



RADIO TEST REPORT

Test Report No. : 27DE0208-HO-A

Applicant : Sharp Corporation
Type of Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone/ Bluetooth enable
Model No. : 812SH
FCC ID : APYHRO00054
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:

November 28 to December 6, 2006

Tested by:

Yasuyuki Fukui
EMC Services

Approved by :

Hironobu Shimoji
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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SECTION 1: Client information

Company Name : Sharp Corporation
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 : Yasushi Kodama

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. : 812SH
Serial No. : 004401/11/038351/6, 004401/11/038393/8
Rating : AC120V/60Hz
Country of Manufacture : Japan
Receipt Date of Sample : November 22, 2006
Condition of EUT : Production 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

Model No: 812SH (referred to as the EUT in this report) is the WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone/ Bluetooth enable.

Clock frequency(ies) in the system : 13MHz (CPU), 32.768kHz (RTC)
Equipment Type : Transceiver
Frequency of Operation : 2402-2480MHz
Bandwidth & Channel spacing : 1MHz & 1MHz
Modulation : FHSS
Power Supply (inner) : DC 2.9V
Antenna Type : Internal Antenna
Antenna Connector Type : N/A
Antenna Gain : 0 dBi max

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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(DC2.9V) 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.

3.2 Procedures and results

| 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 | 25.7dB 0.39810MHz, QP, N | 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) | 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)(iii) | Conducted | N/A | | Complied | |
| 5 | Dwell time | FCC: ANSI C63.4:2003 13. Measurement of intentional radiators | FCC: Section 15.247(a)(1)(iii) | 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 | | <Tx> 8.0dB 37.50MHz, Ver, QP <Rx> 8.2dB 37.50MHz, Ver, QP | 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.

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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 ± 2.66 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.

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3.6 Test set up, Test instruments and Data of EMI

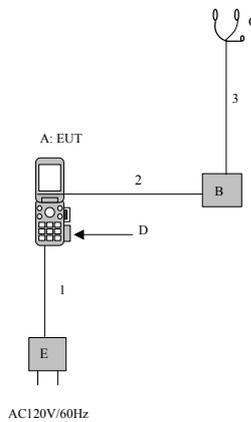
Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The mode used for test : Transmitting mode (Packet size DH5, Data packet: PRBS9)
- Low Channel : 2402MHz
- Mid Channel : 2441MHz
- High Channel : 2480MHz
Receiving mode
- Mid Channel : 2441MHz
Inquiry mode

4.2 Configuration and peripherals



Description of Support equipment

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|-----|--|--------------|---|-------------------|---------|
| A | WCDMA & Tri-band GSM Dual mode Mobile Phone/ Bluetooth enable | 812SH | 004401/11/038393/8*1) , 004401/11/038351/6 *2) | Sharp Corporation | EUT |
| B | Hands free Microphone Unit | XN-1HU90 | - | Sharp Corporation | EUT |
| C | Stereo Headset | XN-1HS90 | - | Sharp Corporation | EUT |
| D | Lithium-Ion Battery | SHBAY1 | - | Sharp Corporation | EUT |
| E | AC Adapter | SHCAA1 | - | HOSIDEN | EUT |

*1) Used for Conducted and radiated emission tests

*2) Used for Antenna Terminal tests

List of cables used

| No. | Name | Length (m) | Shield | |
|-----|--------------------------------------|------------|------------|------------|
| | | | Cable | Connector |
| 1 | DC Cable | 1.5 | Unshielded | Unshielded |
| 2 | Cable for Hands free Microphone Unit | 0.9 | Unshielded | Unshielded |
| 3 | Stereo Headset Cable | 0.75 | Unshielded | Unshielded |

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0m 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 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: December 6, 2006

Test engineer: Yasuyuki Fukui

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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 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 2

Test result : Pass

Date: December 5 and 6, 2006

Test engineer: Yasuyuki Fukui

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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 1: Photographs of test setup

Conducted Emission

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Spurious Emission (Radiated)

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

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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. 4 Semi Anechoic Chamber
 Date : 2006/12/06 16:11:40

| | | | |
|----------------|---|--------------|-------------------------------------|
| Applicant | : Sharp Corporation | Report No. | : 27DE0208-HO |
| Kind of EUT | : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | Power | : DC4.0V (AC Adapter : AC120V/60Hz) |
| | | Temp/C/Humi% | : 24deg.C / 31% |
| | | Operator | : Yasuyuki Fukui |
| Model No. | : 812SH | | |
| Serial No. | : 004401/11/038351/6 | | |
| Mode / Remarks | : Bluetooth Tx 2402MHz , DH5 | | |
| LIMIT | : FCC15C § 15.207 (QP) / RSS-Gen | | |
| | : FCC15C § 15.207 (AV) / RSS-Gen | | |

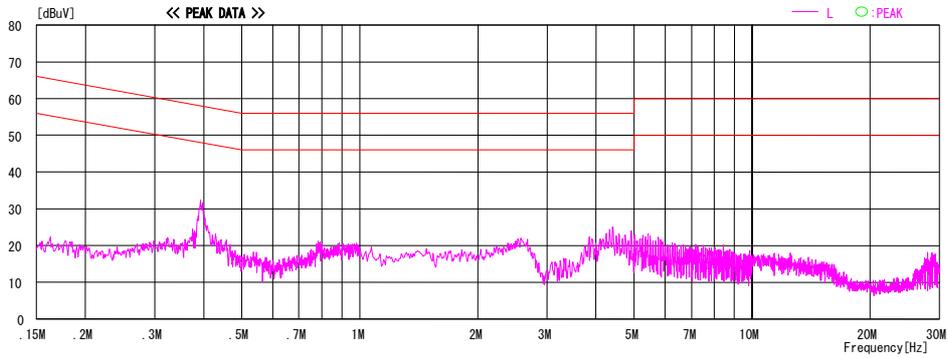
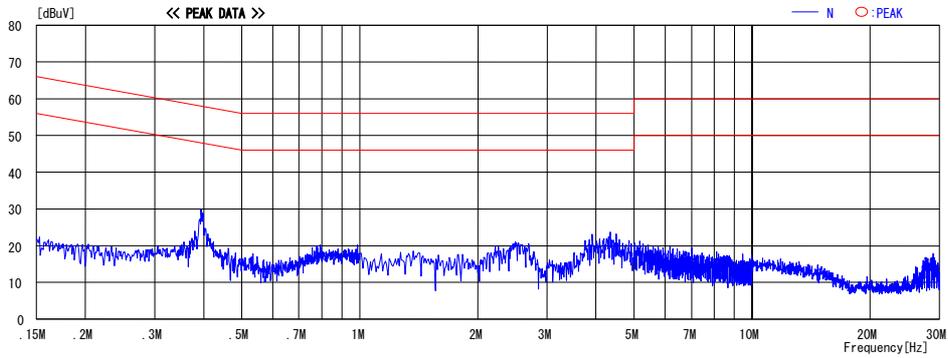


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALORATION: RESULT=READING+C.F(L ISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
 Date : 2006/12/06 16:17:18

| | | | |
|----------------|---|--------------|-------------------------------------|
| Applicant | : Sharp Corporation | Report No. | : 27DE0208-HO |
| Kind of EUT | : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | Power | : DC4.0V (AC Adapter : AC120V/60Hz) |
| Model No. | : 812SH | Temp°C/Humi% | : 24deg. C / 31% |
| Serial No. | : 004401/11/038351/6 | Operator | : Yasuyuki Fukui |
| Mode / Remarks | : Bluetooth Tx 2441MHz , DH5 | | |
| LIMIT | : FCC15C §15.207 (QP) / RSS-Gen FCC15C §15.207 (AV) / RSS-Gen | | |

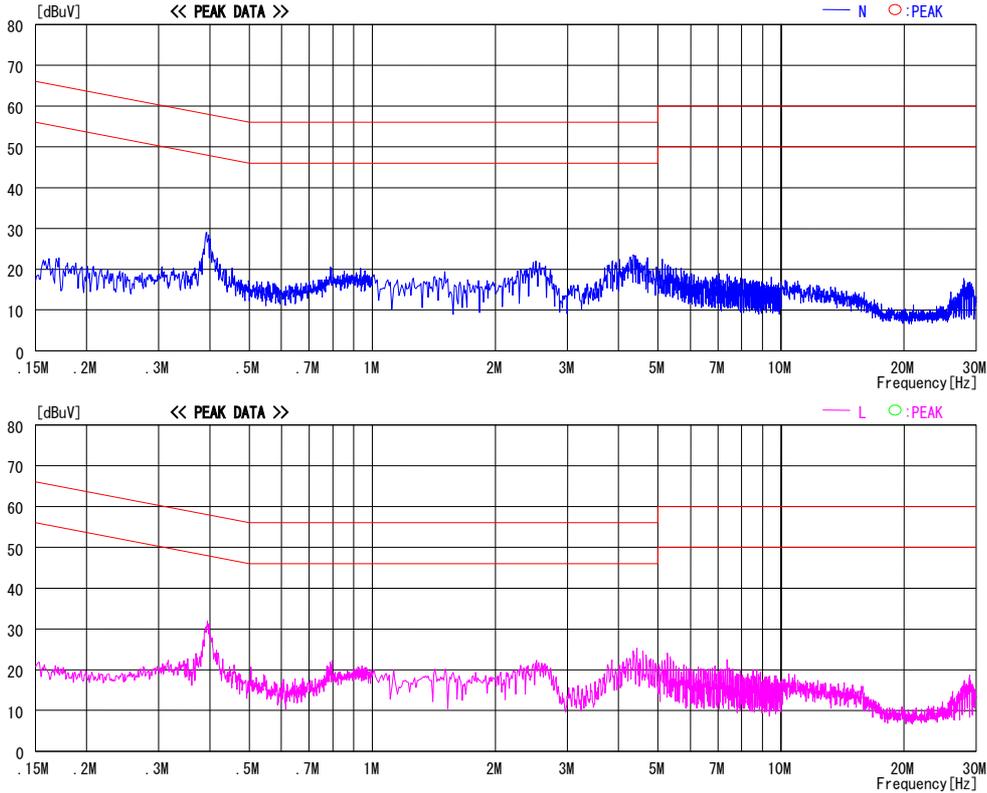


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F (L ISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
 Date : 2006/12/06 16:29:02

| | |
|--|---|
| Applicant : Sharp Corporation Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Model No. : 812SH Serial No. : 004401/11/038351/6 Mode / Remarks : Bluetooth Tx 2480MHz , DH5 LIMIT : FCC15C §15.207 (QP) / RSS-Gen FCC15C §15.207 (AV) / RSS-Gen | Report No. : 27DE0208-HO Power : DC4.0V (AC Adapter : AC120V/60Hz) Temp/C/Humi% : 24deg. C / 31% Operator : Yasuyuki Fukui |
|--|---|

