

APPENDIX 3: Data of EMI test

DATA OF CONDUCTED EMISSION TEST

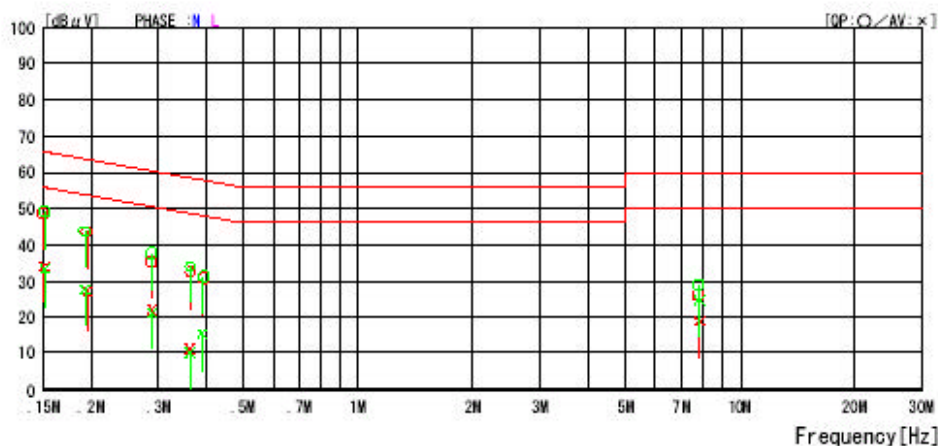
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/05 12:10:21

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009

Report No. : 24BE0174-HO
Power : AC120V / 50Hz
Temp/C/Humi% : 22 / 35
Operator : Kenichi Adachi

Mode / Remarks : 2412MHz, IEEE802.11g, OFDM 54Mbps Ext-antenna

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)



NO	FREQ [MHz]	READING		C.F	RESULT		LIMIT		MARGIN		PHASE
		QP [dB μV]	AV [dB μV]		QP [dB μV]	AV [dB μV]	QP [dB μV]	AV [dB μV]	QP [dB]	AV [dB]	
1	0.1510	48.6	34.1	0.1	48.7	34.2	65.9	55.9	17.2	21.7	N
2	0.1963	43.6	26.9	0.1	43.7	27.0	63.8	53.8	20.1	26.8	N
3	0.2696	38.2	21.8	0.1	38.3	21.9	60.5	50.5	22.2	28.6	N
4	0.3647	32.4	11.0	0.1	32.5	11.1	58.6	48.6	26.1	37.5	N
5	0.3937	30.8	15.4	0.1	30.9	15.5	58.0	48.0	27.1	32.5	N
6	7.8346	24.7	17.6	1.3	26.0	18.9	60.0	50.0	34.0	31.1	N
7	0.1520	48.9	33.0	0.1	49.0	33.1	65.9	55.9	16.9	22.8	L
8	0.1934	43.7	27.5	0.1	43.8	27.6	63.8	53.8	20.1	26.3	L
9	0.2696	37.6	21.1	0.1	37.7	21.2	60.5	50.5	22.8	29.3	L
10	0.3647	34.0	10.1	0.1	34.1	10.2	58.6	48.6	24.5	38.4	L
11	0.3937	31.0	15.3	0.1	31.1	15.4	58.0	48.0	26.9	32.6	L
12	7.8499	27.6	23.4	1.3	28.9	24.7	60.0	50.0	31.1	25.3	L

CHART:WITHOUT FACTOR, Peak hold data. Data is uncorrected.
Except for the above table : adequate margin data below the limits.

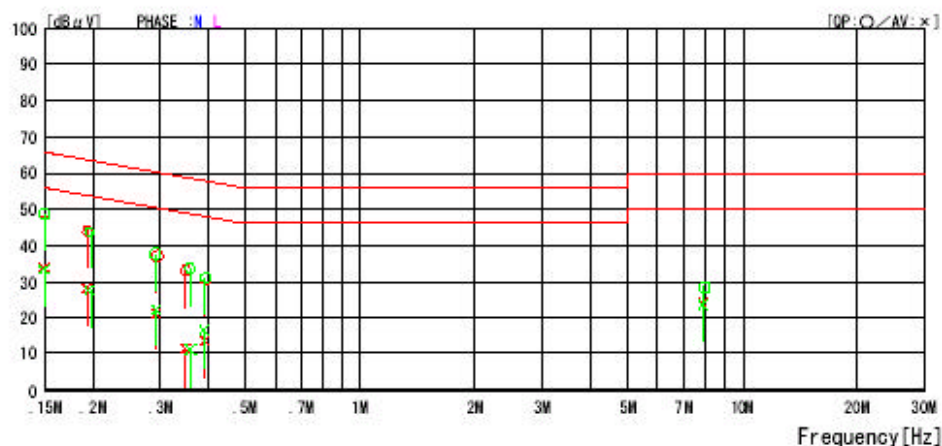
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/05 12:11:16

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009
Report No. : 24CE0174-HO
Power : AC120V / 60Hz
Temp/C/Humi% : 22 / 35
Operator : Kenichi Adachi

Mode / Remarks : 2412MHz, IEEE802.11g, OFDM 54Mbps In-antenna

LIMIT : FCC15C §15.207 (QP)
FCC15C §15.207 (AV)



NO	FREQ [MHz]	READING		C.F	RESULT		LIMIT		MARGIN		PHASE
		QP [dB μV]	AV [dB μV]		QP [dB μV]	AV [dB μV]	QP [dB μV]	AV [dB μV]	QP [dB]	AV [dB]	
1	0.1500	48.7	33.8	0.1	48.8	33.9	66.0	56.0	17.2	22.1	N
2	0.1945	43.9	28.1	0.1	44.0	28.2	63.8	53.8	19.8	25.6	N
3	0.2951	37.1	21.1	0.1	37.2	21.2	60.4	50.4	23.2	29.2	N
4	0.3516	32.8	11.1	0.1	32.9	11.2	58.9	48.9	26.0	37.7	N
5	0.3946	30.6	13.4	0.1	30.7	13.5	58.0	48.0	27.3	34.5	N
6	7.9381	26.9	22.5	1.3	28.2	23.8	60.0	50.0	31.8	26.2	N
7	0.1500	48.6	33.1	0.1	48.7	33.2	66.0	56.0	17.3	22.8	L
8	0.1968	43.7	27.4	0.1	43.8	27.5	63.7	53.7	19.9	26.2	L
9	0.2933	37.4	22.2	0.1	37.5	22.3	60.4	50.4	22.9	28.1	L
10	0.3614	33.2	11.0	0.1	33.3	11.1	58.7	48.7	25.4	37.6	L
11	0.3934	30.9	16.4	0.1	31.0	16.5	58.0	48.0	27.0	31.5	L
12	7.9354	27.1	22.3	1.3	28.4	23.6	60.0	50.0	31.6	26.4	L

