# APPENDIX 2: Data of EMI test

## 20dB Bandwidth and Carrier Frequency Separation

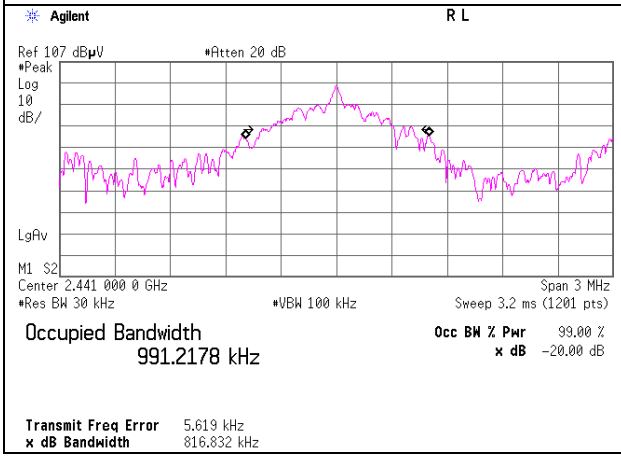
| | |
|---|---|
| Test place | Head Office EMC Lab. No.6 Measurement Room |
| Report No. | 30KE0260-HO-02 |
| Date | 10/28/2010 |
| Temperature/ Humidity | 25 deg.C./ 54% |
| Engineer | Tomotaka Sasagawa |
| Mode | 20dB Bandwidth: Tx (Hopping off) DH5/Inquiry<br>Carrier Frequency Separation: Tx (Hopping on) DH5/Inquiry |

| Mode | Freq. [MHz] | 20dB Bandwidth [MHz] | Carrier Frequency Separation [MHz] | Limit for Carrier Frequency separation [MHz] |
|---|---|---|---|---|
| DH5 | 2402.0 | 1.015 | 1.000 | >= 0.677 |
| DH5 | 2441.0 | 1.010 | 1.000 | >= 0.673 |
| DH5 | 2480.0 | 1.003 | 1.000 | >= 0.669 |
| Inquiry | 2441.0 | 0.817 | 2.000 | >= 0.545 |

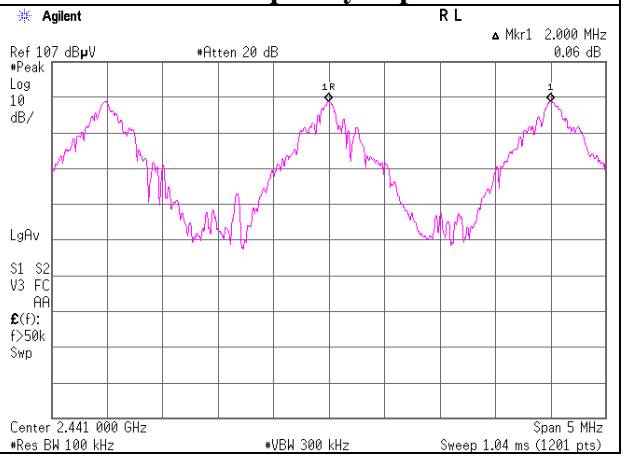
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

### Inquiry

#### 20dB Bandwidth




#### Carrier Frequency Separation

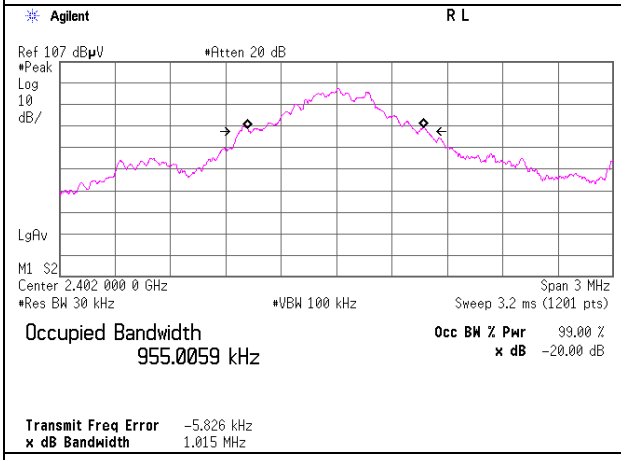


# 20dB Bandwidth and Carrier Frequency Separation

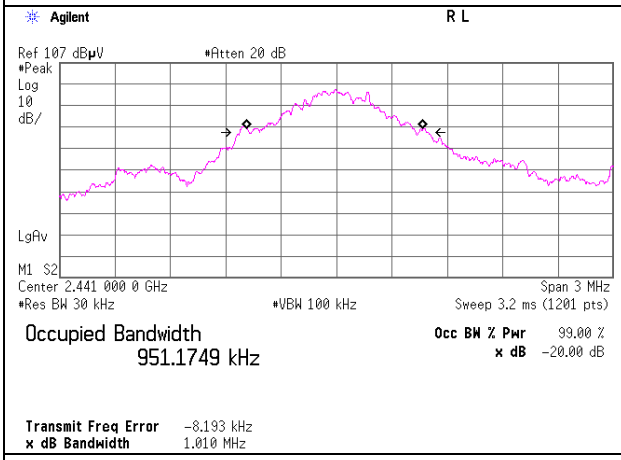
## Tx DH5

### 20dB Bandwidth

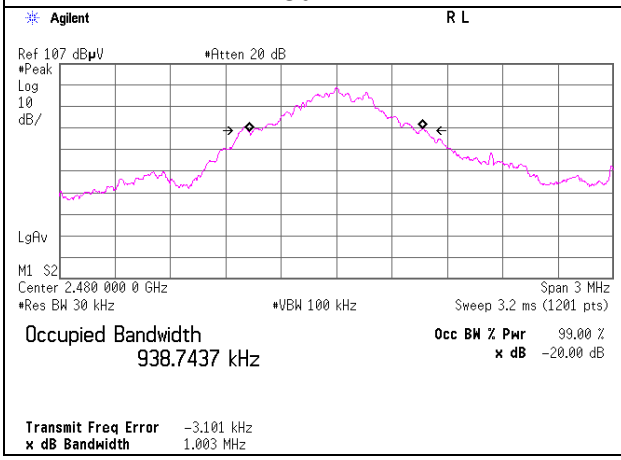
#### 2402MHz




#### 2441MHz

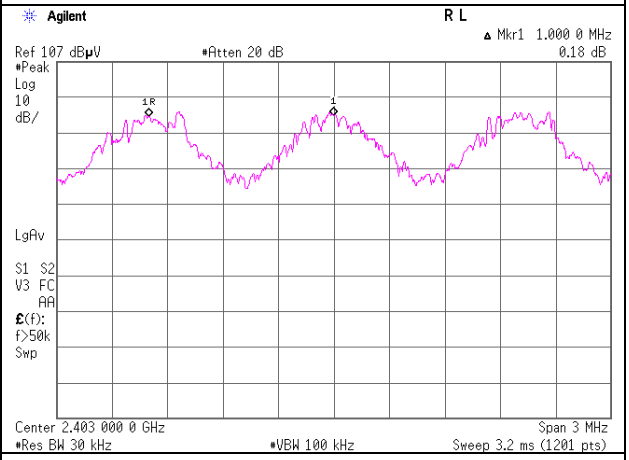



#### 2480MHz

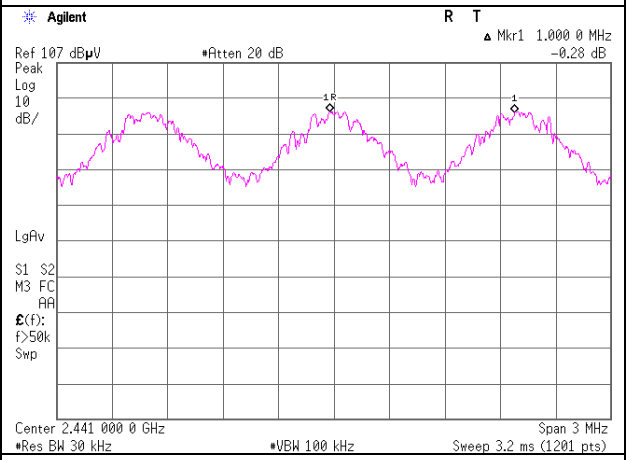



### Carrier Frequency Separation

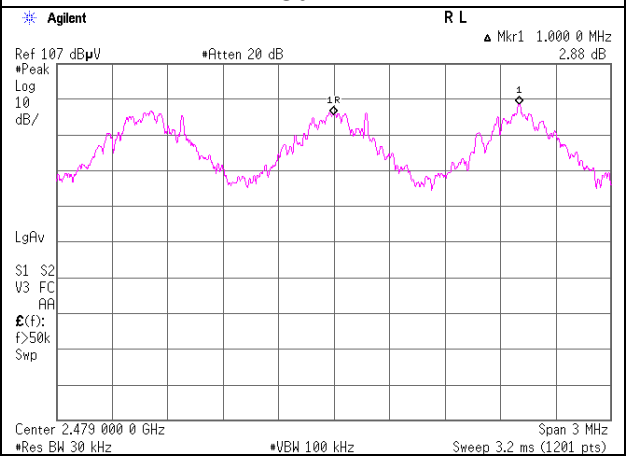
#### 2402MHz




#### 2441MHz




#### 2480MHz

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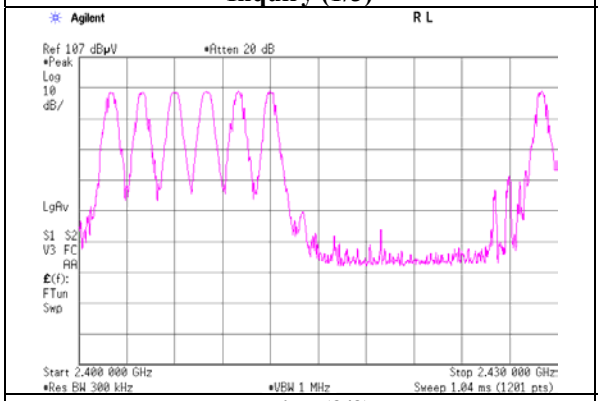
# Number of Hopping Frequency

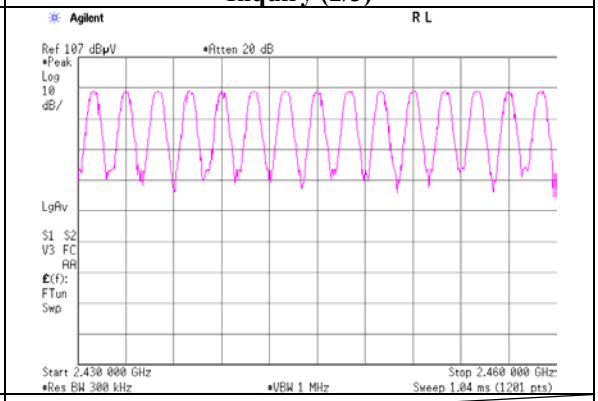
| | |
|---|---|
| Test place | Head Office EMC Lab. No.6 Measurement Room |
| Report No. | 30KE0260-HO-02 |
| Date | 10/28/2010 |
| Temperature/ Humidity | 25 deg.C./ 54% |
| Engineer | Tomotaka Sasagawa |
| Mode | Tx (Hopping on) DH5/Inquiry |

| Mode | Number of channel [times] | Limit [times] |
|---|---|---|
| DH5 | 79 | >= 15 |
| Inquiry | 32 | >= 15 |

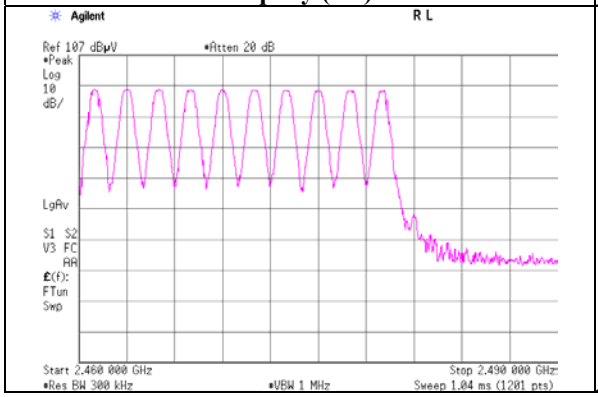
**Inquiry (1/3)**



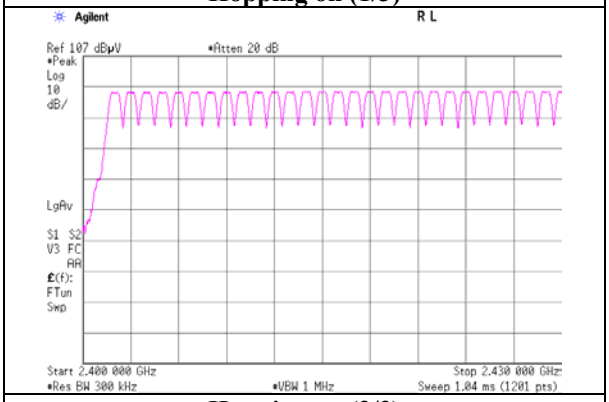
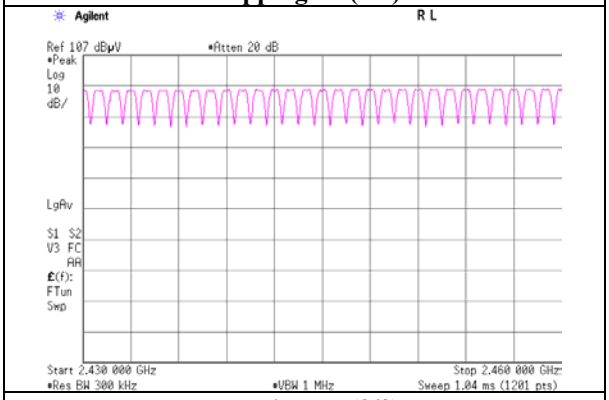
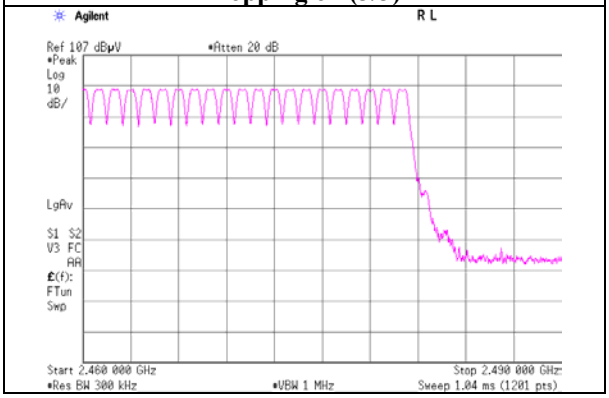

