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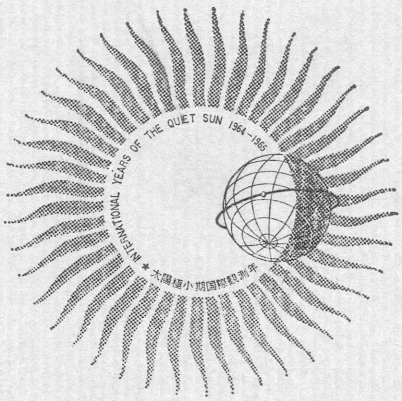
IONOSPHERIC DATA IN JAPAN

FOR JANUARY 1965

Vol. 17 No. 1



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Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

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17

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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 paràbolic 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. 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.

b. 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

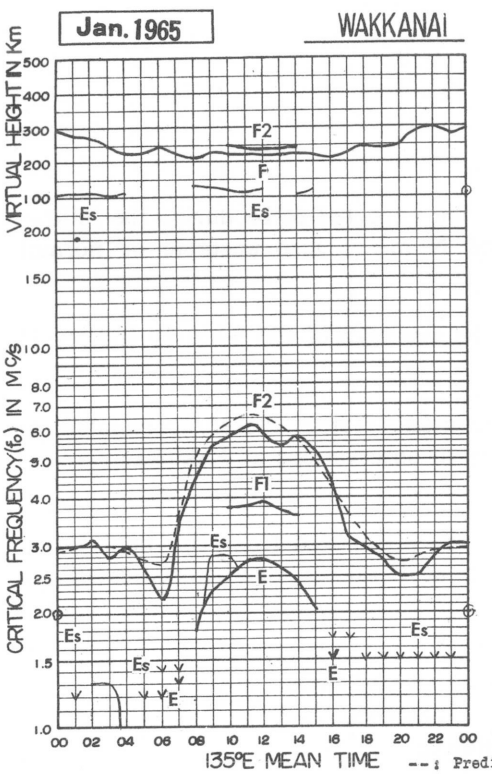
Importances

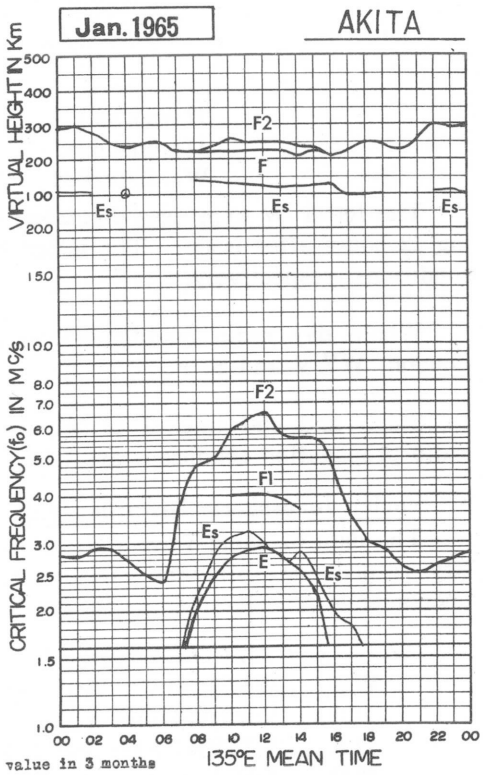
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

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.

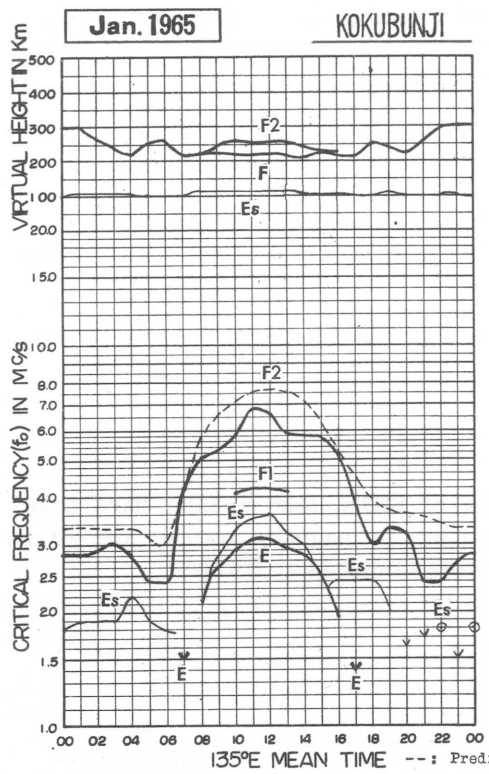
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

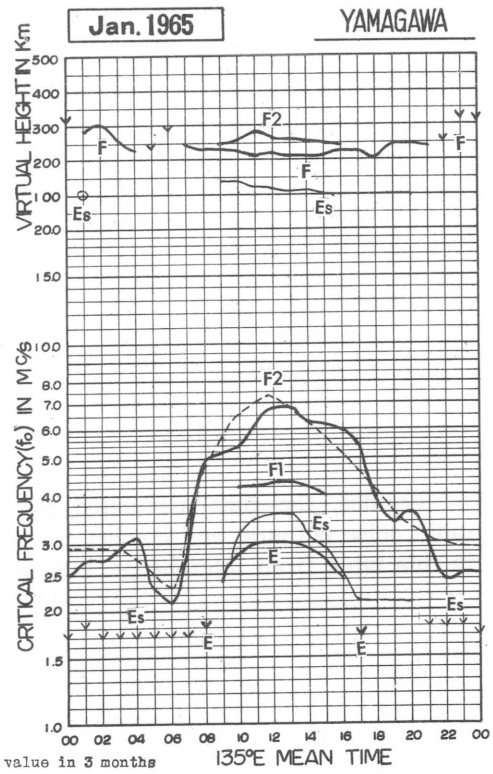




--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





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

IONOSPHERIC DATA

Jan. 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	SF	SF	SF	SF	SF	SF	SF	U029S	049	051	053	057	054H	050	055	050	036	041	044	038	034	SF	SF	SF
2	SF	SF	SF	SF	SF	SF	020	032	043	057	064	064	056	053	058	048	035	030	028	026	020	I023A	027	SF
3	030F	030F	031F	SF	F	FS	024	032	058S	070	063	068	061	063	064	048	042	033	025	025	021	029	030	031
4	SF	SF	033F	030F	033F	028F	023	030	044H	063	061H	060	059	073	058	058	038	I029C	025	I022C	I020C	025	026	028
5	028	031	029	027	028F	025	020	033	046	064	063	062	053	052H	053	050	046	033	027	SF	SF	F	FS	030F
6	SF	030F	SF	SF	030F	SF	SF	031	044	061H	057	053	054	055	061	053	036	030	040S	035S	033	027	032	SF
7	SF	SF	SF	SF	F	028F	024	033	040	053	061	061	053	055	055	054	046	036	026	U027S	024	U027S	F	FS
8	F	F	F	FS	F	F	FS	033S	051	049	061	068	060	051	058	047	040	036	033	026	026	027	029	031
9	031	031	030S	027	032	030	017	032	050	I062C	I073C	I071C	I059C	051	054	I053C	048	I038C	I029C	027	025	028	030F	031F
10	SF	SF	SF	SF	SF	SF	020S	I031C	047	060	058	I060C	053	053	066	060	043	027	024	025	024	025	027	030F
11	030	031	032	028F	SF	SF	I028S	030	039	063	054	061	060	054H	064	056	039	036	043	033	025S	028S	032S	SF
12	031	033	035	031F	033	033	032	036	045	043	060	066	058	050	060	050	047	033	033	038S	030S	SF	SF	SF
13	031F	035F	034	033F	025	027F	023	033S	059	055	054	053	065	065S	057	055	041	026	030	030	027	025	SF	SF
14	SF	SF	SF	SF	SF	023F	028F	033	045	I053C	060	068	062	061	058	047	037	I030S	031	030	025	023S	SF	030F
15	SF	SF	036F	034F	SF	FS	FS	035S	053	054	065	U077S	060	051	050	051	043	028	028	026	024	023F	SF	SF
16	SF	SF	SF	SF	SF	SF	SF	SF	048	055H	053H	059	061	053	063	050	040	027H	029	025	024S	SF	SF	SF
17	SF	C	C	C	C	C	C	C	C	053H	067	070	065	053	047	047	040	027	028	032	024	021	F	F
18	027F	028F	028	028F	031	020	021	033	047	060	055	067	069	064	056	056	044	030	031	026	026	025F	SF	SF
19	SF	029F	SF	FS	F	030F	U026S	036S	I045S	058H	073	065	060	058H	057	058	054	031	034	029	028S	025	028	U028S
20	031	026	032F	031	030	028	023	032	043	049	058	057	057H	053	058	U064S	046	020	028	024	023	023	025	SF
21	SF	F	F	SF	SF	FS	024F	034	044	055	061H	060	066	061	068	059	040	028	030S	031S	025	023S	027	030F
22	030F	030F	030F	030F	SF	033S	022	037	U055S	055	056	076	057	050H	076S	073S	043	045	043	I025S	026	023	028	030
23	030	F	SF	F	030F	022F	023	033S	053	050	051	068S	065	063	062	050	049	035S	026	026	024	027	030	032S
24	031	I031A	032	027	030	022	022	I035S	046	045	C	C	C	C	C	C	C	C	C	C	C	C	C	025
25	026	027	026	027	025	026	I019S	033S	043	051	049H	053	050	055	051H	046H	054	034H	028	024	024	023	026	028
26	028	029	028	026	025	025	022	033	050	046	052H	060	057	053	064	052	044	038	027	027	022	024	027	028
27	029	027	027	026	026	025	016	035	045	044	052	054	057H	056	053	060	047	030	023	027	028	I022S	I027S	030
28	033	SF	SF	SF	028F	SF	022	035	047	050	053	062	057	055	067	055	050	027	024	I024A	026	028	026	SF
29	SF	SF	SF	SF	SF	F	C	C	C	056	063	063	063	058	057	061	049	033	I039A	045	036	030	F	FS
30	SF	SF	FS	SF	SF	SF	020F	U040S	043S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	055	056H	057	054	060	053	053H	050	034	031	028	024	027	029	031
No.	15	15	15	14	14	16	23	27	28	30	29	29	29	29	29	29	29	29	29	28	28	25	18	16
Median	030	030	031	028F	030	026	022	033	046	055	058	062	059	055	058	053	043	031	029	027	025	025	028	030
U. Q.	031	031	033	031F	031	029	024	035	050	060	063	068	062	060	064	058	048	036	033	030	026	027	030	031
L. Q.	028	028	028	027	026	024	020	032	044	050	054	058	055	052	054	050	040	028	026	025	024	023	027	028
Q. R.	003	003	005	004	005	005	004	003	006	010	009	010	007	008	010	008	008	008	007	005	002	004	003	003

IONOSPHERIC DATA

Jan. 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												370L		330										
2												380L	370											
3											380L	380		370L										
4												370L	380L											
5											370L	390	380											
6												380L	370											
7											380L	380	380											
8											380L	380	390H											
9											C	I390C	C											
10												I380C												
11												380L	390L											
12													390	370L										
13											A		390		330L									
14												380L		U370L										
15												400	390	360										
16												390	380											
17											380	390	390	370	340L									
18											400	390	390	360	340	310								
19											390	390	390		360									
20												400		380	340									
21												380	390		380L									
22												400	390	360										
23												380L	380	380L										
24											C	C	C	C	C	C								
25																								
26												370	380	390										
27											350		400	400	360									
28												400L	400	400	370	320								
29											380L	380		390										
30											C	C	C	C	C	C								
31												400L	380	390	370									
No.											9	25	21	15	9	2								
Median											380L	380	390	370	360	315								
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

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IONOSPHERIC DATA

Jan. 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							E110S	A	I205A	220	250	270	265	245	225	A	E150S							
2							E150S	E150S	160	I225A	265	260	270	260	245	A	E200S							
3							E120S	E140S	200	230	I260A	275	270	260	235	A	E160S							
4							E110S	E170S	200	230	250	270	270	260	I240S	215	E150S							
5							E110S	E120S	170	230	270	280	280	265	240	200	E150S							
6							E120S	E140S	160	220	245	270	265	255	230	215	E140S	E150S						
7							E120S	E150S	180	230	265	275	275	270	250	200	E150S							
8							E110S	E130S	I165A	I230A	265	280	280	270	240	200	E160S							
9							E140S	E130S	205	I230C	I255C	I275C	I275C	260	I235R	I195C	E150S							
10							E140S	C	165	I210A	I245A	I260C	C	C	C	C	C							
11							E	A	R	230	240	275	275	I260C	I235C	C	C							
12							E150S	E120S	E150S	225	250	265	275	260	245	I215C	C							
13							E150S	125	195H	210	I235A	I260A	I265A	245	230	205	A							
14							E150S	E130S	195	215	240	235	270	260	235	195	C							
15							E110S	E130S	210	235	245	250	265	255	240	195	A							
16							E120S	E120S	175	215	250	I270A	275	260	235	200	E150S							
17							C	C	C	250	255	I265A	I260A	250	230	C	E180S							
18							E120S	E130S	165	220	I245	270	265	250	245	205	150							
19							E120S	E120S	165	230	250	260	260	I260A	240	205	145							
20							E120S	E120S	150	210	I245A	280	275	270	240	225	E180S			E130S				
21							E150S	E140S	190	225	I255A	270	280	275	260	225	140							
22							E150S	E140S	A	235	265	275	275	265	240	200	E120S							
23							E130S	E150S	180	230	I245A	255	I265A	270	250	210	E170S					E120S		
24							E140S	E150S	205	240	C	C	C	C	C	C	C							
25							E120S	E110S	I175R	240	250	I250A	275	250	230	200	R							
26							E110S	E150S	E170S	225	255	275	285H	275	250	225	E150S							
27							E130S	145	215	250	275H	270	280	I275R	I260R	235	A							
28							E120S	130	205	250	280	285	285	280	255	A	A							
29							C	C	C	250	260	290	285	280	A	A	A							
30							E120S	E130S	210	C	C	C	C	C	C	C	C							
31							C	C	C	245	265	275	280	280	260	R	R	E140S						
No.							28	25	26	30	29	29	28	28	27	20	18	2		1		1		
Median							E120S	E130S	180	230	250	270	275	260	240	205	E150S	E145S		E130S		E120S		
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

11

IONOSPHERIC DATA

Jan. 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	J028	J025	J025	J021	E	E011S	J030	J043	J040	030	028	J033	025G	G	G	029	J030	023	E016S	E012S	E017S	E011S	E011S	E015S
2	021	023	018	017	E	017	E015S	E015S	020	033	038	030	G	G	020G	024	E020S	E019S	E017S	E016S	E015S	J041	029	J030
3	028	E011S	015	020	E	E	E012S	E014S	G	020G	J043	024G	G	G	G	023	J031	E019S	E015S	E012S	E014S	E016S	E016S	E014S
4	E011S	E	016	E	E	E	E011S	E017S	G	020G	G	G	G	G	E025S	G	E015S	C	E015S	C	C	E013S	E012S	E012S
5	E015S	E011S	E	E	018	J023	E011S	E012S	023	036	033	G	G	G	G	G	E015S	E014S	E012S	E015S	E016S	J024	J031	028
6	025	J020	017	013	E	E012S	E012S	E014S	020	028	019G	024G	019G	G	017G	G	E014S	E015S	E012S	E012S	E017S	E014S	E012S	E013S
7	023	020	013	E	E	E	E012S	E015S	G	030	G	G	G	G	G	G	E015S	023	021	020	E016S	E014S	E011S	E012S
8	022	E	020	015	E	E	E011S	E013S	J023	J028	G	G	G	G	G	G	E016S	E015S	E012S	E014S	E015S	E015S	E012S	E015S
9	E014S	E	E	E	E	E012S	E014S	E013S	G	C	C	C	C	G	G	C	E015S	C	C	E017S	018	E012S	E015S	E015S
10	020	E012S	018	018	018	E	E014S	C	G	040	028	C	E027C	E025C	E025C	E023C	E017C	E015S	E015S	J020	J020	022	E012S	E012S
11	E014S	013	E011S	018	E	E012S	020	018	017G	027	028	G	G	E026C	E025C	E026C	E016C	E017S	E015S	E012S	E016S	J033	021	J023
12	E015S	E011S	E	E	E	E015S	E015S	E012S	E015S	028	030	030	030	025G	G	E021C	E018C	E015S	J020	E015S	E012S	E012S	E012S	E012S
13	020	020	020	E	013	E012S	E015S	G	G	025	040	031	032	024G	G	G	022	E015S	E012S	E012S	022	024	E012S	E015S
14	023	E	E	019	E012S	E012S	E015S	E013S	G	031	033	031	G	G	G	G	E020C	S	E017S	E015S	E016S	E011S	E015S	E012S
15	E011S	E	E	E	E	E012S	E011S	E013S	G	020G	030	030	G	022G	020G	022	020	023	021	E015S	E014S	E015S	E015S	015
16	023	E	E	E	013	E012S	E012S	E012S	G	026	G	030	G	G	G	025	E015S	E013S	E012S	E015S	E013S	E015S	E013S	E015S
17	E012S	C	C	C	C	C	C	C	C	G	037	031	028	G	G	E021C	E018S	E012S	E012S	E012S	E012S	E015S	E015S	E012S
18	E012S	E012S	E	018	E	E012S	E012S	E013S	G	G	039	030	G	020G	031	G	G	E013S	E012S	E015S	E017S	E011S	E012S	025
19	024	E	E	020	018	018	023	024	G	028	033	G	G	028	G	025	G	020	E012S	E012S	E015S	E012S	E012S	E015S
20	E013S	E	E	E	E	E012S	E012S	E012S	022	030	J035	026G	G	G	G	G	E018S	E017S	E015S	E013S	E012S	E013S	J021	E012S
21	E012S	020	E	E	E	E012S	E015S	E014S	G	028	027	G	G	G	G	G	G	E016S	E014S	E015S	E014S	018	025	022
22	E012S	023	015	J015	015	E012S	E015S	E014S	021	033	G	G	G	G	020G	025	018	E015S	E018S	E017S	E014S	E015S	E013S	E015S
23	019	017	021	E	E	E012S	E013S	E015S	023	028	028	G	030	G	023G	G	E017S	E017S	E016S	E012S	E013S	E012S	018	E012S
24	020	J033	J034	J026	018	020	E014S	E015S	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	E011S
25	E015S	020	015	014	J019	018	015	013	G	030	037	036	033	033	027	026	G	022	E012S	023	E015S	E015S	E013S	E012S
26	E013S	015	E012S	E012S	E	E012S	E011S	E015S	025	027	031	G	G	032	027	G	E015S	018	E015S	E016S	E012S	E012S	021	E012S
27	023	E012S	E	E	E	E012S	E013S	G	G	G	G	030	G	G	G	G	020	019	E012S	E015S	E015S	S	S	E012S
28	E012S	E	013	J020	E	E	E012S	G	G	G	G	G	033	G	G	023	023	023	020	033M	E015S	022	020	J035
29	J033	J023	E	E	014	E012S	C	C	C	G	G	034	037	023G	J033	026	023	J020	J086	J043	J023	J023	E015S	E015S
30	020	J021	J023	J023	015	E012S	J026	026	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	029	G	G	033	G	020G	G	021	E014S	E017S	J023	025	E017S	E016S	E015S
No.	30	29	29	29	29	29	28	27	28	29	28	27	28	29	29	28	29	26	28	28	26	28	28	30
Median	020	E012	013	013	E	E012S	E014S	E014S	G	028	028	G	G	G	G	G	E017S	E017S	E015S	E015S	E015S	E015S	E015S	E015S
U. Q.	023	020	018	018	014	E012	E015	E015	020	030	034	030	029	G	G	024	020	020	E017	E017	E017	020	019	E015
L. Q.	E013	E	E	E	E	E012	E012	E012	G	020	G	G	G	G	G	G	E015	E015	E012	E012	E014	E012	E012	E012
Q. R.	D010									010							D005	D005				D008	D007	

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

IONOSPHERIC DATA

Jan. 1965 | **f_bE_s** | 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	025	021	020	019		S	013	025	022	G	020	020	020G			021	022	015	S	S	S	S	S	S
2	015	013	013	E		E012S	S	S	G	029	032	022			020G	021	S	S	S	S	S	A	018	022
3	023	S	013	E			S	S		020G	027	020G				022	020	S	S	S	S	S	S	S
4	S		015				S	S		019G					S		S	C	S	C	C	S	S	S
5	S	S			011	018	S	S	G	G	G						S	S	S	S	S	016	020	016
6	017	014	013	E		S	S	S	G	G	019G	019G	018G		016G		S	S	S	S	S	S	S	S
7	E013S	E012S	012				S	S		G							S	016	015	015	S	S	S	S
8	016		E	E			S	S	020	023							S	S	S	S	S	S	S	S
9	S					S	S	S		C	C	C	C			C	S	C	C	S	018	S	S	S
10	015	S	E	E	013		S	C		027	028	C	C	C	C	C	C	S	S	016	017	E014S	S	S
11	S	013	S	012		S	017	017	017G	018G	027			C	C	C	C	S	S	S	S	019	016	019
12	S	S				S	S	S	S	G	G	G	G	023G		C	C	S	020	S	S	S	S	S
13	E012S	017	015		E	S	S			G	037	029	029	019G			C	S	S	S	S	015	S	S
14	016			013	S	S	S	S		028	G	G					C	S	S	S	S	S	S	S
15	S					S	S	S		020G	G	G		022G	020G	017	017	024	018	S	S	S	S	013
16	017				E	S	S	S	·	G		028				G	S	S	S	S	S	S	S	S
17	S	C	C	C	C	C	C	C	C		G	029	027			C	S	S	S	S	S	S	S	S
18	S	S		012		S	S	S			031	G		020G	G			S	S	S	S	S	S	016
19	E015S			E	E	012	E012S	E012S		G	G			027		G		E017S	S	S	S	S	S	S
20	S					S	S	S	G	G	030	023G					S	S	S	S	S	016	S	
21	S	E				S	S	S		G	027							S	S	S	S	012	E012S	E014S
22	S	E	E	E	E	S	S	S	020	G					019G	G	017	S	S	S	S	S	S	S
23	015	012	012			S	S	S	G	G	027		028		020G		S	S	S	S	S	S	015	S
24	E015S	A	018	020	012	013	S	S			C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	S	013	E	E	013	E012S	S	013		G	G	032	G	G	G	G		015	S	E016S	S	S	S	S
26	S	013	S	S		S	S	S	G	G	G			G	G		S	016	S	S	S	S	E015S	S
27	016	S				S	S	S				G					018	E014S	S	S	S	S	S	S
28	S		E	E			S						G			023	016	015	016	A	S	E017S	E015S	017
29	016	014			E	S	C	C	C			G	035	023G	029	025	018	E015S	A	030	E016S	015	S	S
30	E015S	020	020	015	012	S	015	019		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	G			G		020G		020	S	S	019	017	S	S	S
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

IONOSPHERIC DATA

Jan. 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	E012S	E	E	E	E	E011S	E011S	C10	011	012	012	014	017	017	017	012	E015S	E012S	E016S	E012S	E017S	E011S	E011S	E015S
2	E012S	E011S	E	E	E	E012S	E015S	E015S	011	012	017	016	020	019	017	016	E020S	E019S	E017S	E016S	E015S	E015S	E011S	E015S
3	E011S	E011S	E	E	E	E	E012S	E014S	011	016	017	017	017	017	019	017	E016S	E019S	E015S	E012S	E014S	E016S	E016S	E014S
4	E011S	E	E	E	E	E	E011S	E017S	011	012	020	020	024	020	E025S	017	E015S	C	E015S	C	C	E013S	E012S	E012S
5	E015S	E011S	E	E	E	E	E011S	E012S	011	012	017	019	020	018	016	017	E015S	E014S	E012S	E015S	E016S	E015S	E014S	E012S
6	E012S	E	E	E	E	E012S	E012S	E014S	011	011	014	012	011	017	012	016	E014S	E015S	E012S	E012S	E017S	E014S	E012S	E013S
7	E013S	E012S	E	E	E	E	E012S	E015S	011	017	017	017	016	017	016	011	E015S	E011S	E015S	E015S	E016S	E014S	E011S	E012S
8	E016S	E	E	E	E	E	E011S	E013S	011	012	016	016	017	017	017	015	E016S	E015S	E012S	E014S	E015S	E015S	E012S	E015S
9	E014S	E	E	E	E	E012S	E014S	E013S	014	C	C	C	C	017	017	C	E015S	C	C	E017S	E014S	E012S	E015S	E015S
10	E012S	E012S	E	E	E	E	E014S	C	012	017	021	C	E027C	E025C	E025C	E023C	E017C	E015S	E015S	E012S	E011S	E014S	E012S	E012S
11	E014S	E	E011S	E	E	E012S	E	E011S	012	012	017	020	020	E026C	E025C	E026C	E016C	E017S	E015S	E012S	E016S	E012S	E015S	E012S
12	E015S	E011S	E	E	E	E015S	E015S	E012S	E015S	016	018	018	018	019	023	E021C	E018C	E015S	E013S	E015S	E012S	E012S	E012S	E012S
13	E012S	E	E	E	E	E012S	E015S	E011S	012	012	012	012	013	013	015	014	013	E015S	E012S	E012S	E012S	E013S	E012S	E015S
14	E012S	E	E	E	E012S	E012S	E015S	E013S	012	012	013	013	016	017	017	015	E020C	C	E017S	E015S	E016S	E011S	E015S	E012S
15	E011S	E	E	E	E	E012S	E011S	E013S	012	012	017	017	017	017	017	012	012	E012S	E015S	E015S	E014S	E015S	E015S	E012S
16	E011S	E	E	E	E	E012S	E012S	E012S	012	012	017	017	018	018	015	015	E015S	E013S	E012S	E015S	E013S	E015S	E013S	E015S
17	E012S	C	C	C	C	C	C	C	C	017	017	018	018	021	020	E021C	E018S	E012S	E012S	E012S	E012S	E015S	E015S	E012S
18	E012S	E012S	E	E	E	E012S	E012S	E013S	012	017	017	017	017	017	018	016	012	E013S	E012S	E015S	E017S	E011S	E012S	E015S
19	E015S	E	E	E	E	E	E012S	E012S	012	013	016	017	018	017	016	015	012	E017S	E012S	E012S	E015S	E012S	E012S	E015S
20	E013S	E	E	E	E	E012S	E012S	E012S	012	012	013	013	016	013	015	016	E018S	E017S	E015S	E013S	E012S	E013S	E011S	E012S
21	E012S	E	E	E	E	E012S	E015S	E014S	013	012	013	017	017	013	013	013	E012S	E016S	E014S	E015S	E014S	E	E012S	E014S
22	E012S	E	E	E	E	E012S	E015S	E014S	012	013	013	017	017	017	013	012	E012S	E015S	E018S	E017S	E014S	E015S	E013S	E015S
23	E013S	E	E	E	E	E012S	E013S	E015S	012	012	018	017	017	017	015	015	E017S	E017S	E016S	E012S	E013S	E012S	E012S	E012S
24	E015S	E	E	E	E	E012S	E014S	E015S	013	017	C	C	C	C	C	C	C	C	C	C	C	C	C	E011S
25	E015S	E	E	E	E	E012S	E012S	E011S	015	014	016	018	017	017	016	017	012	E012S	E012S	E016S	E015S	E015S	E013S	E012S
26	E013S	E011S	E012S	E012S	E	E012S	E011S	E015S	E017S	016	017	017	017	017	018	017	E015S	E011S	E015S	E016S	E012S	E012S	E015S	E012S
27	E014S	E012S	E	E	E	E012S	E013S	E012S	015	018	020	018	023	022	018	018	013	E014S	E012S	E015S	E015S	S	S	E012S
28	E012S	E	E	E	E	E	E012S	E011S	015	013	015	017	019	020	017	017	013	E015S	E011S	E012S	E015S	E017S	E015S	E015S
29	E015S	E	E	E	E	E012S	C	C	C	017	017	020	018	017	016	012	E014S	E015S	E016S	E015S	E016S	E012S	E015S	E015S
30	E015S	E	E	E	E	E012S	E012S	E013S	013	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	016	017	016	015	017	017	013	012	E014S	E017S	E013S	E015S	E017S	E016S	E015S
No.	30	29	29	29	28	29	28	27	28	29	28	27	28	29	29	28	29	26	28	28	28	28	28	30
Median	E012S	E	E	E	E	E012S	E012S	E013S	012	013	017	017	017	017	016	016	E015S	E015S	E015S	E015S	E015S	E014S	E012S	E012S
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

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

f-min

IONOSPHERIC DATA

Jan. 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	SF	SF	SF	SF	SF	SF	SF	U360S	355	375	360	370	310H	360	365	365	340	330	340	370	325	SF	SF	SF
2	SF	SF	SF	SF	SF	SF	340	345	365	340	350	365	370	355	375	375	345	325	350	340	325	I300A	295	SF
3	285F	300F	290F	SF	F	FS	335	345	360S	365	365	360	355	365	375	375	355	335	350	340	320	310	335	330
4	SF	SF	305F	325F	340F	315F	335	360	350H	365	360H	340	345	360	380	380	370	I340C	330	I330C	I335C	295	310	295
5	305	315	305	310	320F	320	310	335	370	360	365	365	360	340H	355	365	350	360	325	SF	SF	F	FS	300F
6	SF	300F	SF	SF	300F	SF	SF	355	370	350H	370	365	355	340	370	385	355	300	355S	345S	335	320	305	SF
7	SF	SF	SF	SF	F	330F	345	335	365	355	370	375	375	365	345	390	350	335	310	U320S	335	U310S	F	FS
8	F	F	F	FS	F	F	FS	360S	365	345	345	365	350	370	375	370	355	330	350	310	325	325	300	295
9	290	290	285S	325	320	335	355	345	360	I360C	I360C	I365C	I365C	370	365	I350C	360	I335C	I345C	320	330	315	300F	315F
10	SF	SF	SF	SF	SF	SF	350S	I330C	355	350	345	I370C	380	345	365	375	360	335	325	335	335	320	315	300F
11	300	325	315	330F	SF	SF	I330S	355	365	345	370	365	365	335H	350	360	360	335	365	360	320S	305S	295S	SF
12	295	325	325	315F	320	340	340	390	380	370	365	360	380	360	365	355	365	305	310	315S	325S	SF	SF	SF
13	315F	310F	325	335F	310	310F	305	340S	355	365	390	355	355	360S	370	365	385	325	320	335	335	300	SF	SF
14	SF	SF	SF	SF	SF	290F	320F	345	375	I340C	335	370	375	360	375	365	345	I330S	315	355	330	290S	SF	325F
15	SF	SF	315F	325F	SF	FS	FS	350S	355	350	355	U370S	390	370	370	335	370	325	340	325	335	305F	SF	SF
16	SF	SF	SF	SF	SF	SF	SF	SF	370	345H	330H	360	360	350	380	360	395	285H	340	360	305S	SF	SF	SF
17	SF	C	C	C	C	C	C	C	C	320H	360	345	370	380	385	345	375	335	320	345	340	325	F	F
18	295F	295F	315	315F	325	315	335	365	355	365	330	345	380	360	375	375	365	315	340	340	335	310F	SF	SF
19	SF	310F	SF	FS	F	345F	U345S	360S	I365S	340H	340	360	385	300H	335	380	400	305	345	340	345S	300	305	U320S
20	325	320	290F	295	335	355	335	355	370	365	380	345	360H	385	350	U375S	375	375	350	340	350	305	320	SF
21	SF	F	F	SF	SF	FS	350F	355	385	345	360H	355	355	330	345	380	380	310	335S	325S	320	315S	310	300F
22	300F	300F	325F	300F	SF	320S	330	350	U365S	365	355	340	355	320H	345S	370S	370	340	350	I330S	340	295	285	275
23	300	F	SF	F	335F	320F	345	335S	375	360	355	360S	350	315	370	350	365	360S	355	340	315	295	295	290S
24	295	I300A	315	320	345	325	355	I370S	385	380	C	C	C	C	C	C	C	C	C	C	C	C	C	310
25	310	305	310	300	330	355	I350S	340S	390	375	345H	370	375	365	325H	365H	375	330H	330	325	335	315	310	305
26	310	305	305	320	320	335	355	360	360	375	390H	350	360	370	360	385	370	370	330	320	365	315	295	295
27	305	305	305	325	320	330	350	365	365	375	365	335	350H	355	360	370	370	325	335	325	335	I330S	I310S	305
28	295	SF	SF	SF	305F	SF	355	355	370	365	360	355	355	350	360	365	345	335	325	I320A	325	335	315	SF
29	SF	SF	SF	SF	SF	F	C	C	C	370	350	360	315	365	360	360	390	360	I320A	335	335	325	F	FS
30	SF	SF	FS	SF	SF	SF	350F	U350S	355S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	375	355H	370	370	365	365	370H	360	330	315	345	305	295	315	310
No.	15	15	15	14	14	16	23	27	28	30	29	29	29	29	29	29	29	29	29	28	28	25	18	16
Median	300	305	310	320F	320	330	345	355	365	360	360	360	360	360	365	370	365	330	335	335	335	310	310	300
U. Q.																								
L. Q.																								
Q. R.																								

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

M(3000)F2

The Radio Research Laboratories, Japan

W 7

IONOSPHERIC DATA

Jan. 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												400L		395										
2												395L	405											
3											395L	395		405L										
4												400L	415L											
5											405L	405	415											
6												415L	405											
7											395L	400	400											
8											395L	395	400H											
9											C	I390C	C											
10												I400C												
11												395L	400L											
12													400	405L										
13											A		390		395L									
14												395L		U385L										
15												375	390	415										
16												385	395											
17											395	385	385	405	420L									
18											380	370	365	405	420	420								
19											380	385	410		390									
20												375		410	390									
21												400	390		395L									
22												365	390	410										
23												395L	395	395L										
24											C	C	C	C	C	C								
25																								
26												400	395	410										
27											405		390	390	400									
28												390L	400	390	380	400								
29											375L	395		390										
30											C	C	C	C	C	C								
31												390L	395	385	405									
No.											9	25	21	15	9	2								
Median											395L	395	395	405	395	410								
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

M(3000)F1

W 8

IONOSPHERIC DATA

Jan. 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												245		225										
2												240	230											
3											245	235		245										
4												265	245											
5											235	220	220											
6												240	230											
7											250	235	235											
8											255	245	240											
9											C	I235C	C											
10												I235C												
11												250	240											
12													225	235										
13											230		235		235									
14												235		245										
15												230	220	230										
16												250	250											
17											250	260	235	230	225									
18											280	260	225	240	235	220								
19											260	245	220		265									
20												285		225	250									
21												245	250		260									
22												250	250	245										
23												235	245	265										
24											C	C	C	C	C	C								
25																								
26												255	250	235										
27											230		245	240	245									
28												250	250	260	245	230								
29											250	250		250										
30											C	C	C	C	C	C								
31												240	250	255	240									
No.											10	25	21	15	9	2								
Median											250	245	240	240	245	225								
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

h'F2 | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation | W 9

IONOSPHERIC DATA

Jan. 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	A	290	270	275	230	210	290	250	220	220H	205H	225	210H	210	240	220	225	240	225	220	240	250	250	290
2	290	215	265	240	205	200	310	240	220	235	225	220	200	200H	230	220	230	255	235	245	S	I330A	330	315
3	E345A	270	275	240	230	230	245	225	240	220	235	205	220H	220	230	220	210	230	240	230	275	295	250	250
4	295	270	265	255	210	225	205	250	220H	245	235H	200	210	200H	200H	210	205	I240C	250	C	C	310	265	300
5	325	275	275	250	250	250	250	220	220	240	225	215	200	215H	245	215	220	220	240	225	230	295	325	275
6	295	285	280	265	225	230	220	220	220	245H	225H	210	215	220	230	210	200H	285	230	230	230	270	275	275
7	290	275	275	255	250	250	200	230	220	235	240	225	200	215H	195H	215	220	210	265	250	275	280	275	250
8	280	250	260	245	245	225	215	225	210	200H	220	230	210	220	225	220	220	245	230	250	260	260	300	280
9	300	285	290	250	240	225	250S	225	220	I225C	I235C	I230C	I205C	225	225	I230C	215	I230C	I230C	250	275	280	280	260
10	300	280	280	260	240	225	240	I225C	215	230	240	I225C	225H	210H	235H	225	210	230	280	250	250	290	300	275
11	300	285	255	245	290	290	250	220	210	245H	225	225	210	215H	225H	235	210	250	215	225	250	315	300	260
12	270	260	245	245	235	240	245	205	200	220	245	225	230	215	240H	215	210	235	250	240	245	275	300	265
13	295	275	255	230	225	250	310	230	230	230	I220A	230	220	230	220	220	210	280	250	240	255	290	295	265
14	310	285	260	255	205	280	255	225	210	230	230H	245	200H	225	200H	215	230	I220S	250	225	250	310	325	260
15	300	250	250	250	245	245	250	210	225	225	245	250	210	200	220	250	210	I230A	250A	250	245	E300S	295	260
16	275	260	250	245	230	240	245	215	215	225H	220	210	225	225	215	220	200	205H	250	225	250	295	300	265
17	290	C	C	C	C	C	C	C	C	240H	235	250	225	225	215	205H	210	220	250	225	220	285	295	300
18	310	300	275	265	220	250S	260	240	220	220	250	260	245	215	225	210	200H	220	230	235	250	245	280	275
19	300	250	260	240	225	225	250	215	215H	245H	240	235	220	210H	215	225	210	260	230	240	240	275	280	275
20	250	260	275	250	225	215	230	200	210	210	250	240	245H	225	210	225	210	210	230	250	220	300	310	280
21	275	260	260	240	235	240	245	220	210	225	225H	220	210	200H	240	220	205H	250	260	230	260	250	285	280
22	260	265	260	260	235	240	250	230	205H	210	240	250	210	210	250	220	205H	240	220	250	235	310	340	340
23	310	280	245	255	225	240	255	225	220	220	220	240	230	210	230H	210H	210	210	220	245	265	300	300	300
24	295	I295A	295	300	225	270	250	210	210	210H	C	C	C	C	C	C	C	C	C	C	C	C	C	280
25	295	300	295	275	260	220	S	225	210	225	215H	235	220	240	220H	205H	215	200H	220	260	250	295	275	285
26	295	290	290	275	250	240	220	230	225	215	225H	220	240	215	210H	220	200H	210	250	250	260	275	295	290
27	300	280	270	250	250	210	E250S	220	215	210	210	200H	225	230	215	230	215	210	250	250	240	I275S	I280S	275
28	290	280	290	250	265	235	225	225	215	210	225	235	220	235	230	220	220	205	270	I280A	250	245	280	300
29	280	300	285	260	265	225	C	C	C	235	215	225	240H	215	230	240H	210	205	I270A	250A	220	250	250	250
30	295	300	300	280	275	230	215	225	200	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	200H	190H	230	230	230	210	210H	210	200	245	245	310	295	275	260
No.	29	29	29	29	29	29	27	28	28	30	29	29	29	29	29	29	29	29	29	28	27	29	29	30
Median	295	280	270	250	235	235	250	225	215	225	225	225	220	215	225	220	210	230	245	245	250	290	295	275
U. Q.																								
L. Q.																								
Q. R.																								

