



# RADIO TEST REPORT

Test Report No. : 26EE0058-HO-1

Applicant : Sharp Corporation  
Type of Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable  
Model No. : 904SH  
FCC ID : APYHRO00045  
Test standard : FCC Part 15 Subpart C  
Section 15.207, Section 15.247: 2005  
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. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

Date of test:

February 7 and 8, 2006

Tested by:

Mitsuru Fujimura  
EMC Services

Takumi Shimada  
EMC Services

Approved by :

Hironobu Shimoji  
Group Leader of EMC Services

UL Apex Co., Ltd.

Head Office EMC Lab.

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## **SECTION 1: Client information**

Company Name : Sharp Corporation  
Brand Name : SHARP  
Address : 2-13-1 Iida Hachihonmatsu HigashiHiroshima-City,  
Hiroshima-pref. 739-0192 JAPAN  
Telephone Number : +81 82-420-1592  
Facsimile Number : +81 82-420-1852  
Contact Person : Houyuu Sugimoto

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

### **2.1 Identification of E.U.T.**

Type of Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone  
/ Bluetooth enable  
Model No. : 904SH  
Serial No. : 004401/11/001312/7,  
004401/11/001313/9  
Power Supply : DC(nominal)4.0V  
Country of Manufacture : Japan  
Receipt Date of Sample : February 7, 2006  
Condition of E.U.T. : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)

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## 2.2 Product Description

Model No. 904SH(referred to as the EUT in this report) is Tri-Band GSM &WCDMA Mobile Cellular Phone. The EUT has the function that Bluetooth wireless technology interface for establishing contact and transmitting data with certain devices.

<Bluetooth function>

Clock frequency(ies) in the system	:	CPU:13MHz, RTC:32.768KHz
Equipment Type	:	Transceiver
Frequency band	:	Lower limit: 2402MHz Upper limit: 2480MHz
Bandwidth & Channel spacing	:	79MHz & 1MHz
Modulation	:	FHSS
ITU code	:	F1D (for Bluetooth) F1E/F1W
Power Supply	:	DC 2.9V
Antenna Type	:	Internal Antenna
Antenna Gain	:	0dBi(max)
Method of Frequency Generation	:	Synthesizer

### FCC 15.31 (e)

The stable voltage (DC4.0V) is provided to the EUT and it is converted to DC2.9V and then constantly supplied to RF module part. 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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### SECTION 3: Test specification, procedures & results

#### 3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2005  
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits : 2005  
Section 15.247 Operation within the bands 902-928MHz,  
2400-2483.5MHz, and 5725-5850MHz : 2005

#### 3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results
1	Conducted Emission *1)	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	23.9dB 0.39917MHz, AV, L)	Complied
2	Carrier Frequency Separation	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A	*See data.	Complied
3	20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A		Complied
4	Number of Hopping Frequency	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A		Complied
5	Dwell time	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A		Complied
6	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(b)(1)	Conducted	N/A		Complied
7	Band Edge Compliance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted	N/A		Complied
8	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted/ Radiated	N/A		3.2dB (2400MHz, PK, Hor.)

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.

\*1) There is no difference in output levels of 3 Channels (Low/Mid/High) at both QP/AV data, and all the levels complied with the limit. Therefore, only the representative channel (High: 2480MHz) was tested.

\*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.

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### 3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-Gen 4.4.1	-	Conducted	N/A	N/A	N/A

### 3.4 Uncertainty

#### Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is  $\pm 1.3$ 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  $\pm 4.5$ dB(3m)/  $\pm 4.7$ dB(10m).  
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is  $\pm 5.2$ dB(3m)/  $\pm 3.8$ dB(10m).  
The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is  $\pm 6.6$ dB.  
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

#### Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is  $\pm 3.0$ 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 / horizontal conducting plane (m)	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	846015	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 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 and No.2 semi-anechoic and No.3 shielded room.

### 3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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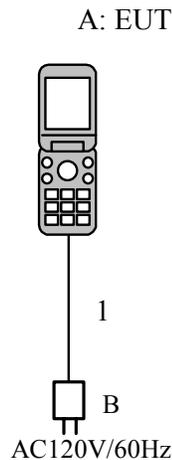
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## **SECTION 4: Operation of E.U.T. during testing**

### **4.1 Operating Modes**

The mode is used : Transmitting mode (PRBS9/Packet size DH5)  
Low Channel :2402MHz  
Mid Channel :2441MHz  
High Channel :2480MHz  
Inquiry

### **4.2 Configuration and peripherals**



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

#### **Description of EUT and support equipment**

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable	904SH	004401/11/001312/7 *1), 004401/11/001313/9 *2),	Sharp Corporation	APYHRO00045 (EUT)
B	AC Adapter	SHCAA1	OLA	Sharp Corporation	-

\*1) Used for Conducted and Radiated Spurious emission tests

\*2) Used for other tests

#### **List of cables used**

No.	Name	Length (m)	Shield
1	DC Cable	1.5	N

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## **SECTION 5: Conducted Emission**

### **Test Procedure and conditions**

EUT was placed on a platform of nominal size, 1m by 0.5m, 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 itself (as a stand alone equipment)

The EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN /(AMN) to the input power source.

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

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 3  
**Test result** : Pass

Date: February 8, 2006

Test engineer: Takumi Shimada

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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 3

**Test result** : Pass

### **[Radiated]**

#### **Test Procedure**

EUT was placed on a platform of nominal size, 0.5m 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.

The result also satisfied with the general limits specified in section 15.209(a).

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
Detector	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth		AV: RBW:1MHz/VBW:10Hz

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 carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

**Test data** : APPENDIX 3

**Test result** : Pass

Date: February 7, 2006

Test engineer: Takumi Shimada

## **SECTION 7: Bandwidth**

### **Test Procedure**

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

**Test data** : APPENDIX 3

**Test result** : Pass

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## **SECTION 8: Maximum Peak Output Power**

### **Test Procedure**

The Maximum Peak Output Power was measured with a spectrum analyzer connected to the antenna port.

**Test data** : APPENDIX 3  
**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 3  
**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 3  
**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 3  
**Test result** : Pass

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**APPENDIX 1: Photographs of test setup**

**Conducted Emission**

**This page has been submitted for a separate exhibit.**

**Spurious Emission (Radiated)**

**This page has been submitted for a separate exhibit.**

**Worst Case Position (Horizontal: X-axis/ Vertical:Z-axis)**

**This page has been submitted for a separate exhibit.**

## APPENDIX 2: Test instruments

### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAT-22	Attenuator(10dB)(above1G Hz)	Orient Microwave	BX10-0476-00	RE, AT	2005/03/16 * 12
MCC-05	Microwave Cable 1G-50GHz	Storm	421-011 ( 90-1394-079 )	RE, AT	2006/01/04 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	AT	2005/05/19 * 12
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE / CE	2005/04/11 * 12
MOS-02	Digital Humidity Indicator	N.T	NT-1800	RE / CE	2004/11/25 * 24
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE / CE	2005/09/16 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE / CE	2006/02/02 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2005/02/24 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2005/09/07 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2006/01/09 * 12
MCC-26	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MCC-47	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MHF-05	High Pass Filter	Tokimec	TF323DCA	RE	2006/01/24 * 12
MPA-10	Pre Amplifier	Agilent	8449B	RE	2005/09/07 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2006/02/06 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2005/02/24 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	AT	2004/11/25 * 24

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

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

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## APPENDIX 3: Data of EMI test

### Conducted Emission

#### DATA OF CONDUCTED EMISSION TEST

Applicant : Sharp Corporation  
 Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode  
 Mobile Phone/ Bluetooth enable  
 Model No. : 904SH  
 Serial No. : 004401/11/001312/7  
 Mode / Remarks : Bluetooth Tx 2402MHz  
 LIMIT : FCC15C § 15.207 (QP)  
 FCC15C § 15.207 (AV)

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2006/02/08 03:16:22

Report No. : 26EE0058-HO  
 Power : DC 4.0V (AC adapter:AC120V/60Hz)  
 Temp./Humi. : 25deg. C / 30%  
 Operator : Takumi Shimada

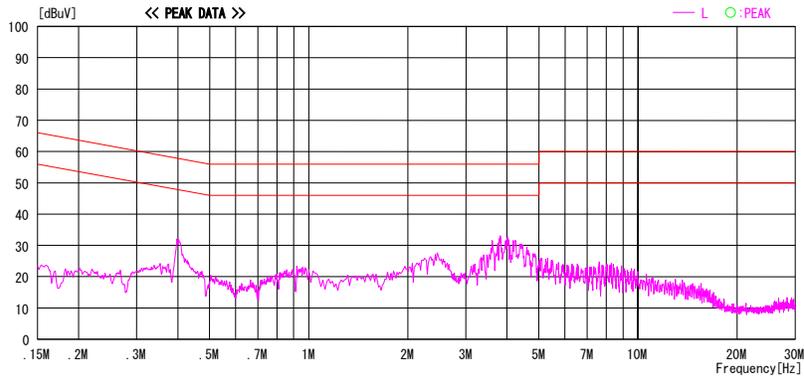
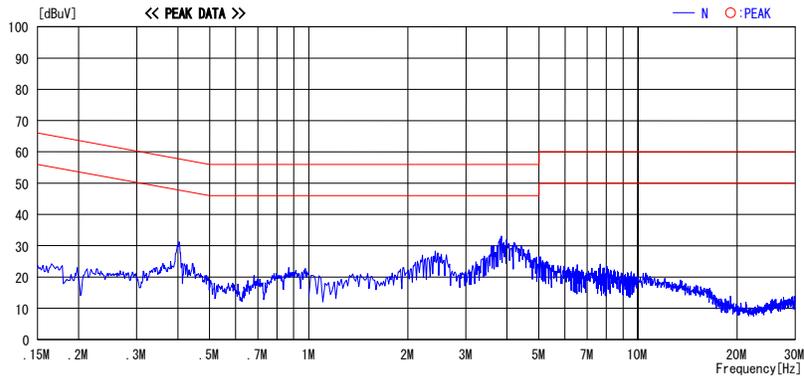


