F—249

IONOSPHERIC DATA IN JAPAN

FOR SEPTEMBER 1969

VOL. 21 No. 9

Issued in December 1969

Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

F－249

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RADIO RESEARCH LABORATORIES

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CONTENTS

	Page
Site of the Radio Wave Observatories and Hiraiso branch	2
Symbols and Terminology	2
Graphs of Ionospheric Data	10
List of Ionospheric Median Values	11
Tables of Ionospheric Data at Wakkanai	13
Tables of Ionospheric Data at Akita	25
Tables of Ionospheric Data at Kokubunji	37
Tables of Ionospheric Data at Yamagawa	51
f-plot of Ionospheric Data	63
Data on Solar Radio Emission	93
Radio Propagation Conditions	96

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. and Inubo Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken
Inubo	35°42.2′N.	140°51.5′E.	9912 Tennodai, Choshi-shi, Chiba-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 *F2* layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed *h'f* trace. (The difference between *hpF2* and the virtual height at $0.969 f_0F2$).

a. Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *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's.)

(i) SWF

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

CO.....WWV 20, 15 and 10 MHz (Fort Collins, Colorado)
LM.....Various frequencies of commercial circuit (Lima)
HA.....WWVH 15 and 10 MHz (Hawaii)
TO.....JJY 15 and 10 MHz (Tokyo)
SH.....BPV 15 and 10 MHz (Shanghai)
HB.....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.

(ii) SPA

The data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio wave propagation received at Inubo Radio Wave Observatory. Characteristics of the VLF radio wave propagation are as the following table. In the last column, a spherical earth with a radius of 6371.2 km is assumed.

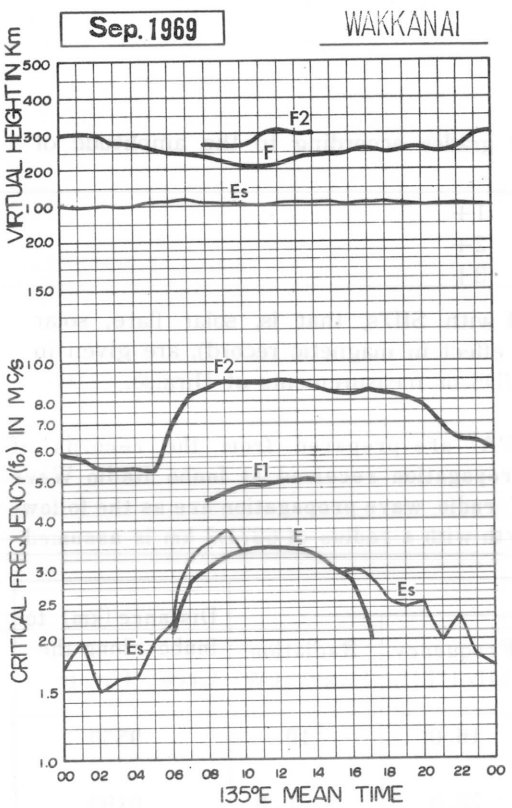
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′ N 001°11′ W	GBR	16.0	40	9550
Fort Collins	40°41′ N 105°03′ W	WWVL	20.0	1.8	9190
Cutler	44°39′ N 067°12′ W	NAA	17.8	1000	10650
North West Cape	21°49′ S 114°10′ E	NWC	22.3	1000	6990
Lualualei	21°26′ N 158°10′ W	NPM	23.4	300	6070
Jim Creek	48°12′ N 121°55′ W	NPG	18.6	250	7620
Haiku	21°24′ N 157°50′ W	HA0 HA2 HA3	10.2 12.2 13.6	2	6100
Aldra	66°25′ N 013°09′ E	AL0 AL2 AL3	10.2 12.2 13.6	4	7820

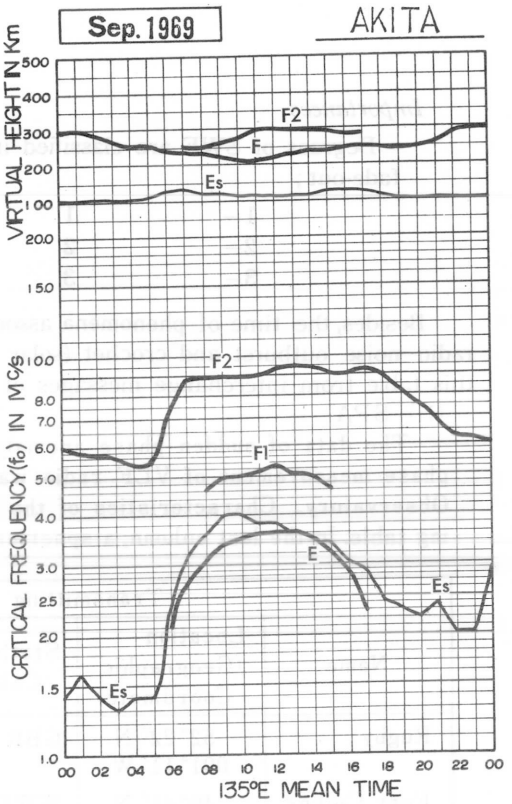
The phase advance is shown in its maximum stage. In the column 'Phase Advance', —means no transmission or no reception during the period, and blank means indistinguishable record.

Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

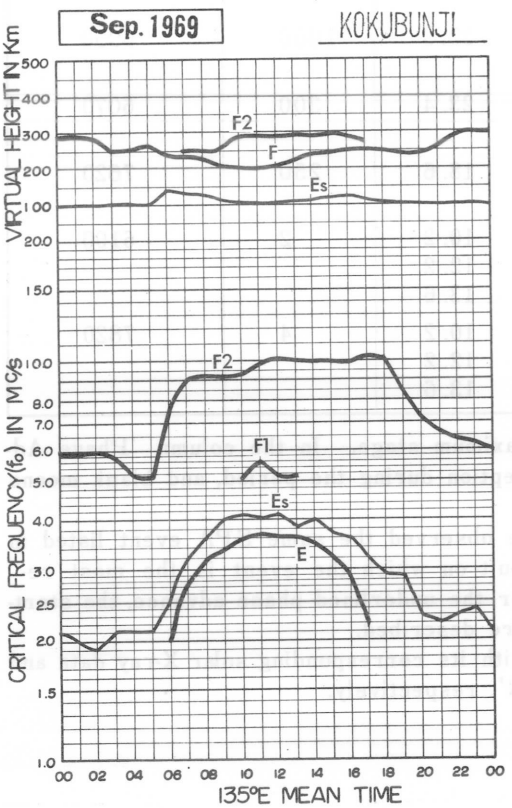
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

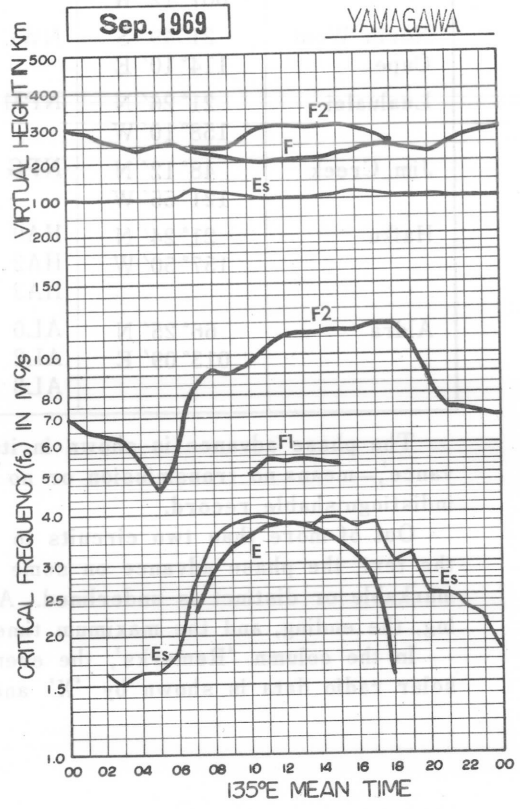
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Sep. 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	060	058	054	054	054	053	070	083	087	090	089	088	090	090	087	084	084	086	084	082	078	070	063	063
	CNT	27	26	28	27	26	27	27	27	26	27	28	26	27	27	27	27	26	28	28	30	30	28	27	27
	Q R	009	009	009	007	009	010	014	012	010	011	015	018	014	011	011	012	012	010	010	010	009	007	008	010
foF1	MED								420	450L	470L	490L	490	500	500L	500L	510	400L							
	CNT								3	8	10	16	11	10	5	6	1	3							
foE	MED						E	210	275	305	320	335	340	340	335	325	300	280	200	E					
	CNT						17	25	27	24	23	23	20	19	22	24	23	21	17	16					
foEs	MED	017	020	015	016	016	020	022	032	035	038	033	032	E025G	034G	021G	023G	030	029	J025X	J024X	J025X	020	023	018
	CNT	28	27	27	28	28	27	27	28	27	26	28	26	26	27	27	27	26	28	29	30	29	29	29	29
	Q R									D023									017	012	023	020			D015
f-min	MED	E	E	E	E	E	E	E	011	014	016	017	018	017	017	017	012	011	E	E	E	E	E	E	E
	CNT	28	27	27	28	28	27	27	28	27	26	28	26	26	27	27	27	26	28	29	30	29	29	29	29
M (3000) F2	MED	265	262	270	275	275	285	310	320	315	315	310	305	300	300	300	300	305	305	305	298	295	285	270	270
	CNT	27	26	28	27	26	27	27	27	26	27	28	26	27	27	27	27	26	28	28	30	30	28	27	27
M (3000) F1	MED								365	370L	370L	330L	370	358	360L	358L	355	370L							
	CNT								3	8	10	16	11	10	5	6	1	3							
h'F2	MED								290	268	265	265	290	308	300	300	300	290							
	CNT								3	12	16	23	18	12	14	7	2	3							
h'F	MED	300	302	298	275	275	265	245	245	235	220	215	210	215	235	240	245	250	260	250	258	260	250	265	298
	CNT	27	28	28	28	27	27	27	28	27	26	26	25	27	27	27	27	26	27	26	26	30	29	27	28
h'Es	MED	102	100	100	102	105	112	112	120	115	115	110	105	105	110	110	108	105	112	110	110	105	105	105	105
	CNT	14	17	15	16	18	16	18	19	20	16	16	14	13	15	14	14	17	22	27	25	24	15	18	17
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Sep. 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	060	058	057	056	053	054	071	088	089	090	090	091	094	096	094	091	091	093	091	082	075	068	062	062
	CNT	29	29	29	29	29	29	29	26	23	25	26	28	29	30	30	30	30	27	27	28	30	30	30	30
	Q R	008	008	006	006	007	009	008	006	006	009	012	012	011	013	013	012	011	005	004	012	011	008	009	011
foF1	MED								440	460	500	500	515	530	505	500	465	400							
	CNT								2	7	17	24	26	25	26	22	16	3							
foE	MED						E130E	210	272	312	338	350	360	365	365	348	320	285	228		E				
	CNT						2	22	22	20	16	15	18	21	21	26	26	24	12		2				
foEs	MED	014	J016X	014	J013X	014	014	024	032	036	040	040	038	038	032G	G	034	030	029	J024X	J023X	J022X	J024X	J020X	J020X
	CNT	29	29	29	29	29	29	29	28	23	25	26	26	28	30	30	29	30	29	30	30	30	30	30	30
	Q R	D015	D012				D006		009	014	009								009	014	016	016	016	D012	D011
f-min	MED	E013S	E	E	E	E	E013S	014	014	015	017	018	018	018	017	017	015	014	013	E013S	E013S	E013S	E013S	E014S	E014S
	CNT	29	29	29	29	29	29	29	28	23	25	26	26	28	30	30	29	30	29	30	30	30	30	30	30
M (3000) F2	MED	270	265	275	280	280	285	320	320	315	320	305	302	295	295	298	300	300	305	305	305	290	280	275	268
	CNT	29	29	29	29	29	29	29	26	23	25	26	28	29	30	30	30	30	27	27	28	30	30	30	30
M (3000) F1	MED								342	365	370	375	365	355	360	355	355	355							
	CNT								2	7	17	24	26	25	26	22	16	3							
h'F2	MED								250	250	260	275	295	295	295	288	285	280	280						
	CNT								17	28	27	26	28	30	30	30	30	23	9						
h'F	MED	292	295	290	270	260	260	240	230	230	225	210	208	212	222	230	230	248	250	245	240	245	260	280	292
	CNT	28	29	29	29	29	29	29	29	28	27	26	28	30	30	30	30	30	30	30	30	30	30	30	30
h'Es	MED	105	105	105	105	105	110	125	130	120	120	115	115	115	115	115	125	125	125	115	105	105	105	105	105
	CNT	14	15	13	15	14	14	18	23	18	19	18	19	18	18	14	17	18	25	26	23	26	25	21	18
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Sep. 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	060	059	060	058	052	051	074	090	091	092	092	098	101	100	100	100	098	102	102	085	071	066	063	062
	CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	29
	Q R	011	011	010	010	011	009	010	008	011	012	011	015	015	012	018	017	013	011	013	015	013	009	008	011
foF1	MED										505L	510L	560L	510L	510L	515L	510L	455L							
	CNT										4	8	6	13	10	6	3	2							
foE	MED					110	E	200	275	320	340	358	370	365	360	350	325	290	215						
	CNT					1	6	7	17	19	19	16	15	13	17	15	16	14	8						
foEs	MED	021	020	019	021	021	021	025	032	036	040	041	040	041	038	040	037	036	J032X	J029X	J029X	023	022	023	J024X
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Q R	D013	D010	D015	D011	010	D007	005	005	008	009						011	011	014	027	031	013	009	008	D015
f-min	MED	E0158	011	011	010	011	012	013	014	015	016	022	026	026	025	018	016	013	012	012	011	E0158	E0158	E0158	E0158
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
M (3000) F2	MED	280	280	285	295	295	290	322	332	320	315	305	295	295	292	295	295	300	305	315	310	295	280	280	275
	CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	29
M (3000) F1	MED										382L	380L	352L	370L	362L	365L	355L	365L							
	CNT										4	8	6	13	10	6	3	2							
h'F2	MED							250	250	250	255	278	292	285	292	290	290	280	272	270					
	CNT							1	14	28	30	30	30	30	30	30	30	27	12	1					
h'F	MED	292	290	285	252	250	270	240	240	230	210	205	200	205	222	240	240	250	250	250	242	240	258	286	295
	CNT	30	30	30	30	30	30	30	30	28	29	27	28	30	30	30	30	30	30	30	30	29	30	30	30
h'Es	MED	100	100	100	100	105	105	140	130	128	118	110	110	110	115	115	120	125	115	110	105	105	100	100	100
	CNT	21	19	18	18	23	22	26	27	23	30	22	20	19	17	17	24	27	29	28	28	27	25	25	22
hpF2	MED	380	380	358	340	340	340	280	270	285	300	310	340	340	340	335	340	318	302	300	300	320	370	380	390
	CNT	29	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	29	30	30	29
ypF2	MED	090	098	090	100	100	095	085	078	085	090	090	095	095	092	090	092	090	090	090	090	100	100	100	100
	CNT	29	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	29	30	30	29

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Sep. 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	070	065	063	062	054	046	054	084	092	090	095	104	112	112	113	114	113	118	119	1068	0848	0728	072	071
	CNT	28	28	28	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	28	28	29
	Q R	018	018	015	011	015	010	009	012	009	011	017	013	014	018	019	014	016	011	011	016	019	017	014	016
foF1	MED								300		470L	505L	550L	540L	545L	545L	530L	U400L	U490L						
	CNT								1		2	6	7	8	18	10	7	3	1						
foE	MED								230	290	328	350	370	380	370	360	340	310	260	155					
	CNT								29	30	30	26	24	23	27	27	27	27	25	8					
foEs	MED	018	E015	016	015	016	016	018	027	035	038	039	039	038	036G	039	039	037	038	030	J032X	J025X	J025X	023	022
	CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	30	30	30
	Q R	D010	D007	D008	D007	D012	D008	D007	003	006	007	011	015	014	012	009	013	006	012	027	021	024	015	D015	D010
f-min	MED	E0158	E0158	012	012	E011E	E013E	E015E	013	015	015	016	018	018	018	017	016	015	012	012	E0158	E0158	E0158	E0158	E0158
	CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	30	30	30
M (3000) F2	MED	272	280	285	295	308	288	305	325	325	320	305	290	290	285	285	285	290	300	315	3128	3008	2708	275	275
	CNT	28	28	28	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	28	28	29
M (3000) F1	MED								405		380L	378L	365L	355L	355L	345L	342L	U385L	U330L						
	CNT								1		2	6	7	8	17	10	6	3	1						
h'F2	MED								240	240	250	275	295	300	300	300	300	280	275	255					
	CNT								5	24	30	29	29	29	29	29	29	29	28	14					
h'F	MED	290	280	268	250	230	250	255	230	230	219	206	200	208	212	206	226	231	250	250	232	228	250	272	280
	CNT	30	30	30	30	30	30	30	30	30	30	28	29	29	29	28	26	28	27	27	30	30	30	30	29
h'Es	MED	100	100	100	100	100	100	100	130	120	120	115	105	105	100	105	110	120	115	110	105	105	100	100	100
	CNT	15	13	15	13	15	16	20	27	29	30	25	25	26	27	26	27	28	29	29	29	24	24	18	21
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

SEP. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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	67	66	66	60	63	69	85	90	86	H 80	80	87	H 94	91	84	85	84	82	82	88	88	75	66	63
2	65	66	64	61	58	63	87	92	90	85	82	84	H 90	91	90	88	84	81	86	89	90	78	70	64
3	63	63	63	63	60	66	87	85	90	91	86	81	H 83	85	91	H 93	88	92	97	92	82	71	71	69
4	68	68	71	63	63	67	89	100	93	90	96	C	87	H 90	93	92	94	91	96	93	86	73	69	65
5	64	64	63	58	58	61	77	85	86	87	87	91	93	90	86	90	90	91	95	93	93	83	70	66
6	63	61	61	58	60	57	58	64	67	71	65	67	73	69	68	70	74	83	80	76	68	64	56	54
7	54	54	54	50	51	52	62	57	60	62	66	71	78	85	87	84	77	75	73	75	78	73	67	59
8	54	53	53	54	50	53	65	74	78	76	64	68	73	78	79	74	76	83	86	85	82	67	53	49
9	46	48	50	50	40	46	68	87	83	80	74	81	80	76	76	71	78	75	A	90	86	75	63	54
10	53	51	50	51	54	54	60	74	75	70	75	75	81	80	70	76	69	71	82	81	80	77	62	51
11	50	49	46	47	48	50	65	74	83	93	74	77	77	77	82	85	76	76	76	76	73	S	F	F
12	F 50	F	U F 44	53	A	43	67	88	97	82	87	73	79	81	83	78	79	78	83	83	77	C	C	C
13	C	C	C	C	C	C	C	C	C	C	89	78	80	78	78	74	76	81	90	78	71	66	61	61
14	61	56	54	52	49	54	71	87	91	C	C	C	C	C	C	C	C	93	96	78	75	69	68	65
15	63	61	60	56	54	52	61	83	80	103	93	91	90	94	98	84	82	85	93	75	75	73	67	66
16	62	58	54	50	47	51	67	81	79	86	103	101	94	97	94	84	87	85	85	77	74	70	63	62
17	60	60	59	58	56	63	70	73	88	91	96	91	81	87	85	83	84	87	90	83	I C 80	78	67	65
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	84	88	86	83	61	53	53
19	S 53	51	53	50	48	49	64	77	90	91	96	86	91	86	80	80	84	89	89	80	78	65	63	63
20	62	62	59	60	59	F 58	78	91	98	I C 93	90	93	I C 88	92	91	80	86	92	85	83	80	F 73	F	F
21	F	F	F 48	F	F	F 53	F 70	S	S	99	96	90	94	92	84	80	83	91	84	83	78	70	68	63
22	63	59	57	F 53	F 53	60	85	I S 83	C	104	98	92	100	96	89	89	97	103	93	83	83	66	56	55
23	55	54	54	54	50	52	78	93	91	94	98	97	93	95	100	97	90	90	84	79	80	70	60	55
24	53	53	53	53	47	47	64	U S 78	84	83	83	85	85	90	89	84	92	89	78	84	77	63	60	55
25	58	56	53	F 51	F 49	F 53	F 73	81	88	89	89	C	C	C	C	C	C	C	78	65	63	61	61	58
26	60	I C 55	I C 51	53	55	C	C	79	86	91	89	104	95	90	93	101	99	86	82	73	67	62	62	63
27	58	58	57	56	55	59	75	89	96	84	99	97	93	96	96	101	96	91	77	69	70	68	70	70
28	68	65	63	F 61	F 58	64	80	86	98	97	97	103	100	103	97	98	C	C	C	86	71	71	63	63
29	61	59	61	55	49	49	63	88	93	U S 93	S 93	96	103	98	95	100	92	96	81	77	76	68	73	67
30	46	41	43	45	43	43	60	U S 76	81	93	98	108	118	99	81	78	86	78	73	73	70	55	43	40
31																								
	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	27	26	28	27	26	27	27	27	26	27	28	26	27	27	27	27	26	28	28	30	30	28	27	27
MED	60	58	54	54	54	53	70	83	87	90	89	88	90	90	87	84	84	86	84	82	78	70	63	63
UQ	63	62	61	58	58	60	78	88	91	93	96	96	94	94	93	91	90	91	90	86	82	73	68	65
LQ	54	53	52	51	49	50	64	76	81	82	81	78	80	83	82	79	78	81	80	76	73	66	60	55

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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											490	520		L	U L 500		450							
2									U L 480	L 500	L 500				L 500	510								
3										L	L 500	L		L 510	L 520									
4												C	A											
5									L	L	480	L	530	L										
6								460	470	470	L 500	530	540	500										
7								410	490	510	520	U L 500	L 530	L	L 500		400							
8									L	470	490	490	500	L										
9									U L 440	L 450	470	480	510	L 490			L 400							
10								L 420	L 430	L 460	A	510	L 500		L	L								
11									U L 450	L 470	L 480	L 470	U L 480		U L 480									
12										A	L 500													
13									C	C	L 490	L		L										
14										C	C	C	C	C	C	C								
15											L 500	U L 500	L											
16										L	L		U L 490											
17									L 430	L	L	L		L	L 450									
18									C	C	C	C	C	C	C	C								
19										L	L	490												
20										C	L	L	C	L										
21											L 480	480		L										
22									C	L	L			U L 490										
23										U L 470	470			L										
24									450		L	470												
25									L	U L 460	U L 470	C	C	C	C	C								
26											L 480	L												
27														U L 530										
28													U L 500											
29										500														
30									L		L	L	470											
31																								
	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	8	10	16	11	10	5	6	1	3							
MED								420	L 450	L 470	L 490	490	500	L 500	L 500	510	L 400							
UQ								440	475	500	L 500	505	530	L 510	L 500		425							
LQ								415	L 435	L 460	L 480	480	U L 490	L 490	L 480		L 400							

SEP. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23·6' N. Long. 141° 41·1' E Sweep 1 MHz to 20 MHz 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	240	300	315	330	330	A	A	A	365	330	300	235	A					
2						A	225	290	A	A	A	A	A	380	360	320	300	250	A					
3						A	235	300	325	335	350	360	350	330	IA 335	330	295	A	S					
4						125	210	295	320	350	360	C	A	A	A	A	A	A	A					
5						A	225	280	315	325	325	325	A	370	A	A	A	A	A					
6						A	215	290	305	325	355	360	350	335	340	315	285	235	A					
7						A	215	290	315	325	335	355	350	355	330	300	290	230	S					
8						110	215	280	300	IA 310	340	335	325	R 335	330	310	290	215	E					
9						E	205	265	300	310	340	340	350	340	325	315	285	200	S					
10						E	200	265	295	305	A	A	A	A	A	305	280	A	E					
11						E	200	265	295	305	310	IA 320	330	325	320	300	280	200	E					
12						A	205	240	275	A	A	A	A	320	320	305	280	195	E					
13						C	C	C	C	C	A	A	A	315	325	300	270	185	E					
14						S	210	275	305	C	C	C	C	C	C	C	C	A	A					
15						S	215	250	290	320	335	330	335	IA 340	330	300	280	200	E					
16						E	195	245	295	A	A	A	A	A	305	300	275	195	E					
17						A	205	280	315	315	320	335	330	330	IA 320	300	270	195	E					
18						C	C	C	C	C	C	C	C	C	C	C	C	205	A					
19						E	IA 205	IA 265	305	330	340	330	335	350	325	300	285	195	E					
20						E	210	275	300	IC 325	325	IA 350	IC 345	335	330	300	270	A	E					
21						E	205	285	A	A	355	360	360	IA 360	315	300	270	A	A					
22						E	200	295	C	320	330	340	340	330	320	300	275	190	E					
23						E	A	245	IA 310	330	345	345	350	335	325	305	255	A	E					
24						E	215	IA 265	310	IA 320	330	350	330	335	310	300	250	180	E					
25						E	200	280	305	320	330	C	C	C	C	C	C	C	E					
26						C	C	270	IA 290	310	335	305	305	330	315	300	270	180	E					
27						E	A	A	A	325	330	350	350	B	330	A	A	A	E					
28						E	210	275	300	325	335	335	335	325	325	310	C	C	C					
29						E	205	275	305	320	330	IA 340	350	340	325	A	A	A						
30						E	195	250	290	305	325	R 320	325	320	305	270	A	A						
31																								
	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						17	25	27	24	23	23	20	19	22	24	23	21	17	16					
MED						E	210	275	305	320	335	340	340	335	325	300	280	200	E					
UQ						E	215	288	312	325	340	350	350	340	330	310	285	215	E					
LQ						E	205	265	295	312	330	330	330	330	320	300	270	195	E					

SEP. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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	J X 31	J X 23	E	E	15	E S 18	J X 33	37	39	39	42	38	40	38	G	G	34	34	30	43	J X 30	J X 23	23	J X 23
2	J X 20	J X 23	J X 20	18	J X 21	J X 30	30	35	J X 43	J X 63	J X 43	41	40	G 35	42	G	31	G	21	J X 22	19	J X 31	E	J X 30
3	J X 28	J X 33	J X 33	J X 25	J X 24	18	G	G	G 20	41	39	40	40	40	42	G 31	34	34	J X 54	J X 83	J X 30	J X 53	J X 80	J X 24
4	J X 51	J X 31	J X 20	16	30	21	29	39	40	48	41	C	J X 58	J X 60	40	34	J X 31	J X 53	J X 55	J X 53	J X 53	J X 34	J X 28	15
5	E S 16	J X 26	J X 23	J X 25	J X 30	22	G 20	33	G	40	J X 60	52	43	G 32	J X 47	J X 46	J X 45	43	J X 50	J X 30	J X 30	J X 50	J X 33	J X 43
6	J X 41	J X 40	J X 21	J X 24	J X 34	J X 63	J X 43	J X 66	J X 53	40	G	43	J X 53	44	G	J X 46	40	30	J X 33	J X 60	J X 63	20	33	J X 37
7	J X 33	30	20	18	J X 21	20	28	33	40	39	45	G	50	41	45	41	G	G	E S 15	20	18	E	J X 30	J X 30
8	J X 23	J X 23	E	E	13	22	31	33	39	37	G	G	G	G	G	G 29	G	G	32	J X 25	J X 23	J X 44	E	E S 15
9	E	18	E	E	E	20	G	30	35	G	G	G	G	43	38	G	G	J X 64	J X 116	J X 55	J X 23	E	J X 30	18
10	E	E	E	E	18	J X 33	G	33	33	G	J X 63	J X 43	35	43	M 44	40	33	23	22	J X 26	J X 60	J X 21	20	J X 30
11	E	E	E	E	E	E	G	33	~~35~~	~~34~~	~~36~~	~~35~~	G	G	G	G	G	27	J X 40	J X 43	J X 40	J X 138	J X 55	J X 53
12	J X 31	J X 50	J X 35	J X 30	J X 61	J X 30	22	G	J X 50	J X 63	J X 64	J X 46	39	G	G	J X 50	J X 55	J X 45	J X 33	J X 90	J X 70	C	C	C
13	C	C	C	C	C	C	C	C	C	C	J X 43	40	J X 44	40	G	G	G	27	J X 40	E	E	E	E	E S 16
14	E	E	E	E	E	E S 14	G	G	G	C	C	C	C	C	C	C	C	22	J X 25	J X 21	E S 15	J X 24	E S 16	E S 15
15	E S 15	E	E	E	E	E S 12	G	G	G	G	G	G	G	38	G	G	34	27	J X 29	J X 30	J X 43	J X 24	18	24
16	23	J X 30	J X 40	15	15	23	34	J X 50	J X 50	J X 40	J X 54	J X 44	J X 55	J X 43	39	G 23	29	35	J X 55	J X 65	J X 63	J X 41	J X 31	J X 20
17	J X 23	J X 30	J X 26	J X 25	J X 23	24	G	G 20	G 28	G	G	G	G	G	35	G	38	G	J X 24	J X 41	C	E S 17	J X 43	J X 33
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	20	J X 23	J X 53	20	J X 24	J X 53
19	J X 21	J X 20	34	20	J X 23	E	21	J X 45	G	G	G	G	G	G	G	G	G	35	21	J X 20	J X 30	J X 21	J X 23	E S 17
20	J X 20	E	E	E	E	E	G	G 22	G	C	G 29	J X 43	C	G 30	38	43	40	34	J X 23	18	24	E	24	E S 15
21	E	E	E	J X 20	E	E	28	G	J X 45	J X 53	G 30	G 28	G 25	41	G 21	G 24	30	J X 30	J X 25	J X 35	J X 20	E	E S 15	E
22	21	15	15	23	20	E	22	G	C	G	G	G	G	G	G	G	G	G	J X 24	E	E	E	E	E S 13
23	J X 18	E	15	E	20	E	J X 33	32	33	G	G	G	G	G	G	G	G	43	J X 33	23	25	E	J X 24	22
24	E	E	E	E	E	J X 41	G 18	J X 51	G 28	J X 46	G	G	G	G	35	G	G	25	20	J X 24	J X 33	24	23	E
25	E	J X 23	E	J X 23	E	E	23	G	G	39	G	C	C	C	C	C	C	C	20	J X 20	J X 20	E	41	21
26	E S 16	C	C	E S 15	E	C	C	39	34	G	G	G	G	G	G	G	G 20	G 15	16	18	J X 20	E	E	E S 15
27	E	16	15	16	20	21	J X 33	J X 48	J X 43	G	39	42	G	E B 40	G	40	30	28	E	E	30	E	E	E
28	E	E	15	E	E	E	G	G	G	G	43	G	G	G	G	G	C	C	C	J X 25	24	E S 15	E	E
29	E	E	E	15	15	20	G 15	G	40	43	50	48	G 32	42	40	32	32	32	J X 25	E	E	E	E	E
30	E	20	15	J X 25	21	16	25	31	43	36	G	G	G	G	G 29	G 25	J X 58	J X 43	J X 28	E S 15	E	E	E	E
31																								
	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	28	27	27	28	28	27	27	28	27	26	28	26	26	27	27	27	26	28	29	30	29	29	29	29
MED	17	20	15	16	16	20	22	32	35	38	33	32	E G 25	G 34	G 21	G 23	30	29	J X 25	J X 24	J X 25	20	23	18
UQ	J X 23	J X 28	J X 20	J X 23	J X 22	22	30	38	43	41	43	43	40	41	40	37	34	35	J X 33	J X 43	J X 40	J X 24	J X 30	J X 30
LQ	E	E	E	E	E	E	G	G	E G 20	G	G	G	G	G	G	G	G	18	21	20	20	E	E	E E 15

The Radio Research Laboratories, Japan

SEP. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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	24	18	E	E	13	E S 18	G	G	G	G	G	38	39	38	G	G	G	G	25	40	17	20	E	16
2	16	20	E	16	17	20	30	G	37	41	41	38	40	G 34	27	G	22	G	18	17	18	29	E	25
3	E	18	16	17	17	15	G	G	G 20	G	G	G	G	40	38	G 29	21	34	52	80	27	18	17	28
4	45	16	16	15	17	G	G	G	G	45	G	C	54	40	38	33	30	50	40	30	27	27	23	15
5	E S 16	16	19	21	17	19	G 18	G	G	G	G	G	37	G 32	40	44	40	30	28	20	24	25	28	32
6	34	26	15	20	25	41	G	G	G	G	G	G	48	G	G	41	36	G	18	38	26	17	27	E
7	21	20	18	17	18	15	G	G	G	G	G	G	G	G	41	G	G	G	E S 15	18	17	E	20	20
8	22	20	E	E	E	20	G	G	G	36	G	G	G	G	G	G 28	G	G	30	24	19	44	E	E S 15
9	E	15	E	E	E	16	G	G	G	G	G	G	G	G	G	G	G	50	A	40	15	E	26	15
10	E	E	E	E	E	29	G	G	G	G	58	36	35	37	38	G	G	23	G	21	17	18	20	16
11	E	E	E	E	E	E	G	G	G	G	G	35	G	G	G	G	G	G	18	35	40	30	40	38
12	23	24	26	24	A	25	17	G	40	53	43	35	38	G	G	G	38	28	27	58	30	C	C	C
13	C	C	C	C	C	C	C	C	C	C	40	37	36	G	G	G	G	G	40	E	E	E	E	E S 16
14	E	E	E	E	E	E S 14	G	G	G	C	C	C	C	C	C	C	C	22	24	19	E S 15	E	E S 16	E S 15
15	E S 15	E	E	E	E	E S 12	G	G	G	G	G	G	G	37	G	G	G	G	23	25	17	20	15	E
16	E	22	30	13	13	18	32	G	44	34	42	43	37	37	G	G 20	20	15	55	51	27	38	18	17
17	18	20	27	22	21	14	G	G 20	G 27	G	G	G	G	G	34	G	37	G	22	30		E S 17	30	17
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	15	19	22	15	17	33
19	17	17	17	16	17	E	21	30	G	G	G	G	G	G	G	G	G	15	20	18	17	18	20	E S 17
20	17	E	E	E	E	E	G	G 22	G	C	G 28	37	C	G 25	23	24	20	21	17	E	E	E	15	E S 15
21	E	E	E	E	E	E	G	G	36	38	G 30	G 28	G 25	36	G 21	G 21	20	27	20	31	18	E	E S 15	E
22	E	E	E	E	15	E	18	G	C	G	G	G	G	G	G	G	G	G	13	E	E	E	E	E S 13
23	12	E	E	E	E	E	27	G	33	G	G	G	G	G	G	G	G	23	30	E	E	E	20	E
24	E	E	E	E	E	14	G 15	38	G 22	44	G	G	G	G	G	G	G	G	20	17	20	E	E	E
25	E	E	E	17	E	E	12	G	G	G	G	C	C	C	C	C	C	C	15	15	16	E	38	E
26	E S 16	C	C	E S 15	E	C	C	21	32	G	G	G	G	G	G	G	G 16	G 14	12	16	E	E	E	E S 15
27	E	12	12	14	E	12	25	37	34	G	G	G	G	E B 40	G	33	27	20	E	E	13	E	E	E
28	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	C	C	C	17	E	E S 15	E	E
29	E	E	E	E	E	E	G 12	G	G	G	G	41	G 31	G 26	G 27	31	26	20	18	E	E	E	E	E
30	E	15	E	25	15	G	G	G	40	G	G	G	G	G	G 28	G 23	48	19	19	E S 15	E	E	E	E
31																								
	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	28	27	27	28	28	27	27	28	27	26	28	26	26	27	27	27	26	28	29	30	29	29	29	29
MED	E E 12	15	E	E E 13	E	E G 14	G	G	G	G	G	G	G	G	G	G	18	15	20	19	17	E E 15	16	E E 15
UQ	18	19	16	17	17	18	18	G	32	34	E G 28	36	37	36	28	G 26	27	23	28	31	22	20	20	17
LQ	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	17	15	E	E	E	E

SEP. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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 S 18	12	11	16	18	20	22	18	17	19	16	12	12	E	E	E	E	E S 15	E
2	E	E	E	E	E	E	16	16	17	19	17	19	17	16	12	11	E	11	E	E	E	E S 15	E	E
3	E S 15	E	E	E	E	E	11	11	12	17	17	19	20	17	17	12	12	E	E S 13	E	E S 14	E	E	E
4	E	E	E	E	E	E	E	E	15	18	18	C	20	17	20	17	12	E	E	E	E	E S 15	E	E
5	E S 16	E	E	E	E	E	E	12	12	18	20	20	17	17	16	16	11	E	E	E	E	E	E	E S 16
6	E S 15	E	E	E	E	E	16	E	19	20	19	21	18	18	18	17	18	11	E	E	E	E	E	E
7	E	E	E S 12	E	E	E	12	11	17	17	19	20	18	18	18	17	14	11	E S 15	E	E	E	E	E
8	E	E	E	E	E	E	E	E	16	17	18	22	17	17	17	17	16	11	E	E	E	E	E	E S 15
9	E	E	E	E	E	E	11	11	16	17	17	19	18	18	17	17	12	E	E S 13	E	E	E	E	E
10	E	E	E	E	E	E	14	16	12	17	19	17	17	17	18	16	12	E	E	E	E S 13	E	E	E
11	E	E	E	E	E	E	15	E	12	17	17	17	16	17	17	12	E	E	E	E	E	E S 15	E	E
12	E	E	E	E	E	E	E	E	E	17	18	18	18	17	18	12	12	11	E	E	E	C	C	C
13	C	C	C	C	C	C	C	C	C	C	18	20	17	17	17	16	E	E	E	E	E	E	E	E S 16
14	E	E	E	E	E	E S 14	11	16	17	C	C	C	C	C	C	C	C	E	E	E	E S 15	E S 16	E S 16	E S 15
15	E S 15	E	E	E	E	E S 12	12	16	18	12	17	16	17	23	12	16	17	E	E	E	E	E	E	E
16	E	E	E	E	E	E	11	12	12	15	17	17	17	17	13	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	12	E	11	16	17	18	17	17	17	17	16	12	E	E	C	E S 17	E	E
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	11	13	14	17	12	12	12	E	E	E	E	E	E	E	E	E S 17
20	E S 16	E	E	E	E	E	E	12	12	C	17	12	C	11	11	E	E	E	E	E	E S 15	E	E	E S 15
21	E	E	E	E	E	E	E	15	15	E	17	18	17	16	11	E	E	E	E	E	E	E	E S 15	E S 14
22	E	E	E	E	E	E	E	11	C	16	11	12	15	15	12	11	11	E	E	E	E	E	E	E S 13
23	E	E	E	E	E	E	E	E	13	E	17	15	15	13	15	11	E	E	E	E	E	E	E	E S 15
24	E	E	E	E	E	E	E	E	15	16	17	17	17	13	E	E	11	12	E	E	E	E S 16	E S 12	E
25	E	E	E	E	E	E	E	E	15	12	11	C	C	C	C	C	C	C	E	E	E	E	E	E S 15
26	E S 16	C	C	E S 15	E	C	C	15	11	16	17	18	18	13	18	E	E	E	E	E	E	E	E	E S 15
27	E	E	E	E	E	E	E	15	13	16	16	18	17	40	23	14	11	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	14	14	18	17	18	18	20	18	13	C	C	C	E	E	E S 15	E	E
29	E	E	E	E	E	E	E	E	14	16	15	15	14	16	12	11	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	12	12	15	14	17	15	12	E	E	E	E	E S 15	E	E	E	E
31																								
	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	28	27	27	28	28	27	27	28	27	26	28	26	26	27	27	27	26	28	29	30	29	29	29	29
MED	E	E	E	E	E	E	E	11	14	16	17	18	17	17	17	12	11	E	E	E	E	E	E	E
UQ	E	E	E	E	E	E	12	14	16	17	18	19	18	17	18	16	12	11	E	E	E	E	E	E S 15
LQ	E	E	E	E	E	E	E	E	12	15	17	17	17	16	12	E 11	E	E	E	E	E	E	E	E

The Radio Research Laboratories, Japan

SEP. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

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

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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	265	270	275	265	255	285	285	325	305	305H	285	295	300H	290	290	285	300	295	295	285	295	305	270	270
2	260	260	280	280	280	300	315	320	335	310	310	285	290H	290	295	300	300	295	290	285	300	295	270	265
3	270	260	280	285	285	310	315	325	315	310	310	280	290H	280	290	290H	295	290	305	305	295	265	260	260
4	270	265	280	270	275	280	300	310	310	305	315	C	285	290H	285	285	300	290	290	305	290	285	275	275
5	270	270	290	280	295	300	310	320	325	315	285	295	300	295	300	295	295	295	305	290	290	300	300	260
6	255	250	245	245	275	285	280	280	270	295	270	265	290	305	290	300	285	315	305	305	285	280	260	260
7	270	280	280	265	275	270	290	310	285	275	280	295	295	295	305	315	310	310	305	280	295	280	290	275
8	270	265	265	270	265	270	290	325	310	300	315	300	305	295	295	295	295	300	290	290	295	290	280	280
9	260	265	275	295	290	305	310	320	330	300	310	310	300	305	310	295	310	305	A	300	305	305	290	265
10	255	255	265	275	275	305	295	325	330	325	305	305	295	305	310	315	315	310	300	300	290	310	310	280
11	275	260	260	270	270	280	325	325	320	345	325	315	300	300	295	305	310	305	305	290	290	S	F	F
12	F 265	F	U F 285	300	A	300	305	325	310	315	330	305	295	310	310	320	325	320	315	315	310	C	C	C
13	C	C	C	C	C	C	C	C	C	C	335	320	320	325	320	325	330	310	310	320	300	285	285	275
14	290	300	295	290	290	305	335	335	320	C	C	C	C	C	C	C	C	315	330	320	305	275	280	275
15	275	280	280	285	265	290	310	325	315	310	310	310	300	300	315	320	305	310	310	295	265	280	265	275
16	270	260	265	270	310	320	330	320	330	300	310	305	300	295	315	310	305	315	310	300	295	295	275	275
17	275	275	270	280	285	295	345	330	320	330	315	310	320	310	310	310	310	300	300	300	I C 295	290	270	265
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	300	305	300	315	310	270	255
19	S 265	255	280	280	260	265	330	300	305	325	335	305	300	315	300	300	300	305	305	300	295	285	265	265
20	265	275	275	280	290	F 295	310	320	325	I C 320	310	310	I C 305	305	320	310	305	305	305	290	305	F 300	F	F
21	F	F	F 250	F	F	F 280	F 330	S	S	315	300	300	310	305	315	310	300	300	300	300	295	285	275	280
22	270	270	265	F 270	F 275	285	340	I S 320	C	315	325	300	295	300	295	290	300	300	310	290	300	290	270	275
23	265	260	270	295	285	280	310	320	310	330	325	320	300	295	300	300	300	305	310	295	305	300	280	270
24	260	260	265	270	255	275	295	U S 295	320	315	325	315	310	300	305	300	305	315	290	310	310	295	270	260
25	260	260	265	F 275	F 260	F 285	F 310	315	275	315	300	C	C	C	C	C	C	C	310	275	270	265	250	250
26	255	I C 260	I C 260	255	275	C	C	315	295	310	300	310	305	290	295	305	305	310	305	290	285	270	265	275
27	275	275	280	270	280	300	310	325	335	305	310	320	290	300	280	295	305	310	300	265	270	265	265	265
28	265	280	270	F 280	F 270	290	325	320	305	315	300	290	290	290	290	295	C	C	C	300	260	255	230	235
29	235	240	260	270	250	260	300	320	305	U S 325	S 310	295	310	310	290	305	295	305	280	260	260	255	275	320
30	245	240	230	245	265	280	285	U S 305	315	290	290	275	285	305	295	310	315	310	265	245	270	255	230	230
31																								
	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	27	26	28	27	26	27	27	27	26	27	28	26	27	27	27	27	26	28	28	30	30	28	27	27
MED	265	262	270	275	275	285	310	320	315	315	310	305	300	300	300	300	305	305	305	298	295	285	270	270
UQ	270	275	280	280	285	300	325	325	325	318	320	310	305	305	310	310	310	310	310	300	300	298	280	275
LQ	260	260	265	270	265	280	298	315	305	305	300	295	292	295	292	295	300	300	298	290	285	272	265	260

SEP. 1969 | M(3000)F2 (0.01)

IONOSPHERIC DATA

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

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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											385	350		L	U L 360		365							
2									U L 365	370 L	380 L				360 L	355								
3										L	360 L	L		355 L	355 L									
4												C	A											
5									L	L	385	L	350	L										
6								325	355	365	340 L	325	I A 370	350										
7								365	345	355	345	U L 360	340 L	L	350 L		400 L							
8									L	370	365	370	350	L										
9									U L 385	380 L	380	375	355	360 L			370 L							
10								370 L	395 L	385 L	A	355	350 L		L	L								
11									U L 370	360 L	375 L	375 L	U L 365		U L 355									
12										A	360 L													
13									C	C	380 L	L		L										
14										C	C	C	C	C	C	C								
15											370 L	U L 360	L											
16										L	L		U L 365											
17									390 L	L	L	L		L	380 L									
18									C	C	C	C	C	C	C	C								
19										L	L	385												
20										C	L	L	C	L										
21											395 L	395		L										
22									C	L	L			U L 365										
23										U L 380	400			L										
24									370		L	405												
25									L	U L 375	U L 380	C	C	C	C	C								
26											380 L	L												
27														U L 360										
28													U L 360											
29										360														
30									L		L	L	360											
31																								
	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	8	10	16	11	10	5	6	1	3							
MED								365	370 L	370 L	380 L	370	358	360 L	358 L	355	370 L							
UQ								368	388 L	380 L	382	380	U L 365	U L 360	360 L		385 L							
LQ								345	360	360	362 L	358	350	355 L	355 L		368							

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SEP. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

SEP. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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											270	320		310	300		290							
2									260	260	270				300	310								
3										275	260	290		315	315									
4												C	300											
5									250	265	250	275 L	300	300										
6								370	410	335	365 L	420	360	320										
7								275	350	400	370	320 L	325	300	310		260							
8									310	275	300	310	315	325										
9									260	275	280	300	315	305			290							
10								290	275	290	A	315	330		300	290								
11									285	250	265	300	320		315									
12										A	290													
13									C	C		250 280		295										
14										C	C	C	C	C	C	C								
15											260	275	280											
16										260	285		270											
17									260	265	265	265		300	285									
18									C	C	C	C	C	C	C	C								
19										260	260	260												
20											260	265	C	295										
21											250	260		270										
22									C	260	250			260										
23										245	260			275										
24									265		255	265												
25									260	265	260	C	C	C	C	C								
26											265	290												
27														275										
28													295											
29										250														
30									270		300	300	295											
31																								
	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	12	16	23	18	12	14	7	2	3							
MED								290	268	265	265	290	308	300	300	300	290							
UQ								330	298	275	282	310	322	310	312		290							
LQ								282	260	260	260	265	295	275	300		275							

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SEP. 1969 | H'F2 (KM)

IONOSPHERIC DATA

SEP. 1969 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N, Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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	310	300	280	275	300	265	245	240	225	210H	205	225	225H	230	240	225	240	260	260	270IA	260	245	260	300
2	310	310	290	260	280	270	250	245	240	240	220	210H	205H	235	230	220	245	260	260	260	250	250	255	290
3	310	315	300	290	260	250	245	240	245	225	225	210	205H	235	235	240H	245	270	A	A	255	250	295	315
4	300IA	300	280	260	290	265	245	245	235	255	260	C	215IA	225H	245	245	250	270IA	260IA	255A	260	260	275	290
5	300	295	260	295	260	245	225	240	235	235	210	215	225	215	240	255IA	245IA	265	260	260	265	250	260	350A
6	A	370	325	325	295	265IA	250	260	240	205	210	240	225IA	250	240	295A	275	260	260	260IA	270	280	300	315
7	320	300	290	285	300	290	275	250	240	210	215	210	265	245	250	240	240	250	250	275	260	260	255	275
8	310	305	300	285	275	300	260	260	245	225	210	205	200	230	230	245	250	265	260A	260	260	240IA	220	275
9	315	325	290	250	230	260	250	250	225	205	210	215	245	240	245	245	240	A	A	A	245	245	250	300
10	325	340	310	300	290	265	260	245	205	210	A	220	210	250	240	250	250	265	260	265	270	250	240	260
11	295	310	315	300	300	285	240	235	245	210	215	200	210	240	215	240	245	255	250	270IA	280IA	260A	A	A
12	300	350	325	260	A	290	250	250	255	A	250	240	215	220	240	260	265A	260	250	A	265A	C	C	C
13	C	C	C	C	C	C	C	C	C	C	240	200	200	205	225	230	260	260	250IA	225	250	255	260	295
14	270	250	250	250	250	250	235	230	225	C	C	C	C	C	C	C	C	250	245	225	260	270	270	280
15	295	280	270	270	255	250	245	245	225	245	215	200	200	245	245	230	260	260	250	240	295	280	290	300
16	295	325	350A	300	245	240	240	245	240IA	215	A	A	210	240	250	225	250	250	A	A	280	290A	275	260
17	300	300	315	290	290	250	225	210	220	210	210	200	190	205	215	240	260	255	245	255	265IC	270	275	305
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	260	245	250	260	220	260	350A
19	320	325	290	280	315	305	235	245	240	220	215	210	200	215	200	245	250	260	245	250	250	250	290	300
20	300	275	260	270	250	260	245	240	230	230IC	210	200	215IC	210	245	240	260	260	240	250	250	240	245	310
21	310	310	325	275	265	260	225	245	230	240	215	200	195	220	225	245	240	250	240	260	250	245	265	260
22	275	300	300	270	260	260	240	230	C	220	230	215	195H	230	215	230	255	250	240	250	240	230	250	300
23	290	300	295	260	245	255	220	235	225	215	205	195H	200	195	245	245	245	250	250	240	245	240	260	275
24	320	305	300	275	275	295	245	250	235	250	210	205	215	215	230	245	260	245	250	260	250	250	275	260
25	285	270	300	300	265	265	245	235	235	210	210	C	C	C	C	C	C	C	240	240	275	270	A	300
26	300	300IC	315IC	310	280	C	C	245	230	215	220	220	240	250	220	260	250	245	240	250	250	250	280	270
27	270	275	265	260	250	250	220	250A	240	225	225	245	215	245	250	260	245	245	220	250	270	260	280	280
28	275	260	260	260	250	250	230	245	225	235	210	210	225	240	240	250	C	C	C	260	270	305	350	350
29	345	305	275	270	300	320	245	260	245	220	260	240	230	240	245	250	250	245	250	295	275	250	280	220
30	305	360	380	370	300	290	245	225	260A	240	225	225	215	240	240	240	250IA	250	285	320	275	275	250	350
31																								
	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	27	28	28	28	27	27	27	28	27	26	26	25	27	27	27	27	26	27	26	26	30	29	27	28
MED	300	302	298	275	275	265	245	245	235	220	215	210	215	235	240	245	250	260	250	258	260	250	265	298
UQ	310	320	315	298	292	288	248	250	240	235	225	220	225	240	245	250	260	260	260	260	270	270	280	308
LQ	295	298	278	260	252	250	235	238	225	210	210	200	200	218	228	240	245	250	245	250	250	245	255	275