**Inquiry (2/3)**




**Inquiry (3/3)**



# Number of Hopping Frequency

| Tx DH5 |
|---|
| Hopping on (1/3) |
|  |
| Hopping on (2/3) |
|  |
| Hopping on (3/3) |
|  |







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# Dwell time

| | |
|---|---|
| Test place | Head Office EMC Lab. No.6 Measurement Room |
| Report No. | 30KE0260-HO-02 |
| Date | 10/28/2010 |
| Temperature/ Humidity | 25 deg.C./ 54% |
| Engineer | Tomotaka Sasagawa |
| Mode | Tx (Hopping on) DH5/Inquiry |

| Mode | Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period | | | | | Length of transmission time [msec] | Result [msec] | Limit [msec] |
|---|---|---|---|---|---|---|---|---|
| DH1 | 51.2 times | / | 5 sec. | x | 31.6 sec. = 324 times | 0.517 | 167 | 400 |
| DH3 | 26.8 times | / | 5 sec. | x | 31.6 sec. = 170 times | 1.669 | 284 | 400 |
| DH5 | 17.6 times | / | 5 sec. | x | 31.6 sec. = 112 times | 2.919 | 327 | 400 |
| Inquiry | 100.0 times | / | 1 sec. | x | 12.8 sec. = 1280 times | 0.208 | 266 | 400 |

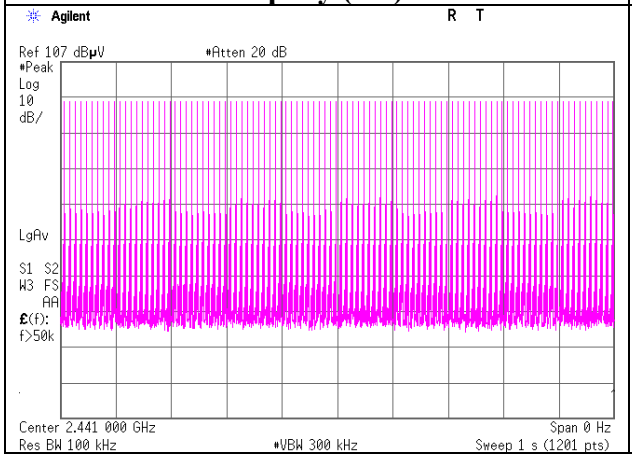
Sample Calculation
Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

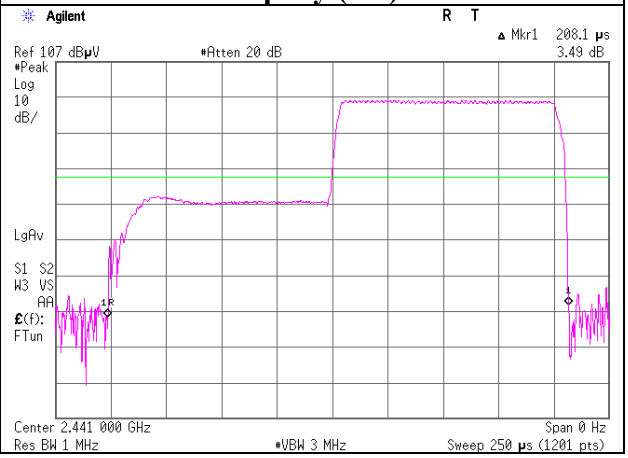
| Mode | Sampling [times] | | | | | Average [times] |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | |
| DH1 | 51 | 51 | 52 | 51 | 51 | 51.2 |
| DH3 | 26 | 27 | 28 | 26 | 27 | 26.8 |
| DH5 | 17 | 18 | 17 | 19 | 17 | 17.6 |

Sample Calculation
Average= Summation(Sampling 1 to 5) / 5

## Inquiry (1/2)

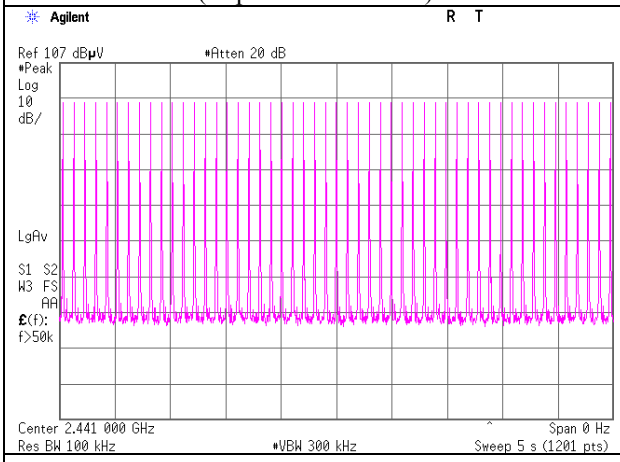



## Inquiry (2/2)

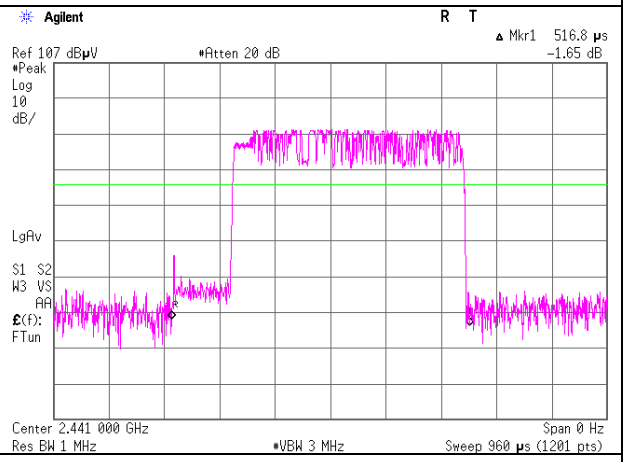


# Dwell time

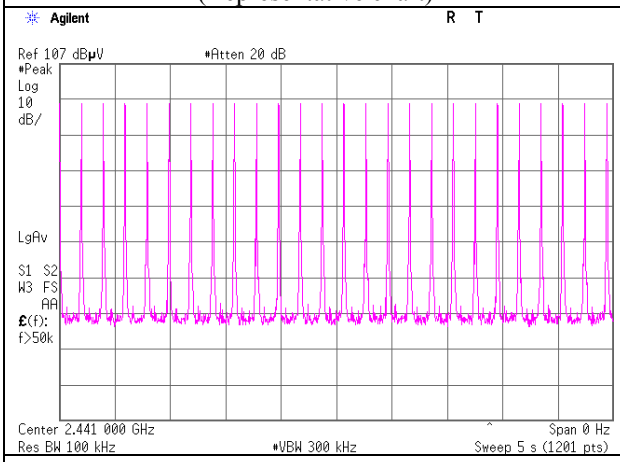
## DH1 (1/2)
(Representative chart)



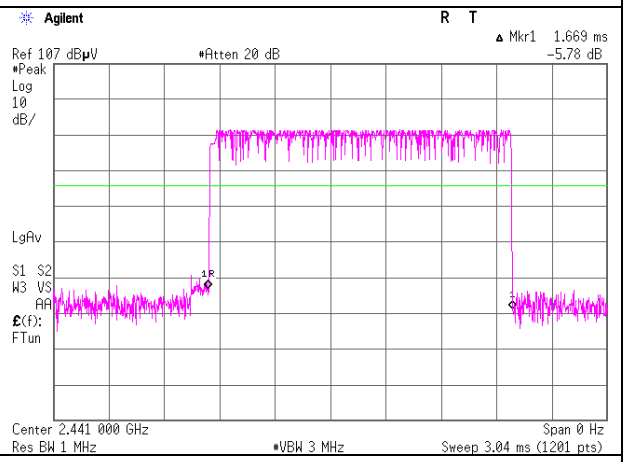

## DH1 (2/2)



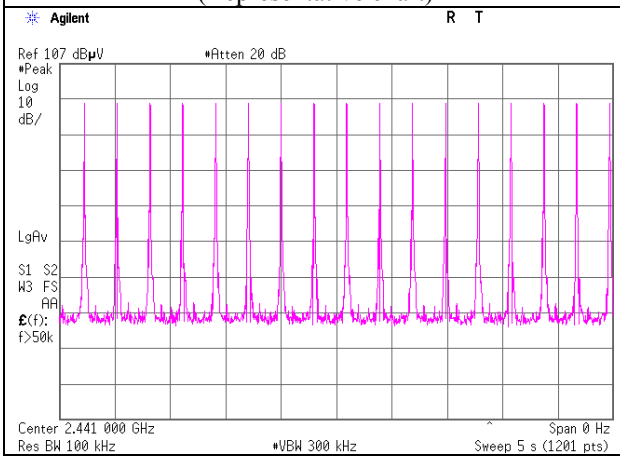

## DH3 (1/2)
(Representative chart)



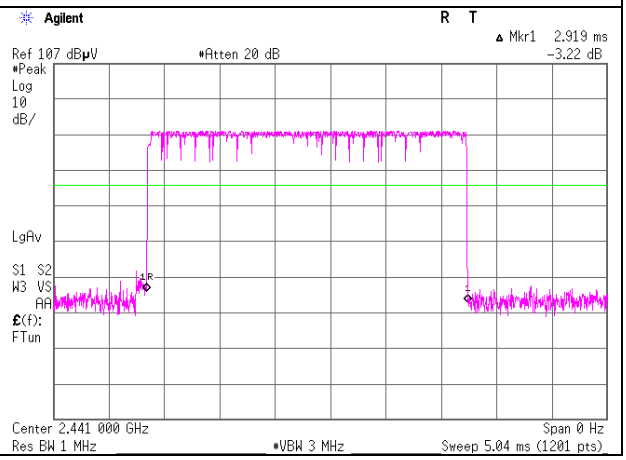

## DH3 (2/2)




## DH5 (1/2)
(Representative chart)




## DH5 (2/2)



# Maximum Peak Output Power

| | |
|---|---|
| Test place | Head Office EMC Lab. No.6 Measurement Room |
| Report No. | 30KE0260-HO-02 |
| Date | 10/28/2010 |
| Temperature/ Humidity | 25 deg.C./ 54% |
| Engineer | Tomotaka Sasagawa |
| Mode | Tx (Hopping off) DH5/Inquiry |

| Mode | Freq. | Reading | Cable Loss | Atten. | Result | | Limit | | Margin |
|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | [dBm] | [dB] | [dB] | [dBm] | [mW] | [dBm] | [mW] | [dB] |
| DH5 | 2402.0 | -10.78 | 1.39 | 19.52 | 10.13 | 10.30 | 20.97 | 125 | 10.84 |
| DH5 | 2441.0 | -10.40 | 1.40 | 19.52 | 10.52 | 11.27 | 20.97 | 125 | 10.45 |
| DH5 | 2480.0 | -10.45 | 1.41 | 19.52 | 10.48 | 11.17 | 20.97 | 125 | 10.49 |
| Inquiry | 2441.0 | -10.68 | 1.40 | 19.52 | 10.24 | 10.57 | 20.97 | 125 | 10.73 |

