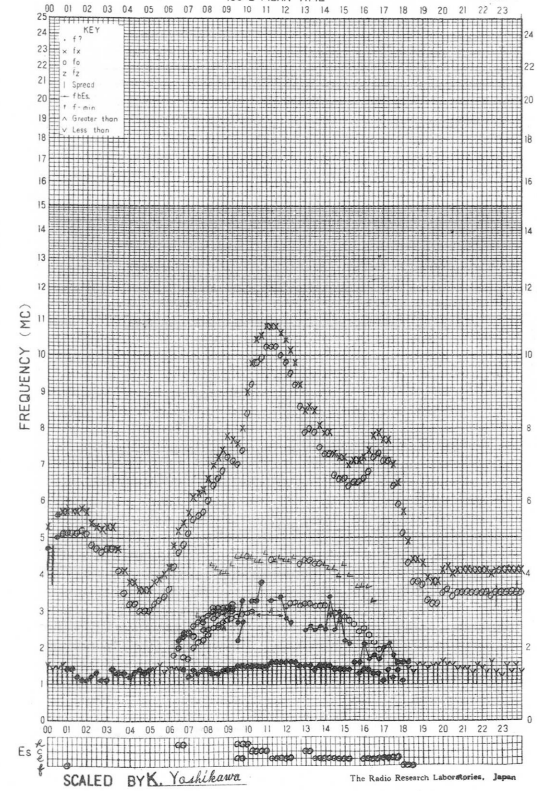
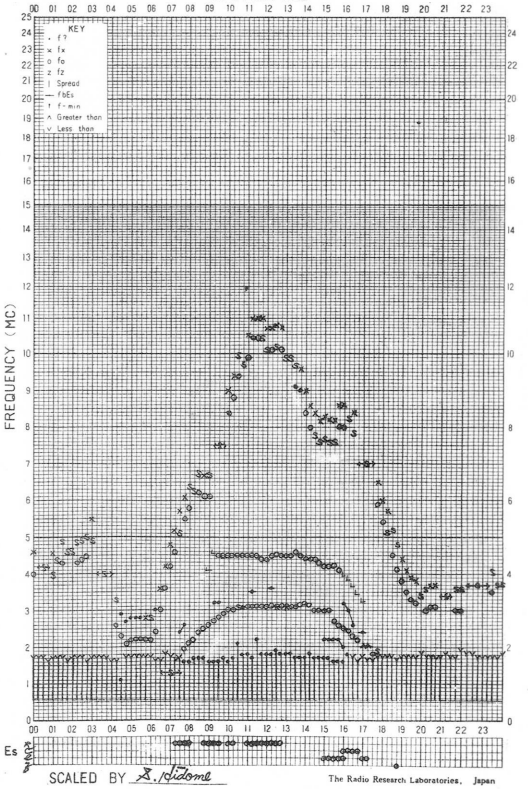


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE MAR. - 5. 1965



SCALED BY S. Tidome

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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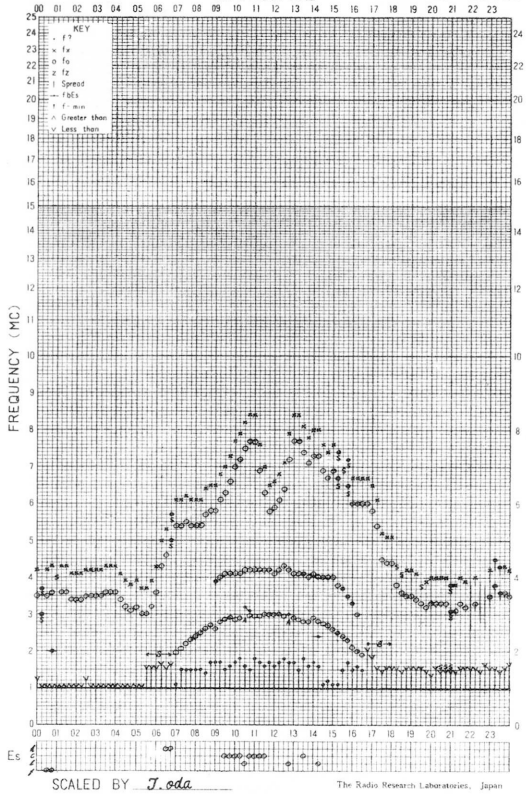

SCALED BY J. oda

The Radio Research Laboratories, Japan

AKITA f-PLOT OF IONOSPHERIC DATA

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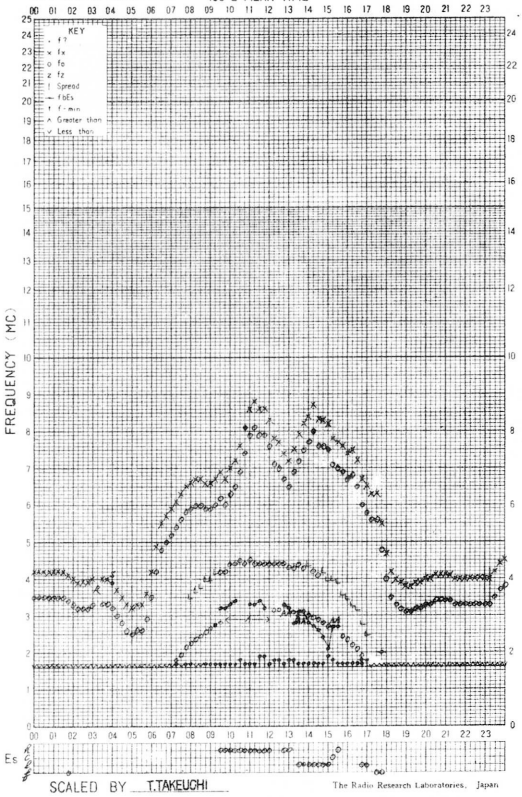

SCALED BY T. TAKEUCHI

The Radio Research Laboratories, Japan

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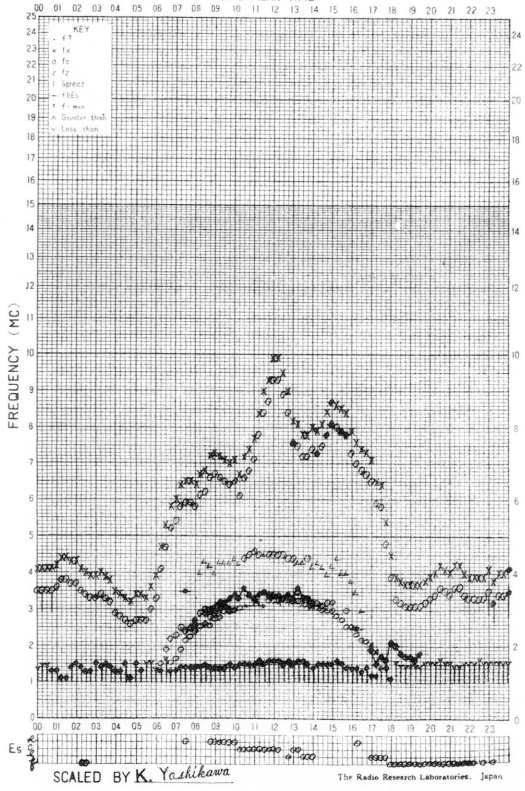

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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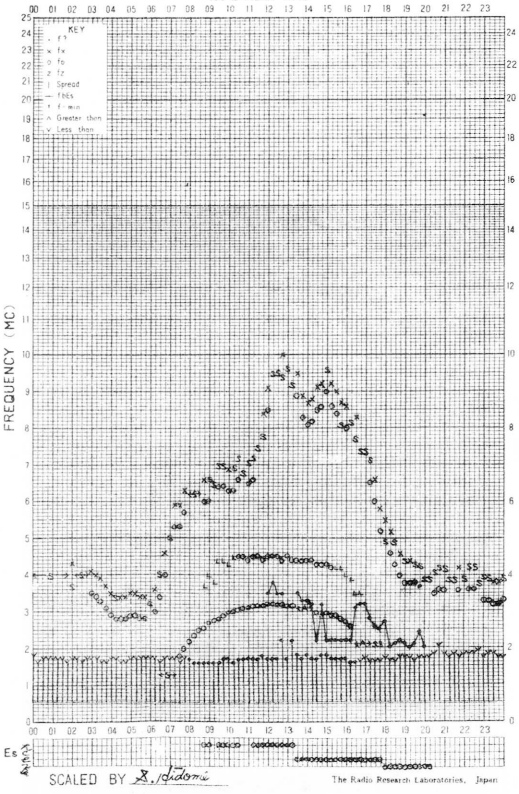

SCALED BY S. Sadami

The Radio Research Laboratories, Japan

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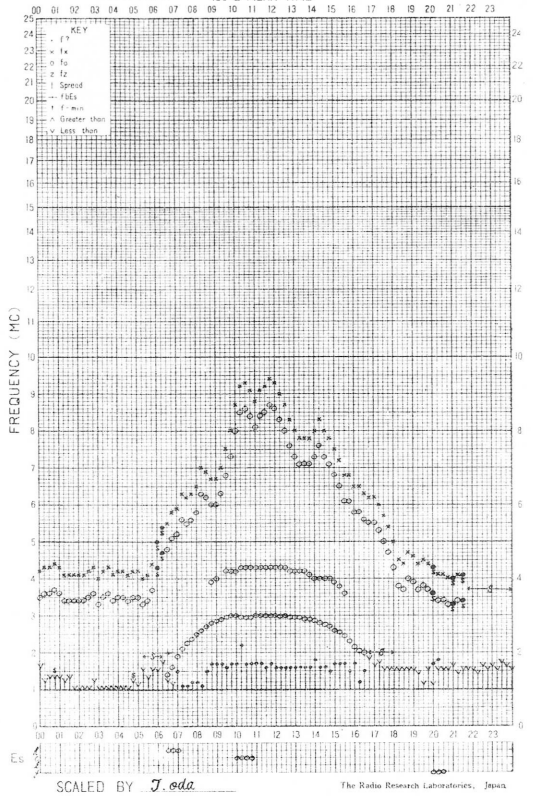

SCALED BY T. oda

The Radio Research Laboratories, Japan

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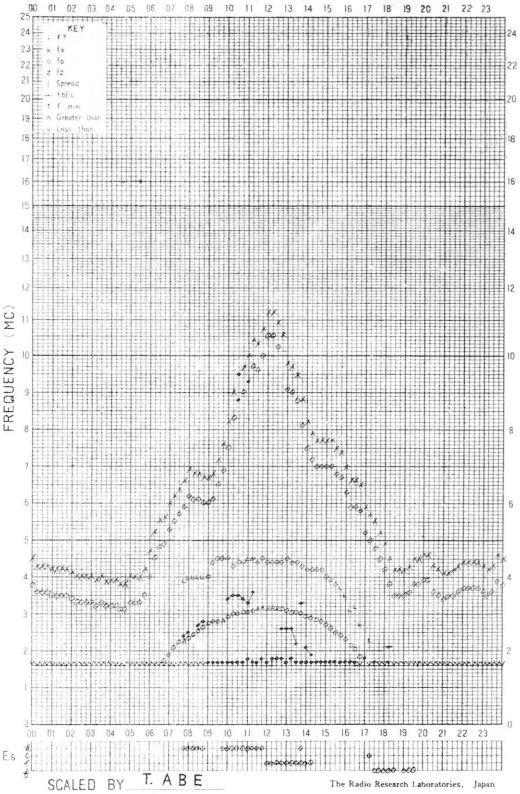

SCALED BY T. ABE

The Radio Research Laboratories, Japan

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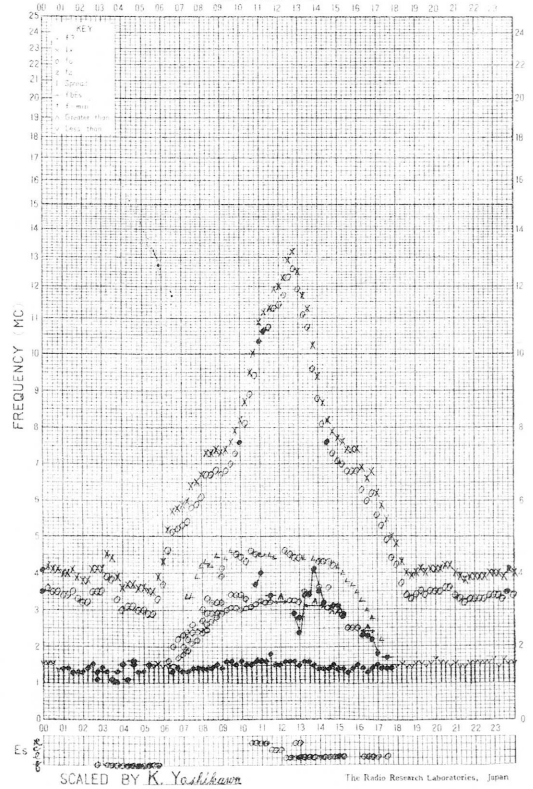

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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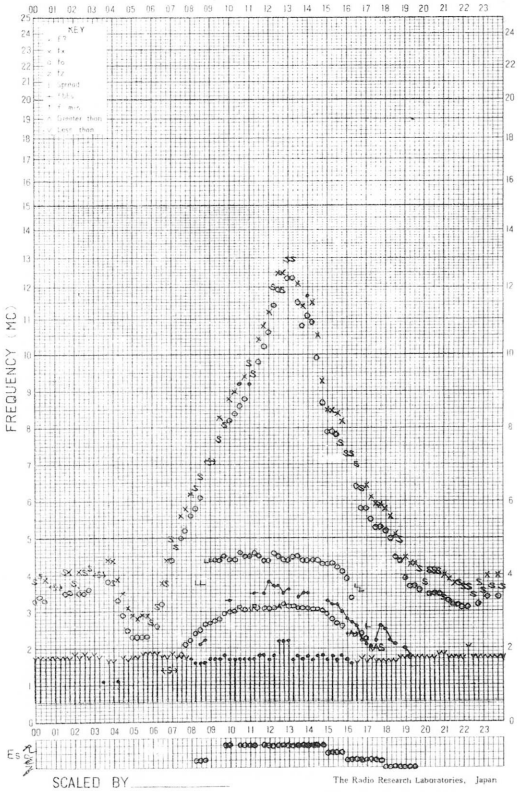

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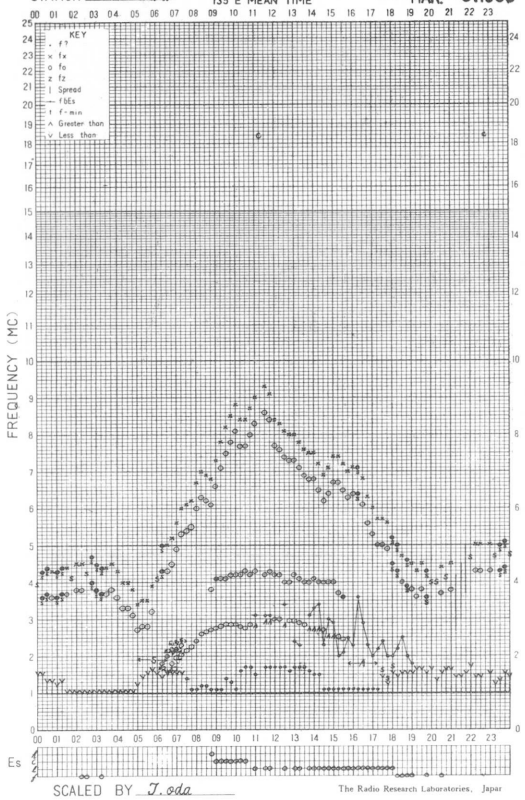

SCALED BY J. oda

The Radio Research Laboratories, Japan

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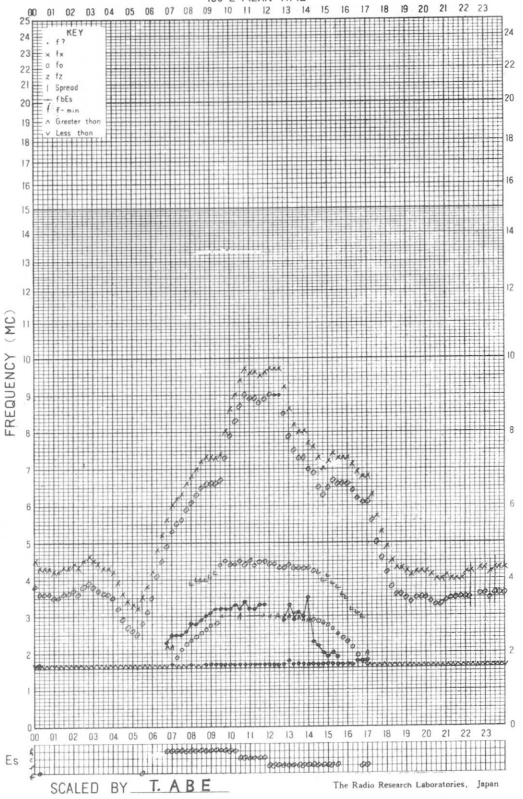

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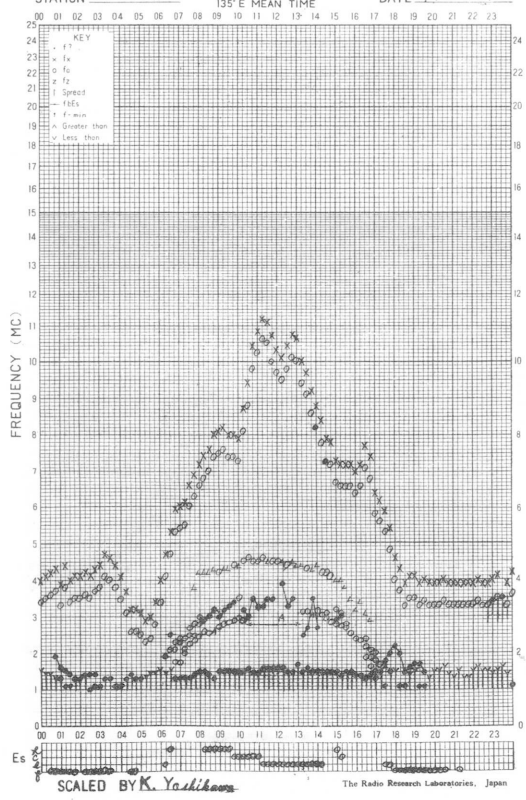

SCALED BY K. Yoshikawa

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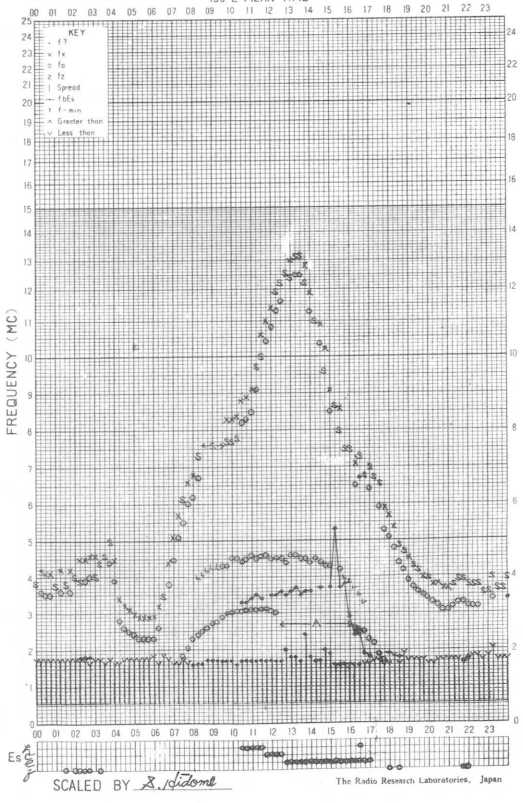

SCALED BY S. Nitome

The Radio Research Laboratories, Japan

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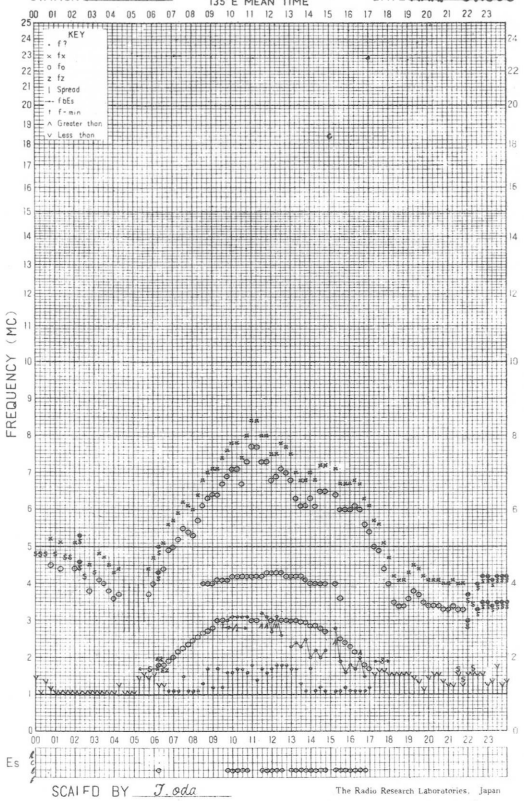

SCALED BY T. Oda

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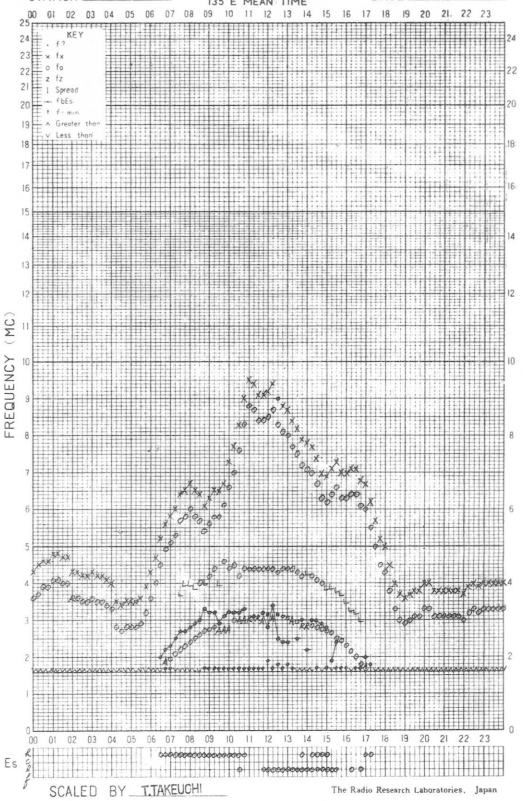

SCALED BY T. TAKEUCHI

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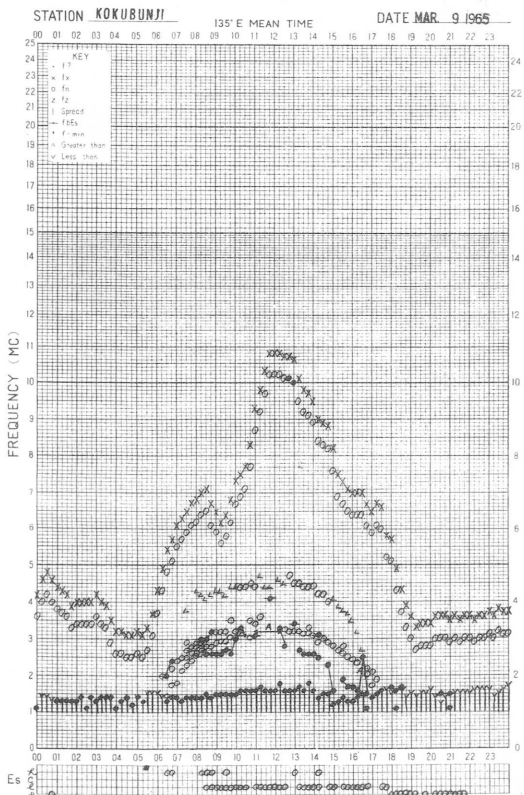
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE MAR. 9 1965



SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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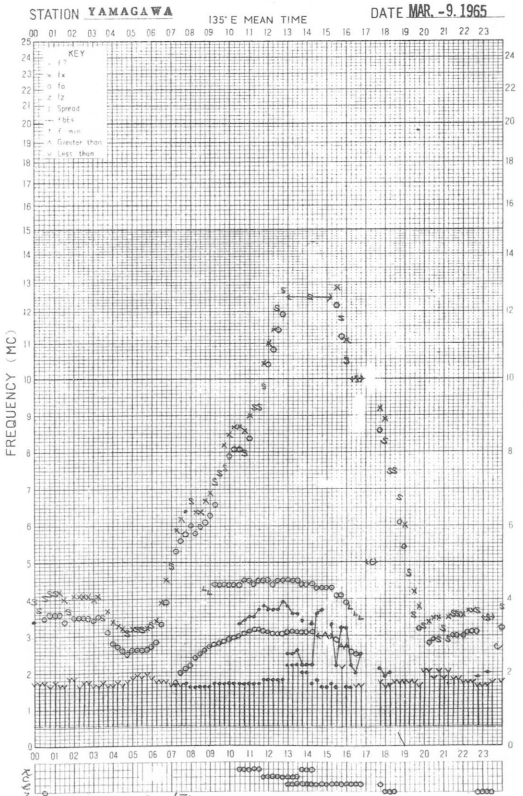

