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IONOSPHERIC DATA IN JAPAN

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CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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

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

Solar radio emission and radio propagation conditions are observed at Hiraiso Branch 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_oF2, f_oF1, f_oE — The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.

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

f_bEs — The lowest ordinary wave frequency at which the Es 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.

$h'Es$ — The lowest virtual height of the trace used to give the f_oEs.

$hpF2$ — 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 extra-ordinary 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 nonblanketing 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	4.5m vertical rod
Bandwidth	±40 Hz 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 15 MHz 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 Observa-

tory. 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.

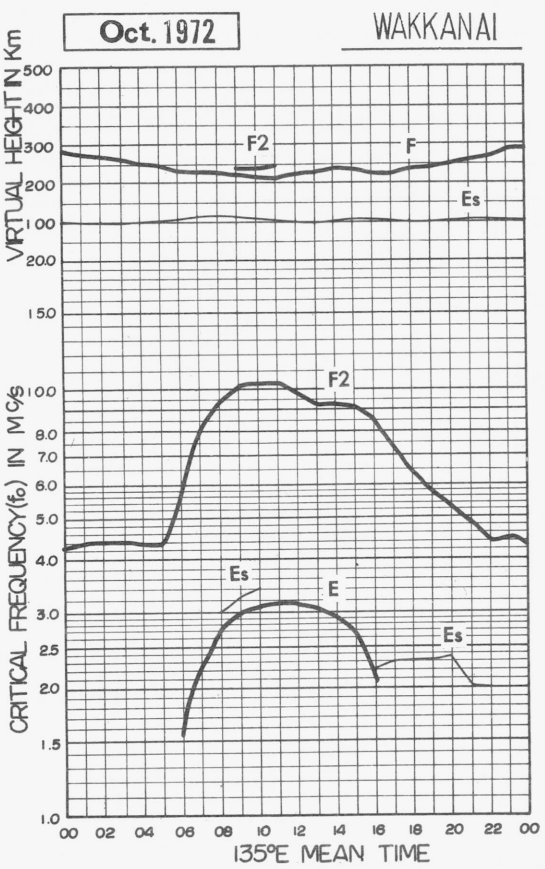
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West Cape	21°49′S 114°10′E	NWC	22.3	1000	6990
Lualualei	21°26′N 158°09′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

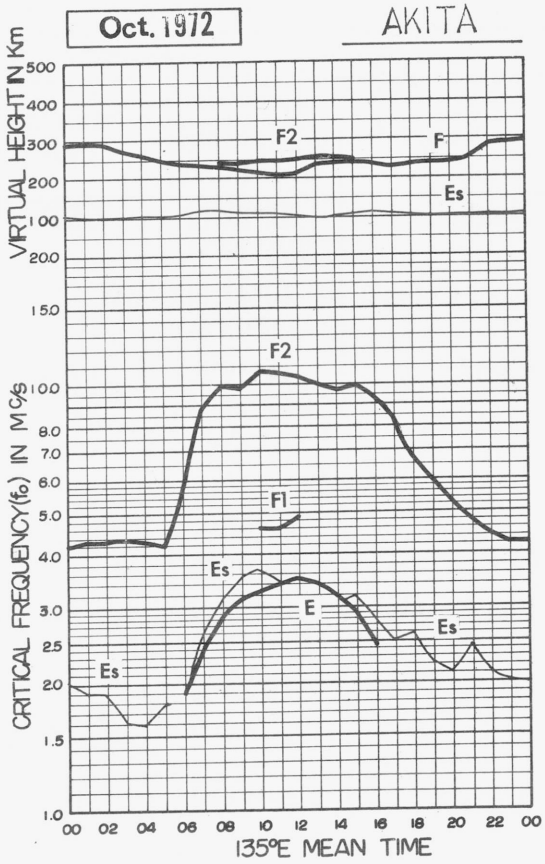
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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.

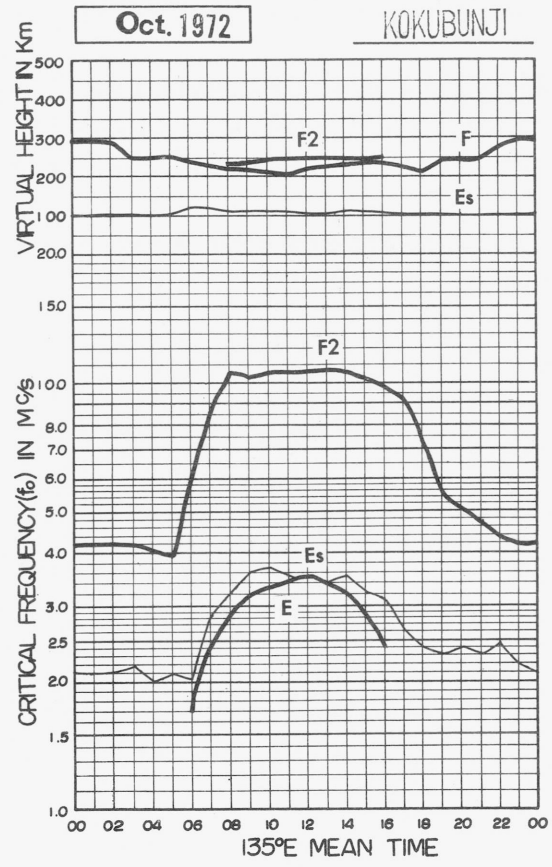
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

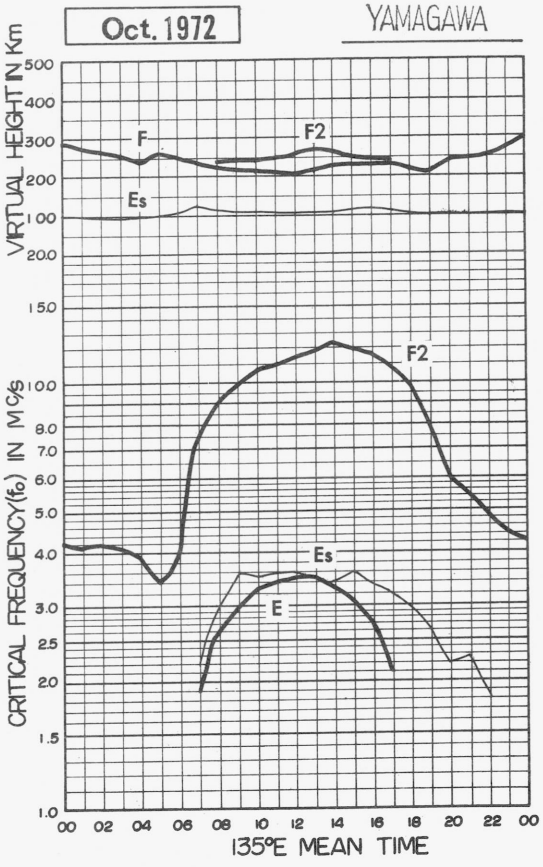




1(F)

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	57	56	57	57	53	48	62	73	95	U R 101	103	94	88	93	96	90	86	85	74	63	57	54	54	55
2	53	52	50	47	49	47	65	92	105	R	R	88	98	91	88	93	98	93	76	65	57	53	53	49
3	47	46	47	48	46	46	63	I R 84	95	89	94	J R 103	R	R	93	92	96	I C 94	83	67	59	53	50	I S 48
4	45	47	44	44	46	48	67	88	87	95	95	R	98	100	J R 94	88	92	96	76	73	62	45	43	45
5	44	43	44	44	43	43	63	80	R	90	101	104	106	100	95	87	86	80	73	73	70	66	47	42
6	41	40	42	41	42	44	63	66	R	93	92	95	101	86	84	89	79	72	68	68	68	56	46	48
7	48	49	50	52	49	49	67	77	86	94	102	103	93	87	85	83	85	78	65	68	71	55	38	40
8	41	42	44	43	43	40	60	78	83	90	98	121	98	78	77	76	80	77	76	76	64	53	45	45
9	47	48	48	49	48	43	64	69	75	87	J R 100	96	90	98	86	83	84	73	57	58	55	52	43	45
10	45	47	45	47	48	47	66	85	81	101	92	95	101	89	85	81	93	77	57	57	56	49	50	49
11	47	48	50	47	45	46	58	75	86	93	106	107	100	89	100	100	90	77	63	63	60	55	51	49
12	48	50	50	50	38	38	57	C	93	108	117	98	93	87	82	88	79	68	56	55	50	44	43	41
13	39	42	45	39	35	29	53	84	82	102	100	88	96	115	90	87	76	75	67	65	53	49	50	48
14	47	46	46	47	49	48	62	78	84	102	94	R	96	100	106	95	83	67	58	50	50	50	53	47
15	40	40	39	39	40	38	60	94	C	92	104	97	97	R 100	82	91	89	68	57	56	A	37	S 38	39
16	42	41	43	44	40	37	51	73	J R 90	90	116	94	83	85	U R 90	90	96	72	45	42	40	40	41	41
17	43	44	43	43	40	39	53	I R 80	92	93	94	110	93	78	85	S	87	63	59	62	48	48	43	42
18	40	40	40	43	45	44	53	72	83	90	96	97	103	96	99	96	91	73	56	50	51	49	50	45
19	44	45	44	F	F 48	51	F 63	84	92	103	103	131	123	115	110	115	106	84	67	67	55	58	57	50
20	43	47	43	43	A	40	40	A	68	78	73	87	90	86	80	80	80	68	65	55	45	37	37	F
21	F 36	F	33	33	A	33	43	65	79	87	94	94	91	87	95	83	76	74	65	53	48	51	43	F
22	F	F	40	F	F	F	F	75	95	117	103	93	101	90	97	97	83	68	56	53	50	50	I S 44	F
23	F	F	F	F 43	S	39	50	C	C	117	98	104	107	90	104	101	90	65	59	53	50	48	43	41
24	41	41	39	43	43	31	47	82	93	118	121	105	103	98	96	94	83	80	55	44	48	50	46	45
25	43	43	43	43	44	43	58	83	93	103	118	133	118	98	90	95	92	72	63	58	53	49	46	41
26	42	44	45	47	43	43	55	79	R 103	108	117	115	115	105	94	97	94	78	65	57	55	46	46	45
27	S	47	45	48	48	43	58	92	93	109	120	120	117	109	96	93	81	65	57	47	45	I A 43	43	42
28	A	43	45	46	47	40	53	81	90	101	103	118	114	102	110	108	91	77	67	64	A	41	43	43
29	40	38	36	38	38	38	52	82	96	103	100	114	109	94	95	97	87	73	76	60	40	37	35	36
30	35	34	36	36	38	37	51	93	120	115	122	96	95	88	85	88	80	71	73	65	44	33	33	32
31	31	33	34	33	F 30	30	48	87	115	113	107	103	100	91	97	93	76	61	60	53	46	41	38	36
	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	30	29	27	30	30	28	27	30	30	29	30	30	31	30	31	31	31	31	29	31	31	28
MED	43	44	44	44	44	43	58	80	92	101	102	103	99	92	94	92	86	73	65	58	53	49	44	45
UQ	47	47	46	47	48	46	63	84	95	108	107	110	106	100	96	96	92	78	70	65	57	53	50	48
LQ	40	41	40	43	40	38	52	75	84	90	95	95	93	87	85	87	80	68	57	53	48	44	43	41

The Radio Research Laboratories, Japan

OCT. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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														
2																								
3										L	L	L												
4										U L 440	L													
5										L 400														
6											U L 430	450												
7										L	L													
8										L		L	U L 460	410										
9											L	L		L										
10											U L 450													
11										L		L	L											
12										L				400										
13											L	L												
14											L													
15											A	440	A											
16												L	L											
17												L												
18												L												
19																								
20									400	A				A										
21																								
22																								
23									C	L														
24										400	400													
25																								
26																								
27																								
28																								
29																								
30																								
31												L												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	3	3	2	1	2										
MED									400	L 400	U L 430	445	U L 460	405										
UQ										L 420	U L 440													
LQ										400	415													

The Radio Research Laboratories, Japan

OCT. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 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 automatio 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							170	245	290	300	300	320	315	300	305	280	240	A						
2							175	245	290	300	315	315	320	305	305	295	230	S						
3							A	230	280	300	315	325	330	320	300	275	220	A						
4							175	245	275	300	A	320	305	315	300	275	220	S						
5							160	A	280	305	325	R	300	300	285	275	220	S						
6							150	235	275	295	R	320	320	315	300	275	230	S						
7						E	S	235	290	A	315	310	305	295	290	265	215	A						
8							S	235	A	300	310	A	305	300	295	270	225	S						
9							S	240	285	300	A	310	305	300	290	A	A	A						
10							150	240	285	300	310	305	310	305	295	250	205	S						
11							S	220	275	295	300	305	300	300	280	250	A	A						
12							145	225	270	295	300	305	310	A	R	265	205	S						
13							145	230	275	295	300	A	A	A	A	A	A	A						
14							A	215	265	290	295	R	300	305	290	250	A	A						
15							S	220	270	295	285	A	A	A	A	A	A	A						
16							S	235	275	300	305	315	R	A	290	A	A	S						
17							S	220	280	290	295	295	A	A	R	A	A							
18							S	220	280	295	300	300	290	A	A	A	A							
19							S	230	280	295	300	300	A	A	A	A	A							
20							S	215	260	295	305	300	A	A	A	A	A							
21							S	215	255	290	290	285	A	A	290	260	200							
22							S	225	270	300	305	325	330	315	295	255	185	E						
23							S	C	C	300	A	A	A	A	A	A	A							
24							S	220	290	300	310	310	315	305	295	270	200							
25							S	220	290	305	305	A	325	320	295	A	200							
26							S	225	280	300	305	315	A	305	295	250	200							
27							S	220	250	285	A	325	A	315	300	240	160							
28							S	220	275	295	A	320	320	310	295	265	A							
29							S	220	A	300	A	325	A	A	A	A	A							
30							S	A	A	A	315	320	310	300	285	250	A							
31							S	A	250	A	310	A	320	300	295	240	175							
	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	8	27	27	28	24	23	20	20	22	20	17	1						
MED						E	155	225	275	300	305	315	310	305	295	265	205	E						
UQ							172	235	282	300	310	320	320	315	300	275	220							
LQ							148	220	270	295	300	305	305	300	290	250	200							

The Radio Research Laboratories, Japan

OCT. 1972 FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 15	E S 14	E	E	E	17	G	G	G	G	G	G	G	G	G	G	G 20	19	E S 17	19	20	F S 15	E	E S 16
2	E S 15	E	E	E	E	J X 20	G	G	G	G	G	G	G	38	G	G	G	20	E	18	F S 15	E S 15	E S 15	E S 15
3	E	E S 14	E S 15	E S 15	E	E S 15	18	G	G	G	35	G	40	G 26	G	G 20	30	28	J X 33	J X 31	J X 33	20	24	E
4	E S 14	E S 14	J X 24	J X 23	15	E	G	G	G	G	J X 35	34	G	G	G	G	G	18	19	J X 30	J X 23	J X 23	E S 15	E S 14
5	E S 15	E	22	J X 18	J X 20	E	G	28	36	38	G	G	G	G	G	G	G	20	19	J X 55	J X 30	J X 40	J X 23	J X 30
6	J X 21	J X 25	E	E	E	E S 15	G	G	31	33	G	G	G	G	G 20	G	G	22	E S 15	E	J X 25	E	E	E
7	E	E	E	E	E	E	G	28	G	33	G	G	G	G 25	G	G	G 19	20	E S 17	E S 15	J X 28	F S 15	F S 15	E S 15
8	E S 15	E S 15	E	E	E	E	G	G 15	30	G 27	G 30	30	G	G 23	G	G	G	E S 14	E S 15	E	J X 21	E S 15	F S 16	E S 17
9	21	J X 18	E	J X 18	15	E	G	G	G	G	35	G 28	G 30	G 30	G 25	J X 33	J X 43	J X 26	E S 14	J X 23	F S 17	E S 15	F S 13	E S 12
10	E S 14	E S 15	E S 15	18	J X 18	E S 14	G	G	G	32	G	G	G	G	G	G 20	G 19	E S 16	E S 14	E S 14	E S 15	E S 12	E S 15	E S 15
11	20	E S 12	E	E	E	E S 14	G	26	30	36	36	G	G	G 26	G	G 20	22	19	J X 22	21	24	E S 17	F S 14	E S 14
12	E S 16	15	E	E	E	E	18	28	33	33	G	G	33	32	G	G 15	30	J X 63	J X 60	E S 15	23	26	F S 13	E S 14
13	J X 23	E S 13	E	14	15	E	23	26	40	J X 51	40	33	35	34	40	J X 34	J X 34	J X 20	J X 53	J X 30	J X 30	22	23	E S 15
14	E S 15	E S 14	E	E	E	J X 30	J X 30	24	32	40	35	G	G 28	G 23	G 23	G 19	21	J X 24	J X 25	E S 15	J X 21	24	24	E S 16
15	E S 15	E	22	E S 15	J X 20	E	E S 17	G	30	33	67	J X 34	J X 51	40	J X 58	J X 60	25	J X 27	J X 33	J X 28	J X 70	19	20	E S 15
16	E S 15	E S 14	E	E	E	E	G	27	30	36	G	G	G	31	G 28	34	J X 50	J X 30	J X 30	J X 22	J X 30	20	F S 15	E S 15
17	E S 15	E S 15	E	E	E S 14	E S 15	E S 17	J X 25	G 21	G	34	33	J X 40	31	G 27	J X 30	J X 33	J X 35	J X 25	J X 41	J X 25	J X 35	J X 23	E S 16
18	22	E	22	22	J X 18	34	E S 14	G	G	33	34	34	33	33	38	J X 40	J X 28	J X 24	E S 17	J X 23	J X 20	J X 21	J X 20	E S 17
19	E S 16	E	E S 15	J X 24	J X 33	J X 23	J X 23	J X 31	33	34	40	40	J X 55	J X 40	J X 45	J X 71	J X 50	J X 50	J X 40	J X 28	J X 43	J X 26	J X 49	J X 63
20	J X 21	E	20	J X 53	J X 74	J X 30	J X 33	J X 71	38	J X 55	41	44	J X 46	J X 53	J X 61	J X 44	J X 30	J X 33	J X 35	24	J X 33	18	F S 15	J X 63
21	J X 30	J X 30	J X 33	J X 30	J X 43	J X 25	J X 25	30	35	J X 73	J X 62	J X 55	J X 50	J X 45	G 21	G	G	20	J X 40	23	J X 25	J X 22	J X 28	J X 35
22	E S 16	J X 50	J X 60	J X 73	J X 23	E S 15	E S 15	G	32	G	G 30	G	G	G 20	G	30	25	23	E S 15	J X 23	J X 23	E S 16	F S 16	E S 16
23	E S 14	E	E	E	16	E	E S 14	C	C	J X 35	J X 37	J X 33	J X 34	J X 33	J X 38	J X 41	J X 33	J X 33	J X 32	J X 24	J X 23	E S 17	F S 17	E S 16
24	E S 15	E S 15	E S 15	E	E	22	20	G	G	G	G	G	G	G	G	G	G 17	J X 21	23	J X 53	J X 20	J X 21	J X 63	J X 31
25	E S 13	E	E	E	E	E S 14	E S 15	G	G	G	36	36	G	G	G	J X 40	G	20	E S 16	E S 16	F S 15	E S 15	J X 26	J X 21
26	J X 20	J X 23	E S 13	E	E	E	E S 16	G	G	G	33	G	J X 45	G 30	G 26	26	G	J X 22	J X 23	20	J X 24	J X 23	23	J X 23
27	J X 23	J X 30	J X 22	E	E	E	E S 15	G	30	J X 43	J X 67	G 31	38	G 29	G	G	22	J X 35	J X 73	J X 53	J X 40	J X 75	J X 53	J X 48
28	J X 53	J X 23	E	E	E	E	E S 16	G	34	35	38	G	G	G	G	G 23	25	J X 29	J X 31	J X 36	J X 83	J X 58	J X 30	J X 21
29	J X 25	J X 21	E S 14	E	J X 18	E	E S 15	G	32	G	J X 33	J X 33	J X 43	40	J X 41	27	20	E S 15	E S 16	J X 31	J X 41	J X 53	J X 33	J X 30
30	J X 30	E S 15	E	18	17	J X 21	E S 16	J X 40	J X 28	32	G 26	G 25	G 24	G 24	G	33	J X 33	J X 33	J X 31	J X 25	J X 24	F S 16	F S 14	E S 15
31	E S 15	E S 15	E	E	E S 15	J X 24	E S 16	30	33	32	G	35	G	G	G	G	G 15	J X 30	J X 23	22	F S 16	F S 15	J X 20	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 15	E E 14	E	E	E E 14	E E 14	E G 15	G	30	33	34	G 25	G 24	G 26	G	G 20	22	J X 23	J X 23	J X 23	J X 24	20	20	E S 16
UQ	J X 21	16	18	18	J X 18	20	18	28	33	36	36	34	39	33	G 28	J X 34	J X 30	J X 30	J X 32	J X 30	J X 30	J X 24	J X 24	J X 22
LQ	E S 15	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E G 15	20	E S 16	18	J X 20	F S 15	F S 15	E S 15

The Radio Research Laboratories, Japan

OCT. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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	E S 15	E S 14	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G 19	19	E S 17	E	E	E S 15	E	E S 16
2	E S 15	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	F S 15	E S 15	F S 15	E S 15
3	E	E S 14	E S 15	E S 15	E	E S 15	17	G	G	G	G	G	G	G 26	G	G 20	G	20	26	28	20	18	E	E
4	E S 14	E S 14	23	13	15	E	G	G	G	G	35	G	G	G	G	G	G	G	19	27	20	20	F S 15	E S 14
5	E S 15	E	E	17	E	E	G	27	35	G	G	G	G	G	G	G	G	G	E	20	22	25	20	25
6	E	15	E	E	E	E S 15	G	G	G	G	G	G	G	G	G 20	G	G	G	E S 15	E	20	E	E	E
7	E	E	E	E	E	E	G	G	G	32	G	G	G	G 24	G	G	G 18	18	E S 17	E S 15	15	F S 15	F S 15	E S 15
8	E S 15	E S 15	E	E	E	E	G	G 15	30	G 25	G 29	36	G	G 23	G	G	G	E S 14	E S 15	E	16	E S 15	F S 16	E S 17
9	E	13	E	17	E	E	G	G	G	G	35	G 27	G 28	G 28	G 23	27	34	17	E S 14	21	F S 17	F S 15	F S 13	E S 12
10	E S 14	E S 15	E S 15	15	16	E S 14	G	G	G	G	G	G	G	G	G	G 19	G 19	G 16	E S 14	E S 14	E S 15	E S 12	F S 15	E S 15
11	E	E S 12	E	E	E	E S 14	G	G	G	G	G	G	G	G 26	G	G 20	21	18	19	20	E	E S 17	F S 14	E S 14
12	E S 16	E	E	E	E	E	G	G	G	G	G	G	G	31	G	G	G	17	30	E S 15	E	E	F S 13	E S 14
13	20	E S 15	E	E	E	E	G	G	40	45	G	33	34	34	32	32	22	20	38	21	20	E	E	E S 15
14	E S 15	E S 14	E	E	E	18	17	G	G	38	G	G	G 28	G 23	G 22	G 18	20	15	20	E S 15	E	E	E	E S 16
15	E S 15	E	E	E S 15	15	E	E S 17	G	22	G 20	45	34	45	34	42	45	24	22	23	23	A	E	20	E S 15
16	E S 15	E S 14	E	E	E	E	G	G	G	G	G	G	G	30	G 26	27	23	17	22	20	23	20	E S 15	E S 15
17	E S 15	E S 15	E	E	E S 14	E S 15	E S 17	19	G 20	G	G	G	35	30	E R 27	28	27	23	23	36	22	22	18	E S 16
18	E	E	E	E	E	E	E S 14	G	G	G	G 16	G	G	32	34	35	22	20	E S 17	20	E	E	E	E S 17
19	E S 16	E	E S 15	E	26	18	18	G	G	G	G	G	52	35	32	50	36	30	20	E	27	20	40	40
20	E	E	E	36	A	E	20	A	36	46	G	43	44	52	42	40	29	28	25	20	E	E	F S 15	20
21	17	17	24	E	A	E	G	G	G	68	57	50	40	40	G 20	G	G	E	36	17	18	20	25	20
22	E S 16	20	27	25	15	E S 15	E S 15	G	G	G	G 27	G	G	G 20	G	G	G	G	E S 15	E	E	F S 16	F S 16	E S 16
23	E S 14	E	E	E	E	E	E S 14	C	C	G	36	34	33	33	38	33	30	33	27	20	E	E S 17	F S 17	E S 16
24	E S 15	E S 15	E S 15	E	E	E	20	G	G	G	G	G	G	G	G	G	G 17	19	18	28	E	16	E	17
25	E S 13	E	E	E	E	E S 14	E S 15	G	G	G	G	36	G	G	G	30	G	16	E S 16	E S 16	F S 15	F S 15	20	E
26	20	15	E S 13	E	E	E	E S 16	G	G	G	G	G	40	G 27	G 24	23	G	15	17	E	20	20	E	22
27	19	21	16	E	E	E	E S 15	G	G	43	35	G 29	35	G 28	G	G	G	17	50	40	40	A	17	25
28	A	17	E	E	E	E	E S 16	G	G	G	35	G	G	G	G	G 21	23	23	27	32	A	27	23	19
29	20	17	E S 14	E	E	E	E S 15	G	29	G	33	25	37	35	34	26	20	E S 15	E S 16	15	20	27	20	20
30	E	E S 15	E	E	E	17	E S 16	23	27	30	G 25	G 25	G 23	G 21	G	20	21	30	22	20	E	F S 16	E S 14	E S 15
31	E S 15	E S 15	E	E	E S 15	20	E S 16	24	G 23	30	G	33	G	G	G	G	G 15	24	20	16	F S 16	E S 15	E	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 15	E E 14	E	E	E	E	E G 14	G	G	G	G	G	G	G 26	G	G 20	G 19	17	19	20	16	E E 16	F E 15	E S 16
UQ	E S 16	E S 15	E E 14	E E 13	E E 14	E E 14	E S 16	G	G 22	28	31	31	34	32	26	28	22	21	24	21	20	20	18	18
LQ	E E 13	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	15	E S 16	E E 14	E	E S 14	E	E S 15

The Radio Research Laboratories, Japan

OCT. 1972 | FBES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio operation

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

The Radio Research Laboratories, Japan

OCT. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	285	290	300	320	290	325	315	330	U R 345	330	320	320	315	315	335	330	330	325	295	290	280	295	290
2	285	285	290	275	290	295	310	320	330	R	R	310	325	320	330	310	325	330	330	310	305	285	285	295
3	275	275	275	290	295	300	335	I R 335	345	335	330	J R 320	R	R	325	315	320	I C 330	320	315	300	300	280	I S 285
4	280	270	275	275	285	305	315	340	335	340	320	R	315	320	J R 330	320	325	325	330	330	325	280	280	285
5	285	285	285	290	300	295	365	350	R	330	335	310	340	340	340	330	325	325	305	315	315	335	320	285
6	295	285	280	295	300	320	365	350	R	345	315	320	325	325	320	330	330	325	315	315	335	325	305	290
7	300	270	285	290	300	295	345	350	350	340	340	320	325	325	320	315	330	340	305	310	325	345	290	280
8	285	280	290	290	300	315	335	345	345	335	315	330	335	320	325	330	325	325	315	335	340	315	295	275
9	270	270	275	290	315	295	355	355	335	325	J R 340	325	310	325	325	315	335	340	315	305	320	320	285	290
10	285	285	285	275	295	290	350	350	360	335	350	340	335	315	330	320	345	345	305	300	300	285	280	290
11	280	275	295	280	280	290	310	345	335	345	330	335	340	305	320	345	340	340	295	300	310	300	280	285
12	270	290	300	335	290	290	320	C	335	335	340	345	345	335	330	340	340	340	320	310	320	295	285	270
13	265	275	300	320	315	285	330	355	335	340	360	340	315	330	355	345	340	335	325	325	300	280	295	305
14	300	285	285	275	300	290	330	340	345	345	340	R	335	340	330	340	350	335	315	290	290	285	305	320
15	285	280	275	280	315	315	330	360	C	325	365	340	340	R 350	330	350	335	370	315	340	A	295	S 300	280
16	285	290	310	320	315	295	335	340	J R 345	335	345	360	325	320	U R 335	320	345	345	310	300	300	290	290	275
17	285	295	295	320	295	300	325	I R 340	350	360	350	355	345	340	320	S	345	335	300	325	325	290	300	290
18	295	285	280	280	315	365	360	360	290	335	355	330	335	330	325	345	350	340	320	290	315	290	300	290
19	280	290	295	F	F 290	290	F 315	350	330	335	315	315	325	315	310	320	340	325	330	295	260	270	290	275
20	275	280	280	260	A	295	285	A	310	295	295	305	305	315	335	335	335	330	330	335	320	280	310	F
21	F 280	F	275	265	A	275	305	315	330	340	330	330	340	315	340	350	340	325	325	330	315	315	295	F
22	F	F	280	F	F	F	F	345	325	340	340	310	340	320	330	350	340	320	320	305	300	300	I S 295	F
23	F	F	F	F 280	S	330	335	C	C	345	325	335	325	320	325	340	340	320	320	310	295	305	305	275
24	270	275	275	285	300	325	320	330	330	340	335	330	340	325	320	340	315	330	315	290	290	290	295	290
25	285	255	275	270	275	295	315	325	325	310	320	320	330	325	320	340	325	310	300	300	325	300	285	270
26	260	275	280	300	300	300	325	330	R 340	335	325	330	330	325	310	340	340	320	300	300	310	285	285	275
27	S	280	275	265	290	295	310	335	325	315	315	325	325	330	325	345	335	310	325	310	300	I A 290	285	290
28	A	280	265	285	290	300	335	345	330	335	310	315	335	300	315	335	320	325	285	335	A	265	280	300
29	290	295	280	270	290	290	320	355	355	350	320	315	330	320	315	330	340	300	325	335	300	280	285	260
30	260	265	260	270	290	295	320	325	335	335	335	335	315	330	320	330	340	305	315	340	300	325	275	275
31	260	275	295	300	F 280	F 280	290	345	350	335	335	330	335	320	330	345	335	305	305	315	320	295	295	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	30	29	27	30	30	28	27	30	30	29	30	30	31	30	31	31	31	31	29	31	31	28
MED	280	280	280	285	295	295	325	345	335	335	332	330	330	322	325	335	335	330	315	310	310	290	290	285
UQ	285	285	290	295	300	300	335	350	345	340	340	335	340	330	330	345	340	338	325	328	320	302	298	290
LQ	272	275	275	275	290	290	315	332	330	335	320	320	325	320	320	320	328	322	305	300	300	285	285	275

OCT. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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														
2																								
3										L	L	L												
4										UL 385	L													
5										L 410														
6											UL 415	400												
7										L	L													
8										L		L	UL 390	415										
9											L	L		L										
10											UL 400													
11										L		L	L											
12										L				415										
13											L	L												
14											L													
15											A	405	A											
16												L	L											
17												L												
18												L												
19																								
20									A	A				A										
21																								
22																								
23									C	L														
24										400	400													
25																								
26																								
27																								
28																								
29																								
30																								
31												L												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										3	3	2	1	2										
MED										L 400	UL 400	402	UL 390	415										
UQ										405	UL 408													
LQ										392	400													

The Radio Research Laboratories, Japan

OCT. 1972 | M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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										245														
2																								
3										220	250	260												
4										220	245													
5										245														
6											245	245												
7										240	235													
8										240		250	220	220										
9											250	270		265										
10											225													
11										235		245	230											
12										230				230										
13											225	245												
14											225													
15											225	235	240											
16												L	L											
17												230												
18												230												
19																								
20									295	275				230										
21																								
22																								
23									C	225														
24										235	245													
25																								
26																								
27																								
28																								
29																								
30																								
31												230												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	11	10	10	3	4										
MED									295	235	240	245	230	230										
UQ										242	245	250	235	248										
LQ										228	225	230	225	225										

The Radio Research Laboratories, Japan

OCT. 1972 | H'F2 (KM)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	260	260	260	250	225	250	225	230	210	210	220	200	200	200	245	245	235	225	215	240	250	270	260	260
2	250	260	250	265	260	270	230	220	235	220	215	200	220	225	225	240	245	220	210	240	230	265	275	250
3	270	300	300	265	250	250	215	225	225	215	200	215	220	225	245	210	245	225	225	240	240	250	250	265
4	295	300	315	295	280	250	210	220	215	215	195	195	200	220	220	245	240	235	220	240	225	250	265	290
5	275	260	275	270	235	265	210	220	220	205	215	235	205	230	240	230	230	230	230	250	250	245	220	300
6	300	300	295	265	250	240	215	220	230	240	200	205	200	225	210	235	225	220	225	235	230	220	240	285
7	250	250	265	250	225	245	220	215	215	210	200	200	225	205	210	245	240	220	225	250	225	210	245	300
8	280	270	260	250	245	240	215	220	210	210	230	220	210	200	205	245	245	220	230	225	215	225	245	285
9	295	295	280	260	235	245	220	210	215	225	220	210	205	225	225	230	230	215	220	250	235	235	250	270
10	275	270	270	250	255	265	220	220	220	220	215	195	225	220	235	230	235	210	215	250	250	250	270	260
11	275	270	250	260	275	275	215	210	220	220	225	235	205	220	245	230	225	215	250	240	235	250	270	275
12	290	270	245	220	250	255	225	225	220	215	225	200	235	200	230	240	220	215	245	245	245	260	290	300
13	350	270	250	220	220	300	240	220	220 A	230 I A	220	200	200	240	225	240	220	220	250	245	250	270	260	260
14	260	260	275	280	250	275	215	230	215	240	210	225	210	200	225	225	215	215	230	250	250	270	250	240
15	250	265	300	275	245	250	210	215	210	210	A	210	I A 225	230	A 245	A	220	205	225	215	A	275	275	270
16	280	275	250	225	220	250	215	220	220	220	235	220	210	210	240	240	220	200	225	250	250	280	280	300
17	290	270	260	240	260	250	210	220	225	225	220	210	210	210	225	230	225	215	260	A	230	270	270	260
18	265	275	285	285	250	210	210	210	215	215	220	200	225	210	245	230	220	205	215	250	260	270	260	245
19	260	245	265	260	295	245	215	215	220	220	220	220	A	220	235	A	220	220	235	255	305	320	A	A
20	295	295	300	A	A	300	300	A	A	A	230	260	250	A	A	A 235	230	225	250	225	240	270	265	370
21	310	315	A 370	315	A	295	260	235	220	A	A	A	245	245	245	225	220	220	A 250	210	245	250	270	325
22	305	325	325	280	270	300	230	225	225	235	210	210	225	225	235	230	220	205	220	235	250	250	270	290
23	295	275	260	270	265	210	250	C	C	220	210	210	200	230	250	235	220	230	245	250	260	250	250	260
24	310	305	310	260	225	200	245	225	220	200	205	225	220	220	230	240	210	220	215	300	285	270	270	270
25	270	300	300	300	295	245	225	225	220	220	225	225	215	225	230	240	220	210	235	240	230	260	265	305
26	325	310	275	265	245	245	225	215	215	220	210	210	215	215	220	230	225	210	220	245	250	255	265	305
27	300	290	270	255	260	245	250	220	210	220	205	230	225	240	225	225	210	215	A	A	A	I A 260	295	300
28	A	300	300	265	260	205	225	225	220	225	210	215	225	225	240	225	220	210	260	A 240	A	A	305	260
29	280	275	300	300	280	250	245	220	220	220	215	215	230	235	240	240	220	245	235	215	250	325	300	350
30	350	340	320	300	265	260	260	250	240	225	220	225	225	225	230	240	220	250	245	235	250	230	275	315
31	320	300	265	250	305	325	275	220	225	220	215	220	220	220	240	225	215	220	250	230	230	260	255	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	29	31	31	29	29	29	29	30	30	30	30	29	31	31	30	29	28	30	30	30
MED	285	275	275	265	250	250	225	220	220	220	215	212	220	222	232	235	220	220	230	240	248	260	265	282
UQ	300	300	300	280	265	268	242	225	220	225	220	225	225	225	240	240	230	222	245	250	250	270	275	300
LQ	270	270	260	250	245	245	215	220	215	215	210	200	205	210	225	230	220	212	220	235	230	250	250	260

The Radio Research Laboratories, Japan

OCT. 1972 | H'F (KM)

IONOSPHERIC DATA

OCT. 1972 | 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

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

The Radio Research Laboratories. Japan

OCT. 1972 | H'ES (KM)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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						F1											L1	L1		F1	F1			
2						F1								C1				C1		F1				
3							L1				H1		C1	L1		L1	H1	CL11	F3	F2	F1	F2	F1	
4			F4	F2	F1						L1	C1						H1	F2	F2	F2	F2		
5			F1	F2	F1			L1	C2	C1								H1	F1	F3	F4	F3	F2	F3
6	F1	F2							C1	C1					L1			H1			F2			
7								H1		L1				L1			L1	L1			F2			
8								L1	L1	L1	L1	L1		L1							F1			
9	F1	F1		F2	F1						L1	L1	L1	L2	L1	L2	L3	L1		F1				
10				F1	F1					C1						L1	L1							
11	F1							H1	H1	C1	C1			L1		L1	L1	L1	F1	F1	F1			
12		F1					C1	H1	C1	C1			C1	L1		L1	C1	C1	F3		F1	F1		
13	F2			F1	F1		C1	C1	C2	C2	C1	L1	L1	L1	L1	L2	L1	L1	F2	F2	F2	F1	F1	
14						F2	L1	C1	C1	C1	C2		L1	L1	L1	L1	L1	L1	F1		F1	F2	F1	
15			F1		F1				L1	CL11	CL21	L2	L2	L3	L3	L3	CL21	L2	F2	F2	F3	F1	F1	
16								H1	H1	C1				L1	L1	L1	L1	L1	F2	F1	F2	F1		
17								L1	L1		C1	C1	L2	L2	L1	L2	L3	F3	F2	F2	F2	F2	F1	
18	F1		F1	F1	F2	F1				C1	CL11	C1	C1	L2	HL12	L4	L3	F1		F1	F1	F1	F1	
19				F2	F3	F2	L1	L1	C1	C2	C1	C2	L2	L2	L3	L3	L4	F3	F2	F1	FF23	F2	F6	F4
20	F1		F1	FF35	F3	F2	L3	C2	C2	LC11	C1	C2	L2	L3	L3	L3	L2	F4	F2	F1	F1	F1		F2
21	F2	F2	F4	F1	F4	F1	L1	C1	C2	C5	C3	C2	L2	L2	L1			F1	F4	F1	F2	F1	F2	F2
22		F3	F3	F3	F1				C2		L1			L1		H1	C1	C1		F1	F1			
23					F1					C1	L2	L2	L2	L2	L2	L3	L3	F3	F3	F2	F1			
24						F1	L1										L1	F1	F1	F2	F1	F2	F1	F2
25											C1	L1				L2		F1					F2	F2
26	F3	F3									C1		L2	L1	L1	L1		F1	F1	F1	F2	F3	F1	F4
27	F1	F2	F2						C1	C2	L2	L1	L1	L1			C1	F1	F4	F4	F4	F2	F2	F4
28	F3	F2							C1	C1	L1					L1	L1	F3	F3	F2	F3	F3	F2	F1
29	F1	F1			F1				L1		L2	L1	L2	L1	L1	L1	L1			F1	F2	F2	F2	F2
30	F1			F1	F1	F2		L2	L2	L1	L1	L1	L1	L1		L1	L2	F3	F2	F2	F2			
31						F2		L2	CL11	L1		L1					L1	F3	F2	F1			F1	
	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

OCT. 1972 | TYPES OF ES

IONOSPHERIC DATA

OCT. 1972 | 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	55	54	54	56	51	42	63	93	101	103	94	106	96	96	101	99	98	87	76	56	56	54	53	54
2	54	53	48	46	44	45	67	87	111	108	99	96	100	105	94	96	97	101	85	I R 60	57	56	53	50
3	47	47	45	47	45	43	67	89	102	89	86	102	96	98	108	101	98	115	98	72	57	53	48	48
4	47	46	45	45	46	51	71	93	98	94	104	104	96	101	106	93	95	111	100	76	59	45	45	45
5	46	44	43	45	43	42	66	84	91	92	110	100	101	108	94	97	90	96	89	83	81	56	46	45
6	43	43	42	43	43	43	64	78	88	92	98	85	98	94	91	86	87	89	83	72	63	57	43	46
7	44	43	45	43	44	39	67	89	98	92	93	92	104	98	86	89	89	88	82	61	64	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	103	113	84	78	77	87	91	84	77	65	45	41	40
9	42	41	42	42	43	36	59	75	H 84	86	102	95	95	96	96	94	91	91	62	53	55	46	41	41
10	44	42	40	40	40	37	67	89	100	89	100	89	97	99	95	94	92	96	57	46	48	48	47	47
11	45	43	44	44	42	42	67	91	89	92	94	110	107	101	96	104	99	88	66	71	63	53	52	49
12	47	49	53	49	32	37	58	94	99	116	117	106	96	87	87	91	94	83	64	54	F	45	46	42
13	41	44	45	39	31	27	51	79	92	103	103	92	100	112	104	87	89	76	72	62	52	51	52	50
14	47	42	43	43	46	43	58	82	114	90	109	92	111	92	101	107	96	73	54	47	50	48	52	41
15	34	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	85	101	109	97	87	91	100	98	83	45	I A 41	42	39	I C 40	39
17	40	43	42	42	36	37	54	76	102	101	97	96	88	86	82	92	96	78	48	54	48	38	41	41
18	37	38	40	41	44	39	I C 52	71	81	87	97	90	99	105	104	102	102	83	I R 58	51	49	48	I R 46	41
19	36	37	I R 39	I R 41	46	43	57	91	96	96	115	116	133	120	114	123	116	85	71	61	57	51	F	A
20	F	F	F	F	F	43	52	I A 76	96	105	132	111	113	107	93	93	94	83	59	57	44	I A 39	39	36
21	33	38	36	35	36	36	49	79	90	92	111	119	101	98	109	107	92	74	67	58	46	42	39	36
22	38	40	41	39	35	34	56	97	106	109	109	96	106	99	96	99	87	78	58	51	48	47	41	41
23	42	43	43	42	41	44	57	88	114	115	102	116	103	106	97	114	102	74	49	51	52	48	45	42
24	40	41	42	44	41	37	54	82	102	110	117	123	102	102	103	109	91	74	59	47	46	48	46	46
25	42	44	42	43	45	47	62	87	112	97	116	128	117	106	104	98	85	78	66	63	59	52	49	41
26	44	45	47	54	46	41	53	93	103	111	115	115	105	103	111	102	92	80	70	57	54	I A 47	42	41
27	45	45	43	46	46	42	54	91	113	101	111	126	109	110	110	101	87	69	56	51	47	I A 46	42	43
28	45	45	F 43	46	44	42	51	83	I R 100	92	109	123	123	123	116	117	109	87	68	74	43	42	43	46
29	40	39	37	38	38	39	57	86	101	110	109	116	108	108	108	104	95	76	76	71	49	34	34	31
30	33	35	I A 35	36	39	37	54	89	115	124	111	114	106	93	96	93	87	72	73	74	59	44	32	31
31	32	34	35	32	27	29	46	96	114	114	108	109	102	91	91	93	92	66	57	62	50	39	41	36
	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	27	27	28	28	28	28	29	29	30	30	30	30	30	30	30	30	30	29	29	28	28
MED	42	43	43	43	43	42	57	88	100	97	108	106	102	100	96	98	93	83	66	59	52	47	44	42
UQ	46	45	45	46	45	43	65	91	108	109	111	116	108	106	106	104	98	89	76	71	59	51	48	46
LQ	39	40	40	40	38	37	54	80	94	92	99	96	97	94	93	93	89	76	58	51	48	44	41	40

The Radio Research Laboratories, Japan

OCT. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	U L 460	U L 470	500	L	L	U L 500	L								
2									L	L	L	L 480	L 510	L	L	L								
3									L	L	L 450	L	L	L	L	L	L							
4									L	L	H 500	L	L	L	L	L								
5									L	L	L 480	L	470	L	L	L								
6									L	L	L 470	L	490	L	L	L								
7									L	L	L 460	H 470	L 540	L	L	L								
8									C	C	C	L 440	L	U L 450	L									
9									L	L 510	H 450	420	H 550	L	L	L								
10									L	L	L 460	L 460	H 510	U L 470	L	L								
11									L	U L 450	U L 460	L	L 500	L 480	L	L								
12									A	L	450	470	L 460	L	L	L								
13									L	L	L	L	L	L	L	L								
14									L	L	460	L	470	L	L	L								
15									C	C	C	C	C	C	C	C								
16									C	L	U L 450	L	L	L	L	L								
17									L	L	L	I A 450	U L 450	L	L	L								
18									L	L	L	L	L	A	L	L								
19									A	A	A	L	A	A	L	L								
20									A	A	L	L	L 440	L	L	A								
21									A	A	A	A	A	L	L	L								
22								L	L	L	L	L	L 500	L	L									
23									L	L	A	L 460	L	L	L									
24									L	L	U L 510	L 480	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	L	U L 440	L									
27									L	L	L	L	A	L	L									
28									L	L	L 470	L	L	L	L									
29									L	L	L	L	L	L	L									
30									L	L	L	L 420	L	L	L									
31									L	L	L	L 460	L	L	L									

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										3	14	12	12	4	1									
MED										U L 460	L 460	L 460	L 495	U L 460	U L 500									
UQ										485	470	475	510	475										
LQ										U L 455	450	445	465	U L 445										

The Radio Research Laboratories, Japan

OCT. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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							190	255	305	330	340	350	355	350	330	290	240	S						
2							195	260	300	325	340	345	355	350	335	300	245	A						
3							200	255	295	325	330	340	345	345	320	290	245	A						
4							B	255	300	325	335	IA 345	IA 340	IA 330	320	300	250	A						
5							190	260	A	A	A	350	355	350	335	305	265	185						
6							170	255	295	A	A	345	355	IA 345	325	295	250	A						
7							A	A	A	A	330	345	350	345	315	275	245	175						
8							C	C	C	C	C	345	350	330	315	290	250	S						
9							190	255	300	IA 320	IA 330	340	345	335	320	290	245	S						
10							195	245	295	IA 325	335	345	345	335	320	300	250	A						
11							180	240	285	310	320	IA 330	340	IA 325	310	A	A	A						
12							A	245	285	310	315	330	IA 335	IA 340	325	300	245	A						
13							A	240	290	315	A	A	A	A	A	IA 275	230	S						
14							175	IA 255	IA 290	A	A	340	345	A	A	A	220	A						
15							C	C	C	C	C	C	C	C	C	C	C	C						
16							C	C	C	320	325	A	A	340	A	A	A	S						
17							S	240	290	310	315	IA 330	IA 335	325	A	A	A	S						
18							C	245	285	315	325	A	A	A	A	A	A	S						
19							A	235	IA 290	315	A	A	A	A	A	A	A	A						
20							S	IA 245	IA 285	A	A	A	IA 345	IA 335	A	A	A	S						
21							A	IA 230	290	A	A	A	A	A	A	A	A	S						
22							B	245	IA 285	315	330	340	IA 350	345	335	IA 305	A	S						
23							S	A	A	A	IA 330	IA 340	350	340	325	295	240	S						
24							B	A	290	320	330	340	345	340	320	295	240	S						
25							B	240	300	325	IA 335	350	355	350	335	305	A	S						
26							S	235	295	IA 320	IA 330	335	345	340	320	A	A	S						
27							S	240	285	A	A	A	A	A	335	295	A	S						
28							S	250	IA 295	315	330	340	350	IA 345	IA 320	290	A	S						
29							S	IA 240	IA 295	320	340	350	355	350	330	A	A	S						
30							S	IA 240	IA 290	IA 320	345	350	355	340	320	275	A	S						
31							S	235	A	A	A	340	350	340	315	280	220	S						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	25	24	20	20	23	24	24	22	20	16	2						
MED							190	245	290	320	330	340	350	340	320	295	245	180						
UQ							195	255	295	325	335	345	355	345	330	300	250							
LQ							180	240	288	315	328	340	345	335	320	290	240							

The Radio Research Laboratories, Japan

OCT. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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

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	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	G	28	G	G	G	G	G	G	G	32	27	E$_{19}^{S}$	J$_{23}^{X}$	J$_{22}^{X}$	J$_{21}^{X}$	E$_{18}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$
2	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E	E$_{14}^{S}$	G	G	G	37	39	40	G	G	G	33	31	J$_{41}^{X}$	J$_{25}^{X}$	J$_{20}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	F$_{14}^{S}$	E$_{14}^{S}$
3	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	21^{M}	J$_{20}^{X}$	G	G	G	36	39	37	37	G	36	G	32	J$_{28}^{X}$	J$_{27}^{X}$	J$_{23}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$
4	E$_{14}^{S}$	19^{M}	J$_{20}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$	J$_{17}^{X}$	E$_{18}^{B}$	G	G	G	36	41	37	38	G	33	J$_{39}^{X}$	J$_{25}^{X}$	J$_{27}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	J$_{21}^{X}$	J$_{38}^{X}$
5	J$_{27}^{X}$	E$_{14}^{S}$	J$_{23}^{X}$	J$_{19}^{X}$	J$_{19}^{X}$	J$_{20}^{X}$	J$_{24}^{X}$	J$_{25}^{G}$	J$_{33}^{X}$	J$_{40}^{X}$	J$_{37}^{X}$	G	G	G	G	G	G	G	J$_{26}^{X}$	J$_{32}^{X}$	J$_{21}^{X}$	J$_{25}^{X}$	E$_{14}^{S}$	J$_{38}^{X}$
6	J$_{30}^{X}$	J$_{22}^{X}$	J$_{20}^{X}$	J$_{21}^{X}$	J$_{24}^{X}$	J$_{28}^{X}$	J$_{18}^{X}$	G	G	36	J$_{44}^{X}$	G	J$_{46}^{X}$	J$_{36}^{X}$	G	G	27	20	J$_{29}^{X}$	J$_{24}^{X}$	J$_{26}^{X}$	J$_{38}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$
7	E$_{14}^{S}$	21^{M}	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	20	27	37	36	G	G	G	G	G	G	G	G	J$_{18}^{X}$	E$_{14}^{S}$	18^{M}	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	J$_{29}^{G}$	G	G	G	G	26	19	20^{M}	E$_{14}^{S}$	E$_{14}^{S}$	J$_{29}^{X}$	18^{M}	20^{M}
9	18^{M}	E$_{14}^{S}$	E$_{14}^{S}$	E	E	E$_{14}^{S}$	20	G	31	41	34	30^{G}	28^{G}	27^{G}	J$_{30}^{G}$	G	30	J$_{28}^{X}$	J$_{28}^{X}$	J$_{18}^{X}$	J$_{19}^{X}$	J$_{19}^{X}$	J$_{24}^{X}$	J$_{18}^{X}$
10	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	J$_{20}^{X}$	20^{M}	G	27	33	35	G	G	G	G	30^{G}	J$_{29}^{G}$	29	J$_{30}^{X}$	J$_{24}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$
11	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	G	28	33	37	37	37	G	J$_{35}^{X}$	29^{G}	J$_{30}^{X}$	J$_{27}^{X}$	J$_{28}^{X}$	J$_{19}^{X}$	J$_{19}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	J$_{25}^{X}$	J$_{34}^{X}$
12	J$_{25}^{X}$	J$_{20}^{X}$	20^{M}	E$_{14}^{S}$	E$_{14}^{S}$	J$_{25}^{X}$	J$_{21}^{X}$	27	43	J$_{45}^{X}$	43	36	37	35	G	33	38	J$_{30}^{X}$	J$_{20}^{X}$	E$_{14}^{S}$	J$_{80}^{X}$	J$_{53}^{X}$	J$_{21}^{X}$	J$_{26}^{X}$
13	J$_{21}^{X}$	J$_{26}^{X}$	E$_{14}^{S}$	J$_{19}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	24	29	33	39	J$_{42}^{X}$	36	37	37	39	34	28	J$_{65}^{X}$	J$_{70}^{X}$	J$_{53}^{X}$	J$_{29}^{X}$	J$_{51}^{X}$	J$_{30}^{X}$	J$_{29}^{X}$
14	J$_{20}^{X}$	J$_{18}^{X}$	J$_{19}^{X}$	J$_{18}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$	G	29	33	34	34	J$_{38}^{X}$	J$_{37}^{X}$	J$_{36}^{X}$	J$_{40}^{X}$	28	26	J$_{24}^{X}$	J$_{40}^{X}$	J$_{34}^{X}$	J$_{28}^{X}$	J$_{26}^{X}$	J$_{19}^{X}$	J$_{23}^{X}$
15	J$_{29}^{X}$	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	39	38	36	J$_{41}^{X}$	G	J$_{34}^{X}$	J$_{43}^{X}$	J$_{51}^{X}$	J$_{40}^{X}$	J$_{43}^{X}$	J$_{44}^{X}$	J$_{43}^{X}$	J$_{33}^{X}$	C	J$_{23}^{X}$
17	20^{M}	21^{M}	J$_{18}^{X}$	E$_{14}^{S}$	J$_{18}^{X}$	J$_{20}^{X}$	J$_{20}^{X}$	21^{G}	32	39	37	J$_{44}^{X}$	J$_{43}^{X}$	J$_{33}^{X}$	J$_{43}^{X}$	J$_{39}^{X}$	J$_{34}^{X}$	J$_{26}^{X}$	J$_{28}^{X}$	J$_{49}^{X}$	J$_{42}^{X}$	J$_{38}^{X}$	J$_{29}^{X}$	J$_{50}^{X}$
18	J$_{41}^{X}$	J$_{26}^{X}$	J$_{19}^{X}$	J$_{23}^{X}$	J$_{25}^{X}$	J$_{19}^{X}$	C	G	G	G	37	J$_{41}^{X}$	37	50	J$_{40}^{X}$	J$_{39}^{X}$	J$_{48}^{X}$	J$_{25}^{X}$	J$_{65}^{X}$	J$_{44}^{X}$	J$_{30}^{X}$	J$_{53}^{X}$	J$_{39}^{X}$	J$_{78}^{X}$
19	E$_{14}^{S}$	J$_{18}^{X}$	J$_{39}^{X}$	J$_{41}^{X}$	J$_{46}^{X}$	J$_{25}^{X}$	J$_{28}^{X}$	32	J$_{64}^{X}$	J$_{49}^{X}$	J$_{68}^{X}$	J$_{39}^{X}$	J$_{64}^{X}$	J$_{38}^{X}$	J$_{80}^{X}$	J$_{47}^{X}$	J$_{31}^{X}$	29	J$_{18}^{X}$	J$_{27}^{X}$	J$_{60}^{X}$	J$_{38}^{X}$	J$_{54}^{X}$	J$_{73}^{X}$
20	J$_{39}^{X}$	J$_{88}^{X}$	J$_{39}^{X}$	E$_{14}^{S}$	J$_{29}^{X}$	J$_{48}^{X}$	J$_{43}^{X}$	J$_{94}^{X}$	J$_{48}^{X}$	J$_{61}^{X}$	J$_{44}^{X}$	37	36	J$_{42}^{X}$	J$_{33}^{X}$	J$_{88}^{X}$	J$_{52}^{X}$	J$_{55}^{X}$	J$_{73}^{X}$	J$_{49}^{X}$	J$_{86}^{X}$	J$_{86}^{X}$	J$_{40}^{X}$	J$_{44}^{X}$
21	J$_{87}^{X}$	J$_{42}^{X}$	J$_{33}^{X}$	J$_{47}^{X}$	J$_{33}^{X}$	J$_{39}^{X}$	J$_{27}^{X}$	29	J$_{48}^{X}$	J$_{47}^{X}$	J$_{64}^{X}$	J$_{79}^{X}$	J$_{45}^{X}$	J$_{48}^{X}$	J$_{36}^{X}$	J$_{38}^{X}$	J$_{48}^{X}$	J$_{40}^{X}$	J$_{49}^{X}$	J$_{19}^{X}$	J$_{18}^{X}$	J$_{19}^{X}$	E$_{17}^{B}$	E$_{14}^{S}$
22	E$_{14}^{S}$	J$_{28}^{X}$	J$_{25}^{X}$	J$_{23}^{X}$	E$_{14}^{S}$	J$_{19}^{X}$	21^{M}	J$_{24}^{G}$	J$_{31}^{X}$	G	J$_{29}^{G}$	26^{G}	J$_{43}^{X}$	J$_{34}^{G}$	G	32	27	20	E$_{14}^{S}$	J$_{23}^{X}$	J$_{24}^{X}$	J$_{25}^{X}$	J$_{29}^{X}$	J$_{18}^{X}$
23	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E	J$_{24}^{X}$	E$_{16}^{S}$	27	J$_{36}^{X}$	33	J$_{45}^{X}$	J$_{36}^{X}$	31^{G}	G	G	35	J$_{20}^{G}$	E$_{17}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	J$_{17}^{X}$	E$_{14}^{S}$
24	19^{M}	J$_{18}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{13}^{S}$	E$_{14}^{S}$	E$_{18}^{B}$	26	30	34	G	G	G	G	G	G	J$_{27}^{X}$	J$_{24}^{X}$	J$_{23}^{X}$	20^{M}	E$_{14}^{S}$	J$_{20}^{X}$	J$_{40}^{X}$	E$_{15}^{S}$
25	J$_{43}^{X}$	J$_{19}^{X}$	E$_{14}^{S}$	J$_{19}^{X}$	J$_{19}^{X}$	J$_{18}^{X}$	E$_{18}^{B}$	26	G	G	35	G	G	G	G	J$_{31}^{X}$	J$_{29}^{X}$	J$_{36}^{X}$	J$_{36}^{X}$	J$_{23}^{X}$	J$_{36}^{X}$	J$_{26}^{X}$	E$_{14}^{S}$	20^{M}
26	J$_{36}^{X}$	J$_{19}^{X}$	20^{M}	18^{M}	20^{M}	22^{M}	E$_{16}^{S}$	26	G	34	35	G	33^{G}	G	G	J$_{38}^{X}$	26	J$_{24}^{X}$	J$_{22}^{X}$	J$_{21}^{X}$	J$_{32}^{X}$	J$_{59}^{X}$	J$_{28}^{X}$	J$_{26}^{X}$
27	J$_{43}^{X}$	J$_{23}^{X}$	J$_{23}^{X}$	J$_{19}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	G	31	J$_{40}^{X}$	J$_{39}^{X}$	J$_{38}^{X}$	J$_{67}^{X}$	J$_{58}^{X}$	G	32	J$_{36}^{X}$	J$_{22}^{X}$	J$_{26}^{X}$	J$_{23}^{X}$	J$_{76}^{X}$	J$_{80}^{X}$	J$_{41}^{X}$	J$_{20}^{X}$
28	J$_{30}^{X}$	J$_{18}^{X}$	J$_{19}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	G	34	J$_{33}^{X}$	G	G	G	J$_{38}^{X}$	J$_{37}^{X}$	26^{G}	J$_{26}^{X}$	E$_{14}^{S}$	J$_{20}^{X}$	E$_{18}^{B}$	E$_{14}^{S}$	J$_{24}^{X}$	J$_{43}^{X}$	J$_{54}^{X}$
29	J$_{54}^{X}$	J$_{20}^{X}$	J$_{33}^{X}$	J$_{28}^{X}$	J$_{23}^{X}$	J$_{23}^{X}$	E$_{16}^{S}$	J$_{28}^{X}$	39	33	G	G	G	G	J$_{29}^{G}$	J$_{35}^{X}$	J$_{34}^{X}$	J$_{43}^{X}$	J$_{38}^{X}$	J$_{27}^{X}$	J$_{29}^{X}$	J$_{48}^{X}$	J$_{34}^{X}$	J$_{44}^{X}$
30	J$_{38}^{X}$	J$_{37}^{X}$	J$_{39}^{X}$	J$_{23}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$	E$_{16}^{S}$	J$_{27}^{X}$	J$_{36}^{X}$	J$_{56}^{X}$	G	G	G	G	G	J$_{34}^{X}$	26	E$_{18}^{S}$	J$_{23}^{X}$	J$_{19}^{X}$	E$_{15}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{17}^{S}$
31	E$_{14}^{S}$	E$_{14}^{S}$	20^{M}	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{15}^{S}$	24	31	J$_{44}^{X}$	J$_{42}^{X}$	J$_{33}^{G}$	J$_{28}^{G}$	J$_{36}^{X}$	G	G	G	J$_{19}^{X}$	J$_{19}^{X}$	J$_{23}^{X}$	J$_{19}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	28	28	27	28	28	29	29	30	30	30	30	30	30	30	30	30	30	29	28	29
MED	J$_{20}^{X}$	J$_{19}^{X}$	19	16	16	18	18	26	32	36	37	34	32^{G}	30^{G}	G	32	28	J$_{25}^{X}$	J$_{26}^{X}$	J$_{22}^{X}$	J$_{21}^{X}$	J$_{25}^{X}$	J$_{21}^{X}$	J$_{20}^{X}$
UQ	J$_{36}^{X}$	J$_{22}^{X}$	J$_{23}^{X}$	J$_{20}^{X}$	J$_{20}^{X}$	J$_{22}^{X}$	20	28	36	J$_{40}^{X}$	J$_{42}^{X}$	38	J$_{37}^{X}$	J$_{37}^{X}$	J$_{36}^{X}$	J$_{35}^{X}$	J$_{34}^{X}$	J$_{30}^{X}$	J$_{36}^{X}$	J$_{27}^{X}$	J$_{32}^{X}$	J$_{38}^{X}$	J$_{32}^{X}$	J$_{38}^{X}$
LQ	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{E}$	G	G	33	29^{G}	G	G	G	G	G	26	19	J$_{20}^{X}$	J$_{18}^{X}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$	E$_{14}^{S}$