CHART : WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION : RESULT=READING+C.F (L ISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2006/02/08 03:19:49

Applicant : Sharp Corporation	Report No. : 26EE0058-HO
Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode	Power : DC 4.0V (AC adapter:AC120V/60Hz)
Model No. : 904SH	Temp./Humi. : 25deg.C / 30%
Serial No. : 004401/11/001312/7	Operator : Takumi Shimada

Mode / Remarks : Bluetooth Tx 2441MHz

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

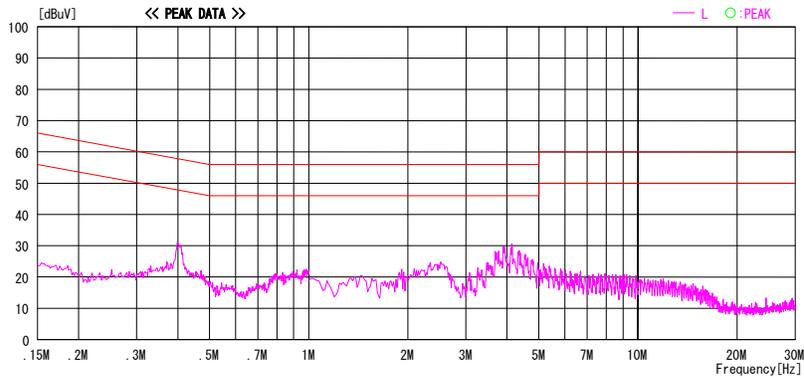
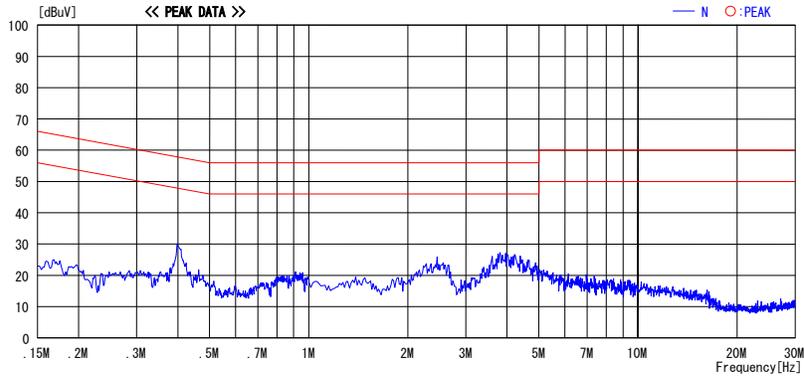


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(L ISN LOSS+CABLE LOSS)  
Except for the above table : adequate margin data below the limits.

## Conducted Emission

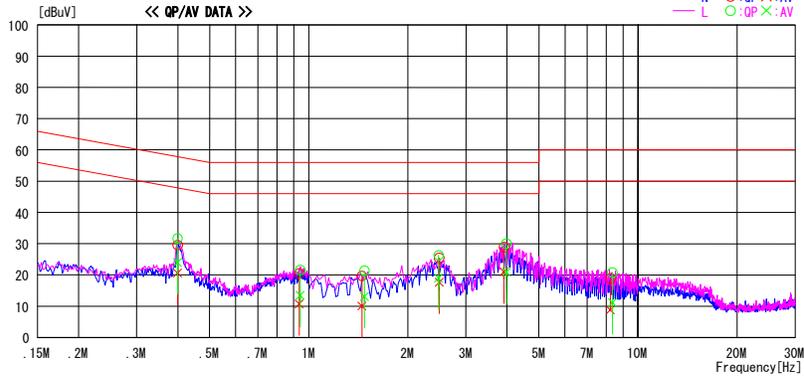
### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
Date : 2006/02/08 03:23:30

Applicant : Sharp Corporation  
Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode  
Mobile Phone/ Bluetooth enable  
Model No. : 904SH  
Serial No. : 004401/11/001312/7  
Report No. : 26EE0058-HO  
Power : DC 4.0V (AC adapter:AC120V/60Hz)  
Temp./Humi. : 25deg. C / 30%  
Operator : Takumi Shimada

Mode / Remarks : Bluetooth Tx 2480MHz

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



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]	
0.39994	29.5	20.5	0.1	29.6	20.6	57.9	47.9	28.3	27.3	N
0.93524	20.2	10.5	0.3	20.5	10.8	56.0	46.0	35.5	35.2	N
1.44890	19.3	9.7	0.4	19.7	10.1	56.0	46.0	36.3	35.9	N
2.48970	24.9	17.2	0.5	25.4	17.7	56.0	46.0	30.6	28.3	N
3.91590	28.2	20.3	0.7	28.9	21.0	56.0	46.0	27.1	25.0	N
8.23570	17.9	7.8	1.0	18.9	8.8	60.0	50.0	41.1	41.2	N
0.39917	31.6	23.9	0.1	31.7	24.0	57.9	47.9	26.2	23.9	L
0.94231	21.3	13.2	0.3	21.6	13.5	56.0	46.0	34.4	32.5	L
1.47500	21.0	12.7	0.4	21.4	13.1	56.0	46.0	34.6	32.9	L
2.47820	25.8	18.5	0.5	26.3	19.0	56.0	46.0	29.7	27.0	L
3.98370	29.3	20.2	0.7	30.0	20.9	56.0	46.0	26.0	25.1	L
8.36281	19.8	10.1	1.0	20.8	11.1	60.0	50.0	39.2	38.9	L

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

## Carrier Frequency Separation

# DATA OF CARRIER FREQUENCY SEPARATION

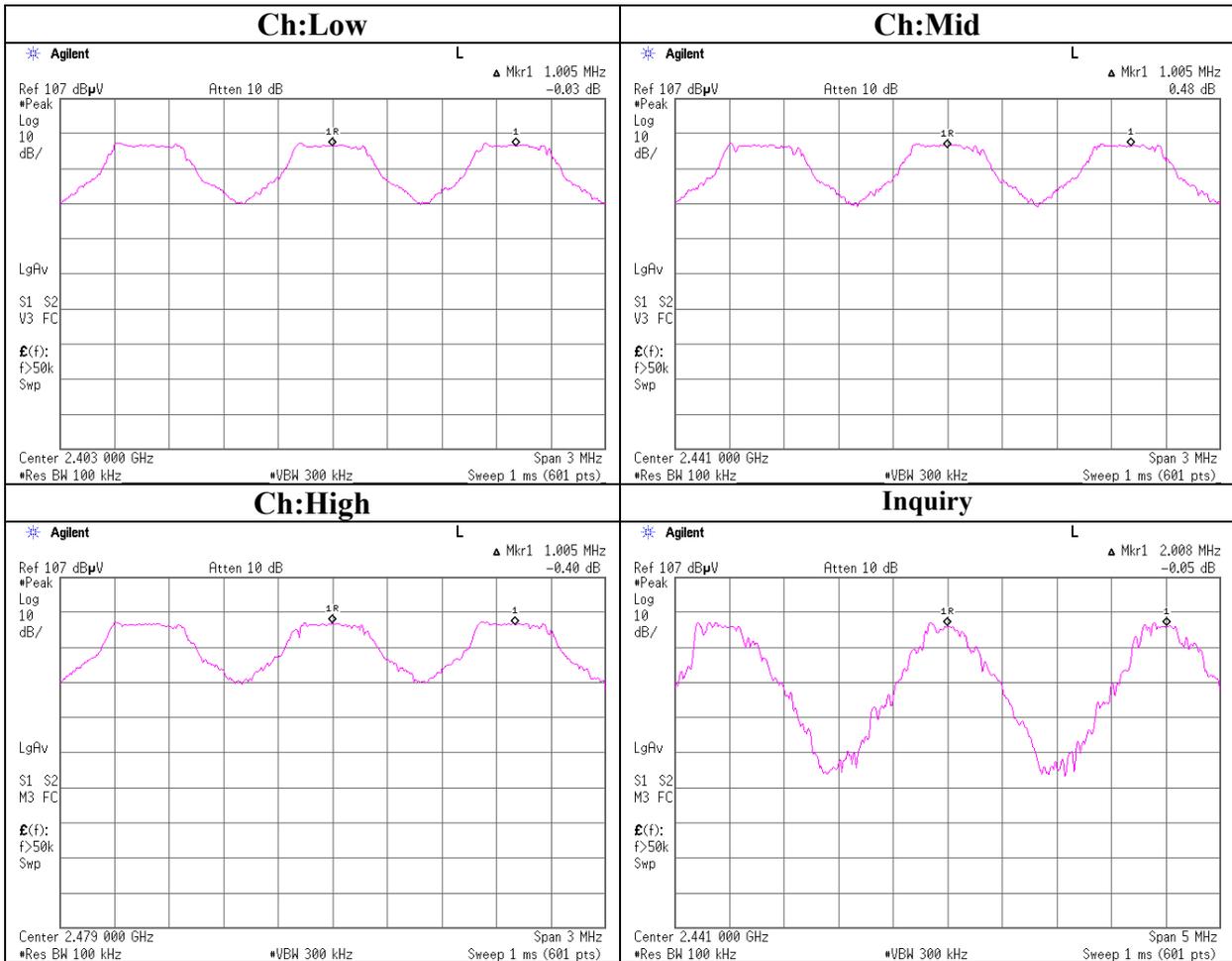
UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY : SHARP Corporation  
EQUIPMENT : WCDMA & Tri-band  
(900/1800/1900) GSM Dual mode  
Mobile Phone/ Bluetooth enable  
MODEL : 904SH  
S/ N : 004401/11/001313/9  
POWER : DC4.0V  
MODE : Tx(Hopping on)/Inquiry

