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IONOSPHERIC DATA IN JAPAN

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES

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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.	Midori-cho, Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°08.2′E.	Tegata Sumiyoshi-cho, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Nukuikita-machi, Koganei-shi, Tokyo-to
Yamagawa	31°12.1′N.	130°37.1′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

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

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

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

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

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

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

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

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

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

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

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

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

a. Descriptive Letters

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

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

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

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

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

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

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

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

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

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Letters

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

value on the monthly tabulation sheets.

D greater than.

E less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-ionic component.

c. Description of Standard Types of E_s

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

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

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

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

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

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

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

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

sometimes extend over several hundred kilometers of virtual height.

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

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

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

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

The number of bursts exceeding the flux level is counted.

c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

Descriptive type is denoted by the following symbols:

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Intensities of WWV and WWVH

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

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

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

Transmitter

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

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

Receiver

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

Descriptive symbols are as follows:

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

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

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

<: Less than the following figure.

b. Radio Propagation Quality Figures

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

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

The tabulated circuits contain Hamburg (commercial circuit), WWV (frequencies 10, 15, 20Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15Mc 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 Hamburg WWV and S. F.

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

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

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

Circuits and Drop-out intensity

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

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

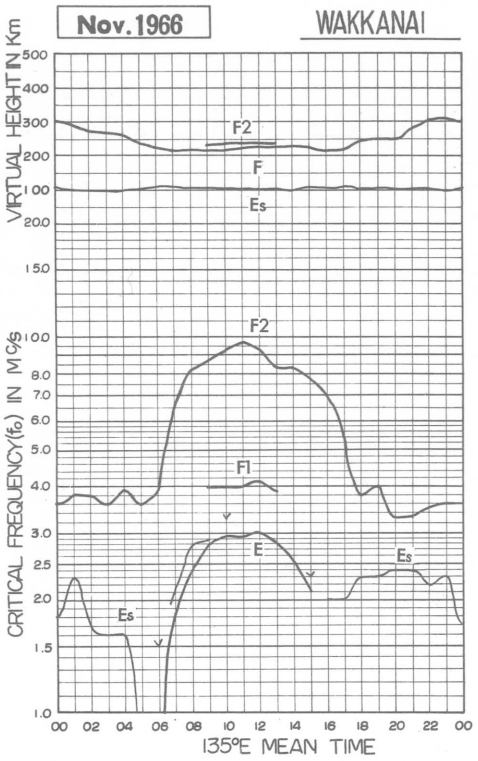
Importances

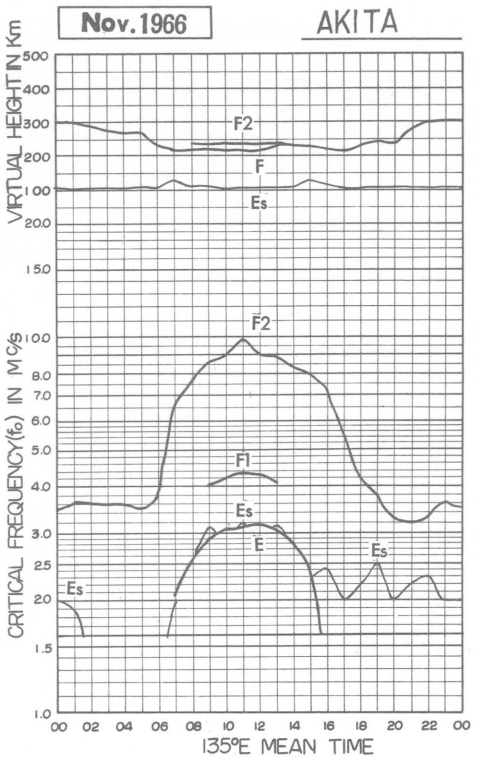
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

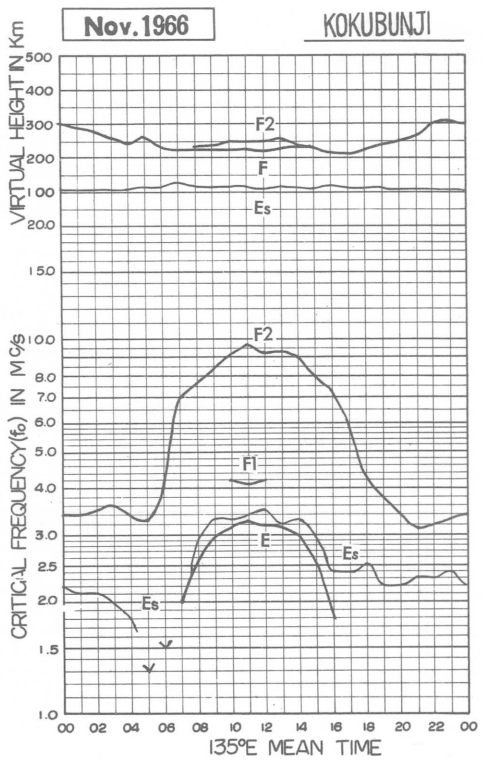
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

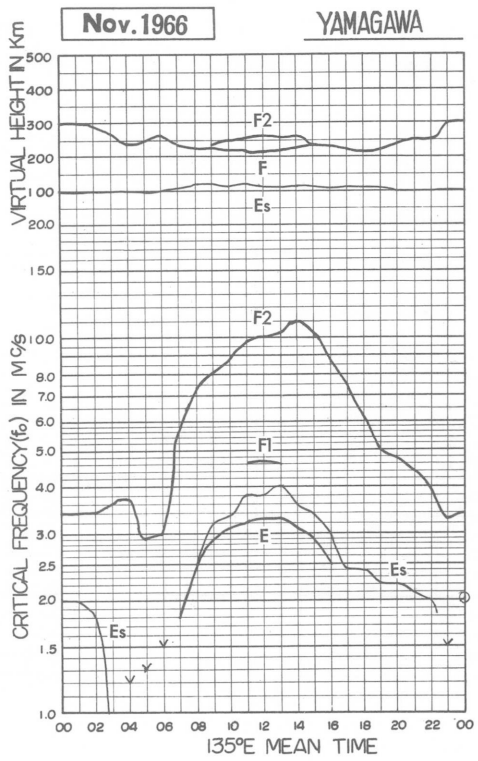
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Nov. 1966

135° E Mean Time (G.M.T. +9h)

CHAR. \ HR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	036	038	038	036	039	036	039	066	082	087	092	096	093	083	083	078	070	051	038	040	033	033	035	036
	CNT	18	20	20	19	19	20	23	25	26	25	26	27	27	27	27	27	29	28	27	27	28	21	21	20
	Q R	005	004	004	005	004	007	008	010	011	009	008	012	010	005	009	011	016	011	010	007	005	004	005	003
foF1	MED										400L	400L	400L	410L	390	380									
	CNT										5	12	16	15	8	3									
foE	MED			E	E	E	E	E	185	240	280	295	295	300	285	255	210		E	E	E	E			
	CNT			1	2	1	2	15	14	18	19	18	22	24	23	23	21		2	1	1	1			
foEs	MED	018	023	017	016	016	E	E015	021	028	029	E033G	G	G	G	G	E023G	020	020	023	023	J024	J024	022	023
	CNT	25	27	25	25	24	24	24	25	26	25	26	27	27	27	27	27	29	28	27	28	28	27	25	25
	Q R																	D012		D019	D019	D018	D018	D016	D012
f·min	MED	E	E	E	E	E	E	E	E012E	012	013	016	016	017	016	012	012	E011S	E	E	E	E	E	E	E
	CNT	25	27	25	25	24	24	24	25	26	25	26	27	27	27	27	27	29	28	27	28	28	27	26	25
M (3000) F2	MED	275	280	280	285	290	300	315	340	340	340	335	330	335	330	335	340	335	330	315	315	300	290	275	280
	CNT	18	20	20	19	19	20	23	25	26	25	26	27	27	27	27	27	29	28	27	27	28	21	21	20
M (3000) F1	MED										400L	395L	390L	395L	390	370									
	CNT										5	12	16	15	8	3									
h'F2	MED										230	235	240	240	235	240									
	CNT										7	13	18	16	8	4									
h'F	MED	300	295	275	270	260	240	225	215	220	215	215	220	225	225	230	225	210	210	245	250	250	280	300	305
	CNT	25	27	26	26	24	24	24	25	26	25	26	27	27	27	27	27	29	27	27	27	28	26	26	25
h'Es	MED	105	100	100	100	100	105	110	110	105	105	105	105	105	105	100	105	105	110	105	105	105	105	105	100
	CNT	14	19	16	15	14	11	12	16	15	14	17	14	14	15	19	15	21	16	18	16	18	20	17	16
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Nov. 1966

135° E Mean Time (G.M.T. +9h)

CHAR. \ HR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	035	036	036	036	036	035	038	066	078	086	090	098	090	089	084	080	072	054	042	038	033	032	033	036
	CNT	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
	Q R	004	004	004	004	004	004	009	008	011	009	013	015	010	007	009	012	013	012	009	006	004	005	005	004
foF1	MED									350	400L	420	430	430L	410L	420L									
	CNT									1	10	20	23	19	19	3									
foE	MED							E	205	255	290	305	310	315	305	285	240	E							
	CNT							4	20	27	27	25	26	26	25	26	26	12							
foEs	MED	J020	J019	E	E	E	E	E	020	J026	031	G	032	G	031	028	023	024	J020	J022	J025	J020	J022	J023	J020
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Q R																	011			025			008	007
f·min	MED	E	E	E	E	E	E	E	E	017	017	017	018	018	017	017	017	E	E	E	E	E	E	E	E
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
M (3000) F2	MED	290	290	290	300	305	305	325	350	350	340	330	330	335	335	335	345	340	340	325	320	320	295	290	285
	CNT	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
M (3000) F1	MED									405	390L	385	385	385L	385L	390L									
	CNT									1	10	20	23	19	19	3									
h'F2	MED									230	230	240	240	240	240	235	230								
	CNT									15	30	30	30	30	30	21	7								
h'F	MED	300	300	295	275	270	270	235	215	215	220	215	215	215	230	230	230	215	210	230	245	240	280	300	300
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	27	28	30	30
h'Es	MED	105	105	105	105	105	105	105	130	110	110	105	105	105	105	105	130	115	105	105	105	105	105	105	105
	CNT	20	16	12	13	9	6	7	17	22	20	21	18	22	20	16	17	22	22	23	25	21	20	26	23
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Nov. 1966

135° E Mean Time (G. M. T. +9h)

CHAR \ HR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	034	034	035	036	034	033	040	070	077	084	091	096	093	093	089	080	073	058	043	038	034	031	032	033
	CNT	29	28	28	29	27	28	28	29	29	30	29	28	29	29	28	27	30	28	27	27	28	27	28	29
	Q R	004	004	004	004	004	005	007	010	011	014	011	015	014	012	012	012	017	016	012	008	006	005	005	006
foF1	MED									320L	420L	420L	410L	420L	420L	380L									
	CNT									2	2	5	5	6	2	2									
foE	MED								200	260	300	315	325	320	315	300	255	180							
	CNT								21	20	26	28	25	24	21	19	18	15							
foEs	MED	022	021	021	020	018	E013B	E015	G	029	033	033	034	035	032	033	030	024	024	025	022	022	023	023	024
	CNT	29	28	28	29	28	29	29	29	29	29	29	28	29	29	28	25	30	28	23	28	29	29	29	29
	Q R	D009	D010	D011	006	D011	D007	D004			007							010	009	015	012	012	006	D012	D012
f·min	MED	012	013	012	012	011	013	014	014	015	015	016	016	016	016	016	015	014	013	012	012	013	012	013	014
	CNT	29	28	28	29	28	29	29	29	29	29	29	28	29	29	28	25	30	28	28	28	29	29	29	29
M (3000) F2	MED	280	280	285	300	310	290	320	345	345	330	330	330	320	325	335	340	340	335	320	310	305	290	280	280
	CNT	29	28	28	29	27	28	28	29	29	30	29	27	29	29	28	27	30	28	27	27	28	27	28	29
M (3000) F1	MED									400L	375L	370L	335L	395L	380L	400L									
	CNT									2	2	5	5	6	2	2									
h'F2	MED									230	240	250	250	250	255	245	230	240							
	CNT									13	27	28	28	28	29	23	10	2							
h'F	MED	300	290	280	260	245	260	235	220	225	220	220	225	220	230	230	230	215	210	220	240	250	265	300	305
	CNT	29	28	28	29	28	29	29	29	28	29	28	28	29	28	29	28	29	28	27	28	28	28	28	28
h'Es	MED	105	105	105	105	105	110	110	130	115	115	115	115	110	115	115	110	115	110	110	110	105	105	105	105
	CNT	21	18	19	22	16	8	13	14	24	23	22	17	20	19	19	20	27	25	21	21	23	24	21	20
hpF2	MED	345	350	340	315	290	330	290	250	250	270	275	280	290	290	270	265	255	260	275	290	300	320	345	350
	CNT	28	28	28	29	27	28	28	29	29	30	29	27	29	29	28	27	30	27	27	26	28	26	27	29
ypF2	MED	065	060	060	065	060	065	050	050	050	050	055	055	060	055	050	050	050	055	060	065	060	065	065	065
	CNT	28	28	28	29	27	28	28	29	29	30	29	27	29	29	28	27	30	27	27	26	28	26	27	29

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Nov. 1966

135° E Mean Time (G. M. T. +9h)

CHAR \ HR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	034	034	034	036	037	029	030	056S	074S	081	088	098	100	101	110	104	086	075	061	050	048	044	039	033
	CNT	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30
	Q R	005	003	001	002	004	004	004	011	011	009	011	016	012	019	013	014	012	013	016	011	011	007	012	007
foF1	MED											460L	460	470	460	460L	360	320	240						
	CNT											1	12	15	15	4	2	3	2						
foE	MED								180	250	290	310	320	330	330	310	290	250	170						
	CNT								5	24	26	25	22	22	20	21	18	19	3						
foEs	MED	020	020	018	E	E012	E013	E015S	G	025	032	033	038	038	040	036	034	030	024	J024	022	J022	021	020	E015S
	CNT	29	30	30	30	30	30	30	30	29	30	27	28	29	30	30	30	29	30	30	30	30	29	30	29
	Q R	D009	D012	D010				D005	D005				006	008	010	007	004	010	010	012	010	008	D009	D007	D006
f·min	MED	E015S	E013S	E011	E	E	E011	E015S	E015S	012	012	014	015	015	015	015	015	013	E015S	E015S	E015S	E015S	E015S	E015S	E015S
	CNT	29	30	30	30	30	30	30	30	29	30	28	28	29	30	30	30	29	30	30	30	30	29	30	29
M (3000) F2	MED	280	280	290	295	320	280	295	340S	350S	340	325	325	325	315	325	330	340	340	330	315	295	285	290	275
	CNT	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	30	30	30	29	29	29	29	29	29
M (3000) F1	MED											370L	365	365	370	350L	405	405	430						
	CNT											1	10	15	15	4	2	3	2						
h'F2	MED									245	240	250	255	260	255	260	245	230	220						
	CNT									1	19	29	29	28	29	29	29	12	2						
h'F	MED	300	300	290	270	240	250	260	235	225	230	220	220	210	220	230	235	230	220	210	220	240	250	250	300
	CNT	29	28	29	29	29	29	29	29	29	30	30	29	28	29	29	30	30	30	29	29	29	29	29	29
h'Es	MED	100	100	100	100	100	100	100	110	120	120	115	120	110	110	115	110	105	105	105	105	100	100	100	100
	CNT	14	17	15	11	12	11	11	12	18	22	23	26	29	26	28	30	27	25	21	23	24	21	16	14
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

Nov. 1966 | 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	056	055	056	F	050F	045	046	067	097	120	117	106	111H	118	096	105	076	061	053	047	045	043	045	046
2	F	F	F	F	F	033	046	073	089	090	102	097H	097	085	083	081	076	051H	038	034	036	035	034	036
3	035	036	040	037	037	034	038	067	078	083	092	089	103	083	087	075	066	045	045	041	036	035	041	042
4	040	040	040	036	037	033	036	061	078	080H	086	088	093	081	083	077	077	056	044	040	031	030	033	036
5	034	036	037	035	037	038	035	063	073	068	084	093	087	082	078	080	088	043	036	041	034	033	036	036
6	037	038	038	F	F	S	041	061	085	C	C	C	C	C	C	C	073	043	I040A	040	033	033	035	I035A
7	036	037	038	037	041	035	039H	068	077	073	084	087	086	078	085	089	086	056	043F	043F	045F	U042F	043F	F
8	F	F	C	C	046F	042F	044	067	093	096	097	113	104	089	090H	095	085	063	I033C	028	033	S	C	C
9	C	F	C	C	C	C	C	066	083	086	088	090H	098	084	079H	085H	073	058	I038A	030	031	031	033	034
10	033	035	036	035	035	035	040	067	083	080H	091H	100	100H	083	086	078H	068	051	052	045	037	033S	036	035
11	037	038	038	035	037	035	043	076	089	097	093	102	092	083	079	074	078	061	048	042S	040S	S	036	038
12	040	043F	040F	036F	043F	040	044	075	080	080	089	088	091H	081	076	081	072	053	035	033	031	034	035	036
13	036	033	033	033	033	032	040	071	082	083	091	087H	094	081	083	077	070	051	I044A	I041A	040S	SF	SF	SF
14	SF	F	F	F	F	F	053	070	086	087	096	096	089	078H	081	084	068	055	041	041	043	F	F	F
15	F	F	F	043F	043F	036	038	070	078	090	090	096H	093H	082	077	082	070H	044	033	033	031	SF	F	037F
16	F	037F	037F	040F	040F	F	041	075	096	087	093	097	093	092	097	083	080	055	A	A	032	C	C	C
17	C	035	036	036	040	042	033	062	075	089	098	100	097	085	087	084	073	055H	032	033	032	032	035	034
18	037	039	038	036	034	032	031	062	079H	090	092	100	111	116	103	093	080	055	047	040	036	035	039	038
19	040	040	039	042	038	038	030	054	083	096	116	107	096	093	091	082	068	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	082	084	095	099H	088	086	098	073	060	054	043	044	040	040	039	038
21	038	040	040	038	039	042	043	057	088	093	095	089	093	080	077	074	063	045	039	034	031	033	036	036F
22	SF	042F	043F	040F	041	040	035F	059	076	083	095	088	081	083	086	070	056	045	034	036	033	033	036	037
23	041	043	044	F	040F	041	035	066	074	083	084	090	087	084	076	067	053	044	033	036	030	032F	F	037F
24	036F	038	037F	040F	036F	033	032	054	073	088H	111	092	082	083	075	073	057	045	036	040	027	026	031	033
25	035F	035	036	035	C	C	C	C	C	C	C	078	075	074	068	060	057	I032A	035	040	036	031	033	033
26	033	032	033	033	C	C	C	C	C	C	081	085	083	080	083H	072	063	038	031	035	032	033	034	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	057	037	033	036	028	030	033F	036F
29	036F	F	F	034F	F	033	030	058	088	090	091	096	086	086	080	060	059	049	041	036	031	031	033	F
30	F	F	F	F	F	F	F	056	075	100	101	101	094	089	079	069	057	051	038	036	034	F	F	F
31																								
Count	18	20	20	19	19	20	23	25	26	25	26	27	27	27	27	27	29	28	27	27	28	21	21	20
Median	036	038	038	036	039	036	039	066	082	087	092	096	093	083	083	078	070	051	038	040	033	033	035	036
U.Q.	040	040	040	040	041	040	043	070	088	092	097	100	097	086	087	084	076	055	044	041	036	035	038	038
L.Q.	035	036	036	035	037	033	035	060	077	083	089	088	087	081	078	073	060	044	034	034	031	031	033	035
Q.R.	005	004	004	005	004	007	008	010	011	009	008	012	010	005	009	011	016	011	010	007	005	004	005	003

The Radio Research Laboratories, Japan

foF2 | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation | W 1

IONOSPHERIC DATA

Nov. 1966 | 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										A	U420L	U440L		380	L									
2										U410L	430	410			410									
3										400L	410	390	430L	370	380									
4											A	U420L	420L	400										
5												430L	420L											
6										C	C	C	C	C	C									
7										360	400	420L	410											
8										L			U420L	420L										
9													400L											
10												L												
11										380L	400L		410L											
12												A	L											
13												400L			380L									
14												380	400L											
15												400	U420L	370										
16										400		U400L	400											
17											U410L		U410L											
18												380		U410L										
19												420												
20													400L											
21											400L		U410L	370										
22											370L													
23											U400L	400L												
24											410L	410L	390	U400L										
25										C	C													
26										C														
27										C	C	C	C	C	C									
28										C	C	C	C	C	C									
29											U400L	400L	400											
30											400	400L												
31																								
Count										5	12	16	15	8	3									
Median										400L	400L	400L	410L	390	380									
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

W 2

IONOSPHERIC DATA

Nov. 1966 | 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	S		E	E	E	E	E	205	250	285	290	295	295	270	230	A	A	E						
2				E			A	A	A	260	280	290	265	270	250	230	A							
3							S	180	I235A	280	A	I295A	I290A	285H	260	215	A							
4							S	I190A	240	A	A	A	300	280	255	210	A							
5							E	190	I230A	I270A	I285A	I295A	300	290	A	A	A							
6							E	175	A	C	C	C	C	C	C	C	A							
7							E	175	I205A	235	A	A	A	A	A	A	A							
8							E	195	A	A	A	305	300	295	275	230	S							
9								A	I240A	A	C	C	300	290	265	215	A							
10							S	160	260	295	300	310	305	300	275	230H	S							
11							E	195	250	290	295	300	300	300	290	200	A							
12							E	200	235	A	A	A	A	A	A	A	A	E						
13							E	180	250	290	I295A	I300A	300	290	280	235	S							
14							E	A	A	A	A	A	305	300	270	220	A							
15							E	A	245	285	300	300	300	285	265	205	S							
16							E	160	240	I280A	295	I295A	300	300	I265A	220	S							
17							S	R	240	280	300	305	305	285	260	210	A							
18							E	180	240	280	300	300	300	285	260	210	A							
19							E	A	A	A	A	295	A	A	A	C	S							
20							C	C	235	280	300	305	300	290	255	205	S							
21							E	A	240	275	295	300	300	280	250	200	S							
22								190	225	270	300	300	300	290	250	200	S							
23							E	A	A	270	295	295	290	280	240	215	A							
24						E		A	A	270	290	290	290	275	I250A	230	S							
25							C	C	C	C	C	295	290	B	250	B	S							
26							C	C	C	C	295	295	290	270	240	205	S							
27							C	C	C	C	C	C	C	C	C	C	C							
28							C	C	C	C	C	C	C	C	C	C	A							
29								A	A	255	280	280	290	265	255H	205	A		E	E	E			
30								S	215	I245A	I280A	290	290	280	245	190	A							
31																								
Count			1	2	1	2	15	14	18	19	18	22	24	23	23	21		2	1	1	1			
Median			E	E	E	E	E	185	240	280	295	295	300	285	255	210		E	E	E	E			
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

W 3

IONOSPHERIC DATA

Nov. 1966 | 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	E016S	E	E	E	E	E	023	032	040	066	040	040	037	035	036	028	025	030	J040	J031	J043	J026	E014S	028
2	J024	J027	J030	016	J023	J033	J023	028	033	025G	G	G	G	G	G	G	026	J028	E	E012S	J025	J024	018	J021
3	E013S	018	014	J023	J025	E	E014S	G	033	G	033	031	040	034	024G	038M	018	E	J023	E015S	E	015	E013S	J025
4	J023	J023	J023	J020	018	020	E013S	J044	G	041	J076	J038	035	G	020G	018G	025	023	E015S	E016S	E015S	J033	J031	E015S
5	E	024	J023	025	J023	028M	016	033	032M	029	J044	J033	034	J033	032	036M	035	J043	J031	028	E015S	E016S	032	021
6	E015S	J023	J021	J022	J036	025	J021	G	033	C	C	C	C	C	C	C	J038	J034	044	J033	J024	J022	J022	J041
7	J034	030	017	E	017	017	E	G	028	033	040	036	033	042M	J040	038M	035	028	021	020	E015S	E012S	E015S	E
8	021	J024	C	C	E	J031	021	G	028	032	033	025G	027G	036	041	027	E015S	E013S	C	J056	J054	J043	C	C
9	C	E019C	C	C	C	C	C	020	J033	044M	E074C	E074C	025G	022G	G	025	031	032	J085	J053	E012S	J023	J023	E015S
10	E	E	E	E	E	E	E011S	022	G	G	G	G	026G	G	020G	G	E018S	E	J030	E015S	J023	J025	023	J033
11	J030	E	015	018	J021	E	E	G	G	G	034	G	G	G	G	025	029	J032	J034	J053	J030	J053	J030	J023
12	J030	J023	J021	E	E	J021	E	G	040	031	036	J051	041	033	026	025	J033	E	J023	033	J025	J025	J025	024
13	J023	J025	E	E	E	E	E	025	029	G	042M	J043	025G	032	040	025	023	J030	J051	J063	J043	J063	J043	J041
14	E	021	018	018	013	E	E	023	053	067	J054	040	024G	031	018G	024	020	J031	J083	J033	J035	J030	J031	020
15	J038	J024	E	016	J021	E	J040	024	G	G	025G	031	G	G	021G	G	018	E	E	E	J026	040	J033	J029
16	018	J023	J026	J021	016	018	E	G	G	043	036	J033	G	031	030	G	020	J043	J133	J130	J073	C	C	C
17	C	018	J021	J023	J023	E	E012S	G	G	G	G	G	G	G	G	G	020	E015S	E015S	E015S	J030	J040	J035	J043
18	020	E	E	020	J022	E	E	G	G	G	G	G	G	025G	022G	019G	020	J030	J023	J023	E012S	E013S	J024	E017S
19	E017S	J031	J032	J025	E	E	016	021	030	J053	J040	033	035	J043	028	E045C	E017S	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	G	031	026G	G	G	G	032	G	E015S	018	J024	J023	E	E015S	E	J024
21	J020	J023	E012S	E	E	015	020	020	G	G	G	G	G	G	G	G	E015S	E	J033	E	J040	J031	J031	J023
22	E	E	E	E	E	E	018	021	G	G	023G	G	G	G	020G	G	E015S	E	023	J023	020	E	E015S	E016S
23	E	E	E	E	E	E	E	022	030	G	G	G	G	G	G	018G	027	018	E	E	021	021	023	E
24	J023	015	J025	016	E	E	025	J030	J031	G	G	G	G	G	034	G	E015S	E	018	E015S	E	E	E	E
25	E	E	E	E	C	C	C	C	C	C	C	G	G	E030B	G	E025B	E016S	J045	E015S	J025	J051	J023	E	026
26	J030	017	015	E	C	C	C	C	C	C	016G	025G	033	020G	G	027	028	E015S	E	E012S	014	020	E016S	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	015	E015S	022	J030	J024	J025	J020	J023
29	016	J023	J021	016	017	015	J025	J025	027	J031	G	G	G	J033	024G	J023	J021	E	E	E	E	J041	021	E012S
30	E	J023	J024	J020	018	020	J021	021	G	J083	040	034	018G	020G	020G	G	016	J021	E	E	E013S	E015S	E	E015S
31																								
Count	25	27	25	25	24	24	24	25	26	25	26	27	27	27	27	27	29	28	27	28	28	27	26	25
Median	018	023	017	016	016	E	E015	021	028	029	E033G	G	G	G	G	E023G	020	020	023	023	J024	J024	022	023
U.Q.	024	024	023	020	022	020	021	025	033	042	040	035	033	033	032	026	028	030	034	033	032	033	031	027
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E016	E	E015	E014	E014	E015	E015	E015
Q.R.																	D012		D019	D019	D018	D018	D016	D012

foEs

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

IONOSPHERIC DATA

Nov. 1966 | f_bEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S						020	G	038	064	G	G	G	G	G	024	022	016	034	020	027	018	S	015
2	012	017	E	E	015	022	015	020	027	023G							018	S		S	014	017	015	018
3	S	015	E	012	012		S		027		028	030	032	020	020G	016	018		012	S		014	S	018
4	017	012	012	015	016	012	S	038		025	041	032	027		018G	018G	023	016	S	S	S	022	025	S
5		E	E	E	015	020	015	023	028	029	030	033	025	026	028	025	030	032	021	020	S	S	025	017
6	S	013	E	E	032	014	015		026	C	C	C	C	C	C	C	035	033	A	019	018	017	017	A
7	026	013	013		012	E			027	G	032	032	033	035	030	028	023	024	020	017	S	S	S	
8	015	016	C	C		020	015		027	030	030	024G	025G	025G	022	G	S	S	C	022	018	E030C	C	C
9	C	C	C	C	C	C	C	017	027	025	C	C	024	021G		016G	022	023	A	017	S	018	E015S	S
10							S	G					026G		020G		S		E015S	S	019	018	017	020
11	016		013	016	017						G					G	025	020	028	026	020	S	021	018
12	020	017	014			018			038	031	033	045	036	029	026	024	026		015	026	016	017	020	E015S
13	016	016						G	G		036	032	025G	023	022	018	G	016	A	A	016	020	023	022
14		E	011	E	E			020	028	033	031	032	020G	023	018G	016	017	025	030	017	018	018	020	014
15	016	015		E	011		E	020			025G	025			020G		G				017	017	020	018
16	E	E	017	E	012	E				028	024	030		024	028		020	034	A	A	025	C	C	C
17	C	E	020	012	E		S										015	S	S	S	020	017	027	020
18	E			016	017									023G	021G	018G	018	025	018	015	S	S	020	S
19	S	014	013	012			E	018	027	033	033	027	033	031	027	C	S	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C		020	024G				020		S	017	018	015		S		015
21	E	E	S			E	E	020									S		017		015	E	011	E
22							E	013			021G				018G		S		E014S	017	012		S	S
23								019	025							017G	016	015			012	E015S	S	
24	E	E	E	E			012	017	024						026		S		015	S				
25					C	C	C	C	C	C	C			B		B	S	A	S	012	026	021		E016S
26	019	015	015		C	C	C	C	C	C	016G	020G	019	017G		G	017	S		S	015	E015S	S	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	017	S	S	016	013	E	016	016
29	E	020	014	014	E	E	015	024	025	019				020	018	015	017					E	E012S	S
30		012	013	013	E	E	E	G		053	029	020	018G	019G	017G		015	016			S	S		S
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

W 5

IONOSPHERIC DATA

Nov. 1966 | 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	E016S	E	E	E	E	E	E	012	012	017	016	013	014	016	012	011	E011S	E	E	E	E015S	E	E014S	E
2	E	E	E	E	E	E	E	E	E	011	011	012	012	012	011	012	E013S	E012S	E	E012S	E	E012S	E	E
3	E013S	E	E	E	E	E	E014S	E	012	012	012	E	016	013	012	E	E	E	E	E015S	E	E	E013S	E
4	E	E	E	E	E	E	E013S	013	011	013	012	012	012	012	012	E	E	E012S	E015S	E016S	E015S	E	E	E015S
5	E	E	E	E	E	E	E	012	E	012	016	017	015	014	016	011	E	E	E	E	E015S	E016S	E014S	E
6	E015S	E	E	E	E	E	E	012	012	C	C	C	C	C	C	C	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	E	012	016	018	011	016	012	E	E	E	E	E015S	E012S	E015S	E
8	E	E	C	C	E	E	E	012	013	018	017	013	017	017	012	012	E015S	E013S	C	E013S	E	E030C	C	C
9	C	E019C	C	C	C	C	C	012	012	012	E074C	E074C	017	013	012	E	E	E	E	E015S	E012S	E015S	E015S	E015S
10	E	E	E	E	E	E	E011S	E014S	018	017	017	019	019	016	016	012	E018S	E	E015S	E015S	E	E	E	E
11	E	E	E	E	E	E	E	012	015	012	017	019	020	019	017	015	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	014	017	018	018	017	016	013	011	E	E	E	E	E	E	E012S	E015S
13	E	E	E	E	E	E	E	E	012	017	017	017	017	012	012	012	E015S	E	E013S	E	E	E	E	E
14	E	E	E	E	E	E	E	E	011	012	012	012	014	017	013	015	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	014	017	017	017	017	017	018	017	017	E012S	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	011	016	016	016	017	017	017	013	E013S	E	E	E	E	C	C	C
17	C	E	E	E	E	E	E012S	012	017	017	019	024	020	022	017	016	E012S	E015S	E015S	E015S	E	E	E	E
18	E	E	E	E	E	E	E	012	015	017	018	017	018	017	015	013	E	E	E	E	E012S	E013S	E	E017S
19	E017S	E	E	E	E	E	E	011	017	018	017	017	018	016	017	E045C	E017S	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	011	012	013	020	017	017	012	013	E015S	E	E	E	E	E015S	E	E
21	E	E	E012S	E	E	E	E	E	012	012	013	015	016	013	012	012	E015S	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	014	017	016	018	016	016	E	012	E015S	E	E014S	E	E	E	E015S	E016S
23	E	E	E	E	E	E	E	015	012	013	017	018	017	013	012	011	E	E	E	E	E	E015S	E015S	E
24	E	E	E	E	E	E	E	E	011	012	012	012	011	013	011	011	E015S	E	E	E015S	E	E	E	E
25	E	E	E	E	C	C	C	C	C	C	C	018	016	030	017	025	E016S	E	E015S	E	E	E016S	E	E016S
26	E015S	E	E	E	C	C	C	C	C	C	011	E	E	E	015	011	E011S	E015S	E	E012S	E	E015S	E016S	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E015S	E015S	E	E012S	E	E	E
29	E	E	E	E	E	E	E	E	E	011	011	011	012	011	E	E	E	E	E	E	E	E	E012S	E012S
30	E	E	E	E	E	E	E	E015S	E	011	012	011	011	012	E	E	E	E	E	E	E013S	E015S	E	E015S
31																								
Count	25	27	25	25	24	24	24	25	26	25	26	27	27	27	27	27	29	28	27	28	28	27	26	25
Median	E	E	E	E	E	E	E	E012E	012	013	016	016	017	016	012	012	E011S	E	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Nov. 1966 | 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	275	290	290	F	300F	285	310	295	310	325	335	325	325H	330	315	340	320	310	305	315	295	285	265	265
2	F	F	F	F	F	265	325	335	335	315	335	305H	340	330	340	345	350	315H	315	295	305	285	275	300
3	280	280	290	280	285	295	315	355	350	335	345	325	330	335	335	345	350	330	320	310	305	285	270	270
4	275	290	285	290	305	280	305	345	340	340H	335	360	335	350	340	340	340	330	315	310	275	275	275	285
5	295	270	285	285	295	330	315	335	350	310	335	350	335	335	335	340	365	350	305	315	305	290	280	280
6	255	275	275	F	F	S	325	345	355	C	C	C	C	C	C	C	365	285	I315A	320	320	275	285	I280A
7	270	295	295	295	290	295	315H	340	350	355	325	335	335	335	330	335	350	355	300F	295F	315F	U285F	275F	F
8	F	F	C	C	310F	295F	315	345	325	345	330	335	345	325	325H	325	340	350	I325C	285	275	S	C	C
9	C	F	C	C	C	C	C	335	340	350	330	310H	335	320	325H	325H	350	330	I325A	300	290	290	275	280
10	280	280	290	285	305	315	320	335	345	340H	320H	330	320H	330	335	330H	340	315	310	315	325	295S	275	285
11	270	295	315	270	290	295	280	340	340	340	340	330	335	340	340	335	335	340	335	305S	330S	S	270	265
12	265	290F	305F	305F	280F	300	320	360	365	350	335	320	320H	325	355	335	340	345	310	305	275	270	285	290
13	325	280	275	275	265	280	325	340	335	345	330	320H	345	330	340	350	330	320	I310A	I300A	290S	SF	SF	SF
14	SF	F	F	F	F	F	350	360	355	335	345	335	345	305H	335	335	340	320	310	310	300	F	F	F
15	F	F	F	300F	325F	315	330	355	355	355	330	320H	335H	330	325	340	300H	340	310	295	315	SF	F	275F
16	F	265F	290F	280F	295F	F	315	345	345	340	325	320	335	325	330	335	330	325	A	A	280	C	C	C
17	C	285	270	305	305	335	325	325	345	345	325	330	330	320	335	345	335	310H	290	315	290	290	280	275
18	265	260	270	295	270	280	310	345	320H	340	325	320	315	330	325	345	345	305	320	320	290	295	280	280
19	270	270	265	285	275	335	320	335	335	315	335	320	335	325	330	340	325	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	355	345	340	325H	330	325	330	340	330	330	325	320	300	325	290	265
21	275	280	280	290	265	285	315	360	340	345	340	330	340	335	355	350	325	315	315	325	295	275	270	315F
22	SF	285F	280F	275F	285	300	315F	340	340	340	340	340	345	330	335	360	340	310	325	325	295	285	310	295
23	275	275	275	F	290F	315	315	350	365	335	335	335	315	345	340	355	325	330	305	335	315	280F	F	270F
24	280F	275	270F	295F	305F	340	320	335	340	320H	340	330	325	335	330	355	330	315	330	340	300	290	275	275
25	270F	265	280	285	C	C	C	C	C	C	C	345	345	350	345	335	335	I330A	315	330	345	325	280	275
26	265	280	280	275	C	C	C	C	C	C	335	325	320	330	330H	330	335	330	290	315	280	300	280	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	315	340	295	345	295	310	265F	250F
29	280F	F	F	295F	F	305	280	330	340	340	340	335	335	335	350	355	335	320	315	345	325	325	285	F
30	F	F	F	F	F	F	F	340	335	340	325	335	330	335	355	335	335	320	320	315	290	F	F	F
31																								
Count	18	20	20	19	19	20	23	25	26	25	26	27	27	27	27	27	29	28	27	27	28	21	21	20
Median	275	280	280	285	290	300	315	340	340	340	335	330	335	330	335	340	335	330	315	315	300	290	275	280
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000) F2 Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

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IONOSPHERIC DATA

Nov. 1966 | 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										A	U390L	U400L		395	L									
2										U400L	395	415			390									
3										380L	390	385	395L	405	370									
4											A	U380L	405L	400										
5												370L	380											
6										C	C	C	C	C	C									
7										415	415	405L	390											
8										L			U405L	380L										
9													400L											
10												L												
11										395L	405L		400L											
12												A	L											
13												390L			370L									
14												395	400L											
15												395	U390L	400										
16										410		U375L	375											
17											U400L		U390L											
18												395		U390L										
19												405												
20													405L											
21											390L		U375L	390										
22											400L													
23											U405L	395L												
24											390L	390L	395	U390L										
25										C	C													
26										C														
27										C	C	C	C	C	C									
28										C	C	C	C	C	C									
29											U375L	390L	380											
30											395	390L												
31																								
Count										5	12	16	15	8	3									
Median										400L	395L	390L	395L	390	370									
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F1 Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Nov. 1966 | 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										I230A	230	230		255	230									
2										230	240	240			250									
3										245	230	240	235	225	240									
4											225	240	240	225										
5												240	240											
6										C	C	C	C	C	C									
7										220	230	240	240											
8										235			225	250										
9													240											
10												240												
11										240	235		240											
12												240	240											
13												240			240									
14												240	240											
15												240	240	225										
16										215		245	235											
17											240		225											
18												245		240										
19												225												
20													230											
21											240		235	235										
22											240													
23											225	235												
24											240	235	235	235										
25										C	C													
26										C														
27										C	C	C	C	C	C									
28										C	C	C	C	C	C									
29											240	235	230											
30											230	240												
31																								
Count										7	13	18	16	8	4									
Median										230	235	240	240	235	240									
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Nov. 1966 | 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	300	265	255	250	245	300	260	235	240A	I230A	220	225	230H	200	225	240	210	220	I245A	250	290A	300	300	310
2	305	240	240	225	300	350	240	210H	240	215	210	200	200H	205	200	225	210	200	215	250	255	270	300	290
3	275	295	250	260	270	240	260	225	225	215	200	195	225	200	215	220	210	200	245	245	240	280	300	300
4	310	270	255	250	250	270	245	I220A	240	230	I230A	225	230	200	235	240	230	200	240	245	250	345A	350A	270
5	260	300	270	295	275	240	225	220	220	215	195H	235	200	195H	230	225	210A	320A	280	260	245	280	350A	310
6	305	310	295	270	I260A	210	245	215	200H	C	C	C	C	C	C	C	210A	I225A	I245A	250	250	310	280	I330A
7	360	280	260	260	275	250	190H	220	220	210	200	220	220	230	245	240	220	215	245	250	240	250	285	290
8	290	300	I265C	I245C	225	235	240	225	225	225	200H	220H	235	205	230H	240	220	200	I230C	350	295	E350C	C	C
9	C	E290C	C	C	C	C	C	215	220	225	I210C	I200C	220	230	225H	225	210	210	I235A	260	250	280	300	300
10	300	295	255	260	250	225	220	215	210	210H	205H	235	230	225	240	225	215	210	240	235	250	300	340	310
11	310	270	235	290	290	250	265	210	220	215	220	240	240	230	210H	225	210	200	250	260	235	S	345	315
12	320	275	245	250	260	250	230	215	210	220	220	I240A	235	225	225	240	225	210	240	300A	300	315	300	270
13	250	275	275	290	310	250	210	210	210	220	230	220	230	220	220	225	210	215	I260A	I265A	260	275	300	270
14	260	270	250	275	260	250	210	210	220	215	225	200	225	225	230	240	210	240	280A	240	260	285	300	290
15	300	300	275	270	235	200	215	215	210H	215	220H	210	235	215	220H	230	210	205	210	260	250	345	350	315
16	295	300	300	295	250	250	245	220	220	210	210	225	220	225	245	230	215	A	A	A	350	C	C	C
17	C	275	320	270	250	215	230	220	215	230	210	230	225	225	235	220	210	205	250	260	280	300	345	320
18	315	300	275	270	305	250	210	205	210	210H	220	215	240	235	225	215	220	225	225	240	220	250	300	305
19	310	300	320	270	275	210	210	200	240	235	235	220	225	230	240	E225C	220	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	225	210H	210H	205H	220	235	245	215	215	215	235	245	250	250	250	300
21	295	285	275	270	290	255	215	220	210	220	220	230	235	210	240	220	210	210	245	220	260	270	300	315
22	270	260	275	260	250	225	210	210	215	215	210	225	230	240	240	220	200	210	225	245	250	290	260	275
23	285	295	280	270	260	240	220	210	210	210	220	210	225	240	225	215	210	210	225	230	215	300	310	290
24	300	300	290	255	240	200	225	215	220	210H	240	220	210	230	240	235	210	225	245	220	250	260	295	325
25	310	305	295	260	C	C	C	C	C	C	C	230	225	240	235	220	220	I235A	250	235	250	250	290	300
26	350	320	310	300	C	C	C	C	C	C	210H	210H	220	240	240	210	200	205	245	250	270	260	295	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	210	205	260	215	240	255	315	345
29	305	300	300	265	300	225	265H	215	225	215	220	220	225	215	215	210	215	210	245	220	225	250	275	350
30	325	315	300	265	250	215	225	215	215	I235A	210	215	225	220	225	210	220	240	250	250	260	305	290	340
31																								
Count	25	27	26	26	24	24	24	25	26	25	26	27	27	27	27	27	29	27	27	27	28	26	26	25
Median	300	295	275	270	260	240	225	215	220	215	215	220	225	225	230	225	210	210	245	250	250	280	300	305
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Nov. 1966 | h'Es km | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	E	E	E	E	E	140	130	120	110	115	110	110	110	110	110	115	110	110	110	110	110	S	105
2	110	110	110	110	110	110	110	110	105	105	G	G	G	G	G	G	115	110	E	S	110	105	105	105
3	S	105	105	100	100	E	S	G	110	G	105	105	105	100	105	100	100	E	105	S	E	105	S	100
4	100	100	100	100	100	110	S	110	G	105	105	105	105	G	105	100	120	110	S	S	S	105	105	S
5	E	100	105	100	105	100	100	110	110	110	105	105	105	105	100	100	100	100	100	100	S	S	105	110
6	S	105	105	105	100	100	100	G	105	C	C	C	C	C	C	C	100	100	100	100	100	100	100	100
7	105	100	100	E	100	100	E	G	110	110	105	105	100	100	100	100	100	100	105	100	S	S	S	E
8	105	100	C	C	E	105	105	G	115	105	105	105	105	105	100	140	S	S	C	105	105	105	C	C
9	C	C	C	C	C	C	C	105	105	105	C	C	100	100	G	100	100	115	110	110	S	105	105	S
10	E	E	E	E	E	E	S	145	G	G	G	G	110	G	105	G	S	E	105	S	100	110	100	100
11	110	E	105	105	105	E	E	G	G	G	140	G	G	G	G	115	110	110	105	105	110	105	105	100
12	100	100	100	E	E	105	E	G	115	115	110	110	105	105	105	105	105	E	115	110	110	105	105	105
13	105	100	E	E	E	E	E	150	125	G	100	100	100	105	100	100	125	110	105	105	105	100	105	100
14	E	105	105	105	100	E	E	110	105	105	105	100	105	100	105	105	100	100	100	105	105	100	100	100
15	105	100	E	105	100	E	100	105	G	G	105	100	G	G	100	G	150	E	E	E	100	100	105	105
16	100	100	100	100	100	100	E	G	G	105	105	100	G	105	105	G	115	110	110	105	105	C	C	C
17	C	105	100	100	100	E	S	G	G	G	G	G	G	G	G	G	105	S	S	S	110	110	105	100
18	105	E	E	100	100	E	E	G	G	G	G	G	G	105	105	105	100	100	100	100	S	S	105	S
19	S	100	100	100	E	E	115	110	105	105	100	100	100	100	100	C	S	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	G	105	100	G	G	G	100	G	S	110	110	110	E	S	E	100
21	100	100	S	E	E	110	110	110	G	G	G	G	G	G	G	G	S	E	110	E	105	105	105	105
22	E	E	E	E	E	E	110	105	G	G	105	G	G	G	100	G	S	E	100	105	105	E	S	S
23	E	E	E	E	E	E	E	110	105	G	G	G	G	G	G	105	105	105	E	E	110	100	100	E
24	110	105	105	100	E	E	115	110	105	G	G	G	G	G	110	G	S	E	110	S	E	E	E	E
25	E	E	E	E	C	C	C	C	C	C	C	G	G	B	G	B	S	110	S	110	110	105	E	110
26	105	100	100	E	C	C	C	C	C	C	100	100	115	100	G	150	115	S	E	S	100	100	S	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	100	S	100	110	110	105	105	105
29	100	100	100	100	100	110	110	105	105	100	G	G	G	105	100	100	100	E	E	E	E	105	105	S
30	E	100	100	100	115	110	110	180	G	105	105	105	100	100	100	G	100	100	E	E	S	S	E	S
31																								
Count	14	19	16	15	14	11	12	16	15	14	17	14	14	15	19	15	21	16	18	16	18	20	17	16
Median	105	100	100	100	100	105	110	110	105	105	105	105	105	105	100	105	105	110	105	105	105	105	105	100
U.Q.																								
L.Q.																								
Q.R.																								