L'F

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

The Radio Research Laboratories, Japan

W 10

IONOSPHERIC DATA

Jan. 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	105	105	100	100	E	S	115	110	105	120	110	110	105	G	G	105	105	105	S	S	S	S	S	S
2	105	105	105	100	E	105	S	S	135	105	125	125	G	G	105	105	S	S	S	S	S	110	110	105
3	110	S	105	120	E	E	S	S	G	110	110	105	G	G	G	105	105	S	S	S	S	S	S	S
4	S	E	110	E	E	E	S	S	G	105	G	G	G	G	S	G	S	C	S	C	C	S	S	S
5	S	S	E	E	110	110	S	S	145	145	135	G	G	G	G	G	S	S	S	S	S	110	110	105
6	105	105	105	105	E	S	S	S	160	155	105	105	105	G	105	G	S	S	S	S	S	S	S	S
7	105	105	105	E	E	E	S	S	G	145	G	G	G	G	G	G	S	105	105	105	S	S	S	S
8	105	E	105	105	E	E	S	S	110	110	G	G	G	G	G	G	S	S	S	S	S	S	S	S
9	S	E	E	E	E	S	S	S	G	C	C	C	C	G	G	C	S	C	C	S	110	S	S	S
10	105	S	110	105	105	E	S	C	G	110	110	C	C	C	C	C	C	S	S	100	100	100	S	S
11	S	105	S	105	E	S	110	110	110	145	130	G	G	C	C	C	C	S	S	S	S	105	110	105
12	S	S	E	E	E	S	S	S	S	160	175	155	150	105	G	C	C	S	105	S	S	S	S	S
13	110	110	110	E	105	S	S	G	G	125	110	110	110	110	G	G	100	S	S	S	105	105	S	S
14	100	E	E	110	S	S	S	S	G	125	120	120	G	G	G	G	C	S	S	S	S	S	S	S
15	S	E	E	E	E	S	S	S	G	110	135	125	G	110	105	140	105	105	105	S	S	S	S	110
16	110	E	E	E	105	S	S	S	G	145	G	115	G	G	G	145	S	S	S	S	S	S	S	S
17	S	C	C	C	C	C	C	C	C	G	120	115	110	G	G	C	S	S	S	S	S	S	S	S
18	S	S	E	110	E	S	S	S	G	G	110	150	G	105	125	G	G	S	S	S	S	S	S	105
19	105	E	E	120	110	110	110	110	G	140	125	G	G	110	G	160	G	100	S	S	S	S	S	S
20	S	E	E	E	E	S	S	S	125	125	110	105	G	G	G	G	S	S	S	S	S	S	125	S
21	S	110	E	E	E	S	S	S	G	120	110	G	G	G	G	G	G	S	S	S	S	110	110	105
22	S	105	105	100	125	S	S	S	115	125	G	G	G	G	105	120	150	S	S	S	S	S	S	S
23	115	110	110	E	E	S	S	S	140	125	115	G	115	G	110	G	S	S	S	S	S	S	110	S
24	110	110	110	105	105	105	S	S	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	S	110	110	115	110	110	110	150	G	145	120	115	130	120	120	120	G	110	S	110	S	S	S	S
26	S	105	S	S	E	S	S	S	150	150	150	G	G	150	135	G	S	100	S	S	S	S	125	S
27	110	S	E	E	E	S	S	G	G	G	G	125	G	G	G	G	110	115	S	S	S	S	S	S
28	S	E	110	110	E	E	S	G	G	G	G	G	130	G	G	110	110	110	100	100	S	100	100	130
29	110	110	E	E	105	S	C	C	C	G	G	130	120	110	105	120	115	105	110	110	110	110	S	S
30	105	110	110	110	110	S	115	110	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	170	G	G	160	G	110	G	105	S	S	105	105	S	S	S
No.	16	14	15	15	10	5	5	5	10	23	19	15	10	8	10	10	9	9	5	6	5	8	8	7
Median	105	110	110	105	110	110	110	110	130	125	120	115	120	110	110	120	105	105	105	105	105	110	110	105
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

IONOSPHERIC DATA

Jan. 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	f2	f	f2	f2			c	12	1	c	1	1	1			1	1	1						
2	f	f	f	f		f			c	1	c	c 1			1	1						f	f	f2
3	f		f	f						1	1	1				1	1							
4			f							1														
5					f2	f2			h	h	h											f	f	f2
6	f	f2	f	f					h	h	1	1	1		1									
7	f	f	f							h								f	f	f				
8	f		f	f					1	1														
9																					f			
10	f		f	f	f2					1	1									f	f	f	f	
11		f		f			12	1	1	h 1	h											f2	f	f
12										h	h	h	h	1					f					
13	f	f	f		f					c	c	1	1	1			1				f	f		
14	f			f						c	c	c												
15										1	h	c		1	1	h 1	1	f	f					f
16	f2				f					h		1				h								
17											c	1	1											
18				f							1	h		1	c									f
19	f			f	f	f	c	1		h	c			1		h		f						
20									c	c	1	1											f	
21		f								c	1											f	f	f
22		f	f	f	f				1	c					1	c	h							
23	f	f	f						h	c	1		1		1								f	
24	f	f2	f2	f4	f	f																		
25		f	f	f	f	f	1	h		h	c	1	h	c	c	c		f		f				
26		f							h	h	h			h	c			f					f	
27	f											c					1	f						
28			f	f									h			1	1	f	f	f		f	f	f
29	f	f			f							h	c	1	1	c 1	c	f	f2	f	f	f		
30	f	f	f2	f	f		1	1																
31										h			h		1		1			f	f			
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Types of Es

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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	I028R	030	027F	029	031R	F	F	033	042	059	088R	070	052	055	053	054	037	036	036	026	022	I023A	030	F
2	I027R	026	027	029	026	023	025	039	045	055	074	063	073R	055	056	052	041	027H	035	029	027	021	026	027
3	028	029	028	028	028F	F	026F	037S	048	071R	066	071	062	059	059	061	043	033	031	028	024	025F	030F	F
4	030S	U031R	033S	032	033S	024	025	035	043	042	068	063V	I064R	060	061	050	046R	030	028	025	027	022	025	026F
5	025	027	028	026	028	025	024	036	046	055	071	075	056	052	057	053R	043	038	033	028	025	022	025F	F
6	024	025	027	025	028	021	023	038S	049	050H	I060R	I063R	058	I061R	057H	053	040	026	033	037	030	022	022R	I026R
7	024	027	028	028	027	025	022	033	045	042	059	063	066	056	053	053R	040	046	030	029F	U030F	FS	FS	FS
8	FS	FS	F	029S	027S	032	024	037	051	051H	055	070	068R	054	053H	057	043	036	039	032	030	026	027	029
9	028	030	030	031	027	027	023	037	043R	057	058	083	058	051	059	054	051	I038A	045	031	I026A	I027A	029F	F
10	030	F	I032C	F	026F	026	026	033R	045	049H	073	U063R	063	055	050	056	050	031	I027A	028	026	022	025	028S
11	028	030	031F	029F	F	023F	022	I033A	046	046	U061R	062	057	058R	053	060	050	032	035	033	025	022	030	FS
12	FS	F	F	036	033	033S	032	042	047	044	056	066	067	055	054	053	045	032	029	033F	032S	F	FS	FS
13	029S	033	036S	032	024	026	025	037	053	060	064	061	057	058	067	060	044	027	030	035	030	025	026	030
14	029F	030S	031	033	023	024F	025F	043	043	049	059	C	C	C	C	C	C	033	026	033	027R	024	026	027
15	025	028	030	028	F	028F	F	043S	046	047	066	085	066	050	051	049	052	036	027	033	022H	022	024	029F
16	031S	027	FS	U032R	F	025F	F	041	I048C	048	048	060	056	060H	054	054	049	031	026	026	023	022	F	025F
17	025F	F	F	RS	F	F	F	038S	051R	049	058H	069	081	061	049	048	045	032	026	033R	025S	022	023	025F
18	025F	025	028	028	026	022	020	038	049	057	058	060H	U070R	I062R	059	048	048	033	028	028	026	I026R	026F	029S
19	029F	F	F	043R	F	F	027	043	050	046	067	080	064	058	058	063	049	031	032	039	026	025	027	028
20	030	028	028	029	027	026	021S	036	047H	I047R	057	058	I066R	075	051	057	047	030H	025	031	023H	020	023	025S
21	026	029S	031S	F	FS	F	F	042	049	050	062	073	066	063	060	067	046	032	031	041	033	023S	F	FS
22	031F	F	F	F	028	F	028F	043	049	050H	073	070	080	059	064	074R	053	038	051	027	026	025	026	030
23	031	033S	035S	034F	028	025	023	041	048	050	064	060	068	063	064	056	046	036	030	030	030	026	028	030
24	030	028S	030	031	025	023	022	039S	049	051	049	067	067	068	059H	058	046	035	033	028	026	021	022	024
25	025	026	025	F	F	024S	020	037	043	052R	054	055	052	051	055	050	047	040	030	025	I026A	027	025	027F
26	027F	F	F	F	F	FS	022	041	050	050	055	051H	073	059	057	065	046	035	030	028	025	025	025	026
27	027	027	027	027	026	026	017R	037	044	048	050	058R	065	058	061	056	048	036	025	026	FS	025	026	029S
28	029	031F	FS	FS	FS	028	023R	039	049	049	052	056	070	061	056	063	053	042	023V	027	028	026	025	U027R
29	FS	028S	029	026	026S	025	025	041R	050	051	060	066	060	065	I054A	056H	067	036	030	I041R	I040R	I028A	026	027
30	028	029	031F	032F	I032R	029	023	037	049	046	062	060	068	054	054	060	049	038	028	035	034	031F	030R	FS
31	031S	030	029	028	030	028	026R	042	047	058	058	060V	054	059	057	052S	U049R	043R	031	028	026	027	028	F
No.	28	24	23	24	22	24	26	31	31	31	31	30	30	30	30	30	30	31	31	31	30	29	27	21
Median	028	028	029	029	027	025	024	038	048	050	060	063	066	058	056	056	046	035	030	029	026	025	026	027
U. Q.	030	030	031	032	028	028	025	041	049	055	066	070	068	061	059	060	049	038	033	033	030	026	028	029
L. Q.	026	027	028	028	026	024	022	037	045	047	056	060	058	055	053	053	044	031	027	028	025	022	025	026
Q. R.	004	003	003	004	002	004	003	004	004	008	010	010	010	006	006	007	005	007	006	005	005	004	003	003

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

Jan. 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										L	L	LH	400L	390L	L									
2										L	LH	L	380L	L	350L									
3										L	LH	400L	400L	LH	370L	L								
4											L	L	400L	L	LH	L								
5										L	400L	400L	400L	370L	LH									
6											L	L	LH	400L	370L	L								
7											420L	L	410L	L	350L	L								
8										L	390L	400L	400L	L	L									
9										LH	L	LH	L	L	LH									
10											390L	L	L	390L	370L	290L								
11										L	330L	L	400L	L	L	310L								
12										310	L	LH	L	380L	370L	300								
13											L	L	L	L	L	L								
14									L	300	L	C	C	C	C	C	C							
15											L	400L	L	L	L	L								
16											360L	400L	390L	L	LH									
17											L	L	410L	LH	L	L	230L							
18										L	L	410L	390	370L	L	L								
19									L		400	400	LH	L	LH	LH	L							
20										S	L	L	410L	L	L	L	L							
21									L	L	L	L	L	380L	320L	L								
22									L	330L	L	400	L	390L	370	330L	L							
23										L	390L	L	L	400L	380L	L	L							
24											L	L	L	L	L	A	A							
25									240	L	L	LH	350L	L	L	L	L							
26										L	400L	390L	410L	410L	L	LH	L							
27											400L	L	410	400	380	L								
28											L	L	L	L	L	L								
29										L	L	L	410L	L	A	L								
30											400L	420L	420	410L	L	LH								
31									LH	L	400L	420L	410	410L	L	L	L							
No.									1	3	12	11	18	13	10	4	1							
Median									240	310	400L	400L	400L	390L	370L	305L	230L							
U. Q.																								
L. Q.																								
Q. R.																								

IONOSPHERIC DATA

Jan. 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								E	A	A	270R	280	285	275	250	215A	E							
2									A	250	275	280	A	A	A	A	E180B							
3									E	A	275	285R	285	A	A	A	E							
4									A	A	265	275	I280A	275	255	I210A	E180B							
5									A	A	I280A	285	295	275	250	A	E							
6									A	245	270	285A	290	275	250	A	E							
7									A	260A	275	285A	I285A	280	260	I220A								
8									A	250	275R	285A	290A	285	260A	220	E							
9									A	A	280	I290A	290	275	245	A	A							
10									A	245	265	I280A	U290R	270	250	220	A							
11									A	A	275A	285	285A	275	255	225	E							
12									A	235	260	I280A	280	270	255	225	E180B							
13								E	A	235	I265A	I280A	I280A	270	255	230	E170B							
14									A	A	A	C	C	C	C	C	C							
15									A	245	275	I280A	I280A	275	255	220	E170B							
16									C	A	A	A	A	280	260	215A	E							
17									A	A	A	A	A	275A	260	A	E							
18									A	A	A	A	A	275	250	A	E							
19									A	A	A	280	290	280R	250	220	A							
20									A	AS	280	290	285	275	A	A	A							
21									205	I240A	I270A	285	290	280	270	240	A							
22								E	A	A	A	I280A	290	280	260	215	A							
23								E	A	A	A	A	A	290	275	240	E							
24									205	250H	275	AH	A	A	A	A	A							
25									205	245	A	A	A	A	A	A	190							
26									A	245R	265	280	I285A	280R	270A	240	A							
27									A	A	A	285R	290A	290	280	I250A	A							
28									A	I250A	270A	290A	300A	285	A	A	E							
29									225	A	A	305	305	295	275	A	A							
30								E	A	A	A	A	295	A	A	250	A							
31								E	A	A	A	I290A	I290A	285	I270A	245A	A							
No.								6	5	13	19	23	23	25	23	18	17							
Median								E	205	245	275	285	290	275	255	220	E							
U. Q.																								
L. Q.																								
Q. R.																								

foE

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Jan. 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	J025	J026	J021	J023	E	E	J016E	018	J041	J028	J026G	G	G	J033	027	024	022	023	J036	J023	J026	J036	J050	J045
2	J036	E	J018	J028	J023	E	E	E	022	031	035	J043	032	034	030	J027	E018B	E	E	E	E	E	J015E	J018
3	J016E	J016E	J020	J020	E	J015E	E	E	020	027	G	J037	J037	J048	J043	J027	020	J028	J023	J013E	E	E	E	E
4	E	E	J016E	J024	E	J014E	E	J013E	019	J025	031	032	032	030	019G	024	E018B	E	E	J023	J021	J013E	E	E
5	E	E	E	E	E	E	E	E	J020	027	J031	G	025G	G	019G	024	E	E	J013E	J012E	E	J016E	E	J023
6	J022	J016E	J013E	J015E	J013E	E	E	J016E	022	028	029	030	J026G	J061	031	024	E	E	J020	E	E	J012E	J020	J014E
7	E	J014E	J016E	J016E	J015E	J012E	E	E	021	030	033	033	031	G	G	023	J021	J020	J015E	J016E	J016E	E	E	J012E
8	J024	J016E	J018	J013E	J013E	E	E	J016E	J025	022G	G	030	030	G	027	G	J015E	J027	J025	J013E	E	E	J016E	E
9	E	E	E	E	J013E	E	E	E	J023	J031	J028G	J035	J025G	G	J031	J029	J024	J038	J041	J028	J063	J034	J029	J026
10	J013E	J015E	C	E	E	E	E	J013E	018	030	030	J033	G	024G	020G	G	020	J019	J030	J027	J016E	J019	J015E	J015E
11	J013E	J017	J017	J016E	J022	J015E	J013E	J041	J031	J038	028	031	030	G	G	G	019	J016E	E	E	E	J012E	J013E	J038
12	J033	J020	J013E	J013E	J016E	J014E	E	018	020	G	030	J030	030	G	G	024	E018B	J016E	J016E	E	E	E	E	E
13	E	J016E	J017	J031	J024	J020	J015E	J018	026	033	J030	J029	J053	G	G	J023G	E017B	021M	E	E	E	E	E	E
14	J012E	J022	E	J016E	E	E	E	E	022	024	033	C	C	C	C	C	C	E	E	J013E	J016E	E	E	E
15	J020	E	E	E	E	E	E	E	022	G	031	032	032	030	028	024	019	E017B	J013E	E	E	E	J016E	J023
16	J024	J029	J015E	E	J012E	E	J015E	E	C	028	J050	J043	J030	028G	G	023	018	E	E	E	E	J016E	J013E	E
17	E	E	J013E	J013E	E	J012E	E	E	021	027	033	J053	J036	031	022G	024	017	J018	E	E	E	E	E	E
18	E	E	E	E	J013E	E	E	E	018	025	032	032	033	030	029	025	019	021M	J015E	E	E	J020	J016E	J018
19	J028	J025	J020	J016E	J013E	J015E	E	J013E	020	J025	J033	J030	G	021G	J025G	J022G	023	E	E	E	E	J012E	E	E
20	E	E	E	E	E	E	E	E	023	030S	G	G	J036	033	J033	032	028	J013E	E	J021	E	E	J020	036S
21	E	E	E	JC12E	E	E	J013E	E	022	028	J035	027G	031	G	028	G	022	J022	J028	JC25	JC32	J020	J020	J032
22	J028	J019	E	E	J020	J019	E	J016E	023	J026	J028	J041	030	G	G	026	021	J031	J024	E	E	E	J013E	J017
23	J017	J013E	E	J012E	J015E	E	J019	019	022	028	030	J033	J030	G	G	G	019	E	E	E	E	J012E	J017	E
24	J016E	J030	J025	J016E	J023	J020	J013E	E	024	G	035	033	033	032	J038	J044	J050	J021	JC26	J016E	JC13E	JC16E	J013E	E
25	E	E	J023	J023	J026	J015E	J026	E	G	G	033	032	031	029	031	J028	G	JC28	JC24	JC25	JC31	J022	JC20	J016E
26	J018	J020	J017	J021	E	E	E	E	025	032	036	029	028	031	030	G	020	E	E	E	E	E	E	E
27	E	J013E	J012E	E	E	E	E	E	025	J032	J030	G	030	023G	G	024	020	J015E	J014E	J017	E	E	E	E
28	E	E	E	J016E	J028	J025	J028	J017	023	028	030	035	034	J039	032	J027	020	J041	E	J025	J015E	E	E	E
29	J016E	J017	J017	J013E	J017	J015E	E	E	026	027	034	042	032	039	J053	032	J032	J035	E	E	J028	J058	J032	E
30	E	J013E	J023	J020	JC18	J013E	J015E	020M	025	030	034	035	G	J036	J039	J033	JC24	J015E	J017	E	E	J016E	J038	J018
31	J015E	J013E	J018	J012E	J021	E	E	E	J021	033	033	029	030	G	029	034	023	J020	J017N	J024	J019	J017	J016E	J017N
No.	31	31	30	31	31	31	31	31	30	31	31	30	30	30	30	30	30	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	E	022	028	031	032	030	G	028	024	020	J018	E	E	E	E	E	E
U. Q.	022	019	018	020	020	E	E	E	025	030	033	035	032	033	031	027	022	023	024	023	E	017	020	018
L. Q.	E	E	E	E	E	E	E	E	020	025	029	029	028	G	G	G	018	E	E	E	E	E	E	E
Q. R.									005	005	004	006	004				004							

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

The Radio Research Laboratories, Japan

foEs

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IONOSPHERIC DATA

Jan. 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	019	019	E	E				017	025	025	023G			025	027	024	018	019	027	018	017	A	019	017
2	023		E	E	E				021	030	031	036	031	033	027	023	E018B							017
3			E	E					020	026		025	023	029	028	023	018	E	017					
4				E					019	024	031	U032R	031	029	019G	024	E018B			E	E	B		
5									020	027	029		022G		017G	023								E
6	E								021	028	029	030	021G	019	030	024			E				E	
7									020	029	032	031	029			023	017	E						
8	E		E						022	020G		029	030		G			018	021					
9									021	026	024G	030	023G		020	025	022	A	030	017	A	A	E	E
10			C						018	030	029	031		024G	020G		020	017	A	022		017		
11		E	E		017			A	025	021	028	031	030				019							E
12	018	E						E	019		030	028	030			023	E018B							
13			E	020	E	E		E	025	028	029	029	029			E	E017B	017						
14		E							021	023	032	C	C	C	C	C	C							
15	E								022		029	031	032	030	028	024	019	E017B						E
16	E	E							C	026	030	032	030	027G		023	018							
17									021	026	028	037	035	030	021G	024	017	017						
18									018	025	030	030	032	030	029	025	019	017				A		E
19	E	E	E						020	024	032	022		020G	020G	E	021							
20									023	E030S			024	033	028	027	023			019			E	019
21									022	027	029	023G	030		G		019	020	021	018	018	E	E	017
22	E	E			E	E			022	025	027	034	030			026	021	027	018					E
23	E						E	018	022	028	028	030	030				U019R						E	
24		E	E		E	E			024		032	031	030	029	028	038	038	018	018					
25			E	E	E		E				030	030	030	029	029	025		025	021	017	A	E	017	
26	E	E	E	E					024	030	032	029	028	031	030		020							
27									024	029	030		U030R	023G		U024R	020			E				
28					E	018	020	E	023	017	030	032	032	036	030	025	019	031		019				
29		E	E		E				026	027	033	038	032	038	A	030	026	017			028	A	017	
30			E	E	E			E	U025R	029	032	032		030	035	022	024		E				017	E
31			E		018				021	032	033	029	029		029	030	022	019	E	018	E	E		E
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

foEs

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

The Radio Research Laboratories, Japan

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Jan. 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	017	017	017	E	017	017	017	017	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	017	017	017	017	E	017	E	018	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	017	017	017	017	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	017	017	017	017	017	E	E	018	E	E	E	E	017	E	E
5	E	E	E	E	E	E	E	E	E	E	017	E	017	E	E	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	017	017	E	E	E	017	E	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	017	E	E	017	E	E	017	017	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	E	017	E	017	017	E	E	E	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	E	017	E	017	017	E	E	E	E	E	E	E	E	E	E
10	E	E	C	E	E	E	E	E	E	017	017	017	017	017	018	017	E	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	E	017	017	E	017	E	E	E	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	018	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	017	017	017	017	E	017	017	E	017	017	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	E	E	C	C	C	C	C	C	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	E	E	E	017	017	E	017	017	017	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	C	017	E	017	017	018	E	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	017	E	017	017	E	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	E	017	E	017	017	018	E	017	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	E	017	E	E	E	E	E	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	E	017	017	017	E	017	017	017	017	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	E	E	E	E	017	E	017	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	E	017	017	E	017	017	017	E	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	017	017	017	017	017	E	017	E	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	E	E	017	017	017	017	017	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	017	017	018	017	017	017	E	017	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	017	018	018	018	018	017	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	017	017	017	017	018	017	017	017	017	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	017	017	017	018	018	017	E	E	E	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	017	E	018	018	017	017	017	E	E	E	E	E	E	E	E	E
No.	31	31	30	31	31	31	31	31	30	31	31	30	30	30	30	30	30	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	E	E	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

Jan. 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	I310R	315	335F	340	355R	F	F	350	380	325	375R	375	360	365	355	390	390	345	375	375	360	I295A	315	F
2	I305R	305	315	345	375	325	335	375	380	320	350	365	355R	380	350	350	370	320H	310	350	370	280	300	300
3	305	305	305	330	340F	F	365F	355S	355	355R	365	365	370	355	360	380	370	335	340	355	355	320F	300F	F
4	305S	U325F	310S	340	345S	365	345	370	370	380	355	350V	I320R	355	345	375	370R	335	325	335	345	365	305	290F
5	290	305	320	305	330	330	340	350	365	370	350	380	360	335	350	360R	365	340	335	355	330	285	290F	F
6	295	300	305	310	370	305	335	345S	410	325H	I340R	I375R	370	I370R	355H	365	370	355	310	365	360	365	285R	I320R
7	315	295	305	325	340	320	360	340	380	390	340	365	365	375	360	370R	395	350	335	325F	U335F	FS	FS	FS
8	FS	FS	F	325S	315S	355	360	350	355	335H	345	355	355R	370	315H	370	370	320	345	345	335	320	290	305
9	295	300	300	325	350	330	350	370	370R	325	315	365	375	355	355	370	370	I335A	355	350	I330A	I310A	315F	F
10	315	F	I330C	F	355F	330	360	345R	360	330H	355	U335R	350	350	380	360	360	360	I330A	345	350	290	310	305S
11	295	305	325F	315F	F	305F	345	I360A	380	390	U330R	355	365	365R	370	370	360	330	315	335	360	280	300	FS
12	FS	F	F	330	335	315S	345	360	360	390	360	335	375	365	350	355	370	335	310	315F	330S	F	FS	FS
13	320S	300	315S	370	300	290	330	350	350	335	355	385	360	355	365	375	375	280	295	315	320	300	295	300
14	295F	295S	305	340	350	305F	310F	370	375	355	335	C	C	C	C	C	C	335	285	335	345R	310	285	295
15	310	300	315	315	F	315F	F	330S	370	375	340	375	385	385	370	345	365	345	310	345	320H	300	290	290F
16	320S	305	FS	U315R	F	325F	F	345	I370C	375	365	365	355	345H	370	340	385	335	305	345	345	325	F	315F
17	305F	F	F	RS	F	F	F	345S	370R	370	310H	325	360	375	390	385	355	345	305	335R	360S	330	310	320F
18	300F	280	290	315	325	365	300	370	355	370	340	315H	U370R	I340R	365	375	370	335	320	340	325	I330R	305F	290S
19	310F	F	F	350R	F	F	340	365	375	350	335	360	345	350	335	365	390	365	315	355	350	320	295	305
20	315	295	295	310	335	370	330S	360	360H	I370R	345	350	I325R	370	360	355	345	320H	300	355	345H	280	285	290S
21	305	285S	300S	F	FS	F	F	365	385	350	330	350	335	355	345	380	355	320	300	335	340	280S	F	FS
22	295F	F	F	F	305	F	335F	355	375	335H	360R	335	375	355	340	345R	395	315	345	350	350	290	295	280
23	290	295S	315S	340F	340	330	340	370	365	355	360	315	365	350	345	355	370	340	330	335	335	305	295	305
24	305	300S	315	335	360	335	360	360S	385	380	350	345	350	355	320H	370	370	345	340	330	350	345	305	300
25	290	290	295	F	F	355S	345	365	365	310R	375	350	350	345	330	355	360	360	305	310	I320A	335	295	295F
26	300F	F	F	F	F	FS	335	350	385	360	360	320H	345	340	370	370	390	345	315	320	330	310	305	305
27	295	300	310	320	340	375	E	380	375	375	355	350R	355	345	360	355	355	350	320	340	FS	325	295	310S
28	310	305F	FS	FS	FS	330	345R	360	390	340	365	320	355	345	360	365	345	375	270V	315	340	315	330	U300R
29	FS	290S	305	310	345S	330	325	360R	380	355	325	345	360	360	I365A	345H	360	340	295	I320R	I360R	I315A	300	295
30	300	295	305F	315F	I330R	335	330	325	355	370	355	350	370	370	355	365	365	370	305	315	325	330F	305R	FS
31	285S	300	305	305	325	305	350R	355	380	365	375	350V	375	360	370	365S	U355R	350R	320	320	335	320	305	F
No.	28	24	23	24	22	24	26	31	31	31	31	30	30	30	30	30	30	31	31	31	30	29	27	21
Median	305	300	305	325	340	330	340	360	370	355	350	350	360	355	360	365	370	340	315	335	340	315	300	300
U. Q.																								
L. Q.																								
Q. R.																								

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

M(3000)F2

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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										L	L	LH	385L	360L	L									
2										L	L	L	380L	L	390L									
3										L	LH	375L	385L	LH	380L	L								
4											L	L	380L	L	LH	L								
5										L	355L	375L	385L	405L	LH									
6											L	L	LH	400L	390	L								
7											365L	L	365L	L	410L	L								
8										L	365L	370L	355L	L	L									
9										LH	L	LH	L	L	LH									
10											355L	L	L	385L	405L	395L								
11										L	400L	L	375L	L	L	385L								
12										425	L	LH	L	395L	410L	400								
13											L	L	L	L	L	L								
14									L	455	L	C	C	C	C	C	C							
15											L	375L	L	L	L	L								
16											400L	380L	385L	L	LH									
17											L	L	355L	LH	L	L	390L							
18										L	L	370L	380	390L	L	L								
19									L		355	360	LH	L	LH	LH	L							
20										S	L	L	360L	L	L	L	L							
21									L	L	L	L	L	395L	415L	L								
22									L	440L	L	350	L	385L	385	375L	L							
23										L	370L	L	L	380L	370L	L	L							
24											L	L	L	L	L	A	A							
25									460	L	L	LH	420L	L	L	L	L							
26										L	375L	385L	380L	390L	L	LH	L							
27											355L	L	370	380	380	L								
28											L	L	L	L	L	L								
29										L	L	L	385L	L	A	L								
30											365L	380L	360	390L	L	LH								
31									LH	L	375L	365L	380	370L	L	L	L							
No.									1	3	12	11	18	13	10	4	1							
Median									460	440	365L	375L	380L	390L	390L	390L	390L							
U. Q.																								
L. Q.																								
Q. R.																								

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

M(3000)F1

The Radio Research Laboratories, Japan

A 8

IONOSPHERIC DATA

Jan. 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										255	240	230	245	255	245									
2										255	255	245	250	230	245									
3										255	255	240	245	255	250	225								
4											270	260L	255	250	245	225								
5										235	255	230	245	245	250									
6											270L	245	235	250H	240	230								
7											280	250	245	235	235L	230								
8										235	255	255	250	240	240H									
9										270	240	235	235	235	250									
10											260	260	260	250	230	235								
11										210	245	245	250	230	235	250								
12										220	250	295	245	245	230	245								
13											245	235	240	250	250	230								
14									215	240	250	C	C	C	C	C	C							
15											275	245	240	230	245	245								
16											240	250	250	245	245									
17											300	290	250	250	235	230	225							
18										230	250	295	245	245	230	225								
19									220		285	250	265	270	255	245	205							
20										245	250	275	295	245	245	245	200							
21									220	240	270	250	250	245	250	230								
22									220	225H	250	290	240	275	255	240	210							
23										240	250	275L	250	230	260	230	210							
24											245	265	260	245	240	245	230							
25									205	225H	245	250	245	245	245	240	220							
26										240	275	225H	250	260	240	235	210							
27											270	245	255	265	250	240								
28											240	L	260	250	245	240								
29										245	280L	260	250	250	I255A	245L								
30											270	250	245	250	250	245								
31									220	250	250	275	250	260	245	235	210							
No.									6	18	31	29	30	30	30	24	9							
Median									220	240	255	250	250	250	245	240	210							
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

29

IONOSPHERIC DATA

Jan. 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	305	300	275	245	210	230	E320E	230	220	240	235	200H	200	205	205	230	200	230	235	220	250	A	290	295
2	I320A	320	280	235	215	265	250	215	205	240	200H	I225A	210H	225	200	200H	210	245H	245	225	210	E350E	305	305
3	300	300	285	250	250	275	240	225	220	245	190H	220H	205	195H	220	240	200	225	245	230	210	300	280	265
4	295	275	275	250	225	220	240	210	185H	225	245	235	220	230	195H	220	205	230	255	250	240	250R	300	310
5	325	295	275	275	245	250	250	205	220	235	225	230	210	200	195H	235	210	240	240	215	240	E325E	305	300
6	300	310	295	295	225	325	250	205	205	230	230	230	220H	200	205	220	220	215	265	225	215	235	E345E	275
7	295	305	300	260	240	275	230	235	225	215	235	225	230	225	200	220	200	235	220	250	215	255	300	280
8	300	300	265	250	275	235	230	230	225	200	205	210	200	215	200	200H	210	250	250	245	245	245	325	295
9	300	300	300	245	235	250	230	215	205	220H	210	205H	220	205	200H	235	220	I235A	245A	220	A	A	265	285
10	250	320	I240C	290	245	255	230	205	220	210H	210	230	250	220	200	200	225	205	I245A	255	230	E345E	300	300
11	300	300	260	275	300	310	250	I240A	205	210A	220	235	205	215	240	200	215	225	245	230	220	E340E	295	300
12	250	280	260	250	235	245	235	220	225	190	200H	195H	195H	220	210	195	205	240	255	260	230	290	300	275
13	295	295	245	210	295	300	245	245	245	245	225	215	215	200	210	210	205	245H	275	250	230	275	290	290
14	295	305	260	240	200	295	255	215	200	180H	245	C	C	C	C	C	C	245	300	245	210	295	315	300
15	260	295	260	280	275	250	285	245	215	230	190H	200H	245	200	240	220	230	210	260	230	260	280	325	290
16	245	275	280	250	245	240	290	230	I215C	225	210	225	205	225	180H	230	215	240	265	245	250	270	280	300
17	300	275	235	215	220	230	290	245	245	240	240	I235A	250	200H	210	210	205	200	E300E	240	220	280	290	290
18	315	350	300	270	255	215	325	220	230	235	225	215	220	200	230	205	205H	230	260	245	250	I260A	295	305
19	275	295	255	215	215	250	245	225	225	235	250	230	195H	215	200H	200H	225	200	275	225	220	265	300	295
20	270	300	305	275	225	210	250	230	195H	I210S	195	220	240	250	225	220	205	205H	260	225	235	E345E	330	I330A
21	290	295	290	240	220	290	260	205	220	205H	230	245	230	220	200	235	225	240	I270A	245	240	E300E	320	320
22	290	300	285	245	285	250	240	225	220	200H	I220A	260	220H	200H	200	230	220	265	240	225	225	300	305	320
23	300	300	250	245	235	280	275	225	230	240	225H	210	210	220	200	225	220	215	255	245	240	290	305	290
24	275	330	300	250	225	265	250	215	220	245	220A	230	215	220	210	I200A	I215A	200	235	240	225	250	300	295
25	320	295	320	295	245	230	255	215	195	200	220H	195H	200	220	230	225	220	205	I250A	250	I250A	230	305	295
26	295	300	295	280	265	270	255	210	210	215	215	205	235	220	210	200H	210	210	245	245	255	260	300	300
27	300	300	280	270	255	215	E440E	215	215	200H	195	200H	225	220	215	210	225	215	250	250	240	245	300	295
28	295	295	265	300	275	250	I250A	220	220	220	200	195H	230	235A	215	225	200H	220	E380E	290	235	265	245	295
29	315	335	300	310	255	250	250	230	220	200H	240	I230A	225	A	A	230A	245	200	290	245	220A	A	295A	300
30	295	295	290	260	235	230	260	220	240	230	245	230	225	210	I200A	180H	225	205	240	245	225	250	295	295
31	300	300	295	295	270	270	245	220	195H	245	240	230	220	240	240	230	205	210	235	250	250	265	265	310
No.	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29	30	30	31	31	31	30	28	31	31
Median	295	300	280	250	245	250	250	220	220	225	220	225	220	220	205	220	210	225	250	245	230	265	300	295
U. Q.																								
L. Q.																								
Q. R.																								

h'E

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

IONOSPHERIC DATA

Jan. 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	105	105	110	110	E	E	E	150	130	110	105	G	G	100	150	155	105	120	100	105	105	100	100	100
2	100	E	110	100	100	E	E	E	135	150	140	130	145	140	125	100	B	E	E	E	E	E	E	120
3	E	E	125	120	E	E	E	E	140	145	G	105	105	100	100	100	100	105	100	E	E	E	E	E
4	E	E	E	115	E	E	E	E	125	120	155	155	150	145	105	130	B	E	E	105	105	B	E	E
5	E	E	E	E	E	E	E	E	130	145	125	G	105	G	105	155	E	E	E	E	E	E	E	110
6	105	E	E	E	E	E	E	E	150	155	150	150	105	105	150	130	E	E	120	E	E	E	110	E
7	E	E	E	E	E	E	E	E	150	155	135	145	130	G	G	135	105	100	E	E	E	E	E	E
8	100	E	100	E	E	E	E	E	110	110	G	130	145	G	140	G	E	100	100	E	E	E	E	E
9	E	E	E	E	E	E	E	E	130	120	110	105	105	G	105	105	100	115	115	105	105	105	105	105
10	E	E	C	E	E	E	E	E	130	150	150	105	G	105	105	G	155	105	100	100	E	100	E	E
11	E	105	100	E	105	E	E	105	105	105	150	150	140	G	G	G	155	E	E	E	E	E	E	105
12	105	105	E	E	E	E	E	125	120	G	160	130	150	G	G	150	B	E	E	E	E	E	E	E
13	E	E	105	105	105	105	E	150	145	130	125	110	105	G	G	100	B	100	E	E	E	E	E	E
14	E	105	E	E	E	E	E	E	150	130	135	C	C	C	C	C	C	E	E	E	E	E	E	E
15	110	E	E	E	E	E	E	E	155	G	145	130	160	155	170	150	145	B	E	E	E	E	E	110
16	110	105	E	E	E	E	E	E	C	125	120	120	120	120	G	150	140	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	145	145	125	120	110	150	110	125	140	105	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	135	150	155	150	135	145	130	150	135	100	E	E	E	125	E	125
19	115	120	105	E	E	E	E	E	145	115	115	105	G	105	105	105	155	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	140	140	G	G	105	150	130	130	130	E	E	105	E	E	120	110
21	E	E	E	E	E	E	E	E	160	130	110	110	E160G	G	145	G	105	100	100	100	100	100	110	105
22	105	105	E	E	140	100	E	E	130	125	120	105	E170G	G	G	165	145	100	100	E	E	E	E	120
23	110	E	E	E	E	E	105	140	155	150	125	115	110	G	G	G	150	E	E	E	E	E	100	E
24	E	115	115	E	105	105	E	E	160	G	135	130	120	120	110	105	105	105	100	E	E	E	E	E
25	E	E	120	110	100	E	105	E	G	G	130	130	130	135	120	110	G	105	105	105	105	110	110	E
26	110	100	100	100	E	E	E	E	170	145	130	140	110	155	150	G	140	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	150	120	125	G	150	100	G	105	130	E	E	100	E	E	E	E
28	E	E	E	E	105	105	105	110	145	110	150	135	130	120	115	110	125	100	E	100	E	E	E	E
29	E	115	105	E	105	E	E	E	165	145	170	135	145	130	120	120	100	100	E	E	110	110	110	E
30	E	E	105	105	110	E	E	105	160	160	145	135	G	105	105	100	100	E	110	E	E	E	105	105
31	E	E	105	E	100	E	E	E	130	160	155	130	130	G	155	130	105	105	N	100	100	100	E	N
No.	11	10	13	8	10	4	3	7	29	27	28	26	26	19	22	24	22	16	11	10	7	8	9	11
Median	105	105	105	110	105	105	105	125	145	140	135	130	125	120	120	130	130	100	100	100	105	100	110	110
U. Q.																								
L. Q.																								
Q. R.																								

h'Es

Sweep 1.6 Mc to 6.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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	f	f2	f2	f				h	h2	1	1			1	h 1	h 1	1	f f2	f4	f2	f2	f2	f2	f2
2	f2		f	f	f				h2	h2	h	h3	h 12	h 12	h 1	1 h								f
3			f	f					h2	h		1	1	12	1	1	1	f	f2					
4				f					h	h	h	h	h h	h	1	h2				f	f			
5									h	h	h		12		1	h 12								f2
6	f2								h h	h2	h2 12	h 1	12	12	h 1	h			f2				f	
7									h	h2	h	h	h			h2 12	f	f						
8	f2		f2						13	12		h	h		h			f	f					
9									h2	c2	1	1	1		1	12	13	f3	f2	f	f3	f3	f2	f
10									h	h	h	1		1	1		h2	f	f3	f4		f2		
11		f	f		f2			f5	13	12 h	h	h 12	h 1				h2							f2
12	f3	f						f	c		h	h	h			h								
13			f2	f2	f2	f2		h	h3	h3	h2	12	12			1		f						
14		f2							h2 h	h	h2													
15	f								h2		h	h2 h	h c	h 12	h2 12	h	h							f2
16	f3	f2								h h	h2	h2	c	c		h	h							
17									h2	h2	h	c4	12	h 12	12	h2	h	f						
18									h	h	h h	h h	h2 c2	h	h2	h h	h	f				f4		f
19	f3	f2	f						h 1	c2	c h	12		12	12	1	h2							
20									h3	h			12 h	h2	h	h2	h2			f2			f2	f3
21									h	h2	c	12	h		h		1	f3	f3	f3	f2	f	f	f2
22	f2	f2			f	f			h	h	h	13 h	h 1			h	h2	f3	f					f2
23	f2						f	h	h	h	h	h2	c2				h						f2	
24		f	f		f2	f2			h		h2	h	h	h2	13	16	13	f3	f3					
25			f	f	f		f				h2	h	h2	h	h2	12		f4	f3	f2	f5	f2	f2	
26	f2	f2	f2	f					h	h2	h2	h	12	h	h 12		h							
27									h	c	h		h	1		12	h			f				
28					f2	f3	f4	f	h2 1	1 h	h	h	h	c2	c2	12 h	h	f3		f2				
29		f2	f		f2				h	h	h	h2	h	h2	h2 12	h3	12	f			f3	f4	f3	
30			f	f	f			1	h	h2 h	h	h		12	12	13	12		f				f2	f2
31			f		f2				h	h h	h2 h	h	h		h c2	h4 12	13	f3	f	f2	f	f2		f
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

Jan. 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	028	029F	030	034	024	U018R	021	040	051R	059	086F	066	J053R	J055R	053R	056	043	036	038	030	A	A	A	A
2	026	027	029	037	024	020	024	044	047	052	069	084	066	064	051	052	051	033	033	035	027	024	025	027
3	030	030	029	035	025	027	026	042	047	059	070	083	070	053	065	066	048	035	034	031	027	020	029F	J030F
4	U029F	031F	034	034	035	022	022	043	049	050	059	J078R	084	054	J063R	060	047	032	029	029	025	022	024	027
5	024	026	028	028	025	025	028	044	051	054	065	072	064	058	057	058	048	034	040	J038S	J027S	020	024	F
6	026	028	027	025	029	020	024	045	J051S	050	057	J075S	072	058	060	050	048	032	028	J040S	035	022	A	024
7	026	027	028	029	030F	I024A	024	039	045	049	065	071	072	058	J054S	053	049	038	046	032	029	022	026	026F
8	028	029	030	029	025	029	027	038	C	055	055	068	069	059	050	059	046	038	041	040	029	024	024	028
9	029	029	030	034	022	025	028	042	049	055	078S	075	065	054	060	059	049	041	045	036	I026A	I027A	I029A	029F
10	F	031F	F	032	024F	024F	025	043	048	049	058	077	065	069	056	059	057	046	030	029	033	020	024	025
11	026	029	032F	J034F	026F	F	028S	038	050	048	064	061	064	060R	053	059	060	036	034	042	034	020	024	029F
12	029F	028F	029	030F	032F	028F	028F	039	048	J052R	J055R	057	063	064	053	051	052	035	028	030F	F	028F	J030F	U028F
13	J030R	030F	034F	032F	019	022	024	039	058	070	064	071	054R	062	065	J063S	049H	J035S	030	U035S	U044S	F	F	F
14	F	028	F	F	F	023F	024	043	051	048	056	068	073	056	067	053	052	037	026	030	034	029	029	029F
15	031	029	031	031F	031F	I024C	024	044	054	054	052	083	079	053	C	C	C	038	028	034	030	022	024	028
16	029	024	029	029	032F	022F	024F	045	051	049	055	058	057	057	055	061	C	C	C	C	C	C	024	025F
17	025F	026	033S	031	024	019F	F	037	053	053	057	067	080	062	054	052	052R	040	029	037	J035S	023	J026R	026
18	028F	025	028	030	029	024	022	042	J052R	058	058	067	066R	057R	069S	057R	I048C	035	029S	J029S	F	F	F	F
19	S	F	F	039F	F	F	F	S	S	059	R	R	S	C	I061S	J067S	056	036	030	036	033	I026S	026	029
20	028	029	027	028	U037S	024	023H	037	053R	057R	R	063R	072	077	074S	055	057	038	I026C	031	026	023	021	024
21	025	026	027	030	031	021	020	048	054	053	057	075	068R	069	061	062	052	034	030	037	U040S	024	024	029
22	030	030	030	030	028	028	030	044	050	047	061	070R	092	080	058	054	071	039	049	036	027	024	027	027
23	030F	031F	036	036	029	023	I025C	043	052	058	059	065	066	074	I073C	068	049	041	029	033	031	027	029	031F
24	031	030	030	034	025	020	021	042	052	053R	052	062	068	070	056	056	052	043	034	031	032	020	021	024
25	025	026	026	027	028	027	023	041R	045	052	055	058	050	057	052	060	049	044	034	031	027	025S	019	U025F
26	029F	028	029	027	027	023	020F	047R	050	051	057	056	C	C	C	C	C	C	C	035	034	023	023F	026F
27	028F	028	028	028	032	024	018	039	044	050	051	064	065	C	C	C	C	048	028	025	027	030F	026S	028F
28	030F	U030S	032	030F	030F	025	025	041	049	051	056	051	070	067	I060A	060A	057	051	A	027	034	025	024	028
29	027	028	029S	030	030	024	024	045	053	053R	058	070	069	054	058	057	060	055	030	037	040	022	024	027S
30	028	028	028	031	035	023	023	042	044	052	061	070	059	063	058	057	056	048	030	033	033	030	027	027
31	030	031	031	029	026	028	023	043	054	053	061	061	066	059	061	056	049	045	030	033	033	025	027	027
No.	28	30	28	30	29	29	29	30	29	31	29	30	29	28	28	28	27	29	28	30	27	27	27	27
Median	028	028	029	030	028	024	024	042	051	053	058	068	066	059	058	058	051	038	030	033	032	024	024	027
U. Q.	030	030	031	034	031	025	026	044	052	055	064	075	072	066	062	060	056	044	034	036	034	026	027	029
L. Q.	026	027	028	029	025	022	022	039	048	050	056	062	064	056	054	054	048	035	029	030	027	022	024	026
Q. R.	004	003	003	005	006	003	004	005	004	005	008	013	008	010	008	006	008	009	005	006	007	004	003	003

foF2

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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										A	A	A	L	A	L									
2											L	L	L	L	L									
3										A	L	420L	420L	L	LH	L	L							
4											U410L	U420L	410L	L	L	L								
5										310	L	L	L	400	L	L								
6											400L	U420L	L	L	L	L								
7											410L	420L	410L	L	L	L								
8									C	L	L	420L	U430L	L	L									
9										L	L	L	L	L	L	L	L							
10											L	L	L	L	L	320L								
11											390LH	L	U420L	L	L	L								
12											L	L	420L	U410L	L	L								
13											L	420	L	410	390L	L								
14												L	L	L	L									
15												400	L	L	C	C	C							
16											L	A	A	L			C							
17											U410L	420	420L	L	L	L								
18										U400S	400	390	410	410	L		C							
19										L	R	L	420L	C	L	L								
20										L	R	L	410L	410	L	L	L							
21									L	L	L	L	L	L	L									
22									L	L	L	L	L	410L	A	L	L							
23										L	L	L	A	L	C	L	L							
24											L	L	410L	L	L		L							
25									L	L	L	L		S	L	L								
26									L		410L	420	C	C	C	C	C	C						
27									L		410L	420L	430L	C	C	C	C							
28										370L		L	L	L	A	A	L							
29											L	430L	L	L	A	L	L							
30											L	430L	L	420L	410L	L	L							
31								L	L		L	420L	L	410L	L	L	L							
No.										3	8	14	12	8	2	1								
Median										370	410	420	420	410	400	320								
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

foF1

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

K 2

IONOSPHERIC DATA

Jan. 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								E140B	220	A	A	A	A	A	A	A	A							
2								155	225	U270R	290	305	305	285	I260A	245	A							
3								155	215	275	285	305	305	295	I275A	A	A							
4								E140B	220	260	280A	295	295	290	280	250	A							
5								E140B	215	A	290	310	305	285	270	245	160							
6								E130B	A	265	280	295	320	305	280	255	195							
7								E160S	A	275	290	310	305	295	280	240	170							
8								E140B	C	260	I290A	305	315	305	290	255	A							
9								E150S	230	A	A	300	I305A	290	280	250	200							
10								E150S	220	260	290	290	290	280	265	250	195							
11								E140B	210	260	I290A	310	I315A	300	280	250	185							
12								E150S	220	260	285	290	290	295	280	245	190							
13								E130B	205	260	285	A	A	A	260	245	180	E140B						
14								155	215	265	290	A	A	300	290	265	A							
15								E120B	200	240	290	300	310	295	C	C	C							
16								E160B	215	A	A	A	A	300	285	245	C							
17								E110B	205	275	I285R	A	A	I295A	280	260	210	E120B						
18								E140B	210	270	295	I315A	310	I305A	285	255	C	E170S						
19								E160S	195	245R	I280A	I295R	I295A	I290C	A	250	A	E140S						
20								E150B	215	255	I280A	305	305	290	280	255	A	E130B						
21								135	205R	260	295	305	I315A	300R	I285A	A	A	E150S						
22								E150S	I210A	A	A	300	310	295	A	A	175	E140B						
23								E140S	185	275	I295A	A	A	A	C	265R	A	E140B						
24								155	185	245R	290	A	A	I280A	285	I250A	205	E150S						
25								E140S	195	245	295	290A	I290A	275	I260A	240R	200	E160S						
26								E130B	215	255R	290	A	C	C	C	C	C	C						
27								165	205R	265	290	I285A	A	C	C	C	C	E150S						
28								E140S	220	270	295	310	325	290	A	A	225R	E130B						
29								E150S	185	275	305	320A	320	310	285	I260A	225	E150S						
30								E120B	260	I260R	310	320R	I315A	290	295	A	210R	A						
31								E130B	A	A	A	305A	305	300A	I275A	250	A	E150S						
No.								31	27	25	26	23	22	26	23	22	15	14						
Median								E150	215	260	290	305	305	295	280	250	195	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