REGULATION : FCC Part15 Subpart C 15.247(a)(1)  
TEST DISTANCE : -  
DATE : 02/07/2006  
TEMPERATURE : 22deg.C  
HUMIDITY : 34%  
ENGINEER : Mitsuru Fujimura

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low	2402.0	1.005	>20dB Bandwidth and 25[kHz]
Mid	2441.0	1.005	>20dB Bandwidth and 25[kHz]
High	2480.0	1.005	>20dB Bandwidth and 25[kHz]
Inquiry	2441.0	2.008	>20dB Bandwidth and 25[kHz]

### Carrier Frequency Separation



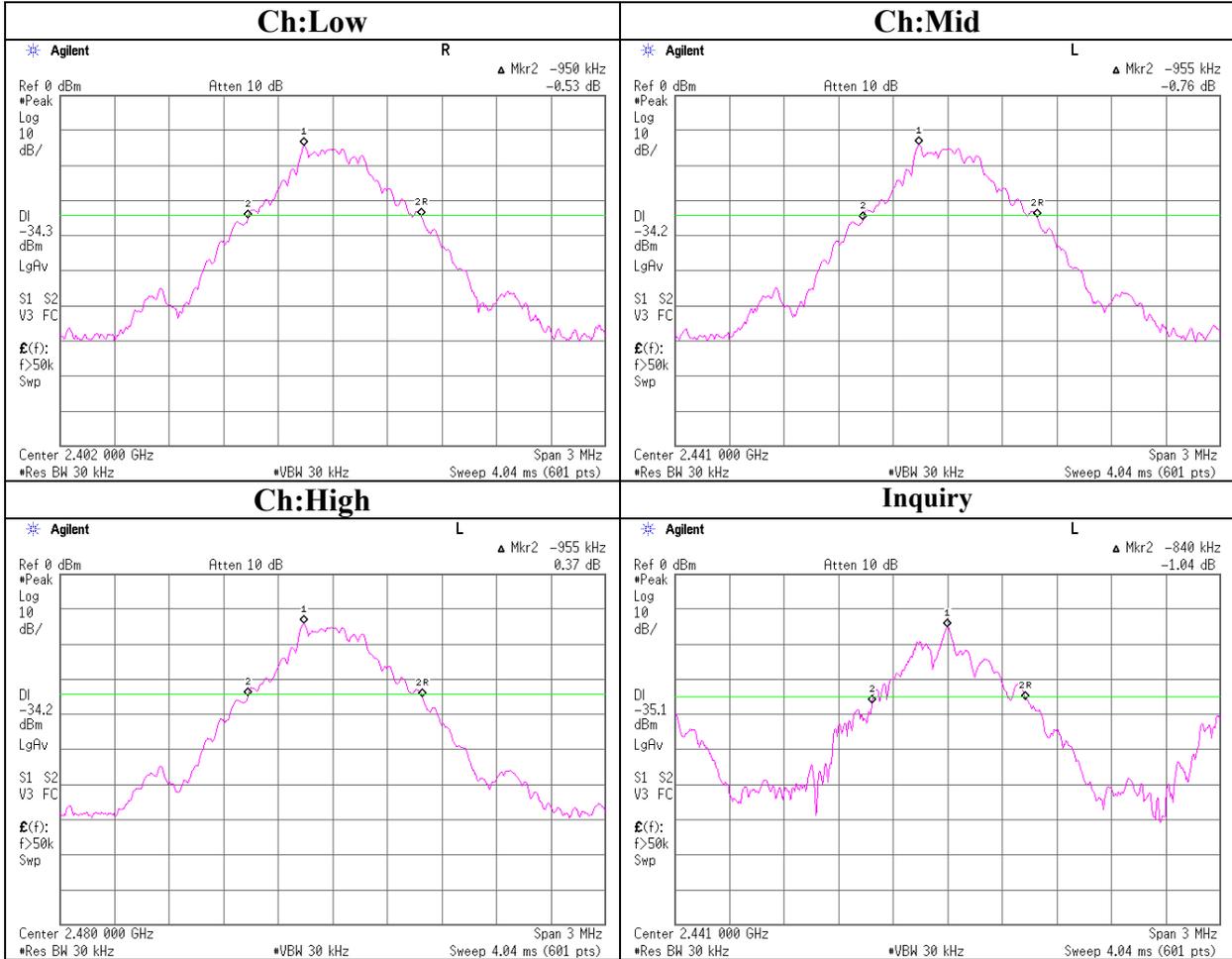
**20dB Bandwidth**  
**DATA OF 20dB BANDWIDTH**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY	: SHARP Corporation	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone/ Bluetooth enable	TEST DISTANCE	: -
MODEL	: 904SH	DATE	: 02/07/2006
S/ N	: 004401/11/001313/9	TEMPERATURE	: 22deg.C
POWER	: DC4.0V	HUMIDITY	: 34%
MODE	: Tx (Hopping off) /Inquiry	ENGINEER	: Mitsuru Fujimura

Ch	Freq. [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
Low	2402.0	0.950	-
Mid	2441.0	0.955	-
High	2480.0	0.955	-
Inquiry	2441.0	0.840	-

### 20dB Bandwidth



**Number of Hopping Frequency**

**DATA OF NUMBER OF HOPPING FREQUENCY**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

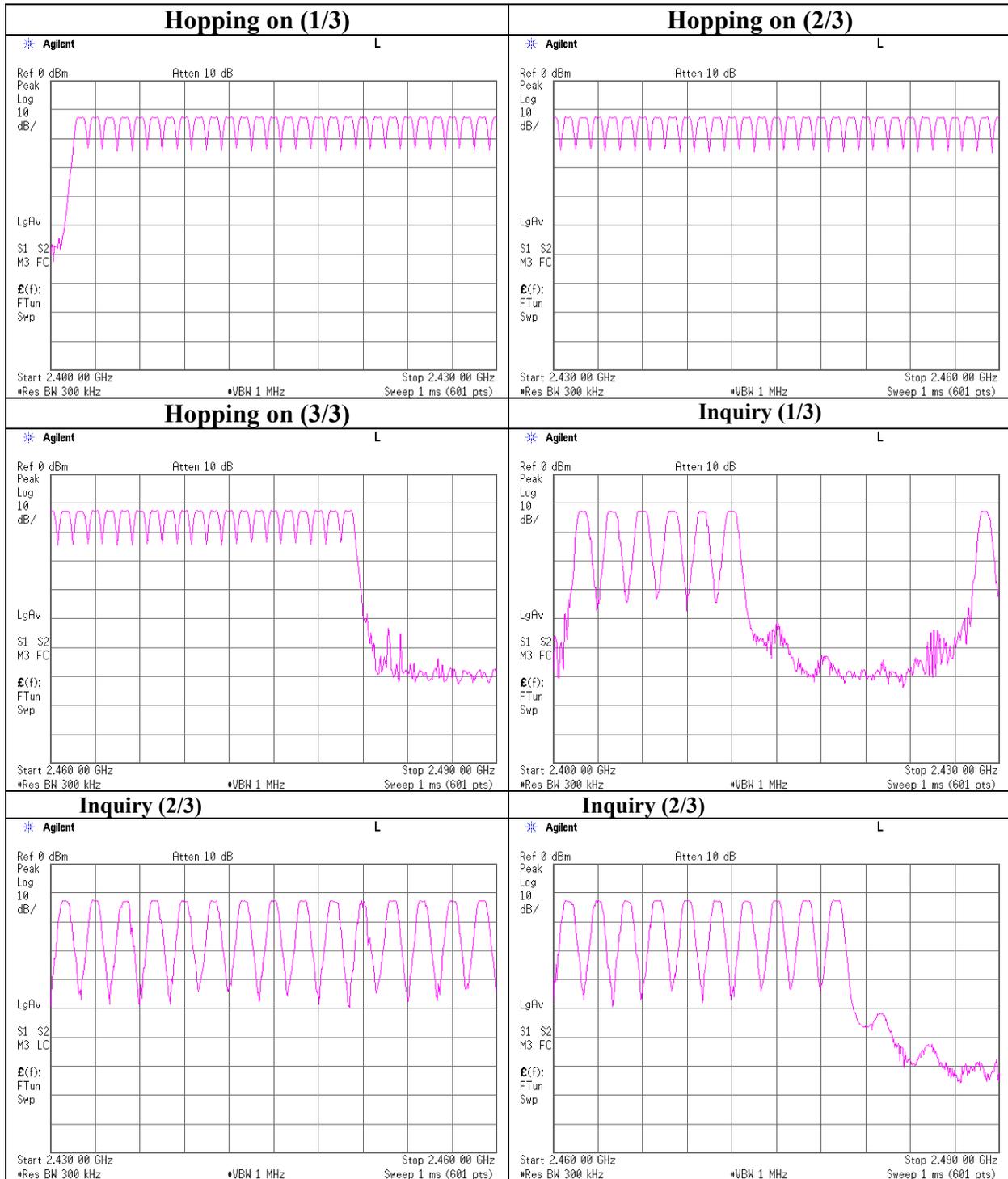
COMPANY : SHARP Corporation  
EQUIPMENT : WCDMA & Tri-band  
(900/1800/1900) GSM Dual mode  
Mobile Phone/ Bluetooth enable  
MODEL : 904SH  
S/ N : 004401/11/001313/9  
POWER : DC4.0V  
MODE : Tx(Hopping on)/Inquiry

