

RADIO TEST REPORT

Test Report No. : 26KE0022-HO-E

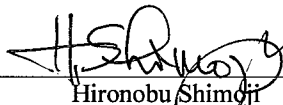
Applicant : **BROTHER INDUSTRIES, LTD.**
Type of Equipment : **Facsimile Machine**
Model No. : **FAX-1960C**
FCC ID : **B3Q8XAB07**
Test standard : **FCC Part 15 Subpart C**
Section 15.207, Section 15.247: 2006
Test Result : **Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.

Date of test:

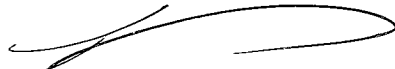
July 19 to August 21, 2006

Tested by:



Hironobu Shimoji
Group Leader of EMC Services

Approved by :



Naoki Sakamoto
Group Leader of EMC Services



NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://ulapex.jp/emc/nvlap.htm>

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MF060b(14.06.06)

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SECTION 1: Client information

Company Name	BROTHER INDUSTRIES,LTD.
Brand name	brother
Address	1-1-1, Kawagishi, Mizuho-ku, Nagoya 467-8562, Japan
Telephone Number	+81-52-824-2348
Facsimile Number	+81-52-824-2734
Contact Person	Katsuhiko Sato

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	Facsimile Machine
Model No.	FAX-1960C
Serial No.	0001, 0002
Rating	AC100-120V
Country of Manufacture	China
Receipt Date of Sample	July 18, 2006
Condition of EUT	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	No modification by the test lab.

2.2 Product Description

2.2.1 General Information

Feature of EUT	EUT is a composite device with the function of FAX, Scanner, Copy, Printer, and cordless phone.
Operation Clock	13.824MHz

2.2.2 Radio Specification

Equipment Type	Transceiver
Frequency band	Low Channel = 5725.809328 MHz High Channel = 5848.889420 MHz
Bandwidth & Channel spacing	Bandwidth: 1MHz Channel spacing: 891.871kHz
Type of Modulation	FHSS
Antenna Type	1/4 lambda dipole antenna (Installed outside) *1) Wire antenna (Installed inside)
Antenna Connector Type	N/A
Antenna Gain	1.1 dBi(Max) : 1/4 lambda dipole antenna *1) 2.6 dBi(Max) : Wire antenna
Power Supply (inner/to RF Module)	DC +3.3V
Method of Frequency Generation	Synthesizer

*1) This antenna is used in priority to another antenna for this EUT system.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2006
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits : 2006
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz : 2006

FCC 15.31 (e)

This EUT provides stable voltage(DC3.3V) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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3.2 Procedures and results

[FHSS]

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results	
1	Conducted emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC: Section 15.207	-	N/A	4.1dB 0.51596MHz L, (AV)	Complied	
2	Carrier Frequency Separation	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)	Conducted	N/A	See data.	Complied	
3	20dB Bandwidth	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(ii)	Conducted	N/A		Complied	
4	Number of Hopping Frequency	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(ii)	Conducted	N/A		Complied	
5	Dwell time	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(ii)	Conducted	N/A		Complied	
6	Maximum Peak Output Power	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(b)(1)	Conducted	N/A		Complied	
7	Band Edge Compliance	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(d)	Conducted	N/A		Complied	
8	Spurious Emission	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(d)	Conducted/ Radiated	N/A		6.2dB 35093.5MHz Horizontal, (AV)	Complied

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Addition to standards

No addition, deviation, nor exclusion has been made from standards.

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3.4 Uncertainty

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is ± 2.6 dB.
The data listed in this test report has enough margin, more than the site margin.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.59 dB(3m)/ ± 4.58 dB(10m).
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 4.62 dB(3m)/ ± 4.60 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 5.27 dB.
The data listed in this test report has enough margin, more than the site margin.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is ± 3.0 dB.

3.5 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	655103	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247A-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	IC4247A-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	-
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 shielded room	-	-	6.0 x 6.0 x 3.9m	N/A	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	N/A	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	N/A	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3 and No.4 semi-anechoic chambers and No.7 shielded room.

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

The mode used for test : **[For Antenna terminal conducted test]**

--Hopping ON

Communication mode *1)

*1) FAX-1960C communicates with Digital Cordless Handset on wireless.

-Hopping OFF

Transmitting mode

Low Channel (ch 1) : 5725.809328MHz

Mid Channel (ch 71) : 5788.240269MHz

High Channel (ch 139) : 5848.889420MHz

[For Conducted emission test]

-Hopping OFF

Transmitting mode + With/Without Digital Cordless Handset Charging

Low Channel (ch 1) : 5725.809328MHz

Mid Channel (ch 71) : 5788.240269MHz

High Channel (ch 139) : 5848.889420MHz

[For Radiated emission test]

-Hopping OFF

Continuous transmitting mode

Low Channel (ch 1) : 5725.809328MHz

Mid Channel (ch 71) : 5788.240269MHz

High Channel (ch 139) : 5848.889420MHz

Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

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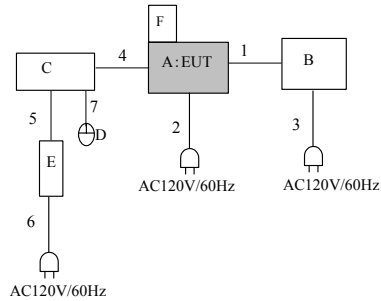
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4.2 Configuration and peripherals



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

Description of Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Facsimile Machine	FAX-1960C	0001 *1), 0002 *2)	Brother	EUT
B	FAX equipment	FQ-70	17104455	Sharp	-
C	Notebook PC	PC-MJ720M	1V024403	Sharp	-
D	PS/2 Mouse	X06-08477	-	Microsoft	-
E	AC Adaptor	EA-RJ1V	NLD0107025900	Sharp	-
F	Digital Cordless Handset*3)	BCL-D10	07001073 070014CO	Brother	-

*1) Used for Antenna Terminal tests

*2) Used for Conducted and Radiated emission tests

*3) Used for Conducted emission tests (With Digital Cordless Handset charging)

List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	TEL Cable	1.5	Unshielded	Unshielded
2	AC Cable	2.3	Unshielded	Unshielded
3	AC Cable	2.0	Unshielded	Unshielded
4	USB Cable	3.0	Shielded	Shielded
5	DC Cable	1.8	Unshielded	Unshielded
6	AC Cable	1.8	Unshielded	Unshielded
7	Mouse Cable	2.0	Unshielded	Unshielded

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a wooden table of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Detector : CISPR quasi-peak and average detector (IF BW 9 kHz)
Measurement range : 0.15-30MHz
Test data : APPENDIX 2
Test result : Pass

Date: July 24, 2006

Test engineer: Hironobu Shimoji

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SECTION 6: Spurious Emission

[Conducted]

Test Procedure

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2

Test result : Pass

[Radiated]

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, raised 80cm above the conducting ground plane.

The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

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.

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of FCC15.205.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

The test was made on EUT at the normal use position.

The carrier level and noise levels were confirmed at each position of 0 deg., 90 deg. and 180 deg. of EUT antenna to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Test data : APPENDIX 2

Test result : Pass

Date: July 19 and 24, 2006

Test engineer: Hironobu Shimoji

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SECTION 7: Bandwidth

Test Procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 8: Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a power meter (tested bandwidth: 50MHz) connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 9: Carrier Frequency Separation

Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 10: Number of Hopping Frequency

Test Procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 11: Dwell time

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

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APPENDIX 2: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Anechoic Chamber
 Date : 2006/07/24 17:08:48

Applicant	: BROTHER INDUSTRIES, LTD.	Report No.	: 26KE0022-HO
Kind of EUT	: Facsimile Machine	Power	: AC 120V 60Hz
Model No.	: FAX-1960C	Temp./Humi.	: 27 deg. C / 54%
Serial No.	: 0002	Operator	: Hironobu Shimoji

Mode / Remarks : Tx ch001_5725.809328MHz + Without Digital Cordless Handset Charging

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen / RSS-210
 FCC15C § 15.207 (AV) / RSS-Gen / RSS-210

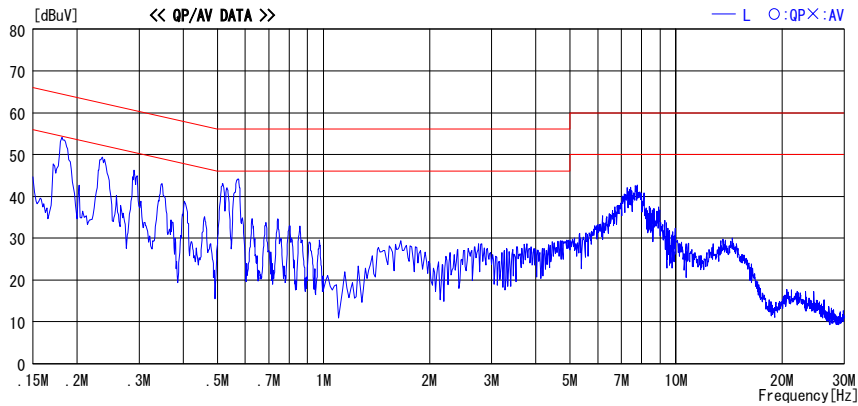
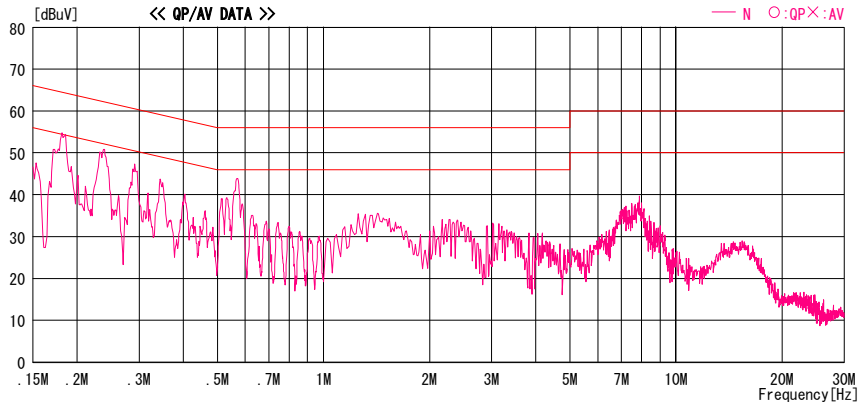


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (L1SN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Anechoic Chamber
 Date : 2006/07/24 17:14:16

Applicant : BROTHER INDUSTRIES, LTD. Kind of EUT : Facsimile Machine Model No. : FAX-1960C Serial No. : 0002	Report No. : 26KE0022-HO Power : AC 120V 60Hz Temp./Humi. : 27 deg. C / 54% Operator : Hironobu Shimoji
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Mode / Remarks : Tx ch071_5788.240269MHz + Without Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210

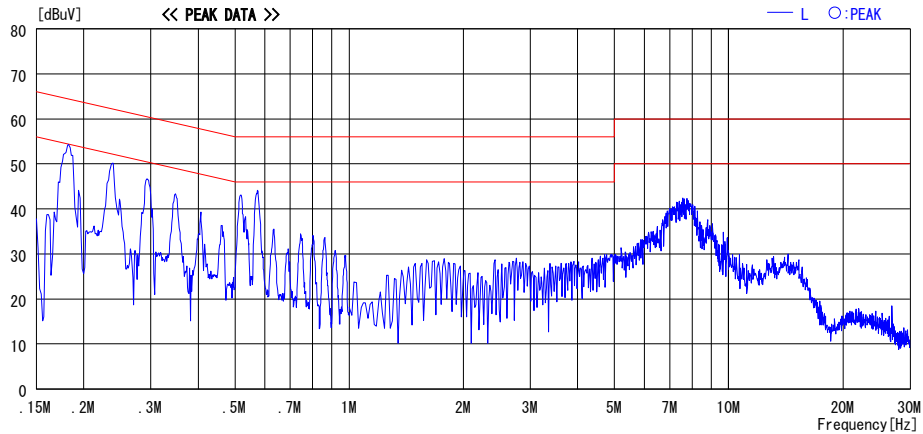
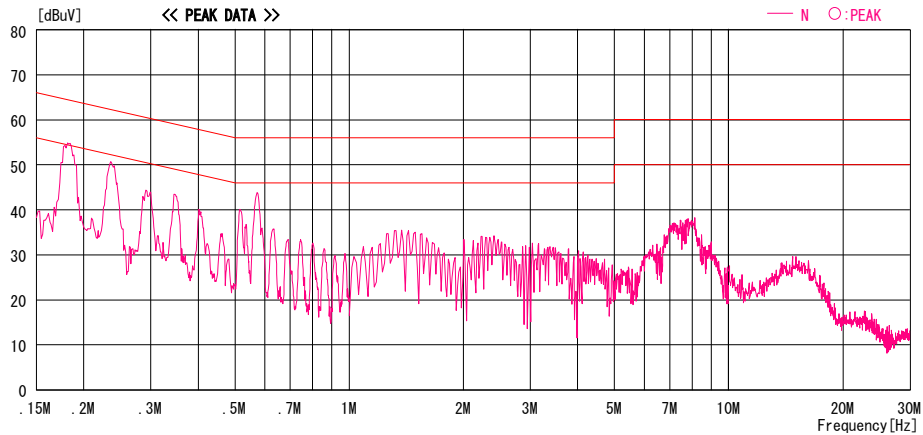