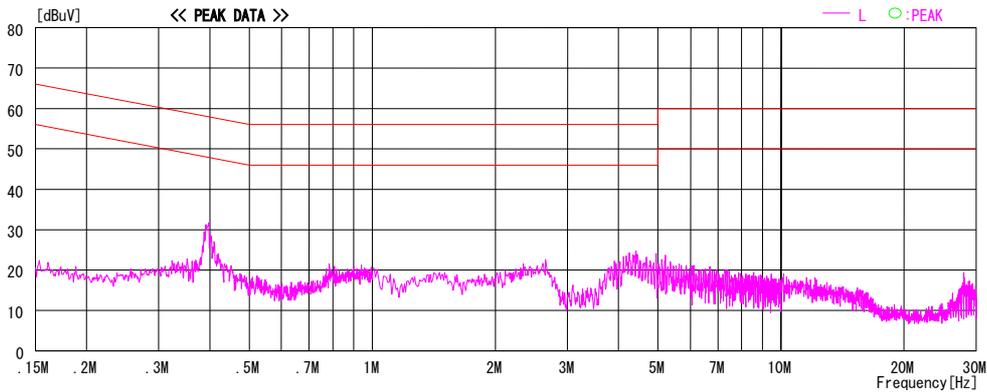
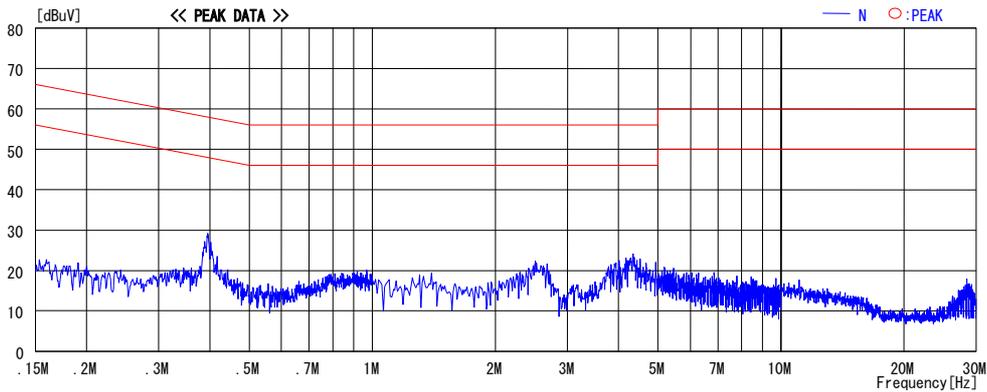


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2006/12/06 16:02:03

| | | | |
|----------------|--|--------------|-------------------------------------|
| Applicant | : Sharp Corporation | Report No. | : 27DE0208-HO |
| Kind of EUT | : WCDMA & Tri-band (900/1800/1900) GSM Dual mode | Power | : DC4.0V (AC Adapter : AC120V/60Hz) |
| | : Mobile Phone / Bluetooth enable | Temp°C/Humi% | : 24deg. C / 31% |
| Model No. | : 812SH | Operator | : Yasuyuki Fukui |
| Serial No. | : 004401/11/038351/6 | | |
| Mode / Remarks | : Bluetooth Rx 2441MHz , DH5 | | |
| LIMIT | : FCC15C §15.207 (QP) / RSS-Gen | | |
| | : FCC15C §15.207 (AV) / RSS-Gen | | |

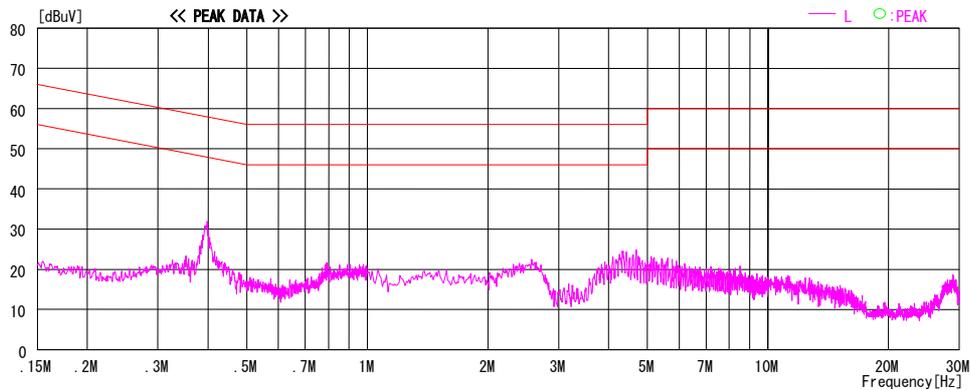
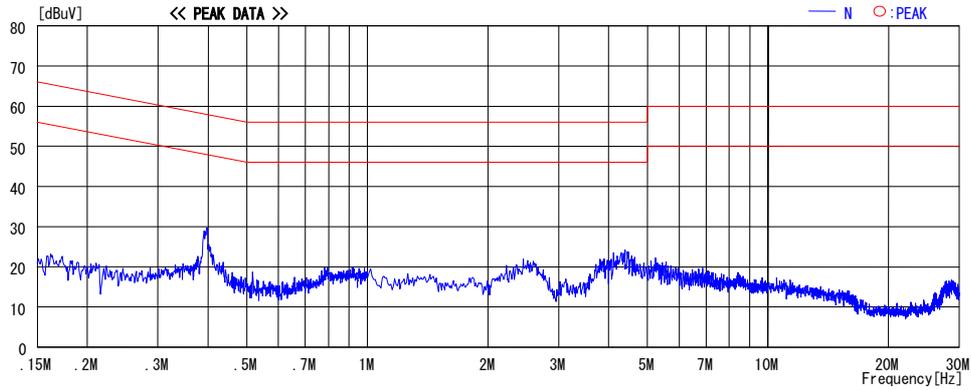


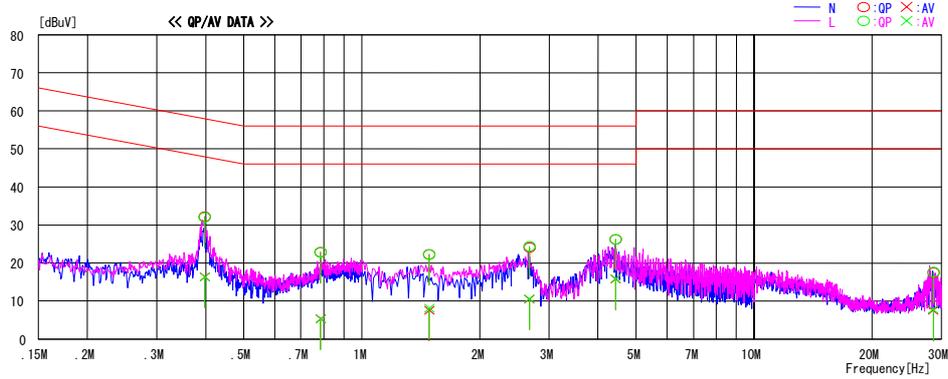
CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2006/12/06 16:29:02

| | |
|--|---|
| Applicant : Sharp Corporation | Report No. : 27DE0208-HO |
| Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode | Power : DC4.0V (AC Adapter : AC120V/60Hz) |
| Mobile Phone / Bluetooth enable | Temp/C/Humi% : 24deg.C / 31% |
| Model No. : 812SH | Operator : Yasuyuki Fukui |
| Serial No. : 004401/11/038351/6 | |
| Mode / Remarks : Bluetooth Tx 2480MHz , DH5 | |
| LIMIT : FCC15C § 15.207 (QP) / RSS-Gen | |
| FCC15C § 15.207 (AV) / RSS-Gen | |



| 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] | |
| 0.39810 | 32.0 | 16.2 | 0.2 | 32.2 | 16.4 | 57.9 | 47.9 | 25.7 | 31.5 | N |
| 0.78496 | 22.6 | 5.1 | 0.3 | 22.9 | 5.4 | 56.0 | 46.0 | 33.1 | 40.6 | N |
| 1.48600 | 21.9 | 7.2 | 0.4 | 22.3 | 7.6 | 56.0 | 46.0 | 33.7 | 38.4 | N |
| 2.67400 | 23.7 | 10.1 | 0.4 | 24.1 | 10.5 | 56.0 | 46.0 | 31.9 | 35.5 | N |
| 4.43800 | 25.6 | 15.2 | 0.6 | 26.2 | 15.8 | 56.0 | 46.0 | 29.8 | 30.2 | N |
| 28.61000 | 15.5 | 5.6 | 2.0 | 17.5 | 7.6 | 60.0 | 50.0 | 42.5 | 42.4 | N |
| 0.39810 | 31.8 | 16.1 | 0.2 | 32.0 | 16.3 | 57.9 | 47.9 | 25.9 | 31.6 | L |
| 0.78496 | 22.5 | 5.0 | 0.3 | 22.8 | 5.3 | 56.0 | 46.0 | 33.2 | 40.7 | L |
| 1.48600 | 21.8 | 7.7 | 0.4 | 22.2 | 8.1 | 56.0 | 46.0 | 33.8 | 37.9 | L |
| 2.67400 | 24.0 | 10.2 | 0.4 | 24.4 | 10.6 | 56.0 | 46.0 | 31.6 | 35.4 | L |
| 4.43800 | 25.6 | 15.3 | 0.6 | 26.2 | 15.9 | 56.0 | 46.0 | 29.8 | 30.1 | L |
| 28.61000 | 15.6 | 5.8 | 2.0 | 17.6 | 7.8 | 60.0 | 50.0 | 42.4 | 42.2 | 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.

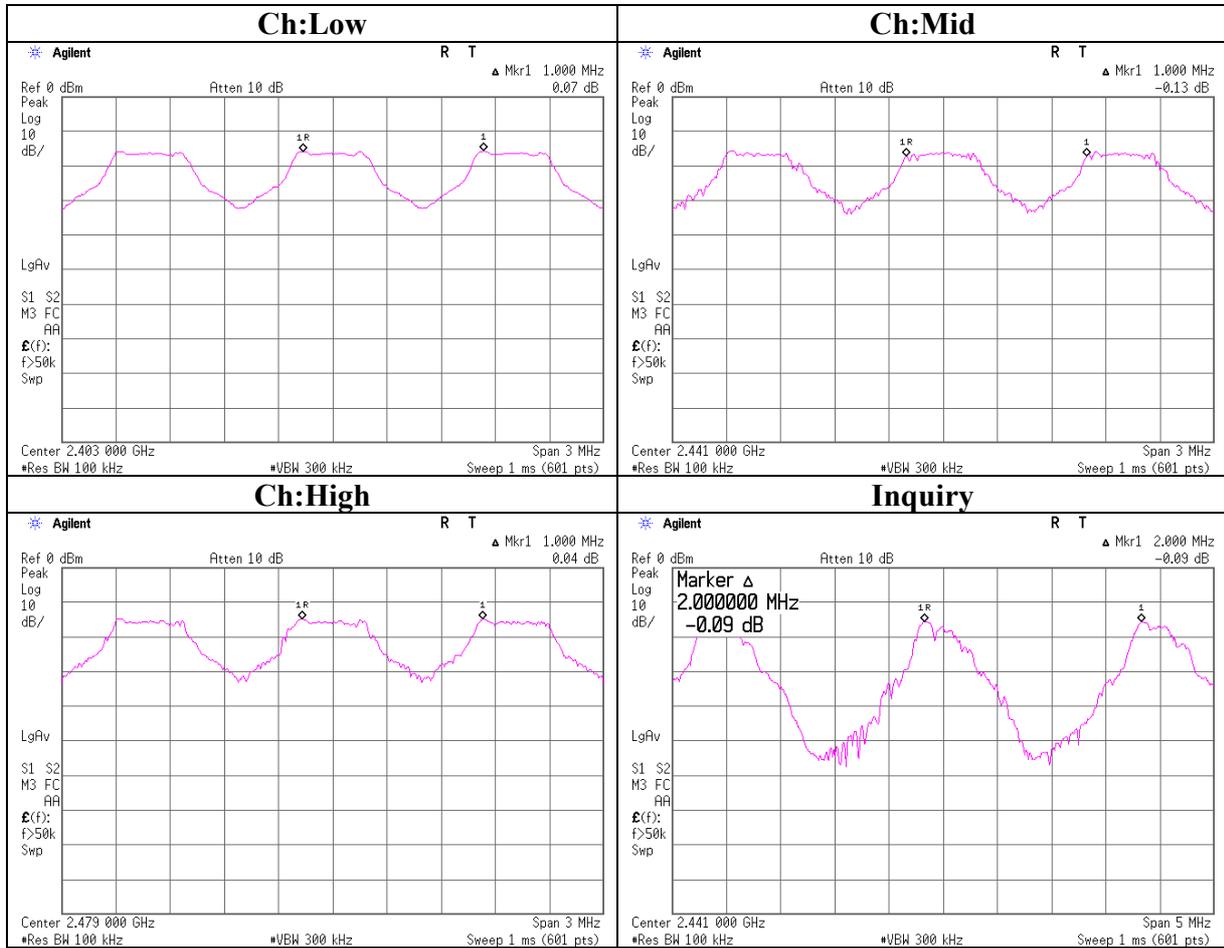
Carrier Frequency Separation

UL Apex Co., Ltd.
Head Office EMC Lab. No.6 Shielded Room

| | | | |
|-----------|---|---------------|-------------------------------------|
| COMPANY | : Sharp Corporation | REGULATION | : FCC Part15 Subpart C 15.247(a)(1) |
| EQUIPMENT | : WCDMA & Tri-band (900/1800/1900) | TEST DISTANCE | : - |
| | : GSM Dual mode Mobile Phone / Bluetooth enable | DATE | : 11/28/2006 |
| MODEL | : 812SH | TEMPERATURE | : 25deg.C |
| S/N | : 004401/11/038393/8 | HUMIDITY | : 55% |
| POWER | : DC4.0V | ENGINEER | : Yasuyuki Fukui |
| MODE | : Transmitting mode (Hopping On)/Inquiry mode | | |