REGULATION : FCC Part15 Subpart C 15.247(a)(1)(iii)  
TEST DISTANCE : -  
DATE : 02/07/2006  
TEMPERATURE : 22deg.C  
HUMIDITY : 34%  
ENGINEER : Mitsuru Fujimura

Mode	Number of channel [time]	Limit [time]
Tx(Hoppng on)	79	$\geq 15$

Mode	Number of channel [time]	Limit [time]
Inquiry	32	$\geq 15$

### Number of Hopping Frequency



**Dwell time**

**DATA OF DWELL TIME**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Shielded Room

COMPANY : SHARP Corporation  
EQUIPMENT : WCDMA & Tri-band (900/1800/1900) GSM Dual  
mode Mobile Phone/ Bluetooth enable

REGULATION : FCC Part15 Subpart C 15.247(a)(1)(iii)  
TEST DISTANCE : -

MODEL : 904SH  
S/ N : 004401/11/001313/9  
POWER : DC4.0V  
MODE : Tx(Hopping on)/Inquiry

DATE : 02/07/2006  
TEMPERATURE : 22deg.C  
HUMIDITY : 34%  
ENGINEER : Mitsuru Fujimura

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	50 times /5sec. x 31.6 = 316 times	0.370	117	400
DH3	28 times / 5sec. x 31.6 = 177 times	1.488	263	400
DH5	19 times / 5 sec. x 31.6 = 120 times	2.757	331	400
Inquiry	101 times / 1sec. x 12.8 = 1293 times	0.145	187	400

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**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

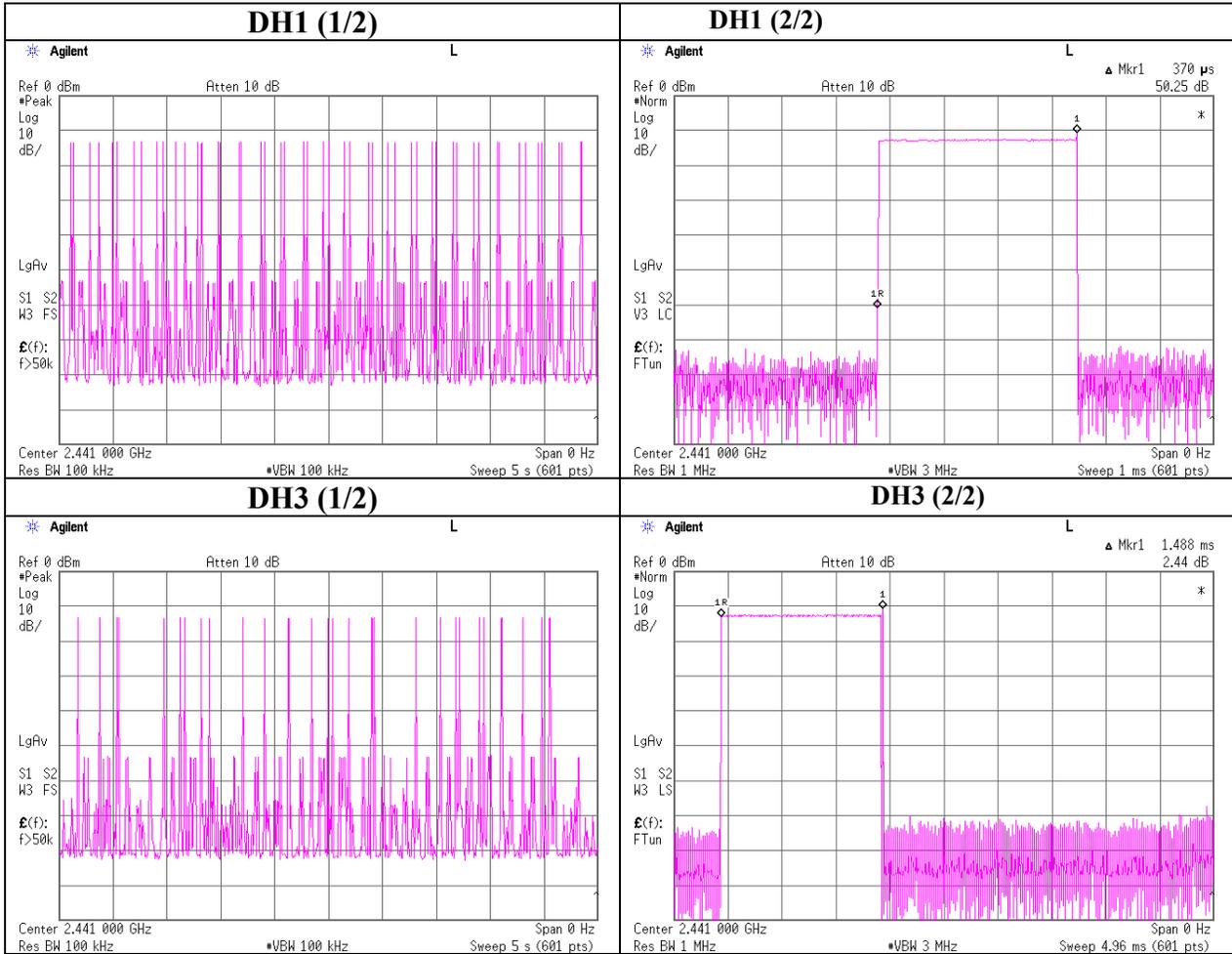
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

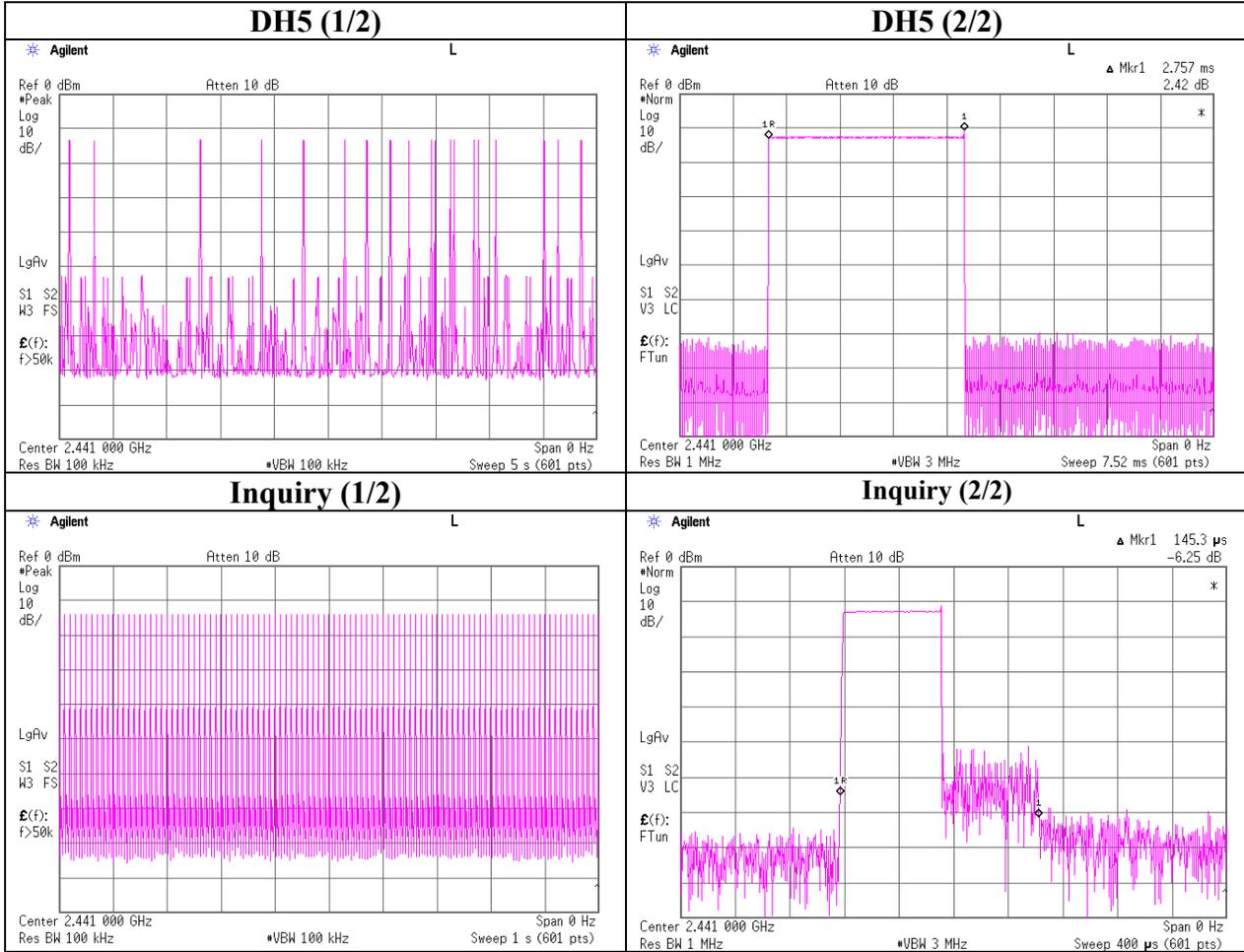
Facsimile : +81 596 24 8124

MF060b(01.06.05)