The Radio Research Laboratories, Japan

SEP. 1969 | H'F (KM)

IONOSPHERIC DATA

SEP. 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 MHz to 20 MHz 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	105	100	E	E	100	S	105	120	115	115	110	105	105	110	G	G	150	125	120	115	100	100	100	100
2	100	100	100	110	110	110	135	120	105	105	105	100	100	100	105	G	100	G	100	100	100	105	E	105
3	100	100	100	105	100	100	G	G	100	120	115	115	110	110	105	105	105	105	115	110	110	110	110	105
4	105	100	100	100	105	125	135	120	120	120	115	C	105	105	110	110	105	100	105	100	100	100	100	100
5	S	100	100	100	100	100	100	120	G	115	110	110	105	105	100	105	100	115	105	100	100	100	100	105
6	105	100	105	110	115	115	115	120	115	100	G	115	110	115	G	120	125	145	110	115	110	105	115	115
7	105	110	110	100	110	125	125	140	120	120	115	G	110	120	110	115	G	G	S	105	105	E	100	100
8	100	100	E	E	100	115	140	125	115	110	G	G	G	G	G	105	G	G	120	115	110	115	E	S
9	E	110	E	E	E	140	G	120	115	G	G	G	G	115	120	G	G	115	115	110	110	E	105	105
10	E	E	E	E	115	115	G	115	115	G	100	105	110	110	110	135	125	110	120	110	110	110	110	100
11	E	E	E	E	E	E	G	120	120	115	115	110	G	G	G	G	G	115	120	110	100	110	110	105
12	105	100	105	105	105	105	110	G	110	110	110	105	105	G	G	120	115	115	110	105	105	C	C	C
13	C	C	C	C	C	C	C	C	C	C	100	105	100	120	G	G	G	120	115	E	E	E	E	S
14	E	E	E	E	E	S	G	G	G	C	C	C	C	C	C	C	C	100	100	100	S	100	S	S
15	S	E	E	E	E	S	G	G	G	G	G	G	G	110	G	G	150	125	115	110	110	110	105	105
16	100	100	100	100	135	120	115	115	110	110	105	105	105	105	115	100	100	120	110	110	110	110	110	105
17	100	100	100	100	100	100	G	105	105	G	G	G	G	G	110	G	120	G	110	110	C	S	110	110
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	100	100	110	100	105	110
19	110	100	110	100	105	E	100	100	G	G	G	G	G	G	G	G	G	125	115	100	100	100	100	S
20	100	E	E	E	E	E	G	105	G	C	100	100	C	100	150	125	125	100	100	100	100	E	100	S
21	E	E	E	100	E	E	135	G	100	100	100	105	105	105	100	100	100	100	100	110	100	E	S	100
22	100	100	105	105	100	E	100	G	C	G	G	G	G	G	G	G	G	G	115	E	E	E	E	S
23	105	E	100	E	115	E	115	115	110	G	G	G	G	G	G	G	G	110	110	115	110	E	100	100
24	E	E	E	E	E	100	105	100	105	110	G	G	G	G	120	G	G	120	120	105	100	100	100	E
25	E	110	E	105	E	E	100	G	G	120	G	C	C	C	C	C	C	C	120	115	115	E	125	110
26	S	C	C	S	E	C	C	120	115	G	G	G	G	G	G	G	100	100	100	100	100	E	E	S
27	E	105	100	100	100	100	105	105	105	G	125	120	G	B	G	110	110	110	E	E	105	E	E	E
28	E	E	100	E	E	E	G	G	G	G	125	G	G	G	G	G	C	C	C	105	100	S	E	E
29	E	E	E	105	100	100	100	G	125	125	130	105	105	120	120	105	105	100	105	E	E	E	E	E
30	E	110	105	115	120	160	135	120	115	115	G	G	G	G	100	100	100	100	125	S	E	E	E	E
31																								
	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	17	15	16	18	16	18	19	20	16	16	14	13	15	14	14	17	22	27	25	24	15	18	17
MED	102	100	100	102	105	112	112	120	115	115	110	105	105	110	110	108	105	112	110	110	105	105	105	105
UQ	105	105	105	105	115	122	135	120	115	120	115	110	110	115	120	120	125	120	118	110	110	110	110	105
LQ	100	100	100	100	100	100	100	110	105	110	102	105	105	105	105	105	100	100	105	100	100	100	100	100

SEP. 1969 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz 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 3	F 1			F 1		L 1	C 1	C 1	C 1	C 1	L 1	L 1	L 1			H 1	C 1	CL 21	FF 22	F 2	F 2	F 1	F 1
2	F 1	F 1	F 1	F 1	F 2	L 3	H 2	C 1	L 2	L 2	L 2	L 1	L 1	L 1	L 1		L 1		L 1	F 2	F 1	F 2		F 2
3	F 1	F 1	F 2	F 2	F 2	L 1			L 1	C 1	C 1	C 1	C 1	C 1	L 1	L 1	L 1	L 2	C 5	F 6	F 2	F 2	F 2	F 4
4	F 5	F 2	F 2	F 1	F 1	C 1	H 1	C 1	C 1	C 1	C 1		L 2	L 2	L 1	L 1	L 2	L 4	L 3	F 5	F 2	F 2	F 3	F 1
5		F 1	F 1	F 2	F 2	L 1	L 1	C 1		C 1	C 1	C 1	L 1	L 1	L 2	L 2	L 3	CL 22	L 2	F 2	F 2	F 2	F 2	F 3
6	F 3	F 5	F 2	F 2	F 2	L 3	C 1	C 3	C 2	L 1		C 1	C 2	C 2		C 1	C 1	H 1	L 1	F 3	F 2	F 1	FF 22	F 1
7	F 2	F 3	F 2	F 1	F 2	L 1	C 1	H 1	C 1	C 1	C 1		C 1	C 1	C 2	C 1				F 1	F 1		F 3	F 3
8	F 2	F 3			F 1	C 2	H 1	C 1	C 2	L 1						L 1			C 3	F 4	F 2	F 4		
9		F 1				H 1		C 1	C 1					C 1	C 1			C 2	C 5	F 4	F 1		F 5	F 1
10					F 1	C 3		C 1	C 1		L 3	L 1	L 1	L 1	L 1	H 1	C 1	L 2	C 1	F 3	F 3	F 2	F 2	F 2
11								C 1	C 1	C 1	C 1	L 1						C 1	C 2	F 4	F 5	F 3	F 4	F 6
12	F 3	F 4	F 3	F 2	F 6	L 4	L 1		C 3	L 3	L 2	L 1	L 1			C 1	C 2	C 3	C 4	F 4	F 2			
13											L 3	L 1	L 2	C 1				C 1	C 2					
14																		L 2	L 2	F 1		F 1		
15														L 1			H 1	C 1	C 2	F 3	F 2	F 4	F 1	F 1
16	F 1	F 3	F 4	F 1	F 1	C 1	C 3	C 2	C 2	L 1	L 2	L 2	L 1	L 2	C 1	L 1	L 1	CL 41	C 3	F 4	F 3	F 6	F 2	F 1
17	F 2	F 2	F 5	F 5	F 5	L 1		L 1	L 1						L 1		C 2		L 2	F 2			F 4	F 2
18																			L 1	F 2	FF 21	F 1	F 2	F 3
19	F 2	F 2	FF 21	F 1	F 1		L 1	L 3										CL 11	C 1	F 1	F 1	F 1	F 2	
20	F 1							L 1			L 1	L 1		L 1	HL 11	CL 11	CL 11	L 3	L 1	F 1	F 1		F 1	
21				F 1			H 1		L 2	LC 21	L 1	L 1	L 1	L 1	L 1	L 1	L 2	L 3	L 2	F 3	F 1			F 1
22	F 1	F 1	F 1	F 1	F 2		L 1												C 1					
23	F 2		F 1		F 1		L 3	C 2	L 1									L 3	C 3	F 1	F 1		F 2	F 1
24						L 1	L 1	L 2	L 2	L 2					C 1			C 2	C 2	F 2	F 2	F 1	F 1	
25		F 1		F 2			L 1			C 1									C 1	F 1	F 1		FF 42	F 1
26								L 1	L 1								L 1	L 1	L 1	F 1	F 1			
27		F 1	F 1	F 2	F 2	L 1	L 2	L 2	L 2		C 1	C 1				L 1	L 1	L 1			F 2			
28			F 1								C 1									F 2	F 1			
29				F 1	F 1	L 1	L 1		C 1	C 1	H 1	L 2	L 1	CL 11	CL 11	L 1	L 2	L 2	F 2					
30		F 2	F 2	F 4	F 2	H 1	H 1	C 2	C 2	C 1					L 2	L 2	L 4	L 1	F 2					
31																								
	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

SEP. 1969 | TYPES OF ES

IONOSPHERIC DATA

SEP. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43·5' N, Long. 140° 08·2' E Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	89	101	98	91	91	91	91	91	91	87	67	63	63
2	63	64	61	60	58	63	85	96	89	88	84	88	95	102	98	91	89	93	91	93	88	81	70	66
3	65	67	64	65	62	65	76	88	93	103	85	80	85	88	98	101	105	99	I R 100	96	70	71	71	71
4	73	73	71	68	67	71	96	I R 100	100	93	90	91	94	96	99	103	99	C	R	R	79	80	78	76
5	76	73	68	68	63	63	81	84	94	85	86	93	100	101	96	91	91	97	101	I R 96	91	77	69	68
6	62	59	55	56	56	57	61	73	75	81	81	85	94	80	76	76	81	96	89	83	64	58	59	57
7	58	57	58	51	46	48	69	83	75	68	80	93	90	97	96	91	88	83	78	74	78	76	67	54
8	51	53	55	51	51	51	69	87	86	83	74	75	87	86	81	80	89	95	I R 92	88	76	71	52	48
9	48	48	51	54	41	41	69	89	89	85	83	79	86	84	84	82	78	86	89	87	84	73	59	53
10	53	51	52	55	53	52	68	83	89	76	75	83	82	90	81	77	81	80	92	89	78	76	63	52
11	50	48	45	45	45	46	69	89	I C 90	81	75	81	78	88	83	95	92	81	83	76	73	70	60	51
12	47	48	50	51	38	45	67	89	98	89	87	80	84	85	86	86	89	88	94	94	71	56	56	55
13	55	54	55	54	44	46	71	81	102	91	94	87	82	85	84	84	80	91	93	86	68	63	61	62
14	61	60	56	56	48	51	82	90	96	90	88	92	87	89	88	84	86	98	I R 97	94	64	66	65	64
15	63	59	60	57	55	55	69	89	C	C	95	I C 90	97	106	I R 109	97	88	90	91	80	66	72	66	64
16	62	60	59	58	56	54	69	81	85	94	102	103	I R 108	104	104	94	86	95	96	82	69	64	63	67
17	64	62	60	56	56	57	77	76	88	101	96	89	91	90	88	87	89	94	I R 96	94	I R 80	71	66	65
18	68	61	59	59	56	54	68	76	80	86	92	95	89	90	92	91	85	R	R	R	74	52	55	53
19	54	53	54	52	49	47	73	81	92	94	102	101	91	87	78	87	90	I R 93	I R 92	79	63	63	62	65
20	62	61	61	60	53	56	78	R	C	94	91	98	96	92	82	89	92	91	90	87	85	67	58	56
21	57	56	56	57	56	61	85	I R 84	89	104	99	99	92	98	89	87	91	I R 92	I R 92	89	76	71	70	66
22	64	64	64	63	61	61	76	87	R	C	C	C	100	98	93	95	99	R	R	82	77	64	57	57
23	58	57	57	61	55	46	64	R	C	C	89	91	I R 97	95	94	103	101	99	I R 90	82	79	69	58	57
24	55	53	52	56	49	54	71	I R 90	S	S	S	89	91	96	97	96	98	I R 102	89	82	79	56	53	57
25	57	56	54	52	51	51	70	87	I S 88	85	103	I S 92	I S 96	101	96	99	102	101	88	70	60	61	61	61
26	60	57	52	55	53	57	73	I S 88	89	85	C	S	S	96	95	I C 99	I R 105	106	86	S 67	62	60	I R 60	61
27	60	58	59	57	55	54	77	89	94	93	93	101	98	103	104	101	102	91	82	64	66	65	66	69
28	I R 64	59	58	59	54	53	71	98	95	96	98	101	102	105	99	102	100	94	89	81	69	69	67	63
29	61	64	63	61	48	49	70	89	102	I A 104	96	102	105	108	95	102	102	I R 96	79	73	75	71	S 70	84
30	I A 44	40	40	43	49	47	61	R	R	96	109	114	123	112	96	93	91	91	76	S 71	S 75	I R 60	S 51	46
31																								
	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	29	29	29	29	29	29	26	23	25	26	28	29	30	30	30	30	27	27	28	30	30	30	30
MED	60	58	57	56	53	54	71	88	89	90	90	91	94	96	94	91	91	93	91	82	75	68	62	62
UQ	63	61	60	60	56	57	77	89	94	94	96	98	98	101	97	99	99	96	92	90	79	71	67	66
LQ	55	53	54	54	49	48	69	83	88	85	84	86	87	88	84	87	88	91	88	78	68	63	58	55

SEP. 1969 | FOF2 (0.1 MHZ)

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IONOSPHERIC DATA

SEP. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz 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								C	C	C	C	600	530	550	560	460	L	L						
2								L	L	L	A	540	570	550	600	490	L	A						
3								L	460	510	500	520	540	540	560	470	450	L						
4								L	A	510	540	520	570	600	590	500	L	C						
5								L	L	500	500	560	560	520	490	520	L	L						
6								450	470	H 560	520	550	540	500	510	460	L	L						
7								A	L	A	550	500	I A 560	540	490	460	L							
8								430	510	480	500	520	540	500	480	H 510	L	L						
9								L	L	480	510	500	520	490	H 560	460	L	L						
10								L	450	450	H 650	I A 500	510	510	L	500	400	L						
11								L	I C 450	470	470	490	540	500	L 480	450	370							
12								L	440	470	500	510	H 500	H 500	490	450	L							
13									L	L	500	500	500	500	L 500	450	L							
14								L	L	H 620	520	560	560	480	470	460	L							
15								L	C	I C 460	450	I C 520	A	500	500	L	L							
16									L	L 500	470	520	520	520	L 500	L								
17									L 460	500	530	H 490	500	L	490	L	L							
18								L	L	480	470	H 500	L	H 500	L	L	L							
19								L	L	460	H 600	470	510	480	L	480	L							
20								L	C	520	490	520	510	500	L 660	L	L							
21									L	500	480	H 500	560	500	470	L	L							
22									L	C	C	C	500	H 600	470	L	L							
23									C	C	L	H 600	H 600	L 520	500	L	L							
24									S	S	S	H 480	520	460	L 510	L 480								
25								L	S	L	480	S	S	520	L	L								
26									L	L	C	S	I S 560	L	L	C	L							
27									L	L	490	L	L	570	500	L								
28									L	L	500	510	480	530	L	L								
29									L	A	510	L 530	L	L	L	L								
30									A	L	H 620	510	480	L	L	L								
31																								
	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	7	17	24	26	25	26	22	16	3							
MED								440	460	500	500	515	530	505	500	465	400							
UQ									465	510	525	530	560	540	560	495	425							
LQ									450	470	485	500	510	500	490	460	385							

The Radio Research Laboratories, Japan

SEP. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz 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						C	C	C	C	C	C	375	IA 385	385	IA 370	355	305	250	A	E				
2						S	225	285	IA 325	345	A	A	A	IA 380	IA 370	345	310	255	A	E				
3						A	IA 225	285	325	340	A	A	A	A	A	A	A	A	A					
4						A	A	A	A	A	365	A	A	A	A	IA 330	A	C	A					
5						S	240	IA 300	A	A	A	A	A	A	375	A	A	A	A					
6						A	A	A	320	A	A	A	A	A	360	330	290	A	A					
7						A	A	A	A	A	A	A	A	A	A	A	290	245	A					
8						S	215	A	A	A	A	A	380	360	335	315	295	235	A					
9						A	215	IA 265	310	335	IA 345	355	IA 360	IA 365	350	330	300	230	S					
10					130	IA 190	250	IA 285	IA 315	IA 335	345	A	A	350	IA 295	280	A	S						
11						S	IA 200	IA 250	IC 290	IA 315	340	IA 350	365	365	345	IA 310	IA 280	A	A					
12						A	A					345	360	355	340	310	A	A	A					
13						S	210	IA 270	A	A	A	365	370	355	340	315	285	A	A					
14						S	215	280	315	335	350	355	365	355	335	315	A	A	S					
15						S	210	A	C	C	A	C	A	A	350	325	290	A	S					
16						S	210	IA 255	305	A	A	A	A	A	350	325	285	A	S					
17						A	205	A	A	A	340	355	365	375	360	325	295	A	A					
18						S	210	IA 265	310	340	350	360	370	355	335	315	290	A	A					
19						S	210	280	325	345	IA 355	365	IA 365	R 365	345	315	275	A	S					
20						S	220	270	IC 310	335	350	365	370	360	335	310	275	235	S					
21						S	215	275	315	340	350	360	370	360	340	320	280	A	A					
22						S	IA 200	265	315	C	C	C	365	365	345	320	285	A	S					
23						S	IA 205	275	IC 310	IC 335	IA 350	365	370	365	345	325	IA 280	225	S					
24						A	A	280	S	S	S	360	370	365	IA 340	320	280	220	S					
25						A	205	275	IS 315	340	355	IS 360	IS 360	IA 355	350	A	A	210	S					
26						S	215	IS 280	320	340	C	S	IS 360	370	350	IC 320	290	A	S					
27						S	210	270	320	340	355	360	370	IA 365	IA 360	IA 340	285	A	S					
28						E	A	270	310	335	355	360	365	370	355	325	285	195	S					
29						S	205	275	310	335	355	360	365	A	A	305	265	205	S					
30						A	A	260	IA 310	A	A	A	IA 360	360	IA 325	290	255	IA 195	S					
31																								
	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	22	22	20	16	15	18	21	21	26	26	24	12		2				
MED						F F 130	210	272	312	338	350	360	365	365	348	320	285	228		E				
UQ							215	280	320	340	355	365	370	365	355	325	290	240						
LQ							205	265	310	335	348	355	365	360	340	315	280	208						

The Radio Research Laboratories, Japan

SEP. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	42	46	G	J X 43	G	G	34	J X 24	J X 28	J X 18	J X 33	J X 26	J X 25
2	J X 29	J X 21	J X 25	J X 19	J X 29	18	31	34	J X 36	J X 50	J X 52	J X 43	39	J X 43	J X 37	44	42	J X 68	J X 26	J X 20	J X 27	J X 37	E S 14	J X 20
3	J X 18	J X 16	E S 14	E	E	J X 20	J X 35	35	40	40	42	J X 48	J X 45	J X 45	J X 45	J X 44	37	35	J X 40	J X 26	J X 48	J X 34	J X 68	J X 63
4	J X 84	J X 84	J X 56	J X 39	J X 43	J X 33	J X 27	35	J X 64	J X 48	G	J X 44	42	J X 56	J X 88	J X 44	J X 44	C	J X 46	J X 94	J X 58	J X 39	J X 33	J X 20
5	J X 25	J X 25	J X 24	J X 24	E S 14	E S 13	G	32	48	44	J X 44	42	J X 50	J X 38	G	J X 80	J X 43	J X 73	J X 36	J X 38	J X 34	J X 31	J X 26	E S 13
6	J X 18	J X 29	J X 26	E S 13	J X 33	J X 28	J X 45	J X 42	47	J X 46	38	41	46	40	G	G	34	J X 29	J X 33	J X 38	J X 38	J X 24	J X 17	J X 44
7	J X 34	J X 25	J X 18	J X 24	J X 25	28	32	J X 88	J X 57	J X 96	J X 86	J X 62	J X 70	45	40	35	G	G 22	J X 48	J X 25	J X 18	E	J X 18	E S 14
8	E	J X 20	J X 25	J X 18	E	E S 14	24	J X 43	J X 48	J X 38	J X 39	J X 39	J G 36	G	J G 32	G	32	29	21	J X 26	J X 25	J X 18	J X 33	J X 32
9	E S 14	E S 13	E S 13	J X 20	J X 20	J X 20	G	29	33	43	41	46	42	38	G	36	32	J X 33	J X 33	J X 20	J X 26	J X 20	J X 38	J X 25
10	J X 29	J X 27	J X 20	J X 26	J X 27	G	30	35	J X 44	44	41	J X 57	J X 44	J X 54	G	36	33	J X 32	J X 34	E S 13	J X 23	J X 58	J X 44	J X 27
11	J X 20	J X 17	E	E S 14	J X 18	E S 14	22	29	C	35	J X 41	J X 38	G	G	G 31	J X 53	J X 39	25	18	J X 25	J X 26	J X 18	E S 14	J X 28
12	J X 78	J X 46	J X 39	J X 50	J X 63	J X 34	J X 28	28	31	52	34	G	G	G 32	36	34	J X 48	J X 50	J X 40	J X 81	J X 43	J X 60	J X 53	J X 24
13	J X 41	J X 24	J X 25	E	E	E S 14	G	29	J X 38	36	J X 48	G	G	G	G	G	G	29	J X 41	J X 34	E S 14	E S 14	E S 14	E S 14
14	E S 13	E S 13	E S 14	E	E	E S 14	G	G	G	G	G	J G 34	G 30	G 29	38	38	J X 55	J X 35	J X 23	J X 18	J X 20	J X 18	J X 18	E S 14
15	E S 14	E S 14	E S 13	J X 13	E	J X 20	G	29	C	C	35	C	J X 54	41	G	37	G	J X 33	J X 19	J X 25	J X 46	J X 28	J X 18	J X 29
16	J X 33	J X 24	J X 20	J X 19	J X 28	E S 13	24	J X 64	35	44	41	39	44	37	G	G	G	29	J X 29	J X 29	J X 31	J X 73	J X 46	J X 43
17	J X 54	J X 28	J X 20	J X 24	J X 28	J X 20	G	J X 40	J X 36	J X 41	G	J G 34	G	G	G	G	J X 41	J X 79	J X 28	J X 30	J X 37	J X 34	J X 25	J X 20
18	E S 14	E S 13	E S 14	E S 14	E S 13	E S 13	24	J X 48	G	G	G	J G 29	G	G	G	G	G	24	18	E S 14	J X 21	E S 14	J X 25	J X 17
19	E S 14	J X 20	J X 25	J X 26	J X 24	J X 18	J X 23	G	G	G	J X 62	J G 34	J X 40	J G 32	J G 25	G	31	29	J X 23	J X 21	J X 22	J X 24	J X 20	J X 20
20	E S 14	E S 13	E	E	E S 14	E S 14	G	G	C	G	G	G	G	G	G	36	32	26	E S 14	J X 20	J X 20	J X 17	J X 20	E S 13
21	E S 13	E S 13	E S 13	E	E	E S 13	G	32	36	36	G	G	G 28	J G 28	G	J G 25	J G 24	J X 25	J X 23	J X 14	J X 19	J X 28	E S 14	E S 14
22	E S 13	E S 13	E S 13	J X 13	J X 12	E S 14	24	G	G	C	C	C	G	G	G	G	G	26	J X 28	J X 38	J X 74	J X 55	J X 23	J X 21
23	E S 14	E S 14	E	E	E	E S 13	J X 43	30	C	C	J X 44	G	G	41	G	36	J X 30	G	J X 18	J X 21	J X 16	E S 14	E	E S 14
24	E S 14	E S 13	E	E	E	17	26	33	S	S	S	G	G	G	36	G	G	G 21	J X 22	E S 14	E S 13	J X 23	J X 22	J X 16
25	E S 14	E S 14	E	J X 13	J X 20	J X 40	G	30	S	36	G	S	S	38	G	36	J X 29	G	J X 24	E S 14	J X 18	J X 19	E S 14	E S 14
26	J X 19	E S 13	E S 14	E	E	E S 14	26	S	G	G	C	S	S	G	G	C	G	26	21	J X 19	J X 18	J X 20	E S 14	E S 14
27	E S 14	E	E	E	E	E S 14	G	32	35	40	39	38	42	41	41	36	G	24	J X 21	J X 31	J X 26	J X 19	J X 17	E S 14
28	E	E	E	E	E	J X 26	J X 25	G	35	G	G	G	G	G	G	G	G	G	E S 14	E S 14	J X 18	E S 14	E S 14	E S 13
29	E S 13	E	E	E	E	E S 13	G	36	42	J X 109	49	45	46	J X 52	38	G	J X 28	G	E S 14	E S 14	E S 14	J X 28	J X 24	J X 29
30	J X 43	J X 42	J X 30	J X 18	J X 19	19	27	J X 43	J X 65	37	J X 50	43	37	G	J X 45	J G 29	G	21	E S 14	E S 14	E S 14	J X 30	E S 14	E S 13
31																								
	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	29	29	29	29	29	29	28	23	25	26	26	28	30	30	29	30	29	30	30	30	30	30	30
MED	14	J X 16	14	J X 13	14	14	24	32	36	40	40	38	38	G 32	G	34	30	29	J X 24	J X 23	J X 22	J X 24	J X 20	J X 20
UQ	J X 29	J X 25	J X 25	J X 20	J X 25	J X 20	27	38	J X 46	44	J X 44	43	44	41	38	36	37	J X 33	J X 33	J X 30	J X 34	J X 34	J X 26	J X 25
LQ	E S 14	E S 13	E	E	E	E S 14	G	29	32	35	G	G	G	G	G	G	G	24	19	J X 14	J X 18	J X 18	E S 14	E S 14

The Radio Research Laboratories, Japan

SEP. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	42	44	G	40	G	G	G	20	17	15	18	18	E
2	21	15	23	17	24	16	28	33	36	45	52	40	39	43	37	39	37	48	22	18	23	19	E S 14	17
3	E	15	E S 14	E	E	16	28	34	38	39	40	43	44	44	38	40	34	28	28	19	17	E	34	24
4	24	28	24	25	27	26	26	32	53	47	G	39	40	48	38	41	34	C	42	60	25	23	24	E
5	E	E	18	16	E S 14	E S 13	G	32	40	39	44	42	41	38	G	42	31	31	21	22	22	24	E	E S 13
6	E	21	19	E S 13	28	23	44	40	46	40	38	39	46	39	G	G	33	26	20	24	20	18	E	25
7	17	15	16	20	22	16	30	47	40	52	40	46	62	45	39	35	G	G 19	29	19	E	E	E	E S 14
8	E	14	21	15	E	E S 14	24	31	38	38	39	39	G 34	G	G 30	G	32	28	18	19	19	15	31	23
9	E S 14	E S 13	E S 13	13	17	16	G	29	32	40	41	45	39	38	G	G	31	G	24	19	23	18	31	22
10	E	20	16	19	20	G	28	34	41	44	40	51	43	39	G	35	33	29	28	E S 13	19	35	30	23
11	18	E	E	E S 14	15	E S 14	22	29	C	35	31	37	G	G	G 31	34	30	25	16	21	24	16	E S 14	22
12	18	41	29	21	28	34	23	28	31	38	34	G	G	G 31	35	33	36	50	30	24	31	31	31	E
13	19	E	E	E	E	E S 14	G	29	34	36	38	G	G	G	G	G	G	25	41	25	E S 14	E S 14	E S 14	E S 14
14	E S 13	E S 13	E S 14	E	E	E S 14	G	G	G	G	G	G 34	G 29	G 29	38	34	32	32	20	E	E	E	E	E S 14
15	E S 14	E S 14	E S 13	E	E	E	G	29	C	C	35	C	54	40	G	G	G	28	18	20	23	17	E	19
16	20	16	15	15	24	E S 13	24	30	G	42	37	38	40	37	G	G	G	26	28	22	20	39	20	26
17	38	15	18	18	18	15	G	30	33	35	G	G 33	G	G	G	G	35	70	19	26	24	19	24	E
18	E S 14	E S 13	E S 14	E S 14	E S 13	E S 13	G	35	G	G	G	G 27	G	G	G	G	G	24	18	E S 14	E	E S 14	18	E
19	E S 14	17	22	17	18	E	16	G	G	G	39	G 34	39	G 31	G 25	G	30	29	17	18	20	17	16	E
20	E S 14	E S 13	E	E	E S 14	E S 14	G	G	C	G	G	G	G	G	G	35	32	G	E S 14	18	15	E	E	E S 13
21	E S 13	E S 13	E S 13	E	E	E S 13	G	30	35	36	G	G	G 27	G 27	G	G 23	G 20	24	18	E	E	18	E S 14	E S 14
22	E S 13	E S 13	E S 13	E	E	E S 14	24	G	G	C	C	C	G	G	G	G	G	24	26	32	19	29	E	E
23	E S 14	E S 14	E	E	E	E S 13	24	30	C	C	42	G	G	G	G	G	30	G	E	E	E	E S 14	E	E S 14
24	E S 14	E S 13	E	E	E	14	25	32	S	S	S	G	G	G	35	G	G	G 19	E	E S 14	E S 13	17	E	E
25	E S 14	E S 14	E	E	13	25	G	G	S	36	G	S	S	38	G	34	28	G	18	E S 14	E	E	E S 14	E S 14
26	E	E S 13	E S 14	E	E	E S 14	24	S	G	G	C	S	S	G	G	C	G	25	E	E	E	E	E S 14	E S 14
27	E S 14	E	E	E	E	E S 14	G	30	35	39	38	38	42	40	40	36	G	23	E	19	18	15	E	E S 14
28	E	E	E	E	E	16	23	G	34	G	G	G	G	G	G	G	G	G	E S 14	E S 14	E	E S 14	E S 14	E S 13
29	E S 13	E	E	E	E	E S 13	G	33	33	A	45	43	44	40	36	G	21	G	E S 14	E S 14	E S 14	21	E	E
30	A	27	25	15	E	17	27	32	56	35	42	42	37	G	37	G 22	G	20	E S 14	E S 14	E S 14	27	E S 14	E S 13
31																								
	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	29	29	29	29	29	29	28	23	25	26	26	28	30	30	29	30	29	30	30	30	30	30	30
MED	14	14	14	E E 13	E E 13	14	23	30	34	38	38	38	38	G 30	G	G	29	25	18	18	18	17	14	14
UQ	18	15	18	16	18	16	25	32	39	40	40	42	42	39	37	35	32	28	26	22	22	21	20	19
LQ	E S 13	E S 13	E	E	E	E S 13	G	28	E G 31	35	G	G	G	G	G	G	G	G 19	14	14	E	14	E	E

SEP. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	17	18	18	19	16	14	13	13	E	E	E S 14	E S 14	E
2	E	E	E S 14	E	E	E S 14	15	14	15	17	18	20	17	15	15	13	13	14	14	E	E	E	E S 14	E S 14
3	E S 14	E	E S 14	E	E	E	13	15	17	16	18	15	15	18	17	16	15	13	13	E S 13	E S 13	E S 13	E S 14	E S 14
4	E	E	E S 13	E	E	E	15	14	14	17	18	18	20	17	18	14	14	C	13	E S 13	E S 14	E S 14	E	E S 14
5	E S 13	E S 13	E S 14	E	E S 14	E S 13	15	14	18	17	18	24	23	16	20	17	14	15	E	E S 12	E S 14	E S 13	E S 13	E S 13
6	E S 14	E S 13	E	E S 13	E	E	15	14	16	16	20	19	18	14	18	18	14	14	12	E	E	E S 13	E S 14	E S 14
7	E	E	E	E	E	12	13	14	15	17	23	22	20	20	18	17	14	13	E	E	E S 14	E	E S 14	E S 14
8	E	E	E S 14	E	E	E S 14	14	14	14	17	19	16	17	17	17	14	14	13	13	E	E S 14	E	E S 14	E
9	E S 14	E S 13	E S 13	E	E	E	14	15	14	17	18	18	20	16	16	17	14	13	E S 13	E S 13	E	E	E S 13	E
10	E S 13	E	E	E	E	E	14	13	15	17	17	18	21	16	17	15	15	13	E S 13	E S 13	E	E S 13	E	E S 13
11	E S 13	E	E	E S 14	E	E S 14	14	14	C	17	18	16	16	18	15	17	14	13	13	E	E	E	E S 14	E S 13
12	E S 13	E	E S 13	E	E	E	14	14	15	16	23	15	19	17	17	16	15	14	13	E S 14	E S 13	E S 14	E S 13	E S 14
13	E S 13	E S 13	E	E	E	E S 14	14	14	17	17	19	22	18	19	17	14	14	13	13	E	E S 14	E S 14	E S 14	E S 14
14	E S 13	E S 13	E S 14	E	E	E S 14	14	14	16	17	17	16	15	18	14	13	13	13	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14
15	E S 14	E S 14	E S 13	E	E	E S 13	15	15	C	C	15	C	17	25	15	15	16	15	E S 14	E S 13	E S 14	E S 14	E	E S 13
16	E S 14	E	E	E	E	E S 13	14	14	18	18	14	21	18	18	19	15	15	14	E S 13	E	E	E S 13	E	E
17	E	E	E	E	E	E	14	13	14	18	21	18	18	17	18	17	17	13	E	E S 14	E S 14	E S 14	E S 13	E S 13
18	E S 14	E S 13	E S 14	E S 14	E S 13	E S 13	15	14	17	17	18	19	17	19	15	15	14	13	14	E S 14	E S 14	E S 14	E S 13	E S 14
19	E S 14	E	E	E	E	E S 14	13	15	14	16	16	16	16	14	16	14	15	13	E S 13	E S 13	E	E S 14	E	E S 14
20	E S 14	E S 13	E	E	E S 14	E S 14	14	13	C	15	15	23	18	17	17	13	14	14	E S 14	E	E	E S 13	E S 13	E S 13
21	E S 13	E S 13	E S 13	E	E	E S 13	14	13	15	18	18	19	18	15	14	14	13	E S 13	E	E	E S 14	E S 13	E S 14	E S 14
22	E S 13	E S 13	E S 13	E	E	E S 14	14	14	18	C	C	C	19	18	17	17	14	14	E S 13	E S 14	E	E S 14	E S 14	E S 14
23	E S 14	E S 14	E	E	E	E S 13	15	14	C	C	16	18	19	17	17	15	14	14	E S 14	E S 13	E S 14	E S 14	E	E S 14
24	E S 14	E S 13	E	E	E	E	16	17	S	S	S	18	15	17	19	16	15	14	E S 14	E S 14	E S 13	E S 14	E S 14	E
25	E S 14	E S 14	E	E	E	E	15	14	S	16	20	S	S	17	15	15	15	13	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
26	E S 13	E S 13	E S 14	E	E	E S 14	14	S	14	18	C	S	S	16	18	C	13	13	E S 13	E S 14	E	E S 14	E S 14	E S 14
27	E S 14	E	E	E	E	E S 14	14	15	15	18	21	19	18	25	29	17	15	15	E S 13	E S 13	E S 13	E	E S 13	E S 14
28	E	E	E	E	E	E	14	15	15	16	18	16	20	20	19	16	14	13	E S 14	E S 14	E	E S 14	E S 14	E S 13
29	E S 13	E	E	E	E	E S 13	14	15	15	15	16	17	23	16	18	15	14	14	E S 14	E S 14	E S 14	E S 13	E S 14	E S 13
30	E S 13	E	E	E	E S 14	E	14	14	13	14	18	17	18	18	15	14	13	14	E S 14	E S 14	E S 14	E	E S 14	E S 13
31																								
	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	29	29	29	29	29	29	28	23	25	26	26	28	30	30	29	30	29	30	30	30	30	30	30
MED	E S 13	E	E	E	E	E S 13	14	14	15	17	18	18	18	17	17	15	14	13	E S 13	E S 13	E S 13	E S 13	E S 14	E S 14
UQ	E S 14	E S 13	E S 13	E	E	E S 14	15	15	16	17	19	19	20	18	18	17	15	14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
LQ	E S 13	E	E	E	E	E	14	14	14	16	17	16	17	16	15	14	14	13	13	E	E	E S 13	E S 13	E S 13

The Radio Research Laboratories, Japan

SEP. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

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

Station AKITA Lat. 39° 43·5′ N. Long. 140° 08·2′ E Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	280	295	285	280	285	285	290	300	295	300	305	255	255
2	260	265	280	275	275	300	310	315	315	300	295	280	280	285	285	285	290	295	300	300	295	285	285	265
3	265	265	275	280	295	310	315	325	315	310	305	300	270	275	280	280	295	295	I R 310	300	270	275	270	265
4	270	265	270	280	275	285	305	I R 315	320	310	300	280	270	275	285	285	290	C	R	R	265	270	270	265
5	270	270	280	285	280	285	320	320	315	305	280	290	290	290	290	290	290	300	300	I R 300	300	285	265	265
6	265	240	240	275	280	295	295	285	295	265	275	275	300	300	290	290	285	290	290	305	285	260	255	255
7	270	265	275	275	270	275	305	325	325	325	295	310	290	290	300	295	305	305	295	285	285	295	305	265
8	255	265	275	270	275	275	295	315	315	320	300	305	295	290	295	295	295	300	I R 310	300	290	300	270	265
9	270	260	280	305	295	295	320	315	325	320	305	290	295	295	290	300	295	300	305	300	305	295	290	265
10	255	250	260	275	285	280	310	315	330	325	295	300	295	300	300	300	305	300	305	305	295	295	300	270
11	270	265	255	265	270	280	320	320	I C 320	335	310	310	285	295	280	300	310	300	300	305	290	295	285	275
12	265	285	280	320	295	295	305	320	325	325	315	305	295	295	305	305	310	310	300	320	310	280	275	265
13	280	280	285	300	280	280	320	315	305	330	320	315	305	310	300	305	305	310	315	310	290	285	275	285
14	285	280	285	290	290	290	335	330	320	300	315	305	300	305	305	300	300	305	I R 315	320	275	280	275	275
15	280	270	270	285	280	295	320	315	C	C	305	I C 290	290	300	I R 305	310	310	305	310	305	255	280	275	265
16	260	260	260	275	280	325	320	335	315	310	305	290	I R 295	290	295	305	295	305	315	305	295	280	275	275
17	275	275	275	285	280	300	325	330	320	325	315	305	305	300	305	300	295	310	I R 310	310	I R 300	290	275	255
18	280	265	270	275	290	295	325	325	335	305	310	310	290	300	300	300	295	R	R	R	325	265	260	265
19	270	260	275	295	260	270	325	315	315	325	305	315	310	300	285	300	300	I R 310	I R 320	315	285	270	270	275
20	275	275	285	285	285	270	320	R	C	325	310	315	305	305	285	305	305	305	305	300	300	305	270	270
21	265	265	265	285	280	285	330	I R 320	315	320	315	320	295	305	305	300	300	I R 310	I R 310	305	290	280	285	275
22	270	270	275	280	295	295	330	335	R	C	C	C	300	290	295	295	305	R	R	320	300	295	270	275
23	280	280	285	285	295	295	320	R	C	C	310	295	I R 300	295	305	300	305	305	I R 305	300	305	295	280	270
24	275	265	260	270	265	275	310	I R 325	S	S	S	325	300	305	305	305	305	I R 310	310	305	315	295	265	275
25	275	280	285	285	280	280	330	320	I S 315	320	310	I S 300	I S 300	315	300	305	305	315	320	305	270	275	280	275
26	285	270	270	275	275	315	325	I S 330	315	330	C	S	S	295	295	I C 280	I R 275	305	305	S 305	275	270	I R 270	270
27	275	275	275	285	285	285	325	330	320	335	305	305	305	300	305	300	305	310	295	295	275	270	270	290
28	I R 290	285	275	290	290	285	325	325	325	300	305	300	290	295	290	295	300	310	305	295	270	245	250	245
29	245	260	255	275	255	255	300	315	315	I A 315	305	315	300	305	305	305	315	I R 310	305	265	275	275	S 275	325
30	I A 275	255	240	250	305	300	315	R	R	300	295	290	295	295	300	300	305	310	295	S 265	S 295	I R 280	S 285	260
31																								
	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	29	29	29	29	29	29	26	23	25	26	28	29	30	30	30	30	27	27	28	30	30	30	30
MED	270	265	275	280	280	285	320	320	315	320	305	302	295	295	298	300	300	305	305	305	290	280	275	268
UQ	275	275	280	285	290	295	325	325	322	325	310	310	300	300	305	305	305	310	310	305	300	295	280	275
LQ	265	265	265	275	275	280	310	315	315	305	300	290	290	290	290	295	295	300	300	300	275	275	270	265

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IONOSPHERIC DATA

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

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.2' E Sweep 1 MHz to 20 MHz 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								C	C	C	C	335	355	350	325	350	L	L						
2								L	L	L	A	365	345	345	335	350	L	A						
3								L	375	360	400	375	355	355	340	355	335	L						
4								L	A	375	355	360	335	335	320	340	L	C						
5								L	L	380	380	350	345	365	360	355	L	L						
6								335	I A 355	H 340	360	330	345	360	360	355	L	L						
7								A	L	A	355	360	I A 350	335	360	355	L							
8								350	355	370	380	350	340	360	355	H 355	L	L						
9								L	L	365	365	365	350	360	H 355	370	L	L						
10								L	385	390	H 325	I A 350	375	360	L	345	355	L						
11								L	I C 360	380	390	370	335	345	L 355	340	380							
12								L	365	370	360	365	H 360	H 355	345	355	L							
13									L	L	380	365	375	360	L 340	355	L							
14								L	L	H 355	365	355	355	375	365	355	L							
15								L	C	I C 380	415	I C 360	A	360	350	L	L							
16									L	L 360	380	365	350	350	L 345	L								
17									L 375	365	365	H 390	405	L	370	L	L							
18								L	L	375	390	H 380	L	H 365	L	L	L							
19								L	L	385	H 355	400	375	375	L	350	L							
20								L	C	365	375	370	360	360	L 325	L	L							
21									L	365	380	H 385	345	360	360	L	L							
22									L	C	C	C	380	H 355	370	L	L							
23									C	C	L	H 335	H 350	L 350	375	L	L							
24									S	S	S	H 405	365	375	L 375	L 340								
25								L	S	L	375	S	S	350	L	L								
26									L	L	C	S	I S 360	L	L	C	L							
27									L	L	395	L	L	355	365	L								
28									L	L	380	390	375	360	L	L								
29									L	A	370	L 365	L	L	L	L								
30									A	L	H 325	365	375	L	L	L								
31																								
	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	7	17	24	26	25	26	22	16	3							
MED								342	365	370	375	365	355	360	355	355	355							
UQ									375	380	380	375	375	360	365	355	368							
LQ									358	365	360	355	345	350	340	348	345							

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SEP. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

SEP. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43·5' N Long. 140° 08·2' E Sweep 1 MHz to 20 MHz 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								C	C	C	C	370	310	305	320	300	300	280						
2								250	250	275	275	300	330	330	320	290	305	280						
3								245	255	295	270	300	355	340	330	290	285	280						
4								240	255	275	290	300	330	330	330	305	290	I C 280						
5								250	250	260	285	325	305	305	280	300	285	280						
6								325	280	380	350	345	300	275	315	290	300	275						
7								290	250	280	335	300	340	325	290	285	280							
8								275	285	275	280	300	325	295	280	325	300	275						
9								265	250	270	290	295	310	300	315	290	275	275						
10								255	235	255	350 L	305	310	310	280	315	280	270						
11								255	I C 265	255	260	295	325	325	300	295	265							
12								245	255	260	275	300	295	315	280	285	280							
13									275	250	270	275	285	295	280	275	275							
14								240	240	310	295	295	300	280	285	280	280							
15								250	I C 260	I C 260	260	I C 300	315	300	290	255	270							
16									290	285	265	295	295	300	300	290								
17									265	270	280	250	285	290	280	280	280							
18								250	235	255	280	260	270	280	290	270	260							
19								240	250	255	295	270	290	265	255	300	275							
20								240	I C 250	275	265	280	280	280	L 325	280	270							
21									260	260	255	265	295	280	270	285	260							
22									255	C	C	C	280	305	270	285	285							
23									I C 240	I C 230	250	320	310	275	290	295	260							
24									S	S	S	245	295	290	290	280								
25								250	I S 250	265	265	I S 280	I S 275	285	270	280								
26									245	255	C	S	I S 270	280	295	I C 275	270							
27									245	240	275	280	280	320	285	275								
28									250	275	265	280	260	290	280	300								
29									250	I A 260	275	280	280	270	260	280								
30									245	250	320	290	260	280	265	265								
31																								
	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								17	28	27	26	28	30	30	30	30	23	9						
MED								250	250	260	275	295	295	295	288	285	280	280						
UQ								255	260	275	290	300	310	310	300	295	285	280						
LQ								245	248	255	265	280	280	280	280	280	270	275						

SEP. 1969 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 1969 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43·5' N Long. 140° 08·2' E Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	210	230	210	230	220	230H	255	260	255	240	240	295	300
2	330	300	290	275	290	260	240	230	230	230IA	225IA	195	200	220	230	230	250	260IA	260	250	250	245	245	280
3	300	295	280	255	245	245	230	235	230	215	205	220	225	225	230	245IA	245	245	245	235	225	280	330	335
4	325	305	305	290	300	290	245	230	240IA	220IA	210	205	215	240IA	230	245IA	250	260IC	255	260	240	275	280	285
5	290	295	250	250	235	250	245	230	240	230	235	230	225	225	230	230	240	270	255	250	245	245	245	290
6	310	360	370	290	300	260	285	260IA	240IA	210H	205	200	245	245	220	230	245	260	245	240	255	275	295	340
7	300	305	270	290	295	310	260	250IA	240	235IA	200	200IA	240IA	240IA	235	240	225	250	250	255	275	250	230	275
8	290	310	300	290	280	295	245	245	230	225	215	215	230	225	230	195H	270	255	255	245	250	230	235IA	315
9	305	305	295	250	230	265	250	230	235	240	210	210IA	210	230	225H	220	245	245	250	250	230	230	270	300
10	340	355	325	295	265	250	245	245	230IA	230IA	205H	235IA	205	225	240	230	230	245	255	235	250	275	250	280
11	290	305	310	305	270	295	245	245	235IC	230	200	205	230	220	230	230	235	250	255	240	260	240	230	275
12	315	315IA	305	235	275IA	265IA	240	230	215	215	210	200	190H	200H	240	240	245IA	260	245	245	240	295	310	310
13	290	280	270	240	235	280	235	225	230	230	200	210	205	210	225	225	245	265	245	245	240	250	250	285
14	250	250	250	245	245	275	240	230	220	220H	200	200	230	215	220	240	250	270	245	220	230	270	280	285
15	275	270	290	270	245	250	230	225	230IC	230IC	200	225IC	235IA	230	230	240	245	265	245	230	310	290	290	310
16	315	305	310	280	265	210	230	225	230	240	205	210	210	205	230	240	250	265	245	235	245	280IA	305	310
17	320	280	290	270	270	260	220H	230	220	215	220	200H	180	245	230	230H	250	260IA	240	245	250	255	280	310
18	290	280	295	275	240	255	240	230	225	210	200	200H	200H	200H	220	245	245	265	245	235	220	215	320	310
19	295	315	295	255	325	300	245	220	230	215	220H	210	210	225	235	225	255	260	240	230	240	270	295	295
20	290	280	260	250	230	275	240	240	230IC	220	210	205	210	220	220H	240	255	250	235	245	245	230	260	295
21	300	305	300	280	265	260	230	230	220	205	215	185H	210	205	210	235	245	250	245	240	245	260	260	270
22	275	280	290	255	245	245	220	230	225	C	C	C	215	200H	225	230	250	250	240	235	245	260	250	295
23	295	275	260	255	215	225	240	230	220IC	210IC	230	195H	190H	215	210	230	245	245	235	240	240	240	240	270
24	290	300	295	270	245	275	245	235	S	S	S	190H	200	220	220	230	255	250	230	240	230	295	290	290
25	290	260	265	270	265	310	230	225	230IS	210H	205	220IS	225IS	220	235	230	250	250	220	220	245	285	280	290
26	260	250	300	280	245	235	235	230IS	225	230	C	S	205IS	225	230	240IC	250	235	225	220	245	270	285	285
27	270	270	260	245	245	245	230	230	235	235	210	205	240	230	230	230H	250	235	230	230	270	290	295	275
28	250	250	255	255	245	265	230	240	230	220H	200	220	195	230	230	250	250	250	245	235	250	330	320	340
29	340	295	280	230	260	325	245	225	235	240IA	240	235	240H	240	240	230	245	240	230	295	270	270	270	230
30	A	390	430	350	260	250	240	245	240IA	235	230H	245	235	215	210H	245	250	235	250	305	250	250	245	320
31																								
	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	28	29	29	29	29	29	29	29	28	27	26	28	30	30	30	30	30	30	30	30	30	30	30	30
MED	292	295	290	270	260	260	240	230	230	225	210	208	212	222	230	230	248	250	245	240	245	260	280	292
UQ	312	305	300	280	270	280	245	240	235	230	220	220	230	230	230	240	250	260	250	250	250	275	295	310
LQ	290	280	270	250	245	250	230	230	225	215	200	200	205	215	220	230	245	245	240	235	240	240	250	280

