

EMISSION TEST REPORT

Test Report No. : 21CE0084-YW-2

Applicant: IBM Japan Ltd.

Type of Equipment: Personal computer built in Wireless LAN card

Model No.: 1171-7WU(ThinkPad i Series 1300)

Test standard: Fcc Part15 Subpart C, Section 15.247

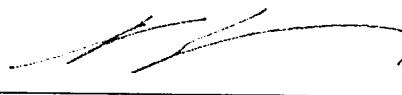
Test Result: Complies

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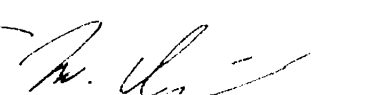
The results in this report apply only to the sample tested.

Date of test: October 31 and November 5,6,7, 2000 Issued date: November 15, 2000

Tested by:

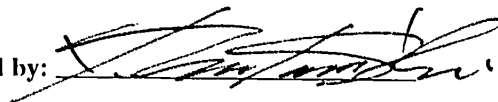


Naoki Sakamoto



Masafumi Inui

Approved by:



Kazutoyo Nakanishi

Testing Laboratory

A-pex International Co., Ltd.

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Kazutoyo Nakanishi
Section Manager of EMC section

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1 GENERAL INFORMATION

APPLICANT : IBM Japan Ltd.

ADDRESS : 1623-14 Shimotsuruma, Yamato-shi,
Kanagawa 242-8502 Japan
Tel: +81-46-215-6574
Fax: +81-46-273-7420

REGULATION(S) : Fcc Part15 Subpart C, Section 15.247

MODEL NUMBER : 1171-7WU(ThinkPad i Series 1300)

SERIAL NUMBER : AA-005LM(ThinkPad i Series 1300)

KIND OF EQUIPMENT : Personal computer built in Wireless LAN card

TESTED DATE : October 31, 2000
: November 5,6,7, 2000

RECEIPT DATE OF SAMPLE : October 30, 2000

REPORT FILE NUMBER : 21CE0084-YW-2

TEST SITE : A-PEX Yokowa No. 2 and 3 Open Test Sites

Test report

FCC ID : AN012P701Z
Our reference : 21CE0084-YW-2
Page : 4 of 13
Issued date : 2000-11-15

1.1 Tested Methodology

The measurement was performed according to the procedures in FCC/ANSI C63.4(1992).

1.2 Test Facility

The open area site measurement facilities used to collect the radiated data are located at 108, Yokowa-cho, Ise-shi, Mie-ken, 516-1106 Japan.

These sites have been fully described in reports submitted to the FCC office.

No.2 test site has filed to the FCC on October 26, 2000 as number: 90411 and is accepted by Industry Canada on February 19, 1998 as number IC2973-2.

No.3 test site has filed to the FCC on September 12, 2000 as number: 90412 and is accepted by Industry Canada on February 19, 1998 as number IC2973-3.

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Test report**FCC ID** : AN012P701Z**Our reference** : 21CE0084-YW-2**Page** : 5 of 13**Issued date** : 2000-11-15

2 PRODUCT DESCRIPTION

IBM Japan Ltd., Model 1171-7WU(referred to as the EUT in this report) is a Personal computer built in Wireless LAN Card.
The specification is as following :

Carrier frequency : Direct sequence spread spectrum.
2412 through 2462MHz (11channels / each 5MHz wide)
Antenna Type : Inverted F-figure type Antenna.(Xmit/Rev switch)
Slot Antenna.(Rev Only)
Operation Voltage : DC 3.3V
I/F : PCMCIA-bus

2.1 Test System Details

Model	FCC ID or DOC	Description	Cable description	Backshell Material
(1) IBM Japan M/N:1171-7WU S/N:AA-005LM	AN012P701Z	Wireless LAN Card	-	-
(2) IBM Japan M/N:1171-7WU S/N:AA-005LM	AN012P701Z	Notebook Computer	Unshielded DC Cable	P.V.C.
(3) IBM Japan M/N:02K6549 S/N:J15BA77954R	N/A	AC Adapter	Unshielded AC Cable	P.V.C.

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3 SYSTEM TEST CONFIGURATION

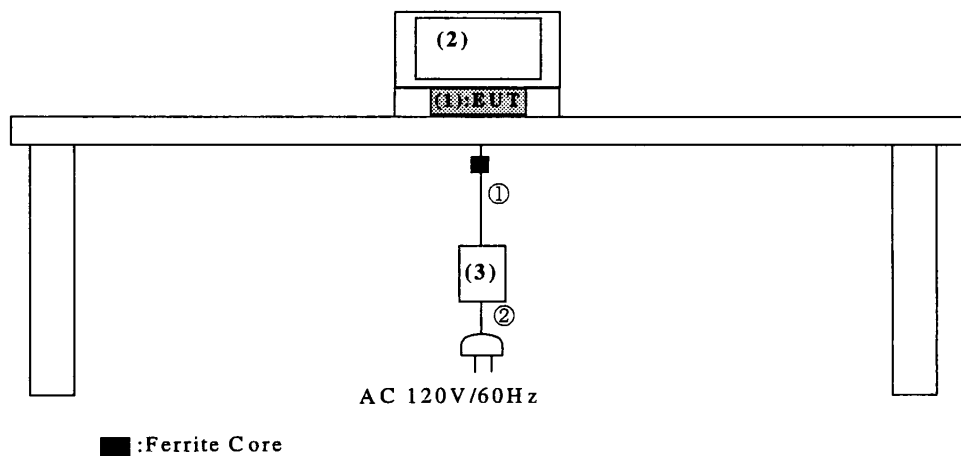
3.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

Operation mode : Data Transmitting Mode(11Mbps)
Performed the test about channels 1(low), 6(mid) and 11(high) among 11 channels of all Carrier frequencies.
Receiving mode(channel 6)
Standby mode(Conducted emission only)

* According to its specification, voltage supplied from host to this equipment is stable and hence this equipment dose not fall into FCC 15.31(e).

3.2.1 Configuration of Tested System



* Cabling was taken into consideration and test data was taken under worst case conditions.

List of cables used

No	Name	Length (m)	Shield	Remark
①	DC Cable	1.8	N	-
②	AC Cable	0.9	N	-

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4 Measurement Uncertainty

Conducted Emission Test

The measurement uncertainty (with a 95% confidence level) for this test was $\pm 2.0\text{dB}$.

- ☐ The data listed in this test report may exceed the test limit because it does not have enough margin (more than 2.0dB).
- ☒ The data listed in this test report has enough margin, more than 2.0dB.

Radiated Emission Test

The measurement uncertainty (with a 95% confidence level) for this test was $\pm 3.3\text{dB}$.

- ☒ The data listed in this test report may exceed the test limit because it does not have enough margin (more than 3.3dB).
- ☐ The data listed in this test report has enough margin, more than 3.3dB.

5 SUMMARY OF TESTS

Direct sequence spread spectrum radio system operating in the 2400-2483.5MHz bands.

5.1 Section 15.247(a)(2) Bandwidth

6dB band width > 500kHz

①2412MHz(Low) : Appendix A1(Conducted)

②2437MHz(Mid) : Appendix A2(Conducted)

③2462MHz(High) : Appendix A3(Conducted)

Summary of the test result : Pass

5.2 15.247(b) Maximum Peak Out Put Power(Radiated and Conducted)

Maximum peak output power limit 1W

Radiated:

①2412MHz(Low) : Appendix A4.5.6

②2437MHz(Mid) : Appendix A4.7.8

③2462MHz(High) : Appendix A4.9.10

Conducted:

①2412MHz(Low) : Appendix A11.12

②2437MHz(Mid) : Appendix A11.13

③2462MHz(High) : Appendix A11.14

Summary of the test result : Pass

Antenna Gain : -1.2dBi(MAX)

5.3 15.247(c) Out of Band Emissions and Restricted Band Radiation

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement. The result was also satisfied the general limits specified in Sec.15.209(a).

(Measurement range : 30MHz to 26GHz)

30MHz to 1GHz (15.209)

①2437MHz(Mid) : Appendix A15.16

1GHz to 26GHz(15.209)

②Low / Mid / High : Appendix A17. 18

③Out of Band : Appendix A19. 20. 21(Radiated)

Summary of the test result : Pass

5.4 15.247(d) Power Density(Conducted)

Power density limit 8dBm

①2412MHz(Low) : Appendix A22. 23

②2437MHz(Mid) : Appendix A22. 24

③2462MHz(High) : Appendix A22. 25

Summary of the test result : Pass

5.5 15.207 Conducted Emissions

①2437MHz(Mid)and Standby : Appendix A26 to 29

Summary of test result : Pass

5.6 15.247(e) Processing Gain

See reference Lucent Technologies Report No."015127. Rev. A"

Summary of test result : Pass

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FCC ID : AN012P701Z

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6 TEST EQUIPMENT USED

<u>Name</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Control No.</u>	<u>Calibrated Until</u>
Pre Amplifier	Hewlett Packard	8447D	AF-01	November 16, 2000
Pre Amplifier	Hewlett Packard	8449B	AF-04	November 16, 2000
Biconical Antenna	Schwarzbeck	BBA9106	BA-03	April 29, 2001
Logperiodic Antenna	Schwarzbeck	UHALP9108-A	LA-06	April 29, 2001
LISN	Rohde & Schwarz	ESH3-Z5	LS-04	November 15, 2000
Horn Antenna	AH System, Inc	SAS-200/571	HA-01	February 4 , 2001
Horn Antenna	AH System, Inc	SAS-200/571	HA-02	February 4 , 2001
Horn Antenna	EMCO	3160-09	APANT14	February 4 , 2001
Spectrum Analyzer	Hewlett packard	8567A	SA-03	May 13, 2001
Spectrum Analyzer	Hewlett packard	8567A	SA-04	December 13, 2000
Spectrum Analyzer	Advantest	R3271	SA-05	September 27, 2001
Test Receiver	Rohde & Schwarz	ESVS30	TR-02	July 13, 2001
Test Receiver	Rohde & Schwarz	ESHS30	TR-03	July 13, 2001
Test Receiver	Rohde & Schwarz	ESCS30	KTR-01	July 13, 2001
Signal Generator	Wiltron	68247B	APSSG03	August 09, 2001

All measurement equipment is traceable to national standards.

Testing Laboratory

A-pex International Co., Ltd.

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APPENDIX

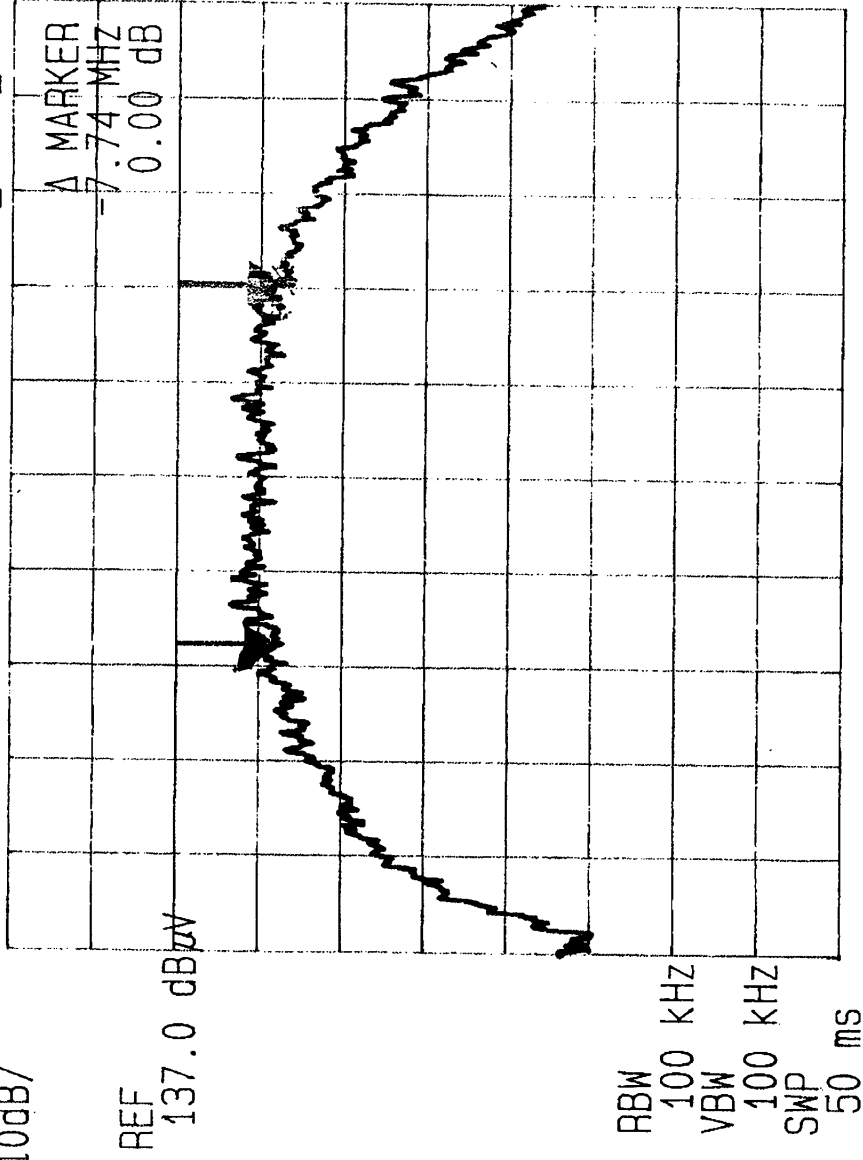
Test Data

① 6dB Bandwidth (5.1)	<u>A1 - A3</u>
② Maximum peak output power (5.2)	<u>A4 - A14</u>
③ Out of band emissions and restricted band radiation (5.3)	<u>A15 - A21</u>
④ Power density (5.4)	<u>A22 - A25</u>
⑤ Conducted Emission(5.5)	<u>A26 - A29</u>