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Anechoic Chamber
 Date : 2006/07/24 17:28:15

Applicant : BROTHER INDUSTRIES, LTD. Kind of EUT : Facsimile Machine Model No. : FAX-1960C Serial No. : 0002	Report No. : 26KE0022-HO Power : AC 120V 60Hz Temp./Humi. : 27 deg. C / 54% Operator : Hironobu Shimoji
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Mode / Remarks : Tx ch139_5848. 889420MHz + Without Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210

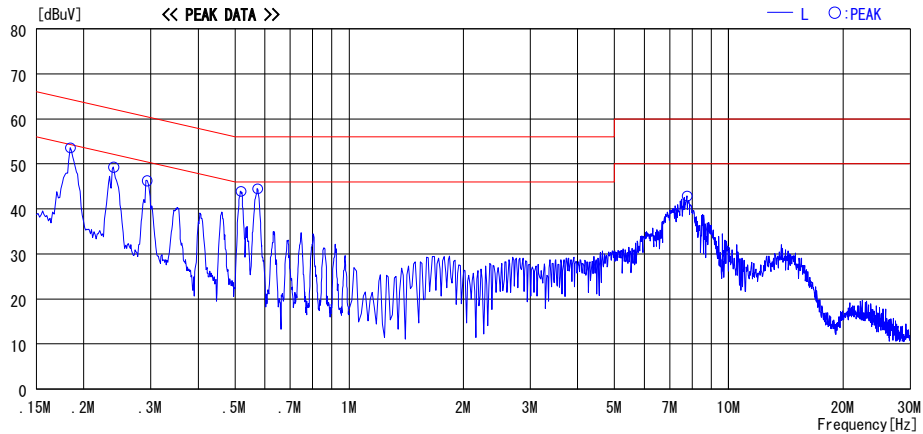
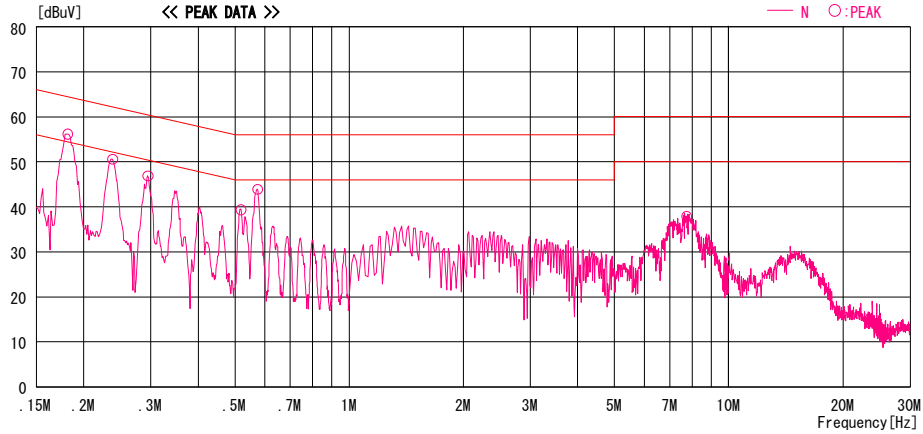


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

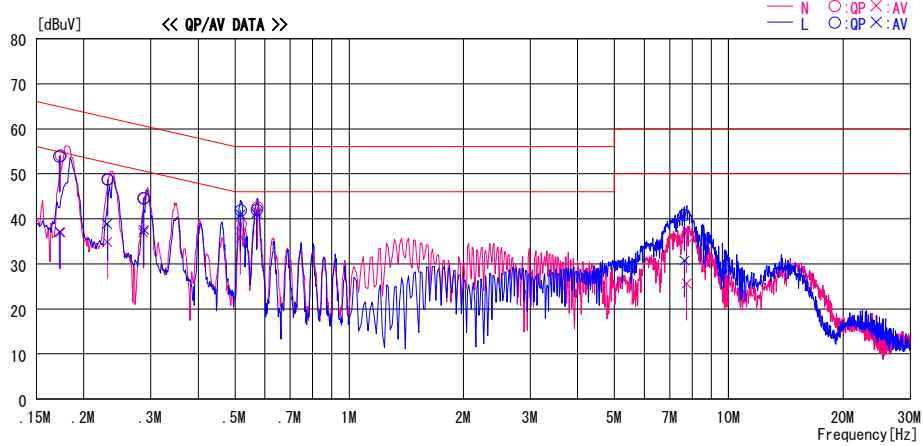
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Anechoic Chamber
 Date : 2006/07/24 17:28:15

Applicant : BROTHER INDUSTRIES, LTD. Kind of EUT : Facsimile Machine Model No. : FAX-1960C Serial No. : 0002	Report No. : 26KE0022-HO Power : AC 120V 60Hz Temp./Humi. : 27 deg. C / 54% Operator : Hironobu Shimoji
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Mode / Remarks : Tx ch139_5848.889420MHz + Without Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.17243	53.6	36.8	0.3	53.9	37.1	64.8	54.8	10.9	17.8	L
0.23044	48.4	38.5	0.4	48.8	38.9	62.4	52.4	13.6	13.5	L
0.28761	44.2	37.1	0.4	44.6	37.5	60.6	50.6	16.0	13.1	L
0.51740	41.5	40.6	0.4	41.9	41.0	56.0	46.0	14.1	5.0	L
0.57050	41.7	40.7	0.4	42.1	41.1	56.0	46.0	14.0	4.9	L
7.64020	39.7	29.5	1.2	40.9	30.7	60.0	50.0	19.1	19.3	L
0.17366	53.9	36.7	0.3	54.2	37.0	64.8	54.8	10.6	17.8	N
0.23099	48.2	34.5	0.4	48.6	34.9	62.4	52.4	13.8	17.5	N
0.28683	44.3	36.6	0.4	44.7	37.0	60.6	50.6	15.9	13.6	N
0.51725	38.4	35.4	0.4	38.8	35.8	56.0	46.0	17.2	10.3	N
0.57258	42.2	41.2	0.4	42.6	41.6	56.0	46.0	13.4	4.4	N
7.74280	34.8	24.3	1.3	36.1	25.6	60.0	50.0	23.9	24.4	N

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 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.2 Anechoic Chamber
 Date : 2006/07/24 17:04:37

Applicant : BROTHER INDUSTRIES, LTD. Kind of EUT : Facsimile Machine Model No. : FAX-1960C Serial No. : 0002	Report No. : 26KE0022-HO Power : AC 120V 60Hz Temp./Humi. : 27 deg. C / 54% Operator : Hironobu Shimoji
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Mode / Remarks : Tx ch001_5725.809328MHz + With Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210

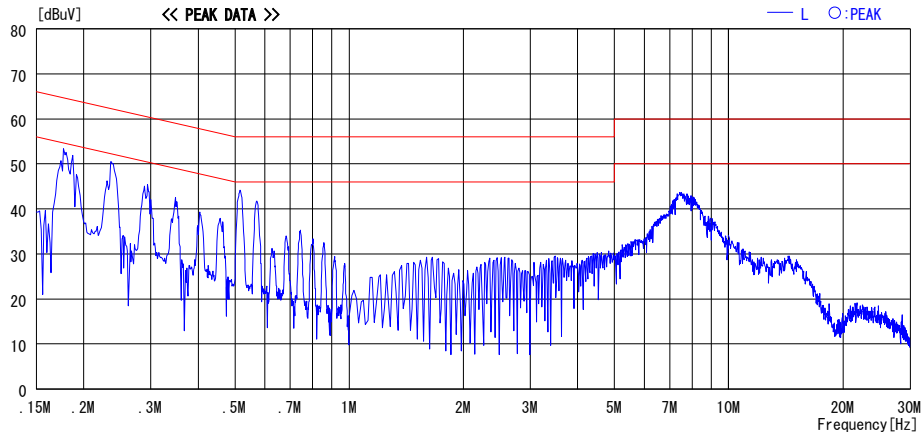
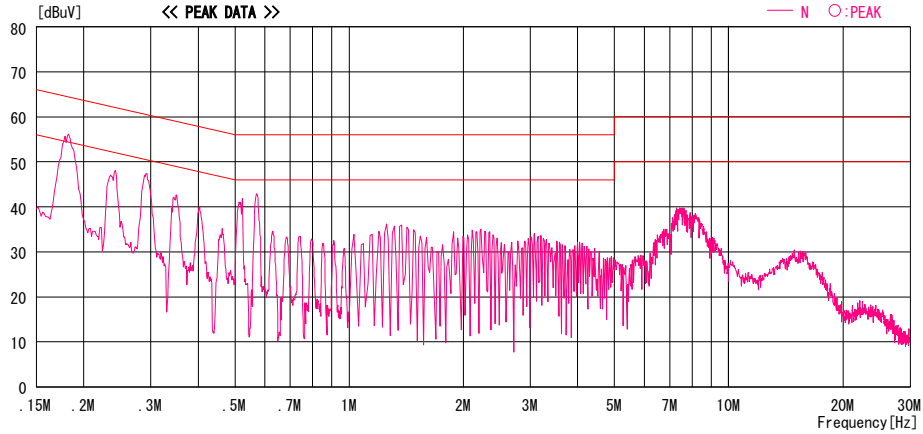


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Anechoic Chamber
 Date : 2006/07/24 17:18:16

Applicant : BROTHER INDUSTRIES, LTD. Kind of EUT : Facsimile Machine Model No. : FAX-1960C Serial No. : 0002	Report No. : 26KE0022-HO Power : AC 120V 60Hz Temp./Humi. : 27 deg. C / 54% Operator : Hironobu Shimoji
---	--

Mode / Remarks : Tx ch071_5788.240269MHz + With Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210

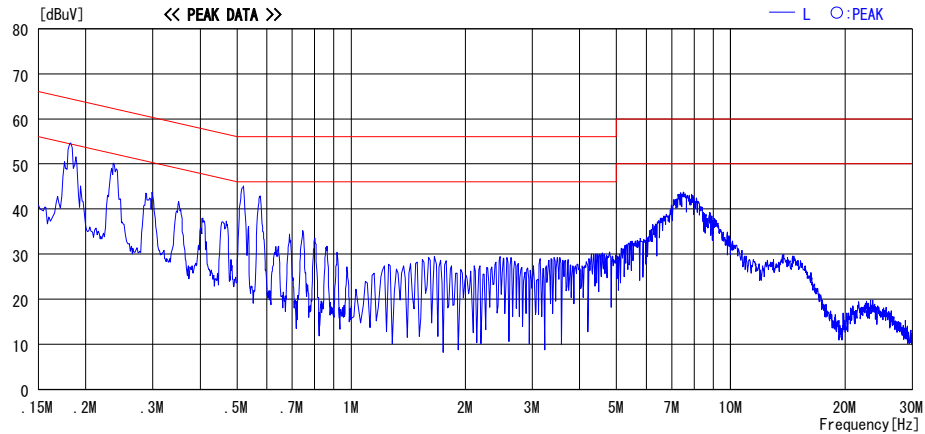
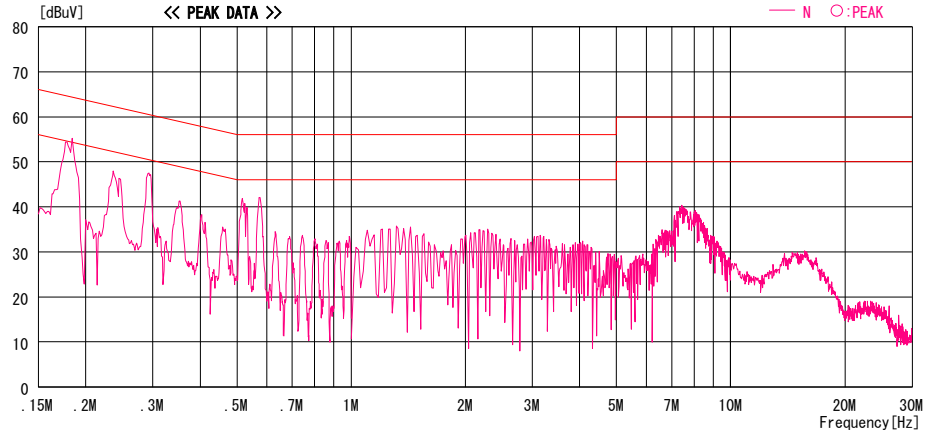