SCALED BY S. Ichitomi

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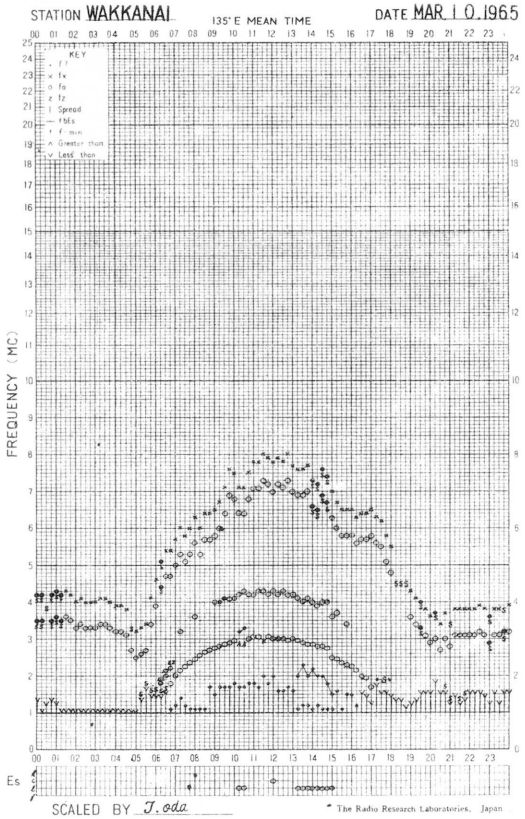
STATION WAKKANAI 135°E MEAN TIME DATE MAR 10.1965



SCALED BY J. oda

The Radio Research Laboratories, Japan

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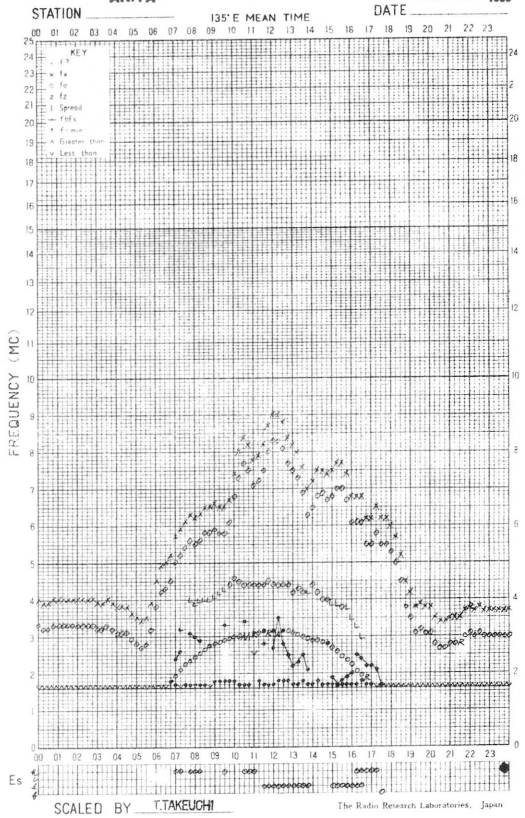

SCALED BY T.TAKEUCHI

The Radio Research Laboratories, Japan

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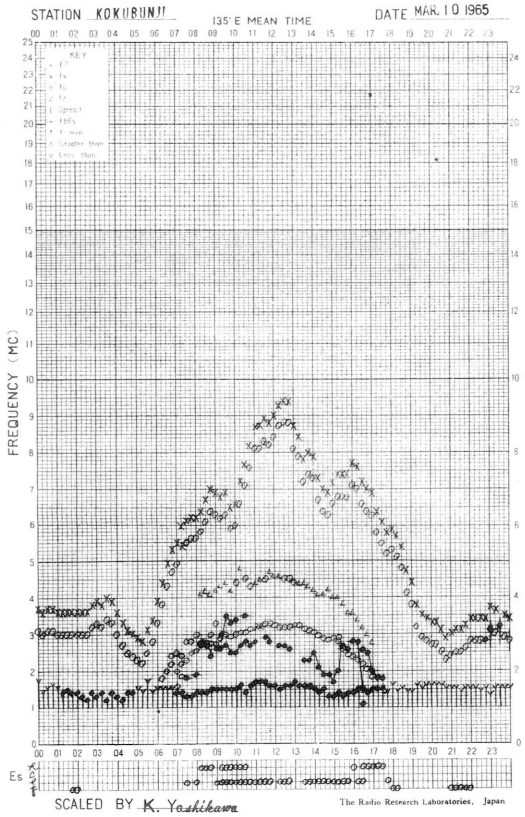

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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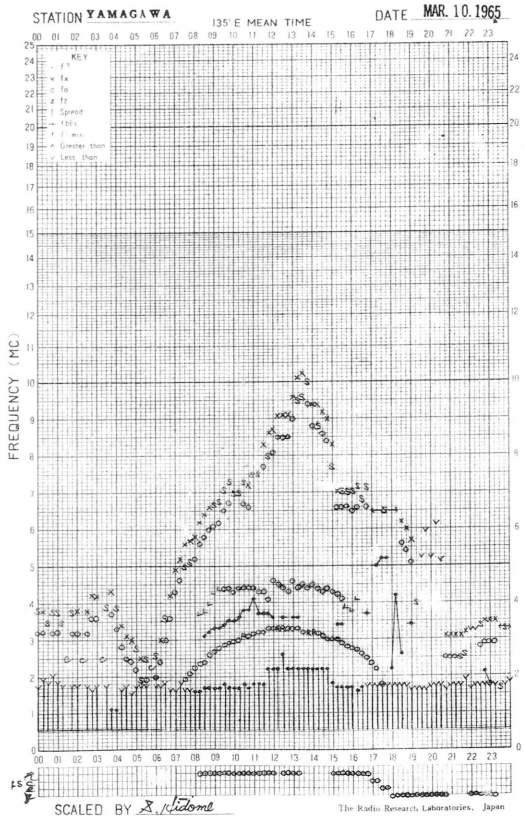

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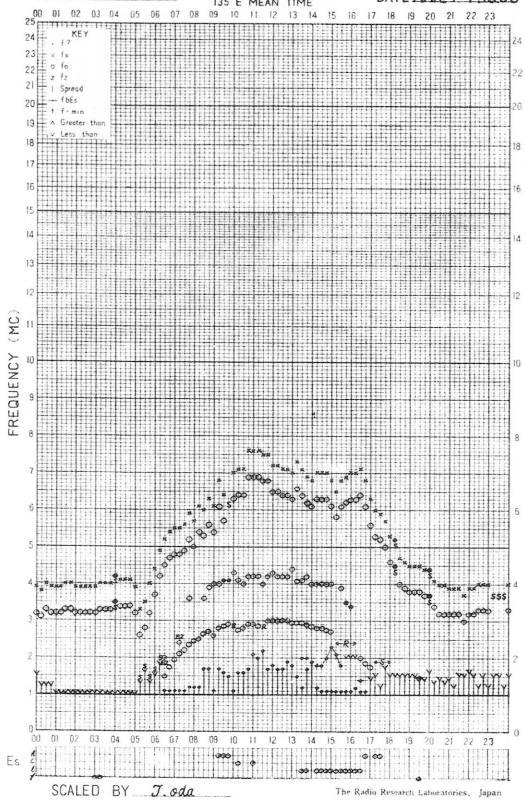

SCALED BY T. Oda

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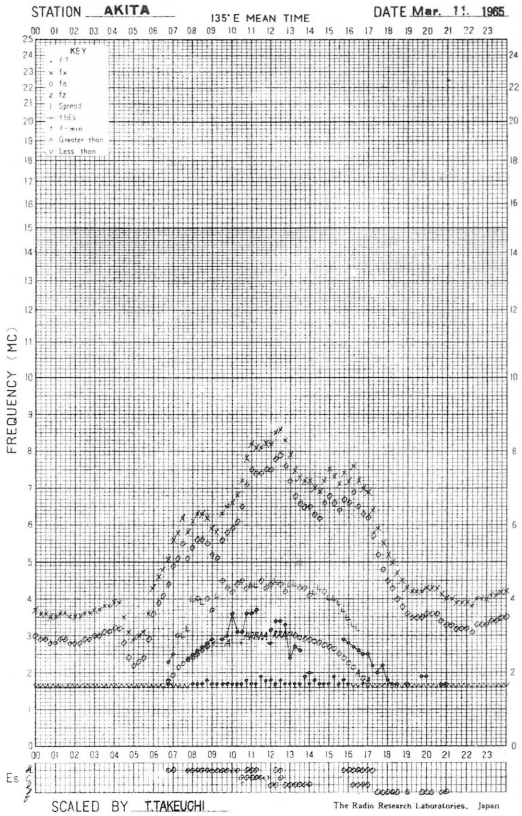

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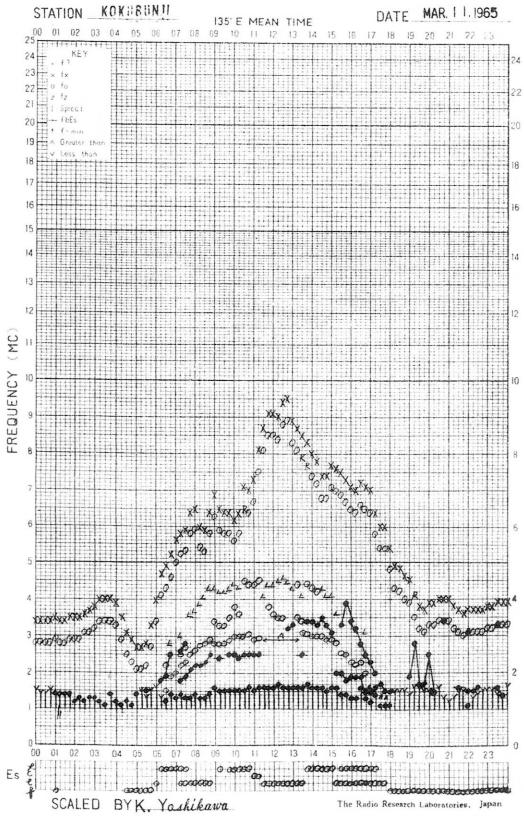

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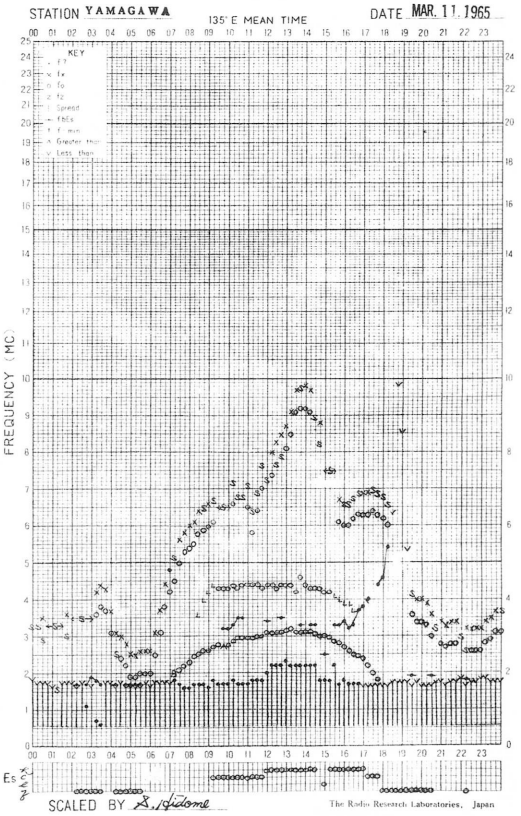

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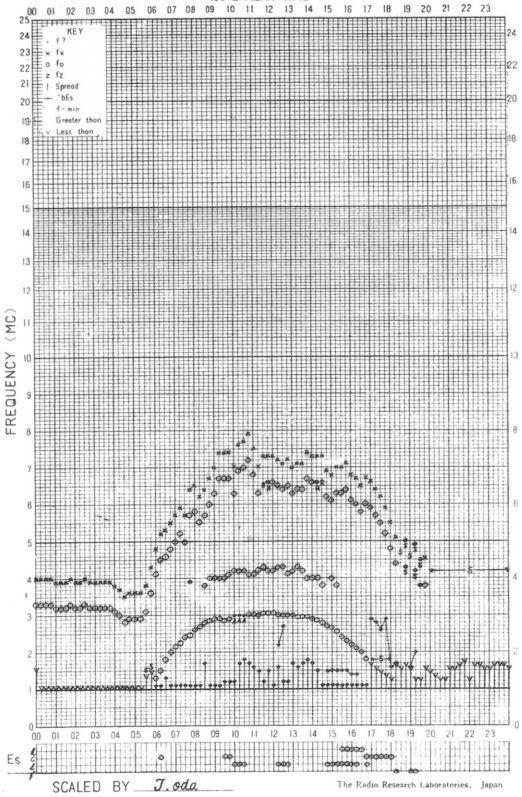

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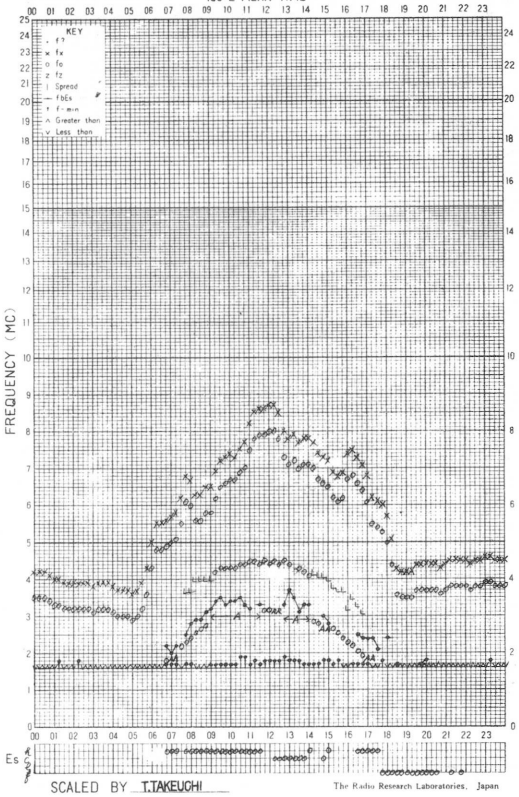

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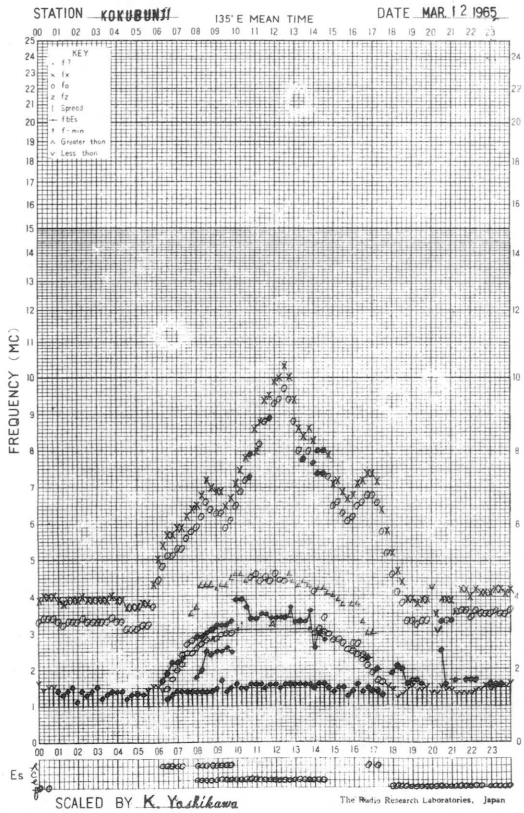

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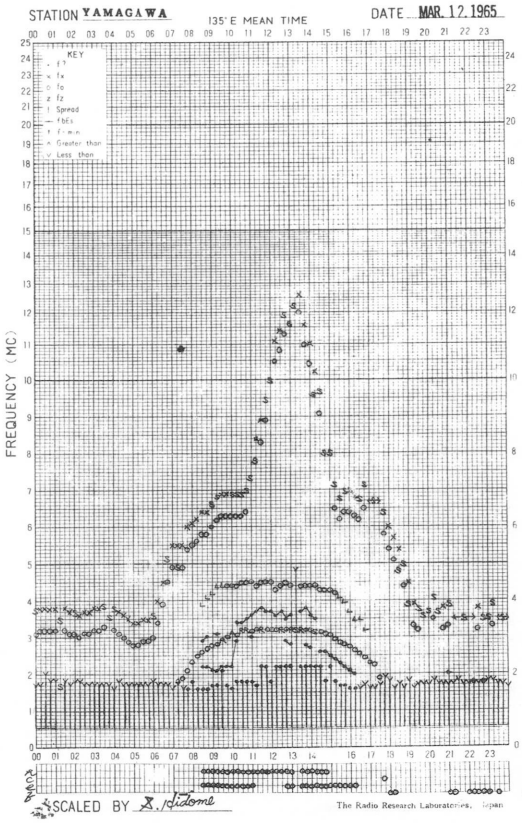

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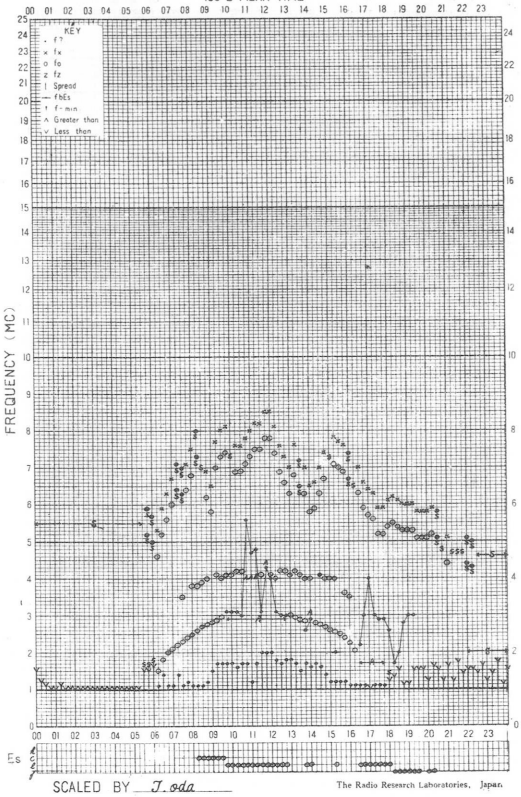

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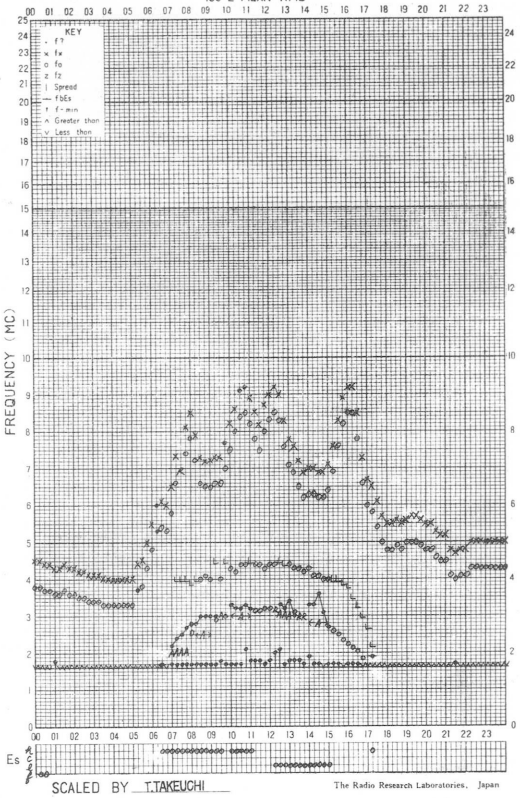

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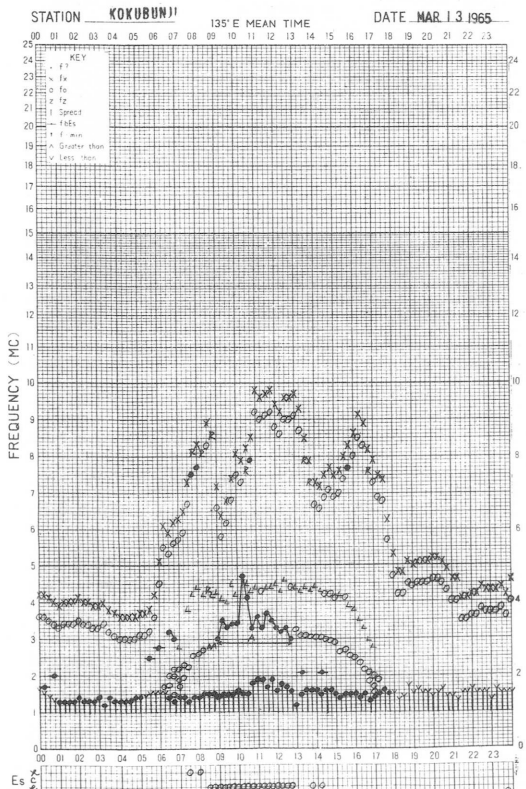

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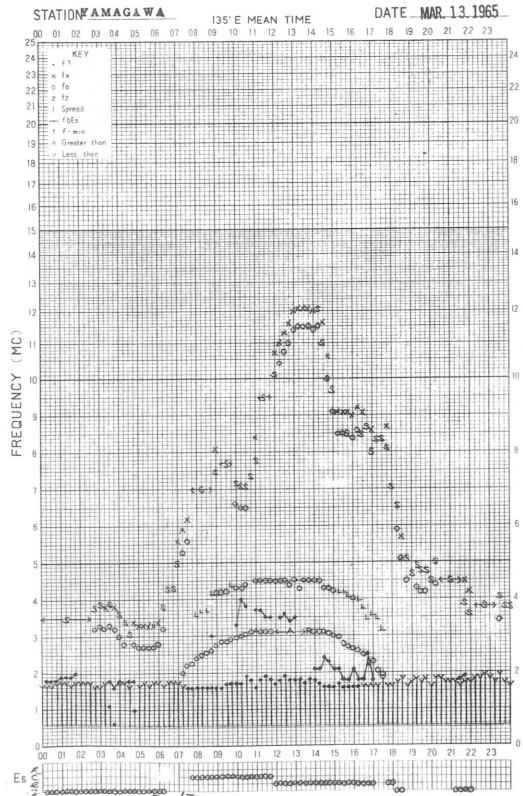

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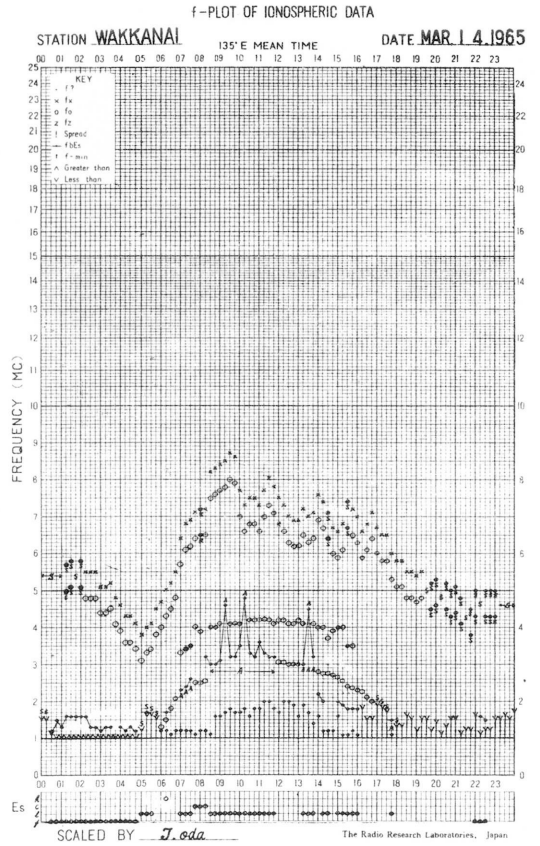
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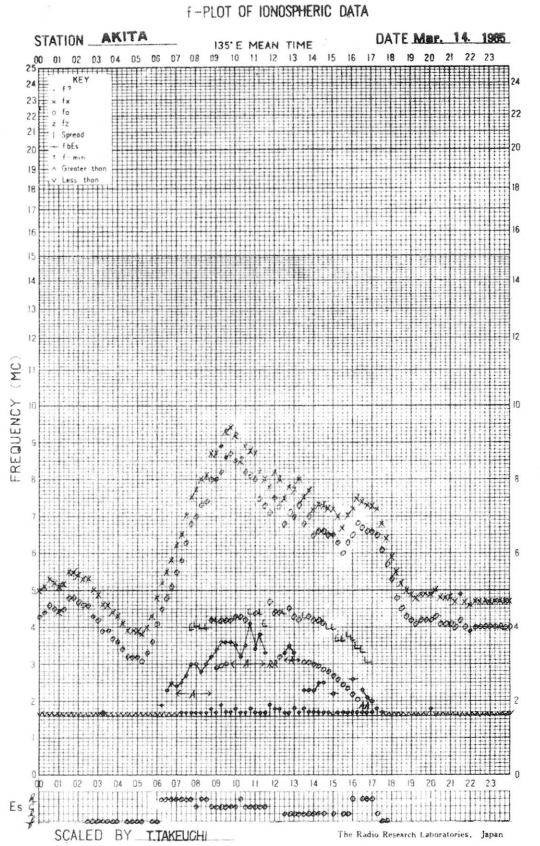
SCALED BY J. Oda
The Radio Research Laboratories, Japan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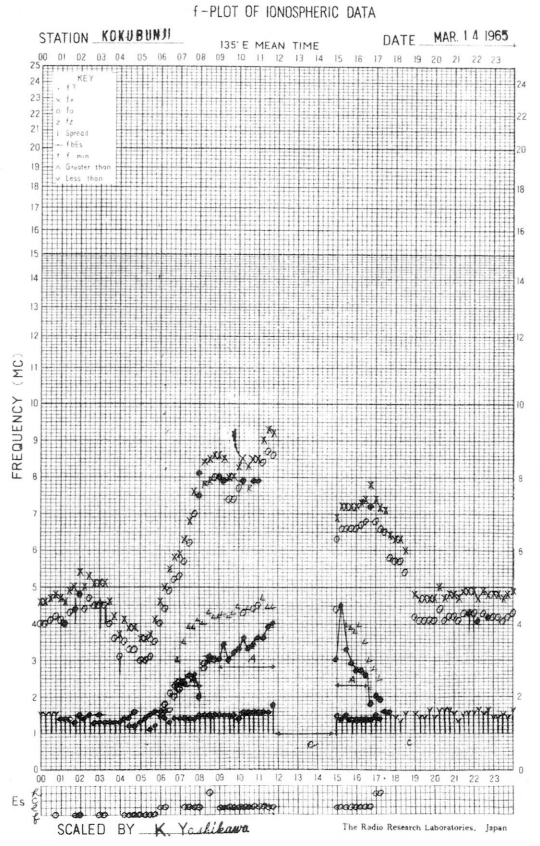
SCALED BY T. TAKEUCHI
The Radio Research Laboratories, Japan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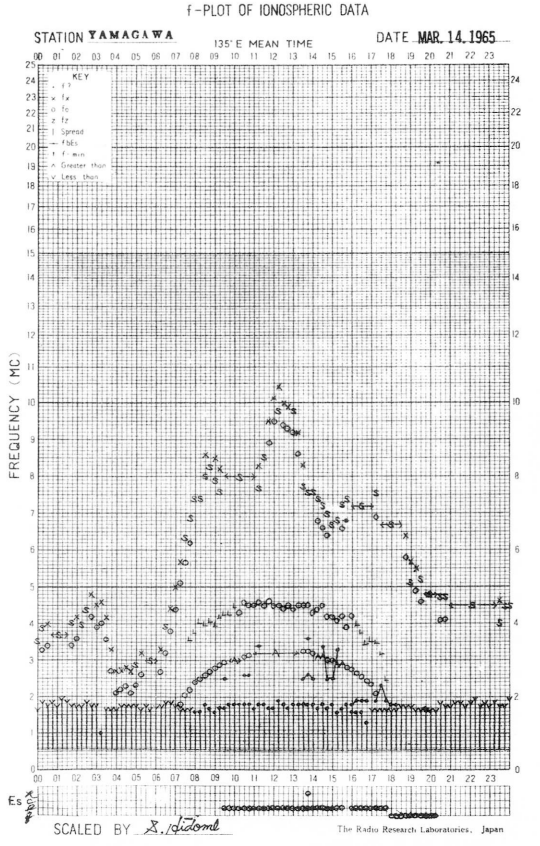
The Radio Research Laboratories, Japan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SCALED BY S. Uchiumi
The Radio Research Laboratories, Japan

