



Test report No. : 10007234S-A  
Page : 1 of 61  
Issued date : June 5, 2013  
Revised date : June 13, 2013  
FCC ID : AJDK074

# **RADIO TEST REPORT**

**Test Report No.: 10007234S-A**

**Applicant** : PIONEER CORPORATION  
**Type of Equipment** : Car Audio with Bluetooth  
**Model No.** : CVX-5338  
**FCC ID** : AJDK074  
**Test regulation** : FCC Part15 Subpart C: 2012  
**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:** May 16 to 24, 2013

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

**Approved by :**   
Toyokazu Imamura  
Leader of WiSE Japan,  
UL Verification Service



- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.  
☒ There is no testing item of "Non-accreditation".

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**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400 Facsimile : +81 463 50 6401

13-EM-F0429

## REVISION HISTORY

# Original Test Report No.: 10007234S-A

[illegible]

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

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**SECTION 1: Customer information**

Company Name : PIONEER CORPORATION  
Brand name : Pioneer  
Address : 25-1 Aza-Nishi-machi, Yamada, Kawagoe-shi, Saitama, 350-8555, JAPAN  
Telephone Number : +81-49-228-6415  
Facsimile Number : +81-49-228-6493  
Contact Person : Makoto Kaieda

**SECTION 2: Equipment under test (E.U.T.)****2.1 Identification of E.U.T.**

Type of Equipment : Car Audio with Bluetooth  
Model No. : CVX-5338  
Serial No. : See Section 4.  
Rating : DC 12V  
Country of Mass-production : Japan  
Condition of EUT : Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)  
Modification of EUT : No modification by the test lab.  
Receipt Date of Sample : May 15, 2013

**2.2 Product description**

Model: CVX-5338 (referred to as the EUT in this report) is a Car Audio with Bluetooth.

Radio specification:

Wireless LAN:

Equipment type : Transceiver  
Frequency of operation : 2412-2462MHz  
Bandwidth & channel spacing : 20MHz & 5MHz  
Type of modulation : BPSK, QPSK, CCK, OFDM  
Antenna type : Ceramic Patch Antennas For 2.4GHz  
Antenna gain with cable loss : +2dBi (max)  
Antenna connector type : U.FL-LP-066  
Operation temperature range : -20 to +65 deg.C.

Bluetooth:

Equipment type : Transceiver  
Frequency of operation : 2402-2480MHz  
Bandwidth & channel spacing : 79MHz & 1MHz  
Type of modulation : GFSK,  $\pi/4$ DQPSK, 8DPSK  
Antenna type : Ceramic Patch Antennas For 2.4GHz  
Antenna gain with cable loss : +2dBi (max)  
Antenna connector type : U.FL-LP-066  
Operation temperature range : -20 to +65 deg.C.

Refer to the test report: 10007234S-C for Bluetooth part.

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## FCC 15.31 (e)

The equipment provides the wireless transmitter with stable power supply (DC3.3V). Therefore, the equipment complies with the requirement.

## FCC 15.203

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

## Clock Frequency:

| Reason For Use                         | Frequency              |
|----------------------------------------|------------------------|
| SYSTEM MICROCOMPUTER                   | 16MHz                  |
| CAN MICROCOMPUTER                      | 8MHz                   |
| Dirana                                 | 41.6MHz                |
| VDEC                                   | 32MHz                  |
| GVIF TX                                | 24MHz                  |
| GPS RX                                 | 26MHz                  |
| SoC int CLK (33M_PLL)                  | 1066.667MHz            |
| SoC int CLK (48M_PLL)                  | 864.0MHz               |
| SoC MASTER CLK                         | 33.33MHz               |
| SoC DOTCLK                             | 37MHz                  |
| SoC USBCLK                             | 48.0MHz                |
| VCXO (SoC)                             | 27.0MHz                |
| Audio PLL IC (SoC)                     | 24.576MHz              |
| Audio PLL IC (SoC)                     | 16.934MHz              |
| Audio PLL IC(ADC for MIC)              | 6.144MHz               |
| DSP MCLK (HD)                          | 24.0MHz                |
| SYS CLK (XM)                           | 24.265MHz              |
| I2C communication SYS uCom ↔E2PROM     | 100k~400kHz            |
| I2C communication SYS uCom ↔VDEC       | 0.4MHz                 |
| I2C communication SYS uCom ↔LVDS       | 400kbps                |
| I2C communication SYS uCom ↔GVIF       | 100kHz or 400kHz       |
| I2C communication SYS uCom ↔Dirana     | 0.3MHz                 |
| I2C communication Dirana ↔L-Dice       | 0.4MHz                 |
| I2C communication Dirana ↔Hero         | 0.4MHz                 |
| I2C communication SoC ↔iPod            | 100~400kHz             |
| SPI communication SYS uCom ↔KeyScan IC | 0.4MHz                 |
| SPI communication SYS uCom ↔CAN uCom   | 0.6MHz                 |
| SPI communication SYS uCom ↔GVIF       | 0.4MHz                 |
| SPI communication SoC ↔HD Module       | 0.8MHz                 |
| UART communication SYS uCom ↔HD Module | 115kbps                |
| UART communication SYS uCom ↔SoC       | 1.5Mbps                |
| UART communication SYS uCom ↔CD Meca   | 19.2kbps               |
| UART communication SoC ↔BT Module      | 3Mbps                  |
| CAN communication                      | 500kbps                |
| LBSC communication Soc ↔NorFlash       | 66.66MHz               |
| DBSC3 communication Soc ↔DDR3          | 533.33MHz              |
| SD IF SoC ↔SD Card                     | 48MHz                  |
| SD IF SoC ↔WiFi Module                 | 24MHz                  |
| Audio data (I2S)                       | 3.072MHz               |
| Audio data (SPDIF)                     | 2.82MHz                |
| D.RGB666 (Video)                       | 37.007MHz              |
| Digital IF Dirana ↔HD Module           | 0.65MHz                |
| USB2.0 signal                          | 480Mbps                |
| LVDS signal                            | 500MHz                 |
| GVIF signal                            | 500MHz                 |
| Global CAN                             | 500kbps                |
| Local CAN                              | 500kbps                |
| AVC-LAN                                | 12Mbps                 |
| DCDC converter                         | 444.444kHz, 480.000kHz |
| HERO (For HD DATA)                     | 62.4MHz                |

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**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400 Facsimile : +81 463 50 6401

## SECTION 3: Test specification, procedures & results

### 3.1 Test specification

Test specification : Test specification: FCC Part 15 Subpart C: 2012,  
final revised on December 27, 2012 and effective January 28, 2013  
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 has been tested for compliance with FCC Part 15 Subpart B by the customer.

### 3.2 Procedures & Results

| Item                                         | Test Procedure *1) | Specification                   | Remarks              | Deviation  | Worst Margin                                                                                                       | Results  |
|----------------------------------------------|--------------------|---------------------------------|----------------------|------------|--------------------------------------------------------------------------------------------------------------------|----------|
| Conducted emission                           | ANSI C63.10:2009   | FCC 15.207                      | -                    | N/A<br>*2) | N/A                                                                                                                | N/A      |
| 6dB bandwidth                                | ANSI C63.10:2009   | FCC 15.247 (a)(2)               | Conducted            | N/A        | * See data                                                                                                         | Complied |
| Maximum peak output power                    | ANSI C63.10:2009   | FCC 15.247 (b)(3)               | Conducted            | N/A        |                                                                                                                    | Complied |
| Out of band emission & Restricted band edges | ANSI C63.10:2009   | FCC 15.109, 15.247 (d) & 15.209 | Conducted / Radiated | N/A        | 3.7dB<br>Freq.: 816.014MHz<br>Polarization: Vertical<br>Detection: Quasi-Peak<br>Mode: Tx 2462MHz,<br>IEEE 802.11g | Complied |
| Power density                                | ANSI C63.10:2009   | FCC 15.247 (e)                  | Conducted            | N/A        | * See data                                                                                                         | Complied |

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

\*1) These tests were also referred to KDB 558074 v03r01 (FCC), "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

\*2) The test is not applicable since the EUT has no AC mains.

### 3.3 Addition to standard

| Item                     | Test Procedure                  | Specification | Remarks   | Worst Margin | Results |
|--------------------------|---------------------------------|---------------|-----------|--------------|---------|
| Occupied Bandwidth (99%) | ANSI C63.10:2009, RSS-Gen 4.6.1 | -             | Conducted | -            | -       |

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.

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Telephone : +81 463 50 6400 Facsimile : +81 463 50 6401

### 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 <sup>*1</sup> /SR <sup>*2</sup><br>(±) | No.2 SAC/SR<br>(±) | No.3 SAC/SR<br>(±) |
|--------------------------------------------------------|-----------------|-------------------------------------------------|--------------------|--------------------|
| <b>Radiated emission</b><br>(Measurement distance: 3m) | 9kHz-30MHz      | 3.7 dB                                          | 3.7 dB             | 3.6 dB             |
|                                                        | 30MHz-300MHz    | 4.9 dB                                          | 5.1 dB             | 4.9 dB             |
|                                                        | 300MHz-1GHz     | 5.0 dB                                          | 5.2 dB             | 4.9 dB             |
|                                                        | 1GHz-15GHz      | 4.8 dB                                          | 4.8 dB             | 4.9 dB             |
| <b>Radiated emission</b><br>(Measurement distance: 1m) | 15GHz-18GHz     | 5.6 dB                                          | 5.6 dB             | 5.6 dB             |
|                                                        | 18GHz-40GHz     | 4.6 dB                                          | 4.3 dB             | 4.4 dB             |

\*1: SAC=Semi-Anechoic Chamber

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

### Radiated emission

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

### Antenna port conducted test

Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB

Spurious emission (Conducted) measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB

Spurious emission (Conducted) and power density measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB

Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB

Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB

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

### 3.5 Test location

UL Japan, Inc. Shonan EMC Lab.

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

Telephone number : +81 463 50 6400

Facsimile number : +81 463 50 6401

JAB Accreditation No. : RTL02610

|                                                                | FCC<br>Registration<br>No. | IC<br>Registration<br>No. | Width x Depth x<br>Height (m) | Size of reference<br>ground plane (m) /<br>horizontal<br>conducting plane | Maximum<br>measurement<br>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 Semi-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 test & Test instruments

Refer to APPENDIX 1 to 3.

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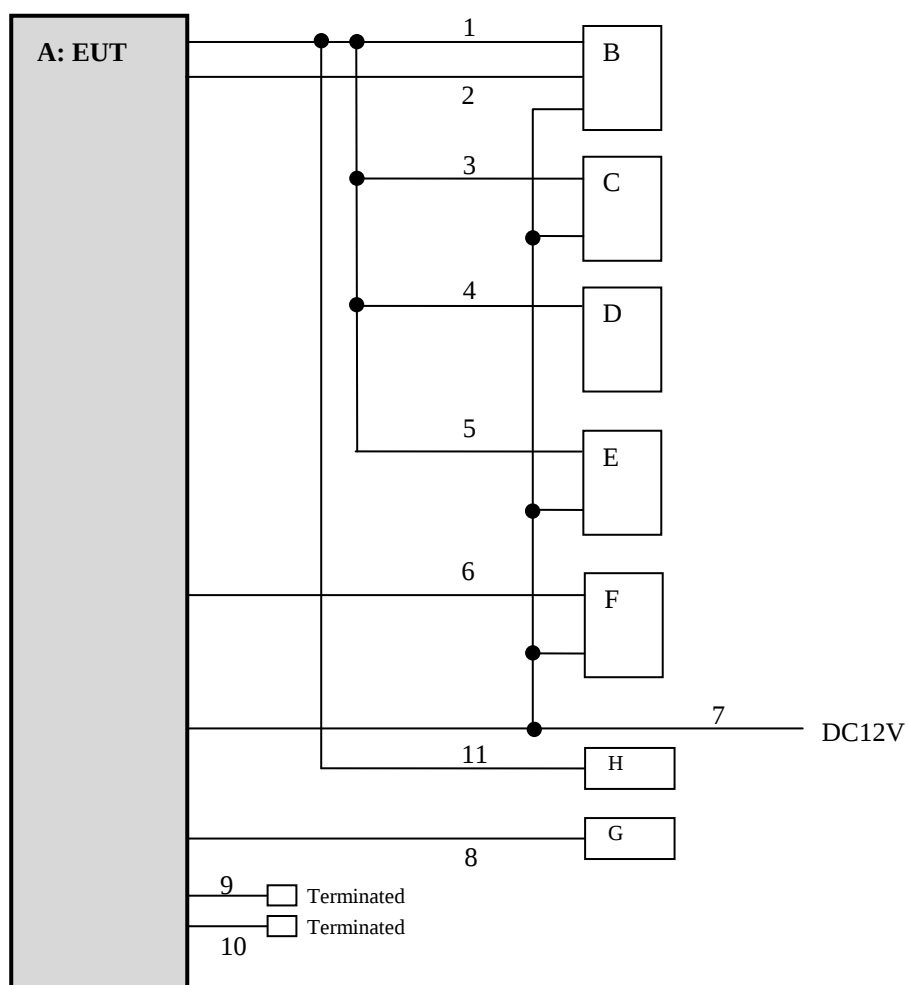
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**SECTION 4: Operation of E.U.T. during testing****4.1 Operating mode**

| Test item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Mode                            | Tested frequency          | Power setting *1) | Worst data rate *2)  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------|-------------------|----------------------|
| Radiated emission (below 1GHz) *2)*3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Transmitting IEEE 802.11g       | 2462MHz                   | Fixed             | 6Mbps, PN9           |
| Other items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Transmitting IEEE 802.11b       | 2412MHz, 2437MHz, 2462MHz | Fixed             | 1Mbps, PN9           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Transmitting IEEE 802.11g       | 2412MHz, 2437MHz, 2462MHz | Fixed             | 6Mbps, PN9           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Transmitting IEEE 802.11n(HT20) | 2412MHz, 2437MHz, 2462MHz | Fixed             | MCS0 (long), PN9 *4) |
| *1) Software: UniTest Ver. 7.2.1.5<br>*2) The worst condition was determined based on the test result of Maximum Peak Output Power.<br>*3) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - "of TCB Council Workshop October 2009.<br>*4) IEEE 802.11n (HT20) mode has "short" (= short guard interval = 400ns) and "long" (= long guard interval = 800ns). Since there was no difference, the measurement was performed with "long" mode. |                                 |                           |                   |                      |

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

## 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   | Car Audio with Bluetooth | CVX-5338             | *1)           | Pioneer      | EUT     |
| B   | Display                  | 86110-30330          | 329004067     | DENSO        | -       |
| C   | Remote Control Device    | 84780-48080          | -             | Tokai Rika   | -       |
| D   | Steering Switch          | -                    | -             | -            | -       |
| E   | Air-Condition ECU        | 886650-76250         | 3Q27          | DENSO        | -       |
| F   | Amplifier                | 86280-53180          | TPJA000186WL  | Pioneer      | -       |
| G   | USB AUX port             | 86190-48030          | 3104482       | Pioneer      | -       |
| H   | Microphone               | SDA3110A<br>2DC00005 | -             | Pioneer      | -       |

\*1) Antenna terminal conducted tests: K1MC000038US, Radiated emission tests: K1MC000040US

**List of cables used**

| No | Cable name                         | Length (m) | Shield     |            | Remark |
|----|------------------------------------|------------|------------|------------|--------|
|    |                                    |            | Cable      | Connector  |        |
| 1  | Signal cable for Display           | 2.0        | Unshielded | Unshielded | -      |
| 2  | Image output cable                 | 2.0        | Unshielded | Unshielded | -      |
| 3  | Signal cable for Remote control    | 2.0        | Unshielded | Unshielded | -      |
| 4  | Signal cable for Steering Switch   | 2.0        | Unshielded | Unshielded | -      |
| 5  | Signal cable for Air-Condition ECU | 2.0        | Unshielded | Unshielded | -      |
| 6  | Signal cable for Amplifier         | 2.0        | Unshielded | Unshielded | -      |
| 7  | DC power cable                     | 3.7        | Unshielded | Unshielded | -      |
| 8  | USB cable                          | 3.0        | Shielded   | Shielded   | -      |
| 9  | Antenna cable for Radio            | 0.15       | Shielded   | Shielded   | -      |
| 10 | Antenna cable for Radio            | 0.15       | Shielded   | Shielded   | -      |
| 11 | Signal cable                       | 2.0        | Unshielded | Unshielded | -      |

\*All cables used for the measurement are exclusive use or marketed.

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**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## **SECTION 5: Out of band 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

## **SECTION 6: 6dB bandwidth & Occupied bandwidth (99%)**

### **Test procedure**

The bandwidth was measured with a spectrum analyzer connected to the antenna port. The test was measured based on Method 8.1 Option 1 and 8.2 Option 2 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Summary of the test results: Pass  
Refer to APPENDIX

## **SECTION 7: Maximum peak output power**

### **Test procedure**

The Maximum Peak Output Power was measured with a power meter connected to the antenna port. The test was measured based on Method 9.1.3 PKPM1 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Summary of the test results: Pass  
Refer to APPENDIX

## **SECTION 8: Peak power density**

### **Test procedure**

The peak power density was measured with a spectrum analyzer connected to the antenna port.

Instrument used : Spectrum Analyzer  
RBW / VBW : 3kHz / 9.1kHz

The test was measured based on Method 10.2 PKPSD of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Summary of the test results: Pass  
Refer to APPENDIX

## **SECTION 9: Radiated emission**

### **9.1 Operating environment**

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

### **9.2 Test configuration**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Photographs of the set up are shown in APPENDIX.

### **9.3 Test conditions**

Frequency range : 30MHz to 25GHz  
EUT position : Table top

### **9.4 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 15GHz) / 1m (above 15GHz) (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.

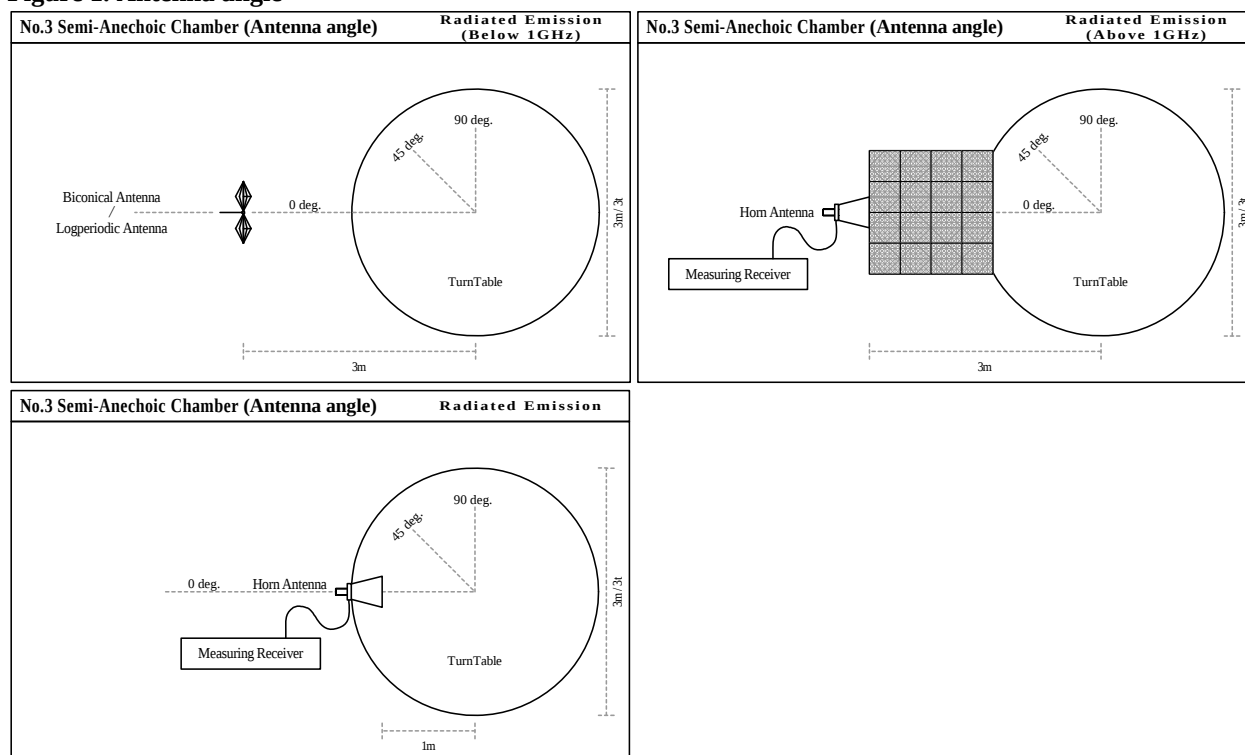
The radiated emission measurements were made with the following detection.

|                |            |                        |                                         |                            |
|----------------|------------|------------------------|-----------------------------------------|----------------------------|
| Frequency      | 30-1000MHz | 1-25GHz                |                                         | 20dBc                      |
| Detection type | Quasi-Peak | Peak                   | Average *1)                             | Peak                       |
| IF Bandwidth   | 120kHz     | RBW: 1MHz<br>VBW: 3MHz | RBW: 1MHz<br>VBW: 3MHz<br>Detector: RMS | RBW: 100kHz<br>VBW: 300kHz |

\*1) Average Power Measurement was measured based on 12.2.5.1 and 12.2.5.2 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

The carrier level and noise levels were fixed at angle of 30 deg. based on the product specification.

Figure 1. Antenna angle



## 9.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

## 9.6 Results

Summary of the test results : Pass \*No noise was detected above the 5<sup>th</sup> order harmonics.

Refer to APPENDIX

## **Contents of APPENDIXES**

### **APPENDIX 1: Data of Radio tests**

6dB Bandwidth  
Maximum peak output power  
Radiated emission  
Spurious emission (Antenna port conducted)  
Peak power density  
Occupied Bandwidth

### **APPENDIX 2: Test instruments**

Test instruments

### **APPENDIX 3: Photographs of test setup**

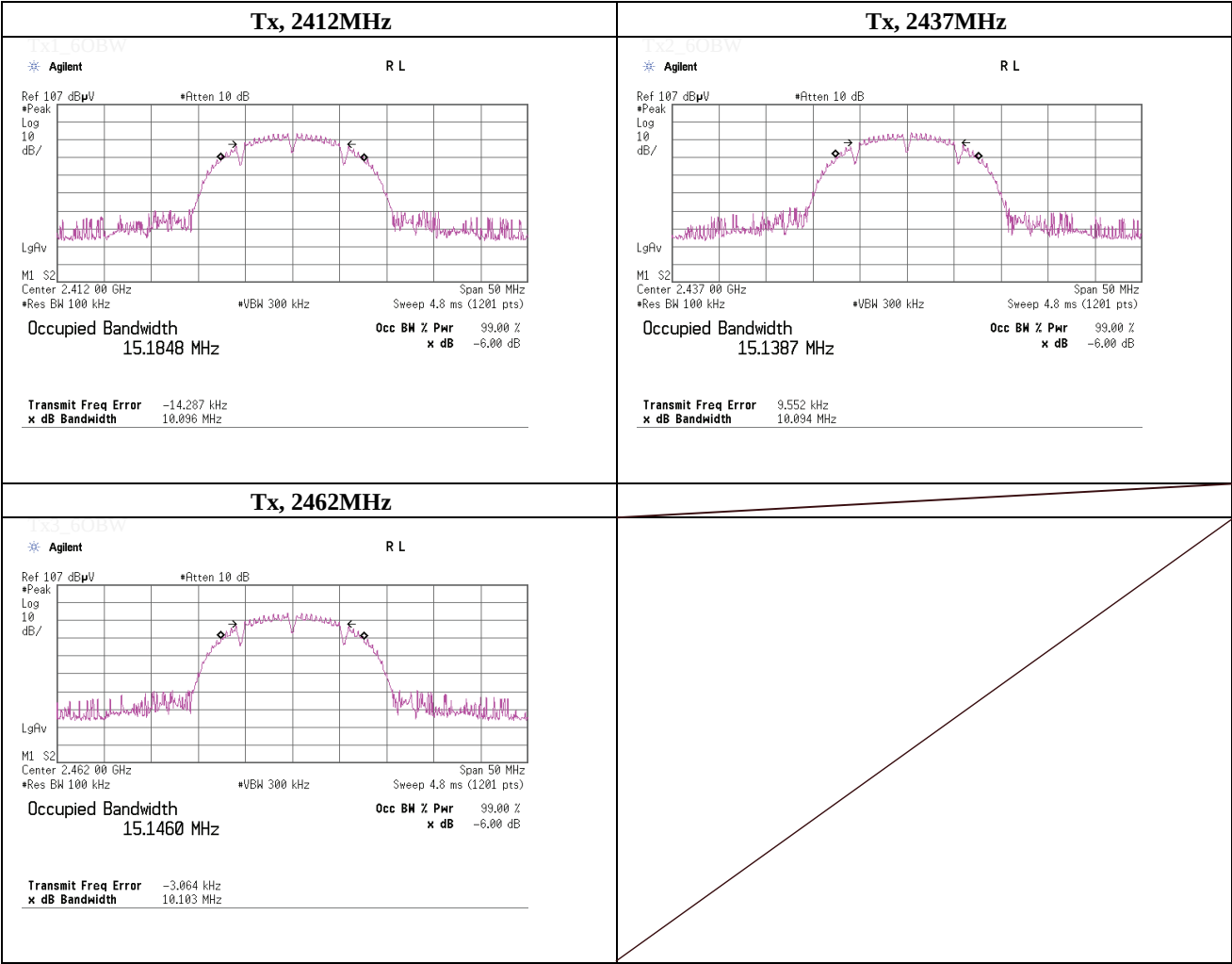
Radiated emission

APPENDIX 1: Data of Radio tests

-6dB Bandwidth

|                        |                                             |                    |
|------------------------|---------------------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab.              | No.5 Shielded Room |
| Date                   | May 16, 2013                                |                    |
| Temperature / Humidity | 23deg.C , 45%RH                             |                    |
| Engineer               | Makoto Hosaka                               |                    |
| Mode                   | Tx, IEEE802.11b, PN9, worst data mode 1Mbps |                    |

| Freq.<br>[MHz] | -6dB Bandwidth<br>[MHz] | Limit<br>[MHz] |
|----------------|-------------------------|----------------|
| 2412.0000      | 10.096                  | > 0.500        |
| 2437.0000      | 10.094                  | > 0.500        |
| 2462.0000      | 10.103                  | > 0.500        |

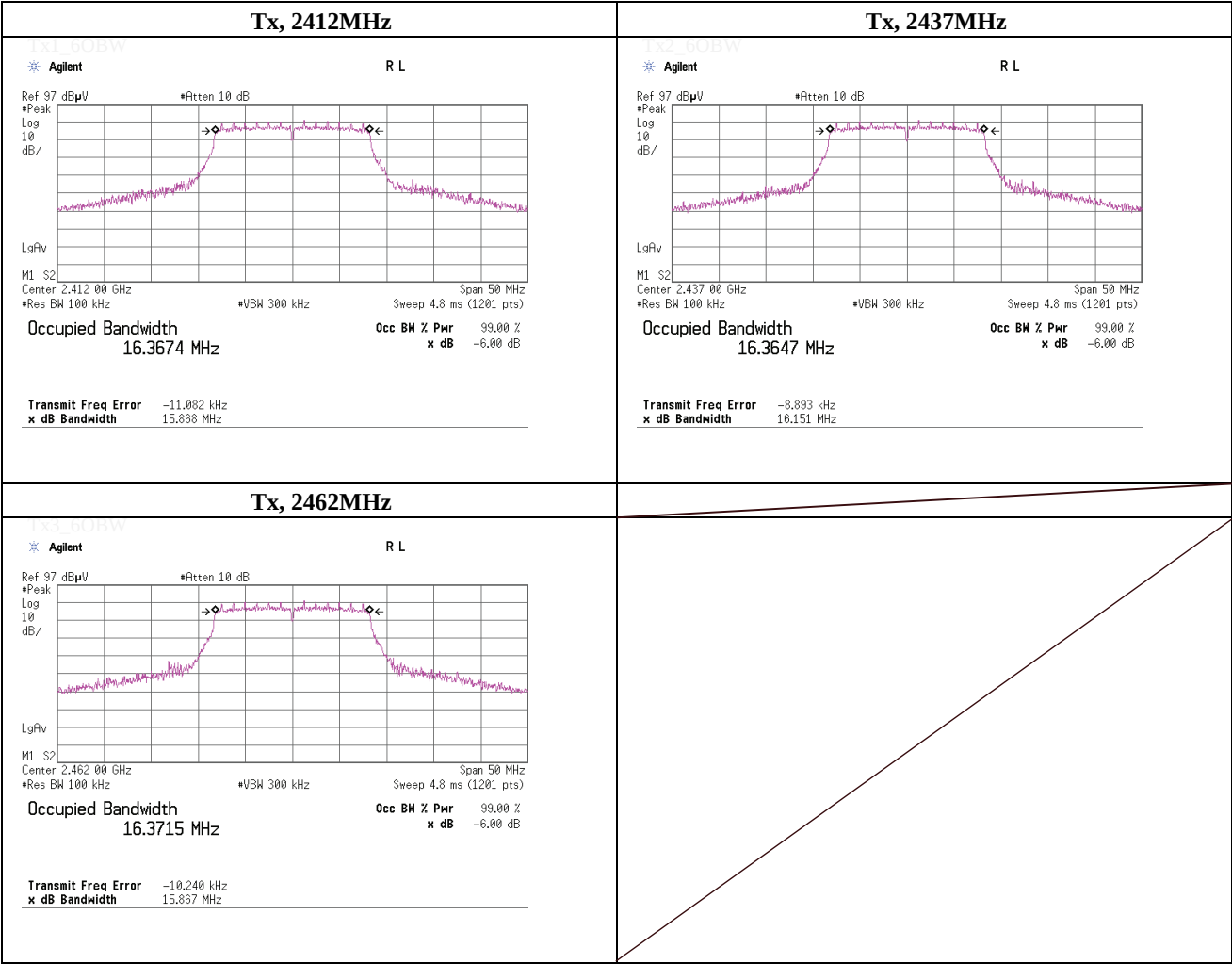


UL Japan, Inc.  
Shonan EMC Lab.  
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
Telephone : +81 463 50 6400  
Facsimile : +81 463 50 6401

-6dB Bandwidth

|                        |                                             |                    |
|------------------------|---------------------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab.              | No.5 Shielded Room |
| Date                   | May 16, 2013                                |                    |
| Temperature / Humidity | 23deg.C , 45%RH                             |                    |
| Engineer               | Makoto Hosaka                               |                    |
| Mode                   | Tx, IEEE802.11g, PN9, worst data mode 6Mbps |                    |

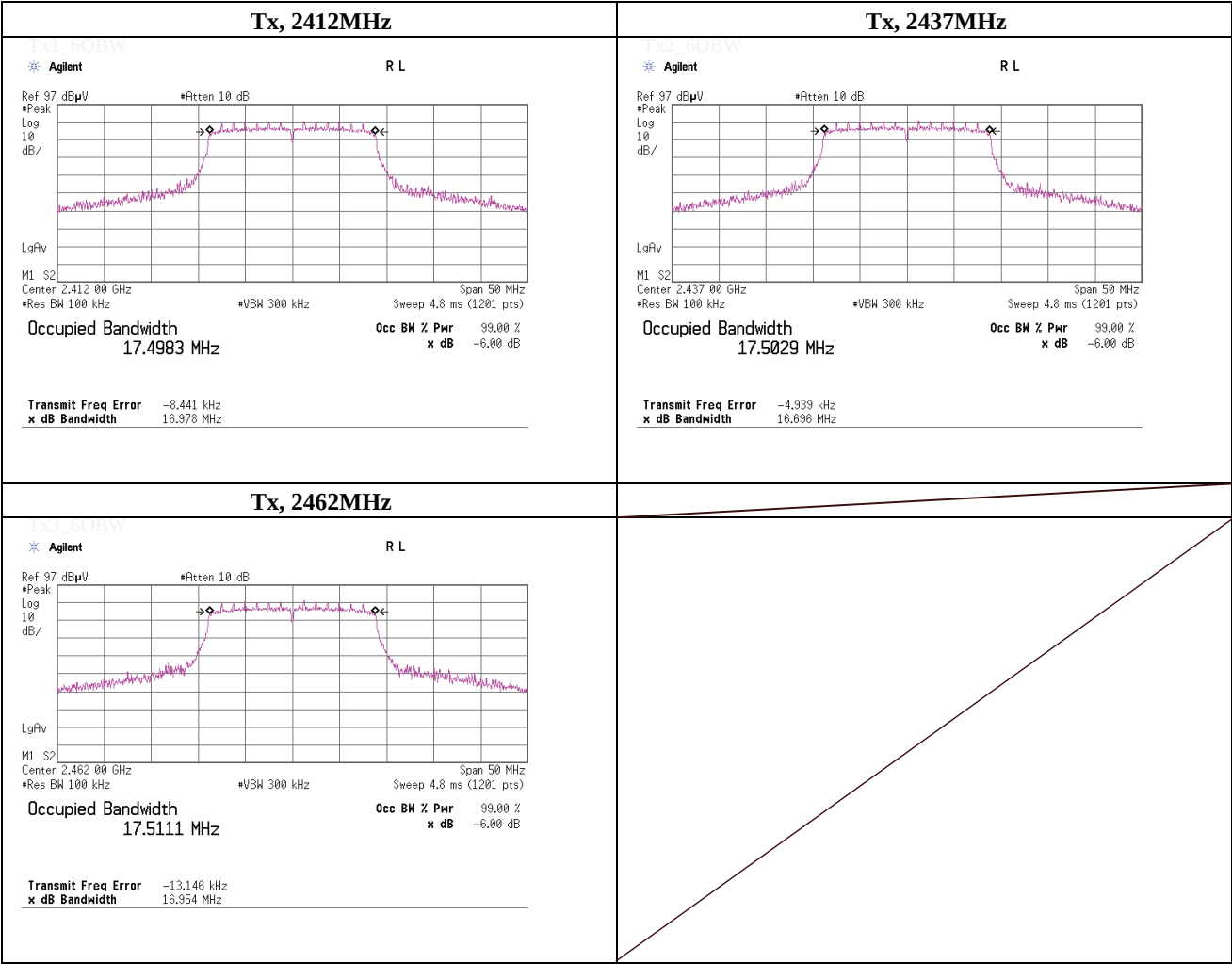
| Freq.<br>[MHz] | -6dB Bandwidth<br>[MHz] | Limit<br>[MHz] |
|----------------|-------------------------|----------------|
| 2412.0000      | 15.868                  | > 0.500        |
| 2437.0000      | 16.151                  | > 0.500        |
| 2462.0000      | 15.867                  | > 0.500        |



**-6dB Bandwidth**

|                        |                                                    |                    |
|------------------------|----------------------------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab.                     | No.5 Shielded Room |
| Date                   | May 16, 2013                                       |                    |
| Temperature / Humidity | 23deg.C , 45%RH                                    |                    |
| Engineer               | Makoto Hosaka                                      |                    |
| Mode                   | Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS) |                    |

| Freq.<br>[MHz] | -6dB Bandwidth<br>[MHz] | Limit<br>[MHz] |
|----------------|-------------------------|----------------|
| 2412.0000      | 16.978                  | > 0.500        |
| 2437.0000      | 16.696                  | > 0.500        |
| 2462.0000      | 16.954                  | > 0.500        |



Maximum Peak Conducted Output Power

(Option 3)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room  
Date May 16, 2013  
Temperature / Humidity 23deg.C , 45%RH  
Engineer Makoto Hosaka  
Mode Tx, IEEE802.11b, PN9, worst data mode : 1 Mbps

(\* P/M: Power Meter with power sensor)

| Ch   | Freq.  | P/M (Peak<br>Reading | Cable<br>Loss | Atten.<br>Loss | Result |       | Limit |      | Margin |
|------|--------|----------------------|---------------|----------------|--------|-------|-------|------|--------|
|      | [MHz]  | [dBm]                | [dB]          | [dB]           | [dBm]  | [mW]  | [dBm] | [mW] | [dB]   |
| Low  | 2412.0 | 5.78                 | 1.48          | 9.62           | 16.88  | 48.75 | 30.00 | 1000 | 13.12  |
| Mid  | 2437.0 | 5.83                 | 1.48          | 9.63           | 16.94  | 49.43 | 30.00 | 1000 | 13.06  |
| High | 2462.0 | 5.88                 | 1.48          | 9.63           | 16.99  | 50.00 | 30.00 | 1000 | 13.01  |

Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

|  | Data rate | Freq.  | P/M (Peak<br>Reading | Cable<br>Loss | Atten.<br>Loss | Result       |       | Limit |      | Margin       |
|--|-----------|--------|----------------------|---------------|----------------|--------------|-------|-------|------|--------------|
|  | [Mbps]    | [MHz]  | [dBm]                | [dB]          | [dB]           | [dBm]        | [mW]  | [dBm] | [mW] | [dB]         |
|  | 1         | 2412.0 | 5.78                 | 1.48          | 9.62           | <b>16.88</b> | 48.75 | 30.00 | 1000 | <b>13.12</b> |
|  | 2         | 2412.0 | 5.75                 | 1.48          | 9.62           | 16.85        | 48.42 | 30.00 | 1000 | 13.15        |
|  | 5.5       | 2412.0 | 5.70                 | 1.48          | 9.62           | 16.80        | 47.86 | 30.00 | 1000 | 13.20        |
|  | 11        | 2412.0 | 5.75                 | 1.48          | 9.62           | 16.85        | 48.42 | 30.00 | 1000 | 13.15        |
|  |           |        |                      |               |                |              |       |       |      |              |
|  |           |        |                      |               |                |              |       |       |      |              |
|  |           |        |                      |               |                |              |       |       |      |              |

Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

UL Japan, Inc.  
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
Telephone : +81 463 50 6400  
Facsimile : +81 463 50 6401

Maximum Peak Conducted Output Power

(Option 3)

Test place                      UL Japan, Inc. Shonan EMC Lab.              No.5 Shielded Room  
Date                              May 16, 2013  
Temperature / Humidity        23deg.C            , 45%RH  
Engineer                        Makoto Hosaka  
Mode                              Tx, IEEE802.11g, PN9,                              worst data mode :              6 Mbps

(\* P/M: Power Meter with power sensor)

| Ch   | Freq.<br>[MHz] | P/M (Peak)<br>Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Result |        | Limit |      | Margin<br>[dB] |
|------|----------------|--------------------------------|-----------------------|------------------------|--------|--------|-------|------|----------------|
|      |                |                                |                       |                        | [dBm]  | [mW]   | [dBm] | [mW] |                |
| Low  | 2412.0         | 10.79                          | 1.48                  | 9.62                   | 21.89  | 154.53 | 30.00 | 1000 | 8.11           |
| Mid  | 2437.0         | 10.85                          | 1.48                  | 9.63                   | 21.96  | 157.04 | 30.00 | 1000 | 8.04           |
| High | 2462.0         | 11.05                          | 1.48                  | 9.63                   | 22.16  | 164.44 | 30.00 | 1000 | 7.84           |

Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

|  | Data rate | Freq.<br>[MHz] | P/M (Peak)<br>Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Result       |        | Limit |      | Margin<br>[dB] |
|--|-----------|----------------|--------------------------------|-----------------------|------------------------|--------------|--------|-------|------|----------------|
|  | [Mbps]    |                |                                |                       |                        | [dBm]        | [mW]   | [dBm] | [mW] |                |
|  | 6         | 2412.0         | 10.79                          | 1.48                  | 9.62                   | <b>21.89</b> | 154.53 | 30.00 | 1000 | <b>8.11</b>    |
|  | 9         | 2412.0         | 10.48                          | 1.48                  | 9.62                   | 21.58        | 143.88 | 30.00 | 1000 | 8.42           |
|  | 12        | 2412.0         | 10.55                          | 1.48                  | 9.62                   | 21.65        | 146.22 | 30.00 | 1000 | 8.35           |
|  | 18        | 2412.0         | 10.77                          | 1.48                  | 9.62                   | 21.87        | 153.82 | 30.00 | 1000 | 8.13           |
|  | 24        | 2412.0         | 10.57                          | 1.48                  | 9.62                   | 21.67        | 146.89 | 30.00 | 1000 | 8.33           |
|  | 36        | 2412.0         | 10.60                          | 1.48                  | 9.62                   | 21.70        | 147.91 | 30.00 | 1000 | 8.30           |
|  | 48        | 2412.0         | 10.71                          | 1.48                  | 9.62                   | 21.81        | 151.71 | 30.00 | 1000 | 8.19           |
|  | 54        | 2412.0         | 10.73                          | 1.48                  | 9.62                   | 21.83        | 152.41 | 30.00 | 1000 | 8.17           |

Worst

Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

UL Japan, Inc.  
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
Telephone : +81 463 50 6400  
Facsimile : +81 463 50 6401

Maximum Peak Conducted Output Power

(Option 3)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room  
Date May 16, 2013  
Temperature / Humidity 23deg.C , 45%RH  
Engineer Makoto Hosaka  
Mode Tx, IEEE802.11n(HT20), PN9, worst data mode : 0 (MCS)

(\* P/M: Power Meter with power sensor)

| Ch   | Freq.<br>[MHz] | P/M (Peak)<br>Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Result |        | Limit |      | Margin |
|------|----------------|--------------------------------|-----------------------|------------------------|--------|--------|-------|------|--------|
|      |                |                                |                       |                        | [dBm]  | [mW]   | [dBm] | [mW] | [dB]   |
| Low  | 2412.0         | 10.77                          | 1.48                  | 9.62                   | 21.87  | 153.82 | 30.00 | 1000 | 8.13   |
| Mid  | 2437.0         | 10.72                          | 1.48                  | 9.63                   | 21.83  | 152.41 | 30.00 | 1000 | 8.17   |
| High | 2462.0         | 10.97                          | 1.48                  | 9.63                   | 22.08  | 161.44 | 30.00 | 1000 | 7.92   |

Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

|  | Mode<br>(MCS) | Freq.<br>[MHz] | P/M (Peak)<br>Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Result       |        | Limit |      | Margin      |
|--|---------------|----------------|--------------------------------|-----------------------|------------------------|--------------|--------|-------|------|-------------|
|  |               |                |                                |                       |                        | [dBm]        | [mW]   | [dBm] | [mW] | [dB]        |
|  | 0             | 2412.0         | 10.77                          | 1.48                  | 9.62                   | <b>21.87</b> | 153.82 | 30.00 | 1000 | <b>8.13</b> |
|  | 1             | 2412.0         | 10.42                          | 1.48                  | 9.62                   | 21.52        | 141.91 | 30.00 | 1000 | 8.48        |
|  | 2             | 2412.0         | 10.54                          | 1.48                  | 9.62                   | 21.64        | 145.88 | 30.00 | 1000 | 8.36        |
|  | 3             | 2412.0         | 10.75                          | 1.48                  | 9.62                   | 21.85        | 153.11 | 30.00 | 1000 | 8.15        |
|  | 4             | 2412.0         | 10.74                          | 1.48                  | 9.62                   | 21.84        | 152.76 | 30.00 | 1000 | 8.16        |
|  | 5             | 2412.0         | 9.63                           | 1.48                  | 9.62                   | 20.73        | 118.30 | 30.00 | 1000 | 9.27        |
|  | 6             | 2412.0         | 9.60                           | 1.48                  | 9.62                   | 20.70        | 117.49 | 30.00 | 1000 | 9.30        |
|  | 7             | 2412.0         | 10.09                          | 1.48                  | 9.62                   | 21.19        | 131.52 | 30.00 | 1000 | 8.81        |

Worst

Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

UL Japan, Inc.  
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
Telephone : +81 463 50 6400  
Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                             |                |                   |
|------------------------|-----------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber  |                |                   |
| Date                   | May 20, 2013                | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH              | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2412 MHz                |                |                   |
|                        | Tx, IEEE802.11b, PN9, 1Mbps |                | S/N: K1MC000040US |

(\* 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.    | 2390.000        | PK       | 61.4           | 27.4            | 14.8      | 41.4      | 62.2            | 73.9           | 11.7        | 173         | 327         |                   |
| Hori.    | 2886.550        | PK       | 53.3           | 28.2            | 7.0       | 41.4      | 47.1            | 73.9           | 26.8        | 102         | 206         |                   |
| Hori.    | 3126.456        | PK       | 55.3           | 28.7            | 6.6       | 41.5      | 49.1            | 73.9           | 24.8        | 100         | 221         |                   |
| Hori.    | 4824.000        | PK       | 53.3           | 31.1            | 7.6       | 41.2      | 50.8            | 73.9           | 23.1        | 117         | 81          |                   |
| Hori.    | 7236.000        | PK       | 47.4           | 36.6            | 9.1       | 41.4      | 51.7            | 73.9           | 22.2        | 100         | 0           |                   |
| Hori.    | 9648.000        | PK       | 44.7           | 38.6            | 10.3      | 38.9      | 54.7            | 73.9           | 19.2        | 105         | 52          |                   |
| Hori.    | 12060.000       | PK       | 47.7           | 39.5            | 11.5      | 39.4      | 59.3            | 73.9           | 14.6        | 100         | 0           |                   |
| Hori.    | 24120.000       | PK       | 44.7           | 39.8            | -1.9      | 46.5      | 36.1            | 73.9           | 37.8        | 100         | 0           | noise floor level |
| Hori.    | 2390.000        | AV       | 43.8           | 27.4            | 14.8      | 41.4      | 44.6            | 53.9           | 9.3         | 173         | 327         |                   |
| Hori.    | 2886.550        | AV       | 49.1           | 28.2            | 7.0       | 41.4      | 42.9            | 53.9           | 11.0        | 102         | 206         |                   |
| Hori.    | 3126.456        | AV       | 52.5           | 28.7            | 6.6       | 41.5      | 46.3            | 53.9           | 7.6         | 100         | 221         |                   |
| Hori.    | 4824.000        | AV       | 49.5           | 31.1            | 7.6       | 41.2      | 47.0            | 53.9           | 6.9         | 117         | 81          | Duty>98%          |
| Hori.    | 7236.000        | AV       | 37.0           | 36.6            | 9.1       | 41.4      | 41.3            | 53.9           | 12.6        | 100         | 0           | Duty>98%          |
| Hori.    | 9648.000        | AV       | 36.4           | 38.6            | 10.3      | 38.9      | 46.4            | 53.9           | 7.5         | 105         | 52          | Duty>98%          |
| Hori.    | 12060.000       | AV       | 36.1           | 39.5            | 11.5      | 39.4      | 47.7            | 53.9           | <b>6.2</b>  | 100         | 0           | Duty>98%          |
| Hori.    | 24120.000       | AV       | 32.0           | 39.8            | -1.9      | 46.5      | 23.4            | 53.9           | 30.5        | 100         | 0           | noise floor level |
| Vert.    | 2390.000        | PK       | 62.4           | 27.4            | 14.8      | 41.4      | 63.2            | 73.9           | 10.7        | 145         | 347         |                   |
| Vert.    | 2886.550        | PK       | 52.3           | 28.2            | 7.0       | 41.4      | 46.1            | 73.9           | 27.8        | 100         | 195         |                   |
| Vert.    | 3126.456        | PK       | 55.7           | 28.7            | 6.6       | 41.5      | 49.5            | 73.9           | 24.4        | 105         | 193         |                   |
| Vert.    | 4824.000        | PK       | 51.7           | 31.1            | 7.6       | 41.2      | 49.2            | 73.9           | 24.7        | 105         | 204         |                   |
| Vert.    | 7236.000        | PK       | 47.8           | 36.6            | 9.1       | 41.4      | 52.1            | 73.9           | 21.8        | 100         | 0           |                   |
| Vert.    | 9648.000        | PK       | 44.2           | 38.6            | 10.3      | 38.9      | 54.2            | 73.9           | 19.7        | 100         | 188         |                   |
| Vert.    | 12060.000       | PK       | 47.0           | 39.5            | 11.5      | 39.4      | 58.6            | 73.9           | 15.3        | 100         | 0           |                   |
| Vert.    | 24120.000       | PK       | 44.6           | 39.8            | -1.9      | 46.5      | 36.0            | 73.9           | 37.9        | 100         | 0           | noise floor level |
| Vert.    | 2390.000        | AV       | 43.8           | 27.4            | 14.8      | 41.4      | 44.6            | 53.9           | 9.3         | 145         | 347         |                   |
| Vert.    | 2886.550        | AV       | 47.9           | 28.2            | 7.0       | 41.4      | 41.7            | 53.9           | 12.2        | 100         | 195         |                   |
| Vert.    | 3126.456        | AV       | 53.3           | 28.7            | 6.6       | 41.5      | 47.1            | 53.9           | 6.8         | 105         | 193         |                   |
| Vert.    | 4824.000        | AV       | 47.6           | 31.1            | 7.6       | 41.2      | 45.1            | 53.9           | 8.8         | 105         | 204         | Duty>98%          |
| Vert.    | 7236.000        | AV       | 37.6           | 36.6            | 9.1       | 41.4      | 41.9            | 53.9           | 12.0        | 100         | 0           | Duty>98%          |
| Vert.    | 9648.000        | AV       | 36.2           | 38.6            | 10.3      | 38.9      | 46.2            | 53.9           | 7.7         | 100         | 188         | Duty>98%          |
| Vert.    | 12060.000       | AV       | 36.1           | 39.5            | 11.5      | 39.4      | 47.7            | 53.9           | <b>6.2</b>  | 100         | 0           | Duty>98%          |
| Vert.    | 24120.000       | AV       | 31.9           | 39.8            | -1.9      | 46.5      | 23.3            | 53.9           | 30.6        | 100         | 0           | noise floor level |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz ~40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### 20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

| 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.    | 2412.000        | PK       | 92.1           | 27.5            | 14.8      | 41.4      | 93.0            | -              | -           | 173         | 327         | Carrier |
| Hori.    | 2400.000        | PK       | 51.1           | 27.4            | 14.8      | 41.4      | 51.9            | 73.0           | 21.1        | 173         | 327         |         |
| Vert.    | 2412.000        | PK       | 97.7           | 27.5            | 14.8      | 41.4      | 98.6            | -              | -           | 145         | 347         | Carrier |
| Vert.    | 2400.000        | PK       | 53.6           | 27.4            | 14.8      | 41.4      | 54.4            | 78.6           | 24.2        | 145         | 347         |         |

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                             |                |                   |
|------------------------|-----------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber  |                |                   |
| Date                   | May 20, 2013                | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH              | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2437 MHz                |                |                   |
|                        | Tx, IEEE802.11b, PN9, 1Mbps |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark            |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|-------------------|
| Hori.    | 2886.520           | PK       | 54.0              | 28.2               | 7.0          | 41.4         | 47.8               | 73.9              | 26.1           | 100            | 206            |                   |
| Hori.    | 3126.480           | PK       | 55.9              | 28.7               | 6.6          | 41.5         | 49.7               | 73.9              | 24.2           | 100            | 221            |                   |
| Hori.    | 4874.000           | PK       | 54.5              | 31.3               | 7.7          | 41.1         | 52.4               | 73.9              | 21.5           | 132            | 56             |                   |
| Hori.    | 7311.000           | PK       | 46.3              | 36.6               | 9.2          | 41.4         | 50.7               | 73.9              | 23.2           | 100            | 0              |                   |
| Hori.    | 9748.000           | PK       | 45.8              | 38.7               | 10.2         | 38.9         | 55.8               | 73.9              | 18.1           | 148            | 38             |                   |
| Hori.    | 12185.000          | PK       | 44.4              | 39.5               | 11.4         | 39.3         | 56.0               | 73.9              | 17.9           | 100            | 0              |                   |
| Hori.    | 24370.000          | PK       | 45.2              | 39.8               | -1.8         | 46.6         | 36.6               | 73.9              | 37.3           | 100            | 0              | noise floor level |
| Hori.    | 2886.520           | AV       | 49.8              | 28.2               | 7.0          | 41.4         | 43.6               | 53.9              | 10.3           | 100            | 206            |                   |
| Hori.    | 3126.480           | AV       | 53.2              | 28.7               | 6.6          | 41.5         | 47.0               | 53.9              | 6.9            | 100            | 221            |                   |
| Hori.    | 4874.000           | AV       | 51.6              | 31.3               | 7.7          | 41.1         | 49.5               | 53.9              | 4.4            | 132            | 56             | Duty>98%          |
| Hori.    | 7311.000           | AV       | 36.6              | 36.6               | 9.2          | 41.4         | 41.0               | 53.9              | 12.9           | 100            | 0              | Duty>98%          |
| Hori.    | 9748.000           | AV       | 35.3              | 38.7               | 10.2         | 38.9         | 45.3               | 53.9              | 8.6            | 148            | 38             | Duty>98%          |
| Hori.    | 12185.000          | AV       | 35.1              | 39.5               | 11.4         | 39.3         | 46.7               | 53.9              | 7.2            | 100            | 0              | Duty>98%          |
| Hori.    | 24370.000          | AV       | 32.6              | 39.8               | -1.8         | 46.6         | 24.0               | 53.9              | 29.9           | 100            | 0              | noise floor level |
| Vert.    | 2886.520           | PK       | 53.2              | 28.2               | 7.0          | 41.4         | 47.0               | 73.9              | 26.9           | 100            | 196            |                   |
| Vert.    | 3126.480           | PK       | 56.0              | 28.7               | 6.6          | 41.5         | 49.8               | 73.9              | 24.1           | 102            | 198            |                   |
| Vert.    | 4874.000           | PK       | 52.5              | 31.3               | 7.7          | 41.1         | 50.4               | 73.9              | 23.5           | 117            | 59             |                   |
| Vert.    | 7311.000           | PK       | 45.5              | 36.6               | 9.2          | 41.4         | 49.9               | 73.9              | 24.0           | 100            | 0              |                   |
| Vert.    | 9748.000           | PK       | 43.4              | 38.7               | 10.2         | 38.9         | 53.4               | 73.9              | 20.5           | 121            | 324            |                   |
| Vert.    | 12185.000          | PK       | 44.5              | 39.5               | 11.4         | 39.3         | 56.1               | 73.9              | 17.8           | 100            | 0              |                   |
| Vert.    | 24370.000          | PK       | 45.1              | 39.8               | -1.8         | 46.6         | 36.5               | 73.9              | 37.4           | 100            | 0              | noise floor level |
| Vert.    | 2886.520           | AV       | 48.8              | 28.2               | 7.0          | 41.4         | 42.6               | 53.9              | 11.3           | 100            | 196            |                   |
| Vert.    | 3126.480           | AV       | 53.2              | 28.7               | 6.6          | 41.5         | 47.0               | 53.9              | 6.9            | 102            | 198            |                   |
| Vert.    | 4874.000           | AV       | 48.3              | 31.3               | 7.7          | 41.1         | 46.2               | 53.9              | 7.7            | 117            | 59             | Duty>98%          |
| Vert.    | 7311.000           | AV       | 37.0              | 36.6               | 9.2          | 41.4         | 41.4               | 53.9              | 12.5           | 100            | 0              | Duty>98%          |
| Vert.    | 9748.000           | AV       | 35.0              | 38.7               | 10.2         | 38.9         | 45.0               | 53.9              | 8.9            | 121            | 324            | Duty>98%          |
| Vert.    | 12185.000          | AV       | 35.0              | 39.5               | 11.4         | 39.3         | 46.6               | 53.9              | 7.3            | 100            | 0              | Duty>98%          |
| Vert.    | 24370.000          | AV       | 32.5              | 39.8               | -1.8         | 46.6         | 23.9               | 53.9              | 30.0           | 100            | 0              | noise floor level |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz ~40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                             |                |                   |
|------------------------|-----------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber  |                |                   |
| Date                   | May 21, 2013                | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 22deg.C, 56%RH              | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2462 MHz                |                |                   |
|                        | Tx, IEEE802.11b, PN9, 1Mbps |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark            |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|-------------------|
| Hori.    | 2483.500           | PK       | 62.7              | 27.5               | 14.9         | 41.4         | 63.7               | 73.9              | 10.2           | 192            | 288            |                   |
| Hori.    | 2886.530           | PK       | 50.0              | 28.2               | 7.0          | 41.4         | 43.8               | 73.9              | 30.1           | 100            | 172            |                   |
| Hori.    | 3126.481           | PK       | 54.4              | 28.7               | 6.6          | 41.5         | 48.2               | 73.9              | 25.7           | 102            | 218            |                   |
| Hori.    | 3145.680           | PK       | 49.2              | 28.7               | 6.6          | 41.5         | 43.0               | 73.9              | 30.9           | 102            | 221            |                   |
| Hori.    | 4924.000           | PK       | 49.9              | 31.5               | 7.7          | 41.0         | 48.1               | 73.9              | 25.8           | 100            | 218            |                   |
| Hori.    | 7386.000           | PK       | 43.4              | 36.7               | 9.2          | 41.5         | 47.8               | 73.9              | 26.1           | 100            | 0              |                   |
| Hori.    | 9848.000           | PK       | 44.1              | 38.9               | 10.2         | 38.9         | 54.3               | 73.9              | 19.6           | 120            | 62             |                   |
| Hori.    | 12310.000          | PK       | 43.7              | 39.5               | 11.3         | 39.3         | 55.2               | 73.9              | 18.7           | 100            | 0              |                   |
| Hori.    | 24620.000          | PK       | 45.0              | 39.7               | -1.7         | 46.7         | 36.3               | 73.9              | 37.6           | 100            | 0              | noise floor level |
| Hori.    | 2483.500           | AV       | 39.8              | 27.5               | 14.9         | 41.4         | 40.8               | 53.9              | 13.1           | 192            | 288            |                   |
| Hori.    | 2886.530           | AV       | 43.1              | 28.2               | 7.0          | 41.4         | 36.9               | 53.9              | 17.0           | 100            | 172            |                   |
| Hori.    | 3126.481           | AV       | 51.2              | 28.7               | 6.6          | 41.5         | 45.0               | 53.9              | 8.9            | 102            | 218            |                   |
| Hori.    | 3145.680           | AV       | 43.2              | 28.7               | 6.6          | 41.5         | 37.0               | 53.9              | 16.9           | 102            | 221            |                   |
| Hori.    | 4924.000           | AV       | 43.4              | 31.5               | 7.7          | 41.0         | 41.6               | 53.9              | 12.3           | 100            | 218            | Duty>98%          |
| Hori.    | 7386.000           | AV       | 36.5              | 36.7               | 9.2          | 41.5         | 40.9               | 53.9              | 13.0           | 100            | 0              | Duty>98%          |
| Hori.    | 9848.000           | AV       | 34.3              | 38.9               | 10.2         | 38.9         | 44.5               | 53.9              | 9.4            | 120            | 62             | Duty>98%          |
| Hori.    | 12310.000          | AV       | 34.0              | 39.5               | 11.3         | 39.3         | 45.5               | 53.9              | 8.4            | 100            | 0              | Duty>98%          |
| Hori.    | 24620.000          | AV       | 32.3              | 39.7               | -1.7         | 46.7         | 23.6               | 53.9              | 30.3           | 100            | 0              | noise floor level |
| Vert.    | 2483.500           | PK       | 67.7              | 27.5               | 14.9         | 41.4         | 68.7               | 73.9              | 5.2            | 100            | 179            |                   |
| Vert.    | 2886.530           | PK       | 50.2              | 28.2               | 7.0          | 41.4         | 44.0               | 73.9              | 29.9           | 115            | 332            |                   |
| Vert.    | 3126.481           | PK       | 55.6              | 28.7               | 6.6          | 41.5         | 49.4               | 73.9              | 24.5           | 100            | 184            |                   |
| Vert.    | 3145.680           | PK       | 51.8              | 28.7               | 6.6          | 41.5         | 45.6               | 73.9              | 28.3           | 100            | 187            |                   |
| Vert.    | 4924.000           | PK       | 51.2              | 31.5               | 7.7          | 41.0         | 49.4               | 73.9              | 24.5           | 118            | 190            |                   |
| Vert.    | 7386.000           | PK       | 45.9              | 36.7               | 9.2          | 41.5         | 50.3               | 73.9              | 23.6           | 100            | 0              |                   |
| Vert.    | 9848.000           | PK       | 44.0              | 38.9               | 10.2         | 38.9         | 54.2               | 73.9              | 19.7           | 154            | 44             |                   |
| Vert.    | 12310.000          | PK       | 44.0              | 39.5               | 11.3         | 39.3         | 55.5               | 73.9              | 18.4           | 100            | 0              |                   |
| Vert.    | 24620.000          | PK       | 44.9              | 39.7               | -1.7         | 46.7         | 36.2               | 73.9              | 37.7           | 100            | 0              | noise floor level |
| Vert.    | 2483.500           | AV       | 43.7              | 27.5               | 14.9         | 41.4         | 44.7               | 53.9              | 9.2            | 100            | 179            |                   |
| Vert.    | 2886.530           | AV       | 44.3              | 28.2               | 7.0          | 41.4         | 38.1               | 53.9              | 15.8           | 115            | 332            |                   |
| Vert.    | 3126.481           | AV       | 53.2              | 28.7               | 6.6          | 41.5         | 47.0               | 53.9              | 6.9            | 100            | 184            |                   |
| Vert.    | 3145.680           | AV       | 47.4              | 28.7               | 6.6          | 41.5         | 41.2               | 53.9              | 12.7           | 100            | 187            |                   |
| Vert.    | 4924.000           | AV       | 46.1              | 31.5               | 7.7          | 41.0         | 44.3               | 53.9              | 9.6            | 118            | 190            | Duty>98%          |
| Vert.    | 7386.000           | AV       | 37.0              | 36.7               | 9.2          | 41.5         | 41.4               | 53.9              | 12.5           | 100            | 0              | Duty>98%          |
| Vert.    | 9848.000           | AV       | 35.4              | 38.9               | 10.2         | 38.9         | 45.6               | 53.9              | 8.3            | 154            | 44             | Duty>98%          |
| Vert.    | 12310.000          | AV       | 34.1              | 39.5               | 11.3         | 39.3         | 45.6               | 53.9              | 8.3            | 100            | 0              | Duty>98%          |
| Vert.    | 24620.000          | AV       | 32.2              | 39.7               | -1.7         | 46.7         | 23.5               | 53.9              | 30.4           | 100            | 0              | noise floor level |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz ~40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                             |                |                   |
|------------------------|-----------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber  |                |                   |
| Date                   | May 20, 2013                | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH              | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2412 MHz                |                |                   |
|                        | Tx, IEEE802.11g, PN9, 6Mbps |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 2390.000           | PK       | 57.3              | 27.4               | 14.8         | 41.4         | 58.1               | 73.9              | 15.8           | 175            | 325            |        |
| Hori.    | 2886.539           | PK       | 54.1              | 28.2               | 7.0          | 41.4         | 47.9               | 73.9              | 26.0           | 100            | 205            |        |
| Hori.    | 3126.479           | PK       | 55.2              | 28.7               | 6.6          | 41.5         | 49.0               | 73.9              | 24.9           | 100            | 221            |        |
| Hori.    | 4824.000           | PK       | 48.9              | 31.1               | 7.6          | 41.2         | 46.4               | 73.9              | 27.5           | 116            | 80             |        |
| Hori.    | 7236.000           | PK       | 46.8              | 36.6               | 9.1          | 41.4         | 51.1               | 73.9              | 22.8           | 100            | 0              |        |
| Hori.    | 9648.000           | PK       | 45.1              | 38.6               | 10.3         | 38.9         | 55.1               | 73.9              | 18.8           | 100            | 0              |        |
| Hori.    | 12060.000          | PK       | 45.9              | 39.5               | 11.5         | 39.4         | 57.5               | 73.9              | 16.4           | 100            | 0              |        |
| Hori.    | 24120.000          | PK       | 44.8              | 39.8               | -1.9         | 46.5         | 36.2               | 73.9              | 37.7           | 100            | 0              |        |
| Hori.    | 2390.000           | AV       | 44.6              | 27.4               | 14.8         | 41.4         | 45.4               | 53.9              | 8.5            | 175            | 325            |        |
| Hori.    | 2886.539           | AV       | 49.7              | 28.2               | 7.0          | 41.4         | 43.5               | 53.9              | 10.4           | 100            | 205            |        |
| Hori.    | 3126.479           | AV       | 52.8              | 28.7               | 6.6          | 41.5         | 46.6               | 53.9              | 7.3            | 100            | 221            |        |
| Vert.    | 2390.000           | PK       | 59.3              | 27.4               | 14.8         | 41.4         | 60.1               | 73.9              | 13.8           | 100            | 140            |        |
| Vert.    | 2886.539           | PK       | 53.4              | 28.2               | 7.0          | 41.4         | 47.2               | 73.9              | 26.7           | 100            | 189            |        |
| Vert.    | 3126.479           | PK       | 56.4              | 28.7               | 6.6          | 41.5         | 50.2               | 73.9              | 23.7           | 100            | 198            |        |
| Vert.    | 4824.000           | PK       | 50.2              | 31.1               | 7.6          | 41.2         | 47.7               | 73.9              | 26.2           | 100            | 186            |        |
| Vert.    | 7236.000           | PK       | 47.3              | 36.6               | 9.1          | 41.4         | 51.6               | 73.9              | 22.3           | 100            | 0              |        |
| Vert.    | 9648.000           | PK       | 44.1              | 38.6               | 10.3         | 38.9         | 54.1               | 73.9              | 19.8           | 100            | 0              |        |
| Vert.    | 12060.000          | PK       | 46.4              | 39.5               | 11.5         | 39.4         | 58.0               | 73.9              | 15.9           | 100            | 0              |        |
| Vert.    | 24120.000          | PK       | 44.7              | 39.8               | -1.9         | 46.5         | 36.1               | 73.9              | 37.8           | 100            | 0              |        |
| Vert.    | 2390.000           | AV       | 45.1              | 27.4               | 14.8         | 41.4         | 45.9               | 53.9              | 8.0            | 100            | 140            |        |
| Vert.    | 2886.539           | AV       | 49.5              | 28.2               | 7.0          | 41.4         | 43.3               | 53.9              | 10.6           | 100            | 189            |        |
| Vert.    | 3126.479           | AV       | 54.0              | 28.7               | 6.6          | 41.5         | 47.8               | 53.9              | 6.1            | 100            | 198            |        |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### Average measurement value with duty fact

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Duty<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark     |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|------------------------|--------------------|-------------------|----------------|------------|
| Hori.    | 4824.000           | AV       | 40.2              | 31.1               | 7.6          | 41.2         | 0.5                    | 38.2               | 53.9              | 15.7           | Duty=0.5dB |
| Hori.    | 7236.000           | AV       | 36.5              | 36.6               | 9.1          | 41.4         | 0.5                    | 41.3               | 53.9              | 12.6           | Duty=0.5dB |
| Hori.    | 9648.000           | AV       | 34.7              | 38.6               | 10.3         | 38.9         | 0.5                    | 45.2               | 53.9              | 8.7            | Duty=0.5dB |
| Hori.    | 12060.000          | AV       | 36.7              | 39.5               | 11.5         | 39.4         | 0.5                    | 48.8               | 53.9              | 5.1            | Duty=0.5dB |
| Hori.    | 24120.000          | AV       | 32.0              | 39.8               | -1.9         | 46.5         | 0.5                    | 23.9               | 53.9              | 30.0           | Duty=0.5dB |
| Vert.    | 4824.000           | AV       | 39.0              | 31.1               | 7.6          | 41.2         | 0.5                    | 37.0               | 53.9              | 16.9           | Duty=0.5dB |
| Vert.    | 7236.000           | AV       | 38.2              | 36.6               | 9.1          | 41.4         | 0.5                    | 43.0               | 53.9              | 10.9           | Duty=0.5dB |
| Vert.    | 9648.000           | AV       | 34.9              | 38.6               | 10.3         | 38.9         | 0.5                    | 45.4               | 53.9              | 8.5            | Duty=0.5dB |
| Vert.    | 12060.000          | AV       | 36.9              | 39.5               | 11.5         | 39.4         | 0.5                    | 49.0               | 53.9              | 4.9            | Duty=0.5dB |
| Vert.    | 24120.000          | AV       | 32.0              | 39.8               | -1.9         | 46.5         | 0.5                    | 23.9               | 53.9              | 30.0           | Duty=0.5dB |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Duty factor

\*12.2.5.2 was applied to AV detection, since the duty cycle is less than 98% and video triggering or signal gating cannot be used.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### 20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark  |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|---------|
| Hori.    | 2412.000           | PK       | 88.4              | 27.5               | 14.8         | 41.4         | 89.3               | -                 | -              | 175            | 325            | Carrier |
| Hori.    | 2400.000           | PK       | 57.5              | 27.4               | 14.8         | 41.4         | 58.3               | 69.3              | 11.0           | 175            | 325            |         |
| Vert.    | 2412.000           | PK       | 92.6              | 27.5               | 14.8         | 41.4         | 93.5               | -                 | -              | 100            | 140            | Carrier |
| Vert.    | 2400.000           | PK       | 56.9              | 27.4               | 14.8         | 41.4         | 57.7               | 73.5              | 15.8           | 100            | 140            |         |

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

**UL Japan, Inc.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                             |                |                   |
|------------------------|-----------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber  |                |                   |
| Date                   | May 20, 2013                | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH              | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2437 MHz                |                |                   |
|                        | Tx, IEEE802.11g, PN9, 6Mbps |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 3126.490           | PK       | 54.5              | 28.7               | 6.6          | 41.5         | 48.3               | 73.9              | 25.6           | 100            | 216            |        |
| Hori.    | 4874.000           | PK       | 46.5              | 31.3               | 7.7          | 41.1         | 44.4               | 73.9              | 29.5           | 100            | 297            |        |
| Hori.    | 7311.000           | PK       | 46.1              | 36.6               | 9.2          | 41.4         | 50.5               | 73.9              | 23.4           | 100            | 0              |        |
| Hori.    | 9748.000           | PK       | 43.6              | 38.7               | 10.2         | 38.9         | 53.6               | 73.9              | 20.3           | 100            | 0              |        |
| Hori.    | 12185.000          | PK       | 45.1              | 39.5               | 11.4         | 39.3         | 56.7               | 73.9              | 17.2           | 100            | 0              |        |
| Hori.    | 24370.000          | PK       | 45.2              | 39.8               | -1.8         | 46.6         | 36.6               | 73.9              | 37.3           | 100            | 0              |        |
| Hori.    | 3126.490           | AV       | 51.6              | 28.7               | 6.6          | 41.5         | 45.4               | 53.9              | 8.5            | 100            | 216            |        |
| Vert.    | 3126.490           | PK       | 56.4              | 28.7               | 6.6          | 41.5         | 50.2               | 73.9              | 23.7           | 100            | 199            |        |
| Vert.    | 4874.000           | PK       | 51.5              | 31.3               | 7.7          | 41.1         | 49.4               | 73.9              | 24.5           | 100            | 185            |        |
| Vert.    | 7311.000           | PK       | 46.1              | 36.6               | 9.2          | 41.4         | 50.5               | 73.9              | 23.4           | 100            | 0              |        |
| Vert.    | 9748.000           | PK       | 43.5              | 38.7               | 10.2         | 38.9         | 53.5               | 73.9              | 20.4           | 100            | 0              |        |
| Vert.    | 12185.000          | PK       | 44.3              | 39.5               | 11.4         | 39.3         | 55.9               | 73.9              | 18.0           | 100            | 0              |        |
| Vert.    | 24370.000          | PK       | 45.3              | 39.8               | -1.8         | 46.6         | 36.7               | 73.9              | 37.2           | 100            | 0              |        |
| Vert.    | 3126.490           | AV       | 54.2              | 28.7               | 6.6          | 41.5         | 48.0               | 53.9              | 5.9            | 100            | 199            |        |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### Average measurement value with duty fact

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Duty<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark     |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|------------------------|--------------------|-------------------|----------------|------------|
| Hori.    | 4874.000           | AV       | 37.9              | 31.3               | 7.7          | 41.1         | 0.5                    | 36.3               | 53.9              | 17.6           | Duty:0.5dB |
| Hori.    | 7311.000           | AV       | 36.9              | 36.6               | 9.2          | 41.4         | 0.5                    | 41.8               | 53.9              | 12.1           | Duty:0.5dB |
| Hori.    | 9748.000           | AV       | 34.4              | 38.7               | 10.2         | 38.9         | 0.5                    | 44.9               | 53.9              | 9.0            | Duty:0.5dB |
| Hori.    | 12185.000          | AV       | 34.9              | 39.5               | 11.4         | 39.3         | 0.5                    | 47.0               | 53.9              | 6.9            | Duty:0.5dB |
| Hori.    | 24370.000          | AV       | 32.4              | 39.8               | -1.8         | 46.6         | 0.5                    | 24.3               | 53.9              | 29.6           | Duty:0.5dB |
| Vert.    | 4874.000           | AV       | 40.1              | 31.3               | 7.7          | 41.1         | 0.5                    | 38.5               | 53.9              | 15.4           | Duty:0.5dB |
| Vert.    | 7311.000           | AV       | 36.6              | 36.6               | 9.2          | 41.4         | 0.5                    | 41.5               | 53.9              | 12.4           | Duty:0.5dB |
| Vert.    | 9748.000           | AV       | 34.1              | 38.7               | 10.2         | 38.9         | 0.5                    | 44.6               | 53.9              | 9.3            | Duty:0.5dB |
| Vert.    | 12185.000          | AV       | 34.8              | 39.5               | 11.4         | 39.3         | 0.5                    | 46.9               | 53.9              | 7.0            | Duty:0.5dB |
| Vert.    | 24370.000          | AV       | 32.5              | 39.8               | -1.8         | 46.6         | 0.5                    | 24.4               | 53.9              | 29.5           | Duty:0.5dB |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Duty factor

\*12.2.5.2 was applied to AV detection, since the duty cycle is less than 98% and video triggering or signal gating cannot be used.

Distance factor : 15GHz -40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

**UL Japan, Inc.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                             |                |                   |                |
|------------------------|-----------------------------|----------------|-------------------|----------------|
| Test place             | No.3 Semi Anechoic Chamber  |                |                   |                |
| Date                   | May 22, 2013                | May 20, 2013   | May 23, 2013      | May 24, 2013   |
| Temperature / Humidity | 25deg.C, 54%RH              | 25deg.C, 54%RH | 26deg.C, 46%RH    | 24deg.C, 52%RH |
| Engineer               | Akio Hayashi                | Akio Hayashi   | Kenichi Adachi    | Kenichi Adachi |
| Mode                   | Tx, 2462 MHz                |                | S/N: K1MC000040US |                |
|                        | Tx, IEEE802.11g, PN9, 6Mbps |                |                   |                |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 240.003            | QP       | 39.2              | 16.9               | 8.2          | 32.0         | 32.3               | 46.0              | 13.7           | 137            | 43             |        |
| Hori.    | 336.009            | QP       | 48.8              | 14.8               | 8.7          | 31.9         | 40.4               | 46.0              | 5.6            | 100            | 213            |        |
| Hori.    | 407.077            | QP       | 46.0              | 16.3               | 9.1          | 32.0         | 39.4               | 46.0              | 6.6            | 100            | 315            |        |
| Hori.    | 432.007            | QP       | 45.0              | 16.6               | 9.2          | 31.9         | 38.9               | 46.0              | 7.1            | 100            | 324            |        |
| Hori.    | 518.094            | QP       | 42.7              | 17.7               | 9.5          | 32.0         | 37.9               | 46.0              | 8.1            | 255            | 359            |        |
| Hori.    | 666.124            | QP       | 41.7              | 19.8               | 10.1         | 31.9         | 39.7               | 46.0              | 6.3            | 100            | 174            |        |
| Hori.    | 816.014            | QP       | 40.4              | 21.1               | 10.5         | 31.5         | 40.5               | 46.0              | 5.5            | 233            | 261            |        |
| Hori.    | 1776.115           | PK       | 50.2              | 25.9               | 14.0         | 41.0         | 49.1               | 73.9              | 24.8           | 124            | 0              |        |
| Hori.    | 2483.500           | PK       | 58.9              | 27.5               | 14.9         | 41.4         | 59.9               | 73.9              | 14.0           | 109            | 343            |        |
| Hori.    | 2886.508           | PK       | 53.2              | 28.2               | 7.0          | 41.4         | 47.0               | 73.9              | 26.9           | 100            | 200            |        |
| Hori.    | 3126.497           | PK       | 53.8              | 28.7               | 6.6          | 41.5         | 47.6               | 73.9              | 26.3           | 100            | 226            |        |
| Hori.    | 4924.000           | PK       | 48.2              | 31.5               | 7.7          | 41.0         | 46.4               | 73.9              | 27.5           | 133            | 56             |        |
| Hori.    | 7386.000           | PK       | 45.3              | 36.7               | 9.2          | 41.5         | 49.7               | 73.9              | 24.2           | 100            | 0              |        |
| Hori.    | 9848.000           | PK       | 43.1              | 38.9               | 10.2         | 38.9         | 53.3               | 73.9              | 20.6           | 100            | 0              |        |
| Hori.    | 12310.000          | PK       | 43.3              | 39.5               | 11.3         | 39.3         | 54.8               | 73.9              | 19.1           | 100            | 0              |        |
| Hori.    | 24620.000          | PK       | 45.0              | 39.7               | -1.7         | 46.7         | 36.3               | 73.9              | 37.6           | 100            | 0              |        |
| Hori.    | 1776.115           | AV       | 42.3              | 25.9               | 14.0         | 41.0         | 41.2               | 53.9              | 12.7           | 124            | 0              |        |
| Hori.    | 2483.500           | AV       | 42.0              | 27.5               | 14.9         | 41.4         | 43.0               | 53.9              | 10.9           | 109            | 343            |        |
| Hori.    | 2886.508           | AV       | 47.3              | 28.2               | 7.0          | 41.4         | 41.1               | 53.9              | 12.8           | 100            | 200            |        |
| Hori.    | 3126.497           | AV       | 50.7              | 28.7               | 6.6          | 41.5         | 44.5               | 53.9              | 9.4            | 100            | 226            |        |
| Vert.    | 144.003            | QP       | 37.1              | 14.6               | 7.7          | 32.1         | 27.3               | 43.5              | 16.2           | 100            | 261            |        |
| Vert.    | 592.107            | QP       | 39.3              | 18.8               | 9.8          | 31.9         | 36.0               | 46.0              | 10.0           | 100            | 179            |        |
| Vert.    | 666.124            | QP       | 39.2              | 19.8               | 10.1         | 31.9         | 37.2               | 46.0              | 8.8            | 100            | 212            |        |
| Vert.    | 720.013            | QP       | 38.5              | 20.4               | 10.2         | 31.8         | 37.3               | 46.0              | 8.7            | 100            | 165            |        |
| Vert.    | 816.014            | QP       | 42.2              | 21.1               | 10.5         | 31.5         | 42.3               | 46.0              | 3.7            | 100            | 182            |        |
| Vert.    | 2483.500           | PK       | 65.9              | 27.5               | 14.9         | 41.4         | 66.9               | 73.9              | 7.0            | 131            | 181            |        |
| Vert.    | 2886.508           | PK       | 52.9              | 28.2               | 7.0          | 41.4         | 46.7               | 73.9              | 27.2           | 100            | 197            |        |
| Vert.    | 3126.460           | PK       | 55.9              | 28.7               | 6.6          | 41.5         | 49.7               | 73.9              | 24.2           | 100            | 197            |        |
| Vert.    | 4924.000           | PK       | 47.8              | 31.5               | 7.7          | 41.0         | 46.0               | 73.9              | 27.9           | 100            | 189            |        |
| Vert.    | 7386.000           | PK       | 45.5              | 36.7               | 9.2          | 41.5         | 49.9               | 73.9              | 24.0           | 100            | 0              |        |
| Vert.    | 9848.000           | PK       | 43.6              | 38.9               | 10.2         | 38.9         | 53.8               | 73.9              | 20.1           | 100            | 0              |        |
| Vert.    | 12310.000          | PK       | 42.9              | 39.5               | 11.3         | 39.3         | 54.4               | 73.9              | 19.5           | 100            | 0              |        |
| Vert.    | 24620.000          | PK       | 45.1              | 39.7               | -1.7         | 46.7         | 36.4               | 73.9              | 37.5           | 100            | 0              |        |
| Vert.    | 2483.500           | AV       | 48.0              | 27.5               | 14.9         | 41.4         | 49.0               | 53.9              | 4.9            | 131            | 181            |        |
| Vert.    | 2886.508           | AV       | 48.3              | 28.2               | 7.0          | 41.4         | 42.1               | 53.9              | 11.8           | 100            | 197            |        |
| Vert.    | 3126.460           | AV       | 53.3              | 28.7               | 6.6          | 41.5         | 47.1               | 53.9              | 6.8            | 100            | 197            |        |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz ~40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### Average measurement value with duty fact

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Duty<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark     |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|------------------------|--------------------|-------------------|----------------|------------|
| Hori.    | 4924.000           | AV       | 38.8              | 31.5               | 7.7          | 41.0         | 0.5                    | 37.5               | 53.9              | 16.4           | Duty:0.5dB |
| Hori.    | 7386.000           | AV       | 36.4              | 36.7               | 9.2          | 41.5         | 0.5                    | 41.3               | 53.9              | 12.6           | Duty:0.5dB |
| Hori.    | 9848.000           | AV       | 33.8              | 38.9               | 10.2         | 38.9         | 0.5                    | 44.5               | 53.9              | 9.4            | Duty:0.5dB |
| Hori.    | 12310.000          | AV       | 33.7              | 39.5               | 11.3         | 39.3         | 0.5                    | 45.7               | 53.9              | 8.2            | Duty:0.5dB |
| Hori.    | 24620.000          | AV       | 32.2              | 39.7               | -1.7         | 46.7         | 0.5                    | 24.0               | 53.9              | 29.9           | Duty:0.5dB |
| Vert.    | 4924.000           | AV       | 38.4              | 31.5               | 7.7          | 41.0         | 0.5                    | 37.1               | 53.9              | 16.8           | Duty:0.5dB |
| Vert.    | 7386.000           | AV       | 36.4              | 36.7               | 9.2          | 41.5         | 0.5                    | 41.3               | 53.9              | 12.6           | Duty:0.5dB |
| Vert.    | 9848.000           | AV       | 33.7              | 38.9               | 10.2         | 38.9         | 0.5                    | 44.4               | 53.9              | 9.5            | Duty:0.5dB |
| Vert.    | 12310.000          | AV       | 33.8              | 39.5               | 11.3         | 39.3         | 0.5                    | 45.8               | 53.9              | 8.1            | Duty:0.5dB |
| Vert.    | 24620.000          | AV       | 32.2              | 39.7               | -1.7         | 46.7         | 0.5                    | 24.0               | 53.9              | 29.9           | Duty:0.5dB |

RResult = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Duty factor

\*12.2.5.2 was applied to AV detection, since the duty cycle is less than 98% and video triggering or signal gating cannot be used.

Distance factor : 15GHz ~40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

**UL Japan, Inc.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                                                    |                |                   |
|------------------------|----------------------------------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber                         |                |                   |
| Date                   | May 20, 2013                                       | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH                                     | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                                       | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2412 MHz                                       |                |                   |
|                        | Tx, IEEE802.11n (HT20), PN9, MCS0 Long G.I.(800ns) |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 2390.000           | PK       | 60.6              | 27.4               | 14.8         | 41.4         | 61.4               | 73.9              | 12.5           | 146            | 336            |        |
| Hori.    | 2886.537           | PK       | 53.6              | 28.2               | 7.0          | 41.4         | 47.4               | 73.9              | 26.5           | 141            | 205            |        |
| Hori.    | 3126.494           | PK       | 54.9              | 28.7               | 6.6          | 41.5         | 48.7               | 73.9              | 25.2           | 100            | 219            |        |
| Hori.    | 4824.000           | PK       | 49.5              | 31.1               | 7.6          | 41.2         | 47.0               | 73.9              | 26.9           | 116            | 81             |        |
| Hori.    | 7236.000           | PK       | 46.8              | 36.6               | 9.1          | 41.4         | 51.1               | 73.9              | 22.8           | 100            | 0              |        |
| Hori.    | 9648.000           | PK       | 44.1              | 38.6               | 10.3         | 38.9         | 54.1               | 73.9              | 19.8           | 100            | 0              |        |
| Hori.    | 12060.000          | PK       | 45.7              | 39.5               | 11.5         | 39.4         | 57.3               | 73.9              | 16.6           | 100            | 0              |        |
| Hori.    | 24120.000          | PK       | 44.7              | 39.8               | -1.9         | 46.5         | 36.1               | 73.9              | 37.8           | 100            | 0              |        |
| Hori.    | 2390.000           | AV       | 45.5              | 27.4               | 14.8         | 41.4         | 46.3               | 53.9              | 7.6            | 146            | 336            |        |
| Hori.    | 2886.537           | AV       | 48.8              | 28.2               | 7.0          | 41.4         | 42.6               | 53.9              | 11.3           | 141            | 205            |        |
| Hori.    | 3126.494           | AV       | 52.4              | 28.7               | 6.6          | 41.5         | 46.2               | 53.9              | 7.7            | 100            | 219            |        |
| Vert.    | 2390.000           | PK       | 63.6              | 27.4               | 14.8         | 41.4         | 64.4               | 73.9              | 9.5            | 172            | 339            |        |
| Vert.    | 2886.537           | PK       | 51.2              | 28.2               | 7.0          | 41.4         | 45.0               | 73.9              | 28.9           | 134            | 157            |        |
| Vert.    | 3126.494           | PK       | 56.1              | 28.7               | 6.6          | 41.5         | 49.9               | 73.9              | 24.0           | 100            | 202            |        |
| Vert.    | 4824.000           | PK       | 47.6              | 31.1               | 7.6          | 41.2         | 45.1               | 73.9              | 28.8           | 112            | 206            |        |
| Vert.    | 7236.000           | PK       | 46.6              | 36.6               | 9.1          | 41.4         | 50.9               | 73.9              | 23.0           | 100            | 0              |        |
| Vert.    | 9648.000           | PK       | 44.0              | 38.6               | 10.3         | 38.9         | 54.0               | 73.9              | 19.9           | 100            | 0              |        |
| Vert.    | 12060.000          | PK       | 45.8              | 39.5               | 11.5         | 39.4         | 57.4               | 73.9              | 16.5           | 100            | 0              |        |
| Vert.    | 24120.000          | PK       | 44.6              | 39.8               | -1.9         | 46.5         | 36.0               | 73.9              | 37.9           | 100            | 0              |        |
| Vert.    | 2390.000           | AV       | 44.4              | 27.4               | 14.8         | 41.4         | 45.2               | 53.9              | 8.7            | 172            | 339            |        |
| Vert.    | 2886.537           | AV       | 46.0              | 28.2               | 7.0          | 41.4         | 39.8               | 53.9              | 14.1           | 134            | 157            |        |
| Vert.    | 3126.494           | AV       | 52.6              | 28.7               | 6.6          | 41.5         | 46.4               | 53.9              | 7.5            | 100            | 202            |        |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### Average measurement value with duty fact

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Duty<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark     |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|------------------------|--------------------|-------------------|----------------|------------|
| Hori.    | 4824.000           | AV       | 40.6              | 31.1               | 7.6          | 41.2         | 0.5                    | 38.6               | 53.9              | 15.3           | Duty:0.5dB |
| Hori.    | 7236.000           | AV       | 38.7              | 36.6               | 9.1          | 41.4         | 0.5                    | 43.5               | 53.9              | 10.4           | Duty:0.5dB |
| Hori.    | 9648.000           | AV       | 36.2              | 38.6               | 10.3         | 38.9         | 0.5                    | 46.7               | 53.9              | 7.2            | Duty:0.5dB |
| Hori.    | 12060.000          | AV       | 37.5              | 39.5               | 11.5         | 39.4         | 0.5                    | 49.6               | 53.9              | 4.3            | Duty:0.5dB |
| Hori.    | 24120.000          | AV       | 32.1              | 39.8               | -1.9         | 46.5         | 0.5                    | 24.0               | 53.9              | 29.9           | Duty:0.5dB |
| Vert.    | 4824.000           | AV       | 38.9              | 31.1               | 7.6          | 41.2         | 0.5                    | 36.9               | 53.9              | 17.0           | Duty:0.5dB |
| Vert.    | 7236.000           | AV       | 38.8              | 36.6               | 9.1          | 41.4         | 0.5                    | 43.6               | 53.9              | 10.3           | Duty:0.5dB |
| Vert.    | 9648.000           | AV       | 36.0              | 38.6               | 10.3         | 38.9         | 0.5                    | 46.5               | 53.9              | 7.4            | Duty:0.5dB |
| Vert.    | 12060.000          | AV       | 37.6              | 39.5               | 11.5         | 39.4         | 0.5                    | 49.7               | 53.9              | 4.2            | Duty:0.5dB |
| Vert.    | 24120.000          | AV       | 32.0              | 39.8               | -1.9         | 46.5         | 0.5                    | 23.9               | 53.9              | 30.0           | Duty:0.5dB |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Duty factor

\*12.2.5.2 was applied to AV detection, since the duty cycle is less than 98% and video triggering or signal gating cannot be used.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### 20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark  |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|---------|
| Hori.    | 2412.000           | PK       | 90.2              | 27.5               | 14.8         | 41.4         | 91.1               | -                 | -              | 146            | 336            | Carrier |
| Hori.    | 2400.000           | PK       | 56.2              | 27.4               | 14.8         | 41.4         | 57.0               | 71.1              | 14.1           | 146            | 336            |         |
| Vert.    | 2412.000           | PK       | 93.8              | 27.5               | 14.8         | 41.4         | 94.7               | -                 | -              | 172            | 339            | Carrier |
| Vert.    | 2400.000           | PK       | 59.0              | 27.4               | 14.8         | 41.4         | 59.8               | 74.7              | 14.9           | 172            | 339            |         |

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

**UL Japan, Inc.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                                                    |                |                   |
|------------------------|----------------------------------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber                         |                |                   |
| Date                   | May 20, 2013                                       | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH                                     | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                                       | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2437 MHz                                       |                |                   |
|                        | Tx, IEEE802.11n (HT20), PN9, MCS0 Long G.I.(800ns) |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 3126.480           | PK       | 55.2              | 28.7               | 6.6          | 41.5         | 49.0               | 73.9              | 24.9           | 100            | 219            |        |
| Hori.    | 4874.000           | PK       | 48.2              | 31.3               | 7.7          | 41.1         | 46.1               | 73.9              | 27.8           | 100            | 302            |        |
| Hori.    | 7311.000           | PK       | 46.0              | 36.6               | 9.2          | 41.4         | 50.4               | 73.9              | 23.5           | 100            | 0              |        |
| Hori.    | 9748.000           | PK       | 43.2              | 38.7               | 10.2         | 38.9         | 53.2               | 73.9              | 20.7           | 100            | 0              |        |
| Hori.    | 12185.000          | PK       | 44.3              | 39.5               | 11.4         | 39.3         | 55.9               | 73.9              | 18.0           | 100            | 0              |        |
| Hori.    | 24370.000          | PK       | 45.2              | 39.8               | -1.8         | 46.6         | 36.6               | 73.9              | 37.3           | 100            | 0              |        |
| Hori.    | 3126.480           | AV       | 52.4              | 28.7               | 6.6          | 41.5         | 46.2               | 53.9              | 7.7            | 100            | 219            |        |
| Vert.    | 3126.480           | PK       | 56.4              | 28.7               | 6.6          | 41.5         | 50.2               | 73.9              | 23.7           | 100            | 199            |        |
| Vert.    | 4874.000           | PK       | 48.2              | 31.3               | 7.7          | 41.1         | 46.1               | 73.9              | 27.8           | 100            | 200            |        |
| Vert.    | 7311.000           | PK       | 45.3              | 36.6               | 9.2          | 41.4         | 49.7               | 73.9              | 24.2           | 100            | 0              |        |
| Vert.    | 9748.000           | PK       | 43.3              | 38.7               | 10.2         | 38.9         | 53.3               | 73.9              | 20.6           | 100            | 0              |        |
| Vert.    | 12185.000          | PK       | 43.5              | 39.5               | 11.4         | 39.3         | 55.1               | 73.9              | 18.8           | 100            | 0              |        |
| Vert.    | 24370.000          | PK       | 45.1              | 39.8               | -1.8         | 46.6         | 36.5               | 73.9              | 37.4           | 100            | 0              |        |
| Vert.    | 3126.480           | AV       | 54.4              | 28.7               | 6.6          | 41.5         | 48.2               | 53.9              | 5.7            | 100            | 199            |        |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz ~40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### Average measurement value with duty fact

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Duty<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark     |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|------------------------|--------------------|-------------------|----------------|------------|
| Hori.    | 4874.000           | AV       | 38.0              | 31.3               | 7.7          | 41.1         | 0.5                    | 36.4               | 53.9              | 17.5           | Duty:0.5dB |
| Hori.    | 7311.000           | AV       | 36.6              | 36.6               | 9.2          | 41.4         | 0.5                    | 41.5               | 53.9              | 12.4           | Duty:0.5dB |
| Hori.    | 9748.000           | AV       | 34.3              | 38.7               | 10.2         | 38.9         | 0.5                    | 44.8               | 53.9              | 9.1            | Duty:0.5dB |
| Hori.    | 12185.000          | AV       | 33.4              | 39.5               | 11.4         | 39.3         | 0.5                    | 45.5               | 53.9              | 8.4            | Duty:0.5dB |
| Hori.    | 24370.000          | AV       | 32.6              | 39.8               | -1.8         | 46.6         | 0.5                    | 24.5               | 53.9              | 29.4           | Duty:0.5dB |
| Vert.    | 4874.000           | AV       | 38.5              | 31.3               | 7.7          | 41.1         | 0.5                    | 36.9               | 53.9              | 17.0           | Duty:0.5dB |
| Vert.    | 7311.000           | AV       | 36.2              | 36.6               | 9.2          | 41.4         | 0.5                    | 41.1               | 53.9              | 12.8           | Duty:0.5dB |
| Vert.    | 9748.000           | AV       | 34.0              | 38.7               | 10.2         | 38.9         | 0.5                    | 44.5               | 53.9              | 9.4            | Duty:0.5dB |
| Vert.    | 12185.000          | AV       | 34.3              | 39.5               | 11.4         | 39.3         | 0.5                    | 46.4               | 53.9              | 7.5            | Duty:0.5dB |
| Vert.    | 24370.000          | AV       | 32.5              | 39.8               | -1.8         | 46.6         | 0.5                    | 24.4               | 53.9              | 29.5           | Duty:0.5dB |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Duty factor

\*12.2.5.2 was applied to AV detection, since the duty cycle is less than 98% and video triggering or signal gating cannot be used.

Distance factor : 15GHz ~40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

**UL Japan, Inc.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Radiated Emission

|                        |                                                    |                |                   |
|------------------------|----------------------------------------------------|----------------|-------------------|
| Test place             | No.3 Semi Anechoic Chamber                         |                |                   |
| Date                   | May 20, 2013                                       | May 23, 2013   | May 24, 2013      |
| Temperature / Humidity | 25deg.C, 54%RH                                     | 26deg.C, 46%RH | 24deg.C, 52%RH    |
| Engineer               | Akio Hayashi                                       | Kenichi Adachi | Kenichi Adachi    |
| Mode                   | Tx, 2462 MHz                                       |                |                   |
|                        | Tx, IEEE802.11n (HT20), PN9, MCS0 Long G.I.(800ns) |                | S/N: K1MC000040US |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 2483.500           | PK       | 59.1              | 27.5               | 14.9         | 41.4         | 60.1               | 73.9              | 13.8           | 164            | 314            |        |
| Hori.    | 2886.577           | PK       | 53.1              | 28.2               | 7.0          | 41.4         | 46.9               | 73.9              | 27.0           | 100            | 213            |        |
| Hori.    | 3126.275           | PK       | 53.5              | 28.7               | 6.6          | 41.5         | 47.3               | 73.9              | 26.6           | 100            | 229            |        |
| Hori.    | 4924.000           | PK       | 48.8              | 31.5               | 7.7          | 41.0         | 47.0               | 73.9              | 26.9           | 131            | 55             |        |
| Hori.    | 7386.000           | PK       | 46.8              | 36.7               | 9.2          | 41.5         | 51.2               | 73.9              | 22.7           | 100            | 0              |        |
| Hori.    | 9848.000           | PK       | 44.1              | 38.9               | 10.2         | 38.9         | 54.3               | 73.9              | 19.6           | 100            | 0              |        |
| Hori.    | 12310.000          | PK       | 46.6              | 39.5               | 11.3         | 39.3         | 58.1               | 73.9              | 15.8           | 100            | 0              |        |
| Hori.    | 24620.000          | PK       | 45.0              | 39.7               | -1.7         | 46.7         | 36.3               | 73.9              | 37.6           | 100            | 0              |        |
| Hori.    | 2483.500           | AV       | 45.0              | 27.5               | 14.9         | 41.4         | 46.0               | 53.9              | 7.9            | 164            | 314            |        |
| Hori.    | 2886.577           | AV       | 48.1              | 28.2               | 7.0          | 41.4         | 41.9               | 53.9              | 12.0           | 100            | 213            |        |
| Hori.    | 3126.275           | AV       | 50.3              | 28.7               | 6.6          | 41.5         | 44.1               | 53.9              | 9.8            | 100            | 229            |        |
| Vert.    | 2483.500           | PK       | 65.3              | 27.5               | 14.9         | 41.4         | 66.3               | 73.9              | 7.6            | 131            | 184            |        |
| Vert.    | 2886.577           | PK       | 53.2              | 28.2               | 7.0          | 41.4         | 47.0               | 73.9              | 26.9           | 100            | 184            |        |
| Vert.    | 3126.275           | PK       | 55.9              | 28.7               | 6.6          | 41.5         | 49.7               | 73.9              | 24.2           | 100            | 194            |        |
| Vert.    | 4924.000           | PK       | 47.6              | 31.5               | 7.7          | 41.0         | 45.8               | 73.9              | 28.1           | 100            | 189            |        |
| Vert.    | 7386.000           | PK       | 46.7              | 36.7               | 9.2          | 41.5         | 51.1               | 73.9              | 22.8           | 100            | 0              |        |
| Vert.    | 9848.000           | PK       | 43.5              | 38.9               | 10.2         | 38.9         | 53.7               | 73.9              | 20.2           | 100            | 0              |        |
| Vert.    | 12310.000          | PK       | 45.4              | 39.5               | 11.3         | 39.3         | 56.9               | 73.9              | 17.0           | 100            | 0              |        |
| Vert.    | 24620.000          | PK       | 45.1              | 39.7               | -1.7         | 46.7         | 36.4               | 73.9              | 37.5           | 100            | 0              |        |
| Vert.    | 2483.500           | AV       | 47.7              | 27.5               | 14.9         | 41.4         | 48.7               | 53.9              | 5.2            | 131            | 184            |        |
| Vert.    | 2886.577           | AV       | 48.7              | 28.2               | 7.0          | 41.4         | 42.5               | 53.9              | 11.4           | 100            | 184            |        |
| Vert.    | 3126.275           | AV       | 53.4              | 28.7               | 6.6          | 41.5         | 47.2               | 53.9              | 6.7            | 100            | 194            |        |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### Average measurement value with duty fact

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Duty<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark     |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|------------------------|--------------------|-------------------|----------------|------------|
| Hori.    | 4924.000           | AV       | 39.7              | 31.5               | 7.7          | 41.0         | 0.5                    | 38.4               | 53.9              | 15.5           | Duty:0.5dB |
| Hori.    | 7386.000           | AV       | 37.7              | 36.7               | 9.2          | 41.5         | 0.5                    | 42.6               | 53.9              | 11.3           | Duty:0.5dB |
| Hori.    | 9848.000           | AV       | 34.6              | 38.9               | 10.2         | 38.9         | 0.5                    | 45.3               | 53.9              | 8.6            | Duty:0.5dB |
| Hori.    | 12310.000          | AV       | 35.2              | 39.5               | 11.3         | 39.3         | 0.5                    | 47.2               | 53.9              | 6.7            | Duty:0.5dB |
| Hori.    | 24620.000          | AV       | 32.2              | 39.7               | -1.7         | 46.7         | 0.5                    | 24.0               | 53.9              | 29.9           | Duty:0.5dB |
| Vert.    | 4924.000           | AV       | 39.1              | 31.5               | 7.7          | 41.0         | 0.5                    | 37.8               | 53.9              | 16.1           | Duty:0.5dB |
| Vert.    | 7386.000           | AV       | 37.7              | 36.7               | 9.2          | 41.5         | 0.5                    | 42.6               | 53.9              | 11.3           | Duty:0.5dB |
| Vert.    | 9848.000           | AV       | 35.2              | 38.9               | 10.2         | 38.9         | 0.5                    | 45.9               | 53.9              | 8.0            | Duty:0.5dB |
| Vert.    | 12310.000          | AV       | 34.8              | 39.5               | 11.3         | 39.3         | 0.5                    | 46.8               | 53.9              | 7.1            | Duty:0.5dB |
| Vert.    | 24620.000          | AV       | 32.3              | 39.7               | -1.7         | 46.7         | 0.5                    | 24.1               | 53.9              | 29.8           | Duty:0.5dB |

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier) + Duty factor

\*12.2.5.2 was applied to AV detection, since the duty cycle is less than 98% and video triggering or signal gating cannot be used.

Distance factor : 15GHz -40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

**UL Japan, Inc.**

**Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

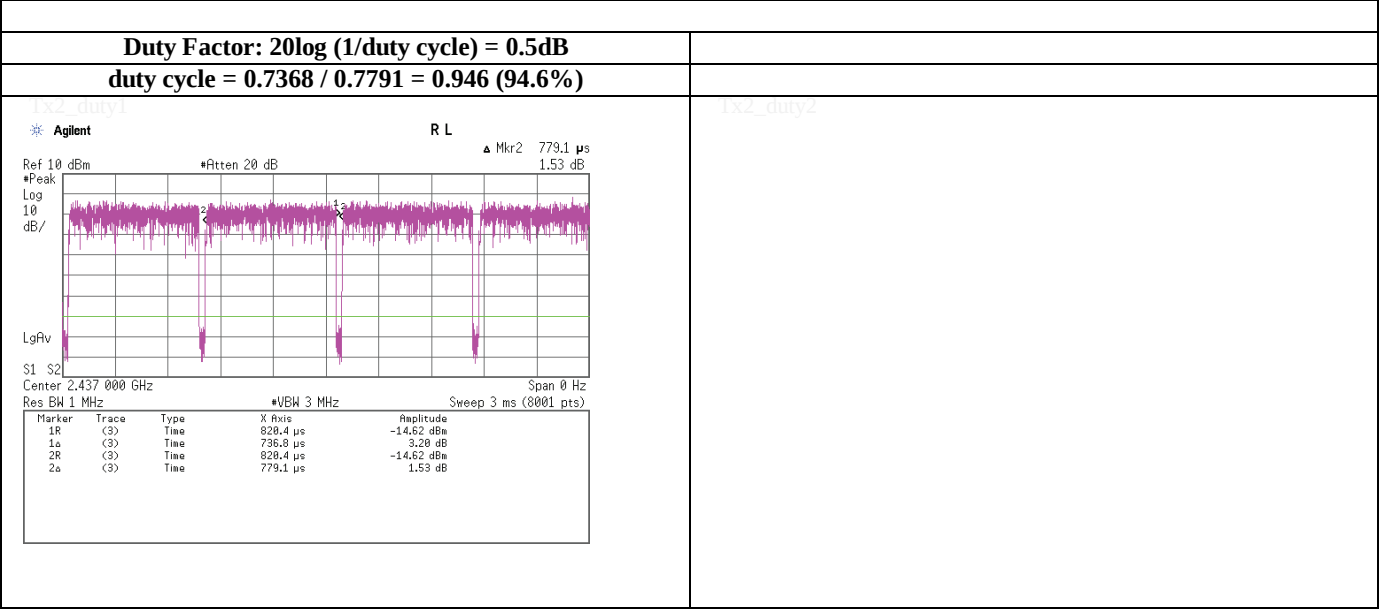
**Burst rate confirmation**

**Tx, IEEE802.11b, PN9, worst data mode 1Mbps**

</

Duty Factor Calculation chart

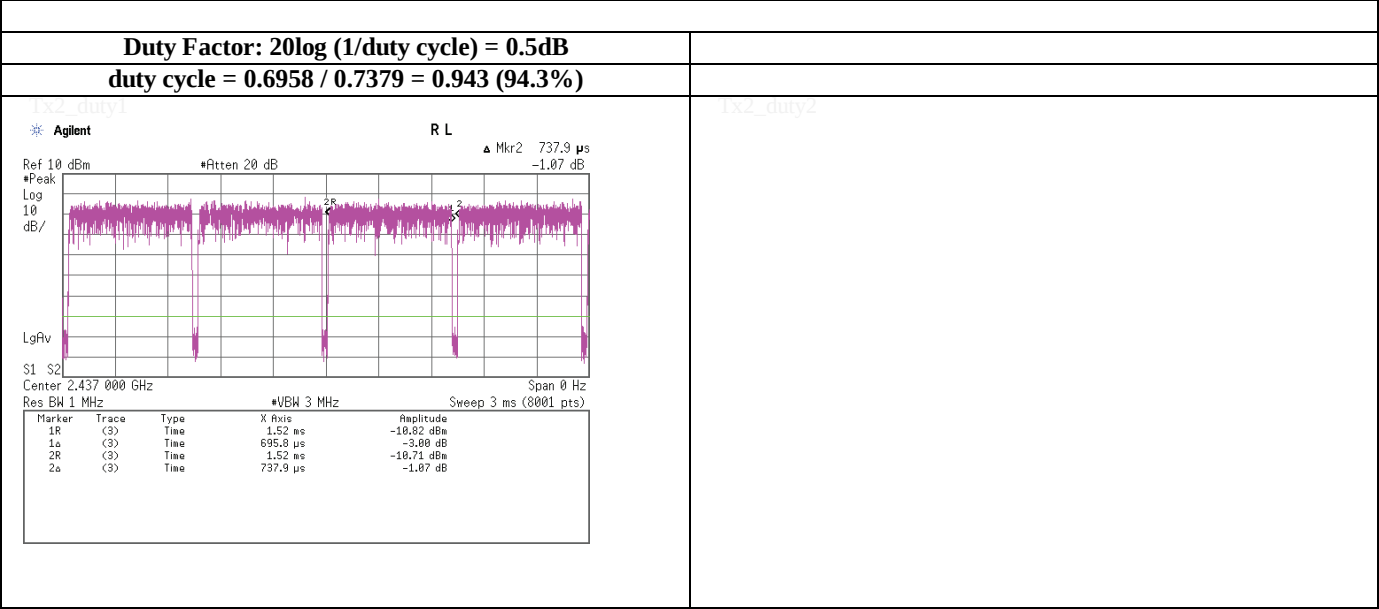
Tx, IEEE802.11g, PN9, worst data mode 6Mbps



**UL Japan, Inc.**  
**Shonan EMC Lab.**  
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
Telephone : +81 463 50 6400  
Facsimile : +81 463 50 6401

Duty Factor Calculation chart

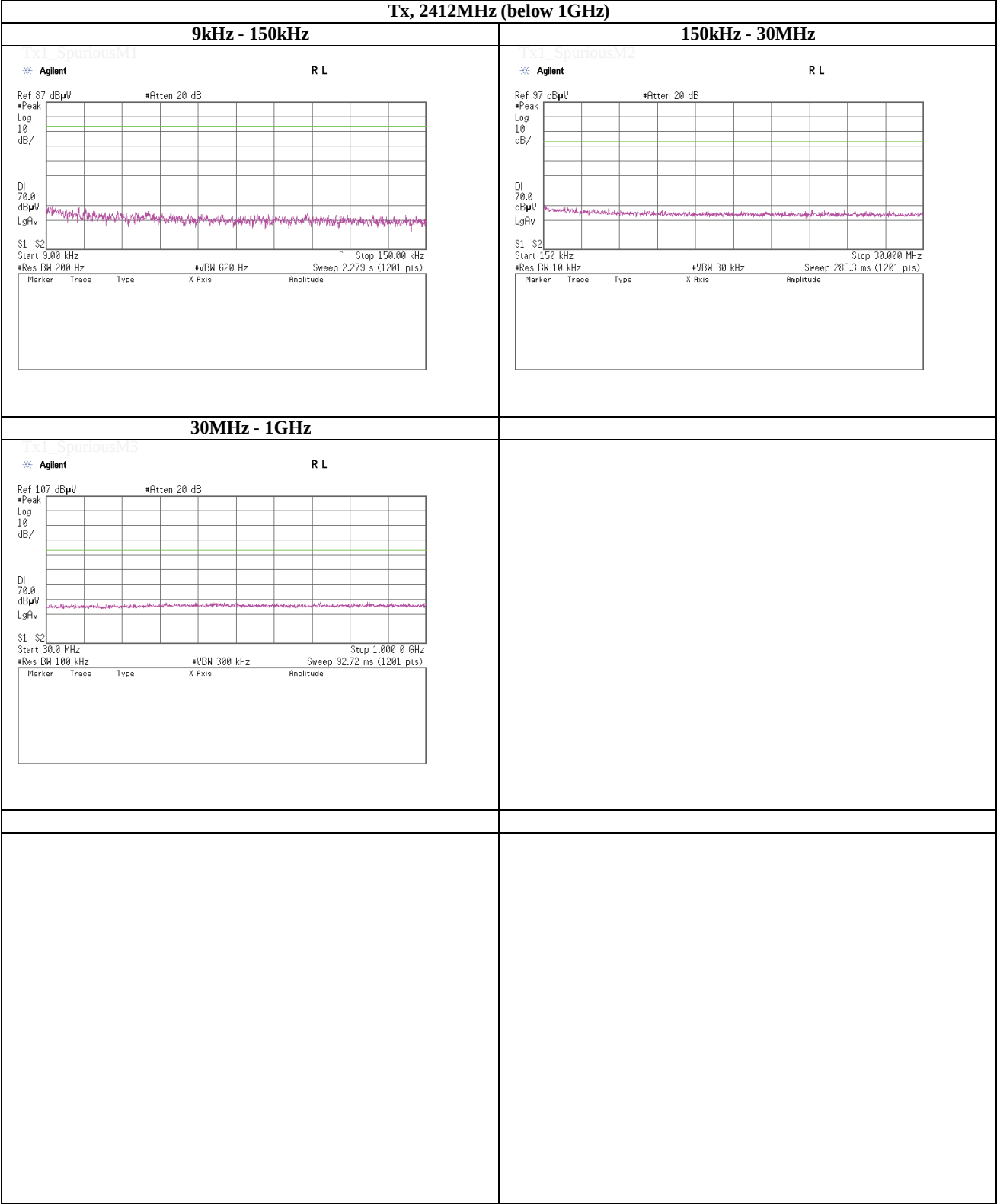
Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11b, PN9, worst data mode 1Mbps**

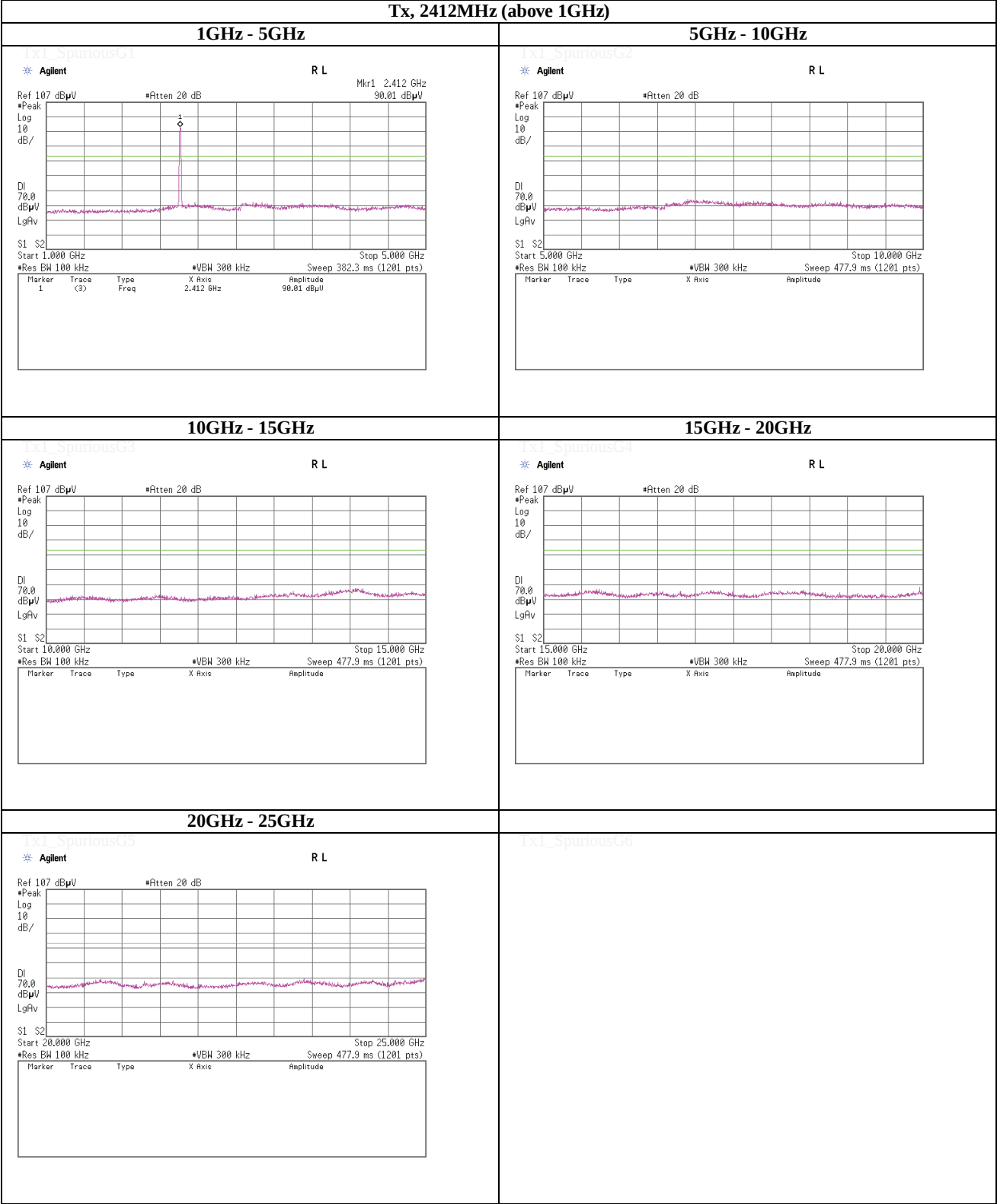
**Tx, 2412MHz (below 1GHz)**



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11b, PN9, worst data mode 1Mbps**

**Tx, 2412MHz (above 1GHz)**



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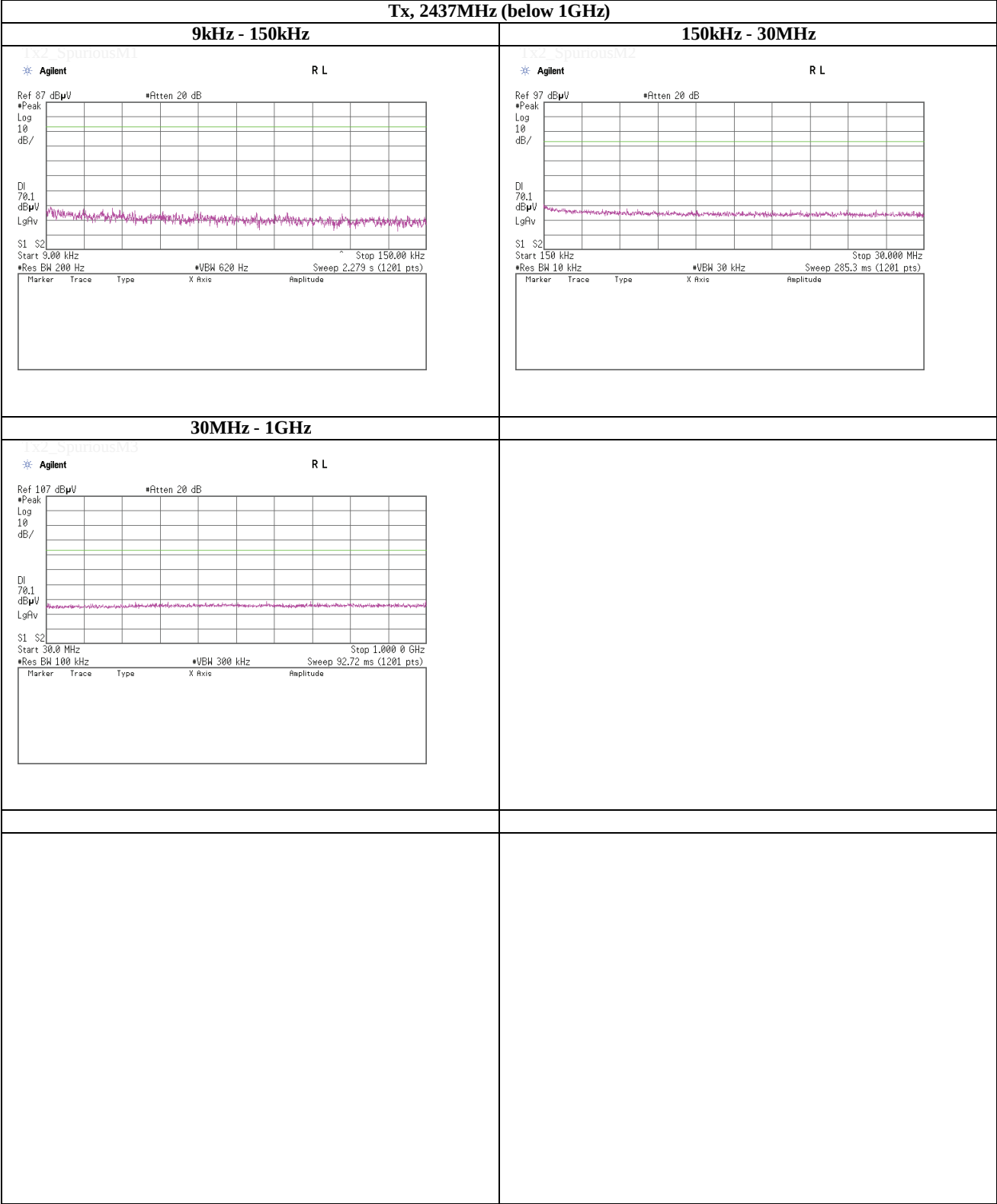
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(Reference chart) Spurious emission (Conducted)

Tx, IEEE802.11b, PN9, worst data mode 1Mbps

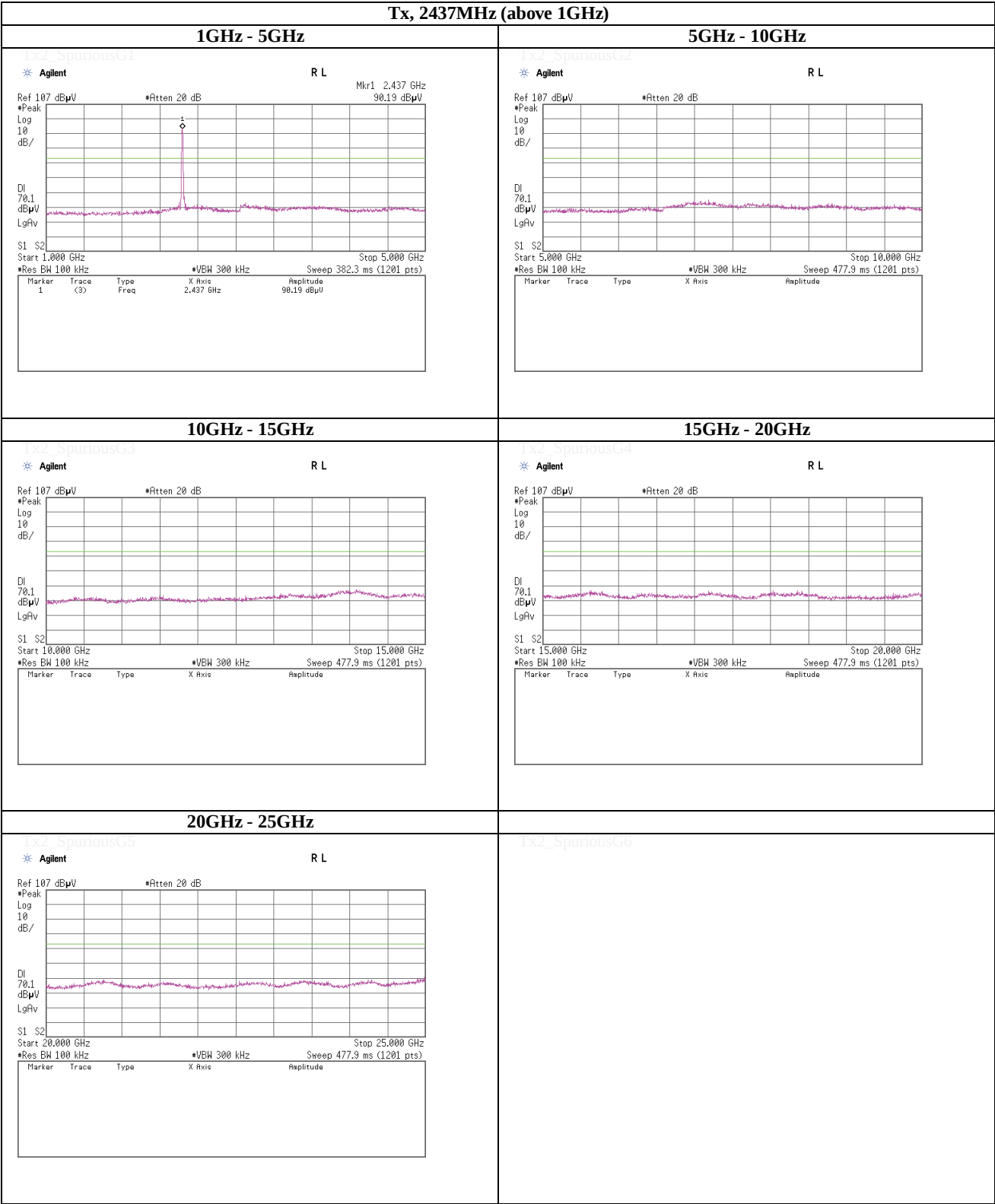
Tx, 2437MHz (below 1GHz)



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11b, PN9, worst data mode 1Mbps**

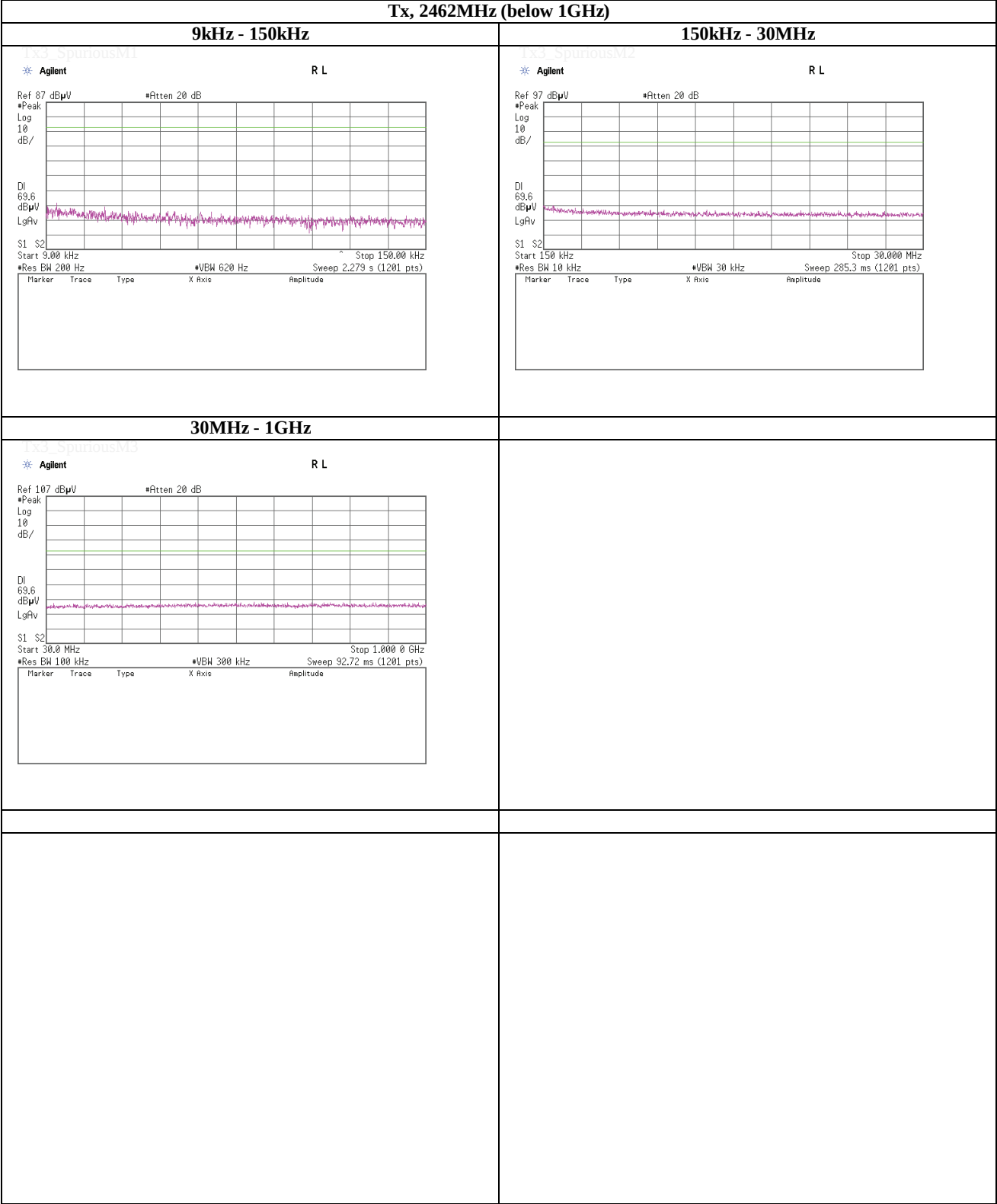
**Tx, 2437MHz (above 1GHz)**



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11b, PN9, worst data mode 1Mbps**

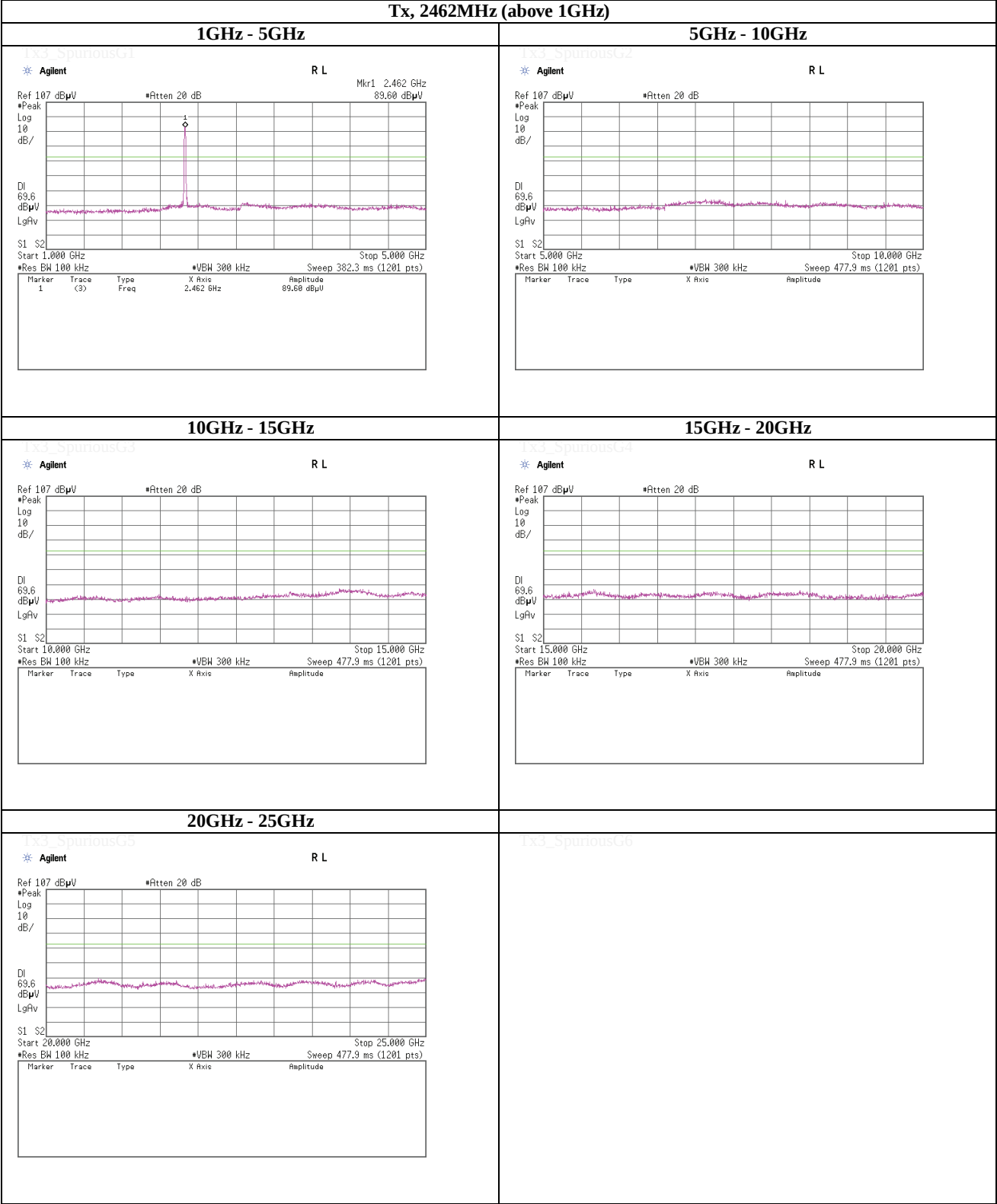
**Tx, 2462MHz (below 1GHz)**



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11b, PN9, worst data mode 1Mbps**

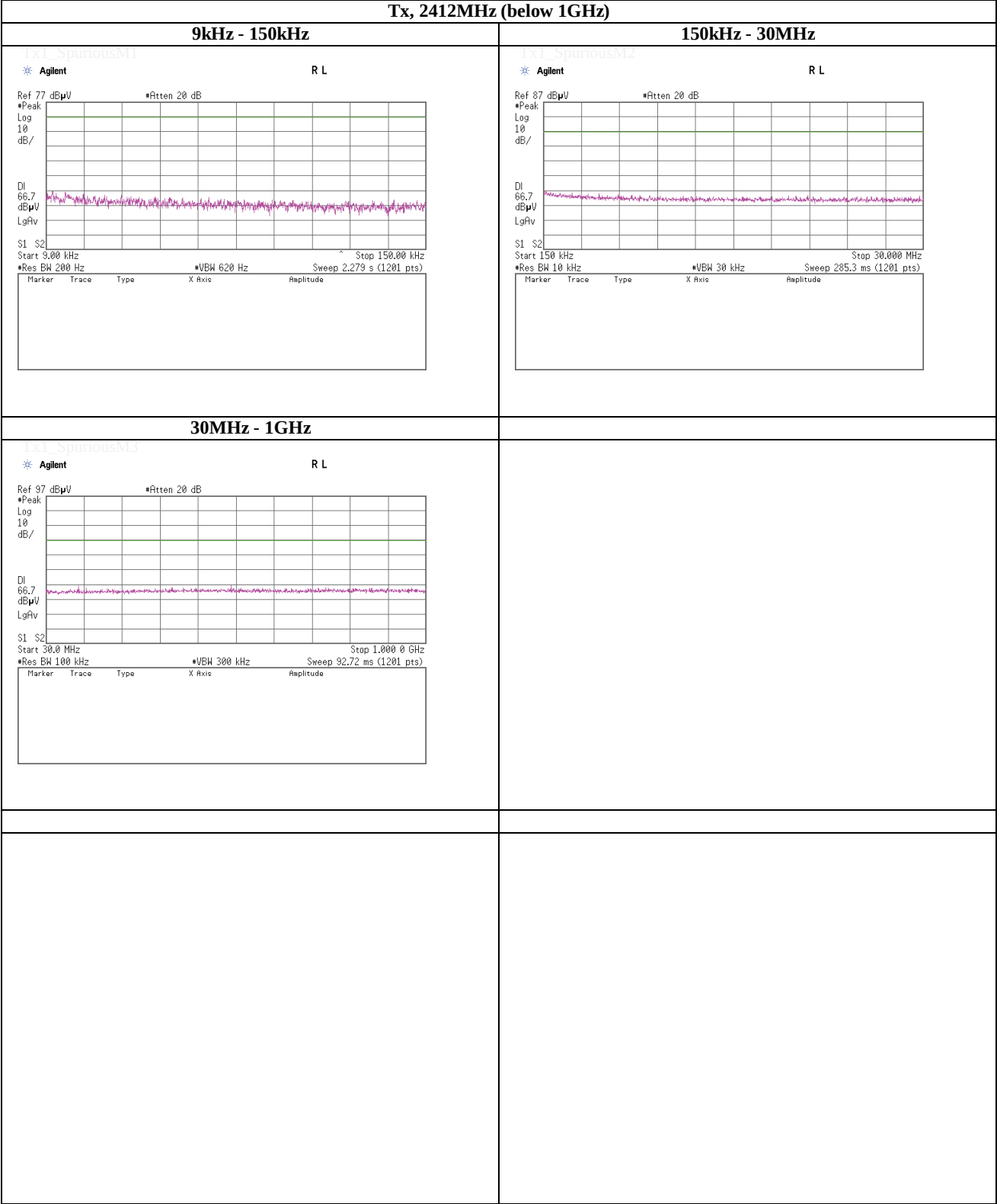
**Tx, 2462MHz (above 1GHz)**



(Reference chart) Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps

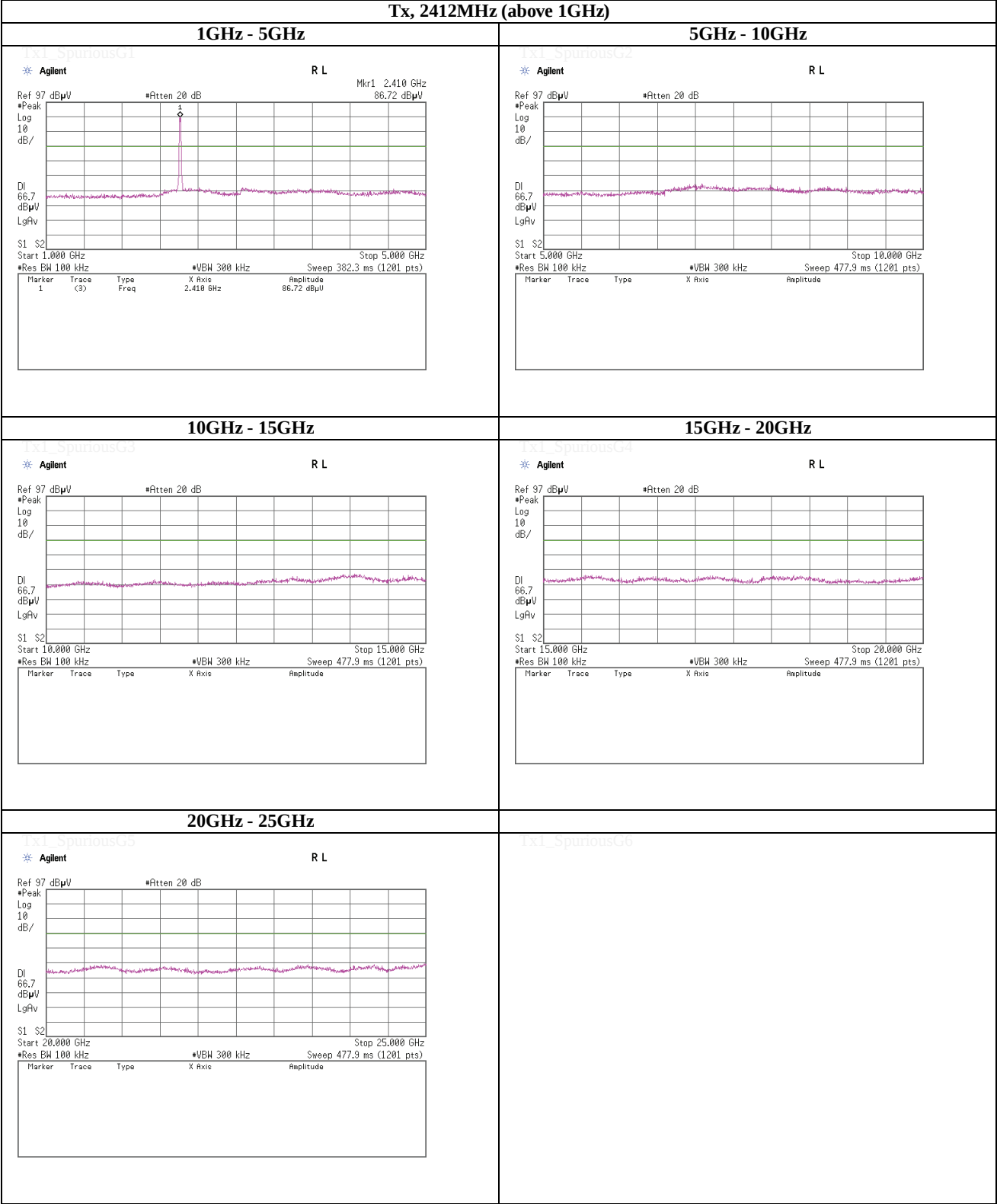
Tx, 2412MHz (below 1GHz)



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11g, PN9, worst data mode 6Mbps**

**Tx, 2412MHz (above 1GHz)**



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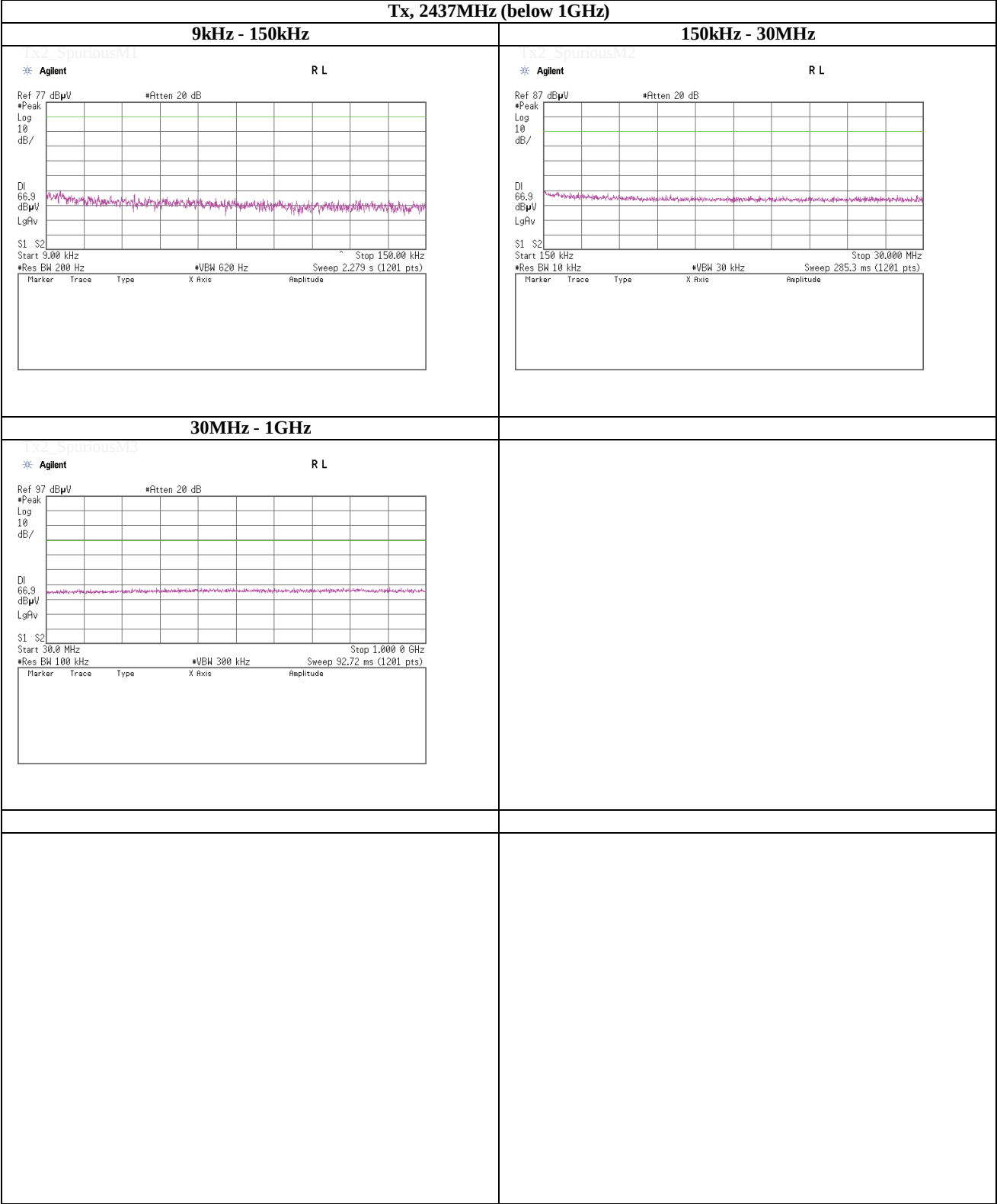
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(Reference chart) Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps

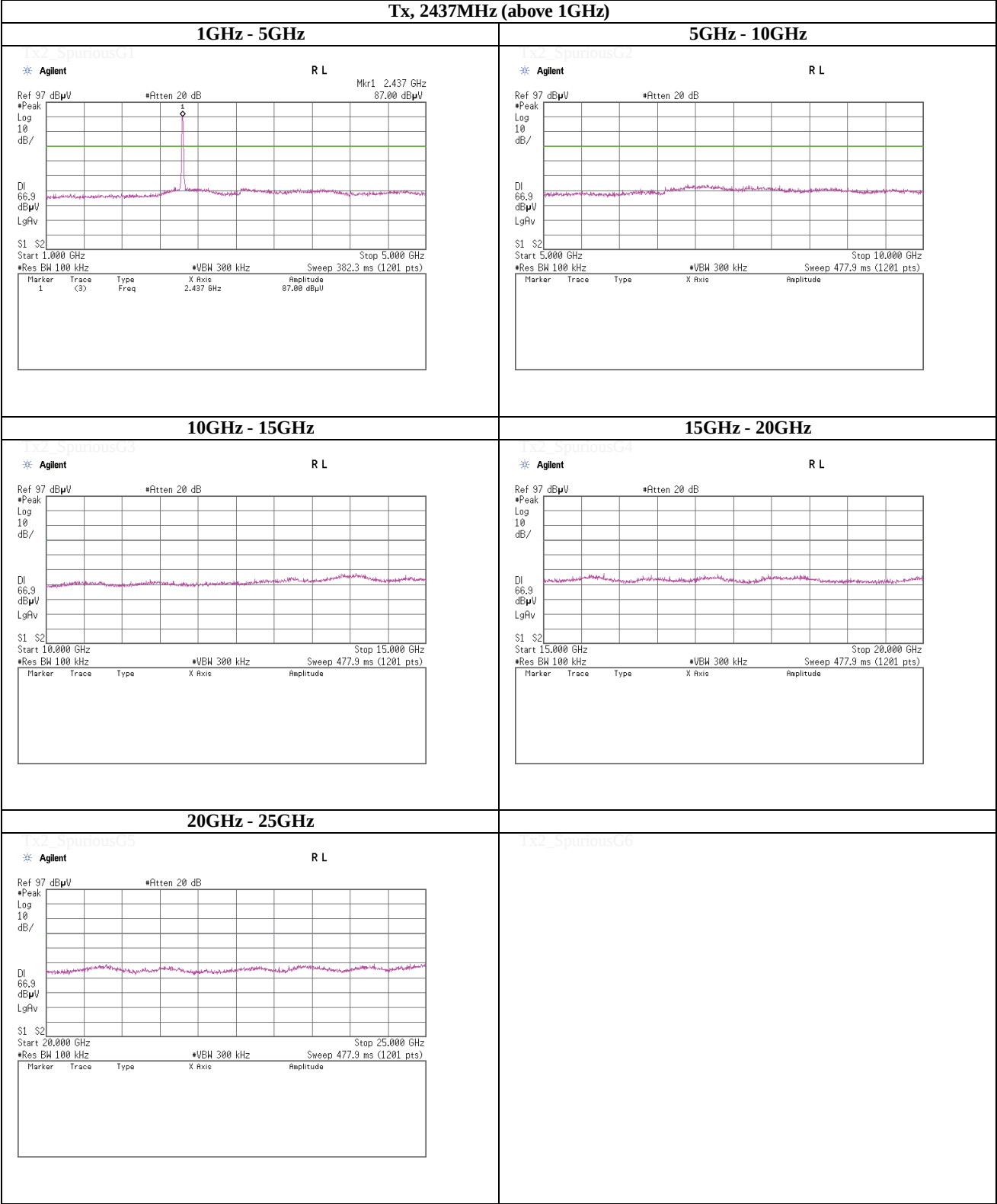
Tx, 2437MHz (below 1GHz)



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11g, PN9, worst data mode 6Mbps**

**Tx, 2437MHz (above 1GHz)**



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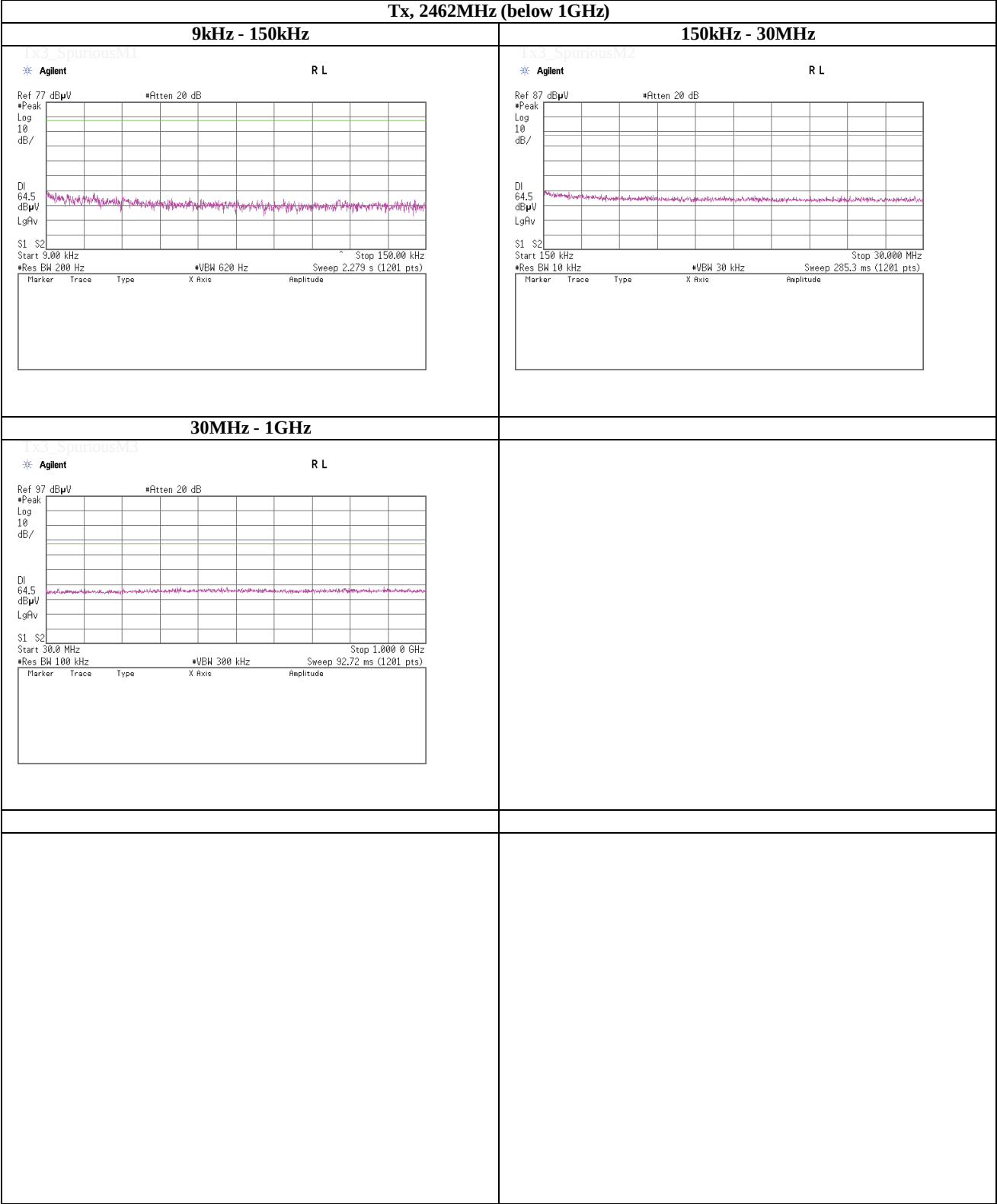
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(Reference chart) Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps

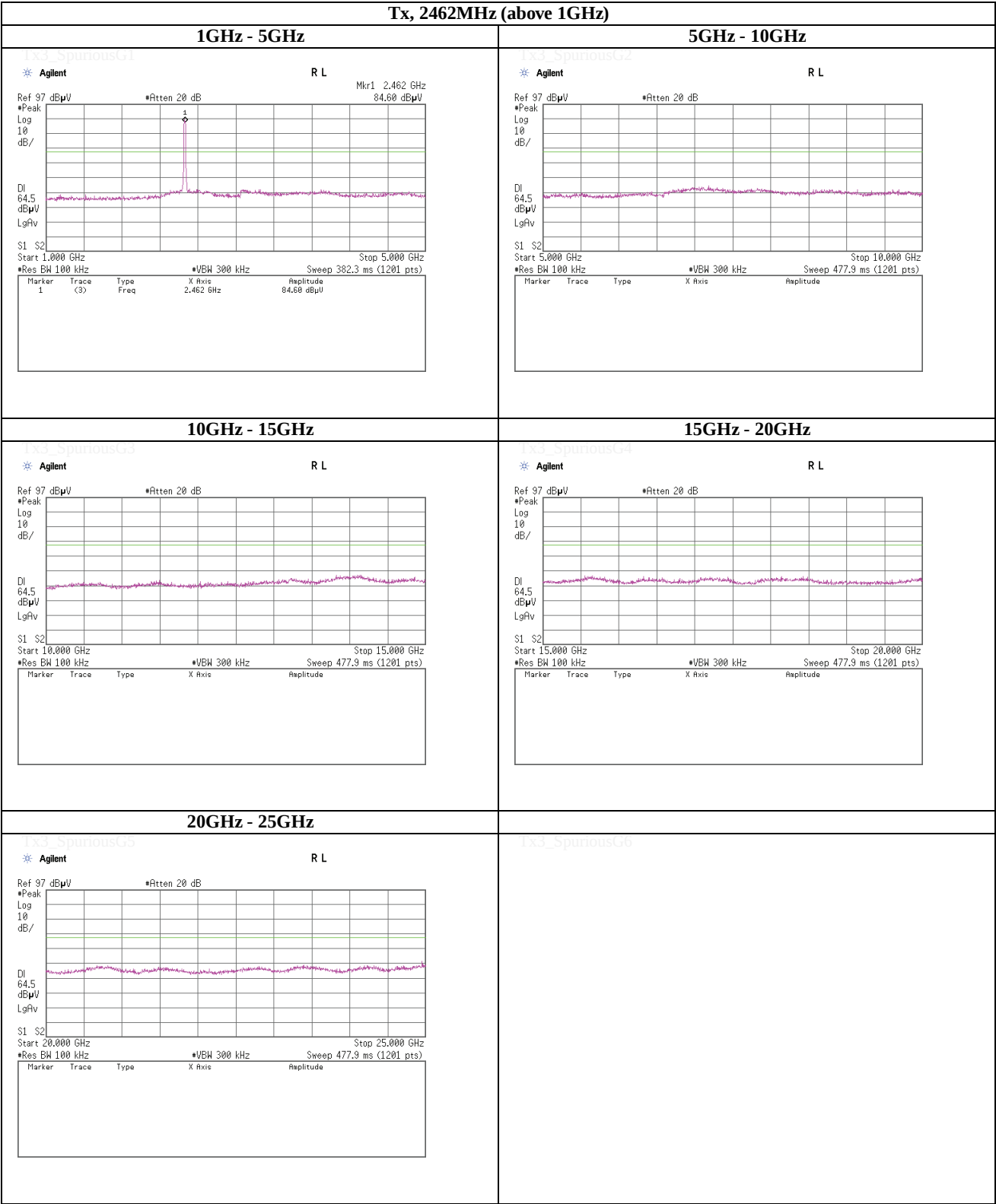
Tx, 2462MHz (below 1GHz)



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11g, PN9, worst data mode 6Mbps**

**Tx, 2462MHz (above 1GHz)**



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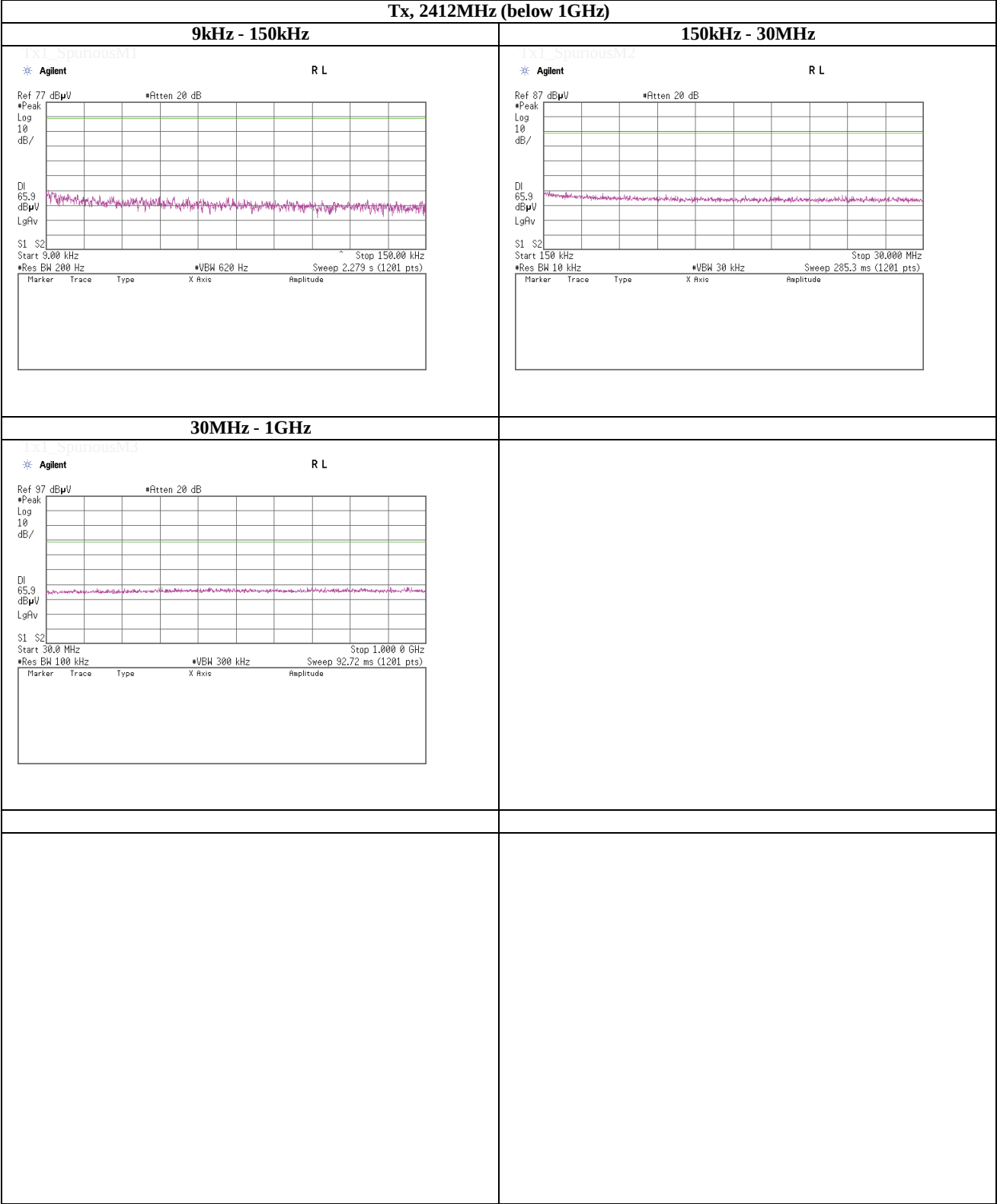
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(Reference chart) Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)

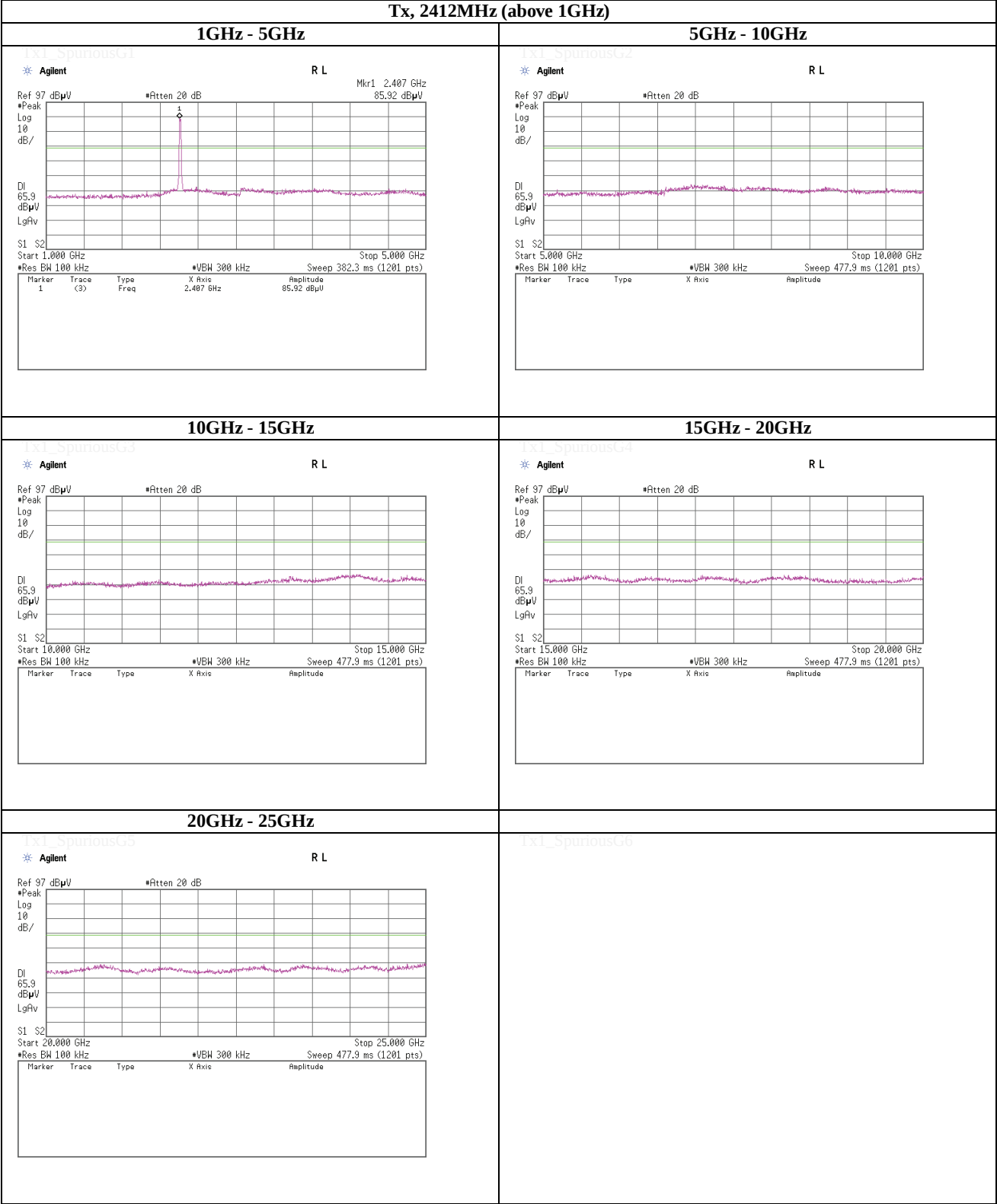
Tx, 2412MHz (below 1GHz)



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)**

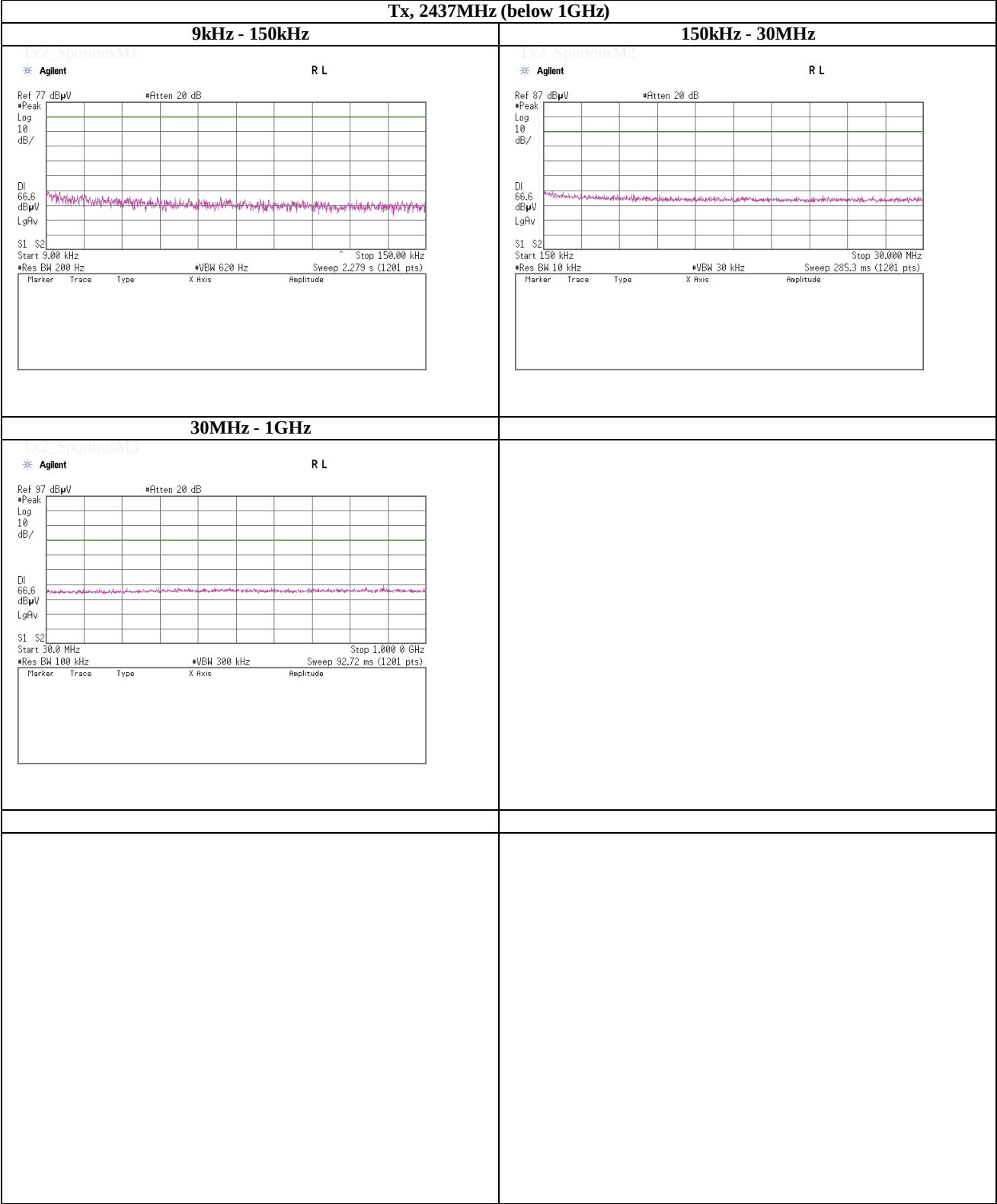
**Tx, 2412MHz (above 1GHz)**



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)**

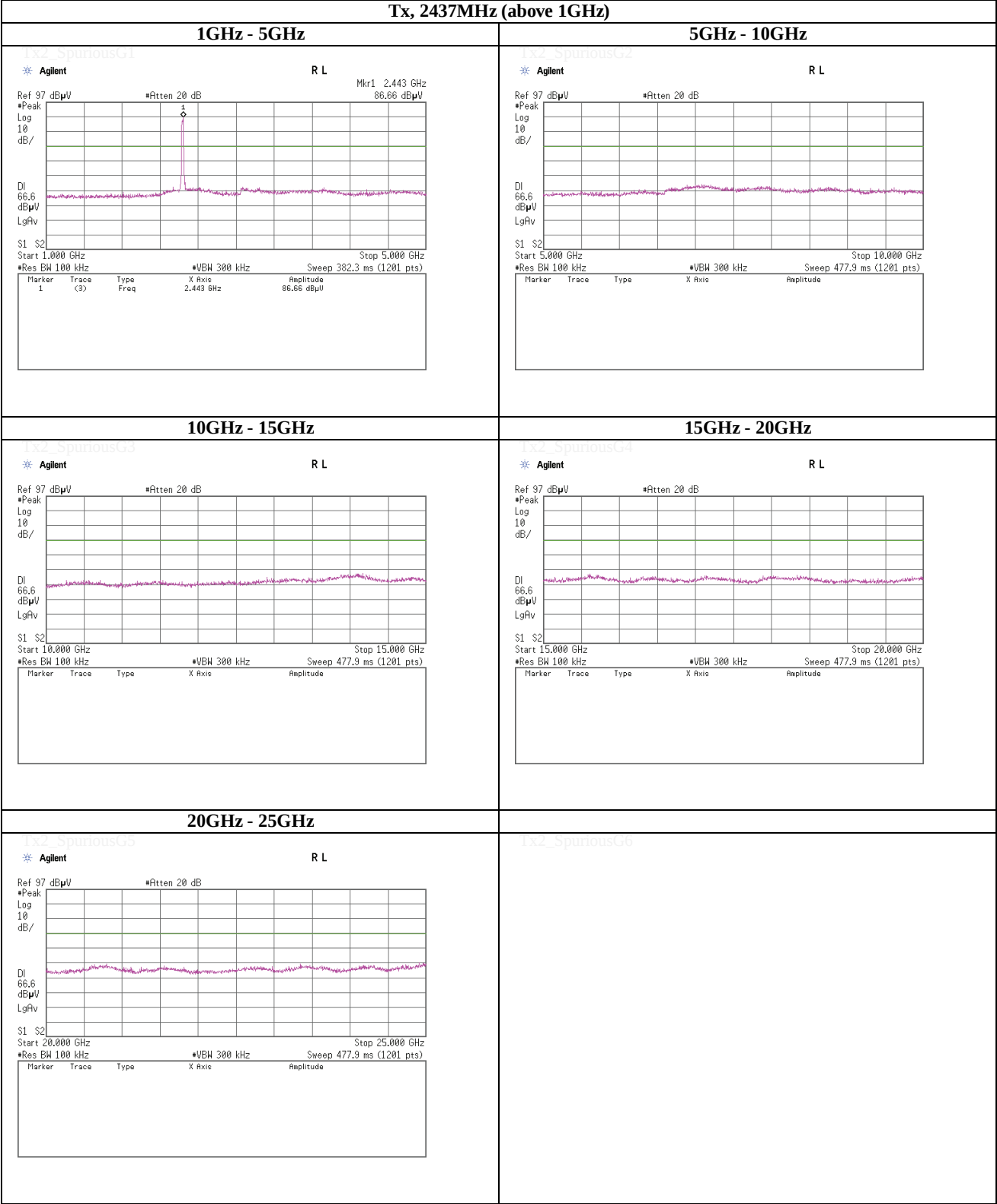
**Tx, 2437MHz (below 1GHz)**



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)**

**Tx, 2437MHz (above 1GHz)**



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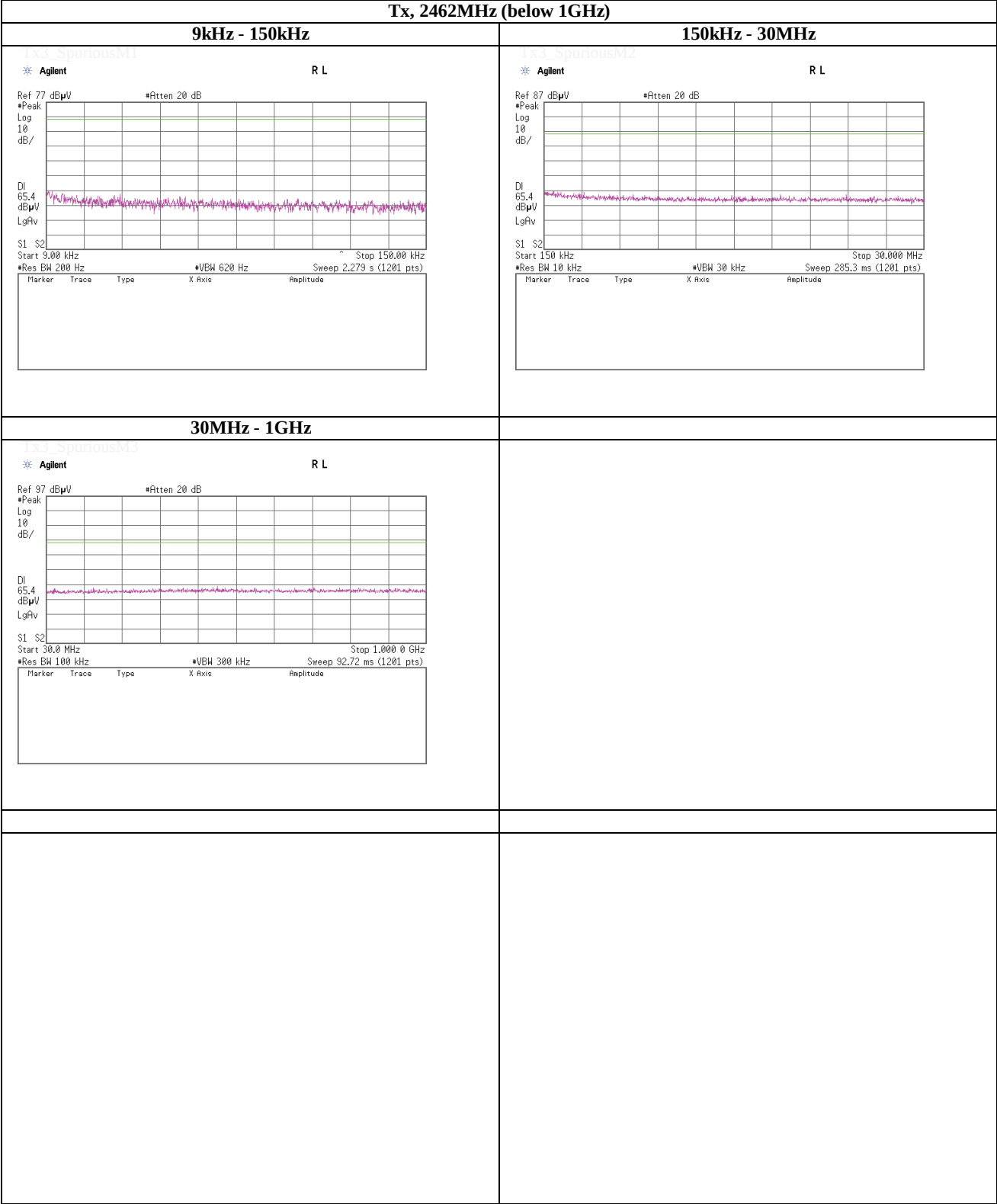
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(Reference chart) Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)

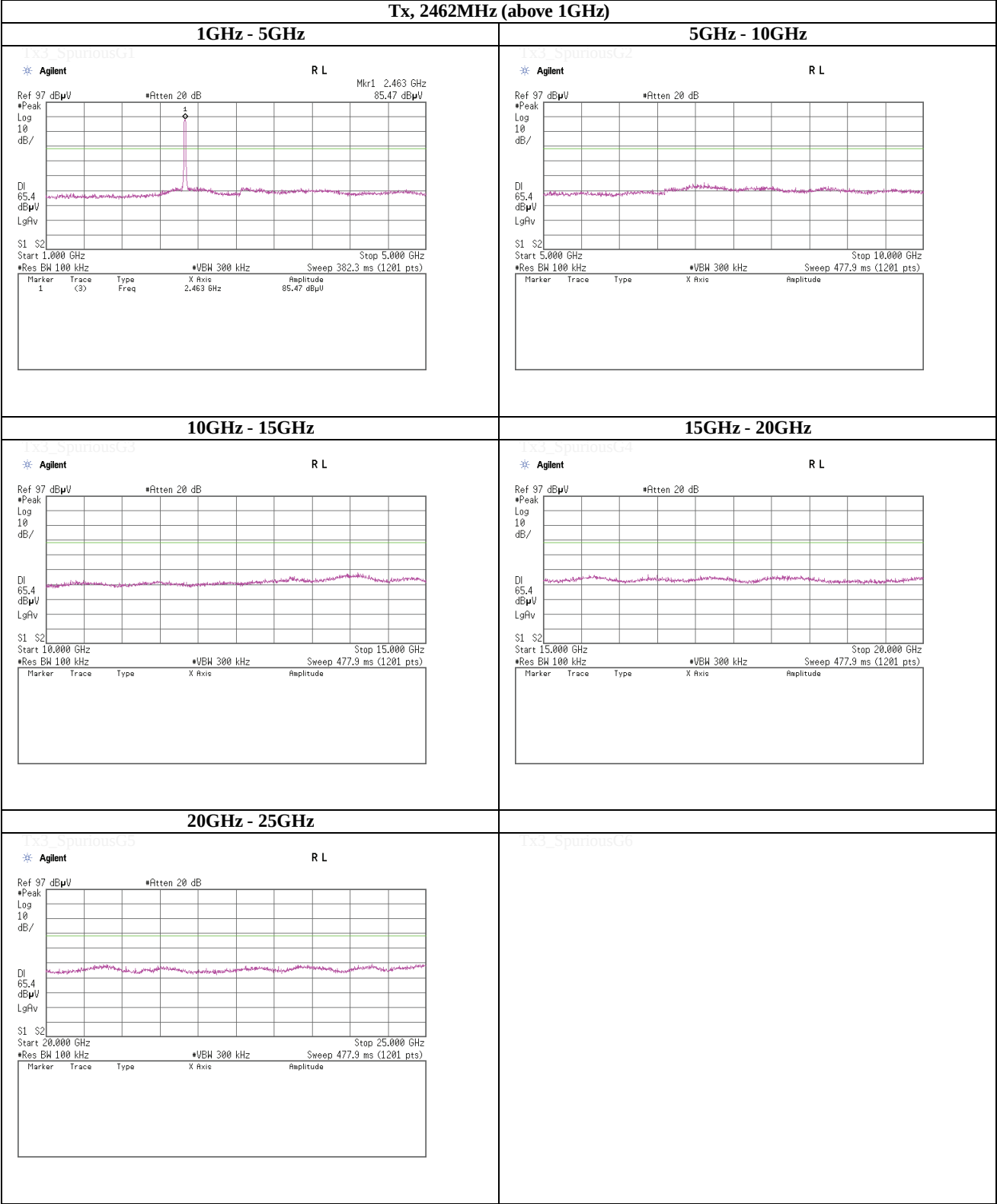
Tx, 2462MHz (below 1GHz)



**(Reference chart) Spurious emission (Conducted)**

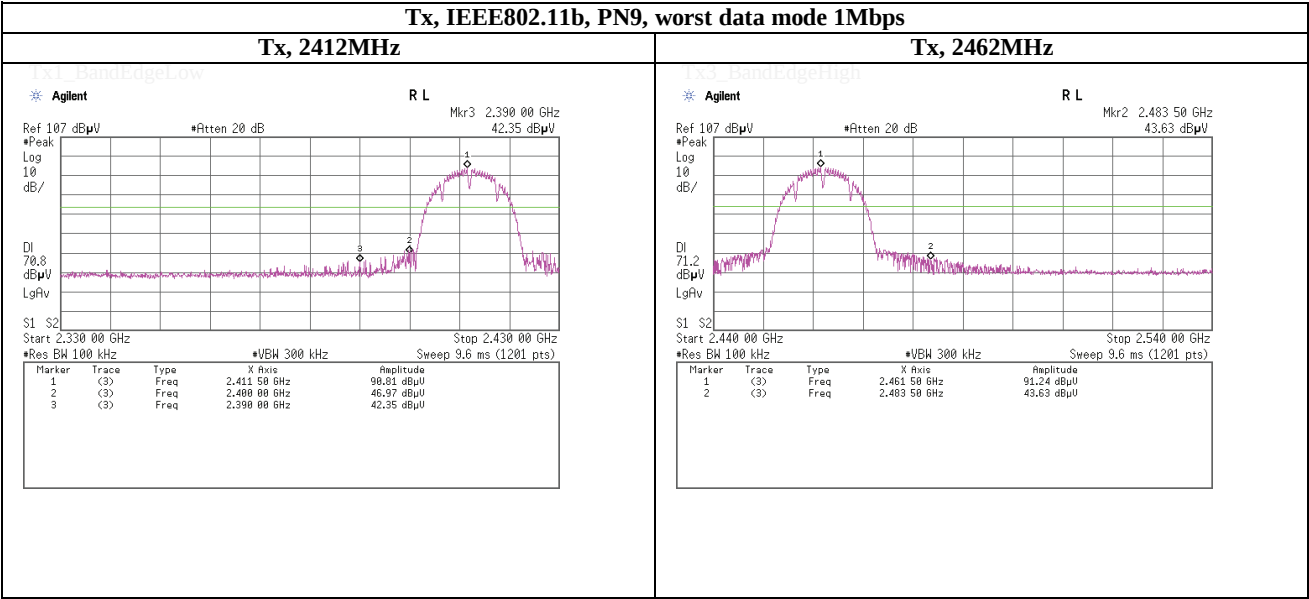
**Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)**

**Tx, 2462MHz (above 1GHz)**



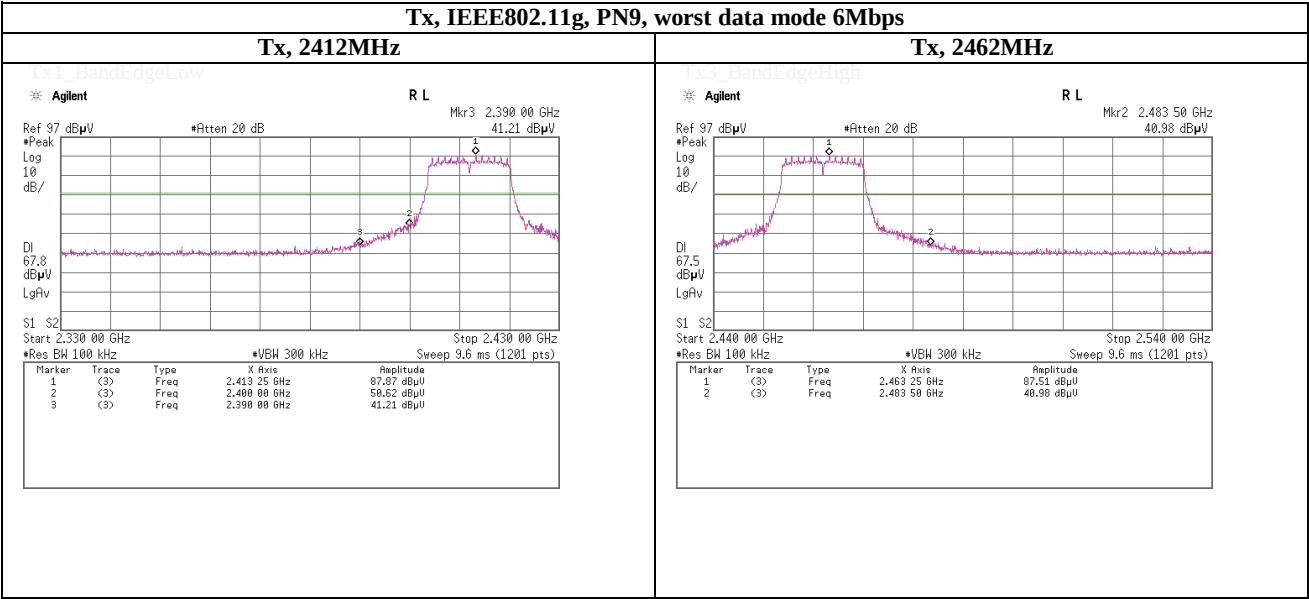
**(Reference chart) Spurious emission (Conducted)**

**Band Edge compliance**



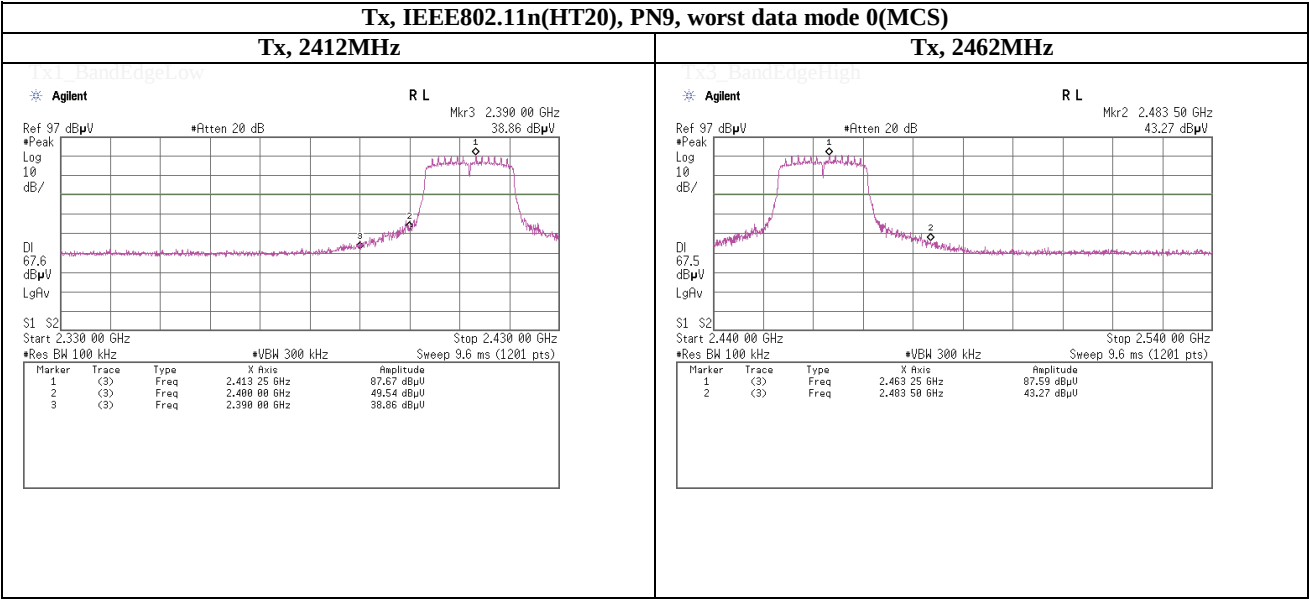
**(Reference chart) Spurious emission (Conducted)**

**Band Edge compliance**



**(Reference chart) Spurious emission (Conducted)**

**Band Edge compliance**



**Maximum Power Spectral Density**

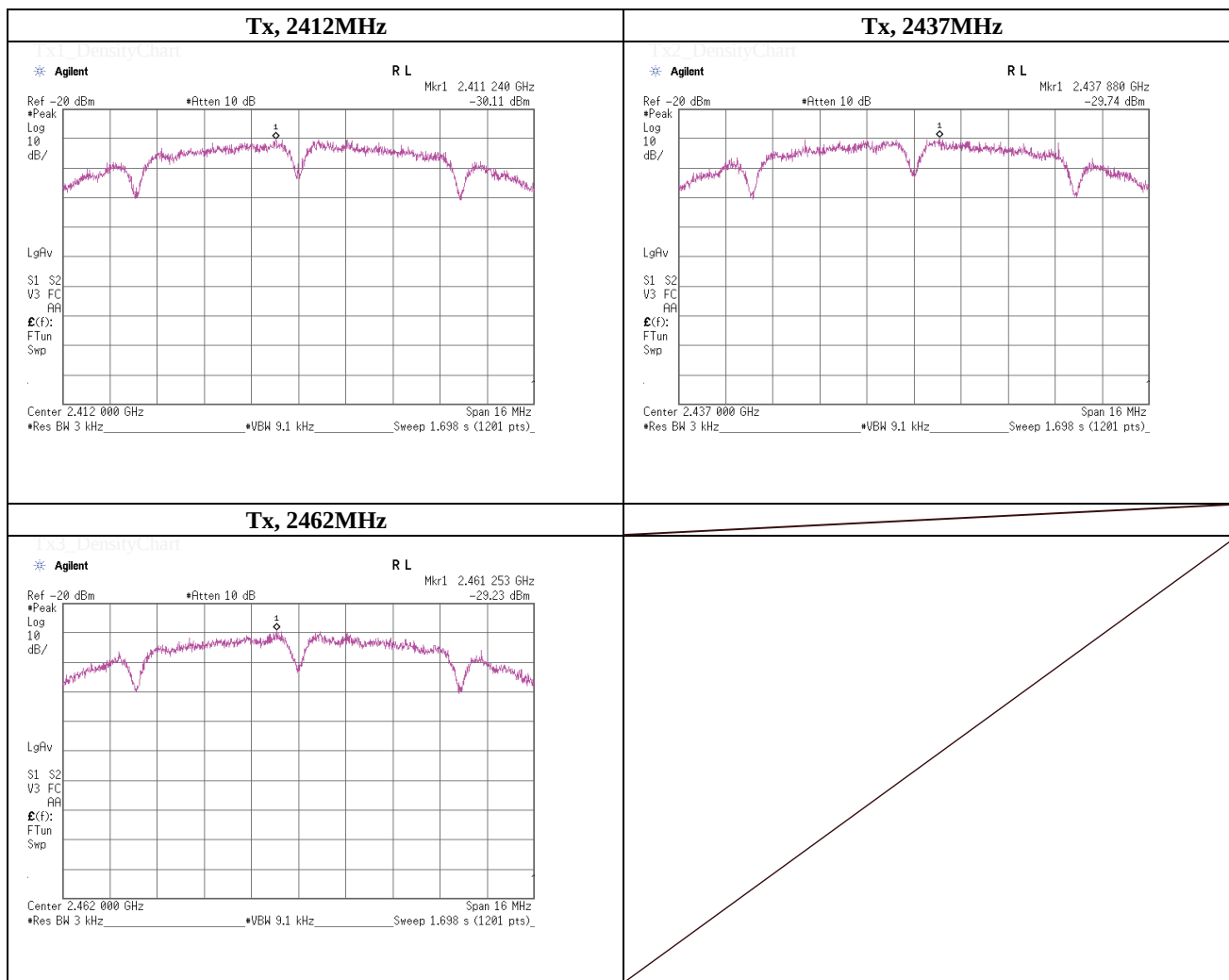
(Option 1)

|                        |                                             |                    |
|------------------------|---------------------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab.              | No.5 Shielded Room |
| Date                   | May 16, 2013                                |                    |
| Temperature / Humidity | 23deg.C , 45%RH                             |                    |
| Engineer               | Makoto Hosaka                               |                    |
| Mode                   | Tx, IEEE802.11b, PN9, worst data mode 1Mbps |                    |

| Ch. Freq.<br>[MHz] | Freq.<br>Reading<br>[MHz] | Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>[dB] | Result<br>[dBm] | Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|---------------------------|------------------|-----------------------|----------------|-----------------|----------------|----------------|
| 2412.0000          | 2411.24                   | -30.11           | 1.48                  | 20.21          | -8.42           | 8.00           | 16.42          |
| 2437.0000          | 2437.88                   | -29.74           | 1.48                  | 20.21          | -8.05           | 8.00           | 16.05          |
| 2462.0000          | 2461.25                   | -29.23           | 1.48                  | 20.21          | -7.54           | 8.00           | 15.54          |

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

**UL Japan, Inc.****Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**Maximum Power Spectral Density**

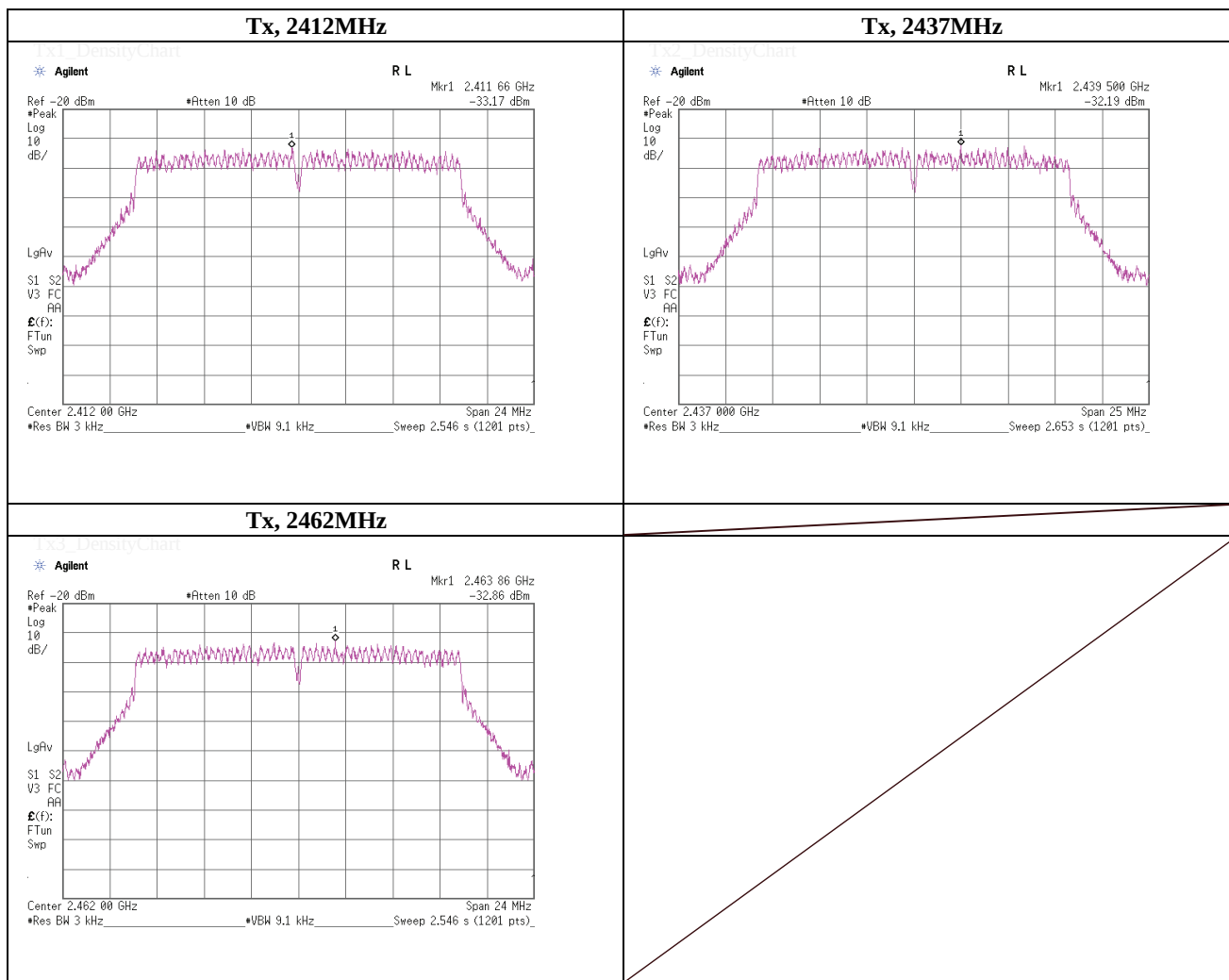
(Option 1)

|                        |                                             |                    |
|------------------------|---------------------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab.              | No.5 Shielded Room |
| Date                   | May 16, 2013                                |                    |
| Temperature / Humidity | 23deg.C , 45%RH                             |                    |
| Engineer               | Makoto Hosaka                               |                    |
| Mode                   | Tx, IEEE802.11g, PN9, worst data mode 6Mbps |                    |

| Ch. Freq.<br>[MHz] | Freq.<br>Reading<br>[MHz] | Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>[dB] | Result<br>[dBm] | Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|---------------------------|------------------|-----------------------|----------------|-----------------|----------------|----------------|
| 2412.0000          | 2411.66                   | -33.17           | 1.48                  | 20.21          | -11.48          | 8.00           | 19.48          |
| 2437.0000          | 2439.50                   | -32.19           | 1.48                  | 20.21          | -10.50          | 8.00           | 18.50          |
| 2462.0000          | 2463.86                   | -32.86           | 1.48                  | 20.21          | -11.17          | 8.00           | 19.17          |

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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Maximum Power Spectral Density

(Option 1)

Test place

UL Japan, Inc. Shonan EMC Lab.

No.5 Shielded Room

Date

May 16, 2013

Temperature / Humidity

23deg.C , 45%RH

Engineer

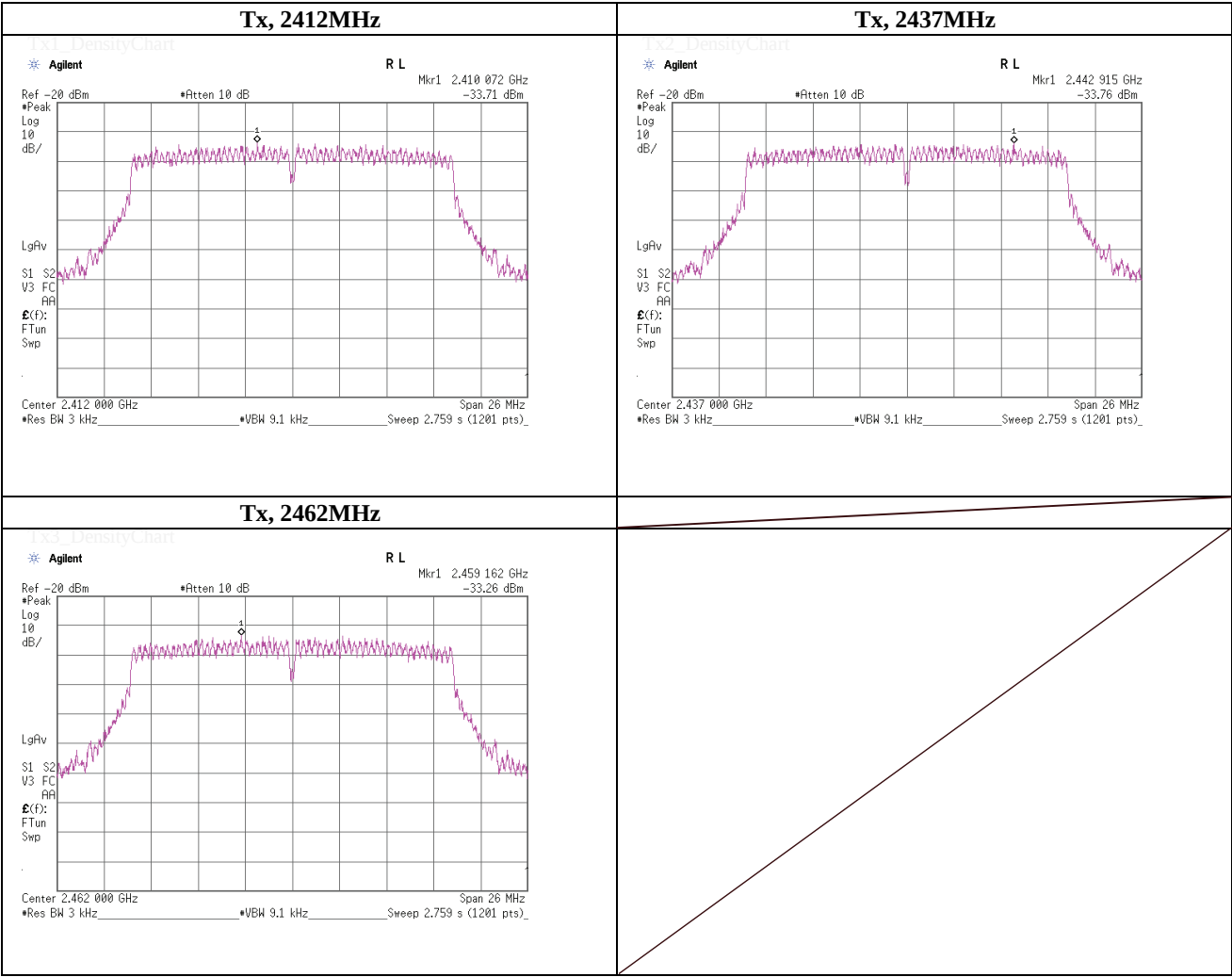
Makoto Hosaka

Mode

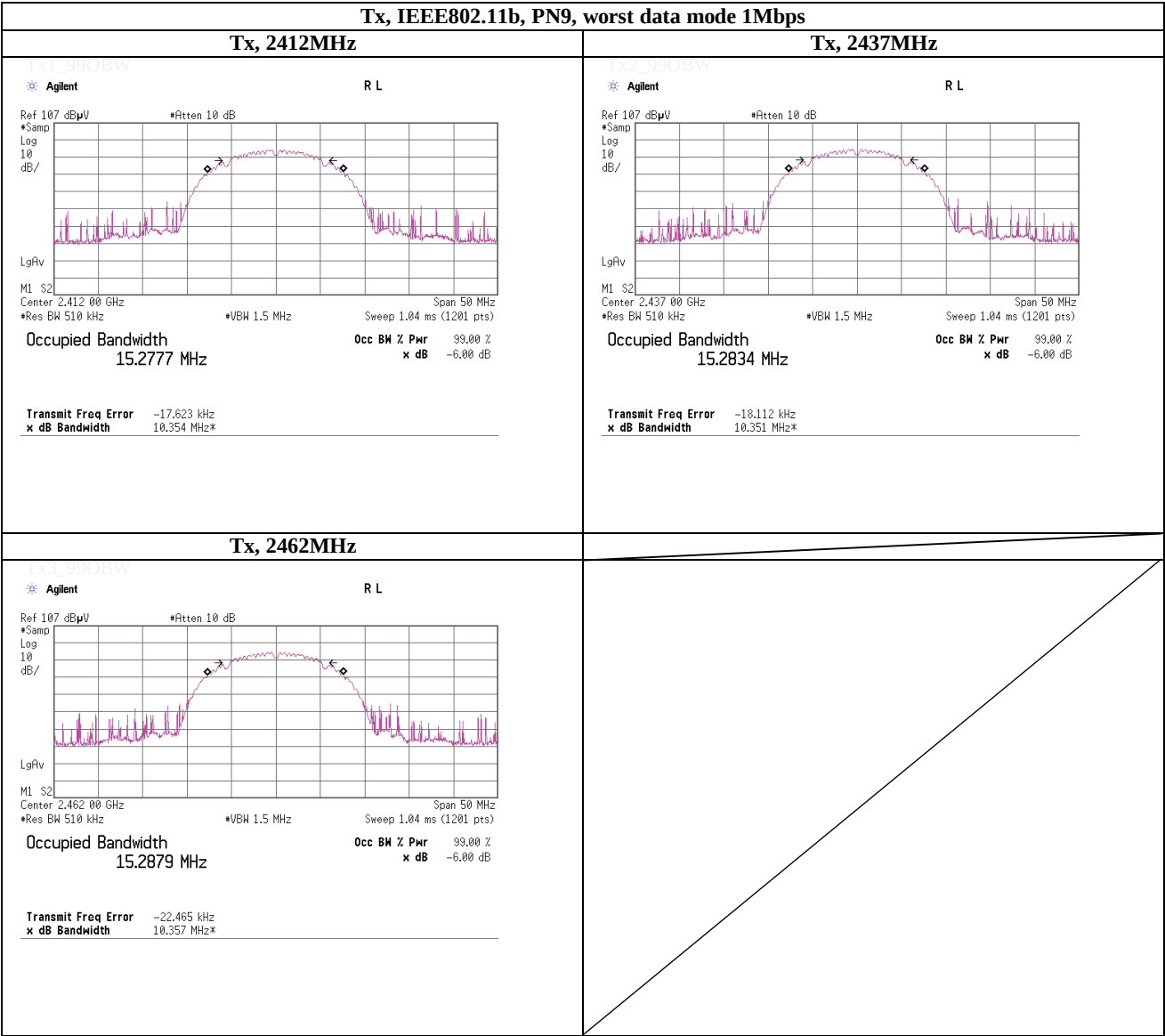
Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)

| Ch. Freq. | Freq. Reading | Reading | Cable Loss | Atten. | Result | Limit | Margin |
|-----------|---------------|---------|------------|--------|--------|-------|--------|
| [MHz]     | [MHz]         | [dBm]   | [dB]       | [dB]   | [dBm]  | [dBm] | [dB]   |
| 2412.0000 | 2410.07       | -33.71  | 1.48       | 20.21  | -12.02 | 8.00  | 20.02  |
| 2437.0000 | 2442.92       | -33.76  | 1.48       | 20.21  | -12.07 | 8.00  | 20.07  |
| 2462.0000 | 2459.16       | -33.26  | 1.48       | 20.21  | -11.57 | 8.00  | 19.57  |

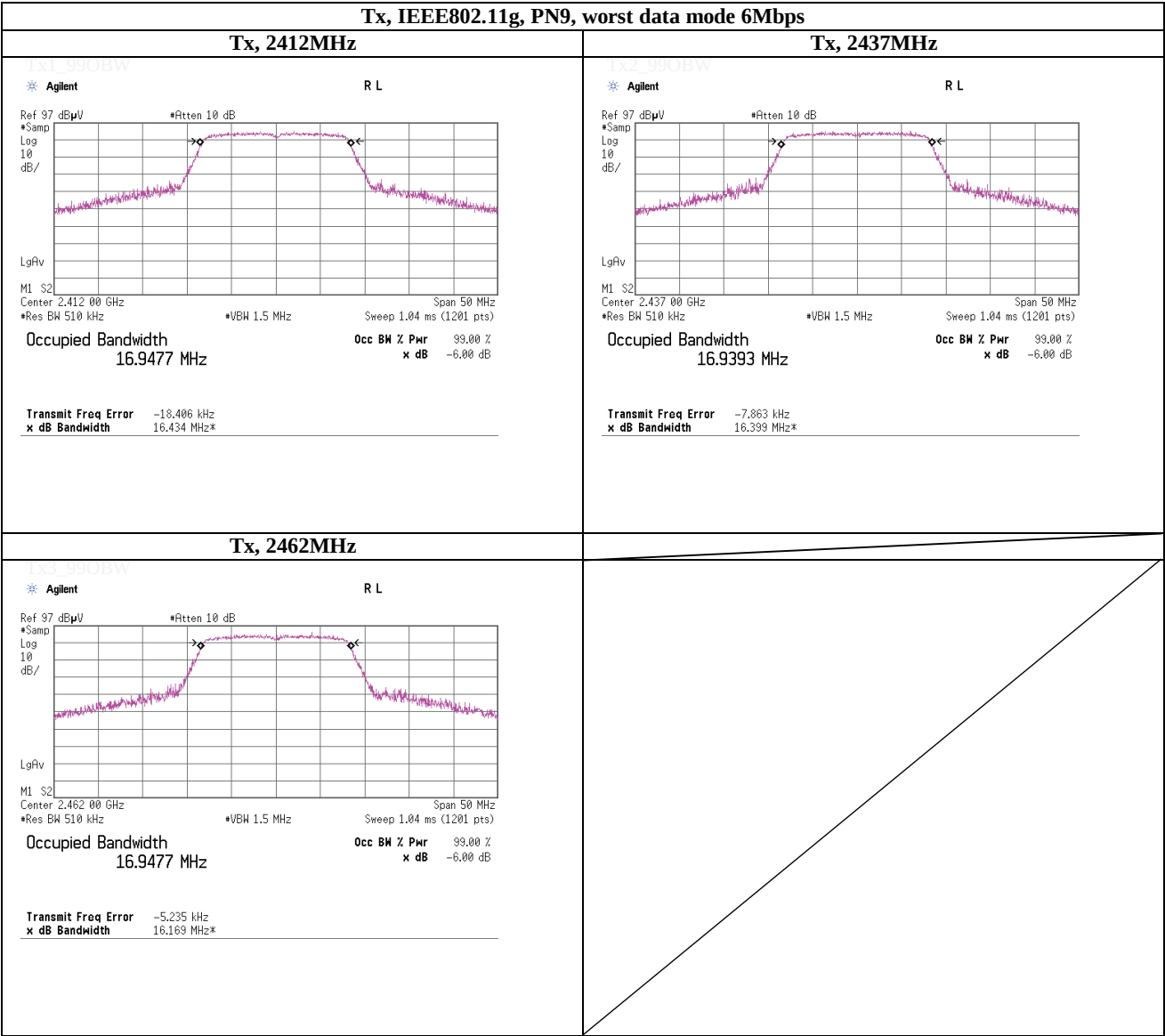
Sample Calculation:  
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss



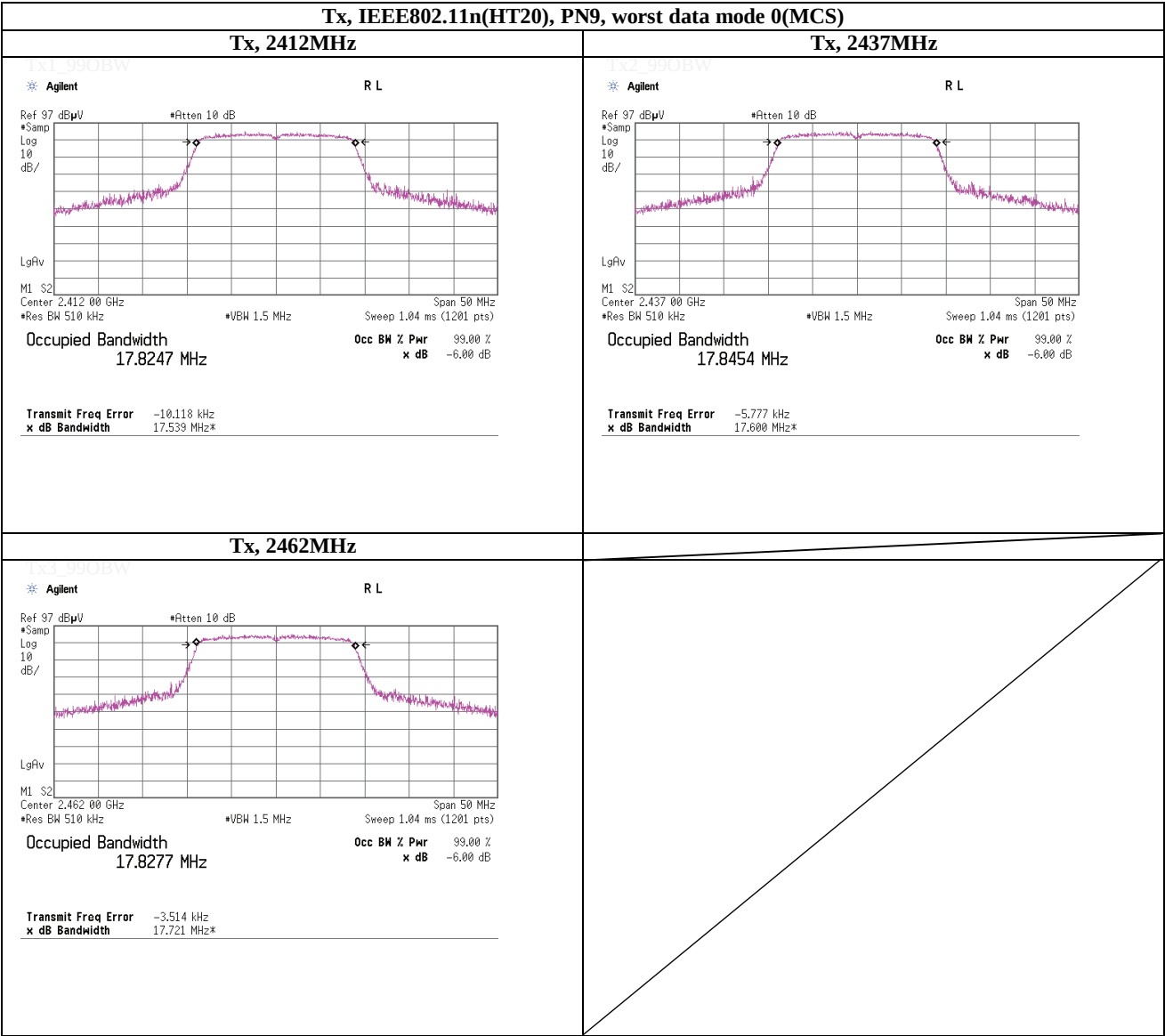
99% Occupied Bandwidth



99% Occupied Bandwidth



99% Occupied Bandwidth



## APPENDIX 2

### Test Instruments

#### EMI test equipment

| Control No.                    | Instrument                | Manufacturer                                | Model No                                   | Serial No                | Test Item | Calibration Date * Interval(month) |
|--------------------------------|---------------------------|---------------------------------------------|--------------------------------------------|--------------------------|-----------|------------------------------------|
| SPM-06                         | Power Meter               | Anritsu                                     | ML2495A                                    | 0850009                  | AT        | 2013/04/09 * 12                    |
| SPSS-03                        | Power sensor              | Anritsu                                     | MA2411B                                    | 0917063                  | AT        | 2013/04/09 * 12                    |
| SAT10-09                       | Attenuator                | Weinschel Corp.                             | 54A-10                                     | W5692                    | AT        | 2012/11/15 * 12                    |
| SAT20-05                       | Attenuator                | Weinschel Corp.                             | 54A-20                                     | Y5649                    | AT        | 2012/11/15 * 12                    |
| SCC-G29                        | Coaxial Cable             | Junkosha                                    | MWX241-01000KM SKMS                        | SEP-20-12-003            | AT        | 2012/09/26 * 12                    |
| SSA-03                         | Spectrum Analyzer         | Agilent                                     | E4448A                                     | MY48250152               | AT        | 2013/01/08 * 12                    |
| SOS-09                         | Humidity Indicator        | A&D                                         | AD-5681                                    | 4061484                  | AT        | 2013/03/07 * 12                    |
| SAEC-03(NSA)                   | Semi-Anechoic Chamber     | TDK                                         | SAEC-03(NSA)                               | 3                        | RE        | 2012/09/21 * 12                    |
| SAF-06                         | Pre Amplifier             | TOYO Corporation                            | TPA0118-36                                 | 1440491                  | RE        | 2012/07/18 * 12                    |
| SCC-G03                        | Coaxial Cable             | Suhner                                      | SUCOFLEX 104A                              | 46499/4A                 | RE        | 2013/04/11 * 12                    |
| SCC-G23                        | Coaxial Cable             | Suhner                                      | SUCOFLEX 104                               | 297342/4                 | RE        | 2013/05/22 * 12                    |
| SHA-03                         | Horn Antenna              | Schwarzbeck                                 | BBHA9120D                                  | 9120D-739                | RE        | 2012/08/17 * 12                    |
| SOS-05                         | Humidity Indicator        | A&D                                         | AD-5681                                    | 4062518                  | RE        | 2013/02/27 * 12                    |
| SSA-02                         | Spectrum Analyzer         | Agilent                                     | E4448A                                     | MY48250106               | RE        | 2013/03/28 * 12                    |
| SJM-11                         | Measure                   | PROMART                                     | SEN1935                                    | -                        | RE        | -                                  |
| COTS-SEMI-1                    | EMI Software              | TSJ                                         | TEPTO-DV(RE,CE, RFLMF)                     | -                        | RE        | -                                  |
| SAT10-06                       | Attenuator                | Agilent                                     | 8493C-010                                  | 74865                    | RE        | 2012/12/18 * 12                    |
| SFL-02                         | Highpass Filter           | MICRO-TRONICS                               | HPM50111                                   | 051                      | RE        | 2012/12/18 * 12                    |
| SAF-03                         | Pre Amplifier             | SONOMA                                      | 310N                                       | 290213                   | RE        | 2013/02/12 * 12                    |
| SAT6-06                        | Attenuator                | JFW                                         | 50HF-006N                                  | -                        | RE        | 2013/02/12 * 12                    |
| SBA-03                         | Biconical Antenna         | Schwarzbeck                                 | BBA9106                                    | 91032666                 | RE        | 2012/10/08 * 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        | 2013/04/03 * 12                    |
| SLA-03                         | Logperiodic Antenna       | Schwarzbeck                                 | UHALP9108A                                 | UHALP 9108-A0901         | RE        | 2012/10/08 * 12                    |
| STR-06                         | Test Receiver             | Rohde & Schwarz                             | ESCI                                       | 101259                   | RE        | 2013/02/27 * 12                    |
| KSA-08                         | Spectrum Analyzer         | Agilent                                     | E4446A                                     | MY46180525               | RE        | 2013/03/04 * 12                    |
| STR-03                         | Test Receiver             | Rohde & Schwarz                             | ESI40                                      | 100054/040               | RE        | 2012/06/14 * 12                    |
| SCC-G18                        | Coaxial Cable             | Suhner                                      | SUCOFLEX 104A                              | 46292/4A                 | RE        | 2013/03/16 * 12                    |
| SAF-09                         | Pre Amplifier             | TOYO Corporation                            | HAP18-26W                                  | 00000018                 | RE        | 2013/03/19 * 12                    |
| SHA-05                         | Horn Antenna              | ETS LINDGREN                                | 3160-09                                    | LM4210                   | RE        | 2013/03/14 * 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 conducted tests ,