CHART-WITHOUT FACTOR, Peak hold data. Data is uncorrected.
Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/05 12:10:21

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009

Report No. : 24BE0174-HO
Power : AC120V / 60Hz
Temp/C/Humi% : 22 / 35
Operator : Kenichi Adachi

Mode / Remarks : 2412MHz IEEE802.11g. OFDM 54Mbps Ext-antenna

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)

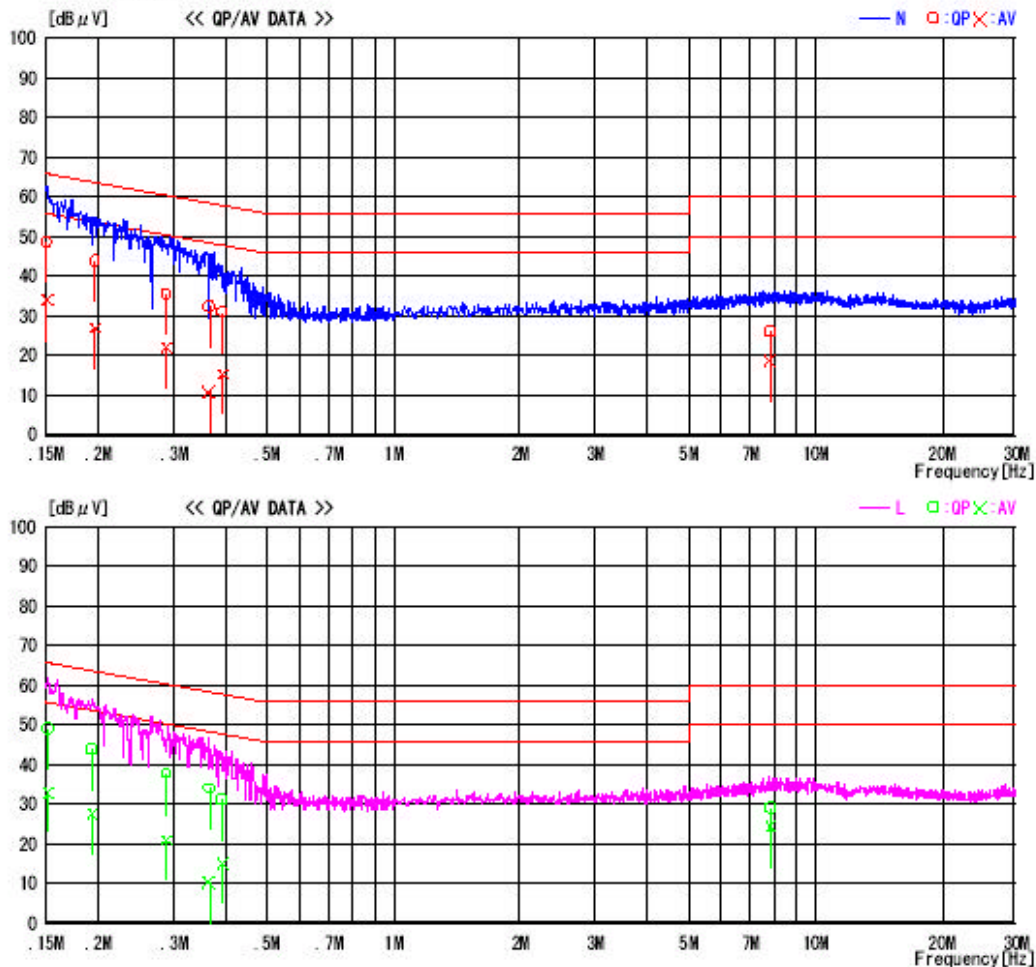


CHART:WITHOUT FACTOR,Peak hold data.Data is uncorrected.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/05 12:11:16

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009

Report No. : 24CE0174-HO
Power : AC120V / 60Hz
Temp'C/Humi% : 22 / 35
Operator : Kenichi Adachi

Mode / Remarks : 2412MHz IEEE802.11g, OFDM 54Mbps In-antenna

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)