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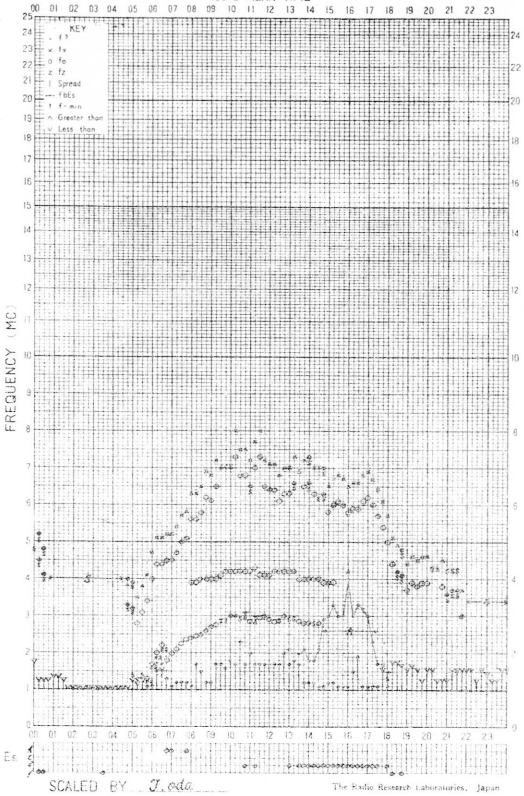

SCALED BY T. Oda

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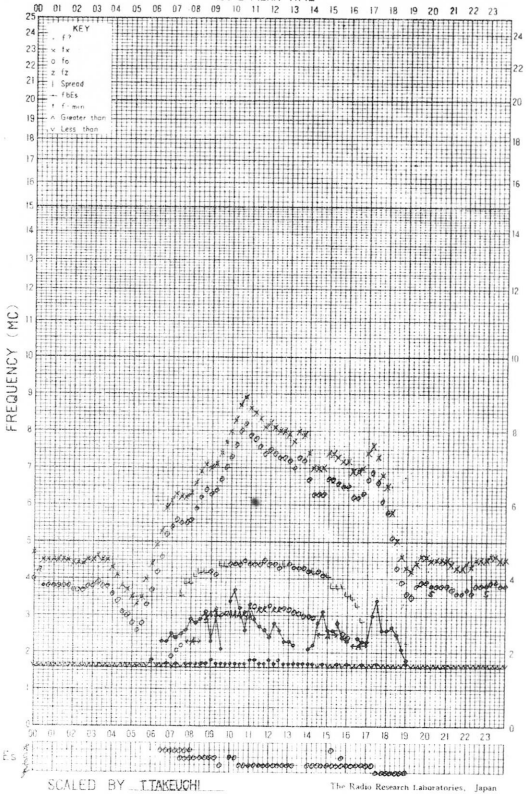

SCALED BY T.TAKEUCHI

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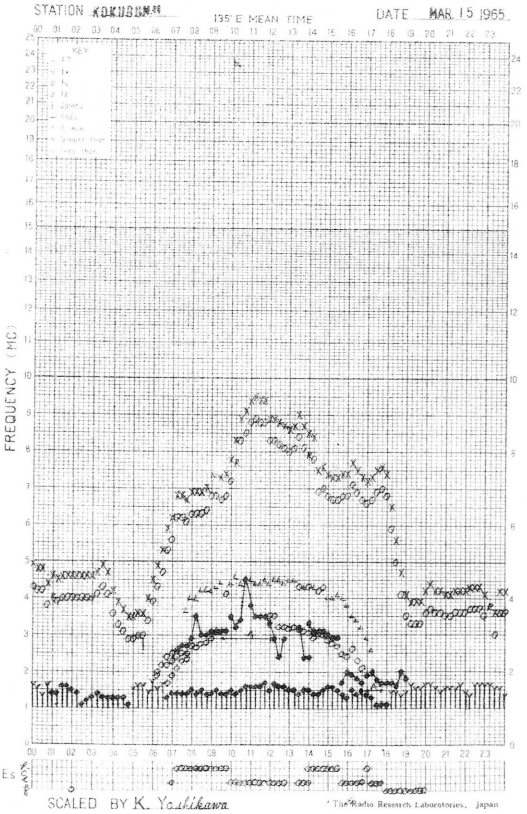

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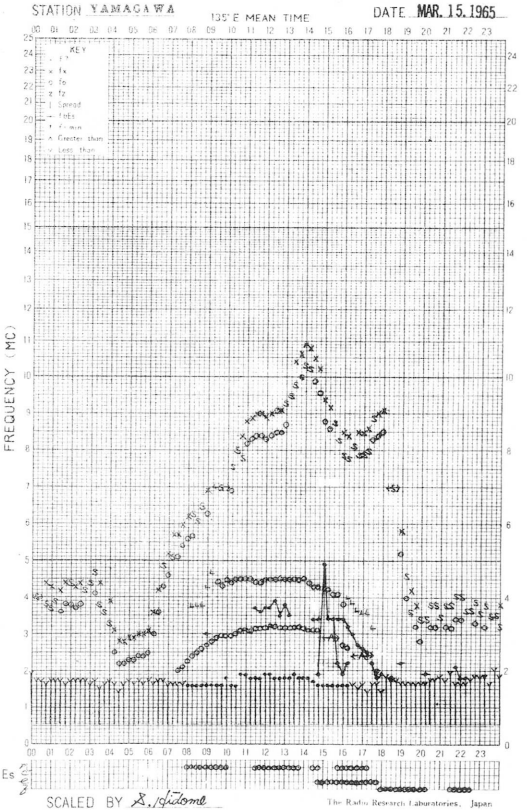

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The Radio Research Laboratories, Japan

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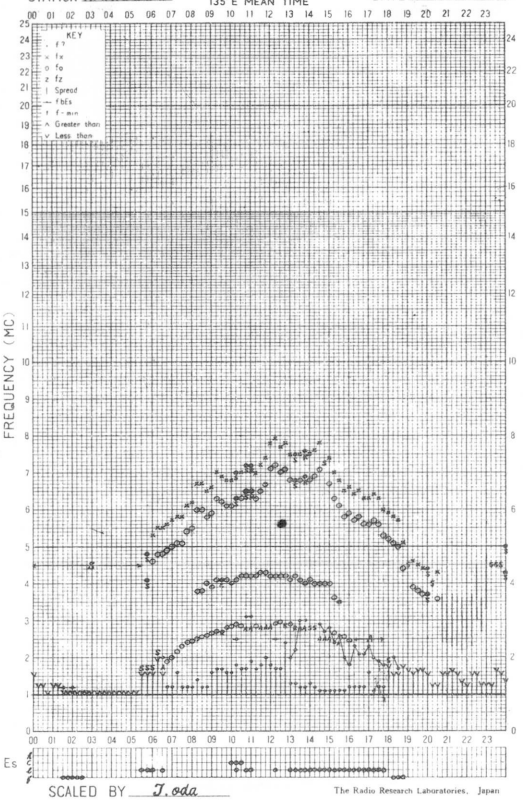

SCALED BY J. oda

The Radio Research Laboratories, Japan

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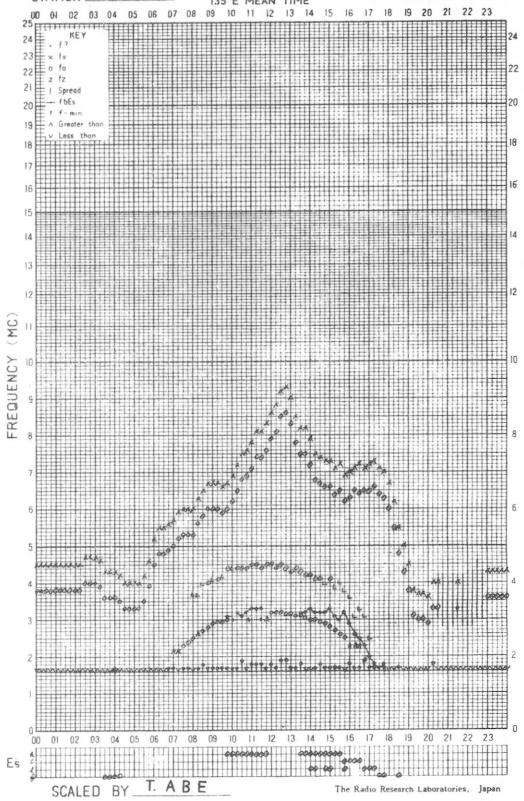

SCALED BY T. ABE

The Radio Research Laboratories, Japan

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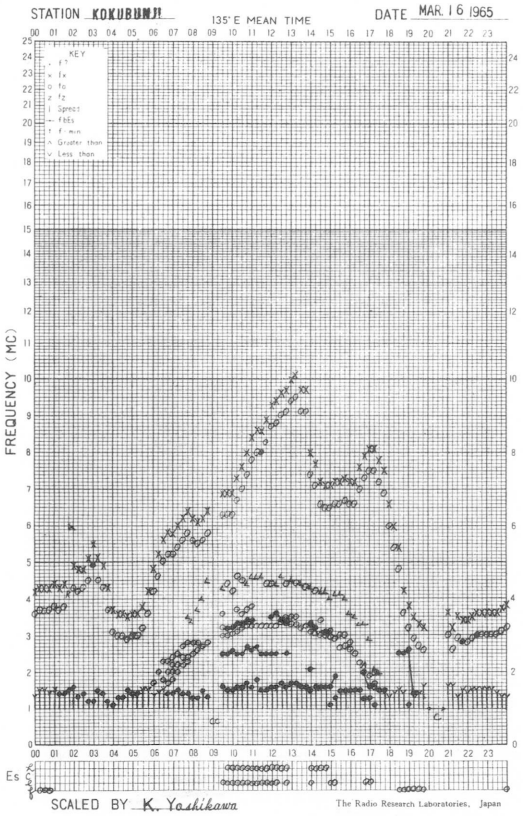

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The Radio Research Laboratories, Japan

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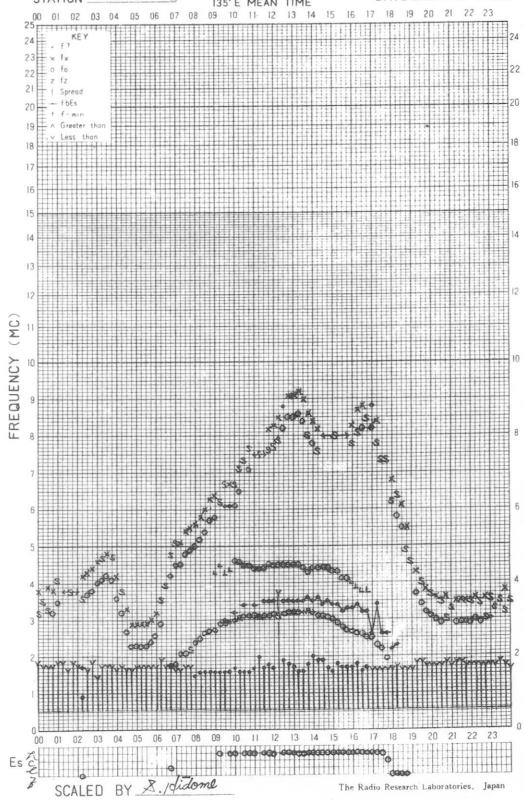

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The Radio Research Laboratories, Japan

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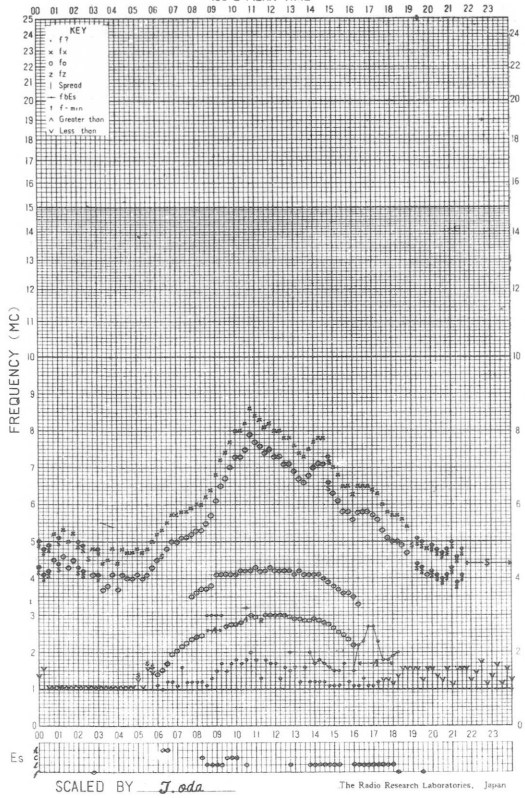

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The Radio Research Laboratories, Japan

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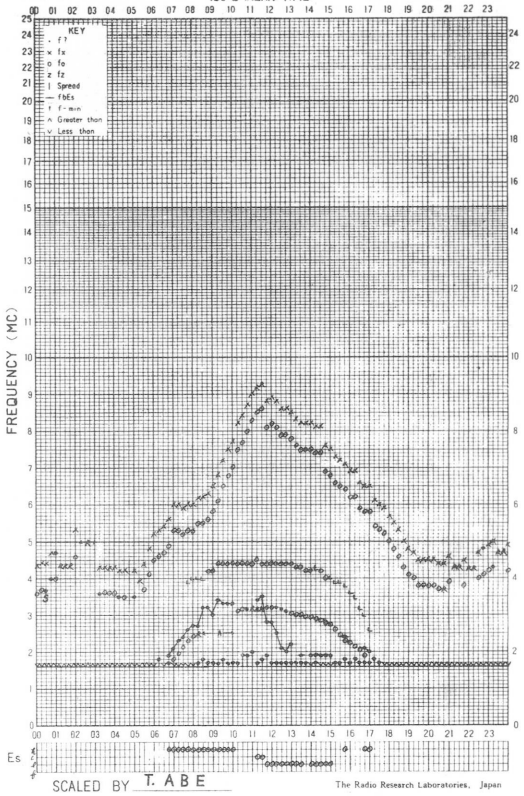

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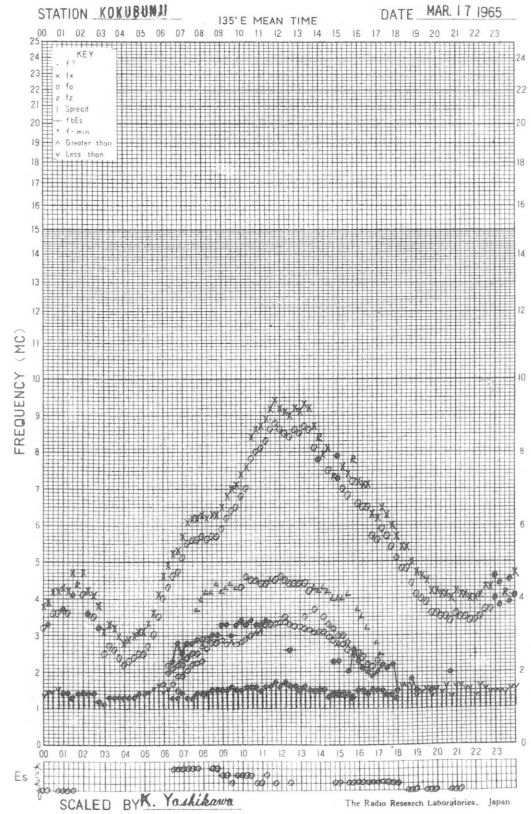

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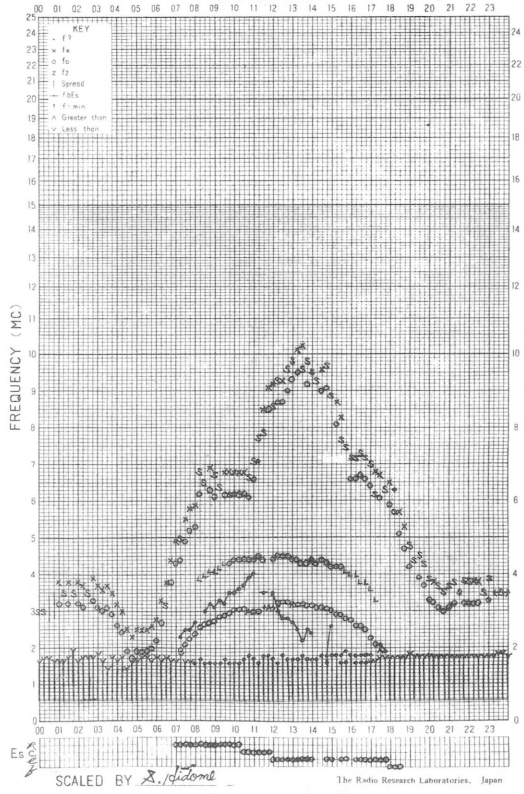

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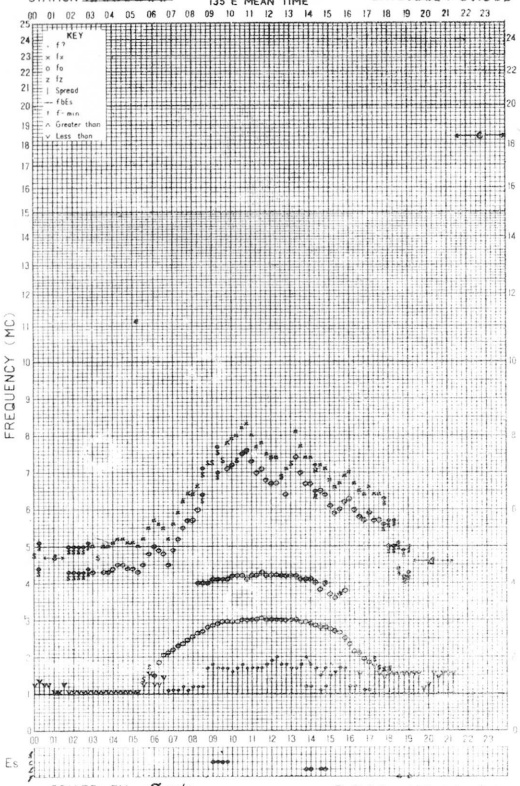

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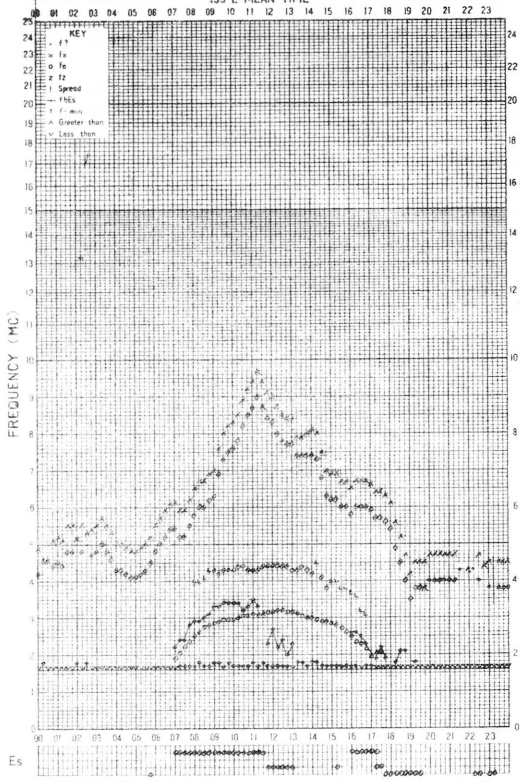

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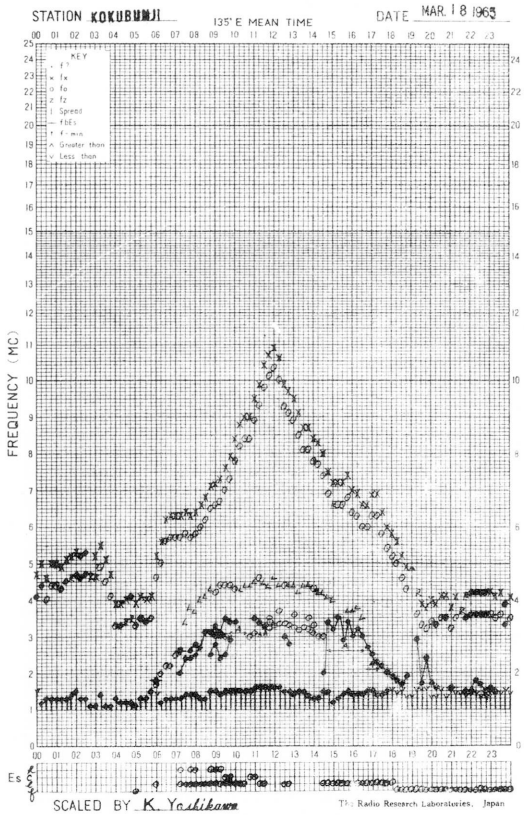

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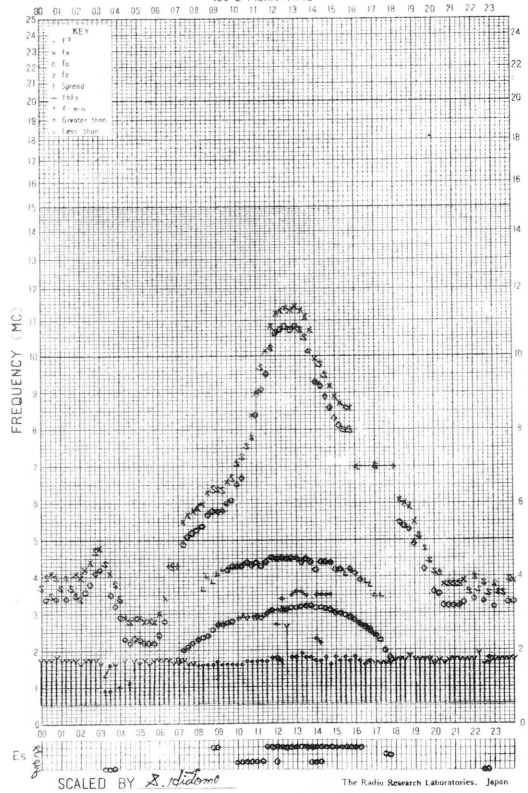