The Radio Research Laboratories, Japan

OCT. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	28	G	G	G	G	G	G	G	32	27	E S 19	E	18	E	E S 18	E S 14	E S 14
2	E S 14	E S 14	F S 14	E S 14	E	E S 14	G	G	G	37	39	38	G	G	G	33	30	32	20	18	E S 14	E S 14	E S 14	E S 14
3	E S 14	E S 14	F S 14	E S 14	E	E	G	G	G	36	38	37	37	G	35	G	27	21	20	20	E	E S 14	E S 14	E S 14
4	E S 14	E	19	E	E S 14	E	E B 18	G	G	G	35	39	37	38	G	31	39	19	E	E	E S 14	E S 14	E	25
5	23	E S 14	17	E	16	E	16	G 20	31	35	34	G	G	G	G	G	G	G	E	20	18	16	E S 14	18
6	24	E	18	18	20	20	14	G	G	34	38	G	31	36	G	G	27	19	26	E	22	30	E	E S 14
7	E S 14	E	E S 14	E S 14	E S 14	E S 14	20	26	34	34	G	G	G	G	G	G	G	G	16	E S 14	E	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	G 28	G	G	G	G	26	18	E	E S 14	E S 14	E	E	E
9	E	E S 14	E S 14	E	E	E S 14	15	G	G	39	34	G 30	G 26	G 26	G 28	G	27	27	25	E	E	E	19	E
10	E S 14	E S 14	E S 14	E S 14	E	E	G	26	32	34	G	G	G	G	G 29	G 28	28	25	18	E S 14	E S 14	E S 14	E S 14	E S 14
11	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	26	32	37	36	36	G	34	G 29	30	24	20	18	E	E S 14	E S 14	E	20
12	20	18	E	E S 14	E S 14	E	20	26	43	42	41	36	36	35	G	G	26	28	E	E S 14	31	25	E	E
13	E	20	E S 14	E	E S 14	E S 14	23	G	32	37	41	36	36	35	32	29	G	19	E	E	20	21	24	20
14	20	16	17	E	E	E S 14	G	28	30	34	34	30	31	36	36	28	26	20	25	29	24	23	17	21
15	29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	38	37	36	38	G	33	41	29	32	30	A	37	30	C	18
17	E	E	E	E S 14	18	E	18	G 19	31	37	34	U R 44	37	26	39	33	32	25	25	39	26	21	28	22
18	26	17	18	19	19	E	C	G	G	G	37	35	37	52	41	31	30	27	38	40	29	29	24	19
19	E S 14	E	34	R 32	25	18	19	29	50	48	60	39	62	114	40	38	28	26	E	20	24	25	40	A
20	25	38	E	E S 14	16	18	26	A	47	54	39	37	36	42	33	51	50	47	45	32	37	A	18	24
21	25	25	25	16	18	28	18	28	44	46	58	68	45	41	34	35	41	29	36	19	E	E	F B 17	E S 14
22	E S 14	E	20	E	E S 14	E	E	G 20	30	G	G 26	G 24	36	G 24	G	32	26	18	E S 14	18	E	19	18	18
23	E S 14	E S 14	E S 14	E S 14	E	E	E S 16	27	30	33	U R 45	36	G 29	G	G	31	G 19	E S 17	E S 14	E S 14	E S 14	E S 14	E	E S 14
24	E	E	E S 14	E S 14	E S 13	E S 14	E B 18	26	G	33	G	G	G	G	G	G	20	19	18	E	E S 14	E	19	E S 15
25	30	E	E S 14	E	E	E	E B 18	26	G	G	35	G	G	G	G	27	27	28	21	E	22	23	E S 14	E
26	30	18	E	E	E	E	E S 16	26	G	34	35	G	G 31	G	G	31	26	21	18	19	25	A	25	17
27	18	18	23	17	E S 14	E S 14	E S 14	G	31	38	38	38	52	40	G	38	30	E	22	20	40	A	20	20
28	24	E	E	E S 14	E S 14	E S 14	E S 14	G	32	29	G	G	G	36	35	G 22	24	E S 14	18	E B 18	E S 14	E	E	37
29	24	18	22	19	18	E	E S 16	25	31	31	G	G	G	G	G 28	29	30	34	26	22	E	E	E	22
30	27	26	A	E	E	E S 14	E S 14	26	30	37	G	G	G	G	G	19	24	E S 18	20	19	E S 15	E S 14	E S 14	E S 17
31	E S 14	E S 14	E	E S 14	E S 14	E S 14	E S 15	21	30	41	42	G 30	G 27	25	G	G	G	E	E	E	E	E S 14	E S 14	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	28	28	27	28	28	29	29	30	30	30	30	30	30	30	30	30	30	29	28	29
MED	14	14	14	14	14	14	E G 16	26	30	35	35	30	G 30	G 24	G	29	27	20	18	18	E E 14	E E 16	E E 14	17
UQ	24	18	18	E S 14	16	E S 14	18	26	32	38	39	37	37	36	33	32	30	27	25	20	24	25	19	20
LQ	E S 14	E	F S 14	E	E	E	E G 14	G	G	33	G 26	G	G	G	G	G	24	E G 18	E	E	E	E S 14	E	E S 14

The Radio Research Laboratories, Japan

OCT. 1972 | FBES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	16	16	15	18	17	21	20	22	15	15	E_{19}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{18}^{S}	E_{14}^{S}	E_{14}^{S}
2	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	15	15	17	16	19	21	17	18	18	15	15	14	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
3	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	15	15	16	16	19	16	18	14	16	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
4	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	18	15	16	14	16	19	19	18	16	15	14	14	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}
5	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E	E_{14}^{S}	16	15	16	14	18	18	16	16	50	13	15	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}
6	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E	14	15	16	18	20	19	17	16	14	15	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
7	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	16	18	18	19	19	18	17	16	14	14	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	15	16	14	14	16	15	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
9	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	15	14	13	14	14	16	16	15	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
10	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	14	14	16	17	16	16	14	14	15	15	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
11	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	16	16	16	16	16	16	18	16	15	14	14	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
12	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	16	14	16	16	16	16	17	16	14	16	14	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	16	16	15	18	17	18	18	17	17	17	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
14	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	16	14	16	16	20	18	16	16	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
15	E_{14}^{S}	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	15	18	16	19	15	15	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	C	E_{14}^{S}
17	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	18	15	16	15	19	16	15	13	14	E_{13}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}
18	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	C	15	16	15	18	16	17	17	17	15	14	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}
19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	15	16	17	15	17	16	16	14	14	14	14	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}
20	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	17	17	17	16	18	18	18	15	14	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
21	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	14	15	16	16	18	17	18	16	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	17	E_{14}^{S}
22	E_{14}^{S}	E	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	17	14	14	16	14	16	15	18	18	18	16	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
23	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{16}^{S}	14	16	18	16	19	16	18	17	15	14	E_{17}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
24	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	18	16	15	16	19	17	22	16	17	16	14	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}
25	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	18	16	16	18	19	21	23	18	18	16	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
26	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{16}^{S}	16	16	18	19	18	16	16	17	16	19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
27	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	18	15	17	16	16	16	23	16	16	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
28	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	18	16	19	19	20	18	14	15	14	E_{14}^{S}	E_{14}^{S}	18	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
29	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{16}^{S}	16	16	18	19	19	19	18	16	15	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}
30	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{16}^{S}	15	16	20	19	19	19	18	19	14	15	E_{18}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{17}^{S}
31	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	15	18	19	18	16	18	18	18	15	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	28	28	27	28	28	29	29	30	30	30	30	30	30	30	30	30	30	29	28	29
MED	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	15	16	16	18	17	18	17	16	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
UQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	16	17	18	19	19	19	18	18	16	16	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
LQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	14	15	16	15	16	16	16	16	14	14	14	E_{14}^{S}	E_{14}^{S}	F_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}

The Radio Research Laboratories, Japan

OCT. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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	290	285	285	300	310	300	320	330	325	330	310	315	305	300	300	310	320	310	315	300	285	280	290	285
2	295	295	300	280	280	290	320	315	330	325	330	305	310	315	310	315	320	330	330	I R 315	305	300	285	300
3	290	290	280	300	315	305	330	325	325	335	320	325	300	315	315	320	315	320	320	335	315	300	295	290
4	290	290	285	285	290	300	340	330	335	325	325	315	305	305	310	315	310	320	320	325	305	285	285	280
5	295	295	290	300	320	300	335	335	335	295	320	315	315	315	310	315	310	325	320	315	330	310	285	295
6	290	285	285	295	305	325	345	350	335	335	340	320	315	315	310	300	315	320	325	320	325	320	305	285
7	300	290	295	310	330	300	330	340	350	325	330	310	310	330	305	315	320	320	330	310	320	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	310	330	325	320	310	330	320	320	325	325	305	295	270
9	270	285	285	315	315	310	335	335	H 320	330	335	330	305	295	315	315	325	340	330	300	310	310	295	290
10	295	295	300	295	300	300	325	345	350	340	335	335	320	315	310	320	335	345	335	300	290	290	295	295
11	285	280	285	290	285	285	330	350	350	325	320	325	320	320	305	320	335	330	310	310	305	295	285	280
12	290	290	300	310	280	300	330	340	335	335	345	335	330	330	315	320	335	325	330	310	F	295	290	275
13	275	285	315	315	325	295	335	330	340	345	330	330	315	315	330	325	335	315	330	330	290	300	290	315
14	325	300	295	280	300	300	320	335	340	335	330	325	330	300	345	330	330	345	330	315	295	290	320	300
15	300	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	320	330	330	325	315	320	330	325	315	325	I A 300	310	280	I C 280	275
17	280	305	310	315	295	295	340	340	345	340	345	345	335	325	315	330	335	345	315	310	325	290	300	290
18	290	290	285	300	320	335	I C 340	355	345	350	350	320	320	320	325	330	335	335	I R 330	305	300	295	I R 310	310
19	295	295	I R 290	I R 305	300	320	335	345	345	325	325	310	315	310	310	310	330	340	310	275	285	280	F	A
20	F	F	F	F	F	275	295	I A 295	315	300	335	295	315	315	325	315	340	340	325	335	290	I A 290	300	300
21	290	290	280	275	260	285	315	325	340	320	315	330	320	325	325	335	350	330	320	325	305	310	300	285
22	280	270	290	310	290	290	320	345	330	335	320	315	320	325	330	325	335	335	340	315	310	305	295	270
23	280	290	290	290	290	305	325	325	345	320	320	320	310	310	310	325	340	340	320	290	305	310	300	305
24	270	275	280	300	315	300	335	330	330	320	320	320	325	315	320	330	340	325	325	315	280	320	310	310
25	285	275	280	280	285	300	320	340	335	330	315	310	325	310	325	325	330	310	310	310	310	295	300	270
26	265	265	290	295	310	295	300	340	330	325	320	325	320	320	315	330	330	320	310	315	315	I A 300	285	280
27	275	285	285	295	305	300	310	340	330	330	320	315	320	315	320	330	335	320	305	315	295	I A 285	290	295
28	270	275	E 270	285	295	315	320	335	I R 335	320	300	305	310	300	310	310	300	325	300	340	305	280	280	295
29	300	285	285	280	295	290	335	330	340	335	310	320	315	315	315	315	335	305	300	330	325	290	290	270
30	275	275	I A 260	270	310	320	310	315	330	340	320	320	325	320	320	320	335	320	305	325	345	325	280	270
31	265	285	305	305	275	275	300	330	325	330	335	320	325	320	320	320	335	325	300	320	330	300	295	305
	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	27	27	28	28	28	28	29	29	30	30	30	30	30	30	30	30	30	29	29	28	28
MED	290	285	285	295	300	300	328	335	335	330	325	320	320	315	315	320	332	325	320	315	305	295	295	290
UQ	295	290	295	305	312	305	335	340	342	335	335	325	325	320	320	330	335	335	330	325	320	305	300	300
LQ	275	282	285	285	290	292	320	330	330	325	320	315	310	310	310	315	320	320	310	310	295	290	285	278

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OCT. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	U L 370	U L 385	360	L	L	U L 340	L								
2									L	L	L	L 375	L 355	L	L	L								
3									L	L	L 385	L	L	L	L	L	L							
4									L	L	H 360	L	L	L	L	L								
5									L	L	L 360	L	385	L	L	L								
6									L	L	L 370	L	380	L	L	L								
7									L	L	L 390	H 390	L 350	L	L	L								
8									C	C	C	L 385	L	U L 380	L									
9									L	L 360	H 380	400	H 345	L	L	L								
10									L	L	L 370	L 380	H 360	U L 370	L	L								
11									L	U L 380	U L 375	L	L 360	L 340	L	L								
12									A	L	I A 395	385	L 390	L	L	L								
13									L	L	L	L	L	L	L	L								
14									L	L	385	L	365	L	L	L								
15									C	C	C	C	C	C	C	C								
16									C	L	U L 380	L	L	L	L	L								
17									L	L	L	I A 380	U L 380	L	L	L								
18									L	L	L	L	L	A	L	L								
19									A	A	A	L	A	A	L	L								
20									A	A	L	L	L 370	L	L	A								
21									A	A	A	A	A	L	L	L								
22								L	L	L	L	L	L 360	L	L									
23									L	L	A	L 370	L	L	L									
24									L	L	U L 370	L 365	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	L	U L 370	L									
27									L	L	L	L	A	L	L									
28									L	L	L 370	L	L	L	L									
29									L	L	L	L	L	L	L									
30									L	L	L	L 400	L	L	L									
31									L	L	L	L 370	L	L	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										3	14	12	12	4	1									
MED										U L 370	L 378	380	L 362	U L 370	U L 340									
UQ										U L 375	L 385	388	380	U L 375										
LQ										L 365	L 370	L 370	L 358	L 355										

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OCT. 1972 | M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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								250	245	245	245	265	245	255	270	255								
2									250	250	255	250	280	275	250	255								
3									245	235	250	260	255	265	275	245	255							
4									245	250	255	250	260	255	255	250								
5									250	250	255	250	260	260	255	255								
6									250	250	255	240	270	265	255	250								
7									235	245	240	245	270	255	250	250								
8									C	C	C	260	250	250	250									
9									235	275	255	245	295	265	270	255								
10									230	245	250	240	275	260	265	250								
11									230	250	250	255	265	255	255	255								
12									230	245	240	255	250	250	255	250								
13									225	230	250	245	250	255	245	240								
14									250	250	260	250	265	255	255	245								
15									C	C	C	C	C	C	C	C								
16									C	235	250	250	250	245	250	250								
17									240	250	240	240	235	250	250	250								
18									225	235	240	260	280	270	255	245								
19									230	235	245	260	260	I A 260	255	250								
20									255	240	250	250	245	265	245	265								
21									230	230	260	245	240	265	260	240								
22								245	250	230	235	220	255	255	250									
23									235	230	240	250	235	270	250									
24									235	235	250	255	250	255	250									
25										230	250	260	240	250	250									
26										250	235	235	245	250	260									
27									235	240	250	255	240	260	245									
28									235	230	250	250	250	255	250									
29									235	230	240	235	250	255	255									
30									235	235	240	245	250	245	255									
31									235	235	235	250	245	240	235									
	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	26	29	29	30	30	30	30	19	1							
MED								248	235	240	250	250	250	255	255	250	255							
UQ									245	250	250	255	265	265	255	255								
LQ									230	235	240	245	245	250	250	248								

The Radio Research Laboratories. Japan

OCT. 1972 | H'F2 (KM)

IONOSPHERIC DATA

OCT. 1972 | 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	260	260	255	250	225	250	240	240	230	205	205	195	230	230	220	245	245	235	215	235	245	280	280	280
2	265	255	245	255	260	275	245	230	230	230	230	215	205	190H	235	235	235	235	215	215	250	255	260	255
3	290	290	295	270	240	250	225	240	235	230	205	225	225	200H	235	235	240	240	220	215	240	250	255	265
4	290	290	295	295	290	250	220	240	235	220	210H	230	230	240	230	230	250	250	220	215	210	255	290	330
5	290	270	280	290	245	250	225	230	230	230	190	190H	180	200H	220	210H	245	235	230	240	220	215	245	265
6	305	295	290	290	255	240	220	235	220	230	215	215	195	230	230	235	240	235	240	230	245	235	240	280
7	290	295	275	245	245	240	230	235	230	215	205	190H	200	195H	230	240	245	240	220	230	240	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	210	200H	215	225	245	250	245	230	230	225	225	260	295
9	300	305	285	250	240	245	230	215	230	225	190H	225	205H	230	235	230	240	230	220	240	245	240	275	295
10	280	265	270	265	265	260	245	235	230	235	215	210	190H	215	200H	240	235	230	205	255	270	275	280	280
11	265	290	285	280	280	300	225	230	230	230	220	215H	210	205	230	235	235	220	230	235	245	250	280	295
12	285	275	250	225	225	270	240	230	A	A	A	200	205	230	200H	230	235	220	210	245	I A 255	290A	290	310
13	320	300	240	220	215	280	235	225	215	I A 225	I A 215	220	225	220	230	240	235	215	220	240	265	290	285	245
14	255	260	290	295	265	255	235	230	230	225	210	225	205	215	245	245	235	205	235	260	295	295	235	250
15	A 290	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	230	210	200H	230	225	240	I A 240	240	215	220	A	A	A	I C 290	300
17	295	270	255	245	280	270	225	225	235	235	230	I A 230	205	225	240	I A 250	240	215	245	290A	255	295	I A 280	295
18	I A 300	300	295	285	245	220	I C 210	215	220	220	210	205H	195H	I A 245	I A 245	230	240	215	235	A	A	305	265	250
19	270	260	I A 300	I A 295	A 285	245	230	220	A	A	A	240	A	A	245	I A 245	230	220	235	295	270	300	I A 305	I A 290
20	305	I A 350	315	320	340	305	290	I A 295	A	A	265	220	210	245	240	I A 240	235	230	260	245	A	A	280	295
21	A	A	A	310	305	I A 285	255	235	A	A	A	I A 225	I A 230	240	240	I A 240	230	235	260	230	245	240	265	295
22	295	305	300	245	245	295	250	240	230	215	200	210	210	235	240	230	220	220	210	245	245	255	270	295
23	300	295	290	260	255	245	235	230	230	230	I A 210	205	230	240	230	245	230	210	210	245	245	250	250	255
24	300	305	295	255	225	245	240	230	230	225	210	210	230	225	235	240	225	225	220	225	285	265	260	245
25	250	300	305	295	285	260	245	225	235	225	235	235	230	230	230	240	225	235	235	240	245	255	255	280
26	355	330	295	250	225	245	230	230	225	215	210	210	205H	205	230	240	225	220	235	235	250	A	305	315
27	310	290	280	285	250	245	245	230	235	225	235	240	I A 235	235	230	235	215	215	235	240	I A 260	I A 275	290	295
28	335	295	320	280	250	235	230	225	235	210	215	190H	230	245	240	245	230	215	245	240	245	270	285	I A 280
29	290	285	325	325	290	280	245	220	230	220	215	230	230	235	245	240	225	245	255	245	220	250	290	I A 340
30	I A 340	I A 350	I A 345	300	270	245	250	245	235	235	225	205	245	235	240	240	225	225	255	245	220	225	295	330
31	315	305	250	250	290	330	280	245	230	I A 235	I A 225	220	230	225	235	235	230	205	245	240	220	245	265	260
	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	28	28	28	24	25	26	30	29	29	30	30	30	30	30	28	27	26	29	29
MED	292	295	290	275	255	250	235	230	230	225	212	215	210	230	235	240	235	225	230	240	245	255	280	290
UQ	305	302	298	295	282	278	245	238	235	230	225	225	230	235	240	240	240	235	240	245	255	280	290	295
LQ	282	272	272	250	242	245	228	225	230	220	210	205	205	215	230	235	230	215	220	230	240	245	260	265

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OCT. 1972 | H'F (KM)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	S	S	S	S	S	S	G	160	G	G	G	G	G	G	G	E G 175	155	S	105	105	100	S	S	S
2	S	S	S	S	E	S	G	G	G	130	130	125	G	G	G	155	140	125	120	115	S	S	S	S
3	S	S	S	S	105	105	G	G	G	140	130	140	140	G	125	G	140	125	100	100	100	S	S	S
4	S	110	105	105	S	110	B	G	G	G	120	115	115	120	G	140	120	115	110	110	S	S	110	110
5	105	S	105	105	105	110	100	110	110	110	110	G	G	G	G	G	G	G	110	110	110	120	S	110
6	105	105	105	105	105	100	110	G	G	115	115	G	105	100	G	G	E G 170	145	110	115	110	105	105	S
7	S	100	S	S	S	S	150	150	110	110	G	G	G	G	G	G	G	G	105	S	100	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	105	G	G	G	G	E G 175	130	120	S	S	110	110	105
9	105	S	S	E	E	S	100	G	150	115	115	110	105	100	100	G	140	120	115	115	105	105	100	100
10	S	S	S	S	105	105	G	150	140	120	G	G	G	G	110	110	145	130	115	S	S	S	S	S
11	S	S	S	S	S	S	G	160	145	135	125	115	G	110	105	110	110	120	120	120	S	S	110	105
12	105	105	100	S	S	105	105	140	125	115	115	115	115	115	G	155	140	115	110	S	110	105	105	110
13	110	100	S	110	S	S	125	130	125	120	115	115	115	115	115	115	140	115	110	110	110	110	110	110
14	105	105	100	110	110	S	G	115	110	110	110	105	105	110	105	110	140	100	100	100	100	100	100	100
15	105	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	115	115	115	110	G	110	100	100	100	100	100	100	100	C	100
17	105	105	100	S	100	100	100	100	130	115	115	110	105	105	100	100	100	100	105	105	105	105	105	105
18	105	100	100	100	100	100	C	G	G	G	115	115	140	145	105	105	100	105	105	100	100	100	100	105
19	S	130	125	120	120	100	100	120	115	115	110	110	100	100	100	105	110	115	110	120	115	110	110	105
20	100	110	120	S	110	110	115	115	115	110	110	110	110	105	100	100	105	105	105	105	105	105	105	100
21	105	105	105	105	105	105	110	120	115	115	110	105	100	100	100	100	100	100	100	100	105	100	B	S
22	S	105	105	110	S	100	105	105	110	G	100	100	100	100	G	140	125	115	S	105	105	100	100	100
23	S	S	S	S	E	100	S	120	115	115	105	105	105	G	G	155	100	S	S	S	S	S	100	S
24	100	100	S	S	S	S	B	140	150	145	G	G	G	G	G	G	100	100	100	95	S	105	105	S
25	100	100	S	100	100	100	B	160	G	G	120	G	G	G	G	110	110	110	105	105	105	105	S	105
26	105	100	100	100	100	100	S	155	G	120	115	G	100	G	G	105	105	105	105	105	105	105	105	100
27	100	100	100	100	S	S	S	G	130	115	110	110	100	100	G	130	115	110	110	105	105	105	100	100
28	100	100	100	S	S	S	S	G	120	110	G	G	G	100	100	100	100	S	105	B	S	100	120	105
29	100	100	100	100	100	100	S	110	115	110	G	G	G	G	105	100	100	100	100	100	100	105	105	100
30	100	100	100	100	100	S	S	115	110	110	G	G	G	G	G	100	130	S	95	100	S	S	S	S
31	S	S	100	S	S	S	S	115	110	105	105	100	100	100	G	G	G	100	110	105	105	S	S	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	19	17	14	14	16	11	20	20	24	22	19	18	16	14	22	27	24	28	24	21	20	19	19
MED	105	100	100	105	105	100	105	120	115	115	115	110	105	102	105	109	112	112	105	105	105	105	105	105
UQ	105	105	105	110	105	105	112	150	130	120	115	115	115	112	110	135	140	120	110	110	105	105	110	105
LQ	100	100	100	100	100	100	100	115	110	110	110	105	100	100	100	100	100	100	102	100	100	100	100	100

The Radio Research Laboratories, Japan

OCT. 1972 | H'ES (KM)

IONOSPHERIC DATA

OCT. 1972 | 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								H 1								H 1	H 1		F 1	F 1	F 1			
2										H 1	H 1	H 1				H 1	H 2	H 3	F 3	F 2				
3					F 1	F 1				H 1	H 1	H 1	H 1		H 1		H 1	H 22	F 2	F 3	F 2			
4		F 1	F 2	F 1		F 1					C 1	C 1	C 1	C 1		H 1	C 4	C 2	F 1	F 1			F 1	F 2
5	F 3		F 3	F 2	F 2	F 1	L 1	L 1	L 1	L 2	L 2								F 1	F 1	F 1	F 1		F 2
6	F 3	F 2	F 2	F 2	F 3	F 3	L 1			C 1	C 1		L 1	L 2			H 1	H 2	F 2	F 1	F 3	F 2	F 1	
7		F 1					H 2	HC 12	L 2	L 2									F 1		F 1			
8												L 2					H 1	H 1	F 1			F 1	F 1	F 1
9	F 1						L 1		H 1	C 2	C 2	L 1	L 1	L 2	L 2		HL 12	C 3	F 3	F 1	F 2	F 1	F 3	F 1
10					F 2	F 1		HL 11	H 2	C 2					L 1	L 1	H 2	H 2	F 3					
11								H 1	H 1	H 1	H 1	C 1		L 2	L 2	L 2	LH 21	C 2	F 1	F 1			F 2	F 2
12	F 3	F 2	F 1			F 2	L 2	H 1	H 3	C 2	C 2	C 1	C 2	C 1		H 1	H 1	C 3	F 1		F 2	F 2	F 2	F 2
13	F 2	F 2		F 1			H 3	H 1	H 2	C 2	C 2	C 1	C 1	C 1	C 1	C 1	H 1	C 2	F 1	F 1	F 2	F 2	F 3	F 4
14	F 2	F 2	F 2	F 1	F 1			C 2	L 1	L 1	L 2	L 2	L 1	L 2	L 3	L 3	H 2	L 3	F 3	F 3	F 2	F 2	F 1	F 2
15	F 3																							
16										C 1	C 2	C 1	L 2		L 2	L 3	L 3	L 4	F 3	F 5	F 4	F 3		F 1
17	F 1	F 1	F 1		F 2	F 1	L 1	L 1	H 1	C 2	C 2	L 2	L 2	L 1	L 2	L 2	L 3	L 3	F 2	F 2	F 3	F 2	F 3	F 2
18	F 3	F 2	F 2	F 2	F 1	F 1					C 2	C 1	H 1	HL 22	L 2	L 2	LH 22	L 3	F 6	F 4	F 3	F 3	F 3	F 1
19		F 1	FF 32	FF 22	FF 23	F 2	L 1	CL 21	C 2	C 3	L 2	L 2	L 4	L 4	L 3	L 2	L 3	C 2	F 1	F 3	F 4	F 3	F 3	F 4
20	F 1	F 2	FF 21		F 2	F 3	C 3	C 4	C 4	L 3	L 2	L 1	L 2	L 2	L 2	L 3	L 3	L 4	F 3	F 3	F 2	F 3	F 2	F 2
21	F 2	F 3	F 4	F 2	F 3	F 3	L 2	C 2	C 3	C 3	L 3	L 2	L 2	L 3	L 2	L 3	L 2	L 3	F 3	F 1	F 1	F 1		
22		F 2	F 2	F 1		F 2	L 1	L 3	L 2		L 2	L 1	L 1	L 1		H 2	H 2	C 1		F 1	F 1	F 1	F 1	F 1
23						F 1		C 2	C 1	C 1	L 2	L 2	L 2			H 1	L 2						F 1	
24	F 1	F 1						H 2	H 1	HL 11							L 2	L 3	F 2	F 1		F 2	F 2	
25	F 3	F 1		F 1	F 1	F 1		H 1			C 1					L 2	L 2	L 3	F 2	F 2	F 3	F 4		F 1
26	F 2	F 2	F 1	F 1	F 1	F 2		H 1		C 1	C 1		L 2			L 2	L 1	L 3	F 2	F 2	F 4	F 4	F 3	F 2
27	F 2	F 3	F 2	F 2					H 1	C 2	L 2	L 1	L 3	L 2		H 1	C 3	L 2	F 3	F 2	F 3	F 3	F 3	F 2
28	F 3	F 2	F 1						C 2	L 1				L 1	L 1	L 1	L 2		F 1			F 1	F 1	F 2
29	F 2	F 1	F 2	F 2	F 1	F 1		L 1	C 2	L 1					L 1	L 1	L 3	L 3	F 3	F 2	F 1	F 2	F 2	F 2
30	F 2	F 3	F 3	F 1	F 1			C 2	L 2	L 1						L 1	H 2		F 2	F 1				
31			F 1					L 1	L 2	L 2	L 2	L 2	L 1	L 2				L 1	F 1	F 1	F 1			

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

The Radio Research Laboratories. Japan

OCT. 1972 | TYPES OF ES

IONOSPHERIC DATA

OCT. 1972 | 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	56	56	55	57	45	40	62	88	109	95	95	109	117	107	109	110	107	97	80	55	57	56	56	56
2	57	55	51	46	41	44	69	89	98	105	104	101	106	110	113	100	J R 101	98	88	59	58	56	51	49
3	49	46	46	47	45	43	J R 70	86	107	91	87	95	101	J R 102	108	115	110	115	107	J R 75	J R 54	51	50	50
4	50	R 57	46	45	46	48	U R 78	81	90	96	102	108	97	106	110	105	101	110	112	I S 73	53	46	50	46
5	R 48	47	45	45	46	43	66	76	97	102	108	102	100	J R 104	93	96	J R 104	113	J R 104	J R 88	J R 75	48	43	43
6	43	44	46	46	46	41	58	J R 75	86	91	93	98	87	J R 106	91	J R 88	96	J R 102	I S 100	I S 75	I R 68	50	I S 43	I S 43
7	46	43	46	45	48	36	61	90	J R 103	95	94	94	108	111	106	95	90	99	91	I S 55	55	47	38	37
8	39	J R 42	41	40	36	S 36	60	80	J R 104	93	81	96	111	95	83	86	89	U R 99	R 88	70	59	C	C	C
9	C	C	C	C	C	C	C	C	C	C	94	101	99	107	105	106	100	96	S 77	53	49	45	I S 42	42
10	J R 42	41	38	39	36	35	62	89	120	87	91	101	91	102	106	106	93	92	74	40	F 44	S 47	47	S 47
11	C	C	C	C	C	C	C	C	92	90	90	J R 101	107	J R 101	94	110	J R 106	95	U R 75	69	I R 58	50	51	48
12	48	47	50	J R 41	I A 36	37	60	R 85	108	108	110	98	98	H 84	92	96	96	96	76	55	50	47	47	45
13	44	46	46	37	34	28	53	83	110	88	83	J R 100	102	110	J R 104	91	88	91	80	59	50	51	51	50
14	42	38	41	R 41	40	38	58	80	98	102	91	R 104	100	97	109	116	101	J R 91	63	54	51	48	50	36
15	34	34	34	37	31	24	50	S 75	J R 103	J R 103	95	97	98	J R 102	J R 105	99	94	104	49	41	47	40	37	37
16	37	38	38	44	32	27	51	74	84	101	96	101	110	96	J R 100	97	J R 100	J R 85	50	39	43	41	41	40
17	41	43	41	39	36	36	60	J R 75	91	106	106	91	93	85	83	91	95	91	52	48	46	I A 39	I A 37	I A 40
18	I A 37	A	39	43	43	I R 35	55	71	71	84	93	92	96	112	114	108	99	93	63	53	55	Z 55	J S 53	44
19	36	36	37	I A 38	41	40	56	81	91	97	109	109	127	121	116	125	113	95	71	60	60	59	60	57
20	46	S 45	45	44	F 46	47	J R 55	R 88	123	136	137	J R 134	130	111	110	J R 102	J R 103	90	58	J R 52	42	I A 42	R 41	42
21	39	39	A	A	360	R 39	52	J R 89	96	97	116	130	116	106	106	117	103	77	60	60	47	42	39	40
22	38	40	43	40	36	37	91	89	92	102	115	120	105	106	91	94	99	82	59	49	49	46	38	39
23	40	41	R 40	40	40	41	64	93	110	108	119	120	115	109	108	111	111	85	56	50	50	46	43	41
24	37	40	41	41	39	35	55	88	J R 104	115	121	121	111	103	109	103	94	71	61	55	46	51	51	47
25	39	40	40	41	40	41	60	91	108	108	109	126	116	116	116	101	84	79	J R 75	65	56	46	46	40
26	46	I R 43	49	51	44	36	56	86	J R 105	I C 116	J R 107	125	106	103	115	115	92	84	I 71	50	45	40	F 40	41
27	44	44	43	44	37	50	I C 78	J R 99	112	106	107	126	114	113	118	J R 103	88	70	59	J R 54	45	45	R	44
28	43	41	41	45	36	43	51	84	90	96	113	128	128	133	132	127	118	97	S 76	73	49	49	47	51
29	45	44	43	46	42	44	61	96	J R 105	111	118	120	J R 103	113	117	110	99	81	J R 76	J S 79	56	32	31	30
30	33	35	34	37	37	39	58	87	121	127	114	120	104	107	96	93	95	80	71	84	69	51	33	34
31	35	35	38	30	26	27	46	96	116	116	109	116	J R 102	99	91	91	94	J R 75	55	61	55	44	40	38
	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	28	28	28	29	29	29	29	30	30	31	31	31	31	31	31	31	31	31	31	31	30	29	30
MED	42	42	42	42	40	39	60	86	104	102	106	104	105	106	106	103	99	92	74	55	51	47	43	42
UQ	46	46	46	45	45	43	62	89	109	108	112	120	112	110	112	110	103	98	80	70	56	51	50	47
LQ	38	40	40	40	36	36	55	80	92	95	94	99	100	102	95	96	94	83	60	52	47	44	40	40

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OCT. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	U L 420	L	L	U L 500	L	L	L								
2									L	L	L	L	L	L 510	L	A								
3									L	L	L	L	L	L	L	L	L							
4									L	L	L 450	L 450	L	L	L	L	L							
5								L	L	L	L	L	L	L	L	L	L							
6									L	L	L	L 480	L	U L 510	L	L	L							
7								L	L	L	L	L	L	L	L	L								
8									L	L 440	L	L	L	L	L	L	L							
9							C	C	C	C	L	L	L 420	L	L	L								
10									L	L	L	L	L	L	L	L								
11									L	L	L	L	L	A	L	L	L							
12									L	A	A	L	L	L	L	L	A							
13									A	A	L	L	L	L	L	L								
14								L	L	L	L	L	L	L	L	L								
15									L	L	L	L	L	L	L									
16									A	A	L	L	L	L	L									
17									L	L	L	L	L	L	L	L								
18									A	A	L	L	L	A	L	A								
19									A	L	L	A	L	L	A	A								
20									A	A	L	A	L	L	L									
21									A	L	L	L	L	L		L								
22									L	L	L	L	L	L	L									
23								L	L	L	L	L 420	L	L	L	L								
24									L	L	L 460	L	L	L	L									
25									L	L	L	L 420	L	L	L									
26									L	C	L	L	L	L	L	L								
27									L	L	L	L	L	L	L									
28									L	L	L	L	L	L	L									
29									L	L	L	L	L	L										
30									L	L	L	L	L	L	L									
31									L	L	L	L 460	L	L	A									
	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	2	5	2	2										
MED										L 430	L 455	L 450	L 460	L 510										
UQ												L 460												
LQ												L 420												

OCT. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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							160	S	320	340	355	355	R 360	R 360	325	305	260	170						
2							170	255	300	320	325	A	A	A	A	300	A	A						
3							B	250	285	320	A	345	350	335	315	290	A	A						
4							185	230	285	325	R	A	I R 330	I R 335	320	295	A	A						
5							B	A	A	A	R	R 345	I R 340	I R 335	I R 300	295	A	A						
6							B	240	295	310	I R 320	I R 330	B	B	R	300	R 260	B						
7							160	250	A	A	A	355	360	350	320	I A 290	240	A						
8							175	270	310	310	R 330	I R 340	I A 340	330	315	290	250	B						
9							C	C	C	C	325	R	370	350	345	290	250	A						
10							A	265	290	315	A	A	A	A	A	A	220	165						
11							C	C	285	310	A	A	A	A	A	A	R 240	A						
12							B	R 235	I R 280	300	A	A	R	A	310	A	A	A						
13							B	A	A	300	A	A	A	A	A	A	235	A						
14							B	A	A	A	A	A	345	R 345	325	I R 290	I R 240	A						
15							A	240	290	335	345	I A 345	345	340	305	275	A	A						
16							185	220	285	I R 315	I R 325	A	A	A	310	280	R 240	B						
17							B	R 240	290	310	I A 310	A	B	A	310	280	230	A						
18							B	R	A	315	315	315	A	A	325	A	A	B						
19							B	A	A	A	A	A	I A 340	325	A	A	A	A						
20							A	A	A	A	A	A	R	A	R	A	A	A						
21							B	225	A	A	A	340	365	350	A	A	A	B						
22							A	245	270	A	340	360	360	I A 340	330	275	A	B						
23							B	A	A	R 335	345	350	R	350	R	R	230	B						
24							B	240	290	305	R 335	I R 345	I R 350	I R 335	I R 320	290	230	B						
25							B	R 250	R	I R 320	R	R	R 360	I R 360	335	A	A	A						
26							B	R 260	I A 290	C	A	R	375	355	I A 340	300	S	B	C					
27							C	230	280	300	A	A	A	R	R	290	A	A						
28							B	A	A	320	350	360	I R 365	I S 360	330	I R 280	240	B						
29							B	250	300	I A 330	I A 355	365	375	I A 360	A	A	A	B						
30							B	245	I A 295	I A 330	I A 345	340	R 335	340	315	250	A	A						
31							B	A	A	A	320	R	A	A	A	285	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	19	18	21	16	15	18	19	19	20	14	2						
MED							172	245	290	315	332	345	355	345	320	290	240	168						
UQ							185	250	295	325	345	355	365	352	328	295	250							
LQ							160	238	285	310	322	340	I 340	335	312	280	230							

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OCT. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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	E S 15	M 20	M 19	J X 23	M 19	M 21	G	G	G	G	G	G	G	G	G	34	31	25	J X 27	J X 29	M 21	J X 27	F S 15	E S 15
2	E S 15	M 20	M 21	J X 19	E B 12	E S 15	21	28	35	37	40	36	42	42	40	J X 51	J X 54	J X 39	J X 46	J X 75	J X 54	J X 25	M 21	M 20
3	E S 15	E S 15	E S 15	E S 15	M 20	M 21	E B 14	G	J G 24	36	41	41	40	41	38	32	29	21	M 20	M 20	18	E S 15	M 20	E S 15
4	E S 15	E S 15	E S 15	M 24	J X 20	J X 25	G	28	35	36	G	37	G	G	G	36	35	J X 29	J X 25	M 21	M 21	E S 15	F S 15	M 22
5	M 21	J X 25	J X 54	J X 51	J X 44	J X 28	E B 13	30	J X 35	J X 39	G 34	G 32	G	G	G	G	30	24	J X 29	J X 35	J X 24	E S 15	J X 29	J X 24
6	25	23	J X 24	J X 25	J X 25	J X 25	21	G 20	32	34	G	G	E B 36	E B 40	G	G	G	22	E S 15	J X 30	J X 31	J X 34	M 21	M 21
7	M 21	M 21	M 21	M 20	E S 15	E B 13	E B 13	28	J X 31	J X 40	37	G 33	J G 27	G 23	G 25	35	31	J X 25	J X 20	M 21	M 25	M 22	M 20	E S 15
8	E S 15	E S 15	E B 12	E B 12	E B 13	M 21	M 21	G 20	G	J G 54	G	G 25	38	G 22	G	31	28	21	21	E S 15	E S 15	C	M 19	C
9	C	C	C	C	C	C	C	C	C	C	39	G	G 29	G	37	31	35	J X 41	J X 53	J X 40	J X 21	M 19	M 21	E S 15
10	M 19	E B 14	E B 14	E B 14	E B 13	M 21	21	G	35	34	35	37	35	33	J X 34	33	36	J X 30	33	J X 29	J X 50	J X 24	J X 40	J X 30
11	C	C	C	C	C	C	C	C	31	33	35	J X 44	45	J X 64	J X 46	32	G	J X 30	J X 23	J X 21	J X 35	J X 25	J X 26	J X 31
12	J X 24	M 21	J X 19	22	J X 59	J X 35	22	G	33	J X 50	J X 74	44	G	36	40	J X 42	J X 51	J X 30	J X 21	19	M 21	M 20	J X 25	J X 28
13	M 21	J X 53	49	J X 30	M 20	M 21	19	J X 41	J X 65	J X 48	J X 40	36	G 34	J X 40	36	30	G	J X 30	J X 29	J X 64	J X 41	M 22	M 21	E S 15
14	J X 29	J X 25	J X 35	J X 30	J X 25	M 21	J X 21	24	31	J X 33	47	35	35	G 31	G 31	G 22	27	J X 29	J X 19	J X 24	J X 24	J X 24	J X 29	J X 34
15	J X 25	M 24	J X 30	J X 30	24	M 22	23	30	36	G	G	37	37	40	37	J X 42	J X 53	J X 54	J X 25	J X 38	J X 29	J X 30	J X 50	M 27
16	J X 20	M 21	M 22	J X 22	J X 24	J X 23	G	J X 31	J X 49	J X 54	40	J X 41	45	J X 43	36	G	33	J X 30	20	J X 21	E S 15	J X 24	J X 25	M 20
17	M 21	J X 19	M 22	J X 16	M 21	M 21	22	27	34	38	38	36	E B 40	37	36	35	J X 44	J X 39	J X 39	J X 23	J X 92	J X 49	J X 54	J X 54
18	45	J X 46	J X 29	J X 29	J X 29	J X 31	J X 22	G 21	35	J X 51	42	J X 54	36	J X 75	J X 43	J X 59	J X 41	J X 94	J X 40	J X 39	J X 39	J X 54	J X 30	J X 53
19	J X 30	J X 24	J X 38	J X 40	J X 25	J X 29	J X 34	28	J X 50	J X 41	40	65	J X 39	37	J X 102	J X 58	J X 38	J X 28	J X 53	J X 59	J X 64	J X 49	J X 41	J X 30
20	J X 30	J X 52	J X 25	J X 30	J X 28	J X 34	J X 24	J X 31	J X 82	J X 44	J X 41	J X 51	G 34	36	G 27	J X 53	J X 47	J X 39	J X 39	J X 39	J X 36	J X 81	J X 51	J X 29
21	J X 30	J X 55	48	J X 55	J X 35	J X 33	J X 20	J X 29	J X 45	J X 38	J X 56	G 25	J G 30	J G 32	J X 40	J X 30	J X 29	21	M 19	E S 15	E B 12	E B 13	F S 15	E B 14
22	E S 15	M 21	M 21	M 20	E B 14	E B 14	18	G	30	36	G 21	G 26	G 30	J X 37	35	36	J X 32	J X 26	J X 19	M 21	J X 25	J X 24	J X 25	J X 29
23	J X 24	J X 24	J X 19	E B 12	M 17	E B 14	23	J X 26	31	G	G	G	J G 30	G 20	G	G	25	22	M 22	M 20	19	E S 15	E S 15	E S 16
24	E S 15	E S 15	E B 13	M 22	E B 13	E B 13	E B 16	29	31	G	G	G	G	G	G	G	27	E B 15	21	E S 15	E S 15	M 20	M 22	M 20
25	J X 19	E B 13	E B 13	E S 15	E B 13	E S 15	E B 17	G	G	G	G	G 35	G	G	G 32	G 35	J X 29	21	J X 25	J X 26	J X 18	J X 25	M 20	J X 20
26	E S 15	21	J X 20	M 16	16	E S 15	G	G	J X 31	C	37	G 33	G 35	G	J X 44	J G 30	E S 31	E B 15	C	M 21	M 20	E S 15	J X 35	J X 29
27	M 21	M 21	M 20	E B 14	E B 14	E B 14	C	28	31	35	J X 41	J X 41	45	G	G	34	33	J X 25	J X 24	J X 23	M 21	J X 51	J X 35	J X 29
28	J X 24	J X 29	M 21	M 20	M 20	20	E B 16	31	32	J G 30	G 29	G 30	G 35	E S 35	G 21	G 20	G 17	J X 25	M 21	M 21	F S 15	E S 15	J X 25	J X 25
29	J X 29	J X 30	J X 30	J X 30	J X 28	J X 25	J X 27	G 24	G 30	J X 46	35	G 35	G 30	J X 41	J X 54	J X 55	J X 50	J X 50	J X 41	J X 26	J X 25	M 21	M 20	E B 13
30	J X 25	J X 40	J X 29	J X 26	J X 21	J X 16	E B 15	J X 28	J X 33	36	J X 44	G	G	G 31	G	G 23	J X 29	J X 25	J X 25	M 21	E S 15	E S 16	F S 16	E S 15
31	E S 15	E S 15	E S 15	E B 13	E S 15	E B 13	E B 14	30	34	35	G 29	G	J X 59	J X 40	J X 40	J G 23	J X 35	J X 24	20	J X 24	J X 33	J X 21	J X 29	E S 15
	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	28	29	30	29	31	31	31	31	31	31	31	31	30	31	31	30	31	30
MED	21	21	21	J X 22	20	21	20	28	32	36	37	G 35	G 34	34	35	32	31	J X 26	J X 24	J X 23	J X 24	J X 23	J X 25	22
UQ	J X 25	J X 25	J X 29	J X 30	J X 25	J X 25	22	29	35	J X 41	40	39	38	40	40	36	J X 37	J X 30	J X 33	J X 32	J X 34	J X 27	J X 30	J X 29
LQ	E S 15	19	19	16	E 15	E 15	E B 14	G 20	31	33	E G 21	G 25	G 28	E G 20	G	G 23	28	23	20	21	18	E 16	M 20	E S 15

The Radio Research Laboratories, Japan

OCT. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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_{15}^{S}	E	E	15	E	E	G	G	G	G	G	G	G	G	G	34	28	22	21	22	16	26	E_{15}^{S}	E_{15}^{S}
2	E_{15}^{S}	E	E	E	E_{12}^{B}	E_{15}^{S}	21	28	32	35	38	36	40	38	39	50	30	30	40	55	40	E	E	E
3	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E	E_{14}^{B}	G	$^{G}22$	34	41	39	39	40	36	32	28	18	G	E	E	E_{15}^{S}	E	E_{15}^{S}
4	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	16	E	G	26	34	35	G	37	G	G	G	34	29	20	21	E	E	E_{15}^{S}	E_{15}^{S}	E
5	E	E	20	35	E	21	E_{13}^{B}	28	G	32	E_{34}^{R}	$^{G}31$	G	G	G	G	28	22	20	22	20	E_{15}^{S}	19	E
6	E	E	E	19	18	17	19	$^{G}18$	31	33	G	G	E_{36}^{B}	E_{40}^{B}	G	G	G	22	E_{15}^{S}	21	21	E	E	E
7	16	E	E	E	E_{15}^{S}	E_{13}^{B}	E_{13}^{B}	28	31	40	37	$^{G}32$	$^{G}36$	$^{G}23$	$^{G}25$	31	29	23	18	18	16	E	E	E_{15}^{S}
8	E_{15}^{S}	E_{15}^{S}	E_{12}^{B}	E_{12}^{B}	E_{13}^{B}	E	G	$^{G}19$	G	$^{G}25$	G	E_{35}^{R}	31	$^{G}22$	G	31	27	20	E	E_{15}^{S}	F_{15}^{S}	C	E	C
9	C	C	C	C	C	C	C	C	C	C	39	G	$^{G}29$	G	37	31	32	40	24	17	18	E	E	E_{15}^{S}
10	E	E_{14}^{B}	E_{14}^{B}	E_{14}^{B}	E_{13}^{B}	E	19	G	35	33	35	37	35	E_{33}^{R}	34	33	35	27	21	25	16	16	24	30
11	C	C	C	C	C	C	C	C	31	33	35	41	44	50	40	32	G	25	22	19	26	23	25	29
12	21	16	16	E	A	27	22	G	30	50	59	42	G	35	40	38	46	30	17	E	E	E	19	24
13	E	E	29	16	E	E	18	40	64	40	38	35	E_{34}^{R}	38	34	29	G	18	20	19	19	E	E	E_{15}^{S}
14	25	20	30	29	20	E	15	24	31	33	39	35	$^{G}33$	$^{G}31$	$^{G}29$	E_{22}^{R}	27	18	16	16	19	19	24	19
15	19	E	16	26	21	E	22	28	33	G	G	35	37	40	37	41	45	34	18	28	25	22	31	18
16	18	E	E	16	E	15	G	31	48	48	38	42	45	42	35	G	29	26	E	E	E_{15}^{S}	E	E	E
17	E	E	E	E	17	E	G	27	34	36	37	36	E_{40}^{B}	37	36	30	31	33	36	19	E	A	A	A
18	A	A	26	22	25	28	16	$^{G}20$	34	51	40	47	36	61	38	58	40	37	40	25	37	39	22	31
19	29	19	30	A	22	26	17	27	49	41	40	62	39	37	76	44	30	25	50	55	49	26	31	25
20	25	16	24	21	17	32	17	30	69	40	40	50	E_{34}^{R}	35	$^{G}27$	45	42	30	30	25	30	A	28	26
21	28	25	A	A	28	23	16	18	40	36	35	$^{G}25$	$^{G}30$	$^{G}32$	40	30	25	16	E	E_{15}^{S}	F_{12}^{B}	E_{13}^{B}	F_{15}^{B}	E_{14}^{B}
22	E_{15}^{S}	E	E	E	E_{14}^{B}	E_{14}^{B}	17	G	30	36	E_{21}^{R}	$^{G}26$	$^{G}29$	37	34	35	31	G	16	E	19	17	17	17
23	16	17	E	E_{12}^{B}	E	E_{14}^{B}	G	26	E_{31}^{R}	G	G	G	$^{G}30$	E_{20}^{R}	G	G	24	18	E	E	E	E_{15}^{S}	F_{15}^{S}	E_{16}^{S}
24	E_{15}^{S}	E_{15}^{S}	E_{13}^{B}	E	E_{13}^{B}	E_{13}^{B}	E_{16}^{B}	28	31	G	G	G	G	G	G	G	25	E_{15}^{B}	E	E_{15}^{S}	F_{15}^{S}	E	16	E
25	E	E_{13}^{B}	E_{13}^{B}	E_{15}^{S}	E_{13}^{B}	E_{15}^{S}	E_{17}^{B}	G	G	G	G	E_{35}^{R}	G	G	$^{G}32$	30	25	16	25	25	16	20	E	E
26	E_{15}^{S}	E	19	E	E	E_{15}^{S}	G	G	30	C	37	$^{G}33$	$^{G}34$	G	40	$^{G}20$	E_{31}^{S}	E_{15}^{B}	C	E	E	E_{15}^{S}	E	25
27	E	E	E	E_{14}^{B}	E_{14}^{B}	E_{14}^{B}	C	28	32	34	36	41	44	G	G	32	31	22	21	22	E	30	29	21
28	E	E	E	E	E	E	E_{16}^{B}	27	33	$^{G}30$	$^{G}29$	$^{G}30$	E_{35}^{R}	E_{35}^{S}	E_{21}^{R}	E_{20}^{R}	$^{G}17$	22	E	E	E_{15}^{S}	E_{15}^{S}	22	E
29	17	26	30	27	22	20	19	$^{G}23$	27	40	35	$^{G}33$	E_{30}^{R}	40	48	44	43	25	41	24	20	E	E	E_{13}^{B}
30	16	24	16	16	15	E	E_{15}^{S}	22	33	34	43	G	G	$^{G}26$	G	$^{G}20$	25	G	20	E	E_{15}^{S}	F_{16}^{S}	F_{16}^{S}	E_{15}^{S}
31	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{13}^{B}	E_{15}^{S}	E_{13}^{B}	E_{14}^{B}	25	30	35	$^{G}28$	G	39	35	35	$^{G}22$	26	24	18	18	25	E	28	E_{15}^{S}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	28	29	30	29	31	31	31	31	31	31	31	31	30	31	31	30	31	30
MED	15	E_{14}^{E}	15	15	E_{14}^{E}	E_{14}^{E}	E_{16}^{G}	25	31	34	35	35	U_{32}	U_{33}	34	31	28	22	20	18	16	E_{15}^{E}	16	E_{15}^{E}
UQ	18	16	20	21	18	17	18	28	34	40	38	38	37	38	38	34	31	26	24	23	20	22	24	24
LQ	E	E	E	E	E	E	E_{13}^{G}	$^{G}18$	30	32	E_{21}^{G}	E_{26}^{G}	E_{29}^{G}	E_{20}^{G}	G	20	25	18	15	E	E_{14}^{E}	E	E	E