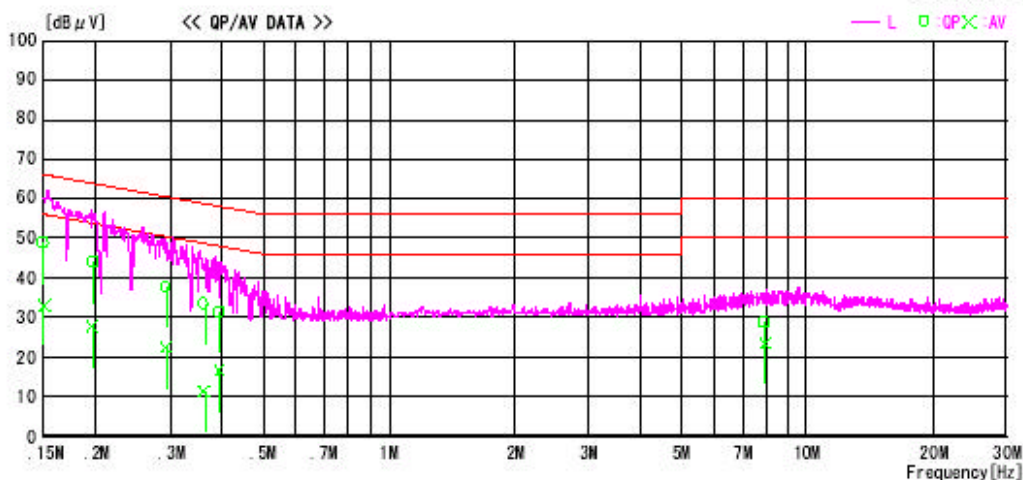
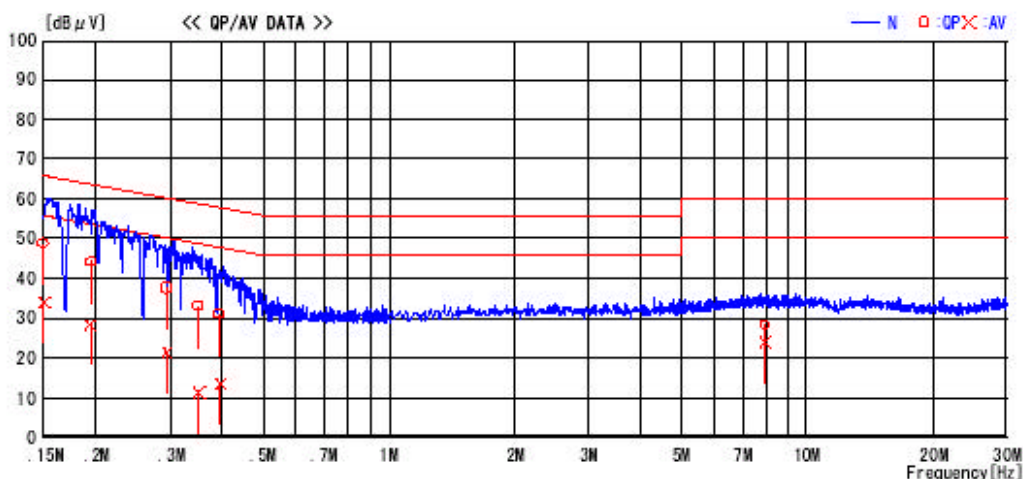


CHART WITHOUT FACTOR, Peak hold data. Data is uncorrected.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/05 09:57:25

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009

Report No. : 24-HO
Power : AC120V / 60Hz
Temp/C/Humi% : 22 / 35
Operator : Kenichi Adachi

Mode / Remarks : 2412MHz, IEEE802.11b, CCK11Mbps In-antenna

LIMIT : FCC15B ClassB(OP) (0.15-30MHz)
FCC15B ClassB(AV) (0.15-30MHz)

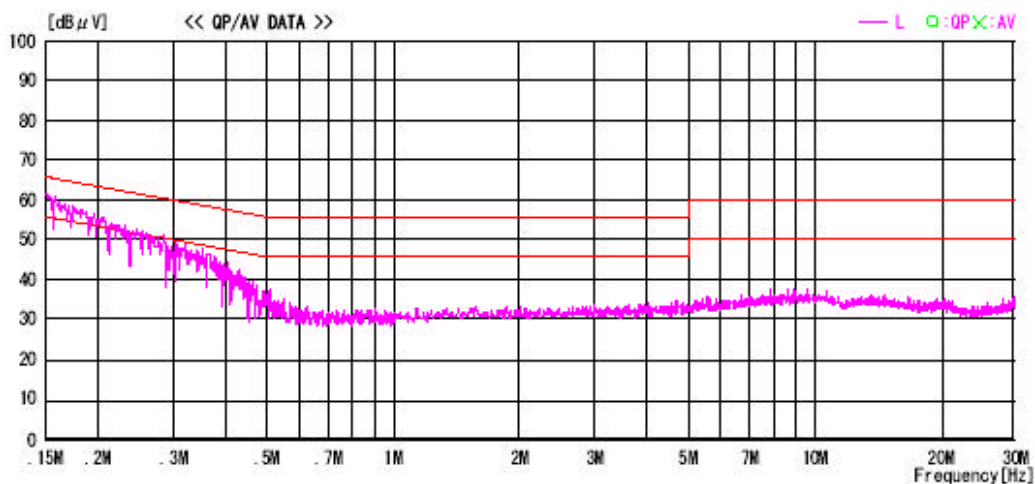
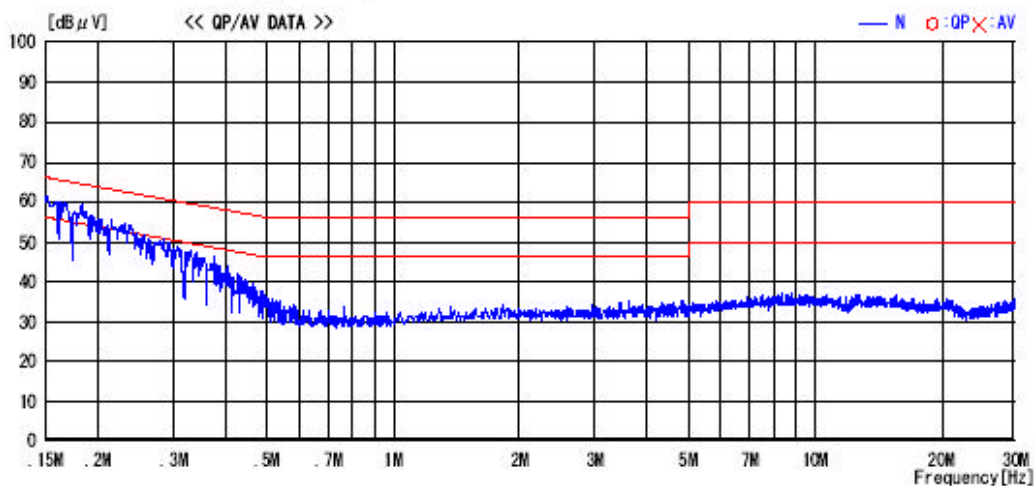


CHART:WITHOUT FACTOR,Peak hold data.Data is uncorrected.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/05 10:45:32

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009

Report No. : 24-HO
Power : AC120V / 60Hz
Temp/C/Humi% : 22 / 35
Operator : Kenichi Adachi

Mode / Remarks : 2412MHz, IEEE802.11g, OFDM 36Mbps In-antenna

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)