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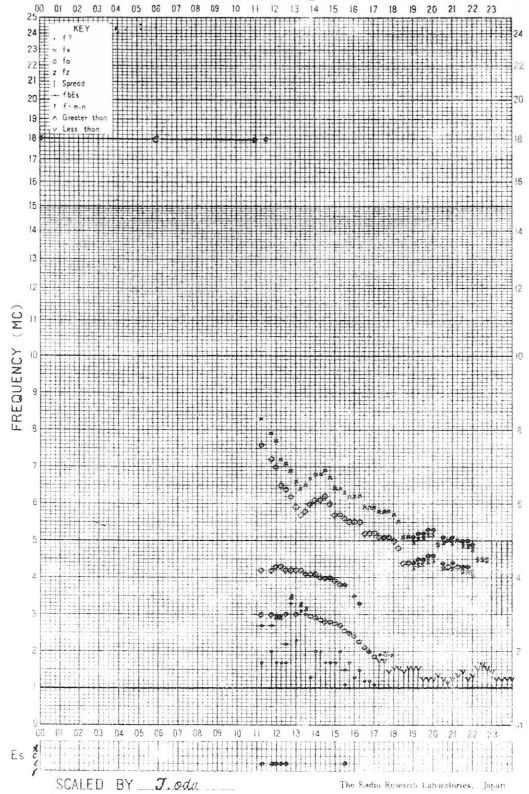

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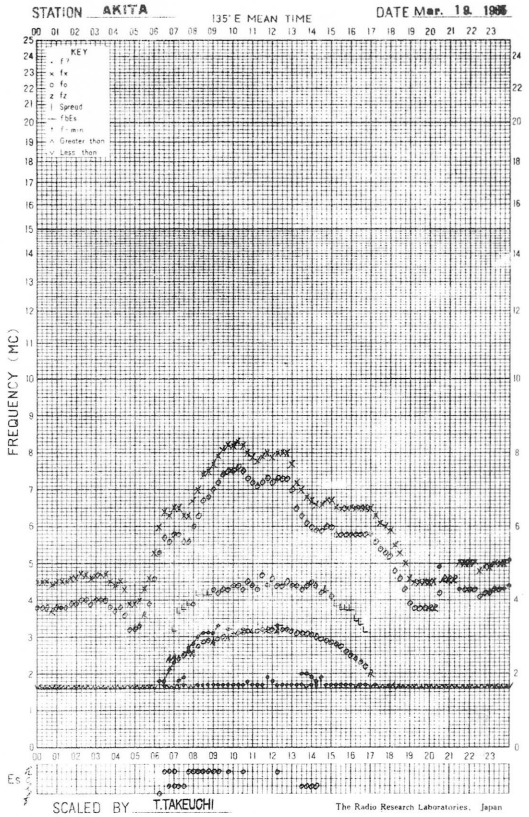

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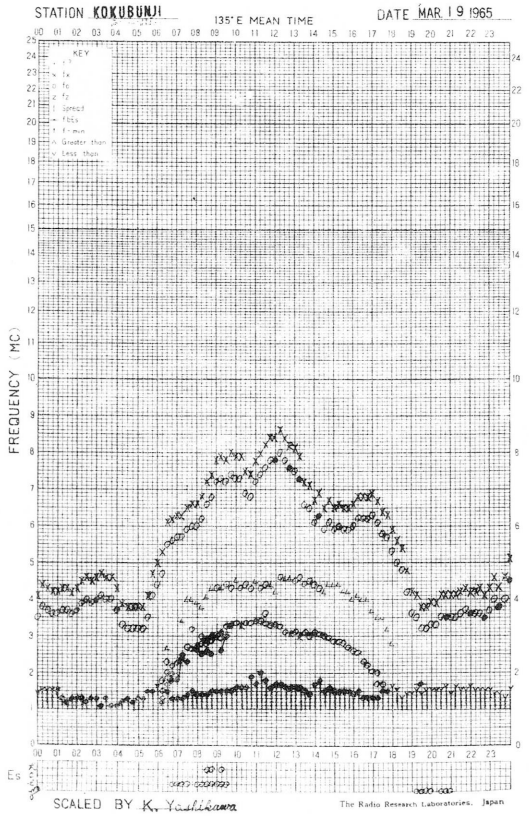

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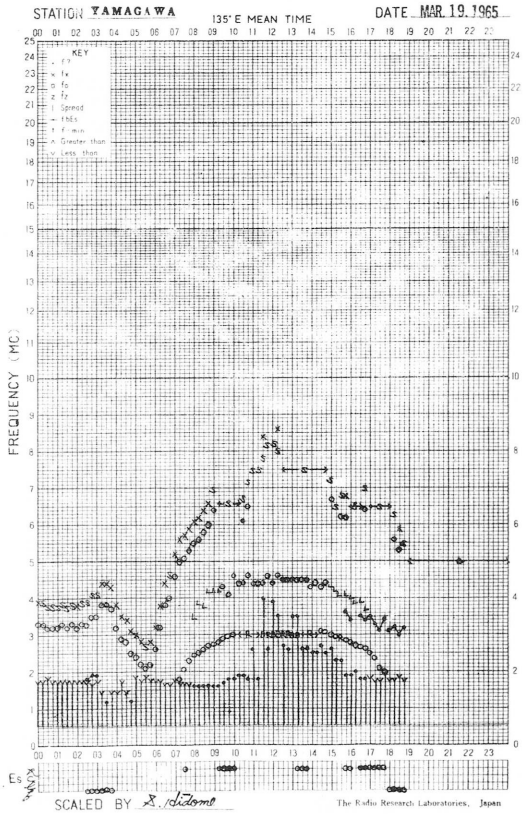

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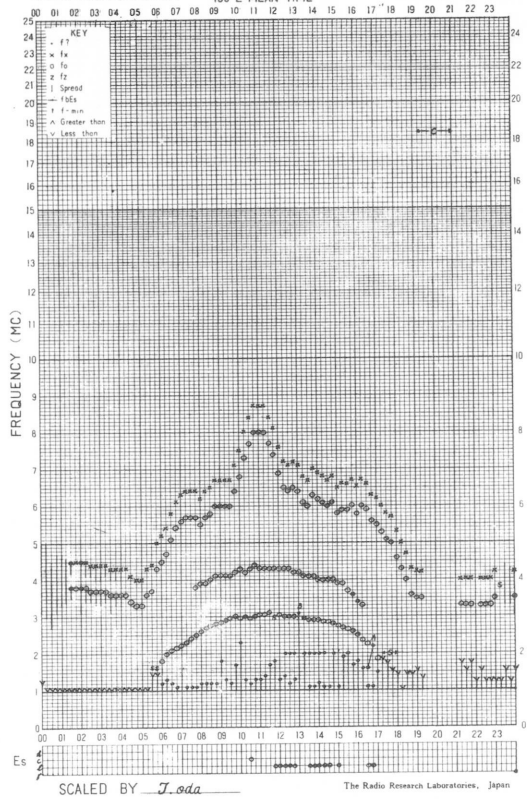

SCALED BY T. oda

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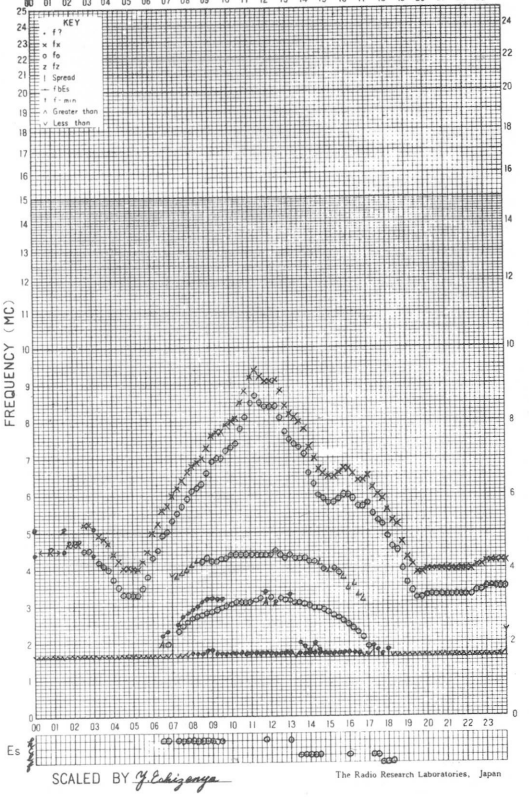

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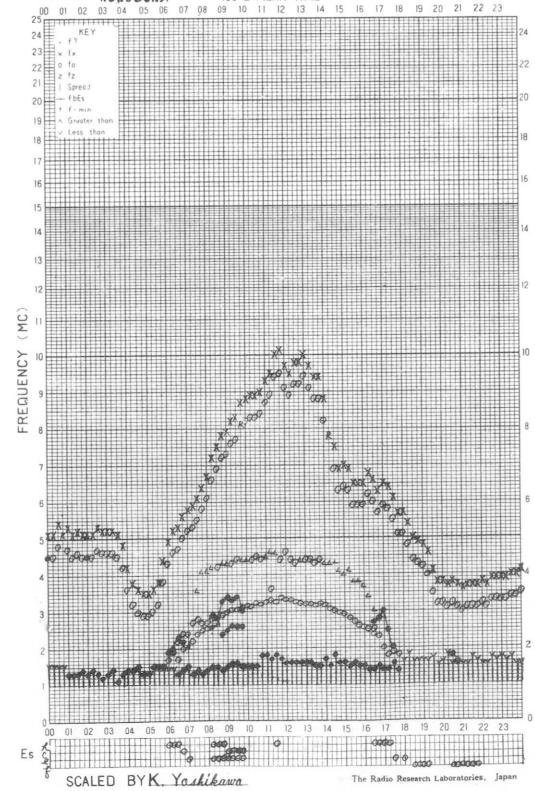

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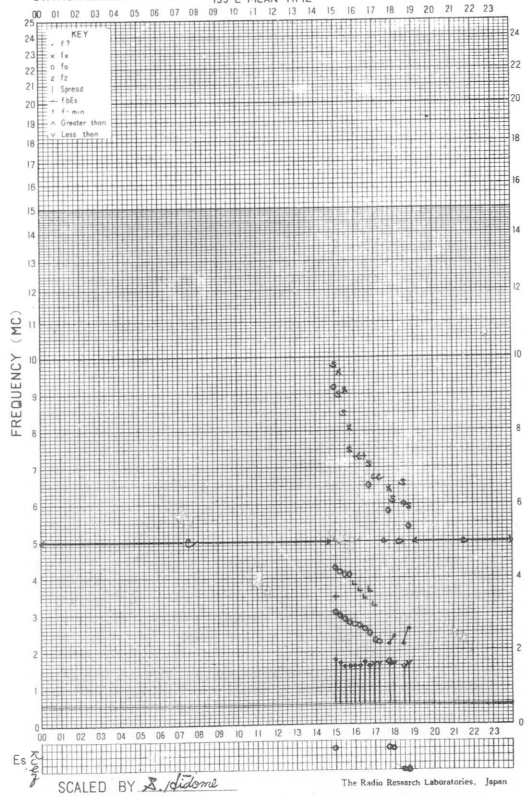
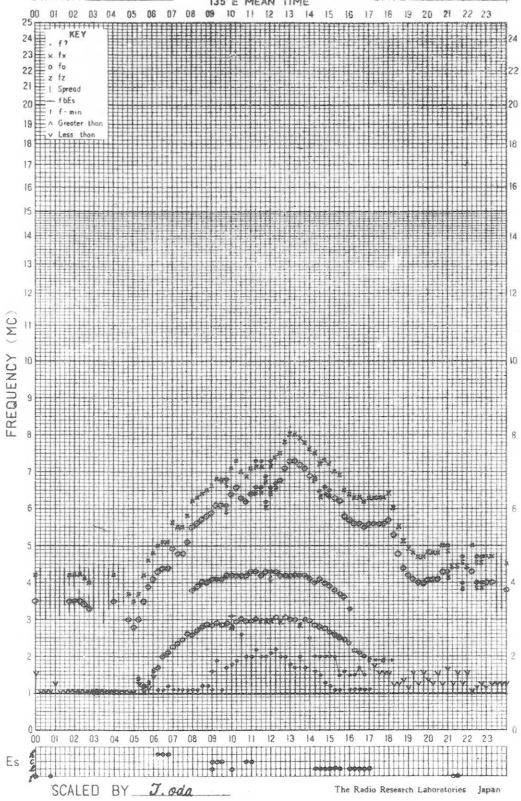


SCALED BY S. Kidomi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAR 21.1965

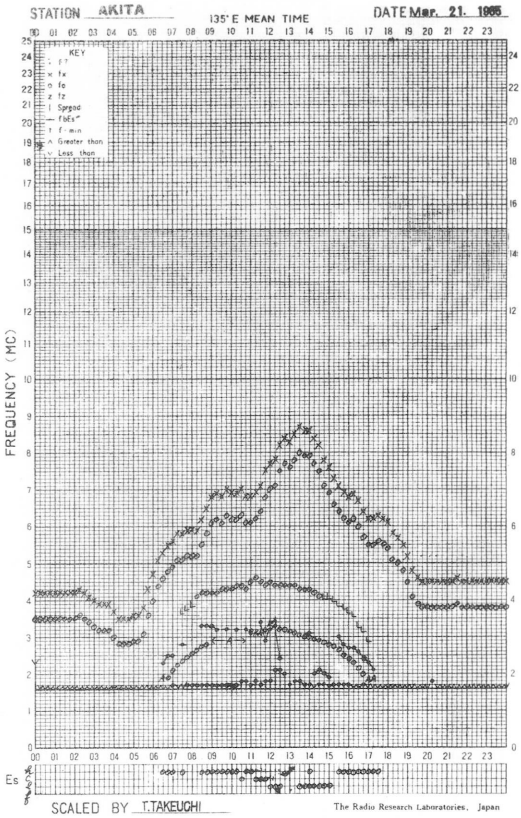


SCALED BY T. oda

The Radio Research Laboratories Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Mar. 21. 1965

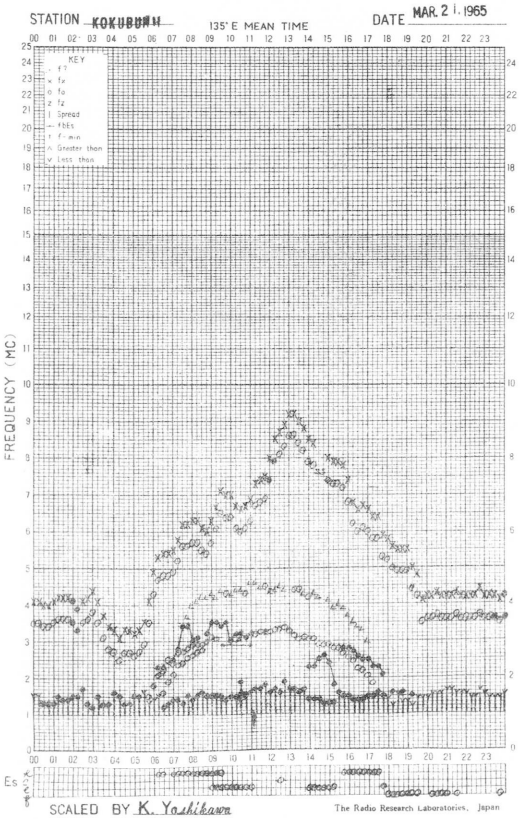


SCALED BY T.TAKEUCHI

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAR 21. 1965



SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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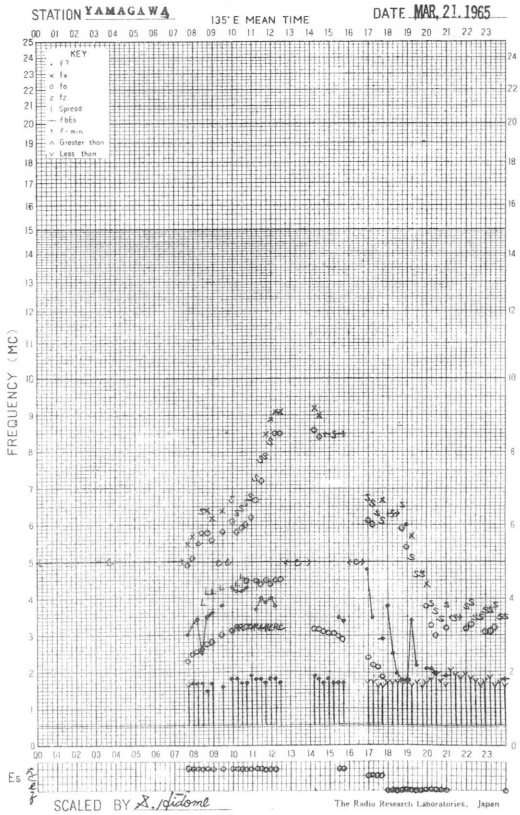

SCALED BY A. Tidome

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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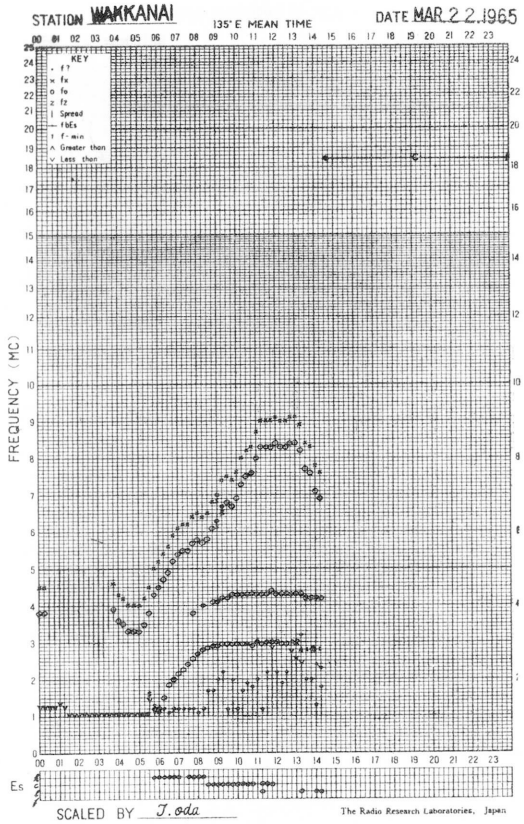

SCALED BY J. oda

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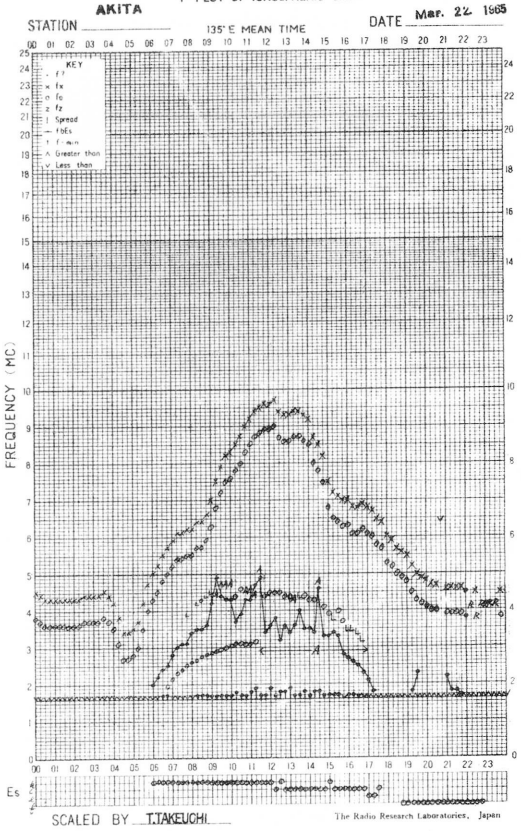

SCALED BY T.TAKEUCHI

The Radio Research Laboratories, Japan

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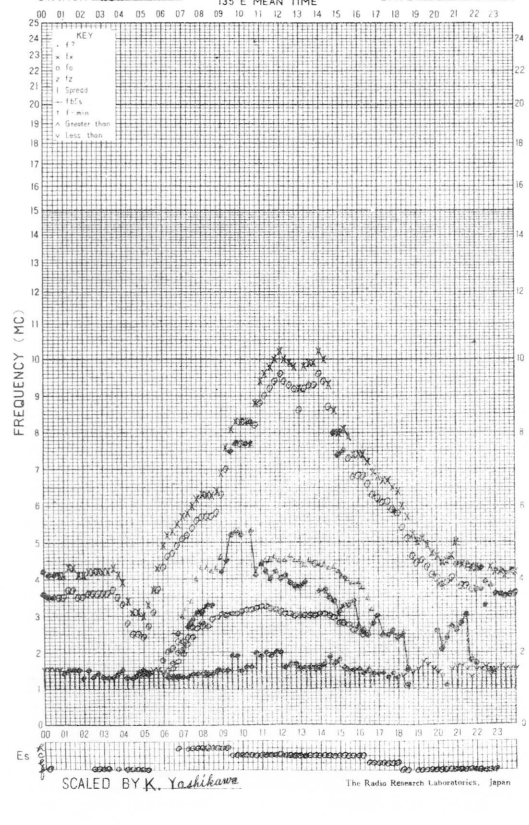

SCALED BY K. Yashikawa

The Radio Research Laboratories, Japan

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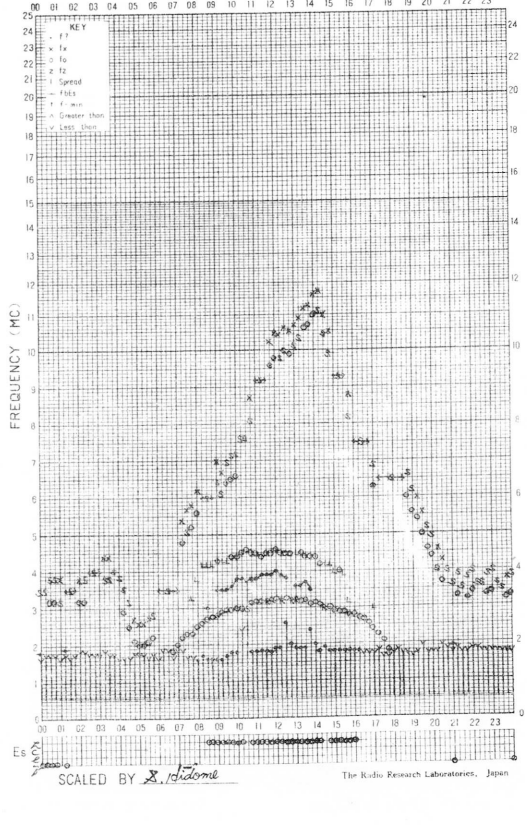

SCALED BY S. Ichinose

The Radio Research Laboratories, Japan

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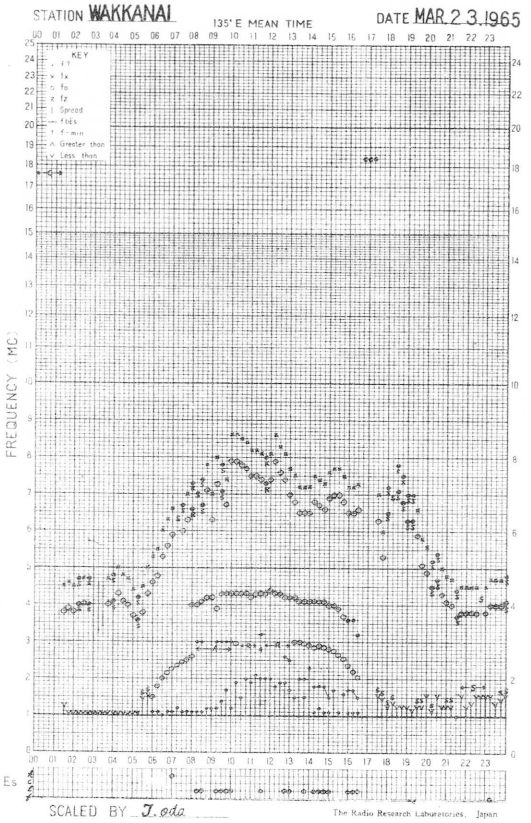

SCALED BY T. Oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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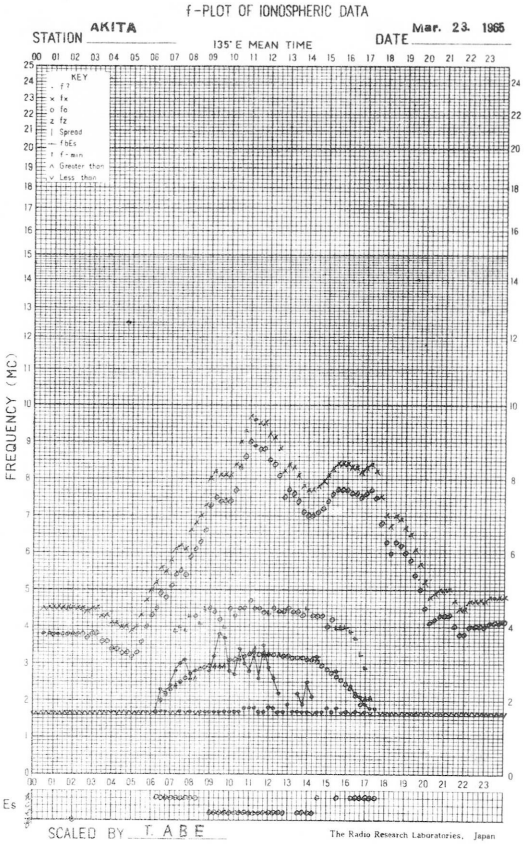