The Radio Research Laboratories. Japan

OCT. 1972 | FBES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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	E S 15	12	12	14	12	14	14	14	18	15	26	19	26	26	20	14	15	12	14	E S 15	E S 15	F S 15	F S 15	E S 15
2	E S 15	14	14	11	12	E S 15	14	14	15	15	16	15	18	25	25	15	14	14	13	E S 15	E S 15	E S 15	F S 15	E S 15
3	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	14	14	13	15	17	16	18	15	15	12	15	12	E S 15	E S 15	E S 15	E S 15	12	E S 15
4	E S 15	E S 15	E S 15	13	13	12	15	15	15	15	15	17	22	17	15	15	12	15	E S 15	12	E S 15	F S 15	F S 15	E S 15
5	E S 15	E S 15	E S 15	12	E S 15	E S 15	13	15	15	16	16	15	23	15	18	19	15	15	E S 15	E S 15	F S 15	F S 15	F S 15	E S 15
6	E S 15	13	E S 15	13	E S 15	13	13	13	15	15	23	23	36	40	18	16	15	15	E S 15	E S 15	F S 15	F S 15	F S 15	E S 15
7	E S 15	E S 15	E S 15	13	E S 15	13	13	12	15	15	15	15	15	16	16	15	12	14	12	14	E S 15	F S 15	F S 15	E S 15
8	E S 15	E S 15	12	12	13	14	16	15	15	15	15	15	15	15	15	15	15	13	12	E S 15	E S 15	C	E S 15	C
9	C	C	C	C	C	C	C	C	C	C	14	18	18	16	16	15	16	14	E S 15	14	E S 15	E S 15	F S 15	E S 15
10	E S 15	14	14	14	13	14	14	14	15	15	14	15	15	15	12	15	14	14	E S 15	13	14	12	F S 15	E S 15
11	C	C	C	C	C	C	C	C	15	15	15	15	22	25	25	15	13	13	13	12	12	F S 15	F S 15	E S 15
12	E S 15	E S 15	E S 15	E S 15	13	13	15	12	12	15	22	26	31	29	15	14	14	14	13	E S 15	F S 15	14	12	12
13	14	E S 15	14	14	14	14	15	14	14	15	18	18	15	23	15	13	15	15	E S 15	E S 15	E S 15	F S 15	F S 15	E S 15
14	E S 15	E S 15	12	12	12	E S 15	12	15	15	15	14	16	25	22	15	15	19	14	12	13	13	E S 15	14	14
15	E S 15	E S 15	14	14	13	12	14	15	14	16	19	21	26	22	17	14	13	12	14	14	E S 15	14	F S 15	E S 15
16	12	14	14	12	12	12	14	14	14	15	22	15	31	24	15	16	15	15	E S 15	E S 15	F S 15	F S 15	F S 15	E S 15
17	E S 15	13	E S 15	12	13	E S 15	15	15	14	15	15	15	40	17	15	15	15	13	E S 15	12	E S 15	13	F S 15	12
18	12	E S 15	E S 15	E S 15	13	E S 15	13	15	13	15	19	15	15	15	15	15	14	14	14	14	14	14	14	14
19	14	13	12	E S 15	13	14	14	15	14	14	15	15	15	14	14	14	14	12	14	E S 15	14	14	12	14
20	E S 15	14	14	14	12	14	14	12	14	15	15	25	25	25	25	15	16	15	E S 15	13	E S 15	E S 15	F S 15	E S 15
21	E S 15	E S 15	14	E S 15	E S 15	12	15	14	15	16	16	17	15	15	15	14	12	15	E S 15	E S 15	12	13	E S 15	14
22	E S 15	13	12	13	14	14	12	14	13	14	14	15	14	15	12	14	12	15	E S 15	E S 15	14	E S 15	14	E S 15
23	14	12	E S 15	12	12	14	15	14	15	26	26	19	16	15	25	18	15	15	E S 15	E S 15	F S 15	F S 15	F S 15	E S 16
24	E S 15	E S 15	13	E S 15	13	13	16	13	14	14	25	15	15	25	15	15	15	15	E S 15	E S 15	F S 15	F S 15	F S 15	E S 15
25	E S 15	13	13	E S 15	13	E S 15	17	15	15	16	25	25	29	25	15	18	16	15	E S 15	E S 15	13	E S 15	F S 15	E S 15
26	E S 15	13	14	E S 15	13	E S 15	15	15	15	C	15	25	26	18	15	15	E S 31	15	C	14	14	E S 15	F S 15	13
27	E S 15	14	14	14	14	14	C	15	15	15	23	25	26	25	25	18	15	15	12	15	13	12	12	E S 15
28	E S 15	12	E S 15	13	12	13	16	15	15	15	15	15	15	E S 35	15	15	15	14	E S 15	E S 15	F S 15	F S 15	F S 15	E S 15
29	E S 15	14	E S 15	12	14	12	12	12	14	15	15	19	25	25	16	18	16	14	14	E S 15	E S 15	F S 15	F S 15	13
30	14	14	12	12	12	14	15	12	19	25	19	19	18	16	15	12	13	13	E S 15	E S 15	E S 15	E S 16	F S 16	E S 15
31	E S 15	E S 15	E S 15	13	E S 15	13	14	13	15	15	15	18	15	15	15	15	12	15	E S 15	E S 15	E S 15	E S 15	13	E S 15
	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	28	29	30	29	31	31	31	31	31	31	31	31	30	31	31	30	31	30
MED	E S 15	13	13	12	13	14	14	14	15	15	16	17	18	18	15	15	15	14	E S 15	E S 15	E S 15	F S 15	F S 15	E S 15
UQ	E S 15	E S 15	E S 15	E S 15	14	E S 15	15	15	15	15	20	19	26	25	18	15	15	15	E S 15	E S 15	F S 15	E S 15	F S 15	E S 15
LQ	E S 15	13	13	12	12	13	14	13	14	15	15	15	15	15	15	14	14	14	14	13	13	13	13	13

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OCT. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	295	300	305	330	330	290	355	340	350	360	315	305	315	310	305	320	330	340	330	315	290	290	295	285
2	295	310	315	305	290	285	330	335	345	335	335	315	305	320	320	310	J R 325	330	335	I A 315	295	305	300	290
3	290	290	280	300	325	300	J R 330	340	355	340	335	335	320	J R 305	305	310	310	315	345	J R 340	J R 315	295	280	280
4	285	R 290	285	275	285	310	U R 335	350	270	320	315	335	320	295	300	320	320	345	350	I S 350	300	300	280	285
5	R 295	R 285	285	300	305	315	320	335	330	335	335	325	305	J R 320	325	305	J R 305	340	340	J R 330	J R 335	310	300	290
6	290	300	275	285	330	345	365	J R 355	355	330	345	340	300	J R 310	320	J R 295	315	J R 335	I S 350	I S 335	I S 315	320	I S 300	I S 285
7	265	280	290	285	315	330	260	355	J R 350	360	335	320	315	315	320	320	320	335	345	I S 350	310	345	295	285
8	285	J R 300	305	320	330	S 305	350	350	J R 355	365	340	305	330	315	315	315	315	U R 325	R 340	330	305	C	C	C
9	C	C	C	C	C	C	C	C	C	C	325	310	305	320	310	330	340	345	S 340	330	295	300	I S 290	290
10	J R 300	295	295	295	310	290	345	335	360	355	330	335	300	310	320	330	335	340	355	285	280	S 300	300	S 290
11	C	C	C	C	C	C	C	C	360	355	325	J R 315	310	J R 310	305	310	J R 330	325	U R 320	315	I R 305	300	315	285
12	295	280	300	J R 320	I A 300	300	320	R 340	335	325	335	335	325	H 310	315	325	330	345	340	320	300	290	280	275
13	270	280	325	320	290	280	330	325	355	355	310	J R 310	315	310	J R 315	330	330	330	330	305	280	290	295	300
14	310	290	270	R 285	305	290	330	325	340	345	320	R 325	310	320	305	330	335	J R 340	320	300	300	290	320	305
15	290	290	290	295	350	270	330	S 345	J R 340	J R 340	340	320	325	J R 310	J R 325	330	330	355	345	290	320	305	295	280
16	295	290	310	320	350	285	330	325	335	335	335	320	320	315	J R 320	320	J R 330	J R 375	360	270	290	295	295	280
17	290	300	295	305	275	285	345	J R 350	330	340	340	340	340	305	325	320	340	355	350	295	305	A	A	A
18	A	A	290	305	355	I R 325	350	370	370	320	335	335	320	320	325	325	330	345	330	285	270	Z 270	J S 290	310
19	305	280	295	I A 310	315	300	340	345	335	320	315	290	305	305	305	320	325	315	310	I A 290	280	285	275	315
20	280	S 275	265	260	F 250	255	J R 275	R 290	310	315	300	J R 320	315	300	320	J R 330	J R 330	350	315	295	290	I A 305	R 295	295
21	275	275	A	A	290	R 285	310	J R 315	325	350	310	325	320	310	315	330	350	340	320	320	330	315	285	290
22	295	275	295	305	270	275	330	345	335	330	315	325	305	325	335	330	330	340	320	300	305	310	300	270
23	275	280	R 275	305	290	290	315	345	330	315	320	310	315	305	315	315	330	330	335	300	300	285	305	300
24	280	275	270	300	310	295	310	335	J R 330	310	320	325	315	300	320	330	340	340	315	295	285	275	310	315
25	290	280	280	290	295	300	320	340	325	340	315	315	305	295	310	300	325	320	J R 320	325	305	325	285	280
26	260	I R 260	265	295	345	295	320	325	J R 330	I C 325	320	310	310	300	305	330	325	330	I C 320	300	290	290	F 270	270
27	275	280	280	300	295	300	I C 330	J R 312	340	330	345	320	310	300	315	J R 320	330	320	325	J R 300	315	310	R	290
28	280	270	275	290	300	305	340	335	350	315	290	305	305	305	310	310	330	325	S 300	315	300	275	270	295
29	310	280	275	285	285	285	330	345	J R 335	335	320	325	J R 295	310	310	325	325	320	J R 295	J S 320	320	315	275	255
30	265	255	260	280	280	320	315	320	330	330	310	310	310	300	310	325	310	315	285	325	330	335	280	290
31	290	285	325	305	280	265	285	320	330	335	330	305	J R 315	325	330	320	340	335	310	315	330	320	305	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	29	29	29	29	30	30	31	31	31	31	31	31	31	31	31	31	31	29	28	29
MED	290	280	288	300	300	295	330	340	335	335	325	320	315	310	315	320	330	335	330	315	300	300	295	290
UQ	295	290	298	305	325	305	340	345	350	345	335	325	320	315	320	330	330	342	342	325	315	310	300	295
LQ	278	278	275	288	290	285	320	325	330	325	315	310	305	305	310	315	325	325	320	298	290	290	280	280

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OCT. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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	U L 420	L	L	U L 390	L	L	L								
2									L	L	L	L	L	L 370	L	A								
3									L	L	L	L	L	L	L	L	L							
4									L	L	L 420	L 425	L	L	L	L	L							
5								L	L	L	L	L	L	L	L	L	L							
6									L	L	L	L 395	L	U L 360	L	L	L							
7								L	L	L	L	L	L	L	L	L								
8									L	L 415	L	L	L	L	L	L	L							
9							C	C	C	C	L	L	L 420	L	L	L								
10									L	L	L	L	L	L	L	L								
11									L	L	L	L	L	A	L	L	L							
12									L	A	A	L	L	L	L	L	A							
13									A	A	L	L	L	L	L	L								
14								L	L	L	L	L	L	L	L	L								
15									L	L	L	L	L	L	L									
16									A	A	L	L	L	L	L									
17									L	L	L	L	L	L	L	L								
18									A	A	L	L	L	A	L	A								
19									A	L	L	A	L	L	A	A								
20									A	A	L	A	L	L	L									
21									A	L	L	L	L	L		L								
22									L	L	L	L	L	L	L									
23								L	L	L	L	L 410	L	L	L	L								
24									L	L	L 410	L	L	L	L									
25									L	L	L	L 400	L	L	L									
26									L	C	L	L	L	L	L	L								
27									L	L	L	L	L	L	L									
28									L	L	L	L	L	L	L									
29									L	L	L	L	L	L										
30									L	L	L	L	L	L	L									
31									L	L	L	L 310	L	L	A									
	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	2	5	2	2										
MED										L 418	L 415	L 400	L 405	L 365										
UQ												L 410												
LQ												L 395												

The Radio Research Laboratories, Japan

OCT. 1972 | M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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

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									230	220	230	255	260	270	250	260								
2									225	240	240	270	250	280	260	250								
3									220	250	240	260	250	250	255	260	250							
4									240	245	240	245	240	285	230	250	250							
5								225	245	245	250	245	240	250	240	240	250							
6									235	240	245	250	235	260	250	260	250							
7								235	240	250	230	230	270	260	250	240								
8									230	235	230	250	250	240	240	250	250							
9							C	C	C	C	260	255	245	260	270	245								
10									225	225	230	240	255	265	260	240								
11									220	245	250	265	260	255	275	275	250							
12									250	245	250	240	240	240H	260	255	245							
13									230	240	250	260	250	260	250	250								
14								230	240	230	230	245	260	260	250	245								
15									225	240	240	250	255	270	255									
16									230	250	240	290	260	250	260									
17									245	240	250	250	250	250	250	270								
18									225	240	245	245	275	260	250	255								
19									240	255	245	295	260	250	280	260								
20									255	250	250	250	250	250	250	250								
21									235	230	280	245	245	250		240								
22									225	245	230	240	245	255	240									
23								230	230	240	240	240	250	250	250	255								
24									240	250	250	240	250	250	250									
25									245	245	240	250	255	250	250									
26									245	I C 250	240	250	240	250	260	235								
27									230	240	250	265	250	250	250									
28									230	240	250	250	255	255	250									
29									240	240	250	250	240	250										
30									240	245	250	240	240	260	245									
31									245	250	240	250	250	250	240									
	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	30	30	31	31	31	31	29	21	7							
MED								230	235	242	245	250	250	250	250	250	250							
UQ								232	240	250	250	255	255	260	260	260	250							
LQ								228	230	240	240	245	245	250	250	245	250							

The Radio Research Laboratories, Japan

OCT. 1972 | H'F2 (KM)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	255	245	245	225	205	260	220	225	220	195	195	195	215	210	205	225	240	220	210	225	260	290	260	255
2	255	245	225	245	270	290	225	220	210	205	200	H 190	240	200	240	I A 230	250	230	230	A	300	240	250	260
3	290	275	280	270	235	250	205	230	200	200	220	200	240	220	210	220	235	230	210	200	230	240	260	275
4	280	285	275	300	285	250	215	210	220	210	200	200	210	220	210	230	235	240	225	200	235	260	270	290
5	260	290	A 300	A 310	250	260	255	220	200	210	220	240	210	240	210	230	240	240	210	220	210	205	290	280
6	290	280	290	290	250	220	205	215	220	210	210	200	190	240	230	220	240	230	210	210	235	240	245	280
7	290	290	285	250	235	235	210	220	230	210	205	190	180	180	H 180	230	230	220	210	200	230	205	245	300
8	300	255	230	230	220	260	210	220	225	200	200	205	210	200	200	240	240	240	205	210	210	C	240	C
9	C	C	C	C	C	C	C	C	C	C	H 200	200	200	220	230	225	230	220	205	210	240	240	250	290
10	255	255	245	250	240	255	225	225	225	205	210	220	190	H 180	205	240	220	220	205	A 250	300	280	270	A 300
11	C	C	C	C	C	C	C	C	220	210	210	210	250	I A 245	250	240	245	230	230	235	270	260	290	320
12	295	255	245	240	A	320	245	235	240	A	A	230	220	210	250	250	I A 245	220	210	220	230	250	300	320
13	300	300	250	240	240	290	240	240	A	A	205	200	235	235	240	240	245	240	210	245	260	275	280	240
14	255	300	360	340	300	250	240	220	235	225	220	200	210	220	220	240	225	220	205	220	270	275	255	230
15	260	305	320	A 320	210	255	220	220	225	200	205	210	205	240	240	245	220	220	200	295	255	260	I A 305	310
16	295	260	260	240	205	300	230	220	I A 230	I A 235	220	220	230	240	250	250	240	220	200	290	290	290	290	290
17	290	260	245	260	270	295	240	225	240	235	220	200	220	220	240	245	240	235	240	260	240	A	I A 355	I A 310
18	A	A	320	260	240	310	225	220	A	A	220	I A 225	200	A	245	A	240	240	230	270	320	I A 330	250	290
19	A 300	300	A 330	A	255	280	220	220	I A 230	240	230	I A 250	240	200	I A 240	I A 250	225	210	I A 265	I A 265	I A 305	290	315	250
20	300	320	350	350	360	370	260	255	A	I A 230	220	I A 245	220	220	240	I A 245	240	225	245	250	A 300	I A 305	320	290
21	A 350	350	A	A	E A 390	A 340	290	240	I A 225	220	195	H 200	220	220	240	240	220	210	205	240	210	220	275	275
22	275	290	270	220	255	305	245	220	220	220	210	205	230	230	230	235	245	210	205	250	250	240	255	310
23	310	300	290	250	255	275	240	230	225	235	225	210	200	240	230	210	230	205	235	270	240	250	260	250
24	280	300	290	250	210	260	250	230	235	235	220	205	220	240	240	245	240	205	220	240	250	290	250	240
25	250	290	300	290	260	290	250	235	240	235	210	210	240	240	240	245	220	235	215	240	230	250	285	290
26	345	305	300	250	230	255	245	230	240	I C 235	220	240	225	220	A 250	245	230	230	I A 220	245	245	255	320	355
27	290	275	270	230	250	245	I C 220	240	220	210	240	225	240	240	240	240	235	220	210	240	230	E A 300	A 340	300
28	300	335	310	280	210	255	220	220	210	200	200	220	240	230	240	245	230	210	230	210	220	275	220	265
29	245	310	A 350	310	290	290	225	220	220	230	220	205	225	245	A 250	240	225	230	A 280	240	205	230	280	320
30	355	A 390	350	300	290	245	255	245	230	230	240	225	210	245	240	245	240	225	250	250	205	240	290	295
31	300	300	250	250	310	340	290	240	240	240	220	200	240	230	A	240	240	220	240	250	240	240	290	260
	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	27	28	29	29	29	27	27	30	31	31	30	30	30	31	31	31	30	31	29	31	30
MED	290	290	288	250	250	260	230	225	225	220	215	205	220	225	240	240	240	220	210	240	240	252	275	290
UQ	300	302	315	295	274	295	245	235	232	235	220	222	238	240	240	245	240	230	230	250	265	278	290	300
LQ	260	268	250	242	232	255	220	220	220	208	205	200	210	220	220	230	230	220	208	220	230	240	252	260

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OCT. 1972 | H'F (KM)

IONOSPHERIC DATA

OCT. 1972 | 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	S	100	100	95	100	100	G	G	G	G	G	G	G	G	G	150	140	120	100	95	100	95	S	S
2	S	105	100	100	B	S	150	155	130	120	120	110	110	100	100	130	115	100	100	100	100	100	100	100
3	S	S	S	S	100	100	B	G	100	140	120	140	140	130	120	140	120	100	100	100	100	S	100	S
4	S	S	S	100	100	100	G	140	130	115	G	115	G	G	G	120	110	100	100	100	100	S	S	100
5	100	100	100	100	100	100	B	100	100	105	100	100	G	G	G	G	110	130	100	100	100	S	100	100
6	100	100	100	100	100	100	100	100	140	130	G	G	B	B	G	G	G	140	S	100	100	100	100	100
7	100	100	100	100	S	B	B	140	110	105	105	100	100	100	100	100	125	100	100	100	95	100	100	S
8	S	S	B	B	B	105	105	100	G	100	G	100	100	100	G	E G 160	140	130	100	S	S	C	100	C
9	C	C	C	C	C	C	C	C	C	C	125	G	100	G	180	155	125	110	105	105	105	105	100	S
10	100	B	B	B	B	105	125	G	125	130	125	110	110	110	110	110	125	120	115	105	105	105	100	100
11	C	C	C	C	C	C	C	C	145	130	115	105	110	105	110	115	G	110	105	100	100	100	110	100
12	100	100	100	100	100	100	135	G	140	115	110	115	G	125	115	110	110	115	115	100	100	100	100	100
13	100	105	105	100	100	100	125	115	115	110	110	110	110	110	110	110	G	110	105	100	100	100	100	S
14	100	100	100	100	100	100	100	120	110	110	105	105	105	105	105	105	140	100	105	100	100	95	95	105
15	105	100	100	100	100	105	145	145	125	G	G	125	125	115	115	110	105	105	105	105	105	105	105	100
16	105	100	105	100	105	105	G	130	120	110	120	110	110	100	125	G	160	130	130	125	S	105	105	105
17	100	100	100	100	100	100	100	145	140	130	110	110	B	110	150	150	120	105	100	100	100	100	100	100
18	100	100	100	100	100	100	100	100	140	130	115	125	110	125	140	125	105	120	100	100	100	100	100	100
19	100	100	125	120	100	120	120	115	110	110	105	120	100	125	100	100	105	105	105	105	105	105	100	100
20	100	125	95	110	115	110	120	115	110	110	105	105	105	100	100	100	100	100	100	100	100	110	100	100
21	100	100	100	100	100	100	105	105	110	105	100	100	100	100	100	100	100	100	100	S	B	B	S	B
22	S	105	120	100	B	B	125	G	115	110	100	100	95	95	155	130	120	95	95	95	100	100	100	95
23	95	95	95	B	100	B	130	120	115	G	G	G	100	100	G	G	140	100	100	100	100	S	S	S
24	S	S	B	110	B	B	B	140	140	G	G	G	G	G	G	G	140	B	110	S	S	100	100	100
25	100	B	B	S	B	S	B	G	G	G	G	100	G	G	110	110	105	100	100	100	100	100	100	100
26	S	100	100	100	100	S	G	G	110	C	110	110	105	G	100	100	S	B	C	105	95	S	105	95
27	95	95	100	B	B	B	C	120	120	110	110	100	100	G	G	130	110	105	100	100	100	100	100	100
28	100	100	100	100	100	100	B	110	110	105	100	100	100	S	100	100	105	100	100	100	S	S	100	100
29	100	95	95	95	100	100	100	120	110	110	110	105	105	100	100	100	100	100	100	95	95	95	105	B
30	100	100	100	100	100	105	B	105	105	105	100	G	G	100	G	100	100	100	100	100	S	S	S	S
31	S	S	S	B	S	B	B	105	110	105	105	G	100	100	100	100	100	100	110	100	100	100	100	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	22	22	22	20	20	16	22	27	24	23	24	22	21	22	26	27	29	29	28	25	22	26	20
MED	100	100	100	100	100	100	120	118	115	110	110	108	105	100	110	110	110	105	100	100	100	100	100	100
UQ	100	100	100	100	100	105	128	140	130	125	115	112	110	110	120	130	125	115	105	100	100	105	100	100
LQ	100	100	100	100	100	100	100	105	110	105	105	100	100	100	100	100	105	100	100	100	100	100	100	100

The Radio Research Laboratories, Japan

OCT. 1972 | H'ES (KM)

IONOSPHERIC DATA

OCT. 1972 | 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		F 1	F 1	F 3	F 1	F 2										HL 11	HL 11	CL 21	FF 32	F 2	F 2	F 2		
2		F 1	F 1	F 1			H 2	H 1	H 1	H 1	H 1	C 1	C 1	L 1	L 1	HL 31	CL 22	L 2	F 1	F 5	F 6	F 4	F 1	F 1
3					F 1	F 2			L 1	H 1	H 1	H 1	H 1	H 1	H 2	H 1	H 1	L 2	F 1	F 1	F 1		F 1	
4				F 2	F 2	F 2		H 1	H 2	C 1		C 1				H 1	C 1	L 2	F 2	F 1	F 1			F 2
5	F 2	F 2	F 4	F 3	F 2	F 3		L 2	LH 11	C 2	L 1	L 1					C 1	H 1	F 4	F 3	F 3	F 1	F 4	F 2
6	F 1	F 1	F 1	F 3	F 2	F 1	L 2	L 1	H 1	H 1								H 1		F 3	F 3	F 2	F 2	F 1
7	F 1	F 1	F 1	F 1				H 1	C 2	C 2	C 2	L 2	L 1	L 1	L 1	L 1	HL 22	L 3	F 4	F 2	F 3	F 1	F 1	
8						F 2	L 1	L 2		L 1		L 1	L 1	L 1		H 1	H 1	H 2	F 1				F 1	
9											H 1		L 1		HL 11	H 1	H 3	C 4	F 2	F 3	F 3	F 1	F 3	
10	F 1					F 1	C 3		HL 31	H 1	HL 11	CL 11	CL 11	C 1	CL 22	C 3	H 3	C 4	F 5	F 3	F 3	F 3	F 4	F 5
11									H 1	H 1	C 1	C 1	C 1	C 1	C 1	C 1		L 3	F 3	F 2	F 3	F 6	FF 21	F 3
12	F 3	F 2	F 2	F 2	F 4	F 3	H 1		H 1	C 2	C 1	C 1		H 1	C 1	C 3	C 4	C 4	F 3	F 1	F 1	F 1	F 4	F 5
13	F 2	F 4	F 4	F 2	F 1	F 1	C 2	C 3	C 3	C 3	C 1	C 1	L 1	C 1	C 1	C 1		C 2	F 3	F 3	F 2	F 2	F 2	
14	F 3	F 3	F 3	F 5	F 4	F 1	L 1	HL 11	C 1	C 1	C 2	L 2	L 1	L 1	L 1	L 1	H 1	L 2	F 1	F 2	F 3	F 4	F 3	FF 22
15	F 3	F 1	F 3	F 3	F 3	F 2	H 2	H 2	H 2			H 1	C 1	C 1	C 2	C 3	C 4	C 4	F 3	F 3	F 3	FF 23	F 4	F 2
16	F 4	F 1	F 1	F 1	F 1	F 2		H 2	H 2	C 2	H 1	C 1	C 2	C 1	H 1		H 1	H 3	FF 11	F 1	F 1	F 2	F 1	F 1
17	F 1	F 2	F 2	F 2	F 2	F 2	LH 11	H 1	H 2	H 1	C 1	C 1		C 1	H 1	H 1	H 2	L 3	F 4	F 4	F 2	F 3	F 3	F 4
18	F 4	F 4	F 4	F 3	F 4	F 3	L 2	L 1	HL 11	HL 21	C 1	HC 11	C 1	HC 21	HL 12	HL 23	L 4	HL 33	F 4	F 4	F 5	F 3	F 4	F 3
19	F 4	F 3	FF 24	FF 23	F 3	FF 42	CL 11	C 2	C 3	CL 22	C 1	HL 21	L 1	HL 12	L 2	L 3	L 2	L 3	F 4	F 4	F 3	F 3	F 6	F 5
20	F 3	FF 23	F 4	FF 24	F 3	F 4	C 2	C 2	C 3	C 2	C 1	C 2	L 1	L 2	L 1	L 3	L 4	L 3	F 3	F 3	F 4	FF 23	F 2	F 2
21	F 4	F 2	F 3	F 3	F 3	F 5	L 1	LH 11	C 2	C 2	L 2	L 1	L 1	L 1	L 2	L 2	L 3	L 1	F 1					
22		F 1	F 1	F 1			H 2		CL 12	CL 22	L 1	L 1	L 1	L 2	HL 12	LL 21	HL 22	LH 23	F 3	F 1	F 2	F 2	F 2	F 2
23	F 3	F 2	F 2		F 1		CL 11	C 2	C 1				L 1	L 1			HL 11	L 1	F 1	F 1	F 1			
24				F 1				H 1	H 1								H 1		F 1			F 1	F 2	F 1
25	F 2											L 1			L 1	L 1	L 1	L 1	F 4	F 2	F 3	F 4	F 5	F 2
26		F 2	F 2	F 1	F 1				C 1		C 1	L 1	L 2		L 3	L 1				F 1	F 1		F 2	F 3
27	F 1	F 2	F 1					C 1	C 1	C 1	C 2	L 1	L 1			H 1	C 2	L 3	F 4	F 6	F 2	F 3	F 5	F 3
28	F 2	F 3	F 1	F 1	F 1	F 1		C 1	C 2	L 1	L 1	L 1	L 1		L 1	L 1	L 1	L 2	F 1	F 1			F 2	F 2
29	F 2	F 2	F 3	F 2	F 2	F 4	L 3	L 2	C 1	C 2	C 1	L 1	L 1	L 2	L 2	L 3	L 3	L 2	F 3	F 4	F 2	F 1	F 1	
30	F 3	F 3	F 2	F 2	F 1	F 1		L 2	L 2	L 1	L 2			L 1		L 1	L 2	LC 21	F 1	F 1				
31								L 1	C 1	C 1	L 1		L 1	L 1	L 2	L 2	L 3	L 1	F 2	F 2	F 1	F 2	F 3	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

OCT. 1972 | TYPES OF ES

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	330	310	305	280	260	330	250	250	250	245	290	305	305	305	315	300	275	255	260	290	320	330	330	330
2	315	290	300	305	350	345	260	255	250	260	260	300	295	300	300	290	J R 290	260	250	I A 300	340	300	310	340
3	350	350	350	320	300	310	J R 260	250	260	250	250	310	300	J R 315	300	300	290	300	250	J R 250	J R 290	300	340	350
4	360	R 335	350	340	340	300	U R 250	250	290	250	290	275	295	310	300	300	300	270	250	I S 255	310	310	350	340
5	300	R 355	340	A	300	300	300	250	270	265	280	260	300	J R 295	300	315	J R 300	270	J R 260	J R 260	J R 250	290	340	350
6	350	340	350	330	290	250	250	J R 240	250	265	250	270	340	J R 300	300	J R 305	300	J R I S 255	I S 255	I S 250	I S 295	300	I S 290	I S 350
7	360	345	300	320	250	280	240	250	J R 250	250	255	290	305	300	290	290	280	275	250	I S 245	290	250	310	350
8	350	J R 305	290	290	265	S 305	245	250	J R 250	250	255	300	275	300	300	300	300	U R 280	260	260	280	C	C	C
9	C	C	C	C	C	C	C	C	C	C	290	305	315	300	305	280	260	250	S 250	250	300	300	I S 310	330
10	J R 315	315	305	305	290	320	250	250	240	250	260	260	305	300	290	280	255	255	220	320	F 355	S 310	300	S 315
11	C	C	C	C	C	C	C	C	240	250	285	J R 300	300	J R 300	300	300	J R 290	295	U R 300	290	I R 300	295	320	340
12	340	330	290	J R 295	I A 300	340	290	R 265	265	270	270	280	290	H 305	300	290	280	250	250	285	300	320	350	350
13	380	350	250	290	310	310	260	280	250	250	295	J R 300	300	300	J R 290	290	290	290	250	300	330	330	300	290
14	290	320	390	R 360	330	290	255	300	250	250	290	R 295	300	290	305	285	225	J R 255	290	300	315	325	290	300
15	315	355	370	340	225	355	250	S 245	J R 280	J R 265	255	290	290	J R 305	J R 300	280	270	240	250	320	290	305	345	370
16	340	320	310	260	230	320	265	260	250	265	260	290	300	300	J R 300	300	J R 260	J R 250	210	350	340	350	350	360
17	350	300	300	300	370	335	250	J R 250	260	260	260	260	280	300	280	300	260	250	250	300	300	A	A	A
18	A	A	360	300	250	I R 280	250	245	240	270	260	260	300	300	280	290	260	250	260	330	380	Z 390	J S 315	300
19	A	350	340	I A 305	300	300	250	250	260	295	290	325	305	305	310	300	290	290	300	I A 340	355	320	360	300
20	350	S 380	400	410	F 420	400	J R 345	R 340	300	290	315	J R 290	300	300	300	J R 270	J R 260	260	290	J R 315	320	I A 330	R 350	325
21	A	395	A	A	A	R 355	280	J R 300	260	250	305	290	290	305	300	285	250	250	290	300	250	280	340	340
22	320	360	320	300	355	360	280	250	250	290	300	290	300	290	260	270	280	255	280	320	305	300	310	370
23	380	355	R 350	305	340	340	300	250	280	300	290	300	290	300	300	300	280	260	265	335	300	310	300	300
24	350	390	350	290	290	310	300	260	J R 265	300	290	300	300	300	290	290	260	250	290	300	330	350	300	290
25	300	360	350	350	350	310	270	250	265	265	295	300	300	330	300	290	300	300	J R 300	300	290	290	360	350
26	400	I R 390	380	300	240	300	290	260	J R 290	I C 300	280	300	300	320	300	270	270	280	I C 270	320	320	340	F 400	390
27	355	345	345	300	315	305	I C 275	J R 300	270	290	300	300	300	310	300	J R 300	280	290	290	J R 300	300	A	R	350
28	390	390	390	340	300	300	250	250	260	295	325	305	310	305	300	305	290	280	S 320	300	305	350	375	330
29	290	345	370	355	355	345	260	250	J R 260	270	290	290	J R 315	305	305	290	275	290	J R 320	J S 290	275	270	345	405
30	415	410	410	360	350	290	290	300	280	275	300	300	300	300	300	290	300	300	340	300	280	290	350	360
31	350	360	300	300	360	360	320	270	280	290	290	300	J R 290	300	290	300	260	260	290	300	280	290	290	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	28	27	28	29	29	29	30	30	31	31	31	31	31	31	31	31	31	31	31	28	28	29
MED	350	350	348	305	300	310	260	250	260	265	290	300	300	300	300	290	280	260	260	300	300	308	335	340
UQ	360	360	365	340	350	340	290	265	270	290	292	300	302	305	300	300	290	285	290	318	320	330	350	350
LQ	315	325	302	300	278	300	250	250	250	250	260	290	295	300	295	288	260	252	250	288	290	292	305	315

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OCT. 1972 | HPF2 (KM)

IONOSPHERIC DATA

OCT. 1972 | 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	75	85	75	60	85	115	50	55	50	55	60	65	45	70	80	60	50	50	60	65	85	80	75	90
2	70	60	55	90	65	70	55	70	55	100	100	90	95	90	90	100	J R 100	100	100	I A 100	100	90	110	100
3	110	100	90	90	90	110	J R 110	100	90	100	100	100	90	J R 105	90	90	100	90	100	J R 110	J R 100	90	100	110
4	100	R 105	90	105	90	90	U R 90	80	50	90	100	95	95	100	90	90	90	110	90	I S 85	100	100	90	100
5	R 90	R 85	100	A	90	90	90	95	90	85	80	100	90	J R 100	90	95	J R 90	90	J R 100	J R 100	J R 90	70	100	90
6	110	100	110	110	90	100	70	J R 90	90	95	100	90	90	J R 90	90	J R 105	90	J R 95	I S 70	I S 100	I S 95	90	I S 100	I S 100
7	100	115	90	90	110	100	100	70	J R 65	40	55	70	65	60	70	65	65	50	55	I S 60	80	55	95	70
8	95	J R 75	70	65	50	S 65	55	50	J R 50	60	95	90	105	90	90	90	90	U R 100	90	100	110	C	C	C
9	C	C	C	C	C	C	C	C	C	C	45	65	100	55	65	65	55	55	S 45	70	95	95	I S 90	75
10	J R 80	80	100	90	65	80	50	45	40	50	65	60	90	60	60	45	65	45	80	125	F 90	S 65	95	S 85
11	C	C	C	C	C	C	C	C	50	90	105	J R 90	90	J R 90	90	90	J R 100	95	U R 90	100	I R 90	95	100	120
12	100	110	100	J R 95	I A 100	100	100	R 75	95	55	50	70	60	H 70	70	35	45	55	50	70	95	90	95	95
13	70	95	105	60	95	90	60	55	50	80	95	J R 90	90	90	J R 90	100	100	100	100	90	100	90	90	90
14	100	110	100	R 100	110	100	85	90	90	60	70	R 45	70	70	90	60	60	J R 60	65	90	75	80	65	95
15	100	90	100	80	70	105	70	S 55	J R 35	J R 55	45	75	65	J R 65	J R 50	55	75	60	50	85	65	90	100	75
16	80	85	75	65	65	100	60	60	70	75	90	100	90	90	J R 90	90	J R 100	J R 90	90	80	100	90	90	100
17	110	90	90	90	100	85	90	J R 80	90	100	80	100	110	90	100	90	90	60	90	90	90	A	A	A
18	A	A	100	90	90	I R 90	90	75	70	85	55	55	55	55	60	50	60	50	60	90	90	Z 80	J S 85	60
19	A	95	105	I A 75	55	100	55	55	60	55	70	80	65	75	85	60	65	70	95	I A 75	95	125	90	55
20	95	S 65	70	80	F 90	90	J R 100	R 105	70	90	95	J R 100	90	90	90	J R 90	J R 100	100	100	J R 105	120	I A 110	R 110	85
21	A	95	A	A	A	R 105	110	J R 90	100	60	80	70	65	50	60	50	50	50	65	55	95	75	100	105
22	80	130	80	95	135	90	65	50	70	50	75	60	95	55	70	50	35	60	75	80	90	55	90	85
23	90	90	R 100	90	105	80	70	50	70	90	100	90	100	90	90	90	100	90	85	105	90	110	90	90
24	100	100	110	100	100	100	90	100	J R 95	90	90	90	90	90	100	100	100	110	100	90	100	100	90	100
25	90	100	110	90	90	100	90	100	95	85	95	90	90	100	90	100	90	90	J R 80	90	100	90	100	110
26	90	I R 100	110	90	100	100	100	100	J R 100	I C 80	80	60	60	90	80	70	75	70	I C 50	80	80	100	F 90	80
27	90	80	100	85	85	95	I C 50	J R 50	50	100	90	90	90	100	90	J R 90	100	100	100	J R 90	90	A	R	110
28	100	100	100	100	100	90	100	100	100	80	80	75	70	90	80	65	80	60	S 70	70	95	95	85	70
29	65	75	80	100	85	100	70	45	J R 50	55	60	70	J R 90	90	75	65	70	65	J R 90	J S 60	80	80	100	90
30	65	85	90	130	90	55	65	45	60	85	90	90	90	90	90	100	90	90	100	90	100	90	110	100
31	110	100	80	90	100	100	90	90	100	100	100	90	J R 100	90	100	90	100	100	100	90	100	90	100	90
	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	26	28	28	27	28	29	29	29	30	30	31	31	31	31	31	31	31	31	31	31	31	28	28	29
MED	92	95	100	90	90	100	85	75	70	82	80	90	90	90	90	90	90	90	90	90	95	90	95	90
UQ	100	100	100	98	100	100	90	90	90	90	95	90	92	90	90	90	100	98	100	100	100	95	100	100
LQ	80	85	80	82	85	90	60	55	50	55	68	70	68	70	72	60	65	60	65	78	90	80	90	85

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OCT. 1972 | YPF2 (KM)

IONOSPHERIC DATA

OCT. 1972 | 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	68	69	62 S	57	45	31	39	78	96 S	102	101	114 S	122 S	124 S	117 S	114 J S	124 J S	125 S	C	79 S	78 S	79	77 S	73 S
2	69	63 S	55	52	42	42 S	50 S	89	100 J S	101 J S	102 J S	99 S	100 J S	114	116 S	112 S	101 S	108 J S	100 J S	78 S	59	54 J S	49 S	50 S
3	49 S	49 S	45	47 S	44	40	45	71	97 S	99 S	84 S	91	113	108 U S	111	115	121 J S	129	122 J S	103 J S	68	60 U S	55	52 S
4	50 S	47	46 S	43	43	45	55	78	86	103 S	106	103	101	100	112	124	118	111	125	98 S	63	56	50	58
5	58	50	46	46	47	42	48	70	87	98	118 U S	110	112	108 S	97 S	106 J S	115 I S	134	135 S	105 U S	77 S	56	46	47
6	47 S	48	48	47	50	43	43	65	83	100 I S	C	C	C	C	C	C	C	C	C	C	C	52	51 S	51
7	51 S	52 S	48	48	48 S	39	43 S	76	89	103 J S	86 S	97 S	115 J S	124 J S	128 S	119 J S	108 S	116 I S	112 S	89 I S	53	52 S	55	51 U S
8	51	48	47	43	39	34	42	76	98 S	95	88	87	119	110 S	96	104	109 S	S	S	70	62	56	49	44 S
9	43	44	46	48 I S	53	28	37	64	77	88 I C	90	89	110 S	125 J S	136 J S	137 S	126 J S	115 I S	107 I S	80 J S	48 S	44 S	39 S	41 S
10	40 S	38 S	37 S	37 S	35	28	30	75 J S	S	104 U S	84	94	99	110 J S	123 J S	130	110 S	107 I S	93 S	64 S	47 S	48 U S	48 S	45 S
11	39	39	39	40 S	38	38	49 S	71	83	94	98	93	106 S	106	109	116 I S	122 J S	111	98 S	81	53 S	53	51	47 S
12	46 S	46	43	38	37	33	38	74	S	120 S	119	110	112 J S	116 J S	123 J S	120 J S	111 S	110	98 S	80 S	44	43	45 S	40 S
13	39 F	39	42	35	33	27	33	78	116 S	91	71 H	96	124 J S	124	121 J S	112 S	101 S	105 J S	S	77 H	56	57	50 J S	51 S
14	42 I S	38 S	38 S	40 S	37	38	43	80	92 S	100 J S	101 S	106	114 J S	118 U S	134	131	117 S	106 S	C	90 U S	59	54	49	40
15	36	31	33	39	40	20	29	68	91	106 I S	114 S	119	106	120	123 S	127	112 S	103 I S	81	49 S	50 S	54 S	32 S	38 S
16	39	36	35	37	38	27	32	68	86 S	98	91 S	104 I S	112	108	113	118 I S	119 S	103	81	46 I A	47	50 I A	41	42 J S
17	41 S	44	46	45	37	34	42	87	83	110 U S	106 S	94	94	102	110 U S	99	102 S	115	99 U S	65	54	52 S	38	37
18	39	39	34	37	42	31	36	67	78	80	97	91	93	110	119	122	116	102	97 S	76	63	61	55	45 I C
19	43	36	36	40	34	31	40	72	73	89	110 S	106	119	116 J S	116 S	116 U S	122 S	114 J S	99 S	79 S	81	69	55	64
20	50	44	44	46	44	46	48 S	67 I S	S	147	144	132 S	134	138 S	151	142	134 S	116 I S	84	60	55	55	47	42
21	42	39	40	41	35 S	39 S	45	78	89	119 U S	122 I S	136	139	142	130	127	125	110 U S	87 S	65	60	52	46 S	45 S
22	45	44	45 S	46	32	34	43	81	98	98	131	138	131	122 J S	115 I S	98	94	107 S	90	60	57	56	43	39
23	40	38	38	40	34	34	44	78	95	98	122 J S	129	123	114 J S	123	117 S	116 S	102 J S	77 S	54	53	53	55	52 J S
24	46 S	41 J S	42	40	31	28	32	72 S	102 U S	112 U S	129	122 J S	106	115	123	110	98 S	92 I C	85 I C	70	54	54	55	44
25	39	38	37	40 S	38	34	39	76 S	102 J S	101	119	115	111	128	128	113	101	100	88	68	61	55	37	38
26	37	38	39	41	39	30	37	72 I C	97	99	114 S	121	116	126	140	137	122	115 J S	101 I S	69	57	57	48 S	42
27	41	42	42	44	46	30	38	85 S	100 S	93	100 S	132	127	129	139	133	110 S	96	82	69	62	53	49	43 S
28	41	42	41	45	44	47 J S	46	67	92	93	111 S	131	132	134	144	136	130	124	102 I S	89 I S	80 J S	61	44	44
29	45	40	42	47 I S	45 I C	34	39	77	93 I S	105	114 J S	116 S	114	128	136	131	120 S	108 S	86 S	80	81	50	30	30
30	33	34	33	36	34	33	34	67	114 J S	119	118	125	116	125	134	119 S	108 S	101	96	98 S	100 S	67	48 S	38
31	37	36	35	32	24	24	28	73	S	115 J S	125	111	105 U S	103 S	102	98 S	106 I S	97	81	64	70	61 S	45	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	27	31	30	30	30	30	30	30	30	29	26	30	30	31	31	31
MED	42	41	42	41	39	34	40	74	92	100	108	110	114	117	123	118	110 S	108 S	96 S	76	59	54	48	44
UQ	48	46	46	46	44	39	44	78	98 S	106 S	119 S	122	122	125	134	130	122 S	115 S	101 S	81 S	68	57	51	50 S
LQ	39	38	38	40	35	30	36	69	86	96	97	96	106	110 S	113	112 S	108 S	103 S	85	65	53	52	44	40

OCT. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	A	A						
2									L	L	L	L	L	L	L	L	L							
3										L	L	L	L	L	L	L	L	L						
4									L	L	L	L	L	L	L	L	L							
5									L	L	L	L	L	L	L	L	L	L						
6									L	L	C	C	C	C	C	C	C	C						
7									A	L	L	L	L	L	L	L	L							
8									L	L	L	L	L	L	L	L	L	A						
9										C	L	L	L	L	L	L	L							
10									L	L	L	L	U L 490	L	L	L								
11									L	L	A	L	L	L	L	L	L							
12									L	L	L	L	L	L	A	L	L							
13										A	L	L	A	L	L	A	L							
14										L	L	L	L 460	L	L	A	L	A						
15										L	L	L 480	L	L 510	L	L	L							
16									L	L	L	L	L	L	L	A								
17										L	L	L	L	L	L		L							
18										L	L	L	A	L	L	A	L	L 400						
19										L	L	L	L	H 450	L	L	L 360							
20									L	L	L	L 450	A	L	L	L	A	A						
21									L	L	L 380	L	L	L	L	L 390	L							
22									L	L	L	L	L	L	L	A	A							
23									L	L	L	L	L	L	L	L	L 360							
24										L	L	L	L	L	L	L								
25										L	L	L	L	L	L	L								
26										L	L	L	L	L	L	L								
27										L	L	L	L	L	L	L	L							
28									L	L	L 440	L	L 410	L	L	L	L							
29									L	L	L 390	L	L 450	L	L	L								
30									L	A	L	L	L	L	L	L								
31									L	L	L	L	L	L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											3	2	4	2		1	2	1						
MED											L 390	L 465	L 455	480		390	L 360	L 400						
UQ											L 415		L 475											
LQ											L 385		L 430											

The Radio Research Laboratories, Japan

OCT. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	230	H 280	315	330	350	360	350	R 350	H 320	H 290	H 235	B					
2							S	H 220	H 280	310	330	A	R	R	R	315	290	225	S					
3							A	210	275	310	335	340	R 350	R 340	330	315	280	210	A					
4							S	210	H 275	290	320	335	R 340	345	R 330	310	290	230	B					
5							S	I A 200	A	325	340	350	360	350	340	320	285	235	S					
6							S	A	H 280	H 305	C	C	C	C	C	C	C	C	C					
7							S	160	250	A	A	A	R 340	345	330	310	270	H 230	S					
8							S	200	H 275	I A 300	330	340	345	340	340	320	280	210	S					
9							S	190	H 260	I C 295	315	325	A	A	325	H 310	H 280	H 210	S					
10							S	220	280	300	320	A	A	A	A	310	275	H 220	S					
11							C	H 210	260	295	315	320	320	310	300	285	250	B	S					
12							S	195	260	300	320	320	320	320	320	305	270	H 210	S					
13							S	190	270	310	320	330	330	A	A	A	275	A	S					
14							S	190	I A 260	A	A	A	330	340	330	I A 310	270	A	S					
15							S	H 200	260	I A 300	320	A	A	350	330	300	H 270	200	S					
16							S	H 210	H 260	295	A	A	A	A	A	A	260	160	S					
17							S	160	260	295	315	I A 325	335	335	I A 330	315	A	A	S					
18							S	B	245	300	A	A	A	A	330	315	260	180	S					
19							S	I A 180	250	I A 290	320	330	I R 330	330	H 330	310	270	A	S					
20							S	A	250	A	A	A	A	350	I A 335	A	A	A	S					
21							S	170	250	280	330	I A 345	350	I A 345	I A 330	310	280	190	S					
22							S	180	H 270	305	320	350	350	I A 345	330	310	H 280	200	S					
23							S	170	270	320	340	R 360	R 365	R 355	R 345	320	280	A	S					
24							S	190	270	315	335	345	350	350	350	325	270	I C 195	C					
25							S	H 200	280	315	330	330	B	350	I A 335	I A 295	250	S	S					
26							S	I C 180	260	I A 290	I A 325	350	360	370	360	I A 330	A	A	S					
27							S	180	250	I C 295	I A 335	I A 345	350	340	I A 325	320	280	160	S					
28							S	190	H 260	310	335	350	350	350	340	320	270	170	S					
29							S	200	270	320	340	350	350	360	340	320	270	190	S					
30							S	190	A	A	A	340	350	350	340	310	270	A	S					
31							S	170	250	285	I A 310	345	I A 355	350	I A 350	A	A	A	S					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								28	29	27	24	22	22	24	26	26	26	19						
MED								190	260	300	328	342	350	348	330	312	272	210						
UQ								205	275	310	335	350	350	350	340	320	280	222						
LQ								180	260	295	320	330	335	340	330	310	270	190						