Jan. 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	021M	J030	J032	J043	J028	E014B	J023	E014B	028	070	J093	060M	J038	049	050	036	J043	J034	109M	J100	050M	035M	036M	035M
2	J057	020	021	020	022	032M	J024	J024	J028	J028	033	034	033	032	032	019G	J028	E015B	J024	J024	E013B	E	E012B	E014B
3	E013B	J019	018	E	E014B	E014B	E013B	G	019G	039	038	J028G	G	035M	J043	035M	032M	020	020	E	E014B	E013B	J031	E
4	019	E	E	E014B	E	024	019	E014B	G	021G	035	032	034	036	030	022G	J043	J026	032	037M	036M	024	J027	024
5	E014B	E014B	020M	023	J022	019	E014B	E014B	G	032	029	030G	025G	025G	G	G	G	E014B	E015S	E014B	E016S	E015S	E016S	E015S
6	019	032M	022	020	019	019	J020	019	J026	J030	J029	032	G	019G	J025G	G	J024	E	J018	019M	E015S	J028	034M	J031
7	J042	E015B	E	E015B	E014B	030	J017	E016S	J026	J029G	032	022G	024G	024G	030	G	021	024M	E014S	024M	024	022	019	J025
8	021	034	024	019	019	E014B	019	021M	C	J029	J030	J029G	G	G	G	J025G	034M	032	J029	E015S	E014S	E015S	E015S	022
9	J028	J029	J029	J029	J024	J025	J026	J025	G	J031	036M	036M	J034	026G	J026G	J030	J024	J029	060M	032	J040	J053	J053	J039
10	022	019	J033	032	J025	024M	020	J018	J028	034	J028G	024G	J029G	J026G	G	018G	J029	J029	025	E013B	E014S	020M	E015S	E015S
11	E014S	E014B	E	E	023	J028	023	021	J026	028	032	G	044M	024G	J027G	G	019G	024	024M	J025	024	020	E015S	E015S
12	021	024	034	J019	024M	J020	E013B	E015S	J025	J038	035M	033	035	033	J026G	G	G	E015S	022	021	E015S	E015S	E015S	E014B
13	E	019	018M	J022	J025	024	J020	E013B	028	G	J040	J060	J037	035	J025G	019G	G	E014B	E015S	E014B	E016S	026	020	019
14	E012B	022	019	E	J024	E012B	E015S	G	030M	G	J032	038	039	J025G	023G	J021G	J026	024	033	E	018	E014S	021	022
15	024	023M	E013B	E014B	J022	C	E015S	E012B	020G	J024G	034	G	034	024G	C	C	C	024	J025	J025	J019	020	019	J023
16	018	J029	024	029	J031	E	E015S	E016B	019G	J028	J038	J044	J044	J030G	J028G	030	C	C	C	C	C	C	E015S	E014S
17	E014S	019	E013B	E015B	E	018	018	E011B	025G	G	J027G	J052	J041	J039	024G	019G	G	E012B	E015S	E015S	E014S	E015S	E015S	E015S
18	E015S	E014B	E014B	E013B	017	019	019	E014B	027	030	031M	032M	034	J032	032M	030M	C	E017S	E016S	E014S	E014S	E016S	E017S	027
19	E015C	E013B	E013B	019	E014B	E015B	E013B	E016S	G	G	034	030	032	C	036	032	J031	J020	E016S	E015S	E014S	E015S	E016S	E014S
20	E016S	E016B	E014B	E016B	E014B	E013B	E016S	E015B	G	G	035	J038	G	036	G	G	023	024	C	J025	E012B	E014S	E014S	E013B
21	J027	025	E	E	E016B	E012B	E016S	G	G	024G	J033	J037	J044	J043	049	J052	J044	J026	J029	034	024	024	023	020
22	J026	J043	J030	032	023	E012B	E013B	E015S	024	J038	J041	035	036	032	J068	J031	J024	024	J024	J020	E015S	E015S	018	E014S
23	022	J019	023	J018	022	E013B	C	022	G	G	J031	J053	075	J052	C	G	J043	035	025	023	024	024	019	E014S
24	E015S	J017	025	025	J026	024	018	G	025	031	034	J043	034	J053	036	J030	024	028	J024	J025	J026	023	020	018
25	021	024	019	E012B	J028	J019	024	023	G	030	033	J038	036	032	J030	024	J026	019	E015S	E014S	E015S	E	019	E
26	J017	J026	022	024	018	018	E014S	021	G	G	034	J043	C	C	C	C	C	C	C	J029	028	021	024	021
27	019	E	019	020	E014B	E012B	E014S	G	G	023G	032	J033	J044	C	C	C	C	E015S	J024	024	021	J018	E014S	E015S
28	E014S	E	E012B	E014B	J025	J028	J027	J030	025	G	033	035	J053	J060	J118	067	G	J042	J043	J017	E015S	E014S	E014S	E014S
29	E015S	E014B	J024	J025	J019	023	018	J024	G	G	G	036	J042	039	J053	034	G	E015S	E014S	E	E014S	E015S	E014S	019
30	E014S	022	022	J027	J025	J020	024	023	G	033	036	038	J053	G	G	048M	J023	019	022	020	E016S	E013S	E015S	024
31	J018	020	018	J018	019	E014B	E015S	E013B	J030	036	038	G	036	036	036	G	J030	J042	J025	J019	020	J023	020	E015S
No.	31	31	31	31	31	30	30	31	30	31	31	31	30	28	27	28	26	29	28	30	30	30	31	31
Median	018	019	019	019	022	019	018	G	G	028	033	035	036	032	030	G	024	024	024	020	E016	E017	018	E015
U. Q.	022	025	024	025	025	024	020	021	026	032	036	038	042	038	036	032	031	028	027	025	024	023	021	023
L. Q.	E014	E014	E013	E014	E016	E014	E015	E014	G	G	031	G	032	026	027	G	G	E016	E016	E014	E014	E015	E015	E014
Q. R.	D008	D011	D011	D011	D009	D010	D005	D007			005		010	012	009			D012	D011	D011	D010	D008	D006	D009

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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	E	023	017	017	021	B	015	B	027	043	054	043	030	041	032	030	033	028	025	019	A	A	A	A
2	017	017	E	E	015	015	E	G	018	025	032	034	033	032	028	017G	018	B	S	S	B		B	B
3	B	E	E		B	B	B		017G	038	035	026G		027	028	026	019	E	S		B	B	014	
4	E			B		E	S	B		021G	035	032	034	033	029	022G	025	015	016	021	020	S	016	E
5	B	B	E	013	E	E	B	B		028	025	030G	025G	024G				B	S	B	S	S	S	S
6	S	015	E	E	E	S	S	G	019	028	024	032		017G	018G		016		016	S	S	017	A	016
7	018	B		B	B	A	S	S	020	022G	025	022G	021G	022G	029		020	S	S	016	015	S	E	E
8	S	020	015	E	E	B	E	G	C	024	030	025G				018G	025	023	023	S	S	S	S	S
9	S	017	018	015	E	014	017	017		027	029	026	030	023G	021G	022	017	022	025	022	A	A	A	017
10	015	E	E	014	014	015	S	S	018	033	022G	023G	026G	023G		017G	017	014	S	B	S	016	S	S
11	S	B			E	014	S	G	G	028	030		035	023G	022G		017G	021	016	016	015	S	S	S
12	S	015	022	E	E	S	B	S	018	031	031	032	035	032	022G			S	015	S	S	S	S	B
13		E	E	E	E	E	S	B	026		033	034	033	030	G	G		B	S	B	S	S	S	S
14	B	E	E		015	B	S		G		032	029	035	021G	019G	020G	018	015	020		E	S	S	S
15	E	015	B	B	E	C	S	B	017G	021G	030		026	023G	C	C	C	S	018	016	S	S	S	S
16	017	021	E	016	020		S	B	018G	028	032	042	041	026G	027G	029	C	C	C	C	C	C	S	S
17	S	E	B	B		E	E	B	020G		025G	034	030	039	023G	017G		B	S	S	S	S	S	S
18	S	B	B	B	E	E	S	B	026	G	022	030	025	028	025	020	C	S	S	S	S	S	S	S
19	C	B	B	E	B	B	B	S			E034R	E030R	030	C	033	021	027	S	S	S	S	S	S	S
20	S	B	B	B	B	B	S	B			030	027		026			023	018	C	015	B	S	S	B
21	015	014			B	B	S			024G	027	025	031	027	033	040	026	S	018	018	015	S	S	S
22	015	023	016	E	E	B	B	S	G	028	041	034	033	031	040	027	015	017	016	016	S	S	S	S
23	S	014	E	E	E	B	C	S			029	037	041	034	C		027	022	016	017	015	S	S	S
24	S	014	016	016	015	E	E		023	028	030	026	032	032	026	029	023	017	016	019	S	S	S	S
25	S	016	E	B	013	015	S	S		029	031	034	032	028	027	022	016	S	S	S	S		E	
26	S	E	E	E	E	E	S	020			031	030	C	C	C	C	C	C	C	017	014	S	015	S
27	E		E	E	B	B	S			G	032	029	033	C	C	C	C	S	016	S	E	S	S	S
28	S		B	B	014	014	016	018	025		032	033	040	033	A	040		027	A	015	S	S	S	S
29	S	B	014	016	014	E	S	017				033	039	029	049	022		S	S		S	S	S	S
30	S	E	015	016	017	015	E	015		031	034	037	034			032	019	018	S	S	S	S	S	016
31	E	016	E	013	E	B	S	019	026	035	035		035	033	033		025	028	018	S	S	017	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

Jan. 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	014	013	012	013	014	014	011	014	015	014	015	015	015	015	014	014	014	011	013	E013S	014	011	013	014
2	011	014	013	012	010	012	014	012	014	014	015	016	016	015	015	015	014	015	E015S	E015S	013	010	012	014
3	013	014	012	010	014	014	013	013	014	015	015	015	015	015	015	014	014	014	E015S	010	014	013	013	010
4	013	010	010	014	010	013	E015S	014	014	013	016	015	016	015	015	015	015	013	013	012	013	E015S	014	010
5	014	014	014	010	011	011	014	014	014	014	015	015	016	016	014	014	014	014	E015S	014	E016S	E015S	E016S	E015S
6	E015S	012	013	014	012	E015S	E016S	013	014	012	015	015	014	014	014	014	012	010	011	E015S	E015S	E014S	012	E015S
7	E015S	015	010	015	014	011	E014S	E016S	014	014	014	014	015	015	015	013	014	E015S	E014S	010	013	E015S	011	013
8	E015S	012	011	010	010	014	014	014	C	014	015	015	015	016	016	014	011	E015S	E015S	E015S	E014S	E015S	E015S	E014S
9	E015S	014	014	013	014	011	E015S	E015S	014	014	014	014	015	014	013	014	014	014	E014S	011	013	011	013	011
10	013	011	013	011	011	013	E014S	E015S	014	014	015	015	014	015	015	014	014	011	E015S	013	E014S	E015S	E015S	E015S
11	E014S	014	010	010	010	011	E015S	014	013	015	015	014	014	015	014	015	014	E014S	E015S	E014S	E014S	E015S	E015S	E015S
12	E015S	010	011	012	014	E015S	013	E015S	014	014	015	015	014	014	014	014	014	E015S	012	E015S	E015S	E015S	E015S	014
13	010	013	010	012	010	013	E015S	013	014	013	015	015	016	016	014	014	013	014	E015S	014	E016S	E015S	E015S	E015S
14	012	014	012	E	E	012	E015S	012	013	014	014	015	014	014	015	014	012	012	E014S	010	012	E014S	E015S	E014S
15	014	011	013	014	012	C	E015S	012	013	014	015	015	016	015	C	C	C	E015S	E015S	011	E014S	E015S	E015S	E015S
16	E015S	012	013	011	010	010	E015S	016	014	014	015	015	015	016	014	016	C	C	C	C	C	C	E015S	E014S
17	E014S	013	013	015	010	013	011	011	014	015	015	015	015	015	015	014	015	012	E015S	E015S	E014S	E015S	E015S	E015S
18	E015S	014	014	013	010	012	E015S	014	014	013	015	015	016	016	015	015	C	E017S	E016S	E014S	E014S	E016S	E017S	E015S
19	E015C	013	013	013	014	015	013	E016S	013	015	016	016	016	C	014	013	014	E014S	E016S	E015S	E014S	E015S	E016S	E014S
20	E016S	016	014	016	014	013	E016S	015	016	015	015	015	014	015	016	015	015	013	C	013	012	E014S	E014S	013
21	012	010	011	011	016	012	E016S	011	014	014	015	015	015	014	014	014	015	E015S	E014S	011	E014S	E015S	E014S	E014S
22	E014S	011	011	012	011	012	013	E015S	014	014	014	015	015	015	015	015	014	014	012	012	E015S	E015S	E015S	E014S
23	E014S	013	012	012	013	013	C	E014S	014	014	015	014	015	015	C	015	014	014	012	E016S	012	E015S	E015S	E014S
24	E015S	012	014	014	012	014	012	014	014	014	016	015	015	016	014	014	014	E015S	011	011	E015S	E014S	E015S	E015S
25	E015S	014	014	012	012	011	E014S	E014S	013	014	016	015	014	014	015	014	013	E016S	E015S	E014S	E015S	011	011	011
26	E014S	013	012	012	011	012	E014S	013	013	014	015	015	C	C	C	C	C	C	C	013	012	E014S	012	E015S
27	011	011	013	010	014	012	E014S	013	014	017	016	014	016	C	C	C	C	E015S	E015S	E015S	012	E014S	E014S	E015S
28	E014S	011	012	014	011	012	012	E014S	015	016	016	016	017	016	016	014	014	013	012	011	E015S	E014S	E014S	E014S
29	E015S	014	012	011	012	011	E014S	E015S	013	015	015	016	017	015	016	015	016	E015S	E014S	011	E014S	E015S	E014S	E015S
30	E014S	015	011	012	011	011	013	012	013	013	014	015	015	017	015	016	014	011	E017S	E016S	E016S	E013S	E015S	E014S
31	011	014	014	011	014	014	E015S	013	014	015	015	016	016	015	015	015	014	E015S	011	E015S	E015S	E015S	E015S	E015S
No.	31	31	31	31	31	30	30	31	30	31	31	31	30	28	27	28	26	29	28	30	30	30	31	31
Median	E014S	013	012	012	012	012	E014S	013	014	014	015	015	015	015	015	014	014	012	E014S	012	E014S	E015S	E015S	E014S
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

Jan. 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	300	305F	330	350	370	U335R	305	340	370R	340	360F	375	J340R	J345R	360R	360	365	335	355	355	A	A	A	A
2	275	295	315	375	350	300	315	345	380	320	320	360	360	375	370	345	360	360	305	345	335	290	290	300
3	300	295	325	350	355	310	340	355	365	305	345	355	370	355	355	380	375	320	325	350	340	300	295F	J285F
4	U290F	305F	320	330	345	335	315	350	365	380	305	J345R	345	350	J350R	370	365	340	325	310	330	360	285	295
5	305	305	320	320	330	315	320	350	370	350	355	340	365	340	350	375	385	325	325	J365S	J350S	300	310	F
6	310	315	305	320	365	320	335	370	J355S	360	355	J360S	355	345	380	375	355	345	285	J350S	360	365	A	290
7	325	295	290	340	340F	I300A	320	365	365	370	355	360	350	360	J365S	360	365	315	355	345	345	320	305	280F
8	285	290	305	325	340	325	350	365	C	355	350	355	345	370	345	355	355	340	320	350	345	305	260	285
9	295	295	315	330	320	320	335	345	355	345	345S	345	370	350	350	355	360	340	330	335	I320A	I320A	I295A	285F
10	F	295F	F	345	325F	290F	320	370	355	345	340	350	355	380	340	355	350	345	305	310	350	320	280	275
11	290	280	310F	J325F	310F	F	325S	365	370	390	330	350	350	330R	340	370	365	360	325	350	355	330	290	295F
12	295F	280F	305	335F	345F	305F	315F	355	365	J335R	J310R	340	340	375	370	355	345	345	285	305F	F	305F	J285F	U305F
13	J295R	295F	325F	370F	275	275	310	355	335	370	350	350	350R	345	340	J375S	350H	J345S	275	U285S	U275S	F	F	F
14	F	285	F	F	F	295F	300	365	375	370	340	350	370	355	370	340	365	350	340	305	355	305	305	295F
15	335	295	305	305F	325F	I300C	290	320	360	370	315	350	345	360	C	C	C	355	320	325	360	295	290	320
16	345	315	305	315	340F	360F	300F	360	375	365	355	360	360	350	325	360	C	C	C	C	C	C	305	285F
17	300F	310	345S	360	355	295F	F	350	360	345	355	345	360	355	370	350	355R	345	305	325	J345S	305	J295R	285
18	285F	285	295	330	340	335	295	355	J345R	345	340	345	350R	350R	360S	365R	I370C	335	310S	J340S	F	F	F	F
19	S	F	F	335F	F	F	F	S	S	375	R	R	S	C	I330S	J350S	365	380	305	335	340	I330S	310	320
20	305	275	295	305	U345S	375	315H	350	355R	335R	R	330R	325	330	345S	360	350	355	I340C	330	340	370	305	300
21	290	300	305	350	330	330	310	365	370	325	330	320	325R	335	350	350	365	350	315	315	U355S	315	300	300
22	285	285	280	315	310	320	340	375	365	360	315	330R	345	340	375	360	340	335	315	365	335	290	305	300
23	280F	270F	285	340	345	285	I320C	340	345	345	340	355	345	335	I345C	360	350	325	320	335	330	315	230	270F
24	295	295	300	330	365	330	340	355	365	370R	345	325	345	345	340	340	365	340	330	340	360	345	335	305
25	295	295	310	305	305	335	350	355R	370	355	345	360	345	350	330	360	335	340	350	330	335	365S	325	U285F
26	260F	280	285	310	335	325	320F	360R	355	365	350	325	C	C	C	C	C	C	C	345	355	325	325F	295F
27	270F	305	300	315	345	370	345	365	365	340	330	355	335	C	C	C	C	355	370	330	350	295F	290S	305F
28	300F	U315S	325	300F	300F	325	360	365	365	350	355	325	300	355	I340A	340A	350	365	A	300	350	330	335	290
29	295	285	285S	295	325	300	320	360	360	355R	345	355	360	355	355	335	345	355	335	325	330	350	295	295S
30	285	295	305	325	370	305	315	355	365	335	320	345	335	335	360	350	365	350	335	315	335	325	295	305
31	300	300	310	310	325	320	325	350	365	335	345	345	360	335	345	355	345	335	305	315	325	320	300	305
No.	28	30	28	30	29	29	29	30	29	31	29	30	29	28	28	28	27	29	28	30	27	27	27	27
Median	295	295	305	330	340	320	320	355	365	350	345	350	350	350	350	360	360	345	320	330	345	320	295	295
U. Q.																								
L. Q.																								
Q. R.																								

M(3000)F2

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

The Radio Research Laboratories, Japan

K 7

IONOSPHERIC DATA

Jan. 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										A	A	A	L	A	L									
2											L	L	L	L	L									
3										A	L	355L	375L	L	LH	L	L							
4											U365L	U365L	365L	L	L	L								
5										410	L	L	L	385	L	L								
6											385L	U355L	L	L	L	L								
7											385L	365L	365L	L	L	L								
8									C	L	L	365L	U370L	L	L									
9										L	L	L	L	L	L	L	L							
10											L	L	L	L	L	420L								
11											385LH	L	U375L	L	L	L								
12											L	L	380L	U370L	L	L								
13											L	355	L	365	350L	L								
14												L	L	L	L									
15												395	L	L	C	C	C							
16											L	A	A	L			C							
17											U365L	365	360L	L	L	L								
18										S	370	360	370	390	L		C							
19										L	R	L	370L	C	L	L								
20										L	R	L	370L	365	L	L	L							
21									L	L	L	L	L	L	L									
22									L	L	L	L	L	365L	A	L	L							
23										L	L	L	A	L	C	L	L							
24											L	L	380L	L	L		L							
25									L	L	L	L		S	L	L								
26									L		370L	380	C	C	C	C	C	C						
27									L		375L	370L	355L	C	C	C	C							
28										375L		L	L	L	A	A	L							
29											L	355L	L	L	A	L	L							
30											L	350L	L	360L	380L	L	L							
31								L	L		L	375L	L	390L	L	L	L							
No.										2	8	14	12	8	2	1								
Median										390	370	365	370	370	365	420								
U. Q.																								
L. Q.																								
Q. R.																								

M(3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 8

40

IONOSPHERIC DATA

Jan. 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										270	255	220	260	240	240									
2											280	240	250	225	230									
3										270	255	250	240	250	255	225	205							
4											310	250	255	250	255	240								
5										240	250	260	250	275	270	235								
6											260	250	240	260	220	225								
7											255	250	255	255	230	230								
8									C	250	260	255	260	240	240									
9										260	250	255	240	255	260	240	220							
10											280	255	250	230	240	260								
11											290	250	255	290	250	240								
12											250	260	280	240	240	230								
13											230	250	250	270	265	235								
14												260	245	250	240									
15												250	250	250	C	C	C							
16											250	250	250	250			C							
17											260	255	250	255	240	250								
18										265	270	270	270	255	250		C							
19										230	290	260	275	C	230	225								
20										245	240	275	275	260	230	225	235							
21									215	240	255	270	285	265	255									
22									220	230	310	280	260	245	245	235	250							
23										260	260	255	265	270	C	230	225							
24											255	280	260	255	255		225							
25									225	250	260	250		260	255	240								
26									215		260	260	C	C	C	C	C	C						
27									225		280	260	290	C	C	C	C							
28										245		235	300	250	A	260	240							
29											260	255	250	260	265	260	245							
30											300	250	270	255	245	250	230							
31								230	235		260	270	255	275	250	230	240							
No.								1	6	13	28	31	29	28	25	20	10							
Median								230	220	250	260	255	255	255	245	235	230							
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

41

IONOSPHERIC DATA

Jan. 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	300	E340A	270	220	E250A	E290B	310	240	220	I215A	A	A	180	A	210	240	220	250A	245	240	A	A	A	A
2	350	310	260	210	200	340A	260	220	205	220	240	250	225	220	205	240	210	210	260	225	210	270	310	300
3	260	300	250	210	210	260	230	230	205	I240A	240A	225	205	205	180H	230	230	210	240	210	210	E290B	275	255
4	300	280	255	230	210	200	240	230	210	230	240	245	250	220	205	230	205	210	250	250	250	220	340	260
5	305	300	275	250	210	255	225	220	220	215	220	215	200	210	225	240	220	205	225	215	220	250	310	270
6	E300S	315	295	280	210	E320S	255	215	220	220	205	205	230	205	230	205	210	225	300	240	205	230	A	E350A
7	270	310	290	255	220	A	280	220	210	220	190	210	195	205	210	225	205	250	205	220	230	250	270	300
8	305	E350A	290	240	225	250	220	200	C	240	220	205	210	205	190	250	210	240	250	220	210	260	E355S	300
9	290	310	300	240	210	260	240	205	220	220	200	200	230	205	210	220	210	210	250	220	A	A	A	350A
10	300	260	260	220	250	290	240	210	220	220	230	260	240	230	205	195	245	205	260	255	210	290	E320S	340
11	305	305	255	225	240	350	230	210	220	205	180H	230	210	200	200	230	230	205	255	220	220	E255S	340	270
12	255	300	E310A	250	210	255	240	205	220	225	200	205	205	240	205	210	230	210	250	270	250	250	300	300
13	255	300	245	200	400	340	255	240	250	225	215	220	205	205	210	230	215H	220	300	255	265	230	275	300
14	265	300	275	230	225	290	260	220	220	220	240	230	250	210	230	220	220	205	250	255	210	260	300	295
15	245	300	260	255	240	I255C	E300S	240	225	240	210	205	250	205	C	C	C	205	250	245	200	E280S	300	255
16	240	310	270	260	255	200	295	210	220	220	205	I220A	I200A	220	205	240	C	C	C	C	C	C	300	310
17	290	260	225	210	205	E300B	300	245	240	230	230	220	200	220	200	210	230	205	250	240	210	E290S	255	300
18	300	345	300	250	220	225	310	240	240	230	225	210	220	200	215	225	I220C	225	E240S	230	225	220	E270S	E325S
19	300	265	260	225	205	210	255	230	230	230	I240A	230	200	I250C	215	240	225	210	275	255	220	280	310	275
20	305	300	305	275	215	200	210H	245	230	225	210	230	230	230	255	230	200	215	I240C	245	225	215	315	310
21	330	315	275	245	210	265	315	225	215	205	210	260	260	235	215	250	230	210	260	270	210	260	305	290
22	315	355	315	240	265	235	230	210	225	230	255	260	225	225	I220A	210	210	215	260	210	230	305	275	325
23	320	315	275	235	210	305	C	230	235	230	225	210	I230A	220	I210C	225	230	210	255	250	250	270	290	325
24	300	305	305	245	210	260	270	230	230	240	225	225	215	230	210	255	230	220	245	230	230	270	300	310
25	325	315	280	270	260	230	210	220	200	200	230	210	210	200	200	245	220	215	225	245	235	220	230	310
26	315	300	270	270	230	240	280	215	225	230	200	215	C	C	C	C	C	C	C	245	220	245	290	310
27	305	270	265	255	220	205	265	220	210	240	225	225	210	C	C	C	C	240	210	250	225	260	270	300
28	265	260	240	245	290	250	240	230	220	200	225	205	255	225	A	A	245	235	I260A	270	230	235	265	275
29	310	310	300	300	250	265	260	225	230	230	215	215	250	245	I220A	200	240	210	230	250	215	225	310	310
30	305	305	300	260	210	205	260	215	230	240	220	240	220	235	210	230	245	220	250	245	245	220	295	315
31	310	295	270	275	260	270	260	225	205	255	230	220	210	210	230	215	230	235	265	265	230	265	270	275
No.	31	31	31	31	31	30	30	31	30	31	30	30	30	28	27	27	27	29	29	30	28	28	28	30
Median	300	300	270	245	220	255	260	220	220	225	220	220	220	220	210	230	220	210	250	245	220	255	295	300
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

Jan. 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	100	105	105	100	100	B	110	B	145	105	100	100	100	100	100	100	100	100	115	110	100	100	100	115
2	100	105	115	100	100	100	100	100	110	110	155	150	155	155	120	100	100	B	100	100	B	E	B	B
3	B	100	100	E	B	B	B	G	105	150	125	110	G	100	100	100	100	100	100	E	B	B	110	E
4	105	E	E	B	E	100	100	B	G	105	150	E155G	160	130	125	115	110	110	105	105	105	105	110	110
5	B	B	110	105	110	105	B	B	G	160	110	110	110	100	G	G	G	B	S	B	S	S	S	S
6	105	105	100	105	105	105	105	110	110	110	110	130	G	100	100	G	100	E	140	110	S	105	100	100
7	100	B	E	B	B	100	100	S	110	105	110	105	105	105	E180G	G	140	100	S	110	105	105	100	100
8	100	100	100	100	100	B	110	110	C	105	105	105	G	G	G	100	100	100	100	S	S	S	S	105
9	100	100	100	100	100	100	100	100	G	105	105	105	105	105	100	100	110	110	105	105	105	100	100	100
10	100	100	100	100	100	100	100	100	105	150	105	105	105	105	G	105	100	100	100	B	S	100	S	S
11	S	B	E	E	105	100	100	100	100	130	105	G	100	100	100	G	100	100	100	100	100	100	S	S
12	100	100	100	100	100	100	B	S	110	105	105	160	E170G	145	105	G	G	S	100	100	S	S	S	B
13	E	105	105	100	100	100	100	B	145	G	115	105	105	105	105	105	G	B	S	B	S	105	100	100
14	B	105	100	E	100	B	S	G	115	G	150	110	105	100	100	100	100	100	100	E	100	S	100	110
15	105	105	B	B	105	C	S	B	110	105	140	G	105	105	C	C	C	100	100	100	100	100	100	100
16	100	100	100	100	100	E	S	B	115	110	110	110	105	105	105	120	C	C	C	C	C	C	S	S
17	S	105	B	B	E	100	100	B	105	G	110	110	110	105	105	100	G	B	S	S	S	S	S	S
18	S	B	B	B	110	105	110	B	150	E150G	110	110	110	110	110	110	C	S	S	S	S	S	S	115
19	C	B	B	105	B	B	B	S	G	G	170	110	110	C	100	100	105	105	S	S	S	S	S	S
20	S	B	B	B	B	B	S	B	G	G	110	110	G	105	G	G	120	105	C	115	B	S	S	B
21	110	110	E	E	B	B	S	G	G	110	110	110	105	105	105	105	105	105	100	100	100	100	100	100
22	100	105	110	110	110	B	B	S	110	110	110	140	140	155	105	105	100	100	100	100	S	S	100	S
23	110	110	110	110	110	B	C	105	G	G	110	110	110	110	C	G	105	105	105	105	100	100	105	S
24	S	110	110	105	110	110	100	G	130	150	130	110	110	110	110	110	155	105	105	105	100	100	100	100
25	100	100	100	B	110	110	110	110	G	160	140	115	115	115	110	110	110	100	S	S	S	E	110	E
26	110	110	110	140	100	105	S	130	G	G	140	110	C	C	C	C	C	C	C	110	110	110	110	110
27	110	E	105	105	B	B	S	G	G	130	115	110	110	C	C	C	C	S	105	100	100	110	S	S
28	S	E	B	B	110	110	105	100	100	G	140	130	115	110	110	110	G	105	110	100	S	S	S	S
29	S	B	110	110	110	100	100	100	G	G	G	110	120	115	115	110	G	S	S	E	S	S	S	110
30	S	110	110	105	105	105	105	105	G	160	145	140	115	G	G	100	100	160	105	100	S	S	S	105
31	105	105	105	105	100	B	S	B	110	175	160	G	110	115	110	G	105	105	105	105	105	100	100	S
No.	18	21	21	19	23	18	17	12	18	22	30	28	26	26	22	20	20	20	20	19	13	15	16	15
Median	100	105	105	105	105	100	100	100	110	110	110	110	110	105	105	105	100	100	100	105	100	100	100	105
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

Jan. 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	f	f3	f2	f2	f2		f2		h21	12	13	12	12	12	12	1	12	f3	f2f4	f2	f3	f	f2	ff
2	f2	f	f	f	f	f2	f	1	1	1	hl	hl	hl	hl	cl	1	1		f	f				
3		f	f						1	h21	h	1		1	12	12	1	f	f				f2	
4	f					f	f			1	hl	h	h	hl	hl	1	13	f	f2	f3	f3	f	f2	f
5			f	f2	f	f				hl	1	12	1	1										
6	f2	f2	f	f	f	f2	f	1	12	12h	1	hl		1	1		1		f	f		f2	f2	f3
7	f2					f5	f2		1	12	1	1	1	1	h		h2	f		f	f2	f2	f2	f2
8	f2	f3	f2	f	f		f	1		12	1	1				1	12	f2	f					f
9	f	f	f2	f	f	f	f	1		12	12	12	12	12	1	12	12	f3	f3	f2	f4	f4	f5	f3
10	f2	f	f2	f2	f2	f2	f	1	1	h3l	1	1	1	1		1	12	f3	f			f2		
11					f2	f3	f2	1	1	h2	1		13	1	12		12	f2	f2	f2	f2	f		
12	f	f2	f4	f	f	f			1	12h	1h	hl	hl	h212	1				f	f				
13		f	f	f	f2	f2	f		h2		12	12	12.	12	1	12						f	f2	f
14		f2	f		f3				1		h	12	13	12	12	1	12	f2	f2		f		f	f
15	f	f			f				1	1	hl		1	1				f	f2	f2	f	f2	f	f
16	f	f4	f2	f3	f2				1	1	12	12	13	12	1	c								
17		f				f	f		1		1	c2	c2	13	12	1								
18					f	f	f		h	h	1	1	1	1	1	1								f
19				f							hl	1	1		13	12	13	1						
20											1	1		12			h	1		f				
21	f2	f2								1	12	12	13	12	12	13	13	1	f3	f2	f2	f	f	f
22	f	f3	f2	f	f				12	12	12	hl	hl	hl	12	1	1	1	f2	f			f	
23	f2	f2	f	f	f			1			1	12	12	12			1	1	f2	f2	f2	f2	f	
24		f	f2	f2	f	f	f		h	h	h	1	1	12	12	12	h	1	f2	f2	f3	f	f	f
25	f	f	f		f2	f2	f	1		h	h	c	c	c	1	1	12	1					f	
26	f2	f	f	ff	f	f		h			h	1								f2	f	f	f2	f
27	f		f	f2						h	c	1	12						f	f	f	f		
28					f2	f2	f3	13	1		h	h	c	c	12	12		14	f3	f				
29			f	f2	f2	f	f	1				c	c	c	c2	1								f
30		f	f2	f2	f	f2	f	1		h	h	h	c			14	12	hl	f	f				f2
31	f	f	f	f2	f				12	hl	hl		c	c	c		12	12	f2	f	f	f	f	
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

Jan. 1965 | hpF2 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	340	345F	300	250	A	U290R	340	260	220R	290	255F	230	J270R	J250R	250R	245	240	260	250	250	A	A	A	A
2	370	340	310	220	240	345	300	245	220	290	300	250	255	230	240	260	240	240	310	255	260	330	330	340
3	310	340	290	245	240	300	260	250	230	320	260	255	245	255	255	240	225	280	290	250	245	310	340F	J340F
4	U330F	325F	295	280	250	250	290	250	220	230	325	J260R	260	250	J260R	250	220	255	290	300	250	245	390	310
5	330	325	310	300	260	300	290	250	220	250	255	275	250	275	270	240	220	290	280	J250S	J260S	320	330	F
6	340	320	330	325	250	340	280	230	J255S	250	270	J255S	250	260	220	230	250	250	340	J255S	230	230	A	370
7	295	350	340	290	255F	I320A	300	245	250	230	260	250	260	255	J240S	240	245	305	250	250	260	300	325	355F
8	360	360	310	295	250	290	260	240	C	255	260	260	260	245	255	260	240	260	290	255	250	300	390	350
9	340	350	310	270	290	300	255	250	250	280	260S	260	250	255	260	250	240	245	270	250	A	A	I330A	370F
10	F	345F	F	255	285F	340F	290	240	240	260	280	260	255	230	260	260	260	250	305	300	250	300	360	360
11	345	350	305F	J270F	305F	F	290S	240	240	220	300	260	260	300R	260	250	250	230	300	250	250	S	355	320F
12	320F	360F	320	260F	250F	305F	300F	240	240	J270R	J290R	270	290	250	250	250	255	250	340	310F	F	315F	J350F	U345F
13	J330R	340F	295F	210F	400	390	300	250	290	225	245	255	250R	290	280	J240S	255H	J265S	380	U350S	U380S	F	F	F
14	F	380	F	F	F	350F	340	250	240	240	260	270	250	250	250	260	250	230	255	300	245	310	360	340F
15	270	340	300	300F	280F	I300C	325	290	250	240	320	250	255	250	C	C	C	245	290	290	245	310	345	305
16	255	310	310	300	260F	240F	320F	250	240	245	255	250	250	255	290	250	C	C	C	C	C	C	305	355F
17	320F	300	250S	240	240	350F	F	260	255	260	260	260	250	255	250	255	250R	250	305	280	J250S	305	J300R	345
18	350F	375	345	285	260	270	340	255	J255R	270	290	270	270R	255R	255S	230R	I240C	270	300S	J260S	F	F	F	F
19	S	F	F	280F	F	F	F	S	S	240	R	R	S	C	I270S	J250S	235	225	330	270	250	I280S	335	305
20	340	350	350	315	U245S	230	315H	255	235R	265R	R	280R	300	275	245S	230	265	235	C	275	270	230	340	350
21	360	350	340	270	235	305	330	245	230	275	290	290	300R	275	255	270	240	245	300	305	U245S	295	350	345
22	370	365	370	295	335	290	265	225	230	240	310	285R	265	245	245	235	255	260	285	230	285	350	335	370
23	385F	385F	350	275	250	350	I310C	265	255	260	265	260	275	280	I260C	245	250	280	295	280	280	320	340	380F
24	345	340	345	290	235	295	270	240	245	255R	260	285	265	260	270	270	235	255	295	255	240	275	300	345
25	355	350	335	315	325	270	240	235R	225	255	260	250	250	260	265	250	230	260	260	280	255	255S	300	U365F
26	385F	360	355	300	260	285	295F	245R	250	240	260	290	C	C	C	C	C	C	C	265	250	270	320F	350F
27	380F	330	315	305	250	230	270	245	235	255	280	260	295	C	C	C	C	240	245	280	270	340F	340S	340F
28	325F	U300S	290	325F	330F	280	250	235	230	255	255	275	305	255	I260A	270A	255	245	A	325	260	275	300	335
29	360	380	355S	345	290	335	300	230	250	255R	260	255	255	260	265	270	260	245	275	295	260	245	350	345S
30	360	345	345	295	230	345	300	240	240	270	300	255	270	265	250	255	240	250	285	295	280	280	345	350
31	350	325	305	320	295	295	290	245	245	270	260	270	255	280	260	245	250	250	300	295	285	285	325	320
No.	28	30	28	30	28	29	29	30	29	31	29	30	29	28	28	28	27	29	27	30	26	25	27	27
Median	340	345	310	290	250	300	295	245	240	255	260	260	260	255	260	250	245	250	290	280	250	300	340	345
U. Q.																								
L. Q.																								
Q. R.																								

hpF2

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

The Radio Research Laboratories, Japan

K 13

45

IONOSPHERIC DATA

Jan. 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	065	055F	060	050	A	U060R	055	050	050R	035	050F	040	J050R	J050R	050R	050	050	060	055	050	A	A	A	A
2	080	060	085	040	060	055	060	050	040	060	055	040	035	040	050	050	055	050	070	050	080	080	055	060
3	095	060	060	050	070	060	050	045	065	070	065	040	035	045	040	030	055	065	050	050	055	095	060F	J065F
4	U075F	065F	055	065	050	055	070	050	070	050	075	J040R	050	060	J060R	020	050	050	065	095	060	055	065	090
5	070	075	050	090	080	095	065	045	050	050	045	065	050	055	030	040	040	050	080	J050S	J070S	080	040	F
6	060	070	070	075	080	060	070	040	J065S	050	025	J040S	045	045	040	065	040	055	070	J045S	065	065	A	080
7	055	060	070	060	050F	I090A	050	050	040	040	040	045	035	045	J050S	055	045	085	040	055	085	095	075	090F
8	080	060	080	055	055	060	080	050	C	040	040	040	050	030	050	040	055	080	055	055	055	095	080	060
9	060	050	085	070	085	060	060	050	045	040	040S	040	025	045	040	045	055	055	055	055	A	A	I070A	070F
10	F	050F	F	055	065F	060F	065	055	055	060	060	040	045	045	080	060	040	050	095	090	050	055	095	095
11	060	090	055F	J085F	090F	F	065S	050	050	045	045	045	040	055R	055	030	045	065	050	050	040	S	055	080F
12	080F	090F	080	045F	055F	090F	095F	060	050	J055R	J070R	055	035	025	030	045	050	050	105	085F	F	085F	J075F	U080F
13	J070R	070F	050F	085F	060	060	060	050	055	055	065	035	050R	040	040	J060S	045H	J045S	100	U070S	U090S	F	F	F
14	F	050	F	F	F	090F	060	050	060	040	060	035	030	040	030	050	030	065	050	060	045	090	090	060F
15	075	070	070	055F	070F	I080C	075	065	045	035	050	050	045	045	C	C	C	055	065	055	055	090	060	090
16	045	085	080	060	080F	060F	080F	040	055	050	040	040	040	045	055	045	C	C	C	C	C	C	090	050F
17	075F	090	055S	050	060	055F	F	040	040	045	040	045	040	040	040	045	045R	050	095	060	J050S	095	J095R	060
18	095F	065	060	060	080	075	060	045	J050R	060	035	040	060R	070R	045S	080R	I060C	090	100S	J060S	F	F	F	F
19	S	F	F	070F	F	F	F	S	S	055	R	R	S	C	I080S	J065S	065	040	065	045	050	I060S	065	055
20	070	070	055	080	U070S	050	055H	050	060R	050R	R	050R	075	045	060S	055	045	050	C	050	055	065	050	050
21	045	045	055	050	040	050	045	035	045	055	060	060	045R	050	045	035	055	055	050	045	U055S	055	055	060
22	055	065	060	060	065	060	045	050	060	040	065	060R	065	065	040	060	050	045	045	040	060	055	065	045
23	065F	060F	075	035	055	065	I060C	050	045	050	045	040	035	045	I050C	040	050	060	050	040	065	050	060	070F
24	055	055	050	055	060	055	050	050	045	045R	040	045	045	050	040	035	060	045	035	050	050	040	050	035
25	040	055	065	070	075	060	060	055R	065	045	040	050	050	045	045	050	045	040	040	050	045	045S	040	U050F
26	065F	075	085	080	070	045	050F	055R	045	055	050	060	C	C	C	C	C	C	C	050	050	060	050F	060F
27	070F	070	080	070	050	060	075	035	045	045	040	045	035	C	C	C	C	050	055	050	060	060F	060S	055F
28	065F	U070S	055	050F	060F	050	050	045	065	045	045	075	045	045	I055A	035A	045	050	A	070	040	055	055	060
29	050	060	055S	055	055	045	070	060	040	045R	045	050	045	040	035	045	040	040	050	045	055	045	050	055S
30	050	055	055	045	060	055	050	050	040	050	045	045	070	045	045	045	045	050	040	045	055	060	055	055
31	050	060	065	060	050	055	055	055	045	050	040	040	055	030	040	055	050	050	050	055	060	070	075	055
No.	28	30	28	30	28	29	29	30	29	31	29	30	29	28	28	28	27	29	27	30	26	25	27	27
Median	065	060	060	060	060	060	060	050	050	050	045	045	045	045	045	045	050	050	055	050	055	060	060	060
U. Q.			•																					
L. Q.																								
Q. R.																								