SCALED BY T. ABE

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f-PLOT OF IONOSPHERIC DATA

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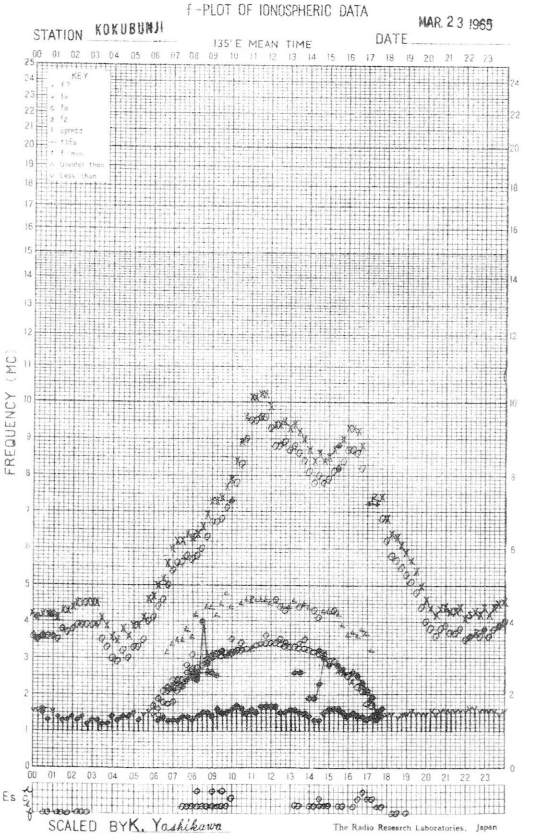

SCALED BY K. Yashikawa

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f-PLOT OF IONOSPHERIC DATA

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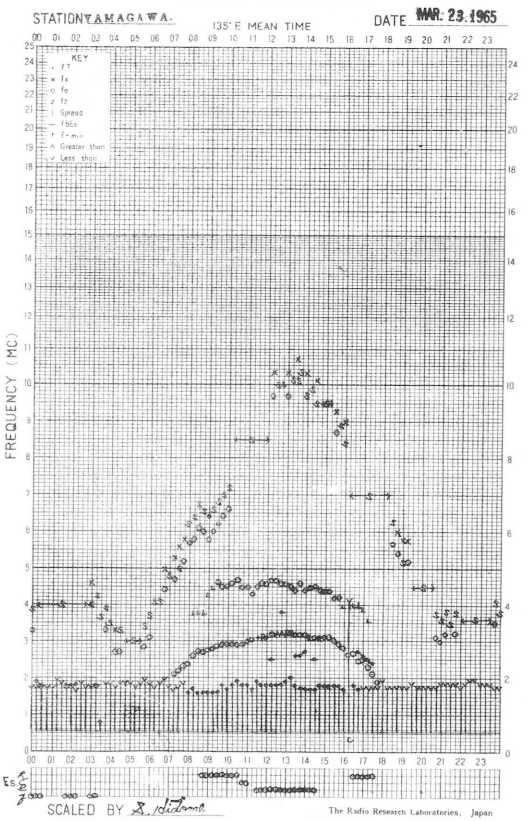
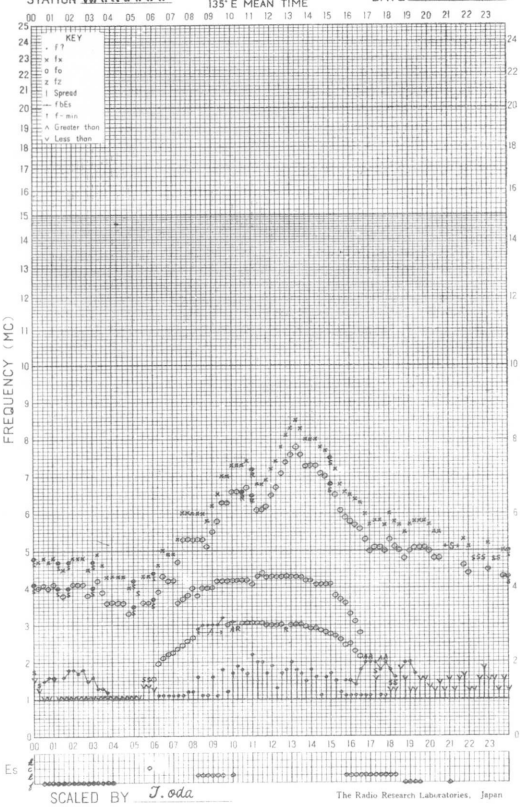


SCALED BY S. Ishimoto

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE MAR. 24. 1965



SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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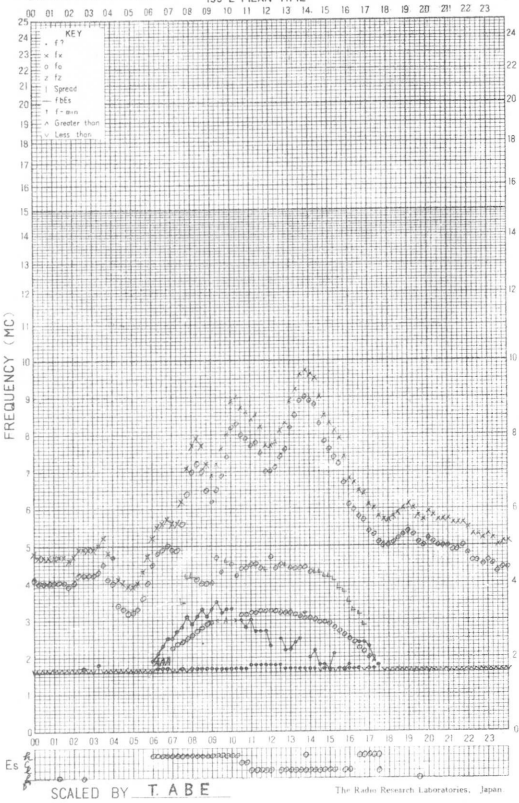

SCALED BY T. ABE

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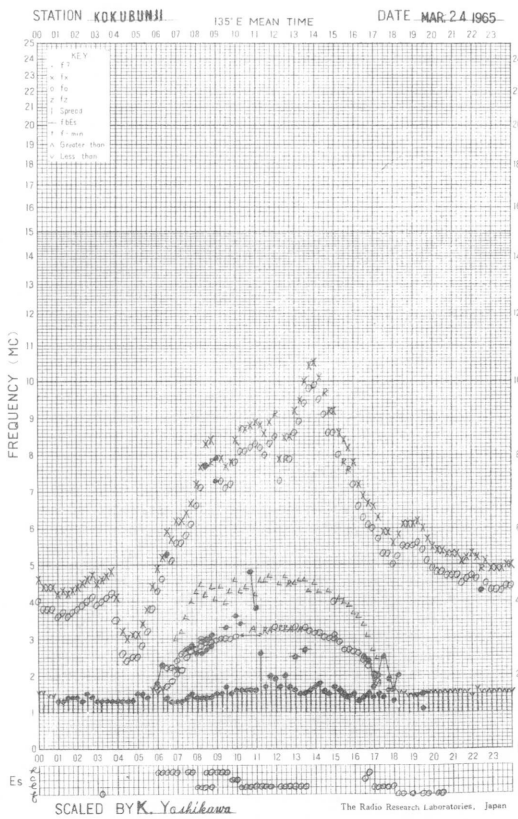

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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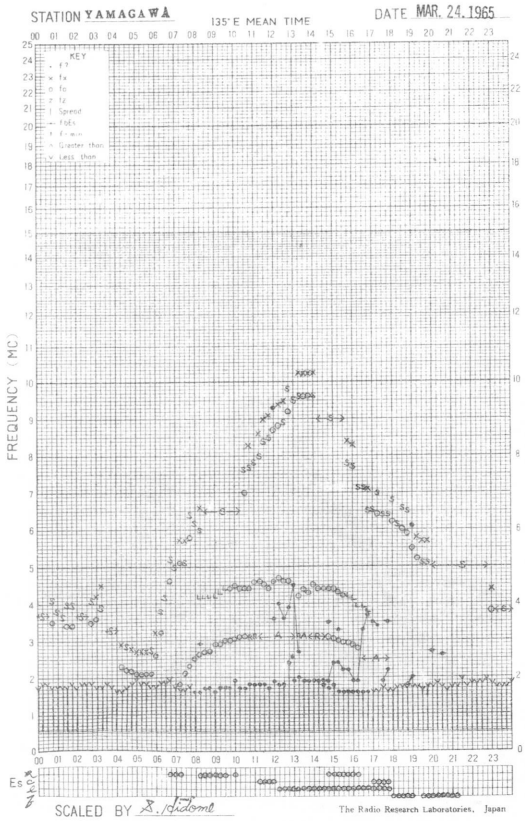
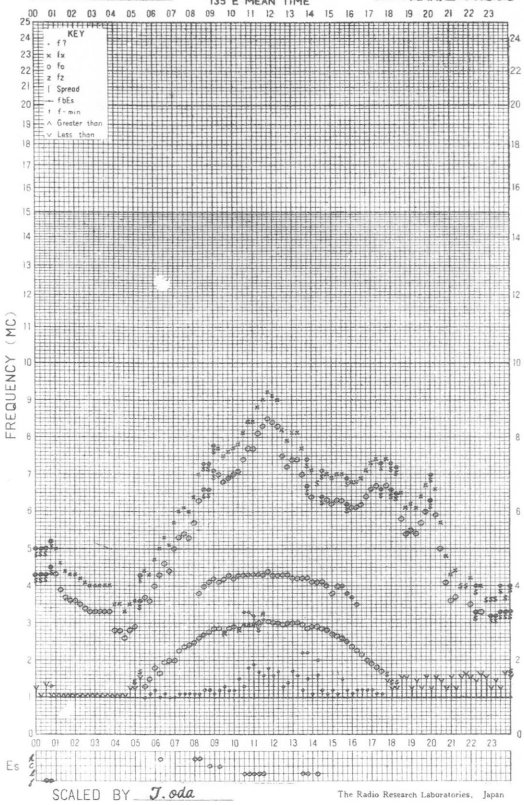


SCALED BY S. Ichimo

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE MAR 25 1965



SCALED BY T. oda

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f-PLOT OF IONOSPHERIC DATA

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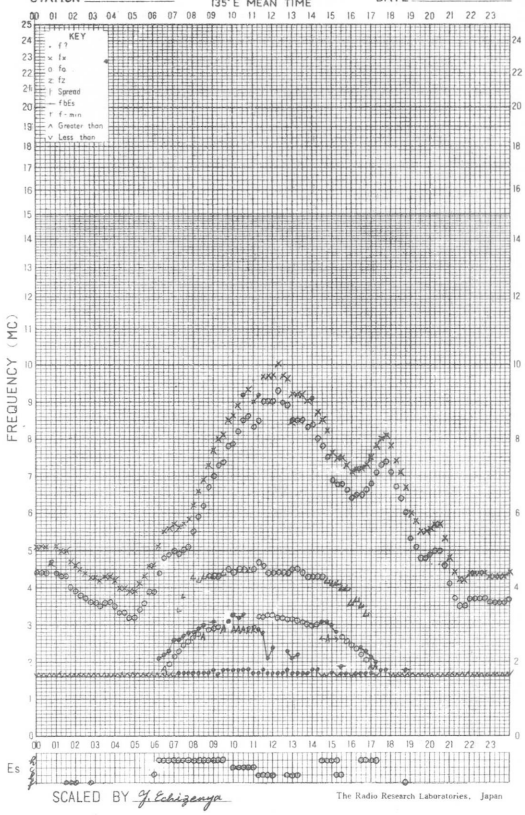

SCALED BY Y. Ichizenya

The Radio Research Laboratories, Japan

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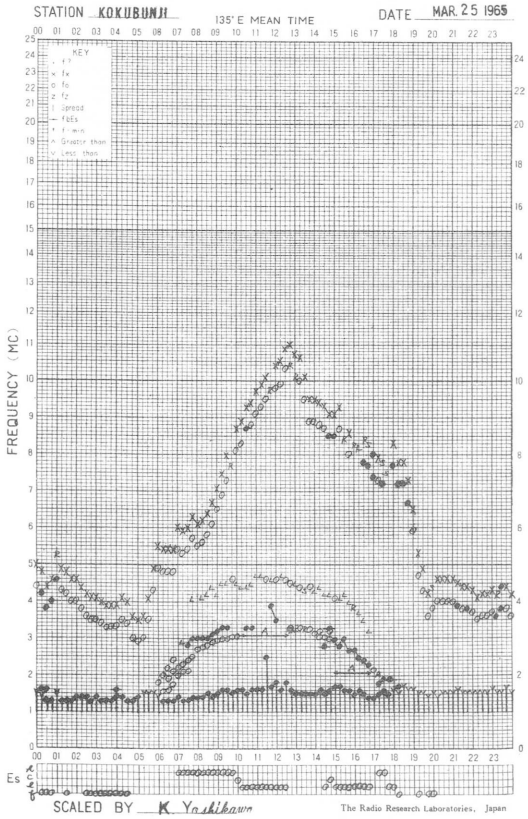

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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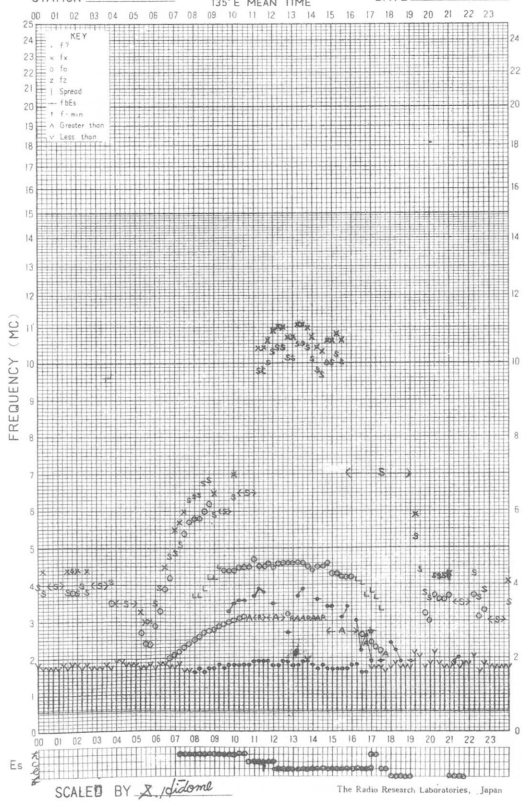

SCALED BY S. Shitomi

The Radio Research Laboratories, Japan

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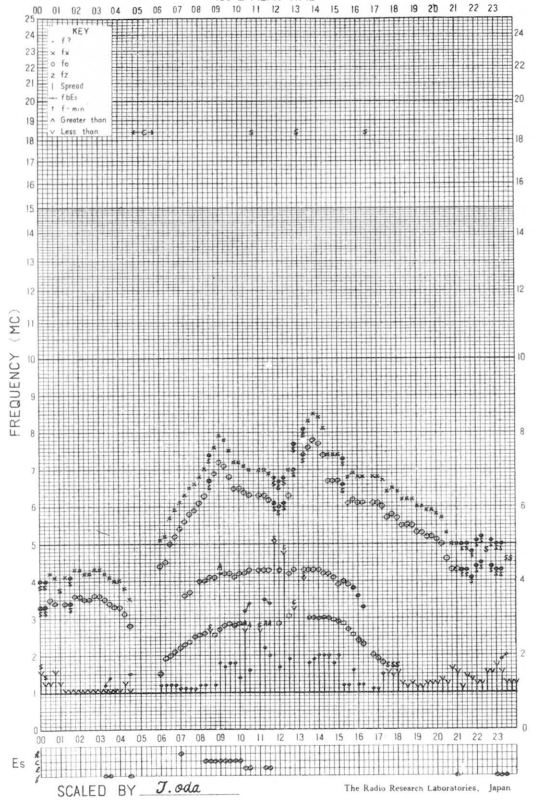

SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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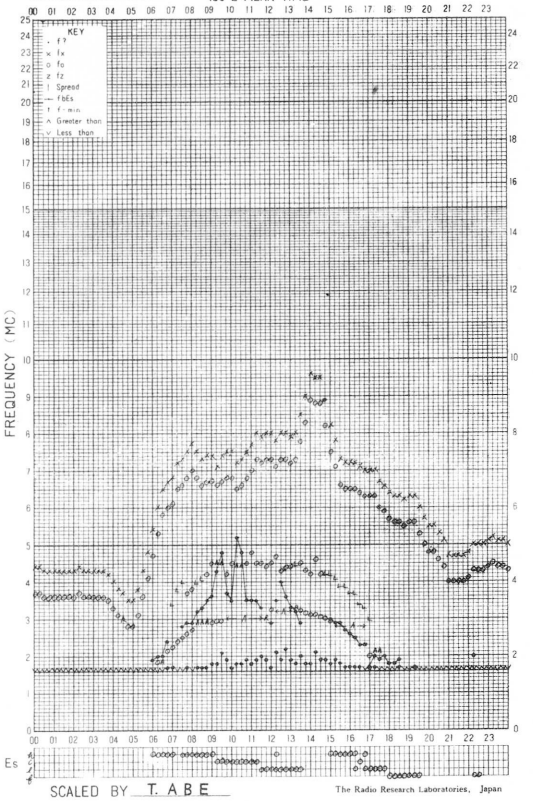

SCALED BY T. A B E

The Radio Research Laboratories, Japan

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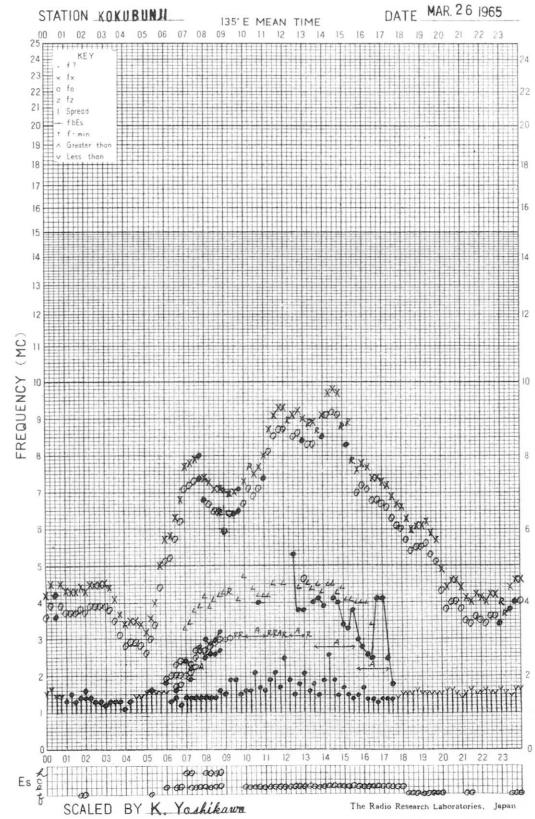

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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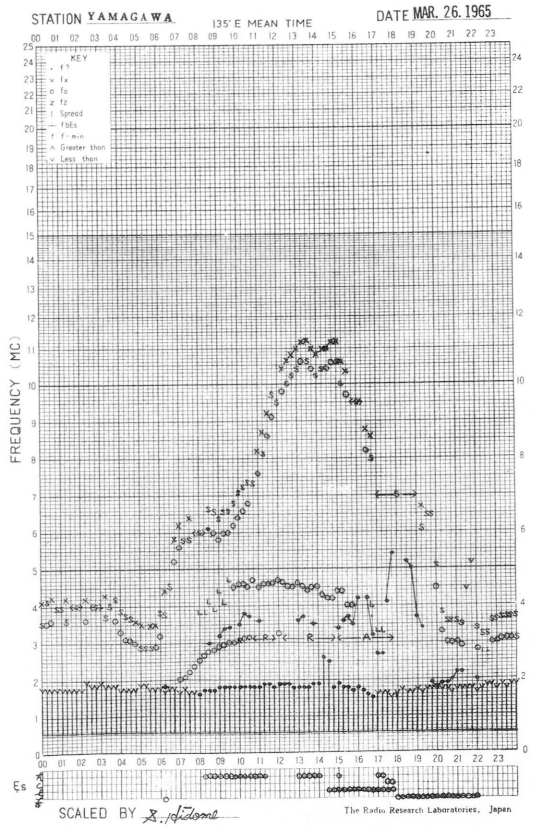

SCALED BY K. Hatsuoka

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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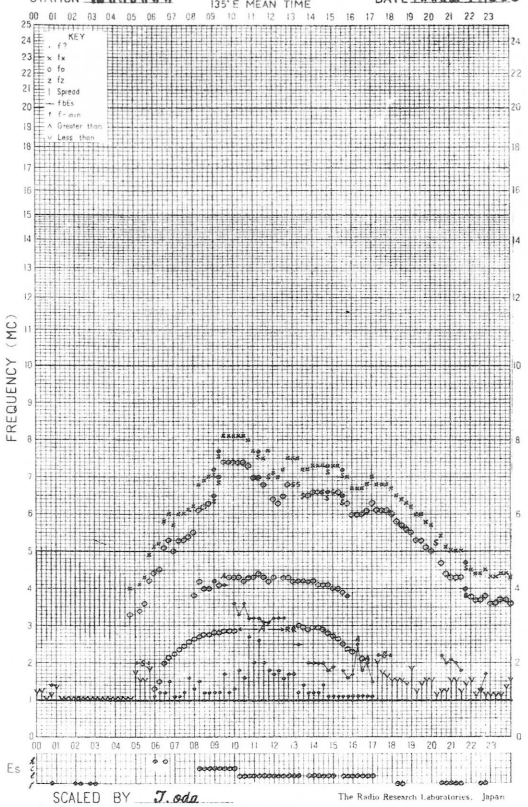

SCALED BY T. oda

The Radio Research Laboratories, Japan

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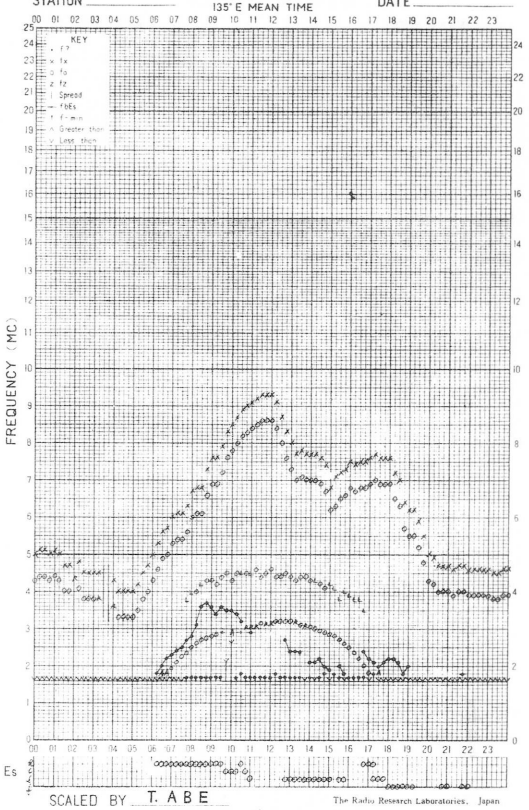

SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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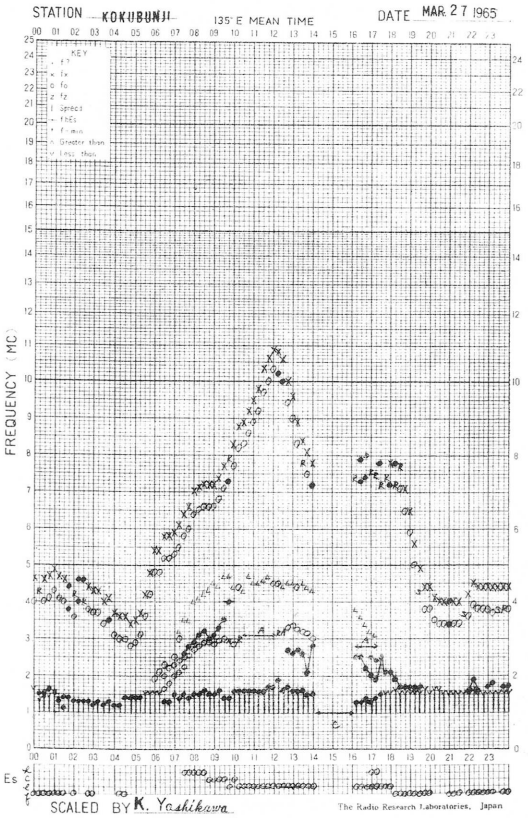

SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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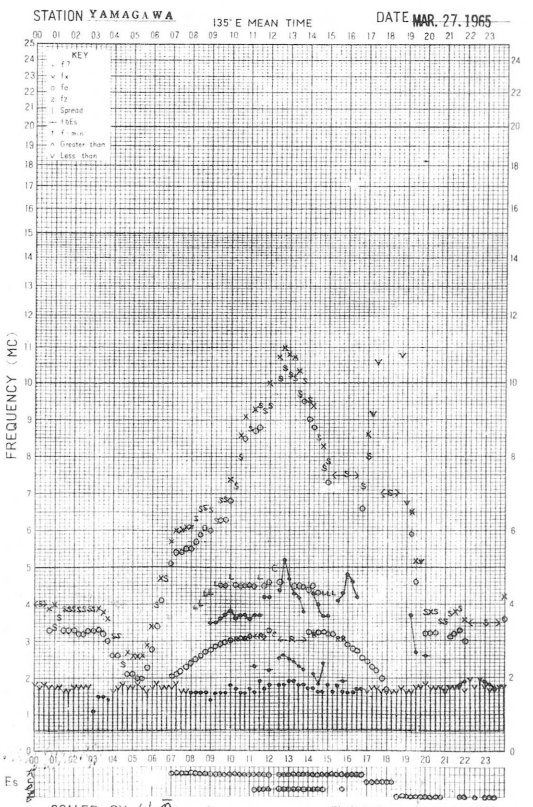
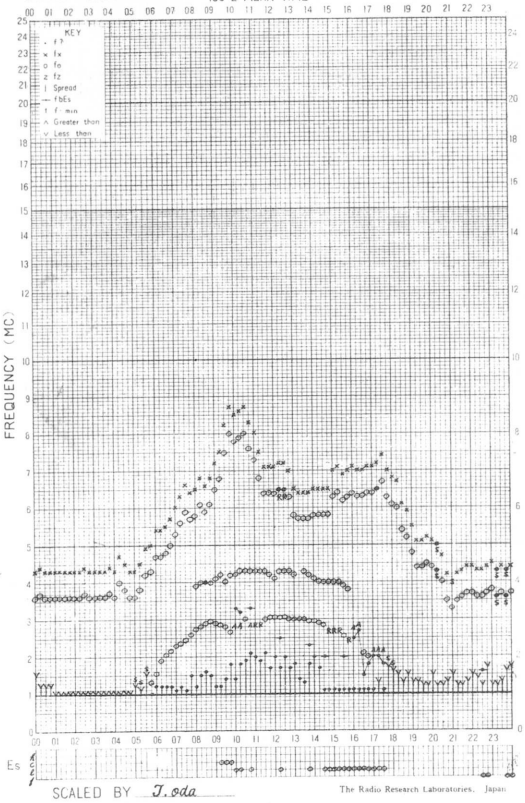


