



RADIO TEST REPORT

Test Report No.: 32AE0215-SH-02-A

Applicant : Sony Corporation
Type of Equipment : Wireless Stereo Headset
Model No. : XBA-BT75
FCC ID : AK8XBABT75
Test regulation : FCC Part15 Subpart C: 2011
Test result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test: October 9 to 12, 2011

Tested by: M. Hosaka
Makoto Hosaka
Engineer of WiSE Japan,
UL Verification Service

Approved by : I. Isozaki
Ichiro Isozaki
Leader of WiSE Japan,
UL Verification Service

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13-EM-F0429

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SECTION 1: Customer information

Company Name : Sony Corporation
Address : Shinagawa INTERCITY C Tower 2-15-3, Konan, Minato-ku, Tokyo, 108-6201
Japan
Telephone Number : +81-3-5769-5640
Facsimile Number : +81-3-5769-5996
Contact Person : Shigeru Higai

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless Stereo Headset
Model Number : XBA-BT75
Serial Number : Refer to clause 4.2
Rating : DC3.7V
Country of Mass-production : China
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample : October 9, 2011
Modification of EUT : No modification by the test lab.

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2.2 Product description

Model: XBA-BT75 (referred to as the EUT in this report) is a Wireless Stereo Headset.

Clock frequency(ies) in the system : DD Converter: 4MHz
Bluetooth:24MHz, 16MHz

<Radio part>

Equipment type : Transceiver
Frequency of operation : 2402-2480MHz
Bandwidth / Channel spacing : 79MHz & 1MHz
Type of modulation : FHSS (GFSK, $\pi/4$ -DQPSK)
Antenna type : Flexible Pattern Antenna
Antenna connector type : integral
Antenna gain : 3.0dBi
ITU code : F1D, G1D
Operation temperature range : 0 to 45 deg.C.

FCC 15.31 (e)

The EUT is a battery-operated device and test was performed with the full-charged battery. Therefore, this EUT complies with the requirement.

FCC Part 15.203

The equipment and its antenna comply with this requirement since this antenna is built in the equipment and it cannot be replaced by end users.

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2011, final revised on July 8, 2011 and effective August 8, 2011
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

The EUT complies with FCC Part 15 Subpart B: 2011. Refer to the test report: 32AE0215-SH-02-B.

3.2 Procedures & Results

| Item | Test Procedure | Specification | Remarks | Deviation | Worst Margin | Results |
|--|--|---|------------------------|------------|--------------|--|
| Conducted emission | ANSI C63.4:2003 7. AC powerline conducted emission measurements | FCC Section 15.207 | - | N/A *1) | - | N/A *1) |
| Carrier frequency separation | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1) | Conducted | N/A | *See data. | Complied |
| 20dB bandwidth | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1) | Conducted | N/A | | Complied |
| Number of hopping frequency | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1)(iii) | Conducted | N/A | | Complied |
| Dwell time | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1)(iii) | Conducted | N/A | | Complied |
| Maximum peak output power | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (b)(1) | Conducted | N/A | | Complied |
| Band edge compliance & Spurious emission | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (d) Section15.209 | Conducted/ Radiated | N/A | | 3.5dB (2400.000MHz, Average, Vertical, Tx 2402MHz, 2-DH5) |

Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422

*1) The EUT operates with a battery and is placed on the Built-in Battery Carrying Case to recharge. AC Line can be connected to the EUT via PC; however, the EUT stops transmission when it is placed on the Built-in Battery Carrying Case. Therefore, the test is not applicable to the EUT.

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3.3 Addition to standard

| Item | Test Procedure | Specification | Remarks | Worst Margin | Results |
|--|--|---------------|-----------|--------------|---------|
| Occupied Bandwidth (99%) | ANSI C63.4:2003 13. Measurement of intentional radiators, RSS-Gen 4.6.1 | RSS-Gen 4.6.1 | Conducted | - | N/A |
| Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422 | | | | | |

* Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

| Item | Frequency range | No.1 SAC ^{*1} /SR ^{*2} (±) | No.2 SAC/SR (±) | No.3 SAC/SR (±) |
|---|-----------------|--|-----------------|-----------------|
| Radiated emission (Measurement distance: 3m) | 30MHz-300MHz | 4.9 dB | 5.1 dB | 5.0 dB |
| | 300MHz-1GHz | 5.0 dB | 5.2 dB | 5.0 dB |
| | 1GHz-18GHz | 4.8 dB | 4.8 dB | 4.9 dB |
| Radiated emission (Measurement distance: 1m) | 1GHz-18GHz | 5.6 dB | 5.6 dB | 5.6 dB |
| | 18GHz-40GHz | 4.8 dB | 4.3 dB | 4.4 dB |

*1: SAC=Semi-Anechoic Chamber

*2: SR= Shielded Room is applied besides radiated emission

*3: Value of Antenna Terminal Voltage measurement is also applies to the No.5 and No.6 Shielded Room.

Radiated emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Antenna port conducted test

Conducted emissions, Power Density Measurement (below 1GHz) uncertainty for this test was: (±) 1.8dB

Conducted emissions, Power Density Measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB

Conducted emissions, Power Density Measurement (3G-18GHz) uncertainty for this test was: (±) 3.6dB

Conducted emissions Measurement (18G-26.5GHz) uncertainty for this test was: (±) 4.0dB

Conducted emissions Measurement (26.5G-50GHz) uncertainty for this test was: (±) 4.2dB

Bandwidth Measurement uncertainty for this test was: (±) 5.4%

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3.5 Test location

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JAB Accreditation No. : RTL02610

| | FCC Registration No. | IC Registration No. | Width x Depth x Height (m) | Size of reference ground plane (m) / horizontal conducting plane | Maximum measurement distance |
|--|----------------------|---------------------|----------------------------|--|------------------------------|
| <input type="checkbox"/> No.1 Semi-anechoic chamber | 697847 | 2973D-1 | 20.6 x 11.3 x 7.65 | 20.6 x 11.3 | 10m |
| <input type="checkbox"/> No.2 Semi-anechoic chamber | 697847 | 2973D-2 | 20.6 x 11.3 x 7.65 | 20.6 x 11.3 | 10m |
| <input checked="" type="checkbox"/> No.3 Semi-anechoic chamber | 697847 | 2973D-3 | 12.7 x 7.7 x 5.35 | 12.7 x 7.7 | 5m |
| <input type="checkbox"/> No.4 Full-anechoic chamber | - | - | 8.1 x 5.1 x 3.55 | 8.1 x 5.1 | - |
| <input type="checkbox"/> No.1 shielded room | - | - | 6.8 x 4.1 x 2.7 | 6.8 x 4.1 | - |
| <input type="checkbox"/> No.2 shielded room | - | - | 6.8 x 4.1 x 2.7 | 6.8 x 4.1 | - |
| <input type="checkbox"/> No.3 shielded room | - | - | 6.3 x 4.7 x 2.7 | 6.3 x 4.7 | - |
| <input type="checkbox"/> No.4 shielded room | - | - | 4.4 x 4.7 x 2.7 | 4.4 x 4.7 | - |
| <input checked="" type="checkbox"/> No.5 shielded room | - | - | 7.8 x 6.4 x 2.7 | 7.8 x 6.4 | - |
| <input type="checkbox"/> No.6 shielded room | - | - | 7.8 x 6.4 x 2.7 | 7.8 x 6.4 | - |

3.6 Test setup, Data of EMI & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

| Test item | Operating mode | Tested frequency |
|---|--|--|
| Carrier frequency separation | Transmitting Hopping ON (DH5/2-DH5)/Inquiry, Payload: PRBS9 | - |
| 20dB bandwidth | Transmitting Hopping OFF (DH5/2-DH5)/Inquiry, Payload: PRBS9 | 2402MHz, 2441MHz, 2480MHz |
| Number of hopping frequency | Transmitting Hopping ON (DH5/2-DH5)/Inquiry, Payload: PRBS9 | - |
| Dwell time | Transmitting (Hopping ON), Payload: PRBS9 DH1, DH3,-DH5 2-DH1, 2-DH3, 2-DH5 ----- Inquiry | - |
| Maximum peak output power | Transmitting (Hopping OFF), Payload: PRBS9 DH5, 2-DH5 | 2402MHz, 2441MHz, 2480MHz |
| Band edge compliance & Spurious emission (Conducted) ----- (Radiated) | Transmitting (DH5/2-DH5), Payload: PRBS9 Hopping ON Hopping OFF ----- Transmitting (DH5/2-DH5), Payload: PRBS9 | Band edge compliance: 2402MHz, 2480MHz Spurious emission: 2402MHz, 2441MHz, 2480MHz |
| 99% occupied bandwidth | Transmitting (DH5/2-DH5), Payload: PRBS9 Hopping ON Hopping OFF | 2402MHz, 2441MHz, 2480MHz |

*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
However, the limit level 125mWof AFH mode was used for the test.

*EUT has the power settings by the software as follows;

Power settings: BDR: 23/44 (PA Attenuator: 1)

EDR: 56/36 (PA Attenuator: 0)

Software : CSR BlueSuite V2.4

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

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4.2 Configuration of tested system



* Test data was taken under worse case conditions.

Description of EUT and support equipment

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|-----|-------------------------|--------------|----------------------|------------------|---------|
| A | Wireless Stereo Headset | XBA-BT75 | 1 *1) 0000154 *2) | Sony Corporation | EUT |

*1) Used for Antenna Terminal conducted tests.

*2) Used for Radiated Emission tests.

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SECTION 5: Carrier frequency separation

Test procedure

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 6: 20dB bandwidth & Occupied bandwidth (99%)

Test procedure

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 7: Number of hopping frequency

Test procedure

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 8: Dwell time

Test procedure

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 9: Maximum peak output power

Test procedure

The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX

SECTION 10: Spurious emissions (Antenna port conducted)

Test procedure

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

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.

In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.

Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=10kHz)

Summary of the test results: Pass
Refer to APPENDIX

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SECTION 11: Radiated emission

11.1 Operating environment

The test was carried out in No.3 Semi-Anechoic Chamber.

Temperature : See test data (APPENDIX)
Humidity : See test data (APPENDIX)

11.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.

The center of EUT, including its peripherals was aligned and flushed with center of tabletop.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Photographs of the set up are shown in APPENDIX.

11.3 Test conditions

Frequency range : 30MHz to 25GHz
Test distance : 3m(below 13GHz) / 1m(above13GHz)
EUT position : Table top

11.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m(below 13GHz) / 1m(above 13GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was 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.

The radiated emission measurements were made with the following detection of the test receiver.

| | | | | |
|----------------|---|-------------|-------------------|-----------------------|
| Frequency | : | 30-1,000MHz | 1-25GHz | |
| Detection Type | : | Quasi-Peak | Peak | * Average |
| IF Bandwidth | : | 120kHz | RBW:1MHz/VBW:3MHz | RBW:1MHz/VBW:See data |

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

* The VBW was based on the inverse of the duty cycle (Refer to Appendix).

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.

Worst position:

| | Horizontal | Vertical |
|------------|------------|----------|
| Below 1GHz | X | X |
| Above 1GHz | Z | Y |

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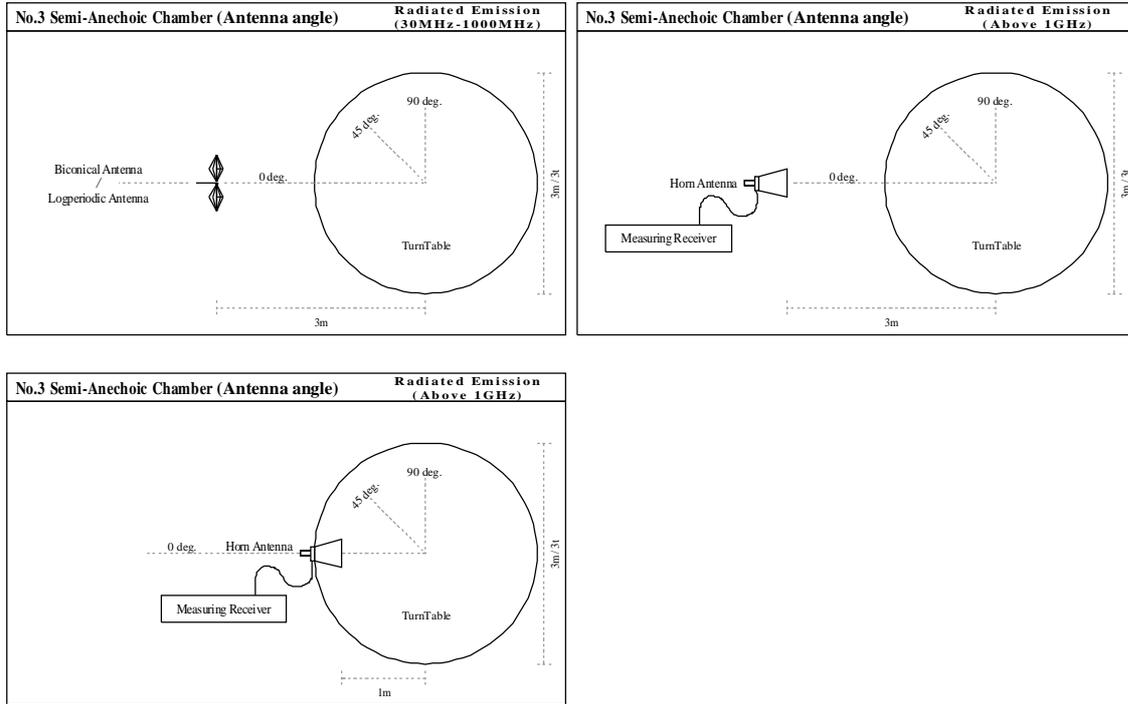
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Figure 1. Antenna angle



11.5 Band edge

Band edge level is below the limits of FCC 15.209. Refer to the data of Radiated emission.

11.6 Results

Summary of the test results : Pass
Refer to APPENDIX

Contents of APPENDIXES

APPENDIX 1: Data of Radio test

20dB bandwidth and Carrier frequency separation
Number of Hopping Frequency
Dwell time
Maximum peak output power
Radiated emission
Spurious emission (Antenna port conducted)
Occupied Bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Radiated emission

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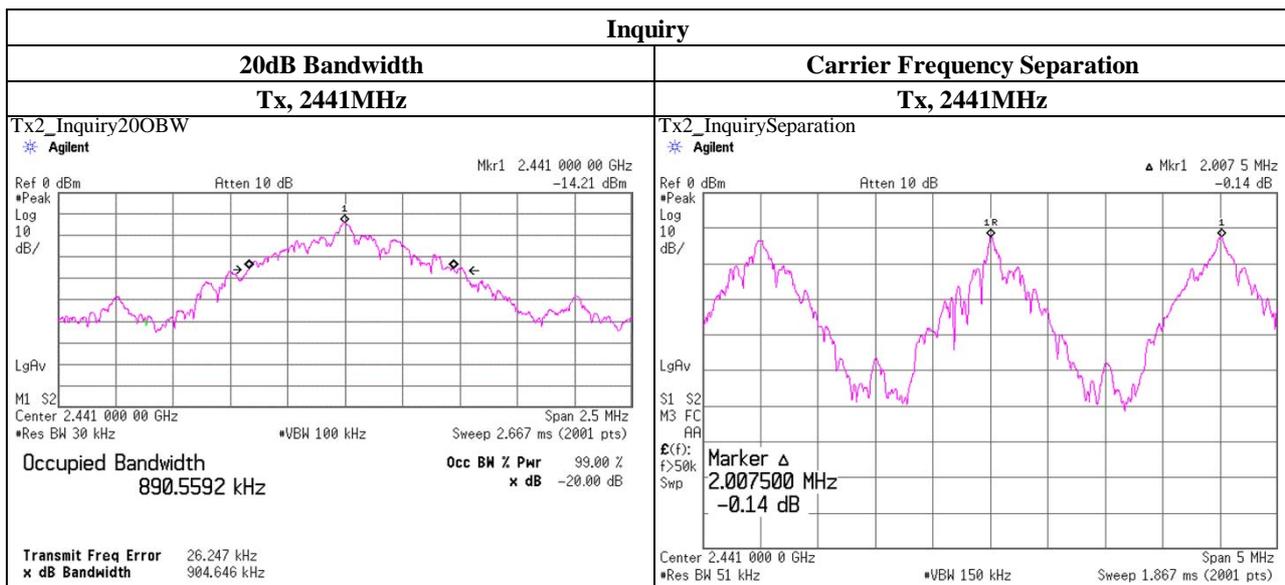
APPENDIX 1: Data of Radio test

20dB Bandwidth and Carrier Frequency Separation

| | | |
|------------------------|--------------------------------|--------------------|
| Test place | UL Japan, Inc. Shonan EMC Lab. | No.5 Shielded Room |
| Date | October 9, 2011 | October 12, 2011 |
| Temperature / Humidity | 24deg.C , 51%RH | 25deg.C , 52%RH |
| Engineer | Shinichi Takano | Kenichi Adachi |
| Mode | Tx, Bluetooth, BDR, PRBS9 | |

| Mode | Freq. [MHz] | 20dB Bandwidth [MHz] | Carrier Frequency Separation [MHz] | Limit for Carrier Frequency Separation [MHz] |
|---------|----------------|----------------------------|---|--|
| DH5 | 2402.0 | 0.899 | 1.000 | >= 0.599 |
| DH5 | 2441.0 | 0.886 | 1.000 | >= 0.591 |
| DH5 | 2480.0 | 0.912 | 1.000 | >= 0.608 |
| Inquiry | 2441.0 | 0.905 | 2.008 | >= 0.603 |

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
 No limit applies to 20dB Bandwidth.