The Radio Research Laboratories, Japan

OCT. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{12}^{B}	E	E	17	25	30	24^{G}	26^{G}	27^{G}	27^{G}	G	38	45	47	J_{49}^{X}	J_{37}^{X}	17	F_{15}^{S}	F_{14}^{S}	F_{14}^{S}	E_{14}^{S}
2	20	E_{14}^{S}	E_{14}^{S}	E_{12}^{B}	12	19	18	26	31	36	38	36	37	37	35	34	45	J_{42}^{X}	J_{32}^{X}	J_{36}^{X}	J_{42}^{X}	J_{30}^{X}	J_{18}^{X}	E_{15}^{S}
3	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	22	23	24	G	18^{G}	32	35	39	43	49	44	41	35	29	23	E_{15}^{S}	33	E_{14}^{S}	F_{15}^{S}	E_{15}^{S}
4	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	18	G	29	31	34	36	38	53	G	G	G	J_{41}^{S}	J_{46}^{X}	J_{28}^{X}	J_{41}^{X}	J_{31}^{X}	J_{28}^{X}	E_{13}^{S}
5	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{B}	E_{13}^{B}	E_{13}^{S}	20	J_{29}^{X}	J_{35}^{X}	J_{45}^{X}	36	J_{35}^{G}	26^{G}	G	G	24^{G}	32	28	J_{27}^{X}	22	E_{14}^{S}	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}
6	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	J_{30}^{X}	J_{26}^{X}	J_{30}^{X}	30	35	C	C	C	C	C	C	C	C	C	C	C	J_{23}^{X}	J_{29}^{X}	J_{21}^{X}
7	20	19	E_{14}^{S}	E_{14}^{B}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	26	J_{41}^{X}	J_{71}^{X}	J_{34}^{X}	38	31^{G}	26^{G}	G	34	32	26	J_{26}^{X}	J_{26}^{X}	J_{21}^{X}	J_{18}^{X}	E_{14}^{S}	E_{14}^{S}
8	E_{14}^{S}	E_{12}^{S}	E_{14}^{S}	E_{12}^{S}	E_{12}^{B}	E_{14}^{S}	E_{15}^{S}	25	30	J_{39}^{X}	J_{33}^{G}	26^{G}	24^{G}	19^{G}	22^{G}	37	35	J_{51}^{X}	J_{27}^{X}	21	22	E_{12}^{S}	E_{14}^{S}	E_{14}^{S}
9	23	J_{22}^{X}	18	E_{15}^{B}	E	E_{11}^{B}	E_{14}^{S}	33	29	C	33	26^{G}	35	39	36	G	35	53	J_{64}^{X}	J_{52}^{X}	J_{51}^{X}	J_{33}^{X}	24	21
10	18	20	23	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	G	32	42	43	39	37	39	36	36	38	J_{38}^{X}	J_{31}^{X}	30	20	27	18	20
11	31	28	24	23	19	17	E_{19}^{C}	G	32	J_{50}^{X}	J_{46}^{X}	J_{48}^{X}	J_{51}^{X}	J_{48}^{X}	38	34	J_{39}^{X}	J_{41}^{X}	J_{39}^{X}	25	21	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}
12	E_{15}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	J_{24}^{X}	E_{15}^{S}	22	32	34	39	43	37	42	J_{60}^{X}	J_{43}^{X}	G	30	J_{42}^{X}	J_{36}^{X}	J_{21}^{X}	J_{19}^{X}	E_{13}^{S}	E_{13}^{S}
13	E_{14}^{S}	E_{14}^{S}	E_{13}^{B}	18	18	E_{13}^{S}	20	28	J_{43}^{X}	J_{59}^{X}	41	J_{45}^{X}	J_{47}^{X}	39	96	J_{56}^{X}	33	J_{67}^{X}	143	J_{64}^{X}	J_{28}^{X}	J_{36}^{X}	E_{14}^{S}	J_{21}^{X}
14	J_{28}^{X}	J_{25}^{X}	J_{25}^{X}	E_{14}^{S}	E_{20}^{C}	E_{14}^{S}	E_{14}^{S}	19^{G}	37	35	34	J_{40}^{X}	35	27^{G}	J_{33}^{G}	J_{81}^{X}	J_{32}^{X}	J_{45}^{X}	J_{33}^{X}	J_{94}^{X}	J_{94}^{X}	J_{39}^{X}	J_{28}^{X}	J_{30}^{X}
15	E_{15}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{B}	E_{14}^{S}	E_{13}^{S}	24	32	41	G	J_{35}^{X}	J_{35}^{X}	J_{33}^{G}	J_{33}^{G}	36	37	32	E_{15}^{S}	22	J_{17}^{X}	J_{33}^{X}	J_{62}^{X}	J_{30}^{X}
16	J_{46}^{X}	J_{30}^{X}	J_{32}^{X}	E_{16}^{B}	E_{14}^{B}	E_{14}^{S}	16	26	34	J_{42}^{X}	J_{36}^{X}	36	41	39	J_{34}^{X}	J_{56}^{X}	35	J_{35}^{X}	E_{13}^{S}	J_{70}^{X}	J_{35}^{X}	J_{62}^{X}	J_{36}^{X}	J_{72}^{X}
17	J_{21}^{X}	E_{12}^{S}	J_{29}^{X}	31	J_{27}^{X}	J_{18}^{X}	E_{14}^{S}	24	33	37	36	38	36	37	37	39	J_{35}^{X}	J_{51}^{X}	J_{37}^{X}	48	J_{55}^{X}	28	E_{14}^{S}	23
18	E_{14}^{S}	25	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{18}^{B}	29	37	J_{84}^{X}	J_{49}^{X}	J_{76}^{X}	J_{45}^{X}	37	45	33	J_{28}^{X}	J_{30}^{X}	19	22	J_{28}^{X}	J_{37}^{X}	J_{30}^{X}
19	J_{25}^{X}	J_{25}^{X}	J_{19}^{X}	J_{21}^{X}	J_{51}^{X}	23	E_{12}^{S}	26	32	34	37	39	36	35	27^{G}	G	13^{G}	26	16	J_{38}^{X}	E_{14}^{S}	25	23	J_{26}^{X}
20	J_{28}^{X}	J_{25}^{X}	J_{24}^{X}	25	J_{92}^{X}	J_{34}^{X}	E_{15}^{S}	J_{44}^{X}	J_{33}^{X}	J_{37}^{X}	J_{59}^{X}	39	J_{73}^{X}	33^{G}	43	J_{39}^{X}	J_{59}^{X}	J_{35}^{X}	J_{45}^{X}	J_{56}^{X}	J_{26}^{X}	J_{29}^{X}	J_{30}^{X}	22
21	J_{26}^{X}	J_{33}^{X}	J_{24}^{X}	24	E_{14}^{B}	E_{15}^{B}	E_{12}^{S}	G	G	31	38	J_{61}^{X}	25^{G}	38	J_{35}^{X}	J_{34}^{X}	J_{31}^{X}	J_{29}^{X}	23	16	J_{33}^{X}	J_{23}^{X}	J_{25}^{X}	J_{21}^{X}
22	18	E_{15}^{S}	E_{14}^{S}	E_{13}^{S}	E	E_{14}^{B}	E_{14}^{S}	22	29	34	34	33^{G}	32^{G}	35	18^{G}	44	J_{51}^{X}	J_{47}^{X}	J_{35}^{X}	J_{25}^{X}	J_{31}^{X}	20	22	E_{15}^{S}
23	16	E_{14}^{S}	17	E_{12}^{B}	E_{11}^{B}	E_{14}^{S}	E_{13}^{S}	G	G	G	G	27^{G}	18^{G}	21^{G}	25^{G}	G	29	23	J_{24}^{X}	J_{30}^{X}	17	23	20	17
24	17	E_{13}^{S}	E_{12}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	23	29	29^{G}	29^{G}	22^{G}	30^{G}	25^{G}	36	36	37	C	C	E_{14}^{S}	F_{13}^{S}	F_{15}^{S}	19	E_{14}^{S}
25	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{11}^{B}	E_{12}^{S}	E_{14}^{S}	E_{14}^{S}	22	G	32	35	G	E_{48}^{B}	G	36	43	J_{44}^{X}	J_{29}^{X}	J_{30}^{X}	J_{37}^{X}	J_{36}^{X}	J_{29}^{X}	E_{13}^{S}	E_{14}^{S}
26	E_{14}^{S}	J_{20}^{X}	23	E_{14}^{S}	E_{12}^{S}	E_{14}^{S}	E_{13}^{S}	C	31	37	40	33^{G}	31^{G}	31^{G}	32^{G}	39	33	J_{25}^{X}	20	23	J_{20}^{X}	22	23	E_{15}^{S}
27	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{B}	E_{13}^{B}	E_{13}^{S}	E_{15}^{S}	G	31	J_{47}^{X}	35	40	G	J_{54}^{X}	33	32^{G}	28^{G}	22	17	J_{20}^{X}	J_{25}^{X}	J_{24}^{X}	J_{33}^{X}	J_{33}^{X}
28	J_{33}^{X}	J_{31}^{X}	23	E_{14}^{B}	E_{15}^{B}	E_{17}^{B}	E_{15}^{S}	G	G	J_{28}^{G}	J_{28}^{G}	J_{31}^{G}	26^{G}	23^{G}	29^{G}	G	G	21	E_{16}^{S}	E_{14}^{S}	F_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
29	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{B}	C	E_{12}^{S}	E_{14}^{S}	19	J_{26}^{G}	32^{G}	30^{G}	G	G	31^{G}	G	23^{G}	J_{28}^{X}	J_{24}^{X}	J_{24}^{X}	J_{26}^{X}	J_{22}^{X}	19	E_{15}^{S}	E_{14}^{S}
30	E_{16}^{S}	E_{15}^{S}	E_{14}^{S}	E_{13}^{B}	E_{12}^{B}	E_{12}^{B}	E_{12}^{S}	17^{G}	J_{36}^{X}	J_{46}^{X}	40	33^{G}	J_{36}^{X}	27^{G}	23^{G}	34	30	J_{32}^{X}	J_{34}^{X}	25	E_{13}^{S}	F_{14}^{S}	E_{15}^{S}	E_{14}^{S}
31	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{B}	E_{11}^{B}	E_{14}^{S}	E_{15}^{S}	G	28	J_{34}^{X}	32	38	36	38	39	44	28	25	26	18	E_{15}^{S}	28	E_{14}^{S}	22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	30	31	30	30	30	30	30	30	30	30	29	29	30	30	31	31	31
MED	E_{16}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{E}	E_{14}^{E}	E_{14}^{S}	E_{14}^{S}	22	31	36	35	36	36	35	34	36	33	J_{32}^{X}	J_{30}^{X}	26	J_{22}^{X}	23	18	E_{15}^{S}
UQ	22	24	23	E_{15}^{E}	E_{15}^{E}	17	16	26	32	J_{42}^{X}	39	39	38	39	37	43	37	J_{42}^{X}	J_{37}^{X}	J_{37}^{X}	J_{33}^{X}	J_{29}^{X}	J_{26}^{X}	J_{22}^{X}
LQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{E}	E_{12}^{E}	E_{14}^{S}	E_{14}^{S}	G	29	32	33	31^{G}	27^{G}	26^{G}	25^{G}	32^{G}	29	26	23	20	17	16	E_{14}^{S}	E_{14}^{S}

The Radio Research Laboratories, Japan

OCT. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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	E S 13	E S 14	E S 14	E B 12	E	E	S	G	G	G 24	G 26	G 27	G 27	G	G	42	46	49	35	16	E S 15	E S 14	E S 14	E S 14
2	E	E S 14	E S 14	E B 12	12	E	S	G	G	36	38	E R 36	G	G	G	34	35	39	31	36	38	17	E	E S 15
3	E S 14	E S 14	E S 14	E S 14	13	14	14	G	G 18	G	G	38	43	48	43	40	34	28	15	E S 15	E	E S 14	E S 15	E S 15
4	E S 14	E S 14	E S 14	E S 14	E S 13	E S 14	E	G	G	G	G	36	38	46	G	G	G	37	44	26	28	28	19	E S 13
5	E S 14	E S 14	E S 13	E B 13	E B 13	E S 13	S	25	31	29	G	G 32	G 26	G	G	G 24	32	28	20	E	F S 14	E S 13	E S 15	E S 15
6	E S 15	E S 14	E S 14	E S 13	E S 14	E	15	20	G	G	C	C	C	C	C	C	C	C	C	C	C	E	19	17
7	18	E	E S 14	E B 14	E S 14	E S 13	E S 14	25	34	37	E R 34	38	G 31	G 26	G	G	31	26	23	24	E	E	E S 14	E S 14
8	E S 14	E S 12	E S 14	E S 12	E B 12	E S 14	E S 15	G	G	34	G 30	G 25	G 24	G 19	G 22	36	34	49	26	E	E	E S 12	E S 14	E S 14
9	E	E	E	E B 15	E	E B 11	E S 14	27	G	C	G	G 26	35	38	G	G	35	45	E S 64	52	29	18	E	E
10	15	E	E	E S 14	E S 13	E S 14	E S 14	G	G	39	42	39	37	39	36	36	37	36	30	19	E	18	E	E
11	E	15	E	16	E	E	E C 19	G	30	43	46	44	41	35	35	31	35	37	36	17	E	E S 14	E S 15	E S 14
12	E S 15	E S 13	E S 14	E S 13	E S 13	20	E S 15	G	31	G	36	41	36	41	55	40	G	29	35	22	E	19	E S 13	E S 13
13	E S 14	E S 14	E B 13	E	E	E S 13	S	27	40	52	41	43	47	36	34	45	G	51	31	23	20	23	E S 14	E
14	24	24	E R 25	E S 14	E C 20	E S 14	E S 14	G 18	28	33	32	36	G	G 27	G 30	49	24	40	29	60	46	27	20	22
15	E S 15	E S 13	E S 13	E S 13	E B 14	E S 14	E S 13	G	31	35	G	35	35	G 33	G 31	35	34	32	E S 15	E	E	E	17	20
16	23	20	21	E B 16	E B 14	E S 14	16	G	32	40	34	34	36	37	32	50	34	32	E S 13	A	26	A	19	E
17	E	E S 12	21	24	23	E	E S 14	G	31	36	35	38	36	36	37	39	33	25	29	47	31	19	E S 14	E
18	E S 14	15	E S 14	E S 14	E S 14	E S 14	E S 14	E B 18	29	37	43	42	51	45	37	43	32	27	15	E	15	20	31	29
19	23	22	16	17	25	E	E S 12	24	32	33	36	39	35	35	G 26	G	G 13	24	16	27	E S 14	16	18	25
20	24	20	17	E	28	17	E S 15	44	29	31	34	35	50	G 31	34	32	55	32	35	43	17	25	18	18
21	16	29	20	16	E B 14	E B 15	E S 12	G	G	G	28	35	G 25	E R 38	35	28	22	17	22	15	32	23	24	20
22	E R 18	E S 15	E S 14	E S 13	E	E B 14	E S 14	G	G	G	G	G 32	G 32	E R 35	G 18	42	48	38	33	E	20	18	E	E S 15
23	E	E S 14	E	E B 12	E B 11	E B 14	E S 13	G	G	G	G	G 27	E R 18	E R 21	E R 25	G	G	23	22	28	14	E	E	E
24	16	E S 13	E S 12	E S 13	E S 14	E S 14	E S 14	G	G	G 28	G 28	G 22	G 24	G 25	25	24	21	C	C	E S 14	F S 13	E S 15	E	E S 14
25	E S 14	E S 13	E S 13	E B 11	E S 12	E S 14	E S 14	G	G	G	G	G	E B 48	G	35	42	43	29	28	35	33	27	E S 13	E S 14
26	E S 14	18	E	E S 14	E S 12	E S 14	E S 13	C	G	34	34	G 31	G 31	G 31	G 31	34	32	22	S	E	E	E	E	E S 15
27	E S 15	E S 14	E S 14	E B 13	E B 13	E S 13	E S 15	G	30	C	34	38	G	44	33	G 30	G 26	21	15	15	18	21	24	19
28	22	26	22	E B 14	E B 15	E B 17	E S 15	G	G	G 25	G 28	G 28	G 26	G 23	G 29	G	G	20	E S 16	E S 14	E S 15	E S 14	E S 14	E S 14
29	E S 15	E S 14	E S 14	E B 15	C	E S 12	E S 14	15	G 23	G 30	G 30	G	G	G 30	G	G 23	23	16	19	24	19	E	E S 15	E S 14
30	E S 16	E S 15	E S 14	E B 13	E B 12	E B 12	E S 12	E R 17	28	44	39	G 32	31	G 27	G 23	G	29	26	22	E	E S 13	E S 14	E S 15	E S 14
31	E S 14	E S 13	E S 14	E B 13	E B 11	E S 14	E S 15	G	G	22	32	38	35	36	36	35	26	22	23	E	E S 15	E	E S 14	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	27	30	31	29	30	30	30	30	30	30	30	29	28	30	30	31	31	31
MED	E S 15	E S 14	E S 14	E E 13	E E 13	E S 14	E S 14	G	G 18	31	32	35	33	32	30	34	32	29	24	18	15	16	F E 14	E S 14
UQ	16	15	E S 14	F E 14	E E 14	E S 14	E S 15	18	30	36	36	38	36	38	35	40	35	37	32	28	26	20	18	16
LQ	E S 14	E S 13	E S 13	E 13	E E 12	E E 12	E S 14	G	G	G	G	G 28	G 25	G 25	E G 18	G 23	22	24	18	E	E	E E 12	E S 13	E S 13

The Radio Research Laboratories, Japan

OCT. 1972 | FBES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 13	E S 14	E S 14	12	E	E	E S 13	13	14	15	17	19	20	26	21	17	13	E S 15	14	E S 13	F S 15	E S 14	E S 14	E S 14
2	E S 15	E S 14	E S 14	12	E	E S 15	E S 14	14	14	14	20	20	20	21	20	14	14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 15
3	E S 14	E S 14	E S 14	E S 14	E	11	E	15	13	14	14	17	20	20	18	15	14	11	E S 13	E S 15	E S 14	E S 14	E S 15	E S 15
4	E S 14	E S 14	E S 14	E S 13	E S 13	E S 14	E S 14	15	14	14	16	20	20	20	20	15	14	14	12	E S 14	E S 13	E	E S 13	E S 13
5	E S 14	E S 14	E S 13	13	13	E S 13	E S 12	15	14	15	16	19	19	19	17	15	14	E S 14	E S 13	E S 14	F S 14	F S 13	E S 15	E S 15
6	E S 15	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 15	15	E C 15	C	C	C	C	C	C	C	C	C	C	C	E S 15	E S 13	E S 14
7	E S 15	E S 13	E S 14	14	E S 14	E S 13	E S 14	12	11	16	17	20	22	19	18	19	14	11	E S 13	E S 14	F S 15	E S 15	E S 14	E S 14
8	E S 14	E S 12	E S 14	E S 12	12	E S 14	E S 15	13	13	14	15	18	16	15	15	13	15	13	E S 12	E S 14	E S 14	E S 12	E S 14	E S 14
9	E S 14	E S 14	E	15	E	11	E S 14	11	14	C	14	14	14	15	23	20	15	E S 14	E S 13	E S 14	E S 14	E S 15	E S 14	E S 14
10	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 13	14	11	16	16	19	20	17	15	11	14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
11	E S 15	12	E S 14	E S 13	E S 14	E S 13	E C 19	E S 14	13	14	15	18	15	15	16	16	14	13	E S 15	E S 13	F S 15	E S 14	E S 15	E S 14
12	E S 15	E S 13	E S 14	E S 13	E S 13	E S 14	E S 15	E S 14	11	15	14	18	17	16	17	14	15	13	E S 14	E S 13	E S 14	E S 13	E S 13	E S 13
13	E S 14	E S 14	13	E S 14	E S 14	E S 13	E S 15	14	15	E C 15	18	19	21	22	19	16	14	E S 13	E S 14	E S 14	E	E S 14	F S 14	E S 14
14	E S 14	E S 14	13	E S 14	E C 20	E S 14	E S 14	13	15	E C 15	15	17	20	E C 22	18	16	11	E S 15	E S 14	E S 14	F S 15	E S 14	E S 15	E S 12
15	E S 15	E S 13	E S 13	E S 13	14	E S 14	E S 13	13	13	15	14	20	19	19	20	19	15	E S 13	E S 15	E S 14	F S 15	E S 14	F S 15	E S 15
16	E S 14	E S 13	E S 14	16	14	E S 14	E S 14	13	15	17	19	19	21	18	17	19	14	E S 14	E S 13	E S 13	F S 13	E S 15	E S 13	E S 13
17	E S 13	E S 12	E S 13	E S 13	E S 13	E S 14	E S 14	E S 13	13	15	16	16	17	18	14	14	12	E S 14	E S 13	E S 14	E S 14	E S 15	E S 14	E S 13
18	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14	18	E S 13	14	17	20	19	15	21	16	14	14	E S 13	E S 13	E S 14	E S 13	F S 15	E S 13
19	E S 14	E S 13	E	E S 13	E S 14	E S 15	E S 12	E S 14	14	14	16	15	16	15	14	18	11	E S 14	E S 13	E S 14	E S 14	E S 14	F S 14	E S 13
20	E S 14	E S 14	E S 13	14	13	E S 15	E S 15	14	14	E C 15	17	18	23	20	20	15	14	E S 13	E S 14	E S 15	E S 13	E S 15	E S 13	E S 15
21	E S 15	E S 14	E S 13	E S 13	14	15	E S 12	15	12	14	15	14	15	20	15	13	11	E S 15	E S 15	E S 13	E S 13	E S 14	E S 15	E S 14
22	E S 14	E S 15	E S 14	E S 13	E	14	E S 14	15	14	17	22	24	26	16	14	22	16	E S 15	E S 15	E S 14	11	E S 13	E S 13	E S 15
23	E S 15	E S 14	E S 13	12	11	E S 14	E S 13	12	14	20	20	17	15	17	19	24	13	E S 13	E S 14	E S 15	E S 12	E S 14	E S 14	E S 14
24	E S 15	E S 13	E S 12	E S 13	E S 14	E S 14	E S 14	14	14	16	16	16	14	16	14	11	11	C	C	E S 14	E S 13	E S 15	E S 15	E S 14
25	E S 14	E S 13	E S 13	11	E S 12	E S 14	E S 14	E S 13	E S 14	16	21	20	48	26	22	22	15	E S 14	E S 14	E S 14	E S 14	E S 15	E S 13	E S 14
26	E S 14	E S 14	E S 13	E S 14	E S 12	E S 14	E S 13	C	E S 14	16	17	20	24	23	17	14	26	13	E S 14	E S 14	E S 14	E S 14	E S 14	E S 15
27	E S 15	E S 14	E S 14	13	13	E S 13	E S 15	E S 14	12	E C 33	19	24	21	24	23	19	15	E S 15	E S 12	E S 14	F S 15	F S 14	E S 13	11
28	E S 14	E S 14	14	14	15	17	E S 15	15	13	15	15	17	16	18	24	17	15	E S 15	E S 16	E S 14	E S 15	E S 14	E S 14	E S 14
29	E S 15	E S 14	E S 14	15	C	E S 12	E S 14	11	11	E C 15	18	22	25	23	20	17	14	13	E S 15	E S 14	E S 14	E S 15	E S 15	E S 14
30	E S 16	E S 15	E S 14	13	12	12	E S 12	14	14	17	19	19	16	17	19	15	14	15	E S 14	E S 15	E S 13	E S 14	E S 15	E S 14
31	E S 14	E S 13	E S 14	13	11	E S 14	E S 15	15	14	14	15	15	16	19	18	14	12	E S 12	E S 14	E S 15	F S 15	E S 15	F S 14	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	30	31	30	30	30	30	30	30	30	30	29	29	30	30	31	31	31
MED	E S 14	E S 14	E S 14	E S 13	E E 13	E S 14	E S 14	14	14	14	16	19	20	18	18	16	14	E S 14	E S 14	E S 14	F S 14	E S 14	E S 14	E S 14
UQ	E S 15	E S 14	E S 14	14	E E 14	E S 14	E S 14	15	14	16	18	20	21	20	20	19	15	E S 14	E S 14	E S 14	E S 15	E S 15	E S 15	E S 14
LQ	E S 14	E S 13	E S 13	E S 13	E E 12	E S 13	E S 13	12	12	14	15	17	16	16	16	14	13	E S 13	E S 13	E S 14	E S 13	E S 14	E S 14	E S 14

The Radio Research Laboratories, Japan

OCT. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	285	305	325 S	315	335	260	290	335	325 S	345	300	305 S	305 S	305 S	300 S	300 S	310 S	320 S	C	280 S	295 S	290	290 S	300 S
2	305	300 S	290	290	260	275 S	290 S	340	350 S	330 S	335 S	325 S	296 S	310	310 S	320 S	325 S	310 S	330 S	320 S	315	290 S	290 S	285 S
3	285 S	290 S	290	290 S	325	315	310	350	335 S	350 S	345 S	310	325	280 U S	305	315	320 S	335	345 S	350 S	355	265 U S	290	285 S
4	295 S	290	285 S	280	280	305	330	370	340	320 S	340	330	335	300	300	315	315	325	345	365 S	310	290	300	300
5	320	305	295	295	300	325	330	345	360	335	335 U S	330	305	315 S	295 S	305 S	300 I S	330	350 S	345 U S	350 S	315	295	285
6	280 S	290	295	295	320	340	315	355	345	350 I S	C	C	C	C	C	C	C	C	C	C	C	295	280 S	285
7	275 S	290 S	290	290	310 S	320	300 S	355	335	340 J S	335 S	300 S	295 J S	295 J S	310 S	310 J S	305 S	320 I S	325 S	345 I S	360	280 S	305	275 U S
8	255	280	320	310	305	325	290	355	345 S	325	340	280	305	305 S	295	300	305 S	S	S	335	305	305	275	270 S
9	265	270	280	300 I S	340	330	300	355	355	335 I C	340	305	290 S	295 J S	300 J S	320 S	310 J S	320 I S	340 I S	340 J S	300 S	295 S	290 S	285 S
10	290 S	310 S	310 S	295 S	335	290	285	345 J S	S	355 U S	345	310	315	300 J S	295 J S	325	325 S	330 I S	345 S	330 S	280 S	300 U S	315 S	315 S
11	290	285	290	300 S	300	285	325 S	365	350	330	345	320	300 S	300	300	315 I S	325 J S	330	340 S	315	310 S	300	295	290 S
12	285 S	305	325	295	325	290	300	325	S	325 S	325	305	305 J S	295 J S	315 J S	305 J S	325 S	325	325 S	355 S	275	280	275 S	255 S
13	260 F	270	320	315	310	295	285	320	345 S	375	340 H	290	315 J S	310	315 J S	325 S	330 S	315 J S	S	325 H	295	305	305 S	315 S
14	300 I S	285 S	270 S	300 S	295	295	310	350	350 S	320 J S	320 S	300	305 J S	295 U S	305	320	325 S	320 S	C	315 U S	285	295	305	305
15	285	275	290	305	350	300	295	340	330	340 I S	325 S	325	310	300	310 S	340	330 S	335 I S	345	305 S	300 S	325 S	295 S	305 S
16	270	295	290	320	330	260	310	345	350 S	240	320 S	325 I S	330	315	310	320 I S	330 S	350	340	300 I A	270	310 I A	305	285 J S
17	285 S	295	315	305	325	285	290	340	350	345 U S	350 S	330	320	315	325 U S	335	310 S	345	335 U S	355	295	310 S	290	290
18	305	290	300	310	350	295	310	360	355	340	335	350	320	320	330	325	345	330	340 S	330	285	305	310	310 I C
19	310	305	305	330	340	300	325	365	355	325	325 S	305	310	300 J S	310 S	295 U S	320 S	325 J S	300 S	295 S	295	295	260	305
20	300	260	255	260	260	260	270 S	290 I S	S	335	315	315 S	300	295 S	310	325	330 S	335 I S	335	285	275	300	320	290
21	265	260	260	270	270 S	265 S	275	345	315	325 U S	310 I S	315	310	310	315	310	320	330 U S	320 S	295	315	270	285 S	270 S
22	290	275	270 S	325	310	265	285	345	325	320	315	320	315	300 J S	320 I S	305	320	325 S	310	335	300	330	280	270
23	275	275	290	300	295	285	295	335	335	315	310 J S	320	320	300 J S	310	315 S	320 S	335 J S	325 S	325	290	290	300	300 J S
24	305 S	300 J S	300	315	310	305	295	335 S	325 U S	320 U S	335	330 J S	310	300	320	320	325 S	345 I C	325 I C	340	295	280	305	300
25	295	290	270	300 S	325	280	305	340 S	335 J S	335	340	320	305	310	310	330	325	330	340	330	320	330	300	290
26	260	285	310	330	370	280	320	345 I C	350	335	325 S	320	300	295	305	305	295	305 J S	325 I S	320	280	290	295 S	270
27	255	260	265	280	320	300	275	330 S	345 S	340	310 S	315	305	290	300	315	340 S	310	305	290	305	270	290	265 S
28	250	260	250	275	320	285 J S	330	345	340	300	300 S	305	305	300	305	300	305	315	300 I S	300 I S	300 J S	285	275	275
29	290	275	265	280 I S	330 I C	275	285	330	340 I S	315	320 J S	320 S	300	295	315	315	315 S	325 S	310 S	285	325	340	285	265
30	250	270	275	275	335	305	295	305	325 J S	325	305	320	305	295	320	305 S	305 S	315	300	315 S	335 S	385	280 S	250
31	270	275	280	290	270	255	265	315	S	350 J S	345	340	315 U S	310 S	320	310 S	315 I S	320	320	290	325	310 S	310	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	27	31	30	30	30	30	30	30	30	29	26	30	30	31	31	31
MED	285	285	290	300	320	290	295	345	345	335	330	320	305	300	310	315	320 S	325 S	328 S	322	300	295	295	285
UQ	295	295	302	310	332	305	310	352	350	340	340	325	315	310	315 S	320	325 S	330	340 S	340	315	310	305	300
LQ	268	275	272	290	300	278	288	335	335	322	315 S	305	305	295 S	300	305 S	310 S	320 S	320 S	300	290	290	285	272 S

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OCT. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	A	A						
2									L	L	L	L	L	L	L	L	L							
3										L	L	L	L	L	L	L	L	L						
4									L	L	L	L	L	L	L	L	L							
5									L	L	L	L	L	L	L	L	L	L						
6									L	L	C	C	C	C	C	C	C	C						
7									A	L	L	L	L	L	L	L	L							
8									L	L	L	L	L	L	L	L	L	A						
9										C	L	L	L	L	L	L	L							
10									L	L	L	L	U L 370	L	L	L								
11									L	L	A	L	L	L	L	L	L							
12									L	L	L	L	L	L	A	L	L							
13										A	L	L	A	L	L	A	L							
14										L	L	L	L 400	L	L	A	L	A						
15										L	L	L 385	L	L 355	L	L	L							
16									L	L	L	L	L	L	L	A								
17										L	L	L	L	L	L		L							
18										L	L	L	A	L	L	A	L	L 410						
19										L	L	L	L	H 435	L	L	L 390							
20									L	L	L	L 390	A	L	L	L	A	A						
21									L	L	L 445	L	L	L	L	L 395	L							
22									L	L	L	L	L	L	L	A	A							
23									L	L	L	L	L	L	L	L	L 390							
24										L	L	L	L	L	L	L								
25										L	L	L	L	L	L	L								
26										L	L	L	L	L	L	L								
27										L	L	L	L	L	L	L	L							
28									L	L	L 415	L	L 425	L	L	L	L							
29									L	L	L 415	L	L 400	L	L	L								
30									L	A	L	L	L	L	L	L								
31									L	L	L	L	L	L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											3	2	4	2		1	2	1						
MED											L 415	L 388	L 400	395		L 395	L 390	L 410						
UQ											L 430		L 412											
LQ											L 415		L 385											

The Radio Research Laboratories, Japan

OCT. 1972 | M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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									235	230	230	260	260	265	265	275	255	230						
2									225	240	250	245	250	290	265	260	245							
3										225	240	240	265	240	275	270	255	240						
4									215	240	240	260	240	255	285	255	240							
5									230	240	250	250	290	250	240	275	280	250						
6									225	230	C	C	C	C	C	C	C	C						
7									225	250	240	275	280	280	280	260	255							
8									225	245	240	275	275	245	275	280	255	245						
9										C	245	290	300	290	290	255	245							
10									235	240	240	290	255	290	285	255								
11									235	250	240	255	290	265	285	275	255							
12									245	245	230	250	270	270	265	255	245							
13										215	230	300	255	260	250	250	250							
14										230	245	235	235	285	265	250	240	240						
15										245	250	255	235	285	270	245	230							
16									225	245	250	275	260	250	265	260								
17										245	235	240	245	255	260		250							
18										240	255	250	260	275	265	250	240	240						
19										255	240	260	275	240	265	260	240							
20									245	230	245	235	255	260	270	235	235	225						
21									215	235	230	245	240	250	255	240	245							
22									230	225	240	235	260	265	240	235	235							
23									230	250	250	245	255	285	280	245	240							
24										245	250	245	240	275	250	245								
25										240	245	245	245	285	260	245								
26										225	250	245	245	260	280	245								
27										225	235	265	240	275	270	240	225							
28									225	225	250	250	240	275	265	240	245							
29									220	235	235	240	240	280	275	240								
30									230	230	245	245	240	280	260	235								
31									240	245	245	250	240	240	245	245								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									19	30	30	30	30	30	30	29	22	7						
MED									230	240	242	250	255	268	265	250	245	240						
UQ									235	245	250	260	265	280	275	260	255	242						
LQ									225	230	240	245	240	255	260	245	240	235						

The Radio Research Laboratories, Japan

OCT. 1972 | H'F2 (KM)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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	245	225	235	200	275	270	230	220	205	220	190H	230	215	225	245	I A 245	I A 230	220	200	225	245	240	245
2	245	230	245	230	245	275	270	235	220	220	210	200	200	190H	185H	230	225	240	225	230	E A 250	255	E A 250	280
3	280	270	280	275	220	235	240	225	210	210	200	200	E A 240	A	A	E A 240	235	240	210	200	200	250	265	265
4	280	280	270	290	285	250	245	205	205	210	200	200H	200	I A 230	200	190	240	245	240	200	230	285	290	255
5	255	255	265	290	250	240	240	210	215	225	220	215	200H	200	200	225	225	245	220	200	205	205	250	275
6	300	285	265	265	250	220	220	205	220	220	C	C	C	C	C	C	C	C	C	C	C	240	255	260
7	290	275	260	255	230	215	245	220	I A 225	230	200	200	195	180H	245	235	230	240	225	220	200	250	250	250
8	300	265	240	230	230	230	245	225	220	220	205H	200H	200H	190H	185H	245	240	I A 240	225	205	225	225	225	275
9	305	295	250	250	225	210	265	220	225	I C 215	200H	200H	180H	200H	220H	240	245	240	230	220	E A 245	E A 250	E S 275	285
10	280	250	250	265	235	E S 255	300	230	230	I A 230	I A 220	200	200	205	210H	250	240	240	215	200	255	280	265	245
11	270	300	290	265	295	300	235	205	220	I A 230	I A 235	I A 225	225	220	210	225	I A 240	240	225	220	210	250	255	255
12	290	255	225	255	220	300	275	245	225	225	215	215	220H	230	I A 245	215	230	240	225	210	200H	275	275	300
13	325	300	230	245	250	E S 240	295	245	220	A	220	E A 240	A	225	220	A	225	250	240	205	250	270	250	240
14	E A 255	E A 300	E A 350	280	E C 295	255	250	230	230	225	205	220	200	200H	245	I A 240	230	A	230	245	A	290	250	250
15	255	E S 310	310	275	195	E S 250	240	230	230	225	205	205H	200H	200	230H	240	245	230	205	205	245	230	260	300
16	E A 300	280	275	250	215	E S 275	230	225	225	240	210	200	200	210	220	A	240	215	205	A	E A 330	A	250	275
17	280	260	255	250	235	E S 285	255	235	215	215	215	210	205	210	240	245	245	240	210	210	E A 290	230	245	290
18	270	265	290	265	230	250	250	215	210	210	A	A	A	205	235	I A 205	240H	205	205	205	245	250	290	265
19	270	290	260	240	255	295	250	220	220	230H	225	225	225	210H	230	235	225	225	230	225	250	250	250	270
20	245	310	325	300	E A 350	325	295	E A 275	230	225	205	210H	I A 220	200H	225H	240	A	A	210	E A 300	260	250	230	270
21	280	E A 350	340	300	280	290	260	230	225	205	185	175H	225	220	215	190H	235	215	205	200	225	250	255	300
22	300	270	275	225	205	305	265	225	225	210	205	200	180H	225	225	A	I A 230	230	215	200	260	220	245	295
23	280	280	265	245	250	280	240	235	225	210H	220	205	I R 205	230	225	230	230	225	205	240	250	250	255	235
24	250	265	250	240	220	E S 265	275	240	235	210	215	210	215	205	220	245	225	I C 225	I C 210	210	245	270	250	240
25	255	265	315	255	235	285	260	225	230	220	220	240	B	215H	240	I A 230	240	230	215	245	255	240	245	290
26	355	320	290	255	210	300	250	I C 230	230	220	210	225H	205	200	240	235	230	230	210	195	250	235	245	290
27	300	300	290	260	230	240	280	235	230	225	195H	210	200H	225H	210H	225	225	220	205	200	225	230	260	295
28	E A 350	345	345	295	225	265	220	205	220	200	200	195H	185	195H	225H	225	180H	225	205	225	205	225	250	270
29	255	295	300	280	I C 235	240	255	230	225	200H	200	215	200	225H	210H	230	230	225	215	250	210	205	E S 260	E S 340
30	350	310	315	300	200H	250	270	265	225	I A 215	225H	225	205	220H	250	230	225	225	220	240	220	220	205	295
31	300	250	250	250	250	E S 350	330	245	235	210	185H	215	205	200	225	210	235	230	210	235	240	225	240	260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	29	29	27	29	29	27	29	28	30	29	29	30	31	31
MED	280	275	268	255	232	258	255	230	225	220	210	208	200	210	225	230	230	230	215	210	235	250	250	270
UQ	300	298	292	278	250	285	270	235	230	225	220	215	214	220	235	240	240	240	225	228	250	250	258	290
LQ	260	265	250	248	220	236	242	220	220	210	200	200	200	200H	210	225	225	225	210	200	215	228	245	255

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OCT. 1972 | H'F (KM)

IONOSPHERIC DATA

OCT. 1972 | H'ES (KM) | 135 E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31 12·1 N. Long. 303 71·E 1 Sweep 2 MHz to 02 MHz in 0 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	B	E	E	100	155	130	100	100	100	100	G	175	140	125	115	110	105	S	S	S	S
2	95	S	S	B	100	100	100	150	135	125	120	130	120	130	170	150	115	105	105	90	100	110	90	S
3	S	S	S	S	100	100	100	G	100	135	155	140	125	115	115	110	110	105	95	S	100	S	S	S
4	S	S	S	S	S	S	100	G	140	125	125	115	110	115	G	G	G	110	105	105	105	105	105	S
5	S	S	S	B	B	S	105	100	100	100	165	100	100	G	G	100	150	125	110	100	S	S	S	S
6	S	S	S	S	S	105	100	100	150	125	C	C	C	C	C	C	C	C	C	C	C	105	105	100
7	100	95	S	B	S	S	S	110	105	100	100	100	100	100	G	155	140	125	100	95	95	95	S	S
8	S	S	S	S	B	S	S	130	125	100	100	100	100	100	100	155	135	120	110	105	105	S	S	S
9	100	100	100	B	E	B	S	125	125	C	125	100	120	110	115	G	140	125	115	110	105	105	105	105
10	105	105	100	S	S	S	S	G	125	115	110	110	110	110	115	160	140	120	115	110	105	100	100	100
11	100	100	100	95	100	100	C	G	125	110	110	110	110	105	105	105	105	105	105	105	100	S	S	S
12	S	S	S	S	S	100	S	130	115	125	115	110	120	110	115	115	G	135	110	105	105	100	S	S
13	S	S	S	130	125	S	125	120	115	110	110	110	110	105	105	105	140	115	105	100	100	100	S	100
14	100	100	95	S	C	S	S	110	105	105	105	105	125	100	100	100	100	100	105	100	100	100	100	100
15	S	S	S	S	B	S	S	130	115	110	G	105	100	100	100	145	125	115	S	100	100	105	100	100
16	100	100	100	B	B	S	100	130	115	110	105	105	105	105	105	100	115	110	S	100	105	105	105	105
17	110	S	100	100	95	100	S	135	115	115	115	110	130	140	165	150	110	110	105	105	105	100	S	100
18	S	95	S	S	S	S	S	B	150	140	100	130	105	105	155	110	110	105	105	95	100	125	125	125
19	100	125	100	110	110	110	S	110	105	105	140	130	140	145	95	G	100	110	110	100	S	100	100	95
20	95	95	95	95	110	110	S	105	110	110	105	105	100	100	100	100	100	100	100	100	100	100	95	95
21	95	95	95	95	B	B	S	G	G	125	100	95	100	120	95	120	90	90	100	100	100	95	95	95
22	95	S	S	S	E	B	S	135	130	125	125	110	105	115	100	130	120	110	105	100	100	100	100	S
23	100	S	100	B	B	S	S	G	G	G	G	100	100	100	100	G	130	95	105	100	100	100	100	100
24	100	S	S	S	S	S	S	150	140	105	100	100	95	95	95	95	95	C	C	S	S	S	100	S
25	S	S	S	B	S	S	S	155	G	125	110	G	B	G	105	105	105	100	100	100	100	100	S	S
26	S	100	100	S	S	S	S	C	110	105	105	100	100	100	100	105	105	105	105	100	100	100	100	S
27	S	S	S	B	B	S	S	G	115	105	100	100	G	115	120	110	110	115	105	100	100	100	100	100
28	100	100	95	B	B	B	S	G	G	100	100	100	100	100	105	G	G	120	S	S	S	S	S	S
29	S	S	S	B	C	S	S	110	100	105	105	G	G	105	G	100	100	100	100	100	100	95	S	S
30	S	S	S	B	B	B	S	105	105	100	105	100	100	100	100	150	135	120	95	100	S	S	S	S
31	S	S	S	B	B	S	S	G	140	100	120	145	110	115	95	95	120	95	95	105	S	105	S	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	12	12	6	7	8	8	20	27	29	28	28	27	27	26	25	27	29	26	27	23	23	17	15
MED	100	100	100	98	100	100	100	128	115	110	108	105	105	105	105	110	115	110	105	100	100	100	100	100
UQ	100	100	100	110	110	108	102	135	130	125	120	110	115	115	115	145	132	120	110	105	105	105	105	100
LQ	98	95	95	95	100	100	100	110	108	105	100	100	100	100	100	100	105	105	100	100	100	100	100	100

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OCT. 1972 | H'ES (KM)

IONOSPHERIC DATA

OCT. 1972 | 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 automatio 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							L 1	H 1	H 1	L 1	L 1	L 1	L 1		HL 11	HL 11	HL 21	C 5	C 4	F 1				
2	F 1				F 1	F 1	L 1	HL 21	HL 21	HL 11	HL 11	HL 11	HL 11	HL 11	HL 11	HL 11	C 2	C 4	CL 21	F 6	FF 35	FF 22	F 2	
3					F 2	F 2	L 2		L 1	H 1	H 1	HL 11	HL 11	CL 11	CL 11	CL 11	CL 22	CL 31	L 1		F 3			
4							L 1		HL 11	H 1	H 1	C 1	C 1	C 1				C 2	C 4	F 5	F 2	F 2	F 2	
5							L 1	L 1	L 3	L 2	HL 11	L 2	L 1			L 1	H 1	H 2	C 2	F 1				
6						F 2	L 1	L 1	HL 12	HL 11												F 1	F 2	F 1
7	F 1	F 1						C 3	C 3	C 3	L 1	L 2	L 1	L 1		H 2	H 1	HL 21	L 2	F 4	F 2	F 1		
8								H 1	HL 22	L 4	L 1	L 1	L 1	L 1	L 1	HL 21	HL 21	H 6	C 4	F 1	F 1			
9	F 2	F 2	F 2					H 2	H 1		HL 11	L 1	CL 11	CL 21	C 1		H 1	C 6	C 4	F 7	F 2	F 3	F 2	F 2
10	F 2	F 2	F 2						H 2	CL 21	CL 21	CL 11	CL 11	CL 11	CL 11	HL 11	H 4	H 3	L 4	F 1	F 1	F 3	F 1	F 1
11	F 2	F 3	F 2	F 1	F 1	F 1			HL 21	C 2	C 1	C 2	C 2	C 1	C 2	C 1	C 2	C 3	C 7	F 2	F 1			
12						F 1		C 2	CL 21	HL 22	CL 21	CL 21	CL 11	CL 21	CL 31	CL 21		H 6	C 5	F 4	F 1	F 1		
13				F 1	F 1		C 1	C 2	C 3	C 2	C 1	C 1	C 2	C 2	C 2	L 2	HL 21	CL 22	L 3	F 2	F 3	F 2		F 2
14	F 2	F 1	F 2					L 1	C 2	C 3	CL 11	C 3	HL 11	L 1	L 1	L 3	LH 11	L 4	L 5	F 4	F 3	F 2	F 1	F 2
15								C 2	C 3	C 2		C 1	L 1	L 1	L 2	HL 21	HL 21	CL 32		FF 11	F 1	F 2	F 2	F 1
16	FF 21	FF 22	F 1				L 1	H 2	C 2	C 3	C 1	C 1	C 1	C 2	C 2	L 3	C 2	C 4		F 2	F 6	F 2	F 2	F 3
17	F 1		F 3	F 4	F 4	F 1		H 1	CL 11	CL 21	CL 12	CL 22	HL 11	HL 12	HL 12	HL 22	CL 22	CL 22	LL 61	F 5	F 3	F 3		F 1
18		F 1							HL 12	HL 12	LH 21	HL 12	L 3	L 1	H 1	C 1	C 2	C 2	L 1	F 1	F 1	FF 22	F 3	F 4
19	F 2	FF 25	FF 21	F 2	F 3	F 1		C 1	C 2	CL 21	HL 11	HL 12	HL 12	HL 12	L 2		L 1	C 4	C 1	F 2		F 1	FF 11	F 3
20	F 4	F 3	F 3	F 1	F 3	FF 21		C 2	C 3	C 2	C 2	C 2	L 2	L 2	L 2	L 2	L 2	L 3	L 3	F 4	F 2	F 4	F 2	F 2
21	F 2	F 3	F 1	F 1						HL 12	L 2	L 2	L 1	CL 22	L 2	LC 21	L 2	L 1	L 1	F 1	F 3	F 2	F 1	F 2
22	F 2							H 1	H 1	H 1	H 1	L 1	L 1	CL 11	L 1	H 1	C 2	C 3	C 6	F 1	F 3	F 2	F 1	
23	F 1		F 1									L 1	L 1	L 1	L 1		HL 11	L 3	L 2	F 4	F 2	F 1	F 1	F 1
24	F 1							H 1	H 1	L 1	L 1	L 1	L 1	L 1	L 1	L 2	LH 12						F 1	
25								H 1		H 1	C 1				C 1	C 1	C 3	C 3	C 2	F 4	F 5	F 4		
26		F 3	F 1						C 2	C 2	C 2	L 1	L 1	L 1	L 1	CL 21	C 1	L 2	L 1	F 1	F 2	F 2	F 1	
27									C 3	C 1	L 2	L 2		C 1	C 1	C 1	C 1	C 1	L 1	F 1	F 2	F 5	F 2	F 2
28	F 2	FF 22	F 1							L 1	L 1	L 1	L 1	L 1	L 1			C 1						
29								L 1	L 2	CL 21	L 1			L 1		L 1	L 1	L 2	L 1	F 1	F 2	F 1		
30								L 1	L 2	C 2	C 2	L 1	L 1	L 1	L 1	HL 11	HL 11	CL 33	L 1	F 1				
31									H 2	LH 11	CL 11	HL 11	CL 11	C 1	LC 11	L 1	CL 12	L 1	L 1	F 1		F 1		F 1
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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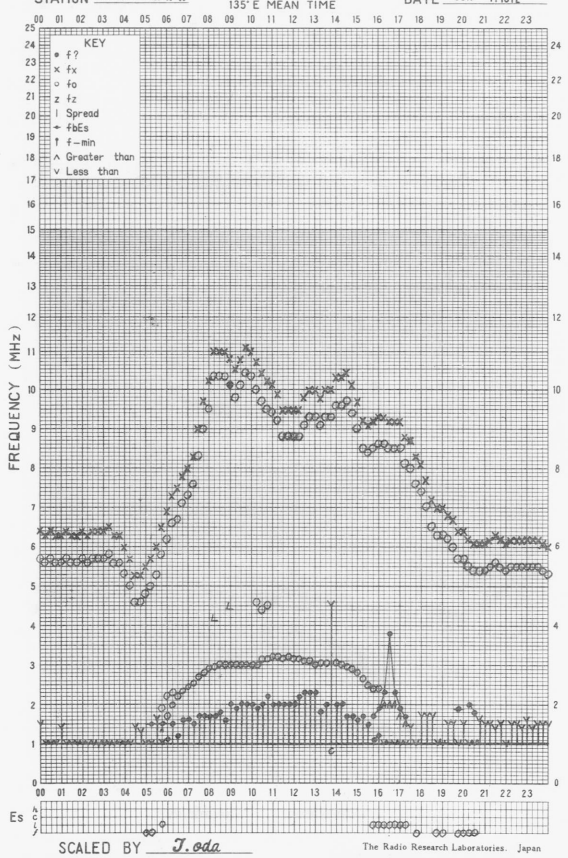
OCT. 1972 | TYPES OF ES

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 1, 1972



SCALED BY J. oda

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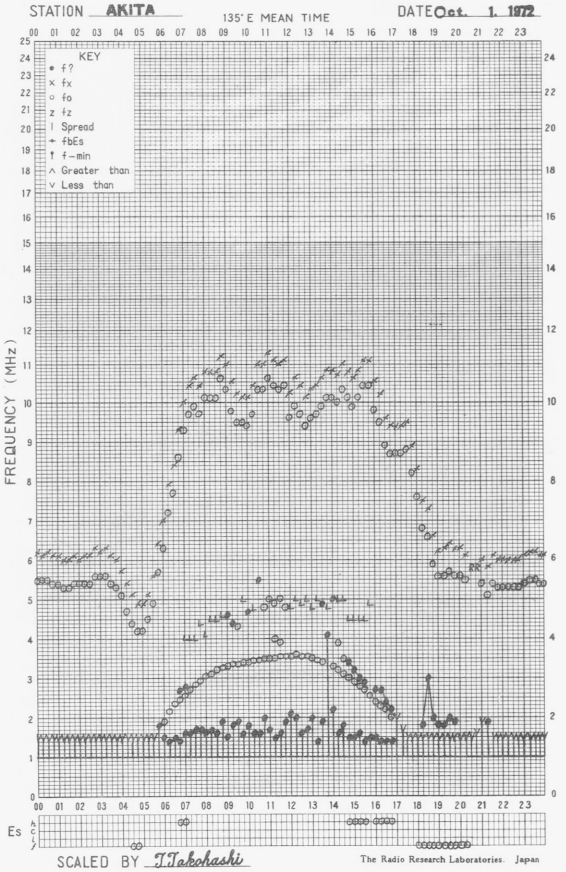
f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 1, 1972



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f-PLOT OF IONOSPHERIC DATA

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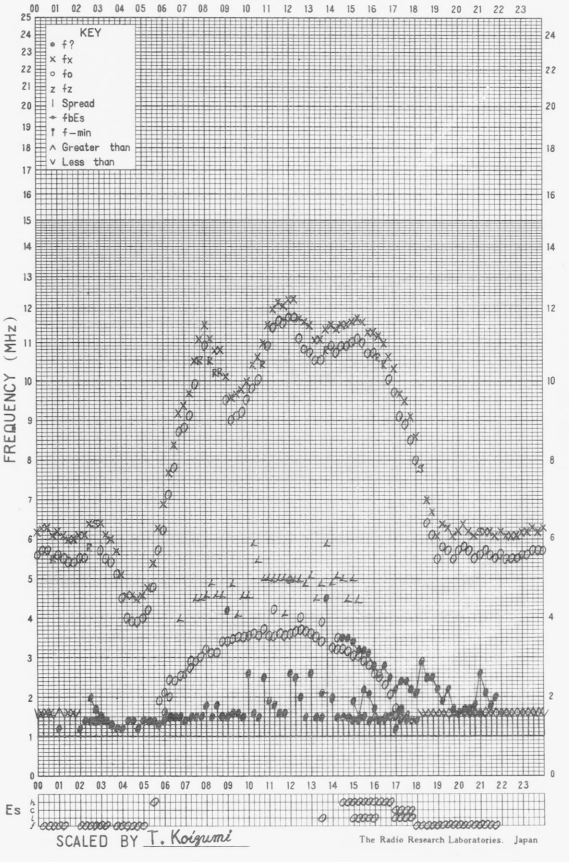

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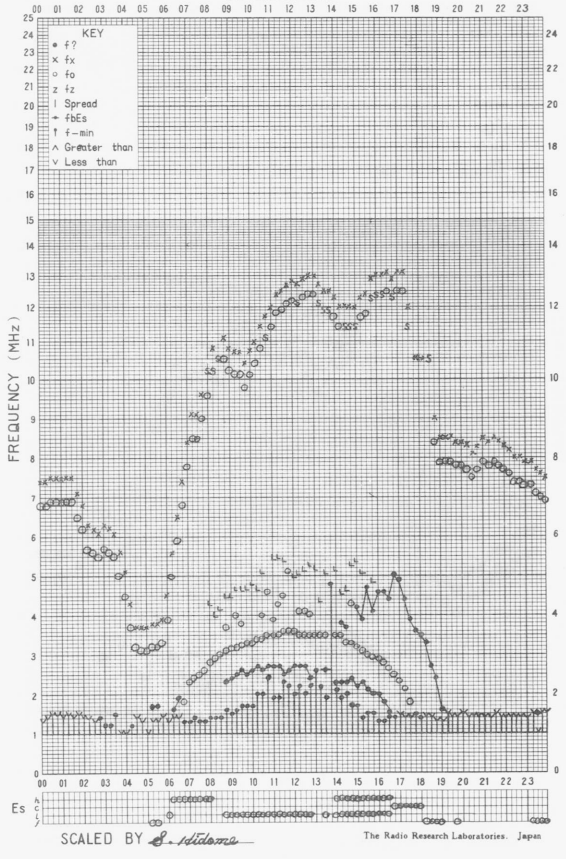

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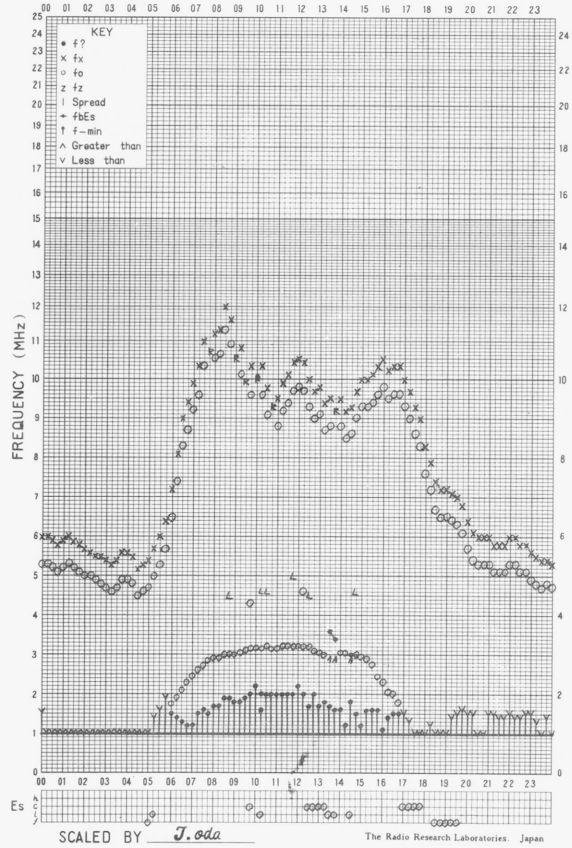
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 2. 1972



SCALED BY T. Oda

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f-PLOT OF IONOSPHERIC DATA

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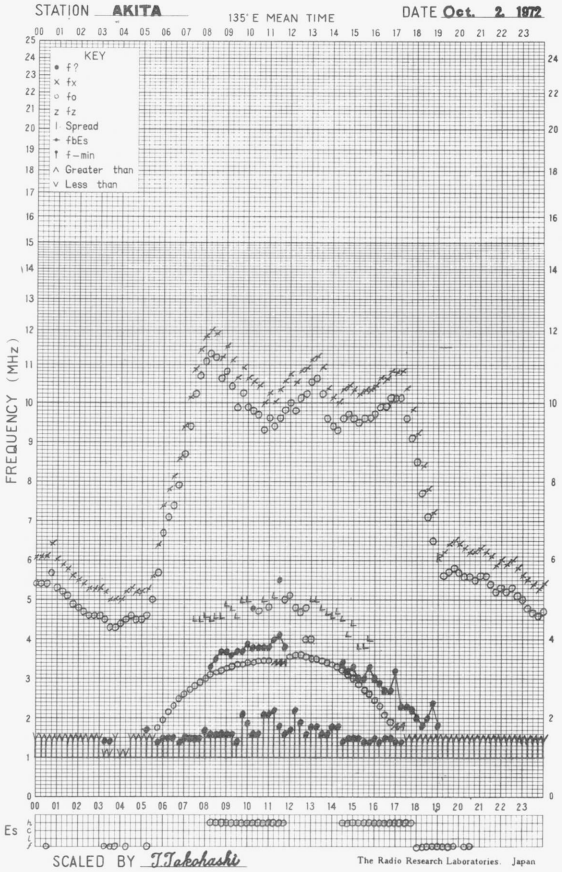

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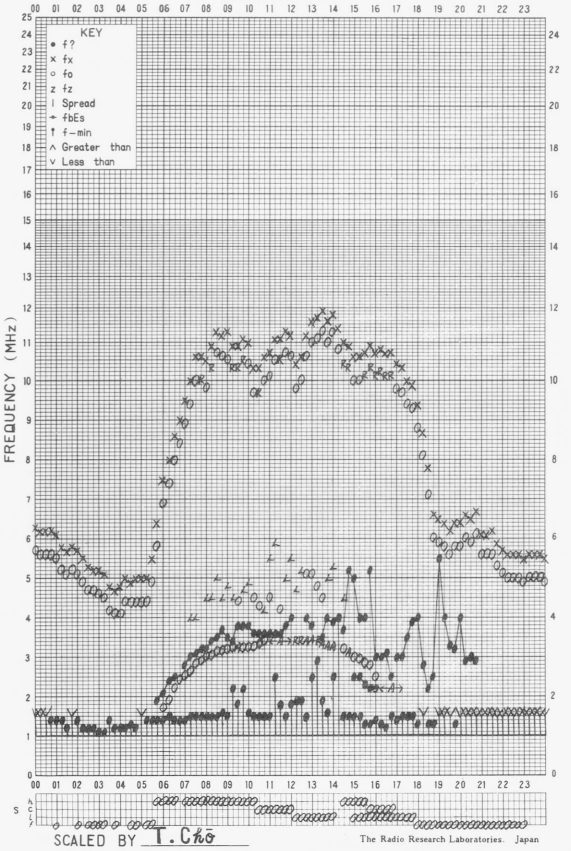
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 2. 1972