| Ch | Freq. [MHz] | Channel separation [MHz] | Limit |
|---------|----------------|-----------------------------|---|
| Low | 2402.0 | 1.000 | >two-thirds of 0.950 [MHz] or 25 [kHz] (whichever is greater) |
| Mid | 2441.0 | 1.000 | >two-thirds of 0.950 [MHz] or 25 [kHz] (whichever is greater) |
| High | 2480.0 | 1.000 | >two-thirds of 0.950 [MHz] or 25 [kHz] (whichever is greater) |
| Inquiry | 2441.0 | 2.000 | >two-thirds of 0.815 [MHz] or 25 [kHz] (whichever is greater) |

Carrier Frequency Separation



20dB Bandwidth

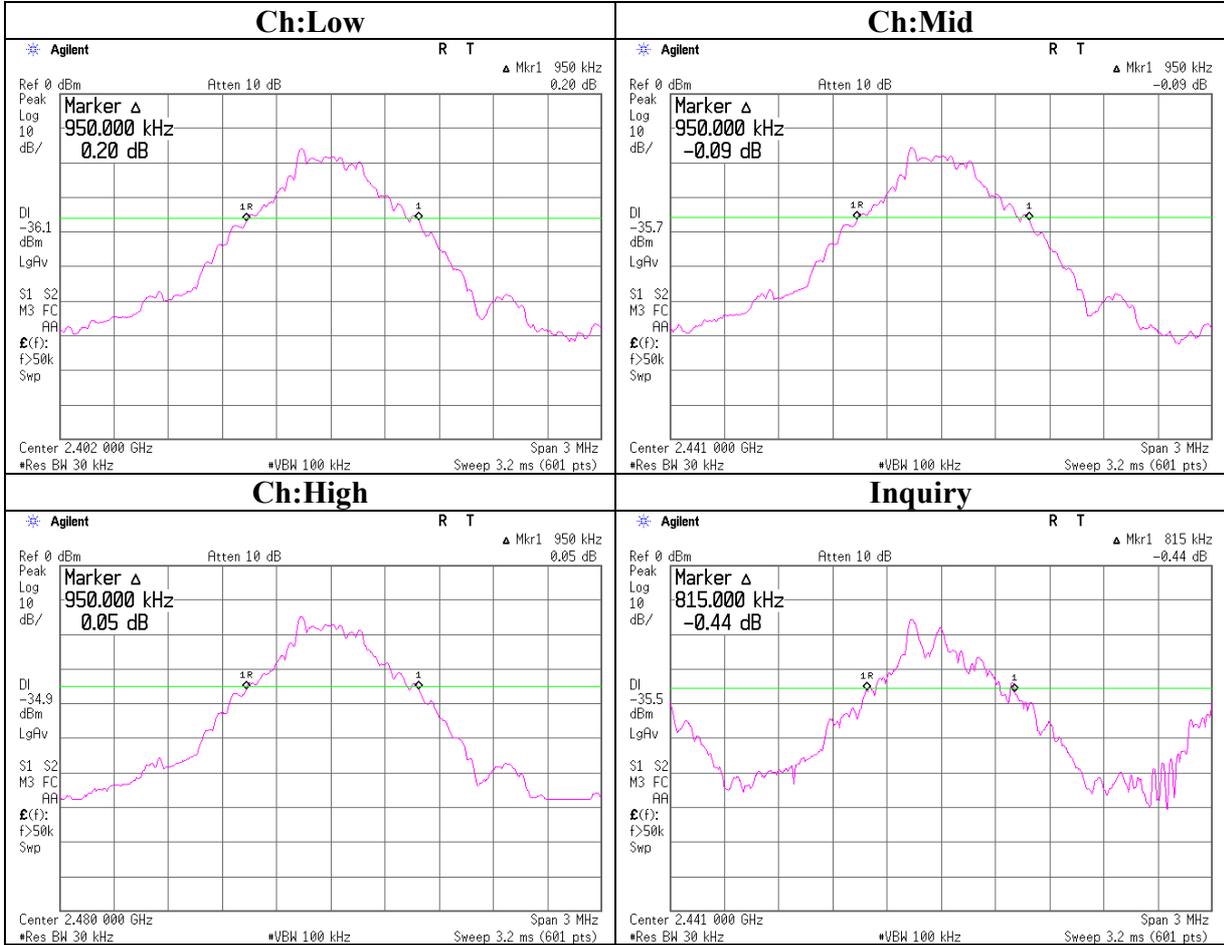
UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY : Sharp Corporation
EQUIPMENT : WCDMA & Tri-band (900/1800/1900)
MODEL : 812SH
S/N : 004401/11/038393/8
POWER : DC4.0V
MODE : Transmitting mode (Hopping On)/Inquiry mode

REGULATION : FCC Part15 Subpart C 15.247(a)(1)
TEST DISTANCE : -
DATE : 11/28/2006
TEMPERATURE : 25deg.C
HUMIDITY : 55%
ENGINEER : Yasuyuki Fukui

| Ch | Freq. [MHz] | 20dB Bandwidth [MHz] | Limit [MHz] |
|---------|----------------|-------------------------|----------------|
| Low | 2402.0 | 0.950 | - |
| Mid | 2441.0 | 0.950 | - |
| High | 2480.0 | 0.950 | - |
| Inquiry | 2441.0 | 0.815 | - |

20dB Bandwidth



Number of Hopping Frequency

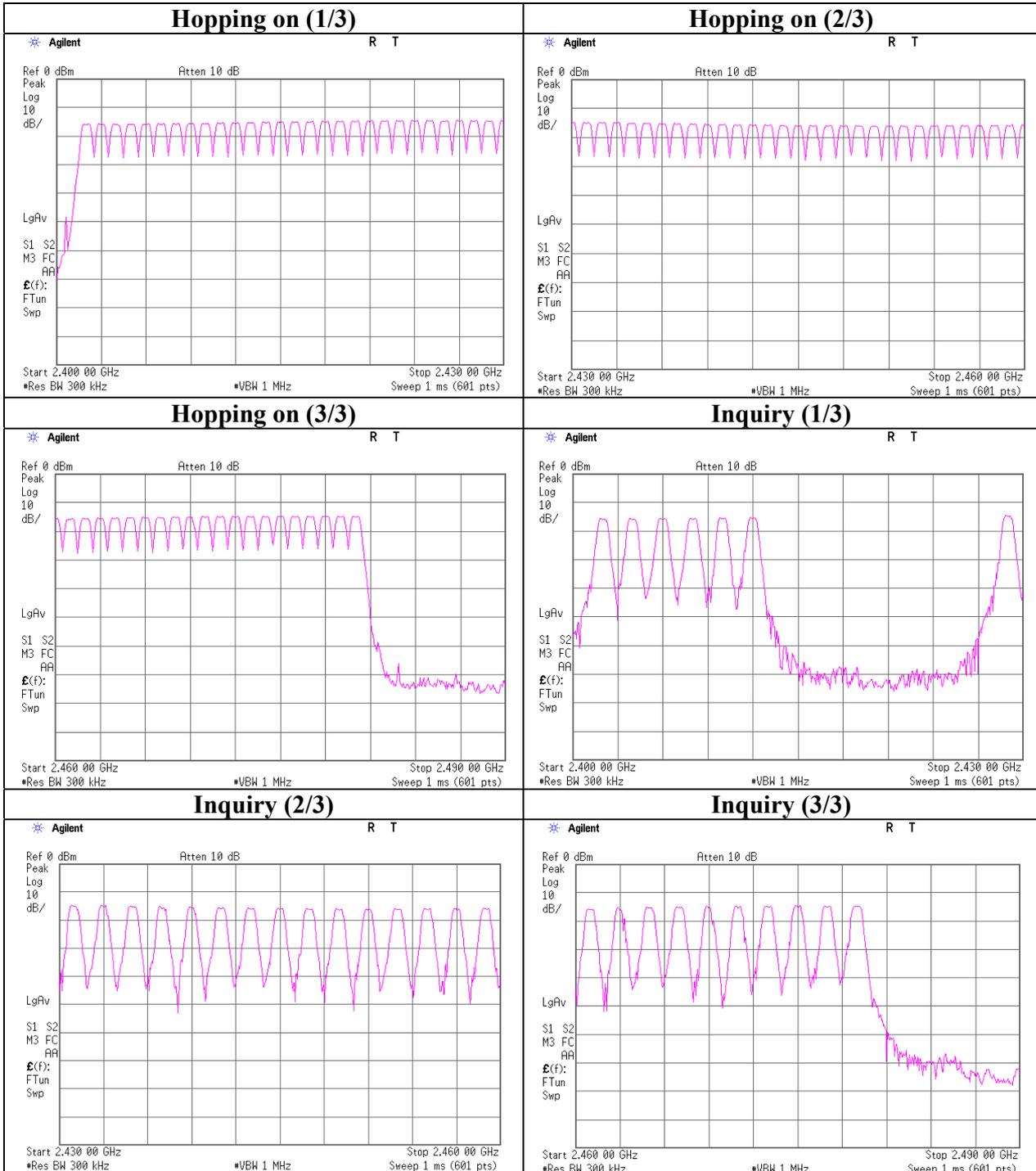
UL Apex Co., Ltd.
Head Office EMC Lab. No.6 Measurement Room

| | | | |
|-----------|---|---------------|--|
| COMPANY | : Sharp Corporation | REGULATION | : FCC Part15 Subpart C 15.247(a)(1)(iii) |
| EQUIPMENT | : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | TEST DISTANCE | : - |
| MODEL | : 812SH | DATE | : 11/28/2006 |
| S/N | : 004401/11/038393/8 | TEMPERATURE | : 25deg.C |
| POWER | : DC4.0V | HUMIDITY | : 55% |
| MODE | : Transmitting mode (Hopping On)/Inquiry mode | ENGINEER | : Yasuyuki Fukui |

| Mode | Number of channel [time] | Limit [time] |
|----------------|-----------------------------|-----------------|
| Tx(Hopping on) | 79 | ≥ 15 |

| Mode | Number of channel [time] | Limit [time] |
|---------|-----------------------------|-----------------|
| Inquiry | 32 | ≥ 15 |