h'Es | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 11

IONOSPHERIC DATA

Nov. 1966 | Types of Es | 135° E Mean Time (G. M. T. +9h) | Wakkanai | Lat. 45° 23.6'N Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							h	h	c	c4	c	c	c	c	c2	12	1	c	f4	f4	f3	f2		f
2	f2	f2	f	1	f2	f3	1	1	1	1							1	f			f2	f2	f	f2
3		f2	f	f2	f2				1		1	1	1	1	1	1	1		f			f		f
4	f2	f	f2	f2	f2	f		12		1	12	12	1		1	1	c 1	f				f2	f2	
5		f	f	f	f2	f2	1	1	1	1	12	1	1	1	12	12	13	f3	f2	f			f4	f
6		f2	f2	f2	f3	f	1		1								14	f4	f2	f2	f2	f2	f2	f3
7	f3	f2	f		f2	f			1	1	12	1	12	13	12	13	12	f5	f	f				
8	f	f				f2	1		1	1	1	1	1	1	1	h				f3	f2	f2		
9								1	12	12			1	1		1	1 c	f f	f4f	f		f	f	
10								h					1		1				f		f	f	f	f
11	f		f	f2	f2						h					c	13	f	f2	f4	f2	f3	f2	f2
12	f2	f2	f2			f2			c2	1	12	12	12	12	12	12	12		f	f4	f	f2	f2	f
13	f	f						h	c		12	12	1	1	1	1	c	f	f5	f3	f2	f2	f2	f2
14		f	f2	f	f			1	12	12	12	12	1	1	1	1	1	f2	f2	f	f	f	f2	f
15	f2	f		f	f3		1	1			1	1			1		h				f2	f2	f2	f2
16	f	f2	f2	f	f	f				1	1	1		1	1		c2	f6	f4	f2	f2			
17		f	f3	f	f												1				f	f2	f3	f
18	f			f2	f2									1	1	1	1	f2	f	f2			f2	
19		f2	f	f			c	1	12	12	12	12	12	1	1									
20										1	1				1			f	f2	f				f
21	f	f				f	1	1											f2		f	f	f	f
22							f	1			1				1				f	f2	f			
23								1	1							1	1	f			f	f	f	
24	f	f	f	f			f	1	1						1				f					
25																		f5		f	f2	f2		f
26	f	f	f2								1	1	c 1	1		h	c				f	f		
27																								
28																	1		f	f	f	f	f	f2
29	f	f3	f2	f2	f	f	f3	12	12	1				1	1	1	1					f2	f	
30		f2	f	f2	f	f	f2	h		15	1	1	1	1	1		1	f						
31																								
Count																								
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

Nov. 1966 | 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	041S	046	048	045	044	FS	056	078	I102R	117	138	123	106	111	112	109	088	056	054	056	046	041	042	043
2	043	I049R	046H	039	034	034	046	069	097	108	102	109	102	094	089	081	073	059	042	037	036	035	032	033
3	034	035	036	033	034	032	043	065	084	090	089	093H	101	089	085	088	075	051	041	045	037	032	035	037
4	038	041	041	041	034	031	045	066	078	086	092	093	100	084	085	076	072	063	041	037	034	031	033	034
5	034	034	036	036	036	036	036	056	081	088	078	089	088	086	085	085	071	054	037	039	036	031	034	036
6	036	036	036	038	037	037	041	I064R	075	086	082	106	089	097	099	088	089	048	I042R	039	038	031	036	I036R
7	036	038	039	037	036	036	045	072	091	077	076	098	097	079	086	091	088	057	039	041	040	034	038	040
8	039	041	039	041	041	036	039	069	085	099	099	105	099	091	089	092	089	063	034	029	032	033	035	036
9	036	036	F	039	036	033	041	064	088	095	091	087	091	097	088	085	075	060	I038A	034	034	033	033	033
10	035	035	036	035	036	037	038	063	083	081	084	099	089	089	079	076	074	056	046	046	044	034	036	036
11	I037R	041	039	033	034	033	036	079	I096R	093	088	100	091	089	081	076	073	061	046	041	I033R	I030R	031	031
12	I033A	035	036	034	033	034	039	076	084	086	080	091	088	090	085	081	076	057	045	028	031	032	036	036
13	035	034	034	033	031	031	039	068	081	086	094	099	088	092	081	076	076	061	046	041	032	033	035	036
14	037	036	038	038	039	036	046	069	074	082	084	092	086	084	079	081	068S	056	052	039	031	I028A	028	030
15	030	031	032	035	036	030	036	072S	074	082	086	096	076	083	086	080H	075	050	036	031	033	030	032	035
16	035	036	036	036F	042F	041	046S	075S	082	086	096	097	098	091	089	088	090	054	046	I038A	I035A	035	I036R	036
17	034	036	037	039	039	030	036	069	069	085	096	104	094	088	088	082	072	056	036	031	033	I034A	036	I037R
18	038	040	040	041	036	034	037	066	070	081	097	107	108	122	112	089	074	068	054	I039A	034	034	036	037
19	036	037	037	037	038	037	029	058	071	086	115	118	092	089	084	083	078	059	046	044	035	036	039	037
20	036	036	036	038	037	036	034	067	078	081	084	091	089	088	084	091	063	043	050	042	038	036	031	032
21	033	034	035	036	033	033	038	066	080	088	090	086	089	085	081	078	065	047	041	036	032	033	036	038
22	035	036	036	034	036	036	037	065	074	085	087	093	084	081	080	073	062	041	036	037	032	026	029	032
23	031	034	033	034	036	035	044	065	087	077	082	094	083	082	076	070	058	038	041	035	031	024	026	029
24	031	032	035	036	034	030	031	063	073	083	I103R	109	084	086	078	077	062	034	041	031	025	028	029	031
25	032	032	034	036	036	031	031	058	067	079	088	086	080	073	079	067	059	047	042	036	I033A	I028A	029	030
26	031	031	031	032	F	035	034	061	062	071	091	083	084	091	087	079	063	038	028	034	033	034	032	033
27	033	035	035	035	036S	035	029	052	073	084	102	111	094	089	075	066	062	044	033	035	026	029	029	030
28	032	032	033	035	035	036	029	055	066	079	079	091	093	083	074	068	063	037	031	036	028	030	033	036
29	038	039	039	042	036	036	032	057	079	094	095	103	084	079	077	066	058	054	049	044	032	026	031	031
30	031	033	035	036	038	046	041	059	076	096	110	116	108	097	078	066	062	051	050	043	040	028	F	032
31																								
Count	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
Median	035	036	036	036	036	035	038	066	078	086	090	098	090	089	084	080	072	054	042	038	033	032	033	036
U.Q.	037	038	039	039	038	036	043	069	084	090	097	106	098	091	088	088	076	059	046	041	036	034	036	036
L.Q.	033	034	035	035	034	032	034	061	073	081	084	091	088	084	079	076	063	047	037	035	032	029	031	032
Q.R.	004	004	004	004	004	004	009	008	011	009	013	015	010	007	009	012	013	012	009	006	004	005	005	004

foF2

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 1

IONOSPHERIC DATA

Nov. 1966 | 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									A	L	420	460L	I450A	I420A	430L	L								
2									L	L	430	430	420	400L	L	L								
3									L	420L	410	450	460L	420L	LH	L								
4									L	L	430L	450A	450L	420L	L	L								
5									LH	L	420	430L	430H	L	420L	L								
6									L	L	420L	450	L	450L	L	L								
7									L	L	L	440H	430H	L	L	L								
8									L	L	440	460	410	410	L									
9									L	410	410	430	440L	410L	L									
10									L	400L	420L	L	440L	450	L									
11									L	L	420	440L	430L	440L	L									
12									L	410L	420L	450	420L	I420A	400L									
13									LH	380L	420L	450	430L	430	L									
14									350	370	400	L	L	L	L									
15										420L	L	450L	410	L										
16										400	410	L	410	410L										
17										L	L	L	430L	L	L									
18										L	L	L	L	420L	L									
19									L	L	L	420	400	410L										
20										L	400	410	400	L										
21										L	410L	410L	410L	400L	L									
22										L	L	410	L	L										
23										L	I390A	I400A	L	L										
24										380L	L	410L	L	370										
25										370L	380L	400H	L	L	L									
26										L	390L	410L	L	L	L									
27										L	L	L	420L	400	L									
28										L	L	420L	L	380										
29										L	L	L	L	400										
30										L	400L	410L	L	L	L									
31																								
Count									1	10	20	23	19	19	3									
Median									350	400L	420	430	430L	410L	420L									
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 2

IONOSPHERIC DATA

Nov. 1966 | 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	225	265	295	315	320A	A	A	A	250	A							
2							E	215	I255A	295	310	320	325	315	285	245	A							
3							E	220	255	A	A	305	315	I305	285	255	A							
4							E	225	I260A	I285A	I305A	I310A	315	A	A	240	195							
5								I210A	245	A	A	A	310	315	I300A	255	A							
6								210	I255A	I280A	I305A	I310A	315	I300A	280	235	A							
7								A	A	A	A	315	325	305	280	240	A							
8								230	I270A	295	315	I320A	325	315	290	245	A							
9								205	255	I295A	310	320	325	315	300	265	A							
10								205	255	290	305	315	325	315	I290A	255	A							
11								205	260	295	310	320	I315A	310	295	240	A							
12								I200A	255	290	A	A	A	A	A	A	A							
13								A	I260A	290	305	320	I325A	315R	I285A	255	A							
14								205	260	300	305	310	315	310	290	A	A							
15								185	255	290	I305	315	I310A	I295A	I280A	245	E							
16								A	250	295	310	315	320	305	290	240	A							
17								A	I250A	I285A	305	315	320	315	300	I250A	A							
18								A	255	290	305	315	315R	310	290	245	A							
19								190	250	I290A	305	310	305	300	275	225	E							
20								185	240	290	305	310	310	305	280	240	E							
21								A	245	285	305	310	315	310	285	240	B							
22								A	250	290	305	310	315	310R	285	I240R	180							
23								I205A	255	290R	A	A	A	305	270	A	A							
24								A	A	290	305	310	310	300	270	240	E							
25								185	240	285	300	310	305	I295A	270	230	E							
26								B	235	280	305	I305A	310	A	A	235	E							
27								E	220	280	290	305	310	300	265	I215A	E							
28								A	A	280	300	305	310	300	I270R	220	E							
29								E	230	275	295	305A	305	290	255	A	E							
30								185	235	I270A	295	A	A	A	265	210	E							
31																								
Count							4	20	27	27	25	26	26	25	26	26	12							
Median							E	205	255	290	305	310	315	305	285	240	E							
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 3

IONOSPHERIC DATA

Nov. 1966 | 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	J023	J016E	E	E	E	J017	J020	J033	J045	J043	040	038	J059	J059	035	J038	J038	J045	J024	J025	E	J016E	J026	J024
2	J016E	J025	J018	J014E	E	E	J013E	025	J031	030	G	G	025G	G	J030	G	021	J018	J023	J018	E	J024	J020	J025
3	J016E	J016E	E	E	E	E	J013E	G	029	031	J037	032	G	J031	G	G	J026	J018	E	J023	J019	J014E	J018	J019
4	J017	J016E	J016E	E	J015E	J016E	025	026	J025	031	J037	J045	033	J033	J035	G	G	J023	J024	J035	J030	J017	J020	J018
5	J020	J038	J020	J017	J018	J020	J018	025	J025	J040	J040	J032	034	038	J037	035	J032	J025	J018	J017	J025	J045	J026	J039
6	J028	J043	J024	J028	J022	J018	J016E	G	027	J031	032	J040	J031G	J035	J040	030	J028	J032	J042	J050	J018	J016E	J018	J024
7	J025	J021	J028	J024	E	E	E	026	J028	J041	J053	J039	J024G	032	G	G	020	J016E	J018	J022	J020	J021	J026	J019
8	J020	J024	J023	J019	J021	E	E	G	J029	J036	033	J038	J050	G	G	027	J028	E	J020	J023	J018	E	J025	J043
9	J016E	J016E	J016E	E	E	J013E	E	G	J033	J051	J036	G	J032G	035	G	J025G	021	J017	J078	J036	J018	J028	J026	J018
10	J018	J024	J024	J020	J014E	J014E	E	G	G	032	028G	037	G	036	032	G	025	E	J014E	J018	J016E	J035	J025	J020
11	J029	J020	J018	J015E	J015E	E	E	G	J022G	J035	J039	037	039	035	033	031	J037	J081	J084	J054	J063	J040	E	J019
12	J051	J019	J019	J017	E	E	E	021	028	036	032	J047	J036	J054	J032	J037	J029	J025	J015E	J046	J020	J062	J052	J029
13	J028	J021	J016E	J019	J023	J016E	E	023	026	030	J033	036	033	G	030	J037	J028	J028	J046	J029	J024	J024	J018	J014E
14	J013E	E	J025	J029	J019	E	J019	G	G	J034	J037	029G	036	036	J040	J053	J038	J041	J048	J043	J091	J061	J031	J021
15	J038	J021	J013E	E	E	E	E	G	J055	G	J036	J038	J033	J035	031	G	E	J020	J052	J046	J023	J024	J023	J023
16	J023	J019	J023	J023	J016E	E	J015E	J031	J028	G	J030G	G	G	G	J036	026	021	J029	J081	J079	J089	J035	J085	J053
17	J025	J024	J019	J025	J019	J016E	J017	J023	J026	J041	G	G	J030G	G	G	G	023	J022	J025	J029	J020	J050	J024	J030
18	J025	J016E	J013E	J016E	J018	J023	J013E	020	027	G	G	G	029G	026G	G	025	J031	J029	J061	J044	J019	J016E	J023	J024
19	J018	J016E	E	E	E	E	J013E	G	J026	J050	G	G	G	G	G	025	E	J019	J028	J070	J020	J021	J023	J020
20	J018	J015E	E	E	J016E	J023	J022	J025	J025	G	J031G	G	G	J024G	J030	G	E	E	E	J023	J022	J021	J025	J018
21	J021	J015E	E	J018	E	E	J014E	J021	J028	J033	G	G	G	G	G	G	E018B	E	E	E	E	J029	J028	J025
22	J025	J023	J014E	E	J016E	E	J016E	J020	G	G	G	G	J027G	G	G	G	G	E	E	E	E	E	J039	J020
23	J016E	E	E	E	E	J023	E	021	G	G	J077	J058	J039	G	G	J029	J024	J024	E	J027	J020	J016E	J015E	E
24	E	J016E	J013E	J013E	E	J013E	J014E	J021	J034	G	J053	G	J037	G	G	G	E	E	J024	J029	E	E	E	J013E
25	J015E	E	E	E	E	J013E	E	G	G	G	G	G	G	J031	G	G	E	J015E	J022	J018	J068	J042	J028	J031
26	J015E	J021	J028	J018	J018	J012E	J013E	022	G	G	J029G	J033	033	035	J028	G	J029	J020	J022	J014E	J015E	J024	J013E	E
27	E	J013E	E	E	E	E	J013E	E	022G	J031	J024G	G	G	J037	G	023	029	J018	E	J013E	J013E	J025	J022	J016E
28	J020	J021	E	E	J013E	E	J020	J031	J035	G	G	J029G	J030G	J025G	G	J023	019	J018	J019	J024	J018	J018	J018	J035
29	J024	J025	J016E	J023	J017	J014E	J015E	J016E	G	J026G	J029G	J040	J035	J025G	J032	J025	J029	J023	J020	J025	J023	J014E	J020	J016E
30	E	E	E	E	E	E	E	G	G	027	G	034	J049	J033	028	023	J025	J024	J020	J016E	E	E	J017	E
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	J020	J019	E	E	E	E	E	020	J026	031	G	032	G	031	028	023	024	J020	J022	J025	J020	J022	J023	J020
U.Q.	025	023	020	019	018	E	E	025	029	036	037	038	036	035	032	029	029	025	042	043	023	035	026	025
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	018	E	E	018	E	E	018	018
Q.R.																	011			025			008	007

foEs

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Nov. 1966 | f_bEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E					E	018	029	044	041	039	038	054	047	034	038	028	019	017	017			024	018
2		018	E					023	029	026			024G		017		021	E	E	E		019	017	E
3									028	031	031	032		031			022	E		E	E		E	018
4	E						E	024	022	031	030	045	032	031	028			019	018	018	018	E	017	E
5	E	017	E	E	E	018	E	022	024	033	039	032	034	036	030	032	023	017	017	E	020	018	017	018
6	018	023	023	024	017	E			025	030	032	034	029G	033	023	024	028	018	A	017	E		E	018
7	017	E	E	E				024	026	036	033	026	021G	032			019		E	020	018	018	018	E
8	E	E	E	E	019				028	027	033	034	022			026	026		E	020	E		018	E
9									022	032	028		023G	034		019G	021	E	A	021	E	021	023	E
10	E	018	020	E						032	028G	036		034	032		024			018		019	021	018
11	024	E	E						017G	023	026	036	037	033	032	031	031	048	030	021	025	022		E
12	A	018	E	E				021	028	034	032	042	035	045	030	028	020	017		022	018	020	020	021
13	022	E		019	E			021	U026R	030	018	036	033		030	028	022	021	022	019	018	E	018	
14			E	019	E		E			025	026	026G	035	G	024	029	032	040	027	025	023	A	E	E
15	018	E							G		035	030	032	033	029			018	018	019	E	E	E	E
16	E	E	E	E				020	023		019G				023	026	020	023	020	A	A	021	025	027
17	020	018	018	019	E		E	021	026	039			028G				022	021	024	026	018	A	E	024
18	019				017	E		019	027				028G	026G		025	020	018	018	A	E		019	019
19	E								023	031						024		E	E	018	E	018	E	E
20	E					E	E	020	020		019			022G	024					020	E	E	E	E
21	E			E				019	019	021							B					E	018	019
22	019	E						019					026G										020	E
23						E		019			045	046	034			025	021	E		022	E			
24								019	026		021		017						E	022				
25														030					018	E	A	A	E	018
26		E	E	E	E			018			024G	031	032	034	028		019	E	E			018		
27									022G	024	023G			024		023	019	E				E	E	
28	E	E					017	023	028			020G	021G	023G		017	018	E	017	020	E	E	E	E
29	018	E		E	E					020G	021G	028	028	023G	024	021	022	019	018	020	018		E	
30										027		033	043	030	028	023	025	018	018				E	
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs | Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Nov. 1966 | 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	018	018	018	019	017	017	017	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	017	017	017	017	017	018	017	017	017	017	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	017	017	017	017	017	018	017	017	E	017	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	017	017	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	017	017	017	017	017	018	017	E	017	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	017	018	017	018	017	017	017	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	017	E	017	018	017	017	017	017	017	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	017	017	017	017	018	017	018	018	018	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	017	017	017	018	017	017	017	017	018	017	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	017	018	017	018	019	019	018	017	017	017	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	017	017	017	017	018	018	019	018	018	017	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	017	017	018	017	018	018	018	017	017	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	017	018	018	018	017	019	018	017	017	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	017	018	017	017	019	017	017	017	E	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	017	018	019	019	017	017	017	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	E	017	018	017	018	017	017	017	017	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	017	017	019	018	018	018	017	017	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	017	018	017	018	018	019	019	017	017	017	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	017	017	018	019	018	019	018	017	017	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	017	017	017	018	019	E	E	017	E	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	E	017	017	018	017	017	017	E	018	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	017	017	018	018	017	018	017	017	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	017	E	018	017	018	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	017	017	017	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	017	E	017	017	018	017	017	017	017	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	017	017	017	017	017	E	017	E	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	017	E	017	E	017	017	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	017	017	017	017	E	E	E	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	017	017	018	017	018	017	017	017	E	E	E	E	E	E	E	E
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	E	E	E	E	E	E	E	E	017	017	017	018	018	017	017	017	E	E	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min | Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Nov. 1966 | 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	270S	305	295	290	290	FS	300	330	I310R	315	305	325	315	280	320	330	330	320	300	325	310	300	305	275
2	285	I310R	320H	310	290	265	330	335	320	345	325	330	325	330	325	345	345	360	330	320	305	315	305	290
3	295	305	305	300	305	285	315	345	335	355	330	300H	325	335	330	340	345	355	310	320	325	290	270	290
4	290	320	295	305	315	280	325	365	355	315	335	335	330	335	325	345	345	335	320	305	325	295	290	300
5	310	295	300	305	315	310	340	350	350	355	345	335	345	330	330	355	340	355	295	320	345	290	285	285
6	290	285	290	305	315	325	330	I350R	350	335	340	330	345	330	345	345	340	375	I355R	310	310	295	290	I290R
7	280	290	310	300	305	290	325	345	350	355	340	335	340	340	330	330	340	355	295	320	325	300	295	305
8	300	285	295	300	310	310	315	350	330	325	335	325	320	330	325	335	335	350	330	295	285	290	295	300
9	290	290	F	315	330	315	335	345	350	355	340	335	330	320	335	335	345	350	I330A	315	305	295	300	305
10	295	275	310	310	315	335	320	350	345	340	335	325	335	340	330	345	340	330	310	310	320	295	280	285
11	I280R	305	335	290	295	300	310	355	I340R	345	330	325	340	330	325	330	345	345	310	315	I320R	I275R	275	275
12	I285A	295	315	295	305	305	315	345	355	350	335	330	340	335	340	350	355	350	335	295	265	270	290	310
13	315	300	300	295	290	290	360	370	345	350	330	335	330	335	335	345	335	340	320	320	300	280	285	285
14	295	300	295	295	300	305	330	360	365	345	345	345	325	345	335	330	340S	350	325	335	320	I295A	280	275
15	280	290	285	305	330	285	330	350S	360	330	330	335	330	340	350	320H	340	360	325	315	300	300	285	285
16	285	280	285	290F	300F	305	315S	345S	345	335	330	330	325	330	325	340	340	335	325	I320A	I300A	285	I295R	320
17	295	285	290	310	315	325	310	365	360	320	330	335	320	330	335	340	345	345	345	320	310	I300A	280	I290R
18	290	270	285	315	300	295	325	350	355	355	320	325	305	320	330	350	335	350	350	I340A	305	270	290	280
19	285	275	290	305	320	305	315	350	350	315	325	330	340	335	340	350	350	340	325	310	330	295	305	315
20	295	295	285	280	290	295	305	330	355	325	340	335	325	330	335	340	330	320	320	335	330	335	275	285
21	295	300	300	310	290	280	325	365	345	340	335	345	335	335	335	345	340	330	330	335	320	305	290	290
22	295	285	290	295	295	295	335	370	350	340	345	330	335	345	335	345	355	320	330	350	345	275	290	280
23	280	295	295	300	285	295	325	355	350	365	345	335	335	340	355	360	360	340	335	350	325	305	275	280
24	285	285	285	305	325	315	310	355	345	325	I330R	295	330	325	345	360	340	330	340	345	290	320	270	290
25	290	285	285	305	310	295	325	350	345	335	335	340	340	350	350	355	340	330	335	340	I345A	I300A	295	280
26	275	265	265	285	F	310	350	375	365	335	335	335	335	330	345	345	375	345	305	305	315	305	305	275
27	295	290	285	290	310S	315	315	330	345	335	325	290	335	340	350	350	355	325	315	350	305	285	270	275
28	280	285	285	305	290	310	315	345	350	340	330	330	335	340	350	355	355	350	325	335	330	310	290	285
29	290	285	270	320	295	285	335	335	330	325	330	340	345	340	350	350	345	310	325	340	345	310	275	260
30	265	275	270	285	315	330	320	350	345	335	325	325	345	340	360	360	340	315	335	330	335	320	F	270
31																								
Count	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
Median	290	290	290	300	305	305	325	350	350	340	330	330	335	335	335	345	340	340	325	320	320	295	290	285
U. Q.																								
L. Q.																								
Q. R.																								

M(3000) F2 Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Nov. 1966 | 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									A	L	I395A	395L	I395A	I385A	390L	L								
2									L	L	385	375	380	400L	L	L								
3									L	380L	385	405	355L	380L	LH	L								
4									L	L	395L	I380A	385L	380L	L	L								
5									LH	L	405	375L	395H	L	380L	L								
6									L	L	390L	380	L	385L	L	L								
7									L	L	L	385H	370H	L	L	L								
8									L	L	390	390	390	385	L									
9									L	385	385	400	385L	385L	L									
10									L	380L	385L	L	405L	380	L									
11									L	L	385	380L	390L	380L	L									
12									L	390L	385L	400	380L	I385A	395L									
13									LH	390L	380L	395	380L	375	L									
14									405	425	405	L	L	L	L									
15										405L	L	385L	390	L										
16										405	375	L	375	385L										
17										L	L	L	375L	L	L									
18										L	L	L	L	380L	L									
19									L	L	L	400	395	385L										
20										L	400	390	385	L										
21										L	385L	380L	380L	380L	L									
22										L	L	390	L	L										
23										L	I385A	I385A	L	L										
24										380L	L	370L	L	385										
25										410L	395L	390H	L	L	L									
26										L	385L	385L	L	L	L									
27										L	L	L	380L	375	L									
28										L	L	365L	L	390										
29										L	L	L	L	395										
30										L	380L	390L	L	L	L									
31																								
Count									1	10	20	23	19	19	3									
Median									405	390L	385	385	385L	385L	390L									
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F1 | Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Nov. 1966 | 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									250	230	255	235	245	255	255	240								
2									250	235	245	235	240	235	240	225								
3									230	235	235	230	235	240	240	230								
4									220	235	240	265	240	240	240	225								
5									230	235	230	245	240	245	240	235								
6									225	230	235	250	240	270	240	235								
7									220	220	235	250	235	235	245	230								
8									225	230	235	240	250	240	235									
9									220	230	235	240	250	235	230									
10									230	230	235	235	230	235	225									
11									230	230	235	255	240	255	240									
12									220	230	235	255	235	255	235									
13									230	235	250	235	230	255	230									
14									210	235	240	245	245	245	245									
15										235	245	255	240	245										
16										230	240	245	240	250										
17										240	255	255	235	250	235									
18										220	240	245	250	255	230									
19									240	240	255	245	240	245										
20										220	225	240	240	240										
21										225	235	235	240	240	235									
22										230	230	225	240	235										
23										215	235	240	240	235										
24										245	245	235	225	240										
25										230	240	240	240	245	245									
26										230	235	235	230	255	230									
27										240	250	240	255	235	225									
28										240	235	235	245	240										
29										235	240	240	235	240										
30										250	240	240	240	240	235									
31																								
Count									15	30	30	30	30	30	21	7								
Median									230	230	240	240	240	240	235	230								
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Nov. 1966 | 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	300	275	265	265	255	280	240	240	I240A	I230A	I235A	230	I225A	I225A	240	I230A	205	200	240	245	235	265	300	305
2	295	245	210	250	270	335	235	220	235	230	215	195	195	185H	180H	230	215	215	220	250	260	260	260	300
3	280	295	265	255	270	290	245	215	230	225	205	190H	190H	210	205H	230	210	210	235	240	225	270	330	300
4	295	265	270	255	225	290	240	220	185H	220	205H	I205A	215	210	215	235	215	220	215	250	240	290	315	300
5	260	295	290	270	270	240	230	195H	180H	235	I215A	195	195H	240	235	240	215	205	250	240	240	285	310	300
6	305	330	345	290	265	245	230	210	190H	180H	215	220	230	205	240	240	230	195	I230A	255	245	290	290	295
7	325	285	270	275	260	290	240	220	190H	225	215	195H	205	220	235	235	230	195	240	250	245	280	295	280
8	295	300	275	255	240	255	240	225	225	225	220	195	195	230	190H	240	215	195	205	300	290	280	295	290
9	305	300	290	260	240	255	230	215	200H	210	220	195	205	225	230	230	220	205	I220A	255	260	300	300	280
10	295	325	280	265	250	240	225	220	220	215	225	I235A	230	235	230	220	215	205	235	250	225	290	340	330
11	I315A	270	240	285	280	275	270	220	230	230	225	240	235	230	235	230	215	235	240	245	I255A	I295A	330	320
12	I335A	295	255	270	285	290	230	215	235	225	225	I215A	210	I230A	230	240	225	205	215	I260A	300	330	300	280
13	290	275	280	305	310	300	230	215	180H	220	215	220	205H	195H	230	235	230	215	225	235	265	290	320	290
14	285	290	285	290	280	270	235	210	205	210	205	195	240	245	240	240	215	I220A	240A	240	A	A	300	325
15	340A	310	305	275	230	E290E	240	215	210	190H	240	215	215	240	200H	235	210	210	230	250	270	275	300	300
16	300	320	320	320	275	255	240	225	210	195H	210	215	205	205H	230H	240	225	215	225	A	A	295	I290A	I270A
17	I280A	300	295	280	240	210	250	220	215	I210A	230	230	215	230	235	210H	215	215	220	I270A	275	I285A	300	I295A
18	290	290	295	265	280	290	230	210	200H	225	190H	220	225	240	235	225H	215	220	205	I240A	245	280	300	300
19	300	315	325	280	260	290	220	215	220	235	220H	220	205	235	240	240	235	210	210	255	230	260	280	260
20	275	290	305	300	290	235	275	220	230	215	210	195	210	230	235	230	205	210	230	230	245	230	E290E	300
21	285	295	280	265	290	300	230	220	220	225	220	220	215	215	240	230	210	215	230	230	240	255	310	285
22	300	315	305	290	290	275	240	215	225	225	225	215	230	235	230	220	210	215	240	240	225	E300E	I300A	310
23	315	310	300	290	280	265	235	205	225	215	I205A	I210A	230	210H	230H	225	220	205	220	240	220	E250E	E340E	340
24	310	310	305	270	240	240	245	230	220	195	235	225	205	190	230H	230	210	205	220	250	E260E	255	300	320
25	320	305	315	275	250	265	240	200H	215H	220	200	205H	190H	240	230	225	215	205	240	235	A	A	270	335A
26	310	335	330	305	305	255	220	215	210	215	195	215	220	245	230	225	205	210	240	250	255	275	265	300
27	295	300	300	290	265	240	230	220	190H	225	195	245	215	215	180H	220	220	210	230	230	E255E	305	E340E	320
28	315	310	295	290	275	245	240	225	215	190H	190H	210H	230	225	230	205H	215	205	235	235	240	270	285	300
29	305	320	315	245	280	275	225	215	205H	190	225	230	225	215	220	225	220	240	230	230	230	245	295	340
30	340	340	325	305	270	240	210	210	190H	190	205	225	I210A	230	225	215H	215	230	230	225	240	250	320	340
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	27	28	30	30
Median	300	300	295	275	270	270	235	215	215	220	215	215	215	230	230	230	215	210	230	245	240	280	300	300
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 10

IONOSPHERIC DATA

Nov. 1966 | 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	E	E	E	E	125	150	130	120	115	120	120	105	105	125	120	130	110	110	110	E	E	110	110
2	E	105	110	E	E	E	E	130	115	110	G	G	105	G	105	G	140	100	100	100	E	105	105	105
3	E	E	E	E	E	E	E	G	155	145	110	140	G	100	G	G	110	120	E	105	105	E	105	105
4	105	E	E	E	E	E	155	155	110	165	105	110	115	105	100	G	G	115	110	105	105	105	105	105
5	105	105	100	100	105	105	105	125	115	105	105	105	140	135	105	135	100	100	100	120	110	105	105	105
6	105	105	100	100	100	105	E	G	120	120	115	105	105	105	105	115	110	105	105	105	110	E	105	105
7	105	105	120	105	E	E	E	130	110	110	105	105	105	140	G	G	130	E	105	105	105	100	100	105
8	105	105	105	105	105	E	E	G	115	105	165	105	105	G	G	150	115	E	110	105	105	E	105	100
9	E	E	E	E	E	E	E	G	105	105	105	G	105	165	G	100	120	100	105	105	105	105	100	105
10	100	100	105	105	E	E	E	G	G	150	105	145	G	155	125	G	140	E	E	100	E	100	100	100
11	100	100	105	E	E	E	E	G	105	105	100	150	140	145	140	135	120	110	105	105	105	105	E	105
12	105	105	105	105	E	E	E	140	140	125	115	105	105	105	105	105	105	105	E	105	105	100	105	105
13	100	100	E	100	105	E	E	155	125	125	100	145	E155G	G	125	135	125	110	110	105	105	130	110	E
14	E	E	105	100	155	E	105	G	G	105	105	105	140	145	100	100	115	110	105	105	105	100	100	105
15	100	100	E	E	E	E	E	G	110	G	105	105	105	105	110	G	E	140	115	110	105	105	105	105
16	105	105	105	105	E	E	E	110	105	G	105	G	G	G	105	130	130	110	105	105	105	105	130	105
17	105	105	105	105	105	E	105	105	100	105	G	G	105	G	G	G	110	105	105	105	105	105	105	105
18	105	E	E	E	105	105	E	155	140	G	G	G	105	105	G	165	105	105	105	105	105	E	100	100
19	105	E	E	E	E	E	E	G	105	110	G	G	G	G	G	145	E	110	115	105	105	105	105	105
20	105	E	E	E	E	105	105	130	105	G	100	G	G	100	100	G	E	E	E	105	105	105	105	105
21	100	E	E	105	E	E	E	115	110	105	G	G	G	G	G	G	B	E	E	E	E	105	105	105
22	100	100	E	E	E	E	E	115	G	G	G	G	105	G	G	G	G	E	E	E	E	E	100	100
23	E	E	E	E	E	140	E	135	G	G	105	105	105	G	G	100	100	105	E	110	115	E	E	E
24	E	E	E	E	E	E	E	115	110	G	100	G	105	G	G	G	E	E	115	105	E	E	E	E
25	E	E	E	E	E	E	E	G	G	G	G	G	G	100	G	G	E	E	105	110	105	105	105	100
26	E	105	105	105	105	E	E	105	G	G	110	110	120	115	115	G	110	120	110	E	E	110	E	E
27	E	E	E	E	E	E	E	E	105	110	105	G	G	100	G	140	150	100	E	E	E	105	100	E
28	100	100	E	E	E	E	110	105	105	G	G	100	100	100	G	105	140	105	105	100	105	105	105	105
29	105	100	E	100	105	E	E	E	G	105	105	105	105	100	100	100	100	100	110	105	105	E	100	E
30	E	E	E	E	E	E	E	G	G	140	G	115	105	105	155	140	100	105	100	E	E	E	105	E
31																								
Count	20	16	12	13	9	6	7	17	22	20	21	18	22	20	16	17	22	22	22	25	21	20	26	23
Median	105	105	105	105	105	105	105	130	110	110	105	105	105	105	105	130	115	105	105	105	105	105	105	105
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

A 11

IONOSPHERIC DATA

Nov. 1966 | 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	f2					f	h	h5	c3	c3	h	h2	14	12	h3 12	h3	c3	f2	f3	f			f4	f2
2		f2	f					h2	c2	c			12		1		h2 1	f	f	f		f3	f2	f2
3									h2	h 1	c2	h		12			c3	f		f	f2		f	f2
4	f						h	h2 c2	12	h 12	1	c3	c	13 h	13			f4	f	f2	f2	f	f2	f
5	f	f2	f2	f2	f2	f2	f	c 1	c2	13	13	12	h 12	h2	12 h	h3 12	12	f	f	f	f3	f2	f2	f2
6	f2	f3	f4	f6	f2	f			c2	c2	c	1	1	13	12 h2	c2 12	13 1	f2	f5	f2	f2		f	f2
7	f2	f	f2 f2	f2				h	c2	c3	12	12	1	h 12			c		f2	f4	f2	f3	f2	f
8	f2	f	f2	f2	f3				c2	12	h 12	13	1			h	c3		f	f3	f2		f2	f2
9									12	12 h	12 h2		12	h		1	c	f2	f3	f3	f	f2	f4	f2
10	f	f2	f2	f						h	1	h2 12		h	c2		h2			f2		f3	f3	f
11	f2	f2	f						1	1	1	h h	h2 c	h	h	h2	c3	f3	f3	f3	f3	f3		f
12	f4	f2	f	f				h2	h	h2	c2	12	12	13	12	12	12	f		f2	f2	f2	f2	f2
13	f2	f2		f2	f2			h2	h2	h2	1	h	h		h2	h2	c2	f3	f3	f3	f2	f	f	
14			f2	f3	f		f			12	12	12	h 12	h 12	12 h2	12 h	c3	f5	f4	f7	f4	f4	f3	f2
15	f3	f							c2		12	1	12	12	c			f	f2	f3	f	f2	f2	f2
16	f2	f2	f2	f				12	12		1				12	h2	h2	f5	f3	f4	f3	f3	f2 f3	f3
17	f2	f2	f2	f2	f		f	1	1	13			1				c2	f3	f4	f7	f2	f4	f2	f3
18	f3				f2	f2		h	h				1	1		h	12	f	f2	f6	f2		f3	f3
19	f								12	12						h		f	f	f2	f2	f2	f	f
20	f					f2	f	h	1		1			12	12					f3	f2	f	f2	f
21	f			f				c2	12	1												f3	f3	f3
22	f2	f2						c					12										f2	f2
23						f		h2			13	13	12			12	12	f		f3	f			
24								c	c2		12		1						f	f2				
25														13					f2	f2	f4	f6	f2	f3
26		f	f2	f2	f2			1			1	12	c2	c2	c2		12	f	f			f2		
27									13	12	12			12		h2	h	f				f2	f2	
28	f2	f2					f2	13	12			1	12	12		1	h2	f	f2	f3	f	f2	f	f2
29	f2	f3		f2	f2					12	12	13	12	13	12	12	12	f2	f2	f3	f2		f2	
30										h2		c2	15	14	h	h2 12	14	f2	f2				f	
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 12