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Anechoic Chamber
 Date : 2006/07/24 17:24:11

Applicant : BROTHER INDUSTRIES, LTD. Kind of EUT : Facsimile Machine Model No. : FAX-1960C Serial No. : 0002	Report No. : 26KE0022-HO Power : AC 120V 60Hz Temp./Humi. : 27 deg. C / 54% Operator : Hironobu Shimoji
---	--

Mode / Remarks : Tx ch139_5848.889420MHz + With Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210

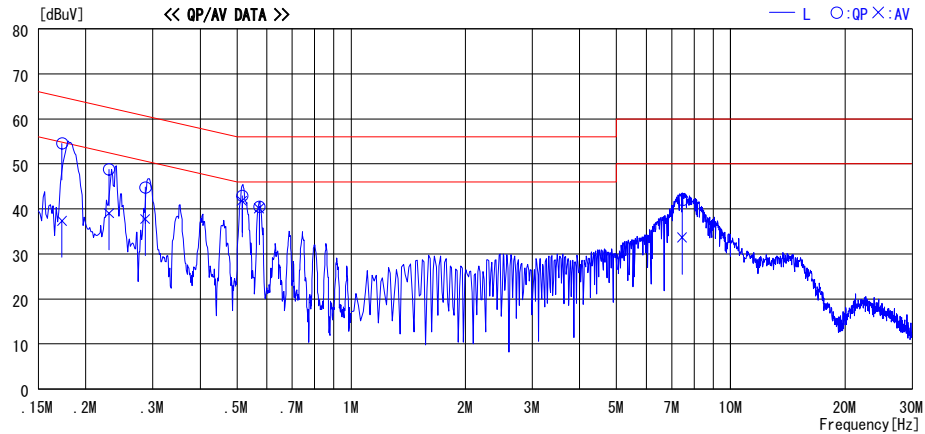
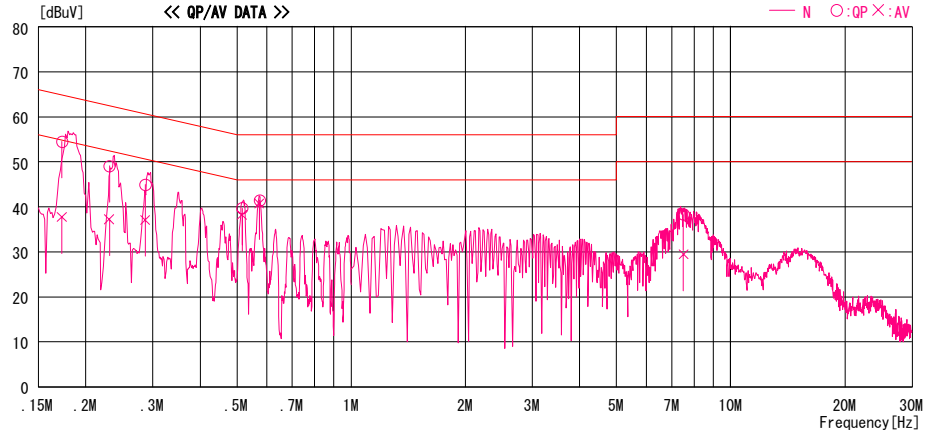


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

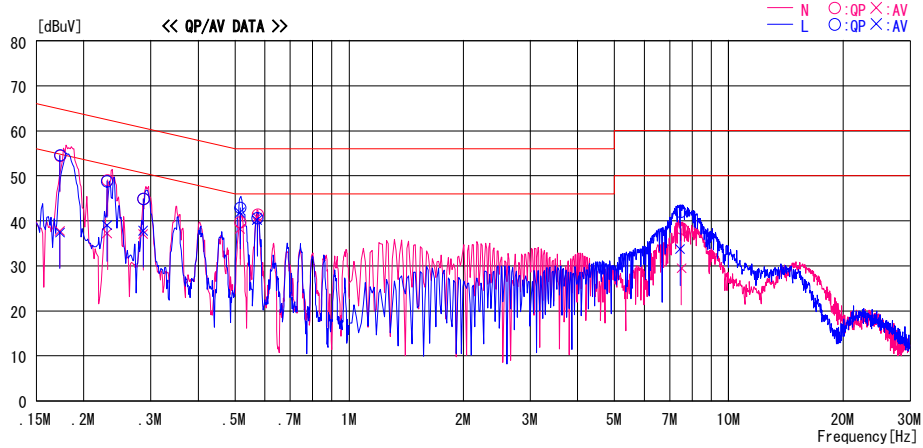
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Anechoic Chamber
 Date : 2006/07/24 17:24:11

Applicant : BROTHER INDUSTRIES, LTD. Report No. : 26KE0022-HO
 Kind of EUT : Facsimile Machine Power : AC 120V 60Hz
 Model No. : FAX-1960C Temp./Humi. : 27 deg. C / 54%
 Serial No. : 0002 Operator : Hironobu Shimoji

Mode / Remarks : Tx ch139_5848.889420MHz + With Digital Cordless Handset Charging

LIMIT : FCC15C §15.207 (QP) / RSS-Gen / RSS-210
 FCC15C §15.207 (AV) / RSS-Gen / RSS-210



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.17299	54.2	37.4	0.3	54.5	37.7	64.8	54.8	10.3	17.1	N
0.23044	48.7	36.8	0.4	49.1	37.2	62.4	52.4	13.3	15.2	N
0.28683	44.6	36.7	0.4	45.0	37.1	60.6	50.6	15.6	13.5	N
0.51558	39.3	37.8	0.4	39.7	38.2	56.0	46.0	16.3	7.8	N
0.57308	41.1	40.3	0.4	41.5	40.7	56.0	46.0	14.6	5.3	N
7.50770	37.1	28.3	1.2	38.3	29.5	60.0	50.0	21.7	20.5	N
0.17323	54.3	37.1	0.3	54.6	37.4	64.8	54.8	10.2	17.4	L
0.23026	48.5	38.6	0.4	48.9	39.0	62.4	52.4	13.6	13.4	L
0.28659	44.5	37.4	0.4	44.9	37.8	60.6	50.6	15.7	12.8	L
0.57200	40.1	39.8	0.4	40.5	40.2	56.0	46.0	15.5	5.8	L
0.51596	42.5	41.5	0.4	42.9	41.9	56.0	46.0	13.1	4.1	L
7.44720	40.8	32.5	1.2	42.0	33.7	60.0	50.0	18.0	16.3	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Carrier Frequency Separation

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	: BROTHER INDUSTRIES,LTD.	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: Facsimile Machine	TEST DISTANCE	: -
MODEL	: FAX-1960C	DATE	: 07/20/2006
S/ N	: 0001	TEMPERATURE	: 24deg.C
POWER	: AC120V	HUMIDITY	: 62%
MODE	: Tx(Hopping on)	ENGINEER	: Hironobu Shimoji

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low (Ch 1)	5725.809328	1.800	> 0.667 (20dB Bandwidth or 25[kHz])(whichever is greater))
Mid (Ch 71)	5788.240269	1.800	> 0.700 (20dB Bandwidth or 25[kHz])(whichever is greater))
High (CH 139)	5848.889420	0.900	> 0.685 (20dB Bandwidth or 25[kHz])(whichever is greater))

The following table shows the hopping sequence.

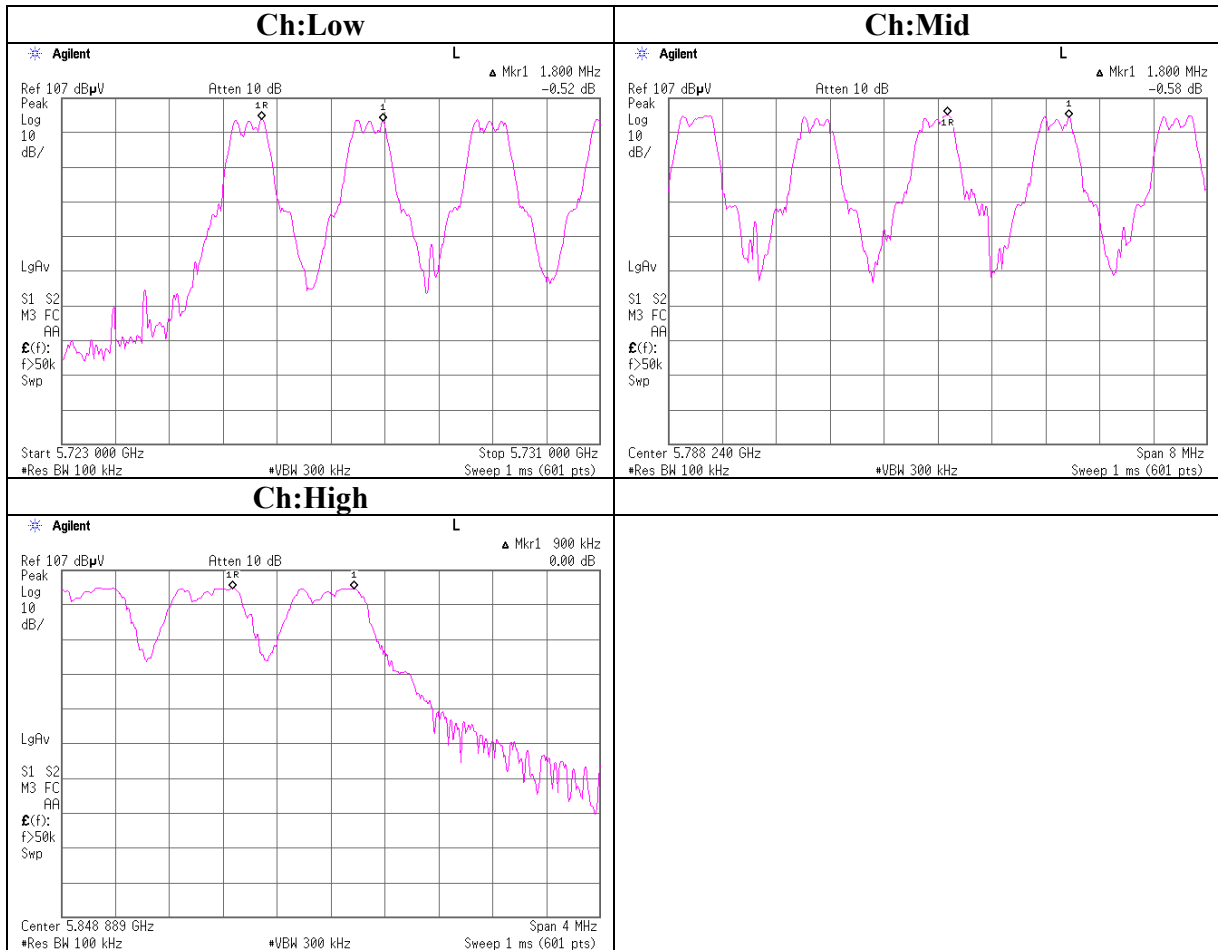
As for the detail of Frequency separation, please refer to “FCC Submission For 5.8 GHz FHSS System”, Clause 3, Section 3.2. (Theory of operation 3. pdf)

APPENDIX D – LOGICAL TO PHYSICAL MAPPING TABLE

The following table is the logical to physical mapping table, as detailed in section 3.2.3.

