F—241

IONOSPHERIC DATA IN JAPAN

FOR JANUARY 1969

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RADIO RESEARCH LABORATORIES

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CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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.	Nukui-Kitamachi, 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 Branch.

	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 component at a frequency equal to $0.834 f_0F2$.

ypF2 The semi-thickness of the *F*2 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 *hpF*2 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 *Es*.

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. Definitions of the CNT, MED, UQ and LQ

Median count (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the *lower quartile* (LQ) is the median value of the lower half.

d. Description of Standard Types of *Es*

The eight standard types of *Es* are identified by corresponding capital letters: *F*, *L*, *C*, *H*, *Q*, *R*, *A*, *S*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. The letter '*N*' is used to designate any *Es* trace that does not correspond to any of the eight types.

F	An *Es* 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 *Es* traces observed in the daytime are classified according to their virtual hight: *H* or *L*.
L	A flat *Es* 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 *Es* 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 *Es* 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 *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
Q	An *Es* 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 *Es* 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 *Es* 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 *Es* trace which rises steadily with frequency and usually emerges from another type *Es* 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 *Es* trace such as *Es-L* or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine f_0Es and $h'Es$. The slant trace is sometimes observed to start at f_0E without echoes clearly identifiable as *Es* echoes being seen.

N The designation '*N*' is used to denote an *Es* 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.

e. Multiple Reflections from *Es*

When the ionogram shows the presence of multiple reflections from *Es* 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 MHz at Hiraiso Branch.
Antennas are two parabolic reflectors : 10 meter for 200 MHz and
5 meter for 500 MHz, 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}Hz^{-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 MHz 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.

Bracket means that observation time does not exceed one third of the period.

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 Strengths of WWV and WWVH

Field Strengths observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraiso Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 Hz is picked up by the use of a narrow band pass filter with ±40 Hz bandwidth.

The *tabulated field strength* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *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	Fort Collins, Colorado Long. 105°02′ W Lat. 40°41′ N	Maui, Hawaii Long. 156°28′ W Lat. 20°46′ N
Power	3 kW for the upper side-band	0.5 kW* for the upper side-band
Antenna	λ/2 vertical	λ/2 vertical
Distance	9150 km	6270 km

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

Receiver

Antenna	4.5 m vertical rod
Bandwidth	±40Hz for the upper side-band
Calibration	every half an hour

The meaning of *Descriptive symbols* is 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.

U: Inaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.

E: 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 (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), Lima (commercial circuit) and WWVH (10 and 15MHz frequencies broadcast from Hawaii), which are received at Hiraiso Branch.

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

N=normal
U=unstable
W=disturbed

The letter W expresses HF propagation disturbances which are expected to occur during the following 12 hours after issue. The letter U and N also means unstable and normal conditions, respectively.

Whole day radio quality indices stand for the averages of the 6-hourly indices of the circuits of Hamburg, WWV and Lima.

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

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

The data of short wave fade-out (SWF) are prepared from the records of field intensities at Hiraiso, of the following circuits. Start-time, Duration, Type and Importance are obtained from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10, 15 and 20 MHz are indicated by (′), (none), and (″), respectively. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensities

C O .....WWV 20, 15 and 10 MHz (Fort Collins, Colorado)
L M .....Various frequencies of commercial circuit (Lima)
H A .....WWVH 15 and 10 MHz (Hawaii)
T O .....JJY 15 and 10 MHz (Tokyo)
S H .....BPV 15 and 10 MHz (Shanghai)
H B .....Various frequencies of commercial circuit (Hamburg)

Start-time and Duration

Types

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

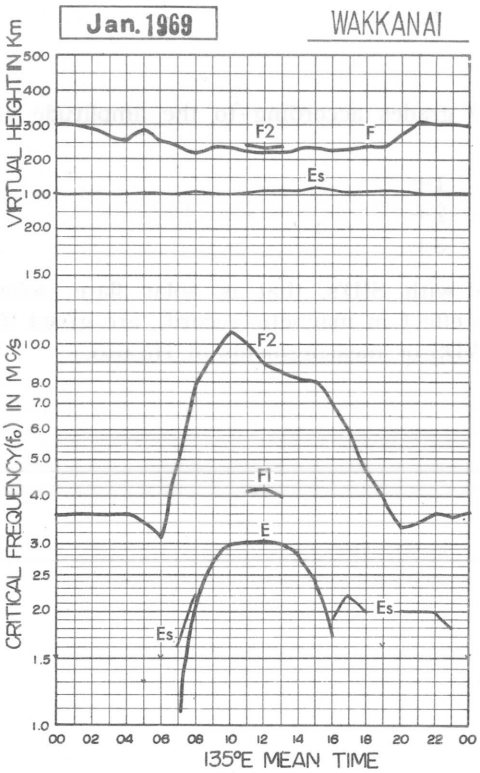
Importances

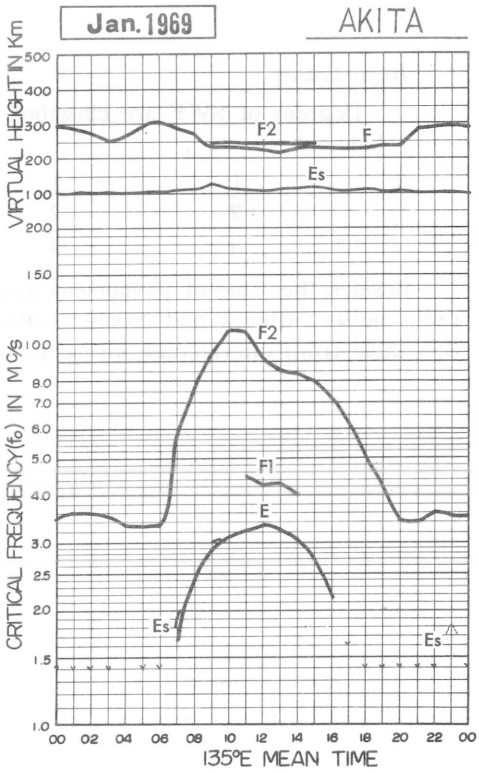
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out ;

1−	1	1+
2−	2	2+
3−	3	3+

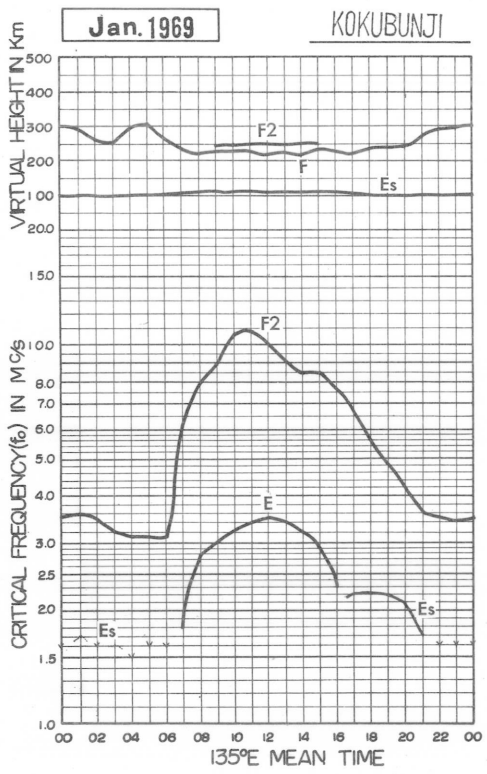
Besides, the time of phenomena associated with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

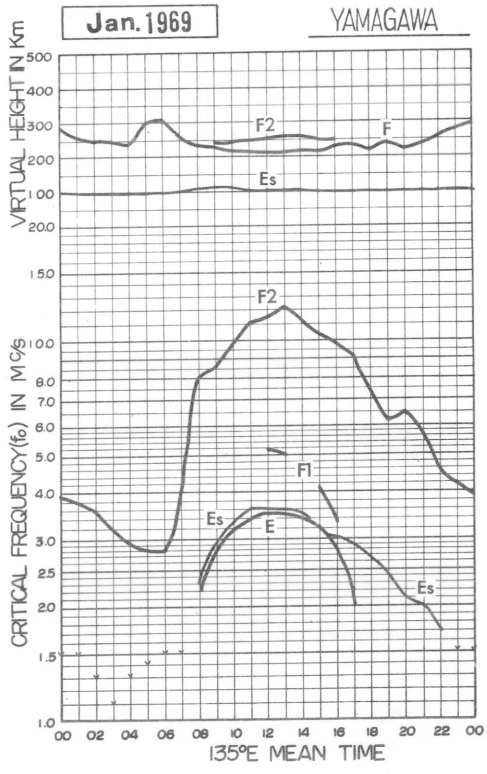
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Jan. 1969

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	036	036	036	036	034	031	050	079	094	107	100	088	086	082	080	070	058	046	040	033	034	036	035
	CNT	31	31	30	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
	Q R	005	004	005	004	004	007	007	006	010	012	019	017	015	012	006	007	006	010	011	010	006	006	006	005
foF1	MED											410L	410L	415L	400	U400L									
	CNT											1	7	12	5	1									
foE	MED								E	212	270	300	305	305	300	285	235	170	E						
	CNT								6	18	27	27	27	28	27	27	26	5	4						
foEs	MED	E015E	E	E014E	E	E	E013E	E015E	016	024	G	E024G	E023G	G	G	G	G	019	022	020	E016E	020	020	J026X	018
	CNT	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31
	Q R																	D008	D016	D018		D011	D015		
f-min	MED	E	E	E	E	E	E	E	E	016	018	020	020	022	021	020	017	E015E	E	E	E	E	E	E	E
	CNT	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	270	275	275	285	280	275	295	320	335	330	335	335	320	325	320	335	325	310	310	315	280	270	275	270
	CNT	31	31	30	31	31	31	3	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F1	MED											400L	400L	405L	405L	U400L									
	CNT											1	7	12	5	1									
h'F2	MED											245	245	230	240	248									
	CNT											3	16	15	9	2									
h'F	MED	300	300	290	270	260	280	255	240	220	235	235	228	220	225	235	235	225	225	240	240	275	310	300	300
	CNT	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	30	30
h'Es	MED	105	105	105	105	105	110	105	105	110	105	105	105	110	112	110	120	112	108	110	110	110	105	105	105
	CNT	14	14	14	15	13	15	13	19	20	13	12	12	6	4	5	7	16	20	20	13	18	16	16	16
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Jan. 1969

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	039	038	036	035	033	033	033	056	077	094	109	106	091	085	083	080	071	062	051	042	034	034	036	035
	CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29
	Q R	005	003	004	003	005	004	006	004	013	015	010	019	012	010	006	007	011	010	012	012	010	005	004	005
foF1	MED									275	330	450L	450L	420L	435L	400L									
	CNT									2	1	3	9	5	8	7									
foE	MED								165	242	290	310	325	335	325	308	270	215							
	CNT								8	30	29	29	29	27	27	28	29	19							
foEs	MED	E014S	E014E	E014E	E014E	E	E014E	E014S	018	G	030	G	G	G	G	G	G	E023G	E016E	E014S	E014S	E014S	E014S	E014S	J018X
	CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
	Q R	D007							D006										D010	D011	D014	D022	D013	D010	D011
f-min	MED	E014S	E	E	E	E	E014E	E014S	E014S	016	018	020	021	022	021	020	018	016	E014S	E014S	E014S	E014S	E014S	E014S	E014S
	CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	280	285	295	300	285	280	300	335	350	335	340	345	335	325	335	335	340	335	320	325	310	3	285	285
	CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29
M (3000) F1	MED									425	425	395	395	405L	398L	395									
	CNT									2	1	3	9	5	8	7									
h'F2	MED									222	245	245	245	245	245	245	245								
	CNT									2	25	31	31	31	31	18	5								
h'F	MED	290	280	275	250	268	290	255	230	220	230	235	230	225	215	230	235	230	225	225	230	235	280	290	290
	CNT	29	30	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	30	27	27	31	30
h'Es	MED	100	105	105	105	105	105	105	108	110	130	115	112	105	110	115	120	115	105	108	105	105	100	102	105
	CNT	13	11	9	12	8	7	7	16	10	17	11	12	9	11	7	5	14	13	14	14	14	15	14	16
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Jan. 1969

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	035	032	031	031	031	061	080	089	108	109	100	090	084	085	076	066	056	048	042	036	035	034
	CNT	31	30	31	31	31	31	31	31	29	30	31	31	30	30	30	30	30	30	30	29	31	31	31	31
	Q R	005	005	004	004	005	006	004	006	013	017	018	018	009	012	011	008	008	010	011	010	014	007	006	006
foF1	MED										U350L			U490L											
	CNT										1			1											
foE	MED								180	255	300	325	340	350	340	320	290	230							
	CNT								10	28	24	25	23	21	20	21	19	19							
foEs	MED	E016S	017	E016	016	E015E	E016S	E016S	E018G	G	027G	030G	033G	E024G	E029G	030	029	E021G	022	022	022	021	017	E016S	E016S
	CNT	31	31	31	31	31	31	31	30	31	30	31	31	30	30	30	30	30	30	30	30	31	31	31	31
	Q R	D006	D007	D008	D009	D008	D005												D012	D011	D009	D008	D008	D006	D005
f-min	MED	E016S	E015S	E015S	E015S	012	E015S	E016S	016	016	016	017	023	025	025	019	016	016	016	E016S	E016S	E016S	E016S	E015S	E016S
	CNT	31	31	31	31	31	31	31	31	31	30	31	31	30	30	30	30	30	30	30	30	31	31	31	31
M (3000) F2	MED	285	290	295	295	275	275	295	330	340	330	320	325	320	320	320	325	330	328	320	320	315	288	280	290
	CNT	31	30	31	31	31	31	31	31	28	30	31	31	30	30	30	30	30	30	30	29	31	30	31	31
M (3000) F1	MED										U435L			U340L											
	CNT										1			1											
h'F2	MED										245	250	250	250	250	250	250								
	CNT										25	29	29	30	29	24	14								
h'F	MED	300	288	260	250	290	310	272	235	220	230	230	230	220	225	220	238	230	220	230	235	240	272	290	290
	CNT	31	30	31	31	31	31	30	31	31	30	31	31	30	30	30	30	30	29	29	29	31	30	30	30
h'Es	MED	100	100	100	100	100	102	102	105	110	115	110	110	110	110	110	110	108	105	105	102	100	100	100	100
	CNT	13	15	12	13	10	10	8	13	13	16	18	18	15	15	17	21	14	21	18	22	19	16	13	14
hpF2	MED	358	340	315	320	365	380	320	275	260	275	290	285	290	290	295	290	268	275	292	290	300	335	350	350
	CNT	30	30	31	31	31	31	31	31	28	30	31	31	30	30	30	30	30	30	30	29	31	30	31	31
ypF2	MED	090	082	085	090	090	090	090	085	085	080	075	075	082	098	085	078	082	085	092	090	085	090	090	090
	CNT	30	30	31	31	31	31	31	31	28	30	31	31	30	30	30	30	30	30	30	29	31	30	31	31

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Jan. 1969

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	039	038	036	032	029	028	028	043	081	086	098	112	114	122	112	103	098	091	072	062	065	056	045	041
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	30	31	31	31	31
	Q R	008	008	006	014	005	005	007	006	009	018	015	018	016	021	028	025	022	024	015	011	011	013	012	011
foF1	MED									250	350	390L	490L	515L	500L	U520L	410L	330							
	CNT									1	1	1	3	4	4	1	3	5							
foE	MED									220	280	315	340	350	350	340	312	280	200						
	CNT									25	29	30	29	28	28	29	28	23	13						
foEs	MED	E015E	E015B	E013B	E011E	E013E	E014E	E015	E015S	023	029	033	036	036	036	035	031	030	J029X	J026X	J024X	021	020	017	E015
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
	Q R			D002										D014	008	014	009		008	D011		D006			D004
f-min	MED	E015S	013	012	E	E	012	E015S	E014S	E014S	014	015	015	016	015	015	015	015	E014S	E015S	E014S	E015S	E014S	E014S	E014S
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	285	285	295	300	290	265	270	300	345	335	325	320	305	305	305	300	310	320	325	305	305	305	295	275
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31
M (3000) F1	MED									400	400	405L	385L	358L	370L	U365L	380L	405							
	CNT									1	1	1	3	4	4	1	3	5							
h'F2	MED									215	240	245	250	255	260	260	250	250	240						
	CNT									1	16	31	31	31	31	31	31	21	1						
h'F	MED	280	265	250	250	U242	U302	U308	260	230	230	220	220	215	215	220	220	235	230	215	230	220	230	255	275
	CNT	31	31	31	29	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
h'Es	MED	100	100	100	100	100	100	100	100	115	120	116	105	105	105	105	100	102	102	100	100	100	100	100	100
	CNT	11	11	12	12	11	13	14	14	19	20	24	25	26	26	25	27	22	28	27	26	20	17	18	14
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

JAN. 1969 | foF2 (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	34	33	31	31	F 33	30	28	50	87	92	101	100	94	86	100	79	77	66	37	26	27	I A 32	32	30
2	33	33	33	35	35	32	33	47	92	109	135	122	108	100	83	74	70	52	41	29	22	26	28	30
3	29	30	31	32	33	27	24	40	79	C	C	C	87	83	85	67	65	62	46	27	27	32	33	34
4	34	36	38	F 36	F 36	34	31	47	67	98	125	102	83	83	80	66	69	40	36	35	29	33	36	35
5	38	38	41	34	34	29	26	44	73	97	107	H 86	87	84	77	81	68	43	37	25	26	33	34	33
6	33	34	35	37	33	28	I A 30	44	79	99	115	107	85	83	81	82	63	51	39	28	23	28	30	30
7	30	S 33	32	35	37	32	29	47	79	102	95	92	86	80	79	80	70	53	44	31	26	29	30	32
8	33	35	33	U F 34	U F 26	U F 28	25	53	94	104	111	116	103	100	94	89	83	59	45	32	33	38	38	40
9	38	36	38	37	38	33	31	53	83	114	106	93	91	93	79	73	74	53	33	30	32	33	36	35
10	36	36	37	37	37	37	28	47	76	98	114	101	91	84	78	80	71	48	45	40	30	30	31	33
11	34	34	37	34	35	36	34	50	82	82	91	92	88	81	73	78	69	48	43	36	33	34	36	38
12	37	36	36	36	37	36	35	50	83	93	107	100	93	84	85	87	84	59	54	36	33	36	39	37
13	36	38	38	38	39	37	41	44	96	91	108	96	83	86	84	81	69	49	48	42	30	J C 31	33	34
14	32	31	31	32	32	32	30	48	76	90	104	94	80	87	86	80	71	48	55	43	33	35	37	37
15	37	36	36	36	35	34	31	50	88	117	126	101	97	100	86	79	75	I C 70	54	54	43	43	40	37
16	36	36	36	38	42	40	36	64	88	111	115	113	U R 103	108	95	82	74	59	I C 63	54	I C 36	40	42	41
17	U C 41	43	40	35	33	31	26	50	91	108	120	113	83	95	78	80	76	63	61	45	38	41	42	43
18	43	41	39	40	36	33	33	50	81	92	108	108	101	93	91	91	83	I C 64	57	43	I A 38	38	38	S 40
19	38	40	39	34	35	34	35	53	83	99	108	122	102	91	82	80	73	53	54	44	33	34	34	34
20	35	35	36	38	32	28	27	48	79	96	96	116	98	86	I C 82	86	65	57	45	35	28	33	33	F 38
21	39	41	44	46	33	38	35	47	76	H 88	89	101	103	78	H 80	79	61	60	43	43	35	35	41	41
22	45	45	45	45	S 40	37	37	53	73	85	87	94	I C 90	81	85	84	65	50	44	35	33	38	40	40
23	40	41	43	45	43	42	33	48	70	83	103	94	76	74	81	73	57	53	38	35	30	34	36	S 38
24	38	37	36	36	36	37	27	46	73	92	107	91	H 80	96	82	82	67	67	44	40	26	31	33	34
25	33	34	33	35	36	34	43	54	85	90	108	110	108	111	101	93	80	62	58	43	34	40	39	32
26	33	34	C	38	33	32	I A 32	60	93	94	117	H 113	98	107	109	74	68	58	50	42	33	34	34	35
27	35	36	37	38	36	I A 30	30	55	79	103	103	110	83	80	90	84	70	68	63	60	45	35	35	33
28	I A 33	33	33	32	31	30	31	58	78	95	90	91	83	88	85	84	72	60	53	46	31	33	34	35
29	34	33	34	34	36	36	31	57	70	89	89	93	78	77	75	75	60	63	46	45	34	34	34	S 36
30	36	35	36	37	I C 39	41	40	54	76	80	80	89	81	90	80	76	73	56	52	47	38	38	40	41
31	43	40	38	40	F 37	40	44	53	64	80	91	90	86	78	82	68	69	60	55	50	44	43	S 43	43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	36	36	36	36	36	34	31	50	79	94	107	100	88	86	82	80	70	58	46	40	33	34	36	35
UQ	38	38	38	38	37	37	35	53	86	102	114	110	98	94	86	83	74	62	54	44	34	38	39	39
LQ	33	34	33	34	33	30	28	47	76	90	95	93	83	82	80	76	68	52	43	34	28	32	33	34

IONOSPHERIC DATA

JAN. 1969 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N, Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2														U L 400										
3										C	C	C		L										
4											L	420	400											
5																								
6													L	L										
7																								
8												L		380										
9												U L 400												
10													U L 400											
11												400												
12												420	420											
13											L	L	U L 400											
14												L	U L 400											
15												U L 410												
16													A											
17												L	420	L										
18											C			380										
19												L												
20													U L 430	L										
21												L	L											
22													I C 400											
23												L	L 410											
24													U L 420	400	L									
25																								
26																								
27											L 410	400	420											
28												L 440			U L 400									
29												L	L 420	U L 410										
30																								
31												L												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	7	12	5	1									
MED											L 410	L 410	L 415	400	U L 400									
UQ												L 420	L 420	U L 400										
LQ												400	U L 400	380										

IONOSPHERIC DATA

JAN. 1969 | foE (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45°23.6'N, Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	205	260	290	300	I A 300	300	265	220	S							
2								A	A	255	300	300	300	295	265	220	S							
3								E	215	C	C	C	300	300	295	215	E							
4								A	A	A	300	310	305	300	I A 270	230	A							
5								E	205	270	295	300	300	300	280	200	A							
6								A	225	245	290	315	305	300	270	220	S							
7								S	215	270	305	310	320	300	270	230	S							
8								A	A	270	295	305	305	290	285	A	S							
9								A	230	285	300	315	310	300	270	220	S							
10								E	215	280	300	305	305	300	280	230	S							
11								S	205	255	B	B	B	300	285	230	A							
12								E	205	280	300	300	I B 305	300	S	S	S							
13								A	205	270	300	310	305	295	260	220	A							
14								S	I C 210	265	295	310	295	285	H 265	235	170							
15								S	205	270	300	305	305	300	295	245	A							
16								S	220	270	295	300	290	290	I C 290	235	S							
17								A	A	275	I C 305	310	310	300	290	235	S	A						
18								A	A	I S 270	I C 295	300	300	300	I C 290	250	A							
19								S	205	265	I C 295	305	305	300	280	240	190	A						
20								A	A	I A 255	I A 290	305	305	300	280	235	165	E						
21								A	220	270	290	300	300	300	290	255	S	A						
22								S	200	280	295	I B 300	I C 300	I B 295	285	245	B	E						
23								S	A	270	300	300	300	300	290	235	A	A						
24								E	A	275	300	300	I B 300	B	B	I B 260	B	S						
25								S	B	A	A	A	B	B	B	B	B	E						
26								A	A	260	B	B	B	B	B	B	B	S						
27								A	A	A	300	300	300	300	300	A	A	S						
28								S	A	280	I A 295	I A 305	I A 300	300	I A 290	250	A	A						
29								A	220	280	300	310	320	305	290	250	A	A						
30								A	A	I A 275	300	310	320	C	295	250	B	E						
31								A	220	270	305	315	320	305	300	255	200	S						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								6	18	27	27	27	28	27	27	26	5	4						
MED								E	212	270	300	305	305	300	285	235	170	E						
UQ								E	220	275	300	310	305	300	290	250	190	E						
LQ								E	205	265	295	300	300	300	270	220	165	E						

IONOSPHERIC DATA

JAN. 1969 | foEs (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	J X 23	J X 25	15	13	E	E	E	G	G 20	G 24	30	J X 48	J X 40	31	G	G	E S 16	J X 23	J X 63	21	J X 33	J X 65	J X 26	J X 23
2	J X 23	J X 23	J X 23	20	E	16	J X 31	J X 30	J X 33	27	G 28	G	G	G	G	G	29	J X 73	J X 30	J X 23	J X 23	J X 20	J X 20	E S 17
3	E	E	E	E	E	E	E S 15	G	30	C	C	C	G	G	G	26	21	J X 28	J X 35	E	J X 21	E	E	E
4	J X 23	E	E	J X 23	20	J X 53	J X 33	J X 43	J X 53	J X 43	J X 33	33	G	G	30	G	J X 38	J X 23	J X 25	E S 15	J X 23	J X 21	J X 20	J X 20
5	E S 16	E	E	E	E	E	E	E	G	32	G	G	33	G	G	26	26	J X 34	J X 31	J X 23	J X 30	E	E	E
6	E	E	E	E	E	J X 25	J X 33	J X 31	G	G	32	G	G	G	G	G	E S 16	E	E S 12	E S 11	E S 17	E S 19	E	23
7	J X 20	J X 23	16	J X 20	J X 27	E S 16	E S 13	23	23	J X 35	G	G	G 31	31	G	G	19	J X 24	E	J X 21	E S 15	E S 15	E	E
8	E	E	E	14	E	E	J X 25	J X 33	J X 28	J X 33	G 23	G 23	G	G	G	32	G	E S 15	14	E	J X 25	J X 34	J X 43	J X 26
9	J X 24	J X 24	18	E	15	14	E	20	25	G 27	G	G	G	G	G	G	E S 18	E	E	E	E S 15	J X 34	J X 25	J X 24
10	J X 23	20	14	J X 23	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E S 17	E	E S 15
11	E S 15	E	E	E	E	E	E S 15	E S 15	G	G	E B 30	E B 31	E B 34	G	G	G	18	E	E	E	E	E S 15	J X 25	E S 15
12	E S 14	20	E	13	E	E	E	G	24	G	G	G	E B 31	G	E S 30	E S 29	20	E S 14	E	E S 15	E	J X 21	E	E S 16
13	E	E	E	E	E	E	E	16	G	G	G	G	G	G	G	G	19	14	E	E S 16	E S 17	E C 30	E	E
14	E S 18	15	J X 21	E	E	J X 19	E S 17	22	E C 33	G	G 28	G 30	G	G	G 23	G	G	E S 12	E S 12	E	E S 16	E S 15	E	E
15	E	E	E	E	E	E	E S 15	E S 16	G	G	G 30	G	G	G	G	G	24	J X 23	J X 30	20	J X 21	J X 24	J X 24	18
16	15	15	15	J X 24	15	E	E	E S 15	G	G	G	39	J X 81	32	G	G	G	E S 13	E	E	18	J X 21	E	E
17	E S 15	E	E	16	15	18	19	16	25	29	E C 54	G 27	G	G	G 24	G	20	14	J X 24	E S 18	E S 12	J X 53	J X 23	J X 30
18	J X 23	20	16	E	E	21	J X 25	17	23	E S 27	E C 45	G 26	G	G	E C 32	G	24	E S 16	J X 29	E	J X 50	J X 31	J X 23	J X 25
19	E	E C 37	E	E	E C 15	E	E	E S 15	G 18	G	G	G	G	G	G	G 21	G	17	J X 33	E	E	E	E	E
20	E	E	E	E	14	20	J X 24	16	J X 26	J X 41	J X 30	34	G	G	G	G	G	J X 41	E	J X 24	J X 25	J X 25	J X 20	18
21	E	E	E	E	E	18	E	15	G	G	G	33	34	G	G	G	E S 17	J X 31	J X 25	E	E	E	E	J X 21
22	E	E	E	E	E	18	J X 25	E S 15	G	G	G	E B 32	C	E B 36	G	G	E B 20	22	18	J X 24	J X 24	J X 21	E	J X 23
23	J X 30	E	E	E	E	E	20	E S 15	31	G	G	G	G	G	G	G	22	J X 33	J X 21	J X 23	20	E S 15	E	E
24	J X 25	J X 21	J X 24	J X 23	J X 28	E	E S 16	J X 34	J X 31	G	G	G	E B 32	E B 31	E B 29	E B 28	E B 20	J X 33	J X 35	J X 43	J X 40	J X 41	E	E
25	E	E	E	E	E	13	E	E S 15	24	31	J X 60	39	E B 35	E B 36	E B 36	E B 29	E B 22	E	20	J X 23	18	21	J X 28	J X 30
26	J X 40	J X 25	E C 34	E	J X 24	J X 70	J X 40	J X 33	J X 45	G	E B 35	E B 33	E B 36	E B 31	E B 35	31	29	J X 40	J X 43	E S 17	J X 25	E S 18	J X 23	E S 17
27	E	E	J X 23	15	J X 33	J X 53	J X 45	J X 30	J X 53	J X 63	30	G	G	G	G	30	29	J X 30	J X 23	20	J X 30	J X 34	J X 40	J X 35
28	J X 53	J X 30	J X 30	J X 23	16	E	E	23	30	29	J X 55	J X 63	J X 44	35	34	G	27	20	J X 65	J X 36	J X 76	J X 35	J X 33	J X 33
29	J X 24	J X 25	J X 33	J X 33	J X 40	J X 24	J X 23	18	25	G	G 24	G 28	G	G	G 23	26	23	J X 24	20	J X 23	20	E S 15	J X 25	20
30	E	E	16	J X 22	18	J X 25	J X 21	J X 25	J X 33	J X 34	G	G	G	E C 31	G	G	E B 21	J X 30	E S 16	E S 16	E	E S 16	J X 28	J X 23
31	J X 31	J X 23	J X 23	J X 23	E	E	E	20	G	G	G	G	G	G	G	G	G	E S 12	15	E	E	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	E E 15	E	E	E	E	E E 13	E E 15	16	24	G	E G 24	E G 23	G	G	G	G	19	22	20	E E 16	20	20	J X 20	18
UQ	J X 23	J X 22	18	J X 21	16	20	J X 24	24	30	31	30	33	E G 33	E G 31	E G 24	E G 26	24	J X 30	J X 30	J X 23	J X 25	J X 30	J X 25	J X 23
LQ	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	E G 16	E E 14	E E 12	E	E E 14	E S 15	E	E

IONOSPHERIC DATA

JAN. 1969 | **fbEs (0.1)** | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	E B 12	E	E	E B 12	E B 15	E S 13	G	G	G 28	31	G 32	G 28	G	G 20	G	22	18	18	E	E	E	E S 14
2	E S 15	E B 14	16	E B 11	E	E B 13	E S 13	E S 14	G	G 27	33	36	37	33	36	28	G	16	20	17	16	E S 12	E	E S 14
3	E S 15	E B 13	E B 14	E B 11	E	E B 11	E S 15	G	G	G	G	27	23	22	G	G	G 24	21	18	E	17	16	18	E S 14
4	E S 13	E	15	E	12	E B 14	E B 14	E S 15	G	G	G	33	31	31	G 29	G 24	G	22	E	E	E	E S 15	E S 14	E S 15
5	E S 15	E S 14	E B 14	E	E	E B 13	E B 11	E S 15	16	G 25	26	29	24	G 27	26	28	30	20	27	21	22	E	25	21
6	E	E	E B 12	E	E	E	E S 15	G	19	24	29	G 28	31	32	G 32	24	22	15	26	21	E S 15	E	E	E S 15
7	E S 15	E B 12	E B 12	20	13	E	E	G	20	27	34	G 31	G	39	39	39	31	28	37	E	E S 15	E S 15	E S 15	E
8	E S 15	E B 12	E	E	E B 13	E B 12	E S 15	E S 15	G	G	43	38	33	G 31	32	23	35	18	E	E	E S 15	E S 15	E	E S 14
9	E B 17	E B 12	E B 12	E B 13	E B 14	E B 15	E S 15	E S 15	G	G	G	G	G 25	G 26	G	G 17	G	23	25	14	E	E S 14	15	E S 13
10	E S 14	16	E B 13	E	E	E S 13	E	E S 14	G	G	G	G	G	G	G 20	G	G	G	E S 15	E S 15	E	E S 15	E S 13	E S 13
11	E B 13	E B 15	E B 12	E	E B 13	E S 14	E S 14	E S 15	G	G	G	G	G 21	21	37	G 19	30	21	20	E S 15	E S 15	E S 15	E S 14	E B 11
12	E S 14	E S 15	12	E	E	E	E	E S 15	G	G	35	35	G	G 30	G 28	G 20	G	16	E	E S 13	E S 15	E S 14	E S 14	E S 14
13	E	E B 15	E B 12	E	E	E B 11	E B 13	E S 14	G	22	G	30	G 25	G	G	G	G	24	E C 19	15	17	E	E	E
14	E S 16	E B 14	E B 13	E	E B 14	E B 11	E S 15	E S 14	G	G	G	31	G 33	G 29	G 25	G 23	G 22	16	25	25	E S 15	E S 14	E S 15	E S 14
15	E S 15	E B 14	E B 13	E B 12	E	E	E S 15	E S 15	26	30	33	G	E C 40	40	32	29	36	52	36	25	31	E	18	22
16	19	20	16	13	E B 11	E B 14	E	E S 15	22	30	G	35	44	G 33	34	G 25	G 17	16	17	E	E S 14	E S 14	E S 14	E S 15
17	E S 15	E B 12	E B 13	E B 14	14	E	E S 15	G	23	G	G	G	G	G	37	29	25	22	25	E S 38	18	18	E S 15	E
18	E	E B 14	E B 12	E	E	E	E	G	G	G	G	G	G	34	G 32	G 30	24	G 15	20	E	23	E	E S 14	E S 13
19	E S 13	E S 14	E B 13	E B 11	E B 14	E B 14	E S 15	S	G	G	G	G 18	20	36	30	G 28	30	22	E	E	E S 15	E S 15	E	E S 15
20	E	E B 13	E B 12	E	E B 11	E B 13	E	16	21	G 22	G	37	44	37	46	G 20	G	G	E S 15	E	20	E S 15	E S 14	E
21	E S 15	E B 12	E B 11	E	E B 13	E S 14	E	16	26	G	20	G	G	36	36	37	46	25	50	26	31	E	15	17
22	26	16	E B 13	16	17	E	E	G	G	29	G	32	26	G	26	34	18	G	E	15	18	22	E	E B 15
23	E B 12	E B 14	E B 12	14	21	14	E	G	G	G	33	45	36	35	31	32	26	25	30	E	E B 12	E	E B 13	16
24	E	E	E	15	14	E	E S 14	E S 15	G	G	30	29	G 27	27	24	22	G 24	20	26	20	E	E S 15	E B 12	E B 14
25	E B 14	E B 15	14	E	E	E	E B 11	G	22	29	G	34	40	35	29	G 24	25	16	E B 15	E B 12	E	E B 13	E B 15	E B 12
26	E B 14	E	19	18	24	22	17	E S 14	G	G	G	40	37	35	36	34	31	45	28	20	16	22	E	18
27	16	21	14	16	E	E	E	E S 15	G	G	32	32	G 28	G 27	G 19	23	24	31	15	22	22	15	E	E
28	18	15	19	A	25	23	E	G	G	17	19	33	32	32	41	32	23	27	23	E	E	15	27	21
29	16	21	25	24	22	20	E	G	19	29	30	30	36	31	35	27	G 19	22	18	18	22	26	25	20
30	16	E	E	E	E	E	E	E S 15	G	E R 28	32	G	G 31	G 31	G	G	G	G	E S 15	E B 13	E S 14	E	E	E
31	E B 14	E B 14	E B 11	E B 11	E	E B 14	E S 15	G	G	G	G	G	G	G	G	G	G	G	22	24	22	34	17	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E E 15	E B 14	E B 13	E E 11	E E 11	E E 12	E E 13	E S 14	G	G	G	30	28	31	30	G 24	23	21	20	E E 15	15	15	E E 14	E E 14
UQ	E S 16	E 15	14	14	14	E B 14	E S 15	E S 15	19	25	31	34	34	34	36	29	28	24	26	20	19	15	15	16
LQ	E E 13	E B 12	E B 12	E	E	E	E	G	G	G	G	G	G 20	G 26	G 22	G 20	G	16	E E 15	E	E E 13	E	E	E E 12

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IONOSPHERIC DATA

JAN. 1969 | f-min (0.1) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45°23.6'N, Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	12	16	19	18	20	19	18	16	E S 16	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	15	18	16	23	25	19	18	17	E S 14	E	E	E	E	E S 15	E S 17	E S 17
3	E	E	E	E	E	E	E S 15	E	E S 20	C	C	C	20	22	22	12	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	11	17	18	14	12	E	E	E	E S 15	E S 15	E	E S 17	E S 16
5	E S 16	E	E	E	E	E	E	E	15	11	18	17	16	17	15	15	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	11	16	17	19	18	16	13	12	E S 16	E	E S 12	E S 11	E S 17	E S 19	E	E S 13
7	E S 16	E	E	E	E	E S 16	E S 13	E S 16	12	11	12	20	21	18	17	15	E S 13	E	E	E	E S 15	E S 15	E	E
8	E	E	E	E	E	E	E	E	E	15	12	13	23	21	20	16	E S 13	E S 15	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	16	17	20	22	21	26	20	18	E S 18	E	E	E	E S 15	E	E	E
10	E	E	E	E	E	E	E	E	15	16	20	20	20	21	20	19	E S 12	E	E	E	E	E S 17	E	E S 15
11	E S 15	E	E	E	E	E	E S 15	E S 15	17	20	30	31	34	25	20	19	E	E	E	E	E	E S 15	E	E S 15
12	E S 14	E	E	E	E	E	E	E	16	23	24	28	31	23	E S 30	E S 29	E S 15	E S 14	E	E S 15	E	E S 15	E	E S 16
13	E	E	E	E	E	E	E	E	17	20	20	24	23	22	20	17	12	E	E	E S 16	E S 17	E C 30	E	E
14	E S 18	E	E	E	E	E	E S 17	E S 16	E C 33	20	20	20	22	21	19	19	16	E S 12	E S 12	E	E S 16	E S 15	E	E
15	E	E	E	E	E	E	E S 15	E S 16	16	20	22	20	22	21	20	18	E	E	E	E S 15	E	E	E	E
16	E	E	E	E	E	E	E	E S 15	16	20	20	22	22	21	24	19	E S 16	E S 13	E	E	E	E	E	E
17	E S 15	E	E	E	E	E	E	E	16	16	E C 54	20	22	20	20	19	E S 15	E	E S 15	E S 18	E S 12	E	E	E S 15
18	E	E	E	E	E	E	E	E	16	E S 27	E C 45	20	23	21	E C 32	20	16	E S 16	E S 12	E	E	E	E	E
19	E	E C 37	E	E	E C 15	E	E	E S 15	11	16	18	20	20	18	18	17	17	E	E S 16	E	E	E	E	E
20	E	E	E	E	E	E	E	E	11	17	16	20	20	20	18	16	12	E	E	E	E S 15	E	E	E
21	E	E	E	E	E	E	E	E	19	20	22	28	22	25	21	20	E S 17	E	E	E	E	E	E	E S 14
22	E	E	E	E	E	E	E	E S 15	17	20	22	32	C	36	24	20	20	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E S 15	12	17	19	20	20	20	20	17	15	E	E	E	E	E S 15	E	E
24	E	E	E	E	E	E	E S 16	E	22	20	24	26	32	31	29	28	20	E S 15	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E S 15	22	24	25	26	35	36	36	29	22	E	E	E	E	E	E	E
26	E	E	E C 34	E	E	E	E	E	20	20	35	33	36	31	35	25	24	E S 12	E S 16	E S 17	E S 12	E S 18	E	E S 17
27	E	E	E	E	E	E	E	E	18	20	20	20	20	26	24	16	13	E S 16	E S 15	E	E S 15	E S 16	E S 16	E S 15
28	E	E	E	E	E	E	E	E S 15	16	16	17	18	17	19	18	16	16	E	E	E S 12	E	E	E	E
29	E	E	E	E	E	E	E	E	20	20	18	20	22	21	16	15	12	E	E	E	E	E S 15	E	E
30	E	E	E	E	E	E	E	E	16	17	20	20	26	E C 31	22	20	21	E	E S 16	E S 16	E	E S 16	E	E
31	E	E	E	E	E	E	E	E	16	20	20	20	20	20	20	17	15	E S 12	E	E	E	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	E	E	E	E	E	E	E	E	16	18	20	20	22	21	20	17	E E 15	E	E	E	E	E	E	E
UQ	E	E	E	E	E	E	E	E S 15	18	20	22	24	23	24	22	20	16	E S 12	E E 12	E S 12	E S 14	E S 15	E	E S 14
LQ	E	E	E	E	E	E	E	E	14	16	18	20	20	20	18	16	E E 12	E	E	E	E	E	E	E

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IONOSPHERIC DATA

JAN. 1969 | M(3000)F2(0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	250	260	260	F 280	250	295	335	335	330	335	330	330	320	310	325	320	335	340	325	265	I A 290	280	260
2	250	275	275	265	270	270	280	300	315	310	325	330	320	320	330	340	330	315	315	305	265	270	280	280
3	270	245	285	290	290	335	295	300	330	C	C	C	325	335	330	345	290	310	325	320	280	270	260	265
4	265	265	290	F 305	F 275	295	300	320	335	330	340	345	325	320	340	345	335	325	300	325	270	275	280	265
5	265	285	290	320	295	310	310	300	315	330	345	H 280	315	345	310	335	310	300	325	310	260	260	275	275
6	265	265	275	295	305	285	I A 290	320	340	325	330	335	340	335	320	340	335	335	335	325	305	270	270	265
7	285	S 265	290	290	315	290	345	340	315	355	355	315	310	325	330	325	335	300	310	305	270	240	250	250
8	245	280	300	U F 340	U F 270	U F 250	250	285	330	335	315	320	310	295	320	325	325	310	310	295	245	265	265	280
9	290	275	270	280	295	275	280	310	325	330	340	325	325	325	310	325	350	325	305	300	280	255	295	295
10	270	270	265	280	290	305	285	305	325	325	335	350	300	335	320	330	340	285	310	320	305	275	275	260
11	265	280	290	285	280	270	305	320	340	340	320	335	320	325	315	345	320	300	315	305	290	290	280	290
12	280	275	270	275	280	270	280	320	335	345	335	350	325	345	305	320	335	305	320	305	275	270	270	270
13	265	270	285	290	265	270	320	325	355	310	345	355	320	325	325	330	320	305	305	315	300	J C 270	285	280
14	290	290	275	280	280	280	315	315	360	320	340	350	320	320	315	335	325	290	320	325	275	270	270	270
15	270	280	270	255	265	275	275	300	325	325	335	340	330	325	315	330	295	I C 320	315	315	285	270	280	270
16	265	260	270	275	270	265	265	295	335	320	330	320	U R 280	330	315	330	325	295	I C 315	350	I C 280	260	260	260
17	U C 250	260	285	285	290	305	275	320	340	325	325	350	325	360	320	330	325	300	290	280	275	270	260	275
18	285	290	255	270	260	265	305	300	335	345	335	335	315	325	330	325	335	I C 295	310	325	I A 285	270	270	S 275
19	265	275	280	270	265	265	290	320	330	345	330	330	335	330	330	350	340	315	300	295	280	290	300	270
20	270	270	280	330	290	275	295	325	340	335	300	320	350	335	I C 315	325	325	310	330	345	320	250	260	F 265
21	275	280	290	315	305	280	300	320	335	H 275	315	345	350	335	H 300	335	285	315	295	295	310	275	285	275
22	270	275	275	290	S 285	275	295	340	320	360	335	320	I C 335	325	340	330	350	320	335	345	275	270	270	285
23	275	290	295	300	280	285	305	350	345	325	330	360	330	340	320	355	325	330	295	315	285	265	270	S 280
24	270	270	270	285	285	290	335	300	340	325	335	330	H 290	335	330	330	325	315	320	320	270	280	280	260
25	250	230	250	240	265	265	295	310	310	335	295	320	290	305	305	325	315	290	305	300	270	260	280	265
26	250	265	C	290	280	265	I A 270	300	325	320	325	H 325	305	310	335	340	315	310	320	295	265	265	270	265
27	255	255	270	310	305	I A 280	270	325	330	330	355	340	345	325	335	335	315	295	300	320	315	295	280	265
28	I A 250	245	250	250	260	255	290	315	345	340	330	330	315	310	330	335	330	300	320	325	290	295	270	280
29	280	275	270	270	280	280	300	315	345	335	340	345	335	330	335	335	315	335	310	315	280	290	275	S 280
30	285	285	280	270	I C 285	290	320	335	355	340	325	335	320	350	335	345	315	310	310	340	290	290	280	290
31	295	300	285	275	F 270	285	295	345	360	335	350	350	310	310	325	340	305	310	305	320	295	300	S 280	255
.	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	270	275	275	285	280	275	295	320	335	330	335	335	320	325	320	335	325	310	310	315	280	270	275	270
UQ	278	280	285	292	290	288	305	325	340	340	340	345	330	335	330	340	335	318	320	325	290	285	280	280
LQ	265	265	270	270	270	268	280	300	325	325	325	325	312	320	315	328	315	300	305	305	270	265	270	265

IONOSPHERIC DATA

JAN. 1969 | M(3000)F1(0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2														U L 400										
3										C	C	C		L										
4											L	390	405											
5																								
6													L	L										
7																								
8												L		395										
9												U L 415												
10													U L 415											
11												405												
12												L 395	L 395											
13											L	L	U L 405											
14												L	U L 415											
15												U L 400												
16													A											
17												L	405	L										
18											C			410										
19												L												
20													U L 390	L										
21												L	L											
22													I C 415											
23												L	L 415											
24													U L 415	420	L									
25																								
26																								
27											L 400	430	405											
28												L 400			U L 400									
29												L	L 405	U L 405										
30																								
31												L												

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	7	12	5	1									
MED											L 400	L 400	L 405	405	U L 400									
UQ												410	U L 415	410										
LQ												L 398	L 405	U L 400										

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IONOSPHERIC DATA

JAN. 1969 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2														240										
3										C	C	C		245										
4											245	240	230											
5																								
6													225	225										
7																								
8												245		245										
9												225												
10													230											
11												235												
12												230	230											
13											245	235	235											
14												225	225											
15												230												
16													I A 250											
17												250	220	245										
18											C			225										
19												260												
20													235	240										
21												250	260											
22													I C 230											
23												245	235											
24													225	260	250									
25																								
26																								
27											235	250	220											
28												245			245									
29												245	240	240										
30																								
31												245												

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											3	16	15	9	2									
MED											245	245	230	240	248									
UQ											245	248	235	245										
LQ											240	232	225	240										

IONOSPHERIC DATA

JAN. 1969 | h'F (km) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N, Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	325	350	315	300	305	250	250	210	225	230	235	225	235	230	235	225	235	230	225	250	300	I A 310	300	300
2	350	310	300	315	270	275	300	250	230	230	245	240	245	235	225	220	235	245	225	245	245	350	325	300
3	300	315	285	260	260	200	285	245	235	C	C	C	220	235	245	215	250	225	225	215	300	310	325	300
4	310	305	260	250	235	A 300	270	240	210	245	245	215	215	225	245	225	225	210	270	240	300	320	300	320
5	320	295	260	225	250	230	250	240	230	250	240	220	230	235	220	240	220	230	225	250	305	300	275	275
6	300	300	275	240	235	280	A	250	220	235	220	230	230	235	225	240	220	230	230	240	280	350	315	305
7	310	325	300	270	240	250	220	220	220	235	235	225	225	235	235	250	225	220	235	260	305	400	350	340
8	340	275	255	215	285	335	A 400	255	225	245	245	235	240	220	245	230	225	220	240	250	340	325	305	305
9	285	305	300	275	250	260	265	245	220	240	240	225	240	245	225	230	220	215	220	260	300	350	300	315
10	315	300	300	275	250	230	210	225	225	240	245	I C 240	225	225	230	240	225	215	235	235	245	310	295	320
11	315	290	270	245	280	285	265	240	225	220	225	230	245	240	240	230	225	225	235	240	295	300	305	300
12	290	300	295	300	270	290	235	225	220	225	225	220	220	225	230	225	240	220	240	260	290	305	295	300
13	300	300	270	265	275	285	250	210	240	225	235	230	220	220	235	230	220	220	230	240	270	I C 230	305	260
14	270	290	315	280	280	265	255	235	215	235	240	225	215	210 H	240	235	225	225	250	225	290	305	300	295
15	300	275	290	290	265	250	290	240	225	240	235	225	220	220	235	240	240	220	240	245	265	300	255	290
16	300	300	290	250	260	285	295	240	205	225	245	240	I A 215	235	I C 230	225	240	240	245	215	290	315	310	330
17	330	300	265	240	250	265	275	250	225	225	I C 240	240	215	220	235	245	245	245	245	250	265	315	305	300
18	280	280	325	270	300	310	255	225	215	220	I C 220	225	220	215	235	230	220	235	245	240	I A 285	310	290	310
19	300	I C 290	260	290	305	320	270	240	230	225	225	200	215	225	225	225	210	215	250	220	250	280	250	300
20	300	300	285	225	235	300	250	245	220	240	220	235	230	225	230	230	210	210	235	230	265	330	385	300
21	275	275	265	220	210	265	260	220	245	220	235	245	215	225	225	240	205	205	250	245	250	275	275	295
22	300	265	270	245	215	260	250	220	220	225	235	225	I C 220	230	250	240	220	215	225	220	290	300	300	270
23	295	265	255	235	250	270	225	215	220	235	235	240	210	225	250	225	215	230	260	250	275	315	300	300
24	310	300	300	280	260	260	250	235	220	240	245	235	215	200	235	245	210	225	245	260	250	300	275	320
25	340	350	350	310	275	300	250	245	240	240	I A 235	240	235	250	240	245	240	245	235	230	260	310	275	280
26	350	325	C	265	260	345	I A 320	270	220	240	245	225 H	235	210	245	235	225	240	I A 250	260	255	310	315	315
27	310	320	275	250	260	I A 295	315	245	I A 230	220	225	200	215	220	250	245	225	240	250	230	260	285	A	A
28	I A 365	345	345	350	305	330	270	245	220	235	225	215	235	220	230	245	220	225	260	250	300	295	300	A 345
29	300	305	305	315	320	300	255	235	225	245	240	235	220	225	225	240	220	225	245	250	250	280	320	285
30	300	270	295	300	270	275	225	230	220	245	235	210	215	250	235	240	230	230	250	235	255	290	300	300
31	275	260	300	305	310	280	220	210	210	225	250	245	220	230	245	220	235	220	245	225	250	260	275	285
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	30	30
MED	300	300	290	270	260	280	255	240	220	235	235	228	220	225	235	235	225	225	240	240	275	310	300	300
UQ	318	308	300	295	280	300	275	245	228	240	245	240	230	235	242	240	235	230	250	250	298	315	310	315
LQ	300	285	270	245	250	260	250	225	220	225	225	225	215	220	230	225	220	220	232	230	255	298	290	295