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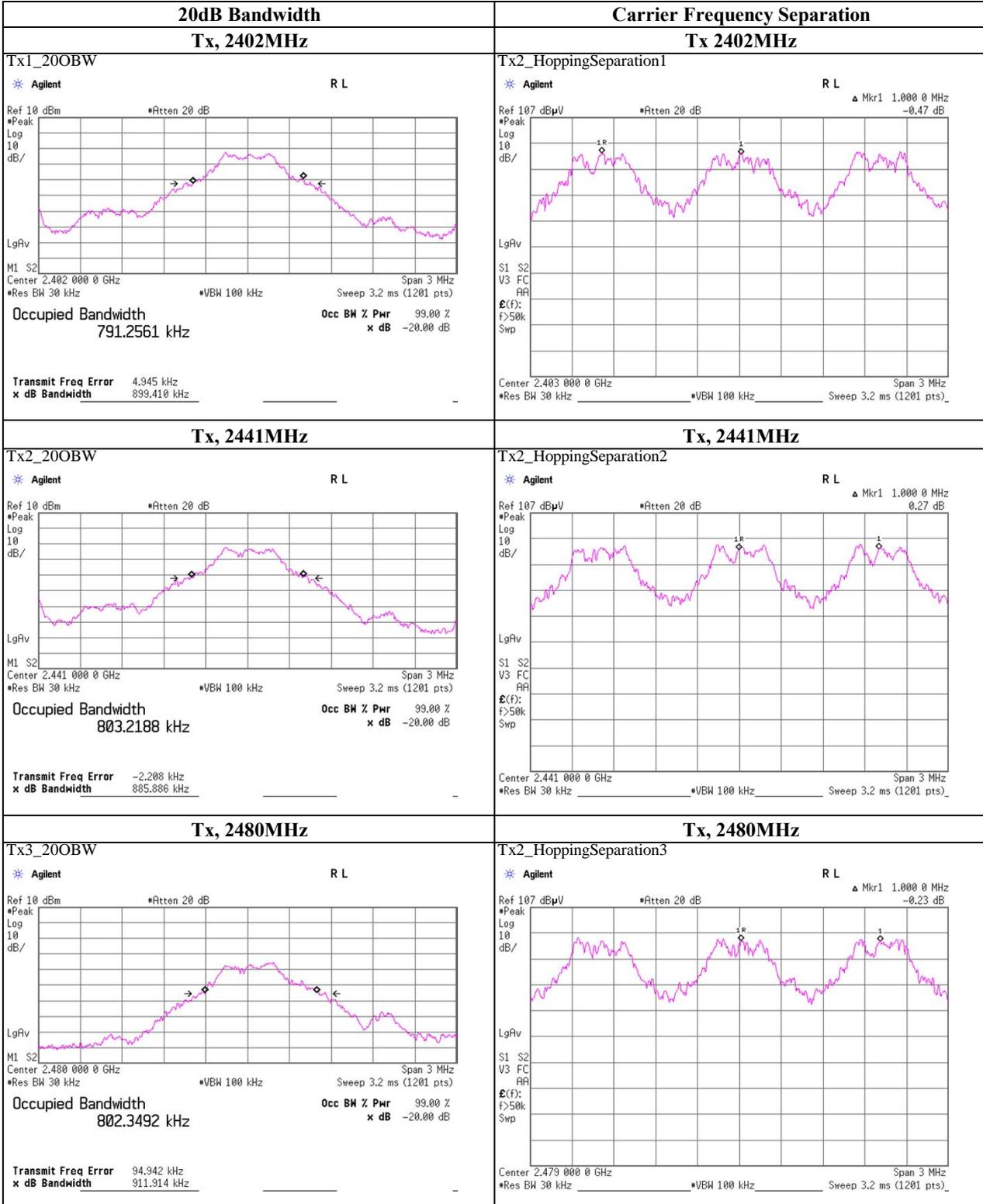
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20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9



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20dB Bandwidth and Carrier Frequency Separation

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date October 9, 2011
Temperature / Humidity 24deg.C , 51%RH
Engineer Shinichi Takano
Mode Tx, Bluetooth, EDR, PRBS9

| Mode | Freq. [MHz] | 20dB Bandwidth [MHz] | Carrier Frequency Separation [MHz] | Limit for Carrier Frequency Separation [MHz] |
|-------|----------------|----------------------------|---|--|
| 2-DH5 | 2402.0 | 1.280 | 1.000 | >= 0.853 |
| 2-DH5 | 2441.0 | 1.264 | 1.000 | >= 0.843 |
| 2-DH5 | 2480.0 | 1.298 | 1.000 | >= 0.865 |
| | | | | |

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

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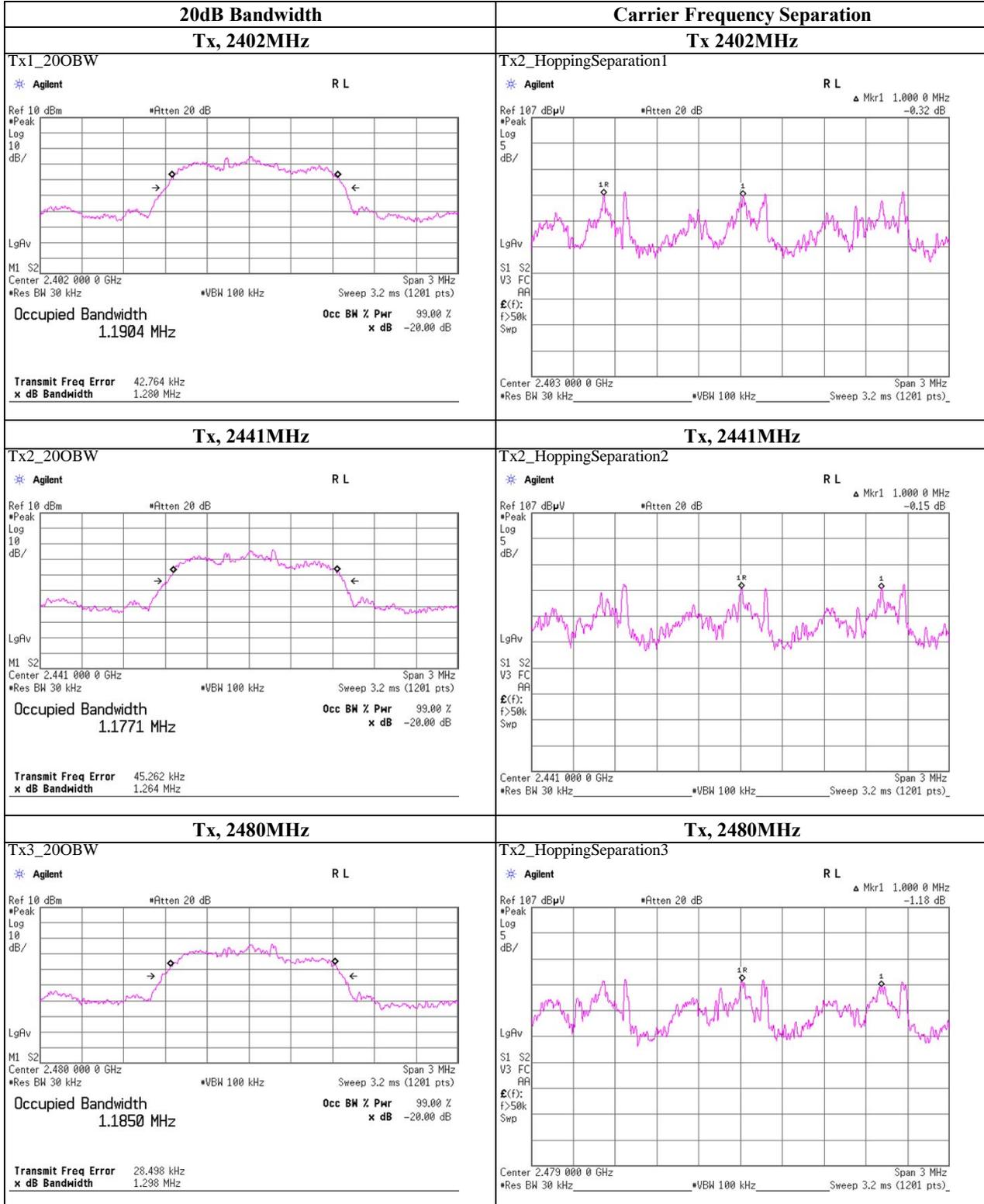
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20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9



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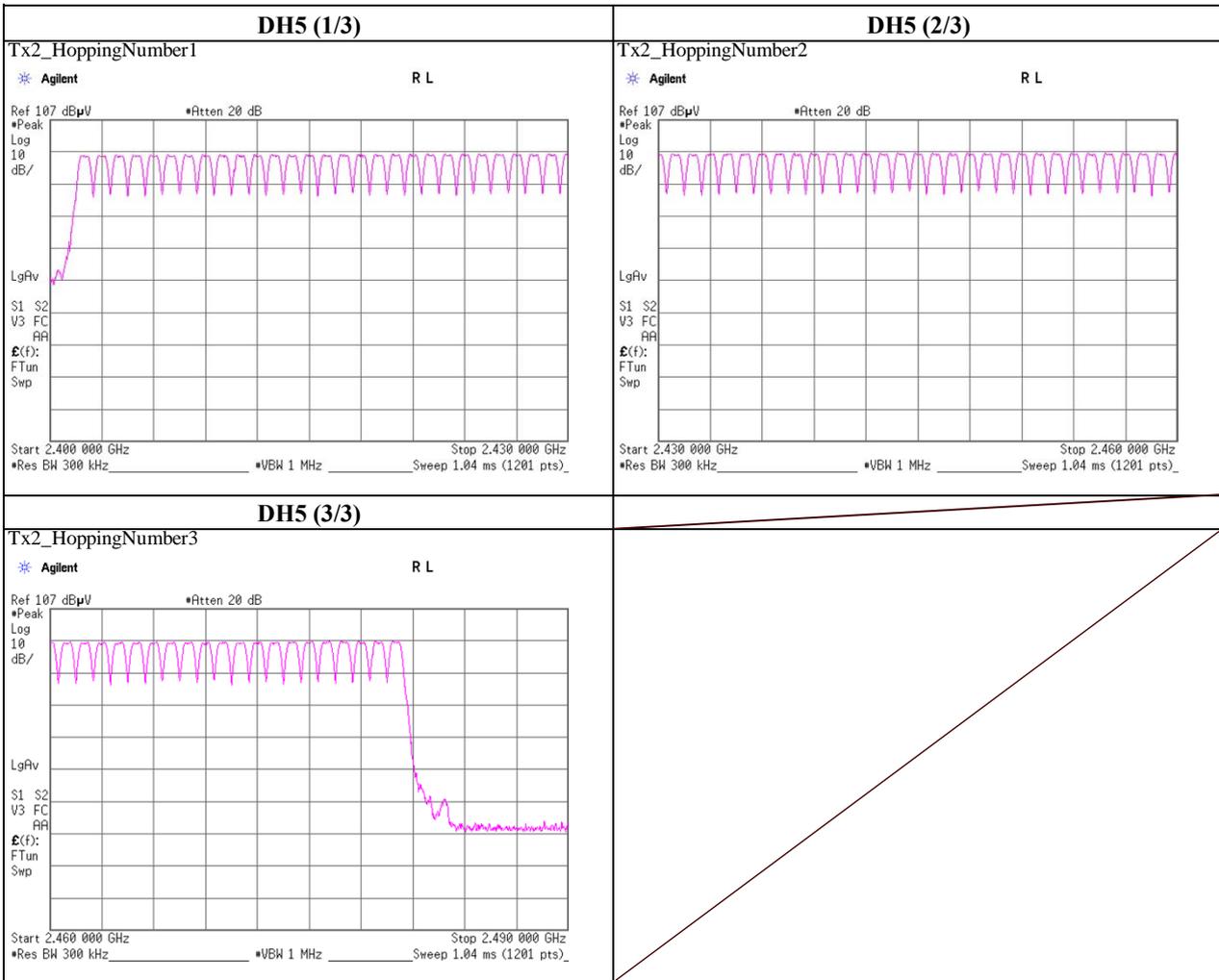
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Number of Hopping Frequency

| | | |
|------------------------|--------------------------------|--------------------|
| Test place | UL Japan, Inc. Shonan EMC Lab. | No.5 Shielded Room |
| Date | October 9, 2011 | |
| Temperature / Humidity | 24deg.C , 51%RH | |
| Engineer | Shinichi Takano | |
| Mode | Tx, Bluetooth, BDR, PRBS9 | |

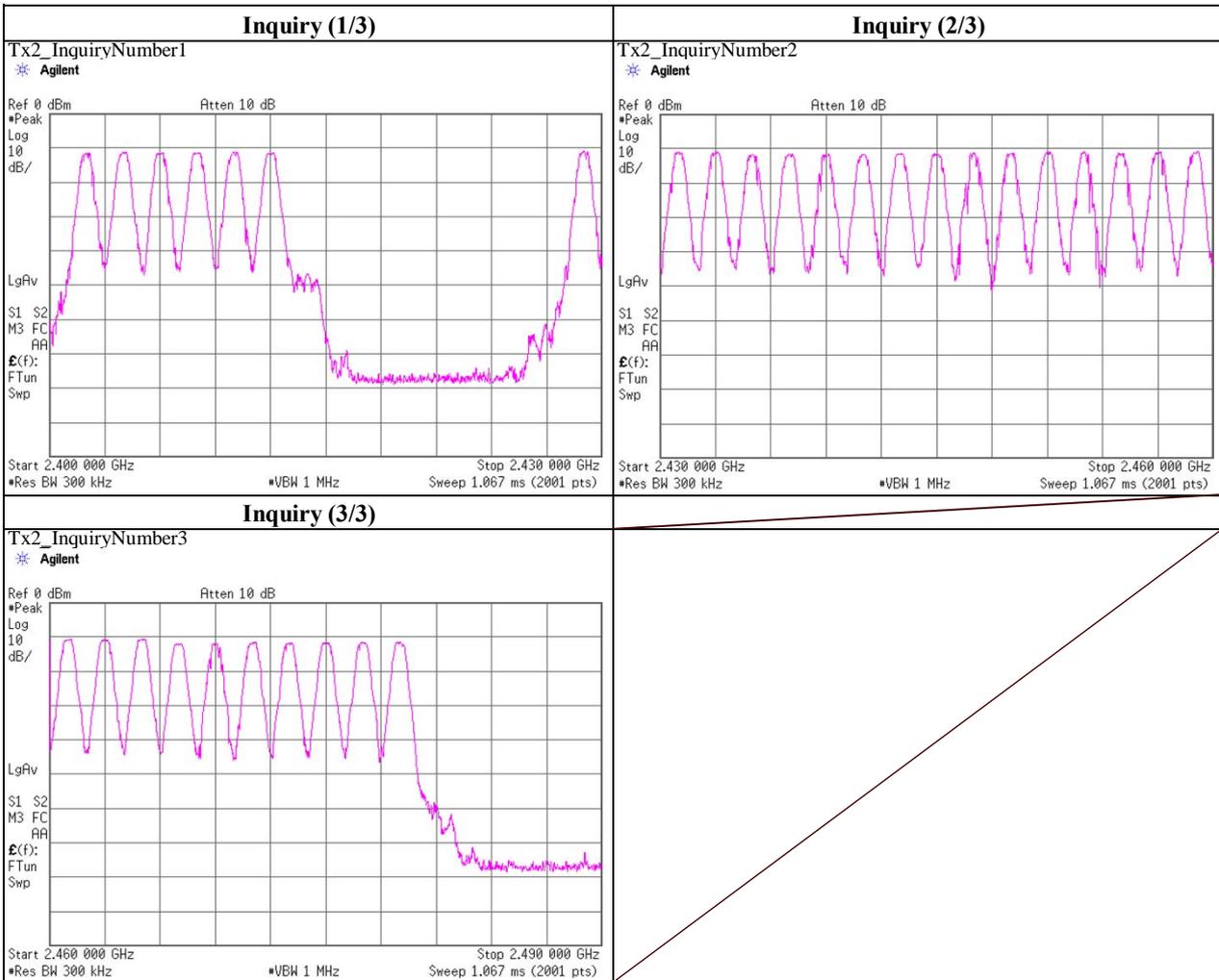
| Mode | Number of Channel [times] | Limit [times] |
|------|---------------------------|---------------|
| DH5 | 79 | >= 15 |



Number of Hopping Frequency

| | | |
|------------------------|--------------------------------|--------------------|
| Test place | UL Japan, Inc. Shonan EMC Lab. | No.5 Shielded Room |
| Date | October 12, 2011 | |
| Temperature / Humidity | 25deg.C , 52%RH | |
| Engineer | Kenichi Adachi | |
| Mode | Tx, Bluetooth, BDR, Inquiry | |

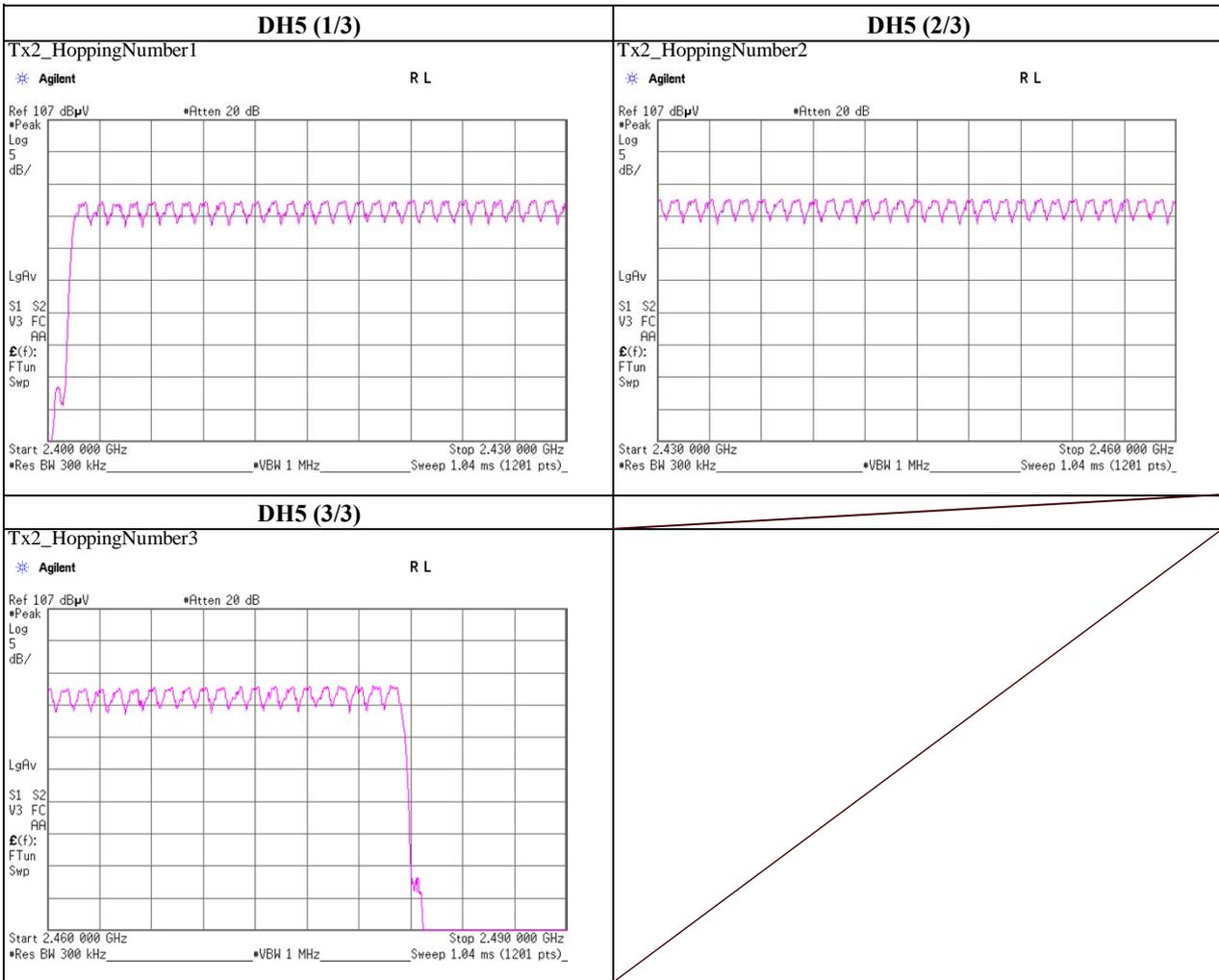
| Mode | Number of Channel [times] | Limit [times] |
|---------|---------------------------|---------------|
| Inquiry | 32 | >= 15 |



Number of Hopping Frequency

| | |
|------------------------|--------------------------------|
| Test place | UL Japan, Inc. Shonan EMC Lab. |
| Date | October 9, 2011 |
| Temperature / Humidity | 24deg.C , 51%RH |
| Engineer | Shinichi Takano |
| Mode | Tx, Bluetooth, EDR, PRBS9 |

| Mode | Number of Channel [times] | Limit [times] |
|-------|---------------------------|---------------|
| 2-DH5 | 79 | >= 15 |



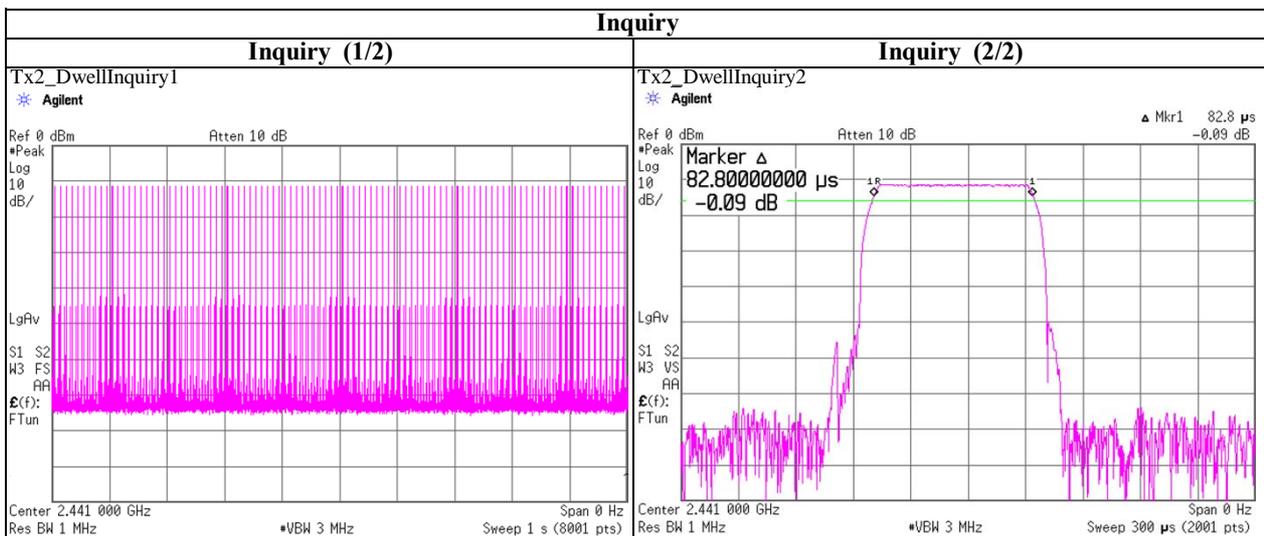
Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date October 12, 2011
 Temperature / Humidity 25deg.C , 52%RH
 Engineer Kenichi Adachi
 Mode Tx, Bluetooth, BDR, PRBS9

| 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 | 101.0 / 5.0 sec. x 31.6 sec. = 639 times | 0.381 | 243 | 400 |
| DH3 | 34.0 / 5.0 sec. x 31.6 sec. = 215 times | 1.638 | 352 | 400 |
| DH5 | 21.0 / 5.0 sec. x 31.6 sec. = 133 times | 2.883 | 383 | 400 |
| Inquiry | 100.0 / 1.0 sec. x 12.8 sec. = 1280 times | 0.083 | 106 | 400 |

Sample Calculation

Result = Number of transmission x Length of transmission time



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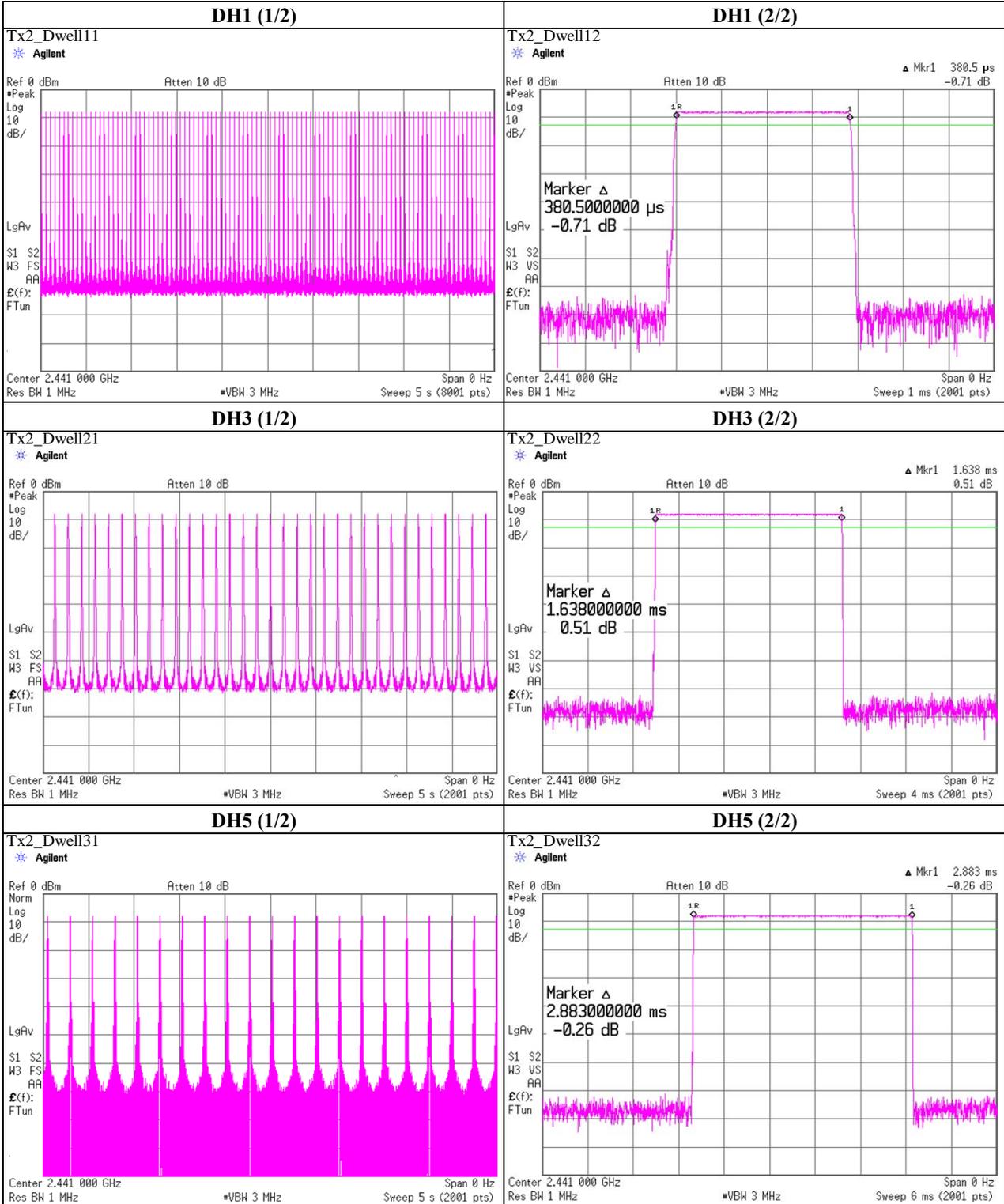
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, BDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date October 12, 2011
Temperature / Humidity 25deg.C , 52%RH
Engineer Kenichi Adachi
Mode Tx, Bluetooth, EDR, PRBS9

| 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] |
|-------|--|--|------------------|-----------------|
| 2-DH1 | 101.0 / 5.0 sec. x 31.6 sec. = 639 times | 0.395 | 252 | 400 |
| 2-DH3 | 34.0 / 5.0 sec. x 31.6 sec. = 215 times | 1.646 | 354 | 400 |
| 2-DH5 | 21.0 / 5.0 sec. x 31.6 sec. = 133 times | 2.898 | 385 | 400 |

Sample Calculation

Result = Number of transmission x Length of transmission time

UL Japan, Inc.

Shonan EMC Lab.

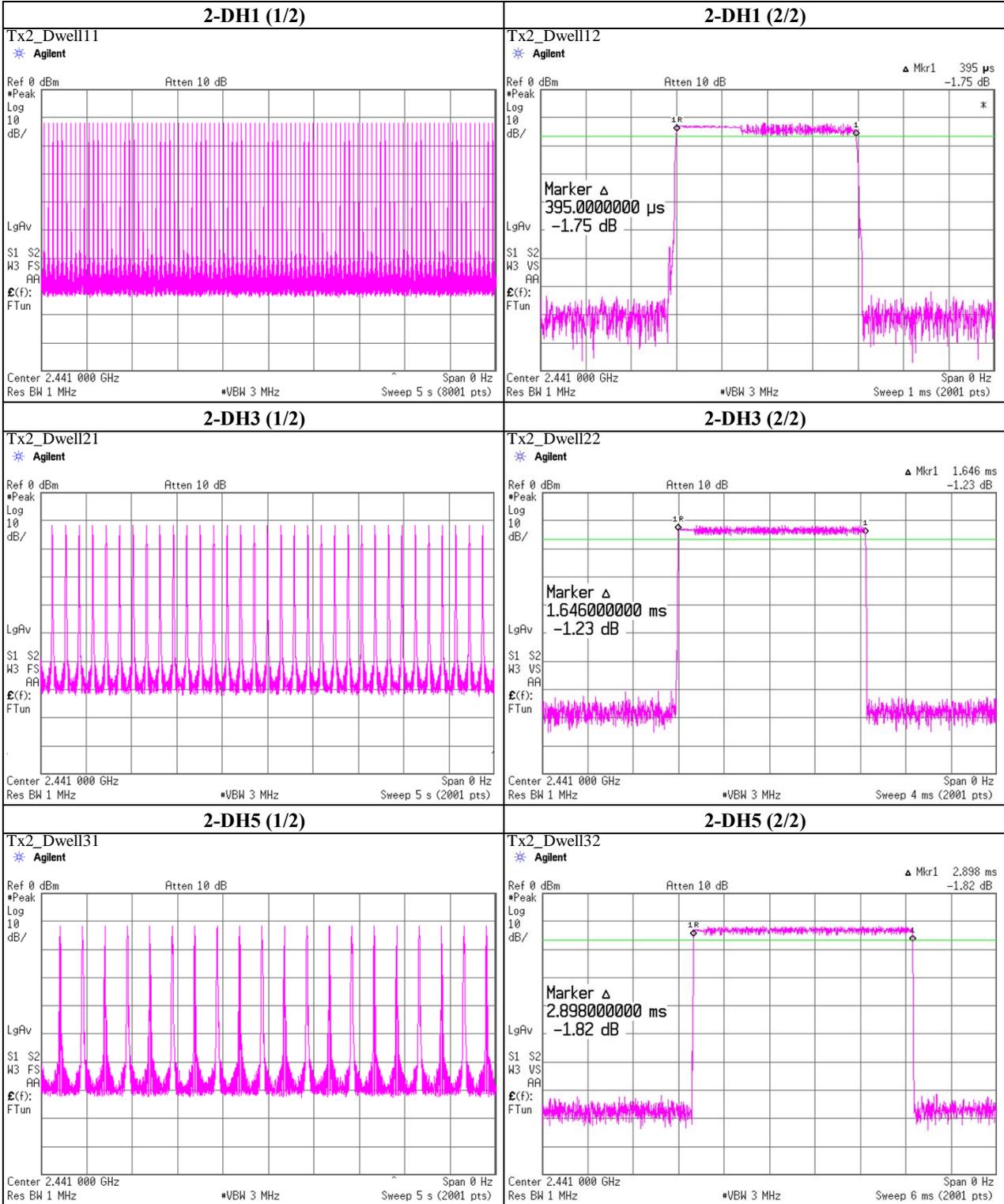
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Dwell time

Tx, Bluetooth, EDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date October 11, 2011 October 12, 2011
 Temperature / Humidity 26deg.C , 54%RH 25deg.C , 52%RH
 Engineer Kenichi Adachi Kenichi Adachi
 Mode Tx, Bluetooth, BDR (Worst: DH5)
 Tx, Bluetooth, EDR (Worst: 2-DH5)
 (* P/M: Power Meter)

| | Freq. [MHz] | P/M (Peak) Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | | Limit | | Margin [dB] |
|-------|----------------|--------------------------------|-----------------------|------------------------|--------|------|-------|------|----------------|
| | | | | | [dBm] | [mW] | [dBm] | [mW] | |
| DH5 | 2402.0 | -7.70 | 0.68 | 9.87 | 2.85 | 1.93 | 20.97 | 125 | 18.12 |
| DH5 | 2441.0 | -6.13 | 0.69 | 9.87 | 4.43 | 2.77 | 20.97 | 125 | 16.54 |
| DH5 | 2480.0 | -7.56 | 0.70 | 9.87 | 3.01 | 2.00 | 20.97 | 125 | 17.96 |
| 2-DH5 | 2402.0 | -9.01 | 0.68 | 9.87 | 1.54 | 1.42 | 20.97 | 125 | 19.43 |
| 2-DH5 | 2441.0 | -8.54 | 0.69 | 9.87 | 2.02 | 1.59 | 20.97 | 125 | 18.95 |
| 2-DH5 | 2480.0 | -9.95 | 0.70 | 9.87 | 0.62 | 1.15 | 20.97 | 125 | 20.35 |

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

UL Japan, Inc.
Shonan EMC Lab.

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2011/10/12 2011/10/13
 Temperature / Humidity 25deg.C , 58%RH 22deg.C , 58%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|-------------|---------------|
| Hori. | 528.00 | QP | 38.7 | 17.5 | 9.6 | 31.9 | 33.9 | 46.0 | 12.1 | 148 | 359 | |
| Hori. | 536.00 | QP | 38.6 | 17.6 | 9.6 | 31.9 | 33.9 | 46.0 | 12.1 | 139 | 0 | |
| Hori. | 2390.00 | PK | 47.1 | 27.2 | 13.8 | 41.1 | 47.0 | 73.9 | 26.9 | 116 | 101 | |
| Hori. | 2400.00 | PK | 53.0 | 27.3 | 13.8 | 41.1 | 53.0 | 73.9 | 20.9 | 116 | 101 | |
| Hori. | 2546.06 | PK | 50.1 | 27.6 | 13.9 | 41.1 | 50.5 | 73.9 | 23.4 | 109 | 103 | |
| Hori. | 2570.00 | PK | 49.4 | 27.7 | 13.9 | 41.1 | 49.9 | 73.9 | 24.0 | 108 | 101 | |
| Hori. | 2594.00 | PK | 48.8 | 27.7 | 13.9 | 41.2 | 49.2 | 73.9 | 24.7 | 108 | 101 | |
| Hori. | 4804.00 | PK | 54.7 | 31.1 | 6.0 | 41.1 | 50.7 | 73.9 | 23.2 | 111 | 169 | |
| Hori. | 7206.00 | PK | 48.7 | 36.5 | 7.4 | 41.3 | 51.3 | 73.9 | 22.6 | 100 | 0 | |
| Hori. | 9608.00 | PK | 46.6 | 38.2 | 8.7 | 38.8 | 54.7 | 73.9 | 19.2 | 100 | 0 | |
| Hori. | 12010.00 | PK | 47.3 | 39.3 | 10.2 | 39.2 | 57.6 | 73.9 | 16.3 | 100 | 0 | |
| Hori. | 19219.97 | PK | 50.5 | 40.9 | -2.8 | 44.0 | 44.6 | 73.9 | 29.3 | 103 | 95 | |
| Hori. | 2390.00 | AV | 34.6 | 27.2 | 13.8 | 41.1 | 34.5 | 53.9 | 19.4 | 116 | 101 | (AV)VBW:270Hz |
| Hori. | 2400.00 | AV | 38.8 | 27.3 | 13.8 | 41.1 | 38.8 | 53.9 | 15.1 | 116 | 101 | (AV)VBW:270Hz |
| Hori. | 2546.06 | AV | 39.8 | 27.6 | 13.9 | 41.1 | 40.2 | 53.9 | 13.7 | 109 | 103 | (AV)VBW:270Hz |
| Hori. | 2570.00 | AV | 38.7 | 27.7 | 13.9 | 41.1 | 39.2 | 53.9 | 14.7 | 108 | 101 | (AV)VBW:270Hz |
| Hori. | 2594.00 | AV | 38.5 | 27.7 | 13.9 | 41.2 | 38.9 | 53.9 | 15.0 | 108 | 101 | (AV)VBW:270Hz |
| Hori. | 4804.00 | AV | 50.1 | 31.1 | 6.0 | 41.1 | 46.1 | 53.9 | 7.8 | 111 | 169 | (AV)VBW:270Hz |
| Hori. | 7206.00 | AV | 37.6 | 36.5 | 7.4 | 41.3 | 40.2 | 53.9 | 13.7 | 100 | 0 | (AV)VBW:270Hz |
| Hori. | 9608.00 | AV | 35.0 | 38.2 | 8.7 | 38.8 | 43.1 | 53.9 | 10.8 | 100 | 0 | (AV)VBW:270Hz |
| Hori. | 12010.00 | AV | 36.4 | 39.3 | 10.2 | 39.2 | 46.7 | 53.9 | 7.2 | 100 | 0 | (AV)VBW:270Hz |
| Hori. | 19219.97 | AV | 44.4 | 40.9 | -2.8 | 44.0 | 38.5 | 53.9 | 15.4 | 103 | 95 | (AV)VBW:270Hz |
| Vert. | 436.00 | QP | 37.2 | 16.4 | 9.3 | 31.9 | 31.0 | 46.0 | 15.0 | 116 | 179 | |
| Vert. | 528.00 | QP | 37.5 | 17.5 | 9.6 | 31.9 | 32.7 | 46.0 | 13.3 | 100 | 102 | |
| Vert. | 536.00 | QP | 38.3 | 17.6 | 9.6 | 31.9 | 33.6 | 46.0 | 12.4 | 100 | 69 | |
| Vert. | 2390.00 | PK | 46.8 | 27.2 | 13.8 | 41.1 | 46.7 | 73.9 | 27.2 | 114 | 276 | |
| Vert. | 2400.00 | PK | 52.1 | 27.3 | 13.8 | 41.1 | 52.1 | 73.9 | 21.8 | 114 | 276 | |
| Vert. | 2546.06 | PK | 48.7 | 27.6 | 13.9 | 41.1 | 49.1 | 73.9 | 24.8 | 109 | 300 | |
| Vert. | 2570.00 | PK | 48.1 | 27.7 | 13.9 | 41.1 | 48.6 | 73.9 | 25.3 | 109 | 300 | |
| Vert. | 2594.00 | PK | 47.8 | 27.7 | 13.9 | 41.2 | 48.2 | 73.9 | 25.7 | 109 | 300 | |
| Vert. | 4804.00 | PK | 55.3 | 31.1 | 6.0 | 41.1 | 51.3 | 73.9 | 22.6 | 100 | 76 | |
| Vert. | 7206.00 | PK | 48.9 | 36.5 | 7.4 | 41.3 | 51.5 | 73.9 | 22.4 | 100 | 0 | |
| Vert. | 9608.00 | PK | 46.8 | 38.2 | 8.7 | 38.8 | 54.9 | 73.9 | 19.0 | 100 | 0 | |
| Vert. | 12010.00 | PK | 48.3 | 39.3 | 10.2 | 39.2 | 58.6 | 73.9 | 15.3 | 100 | 0 | |
| Vert. | 19219.97 | PK | 49.1 | 40.9 | -2.8 | 44.0 | 43.2 | 73.9 | 30.7 | 100 | 130 | |
| Vert. | 2390.00 | AV | 34.7 | 27.2 | 13.8 | 41.1 | 34.6 | 53.9 | 19.3 | 114 | 276 | (AV)VBW:270Hz |
| Vert. | 2400.00 | AV | 37.9 | 27.3 | 13.8 | 41.1 | 37.9 | 53.9 | 16.0 | 114 | 276 | (AV)VBW:270Hz |
| Vert. | 2546.06 | AV | 38.6 | 27.6 | 13.9 | 41.1 | 39.0 | 53.9 | 14.9 | 109 | 300 | (AV)VBW:270Hz |
| Vert. | 2570.00 | AV | 37.3 | 27.7 | 13.9 | 41.1 | 37.8 | 53.9 | 16.1 | 109 | 300 | (AV)VBW:270Hz |
| Vert. | 2594.00 | AV | 37.6 | 27.7 | 13.9 | 41.2 | 38.0 | 53.9 | 15.9 | 109 | 300 | (AV)VBW:270Hz |
| Vert. | 4804.00 | AV | 50.8 | 31.1 | 6.0 | 41.1 | 46.8 | 53.9 | 7.1 | 100 | 76 | (AV)VBW:270Hz |
| Vert. | 7206.00 | AV | 37.9 | 36.5 | 7.4 | 41.3 | 40.5 | 53.9 | 13.4 | 100 | 0 | (AV)VBW:270Hz |
| Vert. | 9608.00 | AV | 34.9 | 38.2 | 8.7 | 38.8 | 43.0 | 53.9 | 10.9 | 100 | 0 | (AV)VBW:270Hz |
| Vert. | 12010.00 | AV | 36.7 | 39.3 | 10.2 | 39.2 | 47.0 | 53.9 | 6.9 | 100 | 0 | (AV)VBW:270Hz |
| Vert. | 19219.97 | AV | 42.7 | 40.9 | -2.8 | 44.0 | 36.8 | 53.9 | 17.1 | 100 | 130 | (AV)VBW:270Hz |

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2011/10/12 2011/10/13
 Temperature / Humidity 25deg.C , 58%RH 22deg.C , 58%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2441 MHz
 Tx, Bluetooth, BDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|-------------|----------------|
| Hori. | 528.00 | QP | 37.9 | 17.5 | 9.6 | 31.9 | 33.1 | 46.0 | 12.9 | 144 | 345 | |
| Hori. | 536.00 | QP | 37.6 | 17.6 | 9.6 | 31.9 | 32.9 | 46.0 | 13.1 | 138 | 356 | |
| Hori. | 2585.00 | PK | 48.3 | 27.7 | 13.9 | 41.2 | 48.7 | 73.9 | 25.2 | 103 | 293 | |
| Hori. | 2609.00 | PK | 47.9 | 27.8 | 13.9 | 41.2 | 48.4 | 73.9 | 25.5 | 102 | 293 | |
| Hori. | 2633.00 | PK | 48.4 | 27.8 | 13.9 | 41.2 | 48.9 | 73.9 | 25.0 | 105 | 161 | |
| Hori. | 4882.00 | PK | 54.2 | 31.2 | 6.0 | 40.9 | 50.5 | 73.9 | 23.4 | 102 | 146 | |
| Hori. | 7323.00 | PK | 48.1 | 36.8 | 7.4 | 41.4 | 50.9 | 73.9 | 23.0 | 100 | 0 | |
| Hori. | 9764.00 | PK | 46.2 | 38.5 | 8.7 | 38.8 | 54.6 | 73.9 | 19.3 | 100 | 0 | |
| Hori. | 12205.00 | PK | 46.6 | 39.3 | 10.3 | 39.2 | 57.0 | 73.9 | 16.9 | 100 | 0 | |
| Hori. | 19531.96 | PK | 51.2 | 40.8 | -2.8 | 43.7 | 45.5 | 73.9 | 28.4 | 103 | 98 | |
| Hori. | 2585.00 | AV | 39.0 | 27.7 | 13.9 | 41.2 | 39.4 | 53.9 | 14.5 | 103 | 293 | (AV) VBW:270Hz |
| Hori. | 2609.00 | AV | 37.7 | 27.8 | 13.9 | 41.2 | 38.2 | 53.9 | 15.7 | 102 | 293 | (AV) VBW:270Hz |
| Hori. | 2633.00 | AV | 38.1 | 27.8 | 13.9 | 41.2 | 38.6 | 53.9 | 15.3 | 105 | 161 | (AV) VBW:270Hz |
| Hori. | 4882.00 | AV | 49.0 | 31.2 | 6.0 | 40.9 | 45.3 | 53.9 | 8.6 | 102 | 146 | (AV) VBW:270Hz |
| Hori. | 7323.00 | AV | 36.9 | 36.8 | 7.4 | 41.4 | 39.7 | 53.9 | 14.2 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 9764.00 | AV | 34.5 | 38.5 | 8.7 | 38.8 | 42.9 | 53.9 | 11.0 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 12205.00 | AV | 35.2 | 39.3 | 10.3 | 39.2 | 45.6 | 53.9 | 8.3 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 19531.96 | AV | 45.1 | 40.8 | -2.8 | 43.7 | 39.4 | 53.9 | 14.5 | 103 | 98 | (AV) VBW:270Hz |
| Vert. | 436.00 | QP | 38.3 | 16.4 | 9.3 | 31.9 | 32.1 | 46.0 | 13.9 | 120 | 186 | |
| Vert. | 528.00 | QP | 36.9 | 17.5 | 9.6 | 31.9 | 32.1 | 46.0 | 13.9 | 100 | 75 | |
| Vert. | 536.00 | QP | 37.1 | 17.6 | 9.6 | 31.9 | 32.4 | 46.0 | 13.6 | 100 | 86 | |
| Vert. | 2585.00 | PK | 46.7 | 27.7 | 13.9 | 41.2 | 47.1 | 73.9 | 26.8 | 106 | 298 | |
| Vert. | 2609.00 | PK | 47.4 | 27.8 | 13.9 | 41.2 | 47.9 | 73.9 | 26.0 | 100 | 303 | |
| Vert. | 2633.00 | PK | 47.1 | 27.8 | 13.9 | 41.2 | 47.6 | 73.9 | 26.3 | 114 | 302 | |
| Vert. | 4882.00 | PK | 53.3 | 31.2 | 6.0 | 40.9 | 49.6 | 73.9 | 24.3 | 110 | 344 | |
| Vert. | 7323.00 | PK | 47.9 | 36.8 | 7.4 | 41.4 | 50.7 | 73.9 | 23.2 | 100 | 0 | |
| Vert. | 9764.00 | PK | 46.1 | 38.5 | 8.7 | 38.8 | 54.5 | 73.9 | 19.4 | 100 | 0 | |
| Vert. | 12205.00 | PK | 46.8 | 39.3 | 10.3 | 39.2 | 57.2 | 73.9 | 16.7 | 100 | 0 | |
| Vert. | 19531.96 | PK | 50.1 | 40.8 | -2.8 | 43.7 | 44.4 | 73.9 | 29.5 | 101 | 145 | |
| Vert. | 2585.00 | AV | 34.4 | 27.7 | 13.9 | 41.2 | 34.8 | 53.9 | 19.1 | 106 | 298 | (AV) VBW:270Hz |
| Vert. | 2609.00 | AV | 35.4 | 27.8 | 13.9 | 41.2 | 35.9 | 53.9 | 18.0 | 100 | 303 | (AV) VBW:270Hz |
| Vert. | 2633.00 | AV | 35.6 | 27.8 | 13.9 | 41.2 | 36.1 | 53.9 | 17.8 | 114 | 302 | (AV) VBW:270Hz |
| Vert. | 4882.00 | AV | 47.8 | 31.2 | 6.0 | 40.9 | 44.1 | 53.9 | 9.8 | 110 | 344 | (AV) VBW:270Hz |
| Vert. | 7323.00 | AV | 36.8 | 36.8 | 7.4 | 41.4 | 39.6 | 53.9 | 14.3 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 9764.00 | AV | 34.5 | 38.5 | 8.7 | 38.8 | 42.9 | 53.9 | 11.0 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 12205.00 | AV | 35.2 | 39.3 | 10.3 | 39.2 | 45.6 | 53.9 | 8.3 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 19531.96 | AV | 43.7 | 40.8 | -2.8 | 43.7 | 38.0 | 53.9 | 15.9 | 101 | 145 | (AV) VBW:270Hz |

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2011/10/12 2011/10/13
 Temperature / Humidity 25deg.C , 58%RH 22deg.C , 58%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|-------------|----------------|
| Hori. | 528.00 | QP | 38.1 | 17.5 | 9.6 | 31.9 | 33.3 | 46.0 | 12.7 | 146 | 350 | |
| Hori. | 536.00 | QP | 37.9 | 17.6 | 9.6 | 31.9 | 33.2 | 46.0 | 12.8 | 138 | 358 | |
| Hori. | 2483.50 | PK | 51.2 | 27.5 | 13.7 | 41.1 | 51.3 | 73.9 | 22.6 | 108 | 296 | |
| Hori. | 2624.00 | PK | 48.3 | 27.8 | 13.9 | 41.2 | 48.8 | 73.9 | 25.1 | 106 | 147 | |
| Hori. | 2648.00 | PK | 48.7 | 27.9 | 14.0 | 41.2 | 49.4 | 73.9 | 24.5 | 106 | 147 | |
| Hori. | 2672.00 | PK | 48.9 | 27.9 | 14.1 | 41.2 | 49.7 | 73.9 | 24.2 | 106 | 147 | |
| Hori. | 4960.00 | PK | 53.7 | 31.4 | 6.0 | 40.8 | 50.3 | 73.9 | 23.6 | 100 | 147 | |
| Hori. | 7440.00 | PK | 47.9 | 37.0 | 7.3 | 41.5 | 50.7 | 73.9 | 23.2 | 100 | 0 | |
| Hori. | 9920.00 | PK | 45.1 | 38.8 | 8.8 | 38.8 | 53.9 | 73.9 | 20.0 | 100 | 0 | |
| Hori. | 12400.00 | PK | 44.4 | 39.4 | 10.3 | 39.2 | 54.9 | 73.9 | 19.0 | 100 | 0 | |
| Hori. | 19835.97 | PK | 49.9 | 40.6 | -2.7 | 43.4 | 44.4 | 73.9 | 29.5 | 103 | 103 | |
| Hori. | 2483.50 | AV | 40.5 | 27.5 | 13.7 | 41.1 | 40.6 | 53.9 | 13.3 | 108 | 296 | (AV) VBW:270Hz |
| Hori. | 2624.00 | AV | 37.6 | 27.8 | 13.9 | 41.2 | 38.1 | 53.9 | 15.8 | 106 | 147 | (AV) VBW:270Hz |
| Hori. | 2648.00 | AV | 37.4 | 27.9 | 14.0 | 41.2 | 38.1 | 53.9 | 15.8 | 106 | 147 | (AV) VBW:270Hz |
| Hori. | 2672.00 | AV | 38.4 | 27.9 | 14.1 | 41.2 | 39.2 | 53.9 | 14.7 | 106 | 147 | (AV) VBW:270Hz |
| Hori. | 4960.00 | AV | 49.7 | 31.4 | 6.0 | 40.8 | 46.3 | 53.9 | 7.6 | 100 | 147 | (AV) VBW:270Hz |
| Hori. | 7440.00 | AV | 36.2 | 37.0 | 7.3 | 41.5 | 39.0 | 53.9 | 14.9 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 9920.00 | AV | 33.1 | 38.8 | 8.8 | 38.8 | 41.9 | 53.9 | 12.0 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 12400.00 | AV | 33.6 | 39.4 | 10.3 | 39.2 | 44.1 | 53.9 | 9.8 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 19835.97 | AV | 44.0 | 40.6 | -2.7 | 43.4 | 38.5 | 53.9 | 15.4 | 103 | 103 | (AV) VBW:270Hz |
| Vert. | 436.00 | QP | 38.1 | 16.4 | 9.3 | 31.9 | 31.9 | 46.0 | 14.1 | 116 | 182 | |
| Vert. | 528.00 | QP | 37.2 | 17.5 | 9.6 | 31.9 | 32.4 | 46.0 | 13.6 | 100 | 75 | |
| Vert. | 536.00 | QP | 37.5 | 17.6 | 9.6 | 31.9 | 32.8 | 46.0 | 13.2 | 100 | 87 | |
| Vert. | 2483.50 | PK | 49.2 | 27.5 | 13.7 | 41.1 | 49.3 | 73.9 | 24.6 | 117 | 312 | |
| Vert. | 2624.00 | PK | 48.3 | 27.8 | 13.9 | 41.2 | 48.8 | 73.9 | 25.1 | 112 | 340 | |
| Vert. | 2648.00 | PK | 48.3 | 27.9 | 14.0 | 41.2 | 49.0 | 73.9 | 24.9 | 112 | 340 | |
| Vert. | 2672.00 | PK | 48.3 | 27.9 | 14.1 | 41.2 | 49.1 | 73.9 | 24.8 | 109 | 340 | |
| Vert. | 4960.00 | PK | 54.5 | 31.4 | 6.0 | 40.8 | 51.1 | 73.9 | 22.8 | 123 | 344 | |
| Vert. | 7440.00 | PK | 47.7 | 37.0 | 7.3 | 41.5 | 50.5 | 73.9 | 23.4 | 100 | 0 | |
| Vert. | 9920.00 | PK | 45.1 | 38.8 | 8.8 | 38.8 | 53.9 | 73.9 | 20.0 | 100 | 0 | |
| Vert. | 12400.00 | PK | 44.7 | 39.4 | 10.3 | 39.2 | 55.2 | 73.9 | 18.7 | 100 | 0 | |
| Vert. | 19835.97 | PK | 48.2 | 40.6 | -2.7 | 43.4 | 42.7 | 73.9 | 31.2 | 100 | 141 | |
| Vert. | 2483.50 | AV | 38.7 | 27.5 | 13.7 | 41.1 | 38.8 | 53.9 | 15.1 | 117 | 312 | (AV) VBW:270Hz |
| Vert. | 2624.00 | AV | 38.5 | 27.8 | 13.9 | 41.2 | 39.0 | 53.9 | 14.9 | 112 | 340 | (AV) VBW:270Hz |
| Vert. | 2648.00 | AV | 37.7 | 27.9 | 14.0 | 41.2 | 38.4 | 53.9 | 15.5 | 112 | 340 | (AV) VBW:270Hz |
| Vert. | 2672.00 | AV | 37.4 | 27.9 | 14.1 | 41.2 | 38.2 | 53.9 | 15.7 | 109 | 340 | (AV) VBW:270Hz |
| Vert. | 4960.00 | AV | 49.0 | 31.4 | 6.0 | 40.8 | 45.6 | 53.9 | 8.3 | 123 | 344 | (AV) VBW:270Hz |
| Vert. | 7440.00 | AV | 36.5 | 37.0 | 7.3 | 41.5 | 39.3 | 53.9 | 14.6 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 9920.00 | AV | 33.3 | 38.8 | 8.8 | 38.8 | 42.1 | 53.9 | 11.8 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 12400.00 | AV | 33.4 | 39.4 | 10.3 | 39.2 | 43.9 | 53.9 | 10.0 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 19835.97 | AV | 41.4 | 40.6 | -2.7 | 43.4 | 35.9 | 53.9 | 18.0 | 100 | 141 | (AV) VBW:270Hz |

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2011/10/12 2011/10/13
 Temperature / Humidity 25deg.C , 58%RH 22deg.C , 58%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2402 MHz
 Tx, Bluetooth, EDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|-------------|----------------|
| Hori. | 528.00 | QP | 37.9 | 17.5 | 9.6 | 31.9 | 33.1 | 46.0 | 12.9 | 147 | 348 | |
| Hori. | 536.00 | QP | 38.0 | 17.6 | 9.6 | 31.9 | 33.3 | 46.0 | 12.7 | 138 | 355 | |
| Hori. | 2390.00 | PK | 47.1 | 27.2 | 13.8 | 41.1 | 47.0 | 73.9 | 26.9 | 168 | 171 | |
| Hori. | 2400.00 | PK | 58.0 | 27.3 | 13.8 | 41.1 | 58.0 | 73.9 | 15.9 | 168 | 171 | |
| Hori. | 2546.00 | PK | 48.9 | 27.6 | 13.9 | 41.1 | 49.3 | 73.9 | 24.6 | 108 | 54 | |
| Hori. | 2570.00 | PK | 48.0 | 27.7 | 13.9 | 41.1 | 48.5 | 73.9 | 25.4 | 108 | 54 | |
| Hori. | 2594.00 | PK | 48.0 | 27.7 | 13.9 | 41.2 | 48.4 | 73.9 | 25.5 | 107 | 54 | |
| Hori. | 4804.00 | PK | 53.4 | 31.1 | 6.0 | 41.1 | 49.4 | 73.9 | 24.5 | 132 | 27 | |
| Hori. | 7206.00 | PK | 49.2 | 36.5 | 7.4 | 41.3 | 51.8 | 73.9 | 22.1 | 100 | 0 | |
| Hori. | 9608.00 | PK | 46.1 | 38.2 | 8.7 | 38.8 | 54.2 | 73.9 | 19.7 | 100 | 0 | |
| Hori. | 12010.00 | PK | 48.3 | 39.3 | 10.2 | 39.2 | 58.6 | 73.9 | 15.3 | 100 | 0 | |
| Hori. | 19219.97 | PK | 50.1 | 40.9 | -2.8 | 44.0 | 44.2 | 73.9 | 29.7 | 103 | 104 | |
| Hori. | 2390.00 | AV | 34.6 | 27.2 | 13.8 | 41.1 | 34.5 | 53.9 | 19.4 | 168 | 171 | (AV) VBW:270Hz |
| Hori. | 2400.00 | AV | 47.6 | 27.3 | 13.8 | 41.1 | 47.6 | 53.9 | 6.3 | 168 | 171 | (AV) VBW:270Hz |
| Hori. | 2546.00 | AV | 38.1 | 27.6 | 13.9 | 41.1 | 38.5 | 53.9 | 15.4 | 108 | 54 | (AV) VBW:270Hz |
| Hori. | 2570.00 | AV | 37.2 | 27.7 | 13.9 | 41.1 | 37.7 | 53.9 | 16.2 | 108 | 54 | (AV) VBW:270Hz |
| Hori. | 2594.00 | AV | 37.2 | 27.7 | 13.9 | 41.2 | 37.6 | 53.9 | 16.3 | 107 | 54 | (AV) VBW:270Hz |
| Hori. | 4804.00 | AV | 45.7 | 31.1 | 6.0 | 41.1 | 41.7 | 53.9 | 12.2 | 132 | 27 | (AV) VBW:270Hz |
| Hori. | 7206.00 | AV | 37.7 | 36.5 | 7.4 | 41.3 | 40.3 | 53.9 | 13.6 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 9608.00 | AV | 34.8 | 38.2 | 8.7 | 38.8 | 42.9 | 53.9 | 11.0 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 12010.00 | AV | 36.4 | 39.3 | 10.2 | 39.2 | 46.7 | 53.9 | 7.2 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 19219.97 | AV | 44.1 | 40.9 | -2.8 | 44.0 | 38.2 | 53.9 | 15.7 | 103 | 104 | (AV) VBW:270Hz |
| Vert. | 436.00 | QP | 37.6 | 16.4 | 9.3 | 31.9 | 31.4 | 46.0 | 14.6 | 117 | 185 | |
| Vert. | 528.00 | QP | 37.5 | 17.5 | 9.6 | 31.9 | 32.7 | 46.0 | 13.3 | 100 | 74 | |
| Vert. | 536.00 | QP | 37.9 | 17.6 | 9.6 | 31.9 | 33.2 | 46.0 | 12.8 | 100 | 88 | |
| Vert. | 2390.00 | PK | 47.9 | 27.2 | 13.8 | 41.1 | 47.8 | 73.9 | 26.1 | 104 | 210 | |
| Vert. | 2400.00 | PK | 61.0 | 27.3 | 13.8 | 41.1 | 61.0 | 73.9 | 12.9 | 104 | 210 | |
| Vert. | 2546.00 | PK | 48.4 | 27.6 | 13.9 | 41.1 | 48.8 | 73.9 | 25.1 | 100 | 179 | |
| Vert. | 2570.00 | PK | 49.0 | 27.7 | 13.9 | 41.1 | 49.5 | 73.9 | 24.4 | 100 | 179 | |
| Vert. | 2594.00 | PK | 48.1 | 27.7 | 13.9 | 41.2 | 48.5 | 73.9 | 25.4 | 100 | 179 | |
| Vert. | 4804.00 | PK | 53.5 | 31.1 | 6.0 | 41.1 | 49.5 | 73.9 | 24.4 | 111 | 0 | |
| Vert. | 7206.00 | PK | 49.4 | 36.5 | 7.4 | 41.3 | 52.0 | 73.9 | 21.9 | 100 | 0 | |
| Vert. | 9608.00 | PK | 46.7 | 38.2 | 8.7 | 38.8 | 54.8 | 73.9 | 19.1 | 100 | 0 | |
| Vert. | 12010.00 | PK | 47.9 | 39.3 | 10.2 | 39.2 | 58.2 | 73.9 | 15.7 | 100 | 0 | |
| Vert. | 19219.97 | PK | 49.3 | 40.9 | -2.8 | 44.0 | 43.4 | 73.9 | 30.5 | 100 | 74 | |
| Vert. | 2390.00 | AV | 34.6 | 27.2 | 13.8 | 41.1 | 34.5 | 53.9 | 19.4 | 104 | 210 | (AV) VBW:270Hz |
| Vert. | 2400.00 | AV | 50.4 | 27.3 | 13.8 | 41.1 | 50.4 | 53.9 | 3.5 | 104 | 210 | (AV) VBW:270Hz |
| Vert. | 2546.00 | AV | 38.1 | 27.6 | 13.9 | 41.1 | 38.5 | 53.9 | 15.4 | 100 | 179 | (AV) VBW:270Hz |
| Vert. | 2570.00 | AV | 37.4 | 27.7 | 13.9 | 41.1 | 37.9 | 53.9 | 16.0 | 100 | 179 | (AV) VBW:270Hz |
| Vert. | 2594.00 | AV | 37.5 | 27.7 | 13.9 | 41.2 | 37.9 | 53.9 | 16.0 | 100 | 179 | (AV) VBW:270Hz |
| Vert. | 4804.00 | AV | 46.5 | 31.1 | 6.0 | 41.1 | 42.5 | 53.9 | 11.4 | 111 | 0 | (AV) VBW:270Hz |
| Vert. | 7206.00 | AV | 37.7 | 36.5 | 7.4 | 41.3 | 40.3 | 53.9 | 13.6 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 9608.00 | AV | 35.0 | 38.2 | 8.7 | 38.8 | 43.1 | 53.9 | 10.8 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 12010.00 | AV | 36.5 | 39.3 | 10.2 | 39.2 | 46.8 | 53.9 | 7.1 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 19219.97 | AV | 43.4 | 40.9 | -2.8 | 44.0 | 37.5 | 53.9 | 16.4 | 100 | 74 | (AV) VBW:270Hz |

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2011/10/12 2011/10/13
 Temperature / Humidity 25deg.C , 58%RH 22deg.C , 58%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2441 MHz
 Tx, Bluetooth, EDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|-------------|----------------|
| Hori. | 528.00 | QP | 38.4 | 17.5 | 9.6 | 31.9 | 33.6 | 46.0 | 12.4 | 150 | 344 | |
| Hori. | 536.00 | QP | 38.1 | 17.6 | 9.6 | 31.9 | 33.4 | 46.0 | 12.6 | 140 | 350 | |
| Hori. | 2585.00 | PK | 48.7 | 27.7 | 13.9 | 41.2 | 49.1 | 73.9 | 24.8 | 108 | 173 | |
| Hori. | 2609.00 | PK | 48.5 | 27.8 | 13.9 | 41.2 | 49.0 | 73.9 | 24.9 | 108 | 173 | |
| Hori. | 2633.00 | PK | 48.3 | 27.8 | 13.9 | 41.2 | 48.8 | 73.9 | 25.1 | 108 | 173 | |
| Hori. | 4882.00 | PK | 53.6 | 31.2 | 6.0 | 40.9 | 49.9 | 73.9 | 24.0 | 110 | 150 | |
| Hori. | 7323.00 | PK | 47.7 | 36.8 | 7.4 | 41.4 | 50.5 | 73.9 | 23.4 | 100 | 0 | |
| Hori. | 9764.00 | PK | 45.3 | 38.5 | 8.7 | 38.8 | 53.7 | 73.9 | 20.2 | 100 | 0 | |
| Hori. | 12205.00 | PK | 46.3 | 39.3 | 10.3 | 39.2 | 56.7 | 73.9 | 17.2 | 100 | 0 | |
| Hori. | 19531.96 | PK | 50.8 | 40.8 | -2.8 | 43.7 | 45.1 | 73.9 | 28.8 | 103 | 103 | |
| Hori. | 2585.00 | AV | 37.9 | 27.7 | 13.9 | 41.2 | 38.3 | 53.9 | 15.6 | 108 | 173 | (AV) VBW:270Hz |
| Hori. | 2609.00 | AV | 37.5 | 27.8 | 13.9 | 41.2 | 38.0 | 53.9 | 15.9 | 108 | 173 | (AV) VBW:270Hz |
| Hori. | 2633.00 | AV | 37.9 | 27.8 | 13.9 | 41.2 | 38.4 | 53.9 | 15.5 | 108 | 173 | (AV) VBW:270Hz |
| Hori. | 4882.00 | AV | 46.4 | 31.2 | 6.0 | 40.9 | 42.7 | 53.9 | 11.2 | 110 | 150 | (AV) VBW:270Hz |
| Hori. | 7323.00 | AV | 36.7 | 36.8 | 7.4 | 41.4 | 39.5 | 53.9 | 14.4 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 9764.00 | AV | 34.1 | 38.5 | 8.7 | 38.8 | 42.5 | 53.9 | 11.4 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 12205.00 | AV | 34.5 | 39.3 | 10.3 | 39.2 | 44.9 | 53.9 | 9.0 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 19531.96 | AV | 45.2 | 40.8 | -2.8 | 43.7 | 39.5 | 53.9 | 14.4 | 103 | 103 | (AV) VBW:270Hz |
| Vert. | 436.00 | QP | 37.3 | 16.4 | 9.3 | 31.9 | 31.1 | 46.0 | 14.9 | 118 | 190 | |
| Vert. | 528.00 | QP | 37.5 | 17.5 | 9.6 | 31.9 | 32.7 | 46.0 | 13.3 | 100 | 71 | |
| Vert. | 536.00 | QP | 38.1 | 17.6 | 9.6 | 31.9 | 33.4 | 46.0 | 12.6 | 100 | 90 | |
| Vert. | 2585.00 | PK | 48.6 | 27.7 | 13.9 | 41.2 | 49.0 | 73.9 | 24.9 | 100 | 178 | |
| Vert. | 2609.00 | PK | 48.3 | 27.8 | 13.9 | 41.2 | 48.8 | 73.9 | 25.1 | 100 | 178 | |
| Vert. | 2633.00 | PK | 48.5 | 27.8 | 13.9 | 41.2 | 49.0 | 73.9 | 24.9 | 100 | 178 | |
| Vert. | 4882.00 | PK | 53.6 | 31.2 | 6.0 | 40.9 | 49.9 | 73.9 | 24.0 | 111 | 351 | |
| Vert. | 7323.00 | PK | 47.4 | 36.8 | 7.4 | 41.4 | 50.2 | 73.9 | 23.7 | 100 | 0 | |
| Vert. | 9764.00 | PK | 45.1 | 38.5 | 8.7 | 38.8 | 53.5 | 73.9 | 20.4 | 100 | 0 | |
| Vert. | 12205.00 | PK | 46.2 | 39.3 | 10.3 | 39.2 | 56.6 | 73.9 | 17.3 | 100 | 0 | |
| Vert. | 19531.96 | PK | 49.5 | 40.8 | -2.8 | 43.7 | 43.8 | 73.9 | 30.1 | 100 | 156 | |
| Vert. | 2585.00 | AV | 37.9 | 27.7 | 13.9 | 41.2 | 38.3 | 53.9 | 15.6 | 100 | 178 | (AV) VBW:270Hz |
| Vert. | 2609.00 | AV | 37.1 | 27.8 | 13.9 | 41.2 | 37.6 | 53.9 | 16.3 | 100 | 178 | (AV) VBW:270Hz |
| Vert. | 2633.00 | AV | 36.9 | 27.8 | 13.9 | 41.2 | 37.4 | 53.9 | 16.5 | 100 | 178 | (AV) VBW:270Hz |
| Vert. | 4882.00 | AV | 46.5 | 31.2 | 6.0 | 40.9 | 42.8 | 53.9 | 11.1 | 111 | 351 | (AV) VBW:270Hz |
| Vert. | 7323.00 | AV | 36.7 | 36.8 | 7.4 | 41.4 | 39.5 | 53.9 | 14.4 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 9764.00 | AV | 34.2 | 38.5 | 8.7 | 38.8 | 42.6 | 53.9 | 11.3 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 12205.00 | AV | 34.4 | 39.3 | 10.3 | 39.2 | 44.8 | 53.9 | 9.1 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 19531.96 | AV | 43.4 | 40.8 | -2.8 | 43.7 | 37.7 | 53.9 | 16.2 | 100 | 156 | (AV) VBW:270Hz |

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber
 Date 2011/10/12 2011/10/13
 Temperature / Humidity 25deg.C , 58%RH 22deg.C , 58%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR, PRBS9

(* PK: Peak, AV: Average, QP: Quasi-Peak)

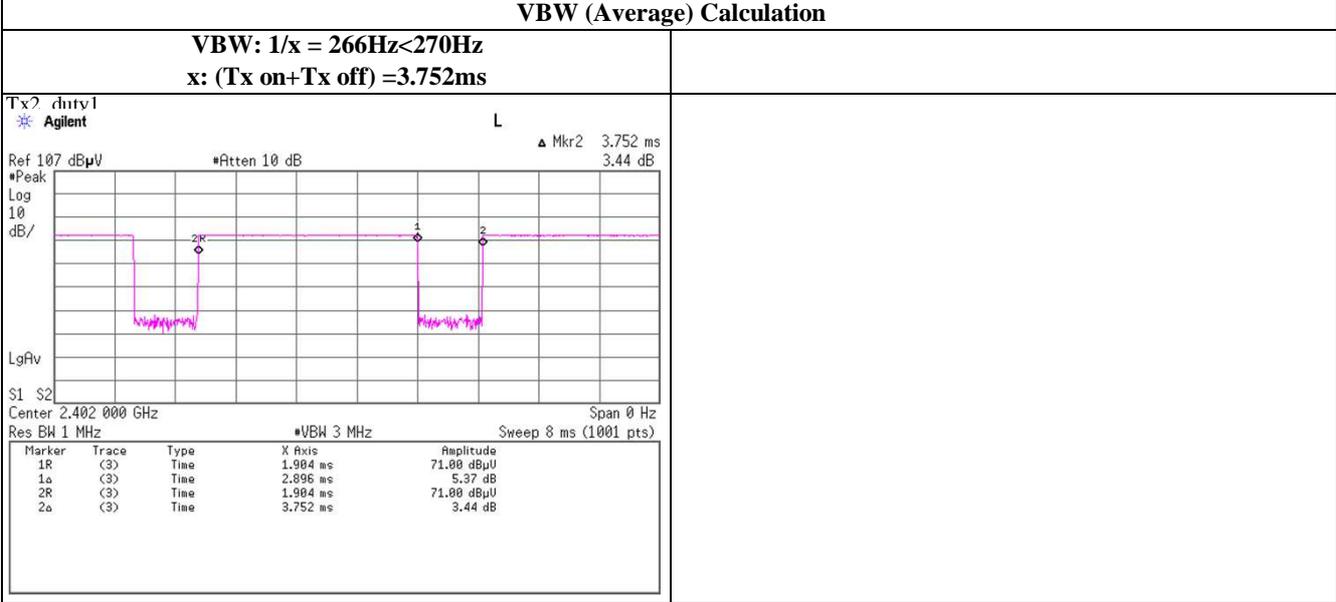
| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|-------------|----------------|
| Hori. | 528.00 | QP | 38.1 | 17.5 | 9.6 | 31.9 | 33.3 | 46.0 | 12.7 | 149 | 351 | |
| Hori. | 536.00 | QP | 38.3 | 17.6 | 9.6 | 31.9 | 33.6 | 46.0 | 12.4 | 139 | 0 | |
| Hori. | 2483.50 | PK | 53.5 | 27.5 | 13.7 | 41.1 | 53.6 | 73.9 | 20.3 | 112 | 160 | |
| Hori. | 2624.00 | PK | 48.3 | 27.8 | 13.9 | 41.2 | 48.8 | 73.9 | 25.1 | 106 | 189 | |
| Hori. | 2648.00 | PK | 47.6 | 27.9 | 14.0 | 41.2 | 48.3 | 73.9 | 25.6 | 106 | 189 | |
| Hori. | 2672.00 | PK | 48.6 | 27.9 | 14.1 | 41.2 | 49.4 | 73.9 | 24.5 | 106 | 189 | |
| Hori. | 4960.00 | PK | 53.2 | 31.4 | 6.0 | 40.8 | 49.8 | 73.9 | 24.1 | 107 | 156 | |
| Hori. | 7440.00 | PK | 47.1 | 37.0 | 7.3 | 41.5 | 49.9 | 73.9 | 24.0 | 100 | 0 | |
| Hori. | 9920.00 | PK | 44.6 | 38.8 | 8.8 | 38.8 | 53.4 | 73.9 | 20.5 | 100 | 0 | |
| Hori. | 12400.00 | PK | 44.8 | 39.4 | 10.3 | 39.2 | 55.3 | 73.9 | 18.6 | 100 | 0 | |
| Hori. | 19835.97 | PK | 50.3 | 40.6 | -2.7 | 43.4 | 50.9 | 73.9 | 29.1 | 102 | 99 | |
| Hori. | 2483.50 | AV | 37.8 | 27.5 | 13.7 | 41.1 | 37.9 | 53.9 | 16.0 | 112 | 160 | (AV) VBW:270Hz |
| Hori. | 2624.00 | AV | 37.7 | 27.8 | 13.9 | 41.2 | 38.2 | 53.9 | 15.7 | 106 | 189 | (AV) VBW:270Hz |
| Hori. | 2648.00 | AV | 37.4 | 27.9 | 14.0 | 41.2 | 38.1 | 53.9 | 15.8 | 106 | 189 | (AV) VBW:270Hz |
| Hori. | 2672.00 | AV | 37.9 | 27.9 | 14.1 | 41.2 | 38.7 | 53.9 | 15.2 | 106 | 189 | (AV) VBW:270Hz |
| Hori. | 4960.00 | AV | 45.6 | 31.4 | 6.0 | 40.8 | 42.2 | 53.9 | 11.7 | 107 | 156 | (AV) VBW:270Hz |
| Hori. | 7440.00 | AV | 36.3 | 37.0 | 7.3 | 41.5 | 39.1 | 53.9 | 14.8 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 9920.00 | AV | 33.3 | 38.8 | 8.8 | 38.8 | 42.1 | 53.9 | 11.8 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 12400.00 | AV | 33.4 | 39.4 | 10.3 | 39.2 | 43.9 | 53.9 | 10.0 | 100 | 0 | (AV) VBW:270Hz |
| Hori. | 19835.97 | AV | 44.6 | 40.6 | -2.7 | 43.4 | 39.1 | 53.9 | 14.8 | 102 | 99 | (AV) VBW:270Hz |
| Vert. | 436.00 | QP | 38.5 | 16.4 | 9.3 | 31.9 | 32.3 | 46.0 | 13.7 | 116 | 179 | |
| Vert. | 528.00 | QP | 37.7 | 17.5 | 9.6 | 31.9 | 32.9 | 46.0 | 13.1 | 100 | 97 | |
| Vert. | 536.00 | QP | 38.4 | 17.6 | 9.6 | 31.9 | 33.7 | 46.0 | 12.3 | 100 | 75 | |
| Vert. | 2483.50 | PK | 53.4 | 27.5 | 13.7 | 41.1 | 53.5 | 73.9 | 20.4 | 100 | 156 | |
| Vert. | 2624.00 | PK | 48.0 | 27.8 | 13.9 | 41.2 | 48.5 | 73.9 | 25.4 | 100 | 208 | |
| Vert. | 2648.00 | PK | 48.0 | 27.9 | 14.0 | 41.2 | 48.7 | 73.9 | 25.2 | 100 | 208 | |
| Vert. | 2672.00 | PK | 48.1 | 27.9 | 14.1 | 41.2 | 48.9 | 73.9 | 25.0 | 100 | 208 | |
| Vert. | 4960.00 | PK | 54.2 | 31.4 | 6.0 | 40.8 | 50.8 | 73.9 | 23.1 | 107 | 22 | |
| Vert. | 7440.00 | PK | 48.8 | 37.0 | 7.3 | 41.5 | 51.6 | 73.9 | 22.3 | 100 | 0 | |
| Vert. | 9920.00 | PK | 44.5 | 38.8 | 8.8 | 38.8 | 53.3 | 73.9 | 20.6 | 100 | 0 | |
| Vert. | 12400.00 | PK | 45.1 | 39.4 | 10.3 | 39.2 | 55.6 | 73.9 | 18.3 | 100 | 0 | |
| Vert. | 19835.97 | PK | 48.9 | 40.6 | -2.7 | 43.4 | 43.4 | 73.9 | 30.5 | 100 | 79 | |
| Vert. | 2483.50 | AV | 37.3 | 27.5 | 13.7 | 41.1 | 37.4 | 53.9 | 16.5 | 100 | 156 | (AV) VBW:270Hz |
| Vert. | 2624.00 | AV | 37.3 | 27.8 | 13.9 | 41.2 | 37.8 | 53.9 | 16.1 | 100 | 208 | (AV) VBW:270Hz |
| Vert. | 2648.00 | AV | 37.0 | 27.9 | 14.0 | 41.2 | 37.7 | 53.9 | 16.2 | 100 | 208 | (AV) VBW:270Hz |
| Vert. | 2672.00 | AV | 37.1 | 27.9 | 14.1 | 41.2 | 37.9 | 53.9 | 16.0 | 100 | 208 | (AV) VBW:270Hz |
| Vert. | 4960.00 | AV | 47.2 | 31.4 | 6.0 | 40.8 | 43.8 | 53.9 | 10.1 | 107 | 22 | (AV) VBW:270Hz |
| Vert. | 7440.00 | AV | 36.3 | 37.0 | 7.3 | 41.5 | 39.1 | 53.9 | 14.8 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 9920.00 | AV | 33.1 | 38.8 | 8.8 | 38.8 | 41.9 | 53.9 | 12.0 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 12400.00 | AV | 33.5 | 39.4 | 10.3 | 39.2 | 44.0 | 53.9 | 9.9 | 100 | 0 | (AV) VBW:270Hz |
| Vert. | 19835.97 | AV | 42.6 | 40.6 | -2.7 | 43.4 | 37.1 | 53.9 | 16.8 | 100 | 79 | (AV) VBW:270Hz |

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amplifier)

Spurious emission, VBW (Average) Calculation chart

Tx, Bluetooth, BDR, PRBS9

VBW (Average) Calculation

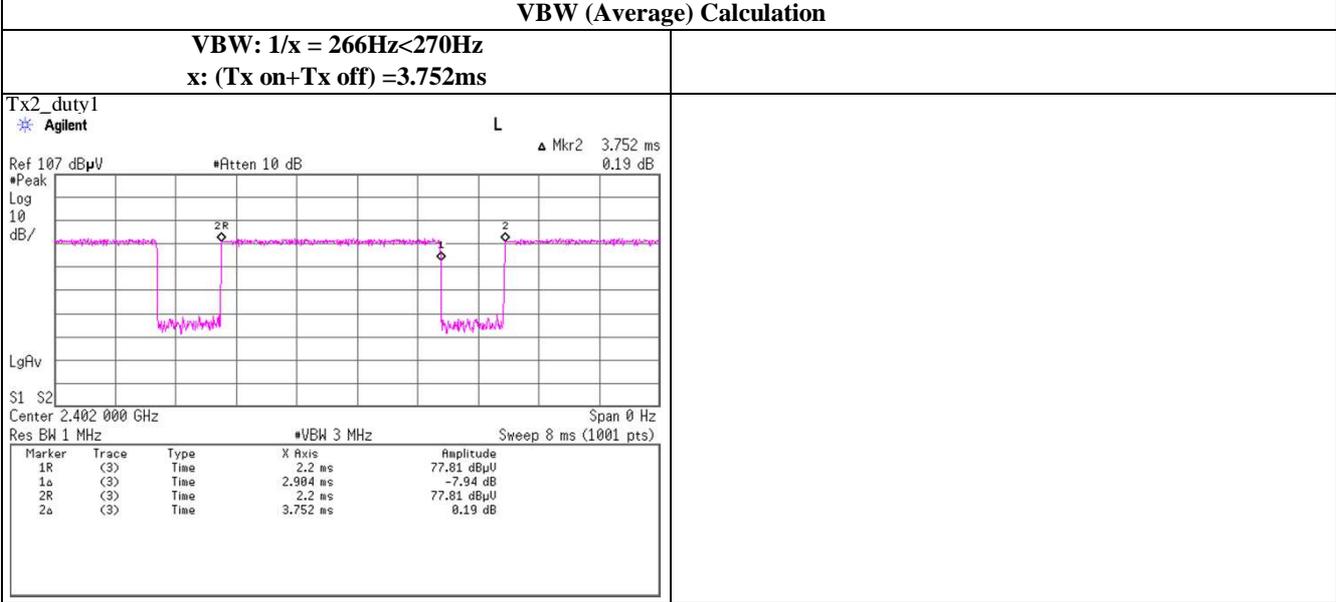


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Spurious emission, VBW (Average) Calculation chart

Tx, Bluetooth, EDR, PRBS9

VBW (Average) Calculation

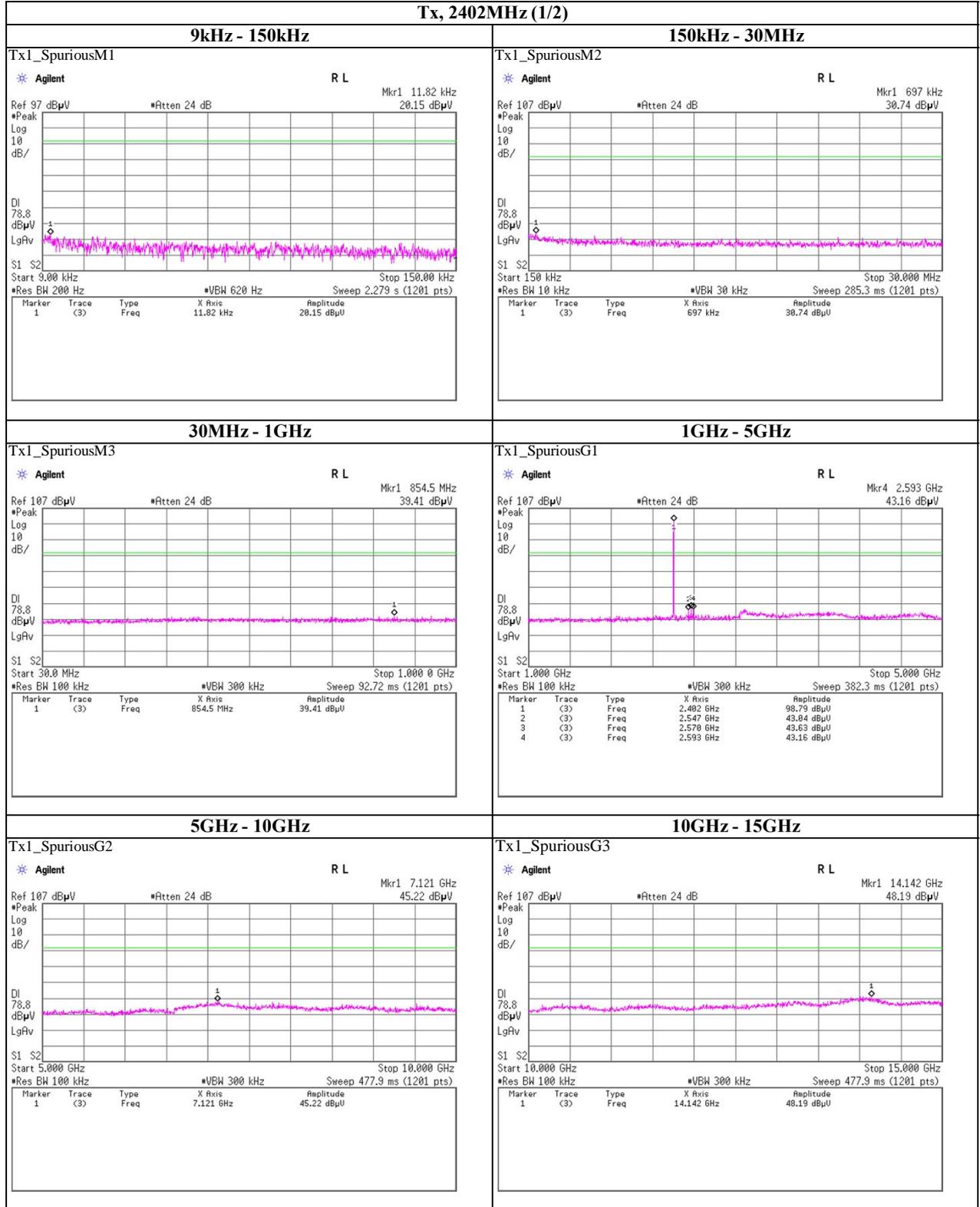


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Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (1/2)



UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

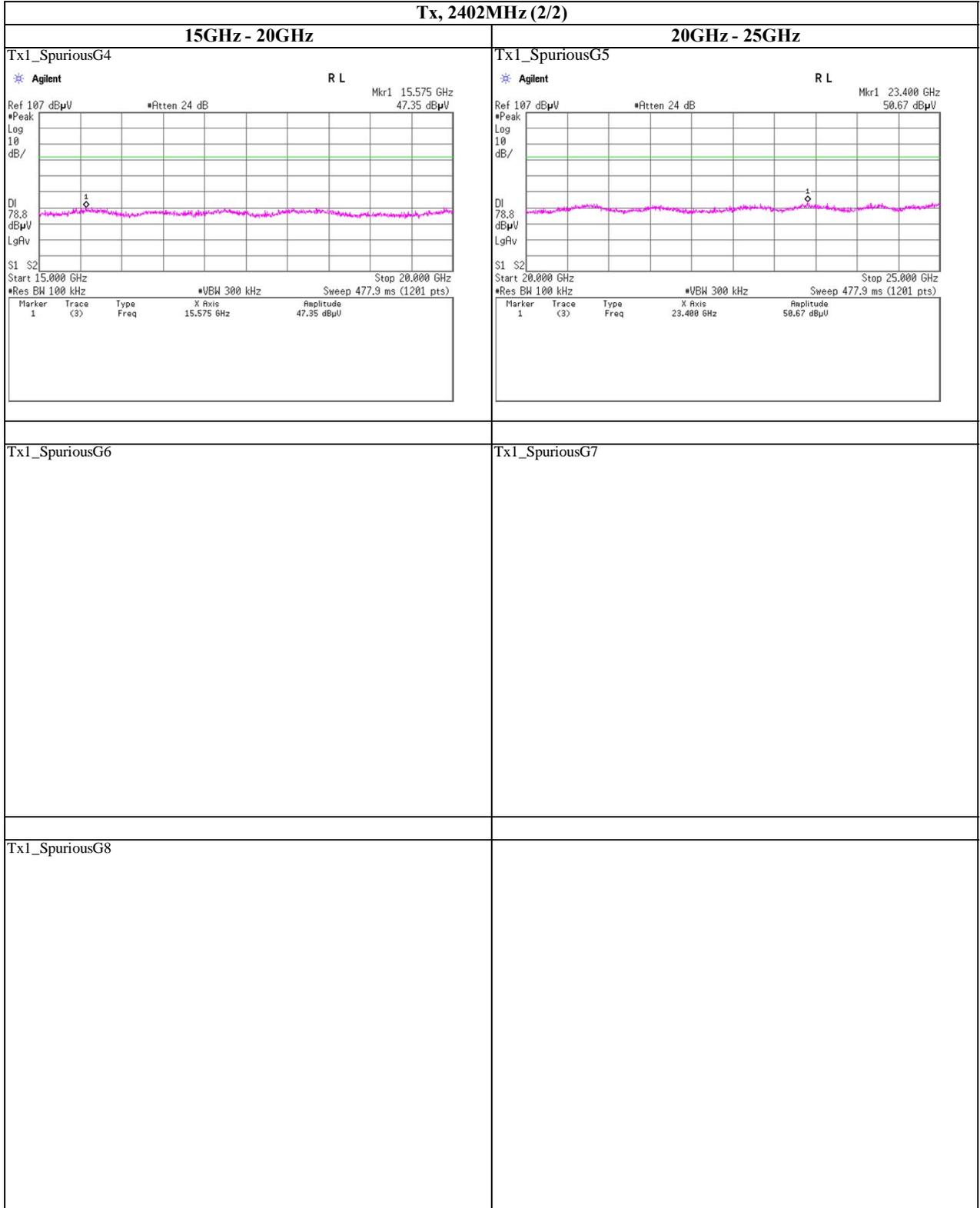
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (2/2)



UL Japan, Inc.

Shonan EMC Lab.

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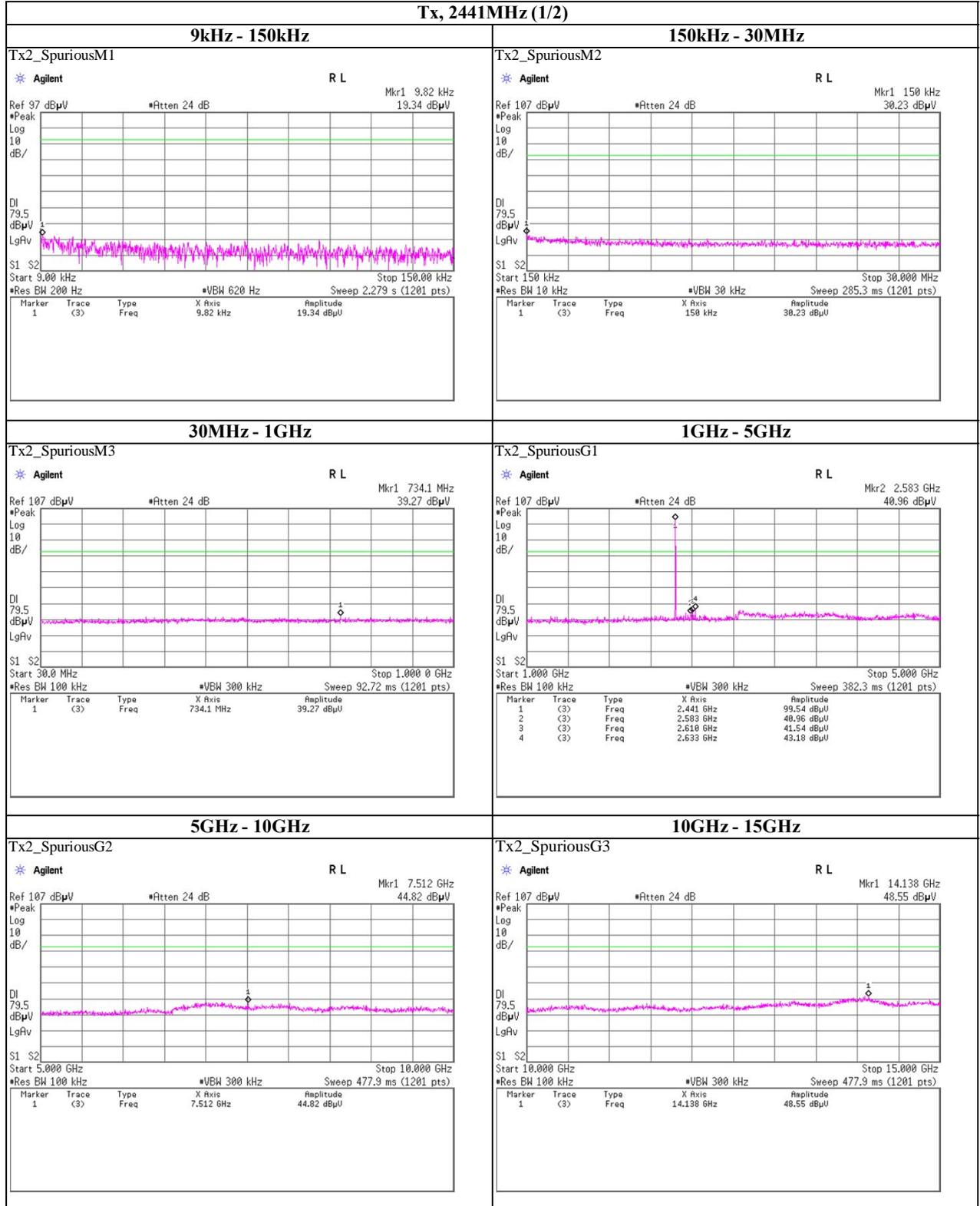
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (1/2)



UL Japan, Inc.

Shonan EMC Lab.

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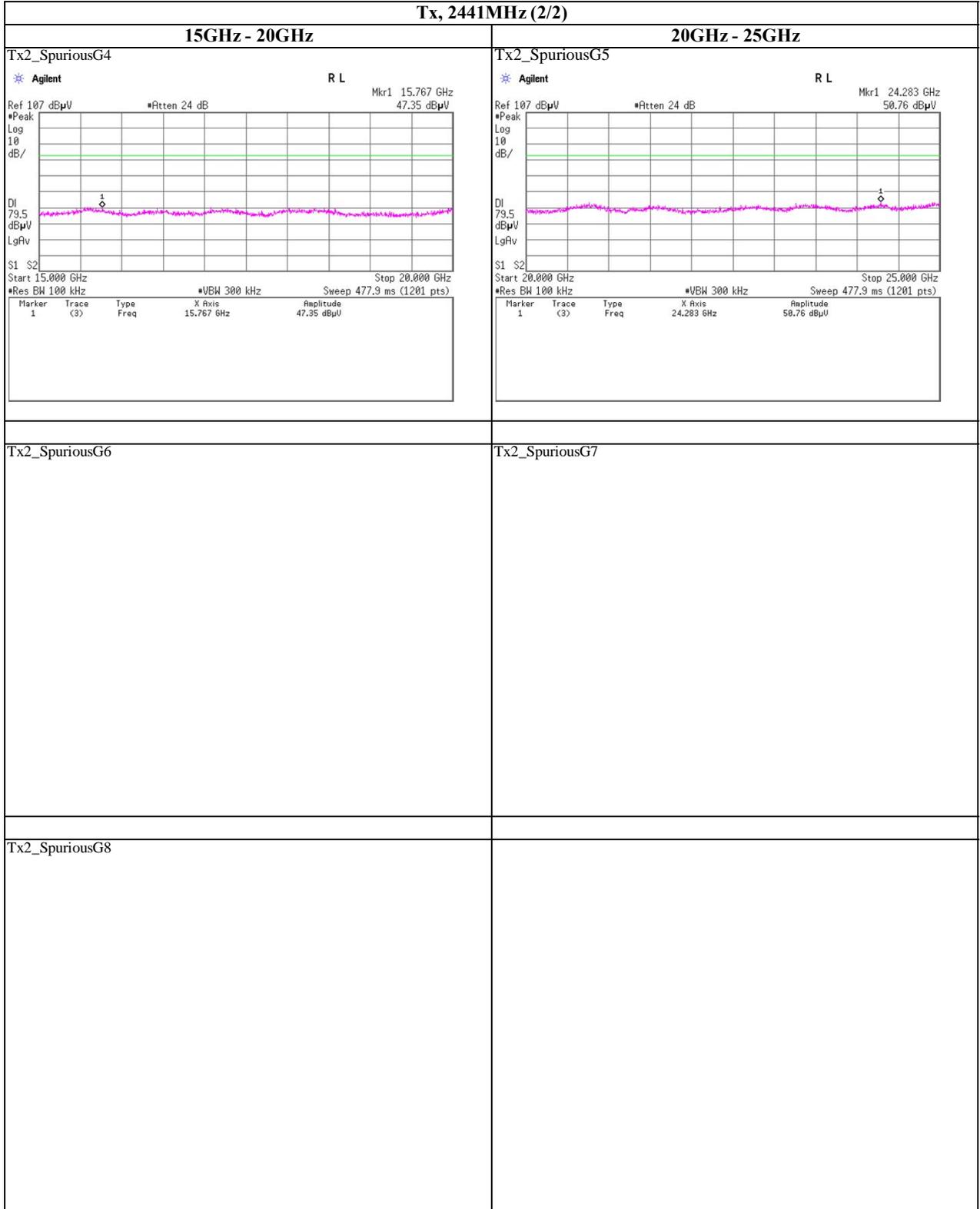
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (2/2)



UL Japan, Inc.

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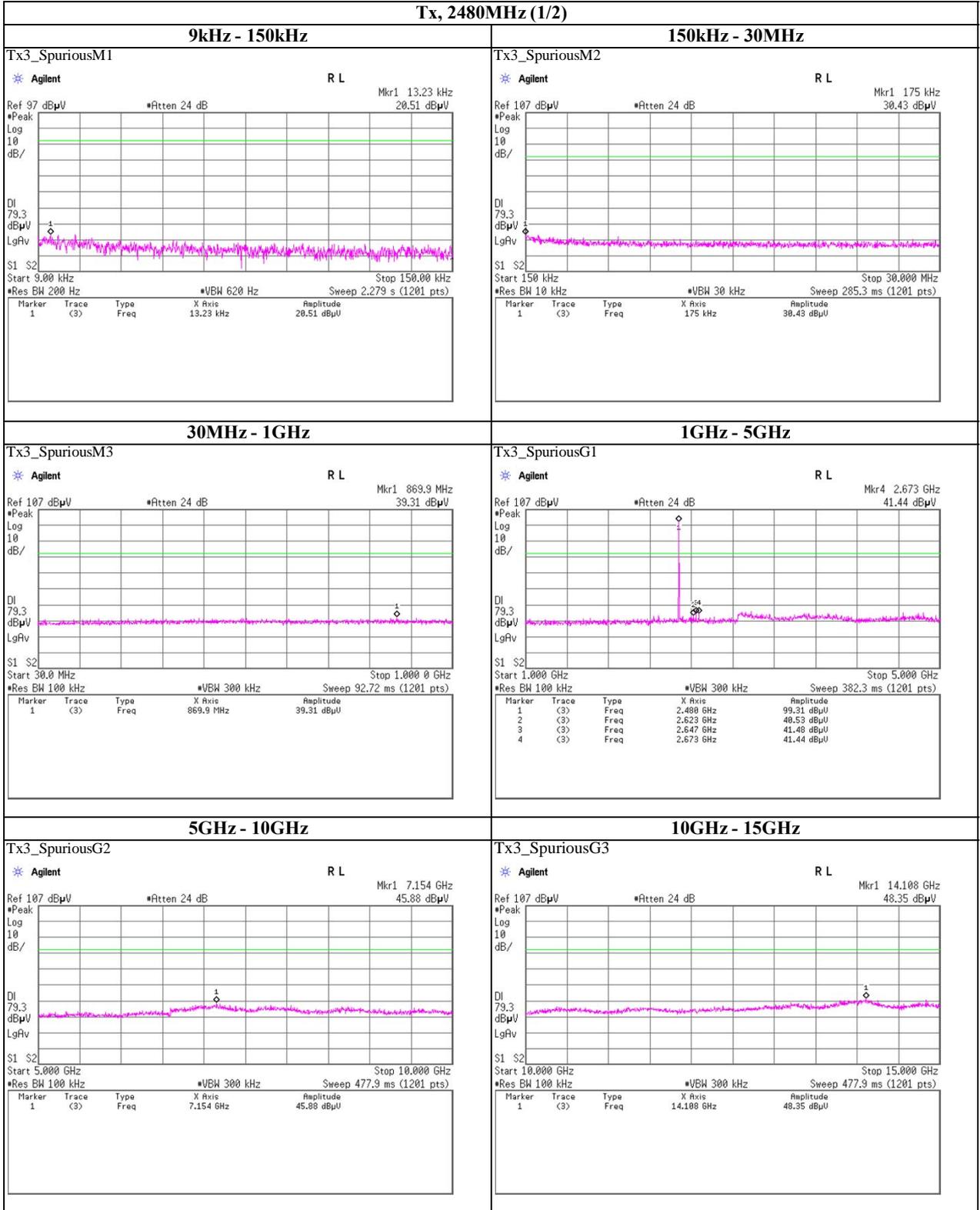
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Tx, 2480MHz (1/2)



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Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (2/2)

| 15GHz - 20GHz | 20GHz - 25GHz | | | | | | | | | | | | | | | | | | | | |
|---|------------------------------|-------|------------|------------|-----------|---|-----|------|------------|------------|---|--------|-------|------|--------|-----------|---|-----|------|------------|------------|
| <p>Tx3_SpuriousG4</p> <p>Agilent R L</p> <p>Ref 107 dBµV #Atten 24 dB Mkr1 15.646 GHz 48.12 dBµV</p> <p>Start 15.000 GHz Stop 20.000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 477.9 ms (1201 pts)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(3)</td> <td>Freq</td> <td>15.646 GHz</td> <td>48.12 dBµV</td> </tr> </tbody> </table> | Marker | Trace | Type | X Axis | Amplitude | 1 | (3) | Freq | 15.646 GHz | 48.12 dBµV | <p>Tx3_SpuriousG5</p> <p>Agilent R L</p> <p>Ref 107 dBµV #Atten 24 dB Mkr1 24.938 GHz 50.65 dBµV</p> <p>Start 20.000 GHz Stop 25.000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 477.9 ms (1201 pts)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(3)</td> <td>Freq</td> <td>24.938 GHz</td> <td>50.65 dBµV</td> </tr> </tbody> </table> | Marker | Trace | Type | X Axis | Amplitude | 1 | (3) | Freq | 24.938 GHz | 50.65 dBµV |
| Marker | Trace | Type | X Axis | Amplitude | | | | | | | | | | | | | | | | | |
| 1 | (3) | Freq | 15.646 GHz | 48.12 dBµV | | | | | | | | | | | | | | | | | |
| Marker | Trace | Type | X Axis | Amplitude | | | | | | | | | | | | | | | | | |
| 1 | (3) | Freq | 24.938 GHz | 50.65 dBµV | | | | | | | | | | | | | | | | | |
| <p>Tx3_SpuriousG6</p> | <p>Tx3_SpuriousG7</p> | | | | | | | | | | | | | | | | | | | | |
| <p>Tx3_SpuriousG8</p> | | | | | | | | | | | | | | | | | | | | | |

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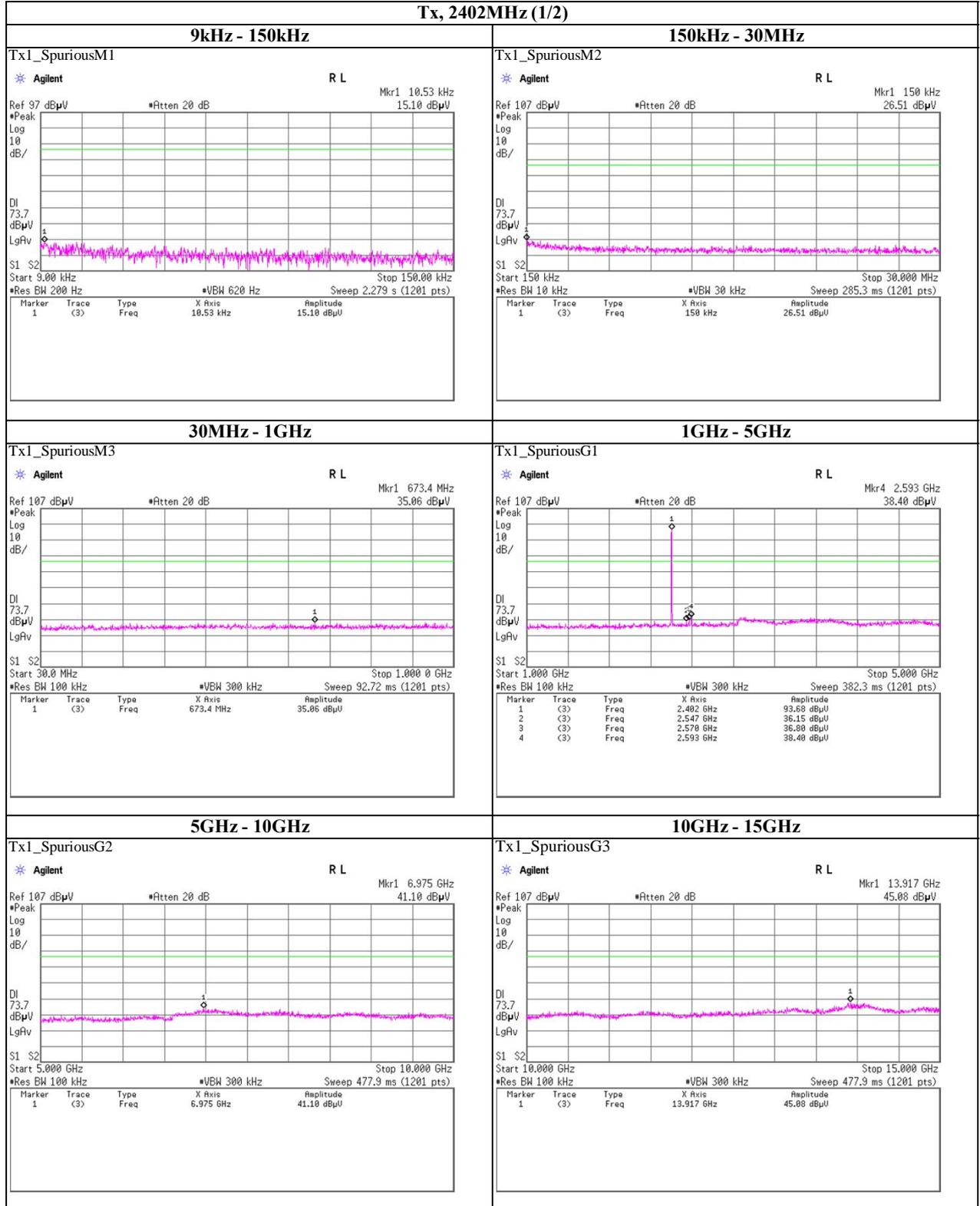
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (1/2)



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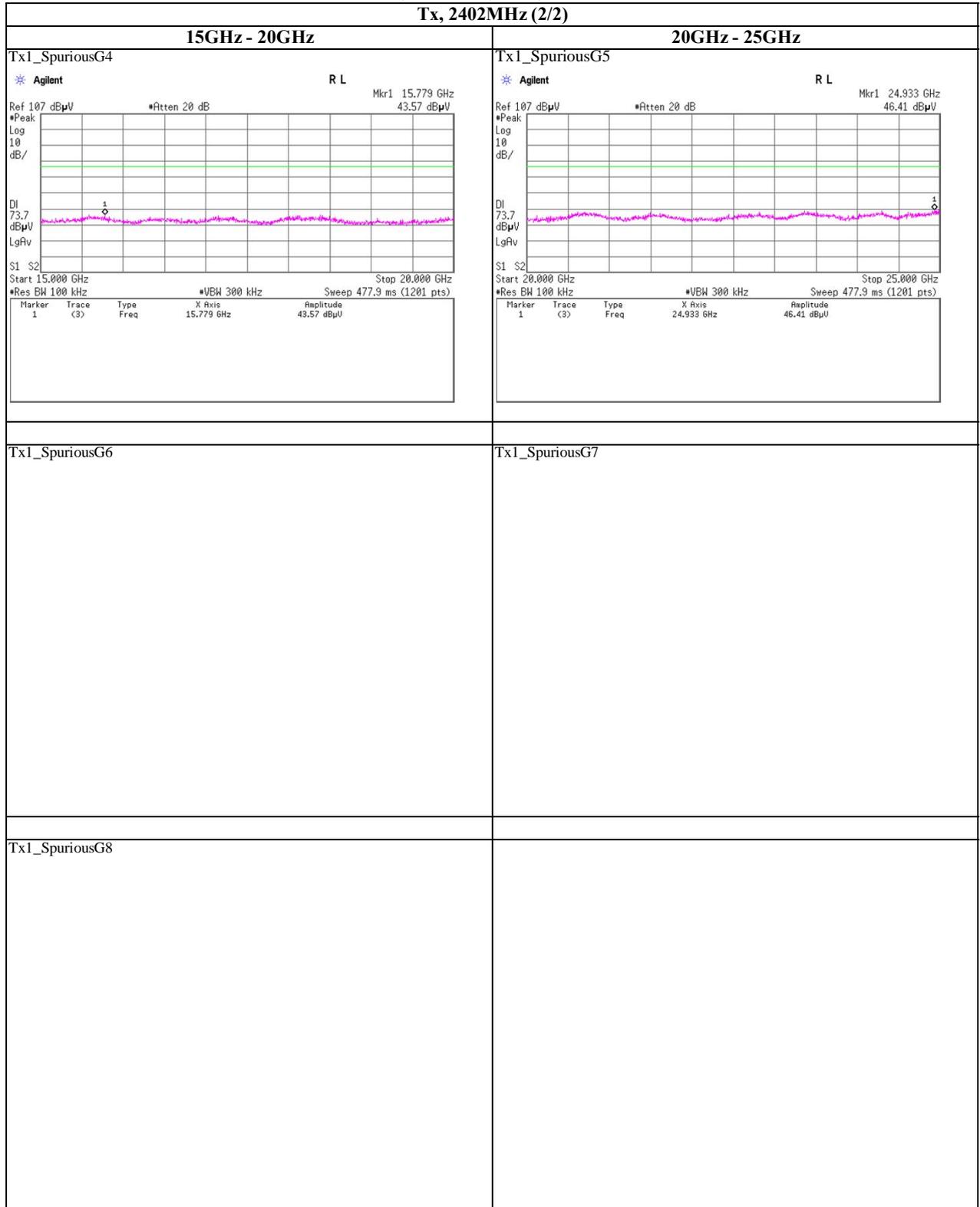
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (2/2)



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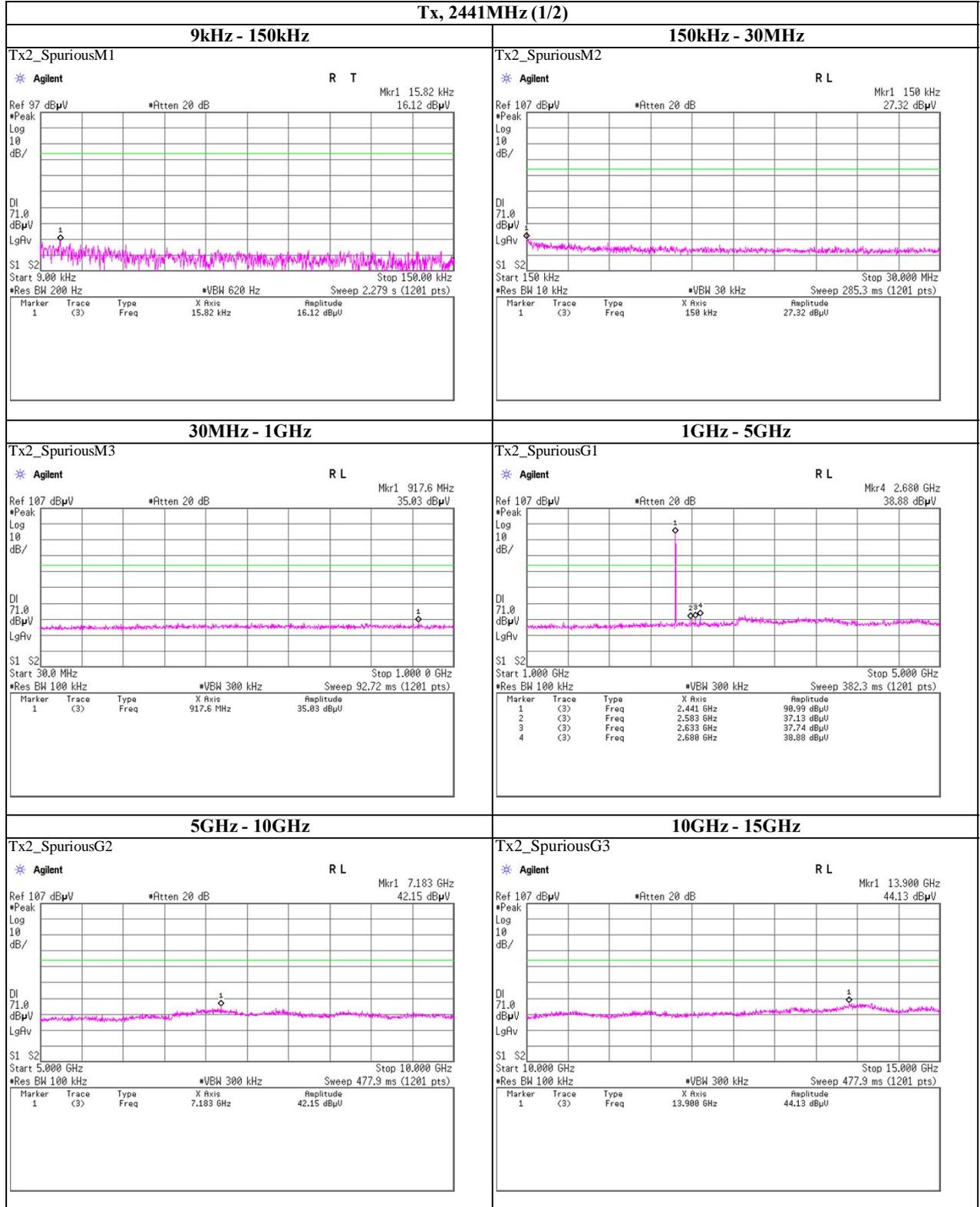
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (1/2)



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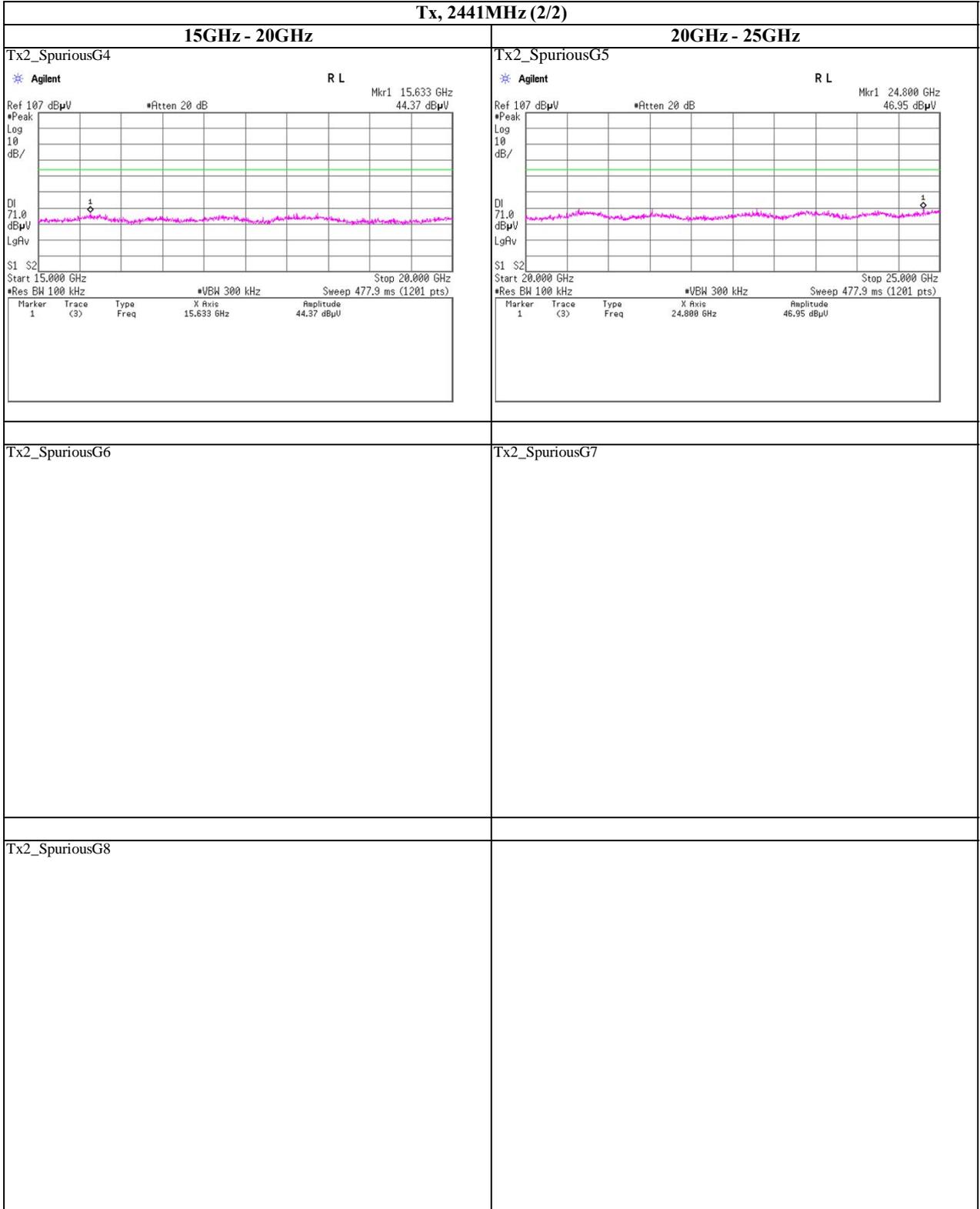
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (2/2)



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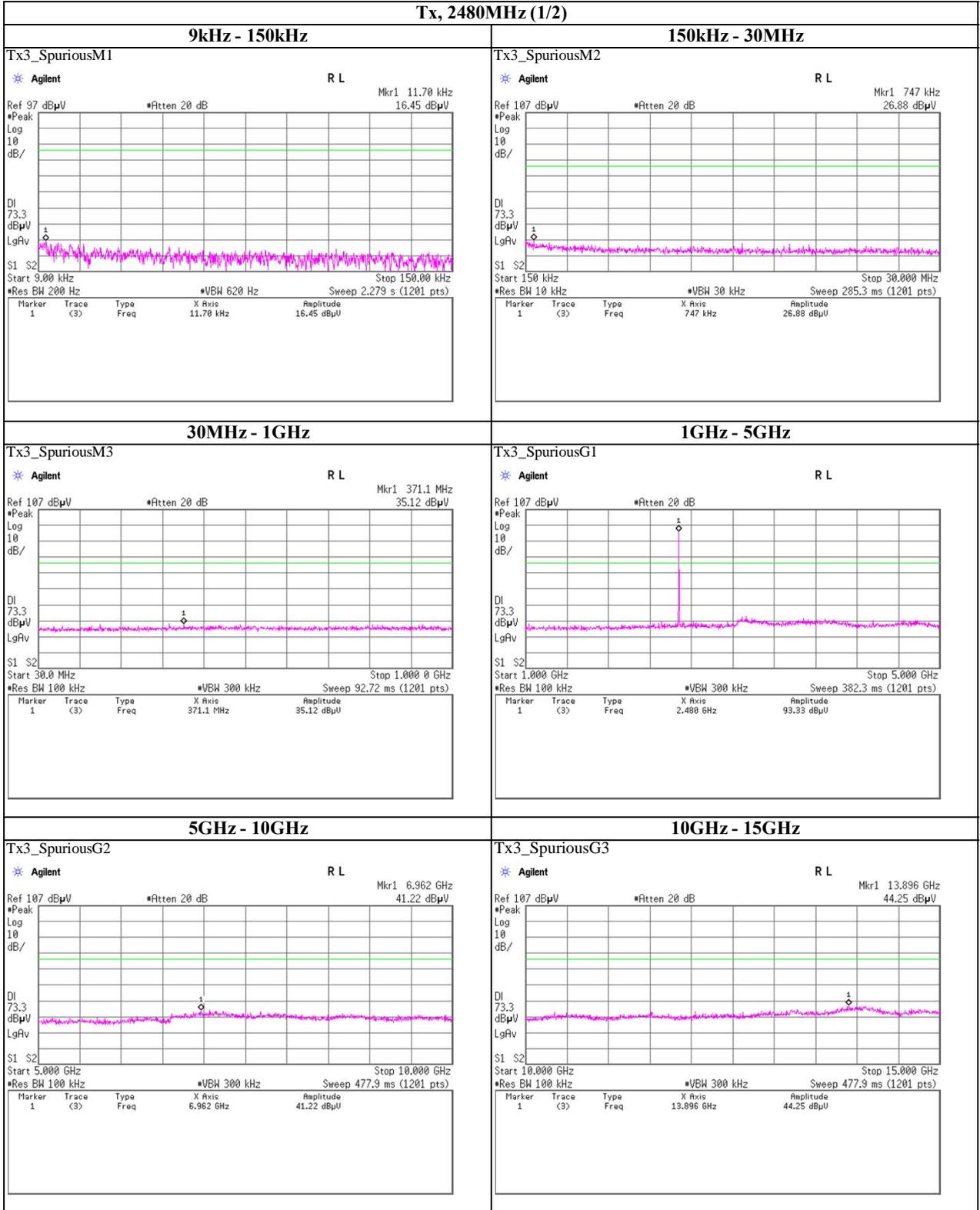
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Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (1/2)



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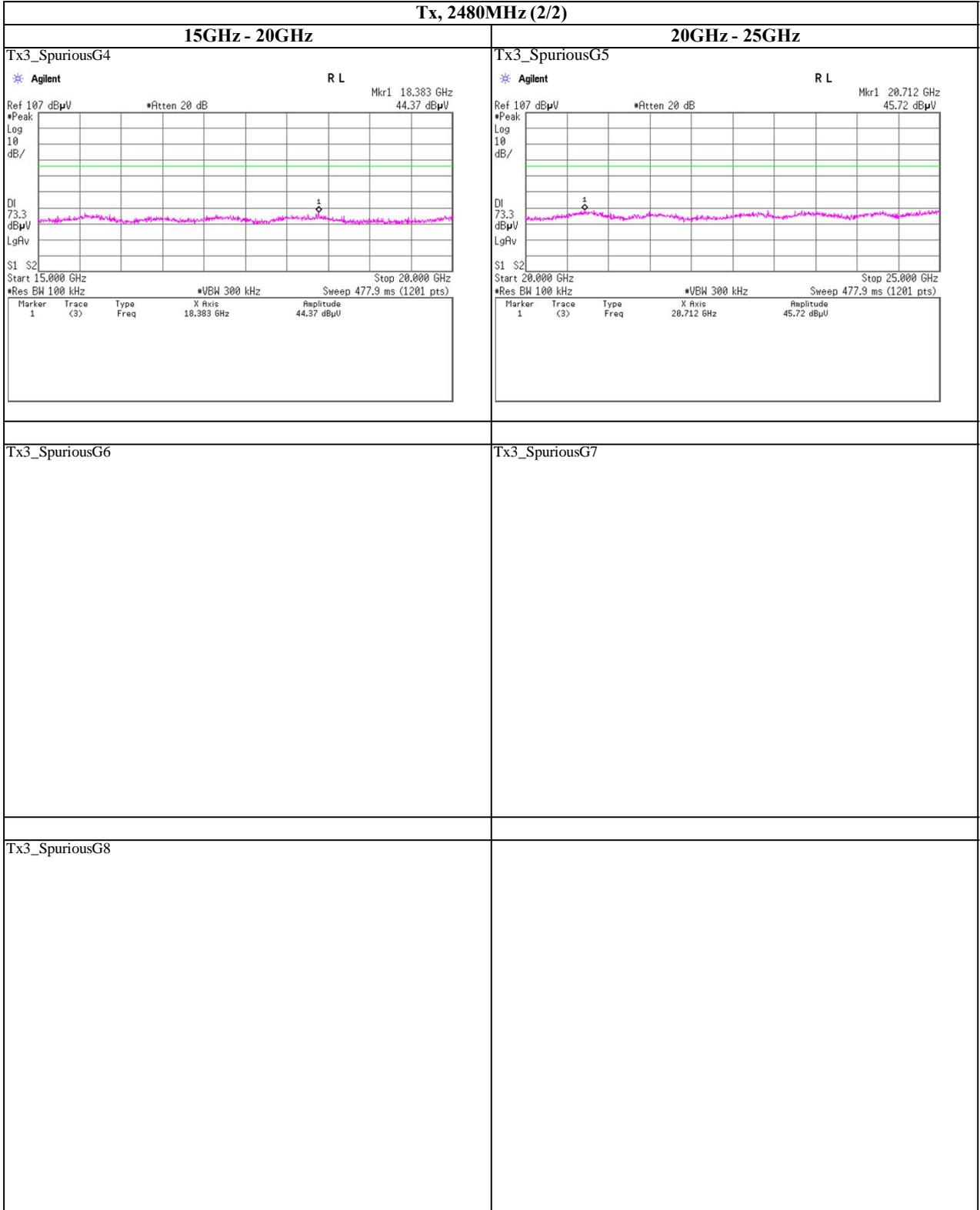
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Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (2/2)



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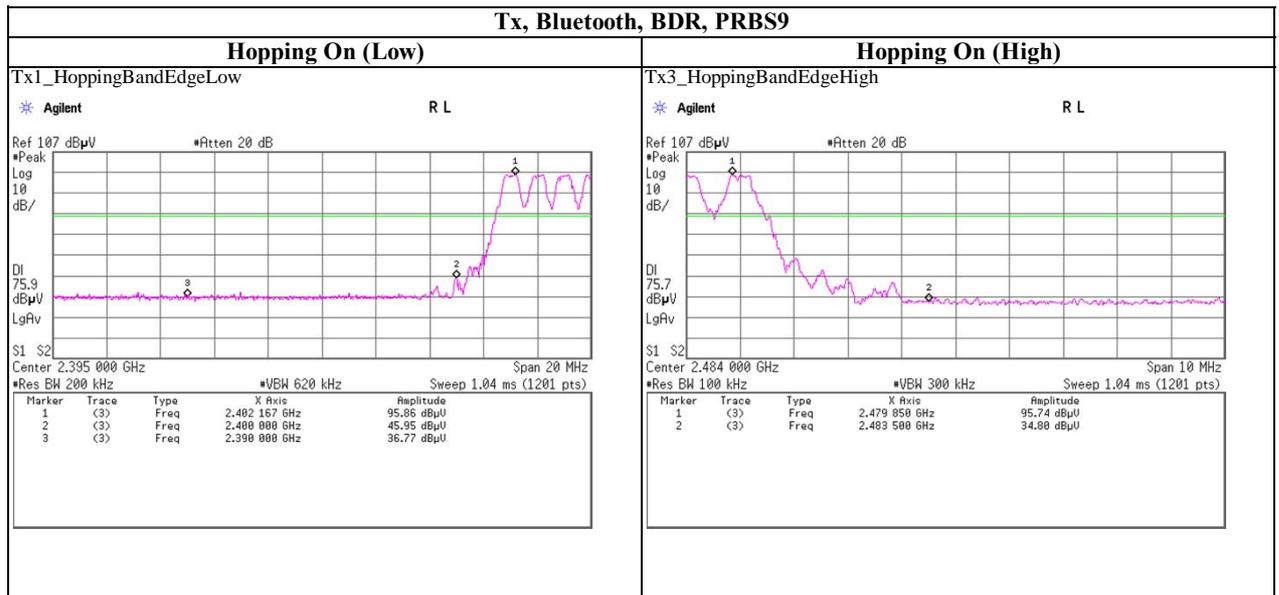
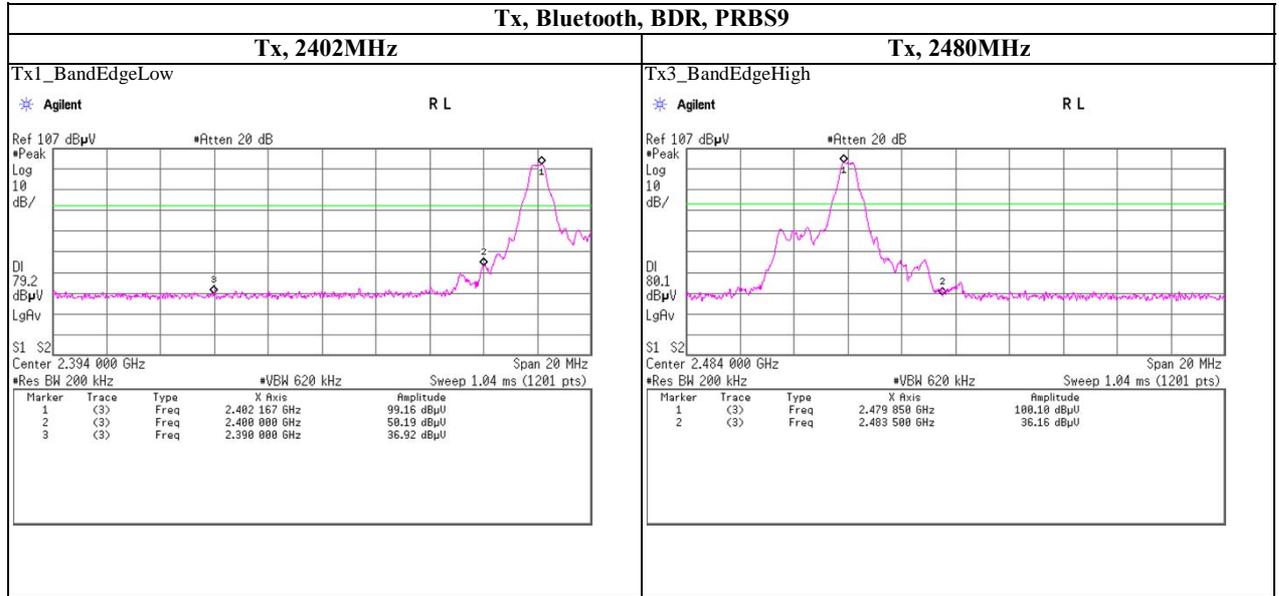
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Spurious emission (Conducted)

Band Edge compliance



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Shonan EMC Lab.

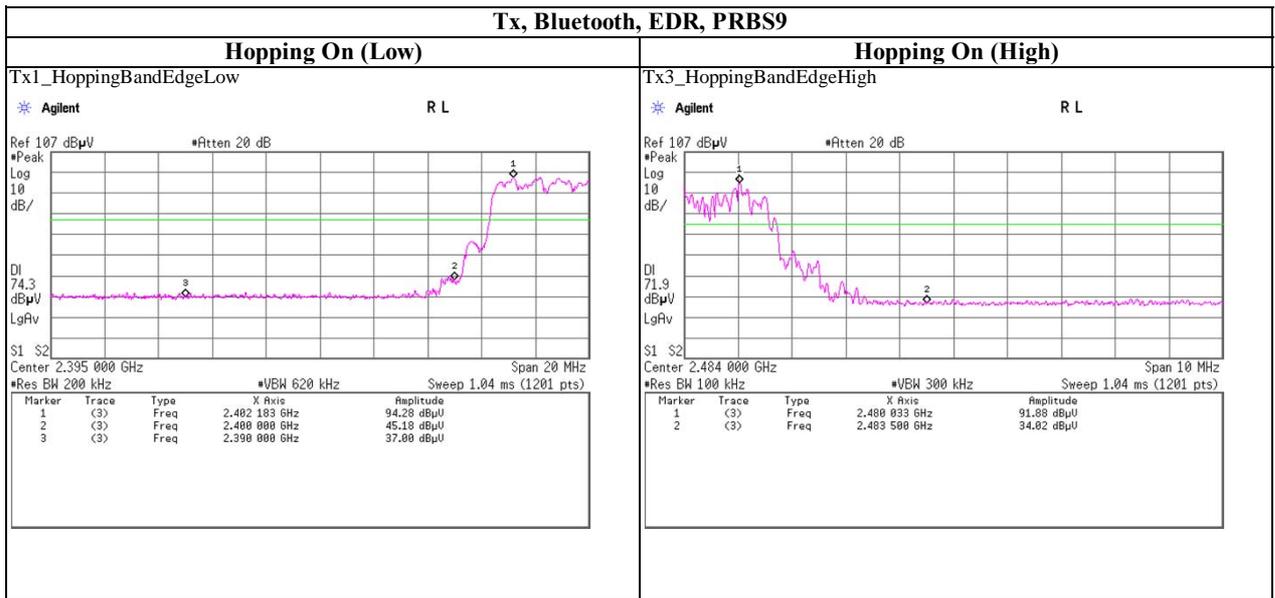
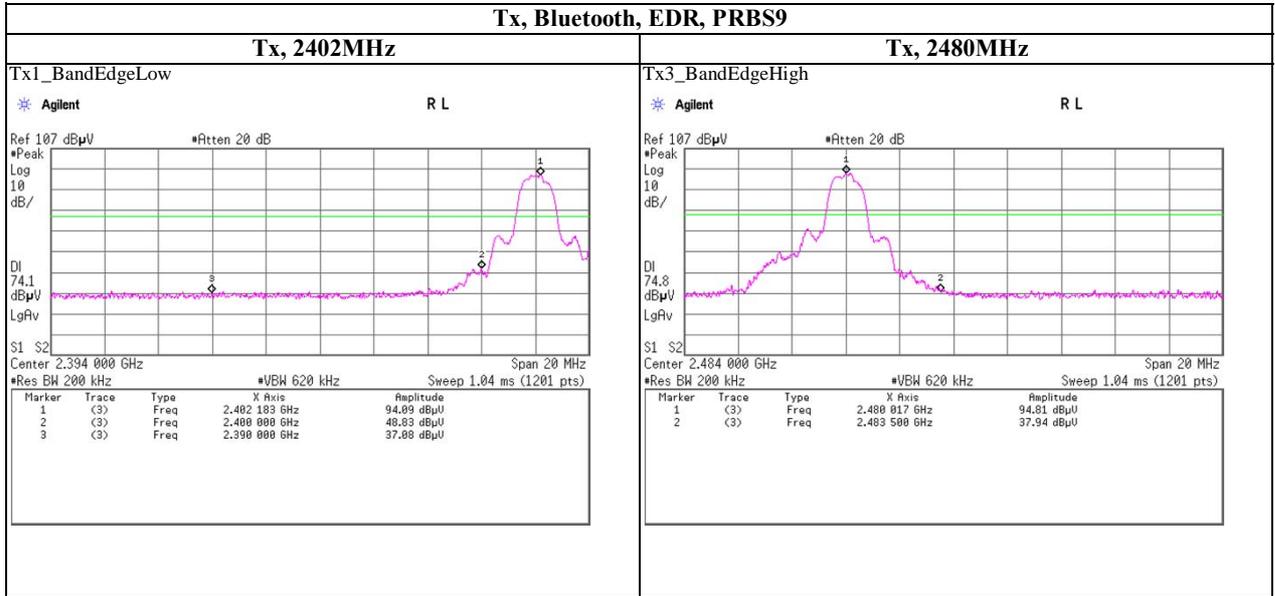
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99% Occupied Bandwidth

| Tx, Bluetooth, BDR, PRBS9 | |
|--|---|
| Tx, 2402MHz | Tx, 2441MHz |
| <p>Tx1_99OBW</p> <p>Agilent R L</p> <p>Occupied Bandwidth 793.9744 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error -3.045 kHz x dB Bandwidth 910.693 kHz*</p> | <p>Tx2_99OBW</p> <p>Agilent R L</p> <p>Occupied Bandwidth 801.1409 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error -2.472 kHz x dB Bandwidth 865.526 kHz*</p> |
| <p>Tx3_99OBW</p> <p>Agilent R L</p> <p>Occupied Bandwidth 796.7064 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error 94.363 kHz x dB Bandwidth 908.380 kHz*</p> | <p>Tx2_Hopping99OBW</p> <p>Agilent R L</p> <p>Occupied Bandwidth 78.5219 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 59.674 kHz x dB Bandwidth 81.114 MHz*</p> |
| (Reference) Tx, Inquiry | (Reference) Tx, Inquiry, Hopping |
| <p>Tx4_99OBW</p> <p>Agilent</p> <p>Occupied Bandwidth 882.2559 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 21.274 kHz x dB Bandwidth 1.039 MHz*</p> | <p>Tx4_Hopping99OBW</p> <p>Agilent</p> <p>Occupied Bandwidth 77.9822 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -487.366 kHz x dB Bandwidth 80.031 MHz*</p> |

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99% Occupied Bandwidth

| Tx, Bluetooth, EDR, PRBS9 | |
|---|---|
| Tx, 2402MHz | Tx, 2441MHz |
| <p>Tx1_99OBW</p> <p>Agilent R L</p> <p>Ref 107 dBμV *Atten 20 dB</p> <p>Center 2.402 000 0 GHz Span 3 MHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.00 ms (1201 pts)</p> <p>Occupied Bandwidth 1.1789 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error 35.482 kHz x dB Bandwidth 1.279 MHz*</p> | <p>Tx2_99OBW</p> <p>Agilent R L</p> <p>Ref 107 dBμV *Atten 20 dB</p> <p>Center 2.441 000 0 GHz Span 3 MHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.00 ms (1201 pts)</p> <p>Occupied Bandwidth 1.1743 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error 35.230 kHz x dB Bandwidth 1.285 MHz*</p> |
| Tx, 2480MHz | Tx, Hopping On |
| <p>Tx3_99OBW</p> <p>Agilent R L</p> <p>Ref 107 dBμV *Atten 20 dB</p> <p>Center 2.480 000 0 GHz Span 3 MHz *Res BW 30 kHz *VBW 100 kHz Sweep 10.00 ms (1201 pts)</p> <p>Occupied Bandwidth 1.1810 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error 31.144 kHz x dB Bandwidth 1.286 MHz*</p> | <p>Tx2_Hopping99OBW</p> <p>Agilent R L</p> <p>Ref 107 dBμV *Atten 20 dB</p> <p>Center 2.441 000 GHz Span 100 MHz *Res BW 1 MHz *VBW 3 MHz Sweep 1.04 ms (1201 pts)</p> <p>Occupied Bandwidth 78.7040 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 5.473 kHz x dB Bandwidth 81.559 MHz*</p> |
| <p>Tx4_99OBW</p> | <p>Tx4_Hopping99OBW</p> |

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Test Report No : 32AE0215-SH-02-A

APPENDIX 2

Test Instruments

EMI test equipment

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|--------------------------------|---------------------------|---|--|-------------------------|-----------|------------------------------------|
| SSA-02 | Spectrum Analyzer | Agilent | E4448A | MY48250106 | AT | 2011/03/07 * 12 |
| SCC-G12 | Coaxial Cable | Suhner | SUCOFLEX 102 | 30790/2 | AT | 2011/03/23 * 12 |
| SAT10-09 | Attenuator | Weinschel Corp. | 54A-10 | W5692 | AT | 2010/11/24 * 12 |
| SPM-06 | Power Meter | Anritsu | ML2495A | 0850009 | AT | 2011/04/12 * 12 |
| SPSS-03 | Power sensor | Anritsu | MA2411B | 0917063 | AT | 2011/04/12 * 12 |
| SAT10-08 | Attenuator | Weinschel | W54-10 | - | AT | 2011/03/23 * 12 |
| SCC-G12 | Coaxial Cable | Suhner | SUCOFLEX 102 | 30790/2 | AT | 2011/03/23 * 12 |
| SOS-09 | Humidity Indicator | A&D | AD-5681 | 4061484 | AT | 2011/03/02 * 12 |
| SAF-06 | Pre Amplifier | TOYO Corporation | TPA0118-36 | 1440491 | RE | 2011/07/19 * 12 |
| SCC-G03 | Coaxial Cable | Suhner | SUCOFLEX 104A | 46499/4A | RE | 2011/04/28 * 12 |
| SCC-G23 | Coaxial Cable | Suhner | SUCOFLEX 104 | 297342/4 | RE | 2011/05/27 * 12 |
| SHA-03 | Horn Antenna | Schwarzbeck | BBHA9120D | 9120D-739 | RE | 2011/08/28 * 12 |
| SOS-05 | Humidity Indicator | A&D | AD-5681 | 4062518 | RE | 2011/02/23 * 12 |
| SSA-02 | Spectrum Analyzer | Agilent | E4448A | MY48250106 | RE | 2011/03/07 * 12 |
| SJM-10 | Measure | PROMART | SEN1935 | - | RE | - |
| COTS-SEMI-1 | EMI Software | TSJ | TEPTO-DV(RE,CE,RF,IMF) | - | RE | - |
| SFL-02 | Highpass Filter | MICRO-TRONICS | HPM50111 | 051 | RE | 2010/12/15 * 12 |
| SAT10-04 | Attenuator(above1GHz) | Agilent | 8493C-010 | 74863 | RE | 2010/12/15 * 12 |
| SHA-05 | Horn Antenna | ETS LINDGREN | 3160-09 | LM4210 | RE | 2011/03/15 * 12 |
| SAF-09 | Pre Amplifier | TOYO Corporation | HAP18-26W | 00000018 | RE | 2011/03/16 * 12 |
| SCC-G18 | Coaxial Cable | Suhner | SUCOFLEX 104A | 46292/4A | RE | 2011/03/16 * 12 |
| SAF-03 | Pre Amplifier | SONOMA | 310N | 290213 | RE | 2011/02/17 * 12 |
| SAT6-03 | Attenuator | JFW | 50HF-006N | - | RE | 2011/02/17 * 12 |
| SBA-03 | Biconical Antenna | Schwarzbeck | BBA9106 | 91032666 | RE | 2010/10/15 * 12 |
| SCC-C1/C2/C3/C4/C5/C10/SRSE-03 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-271(RF Selector) | RE | 2011/04/28 * 12 |
| SLA-03 | Logperiodic Antenna | Schwarzbeck | UHALP9108A | UHALP 9108-A0901 | RE | 2010/10/15 * 12 |
| STR-03 | Test Receiver | Rohde & Schwarz | ESI40 | 100054/040 | RE | 2011/07/28 * 12 |
| SAEC-03(NSA) | Semi-Anechoic Chamber | TDK | SAEC-03(NSA) | 3 | RE | 2011/09/23 * 12 |
| | | | | | | |

The expiration date of the calibration is the end of the expired month .
 As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

- RE: Radiated emission ,
- AT: Antenna terminal disturbance voltage