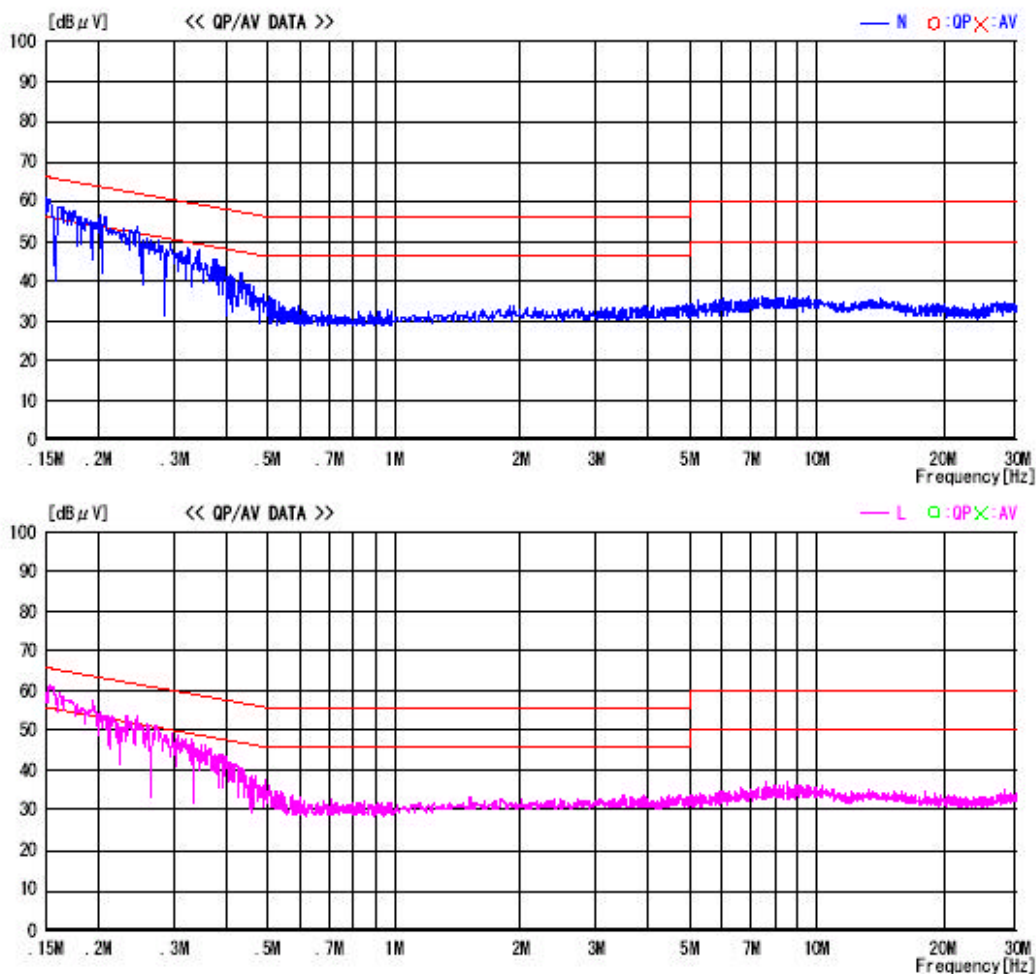


CHART:WITHOUT FACTOR, Peak hold data. Data is uncorrected.

6dB BANDWIDTH (Conducted)

DATA OF 6dB BANDWIDTH

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement room

Company : Brother Corporation
Equipment : Wireless LAN Card
Model : NC-7100
Sample No. : BR1-009
Power : DC 3.3V
Mode : Transmitting (IEEE 802.11b/g) Burst Frame mode
FCC ID :
IC No. :

REPORT NO : 24BE0174-HO
REGULATION : Fcc Part15 Subpart C 15.247(a)
TEST DISTANCE : -
DATE : 11/17/2003
TEMPERATURE : 23deg.C
HUMIDITY : 40%

ENGINEER : Kenichi Adachi

IEEE802.11b (DSSS), Rate: 11Mbps

CH	FREQ	6dB Bandwidth	Limit
	[MHz]	[MHz]	[kHz]
Low(1)	2412.0	11.5	500.0
Mid(6)	2437.0	11.5	500.0
High(11)	2462.0	11.3	500.0

IEEE802.11g (OFDM), Rate: 36Mbps

CH	FREQ	6dB Bandwidth	Limit
	[MHz]	[MHz]	[kHz]
Low(1)	2412.0	16.6	500.0
Mid(6)	2437.0	16.6	500.0
High(11)	2462.0	16.6	500.0