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

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

# Radiated Spurious Emission
(With Earphone)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Tx, DH5 2402MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 32.752 | QP | 22.4 | 17.1 | 7.0 | 32.1 | 14.4 | 40.0 | 25.6 | NS |
| Hori | 111.581 | QP | 30.9 | 11.9 | 8.1 | 32.0 | 18.9 | 43.5 | 24.6 | |
| Hori | 197.849 | QP | 22.0 | 16.6 | 8.9 | 31.9 | 15.6 | 43.5 | 27.9 | NS |
| Hori | 340.233 | QP | 37.6 | 16.5 | 9.9 | 31.9 | 32.1 | 46.0 | 13.9 | |
| Hori | 444.699 | QP | 30.8 | 18.3 | 10.6 | 31.9 | 27.8 | 46.0 | 18.2 | |
| Hori | 806.337 | QP | 22.2 | 23.1 | 12.5 | 31.7 | 26.1 | 46.0 | 19.9 | NS |
| Hori | 1601.021 | PK | 53.5 | 26.1 | 2.5 | 33.1 | 49.0 | 73.9 | 24.9 | |
| Hori | 2390.000 | PK | 59.2 | 27.2 | 2.9 | 32.1 | 57.2 | 73.9 | 16.7 | |
| Hori | 2399.349 | PK | 72.4 | 27.2 | 2.9 | 32.1 | 70.4 | - | - | See 20dBc Data Sheet |
| Hori | 2400.000 | PK | 75.6 | 27.2 | 2.9 | 32.1 | 73.6 | - | - | See 20dBc Data Sheet |
| Hori | 4804.000 | PK | 45.9 | 30.8 | 5.3 | 31.4 | 50.6 | 73.9 | 23.3 | |
| Hori | 7206.000 | PK | 45.8 | 35.7 | 5.7 | 32.3 | 54.9 | 73.9 | 19.0 | |
| Hori | 9608.000 | PK | 44.0 | 37.8 | 6.8 | 33.0 | 55.6 | 73.9 | 18.3 | NS |
| Hori | 12010.000 | PK | 43.2 | 39.3 | -1.4 | 32.8 | 48.3 | 73.9 | 25.6 | |
| Hori | 24020.000 | PK | 46.1 | 37.9 | -1.2 | 31.7 | 51.1 | 73.9 | 22.8 | NS |
| Hori | 1601.021 | AV | 50.7 | 26.1 | 2.5 | 33.1 | 46.2 | 53.9 | 7.7 | 1M/10 |
| Hori | 2390.000 | AV | 41.4 | 27.2 | 2.9 | 32.1 | 39.4 | 53.9 | 14.5 | 1M/270 |
| Hori | 2399.349 | AV | 60.9 | 27.2 | 2.9 | 32.1 | 58.9 | - | - | See 20dBc Data Sheet |
| Hori | 2400.000 | AV | 63.9 | 27.2 | 2.9 | 32.1 | 61.9 | - | - | See 20dBc Data Sheet |
| Hori | 4804.000 | AV | 37.9 | 30.8 | 5.3 | 31.4 | 42.6 | 53.9 | 11.3 | 1M/270 |
| Hori | 7206.000 | AV | 35.4 | 35.7 | 5.7 | 32.3 | 44.5 | 53.9 | 9.4 | 1M/270 |
| Hori | 9608.000 | AV | 32.1 | 37.8 | 6.8 | 33.0 | 43.7 | 53.9 | 10.2 | NS 1M/10 |
| Hori | 12010.000 | AV | 32.1 | 39.3 | -1.4 | 32.8 | 37.2 | 53.9 | 16.7 | 1M/270 |
| Hori | 24020.000 | AV | 35.3 | 37.9 | -1.2 | 31.7 | 40.3 | 53.9 | 13.6 | NS 1M/10 |
| Vert | 32.752 | QP | 22.4 | 17.1 | 7.0 | 32.1 | 14.4 | 40.0 | 25.6 | NS |
| Vert | 111.581 | QP | 26.0 | 11.9 | 8.1 | 32.0 | 14.0 | 43.5 | 29.5 | |
| Vert | 197.849 | QP | 21.9 | 16.6 | 8.9 | 31.9 | 15.5 | 43.5 | 28.0 | NS |
| Vert | 340.233 | QP | 25.6 | 16.5 | 9.9 | 31.9 | 20.1 | 46.0 | 25.9 | |
| Vert | 444.699 | QP | 22.8 | 18.3 | 10.6 | 31.9 | 19.8 | 46.0 | 26.2 | NS |
| Vert | 806.337 | QP | 22.2 | 23.1 | 12.5 | 31.7 | 26.1 | 46.0 | 19.9 | NS |
| Vert | 1601.021 | PK | 52.8 | 26.1 | 2.5 | 33.1 | 48.3 | 73.9 | 25.6 | |
| Vert | 2390.000 | PK | 58.7 | 27.2 | 2.9 | 32.1 | 56.7 | 73.9 | 17.2 | |
| Vert | 2399.349 | PK | 71.9 | 27.2 | 2.9 | 32.1 | 69.9 | - | - | See 20dBc Data Sheet |
| Vert | 2400.000 | PK | 75.3 | 27.2 | 2.9 | 32.1 | 73.3 | - | - | See 20dBc Data Sheet |
| Vert | 4804.000 | PK | 46.2 | 30.8 | 5.3 | 31.4 | 50.9 | 73.9 | 23.0 | |
| Vert | 7206.000 | PK | 45.1 | 35.7 | 5.7 | 32.3 | 54.2 | 73.9 | 19.7 | |
| Vert | 9608.000 | PK | 44.3 | 37.8 | 6.8 | 33.0 | 55.9 | 73.9 | 18.0 | NS |
| Vert | 12010.000 | PK | 42.4 | 39.3 | -1.4 | 32.8 | 47.5 | 73.9 | 26.4 | |
| Vert | 24020.000 | PK | 45.9 | 37.9 | -1.2 | 31.7 | 50.9 | 73.9 | 23.0 | NS |
| Vert | 1601.021 | AV | 49.7 | 26.1 | 2.5 | 33.1 | 45.2 | 53.9 | 8.7 | 1M/10 |
| Vert | 2390.000 | AV | 41.2 | 27.2 | 2.9 | 32.1 | 39.2 | 53.9 | 14.7 | 1M/270 |
| Vert | 2399.349 | AV | 60.4 | 27.2 | 2.9 | 32.1 | 58.4 | - | - | See 20dBc Data Sheet |
| Vert | 2400.000 | AV | 63.2 | 27.2 | 2.9 | 32.1 | 61.2 | - | - | See 20dBc Data Sheet |
| Vert | 4804.000 | AV | 35.8 | 30.8 | 5.3 | 31.4 | 40.5 | 53.9 | 13.4 | 1M/270 |
| Vert | 7206.000 | AV | 33.9 | 35.7 | 5.7 | 32.3 | 43.0 | 53.9 | 10.9 | 1M/270 |
| Vert | 9608.000 | AV | 31.7 | 37.8 | 6.8 | 33.0 | 43.3 | 53.9 | 10.6 | NS 1M/10 |
| Vert | 12010.000 | AV | 31.7 | 39.3 | -1.4 | 32.8 | 36.8 | 53.9 | 17.1 | 1M/270 |
| Vert | 24020.000 | AV | 35.2 | 37.9 | -1.2 | 31.7 | 40.2 | 53.9 | 13.7 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No signal

# Radiated Spurious Emission

(With Earphone)

| | |
|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber |
| Report No. | 30KE0260-HO-02 |
| Date | 10/28/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% |
| Engineer | Satofumi Matsuyama |
| Mode | Tx, DH5 2402MHz |

**20dBc Data Sheet**

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 2399.349 | PK | 60.8 | 27.2 | 2.9 | 32.1 | 58.8 | 85.6 | 26.8 | |
| Hori | 2400.000 | PK | 65.1 | 27.2 | 2.9 | 32.1 | 63.1 | 85.6 | 22.5 | |
| Hori | 2402.000 | PK | 107.6 | 27.2 | 2.9 | 32.1 | 105.6 | - | - | Carrier |
| Vert | 2399.349 | PK | 60.7 | 27.2 | 2.9 | 32.1 | 58.7 | 85.1 | 26.4 | |
| Vert | 2400.000 | PK | 65.1 | 27.2 | 2.9 | 32.1 | 63.1 | 85.1 | 22.0 | |
| Vert | 2402.000 | PK | 107.1 | 27.2 | 2.9 | 32.1 | 105.1 | - | - | Carrier |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

# Radiated Spurious Emission
(With Earphone)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Tx, DH5 2441MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 48.450 | QP | 22.4 | 11.5 | 7.3 | 31.9 | 9.3 | 40.0 | 30.7 | NS |
| Hori | 113.152 | QP | 29.9 | 12.1 | 8.1 | 32.0 | 18.1 | 43.5 | 25.4 | |
| Hori | 183.899 | QP | 22.0 | 16.3 | 8.8 | 31.9 | 15.2 | 43.5 | 28.3 | NS |
| Hori | 340.733 | QP | 38.0 | 16.5 | 9.9 | 31.9 | 32.5 | 46.0 | 13.5 | |
| Hori | 444.965 | QP | 31.1 | 18.3 | 10.6 | 31.9 | 28.1 | 46.0 | 17.9 | |
| Hori | 820.337 | QP | 22.3 | 23.2 | 12.5 | 31.7 | 26.3 | 46.0 | 19.7 | NS |
| Hori | 1626.973 | PK | 53.0 | 26.2 | 2.5 | 33.0 | 48.7 | 73.9 | 25.2 | |
| Hori | 4882.000 | PK | 45.9 | 31.1 | 5.3 | 31.4 | 50.9 | 73.9 | 23.0 | |
| Hori | 7323.000 | PK | 47.6 | 35.9 | 5.7 | 32.4 | 56.8 | 73.9 | 17.1 | |
| Hori | 9764.000 | PK | 44.1 | 38.0 | 6.9 | 33.0 | 56.0 | 73.9 | 17.9 | NS |
| Hori | 12205.000 | PK | 43.4 | 39.3 | -1.4 | 32.8 | 48.5 | 73.9 | 25.4 | |
| Hori | 24410.000 | PK | 46.2 | 37.9 | -1.1 | 31.6 | 51.4 | 73.9 | 22.6 | NS |
| Hori | 1626.973 | AV | 49.9 | 26.2 | 2.5 | 33.0 | 45.6 | 53.9 | 8.3 | 1M/10 |
| Hori | 4882.000 | AV | 37.6 | 31.1 | 5.3 | 31.4 | 42.6 | 53.9 | 11.3 | 1M/270 |
| Hori | 7323.000 | AV | 39.1 | 35.9 | 5.7 | 32.4 | 48.3 | 53.9 | 5.6 | 1M/270 |
| Hori | 9764.000 | AV | 32.3 | 38.0 | 6.9 | 33.0 | 44.2 | 53.9 | 9.7 | NS 1M/10 |
| Hori | 12205.000 | AV | 33.3 | 39.3 | -1.4 | 32.8 | 38.4 | 53.9 | 15.5 | 1M/270 |
| Hori | 24410.000 | AV | 34.4 | 37.9 | -1.1 | 31.6 | 39.6 | 53.9 | 14.3 | NS 1M/10 |
| Vert | 48.450 | QP | 22.4 | 11.5 | 7.3 | 31.9 | 9.3 | 40.0 | 30.7 | NS |
| Vert | 113.152 | QP | 25.9 | 12.1 | 8.1 | 32.0 | 14.1 | 43.5 | 29.4 | |
| Vert | 183.899 | QP | 22.0 | 16.3 | 8.8 | 31.9 | 15.2 | 43.5 | 28.3 | NS |
| Vert | 340.733 | QP | 25.7 | 16.5 | 9.9 | 31.9 | 20.2 | 46.0 | 25.8 | |
| Vert | 444.965 | QP | 22.8 | 18.3 | 10.6 | 31.9 | 19.8 | 46.0 | 26.2 | NS |
| Vert | 820.337 | QP | 22.3 | 23.2 | 12.5 | 31.7 | 26.3 | 46.0 | 19.7 | NS |
| Vert | 1626.973 | PK | 53.6 | 26.2 | 2.5 | 33.0 | 49.3 | 73.9 | 24.6 | |
| Vert | 4882.000 | PK | 44.8 | 31.1 | 5.3 | 31.4 | 49.8 | 73.9 | 24.1 | |
| Vert | 7323.000 | PK | 46.3 | 35.9 | 5.7 | 32.4 | 55.5 | 73.9 | 18.4 | |
| Vert | 9764.000 | PK | 44.3 | 38.0 | 6.9 | 33.0 | 56.2 | 73.9 | 17.7 | NS |
| Vert | 12205.000 | PK | 42.6 | 39.3 | -1.4 | 32.8 | 47.7 | 73.9 | 26.2 | |
| Vert | 24410.000 | PK | 45.4 | 37.9 | -1.1 | 31.6 | 50.6 | 73.9 | 23.3 | NS |
| Vert | 1626.973 | AV | 50.4 | 26.2 | 2.5 | 33.0 | 46.1 | 53.9 | 7.8 | 1M/10 |
| Vert | 4882.000 | AV | 35.7 | 31.1 | 5.3 | 31.4 | 40.7 | 53.9 | 13.2 | 1M/270 |
| Vert | 7323.000 | AV | 36.7 | 35.9 | 5.7 | 32.4 | 45.9 | 53.9 | 8.0 | 1M/270 |
| Vert | 9764.000 | AV | 32.5 | 38.0 | 6.9 | 33.0 | 44.4 | 53.9 | 9.5 | NS 1M/10 |
| Vert | 12205.000 | AV | 32.4 | 39.3 | -1.4 | 32.8 | 37.5 | 53.9 | 16.4 | 1M/270 |
| Vert | 24410.000 | AV | 34.5 | 37.9 | -1.1 | 31.6 | 39.7 | 53.9 | 14.2 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal

**UL Japan, Inc.**
**Head Office EMC Lab.**
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**Telephone : +81 596 24 8116**
**Facsimile : +81 596 24 8124**