	0	1	2	3	4	5	6	7	8	9
0	1	3	5	7	9	11	13	15	17	19
10	21	23	25	27	29	31	33	35	37	39
20	41	43	45	47	49	51	53	55	57	59
30	61	63	65	67	69	71	73	75	77	79
40	81	83	85	87	89	91	93	95	97	99
50	101	103	105	107	109	111	113	115	117	119
60	121	123	125	127	129	130	131	132	133	134
70	135	136	137	138	139					

Carrier Frequency Separation



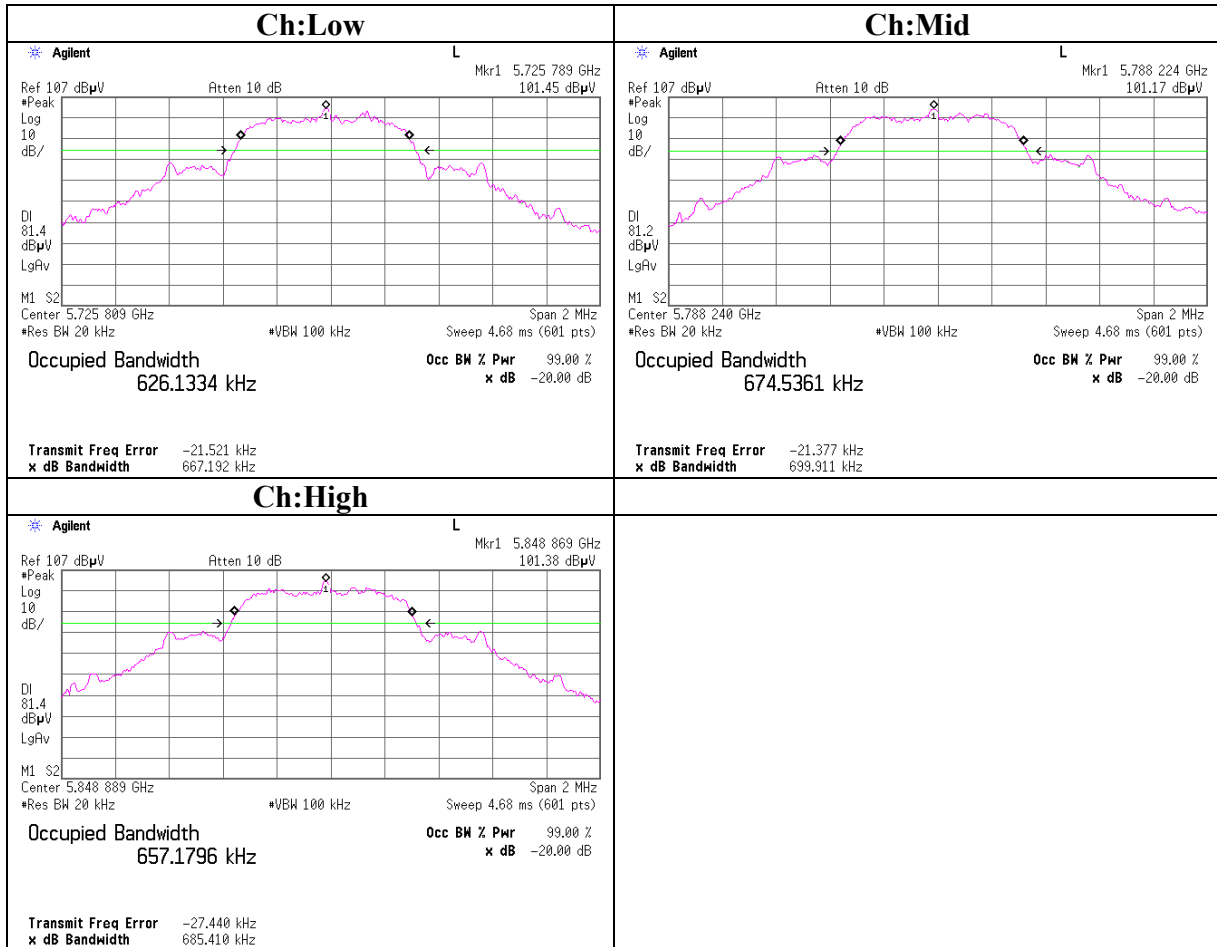
20dB Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	: BROTHER INDUSTRIES,LTD.	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: Facsimile Machine	TEST DISTANCE	: -
MODEL	: FAX-1960C	DATE	: 07/20/2006
S/ N	: 0001	TEMPERATURE	: 24deg.C
POWER	: AC120V	HUMIDITY	: 62%
MODE	: Tx (Hopping off)	ENGINEER	: Hironobu Shimoji

Ch	Freq. [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
Low	5725.809328	0.667	-
Mid	5788.240269	0.700	-
High	5848.889420	0.685	-

20dB Bandwidth



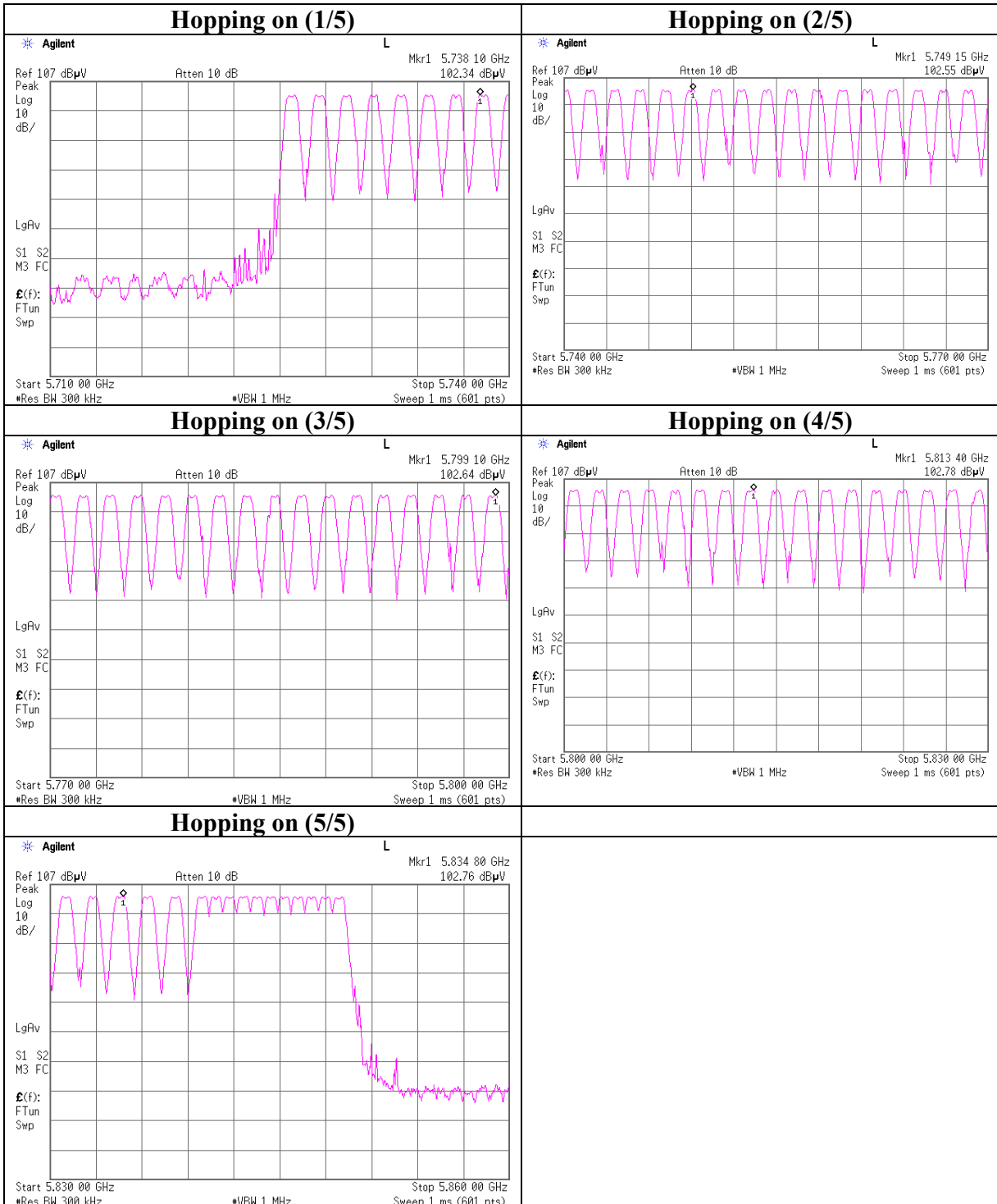
Number of Hopping Frequency

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	: BROTHER INDUSTRIES,LTD.	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)(ii)
EQUIPMENT	: Facsimile Machine	TEST DISTANCE	: -
MODEL	: FAX-1960C	DATE	: 07/20/2006
S/N	: 0001	TEMPERATURE	: 24deg.C
POWER	: AC120V	HUMIDITY	: 62%
MODE	: Tx(Hopping on)	ENGINEER	: Hironobu Shimoji

Mode	Number of channel [time]	Limit [time]
Tx(Hopping on)	75	≥ 75

Number of Hopping Frequency



Dwell time

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY : BROTHER INDUSTRIES,LTD.	REGULATION : FCC Part15 Subpart C 15.247(a)(1)(ii)
EQUIPMENT : Facsimile Machine	TEST DISTANCE : -
MODEL : FAX-1960C	DATE : 08/21/2006
S/ N : 0001	TEMPERATURE : 24deg.C
POWER : AC120V	HUMIDITY : 62%
MODE : Tx(Hopping on)	ENGINEER : Hironobu Shimoji

DUMMY BEARER

Mode	Number of transmission in a 30 sec	Length of transmission time [msec]	Result [msec]	Limit [msec]
Hopping on (M-ch)	34 times / 30sec	0.342	11.638	400

TRAFFIC BEARER

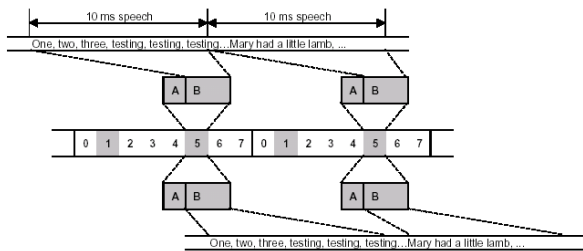
Mode	Number of transmission in a 30 sec	Length of transmission time [msec]	Result [msec]	Limit [msec]
Hopping on (M-ch)	34 times / 30sec	1.044	35.496	400

DUMMY BEARER Dwell Time + TRAFFIC BEARER Dwell Time

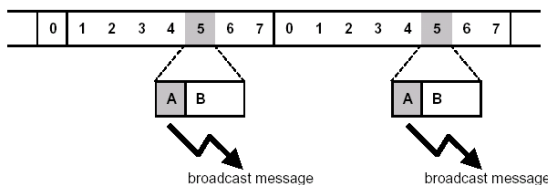
Mode	Dwell Time [msec]	Limit [msec]
Hopping on (M-ch)	47.134	400.000

The dummy bearer is usually separate to the traffic bearers, i.e. they are on different slots. In the case that 4 traffic bearers are required (the maximum number that can be supported by the FP) then one of the traffic bearers will also take over the responsibilities of the dummy bearer. In the remainder of the document this shall be referred to as a ‘combined dummy/traffic bearer’. (From Clause 2.4 of Section 2 in FCC Submission For 5.8 GHz FHSS System)

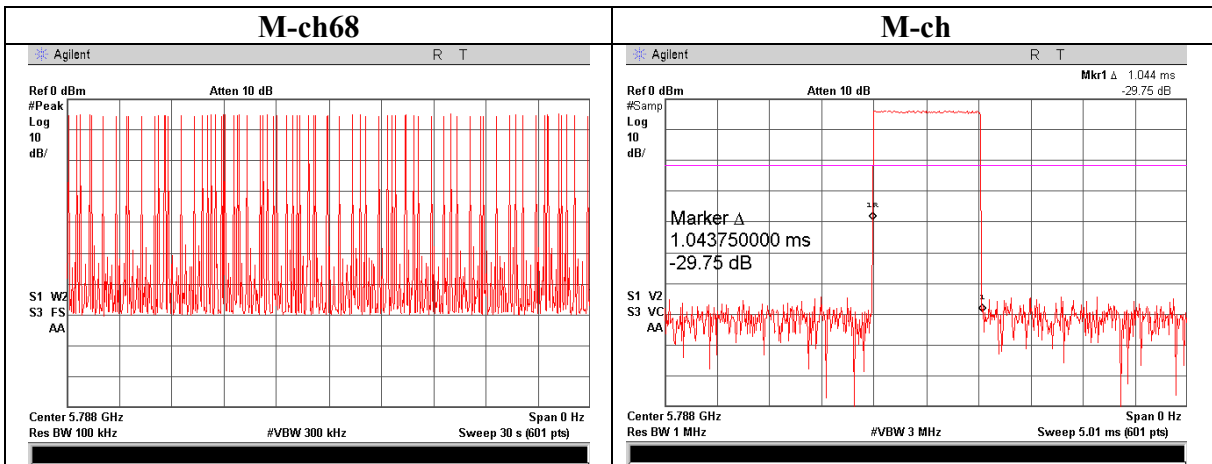
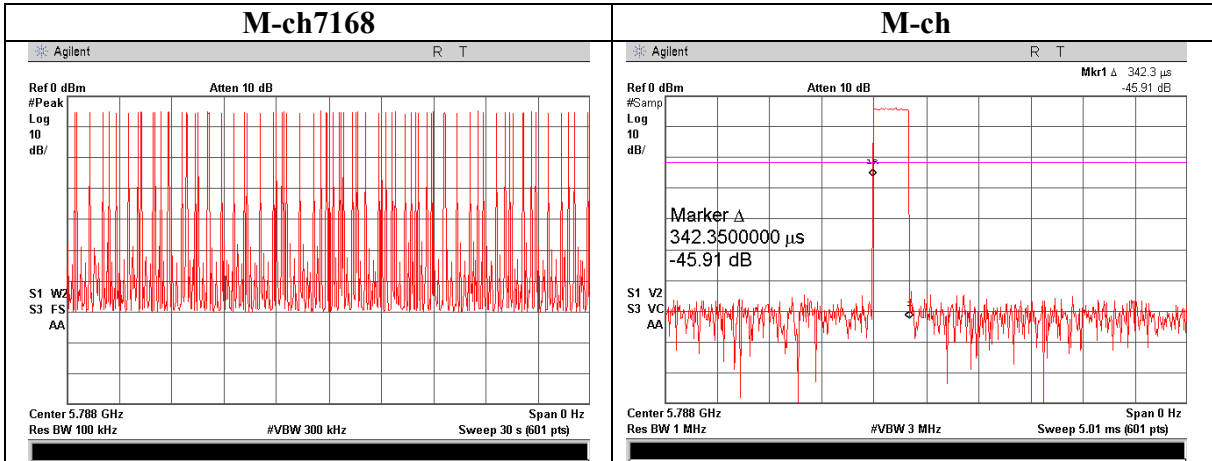
The following diagram shows the down-link transmission of a traffic bearer, the up-link transmission is in slot 1.