Number of Hopping Frequency



Dwell time

DATA OF DWELL TIME

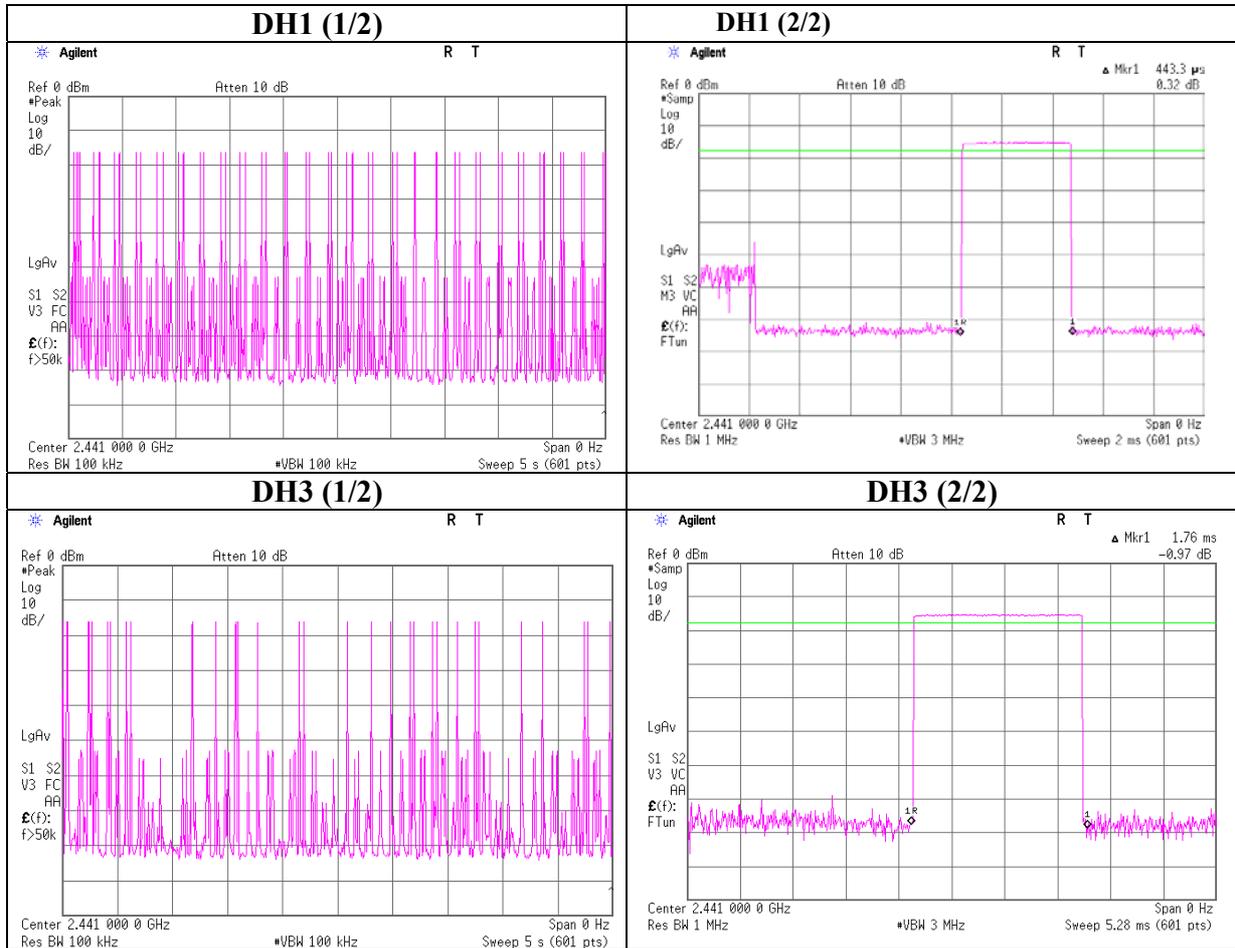
UL Apex Co., Ltd.
Head Office EMC Lab. No.6 Measurement Room

| | | | |
|-----------|---|---------------|--|
| COMPANY | : Sharp Corporation | REGULATION | : FCC Part15 Subpart C 15.247(a)(1)(iii) |
| EQUIPMENT | : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | TEST DISTANCE | : - |
| MODEL | : 812SH | DATE | : 11/28/2006 |
| S/N | : 004401/11/038393/8 | TEMPERATURE | : 25deg.C |
| POWER | : DC4.0V | HUMIDITY | : 55% |
| MODE | : Transmitting mode (Hopping On)/Inquiry mode | ENGINEER | : Yasuyuki Fukui |

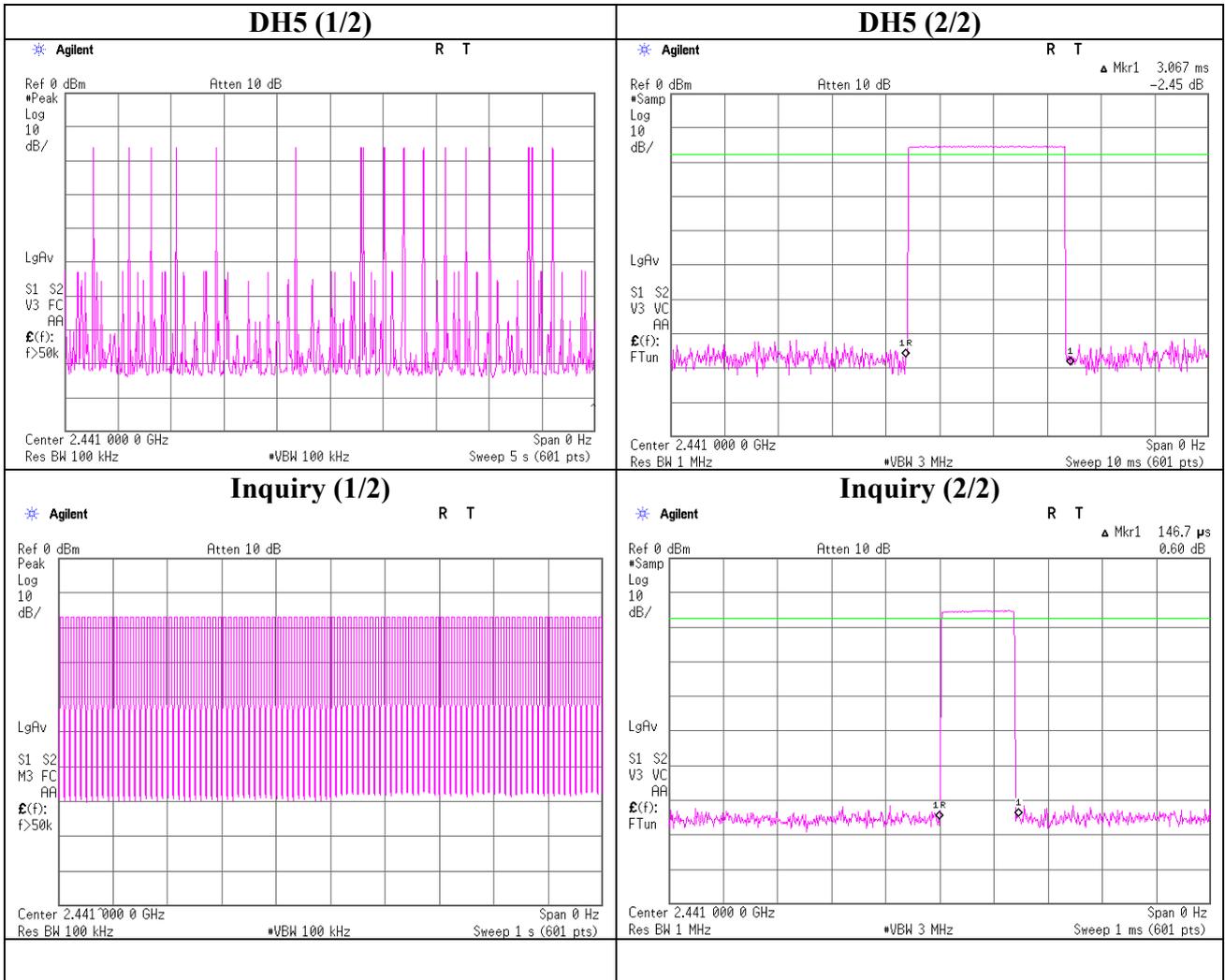
| Mode | Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period | Length of transmission time [msec] | Result [msec] | Limit [msec] |
|---------|--|--|------------------|-----------------|
| DH1 | 50.0times/5sec. x 31.6 = 316.0times * | 0.443 | 140 | 400 |
| DH3 | 31times/5sec. x 31.6 = 195.9 times * | 1.760 | 351 | 400 |
| DH5 | 20.4times/5sec. x 31.6 = 128.9times* | 3.067 | 395 | 400 |
| Inquiry | 101times / 1sec. x 12.8 = 1292.8 times* | 0.147 | 190 | 400 |

*Average data of 5 tests

Dwell time



Dwell time



Maximum Peak Output Power

UL Apex Co., Ltd.
Head Office EMC Lab. No.6 Measurement Room

COMPANY : Sharp Corporation
EQUIPMENT : WCDMA & Tri-band (900/1800/1900)
 GSM Dual mode Mobile Phone / Bluetooth enable
MODEL : 812SH
S/N : 004401/11/038393/8
POWER : DC4.0V
MODE : Transmitting mode (Hopping On)/Inquiry mode

REGULATION : FCC Part15 Subpart C 15.247(b)(1)
TEST DISTANCE : -
DATE : 11/28/2006
TEMPERATURE : 25deg C
HUMIDITY : 55%
ENGINEER : Yasuyuki Fukui

| Ch | Freq. [MHz] | P/M Reading [dBm] | Cable Loss [dB] | Atten. [dB] | Result | | Limit | | Margin [dB] |
|---------|----------------|-------------------------|-----------------------|----------------|--------|------|-------|------|----------------|
| | | | | | [dBm] | [mW] | [dBm] | [mW] | |
| Low | 2402.0 | -12.55 | 2.36 | 10.14 | -0.05 | 0.99 | 20.97 | 125 | 21.02 |
| Mid | 2441.0 | -12.53 | 2.39 | 10.14 | 0.00 | 1.00 | 20.97 | 125 | 20.97 |
| High | 2480.0 | -12.60 | 2.42 | 10.14 | -0.04 | 0.99 | 20.97 | 125 | 21.01 |
| Inquiry | 2441.0 | -12.60 | 2.39 | 10.14 | -0.07 | 0.98 | 20.97 | 125 | 21.04 |

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.