# Radiated Spurious Emission
(With Earphone)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Tx, DH5 2480MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 34.591 | QP | 22.4 | 16.6 | 7.0 | 32.0 | 14.0 | 40.0 | 26.0 | NS |
| Hori | 109.381 | QP | 30.0 | 11.6 | 8.1 | 32.0 | 17.7 | 43.5 | 25.8 | |
| Hori | 196.049 | QP | 22.3 | 16.6 | 8.9 | 31.9 | 15.9 | 43.5 | 27.6 | NS |
| Hori | 328.076 | QP | 39.3 | 16.3 | 9.8 | 31.9 | 33.5 | 46.0 | 12.5 | |
| Hori | 447.399 | QP | 31.3 | 18.3 | 10.6 | 31.9 | 28.3 | 46.0 | 17.7 | |
| Hori | 848.337 | QP | 22.3 | 23.6 | 12.7 | 31.6 | 27.0 | 46.0 | 19.0 | NS |
| Hori | 1653.003 | PK | 52.3 | 26.3 | 2.5 | 33.0 | 48.1 | 73.9 | 25.8 | |
| Hori | 2483.500 | PK | 68.1 | 27.2 | 2.9 | 32.1 | 66.1 | 73.9 | 7.8 | |
| Hori | 2484.233 | PK | 66.4 | 27.2 | 2.9 | 32.1 | 64.4 | 73.9 | 9.5 | |
| Hori | 4960.000 | PK | 50.4 | 31.3 | 5.4 | 31.4 | 55.7 | 73.9 | 18.2 | |
| Hori | 7440.000 | PK | 46.7 | 36.1 | 5.7 | 32.4 | 56.1 | 73.9 | 17.8 | |
| Hori | 9920.000 | PK | 43.9 | 38.2 | 7.1 | 33.0 | 56.2 | 73.9 | 17.7 | NS |
| Hori | 12400.000 | PK | 44.4 | 39.3 | -1.3 | 32.8 | 49.6 | 73.9 | 24.3 | |
| Hori | 24800.000 | PK | 47.3 | 38.0 | -1.0 | 31.5 | 52.8 | 73.9 | 21.1 | NS |
| Hori | 1653.003 | AV | 48.7 | 26.3 | 2.5 | 33.0 | 44.5 | 53.9 | 9.4 | 1M/10 |
| Hori | 2483.500 | AV | 49.6 | 27.2 | 2.9 | 32.1 | 47.6 | 53.9 | 6.3 | 1M/270 |
| Hori | 2484.233 | AV | 45.6 | 27.2 | 2.9 | 32.1 | 43.6 | 53.9 | 10.3 | 1M/270 |
| Hori | 4960.000 | AV | 46.2 | 31.3 | 5.4 | 31.4 | 51.5 | 53.9 | 2.4 | 1M/270 |
| Hori | 7440.000 | AV | 37.9 | 36.1 | 5.7 | 32.4 | 47.3 | 53.9 | 6.6 | 1M/270 |
| Hori | 9920.000 | AV | 32.5 | 38.2 | 7.1 | 33.0 | 44.8 | 53.9 | 9.1 | NS 1M/10 |
| Hori | 12400.000 | AV | 34.1 | 39.3 | -1.3 | 32.8 | 39.3 | 53.9 | 14.6 | 1M/270 |
| Hori | 24800.000 | AV | 36.5 | 38.0 | -1.0 | 31.5 | 42.0 | 53.9 | 11.9 | NS 1M/10 |
| Vert | 34.591 | QP | 22.4 | 16.6 | 7.0 | 32.0 | 14.0 | 40.0 | 26.0 | NS |
| Vert | 109.381 | QP | 24.9 | 11.6 | 8.1 | 32.0 | 12.6 | 43.5 | 30.9 | |
| Vert | 196.049 | QP | 22.3 | 16.6 | 8.9 | 31.9 | 15.9 | 43.5 | 27.6 | NS |
| Vert | 328.076 | QP | 27.6 | 16.3 | 9.8 | 31.9 | 21.8 | 46.0 | 24.2 | |
| Vert | 447.399 | QP | 22.8 | 18.3 | 10.6 | 31.9 | 19.8 | 46.0 | 26.2 | NS |
| Vert | 848.337 | QP | 22.2 | 23.6 | 12.7 | 31.6 | 26.9 | 46.0 | 19.1 | NS |
| Vert | 1653.003 | PK | 54.1 | 26.3 | 2.5 | 33.0 | 49.9 | 73.9 | 24.0 | |
| Vert | 2483.500 | PK | 68.3 | 27.2 | 2.9 | 32.1 | 66.3 | 73.9 | 7.6 | |
| Vert | 2484.233 | PK | 66.7 | 27.2 | 2.9 | 32.1 | 64.7 | 73.9 | 9.2 | |
| Vert | 4960.000 | PK | 46.9 | 31.3 | 5.4 | 31.4 | 52.2 | 73.9 | 21.7 | |
| Vert | 7440.000 | PK | 46.5 | 36.1 | 5.7 | 32.4 | 55.9 | 73.9 | 18.0 | |
| Vert | 9920.000 | PK | 44.0 | 38.2 | 7.1 | 33.0 | 56.3 | 73.9 | 17.6 | NS |
| Vert | 12400.000 | PK | 42.6 | 39.3 | -1.3 | 32.8 | 47.8 | 73.9 | 26.1 | |
| Vert | 24800.000 | PK | 47.6 | 38.0 | -1.0 | 31.5 | 53.1 | 73.9 | 20.8 | NS |
| Vert | 1653.003 | AV | 51.2 | 26.3 | 2.5 | 33.0 | 47.0 | 53.9 | 6.9 | 1M/10 |
| Vert | 2483.500 | AV | 49.9 | 27.2 | 2.9 | 32.1 | 47.9 | 53.9 | 6.0 | 1M/270 |
| Vert | 2484.233 | AV | 46.0 | 27.2 | 2.9 | 32.1 | 44.0 | 53.9 | 9.9 | 1M/270 |
| Vert | 4960.000 | AV | 40.2 | 31.3 | 5.4 | 31.4 | 45.5 | 53.9 | 8.4 | 1M/270 |
| Vert | 7440.000 | AV | 35.8 | 36.1 | 5.7 | 32.4 | 45.2 | 53.9 | 8.7 | 1M/270 |
| Vert | 9920.000 | AV | 32.5 | 38.2 | 7.1 | 33.0 | 44.8 | 53.9 | 9.1 | NS 1M/10 |
| Vert | 12400.000 | AV | 32.8 | 39.3 | -1.3 | 32.8 | 38.0 | 53.9 | 16.0 | 1M/270 |
| Vert | 24800.000 | AV | 36.4 | 38.0 | -1.0 | 31.5 | 41.9 | 53.9 | 12.0 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal

# Radiated Spurious Emission
(With Earphone)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Rx, DH5 2441MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 32.254 | QP | 22.7 | 17.3 | 7.0 | 32.1 | 14.9 | 40.0 | 25.1 | NS |
| Hori | 113.612 | QP | 31.2 | 12.2 | 8.1 | 32.0 | 19.5 | 43.5 | 24.0 | |
| Hori | 166.349 | QP | 22.4 | 15.7 | 8.6 | 31.9 | 14.8 | 43.5 | 28.7 | NS |
| Hori | 340.566 | QP | 37.9 | 16.5 | 9.9 | 31.9 | 32.4 | 46.0 | 13.6 | |
| Hori | 444.665 | QP | 31.0 | 18.3 | 10.6 | 31.9 | 28.0 | 46.0 | 18.0 | |
| Hori | 843.671 | QP | 22.3 | 23.5 | 12.6 | 31.6 | 26.8 | 46.0 | 19.2 | NS |
| Hori | 1628.332 | PK | 51.9 | 26.2 | 2.5 | 33.0 | 47.6 | 73.9 | 26.3 | |
| Hori | 2441.000 | PK | 43.1 | 27.2 | 2.9 | 32.1 | 41.1 | 73.9 | 32.8 | NS |
| Hori | 1628.332 | AV | 48.0 | 26.2 | 2.5 | 33.0 | 43.7 | 53.9 | 10.2 | 1M/10 |
| Hori | 2441.000 | AV | 31.8 | 27.2 | 2.9 | 32.1 | 29.8 | 53.9 | 24.1 | NS 1M/10 |
| Vert | 32.254 | QP | 22.7 | 17.3 | 7.0 | 32.1 | 14.9 | 40.0 | 25.1 | NS |
| Vert | 113.612 | QP | 26.4 | 12.2 | 8.1 | 32.0 | 14.7 | 43.5 | 28.8 | |
| Vert | 166.349 | QP | 22.3 | 15.7 | 8.6 | 31.9 | 14.7 | 43.5 | 28.8 | NS |
| Vert | 340.566 | QP | 25.4 | 16.5 | 9.9 | 31.9 | 19.9 | 46.0 | 26.1 | |
| Vert | 444.665 | QP | 22.8 | 18.3 | 10.6 | 31.9 | 19.8 | 46.0 | 26.2 | NS |
| Vert | 843.671 | QP | 22.3 | 23.5 | 12.6 | 31.6 | 26.8 | 46.0 | 19.2 | NS |
| Vert | 1628.332 | PK | 52.9 | 26.2 | 2.5 | 33.0 | 48.6 | 73.9 | 25.3 | |
| Vert | 2441.000 | PK | 43.5 | 27.2 | 2.9 | 32.1 | 41.5 | 73.9 | 32.4 | NS |
| Vert | 1628.332 | AV | 49.5 | 26.2 | 2.5 | 33.0 | 45.2 | 53.9 | 8.7 | 1M/10 |
| Vert | 2441.000 | AV | 31.8 | 27.2 | 2.9 | 32.1 | 29.8 | 53.9 | 24.1 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
* NS: No Signal

# Radiated Spurious Emission
(With Video Camera)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Tx, DH5 2402MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 377.996 | QP | 36.1 | 17.2 | 10.2 | 31.9 | 31.6 | 46.0 | 14.4 | |
| Hori | 485.994 | QP | 31.8 | 19.0 | 10.8 | 32.0 | 29.6 | 46.0 | 16.4 | |
| Hori | 539.999 | QP | 33.9 | 19.5 | 11.1 | 32.0 | 32.5 | 46.0 | 13.5 | |
| Hori | 741.743 | QP | 31.3 | 22.5 | 12.2 | 32.0 | 34.0 | 46.0 | 12.0 | |
| Hori | 782.996 | QP | 26.5 | 22.9 | 12.4 | 31.8 | 30.0 | 46.0 | 16.0 | |
| Hori | 863.994 | QP | 27.0 | 23.7 | 12.7 | 31.5 | 31.9 | 46.0 | 14.1 | |
| Hori | 1600.954 | PK | 52.9 | 26.1 | 2.5 | 33.1 | 48.4 | 73.9 | 25.5 | |
| Hori | 2390.000 | PK | 54.4 | 27.2 | 2.9 | 32.1 | 52.4 | 73.9 | 21.5 | |
| Hori | 2399.348 | PK | 67.3 | 27.2 | 2.9 | 32.1 | 65.3 | - | - | See 20dBc Data Sheet |
| Hori | 2400.000 | PK | 69.3 | 27.2 | 2.9 | 32.1 | 67.3 | - | - | See 20dBc Data Sheet |
| Hori | 4804.000 | PK | 46.8 | 30.8 | 5.3 | 31.4 | 51.5 | 73.9 | 22.4 | |
| Hori | 7206.000 | PK | 45.5 | 35.7 | 5.7 | 32.3 | 54.6 | 73.9 | 19.3 | |
| Hori | 9608.000 | PK | 43.5 | 37.8 | 6.8 | 33.0 | 55.1 | 73.9 | 18.8 | NS |
| Hori | 12010.000 | PK | 43.4 | 39.3 | -1.4 | 32.8 | 48.5 | 73.9 | 25.4 | |
| Hori | 24020.000 | PK | 47.0 | 37.9 | -1.2 | 31.7 | 52.0 | 73.9 | 21.9 | NS |
| Hori | 1600.954 | AV | 49.1 | 26.1 | 2.5 | 33.1 | 44.6 | 53.9 | 9.3 | 1M/10 |
| Hori | 2390.000 | AV | 36.3 | 27.2 | 2.9 | 32.1 | 34.3 | 53.9 | 19.6 | 1M/270 |
| Hori | 2399.348 | AV | 55.1 | 27.2 | 2.9 | 32.1 | 53.1 | - | - | See 20dBc Data Sheet |
| Hori | 2400.000 | AV | 58.2 | 27.2 | 2.9 | 32.1 | 56.2 | - | - | See 20dBc Data Sheet |
| Hori | 4804.000 | AV | 38.8 | 30.8 | 5.3 | 31.4 | 43.5 | 53.9 | 10.4 | 1M/270 |
| Hori | 7206.000 | AV | 34.8 | 35.7 | 5.7 | 32.3 | 43.9 | 53.9 | 10.0 | 1M/270 |
| Hori | 9608.000 | AV | 32.2 | 37.8 | 6.8 | 33.0 | 43.8 | 53.9 | 10.1 | NS 1M/10 |
| Hori | 12010.000 | AV | 32.2 | 39.3 | -1.4 | 32.8 | 37.3 | 53.9 | 16.6 | 1M/270 |
| Hori | 24020.000 | AV | 35.4 | 37.9 | -1.2 | 31.7 | 40.4 | 53.9 | 13.6 | NS 1M/10 |
| Vert | 59.431 | QP | 37.2 | 8.6 | 7.4 | 32.0 | 21.2 | 40.0 | 18.8 | |
| Vert | 75.992 | QP | 36.9 | 6.6 | 7.7 | 32.1 | 19.1 | 40.0 | 20.9 | |
| Vert | 142.617 | QP | 29.1 | 14.7 | 8.4 | 31.9 | 20.3 | 43.5 | 23.2 | |
| Vert | 377.996 | QP | 33.3 | 17.2 | 10.2 | 31.9 | 28.8 | 46.0 | 17.2 | |
| Vert | 485.994 | QP | 32.3 | 19.0 | 10.8 | 32.0 | 30.1 | 46.0 | 15.9 | |
| Vert | 539.999 | QP | 34.0 | 19.5 | 11.1 | 32.0 | 32.6 | 46.0 | 13.4 | |
| Vert | 1600.954 | PK | 54.7 | 26.1 | 2.5 | 33.1 | 50.2 | 73.9 | 23.7 | |
| Vert | 2390.000 | PK | 59.7 | 27.2 | 2.9 | 32.1 | 57.7 | 73.9 | 16.2 | |
| Vert | 2399.348 | PK | 73.2 | 27.2 | 2.9 | 32.1 | 71.2 | - | - | See 20dBc Data Sheet |
| Vert | 2400.000 | PK | 75.9 | 27.2 | 2.9 | 32.1 | 73.9 | - | - | See 20dBc Data Sheet |
| Vert | 4804.000 | PK | 44.8 | 30.8 | 5.3 | 31.4 | 49.5 | 73.9 | 24.4 | |
| Vert | 7206.000 | PK | 44.7 | 35.7 | 5.7 | 32.3 | 53.8 | 73.9 | 20.1 | |
| Vert | 9608.000 | PK | 43.8 | 37.8 | 6.8 | 33.0 | 55.4 | 73.9 | 18.5 | NS |
| Vert | 12010.000 | PK | 42.5 | 39.3 | -1.4 | 32.8 | 47.6 | 73.9 | 26.3 | |
| Vert | 24020.000 | PK | 46.6 | 37.9 | -1.2 | 31.7 | 51.6 | 73.9 | 22.3 | NS |
| Vert | 1600.954 | AV | 52.1 | 26.1 | 2.5 | 33.1 | 47.6 | 53.9 | 6.3 | 1M/10 |
| Vert | 2390.000 | AV | 42.1 | 27.2 | 2.9 | 32.1 | 40.1 | 53.9 | 13.8 | 1M/270 |
| Vert | 2399.348 | AV | 61.1 | 27.2 | 2.9 | 32.1 | 59.1 | - | - | See 20dBc Data Sheet |
| Vert | 2400.000 | AV | 64.1 | 27.2 | 2.9 | 32.1 | 62.1 | - | - | See 20dBc Data Sheet |
| Vert | 4804.000 | AV | 35.0 | 30.8 | 5.3 | 31.4 | 39.7 | 53.9 | 14.2 | 1M/270 |
| Vert | 7206.000 | AV | 34.3 | 35.7 | 5.7 | 32.3 | 43.4 | 53.9 | 10.5 | 1M/270 |
| Vert | 9608.000 | AV | 32.2 | 37.8 | 6.8 | 33.0 | 43.8 | 53.9 | 10.1 | NS 1M/10 |
| Vert | 12010.000 | AV | 31.9 | 39.3 | -1.4 | 32.8 | 37.0 | 53.9 | 16.9 | 1M/270 |
| Vert | 24020.000 | AV | 35.4 | 37.9 | -1.2 | 31.7 | 40.4 | 53.9 | 13.6 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal

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# Radiated Spurious Emission
(With Video Camera)

| | |
|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber |
| Report No. | 30KE0260-HO-02 |
| Date | 10/28/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% |
| Engineer | Satofumi Matsuyama<br>(1-10GHz) |
| Mode | Tx, DH5 2402MHz |

**20dBc Data Sheet**

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 2399.348 | PK | 54.7 | 27.2 | 2.9 | 32.1 | 52.7 | 80.0 | 27.3 | |
| Hori | 2400.000 | PK | 61.6 | 27.2 | 2.9 | 32.1 | 59.6 | 80.0 | 20.4 | |
| Hori | 2402.000 | PK | 102.0 | 27.2 | 2.9 | 32.1 | 100.0 | - | - | Carrier |
| Vert | 2399.348 | PK | 60.3 | 27.2 | 2.9 | 32.1 | 58.3 | 86.2 | 27.9 | |
| Vert | 2400.000 | PK | 67.5 | 27.2 | 2.9 | 32.1 | 65.5 | 86.2 | 20.7 | |
| Vert | 2402.000 | PK | 108.2 | 27.2 | 2.9 | 32.1 | 106.2 | - | - | Carrier |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

# Radiated Spurious Emission
(With Video Camera)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Tx, DH5 2441MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 377.994 | QP | 35.8 | 17.2 | 10.2 | 31.9 | 31.3 | 46.0 | 14.7 | |
| Hori | 485.996 | QP | 32.0 | 19.0 | 10.8 | 32.0 | 29.8 | 46.0 | 16.2 | |
| Hori | 539.995 | QP | 34.2 | 19.5 | 11.1 | 32.0 | 32.8 | 46.0 | 13.2 | |
| Hori | 719.999 | QP | 33.1 | 22.3 | 12.1 | 32.1 | 35.4 | 46.0 | 10.6 | |
| Hori | 741.744 | QP | 31.3 | 22.5 | 12.2 | 32.0 | 34.0 | 46.0 | 12.0 | |
| Hori | 809.993 | QP | 30.0 | 23.1 | 12.5 | 31.7 | 33.9 | 46.0 | 12.1 | |
| Hori | 1627.004 | PK | 52.2 | 26.2 | 2.5 | 33.0 | 47.9 | 73.9 | 26.0 | |
| Hori | 4882.000 | PK | 46.4 | 31.1 | 5.3 | 31.4 | 51.4 | 73.9 | 22.5 | |
| Hori | 7323.000 | PK | 46.9 | 35.9 | 5.7 | 32.4 | 56.1 | 73.9 | 17.8 | |
| Hori | 9764.000 | PK | 43.9 | 38.0 | 6.9 | 33.0 | 55.8 | 73.9 | 18.1 | NS |
| Hori | 12205.000 | PK | 43.5 | 39.3 | -1.4 | 32.8 | 48.6 | 73.9 | 25.3 | |
| Hori | 24410.000 | PK | 45.3 | 37.9 | -1.1 | 31.6 | 50.5 | 73.9 | 23.4 | NS |
| Hori | 1627.004 | AV | 48.9 | 26.2 | 2.5 | 33.0 | 44.6 | 53.9 | 9.3 | 1M/10 |
| Hori | 4882.000 | AV | 39.2 | 31.1 | 5.3 | 31.4 | 44.2 | 53.9 | 9.7 | 1M/270 |
| Hori | 7323.000 | AV | 37.0 | 35.9 | 5.7 | 32.4 | 46.2 | 53.9 | 7.7 | 1M/270 |
| Hori | 9764.000 | AV | 32.2 | 38.0 | 6.9 | 33.0 | 44.1 | 53.9 | 9.8 | NS 1M/10 |
| Hori | 12205.000 | AV | 33.5 | 39.3 | -1.4 | 32.8 | 38.6 | 53.9 | 15.3 | 1M/270 |
| Hori | 24410.000 | AV | 34.5 | 37.9 | -1.1 | 31.6 | 39.7 | 53.9 | 14.2 | NS 1M/10 |
| Vert | 59.414 | QP | 36.7 | 8.6 | 7.4 | 32.0 | 20.7 | 40.0 | 19.3 | |
| Vert | 76.391 | QP | 36.5 | 6.6 | 7.7 | 32.1 | 18.7 | 40.0 | 21.3 | |
| Vert | 378.001 | QP | 33.5 | 17.2 | 10.2 | 31.9 | 29.0 | 46.0 | 17.0 | |
| Vert | 523.998 | QP | 29.9 | 19.4 | 11.1 | 32.0 | 28.4 | 46.0 | 17.6 | |
| Vert | 539.999 | QP | 33.2 | 19.5 | 11.1 | 32.0 | 31.8 | 46.0 | 14.2 | |
| Vert | 771.999 | QP | 29.7 | 22.8 | 12.3 | 31.9 | 32.9 | 46.0 | 13.1 | |
| Vert | 1627.004 | PK | 55.2 | 26.2 | 2.5 | 33.0 | 50.9 | 73.9 | 23.0 | |
| Vert | 4882.000 | PK | 46.0 | 31.1 | 5.3 | 31.4 | 51.0 | 73.9 | 22.9 | |
| Vert | 7323.000 | PK | 47.5 | 35.9 | 5.7 | 32.4 | 56.7 | 73.9 | 17.2 | |
| Vert | 9764.000 | PK | 44.2 | 38.0 | 6.9 | 33.0 | 56.1 | 73.9 | 17.8 | NS |
| Vert | 12205.000 | PK | 42.8 | 39.3 | -1.4 | 32.8 | 47.9 | 73.9 | 26.0 | |
| Vert | 24410.000 | PK | 45.4 | 37.9 | -1.1 | 31.6 | 50.6 | 73.9 | 23.3 | NS |
| Vert | 1627.004 | AV | 53.0 | 26.2 | 2.5 | 33.0 | 48.7 | 53.9 | 5.2 | 1M/10 |
| Vert | 4882.000 | AV | 36.0 | 31.1 | 5.3 | 31.4 | 41.0 | 53.9 | 12.9 | 1M/270 |
| Vert | 7323.000 | AV | 37.8 | 35.9 | 5.7 | 32.4 | 47.0 | 53.9 | 6.9 | 1M/270 |
| Vert | 9764.000 | AV | 32.2 | 38.0 | 6.9 | 33.0 | 44.1 | 53.9 | 9.8 | NS 1M/10 |
| Vert | 12205.000 | AV | 32.5 | 39.3 | -1.4 | 32.8 | 37.6 | 53.9 | 16.3 | 1M/270 |
| Vert | 24410.000 | AV | 34.5 | 37.9 | -1.1 | 31.6 | 39.7 | 53.9 | 14.2 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal

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# Radiated Spurious Emission
(With Video Camera)

| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Tx, DH5 2480MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 377.996 | QP | 35.4 | 17.2 | 10.2 | 31.9 | 30.9 | 46.0 | 15.1 | |
| Hori | 485.997 | QP | 31.5 | 19.0 | 10.8 | 32.0 | 29.3 | 46.0 | 16.7 | |
| Hori | 508.003 | QP | 30.7 | 19.2 | 11.0 | 32.0 | 28.9 | 46.0 | 17.1 | |
| Hori | 539.998 | QP | 33.9 | 19.5 | 11.1 | 32.0 | 32.5 | 46.0 | 13.5 | |
| Hori | 720.002 | QP | 32.9 | 22.3 | 12.1 | 32.1 | 35.2 | 46.0 | 10.8 | |
| Hori | 741.752 | QP | 31.2 | 22.5 | 12.2 | 32.0 | 33.9 | 46.0 | 12.1 | |
| Hori | 1652.983 | PK | 54.0 | 26.3 | 2.5 | 33.0 | 49.8 | 73.9 | 24.1 | |
| Hori | 2483.500 | PK | 70.7 | 27.2 | 2.9 | 32.1 | 68.7 | 73.9 | 5.2 | |
| Hori | 2484.233 | PK | 69.1 | 27.2 | 2.9 | 32.1 | 67.1 | 73.9 | 6.8 | |
| Hori | 4960.000 | PK | 50.8 | 31.3 | 5.4 | 31.4 | 56.1 | 73.9 | 17.8 | |
| Hori | 7440.000 | PK | 47.1 | 36.1 | 5.7 | 32.4 | 56.5 | 73.9 | 17.4 | |
| Hori | 9920.000 | PK | 43.5 | 38.2 | 7.1 | 33.0 | 55.8 | 73.9 | 18.1 | NS |
| Hori | 12400.000 | PK | 44.5 | 39.3 | -1.3 | 32.8 | 49.7 | 73.9 | 24.3 | |
| Hori | 24800.000 | PK | 47.7 | 38.0 | -1.0 | 31.5 | 53.2 | 73.9 | 20.7 | NS |
| Hori | 1652.983 | AV | 50.9 | 26.3 | 2.5 | 33.0 | 46.7 | 53.9 | 7.2 | 1M/10 |
| Hori | 2483.500 | AV | 52.2 | 27.2 | 2.9 | 32.1 | 50.2 | 53.9 | 3.7 | 1M/270 |
| Hori | 2484.235 | AV | 48.3 | 27.2 | 2.9 | 32.1 | 46.3 | 53.9 | 7.6 | 1M/270 |
| Hori | 4960.000 | AV | 46.5 | 31.3 | 5.4 | 31.4 | 51.8 | 53.9 | 2.1 | 1M/270 |
| Hori | 7440.000 | AV | 37.3 | 36.1 | 5.7 | 32.4 | 46.7 | 53.9 | 7.2 | 1M/270 |
| Hori | 9920.000 | AV | 32.5 | 38.2 | 7.1 | 33.0 | 44.8 | 53.9 | 9.1 | NS 1M/10 |
| Hori | 12400.000 | AV | 34.3 | 39.3 | -1.3 | 32.8 | 39.5 | 53.9 | 14.4 | 1M/270 |
| Hori | 24800.000 | AV | 36.6 | 38.0 | -1.0 | 31.5 | 42.1 | 53.9 | 11.8 | NS 1M/10 |
| Vert | 76.317 | QP | 36.4 | 6.6 | 7.7 | 32.1 | 18.6 | 40.0 | 21.4 | |
| Vert | 142.535 | QP | 29.1 | 14.7 | 8.4 | 31.9 | 20.3 | 43.5 | 23.2 | |
| Vert | 377.996 | QP | 33.0 | 17.2 | 10.2 | 31.9 | 28.5 | 46.0 | 17.5 | |
| Vert | 500.002 | QP | 30.1 | 19.2 | 10.9 | 32.0 | 28.2 | 46.0 | 17.8 | |
| Vert | 515.997 | QP | 30.1 | 19.3 | 11.0 | 32.0 | 28.4 | 46.0 | 17.6 | |
| Vert | 539.998 | QP | 32.6 | 19.5 | 11.1 | 32.0 | 31.2 | 46.0 | 14.8 | |
| Vert | 1652.983 | PK | 57.0 | 26.3 | 2.5 | 33.0 | 52.8 | 73.9 | 21.1 | |
| Vert | 2483.500 | PK | 68.7 | 27.2 | 2.9 | 32.1 | 66.7 | 73.9 | 7.2 | |
| Vert | 2484.235 | PK | 67.0 | 27.2 | 2.9 | 32.1 | 65.0 | 73.9 | 8.9 | |
| Vert | 4960.000 | PK | 47.0 | 31.3 | 5.4 | 31.4 | 52.3 | 73.9 | 21.6 | |
| Vert | 7440.000 | PK | 45.6 | 36.1 | 5.7 | 32.4 | 55.0 | 73.9 | 18.9 | |
| Vert | 9920.000 | PK | 43.5 | 38.2 | 7.1 | 33.0 | 55.8 | 73.9 | 18.1 | NS |
| Vert | 12400.000 | PK | 42.8 | 39.3 | -1.3 | 32.8 | 48.0 | 73.9 | 25.9 | |
| Vert | 24800.000 | PK | 47.5 | 38.0 | -1.0 | 31.5 | 53.0 | 73.9 | 20.9 | NS |
| Vert | 1652.983 | AV | 55.4 | 26.3 | 2.5 | 33.0 | 51.2 | 53.9 | 2.7 | 1M/10 |
| Vert | 2483.500 | AV | 50.4 | 27.2 | 2.9 | 32.1 | 48.4 | 53.9 | 5.5 | 1M/270 |
| Vert | 2484.235 | AV | 46.4 | 27.2 | 2.9 | 32.1 | 44.4 | 53.9 | 9.5 | 1M/270 |
| Vert | 4960.000 | AV | 38.7 | 31.3 | 5.4 | 31.4 | 44.0 | 53.9 | 9.9 | 1M/270 |
| Vert | 7440.000 | AV | 36.1 | 36.1 | 5.7 | 32.4 | 45.5 | 53.9 | 8.4 | 1M/270 |
| Vert | 9920.000 | AV | 32.5 | 38.2 | 7.1 | 33.0 | 44.8 | 53.9 | 9.1 | NS 1M/10 |
| Vert | 12400.000 | AV | 33.0 | 39.3 | -1.3 | 32.8 | 38.2 | 53.9 | 15.7 | 1M/270 |
| Vert | 24800.000 | AV | 36.5 | 38.0 | -1.0 | 31.5 | 42.0 | 53.9 | 11.9 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
*NS: No Signal