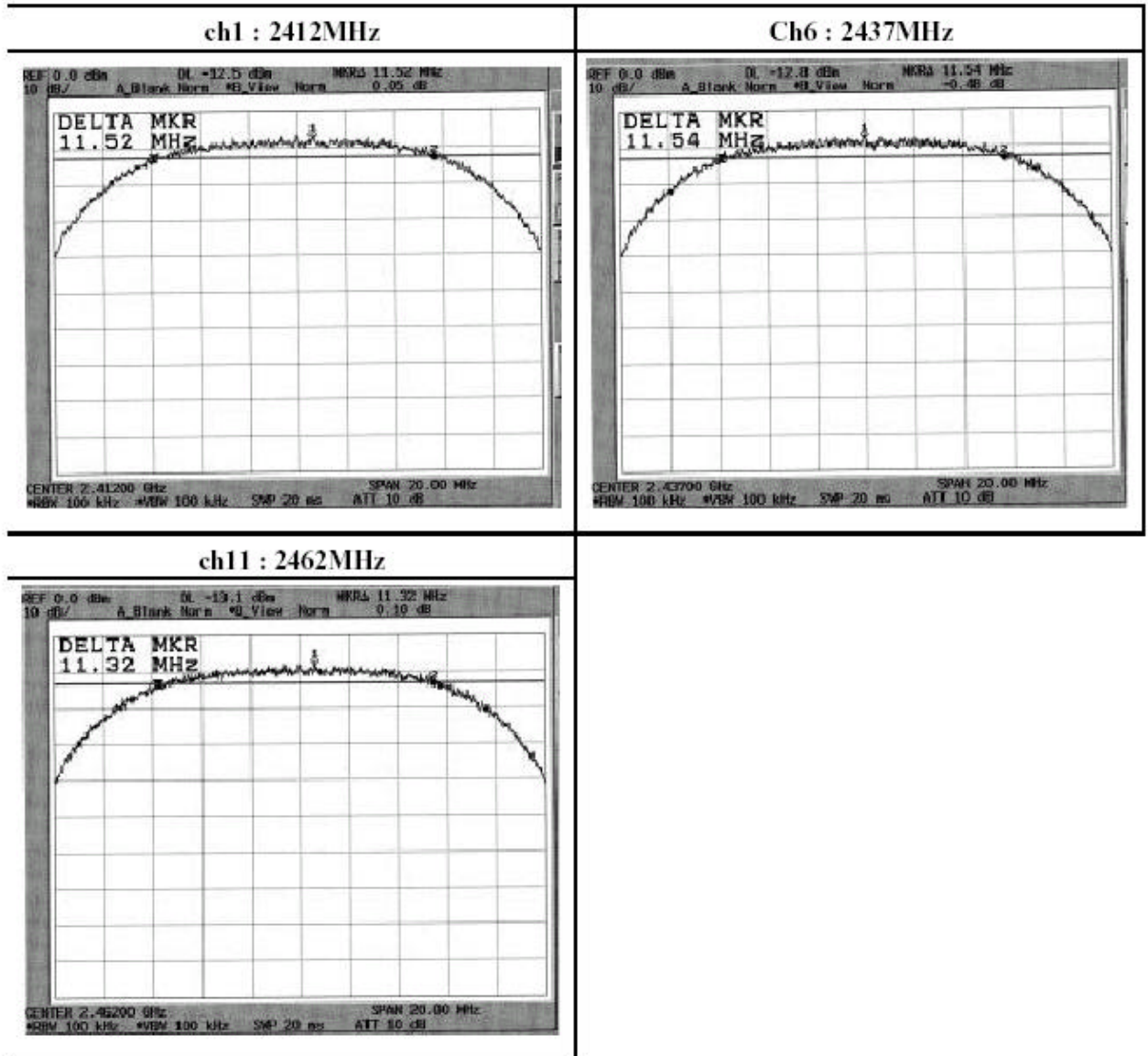
IEEE802.11g (OFDM), Rate: 54Mbps

CH	FREQ	6dB Bandwidth	Limit
	[MHz]	[MHz]	[kHz]
Low(1)	2412.0	16.6	500.0
Mid(6)	2437.0	16.6	500.0
High(11)	2462.0	16.6	500.0

Test Instruments : MRENT-06, MAT-20 (10dB), MCC-22,

6dB Bandwidth (Conducted)

IEEE802.11b: 11Mbps



UL Apex Co., Ltd.

Head Office EMC Lab.

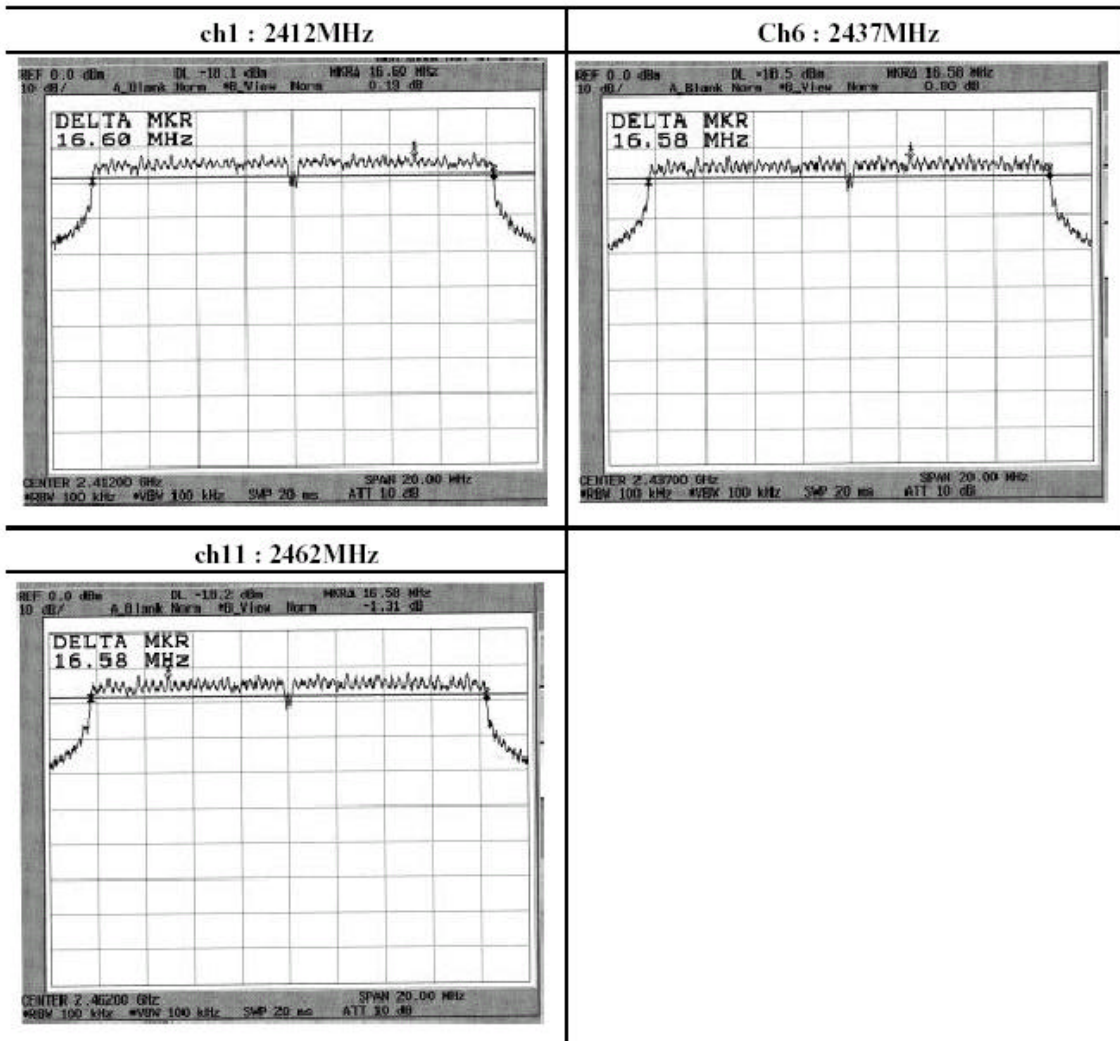
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