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SEP. 1969 | H'F (KM)

IONOSPHERIC DATA

SEP. 1969 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz 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	C	C	C	C	C	C	C	C	C	C	C	125	120	G	115	G	G	130	115	100	105	105	100	100
2	100	100	110	100	105	140	140	140	105	125	120	105	105	110	110	140	140	120	120	105	100	100	S	105
3	105	105	S	E	E	140	100	130	125	125	120	115	115	105	105	110	140	125	105	105	105	120	110	110
4	110	105	105	105	100	100	105	130	120	115	G	115	115	105	115	105	110	C	105	105	105	105	100	100
5	100	100	100	100	S	S	G	135	125	125	115	115	115	115	G	110	110	105	105	105	105	105	105	S
6	100	105	105	S	120	125	120	120	120	120	120	115	115	115	G	G	145	110	105	105	105	105	105	105
7	105	105	105	120	125	130	125	115	115	120	120	115	115	115	115	115	G	105	105	100	100	E	100	S
8	E	110	100	100	E	S	145	120	115	115	110	105	105	G	105	G	175	140	130	100	100	100	105	105
9	S	S	S	110	105	105	G	145	140	125	120	125	120	130	G	130	150	125	120	110	110	105	105	105
10	105	100	105	105	105	G	120	120	115	115	120	115	115	115	G	115	140	115	115	S	110	105	105	105
11	105	100	E	S	120	S	125	130	C	125	110	110	G	G	105	125	120	140	120	110	110	105	S	105
12	105	105	105	125	105	110	115	115	120	105	110	G	G	105	145	145	120	115	110	105	105	105	105	105
13	105	105	105	E	E	S	G	115	110	120	110	G	G	G	G	G	G	120	115	110	S	S	S	S
14	S	S	S	E	E	S	G	G	G	G	G	105	105	105	145	130	120	115	110	100	100	100	100	S
15	S	S	S	100	E	100	G	125	C	C	115	C	115	125	G	135	G	125	120	110	110	100	115	105
16	105	105	105	100	105	S	140	120	130	120	115	115	105	120	G	G	G	125	115	105	110	105	105	105
17	105	105	100	100	100	105	G	105	105	115	G	105	G	G	G	G	130	115	115	115	110	110	105	105
18	S	S	S	S	S	S	150	105	G	G	G	105	G	G	G	G	G	145	125	S	115	S	100	100
19	S	105	100	105	105	110	110	G	G	G	115	100	100	100	100	G	155	130	110	105	100	100	100	100
20	S	S	E	E	S	S	G	G	C	G	G	G	G	G	G	140	140	130	S	100	100	100	100	S
21	S	S	S	E	E	S	G	140	140	140	G	G	105	100	G	100	100	100	100	100	100	100	S	S
22	S	S	S	105	105	S	150	G	G	C	C	C	G	G	G	G	G	125	115	110	105	105	105	100
23	S	S	E	E	E	S	115	165	C	C	105	G	G	140	G	125	115	G	105	100	100	S	E	S
24	S	S	E	E	E	125	130	130	S	S	S	G	G	G	120	G	G	115	110	S	S	100	100	100
25	S	S	E	105	105	105	G	130	S	130	G	S	S	130	G	130	115	G	120	S	110	100	S	S
26	115	S	S	E	E	S	150	S	G	G	C	S	S	G	G	C	G	140	125	100	100	100	S	S
27	S	E	E	E	E	S	G	150	150	130	125	125	125	130	125	115	G	140	110	105	105	100	100	S
28	E	E	E	E	E	110	110	G	140	G	G	G	G	G	G	G	G	G	S	S	110	S	S	S
29	S	E	E	E	E	S	G	135	140	115	130	125	125	115	120	G	115	G	S	S	S	105	115	110
30	110	105	105	105	110	140	130	125	115	125	115	115	105	G	105	105	G	150	S	S	S	110	S	S
31																								
	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	15	13	15	14	14	18	23	18	19	18	19	18	18	14	17	18	25	26	23	26	25	21	18
MED	105	105	105	105	105	110	125	130	120	120	115	115	115	115	115	125	125	125	115	105	105	105	105	105
UQ	105	105	105	105	110	130	140	135	140	125	120	115	115	125	120	130	140	130	120	108	110	105	105	105
LQ	105	102	100	100	105	105	115	120	115	115	110	105	105	105	105	110	115	115	105	100	100	100	100	100

SEP. 1969 | H'ES (KM)

IONOSPHERIC DATA

SEP. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz 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												H1	H1		C2			H1	C2	L2	F2	F2	F2	F2
2	F2	F2	F2	F1	F4	H1	H1	H½ 22	L3	H1	H2	L1	L1	L1	L1	H2	H2	H2	C3	L2	F4	F2		F2
3	F1	F1				H1	L3	H1	H2	H1	C2	C2	C2	L2	L1	L3	H2	H2	L3	F2	F2	F2	F3	F2
4	F3	F4	F3	F4	F4	L3	L1	H2	C4	C1		C1	C1	L2	C1	L3	L3		L4	F3	F4	F3	F3	F2
5	F2	F2	F2	F2			H1	H1	H2	H2	C1	C1	C1	C1		L2	L3	L3	L2	F4	F4	F3	F2	
6	F1	F2	F4		F6	H5	C2	C2	C2	C2	C1	C1	C1	C1			H2	H½ 11	L2	F5	F2	F4	F1	F4
7	F2	F2	F2	F3	F5	H1	H2	C2	C2	C2	C1	C2	C1	C2	C1	C2		L2	L3	F3	F1		F1	
8		F2	F2	F1			H1	C3	C2	C2	L2	L2	L1		L1		H1	H½ 11	H2	F4	F2	F2	F3	F3
9				F1	F3	L1		H1	H1	H1	H½ 22	H1	H1	H1		H1	H1	H1	C3	F2	F4	F3	F3	F4
10	F2	F3	F3	F3	F3		C4	C2	C2	C2	C2	C2	C2	C1		C2	H2	C3	C3		F3	F3	F4	F4
11	F2	F1			F1		H2	H1		H1	L1	L1			L1	H2	C2	H1	C1	F3	F5	F2		F4
12	F3	F6	F6	FF 15	F3	L5	C2	C2	C1	L2	L1			L1	H1	H1	C2	C3	L3	F3	F3	F3	F3	F2
13	F3	F3	F3					C1	L3	H2	C2							C2	C4	F4				
14												L2	L2	L1	H½	H½ 12	C2	C3	L2	F1	F1	F1	F1	
15				F1		L1		H1			C1		C2	H1		H1		H2	C1	F3	F2	F2	F1	F2
16	F4	F2	F2	F1	F4		H1	C1	H1	C2	C1	C1	L2	C2				H2	C2	F2	F2	F3	F2	F5
17	F5	F2	F4	F4	F3	L2		L2	L2	C2		L2					H2	C2	C2	F3	F3	F2	F2	F1
18							H1	L2				L1						H1	C1		F1		F2	F2
19		F2	F4	F3	F4	L2	L1				C1	L2	L1	L2	L2		H1	H2	L2	F3	F3	F1	F1	F1
20																H1	H2	H1		F2	F2	F1	F1	
21								H1	H2	H1			L2	L1		L2	L2	L3	L2	F2	F1	F2			
22				F2	F1		H1											C2	C5	F3	F2	F3	F1	F1
23							C2	H1			L2			H1		H1	C2		L1	F2	F1			
24						C1	H2	H1							C1			L1	L1			F2	F2	F1
25				F1	F2	L3		H1		H1				H1		H2	C2		C3		F1	F2		
26	F1						H2											H2	C½ 21	F1	F2	F2		
27								H2	H1	H1	H1	H1	H1	H1	H1	C1		H1	L1	F2	F2	F1	F1	
28						L2	L2		H1												F1			
29								H2	H1	C2	H1	H2	H2	C2	C2		L2					F2	F2	F1
30	F3	F3	F4	F2	F1	H2	H3	H2	C2	H1	C2	C2	L1		L2	L1		H1				F2		
31																								
	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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SEP. 1969 | TYPES OF ES

IONOSPHERIC DATA

SEP. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz 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	67	64F	64	61	61	64	88	96	87	84	89	93	107	107	104	101	98	107	108	100	I R 88	68	64	65
2	64	I R 70	70	64	64	64	85	90	98	87	93	101	107	107	108	101	99	102	104	99	88	84	75	74
3	74	73	73	70	66	65	79	86	91	102	81	84	86	96	104	114	113	I A 110	I B 105	90	76	75	74	71
4	72	71	69	67	66	J R 68	100	95	92	94	91	93	104	110	111	110	111	118	121	101	I A 87	91	90	93
5	92	J R 86	94	80	64	61	80	94	90	84	83	97	107	108	100	95	100	113	110	107	87	77	71	71
6	64	63	60	62	57	56	69	89	100	85	88	106	114	95	82	86	90	102	102	79	60	55	58	56
7	55	58	57	49	45	44	67	89	87	73	78	95	103	99	100	99	102	95	92	84	82	78	60	55
8	53	53	52	48	49	49	76	87	90	80	80	J R 83	92	96	87	83	96	110	110	86	72	69	57	52
9	52	50	53	55	40	40	62	84	99	93	78	84	88	91	87	86	84	92	98	83	78	66	60	56
10	J R 53	53	54	55	50	51	72	88	86	71	80	84	86	90	90	81	86	94	103	90	74	71	63	52
11	50	50	48	45	46	45	70	102	87	83	77	83	85	91	96	100	96	86	90	80	71	64	55	53
12	51	51	50	47	I A 40	41	67	90	85	85	91	81	89	95	88	88	94	101	108	97	62	52	54	54
13	56	51	51	51	41	41	64	91	100	93	93	93	92	89	86	89	88	97	95	84	68	65	65	63
14	60	59	59	58	49	48	78	J R 106	87	83	90	100	102	96	96	89	94	107	111	J S 107	69	68	66	67
15	66	59	60	58	57	52	69	86	107	97	95	94	101	115	121	109	95	91	98	86	63	71	68	66
16	64	62	60	64	58	54	69	86	81	107	98	111	116	115	115	100	95	102	110	81	66	60	60	64
17	64	64	60	60	55	52	78	86	88	96	90	98	89	95	90	95	94	100	108	98	76	62	67	65
18	67	64	60	60	60	54	69	86	84	86	92	99	96	97	95	96	95	J R 105	116	93	60	50	50	50
19	51	50	54	50	45	46	68	87	89	92	102	110	96	84	87	88	101	107	J R 107	83	58	64	64	65
20	64	64	64	58	50	51	76	101	95	90	98	J R 105	101	101	82	93	96	95	101	95	74	62	60	59
21	57	54	54	54	53	55	83	94	84	94	104	101	97	98	97	95	94	100	104	87	71	74	68	69
22	68	66	63	60	59	57	70	87	99	98	97	107	101	100	105	107	113	115	J R 109	90	72	64	62	61
23	70	66	60	57	54	43	66	90	102	102	87	86	101	104	97	107	108	108	101	J R 84	74	69	61	62
24	57	54	52	54	51	51	80	97	95	100	100	91	92	99	100	106	J R 105	110	100	80	71	58	55	57
25	56	56	52	49	46	48	72	94	91	93	113	106	111	113	109	107	107	101	101	74	60	61	63	62
26	59	58	54	56	54	55	J R 83	J R 102	91	88	93	J R 103	107	101	99	104	111	116	93	65	60	60	58	61
27	58	57	55	55	51	48	75	93	92	93	90	100	110	110	108	104	108	97	90	71	62	67	66	68
28	65	60	60	60	54	47	76	93	93	90	99	108	107	106	104	104	R 104	106	94	80	67	68	70	F
29	F	68	64	61	47	49	75	95	97	107	102	109	105	107	108	106	115	101	85	75	81	I R 76	72	78
30	J R 41	41	40	43	51	40	66	111	117	109	111	127	128	113	109	109	100	J R 103	81	72	R	65	60	50
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	29
MED	60	59	60	58	52	51	74	90	91	92	92	98	101	100	100	100	98	102	102	85	71	66	63	62
UQ	66	64	63	61	58	55	79	95	98	97	98	106	107	107	108	106	107	108	108	95	76	71	68	67
LQ	55	53	53	51	47	46	69	87	87	85	87	91	92	95	90	89	94	97	95	80	63	62	60	56

SEP. 1969 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N. Long. 139° 29·3' E Sweep 1 MHz to 20 MHz 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 510	L 560	L 570	L 550	L 550	L 520	L 510	L 460	A						
2									L	L	L	L	U L 550	L 550	L	A	L	A	A					
3									L	A	A	L 580	L 580	L 480	L 530	A	L	A						
4								L	A	L 500	A	L 550	L 550	L 560	A	A	L	A						
5									L	L	L 510	A	L 510	L	L 490	L	L	L						
6								L	A	A	A	A	L 500	L	L	L 500	L	L						
7								L	A	A	L	L	510	A	L	L	L	L						
8								L	L	L 460	L	L	L	L 510	L 450	L	L	L						
9							L	L	L	L	L	L	L 530	L	L 510	L	L	A						
10								L	L	L	L 520	L 500	L	L 460	L	L	L 450							
11								L	L	L	L	L 510	L 510	L 510	L	L	L							
12								L	L	L	L 510	L	L 510	L 510	L	L	L							
13								L	L	L	A	L	L	L	L 520	L	A	A						
14								L	L	L	L	L 580	L	L	L	L	L	A						
15									L	L	L	L	L	L	L	L	L							
16									A	A	A	A	L	L	L	L	L	L						
17									L	L	L 480	L	L	L	L	L	L							
18								L	L	L	L	L	L	L	L	L	L							
19									L	L	L	L	L	L	L	L	L							
20								L	L	L	L	L	L 510	L 510	L	L 530	L							
21								L	L	L 670	U L 500	L	L	L	L	L								
22									L	L	L	L	L	L	L	L	L							
23									L	L	L	L	L	L 500	L	L	L							
24										L	L 500	L	L	L	L	L	L							
25									L	L	L	L	L	L	L	L	L							
26									L	L	L 510	L	L 500	L	L	L	L							
27									L	L	L	L	U L 510	L	L	L								
28										L	L	L	L	L	L	L								
29									L	L	L	L	L	L	L	L	L							
30									A	L	L	A	L	L	L	L	L							
31																								
	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										4	8	6	13	10	6	3	2							
MED										L 505	L 510	L 560	L 510	L 510	L 515	L 510	L 455							
UQ										L 590	L 515	L 580	L 550	L 550	L 520	L 520								
LQ										L 480	L 500	L 510	L 510	L 500	L 490	L 505								

SEP. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz 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						A	R	300	I A 330	I A 345	I A 360	A	A	380	A	A	A	A	A					
2						B	A	A	A	360	380	385	I A 395	395	390	I A 365	I A 315	255	A					
3						B	210	290	330	350	A	A	A	A	A	A	A	A	A					
4						E	A	I A 270	320	A	A	A	A	A	A	A	A	A	A					
5							A	A	335	345	R	A	A	A	A	A	A	A	A					
6						B	A	290	320	A	A	A	A	A	R	A	A	A	A					
7						E	A	A	I A 320	350	370	I A 385	A	A	A	A	300	240	A					
8						B	A	270	A	A	A	A	R	R 360	A	340	A	250	A					
9						B	A	260	300	320	340	A	A	360	350	A	A	A	A					
10						B	220	A	A	320	I A 335	340	365	A	A	335	A	A						
11						B	A	A	A	A	A	A	A	R	A	315	290	A	A					
12							A	A	A	A	A	A	A	360	A	A	275	A	A					
13							A	A	A	310	A	R 375	A	A	330	325	A	A	A					
14						E	A	270	I A 310	340	360	370	365	355	345	320	285	A	A					
15							I A 185	260	305	I A 330	A	A	355	A	A	A	A	A	A					
16						190	R	A	305	A	A	A	A	360	340	A	A	A	A					
17						B	200	275	310	A	R	R	R	I R 365	360	A	A	A	A					
18						B	195	265	R	A	I R 355	I R 355	I R 350	350	I R 335	320	290	A	A					
19						B	A	R	A	A	I R 355	355	R	R	350	330	290	A	A					
20						B	A	280	I A 310	350	I R 365	380	370	355	R 350	320	290	210	A					
21						B	180	275	310	340	R 380	370	380	380	355	325	285	A	B					
22						E	200	280	320	A	A	360	365	I R 350	345	325	295	A	A					
23						B	A	A	A	A	A	R	R	360	350	310	A	A	A					
24						B	A	A	A	350	A	365	I A 360	345	A	325	295	A	A					
25						B	R	A	A	I A 330	350	I R 350	360	345	350	A	A	210	B					
26						E	A	275	320	350	355	370	I R 370	355	360	A	A	A	B					
27						B	A	280	325	360	370	375	365	A	A	I A 335	290	200	B					
28							A	290	320	330	360	365	370	375	340	320	270	220	B					
29					110		B	270	315	340	355	A	A	A	A	A	A	A	A					
30						B	A	A	I A 300	320	330	A	A	A	A	300	270	190	A					
31																								
	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	6	7	17	19	19	16	15	13	17	15	16	14	8						
MED					110	E	200	275	320	340	358	370	365	360	350	325	290	215						
UQ						E	205	280	320	350	368	375	370	365	352	332	295	245						
LQ						E	190	270	310	330	352	358	360	355	342	320	285	205						

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SEP. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1 MHz to 20 MHz 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	J X 29	J X 43	J X 30	J X 29	J X 25	24	G	35	36	43	44	43	48	44	44	48	J X 56	J X 42	J X 41	J X 29	J X 54	J X 41	J X 29	J X 29
2	J X 38	J X 38	J X 29	J X 29	J X 27	J X 29	J X 41	J X 40	36	G 36	45	43	45	G	48	J X 85	37	J X 42	J X 54	J X 71	J X 34	J X 29	J X 24	22
3	J X 25	J X 34	J X 24	24	J X 29	J X 15	25	34	43	J X 54	48	44	J X 65	J X 54	J X 42	J X 70	J X 41	J X 135	J X 70	J X 42	J X 48	J X 27	J X 29	J X 25
4	J X 24	J X 24	J X 50	J X 41	J X 29	23	24	35	J X 48	J X 108	J X 108	J X 55	J X 41	J X 60	J X 88	J X 50	J X 71	J X 107	J X 95	J X 93	96	J X 63	J X 53	J X 41
5	J X 24	22	E S 15	E S 16	E S 15	20	25	35	36	47	G	J X 63	46	47	43	J X 71	J X 43	J X 29	23	23	22	J X 29	J X 29	31
6	J X 26	J X 25	J X 29	J X 29	J X 35	E B 14	30	J X 49	J X 55	J X 71	71	J X 88	47	J X 48	G	39	J X 48	J X 39	J X 28	J X 31	24	J X 29	J X 29	J X 38
7	J X 37	J X 29	J X 29	J X 24	J X 24	23	25	36	J X 65	J X 63	J X 50	43	J X 41	J X 96	42	39	J X 34	J X 24	J X 40	J X 29	22	21	21	23
8	20	20	E	J X 17	14	E B 15	25	J X 40	J X 54	J X 41	42	J X 43	G 34	G	44	J G 29	34	28	24	J X 61	21	J X 24	22	J X 25
9	J X 29	J X 23	22	22	J X 24	J X 26	J X 27	32	35	36	38	47	43	G	G	43	37	J X 67	J X 91	J X 74	J X 61	J X 32	J X 30	J X 53
10	J X 53	J X 26	J X 29	J X 26	J X 29	J X 24	G	34	35	36	45	40	G	44	40	G	36	J X 52	J X 30	J X 54	J X 44	J X 41	J X 29	J X 24
11	21	21	E B 13	E S 15	21	E B 16	24	30	36	36	45	41	42	G 34	40	J G 28	G	31	23	J X 24	J X 23	23	E S 16	J X 36
12	21	22	21	24	J X 71	J X 28	J X 41	31	36	42	J X 42	43	41	G	43	36	34	J X 32	J X 43	J X 30	J X 43	J X 41	J X 52	J X 54
13	J X 25	E B 13	20	21	20	21	21	35	J X 37	J X 43	61	G 33	J X 58	39	G	37	J X 54	J X 78	J X 42	J X 54	J X 54	E S 15	J X 34	J X 19
14	18	M 20	J X 16	J X 23	J X 17	15	J X 29	J X 29	34	G 30	J G 28	J G 33	G	39	J G 27	37	J X 40	J X 42	J X 56	J X 53	J X 27	J X 24	22	J X 28
15	21	M 20	E	J X 16	J X 13	J X 14	22	J X 30	34	38	41	39	42	39	J X 42	J X 37	35	35	J X 27	20	21	J X 53	J X 61	J X 54
16	J X 34	J X 30	J X 28	32	J X 24	G	G	30	J X 48	J X 51	J X 65	110	J X 41	39	G	37	J X 54	J X 29	J X 37	J X 37	21	22	J X 41	J X 52
17	J X 42	J X 29	J X 24	21	21	21	24	30	G	35	G	G	G	G	G	38	J X 37	60	24	J X 41	J X 25	22	J X 25	J X 24
18	J X 94	21	E B 12	E B 12	E B 14	E B 15	25	G	G	J X 41	G	G	G	G	G	G	31	30	21	21	19	21	21	E S 15
19	E B 14	E B 11	E S 15	E B 14	22	J X 22	J X 43	G	35	38	G 35	G	G	40	G	36	31	30	J X 26	E S 15	E S 15	J X 24	J X 24	J X 19
20	21	21	20	E B 13	21	22	25	G	36	38	G	G	G	G	G	36	J X 42	24	J X 24	20	E S 15	21	21	E S 15
21	E S 15	E B 13	E B 12	E	E	E B 12	25	31	33	36	G	G	G	G	G	G 22	G 19	J X 26	32	23	21	20	22	J X 23
22	21	E B 13	21	M 21	M 22	J X 14	23	30	34	35	35	G	G	G	G	G	G	28	23	J X 24	21	E B 13	E S 16	21
23	E S 16	E S 15	E S 15	21	E B 12	E B 12	28	34	J X 42	38	J X 41	G	G	G	41	38	J X 36	J X 35	J X 51	J X 29	25	E B 11	21	E S 15
24	E S 15	E	E B 11	E B 12	E B 11	21	28	32	J X 43	43	38	G	42	45	40	G	31	J X 68	J X 85	J X 29	23	E S 15	21	E S 15
25	E S 15	E S 15	E	E B 11	20	22	G	J X 36	36	36	G	G	G	G	G	J X 38	35	G	E B 15	22	E S 15	21	E S 16	E S 16
26	E S 16	E S 15	E S 15	E B 13	22	22	28	33	34	37	G	G	G	G	G	35	J X 32	J X 29	22	J X 24	22	21	E S 15	E S 16
27	E B 12	E B 12	E B 12	E B 12	21	21	J X 29	31	43	44	43	43	43	43	44	38	J X 39	J X 37	61	J X 77	J X 30	J X 28	M 21	20
28	M 21	M 20	M 18	E S 15	E	15	24	34	35	37	G	38	43	G	G	G	G	25	E B 13	E	J X 28	J X 15	21	E S 15
29	E S 15	E B 13	J X 14	E	G	E B 11	22	31	37	45	39	41	J X 42	45	J X 41	J X 39	42	J X 25	J X 25	J X 20	21	E B 12	E B 12	E B 13
30	E S 16	E S 15	J X 34	J X 28	22	21	25	J X 47	J X 60	J X 65	42	J X 55	J X 39	37	40	G	30	24	24	J X 21	21	20	J X 25	24
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	21	20	19	21	21	21	25	32	36	40	41	40	41	38	40	37	36	J X 32	J X 29	J X 29	23	22	23	J X 24
UQ	J X 29	J X 25	J X 28	J X 24	J X 24	22	28	35	J X 43	J X 45	45	43	43	44	42	39	J X 42	J X 42	J X 51	J X 53	J X 34	J X 29	J X 29	J X 31
LQ	E 16	E 15	E B 13	E B 13	14	E G 15	23	30	35	36	G	G	G	G	G	G 28	31	28	24	22	21	20	21	E 16

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SEP. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz 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	16	21	28	25	16	16	G	G	35	40	40	42	48	44	40	44	38	40	29	26	40	33	20	24
2	26	26	20	26	16	26	35	30	36	G 34	42	42	42	G	47	52	35	41	52	38	27	20	16	17
3	E	25	18	15	15	G	24	32	40	50	48	40	44	46	40	55	40	A	40	29	25	16	26	16
4	20	16	26	21	20	16	24	29	46	40	51	45	41	43	55	50	43	55	40	40	A	35	30	17
5	16	E	E S 15	E S 16	E S 15	E	24	31	35	45	G	60	41	43	39	41	36	26	18	16	15	25	25	26
6	E	25	26	28	16	E B 14	26	44	54	58	65	55	42	44	G	34	34	32	26	30	17	28	E	33
7	32	22	26	20	23	15	25	21	55	59	48	42	40	66	40	37	26	17	30	19	17	E	E	E
8	E	E	E	E	12	E B 15	22	40	44	40	41	41	E R 34	G	40	G 27	30	27	24	57	E	20	E	19
9	27	19	E	16	21	23	26	25	33	36	37	43	42	G	G	40	36	65	28	31	32	26	16	40
10	27	22	26	25	20	20	G	30	32	36	40	38	G	40	38	G	34	50	26	18	22	29	26	20
11	E	E	E B 13	E S 15	E	E B 16	E R 24	29	34	36	30	40	40	E R 34	37	G 26	G	25	16	24	19	17	E S 16	20
12	E	15	15	17	A	26	40	29	34	34	41	40	38	G	38	34	29	31	42	E	26	E	30	E
13	15	E B 13	E	E	E	E	E R 21	28	34	43	54	G 33	41	38	G	34	39	56	37	41	20	E S 15	E	17
14	E	E	15	18	15	14	26	23	33	G 27	G 28	G 30	G	28	G 26	36	35	41	40	26	19	19	16	E
15	15	E	E	E	E	E	22	30	34	35	40	39	40	39	36	32	29	26	16	E	E	20	27	31
16	26	30	25	27	23	G	G	28	41	51	53	75	40	39	G	33	40	27	34	33	E	E	25	26
17	26	25	19	E	E	G	24	29	G	35	G	G	G	G	G	38	32	60	17	27	22	20	E	21
18	20	17	E B 12	E B 12	E B 14	E B 15	22	G	G	35	G	G	G	G	G	G	30	25	17	16	E	E	E	E S 15
19	E B 14	E B 11	E S 15	E B 14	12	17	25	G	33	35	G 30	G	G	40	G	35	30	25	22	E S 15	E S 15	E	E	17
20	E	17	E	E B 13	E	G	25	G	34	38	G	G	G	G	G	34	38	22	15	E	E S 15	17	E	E S 15
21	E S 15	E B 13	E B 12	E	E	E B 12	23	30	33	36	G	G	G	G	G	G 22	G 19	25	29	15	16	E	16	E
22	E	E B 13	13	11	13	13	15	30	33	35	E R 35	G	G	G	G	G	G	27	16	17	E	E B 13	E S 16	E
23	E S 16	E S 15	E S 15	E	E B 12	E B 12	25	31	39	35	41	G	G	G	40	36	32	32	30	17	E	E B 11	E	E S 15
24	E S 15	E	E B 11	E B 12	E B 11	G	25	31	40	40	38	G	40	38	39	G	30	60	20	29	16	E S 15	E	E S 15
25	E S 15	E S 15	E	E B 11	16	G	G	28	33	35	G	G	G	G	G	33	28	G	E B 15	E	E S 15	E	E S 16	E S 16
26	E S 16	E S 15	E S 15	E B 13	E	15	25	32	33	37	G	G	G	G	G	35	31	26	G	20	19	E	E S 15	E S 16
27	E B 12	E B 12	E B 12	E B 12	E	G	25	30	40	41	40	41	40	41	43	37	35	29	40	45	17	16	E	E
28	E	E	E	E S 15	E	14	24	32	32	37	G	38	42	G	G	G	G	25	E B 13	E	16	15	E	E S 15
29	E S 15	E B 13	E	E	G	E B 11	21	29	34	40	39	40	40	40	40	35	40	24	24	17	E	E B 12	E B 12	E B 13
30	E S 16	E S 15	17	15	25	G	19	44	45	40	40	55	37	E R 37	35	G	29	22	17	18	E	E	25	E
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E E 15	15	15	E E 14	13	E G 14	24	30	34	37	40	40	40	U 32	36	34	32	27	25	20	16	16	16	16
UQ	20	21	19	18	16	16	25	31	40	40	41	42	41	40	40	37	36	41	34	30	22	20	25	20
LQ	E	E B 11	E	E E 11	E	G	20	28	33	35	G	G	G	G	G	G 26	29	25	17	16	E	E	E	E B 13

IONOSPHERIC DATA

SEP. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz 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	12	10	13	10	10	10	15	14	15	16	16	26	28	25	26	27	15	12	12	12	E S 15	12	13	E S 16
2	13	11	11	E S 15	11	11	15	14	16	15	16	26	17	18	14	12	18	12	13	E S 15	13	12	12	10
3	E S 15	10	10	10	10	13	11	15	16	18	25	26	25	26	26	26	16	15	12	E S 16	12	E S 15	11	14
4	E S 16	12	11	11	10	10	11	14	16	26	26	28	27	27	26	26	14	13	13	E S 15	E S 16	12	E S 15	E S 16
5	11	E S 15	E S 15	E S 16	E S 15	E S 16	15	16	16	18	26	27	26	26	26	18	16	13	12	11	10	13	E S 15	E S 16
6	E S 16	E S 15	13	10	11	14	15	13	18	25	26	27	26	27	20	16	15	15	12	E S 16	11	11	E S 16	E S 15
7	12	11	10	10	10	10	11	16	15	16	26	26	27	20	25	19	13	12	14	12	E S 15	E S 15	13	E S 15
8	13	E S 15	10	10	10	15	12	12	14	17	26	28	27	27	17	16	15	12	11	E S 16	E S 16	E S 15	E S 16	E S 16
9	E S 16	E S 16	E S 15	13	11	12	11	13	13	16	26	20	26	18	16	16	15	12	10	E S 15	E S 16	E S 15	13	E S 16
10	12	12	10	12	12	11	12	13	16	16	26	18	26	26	18	16	12	10	11	12	E S 16	12	E S 16	14
11	E S 16	E S 16	13	E S 15	E S 16	16	12	15	16	15	26	18	26	20	26	15	13	12	12	12	11	14	E S 16	E S 15
12	E S 16	10	10	11	13	12	12	15	15	26	26	26	26	16	19	14	13	11	13	E S 16	E S 16	11	12	E S 16
13	11	13	E S 16	11	11	E S 15	11	13	16	15	19	27	27	25	16	16	12	12	11	12	12	E S 15	E S 15	E S 15
14	E S 15	13	10	10	10	10	12	13	14	16	15	16	17	17	15	15	11	11	10	10	E S 15	E S 15	13	E S 15
15	10	12	10	10	10	12	17	14	16	15	16	16	26	26	20	15	12	12	12	14	E S 15	E S 15	E S 16	11
16	12	10	10	10	10	15	15	15	16	16	26	25	25	25	18	16	13	12	11	E S 16	12	12	14	E S 16
17	E S 15	11	11	11	12	15	15	15	18	15	26	25	26	30	18	15	15	15	12	E S 18	12	12	E S 16	12
18	12	12	12	12	14	15	16	15	15	15	18	25	27	18	15	16	14	12	15	10	E S 15	E S 16	E S 15	E S 15
19	14	11	E S 15	14	11	11	12	15	15	15	15	15	17	16	15	15	12	12	12	E S 15	E S 15	E S 15	E S 15	12
20	E S 15	E S 15	E S 15	13	12	13	15	13	12	16	16	19	25	19	14	14	11	10	10	E S 15	E S 15	E S 15	E S 15	E S 15
21	E S 15	13	12	10	10	12	15	14	15	15	16	26	26	18	19	14	10	10	11	10	10	E S 15	13	E S 15
22	E S 15	13	11	E	10	10	11	13	12	16	16	26	26	25	21	16	13	14	12	13	E S 16	13	E S 16	E S 16
23	E S 16	E S 15	E S 15	12	12	12	15	15	13	15	26	27	26	26	26	15	12	11	16	12	E S 15	11	11	E S 15
24	E S 15	10	11	12	11	14	15	15	15	26	18	26	25	25	16	16	13	15	13	12	12	E S 15	E S 15	E S 15
25	E S 15	E S 15	10	11	10	16	16	13	15	15	16	26	26	25	15	12	13	13	15	E S 15	E S 15	E S 15	E S 16	E S 16
26	E S 16	E S 15	E S 15	13	12	10	13	15	16	16	16	26	17	26	16	13	12	12	16	E S 16	E S 15	E S 16	E S 15	E S 16
27	12	12	12	12	11	12	12	15	13	20	25	25	18	29	28	19	15	13	13	12	13	E S 15	14	E S 15
28	E S 15	10	E S 15	E S 15	10	10	11	13	13	15	15	16	26	29	22	16	13	14	13	10	11	12	E S 15	E S 15
29	E S 15	13	12	10	10	11	16	11	15	15	26	25	25	18	16	15	15	13	12	12	13	12	12	13
30	E S 16	E S 15	12	11	12	13	13	12	13	15	16	23	22	18	18	16	15	15	15	12	15	E S 16	12	13
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E S 15	11	11	10	11	12	13	14	15	16	22	26	26	25	18	16	13	12	12	11	E S 15	E S 15	E S 15	E S 15
UQ	E S 16	E S 15	E S 15	12	12	14	15	15	16	17	26	26	26	26	25	16	15	13	13	E S 15	E S 15	E S 15	E S 16	E S 16
LQ	12	11	10	10	10	11	12	13	14	15	16	20	25	18	16	15	12	12	11	12	12	12	12	U 12

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SEP. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | M(3000)F2 (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 MHz to 20 MHz 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	E 260	285	270	265	285	330	330	310	310	290	280	280	290	280	280	280	295	295	310	I R 300	270	265	265
2	265	I R 270	275	285	295	285	300	310	320	300	290	290	290	285	285	280	285	290	300	305	295	285	280	270
3	270	275	285	285	305	310	340	325	295	345	310	280	280	280	270	280	295	I A 305	I R 305	310	275	270	280	270
4	285	285	275	285	275	J R 280	320	330	315	320	290	260	275	285	280	285	290	295	315	305	I A 280	275	280	270
5	280	J R 280	300	310	300	295	315	335	320	310	295	290	290	290	295	285	290	295	310	310	305	285	270	270
6	270	260	255	275	285	290	310	290	320	280	285	285	315	310	300	305	300	305	325	305	320	260	265	260
7	275	280	295	300	275	270	315	340	335	305	275	285	310	290	295	300	295	305	305	295	285	305	295	275
8	270	270	290	275	285	275	310	345	320	315	315	J R 275	305	300	300	285	290	295	315	310	280	280	280	270
9	275	275	270	290	300	285	310	320	315	335	300	300	290	295	300	310	300	305	320	315	310	305	270	270
10	J R 265	265	265	290	300	280	335	320	330	340	290	300	295	300	300	300	300	310	305	310	295	290	300	290
11	280	275	270	275	285	265	305	325	320	315	285	295	295	285	290	300	315	300	310	315	300	295	285	285
12	285	290	300	315	I A 295	295	320	325	315	315	310	310	300	310	315	295	310	305	315	340	340	290	285	280
13	290	295	310	295	285	270	330	330	300	340	290	300	290	290	305	300	310	315	315	320	295	275	290	285
14	300	300	295	310	300	290	335	J R 340	345	315	310	300	290	285	305	290	300	305	315	J S 330	290	280	275	285
15	290	275	285	295	295	310	335	315	325	320	305	285	290	290	305	305	315	300	310	315	275	270	265	275
16	280	275	275	280	290	315	350	350	335	310	295	295	295	285	295	310	305	305	325	310	320	280	265	265
17	280	280	290	300	295	295	335	350	320	325	325	310	295	305	290	295	300	320	330	345	325	270	280	275
18	285	300	285	295	315	320	320	335	345	330	315	295	300	300	295	305	310	J R 305	320	325	350	280	275	275
19	280	275	285	305	265	265	325	350	320	295	305	300	315	285	300	295	310	300	J R 310	335	265	280	270	275
20	265	280	300	310	280	300	335	335	340	310	315	J R 315	315	330	295	300	315	315	315	325	310	290	285	280
21	280	275	270	275	290	300	350	350	345	285	315	305	300	305	305	315	305	310	315	320	300	290	295	285
22	285	285	285	295	300	310	330	335	325	320	305	305	295	295	295	290	305	315	J R 320	295	280	300	275	280
23	270	290	295	305	330	285	330	335	335	325	300	290	300	295	290	290	300	315	315	J R 290	310	295	280	280
24	285	280	285	295	300	295	315	330	295	320	305	320	295	290	295	295	J R 295	310	320	315	300	280	285	285
25	280	300	290	290	305	290	320	330	330	305	310	295	290	300	290	295	300	305	320	315	275	280	275	290
26	285	280	265	285	280	315	J R 285	J R 330	320	320	305	J R 285	295	295	295	290	290	320	325	310	270	260	280	260
27	290	295	295	300	310	310	330	340	325	330	310	300	300	300	295	300	305	325	320	310	285	270	280	295
28	295	300	295	305	315	305	330	340	335	310	295	295	300	290	290	295	R 295	310	315	300	285	255	265	F
29	F	275	280	310	270	265	320	340	320	325	305	305	295	290	295	290	315	315	320	265	270	I R 280	290	310
30	J R 315	250	235	265	335	285	310	295	325	305	280	285	290	295	305	315	305	J R 320	310	290	R	295	315	265
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	29
MED	280	280	285	295	295	290	322	332	320	315	305	295	295	292	295	295	300	305	315	310	295	280	280	275
UQ	285	290	295	305	300	305	335	340	335	325	310	300	300	300	300	300	310	315	320	320	310	290	285	285
LQ	275	275	275	285	285	280	315	325	320	310	290	285	290	290	290	290	295	300	310	305	280	270	270	270

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SEP. 1969 | M(3000)F2 (0.01)

IONOSPHERIC DATA

SEP. 1969 | M(3000)F1 (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 MHz to 20 MHz 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	380 L	355 L	330 L	355 L	345 L	370 L	355 L	370 L	A						
2									L	L	L	L	U L 360	365 L	L	A	L	A	A					
3									L	A	A	345 L	340 L	380 L	360 L	A	L	A						
4								L	A	385 L	A	365 L	355 L	340 L	A	A	L	A						
5									L	L	380 L	A	370 L	L	375 L	L	L	L						
6								L	A	A	A	A	380 L	L	L	345 L	L	L						
7								L	A	A	L	L	370	A	L	L	L	L						
8								L	L	400 L	L	L	L	360 L	400 L	L	L	L						
9							L	L	L	L	L	L	360 L	L	355 L	L	L	A						
10								L	L	L	370 L	360 L	L	395 L	L	L	360 L							
11								L	L	L	L	360 L	370 L	355 L	L	L	L							
12								L	L	L	360 L	L	375 L	340 L	L	L	L							
13								L	L	L	A	L	L	L	345 L	L	A	A						
14								L	L	L	L	330 L	L	L	L	L	L	A						
15									L	L	L	L	L	L	L	L	L							
16									A	A	A	A	L	L	L	L	L	L						
17									L	L	410 L	L	L	L	L	L	L							
18								L	L	L	L	L	L	L	L	L	L							
19									L	L	L	L	L	L	L	L	L							
20								L	L	L	L	L	390 L	370 L	L	360 L	L							
21								L	L	345 L	U 385 L	L	L	L	L	L								
22									L	L	L	L	L	L	L	L	L							
23									L	L	L	L	L	370 L	L	L	L							
24										L	385 L	L	L	L	L	L	L							
25									L	L	L	L	L	L	L	L	L							
26									L	L	380 L	L	395 L	L	L	L	L							
27									L	L	L	L	U L 365	L	L	L								
28										L	L	L	L	L	L	L								
29									L	L	L	L	L	L	L	L	L							
30									A	L	L	A	L	L	L	L	L							
31																								
	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										4	8	6	13	10	6	3	2							
MED										382 L	380 L	352 L	370 L	362 L	365 L	355 L	365							
UQ										392 L	385 L	360 L	375 L	370 L	375 L	358 L								
LQ										362 L	363 L	330 L	360 L	345 L	355 L	350 L								

SEP. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

SEP. 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 MHz to 20 MHz 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	245	250	310	335	320	320	310	305	300	295						
2									255	250	280	325	310	325	300	300	310	270	270					
3									250	250	255	345	320	345	340	310	290	I A 280						
4								250	250	260	285	340	320	340	325	300	300	290						
5									250	260	290	305	305	300	290	295	300	290						
6								310	260	350	350	320	275	270	285	305	295	275						
7								260	250	300	370	330	295	305	300	290	290	250						
8								255	255	250	290	285	285	300	300	300	320	270						
9							250	250	280	260	250	305	335	300	305	300	290	290						
10								255	245	250	320	300	290	290	300	285	300							
11								250	250	255	265	300	305	320	305	300	255							
12								250	250	255	280	285	300	300	300	300	280							
13								250	250	245	280	260	270	315	300	275	270	270						
14								245	220	250	260	300	275	270	280	255	290	270						
15									250	250	260	265	300	300	290	260	260							
16									250	265	255	310	285	290	300	260	280	260						
17									250	255	255	275	265	300	290	300	275							
18								240	230	260	255	285	285	285	290	290	290							
19									250	250	275	290	265	275	290	295	290							
20								250	250	240	290	290	275	260	260	320	265							
21								220	235	325	260	260	260	275	260	280								
22									250	245	260	270	280	295	300	290	275							
23									250	255	240	285	290	300	280	285	275							
24										285	255	240	260	290	270	290	260							
25									250	250	290	265	290	290	285	290	255							
26									250	240	280	295	280	265	290	280	275							
27									250	255	250	300	280	280	275	270								
28										250	300	280	290	290	260	260								
29									250	255	255	255	260	290	265	275	250							
30									240	290	290	295	270	290	290	270	270							
31																								
	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	14	28	30	30	30	30	30	30	30	27	12	1					
MED							250	250	250	255	278	292	285	292	290	290	280	272	270					
UQ								255	250	260	290	305	300	300	300	300	292	290						
LQ								250	250	250	255	275	275	285	280	275	270	270						

SEP. 1969 | H'F2 (KM)

IONOSPHERIC DATA

SEP. 1969 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz 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	290	320	290	300	310	290	245	225	210	210	210	200	275	245	245	245	250	I 250 A	260	250	250	250	300	325
2	350	325	275	290	255	250	250	240	240	205	200	200	195	220	250	I 260 A	240	I 255 A	I 260 A	250	240	250	245	290
3	295	290	270	250	245	240	225	230	210	I 210 A	I 205 A	200	215	250	230	I 255 A	280	I 250 A	250	245	290	290	295	300
4	300	285	300	285	300	300	250	240	I 240 A	225	A	210	215	240	I 240 A	I 245 A	270	I 280 A	250	245	A	295	300	295
5	275	265	250	230	240	265	245	245	240	240	200	I 245 A	230	240	230	250	225	250	250	245	220	250	300	305
6	300	340	360	320	250	250	250	I 280 A	I 250 A	I 250 A	A	A	230	I 245 A	240	240	250	255	245	240	240	320	320	380
7	340	290	290	250	300	300	250	250	A	I 250 A	250 A	210	200	I 225 A	205	220	230	240	250	245	260	240	210	275
8	300	300	255	275	270	290	260	250 A	E 250 A	210	220	225	215	220	215	240	250	250	250	265	240	250	250	305
9	320	320	300	250	240	280	240	240	230	230	200	250	250	240	240	250	260	I 250 A	250	260	250	250	270	E 360 A
10	370	350	350	300	275	290	250	230	235	210	200	200	200	210	235	240	250	270	250	240	255	290	250	260
11	290	300	300	300	295	305	250	240	240	230	205	200	205	210	230	230	240	250	250	245	250	250	245	295
12	300	290	255	240	I 270 A	310	260	235	230	200	220	245	210	200	240	240	245	260	250	230	240	320	350	290
13	255	255	270	275	250	270	240	240	240	240	I 215 A	220	200	205	210	225	I 250 A	I 250 A	245	245	250	250	260	275
14	250	250	255	250	240	270	240	240	220	205	205	205	200 H	220	220	230	250 A	I 255 A	250	225	210	275	290	280
15	255	270	280	255	240	225	230	225	220	215	210	200	240	250	240	235	240	250	250	235	240	300	275	325
16	300	350	325	300	255	250	210	240	A	A	A	I 230 A	200 H	240	240	240	250	255	250	250	230	250	E 400 A	300
17	305	290	255	250	250	280	235	235	230	210	200	200	200	200 H	250	250	240	270	240	220	230	270	290	310
18	290	270	290	260	240	245	240	230	210	200	205	200	220	205	200	220	250	260	250	220	220	265	310	310
19	300	300	295	240	305	310	240	230	220	210	200	215	200	240	230	240	250	255	255	220	210	300	300	290
20	285	290	260	240	250	285	240	245	240	220	200	240	205	200	205	240	250 A	250	245	225	220	225	275	290
21	300	315	300	275	260	255	220	225	220	210	195	195	205	200 H	210	220	245	255	245	225	225	250	245	275
22	275	275	275	250	240	220	225	235	220	210	200	200	200 H	210	240	240	245	250	240	240	240	240	275	300
23	290	270	250	250	220	230	220	240	240	210	220	200	200	200	245	240	250	250	245	225	240	240	250	260
24	290	300	300	260	250	290	240	240	240	210	200	200	200	200 H	240	240	250	250	250	245	240	235	300	300
25	300	260	250	250	255	290	240	240	230	210	205	240	200	230	230	245	245	250	240	210	240	295	290	285
26	260	290	300	295	250	250	245	240	220	215	200	200 H	200	240	210	250	240	250	230	230	290	295	295	295
27	290	260	260	250	240	255	220	240	240	220	210	200	210	225	245	240	255	240	250	260	250	290	290	270
28	250	260	260	250	240	240	245	240	220	220	210	200 H	225	220	240	220	250	255	240	225	250	345	310	345
29	340	275	290	210	250	345	250	220	220	240	240	230	210	230	240	245	250	250	240	290	290	290	250	240
30	240	340	410	350	240	250	240	250	I 250 A	250	230	A	230	230	240	240	245	250	240	290	270	240	260	330
31																								
	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	30	30	30	30	30	30	28	29	27	28	30	30	30	30	30	30	30	30	29	30	30	30
MED	292	290	285	252	250	270	240	240	230	210	205	200	205	222	240	240	250	250	250	242	240	258	286	295
UQ	300	315	300	290	270	290	250	240	240	230	212	228	220	240	240	245	250	255	250	250	250	295	300	308
LQ	275	270	260	250	240	250	235	230	220	210	200	200	200	205	220	235	245	250	245	225	230	250	250	280

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SEP. 1969 | H'F (KM)

