

- . Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 52.70                   | H                  | 14.30                 | 1.70          | 33.10       | 35.60                           | 40.00                    | 4.40           |
| 97.90              | 56.50                   | H                  | 13.20                 | 2.10          | 33.10       | 38.70                           | 43.50                    | 4.80           |
| 165.80             | 52.30                   | H                  | 9.50                  | 2.70          | 33.00       | 31.50                           | 43.50                    | 12.00          |
| 480.08             | 43.60                   | H                  | 18.10                 | 4.60          | 33.10       | 33.20                           | 46.00                    | 12.80          |
| 666.32             | 41.60                   | V                  | 20.60                 | 5.40          | 33.30       | 34.30                           | 46.00                    | 11.70          |

- . Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 52.70                   | H                  | 14.30                 | 1.70          | 33.10       | 35.60                           | 40.00                    | 4.40           |
| 97.90              | 56.70                   | H                  | 13.20                 | 2.10          | 33.10       | 38.90                           | 43.50                    | 4.60           |
| 165.80             | 51.60                   | H                  | 9.50                  | 2.70          | 33.00       | 30.80                           | 43.50                    | 12.70          |
| 480.08             | 43.20                   | H                  | 18.10                 | 4.60          | 33.10       | 32.80                           | 46.00                    | 13.20          |
| 666.32             | 41.40                   | V                  | 20.60                 | 5.40          | 33.30       | 34.10                           | 46.00                    | 11.90          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

o | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

**10.10.5.3 Test data for above 1 GHz**

- . Test Date : December 17, 2013
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 40 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

**Tested by: Hong-Kyu, Lee/ Engineer**

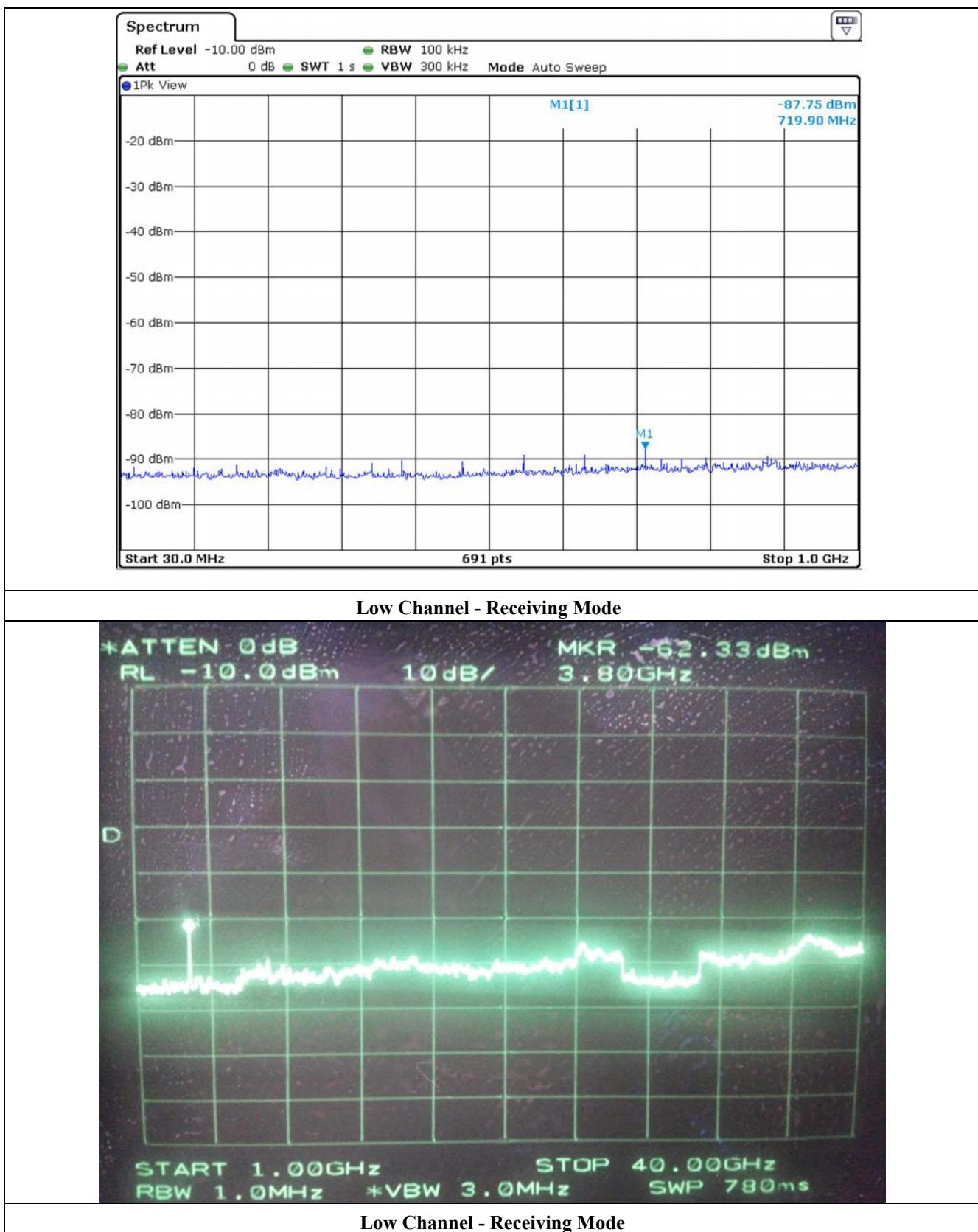
**10.11 Test data for 802.11n\_HT40 RLAN Mode****10.11.1 Test data for Antenna 0 – Conducted**

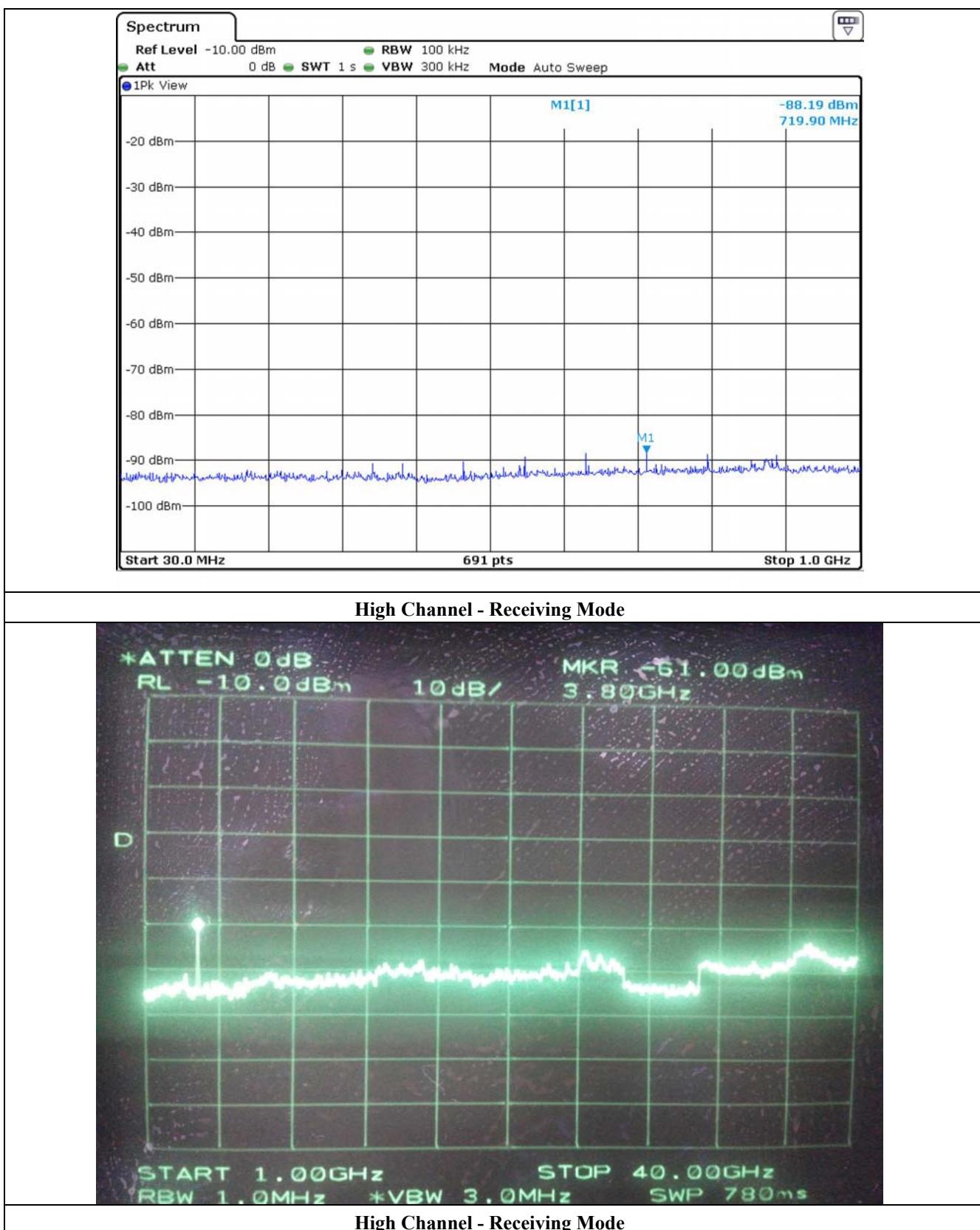
- Test Date : December 27, 2013
- Resolution bandwidth : 120 kHz / 1 MHz
- Frequency range : 30 MHz ~ 40 GHz
- Test Result : Pass

| Frequency (MHz)                     | Spectrum Reading (dBm) | Cable Loss (dB) | Total (dBm) |
|-------------------------------------|------------------------|-----------------|-------------|
| <b>Test result for Low Channel</b>  |                        |                 |             |
| 719.90                              | -87.75                 | 0.19            | -87.56      |
| 3 800.00                            | -62.33                 | 0.69            | -61.64      |
| <b>Test result for High Channel</b> |                        |                 |             |
| 719.00                              | -88.19                 | 0.19            | -88.00      |
| 3 800.00                            | -61.00                 | 0.69            | -60.31      |

---

Tested by: Hong-Kyu, Lee/ Engineer





## 10.11.2 Test data for Antenna 0 - Radiated

### 10.11.2.1 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 10.11.2.2 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 53.10                   | V                  | 14.30                 | 1.70          | 33.10       | 36.00                           | 40.00                    | 4.00           |
| 97.90              | 56.60                   | V                  | 13.20                 | 2.10          | 33.10       | 38.80                           | 43.50                    | 4.70           |
| 165.80             | 51.40                   | V                  | 9.50                  | 2.70          | 33.00       | 30.60                           | 43.50                    | 12.90          |
| 480.08             | 44.00                   | V                  | 18.10                 | 4.60          | 33.10       | 33.60                           | 46.00                    | 12.40          |
| 666.32             | 40.80                   | H                  | 20.60                 | 5.40          | 33.30       | 33.50                           | 46.00                    | 12.50          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 52.10                   | H                  | 14.30                 | 1.70          | 33.10       | 35.00                           | 40.00                    | 5.00           |
| 97.90              | 55.50                   | H                  | 13.20                 | 2.10          | 33.10       | 37.70                           | 43.50                    | 5.80           |
| 165.80             | 51.10                   | H                  | 9.50                  | 2.70          | 33.00       | 30.30                           | 43.50                    | 13.20          |
| 480.08             | 41.90                   | H                  | 18.10                 | 4.60          | 33.10       | 31.50                           | 46.00                    | 14.50          |
| 666.32             | 40.20                   | V                  | 20.60                 | 5.40          | 33.30       | 32.90                           | 46.00                    | 13.10          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

**10.11.2.3 Test data for above 1 GHz**

- . Test Date : December 17, 2013
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 40 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

**Tested by: Hong-Kyu, Lee/ Engineer**

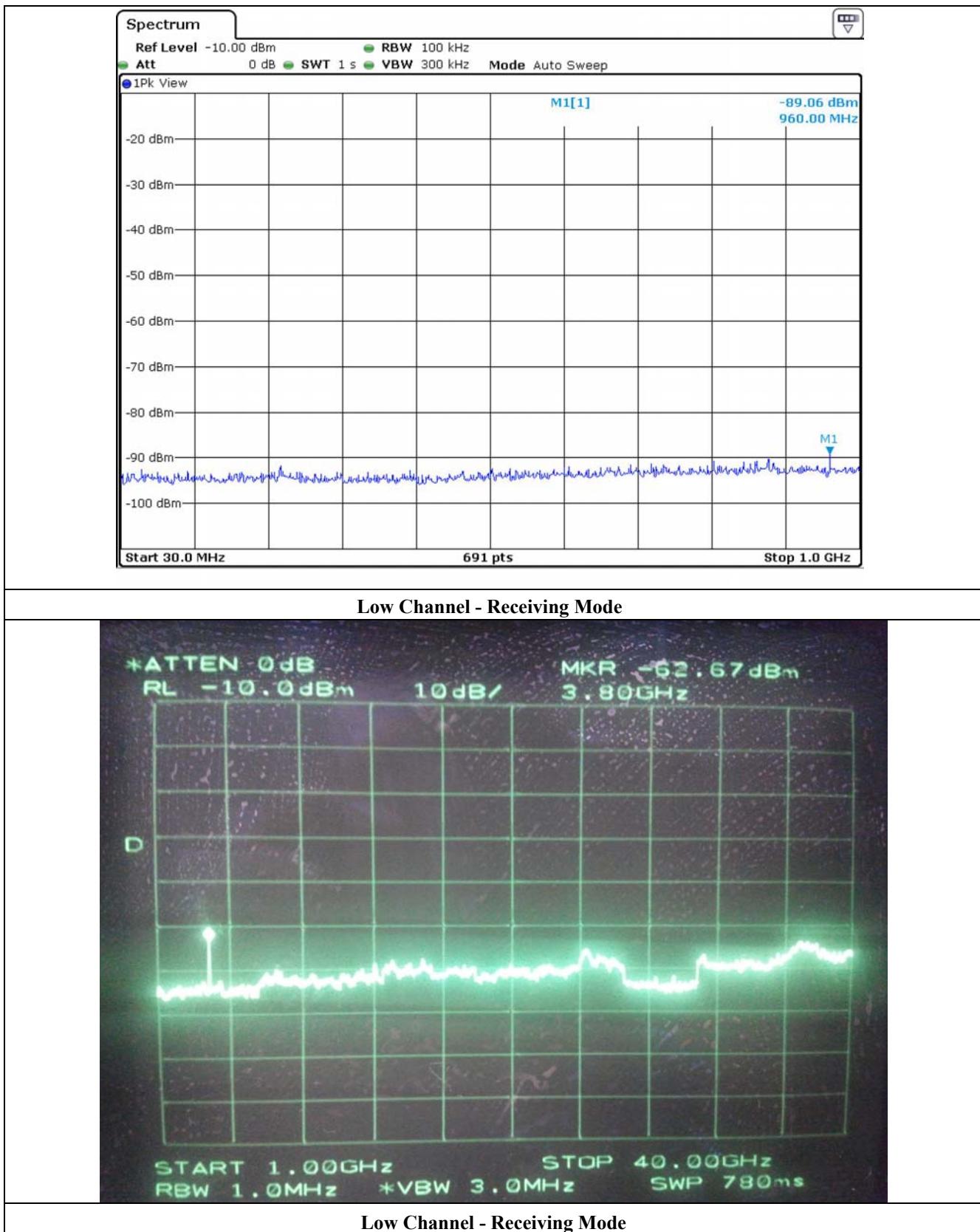
**10.11.3 Test data for Antenna 1 – Conducted**

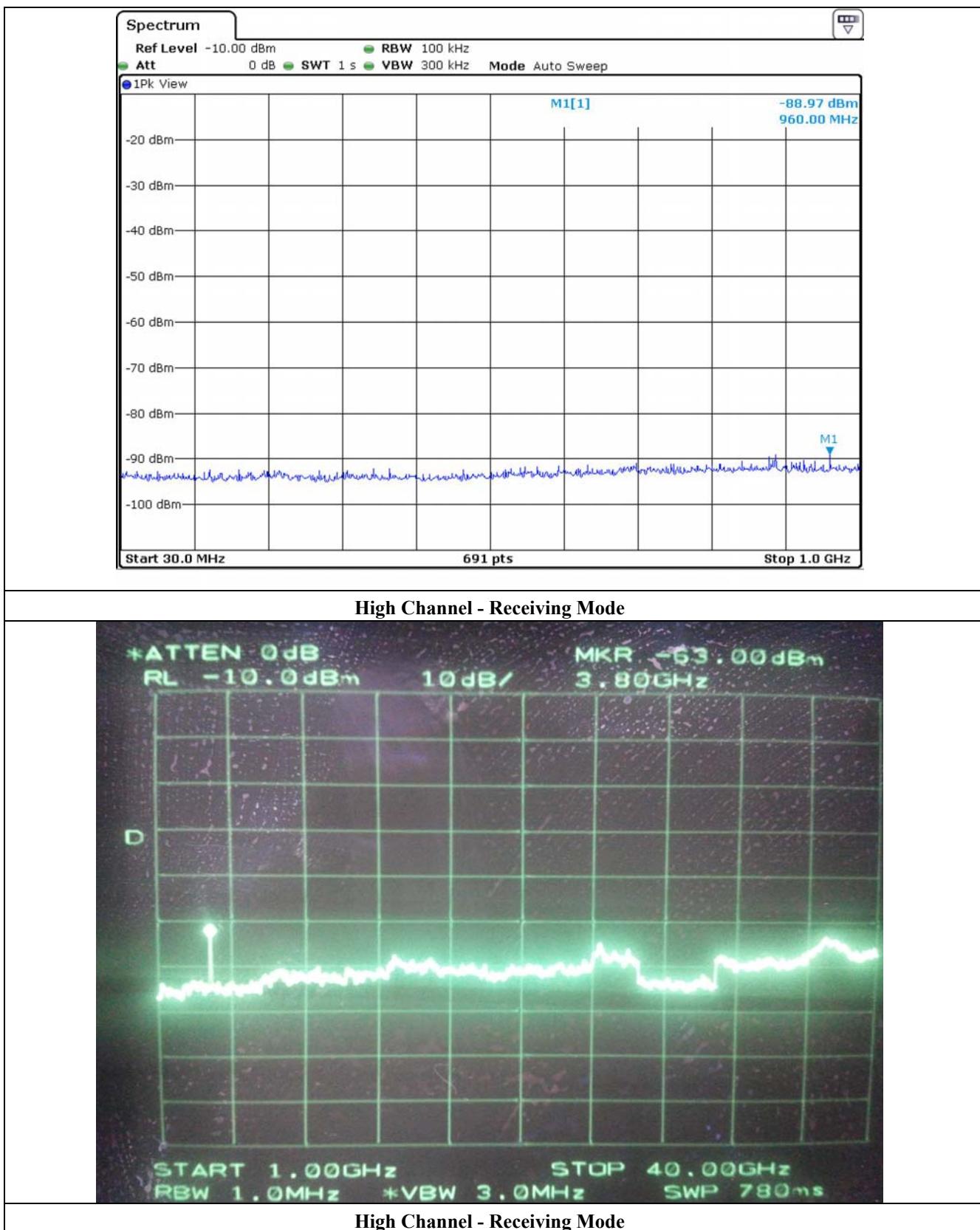
- Test Date : December 27, 2013
- Resolution bandwidth : 120 kHz / 1 MHz
- Frequency range : 30 MHz ~ 26.5 GHz
- Test Result : Pass

| Frequency (MHz)                     | Spectrum Reading (dBm) | Cable Loss (dB) | Total (dBm) |
|-------------------------------------|------------------------|-----------------|-------------|
| <b>Test result for Low Channel</b>  |                        |                 |             |
| 960.00                              | -89.06                 | 0.22            | -88.84      |
| 3 800.00                            | -62.67                 | 0.69            | -61.98      |
| <b>Test result for High Channel</b> |                        |                 |             |
| 960.00                              | -88.97                 | 0.22            | -88.75      |
| 3 800.00                            | -63.00                 | 0.69            | -62.31      |