IONOSPHERIC DATA

Nov. 1966 | 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	I040A	042	046R	033S	039	039	055R	J085R	103	129	119	U130R	111	111	114	120	094	U058R	053R	057	048	046	044	043
2	042	049	039	033	032	033	048	U086R	U098R	116	099	116	098	104	092	082	068	071	044	039	037	039	034	032
3	032	034	033	032	030	029	043	J075S	080	087	095	102	U100R	096	089	090	076	060	038	043	041	032	032	033S
4	036	037	037	040	031	029	044	075	080	077	088	097R	099	094	087	087	074	068	055	037	036	031	030	033
5	033	033	034	038	035	030	040	063	081	088	075	076	074	093	095	C	063	063	039	037	J036S	031	032	036
6	034	035	037	039	037	036	044	066	078	086	089	094	091	094	098	094	080	058	029	A	U041S	035	035	035
7	037	037	037	038	036	035	049	078R	085	082	078	092	094	085	091	095S	091	066	036	043	036	A	A	035
8	U037S	035	036	039	033S	032	041	075	085	092	104	101	093	106	108	082	089	067	038	029	031	035	035	037
9	035	035	035	036	035	032	043	069	084	088	100	089	093	111	C	080	U074S	059	041S	038	033	033	033	035
10	034	033S	035	036	035	038	039S	068	077	095	087	091	102	089Z	083	075R	077R	059	044	045	041	038	037	039
11	037	041	039	036	036	034	U040S	078	091	100	085	C	101	092	086	I080C	075	064	050	038S	031	031	031.	031
12	032	035	035	035	032	033	044	073	086	095	087	085S	092	090	090	081	080	064	039	037	034	037	038	036
13	036	038	037	037	032	032	045	073	069	083	095	107	093	095	088	071	074	067	049	042	029	031	033	034
14	037	034	038	037	040	037	046	068	071	072	095	091	093	087	082	074	075	058	055	047	032R	029	A	A
15	U030R	031	032	038	034	027	038	069	080	073	091	090	088	086	091	C	U072R	056	A	C	C	C	I033C	032
16	034	C	C	035	C	038	045	U076R	081	091	C	095	101	C	C	C	080	C	C	C	A	I034A	036	037
17	C	C	C	C	C	C	C	C	073R	074	098	103	104	095	095	081	069	C	C	030	033	032	036	038S
18	036	038	039	041	041	034	041	073	C	078	093	J116R	107	119R	118	094	080	078	054	032	031	032	034	037
19	037	036	036	036	039	033	037	057	063	080	105	D121R	099	085	082	083	083	065	047	040	041	034	033	034
20	036	036	036	037	036	035	037	081	082	I080C	081	087	087	090	089	086	070	048	049	043	038	029	028	030
21	031	032	035	034	032	030	041	J075R	075	089	091	088	083	088R	089	076	064	048	043	036	035	029	028	031
22	033	034	033F	034	033	032	039	067	072	093	089	089	088	088	079	078	061	048	039	040	034	026	027	028
23	030	031	032	034	034	033	038	J076R	077	078	088	091	088	080	079	I070C	060	045	046	035	029	024	025	I028C
24	030	031	033	037	033	026	030	070	J072R	078	097	115	108	099	095	078	060	048	038	029	031	029	029	032
25	034	034	034	038	032	030	034	066R	074	083	086	092	081	078	076	064	062	049	J041S	U042S	039S	S	027	J029S
26	030	030	030	033	A	F	F	066	068	072	082	C	C	093	089	080	065	J048S	032	031	034	033	031	031
27	032	033	033	034	034	033	032	061	074	088	094	102	J102R	108	084	J075S	064	045	033	036	032	027	029	030
28	031	032	033	033	033	032	031	054	064	072	091	U098R	089	085	U075R	071	056	038	034	030	027	027	030	030
29	034	032	034	038	029	030	032	052R	071R	093	107	U100R	083	082	072	068	056	048	058	044	032	024	027	029
30	030	030	032	033	034	035	037	062	069	083	115	127	115	J098R	085	068	063	052	052	040	037	023	029	031
31																								
Count	29	28	28	29	27	28	28	29	29	30	29	28	29	29	28	27	30	28	27	27	28	27	28	29
Median	034	034	035	036	034	033	040	070	077	084	091	096	093	093	089	080	073	058	043	038	034	031	032	033
U.Q.	036	036	037	038	036	035	044	076	083	092	098	105	102	098	094	086	080	064	050	043	038	034	034	036
L.Q.	032	032	033	034	032	030	037	066	072	078	087	090	088	086	082	074	063	048	038	035	032	029	029	030
Q.R.	004	004	004	004	004	005	007	010	011	014	011	015	014	012	012	012	017	016	012	008	006	005	005	006

foF2

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

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

Nov. 1966 | 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	A	L	L	410L	L								
2									L	L	L	L	L	L	L									
3										L	420L	420L	430L	L	360L	L								
4										L	L	430L	410L	L	L	L								
5									L	L	L			L	L	C								
6										L	L	L	L	L	L	L								
7									L	L	420L	L	A	L	A	L								
8									L	L	L	410L	420L	L	L									
9									L	410L	L	L	410L	430L	L									
10										L	L	L	L	L	L	A								
11									L	L	L	C	L	L	L	C								
12									L	L	L	L	L	L	L									
13										L	450L	410L	410L	L	A									
14									340L	L	L	L	L	420L	A	A								
15										L	L	L	L	L	L	C	L							
16									L	420L	C	L	420L	C	C	C	C							
17									L	L	450L	L	L	L		A	A							
18										L	L	L	L	L	L									
19											L	L	L	L		L								
20										C	L	L	L	L										
21											L	L	L	C	L									
22										L	L	L	L	L										
23										L		L	L	L		C								
24									L	L	L	L	L	L	L									
25										L	L	L	L	L	L									
26										L	L	C	C	L										
27										L	A	L	L	L	L									
28										L	410L	L	L	L	L									
29										L	L	400L	L	L	L									
30									310L	L	L	L	L	L	L									
31																								
Count									2	2	5	5	6	2	2									
Median									320L	420L	420L	410L	420L	420L	380L									
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

IONOSPHERIC DATA

Nov. 1966 | 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							A	210	270	300	315	320	310	290	310	275	185	B						
2							B	I190A	250	270	310	315	320	310	280	255	200	B						
3								190	260	290	I315A	320	I320A	310	300	255	180	B						
4								195	A	285	310	325	305	305	295	260	195	B						
5								200	260	290	310	310	320	315	300	C	A	B						
6								210	260	305	I325A	330R	I330R	320	A	A	A	B						
7								200	A	A	A	A	A	A	270	A	A	B						
8								215	255	305	I320R	325	315	315	305	250	195	B						
9								A	260	305	315	330	I330R	330	I315C	255	A	B						
10								200	290	280	315	325	330	320	310	290	A	B						
11								200	I260A	310	325	I330C	330	325	305	I250C	195	B						
12								190	260	310	320	325	A	A	A	A	A	B						
13								220	A	305	I300A	I315A	I320A	320	A	R	170	B						
14								185	220	300	330	350	335	330	320	290	A	B						
15								210	I270A	300	335	A	A	330	305	C	A							
16								205	I270A	305	C	330	I330A	C	C	C	A							
17								C	A	290	I315A	A	A	A	A	A	A							
18								B	C	A	330	I330A	I330A	320	A	R	A							
19								A	A	300	I330A	I325R	A	A	290	I250R	155							
20								205	270R	I300C	320	330	335	325	300	265	155							
21								180	265	I290A	310	325	325	C	R	255	160							
22								220	I260R	305	320	330	I330A	325	300	255	200							
23								185	R	295	315	325	320	300	I280S	I250C	170							
24								R	A	A	315	A	320	310	275	240	A							
25								175	I270A	300	325R	330R	330	R	A	230	190							
26								A	255	I290A	315	C	C	A	A	A	175							
27								180	255	295	I315A	320	320	310	A	235	A							
28								A	A	I270A	295	310	I320R	315	285	A	A							
29								A	240	I280R	305	I315A	I315R	A	A	A	A							
30								B	A	A	305	I320R	320	300	270	240	180							
31																								
Count								21	20	26	28	25	24	21	19	18	15							
Median								200	260	300	315	325	320	315	300	255	180							
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

Nov. 1966 | 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	J051	J043	023	020	023	E014B	016	030	J052	J055	J052	J066	J042	060	034	J072	J040	J070	J031	J051	J025	J024	E014B	E014B
2	E013B	E012B	E012B	020	020	E013B	E015B	026	J030	035	G	G	G	G	033	032	025	J026	J024	E013B	E014B	E015S	J018	024M
3	J029	J030	E012B	J023	E012B	E	E014B	G	029	032	037	G	J038	035	033	022G	023	020	E013B	022	J025	J024	024	J025
4	025	024	022	J025	J023	E013B	019	033	024	033	033	034	J040	034	G	030	024	J025	E012B	E014B	J031	020	J040	024
5	021	021	020	022	021	020	016	G	032	037	038	041	038	023G	J041	C	J028	J032	021M	J028	031M	J028	021M	J028
6	022	024	J040	J031	J034	021	018	G	030	036	033	037	G	033	J038	J036	023	021	024	034	J022	023	E012B	E012B
7	022	J029	023	020	019	E011B	021	G	030	J040	J038	J055	J054	J040	J049	J029	032	J040	J051	J040	J029	047	J043	J025
8	J030	021	J030	J025	J025	023	E014B	G	032	033	G	G	G	G	032	031	023	J060	J025	E013B	020	J024	023	J026
9	022	023	023	E013B	020	E014B	J018	023	G	G	036	G	G	G	C	G	J039	J024	J030	J029	J030	024	022	E013B
10	021	E014B	E013B	020	022	E014B	E013B	G	030	042	030G	037	037	039	040	J045	J031	J025	J030	021	022	022	E014B	E015S
11	022	023	022	021	E014B	J025	J024	G	J030	034	038	C	042	J039	036	C	J049	J025	J026	J027	J028	J040	J036	J056
12	031	J024	J025	024	J025	018	018	G	032	037	038	J037S	J040	J062	J064	J042	J030	J036F	J030	032M	020	025M	023	J028
13	024	J025	E011B	020M	J018	E013B	E011B	028	J029	032	J036	034	J038	G	J044	032	025	022	E012B	E013B	E014B	018	019	E014B
14	E014B	E014B	E012B	024	021	E013B	021	023	025	035	037	041	037	039	J060	J057	J051	J029	031	J026	J037	020	J067	J052
15	J030	J025	J026	E012B	E012B	E013B	E014B	G	J030	J039	J037	J043	J042	J041	G	C	025	J020	J045	C	C	C	C	J026
16	J025	C	C	022	C	E013B	021	J026	J031	G	C	037	J042	C	C	C	024	C	C	C	J044	J053	J044	J052
17	C	C	C	C	C	C	C	C	032	036	J035	J050	J039	J039	J043	J051	J049	C	C	025	023	022	J025	J026
18	J061	023	023	021	E011B	E013B	E014B	022	C	031	J030G	J034	J038	G	J035	021G	021	J038	032	J022	030M	022	019	021
19	021	J015	J015	017M	E	J025	E	J025	J031	J031	034	031G	035	J032	G	024G	G	E	E	J016	J028	J016	022	J018
20	017	J014	E	E	E	E	E014B	G	021G	C	020G	G	G	G	G	029	021	E015S	E015S	E015S	E015S	E015S	E011B	E015S
21	E013B	E011B	E	E015B	E	E	E015B	G	022G	J033	G	G	G	E056C	G	G	G	013	E	E015S	E015S	E015S	E015S	024
22	J019	E	J015	021M	E	E	E012B	G	023G	G	G	G	034	G	G	G	015G	E015S	E015S	E015S	E015S	E015S	E012B	E015S
23	E	E	E	E	E	E	E015B	G	G	G	G	G	021G	021G	022G	C	G	016	J015	020M	019M	018	J028	C
24	E015S	E	J013	J016	J014	E	E	020G	J029	J028	J029G	J058	G	G	G	G	J036	J029	J026	J024	J030	J023	J023	023M
25	J023	J023	020	018	020	E015B	E015B	G	J027	G	G	G	G	032G	031	G	020	J018	J022S	J024	J038S	025S	J031	J034S
26	J024	021	022	018	J033	J035	024S	023	G	J038	J033	C	C	037	J035	J034	020	J025	J030	025M	021	018	025	J024
27	J022	E014B	E011B	E011B	E011B	E013B	J016	G	G	G	J067	J033	J028G	J029G	029	J023G	J030	J023	025	022	J018	J031	J024	020M
28	E013B	E013B	J022	019	E011B	E015B	J016	J024	J044	033	G	G	G	034	G	031	022	J023	025	021	E013B	E014B	E014B	E014B
29	E015S	E013B	022	017	020	020	E013B	020	G	J034	033	J035	030G	J036	J036	J036	J023	020	J029	J022	J021	023	E016S	E014B
30	E016S	021	023	E014B	E014B	E014B	E014B	018G	025	J030	029G	G	029G	G	G	020G	020	021M	018	J031	019M	023	J028	J030
31																								
Count	29	28	28	29	28	29	29	29	29	29	29	28	29	29	28	25	30	28	28	28	29	29	29	29
Median	022	021	021	020	018	E013B	E015	G	029	033	033	034	035	032	033	030	024	024	025	022	022	023	023	024
U.Q.	025	024	023	022	022	019	018	024	031	036	037	039	040	039	039	036	031	029	030	028	030	024	028	027
L.Q.	E016	E014	E012	016	E011	E012	E014	G	G	029	G	G	G	G	G	G	021	020	015	016	018	018	E016	E015
Q.R.	D009	D010	D011	006	D011	D007	D004			007							010	009	015	012	012	006	D012	D012

foEs

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

IONOSPHERIC DATA

Nov. 1966 | 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	A	031	015	E	015	B	015	026	043	052	052	061	041	051	032	034	028	055	026	025	017	015	B	B
2	B	B	B	E	E	B	B	025	028	033					033	030	025	023	E	B	B	S	E	015
3	015	017	B	E	B		B		029	032	036		034	035	031	022G	021	015	B	E	016	017	E	015
4	017	014	E	016	014	B	019	023	G	032	033	034	034	033		029	023	025	B	B	016	E	017	016
5	E	016	E	E	E	E	016		031	037	036	040	037	023G	038	C	021	022	E	017	019	E	E	020
6	E	015	020	015	018	E	E		023	033	030	036		033	033	033	022	020	015	A	E	E	B	B
7	E	015	015	E	E	B	E		029	034	034	037	040	034	045	029	026	026	028	026	018	A	A	016
8	025	E	014	014	014	014	B		030	033					031	030	021	021	015	B	016	015	015	017
9	E	E	E	B	014	B	E	022			035				C		020	021	026	018	026	016	E	B
10	E	B	B	E	E	B	B		030	041	030G	036	036	039	038	040	026	025	027	014	014	E	B	S
11	E	E	E	E	B	019	E		029	033	037	C	040	034	033	C	039	016	015	015	025	026	026	025
12	020	015	015	015	022	E	E		032	037	037	037	038	038	038	040	022	028	017	030	E	017	E	E
13	015	018	B	E	E	B	B	027	029	032	033	E034R	035		041	027	023	G	B	B	B	E	E	B
14	B	B	B	013	E	B	E	023	E025R	035	032	041	036	035	051	052	040	026	017	016	023	E	A	A
15	026	020	022	B	B	B	B		028	035	035	037	038	038		C	025	016	A	C	C	C	C	020
16	016	C	C	E	C	B	E	022	028		C	034	035	C	C	C	021	C	C	C	A	A	020	023
17	C	C	C	C	C	C	C	C	028	030	033	038	038	039	040	041	045	C	C	015	016	013	016	018
18	027	014	012	E	B	B	B	022	C	031	030G	034	036		033	E021R	E021R	036	032	019	026	015	E	E
19	E	014	012	E		E		020	027	028	033	E031R	033	032		E024R				E	020	014	016	015
20	E	E					B		020G	C	E020R					029	021	S	S	S	S	S	B	S
21	B	B		B			B		022G	030				C				013		S	S	S	S	015
22	E		E	011			B		E023R				034				015G	S	S	S	S	S	B	S
23							B						E021R	E021R	E022S	C		015	015	E	E	E	017	C
24	S		E	012	E			E020R	026	027	026G	040					022	019	022	E	026	019	023	017
25	022	019	E	E	E	B	B		027					E032R	029		016	015	017	024	025	E	019	019
26	E	E	014	E	A	018	019	018		030	026	C	C	034	032	026	015	E	020	E	E	E	016	015
27	E	B	B	B	B	B	E				061	027	025G	026G	026	G	023	015	016	E	E	016	E	E
28	B	B	E	E	B	B	E	023	025	029				034		027	021	021	017	E	B	B	B	B
29	S	B	E	E	016	E	B	020		033	033	033	030G	034	033	033	021	E	016	020	020	019	S	B
30	S	E	015	B	B	B	B	018G	025	029	025G		028G			019G	017	E	E	024	E	017	015	024
31																								
Count																								
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

Nov. 1966 | 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	014	013	011	012	014	012	015	017	015	017	017	016	018	016	015	013	014	013	011	013	014	014	014
2	013	012	012	014	012	013	015	015	016	015	015	015	016	016	016	016	016	013	E015S	013	014	E015S	014	013
3	013	013	012	013	012	010	014	013	014	015	016	017	016	016	016	015	015	014	013	014	013	012	014	013
4	012	010	014	010	010	013	014	014	015	015	016	016	016	015	016	015	016	013	012	014	012	014	013	010
5	013	E015S	013	014	014	013	012	015	015	016	016	016	016	016	016	C	013	013	E015S	E015S	E015S	013	011	E015S
6	E015S	011	013	013	011	011	014	014	014	016	017	022	017	017	017	015	014	013	012	013	011	014	012	012
7	013	013	013	011	011	011	014	014	015	016	015	017	016	016	016	014	013	013	012	013	012	011	013	013
8	013	013	012	010	011	012	014	014	014	014	015	015	016	015	016	016	014	013	012	013	011	011	013	012
9	E015S	012	013	013	013	014	014	014	014	015	017	017	016	015	C	015	015	015	014	014	014	012	012	013
10	E016S	014	013	010	012	014	013	015	016	016	017	017	017	017	017	016	015	012	014	011	013	E015S	014	E015S
11	014	012	013	011	014	011	012	015	015	016	016	C	015	016	016	C	016	013	012	012	012	012	012	014
12	013	014	012	010	011	013	013	015	016	017	016	016	017	016	016	016	014	014	012	014	E016S	013	E015S	011
13	011	013	011	013	011	013	011	014	015	015	016	016	015	017	017	017	015	014	012	013	014	013	014	014
14	014	014	012	011	013	013	013	014	015	015	018	017	018	016	017	014	014	015	014	011	012	011	013	014
15	010	013	013	012	012	013	014	014	014	016	017	016	015	016	015	C	014	011	013	C	C	C	C	014
16	012	C	C	012	C	013	014	014	015	015	C	016	016	C	C	C	014	C	C	C	014	011	012	011
17	C	C	C	C	C	C	C	C	015	015	018	019	015	022	018	016	015	C	C	012	010	011	012	012
18	011	012	011	011	011	013	014	018	C	024	017	019	026	019	016	015	013	010	E016S	010	010	011	E015S	E015S
19	E015S	011	010	010	010	010	010	013	013	019	019	026	026	019	016	015	013	010	010	E014S	E015S	011	E015S	013
20	E015S	010	. E	E	010	010	014	013	011	C	013	013	013	019	018	016	012	E015S	E015S	E015S	E015S	E015S	011	E015S
21	013	011	010	015	010	010	015	011	012	013	013	019	016	E056C	013	013	012	010	010	E015S	E015S	E015S	E015S	013
22	E015S	010	010	E	010	010	012	012	012	015	016	016	015	026	015	013	012	E015S	E015S	E015S	E015S	E015S	012	E015S
23	010	010	010	010	010	010	015	013	011	013	018	013	014	016	012	C	013	013	011	E015S	013	E015S	E015S	C
24	E015S	010	010	010	010	010	010	013	010	015	014	015	015	017	015	016	014	014	E016S	E017S	E016S	014	E016S	014
25	E016S	014	015	016	016	015	015	016	017	017	016	017	016	018	016	015	012	013	013	011	011	E015S	014	E015S
26	011	014	010	011	011	013	015	013	015	015	015	C	C	016	015	015	013	013	013	012	E015S	013	E015S	013
27	E015S	014	011	011	011	013	013	013	014	016	015	014	015	014	014	015	012	013	E015S	013	E015S	013	E015S	013
28	013	013	013	012	011	015	013	012	014	011	014	015	016	017	015	014	014	011	013	014	013	014	014	014
29	E015S	013	012	013	014	013	013	014	015	015	016	015	015	016	013	013	013	E015S	014	013	014	012	E016S	014
30	E016S	013	013	014	014	014	014	015	013	016	016	016	016	015	015	013	014	E015S	014	013	014	013	013	E015S
31																								
Count	29	28	28	29	28	29	29	29	29	29	29	28	29	29	28	25	30	28	28	28	29	29	29	29
Median	012	013	012	012	011	013	014	014	015	015	016	016	016	016	016	015	014	013	012	012	013	012	013	014
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

Nov. 1966 | 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	I290A	285	320R	305S	275	265	320R	J320R	310	325	310	U340R	315	305	325	345	360	U320R	300R	305	325	305	285	265
2	275	300	350	280	265	260	315	U335R	U325R	335	305	330	315	325	325	345	350	350	320	305	285	310	300	280
3	295	295	290	300	310	270	325	J335S	350	340	340	335	U320R	330	335	335	365	335	295	300	340	295	265	280S
4	290	310	290	325	325	290	320	345	345	345	340	345R	330	335	330	345	345	345	345	305	315	300	285	275
5	300	290	285	325	330	300	325	350	340	350	360	345	355	325	335	C	345	335	335	295	J315S	290	280	280
6	280	280	270	290	300	295	325	350	345	330	330	320	315	325	325	340	360	370	305	A	U325S	275	280	280
7	280	300	300	300	320	280	340	345R	340	350	345	325	320	325	310	335S	335	330	315	305	280	A	A	275
8	U285S	295	290	310	325S	275	315	340	345	320	335	330	310	320	305	330	340	350	330	295	280	285	290	290
9	290	275	290	280	325	315	325	350	345	335	350	325	315	325	C	345	U355S	335	315S	330	280	290	295	295
10	280	290S	265	295	320	330	310S	345	335	340	330	300	330	310Z	335	365R	340R	330	310	320	305	285	280	270
11	270	300	305	295	295	285	U305S	335	335	355	345	C	345	325	330	I340C	355	330	335	335S	295	275	270	280
12	290	295	305	300	280	295	330	355	335	345	330	320S	315	320	335	330	340	340	310	300	285	270	285	285
13	290	290	295	290	290	280	325	370	345	325	340	340	325	325	345	325	330	345	320	340	300	280	280	285
14	285	280	280	300	300	285	320	355	360	325	330	330	310	330	330	330	340	310	330	340	320R	305	A	A
15	U265R	275	280	305	340	305	310	355	355	325	325	320	325	310	330	C	U335R	345	A	C	C	C	I280C	280
16	280	C	C	270	C	290	325	U340R	340	330	C	335	325	C	C	C	330	C	C	C	A	I280A	280	285
17	C	C	C	C	C	C	C	C	365R	325	325	330	330	325	340	340	320	C	C	285	305	305	280	285S
18	280	290	290	300	315	280	350	350	C	320	290	J310R	305	310R	310	315	315	335	340	320	280	290	275	275
19	280	260	260	295	320	295	310	350	345	310	305	R	315	320	320	325	340	320	340	295	310	320	290	290
20	280	270	270	270	290	295	290	350	355	I340C	320	310	310	310	315	330	350	300	290	315	310	290	290	285
21	295	290	300	310	290	290	320	J345R	350	345	350	355	310	310R	320	340	340	335	300	300	300	295	275	285
22	280	270	285F	280	285	285	310	350	350	330	325	340	325	325	335	340	340	325	320	340	340	320	290	290
23	280	285	280	295	320	320	310	J360R	340	325	325	320	340	325	340	I320C	350	325	325	340	330	290	280	I265C
24	280	280	280	320	330	310	300	325	J340R	330	330	325	315	320	345	345	335	335	325	305	295	275	275	265
25	280	275	285	330	340	310	325	345R	350	335	335	335	320	335	355	360	340	330	J365S	U355S	325S	S	280	J270S
26	270	265	280	265	A	F	F	350	370	345	330	C	C	325	340	355	340	J330S	310	300	295	300	305	265
27	280	280	275	295	305	330	315	350	340	330	320	330	J335R	345	345	J340S	360	355	305	335	280	280	265	265
28	275	280	290	305	310	295	325	345	345	330	335	U330R	325	350	U350R	340	350	340	340	310	300	295	285	285
29	275	275	275	330	330	290	330	345R	325R	330	330	U350R	335	340	340	340	340	315	340	350	335	265	280	265
30	265	265	270	275	295	305	315	345	335	315	320	330	325	J335R	355	335	350	325	335	350	320	280	270	255
31																								
Count	29	28	28	29	27	28	28	29	29	30	29	27	29	29	28	27	30	28	27	27	28	27	28	29
Median	280	280	285	300	310	290	320	345	345	330	330	330	320	325	335	340	340	335	320	310	305	290	280	280
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

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IONOSPHERIC DATA

Nov. 1966 | 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	A	L	L	385L	L								
2									L	L	L	L	L	L	L									
3										L	380L	395L	415L	L	410L	L								
4										L	L	385L	405L	L	L	L								
5									L	L	L			L	L	C								
6										L	L	L	L	L	L	L								
7									L	L	400L	L	A	L	A	L								
8									L	L	L	390L	400L	L	L									
9									L	380L	L	L	390L	385L	L									
10										L	L	L	L	L	L	A								
11									L	L	L	C	L	L	L	C								
12									L	L	L	L	L	L	L									
13										L	370L	385L	390L	L	A									
14									385L	L	L	L	L	375L	A	A								
15										L	L	L	L	L	L	C	L							
16									L	370L	C	L	380L	C	C	C	C							
17									L	L	360L	L	L	L		A	A							
18										L	L	L	L	L	L									
19											L	L	L	L		L								
20										C	L	L	L	L										
21											L	L	L	C	L									
22										L	L	L	L	L										
23										L		L	L	L		C								
24									L	L	L	L	L	L	L									
25										L	L	L	L	L	L									
26										L	L	C	C	L										
27										L	A	L	L	L	L									
28										L	365L	L	L	L	L									
29										L	L	380L	L	L	L									
30									410L	L	L	L	L	L	L									
31																								
Count									2	2	5	5	6	2	2									
Median									400L	375L	370L	385L	395L	380L	400L									
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

Nov. 1966 | 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									245	240	265	255	235	275	245	235								
2									255	240	220	250	240	250	230									
3										230	240	250	240	235	250	245								
4										230	250	250	255	255	245	230								
5									245	240	230			250	240	C								
6										240	240	260	235	255	250	230								
7									225	230	235	265	245	255	250	245								
8									230	250	250	245	245	255	235									
9									230	230	230	235	230	265	I245C									
10										235	245	240	250	230	235	225								
11									230	225	230	I245C	255	260	245	C								
12									250	240	245	240	260	255	245									
13										250	260	240	250	260	245									
14									220	230	260	250	255	260	245	255								
15										230	255	250	260	255	250	C	245							
16									225	250	C	235	260	C	C	C	C							
17									225	245	260	245	260	255		215	230							
18										215	250	250	255	260	250									
19											275	290	240	240		240								
20										C	230	240	250	260										
21											240	230	250	250	255									
22										250	240	230	255	250										
23										230		245	230	240		I230C								
24									225	240	250	250	240	250	240									
25										250	250	250	245	245	250									
26										230	240	C	C	255										
27										250	260A	250	250	250	250									
28										250	255	255	260	235	230									
29										255	250	250	240	240	230									
30									230	250	250	250	250	240	230									
31																								
Count									13	27	28	28	28	29	23	10	2							
Median									230	240	250	250	250	255	245	230	240							
U.Q.																								
L.Q.																								
Q.R.																								

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 9

IONOSPHERIC DATA

Nov. 1966 | 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	I330A	330	260	245	280	300	255	230	A	A	A	A	220	240	215	235	215	E350A	275	270	230	255	280	300
2	295	260	210	280	245	315	260	230	230	230	210	200	205	225	230	225	210	220	205	250	255	245	250	300
3	300	275	260	245	250	300	250	225	225	215	215	215	205	230	195	225	210	205	215	250	220	270	325	305
4	285	255	260	245	225	270	235	220	225	220	210	210	210	210H	225	235	220	220	210	260	250	270	300	305
5	275	290	275	250	230	230	230	220	230	230	225	230	240	200	240	I220C	205	225	205	255	255	250	305	300
6	300	300	330	260	260	250	225	205	240	230	225	225	220	230	225	230	215	200	210	I295A	245	270	300	300
7	290	295	270	265	235	280	230	225	225	215	210	230	I225A	230	I250A	240	230	215	275	275	235	A	A	300
8	305	275	280	255	230	310	245	225	230	230	225	205	210	200H	240	230	225	210	215	230	285	275	285	275
9	280	290	270	275	220	245	230	225	215	200	235	210	200	205	I230C	225	225	205	255	230	E350A	265	260	270
10	275	290	305	255	230	225	230	225	220	220	230	225	230	230	240	I225A	225	230	E270A	240	260	260	300	330
11	315	250	250	255	260	300	265	225H	225	230	230	I225C	240	225	225	I225C	230	220	215	210	310	E360A	E380A	360
12	310	280	265	270	320	275	225	220	230	240	225	220	220	245A	245	240	220	210	210	E310A	290	300	280	280
13	260	290	260	255	250	300	245	205	210	200H	225	210	210	210H	I210A	225	225	210	215	225	240	305	305	300
14	275	285	290	260	260	260	230	205	210	225	215	225	225	215	I230A	I230A	230	230	235	260	260	255	A	A
15	E400A	325	330	265	210	260	250	210	225	225	230	230	230	240	230	I230C	215	210	A	C	C	C	I295C	340
16	290	C	C	310	C	265	230	220	215	210	C	215	215	C	C	C	220	C	C	C	A	I330A	295	285
17	C	C	C	C	C	C	C	C	225	210	210	230	240	230	250	A	A	C	C	320A	270	260	280	305
18	340	260	280	245	240	250	230	220	C	180H	205	205	230	230	230	230	225	230	225	220	E300A	260	310	305
19	300	320	300	260	230	270	220	210	215	230	210	240	205	210	240	230	225	210	210	240	250	240	270	250
20	300	280	275	275	255	255	270	230	225	I220C	205	200	180	225	240	230	210	200	260	205	225	240	300	300
21	270	280	260	260	245	300	250	225	210	230	205	225	205	C	230	230	210	200	220	245	230	240	280	300
22	300	300	300	270	260	255	255	225	225	220	230	225	205	225	230	230	205	200	230	225	210	255	300	310
23	305	305	300	270	255	250	245	225	210	200H	240	205	205	230	240	I220C	205	205	230	220	220	260	350A	C
24	320	290	290	250	230	250	250	240	210	210	200	245	230	230	240	230	205	220	250	240	E310A	290	E350A	340
25	330	320	305	240	210	255	230	230	240	200	205	185	245	245	230	210	205	205	200	210	250	300A	310	310A
26	300	300	305	305	I260A	270	250	205	205	205	205	C	C	240	245	230	205	205	260	250	250	250	250	310
27	300	300	290	260	245	230	240	205	220	205	I220A	245	220	230	225	220	210	200	250	220	230	280	305	330
28	305	300	280	250	240	255	225	210	220	230	210	235	230	230	225	230	210	225	225	240	270	280	300	305
29	305	325	315	230	260	290	230	210	230	245	235	210	225	230	240	225	220	240	210	230	250	E395A	325	330
30	335	335	320	305	260	260	230	210	200	200	245	230	220	220	220	210	205	205	220	230	230	300A	310	310A
31																								
Count	29	28	28	29	28	29	29	29	28	29	28	28	29	28	29	28	29	28	27	28	28	28	28	28
Median	300	290	280	260	245	260	235	220	225	220	220	225	220	230	230	230	215	210	220	240	250	265	300	305
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Nov. 1966 | 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	115	110	110	110	105	B	150	130	125	120	115	115	115	115	130	120	120	115	115	110	110	115	B	B
2	B	B	B	115	115	B	B	175	115	110	G	G	G	G	150	140	130	115	100	B	B	S	105	105
3	105	100	B	100	B	E	B	G	150	145	125	G	105	130	120	110	125	120	B	115	110	110	110	105
4	105	110	110	100	100	B	150	160	115	170	180	160	120	125	G	195	145	105	B	B	110	110	110	110
5	105	105	110	105	100	110	170	G	160	145	140	120	125	100	125	C	100	100	100	105	105	105	105	100
6	105	100	100	100	100	100	105	G	110	150	115	160	G	185	115	110	110	110	110	105	115	110	B	B
7	110	105	110	100	105	B	195	G	160	115	110	110	110	110	110	115	110	110	110	105	105	105	105	105
8	105	105	110	105	110	110	B	G	130	130	G	G	G	G	170	120	135	115	110	B	110	105	105	105
9	100	100	100	B	105	B	125	125	G	G	150	G	G	G	C	G	115	110	110	110	110	110	B	B
10	100	B	B	105	110	B	B	G	180	175	160	150	165	135	125	125	115	110	110	105	105	105	B	S
11	110	105	105	105	B	110	110	G	105	160	140	C	130	125	145	C	120	115	110	110	110	105	105	105
12	105	110	115	100	100	110	100	G	170	150	145	145	110	105	105	105	105	105	105	100	100	100	100	105
13	105	100	B	100	100	B	B	150	115	150	110	115	110	G	115	120	130	120	B	B	B	105	105	B
14	B	B	B	100	105	B	105	155	125	140	130	125	130	130	120	115	115	110	110	110	105	105	105	105
15	105	100	105	B	B	B	B	G	115	115	115	115	115	115	G	C	120	150	115	C	C	C	C	110
16	105	C	C	105	C	B	115	115	105	G	C	110	105	C	C	C	115	C	C	C	105	105	105	105
17	C	C	C	C	C	C	C	C	115	115	110	110	105	115	115	115	115	C	C	115	110	110	110	110
18	110	110	110	110	B	B	B	155	C	110	115	110	105	G	105	110	110	105	105	105	100	100	100	105
19	100	100	100	105	E	105	E	115	110	110	110	110	110	105	G	110	G	E	E	100	100	105	105	105
20	105	105	E	E	E	E	B	G	100	C	105	G	G	G	G	155	145	S	S	S	S	S	B	S
21	B	B	E	B	E	E	B	G	110	105	G	G	G	C	G	G	G	150	E	S	S	S	S	105
22	105	E	105	100	E	E	B	G	105	G	G	G	110	G	G	G	105	S	S	S	S	S	B	S
23	E	E	E	E	E	E	B	G	G	G	G	G	105	105	105	C	G	100	100	100	100	100	100	C
24	S	E	105	100	105	E	E	110	110	110	110	105	G	G	G	G	110	115	110	115	100	100	100	100
25	100	100	100	125	105	B	B	G	115	G	G	G	G	115	110	G	110	110	110	110	100	110	100	100
26	100	100	105	105	100	100	105	105	G	110	115	C	C	110	115	110	105	110	105	100	100	105	100	100
27	105	B	B	B	B	B	110	G	G	G	105	100	100	100	105	100	100	100	100	100	105	105	100	100
28	B	B	110	105	B	B	110	105	105	110	G	G	G	160	G	110	130	110	110	110	B	B	B	B
29	S	B	110	110	110	120	B	155	G	115	170	110	110	110	110	105	105	110	110	110	110	110	S	B
30	S	105	105	B	B	B	B	105	115	110	110	G	110	G	G	105	105	105	105	110	105	105	105	105
31																								
Count	21	18	19	22	16	8	13	14	24	23	22	17	20	19	19	20	27	25	21	21	23	24	21	20
Median	105	105	105	105	105	110	110	130	115	115	115	115	110	115	115	110	115	110	110	110	105	105	105	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

Nov. 1966 | 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	f5	f5	f	f	f		h	h2	h4	c	c	c3	c2	c3	h12	c4	c2	12	f2	f4	f2	f		
2				f	f			h1	c	c2					h2	h2	c2	13	f				f	f2
3	f3	f2		f					h	h	h		1	h	c	c	h2	1		f	f2	f	f	f
4	f2	f	f	f2	f2		f	h	12	h	h	h	c	h		h	h1	12			f2	f	f2	f2
5	f	f	f	f2	f	f	f		h2	h1	h1	c2	h	12	h2		12	12	f	f3	f3	f2	f	f2
6	f2	f2	f2	f2	f2	f	f		1	h1	1	h		h	12	13	12	13	f	f5	f2	f		
7	f	f2	f2	f	f		f		h1	12	12	12	12	12	13	12	14	14	f3	f4	f3	f3	f4	f2
8	f2	f	f2	f2	f3	f2			h	h					h	c2	h	13	f		f	f2	f	f2
9	f	f	f		f		f	h2			h						12	15	f3	f2	f4	f	f	
10	f			f	f				h	h	h12	h	h1	h1	h	h2	12	15	f3	f	f2	f2		
11	f	f	f2	f		f3	f2		12	h	h		h	h	h		c3	1	f	f	f3	f4	f3	f3
12	f3	f	f2	f2	f4	f	f		h	h2	h	h	12	12	12	13	12	12	f2	f5	f2	f2	f2	f2
13	f2	f2		f	f			h2	12	h	12	12	12		12	c	h2	1				f	f	
14				f	f		f	h2	h	h2	h	h	h	h2	c2	c2	12	13	f2	f	f3	f	f4	f4
15	f6	f4	f3						1	c2	1h	12	12	c2			1	f	f6					f3
16	f2			f			f	12h	1			12	12				1				f5	f3	f2	f3
17									1	c2	1	1	12	12	12	12	13			f2	f2	f	f	f2
18	f4	f2	f2	f				h		1	1	1	12		12	1	1	f4	f4	f2	f4	f2	f	f
19	f	f	f	f2		f		12	1	1	1	1	1	1		1				f	f3	f2	f	f2
20	f	f							12		1					h	h							
21									1	1								f						f2
22	f2		f2	f2					1				1				1							
23													1	1	1			f	f	f	f	f	f2	
24			f	f	f			1	1	c	12	12					12	f2	f3	f2	f2	f3	f2	f2
25	f3	f3	f2	f	f				1					1	c2		1	f	f	f3	f3	f	f3	f3
26	f3	f2	f2	f	f4	f3	f2	12		12	12			1	12	12	1	f	f3	f2	f	f	f2	f2
27	f						f				14	13	1	12	1	12	12	f	f	f	f	f2	f2	f
28			f	f			f	12	12	12				h1		12	h12	f2	f	f				
29			f	f	f	f		h		1h	h	12	1	12	13	12	12	f	f	f5	f	f2		
30		f	f					1	1	12	1		12			12	1	f	f	f3	f	f3	f2	f3
31																								
Count																								
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

Nov. 1966 | 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	I340A	350	300R	285S	345	375	305R	J295R	310	265	310	U260R	295	320	285	265	235	A	330R	320	275	310	335	370
2	365	320	230	350	375	380	305	U270R	U295R	260	300	280	300	290	260	250	250	250	260	305	325	305	310	360
3	340	320	335	300	305	365	300	J250S	250	260	265	275	U285R	275	270	265	225	260	320	305	260	320	375	350S
4	330	310	325	285	270	330	280	255	245	255	265	270R	280	270	275	260	255	260	250	305	300	320	360	345
5	315	335	325	285	275	285	280	260	265	250	250	250	250	300	260	C	250	260	250	320	J300S	320	360	350
6	345	355	380	340	320	320	290	250	250	275	275	285	285	285	285	265	235	235	275	A	U280S	345	350	350
7	345	330	335	325	285	340	275	255R	250	245	255	280	290	280	305	280S	275	255	290	305	320	A	A	355
8	U335S	325	330	300	270S	365	295	260	265	285	270	275	315	295	295	270	265	255	240	335	340	315	325	320
9	335	350	320	335	270	285	285	265	260	275	255	280	295	295	C	265	U260S	265	285S	270	360	320	325	310
10	330	335S	375	315	285	270	295S	265	275	275	270	315	275	295Z	265	245R	260R	270	315	285	320	330	360	365
11	365	315	305	315	325	335	U305S	270	270	255	255	C	280	290	275	I265C	255	270	265	235S	320	A	A	370
12	335	325	310	315	345	330	265	250	275	255	280	290S	305	300	260	270	260	250	290	A	340	360	345	340
13	320	340	340	330	330	365	300	230	250	300	285	265	290	295	265	270	260	275	275	270	365	350	350	345
14	330	345	340	310	315	325	275	235	240	275	280	285	305	280	275	270	265	285	275	265	280R	285	A	A
15	A	350	350	315	235	300	295	235	255	275	280	275	295	310	270	C	U265R	260	A	C	C	C	I340C	345
16	345	C	C	365	C	320	270	U255R	265	275	C	260	295	C	C	C	275	C	C	C	A	I350A	335	325
17	C	C	C	C	C	C	C	C	230R	265	285	280	285	300	265	255	270	C	C	370	305	310	345	345S
18	345	320	340	300	285	335	230	255	C	290	330	J290R	300	300R	290	275	270	260	250	255	350	320	360	380
19	355	390	380	330	260	340	255	250	250	270	310	R	270	270	270	270	255	270	250	310	290	290	320	320
20	355	355	350	350	320	330	310	250	245	I255C	260	290	300	295	290	270	250	305	340	270	280	340	340	340
21	320	350	315	290	355	350	270	J250R	240	260	255	250	290	295R	280	250	250	255	290	290	285	295	340	330
22	345	365	350F	355	350	350	295	250	245	260	260	250	285	270	255	250	255	275	290	250	250	280	340	340
23	350	355	350	320	290	290	300	J230R	255	270	270	285	250	270	255	I270C	240	270	270	250	260	330	360	I390C
24	350	340	345	290	260	300	310	270	J250R	270	290	290	290	300	255	250	260	260	280	290	325	345	350	390
25	360	360	355	265	250	300	290	250R	250	280	270	270	280	260	250	250	250	250	J250S	U250S	300S	S	350	J350S
26	350	350	375	390	A	F	F	250	220	250	285	C	C	300	270	250	250	J290S	300	310	305	300	305	380
27	350	355	350	320	305	280	280	250	260	290	300	290	J290R	250	260	J250S	250	240	300	280	340	350	360	400
28	360	355	325	300	290	320	290	250	250	275	285	U280R	280	255	U250R	265	230	245	255	295	310	325	340	345
29	365	375	370	275	285	335	270	240R	265R	285	270	U270R	260	260	260	265	255	300	260	255	270	395	350	380
30	385	395	365	350	305	310	285	250	260	300	295	260	275	J290R	250	260	250	290	265	255	290	350	360	425
31																								
Count	28	28	28	29	27	28	28	29	29	30	29	27	29	29	28	27	30	27	27	26	28	26	27	29
Median	345	350	340	315	290	330	290	250	250	270	275	280	290	290	270	265	255	260	275	290	300	320	345	350
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

IONOSPHERIC DATA

Nov. 1966 | 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	I070A	065	060R	075S	060	065	050R	J040R	060	045	060	U055R	065	055	065	060	050	A	055R	050	050	055	065	065
2	050	055	065	055	065	065	045	U045R	U050R	040	095	035	065	055	080	050	050	050	080	065	085	055	075	085
3	060	060	065	070	055	080	050	J050S	055	045	050	065	U075R	055	045	045	045	055	065	050	045	065	070	050S
4	065	045	045	055	055	055	050	045	050	045	055	040R	065	050	045	040	045	040	050	045	050	060	055	065
5	055	050	050	055	050	065	055	040	050	050	030	050	050	055	070	C	070	060	060	075	J050S	080	080	095
6	065	070	065	065	075	080	060	050	060	045	055	055	065	055	050	050	060	045	070	A	U055S	055	055	055
7	055	055	050	055	065	060	045	045R	045	060	045	055	055	055	070	055S	045	055	060	045	065	A	A	050
8	U065S	050	070	045	045S	050	050	045	035	060	055	060	055	050	065	055	045	040	065	080	060	065	055	050
9	045	055	055	065	050	045	045	035	040	045	050	070	060	055	C	035	U040S	045	055S	050	065	070	055	070
10	055	055S	065	065	055	050	050S	040	050	055	055	065	065	065Z	045	050R	055R	050	040	060	045	055	050	085
11	060	035	050	050	055	050	U050S	045	055	050	045	C	045	055	045	I050C	050	055	045	065S	075	A	A	045
12	065	050	050	045	050	040	040	045	035	050	065	060S	055	055	085	070	060	060	060	A	070	095	060	065
13	080	060	060	075	095	080	050	050	050	035	035	055	055	050	050	050	055	030	055	035	060	055	055	055
14	055	050	060	045	050	050	055	050	040	040	055	040	045	050	045	045	045	045	055	045	055R	070	A	A
15	A	060	055	045	065	055	050	050	040	055	055	055	045	045	055	C	U040R	055	A	C	C	C	I060C	060
16	055	C	C	045	C	060	050	U045R	040	040	C	055	040	C	C	C	040	C	C	C	A	I050A	065	060
17	C	C	C	C	C	C	C	C	045R	065	060	055	060	050	060	055	060	C	C	070	050	045	055	055S
18	055	055	060	060	065	070	065	045	C	060	070	J065R	070	055R	065	080	085	060	050	095	095	080	090	075
19	095	080	080	075	090	065	105	060	065	090	060	R	070	080	080	075	055	080	065	080	075	060	090	090
20	085	090	100	105	090	070	090	045	030	I050C	080	060	060	060	060	055	050	100	065	090	080	110	110	105
21	090	095	090	070	055	105	070	J055R	050	045	065	050	065	070R	045	065	065	095	105	065	070	100	100	070
22	070	085	060F	100	100	095	060	050	055	050	055	075	050	070	060	060	090	075	065	055	050	075	070	070
23	075	090	070	080	065	075	095	J045R	095	110	080	060	075	070	090	I075C	065	080	075	065	090	090	095	I085C
24	060	070	070	070	085	100	095	085	J060R	055	050	040	070	065	060	050	095	055	070	065	085	100	100	070
25	080	085	060	055	060	095	060	050R	050	030	050	040	080	065	050	040	065	070	J050S	U045S	050S	S	065	J060S
26	080	050	070	070	A	F	F	050	030	050	040	C	C	050	050	050	050	J060S	060	085	075	060	090	080
27	065	090	095	080	080	060	075	050	055	055	060	075	J060R	050	040	J055S	050	060	095	070	110	100	090	095
28	080	090	075	070	070	080	055	060	055	050	050	U055R	055	045	U050R	045	055	055	045	080	050	055	060	055
29	060	040	060	050	055	070	050	060R	060R	055	060	U040R	050	055	045	040	050	040	045	045	040	060	050	040
30	060	055	055	060	060	045	060	050	055	070	050	040	045	J050R	050	055	055	060	055	055	065	090	090	065
31																								
Count	28	28	28	29	27	28	28	29	29	30	29	27	29	29	28	27	30	27	27	26	28	26	27	29
Median	065	060	060	065	060	065	050	050	050	050	055	055	060	055	050	050	050	055	060	065	060	065	065	065
U.Q.																								
L.Q.																								
Q.R.																								