REPORT NO. 21CE0084-YW

REF 137.0 dB μ V
10dB/

A_view B_blank



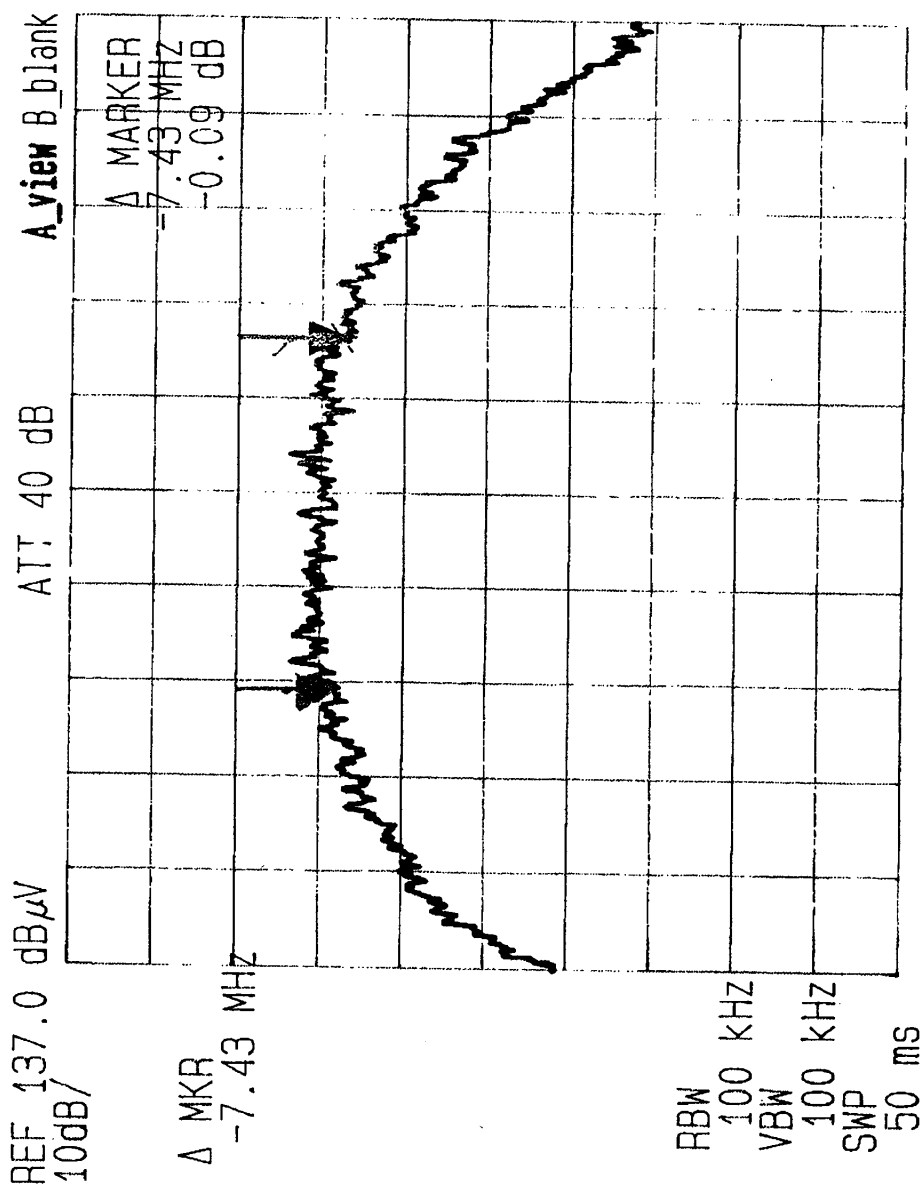
CH. I.

AI

BANDWIDTH

REPORT NO. 21CE0084-YW

FCC ID:AN012P701Z



CENTER 2.43793 GHz

SPAN 20.00 MHz

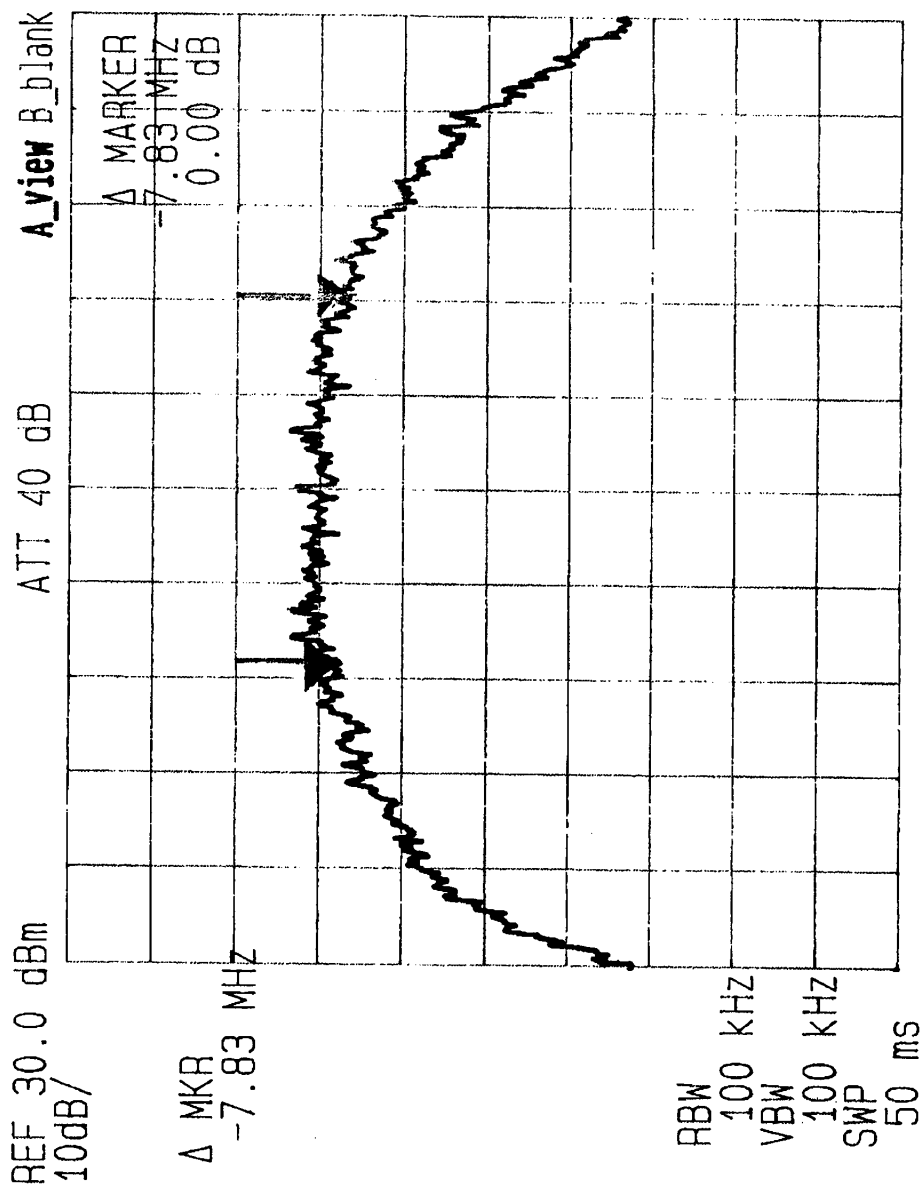
CH. 6

A2

BANDWIDTH

REPORT NO. 21CE0084-YW

FCC ID:AN012P701Z



CH. 11

A3

MAXIMUM PEAK OUT PUT POWER (RADIATED)

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.2 OPEN SITE

COMPANY : IBM Japan Ltd.
 TRADE NAME : IBM Japan
 EQUIPMENT : Wireless LAN Card
 MODEL : 1171-7WU
 POWER : DC3.3V
 Mode : Ch1(Low)/Ch6(Mid)/Ch11(High)
 Remarks : S/A (RBW=1MHz,VBW=1MHz)
 DATE : 2000/11/05

REPORT NO : 21CE0084-YW-2
 REGULATION : FCC15.247(b)
 TEST DISTANCE : 3m
 ATTENUATOR : NONE
 FCC ID : AN012P701Z

ENGINEER : Naoki.Sakamoto

Ch No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP Gain [dB]	Cable Loss [dB]	E		LIMIT [mW]	RESULT	
		HOR [dB μ V]	VER [dB μ V]				HOR [dB μ V]	VER [dB μ V]		HOR [mW]	VER [mW]
1	2.4120	105.6	107.7	28.8	34.3	5.2	105.3	107.4	1000.0	10.2	16.5
6	2.4360	106.0	107.6	28.7	34.3	5.2	105.6	107.2	1000.0	10.9	15.7
11	2.4620	106.0	107.3	28.7	34.3	5.2	105.6	106.9	1000.0	10.9	14.7

SAMPLE CALCULATION :

E= S/A Reading + ANT Factor - AMP Gain + Cable Loss

RESULT = (E * d)Squared / 30G

E : Converted to V/m

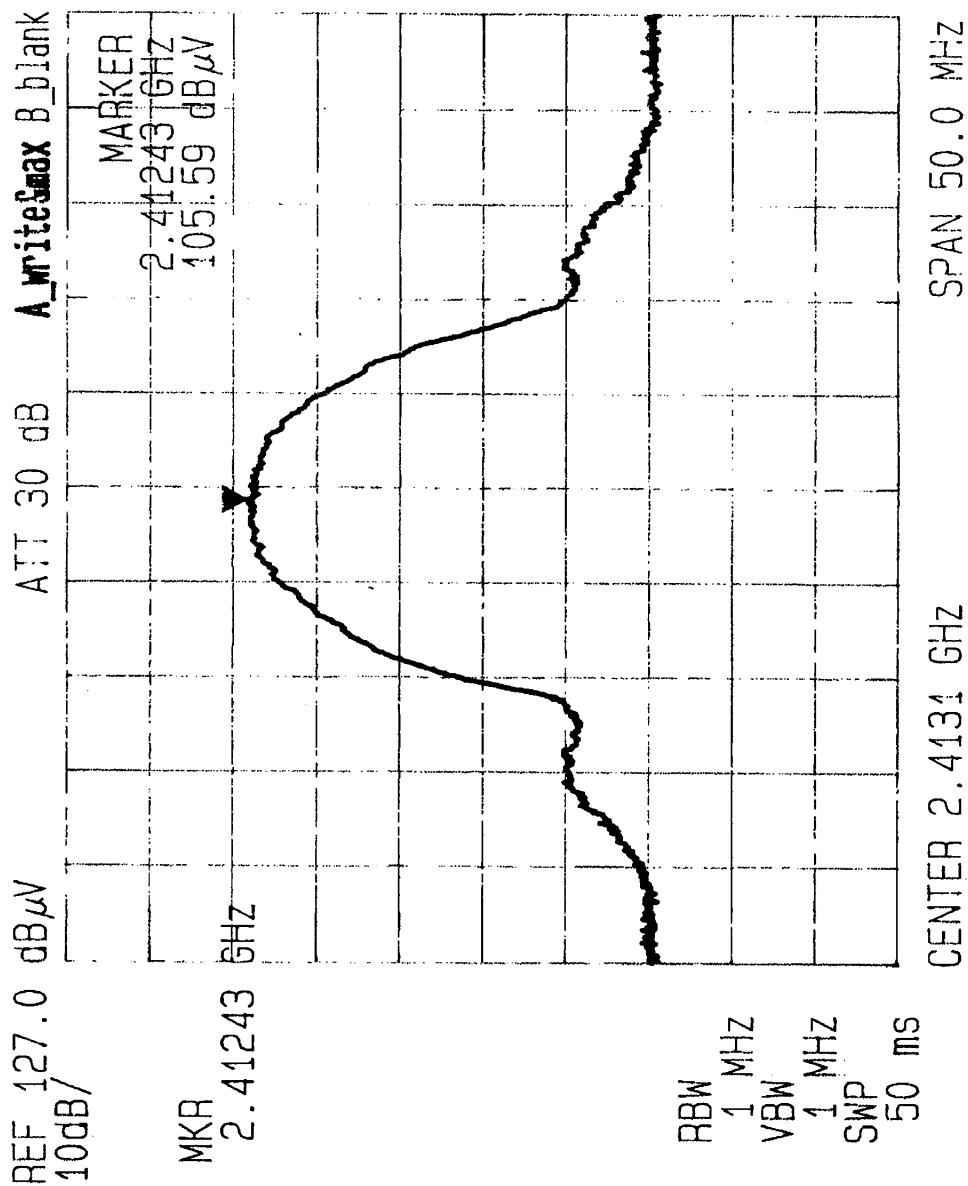
d : Test distance (3m)

G : Antenna gain (1)

PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CH.1

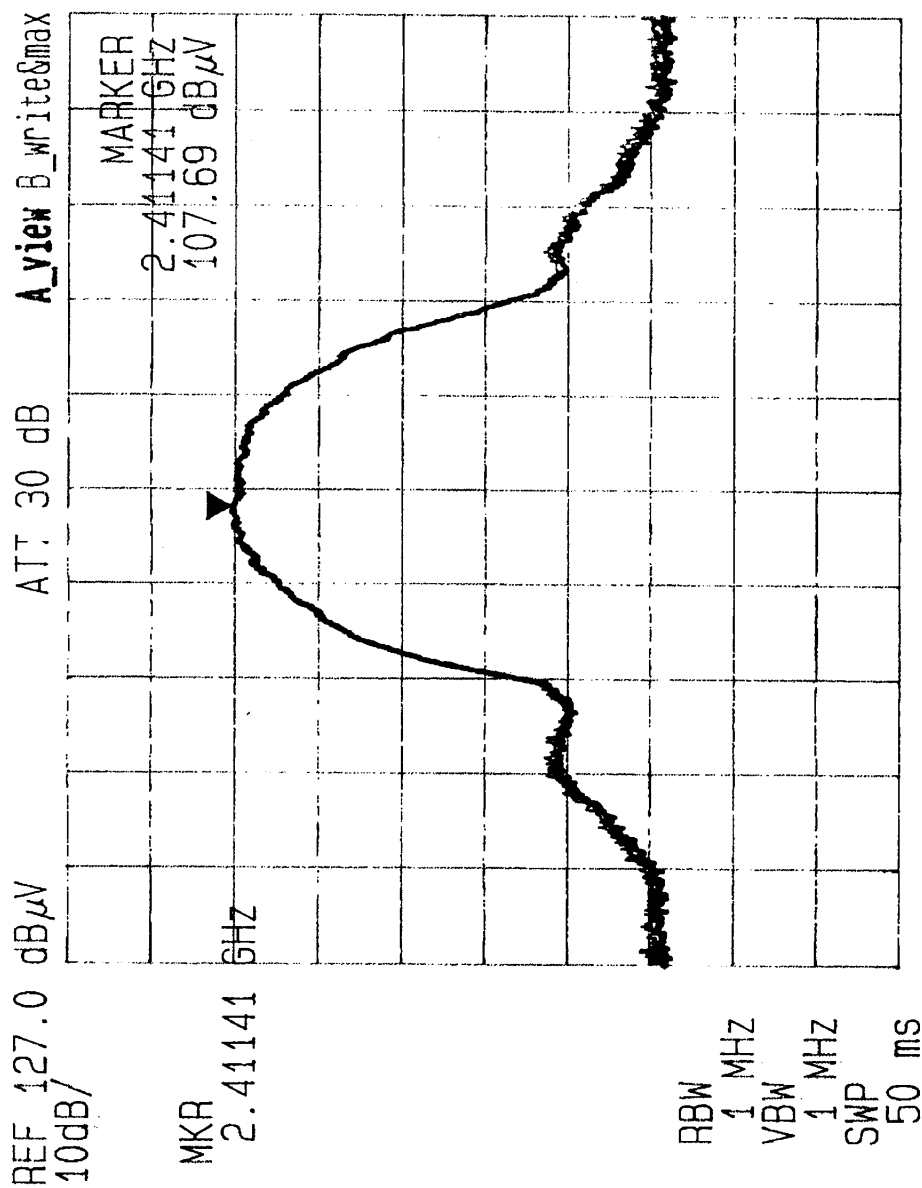
HOB

A5

PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

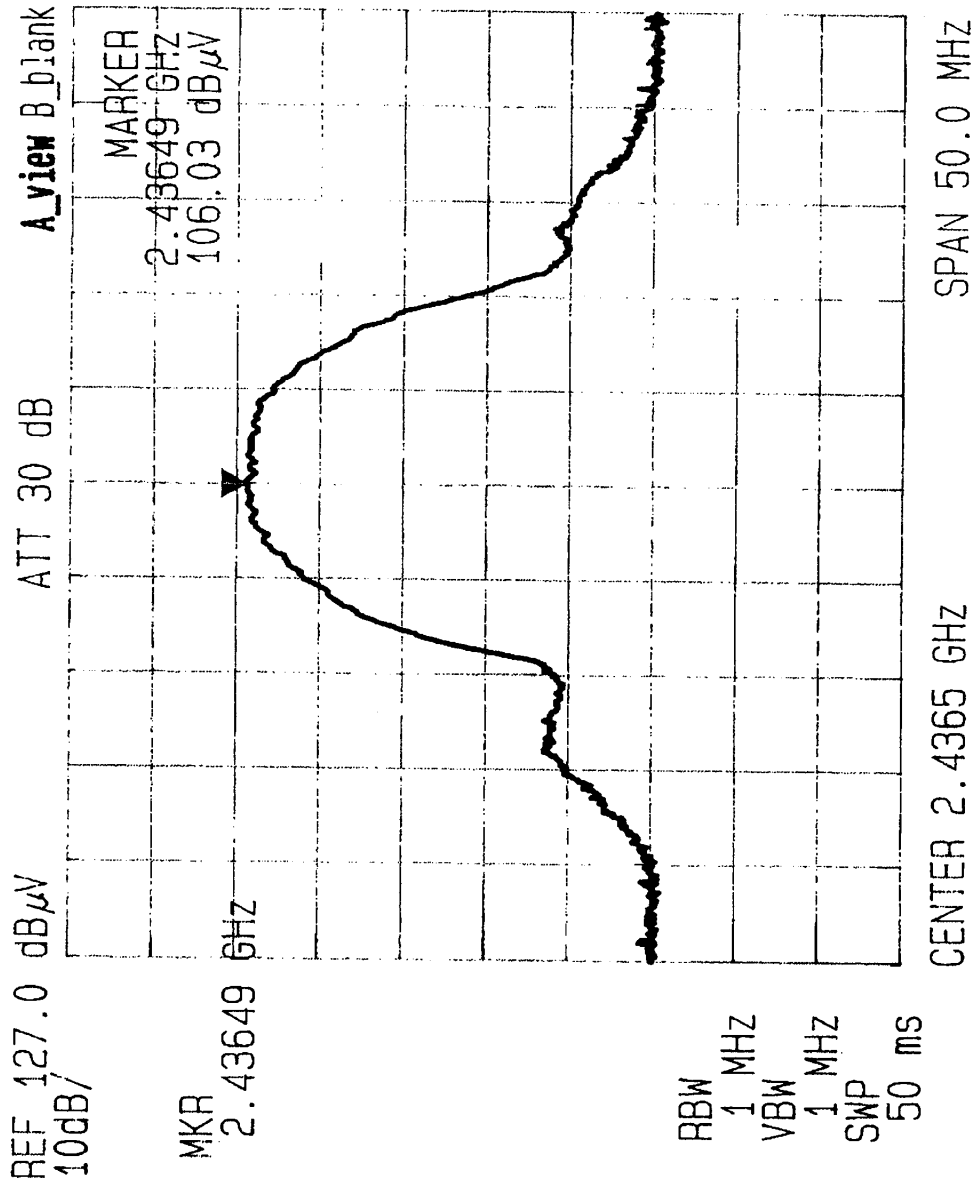
FCC ID: AN012P701Z



PEAK OUTPUT POWER

REPORT NO. 21CE0084-YW

FCC ID: AN012P701Z



CH. 6

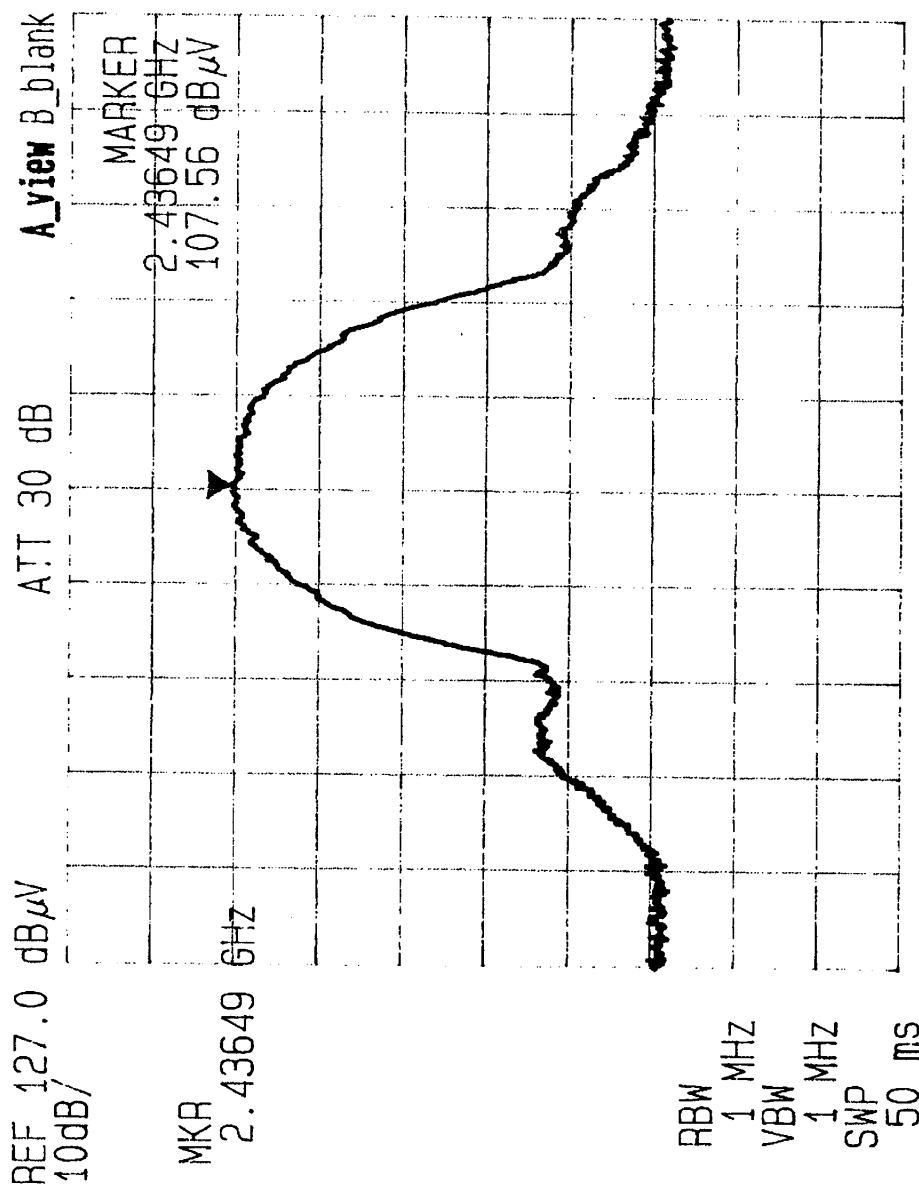
HOR

A7

PEAK OUTPUT POWER

REPORT NO. 21CE0084-YW

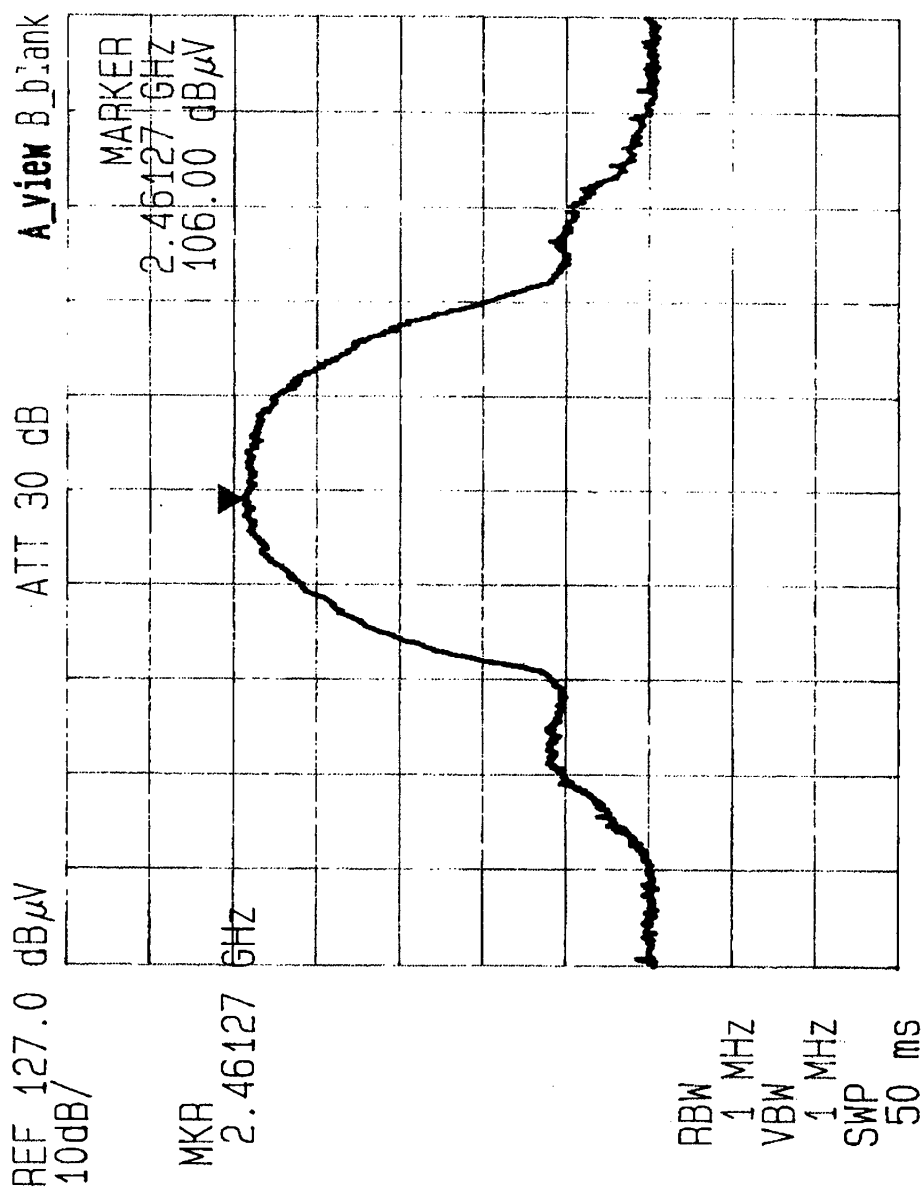
FCC ID: AN012P701Z



PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CH. 11

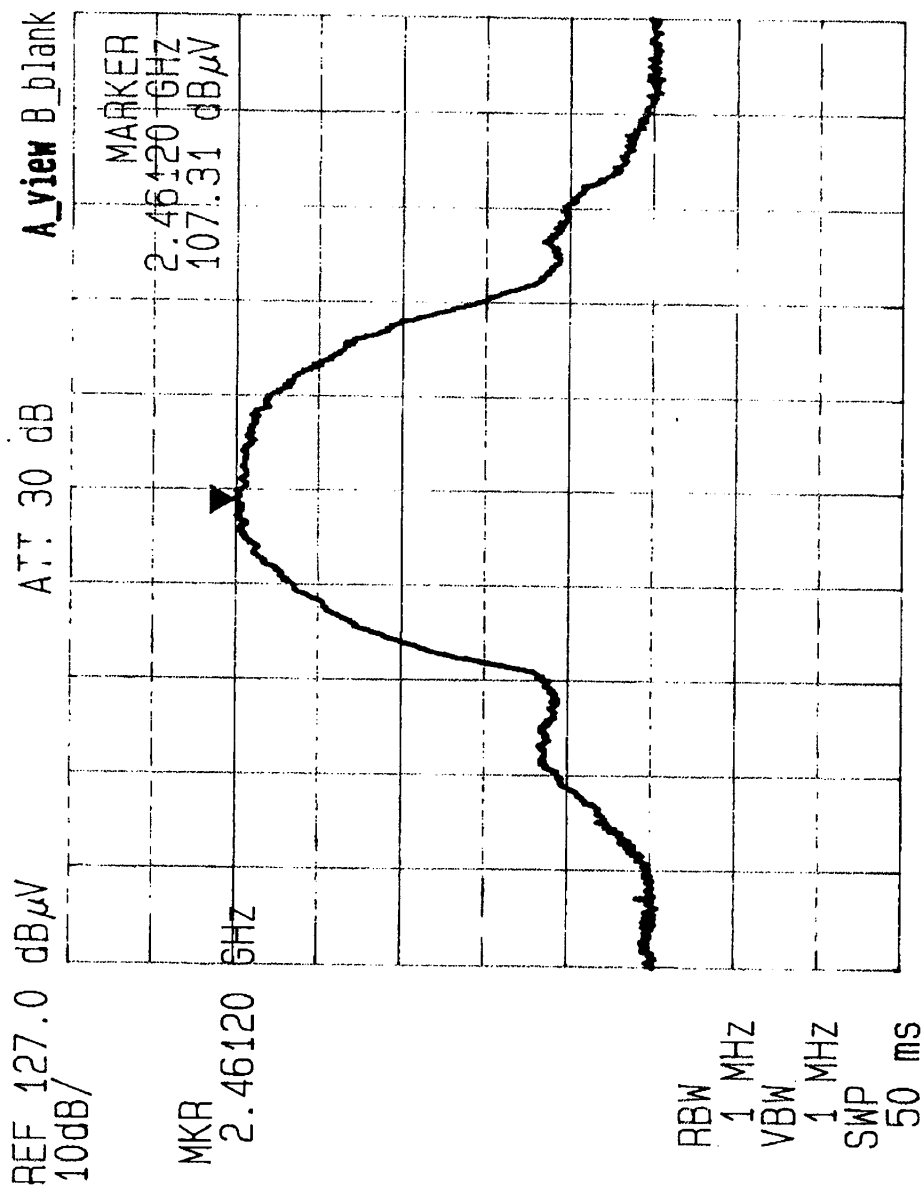
HOR

A9

PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CH.11

VER

A10

MAXIMUM PEAK OUT PUT POWER (CONDUCTED)

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.3 OPEN SITE

COMPANY : IBM Japan Ltd.
TRADE NAME : IBM Japan
EQUIPMENT : Wireless LAN Card
MODEL : 1171-7WU
POWER : DC3.3V
Mode : Ch1(Low)/Ch6(Mid)/Ch11(High)
Remarks : S/A (RBW=3MHz,VBW=3MHz)
DATE : 2000/ 11/06

REPORT NO : 21CE0084-YW-2
REGULATION : FCC15.247(b)
ATTENUATOR : NONE
FCC ID : AN012P701Z

ENGINEER : Naoki.Sakamoto

Ch No.	FREQ [GHz]	S/A Reading [dBm]	Cable Loss [dB]	RESULT [dBm]	LIMIT (1W) [dBm]	MARGIN [dB]
1	2.4113	14.9	2.4	17.3	30.0	12.7
6	2.4365	14.9	2.6	17.5	30.0	12.5
11	2.4614	14.8	2.7	17.5	30.0	12.5

SAMPLE CALCULATION :