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f-PLOT OF IONOSPHERIC DATA

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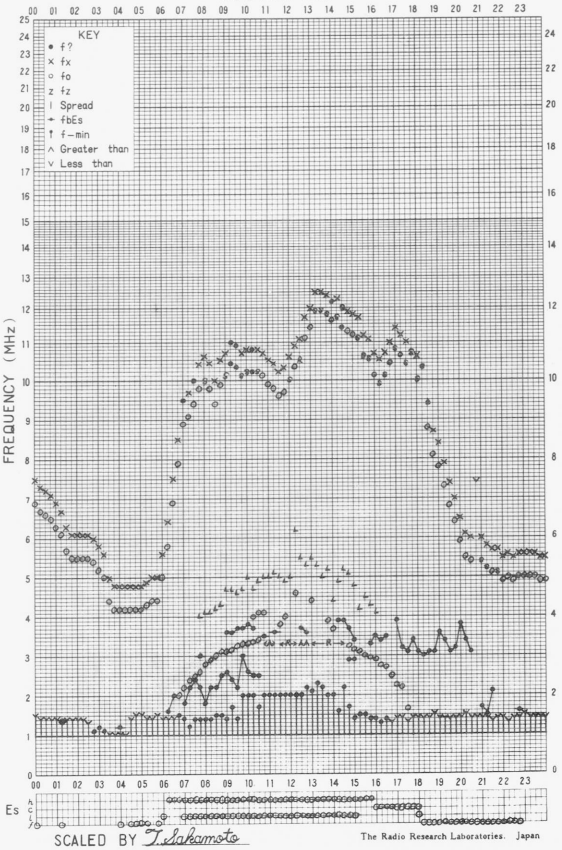

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f-PLOT OF IONOSPHERIC DATA

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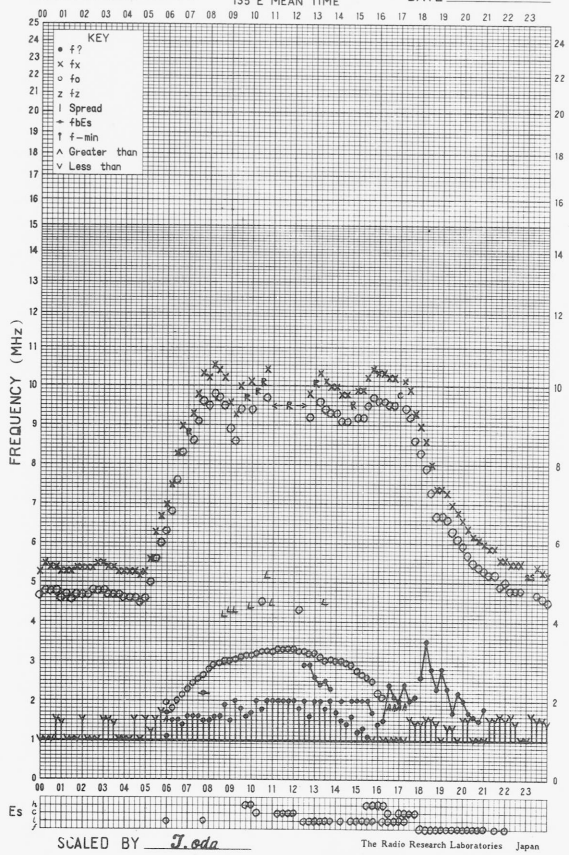

SCALED BY J. Oda

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f-PLOT OF IONOSPHERIC DATA

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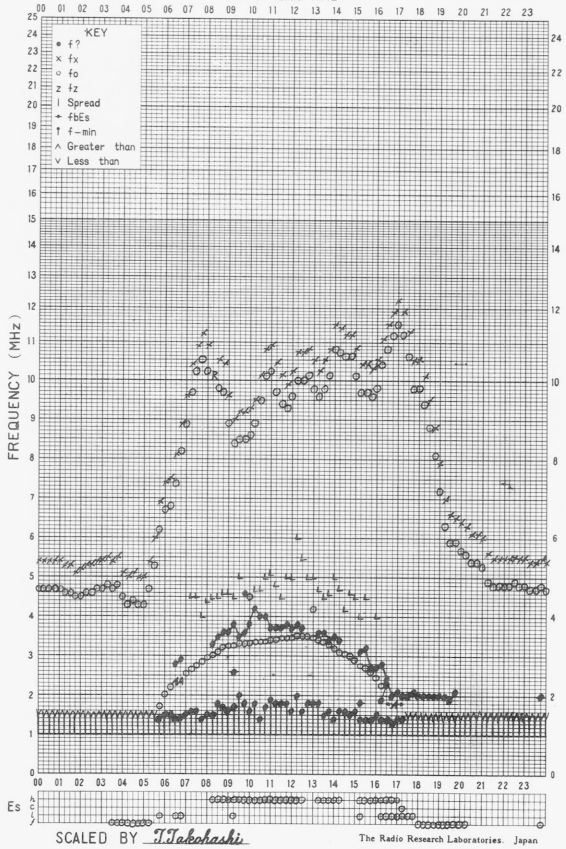

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f-PLOT OF IONOSPHERIC DATA

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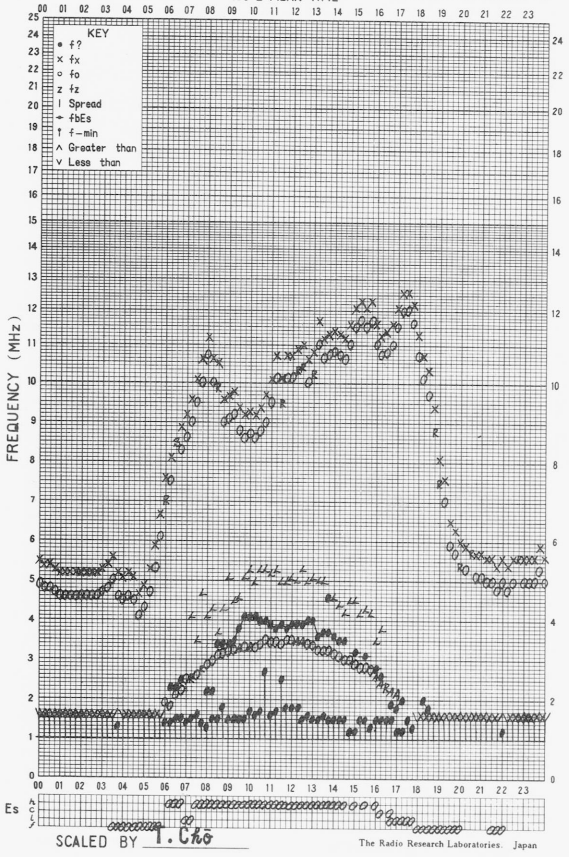

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f-PLOT OF IONOSPHERIC DATA

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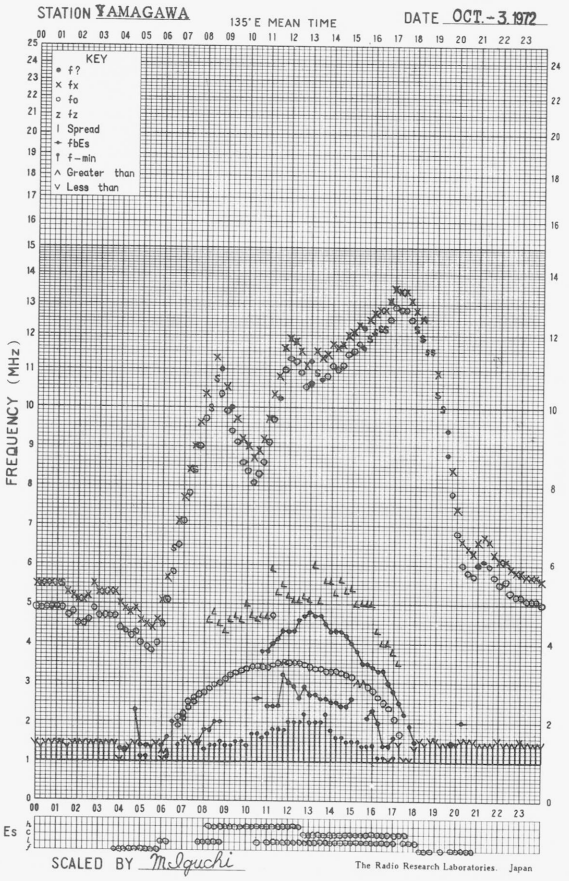
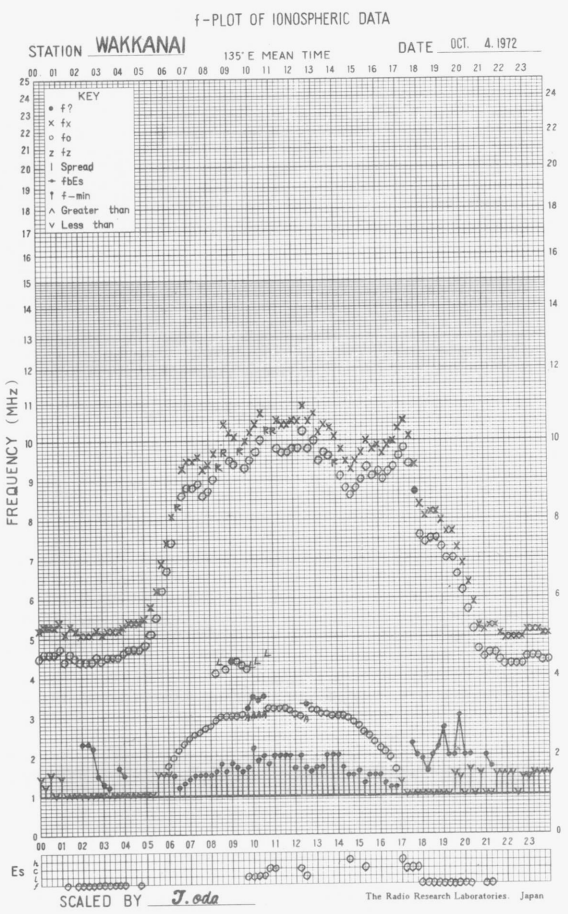


SCALED BY M. Iguchi

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE OCT. 4. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
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∧ Greater than
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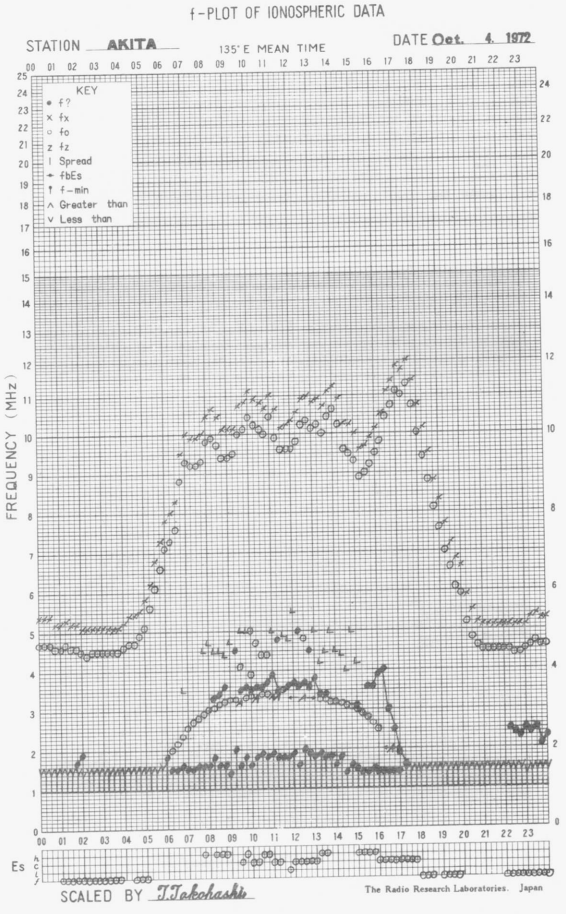
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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DATE Oct. 4. 1972
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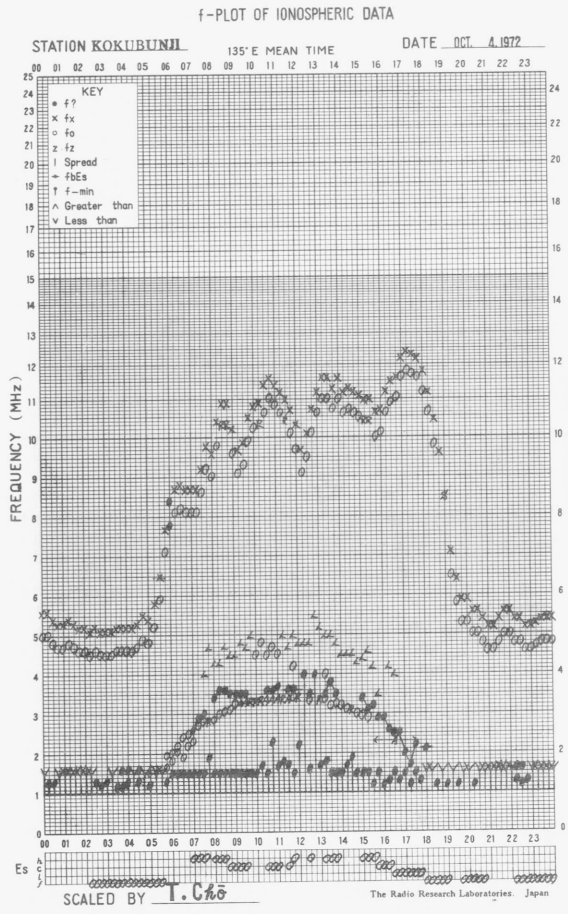
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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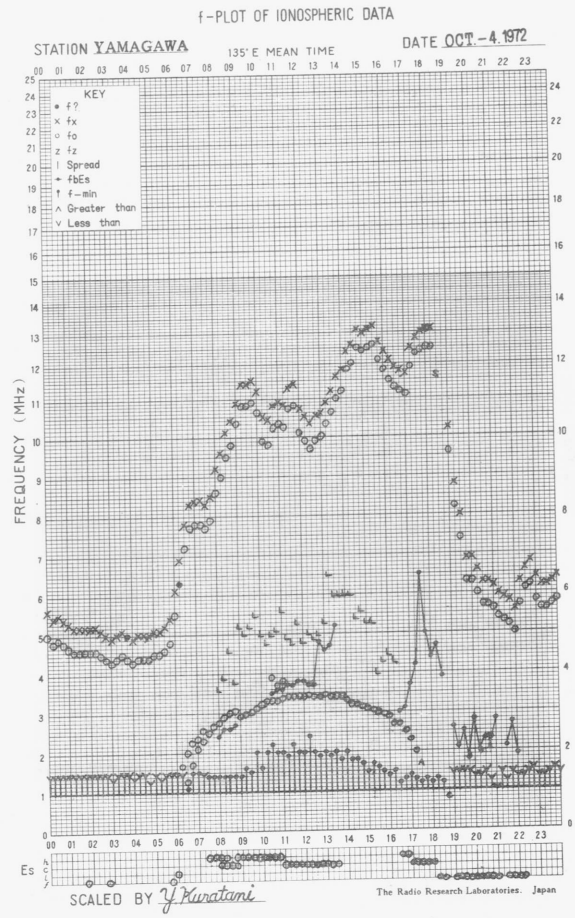
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan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DATE OCT. - 4. 1972
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∧ Greater than
∨ Less than
FREQUENCY (MHz)
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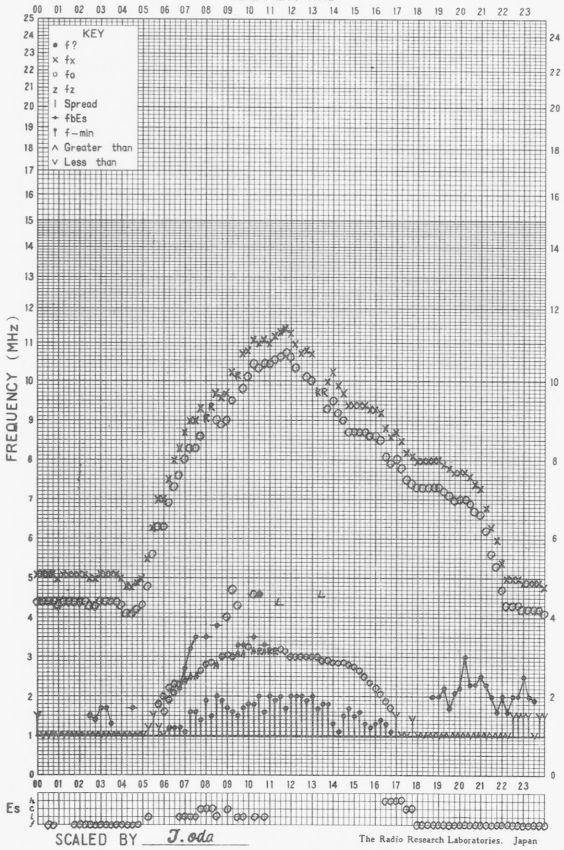
SCALED BY Y. Kuratani
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 5, 1972



SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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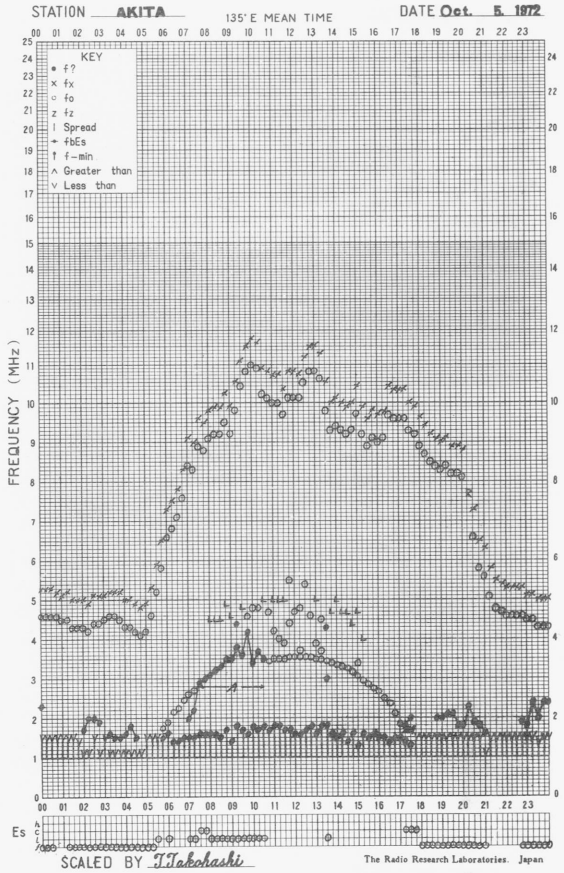

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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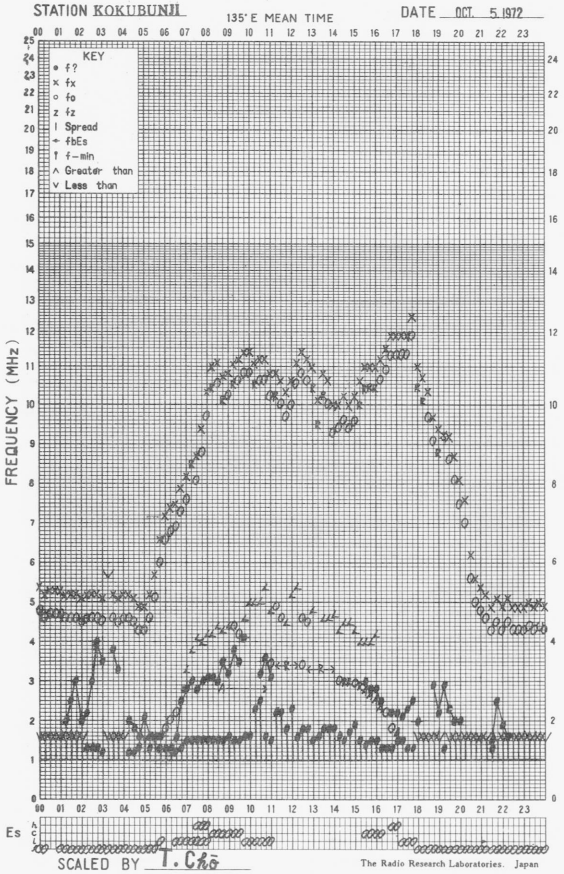

SCALED BY T. Cho

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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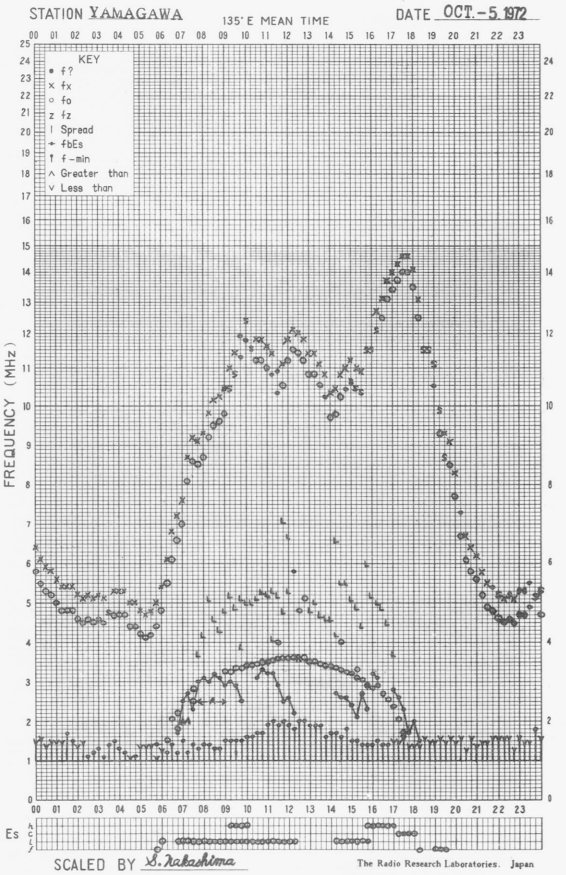
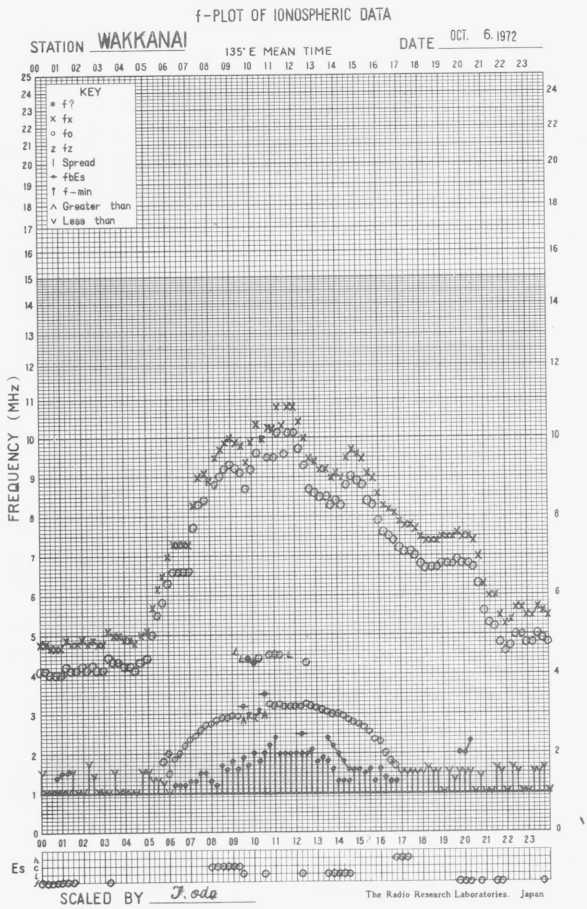


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan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DATE OCT. 6. 1972
KEY
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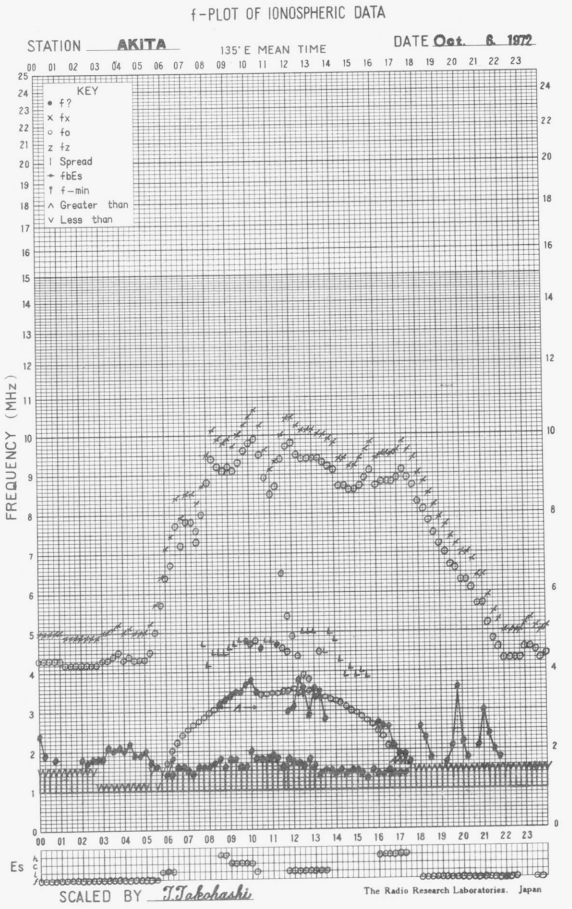
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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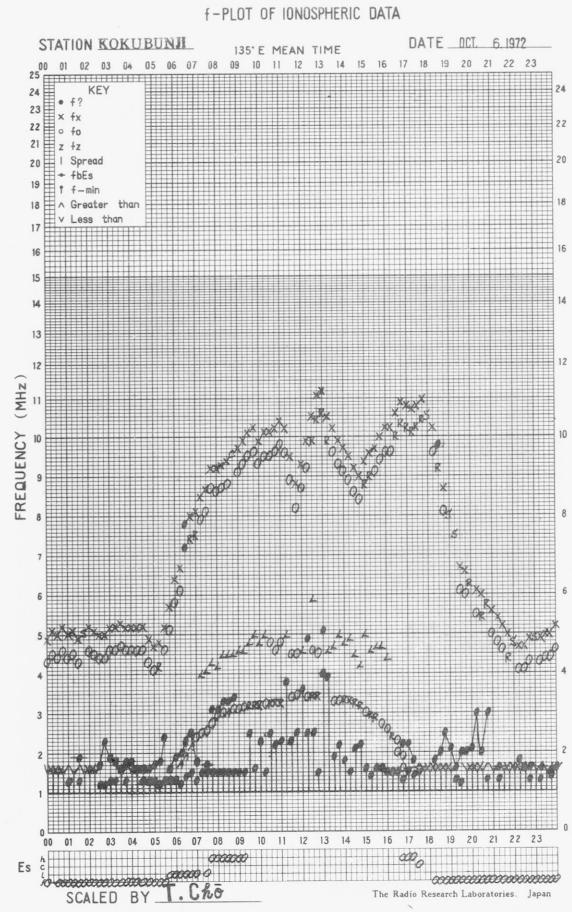
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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DATE OCT. 6. 1972
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FREQUENCY (MHz)
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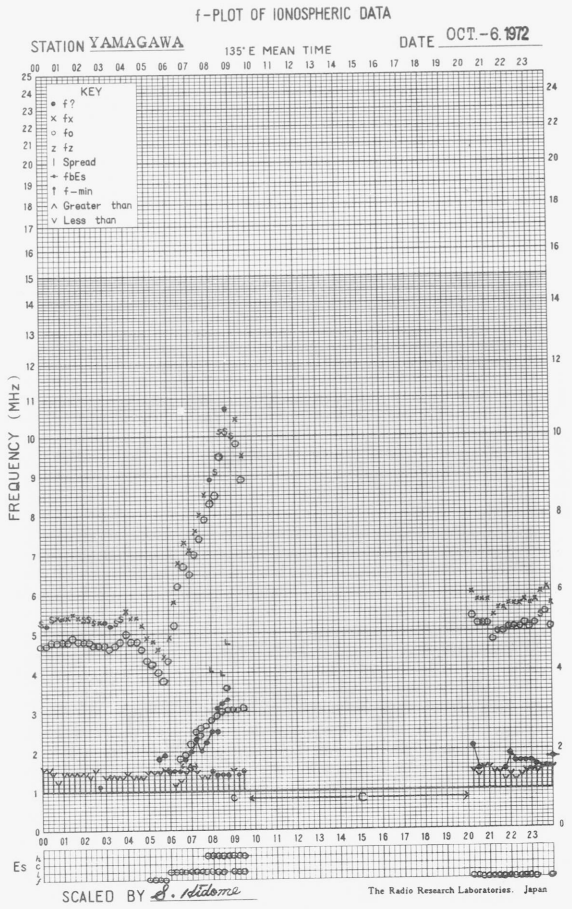
SCALED BY T. Cho
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE OCT.-6. 1972
KEY
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FREQUENCY (MHz)
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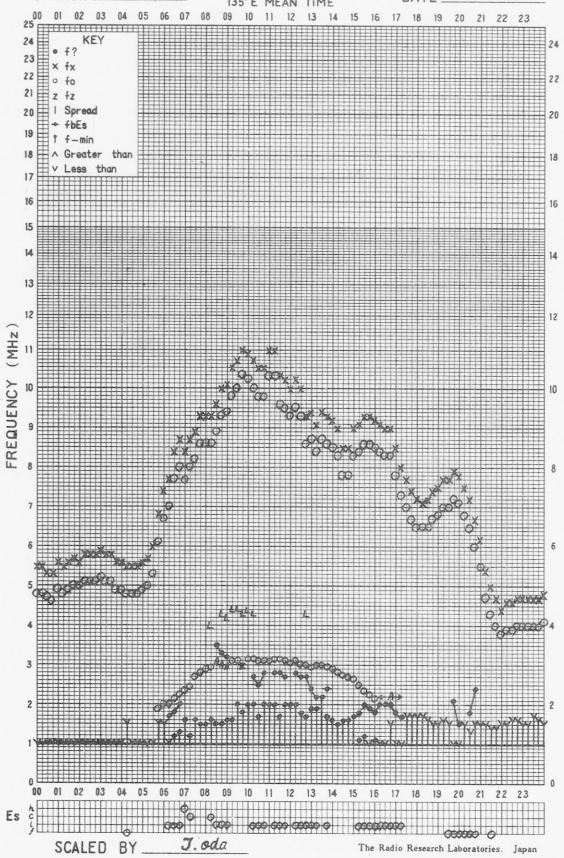
SCALED BY S. Shidome
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 7. 1972

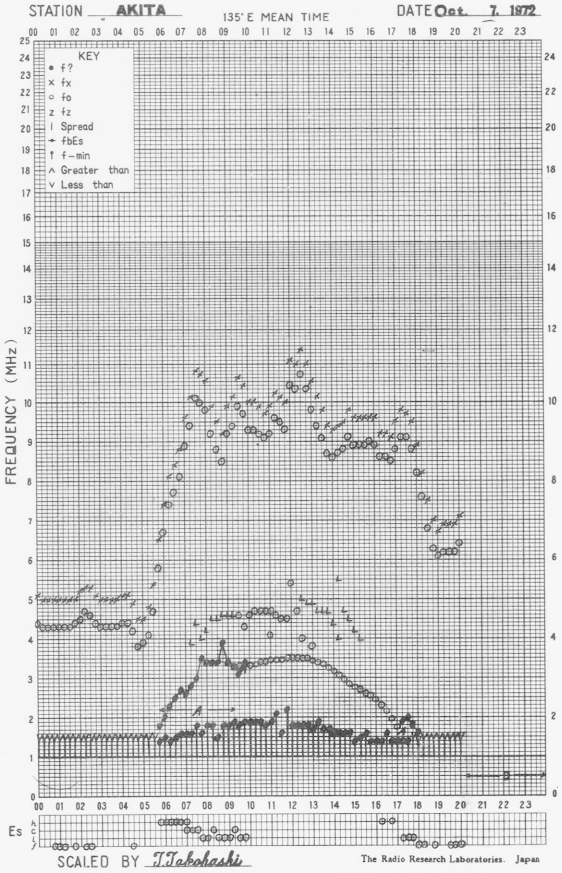


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 7. 1972



SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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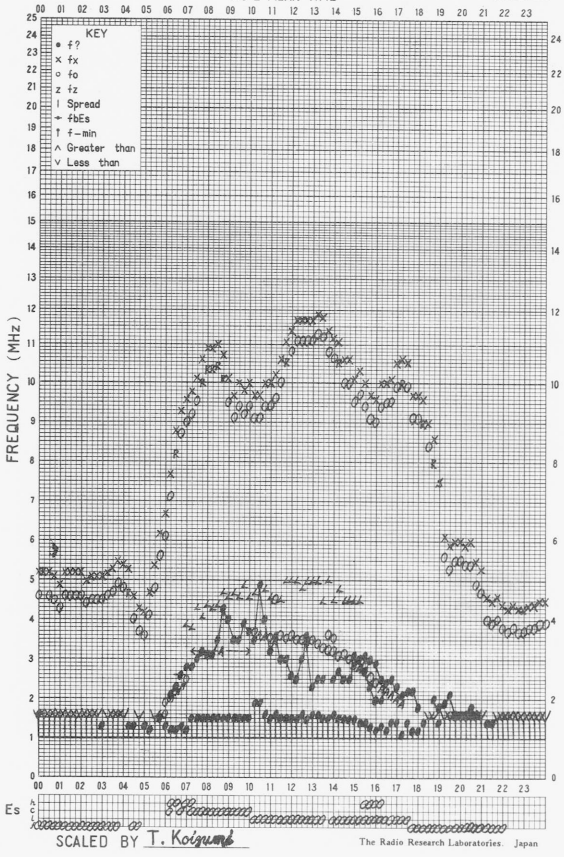

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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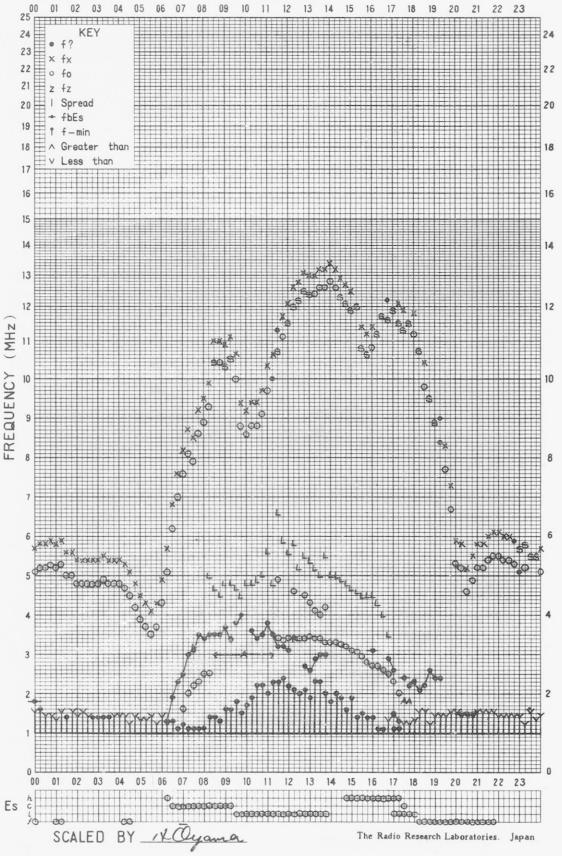
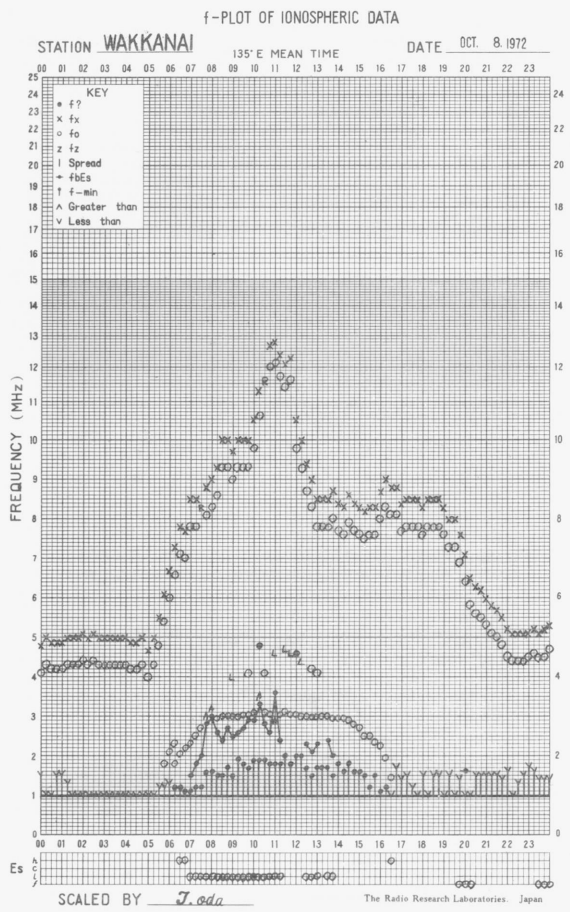


SCALED BY K. Oyama

The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE OCT. 8. 1972
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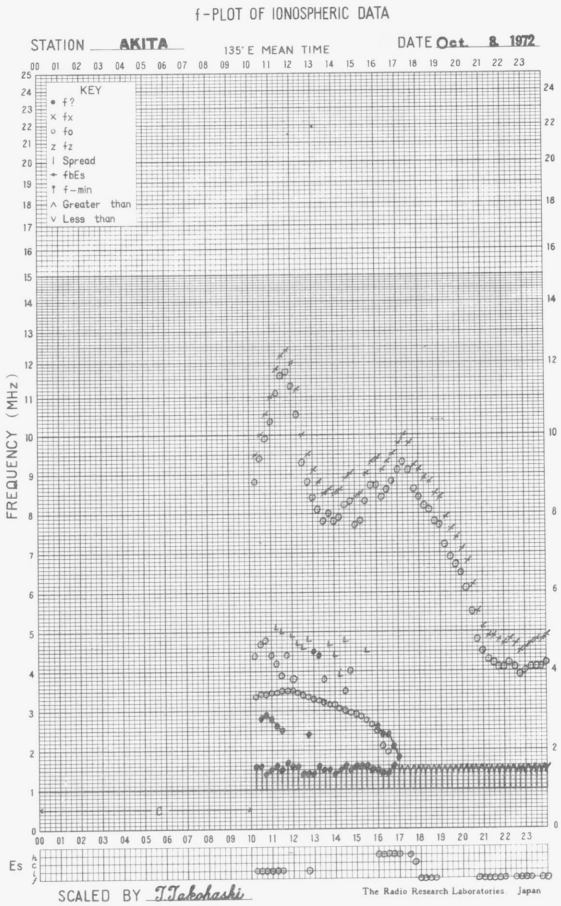
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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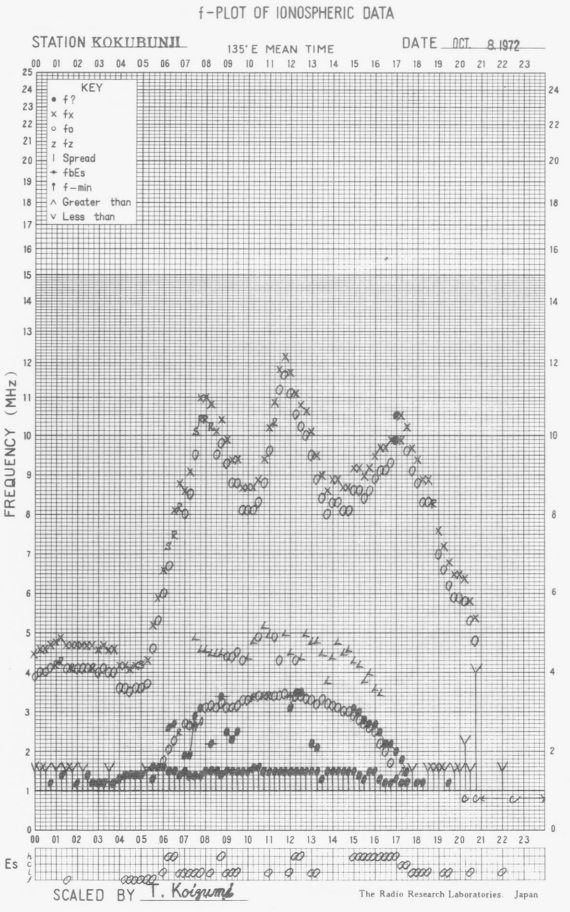
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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DATE OCT. 8. 1972
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FREQUENCY (MHz)
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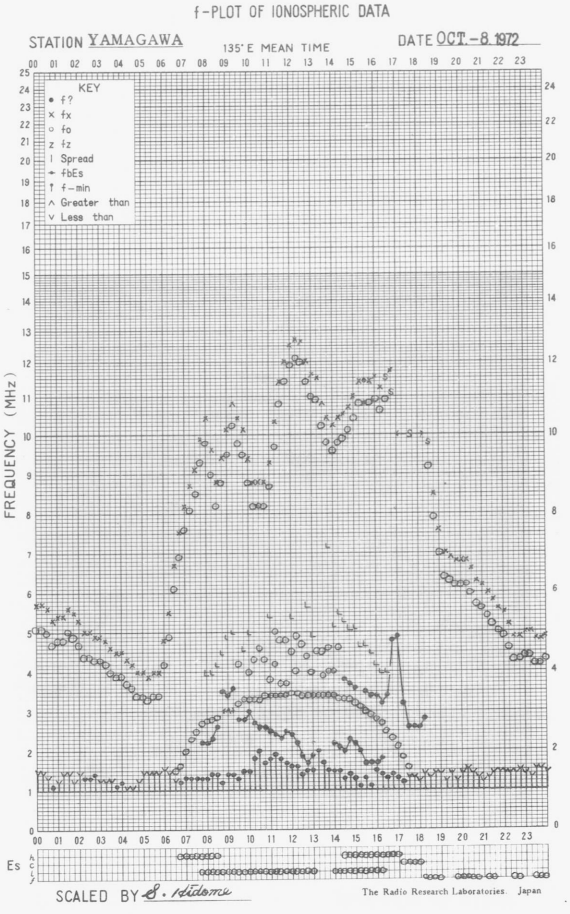
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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DATE OCT. 8. 1972
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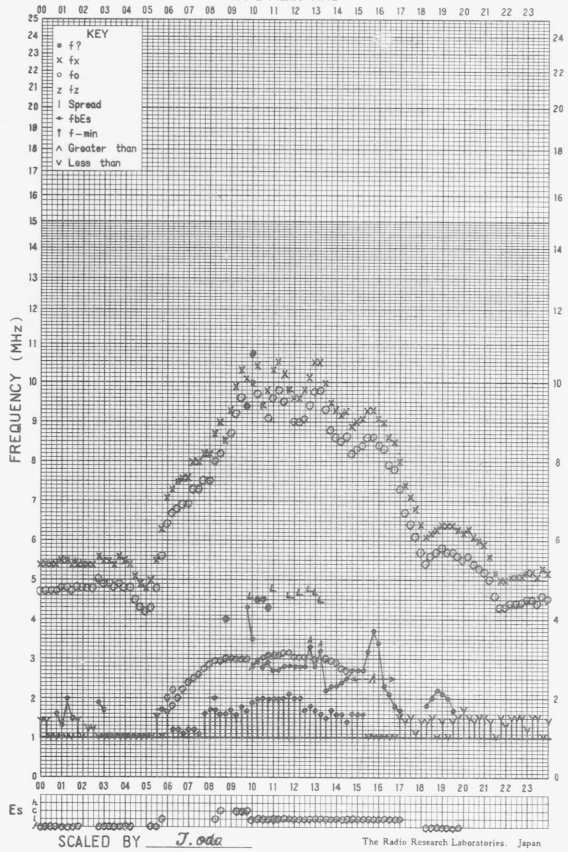
SCALED BY S. Aidoma
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 9. 1972



SCALED BY J. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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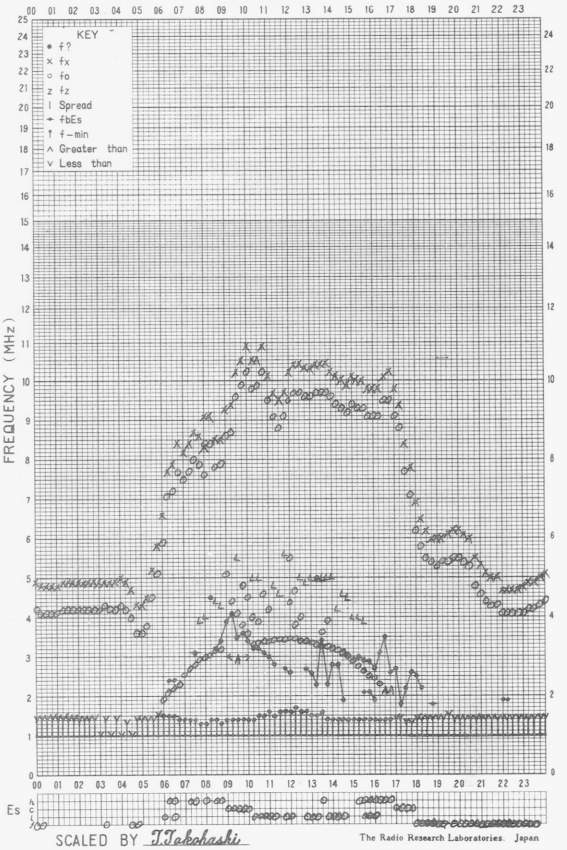

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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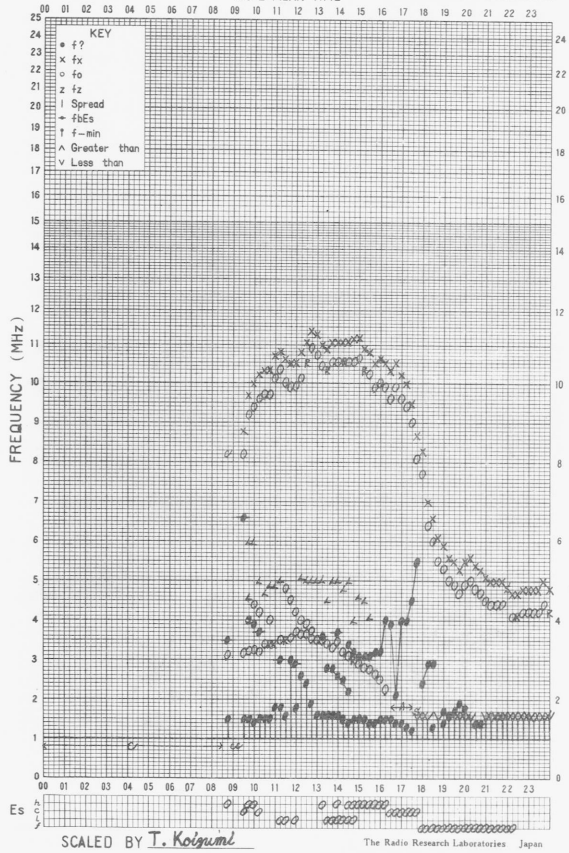

SCALED BY T. Koizumi

The Radio Research Laboratories Japan

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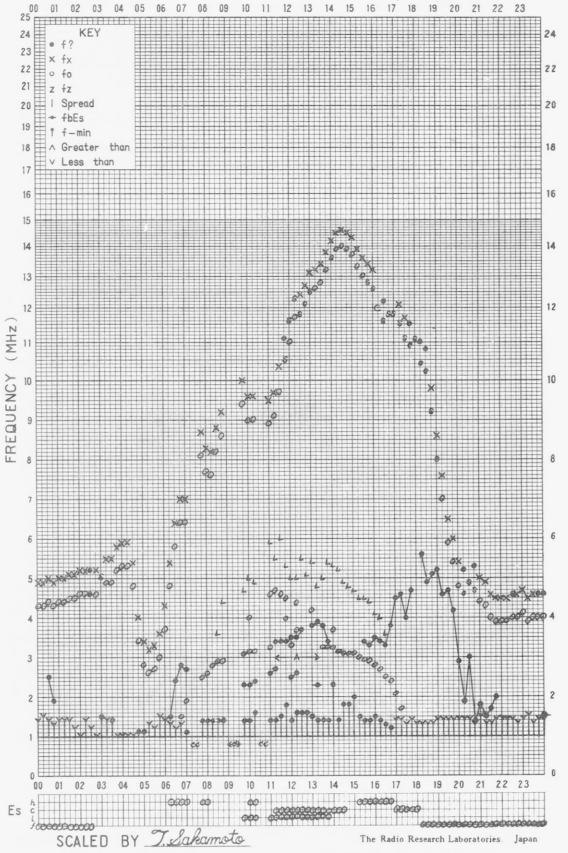
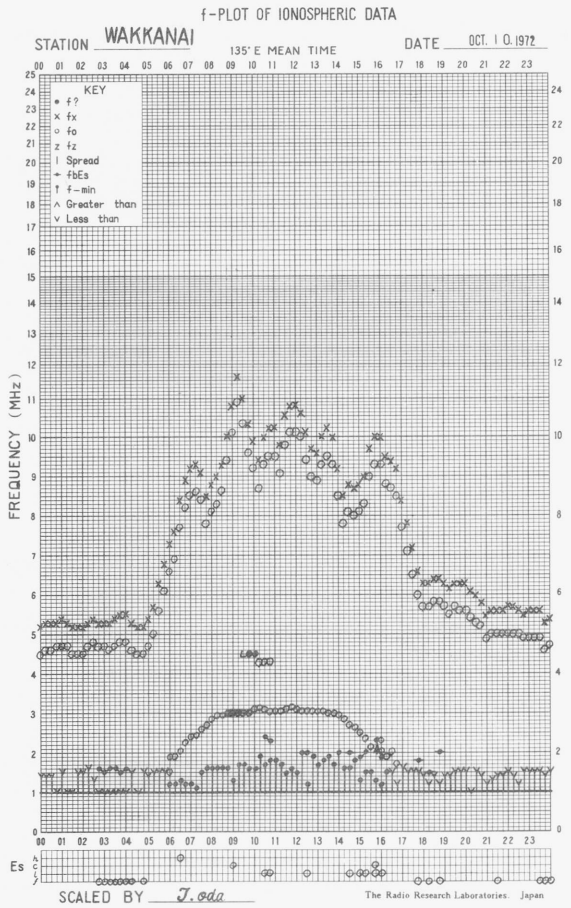


SCALED BY T. Takamoto

The Radio Research Laboratories. Japan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DATE OCT. 10 1972
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∧ Greater than
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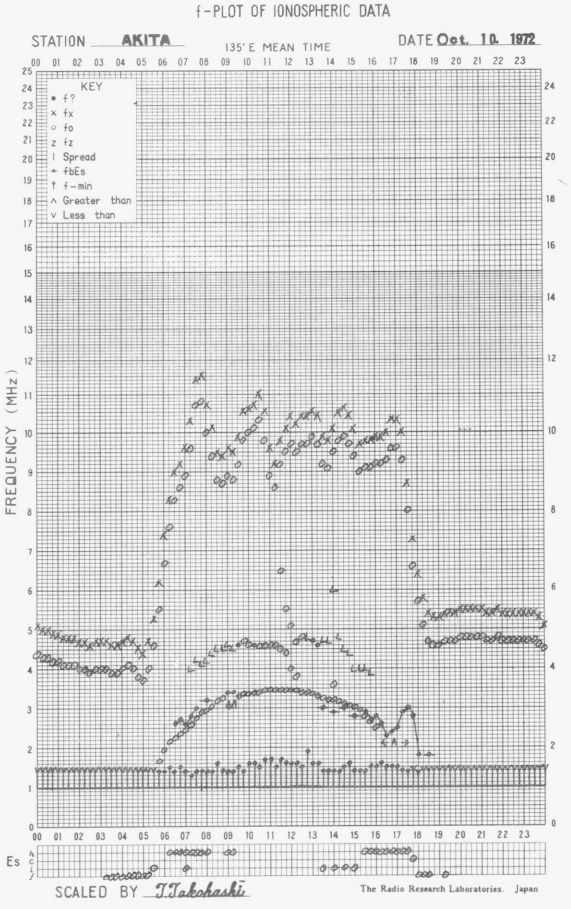
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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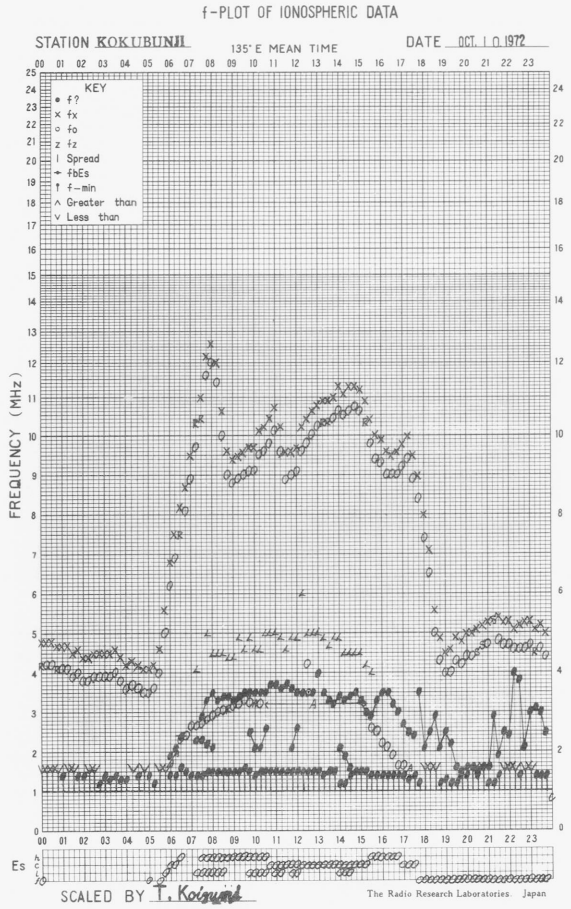
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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DATE OCT. 10 1972
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FREQUENCY (MHz)
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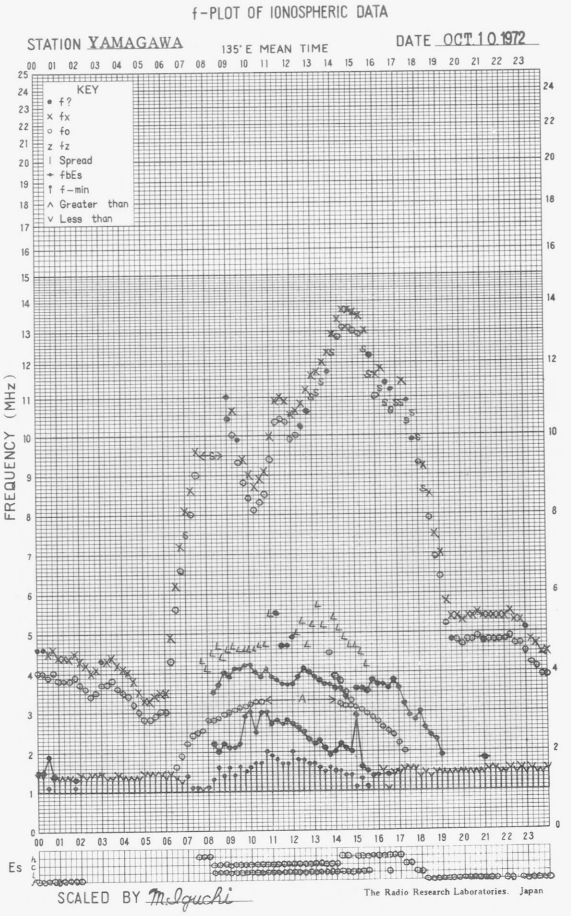
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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DATE OCT 10 1972
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∧ Greater than
∨ Less than
FREQUENCY (MHz)
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SCALED BY M. Iguchi
The Radio Research Laboratories. Japan