SCALED BY T. Ogawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAR. 28. 1965



SCALED BY T. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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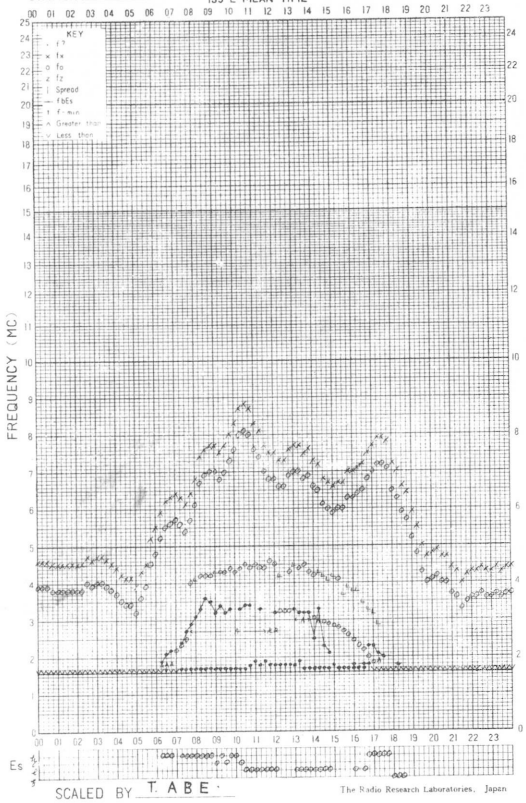

SCALED BY T. ABE

The Radio Research Laboratories, Japan

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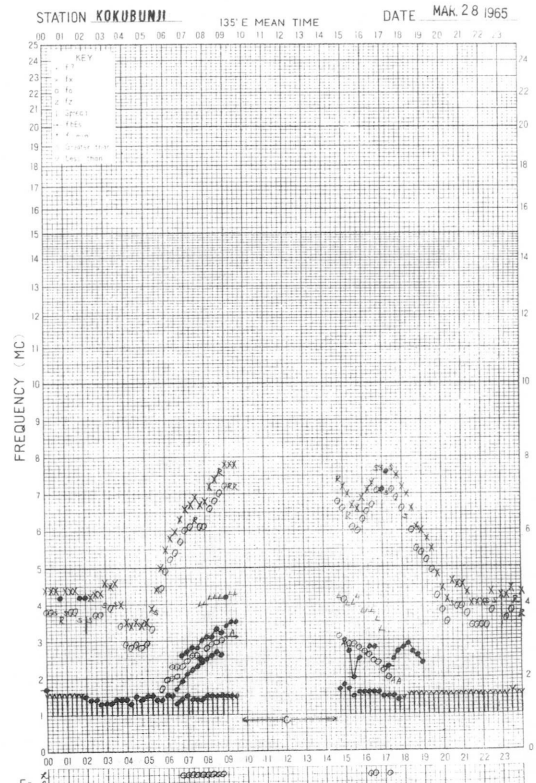

SCALED BY T. Koizumi

The Radio Research Laboratories, Japan

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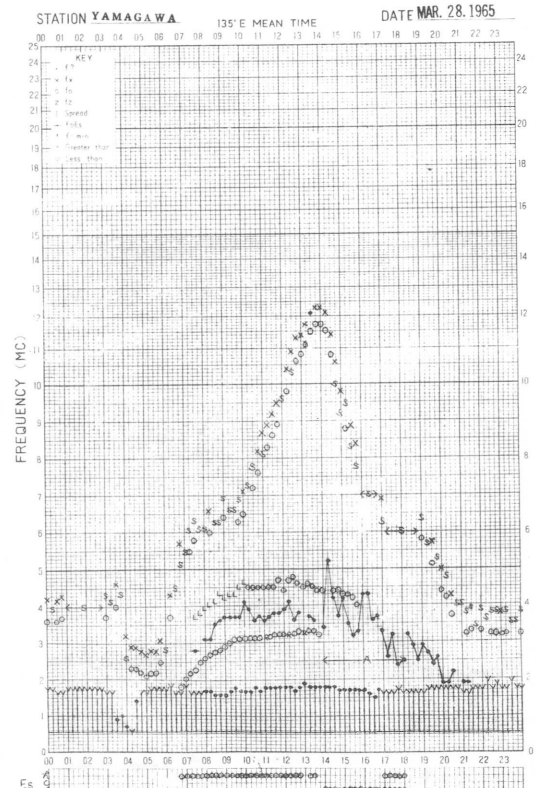

SCALED BY

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f-PLOT OF IONOSPHERIC DATA

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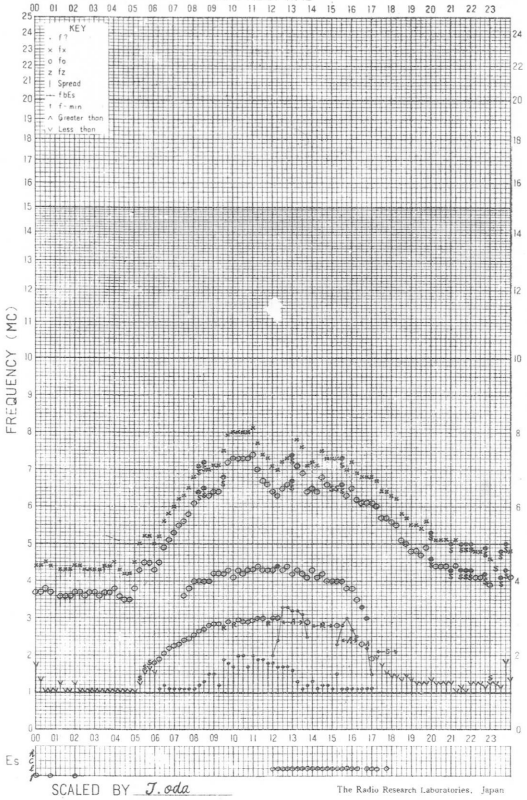

SCALED BY T. Oda

The Radio Research Laboratories, Japan

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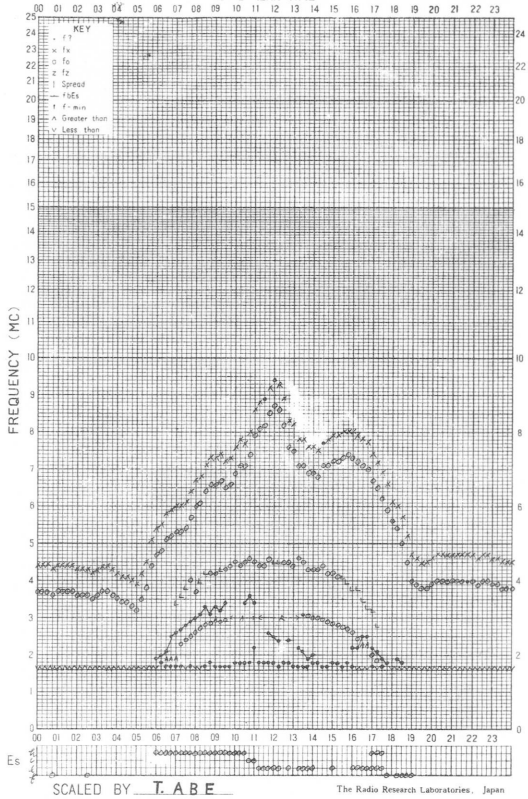

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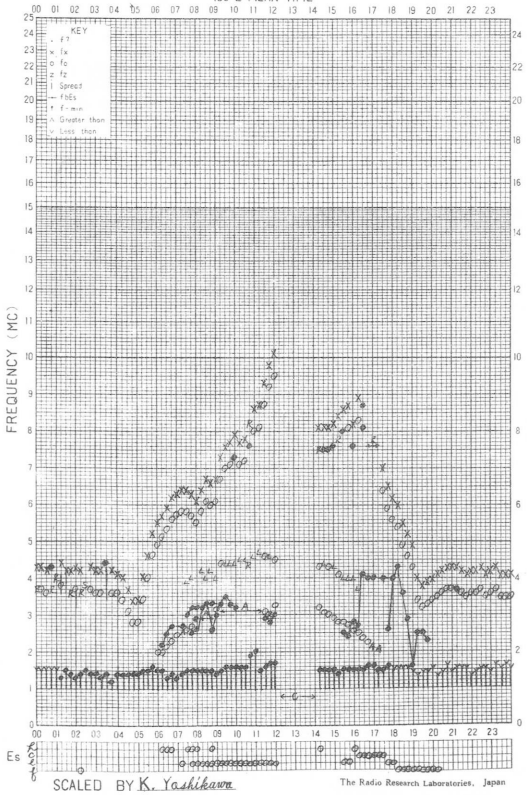

SCALED BY K. Yashikawa

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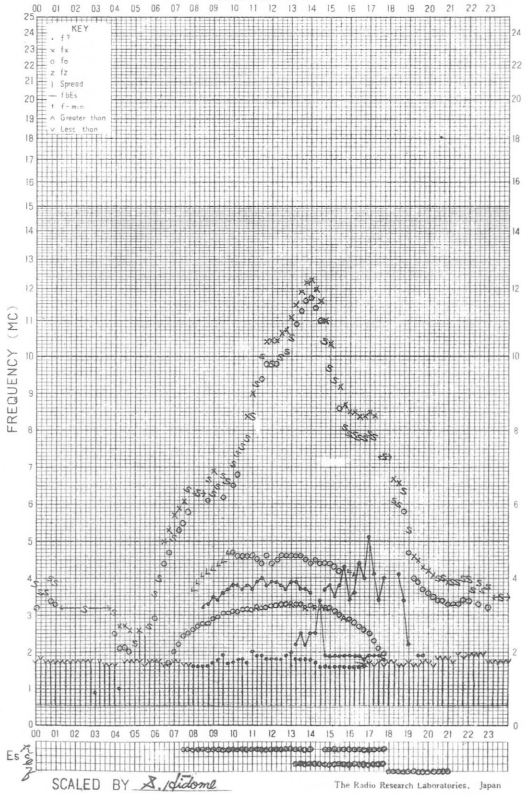

SCALED BY S. Ichiome

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f-PLOT OF IONOSPHERIC DATA

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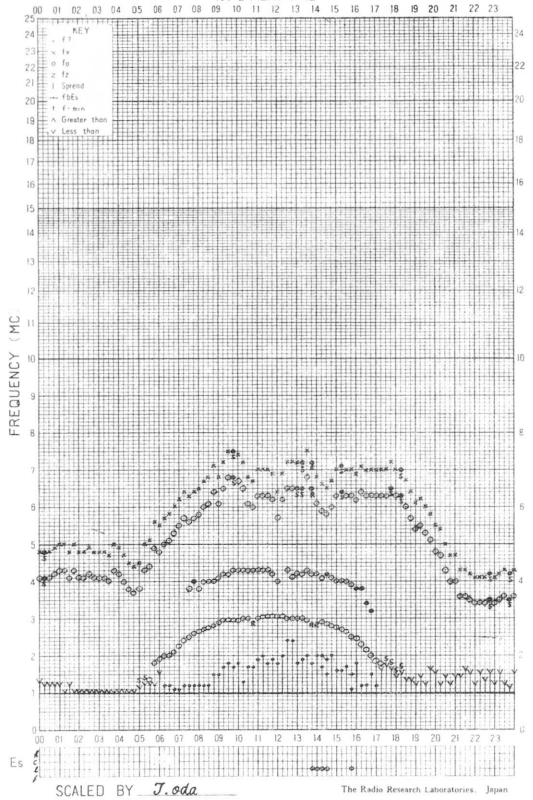

SCALED BY T. oda

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f-PLOT OF IONOSPHERIC DATA

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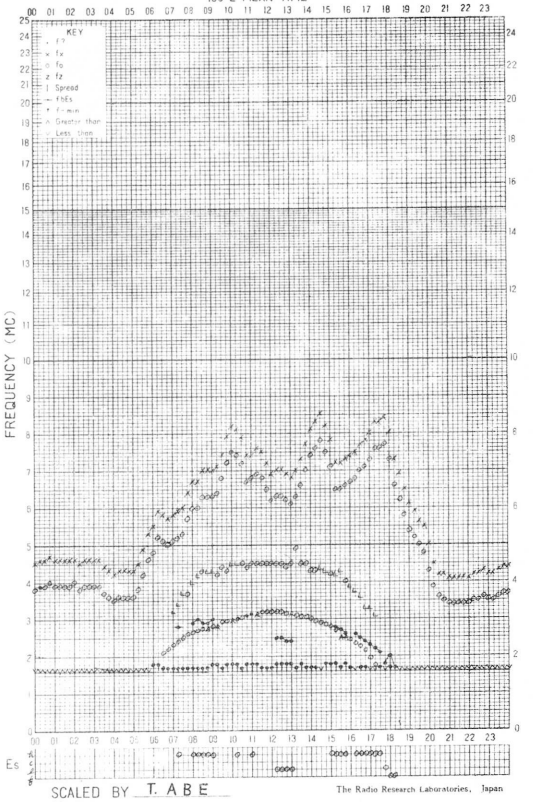

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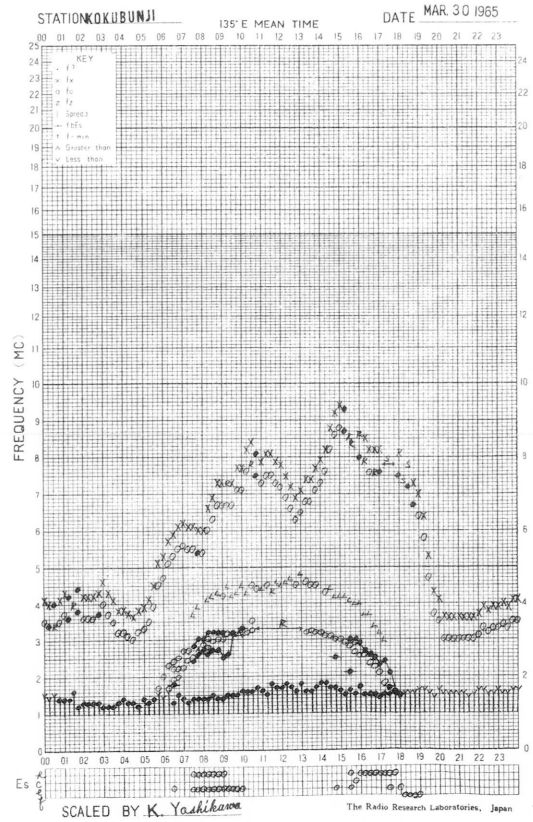

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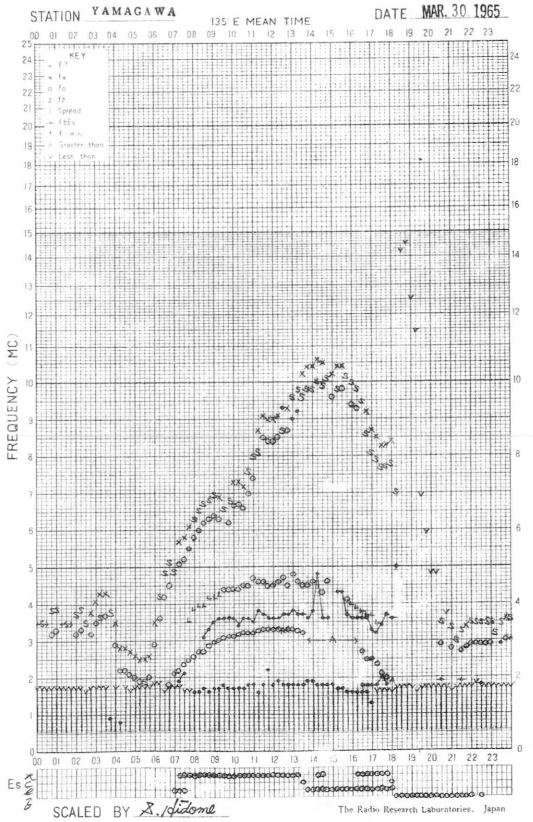

SCALED BY S. Ichijima

The Radio Research Laboratories, Japan

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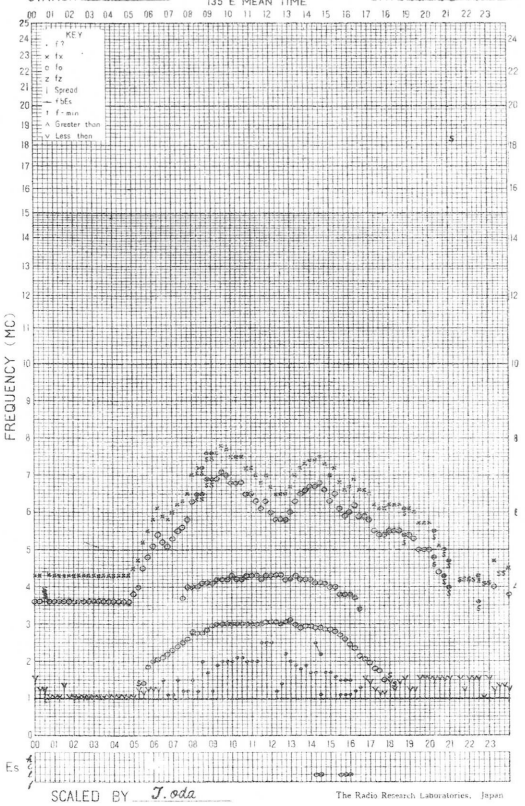

SCALED BY T. oda

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f-PLOT OF IONOSPHERIC DATA

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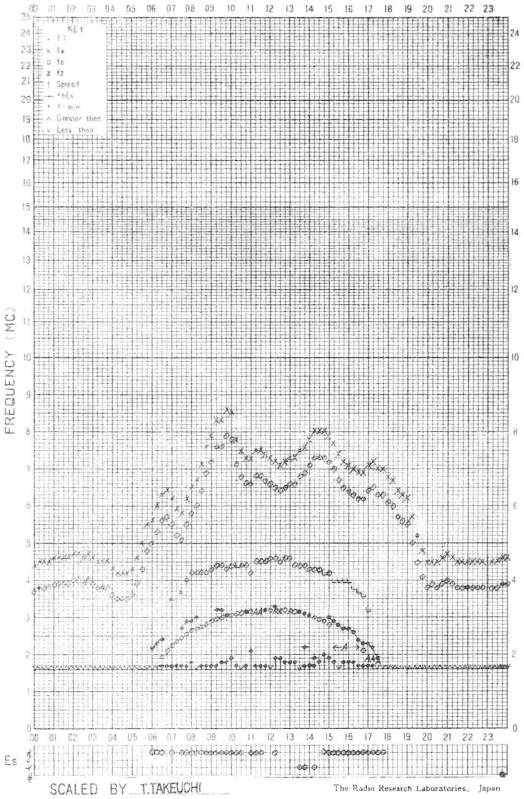

SCALED BY T.TAKEUCHI

The Radio Research Laboratories, Japan

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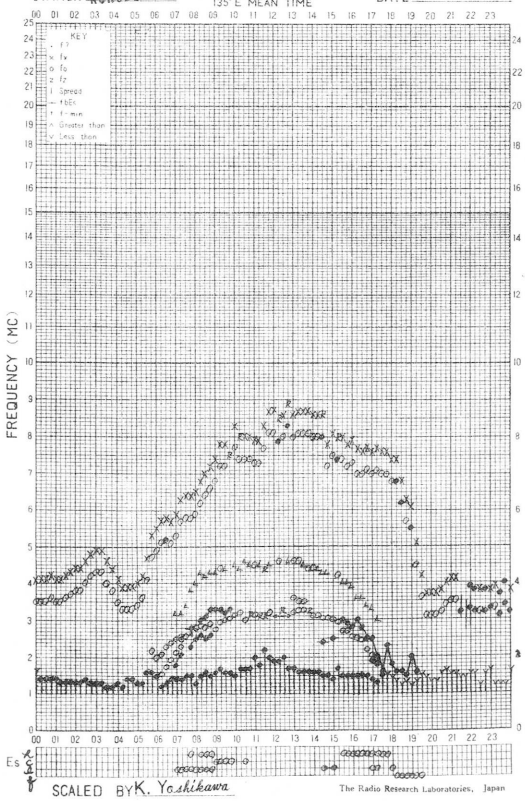

SCALED BY K. Yoshikawa

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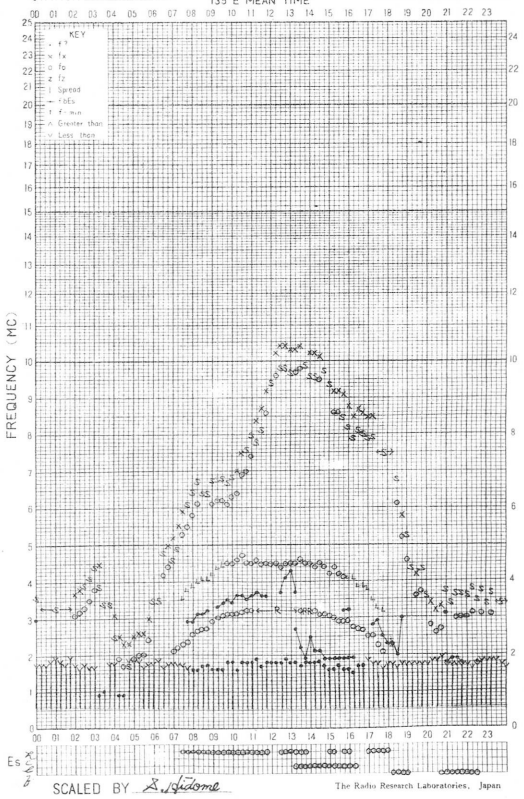

SCALED BY S. Shitome

The Radio Research Laboratories, Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: March 1965.
Observing Station: Hiraiso Frequency: 200 Mc/s

	Flux density 10^{-22} Wm^{-2}(c/s)$^{-1}$					Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	7	8	7	(5)	7	0	0	0	(0)	0
2	6	6	6	(7)	6	0	0	0	(0)	0
3	7	7	7	(7)	7	0	0	0	(0)	0
4	7	7	7	(7)	7	0	0	0	(0)	0
5	7	7	6	(7)	7	0	0	0	(0)	0
6	7	8	7	(6)	7	0	0	0	(0)	0
7	(7)	-	-	-	(7)	(0)	-	-	-	(0)
8	8	8	(6)	(7)	8	0	0	(0)	(0)	0
9	7	8	7	(7)	7	0	0	0	(0)	0
10	7	8	8	(7)	7	0	0	0	(0)	0
11	7	7	7	(6)	7	0	0	0	(0)	0
12	6	7	(7)	(7)	6	0	0	(0)	(0)	0
13	7	7	8	(7)	7	0	0	0	(0)	0
14	8	7	7	(7)	7	0	0	0	(0)	0
15	7	7	8	(6)	7	0	0	0	(0)	0
16	(7)	-	-	-	(7)	(0)	-	-	-	(0)
17	5	7	-	(8)	6	0	0	-	(0)	0
18	8	6	(6)	(5)	7	0	0	(0)	(0)	0
19	5	5	5	(8)	5	0	0	0	(0)	0
20	9	9	8	-	9	0	0	0	-	0
21	-	-	7	(6)	(7)	-	-	0	(0)	(0)
22	7	7	6	-	7	0	0	0	-	0
23	6	7	7	(7)	7	0	0	0	(0)	0
24	6	7	6	-	6	0	0	0	-	0
25	5	7	6	(9)	6	0	0	0	(0)	0
26	7	8	6	(7)	7	0	0	0	(0)	0
27	(7)	7	7	(7)	7	(0)	0	0	(0)	0
28	7	-	-	-	(7)	0	-	-	-	(0)
29	8	8	7	(8)	8	0	0	0	(0)	0
30	(8)	-	-	-	(8)	(0)	-	-	-	(0)
31	7	7	7	(5)	7	0	0	0	(0)	0

Note No observations during the following periods:

7th	0055-	8th	0100	24th	2050-		2400
16th	0045-	17th	0000	27th	0100-		0300
20th	2050-	21st	0500	28th	0200-	29th	0100
22nd	2050-		2400	30th	0100-	31st	0000

SOLAR RADIO EMISSION

Flux Density

Month: March 1965.
Observing Station: Hiraiso Frequency: 500 Mc/s

Flux density 10^{-22} $Wm^{-2}(c/s)^{-1}$

UT	00-03	03-06	06-09	21-24	Day
Date					
1	22	22	21	(22)	22
2	21	22	20	(21)	21
3	23	22	22	(24)	22
4	23	23	22	(20)	23
5	21	-	-	(21)	21
6	23	21	21	(20)	22
7	20	24	24	(21)	22
8	23	23	22	(21)	22
9	21	22	22	(23)	22
10	22	22	23	(23)	22
11	22	21	22	(23)	22
12	23	24	24	(23)	23
13	24	25	25	(22)	24
14	23	24	25	(20)	24
15	22	22	22	(20)	22
16	22	21	21	(19)	21
17	21	22	21	(18)	21
18	20	21	21	(23)	20
19	22	22	23	(21)	22
20	22	23	22	(18)	22
21	21	22	22	(19)	21
22	23	23	23	(20)	23
23	22	23	(25)	-	22
24	22	22	23	(22)	22
25	22	22	22	(23)	22
26	23	22	23	(22)	23
27	23	-	(22)	(21)	22
28	22	23	22	(21)	22
29	23	23	23	(21)	23
30	22	23	21	(22)	22
31	22	21	23	(25)	22

Note No observations during the following periods:

2nd	0200-	0300	27th	0200-	0700
5th	0300-	0840	29th	0100-	0200
23rd	0600-	0700	29th	0400-	0500
23rd	2050-	2400			

Distinctive Event

No Distinctive Event was observed during March, 1965.