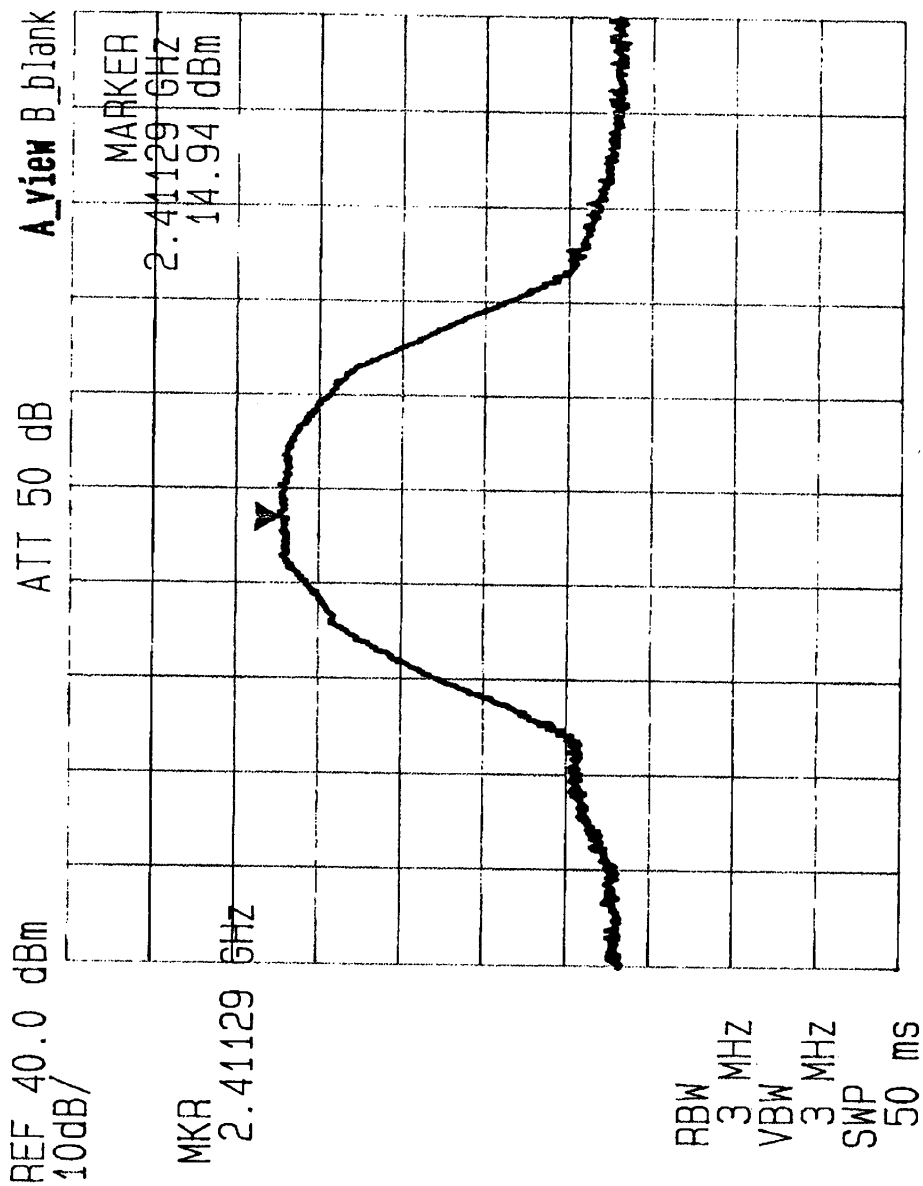
RESULT = S/A Reading + Cable Loss

A11

PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CENTER 2.41279 GHz

SPAN 50.0 MHz

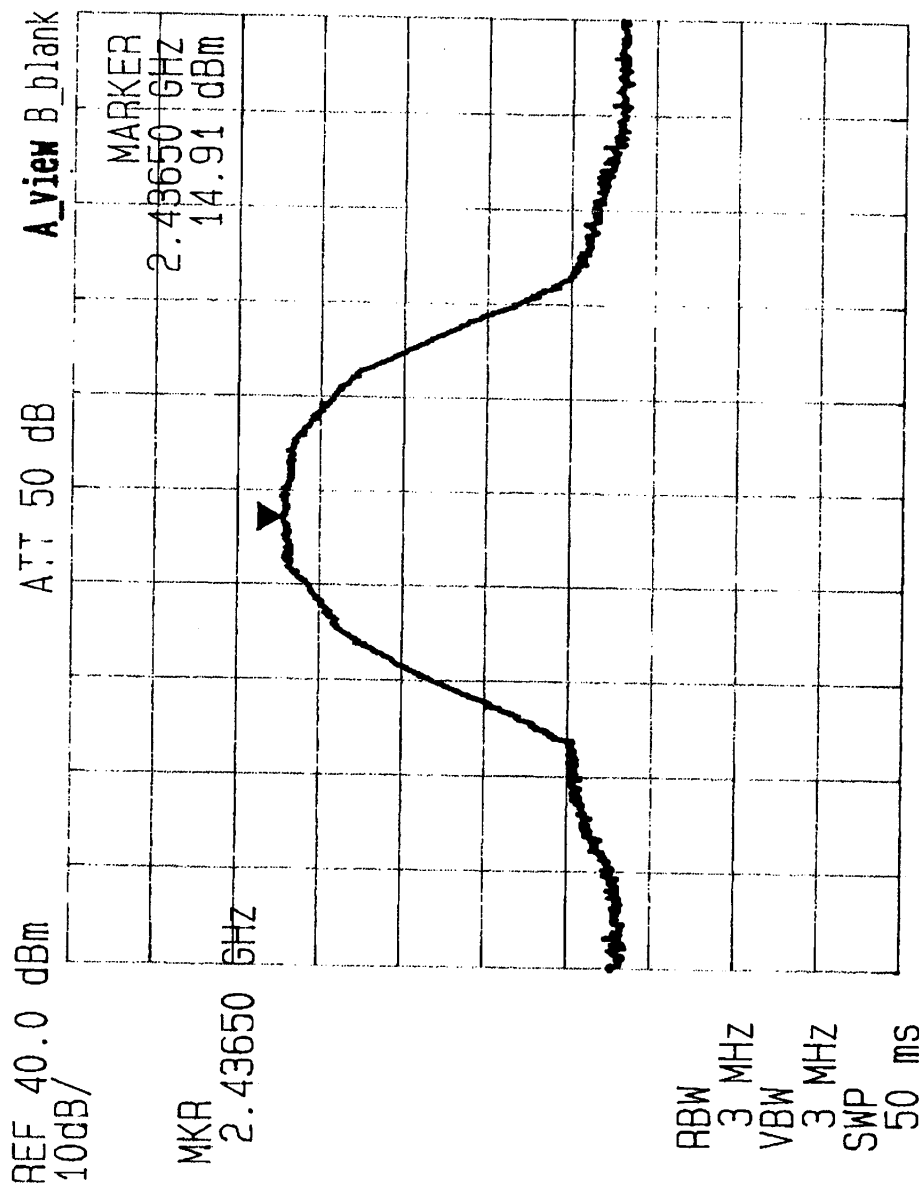
CH.1

A12

PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



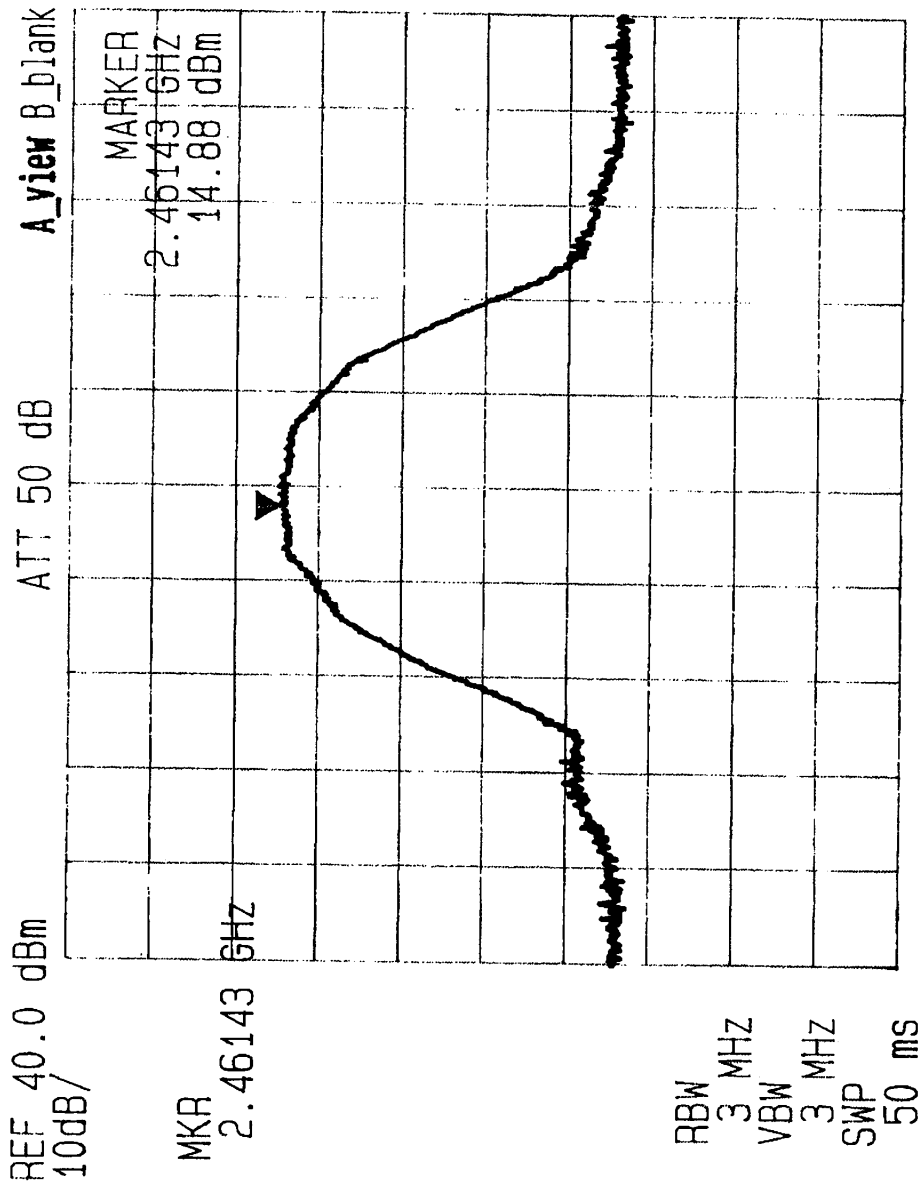
CH. 6

A13

PEAK OUTPUT POWER

REPORT NO, 21CE0084-YW

FCC ID: AN012P701Z



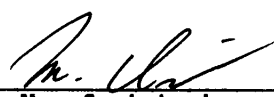
CH. 11

A14

DATA OF RADIATION TEST 1-2GHz

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 21CE0084-YW-2

Applicant : IBM Japan LTD.
Kind of Equipment : ThinkPad i Series 1300
Model No. : 1171-7WU
Serial No. : AA-005LM
Power : DC3.3V(PC:AC120V/60Hz)
Mode : Transmitting (Ch6)
Remarks : FCC ID:AN012P701Z
Date : 10/31/2000
Test Distance : 3 m
Temperature : 19 °C
Humidity : 65 %
Regulation : FCC Part15B CLASS B


Engineer : Masafumi Inui

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	98.30	BB	33.9	36.1	10.1	29.9	2.1	5.9	22.1	24.3	43.5	21.4	19.2
2.	195.68	BB	40.8	35.9	16.4	29.7	3.2	3.1	33.8	28.9	43.5	9.7	14.6
3.	199.93	BB	40.1	34.4	16.5	29.6	3.2	3.1	33.3	27.6	43.5	10.2	15.9
4.	260.88	BB	35.2	34.1	17.5	29.7	3.9	3.0	29.9	28.8	46.0	16.1	17.2
5.	343.62	BB	35.4	32.4	17.2	29.8	4.5	3.1	30.4	27.4	46.0	15.6	18.6
6.	399.37	BB	30.5	31.4	18.0	29.9	4.9	3.1	26.6	27.5	46.0	19.4	18.5
7.	432.04	BB	34.3	35.2	18.4	29.9	5.1	3.1	31.0	31.9	46.0	15.0	14.1
8.	587.03	BB	32.4	30.7	19.4	29.8	6.2	3.0	31.2	29.5	46.0	14.8	16.5
9.	1295.30	BB	48.3	49.0	24.5	35.0	3.8	0.0	41.6	42.3	54.0	12.4	11.7
10.	1389.64	BB	38.0	37.3	24.8	34.8	4.0	0.0	32.0	31.3	54.0	22.0	22.7
11.	1400.70	BB	51.3	50.8	24.9	34.7	4.0	0.0	45.5	45.0	54.0	8.5	9.0
12.	1498.90	BB	47.7	46.7	25.2	34.5	4.1	0.0	42.5	41.5	54.0	11.5	12.5

CALCULATION: READING + ANT.FACTOR + CABLE LOSS - AMP.GAIN + ATTEN.

All other spurious emissions are more than 20dB below the limits.
30 to 1000MHz : QP DETECT / 1 to 2GHz : AV DETECT

DATA OF RADIATION TEST 1-2GHz

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 21CE0084-YW-2

Applicant : IBM Japan LTD.
Kind of Equipment : ThinkPad i Series 1300
Model No. : 1171-7WU
Serial No. : AA-005LM
Power : DC3.3V (PC:AC120V/60Hz)
Mode : Receiving (Ch6)
Remarks : FCC ID:AN012P701Z
Date : 11/5/2000
Test Distance : 3 m
Temperature : 22 °C
Humidity : 68 %
Regulation : FCC Part15B CLASS B

Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	98.30	BB	34.0	35.4	10.1	29.9	2.1	3.1	19.4	20.8	43.5	24.1	22.7
2.	195.70	BB	41.0	36.3	16.4	29.7	3.2	3.1	34.0	29.3	43.5	9.5	14.2
3.	199.94	BB	39.8	33.9	16.5	29.6	3.2	3.1	33.0	27.1	43.5	10.5	16.4
4.	260.87	BB	34.4	34.0	17.5	29.7	3.9	3.0	29.1	28.7	46.0	16.9	17.3
5.	343.60	BB	33.8	33.0	17.2	29.8	4.5	3.1	28.8	28.0	46.0	17.2	18.0