The following diagram shows a dummy bearer transmission. Note, that it uses only a down-link slot and the A-field of the packet.



Dwell time



Maximum Peak Output Power

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY : BROTHER INDUSTRIES,LTD. REGULATION : FCC Part15 Subpart C 15.247(b)(1)
EQUIPMENT : Facsimile Machine TEST DISTANCE : -
MODEL : FAX-1960C DATE : 07/20/2006
S/ N : 0001 TEMPERATURE : 24deg.C
POWER : AC120V HUMIDITY : 62%
MODE : Tx(Hopping Off) ENGINEER : Hironobu Shimoji

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low (ch1)	5725.809328	-6.37	2.75	20.24	16.61	45.81	30.00	1000	13.39
Mid (ch71)	5788.240269	-5.82	2.83	20.26	17.27	53.33	30.00	1000	12.73
High (ch139)	5848.889420	-5.75	2.82	20.28	17.36	54.45	30.00	1000	12.64

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer)+ Attenuator

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

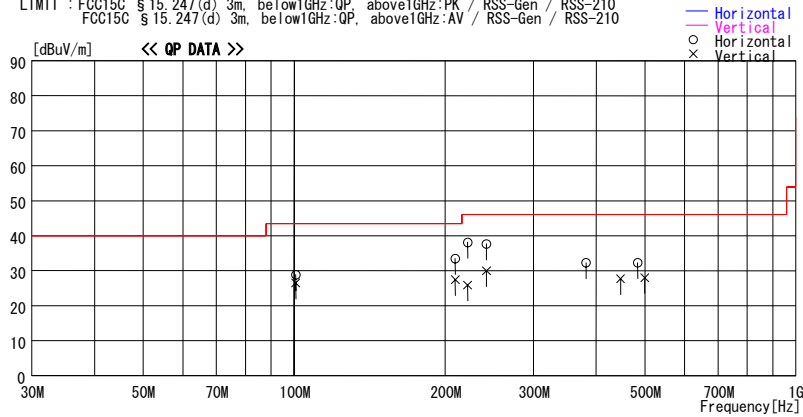
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2006/07/24 09:41:50

Company : BROTHER INDUSTRIES, LTD. Report No. : 26KE0022-HO
Kind of EUT : Facsimile Machine Power : AC120V / 60Hz
Model No. : FAX-1960C Temp./Humi. : 26deg. C. /63%
Serial No. : 0002 Operator : Hironobu Shimoji

Mode / Remarks : Tx ch001_5725_809328MHz / Max-axis (Hor 180deg, Ver 90deg)

LIMIT : FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-210
FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-210



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
			Factor [dB/m]	Gain [dB]						
100.813	40.1	QP	10.0	-21.3	28.8	171	268	Hori.	43.5	14.7
100.790	37.8	QP	10.0	-21.3	26.5	60	100	Vert.	43.5	17.0
209.664	36.9	QP	16.7	-20.2	33.4	210	100	Hori.	43.5	10.1
209.676	30.9	QP	16.7	-20.2	27.4	73	100	Vert.	43.5	16.1
221.765	41.6	QP	16.8	-20.3	38.1	208	107	Hori.	46.0	7.9
221.782	29.4	QP	16.8	-20.3	25.9	90	100	Vert.	46.0	20.1
241.928	40.6	QP	17.0	-19.9	37.7	219	150	Hori.	46.0	8.4
241.903	32.9	QP	17.0	-19.9	30.0	318	100	Vert.	46.0	16.0
447.560	29.6	QP	17.8	-19.7	27.7	349	144	Vert.	46.0	18.3
382.048	34.7	QP	17.2	-19.6	32.3	79	100	Hori.	46.0	13.7
483.842	34.2	QP	17.8	-19.7	32.3	33	193	Hori.	46.0	13.7
499.963	30.2	QP	17.8	-20.0	28.0	209	114	Vert.	46.0	18.0

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

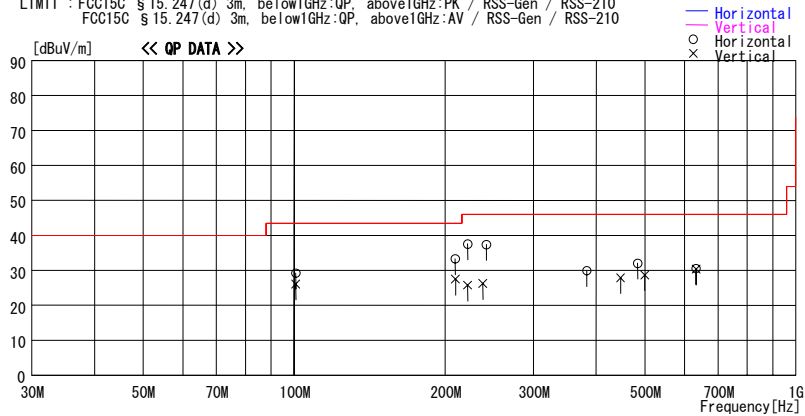
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2006/07/24 11:41:11

Company : BROTHER INDUSTRIES, LTD. Report No. : 26KE0022-HO
 Kind of EUT : Facsimile Machine Power : AC120V / 60Hz
 Model No. : FAX-1960C Temp./Humi. : 26deg. C. / 63%
 Serial No. : 0002 Operator : Hironobu Shimoji

Mode / Remarks: Tx ch071_5788.240269MHz / Max-axis(Hor 180deg, Ver 90deg)

LIMIT : FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-210
 FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-210



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss & Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
100.787	37.4	QP	10.0	-21.3	26.1	60	100	Vert.	43.5	17.4
100.800	40.5	QP	10.0	-21.3	29.2	171	268	Hori.	43.5	14.3
209.672	36.8	QP	16.7	-20.2	33.3	210	100	Hori.	43.5	10.2
209.730	31.0	QP	16.7	-20.2	27.5	73	100	Vert.	43.5	16.0
221.767	41.1	QP	16.8	-20.3	37.6	209	107	Hori.	46.0	8.4
221.784	29.3	QP	16.8	-20.3	25.8	325	204	Vert.	46.0	20.2
237.880	29.1	QP	17.0	-19.9	26.2	319	100	Vert.	46.0	19.8
241.912	40.3	QP	17.0	-19.9	37.4	219	150	Hori.	46.0	8.6
383.053	32.3	QP	17.2	-19.6	29.9	79	100	Hori.	46.0	16.1
447.563	29.8	QP	17.8	-19.7	27.9	349	144	Vert.	46.0	18.1
499.973	30.9	QP	17.8	-20.0	28.7	209	114	Vert.	46.0	17.3
483.862	33.9	QP	17.8	-19.7	32.0	33	193	Hori.	46.0	14.0
633.020	30.1	QP	19.7	-19.2	30.6	178	258	Hori.	46.0	15.4
633.040	29.9	QP	19.7	-19.2	30.4	258	178	Vert.	46.0	15.7

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

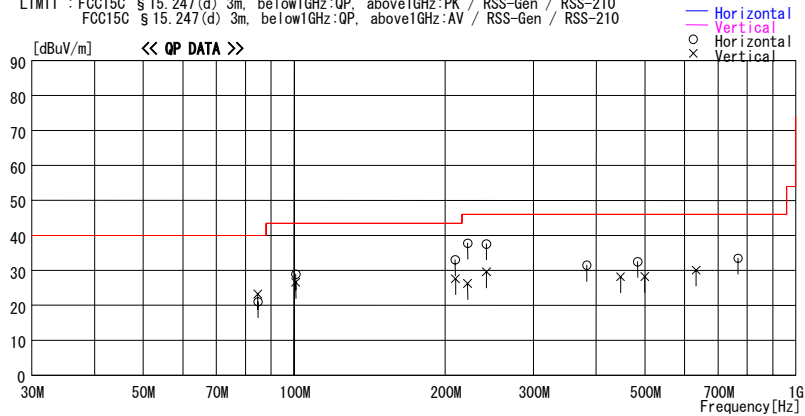
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2006/07/24 13:49:08

Company : BROTHER INDUSTRIES, LTD. Report No. : 26KE0022-HO
 Kind of EUT : Facsimile Machine Power : AC120V / 60Hz
 Model No. : FAX-1960C Temp./Humi. : 26deg. C. / 63%
 Serial No. : 0002 Operator : Hironobu Shimoji

Mode / Remarks: Tx ch139_5848.889420MHz / Max-axis(Hor 180deg, Ver 90deg)

LIMIT : FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-210
 FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-210



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss & Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
84.665	35.4	QP	7.0	-21.4	21.0	145	219	Hori.	40.0	19.0
100.798	37.9	QP	10.0	-21.3	26.6	60	100	Vert.	43.5	16.9
84.661	37.7	QP	7.0	-21.4	23.3	223	117	Vert.	40.0	16.7
100.802	40.2	QP	10.0	-21.3	28.9	171	268	Hori.	43.5	14.6
209.665	36.5	QP	16.7	-20.2	33.0	210	100	Hori.	43.5	10.5
209.721	31.1	QP	16.7	-20.2	27.6	73	100	Vert.	43.5	15.9
221.713	41.2	QP	16.8	-20.3	37.7	209	107	Hori.	46.0	8.3
221.775	29.7	QP	16.8	-20.3	26.2	325	204	Vert.	46.0	19.8
241.667	40.5	QP	17.0	-19.9	37.6	219	150	Hori.	46.0	8.4
241.880	32.5	QP	17.0	-19.9	29.6	319	100	Vert.	46.0	16.4
383.002	33.9	QP	17.2	-19.6	31.5	79	100	Hori.	46.0	14.5
447.581	30.0	QP	17.8	-19.7	28.1	349	144	Vert.	46.0	17.9
483.854	34.4	QP	17.8	-19.7	32.5	33	193	Hori.	46.0	13.5
499.799	30.4	QP	17.8	-20.0	28.2	209	114	Vert.	46.0	17.8
633.213	29.6	QP	19.7	-19.2	30.1	255	178	Vert.	46.0	15.9
768.026	30.4	QP	21.2	-18.1	33.5	178	258	Hori.	46.0	12.5

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

Radiated Spurious Emission (Low)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3Semi Anechoic Chamber

Company : BROTHER INDUSTRIES,LTD.
Equipment : Facsimile Machine
Model : FAX-1960C
Sample No. : 0002
Power : AC 120 V / 60 Hz
Mode : Tx ch1_5725.809328MHz
Remarks : Hor :EUT:X-axis/Ant:180deg , Hor :EUT:X-axis/Ant:90deg
PK DETECT (RBW: 1MHz, VBW: 1MHz)

REPORT NO : Tx ch1_5725.809328MHz
REGULATION : Fcc Part15 Subpart C 15.247(d)
TEST DISTANCE : 3/1m
DATE : 07/19/2006
TEMPERATURE : 25deg.C
HUMIDITY : 65%
ENGINEER : Hironobu Shimoji