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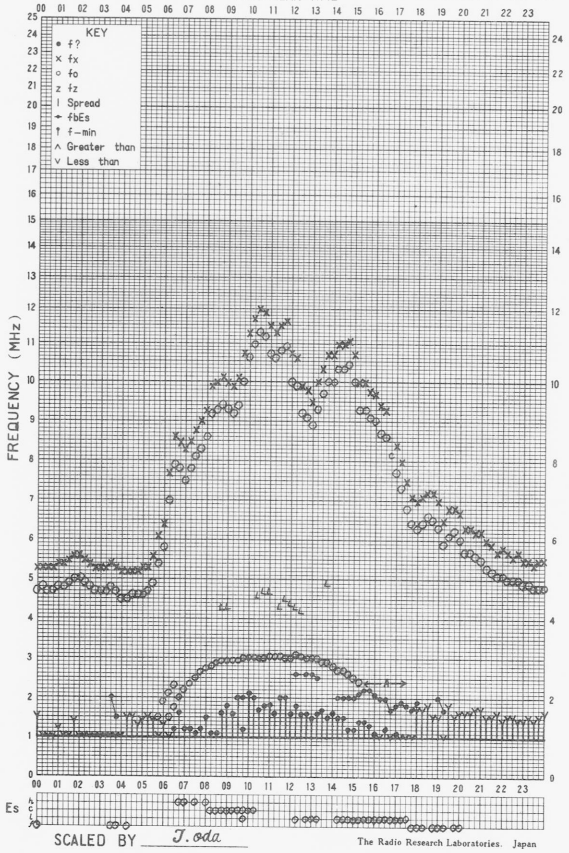

SCALED BY T. oda

The Radio Research Laboratories. Japan

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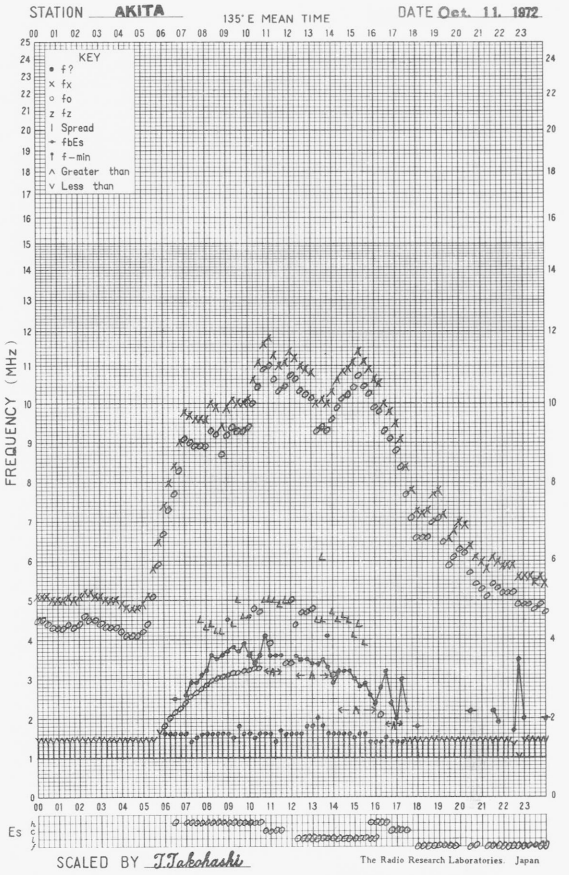

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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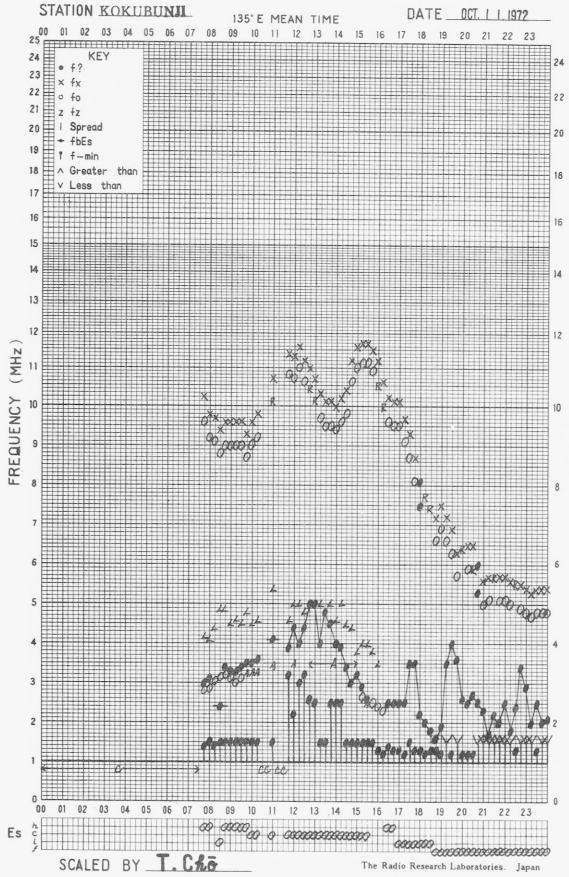

SCALED BY T. Ch5

The Radio Research Laboratories. Japan

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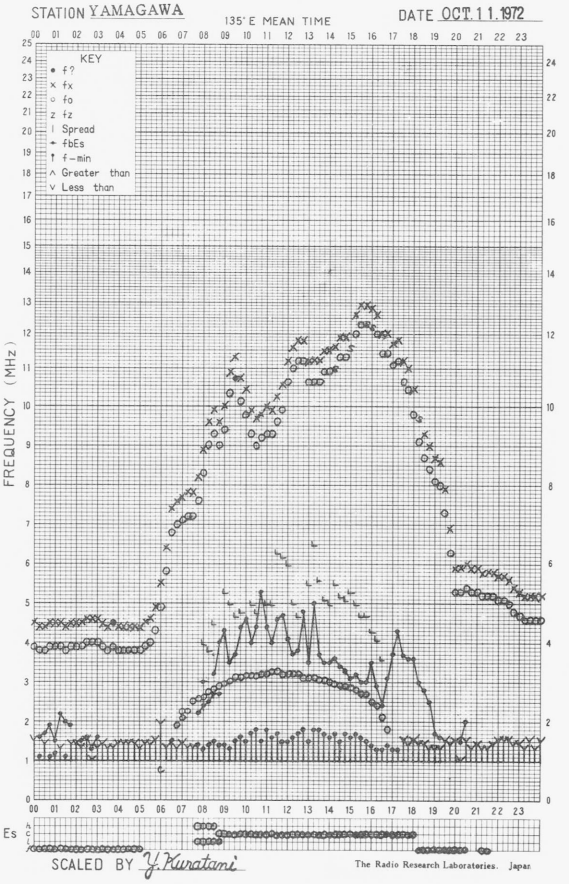

SCALED BY J. Kuratani

The Radio Research Laboratories. Japan

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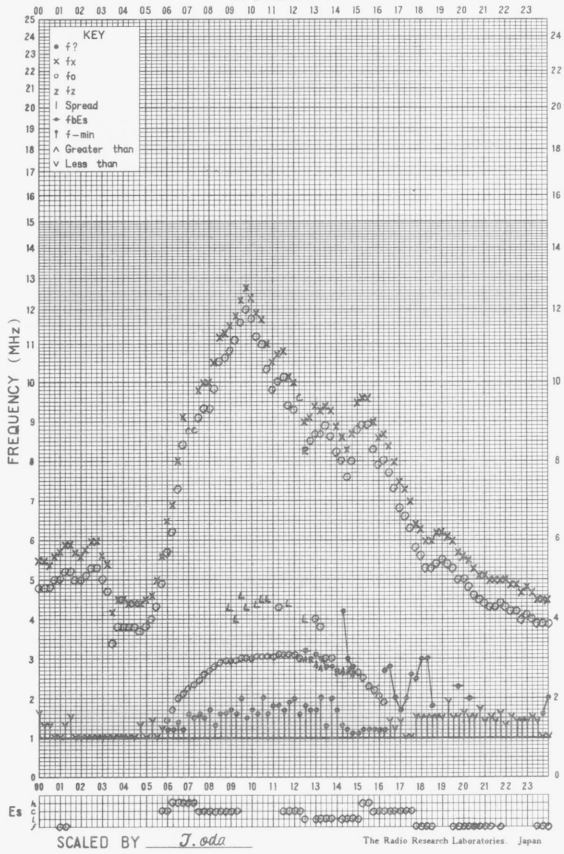

SCALED BY J. oda

The Radio Research Laboratories. Japan

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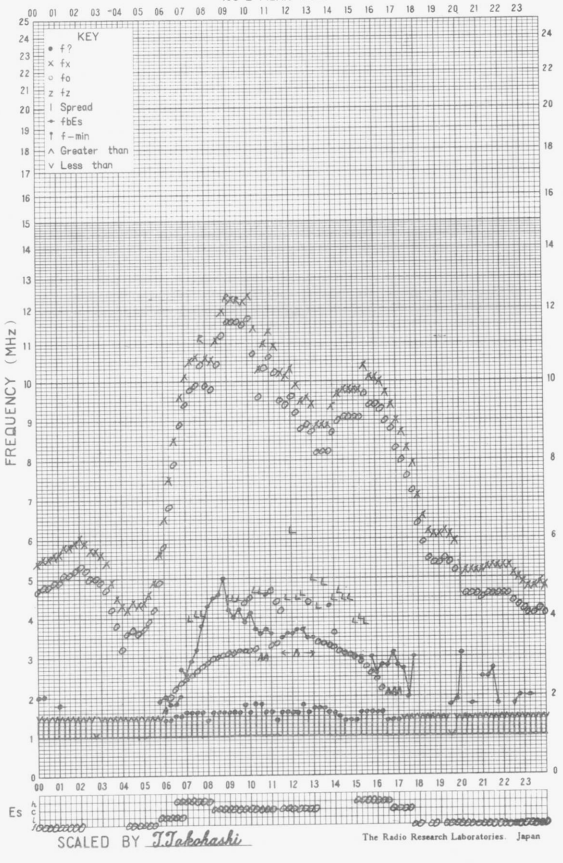

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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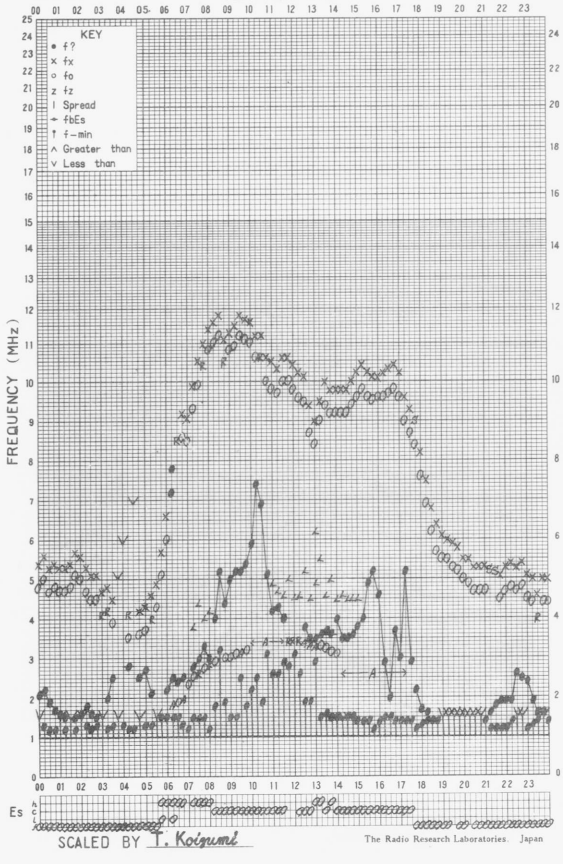

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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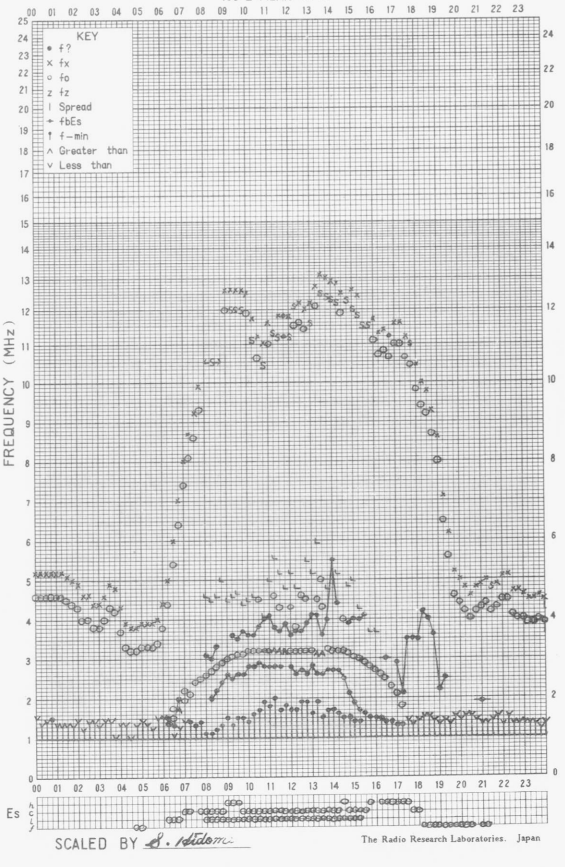

SCALED BY S. Ishida

The Radio Research Laboratories. Japan

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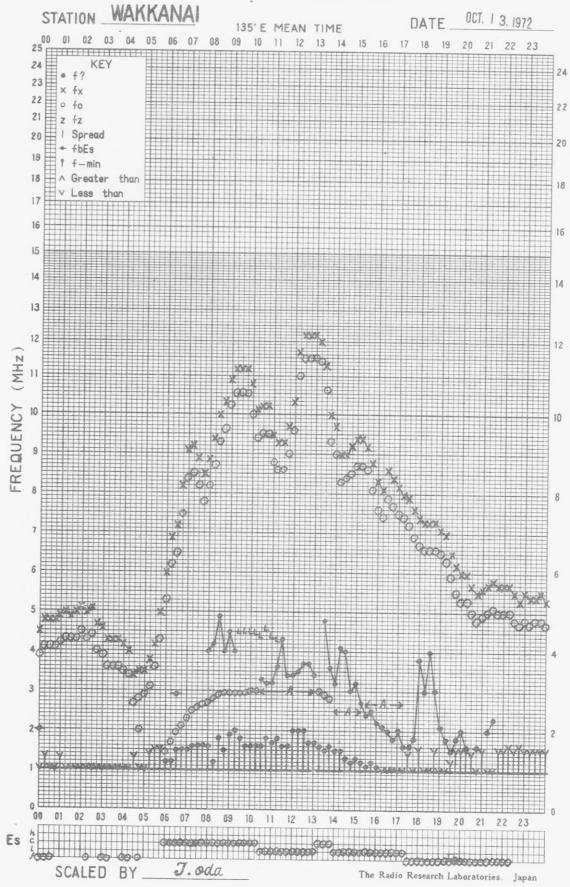

SCALED BY J. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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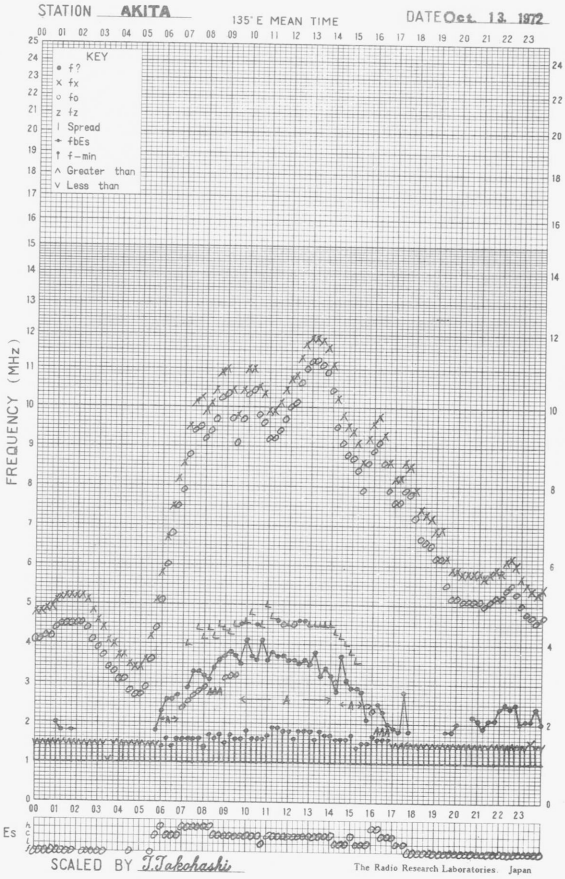

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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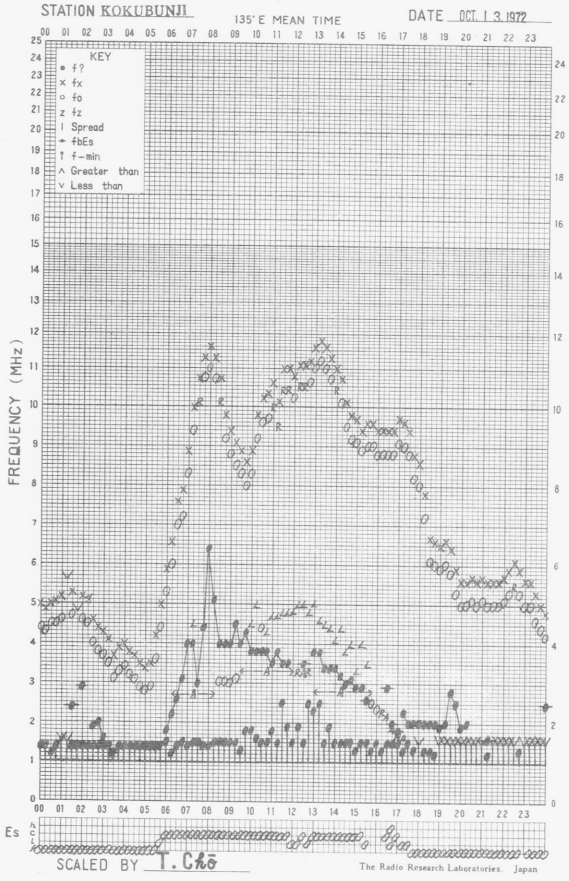

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The Radio Research Laboratories. Japan

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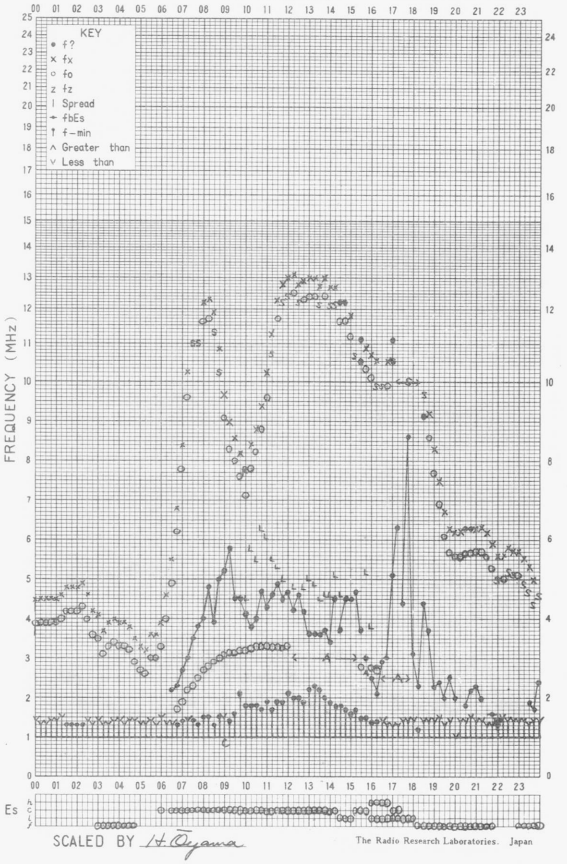
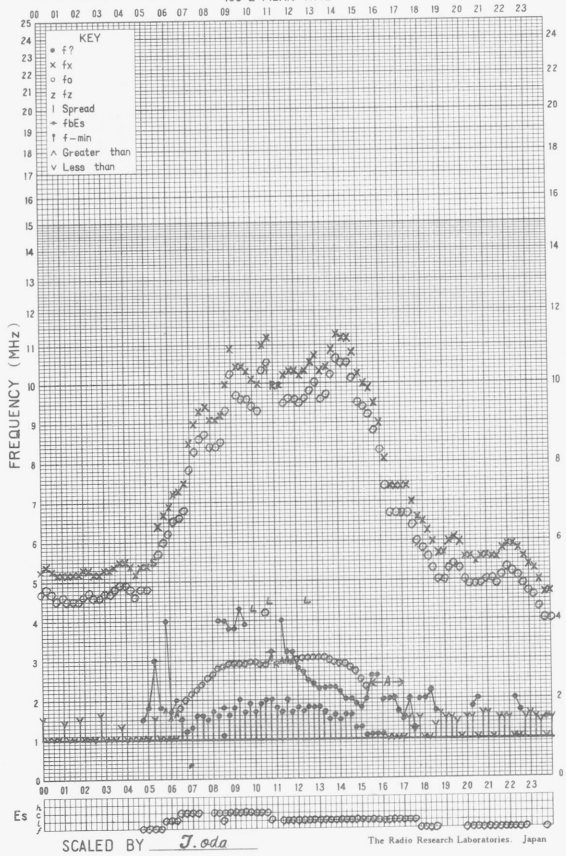


SCALED BY H. Ayama

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 14. 1972

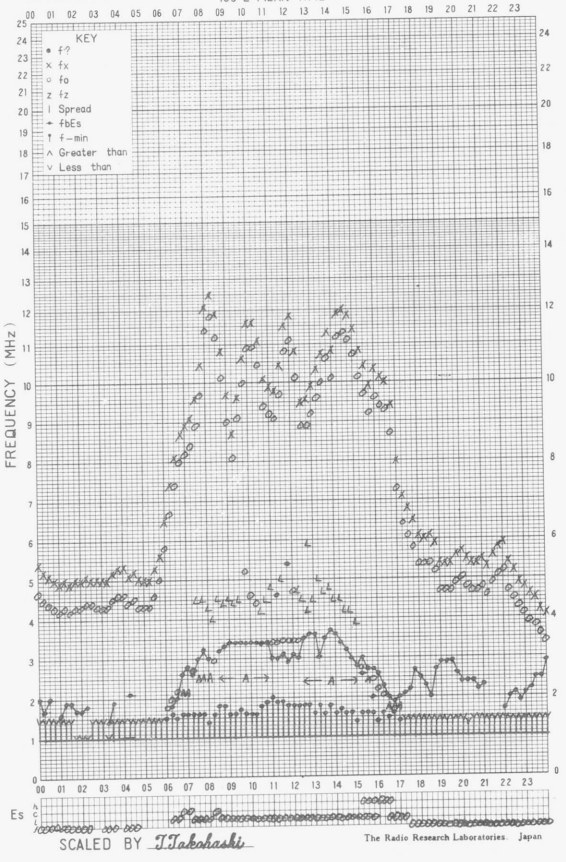


SCALED BY J. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 14. 1972

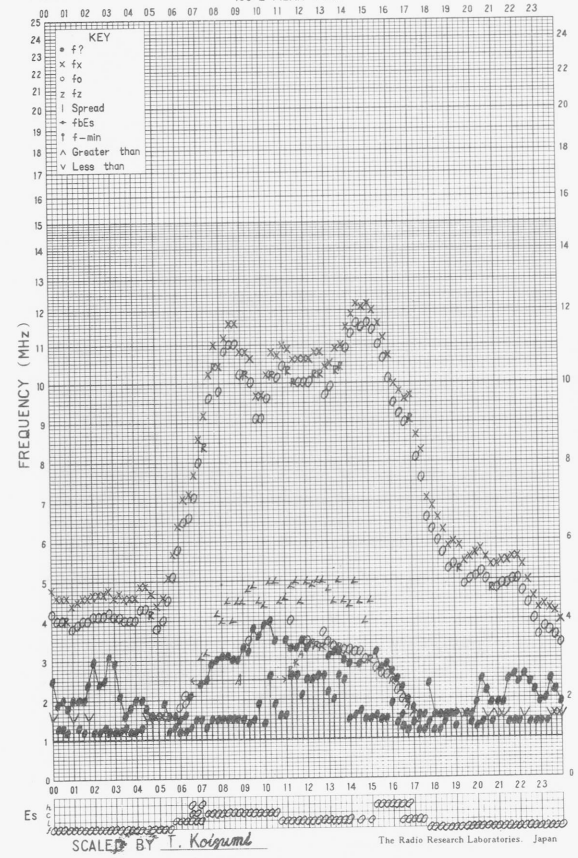


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 14. 1972



SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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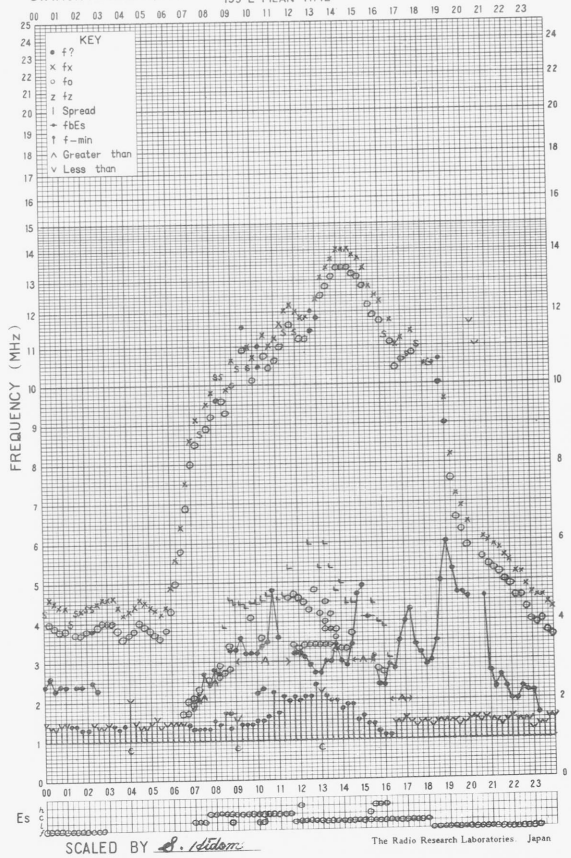

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The Radio Research Laboratories. Japan

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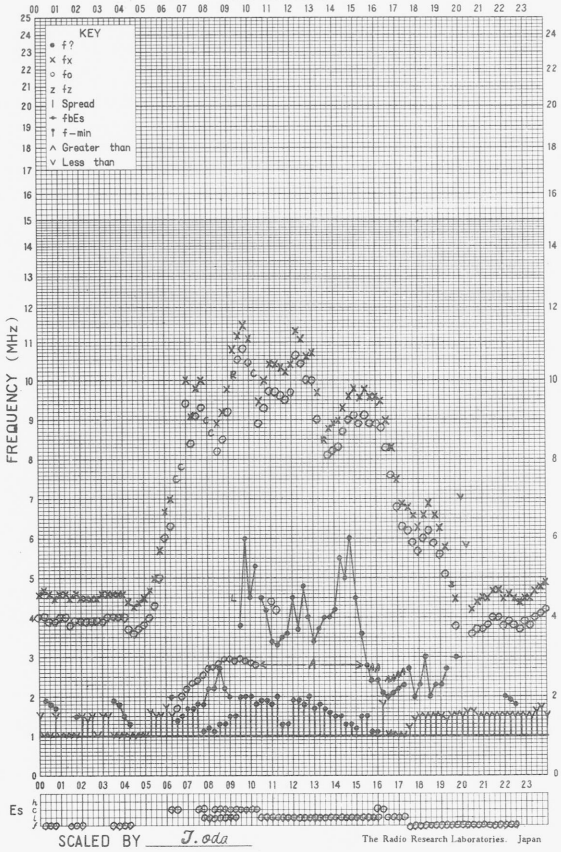

SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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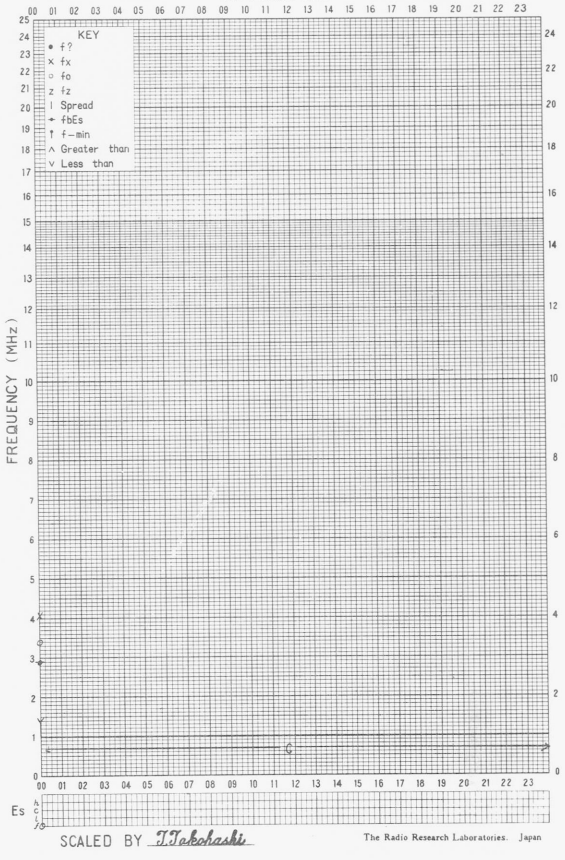

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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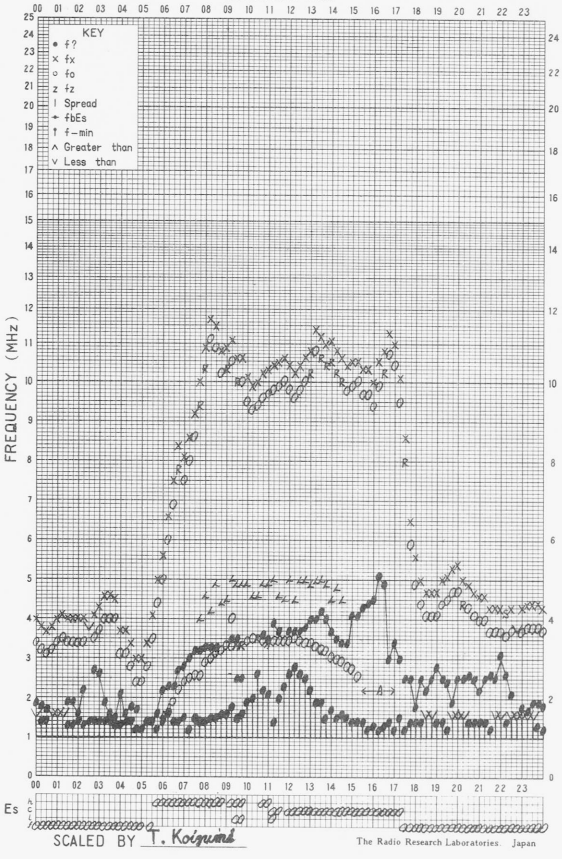

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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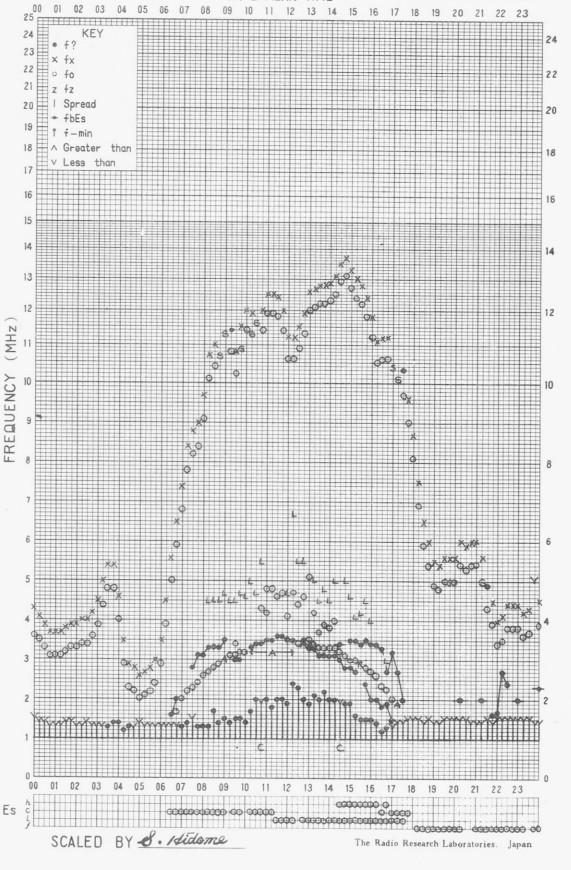
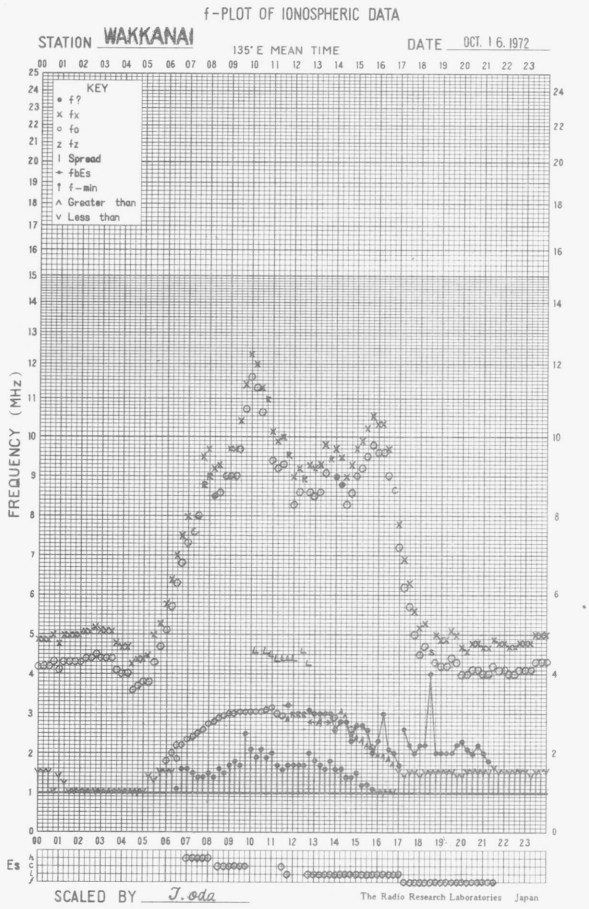


SCALED BY S. Iidaka

The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE OCT. 16. 1972
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FREQUENCY (MHz)
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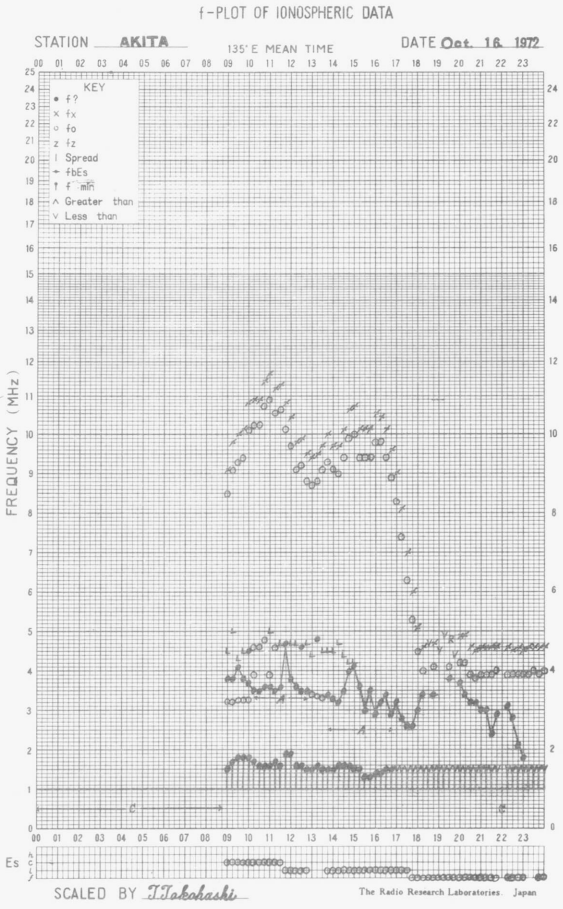
SCALED BY T. Oda
The Radio Research Laboratories Japan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FREQUENCY (MHz)
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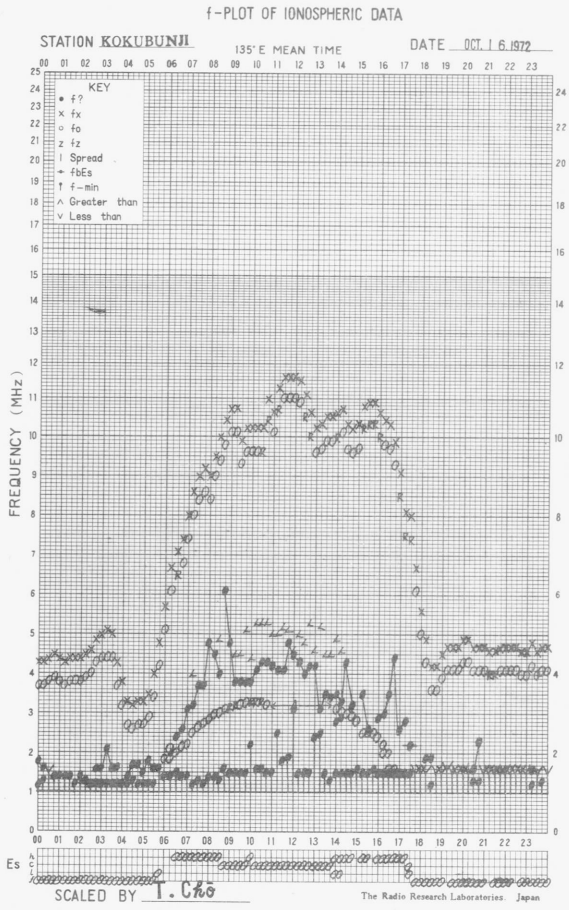
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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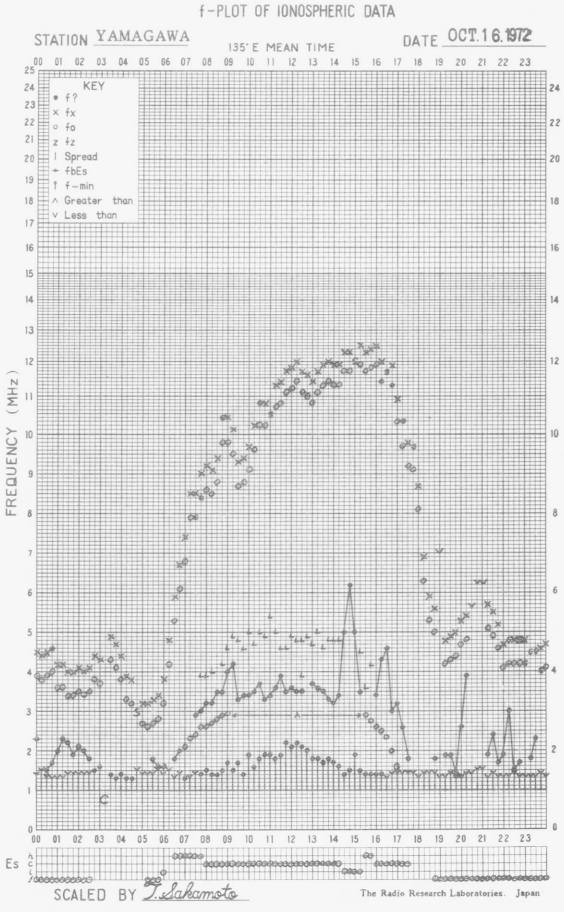
SCALED BY T. Chō
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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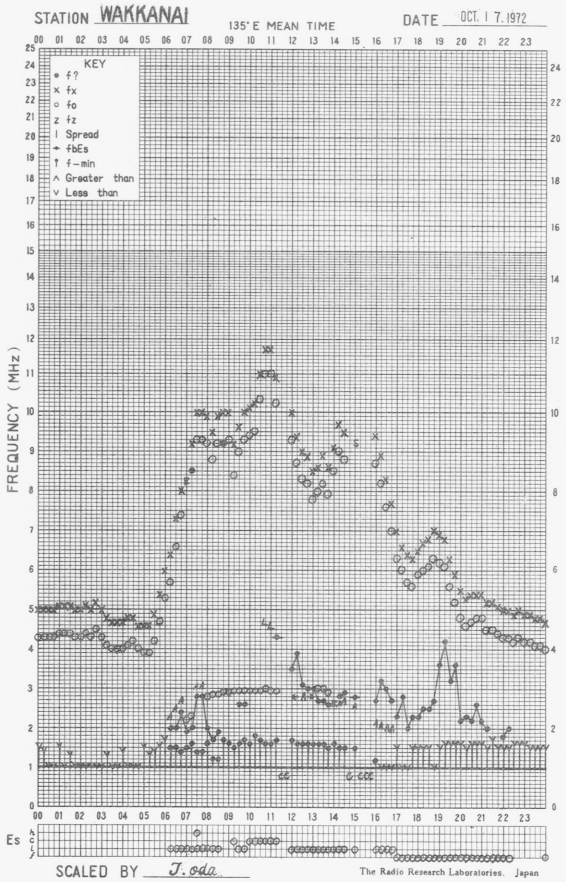
SCALED BY T. Takamoto
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 17. 1972



SCALED BY J. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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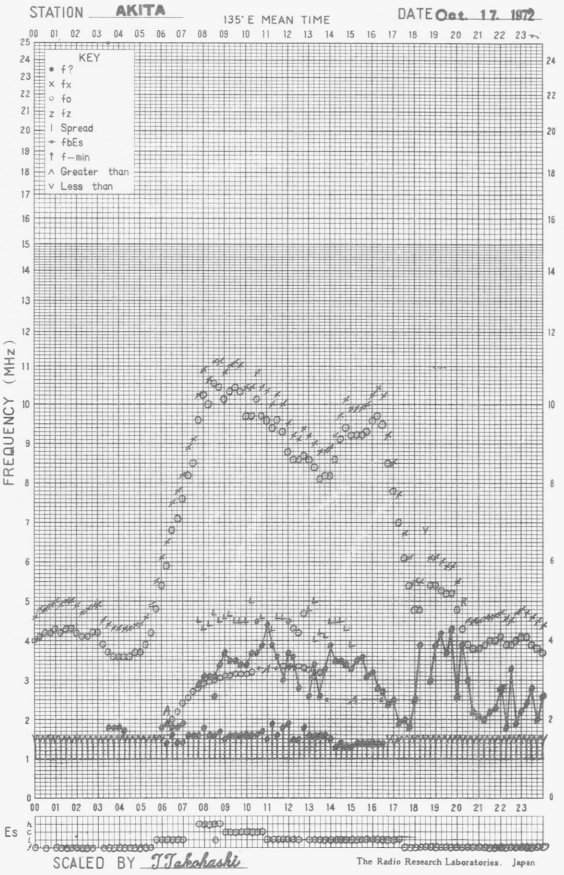

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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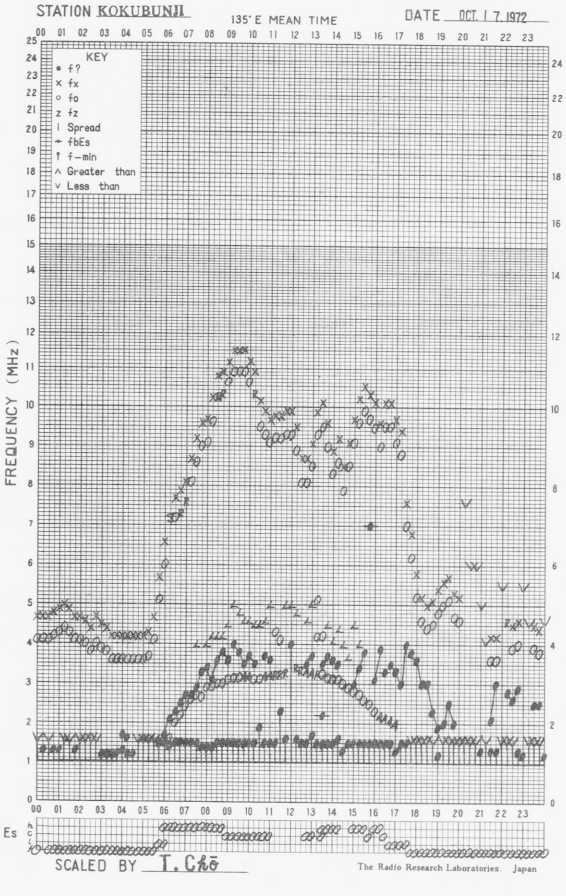

SCALED BY T. Chō

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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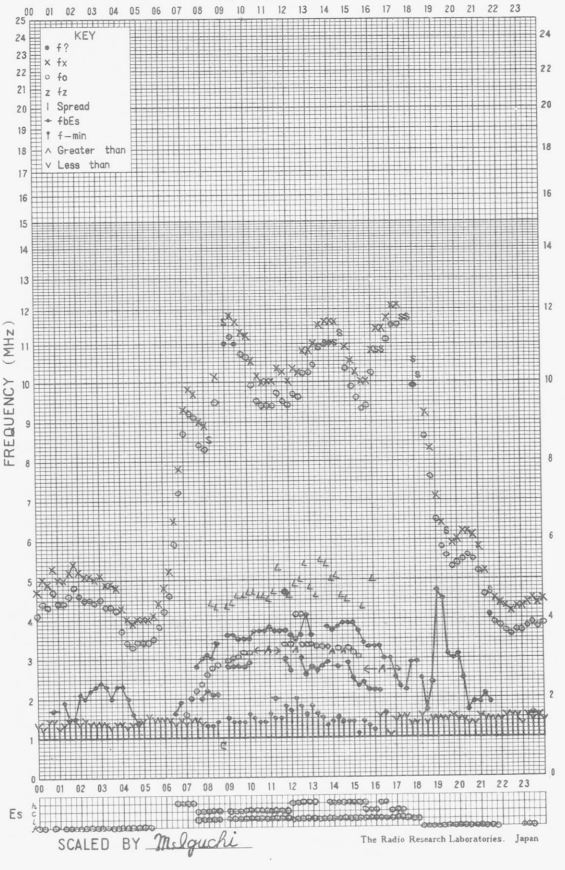
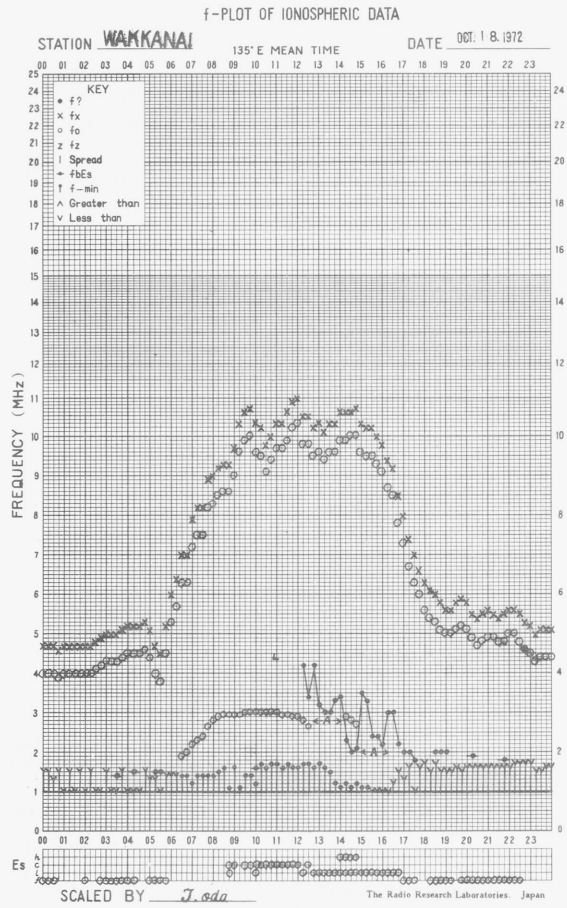


SCALED BY M. Iguchi

The Radio Research Laboratories. Japan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STATION WAKKANAI
135°E MEAN TIME
DATE OCT. 18. 1972
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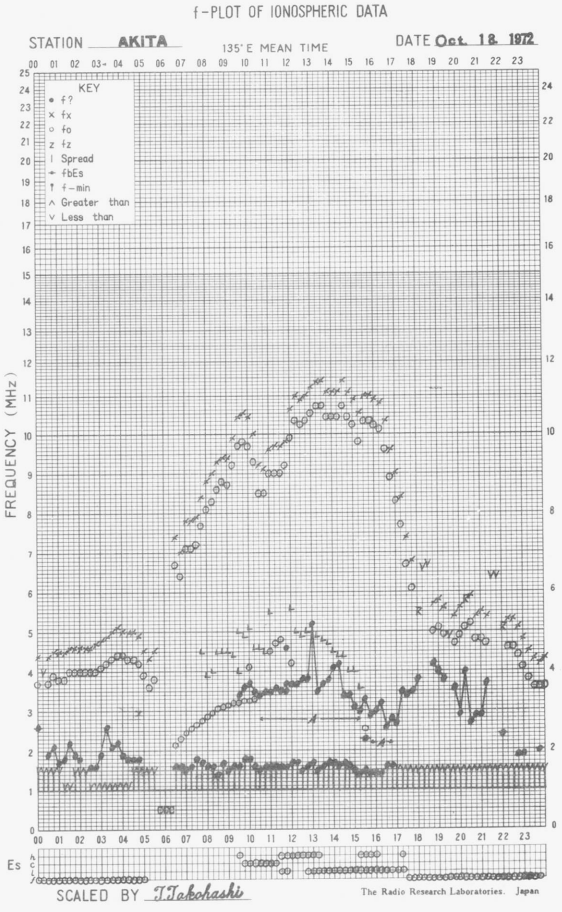
SCALED BY T. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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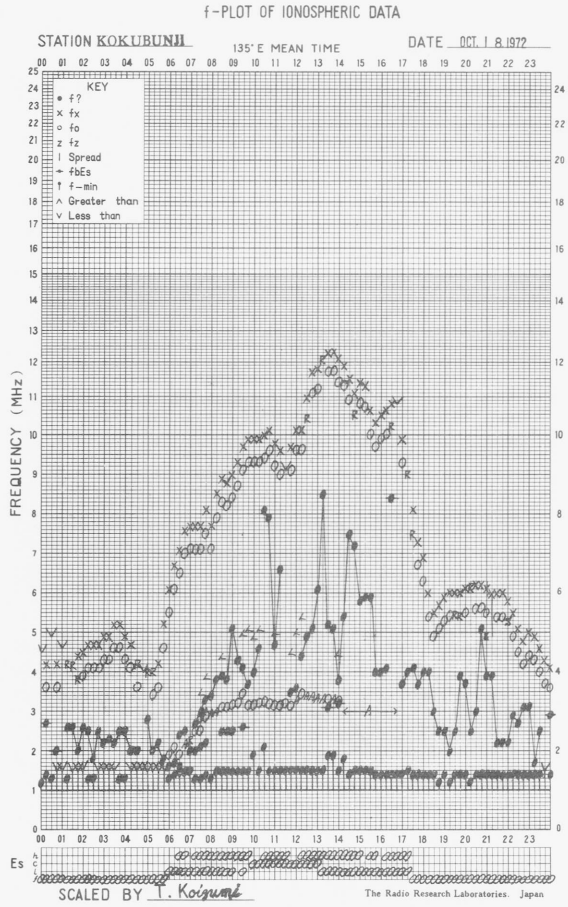
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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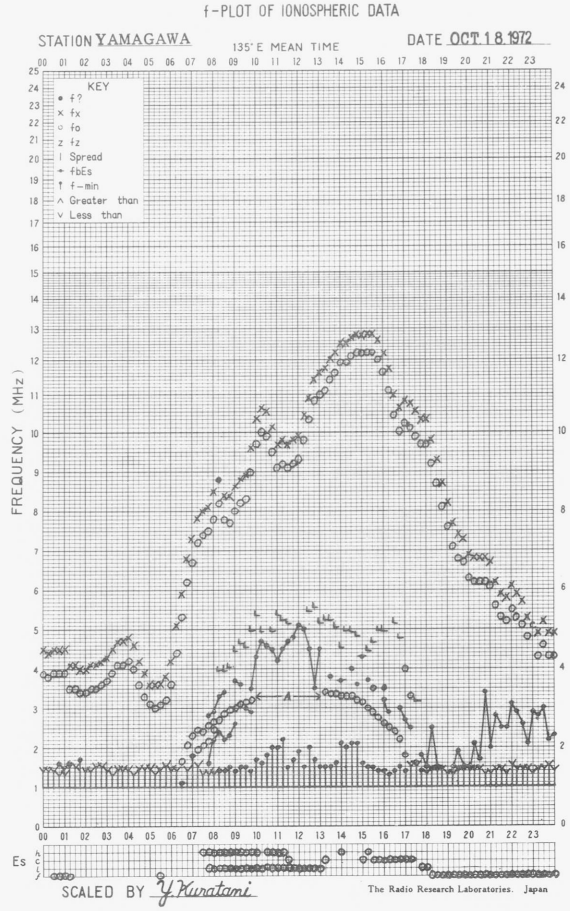
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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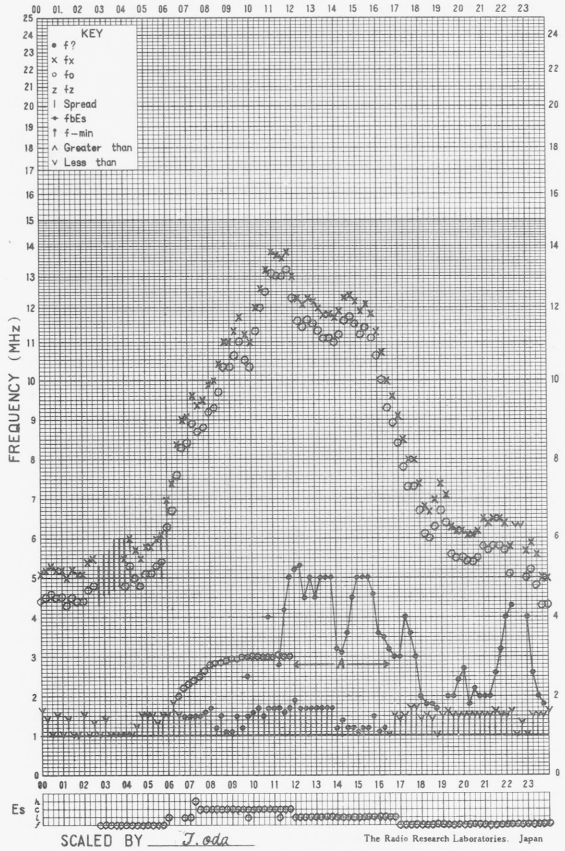
SCALED BY Y. Kuratani
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE OCT. 19. 1972



SCALED BY T. oda

The Radio Research Laboratories. Japan

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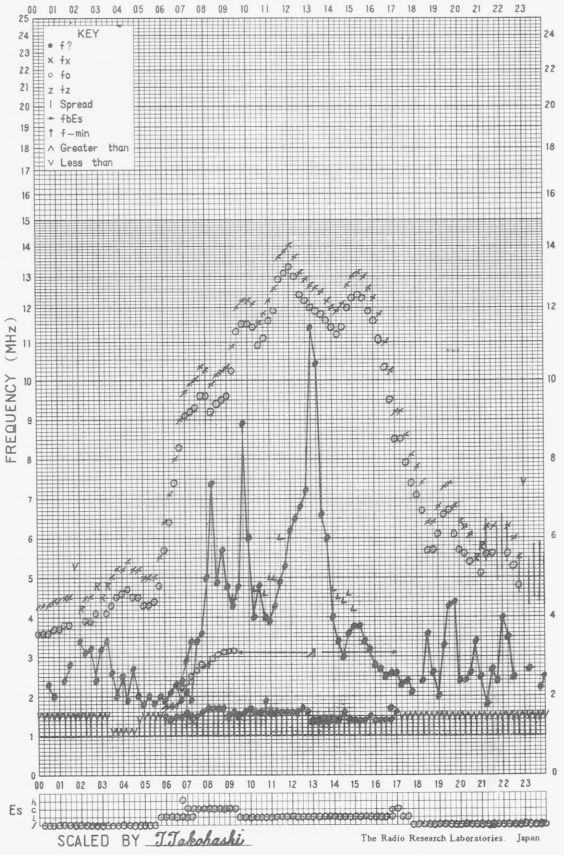