6.	399.38	BB	31.1	32.0	18.0	29.9	4.9	3.1	27.2	28.1	46.0	18.8	17.9
7.	432.05	BB	33.3	34.9	18.4	29.9	5.1	3.1	30.0	31.6	46.0	16.0	14.4
8.	587.03	BB	31.8	31.0	19.4	29.8	6.2	3.0	30.6	29.8	46.0	15.4	16.2
9.	1295.30	BB	48.8	48.8	24.5	35.0	3.8	0.0	42.1	42.1	54.0	11.9	11.9
10.	1389.64	BB	37.7	37.0	24.8	34.8	4.0	0.0	31.7	31.0	54.0	22.3	23.0
11.	1400.70	BB	51.0	50.9	24.9	34.7	4.0	0.0	45.2	45.1	54.0	8.8	8.9
12.	1498.90	BB	47.1	48.0	25.2	34.5	4.1	0.0	41.9	42.8	54.0	12.1	11.2

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

All other spurious emissions are more than 20dB below the limits.
30 to 1000MHz : QP DETECT / 1 to 2GHz : AV DETECT

DATA OF RADIATION TEST (2GHz-26GHz)

A-PEX INTERNATIONAL
YOKOWA NO.2 OPEN SITE

COMPANY : IBM Japan Ltd.
TRADE NAME : IBM Japan
EQUIPMENT : Wireless LAN Card
MODEL : 1171-7WU
POWER : DC3.3V
Mode : Transmitting(Ch1/Ch6/Ch11)
DATE : 2000/10/31

REPORT NO : 21CE0084-YW-2
REGULATION : FCC15.209
TEST DISTANCE : 3m
ATTENUATOR : NONE
FCC ID : AN012P701Z

ENGINEER : Masafumi Inui

PK DETECT (S/A : RBW 1MHz and VBW 1MHz)

Ch No.	FREQ [GHz]	S/A READING(PK)		ANT Factor [dB]	CABLE LOSS [dB]	AMP Gain [dB]	RESULT		LIMIT (PK) [dBμV]	MARGIN	
		HOR [dBμV]	VER [dBμV]				HOR [dBμV]	VER [dBμV]		HOR [dB]	VER [dB]
1	4.8241	52.2	55.0	33.6	6.9	33.9	58.8	61.6	74.0	15.2	12.4
1	7.2348	42.6	49.3	36.5	8.9	34.6	53.4	60.1	74.0	20.6	13.9
1	9.6466	41.8	42.3	37.7	9.3	34.4	54.4	54.9	74.0	19.6	19.1
*1	12.0565	-	-	38.5	11.7	34.8	-	-	74.0	-	-
*1	14.4678	-	-	42.1	14.5	33.2	-	-	74.0	-	-
*1	16.8791	-	-	43.3	16.0	33.3	-	-	74.0	-	-
*1	19.2900	-	-	40.2	16.9	33.4	-	-	74.0	-	-
*1	21.7091	-	-	40.3	17.5	33.0	-	-	74.0	-	-
*1	24.1233	-	-	40.3	19.8	33.2	-	-	74.0	-	-
6	4.8744	48.4	52.9	33.9	6.9	33.9	55.3	59.8	74.0	18.7	14.2
6	7.3095	43.5	49.3	36.4	9.0	34.6	54.3	60.1	74.0	19.7	13.9
6	9.7448	41.5	42.0	37.8	9.2	34.5	54.0	54.5	74.0	20.0	19.5
*6	12.1808	-	-	38.7	11.7	34.7	-	-	74.0	-	-
*6	14.6170	-	-	42.1	14.6	33.2	-	-	74.0	-	-
*6	17.0530	-	-	43.3	16.1	33.3	-	-	74.0	-	-
*6	19.4899	-	-	40.2	17.0	33.4	-	-	74.0	-	-
*6	21.9255	-	-	40.3	17.5	33.0	-	-	74.0	-	-
*6	24.3618	-	-	40.3	19.8	33.2	-	-	74.0	-	-
11	4.9242	49.2	53.0	34.0	7.0	33.9	56.3	60.1	74.0	17.7	13.9
11	7.3875	43.6	50.4	35.2	9.0	34.6	53.2	60.0	74.0	20.8	14.0
11	9.8510	42.0	41.9	37.7	9.2	34.5	54.4	54.3	74.0	19.6	19.7
*11	12.3155	-	-	38.6	11.8	34.8	-	-	74.0	-	-
*11	14.7788	-	-	42.1	14.6	33.2	-	-	74.0	-	-
*11	17.2415	-	-	43.3	16.3	33.3	-	-	74.0	-	-
*11	19.7048	-	-	40.2	17.0	33.4	-	-	74.0	-	-
*11	22.1673	-	-	40.3	17.5	33.0	-	-	74.0	-	-
*11	24.6308	-	-	40.3	19.8	33.2	-	-	74.0	-	-

SAMPLE CALCULATION :

RESULT= S/A READING + ANT Factor + Cable Loss - AMP Gain

Except for the above table : All other spurious emissions are more than 20dB below the limit.

* Emissions did not detect.