IONOSPHERIC DATA

JAN. 1969 | h'Es (km) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45°23.6'N, Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	105	105	E	E	E	G	110	105	105	105	105	105	G	G	S	100	115	110	110	105	105	105
2	100	100	110	105	E	110	110	110	110	105	105	G	G	G	G	G	115	110	105	110	105	105	100	S
3	E	E	E	E	E	E	S	G	160	C	C	C	G	G	G	120	115	110	110	E	115	E	E	E
4	110	E	E	110	110	105	105	105	100	100	100	100	G	G	110	G	105	105	100	S	105	105	100	100
5	S	E	E	E	100	E	E	E	G	110	G	G	115	G	G	120	110	110	110	110	105	E	E	E
6	E	E	E	E	E	105	110	110	G	G	145	G	G	G	G	G	S	E	S	S	S	S	E	105
7	105	100	100	100	105	S	S	105	110	105	G	G	110	135	G	G	130	120	E	110	S	S	E	E
8	E	E	E	120	E	E	110	110	105	105	105	105	G	G	G	120	G	S	160	E	115	110	110	105
9	105	105	105	E	100	100	E	100	105	105	G	G	G	G	G	G	S	E	E	E	S	105	105	105
10	105	100	100	100	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	S	E	S
11	S	E	E	E	E	E	S	S	G	G	B	B	B	G	G	G	110	E	E	E	E	S	105	S
12	S	105	E	105	E	E	E	G	150	G	G	G	B	G	S	S	160	S	E	S	E	110	E	S
13	E	E	E	E	E	E	E	110	G	G	G	G	G	G	G	G	100	105	E	S	S	C	E	E
14	S	105	105	E	E	105	S	105	C	G	110	115	G	G	115	G	G	S	S	E	S	S	E	E
15	E	E	E	E	E	E	S	S	G	G	110	G	G	G	G	G	105	105	110	115	115	110	110	105
16	105	110	110	105	110	E	E	S	G	G	G	120	110	115	G	G	G	S	E	E	105	100	E	E
17	S	E	E	110	110	105	105	105	140	100	C	105	G	G	105	G	160	105	105	S	S	105	105	100
18	100	105	105	E	E	110	110	110	105	S	C	105	G	G	C	G	105	S	105	E	100	100	100	100
19	E	C	E	E	C	E	E	S	105	G	G	G	G	G	G	105	G	105	105	E	E	E	E	E
20	E	E	E	E	110	110	110	105	105	105	100	140	G	G	G	G	G	110	E	110	105	105	105	105
21	E	E	E	E	E	110	E	105	G	G	G	150	135	G	G	G	S	105	105	E	E	E	E	100
22	E	E	E	E	E	110	105	S	G	G	G	B	C	B	G	G	B	110	115	105	105	105	E	105
23	100	E	E	E	E	E	105	S	105	G	G	G	G	G	G	G	115	110	110	110	110	S	E	E
24	100	105	105	105	105	E	S	120	115	G	G	G	B	B	B	B	B	115	110	110	110	105	E	E
25	E	E	E	E	E	115	E	S	125	115	110	110	B	B	B	B	B	E	110	110	110	110	105	110
26	105	110	C	E	110	110	110	110	110	G	B	B	B	B	B	130	125	115	110	S	110	S	110	S
27	E	E	100	100	110	110	105	110	110	110	110	G	G	G	G	105	100	105	105	105	110	110	105	105
28	105	100	105	105	100	E	E	110	105	105	105	105	105	110	110	G	115	115	110	110	110	105	105	105
29	100	100	100	100	100	100	105	105	175	G	105	105	G	G	105	105	105	105	105	105	105	S	110	110
30	E	E	105	105	105	105	105	105	105	105	G	G	G	C	G	G	B	100	S	S	E	S	105	105
31	100	100	100	100	E	E	E	105	G	G	G	G	G	G	G	G	G	S	110	E	E	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14	14	15	13	15	13	19	20	13	12	12	6	4	5	7	16	20	20	13	18	16	16	16
MED	105	105	105	105	105	110	105	105	110	105	105	105	110	112	110	120	112	108	110	110	110	105	105	105
UQ	105	105	105	105	110	110	110	110	120	105	110	118	115	125	110	120	120	110	110	110	110	110	108	105
LQ	100	100	100	100	100	105	105	105	105	105	105	105	105	108	105	105	105	105	105	0	105	105	105	104

IONOSPHERIC DATA

JAN. 1969

Types of Es

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N, Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 1	F 2	F 1	F 1					L 1	L 1	L 1	L 1	L 2	L 1				F 1	F 1	F 1	F 1	F 3	F 1	F 1
2	F 1	F 1	F 1	F 2		F 1	F 2	L 2	L 1	L 1	L 1						C 1	F 2	F 1	F 1	F 1	F 1	F 1	
3									H 1							CL 11	C 1	F 1	F 1		F 1			
4	F 1			F 1	F 1	F 3	F 2	L 1	L 2	L 2	L 1	L 1			L 1		L 2	F 1	F 2		F 1	F 1	F 1	F 1
5					F 1					L 1			C 1			C 1	L 1	F 1	F 1	F 1	F 1			
6						F 2	F 3	L 2			H 1													F 1
7	F 1	F 2	F 1	F 2	F 1			L 1	L 1	L 1			L 1	H 1			H 1	F 1		F 2				
8				F 1			F 3	L 2	L 1	L 1	L 1	L 1				L 1			F 1		F 1	F 3	F 2	F 2
9	F 2	F 2	F 1		F 1	F 1		L 1	L 1	L 1												F 2	F 2	F 1
10	F 1	F 1	F 1	F 1																				
11																	L 1						F 1	
12		F 1		F 1					H 1								H 1					F 1		
13								L 1									L 1	F 1						
14		F 1	F 1			F 1		L 1			L 1	L 1			L 1									
15											L 1						L 1	F 1	F 1	F 1	F 1	F 1	F 2	F 1
16	F 1	F 1	F 1	F 2	F 1							C 1	C 2	C 1							F 1	F 1		
17				F 1	F 1	F 1	F 1	L 1	HL 11	L 1		L 1			L 1		H 1	L 1	F 1			F 2	F 1	F 1
18	F 1	F 1	F 1			F 2	F 1	L 1	L 1			L 1					L 1		F 1		F 2	F 2	F 1	F 1
19									L 1							L 1		L 1	F 2					
20					F 1	F 1	F 1	L 1	L 1	L 2	L 1	H 1						L 1		F 1	F 2	F 1	F 1	F 1
21						F 1		L 1				H 1	H 1					L 1	F 1					F 1
22						F 1	F 2											L 1	F 1	F 1	F 1	F 1		F 1
23	F 2						F 2		LH 11								L 1	L 1	F 1	F 1	F 2			
24	F 2	F 2	F 1	F 2	F 2			C 1	L 1									C 1	F 2	F 2	F 1	F 2		
25						F 1			C 1	L 1	L 1	L 1							F 1	F 1	F 1	F 1	F 2	F 1
26	F 2	F 1			F 2	F 2	F 3	L 2	L 1							H 1	C 1	C 2	C 2		F 2		F 1	
27			F 1	F 1	F 2	F 3	F 1	L 1	L 2	L 1	L 1					L 1	L 1	L 1	F 1	F 1	F 1	F 2	F 3	F 3
28	F 2	F 2	F 1	F 1	F 1			L 1	L 2	L 1	L 2	L 1	L 1	L 1	L 1		L 1	L 1	F 3	F 2	F 2	F 2	F 1	F 3
29	F 2	F 2	F 2	F 2	F 2	F 1	F 1	L 1	H 1		L 1	L 1			L 1	L 1	L 1	L 1	F 1	F 2	F 1		F 1	F 1
30			F 1	F 3	F 2	F 3	F 1	L 2	L 1	L 1								L 1					F 2	F 2
31	F 1	F 1	F 3	F 1				L 1											F 1					

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

IONOSPHERIC DATA

JAN. 1969 | foF2 (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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	33	34	33	33	33	33	31	55	74	114	107	103	100	90	84	88	71	81	54	28	26	33	37	31
2	32	31	33	32	32	32	33	56	79	I R 118	129	114	105	99	89	78	69	64	58	I A 38	I A 30	27	30	29
3	32	32	32	32	32	28	26	50	64	86	124	102	84	85	84	70	55	65	60	33	I A 26	31	32	34
4	34	35	36	32	30	32	29	50	78	83	118	120	81	80	83	80	64	59	33	37	27	31	33	31
5	33	36	40	39	26	30	26	51	64	88	109	96	89	86	79	74	64	52	41	35	28	30	33	32
6	33	33	35	35	30	31	30	55	71	96	124	116	86	81	85	82	70	49	53	39	31	27	30	30
7	30	32	34	34	31	31	32	52	74	94	105	84	92	90	84	74	71	54	47	42	I A 28	30	33	35
8	34	36	36	26	24	24	26	61	87	106	115	114	101	108	96	91	77	69	48	39	34	38	41	40
9	39	36	38	41	36	33	33	56	78	104	105	102	91	86	91	77	64	64	44	34	31	33	35	33
10	37	36	38	36	36	35	36	54	70	86	108	116	91	86	82	75	70	63	46	43	36	31	31	32
11	33	36	38	31	33	33	32	56	77	94	102	85	87	H 83	82	77	67	50	41	37	41	36	37	37
12	37	37	40	36	37	36	38	56	82	110	113	106	90	85	78	82	78	68	52	47	34	35	36	36
13	37	39	38	35	36	35	36	65	76	100	111	96	90	84	78	86	80	60	52	45	38	34	36	36
14	35	32	31	31	32	33	33	58	79	82	111	104	83	76	82	91	80	59	46	48	38	37	37	41
15	37	38	37	36	36	35	34	58	86	98	124	116	92	88	83	85	75	73	67	58	48	41	46	42
16	39	38	38	37	36	34	36	62	86	94	113	129	113	103	91	81	71	68	60	54	36	35	36	36
17	36	40	37	33	31	30	29	54	96	102	115	120	96	81	84	V 79	74	72	51	56	46	43	49	48
18	47	43	38	38	36	34	33	57	84	I R 99	109	120	108	96	99	84	86	64	58	50	39	39	43	41
19	43	43	45	38	36	36	35	62	86	99	114	110	105	94	84	76	72	57	51	54	46	36	41	38
20	34	35	37	38	26	27	31	57	73	85	106	124	99	103	83	81	80	60	48	38	30	28	34	F
21	38	43	46	36	31	S 33	S 33	55	69	91	93	98	94	80	81	77	66	53	49	42	36	35	36	43
22	42	44	46	43	38	37	36	58	69	78	93	98	93	83	78	83	77	56	41	37	31	34	F	36
23	38	40	43	38	36	S 36	36	56	64	73	88	106	89	79	73	80	65	50	43	I A 36	I R 30	I A 28	I A 33	A
24	A	35	34	34	34	35	33	54	69	83	107	111	81	H 70	H 85	81	76	56	58	42	31	26	32	34
25	34	35	35	F 36	F 39	38	40	50	79	I R 110	121	116	103	106	101	85	80	66	65	51	42	39	41	35
26	34	35	35	35	31	32	31	61	107	102	112	101	104	92	111	80	64	62	50	42	I A 34	I R 32	33	34
27	35	35	36	33	31	29	27	64	78	100	I R 103	91	I R 97	H 83	H 78	85	77	66	66	69	F 49	39	34	31
28	I A 32	F 33	F 32	F 34	F 31	F 31	35	63	84	89	103	106	91	90	88	85	80	67	54	50	34	F 34	33	34
29	35	35	33	33	34	33	29	52	76	92	104	92	86	80	79	71	66	56	58	40	39	31	34	34
30	F 36	F 35	F 34	F 33	35	35	32	50	74	83	90	91	88	78	81	77	72	63	49	51	41	33	36	38
31	38	38	36	36	36	37	I C 40	55	65	74	85	96	79	81	76	77	64	61	56	61	43	42	39	39
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29
MED	35	36	36	35	33	33	33	56	77	94	109	106	91	85	83	80	71	62	51	42	34	34	36	35
UQ	38	38	38	36	36	35	36	58	83	101	114	116	100	91	86	84	77	66	58	50	40	36	37	38
LQ	33	35	34	33	31	31	30	54	70	86	104	97	88	81	80	77	66	56	46	38	30	31	33	33

IONOSPHERIC DATA

JAN. 1969 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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	L	L										
2											L	L	L	L										
3										L	L	L	L	L										
4											L	L	L	L										
5											L	L	L	L										
6										L	L	L	L	L 400										
7											L	L	L	L										
8										L	L	U L 420	L	L										
9										L	L	L	L	L										
10										L	L	L	L	L										
11										L	L	L	L	L										
12										L	L	L	L	L	U L 400									
13										L	L	U L 440	L	L	L 380									
14										L	L	L	L	L	L									
15										L	L	L	L	L	L									
16										L	L	L	L	L										
17										L	L	L	L	L	L									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	L	L 500	L	U L 480	L									
21										L	L	L	L	L	L									
22										L	L	L	L	L	U L 400									
23										330	L	L 450	450	430	410	L								
24										L	L 450	460	420	400		L								
25										L	L	L	L	L	L 410									
26										L	L 450	450	410	L 420	L									
27									280	L	420	420	L 420	L	L	L								
28									270		L	I A 430	L	440	L									
29										L	L	L 450	L 430	L 430	L 410	L								
30										L	L	L	L	U L 440	L 400									
31										L	L	L	L	L	L	L								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	1	3	9	5	8	7									
MED									275	330	L 450	L 450	L 420	L 430	L 400									
UQ											L 450	L 450	L 430	L 440	L 410									
LQ											435	U L 430	420	410	L 400									

IONOSPHERIC DATA

JAN. 1969 | foE (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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								165	225	290	310	325	330	320	295	255	195							
2								A	245	290	310	325	340	330	I A 295	245	180							
3								S	230	285	305	325	330	320	310	275	A							
4								S	240	290	315	335	345	325	300	260	200							
5								165	245	290	315	325	335	A	A	A	A							
6								S	225	285	320	340	340	325	305	270	200							
7								S	I A 235	295	315	330	345	I A 325	I A 305	275	A							
8								S	255	290	315	335	340	325	300	260	A							
9								170	250	290	315	335	345	335	310	265	220							
10								S	235	295	315	335	350	330	310	270	200							
11								160	235	290	310	325	340	325	310	270	200							
12								165	250	I A 290	310	I B 330	I B 335	335	300	250	I A 200							
13								A	250	290	315	335	340	335	310	270	225	S						
14								175	250	295	315	330	330	315	305	275	220	S						
15								S	250	A	A	A	A	335	310	270	220	B						
16								B	245	A	A	A	I A 345	345	I A 310	I A 265	225	S						
17								S	250	295	315	335	335	325	320	285	I A 220	S						
18								A	250	290	310	325	340	325	315	I A 275	I A 215	S						
19								A	240	295	315	325	335	335	315	285	A	S						
20								A	250	290	310	325	A	A	A	275	205	S						
21								S	225	285	300	320	330	335	I A 315	I A 295	A	S						
22								A	225	290	310	325	335	330	315	280	230	S						
23								180	250	I A 280	300	310	315	320	300	255	A	S						
24								S	215	285	I A 305	315	320	315	I B 285	260	B	B						
25								S	B	I B 270	I A 280	I A 305	A	B	B	B	B	B						
26								S	245	I A 285	I A 300	315	320	320	I B 300	280	B	B						
27								160	240	285	305	I A 315	A	A	300	265	A	B						
28								A	230	I A 270	300	I A 310	325	320	310	280	200	B						
29								S	240	285	305	325	325	320	305	275	245	B						
30								B	230	285	315	R 330	I A 340	325	305	280	A	B						
31								S	245	290	315	330	340	335	320	280	235	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								8	30	29	29	29	27	27	28	29	19							
MED								165	242	290	310	325	335	325	308	270	215							
UQ								172	250	290	315	330	340	335	310	280	222							
LQ								162	230	285	305	325	330	320	300	265	200							

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | foEs (0.1) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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 S 14	E S 14	E S 14	E S 14	E	E S 14	E S 13	G	G	G	G	G	G	G	G	G	G	E B 17	E S 14	E S 14	E	E S 13	E S 14	E S 14
2	E S 13	E	E	E	E	E	E S 14	J X 29	J X 29	G	34	G	G	G	33	G	G	E S 14	J X 27	J X 66	J X 49	J X 50	J X 38	J X 15
3	E S 14	E B 18	E S 14	E B 18	E	E S 14	E S 14	E S 14	30	36	36	35	37	35	G	G	J X 37	E B 18	J X 29	J X 39	J X 54	J X 40	J X 29	J X 25
4	J X 24	J X 18	E	E	E	E S 14	E S 14	J X 18	G	30	G	G	G	G	G	G	G	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 13
5	E S 14	E	E	E	E	E	E S 13	G	G	G	G	G	G	35	36	32	J X 30	J X 24	J X 28	J X 24	J X 29	E S 14	J X 20	J X 24
6	J X 20	E S 13	E S 14	E	E	E S 14	E S 13	E S 15	G	J X 36	G	G	G	G	G	G	G	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
7	E S 14	E	E	J X 24	E	E	E S 14	J X 20	J X 34	G	G	J X 41	G	37	34	G	J X 27	J X 28	J X 100	J X 33	J X 59	E S 14	J X 20	J X 25
8	E S 14	J X 17	J X 23	J X 16	E	J X 16	J X 19	J X 39	J X 28	32	G	36	J G 29	J G 32	J X 33	28	J X 29	J X 20	J X 21	J X 17	E S 14	J X 29	J X 25	J X 32
9	J X 21	J X 23	J X 26	J X 33	E	E	E	J X 25	G	32	G	G	G	G	G	G	G	E B 16	E S 14	E S 14	E S 14	E S 14	E S 13	J X 20
10	E S 14	E S 13	E S 14	E	E	E S 13	E S 14	21	G	G	G	G	G	J G 29	G	G	G	E B 15	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14
11	E S 13	E	E	E	E S 14	E S 14	E S 13	J X 20	27	32	G	G	G	G	G	G	G	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	J X 20
12	E S 14	J X 18	E S 13	E S 13	E	E S 14	E S 12	J X 18	G	31	G	E B 37	E B 37	G	G	G	23	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	J X 25
13	E S 14	E	E	E	E	E	E	J X 23	G	G	G	G	G	G	G	G	G	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14
14	E S 14	E S 14	E	E B 18	E B 18	E S 14	E	G	G	G 29	G	G	G	G	G	G	G	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
15	E S 14	E	E	E	E	E	E S 13	E S 14	26	30	34	36	J X 49	J X 37	G	G	G	E B 16	E S 14	E S 13	J X 18	J X 23	E S 14	E B 18
16	E S 14	E	E	J X 21	J X 24	E	E S 14	E B 18	G	33	36	35	39	J G 34	J X 49	J X 33	G	J X 24	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14
17	J X 20	E	E S 14	E S 14	J X 18	J X 23	E S 14	E S 15	G	G	G	J X 34	G	G	G	G	J X 29	J X 24	J X 24	E S 14	E S 14	E S 14	E S 14	E S 14
18	E S 14	E S 14	E S 14	J X 21	J X 23	J X 22	J X 23	J X 23	G	G	G	G	G	G	G	30	25	J X 24	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
19	E S 14	E	E	E	E	E S 14	J X 20	J X 21	G	J X 37	G	G	G	J X 34	G	G	24	J X 19	J X 25	E S 14	E S 14	J X 18	E S 14	E S 14
20	E S 14	E S 14	E	E S 14	E	J X 20	J X 21	J X 19	J X 26	G	35	35	36	34	36	G	G	E S 14	J X 24	J X 30	J X 23	J X 31	J X 23	J X 25
21	J X 20	J X 16	E	J X 16	J X 29	J X 23	J X 29	J X 24	J G 20	30	33	36	36	35	34	J X 35	J X 28	J X 29	J X 34	J X 55	J X 44	J X 24	J X 26	E S 14
22	J X 26	E S 14	E S 14	E	E	E S 14	E S 14	J X 20	G 22	G	G	G	G	G	G	G	G	E S 14	E S 14	J X 33	J X 50	J X 23	J X 29	J X 33
23	J X 20	E B 17	J X 23	E S 14	E	E	E S 14	G	G	J X 41	G	G	G	G	G	G	25	E S 15	J X 24	J X 63	J X 77	J X 59	J X 56	J X 63
24	J X 51	J X 51	J X 43	J X 23	E B 14	E B 18	E S 15	E S 15	26	G	35	G	G	G	E B 32	G	E B 24	E B 15	E S 14	E S 14	J X 26	J X 31	J X 18	J X 20
25	E S 12	E S 14	E S 14	E	E S 14	E S 12	E S 15	18	E B 27	34	J X 48	J X 40	37	E B 33	E B 35	E B 30	E B 24	E B 15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
26	J X 21	J X 35	J X 19	J X 23	J X 18	E B 14	E S 13	E S 15	G	59	J X 41	G	G	G	E B 32	G	30	J X 31	20	J X 18	J X 75	J X 78	J X 41	J X 43
27	J X 33	J X 59	E B 16	J X 16	E B 14	J X 21	J X 21	G	G	G	J X 59	J X 49	J X 50	J X 42	G	G	J X 29	J X 31	J X 30	J X 23	J X 24	J X 25	J X 24	J X 45
28	J X 46	J X 23	J X 23	J X 25	J X 30	J X 26	J X 21	J X 20	G	J X 39	34	J X 81	G	G	G	G	G	E B 16	E S 13	19	J X 40	J X 79	J X 50	J X 60
29	J X 21	J X 23	J X 26	J X 18	J X 22	E S 15	E	E S 15	G	G	G	G	G	G	G	G	G	22	J X 25	J X 29	J X 31	J X 25	21	J X 30
30	J X 28	J X 30	J X 38	J X 24	J X 26	E S 15	E S 13	E B 15	G	G	G	G	35	G	G	G	J X 41	J X 38	J X 26	J X 28	E S 14	E S 14	E S 14	E S 14
31	E S 14	E	J X 29	E S 14	E	E	C	E S 14	G	34	G	36	G	G	G	G	27	J X 26	E S 14	E S 14	E S 14	J X 16	E S 14	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 14	E E 14	E E 14	E E 14	E	E E 14	E S 14	18	G	30	G	G	G	G	G	G	E G 23	E E 16	E S 14	E S 14	E S 14	E S 14	E S 14	J X 18
UQ	J X 21	J X 18	J X 21	J X 20	18	E E 16	E S 15	J X 20	25	34	34	36	U 34	34	E G 32	G	28	J X 24	J X 25	J X 28	J X 36	J X 27	J X 24	J X 25
LQ	E S 14	E	E	E	E	E	E S 13	E E 14	G	G	G	G	G	G	G	G	G	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14

IONOSPHERIC DATA

JAN. 1969 | f_bEs (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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 S 14	E S 14	E S 14	E S 14	E	E S 14	E S 13	G	G	G	G	G	G	G	G	G	G	E B 17	E S 14	E S 14	E	E S 13	E S 14	E S 14
2	E S 13	E	E	E	E	E	E S 14	19	20	G	34	G	G	G	32	G	G	E S 14	20	A	A	19	20	15
3	E S 14	E B 18	E S 14	E B 18	E	E S 14	E S 14	E S 14	29	35	35	35	37	34	G	G	24	E B 18	E	20	A	23	20	17
4	20	E	E	E	E	E S 14	E S 14	E	G	G	G	G	G	G	G	G	G	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 13
5	E S 14	E	E	E	E	E	E S 13	G	G	G	G	G	G	34	34	29	22	E	16	E	18	E S 14	16	21
6	19	E S 13	E S 14	E	E	E S 14	E S 13	E S 15	G	23	G	G	G	G	G	G	G	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
7	E S 14	E	E	19	E	E	E S 14	17	27	G	G	29	G	35	32	G	25	17	E	E	A	E S 14	E	19
8	E S 14	E	E	E	E	E	17	29	21	32	G	36	G 28	G 28	26	G	23	E	E	E	E S 14	17	E	20
9	19	19	19	16	E	E	E	15	G	32	G	G	G	G	G	G	G	E B 16	E S 14	E S 14	E S 14	E S 14	E S 13	E
10	E S 14	E S 13	E S 14	E	E	E S 13	E S 14	E	G	G	G	G	G	G 24	G	G	G	E B 15	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14
11	E S 13	E	E	E	E S 14	E S 14	E S 13	E	26	31	G	G	G	G	G	G	G	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E
12	E S 14	15	E S 13	E S 13	E	E S 14	E S 12	15	G	31	G	E B 37	E B 37	G	G	G	23	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E
13	E S 14	E	E	E	E	E	E	18	G	G	G	G	G	G	G	G	G	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14
14	E S 14	E S 14	E	E B 18	E B 18	E S 14	E	G	G	G 24	G	G	G	G	G	G	G	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
15	E S 14	E	E	E	E	E	E S 13	E S 14	24	30	34	35	44	30	G	G	G	E B 16	E S 14	E S 13	E	E	E S 14	E B 18
16	E S 14	E	E	18	17	E	E S 14	E B 18	G	32	34	34	35	G 31	38	28	G	16	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14
17	15	E	E S 14	E S 14	15	15	E S 14	E S 15	G	G	G	30	G	G	G	G	24	E	E	E S 14	E S 14	E S 14	E S 14	E S 14
18	E S 14	E S 14	E S 14	14	15	E	E	19	G	G	G	G	G	G	G	29	24	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
19	E S 14	E	E	E	E	E S 14	17	18	G	23	G	G	G	27	G	G	24	16	18	E S 14	E S 14	E	E S 14	E S 14
20	E S 14	E S 14	E	E S 14	E	17	17	18	21	G	G	G	35	34	34	G	G	E S 14	E	E	E	16	17	18
21	E	15	E	13	20	16	E	E	G 19	30	33	35	36	G	32	33	26	19	19	24	19	19	16	E S 14
22	E	E S 14	E S 14	E	E	E S 14	E S 14	20	G 19	G	G	G	G	G	G	G	G	E S 14	E S 14	22	E	E	E	18
23	E	E B 17	E	E S 14	E	E	E S 14	G	G	28	G	G	G	G	G	G	23	E S 15	15	A	19	A	A	A
24	A	28	20	12	E B 14	E B 18	E S 15	E S 15	25	G	32	G	G	G	E B 32	G	E B 24	E B 15	E S 14	E S 14	16	18	15	15
25	E S 12	E S 14	E S 14	E	E S 14	E S 12	E S 15	17	E B 27	34	40	38	35	E B 33	E B 35	E B 30	E B 24	E B 15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
26	18	23	15	13	E	E B 14	E S 13	E S 15	G	32	32	G	G	G	E B 32	G	30	25	15	16	A	21	19	18
27	26	17	E B 16	13	E B 14	15	15	G	G	G	28	34	34	33	G	G	25	23	24	20	22	23	22	16
28	A	15	17	15	13	18	16	18	G	36	28	49	G	G	G	G	G	E B 16	E S 13	16	17	18	26	24
29	16	16	15	15	14	E S 15	E	E S 15	G	G	G	G	G	G	G	G	G	21	20	27	19	20	18	21
30	16	16	22	19	22	E S 15	E S 13	E B 15	G	G	G	G	35	G	G	G	32	27	20	19	E S 14	E S 14	E S 14	E S 14
31	E S 14	E	20	E S 14	E	E	C	E S 14	G	34	G	36	G	G	G	G	27	20	E S 14	E S 14	E S 14	E	E S 14	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 14	E E 14	E E 14	E E 13	E	E E 14	E S 14	E G 15	G	G 23	G	G	G	G	G	G	E G 22	E E 15	E S 14	E S 14	E S 14	E S 14	E S 14	E E 14
UQ	16	16	E E 14	14	E E 14	E S 14	E S 14	18	20	32	30	34	32	28	E G 32	G	24	16	15	18	18	18	16	18
LQ	E S 14	E	E	E	E	E	E S 13		G	G	G	G	G	G	G	G	G	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | f-min (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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 S 14	E S 14	E S 14	E S 14	E	E S 14	E S 13	E S 13	15	21	24	21	22	27	23	20	17	17	E S 14	E S 14	E	E S 13	E S 14	E S 14
2	E S 13	E	E	E	E	E	E S 14	13	16	18	20	20	19	19	20	19	15	E S 14	E S 13	E	E	E S 13	E S 14	E
3	E S 14	18	E S 14	18	E	E S 14	E S 14	E S 14	18	23	24	27	24	24	28	18	14	18	E S 13	E S 13	E S 13	E S 14	E S 12	E S 14
4	E S 13	E S 14	E	E	E	E S 14	E S 14	E S 14	15	17	18	20	18	16	15	15	15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 13
5	E S 14	E	E	E	E	E	E S 13	13	15	18	18	20	18	18	18	16	14	E S 14	E S 13	E S 13	E	E S 14	E S 13	E
6	E	E S 13	E S 14	E	E	E S 14	E S 13	E S 15	15	17	17	19	18	18	20	18	16	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
7	E S 14	E	E	E	E	E	E S 14	E S 14	16	17	18	18	18	20	19	20	16	E S 14	E S 13	E S 14	E S 13	E S 14	E S 14	E S 13
8	E S 14	E S 14	E	E	E	E	E	E S 14	17	18	20	18	18	17	16	15	13	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E
9	E	E	E	E	E	E	E	E S 12	15	19	24	22	24	21	20	19	16	16	E S 14	E S 14	E S 14	E S 14	E S 13	E S 14
10	E S 14	E S 13	E S 14	E	E	E S 13	E S 14	E S 14	14	18	19	22	24	18	20	22	16	15	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14
11	E S 13	E	E	E	E S 14	E S 14	E S 13	14	15	19	27	25	25	25	23	18	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
12	E S 14	E	E S 13	E S 13	E	E S 14	E S 12	14	16	22	25	37	37	26	25	15	16	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
13	E S 14	E	E	E	E	E	E	13	17	19	24	27	24	24	18	17	16	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14
14	E S 14	E S 14	E	18	18	E S 14	E	15	16	17	17	21	21	19	16	18	19	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
15	E S 14	E	E	E	E	E	E S 13	E S 14	17	18	20	23	23	22	19	17	15	16	E S 14	E S 13	E S 14	E S 13	E S 14	18
16	E S 14	E	E	E	E	E	E S 14	18	15	19	20	24	24	21	18	16	15	E S 14	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14
17	E S 12	E	E S 14	E S 14	E	E	E S 14	E S 15	13	16	18	20	18	23	18	18	15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
18	E S 14	E S 14	E S 14	E	E	E S 14	E S 14	E S 14	15	18	20	24	24	24	20	18	17	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
19	E S 14	E	E	E	E	E S 14	E S 13	14	17	18	17	18	18	21	18	18	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
20	E S 14	E S 14	E	E S 14	E	E	E	13	14	17	18	18	19	21	18	18	14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
21	E S 14	E	E	E	E	E	E S 14	14	15	18	19	24	25	19	20	19	16	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
22	E S 14	E S 14	E S 14	E	E	E S 14	E S 14	14	17	20	24	28	23	23	21	18	15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
23	E S 14	17	E S 14	E S 14	E	E	E S 14	13	16	17	18	18	19	19	19	18	14	E S 15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 13
24	E S 14	E	E	E	14	18	E S 15	E S 15	16	17	20	21	22	24	32	24	24	15	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14
25	E S 12	E S 14	E S 14	E	E S 14	E S 12	E S 15	E S 15	27	29	24	25	28	33	35	30	24	15	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
26	E S 14	E S 13	E	E	E	14	E S 13	E S 15	18	20	21	23	25	28	32	24	26	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
27	E S 14	E S 13	16	E	14	14	E S 14	E S 14	16	19	20	19	16	16	17	17	15	15	E S 15	E S 15	E S 15	E S 15	E S 14	E S 14
28	E S 14	E	E	E	E	E S 14	E S 14	E S 14	15	17	17	21	23	20	20	17	15	16	E S 13	E S 14	E S 15	E S 14	E S 14	E S 14
29	E S 15	E	E	E	E	E S 15	E	E S 15	16	20	20	25	21	20	21	17	15	17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
30	E S 15	E S 14	E S 15	E	E	E S 15	E S 13	15	16	16	18	18	17	23	20	17	16	16	16	E S 14	E S 14	E S 14	E S 14	E S 14
31	E S 14	E	E	E S 14	E	E	C	E S 14	16	16	16	18	19	18	15	18	15	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 14	E	E	E	E	E E 14	E S 14	E S 14	16	18	20	21	22	21	20	18	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
UQ	E S 14	E S 14	E S 14	E E 13	E	E S 14	E S 14	15	16	19	22	24	24	24	21	19	16	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
LQ	E S 14	E	E	E	E	E	E S 13	E S 14	15	17	18	19	18	19	18	17	15	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14

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IONOSPHERIC DATA

JAN. 1969 | M(3000)F2(0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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	280	275	285	275	275	325	340	320	335	345	340	340	335	315	340	315	350	355	325	285	280	320	265
2	280	285	285	285	285	280	295	315	315	I R 330	340	325	335	325	335	335	335	335	350	I A 340	I A 290	275	285	280
3	280	285	285	315	305	310	300	340	350	320	355	345	355	340	335	345	360	315	350	335	I A 300	285	285	275
4	275	280	305	320	285	305	345	320	275	360	330	360	350	315	330	345	335	340	315	325	335	275	290	265
5	275	295	320	340	275	305	315	335	360	330	340	335	340	305	320	335	360	335	320	320	315	265	285	280
6	280	275	285	305	295	275	300	325	340	335	345	360	325	325	335	330	355	320	330	335	355	260	285	285
7	285	280	295	295	305	305	315	330	350	350	335	320	330	335	335	325	340	320	320	335	I A 300	255	275	275
8	275	290	325	315	280	235	270	330	345	330	340	335	300	325	325	335	315	335	320	320	285	280	290	295
9	305	285	290	305	315	280	295	335	340	345	335	345	330	320	335	335	300	335	310	325	305	295	290	280
10	280	280	295	305	305	290	305	335	340	335	325	345	335	340	330	335	330	340	310	335	315	305	270	280
11	285	290	320	300	280	275	305	320	350	350	335	340	325	H 325	340	340	355	320	295	310	300	285	290	290
12	280	275	290	305	285	280	315	340	345	335	345	330	335	345	335	325	340	325	315	325	295	285	275	280
13	280	285	315	275	280	275	285	330	350	325	335	345	335	345	350	340	350	340	315	315	320	285	285	290
14	295	290	290	270	285	285	310	340	355	345	345	345	340	320	330	330	340	345	305	315	290	295	275	295
15	285	290	290	290	285	300	295	325	350	325	340	350	330	330	315	335	345	315	335	315	320	310	295	310
16	305	290	290	285	285	265	275	330	360	350	335	345	325	310	315	320	325	325	315	340	325	285	270	270
17	280	285	295	305	290	280	275	310	330	345	325	335	335	320	350	V 315	320	335	300	320	300	270	290	295
18	300	295	275	285	280	285	295	335	345	I R 340	340	350	335	335	340	345	350	345	330	320	300	285	295	290
19	280	300	310	290	280	265	285	335	355	335	330	335	335	345	335	335	335	330	300	320	310	285	315	310
20	285	285	295	350	265	265	295	360	335	355	335	335	330	335	350	315	335	335	335	360	335	265	275	F
21	290	305	325	360	265	S 280	S 305	330	340	350	355	340	355	315	330	315	335	290	345	325	310	285	270	290
22	280	280	295	305	290	290	315	345	350	340	345	345	335	335	335	340	345	345	330	335	295	290	F	295
23	290	300	315	310	290	S 280	315	340	360	340	335	330	335	335	330	320	360	340	340	I A 310	I R 320	I A 290	I A 270	A
24	A	285	290	305	285	285	320	345	350	335	330	340	345	H 320	H 295	345	340	310	345	350	335	285	290	280
25	260	250	240	F 270	F 275	275	275	310	325	I R 320	330	315	315	310	315	340	335	320	325	330	330	270	315	290
26	275	260	305	290	265	260	285	325	350	345	335	325	330	300	340	350	320	330	325	325	I A 305	I R 275	280	275
27	275	275	305	310	310	265	285	355	350	335	I R 340	355	I R 330	H 320	H 290	359	335	325	315	340	F 325	315	295	265
28	I A 265	F 255	F 285	F 275	F 275	F 275	290	345	355	335	345	345	325	330	340	340	350	310	315	350	320	F 290	280	305
29	295	310	295	290	290	300	350	345	340	330	340	355	345	335	345	345	345	325	350	320	310	325	285	275
30	F 285	F 295	F 285	F 295	305	315	315	340	335	340	345	355	350	320	325	330	330	335	315	335	315	290	285	285
31	310	315	285	270	270	280	I C 310	345	360	335	330	350	330	345	320	345	345	335	310	330	310	300	310	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29
MED	280	285	295	300	285	280	300	335	350	335	340	345	335	325	335	335	340	335	320	325	310	285	285	285
UQ	290	292	305	308	290	290	315	340	350	345	345	348	340	335	338	342	348	338	335	335	320	290	290	295
LQ	275	280	285	285	278	275	288	328	340	332	335	335	330	320	322	330	332	320	315	320	300	275	275	275

IONOSPHERIC DATA

JAN. 1969

M(3000)F1(0.01)

135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / 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	L	L										
2											L	L	L	L										
3										L	L	L	L	L										
4											L	L	L	L										
5											L	L	L	L										
6										L	L	L	L	L 425										
7											L	L	L	L										
8										L	L	U L 390	L	L										
9										L	L	L	L	L										
10										L	L	L	L	L										
11										L	L	L	L	L										
12										L	L	L	L	L	U L 395									
13										L	L	U L 390	L	L	L 395									
14										L	L	L	L	L	L									
15										L	L	L	L	L	L									
16										L	L	L	L	L										
17										L	L	L	L	L	L									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	L	L 345	L	U L 360	L									
21										L	L	L	L	L	L									
22										L	L	L	L	L	U L 375									
23										425	L	L 385	L 380	L 385	395	L								
24										L	L 390	385	405	420		L								
25										L	L	L	L	L	L 415									
26										L	L 380	390	385	L 410	L									
27									430	L	395	410	L 410	L	L	L								
28									420		L	I A 410	L	390	L									
29										L	L	L 390	L 405	L 405	L 380	L								
30										L	L	L	L	U L 390	L 400									
31										L	L	L	L	L	L	L								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	1	3	9	5	8	7									
MED									425	425	L 390	L 390	L 405	L 398	L 395									
UQ											392	U 390	L 405	L 415	L 398									
LQ											L 385	L 385	L 385	L 388	L 388									

IONOSPHERIC DATA

JAN. 1969 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											240	230	240	230										
2											250	235	250	250										
3										260	250	245	230	250										
4											255	235	240	230										
5											250	250	250	250										
6										250	245	230	225	230										
7											250	220	250	250										
8										260	250	235	240	255										
9										240	245	245	240	240										
10										250	245	235	240	240										
11										230	230	250	250	230										
12										250	240	240	250	235	240									
13										260	240	235	245	255	250									
14										230	245	235	235	235	240									
15										255	250	235	245	240	240									
16										235	245	250	245	235										
17										220	265	250	240	240	250									
18										240	235	240	250	245	255									
19										245	240	250	255	245	245									
20										230	255	255	235	255	245									
21										230	235	250	245	240	250									
22										235	250	255	255	250	250									
23										230	250	250	250	250	240	250								
24										240	250	245	240	240		250								
25										260	245	245	245	255	240									
26										245	250	245	270	240	250									
27									225	235	240	235	245	235	235	245								
28									220		245	250	240	250	245									
29										245	245	240	245	245	245	235								
30										245	250	240	250	250	245									
31										250	250	245	240	255	250	245								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	25	31	31	31	31	18	5								
MED									222	245	245	245	245	245	245	245								
UQ										250	250	250	250	250	250	250								
LQ										235	242	235	240	238	240	245								

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IONOSPHERIC DATA

JAN. 1969 | h'F (km) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5' N, Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	305	300	310	290	305	290	230	230	220	245	240	230	230	230	225	225	215	230	205	215	280	290	245	290
2	300	300	280	270	255	290	275	240	225	245	240	230	235	230	230	220	220	230	215	A	A	I A 305	I A 300	290
3	300	290	290	260	245	255	280	220	215	230	250	240	230	230	230	220	215	245	210	245	A	A	295	310
4	310	300	255	215	235	275	225	245	230	225	240	235	225	210	210	235	230	225	210	235	220	305	265	305
5	305	280	245	220	240	270	230	245	210	240	240	235	245	220	230	230	215	230	235	225	255	310	290	I A 285
6	300	300	275	245	220	290	255	230	215	235	220	230	205	200	240	235	215	205	220	215	215	330	295	295
7	290	290	275	275	245	245	255	230	210	230	220	210	230	230	230	215	230	220	235	230	A	340	330	340
8	310	280	230	230	240	355	I A 315	245	230	235	235	225	205	230	235	240	220	210	215	215	280	305	275	260
9	270	300	290	225	280	285	265	215	225	230	220	225	230	230	240	230	220	215	215	215	255	255	280	280
10	290	290	275	245	250	250	255	220	215	210 H	235	230	235	220	225	220	225	225	225	220	230	250	295	290
11	290	265	240	230	295	305	255	240	220	230	230	210	230	225	240	235	215	205	230	240	245	245	280	275
12	295	295	275	250	270	295	255	215	220	235	225	225	220	215	200	200 H	220	220	215	215	270	250	305	295
13	295	275	235	255	280	290	245	230	220	230	240	205	225	190 H	200	240	230	215	240	225	220	280	285	270
14	295	280	285	290 B	290	280	245	230	225	225	230	230	205	210	230	245	240	210	245	240	215	280	290	275
15	280	270	255	275	250	265	255	235	215	220	245	230	I A 215	225	230	240	225	245	230	230	225	290	245	250
16	255	260	260	245	290	315	300	240	215	230	235	240	225	225	230	230	225	235	220	220	230	260	305	315
17	315	265	245	235	265	305	280	230	240	220	230	240	215	210	230	240	240	235	245	240	240	285	275	270
18	245	260	285	270	300	300	265	220	220	230	215	230	215	200 H	230	235	230	225	215	230	240	280	270	270
19	270	250	245	230	290	320	285	245	225	230	235	215	220	220	220	230	225	225	245	225	230	280	240	250
20	280	290	270	215	260	310 A	275	220	220	230	240	225	220	215	240	215	230	210	215	205	225	340 A	300	340 A
21	290	265	235	200	A	310	245	230	225	230	235	230	230	215	230	230	235	205 H	210	230	250	280	305	270
22	285	280	270	235	230	275	240	220	210	225	220	230	230	215	200	240	230	205	220	240	255	295	275	300
23	270	270	250	235	255	300	245	230	215	215	225	225	230	225	225	225	225	220	220	I A 270	240	A	I A 340	A
24	A	A	300 A	255	285	295	225	225	230	200 H	240	240	210	200	235 H	245	230	215	225	220	235	A	290	295
25	300	350	350	300	295	290	275	225	240	240	240	230	235	215	225	235	240	240	240	225	235	275	260	265
26	300	I A 315	260	270	255	320	300	245	240	230	235	220	210	205	250	240	230	240	235	235	A	A	A 310	A 335
27	I A 320	310	255	245	245	295	300	240	205	220	215	200	205	205	225	240	235	230	250	235	225	245	A 275	A 290
28	A	A 370	305	295	310	335	275	235	205	230	295	I A 230	210	205	215	240	240	225	225	220	230	A 285	I A 290	A 300
29	285	270	275	275	285	275	220	235	235	240	235	225	210	215	215	230	230	230	235	A 260	255	250	290	A 340
30	280	280	I A 280	A 280	280	250	230	225	230	230	230	230	230	220	220	240	230	230	220	240	240	245	270	280
31	250	245	280	290	305	280	C	220	220	230	190 H	245	230	215	230	230	230	235	225	235	230	250	240	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	30	27	27	31	30
MED	290	280	275	250	268	290	255	230	220	230	235	230	225	215	230	235	230	225	225	230	235	280	290	290
UQ	300	300	282	275	290	305	275	240	228	232	240	230	230	225	230	240	230	230	235	240	252	300	298	300
LQ	280	270	252	232	245	275	245	222	215	225	222	225	212	210	222	228	220	215	215	220	228	252	272	270

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IONOSPHERIC DATA

JAN. 1969 | h'Es (km) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N. Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	E	S	S	G	G	G	G	G	G	G	G	G	G	B	S	S	E	S	S	S
2	S	E	E	E	E	E	S	110	105	G	155	G	G	G	110	G	G	S	110	105	105	100	100	105
3	S	B	S	B	E	S	S	S	170	150	145	145	135	130	G	G	115	B	115	105	105	100	100	100
4	100	100	E	E	E	S	S	105	G	155	G	G	G	G	G	G	G	S	S	S	S	S	S	S
5	S	E	E	E	E	E	S	G	G	G	G	G	G	140	130	120	120	110	110	105	100	S	100	100
6	100	S	S	E	E	S	S	S	G	105	G	G	G	G	G	G	G	S	S	S	S	S	S	S
7	S	E	E	110	E	E	S	120	115	G	G	105	G	125	120	G	120	110	110	110	105	S	110	105
8	S	105	100	110	E	110	110	105	115	160	G	150	105	100	100	140	110	100	100	100	S	105	105	100
9	100	100	100	100	E	E	E	105	G	155	G	G	G	G	G	G	G	B	S	S	S	S	S	100
10	S	S	S	E	E	S	S	105	G	G	G	G	G	100	G	G	G	B	S	S	S	S	S	S
11	S	E	E	E	S	S	S	110	E G 170	155	G	G	G	G	G	G	G	S	S	S	S	S	S	100
12	S	100	S	S	E	S	S	110	G	135	G	B	B	G	G	G	160	S	S	S	S	S	S	105
13	S	E	E	E	E	E	E	105	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S	S
14	S	S	E	B	B	S	E	G	G	110	G	G	G	G	G	G	G	S	S	S	S	S	S	S
15	S	E	E	E	E	E	S	S	110	115	115	110	105	110	G	G	G	B	S	S	100	100	S	B
16	S	E	E	105	105	E	S	B	G	130	120	120	110	105	105	105	G	105	S	S	S	S	S	S
17	100	E	S	S	110	105	S	S	G	G	G	105	G	G	G	G	105	105	105	S	S	S	S	S
18	S	S	S	105	105	105	105	105	G	G	G	G	G	G	G	130	115	110	S	S	S	S	S	S
19	S	E	E	E	E	S	110	110	G	105	G	G	G	105	G	G	140	105	105	S	S	105	S	S
20	S	S	E	S	E	110	105	110	105	G	130	E G 145	140	140	120	G	G	S	110	105	100	100	105	105
21	100	105	E	115	110	110	105	105	100	170	150	145	140	140	115	110	110	110	105	105	105	100	100	S
22	100	S	S	E	E	S	S	110	105	G	G	G	G	G	G	G	G	S	S	105	105	105	100	105
23	100	B	100	S	E	E	S	G	G	110	G	G	G	G	G	G	110	S	110	105	105	105	105	105
24	105	105	105	100	B	B	S	S	140	G	105	G	G	G	B	G	B	B	S	S	110	105	105	105
25	S	S	S	E	S	S	S	125	B	130	110	105	105	B	B	B	B	B	S	S	S	S	S	S
26	105	105	105	105	105	B	S	S	G	110	110	G	G	G	B	G	130	120	120	115	110	110	105	110
27	110	110	B	105	B	100	100	G	G	G	110	105	100	100	G	G	100	100	100	100	100	100	100	105
28	105	105	105	100	100	100	100	105	G	105	105	100	G	G	G	G	G	B	S	110	120	105	110	110
29	105	105	105	105	100	S	E	S	G	G	G	G	G	G	G	G	G	105	105	100	100	100	100	105
30	110	105	105	105	105	S	S	B	G	G	G	G	100	G	G	G	100	100	100	100	S	S	S	S
31	S	E	100	S	E	E	C	S	G	165	G	150	G	G	G	G	150	115	S	S	S	100	S	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	11	9	12	8	7	7	16	10	17	11	12	9	11	7	5	14	13	14	14	14	15	14	16
MED	100	105	105	105	105	105	105	108	110	130	115	112	105	110	115	120	115	105	108	105	105	100	102	105
UQ	105	105	105	108	108	110	108	110	U 128	155	138	145	135	135	120	130	130	110	110	105	105	105	105	105
LQ	100	102	100	102	102	102	102	105	105	110	110	105	105	102	108	110	110	105	105	100	100	100	100	100