ypF2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Nov. 1966 | 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	042S	039	040F	041F	034	031	031	I071S	090	112	118	132	108	118	125	115	109	081	057	059	062S	057	046S	043S
2	044	045	043	029	034	033	037	070S	094S	096S	107	C	C	112	108	100	077S	077	073S	052	047	054	046	030
3	033	035	033	032	032	027	030	072S	082	077	088	115	110	096	113	105	093S	J077S	I068S	044	058S	040	030	032
4	034	035	032	035	034	028	032	059	073S	077	082	I097S	100	090	118	104	094S	073	072S	065	053	052	041	036
5	038	I041S	034	035	038	026H	027	J063S	081	078	I071C	078	086	099	119	087	072S	J074S	076S	058	042	041	038	030
6	032	034	033	036	041	031	031	063S	J074S	083	094	088	093	113	121	108	086	076S	061	039	048	048	043	035
7	034	035	033	034	038	031	033	I070S	076	086	078	082	097S	112	115	121	100	083	077S	051	045	041	036	033
8	034	035	034	036	035	029	029	061	080	085	J098S	102	082	J096S	126	099	094	086	066	040	042	045	039	036
9	035	036	037	036	045	029	031	068	076S	076	088	099	096	113	117	113	094S	083S	085	064H	056	I049C	042	I038C
10	I035C	034	032	033	039	033	026	054	J073S	091S	091	098	096	090	100	089	I078C	066	071S	044	051	055S	043	040S
11	039	039	035	036	037	032	032	060	091S	091S	092	087	101	110	111	108	088S	072S	076S	058S	053	047	I043A	037
12	038	034	034	036	037	032	034S	J055S	J075S	107	104	101	102	096	109	109	107	077	J060S	056	051	043	043	033
13	029	030	033	036S	034	028	033	J064S	069S	074S	093	116	106	116	110	091	088	085	064	J046S	044	046	043	041
14	039	035	031	035	042	031	030	057	064	072	087	097	106	118	117	110	109	J099S	087	070	067S	047H	044	041
15	035S	033	034	038	044S	022H	029	051	070S	082	I083C	I087C	086	097	107	103	085	072	051	044	046	043	039	036
16	036	033	033	033	035	034	J037S	053S	083	080	092	091	102	101	108	108	J089S	093S	062	054	045	044	044S	031S
17	033	I034A	036	034	038	023	028	055	074S	080	083	104	107	107	114	J096S	084	I073S	061	047	033	036	035	038S
18	035	034	034	037	041S	032F	035	058	070S	067	086	110	102	106	114	107	103	096	061	046	035	041	039	035
19	036	037	036	036	038	032	039	055	068	077	096	122	099	092	095	096S	094S	083	059	049	050	044	031	033
20	030	032	032	033	033	028	030	065S	084	089	080H	080	087	095	104	101	084	070	063	056	053	044	029	028
21	030	031	033	035	033	031	032	064S	079	083	091S	093	098	101S	115S	105	085	067	050	046	046	J044S	030	026
22	028	029	030	031	029	028	030S	I053S	079	079	085	100	091	092	101	094	085S	I078S	J057S	053	056S	048	031	027
23	027	030	032	034	037	035	J030S	056S	I074S	083	086	093H	095S	092	096S	085	086	066	048	054	040H	037	032	029
24	030	032	034	036	044S	024	024	J050S	084	096S	090	106	115	115	105	104	072	J064S	048	041S	039	032	032	029
25	031	033	034	040	038	029	028	053S	073S	077S	086	095	094	091	J089S	084	J076S	062	055	045	I038A	I032A	027	029
26	029	029	030	030S	031	030S	034S	J055S	068S	069	078	096	101	110	114	J104S	086	J071S	052	047	048	047S	046	037
27	034	033	034	040	036	029	028	051	I075C	084	088	107	124	123	I125H	115S	082S	068S	054	050	050	036	031	031
28	033	033	035	035	035	028	024	047	063S	070	079	095	098	093	078	087	J079S	056	040	036	030	030	032	032
29	032	032	034	042	038	028	029	045	J063S	083	J101S	111	105	094	086	082	066	072S	067	062	038	030	029	031
30	032	032	034S	037	037	029	029	049	067	079	104	126	125	114	109	J101S	096S	079S	061	053	051S	043	044	035
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30
Median	034	034	034	036	037	029	030	056S	074S	081	088	098	100	101	110	104	086	075	061	050	048	044	039	033
U.Q.	036	035	034	036	038	032	033	064	081	086	094	108	106	113	117	108	094	083	071	056	053	047	043	037
L.Q.	031	032	033	034	034	028	029	053	070	077	083	092	094	094	104	094	082	070	055	045	042	040	031	030
Q.R.	005	003	001	002	004	004	004	011	011	009	011	016	012	019	013	014	012	013	016	011	011	007	012	007

The Radio Research Laboratories, Japan

foF2

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

Y 1

IONOSPHERIC DATA

Nov. 1966 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	490	410	520	A	L	L							
2										L	L	C	C	430	L	L								
3										L	L	L	L	450	L	L	320							
4										L	C	L	L	450L	L	L	320	230						
5										L	C	470	490	L	470	A								
6										L	L	L	L	L	L	L	L							
7											L	450	460	390	L	L								
8										L	460L	460	460	500	L	L	L							
9											L	L	LH	470	L	L								
10										L	L	490	L	L	L	A	C							
11										L	L	L	A	A	L	L	L	240						
12										L	L	L	500L	460	460	L								
13											L	500	500L	500L	L	L								
14											L	L	470L	500	L	L								
15											C	C	L	L	470L	L								
16											L	L	490	440	L	L								
17										L	L	470L	500L	L	L	L	290							
18												L	470	L	L	L	L							
19										L	L	440	450	460	L	L	L							
20										L	L	L	440	LH	L	L								
21										L	L	460L	L	L	L	L								
22										L	L	L	490L	L	L	L								
23											L	450	L	L	L									
24									L	L	L	L	470L	L	L	L	L							
25										L	L	L	L	460	L	L								
26										L	L	L	L	L	L	L	L							
27											L	460L	L	460	430L	L	A							
28											L	470L	L	L	L	L								
29										L	L	L	L	L	L	330								
30											L	L	440	420	L	390								
31																								
Count											1	12	15	15	4	2	3	2						
Median											460L	460	470	460	460L	360	320	240						
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

Y 2

IONOSPHERIC DATA

Nov. 1966 | 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							S	190	250H	290	305	320	330	325	320	300	260	S						
2							S	S	240	290	300	C	C	320	310	A	A	A						
3							S	S	250H	285H	305	320	325	325	310	290	A	A						
4							S	S	250	280	I300C	320	320	I320A	310	295	260	S						
5							S	150	240	290	I310C	320	330	330	320	300	250	S						
6							S	150	250H	290H	320	330	325	320	I310A	290	240	160						
7							S	S	260	295	315	325	330	330	I315A	290	260	A						
8							S	180	250	295	315	320	I330A	I330A	310	295	A	S						
9							S	S	A	A	A	325	A	A	A	A	A	S						
10							S	180	250	300	320	325	330	330	320	300	I250C	A						
11							S	S	250	295	315	330	330	330	315	295	A	S						
12							S	S	250	295	I315A	A	A	A	A	A	250	A						
13							S	S	240	290	310	320	320	A	A	A	240	A						
14							S	S	250	300	320	330	330	330	310	300	260	A						
15							S	S	A	A	C	C	330	330	325	300	250	S						
16							S	S	250H	290	320	330	330	I325A	320	A	A	S						
17							S	S	A	A	A	A	330	330	A	A	240	S						
18							S	S	A	A	A	A	A	A	320	300	I240A	A						
19							S	S	250	290	310	330	330	A	A	A	A	180						
20							S	B	240	280	310	330	330	320	A	A	250	170						
21							S	S	260H	290	I310A	I325A	330	330	320	290	250	A						
22							S	S	240	290	315	330	330	330	I310A	290H	235H	S						
23							S	S	240H	290	305	320	320	330	310	290	I225A	S						
24							S	S	I245A	290	300	320	330	330	A	A	A	S						
25							S	S	240H	280	315	320	A	A	305	280	230	S						
26							S	S	A	280	310	320	330	A	A	A	A	S						
27							S	B	C	280	310	C	A	A	300	A	A	S						
28							S	B	220	285	310	320	330	330	320	I290A	235	S						
29							S	S	240H	290	A	A	A	A	A	A	A	S						
30							S	S	220	270	305	A	A	A	I300A	280	230	S						
31																								
Count								5	24	26	25	22	22	20	21	18	19	3						
Median								180	250	290	310	320	330	330	310	290	250	170						
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

Y 3

IONOSPHERIC DATA

Nov. 1966 | 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	J051	J032	J028	035	J023	020	E015S	G	028	033	040	053	036	052	J065	041	032	J042	J046	J027	J036	J020	J027	J041
2	J028	J028	019	E	E	E011B	E015S	E015S	026	032	039	C	C	027G	034	034	J043	027	E015S	020	J026	J022	E014S	E015S
3	E015S	E014S	E014S	E	022	021	021	022	027	033	036	035	J041	040	020G	032	J036	J043	021	E016S	J030	J028	J024	E015S
4	021	J026	021	E012B	E	E012B	E015S	E014S	G	G	C	035	035	J042	034	033	G	021	E027C	022	J029	J024	J046	021
5	J034	J030	J032	021	022	020	E015S	G	030	J042	C	042	036	036	039	044	J042	J032	J029	J025	J027	J024	020	021
6	E014S	019	020	J024	021	022	021	G	G	G	034	036	039	040	034	032	022G	G	E014S	E015S	E015S	021	E015S	E014S
7	J024	024	E015S	J026	E	E011B	E015S	E015S	G	033	038	040	037	G	033	036	034	027	E015S	E012B	020	024	022	J025
8	022	023	021	020	014	021	E015S	G	026	028G	J033	J030G	J061	J062	041	034	030	020	024	023	J026	J020	020	E015S
9	021	E012B	E015S	E	E	E011B	E015S	020	J029	J041	033	037	036	J041	J035	033	034	019	018	022	021	C	E015S	C
10	C	E011B	E	E	E	019	019	G	G	033	026G	039	046	039	045	045	C	J028	J026	J046	J022	E015S	E014S	E015S
11	020	020	020	021	017	020	021	020	G	034	038	039	060	J054	J044	036	036	J027	J025	J026	023	020	J065	J026
12	J028	J022	J022	020	018	E011B	020	J025	030	034	037	038	038	J053	J068	J051	J044	J043	J054	J053	J026	J020	E014S	E014S
13	E014S	E	E	E	J021	E	E011B	E015S	029	033	035	037	037	037	J041	033	030	J027	J035	J034	J029	J034	J033	J019
14	E015S	J026	J017	J015	E011B	E015S	J026	J022	J035	040	021G	040	038	G	037	032	J031	J027	J030	E012B	020	J040	021	J034
15	J030	J020	021	J024	021	020	021	020	J042	033	C	C	037	039	G	032	027	E015S	E012B	J033	J061	J028	J028	020
16	020	J023	021	E015B	E012B	E015S	021	J022	024G	J031	J033	J038	J041	J044	034	033	J030	E015S	J025	J028	J021	J031	J061	J052
17	J032	J045	J030	J028	J022	020	E015S	020	025	J029	032	J038	J037	G	034	031	G	020	022	J015	J019	J018	J021	J027
18	J025	J030	J026	J028	E	E	020	021	J043	J042	J045	J044	039	J042	J036	034	J029	021	E015S	E013S	018	E015S	E015S	E014S
19	E014S	E013B	020	E011B	020	021	E015S	E015S	J034	J043	031G	G	J051	034	036	032	025	016G	J026	J034	J032	021	J022	016
20	020	J025	E011B	E	E	E	E014S	E012B	027	030	G	024G	029G	020G	035	031	J026	016G	J015S	J017	E015S	021	E015S	020
21	E015S	E013S	E	E	E	E014S	E015S	E015S	G	027G	032	J041	044	J040	034	J035	J027	022	J022	J024	E029C	020	020	E015S
22	E015S	E014S	E011B	E	E	E	E015S	E014S	G	030	028G	032G	032G	036	J034	028G	022G	E015S	E015S	E015S	E014S	E014S	E015S	E015S
23	E014S	E012B	E	E	E	E011B	020	020	G	G	035	035	034	G	G	J034	J030	J021	021	024	018	E015S	E014S	E014S
24	E015S	E011B	E	E	021	E	E015S	020	025	031	030G	J037	016G	018G	036	J035	J029	J031	J026	020	J024	E015S	E015S	E014S
25	E015S	020	E013S	E	J026	E012B	020	020	G	G	G	J033	J043	J044	036	024G	026	E015S	023	J055	J053	J053	J022	020
26	021	021	020	019	E	020	E015S	J016	026	J032	037	J053	J059	J063	J054	J040	J039	J029	J043	J027	J025	J023	020	020
27	E015S	019	020	E	E026C	021	018	E012B	C	027G	032	E044C	036	J058	J038	J037	J048	J033	J028	021	E015S	E014S	E014S	E014S
28	E014S	E014S	E	E	E	E	E015S	022	020G	G	028G	037	036	041	034	J030	035	J029	022	020	020	021	E015S	E015S
29	E015S	E014S	E013B	E	E	E	E014S	E015S	G	G	J051	J052	J041	J043	J043	034	J030	J030	J025	021	020	E014S	E015S	E015S
30	E015S	E011B	E014B	E	E	E	E015S	E015S	G	G	G	J046	J059	J049	J064	J031	015G	020	J029	023	021	E015S	E014S	E015S
31																								
Count	29	30	30	30	30	30	30	30	29	30	27	28	29	30	30	30	29	30	30	30	30	29	30	29
Median	020	020	018	E	E012	E013	E015S	G	025	032	033	038	038	040	036	034	030	024	J024	022	J022	021	020	E015S
U.Q.	024	025	021	021	021	020	020	020	029	033	037	041	044	044	041	036	036	029	028	027	028	024	022	021
L.Q.	E015	E013	E011	E	E	E	E015	E015	G	G	G	035	036	034	034	032	026	019	016	017	020	E015	E015	E015
Q.R.	D009	D012	D010				D005	D005				006	008	010	007	004	010	010	012	010	008	D009	D007	D006

foEs

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Nov. 1966 | fbEs | 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	036	027	022	015	015	E	E015S		G	033	039	044	G	047	062	035	029	031	041	024	022	E	E	029
2	018	022	E			B	S	S	022	G	G	C	C	026G	G	033	035	022	S	E	021	015	S	S
3	S	S	S		014	E	S	G	G	G	G	G	024	039	020G	G	028	026	017	S	025	018	017	S
4	018	018	E	B		B	S	S			C	G	G	035	G	G		G	C	E	026	020	017	E
5	027	022	025	011	012	E	S		G	023	C	041	G	G	038	043	035	026	018	015	019	017	E	E
6	S	E	E	014	E	013	S				G	G	G	G	033	028	020G		S	S	S	E	S	S
7	020	016	S	021		B	S	S		G	035	038	036		033	034	032	023	S	B	E	E	E	023
8	021	014	E	018	014	E	S		019	019G	024	024G	036	037	037	G	028	018	020	019	E	015	E	S
9	E	B	S			B	S	020	027	030	033	030	034	034	033	030	025	018	015	S	E	C	S	C
10	C	B				E	S			G	025G	038	044	036	045	041	C	025	025	014	016	S	S	S
11	E	E	E	E	E	E	S	G		G	036	038	054	052	039	034	034	018	022	016	E	E	A	018
12	021	017	018	E	E	B	S	S	G	G	035	036	035	035	036	033	021	023	046	050	021	016	S	S
13	S				014		B	S	G	G	G	G	036	035	038	032	029	019	016	025	028	016	023	015
14	S	016	015	015	B	S	S	018	016	035	021G	040	G		035	027	023	021	023	B	E	032	016	018
15	025	016	012	015	E	E	S	017	026	030	C	C	G	037		G	G	S	B	022	022	021	016	E
16	017	015	014	B	B	S	G	017	016G	023	029	029	030	033	G	032	025	S	020	023	017	022	035	023
17	018	A	018	016	011	E	S	018	025	029	032	033	030		033	030		019	019	E	016	015	E	016
18	018	023	018	024			G	019	025	030	032	039	035	033	026	025	024	018	S	S	E	S	S	S
19	S	B	012	B	E	E	S	S	021	022	027G		031	033	033	030	025	014G	E	023	016	E	016	E
20	E	018	B				S	B	G	G		024G	022G	020G	032	030	023	014G	S	E	S	E	S	E
21	S	S				S	S	S		026G	032	033	030	030	030	025	021	018	017	018	C	017	017	S
22	S	S	B				S	S		024	027G	030G	030G	030	030	028G	018G	S	S	S	S	S	S	S
23	S	B				B	S	G			G	G	E034R			025	028	019	E	E	E	S	S	S
24	S	B			E		S	G	025	023	028G	028	016G	018G	034	032	024	022	017	E	E	S	S	S
25	S	E	S		014	B	S	016				029	038	034	035	023G	021	S	022	033	A	A	019	E
26	E	E	E	E		015	S	S	025	G	034	035	G	040	044	034	028	015	022	016	018	018	E	E
27	S	E	E		C	E	S	B	C	025G	030	C	036	035	G	035	043	023	022	E	S	S	S	S
28	S	S					S	020	020G		028G	G	030	037	G	029	030	023	020	E	E	E	S	S
29	S	S	B				S	S			030	033	032	034	037	030	024	020	016	E	016	S	S	S
30	S	B	B				S	S				032	034	035	025	024	015G	020	018	021	E	S	S	S
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Nov. 1966 | 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	E015S	011	E	E	E	E014S	E015S	015	015	011	015	017	017	014	022	017	015	E015S	E024C	E013S	011	E015S	012	E015S
2	E015S	E	011	E	E	011	E015S	E015S	015	012	015	C	C	014	012	011	012	013	E015S	E015S	E	E014S	E014S	E015S
3	E015S	E014S	E014S	E	E	E014S	E015S	E015S	014	014	014	017	015	015	013	012	012	015	E015S	E016S	E016S	E015S	E015S	E015S
4	E015S	E015S	014	012	E	012	E015S	E014S	015	011	E070C	016	015	018	015	015	015	E015S	E027C	E015S	E015S	E014S	E	E015S
5	E015S	E014S	E	E	E	E014S	E015S	011	011	014	C	016	015	016	015	012	012	E015S	E015S	E014S	E013S	E014S	E015S	E015S
6	E014S	E013S	011	E	E	E	E015S	012	014	012	015	022	017	020	015	016	014	013	E014S	E015S	E015S	E015S	E015S	E014S
7	E015S	E015S	E015S	E	E	011	E015S	E015S	012	012	013	016	017	016	017	013	013	012	E015S	012	012	E015S	E015S	E015S
8	E015S	011	E014S	E	E	011	E015S	E015S	011	015	013	015	014	012	012	011	014	E015S	E014S	E015S	E015S	012	E014S	E015S
9	E015S	012	E015S	E	E	011	E015S	E015S	011	011	014	015	017	015	015	015	015	E015S	012	E015S	E015S	C	E015S	C
10	C	011	E	E	E	E014S	E014S	E015S	012	015	015	016	011	017	011	015	C	E014S	E014S	012	E014S	E015S	E014S	E015S
11	E015S	E014S	E014S	013	E	E	E012S	E015S	014	014	015	015	015	015	015	015	015	E015S	E015S	E015S	E015S	E015S	E014S	E014S
12	E015S	012	013	014	013	011	E015S	E014S	012	014	012	013	014	015	015	017	014	011	011	E015S	E015S	E015S	E014S	E014S
13	E014S	E	E	E	E	E	011	E015S	012	012	012	015	016	014	013	014	014	011	E015S	E015S	011	E014S	E015S	012
14	E015S	E015S	011	E	011	E015S	E015S	012	011	014	015	015	015	017	016	015	014	014	E020S	012	011	E014S	E015S	012
15	E014S	E013S	E	E	012	E	E015S	E015S	012	013	C	C	015	018	016	017	016	E015S	012	012	E015S	E015S	E015S	E015S
16	E015S	E014S	E	015	012	E015S	E012S	E013S	012	011	014	015	015	014	014	015	012	E015S	011	E014S	E015S	E014S	E014S	E015S
17	E014S	012	011	E	E	013	E015S	E014S	012	012	012	017	015	016	016	016	015	E014S	012	E014S	012	011	012	E014S
18	E014S	011	E	E	E	E	012	E014S	013	014	016	014	016	016	017	015	013	012	E015S	E013S	E015S	E015S	E015S	E014S
19	E014S	013	E	011	E	011	E015S	E015S	012	013	014	015	017	015	016	015	015	E	E015S	E015S	E015S	E015S	E015S	E015S
20	E014S	011	011	E	E	E	E014S	012	012	012	014	014	015	013	017	015	013	012	E015S	E015S	E015S	E015S	E015S	E014S
21	E015S	E013S	E	E	E	E014S	E015S	E015S	012	012	020	017	015	017	015	015	012	E014S	E014S	E015S	E029C	E015S	E015S	E015S
22	E015S	E014S	011	E	E	E	E015S	E014S	012	012	015	018	016	015	015	012	012	E015S	E015S	E015S	E014S	E014S	E015S	E015S
23	E014S	012	E	E	E	011	E015S	E016S	012	012	012	012	015	016	014	013	012	E015S	E013S	E015S	E015S	E015S	E014S	E014S
24	E015S	011	E	E	E	E	E015S	015	012	015	012	012	012	011	015	011	014	E015S	E014S	E015S	E014S	E015S	E015S	E014S
25	E015S	E014S	E013S	E	E	012	E015S	E015S	015	015	012	012	016	014	015	015	012	E015S	E015S	E015S	011	E015S	E015S	E015S
26	E015S	E015S	012	014	E	E014S	E015S	E015S	015	014	015	016	015	013	015	014	014	E014S	012	E015S	E015S	E014S	E014S	E015S
27	E015S	011	E	E	E026C	E	E015S	012	C	012	012	E044C	016	015	012	012	012	E015S	E015S	E015S	E015S	E014S	E014S	E014S
28	E014S	E014S	E	E	E	E	E015S	012	014	012	012	015	018	015	015	014	011	E014S	E015S	E015S	E015S	E015S	E015S	E015S
29	E015S	E014S	013	E	E	E	E014S	E015S	015	012	012	015	015	014	015	014	012	E015S	E014S	E015S	E015S	E014S	E015S	E015S
30	E015S	011	014	E	E	E	E015S	E015S	014	015	012	012	015	012	015	015	012	E015S	E015S	E015S	E014S	E015S	E014S	E015S
31																								
Count	29	30	30	30	30	30	30	30	29	30	28	28	29	30	30	30	29	30	30	30	30	29	30	29
Median	E015S	E013S	E011	E	E	E011	E015S	E015S	012	012	014	015	015	015	015	015	013	E015S	E015S	E015S	E015S	E015S	E015S	E015S
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

Y 6

IONOSPHERIC DATA

Nov. 1966 | 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	310S	265	280F	315F	325	260	265	I320S	320	320	325	325	315	295	310	315	335	345	310	305	315S	320	285S	265S
2	275	285	350	255	290	275	275	345S	340S	325S	335	C	C	320	325	330	340S	325	330S	300	280	305	335	290
3	280	315	305	310	315	270	285	335S	365	350	320	320	345	315	325	335	340S	J330S	I335S	290	330S	280	295	265
4	275	310	300	290	325	305	315	345	335S	340	325	I330S	340	300	330	325	350S	340	320S	340	300	280	285	265
5	280	I300S	280	290	325	310H	295	J340S	360	370	I345C	335	325	315	330	345	325S	J320S	330S	320	290	300	310	275
6	280	270	275	285	325	305	290	335S	J340S	335	340	325	310	310	330	335	340	330S	360	275	290	300	300	285
7	275	285	300	295	340	280	305	I345S	370	340	335	320	295S	315	315	325	330	325	315S	315	290	295	290	275
8	295	310	295	305	315	275	295	320	350	340	J335S	335	330	J305S	335	330	340	340	335	290	285	300	310	285
9	285	280	275	290	335	285	290	340	355S	345	305	325	325	320	315	335	345S	320S	340	280H	275	I300C	290	I290C
10	I295C	295	290	295	310	335	295	335	J340S	330S	330	325	C	C	C	345	I330C	335	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	320	320	310	315	335	355S	320S	330S	325S	285	275	I280A	270
12	290	300	290	285	310	280	325S	J325S	J340S	345	335	315	325	300	310	320	345	340	J300S	320	300	300	305	280
13	295	300	275	305S	325	260	280	J360S	350S	325S	310	320	310	320	325	320	320	340	345	J325S	280	285	280	270
14	265	265	265	285	335	325	305	350	345	330	335	315	310	305	315	300	310	J320S	335	315	315S	275H	255	270
15	285S	290	290	290	320S	295H	330	345	345S	340	I340C	I320C	325	315	325	340	340	360	330	290	305	300	280	280
16	285	280	275	275	290	300	J330S	310S	350	350	325	320	325	305	305	325	J325S	340S	325	315	310	275	300S	290S
17	275	I280A	300	295	345	270	295	345	365S	350	305	325	320	310	335	J335S	345	I335S	330	345	275	285	265	290S
18	290	295	290	295	335S	250F	310	345	370S	330	315	320	315	305	315	310	325	335	360	330	270	275	285	270
19	270	270	290	280	315	265	310	345	355	325	320	330	335	325	320	325S	340S	345	340	290	320	320	275	300
20	275	280	285	290	305	285	285	355S	370	350	350H	325	325	315	325	330	340	335	325	320	320	285	320	270
21	275	275	305	300	285	250	295	345S	355	350	335S	345	325	305S	315S	315	340	330	320	305	305	J315S	305	275
22	265	285	295	285	310	270	290S	I340S	360	355	345	340	330	315	330	340	330S	I330S	J335S	335	315S	325	300	295
23	265	270	280	290	310	290	J300S	325S	I340S	335	340	325H	320S	325	325S	320	350	365	315	335	280H	305	315	250
24	275	295	295	305	365S	285	290	J340S	355	335S	320	330	320	320	335	345	345	J345S	325	360S	310	280	315	270
25	285	280	290	310	320	305	320	340S	345S	340S	315	325	325	320	J335S	340	J355S	345	325	360	I290A	I285A	265	275
26	285	275	275	275S	295	275S	325S	J345S	355S	350	320	315	315	310	315	J325S	350	J350S	325	300	290	280S	285	255
27	270	280	280	300	305	310	295	335	I335C	345	320	320	325	315	I325H	320S	345S	345S	335	305	315	265	290	270
28	275	280	295	315	315	320	295	320	350S	345	315	315	315	335	335	335	J365S	355	330	305	295	275	280	290
29	280	280	275	310	330	255	300	335	J335S	325	J315S	325	320	330	315	345	335	320S	325	355	340	285	275	255
30	255	260	275S	305	325	280	310	330	350	315	315	335	330	315	325	J325S	335S	340S	345	340	295S	280	275	255
31																								
Count	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	30	30	30	29	29	29	29	29	29
Median	280	280	290	295	320	280	295	340S	350S	340	325	325	325	315	325	330	340	340	330	315	295	285	290	275
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000) F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation | Y 7

IONOSPHERIC DATA

Nov. 1966 | M(3000) F1 | 0.01 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	A	390	350	A	L	L							
2										L	L	C	C	375	L	L								
3										L	L	L	L	385	L	L	405							
4										L	C	L	L	375L	L	L	405	435						
5										L	C	360	355	L	350	A								
6										L	L	L	L	L	L	L	L							
7											L	380	375	435	L	L								
8										L	370L	375	390	340	L	L	L							
9											L	L	LH	360	L	L								
10										L	L	345	L	L	L	A	C							
11										L	L	L	A	A	L	L	L	420						
12										L	L	L	350L	370	355	L								
13											L	340	360L	360L	L	L								
14											L	L	365L	345	L	L								
15											C	C	L	L	345L	L								
16											L	L	365	395	L	L								
17										L	L	360L	340L	L	L	L	410							
18												L	365	L	L	L	L							
19										L	L	385	360	360	L	L	L							
20										L	L	L	410	LH	L	L								
21										L	L	370L	L	L	L	L								
22										L	L	L	345L	L	L	L								
23											L	400	L	L	L									
24									L	L	L	L	360L	L	L	L	L							
25										L	L	L	L	360	L	L								
26										L	L	L	L	L	L	L	L							
27											L	C	L	370	365L	L	A							
28											L	360L	L	L	L	L								
29										L	L	L	L	L	L	400								
30											L	L	385	380	L	410								
31																								
Count											1	10	15	15	4	2	3	2						
Median											370L	365	365	370	350L	405	405	430						
U.Q.																								
L.Q.																								
Q.R.																								

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

M(3000) F1

IONOSPHERIC DATA

Nov. 1966 | 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										255	255	270	245	305	270	245	240							
2										250	255	C	C	250H	250	240								
3										230	250H	270	240	260	265	245	240							
4										225	E295C	275	250	250H	270	240	230	225						
5										225	I245C	275	280	285	270	230								
6										240	255	260	280	270	260	250	225							
7											250	255	270H	250H	275	255								
8										250	250	255	230	305	260	245	240							
9											250	250	260	275	270	240								
10										250	240	280	C	CH	C	240	C							
11										235	I245C	265	275	275	255	255	220	215						
12										255	245	235	270	255H	260	250								
13											250	275	260	270	270	250								
14											250	255	265	280	260	250								
15											I250C	I260C	275	275	270	235								
16											265	250	260	250H	275	250								
17										240	245H	255	265	250H	250	240	235							
18												275	265	270	255	250	235							
19										250	260	250	245	250	255	250	240							
20										235	225	240	250H	250	270	255								
21										240	245	245	255	250	260	250								
22										240	235	240	255	250	250	230								
23											240	240	240	240	265									
24									245	250	245	255	255	255	240	240	220							
25										250	245	245	250	255	240	255								
26										225	240H	275	245	280	250	225	230							
27											245	255	270	245	230	230	225							
28											250	255	250	245	250	255								
29										240	250	250	255	245	260	235								
30											270	245	265	245	245	240								
31																								
Count									1	19	29	29	28	29	29	29	12	2						
Median									245	240	250	255	260	255	260	245	230	220						
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

Y 9

IONOSPHERIC DATA

Nov. 1966 | 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	E330A	E350A	305	255	230	E350S	E320S	240	235	245	250	I230A	220	250	I250A	245	240	215	E290A	255	250	240	255	E350A
2	300	300	205	270H	260	300	295	240	240	225	205	C	C	200	225	240	225H	235	220	200	280	250	225	300
3	300	265	250	250	250	310	290	240	225	225	220	230	220	210	195H	220	225	220	215	220	250	270	295	E335S
4	300	280	255	275	225	255	255	220	225	220	I200C	225	215	210	200H	225	230	200	225	205	270	250	250	300
5	E340A	275	310	270	245	205	290	235	230	240	I230C	245	200	240	250	I235A	225	225	220	215	250	250	250	295
6	300	310	310	290	245	235	260	230	230	235	235	230	220	250	225H	240	230	225H	205	E260H	275	220	250	295
7	330	295	265	315	240	270	255	235	220	230	220	225	215	195	240	240	235	220	210	210	240	240	250	E320A
8	300	270	270	275	240	245	275	240	230	235	225	220	225	240	270	240	240	225	200	215	275	255	245	280
9	275	280	280	265	225	250	300	250	230	230H	235	225	200H	220	240	240	230	225	205	205	220	I250C	250	I265C
10	I260C	260	265	275	250	220	290	235	230	240	200H	245	C	C	A	I235A	I230C	225	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	230	I230C	225	I240A	I250A	250	245	I220A	200H	220	205	230	250	I300A	300
12	300	260	300	295	250	300	245	235	230	240	225	220	200	205	220	240	230	220	E260A	E310A	245	270	250	255
13	260	290	290	250	240	340	275	225	230	235	200	200	200H	230	230	230	240H	225	210	225	275	255	300	300
14	300	340	350	300	245	240	280	220	225	230	230	230	215	215	225	215H	230	225	210	210	205	250	275	285
15	340	300	295	280	230	210	250	220	210	230H	I220C	I205C	215	230	240	240	220H	220	200	245	270	255	270	300
16	300	300	300	305	290	270	255	205H	195H	225H	240	220	240	220	215H	240	240	225	210	225	240	300	E300A	E300A
17	E305A	A	290	250	225	300	E265S	230	235	235	225	215	200	225	230H	235	230	225	215	205	250	280	275	280
18	255	290	300	275	230	305	255	220	225	225	205	240	205	205H	225H	220H	230	225	200	205	235	295	250	295
19	320	300	290	270	250	290	245	215	225	225	215H	200	215	215	240	240	240	225	200	250	235	240	225	275
20	300	300	275	275	250	250	270	240	225	230	225	200	195H	195H	235	230	230	225	205	225	220	230	230	310
21	305	290	270	250	255	350	280	230	230	235	225	220	210	210	210H	225	225	210	210	245	260	230	240	300
22	325	300	280	275	245	315	295	230	225	230	205H	225	210	210H	195H	230	225H	220	195	230	220	225	250	E350S
23	335	300	300	255	230	225	245	240	225	230	225	225H	210H	225	210H	220H	230	210	215	210	205	240	240	325
24	325	280	250	250	205	205	E300S	240	240	200H	215	200H	205H	200H	230H	225	220	210	240	230	210	250	250	330
25	295	300	295	250	240	230	250	240	225	200H	195H	200	220	210	240	240	230	205	215	215	I225A	I280A	E300A	310
26	300	295	295	310	255	E300A	240	230	225	210	200	200	220	E250A	I210A	I235A	220	210	200	250	240	250	235	280
27	300	300	295	250	E255C	245	270	250	I230C	220H	180H	I210C	240	225	210	230	I225A	220	215	230	225	250	295	325
28	300	300	250	250	250	225	250	245	225	220H	215H	230	200H	245	240	220H	225	205	205	240	245	295	300	280
29	300	300	300	240	230	E300S	255	230	230	240	E245A	220H	200H	225	230	200	215H	225	225	220	200	E245S	E300S	295
30	310	315	300	250	240	250	250	240	225	200H	210H	195H	200	215	240	220H	205H	215	200	225	220	245	260	295
31																								
Count	29	28	29	29	29	29	29	29	29	30	30	29	28	29	29	30	30	30	29	29	29	29	29	29
Median	300	300	290	270	240	250	260	235	225	230	220	220	210	220	230	235	230	220	210	220	240	250	250	300
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F

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

IONOSPHERIC DATA

Nov. 1966 | 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	110	110	105	105	105	105	S	G	155	150	145	130	150	125	120	125	125	110	110	105	105	105	105	105
2	105	105	110	E	E	B	S	S	120	130	120	C	C	100	150	130	100	120	S	100	100	100	S	S
3	S	S	S	E	100	100	100	150	150	140	130	130	100	130	100	130	100	125	100	S	110	110	105	S
4	100	100	100	B	E	B	S	S	G	G	C	E165G	150	100	140	135	G	125	C	115	110	110	105	105
5	105	105	100	100	100	100	S	G	150	100	C	125	140	150	145	130	120	115	110	110	105	100	100	100
6	S	100	100	100	105	100	100	G	G	G	150	130	125	115	115	110	105	G	S	S	S	105	S	S
7	100	100	S	100	E	B	S	S	G	155	145	135	130	G	120	150	130	125	S	B	105	100	100	100
8	100	100	100	100	100	100	S	G	110	100	100	100	100	100	125	125	115	110	105	100	100	100	100	S
9	100	B	S	E	E	B	S	115	110	110	115	115	115	115	115	115	110	110	110	105	105	C	S	S
10	C	B	E	E	E	100	100	G	G	170	105	150	140	135	130	130	C	115	C	C	C	S	S	S
11	C	C	C	C	C	C	C	C	G	C	C	140	125	125	125	130	115	110	110	145	105	105	100	100
12	100	100	100	100	100	B	100	115	165	145	140	125	105	105	105	105	105	105	100	100	100	100	S	S
13	S	E	E	E	100	E	B	S	150	140	125	125	120	115	110	110	120	105	105	100	100	105	100	100
14	S	110	100	100	B	S	110	105	100	130	100	130	125	G	120	110	105	105	105	B	100	100	100	100
15	100	100	100	100	100	100	100	115	110	105	C	C	125	120	G	130	120	S	B	105	100	100	105	100
16	100	100	095	B	B	S	115	110	105	105	105	105	100	100	145	110	110	S	105	100	100	100	105	105
17	100	100	100	100	100	100	S	100	120	120	115	110	105	G	115	140	G	110	110	105	105	100	100	100
18	100	100	100	100	E	E	105	120	115	110	105	105	110	110	110	110	105	105	S	S	100	S	S	S
19	S	B	100	B	100	100	S	S	110	100	105	G	105	115	110	110	105	105	105	105	100	100	100	100
20	100	100	B	E	E	E	S	B	160	125	G	100	100	100	115	110	110	105	S	105	S	100	S	100
21	S	S	E	E	E	S	S	S	G	120	105	105	105	105	105	105	105	100	100	100	C	100	100	S
22	S	S	B	E	E	E	S	S	G	105	105	105	105	105	105	105	105	S	S	S	S	S	S	S
23	S	B	E	E	E	B	110	100	G	G	140	165	130	G	G	100	100	100	100	120	100	S	S	S
24	S	B	E	E	100	E	S	100	120	110	105	105	100	100	110	105	095	095	095	100	105	S	S	S
25	S	105	S	E	100	B	100	100	G	G	G	105	100	100	150	105	105	S	145	105	105	105	100	100
26	100	100	100	100	E	100	S	S	120	120	115	110	110	110	110	110	105	105	105	105	100	100	100	100
27	S	110	100	E	C	105	105	B	C	105	105	C	110	100	120	100	100	100	100	100	S	S	S	S
28	S	S	E	E	E	E	S	150	110	G	105	155	105	145	150	100	140	110	100	100	100	100	S	S
29	S	S	B	E	E	E	S	S	G	G	115	115	110	110	105	110	105	100	100	100	100	S	S	S
30	S	B	B	E	E	E	S	S	G	G	G	110	105	105	100	100	100	100	100	140	110	S	S	S
31																								
Count	14	17	15	11	12	11	11	12	18	22	23	26	29	26	28	30	27	25	21	23	24	21	16	14
Median	100	100	100	100	100	100	100	110	120	120	115	120	110	110	115	110	105	105	105	105	100	100	100	100
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'Es

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

Y 11

IONOSPHERIC DATA

Nov. 1966 | 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	f4	f4	f3	f3	f2	f			h2	h 1	h31	h41	h c	h3c	h4	h3	h2	c7	f3	f2	f4	f	f2	f3
2	f2	f2	f						c	h 1	c			1	h 12	h 13	13	c 1		f	f3	f		
3					f	f	12	h3	h2	h	h2	h	1 h2	h 1	1	h 12	13	h 13	f		f2	f2	f	
4	f	f	f									h	h 12	12	h	h		h 1		f	f3	f2	f3	f
5	f4	f3	f4	f2	f	f2			h21	1 h2		h31	h 1	h 1	h21	h312	c41	c21	f2f	f	f4	f2	f	f
6		f	f	f2	f	f2	1				h	h	h	c2	c2	13	12					f		
7	f2	f		f						h 1	h2	h2	h		c	h	h312	h31			f	f2	f4	f3
8	f2	f2	f2	f	f2	f			1	12	1	1	12	12	h21	h 1	c21	c2	f2	f2	f	f	f	
9	f							1	12	c	c	c	c2	c2	c	c2	c2	c2	f	f	f			
10						f	1			h 1	1	h 1	h2	h	h21	h2		c3	f2	f2	f			
11	f	f	f	f2	f	f2	1	1		h2	h2	h2	h3	h3	h2	h3	c5	1	f2f	f2f	f2	f	f3	f
12	f	f2	f	f	f		1	c	h2c	h21	h 12	h212	13	13	14	13	12h2	13	f5	f7	f3	f2		
13					f				h2	h2	h2	h21	c 1	c	c31	c2	h2	1	f	f3	f3	f2f2	f2	f
14		f2	f	f			1	1	1	h21	1	h21	h		c2	12	12	12	f3		f	f3	f2	f2
15	f3	f	f2	f2	f	f	1	c 1	c2	13			c2	c2		h	c			f3	f4	f3	f f2	f
16	f	f	f				1	12	1	12	12	12	12	12	h 1	12	13		f4	f4	f2	f3	f2f2	f2f
17	f2	f5	f	f2	f	f		1	c2	c2	c2	c	1		c2	h 12		12	f2	f	f2	f	f	f
18	f2	f4	f2	f5			1	c2	c2	c2	12	12	12	12	12	12	1	1			f			
19			f		f	f2			c	1	1		1	c2	c2	c2	12	1	f3	f3	f2	f	f2	f
20	f	f2							h2	h		1	1	1	c2	c2	1	1	f	f		f		f
21										c2	12	13	12	12	13	13	12	1	f2	f3		f	f	
22										1	12	12	12	12	12	12	12							
23							1	1			h	h2	h			13	12	1	f2	f f	f			
24					f			1	c	c2	12	1	1	1	12	1312	13	13	f	f	f			
25		f2			f3		1	1				12	13	13	h212	12	1		f	f4	f4	f3f	f2	f
26	f	f	f	f		f2		c	c2	c2	c3	c2	c2	c3	c3	c3	13	1	f2	f f	f2	f2	f	f2
27		f	f			f2	1			1	12		c212	13	c212	16	15	12	f2	f2				
28								h2	12		1	h 12	1	h2	h 1	14	h312	c313	f2	f	f	f		
29											c31	c2	c2	12	13	13	15	15	f2	f2	f			
30												c2	12	13	14h	12	1	1	f	f4f2	f			
31																								
Count																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