IONOSPHERIC DATA

SEP. 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 MHz to 20 MHz 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	100	100	100	100	100	100	G	115	130	115	100	140	110	120	130	110	110	105	110	100	100	100	100	100
2	100	100	100	100	105	105	105	105	140	105	120	130	125	G	140	125	150	125	115	110	105	105	100	100
3	105	100	100	100	100	100	140	140	125	125	110	110	110	110	115	110	110	110	105	105	105	105	105	100
4	100	105	100	105	100	105	140	135	125	125	110	110	110	110	110	110	110	110	105	105	105	100	105	100
5	100	100	S	S	S	100	140	145	140	120	G	110	110	110	115	110	110	110	110	105	105	100	100	100
6	100	100	100	100	100	B	135	130	120	110	110	110	110	110	G	120	110	100	105	100	100	100	100	100
7	J X 37	J X 29	J X 29	J X 24	J X 24	23	25	36	J X 65	J X 63	J X 50	43	115	110	110	110	105	100	100	100	100	100	100	100
8	100	100	E	100	110	B	145	120	110	110	110	110	105	G	100	105	110	150	140	110	100	110	100	100
9	110	110	110	100	110	105	100	105	140	130	130	105	125	G	G	140	130	130	110	110	110	105	105	110
10	110	100	100	100	110	105	G	130	120	130	140	130	G	115	115	G	140	120	110	110	110	105	105	105
11	105	100	B	S	130	B	130	135	120	110	110	110	110	105	110	105	G	140	130	110	100	110	S	110
12	105	105	105	105	105	105	125	110	110	110	105	105	105	G	105	150	140	130	105	100	105	110	100	105
13	105	B	105	100	125	105	150	130	110	110	110	105	110	115	G	145	120	110	110	110	105	S	105	100
14	100	105	105	105	105	110	105	105	125	105	105	105	G	145	105	140	125	110	110	105	100	100	100	100
15	100	100	E	100	105	105	130	125	125	135	125	130	130	135	115	110	110	110	110	110	100	105	105	105
16	105	100	100	100	100	G	G	130	125	110	110	110	105	135	G	140	125	115	110	105	110	105	105	110
17	105	100	100	100	100	100	150	160	G	110	G	G	G	G	G	150	135	110	110	110	105	105	100	100
18	100	100	B	B	B	B	140	G	G	105	G	G	G	G	G	G	150	140	100	100	100	100	100	S
19	B	B	S	B	100	100	105	G	130	105	105	G	G	175	G	150	160	130	110	S	S	100	100	100
20	100	100	100	B	110	105	150	G	130	190	G	G	G	G	G	150	125	125	100	100	S	100	100	S
21	S	B	B	E	E	B	140	155	145	155	G	G	G	G	G	100	100	100	100	100	100	100	110	110
22	110	B	105	105	105	105	105	175	155	135	120	G	G	G	G	G	G	130	110	110	110	B	S	100
23	S	S	S	115	B	B	150	135	110	115	115	G	G	G	130	130	120	110	100	100	110	B	100	S
24	S	E	B	B	B	150	145	140	130	130	130	G	135	130	130	G	150	110	110	105	100	S	105	S
25	S	S	E	B	100	100	G	100	125	120	G	G	G	G	G	125	110	G	B	100	S	100	S	S
26	S	S	S	B	110	110	145	140	140	140	G	G	G	G	G	120	150	135	100	100	100	100	S	S
27	B	B	B	B	100	100	140	155	145	130	125	125	130	125	120	120	130	120	115	110	100	100	100	100
28	100	100	100	S	E	105	170	155	150	150	G	140	130	G	G	G	G	145	B	E	105	110	105	S
29	S	B	100	E	G	B	155	150	130	130	140	130	120	120	110	110	110	110	110	110	110	B	B	B
30	S	S	110	105	110	140	140	130	130	115	110	110	110	110	105	G	150	145	140	130	110	110	110	100
31																								
	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	21	19	18	18	23	22	26	27	28	30	22	20	19	17	17	24	27	29	28	28	27	25	25	22
MED	100	100	100	100	105	105	140	130	128	118	110	110	110	115	115	120	125	115	110	105	105	100	100	100
UQ	105	100	105	105	110	105	145	142	140	130	125	130	125	130	120	140	140	130	110	110	108	105	105	105
LQ	100	100	100	100	100	100	125	118	120	110	110	108	110	110	110	110	110	110	105	100	100	100	100	100

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SEP. 1969 | H'ES (KM)

IONOSPHERIC DATA

SEP. 1969 | TYPES OF ES | 135 E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz 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	F2	F3	F3	F3	F3	L2		C1	H1	C1	L2	H1	L2	H1	H1	C1	C2	L3	L3	F2	F2	F3	F3	F3
2	F3	F3	F2	F2	F2	L3	L3	L3	HL11	L2	HL12	HL11	CL11		H1	HL21	HL11	H2	C3	F5	F5	F4	F1	F2
3	F2	F3	F3	F2	F2	L1	HL11	H2	H2	H1	C2	C1	C1	C2	C1	C2	C2	C3	L2	F3	F3	F3	F3	F2
4	F3	F2	F3	F2	F3	L1	H1	H1	H2	H1	C2	C1	C1	L1	L2	C3	C2	L3	L2	F3	F3	F3	F3	F2
5	F2	F1				F1	H1	H1	HL11	H2		C1	C1	C1	C1	C2	C2	L2	L1	F1	F1	F2	F3	F2
6	F2	F3	F3	F5	F2		H1	H4	H2	C2	C2	C1	C1	C2		H1	C2	L3	L2	F2	F2	F3	F2	F5
7	F5	F4	F3	F7	F5	L3	H1	H1	H2	C2	C2	C1	C1	C3	C1	C1	L2	L2	L3	F4	F2	F1	F1	F2
8	F1	F1		F1	F2		HL12	H3	C2	C1	C1	C2	L1		L2	L1	C1	H1	HL11	FF31	F1	F2	F2	F2
9	F6	F3	F2	F1	F3	L5	L3	LH11	HL11	H1	H1	L2	H1			H1	H2	H3	L2	F3	F4	F5	F2	F3
10	F3	F3	F4	F4	F4	L3		H1	H1	H1	H1	H1		C1	C1		H1	H3	F4	F4	F3	F4	F3	F2
11	F1	F1			F1		H1	H1	H1	C1	C1	C1	L1	L1	L1	L1		H1	H2	F3	F4	F2		F3
12	F1	F2	F2	F2	F4	F2	H2	C1	C1	C1	L2	L1	L1		L2	HL11	H1	H2	L4	F2	F3	F2	F3	F2
13	F2		F1	F1	F1	F1	H1	H1	C2	C3	C3	L1	C1	C1		H1	C3	C4	C4	F3	F3		F2	F3
14	F1	F1	F1	F4	F2	L2	L3	L2	H1	L1	L1	L1		HL11	L1	HL11	HL22	CL32	L4	F3	F3	F4	F2	F2
15	F2	F1		F1	F1	F1	H1	C2	HL21	H1	H1	H1	H1	H1	C1	C1	C1	C2	L2	F1	F1	F3	F3	F4
16	F5	F3	F5	F4	F3			H1	H2	C2	C2	C2	L1	H1		H1	H2	C1	L4	F4	F1	F2	F3	F2
17	F3	F1	F4	F1	F1	L1	H1	H1		C1						H1	H1	C2	L2	F2	F2	F2	F2	F3
18	F3	F1					H1			L1							H1	H1	F1	F1	F1	F1	F1	
19					F1	L3	L3		H1	L1	L1			H1		H1	H1	H1	L4			F2	F2	F2
20	F1	F1	F1		F1	L2	H1		H1	H1						H1	H3	H2	L1	F1		F2	F1	
21							H2	H2	H1	H1						L1	L2	L3	L4	F2	F2	F2	F2	FF21
22	F2		F2	F2	F2	L1	L1	H1	HL11	H1	H1							H1	L1	F1	F1			F1
23				F1			H1	H1	C2	C1	C1				H1	H1	H2	C3	L2	F2	F1		F1	
24						H1	H1	H1	H2	H1	H1		H1	H1	H1		H1	L3	L3	F3	F2		F1	
25					F2	L2		L2	H1	H1						H1	C1			F1		F1		
26					F1	L2	H1	H1	H1	H1						H1	H1	H2	L1	F3	F2	F1		
27					F2	L2	H2	H1	H1	H1	H1	H1	H1	H1	H1	H1	H2	H2	C3	F4	F3	F2	F1	F1
28	F1	F1	F1			F1	HL21	HL12	H1	H1		H1	H1					H1			F2	F1	F1	
29			F1				H1	H1	H2	H1	H1	H1	H1	H1	C2	C2	C2	L2	L2	F2	F1			
30			F3	F2	F1	H1	H1	H2	H2	C2	C1	C2	C1	C1	L2		H1	H1	H1	F2	F1	F1	F3	F2
31																								

	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																								

SEP. 1969 | TYPES OF ES

IONOSPHERIC DATA

SEP. 1969 | HPF2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz 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	370	E 415	355	380	400	360	275	280	300	300	350	370	360	350	360	380	360	340	335	320	I,R 315	390	400	400
2	410	I,R 375	360	380	350	315	285	300	290	310	330	350	350	360	340	350	350	325	305	305	320	340	355	380
3	380	360	350	340	300	295	250	280	310	260	300	360	365	360	380	350	350	I,A 330	I,R 330	300	390	390	380	400
4	380	360	400	365	400	J,R 360	280	290	300	300	330	400	375	380	355	350	360	335	300	300	I,A 390	390	380	390
5	370	J,R 360	340	300	310	340	280	285	295	300	330	360	350	350	340	360	360	340	310	310	300	340	380	400
6	400	410	440	400	360	360	315	350	300	370	350	360	300	330	310	340	330	320	290	300	290	420	400	410
7	400	380	350	320	385	400	300	270	280	A	380	350	305	330	335	330	330	310	305	315	340	300	320	370
8	390	390	340	380	360	370	300	260	280	300	310	J,R 370	310	310	335	350	360	310	300	300	360	350	360	400
9	410	400	390	340	300	360	300	280	300	280	320	340	350	340	335	300	310	310	300	310	300	310	390	400
10	J,R 410	425	410	360	325	360	280	290	260	270	340	340	340	345	315	310	325	300	310	290	310	340	310	350
11	390	400	400	400	380	395	300	285	300	300	350	330	350	360	340	340	300	300	300	300	315	335	360	375
12	365	360	340	310	I,A 320	340	290	290	300	295	300	300	330	310	310	340	310	310	290	275	260	370	380	385
13	335	350	330	300	340	360	280	280	290	260	330	310	320	340	310	310	300	300	290	280	330	350	345	345
14	330	330	330	305	310	340	270	J,R 260	250	290	300	320	330	340	305	330	310	305	290	J,S 260	320	350	375	350
15	320	385	370	340	320	310	260	300	290	290	310	350	360	350	310	310	300	310	300	300	400	390	400	390
16	390	400	395	350	340	300	250	255	260	300	340	350	350	350	350	300	320	300	290	290	300	390	440	400
17	365	370	350	325	360	340	280	250	290	290	290	310	340	335	330	325	320	300	290	260	280	370	380	400
18	370	330	370	340	300	300	280	270	260	280	300	340	310	350	330	320	310	J,R 320	300	275	280	390	400	400
19	390	400	360	310	400	400	290	250	300	340	310	325	300	350	325	340	310	310	J,R 300	265	440	400	400	390
20	390	390	340	300	360	340	280	270	250	300	300	J,R 310	305	290	310	340	300	300	300	290	295	330	370	380
21	380	395	390	355	355	340	250	240	250	350	300	305	330	305	330	300	310	300	290	290	310	340	330	355
22	360	360	355	330	325	300	270	260	290	290	310	310	340	340	350	350	320	300	J,R 300	300	360	320	400	390
23	400	370	350	330	290	340	280	280	270	295	310	340	330	340	340	350	330	300	300	J,R 335	310	350	360	360
24	380	400	400	350	330	350	290	260	360	300	300	300	340	350	330	335	J,R 330	300	290	300	330	380	380	380
25	380	340	350	370	340	360	290	270	270	300	305	320	340	340	350	320	300	300	290	300	390	390	360	350
26	360	370	400	380	390	310	J,R 360	J,R 260	280	280	310	J,R 340	350	330	350	340	315	300	290	300	400	390	390	400
27	370	380	350	350	310	330	260	260	280	290	300	330	310	310	310	310	305	290	290	300	340	375	380	335
28	320	340	350	320	300	340	260	260	280	300	340	310	320	345	350	340	R 320	305	290	300	350	430	405	F
29	F	380	370	295	390	420	290	260	280	290	310	300	350	350	350	350	300	300	300	390	390	I,R 380	350	300
30	J,R 310	410	500	400	290	340	310	315	280	310	360	360	350	340	340	310	310	J,R 290	300	370	R	340	300	400
31																								
	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	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	29	30	30	29
MED	380	380	358	340	340	340	280	270	285	300	310	340	340	340	335	340	318	302	300	300	320	370	380	390
UQ	390	400	395	370	360	360	290	285	300	300	340	350	350	350	350	350	330	310	300	305	360	390	400	400
LQ	365	360	350	320	310	330	270	260	270	290	300	310	320	330	315	310	310	300	290	290	300	340	360	360

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IONOSPHERIC DATA

SEP. 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 MHz to 20 MHz 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	90	F 85	85	90	90	65	70	65	95	120	90	110	100	100	120	100	100	140	105	80	I R 110	100	100	90
2	90	I R 115	90	110	110	85	75	100	70	95	115	100	110	100	110	120	110	120	90	90	120	120	95	90
3	100	95	95	105	75	65	50	80	130	100	100	100	95	100	100	90	90	I A 100	I R 110	100	90	100	80	90
4	100	100	90	85	90	J R 100	80	70	90	100	110	100	105	100	120	110	100	105	115	110	I A 100	100	110	100
5	90	J R 90	100	110	90	100	90	65	65	100	110	100	110	80	100	100	90	100	100	90	110	90	80	100
6	100	100	90	90	100	80	95	110	90	90	130	90	100	80	100	50	100	90	120	140	90	100	100	100
7	100	100	90	110	105	100	100	70	110	A	80	95	90	85	95	80	80	90	90	90	105	70	105	100
8	105	80	65	90	60	90	70	55	75	110	90	J R 90	100	110	105	90	80	100	90	90	130	90	100	100
9	90	100	90	100	120	130	80	80	100	80	90	70	90	100	75	90	100	90	60	80	100	100	100	100
10	J R 100	85	90	100	85	90	80	70	100	70	100	70	70	85	75	100	75	100	90	60	130	100	100	60
11	70	100	90	100	110	95	100	85	90	100	90	110	90	90	100	100	90	80	90	90	85	75	100	75
12	85	90	70	100	I A 85	80	70	70	90	75	100	90	80	90	90	80	90	90	70	65	60	120	110	95
13	75	90	70	90	80	100	100	100	60	70	115	130	150	105	90	90	70	60	70	70	90	120	60	100
14	70	70	70	90	90	70	50	J R 60	100	80	80	75	140	110	95	120	90	90	60	J S 65	90	95	95	95
15	90	70	85	65	80	80	60	60	60	90	110	100	100	100	110	90	80	90	90	90	100	100	100	100
16	100	100	95	90	120	90	60	75	80	100	110	90	100	100	90	90	90	90	60	100	100	100	90	100
17	85	120	90	85	90	70	110	80	100	70	70	90	80	65	80	95	100	80	90	120	80	80	110	80
18	80	80	80	80	100	100	110	80	80	160	90	100	100	90	90	80	90	J R 90	90	65	110	100	100	100
19	110	100	90	110	100	100	110	90	100	70	80	75	90	100	75	90	90	100	J R 110	85	140	110	100	110
20	390	390	340	300	360	340	280	270	250	300	300	J R 310	90	65	110	75	95	70	95	60	75	90	80	70
21	90	100	100	95	90	75	70	60	70	90	60	95	75	95	75	95	85	80	65	70	95	70	75	60
22	90	90	90	85	85	95	75	90	60	100	90	90	100	100	90	100	80	80	J R 90	90	100	90	100	90
23	90	110	60	80	100	100	100	70	70	45	110	110	110	90	100	100	80	100	90	J R 105	90	100	100	100
24	110	100	100	100	80	100	110	90	80	60	60	90	80	90	80	105	J R 110	90	70	90	80	120	100	110
25	110	100	100	110	100	120	100	70	70	100	85	120	100	80	90	90	100	100	90	90	110	100	90	100
26	100	110	100	110	110	90	J R 90	J R 80	70	110	90	J R 100	90	90	90	100	95	90	90	100	110	100	100	100
27	90	80	90	100	100	110	80	80	80	60	100	80	95	95	90	95	80	65	70	90	100	85	80	65
28	80	70	95	80	100	100	90	60	70	100	80	95	95	95	100	80	R 100	85	80	95	95	80	85	F
29	F	90	85	105	100	80	65	60	90	70	90	100	80	90	90	100	90	90	80	110	90	I R 90	100	90
30	J R 100	90	100	100	100	100	100	95	100	90	90	75	70	90	80	90	80	J R 80	90	60	R	90	90	100
31																								
	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	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	29	30	30	29
MED	90	98	90	100	100	95	85	78	85	90	90	95	95	92	90	92	90	90	90	90	100	100	100	100
UQ	100	100	95	105	100	100	100	90	100	100	110	100	100	100	100	100	100	100	90	100	110	100	100	100
LQ	90	85	85	90	85	80	70	65	70	70	85	90	90	90	90	90	80	80	70	70	90	90	90	90

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SEP. 1969 | YPF2 (KM)

IONOSPHERIC DATA

SEP. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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	I S 81	I S 77	S 77	S 65	57	58	S 76	93	77	85	88	87	104	J S 121	116	S 113	U S 122	128	131	132	J S 100	S	S	J S 87
2	S 85	80	80	U S 76	S 76	57	J S 61	89	96	89	87	105	S 118	112	118	U S 121	U S 121	S 122	J S 125	J S 120	J S 101	S 86	U S 83	80
3	I S 78	I S 77	S 74	S 73	68	S 49	J S 62	S 87	S 100	86	80	85	93	S 95	101	114	114	S 113	J S 118	J S 109	I S 94	J S 88	J S 85	U S 81
4	S 80	S 84	79	77	S 69	67	I S 85	I S 101	89	88	C	C	C	C	C	C	C	146	142	131	J S 142	J S 147	U S 151	I S 146
5	S	S	S	I S 106	S 84	60	66	U S 89	87	74	85	106	117	112	104	109	J S 122	127	125	J S 121	S 92	I S 88	I S 90	84
6	78	72	68	70	69	S 52	59	S 95	107	93	102	124	136	124	112	116	120	S 126	125	I S 108	74	J S 70	S 68	71
7	J S 76	S 80	80	69	55	S 47	55	88	92	83	89	110	124	114	119	123	122	126	124	I S 115	I S 98	S 85	68	57
8	55	50	50	48	S 47	44	54	84	82	75	83	94	106	102	95	J S 101	S 114	132	125	S 101	S 69	66	S 62	58
9	58	57	54	58	45	24	45	79	93	87	79	89	102	108	108	103	100	111	U S 116	I S 110	S 87	S 68	64	S 66
10	J S 63	J S 62	U S 61	63	63	56	56	82	78	76	84	94	103	106	101	96	104	116	113	106	77	68	63	61
11	58	55	S 52	51	48	S 44	J S 56	S 92	S 90	88	78	99	112	117	126	116	113	S 110	116	S 116	S 92	60	57	58
12	57	57	55	51	45	36	S 44	75	S 111	78	83	90	106	108	106	97	106	S 116	S 122	U S 97	66	51	S 53	S 54
13	57	58	54	55	48	40	48	J S 91	S 94	85	91	97	109	101	100	95	96	102	113	J S 105	J S 78	S 70	72	68
14	66	65	62	60	54	S 48	S 61	J S 100	85	77	94	108	120	122	113	108	109	118	J S 119	U S 118	J S 97	71	72	71
15	69	65	65	68	60	42	S 51	84	J C 109	93	95	S 97	107	121	129	119	S 104	101	S 112	106	S 84	J S 72	70	I S 72
16	U S 71	65	S 63	S 62	S 61	54	J S 51	68	95	98	105	123	136	138	136	128	J S 123	121	123	S 119	I S 87	75	S 78	S 81
17	S 84	I S 84	S 78	S 78	69	47	59	75	88	97	90	100	102	103	104	103	107	J S 118	120	S 112	82	71	75	U S 76
18	J S 75	77	U S 66	67	63	44	50	J S 97	S 87	80	S 91	98	107	104	101	107	110	S 122	129	S 97	S 66	59	60	59
19	60	J S 62	60	60	42	S 46	51	84	92	99	95	107	89	91	104	105	107	S 118	115	93	68	S 71	78	U S 85
20	79	S 76	72	68	52	44	49	77	J S 101	S 88	105	110	112	92	98	97	98	106	118	S 120	78	S 65	65	68
21	65	58	59	62	51	49	S 63	79	S 91	S 92	106	100	102	103	107	107	102	110	111	U S 86	82	79	77	78
22	J S 73	67	62	59	57	43	U S 51	79	S 96	92	97	99	97	101	106	117	111	S 118	S 119	103	80	S 74	73	75
23	S 76	S 75	65	60	49	41	J S 50	84	92	S 96	J S 99	104	112	120	S 117	117	118	U S 121	R 124	S 112	J S 104	I S 89	79	76
24	70	S 61	59	61	59	49	58	U S 81	U S 98	J C 100	107	110	112	123	128	126	122	122	R 125	J S 106	S 97	S 83	S 76	75
25	76	75	67	60	48	41	53	I S 91	S 94	91	104	113	S 118	126	S 123	114	103	104	110	S 94	63	57	59	60
26	58	58	56	S 51	S 52	49	57	78	J S 87	Z 91	98	100	I C 116	130	125	121	123	123	S 114	S 97	S 84	S 82	76	69
27	64	62	63	63	48	32	S 46	81	S 96	S 96	97	107	124	126	122	112	S 111	112	109	I S 100	I S 88	I S 85	I S 83	S 79
28	U S 74	U S 70	S	S 71	51	41	49	84	83	S 93	99	116	I C 122	119	116	114	115	115	115	J S 100	82	S	S	S
29	S	S	S 77	76	54	51	C 52	C 90	89	S 96	113	111	104	110	J S 123	125	125	110	104	J S 88	79	S 72	S 70	63
30	56	42	39	43	U S 50	31	S 42	83	113	112	112	135	131	112	132	142	131	S 118	123	107	J S 99	J S 106	S 96	70
31																								
	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	28	28	28	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	28	28	29
MED	70	65	63	62	54	46	54	84	92	90	95	104	112	112	113	114	113	118	119	S 106	S 84	S 72	72	71
UQ	S 77	S 76	73	70	63	51	59	S 91	S 96	96	104	110	118	121	123	119	122	122	125	S 116	S 97	S 85	S 78	S 79
LQ	59	58	58	59	48	41	50	79	87	85	87	97	104	103	104	105	106	111	114	S 100	78	68	64	63

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SEP. 1969 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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 610	530	L	L 560	L	U L 490	A					
2								300	L	L	L	L 590	U L 560	U L 600	L 580	U L 570	L	A	A					
3									L	L	L	L	L 570	550	A	L 540	L	L	L					
4									L	L	C	C	C	C	C	C	C	L	A					
5									L	L	L	550	L	530	L	L	L	L	A					
6									L	L	L	L	L	U L 550	L	L	L	L	L					
7									L	L	L	L 540	540	L 510	L	L	L	L	L					
8									L	L	L	U L 560	U L 540	U L 550	L 560	L	L	L						
9								L	L	L	L	L	L	L	L	L	L	A						
10								L	L	L	L	L	L	L	L	A	L	A	A					
11								L	L	L	A	L	L	U L 520	L 520	L	L	L	L					
12									L	L	L	L	L	L	L	L	L	L	A					
13								L	L	L	L	L	L 520	L 510	L 520	L	400	A	A					
14									L	L	L	L	L	U L 540	U L 520	U L 520	L	L	A					
15									L	L	U L 500	450	U L 540	L 530	U L 520	U L 490	L	L						
16									L	L	L	L	L	L	L 560	L	L	L	A					
17									L	U L 510	L 480	L 520	L	L 550	U L 550	L	U L 510	L						
18										L	L	L	L	510	L	L 510	L	L						
19									L	L	U L 500	L 550	L	L	L	L 530	L	L						
20									L	L 430	L 550	L	L	L	L	L	L	L	L					
21									L	L	U L 530	L	L	L 590	U L 550	L	L	L						
22									L	L	L	L	L	L	L	L	L	L						
23									L	L	L	L	L	580	L 540	L	L	L						
24									L	L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L 550	L	L	U L 400	L						
26										L	L 510	L	L	U L 580	L	L	L	L						
27									L	L	L	L	L 530	470	L	L	L	L						
28										L	L	L	L	L	L	L	L	L						
29										L	L	L	L	L	L	L	L							
30										L	L	L	L	L	L	L	L							
31																								
	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		2	6	7	8	18	10	7	3	1						
MED								300		L 470	L 505	L 550	L 540	L 545	L 545	L 530	U L 400	U L 490						
UQ											L 530	L 555	L 565	L 550	L 560	L 550	455							
LQ											U L 500	L 530	L 535	L 520	L 520	L 515	400							

SEP. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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	250	300	330	360	I A 375	390	C 390	A	A	A	300	210					
2							S	255	305	345	A	A	A	390	385	365	340	290	210					
3							S	F 260	310	335	350	370	395	400	380	370	340	A	A					
4							S	250	310	340	C	C	C	C	C	C	C	A	A					
5							S	245	305	330	365	A	A	A	A	A	A	280	150					
6							S	245	H 305	330	345	370	A	A	360	350	I A 320	280	A					
7							S	250	300	340	A	A	A	380	380	I A 355	320	A	A					
8							S	240	285	320	345	365	360	I A 375	360	340	310	255	A					
9							S	240	290	I A 320	340	I A 350	H 370	370	370	350	320	275	A					
10							S	230	285	310	340	350	380	I R 370	I A 360	340	310	260	150					
11							S	220	280	310	A	A	A	370	I A 350	335	300	260	160					
12							S	240	290	320	I A 345	I A 360	360	365	355	335	300	250	A					
13							S	210	255	I A 285	320	380	380	380	I A 365	I A 335	310	260	A					
14							S	H 240	290	320	340	360	370	370	360	335	315	260	A					
15							S	230	270	305	350	365	365	370	360	340	315	A	A					
16							S	225	285	310	I A 325	I A 335	350	370	360	340	310	260	150					
17							S	A	290	315	335	350	365	360	360	340	315	A	A					
18							S	230	290	330	350	360	I R 370	370	350	335	300	260	S					
19							S	230	290	330	340	R	R	R 370	R 355	R 345	310	260	S					
20							S	230	300	325	350	R 370	375	R 370	350	340	310	260	A					
21							S	220	280	325	360	370	380	375	365	350	320	265	160					
22							S	250	290	310	340	360	380	370	370	350	320	260	A					
23							S	240	295	325	I A 355	I A 370	380	380	375	350	310	255	A					
24							S	250	305	330	C 350	H 380	380	365	H 370	350	315	250	S					
25							S	210	280	335	350	375	385	385	370	340	300	260	S					
26							B	220	300	340	360	380	C 380	390	370	I R 335	300	260	A					
27							S	230	300	350	365	370	380	385	I A 375	340	310	255	B					
28							S	230	300	330	350	H 370	C 380	380	H 360	330	H 305	250	150					
29							S	230	300	335	365	375	370	H 365	I A 350	320	305	250	S					
30							S	225	280	320	335	350	350	H 350	350	I A 335	300	240	A					
31																								
	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	30	26	24	23	27	27	27	27	25	8					
MED								230	290	328	350	370	380	370	360	340	310	260	155					
UQ								245	300	335	355	372	380	380	370	350	318	260	185					
LQ								230	285	320	340	360	368	370	358	335	305	255	150					

IONOSPHERIC DATA

SEP. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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 22	24	E B 15	E B 12	E B 12	E S 15	28	37	36	40	47	G 39	G 38	40	41	53	35	J X 54	J X 37	J X 43	J X 38	J X 32	J X 24
2	J X 27	J X 22	J X 19	J X 24	J X 24	J X 24	J X 21	28	34	39	40	40	J X 49	G 35	G 38	56	41	J X 44	60	M 82	J X 24	J X 27	J X 23	J X 22
3	J X 38	J X 25	J X 24	19	E B 13	E B 12	17	30	G	42	39	40	48	49	J X 64	J X 52	40	J X 48	26	J X 29	J X 24	J X 35	J X 42	J X 29
4	J X 24	J X 25	J X 20	J X 20	J X 23	J X 19	J X 24	33	J X 41	J X 80	C	C	C	C	C	C	C	94	78	66	J X 38	J X 44	J X 25	E S 15
5	24	E S 15	J X 32	J X 28	27	22	J X 17	27	35	43	J X 59	78	J X 57	J X 60	J X 64	J X 53	J X 36	44	J X 57	J X 64	J X 84	J X 37	J X 49	J X 25
6	E S 15	E S 15	E S 13	E S 15	20	E B 11	23	30	J X 46	57	49	J X 66	J X 58	J X 61	45	J X 53	37	32	27	J X 64	J X 61	J X 33	J X 30	24
7	J X 33	J X 26	24	J X 22	24	20	J X 21	27	41	J X 64	71	55	47	36	G 35	J X 43	J X 34	J X 39	J X 34	J X 47	J X 28	25	22	22
8	E S 15	E S 14	E B 15	E B 11	E	23	22	G	31	35	41	44	44	39	G 33	J X 36	G 26	J X 36	23	J X 31	J X 24	21	E S 15	E S 15
9	23	E S 15	E S 15	E B 14	E B 12	E S 15	18	J X 30	34	38	38	J X 53	38	40	44	J X 49	37	J X 62	M 141	J X 87	J X 74	J X 42	J X 30	J X 25
10	J X 29	J X 24	21	19	E B 14	E S 15	J X 25	26	38	43	45	41	G 37	G 37	37	49	J X 62	J X 69	J X 64	J X 43	94	J X 48	34	J X 27
11	22	J X 28	E S 14	E B 15	22	J X 18	J X 21	30	39	44	J X 59	77	47	J X 51	J X 51	J X 36	34	J G 24	24	22	E S 14	23	J X 24	E S 15
12	E S 15	E S 13	18	19	J X 28	J X 30	J X 40	J G 24	J X 39	G 25	J X 52	J X 38	38	G 33	48	45	43	J X 38	J X 45	J X 21	J X 25	J X 38	J X 71	J X 38
13	E S 13	J X 21	J X 27	E B 13	E	22	25	25	J X 49	J X 42	J G 34	G 33	G 33	G 34	J X 37	J X 35	42	J X 64	104	J X 94	J X 63	J X 62	J X 45	J X 27
14	J X 29	22	21	J X 20	J X 22	14	E S 15	26	31	37	G 32	44	39	J G 33	39	37	38	39	J X 33	J X 38	J X 61	23	25	24
15	J X 25	E S 15	E B 14	E B 12	E	E S 12	23	26	30	33	G	G	37	G	40	39	39	J X 36	J X 28	J X 36	23	E S 15	E S 15	J X 84
16	J X 51	J X 35	J X 40	J X 30	J X 29	J X 18	18	27	35	41	40	38	42	45	38	39	38	J X 38	J X 50	J X 32	J X 32	J X 28	J X 33	J X 34
17	J X 36	J X 30	J X 33	J X 25	J X 29	J X 40	J X 28	J X 42	J X 38	35	37	42	47	46	40	41	J X 40	J X 46	J X 37	J X 26	J X 25	J X 30	J X 21	22
18	22	E S 15	E S 15	E S 15	E B 11	E S 13	E S 15	G	G 23	G 26	G 29	G 28	G 30	G 26	G 24	G 23	32	28	22	21	E S 15	E S 15	E S 15	E S 15
19	E S 15	E S 13	E B 12	E B 11	18	18	J X 18	27	G 29	G 31	G 33	G 35	G 33	J G 35	J X 40	G 28	35	39	J X 41	J X 32	J X 19	J X 20	E S 15	23
20	E S 15	E S 15	E B 12	E B 12	E B 11	20	E S 15	27	32	40	42	G 29	41	G 28	G 31	G 26	G 22	28	22	J X 19	E S 14	E S 15	E B 15	E S 15
21	E S 15	E S 15	E B 11	E	E	E S 13	E S 14	25	33	G 27	G	G	G 30	G 29	39	38	39	35	J X 26	J X 36	J X 18	E S 15	E S 15	23
22	J X 22	E S 15	E B 12	E B 11	17	19	20	G 18	32	34	G	G 25	G 30	G 21	G 19	42	37	37	22	23	E S 15	20	E B 14	E B 12
23	E S 15	E S 15	19	14	J X 21	22	J X 18	26	33	36	37	39	G 37	43	47	45	43	34	J X 32	J X 19	J X 42	J X 31	E S 15	E S 15
24	E S 15	E S 15	E B 13	E B 13	E B 11	E B 13	E S 15	29	36	36	39	G	G	39	39	J X 52	38	J X 63	J X 27	J X 33	23	21	E S 15	22
25	E S 15	22	E	E S 14	E	E S 15	E S 15	G	32	35	38	39	G	G	G	G	G	G	E S 15	E S 15	E S 13	E S 15	E S 15	J X 20
26	E S 15	E S 15	E S 15	E B 14	E B 12	E S 15	18	29	34	38	39	G	G	G 34	G	J X 68	32	41	J X 37	J X 33	J X 26	J X 30	23	25
27	E S 13	E B 12	E B 12	E B 15	E	E	E S 15	27	36	38	43	38	40	43	45	G 32	37	30	23	J X 26	J X 25	23	23	22
28	E S 15	E S 15	J X 21	17	J X 20	E B 13	22	27	J X 35	35	G	G 25	G 30	G 31	G	G	G 25	29	20	J X 39	24	J X 25	E B 11	E S 15
29	E S 15	E S 15	E B 11	E	E	E S 15	E S 15	26	37	J X 45	45	44	42	41	38	39	J X 41	33	23	J X 18	J X 51	23	J X 25	24
30	E S 15	J X 16	J X 21	J X 24	J X 29	J X 21	E S 15	32	J X 44	39	J X 54	39	G 25	G 23	G 35	J X 37	G 15	G 19	J X 25	J X 22	E S 11	E S 15	E B 15	E S 14
31																								
	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	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	30	30	30
MED	18	E 15	16	15	16	16	18	27	35	38	39	39	38	G 38	39	39	37	38	30	J X 32	J X 25	J X 25	23	22
UQ	J X 25	J X 22	J X 21	J X 20	J X 23	21	22	29	38	42	45	44	44	43	44	49	40	J X 44	J X 50	J X 43	J X 43	J X 35	J X 30	J X 25
LQ	E S 15	E S 15	E B 13	E B 13	E B 11	E S 13	E S 15	26	32	35	G 34	G 29	G 30	G 31	G 35	36	34	32	23	J X 22	19	20	E S 15	E S 15

The Radio Research Laboratories, Japan

SEP. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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	21	20	20	E B 15	E B 12	E B 12	E S 15	28	36	36	40	43	G 38	G 37	E R 40	41	41	33	53	35	28	29	25	E
2	20	20	15	15	22	17	16	G	G	38	39	40	44	G 35	G 30	49	38	43	59	82	17	27	20	21
3	28	23	22	E	E B 13	E B 12	17	G	G	41	E R 39	E R 40	47	48	62	44	38	34	24	22	18	25	25	20
4	19	25	16	15	20	19	S	27	36	43	C	C	C	C	C	C	C	32	66	60	23	30	16	E S 15
5	15	E S 15	25	20	16	E	G	G	G	41	41	44	46	48	42	50	33	42	57	54	45	16	40	20
6	E S 15	E S 15	E S 13	E S 15	E	E B 11	G	G	39	47	47	50	53	46	43	49	35	30	22	54	31	23	21	E
7	18	17	E	15	13	E	18	G	G	39	40	40	42	34	G 33	39	26	29	22	36	23	25	E	E
8	E S 15	E S 14	E B 15	E B 11	E	13	17	G	G	G	39	43	42	E R 39	G 32	30	G 25	19	22	22	18	E	E S 15	E S 15
9	E	E S 15	E S 15	E B 14	E B 12	E S 15	16	G	32	36	G	41	E R 38	39	43	48	G	51	100	68	51	E	18	18
10	24	20	E	E	E B 14	E S 15	S	G	35	40	43	40	G 37	E G 37	37	49	47	53	45	41	28	19	E	E
11	E	22	E S 14	E B 15	E	15	16	28	37	40	50	47	40	32	46	29	25	G 19	22	E	E S 14	E	E	E S 15
12	E S 15	E S 13	E	13	25	25	32	G 20	26	G 25	46	37	E R 38	G 32	47	44	42	37	43	16	21	20	36	19
13	E S 13	E	16	E B 13	E	E	19	G	37	39	G 33	G 33	G 32	G 33	37	35	37	54	30	42	50	50	24	17
14	16	17	E	E	16	13	E S 15	G	G	G	G 30	43	E R 39	G 30	39	G	34	36	27	29	32	E	16	18
15	E	E S 15	E B 14	E B 12	E	E S 12	G	G	G	G	G	G	E R 37	G	39	38	35	31	22	26	E	E S 15	E S 15	62
16	30	27	29	22	20	E	S	G	34	G	38	37	41	44	G	37	G	33	32	30	26	E	17	E
17	25	25	28	22	25	33	24	35	25	G	G	41	46	43	G	36	G	35	30	21	E	20	19	E
18	E	E S 15	E S 15	E S 15	E B 11	E S 13	E S 15	G	G 23	G 26	G 29	G 28	G 30	G 26	G 24	G 23	G	G	22	E	E S 15	E S 15	E S 15	E S 15
19	E S 15	E S 13	E B 12	E B 11	E	E	S	G	G 28	G 30	G 32	G 35	G 32	G 34	33	G 28	33	37	38	31	16	17	E S 15	E
20	E S 15	E S 15	E B 12	E B 12	E B 11	E	E S 15	G	G	38	G	G 29	40	G 28	G 30	G 25	G 21	G	22	17	E S 14	E S 15	E B 15	E S 15
21	E S 15	E B 15	E B 11	E	E	E S 13	E S 14	G	G	G 27	G	G	G 30	G 29	G	G	37	34	G	19	E	E S 15	E S 15	E
22	16	E S 15	E B 12	E B 11	E	E	S	G 16	G	E R 34	G	G 25	G 30	G 21	G 19	41	G	34	19	E	E S 15	E	E B 14	E S 12
23	E S 15	E S 15	E	12	E	E	S	G	G	G	37	E R 39	G 37	42	46	45	39	31	30	16	E	17	E S 15	E S 15
24	E S 15	E S 15	E B 13	E B 13	E B 11	E B 13	E S 15	G	34	G	38	G	G	G	39	37	G	30	16	21	E	E	E S 15	E
25	E S 15	E	E	E S 14	E	E S 15	E S 15	G	G	35	G	39	G	G	G	G	G	G	E S 15	E S 15	E S 13	E S 15	E S 15	E
26	E S 15	E S 15	E S 15	E B 14	E B 12	E S 15	16	27	G	G	39	G	G	G 34	G	31	G	31	17	25	E	15	E	E
27	E S 13	E B 12	E B 12	E B 15	E	E	E S 15	G	G	G	42	E R 38	40	43	E R 45	G 32	36	G	17	21	17	E	E	E
28	E S 15	E S 15	15	16	17	E B 13	S	G	26	G	G	G 25	G 26	G 31	G	G	G 25	G	G	16	E	15	E B 11	E S 15
29	E S 15	E S 15	E B 11	E	E	E S 15	E S 15	G	33	43	44	42	41	40	37	37	38	27	23	15	21	E	E	E
30	E S 15	E	15	15	20	17	E S 15	28	42	35	51	38	G 25	G 23	G 24	34	G 15	G 16	22	E	E S 11	E S 15	E B 15	E S 14
31																								
	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	30	30	30	30	23	30	30	30	29	29	29	29	29	29	29	30	30	30	30	30	30	30
MED	15	E 15	E E 14	E B 14	E E 12	E E 13	15	G	G 24	34	38	38	38	G 34	U 35	37	33	32	22	22	17	15	15	E E 14
UQ	18	20	15	15	16	15	16	G 16	34	39	41	41	41	40	40	44	38	36	38	36	26	20	19	17
LQ	E S 15	E S 15	E B 11	E B 11	E	E	E S 15	G	G	G	G	U G 27	U G 28	G 29	G 24	G 29	G	19	22	16	E E 11	E	E B 14	E

The Radio Research Laboratories, Japan

SEP. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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	Es 15	Es 15	11	15	12	12	Es 15	Es 15	15	16	20	Ec 22	Ec 23	Ec 22	20	17	16	15	15	12	Es 15	Es 15	Es 14	Es 15
2	Es 15	Es 13	13	13	12	12	Es 15	16	15	15	19	Ec 21	Ec 25	Ec 21	19	16	14	14	11	Es 15	Es 15	Es 15	Es 15	Es 12
3	Es 15	Es 15	Es 15	13	13	12	Es 15	16	17	17	20	Ec 21	Ec 24	Ec 21	Ec 21	20	17	16	12	13	Es 15	Es 15	Es 13	Es 15
4	Es 14	Es 15	Es 15	12	12	12	Es 15	12	15	Ec 19	C	C	C	C	C	C	C	14	11	Es 14	Es 15	Es 15	Es 14	Es 15
5	Es 14	Es 15	13	12	13	13	Es 15	12	14	15	20	20	20	20	18	17	16	11	11	Es 15	Es 15	Es 15	Es 13	Es 15
6	Es 15	Es 15	Es 13	Es 15	Es 15	11	Es 15	16	15	16	15	18	19	20	19	15	14	15	15	Es 14	Es 13	Es 13	Es 13	Es 15
7	Es 15	Es 13	12	E	E	Es 13	Es 13	14	15	15	15	18	19	18	18	17	15	11	11	Es 15	E	Es 12	Es 15	Es 13
8	Es 15	Es 14	15	11	E	12	Es 14	13	14	15	16	19	19	17	16	16	15	12	Es 15	Es 15	Es 15	Es 15	Es 15	Es 15
9	Es 15	Es 15	Es 15	14	12	Es 15	Es 13	Es 15	15	15	17	18	19	17	17	17	15	12	13	Es 15	Es 15	Es 14	Es 15	Es 15
10	Es 15	Es 13	Es 15	Es 15	14	Es 15	Es 15	Es 15	15	16	16	17	19	18	16	16	15	11	11	Es 14	Es 15	Es 15	Es 14	Es 15
11	Es 14	Es 13	Es 14	15	12	Es 13	Es 15	15	14	16	18	18	17	17	18	15	14	11	15	Es 15	Es 14	Es 15	Es 15	Es 15
12	Es 15	Es 13	14	E	E	11	Es 13	13	14	15	17	16	18	19	16	15	15	11	E	Es 12	Es 14	Es 13	Es 15	Es 13
13	Es 13	Es 15	15	13	E	Es 14	Es 13	11	14	15	16	24	19	19	17	17	15	13	15	Es 14	Es 15	Es 14	Es 14	Es 14
14	Es 15	Es 15	12	12	E	Es 11	Es 15	13	14	14	16	16	19	16	15	16	13	11	E	Es 15	Es 14	Es 15	Es 14	Es 13
15	Es 15	Es 15	14	12	E	Es 12	Es 15	15	13	16	15	17	17	26	16	15	15	11	13	Es 14	Es 14	Es 15	Es 15	Es 14
16	Es 15	Es 13	13	12	12	Es 13	Es 15	Es 15	15	15	16	17	16	15	16	15	14	12	Es 13	15	Es 14	Es 15	Es 13	Es 15
17	Es 15	Es 15	11	12	E	12	Es 14	14	14	14	16	16	16	19	19	15	14	12	14	Es 15	Es 15	Es 15	Es 15	Es 15
18	Es 15	Es 15	Es 15	Es 15	11	Es 13	Es 15	Es 15	15	16	15	16	23	16	16	15	12	13	Es 15	Es 15	Es 15	Es 15	Es 15	Es 15
19	Es 15	Es 13	12	11	12	Es 13	Es 15	Es 13	14	15	16	19	18	16	18	17	15	12	Es 15	Es 15	Es 12	Es 15	Es 15	Es 15
20	Es 15	Es 15	12	12	11	11	Es 15	Es 15	15	14	19	18	18	17	16	15	13	11	E	Es 14	Es 14	Es 15	15	Es 15
21	Es 15	15	11	E	E	Es 13	Es 14	Es 14	11	15	16	18	16	18	16	16	15	11	Es 15	Es 15	Es 15	Es 15	Es 15	Es 15
22	Es 15	Es 15	12	11	E	Es 15	Es 15	14	15	14	16	16	15	15	15	15	15	15	Es 12	Es 15	Es 15	Es 15	14	Es 12
23	Es 15	Es 15	14	E	E	Es 15	Es 15	Es 14	15	17	16	22	19	17	17	16	15	11	11	Es 15	Es 15	Es 15	Es 15	Es 15
24	Es 15	Es 15	13	13	11	13	Es 15	Es 15	15	16	Ec 19	17	18	17	17	16	15	11	Es 13	Es 12	Es 11	Es 15	Es 15	Es 15
25	Es 15	Es 15	E	Es 14	E	Es 15	Es 15	15	15	16	16	16	17	17	18	18	15	12	Es 15	Es 15	Es 13	Es 15	Es 15	Es 13
26	Es 15	Es 15	Es 15	14	12	Es 15	11	Es 15	16	16	16	18	Ec 24	17	15	15	11	12	14	Es 15	Es 15	Es 14	Es 15	Es 15
27	Es 13	12	12	15	E	E	Es 15	14	16	17	17	21	19	25	32	20	15	15	15	11	Es 15	17	Es 15	Es 15
28	Es 15	Es 15	11	E	13	13	Es 15	Es 14	15	14	17	18	18	Ec 20	Ec 19	15	15	11	14	Es 15	Es 15	Es 13	11	Es 15
29	Es 15	Es 15	11	E	E	Es 15	Es 15	Es 13	14	15	17	16	18	18	19	17	15	12	Es 13	Es 12	Es 15	Es 15	Es 15	Es 15
30	Es 15	Es 15	12	12	E	12	Es 15	Es 15	15	15	15	19	17	16	15	15	11	11	Es 14	Es 15	Es 11	Es 15	15	Es 14
31																								
	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	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	30	30	30
MED	Es 15	Es 15	12	12	E 11	Es 13	Es 15	13	15	15	16	18	18	18	17	16	15	12	12	Es 15	Es 15	Es 15	Es 15	Es 15
UQ	Es 15	Es 15	15	14	12	Es 14	Es 15	Es 15	15	16	17	18	19	19	18	17	15	13	15	Es 15	Es 15	Es 15	Es 15	Es 15
LQ	Es 15	Es 13	12	11	E	12	Es 14	12	14	15	16	17	17	17	16	15	14	11	11	Es 14	Es 14	Es 15	Es 14	Es 14

SEP. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

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

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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	I 260	I 280	290	285	290	265	330	355	335	320	300	275	265	280	280	275	275	295	305	325	310	S	S	250
2	270	280	285	290	320	305	310	330	340	325	295	280	290	275	280	275	275	290	300	315	310	275	270	275
3	I 270	I 280	280	295	305	295	315	335	350	350	305	285	280	275	275	285	285	285	300	300	290	260	270	265
4	270	290	280	295	285	285	I 310	I 340	335	320	C	C	C	C	C	C	C	300	305	290	260	270	275	I 270
5	S	S	S	I 320	320	290	295	325	335	315	280	285	295	285	270	265	285	305	310	315	305	I 280	I 270	275
6	270	255	245	270	310	295	285	300	305	280	260	280	295	305	275	285	290	295	305	310	310	230	250	255
7	265	285	300	305	325	255	295	325	360	320	280	290	300	275	280	280	285	295	305	I 310	I 300	295	285	265
8	260	265	290	275	280	275	305	325	340	330	310	290	295	285	285	275	285	305	325	315	285	280	285	265
9	275	280	280	335	355	285	310	325	360	345	295	285	275	290	295	290	295	300	315	I 320	320	270	275	270
10	260	265	265	295	295	340	315	350	345	330	285	285	270	285	285	275	295	300	320	320	300	280	285	275
11	265	275	265	275	275	275	285	345	345	335	295	275	275	275	290	295	290	300	300	310	335	265	265	275
12	265	280	295	315	315	285	285	325	350	325	300	290	280	285	300	290	280	310	330	315	315	265	265	260
13	280	290	285	305	290	260	285	340	340	320	320	305	305	285	295	295	300	305	310	315	295	285	295	280
14	290	280	295	295	315	285	295	360	350	325	285	285	290	295	285	280	285	305	320	315	310	260	280	280
15	280	275	275	295	315	290	315	330	330	315	315	280	280	285	310	310	295	290	320	310	300	270	270	I 270
16	275	270	270	290	310	335	335	340	335	320	285	275	285	285	285	285	295	295	315	325	300	265	265	260
17	275	295	295	295	305	300	325	335	335	340	305	310	295	285	285	285	290	305	325	330	305	265	280	275
18	270	300	275	295	335	305	295	340	365	335	315	295	290	290	280	290	290	310	335	340	285	260	255	265
19	265	260	285	320	250	245	305	335	325	330	320	310	295	285	285	295	295	310	325	335	255	260	280	280
20	290	280	295	330	305	310	310	330	335	320	305	305	315	280	295	290	285	295	305	335	320	265	275	275
21	265	260	270	275	295	285	315	355	340	315	320	300	305	290	295	300	300	310	325	305	285	285	290	285
22	295	290	280	295	325	295	345	330	340	315	310	295	300	280	285	290	290	295	320	310	300	270	270	265
23	275	305	300	300	305	295	305	345	320	320	300	295	280	290	290	290	295	305	320	325	305	300	285	285
24	280	265	270	295	325	290	300	330	330	310	300	290	275	285	290	295	295	305	310	305	290	255	265	260
25	275	295	300	300	300	275	290	340	320	320	305	285	285	295	295	295	305	305	320	340	310	265	275	285
26	275	285	285	270	290	300	325	355	345	320	305	290	280	295	280	280	295	310	315	300	285	265	275	275
27	270	275	285	310	345	285	295	335	315	340	320	280	290	295	290	285	290	300	315	I 310	I 290	I 285	I 285	275
28	280	275	S	305	325	290	300	350	335	355	310	310	I 295	295	275	280	280	295	295	310	280	S	S	S
29	S	S	295	295	260	245	285	345	325	315	315	310	285	275	280	285	305	310	315	300	295	275	285	290
30	315	245	225	255	320	280	280	310	320	315	270	295	290	270	275	295	295	280	300	290	280	295	300	270
31																								
	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	28	28	28	30	30	30	30	30	30	30	29	29	29	29	29	29	29	30	30	30	30	28	28	29
MED	272	280	285	295	308	288	305	335	335	320	305	290	290	285	285	285	290	300	315	312	300	270	275	275
UQ	280	288	295	305	320	295	315	345	345	330	310	295	295	290	290	295	295	305	320	325	310	280	285	275
LQ	265	268	272	290	290	275	295	330	330	315	295	285	280	280	280	280	285	295	305	310	285	265	270	265