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# Radiated Spurious Emission
(With Video Camera)

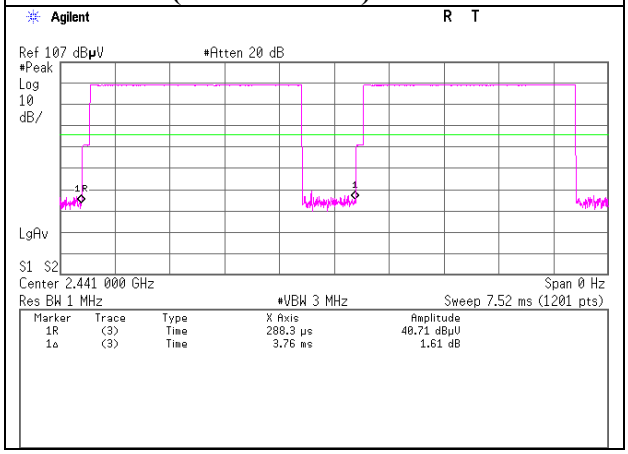
| | | |
|---|---|---|
| Test place | Head Office EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 30KE0260-HO-02 | |
| Date | 10/28/2010 | 10/29/2010 |
| Temperature/ Humidity | 20 deg.C./ 47% | 25 deg.C./ 44% |
| Engineer | Satofumi Matsuyama (1-10GHz) | Keisuke Kawamura (Below 1GHz, 10-26.5GHz) |
| Mode | Rx, DH5 2441MHz | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| Hori | 377.994 | QP | 35.6 | 17.2 | 10.2 | 31.9 | 31.1 | 46.0 | 14.9 | |
| Hori | 485.994 | QP | 32.1 | 19.0 | 10.8 | 32.0 | 29.9 | 46.0 | 16.1 | |
| Hori | 540.001 | QP | 32.6 | 19.5 | 11.1 | 32.0 | 31.2 | 46.0 | 14.8 | |
| Hori | 720.002 | QP | 32.9 | 22.3 | 12.1 | 32.1 | 35.2 | 46.0 | 10.8 | |
| Hori | 741.751 | QP | 31.0 | 22.5 | 12.2 | 32.0 | 33.7 | 46.0 | 12.3 | |
| Hori | 809.987 | QP | 30.2 | 23.1 | 12.5 | 31.7 | 34.1 | 46.0 | 11.9 | |
| Hori | 1152.007 | PK | 49.2 | 24.4 | 2.2 | 34.2 | 41.6 | 73.9 | 32.3 | |
| Hori | 1628.339 | PK | 53.1 | 26.2 | 2.5 | 33.0 | 48.8 | 73.9 | 25.1 | |
| Hori | 2441.000 | PK | 43.3 | 27.2 | 2.9 | 32.1 | 41.3 | 73.9 | 32.6 | NS |
| Hori | 1152.007 | AV | 43.3 | 24.4 | 2.2 | 34.2 | 35.7 | 53.9 | 18.2 | 1M/10 |
| Hori | 1628.339 | AV | 50.3 | 26.2 | 2.5 | 33.0 | 46.0 | 53.9 | 7.9 | 1M/10 |
| Hori | 2441.000 | AV | 31.3 | 27.2 | 2.9 | 32.1 | 29.3 | 53.9 | 24.6 | NS 1M/10 |
| Vert | 59.374 | QP | 36.2 | 8.6 | 7.4 | 32.0 | 20.2 | 40.0 | 19.8 | |
| Vert | 377.998 | QP | 32.4 | 17.2 | 10.2 | 31.9 | 27.9 | 46.0 | 18.1 | |
| Vert | 467.999 | QP | 30.1 | 18.7 | 10.7 | 32.0 | 27.5 | 46.0 | 18.5 | |
| Vert | 523.998 | QP | 29.5 | 19.4 | 11.1 | 32.0 | 28.0 | 46.0 | 18.0 | |
| Vert | 539.993 | QP | 35.1 | 19.5 | 11.1 | 32.0 | 33.7 | 46.0 | 12.3 | |
| Vert | 755.993 | QP | 30.8 | 22.6 | 12.2 | 32.0 | 33.6 | 46.0 | 12.4 | |
| Vert | 1152.007 | PK | 50.1 | 24.4 | 2.2 | 34.2 | 42.5 | 73.9 | 31.4 | |
| Vert | 1628.339 | PK | 56.4 | 26.2 | 2.5 | 33.0 | 52.1 | 73.9 | 21.8 | |
| Vert | 2441.000 | PK | 44.0 | 27.2 | 2.9 | 32.1 | 42.0 | 73.9 | 31.9 | NS |
| Vert | 1152.007 | AV | 43.8 | 24.4 | 2.2 | 34.2 | 36.2 | 53.9 | 17.7 | 1M/10 |
| Vert | 1628.339 | AV | 54.6 | 26.2 | 2.5 | 33.0 | 50.3 | 53.9 | 3.6 | 1M/10 |
| Vert | 2441.000 | AV | 31.3 | 27.2 | 2.9 | 32.1 | 29.3 | 53.9 | 24.6 | NS 1M/10 |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*NS: No Signal

# VBW (AV) Calculation

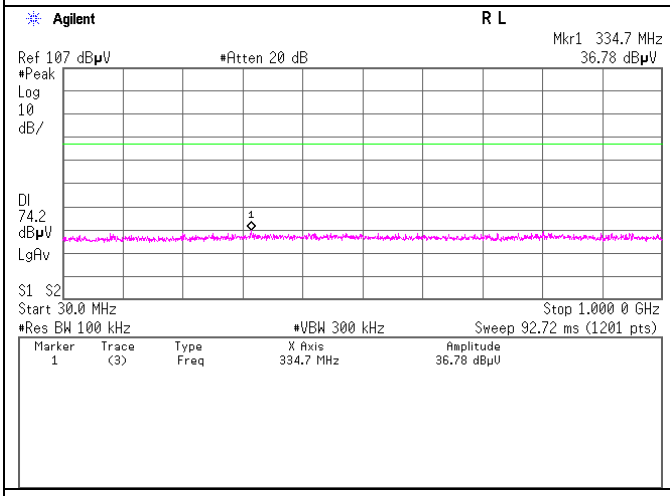
**VBW: 1/x = 266Hz<270Hz**
**x: (Tx on+Tx off) =3.76ms**



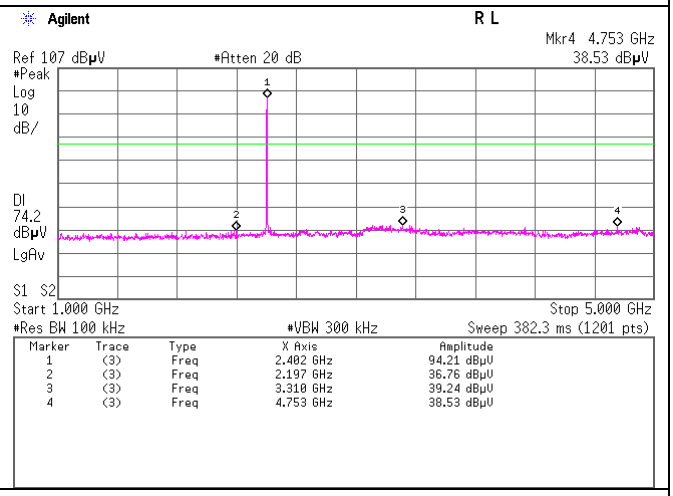
# Conducted Spurious Emission

## Tx DH5 2402MHz

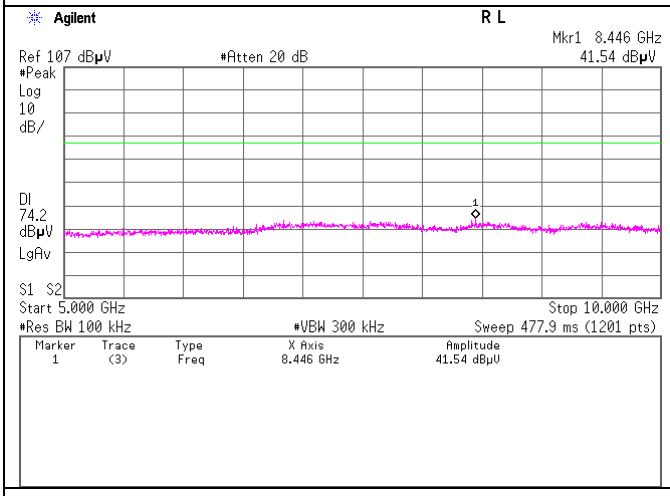
### 30MHz-1GHz



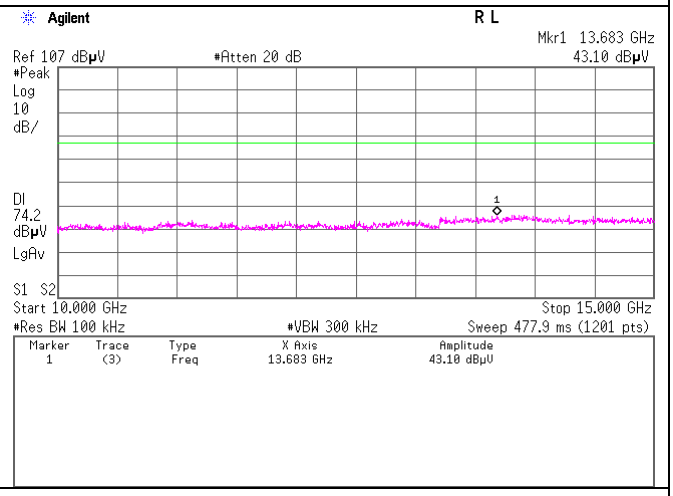

### 1GHz-5GHz



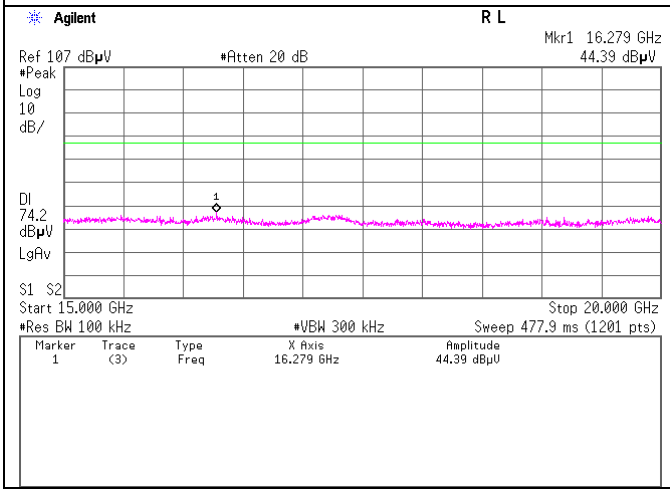

### 5GHz-10GHz



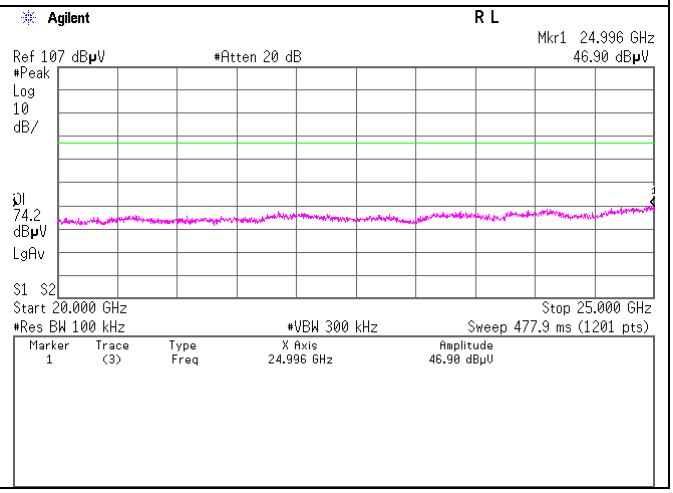

### 10GHz-15GHz




### 15GHz-20GHz




### 20GHz-25GHz

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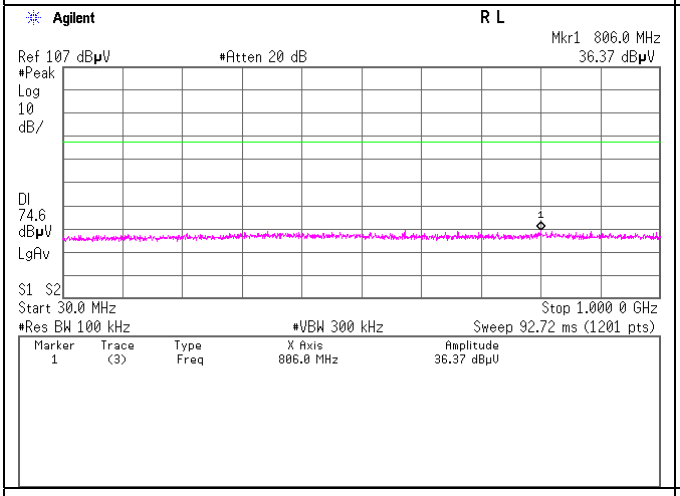
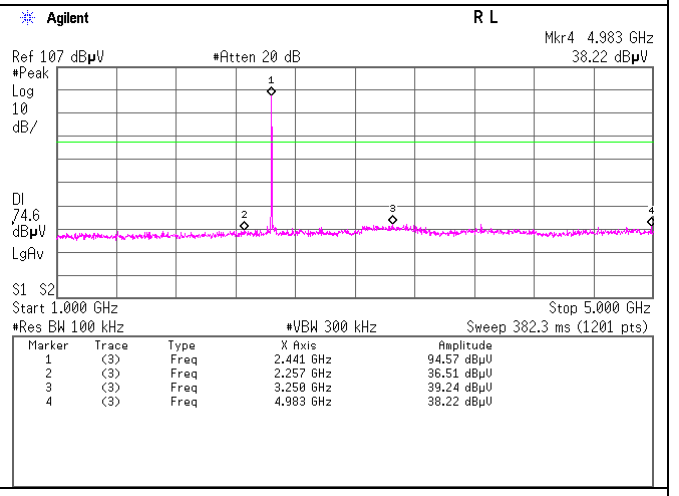
# Conducted Spurious Emission