### Dwell time

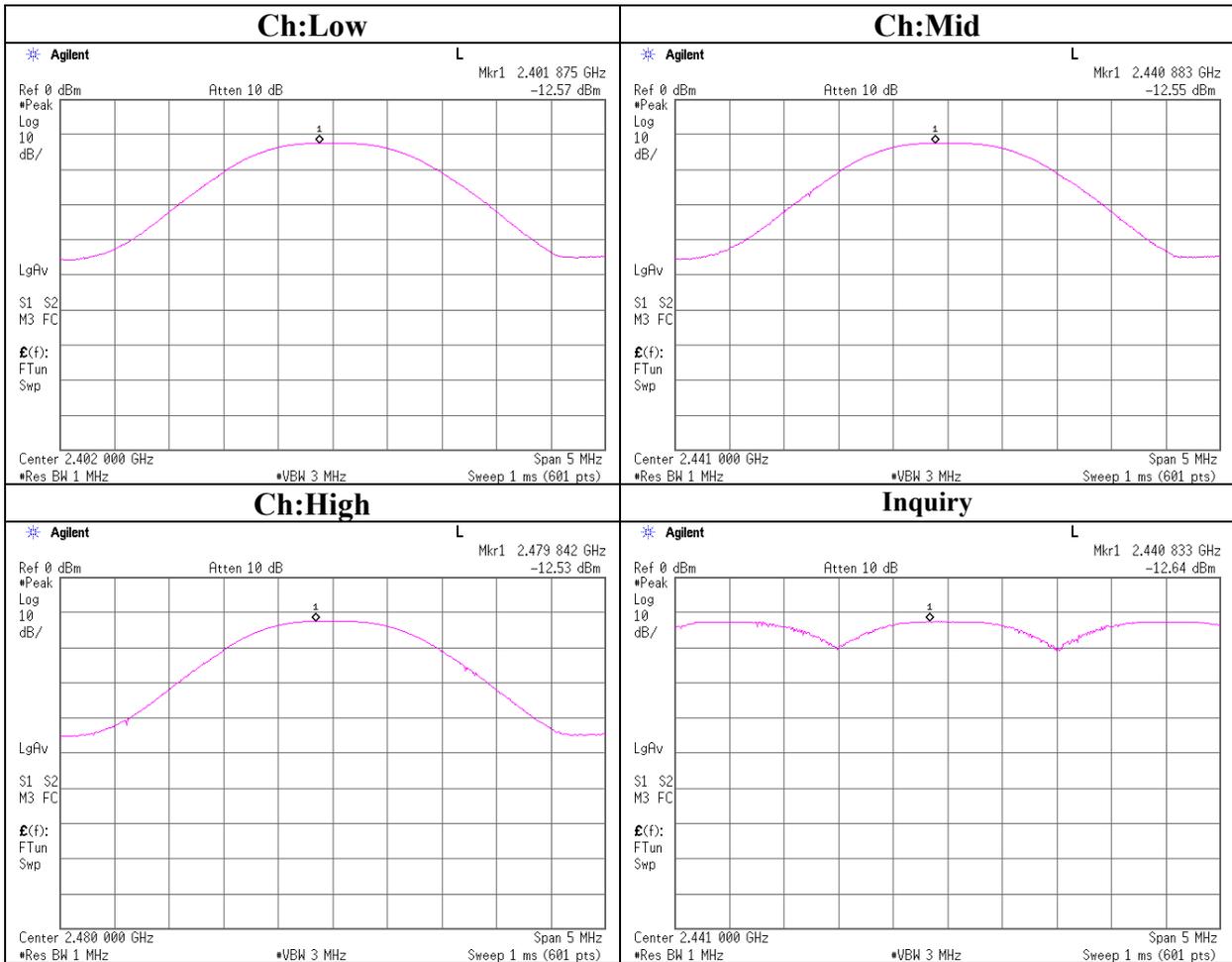


**Dwell time**





### Maximum Peak Output Power



### 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

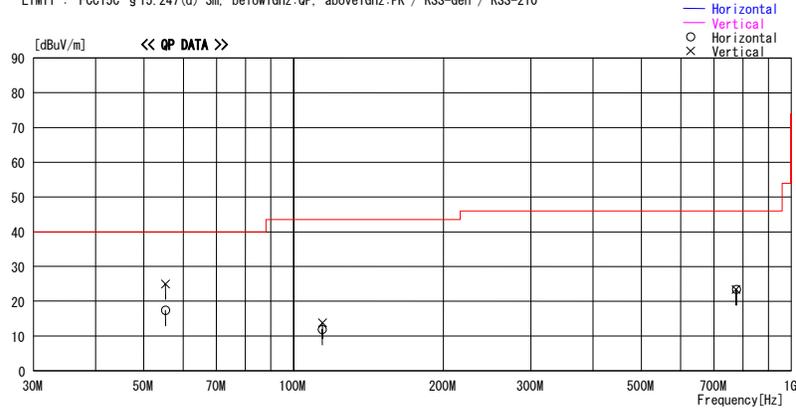
UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
Date : 2006/02/08 02:46:23

Applicant : Sharp Corporation  
Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode  
Mobile Phone/ Bluetooth enable  
Report No. : 26EE0058-HO  
Power : DC 4.0V (AC adapter: AC120V/60Hz)  
Temp./Humi. : 25deg.C / 30%  
Operator : Takumi Shimada

Model No. : 904SH  
Serial No. : 004401/11/001312/7

Mode / Remarks : Bluetooth Tx 2402MHz, EUT max-axis(H:X-axis, V:Z-axis),

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



Frequency	Reading	DET	Antenna Factor	Loss Gain	Level	Angle	Height	Polar	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
55.269	30.7	QP	9.1	-22.4	17.4	276	400	Hori	40.0	22.6
55.288	38.3	QP	9.1	-22.4	25.0	360	151	Vert	40.0	15.0
114.104	21.8	QP	11.8	-21.7	11.9	313	328	Hori	43.5	31.6
114.342	23.7	QP	11.8	-21.7	13.8	207	100	Vert	43.5	29.7
774.836	20.8	QP	21.2	-18.6	23.4	269	100	Vert	46.0	22.6
776.619	20.8	QP	21.2	-18.6	23.4	80	100	Hori	46.0	22.6

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.

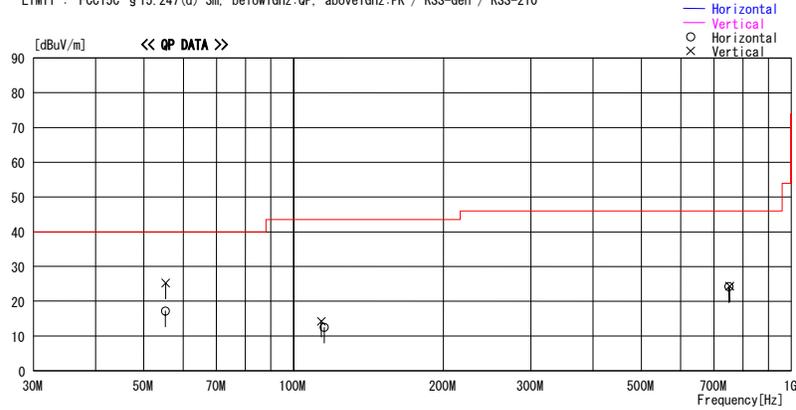
### DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
Date : 2006/02/08 02:24:25

Applicant : Sharp Corporation Report No. : 26EE0058-HO  
Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Power : DC 4.0V (AC adapter: AC120V/60Hz)  
Mobile Phone/ Bluetooth enable Temp./Humi. : 25deg. C / 30%  
Model No. : 904SH Operator : Takumi Shimada  
Serial No. : 004401/11/001312/7

Mode / Remarks : Bluetooth Tx 2441MHz, EUT max-axis(H:X-axis, V:Z-axis),

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



Frequency	Reading	DET	Antenna Factor	Loss Gain	Level	Angle	Height	Polar	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
55.258	30.5	QP	9.1	-22.4	17.2	292	400	Hori	40.0	22.8
55.318	38.6	QP	9.0	-22.4	25.2	360	150	Vert	40.0	14.8
115.267	22.3	QP	11.9	-21.7	12.5	239	400	Hori	43.5	31.0
113.667	24.1	QP	11.7	-21.6	14.2	187	119	Vert	43.5	29.3
749.169	20.7	QP	21.0	-17.5	24.2	95	100	Hori	46.0	21.8
752.669	20.9	QP	21.0	-17.6	24.3	4	100	Vert	46.0	21.7