---

Tested by: Hong-Kyu, Lee/ Engineer





#### 10.11.4 Test data for Antenna 1 - Radiated

##### 10.11.4.1 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

##### 10.11.4.2 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
  - Resolution bandwidth : 120 kHz
  - Frequency range : 30 MHz ~ 1 000 MHz
  - Measurement distance : 3 m
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 52.30                   | H                  | 14.30                 | 1.70          | 33.10       | 35.20                           | 40.00                    | 4.80           |
| 97.90              | 56.10                   | H                  | 13.20                 | 2.10          | 33.10       | 38.30                           | 43.50                    | 5.20           |
| 165.80             | 52.10                   | H                  | 9.50                  | 2.70          | 33.00       | 31.30                           | 43.50                    | 12.20          |
| 480.08             | 43.20                   | H                  | 18.10                 | 4.60          | 33.10       | 32.80                           | 46.00                    | 13.20          |
| 666.32             | 41.60                   | V                  | 20.60                 | 5.40          | 33.30       | 34.30                           | 46.00                    | 11.70          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 52.60                   | H                  | 14.30                 | 1.70          | 33.10       | 35.50                           | 40.00                    | 4.50           |
| 97.90              | 56.20                   | H                  | 13.20                 | 2.10          | 33.10       | 38.40                           | 43.50                    | 5.10           |
| 165.80             | 52.20                   | H                  | 9.50                  | 2.70          | 33.00       | 31.40                           | 43.50                    | 12.10          |
| 480.08             | 43.80                   | H                  | 18.10                 | 4.60          | 33.10       | 33.40                           | 46.00                    | 12.60          |
| 666.32             | 41.10                   | V                  | 20.60                 | 5.40          | 33.30       | 33.80                           | 46.00                    | 12.20          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

**10.11.4.3 Test data for above 1 GHz**

- . Test Date : December 17, 2013
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 40 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

**Tested by: Hong-Kyu, Lee/ Engineer**

### 10.11.5 Test data for Multiple transmit - Radiated

#### 10.11.5.1 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

#### 10.11.5.2 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 52.90                   | H                  | 14.30                 | 1.70          | 33.10       | 35.80                           | 40.00                    | 4.20           |
| 97.90              | 56.80                   | H                  | 13.20                 | 2.10          | 33.10       | 39.00                           | 43.50                    | 4.50           |
| 165.80             | 51.80                   | H                  | 9.50                  | 2.70          | 33.00       | 31.00                           | 43.50                    | 12.50          |
| 480.08             | 43.60                   | H                  | 18.10                 | 4.60          | 33.10       | 33.20                           | 46.00                    | 12.80          |
| 666.32             | 41.20                   | V                  | 20.60                 | 5.40          | 33.30       | 33.90                           | 46.00                    | 12.10          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 58.13              | 51.10                   | H                  | 14.30                 | 1.70          | 33.10       | 34.00                           | 40.00                    | 6.00           |
| 97.90              | 55.20                   | H                  | 13.20                 | 2.10          | 33.10       | 37.40                           | 43.50                    | 6.10           |
| 165.80             | 50.90                   | H                  | 9.50                  | 2.70          | 33.00       | 30.10                           | 43.50                    | 13.40          |
| 480.08             | 42.30                   | H                  | 18.10                 | 4.60          | 33.10       | 31.90                           | 46.00                    | 14.10          |
| 666.32             | 39.70                   | V                  | 20.60                 | 5.40          | 33.30       | 32.40                           | 46.00                    | 13.60          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

**10.11.5.3 Test data for above 1 GHz**

- . Test Date : December 17, 2013
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 40 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

**Tested by: Hong-Kyu, Lee/ Engineer**

## 11. PEAK POWER SPECTRUL DENSITY

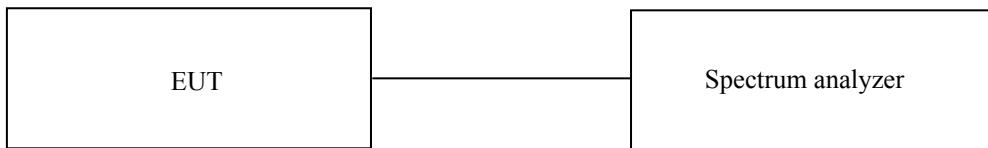
### 11.1 Operating environment

Temperature : 24 °C

Relative humidity : 44 % R.H.

### 11.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 3 kHz, the video bandwidth is set to 3 times the resolution bandwidth.



### 11.3 Test equipment used

| Model Number | Manufacturer | Description       | Serial Number | Last Cal.    |
|--------------|--------------|-------------------|---------------|--------------|
| ■ - FSV30    | R/S          | Spectrum Analyzer | 101372        | May 20, 2013 |

All test equipment used is calibrated on a regular basis.

## 11.4 Test data for 802.11b WLAN Mode

### 11.4.1 Test data for Antenna 0

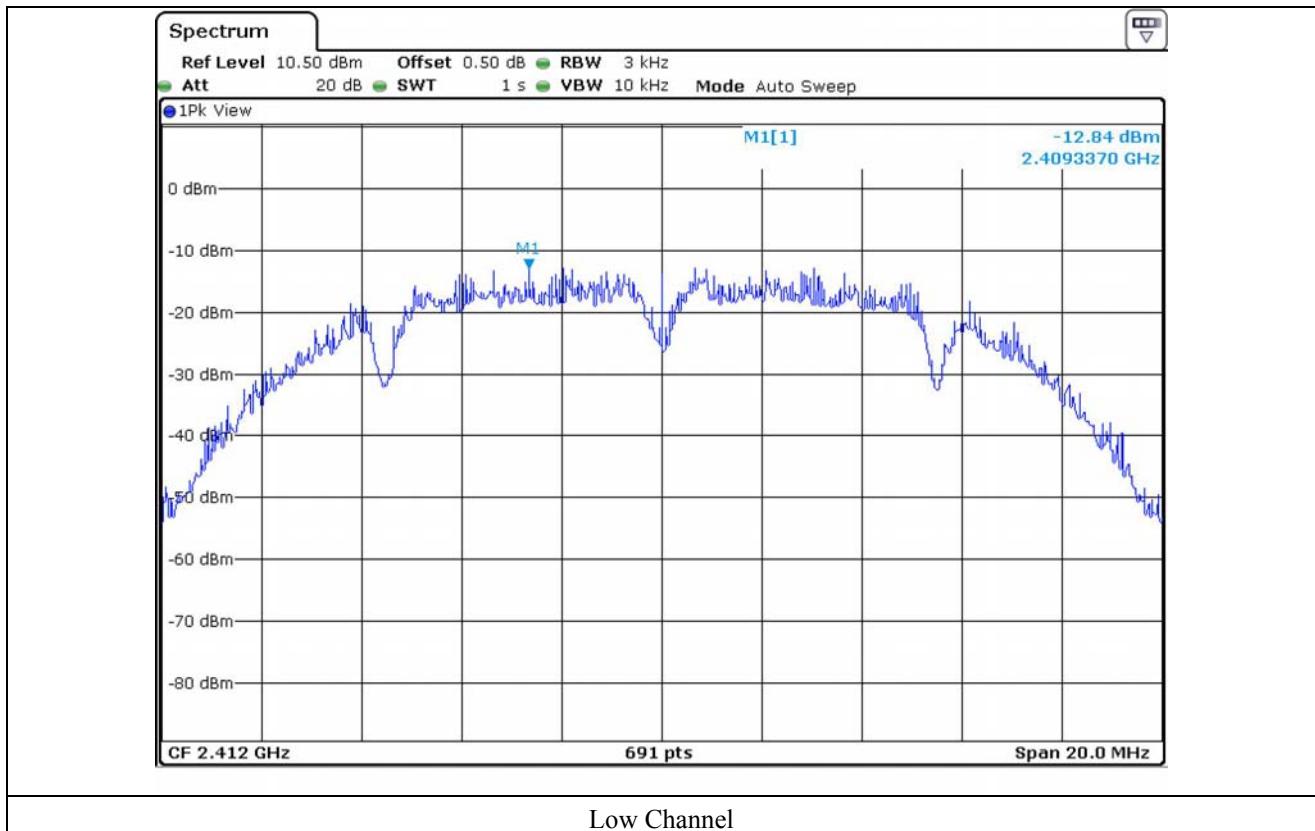
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

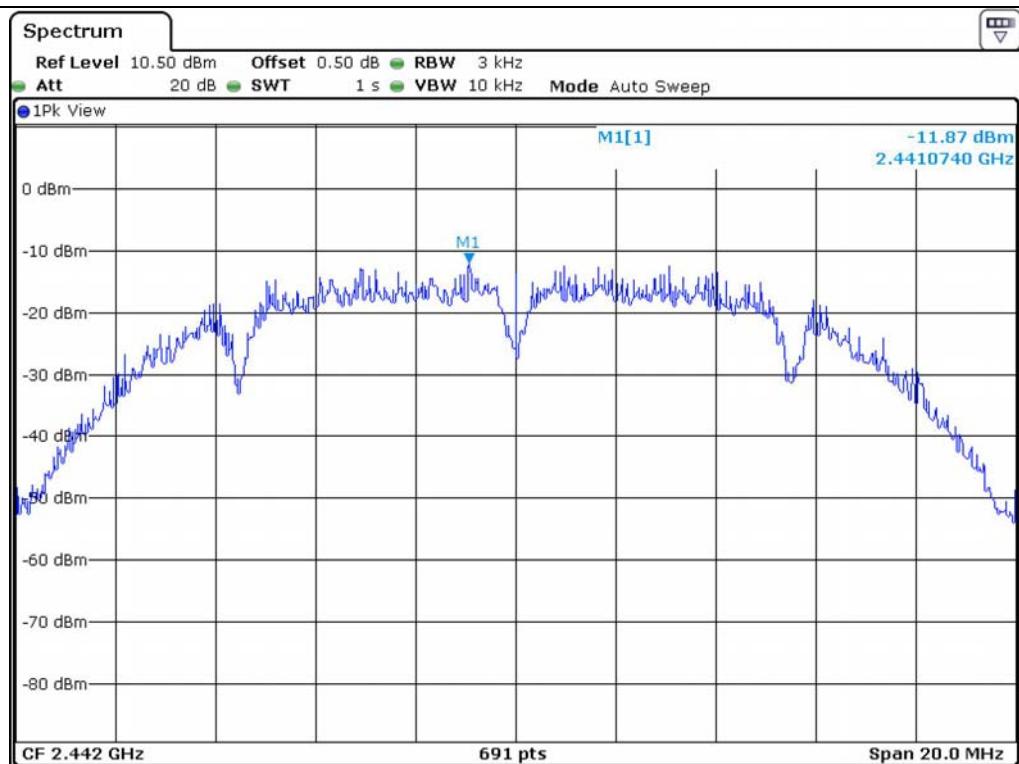
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 412          | -12.84               | 8.00        | 20.84       |
| Middle  | 2 442          | -11.87               | 8.00        | 19.87       |
| High    | 2 462          | -12.46               | 8.00        | 20.46       |

Remark. Margin = Limit – Measured value

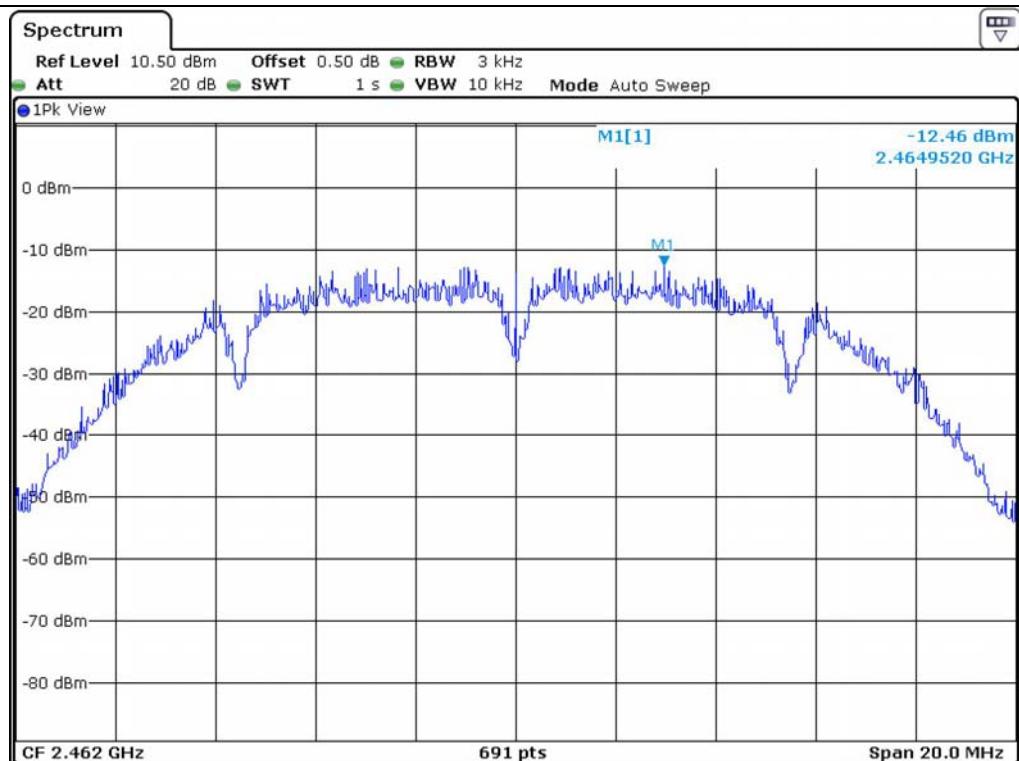
0 | 33 21.