## Tx DH5 2441MHz

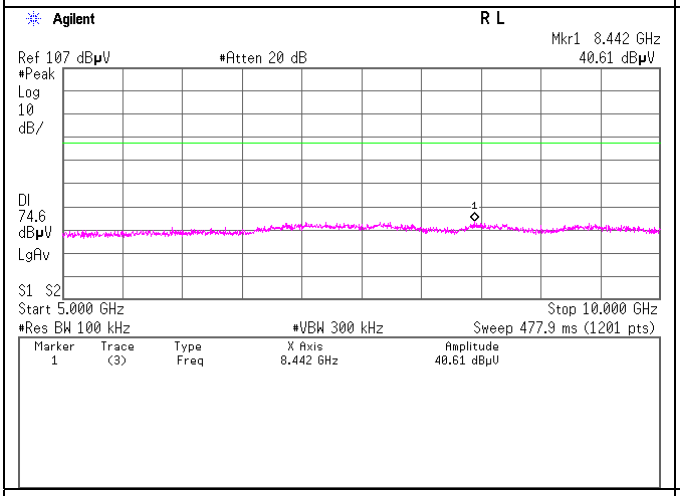
### 30MHz-1GHz



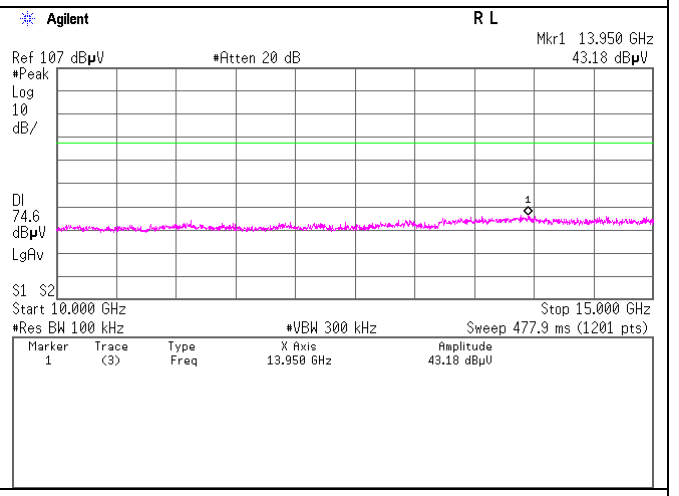

### 1GHz-5GHz



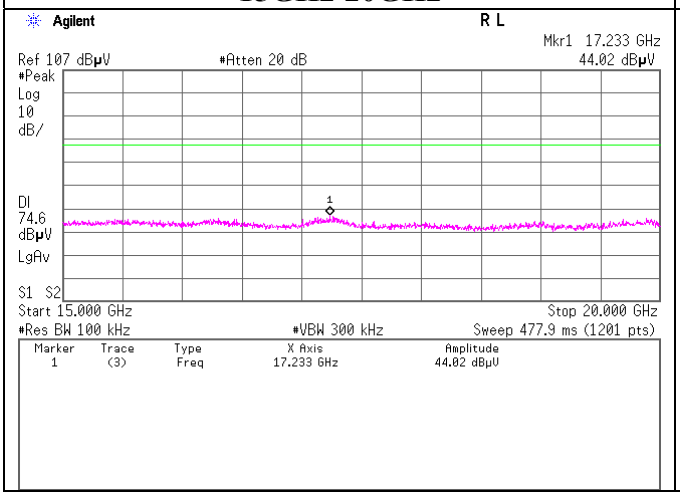

### 5GHz-10GHz



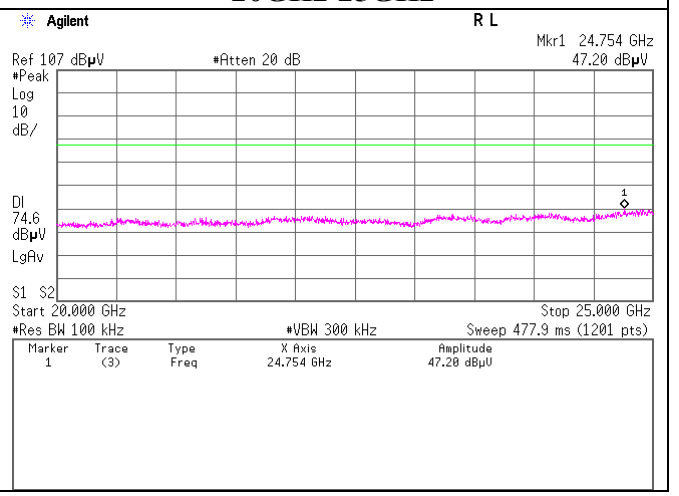

### 10GHz-15GHz




### 15GHz-20GHz




### 20GHz-25GHz

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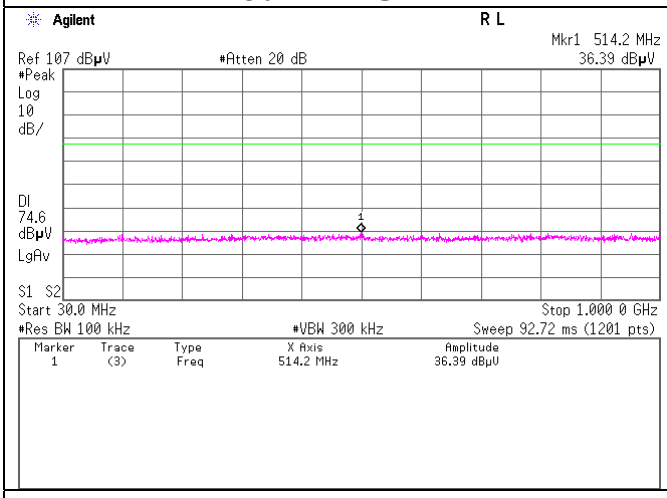
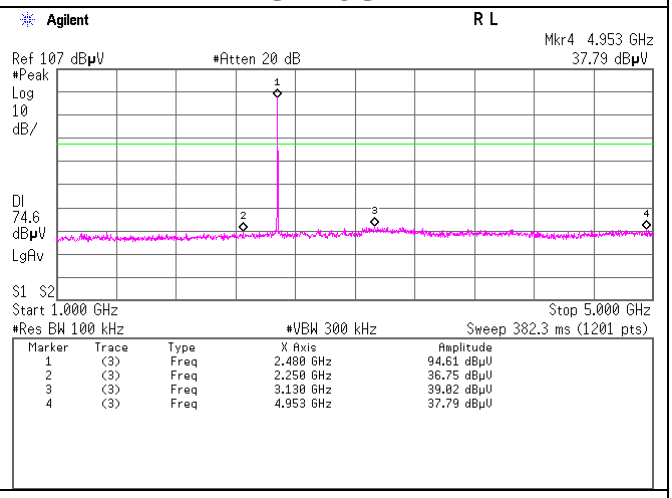
# Conducted Spurious Emission

## Tx DH5 2480MHz

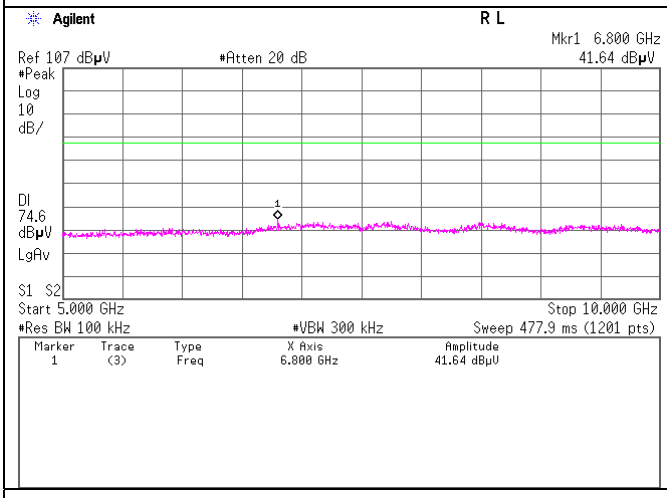
### 30MHz-1GHz



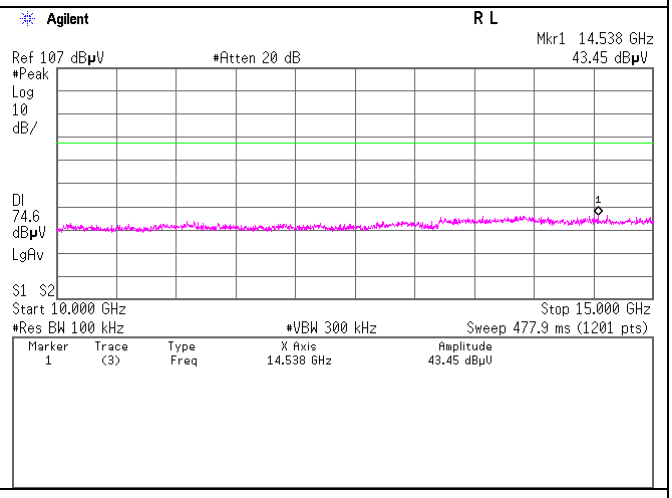

### 1GHz-5GHz



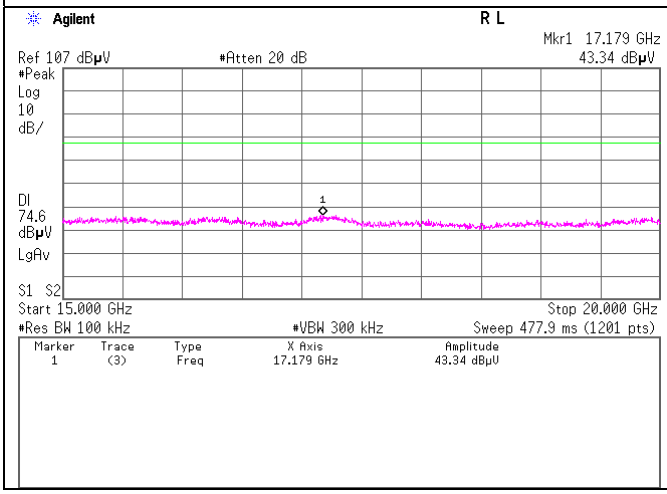

### 5GHz-10GHz



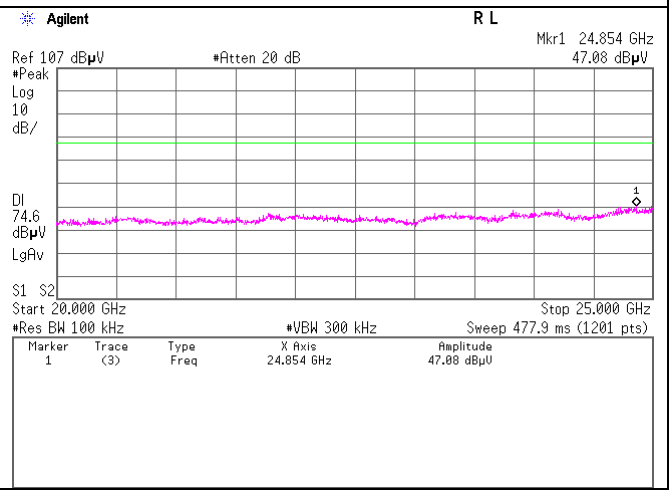

### 10GHz-15GHz




### 15GHz-20GHz




### 20GHz-25GHz

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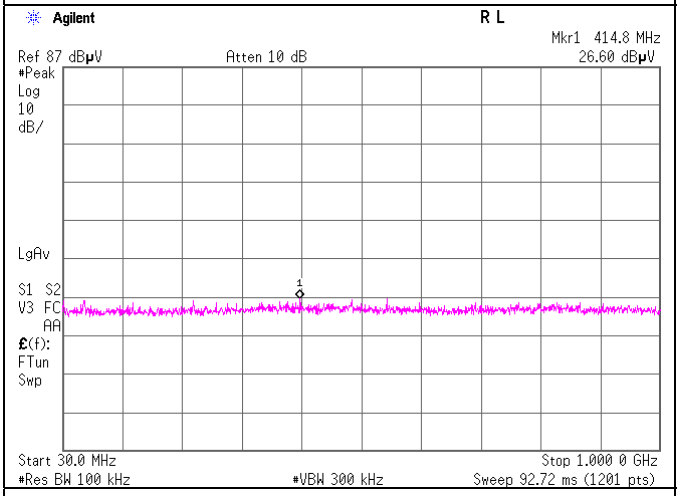
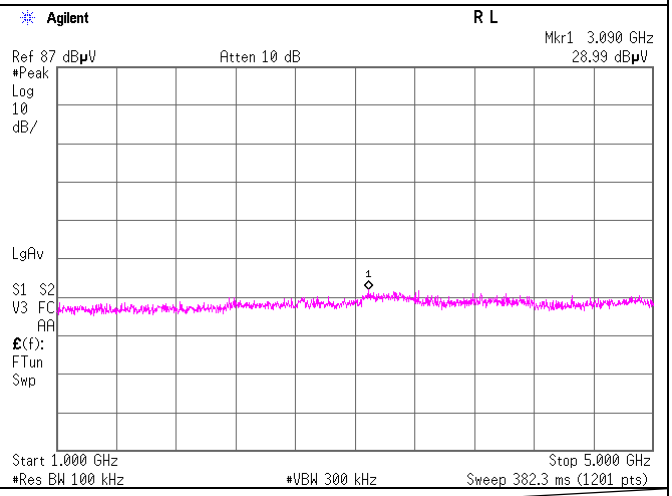
# Conducted Spurious Emission