DATA OF RADIATION TEST (2GHz-26GHz)

A-PEX INTERNATIONAL
YOKOWA NO.2 OPEN SITE

COMPANY : IBM Japan Ltd.
TRADE NAME : IBM Japan
EQUIPMENT : Wireless LAN Card
MODEL : 1171-7WU
POWER : DC3.3V
Mode : Transmitting(Ch1/Ch6/Ch11)
DATE : 2000/10/31

REPORT NO : 21CE0084-YW-2
REGULATION : FCC15.209
TEST DISTANCE : 3m
ATTENUATOR : NONE
FCC ID : AN012P701Z

ENGINEER : Masafumi Inui

AV DETECT (S/A : RBW 1MHz and VBW 10Hz)

Ch No.	FREQ [GHz]	S/A READING(AV)		ANT Factor [dB]	CABLE LOSS [dB]	AMP Gain [dB]	RESULT		LIMIT (PK) [dBμV]	MARGIN	
		HOR [dBμV]	VER [dBμV]				HOR [dBμV]	VER [dBμV]		HOR [dB]	VER [dB]
1	4.8226	39.6	45.1	33.6	6.9	33.9	46.2	51.7	54.0	7.8	2.3
1	7.2311	30.7	39.3	36.5	8.9	34.6	41.5	50.1	54.0	12.5	3.9
1	9.6460	33.3	32.8	37.7	9.3	34.4	45.9	45.4	54.0	8.1	8.6
*1	12.0565	-	-	38.5	11.7	34.8	-	-	54.0	-	-
*1	14.4678	-	-	42.1	14.5	33.2	-	-	54.0	-	-
*1	16.8791	-	-	43.3	16.0	33.3	-	-	54.0	-	-
*1	19.2900	-	-	40.2	16.9	33.4	-	-	54.0	-	-
*1	21.7091	-	-	40.3	17.5	33.0	-	-	54.0	-	-
*1	24.1233	-	-	40.3	19.8	33.2	-	-	54.0	-	-
6	4.8723	37.9	44.5	33.9	6.9	33.9	44.8	51.4	54.0	9.2	2.6
6	7.3077	32.0	40.0	36.4	9.0	34.6	42.8	50.8	54.0	11.2	3.2
6	9.7446	33.2	32.5	37.8	9.2	34.5	45.7	45.0	54.0	8.3	9.0
*6	12.1808	-	-	38.7	11.7	34.7	-	-	54.0	-	-
*6	14.6170	-	-	42.1	14.6	33.2	-	-	54.0	-	-
*6	17.0530	-	-	43.3	16.1	33.3	-	-	54.0	-	-
*6	19.4899	-	-	40.2	17.0	33.4	-	-	54.0	-	-
*6	21.9255	-	-	40.3	17.5	33.0	-	-	54.0	-	-
*6	24.3618	-	-	40.3	19.8	33.2	-	-	54.0	-	-
11	4.9261	40.8	41.1	34.0	7.0	33.9	47.9	48.2	54.0	6.1	5.8
11	7.3889	39.0	38.5	35.2	9.0	34.6	48.6	48.1	54.0	5.4	5.9
11	9.8522	34.0	33.8	37.7	9.2	34.5	46.4	46.2	54.0	7.6	7.8
*11	12.3155	-	-	38.6	11.8	34.8	-	-	54.0	-	-
*11	14.7788	-	-	42.1	14.6	33.2	-	-	54.0	-	-
*11	17.2415	-	-	43.3	16.3	33.3	-	-	54.0	-	-
*11	19.7048	-	-	40.2	17.0	33.4	-	-	54.0	-	-
*11	22.1673	-	-	40.3	17.5	33.0	-	-	54.0	-	-
*11	24.6308	-	-	40.3	19.8	33.2	-	-	54.0	-	-

SAMPLE CALCULATION :

RESULT= S/A READING + ANT Factor + Cable Loss - AMP Gain

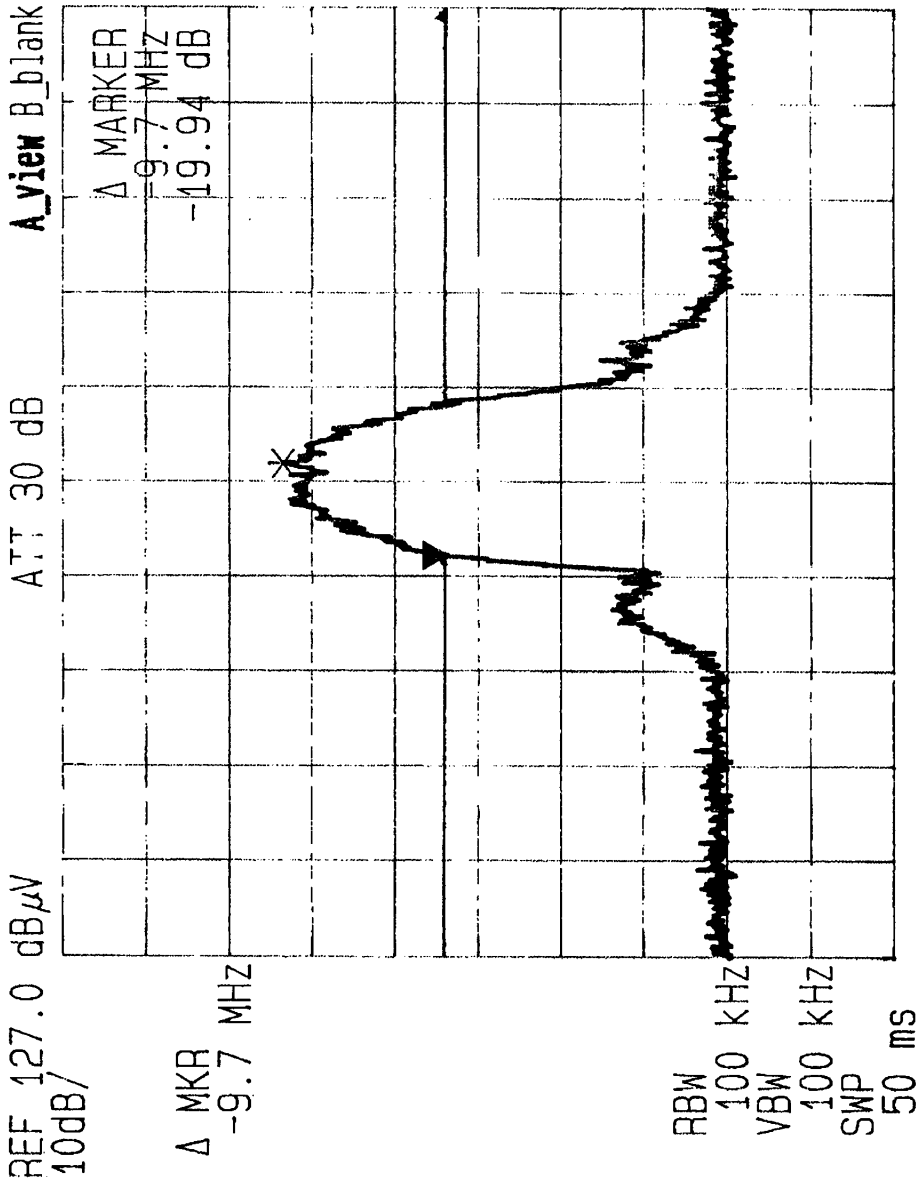
Except for the above table : All other spurious emissions are more than 20dB below the limit.

* Emissions did not detect.

OUT OF BAND-BAND EDGES

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z

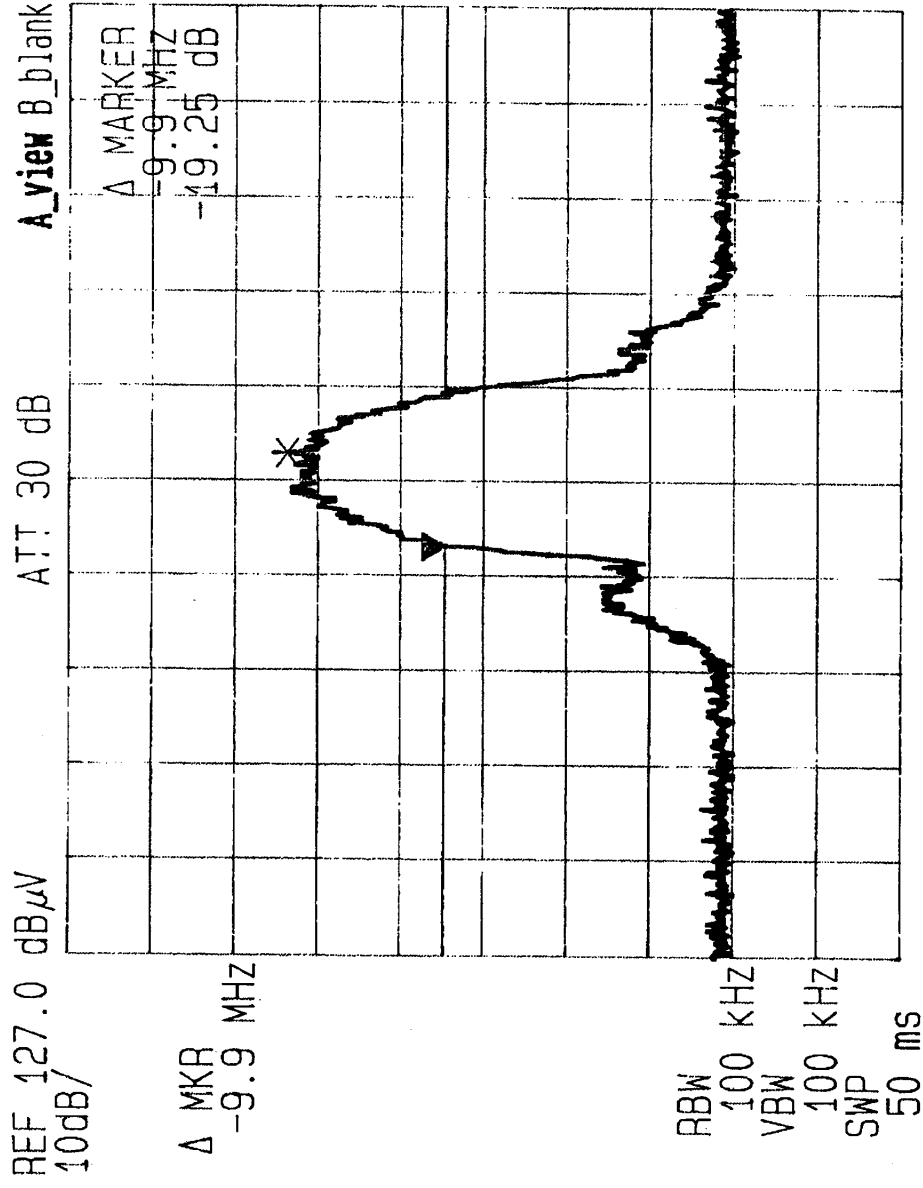


VER A19

OUT OF BAND-BAND EDGES

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CH. 6

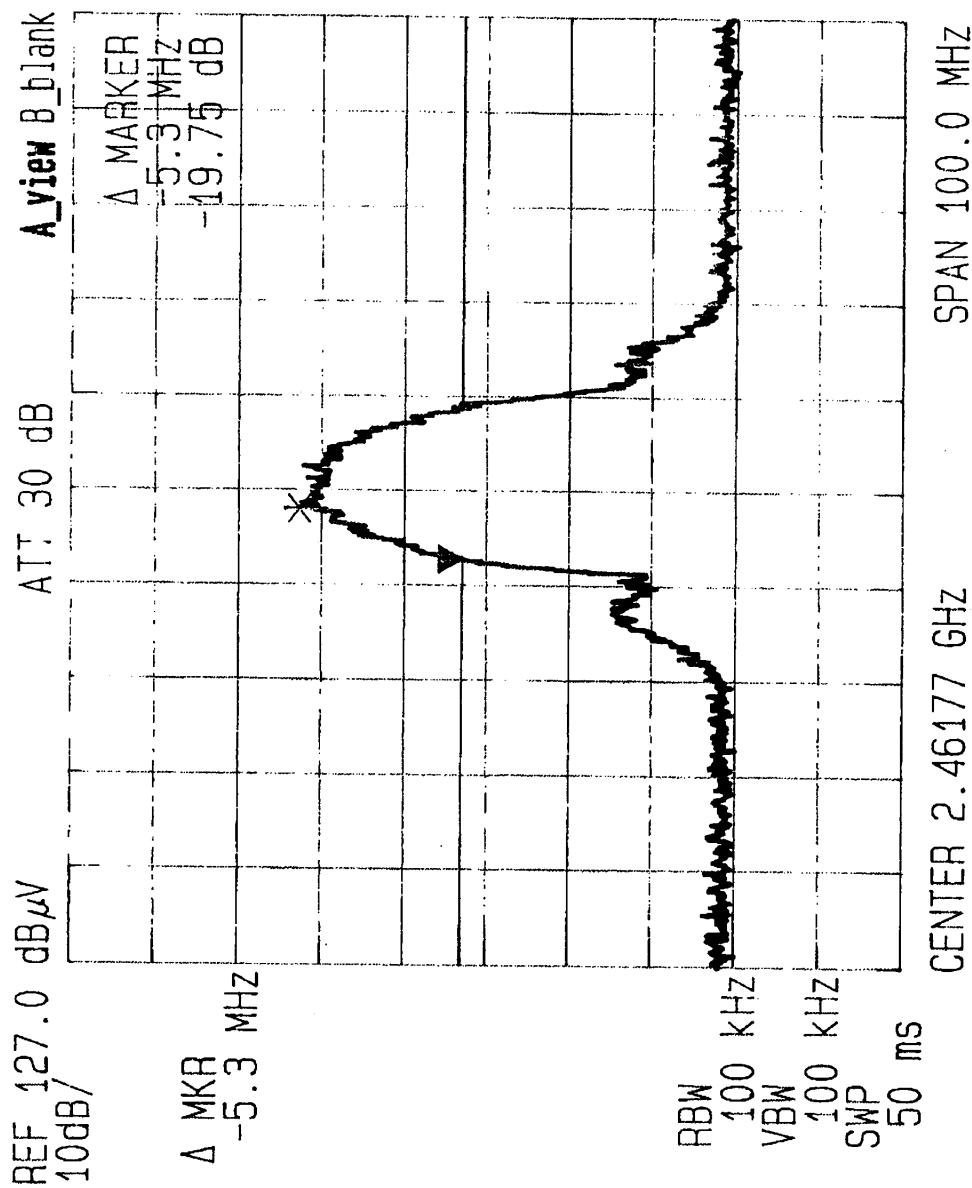
VER

A20

OUT OF BAND-BAND EDGES

REPORT NO. 21CE0084-YW

FCC ID:AN012P701Z



CH.11

VER

A21

POWER DENSITY (CONDUCTED)

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.3 OPEN SITE

COMPANY : IBM Japan Ltd.
TRADE NAME : IBM Japan
EQUIPMENT : Wireless LAN Card
MODEL : 1171-7WU
POWER : DC3.3V
Mode : Ch1(Low)/Ch6(Mid)/Ch11(High)
Remarks : S/A (RBW=3kHz,VBW=10kHz)
DATE : 2000/ 11/06