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2400.1	45.4	44.7	30.6	32.7	12.2	0.0	55.5	54.8	74.0	18.5	19.2
2	4800.1	42.5	42.8	35.7	31.5	13.2	0.0	59.9	60.2	74.0	14.1	13.8
3※	5725.0	96.2	96.0	36.5	30.5	13.3	0.0	115.5	115.3	74.0	-	-
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	11451.0	54.6	53.5	38.3	32.7	5.5	0.2	56.4	55.3	74.0	17.6	18.7
5※	17177.3	59.6	58.9	46.1	31.9	6.6	3.7	74.6	73.9	74.0	-	-
6	22903.2	58.8	59.0	39.8	32.2	7.7	0.0	64.6	64.8	74.0	9.4	9.2
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
7	28629.1	42.0	43.1	44.5	24.3	12.3	0.0	58.9	60.0	74.0	15.1	14.0
8	34354.9	40.2	40.4	42.5	24.7	13.1	0.0	55.5	55.7	74.0	18.5	18.3

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2400.1	29.9	29.1	30.6	32.7	12.2	0.0	40.0	39.2	54.0	14.0	14.8
2	4800.1	27.0	27.1	35.7	31.5	13.2	0.0	44.4	44.5	54.0	9.6	9.5
3※	5725.0	35.2	35.1	36.5	30.5	13.3	0.0	54.5	54.4	54.0	-	-
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	11451.0	33.1	32.4	38.3	32.7	5.5	0.2	34.9	34.2	54.0	19.1	19.8
5※	17177.3	35.4	35.3	46.1	31.9	6.6	3.7	50.4	50.3	54.0	-	-
6	22903.2	34.9	35.0	39.8	32.2	7.7	0.0	40.7	40.8	54.0	13.3	13.2
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
7	28629.1	23.6	23.8	44.5	24.3	12.3	0.0	40.5	40.7	54.0	13.5	13.3
8	34354.9	27.0	27.1	42.5	24.7	13.1	0.0	42.3	42.4	54.0	11.7	11.6

* Reference data

20dBc(Fundamental 5725.8MHz) (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	5725.8	99.2	98.3	36.5	30.5	13.3	0.0	118.5	117.6	-	-	-
3※	5725.0	66.9	66.7	36.5	30.5	13.3	0.0	86.2	86.0	Funda-20dB	12.3	11.6
5※	17177.3	59.8	60.2	46.1	31.9	6.6	3.7	74.8	75.2	Funda-20dB	23.7	22.4

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54dB

Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.6dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

Radiated Spurious Emission (Mid)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3Semi Anechoic Chamber

Company : BROTHER INDUSTRIES,LTD.	REPORT NO : Tx ch1_5725.809328MHz
Equipment : Facsimile Machine	REGULATION : Fcc Part15 Subpart C 15.247(d)
Model : FAX-1960C	TEST DISTANCE : 3/1m
Sample No. : 0002	DATE : 07/19/2006
Power : AC 120 V / 60 Hz	TEMPERATURE : 25deg.C
Mode : Tx ch071_5788.240269MHz	HUMIDITY : 65%
Remarks : Hor :EUT:X-axis/Ant:180deg , Hor :EUT:X-axis/Ant:90deg	ENGINEER : Hironobu Shimoji

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2428.0	43.7	44.0	30.5	32.6	12.2	0.0	53.8	54.1	74.0	20.2	19.9
2	4857.3	44.4	44.7	36.0	31.5	13.0	0.0	61.9	62.2	74.0	12.1	11.8
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
3	11576.5	54.0	53.9	38.7	32.7	5.6	0.1	56.2	56.1	74.0	17.8	17.9
4*	17364.6	57.9	58.1	46.2	31.9	6.6	4.7	74.0	74.2	74.0	-	-
5	23153.0	59.1	59.2	39.7	32.2	7.8	0.0	64.9	65.0	74.0	9.1	9.0
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	28941.2	41.7	42.6	44.5	24.3	12.3	0.0	58.6	59.5	74.0	15.4	14.5
7	34729.4	42.1	41.8	43.1	24.5	13.4	0.0	58.5	58.2	74.0	15.5	15.8

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2428.0	27.7	27.6	30.5	32.6	12.2	0.0	37.8	37.7	54.0	16.2	16.3
2	4857.3	27.6	28.3	36.0	31.5	13.0	0.0	45.1	45.8	54.0	8.9	8.2
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
3	11576.5	32.2	32.4	38.7	32.7	5.6	0.1	34.4	34.6	54.0	19.6	19.4
4*	17364.6	34.8	34.9	46.2	31.9	6.6	4.7	50.9	51.0	54.0	-	-
5	23153.0	35.3	35.4	39.7	32.2	7.8	0.0	41.1	41.2	54.0	12.9	12.8
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	28941.2	22.9	23.2	44.5	24.3	12.3	0.0	39.8	40.1	54.0	14.2	13.9
7	34729.4	28.1	27.8	43.1	24.5	13.4	0.0	44.5	44.2	54.0	9.5	9.8

* Reference data

20dBc(Fundamental 5788.2MHz) (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	5788.2	97.2	97.3	36.6	30.4	13.3	0.0	116.7	116.8	-	-	-
4*	17364.6	56.8	57.0	46.2	31.9	6.6	4.7	72.9	73.1	Funda-20dB	23.8	23.7

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.6dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

Radiated Spurious Emission (High)

<p>Company : BROTHER INDUSTRIES, LTD. Equipment : Facsimile Machine Model : FAX-1960C Sample No. : 0002 Power : AC 120 V / 60 Hz Mode : Tx ch139_5848.889420MHz Remarks : Hor :EUT:X-axis/Ant:180deg , Hor :EUT:X-axis/Ant:90deg PK DETECT (RBW: 1MHz, VBW: 1MHz)</p>	<p>REPORT NO : Tx ch1_5725.809328MHz REGULATION : Fcc Part15 Subpart C 15.247(d) TEST DISTANCE : 3/1m DATE : 07/19/2006 TEMPERATURE : 25deg.C HUMIDITY : 65% ENGINEER : Hironobu Shimoji</p>
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UL Apex Co., Ltd.
Head Office EMC Lab. No.3Semi Anechoic Chamber

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2489.7	46.5	46.3	30.4	32.6	12.3	0.0	56.6	56.4	74.0	17.4	17.6
2	4978.3	43.1	44.1	36.8	31.5	13.0	0.0	61.4	62.4	74.0	12.6	11.6
3※	5850.0	64.6	66.2	36.7	30.3	13.4	0.0	84.4	86.0	74.0	-	-
4	5970.6	41.2	40.5	36.7	30.2	13.4	0.0	61.1	60.4	74.0	12.9	13.6
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	11697.7	51.9	52.3	39.2	32.7	5.6	0.1	54.6	55.0	74.0	19.4	19.0
6※	17546.7	58.4	58.6	46.2	31.8	6.6	5.6	75.5	75.7	74.0	-	-
7	23395.5	58.5	59.0	39.3	32.1	7.8	0.0	64.0	64.5	74.0	10.0	9.5
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
8	29244.5	42.8	43.2	44.5	24.4	12.4	0.0	59.7	60.1	74.0	14.3	13.9
9	35093.5	41.7	40.9	44.4	24.2	13.7	0.0	60.0	59.2	74.0	14.0	14.8

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2489.7	28.5	28.4	30.4	32.6	12.3	0.0	38.6	38.5	54.0	15.4	15.5
2	4978.3	28.3	28.8	36.8	31.5	13.0	0.0	46.6	47.1	54.0	7.4	6.9
3※	5850.0	34.6	34.7	36.7	30.3	13.4	0.0	54.4	54.5	54.0	-	-
4	5970.6	26.2	26.1	36.7	30.2	13.4	0.0	46.1	46.0	54.0	7.9	8.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	11697.7	32.1	32.0	39.2	32.7	5.6	0.1	34.8	34.7	54.0	19.2	19.3
6※	17546.7	34.7	34.6	46.2	31.8	6.6	5.6	51.8	51.7	54.0	2.2	2.3
7	23395.5	35.0	35.2	39.3	32.1	7.8	0.0	40.5	40.7	54.0	13.5	13.3
Test distance 0.5meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
8	29244.5	22.3	22.4	44.5	24.4	12.4	0.0	39.2	39.3	54.0	14.8	14.7
9	35093.5	29.5	28.9	44.4	24.2	13.7	0.0	47.8	47.2	54.0	6.2	6.8

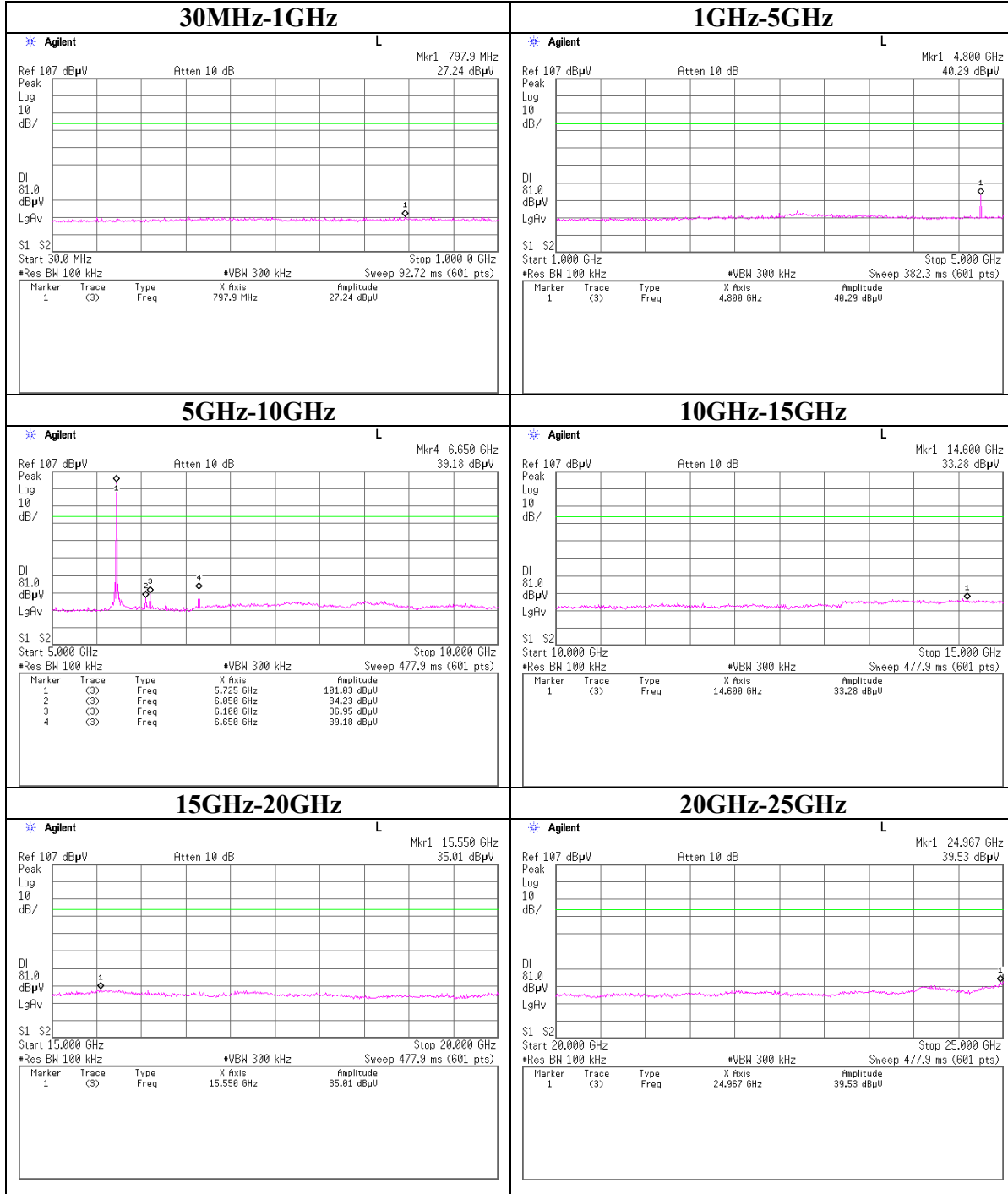
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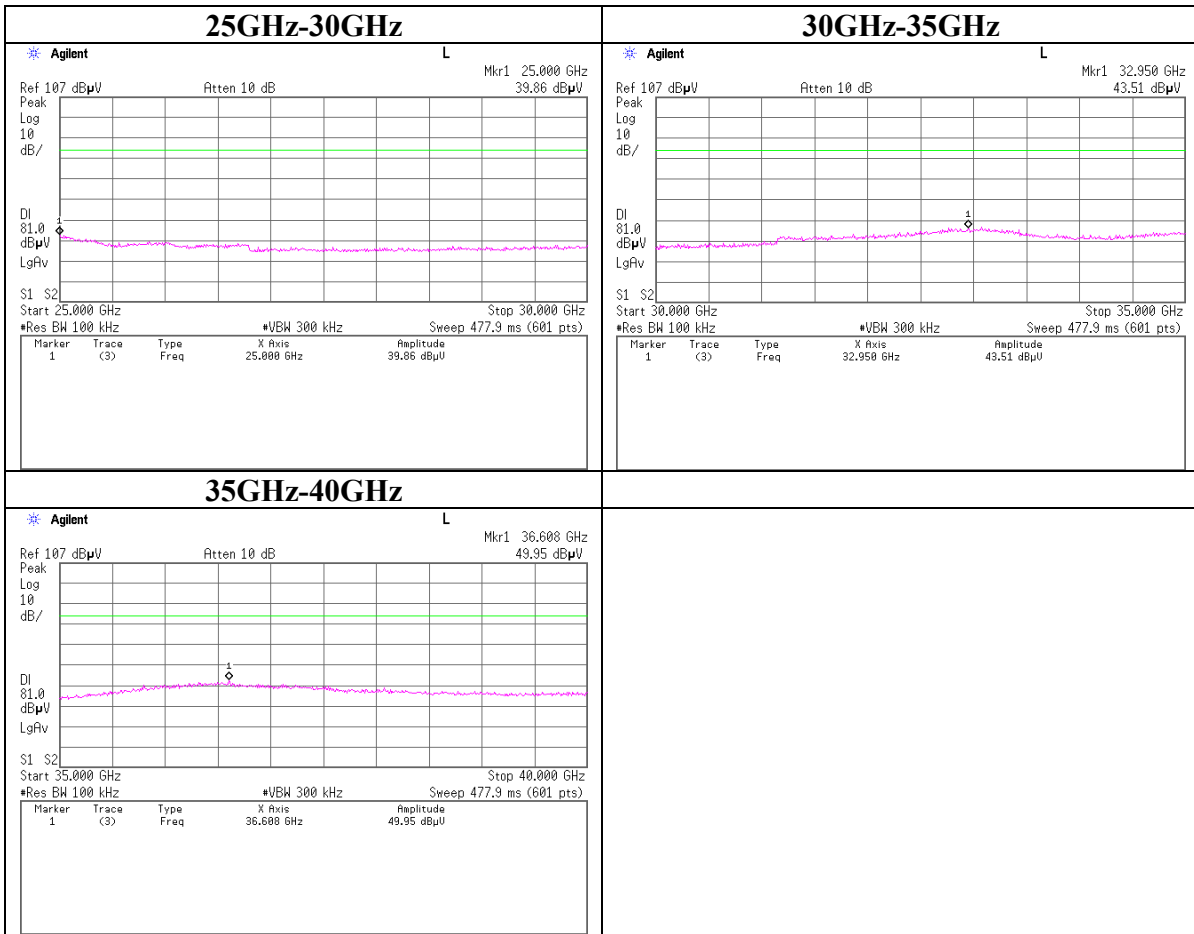
20dBc(Fundamental 5848.88MHz) (RBW: 100kHz, VBW: 300kHz)												
No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	5848.5	96.4	98.1	36.6	30.3	13.4	0.0	116.1	117.8	-	-	-
3※	5850.0	45.0	44.2	36.6	30.3	13.4	0.0	64.7	63.9	Funda-20dB	31.4	33.9
6※	17059.0	59.6	59.9	46.2	31.8	6.6	5.6	76.7	77.0	Funda-20dB	19.4	20.8