Measurement of H.F. Field Strength (Upper Side-band of WWV)

Apr. 1964 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT / Date	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315
1	-16	-13	<-38s	<-33s	<-20s	<-24s	<-33s	<-29s	<-26s	<-27s	<-26s	<-35s	<-39s	<-32s	<-39s	<-36s	<-39s	<-38s	<-38s	<-39s	(<-34)s C	<- 4s	<-27s	<-22s
2	<-17s	<-27s	<-29s	<-23s	<-23s	<-14s	<-19s	<-21s	<-22s	<-18s	<-18s	<-27s	<-16s	<-39s	<-39s	<-39s	<-39s	<-33s	<-23s	<-39s	(-31)s	-16	-13	-14
3	-15	<-27s	<-37s	<-32s	<-20s	<-20s	<-27s	<-29s	<-24s	<-22s	<-32s	<-38s	<-34s	<-39s	<-39s	<-38s	<-39s	<40s	<-39s	<-39s	<-39s	-17	-13	-16
4	- 8	<-30s	<-39s	<-36s	<-29s	<-33s	<-37s	<-35s	-14	<-26s	<-25s	<-23s	<-10s	<-38s	<-38s	<-38s	<-38s	-25	- 7	-15	- 6	-15	-15	-22
5	(-20)s	<-21s	<-39s	<-32s	<-24s	<-25s	<-30s	<-25s	-17	<-26s	<-22s	<-28s	<-38s	-28	<-39s	<-39s	<-41s	<-40s	<-22s	<-40s	-35	-13	-14	-13
6	-16	<-33s	<-39s	<-30s	<-20s	<-20s	<-27s	<-28s	<-26s	<-20s	<-15s	<-30s	<-22s	<-36s	<-40s	<-31s	<-36s	<-35s	-17	<-35s	-17	-10	-12	-14
7	<-28s	-21	<-31s	<-34s	<-24s	<-19s	<-35s	<-32s	<-26s	<-25s	<-25s	<-32s	<-17s	<-37s	<-37s	<-31s	<-38s	<-37s	<-10s	-18	- 6	- 8	- 4	- 7
8	-15	-17	(-29)s	<-38s	<-20s	<-17s	<-27s	<-32s	<-29s	<-28s	<-28s	<-32s	<-36s	<-32s	-18	<-19s	-31	-29	<-37s	<-37s	-29	-20	-17	-20
9	-19	(<-36)s C	<-38s	<-38s	<-11s	<-14s	<-35s	<-34s	<-30s	<-29s	<-30s	<-18s	-20	-21	-12	<-22s	<-36s	<-31s	<- 8s	<-37s	-19	-14	-10	-12
10	-15	-17	-29	<-35s	<-21s	C	C	<-27s	<-28s	<-26s	<-25s	<-25s	-24	-33	<-33s	<-34s	<-32s	-27	-30	-24	-17	- 6	-12	-10
11	-12	- 4	-16	<-39s	<-33s	<-24s	<-34s	<-32s	<-27s	<-32s	<-24s	<-25s	<-34s	<-37s	-19	<-32s	<-37s	20	<-36s	<-37s	<-36s	-16	-20	C
12	<-21s	<-19s	<-38s	<-33s	<-22s	<-15s	<-34s	<-29s	<-27s	<-27s	<-29s	<-37s	<-36s	<-38s	<-38s	<-38s	<-38s	<-38s	<-38s	<-37s	-27	-19	(-13)s	- 2
13	-17	- 7	- 3	<-37s	<-21s	<-31s	<-36s	<-36s	<-31s	<-31s	<-33s	- 9	-25	-20	-20	<-37s	<-37s	<-38s	<-38s	<-38s	-15	- 8	-12	-13
14	-10	-16	-13	<-38s	<-18s	<-25s	<-26s	<-31s	C	<-37s	<-24s	<-32s	<-37s	<-35s	<-35s	<-37s	<-37s	-32	-10	-30	- 6	- 9	- 5	-13
15	-16	- 7	- 9	<-35s	<-28s	<-29s	<-37s	<-34s	<-31s	<-32s	<-27s	<-28s	<-30s	<-36s	-16	<-18s	<-36s	<-36s	<-35s	<-36s	-18	-16	-12	-14
16	-13	- 5	<-33s	<-40s	<-27s	<-20s	<-32s	<-37s	<-28s	<-26s	<-18s	<-21s	<-27s	<-37s	<-37s	<-37s	<-34s	<-38s	-34	<-39s	-11	-17	-14	-17
17	<-24s	<-31s	<-37s	<-39s	<-19s	<-29s	<-33s	<-26s	<-33s	<-23s	- 7	<-33s	<-33s	-26	-28	<-34s	<-34s	<-34s	<-34s	<-35s	-22	-20	C	<-29s
18	<-21s	<-32s	<-36s	<-36s	<-27s	<-29s	<-32s	<-32s	<-25s	<-30s	<-21s	<-24s	<-25s	-32	<-35s	<-34s	<-34s	<-34s	<-34s	<-34s	<-34s	-20	(-22)s	<-28s
19	<-27s	<-36s	<-36s	<-35s	<-34s	<-20s	<-22s	<-32s	<-33s	<-29s	<-26s	<-29s	<-25s	<-35s	<-35s	<-36s	<-35s	<-36s	<-30s	<-35s	-30	-18	- 7	(-23)s
20	<-25s	<-24s	<-33s	<-34s	<-26s	<-22s	<-23s	<-24s	<-24s	<-28s	<-22s	<-22s	<- 3s	<-34s	<-34s	<-35s	<-35s	<-35s	<-35s	<-35s	(-35)s	-24	-20	-22
21	-20	-11	-22	<-36s	<-25s	<-26s	<-26s	<-20s	<-17s	<-22s	<-21s	<-21s	<-24s	<-37s	<-36s	<-35s	<-35s	<-35s	<-35s	<-37s	-29	(-34)s	-20	-19
22	<-38s	<-32s	<-36s	<-35s	<-36s	<-30s	<-36s	<-34s	<-23s	<-25s	<-22s	<-21s	<-34s	<-34s	<-34s	<-31s	<-32s	<-35s	<-35s	<-36s	<-29s	<-27s	<-24s	<-27s
23	<-28s	<-26s	<-21s	<-32s	<-29s	<-20s	<-36s	<-28s	<-10s	<-26s	<-14s	<-21s	-25	-13	-25	<-37s	<-37s	<-38s	-17	-28	-17	-12	-14	-20
24	-15	-16	-11	<-38s	<-24s	<-23s	<-28s	<-27s	-15	<-27s	-12	<-28s	<-29s	-30	-32	<-38s	<-38s	<-38s	<-38s	<-38s	-13	-12	-19	-13
25	-24	<-30s	-23	<-39s	<-24s	<-19s	<-33s	<-36s	<-29s	<-16s	<-25s	-22	-34	<-28s	<-38s	<-18s	<-38s	<-38s	<-17s	<-37s	C	C	-10	- 9
26	<-30s	<-24s	<-20s	<-22s	<-19s	<-24s	<-37s	<-24s	<-17s	<-27s	-17	<-27s	<- 7s	<-36s	<-37s	<-38s	<-37s	<-37s	<-37s	<-37s	<-34s	<-25s	(-24)s	-17
27	(-30)s	<-29s	<-30s	<-29s	<-22s	<-18s	<-33s	<-31s	<-28s	<-27s	<-18s	<-27s	<- 3s	<-37s	<-37s	<-16s	<-34s	<-39s	<-33s	<-35s	<-30s	-27	(-33)s	<-39s
28	<-31s	<-39s	<-39s	<-39s	<-30s	<-18s	<-37s	<-30s	<-25s	<-25s	<-13s	(-16)s	<- 7s	<-38s	<-34s	<-29s	<-34s	<-32s	<-26s	<-38s	<-37s	-28	<-32s	<-34s
29	<-38s	(-20)s	<-37s	<-36s	<-31s	<-25s	<-30s	<-25s	<-28s	<-29s	<-27s	<-33s	<-33s	<-37s	<-36s	<-19s	<-38s	<-38s	<-38s	<-37s	(-29)s	<-26s	<-31s	<-38s
30	<-22s	<-18s	(-24)s	<-33s	<-29s	<-36s	<-33s	<-30s	<-27s	<-25s	<-19s	<-33s	<-22s	<-38s	<-38s	<-35s	<-35s	<-34s	<-34s	<-35s	<-31s	(-15)s	-12	-14
Median	(-20)s	(<-22)s	(<-32)s	(<-35)s	(<-24)s	(<-23)s	(<-33)s	(<-30)s	(<-26)s	(<-26)s	(<-23)s	(<-27)s	(<-25)s	(<-36)s	(<-36)s	(<-35)s	(<-36)s	(<-36)s	(<-34)s	(<-37)s	-29	(-16)s	(-14)s	-17
Med. Count	30	30	30	30	30	29	29	30	29	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29
Upper decile	-12	- 7	-11	<-29s	<-19s	<-15s	<-23s	<-24s	<-15s	<-20s	<-13s	<-18s	<- 7s	-21	-18	<-18s	<-32s	-27	<-10s	-24	- 6	<- 8s	- 7	- 9
Lower decile	<-31s	<-36s	<-39s	<-39s	<-33s	<-31s	<-37s	<-36s	<-31s	<-32s	<-30s	<-35s	<-37s	<-38s	<-39s	<-38s	<-39s	<-39s	<-38s	<-39s	<-36s	<-27s	<-31s	<-34s

Measurement of H.F. Field Strength (Upper Side-band of WWV)

May 1964 Frequency: 15 Mc/s, Bandwidth: 40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315
Date																								
1	-13	-16	(-29)s	<-26s	<-21s	<-21s	<-28s	<-31s	<-21s	<-20s	<-22s	<-30s	<-28s	<-35s	<-34s	<-22s	<-38s	<-38s	<-38s	<-38s	<-31s	<-23s	<-33s	<-38s
2	<-38s	<-38s	<-39s	<-37s	<-30s	<-28s	<-36s	<-35s	<-28s	<-36s	<-26s	<-30s	< 9s	<-30s	<-24s	<-15s	-28	<-34s	<-26s	<-38s	<-38s	<-24s	-29	-28
3	-27	- 9	-26	<-37s	<-37s	<-33s	<-33s	<-28s	<-17s	<-27s	<-21s	<-21s	-11	-23	-19	-24	<-38s	<-38s	-29	-37	-28	-22	-19	-21
4	(-38)s	(-38)s	-38	<-39s	<-38s	<-34s	<-31s	<-29s	<-27s	<-27s	(-24)s	-23	-17	-10	-15	-15	<-25s	<-38s	-25	-18	- 6	- 6	-10	-15
5	-16	-23	-16	<-39s	<-26s	<-27s	<-37s	<-27s	<-29s	<-27s	<-22s	<-18s	-24	-19	<-38s	<-23s	<-35s	<-39s	<-39s	<-36s	-20	-21	-20	-23
6	-23	-19	-17	-22	<-34s	<-37s	<-33s	<-28s	<-25s	<-26s	- 6	<-20s	-14	-14	<-38s	<-29s	<-35s	-33	<-36s	-13	-12	-11	-17	-16
7	-20	-15	-11	- 8	-21	<-16s	<-33s	-11	<-24s	<-24s	<-14s	-18	< 6s	-29	-26	<-24s	-27	<-38s	-34	- 4	- 5	- 9	-11	-20
8	-21	-20	-13	-10	<-37s	<-33s	<-36s	<-26s	<-26s	<-20s	-26	-15	0	- 5	- 2	-10	-15	-24	-13	-14	- 7	-11	-13	-16
9	-17	-14	- 9	-14	<-31s	<-16s	<-37s	<-27s	<-32s	<-31s	-10	-13	- 2	-13	<-29s	<-24s	-37	<-38s	-24	- 6	- 4	- 6	-12	-17
10	-19	-19	-12	<-40s	<-23s	<-10s	-16	<-35s	<-29s	<-31s	-15	-18	-12	<-33s	<-38s	<-25s	<-38s	<-38s	<-23s	<-37s	-29	-24	-18	-28
11	-33	-33	-34	-30	-28	-25	-20	-19	-22	-25	<-30s	-26	< 4s	<-37s	<-38s	<-40s	<-40s	<-40s	<-28s	-33	-24	-23	-37	(-38)s
12	-27	-21	-21	-37	<-26s	<-17s	<-24s	<-37s	-26	-23	<-23s	-17	-11	-14	-10	-17	-28	-19	(-22)s	-23	-17	-10	-18	<-16s
13	-20	- 8	-11	- 7	-23	<-20s	<-37s	<-37s	<-35s	<-28s	-18	-15	- 2	- 2	-21	<-20s	<-40s	<-38s	-37	-26	-13	-14	-14	-20
14	-23	-30	-24	-37	-27	<- 6s	-20	<-24s	<-25s	<-24s	-14	-18	-32	<-35s	<-35s	<-29s	<-35s	<-35s	<-35s	<-35s	-14	-23	<-28s	(-29)s
15	<-35s	-31	-26	<-38s	<-22s	<-23s	<-38s	<-36s	<-29s	<-29s	<-24s	<-37s	<-26s	<-34s	<-35s	<-31s	<-35s	<-35s	<-35s	<-35s	-33	-27	<-25s	<-31s
16	<-39s	<-39s	-30	<-39s	<-33s	<-28s	<-31s	<-22s	<-29s	<-35s	<-27s	<-29s	<-26s	<-36s	<-36s	<-35s	(-36)s	<-37s	<-37s	-37	(-38)s	-24	-25	-28
17	-37	-25	-22	-30	<-28s	<-18s	<-32s	<-32s	<-30s	-20	-19	<-31s	<-33s	<-30s	<-35s	<-30s	<-35s	<-39s	<-36s	<-26s	<-32s	-29	-29	-26
18	-26	<-39s	<-37s	<-37s	<-32s	<-25s	<-19s	<-20s	<-34s	<-34s	-12	-23	-17	-14	<-37s	<-31s	<-37s	<-37s	<-38s	-30	-27	-24	-26	-24
19	-17	-16	-28	-28	<-14s	<-32s	<-28s	<-29s	<-29s	<-27s	-17	-22	-14	-12	-19	<-24s	<-33s	<-35s	-33	-21	- 7	-13	-21	-24
20	-27	-30	-34	<-40s	<-25s	<-35s	<-31s	<-28s	(-22)s	<-25s	-18	(-24)s	- 8	-12	-23	-16	<-28s	-29	-11	-27	-20	-24	-23	-27
21	-27	-26	C	-27	<-20s	<-28s	<-25s	C	(-28)s	<-27s	- 8	-23	-15	-18	(-23)s	- 7	-17	-23	<-24s	-18	- 2	-12	- 8	-21
22	-27	-24	-18	-30	<-28s	<-26s	<-33s	<-33s	<-31s	(-25)s	-13	-19	-10	-23	-16	-17	-12	-25	-23	-24	-17	- 7	- 9	-14
23	-21	-19	- 9	<-34s	<-28s	<-28s	<-30s	<-23s	<-21s	<-23s	-12	-12	- 9	- 9	-13	-15	-18	-13	- 7	- 9	- 8	-10	-10	-10
24	- 7	-16	-15	-30	-22	(-27)s	-27	<-24s	<-22s	<-19s	<-15s	<-14s	<-20s	<-24s	<-24s	<-19s	<-36s	<-31s	<-32s	<-28s	<-24s	<-18s	<-25s	<-22s
25	-25	<-31s	-23	-39	-24	<-25s	<-37s	<-32s	<-28s	<-23s	<-23s	<-23s	<-19s	<-25s	<-29s	<-16s	<-33s	<-33s	<-23s	<-34s	-30	-25	-26	<-30s
26	<-37s	<-37s	<-37s	<-40s	-25	-10	-17	-29	<-33s	<-27s	<-26s	<-26s	- 8	-10	<-25s	<-27s	-23	-18	- 6	-29	-27	-19	- 9	-24
27	-16	-22	-23	- 9	<-25s	<-25s	<-28s	<-27s	<-25s	<-25s	-22	-22	-22	-22	<-28s	<-12s	<-36s	<-36s	<-40s	(-34)s	(-29)s	-27	-18	(-27)s
28	(-31)s	-31	-24	-27	<-27s	<-26s	<-40s	<-32s	<-24s	<-28s	<-27s	(-22)s	-10	-17	- 3	<-39s	<-39s	<-39s	<-39s	<-40s	-27	-23	-18	<-31s
29	-16	(-19)s	<-40s	<-25s	<-30s	<-32s	<-36s	<-24s	<-29s	<-27s	-14	- 8	- 4	<- 1s	<-25s	-20	-14	-17	-11	-13	- 1	-11	- 8	-11
30	-16	-21	-14	-18	<-26s	-25	-26	-19	-20	-19	- 6	-17	-10	<-23s	-22	<-13s	-25	-31	<-26s	<-31s	(-34)s	-22	- 9	2
31	(-24)s	-18	-10	-31	<-34s	<-25s	<-34s	<-28s	<-25s	<-25s	-15	<-22s	- 2	-11	<-11s	-16	-26	-30	(-26)s	- 3	-12	-13	<-24s	(-23)s
Median	(-24)s	(-22)s	-23	(-32)s	(-27)s	(-25)s	(-31)s	(-28)s	(-27)s	(-20)s	(-20)s	(-22)s	(-12)s	(-20)s	(-25)s	(-22)s	(-35)s	(-35)s	(-28)s	(-29)s	-20	(-22)s	-18	(-24)s
Med. Count	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Upper decile	-16	-14	-10	- 9	<-21s	<-10s	<-19s	-19	<-21s	<-20s	- 8	-13	- 2	< 5s	-10	<-12s	-15	-18	-11	- 6	- 4	- 7	- 9	-11
Lower decile	<-38s	<-38s	<-38s	<-40s	<-37s	<-34s	<-37s	<-36s	<-33s	<-34s	<-27s	<-30s	<-28s	<-35s	<-38s	<-35s	<-39s	<-39s	<-39s	<-38s	(-34)s	<-27s	<-29s	<-31s

Measurement of H.F. Field Strength (Upper Side-band of WWV)

Jun. 1964 Frequency: 15 Mc/s, Bandwidth: 40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT / Date	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315
1	-28	(-29)s	-19	-19	(-17)s	(-17)s	-23	-15	-15	<-23s	-18	- 5	-12	-17	<-36s	<-20s	<-36s	<-36s	-12	-15	-12	- 8	-16	(-21)s
2	-18	-23	-20	-14	-13	-22	<-29s	<-21s	<-20s	<-20s	<-20s	-15	- 3	- 9	-14	-19	<-37s	<-37s	-21	-11	- 8	0	-24	-20
3	-12	-20	-16	- 4	C	<-30s	<-25s	<-26s	<-24s	-15	(-11)s	-15	- 5	- 6	- 7	- 9	- 9	-11	- 6	-19	-10	-10	- 6	- 9
4	-14	-23	-21	-13	<-29s	-19	-18	-19	<-28s	<-24s	<-16s	<-23s	- 8	- 8	<-25s	<-21s	(-32)s	-33	-25	-14	-27	-22	-11	-16
5	-20	-15	-26	-25	-25	(-26)s	<-36s	-22	<-23s	- 9	- 6	- 4	0	- 2	-19	-20	-34	-14	-37	-24	- 3	-14	-22	-23
6	-21	-23	-19	-19	-22	(-19)s	-18	- 8	- 2	-10	-14	-10	- 7	-16	-21	<-16s	- 3	- 8	-21	- 3	-10	- 2	<-21s	-19
7	-11	-16	-12	- 7	-17	- 1	0	- 8	-15	1	0	2	5	- 1	- 8	- 8	- 5	-15	-13	-11	- 4	- 2	-11	-11
8	-22	-16	-10	-10	- 8	- 5	- 3	- 6	-15	-12	-14	- 8	- 2	- 6	- 3	<-10s	(-23)s	-23	-18	-19	- 7	-12	- 3	- 7
9	-16	-14	(-17)s	-14	(-27)s	-21	-26	C	C	-25	-17	- 8	-11	-17	-18	<-16s	<-27s	<-36s	- 8	- 5	-25	<-15s	<-24s	-13
10	-22	<-27s	-12	<-29s	<-22s	<-10s	<-21s	<-18s	<-12s	<-13s	<-17s	<-19s	<-23s	<-14s	<-14s	<-25s	<-21s	<-28s	(-26)s	<-33s	<-33s	-26	<-26s	-28
11	-27	<-37s	<-37s	<-37s	<-25s	<-23s	<-23s	<-22s	<-19s	<-17s	<-17s	<-17s	<-16s	<-23s	<-21s	<-28s	<-35s	<-36s	<-32s	<-36s	<-36s	<-32s	<-27s	(-25)s
12	(-36)s	<-32s	<-29s	<-31s	<-26s	<-25s	<-28s	<-23s	<-18s	<-14s	<-16s	<-16s	<-18s	< 8s	<-18s	<-34s	<-34s	<-34s	<-34s	<-34s	<-34s	<-34s	<-37s	<-28s
13	<-38s	<-37s	<-38s	<-37s	<-33s	<-35s	<-35s	<-35s	<-22s	<-21s	<-18s	<-22s	-19	-26	-27	<-33s	<-33s	<-33s	-18	<-40s	<-32s	<-30s	<-22s	<-21s
14	<-30s	<-32s	-29	-25	-29	<-29s	<-28s	<-26s	<-25s	<-24s	(-21)s	-18	- 7	-13	-23	<-26s	<-28s	-15	-12	<-35s	-25	<-26s	-11	-15
15	-11	- 9	-14	-19	-24	<-35s	<-26s	<-26s	<-28s	<-25s	-22	-15	- 1	- 3	-15	<-28s	<-30s	<-38s	<-39s	-18	-12	-16	-21	- 9
16	-14	-30	<-21s	- 7	<-26s	-26	-24	<-16s	< 3s	<-21s	<-16s	-18	2	- 3	-12	-22	-23	<-31s	<-29s	-23	-14	-12	-15	- 5
17	-24	-14	-11	-15	-24	<-31s	-33	<-29s	<-28s	-15	-13	0	8	3	4	- 3	- 6	- 6	- 6	-22	-13	- 4	-22	-14
18	-10	- 9	- 8	-10	-11	<-22s	<-25s	(-22)s	-22	<-25s	-20	- 5	- 7	-22	-12	- 3	-17	-15	- 1	-27	-26	<-30s	-17	- 9
19	- 7	(-22)s	-23	-25	(-24)s	-15	- 8	- 9	- 8	- 8	-10	- 6	- 3	0	5	- 7	-21	-22	-16	-19	-16	<-13s	-13	3
20	<-11s	-17	-23	-23	<-27s	<-21s	(-23)s	-19	<-21s	<-18s	-20	<-23s	(-24)s	-20	<-22s	<-25s	<-27s	<-29s	<-23s	<-30s	<-29s	-19	-21	-25
21	<-29s	-29	-10	-26	<-29s	<-26s	<-25s	<-24s	<-22s	<-21s	-13	- 7	- 9	- 6	-16	<-22s	-24	-29	<-16s	-26	-22	<-23s	1	- 6
22	-24	-29	-26	-18	-18	<-20s	(-23)s	<-21s	<-20s	- 9	-14	- 2	- 3	0	- 9	<-23s	-19	-22	<-29s	-22	-28	<-25s	-25	-24
23	<-31s	-18	-22	-20	<-30s	<-30s	<-37s	<-21s	-20	-21	< 7s	- 2	-17	- 9	-12	<-26s	-23	-22	-22	-25	-21	<-22s	-10	-10
24	-19	-23	- 8	<-36s	-23	-26	(-22)s	<-21s	<-13s	<-16s	(- 5)s	- 5	4	- 4	- 3	-14	- 4	-17	-10	-15	-14	-11	-16	<-15s
25	<-23s	-23	-18	- 7	<-29s	-27	<-36s	(-29)s	<-26s	<-17s	< 9s	< 7s	- 5	-17	<-20s	<-18s	<-29s	<-25s	-20	-25	-25	-22	<-25s	-20
26	<-24s	-23	<-30s	-17	<-20s	<-25s	<-24s	(-22)s	<-18s	<-18s	<-16s	<-11s	- 3	(- 7)s	-21	<-12s	<-18s	<-29s	<-29s	-33	-23	<-12s	-19	-19
27	-19	-19	-16	<-29s	<-22s	<-27s	(-31)s	(-20)s	(-20)s	C	<-13s	< 4s	- 8	4	- 2	- 9	- 5	-15	-11	- 9	-10	< 3s	-12	-23
28	<-11s	-13	(-17)c	-13	-10	<-24s	<-30s	<-24s	<-26s	<-22s	<-20s	- 7	<-12s	-11	-23	<-27s	<-30s	-32	<-30s	<-37s	-31	<-15s	<-32s	<-31s
29	<-32s	-29	C	-25	<-26s	<-38s	-14	-14	-13	<-24s	<-27s	<-29s	-12	-20	-26	<-16s	<-32s	<-26s	<-25s	<-33s	<-38s	-23	<-26s	<-27s
30	-30	<-41s	-25	-16	-12	- 4	- 9	- 6	- 9	-10	C	- 1	- 2	- 7	-21	-15	-11	-14	(-10)s	(-26)s	- 8	- 7	- 7	-13
Median	(-22)s	(-23)s	(-19)s	-19	(-24)s	(-25)s	(-25)s	(-21)s	(-20)s	(-18)s	(-16)s	(- 9)s	- 7	(- 8)s	(-18)s	(-20)s	(-26)s	(-26)s	(-20)s	-24	-22	(-18)s	-20	(-18)s
Med. Count	30	30	29	30	29	30	30	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30
Upper decil	-11	-13	-10	- 7	-11	- 5	- 8	- 8	< 8s	- 9	(- 6)s	- 1	4	0	- 2	- 7	- 5	-11	- 6	- 9	- 7	- 2	- 6	- 6
Lower decil	<-32s	<-37s	<-30s	<-36s	<-29s	<-35s	<-36s	(-29)s	<-28s	<-25s	(-21)s	<-23s	<-19s	<-22s	<-26s	<-28s	<-35s	<-36s	<-34s	<-36s	<-34s	<-30s	<-27s	<-28s