Tested by: Hong-Kyu, Lee/ Engineer





## Middle Channel



## High Channel

### 11.4.2 Test data for Antenna 1

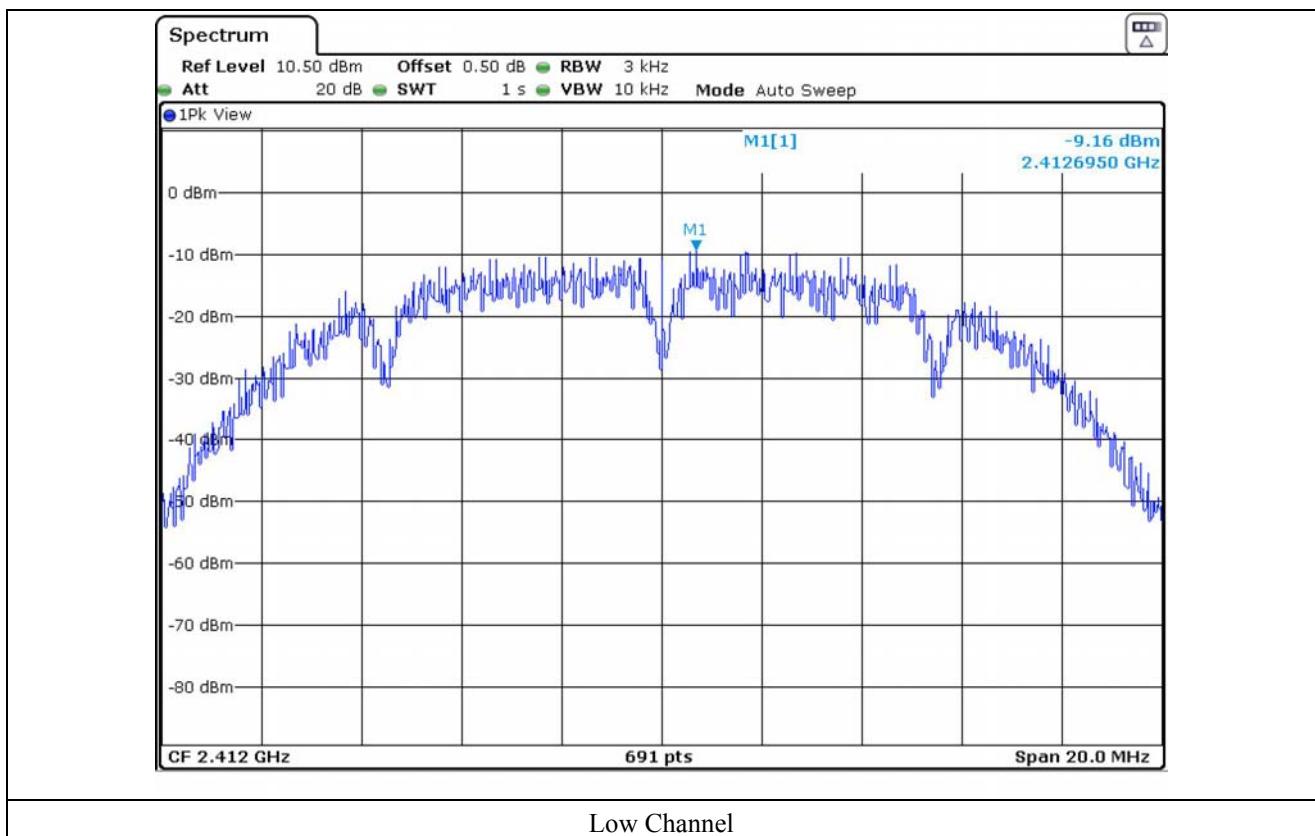
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

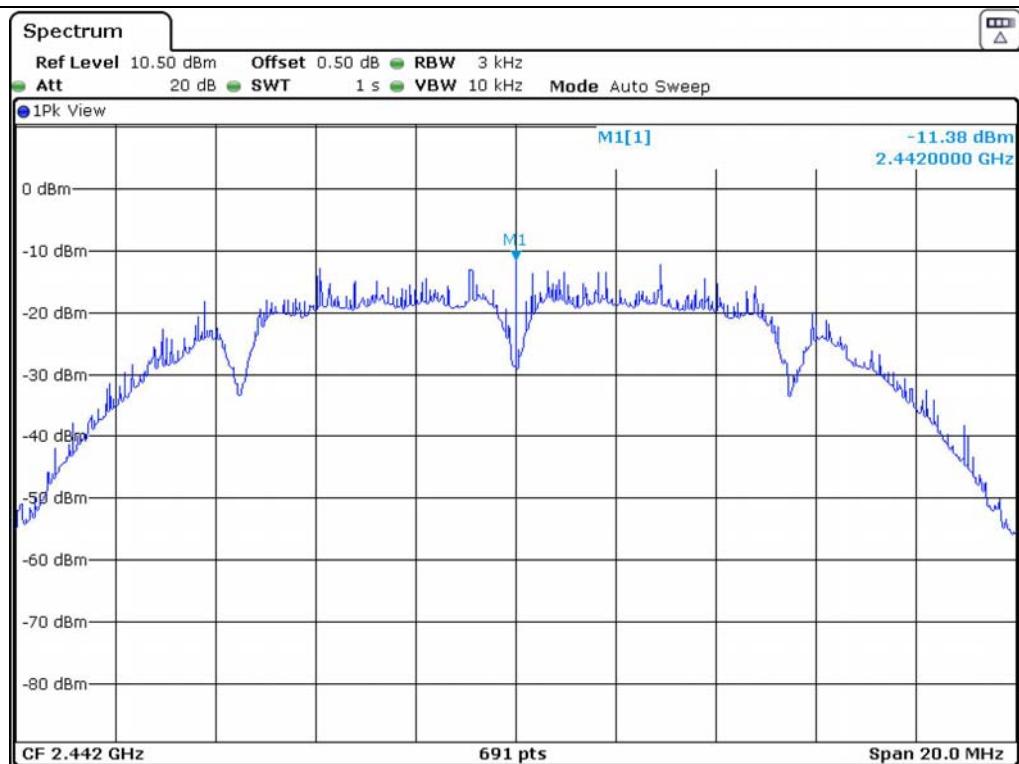
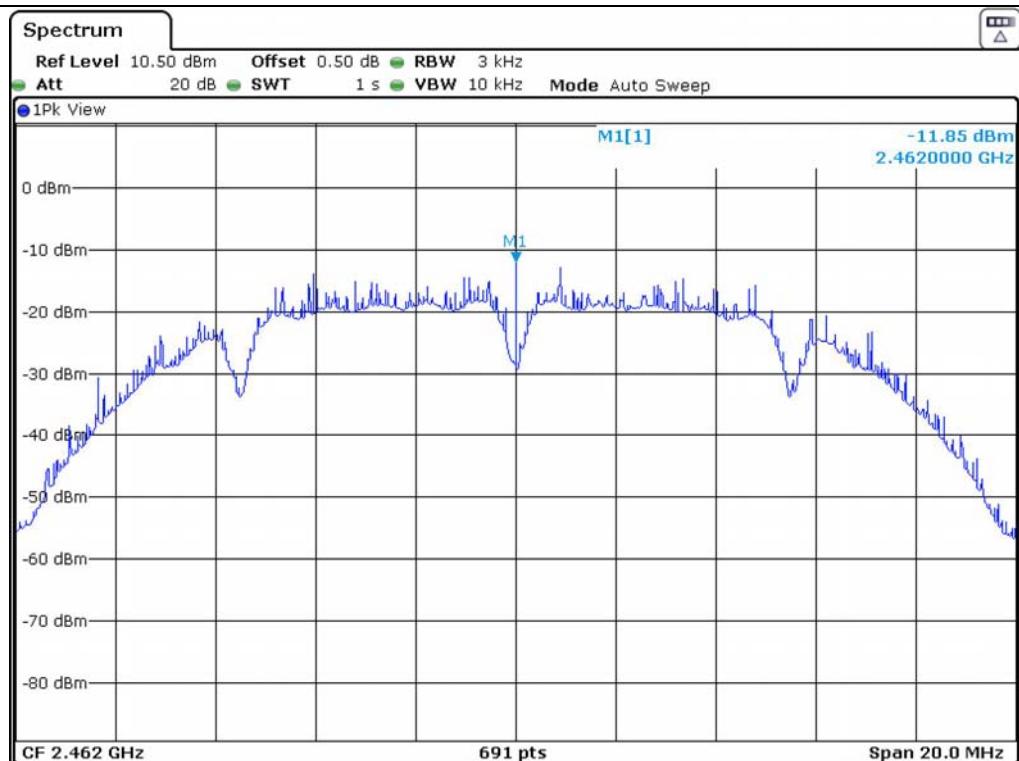
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 412          | -9.16                | 8.00        | 17.16       |
| Middle  | 2 442          | -11.38               | 8.00        | 19.38       |
| High    | 2 462          | -11.85               | 8.00        | 19.85       |

Remark. Margin = Limit – Measured value

o | 30%

Tested by: Hong-Kyu, Lee/ Engineer



**Middle Channel****High Channel**

## 11.5 Test data for 802.11g WLAN Mode

### 11.5.1 Test data for Antenna 0

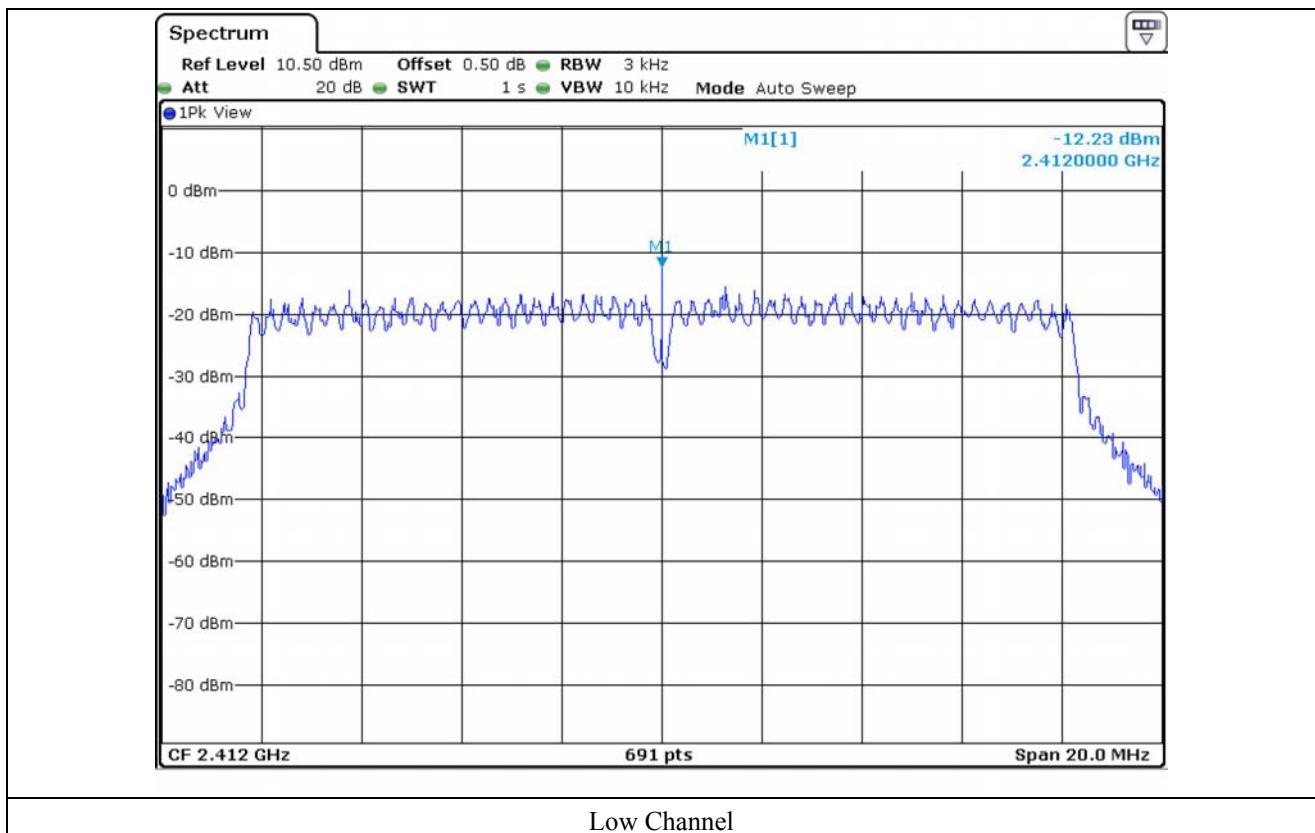
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

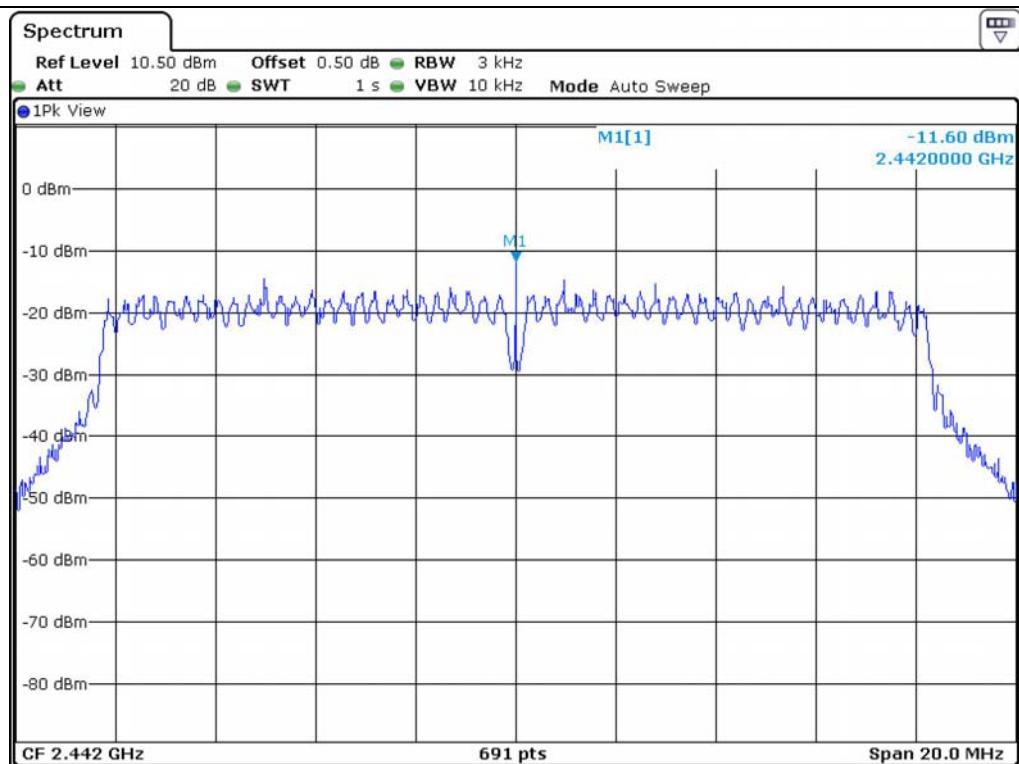
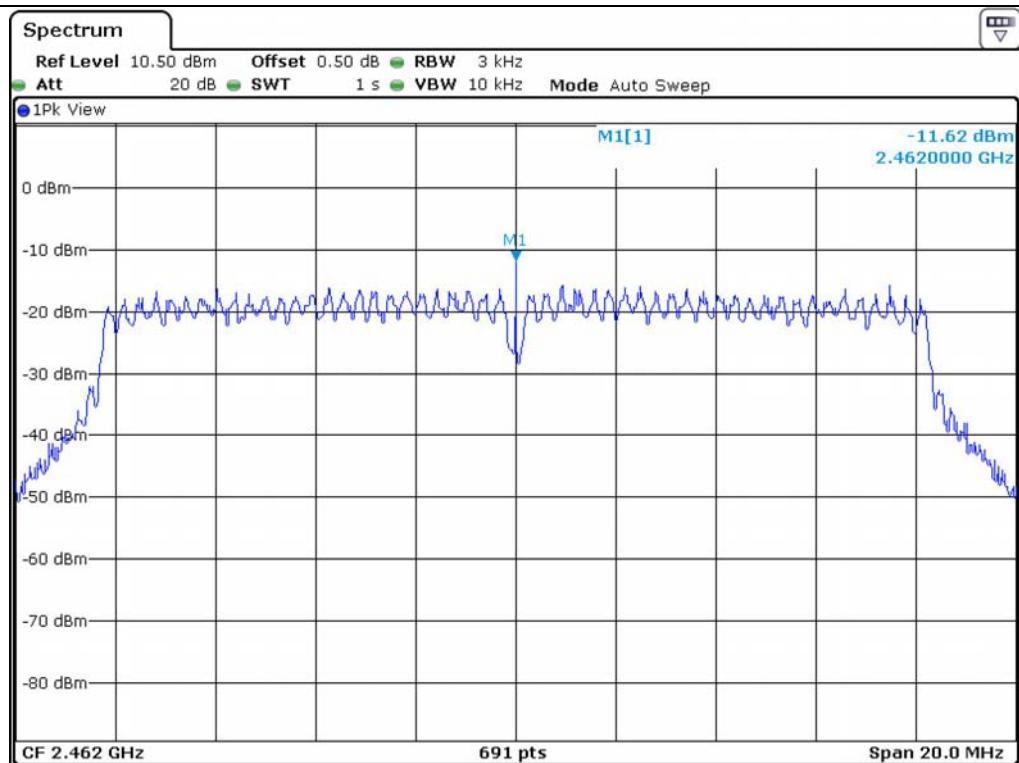
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 412          | -12.23               | 8.00        | 20.23       |
| Middle  | 2 442          | -11.60               | 8.00        | 19.60       |
| High    | 2 462          | -11.62               | 8.00        | 19.62       |

Remark. Margin = Limit – Measured value

0 | 33 21.

Tested by: Hong-Kyu, Lee/ Engineer



**Middle Channel****High Channel**

### 11.5.2 Test data for Antenna 1

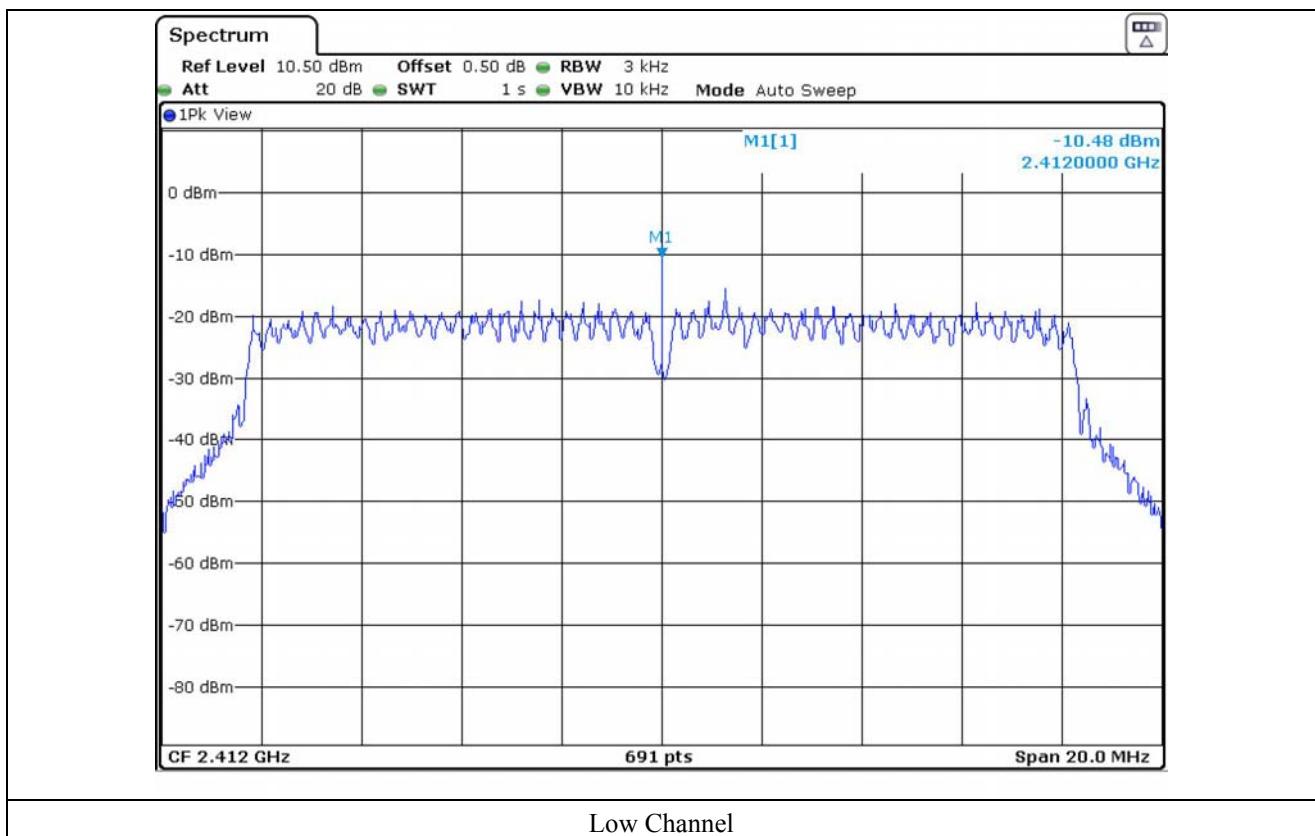
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