IONOSPHERIC DATA

JAN. 1969 | Types of Es | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2								L 2	L 1		H 1				L 1				F 1	F 5	F 2	F 3	F 2	F 1
3									H 1	H 1	H 1	H 1	H 1	H 1			C 1		F 1	F 3	F 3	F 3	F 2	F 1
4	F 2	F 1						L 1		H 1														
5														H 1	H 2	C 2	C 1	F 1	F 2	F 1	F 2		F 2	F 2
6	F 2									L 2														
7				F 2				C 1	C 2			L 1		H 1	C 1		C 2	F 1	F 2	F 1	F 3		F 1	F 2
8		F 1	F 1	F 1		F 1	F 2	L 4	L 1	H 1		H 1	L 2	L 2	L 1	H 1	L 1	F 1	F 1	F 1		F 2	F 1	F 3
9	F 2	F 2	F 2	F 2				L 1		H 1														F 1
10								L 1						L 1										
11								L 1	H 1	H 1														F 1
12		F 1						L 1		H 1							H 1							F 1
13								L 1																
14										L 1														
15									L 1	C 1	C 2	L 1	L 2	L 1							F 1	F 1		
16				F 2	F 2					H 1	C 1	C 1	C 1	L 1	L 2	L 2		L 1						
17	F 1				F 1	F 2						L 1					L 2	L 1	F 1					
18				F 1	F 2	F 1	F 1	L 2								H 1	C 1	L 1						
19							F 2	L 1		L 1				L 1			H 1	L 1	F 1			F 1		
20						F 2	F 2	L 2	L 2		H 1	H 1	H 1	H 1	H 2				F 1	F 1	F 2	F 2	F 2	F 2
21	F 1	F 1		F 1	F 3	F 2	F 2	L 1	L 1	H 1	H 1	H 1	H 1	H 1	C 1	L 2	L 1	L 1	F 2	F 3	F 2	F 2	F 1	
22	F 1							L 1	L 1											F 3	F 2	F 3	F 2	F 2
23	F 1		F 1							C 2							L 2		F 1	F 2	F 2	F 2	F 2	F 3
24	F 5	F 3	F 2	F 2					H 1		L 1										F 1	F 2	F 1	F 1
25								H 1		H 1	C 1	L 1	L 1											
26	F 2	F 2	F 1	F 1	F 1					L 1	L 1						H 1	C 3	F 1	F 1	F 4	F 2	F 2	F 1
27	F 3	F 2		F 1		F 1	F 1				L 1	L 1	L 1	L 2			L 1	L 1	F 1	F 1	F 2	F 3	F 2	F 1
28	F 3	F 1	F 1	F 1	F 1	F 1	F 1	L 1		L 3	L 2	L 3								F 1	F 1	F 2	F 3	F 3
29	F 1	F 2	F 1	F 1	F 1													L 1	F 1	F 2	F 1	F 1	F 2	F 2
30	F 1	F 2	F 3	F 2	F 4								L 1				L 1	L 1	F 1	F 1				
31			F 2							H 1		H 1					H 2	C 2				F 1		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

IONOSPHERIC DATA

JAN. 1969 | foF2 (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	36	36	36	34	33	36	36	59	75	J R 101	130	111	110	95	78	92	73	J R 76	58	36	28	31	35	32
2	31	33	36	32	30	31	31	58	J R 77	113	123	120	103	95	102	91	75	63	J R 66	36	28	30	33	31
3	31	33	31	31	29	28	30	56	70	I R 80	112	113	101	78	84	80	60	53	69	37	28	29	32	33
4	33	A	37	31	27	29	29	56	R	98	97	122	96	74	84	83	58	J R 65	59	42	42	36	35	38
5	34	J R 40	44	31	23	27	28	58	U R 73	83	108	104	94	84	91	80	J R 77	56	41	42	35	29	I S 32	33
6	31	33	34	32	26	28	31	61	I R 81	98	131	121	I R 100	84	91	87	84	59	54	48	28	28	31	32
7	31	32	38	34	27	30	30	64	R	83	106	95	95	98	80	81	67	60	I A 50	49	31	31	I A 32	33
8	33	38	35	22	22	22	26	I R 66	I R 82	R 103	129	118	115	112	J R 103	96	85	J R 83	57	49	46	41	45	45
9	40	34	34	36	29	28	29	58	J R 81	J R 101	J R 106	106	103	95	96	88	71	70	61	42	34	36	33	31
10	34	36	35	36	31	31	31	62	I R 70	86	115	120	101	95	92	88	72	96	58	51	46	37	34	I R 33
11	32	35	34	29	28	29	29	58	73	92	108	86	87	89	83	85	69	58	40	46	43	39	40	36
12	36	35	36	35	32	33	34	64	J R 71	103	123	100	92	88	84	C	C	C	C	C	44	38	34	37
13	39	41	32	31	32	33	33	58	82	103	114	109	99	96	85	85	J R 87	70	50	51	I R 50	38	39	R 40
14	39	32	30	30	30	30	32	61	86	88	111	108	91	81	85	88	86	72	38	46	49	38	38	40
15	41	I R 38	35	33	35	35	34	63	J R 87	88	122	128	104	84	86	89	81	60	68	58	51	J R 42	47	40
16	38	36	39	36	34	35	35	68	92	84	120	130	126	114	105	88	J R 80	69	68	54	39	36	35	35
17	35	40	34	35	V 23	26	26	60	J R 79	116	J R 106	108	J R 107	92	80	84	U R 80	70	53	54	I R 53	I R 48	52	52
18	47	43	37	35	34	33	34	I R 64	I R 84	R 100	108	118	R 107	94	91	79	83	R 69	55	51	39	39	43	40
19	44	43	39	31	33	33	31	61	90	R 100	115	116	102	97	83	82	74	58	48	52	J R 52	39	J R 42	37
20	35	33	35	30	25	26	I A 30	J R 68	D R 80	82	96	112	119	97	83	76	80	66	45	A	31	31	32	33
21	35	42	46	24	26	24	30	54	70	C	92	101	100	84	78	82	72	67	J R 54	38	31	31	I A 37	39
22	35	F 38	43	43	36	36	36	58	72	78	94	95	95	85	80	76	79	62	35	39	30	33	34	33
23	34	37	38	37	31	30	31	59	80	80	81	98	100	88	78	77	J R 76	57	44	36	37	29	I A 30	32
24	33	35	37	38	34	35	39	63	70	87	104	112	88	72	80	84	I R 75	62	57	45	33	27	I A 30	31
25	31	31	32	33	36	36	36	I R 63	80	115	125	119	100	106	113	90	72	J R 77	61	R 54	45	37	45	39
26	37	37	41	32	31	33	30	J R 66	96	125	112	114	102	107	106	97	78	69	56	44	37	32	33	34
27	36	J R 40	I A 36	32	30	30	30	64	89	90	99	91	C	C	C	91	80	76	73	74	42	39	32	30
28	32	I A 32	32	31	31	30	35	67	83	85	97	J R 107	102	93	91	85	86	75	62	61	42	31	30	34
29	35	35	35	34	32	32	32	59	70	84	112	R 105	92	87	79	72	74	61	58	41	42	37	36	36
30	39	38	35	31	33	34	32	60	68	87	100	90	92	80	82	86	77	66	56	49	44	31	35	38
31	37	36	33	32	32	34	37	57	H 65	72	83	96	84	J R 75	78	79	70	58	57	56	I R 50	39	37	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	29	30	31	31	30	30	30	30	30	30	30	29	31	31	31	31
MED	35	36	35	32	31	31	31	61	80	89	108	109	100	90	84	85	76	66	56	48	42	36	35	34
UQ	38	38	38	35	33	34	34	64	84	101	118	118	103	96	91	88	80	70	61	52	46	38	38	38
LQ	33	33	34	31	28	28	30	58	71	84	100	100	94	84	80	80	72	60	50	42	32	31	32	32

IONOSPHERIC DATA

JAN. 1969 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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		L	L										
2										L		L	L	L	L									
3											L	L	L		L									
4										L	L	L	L	L	L	L								
5											L	L	L	L	L									
6											L	L	L	L	L									
7										L	L	L	U L 490	L										
8										L	L	L	L	L	L									
9										L	L	L	L	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L		L								
12										L	L	L	L	L	L	C								
13										L	L	L	L	L	L	L								
14										L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	L	L	L	L										
21										C	L	L	L	L	L									
22										L	L	L	L	L	L	L								
23										L	L	L	L	L	L	L								
24										L	L	L	L	L	L	L								
25										A	L	L	L	L	L									
26										L	L	L	L	L	L									
27										L	L	L	C	C	C	L								
28										L	L		L	L										
29										L	L	L	L	L	L									
30										L	L	L	L	L	L	L								
31										U L 350		L	L	L		L								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1			1											
MED										U L 350			U L 490											
UQ																								
LQ																								

IONOSPHERIC DATA

JAN. 1969 | foE (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	I R 260	I R 300	320	345	350	345	R	R	B	S						
2								175	I A 255	310	330	350	A	A	A	R	220	S						
3								B	255	300	330	335	I R 340	I R 335	I B 325	A	A	B						
4								B	I R 250	305	330	350	360	335	A	240	210	B						
5								200	250	310	330	I R 340	345	330	I A 300	285	A	S						
6								175	270	I R 305	330	I R 345	I R 350	A	A	R	230	B						
7								B	270	310	I A 325	335	I R 340	345	R	R	230	S						
8								B	A	300	330	340	R	325	325	280	230	B						
9								B	255	310	I R 325	I A 330	350	350	I A 340	A	220	S						
10								B	265	310	325	350	350	I R 340	I R 330	290	220	B						
11								185	R 255	300	325	330	340	340	320	280	215	B						
12								B	250	I A 305	I A 325	350	355	340	315	C	C	C						
13								B	255	300	R 330	R 350	350	340	R 310	290	245	B						
14								B	250	I R 290	I R 320	R 350	350	I R 340	320	I A 290	230	B						
15								B	260	A	A	A	A	A	A	290	225	B						
16								B	250	R	A	A	A	A	330	285	230	B						
17								185	270	A	325	345	I R 350	340	335	300	A	B						
18								B	I R 250	290	330	345	I R 350	350	345	290	240	B						
19								B	I R 260	I R 300	325	R	A	A	315	300	230	B						
20								A	R 250	295	330	335	335	335	320	285	235	B						
21								C	250	C	320	330	335	R	A	A	A	B						
22								180	270	295	325	330	R 340	R 335	315	270	240	B						
23								170	255	A	A	330	A	R	A	A	R	B						
24								180	255	A	325	335	350	335	315	290	240	B						
25								B	B	A	A	R	A	A	I R 320	A	B	B						
26								170	255	U A 285	A	A	340	I A 330	315	A	B	B						
27								A	255	290	315	A	C	C	C	285	A	A						
28								B	260	305	A	A	A	A	A	A	230	B						
29								B	R	300	340	A	A	A	A	290	A	B						
30								B	U R 255	300	330	345	355	340	I R 330	290	240	B						
31								180	255	300	330	340	345	I R 340	335	300	R	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								10	28	24	25	23	21	20	20	19	19							
MED								180	255	300	325	340	350	340	320	290	230							
UQ								185	260	305	330	348	350	340	328	290	238							
LQ								175	250	298	325	335	340	335	315	285	222							

IONOSPHERIC DATA

JAN. 1969 | foEs (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	E S 16	E S 16	M 21	E S 16	E S 16	E B 16	G 21	J G 29	G	G	G	G	G	G	E B 25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
2	22	21	E S 16	E S 15	E B 12	E S 16	E S 16	G	32	J G 29	G	J G 33	34	33	36	25	G	J X 22	E S 16	23	21	21	21	18
3	21	21	E S 15	E S 15	E S 16	E S 16	E S 16	E B 16	31	35	36	37	G	G	E B 40	36	J X 30	J X 24	21	J X 23	J X 22	21	J X 25	J X 30
4	J X 29	42	23	E S 16	E S 15	E S 16	E S 16	E B 16	G	G	G	G	G	G	31	G	G	21	E S 16	M 21	E S 15	E S 15	E S 15	E S 15
5	E S 16	E S 15	E B 13	E	E B 14	E S 15	E S 15	G	G	G	35	G	38	35	J X 37	36	J X 40	J X 61	J X 51	J X 24	22	J X 25	31	M 23
6	23	E S 16	E S 16	E	E B 11	E S 16	E S 15	G	G	J G 30	G	G	G	36	35	G 23	G	E B 16	E S 16	M 21	E S 18	E S 16	E S 16	E S 15
7	E S 15	E S 16	E S 16	E S 15	E S 15	J X 24	E S 15	E B 17	G	G	36	36	G	G	G	G	G	J X 25	J X 89	J X 28	28	24	22	J X 41	23
8	J X 24	J X 21	E S 16	23	E S 16	E S 15	E B 14	21	30	J X 39	35	G	G	J G 29	35	J X 29	G 21	23	23	E S 15	E S 15	E S 15	M 21	J X 39
9	J X 25	23	22	E S 15	M 18	E B 14	E B 12	23	29	G	G	36	G 29	G 30	J X 41	36	G 19	J X 42	J X 26	E S 16	E S 16	E S 16	M 21	M 21
10	M 21	M 21	M 21	M 21	E B 13	E S 16	E S 16	21	G	G	36	G	G	G	G	G	J X 30	J X 25	22	M 21	M 21	E S 15	E S 16	E S 16
11	E S 16	E S 16	E	E	E B 12	E S 16	E S 16	G	G	G	G	36	G	G	G	G	G	E B 15	M 22	E S 15	E S 15	J X 24	E S 15	E S 16
12	M 21	22	23	21	E	E S 15	E S 15	E B 16	G	35	J X 41	G	G	G	G	C	C	C	C	C	E S 16	E S 15	E B 13	E S 15
13	E S 16	E S 15	E B 12	M 20	E	E S 15	E S 15	E B 16	G	G	G	G	G	G	G	G	G	21	J X 22	M 31	J X 25	24	E S 15	E S 15
14	E B 12	E	E B 12	E B 11	E B 13	E S 15	E S 15	E B 16	G	35	G 31	G 32	J G 30	G	J G 28	J X 42	G	J X 25	E S 16	E S 16	E S 16	E S 16	E S 15	E S 15
15	E S 16	E S 16	E B 12	E S 16	E S 16	E S 16	E S 16	E B 18	G	34	35	35	J X 41	35	35	J G 29	G 22	J X 29	J X 28	J X 28	J X 25	J X 26	21	21
16	J X 23	23	23	J X 29	22	21	21	J X 25	J G 24	G	36	39	36	35	J G 29	G 25	G	E B 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	E B 11	E B 14	E B 12	M 20	M 21	E S 16	G	G	30	G 22	G	G	G	G	J G 28	J X 29	J X 29	J X 25	J X 24	J X 24	E S 16	E S 16	E S 16
18	E S 16	E S 15	E S 15	E S 16	E	22	21	21	G 21	32	34	G	G	G	G	G 27	G	18	E S 16	21	J X 19	E S 16	E S 15	E S 15
19	E S 15	J X 25	E B 13	E B 12	E S 16	E S 15	E S 15	20	G 24	G	G	G 34	36	36	35	M 35	30	J X 37	J X 25	22	21	21	E S 15	21
20	E S 15	E S 15	E B 12	E B 11	E	24	J X 36	J X 25	G 22	G	G	38	36	40	39	40	28	22	J X 25	J X 73	J X 39	J X 29	M 20	E S 15
21	E S 16	E S 15	E S 15	M 20	J X 25	E S 15	J X 24	C	31	C	G	35	35	35	35	35	35	30	J X 27	J X 25	23	J X 29	J X 37	21
22	E S 16	E S 17	22	21	E S 16	E S 16	E S 16	21	J X 28	32	G	G	G	G	G	G	G	E B 16	E S 15	21	J X 29	J X 37	31	23
23	J X 30	20	23	23	J X 23	17	E S 16	G	G	30	33	J X 36	J X 37	G	35	36	G 21	J X 33	M 31	M 32	J X 26	J X 25	J X 36	M 35
24	J X 42	J X 22	21	E	E B 12	E S 16	18	21	G	J X 38	J G 30	G 24	G 24	G	G	G	G	E B 19	21	21	24	J X 21	J X 38	E S 16
25	E S 16	E S 16	E B 14	E S 15	E S 15	E S 15	E S 16	20	28	M 90	37	G 35	48	44	G	30	E B 25	E B 17	E S 16	E S 16	E S 16	E S 15	E S 15	20
26	J X 23	J X 26	J X 24	23	J X 24	21	E S 16	G	G	J X 42	J X 37	43	42	J X 36	G 30	30	E B 25	E B 18	E S 15	J X 24	M 22	E S 16	E S 15	J X 24
27	E S 16	J X 27	J X 54	J X 23	24	23	23	J X 22	G 20	G	J G 30	J X 55	C	C	C	31	35	30	31	J X 23	21	17	E S 15	E S 16
28	E S 16	40	20	21	J X 25	20	21	E B 20	G	J G 25	35	35	42	J X 43	J X 41	J X 43	G	30	J X 50	J X 29	18	20	E S 16	E S 16
29	E S 15	E S 16	E B 13	20	E	E S 16	E S 16	23	G	G	G	J X 36	J X 40	36	36	35	35	J X 36	J X 30	21	22	24	E S 16	20
30	20	J X 30	35	M 35	J X 29	21	E S 21	J X 24	G	G	G	G	G	G	G	G	G	E B 16	E S 16	E S 15	E S 16	E S 15	24	E S 15
31	E S 15	E S 15	E S 15	E B 12	E B 11	E B 14	M 22	G	G	G	36	G	G	G 31	39	32	22	19	E S 16	J X 29	E S 16	E S 16	E S 16	E S 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	30	31	31	30	30	30	30	30	30	30	30	31	31	31	31
MED	E S 16	17	E 16	16	E E 15	E S 16	E S 16	E G 18	G	G 27	G 30	G 33	E G 24	E G 29	30	29	E G 21	22	22	22	21	17	E S 16	E S 16
UQ	22	22	22	21	20	20	E E 19	21	G 24	32	36	36	36	35	36	35	29	J X 30	J X 27	J X 25	24	24	21	21
LQ	E S 16	E S 15	E B 14	E E 12	E E 12	E S 15	E S 15	G	G	G	G	G	G	G	G	G	G	E B 18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16

IONOSPHERIC DATA

JAN. 1969 | f_bEs (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	E S 16	E S 16	E	E S 16	E S 16	E B 16	E R 21	G 26	G	G	G	G	G	G	E B 25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
2	E	E	E S 16	E S 15	E B 12	E S 16	E S 16	G	28	G 26	G	G 33	E R 34	E R 33	33	E R 25	G	20	E S 16	E	E	E	E	E
3	E	E	E S 15	E S 15	E S 16	E S 16	E S 16	E B 16	30	35	36	36	G	G	E B 40	32	28	17	E	19	19	E	25	29
4	28	A	E	E S 16	E S 15	E S 16	E S 16	E B 16	G	G	G	G	G	G	30	G	G	G	E S 16	E	E S 15	E S 15	E S 15	E S 15
5	E S 16	E S 15	E B 13	E	E B 14	E S 15	E S 15	G	G	G	E R 35	G	E R 38	35	37	33	40	53	20	23	E	19	27	E
6	E	E S 16	E S 16	E	E B 11	E S 16	E S 15	G	G	30	G	G	G	32	32	E R 23	G	E B 16	E S 16	E	E S 18	E S 16	E S 16	E S 15
7	E S 15	E S 16	E S 16	E S 15	E S 15	16	E S 15	E B 17	G	G	E R 36	36	G	G	G	G	G	G	A	24	E	E	A	E
8	E	E	E S 16	E	E S 16	E S 15	E B 14	G	29	27	34	G	G	G 27	28	24	G 19	17	E	E S 15	E S 15	E S 15	18	33
9	17	16	E	E S 15	E	E B 14	E B 12	19	27	G	G	E R 36	G 26	G 26	38	33	G 19	34	E	E S 16	E S 16	E S 16	E	E
10	E	E	E	E	E B 13	E S 16	E S 16	18	G	G	36	G	G	G	G	G	19	G	E	E	E	E S 15	E S 16	E S 16
11	E S 16	E S 16	E	E	E B 12	E S 16	E S 16	G	G	G	G	36	G	G	G	G	G	E B 15	E	E S 15	E S 15	23	E S 15	E S 16
12	E	E	E	E	E	E S 15	E S 15	E B 16	G	32	40	G	G	G	G	C	C	C	C	C	E S 16	E S 15	E B 13	E S 15
13	E S 16	E S 15	E B 12	E	E	E S 15	E S 15	E B 16	G	G	G	G	G	G	G	G	G	16	19	E	16	E	E S 15	E S 15
14	E B 12	E	E B 12	E B 11	E B 13	E S 15	E S 15	E B 16	G	35	E R 31	G 31	G 30	G	G 26	40	G	G	E S 16	E S 16	E S 16	E S 16	E S 15	E S 15
15	E S 16	E S 16	E B 12	E S 16	E S 16	E S 16	E S 16	E B 18	G	31	35	35	39	33	32	G 25	G 19	26	18	19	20	18	E	E
16	19	E	E	26	E	E	E	17	G 19	G	33	37	E R 36	34	G 26	G 25	G	E B 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	E B 11	E B 14	E B 12	E	E	E S 16	G	G	30	G 21	G	G	G	G	G 26	25	26	20	17	E	E S 16	E S 16	E S 16
18	E S 16	E S 15	E S 15	E S 16	E	E	E	19	E R 21	32	34	G	G	G	G	G 26	G	17	E S 16	E	E	E S 16	E S 15	E S 15
19	E S 15	15	E B 13	E B 12	E S 16	E S 15	E S 15	G	E R 24	G	G	E R 34	36	34	34	29	28	25	E	15	E	E	E S 15	E
20	E S 15	E S 15	E B 12	E B 11	E	16	A	15	G 21	G	G	38	36	40	38	39	27	18	E	A	16	21	E	E S 15
21	E S 16	E S 15	E S 15	E	14	E S 15	E	C	27	C	G	E R 35	35	E R 35	33	32	31	26	25	20	E	E	A	E
22	E S 16	E S 17	E	E	E S 16	E S 16	E S 16	17	25	26	G	G	G	G	G	G	G	E B 16	E S 15	20	19	26	16	17
23	E	E	E	E	E	16	E S 16	G	G	30	33	30	37	G	34	30	E R 21	29	24	20	17	16	A	20
24	26	16	E	E	E B 12	E S 16	E	G	G	33	G 26	E R 24	E R 24	G	G	G	G	E B 19	E	E	E	E	A	E S 16
25	E S 16	E S 16	E B 14	E S 15	E S 15	E S 15	E S 16	18	28	56	36	E R 35	48	40	G	30	E B 25	E B 17	E S 16	E S 16	E S 16	E S 15	E S 15	E
26	E	17	E	15	E	E	E S 16	G	G	41	33	37	32	36	G 29	30	E B 25	E B 18	E S 15	22	E	E S 16	E S 15	E
27	E S 16	16	A	17	15	E	E	19	G 19	G	G 26	38	C	C	C	26	29	25	26	19	E	17	E S 15	E S 16
28	E S 16	A	E	E	20	E	E	E B 20	G	G 25	34	E R 35	40	38	40	43	G	25	40	26	E	E	E S 16	E S 16
29	E S 15	E S 16	E B 13	E	E	E S 16	E S 16	17	G	G	G	36	37	35	33	26	26	25	21	E	17	18	E S 16	17
30	17	17	25	26	25	E	E S 21	17	G	G	G	G	G	G	G	G	G	E B 16	E S 16	E S 15	E S 16	E S 15	17	E S 15
31	E S 15	E S 15	E S 15	E B 12	E B 11	E B 14	18	G	G	G	E R 36	G	G	E R 31	35	31	E R 22	19	E S 16	25	E S 16	E S 16	E S 16	E S 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	30	31	31	30	30	30	30	30	30	30	30	31	31	31	31
MED	E S 16	E E 15	E E 13	E E 12	E E 12	E S 15	E S 16	E G 16	G	G 26	E G 26	E G 31	E G 24	E G 26	28	26	E G 19	18	16	16	E E 16	16	E S 16	E S 15
UQ	E S 16	E E 16	E S 15	E S 15	E E 15	E S 16	E S 16	17	21	31	34	36	36	34	34	31	25	25	20	20	E S 16	16	16	E S 16
LQ	E E 12	E E 11	E	E	E	E E 14	E E 14	G	G	G	G	G	G	G	G	G	G	E G 16	E	E	E	E E 15	E S 15	E

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IONOSPHERIC DATA

JAN. 1969 | f-min (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N, Long. 139°29.3'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	E S 16	E S 16	E S 15	E S 16	E S 16	16	17	16	25	26	25	26	26	19	25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
2	E S 16	E S 16	E S 16	E S 15	12	E S 16	E S 16	16	16	16	26	26	26	26	26	18	16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
3	E S 16	E S 16	E S 15	E S 15	E S 16	E S 16	E S 16	16	17	19	26	26	27	25	40	16	16	11	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16
4	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	16	16	16	17	18	19	16	15	16	16	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
5	E S 16	E S 15	13	10	14	E S 15	E S 15	15	14	16	16	18	19	25	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
6	E S 16	E S 16	E S 16	10	11	E S 16	E S 15	14	16	15	16	16	20	26	18	16	15	16	E S 16	E S 16	E S 18	E S 16	E S 16	E S 15
7	E S 15	E S 16	E S 16	E S 15	E S 15	13	E S 15	17	17	16	18	25	26	25	25	16	15	E S 16	E S 15	E S 16	E S 16	E S 16	E S 15	E S 16
8	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	14	19	16	16	16	16	25	17	16	14	15	16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
9	E S 16	12	12	E S 15	E S 15	14	12	16	16	17	26	26	18	19	25	16	15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	12	13	E S 16	E S 16	16	16	16	16	23	26	26	26	16	16	16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16
11	E S 16	E S 16	10	10	12	E S 16	E S 16	16	15	16	16	20	16	19	16	17	16	15	E S 16	E S 15	E S 15	E S 15	E S 15	E S 16
12	E S 16	E S 15	E S 15	E S 15	10	E S 15	E S 15	16	16	15	19	26	26	20	26	C	C	C	C	C	E S 16	E S 15	13	E S 15
13	E S 16	E S 15	12	12	10	E S 15	E S 15	16	15	16	25	25	26	26	25	19	15	14	E S 15	E S 15	12	E S 15	E S 15	E S 15
14	12	10	12	11	13	E S 15	E S 15	16	16	15	19	26	18	18	16	15	16	16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 15
15	E S 16	E S 16	12	E S 16	E S 16	E S 16	E S 16	18	16	18	18	18	20	16	25	16	16	16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
16	E S 16	E S 16	12	E S 16	14	E S 16	E S 16	16	10	16	25	26	19	25	18	16	15	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	11	14	12	11	E S 15	E S 16	16	16	16	16	26	26	25	26	17	14	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
18	E S 16	E S 15	E S 15	E S 16	10	E S 16	E S 16	16	16	18	19	26	26	25	25	17	16	14	E S 16	E S 15	E S 15	E S 16	E S 15	E S 15
19	E S 15	13	13	12	E S 16	E S 15	E S 15	16	16	16	17	18	25	16	14	15	16	16	E S 15	11	E S 15	14	E S 15	E S 15
20	E S 15	E S 15	12	11	10	10	E S 16	12	15	16	16	16	23	18	17	16	14	16	E S 16	E S 16	E S 15	E S 17	E S 16	E S 15
21	E S 16	E S 15	E S 15	E S 15	13	E S 15	E S 16	E C 27	15	C	15	14	26	25	16	16	15	16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16
22	E S 16	E S 17	E S 16	E S 16	E S 16	E S 16	E S 16	15	15	15	16	18	19	20	16	18	16	16	E S 15	E S 15	E S 16	E S 16	12	E S 15
23	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	15	16	16	16	15	17	16	16	15	16	16	E S 15	E S 15	E S 15	13	E S 15	E S 15
24	E S 15	11	14	10	12	E S 16	E S 15	15	16	16	16	16	25	26	20	25	18	19	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 16	14	E S 15	E S 15	E S 15	E S 16	15	25	25	26	27	25	26	28	20	25	17	E S 16	E S 16	E S 16	E S 15	E S 15	E S 15
26	E S 15	E S 15	13	10	E S 15	E S 15	E S 16	14	17	16	16	25	25	26	26	22	25	18	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15
27	E S 16	12	E S 15	10	10	E S 15	E S 15	11	15	15	16	26	C	C	C	14	16	15	E S 16	E S 16	E S 16	13	E S 15	E S 16
28	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	20	15	16	16	26	25	16	18	16	16	16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16
29	E S 15	E S 16	13	E S 16	10	E S 16	E S 16	16	16	16	25	19	25	25	18	16	15	15	E S 15	E S 15	14	E S 15	E S 16	E S 15
30	E S 15	12	12	10	11	E S 15	E S 21	16	15	16	16	16	25	26	26	16	16	16	E S 16	E S 15	E S 16	E S 15	E S 15	E S 15
31	E S 15	E S 15	E S 15	12	11	14	E S 15	15	15	15	19	18	18	18	18	18	14	16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	31	31	30	30	30	30	30	30	30	30	31	31	31	31
MED	E S 16	E S 15	E S 15	E S 15	14	E S 15	E S 16	16	16	16	17	23	25	25	19	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	16	16	16	22	26	26	26	26	18	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E S 15	E S 15	12	10	11	E S 15	E S 15	15	15	16	16	18	19	18	16	16	15	14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969

M(3000)F2(0.01)

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	280	285	280	255	285	320	320	330	J R 305	330	325	320	330	320	315	330	J R 310	335	320	280	275	295	290
2	275	285	285	315	275	275	295	315	J R 330	310	325	315	320	295	315	310	335	310	J R 325	320	285	275	280	295
3	275	305	310	305	275	280	315	325	285	I R 330	315	325	335	330	320	325	350	300	330	335	320	260	280	285
4	285	A	305	330	280	275	310	325	R	345	310	335	345	335	320	330	340	J R 325	350	325	325	285	285	265
5	290	J R 290	340	360	265	280	285	325	U R 360	315	320	315	315	320	320	325	J R 320	300	320	315	320	255	I S 270	290
6	290	280	295	315	275	280	305	315	I R 330	310	315	310	I R 310	320	300	325	325	330	310	340	350	285	290	290
7	280	290	290	295	320	280	285	335	R	315	325	325	315	320	330	335	330	335	I A 315	335	295	260	I A 265	275
8	280	290	325	290	275	265	275	I R 330	I R 340	R 320	335	320	295	305	J R 305	320	330	J R 325	335	325	260	265	290	300
9	300	280	295	310	275	270	275	345	J R 330	J R 340	J R 325	315	310	310	315	330	325	315	345	320	295	295	290	275
10	265	285	295	315	310	275	300	325	I R 330	325	315	335	315	305	315	320	305	315	330	310	315	320	280	I R 280
11	290	295	325	295	265	270	280	330	320	340	350	350	310	320	325	340	350	330	325	325	300	295	300	290
12	285	290	295	310	270	270	295	345	J R 350	330	340	330	325	325	320	C	C	C	C	C	315	280	270	280
13	285	320	315	280	275	275	305	330	340	340	320	330	320	310	305	330	J R 345	355	320	325	I R 310	295	275	R 310
14	310	315	295	275	270	285	315	345	360	325	330	315	320	310	310	310	320	345	325	310	310	285	275	285
15	290	I R 285	285	290	290	275	305	310	J R 325	330	315	330	325	305	305	310	330	315	310	315	320	J R 285	305	295
16	305	295	280	300	275	265	275	335	335	310	300	310	300	305	305	320	J R 315	305	310	320	320	295	265	285
17	265	270	275	305	V 260	275	280	315	J R 340	335	J R 320	315	J R 325	310	315	320	U R 320	330	315	300	I R 295	I R 270	290	300
18	320	305	295	275	270	280	270	I R 325	I R 330	R 330	325	320	R 325	330	330	330	310	R 335	305	320	290	285	280	285
19	305	315	325	275	270	260	295	330	350	R 330	330	340	325	320	340	340	325	330	310	305	J R 340	305	J R 300	305
20	300	300	290	335	305	270	I A 290	J R 340	R	330	300	340	335	335	330	325	335	360	335	A	285	305	290	285
21	285	330	365	290	265	280	300	355	340	C	305	335	320	335	320	315	320	330	J R 315	325	315	315	I A 305	305
22	295	F 280	310	300	300	280	305	350	350	350	320	335	325	330	325	335	345	350	315	320	300	A	310	295
23	295	295	320	320	260	270	305	340	350	350	320	325	320	340	320	310	J R 340	330	325	305	305	290	I A 280	280
24	275	290	300	285	270	270	305	330	360	320	325	340	340	330	315	300	I R 335	325	315	340	345	290	I A 275	290
25	285	260	255	275	265	280	280	I R 310	320	320	315	330	310	295	320	325	320	J R 325	315	R 330	325	270	310	290
26	270	255	315	285	270	255	270	J R 325	325	350	315	325	280	315	310	340	345	320	330	320	320	295	270	275
27	270	J R 290	I A 300	280	295	280	280	345	370	360	350	340	C	C	C	350	330	325	310	340	360	325	310	300
28	270	I A 275	280	295	305	270	290	330	350	330	320	J R 320	325	325	320	310	325	335	310	330	335	300	275	275
29	270	285	295	305	295	280	320	340	355	340	335	R 340	320	330	340	320	340	325	330	345	300	280	280	275
30	275	285	300	300	300	275	295	350	345	330	340	330	340	335	305	325	335	330	325	310	340	290	275	295
31	300	295	285	275	275	275	300	350	H 360	335	335	315	335	J R 325	310	320	345	335	315	310	I R 340	295	305	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	28	30	31	31	30	30	30	30	30	30	30	29	31	30	31	31
MED	285	290	295	295	275	275	295	330	340	330	320	325	320	320	320	325	330	328	320	320	315	288	280	290
UQ	295	295	312	310	292	280	305	342	350	340	330	335	325	330	320	330	340	335	330	330	325	295	298	295
LQ	275	280	288	282	270	270	280	325	330	320	315	318	315	310	310	315	320	315	315	315	298	275	275	280

IONOSPHERIC DATA

JAN. 1969 | M(3000)F1(0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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		L	L										
2										L		L	L	L	L									
3											L	L	L		L									
4										L	L	L	L	L	L	L								
5											L	L	L	L	L									
6											L	L	L	L	L									
7										L	L	L	U L 340	L										
8										L	L	L	L	L	L									
9										L	L	L	L	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L		L								
12										L	L	L	L	L	L	C								
13										L	L	L	L	L	L	L								
14										L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	L	L	L	L										
21										C	L	L	L	L	L									
22										L	L	L	L	L	L	L								
23										L	L	L	L	L	L	L								
24										L	L	L	L	L	L	L								
25										A	L	L	L	L	L									
26										L	L	L	L	L	L									
27										L	L	L	C	C	C	L								
28										L	L		L	L										
29										L	L	L	L	L	L									
30										L	L	L	L	L	L	L								
31										U L 435		L	L	L		L								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1			1											
MED										U L 435			U L 340											
UQ																								
LQ																								

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	250		250	250										
2										275		255	245	250	250									
3											285	250	250		260									
4										230	250	250	240	225	255	240								
5											265	250	250	250	260									
6											250	250	250	255	265									
7										240	250	250	285	270										
8										255	255	250	265	250	255									
9										245	265	260	255	250	260									
10										250	275	245	250	265	250	250								
11										245	245	240	280	250		240								
12										250	245	240	250	240	240	C								
13										245	255	250	260	255	270	260								
14										240	250	245	245	250	250	260								
15										240	285	250	250	240	250	250								
16										225	265	250	250	255	250	250								
17											250	250	250	250	240	260								
18											240	250	245	250	245									
19										230	250	235	250	250	240									
20										250	280	245	280	250										
21										C	245	250	265	250	250									
22										230	265	240	250	250	255	250								
23										245	240	255	260	250	250	250								
24										250	245	250	250	240	275	250								
25										260A	240	245	260	260	255									
26										250	240	255	310	240	270									
27										230	235	225	C	C	C	215								
28										230	250		265	250										
29										230	255	250	250	260	245									
30										250	240	250	255	255	240	260								
31										240		275	250	260		250								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										25	29	29	30	29	24	14								
MED										245	250	250	250	250	250	250								
UQ										250	265	250	260	255	260	260								
LQ										230	245	245	250	250	248	250								

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | h'F (km) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	320	295	295	350	300	250	240	220	250	240	245	230	230	240	240	215	245	210	225	250	300	285	290
2	305	305	290	250	260	310	295	245	220	245	245	245	245	240	240	220	220	240	220	215	280	310	290	290
3	295	295	275	250	280	300	250	245	215	240	245	245	240	245	245	240	220	230	240	210	250	310	I A 320	A
4	360	A	260	245	300	300	275	245	240	225	220	245	220	220	205	220	210	240	210	240	210	280	270	300
5	305	280	245	200	360	305	290	240	220	240	250	240	240	240	I A 245	245	245	A	250	235	235	335	A	290
6	300	310	285	235	250	320	260	240	240	250	240	240	230	240	240	250	240	240	250	210	210	310	300	300
7	300	310	260	250	250	310	280	240	225	200	225	230	200	250	250	240	220	220	A	240	240	340	I A 325	340
8	320	295	210	240	350	400	320	230	235	240	240	225	220	230	210	245	230	240	210	225	250	305	280	A 290
9	250	290	270	250	250	340	260	230	220	235	235	240	230	240	250	240	220	E A 260	225	235	250	265	275	300
10	300	300	285	245	250	300	290	235	220	235	240	210	230	220	200	240	230	220	220	250	245	245	295	300
11	300	275	220	250	300	340	290	235	215	220	200	210	225	220	245	220	215	210	230	250	250	A 290	270	270
12	270	285	280	245	285	325	260	220	210	240	230	210	210	215	205	C	C	C	C	C	225	255	310	300
13	290	250	210	295	300	310	250	240	230	240	H 230	220	210	240	210	230	210	205	240	235	225	255	290	250
14	245	245	255	290	305	315	255	230	230	235	235	225	210	220	220	240	235	220	210	265	235	275	270	300
15	265	285	275	300	280	300	265	250	220	230	240	240	210	210	220	240	230	220	250	250	240	275	260	250
16	250	290	260	260	260	350	310	245	220	210	240	230	240	215	220	240	220	220	235	230	240	250	340	300
17	310	320	230	260	210	350	320	245	210	250	220	220	240	235	220	250	245	240	220	270	250	300	290	260
18	245	250	250	300	300	320	290	215	220	230	230	220	210	205	225	225	235	210	230	220	255	290	275	260
19	270	240	230	250	340	350	270	240	235	220	H 200	240	210	H 190	220	235	230	220	240	245	220	240	270	245
20	255	255	255	210	240	A 340	A	230	210	225	220	230	210	240	235	230	230	215	220	A	310	300	315	320
21	300	255	220	215	340	350	275	220	225	C	235	250	220	240	230	235	240	245	260	230	240	270	I A 295	250
22	275	300	260	240	250	300	250	230	230	225	225	220	215	220	215	225	240	210	205	245	255	A	240	270
23	290	255	240	225	305	335	260	230	230	230	200	240	220	225	220	220	230	220	240	250	245	260	I A 305	310
24	A 340	275	270	255	260	310	240	240	220	230	210	220	220	210	210	230	245	210	250	220	210	290	I A 330	300
25	330	370	360	330	310	300	300	240	240	I A 235	225	225	220	230	220	235	235	235	225	210	230	250	275	260
26	300	340	255	255	290	345	310	255	240	I A 240	210	210	210	225	230	240	230	230	220	245	220	255	325	320
27	320	270	I A 260	290	245	305	305	220	220	220	230	230	C	C	C	190	235	235	240	225	200	240	255	285
28	330	I A 330	325	295	300	340	285	230	215	210	230	240	240	210	250	250	245	210	275	250	210	250	290	305
29	300	300	275	265	255	290	250	235	225	220	235	220	220	220	230	210	230	220	240	205	255	260	285	300
30	300	280	A 290	I A 300	A 300	270	260	220	220	240	210	205	220	205	210	245	230	220	220	240	210	255	305	270
31	250	270	260	290	310	300	250	210	H 200	200	250	220	235	230	250	230	230	230	240	250	220	250	260	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	30	31	31	30	31	31	30	30	30	30	30	29	29	29	31	30	30	30
MED	300	288	260	250	290	310	272	235	220	232	230	230	220	225	222	238	230	220	230	235	240	272	290	290
UQ	305	305	278	290	305	340	290	240	230	240	240	240	230	240	240	240	235	238	240	250	250	300	305	300
LQ	270	270	248	245	252	300	255	230	220	220	220	220	210	215	215	225	220	220	220	225	220	255	270	270

IONOSPHERIC DATA

JAN. 1969 | h'Es (km) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	100	S	S	B	120	110	G	G	G	G	G	G	B	S	S	S	S	S	S	S
2	100	100	S	S	B	S	S	G	110	110	G	110	110	110	110	110	G	100	S	100	100	100	100	100
3	100	100	S	S	S	S	S	B	170	150	150	145	G	G	B	100	100	100	100	105	100	100	100	100
4	100	100	100	S	S	S	S	B	G	G	G	G	G	G	105	G	G	100	S	100	S	S	S	S
5	S	S	B	E	B	S	S	G	G	G	185	G	160	145	130	125	110	110	105	105	105	100	100	100
6	100	S	S	E	B	S	S	G	G	110	G	G	G	110	110	110	G	B	S	100	S	S	S	S
7	S	S	S	S	S	110	S	B	G	G	110	160	G	G	G	G	G	110	110	105	100	100	105	100
8	100	100	S	110	S	S	B	100	110	105	140	G	G	105	100	100	100	100	100	S	S	S	100	100
9	100	100	100	S	100	B	B	140	160	G	G	110	105	100	105	110	100	110	110	S	S	S	100	100
10	100	100	100	100	B	S	S	150	G	G	150	G	G	G	G	G	100	100	100	100	100	S	S	S
11	S	S	E	E	B	S	S	G	G	G	G	170	G	G	G	G	G	B	110	S	S	100	S	S
12	110	100	100	105	E	S	S	B	G	120	110	G	G	G	G	C	C	C	C	C	S	S	B	S
13	S	S	B	100	E	S	S	B	G	G	G	G	G	G	G	G	G	110	110	105	105	105	S	S
14	B	E	B	B	B	S	S	B	G	125	110	110	110	G	105	100	G	100	S	S	S	S	S	S
15	S	S	B	S	S	S	S	B	G	135	120	115	110	110	105	110	110	105	105	105	100	100	100	100
16	110	105	100	100	100	100	100	100	100	G	115	115	110	110	110	105	G	B	S	S	S	S	S	S
17	S	B	B	B	100	110	S	G	G	120	100	G	G	G	G	110	110	105	100	100	100	S	S	S
18	S	S	S	S	E	100	100	100	110	190	155	G	G	G	G	110	G	110	S	100	100	S	S	S
19	S	120	B	B	S	S	S	105	115	G	G	110	110	110	150	110	140	105	105	105	105	100	S	100
20	S	S	B	B	E	115	110	105	105	G	G	135	130	130	130	125	180	150	110	100	100	100	100	S
21	S	S	S	115	110	S	105	C	100	C	G	150	140	140	115	110	110	110	105	105	100	100	100	100
22	S	S	100	100	S	S	S	110	110	150	G	G	G	G	G	G	G	B	S	110	105	105	100	100
23	100	105	100	100	100	100	S	G	G	115	110	110	105	G	110	110	105	105	105	105	100	100	105	100
24	105	100	105	E	B	S	120	110	G	110	105	105	105	G	G	G	G	B	100	100	100	100	100	S
25	S	S	B	S	S	S	S	120	110	115	110	110	105	105	G	105	B	B	S	S	S	S	S	100
26	105	105	105	105	105	105	S	G	G	110	110	105	110	110	110	110	B	B	S	110	110	S	S	100
27	S	110	105	105	105	100	100	100	105	G	105	100	C	C	C	175	100	100	100	100	100	100	S	S
28	S	100	100	100	100	100	100	B	G	110	105	105	105	105	105	105	G	105	105	100	100	100	S	S
29	S	S	B	100	E	S	S	110	G	G	G	105	105	105	105	105	105	100	100	100	100	100	S	100
30	105	105	100	100	105	105	S	100	G	G	G	G	G	G	G	G	G	B	S	S	S	S	100	S
31	S	S	S	B	B	B	105	G	G	G	180	G	G	110	145	140	110	140	S	105	S	S	S	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	15	12	13	10	10	8	13	13	16	18	18	15	15	17	21	14	21	18	22	19	16	13	14
MED	100	100	100	100	100	102	102	105	110	115	110	110	110	110	110	110	108	105	105	102	100	100	100	100
UQ	105	105	102	105	105	110	108	110	115	130	150	135	110	110	115	110	110	110	110	105	102	100	100	100
LQ	100	100	100	100	100	100	100	100	105	110	110	105	105	105	105	105	100	100	100	100	100	100	100	100

IONOSPHERIC DATA

JAN. 1969

Types of Es

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					F 1				L 1	L 1														
2	F 1	F 1							L 1	L 1		L 1	L 1	L 1	L 1	L 1		L 1		F 2	F 1	F 1	F 1	F 1
3	F 1	F 1							H 1	H 1	H 1	H 1				L 1	L 2	L 1	F 1	F 2	F 4	F 1	F 1	F 2
4	F 3	F 3	F 1												L 1			L 1		F 1				
5											H 1		HL 11	HL 11	H 1	C 1	L 2	L 3	F 2	F 2	F 1	F 3	F 3	F 2
6	F 2									L 1				C 1	C 1	L 1				F 1				
7						F 2					L 1	H 1						L 1	F 3	F 2	F 2	F 1	F 2	F 1
8	F 1	F 1		F 1				L 1	L 1	L 1	HL 11			L 1	L 2	L 1	L 1	L 1	F 2				F 2	F 3
9	F 2	F 1	F 1		F 1			H 2	H 1			C 1	L 1	L 1	L 2	L 1	L 1	L 2	F 1				F 1	F 1
10	F 1	F 1	F 1	F 1				H 1			HL 11						L 1	L 1	F 1	F 1	F 1			
11												H 1							F 1			F 3		
12	F 1	F 1	F 1	F 1						C 1	L 2													
13				F 1														L 1	F 2	F 1	F 2	F 1		
14										H 1	L 1	L 1	L 1		L 1	L 1		L 1						
15										H 1	H 1	C 1	C 1	L 1	L 1	L 1	L 1	L 2	F 2	F 2	F 2	F 2	F 1	F 1
16	F 2	F 2	F 1	F 2	F 1	F 1	F 1	L 2	L 1		C 1	C 1	L 1	L 1	L 1	L 1								
17					F 1	F 1				H 1	L 1					L 1	L 2	L 3	F 2	F 1	F 2			
18						F 1	F 1	L 1	L 1	HL 11	H 1					L 1		L 1		F 1	F 1			
19		F 1						L 1	L 1			L 1	L 2	LH 11	HL 11	L 2	HL 22	L 3	F 2	F 1	F 1	F 1		F 1
20						F 1	F 4	L 1	L 2			H 1	H 1	H 1	H 1	H 1	H 1	H 1	F 1	F 3	F 2	F 2	F 1	
21				F 1	F 1		F 2		LH 11			H 1	H 1	H 1	C 1	C 1	L 2	L 2	F 3	F 2	F 1	F 2	F 3	F 1
22			F 1	F 1				L 1	L 1	HL 11										F 2	F 2	F 3	F 2	F 2
23	F 2	F 1	F 1	F 1	F 1	F 1				C 1	L 1	L 1	L 1		L 2	L 2	L 1	L 2	F 3	F 2	F 2	F 2	F 3	F 3
24	F 3	F 3	F 1				F 1	L 1		L 1	L 1	L 1	L 1						F 1	F 1	F 1	F 2	F 2	
25								L 1	L 1	C 2	C 2	L 1	L 1	L 1		L 1								F 1
26	F 2	F 3	F 1	F 1	F 2	F 1				C 3	C 1	L 2	L 1	L 1	L 1	L 1				F 2	F 1			F 1
27		F 2	F 4	F 3	F 2	F 2	F 2	L 2	L 1		L 1	L 1				H 1	L 1	L 1	F 1	F 1	F 1	F 1		
28		F 3	F 1	F 1	F 2	F 1	F 1			L 1	L 1	L 1	L 1	L 1	L 1	L 2		L 1	F 2	F 2	F 1	F 1		
29				F 1				L 1				L 1	L 1	L 1	L 1	L 1	L 1	L 1	F 1	F 1	F 1	F 1		F 1
30	F 2	F 2	F 2	F 3	F 3	F 1		L 1															F 1	
31							F 2				H 1			L 1	H 1	H 1	L 1	H 1		F 3				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | hpF2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	380	385	370	350	420	360	290	300	270	J R 310	290	290	300	290	270	300	275	J R 300	265	295	345	375	340	345
2	380	360	345	300	375	390	345	300	J R 265	300	280	300	280	315	300	290	265	300	J R 270	280	350	385	350	360
3	365	340	310	300	375	365	300	275	345	I R 275	320	275	265	265	290	275	255	340	280	260	300	400	390	I A 360
4	A	A	310	260	365	365	330	280	R	255	305	270	255	255	295	270	250	J R 290	250	290	280	345	345	390
5	350	J R 335	260	230	400	355	340	280	U R 250	290	300	295	295	280	295	285	J R 275	310	300	285	285	400	I S 370	335
6	355	375	325	295	365	375	300	290	I R 275	290	285	300	I R 300	290	310	290	275	290	310	260	250	380	360	350
7	390	370	345	300	300	360	330	275	R	300	290	280	300	300	275	260	275	280	I A 295	280	310	400	I A 400	400
8	390	340	265	340	400	440	380	I R 280	I R 265	R 305	285	290	315	305	J R 305	300	260	J R 270	255	285	375	365	350	315
9	310	350	310	300	350	380	345	250	J R 270	J R 265	J R 285	300	300	300	300	275	265	300	275	290	335	320	340	385
10	380	350	335	300	320	385	330	285	I R 275	290	300	280	290	300	300	300	300	310	290	310	300	300	360	I R 350
11	350	315	265	360	430	390	380	270	275	265	250	250	310	295	270	270	250	270	280	295	310	320	315	345
12	335	335	335	295	390	390	315	250	J R 350	280	270	285	280	280	280	C	C	C	C	C	295	330	380	360
13	345	285	270	355	375	370	300	280	260	275	295	290	295	300	305	290	J R 250	240	295	280	I R 300	305	360	R 305
14	300	295	315	350	370	360	290	255	250	260	280	280	290	285	300	300	280	260	280	320	300	350	370	350
15	360	I R 350	350	350	350	360	320	300	J R 265	260	300	290	290	300	300	300	260	300	300	300	300	J R 350	340	315
16	300	350	330	300	350	400	380	280	260	300	310	310	300	300	310	300	J R 300	300	300	300	300	310	400	350
17	400	390	385	320	V 380	400	370	300	J R 250	275	J R 300	300	J R 280	300	300	300	U R 290	270	300	320	I R 340	I R 395	345	325
18	300	310	315	375	400	390	360	I R 275	I R 280	R 280	290	290	R 285	285	270	265	290	R 255	300	290	330	355	350	345
19	315	290	275	355	390	410	320	270	250	R 285	285	255	290	295	260	260	280	270	310	315	J R 265	300	J R 340	300
20	305	310	310	255	295	385	I A 320	J R 250	R	280	340	260	270	280	270	290	270	250	260	A	370	330	370	380
21	360	280	240	300	390	360	320	250	250	C	315	285	300	275	290	300	275	285	J R 300	275	300	320	I A 330	310
22	335	F 365	315	320	345	380	310	250	250	260	300	255	290	260	285	260	255	250	270	290	310	A	290	315
23	325	310	290	280	380	390	315	255	250	250	290	290	300	265	270	295	J R 255	250	265	300	285	300	I A 360	350
24	350	325	315	340	360	385	300	260	250	290	290	275	260	260	300	350	I R 260	265	300	260	260	350	I A 385	360
25	380	420	420	390	400	380	390	I R 330	290	300	300	275	305	330	295	280	290	J R 270	300	R 265	280	360	310	305
26	370	395	300	320	365	410	390	J R 295	290	260	300	290	360	280	305	260	250	290	275	280	270	315	380	380
27	380	J R 310	I A 300	340	315	375	360	250	245	250	260	260	C	C	C	250	270	280	300	260	240	300	310	340
28	400	I A 390	380	360	330	420	340	270	250	260	300	J R 290	290	290	300	300	290	260	300	290	285	310	360	375
29	400	350	335	310	330	360	300	275	250	250	275	R 265	280	280	255	290	255	290	280	245	310	340	350	360
30	360	335	310	I A 315	315	350	315	250	250	270	260	270	260	270	290	290	260	265	285	300	265	310	375	325
31	310	315	330	370	375	365	300	250	H 245	265	265	300	280	J R 290	310	295	260	265	300	310	I R 270	300	300	320
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	31	31	31	31	28	30	31	31	30	30	30	30	30	30	30	29	31	30	31	31
MED	358	340	315	320	370	380	320	275	260	275	290	285	290	290	295	290	268	275	292	290	300	335	350	350
UQ	380	365	335	350	390	390	352	282	R 275	290	300	290	300	300	300	300	280	300	300	300	310	365	370	360
LQ	325	310	300	300	348	362	305	252	250	260	282	272	280	280	275	270	255	265	275	280	280	310	340	320