Measurement of H.F. Field Strength (Upper Side-band of WWVH)

Apr. 1964 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345
1	2	- 2	2	9	8	12	8	-12	-23	<-26s	<-27s	<-38s	<-37s	<-39s	<-39s	<-36s	<-38s	<-37s	<-38s	-10	1	- 9	- 2	8
2	- 4	- 9	- 5	3	6	9	10	6	14	- 5	- 3	<-38s	<- 7s	<-39s	<-39s	<-23s	<-39s	<-30s	<-29s	-18	- 7	- 6	-12	- 8
3	0	- 7	- 2	6	10	9	7	-10	-13	(-19)s	-25	(-37)s	-31	<-39s	<-39s	<-30s	<-38s	<-38s	-30	-15	- 2	0	- 4	- 6
4	- 7	- 6	- 2	10	8	4	6	-13	-12	-13	(-18)s	<-22s	- 8	<-38s	<-38s	<-38s	<-38s	1	0	1	- 1	- 3	-13	- 8
5	- 2	- 7	- 4	2	9	14	14	6	-13	3	-16	-30	-30	-33	<-37s	<-39s	- 2	-33	-28	- 2	- 4	- 3	- 7	- 3
6	- 2	- 6	- 1	3	9	11	0	-10	-11	(-13)s	-15	-25	-28	<-32s	<-38s	<-31s	<-36s	<-35s	-26	1	1	- 2	- 8	- 7
7	- 5	- 3	4	4	8	13	7	-11	2	-15	- 5	-23	-15	<-37s	<-37s	<-26s	<-38s	-36	8	- 6	6	-11	- 4	- 5
8	- 3	4	5	4	13	14	14	- 9	-14	-16	-28	<-30s	<-23s	<-32s	<-30s	<-19s	- 4	<-38s	-29	-13	- 2	- 2	- 6	- 3
9	- 8	- 6	- 1	8	11	15	15	- 9	-15	- 1	-13	-23	-14	- 2	<-35s	<-24s	<-36s	-16	-19	- 1	- 5	- 4	2	- 6
10	- 1	- 2	- 4	7	13	C	13	- 2	- 9	-10	-10	-10	- 9	-23	<-33s	<-33s	(-30)s	<-27s	-18	- 9	- 1	- 2	- 5	- 6
11	- 3	- 3	7	3	12	8	5	-10	-12	-20	<-23s	<-29s	<-37s	<-36s	<-36s	<-36s	(-37)s	-22	<-36s	- 7	- 6	3	C	- 4
12	- 4	- 2	- 2	- 1	5	7	- 1	- 1	- 8	-12	-24	<-37s	<-36s	<-38s	<-38s	<-38s	-32	-30	(-37)s	- 2	0	0	- 4	- 2
13	- 5	0	- 4	4	9	11	12	5	-12	-20	(-26)s	<-31s	-27	<-37s	<-37s	<-37s	-32	-13	-27	- 2	1	- 4	- 4	- 5
14	- 7	- 3	- 3	0	11	12	11	- 1	-14	-15	- 4	-13	-29	-13	-29	<-20s	- 1	- 1	-17	5	- 1	- 4	- 4	- 5
15	- 4	3	2	3	5	C	10	-21	-15	1	12	3	-13	-16	-31	<-29s	-16	-10	-27	0	0	- 1	-11	- 7
16	- 7	- 5	2	1	8	10	14	-12	-14	-17	<-20s	<-23s	<-36s	<-37s	(-36)s	<-22s	- 8	- 7	-31	- 2	- 6	-12	-11	- 9
17	- 9	- 6	- 4	2	10	8	5	7	2	- 7	-16	-25	-30	<-34s	<-34s	<-34s	-33	-29	<-22s	0	0	1	C	- 4
18	- 2	- 2	4	9	10	12	11	7	6	- 4	- 3	-17	-15	-23	<-35s	<-34s	(-34)s	-34	-34	0	- 6	- 3	- 6	- 9
19	- 7	- 5	2	3	13	6	11	10	-15	- 8	(-22)s	<-30s	<-20s	-28	<-35s	<-35s	<-35s	- 6	2	- 1	0	- 1	-12	-13
20	- 7	C	- 2	7	9	13	18	-14	(-18)s	(-23)s	<-20s	(-23)s	<- 7s	<-34s	<-34s	<-35s	<-35s	-17	-17	- 5	- 2	- 5	- 7	2
21	- 6	- 3	2	7	9	0	10	-14	-18	<-21s	<-21s	<-24s	<-35s	<-36s	<-37s	<-35s	(-32)s	-29	-19	- 4	0	- 5	6	- 2
22	- 2	-10	- 1	3	2	14	12	-15	-20	-10	<-22s	<-27s	<-27s	<-34s	<-34s	<-31s	-30	- 6	-15	- 2	- 2	- 4	- 7	- 8
23	- 5	- 7	- 2	8	8	12	- 2	-14	-17	(-20)s	<-21s	<-26s	<-34s	<-34s	<-35s	<-37s	- 1	-12	-13	0	- 4	- 8	- 5	- 7
24	- 3	1	1	6	7	7	- 6	-15	-17	-21	(-22)s	(-24)s	<-26s	<-39s	<-39s	<-38s	<-38s	<-38s	<-38s	6	- 4	- 9	- 8	- 8
25	-13	- 7	- 3	5	8	10	17	7	-22	<-24s	<-22s	<-22s	-30	<-38s	<-38s	<-22s	-24	-13	-22	-14	C	- 7	- 9	- 5
26	-14	-10	1	2	7	7	9	9	-13	-15	-23	-23	(-10)s	-28	<-37s	-37	<-37s	-30	-17	2	- 1	- 3	- 5	- 8
27	- 9	-10	- 6	- 1	8	10	12	12	-20	<-24s	-22	- 9	3	<-37s	<-37s	<-17s	- 7	(-35)s	(-33)s	- 6	- 3	- 7	-11	- 4
28	- 8	- 4	- 5	- 4	8	8	9	9	-12	-22	<-25s	- 8	<-16s	-24	<-34s	<-34s	<-37s	- 9	- 8	2	- 1	-14	-21	-19
29	-19	-10	-10	2	6	8	8	- 6	- 2	-19	<-27s	<-31s	<-37s	<-37s	<-36s	<-38s	<-38s	-32	-25	- 2	0	- 4	-14	- 4
30	- 3	- 1	- 2	4	9	8	10	0	-12	-10	-11	-15	-14	-15	-24	<-35s	<-35s	<-34s	-31	- 9	- 4	- 3	0	- 7
Median	- 5	- 5	- 2	4	8	10	10	- 8	-13	(-15)s	(-22)s	(-25)s	(-28)s	(-34)s	(-36)s	(-34)s	(-34)s	(-29)s	(-26)s	- 2	- 1	- 4	- 6	- 6
Med. Count	30	29	30	30	30	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	28	30
Upper decile	- 1	1	4	9	13	14	15	9	2	- 1	- 3	- 9	<- 7s	-15	<-30s	<-20s	- 2	- 6	0	2	1	0	0	- 2
Lower decile	-13	-10	- 5	- 1	5	6	- 1	-15	-20	<-24s	<-27s	<-37s	<-37s	<-39s	<-39s	<-38s	<-38s	<-38s	(-37)s	-14	- 6	-11	-13	- 9

Measurement of H.F. Field Strength (Upper Side-band of WWVH)

May 1964 Frequency: 15 Mc/s, Bandwidth: 40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345
1	- 4	- 8	- 1	6	8	7	-10	- 7	-10	-13	(-21)s	-14	- 4	- 8	-14	<-17s	- 7	-16	-10	- 3	3	- 2	- 8	-10
2	-12	-14	- 7	- 3	4	12	14	16	5	- 9	(-16)s	-10	- 7	- 8	-13	<-15s	- 1	- 4	-10	1	- 3	- 3	- 7	- 8
3	- 7	- 3	- 2	- 1	8	9	13	12	1	-13	-18	- 6	-21	-14	<-38s	<-38s	-21	-24	-27	- 2	- 4	- 3	-10	-16
4	-15	- 7	- 4	- 3	7	8	14	7	-15	-14	-22	<-27s	<-22s	-20	<-35s	<-38s	3	-15	- 8	- 1	- 2	- 2	- 8	-10
5	-10	-14	- 4	6	9	10	15	14	12	17	12	-15	<-18s	-33	(-33)s	<-28s	- 5	- 6	-22	0	1	- 7	- 8	- 9
6	- 7	- 6	- 2	2	7	12	13	16	17	5	5	12	<-24s	<-35s	<-38s	(-35)s	(-35)s	- 9	- 7	-11	- 1	- 2	-11	-14
7	- 7	- 7	- 5	- 1	8	12	11	13	15	15	8	-16	- 1	- 4	<-32s	-27	-27	-37	-21	1	- 1	- 1	-10	- 6
8	- 9	- 8	1	7	8	13	20	16	16	13	9	<-28s	<-30s	<-32s	<-32s	<-24s	<-35s	- 9	- 5	9	- 2	-11	-11	-12
9	-15	- 6	0	9	9	14	13	20	- 6	-12	-17	(-24)s	<-21s	<-27s	<-31s	<-27s	-16	- 6	- 6	0	- 2	- 7	- 9	- 7
10	- 9	- 2	- 5	8	11	9	11	13	2	4	- 8	<-25s	-24	-24	<-38s	<-23s	<-38s	<-38s	-19	- 2	-12	-15	(-20)s	-19
11	-14	-15	- 7	1	1	- 4	5	7	10	- 4	10	16	(- 6)s	<-37s	-27	- 4	9	- 1	-11	4	4	- 5	-11	-16
12	-11	- 9	- 6	0	6	11	12	0	- 1	8	2	8	6	- 1	-17	-14	-14	6	-11	3	- 1	- 3	<- 5s	- 7
13	- 7	- 2	- 6	0	11	9	12	6	9	10	10	1	3	- 9	-16	-17	-24	-19	-27	3	- 8	-17	- 4	- 3
14	- 9	- 9	- 8	4	12	8	6	8	10	9	11	- 2	- 6	-19	<-35s	<-35s	<-35s	<-35s	-33	- 1	-23	-18	-23	-24
15	-19	-21	- 1	- 1	8	5	7	10	9	14	6	0	- 2	-13	-31	<-31s	-33	-15	-27	3	- 8	-11	-15	-11
16	-15	-10	-12	- 8	6	10	7	11	12	12	- 3	0	(-30)s	<-36s	<-36s	<-32s	<-36s	<-37s	- 5	-12	-10	-18	-22	-14
17	-22	-22	-14	- 1	4	11	6	-10	-20	(-26)s	<-30s	<-30s	<-25s	-18	(-32)s	<-33s	<-35s	-29	-29	- 5	- 5	- 9	-16	-13
18	- 8	- 7	- 5	- 2	- 2	4	8	8	12	10	4	- 5	- 7	-18	-18	<-30s	-10	-23	-11	- 3	4	- 9	-10	-22
19	-21	- 8	-13	- 4	4	8	13	12	8	10	6	-19	-11	-23	-25	-20	- 9	- 3	- 7	1	- 5	-11	-14	-21
20	-12	-14	- 9	- 5	5	12	11	9	- 5	7	8	1	- 5	-16	-23	- 9	-15	-14	-29	3	0	- 9	-14	-18
21	-16	-13	-14	-16	2	6	10	12	8	- 3	- 8	-13	-25	<-31s	<-24s	<-14s	- 7	- 7	1	- 5	1	-13	- 9	-13
22	-17	- 8	- 8	- 3	- 3	2	7	14	12	13	7	8	6	-10	(-30)s	-19	2	-10	- 4	2	- 5	-13	-16	- 8
23	-10	-16	- 7	- 6	5	7	11	7	13	8	-11	<-27s	-14	-25	-26	- 7	-14	- 7	- 3	- 1	- 2	- 2	-10	-18
24	-13	-13	-10	0	6	13	12	14	18	9	3	2	2	-10	<-10s	-10	-19	- 9	-11	- 5	- 2	- 5	(-22)s	(-25)s
25	-21	-21	- 8	- 2	- 1	8	3	7	3	1	- 3	-18	-15	-24	<-29s	<-14s	<-33s	- 9	- 6	- 2	-10	-13	-20	-13
26	-11	-22	-16	- 6	6	4	20	9	3	1	- 4	-11	- 8	- 9	- 4	(-10)s	- 7	0	- 3	5	- 3	-11	-18	-12
27	-11	- 8	- 8	- 2	2	13	13	12	13	4	4	8	1	(-16)s	-25	-10	- 8	-18	- 3	- 4	-10	-18	-16	- 7
28	- 9	-12	-11	- 9	- 1	9	8	11	5	6	1	3	- 1	-15	<-22s	-22	-18	- 8	2	- 4	0	-13	-12	-20
29	-11	- 6	- 9	0	3	7	13	15	9	- 5	(-13)s	-10	- 8	<-14s	-15	(-15)c	- 3	- 5	1	- 1	- 5	- 7	-12	- 7
30	- 6	- 7	- 1	2	5	10	10	16	13	9	8	- 8	(- 4)s	(-21)s	-23	<-22s	- 9	-22	-23	3	- 1	-10	-14	-10
31	- 8	- 5	0	5	4	6	7	8	2	- 1	3	2	4	-14	-23	<-20s	-23	-27	-10	1	-10	-15	-21	-23
Median	-11	- 8	- 7	- 1	6	9	11	11	9	6	3	- 8	(- 7)s	(-18)s	(-28)s	(-20)s	-15	-10	-10	- 1	- 2	- 9	(-12)s	(-13)s
Med. 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
Upper decile	- 7	- 3	0	7	11	13	15	16	16	14	10	8	4	- 8	<-13s	- 9	2	- 1	1	4	3	- 2	<- 7s	- 7
Lower decile	-21	-21	-14	- 8	- 1	4	5	0	-10	-13	(-21)s	<-27s	<-25s	<-35s	<-38s	<-35s	<-35s	<-37s	-29	- 5	-10	-18	(-22)s	-23

Measurement of H.F. Field Strength (Upper Side-band of WWVH)

Jun. 1964 Frequency: 15 Mc/s, Bandwidth: 40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345
1	-14	(-17)s	-11	- 2	6	11	12	12	14	- 5	- 6	-19	-21	-26	-29	<-21s	-17	-20	- 9	- 4	- 6	-10	-14	-16
2	-13	-19	-12	- 3	3	10	11	13	12	- 5	- 4	- 7	- 1	-22	<-31s	-33	<-37s	- 7	2	- 7	-10	-17	-21	-19
3	-11	-12	-11	- 6	- 3	9	11	18	14	13	7	4	3	- 2	-16	-10	- 3	- 2	- 2	- 1	- 4	- 2	- 5	- 8
4	-14	- 6	-12	- 7	0	8	13	15	15	13	12	1	-14	- 4	-25	<- 9s	<-37s	-10	- 3	5	- 8	- 9	- 9	-16
5	-14	- 7	- 6	- 2	5	7	11	15	- 1	(-18)s	- 4	<-18s	<-10s	<-25s	<-28s	<-21s	-34	-10	-23	3	0	- 6	-13	- 2
6	- 3	- 3	1	- 1	5	7	12	15	16	17	5	8	3	- 8	-14	<-14s	-22	1	- 6	4	- 7	- 6	- 7	- 5
7	- 3	- 7	- 7	- 1	2	2	13	16	16	16	15	3	- 9	- 9	-23	-14	-22	- 3	0	2	6	- 2	-11	-16
8	-12	-18	- 2	1	- 2	11	10	9	13	14	13	13	12	4	4	- 1	- 3	- 6	-11	- 3	- 5	- 4	- 7	- 9
9	- 6	- 6	- 6	- 1	8	13	16	14	11	13	12	11	5	2	-14	<-19s	-19	- 5	- 9	- 4	4	- 7	-13	- 7
10	-10	-11	- 3	- 1	10	9	14	15	18	10	3	4	4	< 15s	< 14s	<-22s	<-25s	-24	-10	- 9	- 4	- 1	-12	-21
11	-23	-27	-12	-11	- 5	2	3	14	6	- 3	- 5	1	- 2	- 8	-13	<-23s	-15	-16	-21	0	-10	- 8	- 9	-17
12	-24	-19	-12	- 1	3	3	10	10	9	20	(-11)s	(-19)s	-13	(-10)s	(-21)s	<-34s	(-34)s	-27	-13	- 8	- 8	-16	-24	<-28s
13	-30	-28	-14	-10	- 8	19	6	4	5	10	6	5	5	- 4	- 2	- 7	- 7	- 2	6	- 1	- 8	- 9	-15	-16
14	-12	-11	- 9	0	0	8	0	5	6	12	12	9	17	-11	-30	-12	- 9	-12	- 2	1	- 3	- 9	-10	- 7
15	- 2	- 6	-10	- 3	6	7	10	9	11	9	10	6	3	-11	-21	- 9	0	- 9	- 5	- 1	- 3	- 7	- 8	-13
16	- 5	-12	- 4	- 3	6	3	7	11	14	- 8	2	4	<-18s	<-34s	<-35s	-31	(-35)s	- 9	- 6	1	- 8	-11	- 8	- 1
17	0	- 1	- 1	- 2	6	7	6	0	10	14	14	8	0	5	-10	<-10s	1	9	4	4	8	5	3	1
18	3	- 1	0	4	13	13	17	17	19	19	14	11	10	6	- 7	<-29s	5	4	5	5	5	8	4	1
19	- 5	0	0	5	14	12	21	23	20	17	12	8	8	6	- 2	-12	7	- 3	8	8	6	4	6	7
20	10	7	6	10	15	17	23	24	25	22	10	9	5	4	- 2	- 8	- 5	5	5	7	2	9	6	0
21	1	- 2	3	4	9	15	23	23	14	- 4	12	10	7	8	6	- 2	1	7	6	7	11	0	- 3	- 8
22	- 7	- 9	C	16	12	16	17	19	- 2	8	23	-10	-13	<-20s	-18	<-24s	-25	- 1	2	8	5	- 3	- 4	- 8
23	- 5	- 1	- 1	9	11	4	13	17	19	13	16	8	10	0	- 6	- 2	11	11	- 2	- 5	- 5	0	- 7	- 1
24	- 9	- 5	- 8	1	- 2	8	14	18	16	14	14	10	8	8	1	- 6	- 2	3	2	3	3	- 5	- 1	- 2
25	- 8	- 7	- 5	5	8	12	12	17	22	12	14	8	19	16	4	- 4	- 4	2	7	3	0	- 7	- 8	-14
26	- 5	- 7	2	0	5	8	6	11	9	5	2	- 3	- 7	(- 8)s	<-25s	<-13s	- 6	-13	- 6	- 6	- 1	- 7	- 8	- 8
27	- 7	- 4	- 1	1	5	7	11	14	C	- 1	- 2	(- 9)s	- 5	- 4	<-20s	<-14s	<-30s	-15	- 4	6	- 2	- 2	- 9	- 5
28	0	0	- 1	0	10	17	15	16	6	5	2	-14	<- 4s	-21	-18	<-27s	1	- 2	- 6	3	- 6	- 3	-16	-18
29	- 6	- 6	- 7	2	8	12	12	15	19	-11	-24	-12	- 2	-16	-20	<-18s	<-26s	-25	-19	2	- 6	3	- 2	- 8
30	S	- 2	- 4	2	9	12	7	7	-20	-12	C	-14	8	-20	<-29s	(-25)s	(-24)s	- 8	- 3	- 1	6	- 8	-11	- 1
Median	- 7	- 6	- 5	0	6	9	12	15	14	11	10	4	3	(- 7)s	(-18)s	(-16)s	-12	- 6	- 3	2	- 3	- 6	- 8	- 8
Med. Count	29	30	29	30	30	30	30	30	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
Upper decile	1	0	2	9	13	17	21	23	20	19	15	11	12	< 8s	< 4s	- 2	5	7	6	7	6	5	4	1
Lower decile	-23	-19	-12	- 7	- 3	3	6	5	- 1	-11	- 6	<-18s	<-14s	<-25s	<-30s	<-31s	<-35s	-24	-19	- 7	- 8	-11	-16	-19

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Mar. 1965	Whole Day Index	L. N. 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	4 3 4	(4) - - 4	4 4 4 4	4 3 - (3)	N N N N			
2	4o	4 4 4	4 - - 5	(4 3) 4 4	4 4 - 4	N N N N	12.9	---	113γ
3	4-	4 3 3	4 - - 4	4 4 4 (4)	4 5 - 5	N N N N	---	---	
4	4-	3 4 3	3 - - 3	4 4 4 4	5 5 - 4	N N N N	---	21xx	
5	3+	4 4 4	3 - - 3	3 3 3 3	4 4 - (3)	N N N N			
6	4-	5 4 4	4 - - 3	3 3 4 (3)	5 5 - 4	N N N N			
7	4-	C C C	3 - - 4	4 4 4 4	5 4 - 4	N N N N			
8	4+	5 4 4	4 - (4) 5	4 5 4 3	5 5 - 4	N N N N			
9	4o	4 4 4	4 - - 5	4 4 4 3	4 3 - 4	N N N N			
10	4o	4 4 4	4 - - 5	4 3 4 3	4 3 - 4	N N N N			
11°	4-	4 3 4	4 - - 5	3 4 3 (4)	4 4 - 4	N N N N			
12	4o	4 4 3	4 - (5) 5	4 3 4 4	4 3 - 4	N N N N			
13	4+	5 5 4	3 - (4) 4	4 5 5 4	5 5 - 5	N N N N			
14	4+	4 5 3	5 - (4) 4	4 5 4 4	5 5 - 4	N N N N			
15	4o	(4) 4 4	5 - - 4	3 4 4 4	4 4 - 4	N N N N			
(16)	4+	5 4 4	3 - - 5	4 5 5 4	4 4 - (3)	N N N N			
(17)	4o	4 5 5	(3) - (4 3)	4 4 4 5	5 5 - 4	N N N N			
(18)	5-	4 4 4	(4) - (5) 5	5 5 5 5	4 3 - 5	N N N N			
19	5-	5 5 4	5 - - 5	5 4 4 4	4 3 - 3	N N N N			
20	4o	4 4 4	4 - - (5)	4 3 4 4	4 3 - 3	N N N N			
21	4o	C (4 4)	C - - 4	C 4 4 4	(5) 3 - 5	N N N N			
22	5-	5 5 5	4 - - 5	5 4 4 5	5 5 - 4	N N N N			
23	4o	4 4 3	5 - - 4	4 4 4 4	5 5 - 5	N N N N			
24	4o	4 4 3	4 - - 4	5 5 4 4	4 (4) - (4)	N N N N			
25	4-	4 3 3	4 - - 3	4 4 4 5	5 5 - 5	N N U U			
26	4o	4 4 4	4 - - 3	4 4 5 4	4 (4) - 4	N N N N			
27	4o	3 4 4	3 - - 3	5 5 4 5	4 5 - 5	N N N N			
28	4+	C C C	4 - - 4	5 4 4 5	4 4 - (5)	N N N N			
29	4-	(3) 3 3	4 - - 3	5 4 4 4	4 (3) - 4	N N N N			
30	4o	5 4 5	3 - - 4	4 4 4 4	4 (3) - 4	N N N N			
31	4+	4 4 4	4 - - 5	4 5 4 4	4 5 - 4	N N N N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

▲ = COSMIC EVENT

( ) = Regular World Day

C = artificial accident

\- = impossible to evaluate

--- = continuing magnetic storm

( ) = inaccurate

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during March, 1965.

IONOSPHERIC DATA IN JAPAN FOR MARCH 1965
第 17 巻　第 3 号

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