ypF2

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

The Radio Research Laboratories, Japan

K 14

IONOSPHERIC DATA

Jan. 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	I023S	025S	026	032	025	A	A	026	052	064H	I066C	062	066S	J066S	I062A	057	055	049	037	034	027	022	I023A	026
2	027	I026A	028	032	037S	I024S	I020S	028	I045H	J049H	I057S	C	C	083	J065S	056H	058	J063S	032	044S	037	030	023	025S
3	028	028	029	031	037	022	023	031	043H	049S	060S	I088S	092S	J079S	J078S	060	059	J046S	031	034	034S	026	022S	I024S
4	024S	I024S	029	J031S	S	J019H	J018S	026S	045S	J050S	052	J061S	064S	059	062S	060	056	050H	I035A	I033A	I036S	J034S	022	021S
5	024	024S	025	I028S	027	021	024	032	I045H	054H	054H	I069S	081S	J079S	071S	I071S	J064S	J050S	I039S	I042S	I039S	J028S	023	U024S
6	027	027	027S	028	039S	019	020	024S	J047S	055H	052H	065	J076S	I070S	J062S	049	057	055S	036S	I032S	S	021	021	019S
7	024S	024S	024S	025	S	018	019	027S	J048S	J051S	048	066	081S	081	060	048	058	J048S	037S	043S	041S	025S	020H	025
8	J026S	025S	I027S	028	S	021	022	C	C	054H	058	058	066S	060	060S	058	055	064S	040	037S	J033S	027S	022S	022S
9	024	027S	030S	036	028	020S	021	030S	049S	060	I069S	087S	085	I072S	061S	059S	058	J052S	038S	I042S	I041S	I034S	I023A	I025S
10	027	029S	I028A	028	I031S	023	021	030	J052S	046	050	J062S	J073S	066S	057	059	I067H	J062S	041S	032S	029S	021	I022S	I022S
11	024S	023	024	033S	028	021	022	031S	043	050	045H	I071S	S	I065S	057	J064S	I063S	055	031	I039S	I038S	I025S	I021S	F
12	026S	023	023S	023S	034S	024S	020S	026S	J053S	J050S	046H	052	064	070S	056	057	055	050S	037	U025S	I032S	I035C	I030S	I029S
13	029S	031S	035S	040S	022	019S	020	028S	J054S	065	U063S	059	J064S	058	068S	065S	J063S	J049S	044S	030S	040S	I038C	024S	I027S
14	I029S	030S	029S	031S	J034S	023	023S	028	057S	055	051H	J063S	087S	065S	072	060S	061S	047H	043S	S	S	038	027	025S
15	027	027	027	030	034	I021A	021S	I023S	054	064S	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	026	I029S	029	027	028	024	024S	029	I047S	051H	056	J062S	058	I060S	062	067S	054	049H	033H	I027A	I028A	J030S	027	022
17	024	025	026S	U029S	032	J017S	I019S	023S	043S	055	I063S	068S	I068S	I068S	065	I068S	U062S	I061S	I051S	035S	I042S	I041S	I037S	025S
18	024	025	J026S	J031S	033	J019S	020	026	056	056	051	058	071S	066S	J062S	060S	056	050H	033	033S	030	I028S	025S	023
19	024S	027	030S	027	028	023	J017S	J024S	J052S	055S	I064S	052H	084Z	090	064	063	056H	053	038S	029	U038S	028	027	024
20	023S	I024S	026	026	028	I023S	I019S	023	051	I051H	053S	054	070S	I073S	075	I056S	060	052	036	023S	I031S	023	023S	022
21	024S	027	027S	026S	035S	023	J017S	027S	053	055	U060S	055	069	I072S	I065S	064S	I061S	050	039	I035S	I036S	I035S	027	024S
22	026S	I028S	028S	029	J031S	029	027S	028	050S	057	J062S	I067S	089	088S	089S	I074S	065H	I062S	043	049S	027	I027S	025	025S
23	024	028	030S	037	031	J016S	J018S	026	058	060	I074S	065	I061S	I075S	090	I061S	A	A	A	S	032S	029	I030S	I027S
24	025S	027	I025S	F	032	019	J017S	024S	I051S	060H	057	067	083S	I088S	I084S	I080S	J079S	I068S	057	I039S	032S	028S	027S	024
25	024	024	025	026	027	028	024	026S	043	052H	058	058	053S	067S	055	I059S	I057H	051	036S	035S	045	037S	030S	024
26	025S	I026S	I026A	027	I027S	024S	023S	030	J050S	052H	053	058	U060S	I062S	058	063	082S	054H	040S	I035S	S	S	S	I025S
27	024S	I025S	025S	025S	I030S	025	021	027	044H	045	053S	056	065S	I065S	I063S	I061S	063H	061S	044	I027S	U026S	029	025	I025S
28	027	I027S	028S	029S	034S	028S	I024S	028S	U046S	050S	055H	059	I068S	I068S	084H	082	S	I115S	I107S	060S	J051S	058S	I038S	I030S
29	028S	I029S	031S	034S	036S	026S	024S	032S	052S	052	051	064	067	058	S	068S	I061S	I073S	059S	027	I035A	J033S	020S	023
30	025	I026S	025S	028	035	023	020	I030S	044	048	051	060	I064C	064S	J077S	062S	059S	057H	052S	030	U037S	038	030	025S
31	028S	027S	I030S	J030S	029	025	026S	J030S	J053S	050H	051H	070S	063	062S	062	067	062S	058	051S	U036S	S	I030S	022	026
No.	31	31	31	30	28	30	30	30	30	31	30	29	28	30	29	30	28	29	29	28	26	29	29	29
Median	025S	027S	027S	029	031	023	021S	028S	050S	052	054	062	068S	068S	063	061S	060	053S	039S	034S	U036S	029S	024	025S
U. Q.	027	028	029	031	034	024	023	030	053	056	060	067	081	075	074	067	063	062	044	039	039	035	027	025
L. Q.	024	025	025	027	028	019	019	026	045	050	051	058	064	064	060	059	056	050	036	030	031	026	022	023
Q. R.	003	003	004	004	006	005	004	004	008	006	009	009	017	011	014	008	007	012	008	009	008	009	005	002

The Radio Research Laboratories, Japan

foF2

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

Y 1

IONOSPHERIC DATA

Jan. 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												420	410	A	A	L	A							
2											450	C	C	410	400									
3											430	430	430	430	420	L	L							
4											L	410H	420H	400	430	L	L							
5												430H	430L	430	400	390L	L							
6												410H	430	430	420	L	280							
7											L	430	410	420	S	L								
8								C	C		L	410	430	420H	410	L								
9										L	400H	430H	430	420H	420	L	L							
10												410L	L	430	410L	LH								
11												410	430	430	470	L	L							
12													420L	420	420L	L	L							
13										L	L	L	430L	430	410H	L								
14												A	430	L	I420S	L	L							
15										L	C	C	C	C	C	C	C	C						
16											L	430	420	I450A	420	L	L							
17										L	410	420	420	420	410	L	L							
18										L	LH	410	410H	L	410L	L	L							
19											L	410H	430	I420S	410	LH								
20											L	LH	420	430	420	400L	L							
21											L	430	430H	420	420	A	A							
22											L	430	430	430	410	L								
23											L	430L	I430A	430	430	L								
24											L	430	430H	LH	L	L	L							
25											L	L	420L	410	420	380								
26											420L	I400C	430	430	420	400	L							
27											L	420H	430	430	410	380								
28												430	L	430	430	410L	L	L						
29											L	420	420	420	420	400	L							
30											LH	LH	C	430	420	400	LH							
31											L	420	430	430	L	400	L	L						
No.											5	23	26	26	26	9	1							
Median											420	420	430	430	420	400	280							
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

IONOSPHERIC DATA

Jan. 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								E170S	185	I245R	I275C	300	A	A	A	A	A	A						
2								E180S	190	250H	I280R	C	C	300	I290R	255	A	E170S						
3								E180S	E180B	250	280	300	310	I295A	280	265	230	E190S						
4								E180S	200	240H	280H	300	300	300	290	270	240	E180S						
5								E170S	E180B	250	290	300	I300R	300	290R	260	225	E170S						
6								E170S	190	240	265	270	A	A	I290A	275	240	E170S						
7								E170S	E170B	250	270	280	A	A	A	275	230	E190S						
8								C	C	260	285	I300A	310	310R	300	275	230	E170S						
9								E170S	E170S	230	270	300	300R	300	300	270	230	E170S						
10								E180S	E190S	230	I270A	290	300	I300A	I285A	265	230	E170S						
11								E180S	E170B	220	270	I290A	300	300	290	270	240	E170S						
12								E180S	E170S	210	240	290	310S	I305A	I290A	I270A	230	E170S						
13								E180S	200	230	280	290	290	I300A	305	I270A	230	A						
14								E180S	E180S	240	275	290	280	I285R	I295A	280	250	200						
15								E170S	E170S	230H	C	C	C	C	C	C	C	C						
16								E170S	E170S	230	275	290	280	I285A	I295A	280	240	E160S						
17								E180S	E170S	260	280	290	300	A	A	290	245	E170S						
18								E160S	E170S	240	270	295	300	310	290	270	250	180						
19								E170S	E170B	260H	270	300	I300A	300	A	A	235	E170S						
20								E170S	E170S	240	280	I295A	I300R	U310R	295	270	250	E180S						
21								E170S	205	250	A	A	A	A	R	A	A	190						
22								E160S	E180S	240	270	I295R	I310R	I310R	290	I260A	240	A						
23								E170S	190	235H	280	300	295	I305A	300R	A	A	E160S						
24								E170S	190	245	275	A	A	290	I260A	230	205	E160S						
25								E170S	A	A	280	295	310	300	290	270	250	190						
26								E170S	190	250	295	I300C	I300A	300	I280A	290	250	A						
27								E160S	200	250	290	300	A	A	A	A	255	200						
28								E170S	200	260	290	315	U315R	310	290	285	250	A						
29								E170S	200	250	285H	I300R	300	295	A	A	250	A						
30								E170S	E170S	240	270	310	C	A	A	A	250	180						
31								E170S	190	260H	290	300	310	I305A	300	275	245	190						
No.								30	29	30	29	27	22	23	22	23	26	24						
Median								E170S	E180	240	280	300	300	300	290	270	240	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

Jan. 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	J022	J021	E017S	E016S	J021	022M	021M	E017S	023	028	C	J037	J038	069M	J082	J038	J039	023	J026	023M	022	E018S	J024	E017S
2	E018S	032M	E018S	021	J024	S	S	E018S	G	G	035	C	C	028G	028G	J022G	J031	J032	J025	E018S	J024	021	E018S	E019S
3	E019S	E017S	E017S	E011B	E017S	E016S	E017S	E018S	022	032	032	032	026G	J042	J028G	029	027	E017S	E017S	E019S	E017S	E018S	E018S	E018S
4	E018S	E017S	E017S	E011B	E009B	E018S	E018S	E018S	G	G	G	G	027G	G	G	026G	J037	021	J054	J053	J022	J015S	J019	J015S
5	J014S	022	J015S	J014S	E011B	E018S	J015S	E017S	E018B	027	G	G	030G	029G	029G	J023G	030	J029	J031	021M	021M	E018S	E018S	E018S
6	E017S	E017S	E017S	E010B	E010B	E017S	E017S	E017S	G	027	029	032	032	032	029	024G	G	E017S	J030	E017S	021	E017S	E017S	E017S
7	E019S	E016S	E018S	020M	E010B	E012B	E017S	E017S	E017B	G	029	J038	038	038	038	029	021G	022M	021M	023	021M	E018S	E018S	E018S
8	E017S	E017S	E017S	J015S	E011B	E017S	E020S	C	C	G	028G	J032	027G	021G	022G	021G	023G	021	E018S	E018S	E017S	E018S	E018S	E018S
9	E016S	E017S	E018S	E017S	E016S	E018S	E018S	E017S	021	025	024G	028G	029G	030	021G	021G	G	E017S	J021	027M	022	J021	043M	021M
10	E018S	E018S	J031	E016S	E018S	E017S	E017S	E018S	E019S	G	035	033	032	J036	J032	023G	G	020	E018S	021M	E018S	E018S	S	S
11	E018S	E018S	E018S	E017S	E011B	E017S	E018S	E018S	E017B	G	030	035	034	025G	020G	G	G	E017S	E017S	E017S	E019S	S	E018S	E018S
12	E017S	E017S	J021	021	021	E017S	E017S	E018S	E017S	024	033	037	035	034	J038	031	021G	E017S	J020	020M	022M	C	E018S	E017S
13	021M	E018S	E017S	E010B	E018S	J015S	E018S	E018S	022	028	032	038	034	034	028G	J029	027	J024	022	022	020	C	E019S	022
14	E017S	E018S	E017S	E011B	J020	021	E017S	E018S	E018S	025	033	J052	038	030G	J037	021G	022G	J021	028	J032	J024	J020	022	021M
15	023M	021M	021M	022M	021M	023	023M	J021	021	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	024M	022M	J022	020	021M	E016S	E017S	E017S	022	G	G	038	037	J051	J038	031	031	024	J020	J031	J037	021M	E017S	E018S
17	E017S	E017S	021M	021M	E008B	E019S	S	E018S	E017S	030	033	039	038	045	030	031	028	J026	E018S	023M	021M	E018S	E018S	E018S
18	E017S	E017S	E015S	E015S	E011B	E017S	E016S	E016S	E017S	G	028	033	032	035	037	G	G	G	E017S	E017S	E017S	E017S	E017S	E018S
19	E018S	E018S	E016S	E017S	E010B	E017S	E019S	E017S	E017B	G	031	034	038	040	030	J038	J024	E017S	E018S	E018S	E017S	E017S	E017S	E018S
20	E019S	E017S	E018S	E017S	E017S	E017S	E019S	E017S	E017S	G	G	030	038	036	034	038	G	E018S	E018S	021M	E018S	E016S	E017S	E018S
21	E017S	022M	E017S	E017S	E017S	E016S	E019S	E017S	G	027	031	J033	035	045	035	J053	040	G	J028	J030	J024	J022	E018S	E018S
22	E017S	021M	E017S	E016S	J024	E017S	021	021	E018S	G	034	036	025G	030G	020G	J037	J024	021	J021	021	022M	S	E016S	E017S
23	E017S	E017S	E017S	J020	021M	E019S	E018S	E017S	G	G	G	038	J053	037	033	054M	J084	090M	058M	028M	023M	024M	024M	S
24	E017S	E017S	E017S	E009B	E016S	E017S	E018S	E017S	G	G	G	038	036	032	034	030	029	J038	J038	J032	E017S	023	021M	E018S
25	E017S	023	E018S	E018S	E017S	E017S	E017S	E017S	032	029	033	035	036	039	031	020G	030	022	021M	E018S	E018S	E018S	E017S	E018S
26	E019S	E018S	028M	E018S	J021	E018S	E017S	E017S	G	G	032	C	J038	039	029	022G	026	J022	J020	E018S	S	E017S	E018S	E021S
27	E017S	021M	E018S	E016S	E016S	E017S	E016S	E016S	G	030	035	037	042	036	037	J033	021G	021	E018S	022	E019S	E018S	E018S	E018S
28	E018S	S	E018S	E017S	E018S	E017S	E016S	E017S	G	G	033	037	037	043	J054	028G	G	023	024M	J022	J024	038	E017S	E017S
29	E017S	E017S	E016S	E017S	E012B	E017S	E017S	E017S	G	G	032	033	051	J038	J039	J052	J038	J061	J029	J025	035M	E016S	E019S	E018S
30	E017S	022M	E016S	E018S	E017S	E016S	021M	021M	E017S	G	033	033	C	034	J036	J035	029	G	E017S	E017S	E017S	021M	E017S	E018S
31	E017S	E018S	E019S	E017S	E018S	E019S	E017S	E017S	020	028	035	039	034	032	032	G	024G	021	E017S	E017S	E018S	E018S	E017S	E017S
No.	31	30	31	31	31	30	29	30	30	31	29	28	28	30	30	30	30	30	30	30	29	26	29	28
Median	E017S	E018S	E017S	E017S	E017S	E017S	E017S	E017S	G	G	032	035	036	036	032	029	025	021	021	021	021	E018S	E018S	E018S
U. Q.	E019	021	E018	E018	021	E018	E019	E018	020	027	033	038	038	039	037	035	030	024	028	025	022	021	E019	E018
L. Q.	E017	E017	E017	E015	E011	E017	E017	E017	E017	G	G	032	032	030	G	G	G	G	E018	E018	E018	E017	E017	E018
Q. R.		D004			D010				D003			006	006	009					D010	D007	D004	D004		

Sweep 0.55 Mc to 17.9 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

foEs

Y 4

50

IONOSPHERIC DATA

Jan. 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	E022S	018	S	S	E	A	A	S	G	028	C	025	035	045	A	034	026	022	E	019	018	S	A	S
2	S	A	S	019	018	S	S	S			034	C	C	024G	023G	022G	029	026	025	S	019	E	S	S
3	S	S	S	B	S	S	S	S	022	032	G	029	024G	038	024G	023	019		S	S	S	S	S	S
4	S	S	S	B	B	S	S	S					024G			025G	022G	G	A	A	019	S	018	S
5	S	E	S	E014S	B	S	S	S	B	G			E030R	024G	025G	021G	020	024	E031S	E	018	S	S	S
6	S	S	S	P	B	S	S	S		G	E029R	032	032	031	E029R	022G		S	029	S	018	S	S	S
7	S	S	S	E	B	B	S	S	B		E029R	033	038	038	E038S	021	019G	G	E	E023S	E	S	S	S
8	S	S	S	S	B	S	S	C	C		028G	031	024G	019G	022G	E021S	021G	019	S	S	S	S	S	S
9	S	S	S	S	S	S	S	S	020	G	024G	025G	024G	027	021G	019G		S	018	018	E	E	A	018
10	S	S	A	S	S	S	S	S	S		034	G	G	033	031	022G		019	S	E	S	S	S	S
11	S	S	S	S	B	S	S	S	B		029	032	034	024G	019G			S	S	S	S	S	S	S
12	S	S	E	019	017	S	S	S	S	G	032	036	034	G	034	E031R	019G	S	020	E	E	C	S	S
13	E	S	S	B	S	S	S	S	022	G	031	032	032	031	024G	028	019	021	019	019	019	C	S	E
14	S	S	S	B	018	E	S	S	S	G	032	048	035	E030R	E037S	019G	019G	019	027	E032S	E024S	020	018	019
15	018	E	E	E	S	A	018	E021S	G		C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	017	017	018	013	017	S	S	S	G			038	034	051	033	031	027	020	018	A	A	E	S	S
17	S	S	E	016	B	S	S	S	S	030	033	033	034	033	E030R	023	022	026	S	E	E	S	S	S
18	S	S	S	S	B	S	S	S	S		G	G	032	G	035				S	S	S	S	S	S
19	S	S	S	S	B	S	S	S	B		031	032	035	035	E030R	031	019	S	S	S	S	S	S	S
20	S	S	S	S	S	S	S	S	S			E030R	038	036	G	036		S	S	E	S	S	S	S
21	S	018	S	S	S	S	S	S		E027R	031	032	033	041	G	040	040		019	E030S	E024S	E022S	S	S
22	S	E	S	S	024	S	021	017	S		033	036	024G	E030R	019G	032	022	021	E021S	019	E	S	S	S
23	S	S	S	E	018	S	S	S				038	E053S	032	033	036	A	A	A	E028S	020	019	019	S
24	S	S	S	S	S	S	S	S				035	032	032	G	G	E029R	E038S	038	025	S	023	019	S
25	S	019	S	S	S	S	S	S	025	029	032	032	034	035	G	019G	030	G	E	S	S	S	S	S
26	S	S	A	S	E	S	S	S			032	C	037	037	E029R	022G	018	022	019	S	S	S	S	S
27	S	019	S	S	S	S	S	S		G	G	033	037	033	033	032	018G	018	S	E	S	S	S	S
28	S	S	S	S	S	S	S	S			033	035	036	036	037	026G		022	020	E022S	019	034	S	S
29	S	S	S	S	B	S	S	S			032	032	037	035	035	031	022	055	027	023	A	S	S	S
30	S	017	S	S	S	S	E	019	S		032	032	C	034	031	032	022		S	S	S	018	S	S
31	S	S	S	S	S	S	S	S	G	G	032	034	033	E032R	G		019G	021	S	S	S	S	S	S
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

foEs

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

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Jan. 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	E017S	E017S	E017S	E016S	E016S	E018S	E017S	E017S	017	016	C	017	017	017	017	016	017	E016S	E017S	E017S	E017S	E018S	E017S	E017S
2	E018S	E017S	E018S	E018S	E017S	S	S	E018S	016	018	017	C	C	017	017	016	017	E017S	E017S	E018S	E017S	E018S	E018S	E019S
3	E019S	E017S	E017S	011	E017S	E016S	E017S	E018S	018	017	017	017	017	017	017	017	017	E019S	E017S	E019S	E017S	E018S	E018S	E018S
4	E018S	E017S	E017S	011	009	E018S	E018S	E018S	016	016	017	017	017	019	018	018	017	E018S	E017S	E017S	E017S	E017S	E017S	E018S
5	E018S	E017S	E017S	010	011	E018S	E017S	E017S	018	016	017	017	018	018	017	017	017	E017S	E017S	E018S	E017S	E018S	E018S	E018S
6	E017S	E017S	E017S	010	010	E017S	E017S	E017S	017	017	017	017	018	018	018	017	016	E017S	E017S	E017S	E017S	E017S	E017S	E017S
7	E019S	E016S	E018S	E017S	010	012	E017S	E017S	017	017	017	017	017	019	017	017	017	E019S	E017S	E017S	E017S	E018S	E018S	E018S
8	E017S	E017S	E017S	E019S	011	E017S	E020S	C	C	017	017	018	017	018	017	017	017	E017S	E018S	E018S	E017S	E018S	E018S	E018S
9	E016S	E017S	E018S	E017S	E016S	E018S	E018S	E017S	E017S	017	017	017	018	017	017	017	017	E017S	E016S	E017S	E017S	E017S	E017S	E017S
10	E018S	E018S	E017S	E016S	E018S	E017S	E017S	E018S	E019S	017	017	018	017	018	017	017	017	E017S	E018S	E018S	E018S	E018S	S	S
11	E018S	E018S	E018S	E017S	011	E017S	E018S	E018S	017	017	017	017	017	018	018	017	016	E017S	E017S	E017S	E019S	S	E018S	E018S
12	E017S	E017S	E017S	E018S	010	E017S	E017S	E018S	E017S	017	017	017	018	017	017	016	017	E017S	E018S	E017S	E018S	C	E018S	E017S
13	E018S	E018S	E017S	010	E018S	E016S	E018S	E018S	017	017	017	017	018	018	017	017	016	E017S	E018S	E017S	E018S	C	E019S	E017S
14	E017S	E018S	E017S	011	E016S	E018S	E017S	E018S	E018S	017	017	017	018	017	018	017	017	016	E018S	E016S	E017S	E017S	E017S	E017S
15	E017S	E017S	E018S	E017S	010	E016S	E017S	E017S	E017S	016	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	E016S	E016S	E016S	009	009	E016S	E017S	E017S	E017S	016	017	016	016	017	017	016	016	E016S	E016S	E017S	E016S	E017S	E017S	E018S
17	E017S	E017S	E017S	009	008	E019S	S	E018S	E017S	016	016	016	018	017	017	017	017	E017S	E018S	E017S	E017S	E018S	E018S	E018S
18	E017S	E017S	E015S	E015S	011	E017S	E016S	E016S	E017S	017	018	017	017	016	018	017	018	E017S	E017S	E017S	E017S	E017S	E017S	E018S
19	E018S	E018S	E016S	E017S	010	E017S	E019S	E017S	017	016	016	016	017	016	016	016	017	E017S	E018S	E018S	E017S	E017S	E017S	E018S
20	E019S	E017S	E018S	E017S	E017S	E017S	E019S	E017S	E017S	017	016	016	016	017	017	016	018	E018S	E018S	E018S	E018S	E016S	E017S	E018S
21	E017S	E016S	E017S	E017S	E017S	E016S	E019S	E017S	018	016	016	017	017	017	016	016	017	E017S	E017S	E017S	E017S	E017S	E018S	E018S
22	E017S	E018S	E017S	E016S	011	E017S	E018S	E016S	E018S	016	017	017	017	017	017	017	017	E017S	E017S	E017S	E017S	S	E016S	E017S
23	E017S	E017S	E017S	E017S	009	E019S	E018S	E017S	017	016	017	016	016	016	017	016	016	E016S	E017S	E017S	E017S	E017S	E017S	S
24	E017S	E017S	E017S	009	E016S	E017S	E018S	E017S	016	017	016	016	016	016	016	017	017	E016S	E017S	E017S	E017S	E017S	E017S	E018S
25	E017S	E017S	E018S	E018S	E017S	E017S	E017S	E017S	017	016	016	016	017	017	017	018	017	E017S	E017S	E018S	E018S	E018S	E017S	E018S
26	E019S	E018S	E017S	E018S	E017S	E018S	E017S	E017S	016	016	017	E042C	018	017	016	016	016	E016S	E017S	E018S	S	E017S	E018S	E021S
27	E017S	E018S	E018S	E016S	E016S	E017S	E016S	E016S	016	016	016	018	016	016	016	016	016	E017S	E018S	E017S	E019S	E018S	E018S	E018S
28	E018S	S	E018S	E017S	E018S	E017S	E016S	E017S	016	016	016	016	017	017	017	018	016	E016S	E016S	E017S	E017S	E016S	E017S	E017S
29	E017S	E017S	E016S	E017S	012	E017S	E017S	E017S	017	016	016	017	018	016	019	016	016	E016S	E016S	E016S	E017S	E016S	E019S	E018S
30	E017S	E016S	E016S	E018S	E017S	E016S	E016S	E017S	E017S	016	016	016	C	018	016	018	016	E016S	E016S	E017S	E017S	E016S	E017S	E018S
31	E017S	E018S	E019S	E017S	E018S	E019S	E017S	E017S	016	016	016	017	018	017	016	016	017	E016S	E017S	E017S	E018S	E018S	E017S	E017S
No.	31	30	31	31	31	30	29	30	30	31	29	29	28	30	30	30	30	30	30	30	29	26	29	28
Median	E017S	E017S	E017S	E017S	E016S	E017S	E017S	E017S	016	016	017	017	017	017	017	017	017	E017S	E017S	E017S	E017S	E017S	E017S	E018S
U. Q.																								
L. Q.																								
Q. R.																								

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

f-min

IONOSPHERIC DATA

Jan. 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	I315S	310S	310	375	375	A	A	330	370	380H	I380C	345	335S	J350S	I340A	335	370	365	340	335	335	325	I315A	310
2	300	I300A	305	345	380S	I375S	I335S	335	I365H	J345H	I330S	C	C	340	J340S	340H	350	J380S	305	325S	325	365	310	280S
3	295	300	295	315	360	320	320	350	370H	325S	310S	I340S	350S	J330S	J340S	345	370	J380S	305	340	355S	345	295S	I300S
4	290S	I300S	295	J330S	S	J325H	J295S	315S	375S	J340S	355	J345S	360S	355	325S	335	370	365H	I360A	I330A	I355S	J370S	325	290S
5	290	285S	310	I330S	370	305	315	345	I370H	370H	340H	I330S	345S	J355S	340S	I350S	J345S	J360S	I335S	I355S	I355S	J355S	285	U300S
6	290	295	300S	320	360S	400	335	340S	J360S	365H	365H	335	J340S	I370S	J375S	370	350	365S	350S	I295S	S	355	335	285S
7	295S	290S	280S	295	S	370	295	335S	J375S	J380S	375	330	335S	370	335	355	350	J355S	305S	350S	345S	325S	300H	280
8	J310S	285S	I290S	295	S	285	315	C	C	355H	345	350	325S	335	340S	345	325	360S	330	340S	J350S	345S	320S	265S
9	305	280S	300S	340	350	275S	295	325S	345S	350	I320S	325S	320	I340S	350S	340S	345	J365S	325S	I310S	I340S	I330S	I320A	I280S
10	295	315S	I320A	320	I345S	370	290	340	J365S	380	340	J345S	J355S	340S	350	305	I345H	J355S	365S	290S	360S	380	I310S	I290S
11	290S	280	295	325S	355	300	320	355S	370	360	370H	I325S	S	I360S	300	J330S	I350S	375	325	I325S	I360S	I360S	I310S	F
12	310S	310	300S	290S	345S	360S	300S	325S	J360S	J360S	370H	355	360	345S	355	360	345	350S	380	U285S	I320S	I335C	I310S	I275S
13	295S	290S	310S	375S	365	275S	300	320S	J335S	370	U365S	360	J345S	330	355S	345S	J350S	J345S	340S	265S	310S	I345C	290S	I290S
14	I300S	310S	295S	300S	J355S	295	305S	305	355S	370	355H	J320S	355S	310S	345	350S	360S	360H	365S	S	S	320	335	280S
15	295	310	300	320	355	I300A	275S	S	350	360S	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	305	I310S	315	320	330	340	325S	315	I380S	355H	355	J355S	345	I325S	325	375S	370	365H	385H	I315A	I300A	J325S	370	320
17	290	305	310S	U315S	375	J355S	I325S	325S	350S	325	I350S	370S	I350S	I340S	355	I340S	U340S	I340S	I355S	290S	I310S	I330S	I340S	355S
18	290	295	J295S	J325S	385	J370S	295	330	360	355	355	345	350S	355S	J355S	350S	380	370H	360	360S	315	I320S	325S	315
19	290S	285	315S	335	345	390	J300S	J335S	J325S	330S	I355S	290H	330Z	355	345	370	355H	360	395S	305	U340S	320	340	335
20	290S	I295S	305	295	340	I375S	I365S	315	370	I355H	340S	280	330S	S	335	I350S	335	365	360	310S	I340S	350	315S	305
21	300S	300	275S	310S	330S	390	J300S	335S	365	365	U350S	350	350	I345S	I355S	340S	I350S	360	350	I345S	I340S	I340S	335	295S
22	295S	I290S	275S	285	J325S	340	355S	355	345S	365	J355S	I330S	330	340S	345S	I350S	320H	I370S	325	370S	335	I320S	310	305S
23	270	280	315S	360	385	S	J305S	310	360	350	I360S	385	I330S	I320S	350	I345S	A	A	A	S	325S	315	I330S	I345S
24	295S	295	I285S	F	345	370	J295S	340S	I365S	360H	350	345	335S	I330S	I330S	I330S	J350S	I355S	355	I340S	320S	325S	335S	325
25	295	295	320	310	335	340	335	330S	355	355H	365	365	370S	340S	325	I340S	I370H	370	360S	320S	330	345S	355S	300
26	315S	I310S	I310A	325	I320S	315S	330S	365	J370S	375H	360	345	U360S	I360S	345	340	365S	370H	350S	I330S	S	S	S	I315S
27	335S	I315S	330S	320S	I340S	325	335	365	350H	360	345S	350	355S	I340S	I350S	I360S	350H	360S	385	I320S	U310S	310	330	I295S
28	285	I285S	320S	315S	355S	320S	I325S	325S	U370S	360S	355H	340	I345S	I340S	320H	335	S	I350S	I350S	335S	J280S	345S	S	I310S
29	310S	I305S	305S	310S	355S	325S	310S	330S	365S	365	355	360	375	340	S	360S	I345S	I350S	355S	360	I350A	J360S	295S	300
30	290	I305S	295S	320	370	350	300	I350S	375	360	345	335	I350C	330S	J350S	360S	355S	345H	365S	300	U330S	340	335	290S
31	290S	320S	I295S	J325S	310	305	310S	J350S	J375S	390H	355H	355S	350	340S	325	360	355S	380	335S	U340S	S	I360S	285	300
No.	31	31	31	30	28	29	30	29	30	31	30	29	28	29	29	30	28	29	29	28	26	29	28	29
Median	295S	300S	300S	320	355	340	310S	335S	365S	360	355	345	350S	340S	345	345S	350	360S	350S	330S	U335S	340S	320	300S
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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												380	400	A	A	L	A							
2											370	C	C	380	400									
3											350	350	370	365	360	L	L							
4											L	385H	375H	375	365	L	L							
5												370H	370L	355	375	360L	L							
6												390H	365	370	380	L	430							
7											L	375	355	A	S	L								
8								C	C		L	385	370	385H	365	L								
9										L	360H	355H	360	370H	365	L	L							
10												365L	L	370	390L	LH								
11												355	350	370	355	L	L							
12													370L	355	375L	L	L							
13										L	L	L	370L	370	350H	L								
14												A	350	L	I375S	L	L							
15										L	C	C	C	C	C	C	C	C						
16											L	370	385	I370A	355	L	L							
17										L	365	375	370	380	385	L	L							
18										L	LH	380	370H	L	370L	L	L							
19											L	400H	395	S	385	LH								
20											L	LH	345	360	360	385L	L							
21											L	385	365H	A	370	A	A							
22											L	385	360	395	390	L								
23											L	375L	A	370	350	L								
24											L	350	370H	LH	L	L	L							
25											L	L	405L	365	375	390								
26											365L	I390C	395	375	380	375	L							
27											L	380H	365	375	390	395								
28												370	L	365	365	380L	L	L						
29											L	360	380	395	360	375	L							
30											LH	LH	C	395	370	400	LH							
31											L	380	370	390	L	375	L	L						
No.											5	23	25	23	26	9	1							
Median											365	375	370	370	370	380	430							
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

IONOSPHERIC DATA

Jan. 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												240	265	250	A	290	240							
2											S	C	C	240	245									
3											340	270	250	250	255	250	240							
4											265	290	255	250	300	270	230							
5												300	250	255	270	255	240							
6												290	255	250	240	240	250							
7											230	300	270	250	270	230								
8								C	C		255	250	280	255	275	250								
9										250	260	275	300	260	250	270	250							
10												260	250	255	255	300								
11												310	250	250	325	275	250							
12													255	260	255	250	240							
13										240	250	250	280	280	270	250								
14												300	255	305	255	250	240							
15										240	C	C	C	C	C	C	C	C						
16											255	250	265	300	300	250	230							
17										290	280	250	255	265	250	255	245							
18										255	250	270	255	250	250	250	240							
19											245	290H	260	250	280	250								
20											275	380	280	260	255	235	250							
21											250	270	275	260	250	250	250							
22											250	330	290	245	250	245								
23											250	245	I290A	300	250	270								
24											255	280	260	260	230	250	250							
25											250	250	250	290	300	250								
26											270	280	250	240	280	290	245							
27											270	280	260	290	275	250								
28												285	250	275	275	250	240	240						
29											250	255	250	280	280	250	250							
30											275	280	I270C	295	255	250	250							
31											250H	255	280	270	275	250	250	230						
No.										5	21	28	29	30	29	29	20	2						
Median										250	255	280	260	260	255	250	245	235						
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

55

IONOSPHERIC DATA

Jan. 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	A	325	290	230	220	A	A	250	230	235H	I240C	210	200	A	A	240	A	220	235	245	250	E280S	A	300
2	290	A	290	250	225	I195S	S	250	190H	210H	245	C	C	200	200	245H	250	220	E305A	250	220	230	E285S	E345S
3	305	295	295	280	220	E285S	E280S	230	210H	250	230	235	230	E250A	200	225	230	210	E230S	250	225	240	E340S	325
4	310	300	300	250	215	SH	S	250	230	250	240	205H	200H	200	225	210	215	200H	A	A	250	230	E280A	E370S
5	E350S	E350S	300	255	220	E325S	E275S	225	190H	220H	220H	190H	250	200	205	225	230	225	A	250	220	205	E330S	305
6	E300S	305	300	270	225	E200S	E275S	280	240	245H	230H	200H	215	235	205	200	180	230	E240A	E300S	230	E225S	E250S	S
7	E325S	E290S	E350S	310	230	210	S	255	230	240	215	195	A	I250A	I220A	205	245	225	250	250	230	E250S	SH	325
8	300	335	295	305	205	S	E350S	C	C	200H	220	215	230	200H	200	235	240	240	245	220	230	240	E275S	E400S
9	305	300	300	245	210	E350S	E325S	250	235	240	210H	200H	230	200H	230	210	230	235	275	250	250	210	A	E320A
10	325	280	I265A	E290S	245	210	E310S	245	225	225	250	225	250	220	225	195H	200H	240	200	E250S	215	225	S	S
11	E340S	E340S	340	250	220	E320S	300	205	210	230	200H	195	250	225	205	205	250	225	205	255	210	I230S	S	E350S
12	290	E290S	E330S	E350A	250	200	E340S	265	230	230	220H	250	250	245	230	230	210	230	205	350	255	I250C	275	330
13	305	325	275	205	230	E400S	E350S	270	250	245	240	235	205	205	195H	235	245	235	235	350	255	I230C	E300S	350
14	300	275	300	250	225	E330S	E290S	290	240	235	225H	A	230	200	A	230	230	200H	230	A	A	265	245	E370A
15	E340A	280	315	275	240	A	E400A	A	250	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	E315A	280	275	255	250	230	E270S	250	225	240H	230	E250A	210	I195A	240	240	230	220H	200H	A	A	255	230	E300S
17	E300S	E300S	295	255	215	S	S	E290S	240	250	245	230	220	200	195	230	240	245	200	E225S	245	215	230	245
18	E330S	E335S	300	255	200	S	E350S	270	245	230	215H	220	205H	240	E240A	200	215	200H	205	225	260	240	250	E300S
19	E350S	E330S	260	240	230	205	S	E280S	250	240	255	200H	200	200	200	205H	210H	230	200	250	235	250	250	250
20	E350S	330	E300S	300	255	200	S	E275S	240	200H	250	200H	A	245	230	E235A	200	230	210	E300S	250	240	E265S	E330S
21	E320S	305	E350S	E290S	240	200	S	255	230	240	235	205	220H	I240A	240	A	A	225	225	A	A	A	250	E295S
22	E305S	E310S	E345S	305	300	250	250	245	230	245	245	230	250	235	200	240	255H	230	I250A	215	250	S	280	E310S
23	E400S	350	300	240	205	S	S	275	250	245	240	E250A	A	225	230	E250A	A	A	A	A	250	250	275	I260S
24	E330S	E320S	340	290	220	E250S	S	265	240	220H	210	240	205H	200H	210	200	250	240	230	E265A	230	E275A	255	E275S
25	E320S	E350S	E300S	E290S	260	245	250	E230S	215	200H	250	240	200	240	225	215	245H	225	205	250	245	240	235	E300S
26	E300S	290	I300A	250	245	E300S	E260S	230	225	230H	240	I230C	210	225	205	205	240	205H	200	245	I240S	210	220	E330S
27	E290S	E300A	E275S	E300S	250	E245S	E275S	225	180H	245	235	200H	250	205	200	200	245H	230	200	240	E295S	250	275	320
28	E325S	I310S	E300S	260	240	E250S	E250S	245	235	235	225H	225	250	240	240	225	215	230	200	205	295	240	205	240
29	290	315	300	290	215	E240S	E290S	250	235	230	225	205	240	210	230	200	230	250	205	E250A	A	215	E400S	E340S
30	320	300	330	290	230	225	E330S	250	225	235	230H	195H	I200C	210	200	200	200H	195H	205	E280S	255	240	250	E300S
31	E305S	E300S	300	265	E290S	E300S	E285S	250	230	225H	195	215	200	215	205	200	220	230	205	240	245	240	E340S	E300S
No.	30	30	31	31	31	24	21	29	30	31	30	28	26	29	28	29	27	29	27	25	26	28	25	28
Median	E310S	290	300	260	230	E245S	E290S	250	230	235	230	210	220	210	210	210	230	230	205	245	245	240	U250	E315S
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

Y 10

IONOSPHERIC DATA

Jan. 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	100	105	S	S	100	100	100	S	155	150	C	105	105	100	100	100	105	160	120	105	105	S	100	S
2	S	100	S	100	100	S	S	S	G	G	160	C	C	105	100	100	100	100	100	S	100	100	S	S
3	S	S	S	B	S	S	S	S	150	160	155	105	105	105	100	100	100	S	S	S	S	S	S	S
4	S	S	S	B	B	S	S	S	G	G	G	G	110	G	G	115	105	115	100	100	105	S	105	S
5	S	105	S	100	B	S	S	S	B	E175G	G	G	110	100	100	100	100	100	100	100	100	S	S	S
6	S	S	S	B	B	S	S	S	G	130	130	110	110	110	105	105	G	S	105	S	105	S	S	S
7	S	S	S	105	B	B	S	S	B	G	140	110	150	105	105	100	100	105	100	110	110	S	S	S
8	S	S	S	S	B	S	S	C	C	G	110	105	105	100	100	100	100	100	S	S	S	S	S	S
9	S	S	S	S	S	S	S	S	125	120	105	105	100	105	105	105	G	S	110	110	110	105	105	100
10	S	S	100	S	S	S	S	S	S	G	155	150	E150G	105	105	100	G	100	S	100	S	S	S	S
11	S	S	S	S	B	S	S	S	B	G	E145G	125	130	105	105	G	G	S	S	S	S	S	S	S
12	S	S	100	100	100	S	S	S	S	120	110	150	150	145	100	100	100	S	100	100	100	C	S	S
13	110	S	S	B	S	S	S	S	155	150	135	120	125	115	105	105	100	100	100	100	100	C	S	110
14	S	S	S	B	100	100	S	S	S	E165G	135	115	115	105	105	100	100	100	100	100	100	100	100	100
15	100	100	100	100	100	100	100	100	100	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	105	105	105	100	100	S	S	S	125	G	G	120	115	105	105	130	125	115	110	100	100	100	S	S
17	S	S	100	100	B	S	S	S	S	160	145	125	115	110	110	105	105	100	S	100	100	S	S	S
18	S	S	S	S	B	S	S	S	S	G	E155G	145	125	135	125	G	G	G	S	S	S	S	S	S
19	S	S	S	S	B	S	S	S	B	G	170	150	115	125	100	100	100	S	S	S	S	S	S	S
20	S	S	S	S	S	S	S	S	S	G	G	105	150	150	150	135	G	S	S	100	S	S	S	S
21	S	100	S	S	S	S	S	S	G	130	110	105	105	100	150	100	100	G	100	100	100	100	S	S
22	S	100	S	S	105	S	100	110	S	G	E165G	150	100	100	100	100	100	100	100	100	100	S	S	S
23	S	S	S	100	100	S	S	S	G	G	G	115	110	105	150	100	100	100	100	100	100	100	100	S
24	S	S	S	S	S	S	S	S	G	G	G	130	125	125	120	115	115	105	100	100	S	100	100	S
25	S	100	S	S	S	S	S	S	100	100	150	130	125	125	E130G	100	150	E145G	100	S	S	S	S	S
26	S	S	100	S	100	S	S	S	G	G	170	C	125	120	115	100	100	100	100	S	S	S	S	S
27	S	100	S	S	S	S	S	S	G	E170G	130	115	110	105	105	105	100	100	S	100	S	S	S	S
28	S	S	S	S	S	S	S	S	G	G	E180G	130	125	120	110	110	G	100	100	155	150	135	S	S
29	S	S	S	S	B	S	S	S	G	G	E170G	130	120	115	105	105	100	100	100	100	100	S	S	S
30	S	100	S	S	S	S	100	100	S	G	150	145	C	115	105	105	105	G	S	S	S	100	S	S
31	S	S	S	S	S	S	S	S	100	170	120	115	125	110	155	G	105	150	S	S	S	S	S	S
No.	4	10	6	8	9	3	4	3	8	13	23	26	28	29	29	27	23	20	19	19	17	9	6	3
Median	100	100	100	100	100	100	100	100	125	140	140	120	115	105	105	100	100	100	100	100	100	100	100	100
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

h'Es

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

Y 11

IONOSPHERIC DATA

Jan. 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	f	f			f	f	f		h2	h 1		12	1	12	13	12	12	h21	f2	f	f		f	
2		f		f	f						h			1	1	1	12	12	f2		f	f		
3									h	h2	h	1	1	12	1	1	1							
4													1			1	1	1	f2	f2	f	f	f2	f
5	f	f	f	f			f			h			1	1	1	1	12	12	f2	f	f			
6										h	h	h2	1	1	1	12			f2		f			
7				f							h	c	h 1	12h	12	12	1	1	f	f3	f			
8				f							1	12	1	1	1	1	12	1						
9									h	c 1	1	1	1	1	1	1			f	f	f2	f	f	f
10			f								h21	h 1	h	12	12	12		1		f				
11											h	h	h	1	1									
12			f	f	f					c	c	h	h 1	h 1	12	13	12		f2	f	f			
13	f					f			h 1	h	h	c	c	1	1	1	1	13	f	f	f			f
14					f	f				h	c	c	c	1	13	1	1	1	f2	f2	f2	f	f	f
15	f	f	f	f	f	f2	f2	12	1															
16	f	f2	f2	f	f				c			h2	c	13	1	h 1	c21	c 1	f	f2	f3	f		
17			f	f						h	h	h	c2	12	12	12	12	13		f2	f			
18											h	h	h	h	c2									
19											h	h	1	c3	12	12	1							
20												1	h 1	h 1	h 1	h21				f	·			
21		f								h	1	1	1	12	h 1	12	12		f2	f2	f2	f2		
22		f			f2		f	1			h	h 1	1	1	1	12	12	1	f	f	f			
23				f	f							c2	c2	1	h 1	12	12	12	f2	f2	f	f	f	
24												c 1	c 1	c 1	c 12	c2	c21	13	f3	f2		f2	f	
25		f							12	12	h 12	h 1	h	h	h 1	1	h 1	h	f					
26			f		f						h 12		h 1	c21	c 1	1	1	12	f					
27		f								h	h	c	12	1	12	12	1	1		f				
28											h	h2	h	h	c2	1		1	f	f f	f	f3		
29											h	h	h	c	1	12	12	12	f2	f4	f2			
30		f					f	1			h	h		1	1	1	1					f		
31									1	h	h	c	h	1	h		12	h						
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