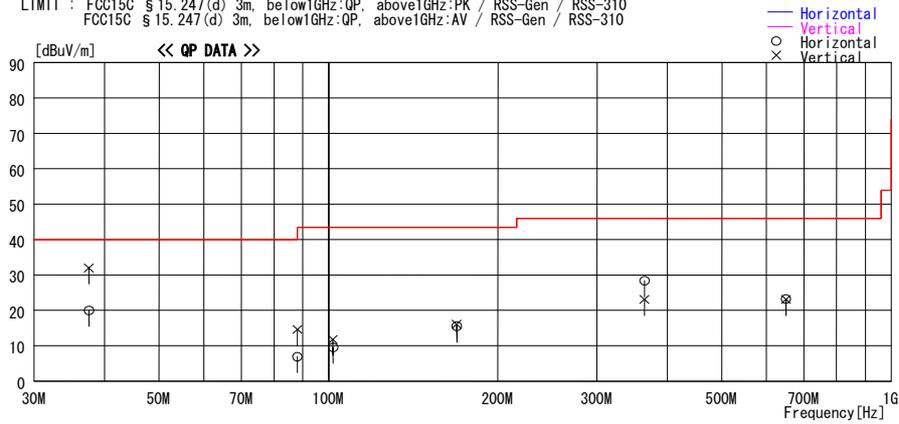
Radiated Spurious Emission

* 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. 4 Semi Anechoic Chamber
Date : 2006/12/06 10:54:17

Applicant : Sharp Corporation Report No. : 27DE0208-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. : 24deg.C / 31%
Model No. : 8123H Operator : Yasuyuki Fukui
Serial No. : 004401/11/038351/6
Mode / Remarks : Bluetooth Tx 2402MHz, DH5, EUT max-axis (H:X, V:Y)
LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-310
FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-310



| Frequency [MHz] | Reading [dBuV] | DET | Antenna | | Level [dBuV/m] | Angle [Deg] | Height [cm] | Polar. | Limit | |
|--------------------|-------------------|-----|------------------|-----------------------|-------------------|----------------|----------------|--------|----------|------|
| | | | Factor [dB/m] | Loss& Gain [dB] | | | | | [dBuV/m] | [dB] |
| 37.500 | 41.0 | QP | 15.7 | -24.7 | 32.0 | 6 | 100 | Vert. | 40.0 | 8.0 |
| 37.500 | 29.0 | QP | 15.7 | -24.7 | 20.0 | 297 | 260 | Hori. | 40.0 | 20.0 |
| 88.050 | 29.7 | QP | 8.8 | -23.9 | 14.6 | 355 | 100 | Vert. | 43.5 | 28.9 |
| 88.050 | 22.0 | QP | 8.8 | -23.9 | 6.9 | 26 | 300 | Hori. | 43.5 | 36.6 |
| 101.820 | 22.1 | QP | 11.2 | -23.7 | 9.6 | 178 | 300 | Hori. | 43.5 | 33.9 |
| 101.820 | 24.3 | QP | 11.2 | -23.7 | 11.8 | 179 | 100 | Vert. | 43.5 | 31.7 |
| 169.000 | 22.3 | QP | 16.2 | -22.9 | 15.6 | 340 | 300 | Hori. | 43.5 | 27.9 |
| 169.000 | 22.8 | QP | 16.2 | -22.9 | 16.1 | 228 | 100 | Vert. | 43.5 | 27.4 |
| 364.229 | 32.3 | QP | 17.6 | -21.5 | 28.4 | 353 | 100 | Hori. | 46.0 | 17.6 |
| 364.229 | 27.0 | QP | 17.6 | -21.5 | 23.1 | 16 | 100 | Vert. | 46.0 | 22.9 |
| 650.000 | 22.1 | QP | 21.1 | -20.0 | 23.2 | 26 | 100 | Hori. | 46.0 | 22.8 |
| 650.000 | 22.0 | QP | 21.1 | -20.0 | 23.1 | 330 | 100 | Vert. | 46.0 | 22.9 |

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)

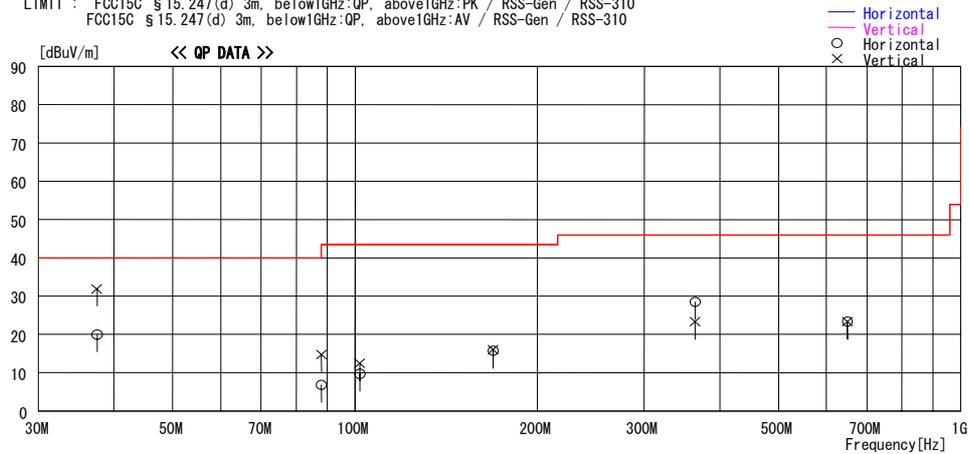
Radiated Spurious Emission

* 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.4 Semi Anechoic Chamber
Date : 2006/12/06 11:45:20

| | | |
|---|---|--|
| Applicant : Sharp Corporation | Report No. : 27DE0208-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. : 24deg. C / 31% | |
| Model No. : 812SH | Operator : Yasuyuki Fukui | |
| Serial No. : 004401/11/038351/6 | | |
| Mode / Remarks : Bluetooth Tx 2441MHz, DH5, EUT max-axis (H:X, V:Y) | | |
| LIMIT : FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-310 | | |
| FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-310 | | |



| Frequency [MHz] | Reading [dBuV] | DET | Antenna | | Level [dBuV/m] | Angle [Deg.] | Height [cm] | Polar. | Limit [dBuV/m] | Margin [dB] |
|--------------------|-------------------|-----|------------------|---------------------|-------------------|-----------------|----------------|--------|-------------------|----------------|
| | | | Factor [dB/m] | Loss & Gain [dB] | | | | | | |
| 37.500 | 40.9 | QP | 15.7 | -24.7 | 31.9 | 10 | 100 | Vert. | 40.0 | 8.1 |
| 37.500 | 29.0 | QP | 15.7 | -24.7 | 20.0 | 260 | 300 | Hori. | 40.0 | 20.0 |
| 88.050 | 21.9 | QP | 8.8 | -23.9 | 6.8 | 261 | 300 | Hori. | 43.5 | 36.7 |
| 88.050 | 29.9 | QP | 8.8 | -23.9 | 14.8 | 298 | 100 | Vert. | 43.5 | 28.7 |
| 101.820 | 22.2 | QP | 11.2 | -23.7 | 9.7 | 177 | 300 | Hori. | 43.5 | 33.8 |
| 101.820 | 25.0 | QP | 11.2 | -23.7 | 12.5 | 178 | 100 | Vert. | 43.5 | 31.0 |
| 169.000 | 22.8 | QP | 16.2 | -22.9 | 16.1 | 227 | 100 | Vert. | 43.5 | 27.4 |
| 169.000 | 22.4 | QP | 16.2 | -22.9 | 15.7 | 358 | 300 | Hori. | 43.5 | 27.8 |
| 364.229 | 32.4 | QP | 17.6 | -21.5 | 28.5 | 352 | 100 | Hori. | 46.0 | 17.5 |
| 364.229 | 27.2 | QP | 17.6 | -21.5 | 23.3 | 20 | 100 | Vert. | 46.0 | 22.7 |
| 650.000 | 22.2 | QP | 21.1 | -20.0 | 23.3 | 300 | 100 | Vert. | 46.0 | 22.7 |
| 650.000 | 22.3 | QP | 21.1 | -20.0 | 23.4 | 30 | 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

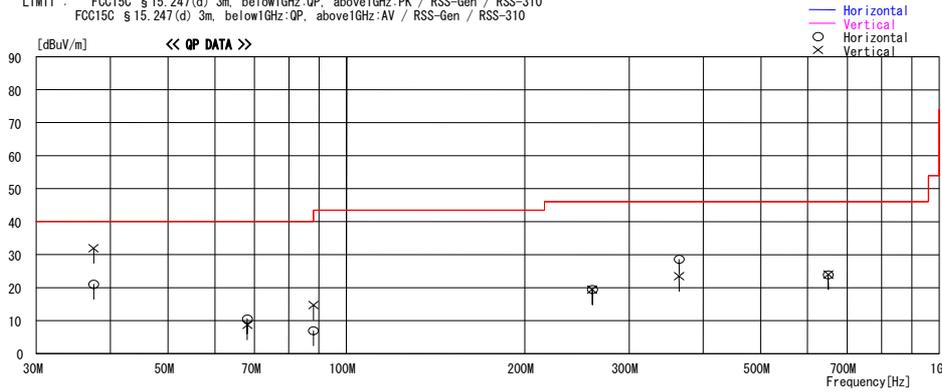
* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2006/12/06 13:59:19

Applicant : Sharp Corporation
Kind of EUT : WCDMA & Tri-band (900/1800/1900) GSM Dual mode
Model No. : 812SH
Serial No. : 004401/11/038351/6
Mode / Remarks : Bluetooth Tx 2480MHz, DHS, EUT max-axis (H:X, V:Y)
LIMIT : FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-310
FCC15C § 15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-310

Report No. : 27DE0208-HO
Power : DC 4.0V (AC adapter: AC120V/60Hz)
Temp./Humi. : 24deg.C / 31%
Operator : Yasuyuki Fukui



| Frequency [MHz] | Reading [dBuV] | DET | Antenna | | Level [dBuV/m] | Angle [Deg.] | Height [cm] | Polar. | Limit [dBuV/m] | Margin [dB] |
|--------------------|-------------------|-----|------------------|---------------------|-------------------|-----------------|----------------|--------|-------------------|----------------|
| | | | Factor [dB/m] | Loss & Gain [dB] | | | | | | |
| 37.500 | 30.0 | QP | 15.7 | -24.7 | 21.0 | 250 | 300 | Hori. | 40.0 | 19.0 |
| 37.500 | 40.9 | QP | 15.7 | -24.7 | 31.9 | 36 | 100 | Vert. | 40.0 | 8.1 |
| 68.070 | 27.1 | QP | 7.7 | -24.2 | 10.6 | 5 | 295 | Hori. | 40.0 | 29.4 |
| 68.070 | 25.2 | QP | 7.7 | -24.2 | 8.7 | 109 | 100 | Vert. | 40.0 | 31.3 |
| 88.050 | 22.0 | QP | 8.8 | -23.9 | 6.9 | 259 | 270 | Hori. | 43.5 | 36.6 |
| 88.050 | 29.8 | QP | 8.8 | -23.9 | 14.7 | 290 | 100 | Vert. | 43.5 | 28.8 |
| 260.000 | 23.1 | QP | 18.4 | -22.1 | 19.4 | 194 | 100 | Vert. | 46.0 | 26.6 |
| 260.000 | 23.2 | QP | 18.4 | -22.1 | 19.5 | 235 | 300 | Hori. | 46.0 | 26.5 |
| 364.230 | 32.5 | QP | 17.6 | -21.5 | 28.6 | 354 | 100 | Hori. | 46.0 | 17.4 |
| 364.230 | 27.3 | QP | 17.6 | -21.5 | 23.4 | 34 | 100 | Vert. | 46.0 | 22.6 |
| 650.000 | 22.8 | QP | 21.1 | -20.0 | 23.9 | 259 | 100 | Hori. | 46.0 | 22.1 |
| 650.000 | 22.9 | QP | 21.1 | -20.0 | 24.0 | 303 | 100 | Vert. | 46.0 | 22.0 |

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)