## Rx 2441MHz

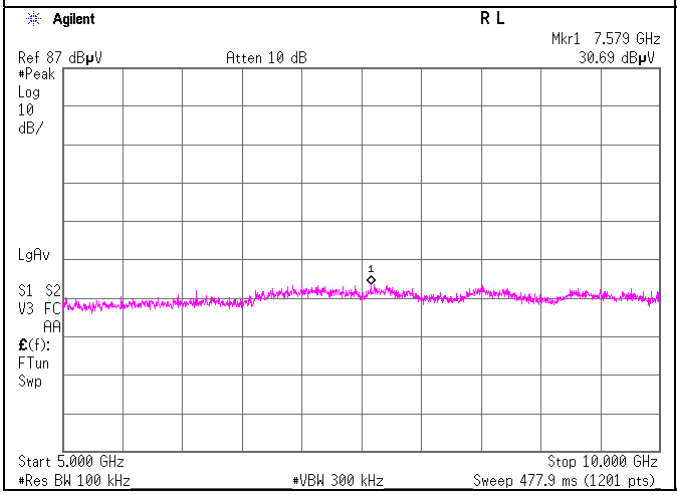
### 30MHz-1GHz




### 1GHz-5GHz




### 5GHz-10GHz

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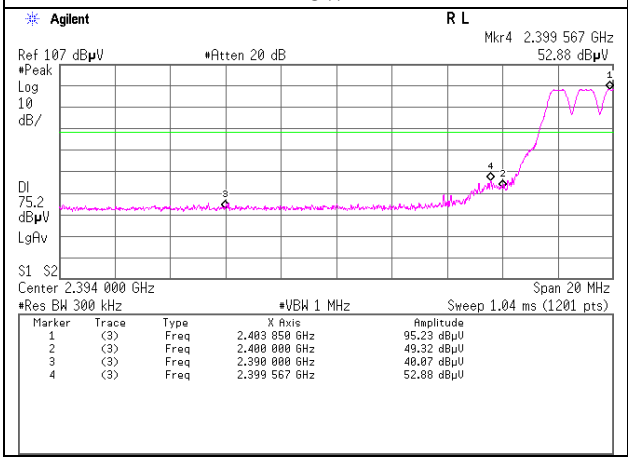
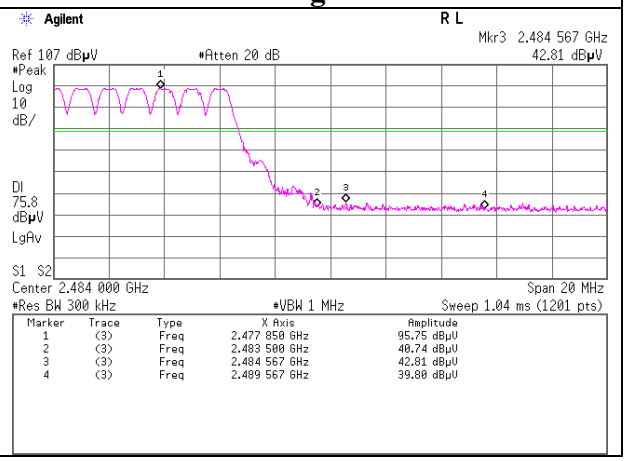
# Conducted Emission Band Edge compliance

## Tx DH5, Hopping on

### Low

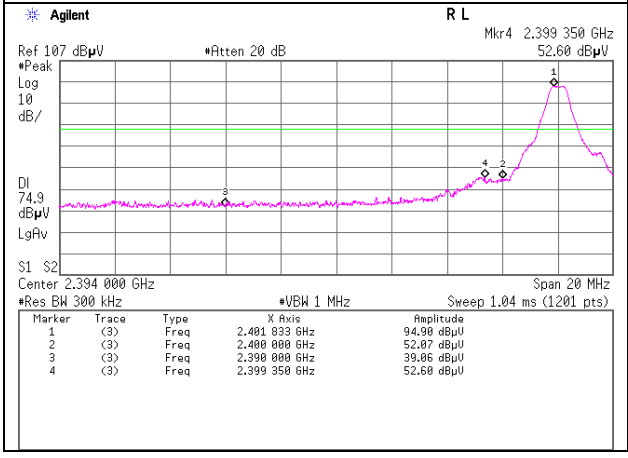



### High

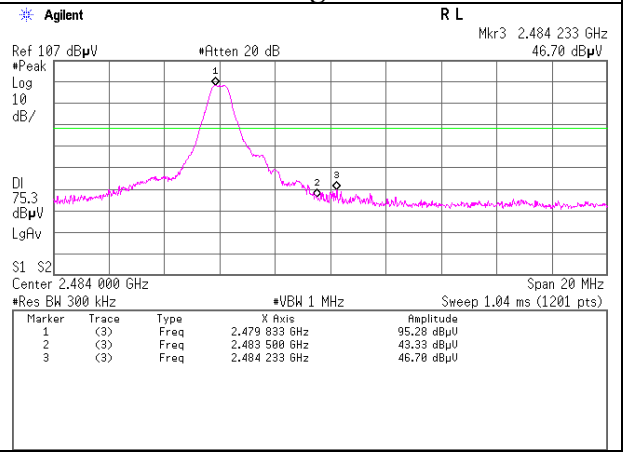



## Tx DH5, Hopping off

### Low



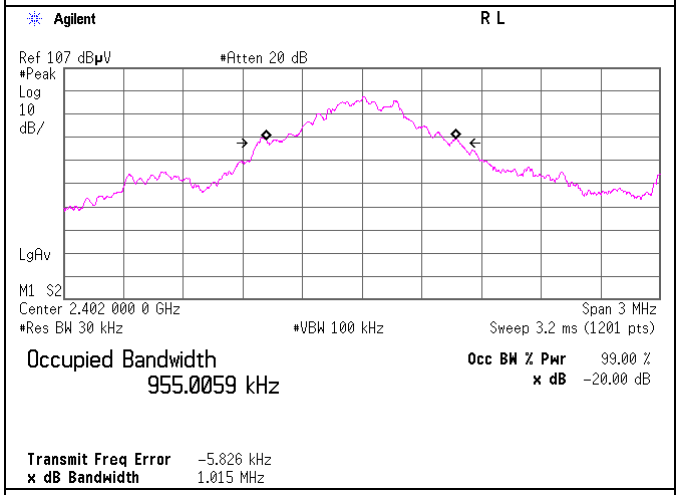

### High



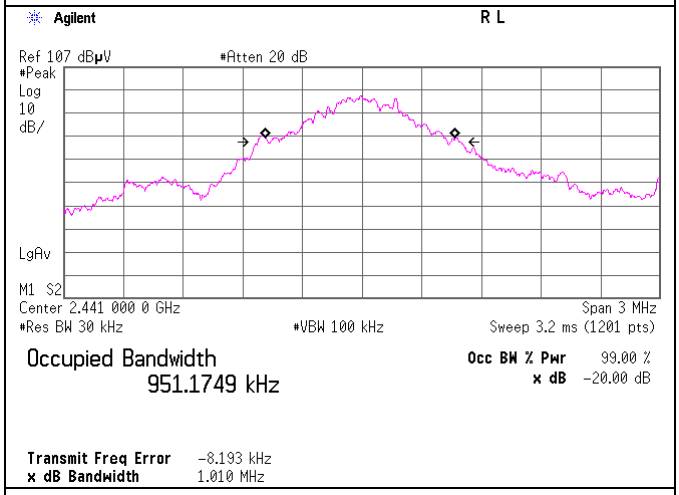
# 99%Occupied Bandwidth

## Tx DH5, Hopping off

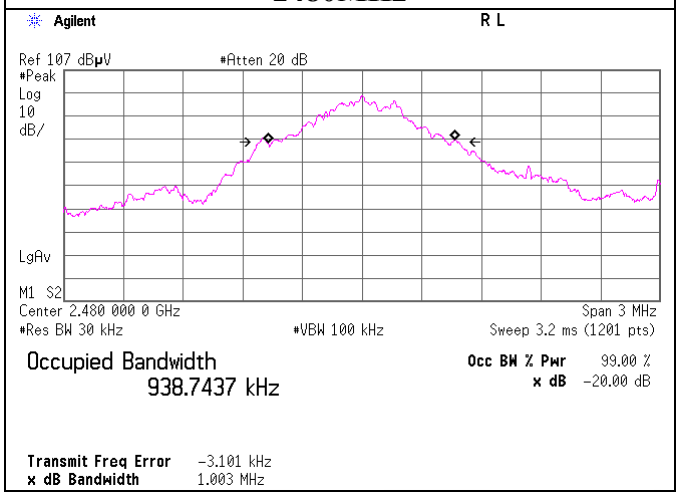
### 2402MHz




### 2441MHz

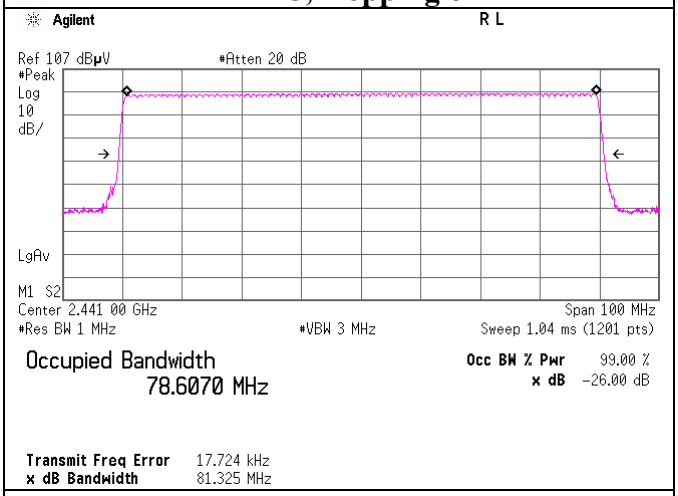



### 2480MHz

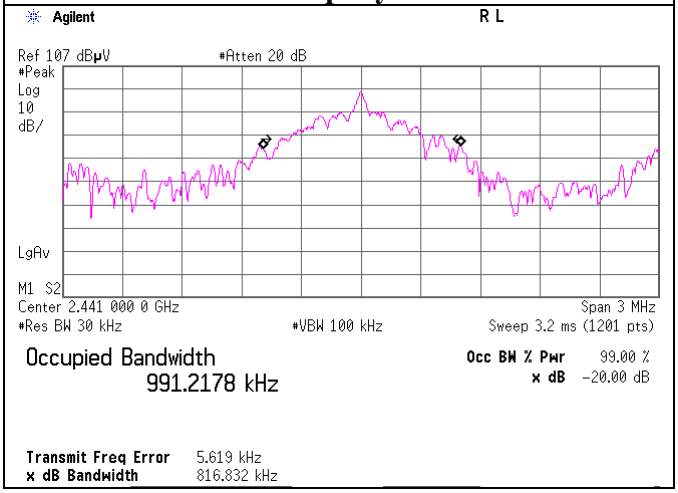


# 99% Occupied Bandwidth

## Tx DH5, Hopping on




## Inquiry



# APPENDIX 3: Test instruments

**EMI test equipment**

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|---|---|---|---|---|---|---|
| MCC-67 | Microwave Cable 1G-40GHz | Schner | SUCOFLEX102 | 28635/2 | AT | 2010/04/28 * 12 |
| MAT-40 | Attenuator(20dB) 1-40GHz | Weinschel | 54A-20 | S8132 | AT | 2010/10/06 * 12 |
| MPM-09 | Power Meter | Anritsu | ML2495A | 6K00003348 | AT | 2010/09/10 * 12 |
| MPSE-12 | Power sensor | Anritsu | MA2411B | 011598 | AT | 2010/09/10 * 12 |
| MSA-03 | Spectrum Analyzer | Agilent | E4448A | MY44020357 | AT | 2009/11/20 * 12 |
| MAEC-04 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-10005 | RE | 2010/02/02 * 12 |
| MOS-15 | Thermo-Hygrometer | Custom | CTH-180 | - | RE | 2010/02/09 * 12 |
| MJM-07 | Measure | PROMART | SEN1955 | - | RE | - |
| COTS-MEMI | EMI measurement program | TSJ | TEPTO-DV | - | RE | - |
| MHA-21 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 9120D-557 | RE | 2010/08/08 * 12 |
| MCC-57 | Microwave Cable | Suhner | SUCOFLEX104 | 246769(1m) / 292411(5m) | RE | 2009/11/17 * 12 |
| MPA-12 | MicroWave System Amplifier | Agilent | 83017A | MY39500780 | RE | 2010/03/16 * 12 |
| MHF-20 | High Pass Filter 3.5-18.0GHz | TOKIMEC | TF323DCC | 607 | RE | 2010/09/21 * 12 |
| MCC-79 | Microwave Cable 1G-26.5GHz | Suhner | SUCOFLEX104 | 278923/4 | RE | 2009/12/19 * 12 |
| MTR-07 | Test Receiver | Rohde & Schwarz | ESCI | 100635 | RE | 2010/10/27 * 12 |
| MBA-05 | Biconical Antenna | Schwarzbeck | BBA9106 | 1302 | RE | 2010/10/11 * 12 |
| MLA-08 | Logperiodic Antenna | Schwarzbeck | UKLP9140-A | N/A | RE | 2010/10/11 * 12 |
| MCC-50 | Coaxial cable | UL Japan | - | - | RE | 2010/03/18 * 12 |
| MAT-51 | Attenuator(6dB) | Weinschel | 2 | AS3557 | RE | 2010/01/20 * 12 |
| MPA-14 | Pre Amplifier | SONOMA INSTRUMENT | 310 | 260833 | RE | 2010/03/05 * 12 |

**The expiration date of the calibration is the end of the expired month.**
**All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.**

**As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.**

**Test Item: RE: Radiated Emission**
**AT: Antenna Terminal Conducted test**