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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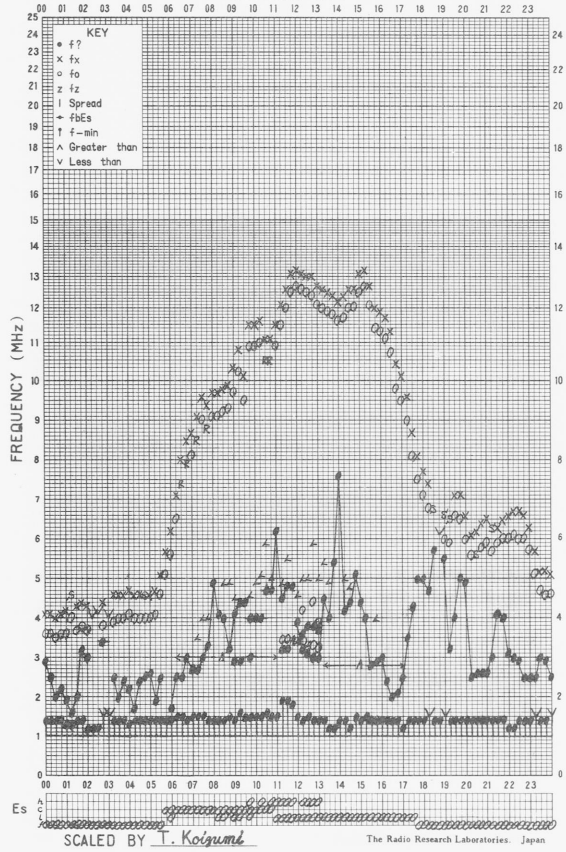

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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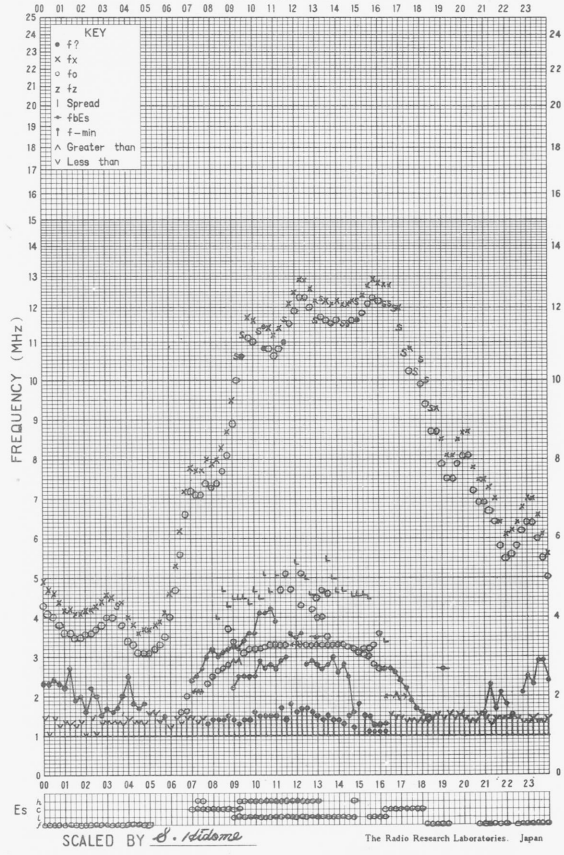
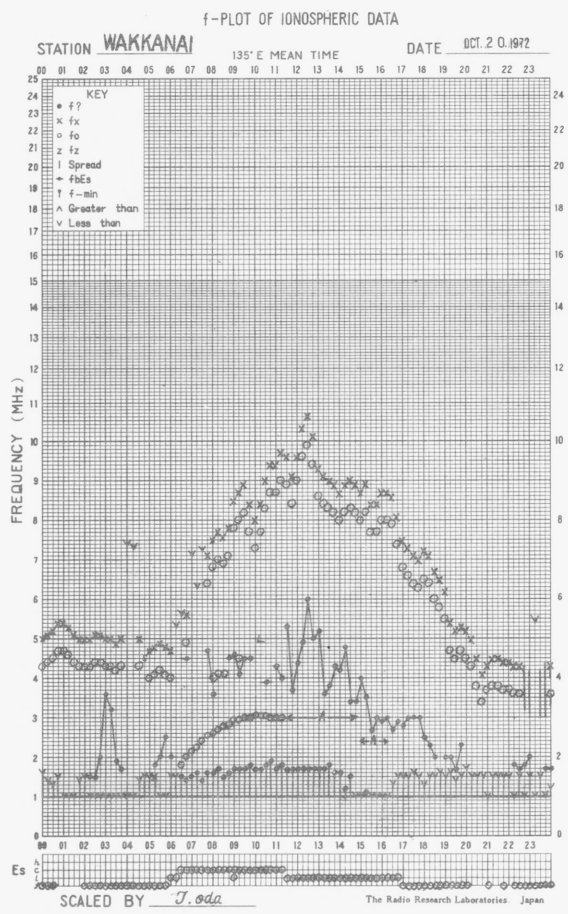


SCALED BY S. Iidoma

The Radio Research Laboratories. Japan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DATE OCT. 20. 1972
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FREQUENCY (MHz)
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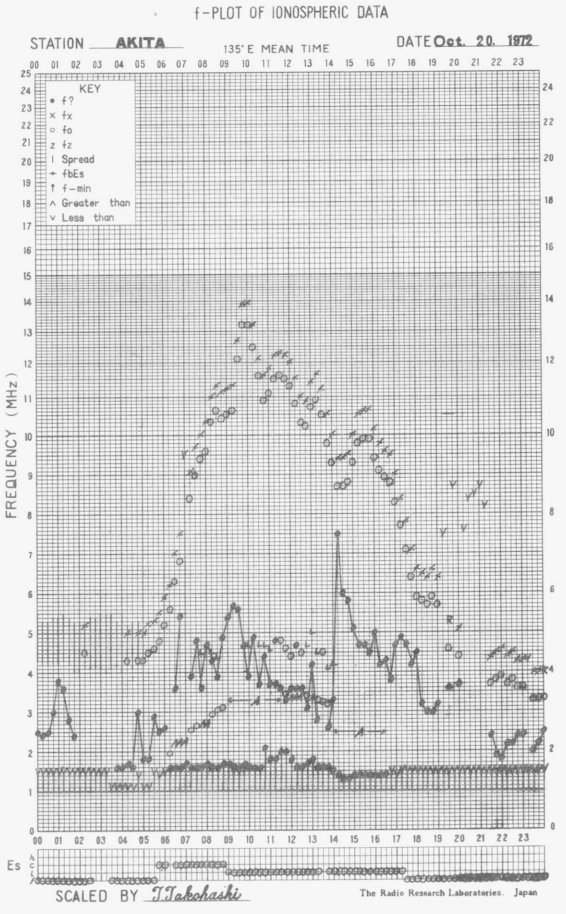
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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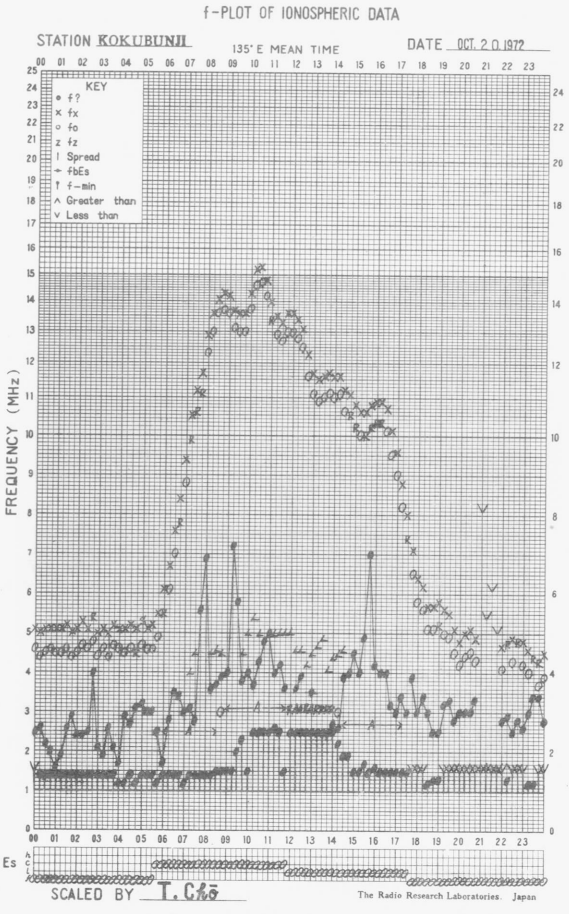
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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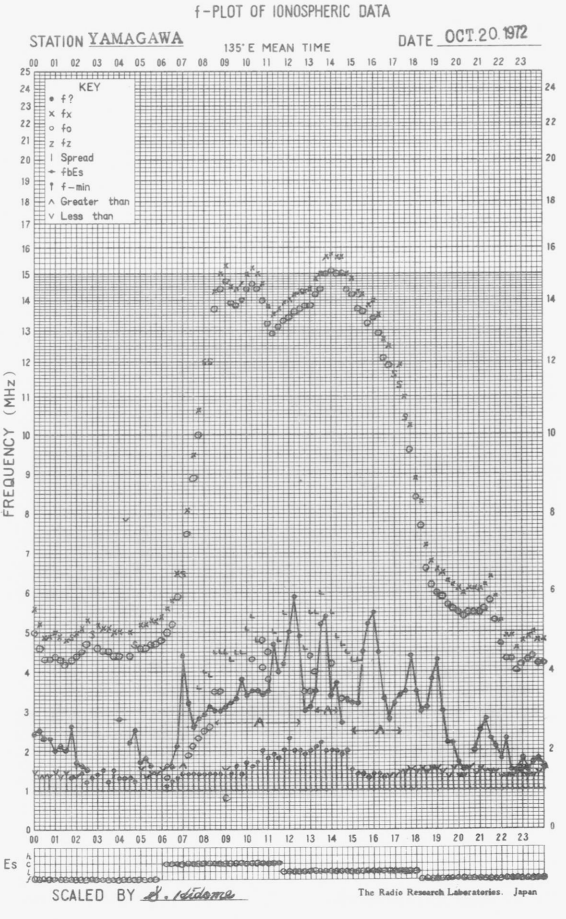
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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SCALED BY S. Iidoma
The Radio Research Laboratories. Japan

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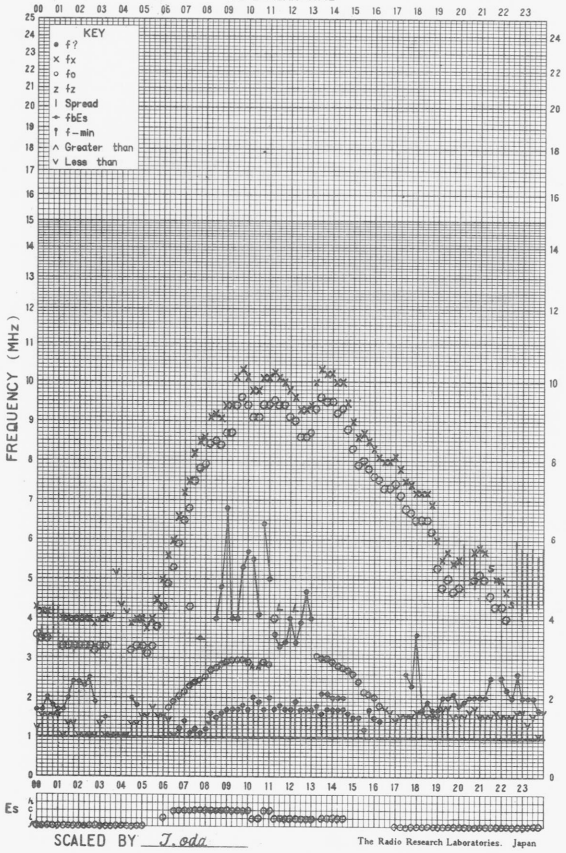
STATION WAKKANAI 135°E MEAN TIME DATE OCT. 2 1. 1972



SCALED BY T. oda The Radio Research Laboratories. Japan

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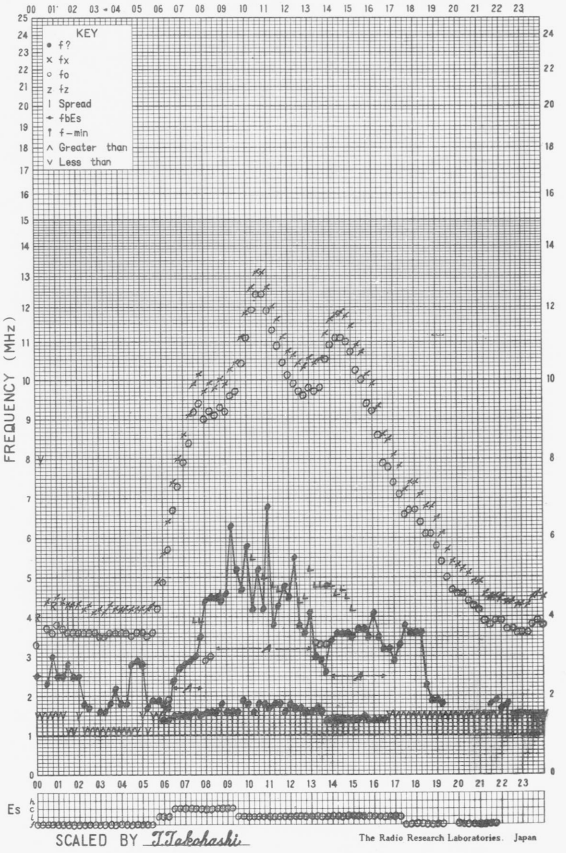

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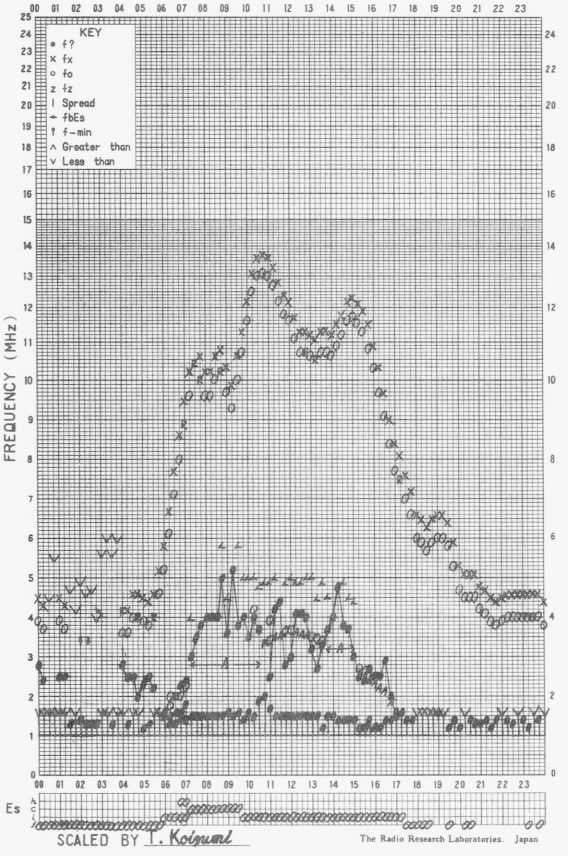

SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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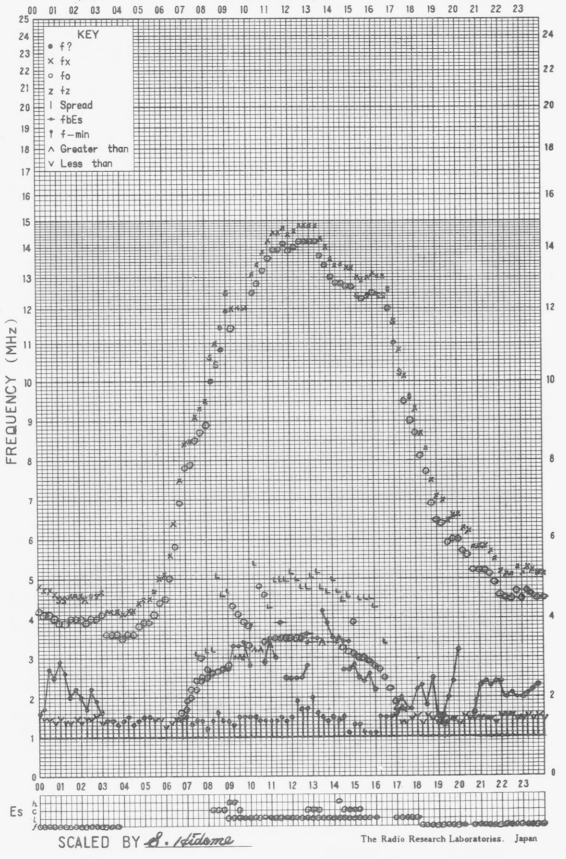

SCALED BY S. Kitsuma The Radio Research Laboratories. Japan

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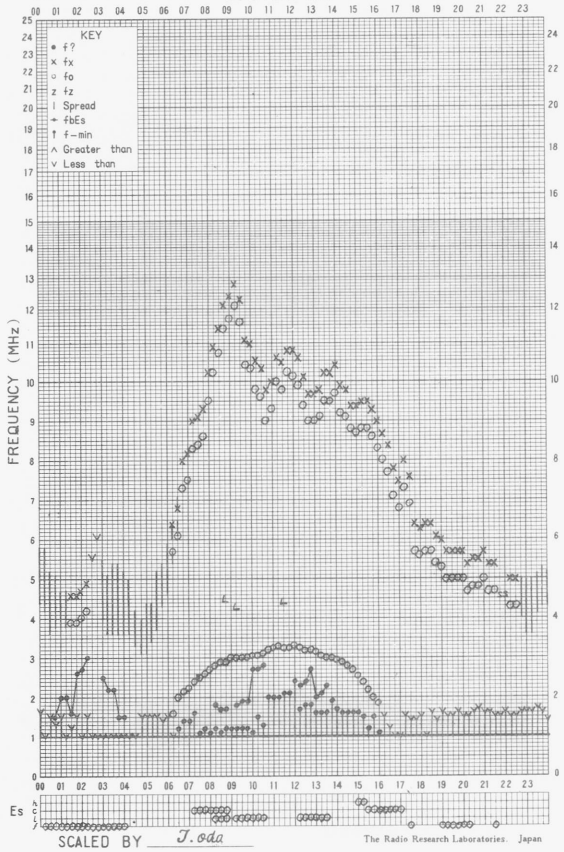

SCALED BY T. oda

The Radio Research Laboratories. Japan

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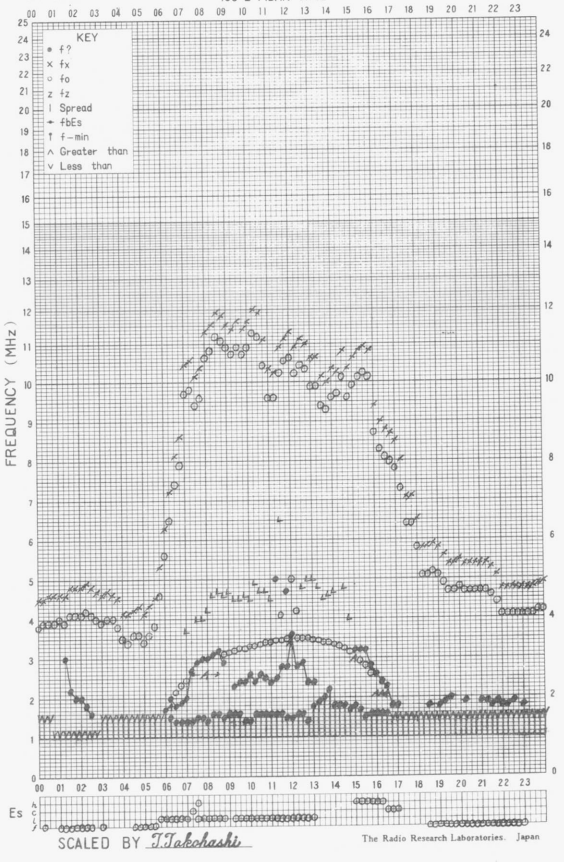

SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

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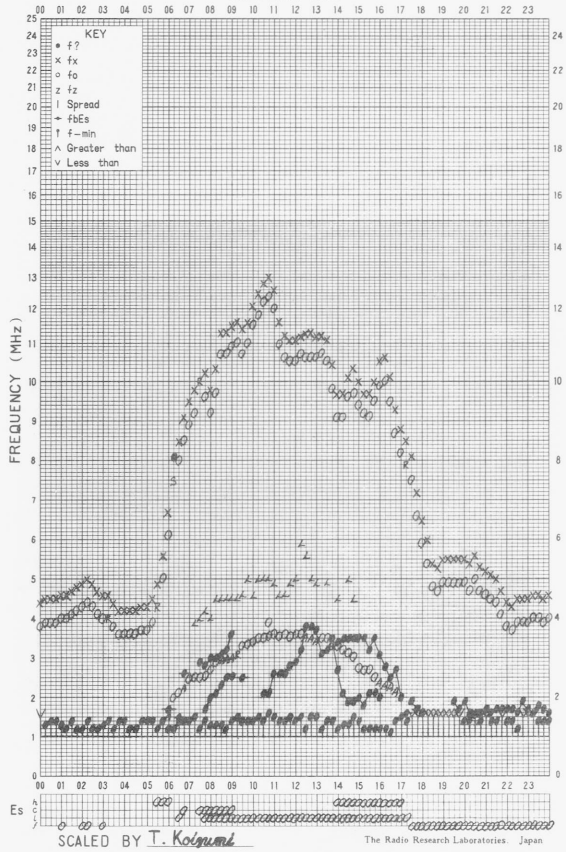

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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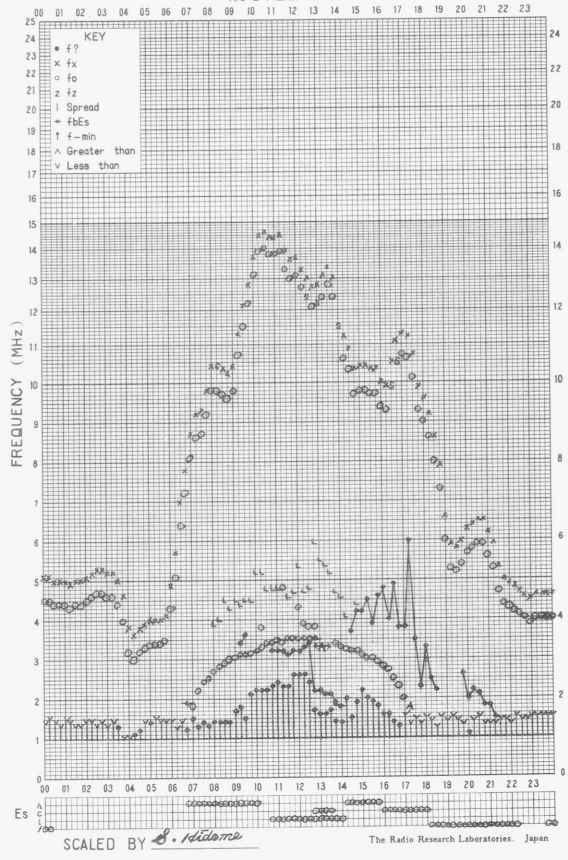
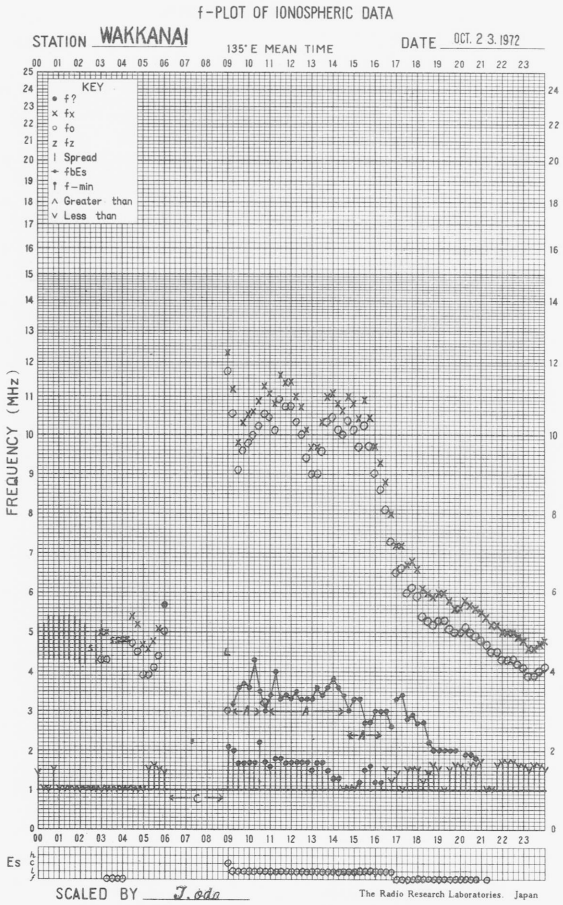


SCALED BY S. Hidaka

The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE OCT. 23. 1972
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FREQUENCY (MHz)
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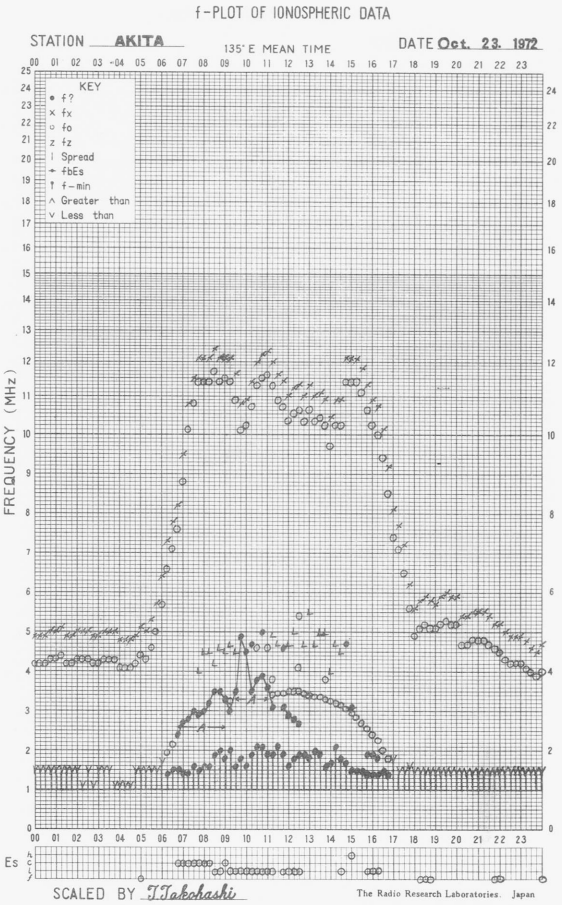
SCALED BY T. Oda
The Radio Research Laboratories. Japan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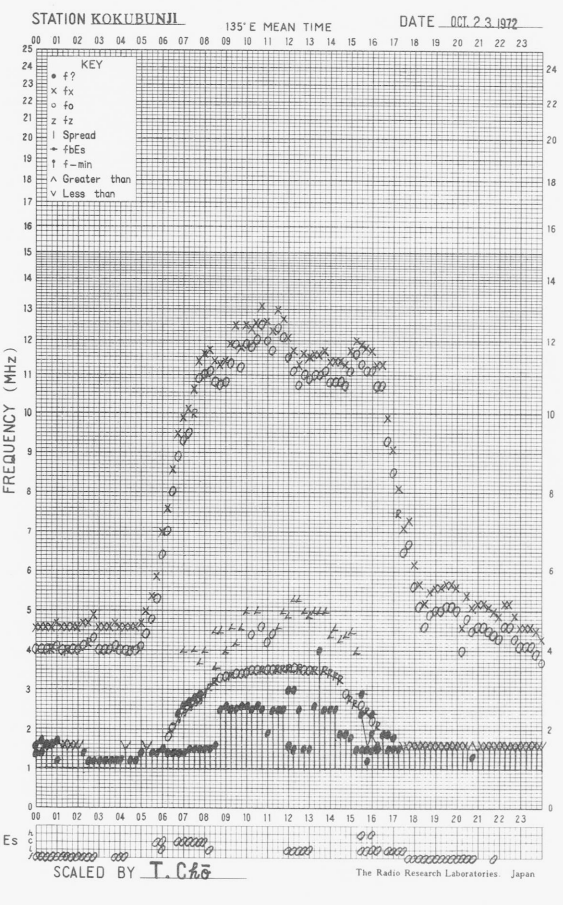
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan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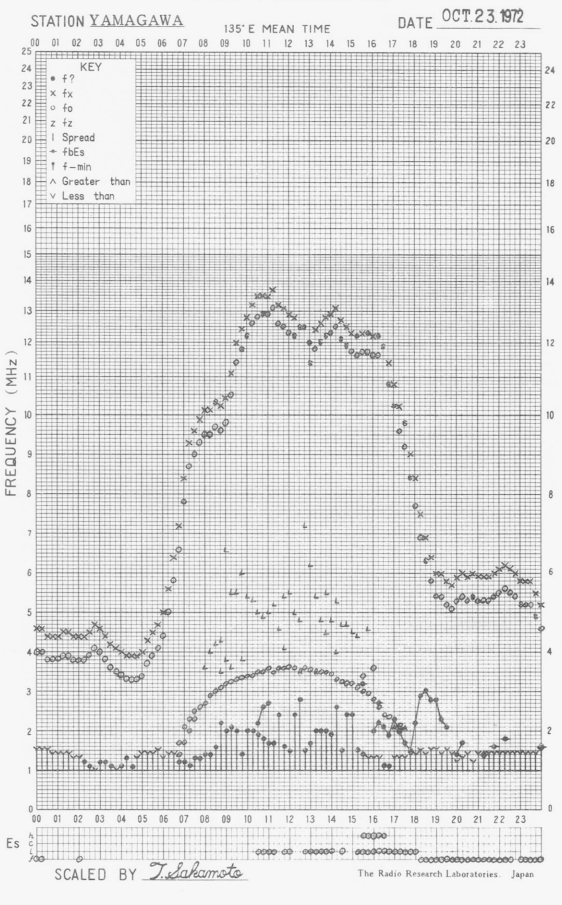
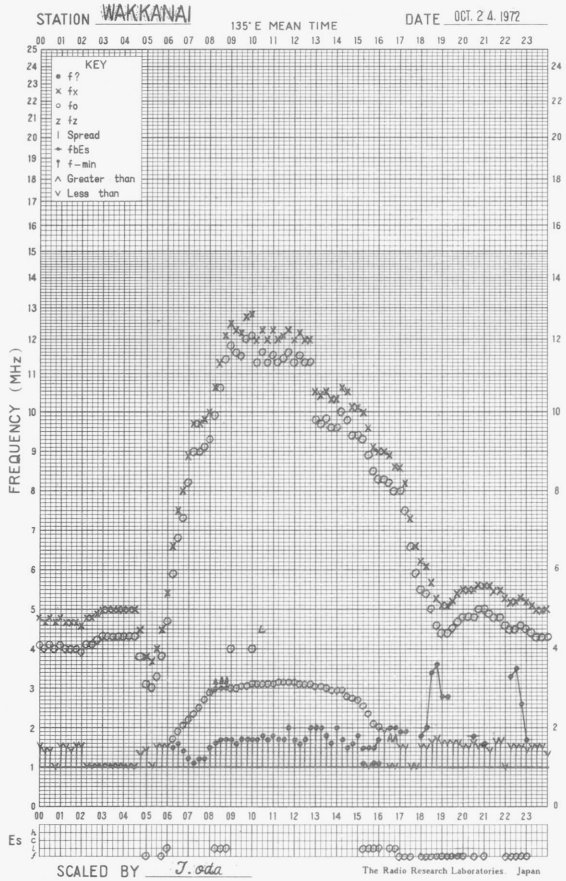
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE OCT. 23. 1972
KEY
f?
fx
fo
fz
Spread
fbEs
f-min
Greater than
Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takamoto
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 24. 1972

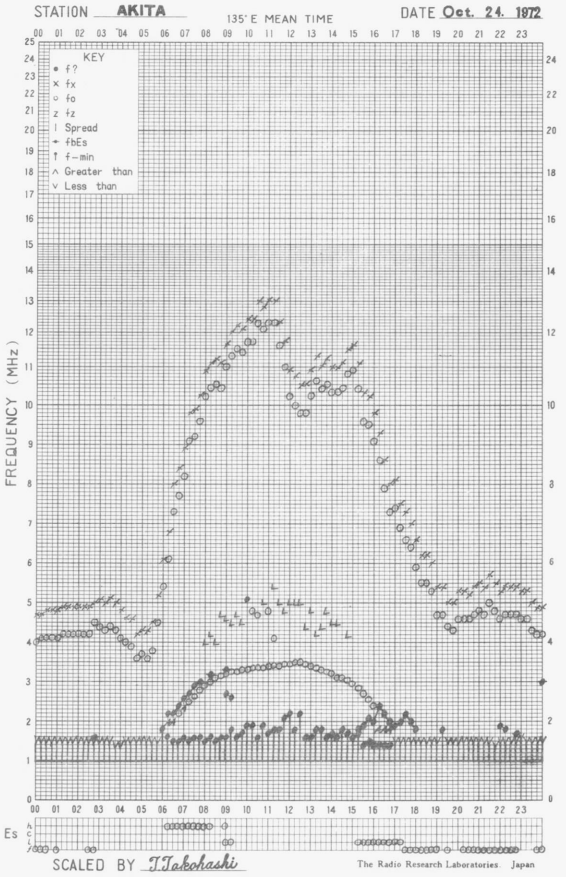


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 24. 1972

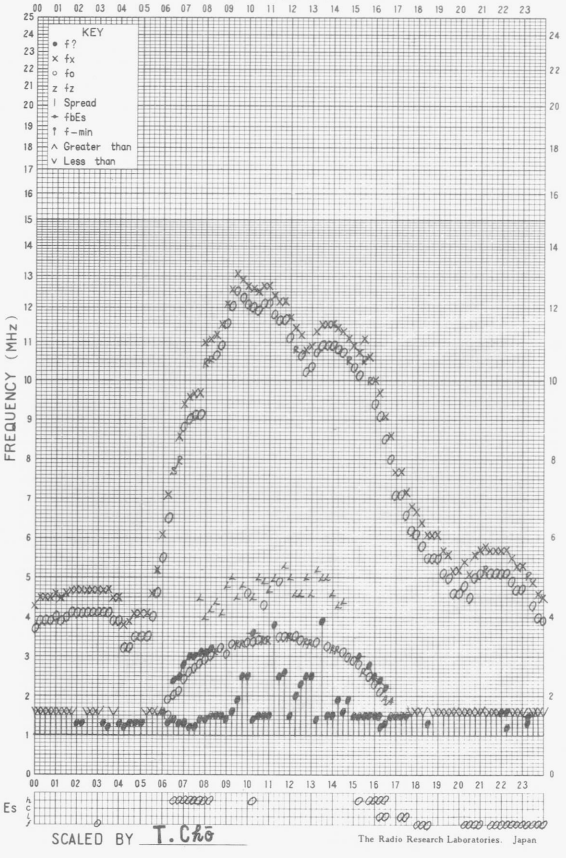


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 24. 1972

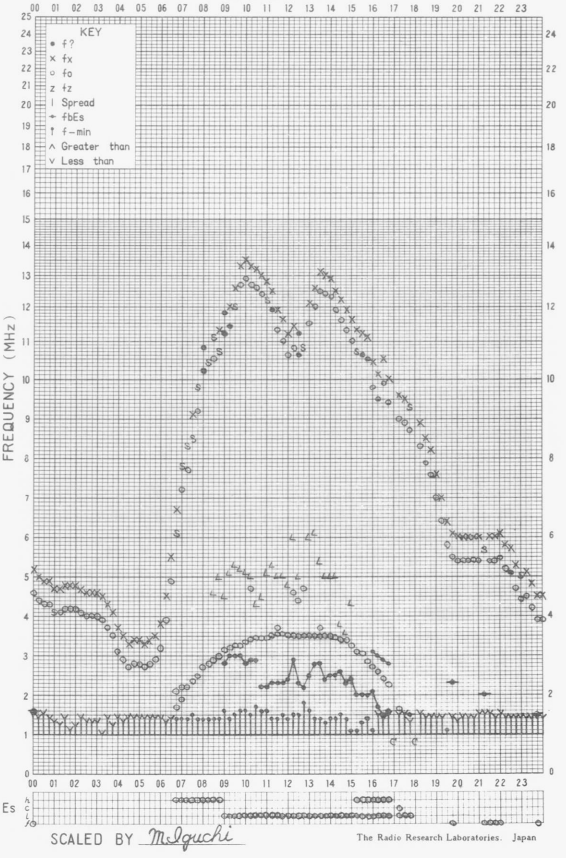


SCALED BY T. Chō

The Radio Research Laboratories. Japan

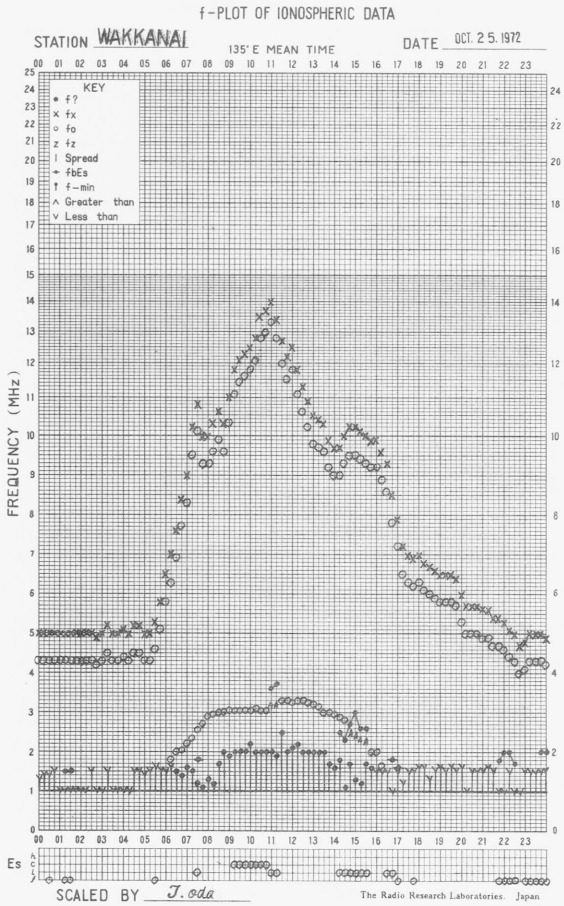
f-PLOT OF IONOSPHERIC DATA

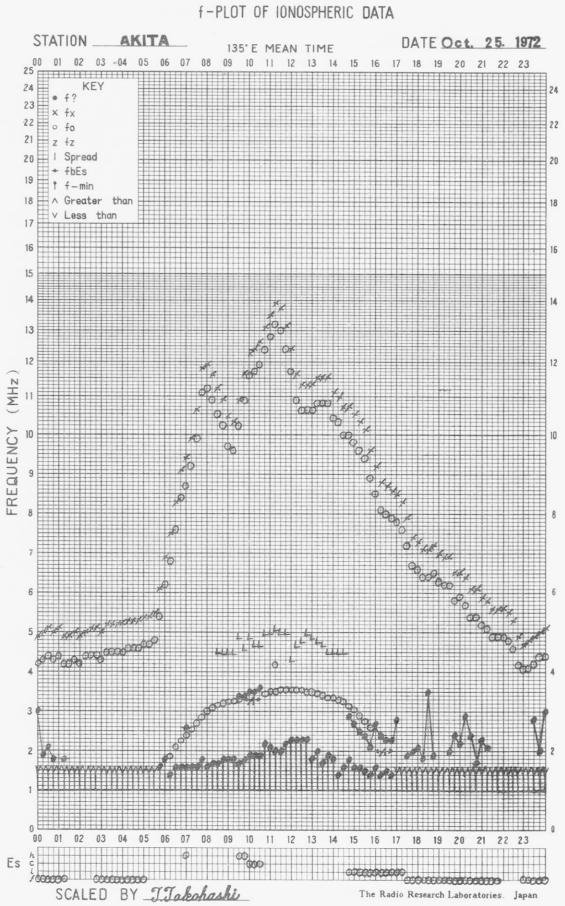
STATION YAMAGAWA 135°E MEAN TIME DATE OCT 24 1972

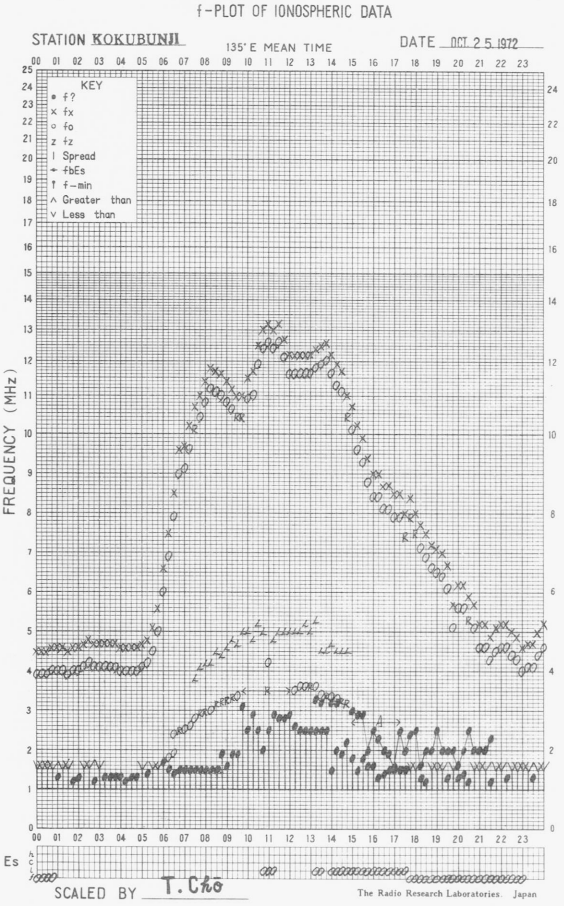


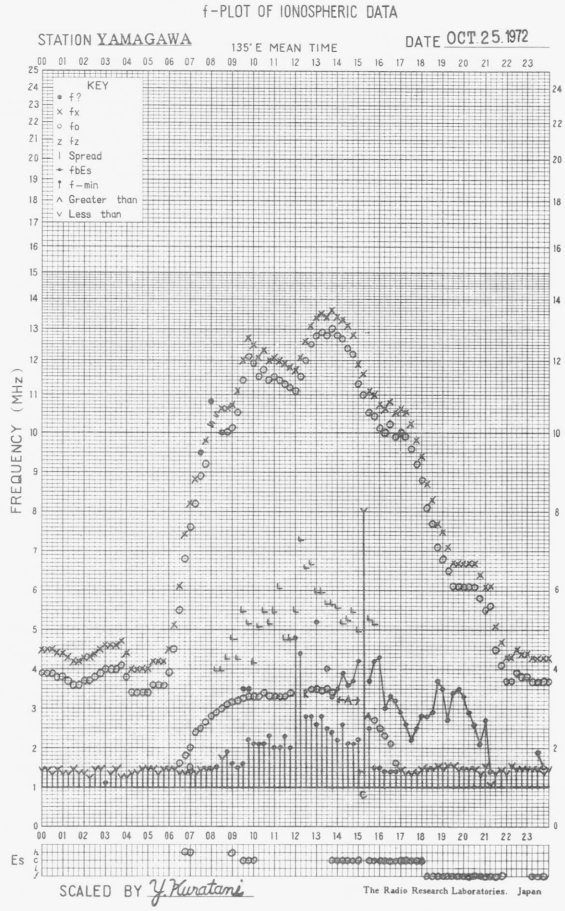
SCALED BY M. Iguchi

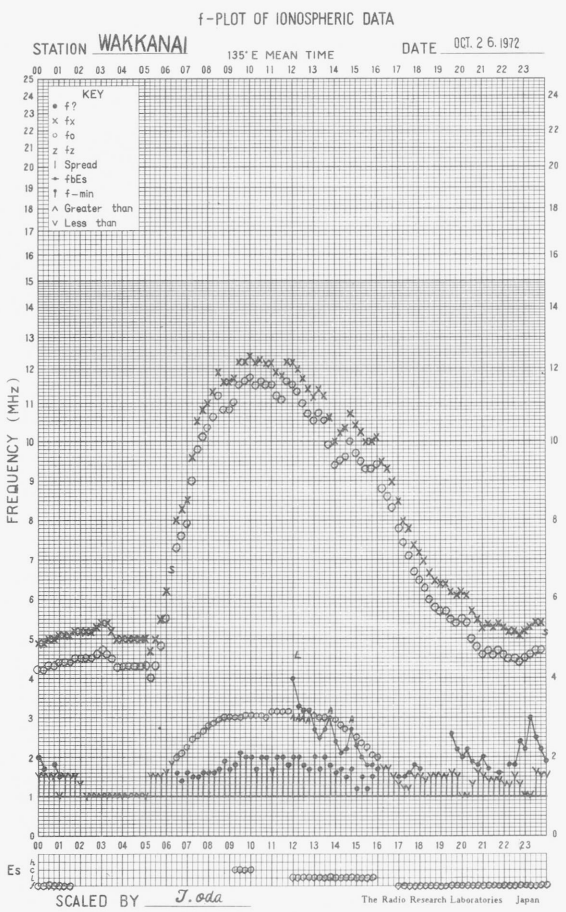
The Radio Research Laboratories. Japan

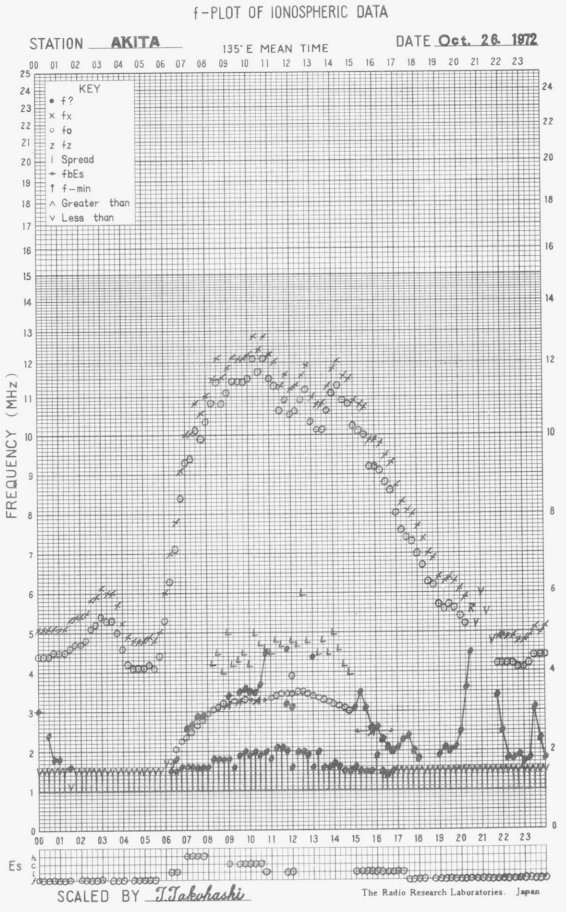

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE OCT. 25. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

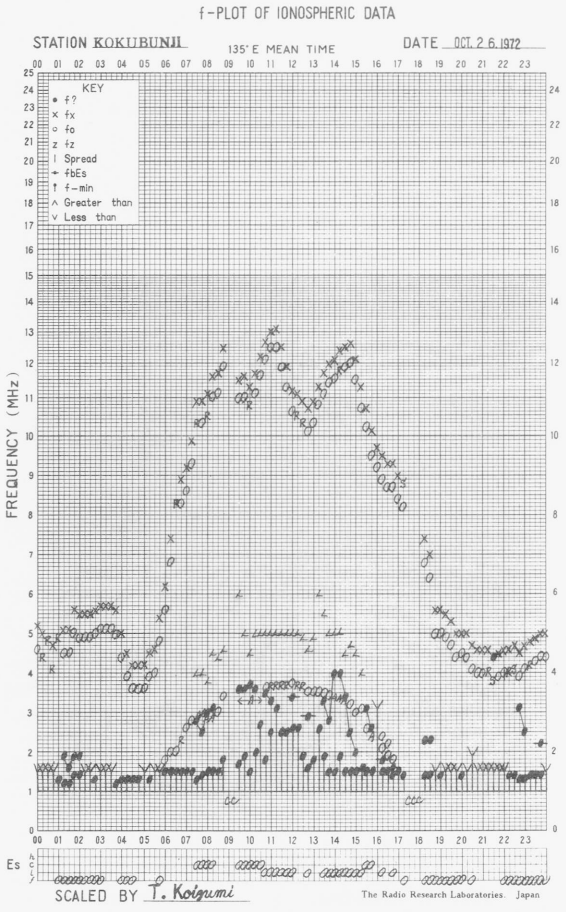

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Oct. 25. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

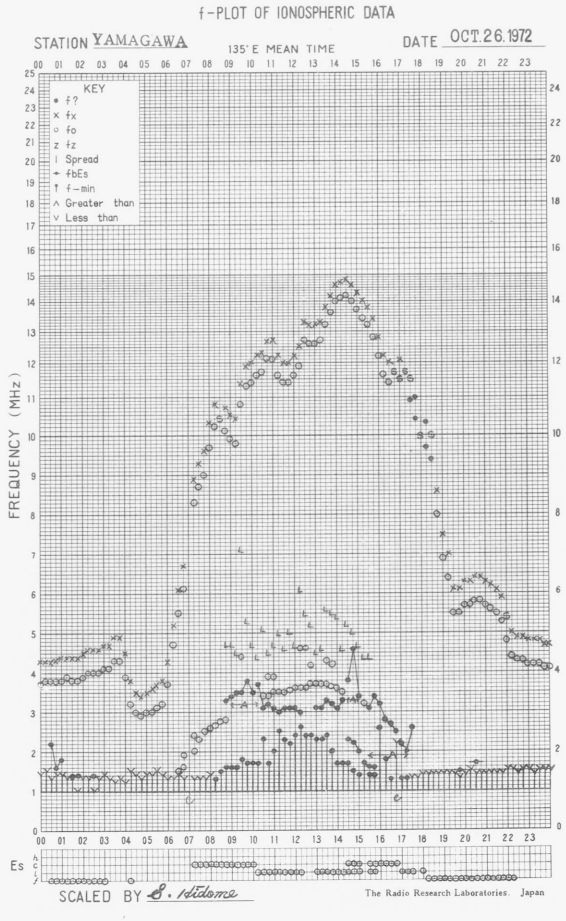

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE OCT. 25. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE OCT. 25. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY Y. Kuratani
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE OCT. 26. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories Japan

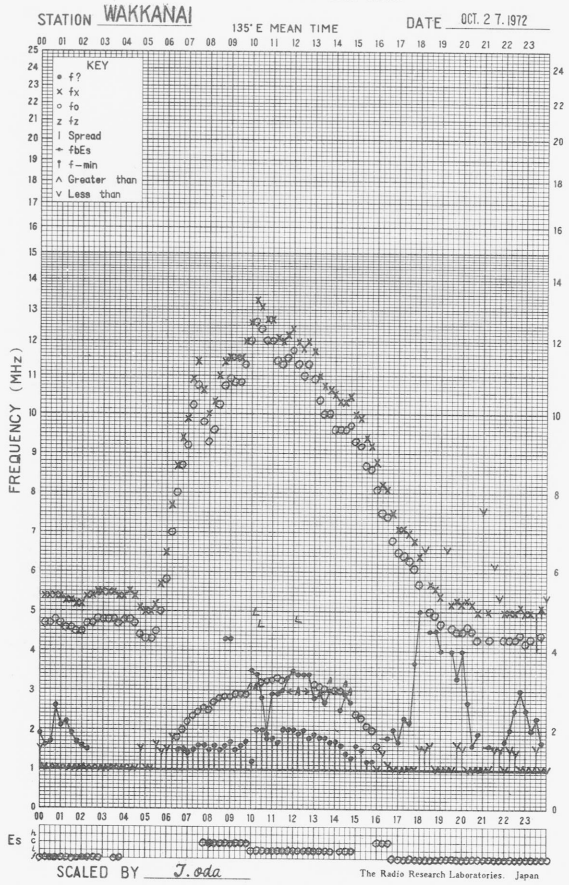

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Oct. 26. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE OCT. 26. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE OCT. 26. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Ishioka
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 27. 1972