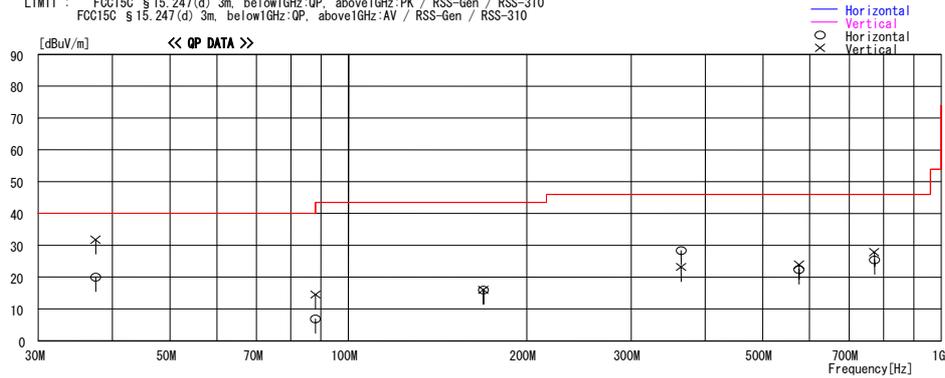
Radiated Spurious Emission

* 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. 4 Semi Anechoic Chamber
Date : 2006/12/06 14:31:24

| | |
|--|---|
| Applicant : Sharp Corporation | Report No. : 27DE0208-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. : 24deg.C / 31% |
| Model No. : 812SH | Operator : Yasuyuki Fukui |
| Serial No. : 004401/11/038351/6 | |
| Mode / Remarks : Bluetooth Rx 2441MHz, DHS, EUT max-axis (H:X, V:Y) | |
| LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK / RSS-Gen / RSS-310 | |
| FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:AV / RSS-Gen / RSS-310 | |



| Frequency [MHz] | Reading [dBuV] | DET | Antenna | | Level [dBuV/m] | Angle [Deg] | Height [cm] | Polar. | Limit [dBuV/m] | Margin [dB] |
|--------------------|-------------------|-----|------------------|---------------------|-------------------|----------------|----------------|--------|-------------------|----------------|
| | | | Factor [dB/m] | Loss & Gain [dB] | | | | | | |
| 37.500 | 40.8 | QP | 15.7 | -24.7 | 31.8 | 12 | 100 | Vert. | 40.0 | 8.2 |
| 37.500 | 29.0 | QP | 15.7 | -24.7 | 20.0 | 74 | 270 | Hori. | 40.0 | 20.0 |
| 88.050 | 29.7 | QP | 8.8 | -23.9 | 14.6 | 158 | 100 | Vert. | 43.5 | 28.9 |
| 88.050 | 22.0 | QP | 8.8 | -23.9 | 6.9 | 108 | 300 | Hori. | 43.5 | 36.6 |
| 169.000 | 22.7 | QP | 16.2 | -22.9 | 16.0 | 321 | 270 | Hori. | 43.5 | 27.5 |
| 169.000 | 22.8 | QP | 16.2 | -22.9 | 16.1 | 13 | 100 | Vert. | 43.5 | 27.4 |
| 364.228 | 32.3 | QP | 17.6 | -21.5 | 28.4 | 350 | 100 | Hori. | 46.0 | 17.6 |
| 364.228 | 27.1 | QP | 17.6 | -21.5 | 23.2 | 15 | 100 | Vert. | 46.0 | 22.8 |
| 575.805 | 23.9 | QP | 20.4 | -20.3 | 24.0 | 129 | 100 | Vert. | 46.0 | 22.0 |
| 575.805 | 22.3 | QP | 20.4 | -20.3 | 22.4 | 331 | 100 | Hori. | 46.0 | 23.6 |
| 771.808 | 21.7 | QP | 22.9 | -19.1 | 25.5 | 110 | 100 | Hori. | 46.0 | 20.5 |
| 771.808 | 24.1 | QP | 22.9 | -19.1 | 27.9 | 302 | 100 | Vert. | 46.0 | 18.1 |

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.4Semi Anechoic Chamber

| | |
|--|---|
| Company : Sharp Corporation | REPORT NO : 27DE0208-HO |
| Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | REGULATION : Fcc Part15 Subpart C 15.247(d) |
| Model : 812SH | TEST DISTANCE : 3/1m |
| Sample No. : 004401/11/038351/6 | DATE : 12/05/2006 |
| Power : DC4.0V (AC 120 V / 60 Hz) | TEMPERATURE : 24deg.C |
| Mode : Bluetooth Hopping Off Tx 2402MHz | HUMIDITY : 33% |
| Remarks : Hor X , Ver Y-axis | ENGINEER : Yasuyuki Fukui |

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 | 2390.0 | 40.0 | 40.0 | 26.6 | 32.7 | 2.1 | 0.0 | 36.0 | 36.0 | 74.0 | 38.0 | 38.0 |
| 2 | 4804.0 | 39.3 | 39.0 | 30.8 | 31.5 | 3.2 | 1.4 | 43.2 | 42.9 | 74.0 | 30.8 | 31.1 |
| 3 | 7206.0 | 41.0 | 40.9 | 35.2 | 32.4 | 3.9 | 1.2 | 48.9 | 48.8 | 74.0 | 25.1 | 25.2 |
| 4 | 9608.0 | 39.9 | 39.8 | 37.6 | 33.0 | 4.8 | 1.0 | 50.3 | 50.2 | 74.0 | 23.7 | 23.8 |
| Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac | | | | | | | | | | | | |
| 5 | 24020.0 | 42.3 | 42.4 | 39.7 | 31.9 | 7.9 | 0.0 | 48.5 | 48.6 | 74.0 | 25.5 | 25.4 |

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 |
| Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss | | | | | | | | | | | | |
| 1 | 2390.0 | 30.7 | 30.6 | 26.6 | 32.7 | 2.1 | 0.0 | 26.7 | 26.6 | 54.0 | 27.3 | 27.4 |
| 2 | 4804.0 | 29.4 | 29.5 | 30.8 | 31.5 | 3.2 | 1.4 | 33.3 | 33.4 | 54.0 | 20.7 | 20.6 |
| 3 | 7206.0 | 30.2 | 30.3 | 35.2 | 32.4 | 3.9 | 1.2 | 38.1 | 38.2 | 54.0 | 15.9 | 15.8 |
| 4 | 9608.0 | 30.3 | 30.3 | 37.6 | 33.0 | 4.8 | 1.0 | 40.7 | 40.7 | 54.0 | 13.3 | 13.3 |
| Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac | | | | | | | | | | | | |
| 5 | 24020.0 | 32.9 | 32.9 | 39.7 | 31.9 | 7.9 | 0.0 | 39.1 | 39.1 | 54.0 | 14.9 | 14.9 |

* Reference data

20dBc(Fundamental 2402MHz) (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 | 2402.0 | 94.1 | 90.8 | 26.6 | 32.7 | 2.1 | 0.0 | 90.1 | 86.8 | - | - | - |
| 2 | 2400.0 | 40.4 | 38.2 | 26.6 | 32.7 | 2.1 | 0.0 | 36.4 | 34.2 | Funda-20dB | 33.7 | 32.6 |

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 Fiter was not used for factor 0.0dB of the above table.

Radiated Spurious Emission

UL Apex Co., Ltd.
Head Office EMC Lab. No.4Semi Anechoic Chamber

| | |
|--|---|
| Company : Sharp Corporation | REPORT NO : 27DE0208-HO |
| Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | REGULATION : Fcc Part15 Subpart C 15.247(d) |
| Model : 812SH | TEST DISTANCE : 3/1m |
| Sample No. : 004401/11/038351/6 | DATE : 12/05/2006 |
| Power : DC4.0V (AC 120 V / 60 Hz) | TEMPERATURE : 24deg.C |
| Mode : Bluetooth Hopping Off Tx 2441MHz | HUMIDITY : 33% |
| Remarks : Hor X , Ver Y-axis | ENGINEER : Yasuyuki Fukui |

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 | 4882.0 | 38.2 | 38.1 | 31.0 | 31.5 | 3.2 | 1.4 | 42.3 | 42.2 | 74.0 | 31.7 | 31.8 |
| 2 | 7323.0 | 40.0 | 40.0 | 35.4 | 32.5 | 3.9 | 1.1 | 47.9 | 47.9 | 74.0 | 26.1 | 26.1 |
| 3 | 9764.0 | 39.0 | 39.0 | 37.6 | 33.1 | 4.9 | 1.1 | 49.5 | 49.5 | 74.0 | 24.5 | 24.5 |
| Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac | | | | | | | | | | | | |
| 4 | 24410.0 | 43.0 | 43.1 | 39.8 | 31.7 | 8.0 | 0.0 | 49.6 | 49.7 | 74.0 | 24.4 | 24.3 |

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 | 4882.0 | 29.2 | 30.0 | 31.0 | 31.5 | 3.2 | 1.4 | 33.3 | 34.1 | 54.0 | 20.7 | 19.9 |
| 2 | 7323.0 | 30.1 | 29.9 | 35.4 | 32.5 | 3.9 | 1.1 | 38.0 | 37.8 | 54.0 | 16.0 | 16.2 |
| 3 | 9764.0 | 29.4 | 29.3 | 37.6 | 33.1 | 4.9 | 1.1 | 39.9 | 39.8 | 54.0 | 14.1 | 14.2 |
| Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac | | | | | | | | | | | | |
| 4 | 24410.0 | 32.7 | 32.7 | 39.8 | 31.7 | 8.0 | 0.0 | 39.3 | 39.3 | 54.0 | 14.7 | 14.7 |

* Reference data

20dBc(Fundamental 2441MHz) (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 | 2441.0 | 92.5 | 88.5 | 26.7 | 32.6 | 2.1 | 0.0 | 88.7 | 84.7 | - | - | - |

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.4Semi Anechoic Chamber

| | |
|--|---|
| Company : Sharp Corporation | REPORT NO : 27DE0208-HO |
| Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable | REGULATION : Fcc Part15 Subpart C 15.247(d) |
| Model : 812SH | TEST DISTANCE : 3/1m |
| Sample No. : 004401/11/038351/6 | DATE : 12/05/2006 |
| Power : DC4.0V (AC 120 V / 60 Hz) | TEMPERATURE : 24deg.C |
| Mode : Bluetooth Hopping Off Tx 2480MHz | HUMIDITY : 33% |
| Remarks : Hor X , Ver Y-axis | ENGINEER : Yasuyuki Fukui |

| 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 | 2483.5 | 49.0 | 45.0 | 26.8 | 32.6 | 2.2 | 0.0 | 45.4 | 41.4 | 74.0 | 28.6 | 32.6 |
| 2 | 4960.0 | 39.1 | 39.0 | 31.1 | 31.5 | 3.2 | 1.4 | 43.3 | 43.2 | 74.0 | 30.7 | 30.8 |
| 3 | 7440.0 | 39.6 | 39.5 | 35.6 | 32.5 | 4.0 | 1.1 | 47.8 | 47.7 | 74.0 | 26.2 | 26.3 |
| 4 | 9920.0 | 39.0 | 39.0 | 37.7 | 33.1 | 4.9 | 1.2 | 49.7 | 49.7 | 74.0 | 24.3 | 24.3 |
| Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac | | | | | | | | | | | | |
| 5 | 24800.0 | 42.3 | 42.3 | 40.0 | 31.4 | 8.1 | 0.0 | 49.5 | 49.5 | 74.0 | 24.5 | 24.5 |

| 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 | 2483.5 | 43.3 | 38.8 | 26.8 | 32.6 | 2.2 | 0.0 | 39.7 | 35.2 | 54.0 | 14.3 | 18.8 |
| 2 | 4960.0 | 29.5 | 29.5 | 31.1 | 31.5 | 3.2 | 1.4 | 33.7 | 33.7 | 54.0 | 20.3 | 20.3 |
| 3 | 7440.0 | 29.5 | 29.5 | 35.6 | 32.5 | 4.0 | 1.1 | 37.7 | 37.7 | 54.0 | 16.3 | 16.3 |
| 4 | 9920.0 | 30.0 | 29.9 | 37.7 | 33.1 | 4.9 | 1.2 | 40.7 | 40.6 | 54.0 | 13.3 | 13.4 |
| Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac | | | | | | | | | | | | |
| 5 | 24800.0 | 33.0 | 33.1 | 40.0 | 31.4 | 8.1 | 0.0 | 40.2 | 40.3 | 54.0 | 13.8 | 13.7 |

* Reference data

| 20dBc(Fundamental 2480MHz) (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 | 2480.0 | 95.0 | 86.8 | 26.8 | 32.6 | 2.2 | 0.0 | 91.4 | 83.2 | - | - | - |

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.4Semi Anechoic Chamber

Company : Sharp Corporation
Equipment : WCDMA & Tri-band (900/1800/1900) GSM Dual mode Mobile Phone / Bluetooth enable
Model : S12SH
Sample No. : 004401/11/038351/6
Power : DC4.0V (AC 120 V / 60 Hz)
Mode : Bluetooth Hopping Off Rx 2441MHz
Remarks : Hor X , Ver Y-axis