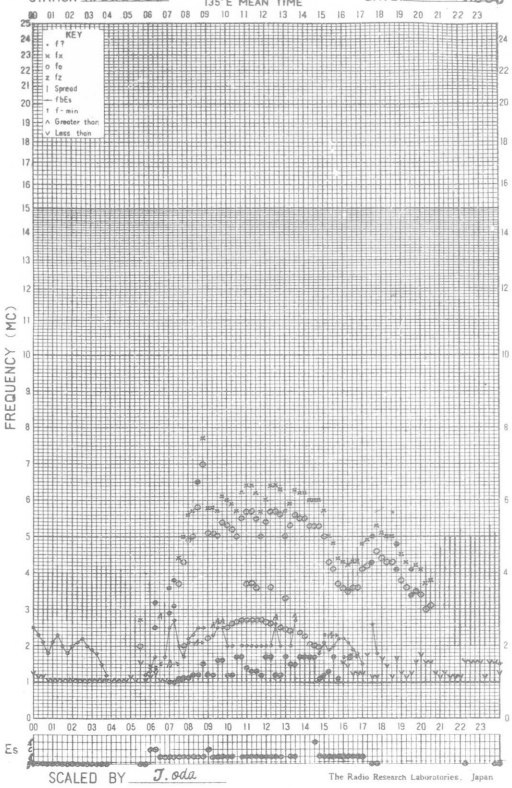
Types of Es

Y 12

58

f-PLOT OF IONOSPHERIC DATA

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

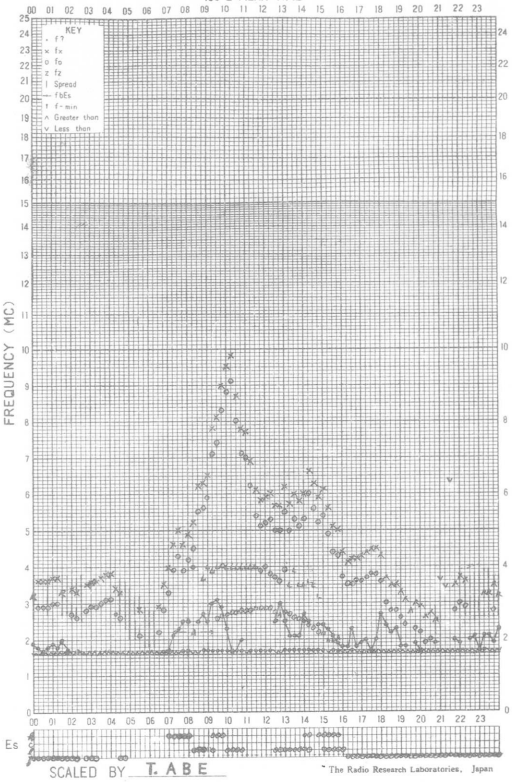


SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Jan. 1. 1965

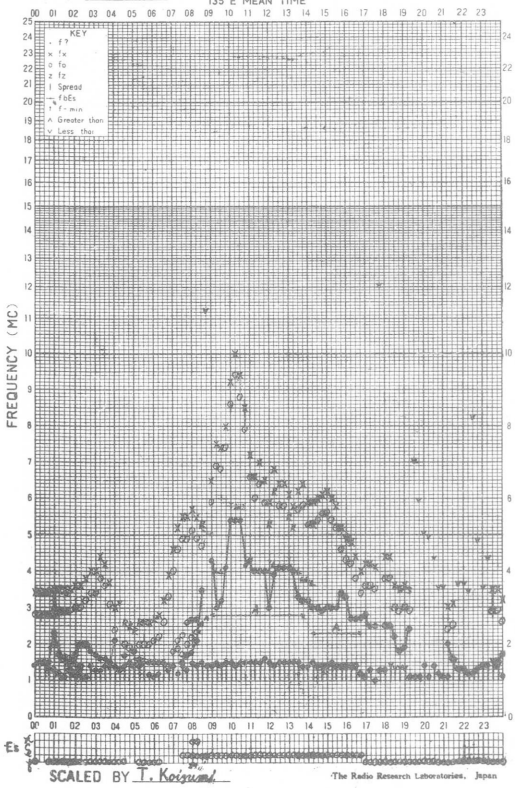


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JAN. 1, 1965

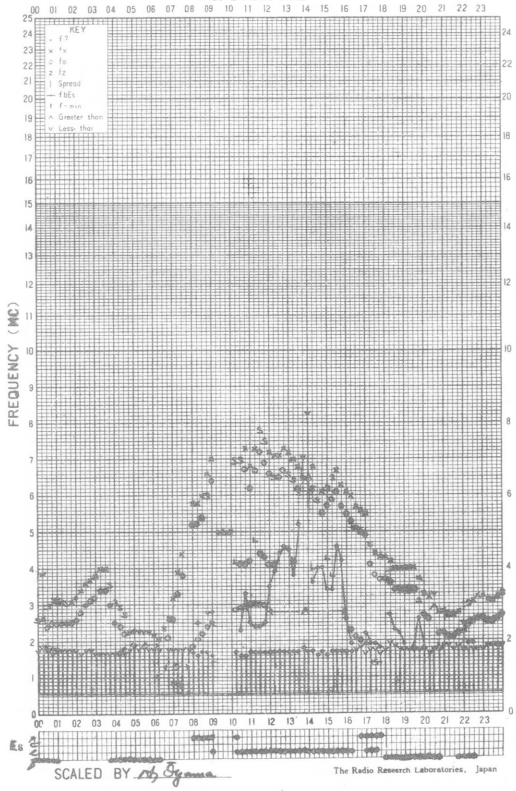


SCALED BY T. Koizumi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JAN. -1, 1965

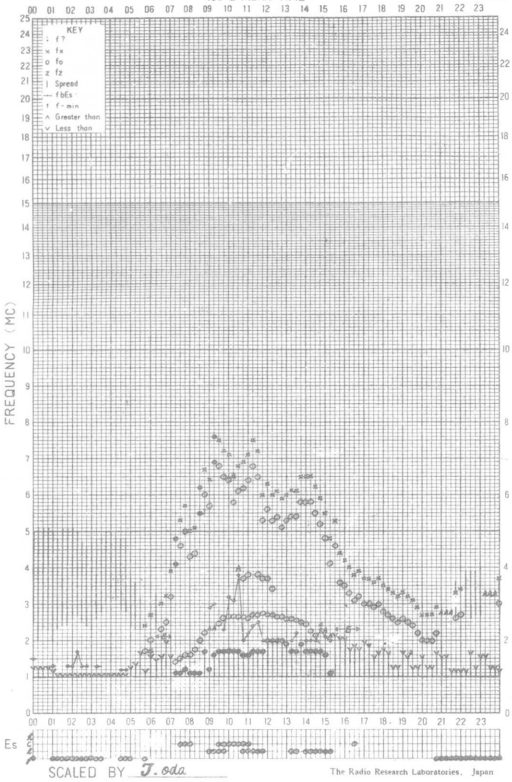


SCALED BY [illegible]

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 2. 1965

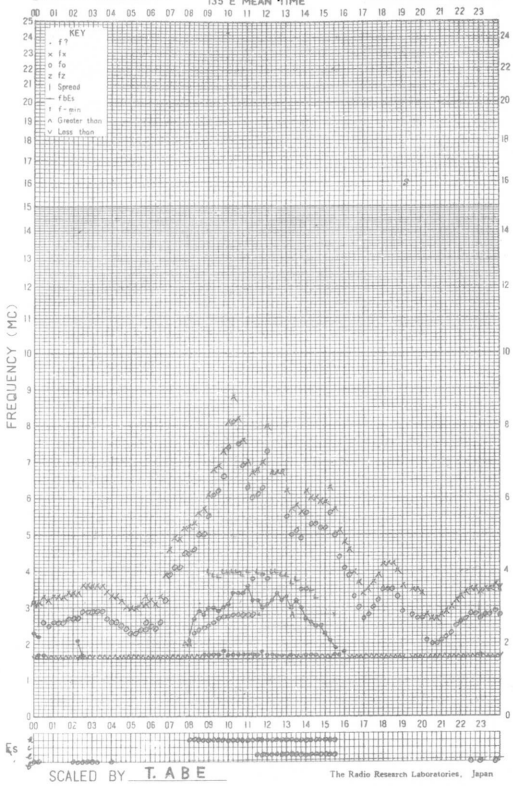


SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Jan. 2 1965

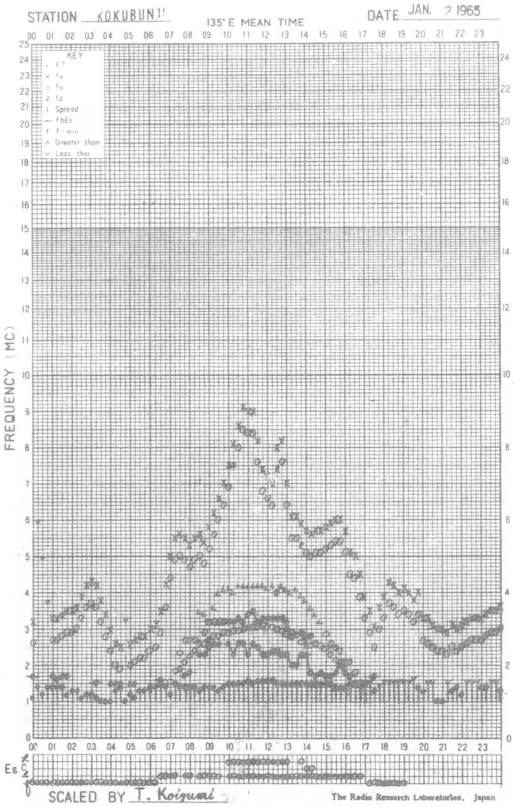


SCALED BY T. A B E

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JAN. 2 1965

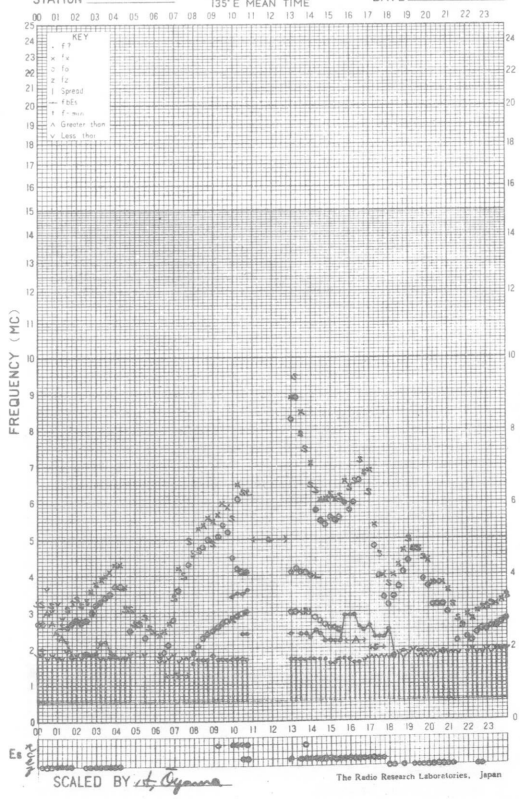


SCALED BY T. Koizumi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JAN. -2. 1965

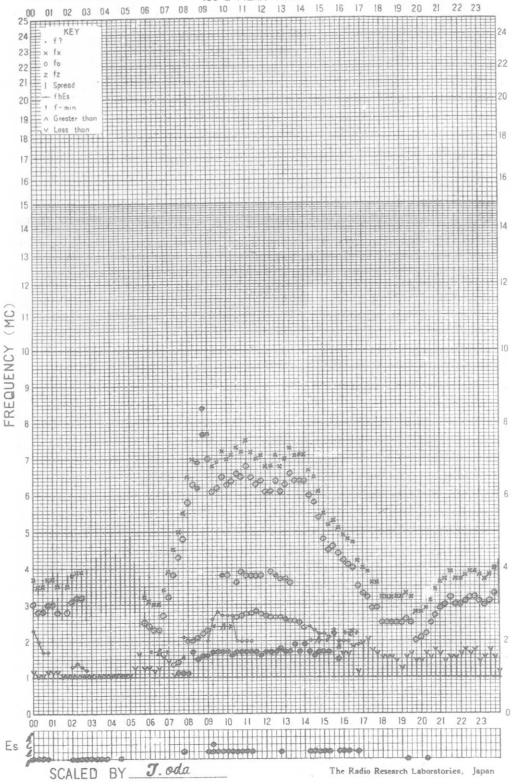


SCALED BY K. Ogawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 3.1965



SCALED BY T. oda

The Radio Research Laboratories, Japan

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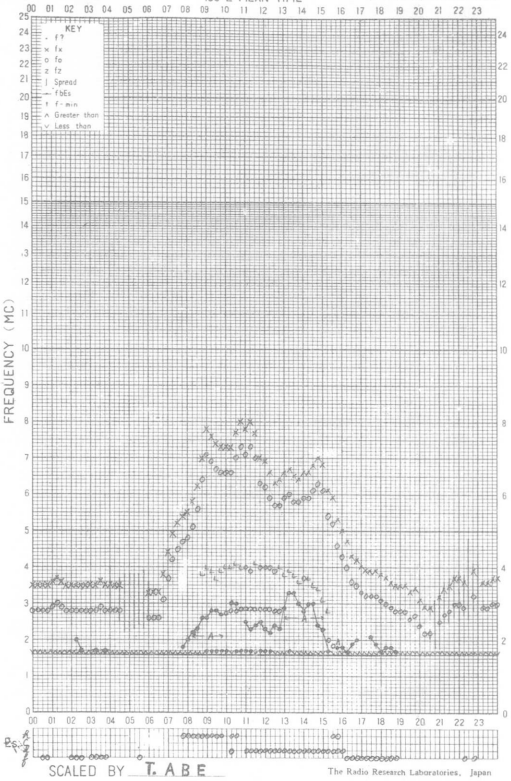

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The Radio Research Laboratories, Japan

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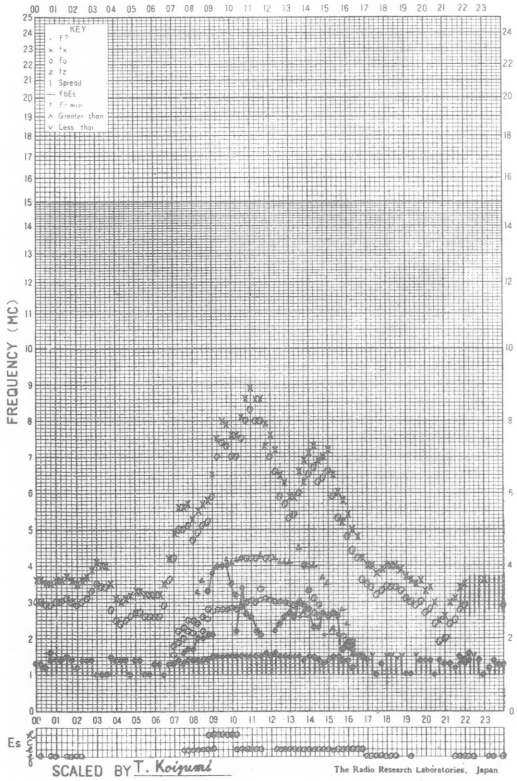

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The Radio Research Laboratories, Japan

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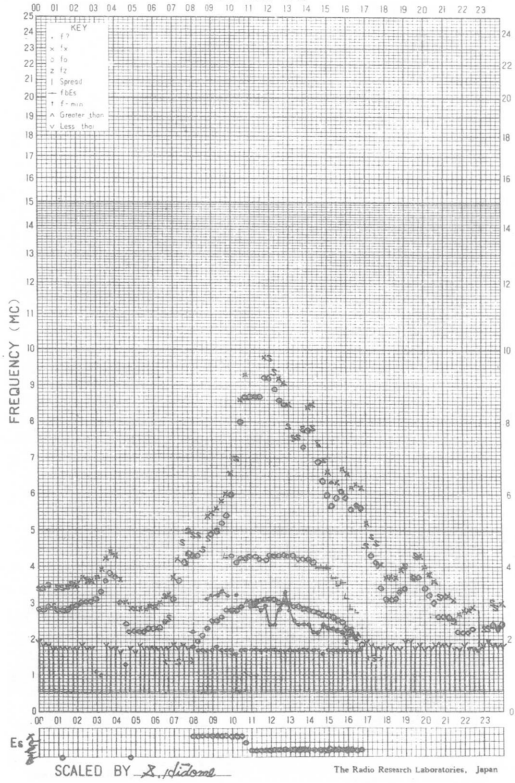

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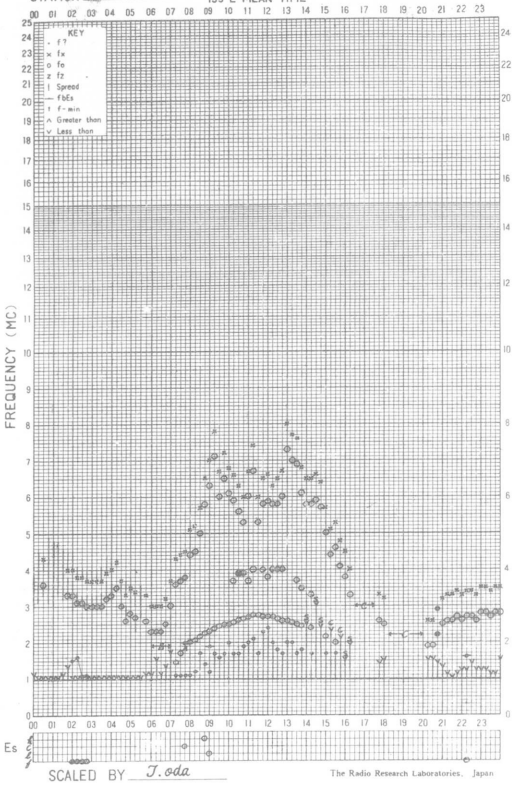

SCALED BY J. Oda

The Radio Research Laboratories, Japan

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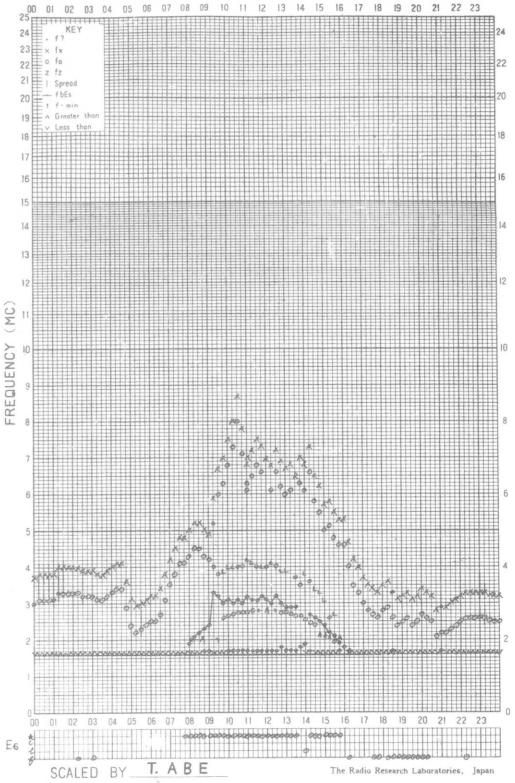

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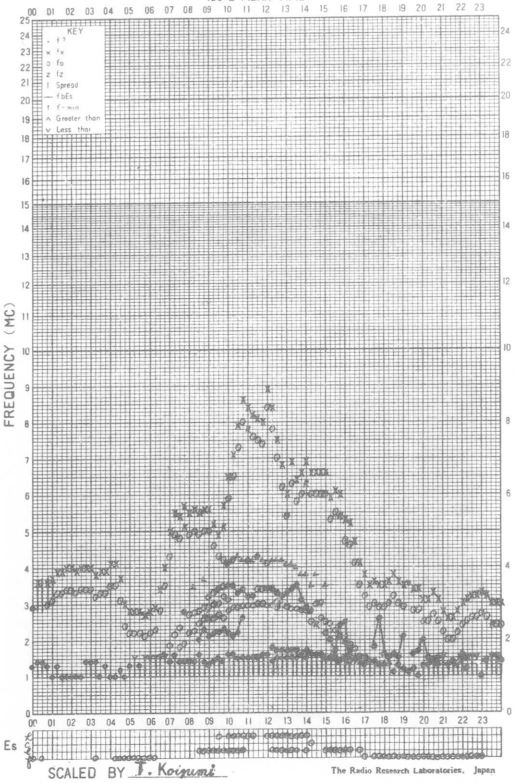

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The Radio Research Laboratories, Japan

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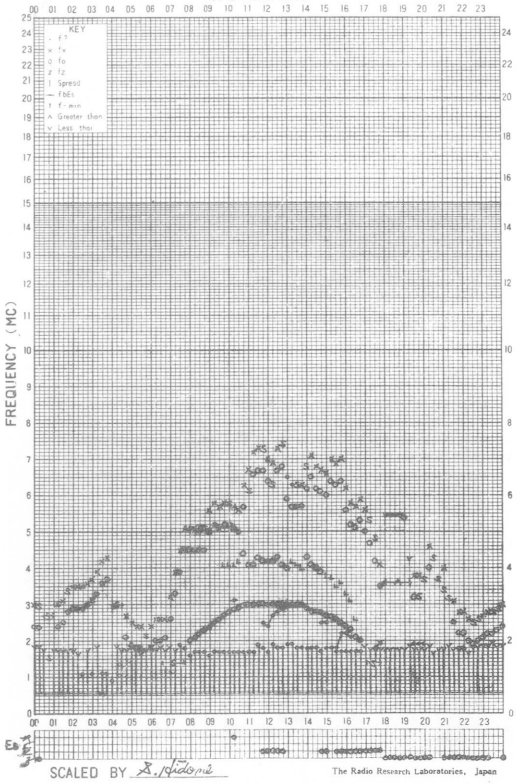

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The Radio Research Laboratories, Japan

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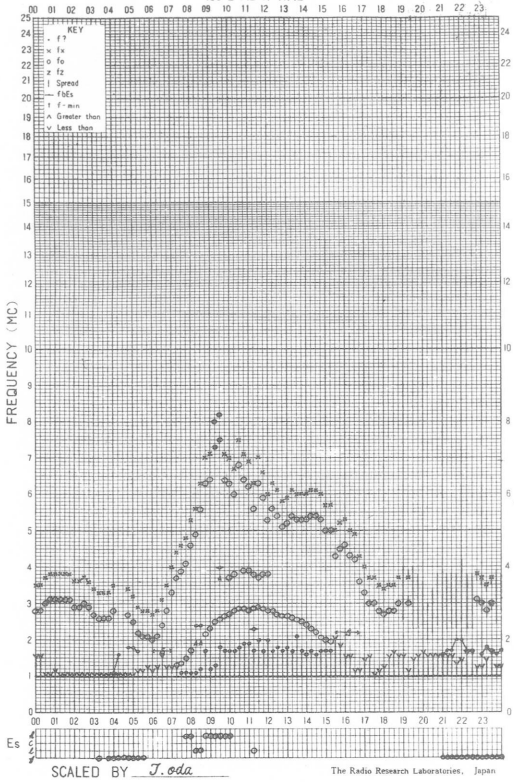

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The Radio Research Laboratories, Japan

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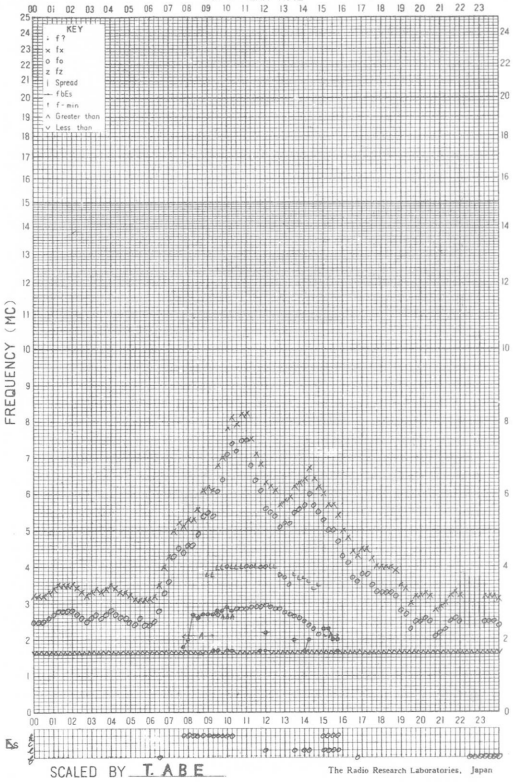

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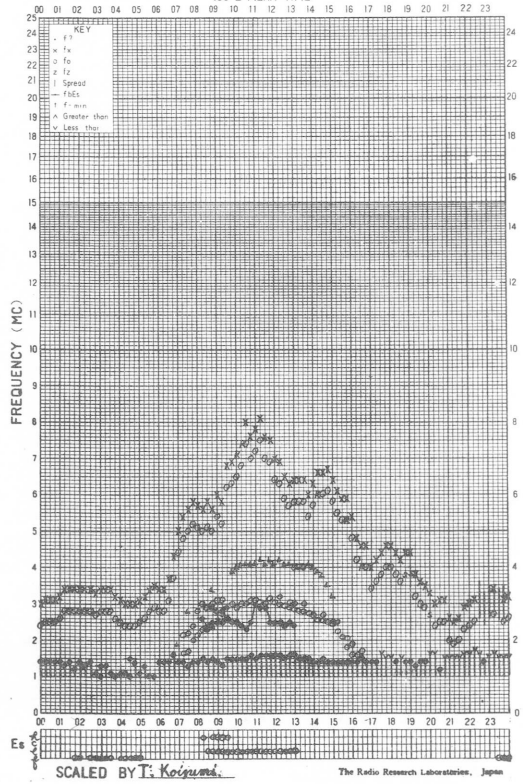

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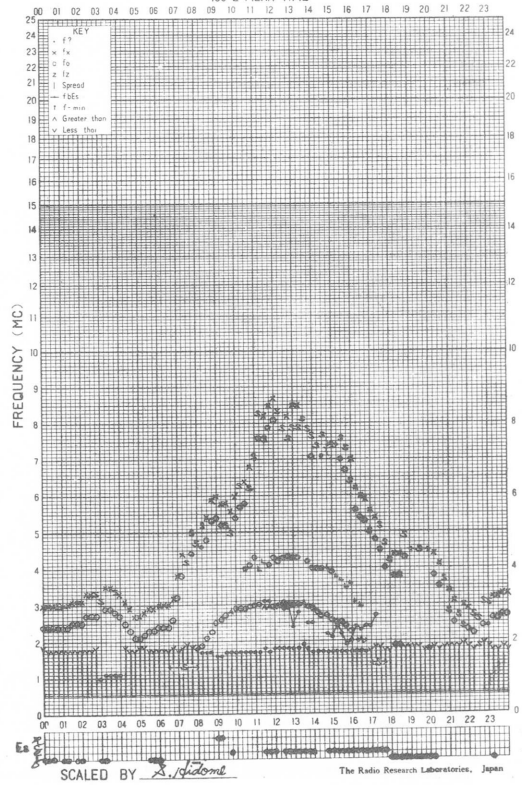

SCALED BY S. Sidomi

The Radio Research Laboratories, Japan

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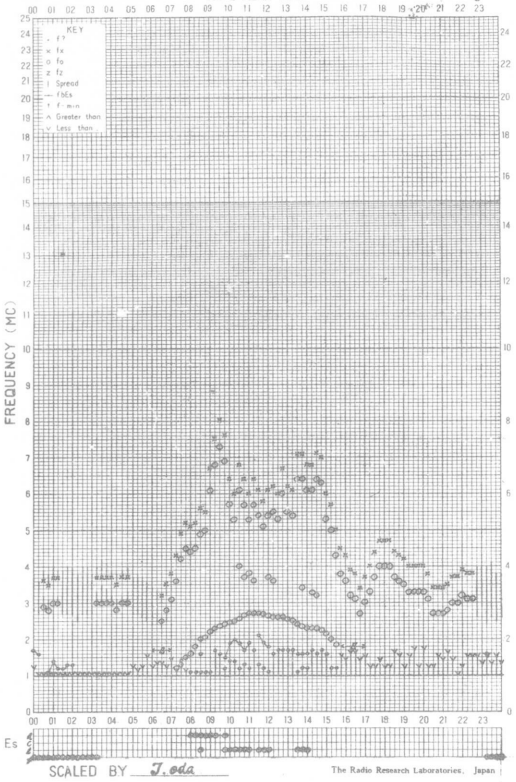

SCALED BY J. oda The Radio Research Laboratories, Japan

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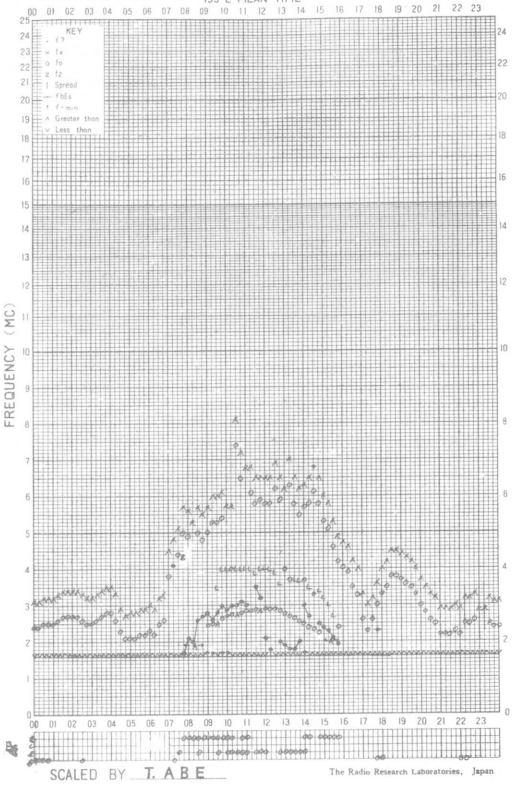

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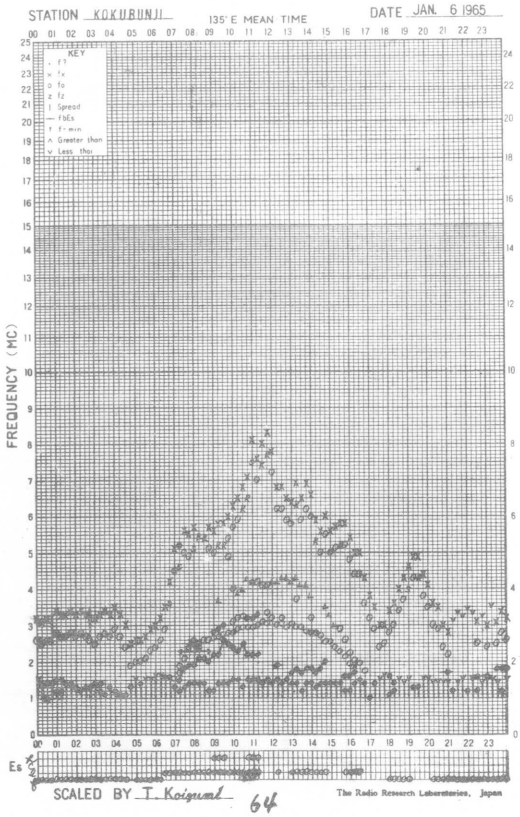

SCALED BY T. Koigumi The Radio Research Laboratories, Japan

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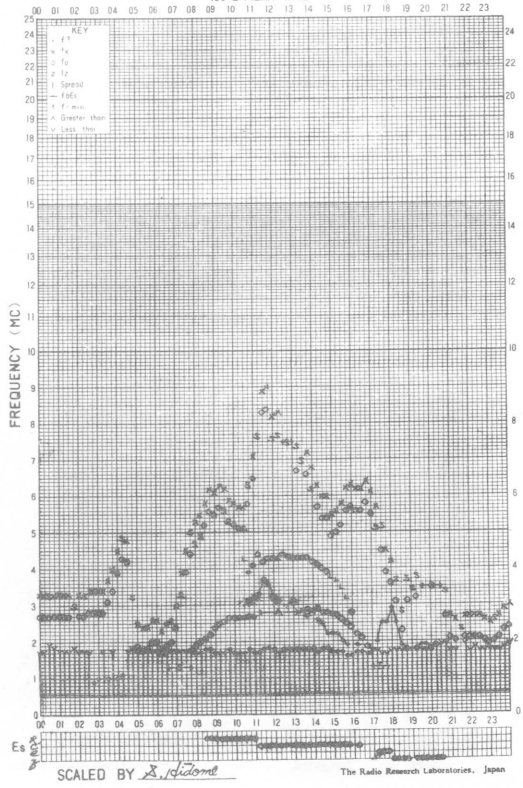

SCALED BY S. Sidomi The Radio Research Laboratories, Japan

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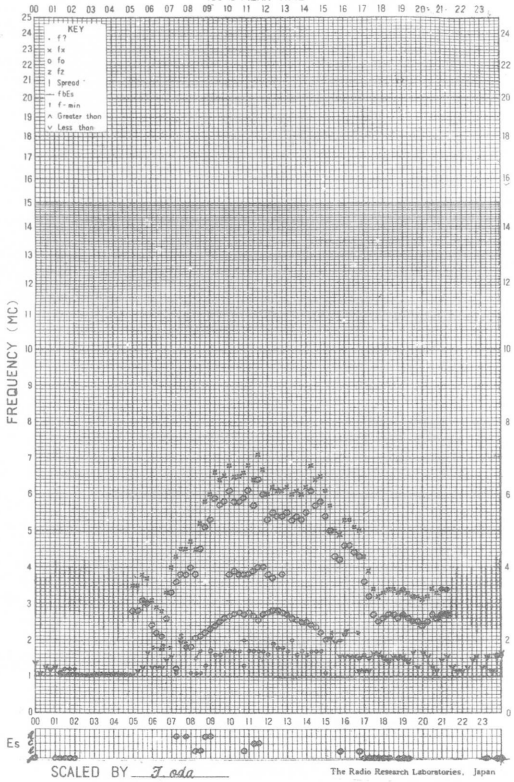

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The Radio Research Laboratories, Japan

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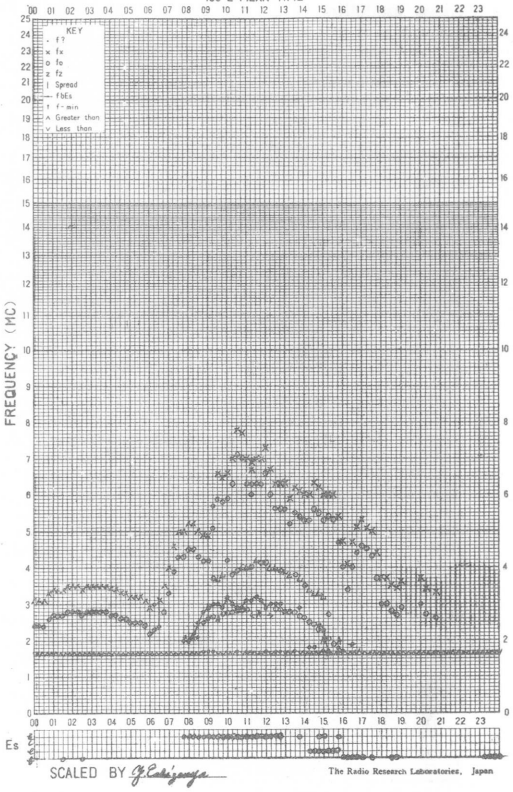

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The Radio Research Laboratories, Japan

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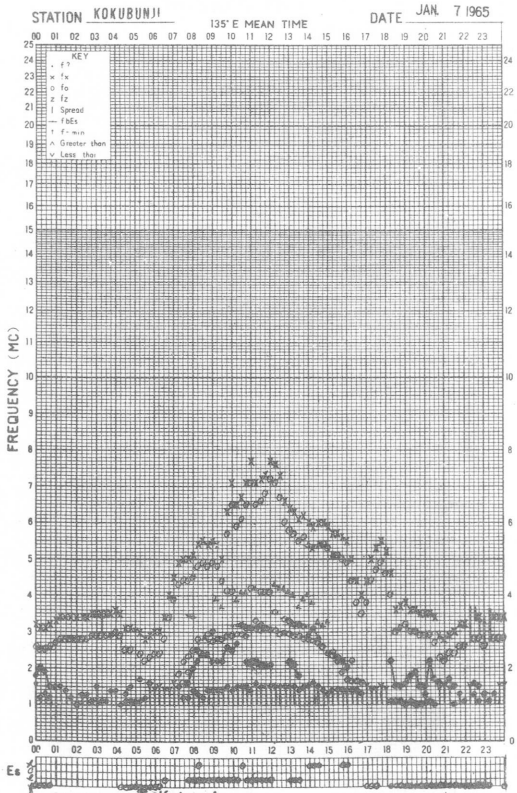

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The Radio Research Laboratories, Japan

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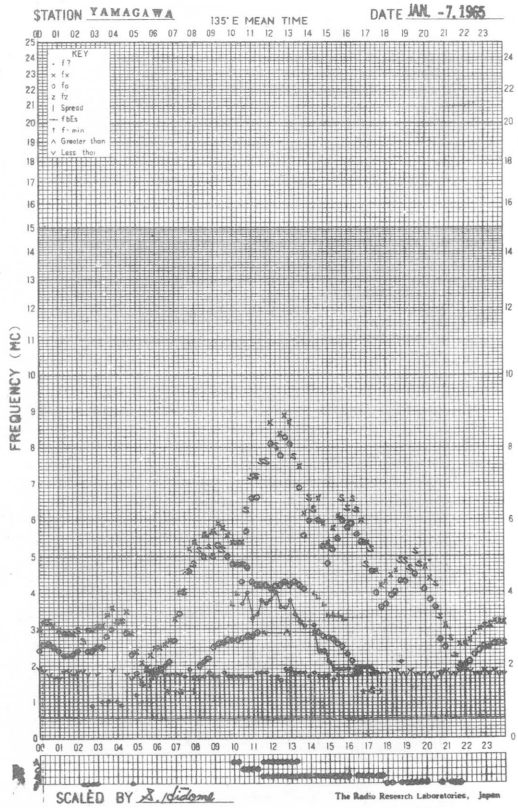

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The Radio Research Laboratories, Japan

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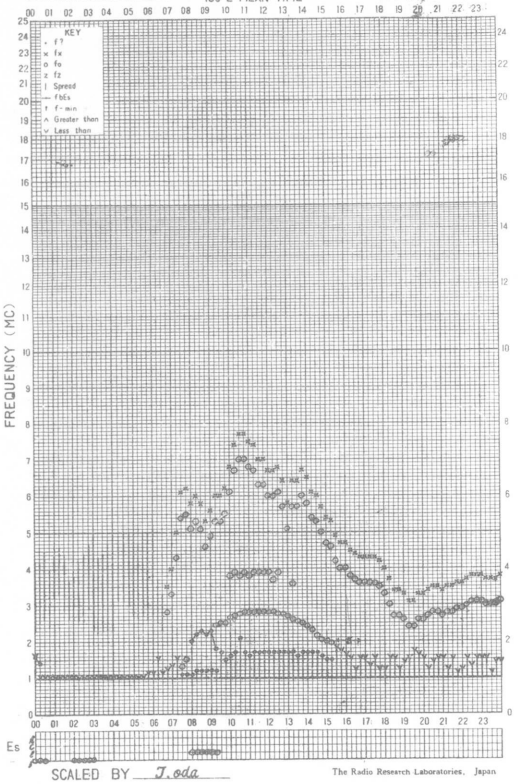

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The Radio Research Laboratories, Japan

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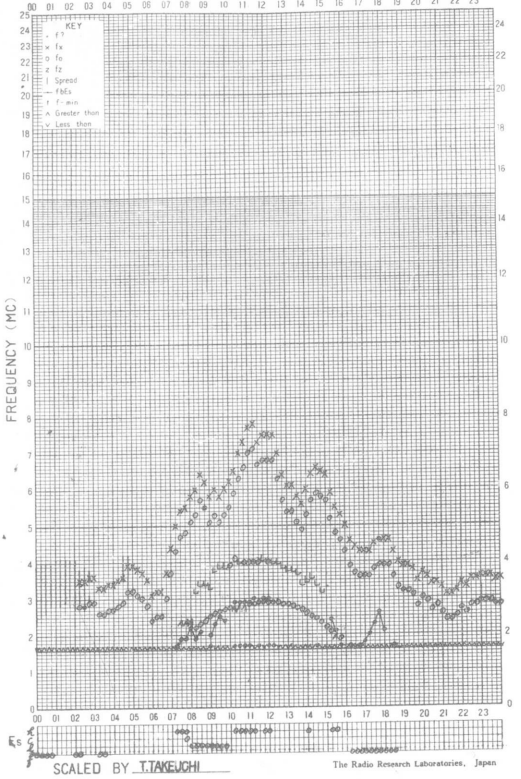