IONOSPHERIC DATA

JAN. 1969 | YpF2 (km) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	95	110	110	80	100	90	100	130	J R 80	90	70	60	110	180	90	115	J R 130	125	105	135	85	110	95
2	80	90	95	120	115	50	65	110	J R 95	80	70	80	70	95	100	150	85	90	J R 90	80	110	105	90	130
3	95	70	80	100	115	125	100	85	145	I R 105	80	75	95	125	70	85	95	80	110	130	100	100	100	I A 95
4	A	A	80	80	125	125	120	110	R	50	90	75	60	100	60	75	70	J R 60	55	65	80	100	100	105
5	55	J R 75	45	65	100	90	60	80	U R 45	100	90	65	95	100	65	115	J R 135	150	80	105	105	90	I S 80	85
6	65	115	85	95	135	115	100	100	I R 90	90	105	90	I R 120	100	90	80	85	70	90	130	110	110	90	90
7	100	90	75	90	90	100	80	85	R	90	70	110	60	90	85	80	85	110	I A 100	110	100	110	I A 100	90
8	100	100	85	110	80	60	80	I R 105	I R 70	R 95	60	65	85	100	J R 90	60	85	J R 90	65	70	90	90	95	85
9	90	110	90	65	100	75	110	50	J R 75	J R 115	J R 75	90	90	100	100	75	105	90	75	100	85	90	100	75
10	110	110	75	90	80	105	90	105	I R 105	70	90	80	100	120	100	90	100	100	110	100	100	100	90	I R 100
11	90	75	115	120	70	90	90	90	115	80	55	55	75	75	85	50	50	85	105	55	85	80	80	65
12	70	65	65	75	105	105	80	55	J R 50	75	40	70	80	70	75	C	C	C	C	C	75	80	65	85
13	60	70	85	90	90	100	70	70	60	55	65	60	55	95	75	65	J R 50	60	65	75	I R 75	95	95	R 70
14	60	65	85	95	80	85	65	50	35	130	80	70	100	105	90	90	80	80	70	80	100	90	130	90
15	90	I R 110	90	90	80	100	70	90	J R 135	120	90	70	100	90	100	100	100	100	100	100	100	J R 90	100	95
16	100	70	110	100	90	100	100	120	140	100	100	90	110	100	90	70	J R 120	110	100	100	90	90	100	60
17	100	100	115	80	V 120	100	90	110	J R 110	70	J R 60	100	J R 120	100	100	60	U R 90	90	100	90	I R 90	I R 105	95	95
18	100	90	95	85	90	80	80	I R 105	I R 110	R 65	75	65	R 70	60	85	80	105	R 90	95	70	75	90	95	100
19	80	70	70	90	70	85	80	75	50	R 60	60	90	65	60	85	80	70	85	85	80	J R 45	95	J R 65	95
20	90	90	90	60	75	70	I A 90	J R 60	R	70	70	70	90	60	90	70	70	40	80	A	70	80	85	80
21	50	80	80	80	60	70	90	50	90	C	85	65	60	75	110	100	85	75	J R 100	105	100	90	I A 85	110
22	85	F 95	85	80	65	120	90	50	90	85	95	85	65	95	70	85	45	55	85	65	90	A	65	85
23	75	80	65	75	75	80	75	55	55	50	65	55	55	80	100	60	J R 60	95	90	100	70	100	I A 80	105
24	95	75	80	115	95	70	85	70	45	80	70	75	80	100	60	60	I R 90	85	100	90	70	140	I A 115	60
25	60	80	80	70	100	110	100	I R 90	100	50	90	75	90	115	60	75	65	J R 60	70	R 75	75	95	80	95
26	85	100	90	90	95	85	105	J R 60	65	50	65	60	90	115	65	60	55	65	70	75	85	75	90	75
27	115	J R 85	I A 70	110	90	95	95	55	45	50	50	55	C	C	C	60	80	80	100	60	60	70	50	60
28	60	I A 65	70	80	90	80	60	90	80	90	80	J R 90	100	100	80	90	70	100	100	90	85	90	80	115
29	100	90	85	80	110	80	100	115	100	60	65	R 70	85	65	65	65	60	65	65	100	85	105	105	100
30	95	75	80	I A 90	95	75	80	55	60	90	85	90	80	75	80	70	60	60	70	85	80	85	75	75
31	85	80	90	95	80	90	95	50	H 40	95	85	90	60	J R 70	90	95	80	85	100	90	I R 85	100	90	80
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	31	31	31	31	28	30	31	31	30	30	30	30	30	30	30	29	31	30	31	31
MED	90	82	85	90	90	90	90	85	85	80	75	75	82	98	85	78	82	85	90	90	85	90	90	90
UQ	100	95	90	98	100	100	98	102	108	95	88	90	95	100	100	90	95	95	100	100	100	100	100	98
LQ	70	75	78	80	80	80	80	55	52	60	65	65	65	75	70	65	65	65	70	75	75	90	80	78

IONOSPHERIC DATA

JAN. 1969 | foF2 (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	37	34	35	33	31	33	S 38	49	71	77	I S 118	135	119	100	S 104	S 101	102	78	J S 74	65	J S 47	38	34	S 35
2	34	34	39	42	24	26	31	43	S 83	101	S 109	119	125	J R 126	U S 136	129	99	J S 79	68	65	J S 62	52	S 51	S 45
3	39	37	34	34	28	27	27	S 43	72	81	95	116	119	113	99	103	94	75	61	S 73	S 56	43	39	40
4	39	S 40	40	44	26	22	23	40	85	S 88	84	99	130	J S 124	J S 104	100	S 92	81	S 65	70	71	51	37	38
5	39	42	46	38	24	22	23	S 40	83	105	S 98	S 98	S 119	J S 128	107	112	94	J S 88	63	S 64	J S 69	53	S 41	43
6	S 45	40	36	32	27	24	S 26	J S 44	S 86	S 108	S 117	109	123	J C 142	J C 143	I C 127	U C 113	106	69	75	S 70	J S 49	42	35
7	33	32	36	39	32	27	28	S 40	84	J S 96	99	U C 109	113	J S 120	J C 125	C 102	S 82	78	C 63	57	J S 50	U S 51	42	38
8	37	44	36	19	20	F 25	26	61	74	79	104	125	U C 131	128	U C 124	C 119	106	91	79	71	C 66	U C 58	54	C 54
9	49	39	36	34	25	19	17	40	91	83	98	107	C 127	125	J C 126	121	100	81	81	61	57	J C 48	45	36
10	33	33	33	34	30	24	23	S 42	S 90	H 81	C 94	128	123	128	143	U C 148	C 148	128	I C 96	C 80	79	J S 80	S 57	43
11	40	40	38	27	26	28	25	S 42	81	S 96	97	85	105	97	115	96	97	83	58	55	66	66	50	42
12	37	35	32	31	27	28	25	44	83	83	111	110	105	114	S 120	S 116	I C 121	J C 114	C	C	I C 97	C 75	53	45
13	C 44	43	34	27	29	29	30	40	78	113	C 101	I C 118	J C 114	C 126	I C 129	I C 127	S 130	J S 126	I C 98	U C 70	I C 80	J C 75	J C 68	I C 64
14	S 60	J C 49	H 35	28	28	28	28	S 44	75	S 106	95	104	C 96	C 93	C 96	J C 99	C 97	J C 104	I C 81	J C 61	U C 77	J C 65	J C 49	36
15	35	35	31	31	32	31	31	42	82	85	95	130	C 126	97	C 98	C 95	95	80	66	64	58	45	46	J C 46
16	37	31	35	33	31	J C 33	35	54	83	C 83	C 109	C 141	142	C 122	S 129	J S 124	J S 123	106	81	66	J S 64	J S 63	J S 56	S 58
17	S 47	I S 44	41	37	30	23	22	S 41	S 96	S 86	S 113	103	J S 117	122	S 117	104	106	H 93	J S 67	J S 54	S 62	58	49	51
18	51	45	39	31	32	33	30	49	S 80	S 94	108	S 117	113	112	97	88	86	90	70	60	S 62	56	54	S 58
19	46	48	40	23	25	27	24	40	87	J S 103	U S 113	126	R 122	128	R 107	R 87	75	S 75	59	S 53	67	67	41	41
20	36	35	29	31	25	26	27	46	S 75	S 82	S 88	J S 119	114	111	S 97	92	S 87	S 98	66	J S 49	S 47	J S 52	S 45	40
21	S 43	46	47	25	21	F 22	24	39	S 72	85	104	93	103	129	126	J S 143	138	121	73	59	63	S 48	35	F 34
22	S 31	30	30	31	29	27	27	45	J S 64	75	S 93	119	109	111	H 112	94	83	84	66	43	53	H 50	36	33
23	33	34	36	32	29	F 30	30	40	83	100	90	93	I S 112	135	S 157	S 148	S	88	79	J S 61	65	S 63	J S 42	32
24	33	34	34	33	30	28	S 32	46	76	83	95	106	100	89	85	89	91	97	73	60	66	60	36	33
25	35	33	33	35	36	35	35	43	78	S 111	127	112	111	123	131	111	99	96	87	78	66	61	44	43
26	41	39	43	27	29	32	S 33	46	S 98	S 120	S 117	134	S 118	123	106	97	103	104	R 85	59	61	52	40	39
27	37	44	F 40	30	29	31	S 33	S 48	85	83	92	H 107	105	102	106	113	S 114	116	102	S 97	I S 94	U S 78	61	48
28	S 43	38	37	I A 34	36	S 36	36	S 54	S 79	88	S 95	127	131	131	S 118	115	123	122	105	S 76	74	49	40	40
29	39	34	35	38	33	30	30	44	S 79	77	S 100	114	111	S 110	98	95	87	85	68	62	S 58	62	55	50
30	44	38	41	F 30	31	31	S 32	41	73	87	S 94	105	94	93	90	84	96	S 96	79	S 61	60	51	47	S 51
31	S 44	36	34	30	29	31	30	46	73	73	73	R 89	92	93	86	84	S 89	81	S 61	S 60	71	58	S 42	35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	30	31	31	31	31
MED	39	38	36	32	29	28	28	43	81	86	98	112	114	122	112	103	98	91	72	62	65	56	45	41
UQ	44	42	40	34	31	31	32	46	84	S 100	109	122	123	127	126	120	113	105	81	70	70	63	52	47
LQ	36	34	34	30	26	26	25	40	75	82	94	104	107	106	98	95	91	81	66	59	S 59	50	40	36

IONOSPHERIC DATA

JAN. 1969 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	L	L	L	L								
2										L	L	L	L	L	U L 520	L	320							
3											L	L	L	L	L	L								
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L	L							
6										L	L	U L 490	L	L 450	L	L								
7											L	L	U L 630	L	L	L								
8										L	L	L	U L 490	L	L	L								
9											L 390	L	L	L	L	L	L							
10											L	L 500	L	L	L	L								
11											L	L	L	L	L	L	L 340							
12										L	L	L	L	L	L	L	L							
13										L	L	L	L 470	L	L	L 410	L							
14										L	L	L	L	L	L	L	L							
15											L	L	L	L	L	L								
16										L	L	L	L	L 500	L	L	L							
17											L	L	L 540	L	L	L	310							
18											L	L	L	L	L	L	L							
19										L	L	L	L	L	L	L	340							
20										L	L	L	L	L	A	L	330							
21											L	L	L	L	L	L	A							
22										L	L	L 450	L	L	L	L	L							
23										L	L	L	L	500	L	L	L							
24										L	L	L	L	L	L	L 380	L							
25											L	L	L	L	L	L								
26										L	L	L	L	L	L	L								
27										350	L	L	L	L	L	L 490	L							
28									250		L	L	L	L	L	L	L							
29											L	L	L	L	L	L	L							
30											L	L	L	L	L	L	L	L						
31											L	L	L	L 510	L	L	L							

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	1	3	4	4	1	3	5							
MED									250	350	L 390	L 490	L 515	L 500	U L 520	L 410	330							
UQ												L 495	L 585	L 505		L 450	340							
LQ												L 470	L 480	475		L 395	320							

IONOSPHERIC DATA

JAN. 1969 | foE (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	220	280	315	330	340	340	335	300	260	A						
2								S	200	280	IA 320	340	350	R 350	IA 345	300	260	180						
3								S	235	290	330	340	350	350	350	310	280	A						
4								S	H 220	H 280	IA 310	IA 340	350	350	330	300	H 270	A						
5								S	210	290	320	340	350	350	330	310	A	A						
6								S	220	290	325	340	355	350	330	305	270	190						
7								S	220	290	IA 315	340	C 350	350	A	A	A	A						
8								S	190	285	IA 315	IA 335	C 350	360	340	310	A	A						
9								S	220	285	325	345	350	350	340	320	280	A						
10								S	220	290	320	350	355	350	340	320	280	170						
11								S	H 220	280	H 315	H 340	350	350	340	310	250	A						
12								S	220	290	IA 310	IA 335	350	350	340	310	270	200						
13								S	H 230	290	310	340	350	340	335	310	270	A						
14								S	210	270	H 305	335	350	350	335	320	280	H 200						
15								S	A	A	A	330	345	IA 330	340	320	A	A						
16								S	A	285	305	IA 330	IA 350	355	IA 340	315	270	180						
17								S	A	290	320	350	365	360	IA 340	320	280	A						
18								S	220	H 280	H 315	340	350	350	340	310	H 290	H 210						
19								S	210	270	310	335	345	IA 340	335	320	A	A						
20								S	A	270	300	IA 315	340	350	340	H 315	280	200						
21								S	A	280	315	330	340	IA 350	IA 335	A	A	A						
22								S	210	275	320	335	340	340	335	IA 305	270	200						
23								S	200	260	290	A	A	A	340	IA 315	A	A						
24								S	230	270	305	330	340	340	320	310	280	A						
25								S	A	A	300	A	A	A	340	320	290	220						
26								S	210	270	300	IA 315	A	A	A	A	A	A						
27								S	220	270	IA 295	340	350	350	330	310	H 285	A						
28								S	220	270	295	IA 330	350	350	IA 345	IA 320	280	210						
29								S	230	IA 280	320	340	IA 350	350	IA 335	320	280	A						
30								S	220	260	300	340	350	350	340	315	280	230						
31								S	H 220	H 280	320	340	360	350	350	325	280	H 230						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									25	29	30	29	28	28	29	28	23	13						
MED									220	280	315	340	350	350	340	312	280	200						
UQ									220	290	320	340	350	350	340	320	280	210						
LQ									210	270	305	330	348	350	335	310	270	190						

IONOSPHERIC DATA

JAN. 1969 | foEs (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	E B 12	E	E	E B 12	E B 15	E S 13	23	G	G 29	35	J G 34	G 29	G	G 20	G	J X 29	J X 26	24	20	23	20	E S 14
2	E S 15	E B 14	J X 22	E B 11	E	E B 13	E S 13	E S 14	G	G 28	J X 33	36	39	37	J X 39	J X 37	G	J X 21	J X 25	J X 22	J X 18	E S 12	23	E S 14
3	E S 15	E B 13	E B 14	E B 11	E	E B 11	E S 15	18	G	G	40	39	42	38	G	35	G 26	24	J X 20	J X 18	J X 21	17	19	E S 14
4	E S 13	J X 18	J X 24	J X 22	J X 22	E B 14	E B 14	E S 15	25	G	34	39	J X 36	J X 36	G 30	J G 25	G	J X 31	22	22	24	E S 15	E S 14	E S 15
5	E S 15	E S 14	E B 14	E	E	E B 13	E B 11	E S 15	25	G 28	36	39	40	J G 30	35	J X 41	J X 54	J X 62	J X 42	J X 31	J X 29	J X 25	J X 32	J X 28
6	J X 20	20	E B 12	E	E	23	E S 15	23	23	J X 35	J X 53	G 32	J X 36	J X 37	J G 33	J X 31	J X 31	J X 32	J X 26	J X 24	E S 15	23	19	E S 15
7	E S 15	E B 12	E B 12	J X 26	J X 21	20	24	21	J X 32	J X 32	37	G 34	36	40	J X 65	J X 47	35	J X 31	M 90	J X 29	E S 15	E S 15	E S 15	J X 20
8	E S 15	E B 12	22	23	E B 13	E B 12	E S 15	E S 15	G	30	J X 49	J X 45	J X 41	J G 34	J X 46	33	J X 41	J X 24	J X 22	J X 24	E S 15	E S 15	17	E S 14
9	E B 17	E B 12	E B 12	E B 13	E B 14	E B 15	E S 15	E S 15	24	30	34	G	G 25	G 26	G	G 17	30	31	J X 30	J X 35	J X 21	E S 14	J X 29	E S 13
10	E S 14	J X 21	E B 13	E	E	E S 13	J X 21	E S 14	G	G	G	G	G	G	G 20	G	G	G	E S 15	E S 15	20	E S 15	E S 13	E S 13
11	E B 13	E B 15	E B 12	E	E B 13	E S 14	E S 14	E S 15	G	30	33	G	G 21	37	40	G 23	33	23	J X 31	E S 15	E S 15	E S 15	E S 14	E B 11
12	E S 14	E S 15	J X 22	E	E	J X 22	20	E S 15	G	G	39	J X 40	G	G 30	J G 34	G 21	G	J X 29	J X 19	E S 13	E S 15	E S 14	E S 14	E S 14
13	23	E B 15	E B 12	E	E	E B 11	E B 13	E S 14	G	J X 32	G	J X 35	G 25	G	G	G	G	J X 29	19	J X 21	J X 26	J X 25	J X 21	21
14	E S 16	E B 14	E B 13	E	E B 14	E B 11	E S 15	E S 14	G	29	32	34	G 34	G 29	G 28	G 24	G 22	J X 25	35	J X 27	E S 15	E S 14	E S 15	E S 14
15	E S 15	E B 14	E B 13	E B 12	E	E	E S 15	E S 15	28	34	J X 36	37	40	40	J X 35	J X 56	J X 42	J X 52	J X 41	J X 31	J X 52	J X 30	J X 32	J X 27
16	J X 24	J X 26	J X 19	J X 18	E B 11	E B 14	21	E S 15	23	35	33	36	48	G 34	J X 38	J G 31	G 26	J X 29	25	22	E S 14	E S 14	E S 14	E S 15
17	E S 15	E B 12	E B 13	E B 14	19	19	E S 15	22	J X 28	G	36	G	G	G	39	J X 38	J X 33	J X 29	J X 29	J X 38	J X 24	J X 26	E S 15	22
18	22	E B 14	E B 12	E	J X 25	J X 18	18	23	24	G	G	G	G	36	G 34	G 30	J X 38	G 15	J X 36	J X 25	J X 31	24	E S 14	E S 13
19	E S 13	E S 14	E B 13	E B 11	E B 14	E B 14	E S 15	27	G	G	G	G 18	39	37	J X 38	J G 31	36	J X 37	36	J X 21	E S 15	E S 15	23	E S 15
20	23	E B 13	E B 12	E	E B 11	E B 13	22	J X 25	J X 29	G 23	G	37	49	39	J X 79	G 20	G	G	E S 15	23	J X 29	E S 15	E S 14	23
21	E S 15	E B 12	E B 11	E	E B 13	E S 14	21	J X 63	J X 71	G	35	38	38	39	38	38	J X 53	J X 29	J X 52	J X 28	J X 39	J X 26	J X 56	J X 26
22	J X 34	J X 25	E B 13	J X 31	J X 25	23	21	22	G	29	G	J X 38	J X 35	G	J X 37	J X 50	J X 28	J X 27	J X 24	J X 20	J X 25	J X 30	J X 16	E B 15
23	E B 12	E B 14	E B 12	J X 26	J X 34	J X 23	J X 22	23	23	30	34	J X 51	J X 54	J X 39	J X 35	J X 36	J X 41	J X 39	J X 33	J X 24	E B 12	J X 20	E B 13	J X 21
24	21	20	24	J X 18	22	18	E S 14	E S 15	G	G	J X 42	J X 43	J G 34	35	J X 34	J X 33	J G 27	J X 33	J X 32	J X 24	26	E S 15	E B 12	E B 14
25	E B 14	E B 15	J X 25	E	E	E	E B 11	23	23	32	33	J X 42	J X 45	J X 37	J X 53	G 25	J X 33	J X 30	E B 15	E B 12	E	E B 13	E B 15	E B 12
26	E B 14	J X 21	J X 36	J X 36	J X 30	J X 27	J X 24	E S 14	G	G	33	73	J X 43	J X 40	39	J X 44	J X 40	J X 61	J X 29	J X 39	16	J X 29	J X 21	J X 21
27	J X 20	J X 58	20	J X 31	20	J X 19	J X 17	E S 15	25	29	37	36	G 30	G 28	G 19	38	J X 35	J X 39	J X 32	J X 32	J X 29	20	J X 17	J X 22
28	J X 29	J X 26	J X 26	J X 52	J X 50	J X 26	24	22	23	29	33	37	J X 43	J X 42	J X 53	J X 43	J X 35	27	25	J X 21	J X 38	J X 34	J X 46	J X 40
29	J X 34	J X 29	J X 35	J X 33	J X 30	25	23	23	24	30	33	34	37	44	J X 64	J X 34	G 22	J X 31	J X 30	J X 38	J X 34	J X 38	J X 31	J X 21
30	J X 24	J X 20	22	J X 21	E	20	21	E S 15	G 22	28	32	G	G 35	G 34	G	G	G	G	E S 15	E B 13	E S 14	22	J X 24	J X 22
31	E B 14	E B 14	E B 11	E B 11	E	E B 14	E S 15	22	23	31	G	36	G	G	G	G	G	26	23	J X 28	J X 24	J X 41	J X 24	J X 26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E E 15	E B 15	E B 13	E E 11	E E 13	E E 14	E 15	E S 15	23	29	33	36	36	36	35	31	30	J X 29	J X 26	J X 24	21	20	17	E 15
UQ	22	J X 20	22	J X 22	22	20	21	22	24	30	36	39	40	38	J X 39	J X 38	J X 36	J X 32	J X 32	J X 28	J X 28	J X 26	J X 24	J X 22
LQ	E S 14	E B 14	E B 12	E	E	E B 13	E S 15	E S 15	G	G	30	G 33	G 28	G 29	G 24	G 22	G	24	22	21	E S 15	E S 15	E S 14	E S 14

IONOSPHERIC DATA

JAN. 1969 | f_bEs (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	E B 12	E	E	E B 12	E B 15	E S 13	G	G	G 28	31	G 32	G 28	G	G 20	G	22	18	18	E	E	E	E S 14
2	E S 15	E B 14	16	E B 11	E	E B 13	E S 13	E S 14	G	G 27	33	36	37	33	36	28	G	16	20	17	16	E S 12	E	E S 14
3	E S 15	E B 13	E B 14	E B 11	E	E B 11	E S 15	G	G	G	G	27	G 23	G 22	G	G	G 24	21	18	E	17	16	18	E S 14
4	E S 13	E	15	E	12	E B 14	E B 14	E S 15	G	G	G	33	31	31	G 29	G 24	G	22	E	E	E	E S 15	E S 14	E S 15
5	E S 15	E S 14	E B 14	E	E	E B 13	E B 11	E S 15	G 16	G 25	26	29	G 24	G 27	G 26	28	30	20	27	21	22	E	25	21
6	E	E	E B 12	E	E	E	E S 15	G	19	24	29	G 28	31	32	G 32	24	22	15	26	21	E S 15	E	E	E S 15
7	E S 15	E B 12	E B 12	20	13	E	E	G	20	27	34	G 31	G	39	39	39	31	28	37	E	E S 15	E S 15	E S 15	E
8	E S 15	E B 12	E	E	E B 13	E B 12	E S 15	E S 15	G	G	43	38	33	G 31	32	23	35	18	E	E	E S 15	E S 15	E	E S 14
9	E B 17	E B 12	E B 12	E B 13	E B 14	E B 15	E S 15	E S 15	G	G	G	G	G 25	G 26	G	G 17	G	23	25	14	E	E S 14	15	E S 13
10	E S 14	16	E B 13	E	E	E S 13	E	E S 14	G	G	G	G	G	G	G 20	G	G	G	E S 15	E S 15	E	E S 15	E S 13	E S 13
11	E B 13	E B 15	E B 12	E	E B 13	E S 14	E S 14	E S 15	G	G	G	G	G 21	G 21	37	G 19	30	21	20	E S 15	E S 15	E S 15	E S 14	E B 11
12	E S 14	E S 15	12	E	E	E	E	E S 15	G	G	35	35	G	G 30	G 28	G 20	G	16	E	E S 13	E S 15	E S 14	E S 14	E S 14
13	E	E B 15	E B 12	E	E	E B 11	E B 13	E S 14	G	22	G	30	G 25	G	G	G	G	24	E C 19	15	17	E	E	E
14	E S 16	E B 14	E B 13	E	E B 14	E B 11	E S 15	E S 14	G	G	G	31	G 33	G 29	G 25	G 23	G 22	16	25	25	E S 15	E S 14	E S 15	E S 14
15	E S 15	E B 14	E B 13	E B 12	E	E	E S 15	E S 15	26	30	33	G	E C 40	40	32	29	36	52	36	25	31	E	18	22
16	19	20	16	13	E B 11	E B 14	E	E S 15	22	30	G	35	44	G 33	34	G 25	G 17	16	17	E	E S 14	E S 14	E S 14	E S 15
17	E S 15	E B 12	E B 13	E B 14	14	E	E S 15	G	23	G	G	G	G	G	37	29	25	22	25	E S 38	18	18	E S 15	E
18	E	E B 14	E B 12	E	E	E	E	G	G	G	G	G	G	34	G 32	G 30	24	G 15	20	E	23	E	E S 14	E S 13
19	E S 13	E S 14	E B 13	E B 11	E B 14	E B 14	E S 15	S	G	G	G	G 18	G 20	36	30	G 28	30	22	E	E	E S 15	E S 15	E	E S 15
20	E	E B 13	E B 12	E	E B 11	E B 13	E	16	21	G 22	G	37	44	37	46	G 20	G	G	E S 15	E	20	E S 15	E S 14	E
21	E S 15	E B 12	E B 11	E	E B 13	E S 14	E	16	26	G	G 20	G	G	36	36	37	46	25	50	26	31	E	15	17
22	26	16	E B 13	16	17	E	E	G	G	29	G	32	26	G	26	34	18	G	E	15	18	22	E	E B 15
23	E B 12	E B 14	E B 12	14	21	14	E	G	G	G	33	45	36	35	31	32	26	25	30	E	E B 12	E	E B 13	16
24	E	E	E	15	14	E	E S 14	E S 15	G	G	30	29	G 27	27	24	22	G 24	20	26	20	E	E S 15	E B 12	E B 14
25	E B 14	E B 15	14	E	E	E	E B 11	G	22	29	G	34	40	35	29	G 24	25	16	E B 15	E B 12	E	E B 13	E B 15	E B 12
26	E B 14	E	19	18	24	22	17	E S 14	G	G	G	40	37	35	36	34	31	45	28	20	16	22	E	18
27	16	21	14	16	E	E	E	E S 15	G	G	32	32	G 28	G 27	G 19	23	24	31	15	22	22	15	E	E
28	18	15	19	A	25	23	E	G	G	G 17	G 19	33	32	32	41	32	23	27	23	E	E	15	27	21
29	16	21	25	24	22	20	E	G	19	29	30	30	36	31	35	27	G 19	22	18	18	22	26	25	20
30	16	E	E	E	E	E	E	E S 15	G	E R 28	32	G	31	G 31	G	G	G	G	E S 15	E B 13	E S 14	E	E	E
31	E B 14	E B 14	E B 11	E B 11	E	E B 14	E S 15	G	G	G	G	G	G	G	G	G	G	G	22	24	22	34	17	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E E 15	E B 14	E B 13	E E 11	E E 11	E E 12	E E 13	E S 14	G	G	G	30	G 28	G 31	30	G 24	23	21	20	E E 15	15	15	E E 14	E E 14
UQ	E S 16	E 15	14	14	14	E B 14	E S 15	E S 15	19	25	31	34	34	34	36	29	28	24	26	20	19	15	15	16
LQ	E E 13	E B 12	E B 12	E	E	E	E	G	G	G	G	G	G 20	G 26	G 22	G 20	G	16	E E 15	E	E E 13	E	E	E E 12

IONOSPHERIC DATA

JAN. 1969

f-min (0.1)

135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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 S 15	E S 15	12	E	E	12	15	E S 13	E S 13	14	15	17	16	16	15	15	15	E S 14	E S 14	E S 15	E S 15	E S 15	E S 15	E S 14
2	E S 15	14	11	11	E	13	E S 13	E S 14	E S 14	15	15	15	16	16	17	15	14	E S 14	E S 15	E S 15	E S 15	E S 12	E S 15	E S 14
3	E S 15	13	14	11	E	11	E S 15	E S 15	E S 15	14	15	16	15	15	32	17	16	E S 14	E S 15	E S 14	E S 14	E S 13	17	E S 14
4	E S 13	E S 14	11	11	E	14	14	E S 15	E S 14	14	15	15	15	14	14	14	15	E S 14	E S 15	E S 13	E S 15	E S 15	E S 14	E S 15
5	E S 15	E S 14	14	E	E	13	11	E S 15	E S 13	14	15	15	15	15	15	15	14	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15
6	E S 15	E S 14	12	E	E	E	E S 15	E S 13	E S 13	14	15	15	15	15	15	15	15	E S 12	E S 15	E S 15	E S 15	E S 15	E S 13	E S 15
7	E S 15	12	12	E	E	12	E S 15	E S 15	E S 15	14	15	15	18	19	17	15	16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 13
8	E S 15	12	12	E	13	12	E S 15	E S 15	E S 15	17	18	18	17	15	15	15	14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 14
9	17	12	12	13	14	15	E S 15	E S 15	E S 15	14	17	17	18	16	19	14	16	11	E S 12	E S 12	E S 15	E S 14	E S 13	E S 13
10	E S 14	13	13	E	E	E S 13	E S 14	E S 14	E S 14	13	16	14	15	15	15	15	11	E S 15	E S 15	E S 15	E S 14	E S 15	E S 13	E S 13
11	13	15	12	E	13	E S 14	E S 14	E S 15	E S 14	15	15	16	15	15	14	14	11	E S 13	E S 15	E S 15	E S 15	E S 15	E S 14	11
12	E S 14	E S 15	E	E	E	13	E S 15	E S 15	E S 13	13	11	15	15	15	15	13	15	E S 13	E S 15	E S 13	E S 15	E S 14	E S 14	E S 14
13	E S 13	15	12	E	E	11	13	E S 14	E S 14	11	16	18	18	E C 18	16	16	16	E S 15	E S 13	E S 12	E S 13	E S 14	E S 15	E S 15
14	E S 16	14	13	E	14	11	E S 15	E S 14	15	15	17	18	17	17	16	17	14	E S 14	E S 15	E S 13	E S 15	E S 14	E S 15	E S 14
15	E S 15	14	13	12	E	E	E S 15	E S 15	15	15	19	19	21	18	18	16	14	13	E S 15	11	12	E S 15	E S 15	E S 15
16	E S 15	12	12	E	11	14	E S 15	E S 15	E S 14	13	15	18	18	19	15	14	14	11	E S 15	E S 15	E S 14	E S 14	E S 14	E S 15
17	E S 15	12	13	14	E	15	E S 15	E S 14	E S 15	14	16	18	19	15	16	17	15	E S 14	11	E S 15	E S 13	E S 15	E S 15	E S 15
18	E S 15	14	12	E	E	12	E S 15	E S 15	14	15	16	17	18	16	18	15	15	11	11	E S 14	E S 15	E S 15	E S 14	E S 13
19	E S 13	E S 14	13	11	14	14	E S 15	E S 13	15	15	15	15	15	15	15	15	15	E S 14	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15
20	E S 15	13	12	E	11	13	E S 15	E S 15	E S 14	15	15	14	15	15	15	15	14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 14	E S 14
21	E S 15	12	11	E	13	E S 14	E S 15	E S 15	E S 15	13	14	15	16	15	11	15	16	15	12	E S 14	E S 15	E S 14	12	E S 14
22	E S 15	11	13	E	E	13	E S 15	E S 15	14	14	14	15	14	16	15	14	14	E S 15	E S 14	12	13	15	14	15
23	12	14	12	E	E	11	E S 14	E S 15	14	15	15	16	17	17	15	15	14	14	13	13	12	13	13	14
24	14	14	E	E	E	14	E S 14	E S 15	14	15	15	14	15	15	14	14	14	14	E S 15	E S 15	14	E S 15	12	14
25	14	15	12	E	E	E	11	E S 15	15	18	20	19	19	19	18	17	16	E S 14	15	12	E	13	15	12
26	14	12	E	E	E	E	E S 13	E S 14	13	13	14	15	15	21	18	19	21	18	13	E S 14	E	14	13	15
27	15	11	11	E	E	12	E S 15	E S 15	E S 15	14	15	15	15	15	15	14	11	E S 14	E S 13	14	E S 15	13	13	E S 15
28	E S 14	12	11	E	E	E	E S 15	E S 14	E S 14	15	14	14	15	15	16	15	14	14	12	E S 14	E S 15	E S 13	E S 14	E S 14
29	13	11	11	E	E	E S 15	E S 15	E S 13	14	15	15	15	16	19	17	17	15	14	E S 13	E S 14	11	13	E S 14	E S 15
30	13	E S 15	12	E	E	13	E S 15	E S 15	E S 15	14	15	14	16	15	16	15	14	E S 14	E S 15	13	E S 14	E S 14	E S 14	E S 13
31	14	14	11	11	E	14	E S 15	E S 15	E S 14	15	15	16	16	16	15	15	15	14	E S 15	E S 13	E S 15	E S 13	E S 15	E S 13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 15	13	12	E	E	12	E S 15	E S 15	E S 14	14	15	15	16	15	15	15	15	E S 14	E S 15	E S 14	E S 15	E S 14	E S 14	E S 14
UQ	E S 15	14	12	E E 11	E E 11	14	E S 15	E S 15	15	15	16	17	18	16	17	16	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	E E 13	12	11	E	E	11	E S 14	E S 14	E S 14	14	15	15	15	15	15	14	14	E S 14	E S 13	E S 13	E S 14	E S 13	E S 14	E S 14

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | M(3000)F2(0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	310	275	270	280	240	270	265 S	305	325	320	310 I S	330	320	320	305 S	300 S	325	320	325 J S	345	315 J S	295	285	285 S
2	285	285	295	340	310	270	275	295	335 S	345	310 S	310	305	290 J R	295 U S	310	325	315 J S	310	335	305 J S	285	290 S	285 S
3	285	285	295	300	345	260	285	310 S	360	335	295	320	305	315	300	300	310	320	295	330 S	310 S	280	255	255
4	265	260 S	280	340	345	250	255	285	340	360 S	345	305	310	300 J S	270 J S	300	325 S	335	320 S	330	340	335	255	265
5	240	275	310	315	360	255	260	275 S	335	335	335 S	285 S	295 S	305 J S	300	310	295	300 J S	300	295 S	295 J S	305	270 S	260
6	270 S	295	300	310	295	260	275 S	275 J S	330 S	340 S	345 S	325	310	280 J C	270 J C	280 I C	315 U C	330	340	330	335 S	295 J S	270	280
7	290	280	295	335	335	260	270	300 S	345	335 J S	325	305 U C	295	300 J S	305 J C	330 C	325 S	325	325 C	325	270 J S	280 U S	290	255
8	280	310	365	290	245	235 F	290	340	350	330	305	295	300 U C	285	280 U C	290 C	300	310	315	315	315 C	290 U C	305	290 C
9	320	295	300	325	380	250	265	300	355	340	325	315	290 C	295	285 J C	300	300	300	320	305	305	295 J C	295	275
10	265	280	285	325	340	215	230	285 S	355 S	345 H	285 C	315	300	280	290	295 U C	295 C	310	310 I C	300 C	300	285 J S	285 S	265
11	270	285	320	280	270	255	260	290 S	335	340 S	350	315	325	290	305	300	330	335	290	275	280	310	280	260
12	270	290	290	295	260	255	260	295	350	335	325	320	305	300	300 S	295 S	300 I C	300 J C	C	C	320 I C	220 C	245	250
13	270 C	300	340	265	260	270	295	280	315	345	305 C	320 I C	300 J C	305 C	295 I C	290 I C	300 S	325 J S	295 I C	265 U C	295 I C	305 J C	275 J C	280 I C
14	295 S	320 J C	300 H	285	275	270	285	320 S	335	345 S	330	330	310 C	310 C	310 C	300 J C	310 C	325 J C	345 I C	235 J C	305 U C	290 J C	305 J C	265
15	290	315	305	275	290	290	275	300	350	335	305	310	320 C	330	305 C	305 C	315	330	320	315	310	275	295	325 J C
16	310	275	290	305	330	255 J C	270	325	365	315 C	305 C	320 C	320	295 C	300 S	290 J S	300 J S	320	325	305	280 J S	270 J S	265 J S	290 S
17	290 S	280 I S	295	295	305	255	270	295 S	355 S	310 S	340 S	330	310 J S	315	305 S	305	310	310 H	335 J S	285 J S	285 S	305	275	280
18	310	315	335	260	270	260	255	320	350 S	330 S	330	325 S	320	320	310	315	315	330	330	310	275 S	280	275	305 S
19	300	320	345	325	260	280	265	285	335	335 J S	325 U S	320	305 R	315	315 R	335 R	320	330 S	330	290 S	315	330	290	290
20	290	300	295	325	275	265	275	325	375 S	320 S	305 S	315 J S	305	315	310 S	320	315 S	335 S	355	310 J S	270 S	275 J S	260 S	255
21	265 S	305	360	330	260	280 F	270	295	345 S	330	335	325	295	310	310	285 J S	310	330	300	290	315	275 S	265	280 F
22	290 S	275	300	325	315	265	275	305	345 J S	335	305 S	330	305	305	285 H	320	315	335	335	300	285	280 H	310	290
23	280	290	310	295	295	270 F	285	295	335	350	320	300	290 I S	295	305 S	300 S	S	310	330	280 J S	285	315 S	265 J S	265
24	285	275	295	305	280	270	255 S	315	330	335	345	330	310	300	300	315	310	340	330	320	320	340	305	265
25	265	250	250	265	280	270	255	280	310	295 S	325	315	290	295	305	305	305	305	310	310	305	310	255	275
26	290	280	325	260	260	255	275 S	285	325 S	335 S	325 S	320	295 S	310	310	310	300	315	305 R	305	300	310	265	270
27	270	300	295 F	305	290	270	275 S	315 S	375	360	325	320 H	315	305	290	295	305 S	310	315	290 S	305 I S	290 U S	280	290
28	260 S	270	285	265 I A	250	255 S	270	315 S	340 S	330	295 S	315	315	305	295 S	285	305	320	335	305 S	305	305	280	290
29	280	275	285	300	290	275	280	305	345 S	330	320 S	325	315	320 S	305	315	315	330	325	325	285 S	305	280	285
30	290	285	315	275 F	290	280	280 S	295	330	325	330 S	325	330	325	310	300	315	320 S	330	305 S	300	275	275	295 S
31	315 S	280	295	280	260	275	275	310	355	345	345	310 R	315	320	310	315	330 S	345	330 S	290 S	335	295	275 S	285
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	30	31	31	31	31
MED	285	285	295	300	290	265	270	300	345	335	325	320	305	305	305	300	310	320	325	305	305	295	275	280
UQ	290	300	312	325	312	270	275	312	352	342	332	325	315	315	308	312	315	330	330	320	315	305	290	290
LQ	270	275	292	280	260	255	262	288	335	330	305	312	300	295	295	295	300	310	310	290 S	285	280	265	265

IONOSPHERIC DATA

JAN. 1969

M(3000)F1(0.01)

135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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	L	L	L	L								
2										L	L	L	L	L	U L 365	L	420							
3											L	L	L	L	L	L								
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L	L							
6										L	L	U L 385	L	L 400	L	L								
7											L	L	U L 340	L	L	L								
8										L	L	L	U L 365	L	L	L								
9											L 405	L	L	L	L	L	L							
10											L	L 360	L	L	L	L								
11											L	L	L	L	L	L	L 380							
12										L	L	L	L	L	L	L	L							
13										L	L	L	L 380	L	L	L 380	L							
14										L	L	L	L	L	L	L	L							
15											L	L	L	L	L	L								
16										L	L	L	L	L 380	L	L	L							
17											L	L	L 350	L	L	L	400							
18											L	L	L	L	L	L	L							
19										L	L	L	L	L	L	L	405							
20										L	L	L	L	L	A	L	440							
21											L	L	L	L	L	L	A							
22										L	L	L 390	L	L	L	L	L							
23										L	L	L	L	350	L	L	L							
24										L	L	L	L	L	L	L 400	L							
25											L	L	L	L	L	L								
26										L	L	L	L	L	L	L								
27										400	L	L	L	L	L	L 335	L							
28									400		L	L	L	L	L	L	L							
29											L	L	L	L	L	L	L							
30											L	L	L	L	L	L	L	L						
31											L	L	L	L 360	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	1	3	4	4	1	3	5							
MED									400	400	L 405	L 385	L 358	L 370	U L 365	L 380	405							
UQ												L 388	L 372	L 390		L 390	420							
LQ												L 372	L 345	355		L 358	400							

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1969 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / 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											280	245	250	245	260	250								
2										230	240	270	265	250	280	250	230							
3											280	255	260	245	250	260								
4										230	230	250	270	240	240	255								
5										240	235	230	280	255	250	255	230							
6										250	240	255	255	250	260	255								
7											250	250	300	280	260	250								
8										245	280	285	270	265	280	280								
9											245	255	280	260	255	255	240							
10											255	275	255	260	280	260								
11											240	230	275	290	275	245	255							
12										230	260	250	250	265	275	275	245							
13										245	240	245	255	285	260	250	250							
14										240	245	250	250	275	275	260	255							
15											250	270	255	250	250	250								
16										240	270	270	250	250	260	250	250							
17											250	250	295	255	265	285	250							
18											250	250	250	255	280	250	255							
19										240	240	245	255	260	240	250	240							
20										250	245	270	255	255	250	250	240							
21											250	245	255	270	260	245	245							
22										240	275	260	270	280	270	255	240							
23										230	240	245	270	280	260	240	225							
24										250	230	245	275	250	255	255	280							
25											250	240	285	290	270	240								
26										230	255	270	280	270	255	240								
27										210	240	240	220	285	280	295	250							
28									215		230	255	270	265	240	280	255							
29											240	260	255	255	250	250	235							
30											255	255	245	275	280	250	260	240						
31											240	255	255	275	260	275	255							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	16	31	31	31	31	31	31	21	1						
MED									215	240	245	250	255	260	260	250	250	240						
UQ										245	255	260	272	275	275	260	255							
LQ										230	240	245	255	252	252	250	240							

IONOSPHERIC DATA

JAN. 1969 | h'F (km) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Day \ Hour	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	300	300	270	265	300	300	250	220	230	220H	220H	225	220	220	225	250	215	240	220	210	245	295	280
2	285	300	275	240	200	325	300	275	245	230	230	240H	230	230	205H	235	225	205	225	220	205	250	260	255
3	260	270	280	265	205	320	310	260	215	215	225	235	230	230	240	210H	240	210	215	230	210	220	300	305
4	305	300	270	230	225	E B 355	E B 350	275	240	230	215	225	225	230	215	205H	230	230	210	240	215	205	260	300
5	345	300	250	225	200	E B 350	E B 315	295	230	240	235H	215	235	230H	225	205H	230	215	225	245	215	230	E A 290	320
6	285	260	245	230	235	300H	305	270	240	240	235H	220H	215H	215	215H	215H	245	225	200	250	205	220	260	300
7	290	300	275	250	205	285	315	280	240	230	215H	220	205H	220	E A 250	E A 250	235	220	235	230	220	260	255	305
8	300	255	215	200H	420	400	330	245	220	235	E A 270	225	220	220	220H	230	245	230	230	230	220	220	245	245
9	240	250	255	240	210	E B 400	E S 405	270	240	225	205	230	230	250	220H	245	235	230	220	225	220	240	240	275
10	300	295	270	245	205	E S 400	E S 390	280	235	225	225	225H	225	210	220	230	235	225	200	230	220	230	220	260
11	285	255	230	250	E B 300	E S 325	E S 310	260	230	230	220	205H	220	210	255	220	230	225	200	225	245	230	250	265
12	275	250	265	245	255	E B 350	E S 345	255	230	225	230	220	210	200	200H	225	235	225	215	205	215	210	270	305
13	290	250	225	E E 295	E E 300	E B 305	280	250	245	245	225	220	295	230	230	215	245	235	210	245	230	220	250	255
14	250	240	245	295	305	325	310	250	225	240	220	225	210	205	225	225	220H	235	210	E A 285	250	220	245	300
15	295	250	250	300	270	275	305	260	240	240	220	220	250	240	225	210	245	E A 250	250	250	260	250	275	250
16	250	E A 300	290	250	245	E B 350	345	255	220	220	225	210H	240	205	220	210	230H	225	205	220	230	245	260	240
17	250	280	245	250	240	E B 390	E S 370	265	245	210	220H	230	205	220	210	220	235	230	200	I A 275	280	245	285	270
18	245	245	235	250	290	345	345	250	225	235	230	220	190H	205	225H	205H	235	230	225	245	240	240	270	250
19	260	245H	225	220	360	385	350	285	245	230	220H	200	240	230	225H	225	215	230	205	245	250	225	240	255
20	275	255	250	225	205	350	E S 320	240	220	225	200	215H	240	210H	I A 220	210H	200	240	200	210	E A 270	240	270	325
21	300	260	225	205	E B 350	E S 350	E S 330	255	240	230	230	215	210	200H	230	235	I A 230	230	250	250	240	230	250	315
22	E A 350	300	295	250	255	260	E S 315	240	210	200H	225	200	185H	185H	225	240	220	230	205	210	250	235	225	275
23	295	290	245	250	E A 300	320	295	260	240	230	210H	I A 230	205	200	200H	225	225	225	220	200	245	210	245	320
24	290	295	270	250	220	320	300	240	230	220	215	200H	195	225	205	205	225	230	220	230	220	205	225	300
25	300	350	350	300	260	275	315	275	230	235	220	225	240	230	220	225	240	240	220	230	215	220	245	275
26	270	270	245	A	A	A	340	295	245	235	205	225	225	215	205	230	250	245	220	220	250	240	270	305
27	300	260	250	225	265	320	310	250	215	205	200	205H	200H	200H	180H	190H	235	230	220	230	210	205	240	250
28	275	300	290	A	E A 355	E A 350	305	250	200	225	210	200	195H	235H	235	205H	255	230	205	205	220	240	E A 305	E A 300
29	275	E A 325	E A 350	280	E A 270	E A 315	300	250	225	200	220	210H	215	205	220	210	220	195	210	230	245	250	265	250
30	255	270	245	255	250	300	275	260	225	225	205H	220H	210	200	205H	225	205H	240	215	200	210	215	265	240
31	225	255	255	295	300	300	300	245	225	225	215	205	190H	205	225	210	240	235	215	240	240	E A 240	245	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	29	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	280	265	250	250	U 242	U 302	308	260	230	230	220	220	215	215	220	220	235	230	215	230	220	230	255	275
UQ	296	299	274	260	U 282	E E 350	E E 342	272	240	235	225	225	230	230	225	226	240	231	222	244	245	240	269	302
LQ	258	255	245	230	220	300	301	250	222	225	215	210	205	205	212	210	225	225	205	220	215	220	245	255