REPORT NO : 27DE0208-HO
REGULATION : Fcc Part15 Subpart C 15.247(d)
TEST DISTANCE : 3/1m
DATE : 12/05/2006
TEMPERATURE : 24deg.C
HUMIDITY : 33%
ENGINEER : Yasuyuki Fukui

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 | 4882.0 | 39.8 | 39.8 | 31.0 | 31.5 | 3.2 | 0.0 | 42.5 | 42.5 | 74.0 | 31.5 | 31.5 |
| 2 | 5755.0 | 40.0 | 39.1 | 32.0 | 30.5 | 3.4 | 0.0 | 44.9 | 44.0 | 74.0 | 29.1 | 30.0 |
| 3 | 7323.0 | 41.8 | 41.0 | 35.4 | 32.5 | 3.9 | 0.0 | 48.6 | 47.8 | 74.0 | 25.4 | 26.2 |

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 | 4882.0 | 30.0 | 30.0 | 31.0 | 31.5 | 3.2 | 0.0 | 32.7 | 32.7 | 54.0 | 21.3 | 21.3 |
| 2 | 5755.0 | 29.3 | 29.3 | 32.0 | 30.5 | 3.4 | 0.0 | 34.2 | 34.2 | 54.0 | 19.8 | 19.8 |
| 3 | 7323.0 | 30.6 | 30.5 | 35.4 | 32.5 | 3.9 | 0.0 | 37.4 | 37.3 | 54.0 | 16.6 | 16.7 |

* Reference data

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

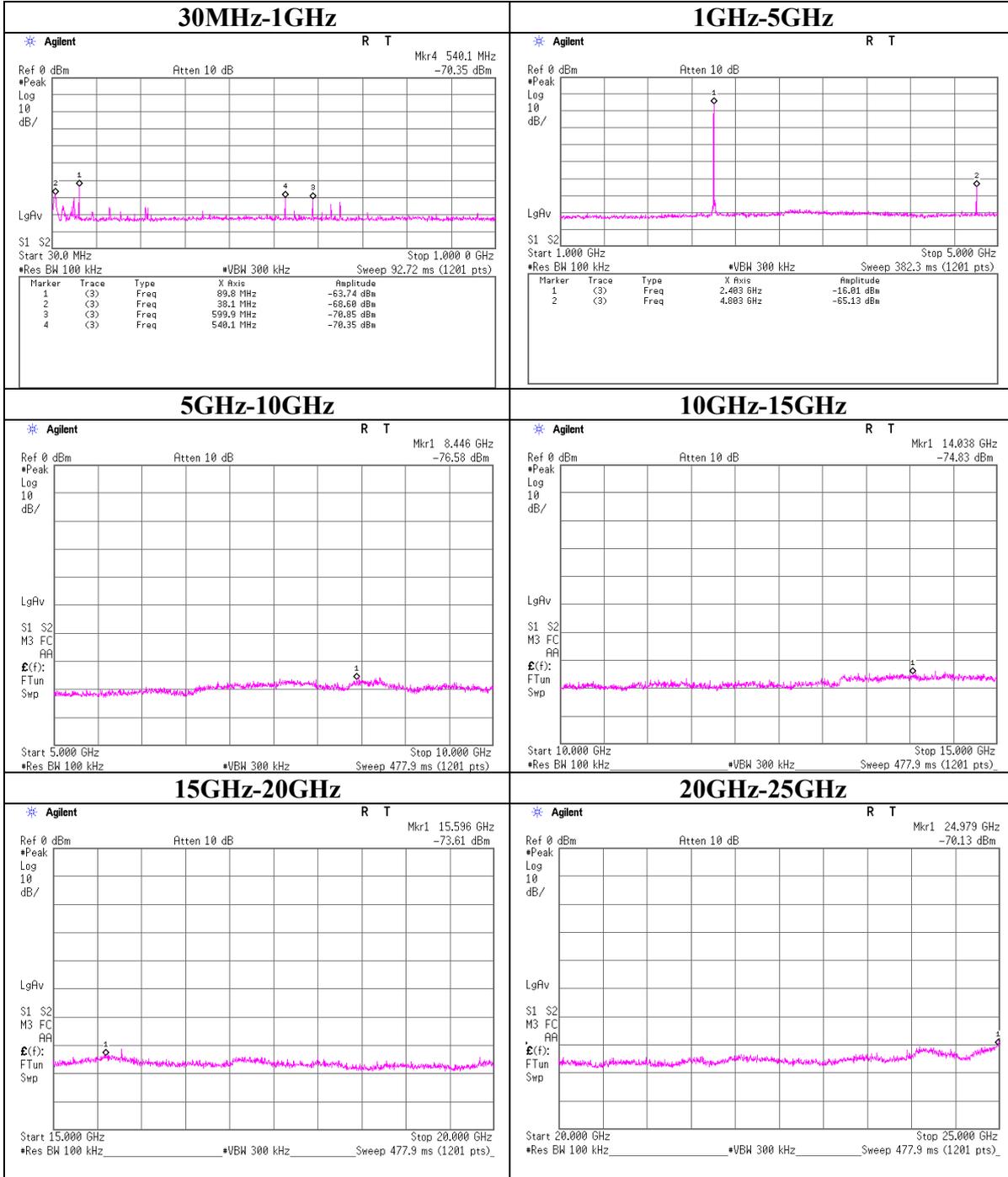
*Except for the above table : All other spurious emissions were less than 20dB for the limit.

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

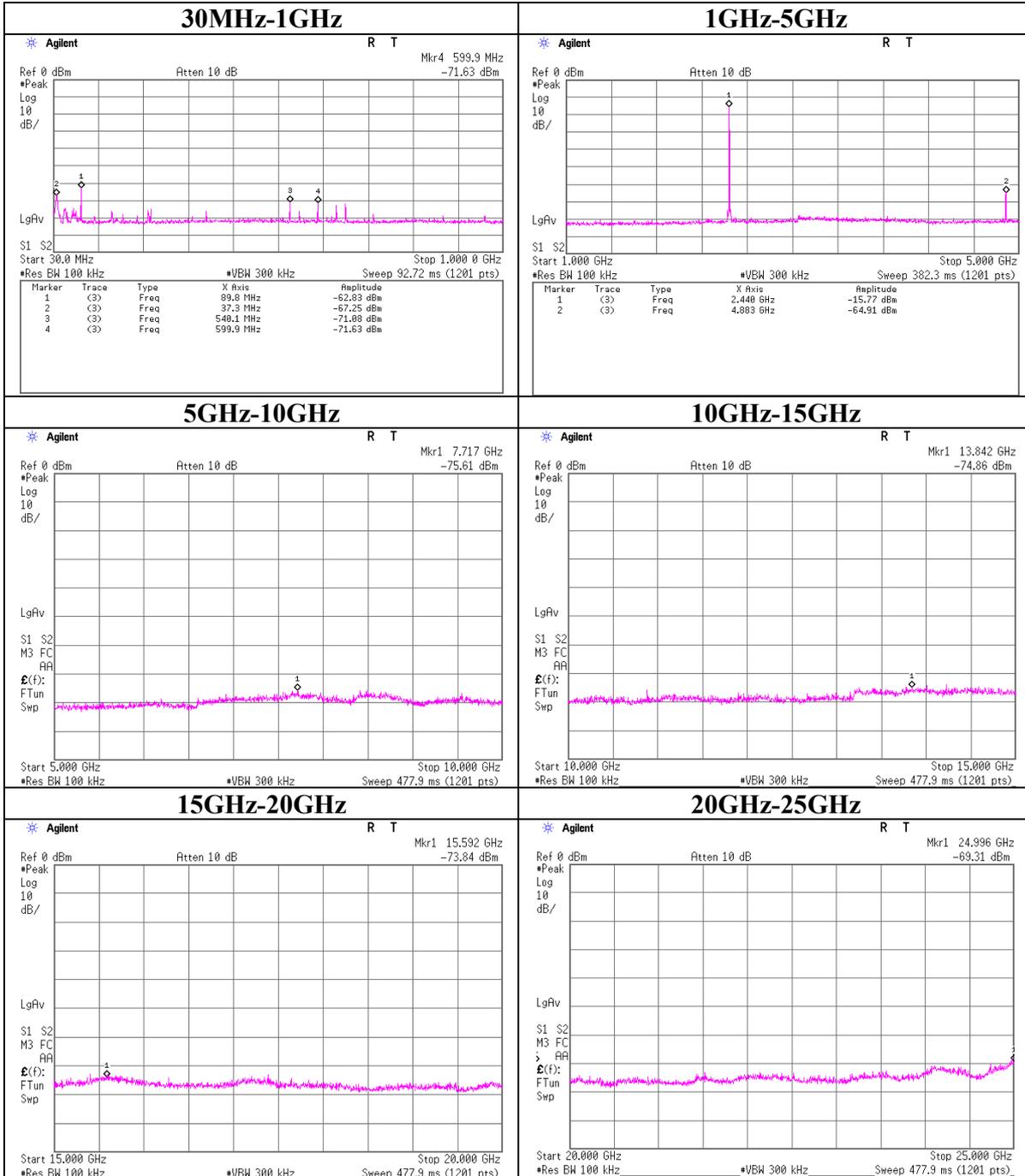
*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