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB
Test Distance 0.5m : Distance Factor(Dfac) = 20log(3/0.5) = 15.6dB
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.
*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
*Hi-Pass Filter was not used for factor 0.0dB of the above table.

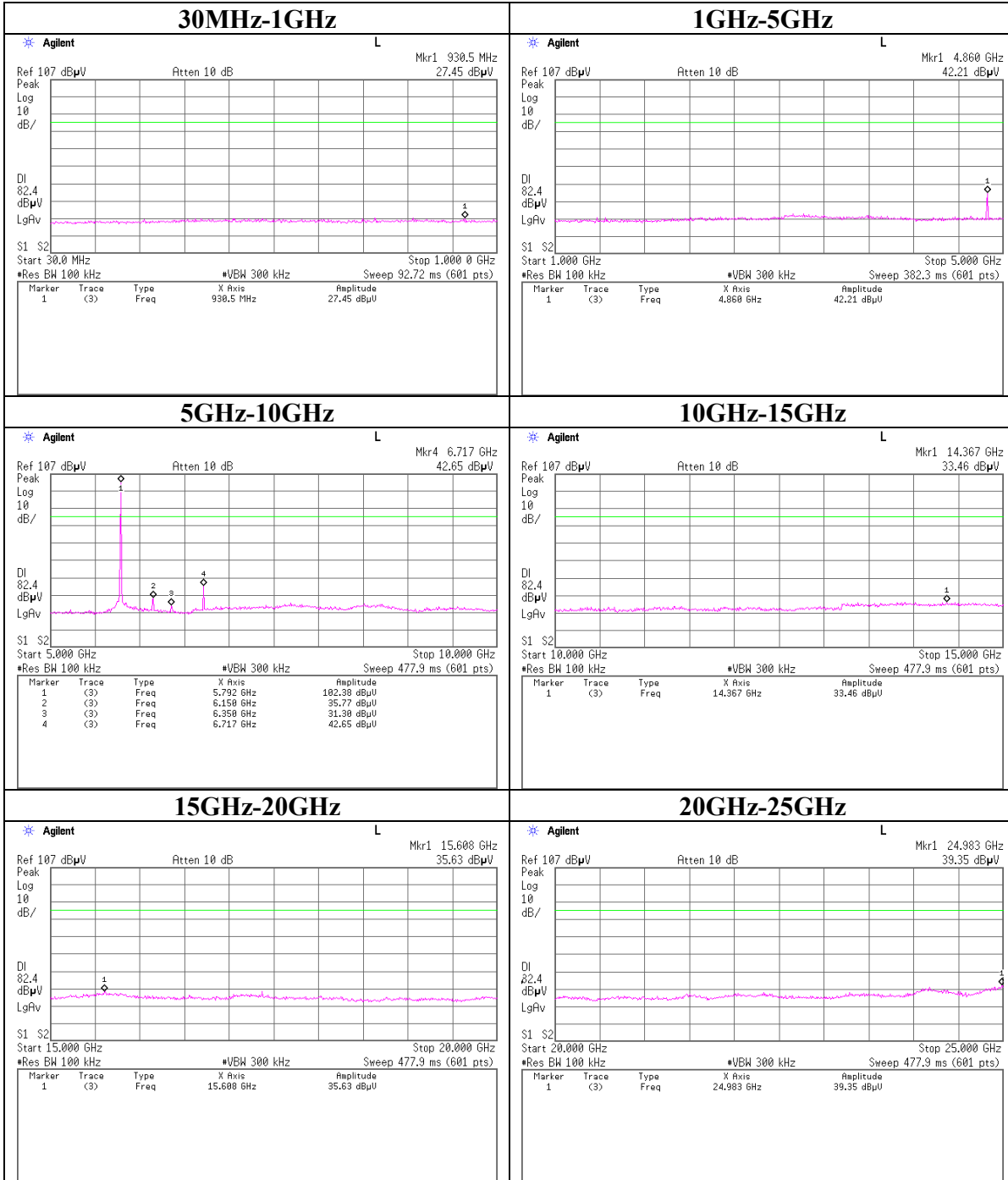
Conducted Spurious Emission

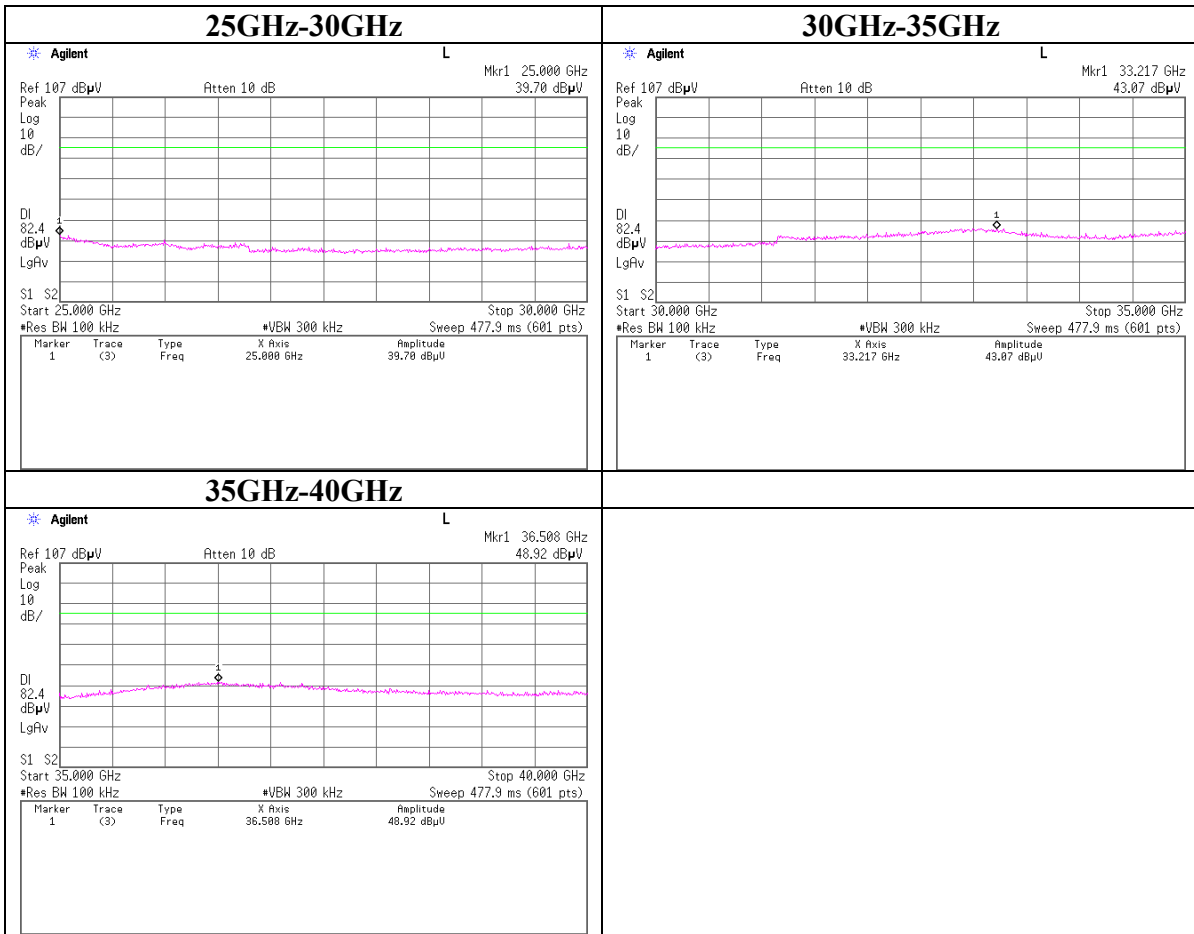
Ch:Low



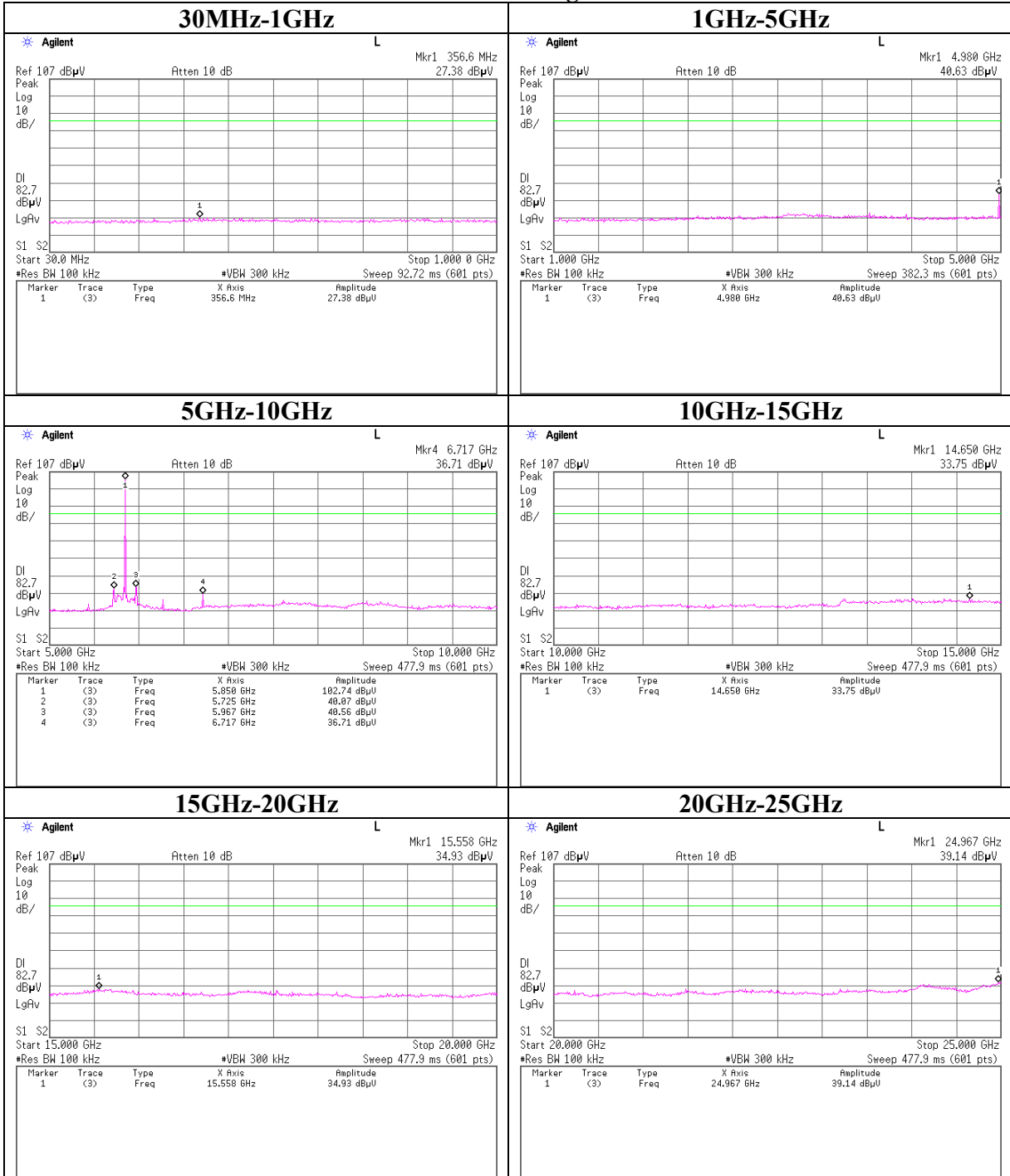


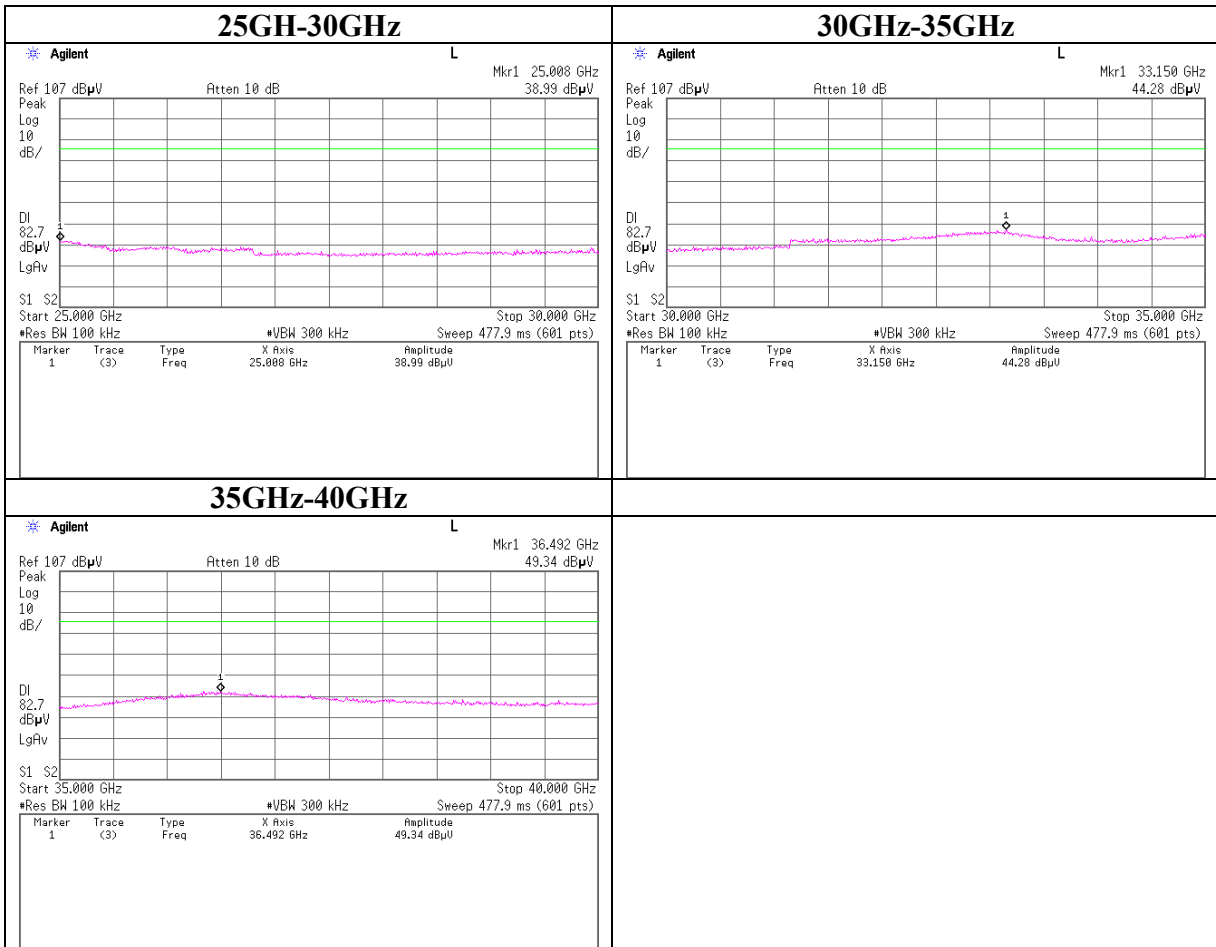
Conducted Spurious Emission
Ch:Mid



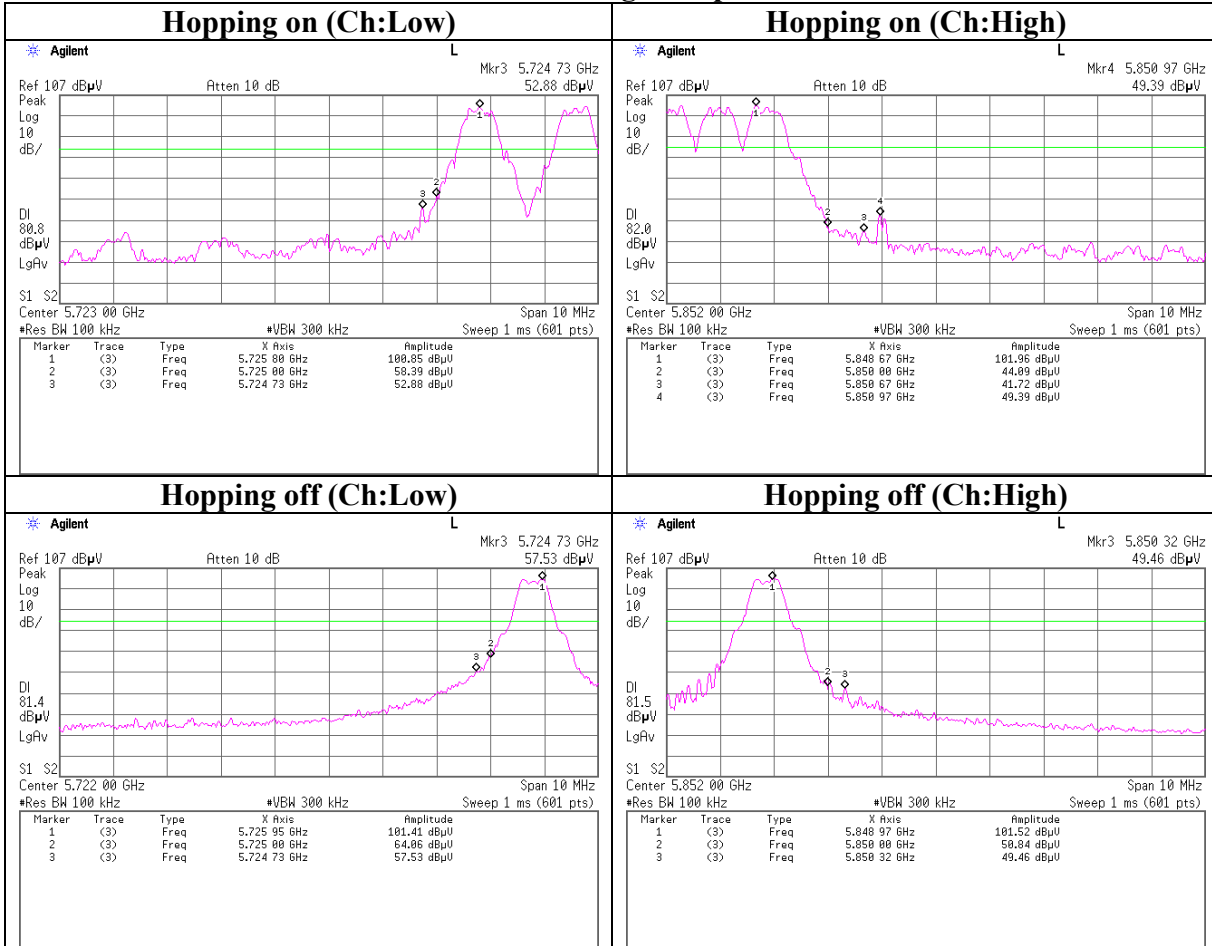


Conducted Spurious Emission
Ch:High





Conducted Spurious Emission
Band Edge compliance



APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/03/06 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE / AT	2006/06/02 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	RE	2006/05/20 * 12
MCC-57	Microwave Cable	Suhner	SUCOFLEX104	Above 1GHz RE	2006/04/15 * 12
MCC-27	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX101	RE / AT	2005/08/30 * 12
MCC-05	Microwave Cable 1G-40GHz	Storm	421-011 (90-1394-079)	RE	2006/01/04 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	RE	2006/03/27 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	RE	2006/05/16 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE(MW)	2006/01/09 * 12
MHA-04	Horn Antenna	EMCO	3160-10	RE(MW)	2006/01/09 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MBF-03	SHF Bandpass Filter	M-City	13GHz BPF	RE	2006/05/20 * 12
MHF-06	High Pass Filter	Tokimec	TF323DCA	RE	2006/05/20 * 12
MHF-11	High Pass Filter	TOKIMEC	TF37NCCC	RE	2006/06/21 * 12