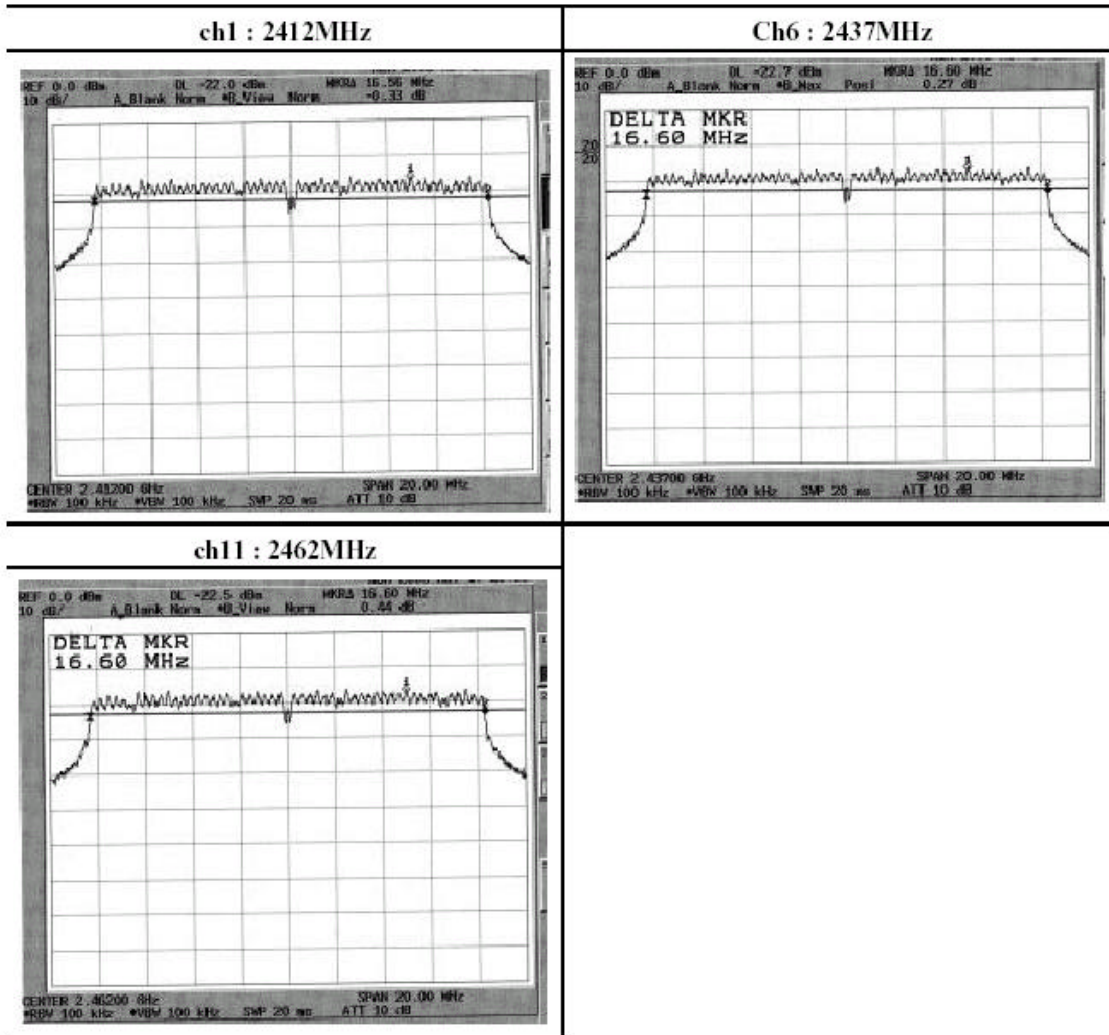
Facsimile : +81 596 24 8124

MF060b(10.04.03)

IEEE802.11g : 36Mbps



IEEE802.11g : 54Mbps



Maximum Peak OutPut Power (Conducted)

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement room

Company : Brother
Equipment : Wireless LAN Card
Model : NC-7100
Sample No. : BR1-009
Power : DC 3.3V
Mode : Transmitting (IEEE 802.11b)

REPORT NO : 24BE0174-HO
REGULATION : Fcc Part15 Subpart C 15.247(b)(3)
TEST DISTANCE : -
DATE : 11/17/2003
TEMPERATURE : 23deg.C
HUMIDITY : 40%

FCC ID :
IC No. :

ENGINEER : Kenichi Adachi

IEEE802.11b (DSSS), Rate: 11Mbps

ch	FREQ [MHz]	S/A Reading [dBm]	Cable Loss [dB]	ATTEN. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low(1)	2412.0	3.34	3.4	10.0	16.7	30.0	13.3
Mid(6)	2437.0	2.99	3.4	10.0	16.4	30.0	13.6
High(11)	2462.0	2.65	3.5	10.0	16.2	30.0	13.9

(Channel power measurement)

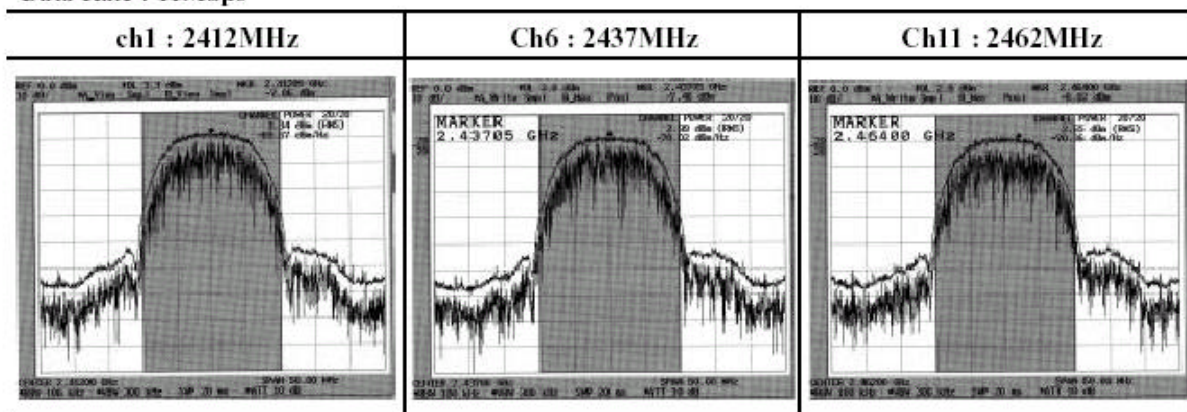
Measured with a spectrum analyzer

Sample Calculation:

Result = Reading + (Cable+ATTEN.)Loss

Test Instruments : MRENT-06, MAT-20(10dB), MCC-22

Data Rate : 11Mbps



DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.

Head Office EMC Lab. No.3 Measurement room

Company : Brother
Equipment : Wireless LAN Card
Model : NC-7100
Sample No.: BR1-009
Power : DC 3.3V
Mode : Transmitting (IEEE 802.11g)

REPORT NO : 24BE0174-HO
REGULATION : Fcc Part15 Subpart C 15.247(b)(3)
TEST DISTANCE : -
DATE : 11/17/2003
TEMPERATURE : 23deg.C
HUMIDITY : 40%

FCC ID :
IC No. :

ENGINEER : Kenichi Adachi

IEEE802.11g Rate: 36Mbps

ch	FREQ [MHz]	S/A Reading [dBm]	Cable Loss [dB]	ATTEN. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low(1)	2412.0	-0.34	3.4	10.0	13.1	30.0	16.9
Mid(6)	2437.0	-0.44	3.4	10.0	13.0	30.0	17.0
High(11)	2462.0	-0.43	3.5	10.0	13.1	30.0	16.9

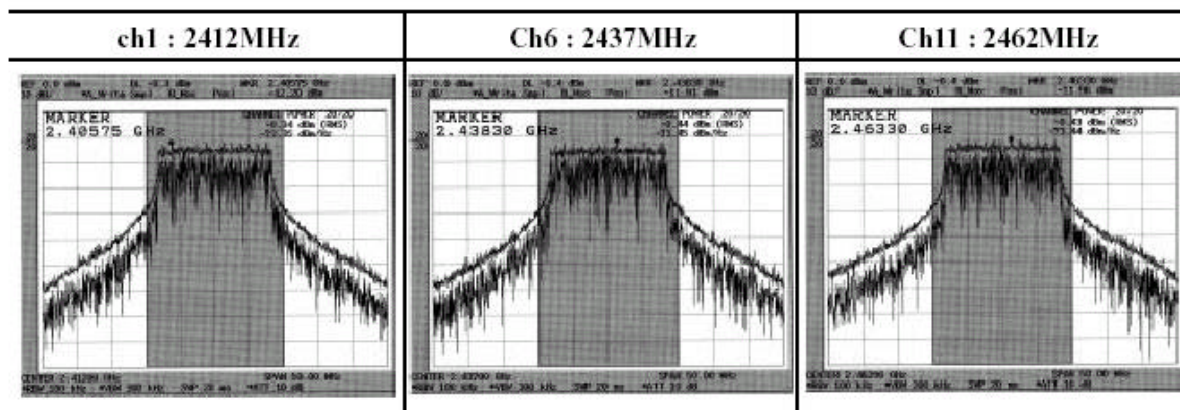
(Channel power measurement)

Measured with a spectrum analyzer

Sample Calculation:

Result = Reading + (Cable+ATTEN.)Loss

Test Instruments : MRENT-06, MAT-20(10dB), MCC-22



DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement room

Company : Brother
Equipment : Wireless LAN Card
Model : NC-7100
Sample No. : BR1-009
Power : DC 3.3V
Mode : Transmitting (IEEE 802.11g)

REPORT NO : 24BE0174-HO
REGULATION : Fcc Part15 Subpart C 15.247(b)(3)
TEST DISTANCE : -
DATE : 11/17/2003
TEMPERATURE : 23deg.C
HUMIDITY : 40%

FCC ID :
IC No. :

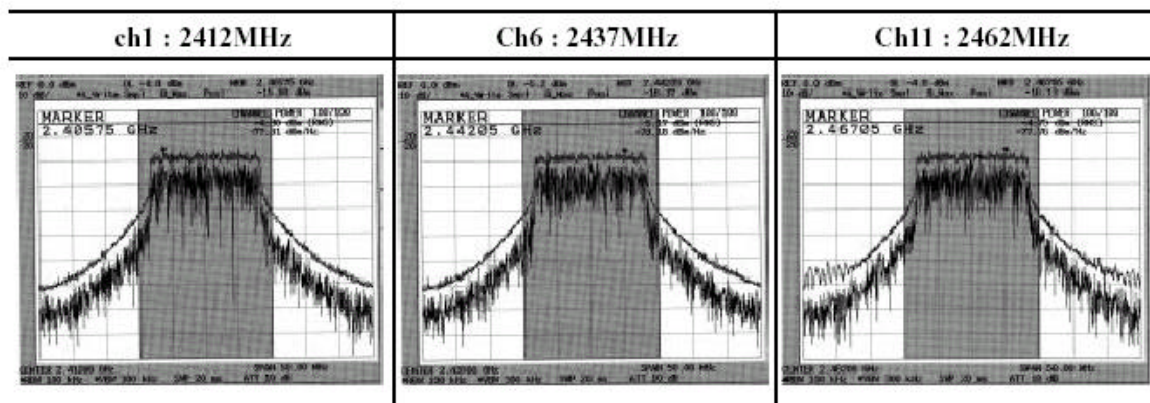
ENGINEER : Kenichi Adachi

IEEE802.11g Rate: 54Mbps

ch	FREQ [MHz]	S/A (PK) Reading [dBm]	Cable Loss [dB]	ATTEN. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low(1)	2412.0	-4.80	3.4	10.0	8.6	30.0	21.4
Mid(6)	2437.0	-5.17	3.4	10.0	8.2	30.0	21.8
High(11)	2462.0	-4.75	3.5	10.0	8.8	30.0	21.3