SEP. 1969 | M(3000)F2 (0.01)

IONOSPHERIC DATA

SEP. 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 MHz to 20 MHz 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 325	375	L	L 345	L	U L 330	A				
2								405	L	L	L	L 345	U L 350	U L 335	L 335	A	L	A	A					
3									L	L	L	L	L 345	360	A	L 335	L	L	L					
4									L	L	C	C	C	C	C	C	C	L	A					
5									L	L	L	365	L	A	L	L	L	L	A					
6									L	L	L	L	L	U L 350	L	L	L	L	L					
7									L	L	L	L 355	370	L 380	L	L	L	L	L					
8									L	L	L	U L 350	U L 355	U L 355	L 330	L	L	L						
9								L	L	L	L	L	L	L	L	L	L	A						
10								L	L	L	L	L	L	L	L	A	L	A	A					
11								L	L	L	A	L	L	U L 355	L 350	L	L	L	L					
12									L	L	L	L	L	L	L	L	L	L	A					
13								L	L	L	L	L	L 370	L 370	L 345	L	385	A	A					
14									L	L	L	L	L	U L 345	U L 345	U L 340	L	L	A					
15									L	L	U L 395	425	U L 355	L 350	U L 350	U L 360	L	L						
16									L	L	L	L	L	L	L 340	C	L	L	A					
17									L	U L 365	L 400	L 385	L	L 355	U L 340	L	U L 335	L						
18										L	L	L	L	L 375	L	L 335	L	L						
19									L	L	U L 380	L 365	L	L	L	L 350	L	L						
20									L	L 395	L 360	L	L	L	L	L	L	L	L					
21									L	L	U L 370	L	L	L 340	U L 355	L	L	L						
22									L	L	L	L	L	L	L	L	L	L						
23									L	L	L	L	L	L 345	L 350	L	L	L						
24									L	L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L 345	L	L	U L 400	L						
26										L	L 375	L	L	U L 325	L	L	L	L						
27									L	L	L	L	L 365	400	L	L	L	L						
28										L	L	L	L	L	L	L	L	L						
29										L	L	L	L	L	L	L	L							
30										L	L	L	L	L	L	L	L							
31																								
	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		2	6	7	8	17	10	6	3	1						
MED								405		L 380	L 378	L 365	L 355	L 355	L 345	L 342	U L 385	U L 330						
UQ											U L 395	375	L 368	L 370	L 350	L 350	392							
LQ											L 370	L 352	L 348	L 345	L 340	L 335	360							

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SEP. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

SEP. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz 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	290	340	355	330	300	330	320	300	270					
2								240	255	255	305	340	305	340	340	335	305	290	275					
3									245	240	280	330	325	330	355	330	300	280	255					
4									235	250	C	C	C	C	C	C	C	275	250					
5									240	240	350	325	300	295	350	350	305	280	260					
6									240	320	300	310	290	285	330	310	290	280	250					
7									230	250	345	295	300	290	305	310	275	275	250					
8									225	250	280	300	305	300	315	305	310	280						
9								250	220	245	250	330	300	310	305	300	300	300						
10								230	230	250	310	300	300	290	305	305	285	275	250					
11								230	230	255	250	330	315	325	305	290	280	270	260					
12									240	240	275	300	305	300	280	290	300	270	230					
13								240	230	250	270	280	290	290	290	305	270	280	255					
14									225	240	300	290	300	285	290	300	275	270	255					
15									230	250	250	250	305	305	285	255	255	280						
16									250	235	280	295	310	305	305	280	280	275	255					
17									250	255	250	280	280	305	305	300	300	275						
18										240	270	290	280	280	290	295	280	275						
19									245	255	255	275	250	300	300	305	295	270						
20									245	250	290	280	265	320	300	300	280	280	265					
21									225	235	265	265	275	310	300	295	275	265						
22									250	240	255	255	275	325	300	300	275	270						
23									250	250	280	260	310	310	290	300	285	265						
24									245	245	270	300	300	310	295	280	280	260						
25									250	255	255	295	300	300	295	265	250	255						
26										250	265	265	315	280	295	295	280	255						
27									250	240	265	320	300	270	295	300	275	270						
28										255	290	290	300	280	300	305	275	265						
29										255	260	255	255	275	310	275	275							
30										255	305	290	250	320	320	280	255							
31																								
	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								5	24	30	29	29	29	29	29	29	29	28	14					
MED								240	240	250	275	295	300	300	300	300	280	275	255					
UQ								240	250	255	290	310	305	310	305	305	300	280	260					
LQ								230	230	240	260	280	280	290	295	290	275	270	250					

SEP. 1969 | H'F2 (KM)

IONOSPHERIC DATA

SEP. 1969 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12·1' N Long. 130° 37·1' E Sweep 1 MHz to 20 MHz 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	300	285	270	250	285	260	240	240	215	220	215	200H	190H	200	195H	225	E A 250	250	A	250	230	250	300	300
2	300	290	275	260	245	210	255	240	220	205H	205H	200	210	215	220	A	225	A	A	260	235	240	260	290
3	320	300	300	255	230	200	250	235	230	235	205H	200H	E A 250	E A 250	A	E A 240	250	E A 240	250	235	240	275	295	305
4	300	290	265	265	260	285	255	240	225	235	C	C	C	C	C	C	C	255	I A 250	250	240	255	250	245
5	250	280	255	230	210	230	250	230	225	225	200H	200	E A 250	E A 250	240H	I A 255	220	I A 245	I A 260	255	250	240	300	275
6	295H	315	330	290	225	230	270	250	240	240H	E A 250	290	I A 255	230	230H	I A 220	230	250	250	240	220	240H	325	300
7	290	270	245	225	230	255	275	240	230	215	205H	200	230	220	225	220H	225	250	250	240	240	235	230	260
8	300	310	280	250	260	280	255	230	220	205H	E A 220	215	205	215	220	220	235H	245	250	230	205	260	260	300
9	295	280	285	235	215	355	255	235	230	205	205	200H	215	215	E A 250	A	235H	A	E A 305	250	250	210	300	300
10	340	320	315	275	255	225	225	220	215	225	230H	205	195H	205	230	A	A	A	A	240	230	240	245	260
11	255	300	300	290	230	280	255	235	225	230	A	I A 200	205	200	I A 205	225H	225	240	255	225	205	225	290	290
12	290	280	250	210	250	E A 300	E A 305	245	220	200	250	195H	205	220	I A 260	I A 255	I A 255	I A 250	I A 235	225	210	275	350	E A 340
13	280	250	265	245	225	275	275	230	230	220	200	200H	200	200H	205	230	230	I A 235	I A 240	245	250	300	270	265
14	250	275	245	245	240	245	255	225	215	205	200H	220	200H	210	205	225	230	250	I A 250	240	225	225	290	280
15	270	280	290	250	210	200	245	230	225	215	205	200	215	220	225	230	240	245	255	240	225	275	265	A
16	300	310	330	285	250	220	210	210	240	215	200H	200H	225H	235	215	230H	230H	260	I A 250	230	230	230	295	300
17	290	260	250	250	230	300	240	210	225	215	205	200	E A 250	220	200H	245	225	E A 260	250	225	210	280	290	295
18	300	250	290	255	215	240	275	240	230	215	210	200H	190H	200	195H	220	250	250	240	210	200	250	290	300
19	305	290	265	220	270	330	255	225	230	225	215	205	190H	200H	195H	230	245	E A 270	250	220	200H	300	300	260
20	265	260	255	225	225	245	245	225	230	220	215	200H	200H	210H	200H	200H	225	235	260	230	200	260	265	280
21	295	300	295	250	225	250	250	215	220	210	205	200H	225	210	205	220	240	255	250	235	250	250	250	275
22	270	260	265	250	230	220	255	220	230	225	210	200	195H	200H	205H	245	230H	250	245	225	215	245	275	280
23	280	245	245	225	200	250	250	225	225	215	205H	220	210	215	E A 250	E A 255	250	250	250	220	210	230	250	260
24	275	305	300	255	230	260	260	220	230	230	205	200H	200H	200H	225	240H	230H	I A 240	245	225	205	230	275	290
25	270	250	230	240	210	260	275	230	220	205	210	205H	210H	205	205H	225	220	240	250	220	205	290	300	290
26	270	265	280	285	260	240	235	215	230	225	210H	200	225	205H	205H	225H	230H	250	230	230	205	250	255	270
27	280	270	255	225	210	225	255	230	230	225	225	205H	215	230	250	215	250	250	250	225	235	250	250	250
28	265	265	255	250	205	250	265	230	230	205H	205H	200H	210H	215	205H	205H	245	245	245	225	230	355	265	300
29	305	250	230	215	190H	335	290	215	230	E A 250	240	225	215	205	205	250	250	250	250	255	250	280	255	240
30	245	350	405	350	240	300	280	240	240	240	265	225	210	215H	210H	230H	240	240	245	250	255	240	245	220
31																								
	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	30	30	30	30	30	30	30	30	28	29	29	29	28	26	28	27	27	30	30	30	30	29
MED	290	280	268	250	230	250	255	230	230	219	206	200	208	212	206	226	231	250	250	232	228	250	272	280
UQ	300	300	295	260	250	280	268	240	230	225	216	205	220	218	226	235	246	250	250	245	240	275	295	300
LQ	270	260	255	230	215	230	250	220	220	210	205H	200H	200H	205	205H	220	228	242	245	225	205	240	255	260

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SEP. 1969 | H'F (KM)

IONOSPHERIC DATA

SEP. 1969 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12·1' N. Long. 130° 37·1' E Sweep 1 MHz to 20 MHz 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	100	100	100	B	B	B	S	125	115	120	115	110	105	105	105	105	105	130	115	105	105	105	100	100
2	100	100	100	100	100	100	100	135	125	120	115	105	105	100	100	150	145	125	115	110	105	105	105	100
3	100	100	100	100	B	B	140	130	G	115	120	125	115	115	110	115	120	110	105	105	105	100	100	100
4	100	100	100	100	100	100	105	120	115	110	C	C	C	C	C	C	C	105	105	100	100	100	100	S
5	95	S	100	100	100	100	100	130	125	120	110	110	105	105	105	105	105	115	105	105	100	100	100	100
6	S	S	S	S	100	B	100	140	120	110	110	105	105	105	110	110	110	145	110	105	100	100	100	100
7	100	100	100	100	100	100	100	130	120	110	105	100	100	100	100	100	100	100	100	100	100	95	95	95
8	S	S	B	B	E	100	100	G	130	125	115	115	110	105	105	100	100	100	140	100	95	100	S	S
9	100	S	S	B	B	S	125	105	120	125	125	100	125	120	125	120	155	120	105	105	105	105	105	100
10	100	100	100	100	B	S	105	120	120	115	110	110	100	100	100	130	125	115	110	105	105	105	100	100
11	100	95	S	B	100	100	100	120	115	110	105	100	100	100	100	100	100	100	120	100	S	100	100	S
12	S	S	105	100	100	100	100	100	100	105	100	100	140	100	145	130	125	120	105	100	95	100	105	100
13	S	100	100	B	E	100	115	115	105	100	100	100	100	100	100	100	120	110	105	105	100	100	100	100
14	100	95	100	100	100	100	S	150	140	130	100	140	150	100	145	150	125	110	105	100	100	100	100	95
15	95	S	B	B	E	S	100	150	115	120	G	G	145	G	130	125	115	105	105	105	105	S	S	105
16	105	100	100	100	105	120	125	125	120	115	105	120	115	130	150	130	125	115	110	100	100	100	100	100
17	100	100	100	100	100	100	100	100	100	125	125	120	120	120	140	125	115	110	105	105	105	105	100	100
18	100	S	S	S	B	S	S	G	105	105	100	100	100	100	100	100	175	145	120	110	S	S	S	S
19	S	S	B	B	100	100	105	150	100	105	105	105	105	100	100	100	150	125	115	105	110	105	S	100
20	S	S	B	B	B	100	S	150	E G 175	125	125	100	135	100	100	100	100	155	115	95	S	S	B	S
21	S	B	B	E	E	S	S	125	115	105	G	G	105	100	145	150	125	120	100	110	110	S	S	100
22	100	S	B	B	105	105	105	100	125	125	G	100	100	100	100	130	135	120	115	110	S	100	B	S
23	S	S	100	100	100	100	100	140	130	120	115	105	105	125	120	120	120	115	105	105	105	105	S	S
24	S	S	B	B	B	B	S	140	125	130	120	G	G	125	150	120	130	110	110	105	105	100	S	100
25	S	100	E	S	E	S	S	G	140	145	135	140	G	G	G	G	G	G	S	S	S	S	S	100
26	S	S	S	B	B	S	135	145	150	140	140	G	G	105	G	105	140	130	110	105	100	100	105	105
27	S	B	B	B	E	E	S	145	130	140	120	125	130	120	105	105	125	125	110	105	105	100	100	100
28	S	S	100	100	100	B	100	155	105	160	G	100	100	100	G	G	100	150	130	105	100	100	B	S
29	S	S	B	E	E	S	S	150	125	115	115	115	115	115	115	110	110	140	120	110	105	105	105	105
30	S	115	105	105	105	105	S	130	120	125	115	130	100	100	100	100	100	100	95	95	S	S	B	S
31																								
	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	15	13	15	13	15	16	20	27	29	30	25	25	26	27	26	27	28	29	29	29	24	24	18	21
MED	100	100	100	100	100	100	100	130	120	120	115	105	105	100	105	110	120	115	110	105	105	100	100	100
UQ	100	100	100	100	100	100	110	145	125	125	120	120	120	115	130	128	128	125	115	105	105	105	105	100
LQ	100	100	100	100	100	100	100	120	115	110	105	100	100	100	100	100	105	110	105	100	100	100	100	100

SEP. 1969 | H'ES (KM)

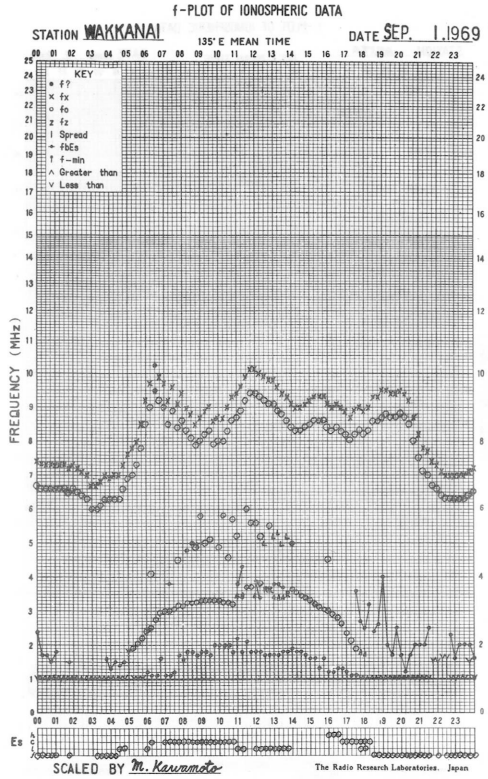
IONOSPHERIC DATA

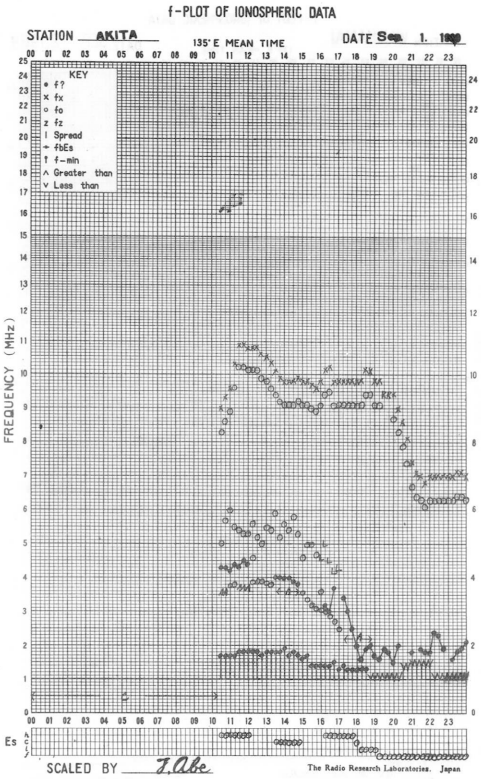
SEP. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12·1' N Long. 130° 37·1' E Sweep 1 MHz to 20 MHz 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 1	F 1					H 2	C 2	C 1	C 1	C 1	L 1	L 1	L 1	L 2	L 2	H 3	C 5	F 4	F 4	F 4	F 4	F 2
2	F 2	F 2	F 1	F 1	F 1	F 1	L 1	H 1	H 2	CL 11	CL 11	L 1	L 1	L 1	L 1	HL 12	HL 11	HL 21	CL 31	FF 52	FF 11	F 2	F 3	F 2
3	F 3	F 2	F 2	F 1			H 1	H 1		C 2	C 1	C 1	C 1	C 1	C 3	C 2	C 1	L 2	L 1	F 3	F 2	F 3	F 5	F 2
4	F 2	F 1	F 1	F 1	F 1	F 1	L 1	C 2	C 2	C 1								C 3	L 4	F 6	F 5	F 7	F 4	
5	F 3		F 3	F 3	F 1	F 1	L 1	CL 22	CL 22	CL 12	C 1	C 1	L 2	L 2	L 2	L 2	L 1	C 3	C 4	F 7	F 4	F 2	F 3	F 1
6					F 1		L 1	H 1	C 2	C 2	C 3	C 2	C 2	C 2	C 1	C 2	C 2	H 2	C 2	F 4	F 4	F 7	F 6	F 1
7	F 4	F 3	F 2	F 2	F 2	F 1	L 1	H 2	H 1	C 2	C 1	L 1	L 1	L 1	L 1	L 2	L 3	L 4	L 4	F 7	F 4	F 3	F 1	F 2
8						F 2	LH 12		H 2	H 1	C 1	C 1	C 1	L 1	L 1	L 2	L 2	L 1	HL 11	F 2	F 3	F 1		
9	F 1						H 1	LH 12	CL 22	HL 12	HL 11	LC 11	HL 11	CL 11	HL 11	C 1	H 1	C 4	L 3	F 4	F 4	F 2	F 2	F 2
10	F 2	F 2	F 1	F 1			L 1	C 2	C 3	C 2	C 1	C 1	L 1	L 1	L 1	H 2	H 2	C 6	C 7	F 7	F 3	F 3	F 2	F 1
11	F 1	F 3			F 1	F 3	L 3	H 3	C 3	C 2	C 2	L 2	L 2	L 1	L 2	L 3	L 2	L 3	C 3	F 1		F 2	F 2	
12			F 1	F 1	F 6	F 6	L 7	L 3	L 4	L 1	L 3	L 2	HL 11	L 2	HL 21	HL 22	HL 22	HL 52	CL 72	F 3	F 5	F 4	F 3	F 7
13		F 1	F 2			F 2	C 5	C 3	C 4	C 3	L 2	L 1	L 1	L 1	L 3	L 2	HL 21	C 4	L 5	F 7	F 3	F 4	F 3	FF 22
14	FF 12	F 1	F 1	F 1	F 3	F 1		H 2	HL 22	HL 12	L 2	HL 12	HL 11	L 2	HL 11	HL 11	H 2	C 5	L 7	F 6	F 5	F 1	F 1	F 2
15	F 1						L 1	HH 12	C 1	C 1			H 1		H 1	H 1	C 2	C 3	L 3	F 3	F 1			F 5
16	F 5	F 7	F 5	F 6	F 5	F 1	H 1	H 3	C 4	C 3	C 2	CL 12	CL 11	H 1	H 1	H 1	H 2	C 3	C 6	F 4	F 7	F 1	F 2	F 1
17	F 3	F 6	F 4	F 5	F 6	F 7	L 7	L 5	LH 32	H 2	HL 11	HL 11	C 1	C 1	H 1	H 1	C 1	C 3	L 3	F 3	F 1	F 2	F 2	F 1
18	F 1								L 2	L 1	L 1	L 1	L 1	L 1	L 1	L 1	HL 11	H 2	H 2	FF 11				
19					F 1	F 1	L 1	HL 22	L 2	L 1	L 1	L 2	L 1	L 2	L 3	L 2	HL 22	H 4	C 3	F 7	F 1	F 2		F 1
20						F 1		H 2	HL 11	HL 11	HL 11	L 1	HL 11	L 1	L 1	L 1	L 2	HL 21	CL 41	F 2				
21								H 2	C 2	L 1			L 1	L 1	HL 11	H 1	H 2	CL 23	LC 11	FF 12	FF 21			F 1
22	F 2				F 1	F 1	L 1	L 1	H 1	H 2		L 1	L 1	L 1	L 1	HL 11	H 2	C 4	C 3	F 1		F 1		
23			F 1	F 3	F 1	F 2	L 1	H 2	HL 11	CL 11	CL 11	L 1	L 1	H 1	CL 11	CL 11	CL 21	CL 21	CL 21	FF 11	F 1	F 3		
24								H 1	H 2	HL 11	HL 11			H 1	H 1	H 1	H 2	C 3	L 1	F 4	F 1	F 1		F 1
25		F 2							H 1	HL 11	HL 11	HL 11												F 1
26							H 2	H 2	H 1	H 1	H 1			L 1		L 1	H 1	H 5	L 2	F 4	F 1	F 3	F 1	F 1
27								HL 21	H 2	H 1	H 1	H 1	H 1	C 1	L 1	L 1	H 3	H 2	L 1	F 3	F 3	F 2	F 1	F 1
28			F 1	F 1	F 2		L 1	HL 12	L 2	HL 12		L 1	L 1	L 1			L 1	HL 22	H 1	F 5	F 2	F 2		
29								H 2	H 1	C 2	C 1	C 1	C 1	C 1	C 1	C 1	C 3	H 2	C 3	F 2	F 2	F 1	F 1	F 2
30		F 1	F 3	F 3	F 6	F 3		H 3	C 2	H 1	CL 31	H 1	L 1	L 1	L 1	L 3	L 1	L 3	L 3	F 3				
31																								
	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																								

SEP. 1969 | TYPES OF ES


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 1.1969
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Sep. 1.
KEY
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○ fo
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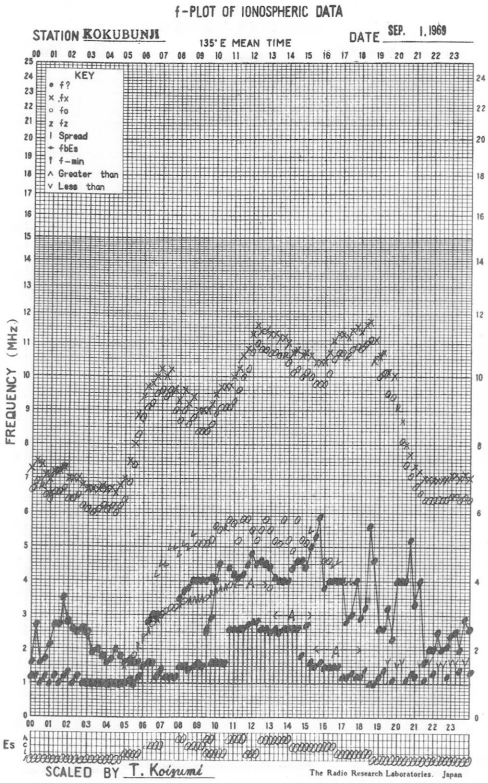
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE SEP. 1.1969
KEY
• f?
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⌁ fbEs
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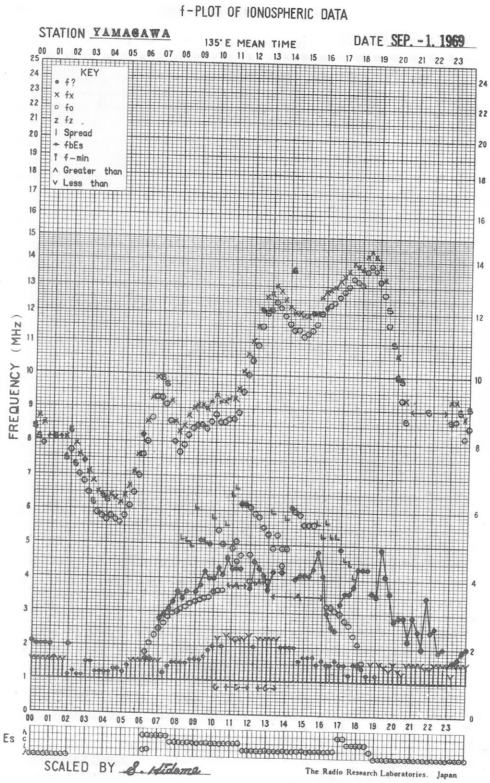
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135° E MEAN TIME
DATE SEP. 1. 1969
KEY
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↑ f-min
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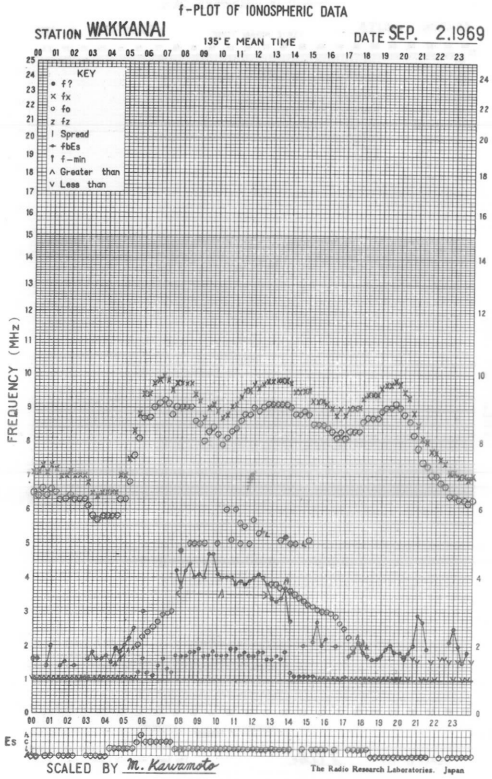
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan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DATE SEP. 2.1969
KEY
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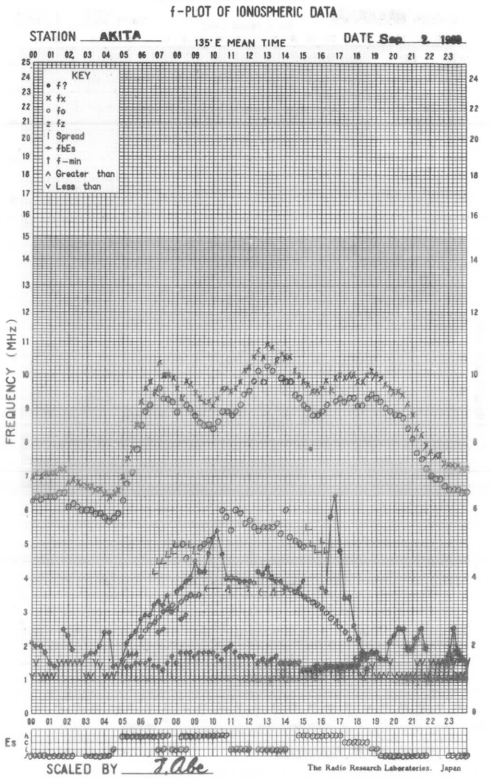
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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STATION AKITA
135° E MEAN TIME
DATE Sep. 2. 1969
KEY
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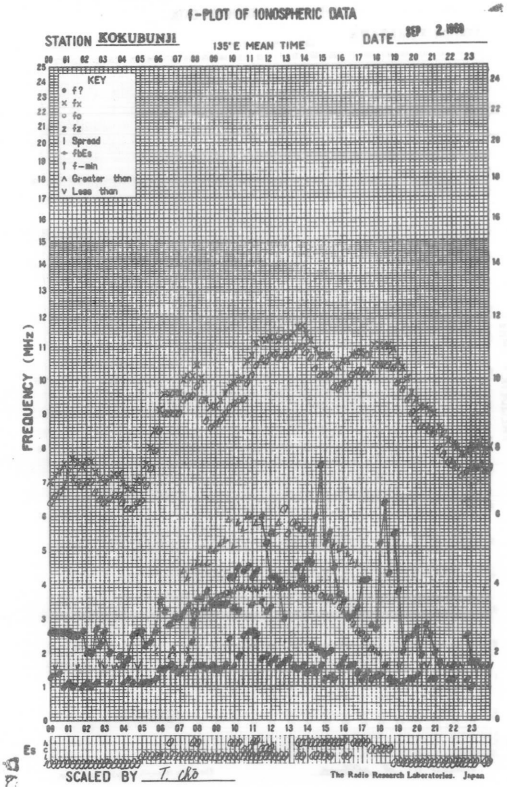
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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KEY
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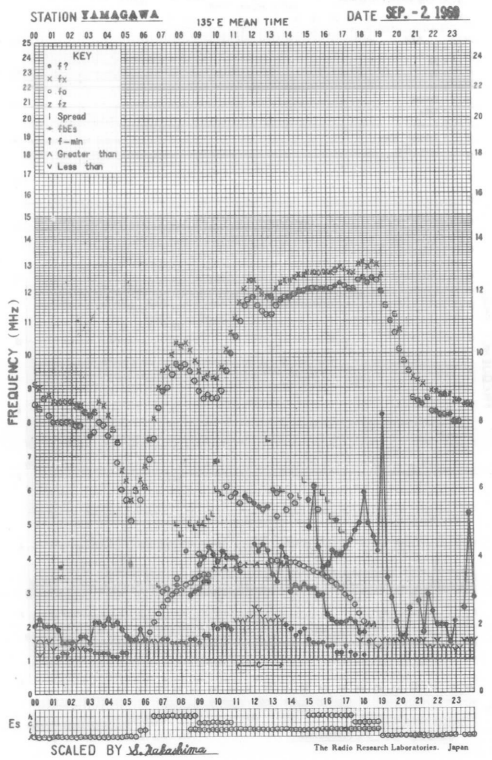
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ichi
The Radio Research Laboratories. Japan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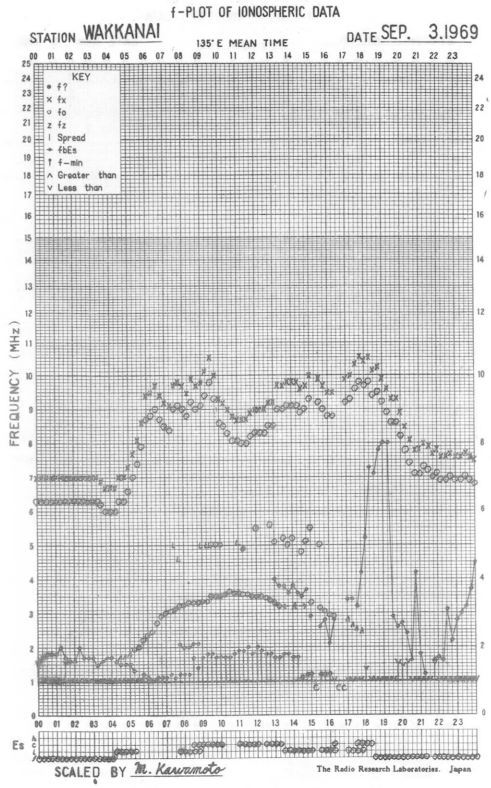
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE SEP. 3.1969
KEY
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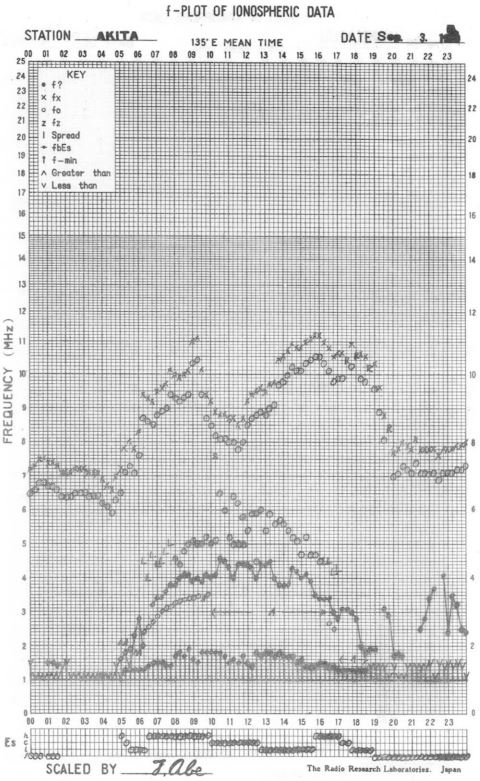
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE Sep. 3. 19
KEY
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○ fo
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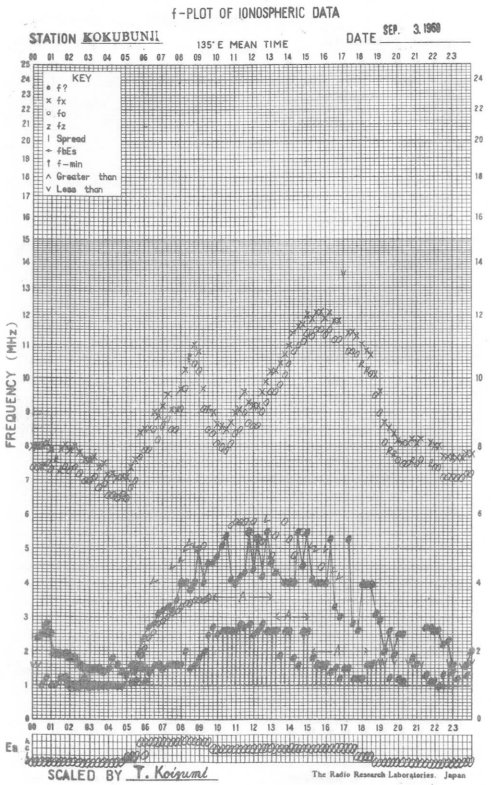
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135°E MEAN TIME
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KEY
* f?
× fx
○ fo
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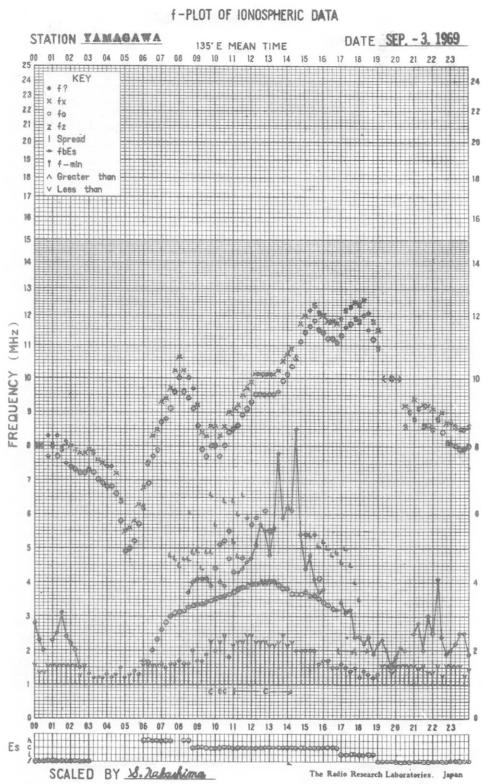
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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○ fo
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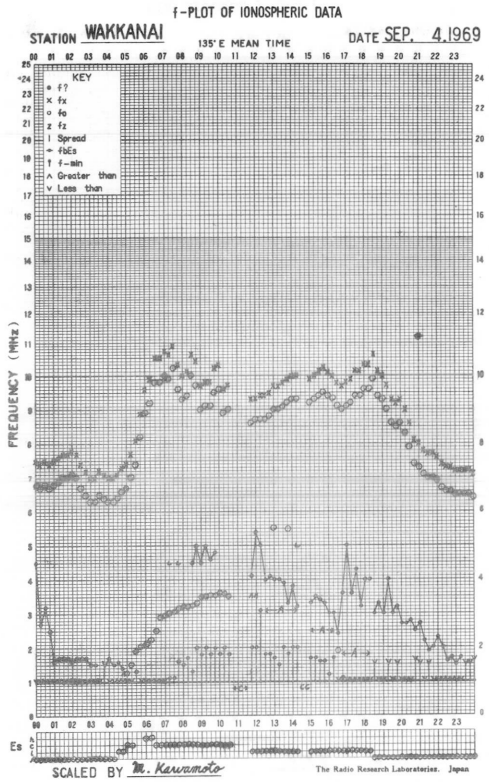
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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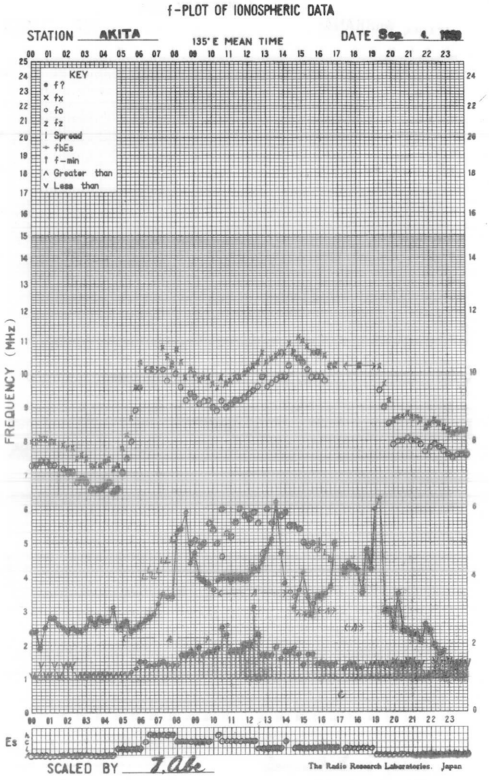
135°E MEAN TIME
DATE SEP. 4,1969
KEY
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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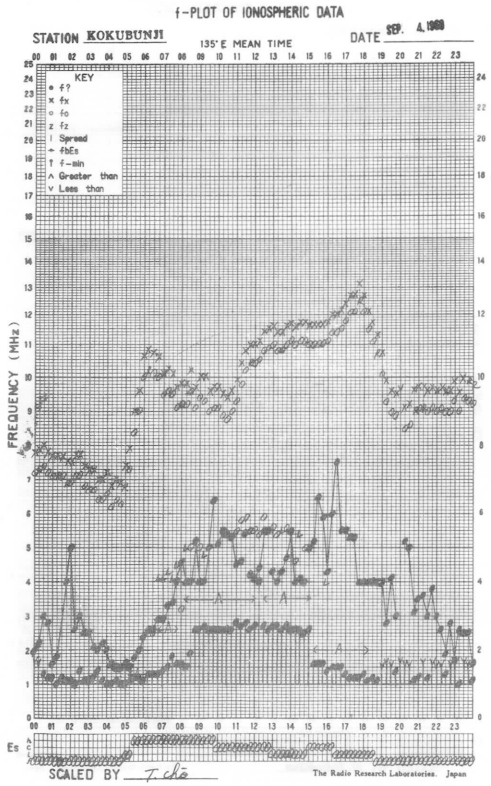
135°E MEAN TIME
DATE Sep. 4. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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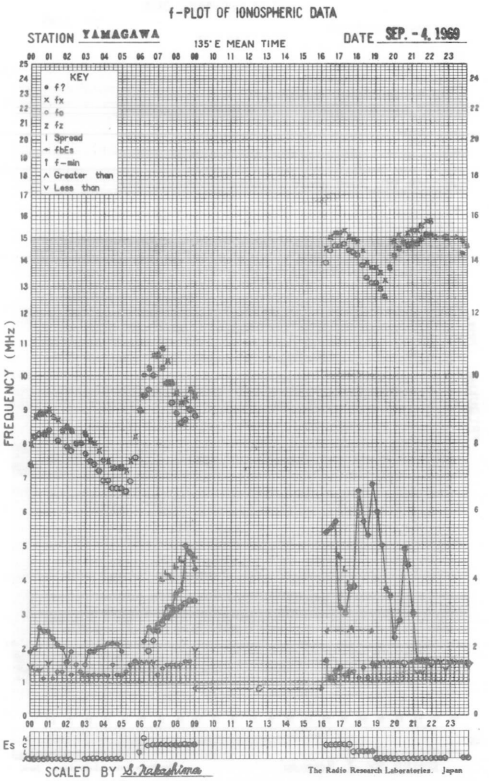
135°E MEAN TIME
DATE SEP. 4,1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Ito
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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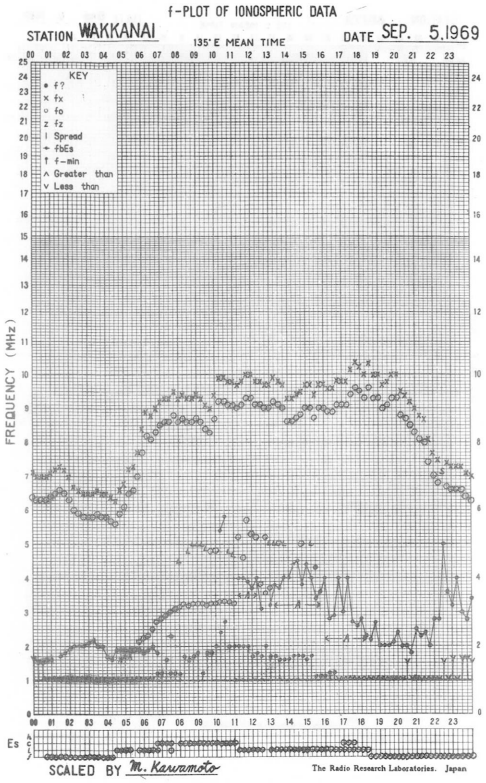
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135°E MEAN TIME
DATE SEP. 5.1969
KEY
* f?
× fx
○ fo
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| Spread
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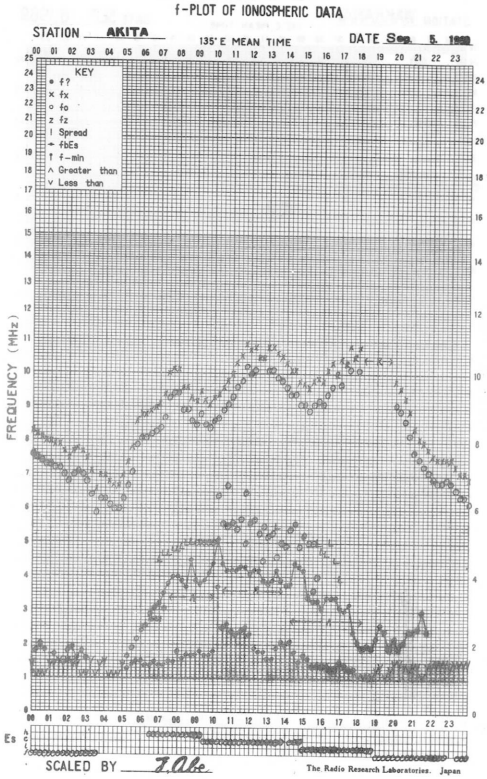
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE Sep. 5. 1969
KEY
* f?
× fx
○ fo
z fz
| Spread
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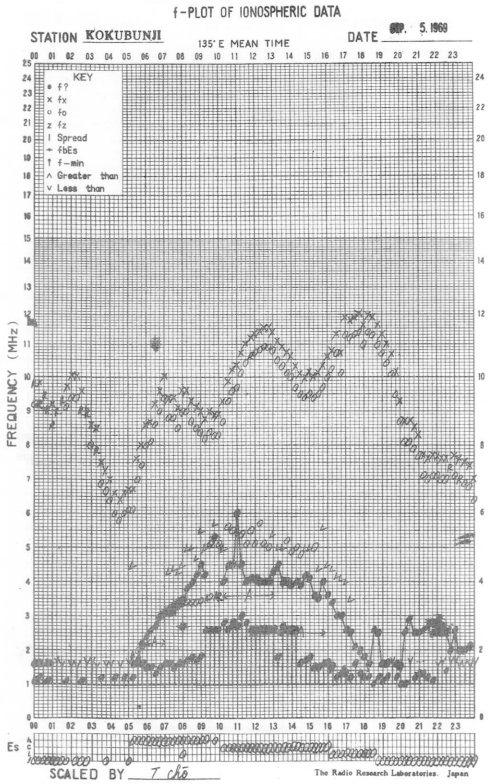
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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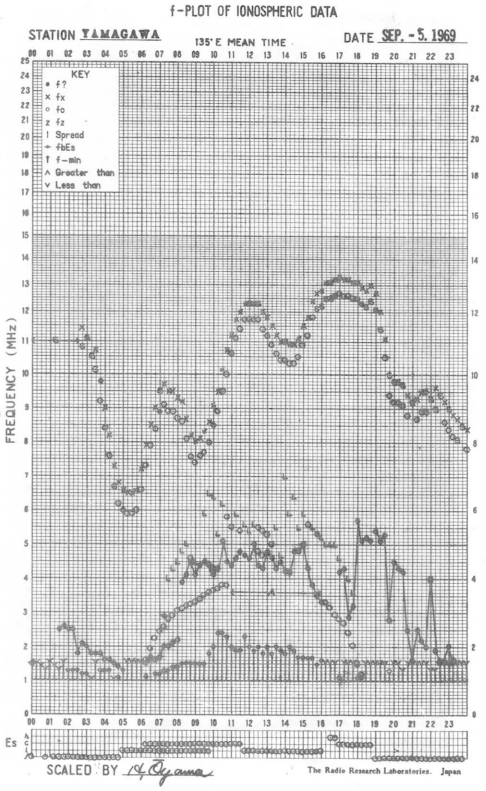
135°E MEAN TIME
DATE SEP. 5. 1969
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ito
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. - 5. 1969
KEY
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× fx
○ fo
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↑ f-min
^ Greater than
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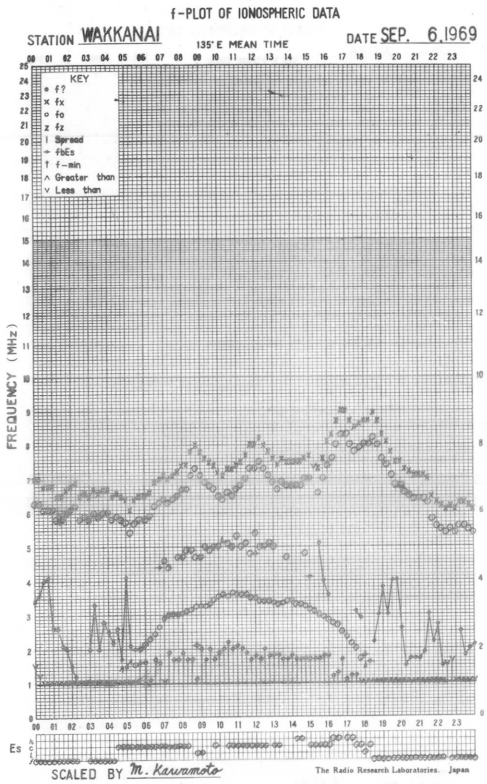
FREQUENCY (MHz)
Es
SCALED BY H. Ogawa
The Radio Research Laboratories. Japan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DATE SEP. 6, 1969
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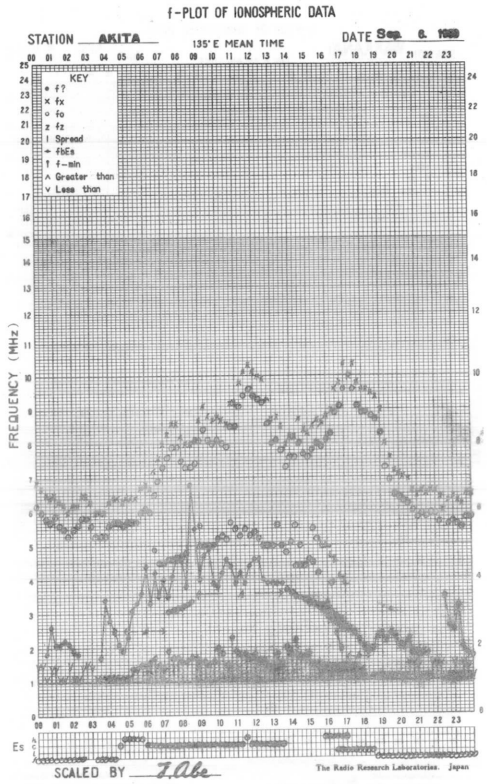
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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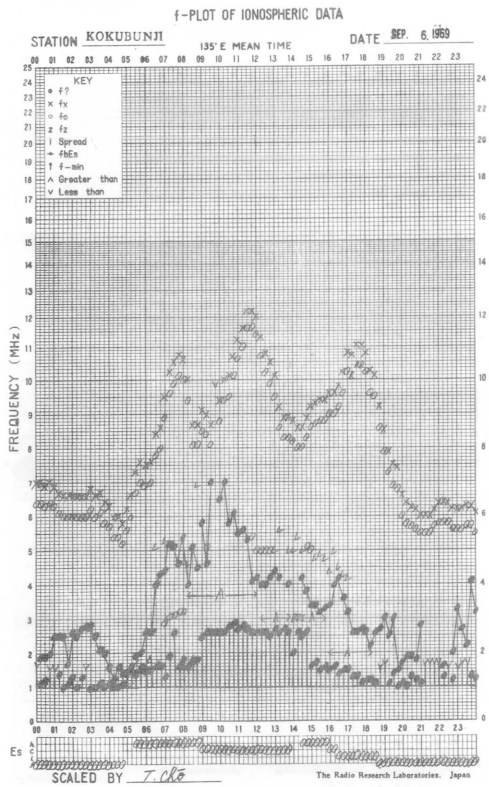
SCALED BY T. Abe
The Radio Research Laboratories. Japan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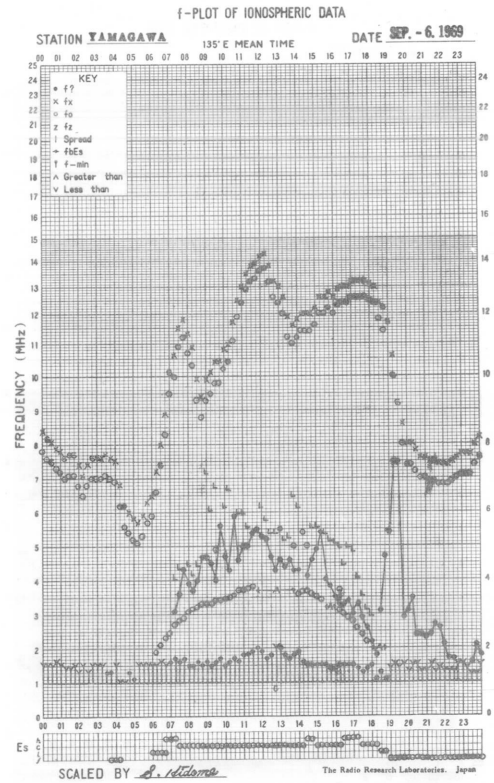
SCALED BY T. Oto
The Radio Research Laboratories. Japan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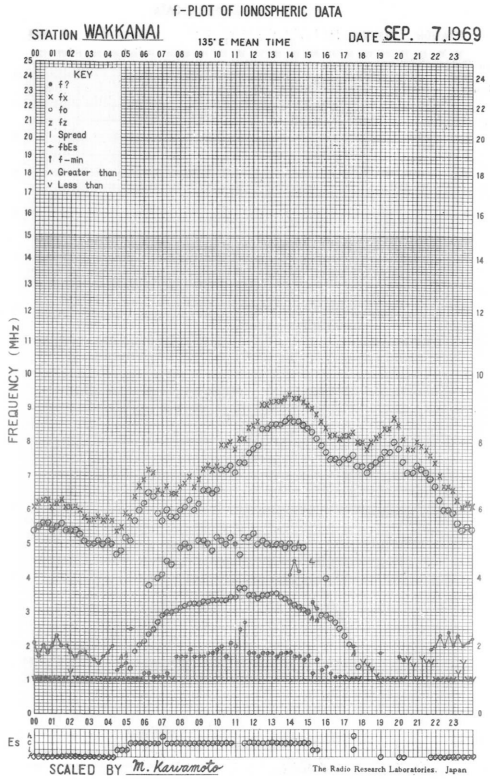
SCALED BY S. Uchioma
The Radio Research Laboratories. Japan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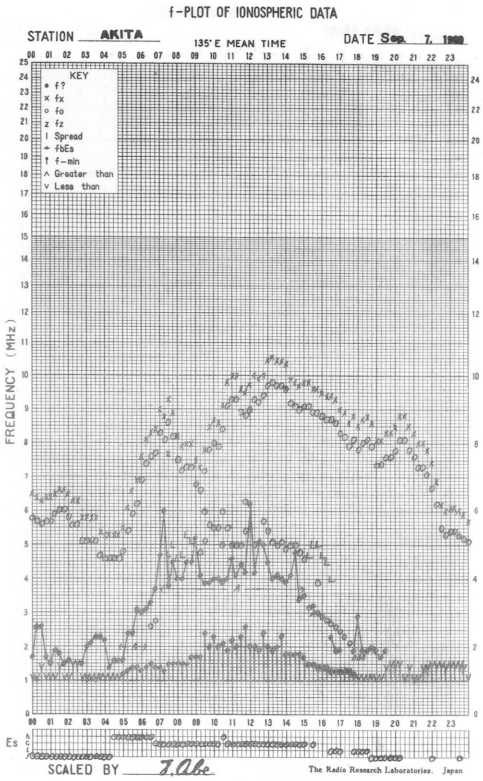
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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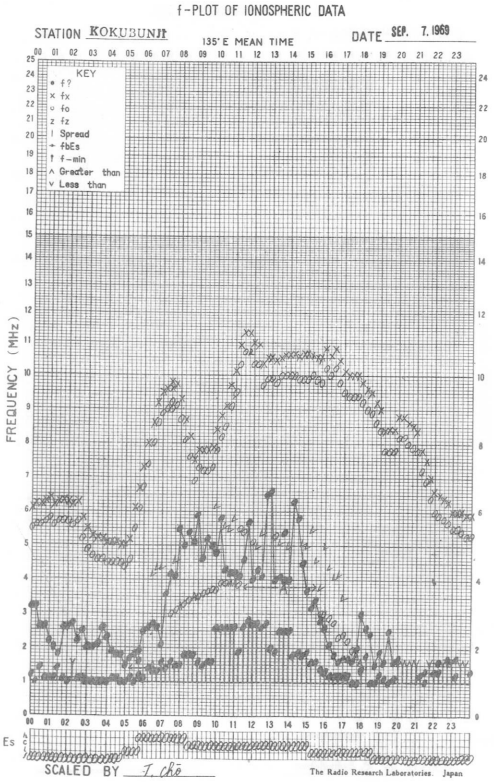
The Radio Research Laboratories. Japan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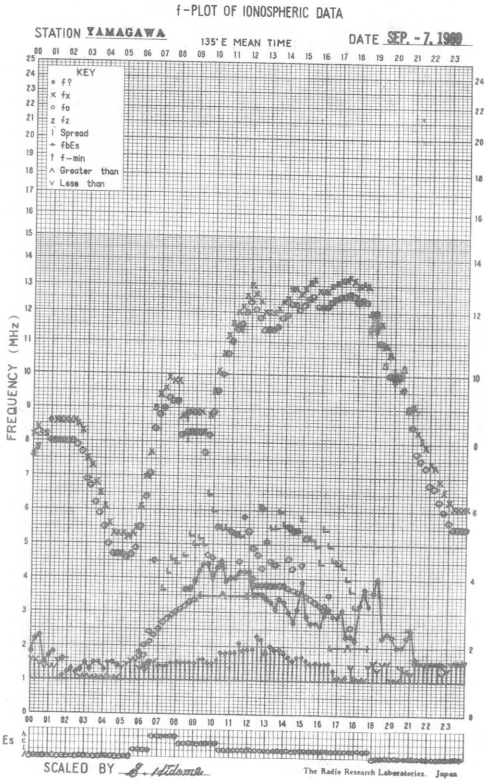
SCALED BY T. Chō
The Radio Research Laboratories. Japan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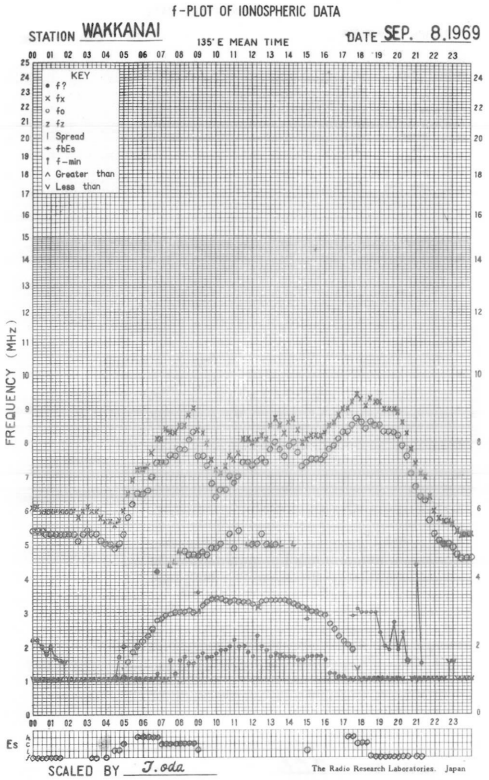
The Radio Research Laboratories. Japan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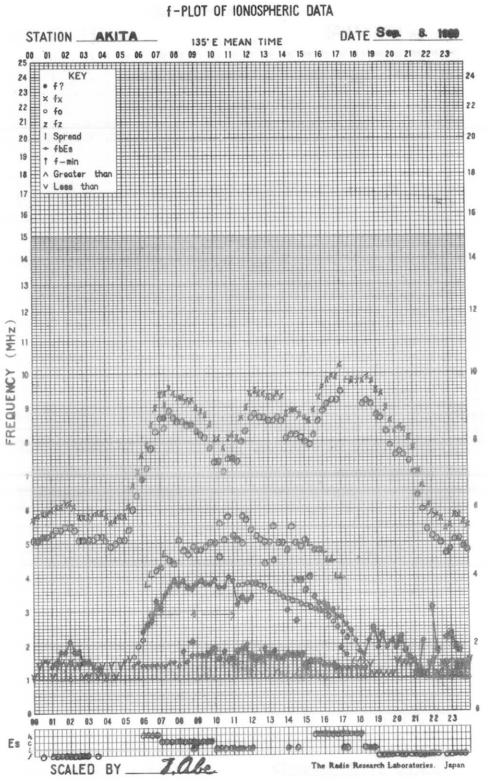
SCALED BY T. Oda
The Radio Research Laboratories. Japan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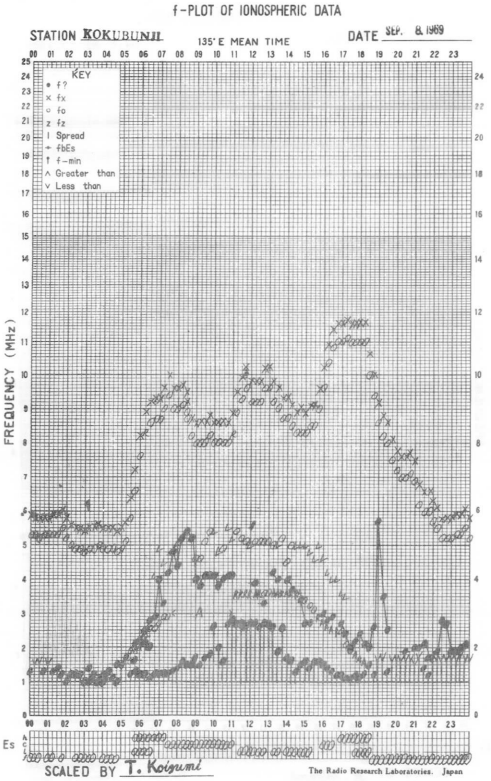
The Radio Research Laboratories. Japan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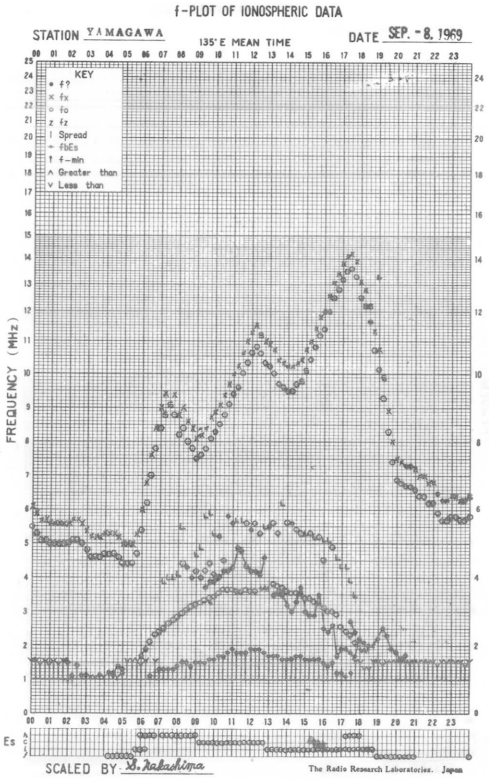
The Radio Research Laboratories. Japan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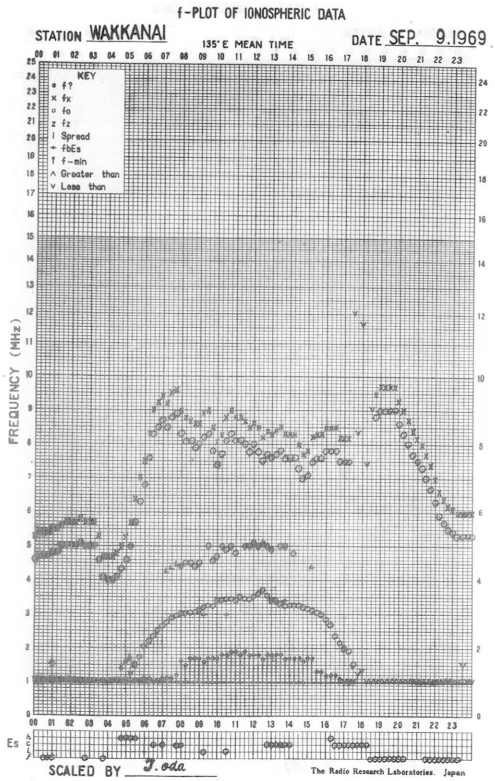
The Radio Research Laboratories. Japan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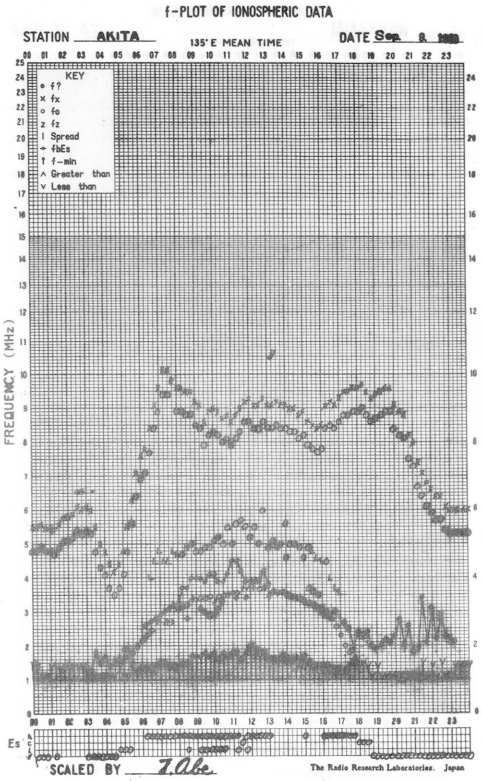
SCALED BY T. oda
The Radio Research Laboratories. Japan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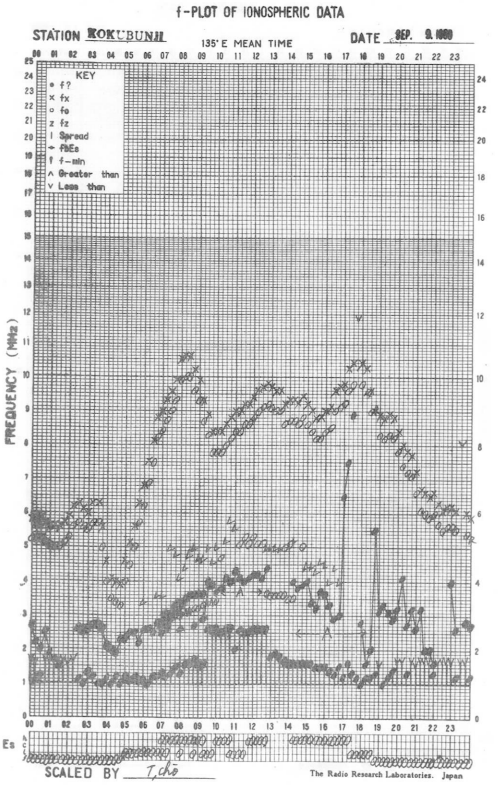
The Radio Research Laboratories. Japan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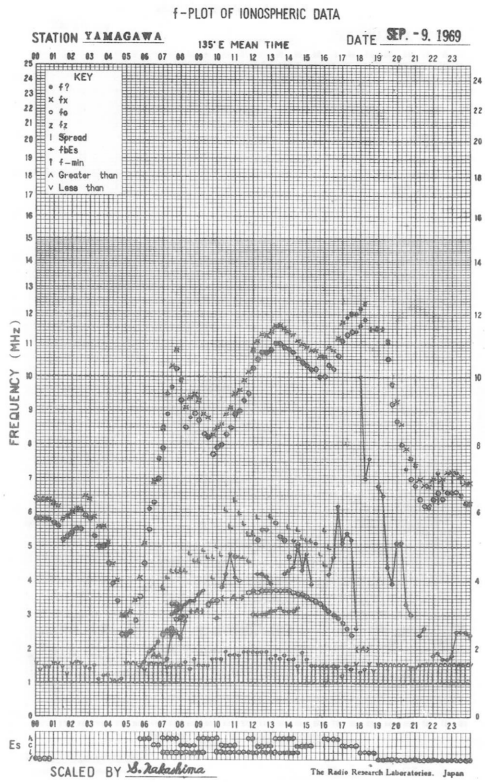
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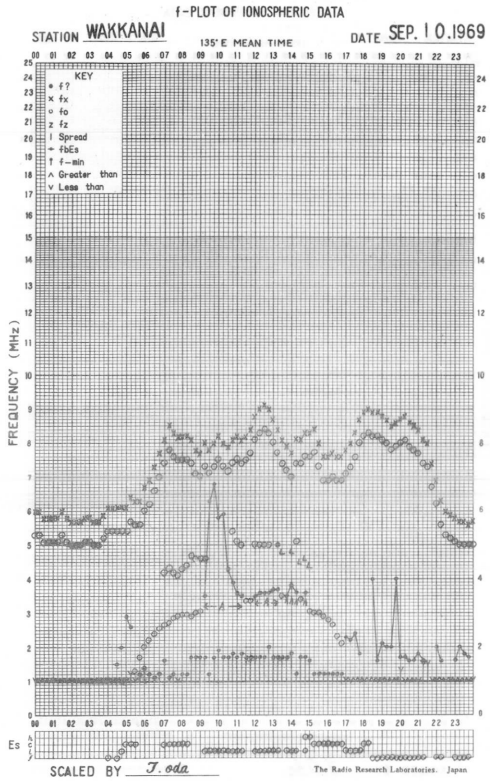
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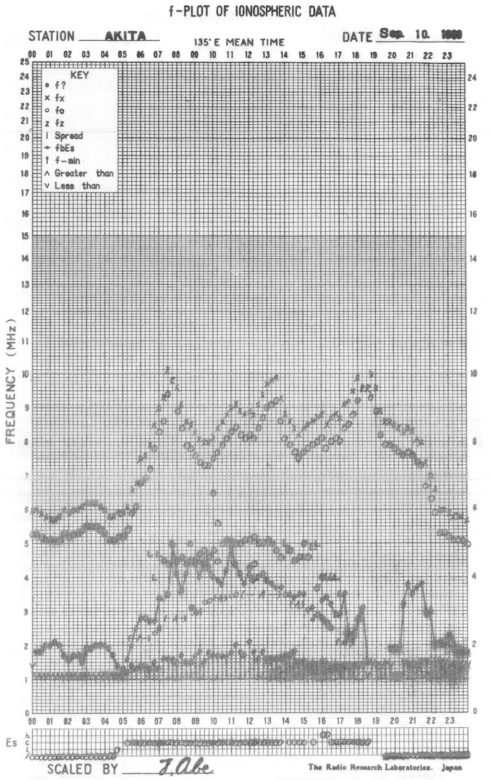
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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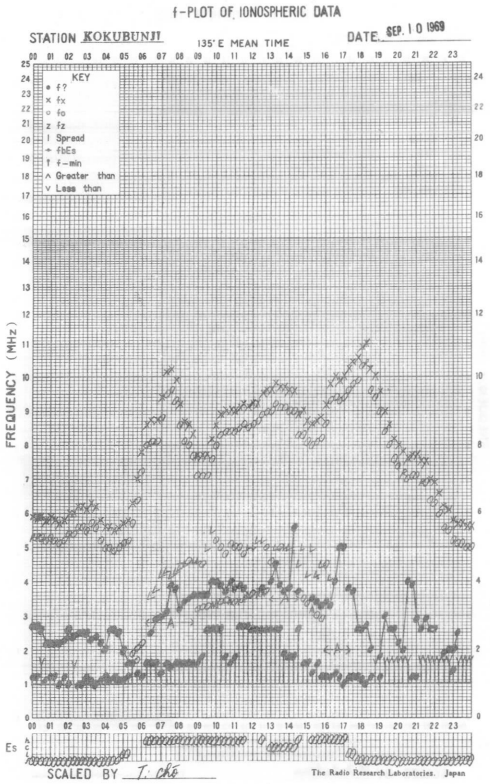
SCALED BY T. Abe.
The Radio Research Laboratories. Japan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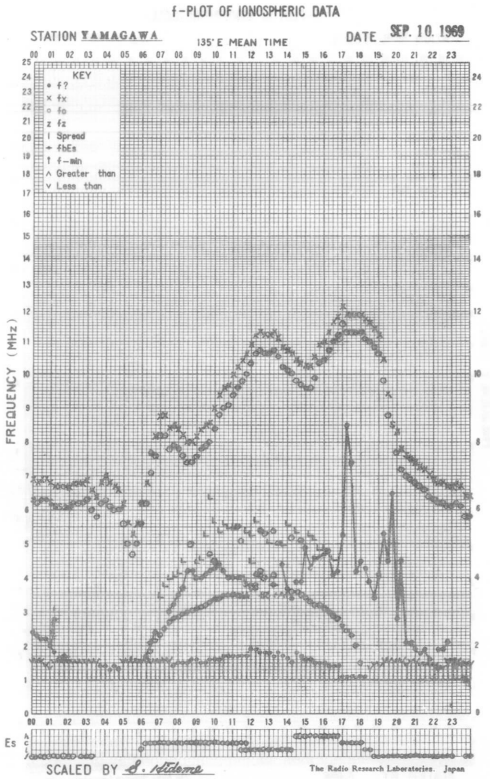
The Radio Research Laboratories. Japan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∧ Greater than
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FREQUENCY (MHz)
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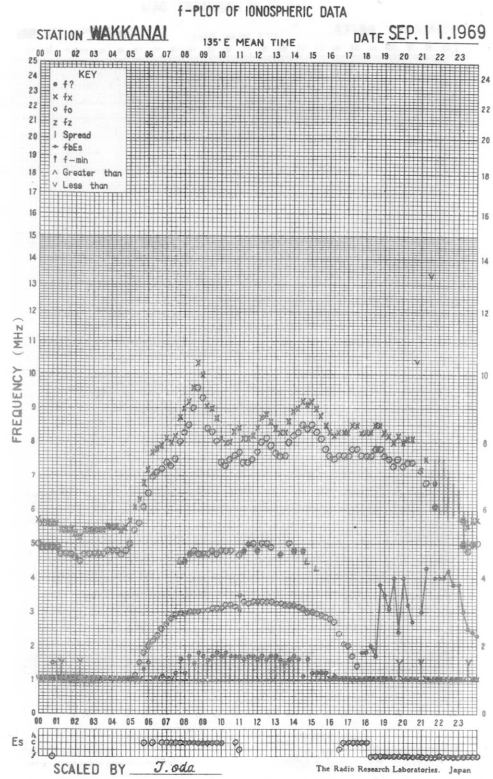
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan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○ fo
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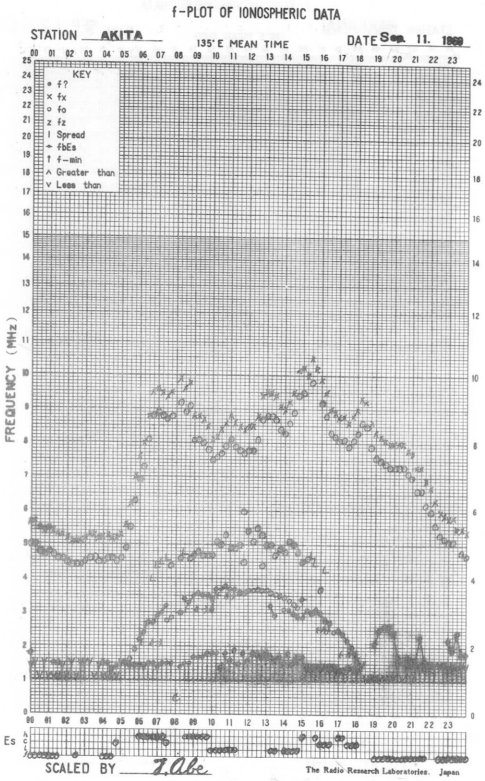
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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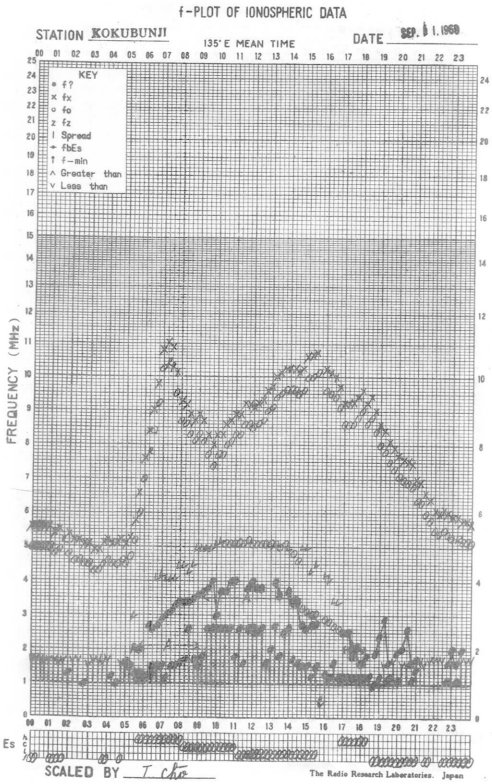
The Radio Research Laboratories. Japan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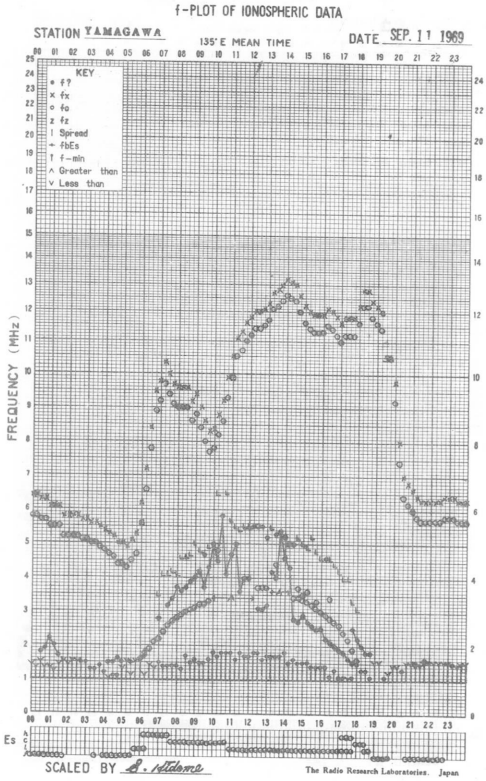
SCALED BY T. Cho
The Radio Research Laboratories. Japan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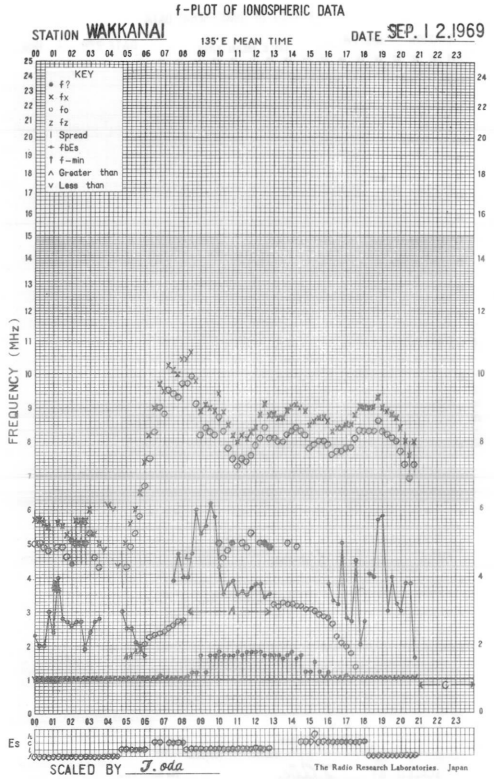
The Radio Research Laboratories. Japan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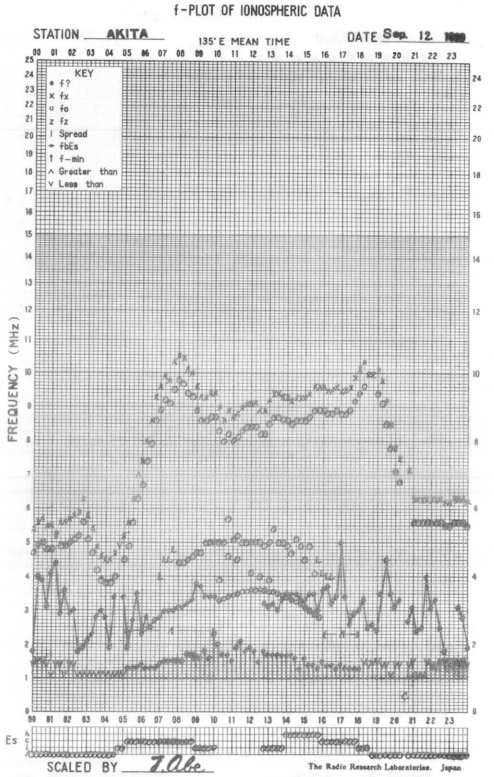
SCALED BY T. oda
The Radio Research Laboratories. Japan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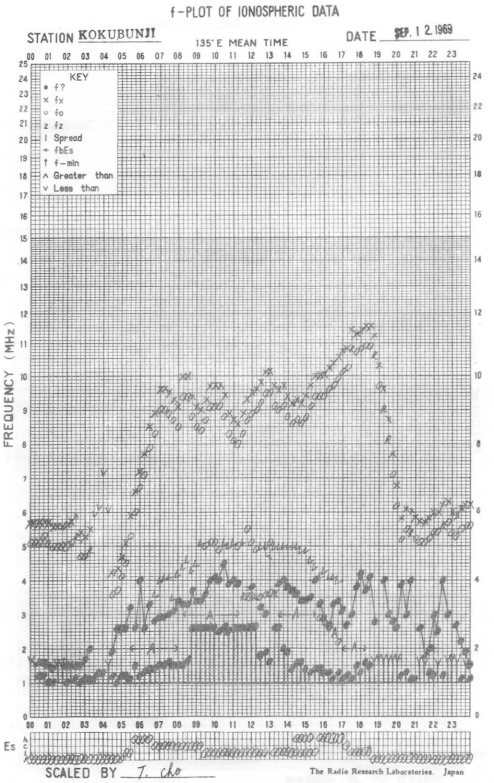
SCALED BY T. Abe
The Radio Research Laboratories. Japan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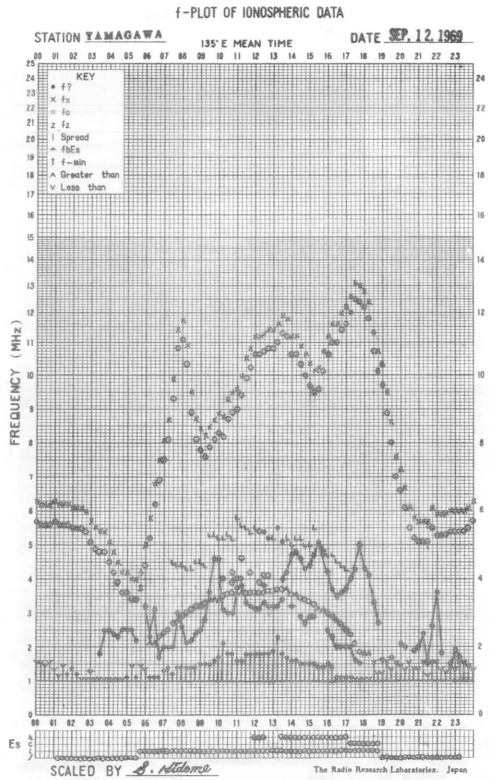
The Radio Research Laboratories. Japan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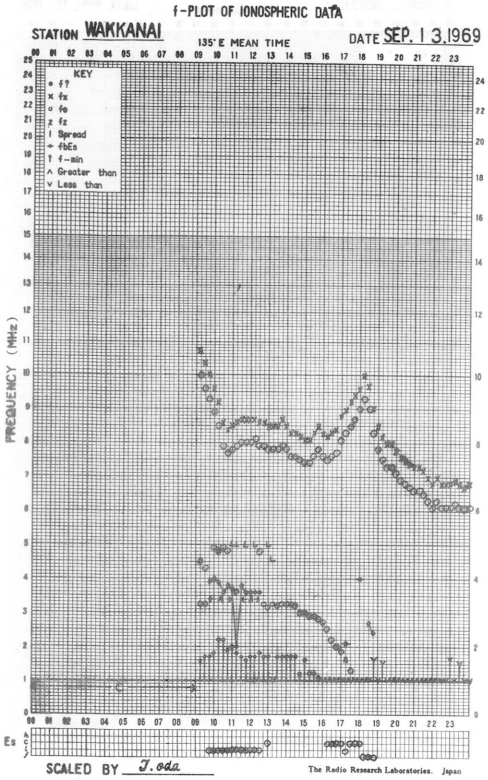
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan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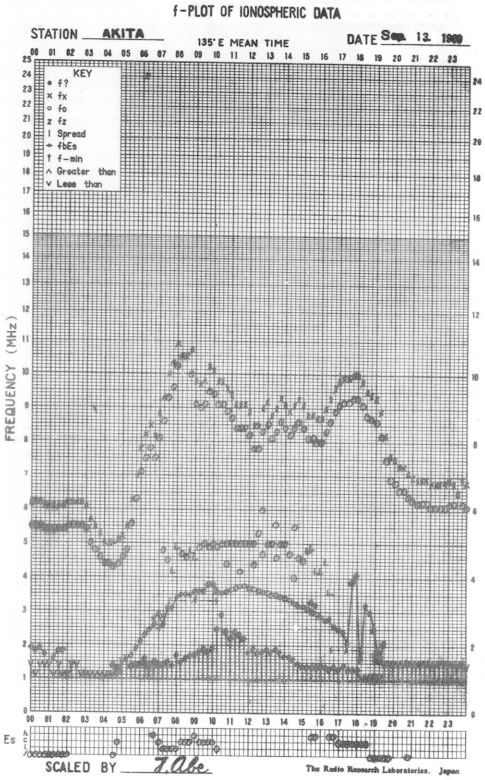
The Radio Research Laboratories. Japan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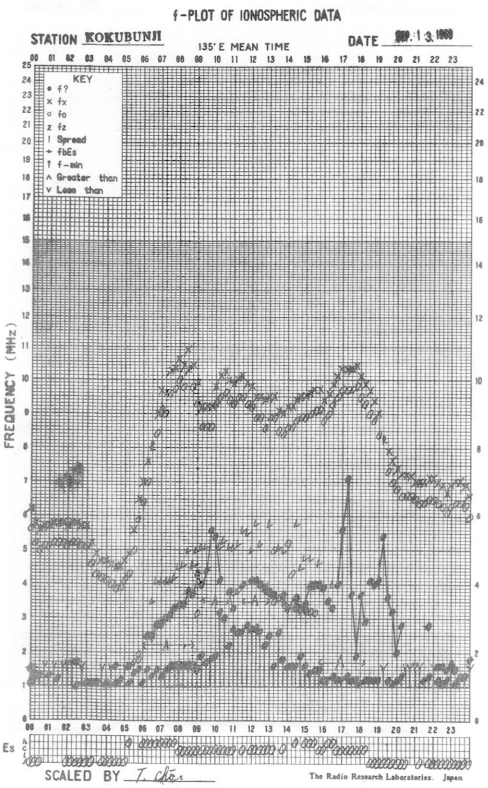
The Radio Research Laboratories. Japan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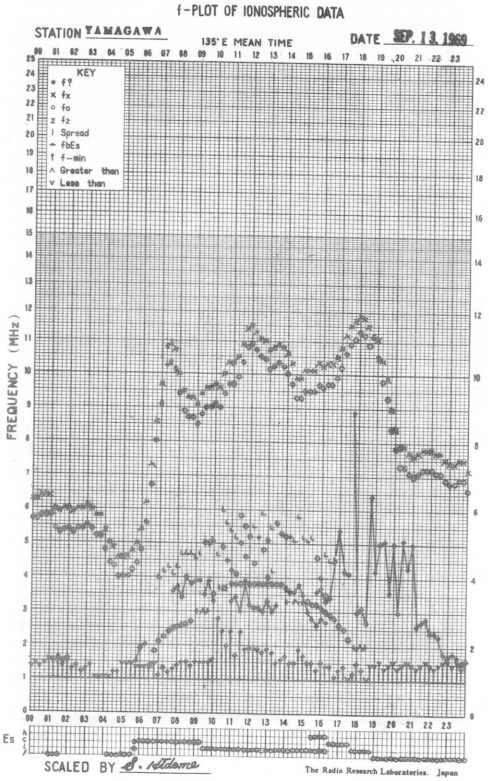
The Radio Research Laboratories. Japan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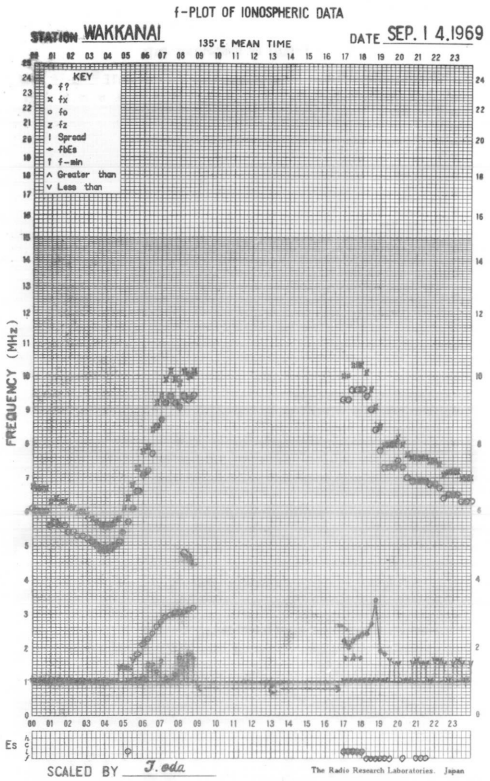
SCALED BY S. Nitadori
The Radio Research Laboratories. Japan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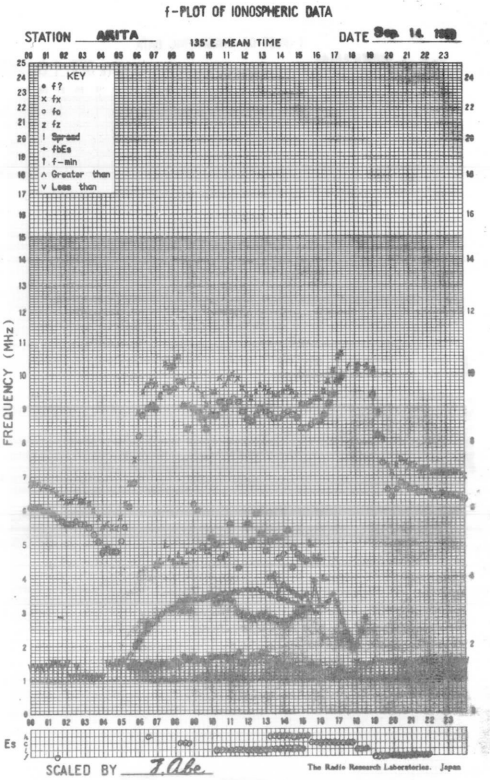
The Radio Research Laboratories. Japan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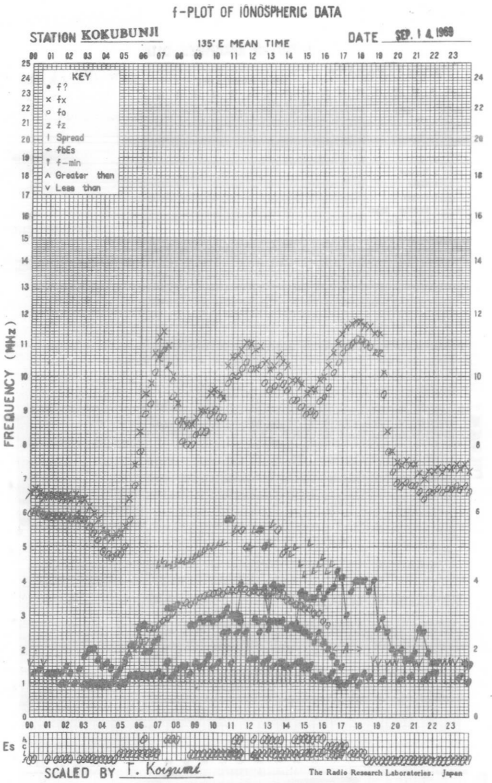
The Radio Research Laboratories. Japan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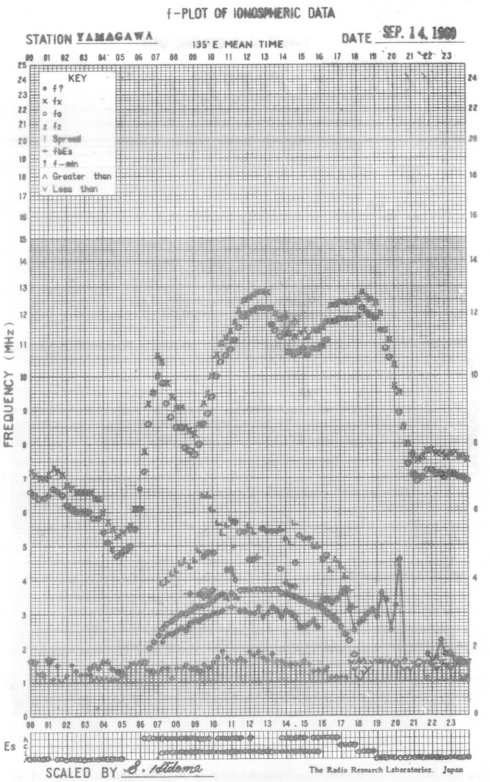
The Radio Research Laboratories. Japan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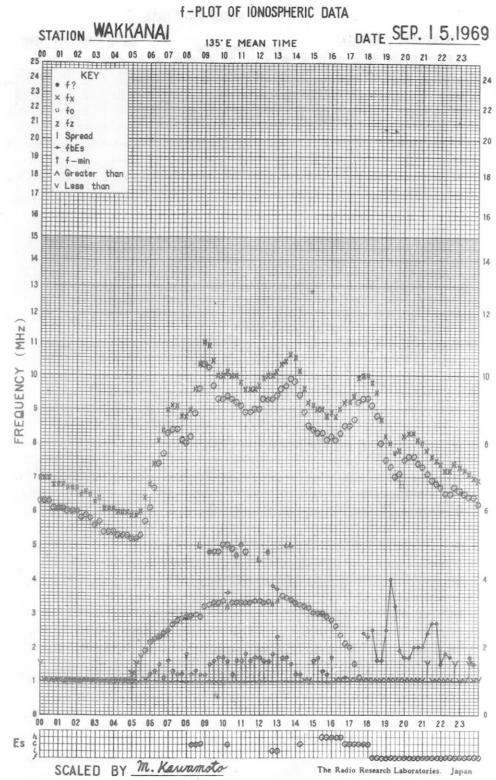
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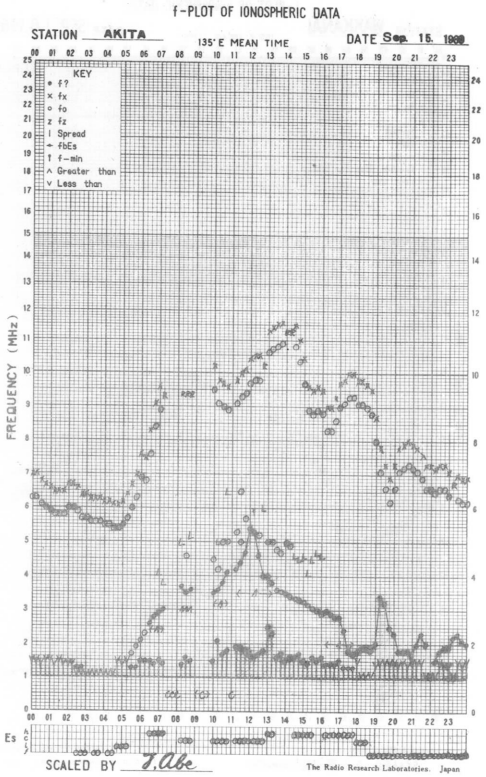
The Radio Research Laboratories. Japan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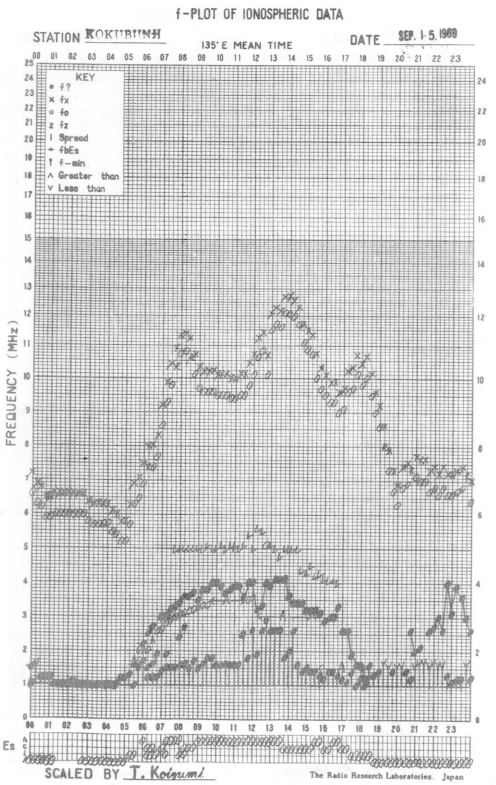
The Radio Research Laboratories. Japan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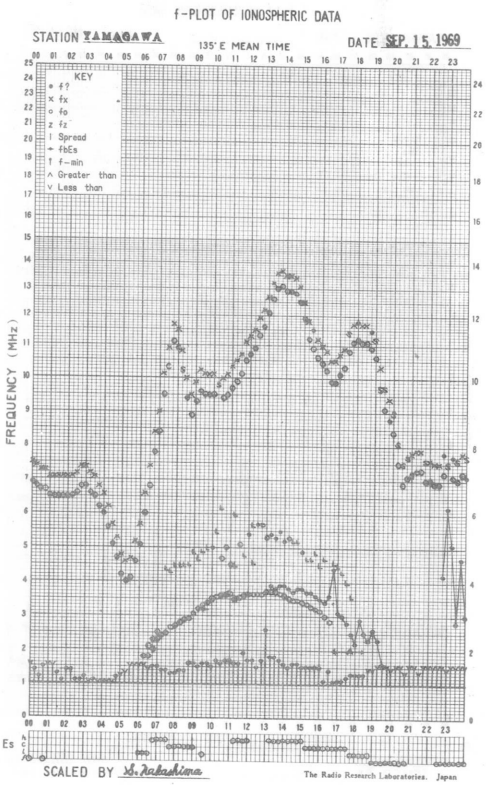
The Radio Research Laboratories. Japan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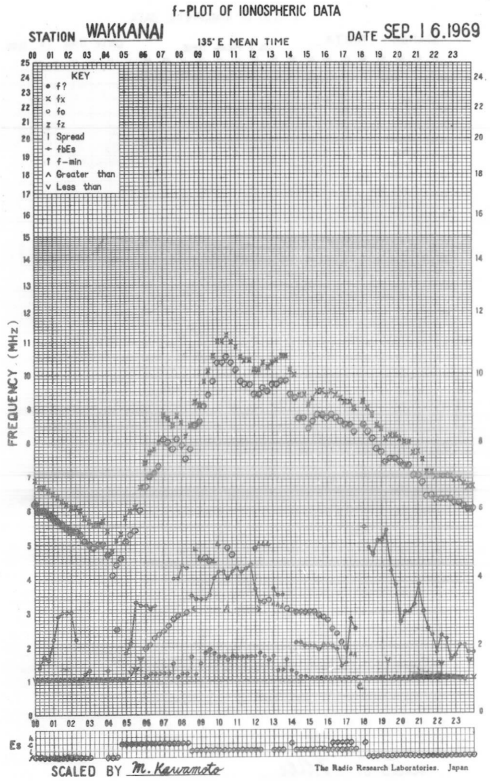
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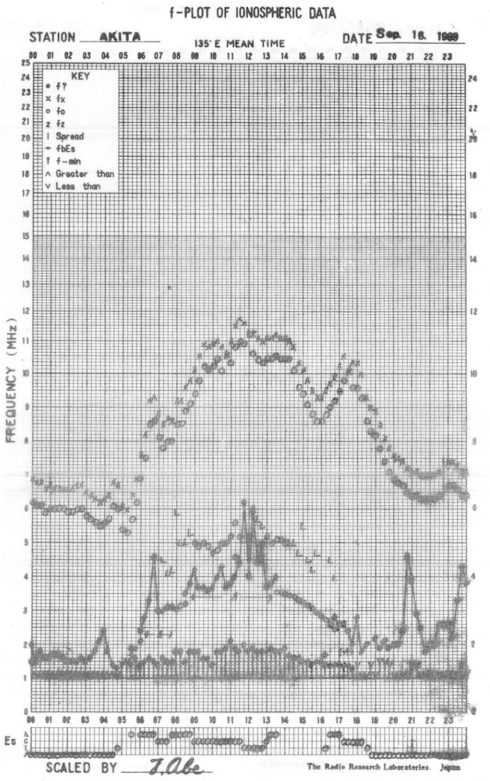
The Radio Research Laboratories. Japan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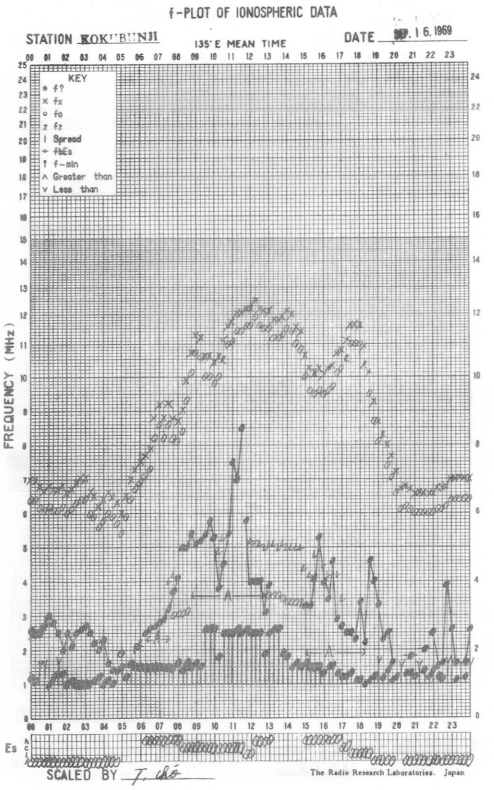
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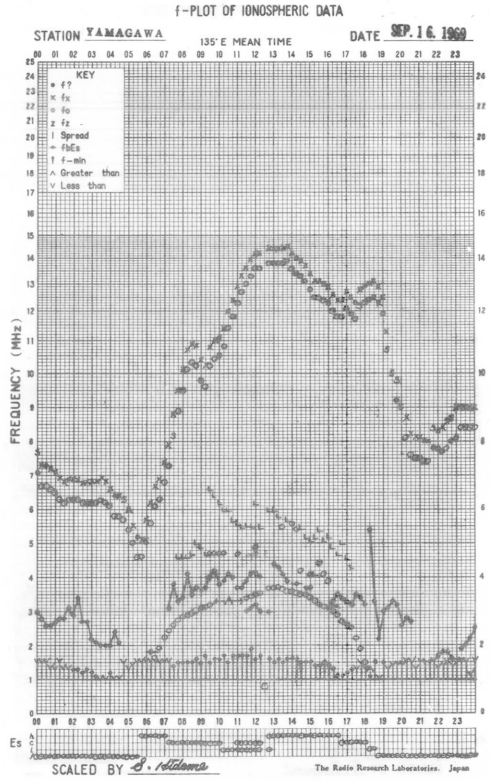
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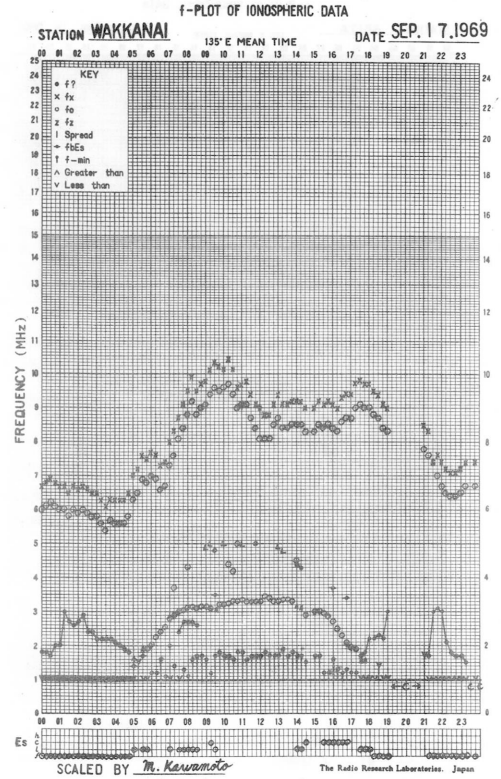
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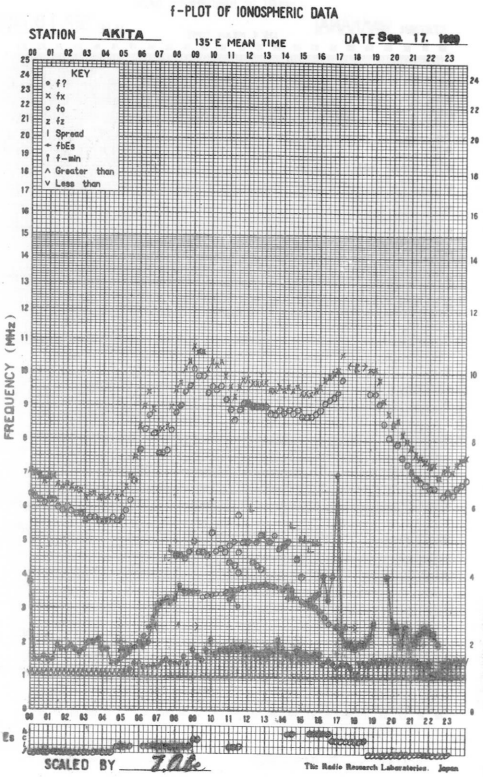
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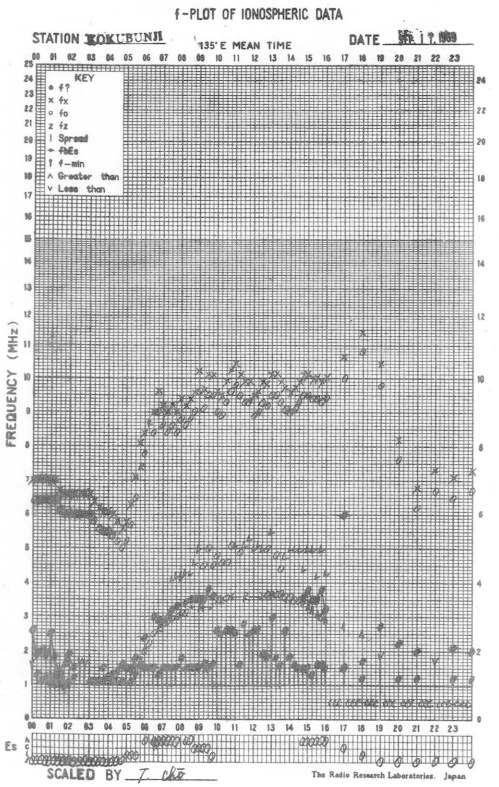
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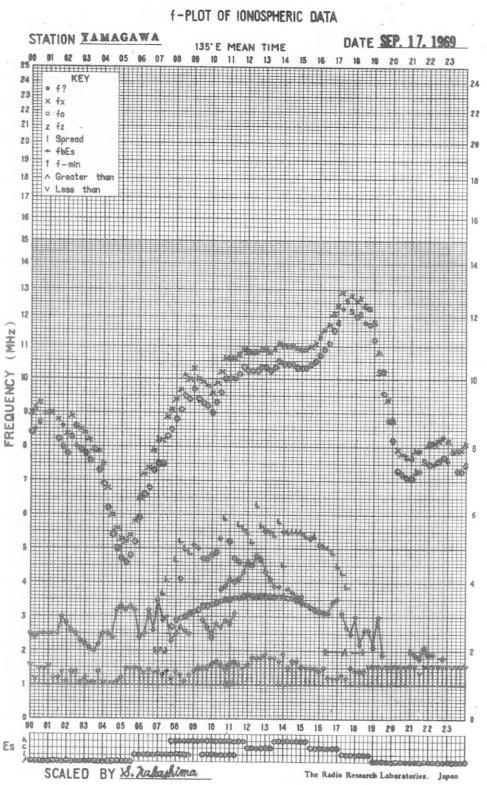
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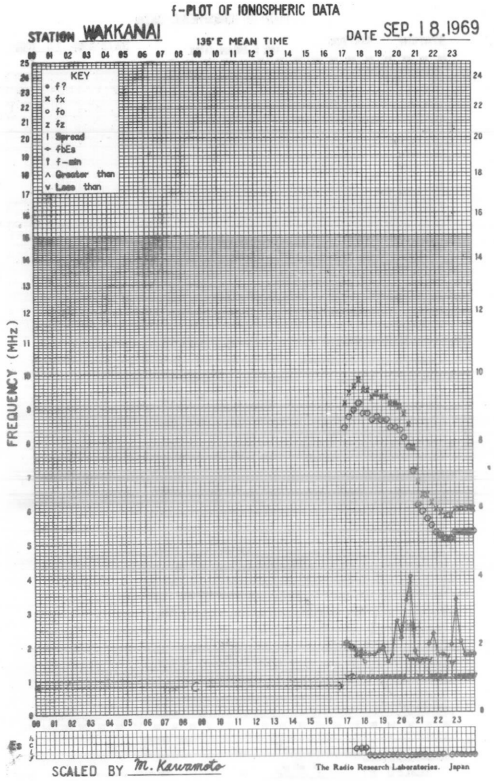
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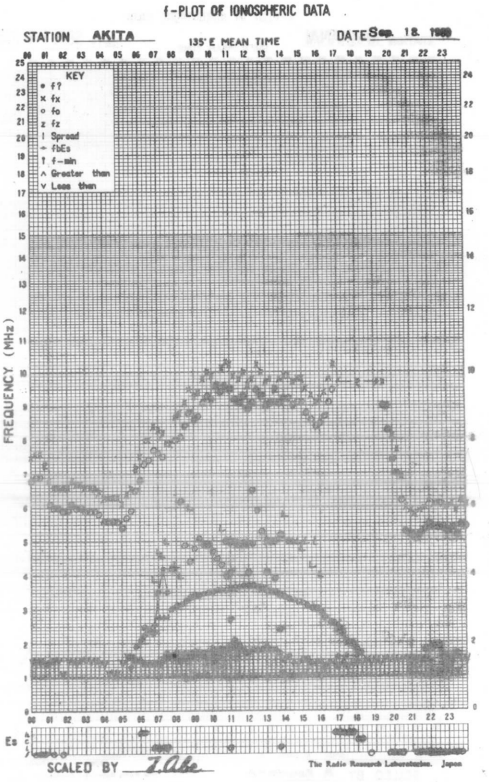
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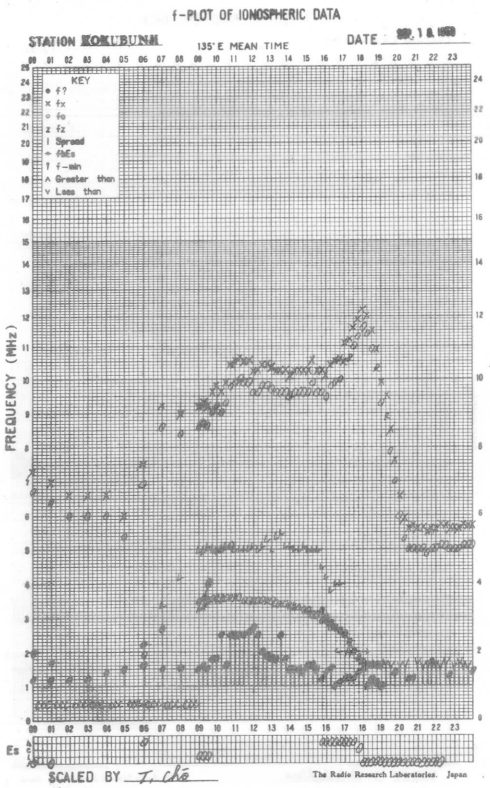
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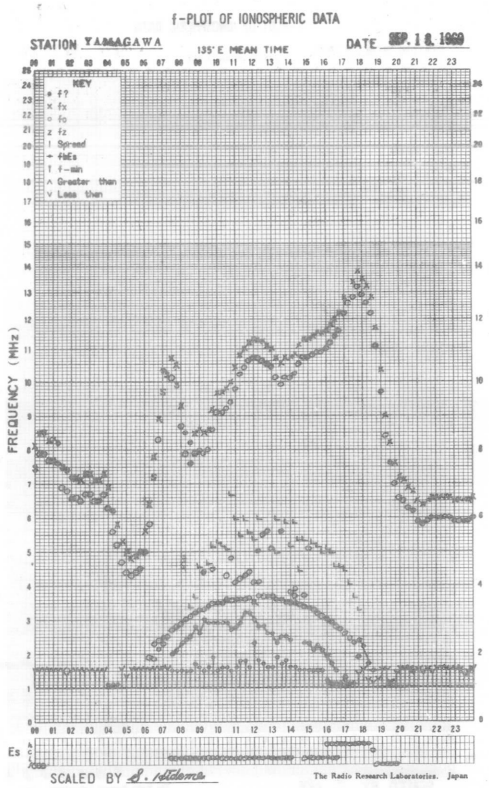
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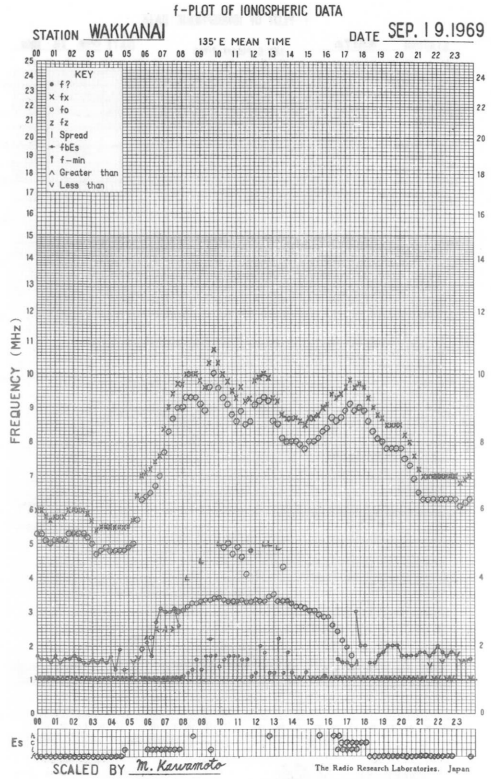
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FREQUENCY (MHz)
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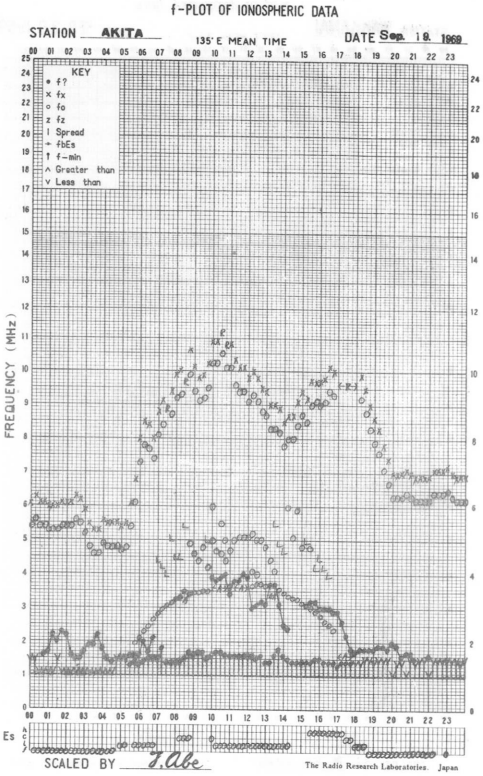
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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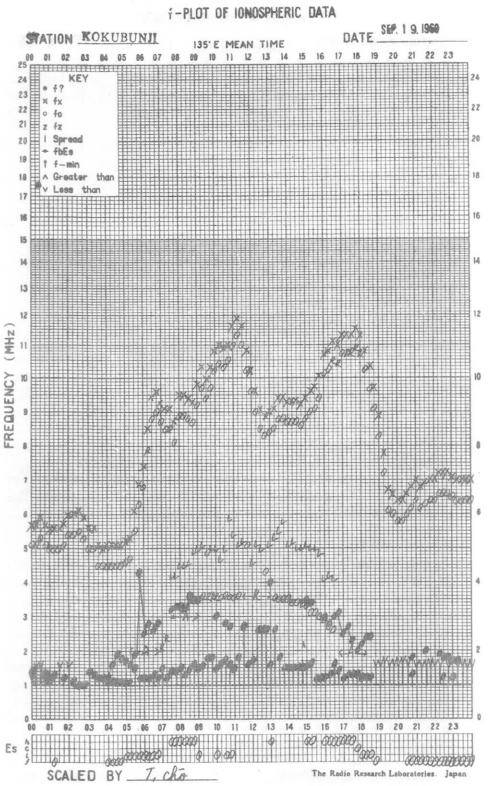
The Radio Research Laboratories. Japan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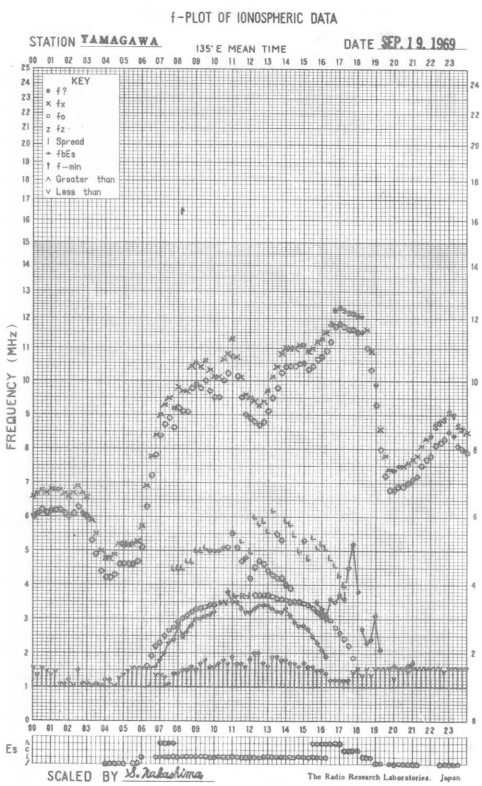
The Radio Research Laboratories. Japan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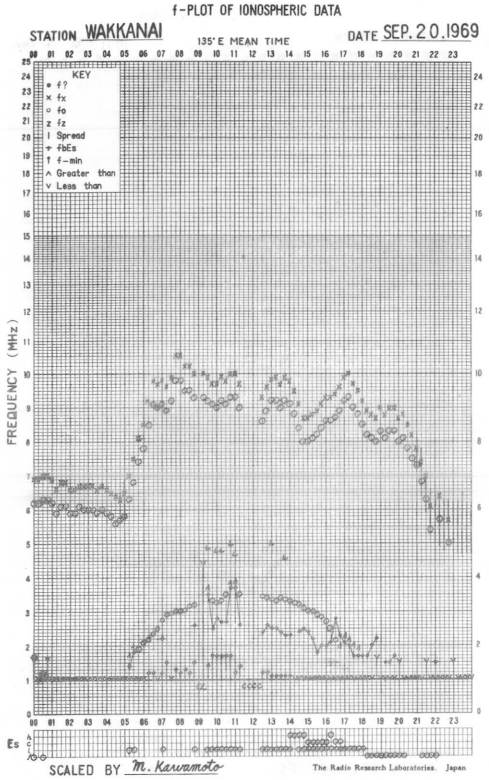
The Radio Research Laboratories. Japan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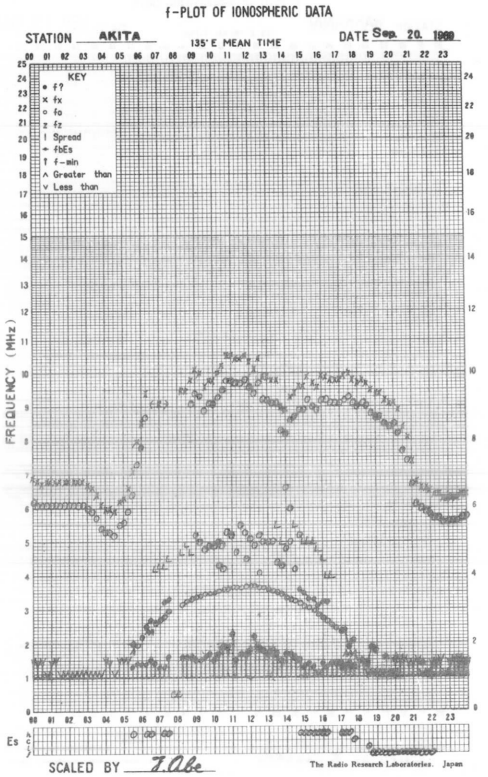
The Radio Research Laboratories. Japan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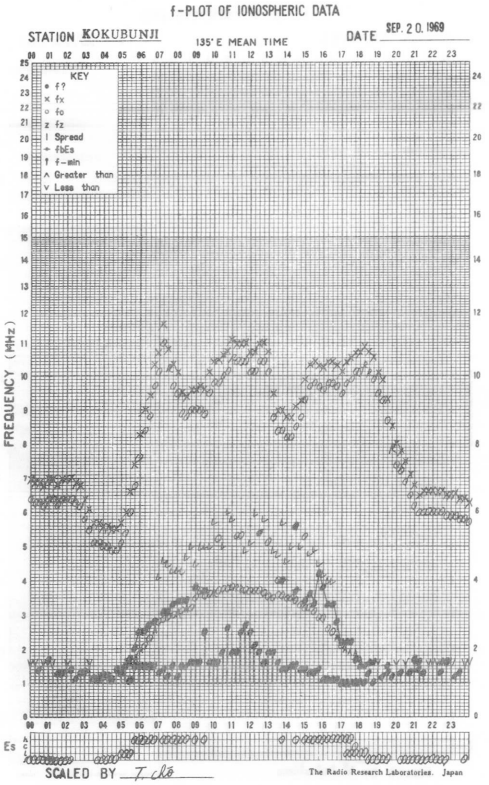
The Radio Research Laboratories. Japan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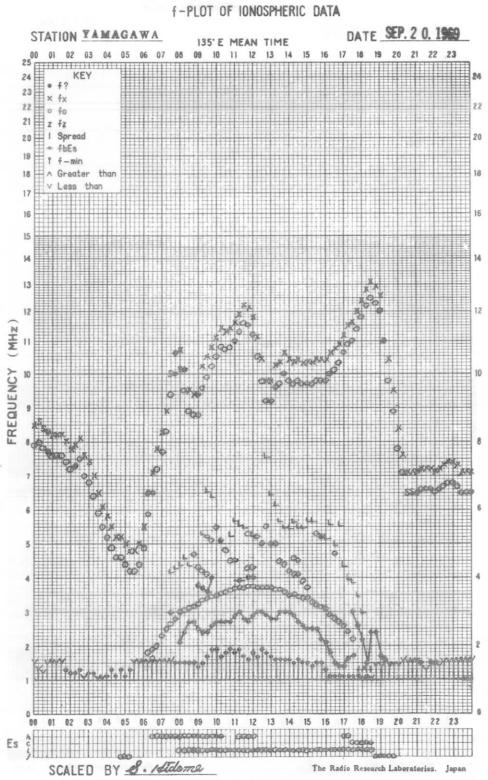
The Radio Research Laboratories. Japan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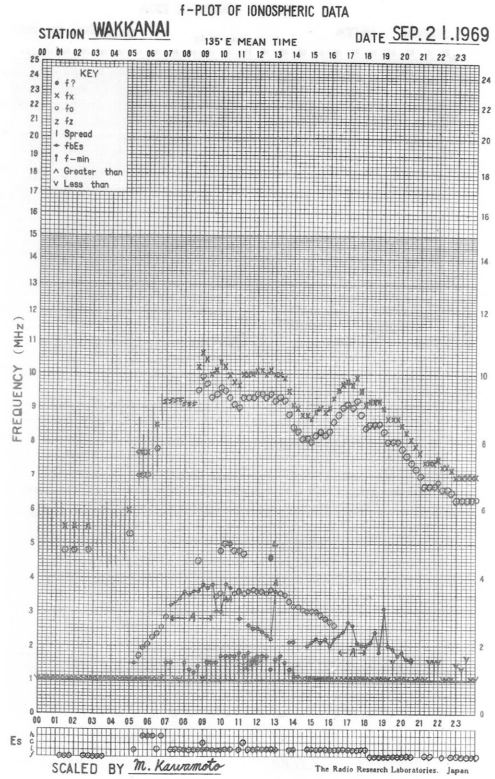
The Radio Research Laboratories. Japan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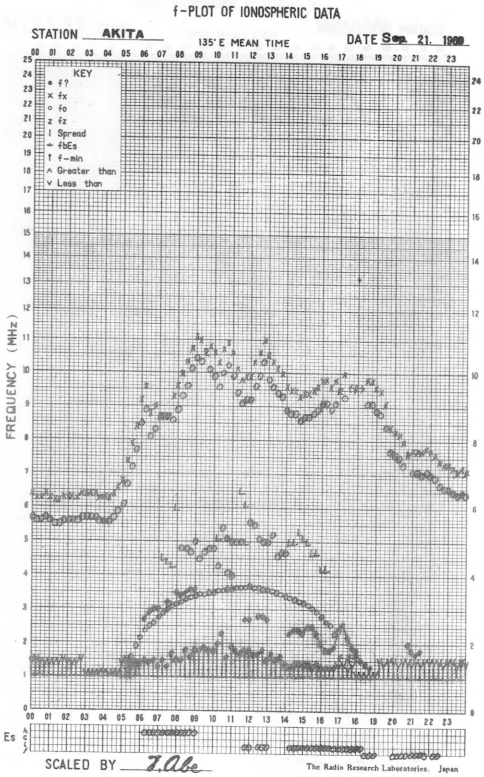
The Radio Research Laboratories. Japan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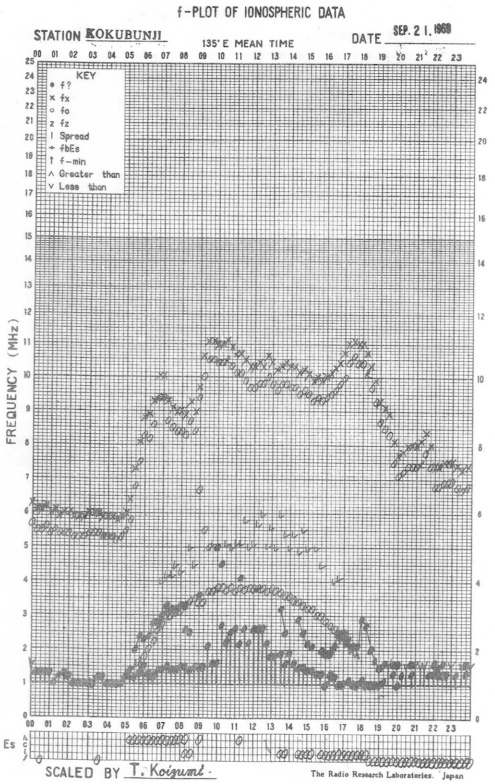
The Radio Research Laboratories. Japan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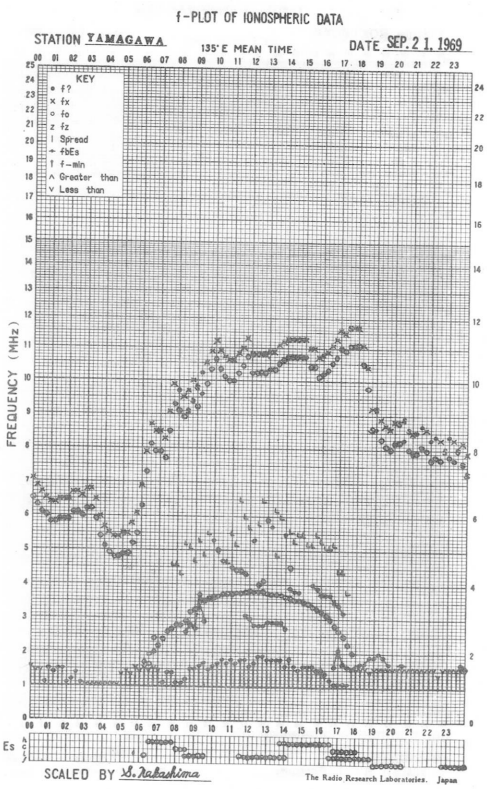
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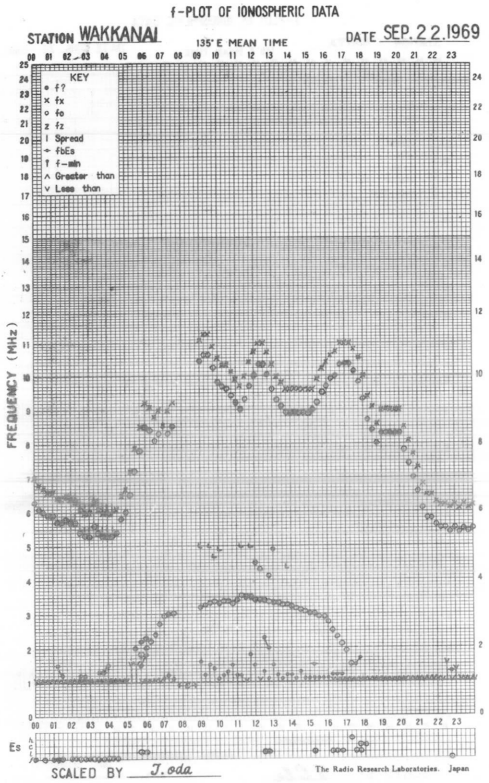
The Radio Research Laboratories. Japan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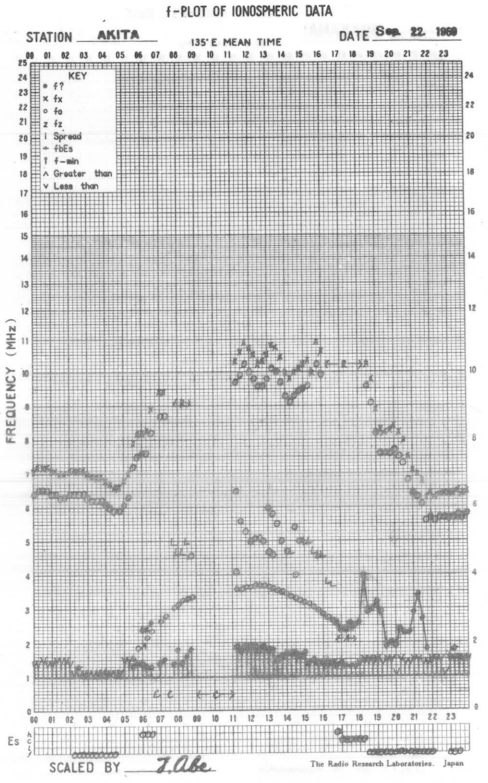
The Radio Research Laboratories. Japan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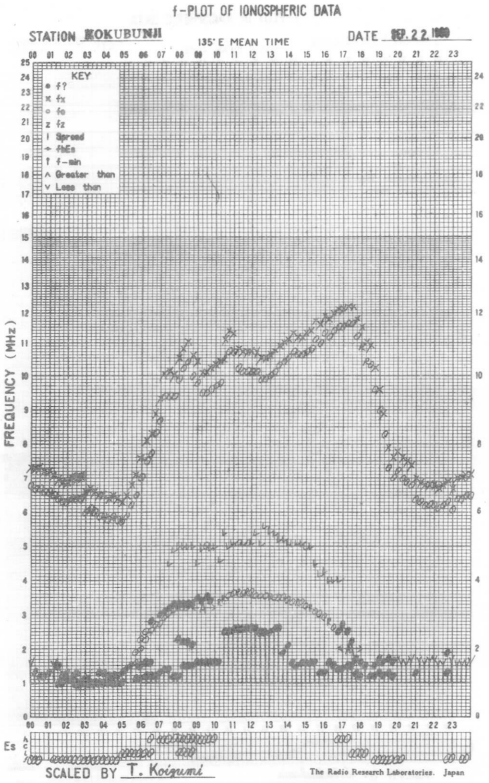
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fx
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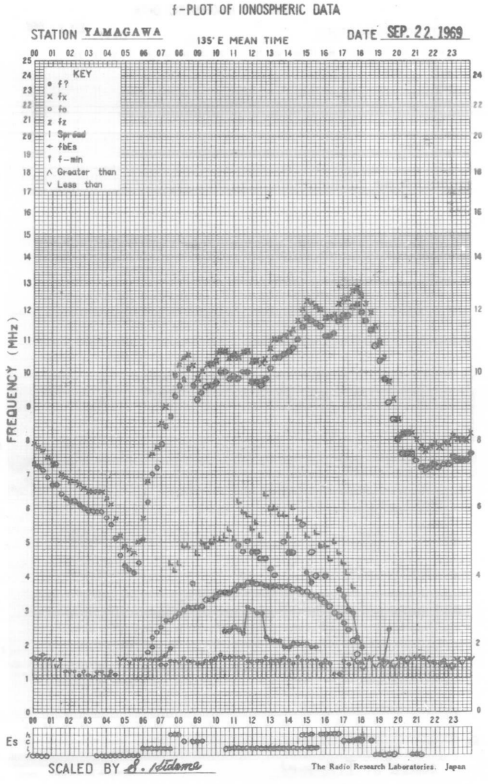
fz
Spread
fbEs
f-min
Greater than
Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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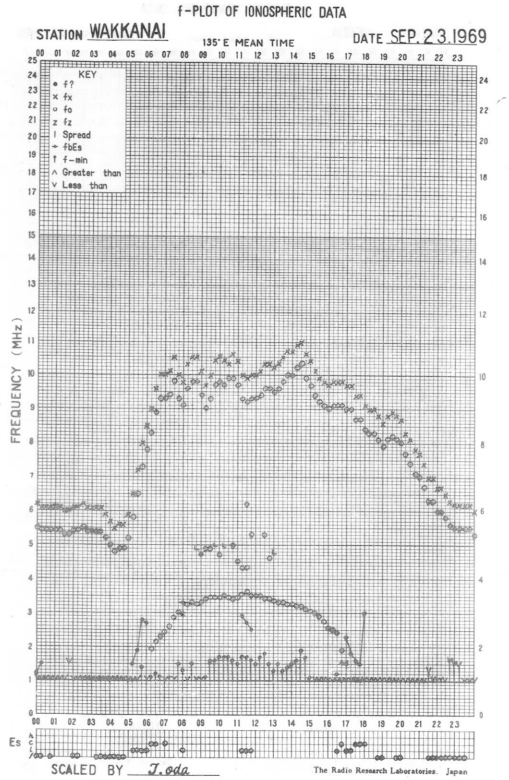
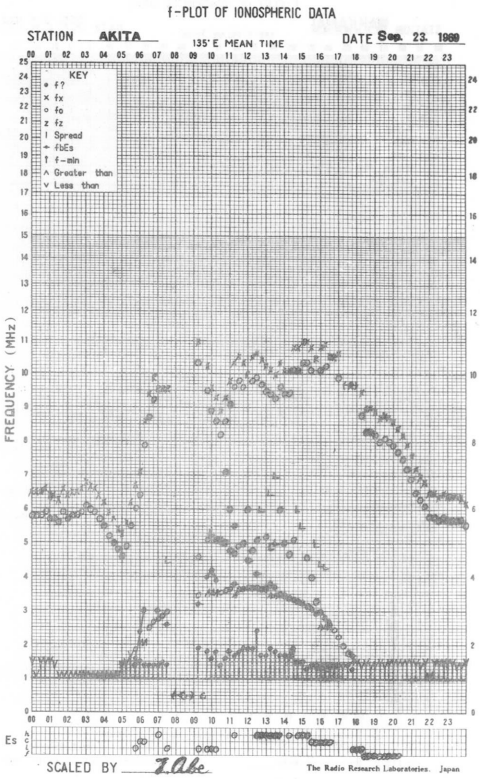
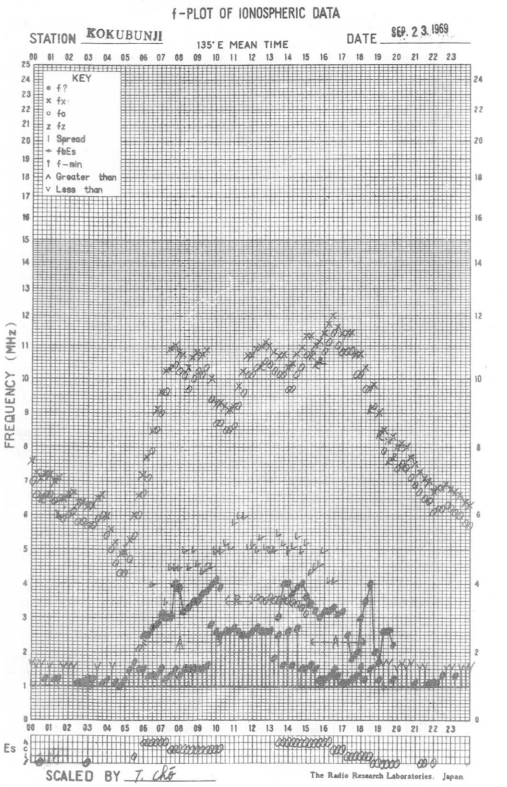
STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. 22. 1969
KEY
f?
fx
fo
fz
Spread
fbEs
f-min
Greater than
Less than
FREQUENCY (MHz)
Es
SCALED BY A. Nishizawa
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 23. 1969
KEY
FREQUENCY (MHz)
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Sep. 23. 1969
KEY
FREQUENCY (MHz)
SCALED BY T. Abe
The Radio Research Laboratories. Japan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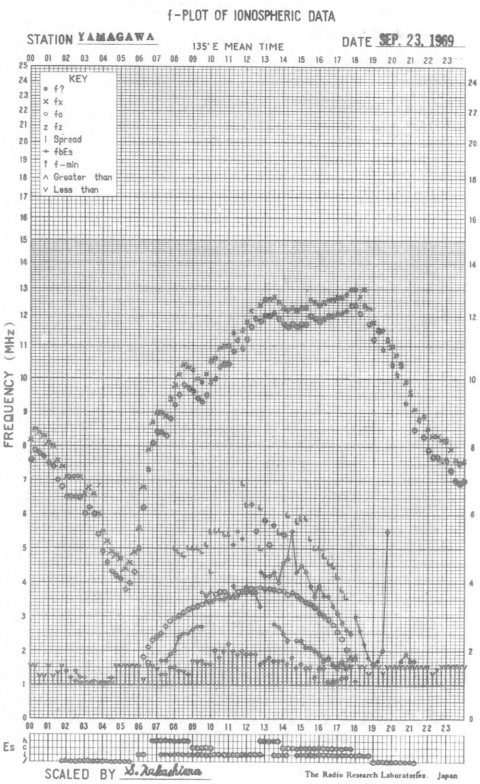
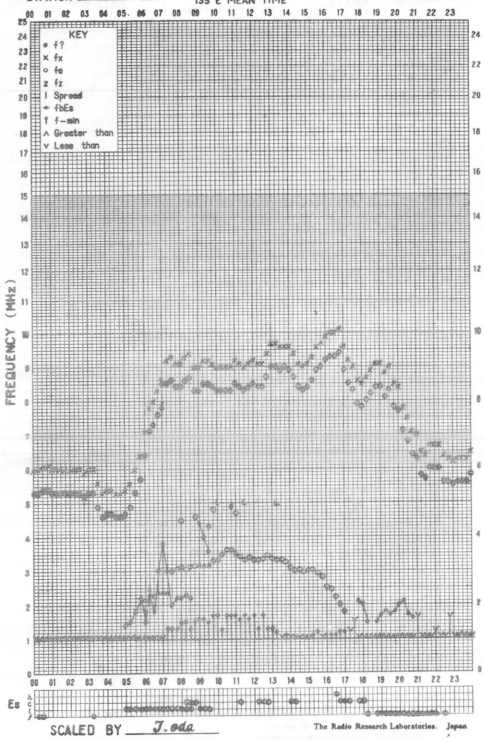
DATE SEP. 23. 1969
KEY
FREQUENCY (MHz)
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE SEP. 23. 1969
KEY
FREQUENCY (MHz)
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE SEP. 24, 1969

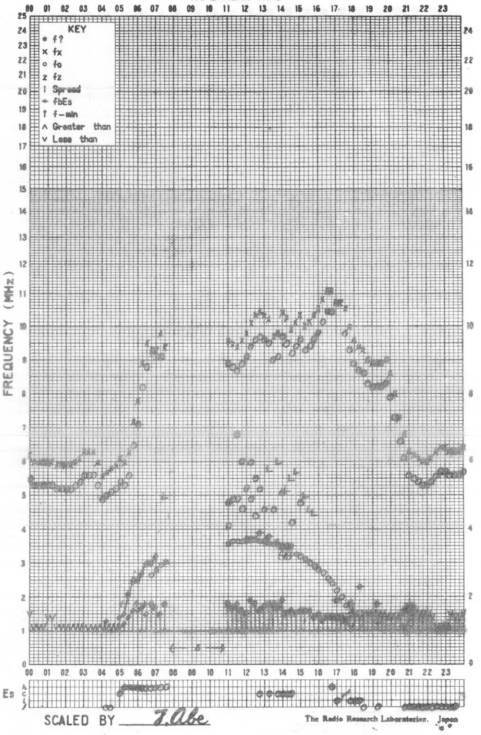


SCALED BY J. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Sep. 24, 1969

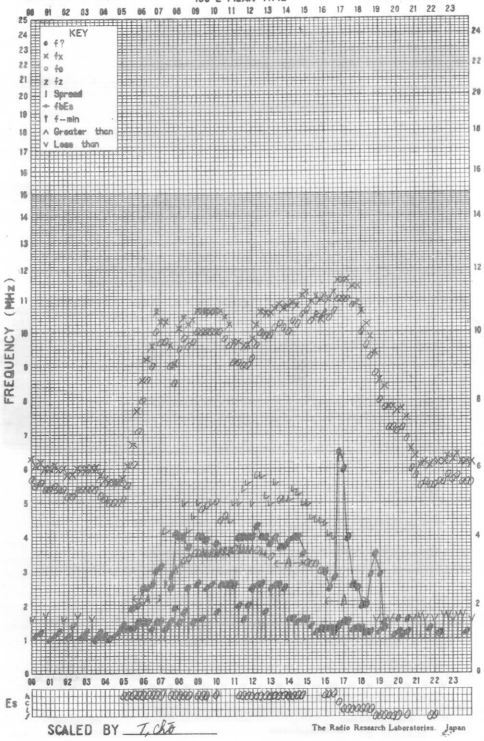


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE SEP. 24, 1969

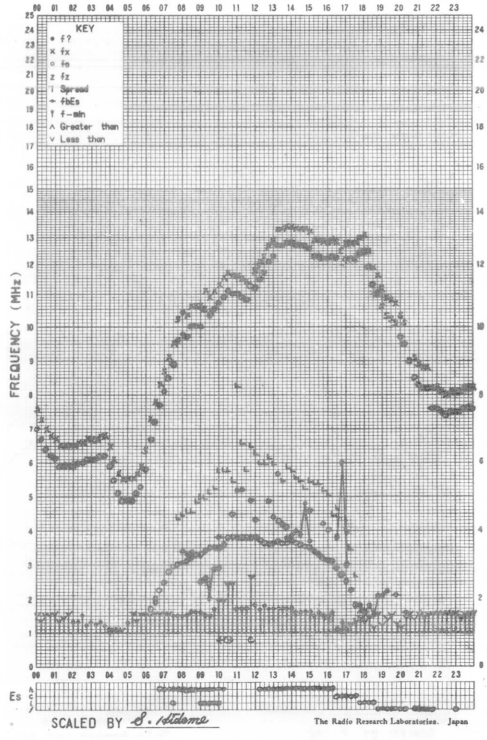


SCALED BY T. Abe

The Radio Research Laboratories. Japan

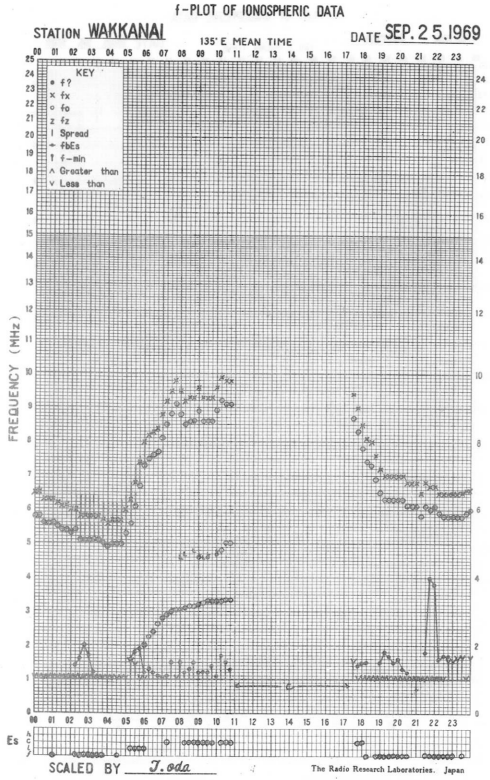
f-PLOT OF IONOSPHERIC DATA

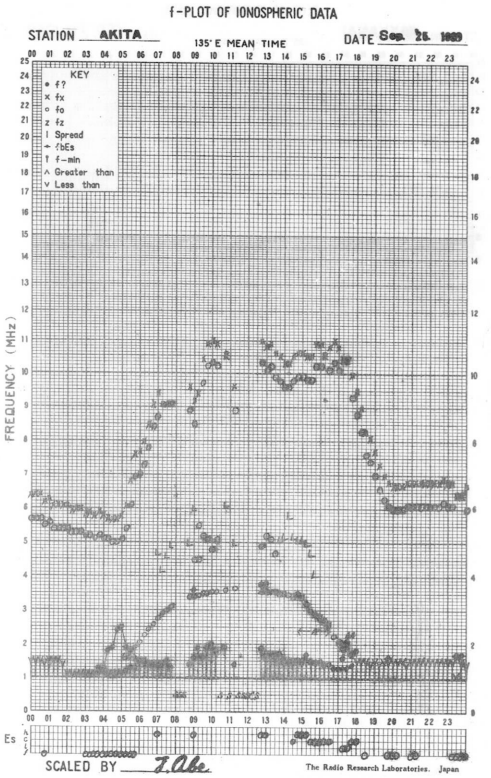
STATION YAMAGAWA 135°E MEAN TIME DATE SEP. 24, 1969