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

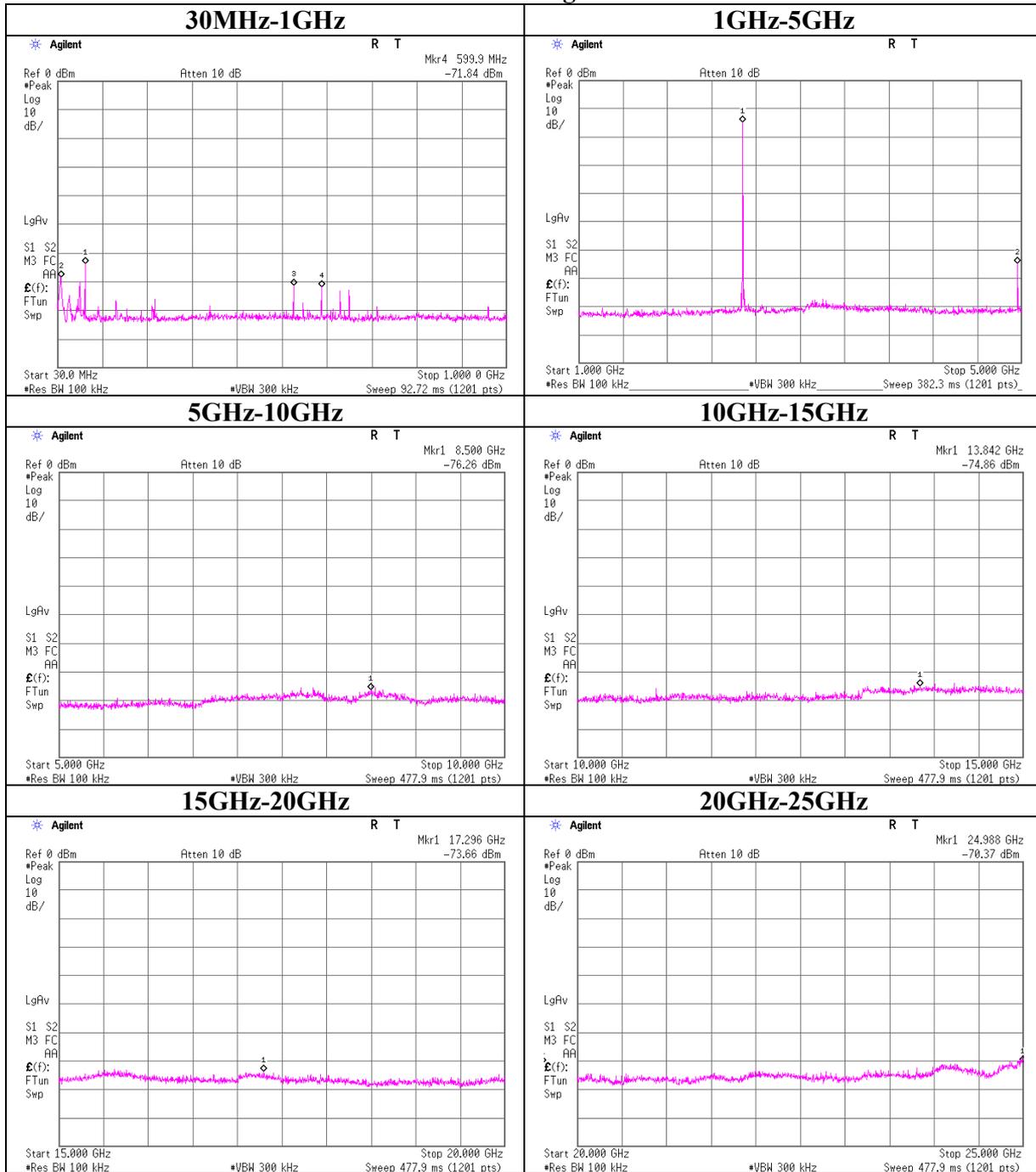
Conducted Spurious Emission
Ch:Low



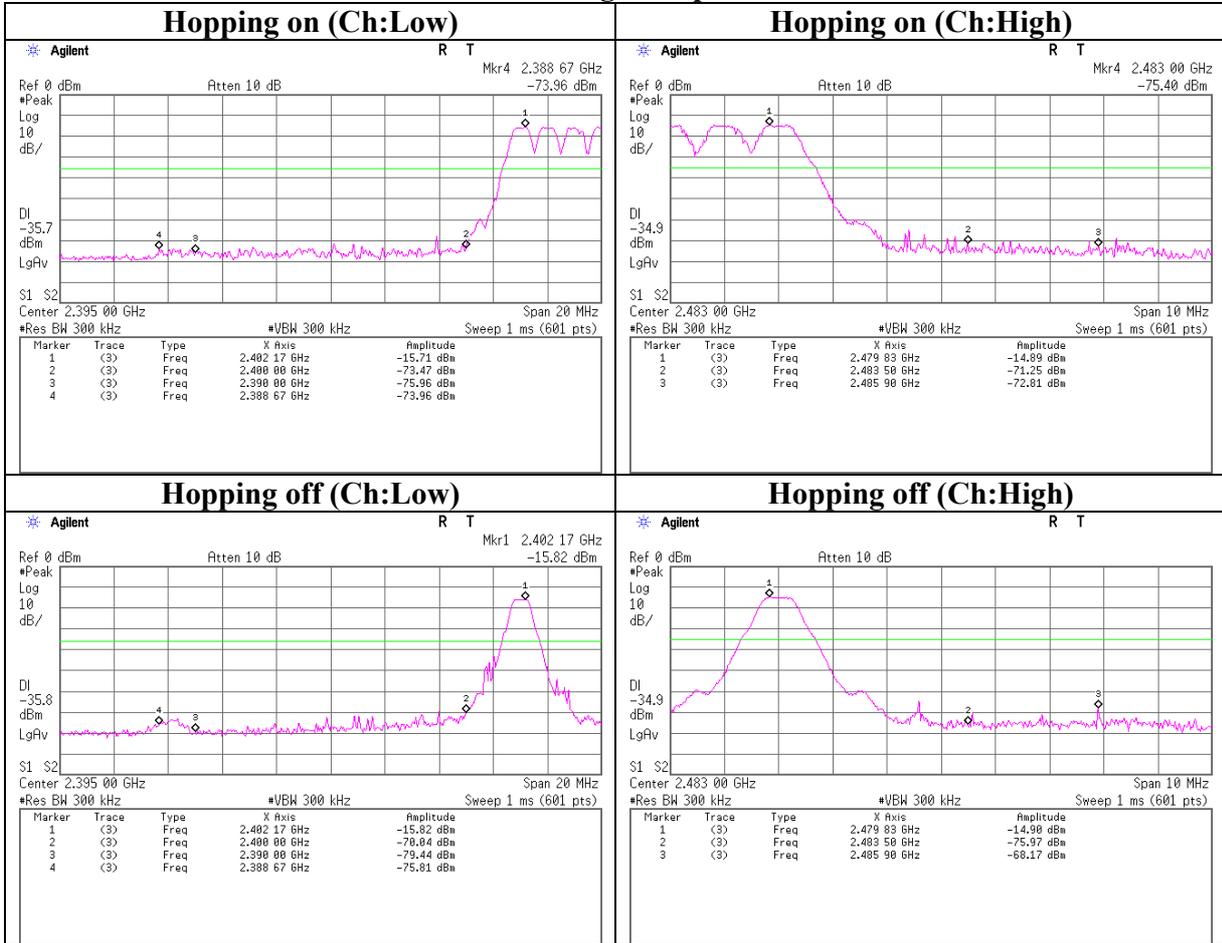
Conducted Spurious Emission
Ch:Mid



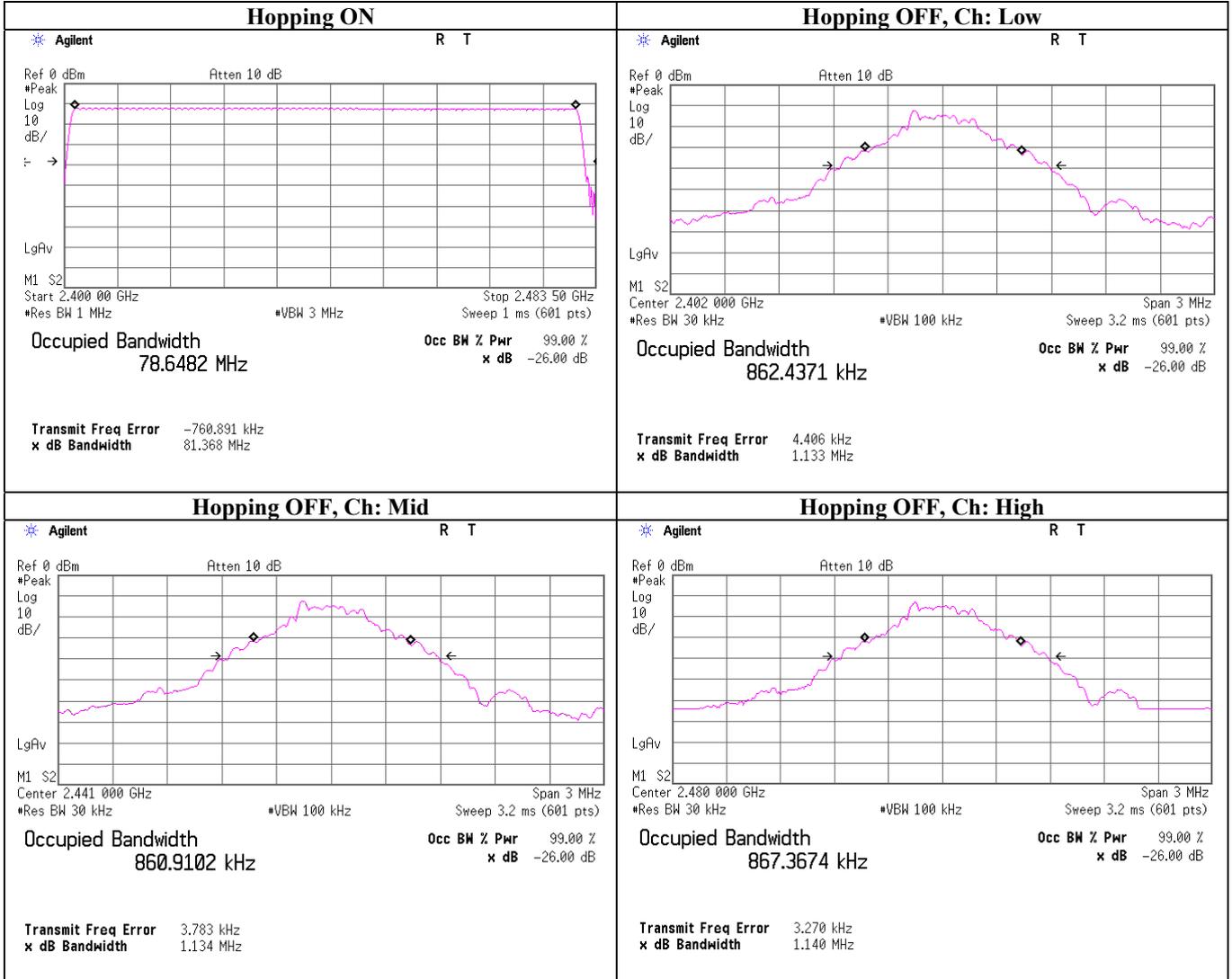
Conducted Spurious Emission
Ch:High



Conducted Spurious Emission Band Edge compliance



99% Occupied Bandwidth



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 / CE | 2006/03/06 * 12 |
| MHF-05 | High Pass Filter 3.5-24GHz | Tokimec | TF323DCA | RE | 2006/01/24 * 12 |
| MPA-12 | MicroWave System Amplifier | Agilent | 83017A | RE | 2006/03/27 * 12 |
| MHA-21 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | RE | 2006/08/17 * 12 |
| MSA-05 | Spectrum Analyzer | Advantest | R3273 | RE / CE | 2006/05/20 * 12 |
| MCC-57 | Microwave Cable 1G-26.5GHz | Suhner | SUCOFLEX104 | RE | 2006/04/15 * 12 |
| MOS-15 | Thermo-Hygrometer | Custom | CTH-180 | RE /CE | 2006/01/19 * 24 |
| MBM-03 | Barometer | Sunoh | SBR121 | RE / CE | 2006/02/13 * 36 |
| MJM-01 | Measure | KDS | ES19-55 | RE /CE | - |
| MSTW-14 | EMI measurement program | TSJ | TEPTO-DV | RE | - |
| MHA-01 | Horn Antenna 18-26.5G | EMCO | 3160-09 | RE | 2006/01/09 * 12 |
| MTR-02 | Test Receiver | Rohde & Schwarz | ESCS30 | RE / CE / | 2006/02/02 * 12 |
| MAT-31 | Attenuator(6dB) | TME | UFA-01 | RE | 2006/03/11 * 12 |
| MBA-05 | Biconical Antenna | Schwarzbeck | BBA9106 | RE | 2006/01/29 * 12 |
| MLA-08 | Logperiodic Antenna | Schwarzbeck | UKLP9140-A | RE | 2006/01/29 * 12 |
| MCC-50 | Coaxial cable | UL Apex | - | RE / CE | 2006/03/09 * 12 |
| MLS-07 | LISN(AMN) | Schwarzbeck | NSLK8127 | CE | 2006/02/06 * 12 |
| MPA-14 | Pre Amplifier | SONOA INSTRUMENT | 310 | RE | 2006/03/25 * 12 |
| MSA-04 | Spectrum Analyzer | Agilent | E4448A | AT | 2006/06/02 * 12 |
| MCC-22 | Microwave Cable 1G-40GHz | Storm | 421-011 (90-011-080) | AT | 2006/05/12 * 12 |
| MAT-23 | Attenuator(10dB) DC-18GHz | Orient Microwave | BX10-0476-00 | AT | 2006/03/18 * 12 |
| MPM-08 | Power Meter | Anritsu | ML2495A | AT | 2006/09/20 * 12 |

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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MF060b(14.06.06)