MCP-03	FAX	Sharp	FO-70	RE	Pre Check
MBM-03	Barometer	Sunoh	SBR121	RE	2006/02/13 * 36
MOS-15	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE / CE	2006/04/10 * 12
MOS-02	Digital Humidity Indicator	N.T	NT-1800	RE / CE	2004/11/25 * 24
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	RE / CE	2006/03/04 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE / CE	2005/09/16 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2006/02/23 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2005/09/07 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2006/02/23 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2006/06/01 * 12
MJG-50	Conversion adapter	SE	RW-P003	CE	-
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE (AE)	2006/02/06 * 12
MTA-06	Terminator	MCL	BTRM-50	CE	2006/02/06 * 12
MSA-06	Spectrum Analyzer	Agilent	E4407B	AT	2006/05/24 * 12
MAT-21	Attenuator(20dB)(above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-120	AT	2006/01/10 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	AT	2004/11/25 * 24
MRENT-33	Power sensor	Anritsu	MA2411B	AT	2006/04/25 * 12
MRENT-36	Power Meter	Anritsu	ML2496A	AT	2006/04/25 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

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MF060b(14.06.06)

Test Item:

CE: AC Main Conducted Emission

AT: Antenna Terminal Conducted Spurious Emission, Maximum Peak Output Power

Carrier Frequency Separation, 20dB Bandwidth, Number of Hopping Frequency, Dwell time

RE: Radiated Spurious Emission

UL Apex Co., Ltd.

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MF060b(14.06.06)