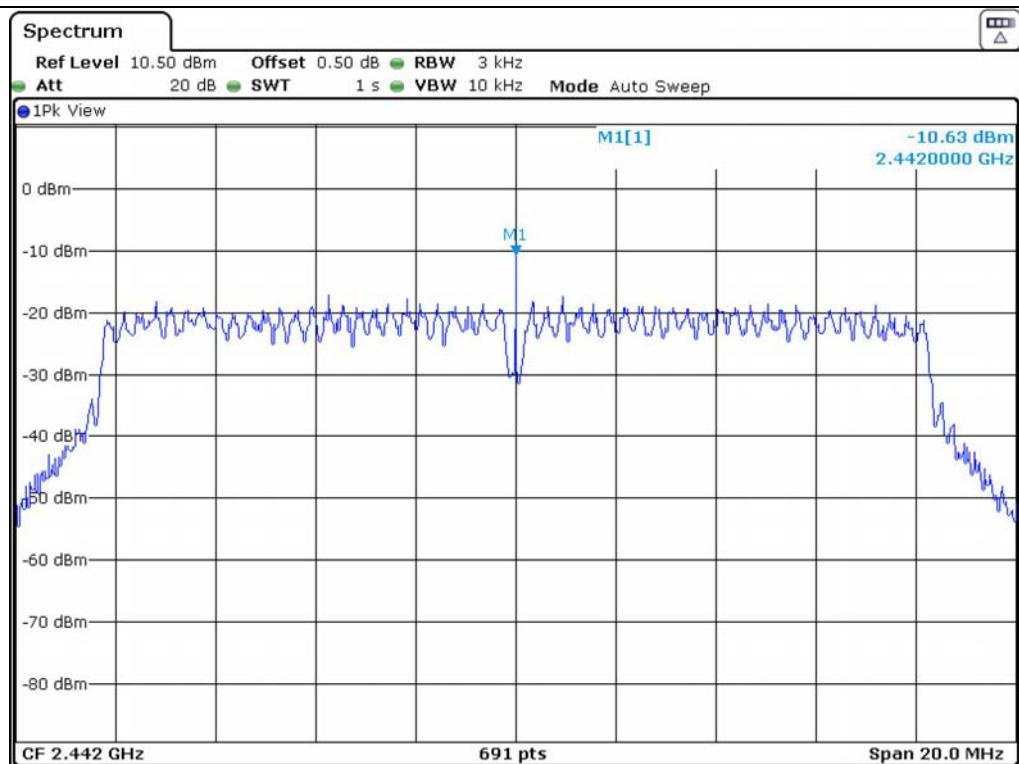
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 412          | -10.48               | 8.00        | 18.48       |
| Middle  | 2 442          | -10.63               | 8.00        | 18.63       |
| High    | 2 462          | -10.90               | 8.00        | 18.90       |

Remark. Margin = Limit – Measured value

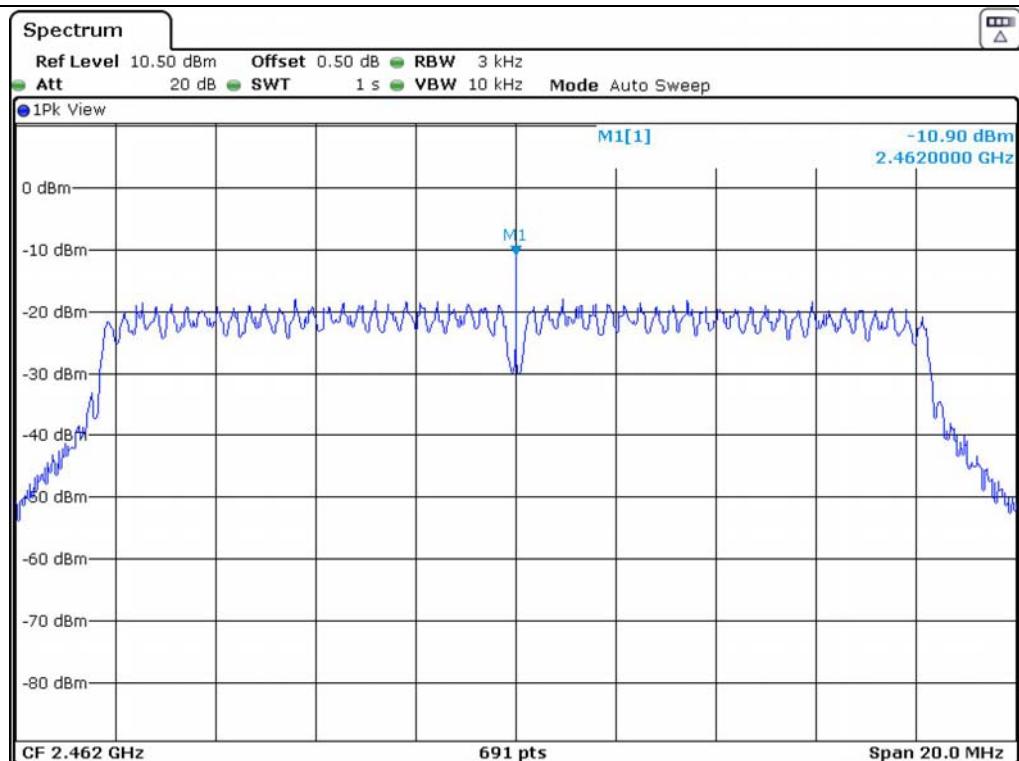
o | 30%

Tested by: Hong-Kyu, Lee/ Engineer





## Middle Channel



## High Channel

## 11.6 Test data for 802.11n\_HT20 WLAN Mode

### 11.6.1 Test data for Antenna 0

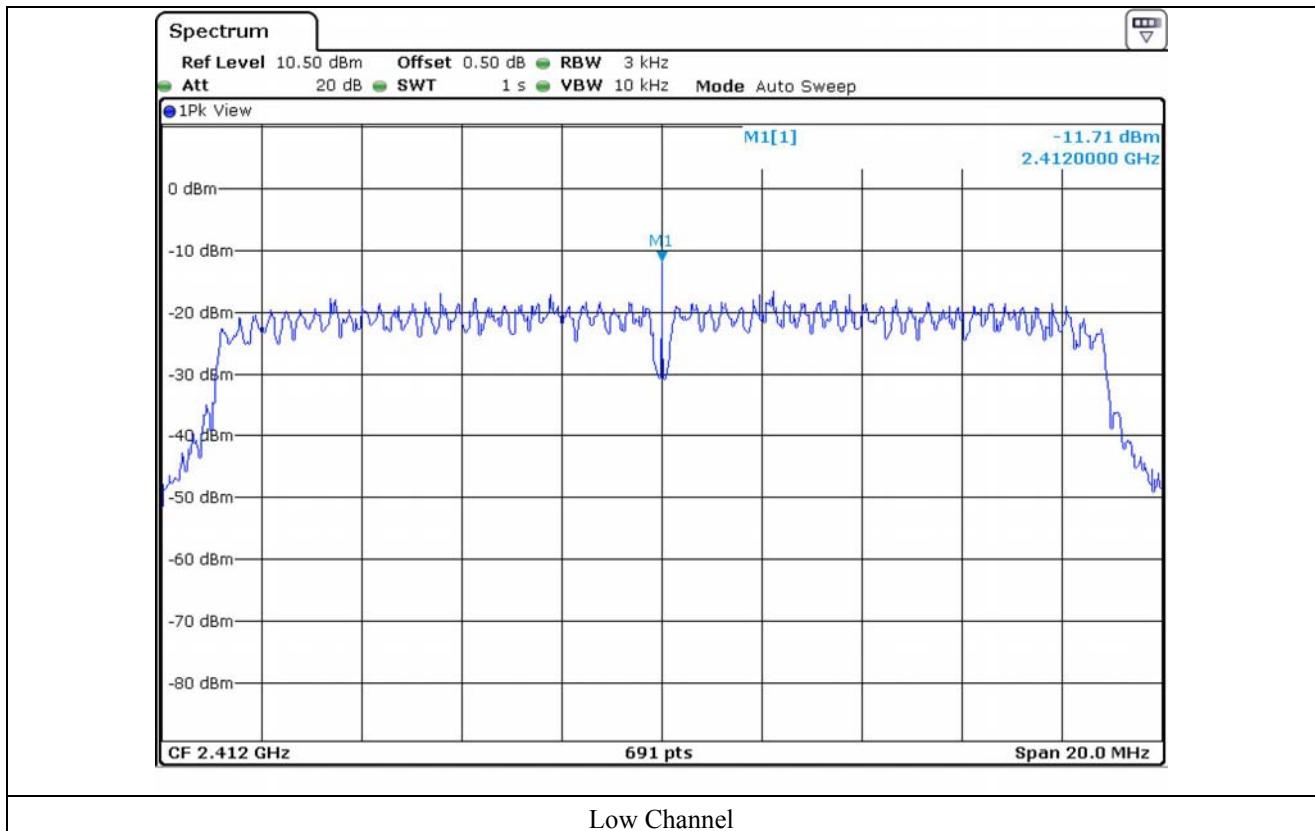
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

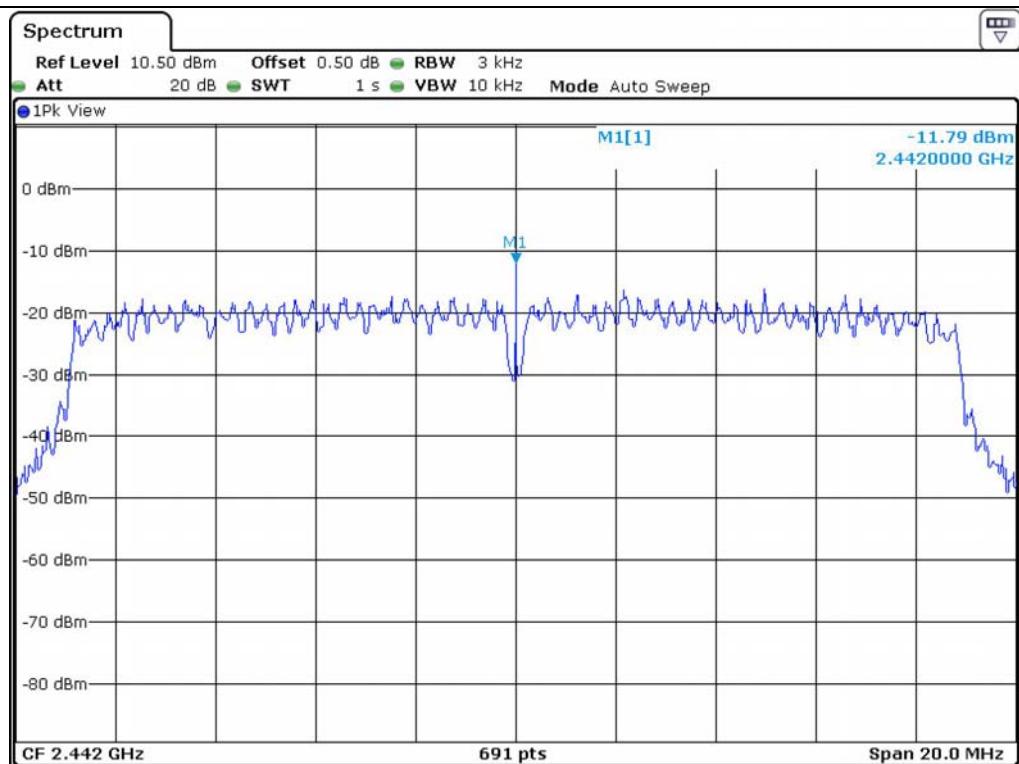
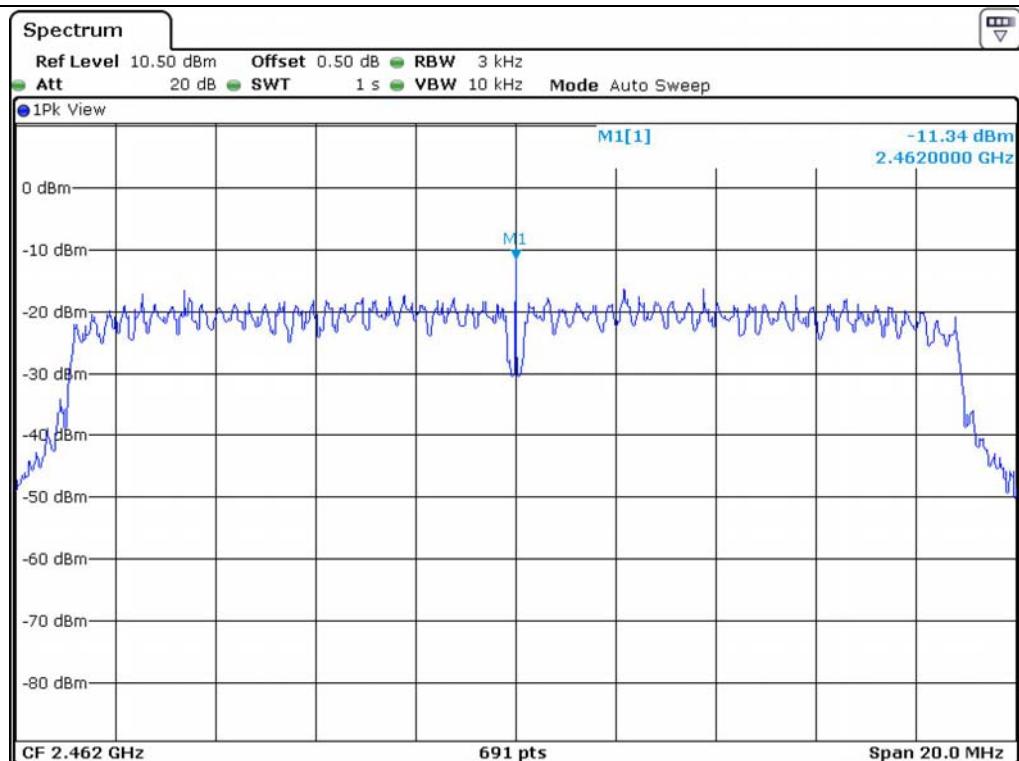
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 412          | -11.71               | 8.00        | 19.71       |
| Middle  | 2 442          | -11.79               | 8.00        | 19.79       |
| High    | 2 462          | -11.34               | 8.00        | 19.34       |

Remark. Margin = Limit – Measured value

0 | 33.21.

Tested by: Hong-Kyu, Lee/ Engineer



**Middle Channel****High Channel**

### 11.6.2 Test data for Antenna 1

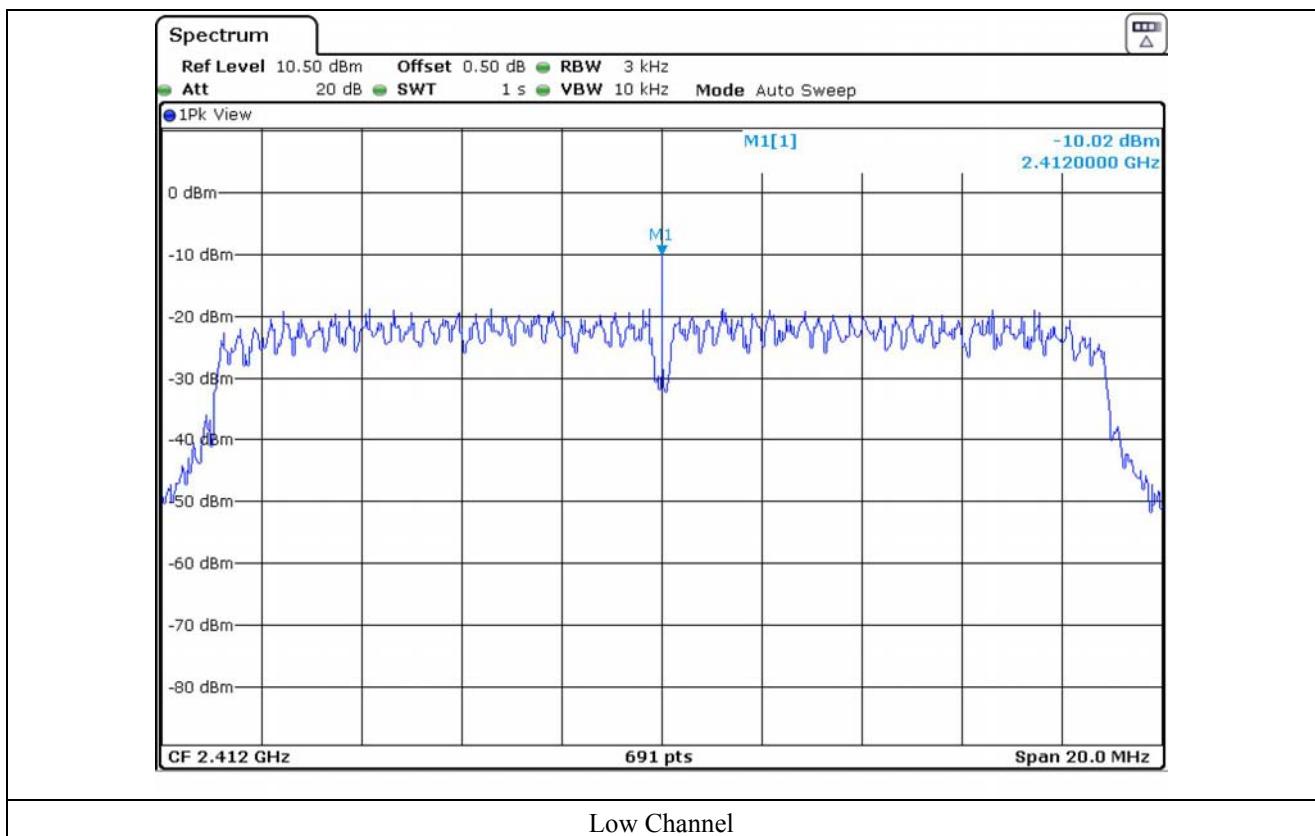
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