IONOSPHERIC DATA

JAN. 1969 | h'Es (km) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	B	E	E	B	B	S	150	G	105	105	105	105	G	105	G	100	100	100	105	105	105	S
2	S	B	105	B	E	B	S	S	G	105	105	160	155	105	105	105	G	100	100	100	95	S	100	S
3	S	B	B	B	E	B	S	105	G	G	145	130	135	135	G	125	115	100	100	105	100	100	100	S
4	S	105	100	100	100	B	B	S	155	G	120	105	105	105	105	105	G	100	105	100	100	S	S	S
5	S	S	B	E	E	B	B	S	150	110	160	150	155	105	155	105	110	105	100	100	100	100	95	95
6	95	95	B	E	E	100	S	110	110	105	105	105	105	105	105	105	100	100	100	100	S	100	100	S
7	S	B	B	110	110	115	120	120	110	110	110	110	120	115	105	110	130	115	105	105	S	S	S	105
8	S	B	110	110	B	B	S	S	G	165	105	105	100	100	100	130	100	115	105	105	S	S	95	S
9	B	B	B	B	B	B	S	S	155	145	E G 170	G	100	100	G	100	160	120	110	110	105	S	100	S
10	S	100	B	E	E	S	110	S	G	G	G	G	G	G	100	G	G	G	S	S	105	S	S	S
11	B	B	B	E	B	S	S	S	G	150	130	G	100	130	125	100	115	110	100	S	S	S	S	B
12	S	S	100	E	E	100	100	S	G	G	115	105	G	105	100	100	G	100	100	S	S	S	S	S
13	100	B	B	E	E	B	B	S	G	105	G	100	105	G	G	G	G	105	105	105	100	100	100	100
14	S	B	B	E	B	B	S	S	G	145	130	105	105	105	105	100	100	100	100	100	S	S	S	S
15	S	B	B	B	E	E	S	S	120	110	110	120	110	110	105	105	105	105	105	105	100	100	100	100
16	100	100	100	100	B	B	100	S	115	120	115	105	105	105	100	100	100	100	100	100	S	S	S	S
17	S	B	B	B	95	95	S	100	110	G	120	G	G	G	105	100	100	100	100	100	100	100	S	95
18	90	B	B	E	100	105	100	100	95	G	G	G	G	105	105	105	105	105	100	100	100	100	S	S
19	S	S	B	B	B	B	S	100	G	G	G	100	160	150	100	100	140	105	105	100	S	S	100	S
20	100	B	B	E	B	B	110	100	105	105	G	140	125	135	120	100	G	G	S	100	100	S	S	100
21	S	B	B	E	B	S	110	105	105	G	150	125	115	105	130	110	105	105	120	100	100	100	100	95
22	95	100	B	100	100	100	100	100	G	155	G	100	100	G	100	100	100	95	100	100	100	100	100	B
23	B	B	B	100	100	100	100	100	120	120	110	105	105	105	105	105	105	100	100	105	B	100	B	100
24	100	100	100	100	100	100	S	S	G	G	100	100	100	100	100	100	100	100	100	100	100	S	B	B
25	B	B	100	E	E	E	B	125	115	110	125	105	105	105	100	100	100	105	B	B	E	B	B	B
26	B	100	100	100	100	100	100	S	G	G	125	105	105	110	105	105	105	105	105	105	100	100	100	100
27	100	105	95	100	95	100	100	S	135	120	110	100	100	100	100	100	100	100	100	100	100	105	100	100
28	100	100	100	100	100	100	100	100	100	140	125	110	100	100	100	100	100	130	110	110	100	100	100	100
29	100	95	95	90	90	90	95	100	115	105	105	105	105	100	100	100	100	100	100	100	100	100	100	100
30	100	100	100	100	E	100	100	S	100	125	120	G	105	105	G	G	G	G	S	B	S	100	100	100
31	B	B	B	B	E	B	S	100	100	160	G	140	G	G	G	G	G	140	120	110	105	100	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	11	12	12	11	13	14	14	19	20	24	25	26	26	25	27	22	28	27	26	20	17	18	14
MED	100	100	100	100	100	100	100	100	115	120	116	105	105	105	105	100	102	102	100	100	100	100	100	100
UQ	100	100	100	100	100	100	110	105	128	145	126	120	115	110	105	105	110	105	105	105	100	100	100	100
LQ	98	100	100	100	98	100	100	100	105	108	108	105	100	105	100	100	100	100	100	100	100	100	100	100

IONOSPHERIC DATA

JAN. 1969

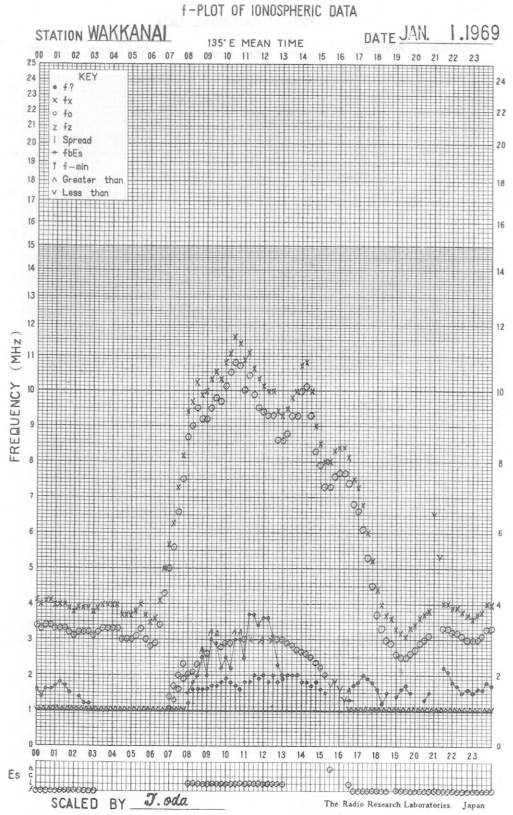
Types of Es

135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Day \ Hour	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 2		L 1	L 1	L 1	L 1		L 1		L 3	F 3	F 1	F 1	F 1	F 1	
2			F 1							L 1	L 2	H 1	HL 11	L 1	L 2	L 2		L 2	F 5	F 2	F 2		F 1	
3								L 1			H 1	HL 22	HL 11	HL 11		H 1	L 2	L 4	F 5	F 1	F 6	F 2	F 1	
4		F 1	F 1	F 1	F 1				H 2		C 2	L 2	L 2	L 2	L 2	L 2		L 3	F 1	F 1	F 1			
5									HL 21	L 2	HL 22	HL 12	HL 11	L 1	HL 12	LH 21	CL 32	L 3	F 3	F 3	F 3	F 2	F 3	F 4
6	F 3	F 1				F 1		L 2	L 2	LH 31	L 3	L 2	L 2	L 2	L 2	L 2	L 2	L 2	F 3	F 3		F 1	F 1	
7				F 2	F 1	F 1	F 1	C 1	L 2	L 2	L 2	L 1	C 1	C 1	L 2	L 1	HL 22	C 3	F 2	F 1				F 1
8			F 1	F 1					H 1	L 2	L 2	L 2	L 2	L 2	L 2	HL 12	LC 22	CL 21	F 1	F 2			F 1	
9									H 1	H 1	H 1		L 1	L 1		L 1	H 1	CL 11	F 4	F 2	F 1		F 1	
10		F 1					F 1								L 1						F 1			
11										H 1	H 1		L 1	HL 11	HL 11	L 2	CL 21	L 2	F 2					
12			F 1			F 1	F 1				C 2	L 1		L 1	L 1	L 1		L 2	F 1					
13	F 1									L 1		L 1	L 1					L 2	F 1	F 1	F 3	F 1	F 1	F 1
14										H 1	H 1	L 1	L 1	L 1	L 1	L 1	L 1	L 1	F 2	F 1				
15									L 2	L 1	L 1	C 1	C 1	L 2	L 1	L 1	LL 21	LL 22	F 3	F 3	F 2	F 1	F 1	F 1
16	F 1	F 1	F 1	F 1			F 1		L 2	C 1	C 1	L 1	L 1	L 1	L 2	L 2	L 1	LH 21	F 1	F 1				
17					F 1	F 1		L 1	L 2		C 1				L 3	L 2	L 3	L 3	F 7	F 5	F 2	F 1		F 1
18	F 1				F 1	F 1	F 1	L 2	L 1					L 1	L 1	L 1	L 2	L 1	F 3	F 2	F 2	F 1		
19								L 1				L 1	HL 11	HL 12	LH 21	L 2	HL 12	L 3	F 1	F 1			F 2	
20	F 1						F 2	L 2	L 3	L 2		HL 11	H 2	H 1	C 2	L 1				F 1	F 4			F 1
21							F 1	L 2	L 2		HL 11	H 2	C 1	L 2	HC 11	CL 21	L 4	L 4	FF 43	F 6	F 5	F 2	F 3	F 2
22	F 4	F 2		F 3	F 2	F 1	F 1	L 2		H 1		L 2	L 1		L 1	L 3	L 1	L 1	F 1	F 1	F 2	F 3	F 1	
23				F 1	F 2	F 2	F 1	L 1	C 2	C 2	C 2	L 2	L 2	L 2	L 2	L 3	L 2	L 3	F 4	F 1		F 1		F 2
24	F 1	F 2	F 1	F 2	F 1	F 1					L 4	L 3	L 2	L 1	L 2	L 1	L 2	LH 11	F 4	F 2	F 1			
25			F 2					HL 11	C 2	C 1	C 1	L 2	L 2	L 2	L 2	L 1	L 1	L 1						
26		F 2	F 4	F 3	F 4	F 5	F 4				H 2	L 2	LH 11	L 1	L 1	L 2	L 2	L 4	F 3	F 2	F 2	F 4	F 1	F 3
27	F 2	FF 31	FF 21	FF 21	F 1	F 1	F 1		HL 21	C 1	C 3	L 1	L 1	L 1	L 1	L 2	LH 31	L 5	F 3	F 3	F 3	F 1	F 1	F 1
28	F 2	F 1	F 2	F 4	F 4	F 3	F 3	L 1	L 1	HL 22	HL 11	CL 11	L 2	L 2	L 2	L 3	L 2	HL 31	F 4	F 1	F 1	F 2	F 2	F 2
29	F 2	F 3	F 3	F 2	F 2	F 1	F 1	L 1	CL 11	L 1	L 1	L 1	L 2	L 2	L 2	L 1	L 1	L 1	F 3	F 3	F 3	F 2	F 2	F 2
30	F 1	F 1	F 1	F 1		F 1	F 1		L 1	H 1	C 2		L 1	L 1								F 1	F 1	F 1
31								L 2	L 1	H 2		H 1						H 2	F 4	FF 41	F 3	F 6	F 3	F 3

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								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STATION WAKKANAI
135° E MEAN TIME
DATE JAN. 1.1969
KEY
• f?
× fx
○ fo
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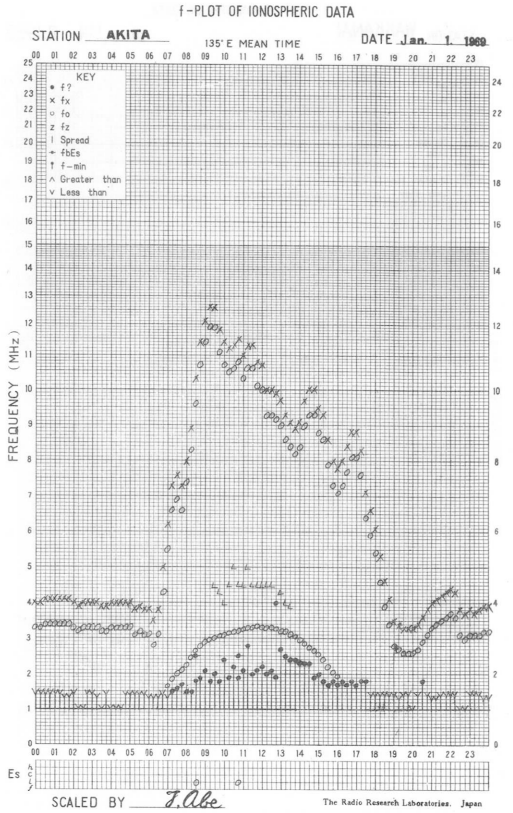
| Spread
+ fbEs
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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STATION AKITA
135° E MEAN TIME
DATE Jan. 1. 1969
KEY
• f?
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○ fo
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| Spread
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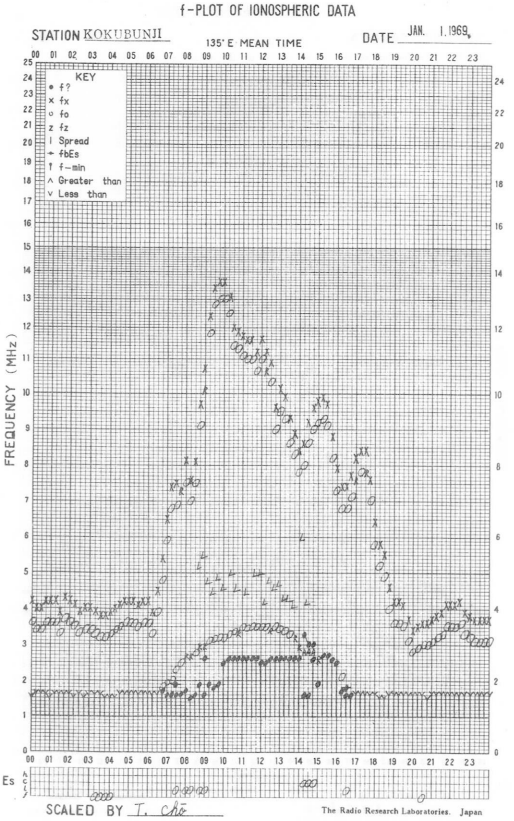
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE JAN. 1.1969
KEY
• f?
× fx
○ fo
z fz
| Spread
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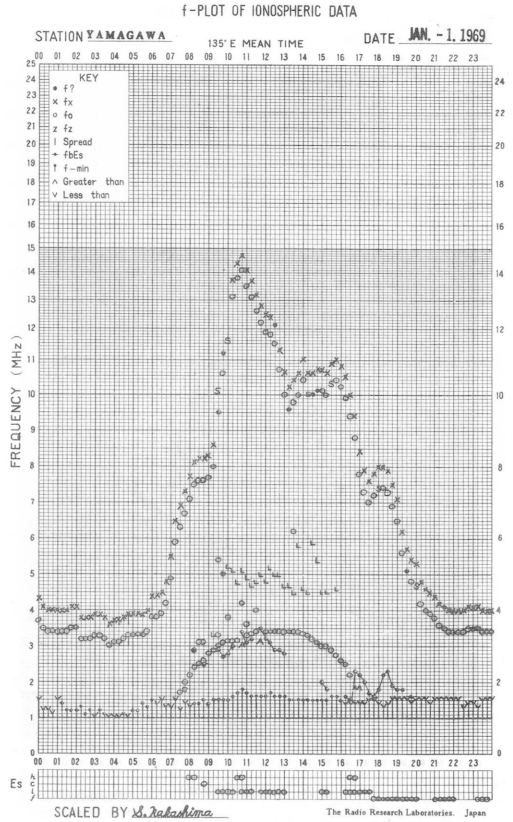
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135° E MEAN TIME
DATE JAN. - 1. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
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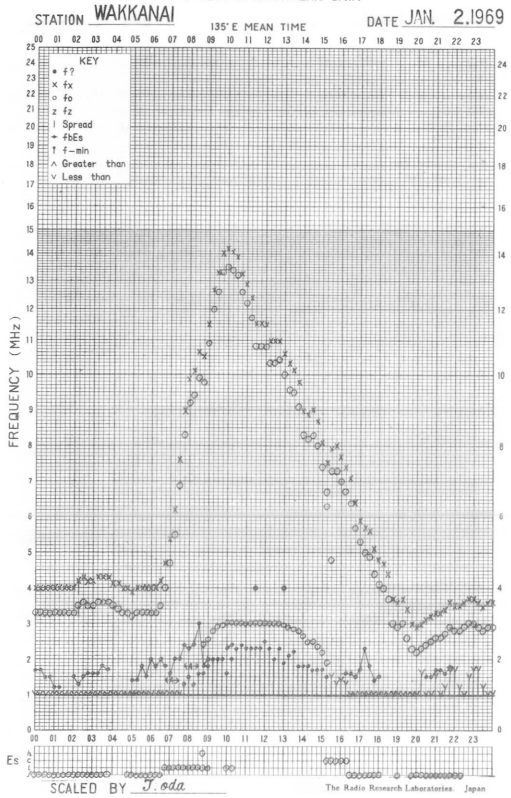
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 2.1969



SCALED BY T. oda

The Radio Research Laboratories. Japan

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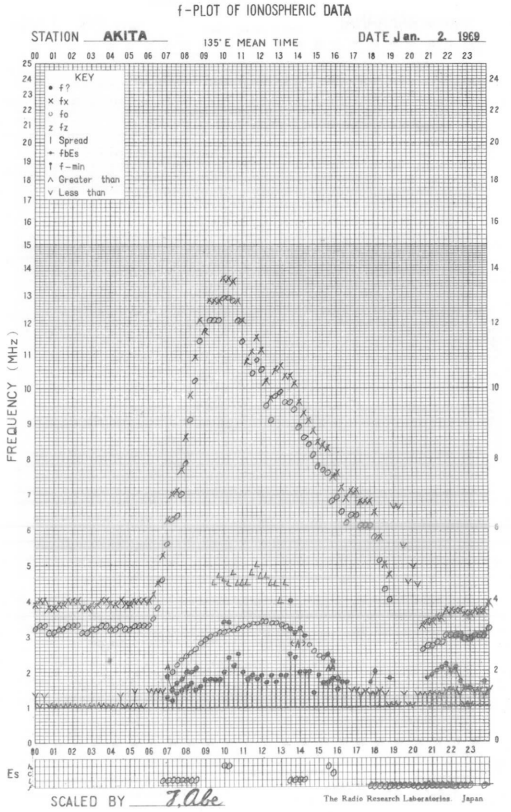

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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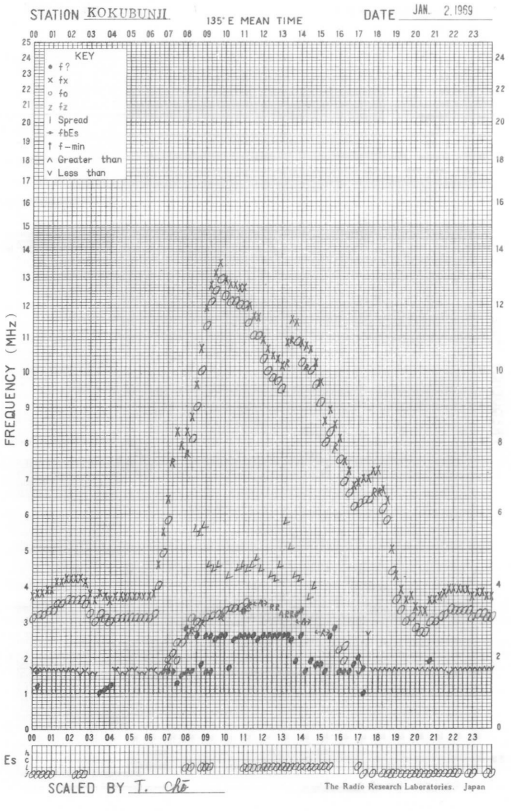

SCALED BY T. Chê

The Radio Research Laboratories. Japan

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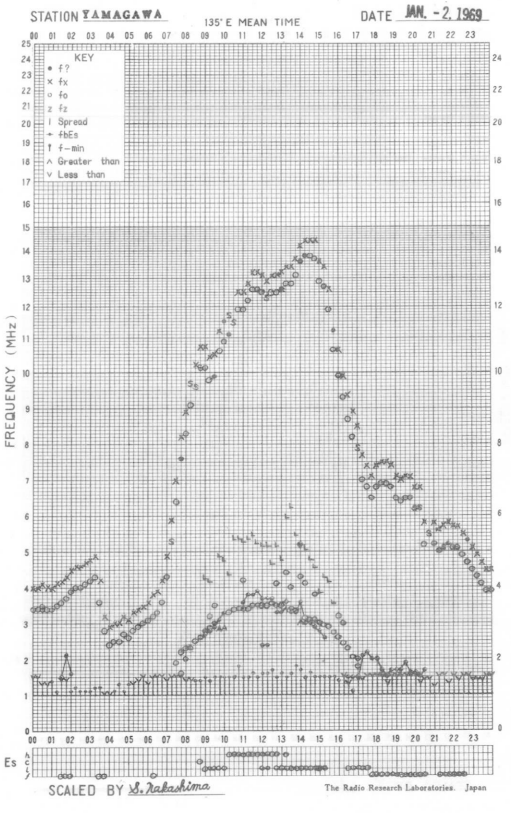

SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

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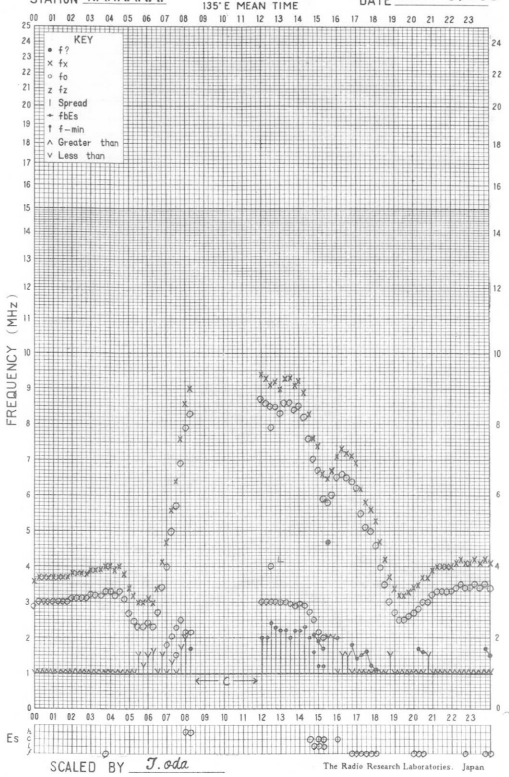

SCALED BY T. Oda

The Radio Research Laboratories. Japan

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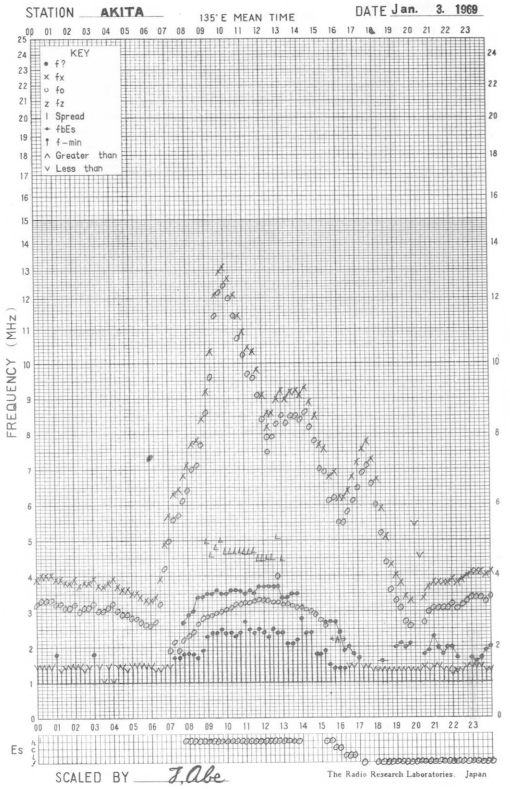

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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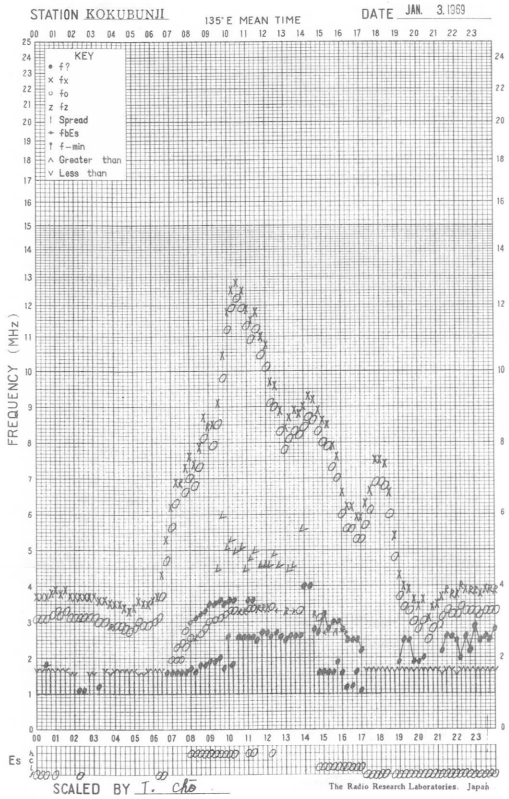
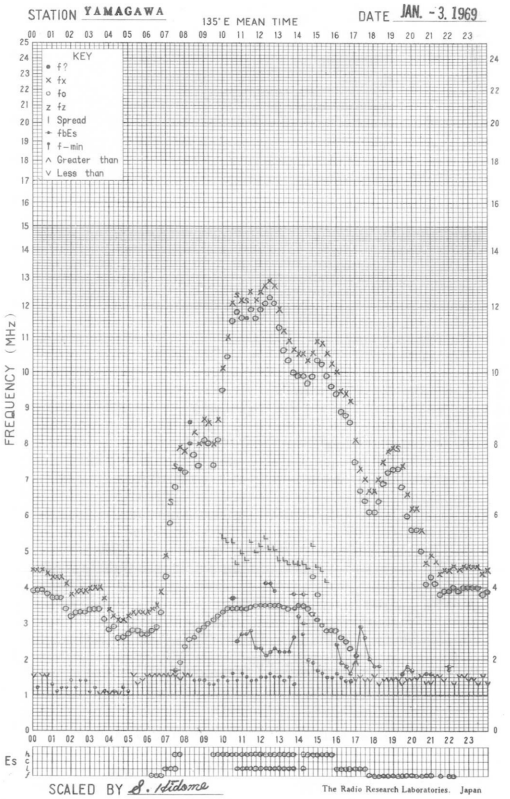


SCALED BY I. Cho

The Radio Research Laboratories. Japan

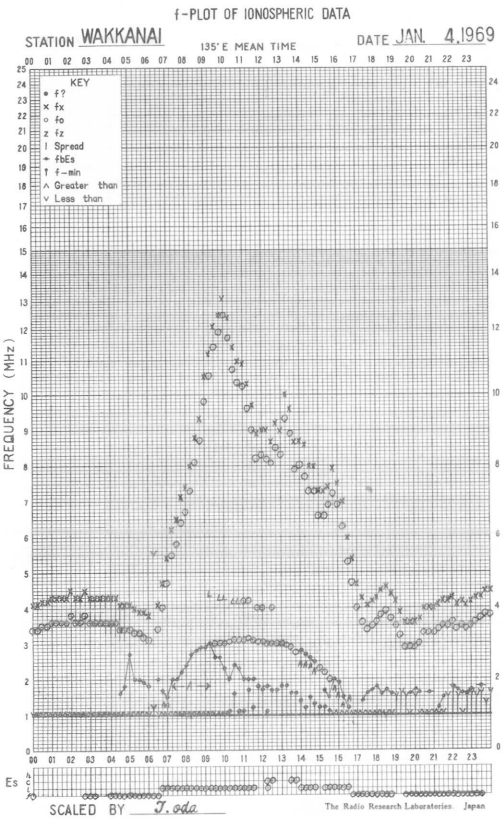
f-PLOT OF IONOSPHERIC DATA

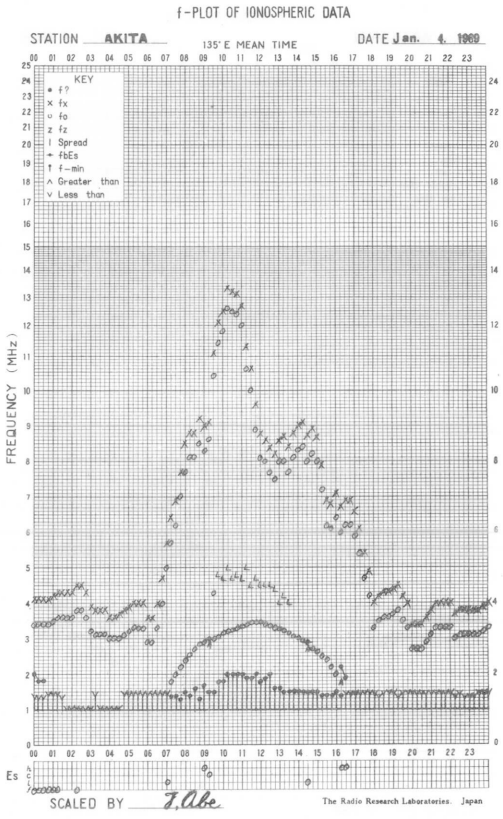
STATION YAMAGAWA 135°E MEAN TIME DATE JAN. -3. 1969

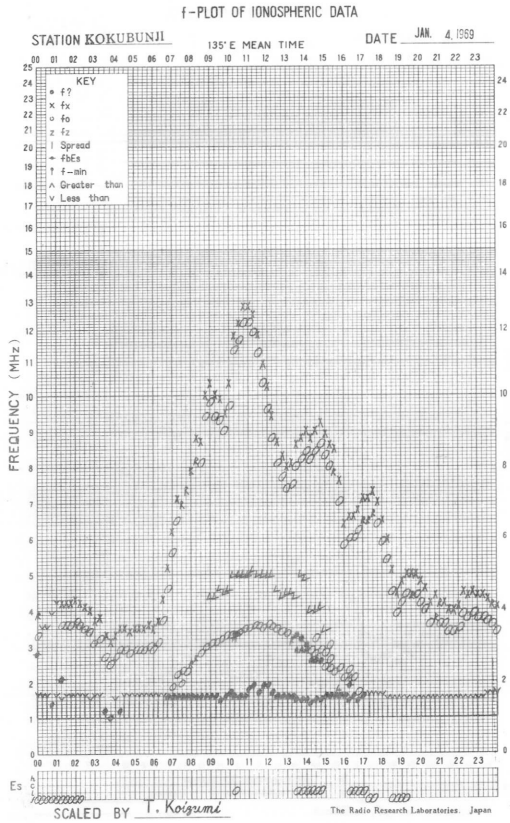


SCALED BY S. Hidoma

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JAN. 4,1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jan. 4, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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STATION KOKUBUNJI
135°E MEAN TIME
DATE JAN. 4, 1969
KEY
FREQUENCY (MHz)
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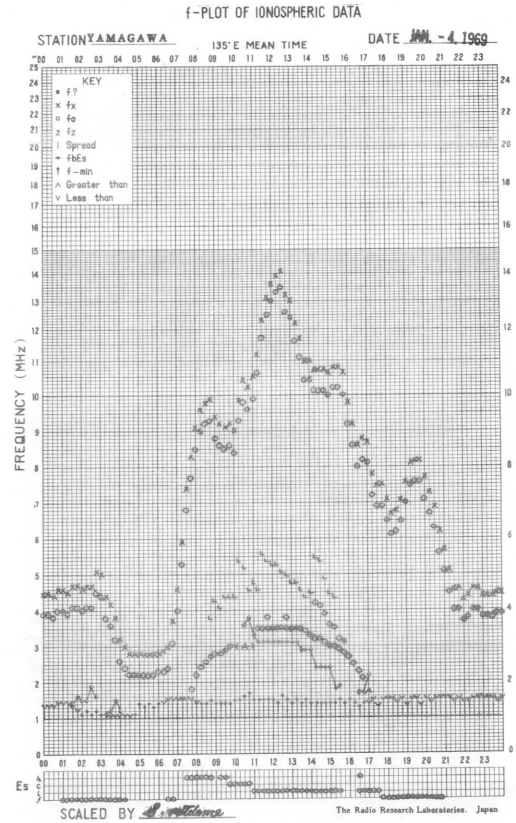
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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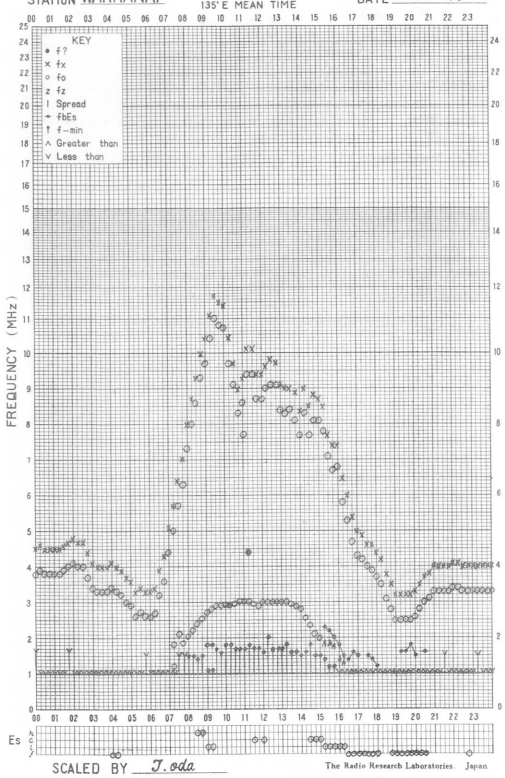
STATION YAMAGAWA
135°E MEAN TIME
DATE JAN. 4, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Yoshioka
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 5.1969

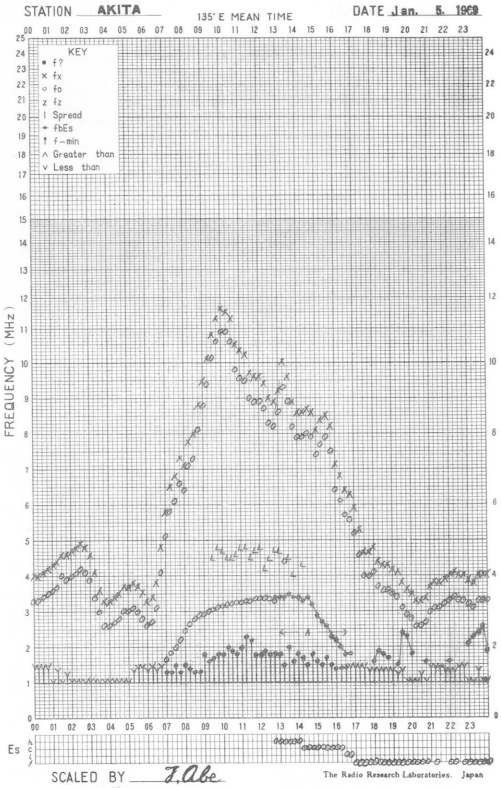


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 5. 1969



SCALED BY T. Abe

The Radio Research Laboratories. Japan

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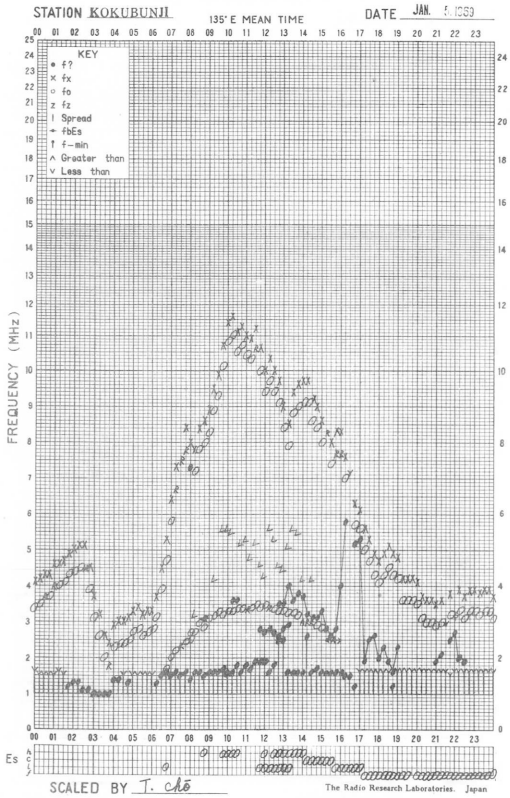
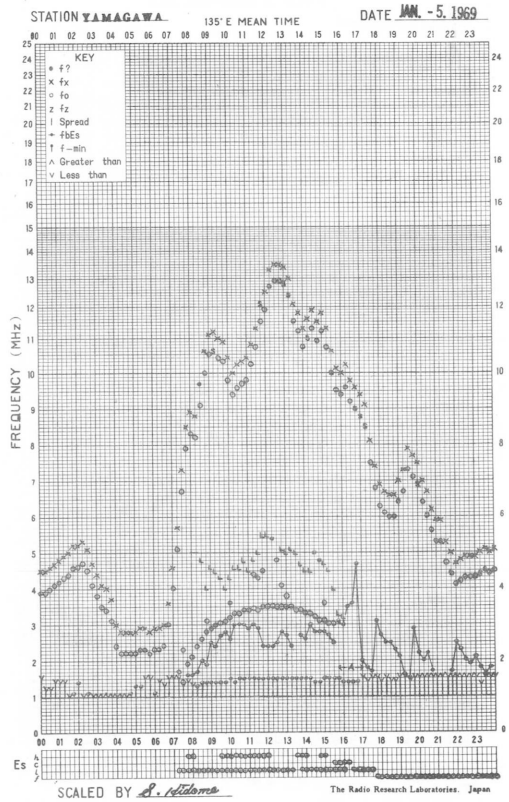


SCALED BY T. Ichi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. - 5. 1969

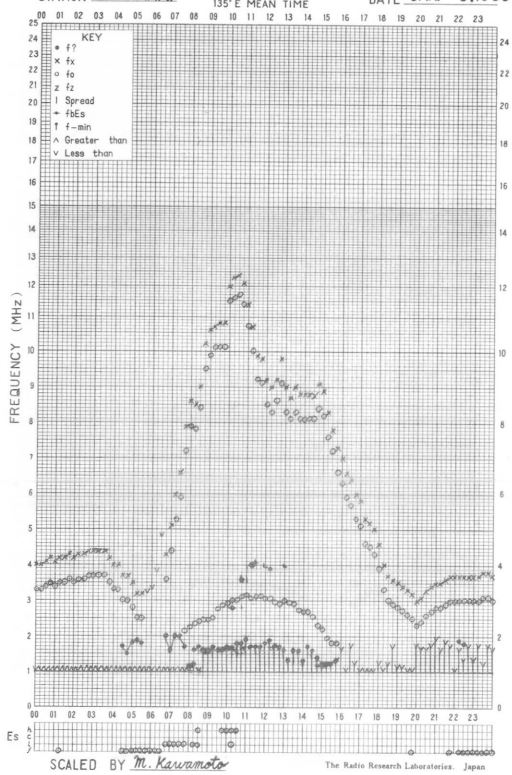


SCALED BY S. Hidama

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 6.1969



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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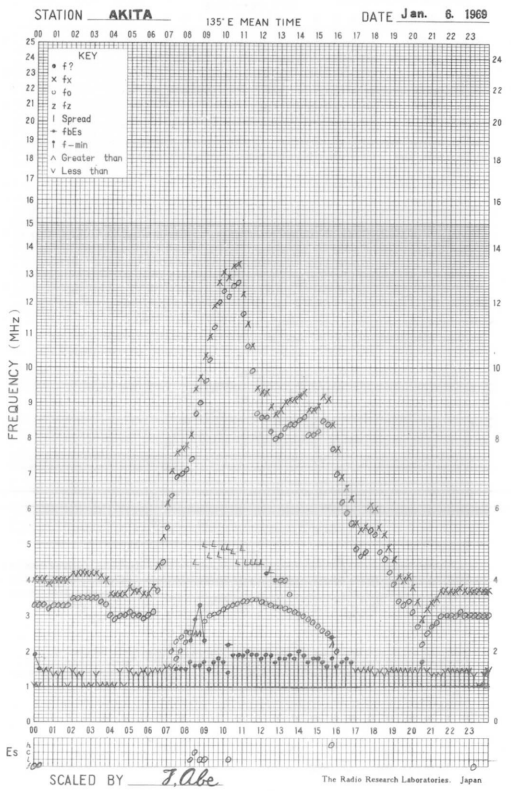

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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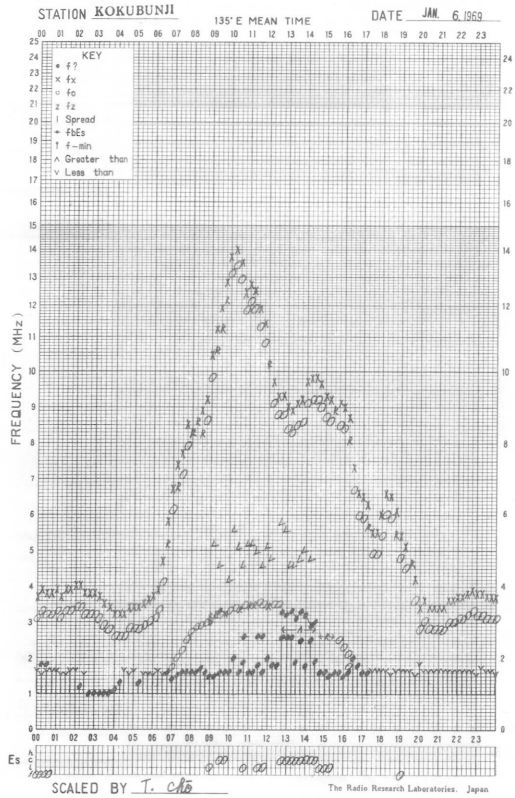

SCALED BY T. Ichi

The Radio Research Laboratories. Japan

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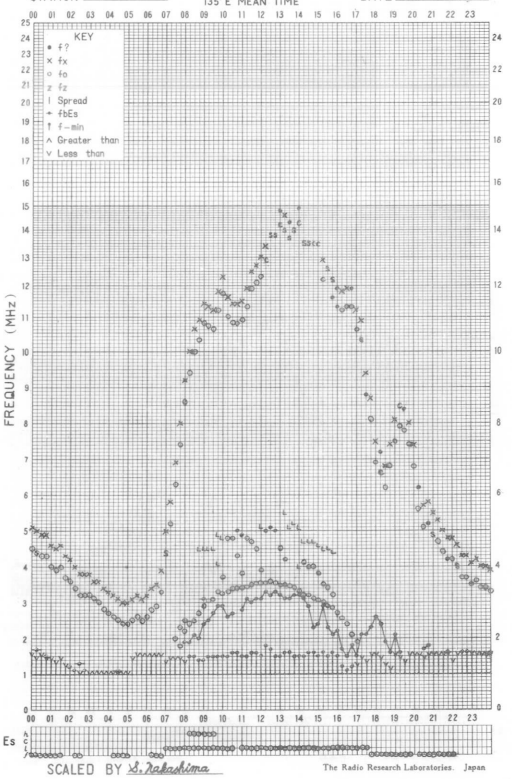
STATION YAMAGAWA 135° E MEAN TIME DATE JAN. - 6. 1969

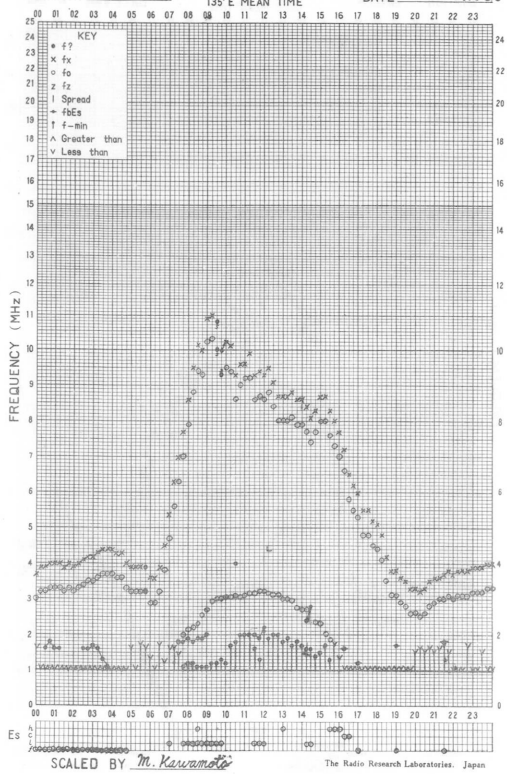


SCALED BY S. Takashima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 7, 1969



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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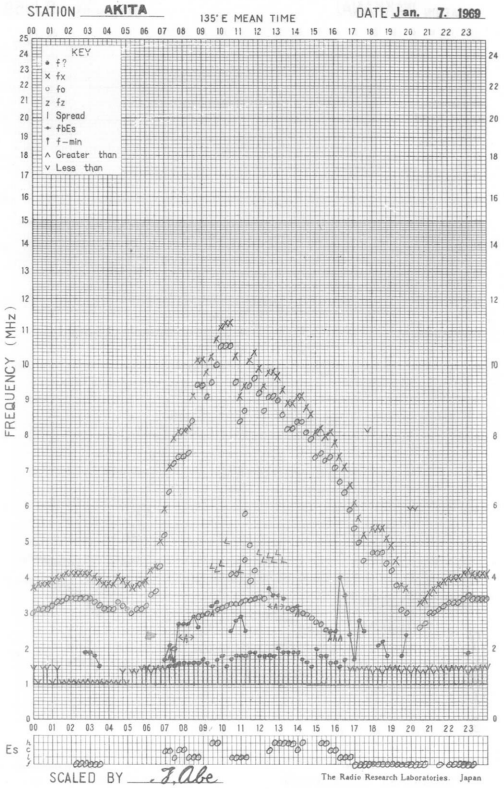

SCALED BY T. Abe The Radio Research Laboratories. Japan

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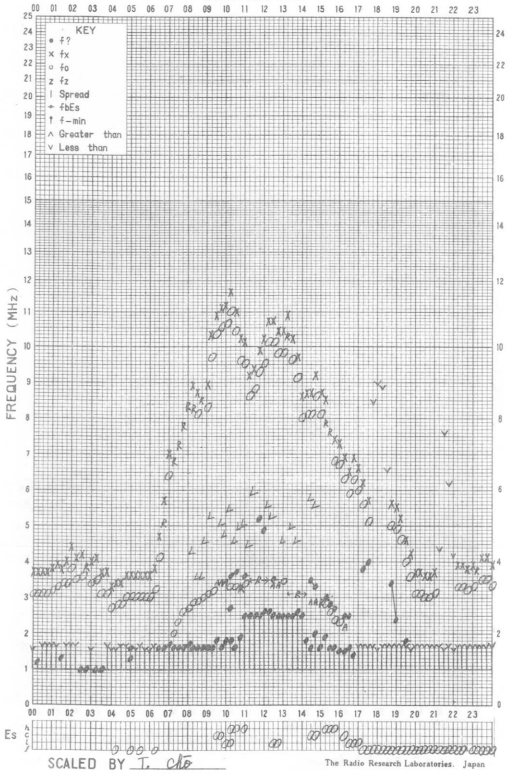

SCALED BY T. Cho The Radio Research Laboratories. Japan

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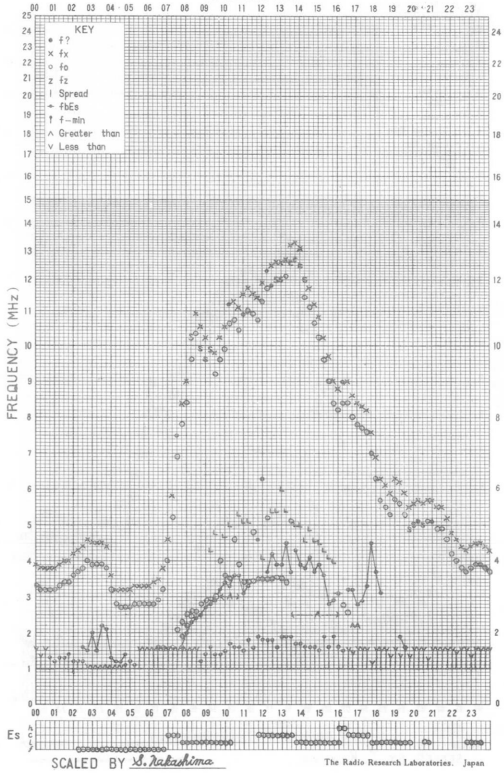

SCALED BY S. Nakashima The Radio Research Laboratories. Japan

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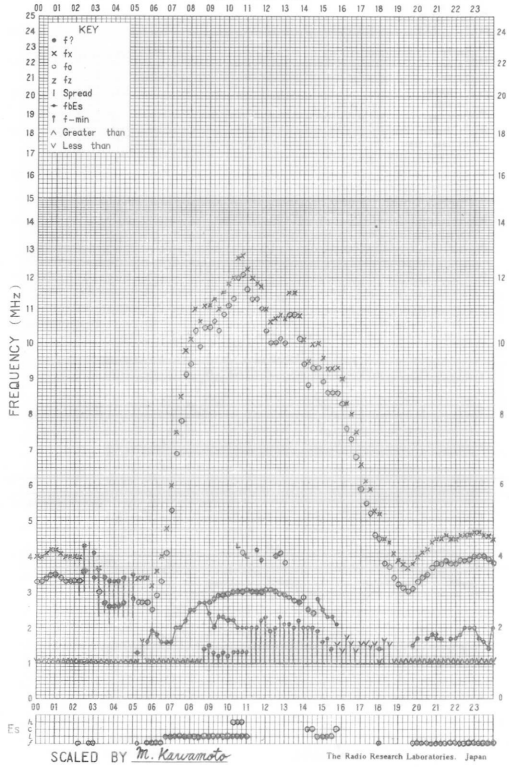