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

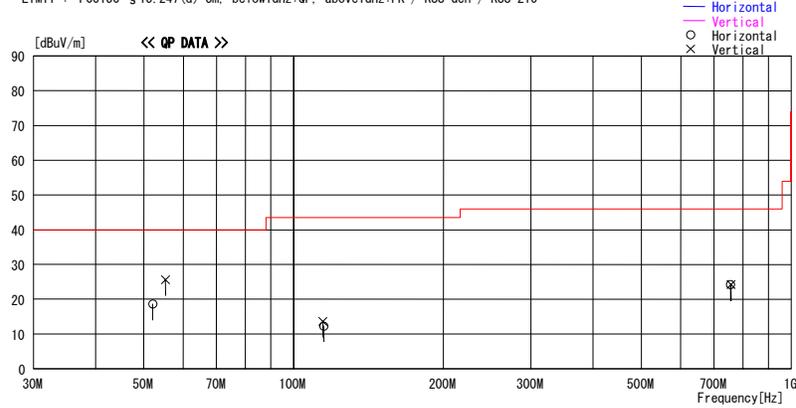
UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
Date : 2006/02/08 01:56:24

Applicant : Sharp Corporation  
Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile  
Phone/ Bluetooth enable  
Model No. : 904SH  
Serial No. : 004401/11/001312/7

Report No. : 26EE0058-HO  
Power : DC 4.0V (AC adapter: AC120V/60Hz)  
Temp./Humi. : 25deg.C / 30%  
Operator : Takumi Shimada

Mode / Remarks : Bluetooth Tx 2480MHz, EUT max-axis(H:X-axis, V:Z-axis),

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



Frequency	Reading	DET	Antenna Factor	Loss Gain	Level	Angle	Height	Polar	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
52.084	31.3	OP	9.7	-22.4	18.6	347	400	Hori	40.0	21.4
55.292	38.9	OP	9.1	-22.4	25.6	360	139	Vert	40.0	14.4
114.928	22.1	OP	11.9	-21.7	12.3	133	400	Hori	43.5	31.2
114.527	23.5	OP	11.8	-21.7	13.6	179	110	Vert	43.5	29.9
755.002	20.8	OP	21.1	-17.7	24.2	311	100	Hori	46.0	21.8
757.336	20.9	OP	21.1	-17.8	24.2	8	100	Vert	46.0	21.8

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

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2Semi Anechoic Chamber

Company : Sharp Corporation	REPORT NO : 26EE0058-HO
Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone/ Bluetooth enable	REGULATION : Fcc Part15 Subpart C 15.247(d)
Model : 904SH	TEST DISTANCE : 3/1m
Sample No. : 004401/11/001312/7	DATE : 02/07/2006
Power : DC 4.0V (AC 120 V / 60 Hz)	TEMPERATURE : 25deg.C
Mode : Bluetooth Tx 2402MHz	HUMIDITY : 30%
Remarks : Hor X-axis , Ver Z-axis	ENGINEER : Takumi Shimada

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
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2390.0	45.8	44.2	30.6	32.4	4.0	0.0	48.0	46.4	74.0	26.0	27.6
2	2400.0	68.6	64.3	30.6	32.4	4.0	0.0	70.8	66.5	74.0	3.2	7.5
3	4804.0	43.0	41.4	35.7	31.9	5.6	1.4	53.8	52.2	74.0	20.2	21.8
4	7206.0	41.8	42.9	37.5	31.5	6.6	1.2	55.6	56.7	74.0	18.4	17.3
5	9608.0	43.5	43.3	36.6	31.7	7.8	1.0	57.2	57.0	74.0	16.8	17.0
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
6	12010.0	41.7	41.6	40.3	31.2	9.5	1.8	52.6	52.5	74.0	21.4	21.5
7	14412.0	43.5	43.1	43.2	31.0	10.5	0.9	57.6	57.2	74.0	16.4	16.8
8	16814.0	42.3	42.4	46.4	30.8	11.3	1.2	60.9	61.0	74.0	13.1	13.0
9	19216.0	42.8	42.8	39.0	30.0	12.4	0.0	54.7	54.7	74.0	19.3	19.3
10	21618.0	44.2	44.5	39.3	30.3	12.6	0.0	56.3	56.6	74.0	17.7	17.4
11	24020.0	45.9	45.5	39.1	30.4	13.2	0.0	58.3	57.9	74.0	15.7	16.1

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
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2390.0	33.4	31.5	30.6	32.4	4.0	0.0	35.6	33.7	54.0	18.4	20.3
2	2400.0	43.9	40.5	30.6	32.4	4.0	0.0	46.1	42.7	54.0	7.9	11.3
3	4804.0	29.9	28.8	35.7	31.9	5.6	1.4	40.7	39.6	54.0	13.3	14.4
4	7206.0	29.0	29.0	37.5	31.5	6.6	1.2	42.8	42.8	54.0	11.2	11.2
5	9608.0	29.2	29.3	36.6	31.7	7.8	1.0	42.9	43.0	54.0	11.1	11.0
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
6	12010.0	28.8	28.8	40.3	31.2	9.5	1.8	39.7	39.7	54.0	14.3	14.3
7	14412.0	30.1	30.2	43.2	31.0	10.5	0.9	44.2	44.3	54.0	9.8	9.7
8	16814.0	30.0	30.1	46.4	30.8	11.3	1.2	48.6	48.7	54.0	5.4	5.3
9	19216.0	29.8	30.2	39.0	30.0	12.4	0.0	41.7	42.1	54.0	12.3	11.9
10	21618.0	31.6	31.7	39.3	30.3	12.6	0.0	43.7	43.8	54.0	10.3	10.2
11	24020.0	33.7	33.4	39.1	30.4	13.2	0.0	46.1	45.8	54.0	7.9	8.2

\* Reference data

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

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2Semi Anechoic Chamber

Company : Sharp Corporation	REPORT NO : 26EE0058-HO	REGULATION : Fcc Part15 Subpart C 15.247(d)
Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone/ Bluetooth enable	TEST DISTANCE : 3/1m	
Model : 904SH	DATE : 02/07/2006	
Sample No. : 004401/11/001312/7	TEMPERATURE : 25deg.C	
Power : DC 4.0V (AC 120 V / 60 Hz)	HUMIDITY : 30%	
Mode : Bluetooth Tx 2441MHz	ENGINEER : Takumi Shimada	
Remarks : Hor X-axis , Ver Z-axis		

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
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	4882.0	43.3	42.8	36.2	31.8	5.5	1.4	54.6	54.1	74.0	19.4	19.9
2	7323.0	41.5	41.8	37.9	31.7	6.7	1.1	55.5	55.8	74.0	18.5	18.2
3	9764.0	41.7	42.2	36.6	31.8	7.9	1.1	55.5	56.0	74.0	18.5	18.0
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
4	12205.0	41.9	41.6	40.4	31.0	9.5	1.7	53.0	52.7	74.0	21.0	21.3
5	14646.0	42.3	43.5	43.1	31.1	10.4	0.8	56.0	57.2	74.0	18.0	16.8
6	17087.0	43.5	43.8	46.1	30.7	11.5	1.3	62.2	62.5	74.0	11.8	11.5
7	19528.0	43.4	43.1	39.1	29.7	12.4	0.0	55.7	55.4	74.0	18.3	18.6
8	21969.0	45.4	45.7	39.5	30.7	12.7	0.0	57.4	57.7	74.0	16.6	16.3
9	24410.0	46.7	45.5	39.1	30.5	13.1	0.0	58.9	57.7	74.0	15.1	16.3

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
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	4882.0	30.4	28.9	36.2	31.8	5.5	1.4	41.7	40.2	54.0	12.3	13.8
2	7323.0	29.0	29.0	37.9	31.7	6.7	1.1	43.0	43.0	54.0	11.0	11.0
3	9764.0	29.1	29.1	36.6	31.8	7.9	1.1	42.9	42.9	54.0	11.1	11.1
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac</b>												
4	12205.0	28.3	28.4	40.4	31.0	9.5	1.7	39.4	39.5	54.0	14.6	14.5
5	14646.0	29.8	29.9	43.1	31.1	10.4	0.8	43.5	43.6	54.0	10.5	10.4
6	17087.0	30.8	29.9	46.1	30.7	11.5	1.3	49.5	48.6	54.0	4.5	5.4
7	19528.0	30.8	30.5	39.1	29.7	12.4	0.0	43.1	42.8	54.0	10.9	11.2
8	21969.0	32.6	32.8	39.5	30.7	12.7	0.0	44.6	44.8	54.0	9.4	9.2
9	24410.0	32.8	32.9	39.1	30.5	13.1	0.0	45.0	45.1	54.0	9.0	8.9

\* Reference data

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

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

## Radiated Spurious Emission

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2Semi Anechoic Chamber

Company : Sharp Corporation	REPORT NO : 26EE0058-HO	UL Apex Co., Ltd.
Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone/ Bluetooth enable	REGULATION : Fcc Part15 Subpart C 15.247(d)	Head Office EMC Lab. No.2Semi Anechoic Chamber
Model : 904SH	TEST DISTANCE : 3/1m	
Sample No. : 004401/11/001312/7	DATE : 02/07/2006	
Power : DC 4.0V (AC 120 V / 60 Hz)	TEMPERATURE : 25deg C	
Mode : Bluetooth Tx 2480MHz	HUMIDITY : 30%	
Remarks : Hor X-axis , Ver Z-axis	ENGINEER : Takumi Shimada	