SCALED BY T. TAKEUCHI

The Radio Research Laboratories, Japan

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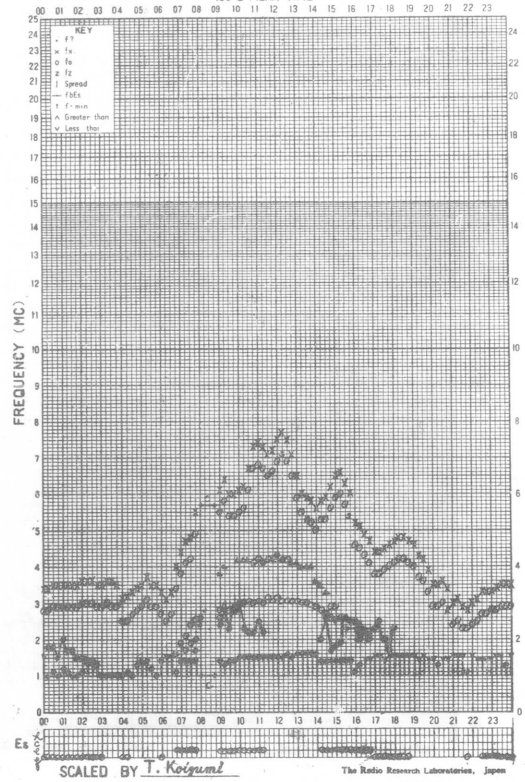

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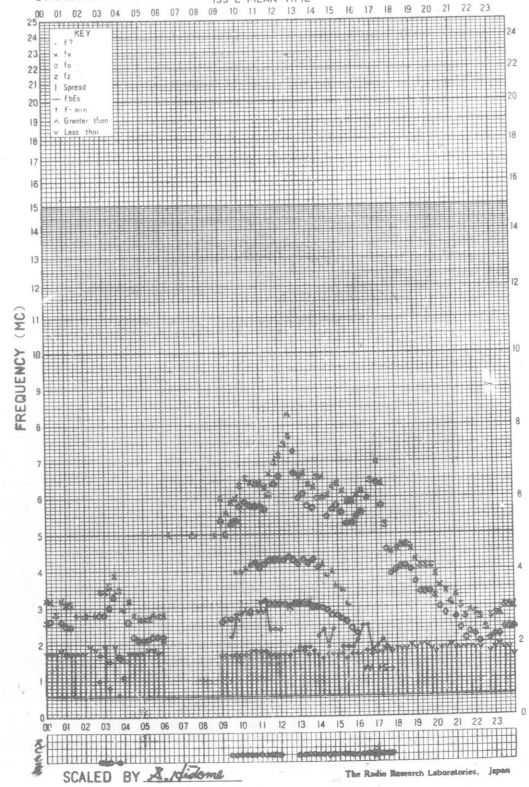

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The Radio Research Laboratories, Japan

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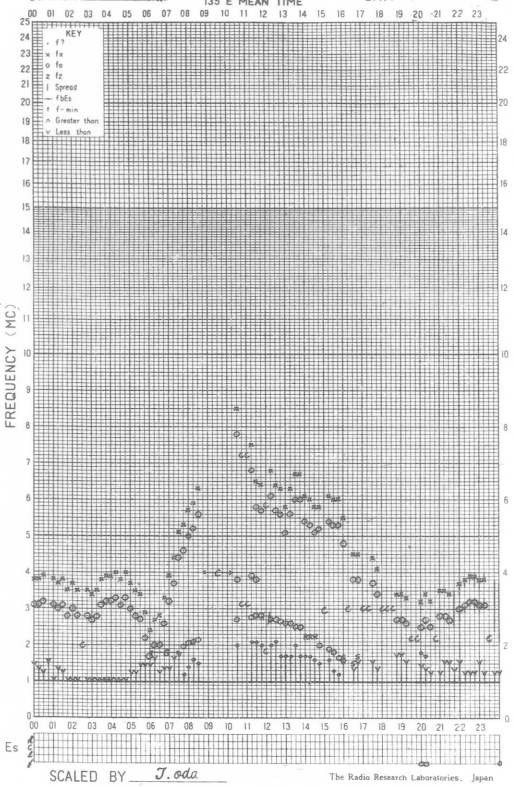

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The Radio Research Laboratories, Japan

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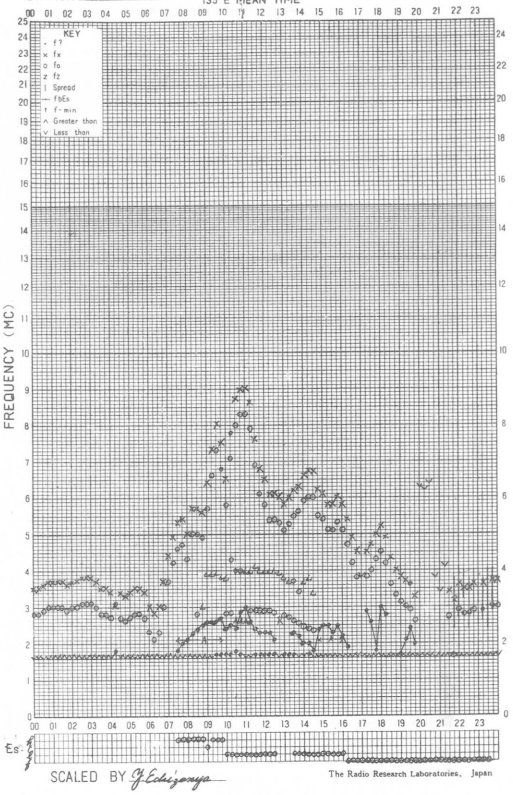

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The Radio Research Laboratories, Japan

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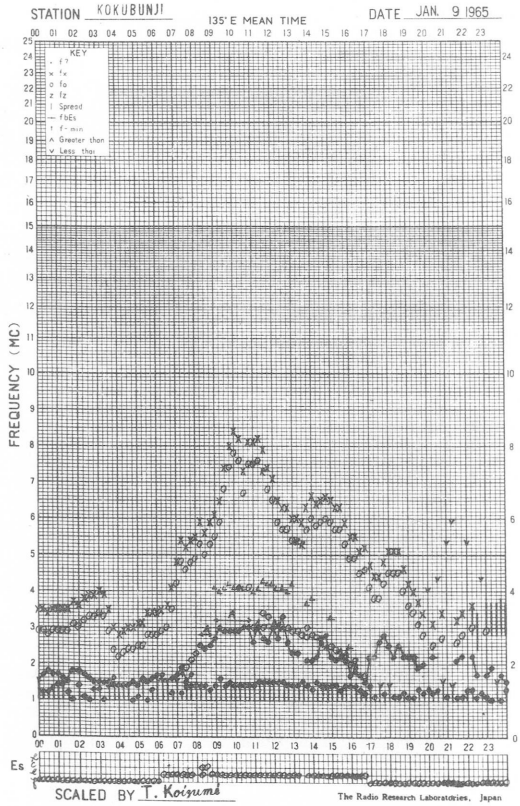

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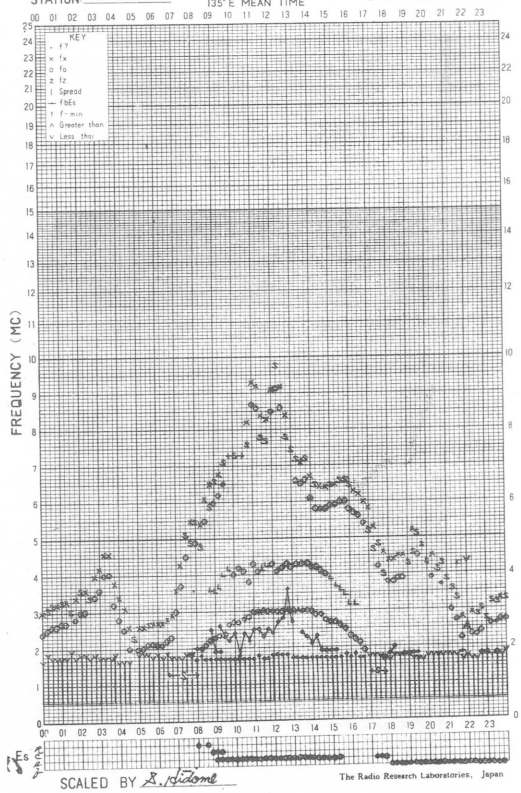

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The Radio Research Laboratories, Japan

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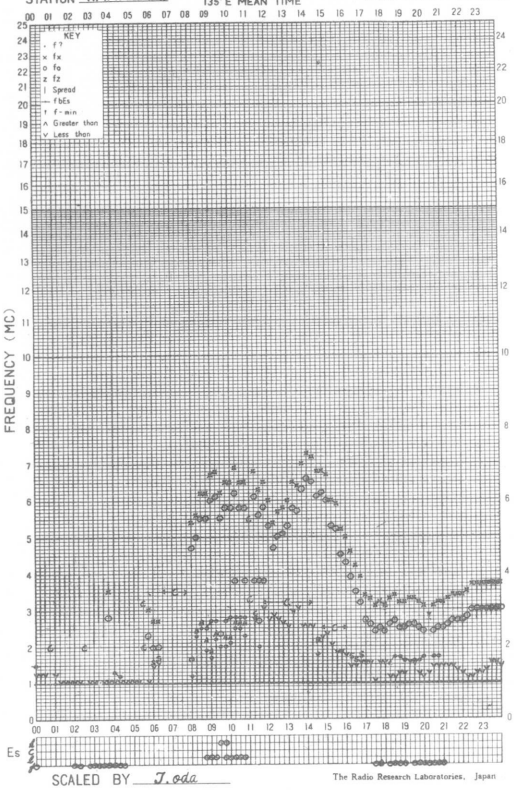

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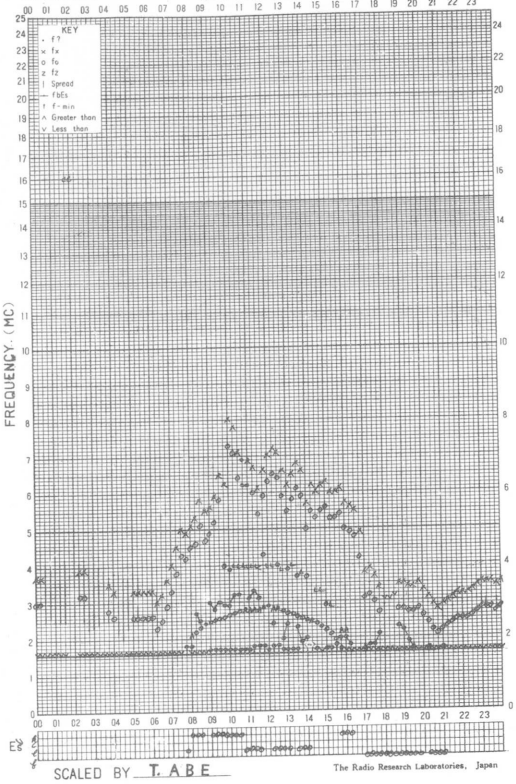

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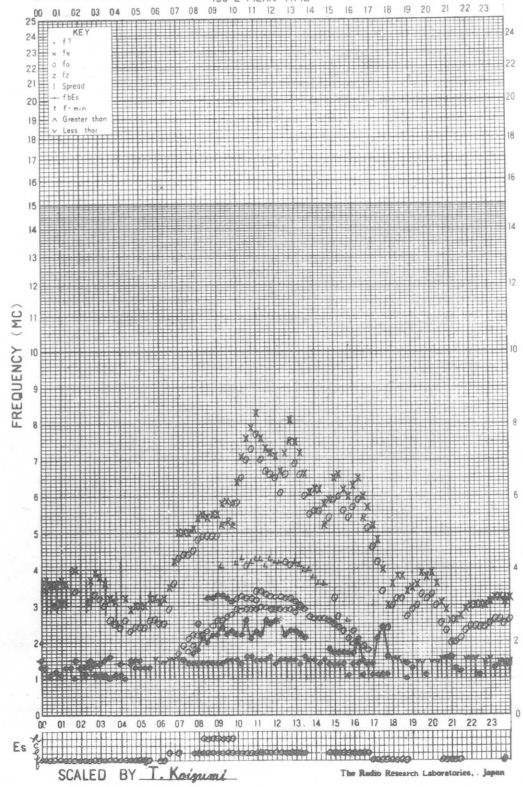

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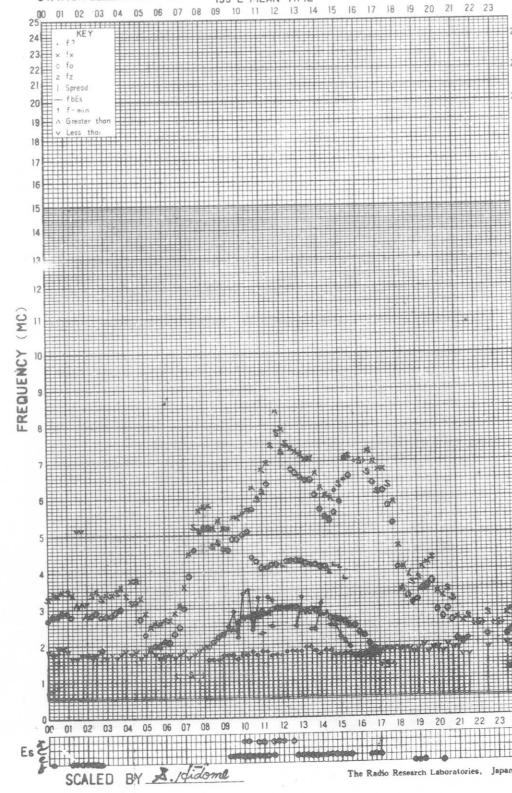

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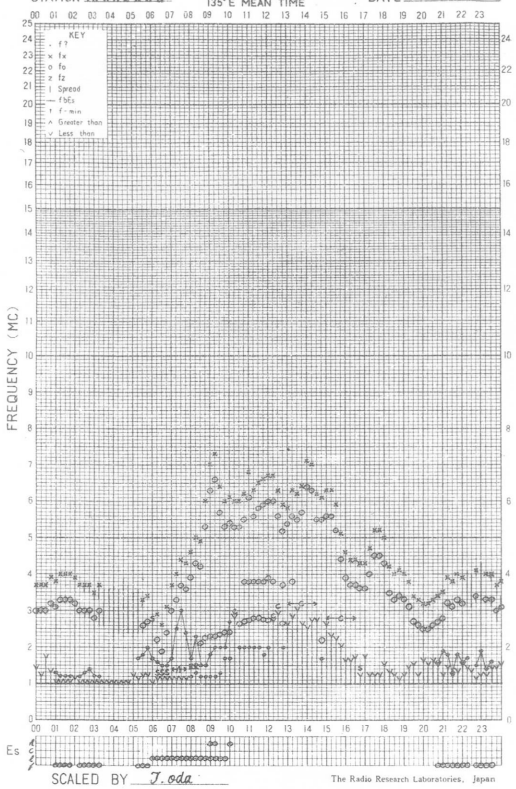

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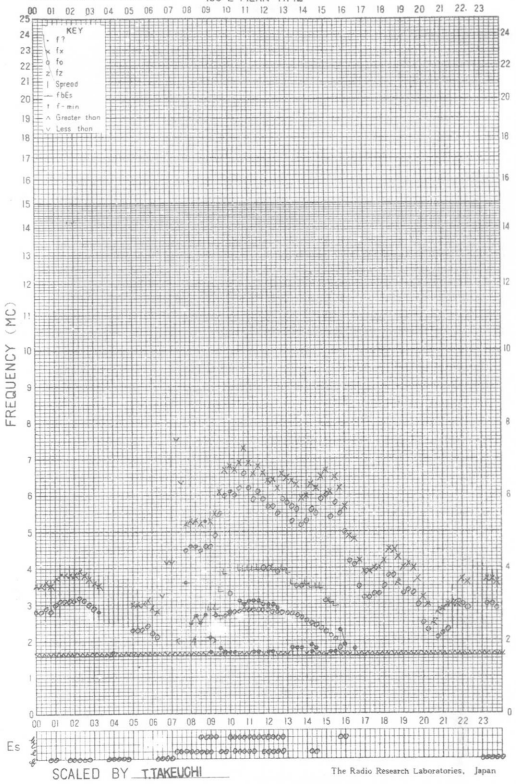

SCALED BY T.TAKEUCHI

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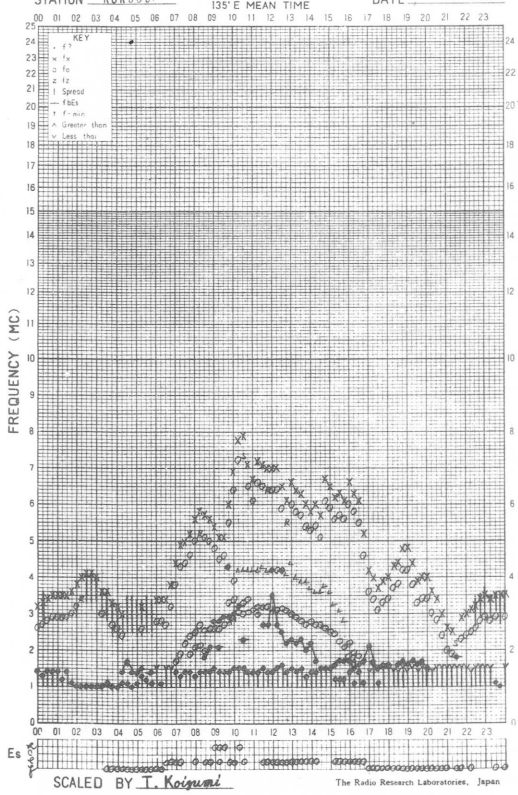

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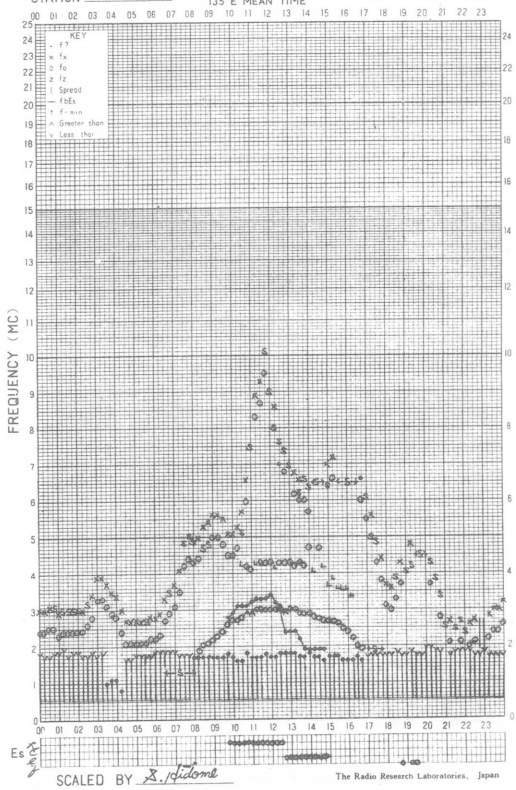

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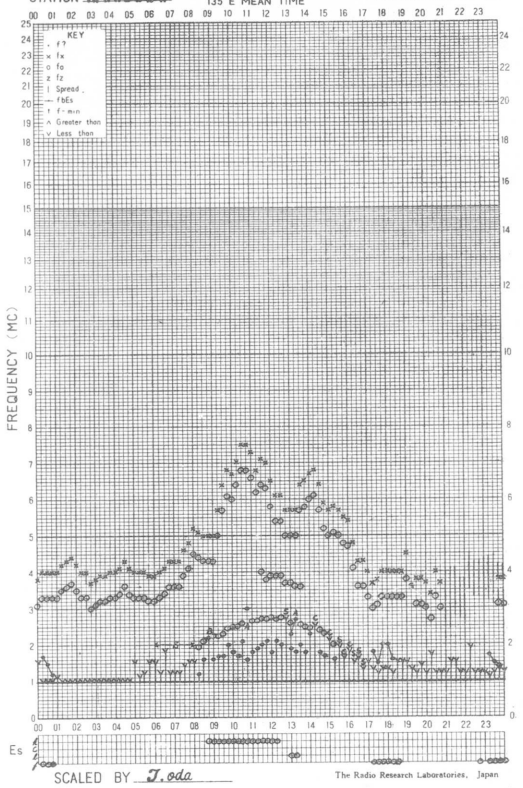

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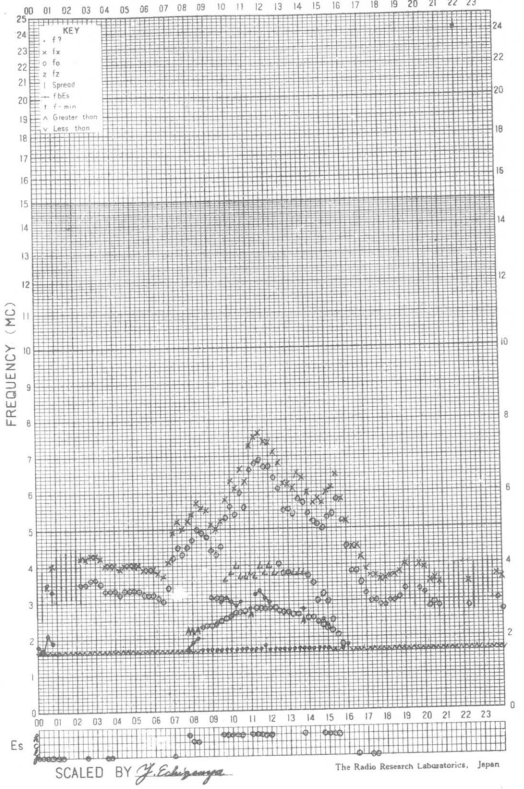

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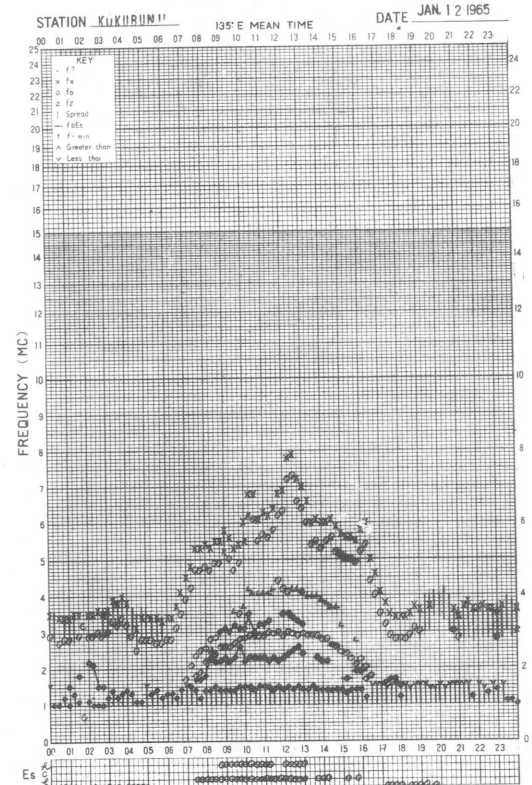

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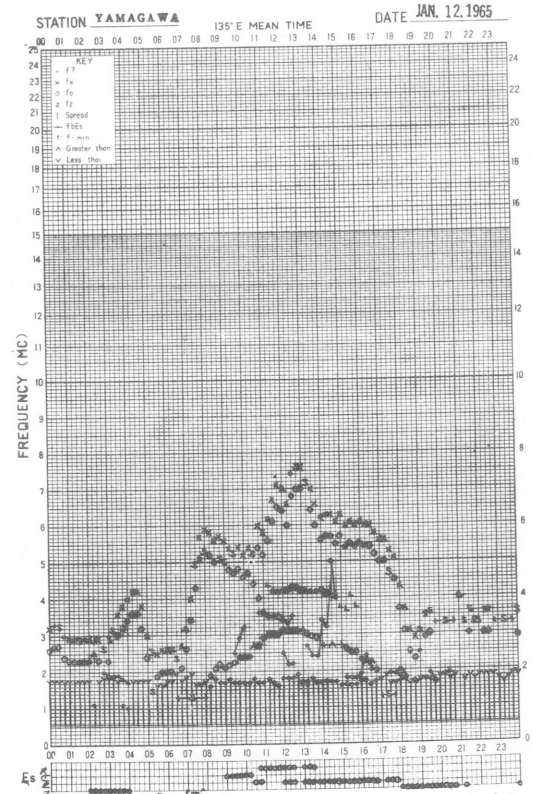

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The Radio Research Laboratories, Japan

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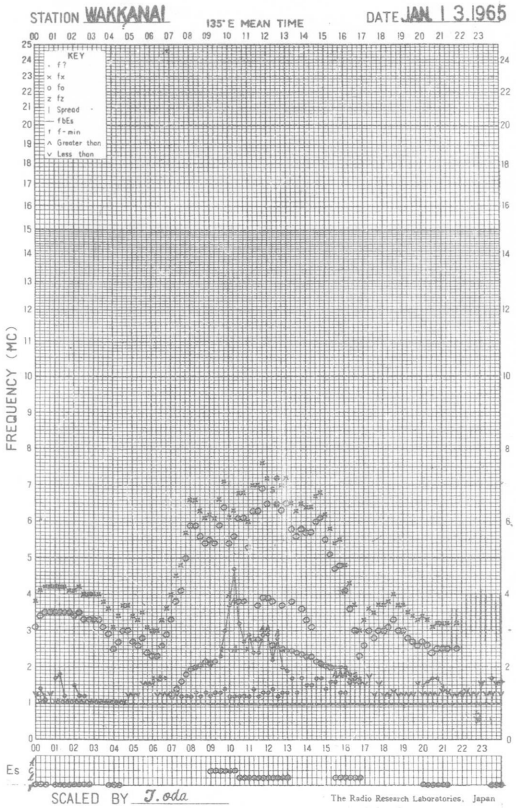

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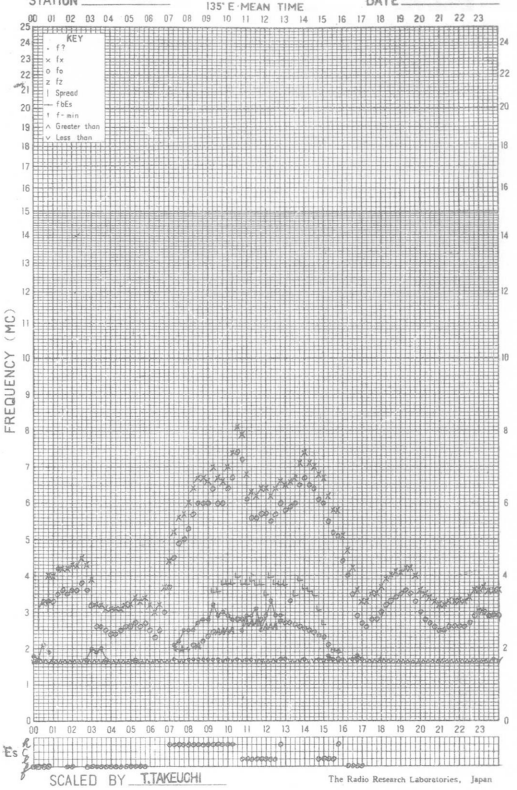

SCALED BY T.TAKEUCHI

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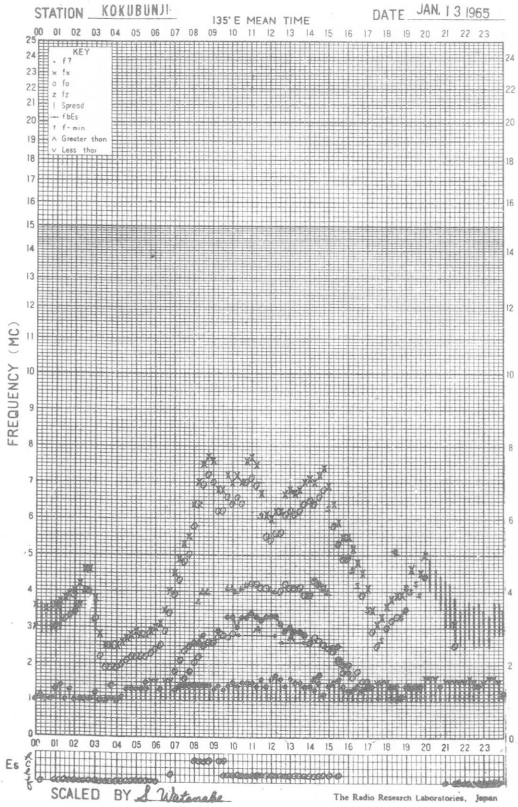

SCALED BY S. Watanabe

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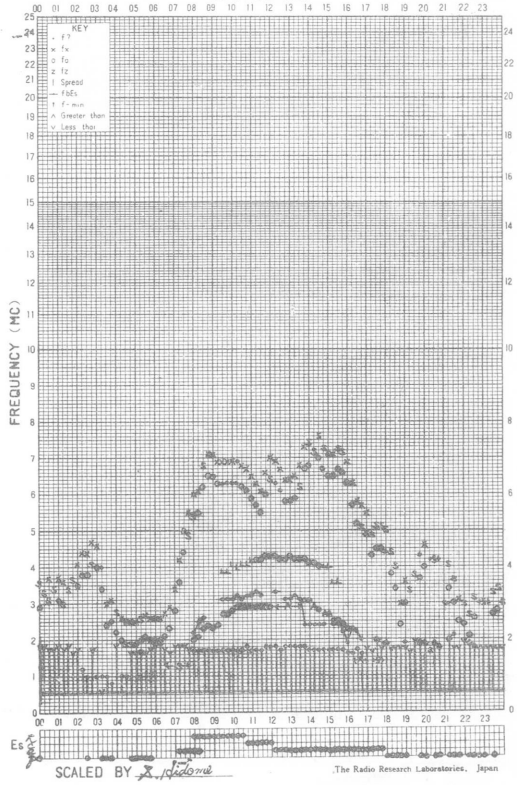
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JAN. 13, 1965



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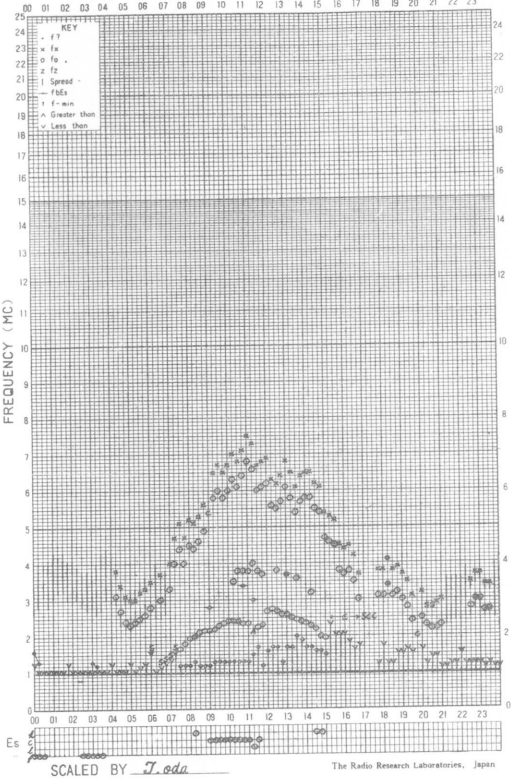

SCALED BY T. Oda

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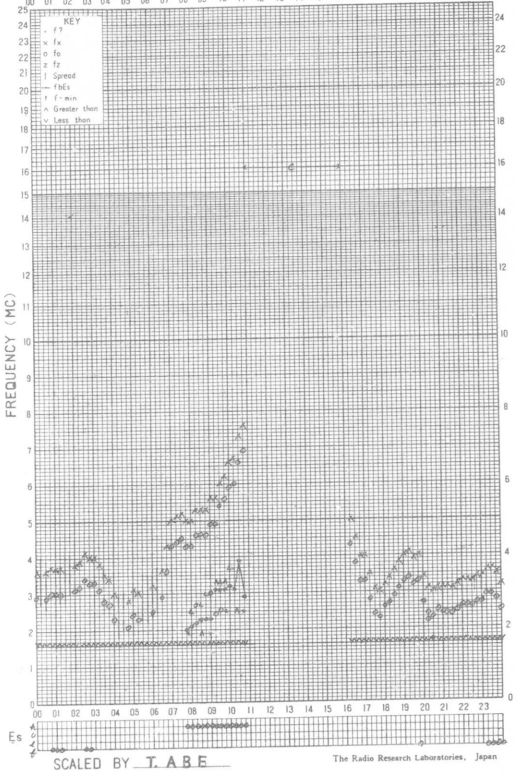

SCALED BY T. ABE

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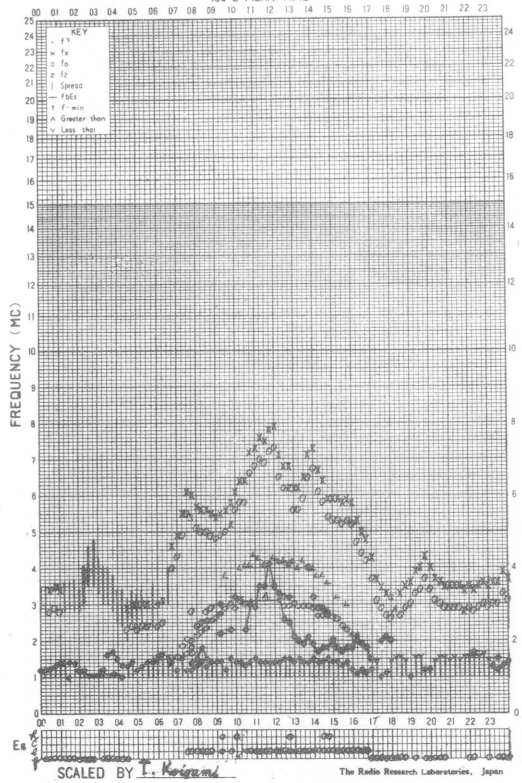

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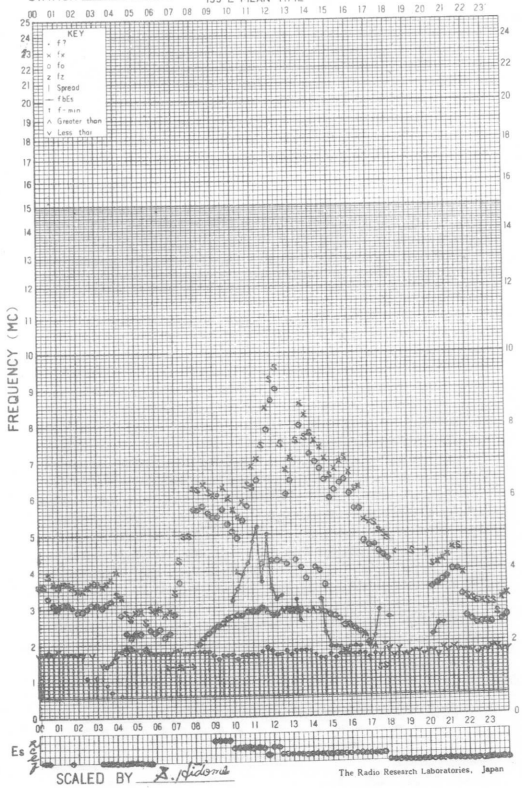

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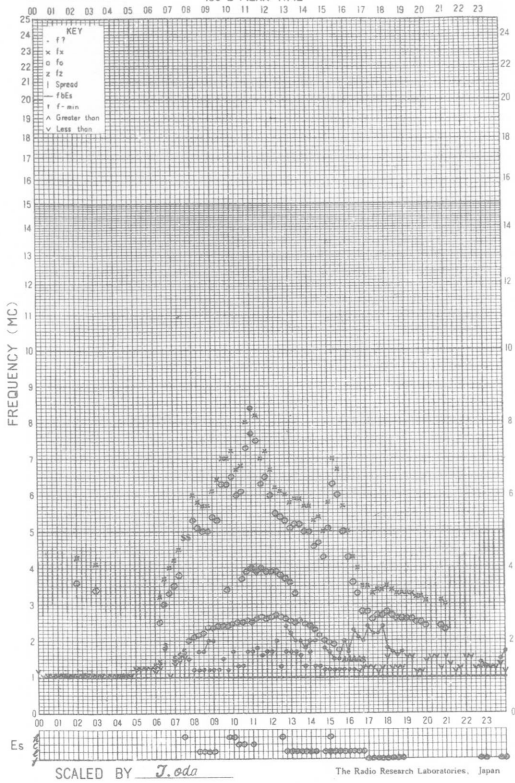

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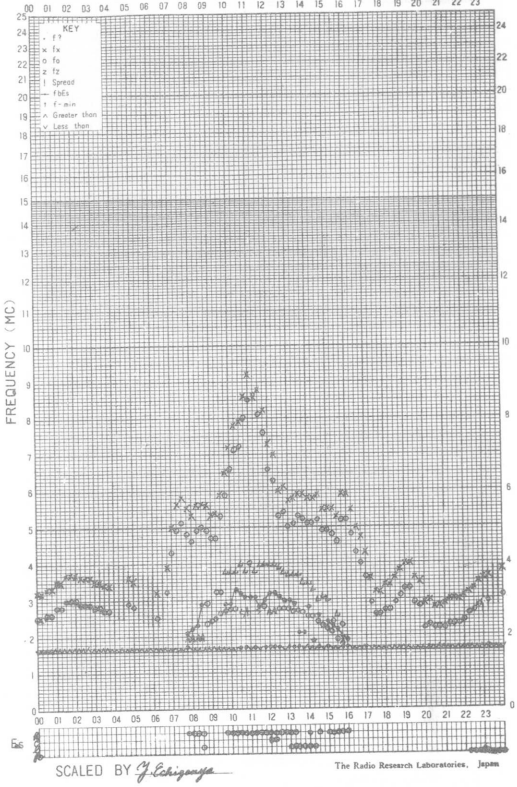

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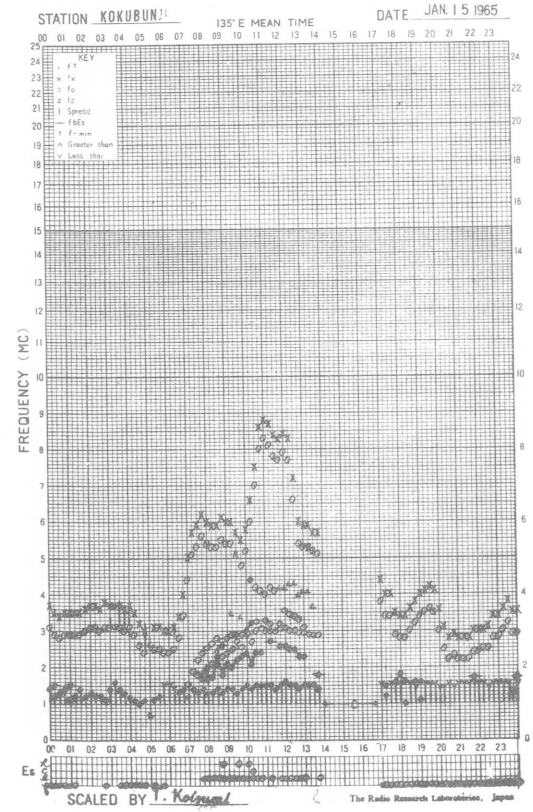

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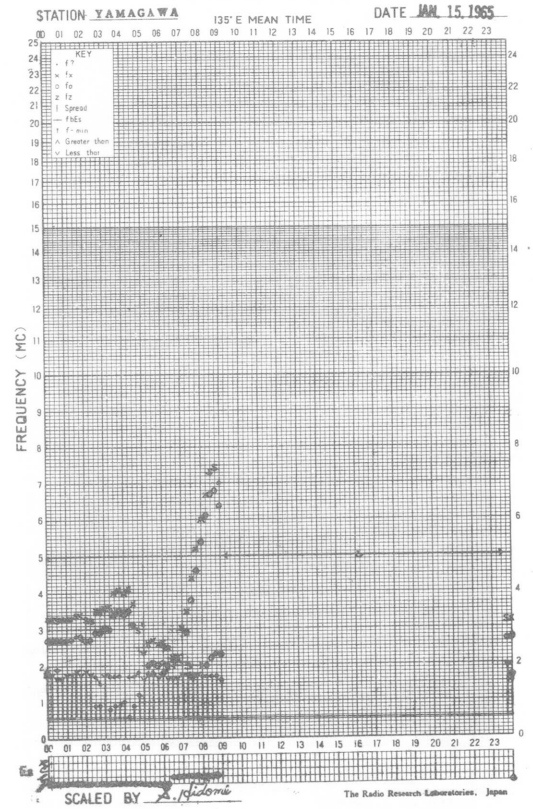

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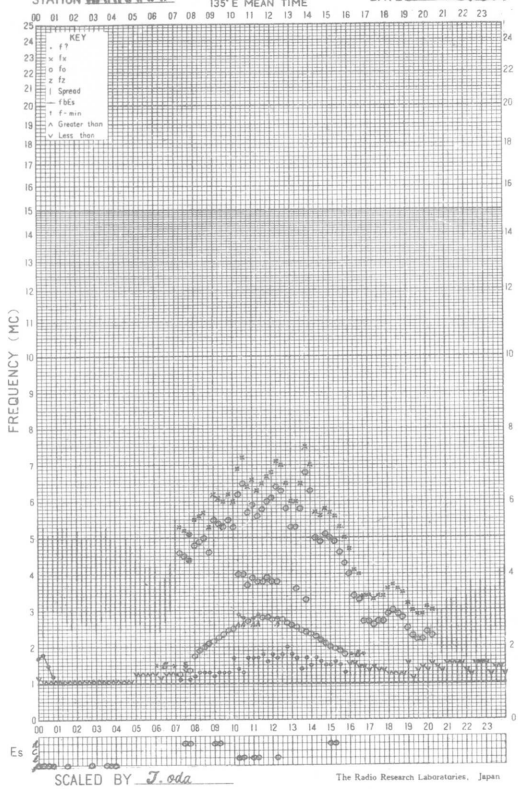

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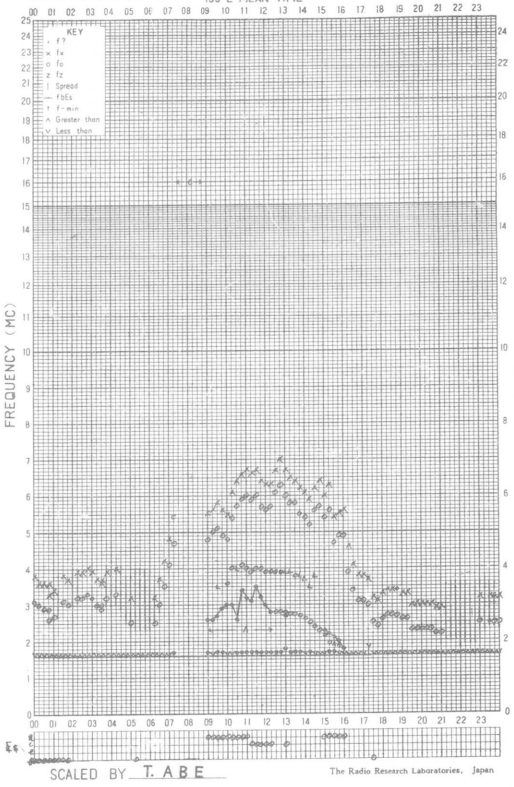

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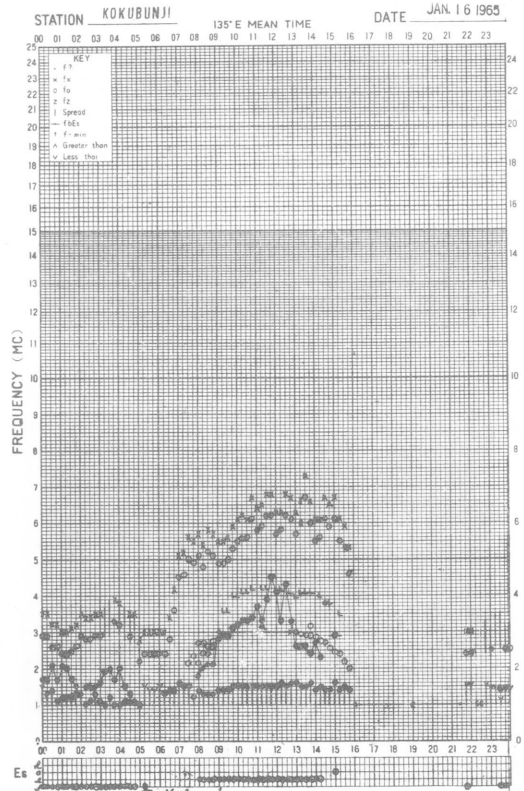