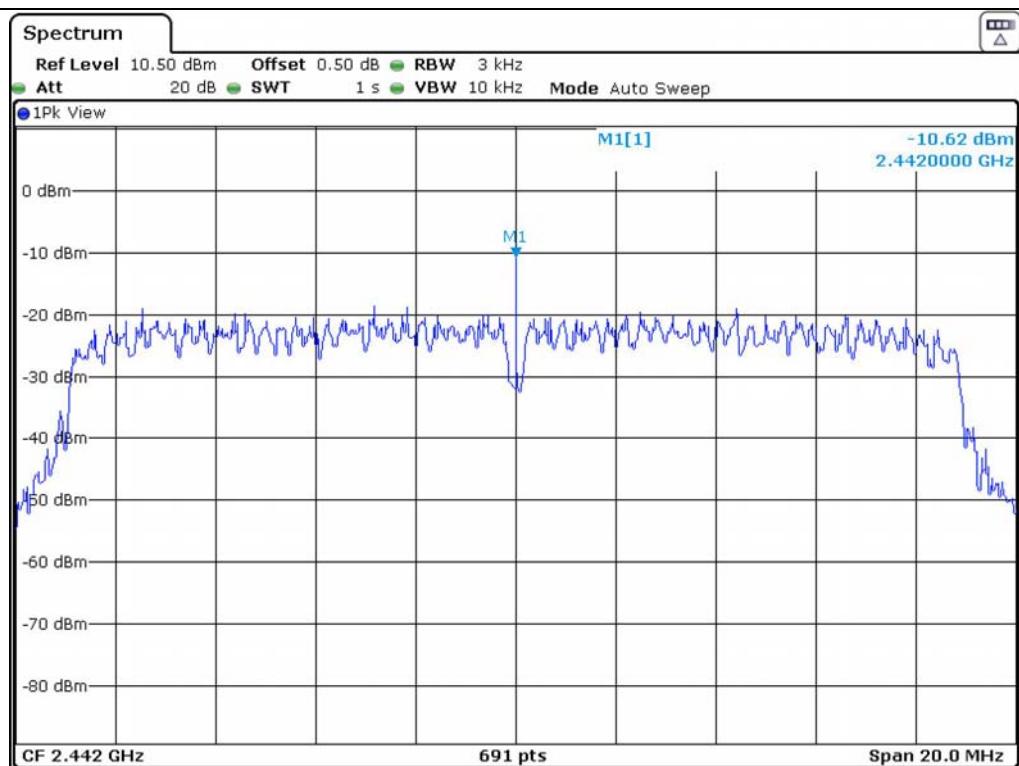
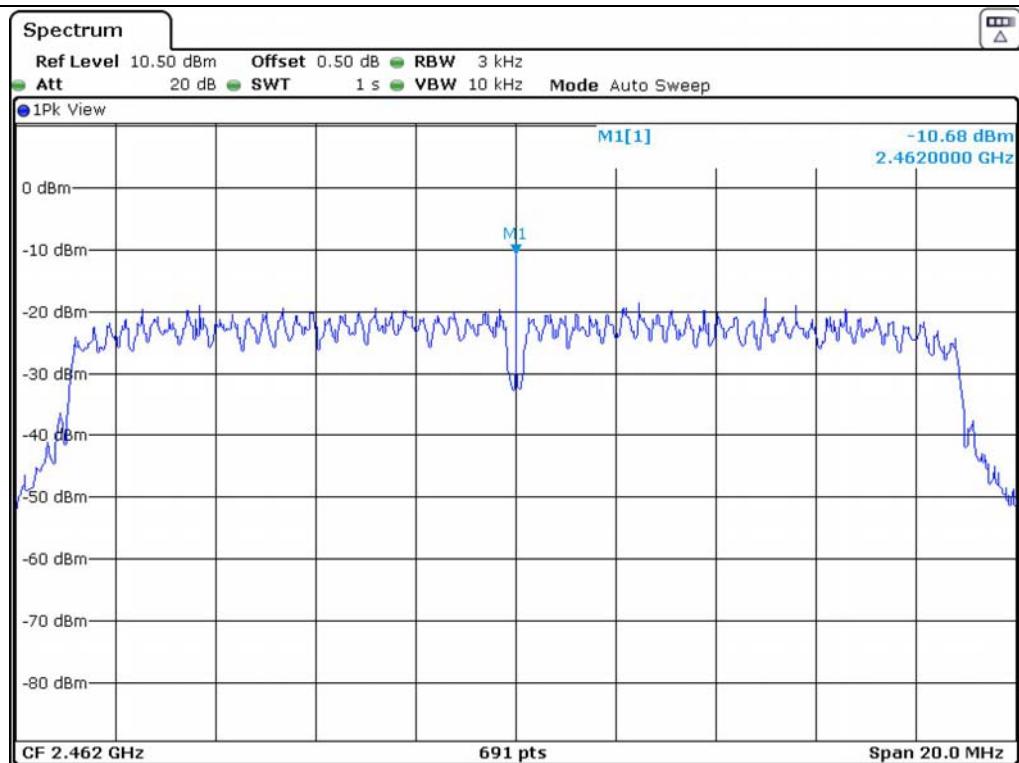
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 412          | -10.02               | 8.00        | 18.02       |
| Middle  | 2 442          | -10.62               | 8.00        | 18.62       |
| High    | 2 462          | -10.68               | 8.00        | 18.68       |

Remark. Margin = Limit – Measured value

o | 30%

Tested by: Hong-Kyu, Lee/ Engineer



**Middle Channel****High Channel**

**11.6.3 Test data for Multiple transmit**

- . Test Date : December 26, 2013
- . Test Result : Pass
- . Operating Condition : Continuous transmitting mode

| CHANNEL | FREQUENCY(MHz) | CALCULATED POWER (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|------------------------|-------------|-------------|
| Low     | 2 412          | -7.77                  | 8.00        | 15.77       |
| Middle  | 2 442          | -8.16                  | 8.00        | 16.16       |
| High    | 2 462          | -7.99                  | 8.00        | 15.99       |

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density =  $10\log(10^{(\text{Antenna1 Power Density}/10)} + 10^{(\text{Antenna2 Power Density}/10)})$

o | 3321.

**Tested by: Hong-Kyu, Lee/ Engineer**

## 11.7 Test data for 802.11n\_HT40 WLAN Mode

### 11.7.1 Test data for Antenna 0

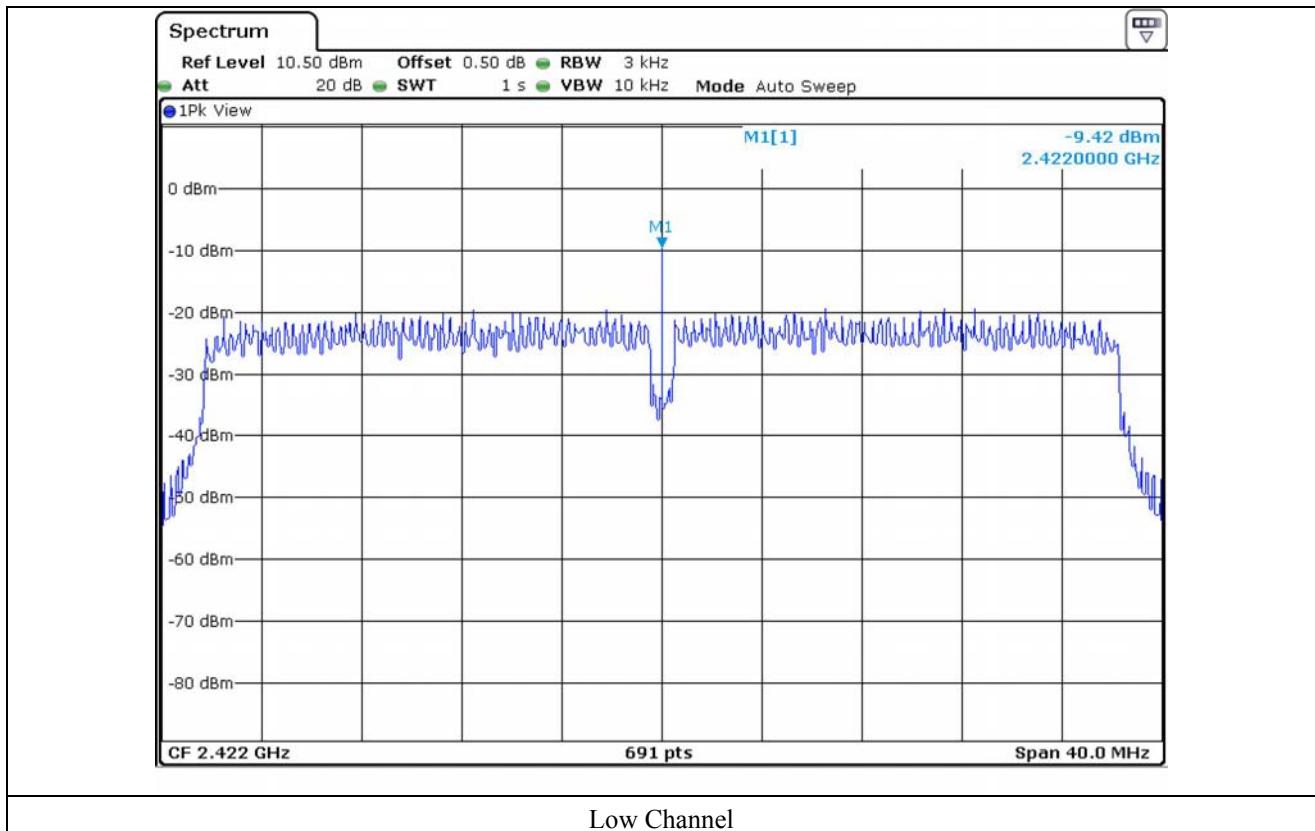
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

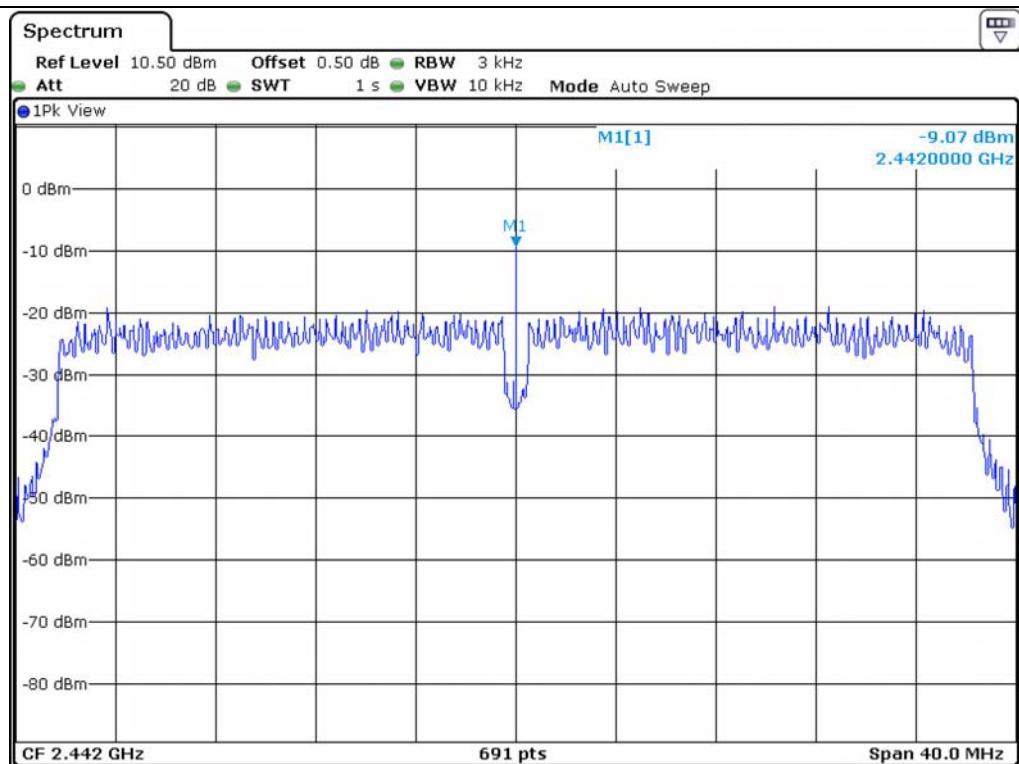
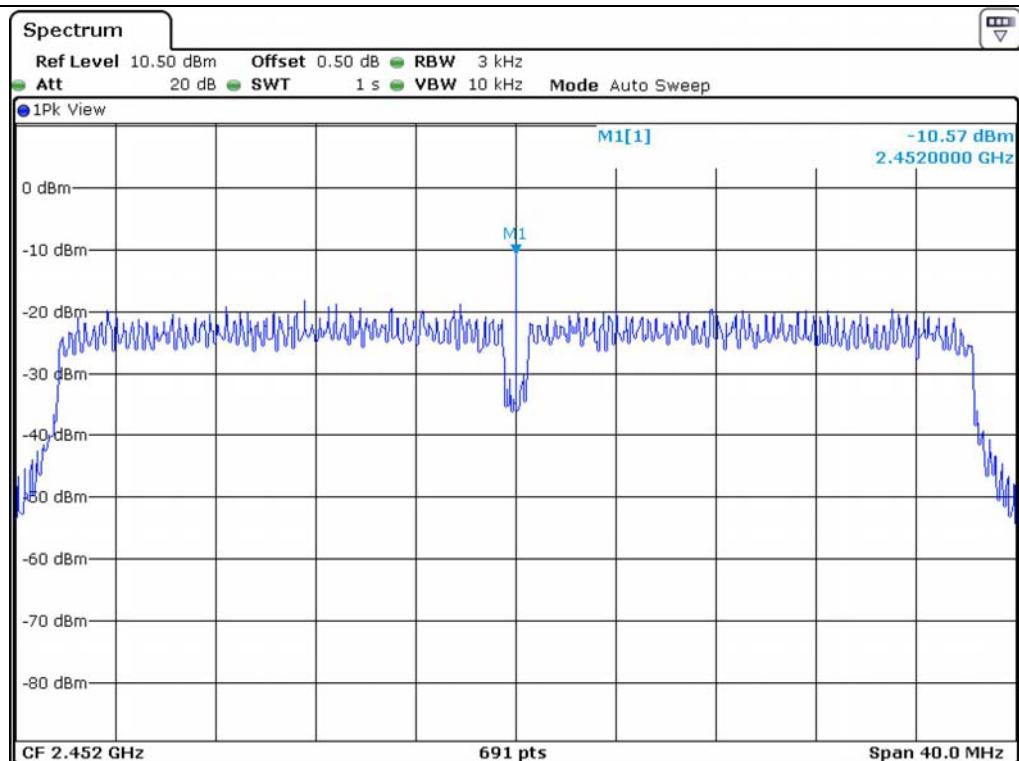
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 422          | -9.42                | 8.00        | 17.42       |
| Middle  | 2 442          | -9.07                | 8.00        | 17.07       |
| High    | 2 452          | -10.57               | 8.00        | 18.57       |

Remark. Margin = Limit – Measured value

0 | 33 21.