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		
		[dBuV]		RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss										
<b>Test distance 3meters</b>														
1	2483.5	65.7	63.9	30.4	32.4	4.1	0.0	67.8	66.0	74.0	6.2	8.0		
2	4960.0	43.2	42.6	36.6	31.8	5.6	1.4	55.0	54.4	74.0	19.0	19.6		
3	7440.0	43.3	42.1	38.2	31.9	6.7	1.1	57.4	56.2	74.0	16.6	17.8		
4	9920.0	42.3	42.7	36.5	32.0	8.1	1.2	56.1	56.5	74.0	17.9	17.5		
<b>Test distance 1meters</b>														
5	12400.0	40.9	41.1	40.5	30.7	9.7	1.6	52.5	52.7	74.0	21.5	21.3		
6	14880.0	43.1	43.0	42.8	31.0	10.4	0.9	56.7	56.6	74.0	17.3	17.4		
7	17360.0	43.5	43.6	46.2	31.0	11.8	1.7	62.7	62.8	74.0	11.3	11.2		
8	19840.0	44.3	44.0	39.1	30.3	12.4	0.0	56.0	55.7	74.0	18.0	18.3		
9	22320.0	45.5	44.9	39.5	30.7	12.8	0.0	57.6	57.0	74.0	16.4	17.0		
10	24800.0	47.3	48.2	39.3	30.6	13.2	0.0	59.7	60.6	74.0	14.3	13.4		

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		
		[dBuV]		RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss										
<b>Test distance 3meters</b>														
1	2483.5	32.9	32.1	30.4	32.4	4.1	0.0	35.0	34.2	54.0	19.0	19.8		
2	4960.0	29.9	29.2	36.6	31.8	5.6	1.4	41.7	41.0	54.0	12.3	13.0		
3	7440.0	29.2	29.1	38.2	31.9	6.7	1.1	43.3	43.2	54.0	10.7	10.8		
4	9920.0	29.4	29.5	36.5	32.0	8.1	1.2	43.2	43.3	54.0	10.8	10.7		
<b>Test distance 1meters</b>														
5	12400.0	28.4	28.3	40.5	30.7	9.7	1.6	40.0	39.9	54.0	14.0	14.1		
6	14880.0	30.5	30.5	42.8	31.0	10.4	0.9	44.1	44.1	54.0	9.9	9.9		
7	17360.0	30.8	30.8	46.2	31.0	11.8	1.7	50.0	50.0	54.0	4.0	4.0		
8	19840.0	30.8	31.1	39.1	30.3	12.4	0.0	42.5	42.8	54.0	11.5	11.2		
9	22320.0	32.4	32.3	39.5	30.7	12.8	0.0	44.5	44.4	54.0	9.5	9.6		
10	24800.0	34.9	34.6	39.3	30.6	13.2	0.0	47.3	47.0	54.0	6.7	7.0		

\* Reference data

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

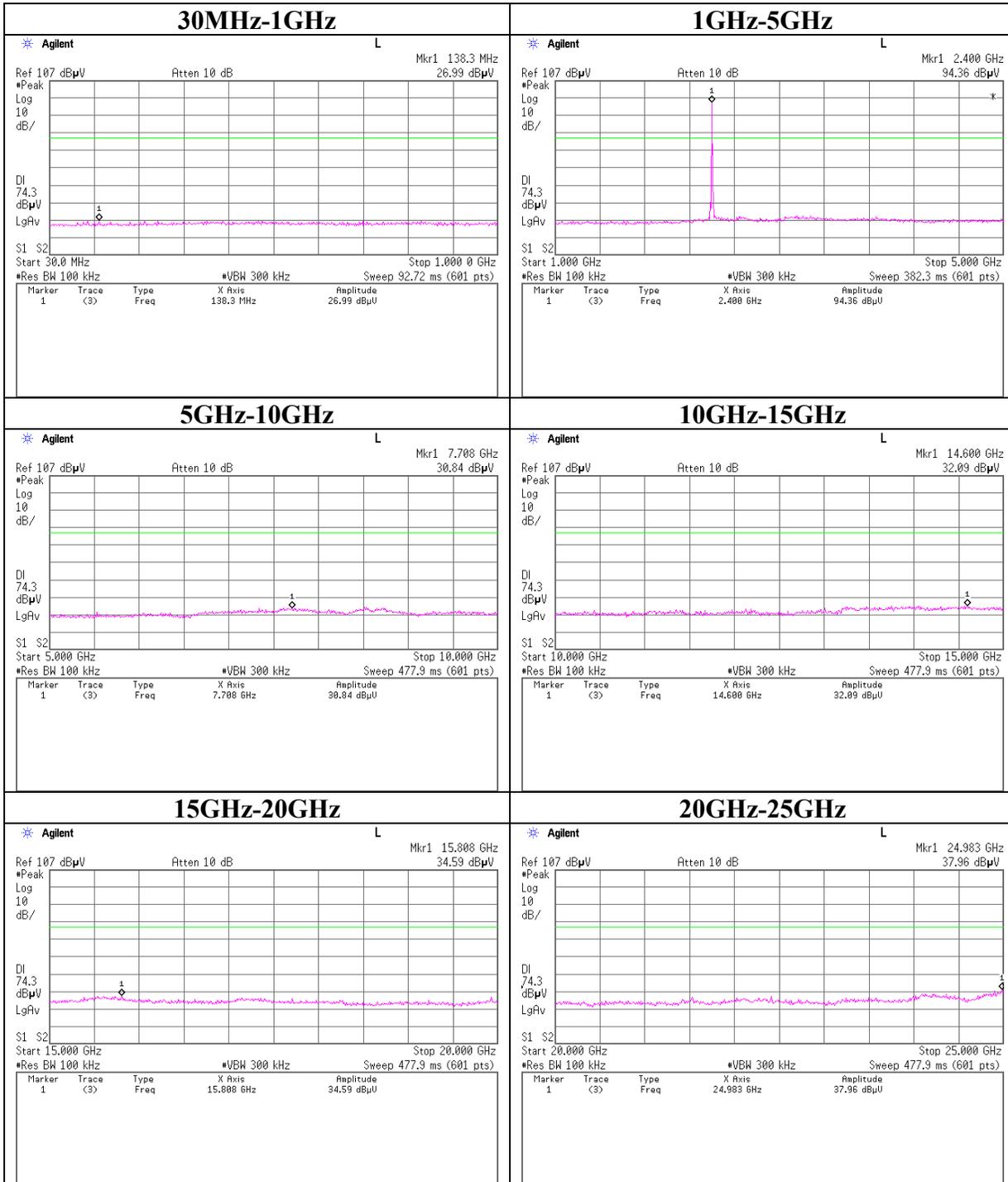
\*Except for the above table : All other spurious emissions were less than 20dB for the limit.

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

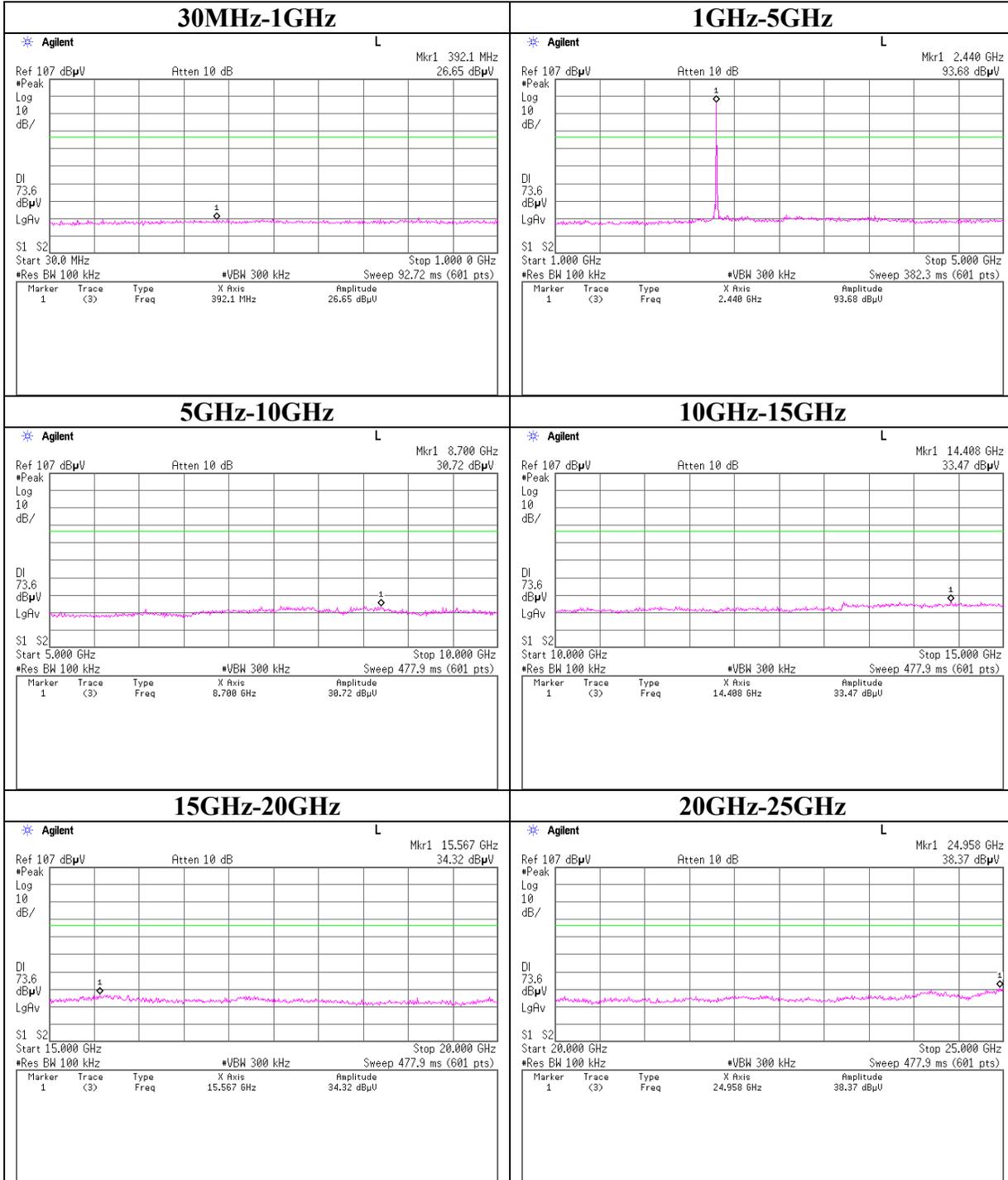
\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