SCALED BY S. Watanabe

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 25. 1969
KEY
* f?
× fx
○ fo
z fz
| 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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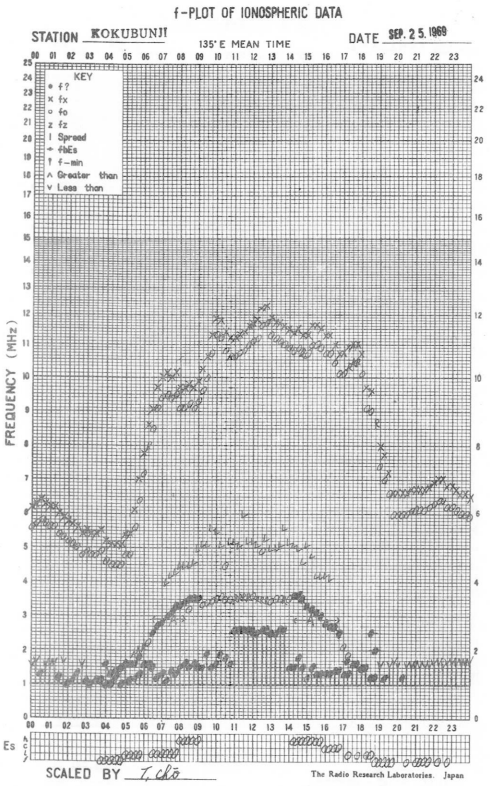
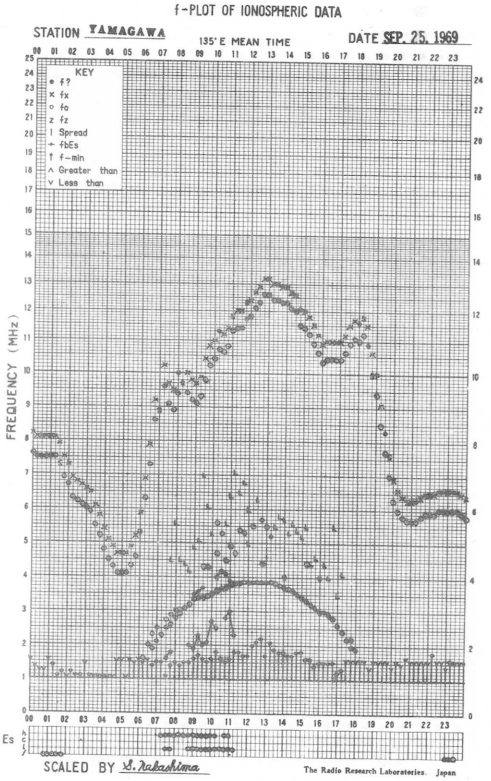
135° E MEAN TIME
DATE Sep. 25. 1969
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE SEP. 25. 1969
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan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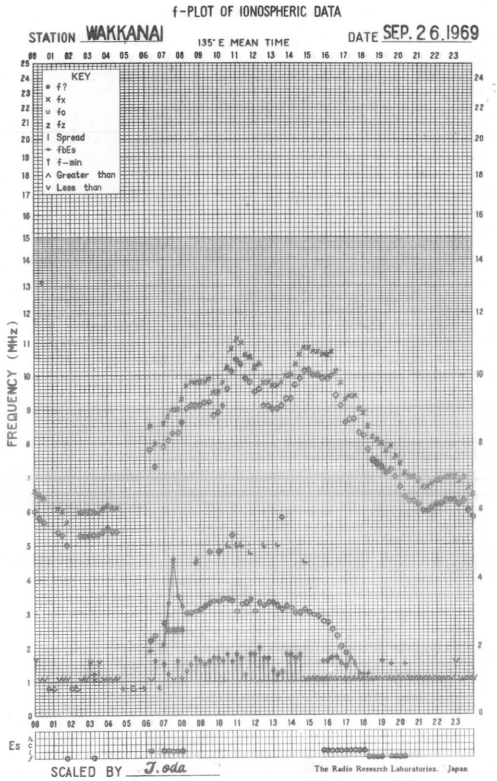
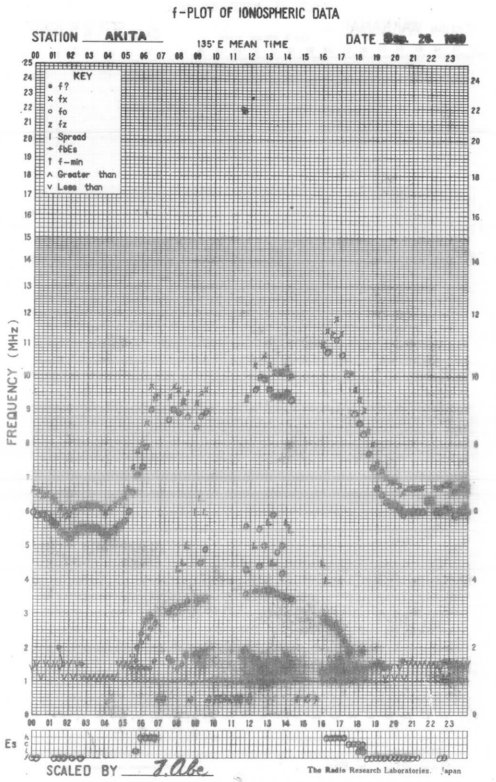
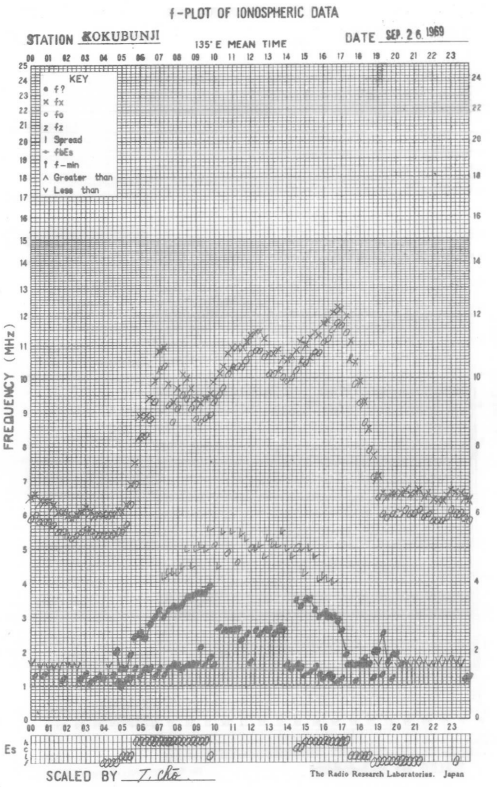
STATION YAMAGAWA
135° E MEAN TIME
DATE SEP. 25. 1969
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE SEP. 26. 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
~ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Sep. 26. 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
~ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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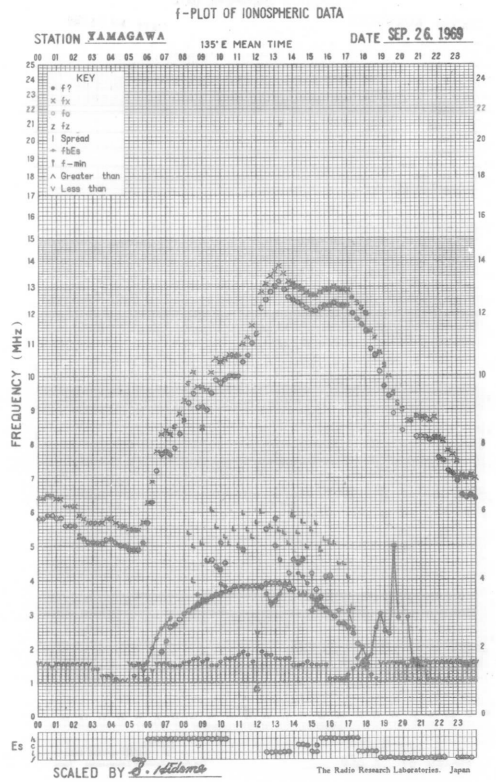
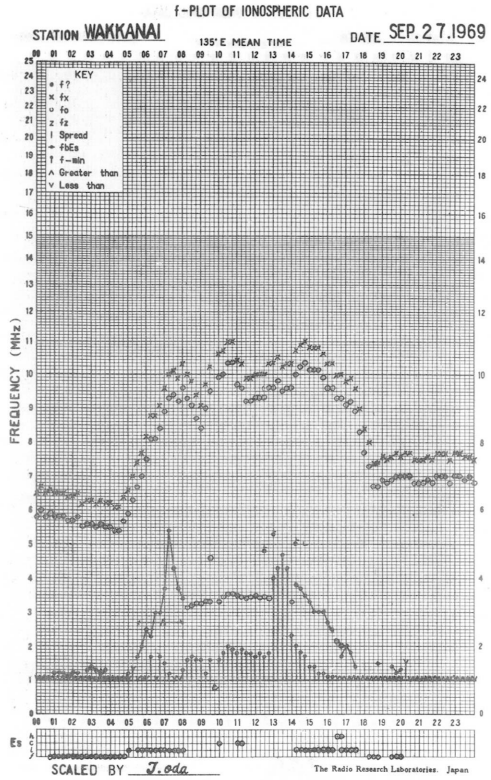
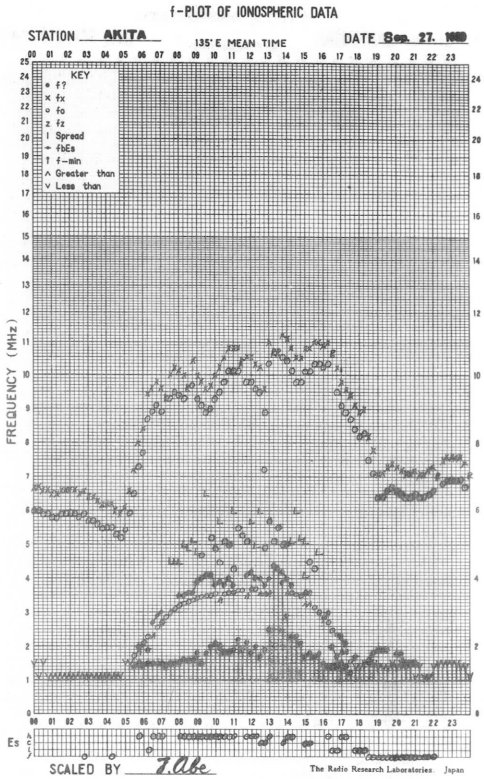
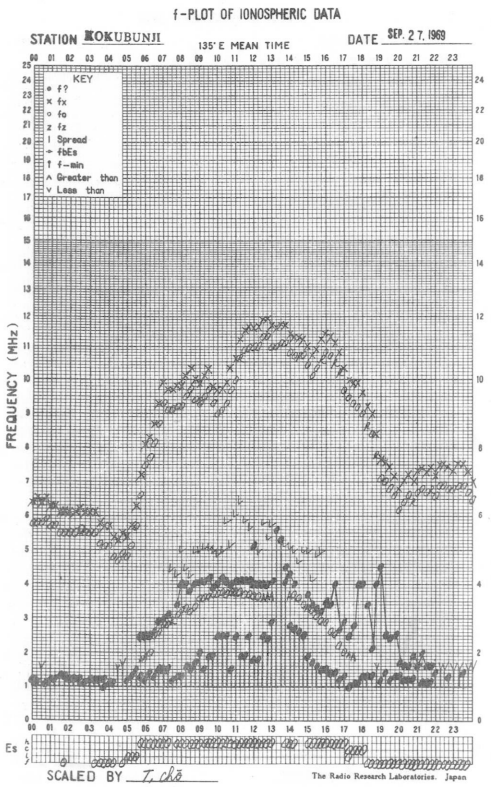
STATION KOKUBUNJI
135°E MEAN TIME
DATE SEP. 26. 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
~ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ota
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. 26. 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
~ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nitami
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE SEP. 27. 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 Sep. 27. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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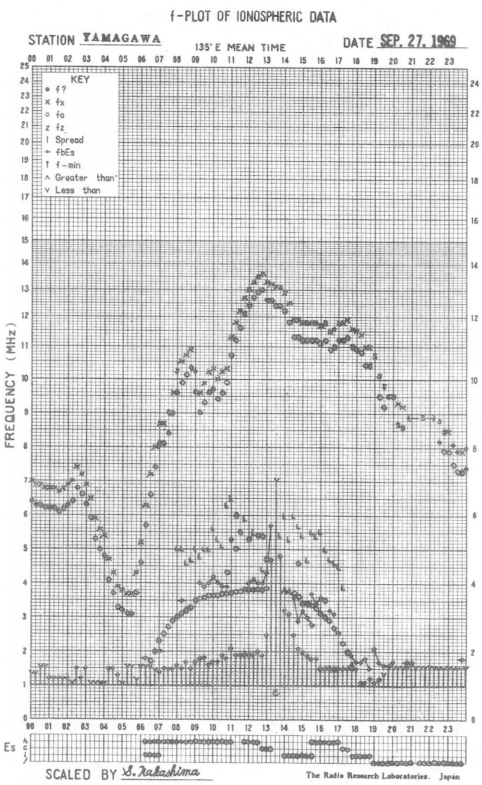
STATION KOKUBUNJI
135°E MEAN TIME
DATE SEP. 27. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Ichi
The Radio Research Laboratories. Japan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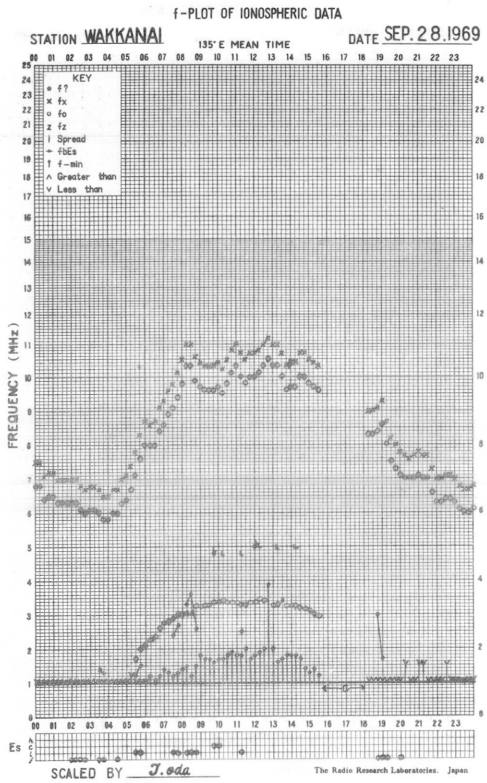
STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. 27. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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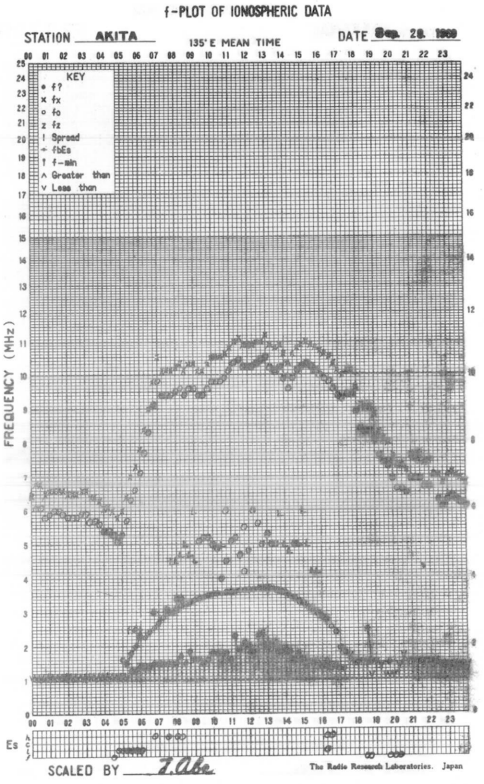
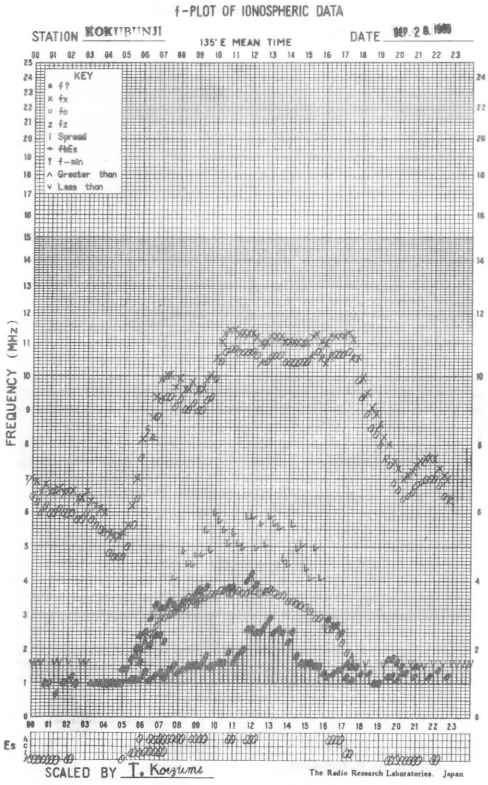
135° E MEAN TIME
DATE SEP. 28. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Sep. 28. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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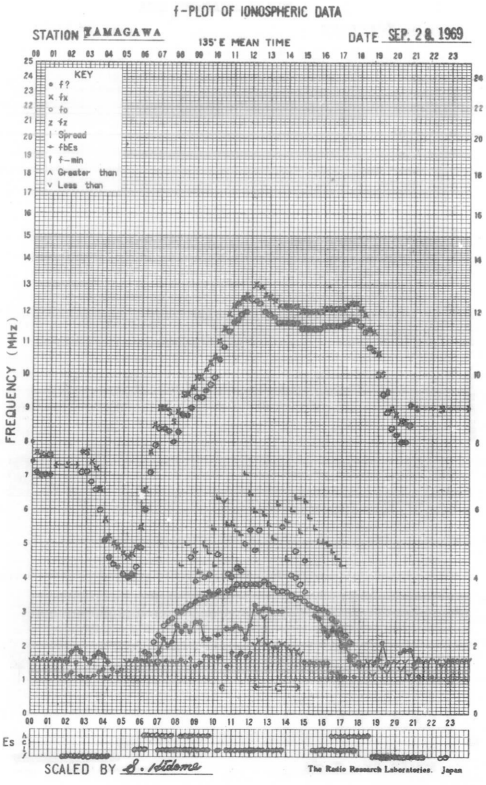
STATION KOKUBUNJI
135° E MEAN TIME
DATE SEP. 28. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Kogure
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE SEP. 28. 1969
KEY
FREQUENCY (MHz)
Es
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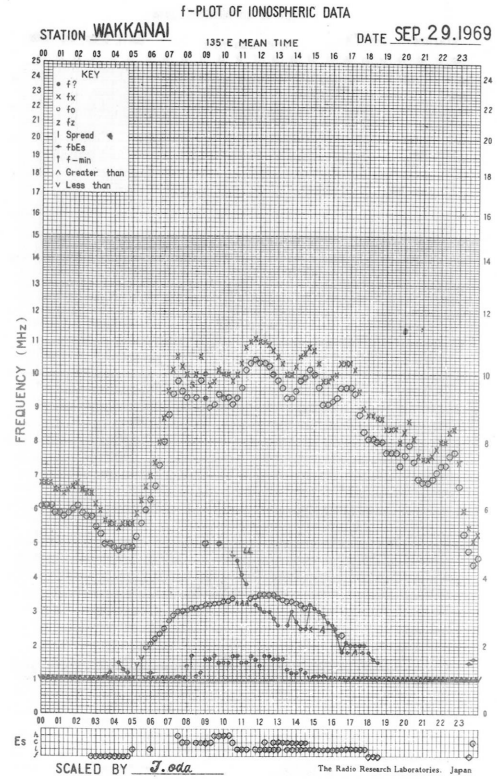
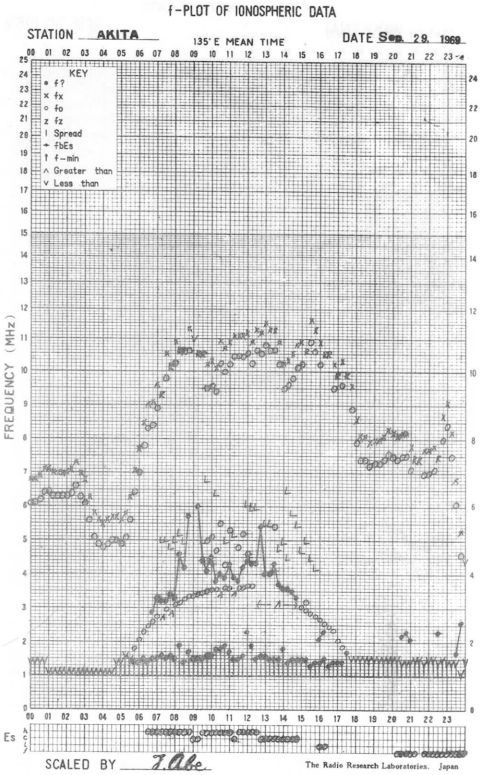
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE SEP. 29. 1969
KEY
• f?
× fx
○ fo
z fz
| 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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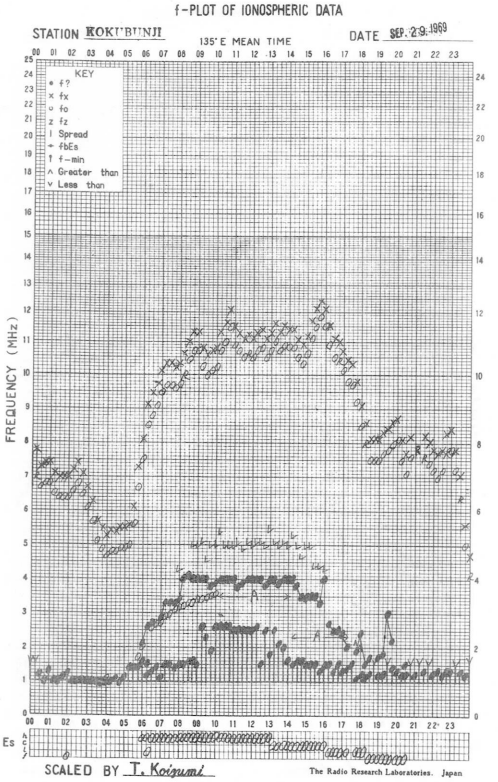
135°E MEAN TIME
DATE Sep. 29. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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STATION KOKUBUNJI
135°E MEAN TIME
DATE SEP. 29. 1969
KEY
• f?
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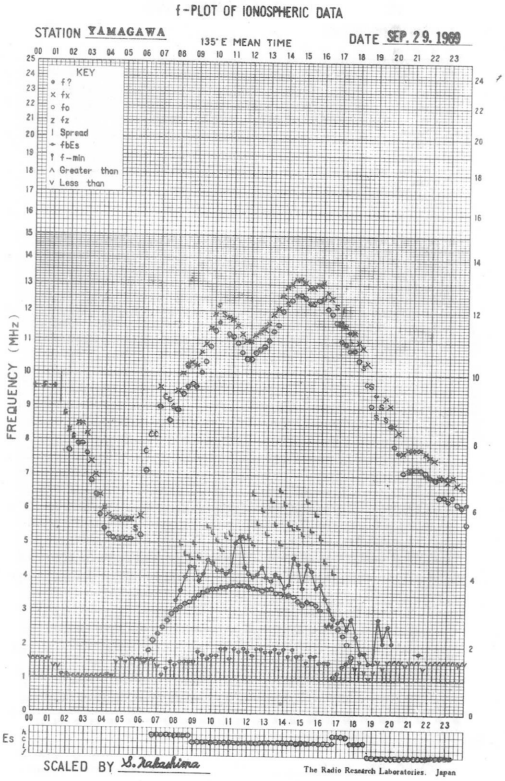
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. 29. 1969
KEY
• f?
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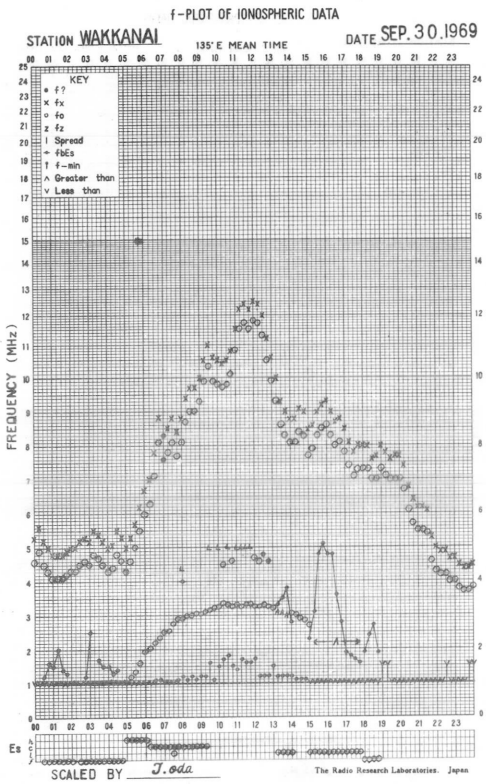
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY K. Takashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135°E MEAN TIME
DATE SEP. 30, 1969
KEY
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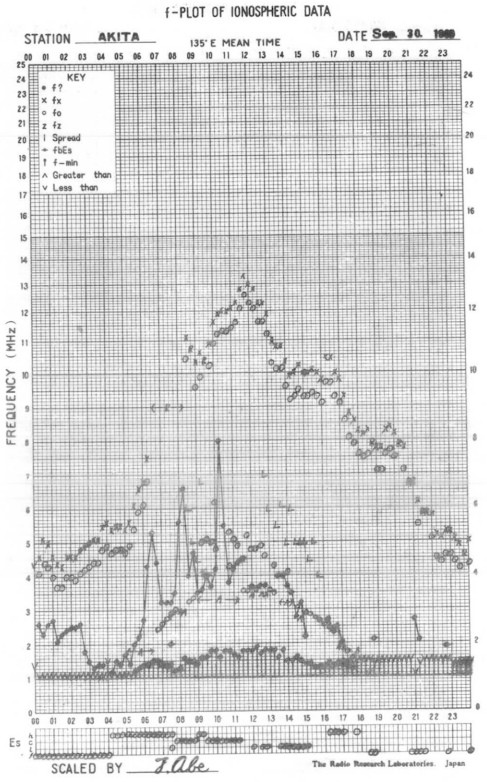
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
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KEY
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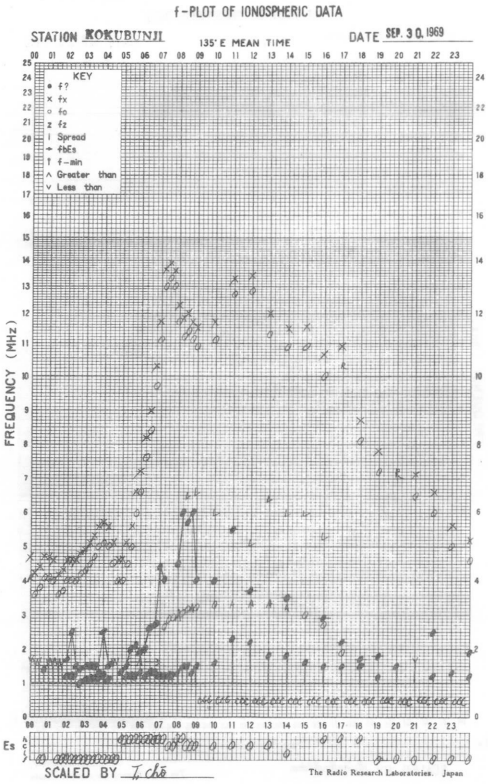
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE SEP. 30, 1969
KEY
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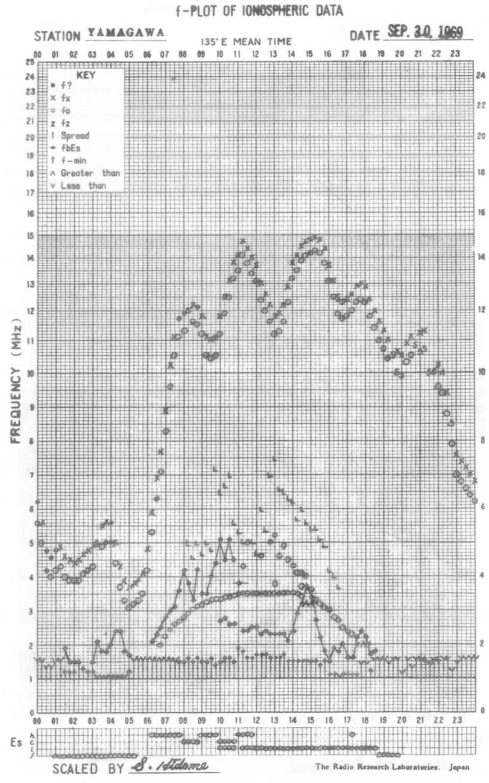
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ichi
The Radio Research Laboratories. Japan


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

SOLAR RADIO EMISSION

Flux Density and Variability

Month: September 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	10	9	6	7	8	1	1	1	0	1
2	7	6	7	6	7	0	0	*	0	0
3	6	6	7	7	6	0	0	0	0	0
4	6	7	7	8	7	0	0	0	0	0
5	7	6	9	6	7	0	0	0	0	0
6	7	7	7	6	7	0	0	0	0	0
7	6	6	7	6	6	0	0	*	0	0
8	6	6	6	6	6	0	0	0	0	0
9	6	6	6	7	6	0	0	0	0	0
10	6	-	7	-	6	0	-	0	-	0
11	5	5	5	5	5	0	0	0	0	0
12	4	5	5	5	5	0	0	0	0	0
13	5	5	5	8	5	0	0	0	1	0
14	5	6	7	8	7	1	1	1	1	1
15	8	7	7	6	8	1	1	1	0	1
16	8	6	6	6	6	1	1	1	1	1
17	5	5	5	8	5	1	1	1	1	1
18	8	7	6	6	7	1	1	1	1	1
19	6	6	6	6	6	0	1	1	1	1
20	5	6	7	5	6	1	0	1	1	1
21	5	5	5	5	5	0	0	0	0	0
22	5	5	(5)	5	5	0	0	(0)	0	0
23	5	5	5	6	5	0	0	0	0	0
24	6	5	5	6	5	0	0	0	0	0
25	6	6	6	5	6	0	0	1	0	0
26	5	5	5	7	5	0	0	0	1	0
27	6	6	7	q	6	1	1	0	0	1
28	q	q	q	q	q	1	1	1	0	1
29	q	q	q	q	q	0	0	1	0	0
30	q	q	q	q	q	0	0	0	0	0

Note No observations during the following periods:

10th 0300- 0600
10th 2020- 2400
22nd 0700- 0850
29th 2300- 2400

q: means quiet level, radiometer being unstable.

*: interference by atmospherics.

SOLAR RADIO EMISSION

Flux Density

Month: September 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	37	35	33	34	35
2	35	35	33	36	34
3	34	34	33	34	34
4	34	34	34	33	34
5	32	32	32	33	32
6	34	32	30	32	32
7	33	31	30	31	31
8	30	29	29	29	29
9	30	28	29	29	29
10	29	29	29	-	29
11	27	25	24	27	25
12	27	27	26	28	27
13	27	26	25	33	27
14	29	28	26	29	29
15	28	27	26	30	27
16	32	30	29	31	30
17	30	29	28	32	30
18	29	29	29	29	30
19	29	29	28	29	29
20	29	28	29	29	29
21	29	29	29	28	29
22	29	28	(28)	31	28
23	32	32	32	35	32
24	37	35	34	34	35
25	33	34	36	-	34
26	-	32	32	32	(32)
27	33	32	31	31	32
28	31	31	31	32	31
29	30	30	30	33	31
30	33	31	31	31	32

Note No observations during the following periods:

10th 2020- 2400
22nd 0730- 0810
25th 2020- 26th 0300

Distinctive Events

(single-frequency observations)

Month: September 1969
Observing station: Hiraiso
Normal observing period: 2020 - 0850 (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	
9	500	0519.5	0540.5	23.5	C	24	5	
	200	0523	0540.0	57	C	25	2	
15	200	0034.0	0034.5	2.0	C	>230	>80	
		0249.0	0249.2	2.0	C	190	65	
		0252.0	0253.0	1.0	C	>230	>70	
17	200	0835	0838.0	4	C	>270	>30	
	500	2124.0	2124.8	1.5	C	>635	>200	
		2229.0	2232.6	5.0	C	450	75	
18	500	0505.5	0505.7	6.0	C	585	33	
25	200	0640	0719	70	RF	27	10	
27	500	0347.0	0446.0	101.0	C	125	13	
	200	0345	-	115	RF	>130	>20	

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

SEP 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	-5	2	4	4	9	11	12	3	7	5	9	6	5	10	11	-4	17	-1	7	2	4	5	-1	1
2	-7	-2	-2	2	10	8	10	-3	-8	-3	-5	-5	-4	22	-7	1	-3	2	4	-2	2	-8	-10	-7
3	-8	-10	-1	2	11	6	14	7	-2	-6	-6	-10	-14	9	13	9	7	2	1	-5	-1	-5	ES -3	ES -9
4	-11	-9	-2	-6	4	12	14	9	5	1	-2	-5	-4	13	5	1	4	2	0	-13	-4	-1	-7	-5
5	-4	ES -17	0	5	9	16	16	-5	-2	1	-6	ES -9	-5	3	3	15	17	10	-6	5	10	-6	-10	0
6	-2	-2	-2	6	8	-1	-12	-6	2	0	-5	ES -2	ES -15	-17	-8	-3	-5	1	ES -30	ES -30	-21	-10	-8	-5
7	-9	-11	-2	0	6	10	6	-8	-8	ES -12	ES -14	ES -14	-4	1	-2	1	2	8	-8	-25	0	-4	0	-3
8	-4	0	1	3	13	-4	-9	-7	-5	ES -5	-8	-5	ES -8	ES -12	ES -12	ES -11	-4	0	12	-3	0	-3	2	-1
9	-4	-3	5	1	8	9	ES -29	ES -29	ES -25	ES 2	-7	ES -9	ES -8	ES -6	1	-13	ES -34	-1	-3	-8	-6	-7	6	2
10	-9	-4	3	2	2	3	ES -25	ES -34	ES -25	ES -13	ES -12	ES -10	ES 2	-4	-7	-2	-4	C	C	C	29	28	31	27
11	1	-1	7	6	10	18	0	ES -5	ES -6	ES -5	ES -8	ES -3	ES -3	-6	ES -13	ES -13	-8	-13	-13	2	-3	-2	-5	-3
12	0	4	4	7	4	-4	-9	-9	ES -11	ES -8	ES -8	ES -7	ES -5	ES -5	-12	ES -24	-24	-8	ES -33	-15	-3	-6	-3	-3
13	7	ES -34	3	13	7	12	-8	ES -13	ES -3	ES -19	ES -1	ES 2	ES -8	ES -11	-12	S	9	1	-6	-8	-5	2	-10	-3
14	0	0	1	5	7	6	-6	ES -15	ES -4	ES -2	ES -3	ES -6	ES 2	ES -8	-6	-10	15	16	1	-3	12	5	0	1
15	-1	-1	6	6	6	2	-15	-11	ES -11	-5	ES -4	ES -5	ES -3	ES -9	-2	0	-4	ES -10	ES -30	-18	-8	-2	-7	-11
16	-5	-8	-8	ES -19	ES -34	ES -12	ES -25	ES -9	ES -8	ES 2	ES -3	ES -4	ES -2	ES -9	-13	-3	-5	6	7	-4	2	-5	-3	-3
17	8	6	6	11	ES 0	ES -12	ES -25	ES -3	ES -12	ES -7	ES -4	ES -4	ES -16	-5	-11	-6	12	3	4	7	1	-1	-1	ES 0
18	ES 2	-1	6	7	14	-10	ES -25	ES -12	ES -9	ES -5	ES -8	ES -4	ES -7	ES -6	ES -20	ES -13	ES -5	13	-6	-2	10	10	7	ES 3
19	2	1	C	ES 7	ES 2	ES -6	ES 9	-6	ES -7	ES -3	ES -2	ES -14	ES -9	ES -15	ES -25	-15	-2	2	7	0	-5	7	7	1
20	-5	-3	ES 12	4	6	ES -3	ES 0	ES -4	ES -4	ES 2	ES 0	ES -4	ES -8	ES -7	-20	-10	6	-2	2	2	6	0	-5	-3
21	-2	1	6	15	13	2	ES -7	ES 0	ES 0	ES -5	ES 1	ES -5	ES 1	ES -9	-8	-2	3	2	0	-7	-1	-5	-4	-3
22	4	1	2	6	12	4	-6	-10	ES -14	ES -11	ES 3	S	1	-3	ES -29	-14	-3	2	4	3	-2	-2	1	-2
23	6	5	8	18	18	6	5	4	ES -10	ES 0	ES -4	ES -3	ES -4	ES -10	C	C	C	C	C	C	C	C	C	C
24	1	1	4	10	17	9	-4	-3	ES 2	ES 3	ES 3	ES 2	ES -7	ES -7	-5	-2	6	5	-3	-4	0	-1	0	0
25	1	4	-1	7	15	-10	-16	-8	-7	-3	-6	-6	ES -5	ES -10	-6	2	13	ES -21	-15	0	-1	-2	0	2
26	2	5	10	10	10	-7	-3	-7	ES -4	ES -3	3	ES -14	ES -7	ES -4	-8	-7	6	1	0	-2	1	2	1	1
27	1	6	8	12	5	8	-7	0	-4	ES 2	ES -8	ES -15	-9	C	C	C	C	5	6	4	1	2	1	4
28	2	6	14	14	15	21	20	1	ES -2	ES -3	5	ES -9	C	C	C	C	C	C	C	C	C	C	7	4
29	8	3	9	-1	ES -3	ES -11	ES -8	ES -8	ES -3	-2	ES -3	-8	-7	0	4	ES -31	ES -31	ES -31	ES -31	4	18	2	-4	1
30	-2	2	-5	-12	-7	-7	-16	ES -18	ES -16	ES -7	-2	ES -3	ES -5	ES -12	ES -30	ES -30	ES -7	ES -21	ES -30	ES -30	-5	8	12	3
CNT	30	30	29	30	30	30	30	30	30	30	30	29	29	28	27	26	27	27	27	27	28	28	29	29
MED	US 0	0	US 4	US 6	8	4	US -6	ES -6	ES -6	ES -3	ES -4	ES -5	ES -5	ES -6	-8	-5	-2	2	0	-3	0	-2	-1	US 0
UD	7	6	ES 10	14	15	16	14	4	2	ES 2	ES 3	ES 2	ES 2	10	5	2	15	10	7	4	12	8	7	4
LD	ES -9	-11	ES -2	ES -6	ES -3	ES -11	ES -25	ES -18	ES -16	ES -12	ES -8	ES -14	ES -14	ES -12	ES -25	ES -24	ES -24	ES -21	ES -30	-25	-6	-7	ES -10	ES -7

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

SEP 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	-22	-13	-11	ES -6	8	12	17	15	19	20	16	19	21	20	14	16	10	4	2	10	12	7	3	-8
2	ES -22	-12	-9	-2	4	13	8	12	14	17	14	12	8	10	4	ES -13	9	10	8	-8	-3	-20	ES -10	ES -9
3	ES -24	-13	-12	-3	7	7	13	12	12	16	8	-10	7	-6	ES -3	ES -9	4	11	2	0	-2	-13	ES -6	ES -27
4	ES -17	ES -21	-12	-11	4	9	12	27	23	21	17	14	13	13	11	5	7	14	-4	-18	-4	-17	-21	ES -21
5	ES -17	ES -17	-11	2	2	9	12	19	19	14	15	13	12	10	-10	ES -23	-4	8	-7	0	-3	-12	ES -23	-11
6	ES -27	ES -23	-12	-2	-1	5	10	13	16	13	7	1	ES -15	ES -30	-5	ES -21	ES -21	ES -30	ES -30	-1	1	-9	ES -11	-5
7	ES -20	ES -29	-8	-2	7	10	15	18	18	15	14	-4	13	1	ES -34	ES -34	7	7	-19	-8	-9	-6	-11	-12
8	-7	-12	-6	1	7	13	11	8	17	17	18	18	12	ES -9	ES -12	ES -11	ES -34	7	4	-1	-3	-8	ES -11	ES -6
9	-17	-25	-8	2	4	9	3	1	-2	10	3	11	ES 1	ES -34	ES -25	ES -34	ES -34	ES -34	ES -25	-4	-4	-6	-13	ES -15
10	ES -19	-14	0	2	4	11	11	10	-2	11	4	6	7	4	ES -34	ES -34	ES -34	C	C	C	28	23	22	19
11	-9	-12	-6	2	7	11	12	3	-4	7	6	7	4	-11	ES -11	ES -17	-6	-3	-4	-2	-4	-9	ES -13	ES -17
12	-8	-8	-2	6	6	9	-7	-5	15	19	-6	ES -22	ES -3	ES -9	ES -24	ES -33	2	-3	ES -33	-3	-5	-11	ES -7	-9
13	ES -9	-8	-4	3	12	13	7	-9	ES -16	ES -5	ES -1	ES 11	ES -8	ES -14	ES -11	ES -15	-3	12	-1	-3	0	0	3	-14
14	-9	-4	-4	2	7	13	12	12	18	12	14	9	ES -4	-9	-4	ES -11	1	6	ES -30	-1	-2	1	-3	-10
15	-14	-8	-3	1	5	11	3	ES -8	ES -9	17	2	ES -3	ES 0	ES -8	ES -23	ES -10	4	16	-12	-5	1	-22	-14	ES -13
16	-10	-9	-13	-3	1	6	2	ES -13	ES -3	-2	10	ES -5	ES -9	ES -19	ES -34	ES -25	-12	12	-7	-5	-4	-11	-23	ES -11
17	-4	-5	-7	7	12	14	12	11	17	18	7	ES -9	ES -11	ES -11	ES -15	ES -7	ES -16	21	12	-1	1	-2	-7	ES -6
18	ES -1	-9	-5	4	17	11	7	9	10	ES -3	ES -9	ES -9	ES -7	ES -12	ES -24	ES -6	ES -12	10	-2	-2	2	-2	-7	ES 3
19	-2	-14	-9	ES 8	1	7	0	15	19	19	7	ES -14	ES -4	ES -25	ES -25	ES -25	ES -19	11	ES -25	-5	1	-2	-3	ES -8
20	ES -20	ES -11	0	1	14	10	12	17	12	8	ES 4	ES -16	ES -10	ES -29	ES -29	ES -29	ES -29	13	1	7	0	-3	ES -16	-3
21	-9	-5	0	3	11	12	16	11	12	15	11	ES -1	ES -8	ES -21	ES -15	ES -21	ES -18	14	12	0	-5	-4	ES -18	-8
22	-2	-6	-7	-1	12	14	17	20	19	13	2	S	ES -8	ES -20	ES -29	ES -11	ES -28	17	6	-3	2	-10	-7	-4
23	-2	-1	1	9	15	16	23	4	ES -3	ES -5	ES 2	ES -5	ES -8	C	C	C	C	C	C	C	C	C	C	C
24	-11	0	-2	3	10	16	17	21	22	21	ES 7	ES -3	ES -7	ES -9	-7	ES -6	ES -15	6	ES -36	-4	0	-1	ES 0	-9
25	-9	-4	-5	6	15	16	22	19	10	9	21	6	ES -6	ES -10	-6	ES -5	ES -6	-7	-7	4	-1	-2	-2	ES -1
26	ES -5	-5	2	5	8	15	18	23	16	21	9	ES -3	20	ES -10	ES -5	ES -2	-5	15	6	1	2	-4	-5	-4
27	-6	-5	-2	5	5	17	23	15	8	22	7	1	C	C	C	C	ES -3	25	10	-2	1	-2	-5	ES 1
28	C	-5	2	-1	12	17	19	24	17	18	23	7	C	C	C	C	C	C	C	C	C	0	-4	ES -5
29	ES 2	1	1	9	12	16	17	12	16	ES -3	-2	-3	19	ES -18	ES -23	ES -31	ES -31	ES -31	-14	2	1	2	-3	-8
30	-7	-6	-5	2	10	12	15	4	ES -7	ES 0	ES -2	5	ES -3	-12	-17	-18	-12	-17	ES -30	2	7	-2	-8	0
CNT	29	30	30	30	30	30	30	30	30	30	30	29	28	27	27	27	28	27	27	27	28	29	29	29
MED	ES -9	-8	-5	US 2	7	12	12	12	14	14	7	US 1	ES -3	ES -10	ES -15	ES -15	US -9	10	-4	-2	0	-4	US -7	ES -8
UD	ES -2	-1	1	ES 8	15	16	22	23	19	21	18	14	19	10	4	ES -2	7	17	10	4	7	2	3	ES 1
LD	ES -22	ES -23	-12	ES -3	1	7	2	ES -8	ES -7	ES -3	ES -2	ES -14	ES -10	ES -29	ES -34	ES -34	ES -34	ES -30	ES -30	-8	-5	-17	ES -21	ES -17

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Sept. 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 4 4	4 5 4 4	5 5 - 4	4 5 5 4	N N N N			
2	4+	4 4 4	5 4 4 4	4 5 - 4	4 4 4 4	N N N N			
3	4+	4 4 4	4 4 5 5	4 4 - C	4 4 4 4	N N N N			
4	4o	4 4 4	5 (4) 4 4	4 4 - 4	4 4 4 4	N N N N			
5	4o	5 3 (4)	5 4 4 3	4 4 - 3	4 4 4 4	N N N N	06.5	---	90γ
6	4-	3 (3)(4)	4 4 4 3	4 4 - -	4 4 3 3	N N U U	---	14xx	
7	4-	3 4 (3)	4 4 4 (4)	(4) - - -	4 4 4 4	U N N N			
8	3+	3 3 3	4 4 4 4	4 (3) - 3	4 4 3 4	N U U U			
(9)	4-	4 4 (4)	4 3 3 4	4 4 - 4	4 4 4 4	N N N N			
(10)	4-	4 4 C	4 3 4 (4)	4 (3) - C	4 4 3 (4)	N N N N			
(11)	4-	(4) C 4	4 4 4 3	4 4 - 3	4 4 3 4	N N N N			
12	4-	4 C 4	4 4 3 4	3 4 - 3	4 3 4 3	N N N N			
13	4o	4 C (4)	4 4 4 4	3 (4) - -	4 (3) 4 5	N N N N			
14	4o	4 C (4)	4 4 4 4	(4) - - -	5 4 4 4	N N N N	15.18	---	82γ
15	3+	4 3 (3)	4 4 4 3	3 (3) - 3	5 4 4 4	N U U U	---	20xx	
16	3+	4 4 5	2 3 3 4	3 (3) - 3	(4) 3 4 4	U N N N			
17	4-	5 4 (4)	3 3 4 4	3 4 - 4	4 4 4 5	N N N N			
18	4-	4 4 3	4 4 3 4	4 4 - 4	4 3 3 4	N N N N			
19	4o	4 (5)(5)	4 3 4 4	4 4 - 4	(4) 4 4 4	N N N N			
20	4o	4 4 (4)	4 4 4 4	4 4 - -	4 4 4 4	N N N N			
21	4o	4 4 4	4 4 4 (4)	(4) - - -	4 4 4 (4)	N N N N			
22	4o	4 3 5	4 4 (3) 4	4 4 - 4	4 4 4 4	N N N N			
23	4+	4 4 4	5 5 C (4)	4 4 - 4	4 3 (4) C	N N N N			
24	5-	5 4 4	4 5 5 4	4 5 - 5	4 4 4 4	N N N N			
25	4+	(4) 4 4	4 5 4 4	5 C - 5	4 4 4 4	N N N N			
26	4+	4 4 4	5 5 4 4	4 4 - 5	4 4 4 4	N N N N			
27	4+	5 5 4	5 5 4 5	4 3 - -	4 4 4 4	N N N N	21.24	---	97γ
28*Δ	5-	5 4 4	5 5 4 (4)	(5) - - -	4 5 5 4	U U U U	---	---	
29Δ	3+	3 3 (3)	3 4 4 3	4 4 - (3)	4 3 4 4	N U U U	04.53	04 XX ---	162γ
30*Δ	3+	(3) 3 (3)	3 3 3 3	4 4 - 4	4 3 4 4	U U U U	---	24xx	

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

Time in U.T.

Sept. 1969	S W F									Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	LM	HA	TO	HB	SH							
13	25				-		01.12	40	S	2-	x		
27	20	-	>30		-		03.58	50	Slow	3	x	x	
	20'		-'										

I N U B O

1969	S P A								
Sep.	Phase Advance (degrees)					Time (U.T.)			Remarks
DATE	GBR	WWVL	NAA	NWC	AL2	Start	End	Maximum	
3				16		0444	0520	0447	
4			13	64	20	0304	0420	0315	X
4				12		0457	0540	0512	X
5		14	16	56		0045	0232	0127	X
5		20	18			2210	2312	2224	X
7			18	8		0440	0536	0445	
8				12		0630	0700	0635	X
8				16		0846	0937	0856	
10				20		0523	0600	0528	X
13	30	32	26	80	28	0113	0230	0125	X
13				16		0246	0314	0250	
15			22	60	31	0341	0500	0358	X
15				16		0545	0621	0554	X
16				28		0003	0050	0011	X
17				8		0358.	0440	0403	
18				32		0255	0322	0300	X
19				8		0146	0210	0151	
21				8		0208	0235	0214	
23				44		0526	0640	0532	
24				24		0117	0208	0136	
25		22	16	52		0153	0321	0220	X
27		18	26	112	44	0352	0640	0420	X
28			10	64	27	0327	0450	0345	X

IONOSPHERIC DATA IN JAPAN FOR SEPTEMBER 1969

第 21 巻 第 9 号

1969年12月20日 印 刷
1969年12月25日 発 行

(不許複製非売品)

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電話国分寺(0423)(21)1211(代)

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