Tested by: Hong-Kyu, Lee/ Engineer



**Middle Channel****High Channel**

### 11.7.2 Test data for Antenna 1

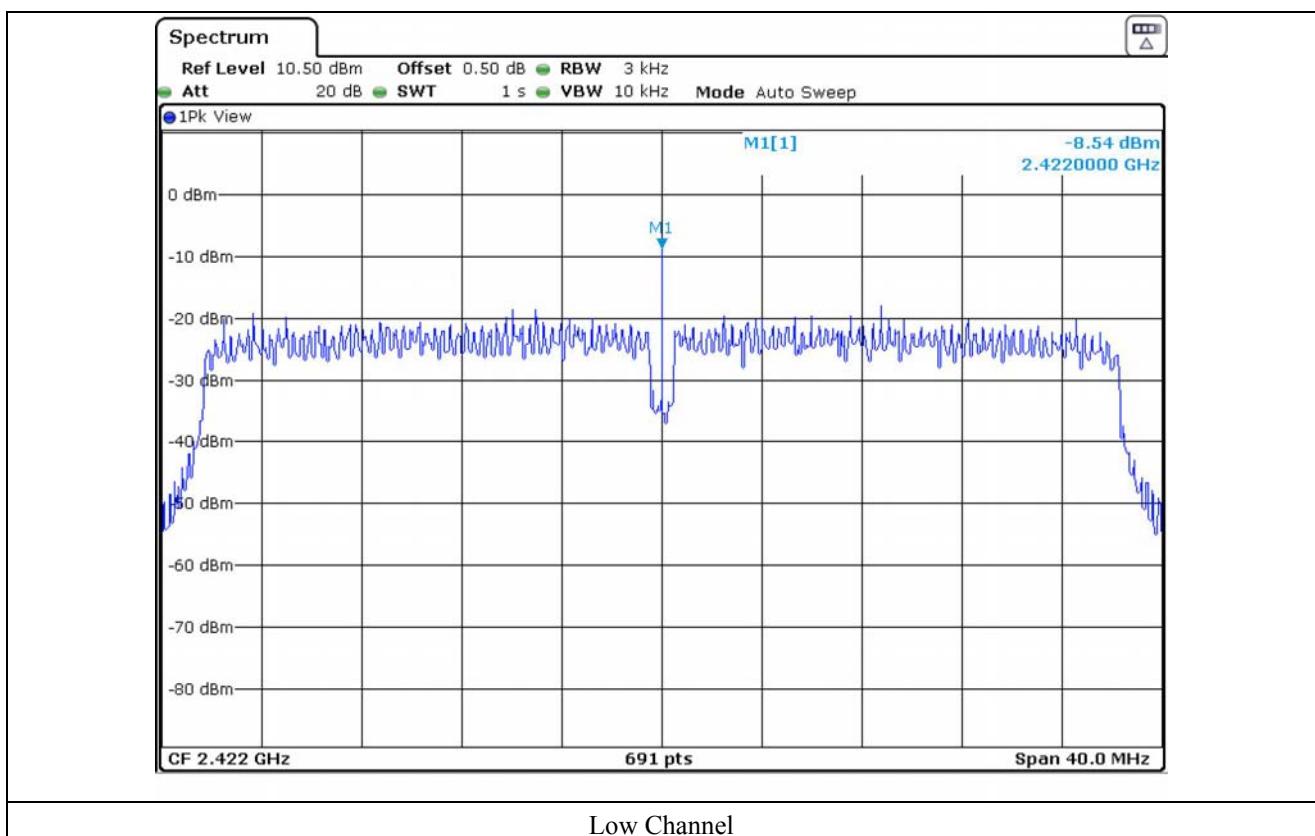
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

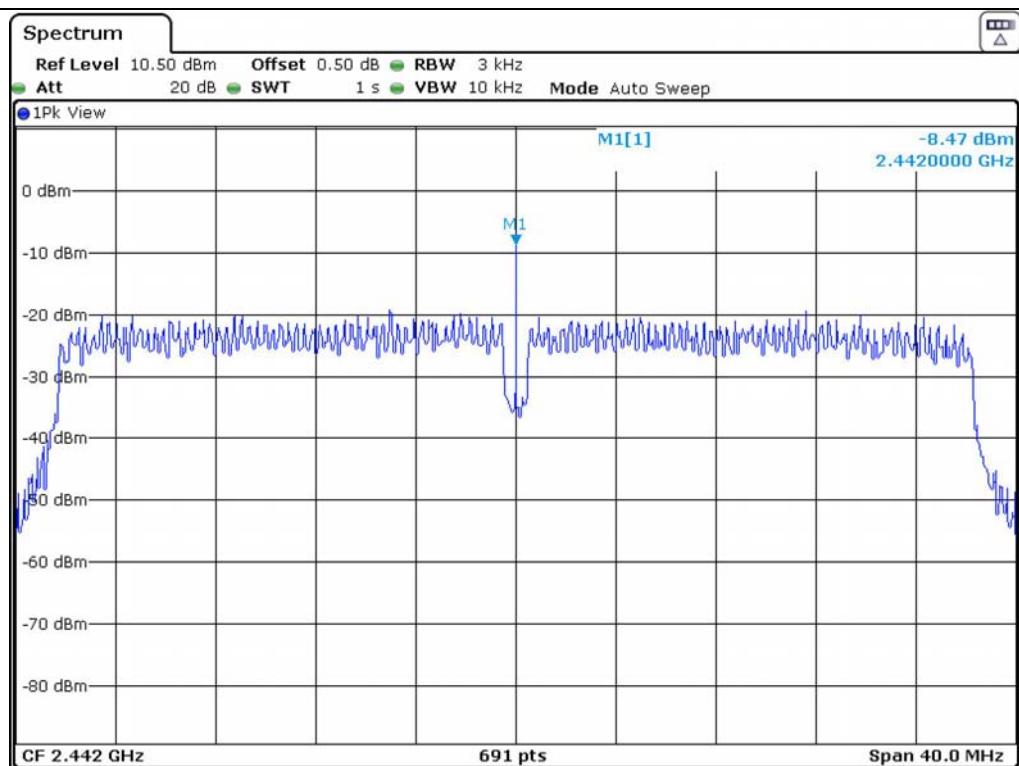
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 2 422          | -8.54                | 8.00        | 16.54       |
| Middle  | 2 442          | -8.47                | 8.00        | 16.47       |
| High    | 2 452          | -8.01                | 8.00        | 16.01       |

Remark. Margin = Limit – Measured value

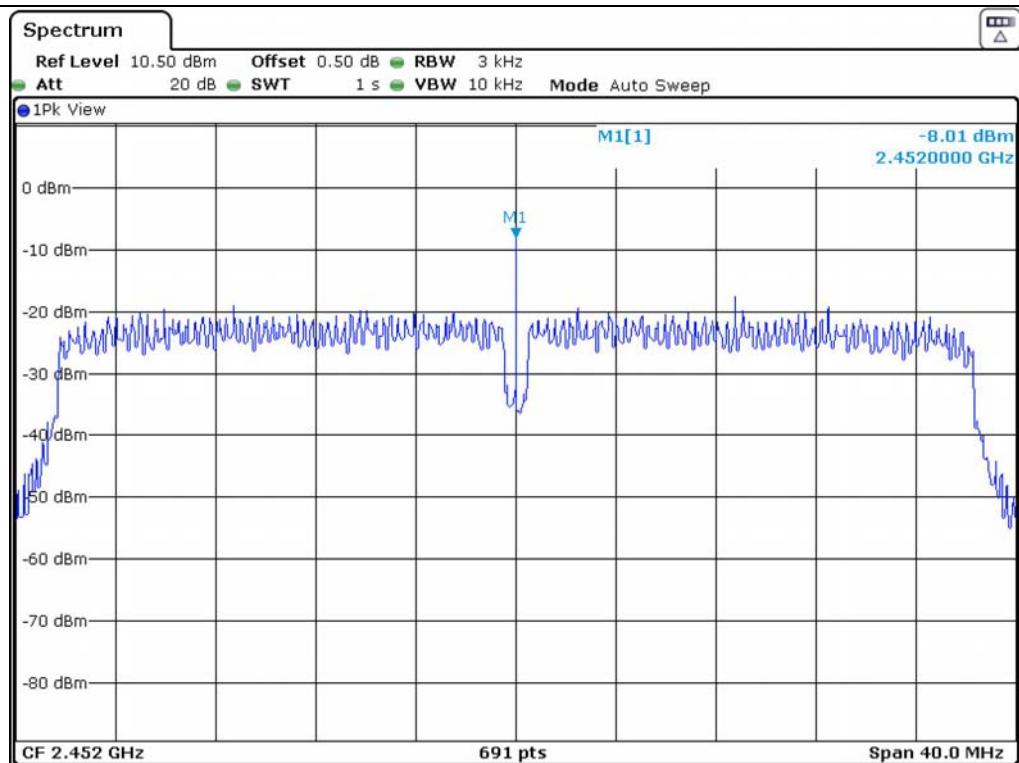
0 | 30 21.

Tested by: Hong-Kyu, Lee/ Engineer





## Middle Channel



## High Channel

**11.7.3 Test data for Multiple transmit**

- . Test Date : December 26, 2013
- . Test Result : Pass
- . Operating Condition : Continuous transmitting mode

| CHANNEL | FREQUENCY(MHz) | CALCULATED POWER (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|------------------------|-------------|-------------|
| Low     | 2 422          | -5.95                  | 8.00        | 13.95       |
| Middle  | 2 442          | -5.75                  | 8.00        | 13.75       |
| High    | 2 452          | -6.09                  | 8.00        | 14.09       |

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density =  $10\log(10^{(\text{Antenna1 Power Density}/10)} + 10^{(\text{Antenna2 Power Density}/10)})$

0 | 30.3.

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Tested by: Hong-Kyu, Lee/ Engineer

## 11.8 Test data for 802.11a RLAN Mode

### 11.8.1 Test data for Antenna 0

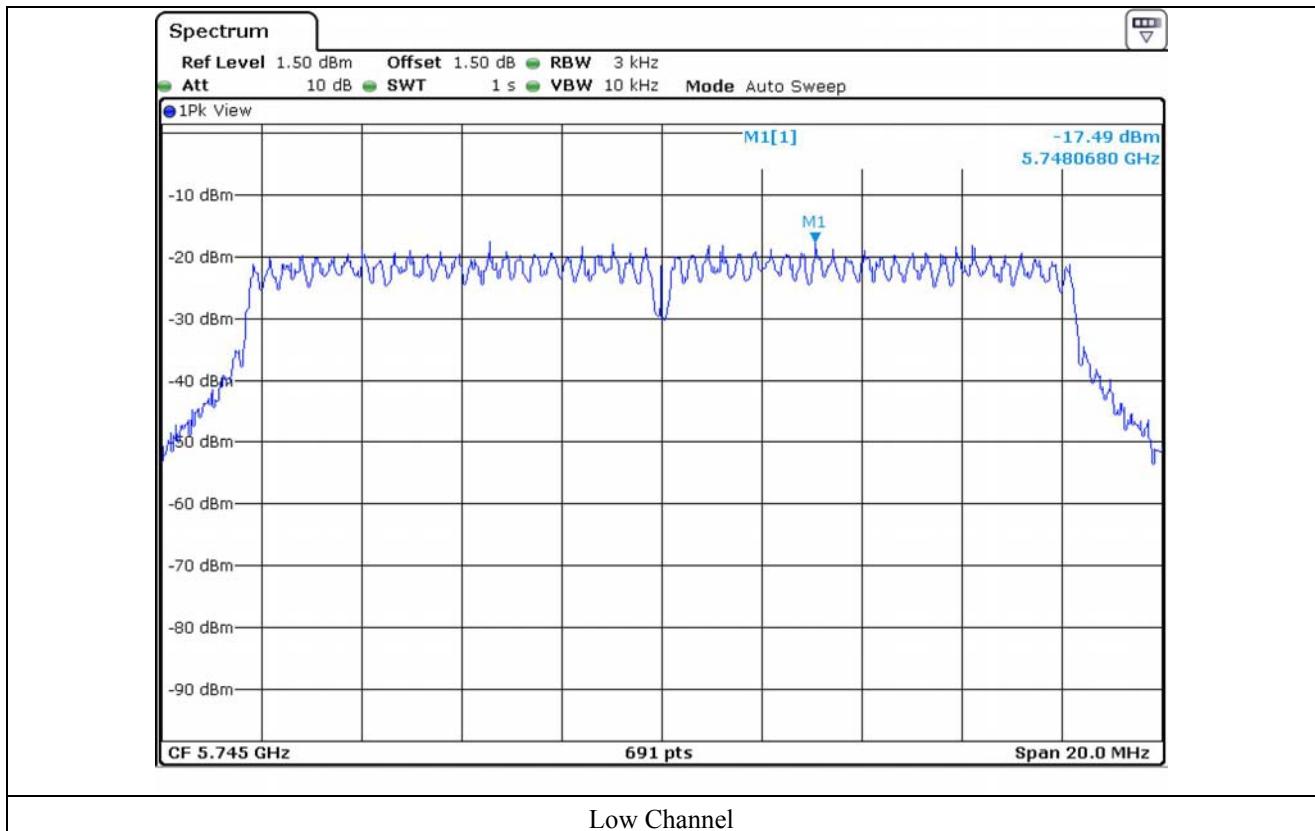
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

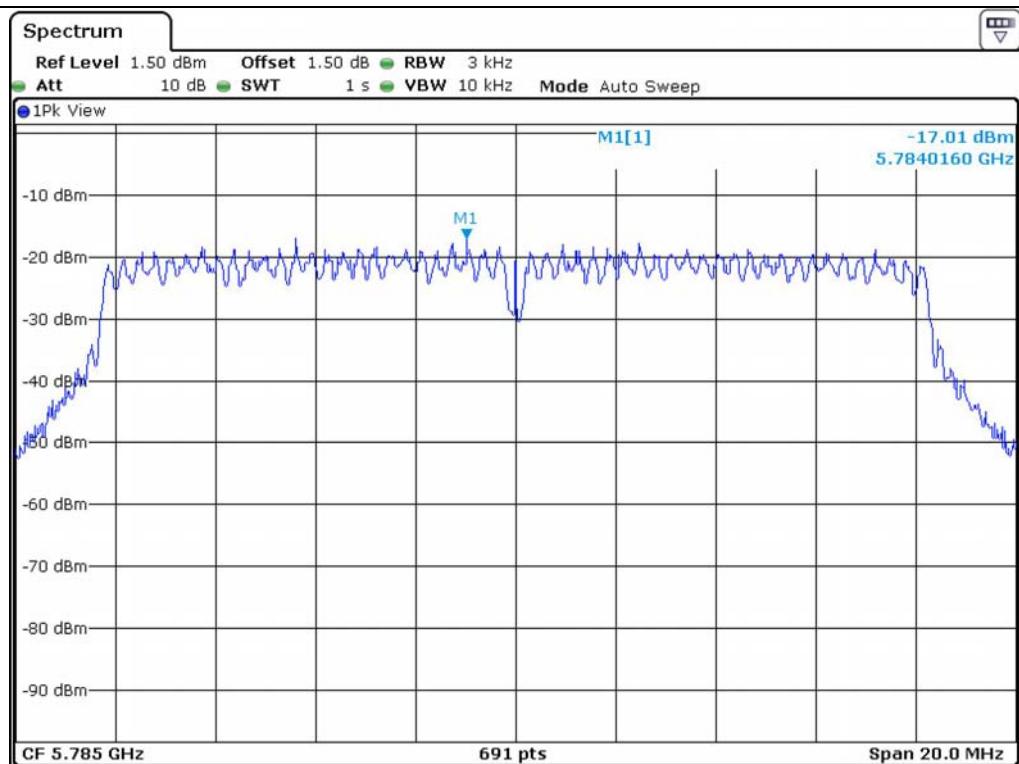
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 5 745          | -17.49               | 8.00        | 25.49       |
| Middle  | 5 785          | -17.01               | 8.00        | 25.01       |
| High    | 5 825          | -17.06               | 8.00        | 25.06       |

Remark. Margin = Limit – Measured value

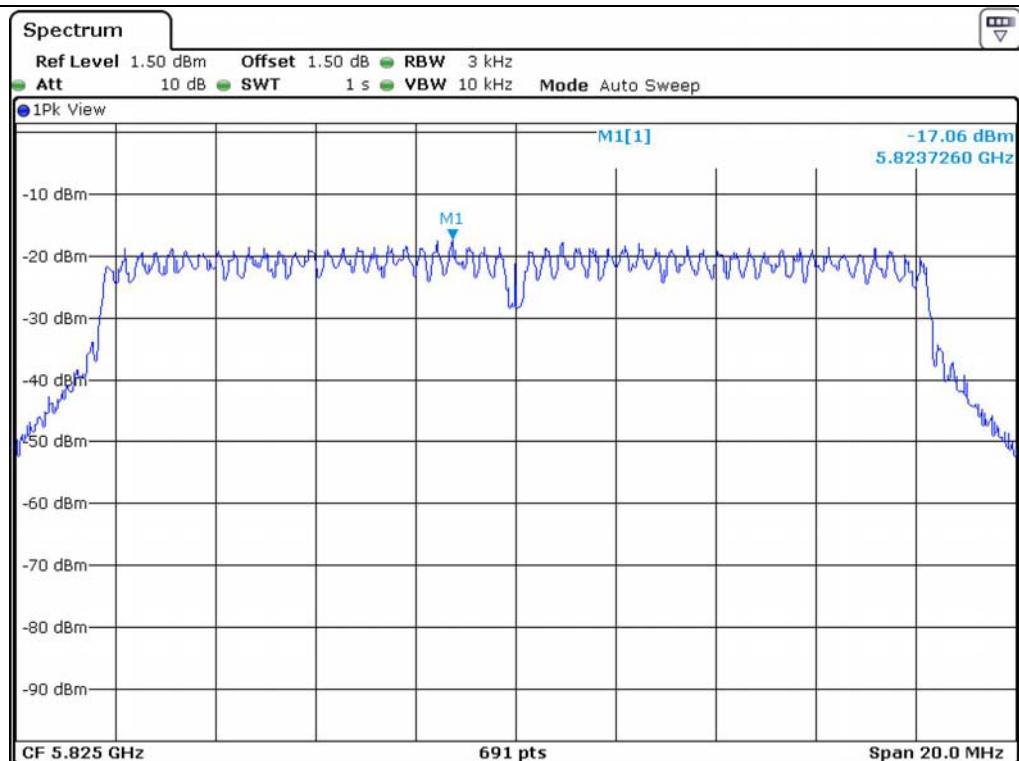
0 | 33.21.