REPORT NO : 21CE0084-YW-2
REGULATION : FCC15.247(d)
ATTENUATOR : NONE
FCC ID : AN012P701Z

ENGINEER : Naoki.Sakamoto

Ch No.	FREQ [GHz]	S/A Reading [dBm]	Cable Loss [dB]	RESULT [dBm]	LIMIT [dBm]	MARGIN [dB]
1	2.4130	-8.3	2.4	-5.9	8.0	13.9
6	2.4380	-8.3	2.6	-5.7	8.0	13.7
11	2.4630	-8.3	2.7	-5.6	8.0	13.6

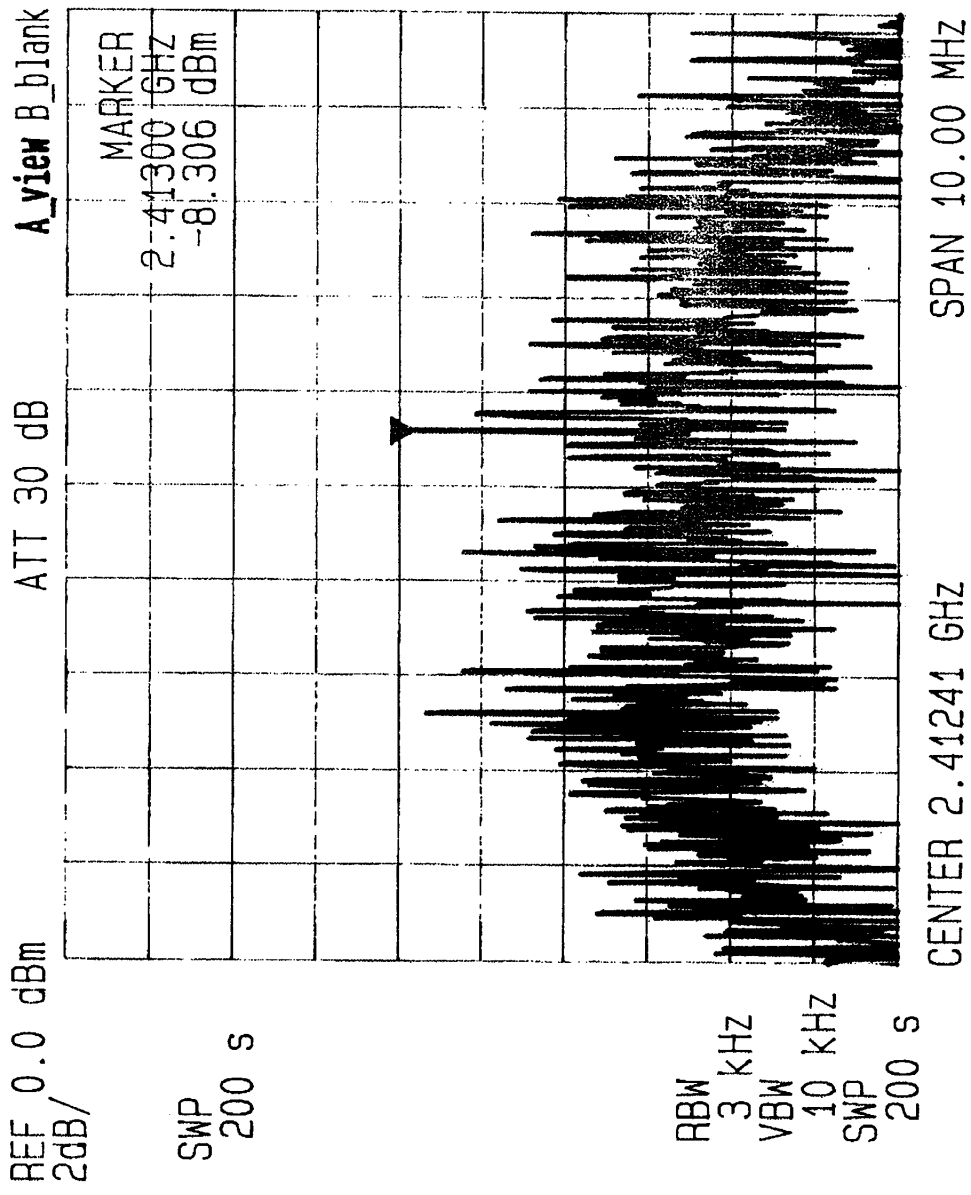
SAMPLE CALCULATION :

RESULT = S/A Reading + Cable Loss

POWER DENSITY

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CH. 1

A23

POWER DENSITY

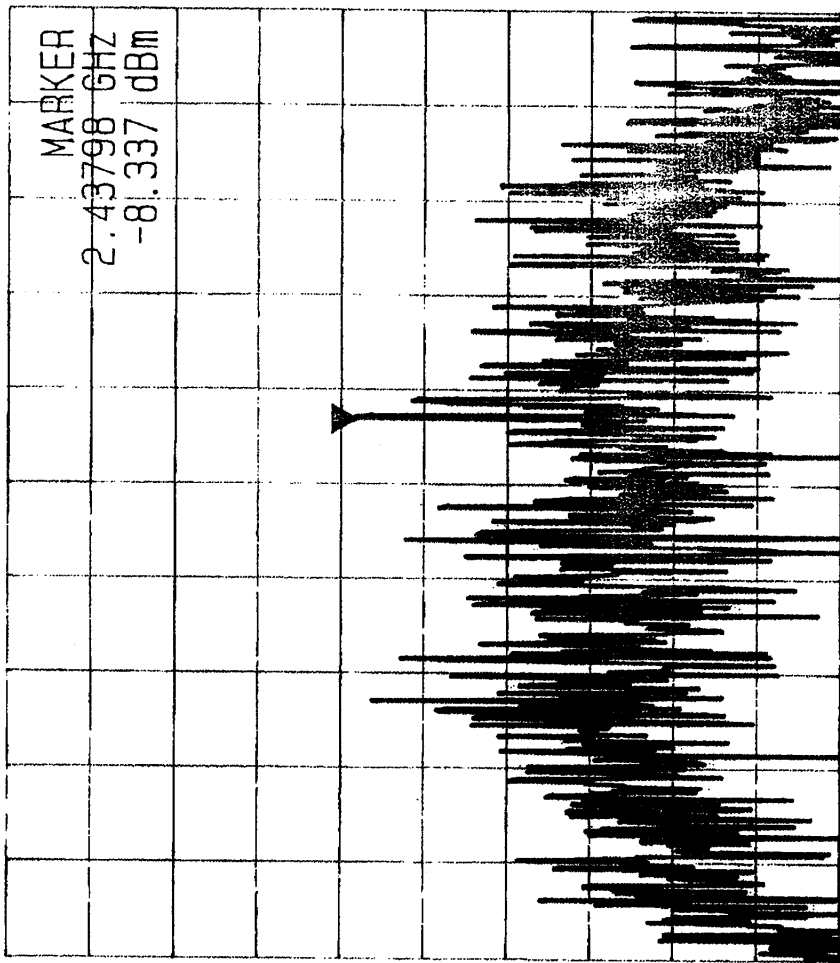
REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z

REF 0.0 dBm
2dB/

ATT 30 dB

A_view B_blank



MARKER
2.43798 GHz
-81.337 dBm

SWP
200 s

RBW 3 kHz
VBW 10 kHz
SWP 200 s

CENTER 2.43730 GHz

SPAN 10.00 MHz

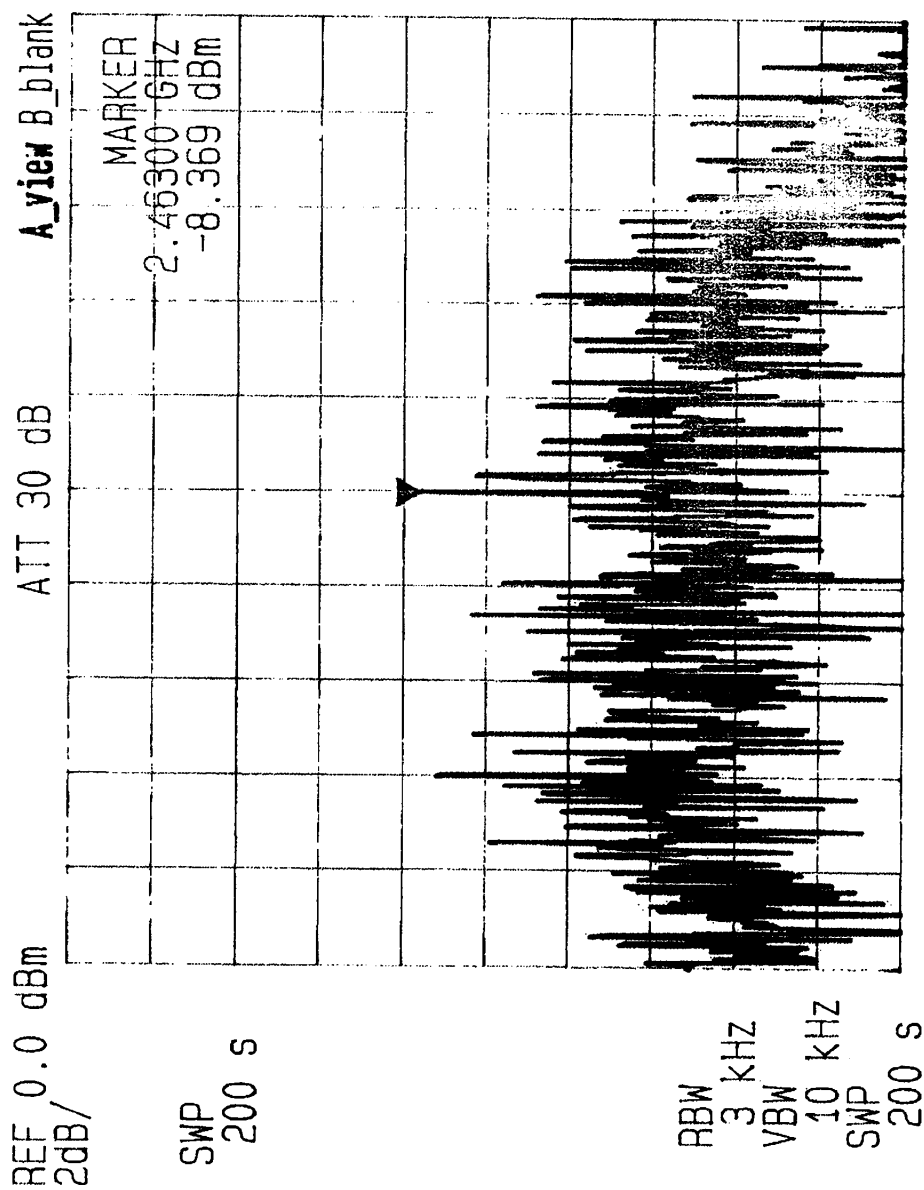
CH. 6

A24

POWER DENSITY

REPORT NO, 21CE0084-YW

FCC ID:AN012P701Z



CENTER 2.46301 GHZ SPAN 10.00 MHZ

CH. 11

A25

DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 21CE0084-YW-2

Applicant : IBM Japan LTD.
Kind of Equipment : ThinkPad i Series 1300
Model No. : 1171-7WU
Serial No. : AA-005LM
Power : DC3.3V (PC:AC120V/60Hz)
Mode : Transmitting (Ch6)
Remarks : FCC ID: AN012P701Z
Date : 10/31/2000
Phase : Single Phase
Temperature : 20 °C
Humidity : 64 %
Regulation : FCC Part15B CLASS B


Engineer : Masafumi Inui

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dBuV]	CABLE LOSS [dBuV]	ATTEN. [dBuV]	RESULT		LIMITS		MARGIN	
		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]				QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]
1.	0.4514	30.0	-	30.8	-	0.1	0.2	0.0	31.1	-	48.0	0.0	16.9	-
2.	0.5171	28.5	-	25.4	-	0.1	0.2	0.0	28.8	-	48.0	0.0	19.2	-
3.	0.6468	25.9	-	22.3	-	0.1	0.2	0.0	26.2	-	48.0	0.0	21.8	-
4.	4.7253	33.1	-	34.6	-	0.3	0.5	0.0	35.4	-	48.0	0.0	12.6	-
5.	7.9604	24.4	-	22.4	-	0.5	0.5	0.0	25.4	-	48.0	0.0	22.6	-
6.	16.6957	22.9	-	21.5	-	1.1	0.8	0.0	24.8	-	48.0	0.0	23.2	-
7.	29.1871	17.6	-	17.4	-	1.5	1.0	0.0	20.1	-	48.0	0.0	27.9	-

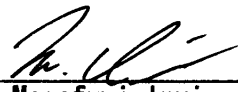
CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