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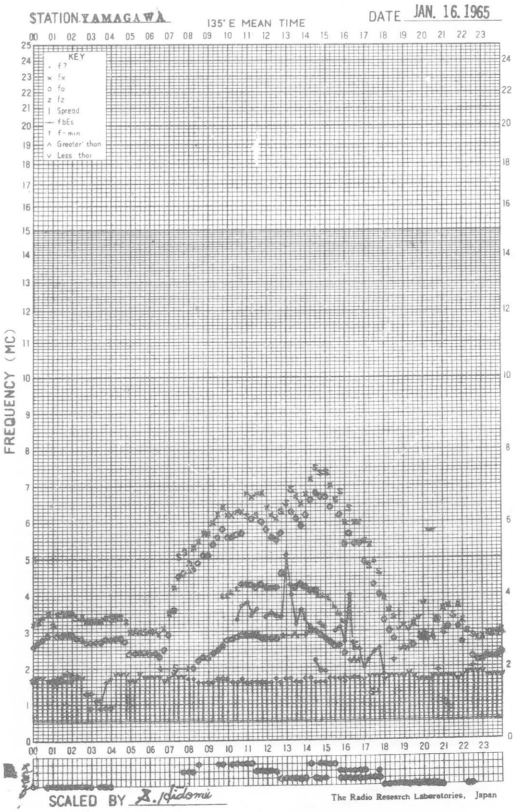

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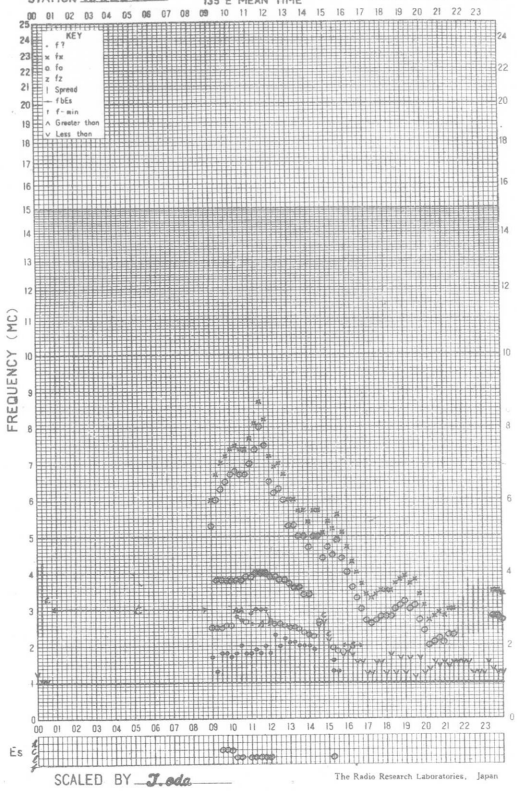

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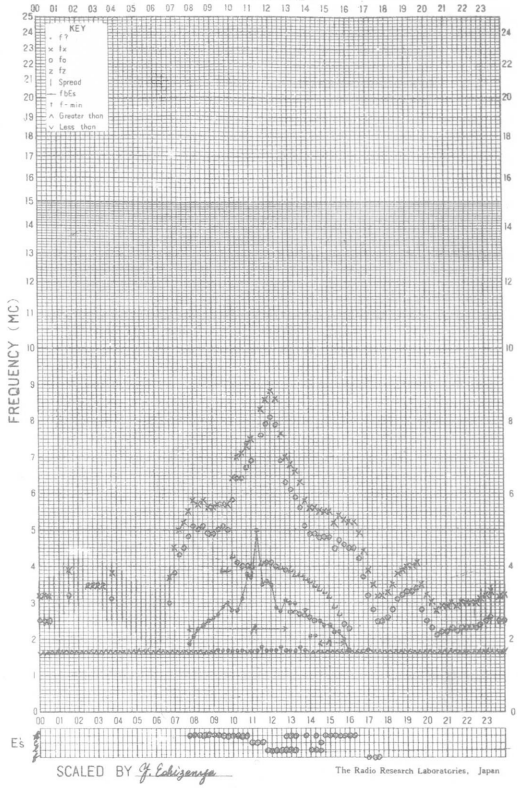

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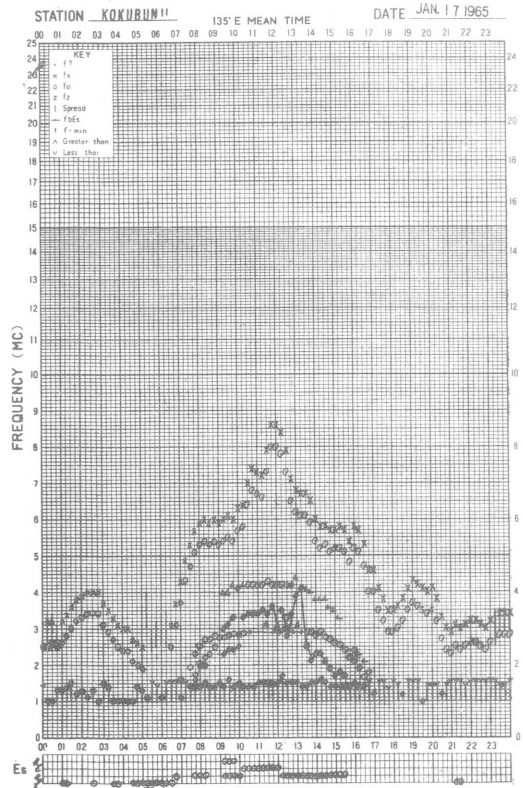

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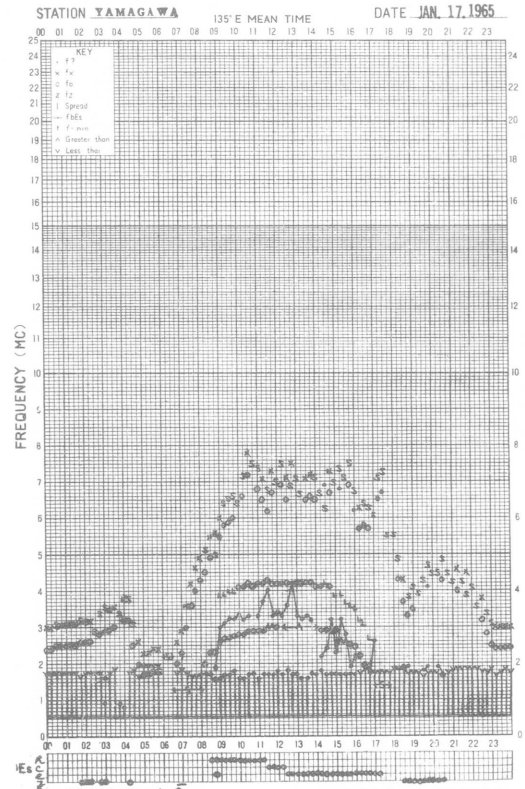

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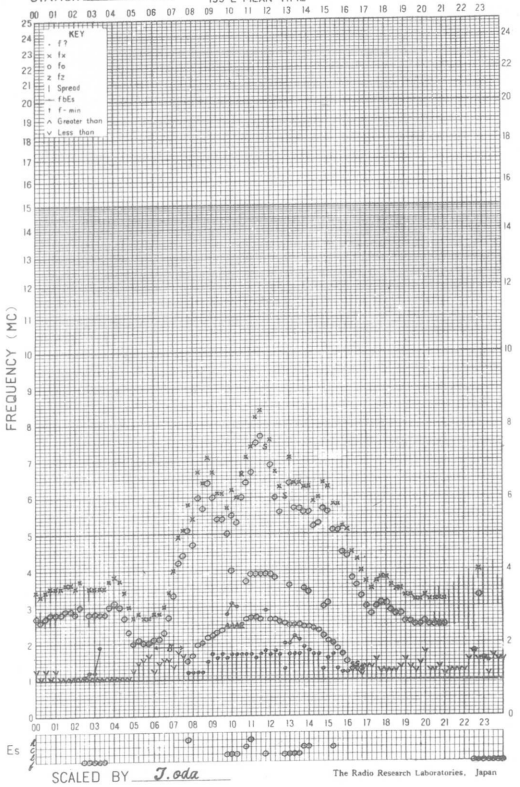

SCALED BY J. oda

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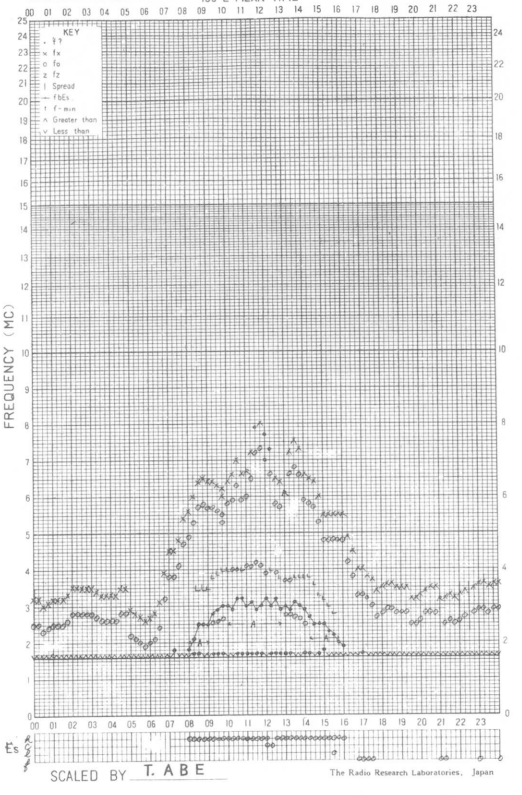

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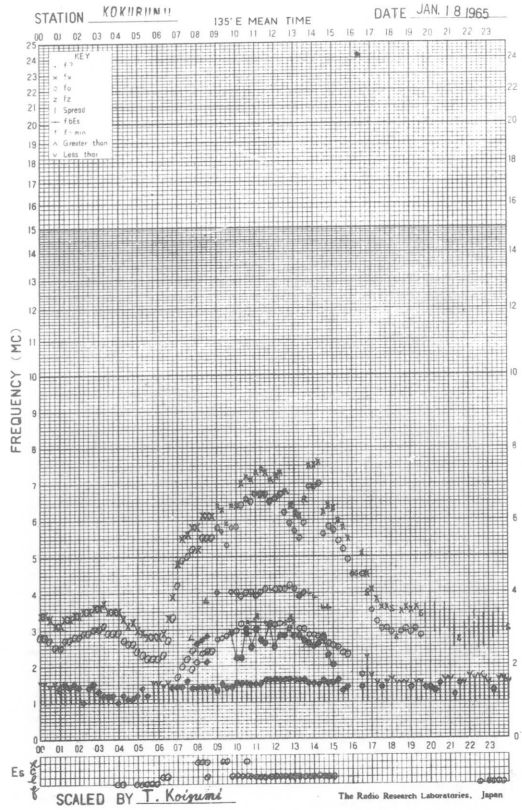

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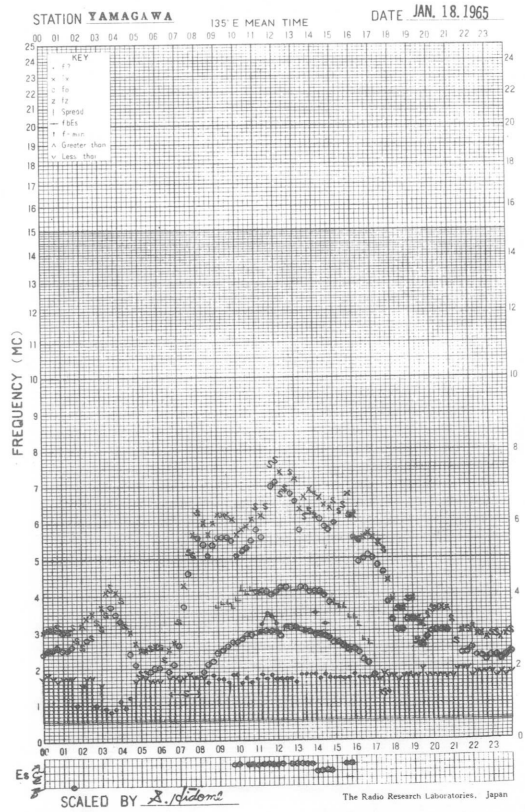

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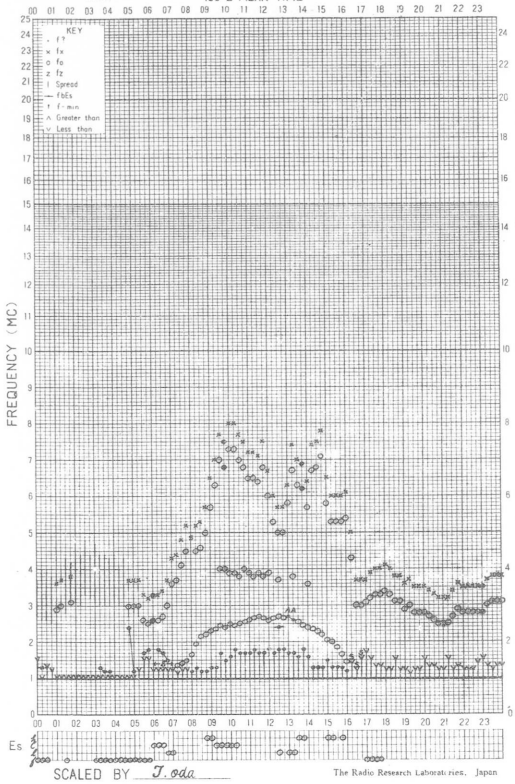

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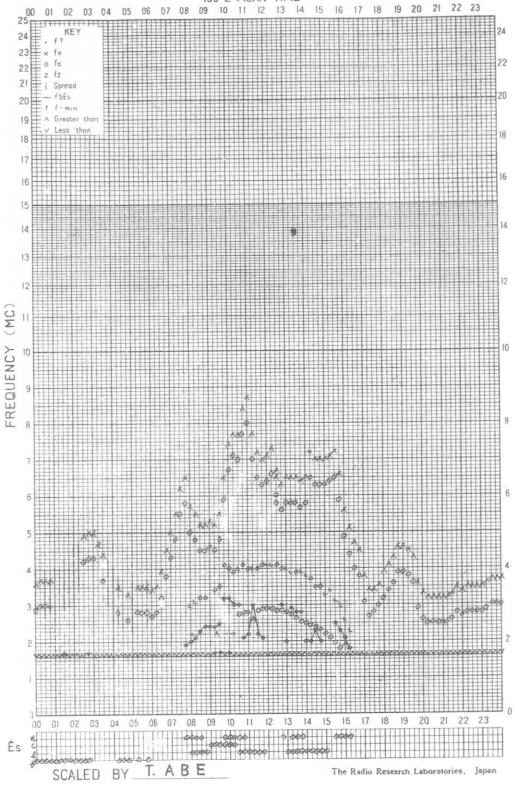

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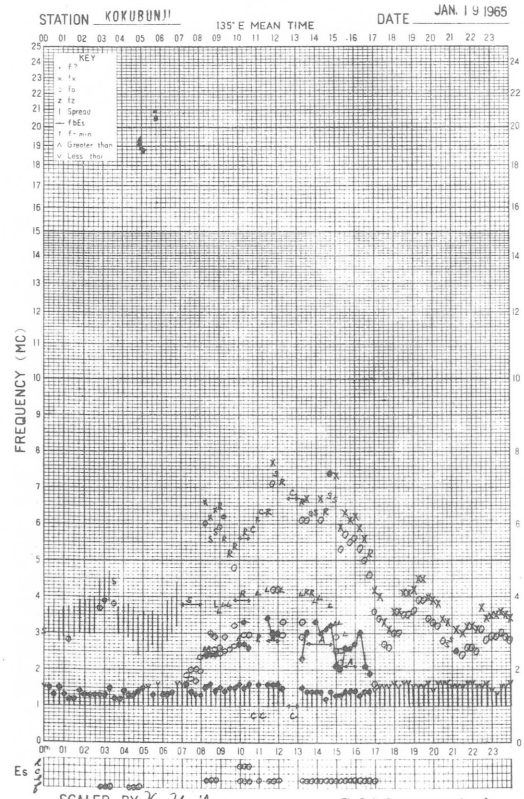

SCALED BY K. Yasikawa

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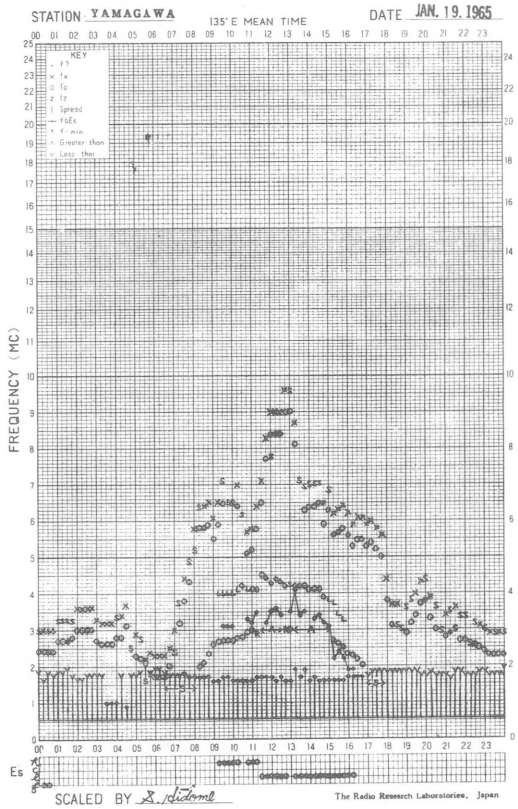

SCALED BY S. Sidomi

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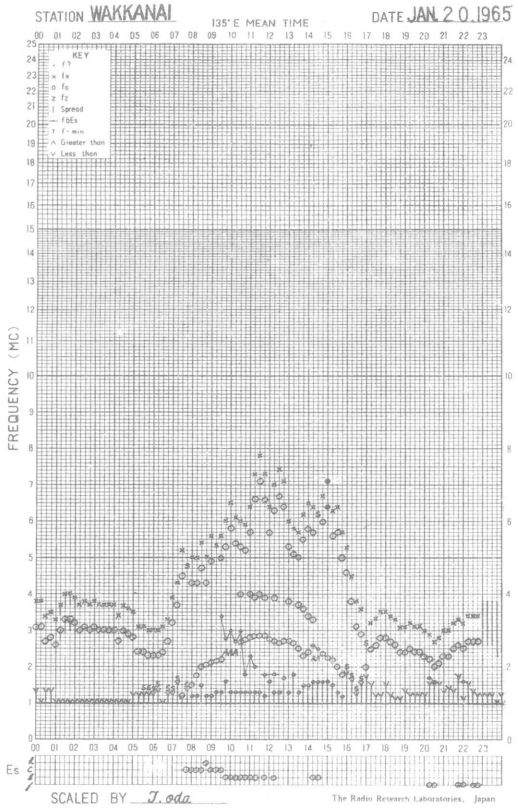

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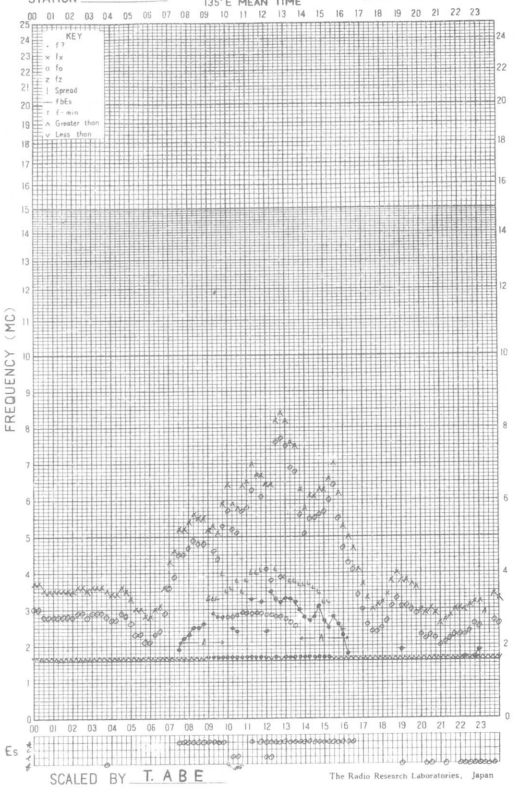

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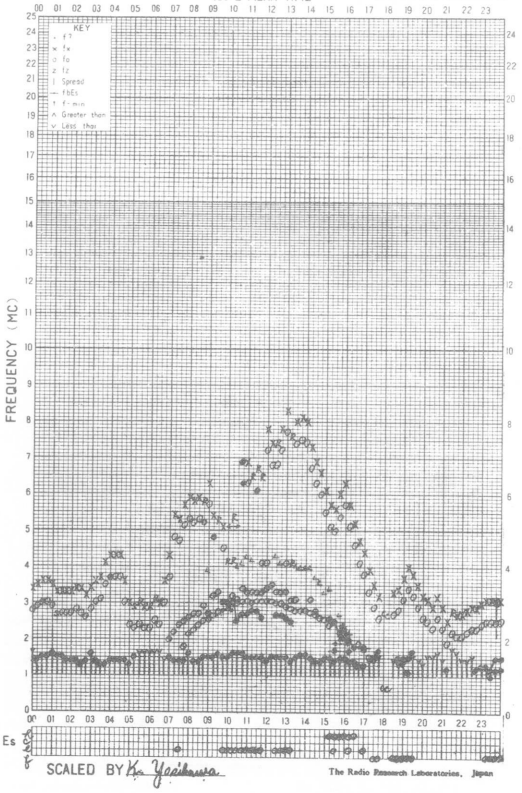

SCALED BY Ko Yoshikawa

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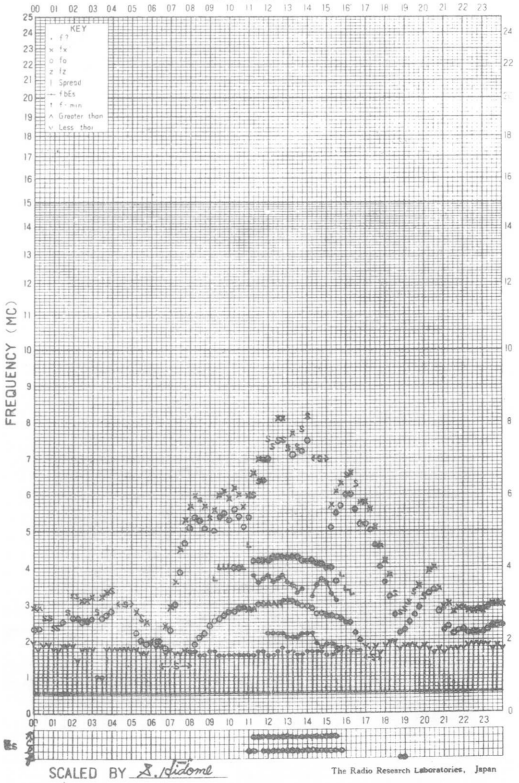

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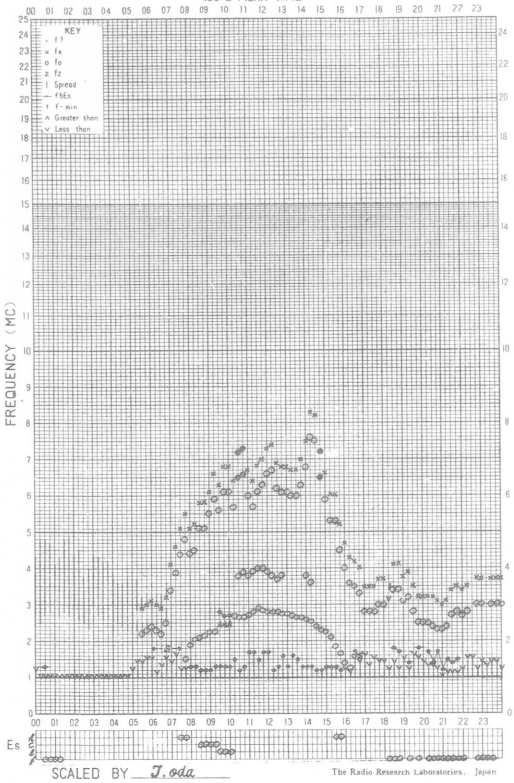

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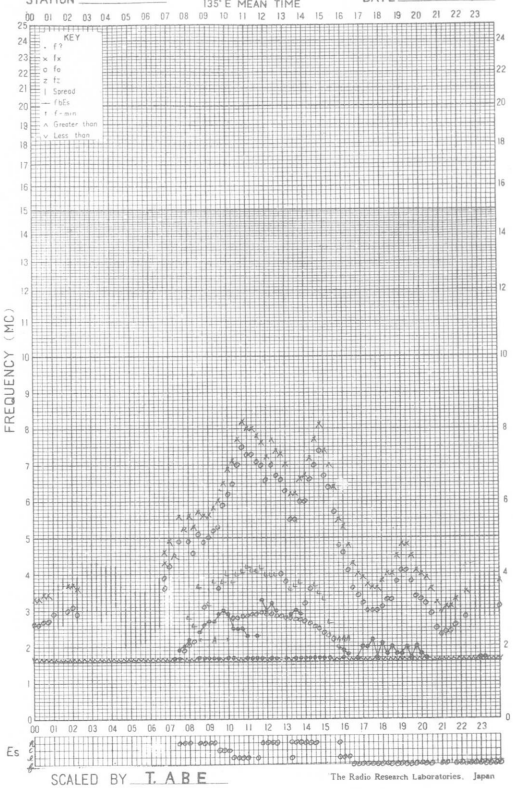

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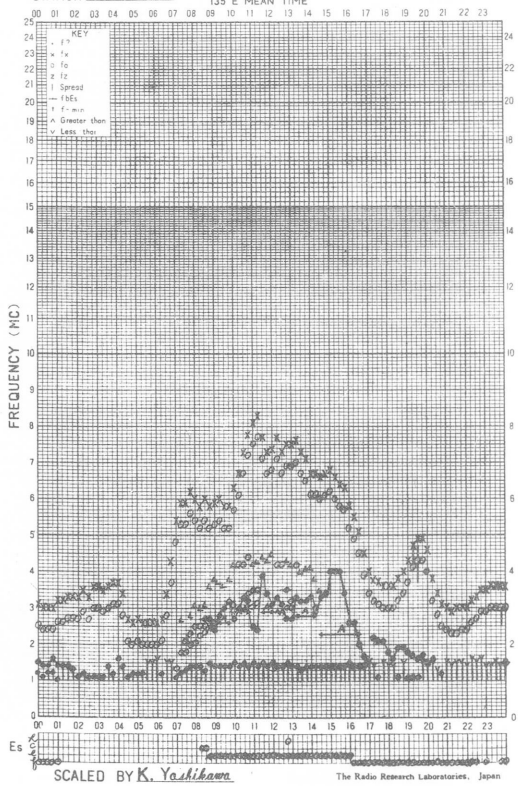

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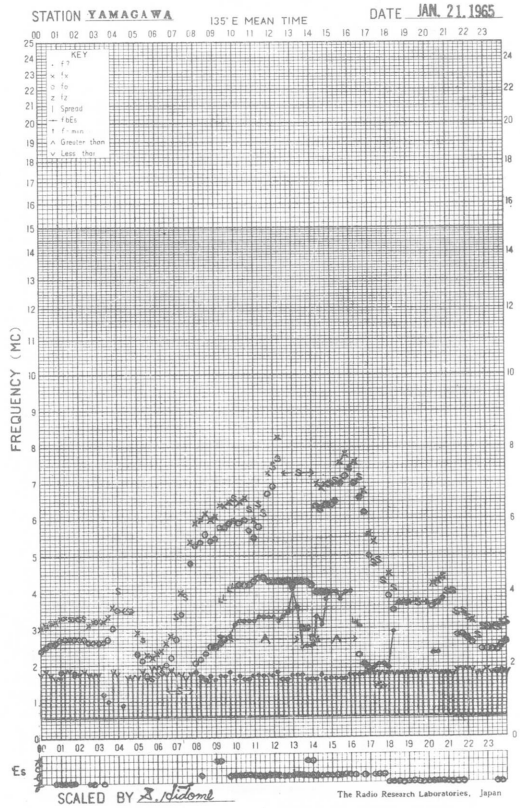

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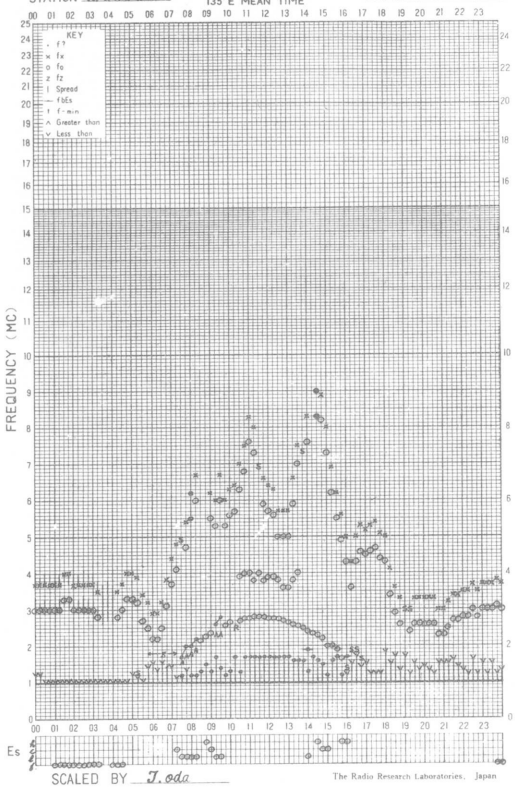

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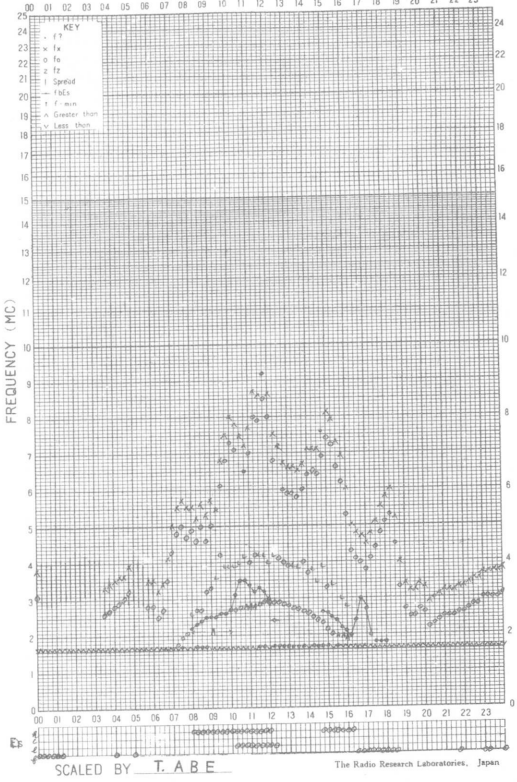

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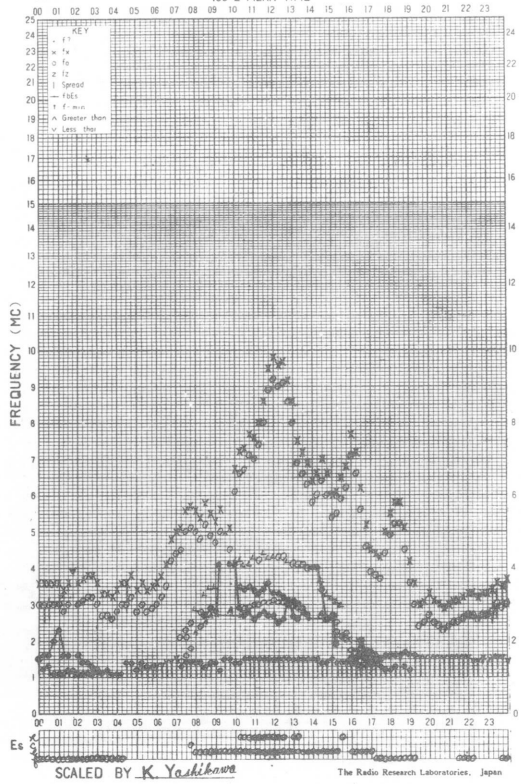

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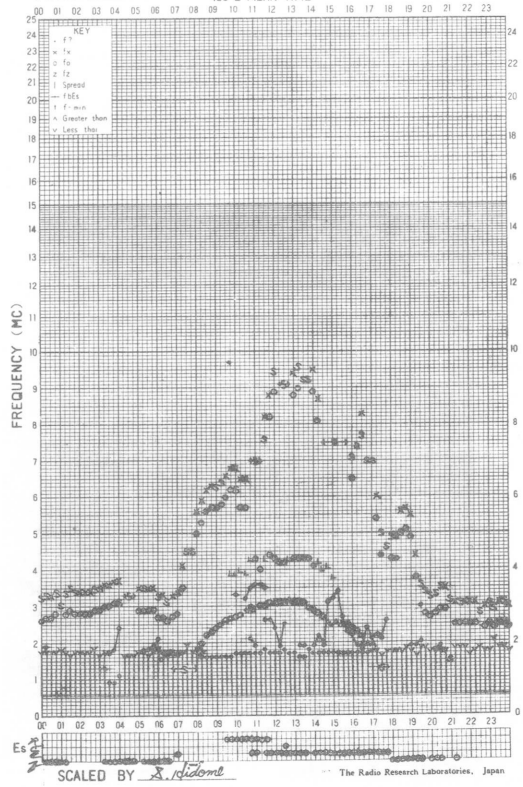

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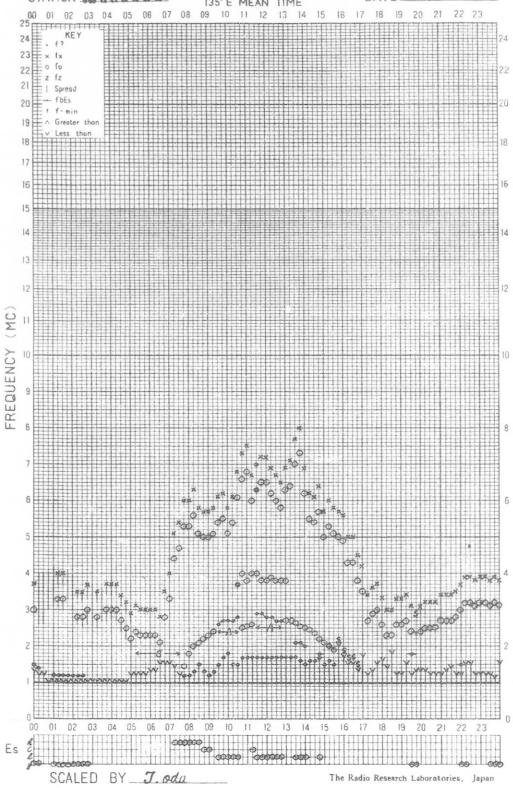

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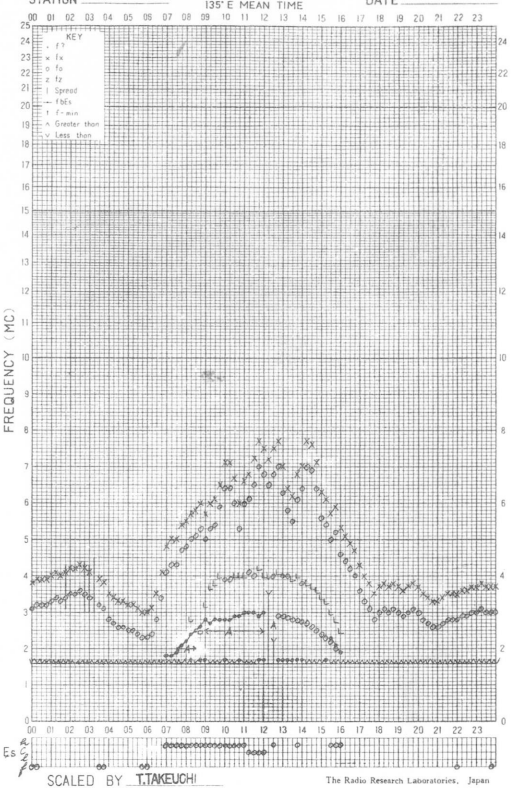

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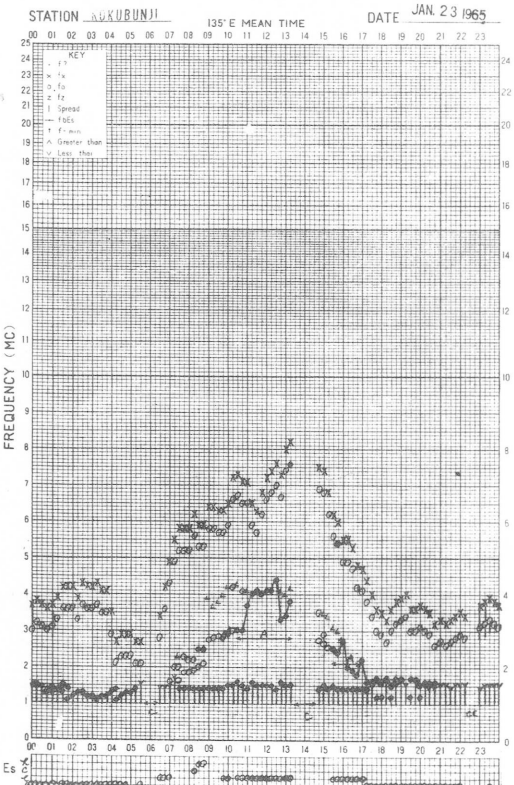

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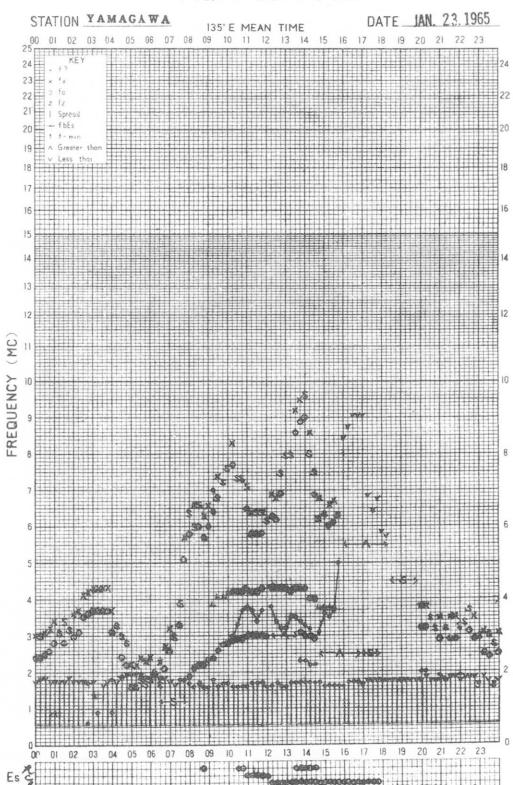

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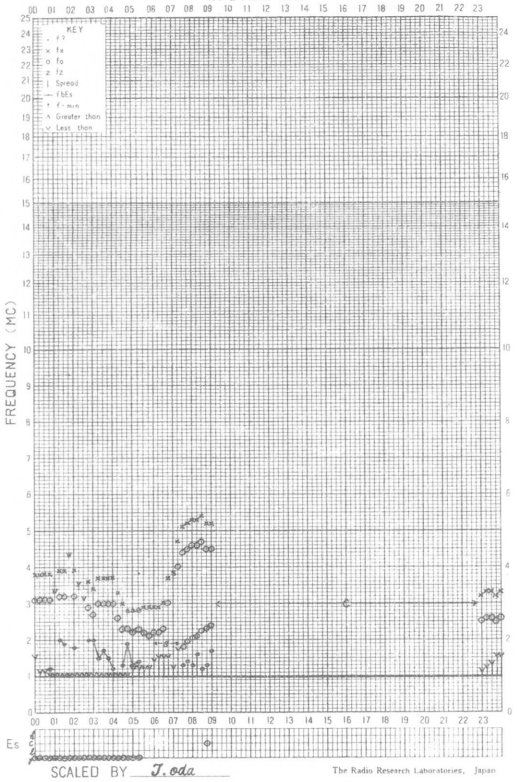

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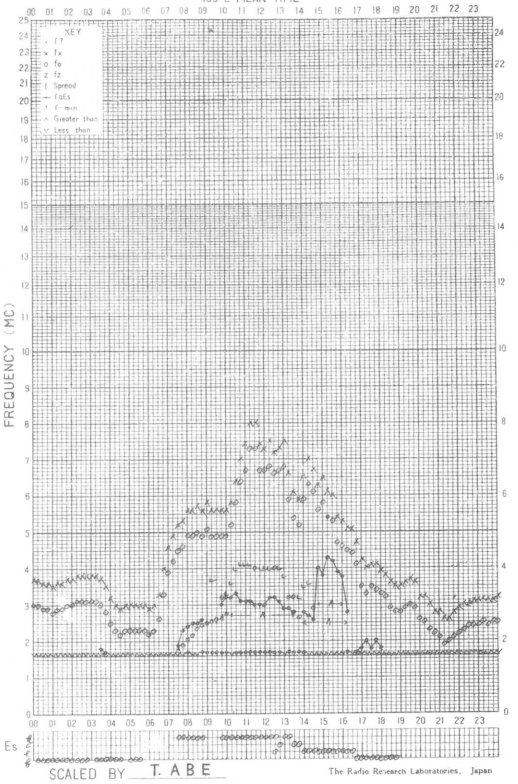

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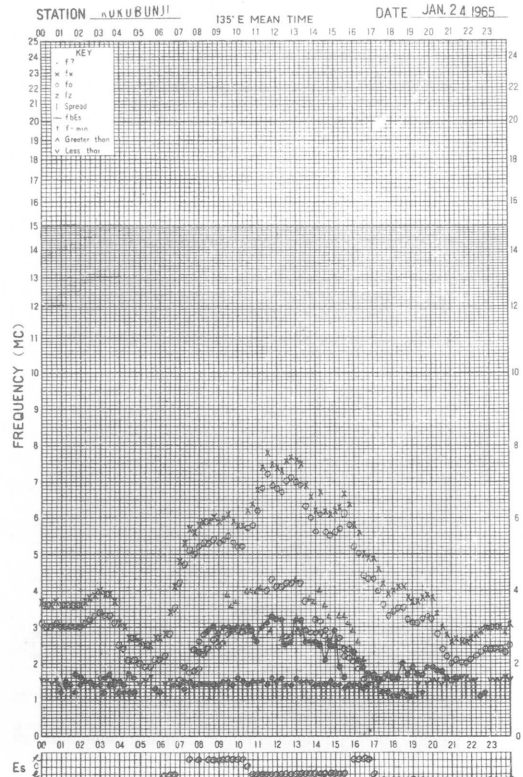