Tested by: Hong-Kyu, Lee/ Engineer





## Middle Channel



## High Channel

### 11.8.2 Test data for Antenna 1

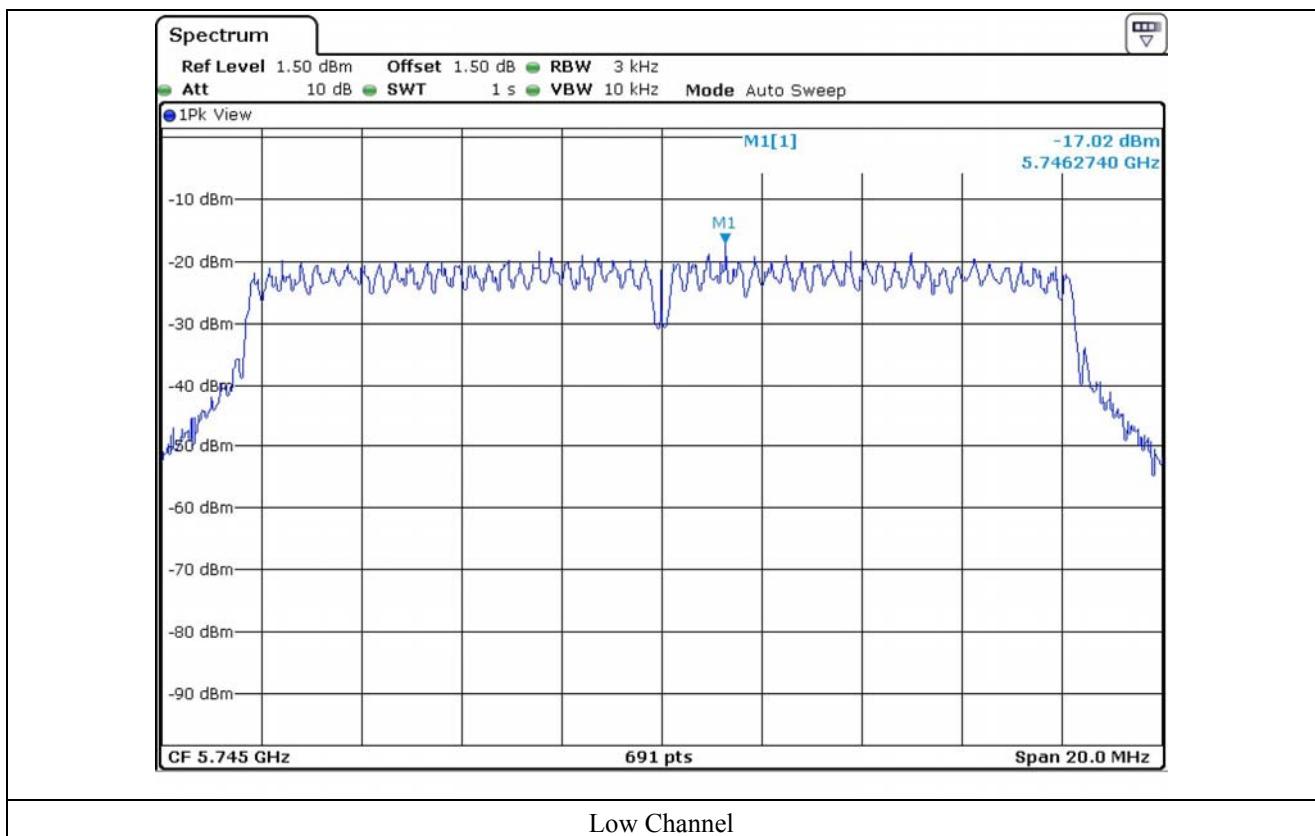
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

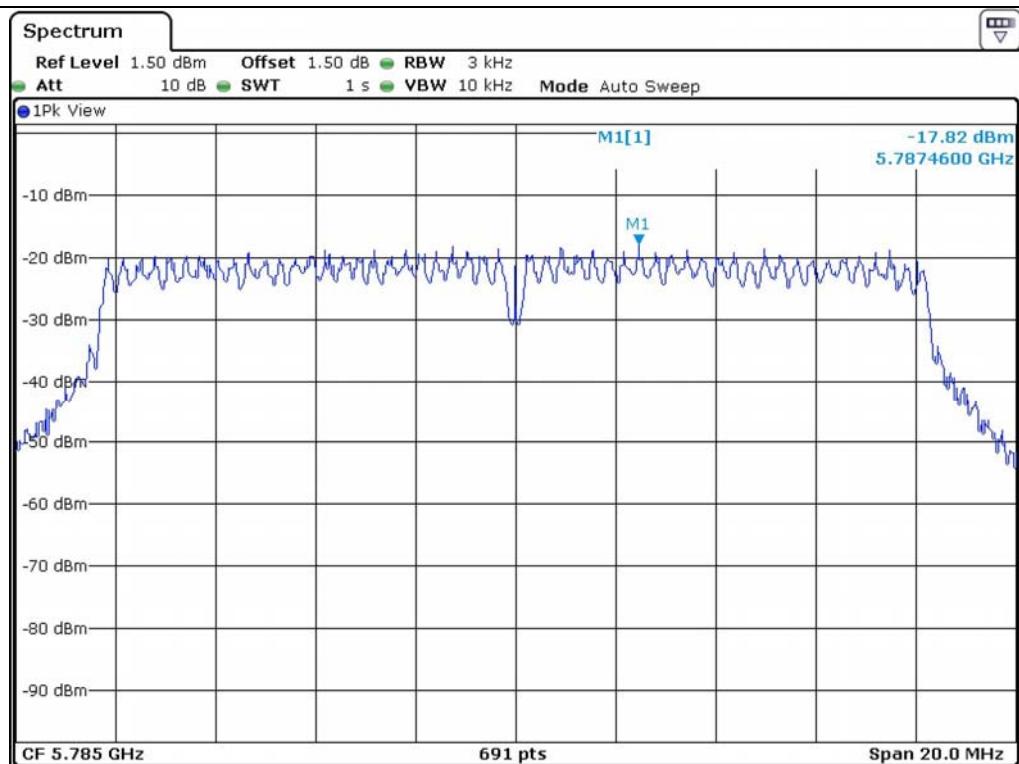
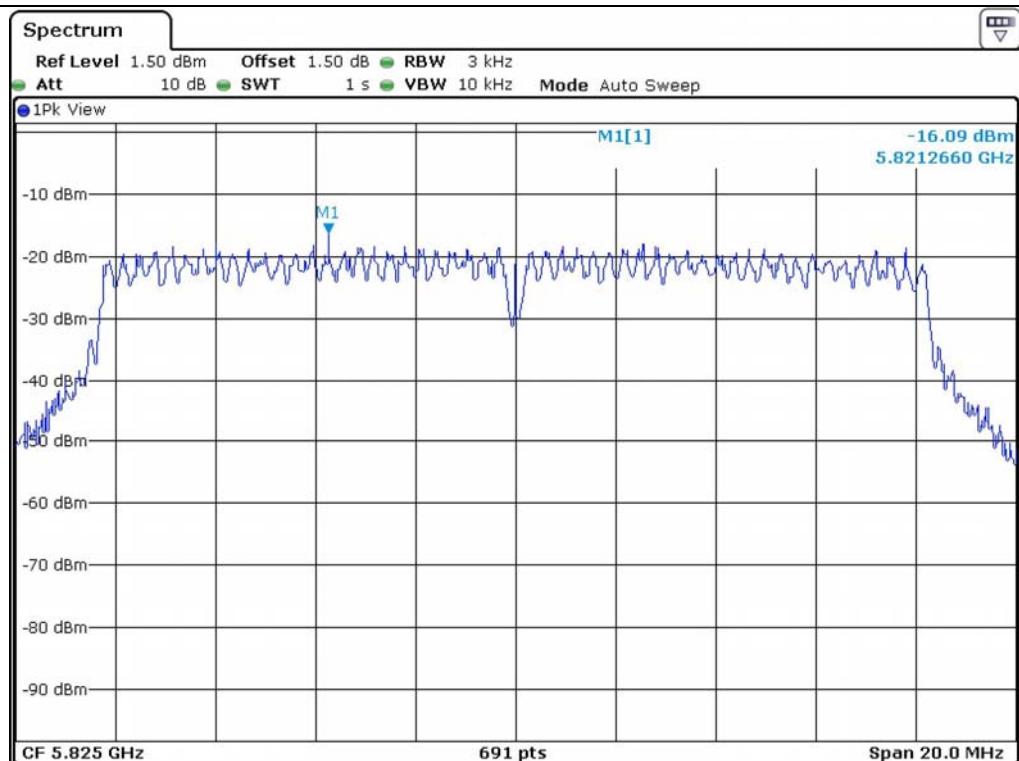
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 5 745          | -17.02               | 8.00        | 25.02       |
| Middle  | 5 785          | -17.82               | 8.00        | 25.82       |
| High    | 5 825          | -16.09               | 8.00        | 24.09       |

Remark. Margin = Limit – Measured value

o | 30%

Tested by: Hong-Kyu, Lee/ Engineer



**Middle Channel****High Channel**

## 11.9 Test data for 802.11n\_HT20 RLAN Mode

### 11.9.1 Test data for Antenna 0

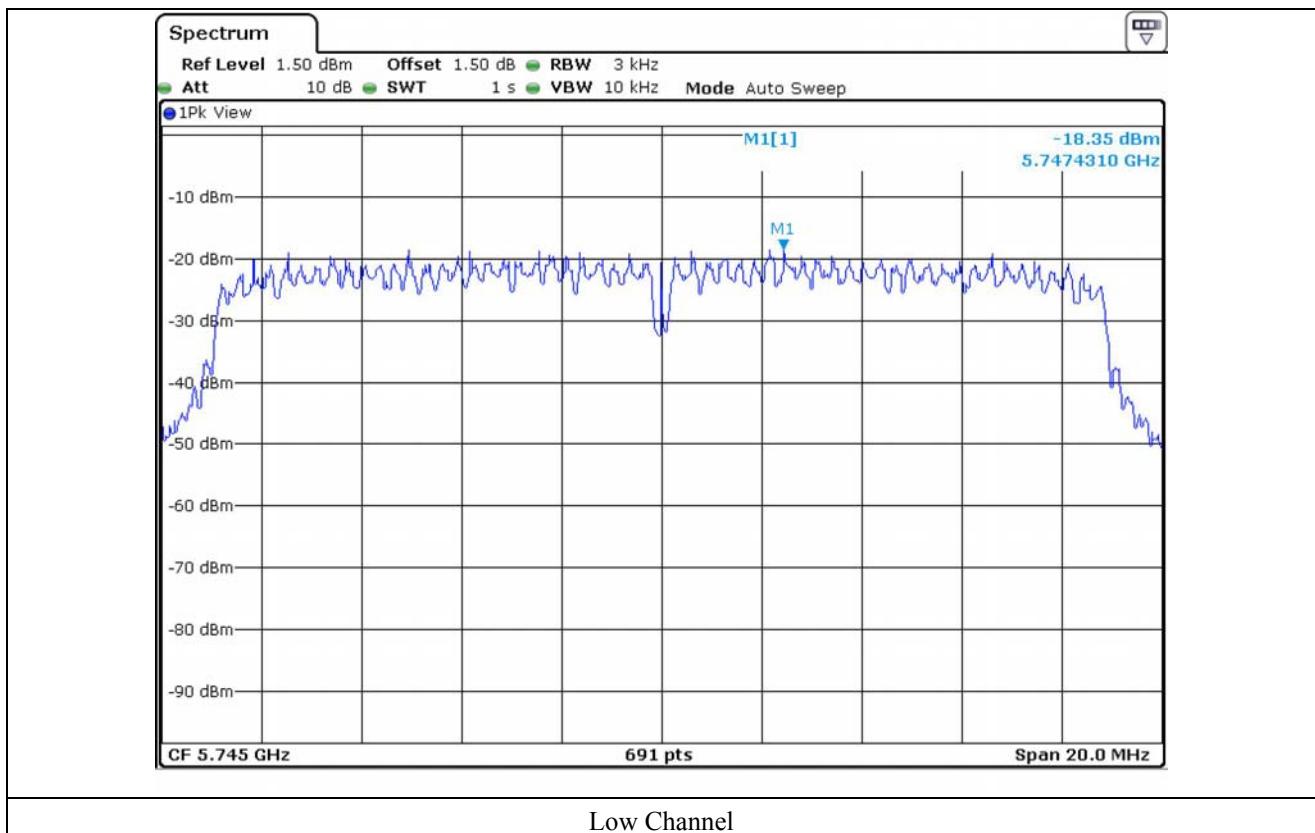
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

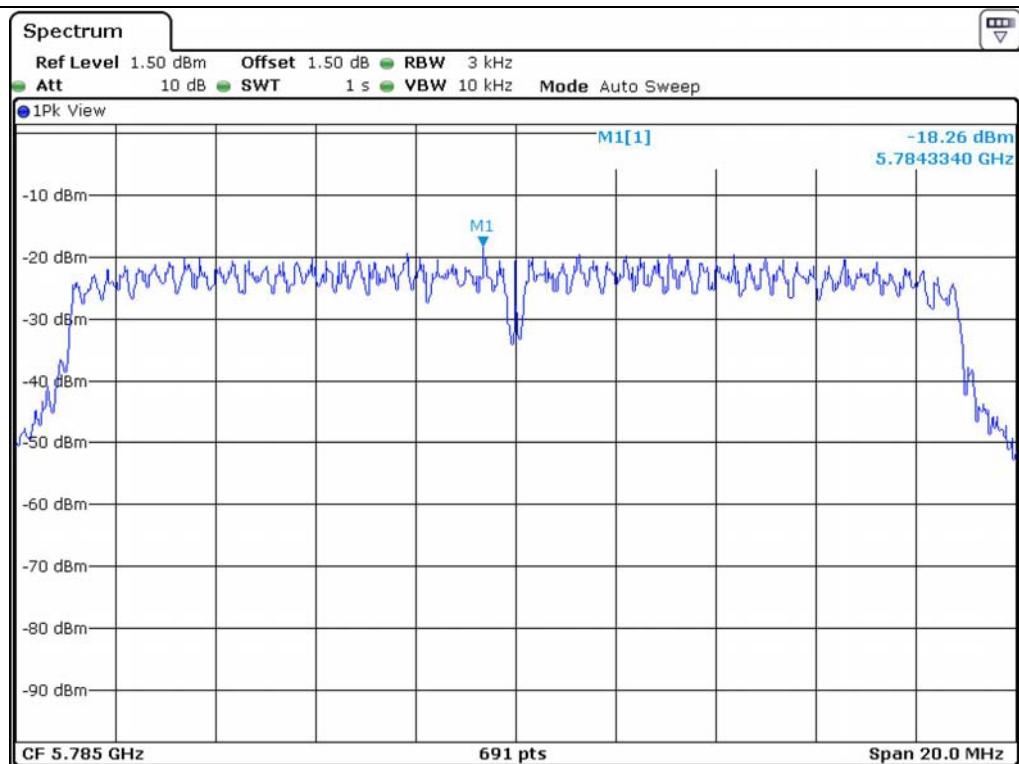
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 5 745          | -18.35               | 8.00        | 26.35       |
| Middle  | 5 785          | -18.26               | 8.00        | 26.26       |
| High    | 5 825          | -18.97               | 8.00        | 26.97       |

Remark. Margin = Limit – Measured value

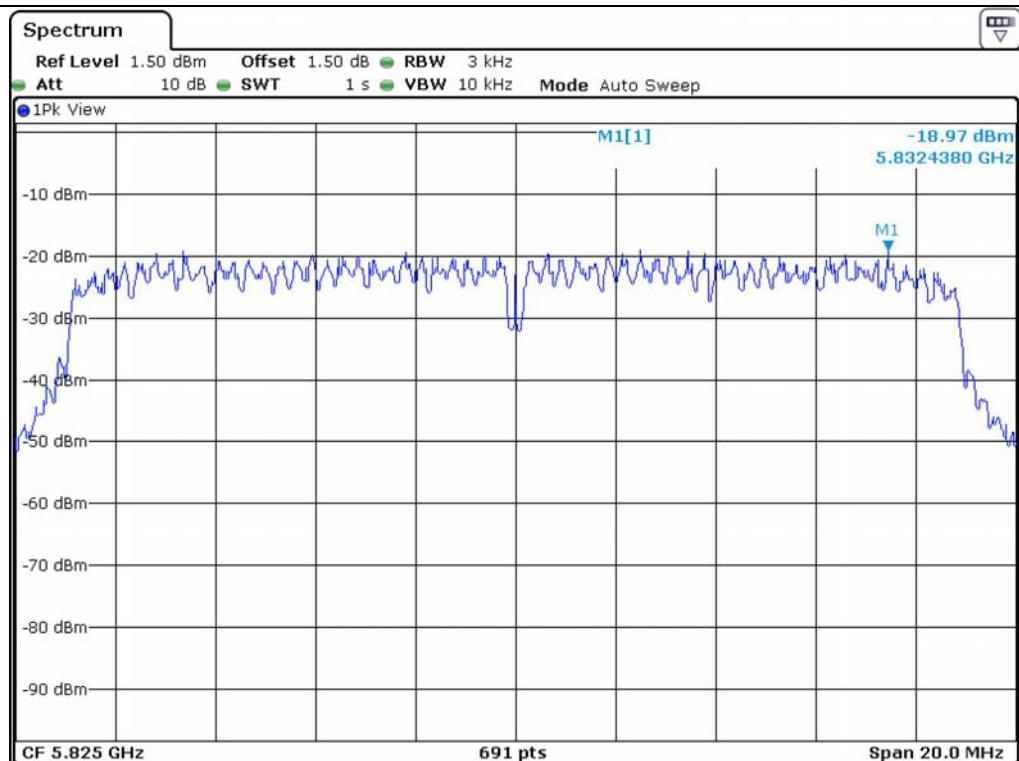
0 | 33.21.