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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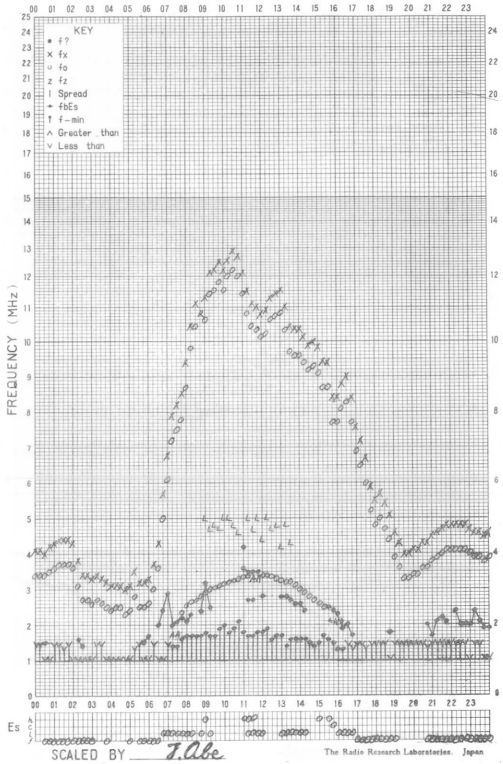
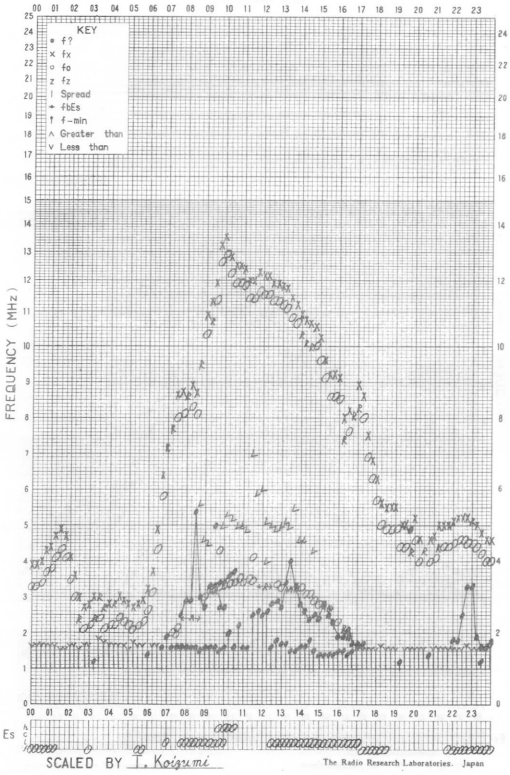


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JAN. 8.1969

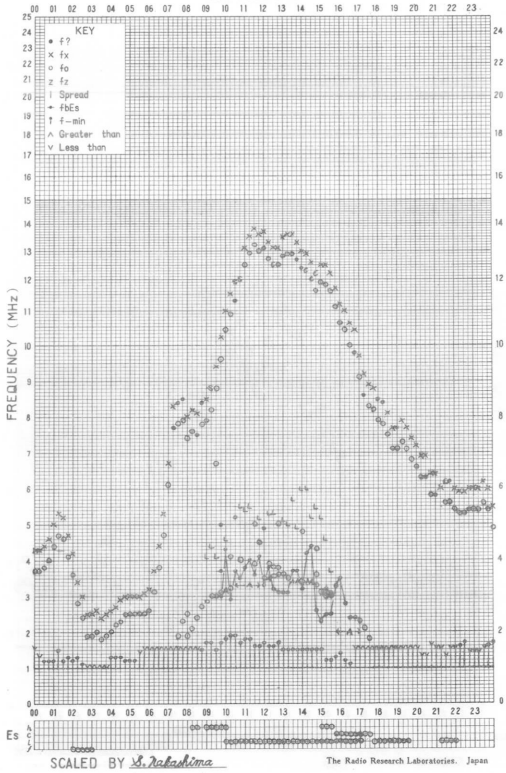


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JAN. - 8. 1969



SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

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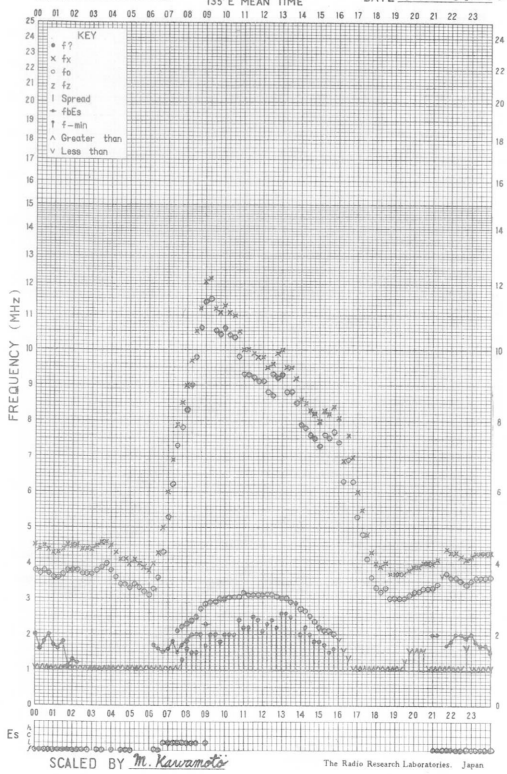
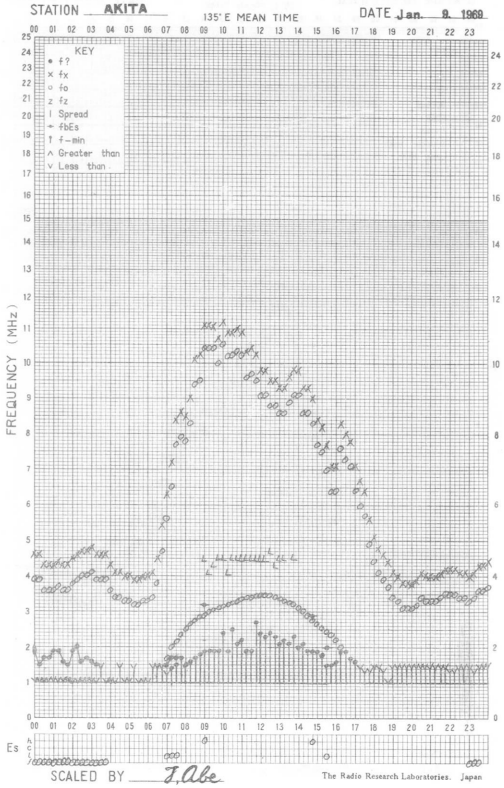


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 9. 1969

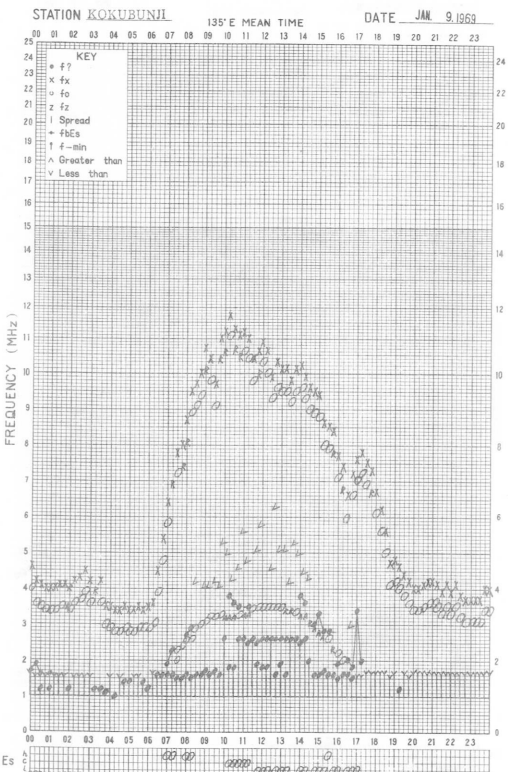


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 9.1969

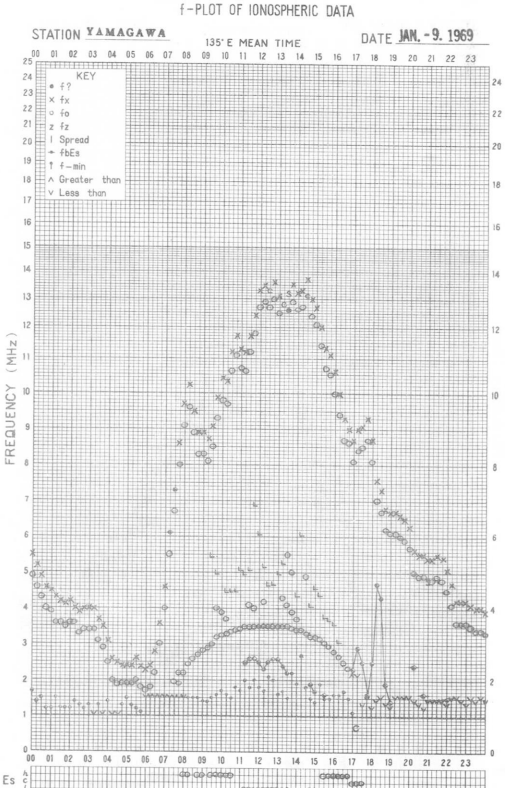


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN.-9. 1969

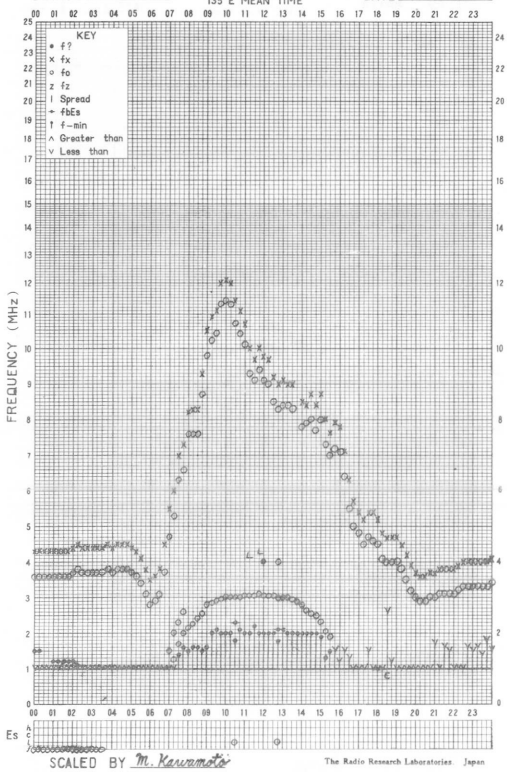


SCALED BY S. Kitadoma

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 10.1969



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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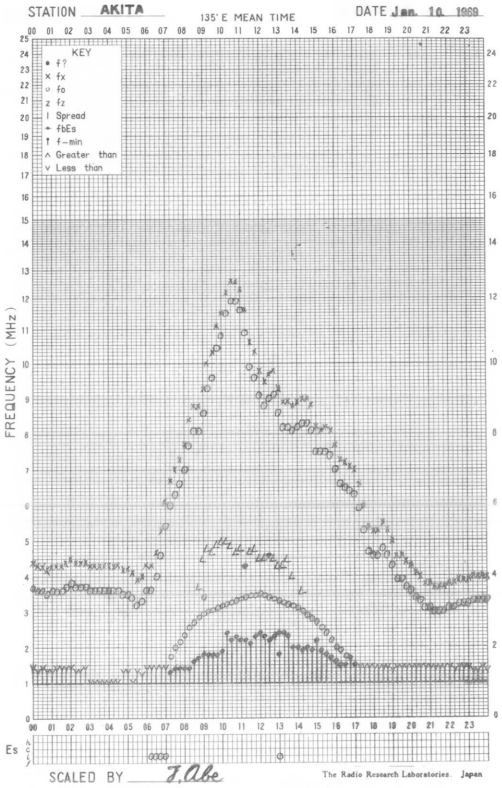

SCALED BY T. Abe The Radio Research Laboratories. Japan

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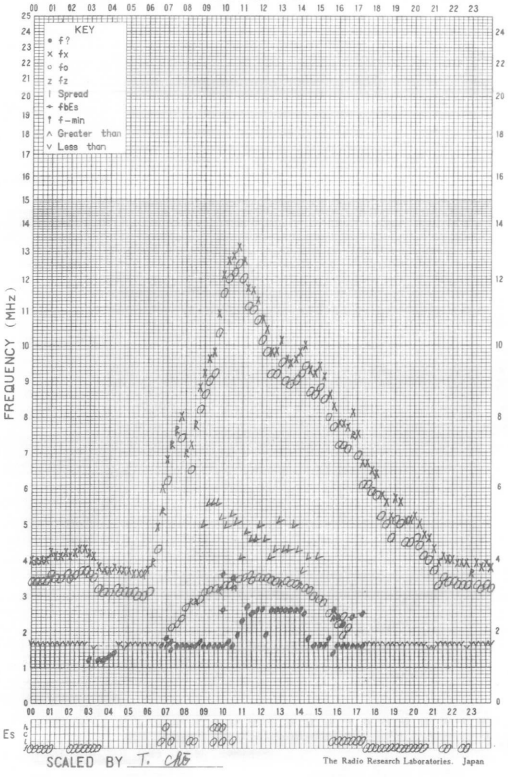

SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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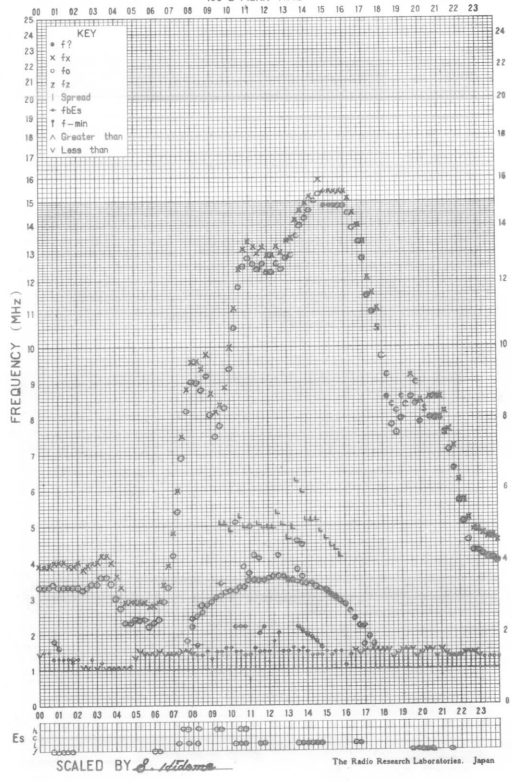

SCALED BY S. Ichidama The Radio Research Laboratories. Japan

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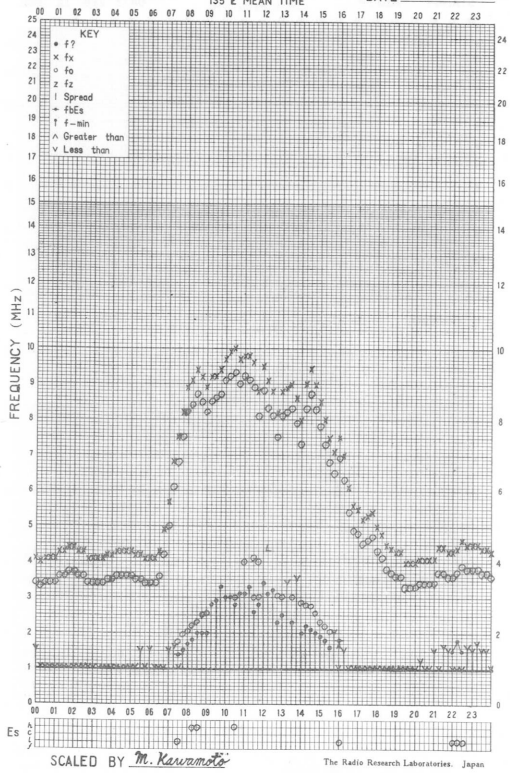

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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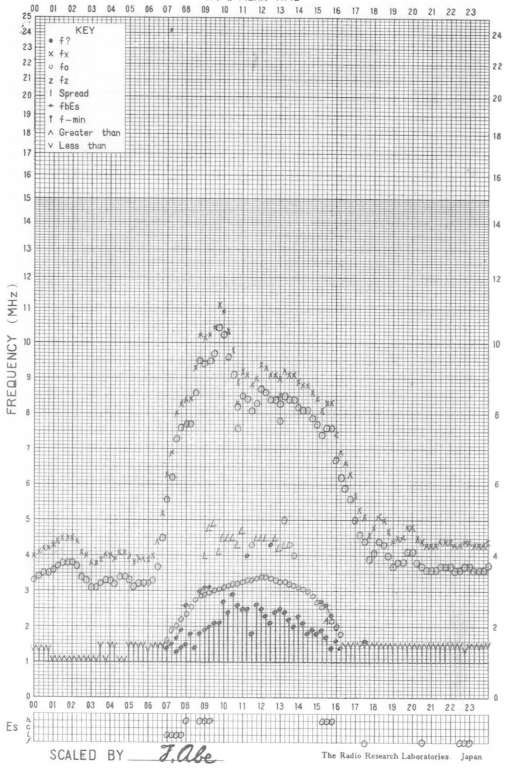

SCALED BY I. Abe

The Radio Research Laboratories. Japan

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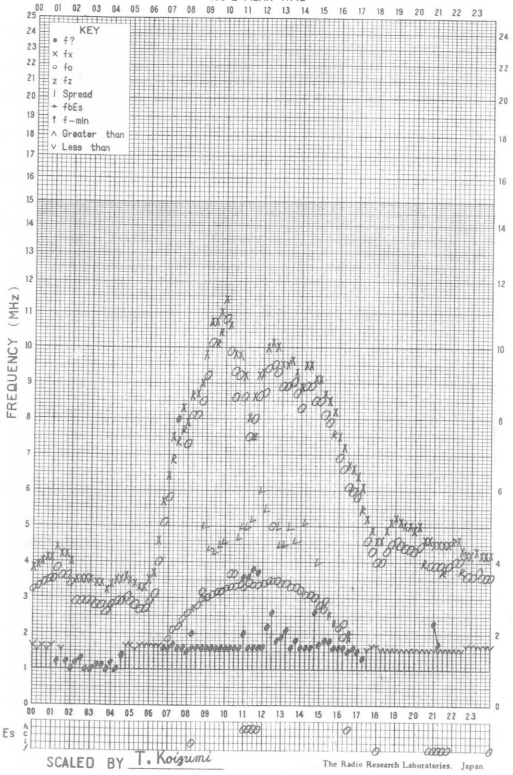

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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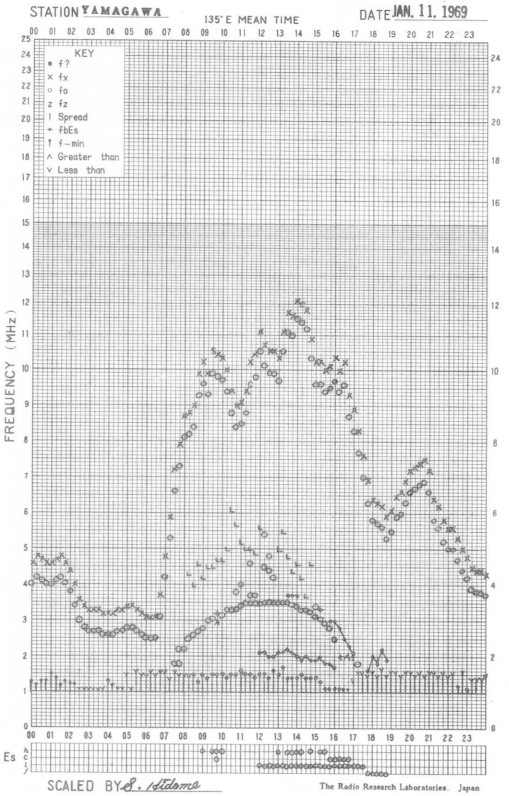

SCALED BY S. Aidoma

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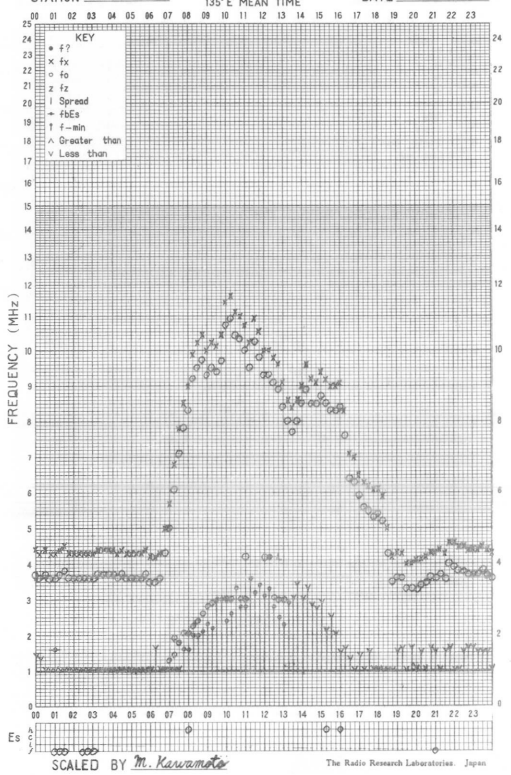

SCALED BY M. Kawamoto

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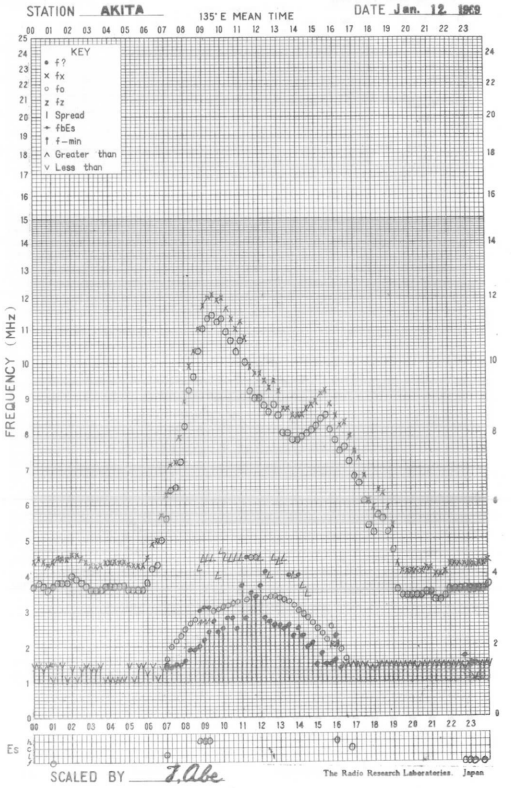

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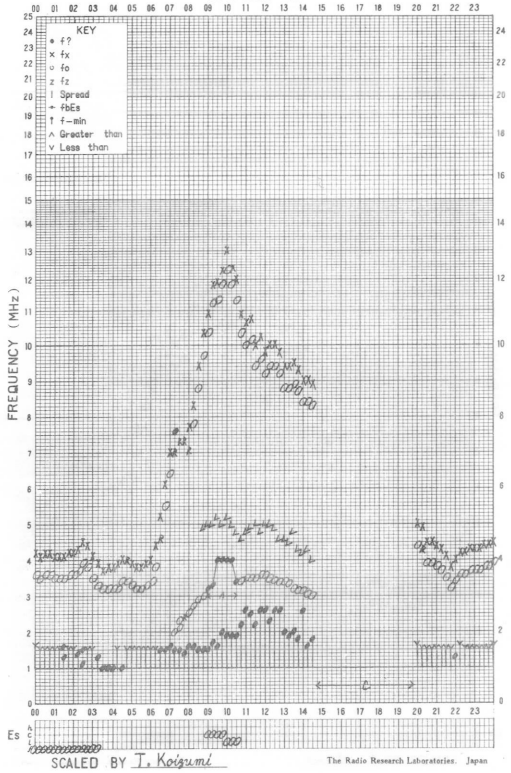

SCALED BY T. Koizumi

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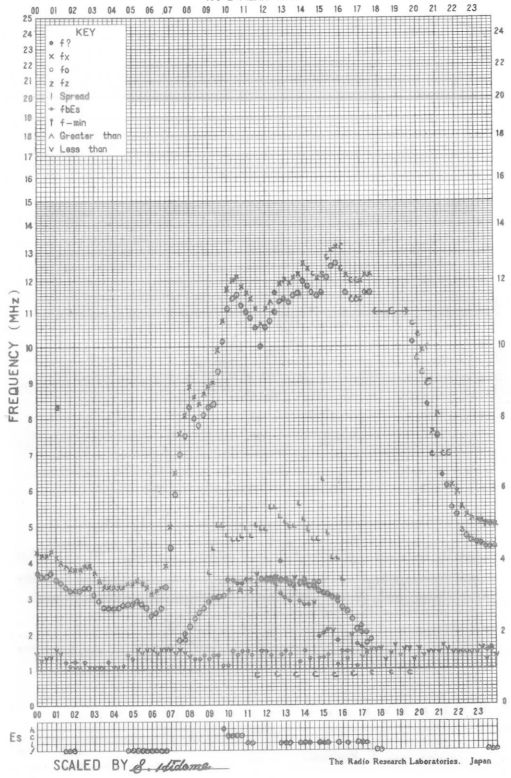

SCALED BY S. Hidama

The Radio Research Laboratories. Japan

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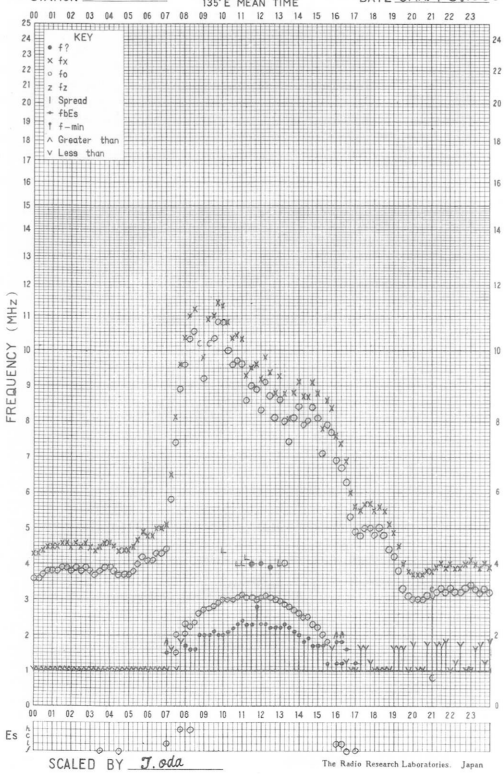

SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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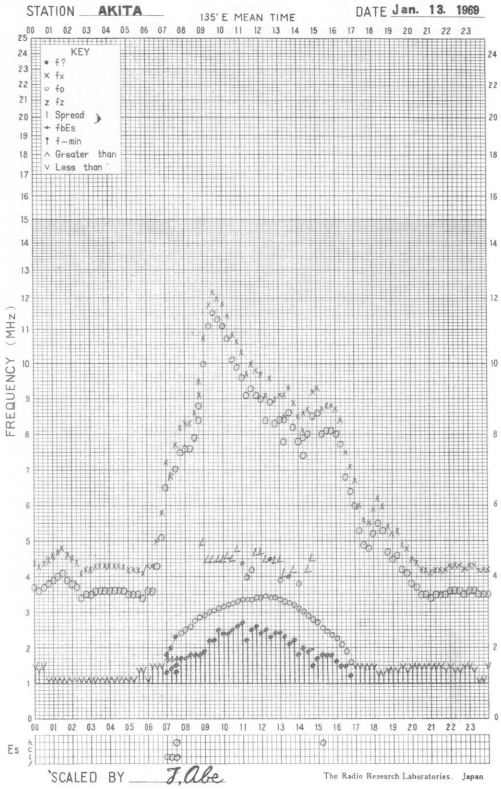

SCALED BY T. Abe

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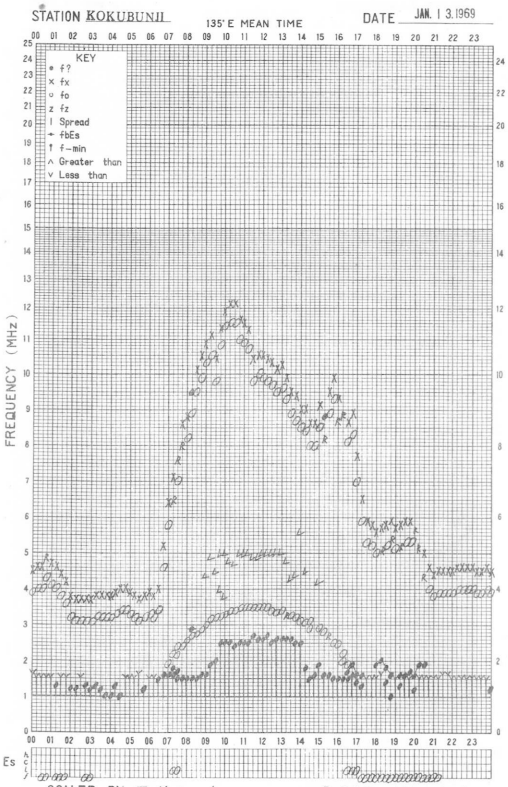

SCALED BY T. Koizumi

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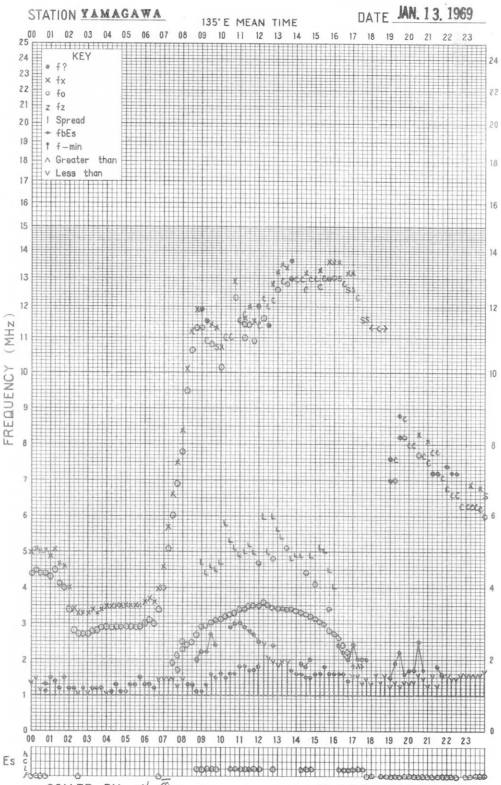

SCALED BY K. Oyama

The Radio Research Laboratories. Japan

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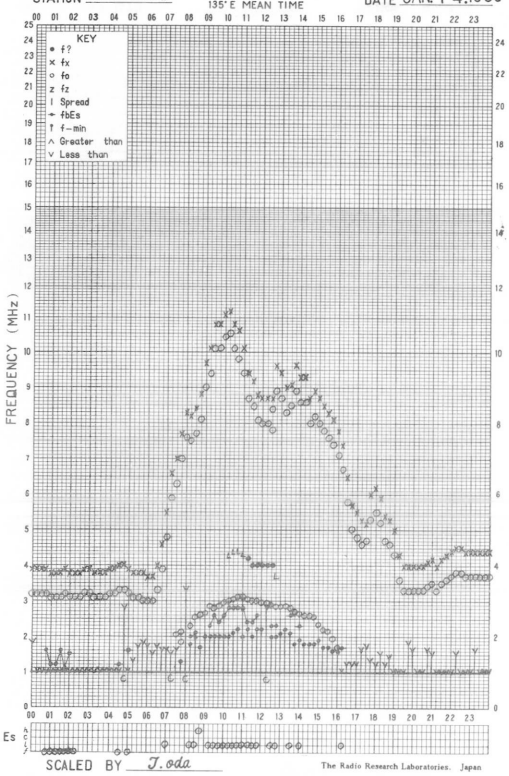

SCALED BY T. Oda

The Radio Research Laboratories. Japan

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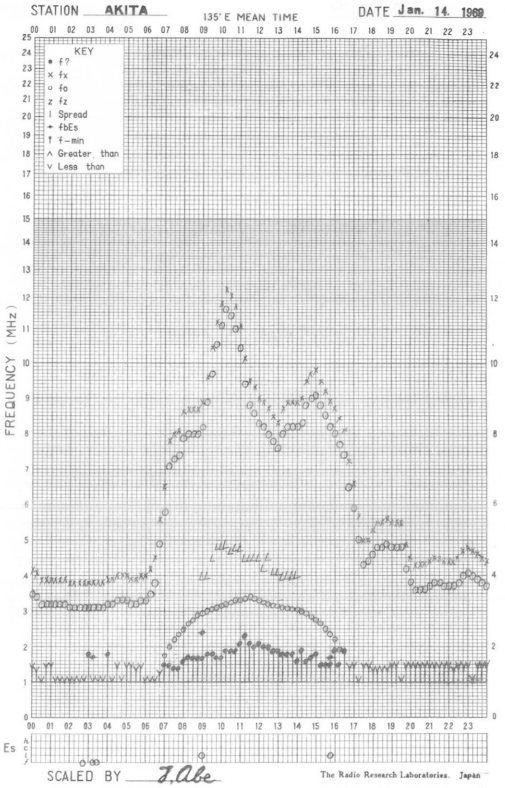

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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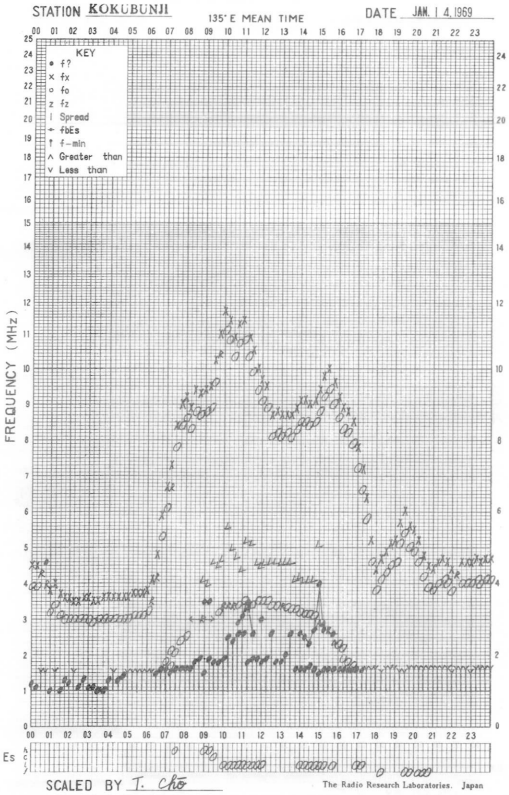

SCALED BY T. Chō

The Radio Research Laboratories. Japan

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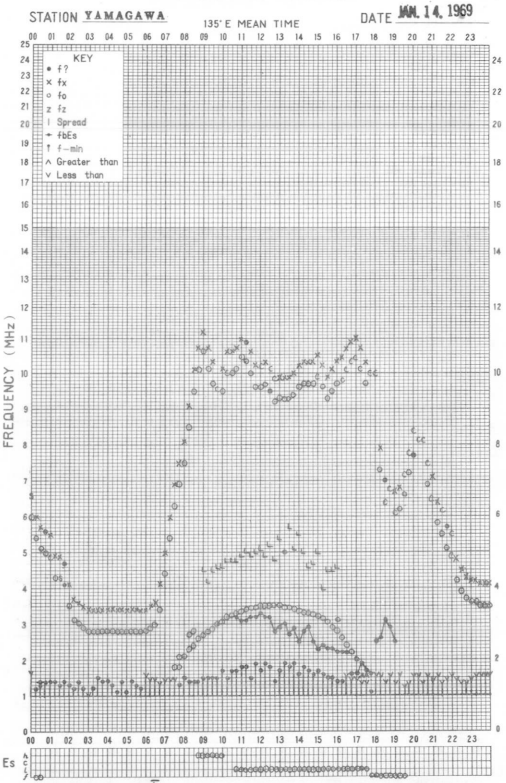

SCALED BY N. Iyama

The Radio Research Laboratories. Japan

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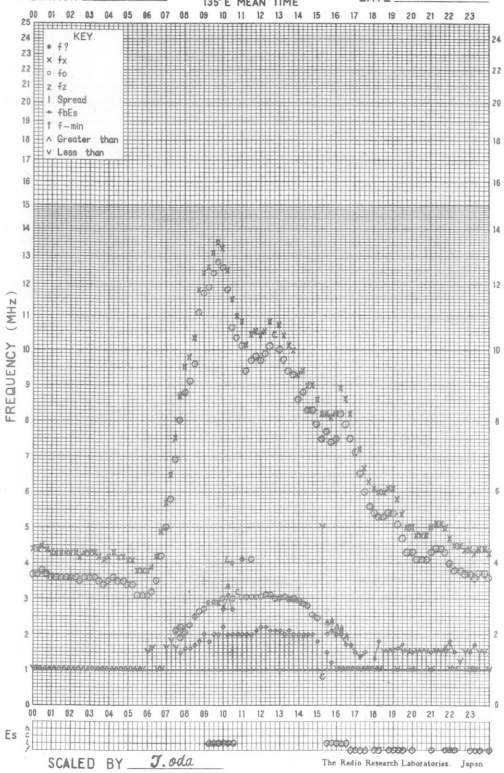

SCALED BY T. Oda

The Radio Research Laboratories. Japan

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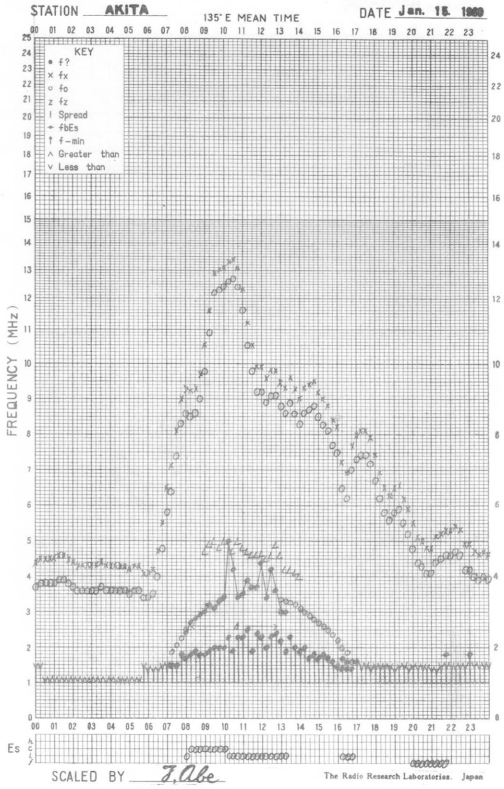

SCALED BY T. Abe

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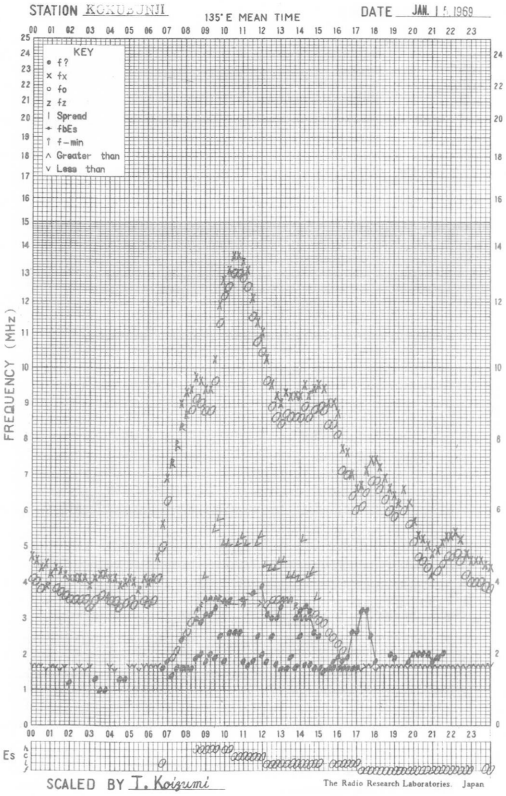

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The Radio Research Laboratories. Japan

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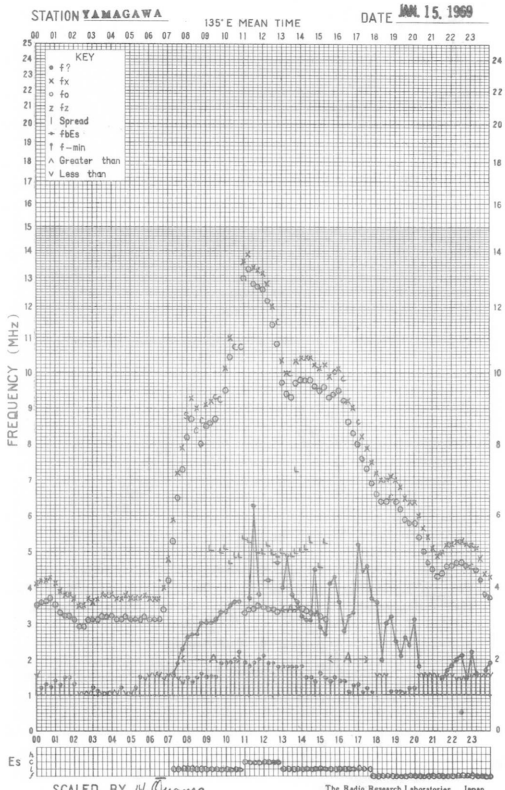

SCALED BY M. Oyama

The Radio Research Laboratories. Japan

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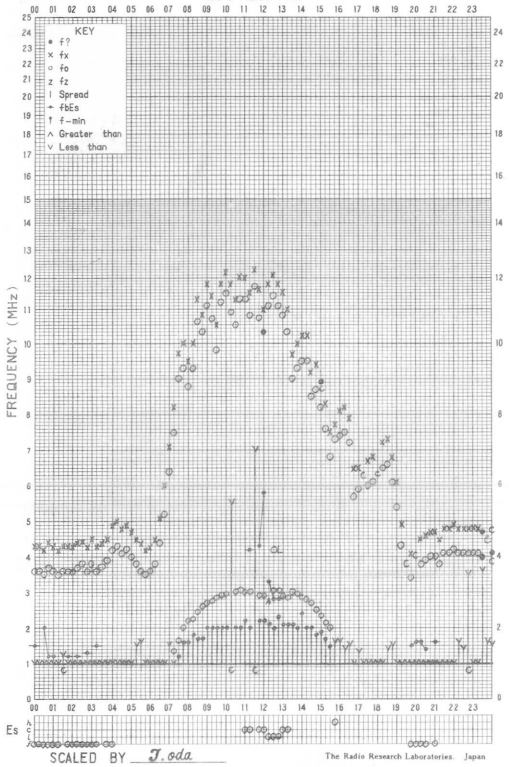

SCALED BY T. Oda

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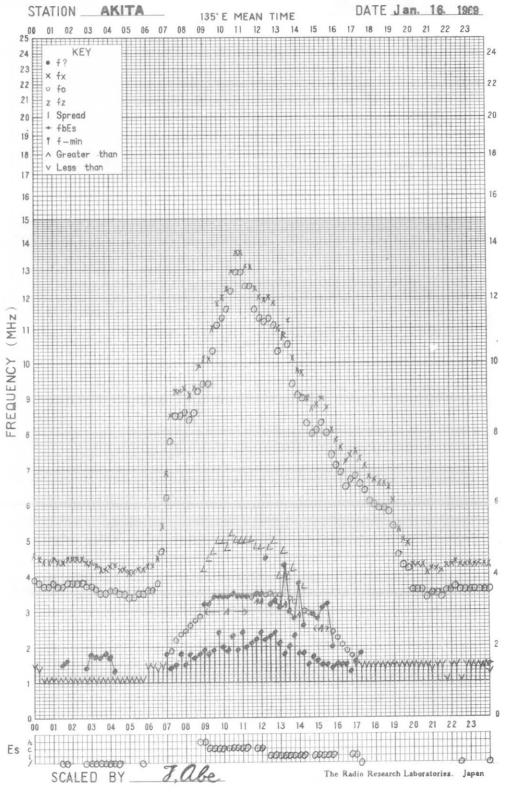

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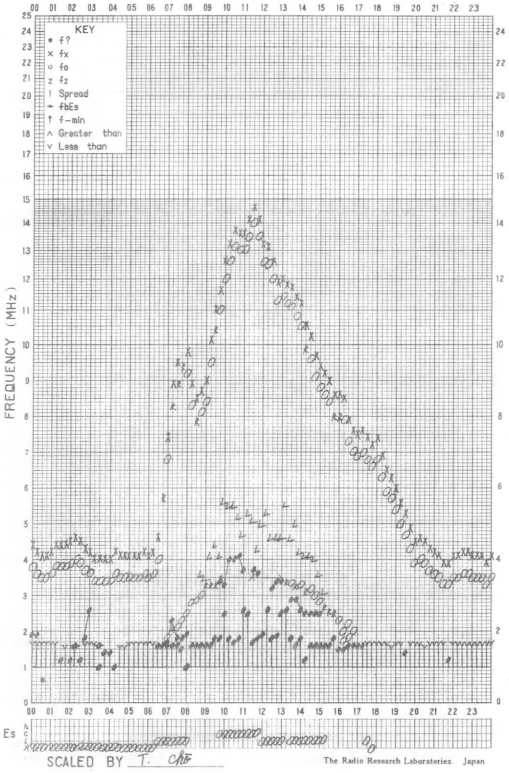

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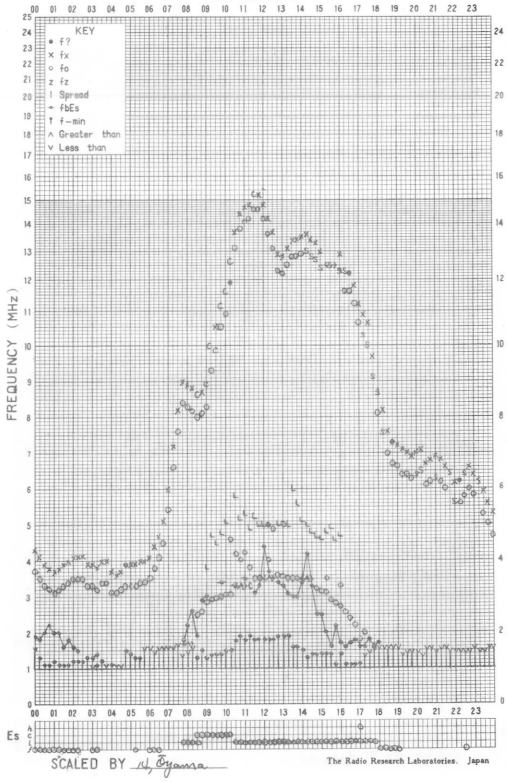

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The Radio Research Laboratories. Japan

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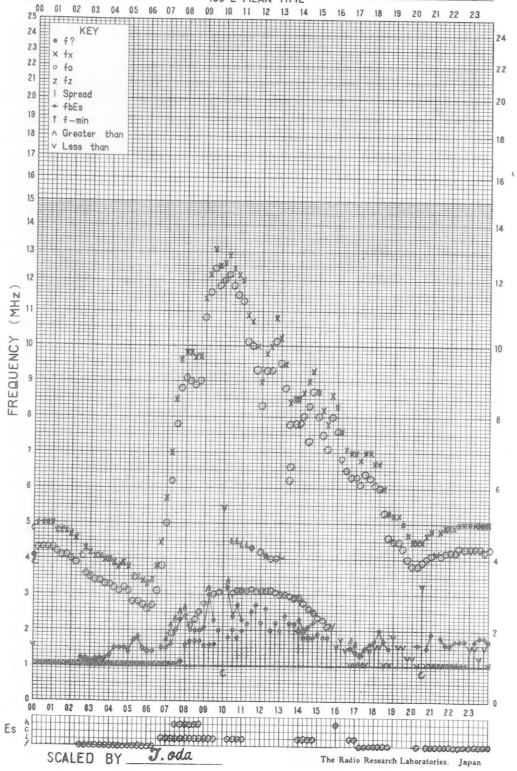

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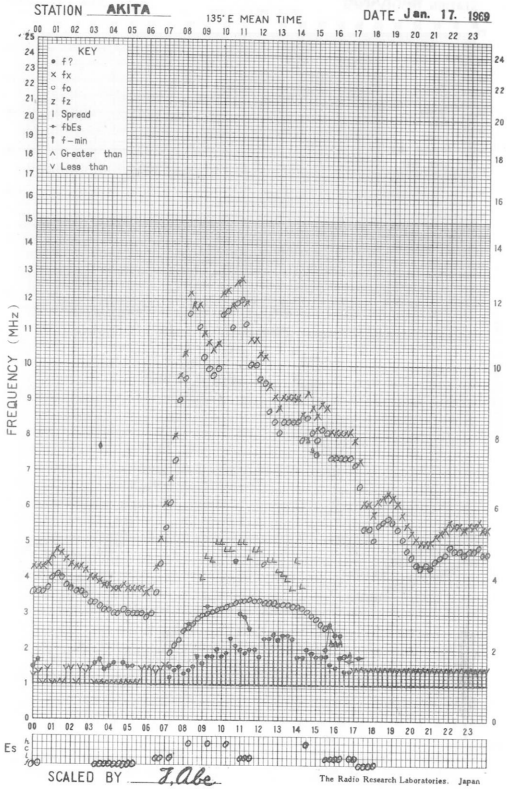