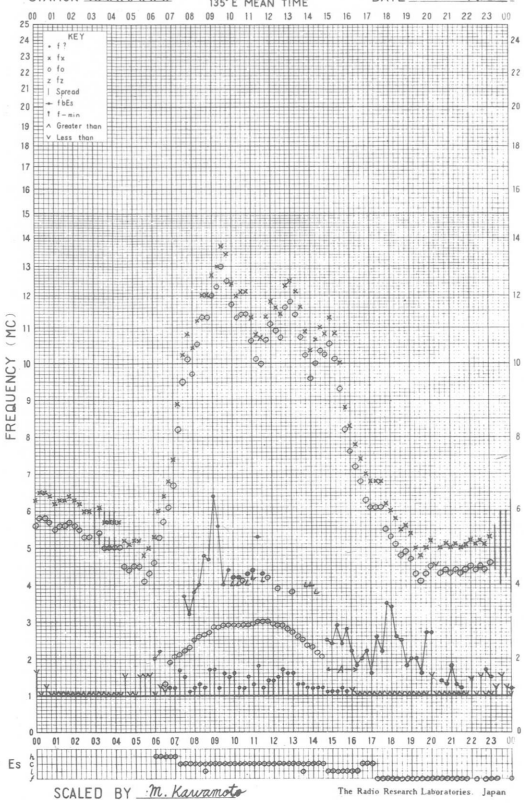
Types of Es

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

Y 12

f-PLOT OF IONOSPHERIC DATA

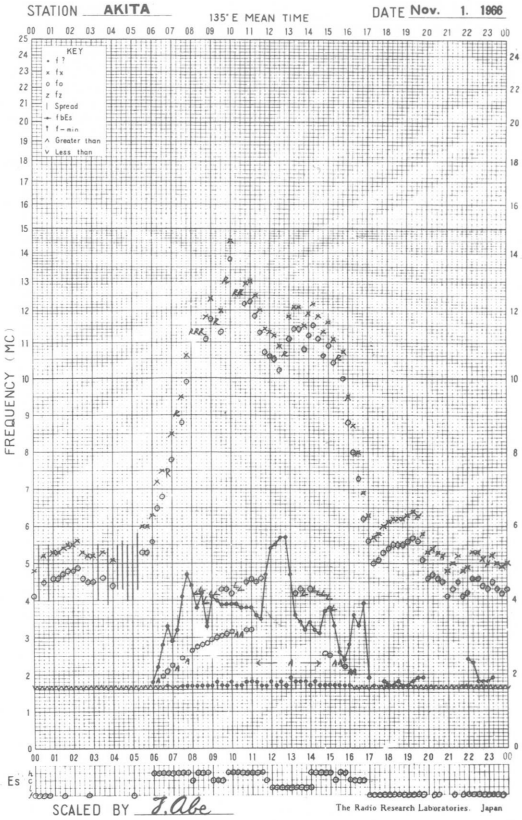
STATION WAKKANAI 135°E MEAN TIME DATE NOV. 1, 1966



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

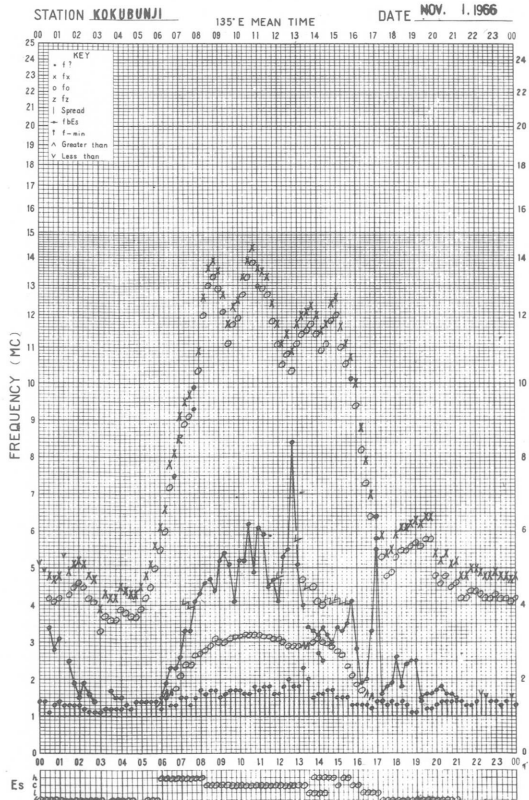
STATION AKITA 135°E MEAN TIME DATE Nov. 1. 1966



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

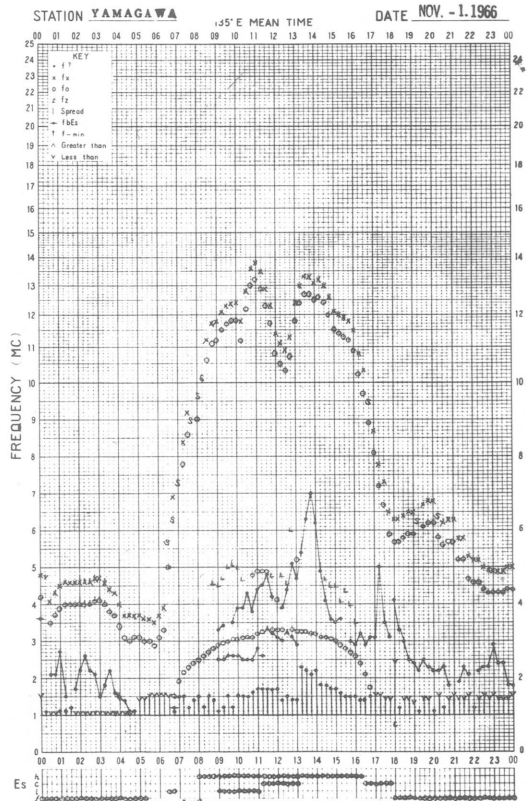
STATION KOKUBUNJI 135°E MEAN TIME DATE NOV. 1. 1966



SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

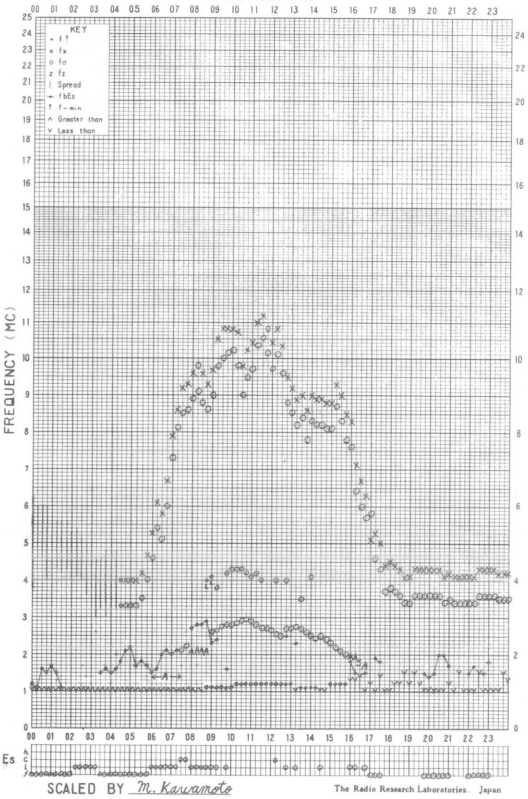
STATION YAMAGAWA 135°E MEAN TIME DATE NOV. - 1. 1966



SCALED BY S. Ichidome The Radio Research Laboratories. Japan

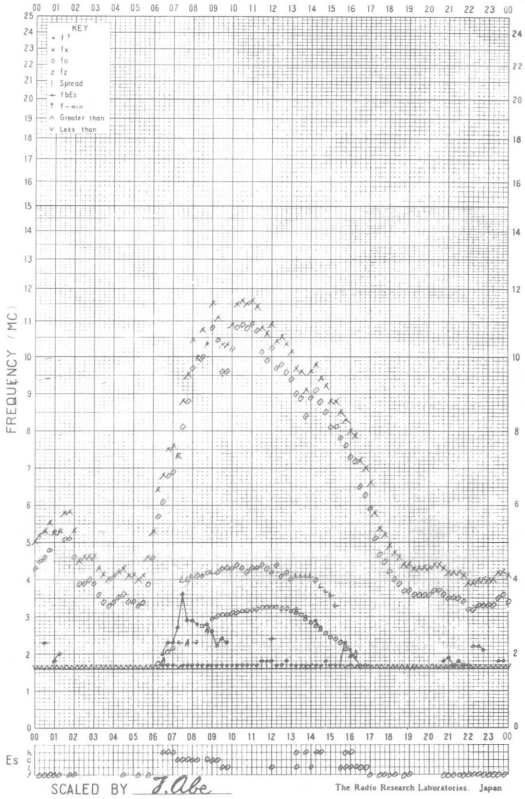
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE Nov. 2. 1966



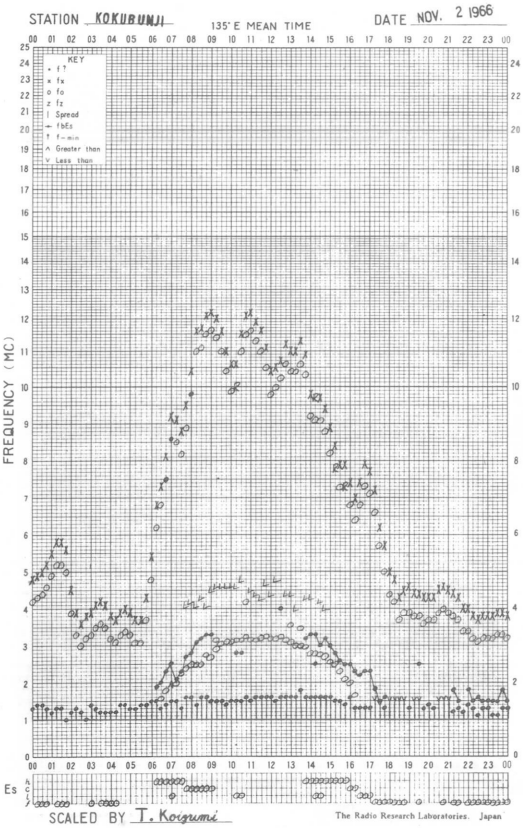
f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Nov. 2. 1966



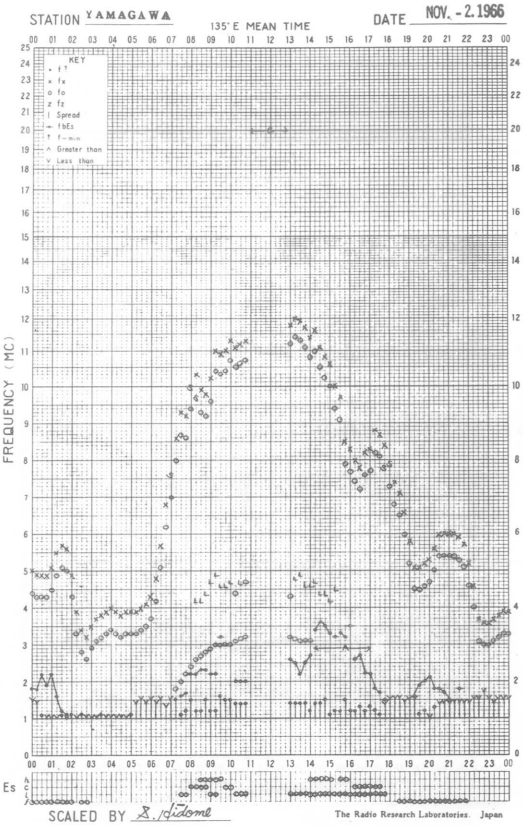
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE NOV. 2 1966



f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE NOV. - 2. 1966



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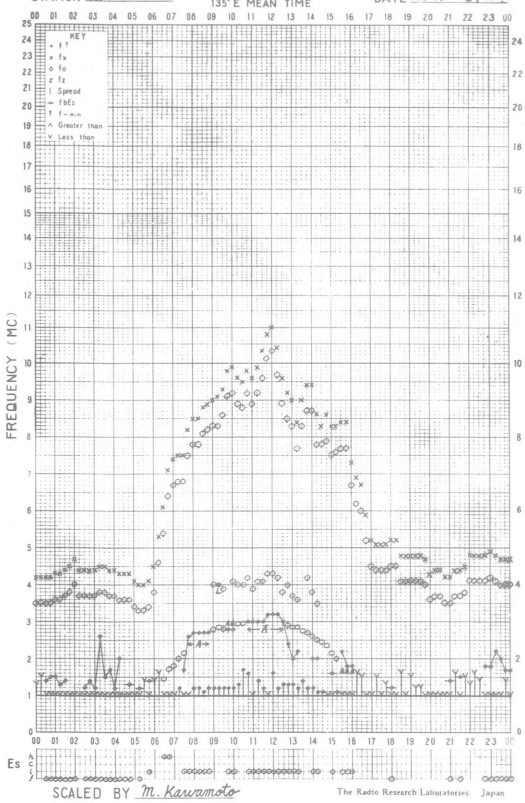

SCALED BY M. Kawamoto The Radio Research Laboratories Japan

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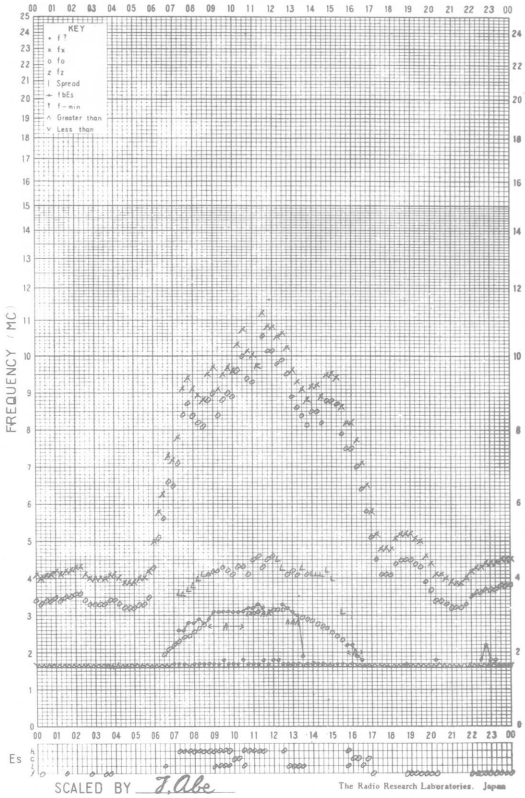

SCALED BY T. Abe The Radio Research Laboratories. Japan

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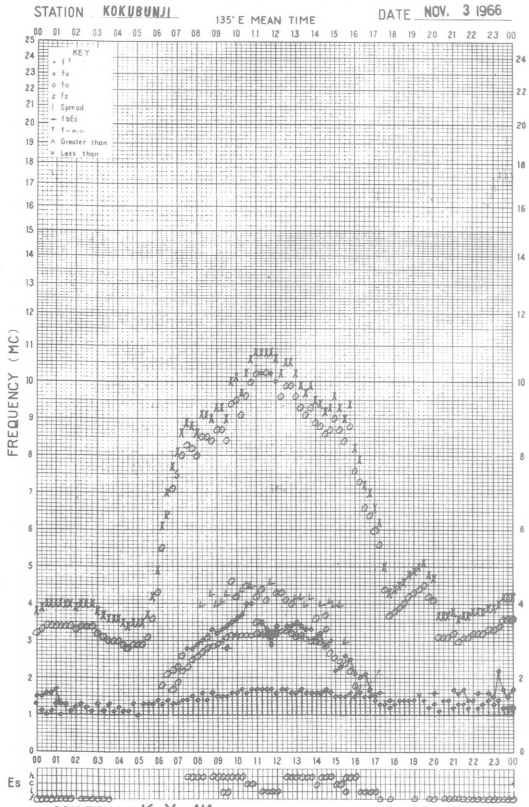

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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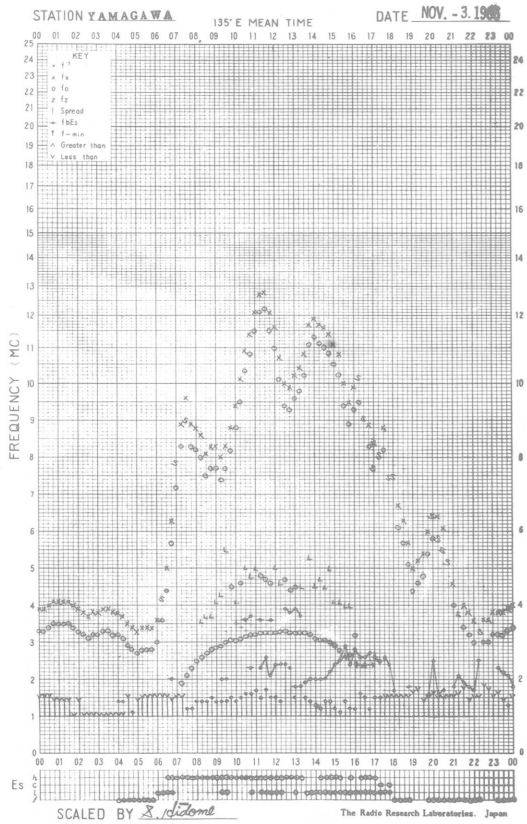

SCALED BY S. Ichidome The Radio Research Laboratories. Japan

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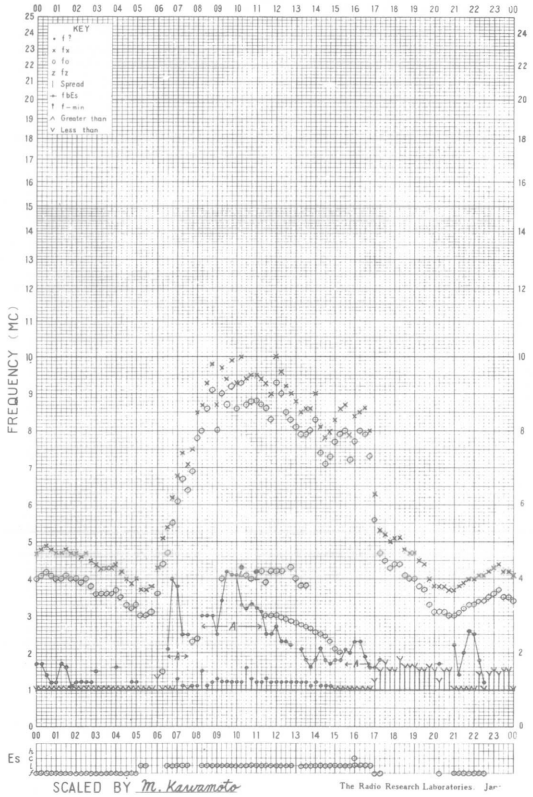

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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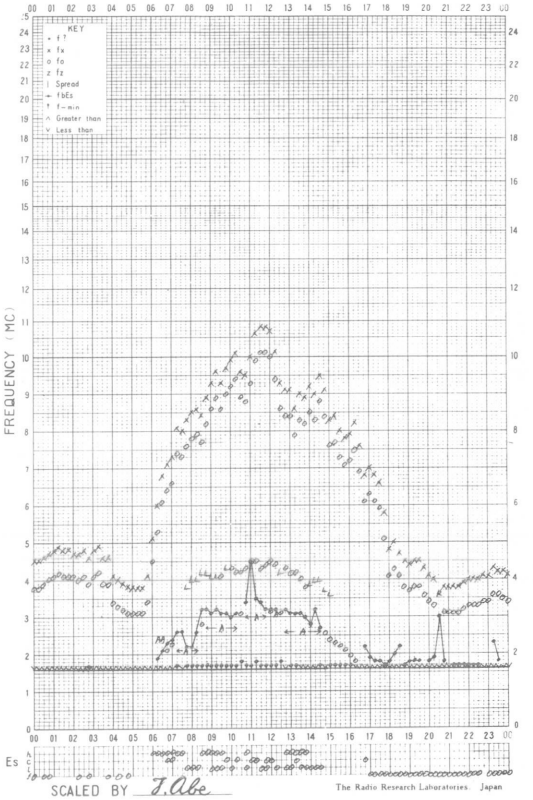

SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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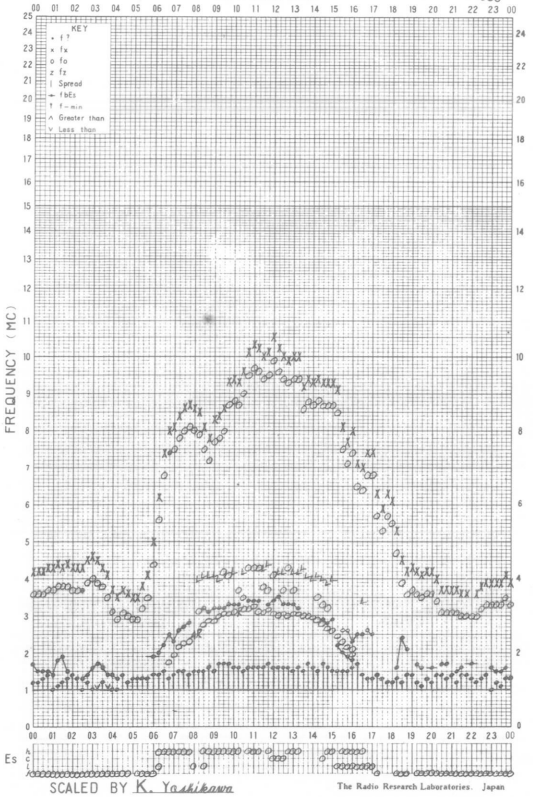

SCALED BY K. Yashikawa

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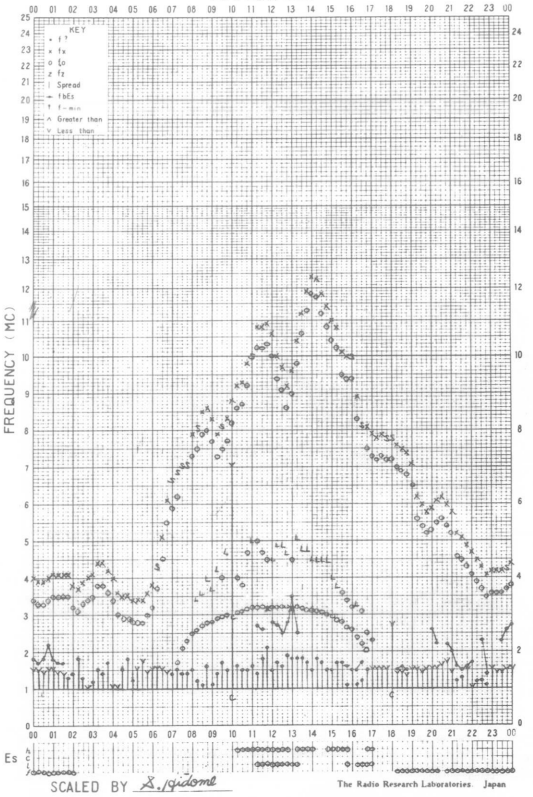

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The Radio Research Laboratories. Japan

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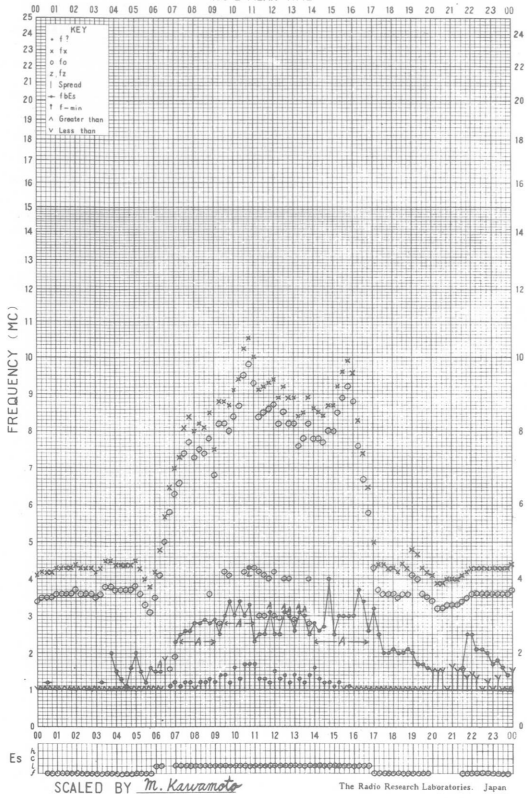

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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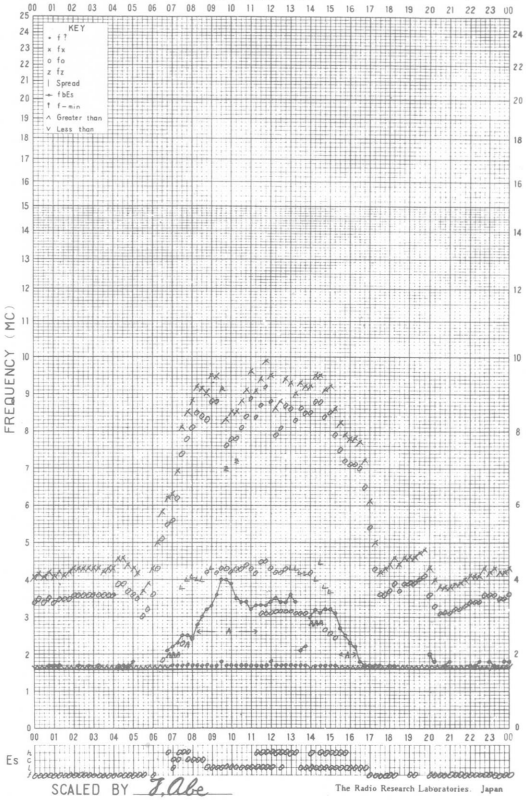

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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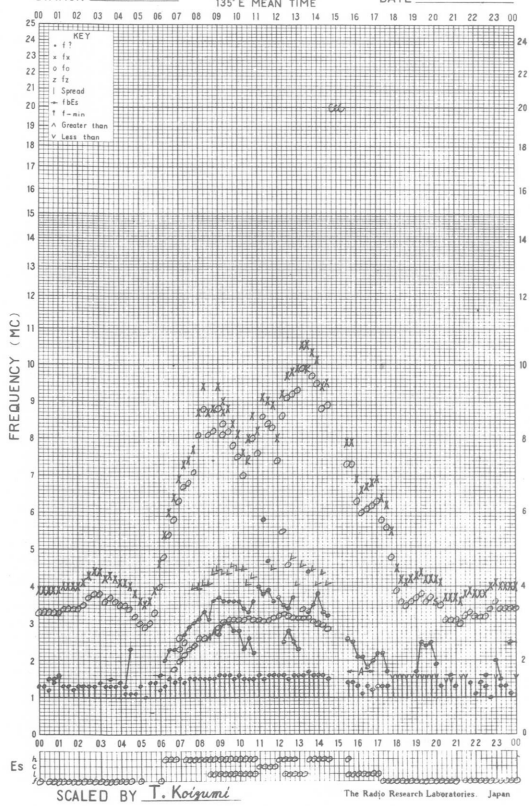

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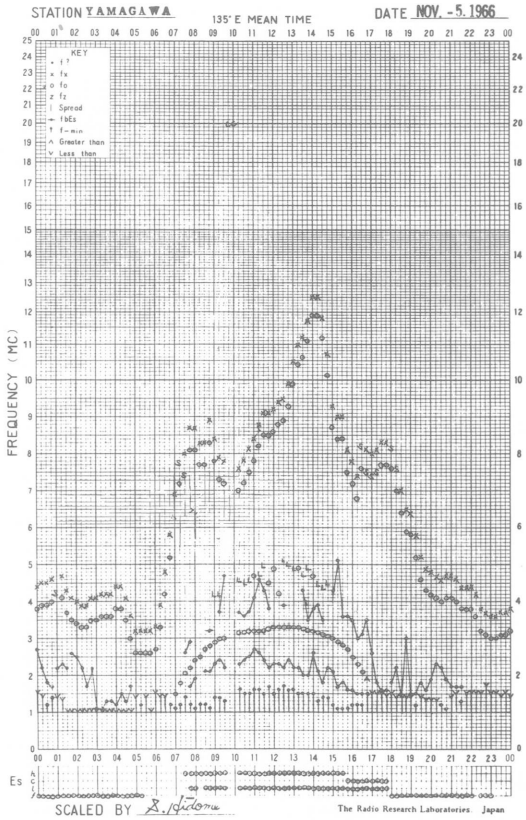

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The Radio Research Laboratories. Japan

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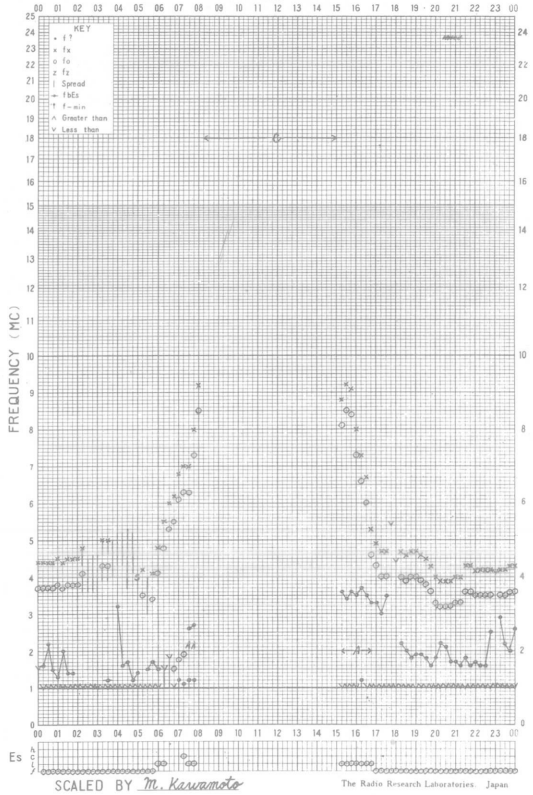

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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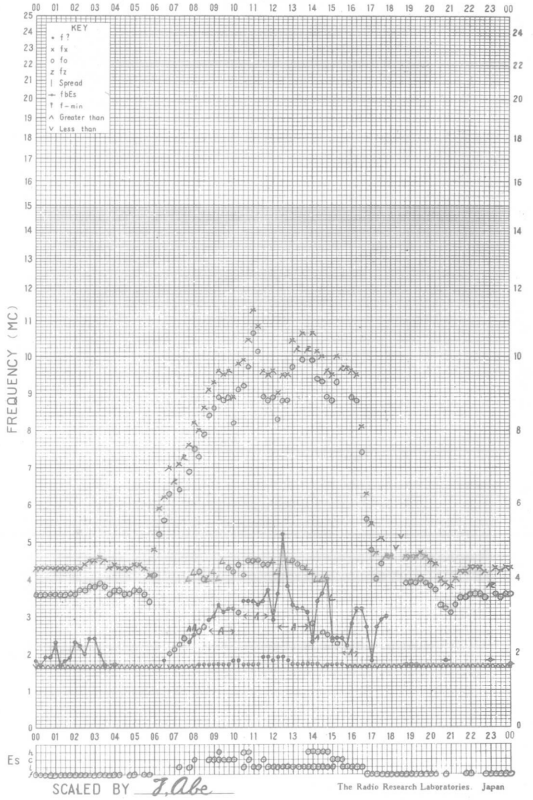

SCALED BY T. Abe

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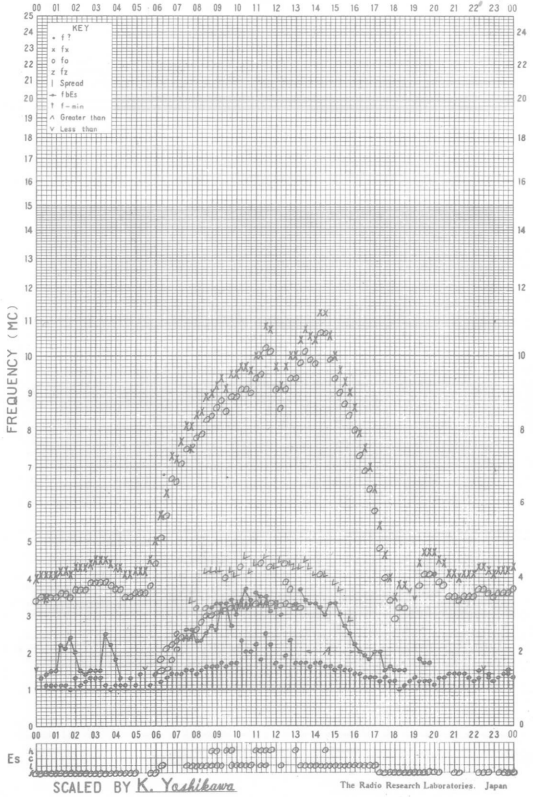

SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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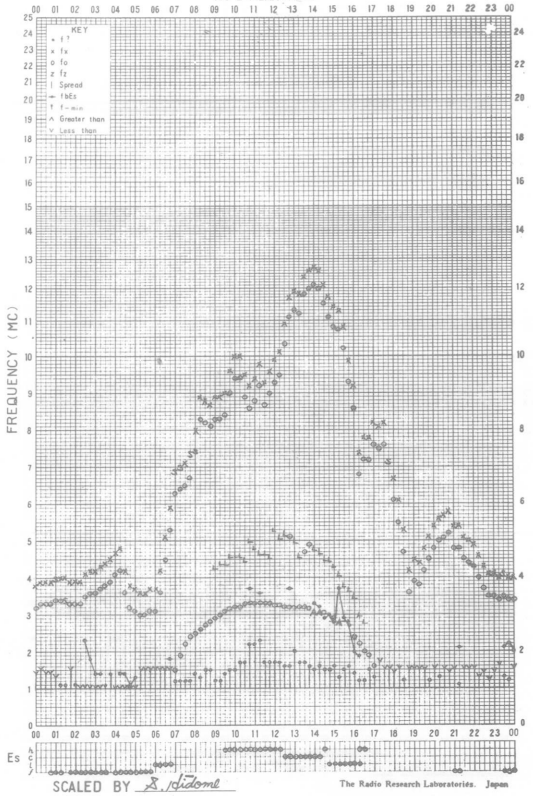

SCALED BY S. Tidomi

The Radio Research Laboratories. Japan

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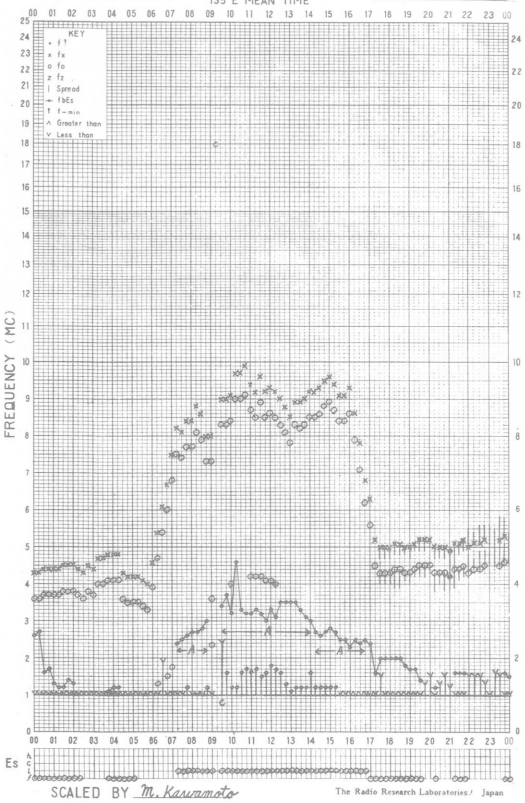

SCALED BY M. Kawamoto The Radio Research Laboratories / Japan

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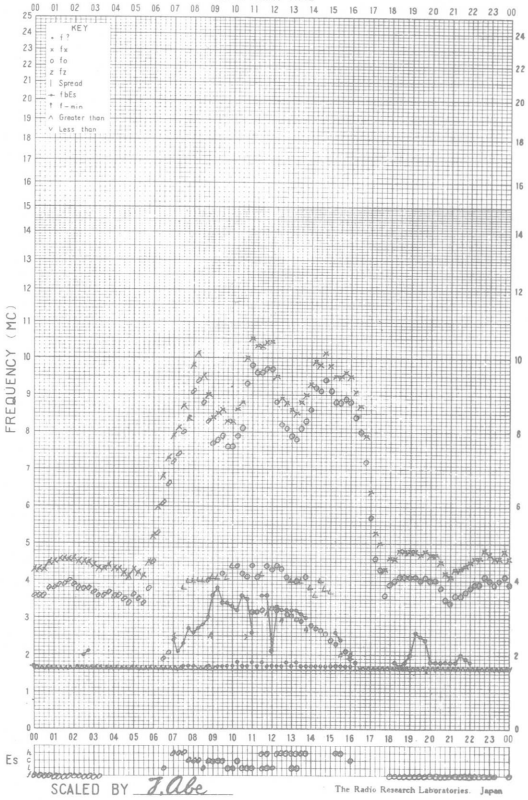

SCALED BY T. Abe The Radio Research Laboratories. Japan

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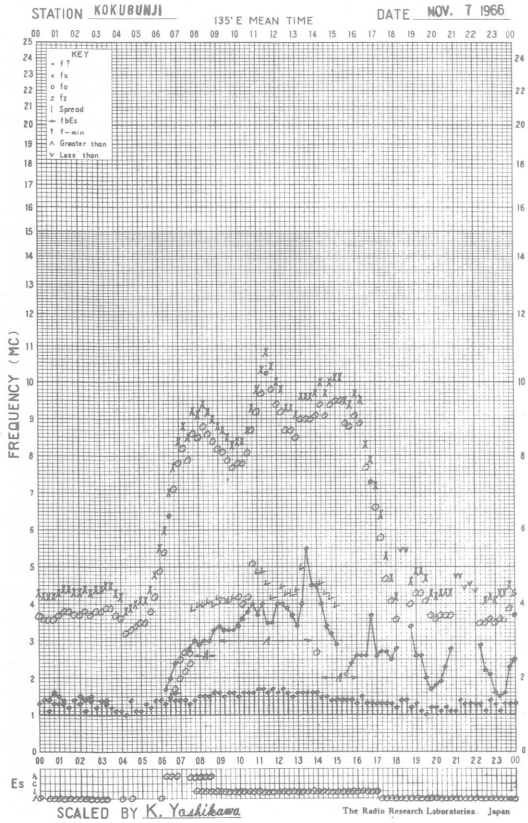

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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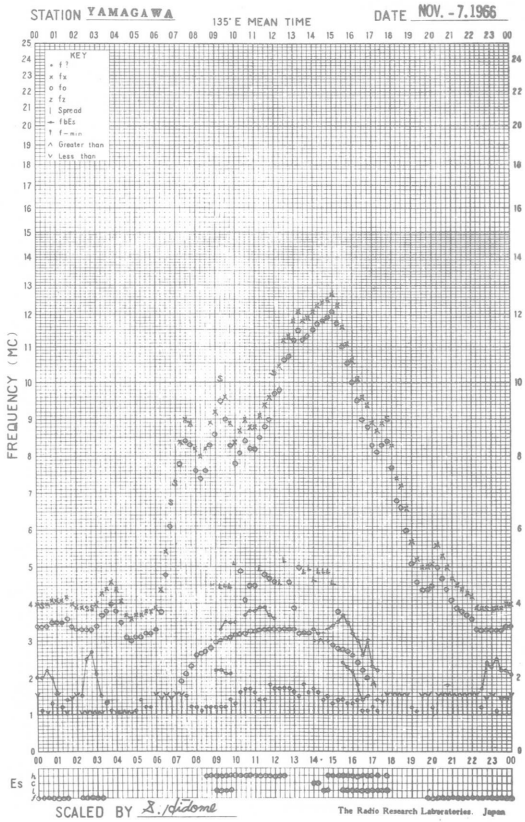

SCALED BY S. Sidome The Radio Research Laboratories. Japan

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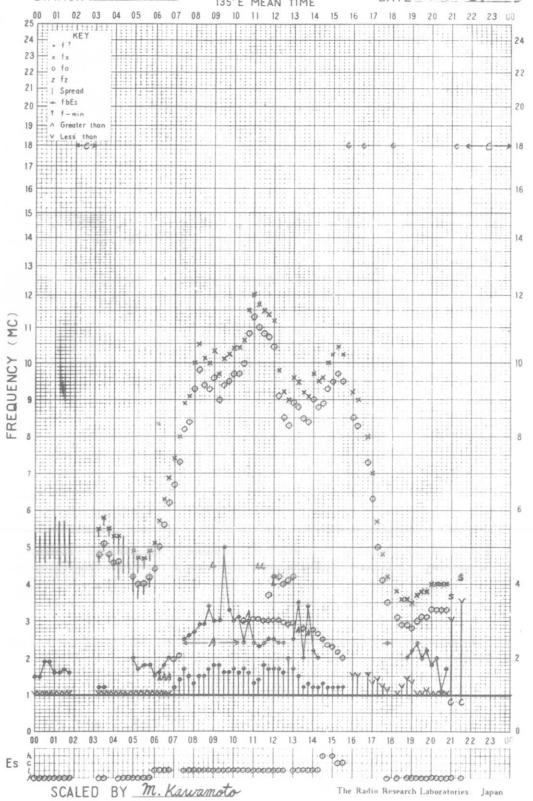

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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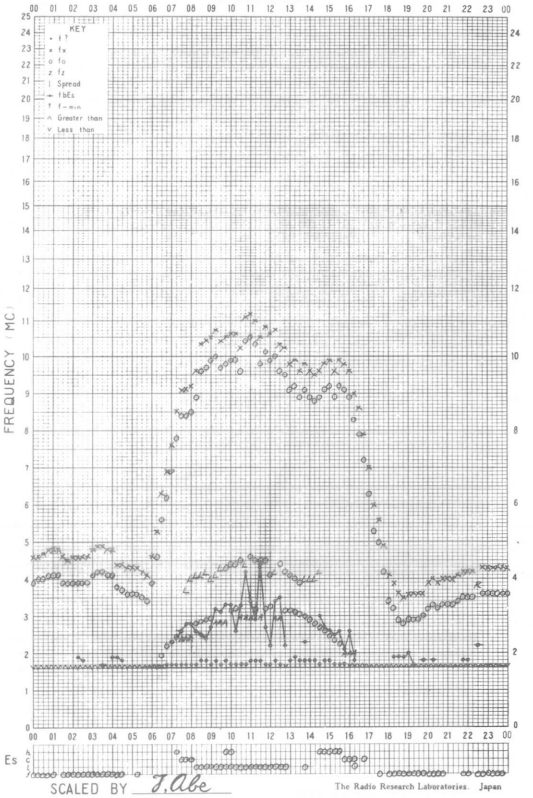

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The Radio Research Laboratories. Japan

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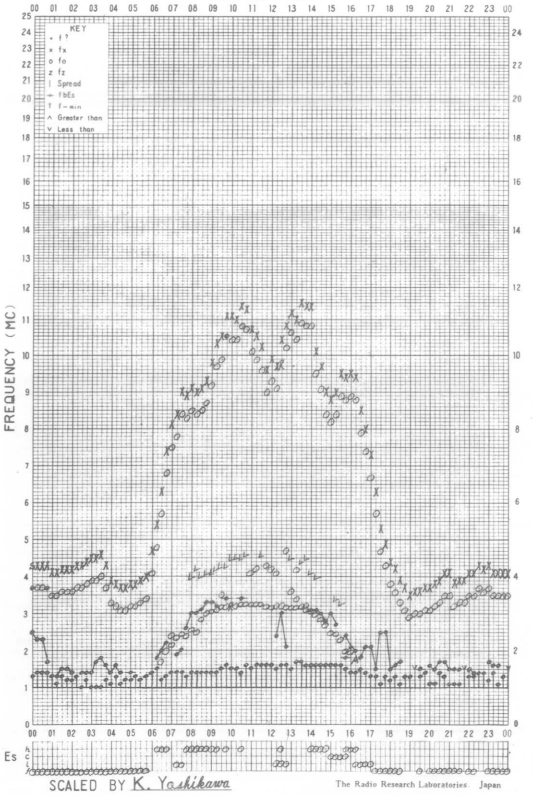

SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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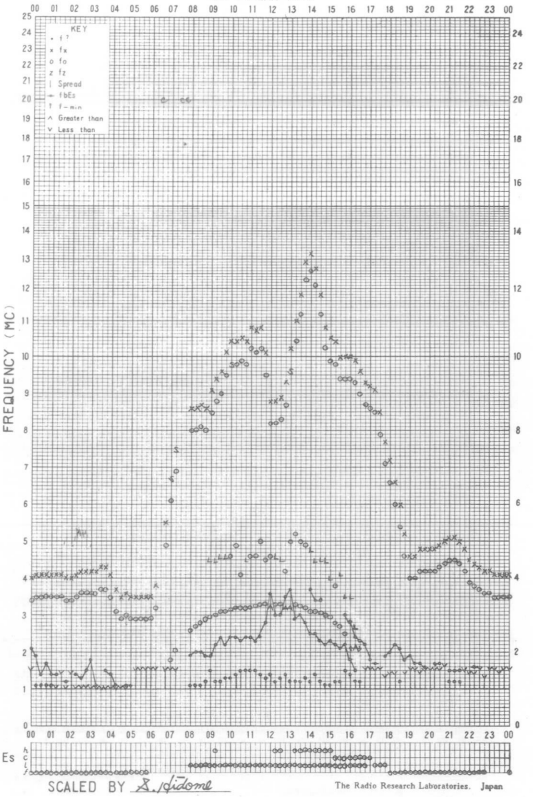

SCALED BY S. Shibata

The Radio Research Laboratories. Japan

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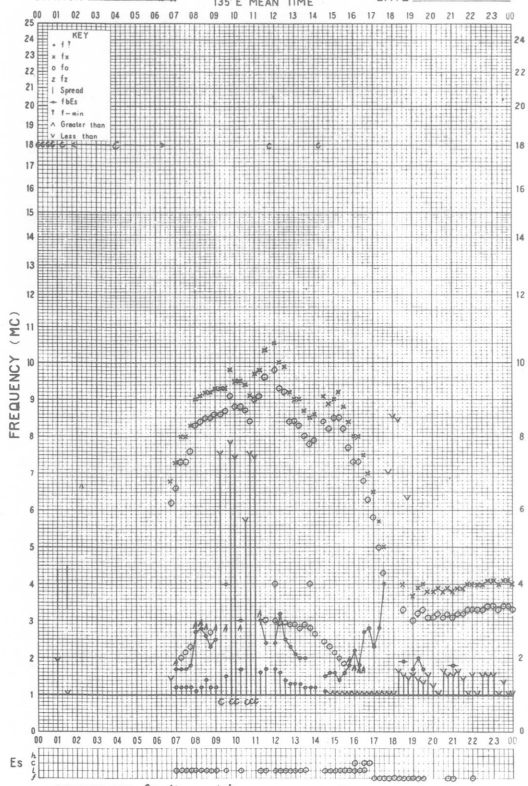

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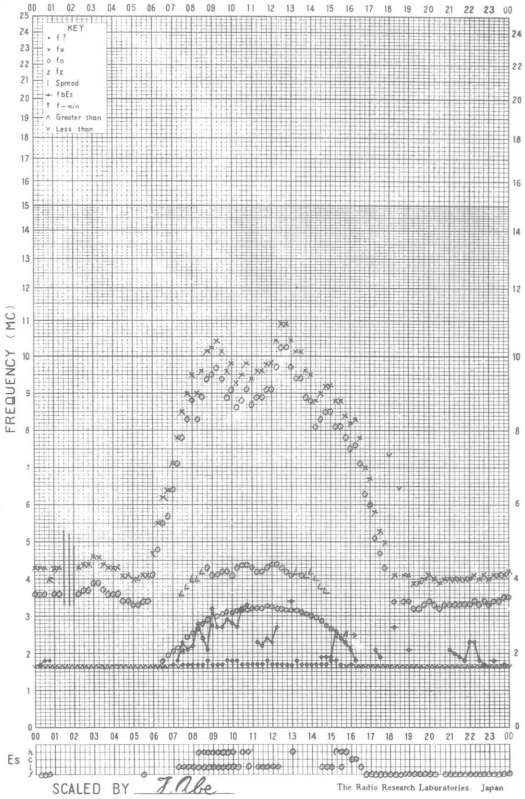

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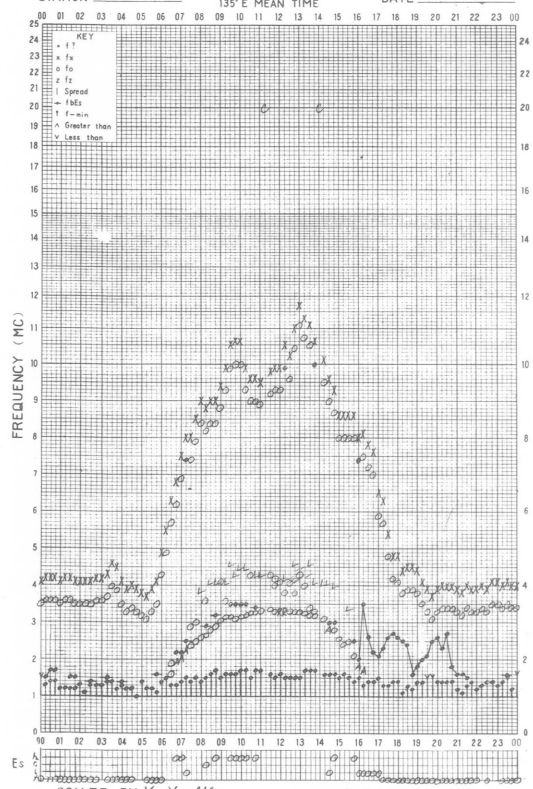

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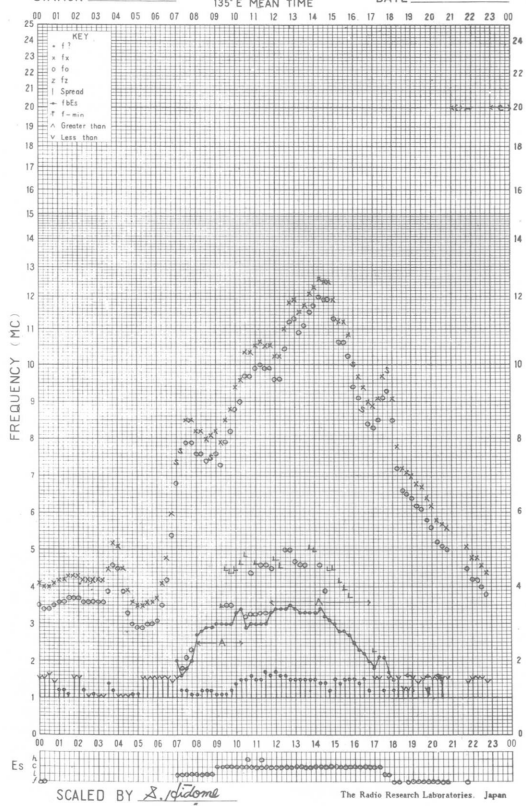

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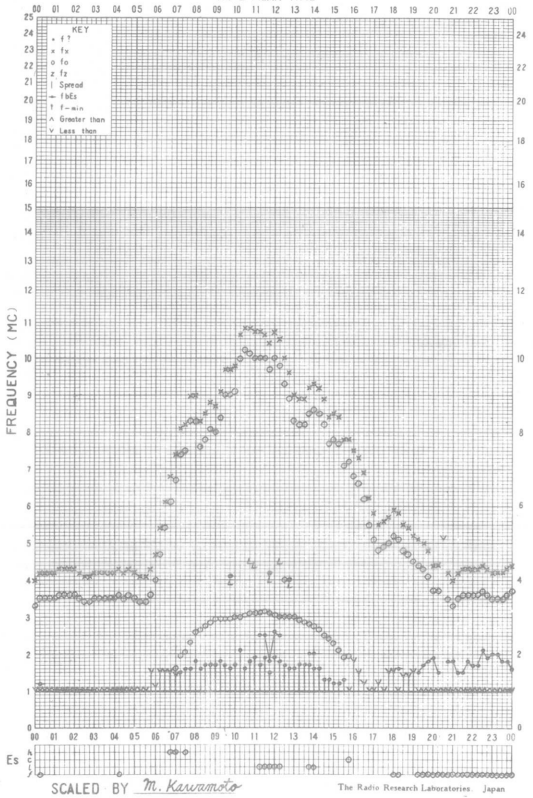

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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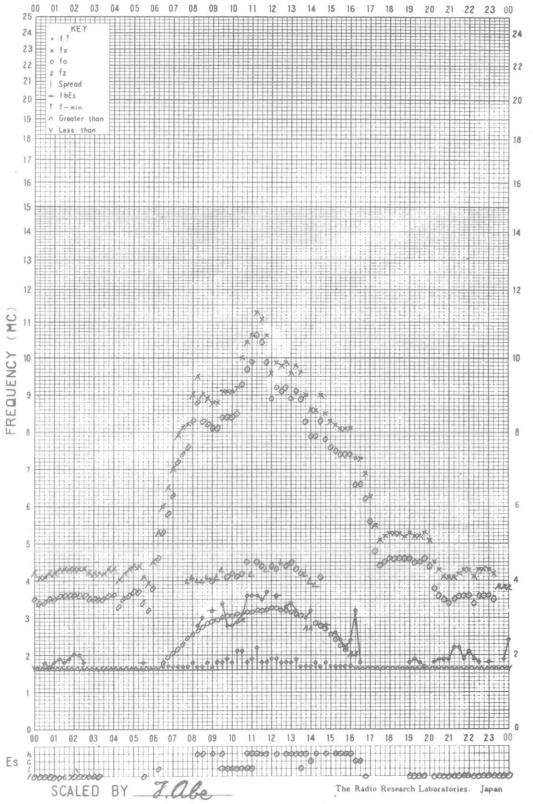

SCALED BY T. Abe The Radio Research Laboratories. Japan

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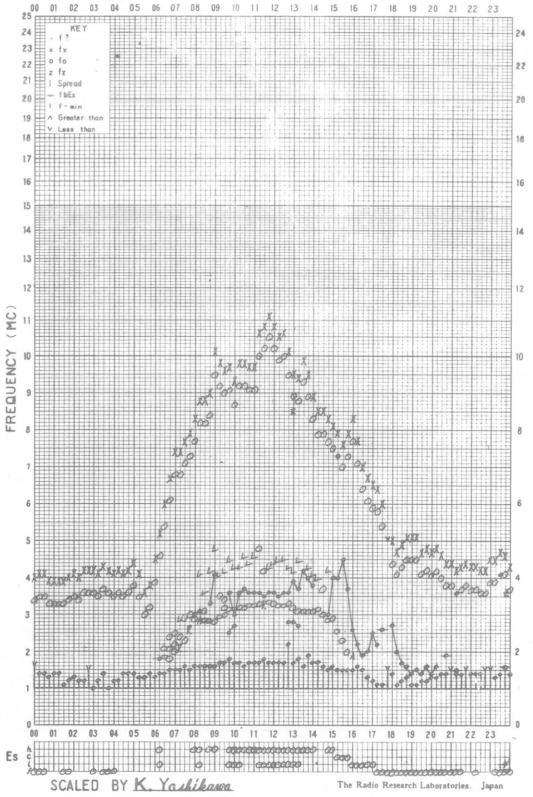

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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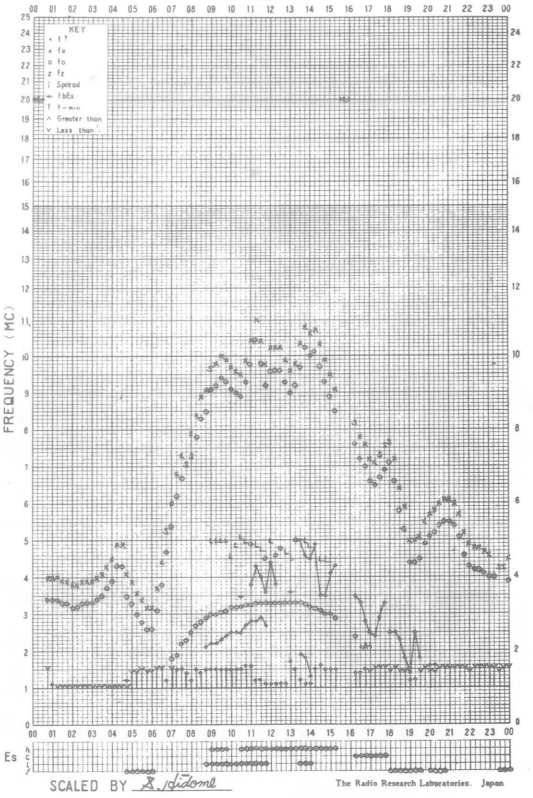

SCALED BY S. Iidoma The Radio Research Laboratories. Japan

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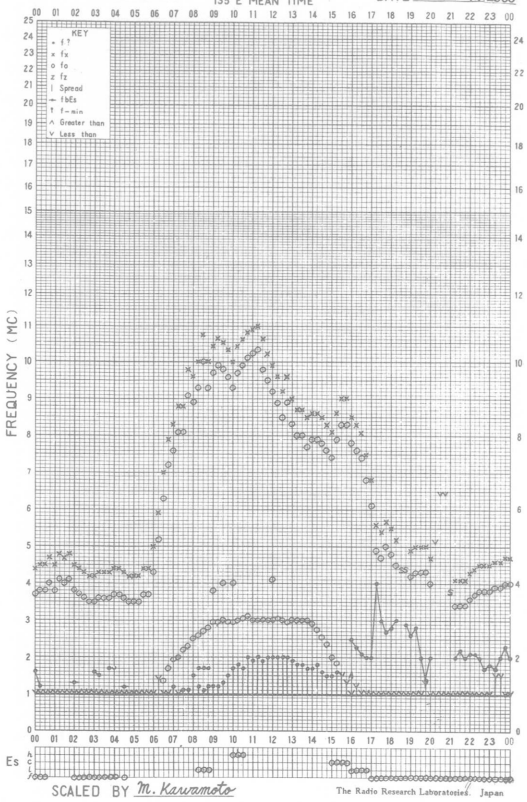

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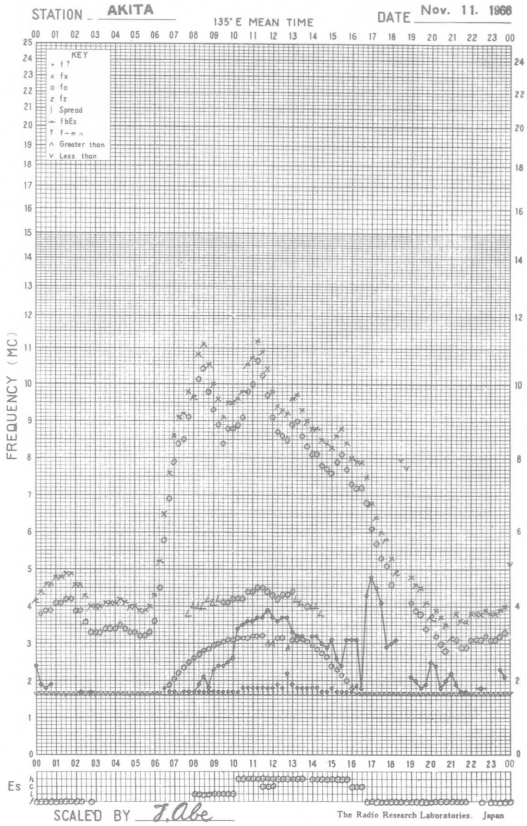

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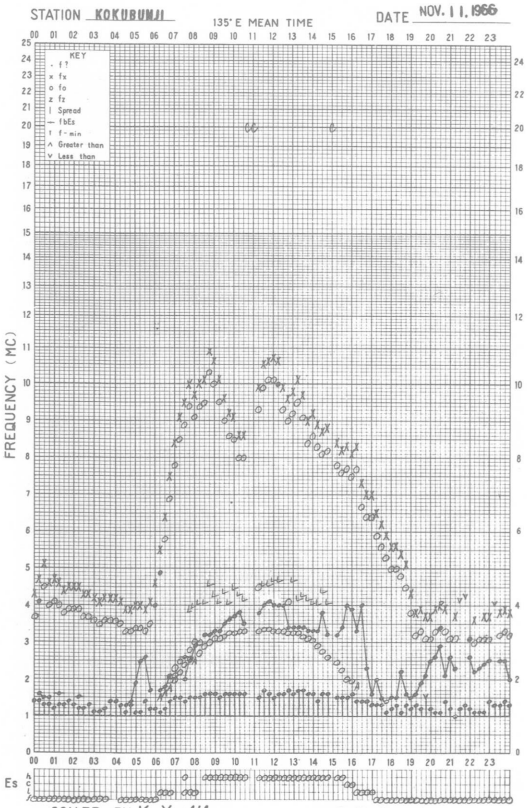

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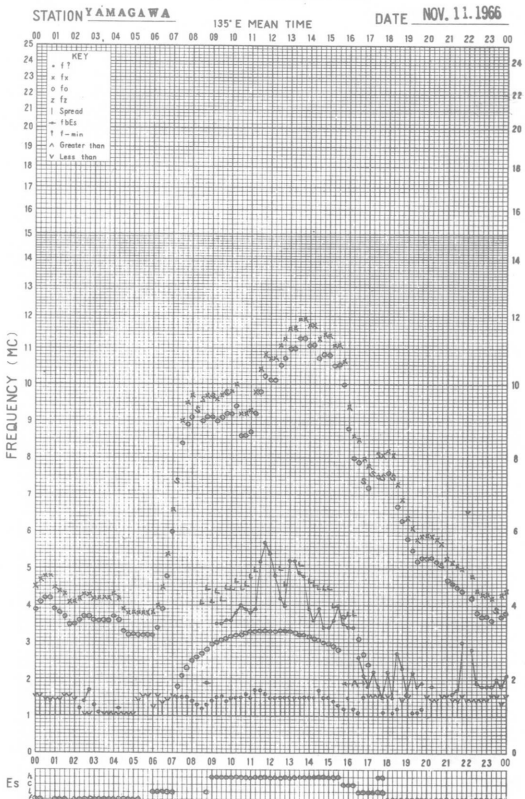

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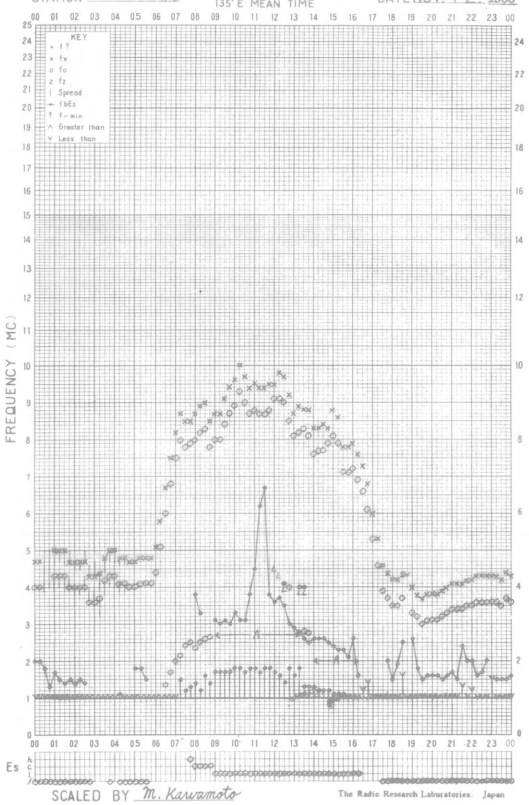

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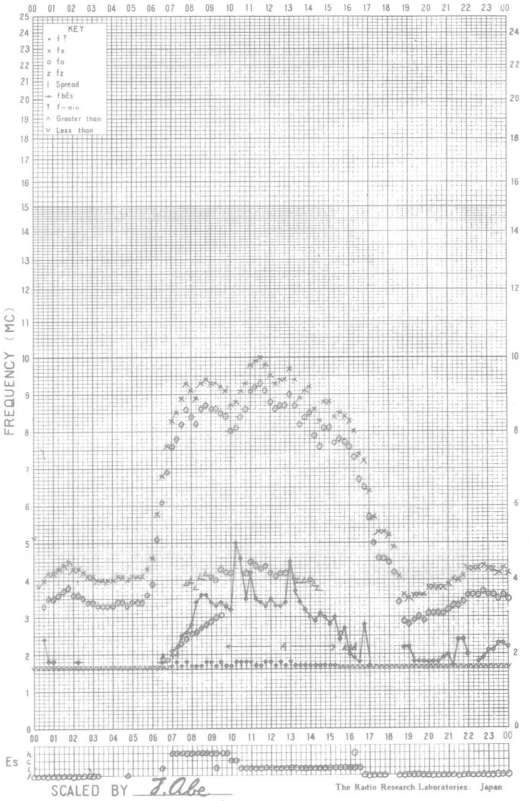

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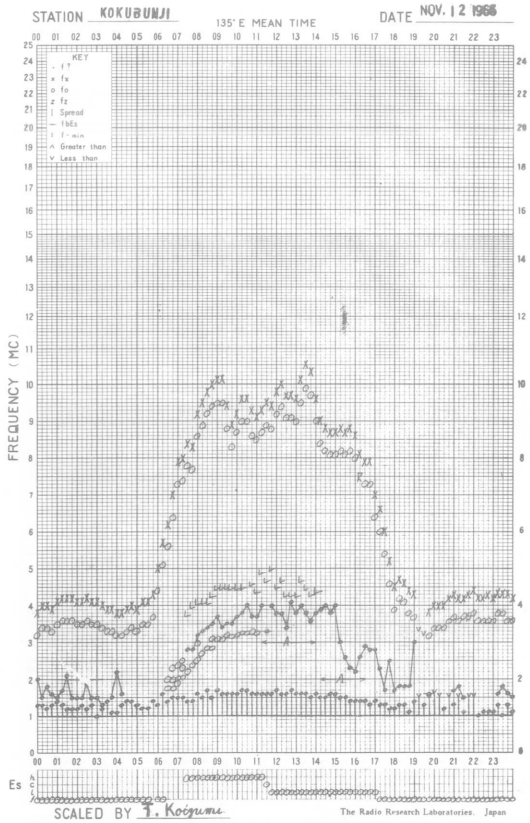

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The Radio Research Laboratories. Japan

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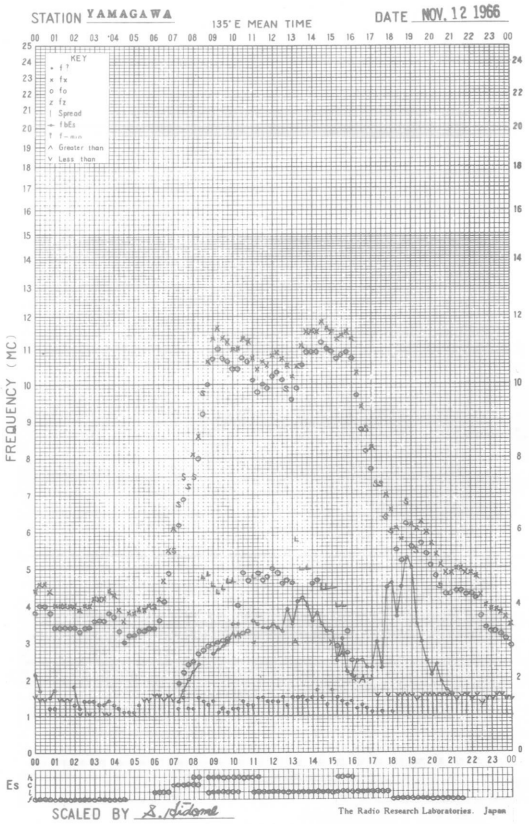

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The Radio Research Laboratories. Japan

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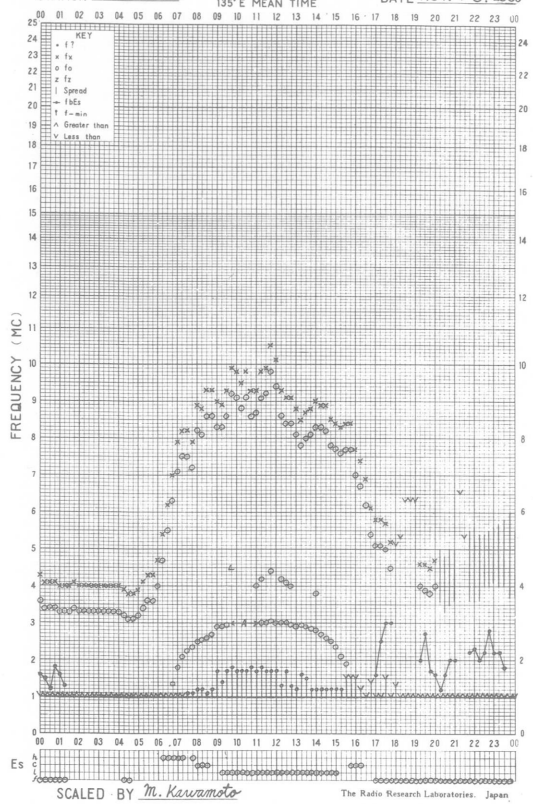

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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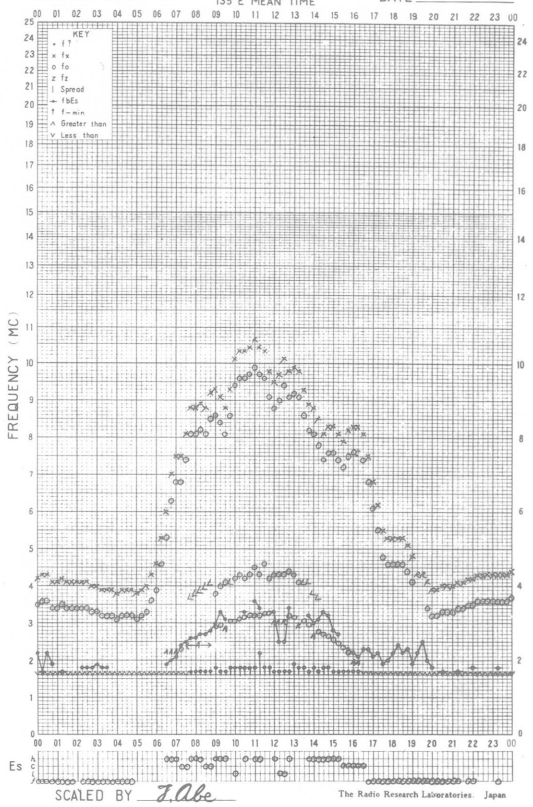

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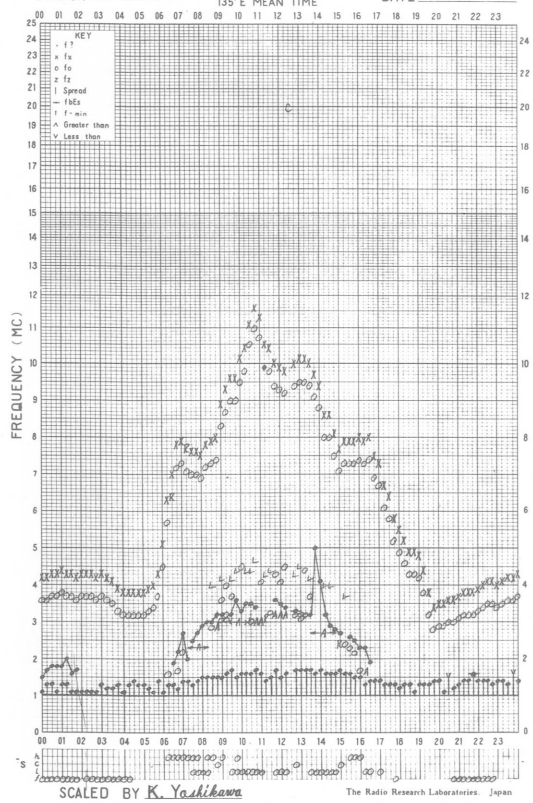

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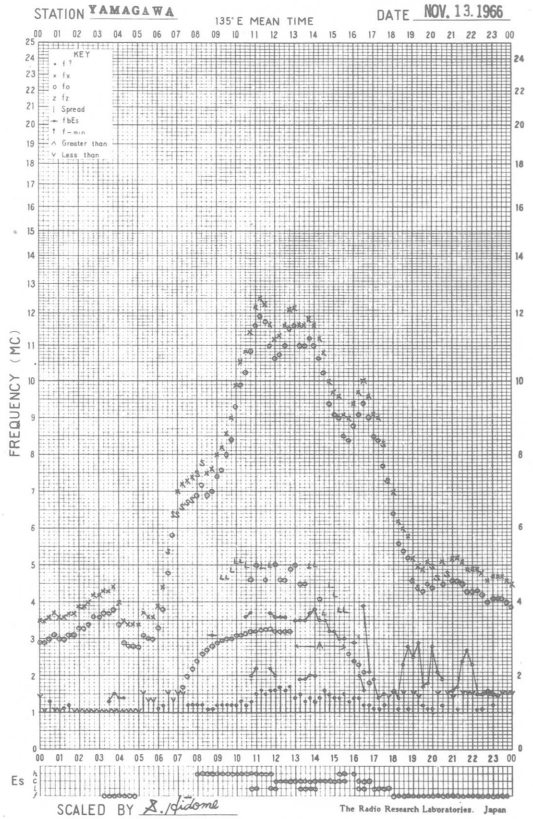
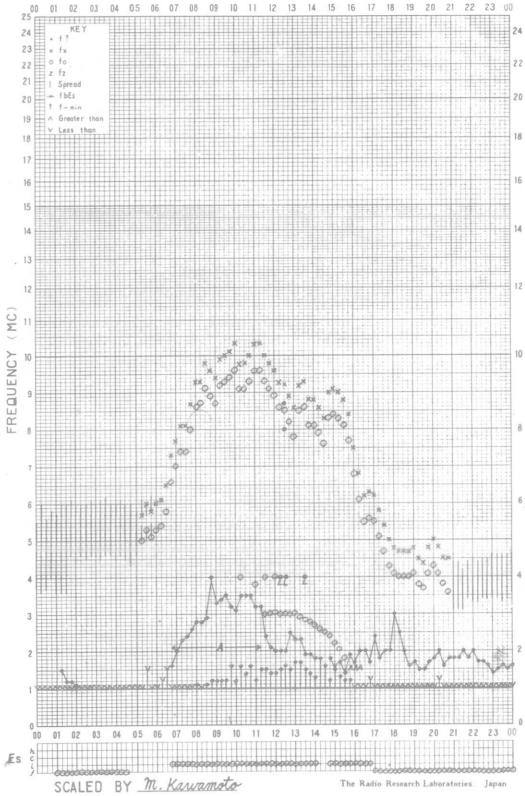


SCALED BY S. Fukome The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE NOV. 14, 1966



SCALED BY M. Kawamoto

The Radio Research Laboratories Japan

f-PLOT OF IONOSPHERIC DATA

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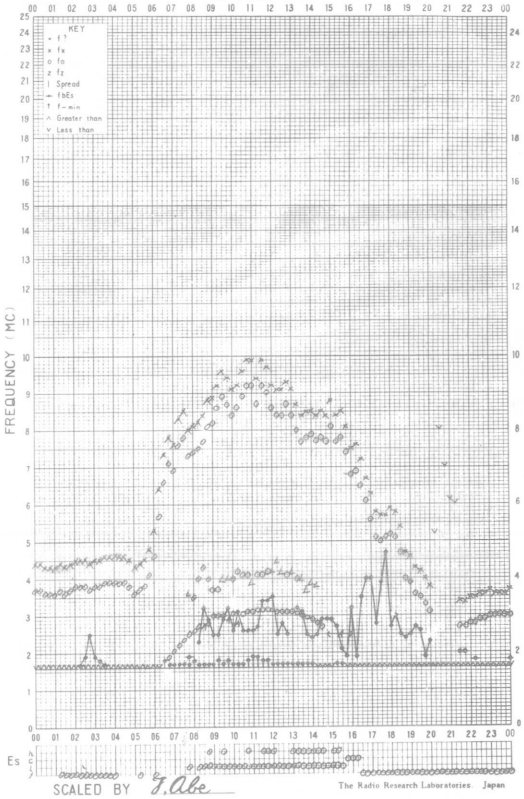

SCALED BY J. Abe

The Radio Research Laboratories Japan

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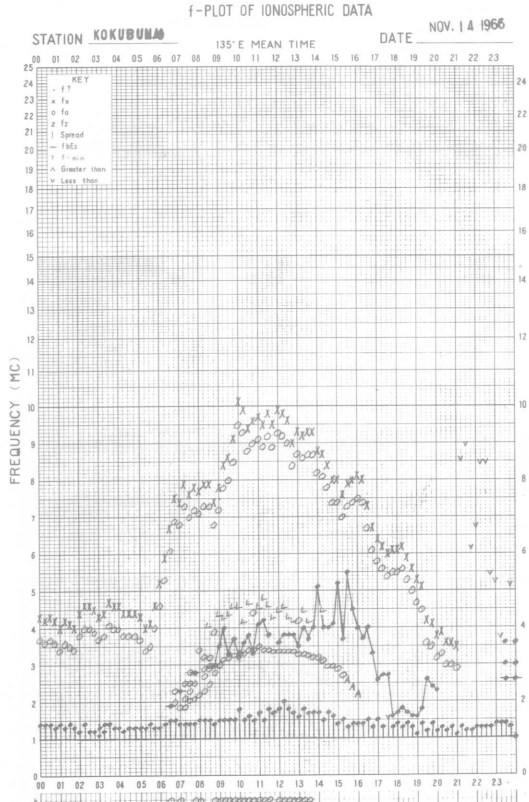

SCALED BY K. Yoshikawa

The Radio Research Laboratories Japan

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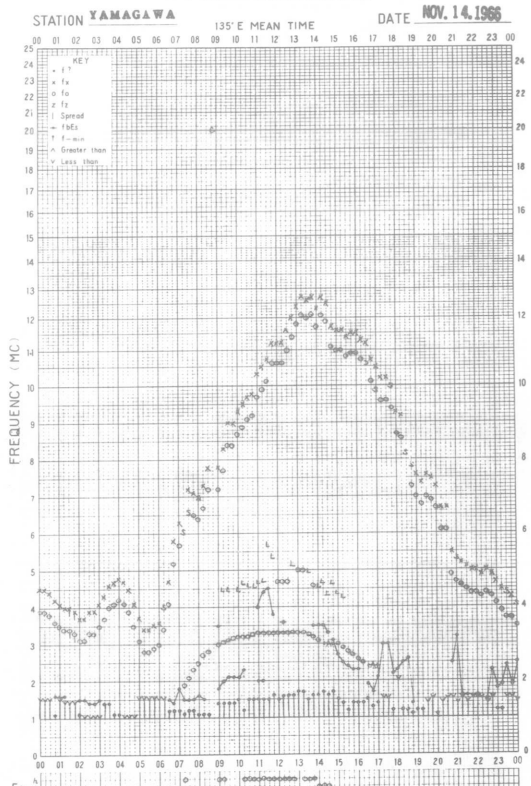

SCALED BY S. Kidome

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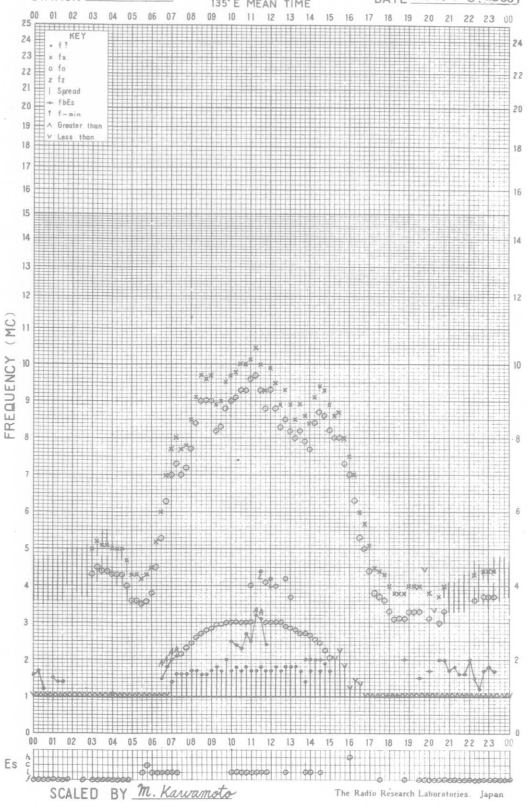

SCALED BY M. Kawamoto

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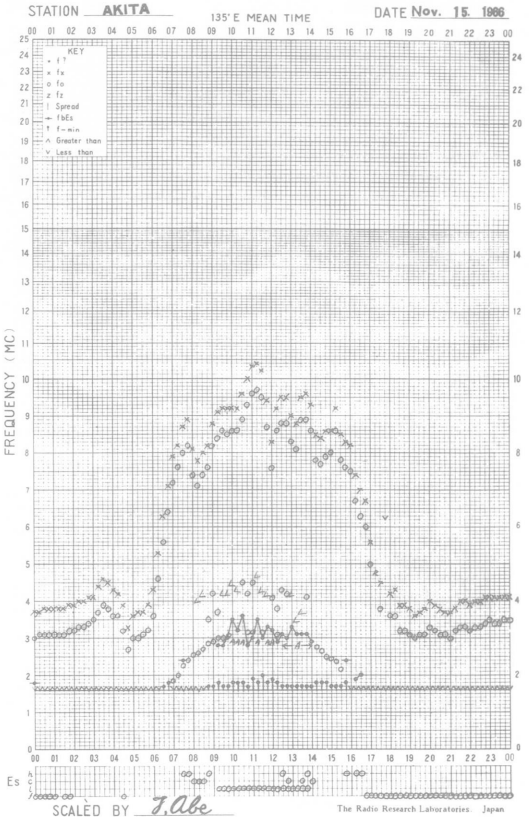

SCALED BY T. Abe

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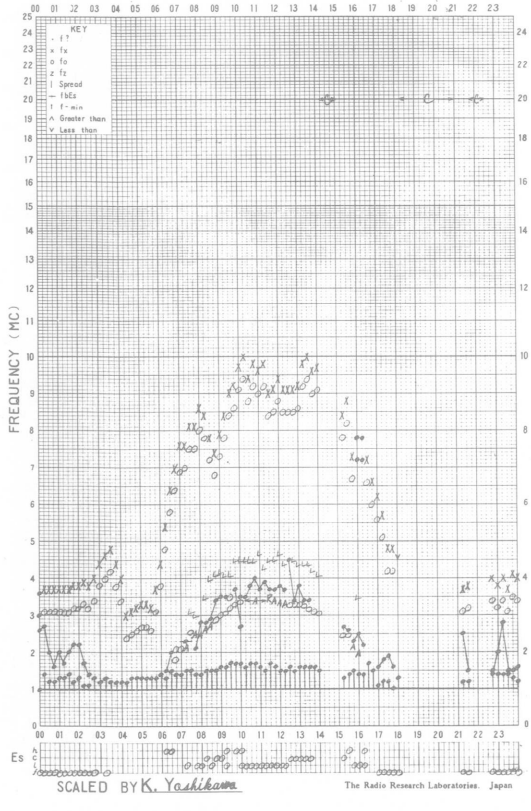

SCALED BY K. Yashikawa

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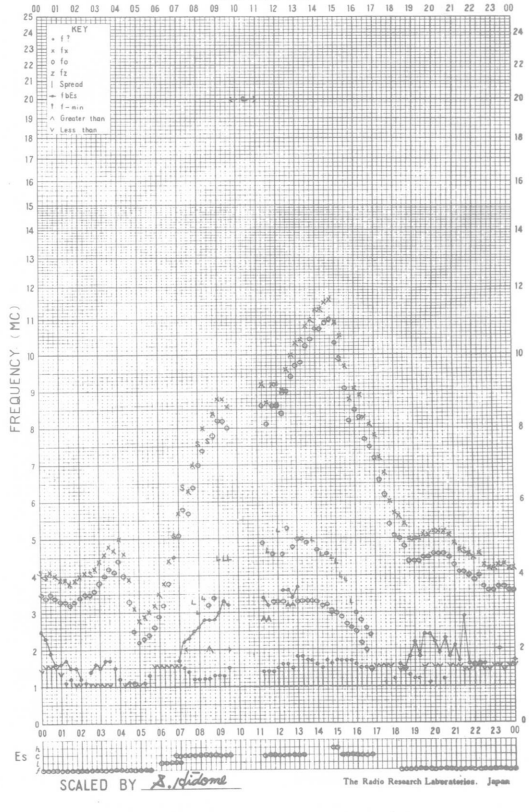

SCALED BY S. Nidome

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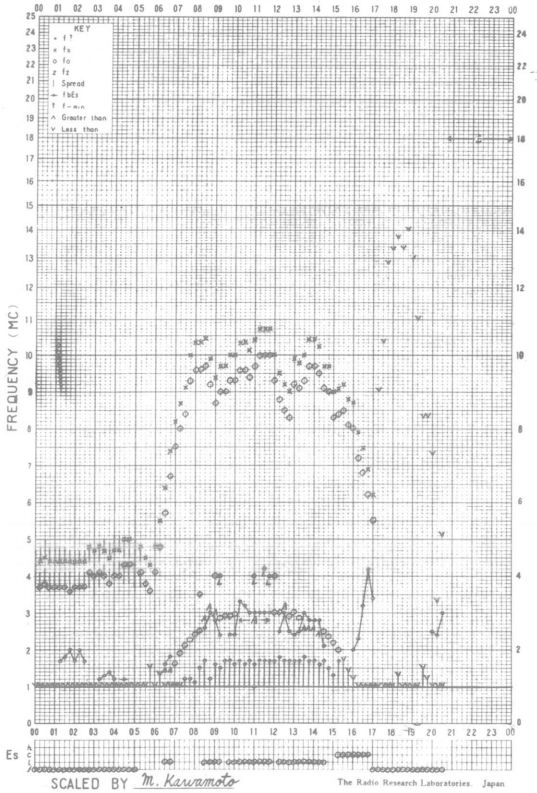

SCALED BY M. Kawamoto

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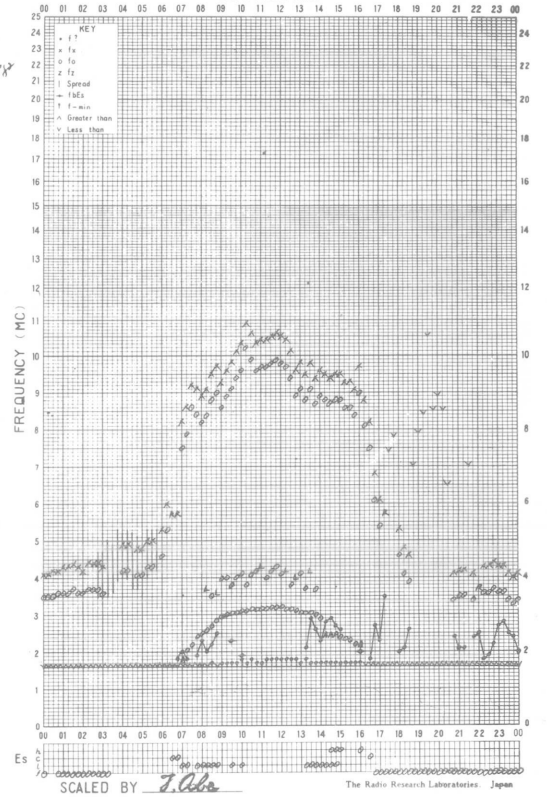

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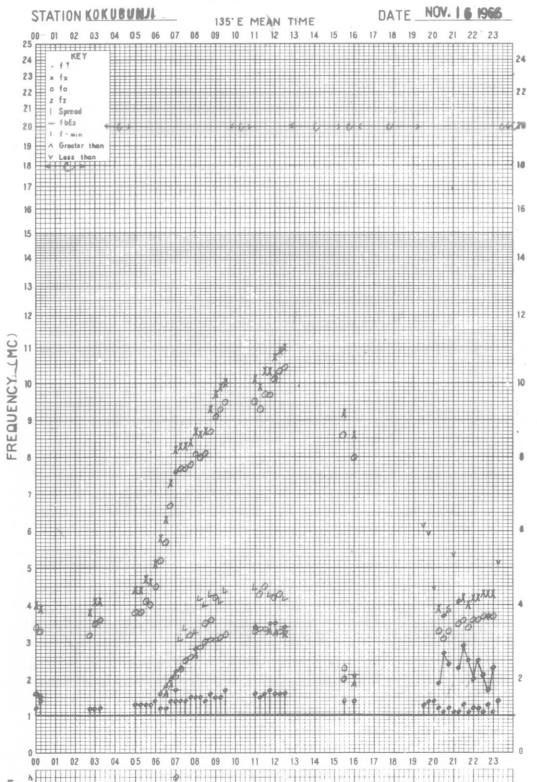

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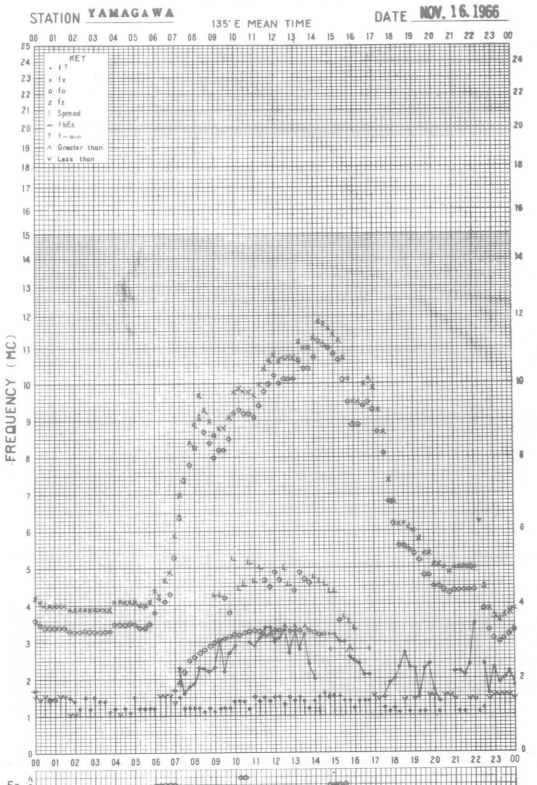

SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

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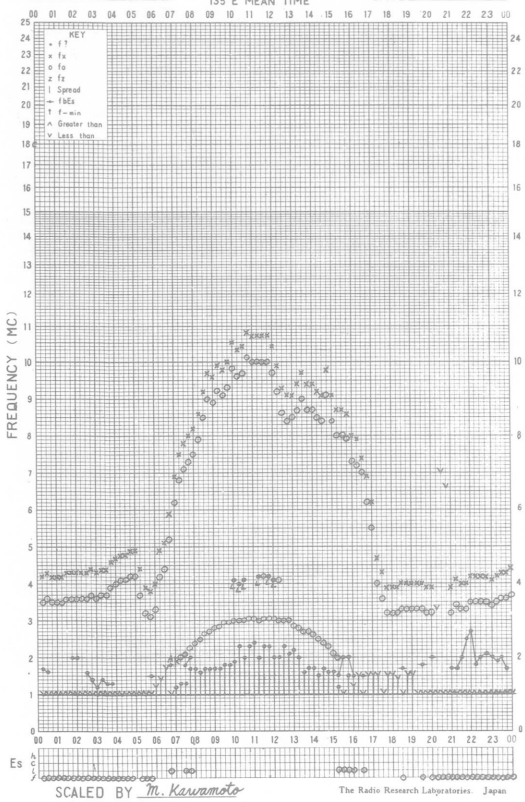

SCALED BY M. Kawamoto

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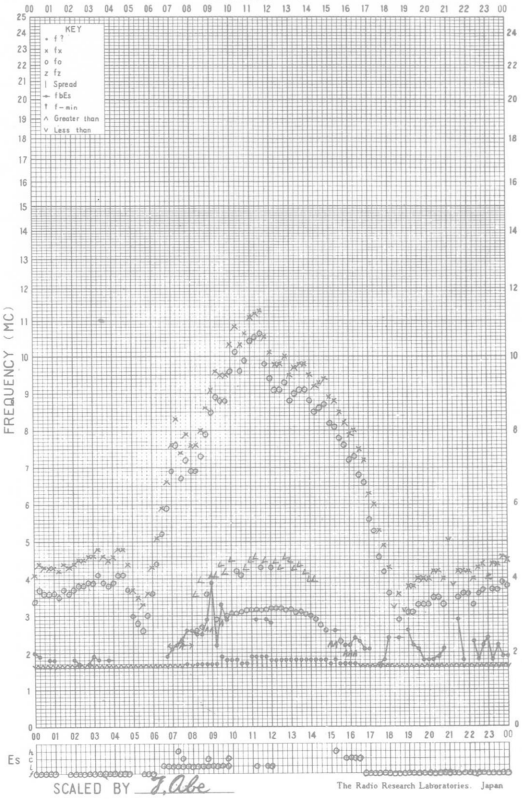

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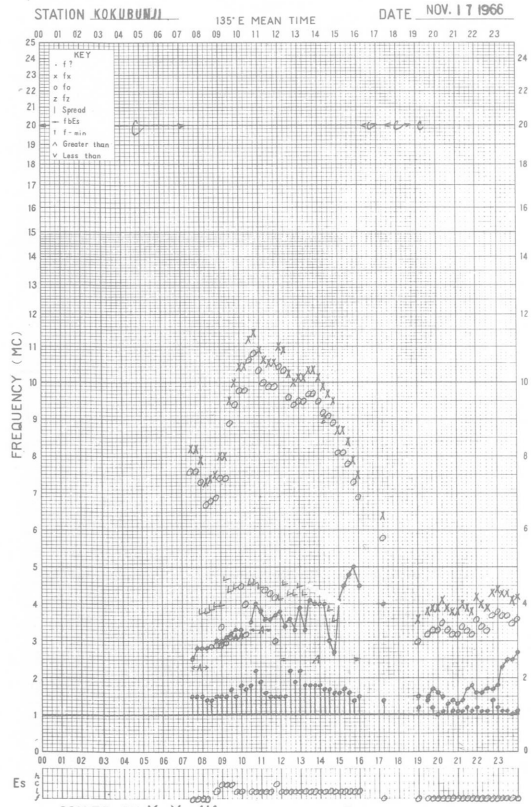

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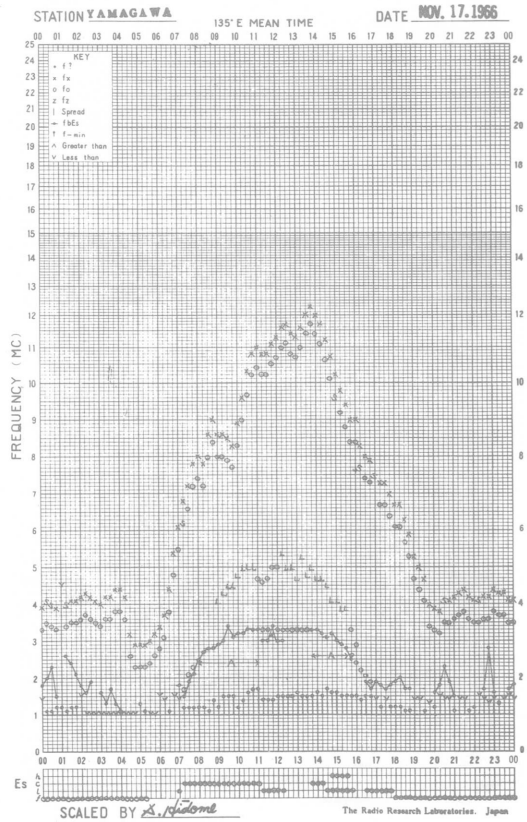

SCALED BY S. Nidome

The Radio Research Laboratories. Japan

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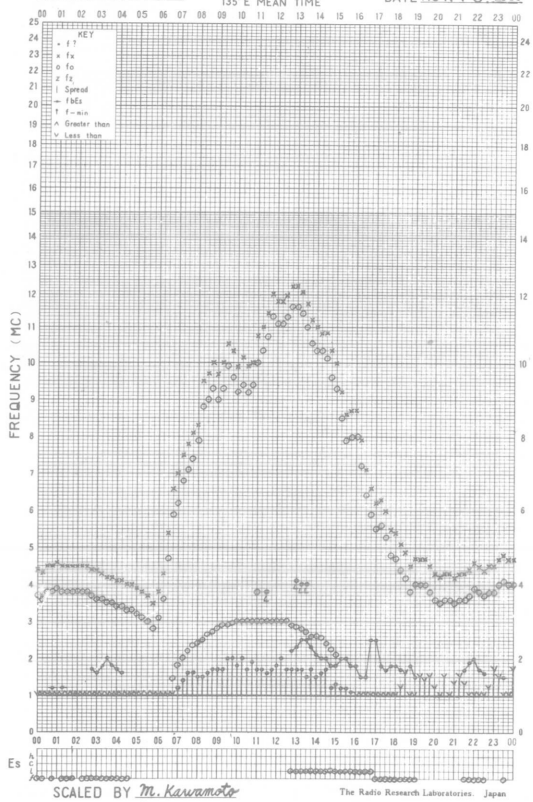

SCALED BY M. Kawamoto

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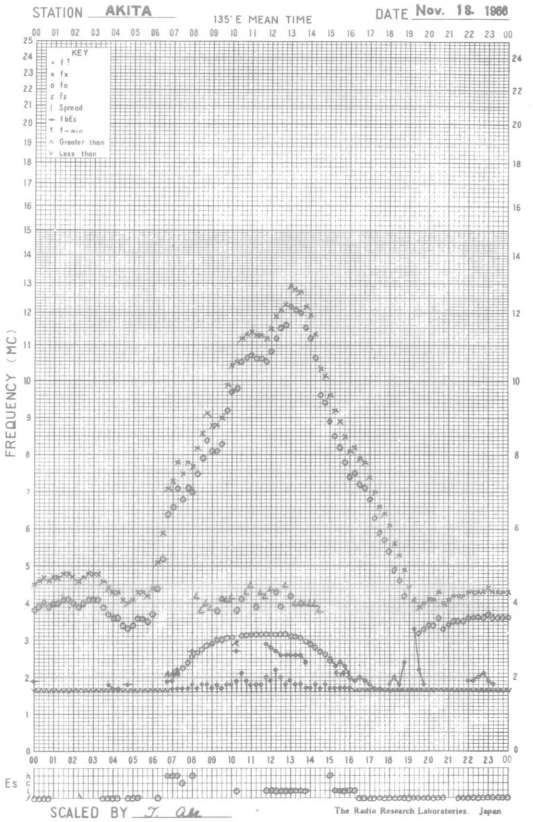

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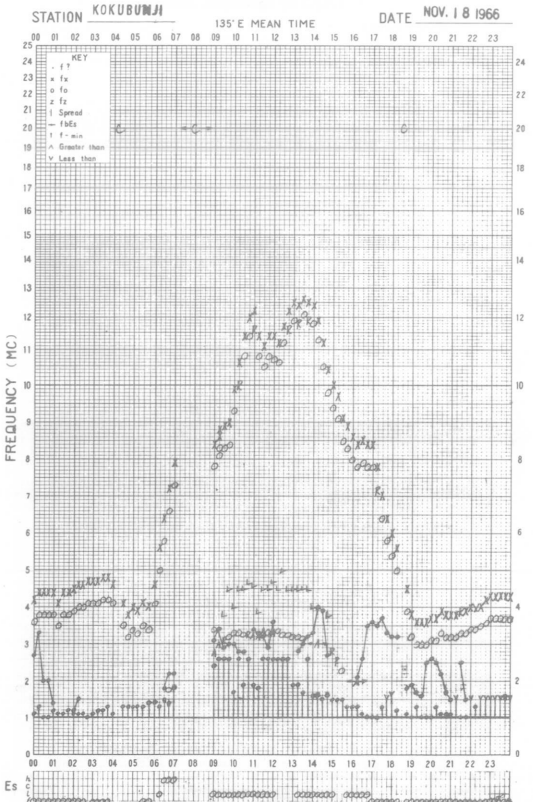

SCALED BY T. Koizumi

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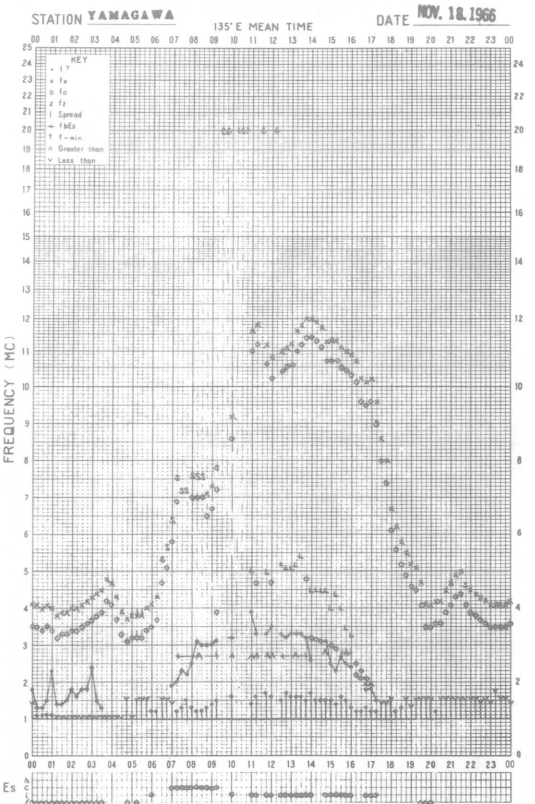

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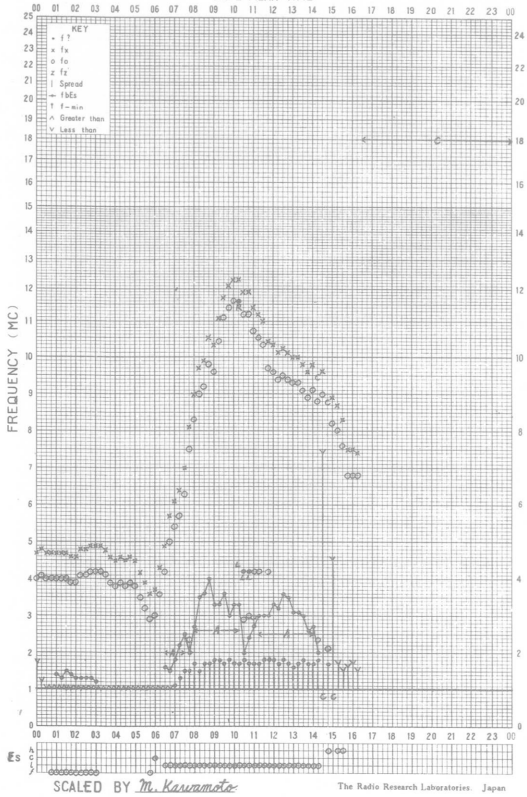

SCALED BY M. Kawamoto

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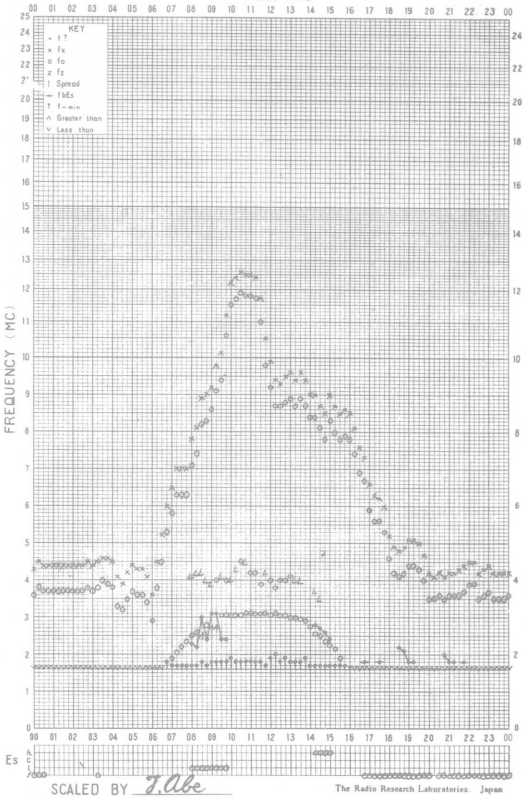

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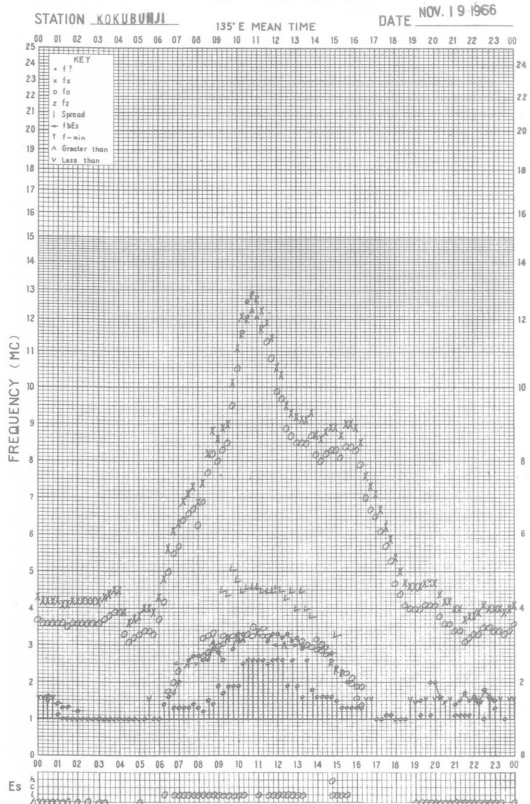

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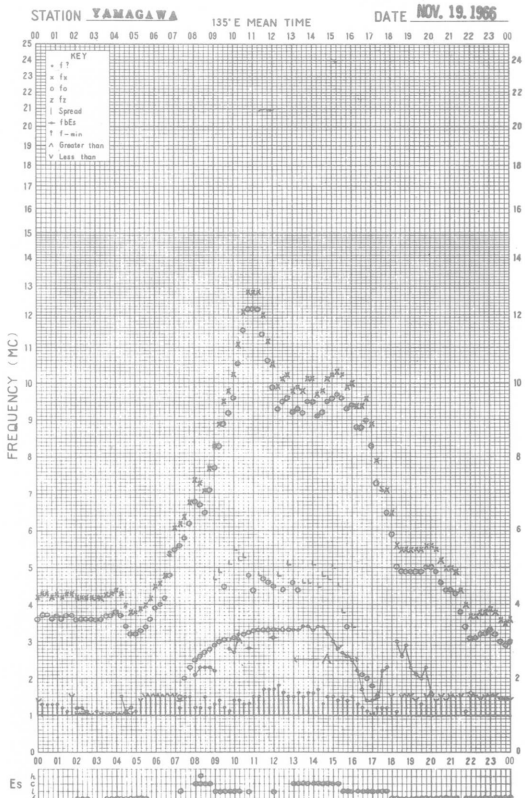

SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

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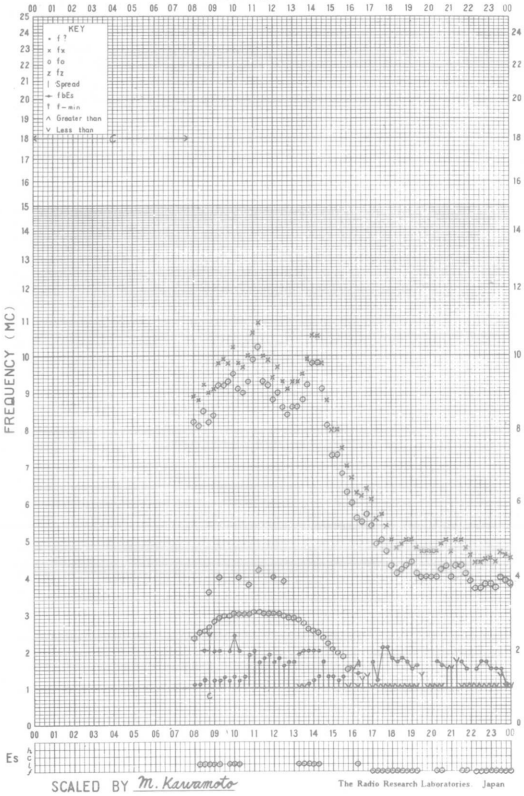

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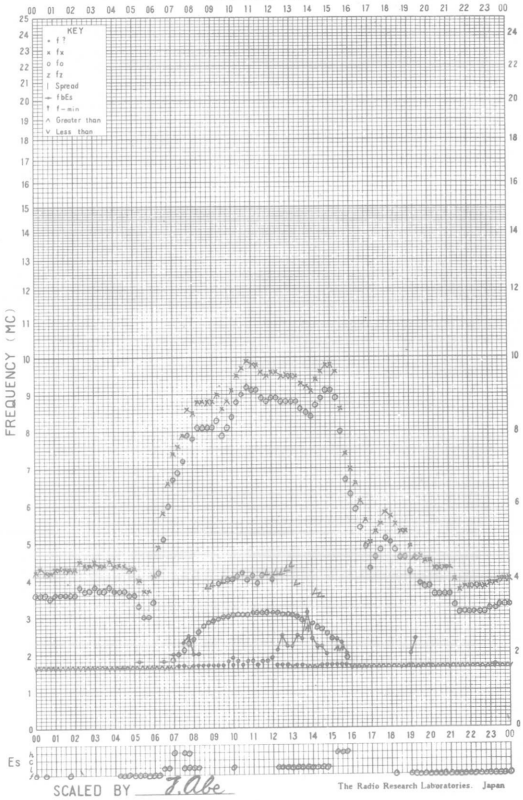

SCALED BY T. Abe The Radio Research Laboratories. Japan

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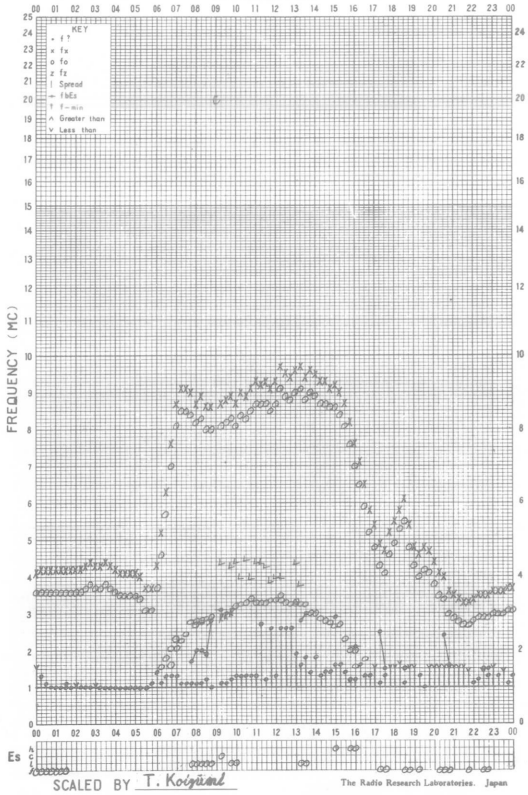

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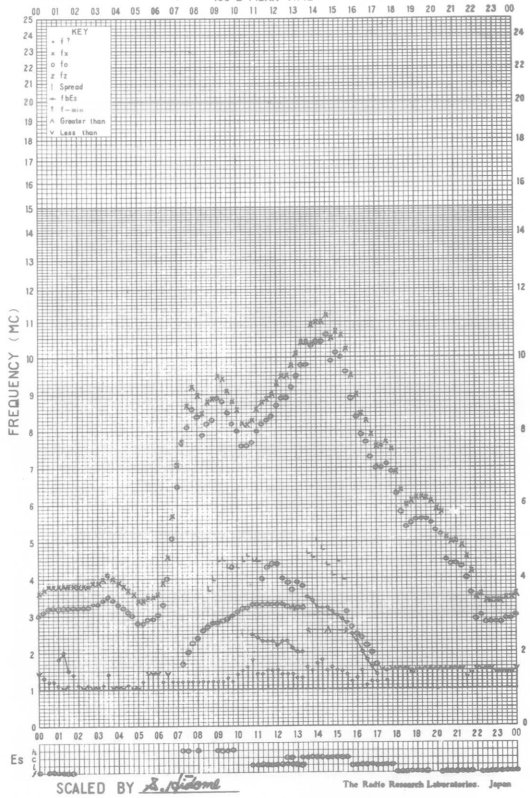

SCALED BY S. Nidome The Radio Research Laboratories. Japan

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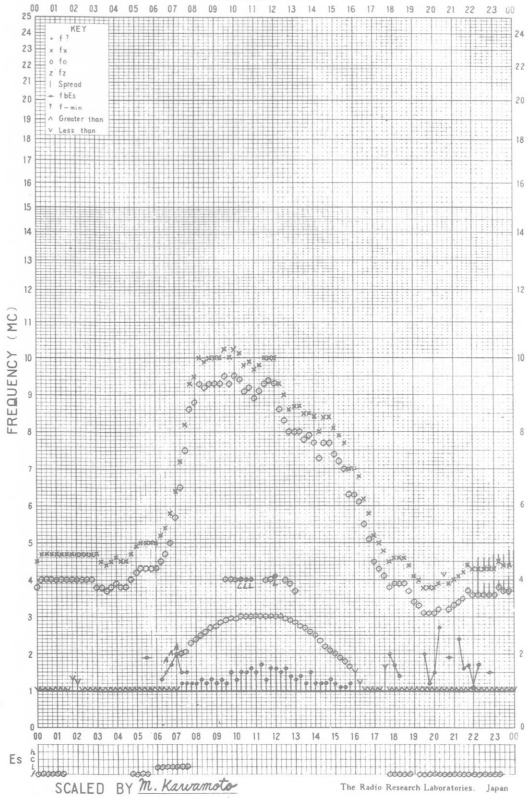

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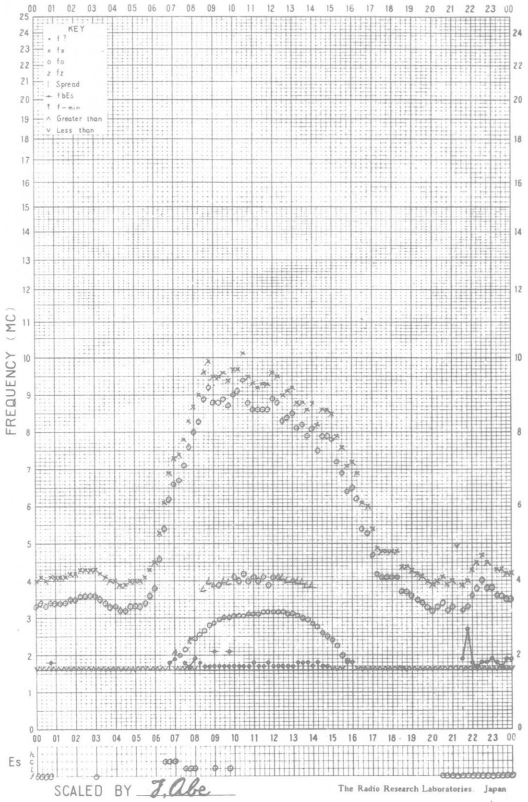

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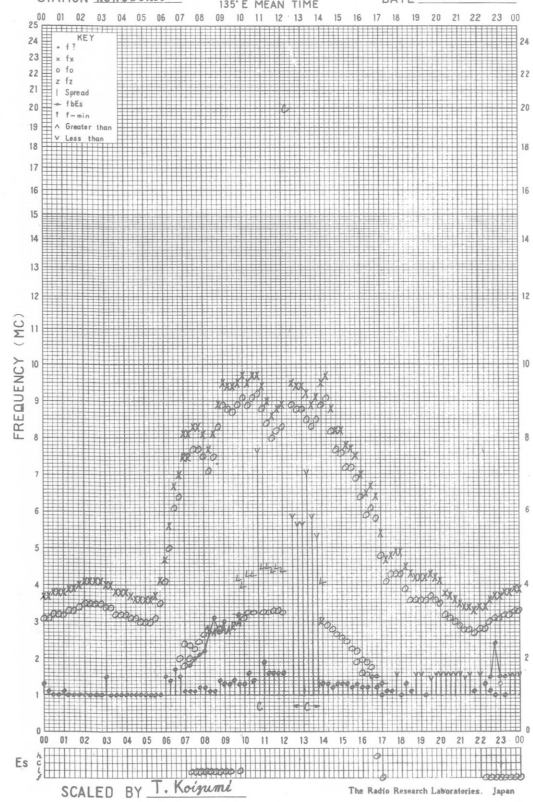

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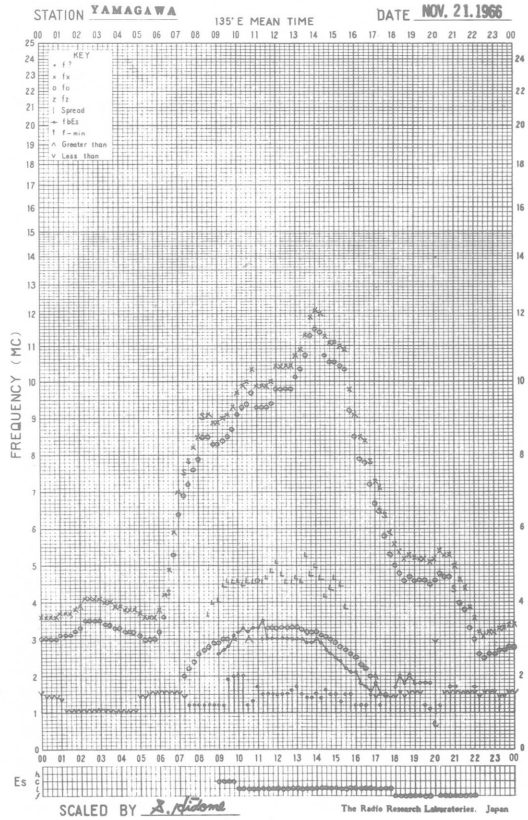

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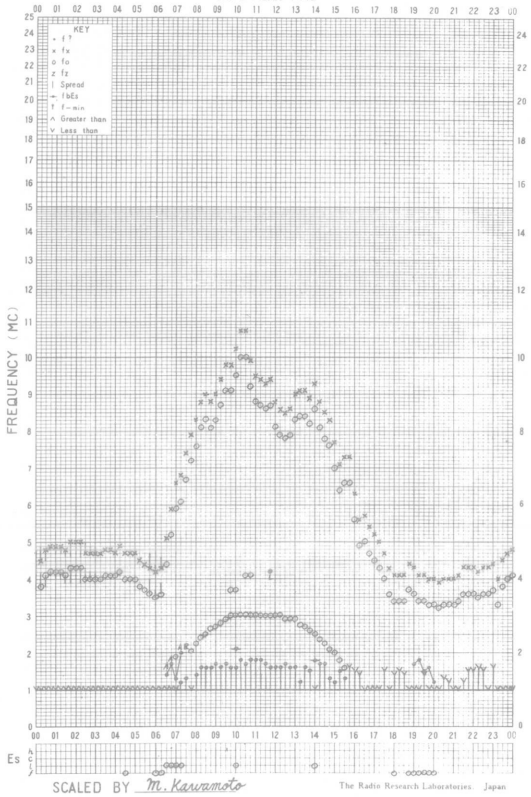

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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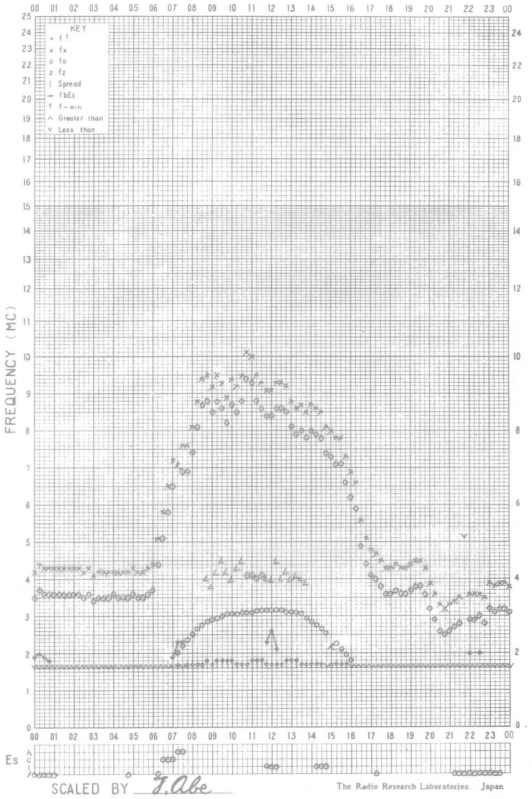

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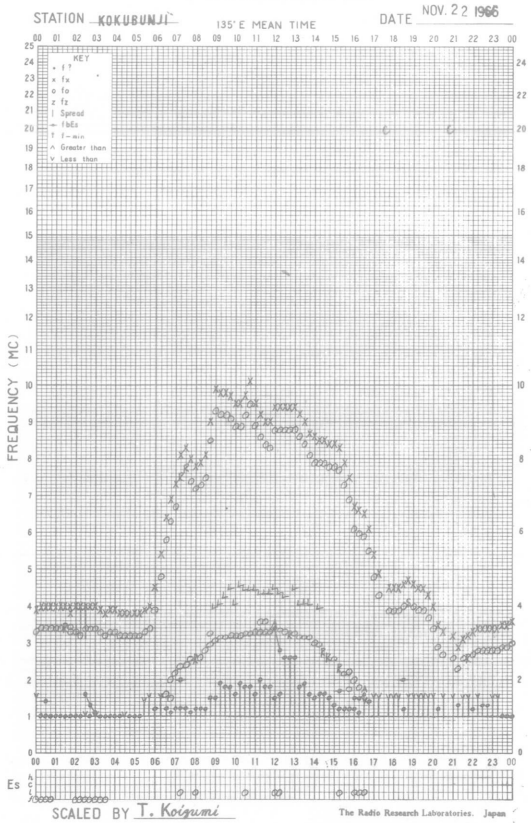

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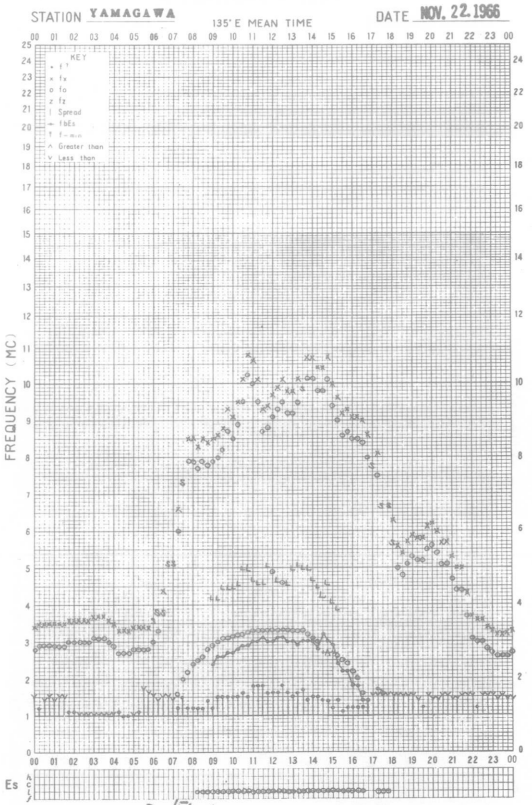

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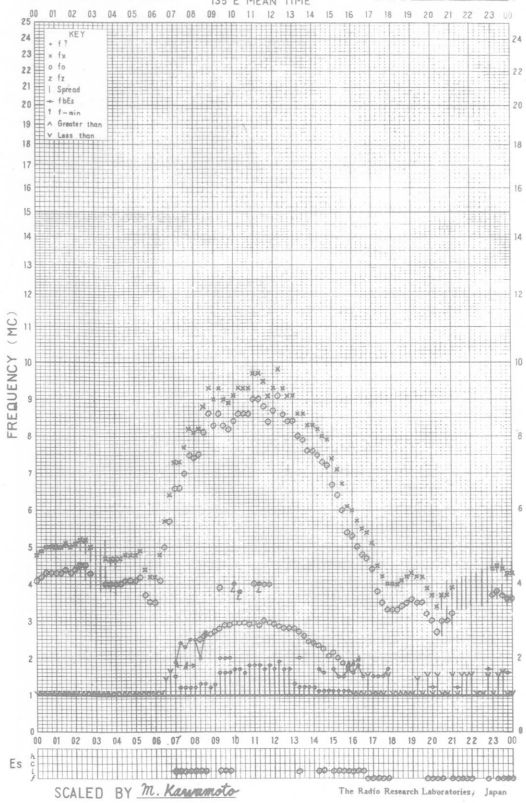

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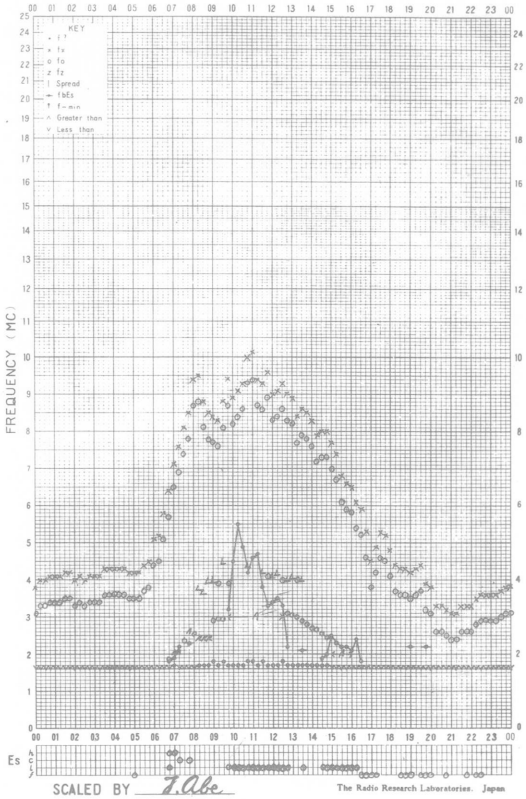

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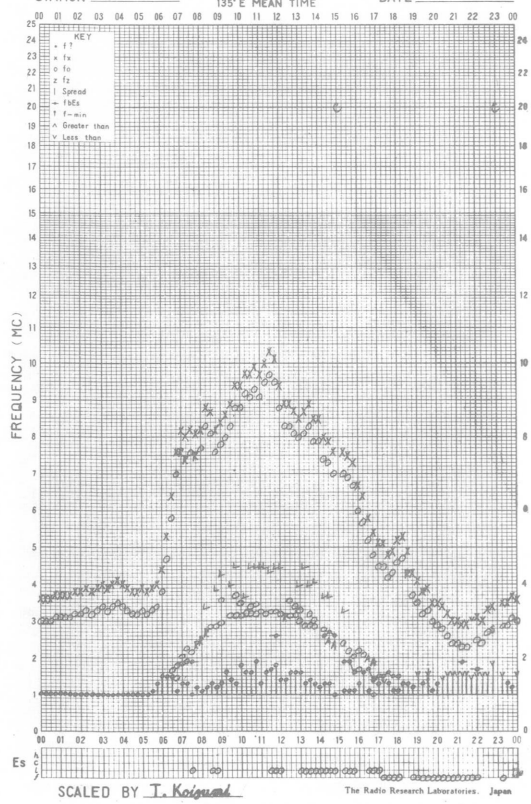

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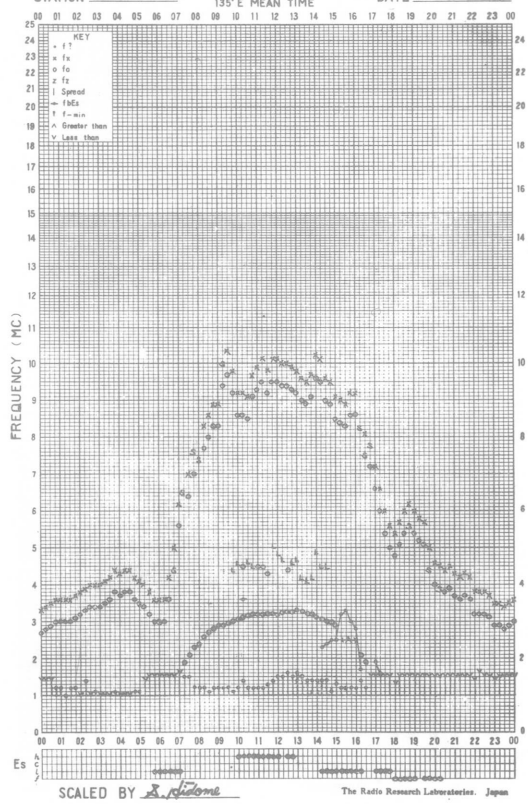

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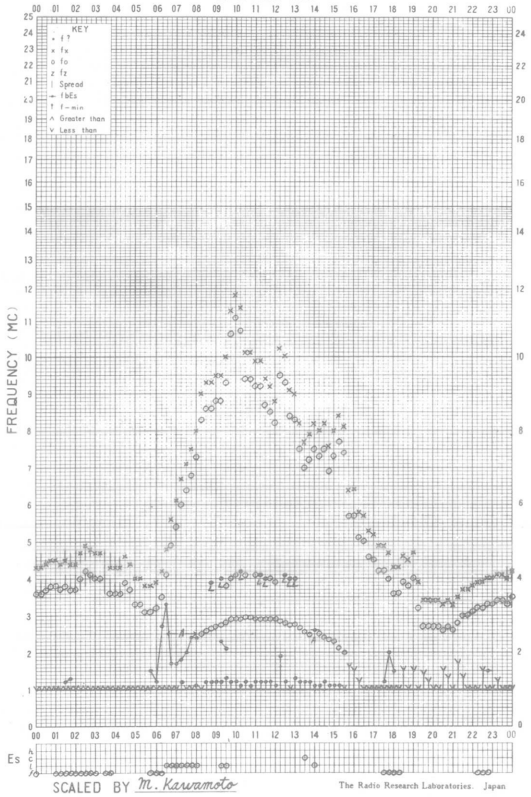

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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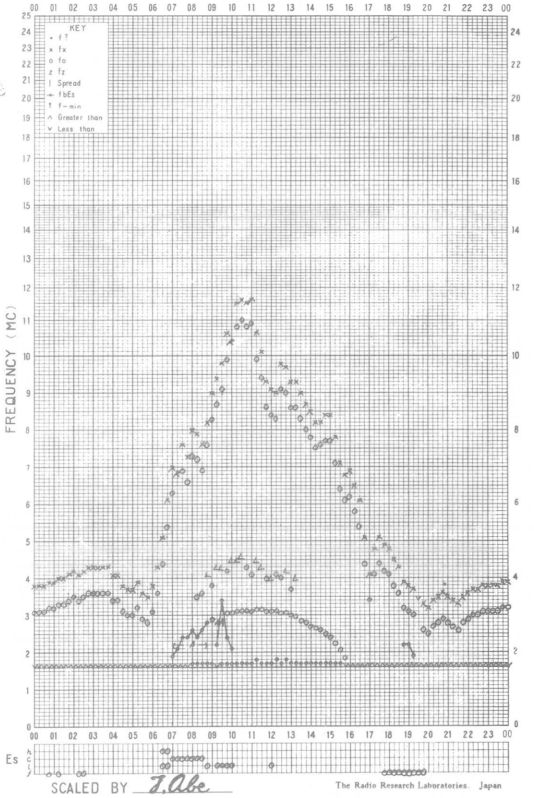

SCALED BY I. Abe The Radio Research Laboratories. Japan

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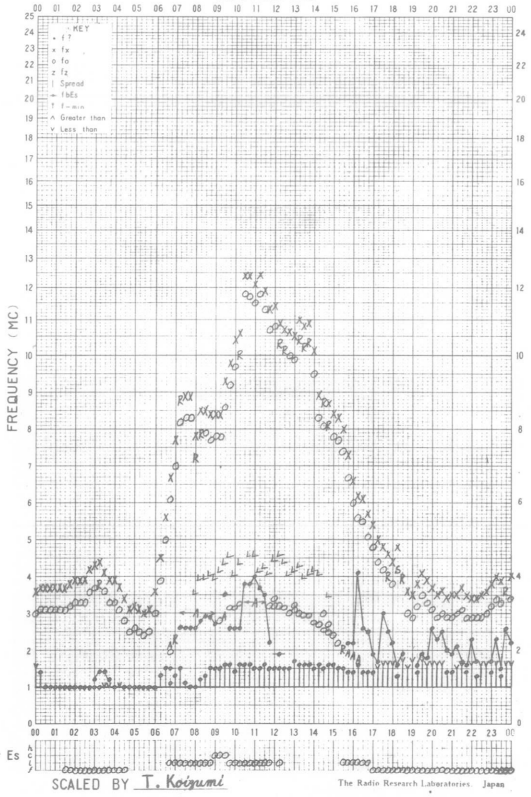

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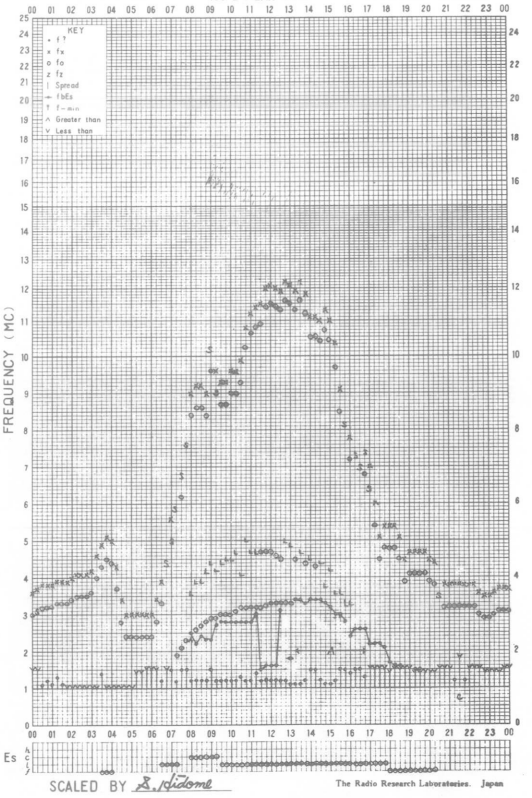

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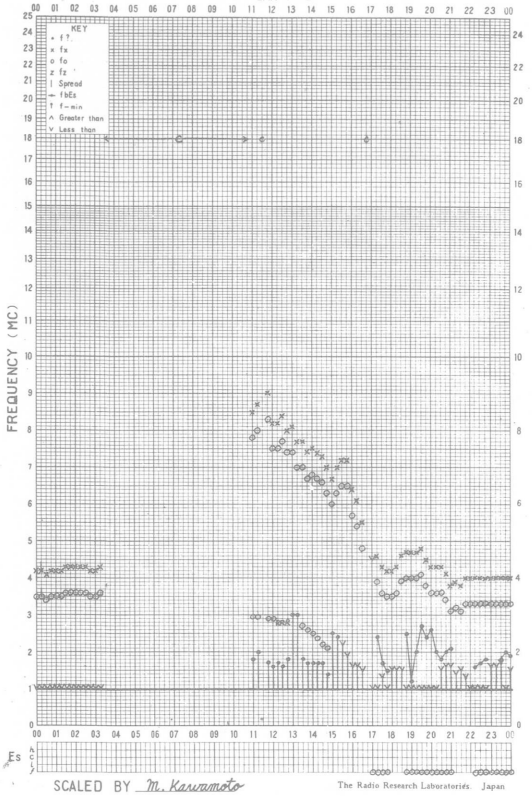

SCALED BY M. Kawamoto

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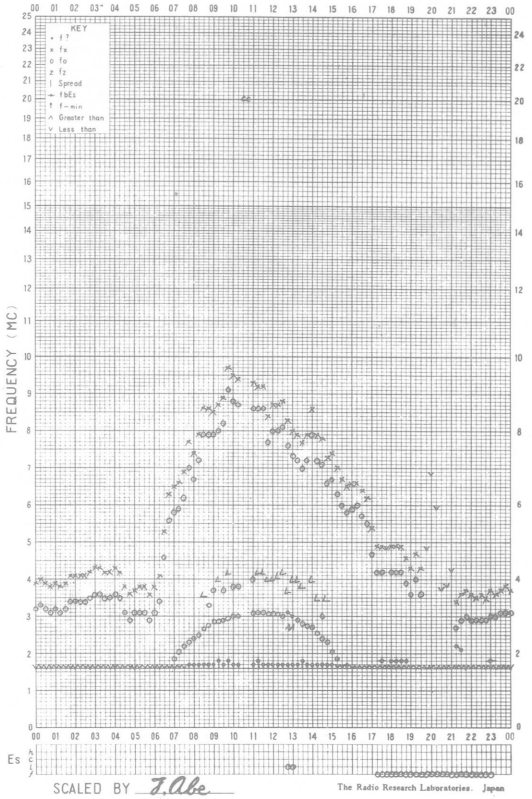
f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Nov. 25. 1966

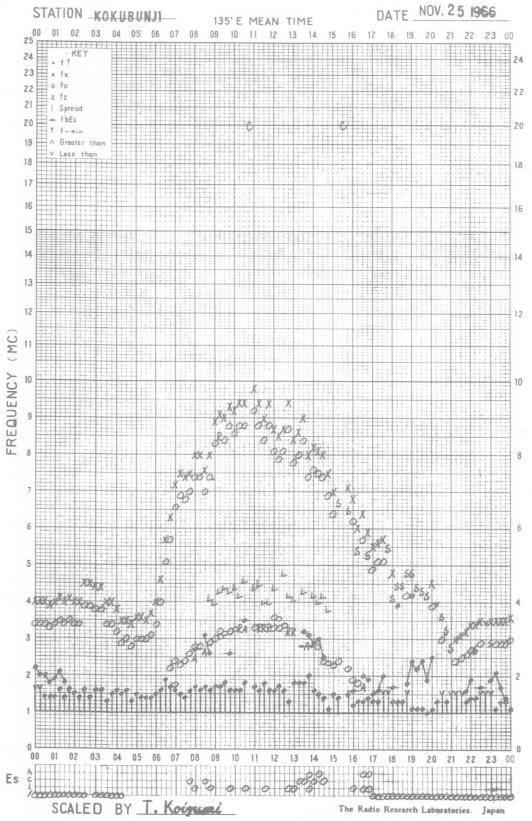


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE NOV. 25 1966

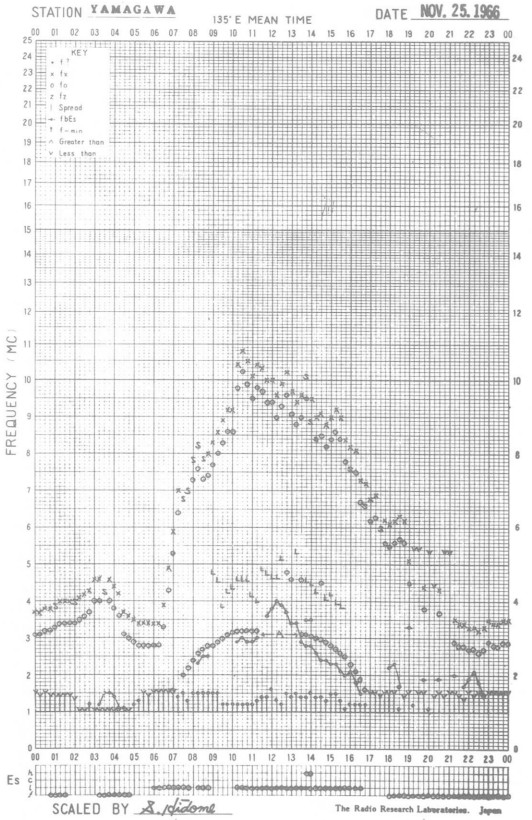


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE NOV. 25. 1966

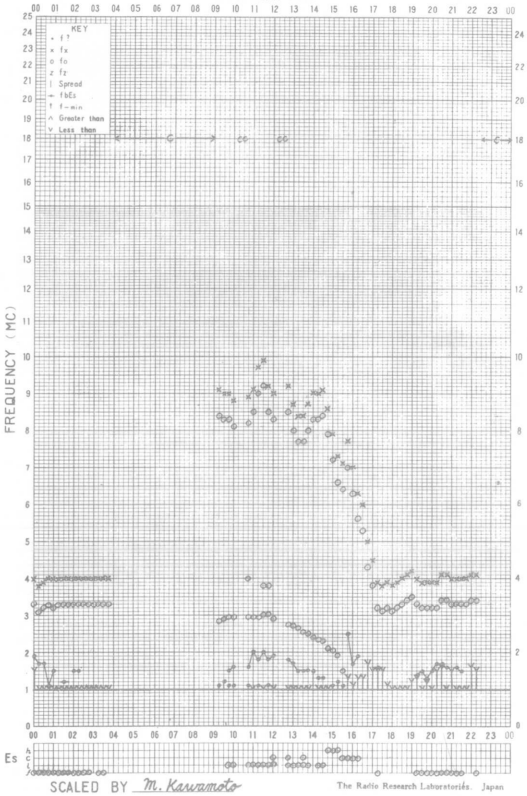


SCALED BY S. Ichimo

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

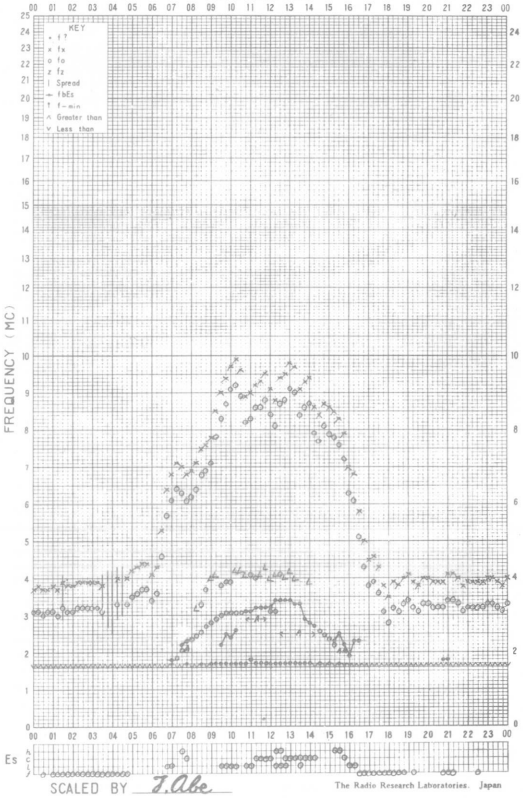
STATION WAKKANAI 135°E MEAN TIME DATE NOV. 26. 1966



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

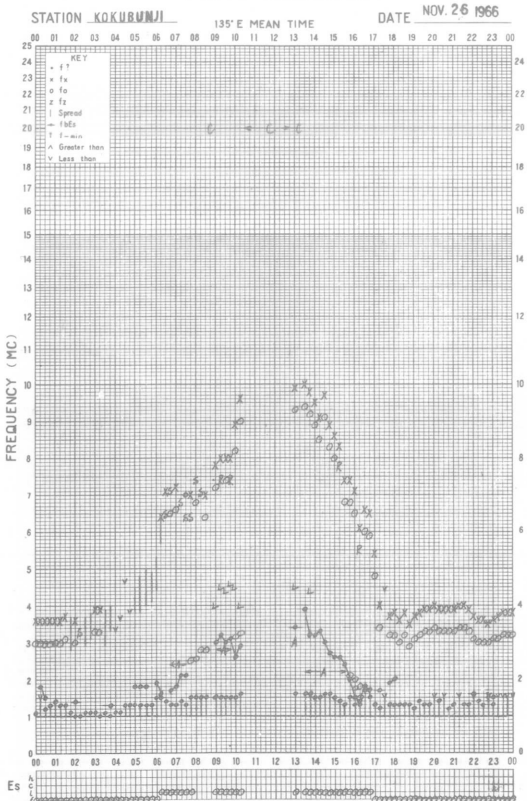
STATION AKITA 135°E MEAN TIME DATE Nov. 26. 1966



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

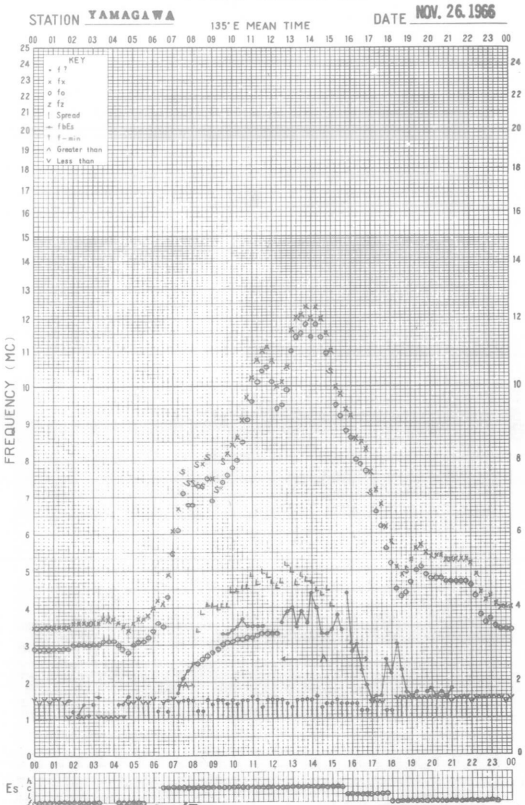
STATION KOKUBUNJI 135°E MEAN TIME DATE NOV. 26 1966



SCALED BY T. Koizumi The Radio Research Laboratories. Japan.

f-PLOT OF IONOSPHERIC DATA

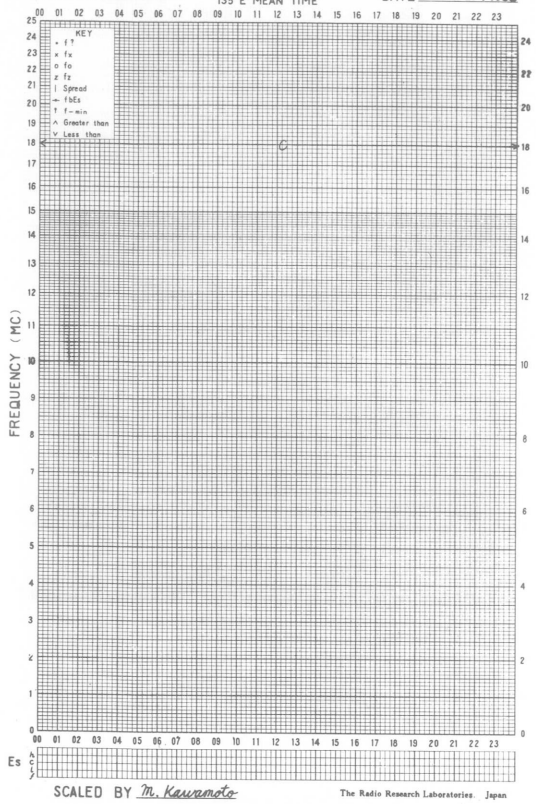
STATION YAMAGAWA 135°E MEAN TIME DATE NOV. 26. 1966



SCALED BY S. Sidomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

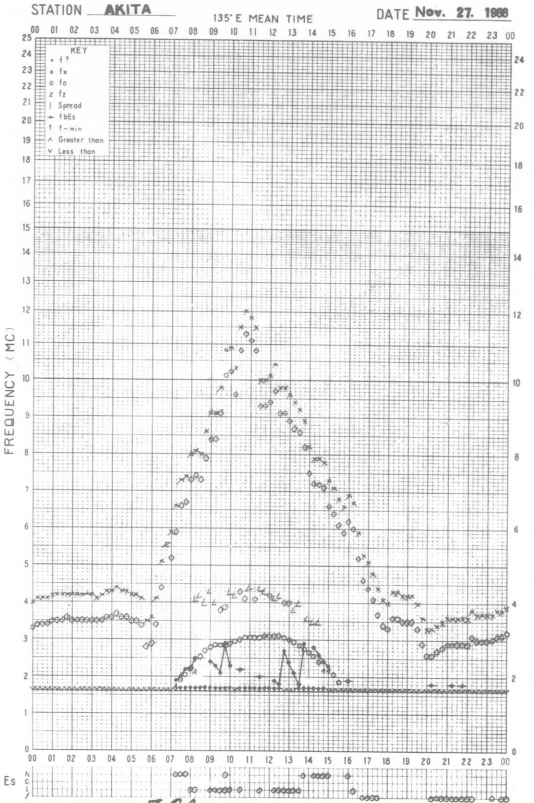
STATION WAKKANAI 135°E MEAN TIME DATE Nov. 27, 1966



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Nov. 27. 1966



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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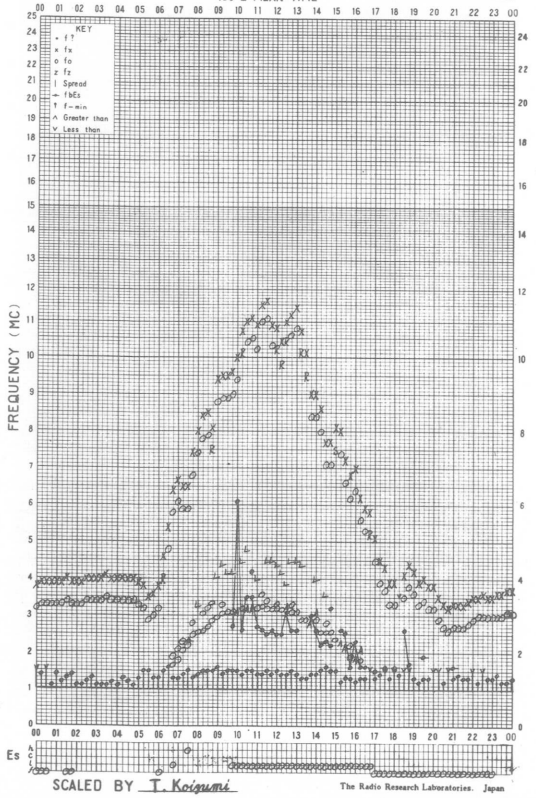
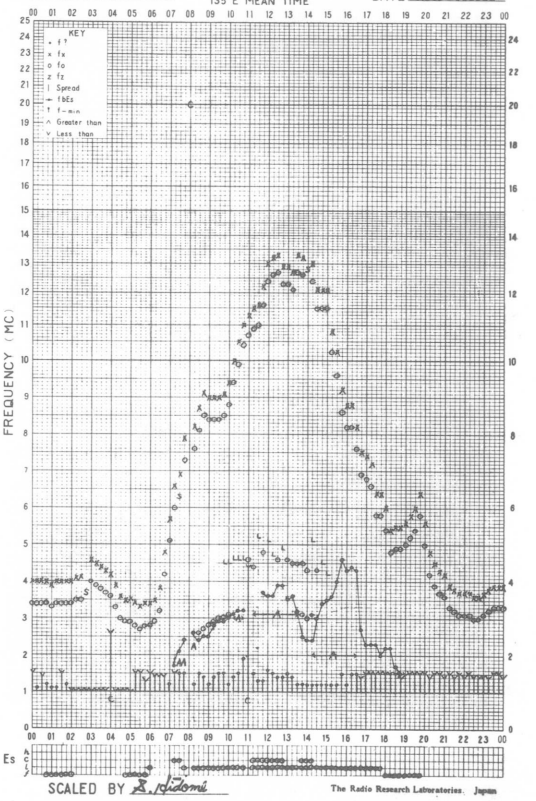


SCALED BY T. Koizumi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

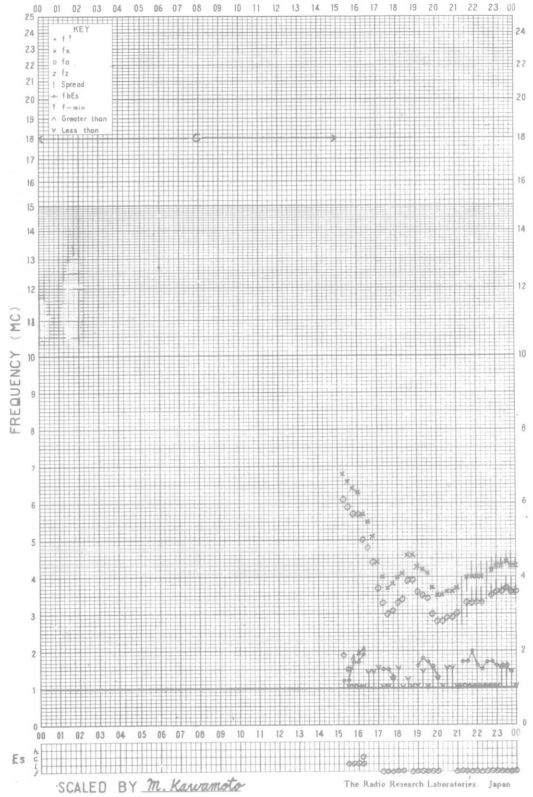
STATION YAMAGAWA 135°E MEAN TIME DATE NOV. 27, 1966



SCALED BY K. Nitomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE NOV. 28. 1966

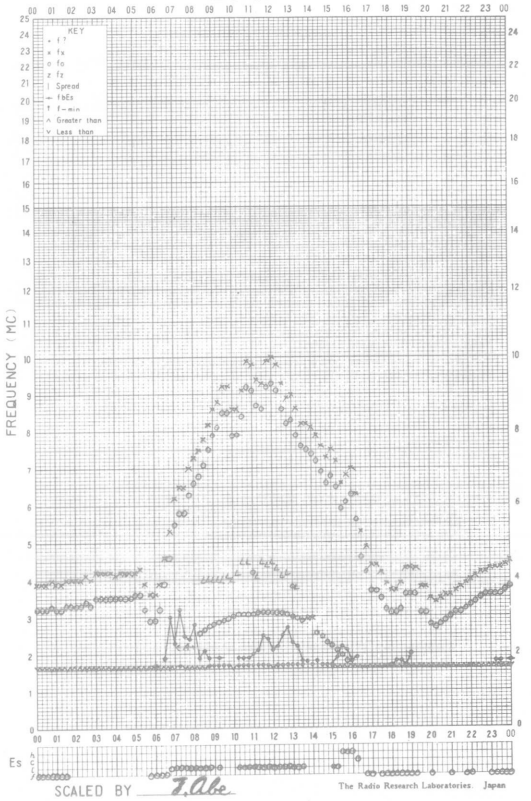


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Nov. 28. 1966

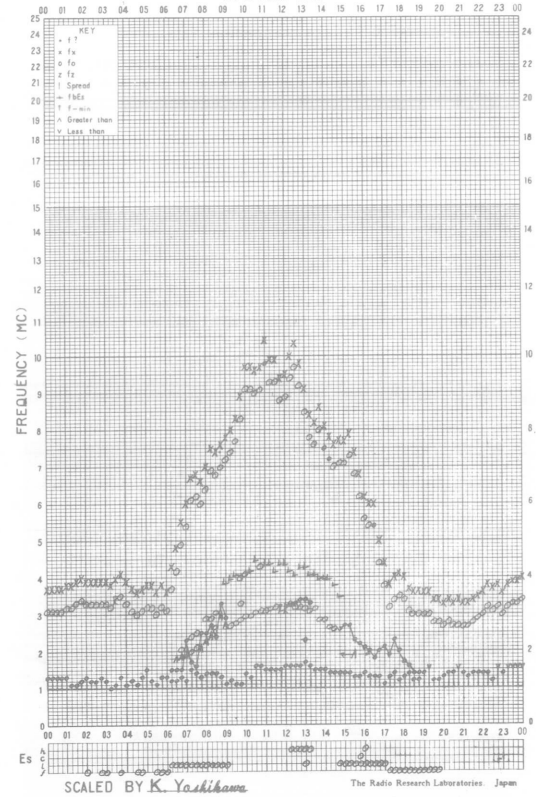


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE NOV. 28 1966

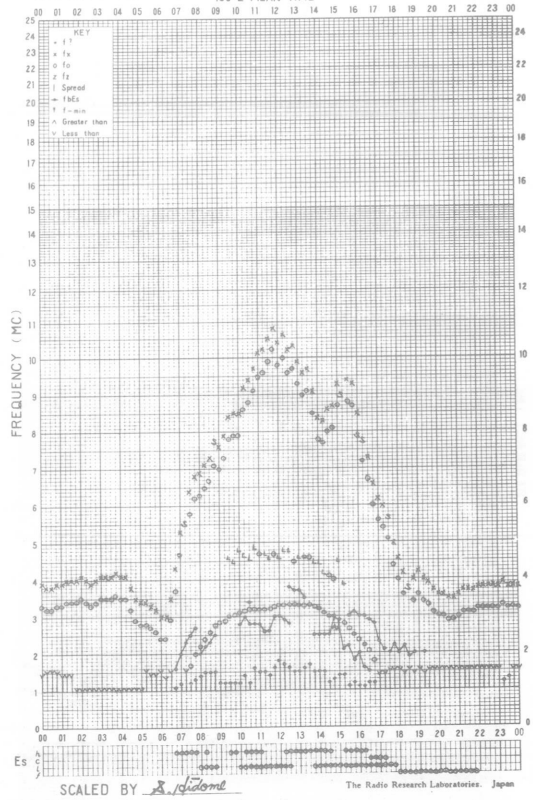


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE NOV. 28. 1966

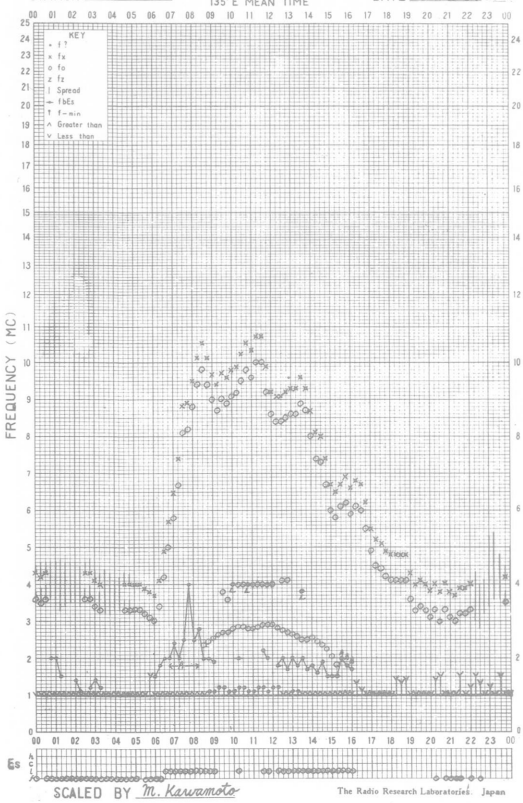


SCALED BY S. Hidomi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

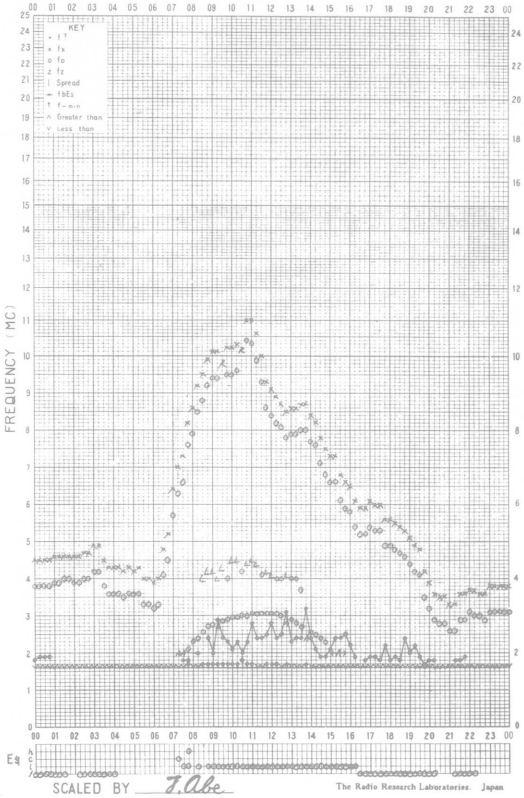
STATION WAKKANAI 135°E MEAN TIME DATE NOV. 29. 1966



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

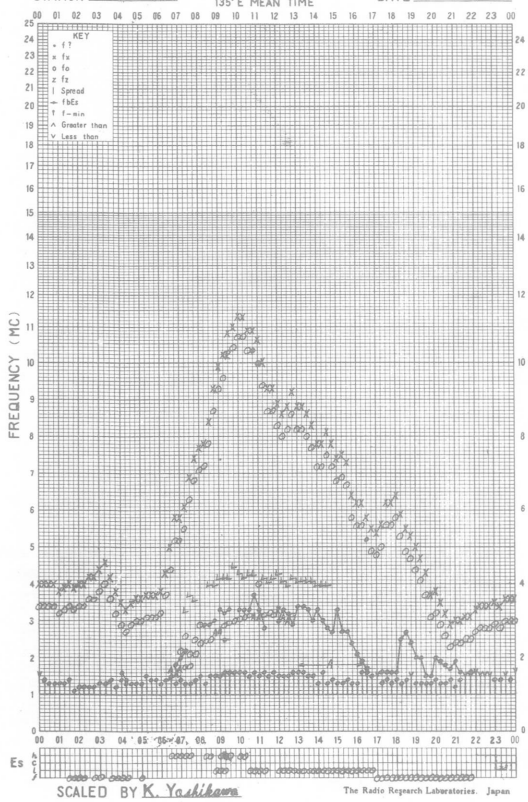
STATION AKITA 135°E MEAN TIME DATE Nov. 29. 1966



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

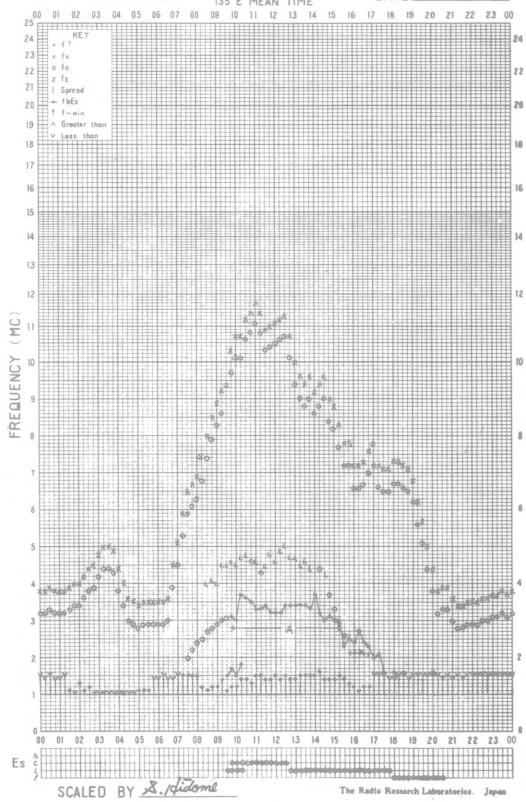
STATION KOKUBUNJI 135°E MEAN TIME DATE NOV. 29 1966



SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

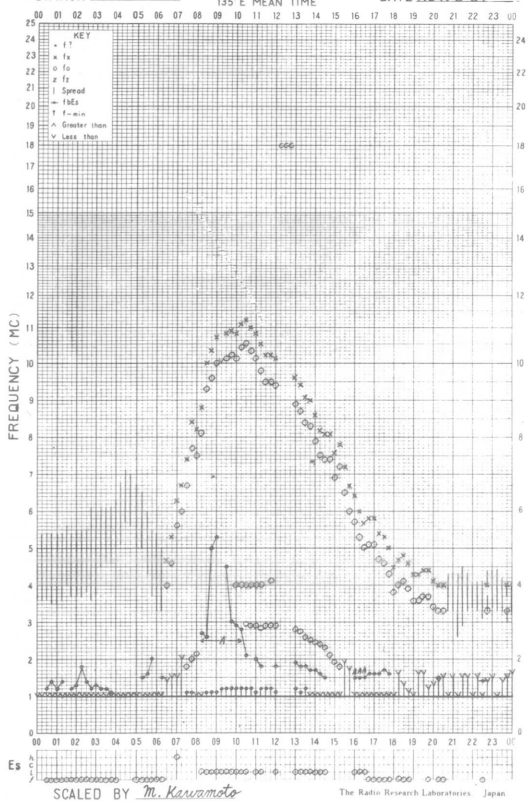
STATION YAMAGAWA 135°E MEAN TIME DATE NOV. 29, 1966



SCALED BY S. Shitomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE NOV. 30. 1966

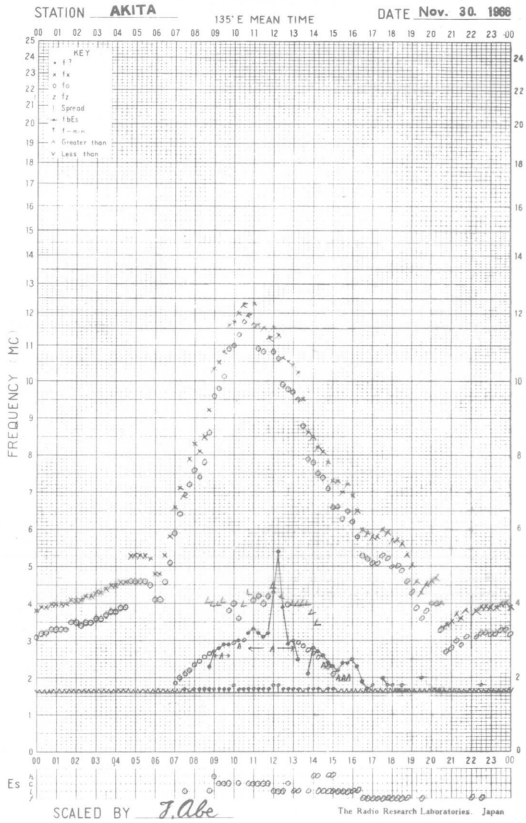


SCALED BY M. Kawamoto

The Radio Research Laboratories Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Nov. 30. 1966

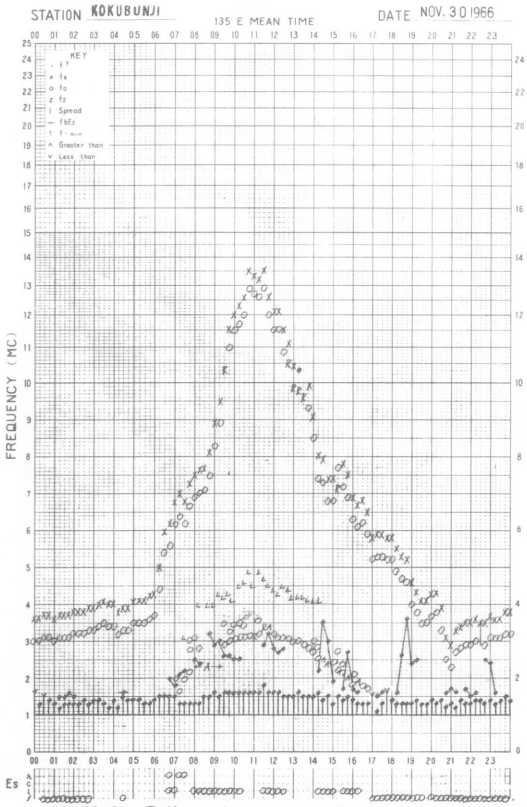


SCALED BY T. Abe

The Radio Research Laboratories Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135 E MEAN TIME DATE NOV. 30 1966

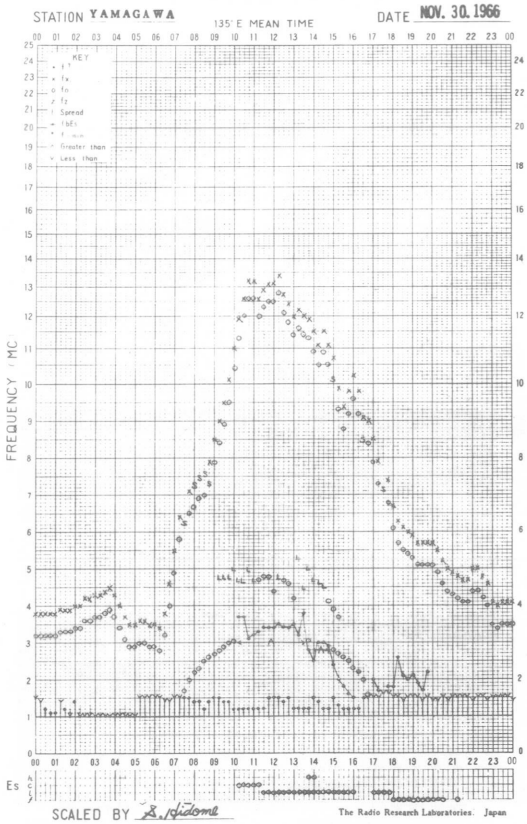


SCALED BY T. Koigumi

The Radio Research Laboratories Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE NOV. 30. 1966



SCALED BY S. Hidomi

The Radio Research Laboratories Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: November 1966
Observing station: Hiraiso
Frequency: 200 Mc/s

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

Note No observations during the following periods:

3rd	2120-	2200	12th	2120-	2400
6th	2120-	2400	13th	2120-	2400
7th	2120-	2400	14th	2120-	2400
8th	0120-	0440	16th	2120-	2300
8th	2120-	2400	18th	0600-	0730
9th	2120-	2400	20th	2120-	2300
10th	2120-	2400	26th	0000-	0100
11th	2120-	2400	28th	2120-	2400

* Strong interference by ignition noise

SOLAR RADIO EMISSION

Flux Density

Month: November 1966
Observing station: Hiraiso Frequency: 500 Mc/s

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

UT	00-03	03-06	06-09	21-24	Day
Date					
1	27	26	(27)	26	27
2	28	27	(27)	29	27
3	29	27	(25)	28	28
4	28	26	(28)	29	27
5	28	28	(28)	30	28
6	30	31	(27)	32	30
7	29	30	(33)	30	31
8	30	30	(31)	31	30
9	29	31	(31)	30	30
10	29	29	(32)	32	29
11	31	(31)	(32)	33	31
12	32	34	(31)	31	33
13	31	33	(31)	-	32
14	32	33	(32)	32	32
15	33	32	(31)	30	32
16	32	33	(31)	31	32
17	31	30	(30)	28	31
18	29	29	(29)	30	29
19	29	31	(29)	-	30
20	(27)	28	(30)	-	29
21	28	28	(29)	33	28
22	32	31	(30)	32	32
23	33	31	(31)	31	32
24	28	27	(28)	30	28
25	32	31	(30)	27	31
26	28	32	(30)	30	29
27	31	30	(31)	27	30
28	29	29	(30)	28	29
29	29	29	(28)	27	29
30	27	28	(27)	28	27

Note No observations during the following periods:

5th 0500- 0600
6th 0500- 0600
7th 0000- 0100
7th 0500- 0600
11th 0300- 0500
13th 2120- 2400
19th 2120- 20th 0200
20th 2120- 2400
26th 0000- 0100

Distinctive Events

(single-frequency observations)

Month: November 1966
Observing station: Hiraiso
Normal observing period: 2120 - 0730 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(c/s)^{-1}$		Remarks
	Mc/s	UT	UT	minutes		peak	mean	
3	500	0323.5	0323.9	0.5	C	20	8	
	200	0323	0324.3	1.5	C	1640	340	
5	500	0249.8	0250	1.5	C	250	20	
	500	2320	2320.6	3	C	30	7	
	200	2320	2321	2	C	1280	200	

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

Nov. 1966 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

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

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

Nov. 1966 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Nov. 1966	Whole Day Index	H B 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S F 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	C C (4)	4 - - 4	4 4 5 4	4 5 - 4	N N U U	---	21xx	
2	4-	C C C	3 - - 4	5 4 4 3	4 4 - 3	N N N N			
3	4o	C 4 (4)	4 - - 3	4 4 5 4	4 4 - 4	N N N N			
4	4o	(4) 4 4	3 - - 3	5 4 5 5	4 4 - 4	N N N N			
5	4o	4 4 5	3 - - (4)	3 4 5 (4)	4 3 - 4	N N N N			
6	4-	3 4 C	3 - - 4	4 4 4 4	4 3 - 4	N N N N			
7	5-	4 5 C	(4) - (5) 5	4 5 5 4	4 4 - 4	N N N N			
8	4o	4 5 (3)	4 - - 4	5 4 4 4	4 3 - 5	N N N N			
9	4+	4 4 4	3 - - 5	5 5 5 (3)	4 4 - 4	N N N N			
10	4+	4 4 5	5 - - 5	4 5 4 3	4 5 - 3	N N N N			
11	4o	4 4 4	4 - (4) 5	3 4 5 4	4 4 - 4	N N N N			
12	4o	4 4 4	4 - - 5	4 5 (3) 3	4 4 - 3	N N N N			
13	5-	5 5 (4)	4 - (5) 4	5 5 5 4	4 4 - 4	N N N N			
14	4o	4 5 4	4 - - 5	3 4 4 4	4 4 - 4	N N N N			
(15)	4o	4 4 (4)	4 - - 4	(4) 4 (4 4)	4 5 - 4	N N N N			
(16)	4+	5 5 5	4 - - 5	3 4 4 4	4 5 - 4	N N N N			
(17)	4o	5 5 (4)	3 - - 4	(3) 4 4 3	4 3 - 3	N N N N			
18	4o	4 4 (4)	5 - - 4	4 5 (3) 4	4 3 - C	N N N N			
19	4+	5 5 4	(5) - - 4	(4) 4 3 4	4 4 - (3)	N N N N			
20	4+	5 (5 3)	5 - - 5	4 4 4 3	4 4 - (3)	N N N N			
21	4+	(3) 4 4	4 - - 4	5 5 5 4	4 3 - 5	N N N N			
22	4o	3 4 (4)	4 - - 4	4 4 5 3	4 4 - 4	N N N N			
23	4-	3 4 (4)	4 - - 4	4 4 4 3	4 5 - (4)	N N N N			
24	4-	(4) 4 (3)	4 - - 4	4 4 3 (4)	4 4 - (4)	N N N N			
25	4+	5 5 4	4 - - 5	5 4 4 4	5 4 - (4)	N N N N			
26	4+	4 4 (5)	4 - - 4	5 5 5 4	5 5 - 5	N N N N			
27	4o	4 4 4	4 - - 4	(3) 4 5 4	4 3 - 4	N N N N			
28	4-	4 4 4	(4) - - 4	3 4 4 3	4 4 - (4)	N N N N			
29	4-	4 3 3	3 - - 4	4 4 4 5	4 5 - 5	N N N N			
30	4-	4 (4) 3	3 - - 4	4 5 3 4	4 5 - 4	N N N N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

△ = COSMIC EVENT

( ) = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during November, 1966.

IONOSPHERIC DATA IN JAPAN FOR NOVEMBER 1966

第18巻 第11号

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