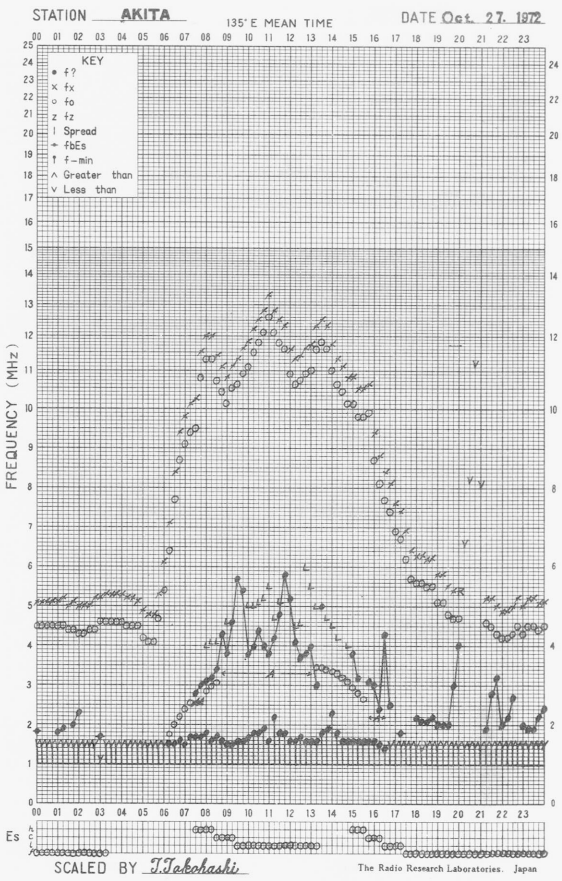


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 27. 1972

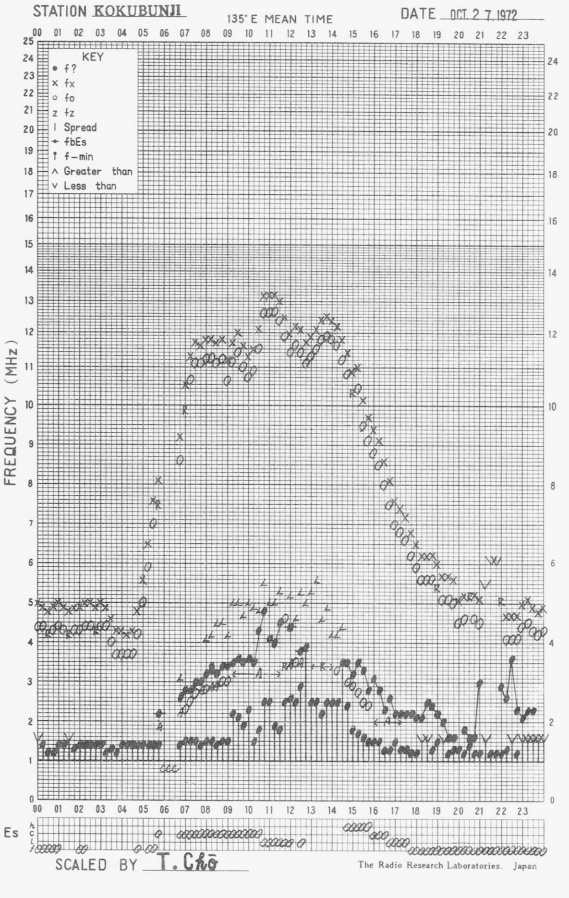


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 27. 1972

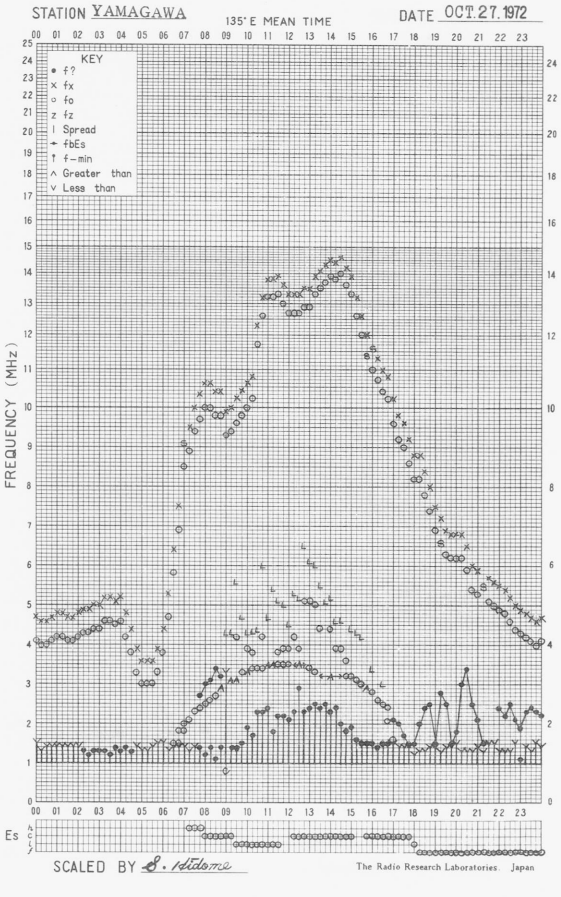


SCALED BY T. Cho

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE OCT. 27. 1972

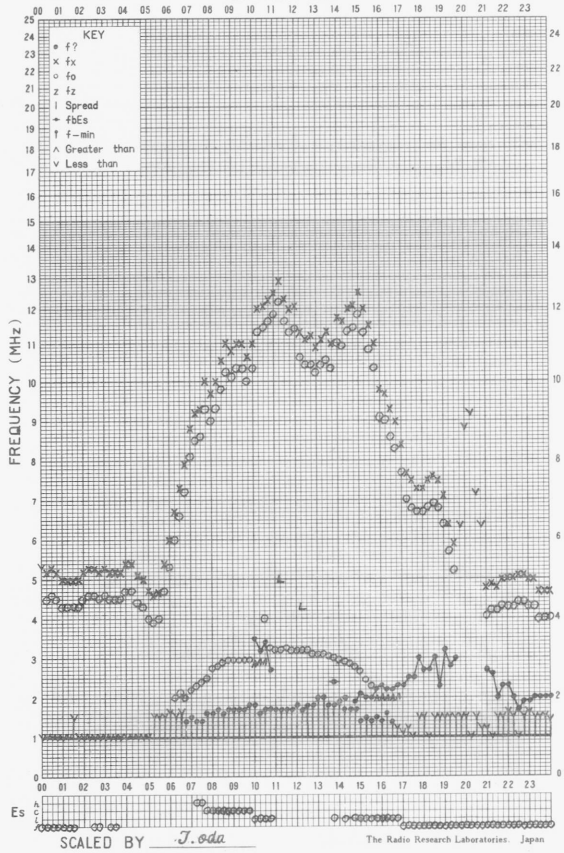


SCALED BY S. Iidaka

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 28 1972

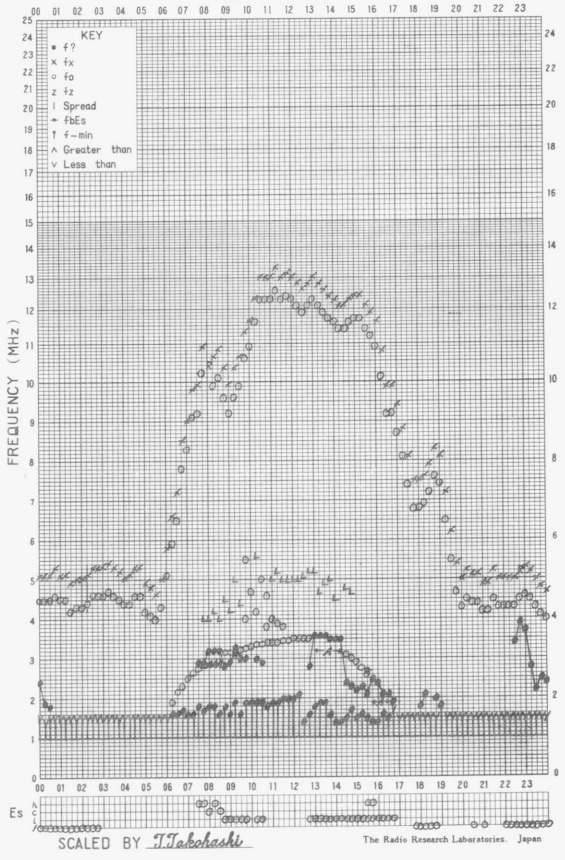


SCALED BY J. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 28. 1972

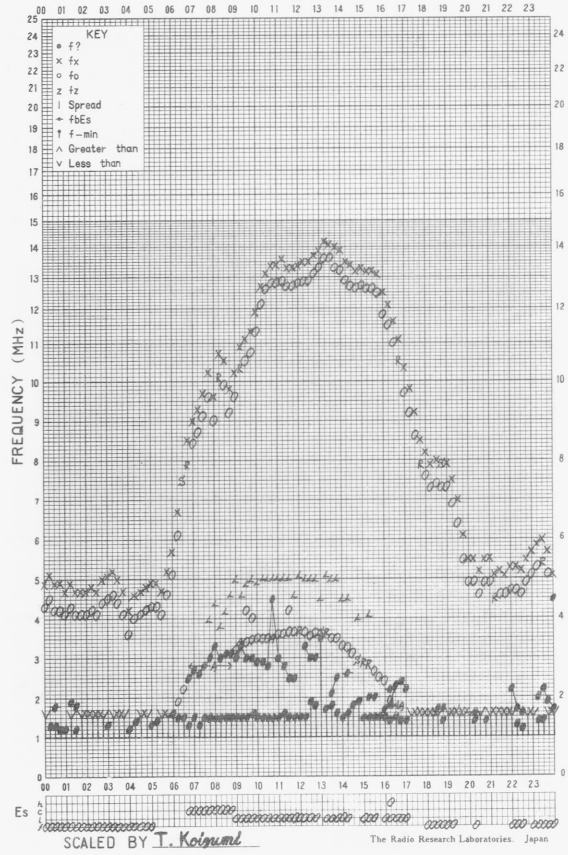


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 28 1972

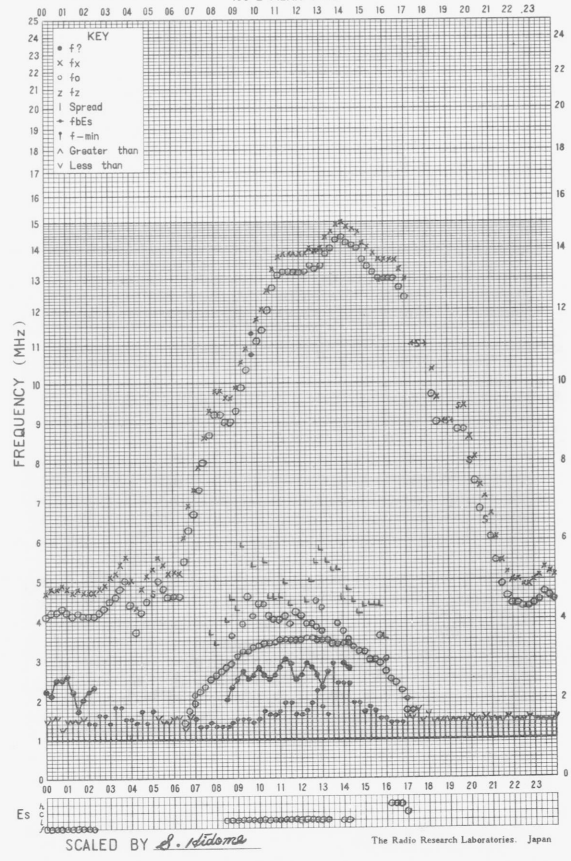


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE OCT. 28 1972

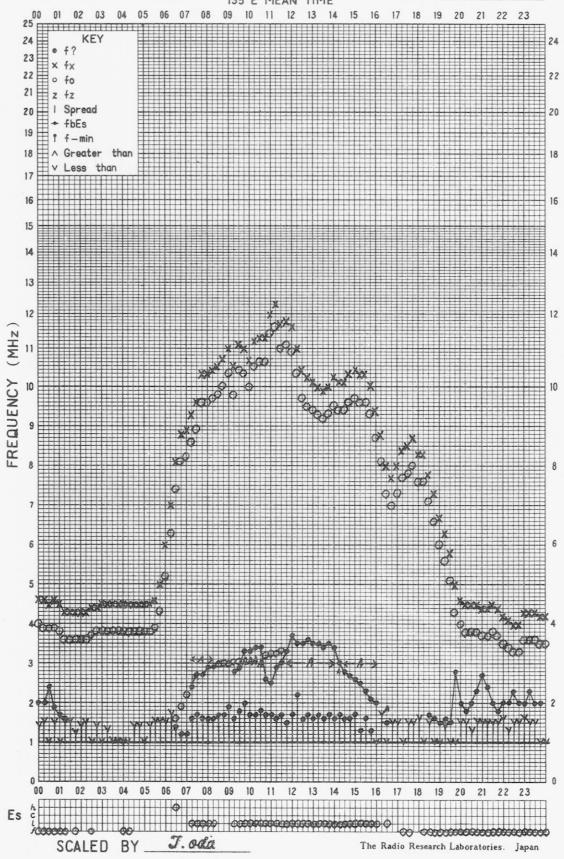


SCALED BY S. Kidoma

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 29. 1972

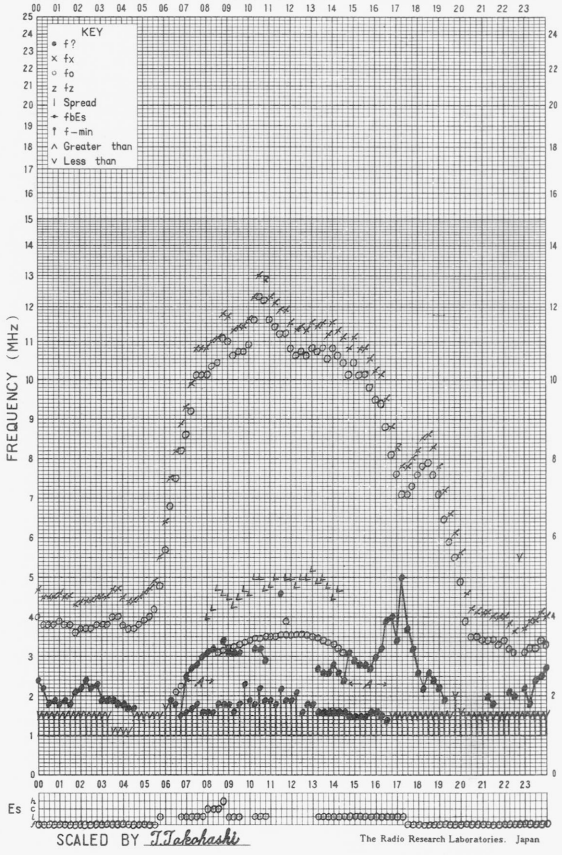


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 29. 1972

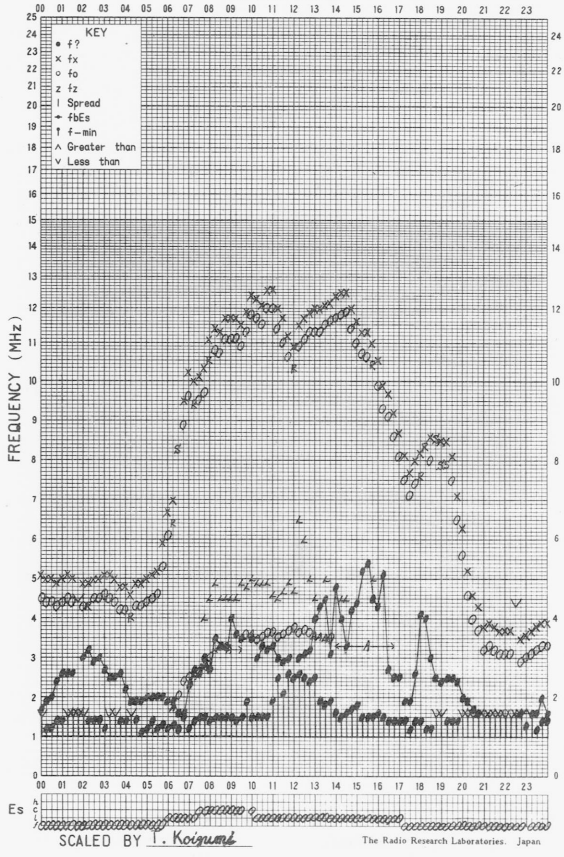


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 29. 1972

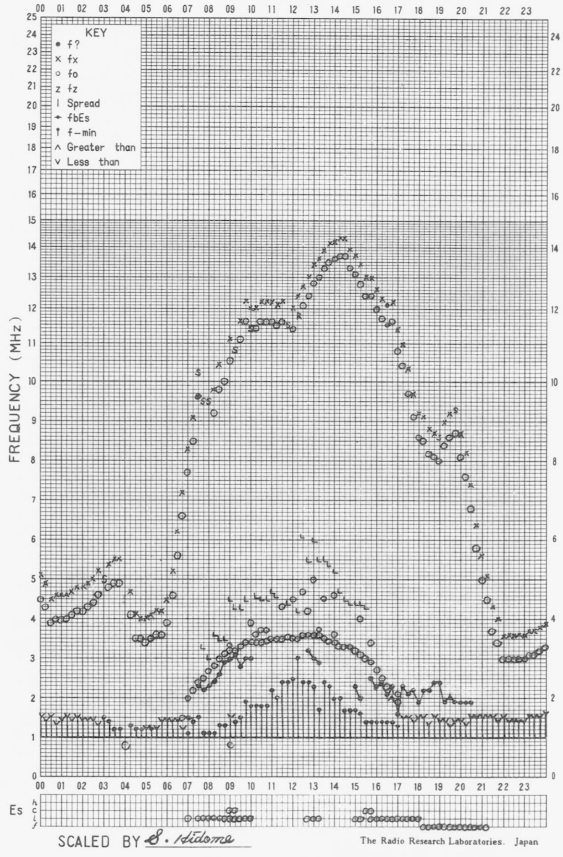


SCALED BY I. Koizumi

The Radio Research Laboratories. Japan

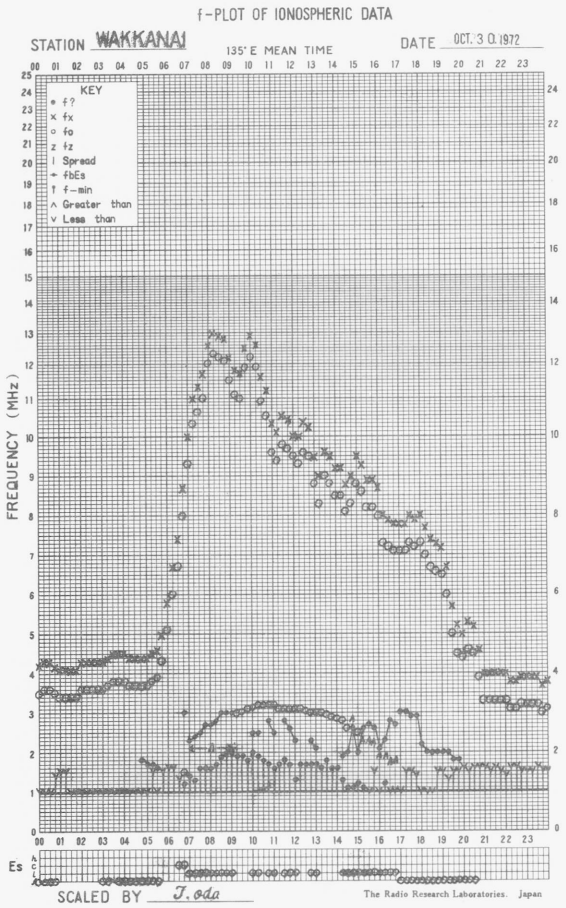
f-PLOT OF IONOSPHERIC DATA

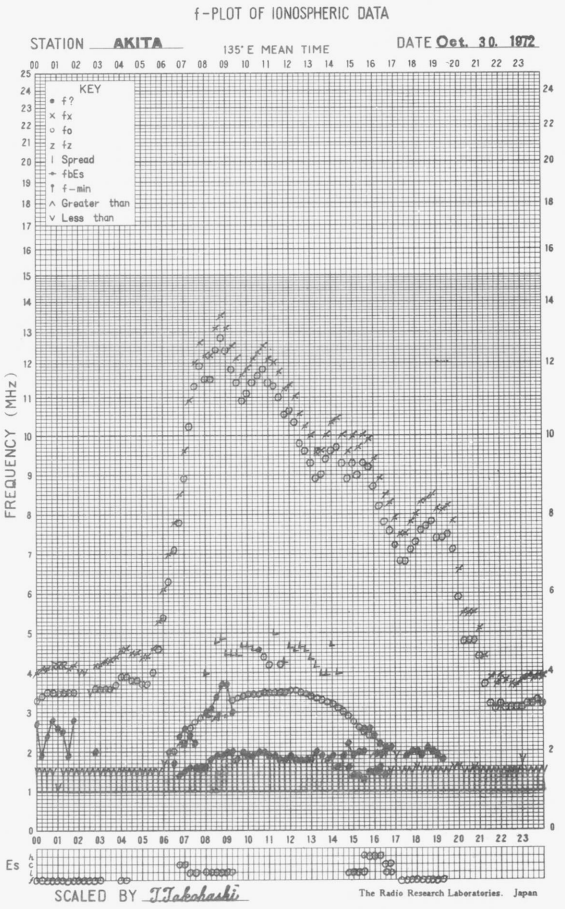
STATION YAMAGAWA 135°E MEAN TIME DATE OCT. 29. 1972

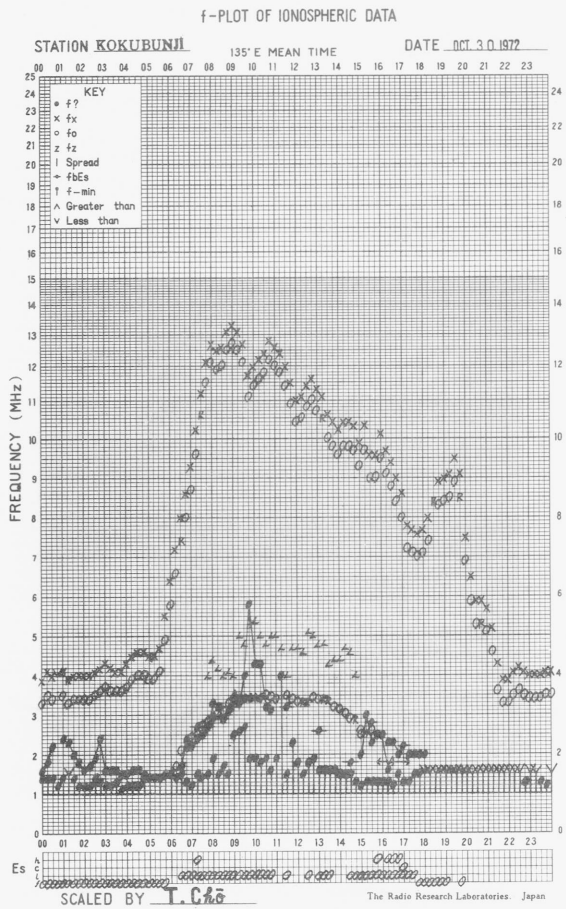


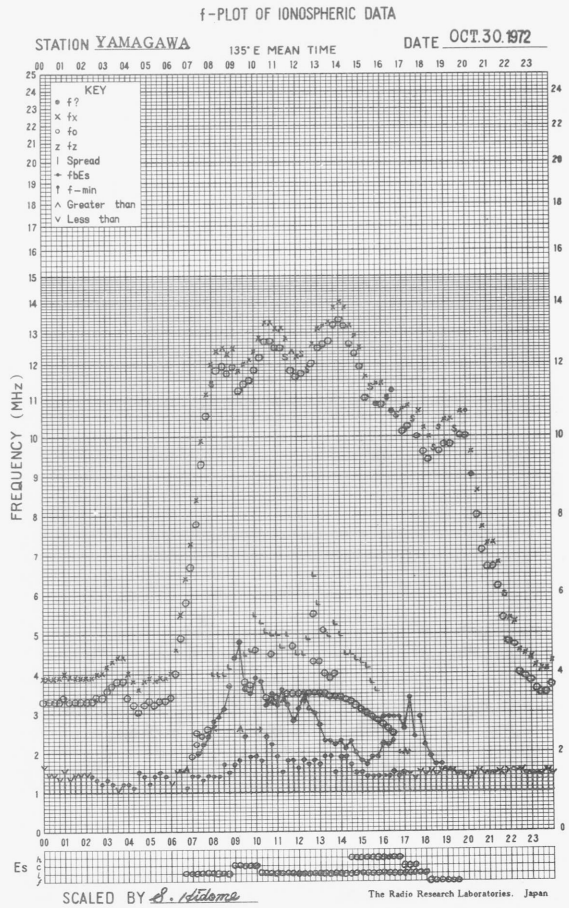
SCALED BY S. Iidoma

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE OCT. 30 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

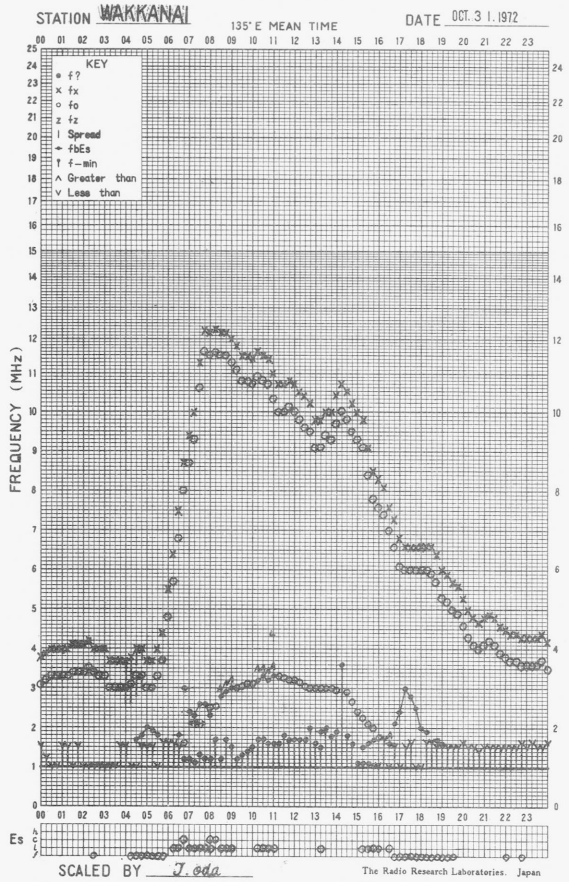

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Oct. 30. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE OCT. 30 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE OCT. 30. 1972
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Kitsuma
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE OCT. 31. 1972

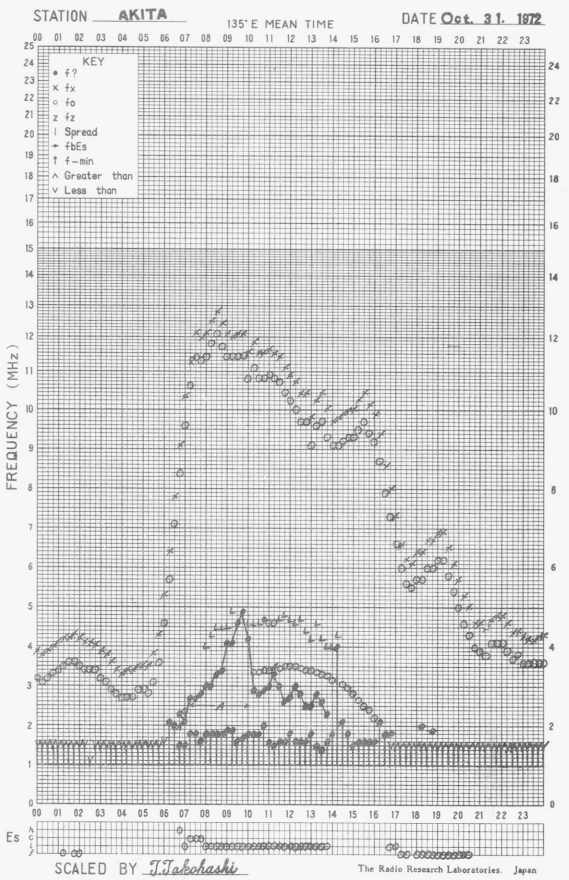


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Oct. 31. 1972

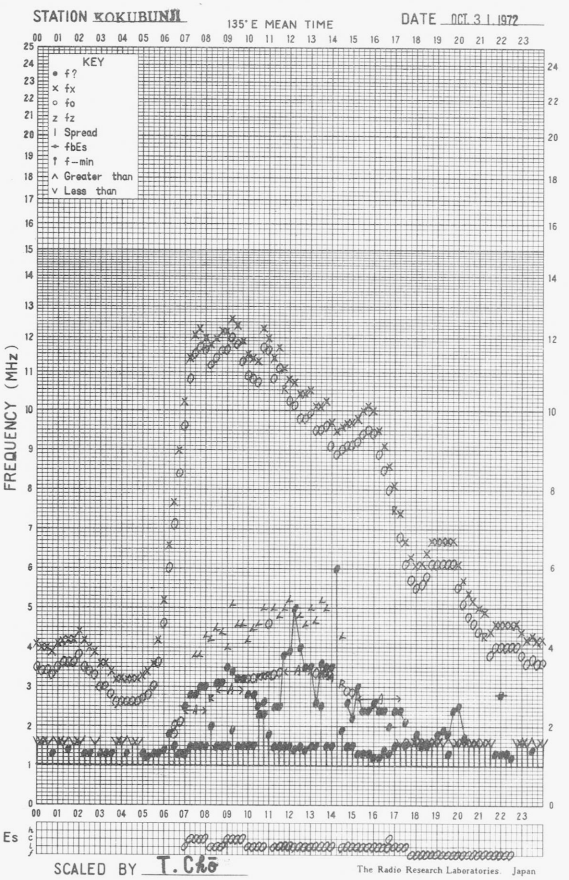


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 31. 1972

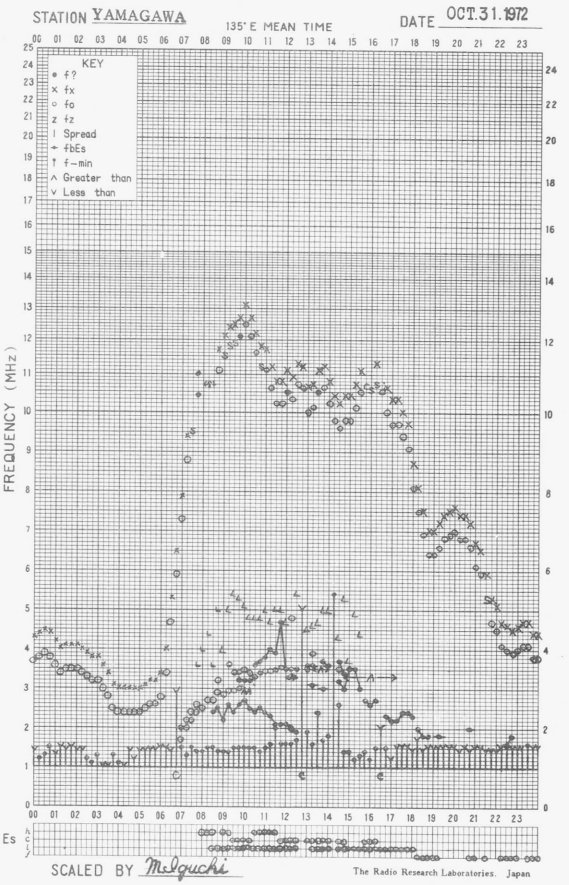


SCALED BY T. Chō

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE OCT. 31. 1972



SCALED BY Meguchi

The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: October 1972
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	7	7	5	6	6	0	0	0	0	0
2	6	6	6	5	6	0	0	0	0	0
3	5	6	6	6	6	0	0	0	0	0
4	6	7	6	6	6	0	0	0	0	0
5	6	6	5	6	6	0	0	0	0	0
6	5	q	q	-	6	0	0	0	-	0
7	6	6	6	6	6	0	0	0	0	0
8	6	6	6	6	6	0	0	0	0	0
9	7	6	6	6	6	0	0	0	0	0
10	5	5	6	6	6	0	0	0	0	0
11	5	5	q	6	5	0	0	0	0	0
12	6	6	5	6	6	0	0	0	0	0
13	6	6	6	7	6	0	0	0	0	0
14	6	6	6	7	6	0	0	0	0	0
15	6	6	6	6	6	0	0	0	0	0
16	6	6	7	7	6	0	0	0	0	0
17	7	7	(7)	6	7	0	0	(0)	0	0
18	7	7	(8)	9	7	0	0	(0)	1	0
19	8	8	(7)	9	8	1	1	(0)	0	1
20	8	7	(7)	7	8	1	0	(0)	0	0
21	9	7	(8)	8	8	0	0	(0)	1	0
22	7	9	(8)	7	8	1	1	(1)	1	1
23	8	9	(12)	11	8	1	1	(1)	1	1
24	16	15	(11)	44	14	1	1	(1)	2	1
25	100	102	(50)	17	79	1	1	(1)	1	1
26	40	29	(29)	10	29	1	1	(1)	1	1
27	12	13	(14)	69	12	1	1	(1)	1	1
28	25	13	(13)	11	33	0	0	(0)	0	0
29	8	8	(9)	32	9	1	0	(0)	1	0
30	25	21	(13)	11	25	0	0	(0)	0	0
31	9	9	(8)	10	9	0	0	(1)	0	0

Note No observations during the following periods:

6th 0755- 2400

q: quiet level, when radiometer is unstable.

SOLAR RADIO EMISSION

Flux Density

Month: October 1972
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	24	23	24	22	24
2	23	22	21	24	22
3	23	23	23	21	23
4	22	23	22	22	22
5	23	24	23	25	23
6	24	24	23	-	24
7	23	22	22	22	22
8	22	22	21	23	22
9	21	21	20	24	21
10	25	24	25	24	24
11	25	24	22	25	24
12	25	25	23	27	25
13	26	24	23	28	25
14	25	25	25	25	27
15	23	24	25	25	24
16	25	24	26	-	25
17	27	26	(27)	26	27
18	27	26	(26)	27	27
19	28	29	(28)	31	28
20	30	30	(29)	31	30
21	30	29	(30)	30	30
22	28	28	(29)	29	28
23	31	31	(33)	38	31
24	38	36	(30)	62	36
25	58	44	(40)	32	52
26	34	32	(31)	31	32
27	27	28	(28)	(32)	29
28	32	31	(32)	31	32
29	31	30	(29)	(30)	30
30	30	29	(28)	(29)	29
31	29	28	(28)	(29)	28

Note No observations during the following periods:

6th	0800-	7th	0015	29th	2210-		2320
16th	2050-	17th	0030	30th	2210-		2320
27th	2210-		2250	31st	2210-		2320

Distinctive Events

(single-frequency observations)

Month: October 1972
Observing station: Hiraiso
Normal observing period: 2050 - 0810 (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	
1	500	0438.0	0438.0	0.5	eC	130	30	
	200	0438.0	0438.0	0.3	eC	240	120	
		0439.5	0440.5	1.8	C	960	230	
	500	0440.0	0440.7	1.0	C	45	5	
	100	0440.0	0440.6	3.5	C	100	30	P: lr
7	100	2233	2250.5	46	C	120	20	P: lrl
	500	2245.0	2259.3	21	RF	30	10	
	200	2248.0	2250.0	15	C	20	5	
	100	2340	2354	46	RF	20	7	P: L
19	200	0456	0515	45	RF	70	5	
	100	0500	0518	80	Ns	40	10	P: R
	500	0504.5	0516.5	30	RF	40	10	
20	100	0718.4	0721.0	19	C	220	50	P: r
	200	0720.5	0721.0	1.5	C	450	60	
	500	0720.5	0721.6	1.5	C	190	45	
23	500	0237	0510	180	RF	15	3	
	100	2116.7	2117.0	1.0	S	200	70	P: lr
	200	2116.8	2117.0	0.5	C	580	70	
	500	2136.0	2225.7	106	RF	50	10	
	200	2241.0	2241.7	1.0	C	150	50	
	100	2241.5	2241.7	1.0	S	60	20	P: lr
24	100	0021.8	0022.0	1.0	eS	55	15	P: lr
		0524.8	0524.9	1.0	eS	180	40	P: lr
		0631.8	0631.8	1.4	eS	140	40	P: lr
		<2050	0110	>700	Ns	190	60	P: R
	200	<2050	0040	>700	Ns	170	80	**
	500	2342.0	2342.3	1.0	C	620	85	
25	500	0504.0	0504.4	0.8	S	35	15	
	100	0631.0	0632.8	2.5	C	230	150	P: r
	200	0632.0	0632.5	2.0	C	610	120	
	500	0632.6	0632.6	1.0	C	350	65	
	200	<2050	0040	>700	Ns	200	30	**
	500	2157.5	2157.7	0.7	C	20	8	
	200	2327.0	2327.6	2.5	C	360	90	
	100	2327.2	2327.4	1.5	C	150	60	P: lrl
	500	2327.5	2328.0	1.0	C	30	20	
	200	2340.0	2340.2	2.0	C	820	130	

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}Hz^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
26	100	0027	0057	90	Ns	120	30	P: R
	200	0201.0	0201.8	3.0	C	590	170	
		0249.0	0250.5	3.0	C	1000	280	
	100	0455	0553	90	Ns	90	35	P: R
		2136	(2143.2)	14	C	(200)	(50)	P: r, * 2145-47
	500	2143	2145.0	7.5	C	25	5	
	200	2144.0	-	6.5	C	-	-	* 2145-47
27	100	(0001.0)	(0001.2)	$\geq$2.5	C	(210)	(90)	P: r, * 0000-01
		0309.0	0310.1	3.0	C	230	80	P: rlr
	200	0309.0	0310.0	1.5	C	860	150	
	500	0309.7	0310.0	2.0	C	50	20	
	100	<2050	2332	>310	Ns	160	60	P: R
28	100	0644	(0644.6)	4.0	C	(300)	(80)	P: lrl, * 0645.3-46.7
	500	0644.8	0645.0	1.5	C	120	20	
	100	<2050	2330	>520	Ns	17	10	P: L
29	200	0031	0041.0	18	F	4500	-	
	500	0037	0038.0	5.0	C	95	20	
	100	0039.2	0040.2	2.3	C	150	60	P: r
	500	0222.7	0222.9	0.5	C	55	25	
	100	0228.5	0229.2	3.0	C	120	50	P: r
	200	0340.5	0340.9	1.0	C	60	30	
		0343.2	0344.0	1.3	C	300	90	
	100	0358.7	(0359.8)	$\geq$1.3	C	(250)	(180)	P: rl, * 0400-01
	200	0358.8	0359.5	1.2	C	3500	680	
	100	0554.7	0554.9	1.0	S	85	40	P: r
		0709.8	0710.3	1.2	C	70	20	P: r
		0711.0	0711.8	1.5	C	80	30	P: r
		<2050	2256	>700	Ns	120	50	P: lr
		2249.5	2250.0	2.0	C	220	140	P: l
30	500	0328.7	0328.7	1.0	eC	710	90	
	200	0516.0	0516.2	1.5	C	410	140	
	100	0516.3	0516.8	1.5	C	240	130	P: lrl
	500	0517.0	0517.2	0.5	C	100	50	

*: interrupted by calibration.

**: Flux duplicates in steady flux.

P: polarization.

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

OCT 1972 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	-2	3	2	5	8	2	-8	ES -9	ES -11	ES -8	ES -7	ES -8	ES -7	ES -6	5	-2	3	1	-2	-6	-1	3	0	3
2	2	4	4	8	2	-5	ES -7	ES -9	ES -8	ES -8	ES -5	ES -7	ES -11	ES -3	-2	-16	ES -16	ES -16	-9	-9	2	3	3	2
3	2	2	4	2	7	ES -13	ES -13	ES -7	ES -7	ES -5	ES 0	ES -8	ES -2	ES -3	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	1	1	3	3
4	6	3	8	9	14	-4	ES -18	ES -18	ES -12	ES -14	ES -15	ES -27	ES -27	ES -5	ES -27	-6	-9	ES -27	-4	-16	4	3	4	3
5	4	8	9	17	10	-9	ES -9	ES -9	ES -7	ES -7	ES -3	ES 9	ES 6	ES 0	ES -26	ES -6	ES -6	ES -6	-2	ES -7	0	2	5	5
6	4	4	9	10	14	4	ES -10	ES -5	ES -10	ES -4	ES -1	ES -2	ES 3	ES 1	ES -27	-12	-1	3	3	-12	0	4	5	5
7	2	3	6	12	9	ES -11	ES -11	ES -3	ES -10	ES -4	ES -4	ES 2	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-1	3	4	4
8	6	9	10	10	-1	ES -8	ES -12	ES -6	ES -6	ES -4	ES -4	ES -2	ES 1	ES -10	ES -27	ES -27	-12	-12	-6	ES -27	3	5	5	5
9	5	7	3	9	ES -15	ES -27	C	C	ES -4	ES -5	ES -6	ES -4	ES -3	ES -28	-19	-5	-6	-2	-3	-10	-3	4	6	4
10	4	5	7	10	5	ES -13	ES -7	ES -4	ES -5	ES 0	ES -10	ES -8	ES -7	ES -28	-10	ES -28	ES -28	ES -28	ES -28	ES -28	2	8	6	5
11	9	9	19	16	7	ES -6	ES -5	ES -6	ES -5	ES -1	ES -5	ES -6	ES -2	ES 1	ES -7	ES -12	1	6	19	ES -27	-5	13	12	10
12	8	6	-4	ES -6	ES -13	ES -8	ES -6	ES -7	ES -1	ES -3	ES -6	ES -3	ES 1	ES 3	ES -28	ES -28	ES -28	2	-7	-11	-1	5	3	9
13	9	7	17	11	ES -16	ES -13	ES -7	ES -1	ES -1	ES -1	ES 2	ES 2	ES 2	ES 0	-4	-1	-12	4	-6	1	1	5	8	5
14	6	8	10	6	ES -11	ES -10	ES -4	ES -5	ES -2	ES -3	ES -8	ES -6	ES 2	ES 8	ES -28	ES -28	ES -28	ES -28	ES -28	-11	4	7	6	3
15	3	9	11	7	ES -7	ES -9	ES -7	ES -3	ES -3	ES -4	ES -2	ES -6	ES -9	ES -27	ES -27	ES -27	ES -27	-10	0	ES -27	0	8	5	4
16	6	8	10	ES -12	ES -9	ES -8	ES -6	ES -5	ES -4	ES -5	ES -10	ES -8	ES -8	ES -27	ES -27	ES -27	ES -27	ES -27	-9	ES -27	-1	3	3	4
17	5	9	0	ES 8	-6	4	ES -4	ES -6	ES -7	ES -7	ES -3	ES -1	ES -7	ES -13	ES -27	ES -27	ES -27	ES -27	-4	-1	1	1	1	1
18	4	9	9	14	ES -18	ES -14	ES -12	ES -12	ES -10	ES -9	ES -12	-18	ES -27	ES -1	-4	-6	-4	5	1	1	4	4	6	5
19	8	8	9	13	3	ES -12	ES -5	ES -5	ES 2	ES -4	ES -4	ES -1	ES -2	ES 4	ES -15	ES -27	ES -27	ES -27	ES -27	-10	ES -27	1	5	-1
20	0	-10	3	ES -11	ES -13	ES -13	ES -8	ES -10	ES -7	ES -7	ES -5	ES -2	ES 0	ES -2	ES -26	-1	ES -17	ES -11	ES -15	ES -13	-5	6	4	5
21	2	3	-8	1	ES -5	-10	ES -11	ES -7	ES -7	ES -5	ES -2	ES -3	ES -3	ES -10	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-9	4	3	0
22	1	1	9	-6	ES -6	ES -9	C	-9	ES -6	ES -4	ES -3	ES 1	ES -1	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-5	3	1	0
23	-1	1	7	-3	ES -12	ES -6	ES -5	ES -5	ES -5	ES -5	ES -10	ES -7	ES -4	ES -5	ES -5	ES -27	ES -27	ES -27	ES -7	ES -14	-5	1	0	2
24	2	5	6	6	ES -15	ES -10	ES -8	ES -6	ES -7	ES -7	ES -8	ES -12	ES -4	ES 4	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-4	0	0	0
25	-1	3	3	1	ES -12	ES -9	ES -9	ES -5	ES -9	ES -2	ES -15	ES -2	ES -4	ES -7	ES -27	ES -27	ES -27	ES -27	-12	ES -27	-4	-2	-1	0
26	1	5	4	-1	ES -4	-10	ES -5	ES -6	ES 0	ES -3	ES -7	ES 0	ES 0	ES -2	-8	-16	ES -27	ES -27	ES -27	-21	-5	0	4	4
27	4	7	6	11	-5	ES -12	ES -6	ES -5	ES -3	ES -5	ES -1	ES 5	ES 0	ES -8	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-3	3	3	1
28	3	5	9	8	9	ES -16	ES -7	ES -2	ES -4	ES -5	ES 3	ES -8	ES -3	ES -4	-2	ES -27	ES -27	ES -27	ES -27	ES -27	-7	3	3	3
29	4	4	15	3	ES -7	ES -11	ES -7	ES -5	ES -4	ES -4	ES 3	ES -9	ES -16	ES -16	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-2	1	2	2
30	-1	4	7	ES -7	ES -7	ES -12	ES -7	ES -2	ES -6	ES -6	ES -3	ES -5	ES -27	ES -27	ES -27	ES -27	ES -27	ES -18	ES -5	ES -8	-9	3	1	-1
31	4	5	2	5	ES -2	ES -17	ES -6	ES -4	ES -4	ES -5	ES -4	ES -1	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	4	4	1	7
CNT	31	31	31	31	31	31	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	4	5	7	US 7	ES -5	ES -10	ES -7	ES -6	ES -6	ES -5	ES -4	ES -4	ES -3	ES -5	ES -27	ES -27	ES -27	ES -27	US -9	ES -21	-1	3	3	3
UD	8	9	15	14	10	2	ES -5	ES -2	ES -1	ES -1	ES 2	ES 2	ES 2	ES 4	-2	-2	-1	4	1	-1	4	8	6	7
LD	-1	1	0	ES -7	ES -15	ES -16	ES -12	ES -10	ES -10	ES -8	ES -12	ES -12	ES -27	ES -27	ES -27	ES -28	ES -28	ES -27	ES -27	ES -27	-9	0	0	0

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

OCT 1972 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	-7	-3	1	5	2	13	18	8	-3	4	ES -7	ES -8	ES -2	ES -27	ES 1	ES -18	ES -18	ES -27	ES -27	2	0	-1	-2	-6
2	4	-6	-3	4	11	14	12	17	3	-1	-3	ES -8	ES -5	ES -28	ES -3	ES -28	ES -16	-4	ES -22	-2	5	2	-3	-2
3	-3	1	-2	4	12	15	17	17	9	3	ES -2	ES -4	ES -3	ES -27	ES -10	ES -27	ES -27	ES -27	ES -27	-2	9	4	-6	0
4	-2	0	2	9	13	14	16	5	17	6	ES -18	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	4	3	2	4	3	-1	-1
5	4	5	7	6	14	15	14	20	8	-1	ES 2	ES 5	ES -2	ES -26	ES -6	ES -6	ES -6	ES -6	ES -7	8	6	5	-1	-1
6	-1	-4	3	4	9	19	15	19	14	3	ES 4	ES 4	ES 1	ES -27	ES -27	ES -15	ES -7	ES -7	ES -27	8	7	3	-1	-5
7	-4	-2	2	9	11	17	13	8	13	3	ES -4	ES 0	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	8	4	3	-4	5
8	-6	2	3	9	10	3	-5	ES -4	3	3	ES -4	ES 1	ES -4	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	4	4	5	0	0
9	-2	3	5	6	14	17	C	ES -7	0	ES 2	ES -6	ES -4	ES -11	ES -28	ES -28	ES -28	ES -28	ES -28	-16	2	2	5	3	2
10	2	0	7	8	14	15	9	ES -4	ES -2	ES -5	ES -10	ES -6	ES -7	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-1	11	4	-1	5
11	-1	4	8	9	15	15	20	10	9	3	ES -3	ES -1	ES -5	ES -10	ES -7	ES -6	ES -27	8	-2	6	11	5	3	3
12	-1	2	8	12	8	18	9	4	ES 0	ES -2	ES -3	ES -3	ES 1	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	8	8	4	ES -1
13	0	8	8	11	14	-9	ES -4	ES -1	ES 3	ES 3	ES 2	ES 2	ES 6	ES -27	ES -27	ES -27	ES -27	ES -18	-12	4	5	4	-1	3
14	4	1	5	9	12	18	19	8	1	ES -2	ES -5	ES -5	ES 1	-13	ES -28	ES -28	ES -28	ES -28	ES -28	3	7	5	-2	-2
15	1	-1	8	12	12	16	ES -3	ES -3	ES 2	ES -3	ES -2	ES -9	ES -6	ES -27	ES -27	ES -27	ES -27	-4	ES -27	4	6	9	-2	0
16	0	4	4	13	16	14	3	12	ES -1	ES -7	ES -5	ES -5	ES -10	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	8	8	5	6	0
17	0	3	9	8	14	7	3	-2	ES -7	ES -5	ES -1	ES -5	ES -7	ES -27	ES -27	ES -27	-3	-2	-3	4	8	7	1	2
18	-2	1	3	11	14	9	9	4	3	-7	ES -12	ES -12	ES -27	ES -27	ES -18	ES -27	ES -27	-4	8	3	5	9	6	-1
19	3	3	8	9	13	16	15	9	0	ES 3	ES 4	ES -1	ES 0	0	ES -27	ES -27	ES -27	ES -27	7	0	11	5	4	4
20	2	3	3	9	12	12	14	13	3	-4	ES 2	ES 2	ES 0	ES -26	-5	ES -17	-11	0	2	1	4	6	0	0
21	1	1	-4	4	13	18	16	10	14	-1	ES -5	ES -2	ES -1	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	3	1	3	-5	-1
22	-2	6	C	10	11	16	-3	2	1	ES -1	ES -1	ES -3	ES -12	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	3	8	5	4	-12
23	1	3	0	13	14	18	19	9	ES -3	ES -7	ES -5	ES -4	ES -1	ES -1	ES -7	FS -7	ES -27	ES -27	ES -27	0	8	15	3	3
24	3	8	4	7	13	14	8	27	3	ES -7	ES -3	ES -3	ES 2	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	0	4	7	-3	-3
25	ES -12	-7	-1	8	10	13	11	12	8	ES -2	ES -2	ES -2	ES 0	ES -9	ES -27	ES -27	ES -27	ES -27	ES -27	-4	4	9	5	-5
26	-5	-3	-2	6	12	18	19	19	17	ES -1	ES -1	ES -1	ES -5	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-10	7	C	-5	-1
27	-3	-4	3	9	13	19	9	14	ES -1	ES -2	ES 2	ES 3	ES -2	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-21	8	4	1	5
28	4	5	13	17	22	24	25	28	22	20	ES 5	ES -3	ES -2	-5	-6	ES -27	ES -27	ES -27	-15	9	8	9	7	6
29	-1	8	13	15	16	21	21	15	1	10	24	ES -4	ES -7	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-1	8	8	3	1
30	-1	8	8	13	18	13	7	20	9	11	ES -1	ES -2	ES -27	ES -27	ES -27	ES -27	ES -27	ES -18	ES -5	-4	10	8	4	5
31	8	9	11	16	18	15	2	6	-1	-3	ES -1	ES -11	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	7	12	12	10	7
CNT	31	31	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31
MED	-1	2	4	9	13	15	12	9	3	ES -1	ES -2	ES -3	ES -4	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	2	7	5	0	0
UD	4	8	11	15	18	19	20	20	17	10	ES 4	ES 3	ES 1	ES -5	ES -5	ES -7	ES -7	0	3	8	11	9	6	5
LD	-6	-4	-2	4	9	7	ES -3	ES -4	ES -3	ES -7	ES -10	ES -11	ES -27	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-10	2	3	-5	ES -5

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Oct. 1972	Whole Day Index		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	5-		(4) - (5) 4	5 - - -	4 (4) - 3	N N N N			
2	4°		(4) - (5) 4	4 (4) - 3	4 (4) - 4	N N N N			
3	4°		(4) - - 4	4 (4) - 4	4 (4) - 4	N N N N			
4	4+		(4) - (5) 4	4 (5) - 4	4 (4)(5) 4	N N N N			
5	4+		(4) - - 5	4 (4) - 4	4 (4) - 4	N N N N			
6	4+		(5) - (5) 4	4 (4) - 4	4 (4) - 4	N N N N			
7	4°		(4) - - (4)	4 - - -	4 (4) - 4	N N N N			
8	4+		(4) - (5) 4	4 - - -	3 (4) - 4	N N N N			
9	4°		(4) - (5) 4	3 - - 4	4 (3) - 4	N N N N			
10	4-		(4) - (3)(4)	4 C - 4	4 (3) - 4	N N N N			
11	4°		(4) - (5)(4)	4 (4) - 4	4 (4)(5) 4	N N N N			
12	4-		(3) - (4)(4)	4 (4) - 3	4 (4) - 3	N N N N			
13	4°		(4) - (5) 4	4 (3) - 4	4 (3) - 4	N N N N			
14	4-		(4) - - 3	4 (4) - -	4 (4) - 4	N N N N			
15	4-		4 - - 4	3 - - -	4 (3) - 4	N N N N			
16	4-		(3) - - 4	3 (4) - 4	4 (4) - 4	N N N N			
[17]	4-		(4) - - (4)	3 (4) - 4	4 (3)(5) 4	N N N N			
[18]	4°		(4) - (5)(4)	4 (4) - 4	4 (4)(5) 4	N N N N	17.46	---	126γ
[19*]	4-		(4) - - (4)	4 (4) - 2	4 (4)(5) 4	N N N N	---	22	
20	4-		(3) - (4)(4)	3 (4) - -	4 (4)(5) 4	N N N N			
21	4-		(3) - - (4)	4 (4) - -	4 (4) - 4	N N N N			
22	4-		(3) - - 4	4 - - (4)	4 (3) - 4	N N N N			
23	4°		(4) - - 4	4 (4) - 4	4 (4) - 4	N N N N			
24	4-		(4) - - 4	4 (3) - 4	4 (4) - 4	N N N N			
25	4-		(4) - - 4	3 (4) - 4	4 (4) - 4	N N N N			
26	4°		(4) - (4) 4	4 (4) - 4	4 (5) - 4	N N N N			
27	4°		(4) - - 4	4 (4) - 4	4 (4) - 4	N N N N			
28	4-		(4) - - 3	4 (4) - -	5 (5)(5) 5	N N N N			
29	4-		(4) - (3) 4	(4) - - -	5 (5) - 4	N N N N			
30'	4-		(4) - - 4	3 (3) - 4	4 (4) - 4	N N N N			
31	4-		(4) - - 4	4 (2) - (4)	4 (4) - 5	N N N N	16.54	---	

GEOALERT

" = PROTON FLARE
* = MAGSTORM
° = MAGCALME
' = 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.

Oct. 1972	S W F								Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	LM	HA	TO	SH							
1	15		17			04.37	26	Slow	2	04.35	×	
25		8				00.28	20	S	1-		×	
25			12			06.33	16	S	2-		×	
26		12				06.47	××	S	1	06.46	×	
29	5		10			00.35	16	Slow	1+	00.56	×	
31		8				04.18	23	G	1-		×	
31		17	19			05.00	20	Slow	2		×	

I N U B O

1972 OCT.	S P A									Remarks
	Phase Advance (degrees)						Time (U.T.)			
DATE	GBR	NAA	NWC	NPG	HA3	AL3	Start	End	Maximum	
1		20	120	27	62	43	0438	0623	0445	X
1				5	31		2038	2134	2041	X
1					7		2208	2243	2214	X
4			72				0614	0743	0622	
15	67					63	1816	1925	1822	
20	20					48	1558	1638	1607	
20	22					26	1656	1738	1711	
20	58					38	1746	1816	1751	
21			28		9		0246	0518	0313	
22			10				0412	0517	0422	
22			26				0549	0640	0557	X
22		45	54*	49*	72*	22	2301	0028	2336	
23		31	32*	7	15		0216	0306	0225	X
23			14		5		0314	0358D	0334	
23	13	15	40	7	15	17	0405	0418	0409	X
23	40		47*				0542	0621	0556	X
23				7			2024	2038	2026	X
23			6	11	9		2307	2338	2314	
24			12	9	7		0046	0130	0052	
24			8			12	0444	0524	0454	
24			32			26	0522	0623	0537	X
24			40			18	0626	0744	0634	X
24				3			2204	2218	2209	
24				7	5		2223	2244	2231	X
24		15	24	54	50	19	2245	2330	2252	X

1972 OCT.	S P A									Remarks
	Phase Advance (degrees)						Time (U.T.)			
DATE	GBR	NAA	NWC	NPG	HA3	AL3	Start	End	Maximum	
24			—	39	28	13	2338	0020	2355	
25		15	—	54	47	24	0030	0052	0034	X
25		14	—	20	30	14	0144	0206	0149	
25			—	9	18		0224	0248D	0232	
25		11	—	18	23	11	0249	0327	0258	
25			43				0757	0840	0805	
25				31	41		2058	2144	2104	X
25		10	16	23*	22		2304	2357	2307	X
26			—	7	9	14	0002	0032	0016	
26		9	6	13	15		0030	0054	0035	X
26				10	5		0100E	0127	0104	
26		18	43	20	36	19	0158	0310	0216	X
26	20	13	36	17	16	25	0311	0341	0314	X
26	85	21	60	32*	18	79	0646	0806	0652	X
26				25	21		2144	2216	2148	
27		8	4	18	16		0001	0045	0007	
27			42*	15*	23*	18	0126	0206	0144	
27			8				0501	0532	0504	
27				25	40		2048	2159	2055	X
27				5			2232	2250	2236	
28			10	7	11		0026	0102	0030	
28			6	3	4		0122	0142	0128	
28	34	35	52*	15	22	18	0420	0453	0425	X
28				3			2256	2324	2306	
29	10	12	45	30	31	18	0035	0209	0043	

1972 OCT.	S P A									Remarks
	Phase Advance (degrees)						Time (U.T.)			
DATE	GBR	NAA	NWC	NPG	HA3	AL3	Start	End	Maximum	
29	18	26	80	44	41	25	0234	0500	0309	X
29	25*	28	51*	44	39*	25*	2346	0112	2350	
30		10	12	7	7	12	0117	0208	0125	
30		15	20	10			0410	0448D	0416	X
30			27				0448E	0558	0458	
30	22		91				0708	0845	0733	X
30		16	41	45	52		2307	0020	2316	X
31	32	19	82	9	32	29	0417	0452	0432	
31	70	30	169	18	50	61	0500	0548	0509	X
31	55*					23*	1653	1821	1655	
31	52					23*	1851	1926	1854	
31				12			2041	2125	2054	
31			10	9	7		2328	2343	2334	

NOTES (1) : The letter E or D attached to a time shows that the pertinent time is earlier or more delayed than the given time, respectively.

(2) : The mark * shows a multi-peak event.

(3) : The mark ** shows a time on the day before the pertinent day.

IONOSPHERIC DATA IN JAPAN FOR OCTOBER 1972

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