(Channel power measurement)
Measured with a spectrum analyzer
Sample Calculation:
Result = Reading + (Cable+ATTEN.)Loss

Test Instruments : MRENT-06, MAT-20(10dB), MCC-22



Out of Band Radiated Emission : 30-1000MHz

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/07 16:33:32

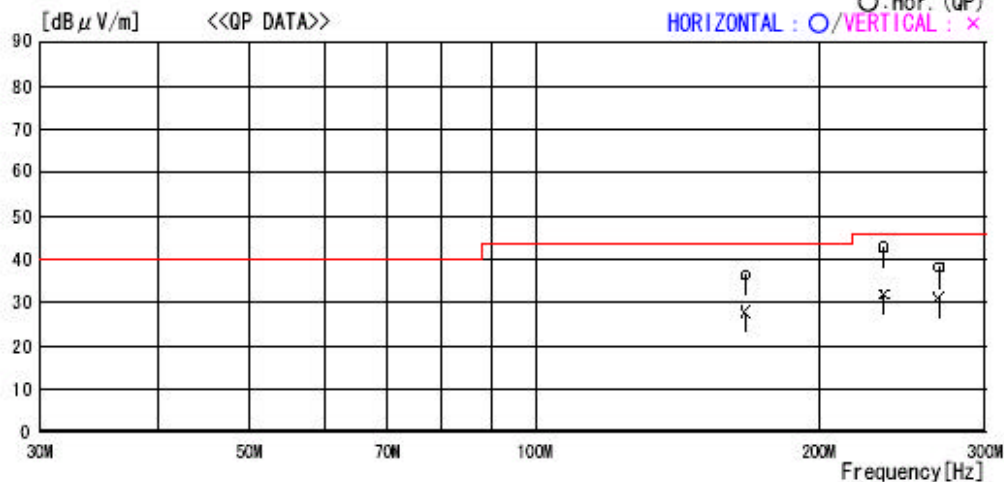
Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009
Report No. : 24BE0174-HO
Power : AC 120V / 60Hz
Temp/C/Humi% : 22°C / 38%
Operator : Kenichi Adachi

Note / Remarks : Tx:2412MHz, IEEE801.11b, 11Mbps, Ext-antenna

LIMIT : FCC15C §15.247(a) 3m
Except for the data below : adequate margin data below the limits.

×:Ver. (QP)

○:Hor. (QP)



No.	FREQ [MHz]	READING QP [dB μ V]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dB μ V/m]	LIMIT [dB μ V/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	167.027	36.7	15.1	7.7	23.2	36.3	43.5	7.2	156	96
2	233.996	40.7	16.6	8.1	22.9	42.5	46.0	3.5	136	24
3	267.432	35.3	17.7	8.2	23.0	38.2	46.0	7.8	100	0
----- Vertical -----										
4	167.025	28.2	15.1	7.7	23.2	27.8	43.5	15.7	100	130
5	233.988	30.1	16.6	8.1	22.9	31.9	46.0	14.1	100	93
6	267.432	28.4	17.7	8.2	23.0	31.3	46.0	14.7	178	114

CHART:WITHOUT FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN Page:

DATA OF RADIATED EMISSION TEST

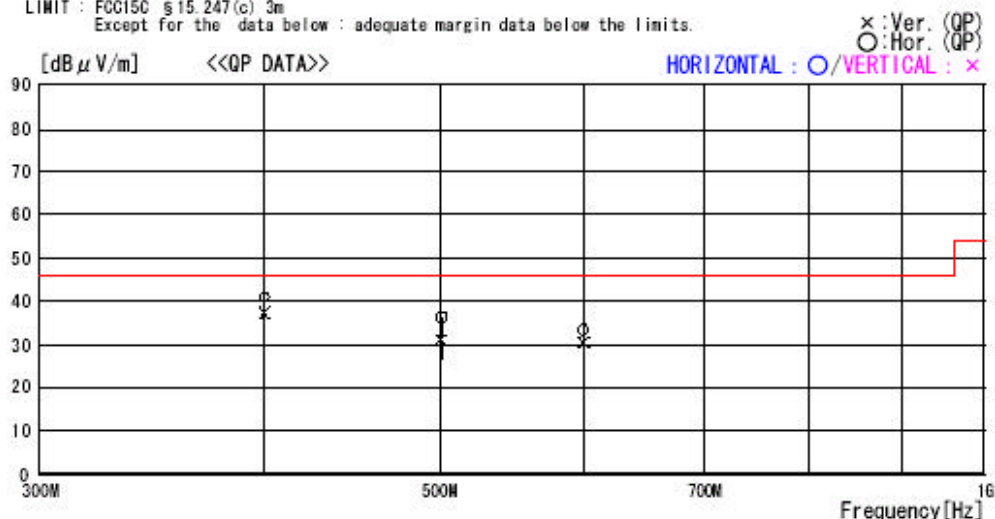
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/12/07 16:34:10

Applicant : Brother
Kind of EUT : Wireless LAN Card
Model No. : NC-7100
Serial No. : BR1-009
Report No. : 24BE0174-HO
Power : AC 120V / 60Hz
Temp/C/Humi% : 22°C / 38%
Operator : Kenichi Adachi

Mode / Remarks : Tx:2412MHz, IEEE801.11b, 11Mbps, Ext-antenna

LIMIT : FCC15C §15.247(c) 3m

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



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	400.000	37.8	17.3	8.9	23.2	40.8	46.0	5.2	100	24
2	501.154	31.6	18.2	9.3	23.0	36.1	46.0	9.9	186	352
3	599.582	27.7	19.6	9.2	23.2	33.3	46.0	12.7	155	231
----- Vertical -----										
4	399.999	34.3	17.3	8.9	23.2	37.3	46.0	8.7	100	131
5	501.159	26.5	18.2	9.3	23.0	31.0	46.0	15.0	100	330
6	599.595	24.8	19.6	9.2	23.2	30.4	46.0	15.6	100	110

CHART: WITHOUT FACTOR ANT TYPE: -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION: READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page: