

## APPENDIX 1: Data of Radio tests

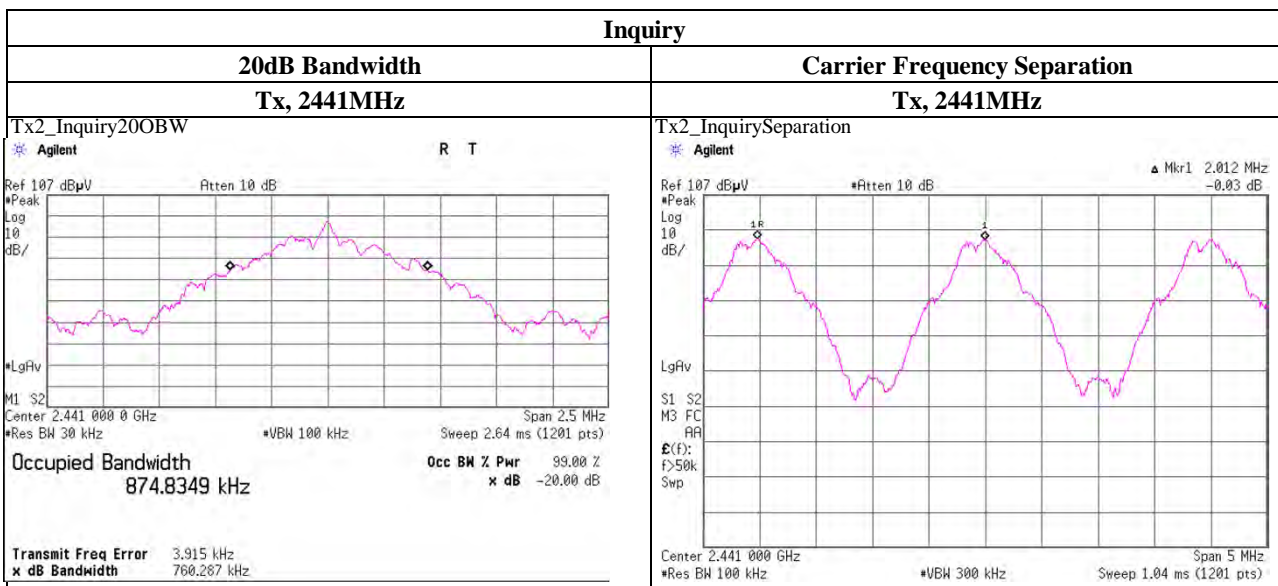
### 20dB Bandwidth and Carrier Frequency Separation

Test place : UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room  
 Date : February 16, 2012 February 20, 2012  
 Temperature / Humidity : 22deg.C , 30%RH 23deg.C , 40%RH  
 Engineer : Hikaru Shirasawa Wataru Kojima  
 Mode : Tx, Bluetooth, BDR, PRBS9

| Mode    | Freq.<br>[MHz] | 20dB<br>Bandwidth<br>[MHz] | Carrier<br>Frequency<br>Separation<br>[MHz] | Limit for<br>Carrier<br>Frequency<br>Separation<br>[MHz] |
|---------|----------------|----------------------------|---|--|
| DH5     | 2402.0         | 0.927                      | 1.000                                       | >= 0.618   |
| DH5     | 2441.0         | 0.931                      | 0.993                                       | >= 0.621   |
| DH5     | 2480.0         | 0.930                      | 1.013                                       | >= 0.620   |
| Inquiry | 2441.0         | 0.760                      | 2.012                                       | >= 0.507   |

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

No limit applies to 20dB Bandwidth.



**UL Japan, Inc.**

**Shonan EMC Lab.**

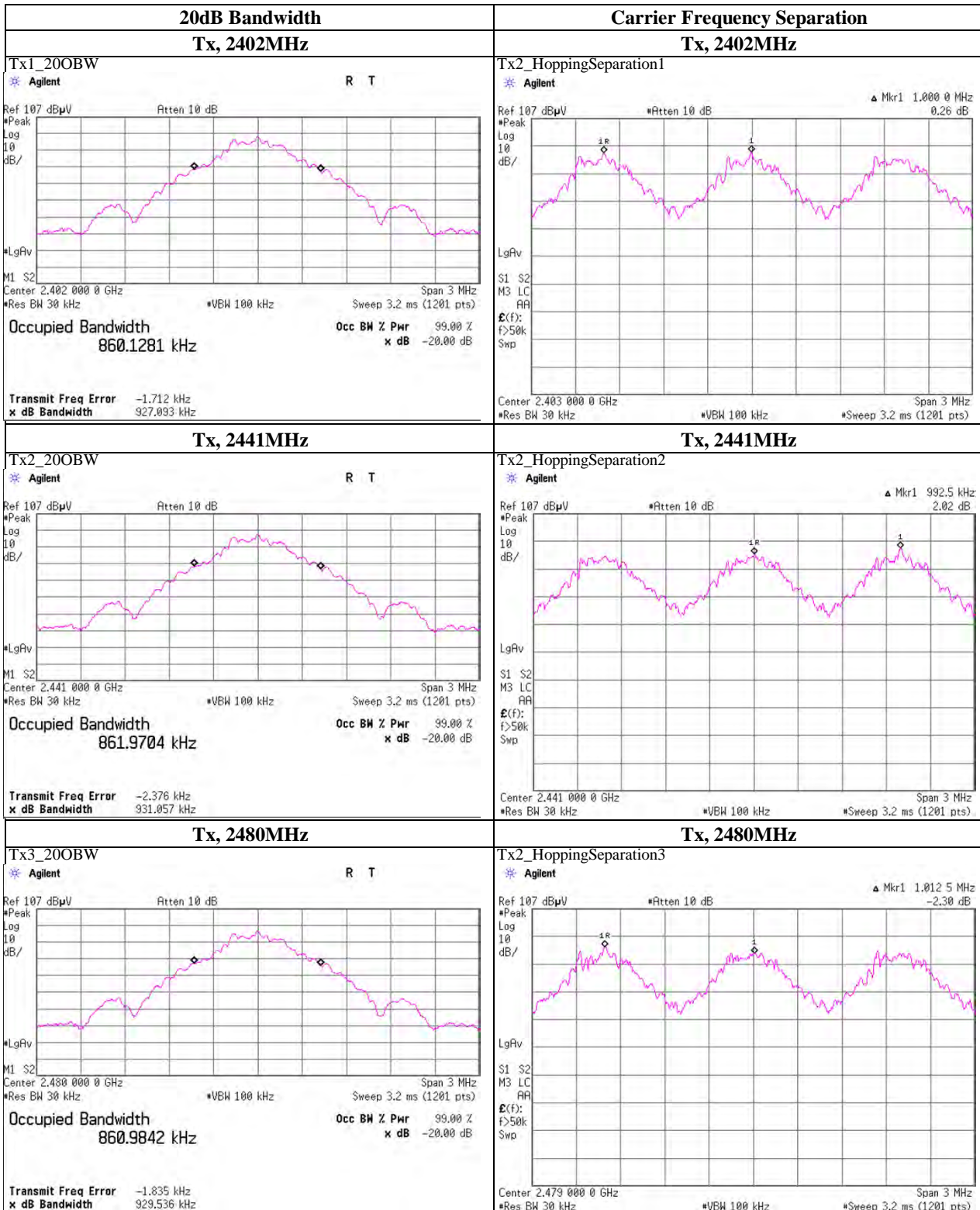
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## 20dB Bandwidth and Carrier Frequency Separation

### Tx, Bluetooth, BDR, PRBS9



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## 20dB Bandwidth and Carrier Frequency Separation

|                        |                                |                    |
|------------------------|--------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab. | No.5 Shielded Room |
| Date                   | February 16, 2012              | February 20, 2012  |
| Temperature / Humidity | 22deg.C , 30%RH                | 23deg.C , 40%RH    |
| Engineer               | Hikaru Shirasawa               | Wataru Kojima      |
| Mode                   | Tx, Bluetooth, EDR, PRBS9      |                    |

| Mode  | Freq.<br>[MHz] | 20dB<br>Bandwidth<br>[MHz] | Carrier<br>Frequency<br>Separation<br>[MHz] | Limit for<br>Carrier<br>Frequency<br>Separation<br>[MHz] |
|-------|----------------|----------------------------|---|--|
| 3-DH5 | 2402.0         | 1.259                      | 1.003                                       | >= 0.839   |
| 3-DH5 | 2441.0         | 1.287                      | 1.005                                       | >= 0.858   |
| 3-DH5 | 2480.0         | 1.258                      | 1.000                                       | >= 0.839   |

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

No limit applies to 20dB Bandwidth.

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**UL Japan, Inc.**

**Shonan EMC Lab.**

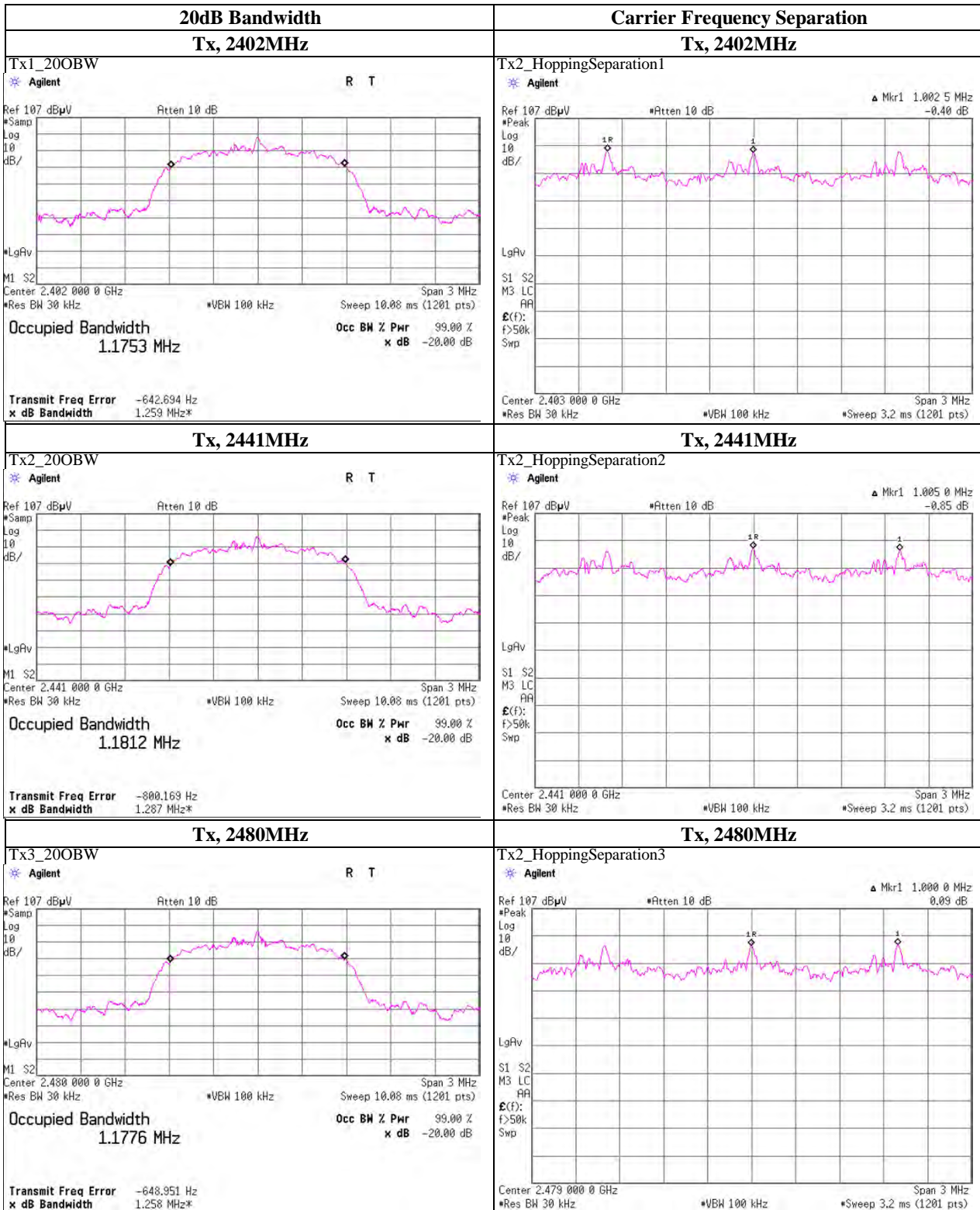
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## 20dB Bandwidth and Carrier Frequency Separation

### Tx, Bluetooth, EDR, PRBS9



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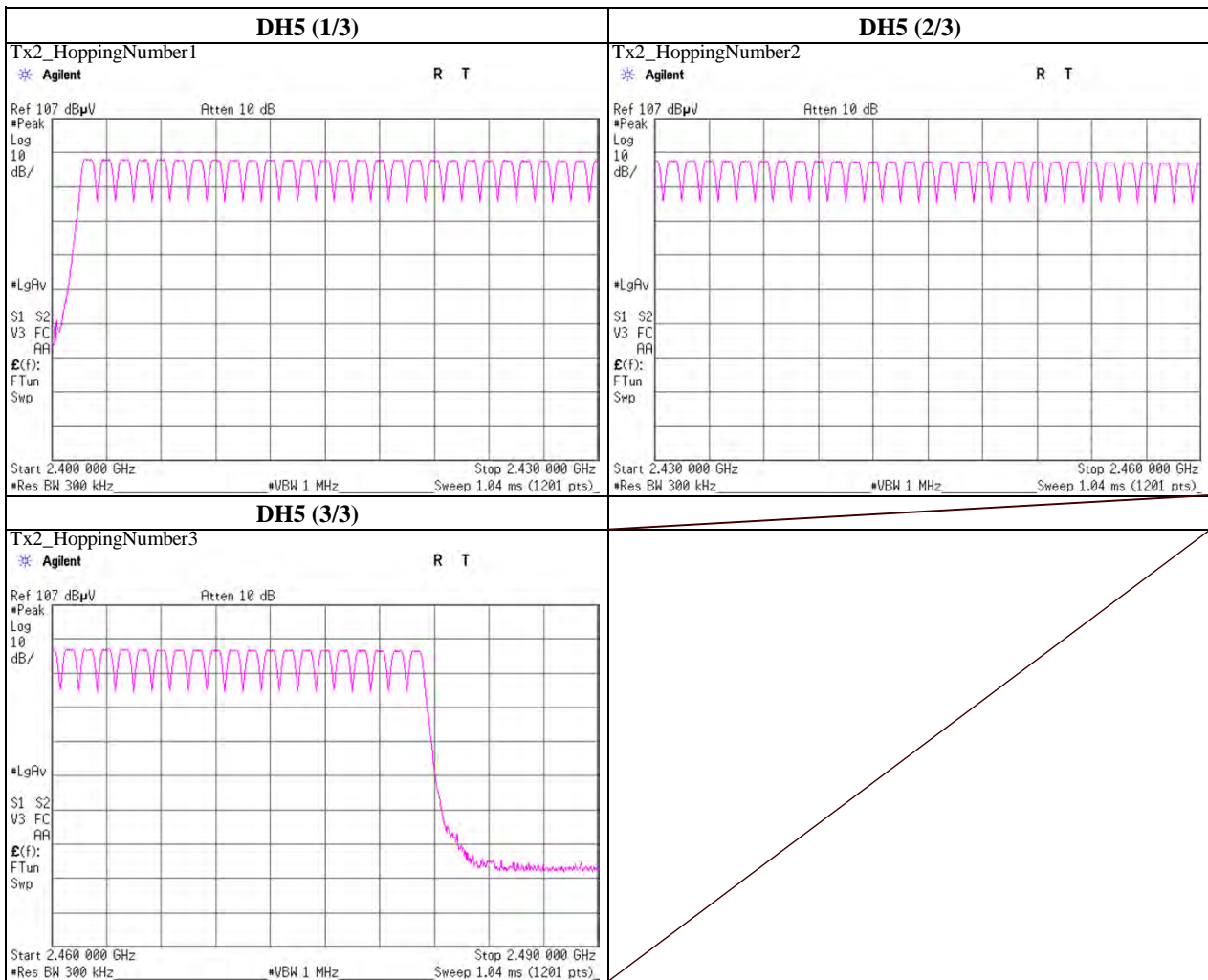
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### Number of Hopping Frequency

|                        |                                |                    |
|------------------------|--------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab. | No.5 Shielded Room |
| Date                   | February 16, 2012              |                    |
| Temperature / Humidity | 22deg.C , 30%RH                |                    |
| Engineer               | Hikaru Shirasawa               |                    |
| Mode                   | Tx, Bluetooth, BDR, PRBS9      |                    |

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

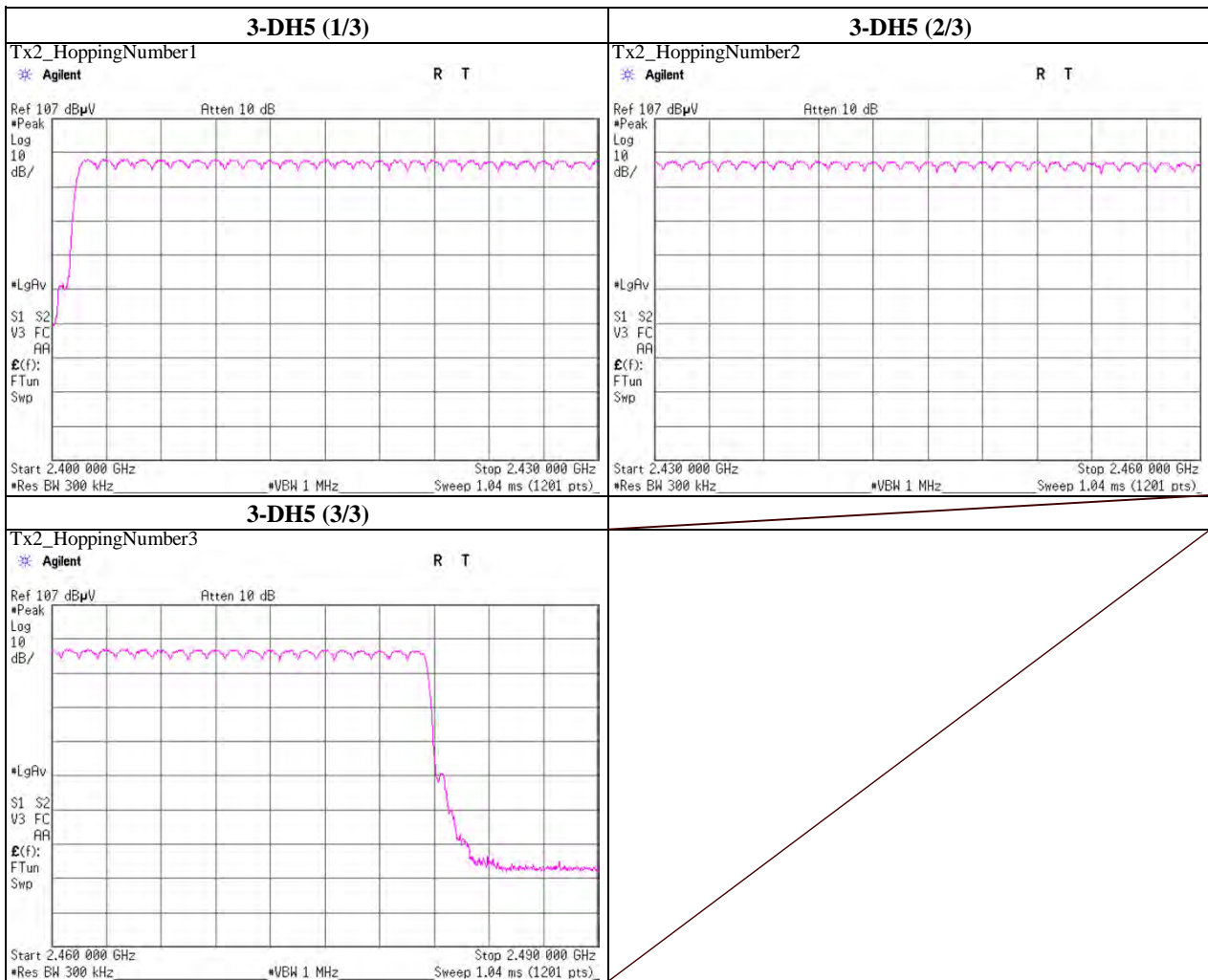




### Number of Hopping Frequency

|                        |                                |                    |
|------------------------|--------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab. | No.2 Shielded Room |
| Date                   | February 16, 2012              |                    |
| Temperature / Humidity | 22deg.C , 30%RH                |                    |
| Engineer               | Hikaru Shirasawa               |                    |
| Mode                   | Tx, Bluetooth, EDR, PRBS9      |                    |

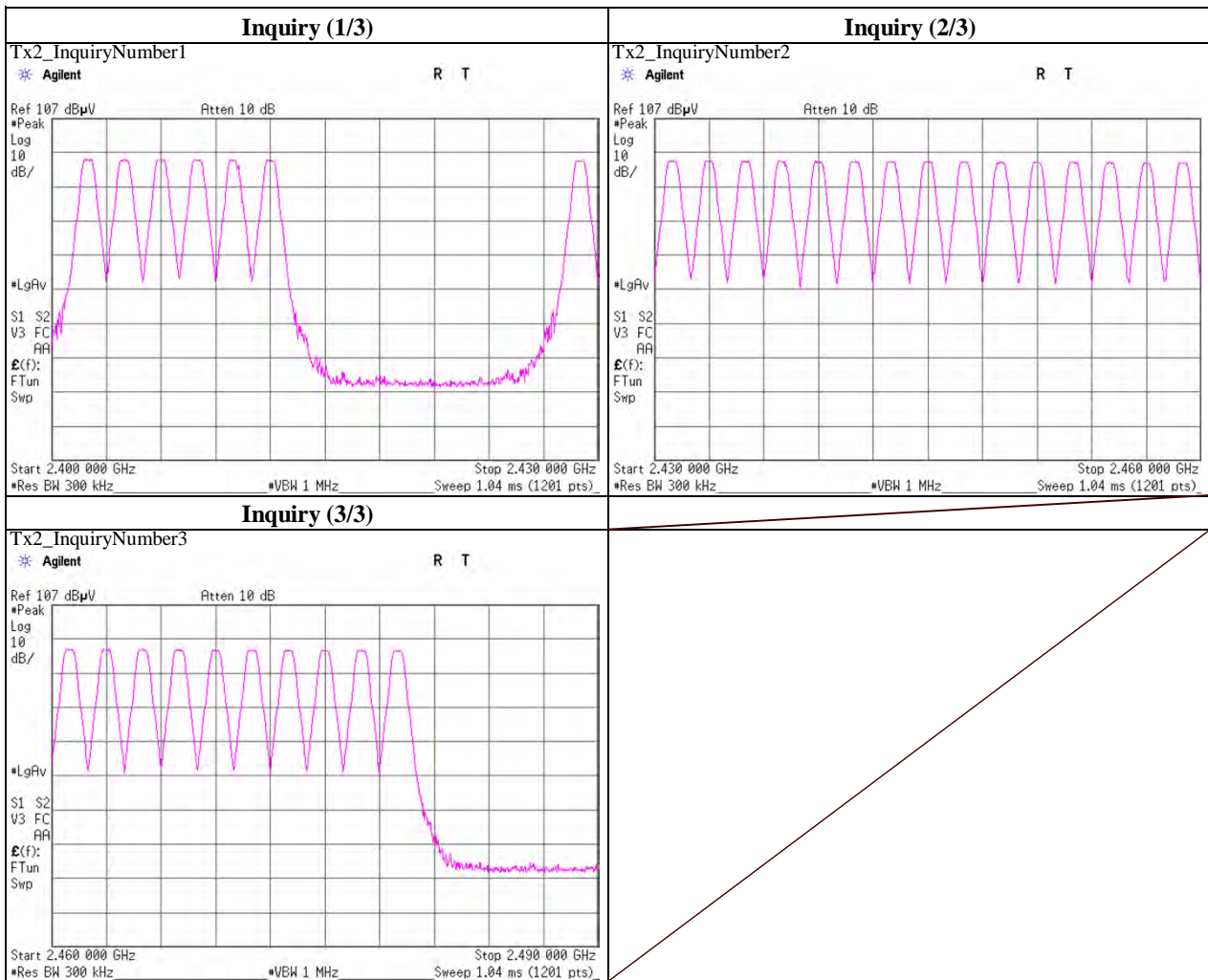
| Mode  | Number of Channel [times] | Limit [times] |
|-------|---------------------------|---------------|
| 3-DH5 | 79                        | >= 15         |



### Number of Hopping Frequency

|                        |                                |                    |
|------------------------|--------------------------------|--------------------|
| Test place             | UL Japan, Inc. Shonan EMC Lab. | No.2 Shielded Room |
| Date                   | February 16, 2012              |                    |
| Temperature / Humidity | 22deg.C , 30%RH                |                    |
| Engineer               | Hikaru Shirasawa               |                    |
| Mode                   | Tx, Bluetooth, EDR, Inquiry    |                    |

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



### Dwell Time

Test place           UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room  
 Date                February 20, 2012  
 Temperature / Humidity 23deg.C , 40%RH  
 Engineer           Wataru Kojima  
 Mode                Tx, Bluetooth, BDR, PRBS9

Tx, Bluetooth

| Mode    | Number of transmission<br>in a 31.6(79 Hopping x 0.4)<br>/ 12.8(32 Hopping x 0.4)second period | Length of<br>transmission<br>time [msec] | Result<br>[msec] | Limit<br>[msec] |
|---------|--|--|------------------|-----------------|
| DH1     | 50.8 / 5.0 sec. x 31.6 sec. = 322 times  | 0.455                                    | 146              | 400             |
| DH3     | 26.2 / 5.0 sec. x 31.6 sec. = 166 times  | 1.711                                    | 284              | 400             |
| DH5     | 17.8 / 5.0 sec. x 31.6 sec. = 113 times  | 2.960                                    | 334              | 400             |
| Inquiry | 100.0 / 1.0 sec. x 12.8 sec. = 1280 times  | 0.152                                    | 194              | 400             |

Sample Calculation

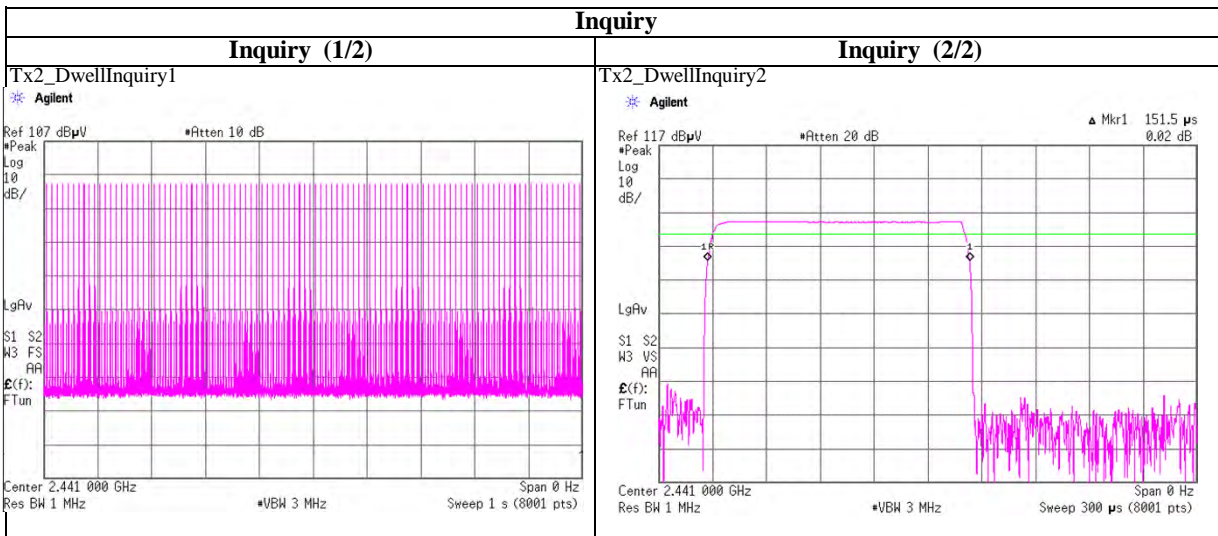
Result = Number of transmission x Length of transmission time

\*Average data of 5 tests.(except Inquiry)

| Mode    | Sampling [times] |     |     |     |     | Average<br>[times] |
|---------|------------------|-----|-----|-----|-----|--------------------|
|         | 1                | 2   | 3   | 4   | 5   |                    |
| DH1     | 52               | 50  | 51  | 50  | 51  | 50.8               |
| DH3     | 24               | 29  | 25  | 26  | 27  | 26.2               |
| DH5     | 14               | 19  | 17  | 20  | 19  | 17.8               |
| Inquiry | 100              | 100 | 100 | 100 | 100 | 100.0              |

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5



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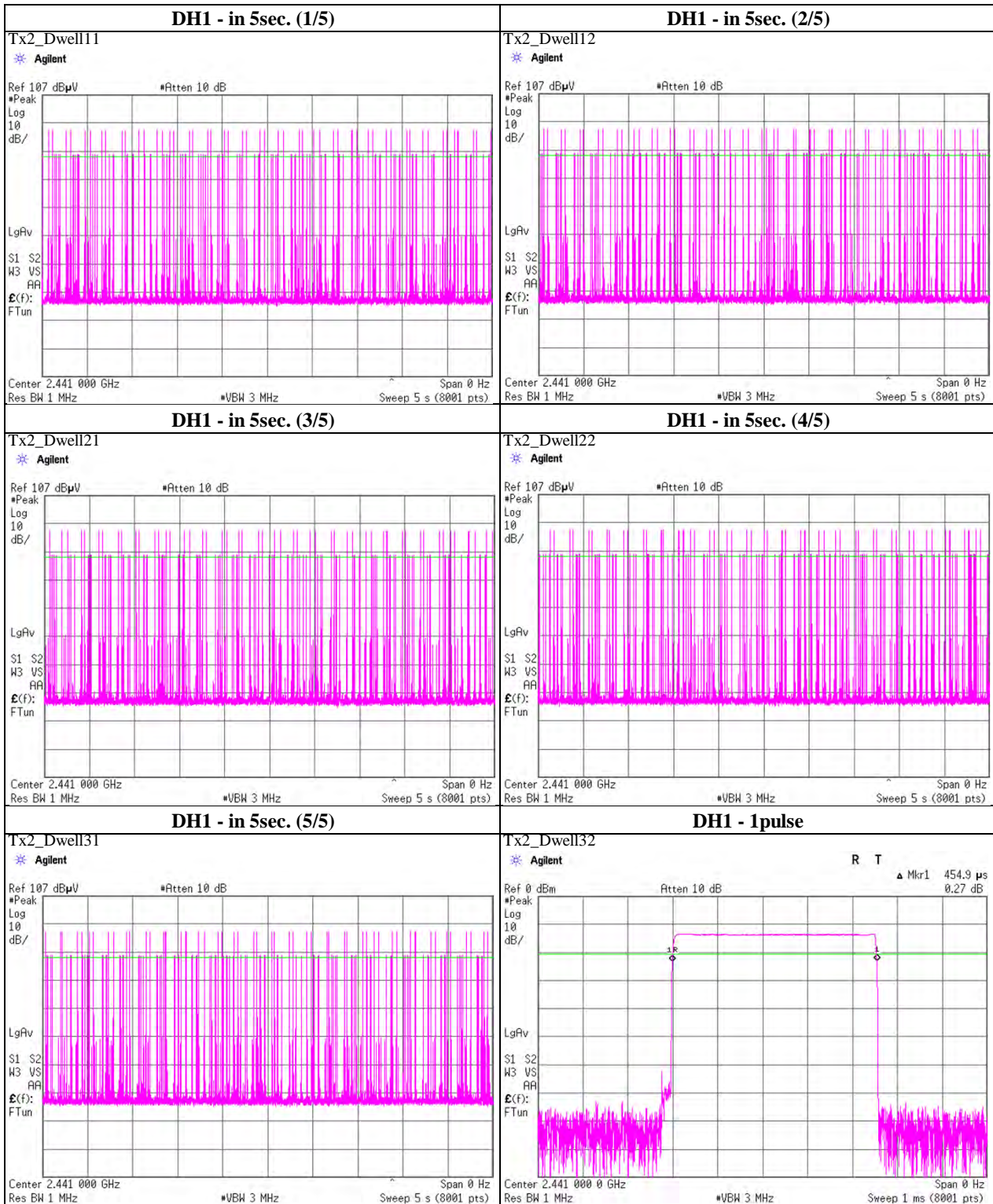
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## Dwell time

### Tx, Bluetooth, BDR, PRBS9



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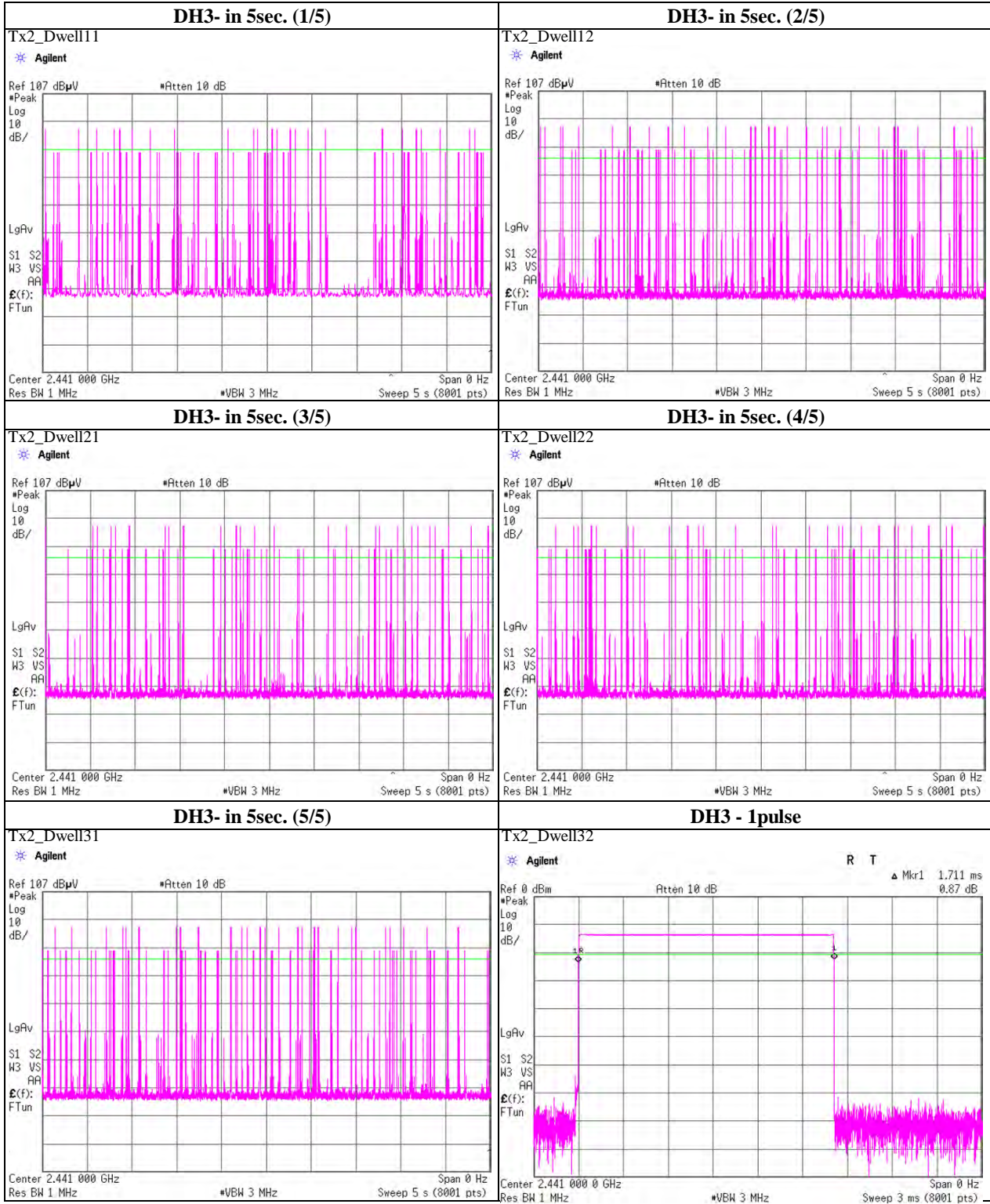
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## Dwell time

### Tx, Bluetooth, BDR, PRBS9



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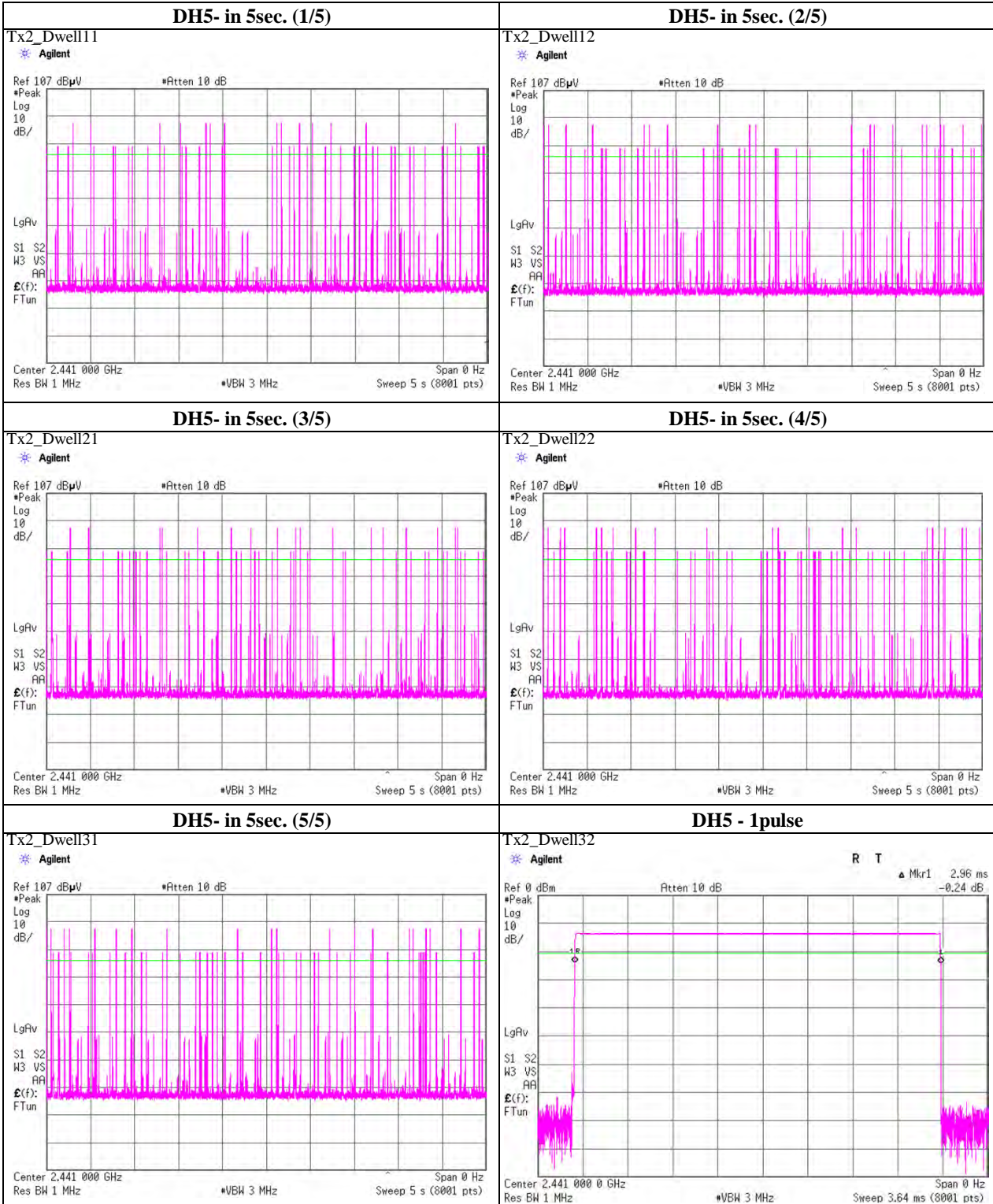
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**Dwell time**

**Tx, Bluetooth, BDR, PRBS9**



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## Dwell Time

Test place           UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room  
Date                   February 20, 2012  
Temperature / Humidity 23deg.C       , 40%RH  
Engineer             Wataru Kojima  
Mode                 Tx, Bluetooth, EDR, PRBS9

| Mode  | Number of transmission<br>in a 31.6(79 Hopping x 0.4)<br>/ 12.8(32 Hopping x 0.4)second period | Length of<br>transmission<br>time [msec] | Result<br>[msec] | Limit<br>[msec] |
|-------|--|--|------------------|-----------------|
| 3-DH1 | 50.4 / 5.0 sec. x 31.6 sec. = 319 times  | 0.451                                    | 144              | 400             |
| 3-DH3 | 23.0 / 5.0 sec. x 31.6 sec. = 146 times  | 1.702                                    | 248              | 400             |
| 3-DH5 | 18.2 / 5.0 sec. x 31.6 sec. = 116 times  | 2.954                                    | 343              | 400             |

Sample Calculation

Result = Number of transmission x Length of transmission time

\*Average data of 5 tests.(except Inquiry)

| Mode  | Sampling [times] |    |    |    |    | Average<br>[times] |
|-------|------------------|----|----|----|----|--------------------|
|       | 1                | 2  | 3  | 4  | 5  |                    |
| 3-DH1 | 51               | 50 | 50 | 50 | 51 | 50.4               |
| 3-DH3 | 24               | 20 | 27 | 20 | 24 | 23.0               |
| 3-DH5 | 15               | 19 | 20 | 15 | 22 | 18.2               |

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

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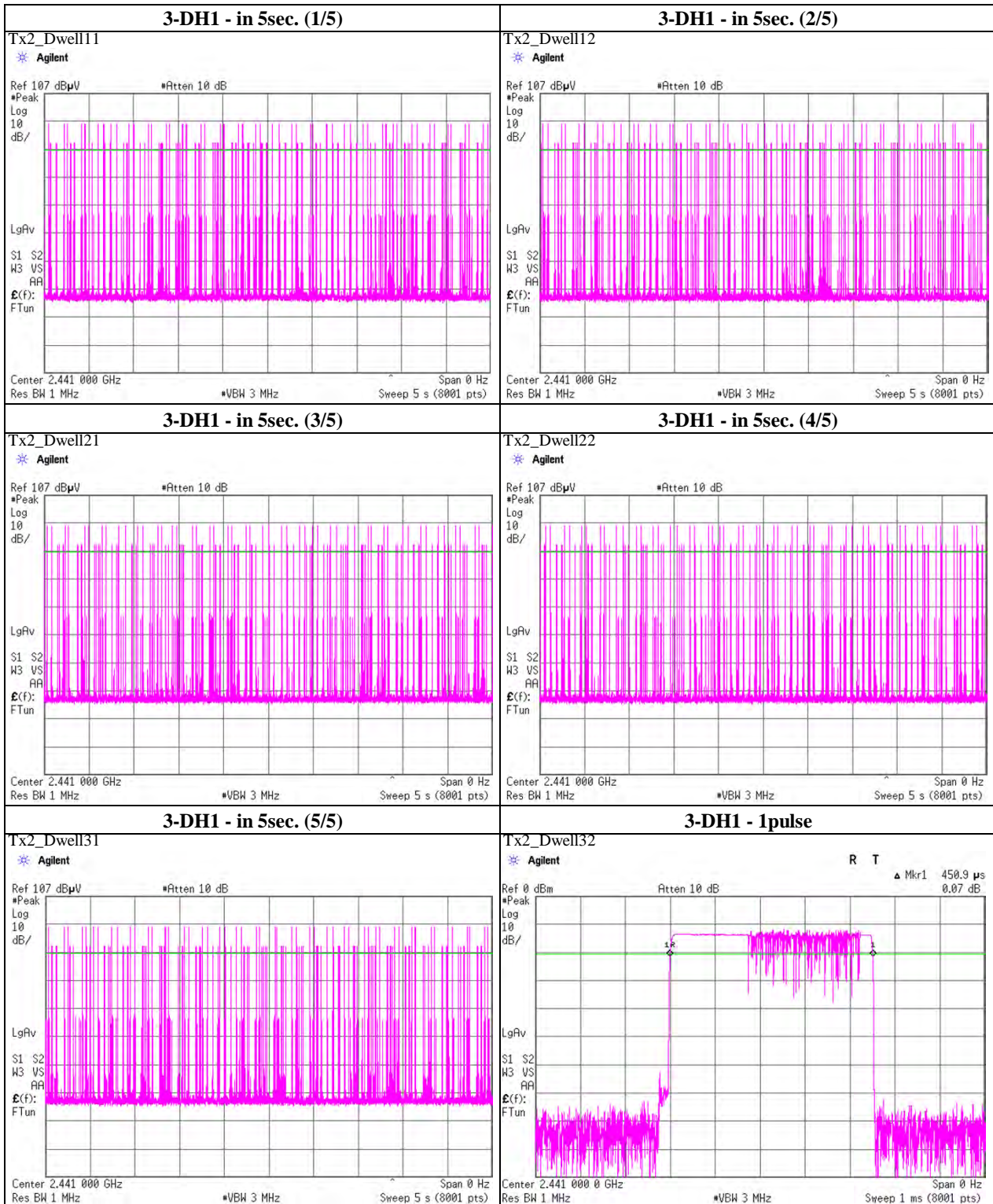
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## Dwell time

### Tx, Bluetooth, EDR, PRBS9



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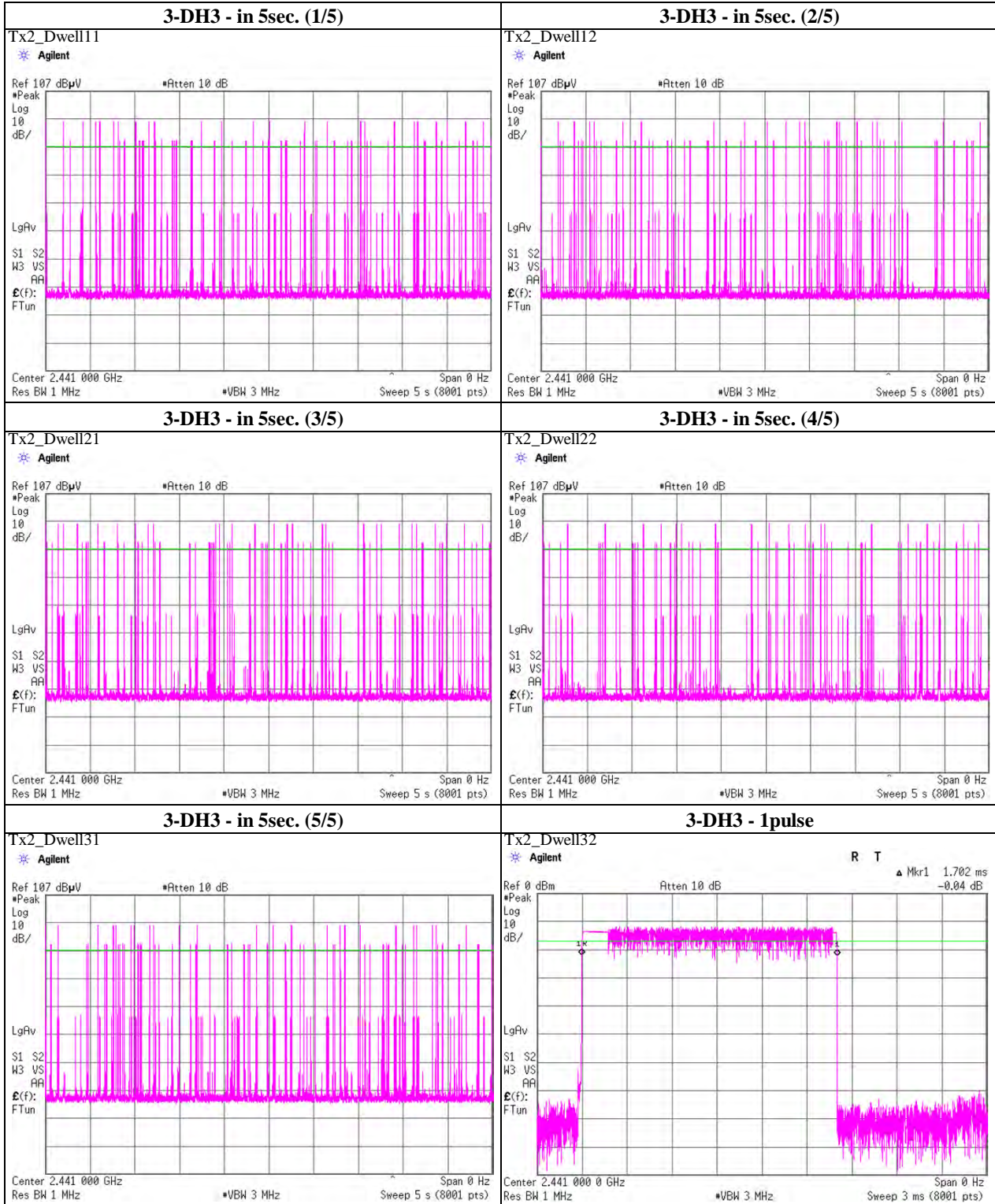
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## Dwell time

### Tx, Bluetooth, EDR, PRBS9



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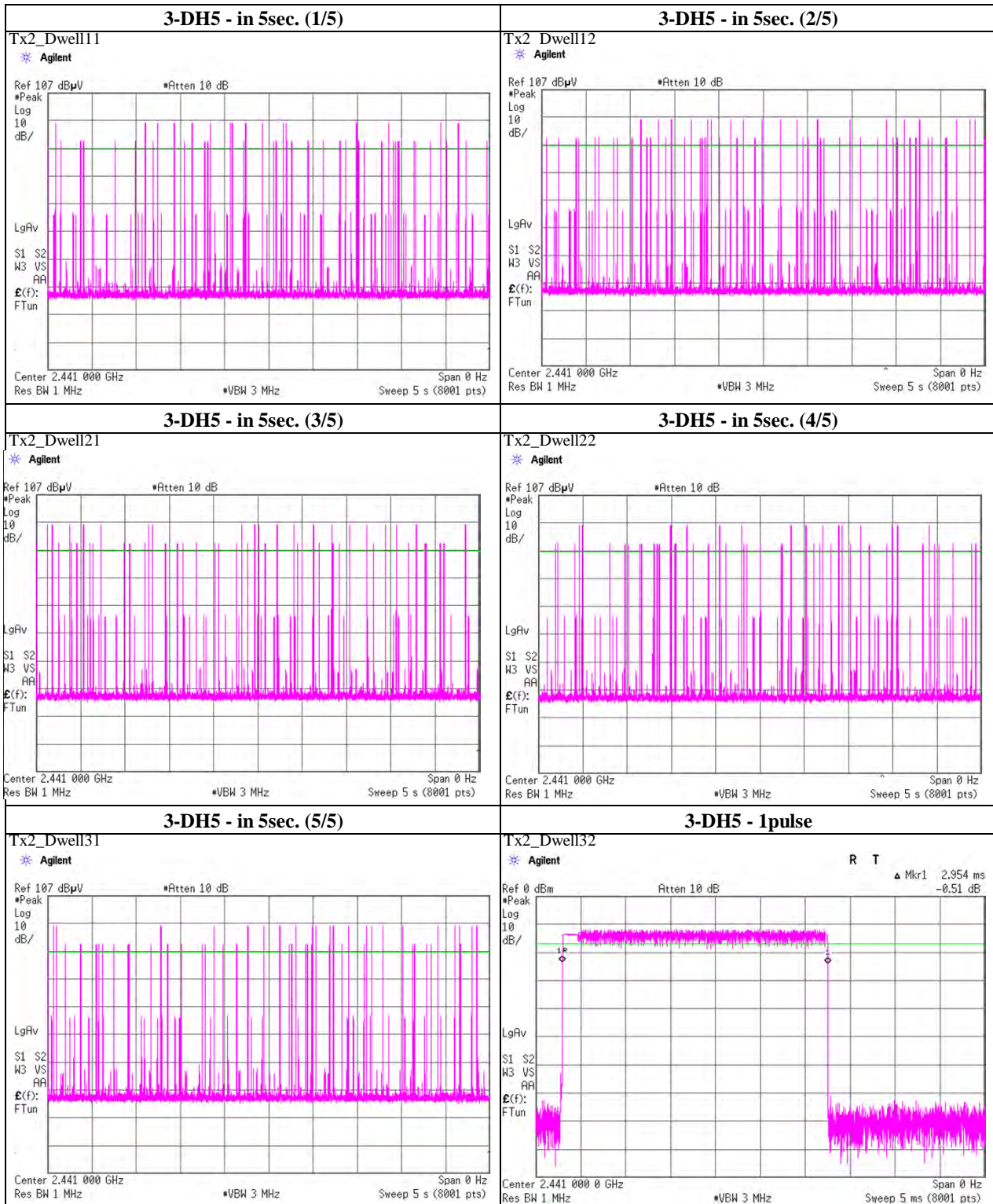
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## Dwell time

### Tx, Bluetooth, EDR, PRBS9



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## Peak Output Power (Conducted)

Test place                   UL Japan, Inc. Shonan EMC Lab.     No.5 Shielded Room  
Date                         February 20, 2012  
Temperature / Humidity     23deg.C     , 40%RH  
Engineer                    Wataru Kojima  
Mode                         Tx, Bluetooth

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

|       | 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] |                |
| DH5   | 2402.0         | -11.84                         | 1.39                  | 9.57                   | -0.88  | 0.82 | 20.97 | 125  | 21.85          |
| DH5   | 2441.0         | -12.44                         | 1.40                  | 9.57                   | -1.47  | 0.71 | 20.97 | 125  | 22.44          |
| DH5   | 2480.0         | -13.22                         | 1.41                  | 9.57                   | -2.24  | 0.60 | 20.97 | 125  | 23.21          |
| 2-DH5 | 2402.0         | -10.14                         | 1.39                  | 9.57                   | 0.82   | 1.21 | 20.97 | 125  | 20.15          |
| 2-DH5 | 2441.0         | -10.74                         | 1.40                  | 9.57                   | 0.23   | 1.05 | 20.97 | 125  | 20.74          |
| 2-DH5 | 2480.0         | -11.56                         | 1.41                  | 9.57                   | -0.58  | 0.87 | 20.97 | 125  | 21.55          |
| 3-DH5 | 2402.0         | -9.74                          | 1.39                  | 9.57                   | 1.22   | 1.32 | 20.97 | 125  | 19.75          |
| 3-DH5 | 2441.0         | -10.35                         | 1.40                  | 9.57                   | 0.62   | 1.15 | 20.97 | 125  | 20.35          |
| 3-DH5 | 2480.0         | -11.30                         | 1.41                  | 9.57                   | -0.32  | 0.93 | 20.97 | 125  | 21.29          |

Sample Calculation:

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

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**Radiated Emission**

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber  
 Date February 18, 2012 February 21, 2012  
 Temperature / Humidity 25deg.C , 30%RH 18deg.C , 32%RH  
 Engineer Hikaru Shirasawa Akio Hayashi  
 Mode Tx, 2402 MHz  
 Tx, Bluetooth, BDR, PRBS9

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

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark      |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|--------------|-------------|
| Hori.    | 67.949          | QP       | 48.3           | 6.8             | 7.5       | 31.8      | 30.8            | 40.0           | 9.2         | 289         | 82           | PK:VBW 3MHz |
| Hori.    | 75.943          | QP       | 54.8           | 6.4             | 7.6       | 31.8      | 37.0            | 40.0           | 3.0         | 246         | 232          | AV:VBW 10Hz |
| Hori.    | 312.000         | QP       | 46.4           | 14.3            | 6.9       | 31.8      | 35.8            | 46.0           | 10.2        | 100         | 202          |             |
| Hori.    | 575.975         | QP       | 36.4           | 18.6            | 8.5       | 32.0      | 31.5            | 46.0           | 14.5        | 170         | 347          |             |
| Hori.    | 900.018         | QP       | 32.2           | 21.9            | 10.0      | 31.3      | 32.8            | 46.0           | 13.2        | 100         | 80           |             |
| Hori.    | 1440.000        | PK       | 54.1           | 25.0            | 12.9      | 40.8      | 51.2            | 73.9           | 22.7        | 133         | 101          |             |
| Hori.    | 2390.000        | PK       | 47.2           | 27.2            | 13.8      | 41.1      | 47.1            | 73.9           | 26.8        | 100         | 0            |             |
| Hori.    | 2400.000        | PK       | 48.4           | 27.3            | 13.8      | 41.1      | 48.4            | 73.9           | 25.5        | 100         | 71           |             |
| Hori.    | 4804.000        | PK       | 49.0           | 31.1            | 5.9       | 41.1      | 44.9            | 73.9           | 29.0        | 145         | 264          |             |
| Hori.    | 7206.000        | PK       | 47.6           | 36.5            | 6.9       | 41.3      | 49.7            | 73.9           | 24.2        | 100         | 359          |             |
| Hori.    | 9608.000        | PK       | 45.3           | 38.2            | 8.8       | 38.8      | 53.5            | 73.9           | 20.4        | 100         | 0            |             |
| Hori.    | 12010.000       | PK       | 46.1           | 39.3            | 9.6       | 39.2      | 55.8            | 73.9           | 18.1        | 100         | 359          |             |
| Hori.    | 1440.000        | AV       | 50.3           | 25.0            | 12.9      | 40.8      | 47.4            | 53.9           | 6.5         | 133         | 101          |             |
| Hori.    | 2390.000        | AV       | 35.3           | 27.2            | 13.8      | 41.1      | 35.2            | 53.9           | 18.7        | 100         | 0            |             |
| Hori.    | 2400.000        | AV       | 38.2           | 27.3            | 13.8      | 41.1      | 38.2            | 53.9           | 15.7        | 100         | 71           |             |
| Hori.    | 4804.000        | AV       | 39.9           | 31.1            | 5.9       | 41.1      | 35.8            | 53.9           | 18.1        | 145         | 264          |             |
| Hori.    | 7206.000        | AV       | 35.8           | 36.5            | 6.9       | 41.3      | 37.9            | 53.9           | 16.0        | 100         | 359          |             |
| Hori.    | 9608.000        | AV       | 33.4           | 38.2            | 8.8       | 38.8      | 41.6            | 53.9           | 12.3        | 100         | 0            |             |
| Hori.    | 12010.000       | AV       | 34.4           | 39.3            | 9.6       | 39.2      | 44.1            | 53.9           | 9.8         | 100         | 359          |             |
| Vert.    | 35.998          | QP       | 41.8           | 16.3            | 7.0       | 31.8      | 33.3            | 40.0           | 6.7         | 100         | 95           |             |
| Vert.    | 503.973         | QP       | 41.2           | 17.7            | 8.1       | 31.9      | 35.1            | 46.0           | 10.9        | 100         | 105          |             |
| Vert.    | 863.958         | QP       | 34.6           | 21.5            | 9.8       | 31.6      | 34.3            | 46.0           | 11.7        | 116         | 102          |             |
| Vert.    | 935.948         | QP       | 33.5           | 22.3            | 10.2      | 31.1      | 34.9            | 46.0           | 11.1        | 100         | 128          |             |
| Vert.    | 1440.000        | PK       | 49.8           | 25.0            | 12.9      | 40.8      | 46.9            | 73.9           | 27.0        | 147         | 50           |             |
| Vert.    | 2390.000        | PK       | 47.0           | 27.2            | 13.8      | 41.1      | 46.9            | 73.9           | 27.0        | 100         | 0            |             |
| Vert.    | 2400.000        | PK       | 48.7           | 27.3            | 13.8      | 41.1      | 48.7            | 73.9           | 25.2        | 175         | 359          |             |
| Vert.    | 4804.000        | PK       | 50.1           | 31.1            | 5.9       | 41.1      | 46.0            | 73.9           | 27.9        | 100         | 20           |             |
| Vert.    | 7206.000        | PK       | 47.6           | 36.5            | 6.9       | 41.3      | 49.7            | 73.9           | 24.2        | 100         | 0            |             |
| Vert.    | 9608.000        | PK       | 45.1           | 38.2            | 8.8       | 38.8      | 53.3            | 73.9           | 20.6        | 100         | 359          |             |
| Vert.    | 12010.000       | PK       | 46.7           | 39.3            | 9.6       | 39.2      | 56.4            | 73.9           | 17.5        | 100         | 0            |             |
| Vert.    | 1440.000        | AV       | 43.4           | 25.0            | 12.9      | 40.8      | 40.5            | 53.9           | 13.4        | 147         | 50           |             |
| Vert.    | 2390.000        | AV       | 35.7           | 27.2            | 13.8      | 41.1      | 35.6            | 53.9           | 18.3        | 100         | 0            |             |
| Vert.    | 2400.000        | AV       | 36.5           | 27.3            | 13.8      | 41.1      | 36.5            | 53.9           | 17.4        | 175         | 359          |             |
| Vert.    | 4804.000        | AV       | 41.9           | 31.1            | 5.9       | 41.1      | 37.8            | 53.9           | 16.1        | 100         | 20           |             |
| Vert.    | 7206.000        | AV       | 36.5           | 36.5            | 6.9       | 41.3      | 38.6            | 53.9           | 15.3        | 100         | 0            |             |
| Vert.    | 9608.000        | AV       | 33.7           | 38.2            | 8.8       | 38.8      | 41.9            | 53.9           | 12.0        | 100         | 359          |             |
| Vert.    | 12010.000       | AV       | 34.5           | 39.3            | 9.6       | 39.2      | 44.2            | 53.9           | 9.7         | 100         | 0            |             |

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

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

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**Radiated Emission**

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber  
 Date February 18, 2012 February 21, 2012  
 Temperature / Humidity 25deg.C , 30%RH 18deg.C , 32%RH  
 Engineer Hikaru Shirasawa Akio Hayashi  
 Mode Tx, 2441 MHz  
 Tx, Bluetooth, BDR, PRBS9

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

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark      |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|--------------|-------------|
| Hori.    | 67.930          | QP       | 51.7           | 6.8             | 7.5       | 31.8      | 34.2            | 40.0           | 5.8         | 277         | 94           | PK:VBW 3MHz |
| Hori.    | 75.938          | QP       | 54.3           | 6.4             | 7.6       | 31.8      | 36.5            | 40.0           | 3.5         | 234         | 220          | AV:VBW 10Hz |
| Hori.    | 312.000         | QP       | 46.3           | 14.3            | 6.9       | 31.8      | 35.7            | 46.0           | 10.3        | 100         | 211          |             |
| Hori.    | 503.977         | QP       | 40.4           | 17.7            | 8.1       | 31.9      | 34.3            | 46.0           | 11.7        | 100         | 351          |             |
| Hori.    | 863.970         | QP       | 33.4           | 21.5            | 9.8       | 31.6      | 33.1            | 46.0           | 12.9        | 100         | 82           |             |
| Hori.    | 960.021         | QP       | 32.4           | 22.5            | 10.3      | 30.9      | 34.3            | 53.9           | 19.6        | 100         | 41           |             |
| Hori.    | 1440.000        | PK       | 54.5           | 25.0            | 12.9      | 40.8      | 51.6            | 73.9           | 22.3        | 132         | 100          |             |
| Hori.    | 4882.000        | PK       | 49.1           | 31.2            | 5.9       | 40.9      | 45.3            | 73.9           | 28.6        | 100         | 235          |             |
| Hori.    | 7323.000        | PK       | 46.2           | 36.8            | 6.9       | 41.4      | 48.5            | 73.9           | 25.4        | 100         | 0            |             |
| Hori.    | 9764.000        | PK       | 45.3           | 38.5            | 8.7       | 38.8      | 53.7            | 73.9           | 20.2        | 100         | 0            |             |
| Hori.    | 12205.000       | PK       | 45.3           | 39.3            | 9.6       | 39.2      | 55.0            | 73.9           | 18.9        | 100         | 359          |             |
| Hori.    | 1440.000        | AV       | 50.2           | 25.0            | 12.9      | 40.8      | 47.3            | 53.9           | 6.6         | 132         | 100          |             |
| Hori.    | 4882.000        | AV       | 39.9           | 31.2            | 5.9       | 40.9      | 36.1            | 53.9           | 17.8        | 100         | 235          |             |
| Hori.    | 7323.000        | AV       | 33.7           | 36.8            | 6.9       | 41.4      | 36.0            | 53.9           | 17.9        | 100         | 0            |             |
| Hori.    | 9764.000        | AV       | 33.4           | 38.5            | 8.7       | 38.8      | 41.8            | 53.9           | 12.1        | 100         | 0            |             |
| Hori.    | 12205.000       | AV       | 34.1           | 39.3            | 9.6       | 39.2      | 43.8            | 53.9           | 10.1        | 100         | 359          |             |
| Vert.    | 35.997          | QP       | 41.5           | 16.3            | 7.0       | 31.8      | 33.0            | 40.0           | 7.0         | 102         | 69           |             |
| Vert.    | 575.973         | QP       | 38.9           | 18.6            | 8.5       | 32.0      | 34.0            | 46.0           | 12.0        | 137         | 308          |             |
| Vert.    | 935.954         | QP       | 34.0           | 22.3            | 10.2      | 31.1      | 35.4            | 46.0           | 10.6        | 100         | 129          |             |
| Vert.    | 1440.000        | PK       | 50.1           | 25.0            | 12.9      | 40.8      | 47.2            | 73.9           | 26.7        | 177         | 63           |             |
| Vert.    | 4882.000        | PK       | 49.6           | 31.2            | 5.9       | 40.9      | 45.8            | 73.9           | 28.1        | 100         | 359          |             |
| Vert.    | 7323.000        | PK       | 47.1           | 36.8            | 6.9       | 41.4      | 49.4            | 73.9           | 24.5        | 100         | 0            |             |
| Vert.    | 9764.000        | PK       | 45.9           | 38.5            | 8.7       | 38.8      | 54.3            | 73.9           | 19.6        | 100         | 359          |             |
| Vert.    | 12205.000       | PK       | 46.6           | 39.3            | 9.6       | 39.2      | 56.3            | 73.9           | 17.6        | 100         | 0            |             |
| Vert.    | 1440.000        | AV       | 42.4           | 25.0            | 12.9      | 40.8      | 39.5            | 53.9           | 14.4        | 177         | 63           |             |
| Vert.    | 4882.000        | AV       | 42.2           | 31.2            | 5.9       | 40.9      | 38.4            | 53.9           | 15.5        | 100         | 359          |             |
| Vert.    | 7323.000        | AV       | 35.4           | 36.8            | 6.9       | 41.4      | 37.7            | 53.9           | 16.2        | 100         | 0            |             |
| Vert.    | 9764.000        | AV       | 34.0           | 38.5            | 8.7       | 38.8      | 42.4            | 53.9           | 11.5        | 100         | 359          |             |
| Vert.    | 12205.000       | AV       | 34.3           | 39.3            | 9.6       | 39.2      | 44.0            | 53.9           | 9.9         | 100         | 0            |             |

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

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

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

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**Radiated Emission**

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber  
 Date February 18, 2012 February 21, 2012  
 Temperature / Humidity 25deg.C , 30%RH 18deg.C , 32%RH  
 Engineer Hikaru Shirasawa Akio Hayashi  
 Mode Tx, 2480 MHz  
 Tx, Bluetooth, BDR, PRBS9

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

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark      |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|--------------|-------------|
| Hori.    | 67.954          | QP       | 49.1           | 6.8             | 7.5       | 31.8      | 31.6            | 40.0           | 8.4         | 317         | 82           | PK:VBW 3MHz |
| Hori.    | 75.946          | QP       | 55.4           | 6.4             | 7.6       | 31.8      | 37.6            | 40.0           | 2.4         | 235         | 219          | AV:VBW 10Hz |
| Hori.    | 83.942          | QP       | 44.0           | 7.1             | 7.7       | 31.8      | 27.0            | 40.0           | 13.0        | 253         | 191          |             |
| Hori.    | 123.912         | QP       | 37.1           | 13.2            | 8.2       | 31.8      | 26.7            | 43.5           | 16.8        | 245         | 56           |             |
| Hori.    | 249.608         | QP       | 38.0           | 17.3            | 9.4       | 31.7      | 33.0            | 46.0           | 13.0        | 135         | 250          |             |
| Hori.    | 312.001         | QP       | 45.9           | 14.3            | 6.9       | 31.8      | 35.3            | 46.0           | 10.7        | 100         | 202          |             |
| Hori.    | 863.958         | QP       | 31.6           | 21.5            | 9.8       | 31.6      | 31.3            | 46.0           | 14.7        | 100         | 88           |             |
| Hori.    | 1440.000        | PK       | 54.2           | 25.0            | 12.9      | 40.8      | 51.3            | 73.9           | 22.6        | 133         | 100          |             |
| Hori.    | 2483.500        | PK       | 47.4           | 27.5            | 13.8      | 41.1      | 47.6            | 73.9           | 26.3        | 100         | 359          |             |
| Hori.    | 2483.900        | PK       | 47.7           | 27.5            | 13.8      | 41.1      | 47.9            | 73.9           | 26.0        | 100         | 0            |             |
| Hori.    | 4960.000        | PK       | 49.8           | 31.4            | 5.8       | 40.8      | 46.2            | 73.9           | 27.7        | 100         | 299          |             |
| Hori.    | 7440.000        | PK       | 47.6           | 37.0            | 6.9       | 41.5      | 50.0            | 73.9           | 23.9        | 100         | 359          |             |
| Hori.    | 9920.000        | PK       | 45.6           | 38.8            | 8.7       | 38.8      | 54.3            | 73.9           | 19.6        | 100         | 0            |             |
| Hori.    | 12400.000       | PK       | 46.3           | 39.4            | 9.6       | 39.2      | 56.1            | 73.9           | 17.8        | 100         | 0            |             |
| Hori.    | 1440.000        | AV       | 50.2           | 25.0            | 12.9      | 40.8      | 47.3            | 53.9           | 6.6         | 133         | 100          |             |
| Hori.    | 2483.500        | AV       | 35.3           | 27.5            | 13.8      | 41.1      | 35.5            | 53.9           | 18.4        | 100         | 359          |             |
| Hori.    | 2483.900        | AV       | 35.3           | 27.5            | 13.8      | 41.1      | 35.5            | 53.9           | 18.4        | 100         | 0            |             |
| Hori.    | 4960.000        | AV       | 41.4           | 31.4            | 5.8       | 40.8      | 37.8            | 53.9           | 16.1        | 100         | 299          |             |
| Hori.    | 7440.000        | AV       | 35.5           | 37.0            | 6.9       | 41.5      | 37.9            | 53.9           | 16.0        | 100         | 359          |             |
| Hori.    | 9920.000        | AV       | 33.3           | 38.8            | 8.7       | 38.8      | 42.0            | 53.9           | 11.9        | 100         | 0            |             |
| Hori.    | 12400.000       | AV       | 33.8           | 39.4            | 9.6       | 39.2      | 43.6            | 53.9           | 10.3        | 100         | 0            |             |
| Vert.    | 36.002          | QP       | 42.1           | 16.3            | 7.0       | 31.8      | 33.6            | 40.0           | 6.4         | 100         | 94           |             |
| Vert.    | 503.973         | QP       | 40.5           | 17.7            | 8.1       | 31.9      | 34.4            | 46.0           | 11.6        | 128         | 302          |             |
| Vert.    | 935.954         | QP       | 33.7           | 22.3            | 10.2      | 31.1      | 35.1            | 46.0           | 10.9        | 100         | 132          |             |
| Vert.    | 1440.000        | PK       | 50.9           | 25.0            | 12.9      | 40.8      | 48.0            | 73.9           | 25.9        | 191         | 61           |             |
| Vert.    | 2483.500        | PK       | 48.0           | 27.5            | 13.8      | 41.1      | 48.2            | 73.9           | 25.7        | 100         | 359          |             |
| Vert.    | 2483.900        | PK       | 48.2           | 27.5            | 13.8      | 41.1      | 48.4            | 73.9           | 25.5        | 100         | 0            |             |
| Vert.    | 4960.000        | PK       | 50.5           | 31.4            | 5.8       | 40.8      | 46.9            | 73.9           | 27.0        | 100         | 0            |             |
| Vert.    | 7440.000        | PK       | 48.2           | 37.0            | 6.9       | 41.5      | 50.6            | 73.9           | 23.3        | 100         | 359          |             |
| Vert.    | 9920.000        | PK       | 45.2           | 38.8            | 8.7       | 38.8      | 53.9            | 73.9           | 20.0        | 100         | 359          |             |
| Vert.    | 12400.000       | PK       | 46.8           | 39.4            | 9.6       | 39.2      | 56.6            | 73.9           | 17.3        | 100         | 0            |             |
| Vert.    | 1440.000        | AV       | 43.8           | 25.0            | 12.9      | 40.8      | 40.9            | 53.9           | 13.0        | 191         | 61           |             |
| Vert.    | 2483.500        | AV       | 35.4           | 27.5            | 13.8      | 41.1      | 35.6            | 53.9           | 18.3        | 100         | 359          |             |
| Vert.    | 2483.900        | AV       | 35.4           | 27.5            | 13.8      | 41.1      | 35.6            | 53.9           | 18.3        | 100         | 0            |             |
| Vert.    | 4960.000        | AV       | 43.1           | 31.4            | 5.8       | 40.8      | 39.5            | 53.9           | 14.4        | 100         | 0            |             |
| Vert.    | 7440.000        | AV       | 35.4           | 37.0            | 6.9       | 41.5      | 37.8            | 53.9           | 16.1        | 100         | 359          |             |
| Vert.    | 9920.000        | AV       | 33.3           | 38.8            | 8.7       | 38.8      | 42.0            | 53.9           | 11.9        | 100         | 359          |             |
| Vert.    | 12400.000       | AV       | 33.7           | 39.4            | 9.6       | 39.2      | 43.5            | 53.9           | 10.4        | 100         | 0            |             |

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

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

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**Radiated Emission**

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber  
 Date February 18, 2012 February 21, 2012  
 Temperature / Humidity 25deg.C , 30%RH 18deg.C , 32%RH  
 Engineer Hikaru Shirasawa Akio Hayashi  
 Mode Tx, 2402 MHz  
 Tx, Bluetooth, EDR, PRBS9

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

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark      |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|--------------|-------------|
| Hori.    | 67.954          | QP       | 49.1           | 6.8             | 7.5       | 31.8      | 31.6            | 40.0           | 8.4         | 317         | 82           | PK:VBW 3MHz |
| Hori.    | 75.946          | QP       | 55.4           | 6.4             | 7.6       | 31.8      | 37.6            | 40.0           | 2.4         | 235         | 219          | AV:VBW 10Hz |
| Hori.    | 83.942          | QP       | 44.0           | 7.1             | 7.7       | 31.8      | 27.0            | 40.0           | 13.0        | 253         | 191          |             |
| Hori.    | 123.912         | QP       | 37.1           | 13.2            | 8.2       | 31.8      | 26.7            | 43.5           | 16.8        | 245         | 56           |             |
| Hori.    | 249.608         | QP       | 38.0           | 17.3            | 9.4       | 31.7      | 33.0            | 46.0           | 13.0        | 135         | 250          |             |
| Hori.    | 312.001         | QP       | 45.9           | 14.3            | 6.9       | 31.8      | 35.3            | 46.0           | 10.7        | 100         | 202          |             |
| Hori.    | 863.958         | QP       | 31.6           | 21.5            | 9.8       | 31.6      | 31.3            | 46.0           | 14.7        | 100         | 88           |             |
| Hori.    | 1440.000        | PK       | 54.0           | 25.0            | 12.9      | 40.8      | 51.1            | 73.9           | 22.8        | 131         | 103          |             |
| Hori.    | 2390.000        | PK       | 47.3           | 27.2            | 13.8      | 41.1      | 47.2            | 73.9           | 26.7        | 100         | 0            |             |
| Hori.    | 2400.000        | PK       | 51.5           | 27.3            | 13.8      | 41.1      | 51.5            | 73.9           | 22.4        | 109         | 221          |             |
| Hori.    | 4804.000        | PK       | 50.3           | 31.1            | 5.9       | 41.1      | 46.2            | 73.9           | 27.7        | 100         | 0            |             |
| Hori.    | 7206.000        | PK       | 48.2           | 36.5            | 6.9       | 41.3      | 50.3            | 73.9           | 23.6        | 100         | 359          |             |
| Hori.    | 9608.000        | PK       | 46.5           | 38.2            | 8.8       | 38.8      | 54.7            | 73.9           | 19.2        | 100         | 0            |             |
| Hori.    | 12010.000       | PK       | 47.4           | 39.3            | 9.6       | 39.2      | 57.1            | 73.9           | 16.8        | 100         | 359          |             |
| Hori.    | 1440.000        | AV       | 50.1           | 25.0            | 12.9      | 40.8      | 47.2            | 53.9           | 6.7         | 131         | 103          |             |
| Hori.    | 2390.000        | AV       | 35.2           | 27.2            | 13.8      | 41.1      | 35.1            | 53.9           | 18.8        | 100         | 0            |             |
| Hori.    | 2400.000        | AV       | 39.1           | 27.3            | 13.8      | 41.1      | 39.1            | 53.9           | 14.8        | 109         | 221          |             |
| Hori.    | 4804.000        | AV       | 40.4           | 31.1            | 5.9       | 41.1      | 36.3            | 53.9           | 17.6        | 100         | 0            |             |
| Hori.    | 7206.000        | AV       | 35.9           | 36.5            | 6.9       | 41.3      | 38.0            | 53.9           | 15.9        | 100         | 359          |             |
| Hori.    | 9608.000        | AV       | 33.6           | 38.2            | 8.8       | 38.8      | 41.8            | 53.9           | 12.1        | 100         | 0            |             |
| Hori.    | 12010.000       | AV       | 34.5           | 39.3            | 9.6       | 39.2      | 44.2            | 53.9           | 9.7         | 100         | 359          |             |
| Vert.    | 36.002          | QP       | 42.1           | 16.3            | 7.0       | 31.8      | 33.6            | 40.0           | 6.4         | 100         | 94           |             |
| Vert.    | 75.946          | QP       | 51.0           | 6.4             | 7.6       | 31.8      | 33.2            | 40.0           | 6.8         | 199         | 154          |             |
| Vert.    | 503.973         | QP       | 40.5           | 17.7            | 8.1       | 31.9      | 34.4            | 46.0           | 11.6        | 128         | 302          |             |
| Vert.    | 935.954         | QP       | 33.7           | 22.3            | 10.2      | 31.1      | 35.1            | 46.0           | 10.9        | 100         | 132          |             |
| Vert.    | 1440.000        | PK       | 50.0           | 25.0            | 12.9      | 40.8      | 47.1            | 73.9           | 26.8        | 112         | 62           |             |
| Vert.    | 2390.000        | PK       | 47.0           | 27.2            | 13.8      | 41.1      | 46.9            | 73.9           | 27.0        | 100         | 0            |             |
| Vert.    | 2400.000        | PK       | 50.8           | 27.3            | 13.8      | 41.1      | 50.8            | 73.9           | 23.1        | 115         | 160          |             |
| Vert.    | 4804.000        | PK       | 49.2           | 31.1            | 5.9       | 41.1      | 45.1            | 73.9           | 28.8        | 100         | 22           |             |
| Vert.    | 7206.000        | PK       | 48.2           | 36.5            | 6.9       | 41.3      | 50.3            | 73.9           | 23.6        | 100         | 0            |             |
| Vert.    | 9608.000        | PK       | 46.4           | 38.2            | 8.8       | 38.8      | 54.6            | 73.9           | 19.3        | 100         | 359          |             |
| Vert.    | 12010.000       | PK       | 46.9           | 39.3            | 9.6       | 39.2      | 56.6            | 73.9           | 17.3        | 100         | 0            |             |
| Vert.    | 1440.000        | AV       | 42.4           | 25.0            | 12.9      | 40.8      | 39.5            | 53.9           | 14.4        | 112         | 62           |             |
| Vert.    | 2390.000        | AV       | 35.2           | 27.2            | 13.8      | 41.1      | 35.1            | 53.9           | 18.8        | 100         | 0            |             |
| Vert.    | 2400.000        | AV       | 38.5           | 27.3            | 13.8      | 41.1      | 38.5            | 53.9           | 15.4        | 115         | 160          |             |
| Vert.    | 4804.000        | AV       | 40.6           | 31.1            | 5.9       | 41.1      | 36.5            | 53.9           | 17.4        | 100         | 22           |             |
| Vert.    | 7206.000        | AV       | 36.0           | 36.5            | 6.9       | 41.3      | 38.1            | 53.9           | 15.8        | 100         | 0            |             |
| Vert.    | 9608.000        | AV       | 33.9           | 38.2            | 8.8       | 38.8      | 42.1            | 53.9           | 11.8        | 100         | 359          |             |
| Vert.    | 12010.000       | AV       | 34.6           | 39.3            | 9.6       | 39.2      | 44.3            | 53.9           | 9.6         | 100         | 0            |             |

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

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

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**Radiated Emission**

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber  
 Date February 18, 2012 February 21, 2012  
 Temperature / Humidity 25deg.C , 30%RH 18deg.C , 32%RH  
 Engineer Hikaru Shirasawa Akio Hayashi  
 Mode Tx, 2441 MHz  
 Tx, Bluetooth, EDR, PRBS9

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

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark      |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|--------------|-------------|
| Hori.    | 67.956          | QP       | 49.5           | 6.8             | 7.5       | 31.8      | 32.0            | 40.0           | 8.0         | 294         | 100          | PK:VBW 3MHz |
| Hori.    | 75.947          | QP       | 55.7           | 6.4             | 7.6       | 31.8      | 37.9            | 40.0           | 2.1         | 268         | 27           | AV:VBW 10Hz |
| Hori.    | 249.605         | QP       | 39.3           | 17.3            | 9.4       | 31.7      | 34.3            | 46.0           | 11.7        | 134         | 242          |             |
| Hori.    | 312.001         | QP       | 46.1           | 14.3            | 6.9       | 31.8      | 35.5            | 46.0           | 10.5        | 100         | 204          |             |
| Hori.    | 503.973         | QP       | 38.4           | 17.7            | 8.1       | 31.9      | 32.3            | 46.0           | 13.7        | 102         | 116          |             |
| Hori.    | 575.978         | QP       | 36.8           | 18.6            | 8.5       | 32.0      | 31.9            | 46.0           | 14.1        | 168         | 50           |             |
| Hori.    | 863.963         | QP       | 32.1           | 21.5            | 9.8       | 31.6      | 31.8            | 46.0           | 14.2        | 106         | 85           |             |
| Hori.    | 1440.000        | PK       | 53.9           | 25.0            | 12.9      | 40.8      | 51.0            | 73.9           | 22.9        | 131         | 98           |             |
| Hori.    | 4882.000        | PK       | 49.7           | 31.2            | 5.9       | 40.9      | 45.9            | 73.9           | 28.0        | 100         | 267          |             |
| Hori.    | 7323.000        | PK       | 47.9           | 36.8            | 6.9       | 41.4      | 50.2            | 73.9           | 23.7        | 100         | 359          |             |
| Hori.    | 9764.000        | PK       | 46.0           | 38.5            | 8.7       | 38.8      | 54.4            | 73.9           | 19.5        | 100         | 0            |             |
| Hori.    | 12205.000       | PK       | 46.8           | 39.3            | 9.6       | 39.2      | 56.5            | 73.9           | 17.4        | 100         | 359          |             |
| Hori.    | 1440.000        | AV       | 49.8           | 25.0            | 12.9      | 40.8      | 46.9            | 53.9           | 7.0         | 131         | 98           |             |
| Hori.    | 4882.000        | AV       | 39.8           | 31.2            | 5.9       | 40.9      | 36.0            | 53.9           | 17.9        | 100         | 267          |             |
| Hori.    | 7323.000        | AV       | 35.3           | 36.8            | 6.9       | 41.4      | 37.6            | 53.9           | 16.3        | 100         | 359          |             |
| Hori.    | 9764.000        | AV       | 33.8           | 38.5            | 8.7       | 38.8      | 42.2            | 53.9           | 11.7        | 100         | 0            |             |
| Hori.    | 12205.000       | AV       | 34.2           | 39.3            | 9.6       | 39.2      | 43.9            | 53.9           | 10.0        | 100         | 359          |             |
| Vert.    | 36.001          | QP       | 41.6           | 16.3            | 7.0       | 31.8      | 33.1            | 40.0           | 6.9         | 100         | 98           |             |
| Vert.    | 935.948         | QP       | 31.1           | 22.3            | 10.2      | 31.1      | 32.5            | 46.0           | 13.5        | 151         | 119          |             |
| Vert.    | 1440.000        | PK       | 49.2           | 25.0            | 12.9      | 40.8      | 46.3            | 73.9           | 27.6        | 111         | 63           |             |
| Vert.    | 4882.000        | PK       | 49.7           | 31.2            | 5.9       | 40.9      | 45.9            | 73.9           | 28.0        | 111         | 0            |             |
| Vert.    | 7323.000        | PK       | 47.9           | 36.8            | 6.9       | 41.4      | 50.2            | 73.9           | 23.7        | 100         | 0            |             |
| Vert.    | 9764.000        | PK       | 46.3           | 38.5            | 8.7       | 38.8      | 54.7            | 73.9           | 19.2        | 100         | 359          |             |
| Vert.    | 12205.000       | PK       | 46.8           | 39.3            | 9.6       | 39.2      | 56.5            | 73.9           | 17.4        | 100         | 0            |             |
| Vert.    | 1440.000        | AV       | 42.4           | 25.0            | 12.9      | 40.8      | 39.5            | 53.9           | 14.4        | 111         | 63           |             |
| Vert.    | 4882.000        | AV       | 41.8           | 31.2            | 5.9       | 40.9      | 38.0            | 53.9           | 15.9        | 111         | 0            |             |
| Vert.    | 7323.000        | AV       | 35.4           | 36.8            | 6.9       | 41.4      | 37.7            | 53.9           | 16.2        | 100         | 0            |             |
| Vert.    | 9764.000        | AV       | 34.1           | 38.5            | 8.7       | 38.8      | 42.5            | 53.9           | 11.4        | 100         | 359          |             |
| Vert.    | 12205.000       | AV       | 34.5           | 39.3            | 9.6       | 39.2      | 44.2            | 53.9           | 9.7         | 100         | 0            |             |

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

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

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**Radiated Emission**

Test place UL Japan, Inc. Shonan EMC Lab. No.3 Semi Anechoic Chamber  
 Date February 18, 2012 February 21, 2012  
 Temperature / Humidity 25deg.C , 30%RH 18deg.C , 32%RH  
 Engineer Hikaru Shirasawa Akio Hayashi  
 Mode Tx, 2480 MHz  
 Tx, Bluetooth, EDR, PRBS9

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

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark      |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|--------------|-------------|
| Hori.    | 67.951          | QP       | 51.2           | 6.8             | 7.5       | 31.8      | 33.7            | 40.0           | 6.3         | 254         | 95           | PK:VBW 3MHz |
| Hori.    | 75.951          | QP       | 55.5           | 6.4             | 7.6       | 31.8      | 37.7            | 40.0           | 2.3         | 263         | 216          | AV:VBW 10Hz |
| Hori.    | 249.602         | QP       | 38.3           | 17.3            | 9.4       | 31.7      | 33.3            | 46.0           | 12.7        | 130         | 240          |             |
| Hori.    | 312.001         | QP       | 46.4           | 14.3            | 6.9       | 31.8      | 35.8            | 46.0           | 10.2        | 100         | 206          |             |
| Hori.    | 863.915         | QP       | 33.4           | 21.5            | 9.8       | 31.6      | 33.1            | 46.0           | 12.9        | 100         | 85           |             |
| Hori.    | 900.018         | QP       | 32.1           | 21.9            | 10.0      | 31.3      | 32.7            | 46.0           | 13.3        | 100         | 81           |             |
| Hori.    | 1440.000        | PK       | 54.1           | 25.0            | 12.9      | 40.8      | 51.2            | 73.9           | 22.7        | 135         | 102          |             |
| Hori.    | 2483.500        | PK       | 47.5           | 27.5            | 13.8      | 41.1      | 47.7            | 73.9           | 26.2        | 100         | 0            |             |
| Hori.    | 2483.950        | PK       | 47.2           | 27.5            | 13.8      | 41.1      | 47.4            | 73.9           | 26.5        | 100         | 359          |             |
| Hori.    | 4960.000        | PK       | 49.9           | 31.4            | 5.8       | 40.8      | 46.3            | 73.9           | 27.6        | 100         | 298          |             |
| Hori.    | 7440.000        | PK       | 47.8           | 37.0            | 6.9       | 41.5      | 50.2            | 73.9           | 23.7        | 100         | 359          |             |
| Hori.    | 9920.000        | PK       | 45.0           | 38.8            | 8.7       | 38.8      | 53.7            | 73.9           | 20.2        | 100         | 0            |             |
| Hori.    | 12400.000       | PK       | 45.7           | 39.4            | 9.6       | 39.2      | 55.5            | 73.9           | 18.4        | 100         | 359          |             |
| Hori.    | 1440.000        | AV       | 50.3           | 25.0            | 12.9      | 40.8      | 47.4            | 53.9           | 6.5         | 135         | 102          |             |
| Hori.    | 2483.500        | AV       | 35.3           | 27.5            | 13.8      | 41.1      | 35.5            | 53.9           | 18.4        | 100         | 0            |             |
| Hori.    | 2483.950        | AV       | 35.3           | 27.5            | 13.8      | 41.1      | 35.5            | 53.9           | 18.4        | 100         | 359          |             |
| Hori.    | 4960.000        | AV       | 41.7           | 31.4            | 5.8       | 40.8      | 38.1            | 53.9           | 15.8        | 100         | 298          |             |
| Hori.    | 7440.000        | AV       | 35.5           | 37.0            | 6.9       | 41.5      | 37.9            | 53.9           | 16.0        | 100         | 359          |             |
| Hori.    | 9920.000        | AV       | 33.4           | 38.8            | 8.7       | 38.8      | 42.1            | 53.9           | 11.8        | 100         | 0            |             |
| Hori.    | 12400.000       | AV       | 33.8           | 39.4            | 9.6       | 39.2      | 43.6            | 53.9           | 10.3        | 100         | 359          |             |
| Vert.    | 36.001          | QP       | 41.1           | 16.3            | 7.0       | 31.8      | 32.6            | 40.0           | 7.4         | 100         | 98           |             |
| Vert.    | 503.974         | QP       | 39.8           | 17.7            | 8.1       | 31.9      | 33.7            | 46.0           | 12.3        | 100         | 104          |             |
| Vert.    | 575.972         | QP       | 38.4           | 18.6            | 8.5       | 32.0      | 33.5            | 46.0           | 12.5        | 123         | 330          |             |
| Vert.    | 935.949         | QP       | 33.4           | 22.3            | 10.2      | 31.1      | 34.8            | 46.0           | 11.2        | 100         | 128          |             |
| Vert.    | 1440.000        | PK       | 48.0           | 25.0            | 12.9      | 40.8      | 45.1            | 73.9           | 28.8        | 139         | 272          |             |
| Vert.    | 2483.500        | PK       | 47.6           | 27.5            | 13.8      | 41.1      | 47.8            | 73.9           | 26.1        | 100         | 359          |             |
| Vert.    | 2483.950        | PK       | 47.0           | 27.5            | 13.8      | 41.1      | 47.2            | 73.9           | 26.7        | 100         | 0            |             |
| Vert.    | 4960.000        | PK       | 51.7           | 31.4            | 5.8       | 40.8      | 48.1            | 73.9           | 25.8        | 100         | 3            |             |
| Vert.    | 7440.000        | PK       | 47.0           | 37.0            | 6.9       | 41.5      | 49.4            | 73.9           | 24.5        | 100         | 0            |             |
| Vert.    | 9920.000        | PK       | 45.1           | 38.8            | 8.7       | 38.8      | 53.8            | 73.9           | 20.1        | 100         | 359          |             |
| Vert.    | 12400.000       | PK       | 45.5           | 39.4            | 9.6       | 39.2      | 55.3            | 73.9           | 18.6        | 100         | 0            |             |
| Vert.    | 1440.000        | AV       | 41.4           | 25.0            | 12.9      | 40.8      | 38.5            | 53.9           | 15.4        | 139         | 272          |             |
| Vert.    | 2483.500        | AV       | 35.4           | 27.5            | 13.8      | 41.1      | 35.6            | 53.9           | 18.3        | 100         | 359          |             |
| Vert.    | 2483.950        | AV       | 35.3           | 27.5            | 13.8      | 41.1      | 35.5            | 53.9           | 18.4        | 100         | 0            |             |
| Vert.    | 4960.000        | AV       | 42.7           | 31.4            | 5.8       | 40.8      | 39.1            | 53.9           | 14.8        | 100         | 3            |             |
| Vert.    | 7440.000        | AV       | 35.4           | 37.0            | 6.9       | 41.5      | 37.8            | 53.9           | 16.1        | 100         | 0            |             |
| Vert.    | 9920.000        | AV       | 33.2           | 38.8            | 8.7       | 38.8      | 41.9            | 53.9           | 12.0        | 100         | 359          |             |
| Vert.    | 12400.000       | AV       | 33.7           | 39.4            | 9.6       | 39.2      | 43.5            | 53.9           | 10.4        | 100         | 0            |             |

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

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

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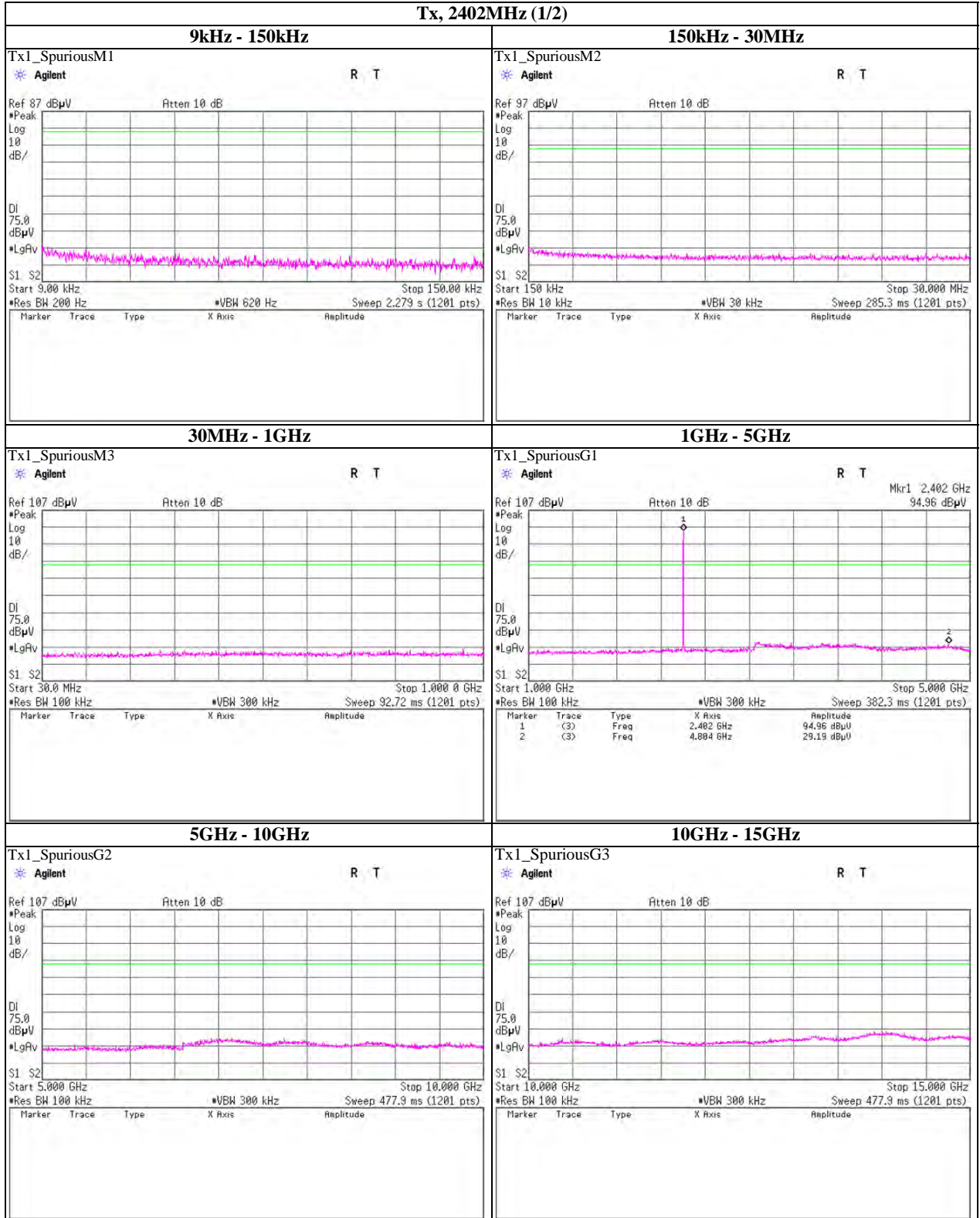
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### Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (1/2)



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**Spurious emission (Conducted)**

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2402MHz (2/2)**



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### Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2441MHz (1/2)**



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**Spurious emission (Conducted)**

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2441MHz (2/2)**



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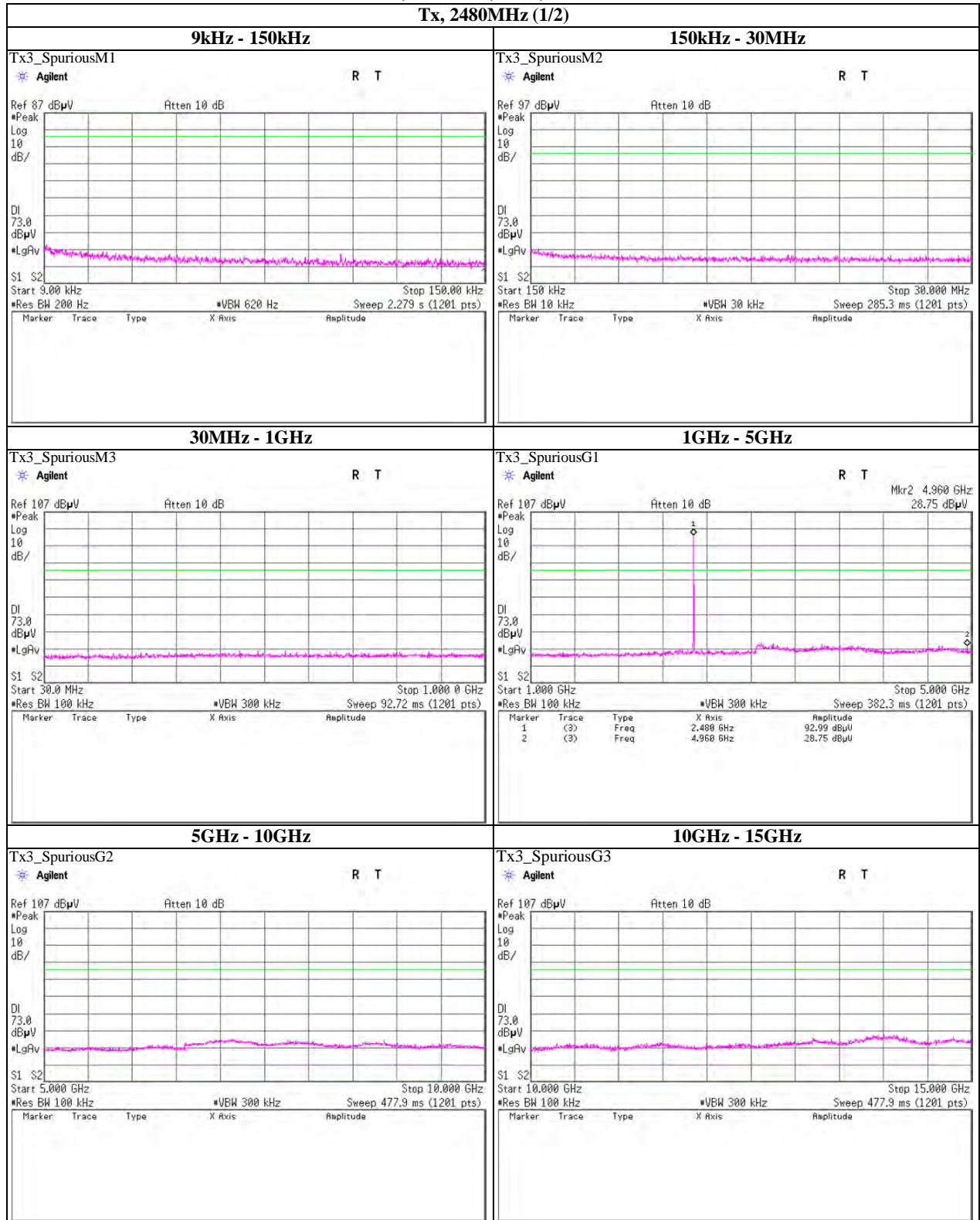
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Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (1/2)



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**Spurious emission (Conducted)**

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2480MHz (2/2)**



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### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (1/2)



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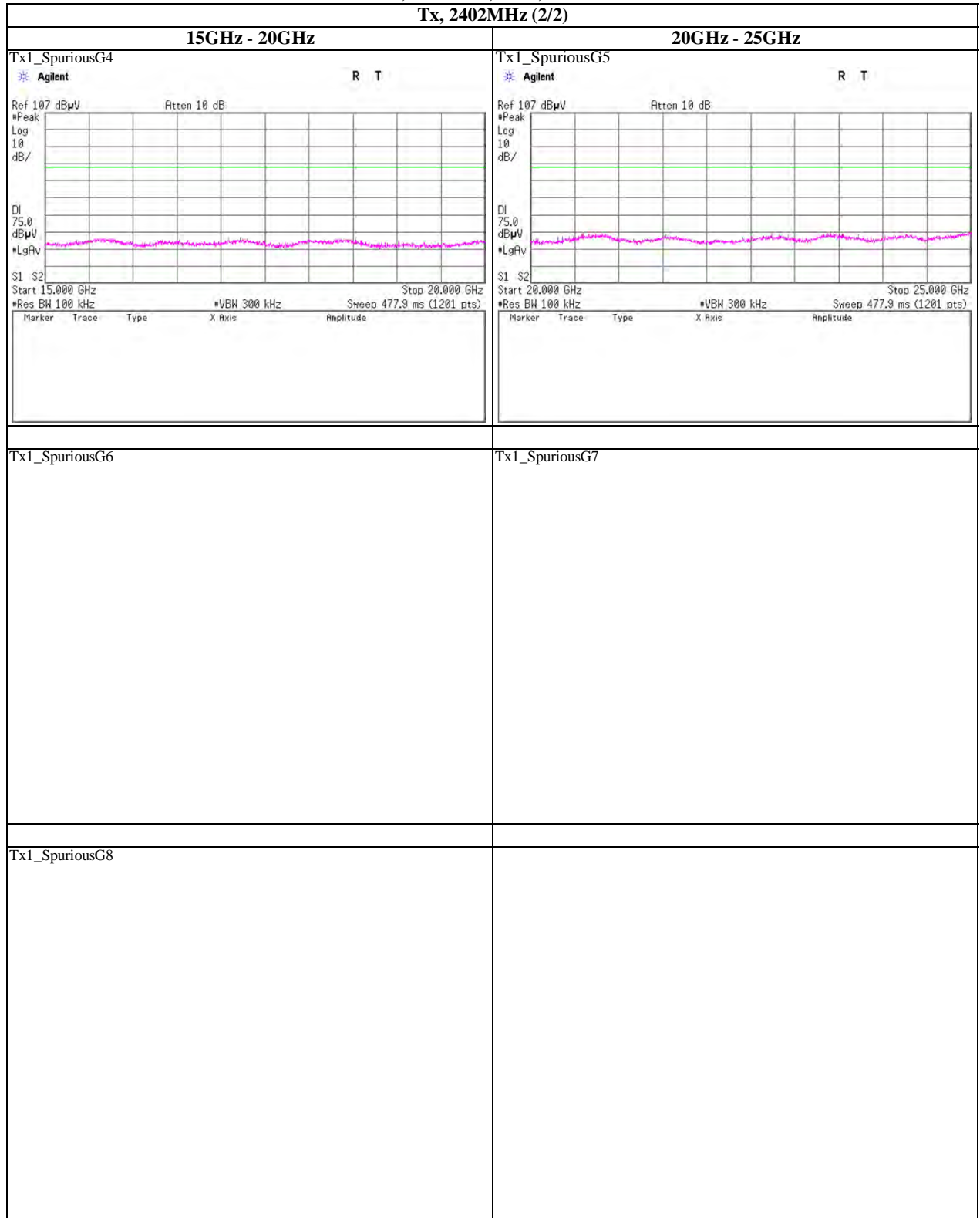
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**Spurious emission (Conducted)**

**Tx, Bluetooth, EDR, PRBS9**

**Tx, 2402MHz (2/2)**



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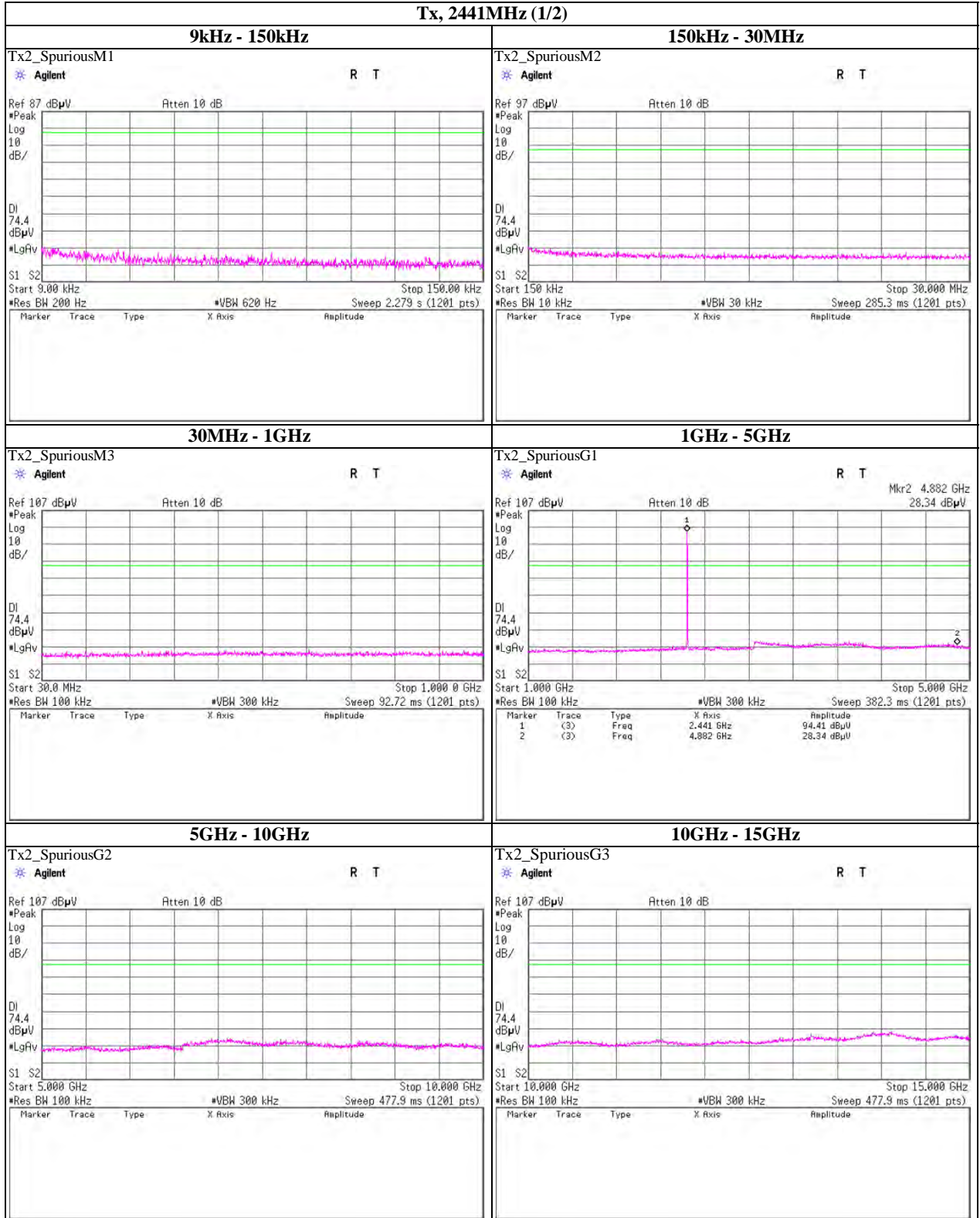
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### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (1/2)



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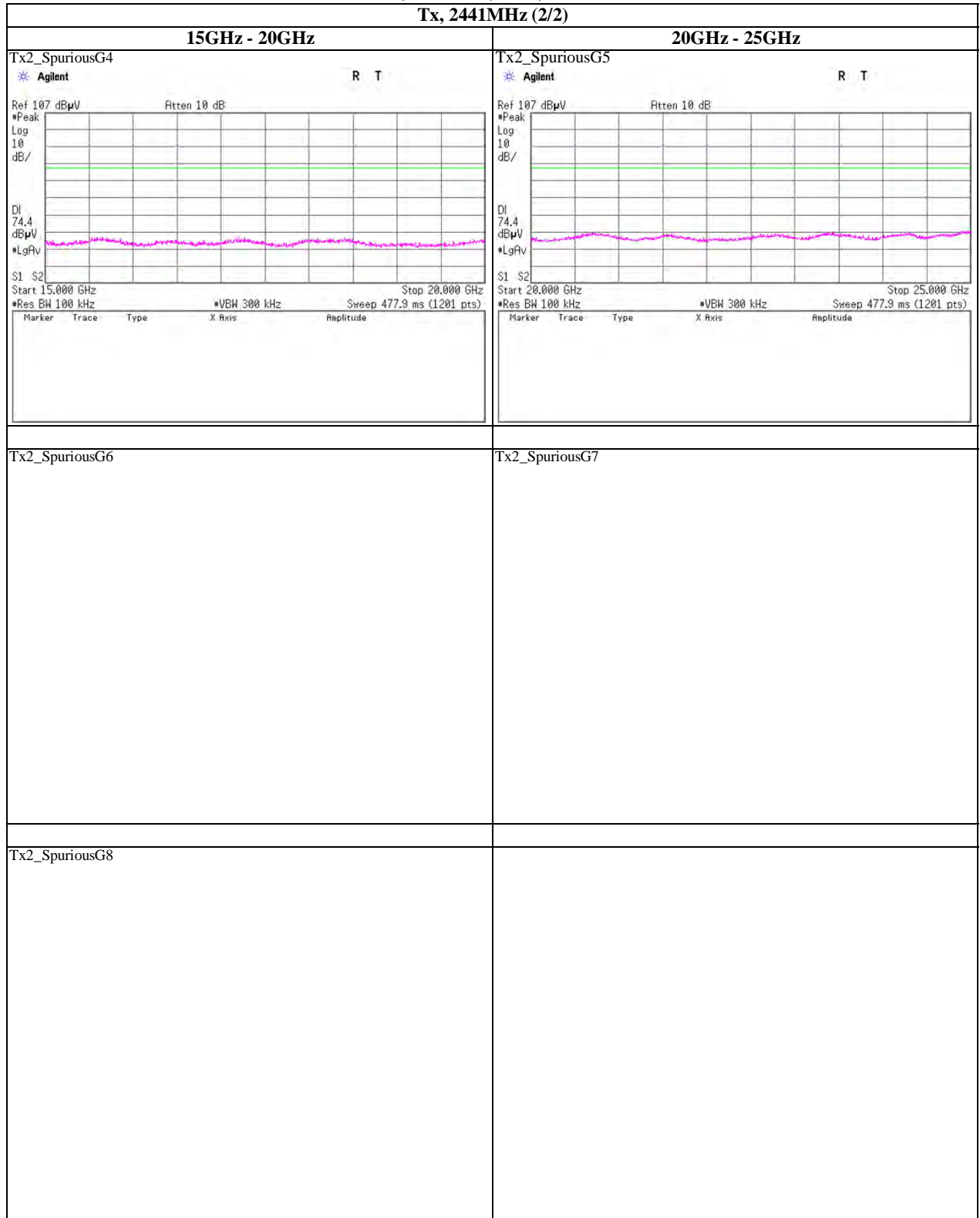
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**Spurious emission (Conducted)**

**Tx, Bluetooth, EDR, PRBS9**

**Tx, 2441MHz (2/2)**



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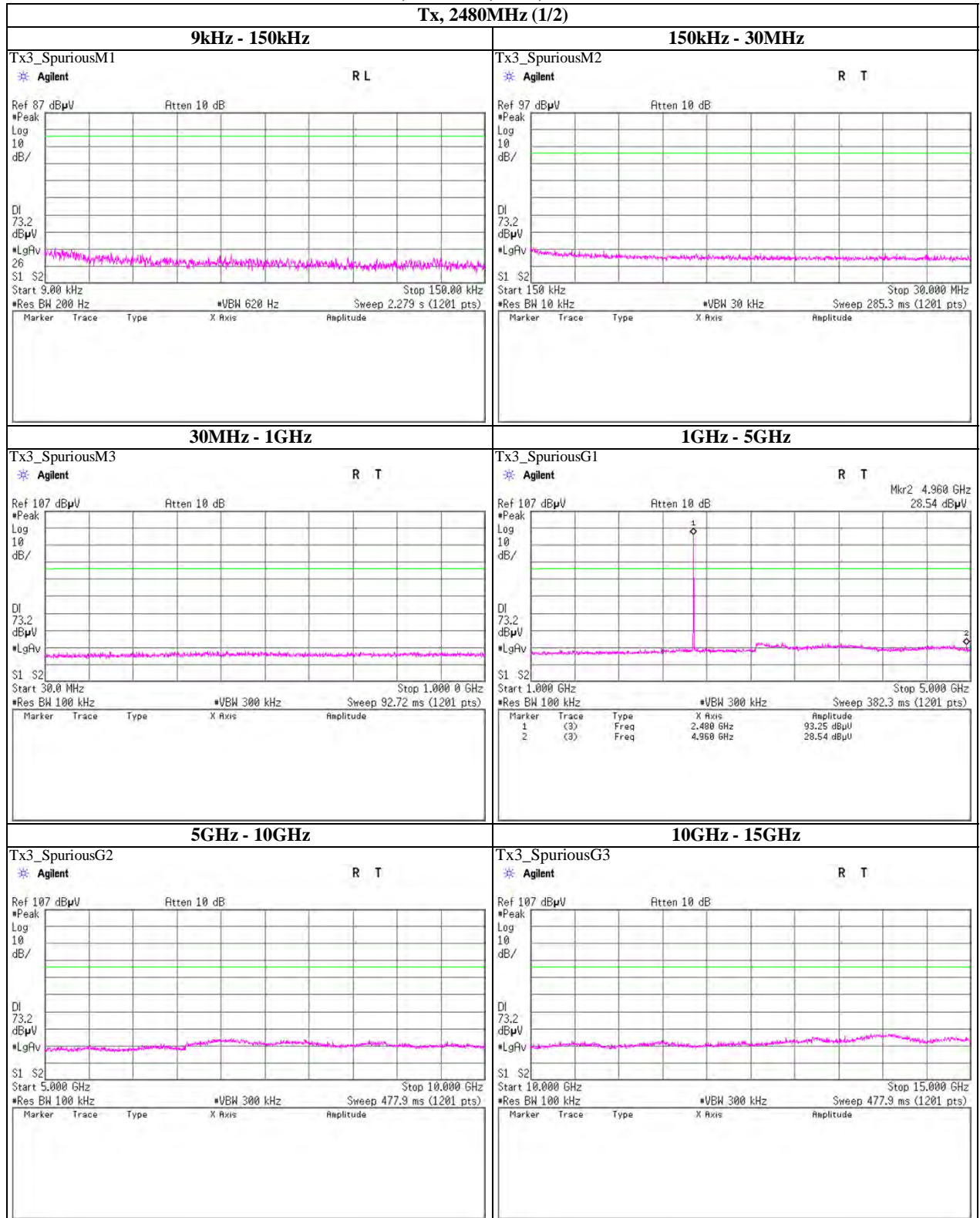
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### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (1/2)



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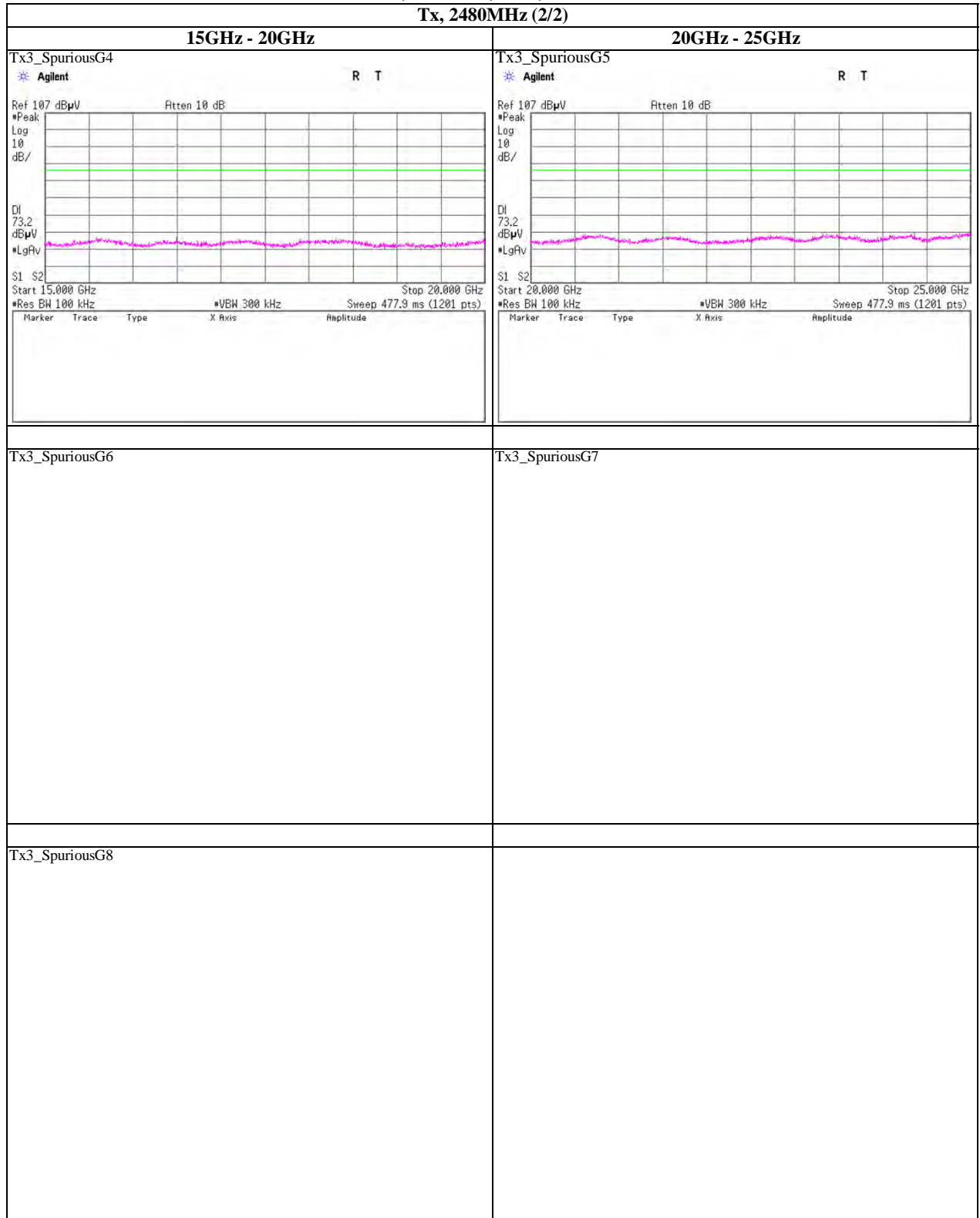
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**Spurious emission (Conducted)**

**Tx, Bluetooth, EDR, PRBS9**

**Tx, 2480MHz (2/2)**



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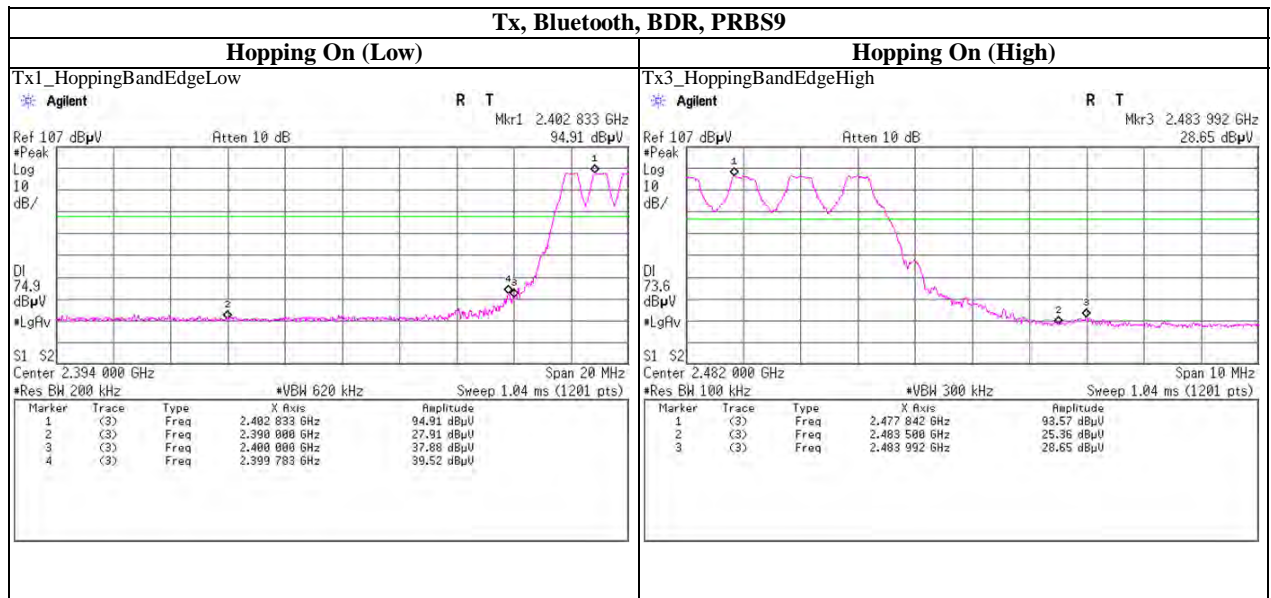
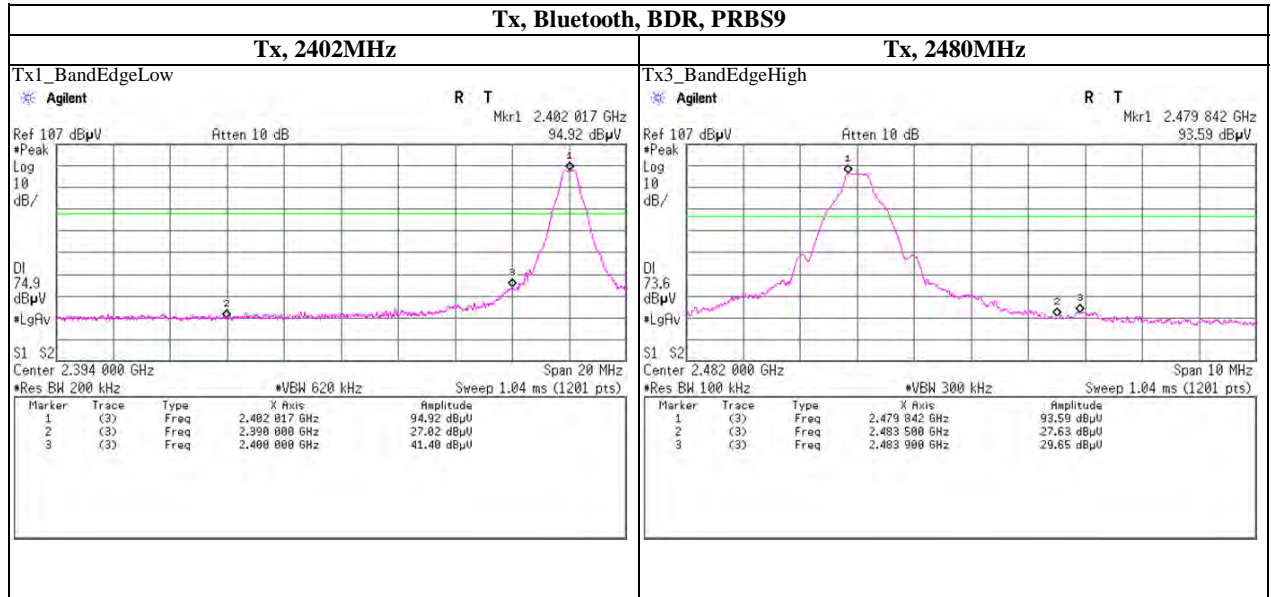
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## Spurious emission (Conducted)

### Band Edge compliance



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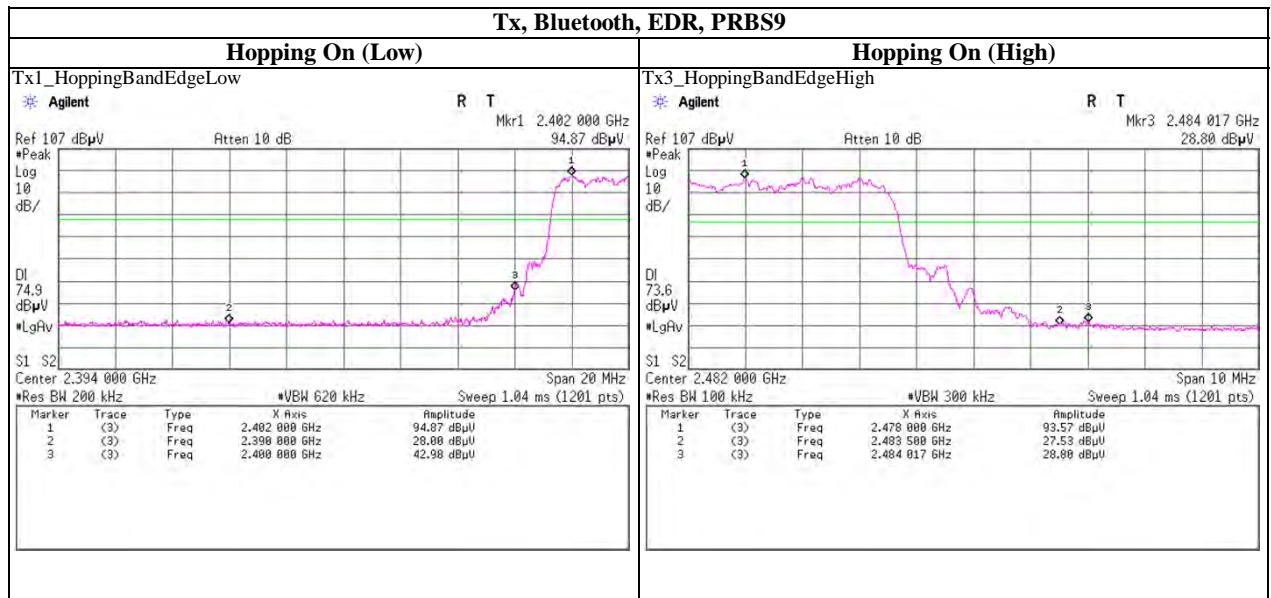
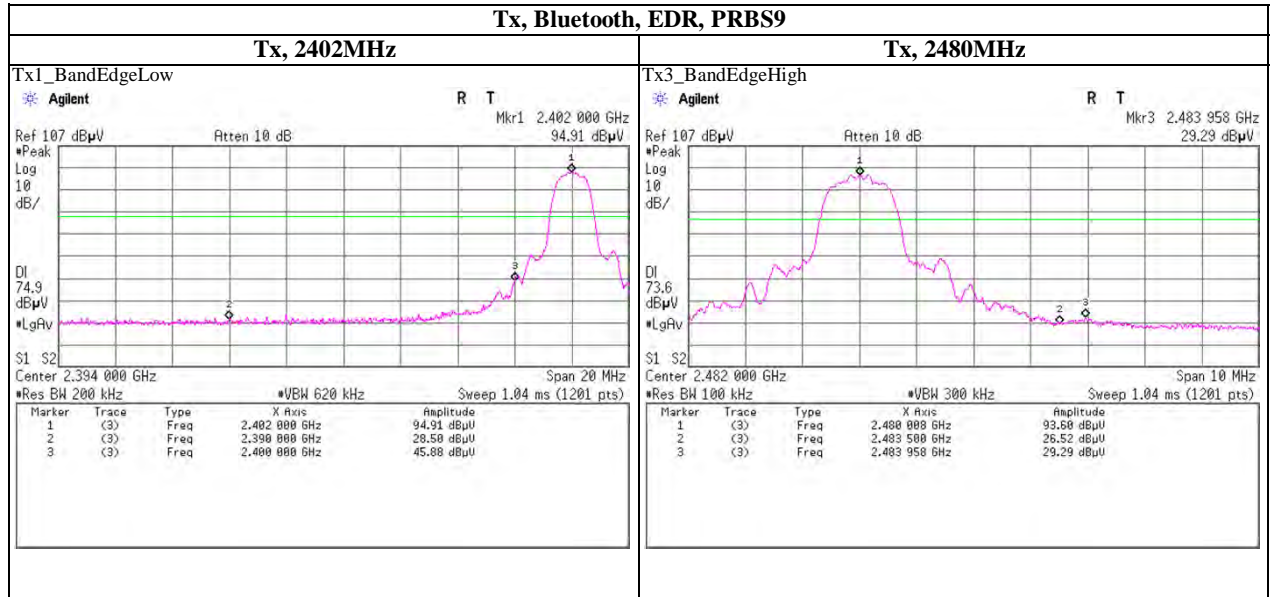
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## Spurious emission (Conducted)

### Band Edge compliance



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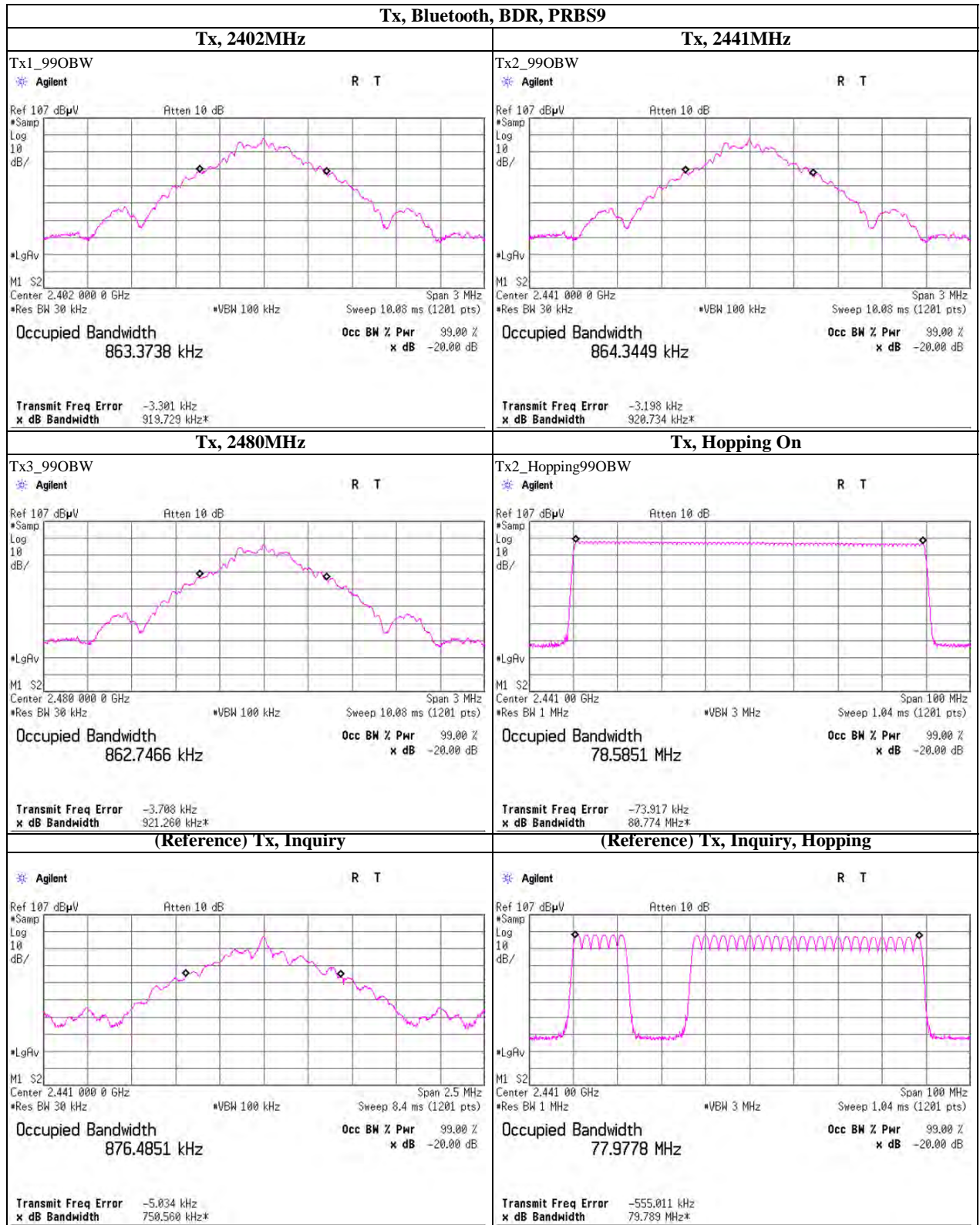
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### 99% Occupied Bandwidth



### 99% Occupied Bandwidth

| Tx, Bluetooth, EDR, PRBS9   |   |
|---|---|
| Tx, 2402MHz   | Tx, 2441MHz   |
| <p><b>Tx1_99OBW</b><br/>                     * Agilent R T</p> <p>Ref 107 dBµV<br/>                     *Samp Log 10 dB/<br/>                     #LgRv<br/>                     M1 S2<br/>                     Center 2.402 000 0 GHz Span 3 MHz<br/>                     *Res BW 30 kHz *VBW 100 kHz Sweep 10.00 ms (1201 pts)</p> <p><b>Occupied Bandwidth</b><br/>                     1.1753 MHz</p> <p>Occ BW % Pwr 99.00 %<br/>                     x dB -20.00 dB</p> <p>Transmit Freq Error -642.094 Hz<br/>                     x dB Bandwidth 1.259 MHz*</p> | <p><b>Tx2_99OBW</b><br/>                     * Agilent R T</p> <p>Ref 107 dBµV<br/>                     *Samp Log 10 dB/<br/>                     #LgRv<br/>                     M1 S2<br/>                     Center 2.441 000 0 GHz Span 3 MHz<br/>                     *Res BW 30 kHz *VBW 100 kHz Sweep 10.00 ms (1201 pts)</p> <p><b>Occupied Bandwidth</b><br/>                     1.1812 MHz</p> <p>Occ BW % Pwr 99.00 %<br/>                     x dB -20.00 dB</p> <p>Transmit Freq Error -800.169 Hz<br/>                     x dB Bandwidth 1.287 MHz*</p>     |
| <p><b>Tx3_99OBW</b><br/>                     * Agilent R T</p> <p>Ref 107 dBµV<br/>                     *Samp Log 10 dB/<br/>                     #LgRv<br/>                     M1 S2<br/>                     Center 2.480 000 0 GHz Span 3 MHz<br/>                     *Res BW 30 kHz *VBW 100 kHz Sweep 10.00 ms (1201 pts)</p> <p><b>Occupied Bandwidth</b><br/>                     1.1776 MHz</p> <p>Occ BW % Pwr 99.00 %<br/>                     x dB -20.00 dB</p> <p>Transmit Freq Error -648.951 Hz<br/>                     x dB Bandwidth 1.258 MHz*</p> | <p><b>Tx2_Hopping99OBW</b><br/>                     * Agilent R T</p> <p>Ref 107 dBµV<br/>                     *Samp Log 10 dB/<br/>                     #LgRv<br/>                     M1 S2<br/>                     Center 2.441 00 GHz Span 100 MHz<br/>                     *Res BW 1 MHz *VBW 3 MHz Sweep 1.04 ms (1201 pts)</p> <p><b>Occupied Bandwidth</b><br/>                     78.6824 MHz</p> <p>Occ BW % Pwr 99.00 %<br/>                     x dB -20.00 dB</p> <p>Transmit Freq Error -83.494 kHz<br/>                     x dB Bandwidth 81.059 MHz*</p> |

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## APPENDIX 2 Test Instruments

Page : 54 of 55  
 Issued date : February 29, 2012  
 FCC ID : AJDK052

### EMI test equipment

| Control No.                    | Instrument                | Manufacturer                                       | Model No                                   | Serial No               | Test Item | Calibration Date * Interval(month) |
|--------------------------------|---------------------------|--|--|-------------------------|-----------|------------------------------------|
| SSA-03                         | Spectrum Analyzer         | Agilent  | E4448A                                     | MY48250152              | AT        | 12/05/2011 * 12                    |
| SCC-G12                        | Coaxial Cable             | Suhner   | SUCOFLEX 102                               | 30790/2                 | AT        | 03/23/2011 * 12                    |
| SAT10-09                       | Attenuator                | Weinschel Corp.                                    | 54A-10                                     | W5692                   | AT        | 11/09/2011 * 12                    |
| SOS-09                         | Humidity Indicator        | A&D  | AD-5681                                    | 4061484                 | AT        | 03/02/2011 * 12                    |
| SAF-06                         | Pre Amplifier             | TOYO Corporation                                   | TPA0118-36                                 | 1440491                 | RE        | 07/19/2011 * 12                    |
| SCC-G03                        | Coaxial Cable             | Suhner   | SUCOFLEX 104A                              | 46499/4A                | RE        | 04/28/2011 * 12                    |
| SCC-G23                        | Coaxial Cable             | Suhner   | SUCOFLEX 104                               | 297342/4                | RE        | 05/27/2011 * 12                    |
| SHA-03                         | Horn Antenna              | Schwarzbeck  | BBHA9120D                                  | 9120D-739               | RE        | 08/28/2011 * 12                    |
| SOS-05                         | Humidity Indicator        | A&D  | AD-5681                                    | 4062518                 | RE        | 02/06/2012 * 12                    |
| SSA-02                         | Spectrum Analyzer         | Agilent  | E4448A                                     | MY48250106              | RE        | 03/07/2011 * 12                    |
| SJM-10                         | Measure                   | PROMART  | SEN1935                                    | -                       | RE        | -                                  |
| COTS-SEMI-1                    | EMI Software              | TSJ  | TEPTO-DV(RE,CE, RFLMF)                     | -                       | RE        | -                                  |
| SAT10-05                       | Attenuator(above1GHz)     | Agilent  | 8493C-010                                  | 74864                   | RE        | 12/27/2011 * 12                    |
| KFL-01                         | Highpass Filter           | Hewlett Packard                                    | 84300 80038                                | 004                     | RE        | 04/21/2011 * 12                    |
| SPM-06                         | Power Meter               | Anritsu  | ML2495A                                    | 0850009                 | AT        | 04/12/2011 * 12                    |
| SPSS-03                        | Power sensor              | Anritsu  | MA2411B                                    | 0917063                 | AT        | 04/12/2011 * 12                    |
| SSA-02                         | Spectrum Analyzer         | Agilent  | E4448A                                     | MY48250106              | RE        | 03/07/2011 * 12                    |
| SHA-04                         | Horn Antenna              | ETS LINDGREN                                       | 3160-09                                    | LM3640                  | RE        | 03/15/2011 * 12                    |
| SAF-08                         | Pre Amplifier             | TOYO Corporation                                   | HAP18-26W                                  | 00000019                | RE        | 03/16/2011 * 12                    |
| SCC-G17                        | Coaxial Cable             | Suhner   | SUCOFLEX 104A                              | 46291/4A                | RE        | 03/16/2011 * 12                    |
| SAF-01                         | Pre Amplifier             | SONOMA   | 310N                                       | 290211                  | RE        | 02/10/2012 * 12                    |
| SAT6-05                        | Attenuator                | JFW  | 50HF-006N                                  | -                       | RE        | 02/10/2012 * 12                    |
| SAT3-04                        | Attenuator                | JFW  | 50HF-003N                                  | -                       | RE        | 02/10/2012 * 12                    |
| SBA-01                         | Biconical Antenna         | Schwarzbeck  | BBA9106                                    | 91032664                | RE        | 10/15/2011 * 12                    |
| SCC-A1/A3/A5/A7/A8/A13/SRSE-01 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-269(RF Selector) | RE        | 04/28/2011 * 12                    |
| SCC-A2/A4/A6/A7/A8/A13/SRSE-01 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-269(RF Selector) | RE        | 04/28/2011 * 12                    |
| SLA-01                         | Logperiodic Antenna       | Schwarzbeck  | UHALP9108A                                 | UHALP 9108-A 0888       | RE        | 11/23/2011 * 12                    |
| SOS-01                         | Humidity Indicator        | A&D  | AD-5681                                    | 4062555                 | RE        | 02/06/2012 * 12                    |
| STR-01                         | Test Receiver             | Rohde & Schwarz                                    | ESU40                                      | 100093                  | RE        | 10/22/2011 * 12                    |
| SJM-12                         | Measure                   | PROMART  | SEN1935                                    | -                       | RE        | -                                  |
| SAEC-01(NSA)                   | Semi-Anechoic Chamber     | TDK  | SAEC-01(NSA)                               | 1                       | RE        | 09/01/2011 * 12                    |
|                                |                           |  |  |                         |           |                                    |
|                                |                           |  |  |                         |           |                                    |

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

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

Test Item :

RE: Radiated emission ,  
 AT: Antenna terminal disturbance voltage