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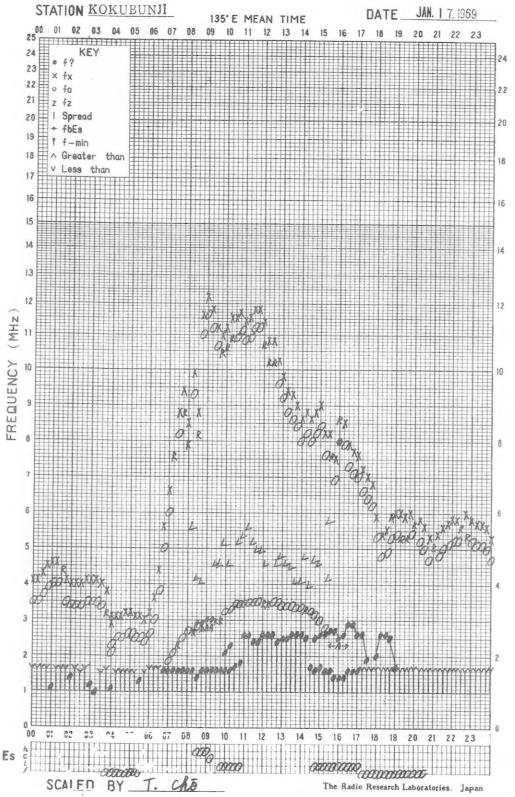

SCALED BY T. Ichi

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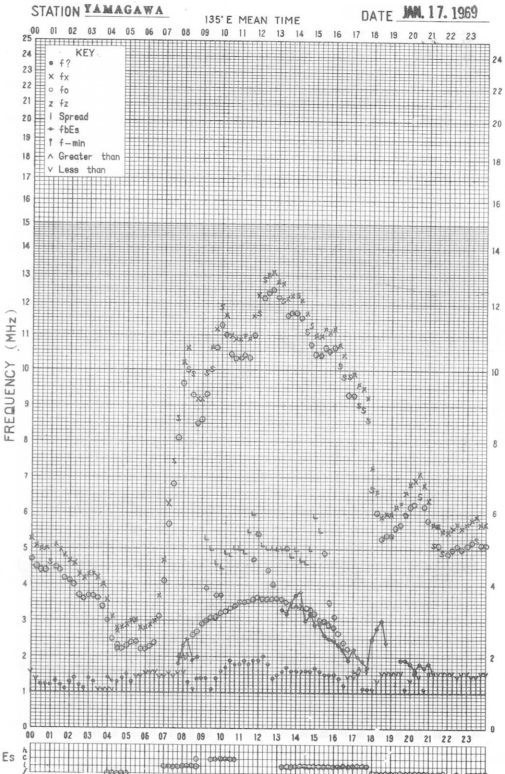

SCALED BY K. Oyama

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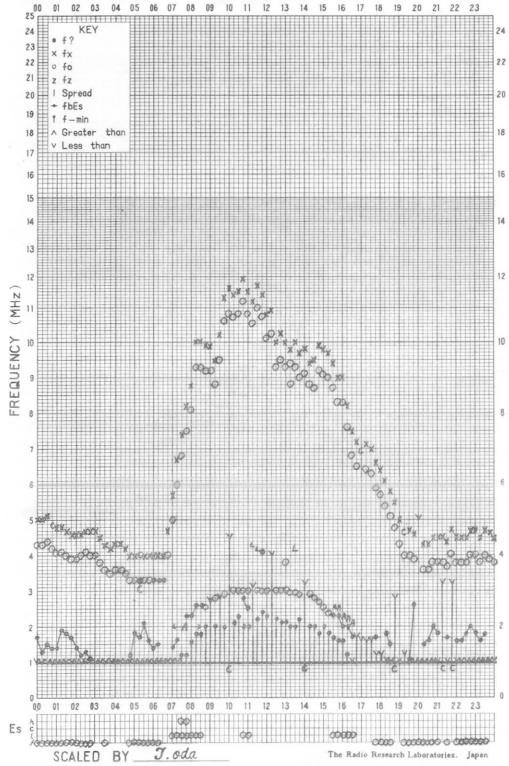

SCALED BY T. oda

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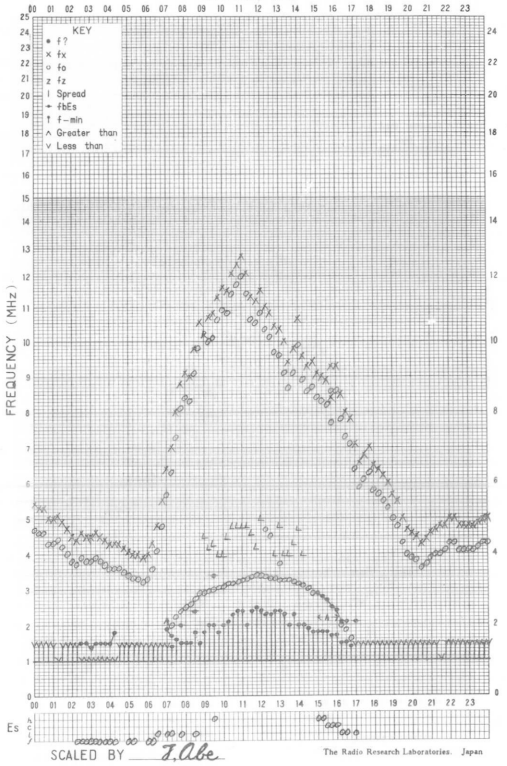

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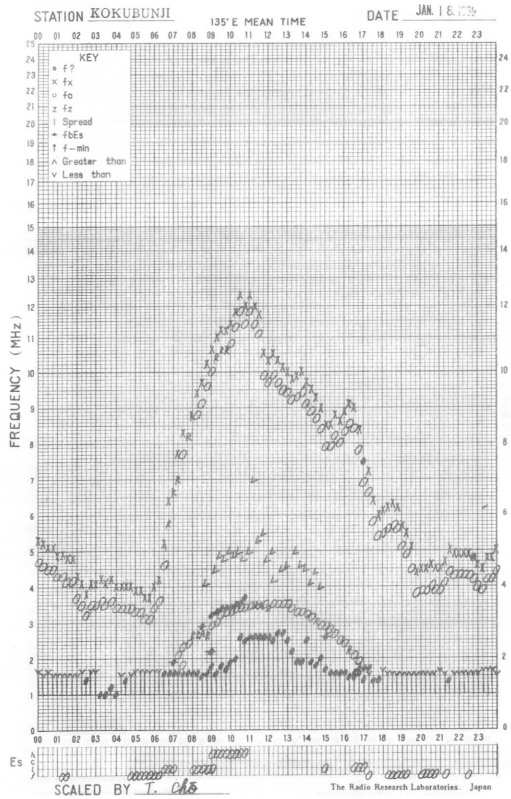

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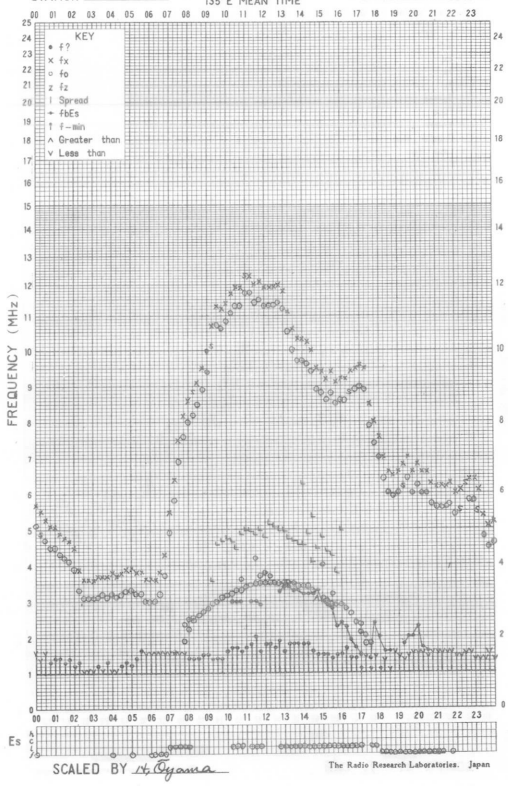

SCALED BY H. Oyama

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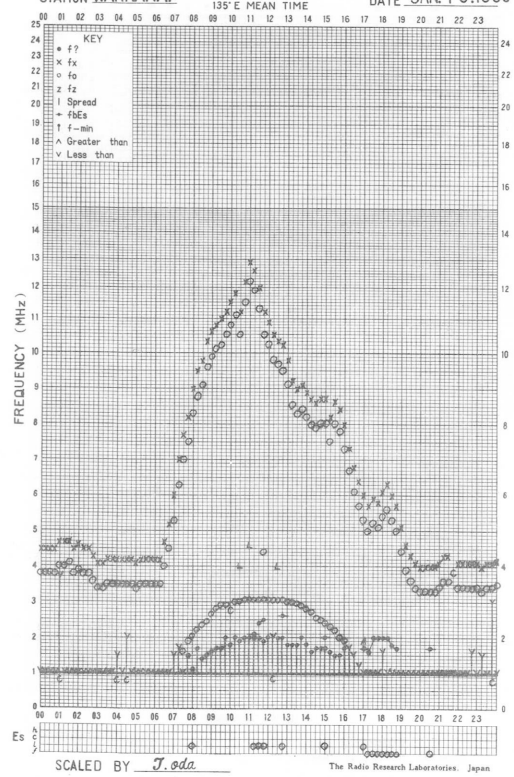

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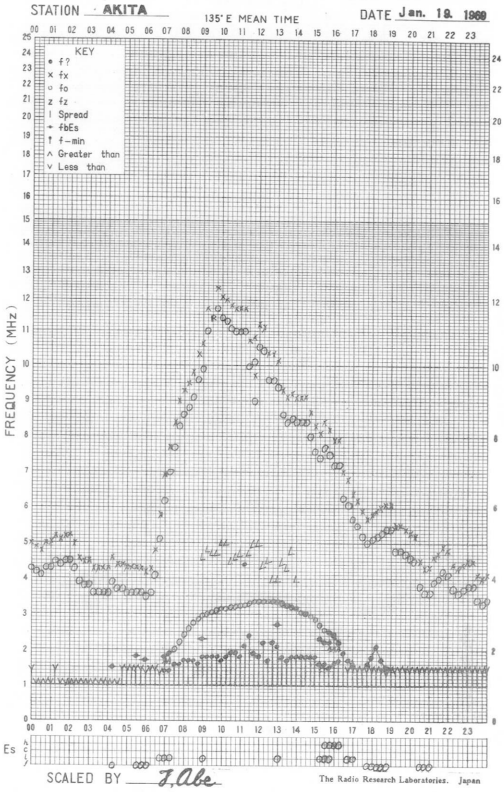

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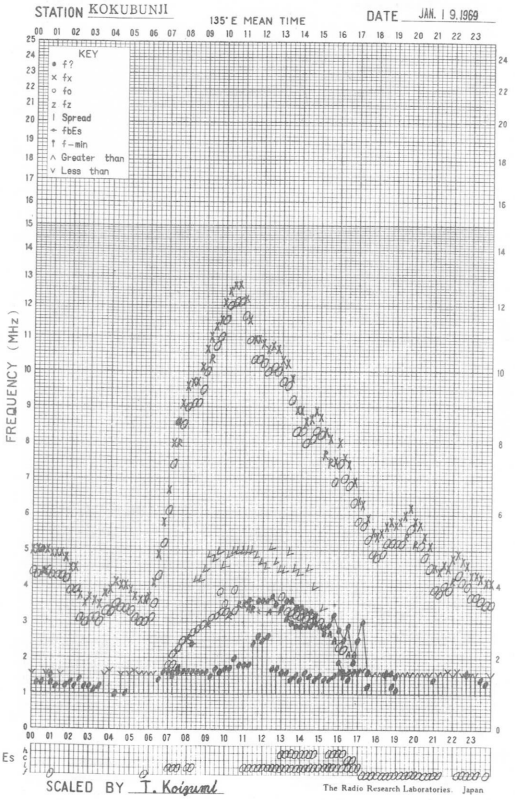

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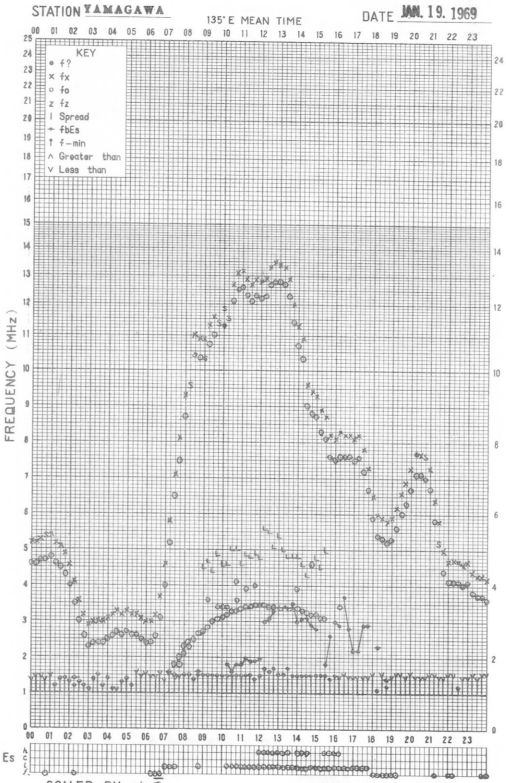

SCALED BY N. Ogawa

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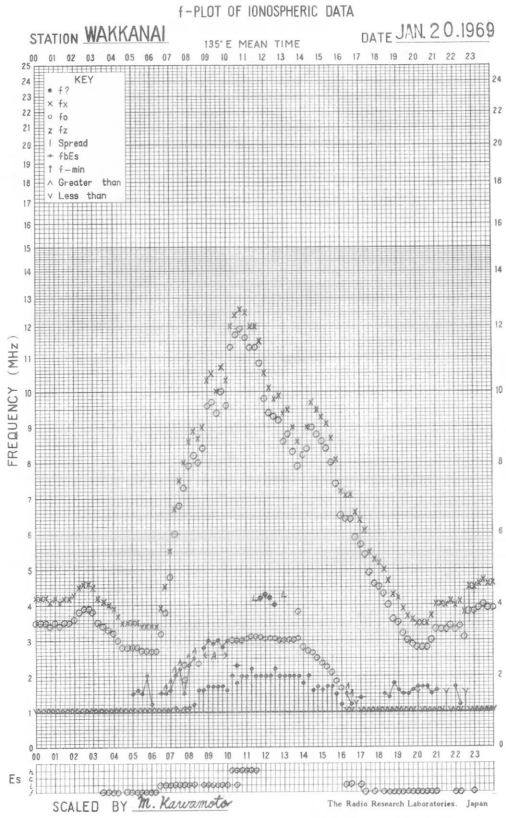
f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JAN. 20.1969
KEY
• f?
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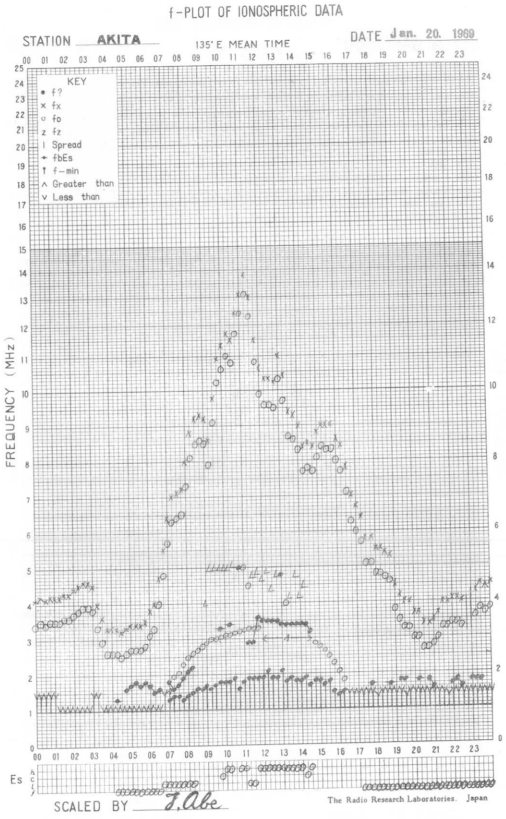
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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STATION AKITA
135°E MEAN TIME
DATE Jan. 20. 1969
KEY
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FREQUENCY (MHz)
Es
SCALED BY T. Abe
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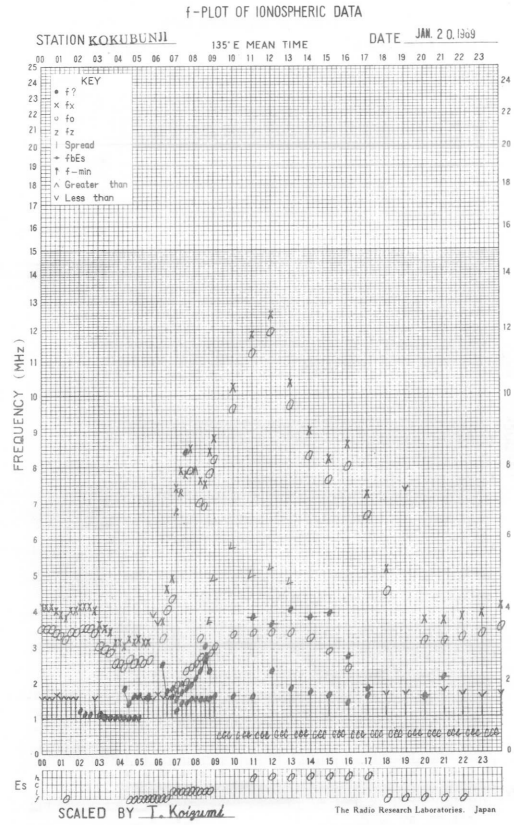
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135°E MEAN TIME
DATE JAN. 20.1969
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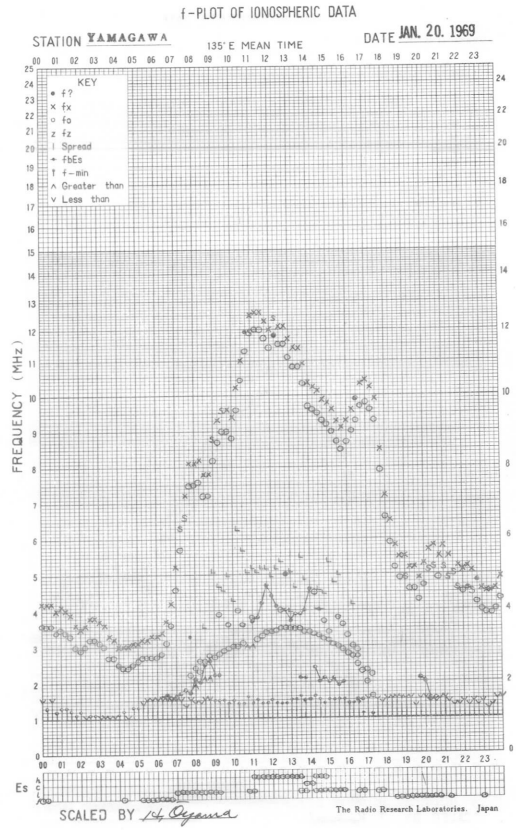
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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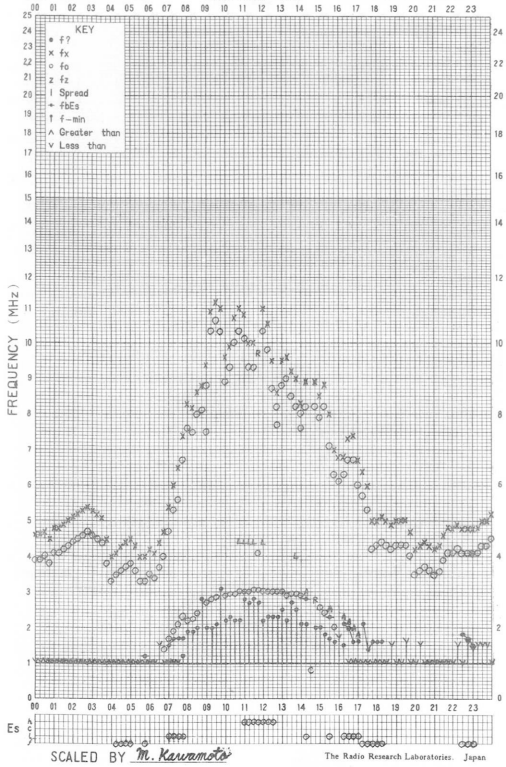
SCALED BY H. Ogawa
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 21. 1969



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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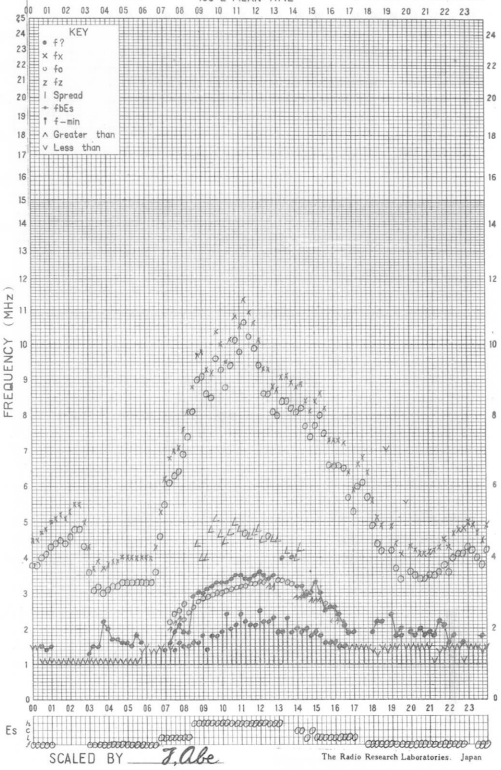

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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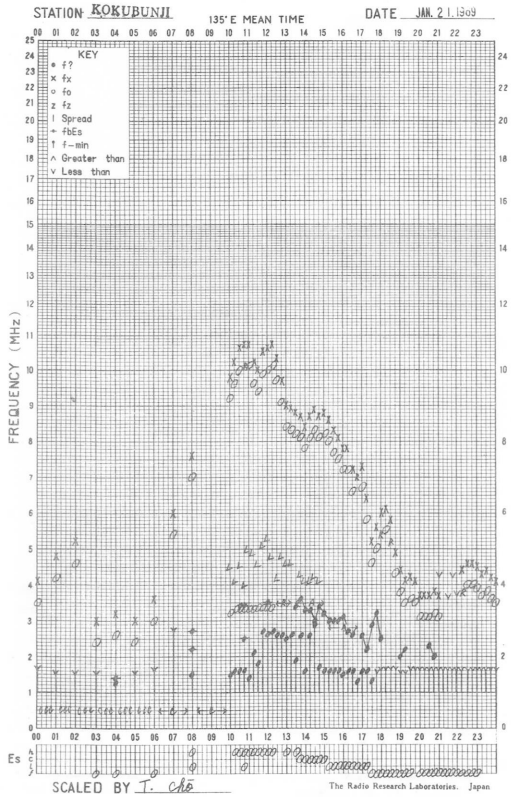

SCALED BY T. Chō

The Radio Research Laboratories. Japan

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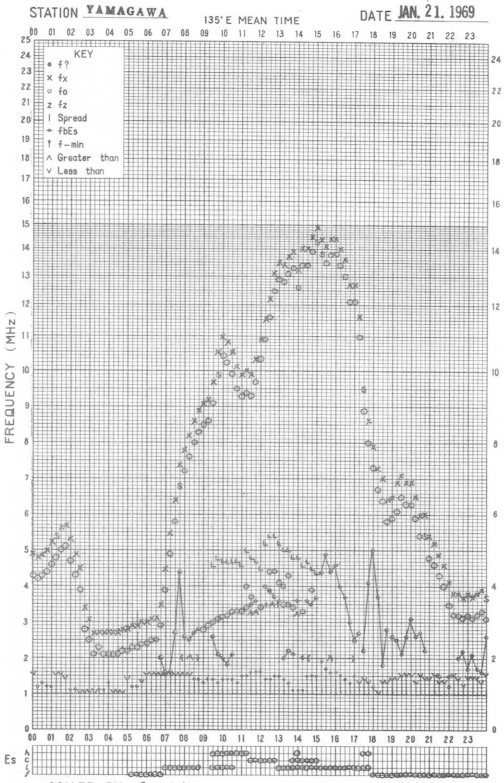
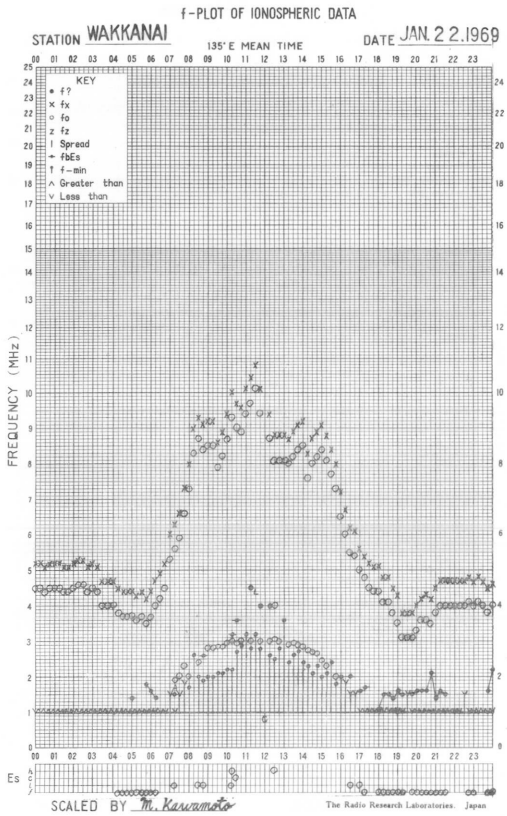


SCALED BY S. Ishidome

The Radio Research Laboratories. Japan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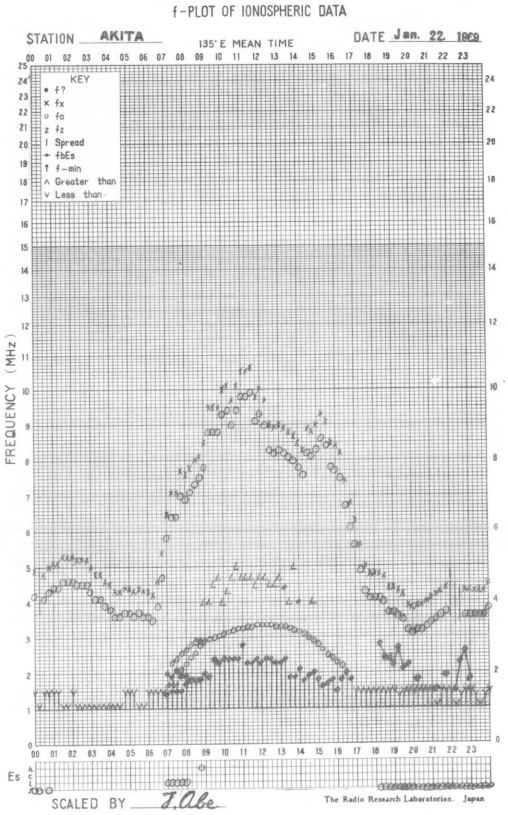
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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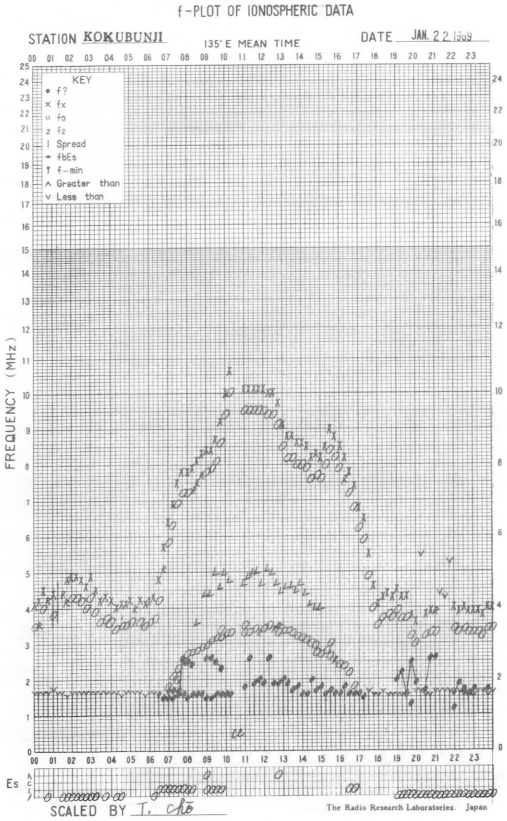
SCALED BY T. Abe
The Radio Research Laboratories. Japan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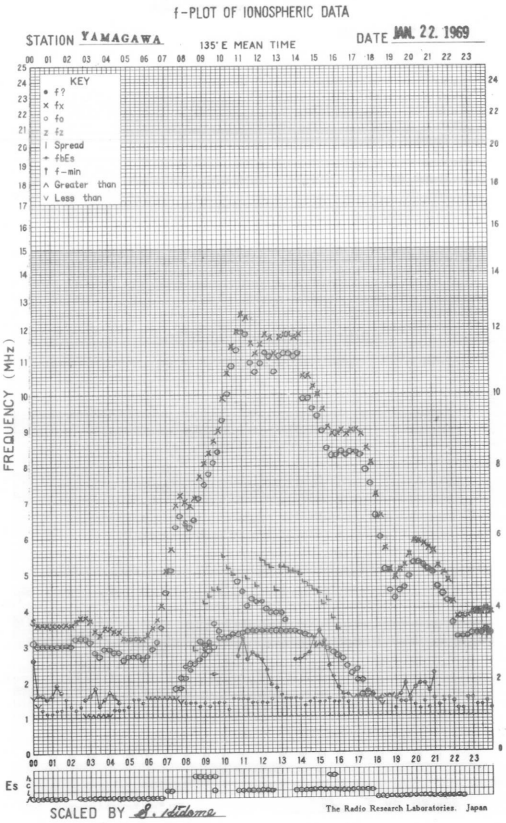
SCALED BY T. Ito
The Radio Research Laboratories. Japan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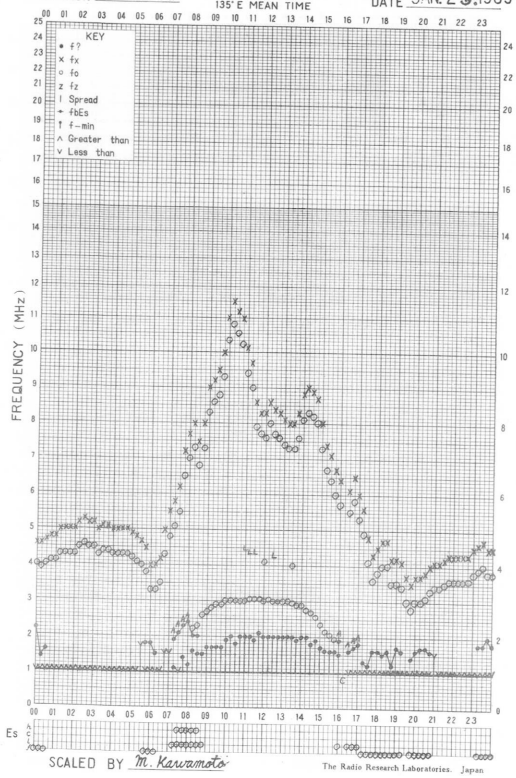
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 23, 1969



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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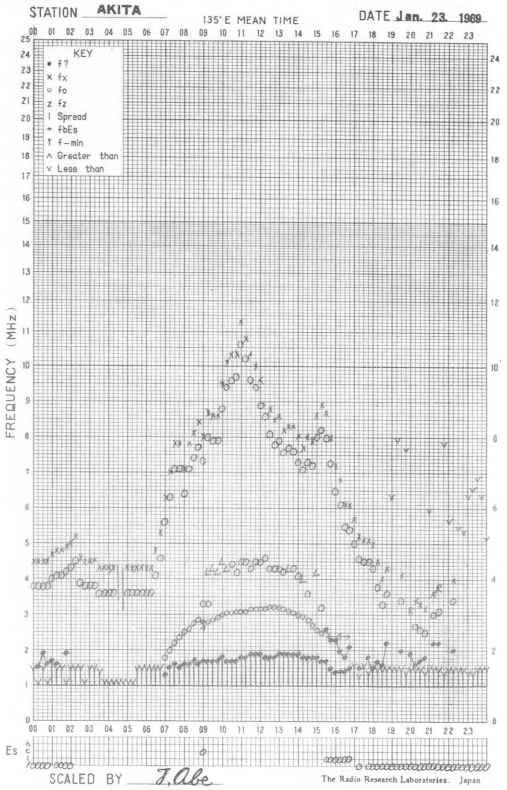
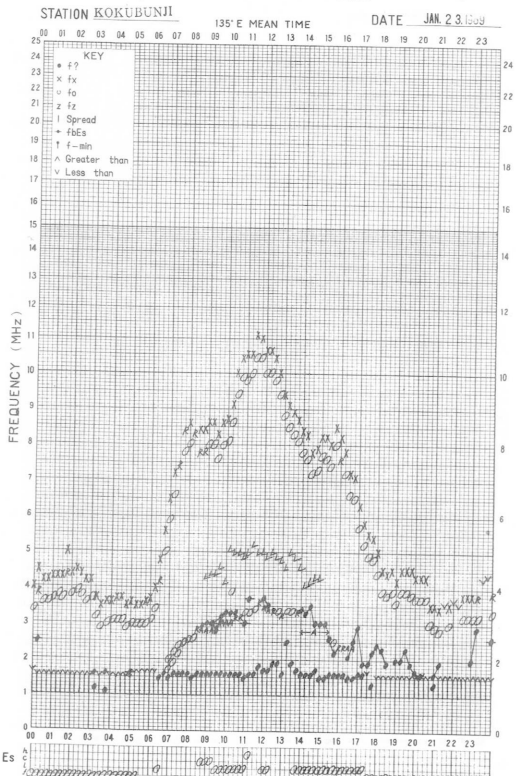


SCALED BY I. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JAN. 23, 1969



SCALED BY T. Ito

The Radio Research Laboratories. Japan

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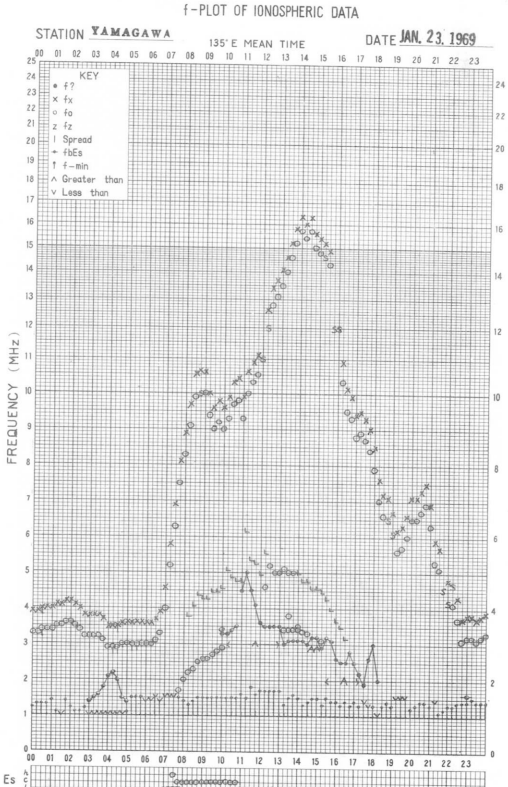
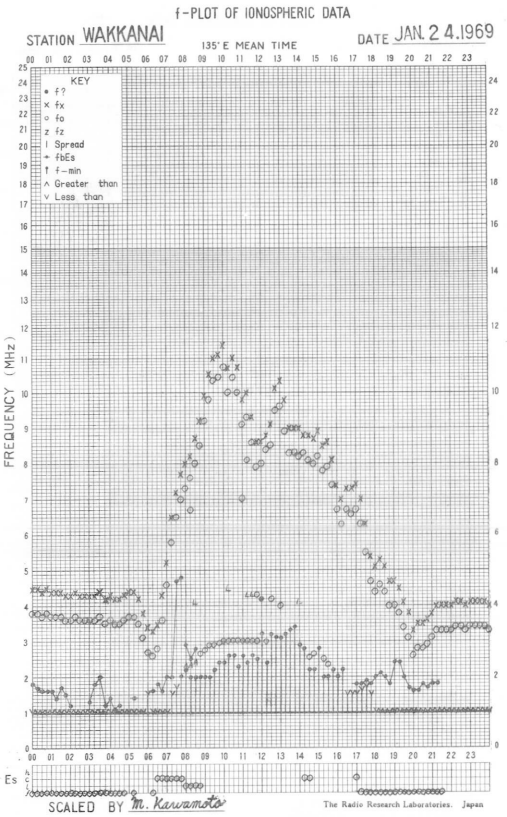


SCALED BY S. Watanabe

The Radio Research Laboratories. Japan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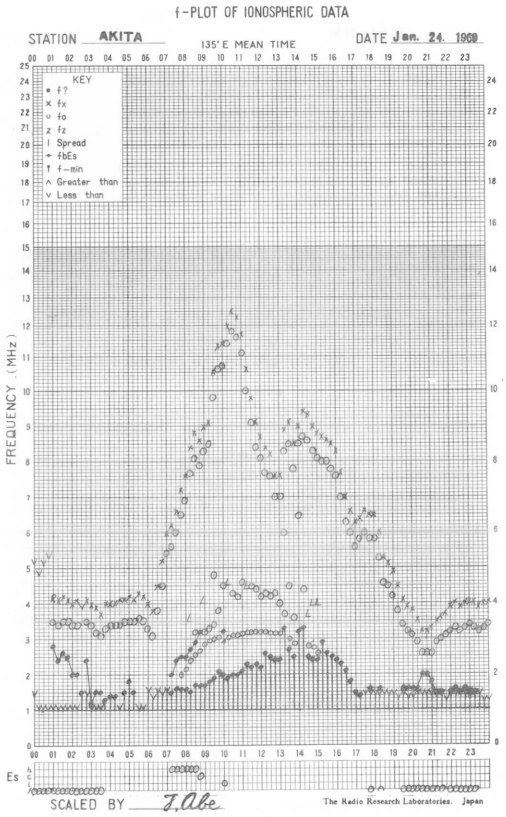
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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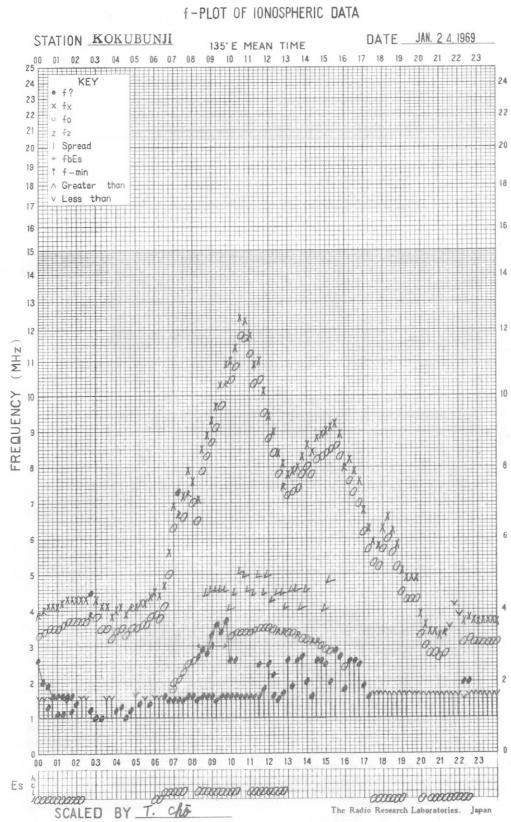
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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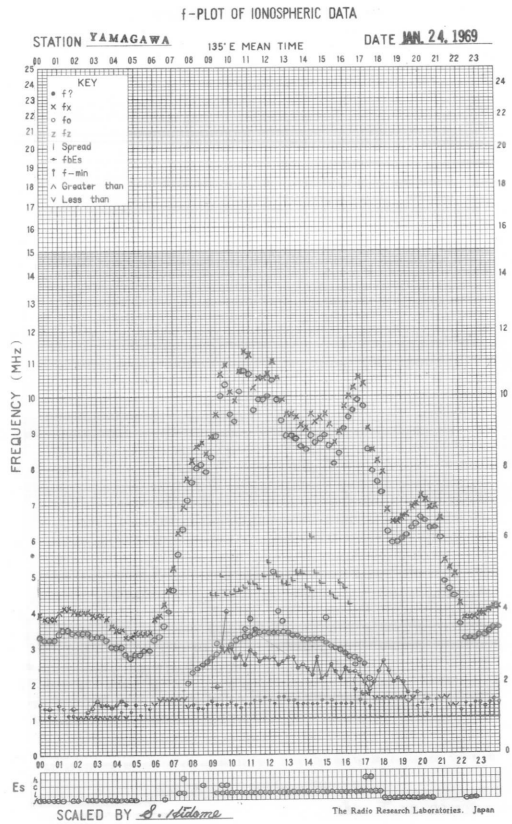
SCALED BY T. Abe
The Radio Research Laboratories. Japan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SCALED BY S. Ichidama
The Radio Research Laboratories. Japan

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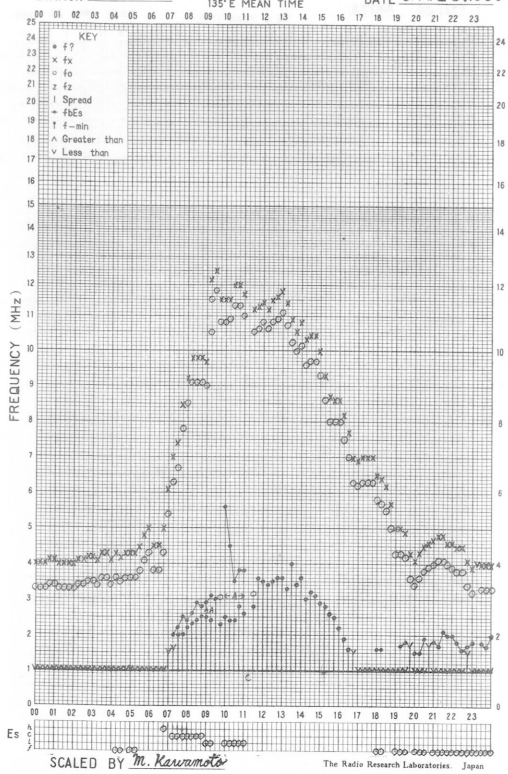

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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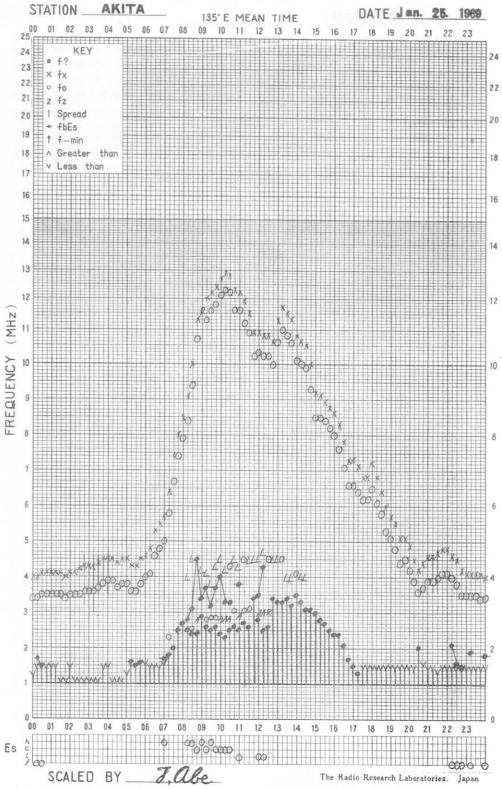

SCALED BY T. Abe The Radio Research Laboratories. Japan

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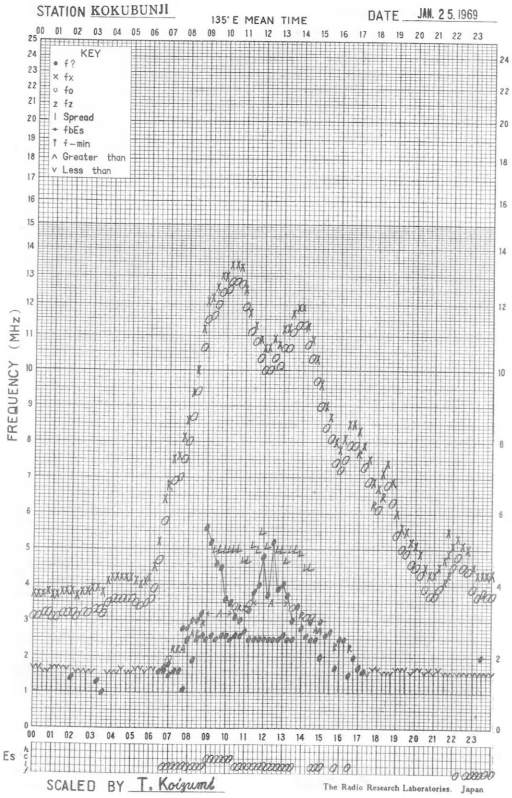

SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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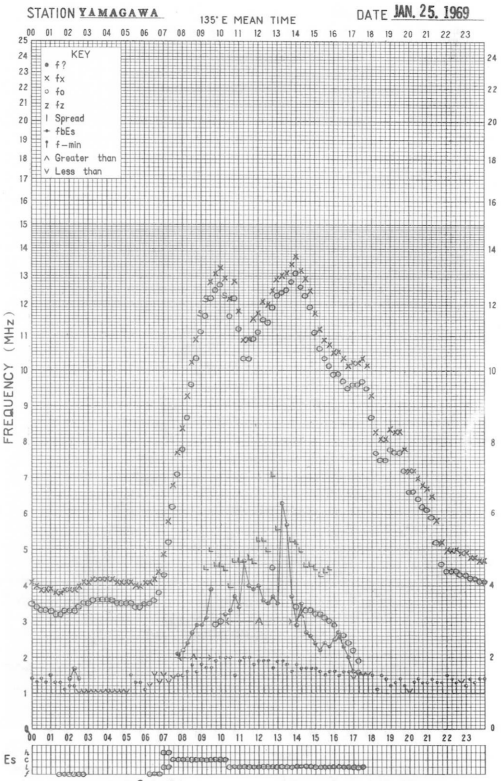

SCALED BY S. Ishitomo The Radio Research Laboratories. Japan

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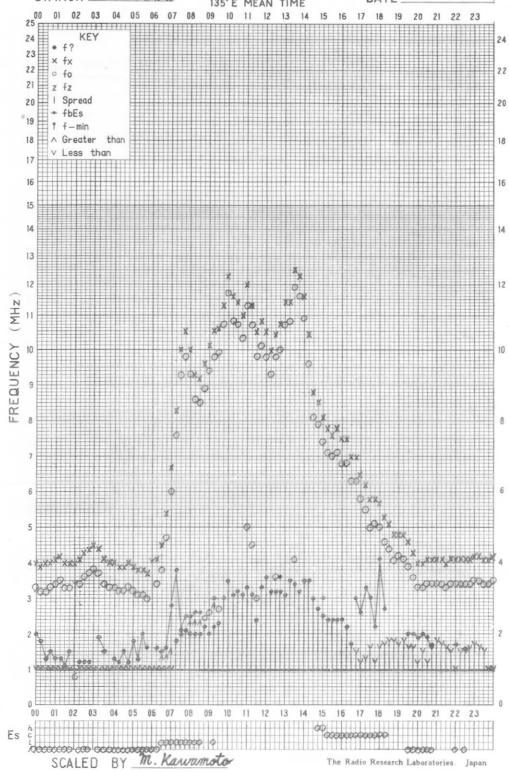

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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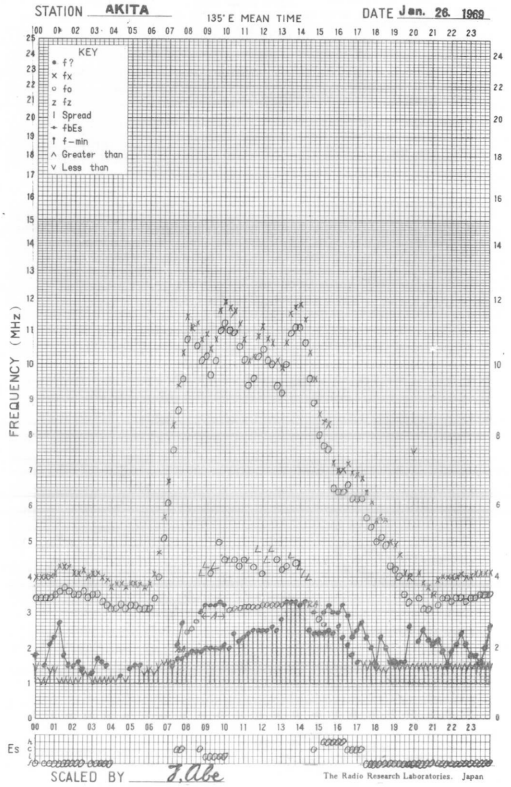

SCALED BY T. Abe The Radio Research Laboratories. Japan

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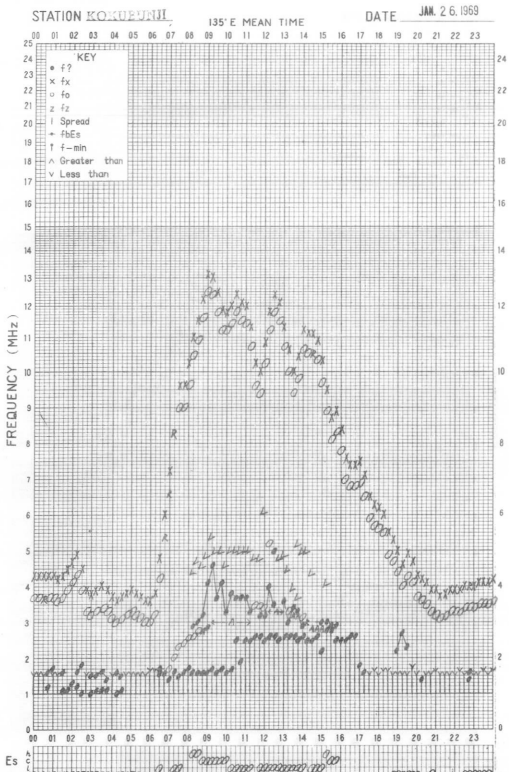

SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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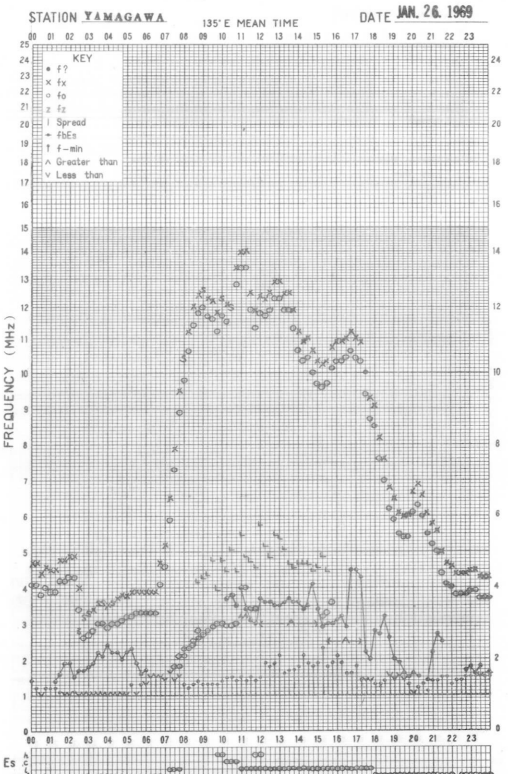

SCALED BY S. Iidaka The Radio Research Laboratories. Japan

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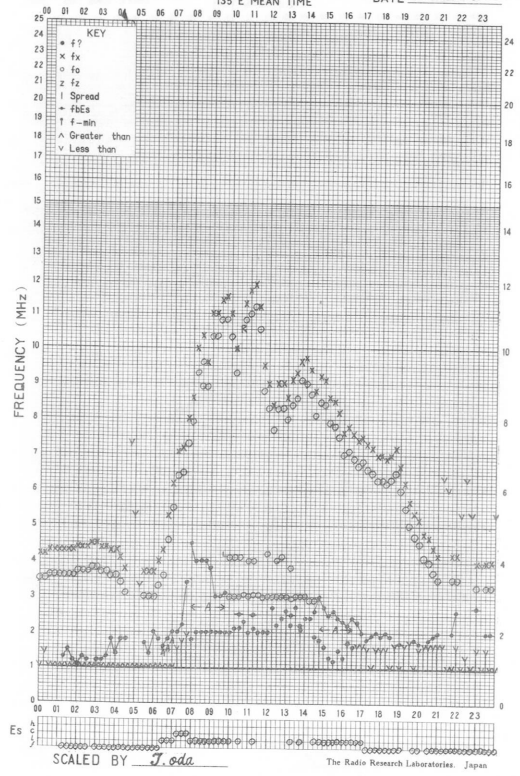

SCALED BY T. Oda

The Radio Research Laboratories. Japan

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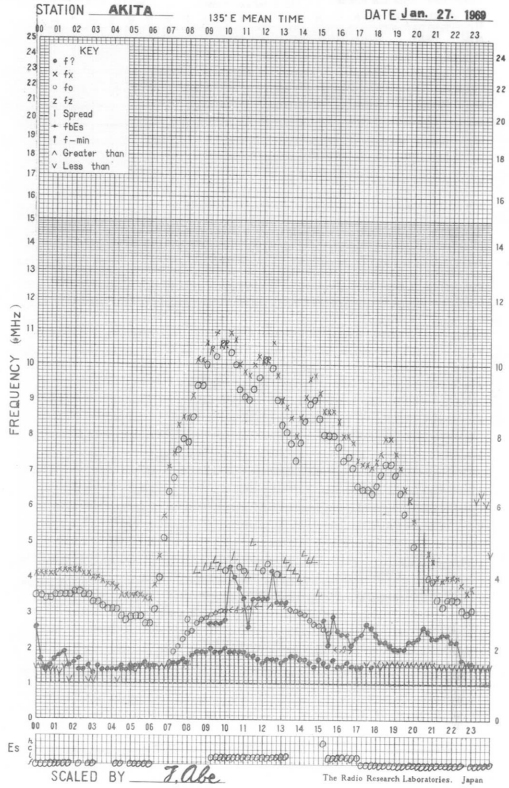

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The Radio Research Laboratories. Japan

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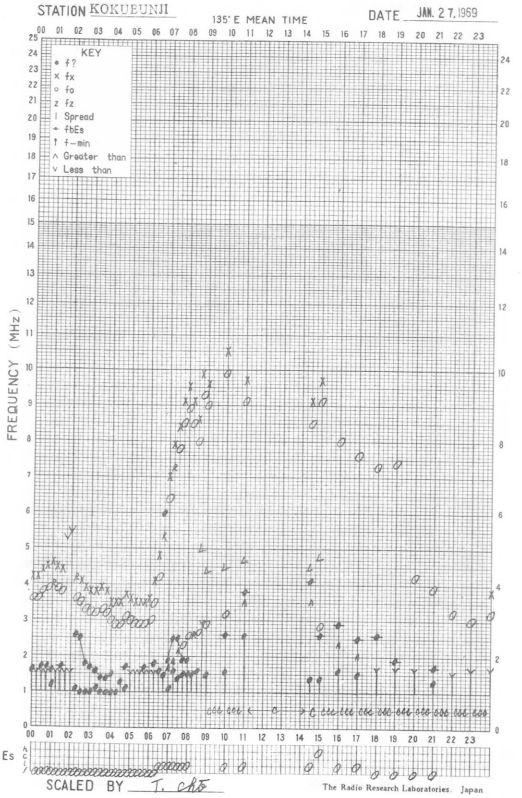

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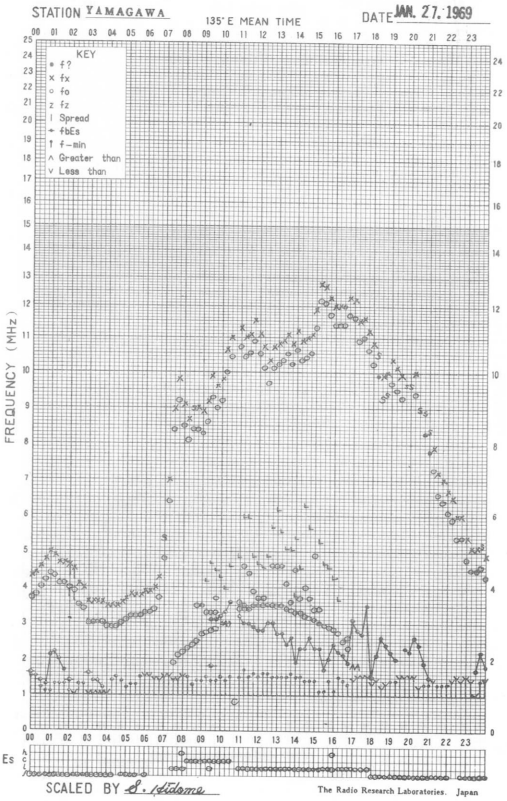

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The Radio Research Laboratories. Japan

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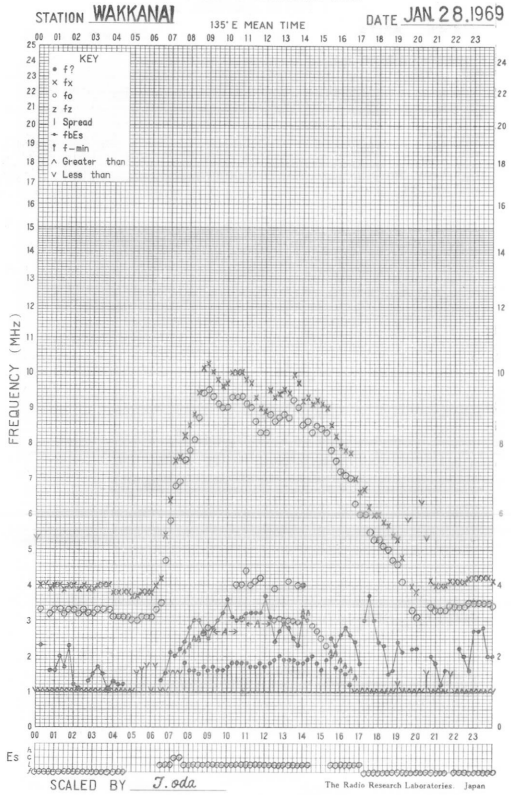

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The Radio Research Laboratories. Japan

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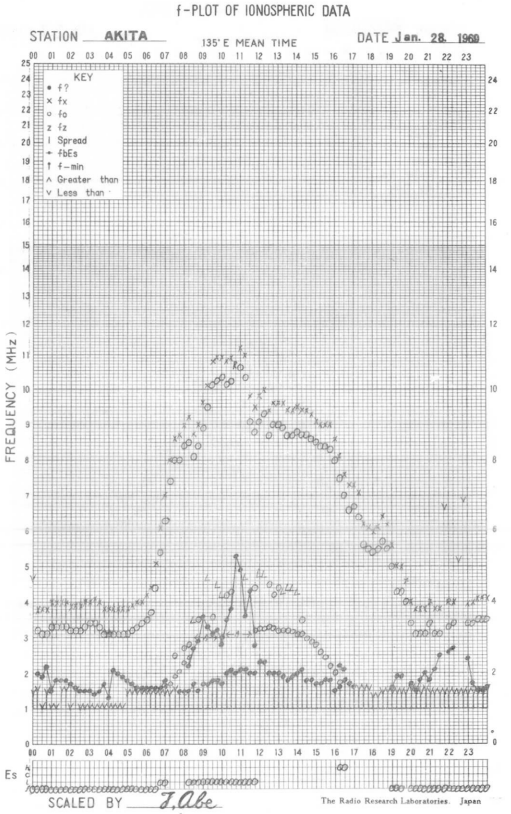

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The Radio Research Laboratories. Japan

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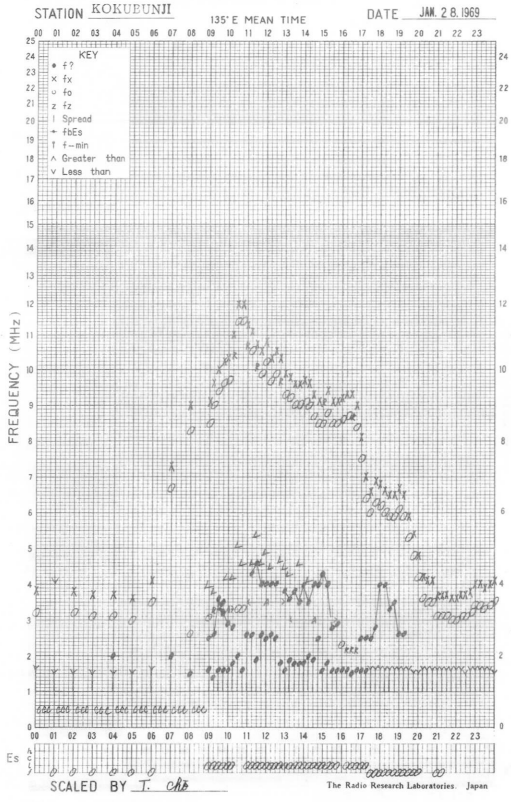

SCALED BY T. Chō

The Radio Research Laboratories. Japan

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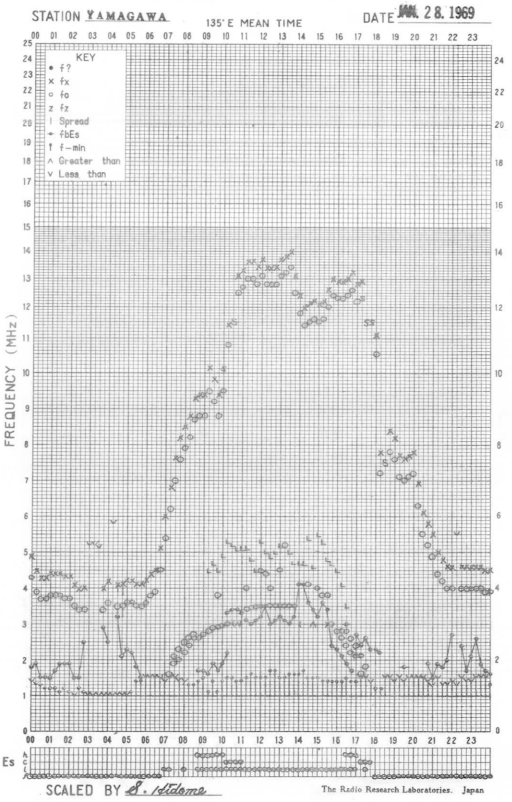

SCALED BY S. Ishiome

The Radio Research Laboratories. Japan

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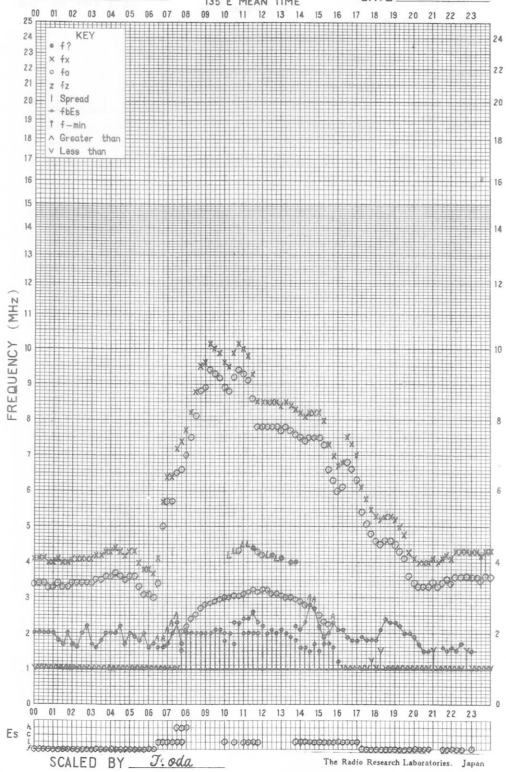

SCALED BY T. Oda

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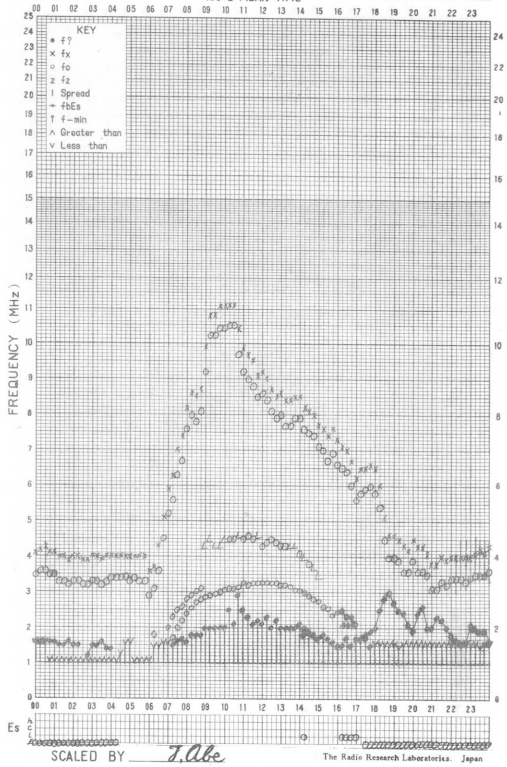

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The Radio Research Laboratories. Japan

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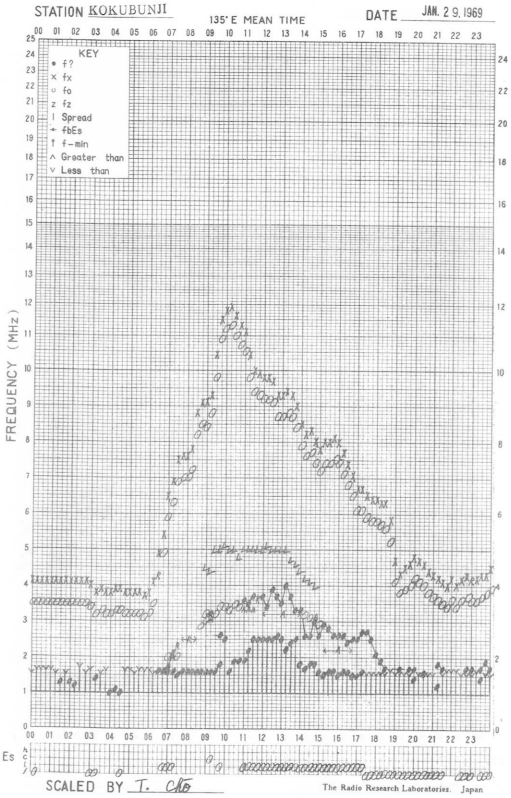

SCALED BY T. Oto

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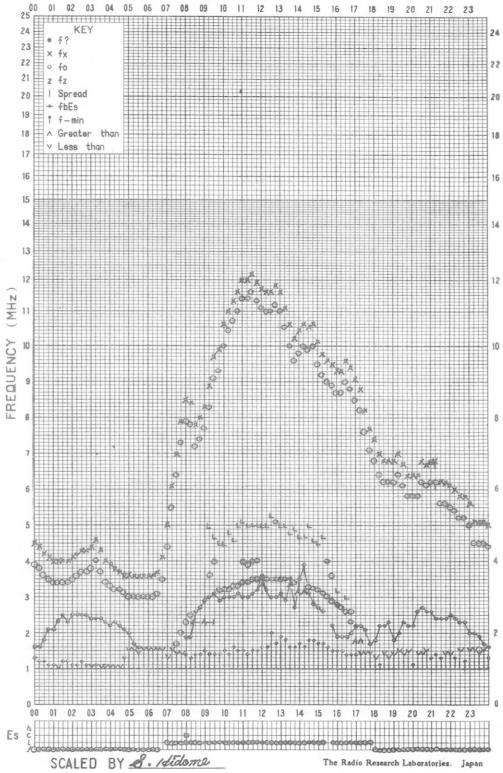

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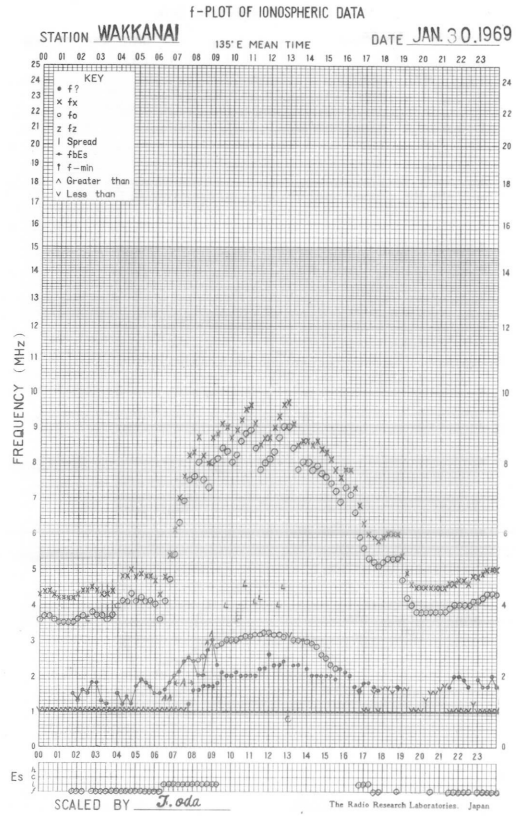
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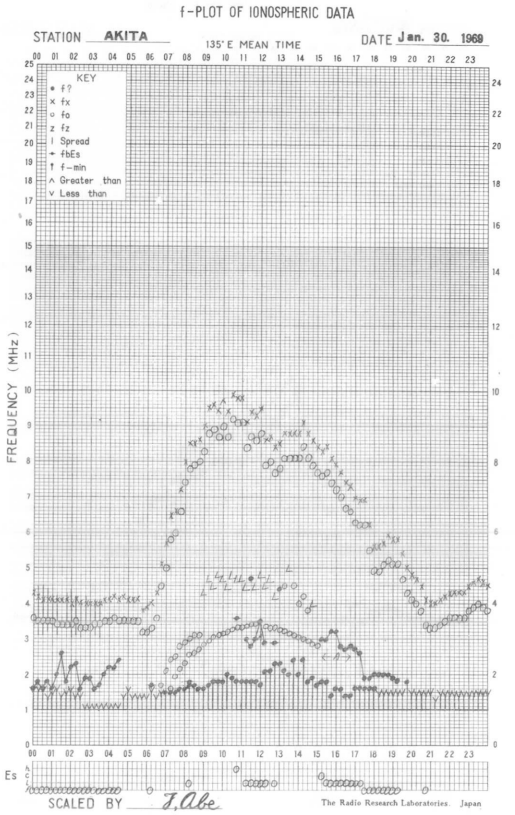
SCALED BY T. oda
The Radio Research Laboratories. Japan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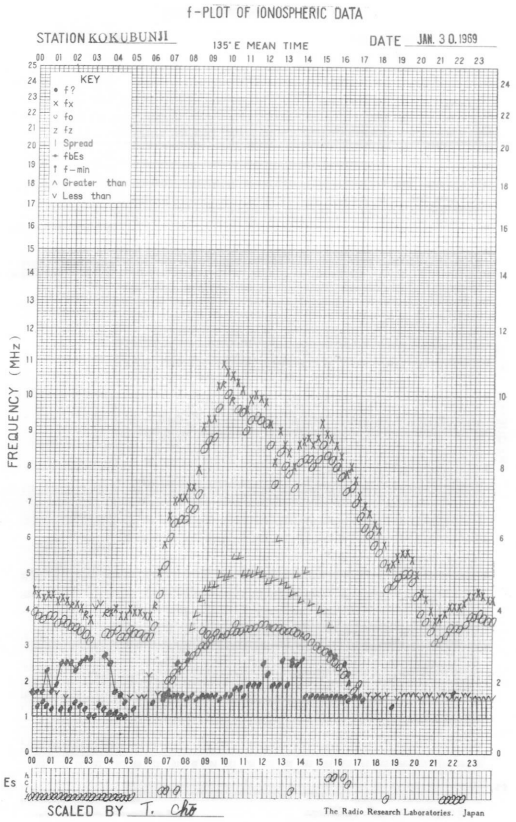
SCALED BY T, Abe
The Radio Research Laboratories. Japan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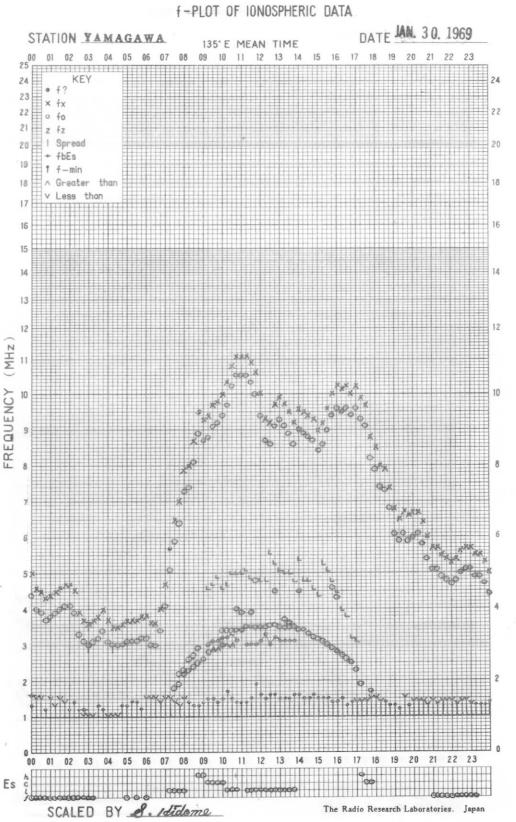
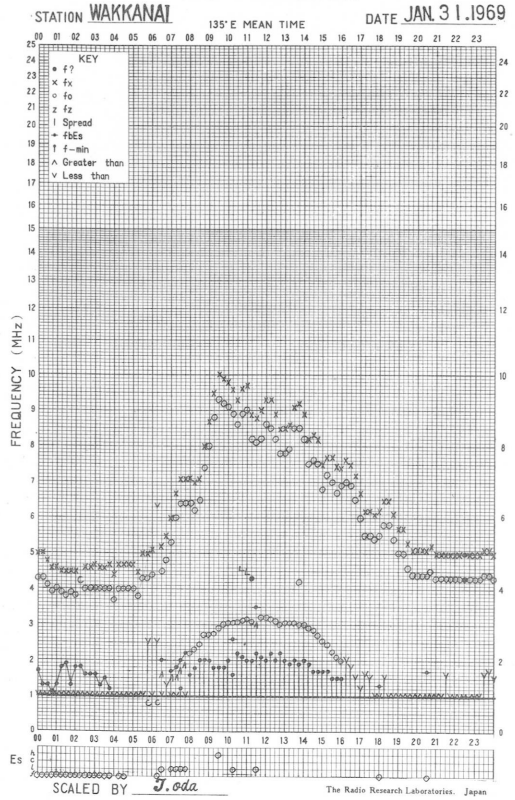
SCALED BY T. Ichi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE JAN. 30. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Ishidome
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 31. 1969

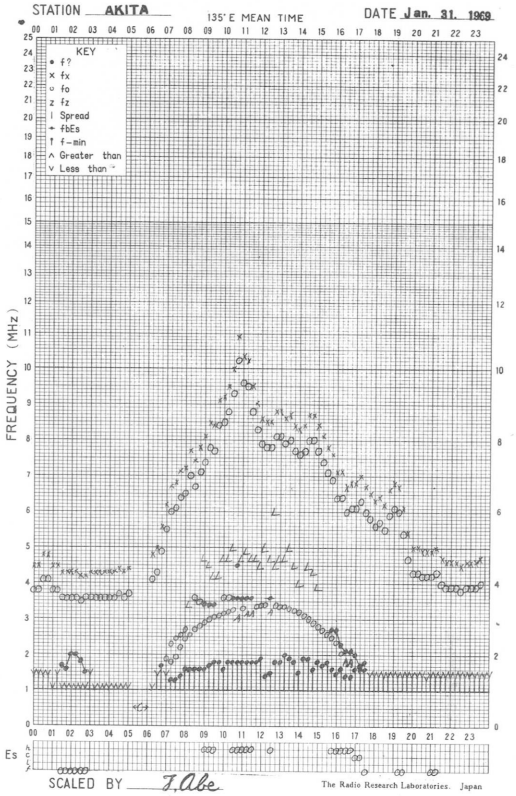


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 31. 1969

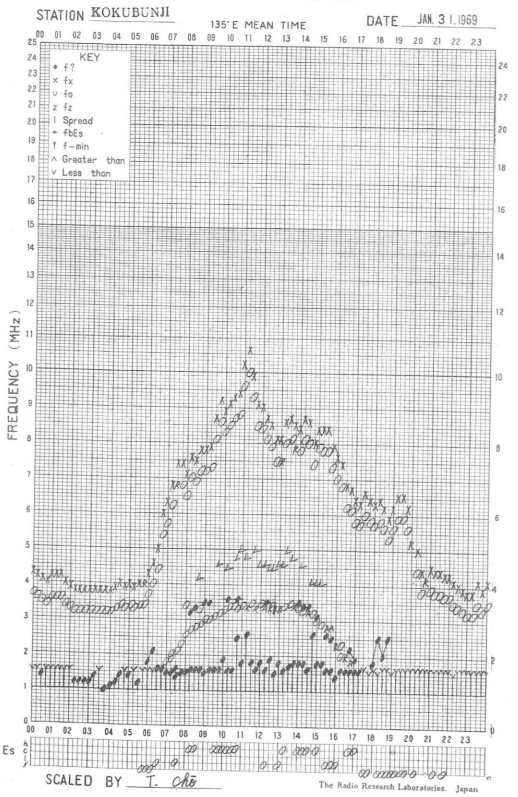


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 31. 1969

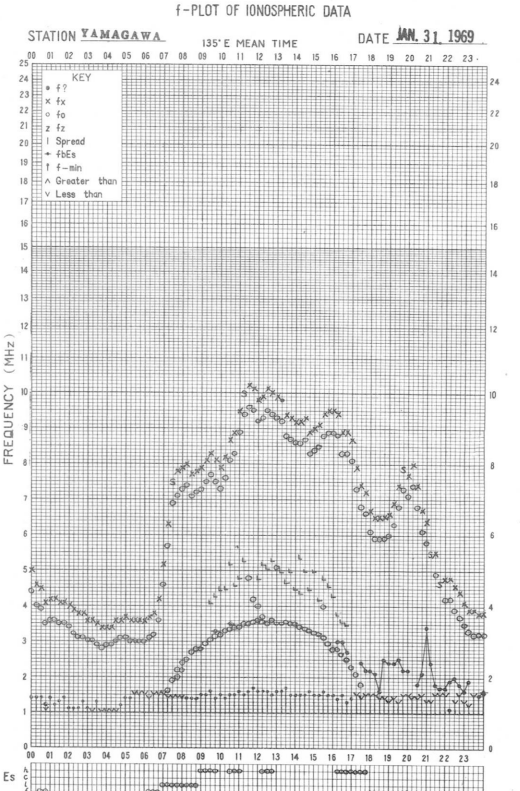


SCALED BY T. Oho

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 31. 1969



SCALED BY H. Oyama

The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: January 1969
Observing station: Hiraiso Frequency: 200 MHz

	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$					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	8	8	-	(7)	8	1	0	-	(0)	0
2	8	8	-	(8)	8	1	0	-	(1)	0
3	8	8	-	(8)	8	1	1	-	(1)	1
4	7	7	-	(6)	7	1	1.	-	(1)	1
5	7	6	-	(8)	6	1	0	-	(1)	1
6	8	10	-	(20)	9	1	1	-	(1)	1
7	23	33	-	(20)	27	1	1	-	(1)	1
8	13	14	-	(8)	14	1	1	-	(1)	1
9	8	7	-	(6)	7	0	1	-	(1)	1
10	7	7	-	(7)	7	1	0	-	(1)	0
11	7	7	-	(8)	7	1	1	-	(0)	1
12	8	8	-	(11)	8	1	1	-	(1)	1
13	9	8	-	(14)	9	1	1	-	(1)	1
14	8	8	-	(7)	9	1	1	-	(0)	1
15	6	7	-	(6)	7	0	1	-	(0)	0
16	6	6	-	-	6	0	0	-	-	0
17	-	-	-	-	-	-	-	-	-	-
18	-	10	-	(7)	(10)	-	1	-	(1)	(1)
19	8	7	-	(10)	7	0	0	-	(1)	0
20	(9)	-	-	-	(9)	(1)	-	-	-	(1)
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-

Note No observations during the following periods:

3rd 0050- 0135
16th 2150- 18th 0400
20th 0100- 31st 2400

SOLAR RADIO EMISSION

Flux Density

Month: January 1969
Observing station: Hiraiso Frequency: 500 MHz

Flux density 10^{-22} $Wm^{-2}(Hz)^{-1}$

UT	00-03	03-06	06-09	21-24	Day
Date					
1	39	37	-	(41)	38
2	39	36	-	(34)	38
3	(38)	(39)	-	(33)	(37)
4	38	38	-	(37)	37
5	37	38	-	-	38
6	35	36	-	-	35
7	38	41	-	(40)	40
8	39	40	-	(38)	40
9	36	36	-	(34)	36
10	37	36	-	(32)	36
11	38	37	-	(39)	37
12	40	39	-	(41)	39
13	43	39	-	(44)	41
14	-	40	-	(35)	41
15	39	41	-	(34)	39
16	(38)	35	-	(32)	35
17	35	34	-	(29)	34
18	34	34	-	(30)	33
19	37	36	-	(44)	36
20	-	40	-	(34)	(42)
21	33	35	(34)	(31)	34
22	34	34	(34)	(33)	34
23	33	(31)	-	-	32
24	-	-	-	-	-
25	-	-	-	-	-
26	-	-	-	-	-
27	-	-	-	-	-
28	-	-	-	-	-
29	-	-	-	-	-
30	-	-	-	-	-
31	-	-	-	-	-

Note No observations during the following periods:

3rd	0100-		0500	14th	0000-		0300
3rd	2330-	4th	0045	16th	0000-		0200
5th	2150-	6th	0010	19th	0400-		0500
6th	0120-		0200	20th	0000-		0400
6th	0500-	7th	0020	21st	0100-		0200
10th	0000-		0100	23rd	0400-	31st	2400
12th	2235-		2340				

13th 2145 - 16th 0200 and 20th 0000 - 0745, receiver unstable.

Distinctive Events

(single-frequency observations)

Month: January 1969
Observing station: Hiraiso
Normal observing period: 2150 - 0750 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
4	500	0620.4	0624.0	10.0	C	35	2	
	200	0622.0	0622.0	3.0	C	120	35	
5	500	0310.0	0316.8	12.0	C	220	15	
	200	0310.5	0312.5	3.0	C	290	5	
6	200	0526.0	0527.5	3.0	C	600	160	
18	500	0027.0	0033.0	17.0	C	210	50	
	500	0120.0	0122.0	7.5	C	480	18	

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

JAN 1969 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 15M	01H 15M	02H 15M	03H 15M	04H 15M	05H 15M	06H 15M	07H 15M	08H 15M	09H 15M	10H 15M	11H 15M	12H 15M	13H 15M	14H 15M	15H 15M	16H 15M	17H 15M	18H 15M	19H 15M	20H 15M	21H 15M	22H 15M	23H 15M
1	7	12	13	-14	-1	ES -8	ES -3	ES -11	ES -4	ES 0	ES -12	ES -32	ES -31	ES -31	ES -31	ES -22	ES -16	ES -13	ES -13	ES -13	ES -12	0	6	6
2	7	7	10	ES -12	-6	-1	ES -12	ES -14	ES -7	ES 1	ES 7	ES -9	ES -13	ES -27	ES -33	-19	ES -21	ES -33	ES -33	ES -33	ES -33	-4	7	6
3	-2	9	7	ES -11	ES -9	ES -14	ES -14	ES -14	ES -8	ES 9	ES -12	ES -14	ES -22	ES -32	ES -32	ES -16	ES -16	ES -16	ES -16	ES -16	ES -16	1	9	10
4	11	9	7	ES -10	ES -14	ES -6	ES -16	ES -16	ES -9	ES -22	ES -14	ES -18	ES -21	ES -33	-27	ES -33	ES -16	ES -16	ES -16	ES -16	ES -16	ES -16	8	11
5	12	14	11	-8	ES -2	ES -3	ES -13	ES -14	ES -8	ES -16	ES -5	ES -14	ES -28	ES -32	ES -32	ES -32	ES -32	ES -22	ES -22	-12	2	4	8	10
6	9	10	8	ES -15	ES -12	ES -3	ES -16	-12	ES -15	ES -15	ES -22	ES -26	ES -33	ES -20	ES -23	ES -23	ES -17	ES -17	ES -17	ES -17	ES -17	2	9	9
7	10	10	12	ES -7	ES 1	ES 0	ES -23	ES -21	ES -33	ES -8	ES -1	ES -32	ES -32	ES -24	ES -26	-20	ES -26	ES -32	ES -32	ES -17	ES -26	2	10	17
8	20	20	20	1	1	2	ES -3	ES -11	ES -4	ES -8	ES 6	ES -4	ES -28	ES -28	ES -22	-28	ES -22	ES -22	ES -22	ES -22	ES -22	-2	7	7
9	3	8	15	ES -18	ES -5	ES -9	-10	-11	ES -11	ES -7	ES -18	ES -27	ES -34	ES -35	ES -31	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	6	9	7
10	10	9	10	ES -18	ES 3	ES -2	ES -18	ES -18	ES -10	ES -9	ES -10	ES -24	ES -23	ES -23	ES -32	ES -33	ES -33	ES -33	ES -33	ES -34	ES -34	0	10	8
11	6	8	10	ES -12	ES 18	ES -7	ES -22	ES -22	ES -16	ES -7	ES -32	ES -22	ES -21	-17	ES -17	ES -17	ES -17	ES -17	ES -17	ES -17	ES -17	3	C	C
12	4	5	ES -7	ES -13	-5	C	C	C	C	C	C	C	ES -5	ES -5	ES -5	ES -7	ES -7	ES -7	ES -7	ES -7	ES -31	-4	3	7
13	8	9	11	0	ES -1	ES -3	ES -8	ES -7	ES -1	ES -21	ES -13	ES -13	ES -24	ES -24	ES -33	-21	ES -33	ES -33	ES -33	ES -33	ES -33	1	8	11
14	C	6	15	-11	ES -6	ES -5	ES -17	ES -9	ES -6	ES -8	ES -5	ES -8	ES -14	ES -14	ES -31	ES -19	ES -19	ES -19	ES -19	ES -31	ES -31	1	12	10
15	14	14	12	5	ES -5	ES -5	ES -3	ES -8	ES -5	ES -2	ES -11	ES -12	ES -26	ES -14	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	2	9	8
16	6	6	-1	ES -10	ES -2	ES 1	ES -9	ES -10	ES -5	ES 5	ES -2	ES -12	ES -14	ES -17	ES -25	ES -34	ES -34	-23	ES -34	ES -34	ES -34	1	11	10
17	13	8	14	10	-3	ES -5	ES -12	ES -10	ES -3	ES -10	ES -17	ES -17	ES -34	ES -16	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	1	9	8
18	9	14	11	ES -5	ES -2	ES -2	ES -9	ES -11	ES -9	ES -4	ES -7	ES -9	ES -12	ES -17	ES -32	-24	-22	ES -33	ES -33	ES -33	ES -33	3	12	10
19	12	11	16	ES -4	ES 10	ES -7	ES -12	ES -8	ES -15	ES -23	ES -12	ES -23	ES -23	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	7	13	11
20	17	14	10	ES -8	ES -5	ES 1	ES -5	ES -11	ES -4	ES -8	ES -8	ES -7	ES -9	ES -9	ES -9	ES -9	ES -9	0	6	ES -7	C	-1	7	7
21	3	11	0	ES -9	ES -1	ES -8	ES -22	ES -16	ES -32	ES -20	ES -22	ES -13	ES -6	ES -6	ES -31	ES -32	ES -32	-23	7	ES -33	ES -34	3	6	7
22	-2	10	7	ES -5	ES -2	ES -2	ES -10	ES -15	ES -15	ES -15	ES -22	ES -12	ES -12	ES -17	ES -17	ES -18	ES -33	-5	-18	ES -33	ES -33	3	9	8
23	10	10	14	ES -6	ES -2	ES -1	ES -28	ES -28	ES -6	ES -5	ES -1	ES -3	ES -3	ES -3	ES -3	ES -4	ES -4	ES -4	ES -32	ES -32	ES -32	3	0	8
24	-1	4	5	-11	ES -9	C	ES -21	ES -16	ES -16	ES -10	ES -16	ES -16	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-7	-2	-2
25	-1	3	-2	3	6	ES -6	ES -8	ES -1	ES -6	ES 8	ES -5	ES -17	ES -22	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-4	-1	-3
26	-6	3	-5	3	ES -7	ES -6	ES -11	ES -15	-2	ES -3	ES -12	ES -16	ES -15	ES -32	ES -32	ES -32	ES -32	ES -32	-17	-13	-20	-13	-8	-11
27	ES -10	-3	-10	ES -2	ES 11	ES -9	ES -6	ES -6	ES -6	ES -3	ES -2	ES -3	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-8	-5	-3
28	2	3	7	ES -9	ES -1	ES -4	ES -16	ES -3	ES -16	8	ES -8	ES -10	ES -32	ES -32	ES -32	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	2	8	5
29	9	7	12	-6	-2	ES -8	ES -11	ES -11	ES -3	ES -1	ES -14	ES -19	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	2	9	10
30	4	8	8	ES -16	ES -2	ES -2	ES -11	ES -6	ES -2	ES -1	ES -7	ES -16	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	3	10	11
31	12	10	10	-7	ES -3	ES 2	C	ES -4	ES 6	ES -10	ES -8	ES -8	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	5	11	10
CNT	30	31	31	31	31	29	29	30	30	30	30	30	31	31	31	31	31	31	31	31	30	31	30	30
MED	8	9	10	ES -8	ES -2	ES -4	ES -12	ES -11	ES -6	ES -8	ES -10	ES -14	ES -23	ES -27	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	1	8	8
UD	14	14	15	3	ES 10	ES 1	ES -3	ES -4	ES -2	ES 8	ES -1	ES -4	ES -6	ES -6	ES -9	ES -9	ES -9	ES -5	ES -7	ES -12	ES -16	5	12	11
LD	-2	3	-5	ES -16	ES -9	ES -9	ES -22	ES -21	ES -16	ES -21	ES -22	ES -27	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -34	ES -34	-8	-2	-3

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

JAN 1969 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	4	-1	8	12	14	17	27	1	ES 1	ES -7	ES -5	ES -20	-21	-21	ES -31	ES -16	ES -15	ES -13	ES -13	ES -13	-2	9	6	3
2	4	5	4	6	11	15	10	ES -7	ES -7	ES -6	ES -8	ES -27	ES -13	ES -27	ES -33	ES -27	ES -27	ES -33	ES -33	ES -33	-2	9	6	3
3	-2	9	7	16	6	8	13	1	4	ES -9	ES -11	ES -19	ES -22	ES -32	ES -32	ES -16	ES -16	ES -16	ES -16	ES -16	6	11	7	5
4	2	2	6	19	9	-2	14	ES -1	-7	ES -6	ES -12	-14	-21	-21	ES -16	ES -33	ES -16	ES -16	ES -16	ES -16	-4	1	8	8
5	7	7	11	23	25	10	15	10	ES -3	ES -10	ES -10	ES -9	-8	-11	ES -32	ES -32	ES -32	ES -22	ES -22	ES -17	0	14	8	6
6	3	4	7	16	13	14	2	-17	-5	ES -12	ES -14	-15	ES -17	-14	ES -23	ES -23	ES -17	ES -17	ES -17	ES -17	3	6	2	6
7	4	6	8	S	24	-2	6	21	19	3	-5	-13	-14	-13	-15	-12	ES -15	ES -32	ES -32	ES -17	5	10	9	8
8	10	8	13	18	25	18	18	16	1	ES -6	ES -2	ES -6	-12	-12	-17	ES -28	ES -22	ES -22	ES -22	ES -22	-2	3	7	-5
9	ES -14	0	9	12	13	13	13	13	1	ES -6	ES -11	-4	-13	-19	ES -31	ES -33	ES -33	ES -33	ES -33	ES -33	0	15	4	4
10	3	3	13	18	18	24	13	13	7	-7	-3	-6	-8	-17	ES -32	ES -33	ES -33	ES -33	ES -33	ES -34	3	9	10	6
11	8	6	13	20	ES 25	13	6	7	-3	2	14	-1	-9	ES -17	ES -17	ES -17	ES -17	ES -17	ES -17	ES -17	3	12	C	8
12	9	10	15	3	C	C	C	C	C	C	C	C	ES -5	ES -5	ES -5	ES -7	ES -7	ES -7	ES -7	ES -7	-1	6	7	7
13	7	5	11	14	25	22	18	11	7	-3	-5	ES -13	ES -24	ES -33	ES -24	ES -21	ES -33	ES -33	ES -33	ES -33	2	8	5	6
14	6	3	10	14	21	19	-2	11	0	ES -8	-3	-4	ES -8	-14	ES -31	ES -19	ES -19	ES -19	ES -19	ES -31	4	10	8	5
15	4	4	15	13	17	20	10	22	10	-4	-3	-9	-13	ES -12	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	2	15	9	6
16	0	-1	4	16	22	5	18	26	14	-4	ES -7	ES -12	ES -19	ES -14	-19	ES -34	ES -34	-23	ES -34	ES -34	2	4	7	7
17	8	2	8	18	23	30	27	16	3	ES -4	-5	-7	-6	-9	-18	ES -34	ES -34	ES -34	ES -34	ES -34	0	7	7	5
18	9	10	9	21	27	15	12	15	13	ES -9	-7	ES -9	-9	ES -17	ES -32	ES -34	ES -33	ES -33	ES -33	ES -33	1	12	1	8
19	6	6	10	23	27	18	14	22	7	3	-9	-10	-10	-8	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	7	12	8	6
20	10	10	11	17	20	3	5	ES 2	ES 1	ES -8	ES -8	ES -7	ES -9	ES -9	ES -9	ES -9	ES -9	ES -8	ES -7	C	4	4	7	2
21	6	9	10	20	14	12	7	-2	ES -4	-9	ES -11	ES -5	ES -6	-22	ES -31	ES -32	ES -32	ES -32	ES -33	ES -33	10	8	6	2
22	5	5	8	19	15	14	14	13	-10	-11	ES -8	ES -12	-12	ES -17	ES -17	ES -33	ES -33	ES -33	ES -33	ES -33	6	9	5	6
23	7	7	11	14	22	17	14	7	7	0	ES -1	ES -3	ES -3	ES -3	ES -3	ES -4	ES -4	ES -32	ES -32	ES -32	2	6	2	8
24	2	2	3	8	9	10	10	14	13	ES -4	-8	-11	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-8	4	5	8
25	-1	0	4	16	14	17	6	-3	3	10	-7	-10	-17	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-2	5	3	3
26	2	3	8	13	18	8	-2	7	4	-3	-6	6	7	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	3	6	5	-2
27	ES -3	-2	10	14	24	8	16	19	2	ES -4	ES -3	ES 4	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	3	10	6	3
28	2	4	9	14	20	20	20	20	20	-3	ES -8	-6	ES -32	ES -32	ES -32	ES -33	ES -33	ES -33	ES -33	ES -33	8	8	5	2
29	1	3	8	14	23	-1	14	11	ES -2	-8	ES -9	-9	-14	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-22	-1	3	-3	-2
30	-1	-3	4	10	8	ES -14	-6	9	6	ES 3	-9	-19	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	0	-6	-10	ES -9
31	-8	-7	ES -8	10	17	11	18	16	16	ES -8	ES -8	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	2	5	3	1
CNT	31	31	31	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	30	31	31	30	31
MED	4	4	9	15	US 19	14	13	11	3	ES -6	ES -8	ES -9	ES -13	ES -17	ES -31	ES -32	ES -32	ES -32	ES -32	ES -32	2	8	6	5
UD	9	10	13	21	25	22	20	22	16	3	ES -2	ES -1	ES -5	ES -8	ES -9	ES -9	ES -9	ES -13	ES -13	ES -16	7	14	9	8
LD	ES -3	-2	4	8	ES 9	-2	-2	ES -3	ES -7	ES -10	ES -11	ES -20	ES -32	ES -32	ES -32	ES -34	ES -33	ES -33	ES -33	ES -34	-2	3	1	-2

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jan. 1969	Whole Day Index	H B 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	L M 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	4-	4 3 (4)	4 - (4) 4	C C - C	4 4 - 4	N N N N			
2	4-	4 (3) 4	4 - 4 (4)	C C - C	4 3 - C	N N N N			
3	4o	4 4 3	4 - 4 4	4 (4) - (4)	4 4 - 4	N N N N			
4	4-	3 4 4	4 - (3) 4	4 (4) - -	4 4 - 4	N N N N			
5	4o	4 4 4	4 - 4 5	(4) - - -	4 4 - 4	N N N N			
6	4o	4 3 (4)	4 - 4 4	4 (4) - (4)	4 4 - 4	N N N N			
7	4o	4 4 (4)	4 - 3 4	(4) 4 - (4)	4 4 - 4	N N N N	03.21	---	56γ
8	4o	4 5 4	5 (4) 4 4	3 4 - (4)	5 4 - 4	N N N N	---	24xx	
9	4-	3 4 4	4 - 3 4	4 4 - 4	4 4 - 4	N N N N			
10	4o	4 4 (4)	4 - 4 4	3 4 - 4	4 4 - 4	N N N N			
11	4o	4 4 4	4 - 4 (4)	4 (4) - -	4 (4) - C	N N N N			
12	4+	4 5 5	(4) - 4 4	(4) - - -	C (4) - 4	N N N N			
13	4o	4 4 4	(4) - 4 4	4 C - 4	4 4 - 4	N N N N			
14	4o	4 4 4	4 - 4 4	4 4 - 4	4 4 - 4	N N N N			
15	4+	4 4 4	5 (5) 5 4	5 4 - 4	4 4 - 4	N N N N			
16	4o	4 4 4	4 (4) 4 4	4 3 - 4	4 3 - 4	N N N N			
17	4+	4 4 4	4 (5) 5 4	4 (4) - 4	4 4 - 4	N N N N			
18	4o	4 4 3	4 (5) 4 4	4 5 - -	4 3 - 4	N N N N			
19	4o	4 4 3	4 - 4 4	(4) - - -	5 5 - 4	N N N N			
20	4o	4 4 (4)	(4) - 4 4	4 (4) - 4	4 4 - 4	N N N N			
21	4o	4 4 5	4 - 4 4	4 3 - (3)	4 5 - 4	N N N N			
22	4o	4 4 4	4 - 4 4	3 4 - 4	4 4 - 4	N N N N			
23	4o	5 5 4	4 - 3 4	4 (4) - 4	4 4 - 4	N N N N			
24	3+	(4) 3 3	4 - 3 3	3 (3) - 4	4 4 - 4	N N N N	10.5		
25	4-	4 3 (4)	4 (4) 4 3	4 3 - -	4 4 - 4	N N N N	00.35	---	81γ
26*	4-	5 3 4	3 - 4 (3)	(3) - - -	4 4 - 4	N N N N	---	---	
27	4-	4 5 5	(3) - 3 3	3 3 - 4	4 3 - 4	N N N N	---	24xx	
28	4o	5 5 4	4 - 3 4	4 C - 4	4 4 - 4	N N N N			
29	4o	4 4 (4)	4 - 4 4	4 C - 4	4 4 - 4	N N N N			
30	4+	4 4 4	4 - 4 4	5 C - (5)	4 4 - 3	N N N N			
31	4o	4 4 4	4 - 3 (4)	4 C - C	3 4 - 4	N N N N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = 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 January, 1969.

IONOSPHERIC DATA IN JAPAN FOR JANUARY 1969
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