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

**Conducted Spurious Emission**  
**Ch:Low**

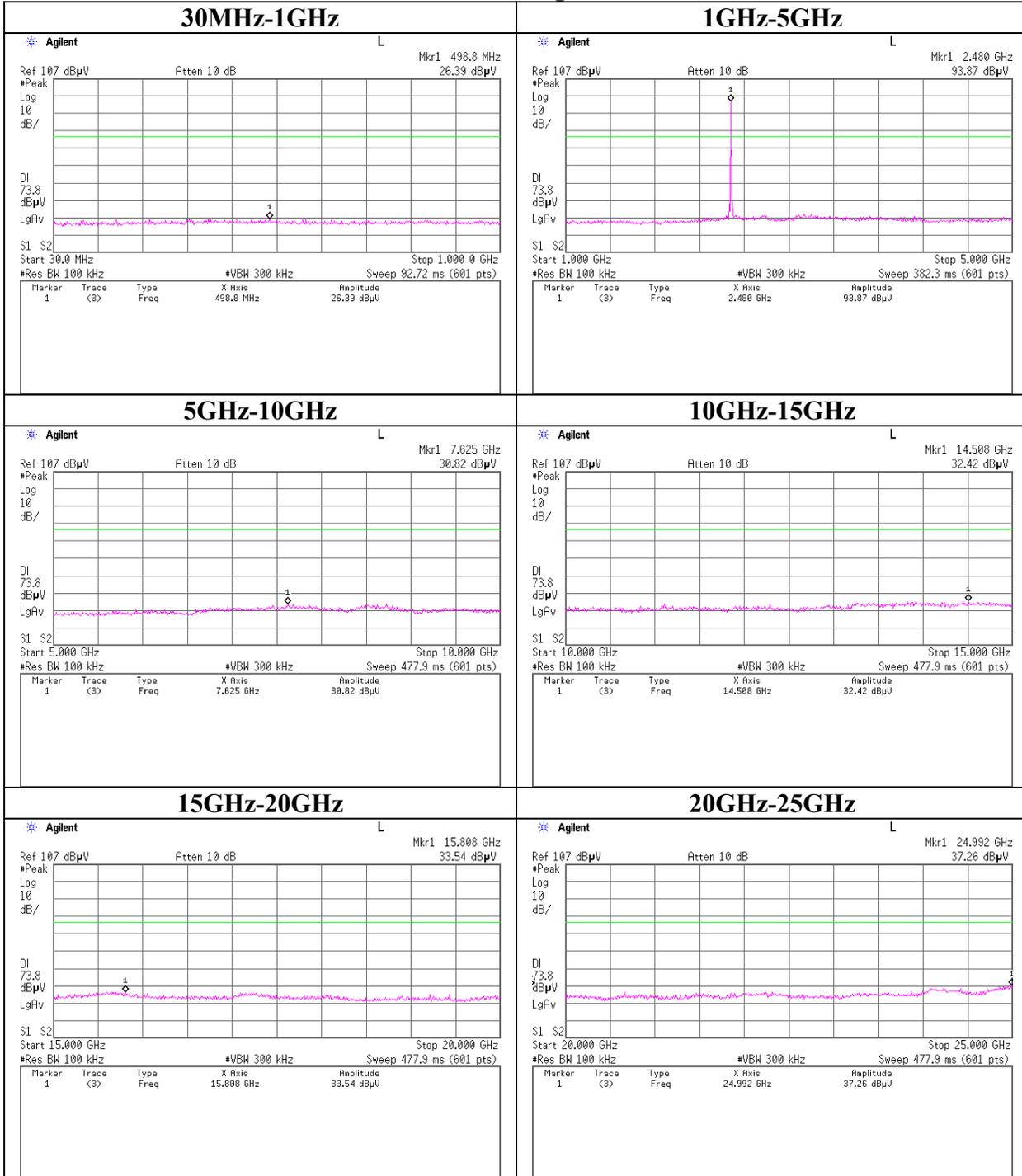


**Conducted Spurious Emission**  
**Ch:Mid**

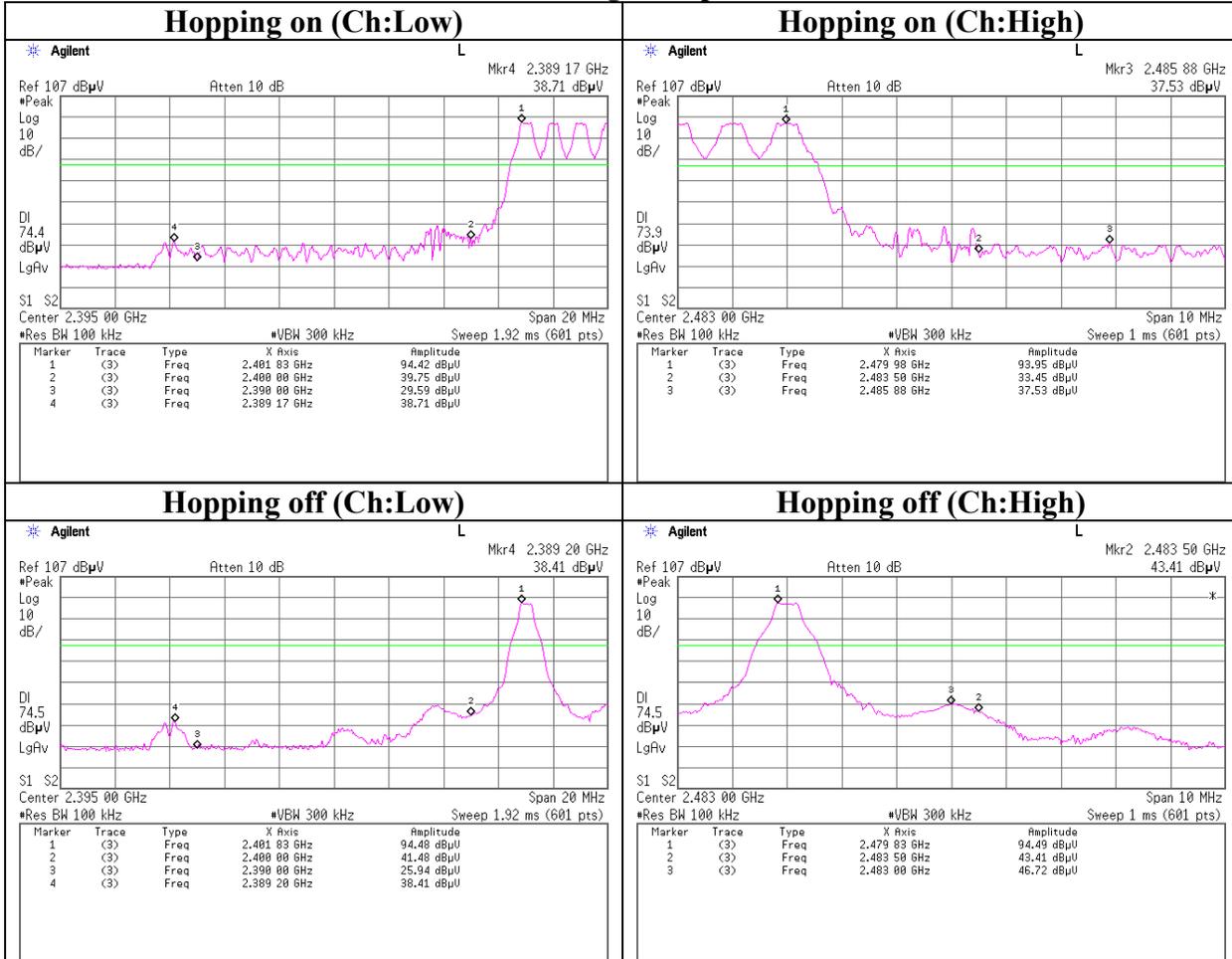


## Conducted Spurious Emission

### Ch:High



## Conducted Spurious Emission Band Edge compliance



### 99% Occupied Bandwidth