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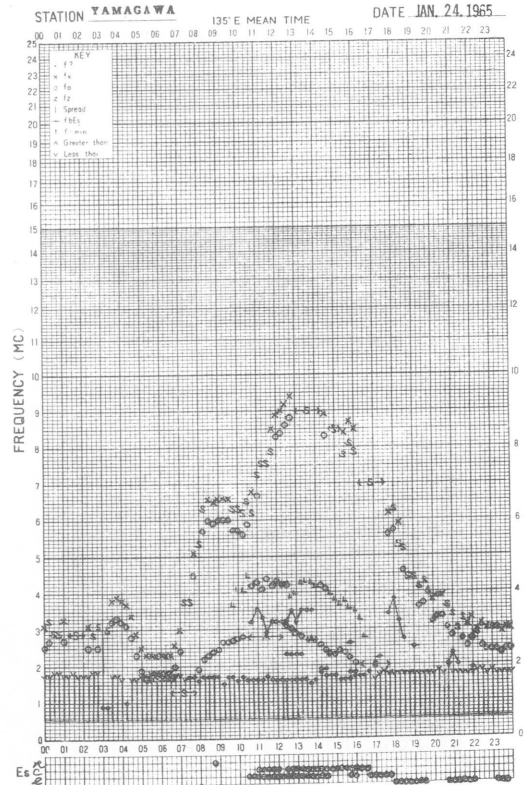
The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JAN. 24, 1965

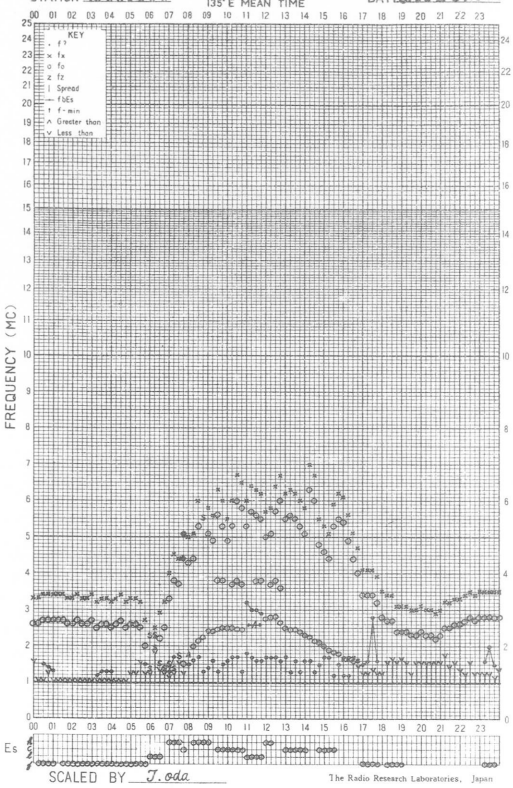


SCALED BY A. Ishimi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 25, 1965

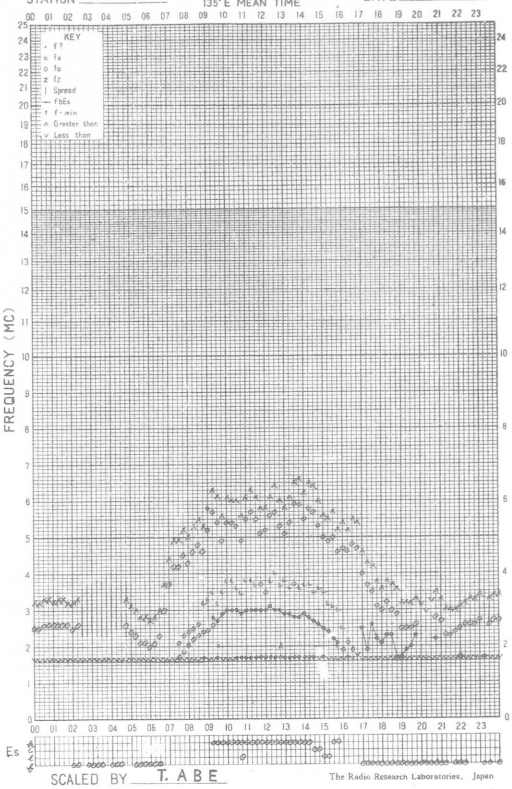


SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 25. 1965

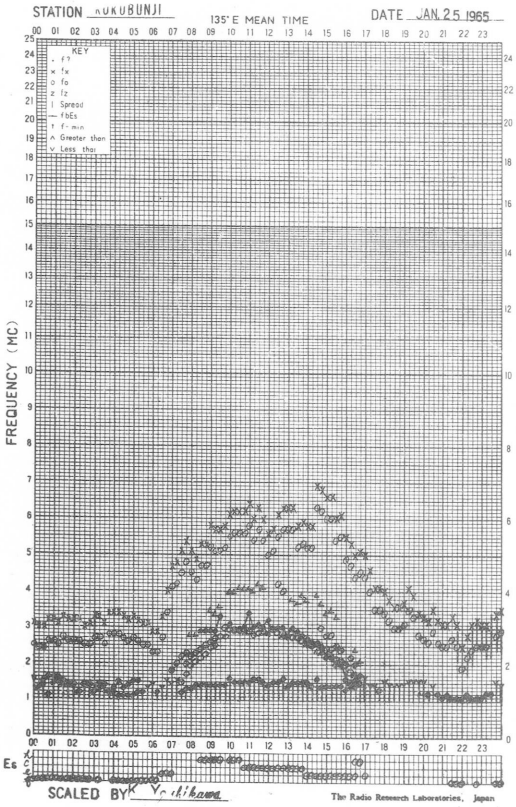


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 25. 1965

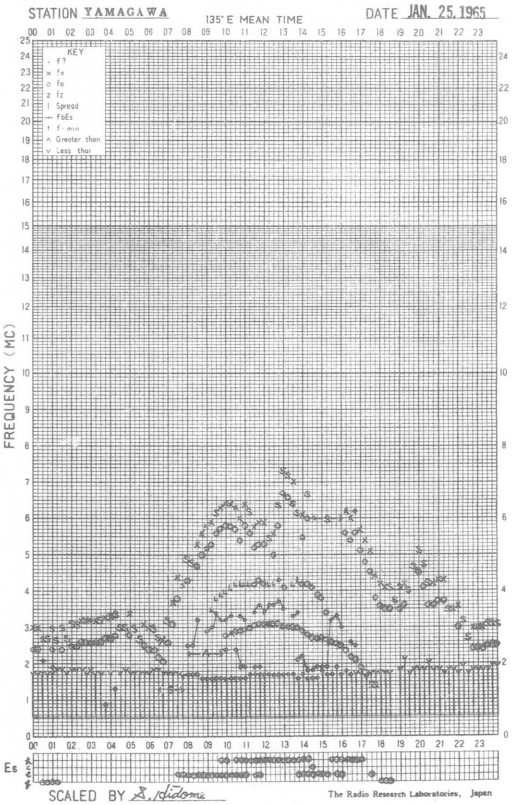


SCALED BY K. Yokoyama

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 25, 1965



SCALED BY S. Shidomi

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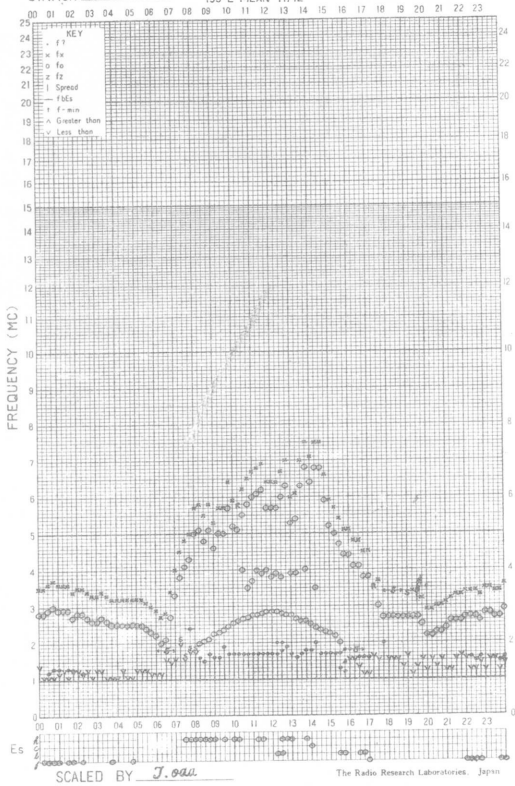
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 26. 1965

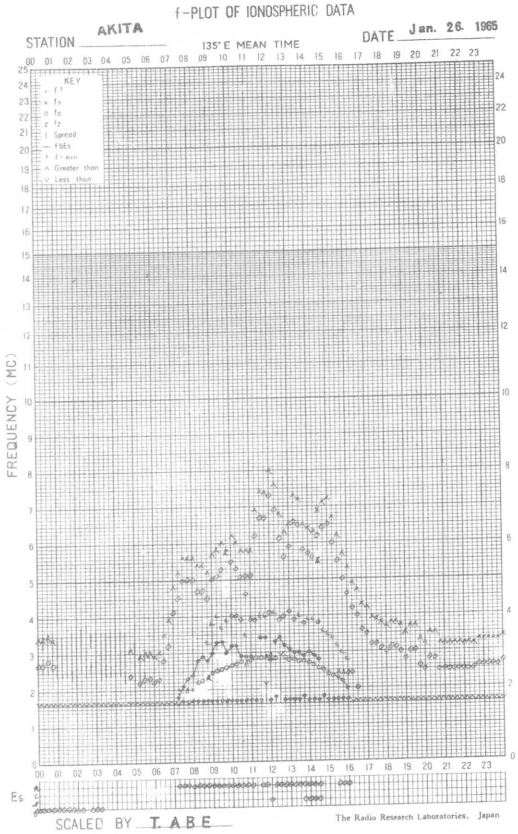


SCALED BY J. Oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 26. 1965



SCALED BY T. ABE

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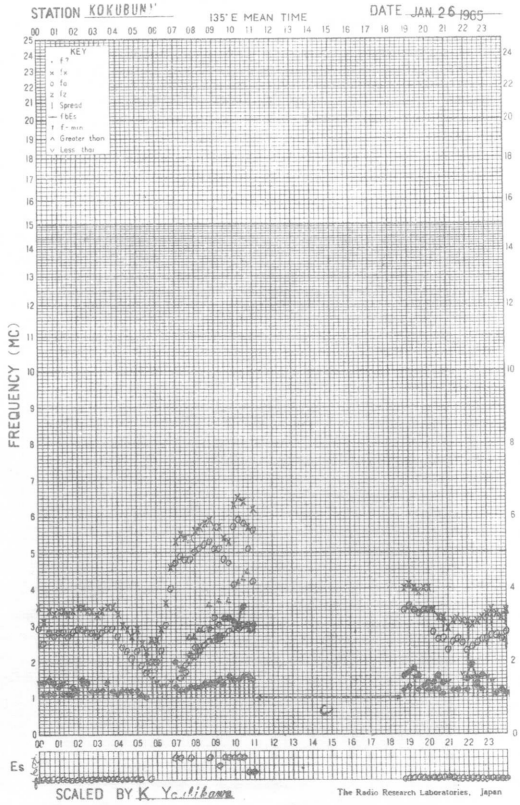
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 26. 1965



SCALED BY K. Yoshikawa

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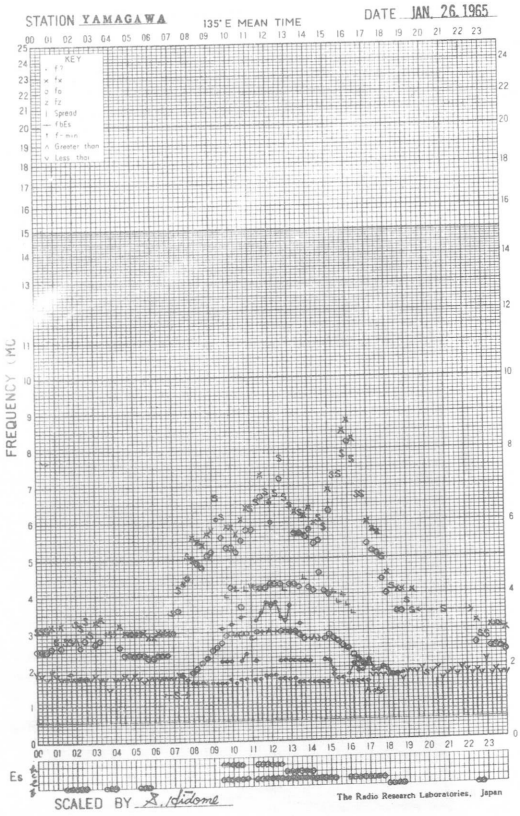
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 26. 1965



SCALED BY S. Nitome

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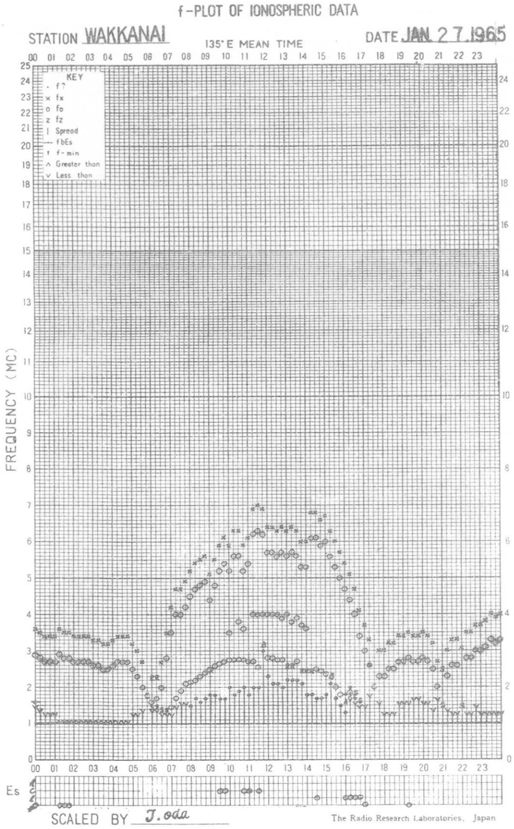
f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JAN. 27.1965
KEY
· f?
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o fo
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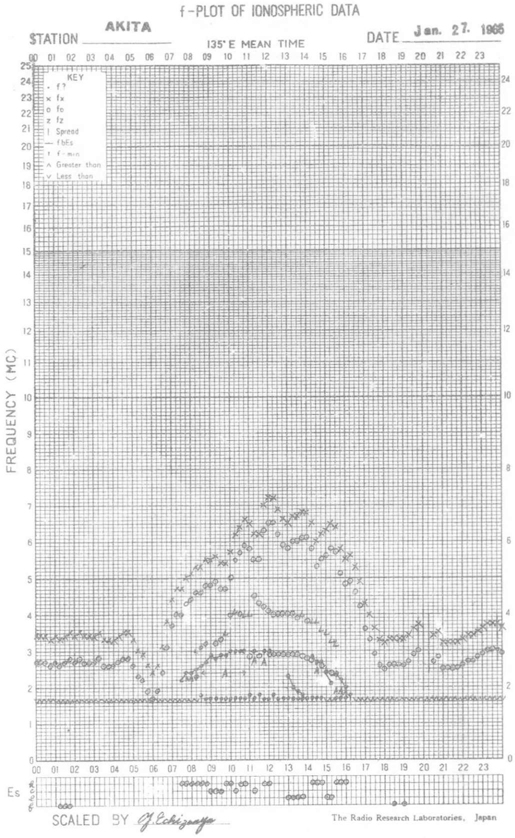
| Spread
— fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MC)
Es
SCALED BY J. Oda
The Radio Research Laboratories, Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jan. 27. 1965
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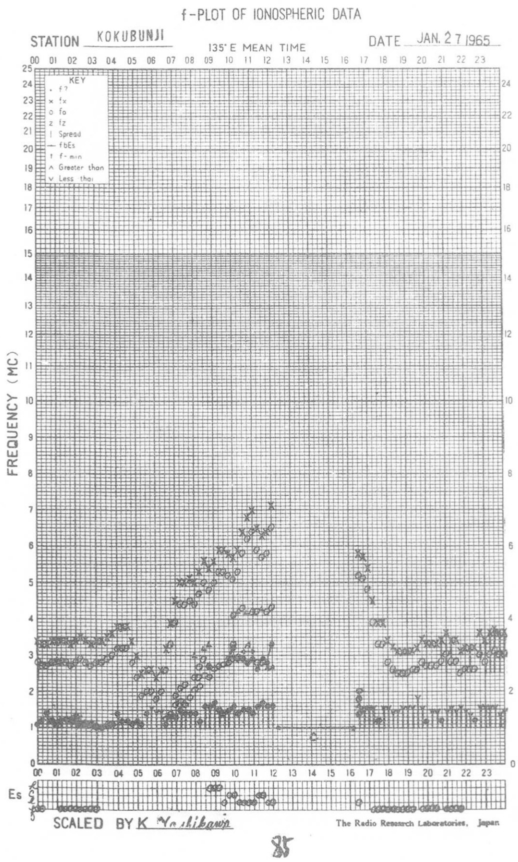
∨ Less than
FREQUENCY (MC)
Es
SCALED BY
The Radio Research Laboratories, Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE JAN. 27 1965
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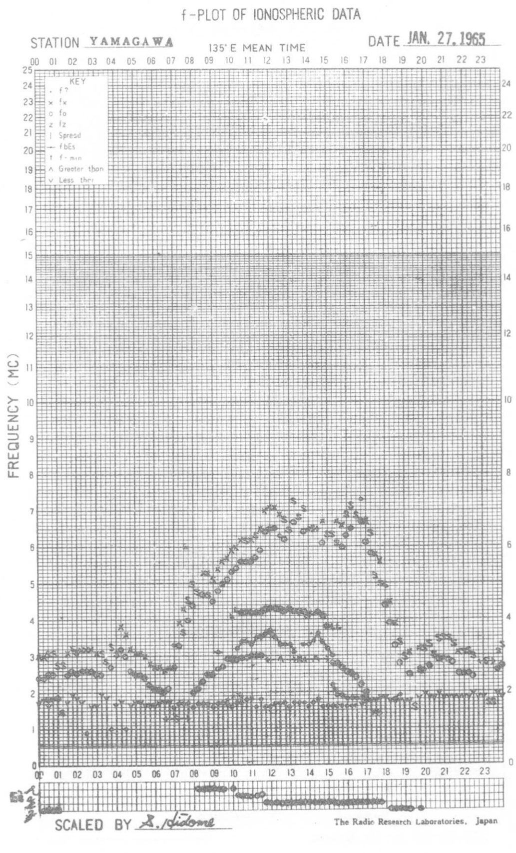
FREQUENCY (MC)
Es
SCALED BY K
The Radio Research Laboratories, Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE JAN. 27. 1965
KEY
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| Spread
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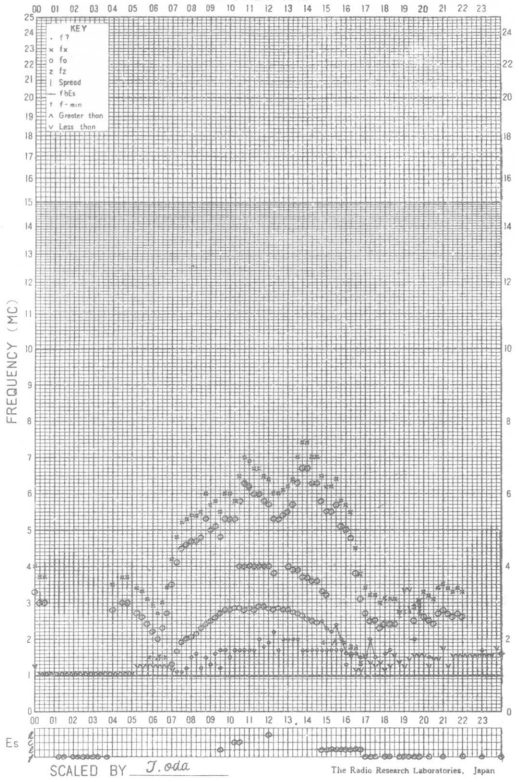
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MC)
SCALED BY
The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 28, 1965

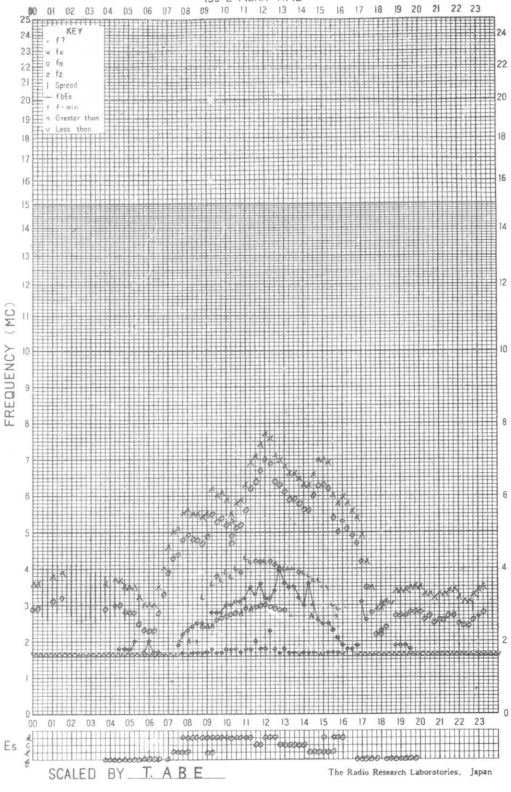


SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 28. 1965

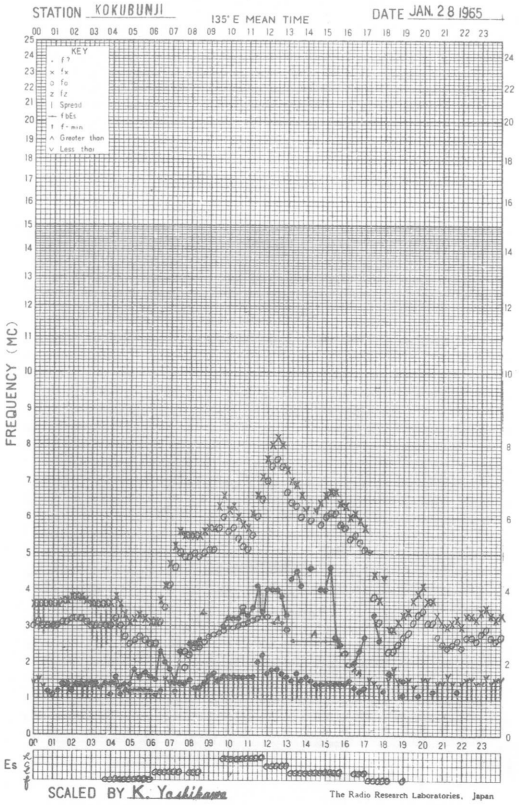


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 28 1965

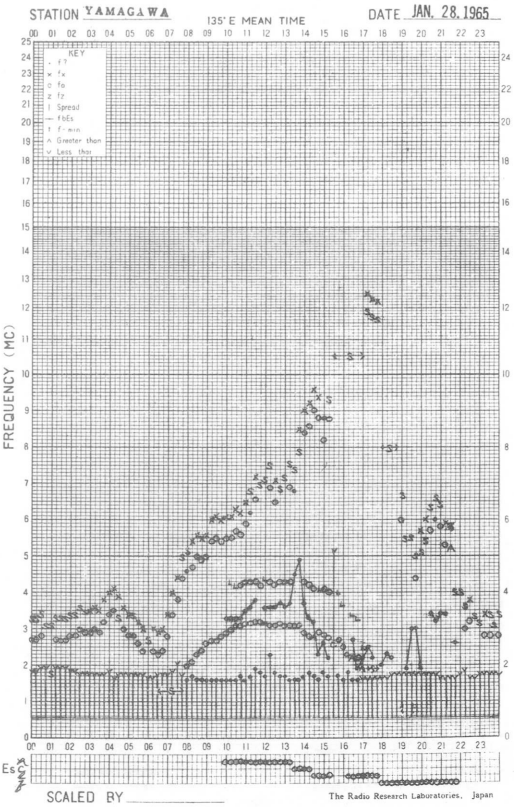


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 28, 1965

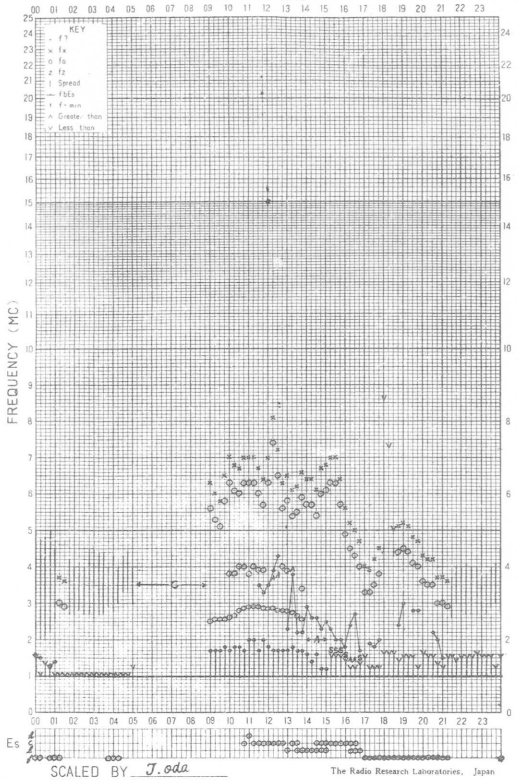


SCALED BY _____

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 29, 1965

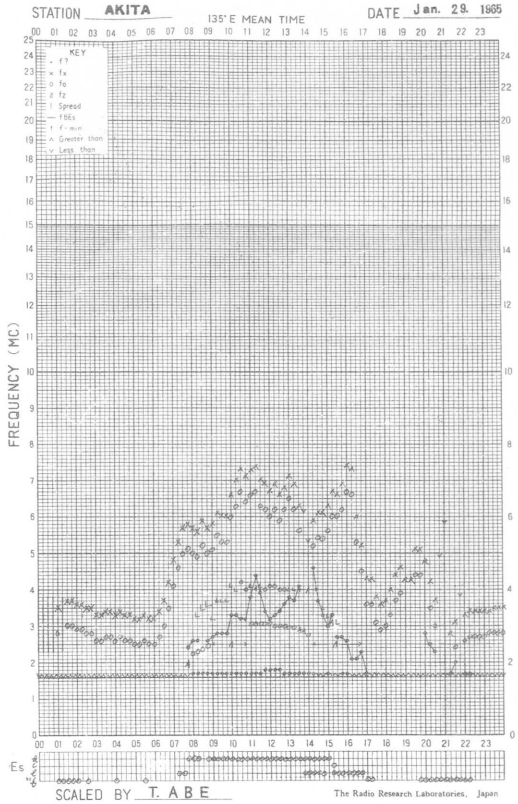


SCALED BY J. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 29, 1965

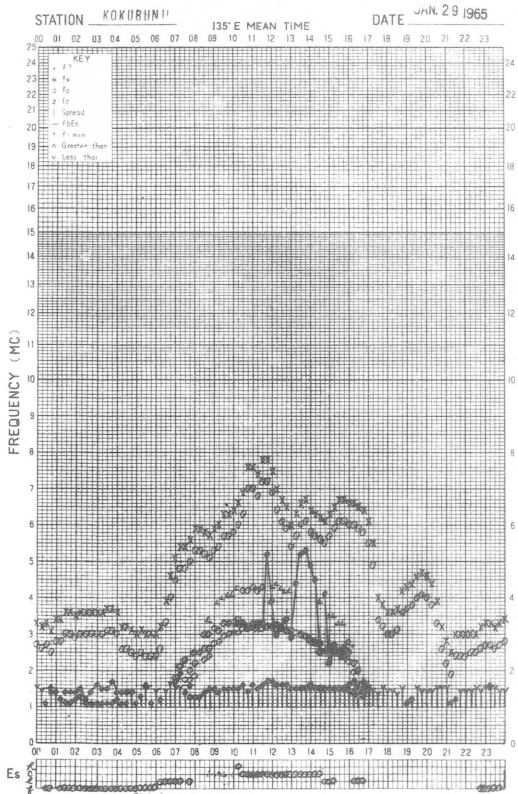


SCALED BY T. A B E

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 29 1965

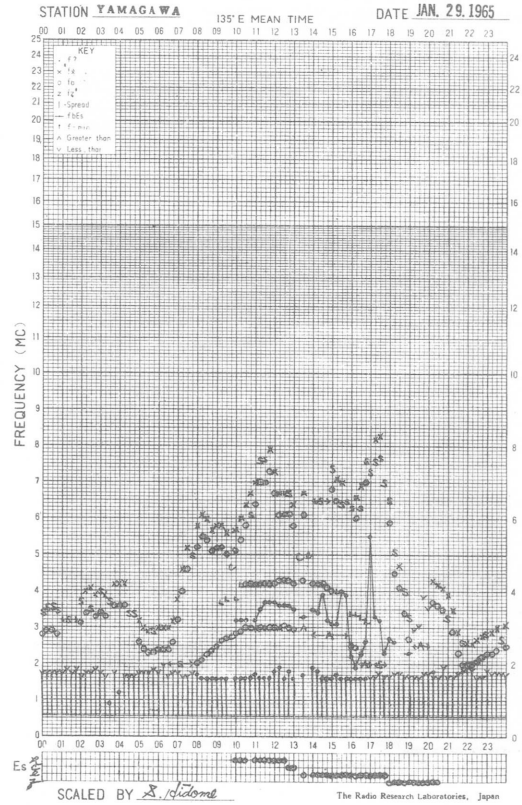


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 29, 1965

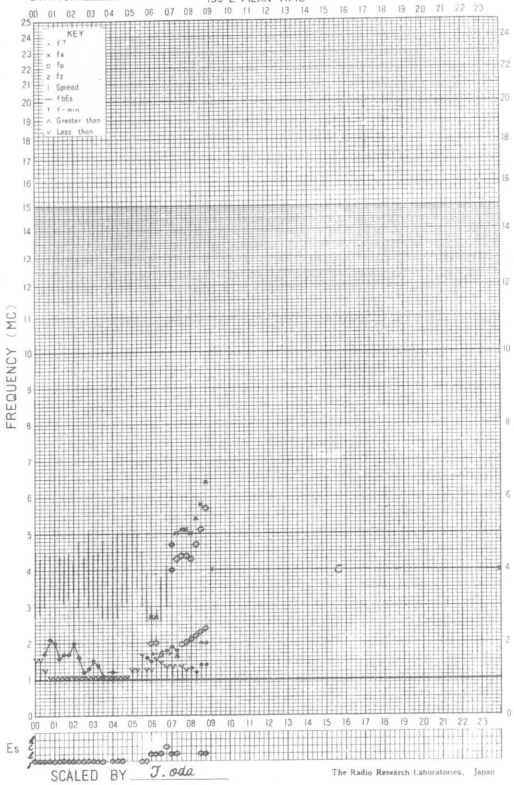


SCALED BY S. Kidome

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 30. 1965

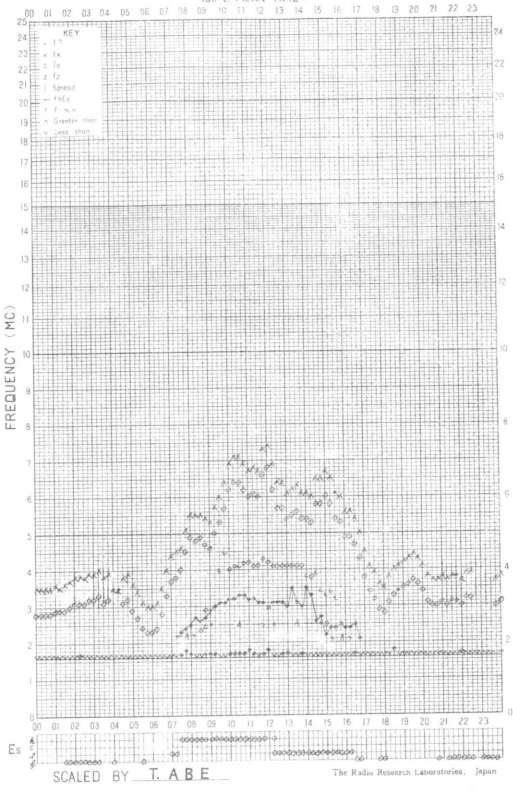


SCALED BY T. oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 30. 1965

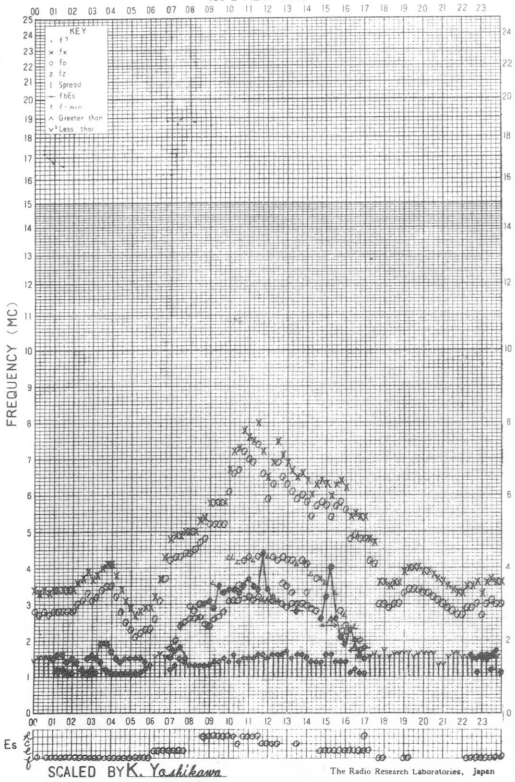


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN 30 1965



SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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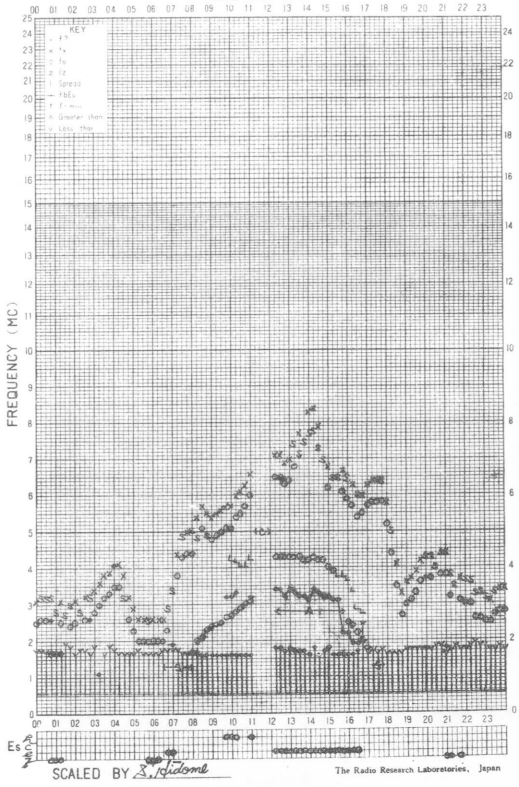
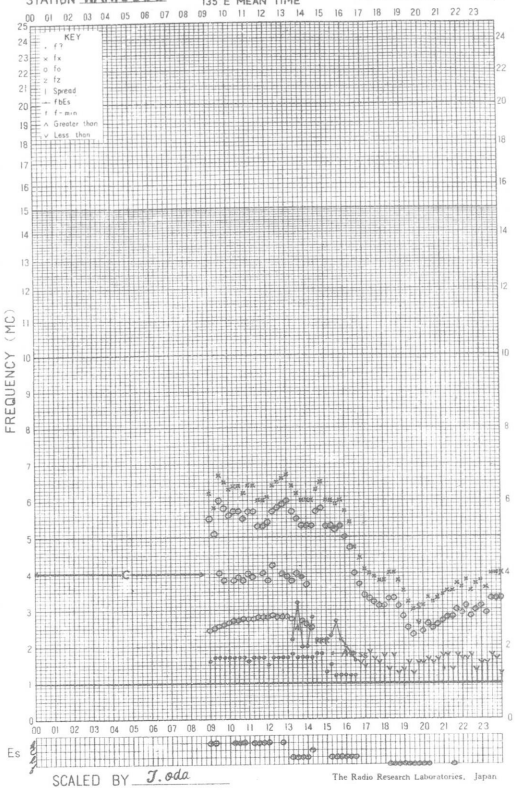


SCALED BY S. Fukami

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 31. 1965

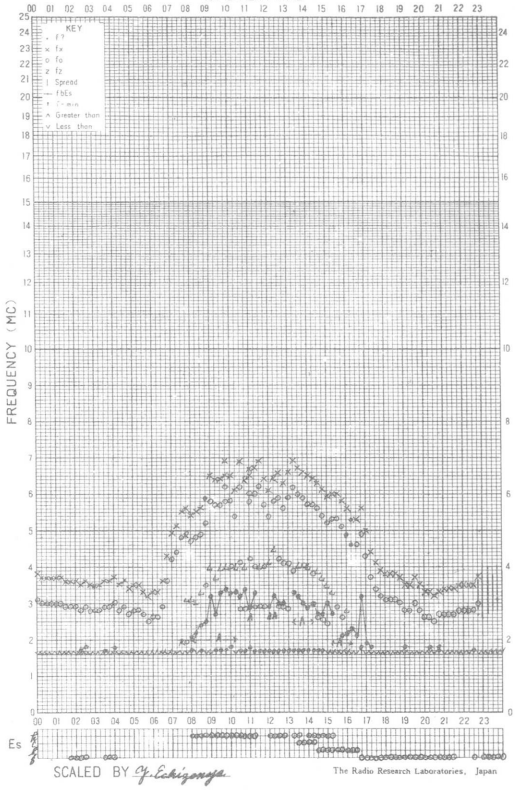


SCALED BY T. Oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Jan. 31. 1965

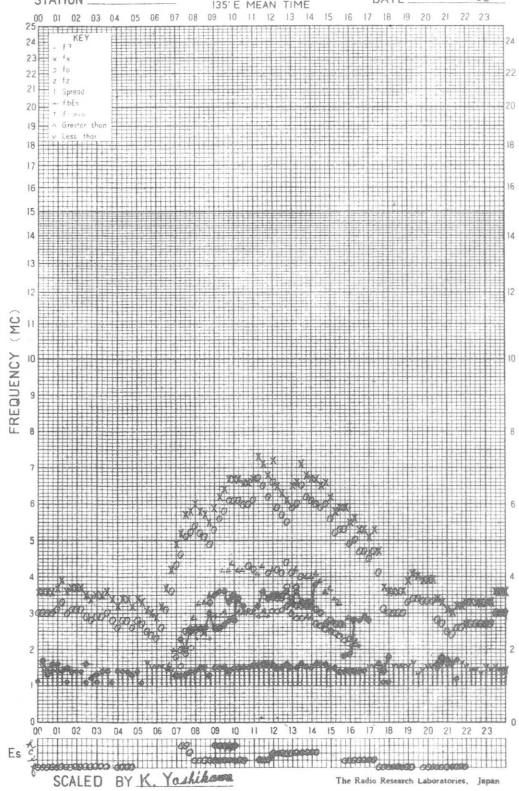


SCALED BY Y. Ichizonya

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JAN. 31. 1965

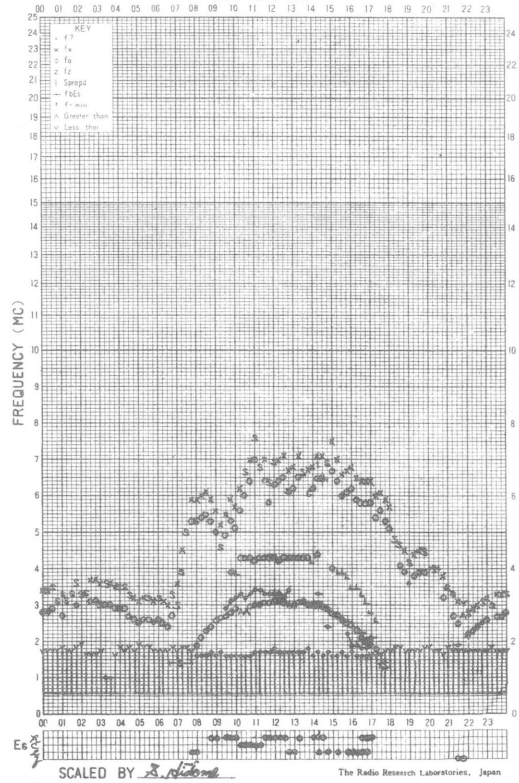


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JAN. 31. 1965



SCALED BY S. Nidome

The Radio Research Laboratories, Japan

SOLAR RADIO EMISSION

Flux Density and Variability

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

UT Date	Flux density $10^{-22}Wm^{-2}(c/s)^{-1}$ 00-03	03-06	06-09	21-24	Day	Variability 0 to 3 00-03	03-06	06-09	21-24	Day
1	16	21	(19)	(23)	18	1	2	(1)	(1)	1
2	46	27	(16)	(17)	32	2	2	(1)	(2)	2
3	13	11	(11)	(12)	12	1	1	(1)	(0)	1
4	12	12	(12)	(11)	12	0	0	(0)	(0)	0
5	11	11	-	-	11	0	0	-	-	0
6	12	11	(11)	(10)	11	0	0	(0)	(0)	0
7	13	16	(13)	(10)	14	0	0	(0)	(0)	0
8	9	9	(9)	(10)	9	0	0	(0)	(0)	0
9	11	10	(10)	(8)	11	0	0	(0)	(0)	0
10	10	10	(8)	(9)	9	0	0	(0)	(0)	0
11	10	9	(6)	(8)	9	0	0	(0)	(0)	0
12	10	9	(9)	-	9	0	0	(0)	-	0
13	10	11	(11)	(12)	11	0	0	(0)	(0)	0
14	12	12	(10)	(9)	12	0	0	(0)	(0)	0
15	11	12	(11)	(10)	11	0	0	(0)	(0)	0
16	11	11	(13)	-	11	0	0	(0)	-	0
17	-	11	(13)	(12)	12	-	0	(0)	(0)	0
18	10	10	(8)	-	10	0	0	(0)	-	0
19	10	(10)	(7)	-	(9)	0	(0)	(0)	-	(0)
20	8	6	(6)	-	7	0	0	(0)	-	0
21	-	7	(7)	-	7	-	0	(0)	-	0
22	(6)	7	(7)	(6)	7	(0)	0	(0)	(0)	0
23	7	8	(7)	(8)	7	0	0	(0)	(0)	0
24	9	10	(10)	(8)	10	0	0	(0)	(0)	0
25	9	9	(10)	(8)	9	0	0	(0)	(0)	0
26	9	9	(7)	(7)	9	0	0	(0)	(0)	0
27	7	7	(6)	-	7	0	0	(0)	-	0
28	7	8	-	-	8	0	0	-	-	0
29	7	9	(10)	(7)	8	0	0	(0,	(0)	0
30	7	7	(7)	(8)	7	0	0	(0)	(0)	0
31	(8)	7	(8)	(7)	7	0	0	(0)	(0)	0

Note No observations during the following periods:

5th	0600-	6th	0100	19th	2150-		2400
12th	2150-		2400	20th	2150-	21st	0300
16th	2150-	17th	0300	21st	2150-	22nd	0200
18th	2150-		2400	27th	2150-		2400
19th	0200-		0300	28th	0600-	29th	0100
19th	0400-		0600	31st	0100-		0400

SOLAR RADIO EMISSION

Flux Density

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

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

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

Note No observations during the following periods:

2nd	2150-	3rd 0300	20th	0110-	0130
4th	0300-	0750	20th	0200-	0240
10th	2150-	2400	20th	0445-	0525
13th	0320-	0430	31st	2150-	2400
18th	0430-	0510			

* radiometer unstable

Distinctive Event

No Distinctive Event was observed during January, 1965.

Errata

Descriptions of Outstanding Occurrences of September 1963, 500 Mc/s, should be read as follows:

18th	Max. Time :	2325 for 2225,
20th	Start Time:	2351.5 for 2251.5.

Note

For December and January, the flux value of 500 Mc/s between 06 and 09 is not listed owing to uncertainty of low elevation, observations are still available, however.

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

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

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = 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 January, 1965.

IONOSPHERIC DATA IN JAPAN FOR JANUARY 1965
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