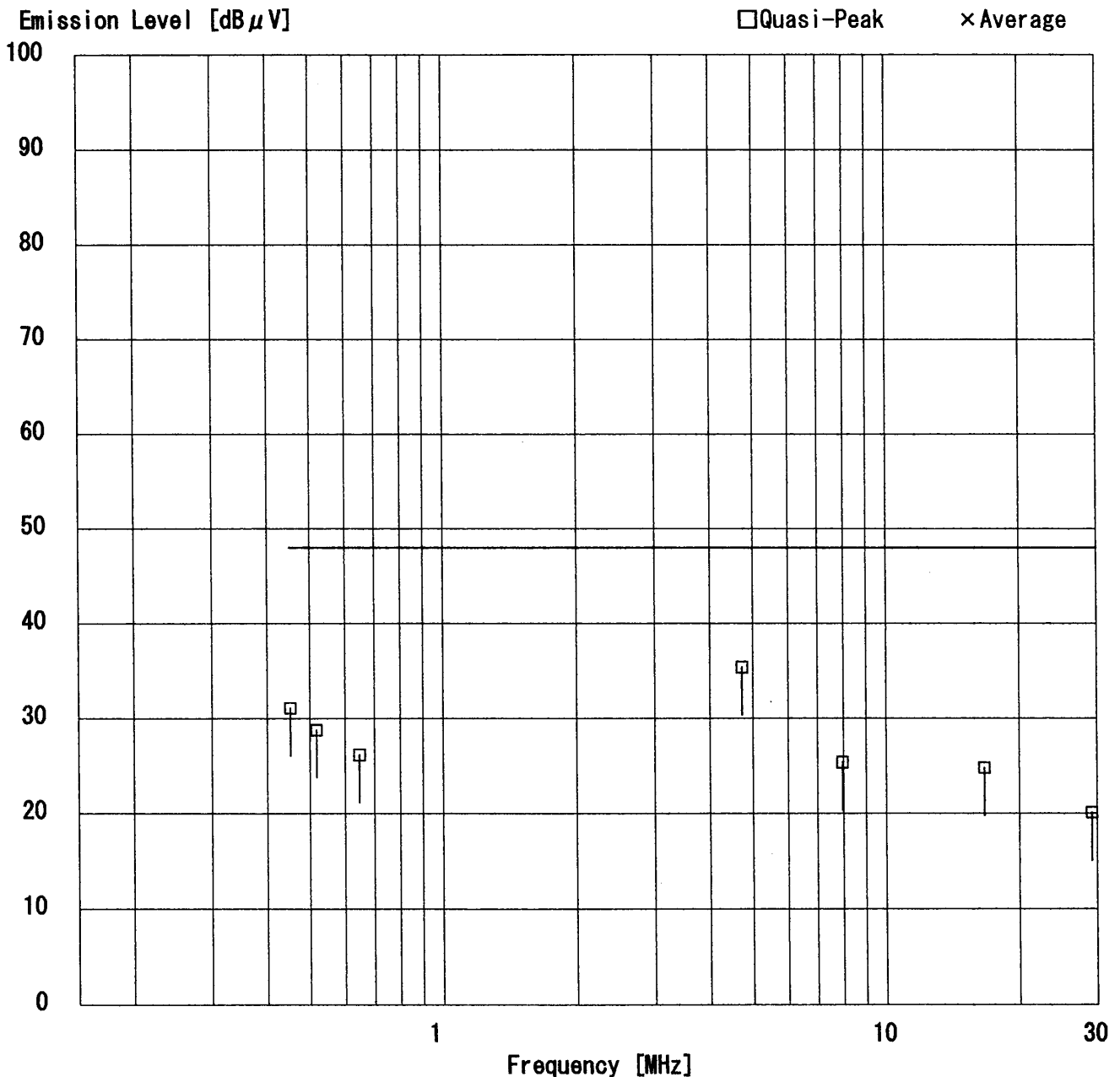
Except for the above table: adequate margin data below the limits.

DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 21CE0084-YW-2

Applicant : IBM Japan LTD.
Kind of Equipment : ThinkPad i Series 1300
Model No. : 1171-7WU
Serial No. : AA-005LM
Power : DC3.3V (PC:AC120V/60Hz)
Mode : Transmitting (Ch6)
Remarks : FCC ID:AN012P701Z
Date : 10/31/2000
Phase : Single Phase
Temperature : 20 °C
Humidity : 64 %
Regulation : FCC Part15B CLASS B


Engineer : Masafumi Inui



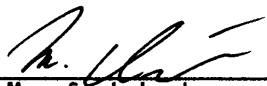
DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.2 OPEN TEST SITE

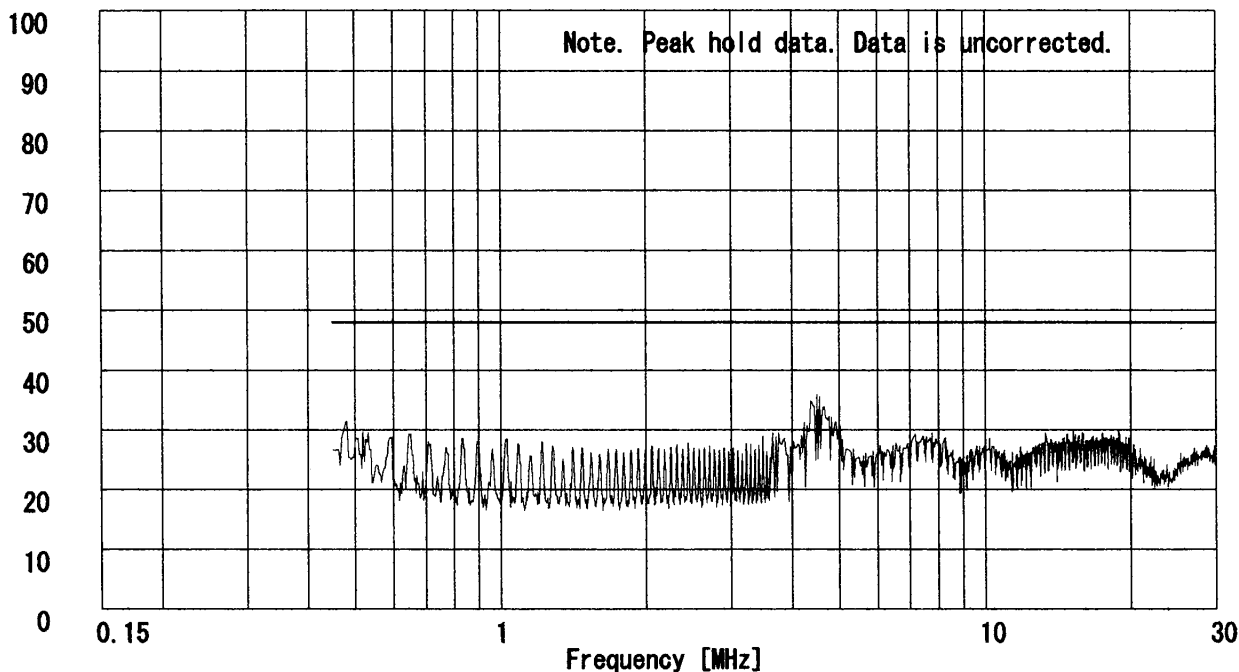
Report No. : 21CE0084-YW-2

Applicant : IBM Japan LTD.
Kind of Equipment : ThinkPad i Series 1300
Model No. : 1171-7WU
Serial No. : AA-005LM
Power : DC3.3V(PC:AC120V/60Hz)
Mode : Transmitting (Ch6)
Remarks : FCC ID:AN012P701Z
Date : 10/31/2000
Phase : Single Phase
Temperature : 20 °C
Humidity : 64 %
Regulation 1 : FCC Part15B CLASS B
Regulation 2 : None


Engineer : Masafumi Inui

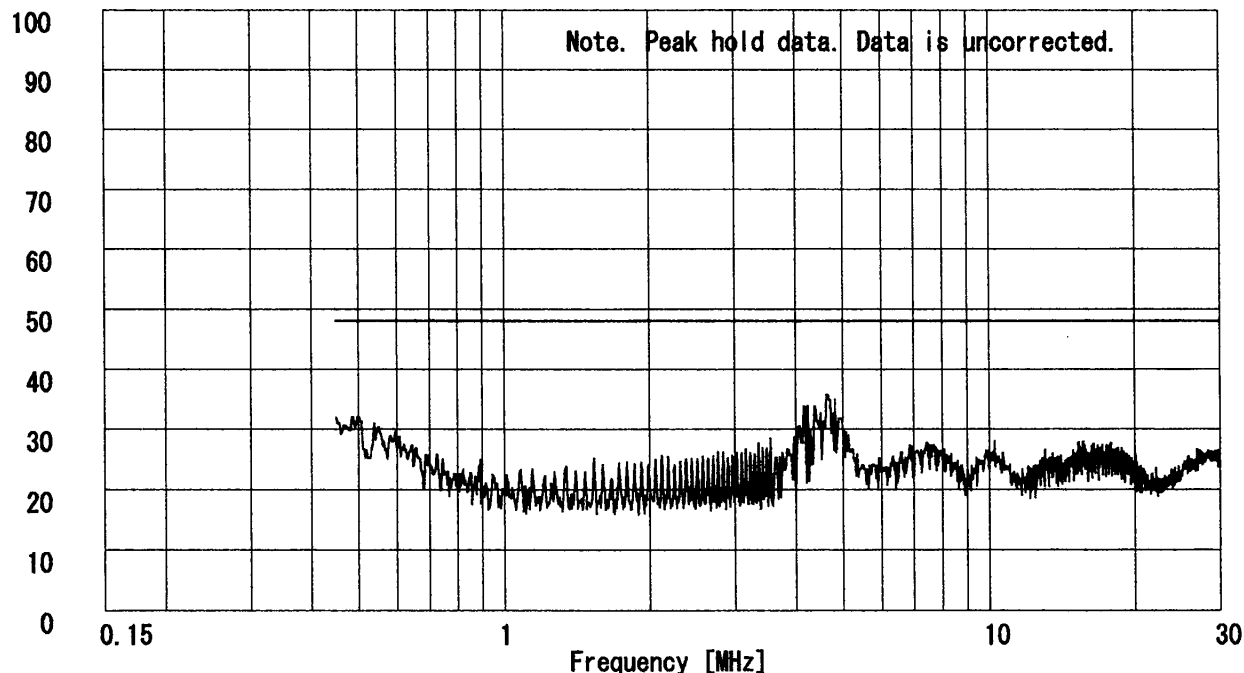
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.2 OPEN TEST SITE

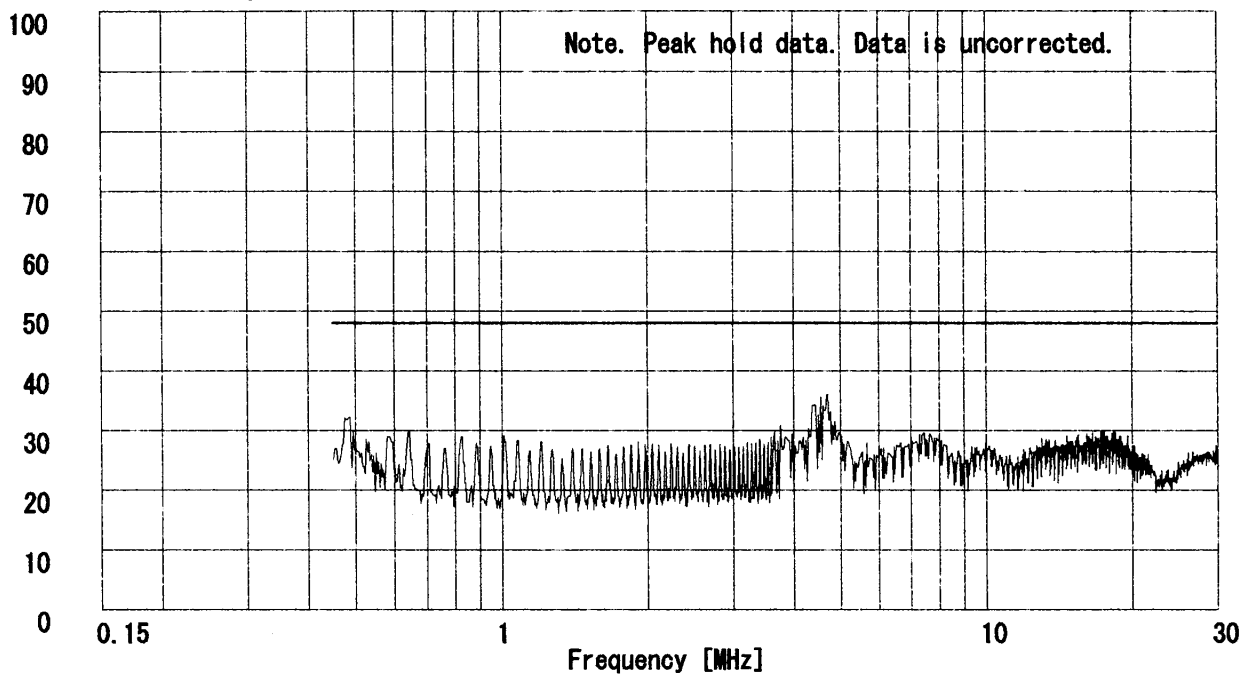
Report No. : 21CE0084-YW-2

Applicant : IBM Japan LTD.
Kind of Equipment : ThinkPad i Series 1300
Model No. : 1171-7WU
Serial No. : AA-005LM
Power : DC3.3V (PCAC120V/60Hz)
Mode : Standby
Remarks : FCC ID: AN012P701Z
Date : 10/31/2000
Phase : Single Phase
Temperature : 20 °C
Humidity : 64 %
Regulation 1 : FCC Part15B CLASS B
Regulation 2 : None


Engineer : Masafumi Inui

Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1