Tested by: Hong-Kyu, Lee/ Engineer





## Middle Channel



## High Channel

### 11.9.2 Test data for Antenna 1

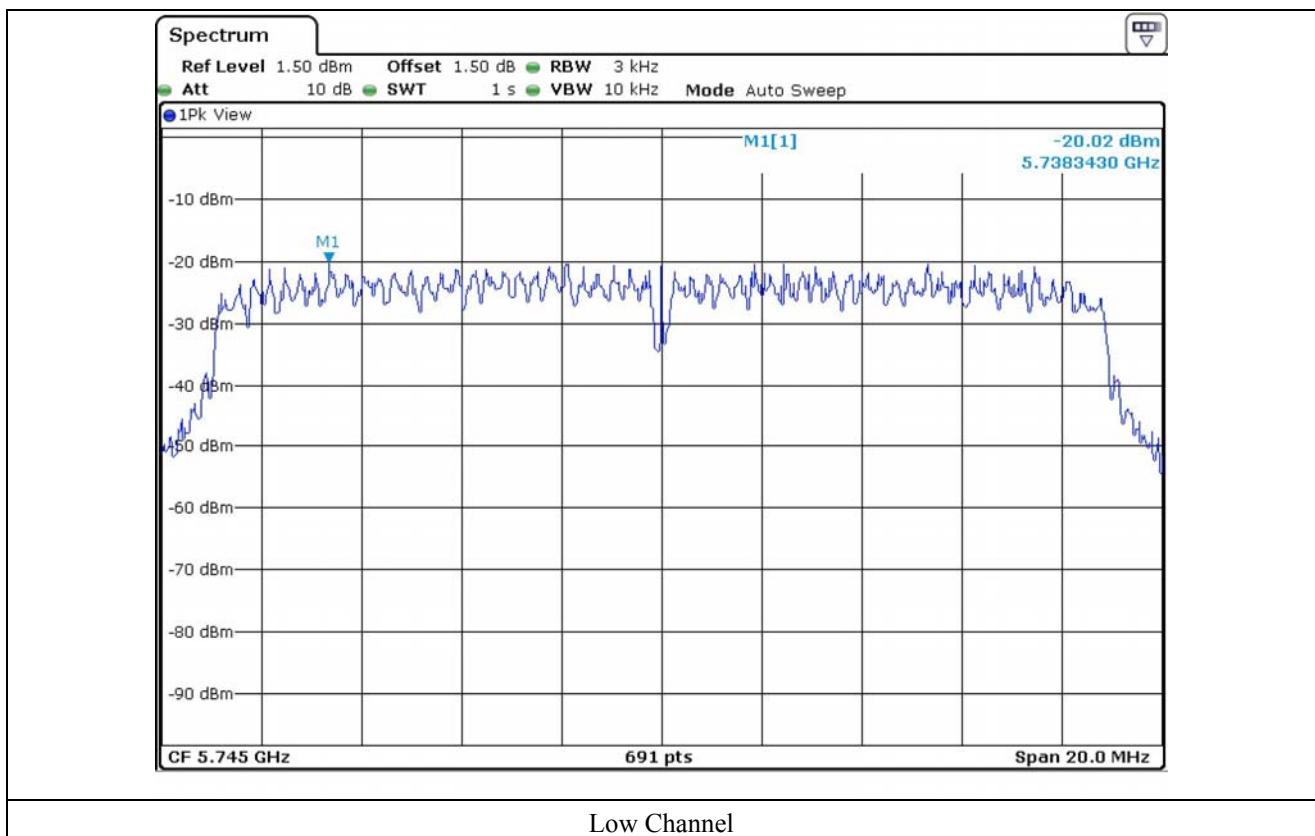
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

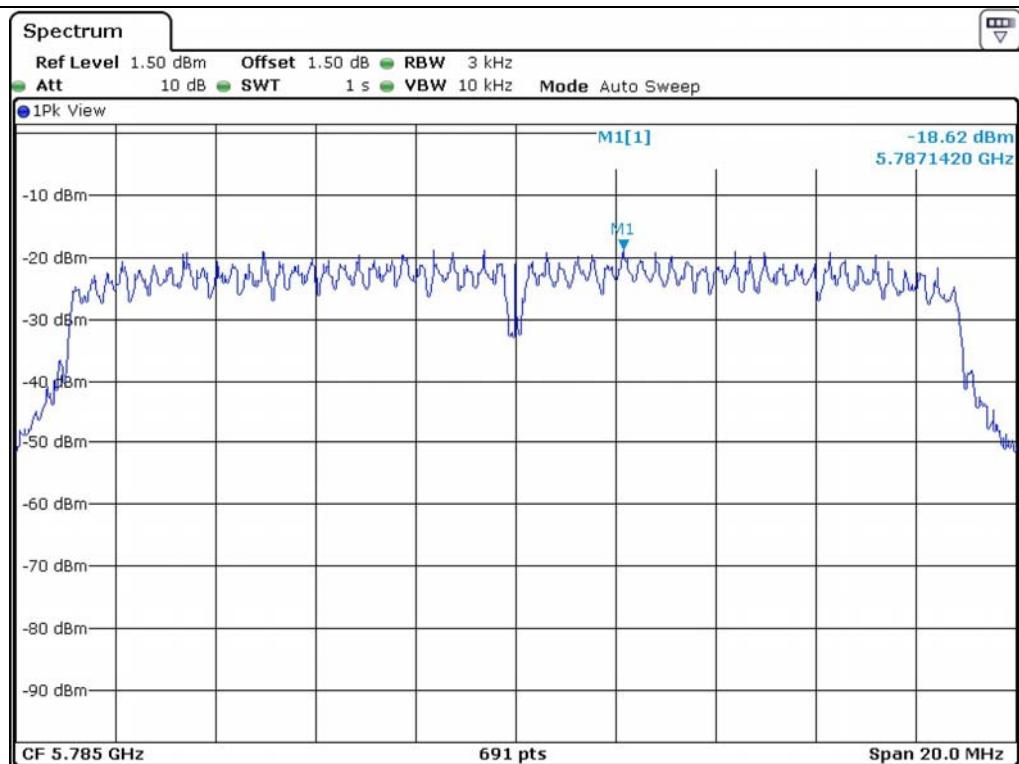
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 5 745          | -20.02               | 8.00        | 28.02       |
| Middle  | 5 785          | -18.62               | 8.00        | 26.62       |
| High    | 5 825          | -18.11               | 8.00        | 26.11       |

Remark. Margin = Limit – Measured value

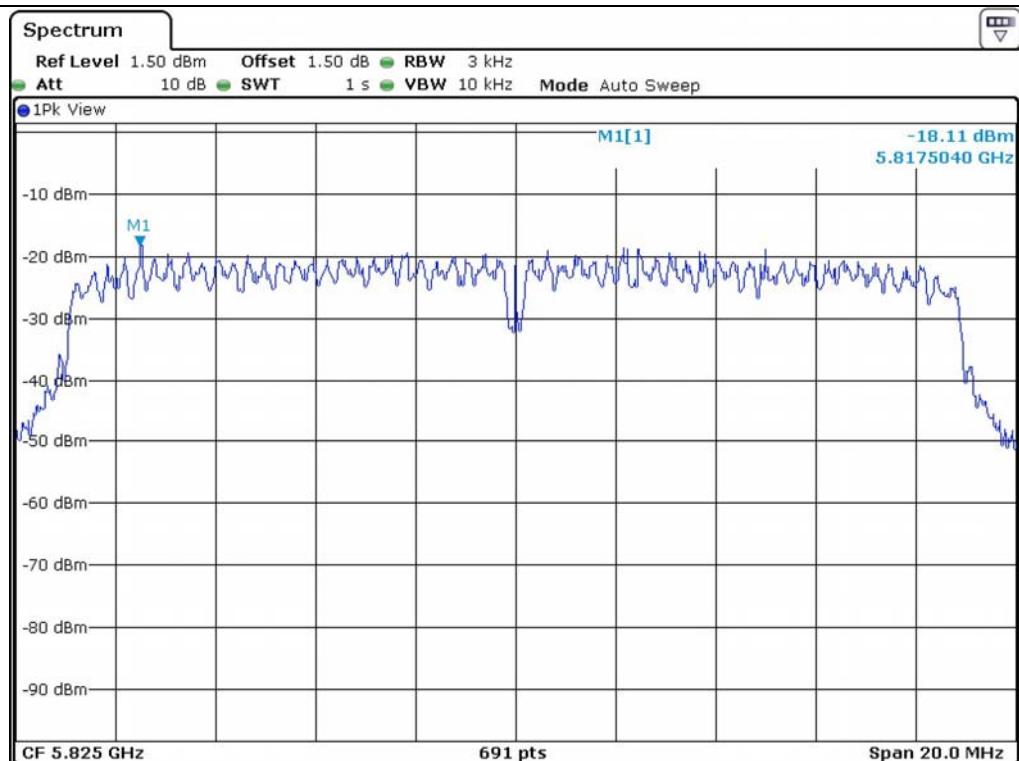
o | 30.2.

Tested by: Hong-Kyu, Lee/ Engineer





## Middle Channel



## High Channel

**11.9.3 Test data for Multiple transmit**

- . Test Date : December 27, 2013
- . Test Result : Pass
- . Operating Condition : Continuous transmitting mode

| CHANNEL | FREQUENCY(MHz) | CALCULATED POWER (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|------------------------|-------------|-------------|
| Low     | 5 745          | -16.09                 | 8.00        | 24.09       |
| Middle  | 5 785          | -15.43                 | 8.00        | 23.43       |
| High    | 5 825          | -15.51                 | 8.00        | 23.51       |

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density =  $10\log(10^{(\text{Antenna1 Power Density}/10)} + 10^{(\text{Antenna2 Power Density}/10)})$

0 | 33.2

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**Tested by: Hong-Kyu, Lee/ Engineer**

## 11.10 Test data for 802.11n\_HT40 RLAN Mode

### 11.10.1 Test data for Antenna 0

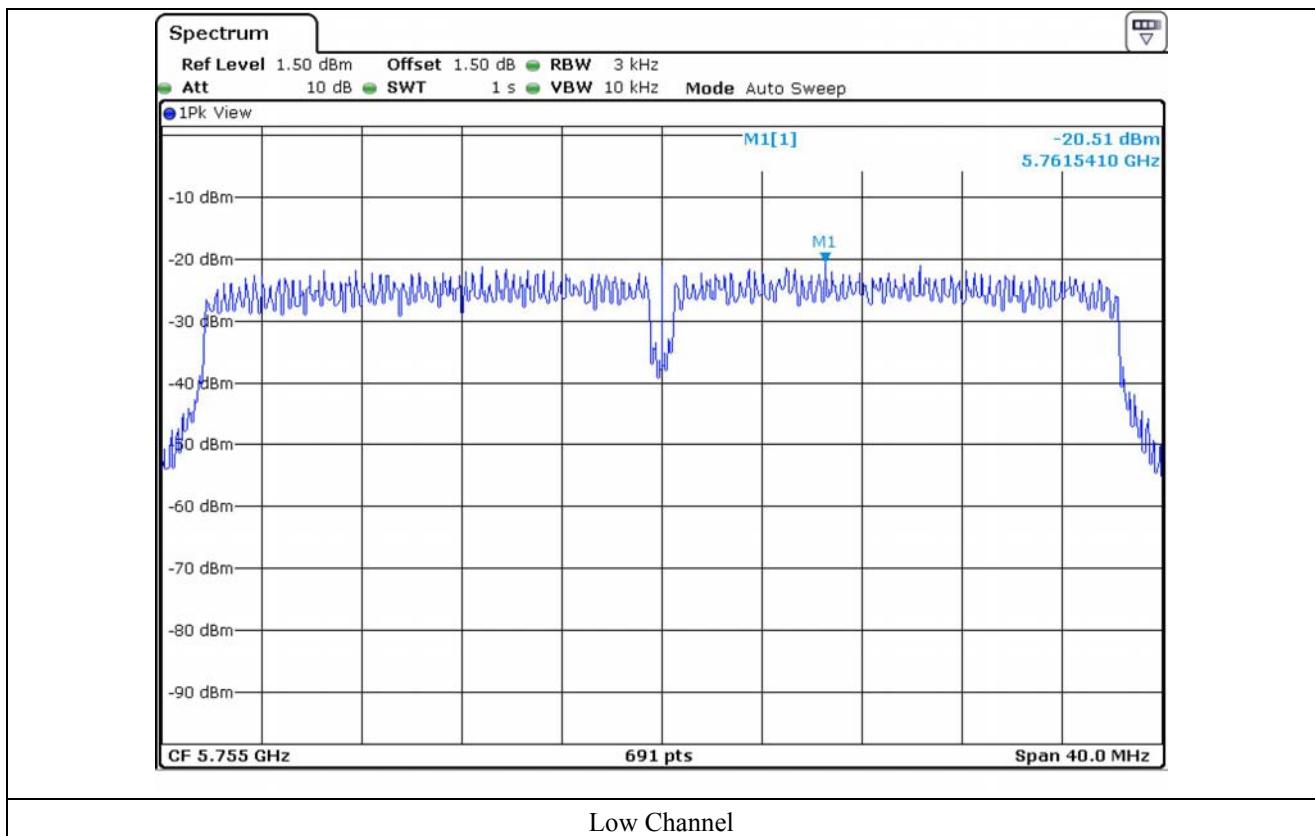
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

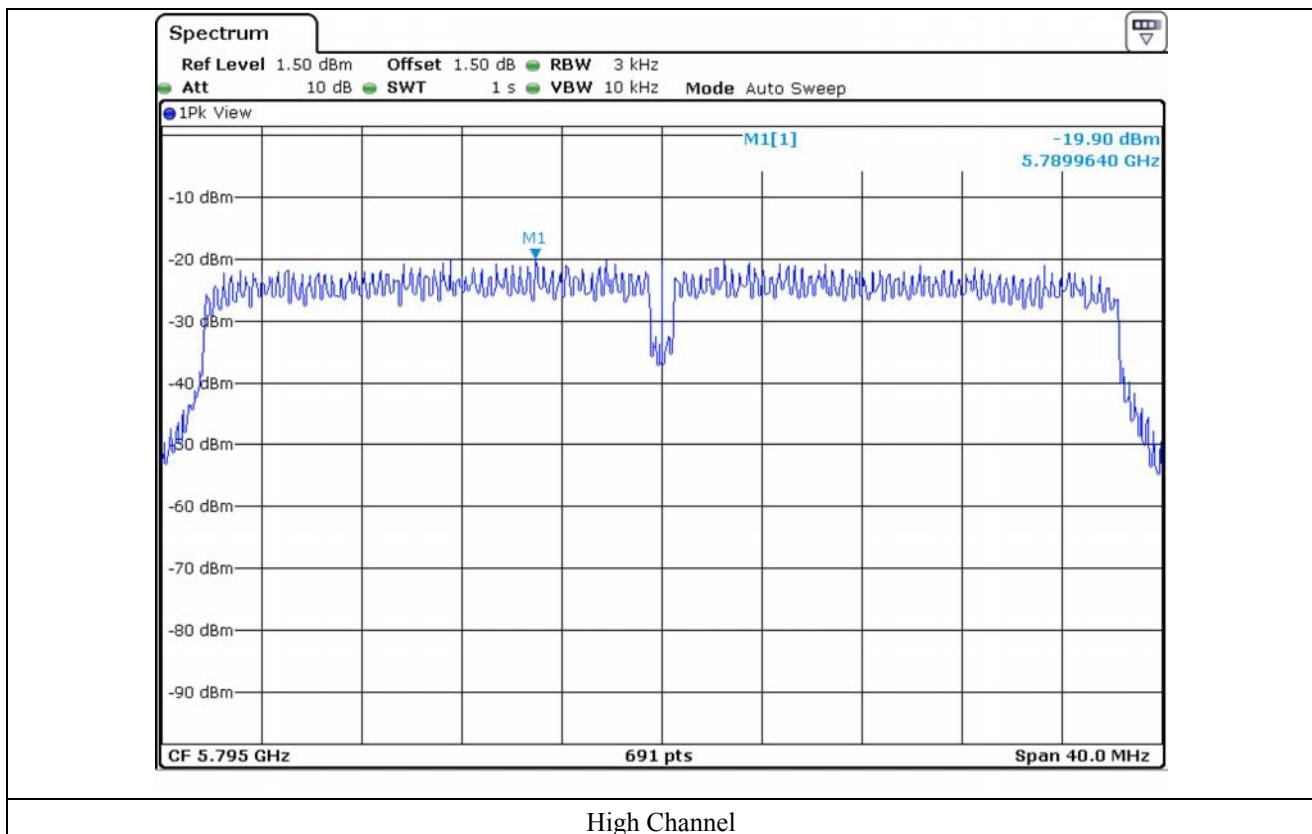
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 5 755          | -20.51               | 8.00        | 28.51       |
| High    | 5 795          | -19.90               | 8.00        | 27.90       |

Remark. Margin = Limit – Measured value

0 | 30 21.

Tested by: Hong-Kyu, Lee/ Engineer





High Channel

### 11.10.2 Test data for Antenna 1

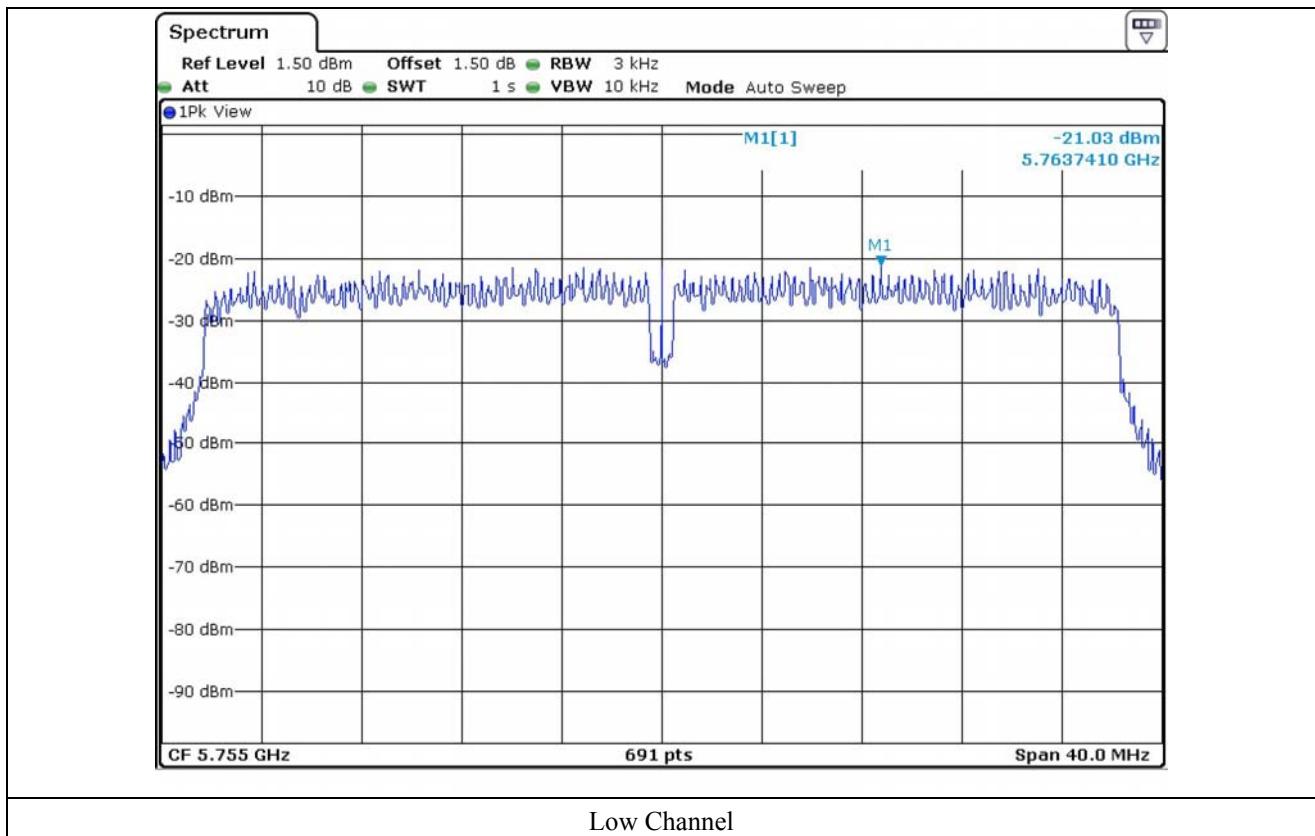
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

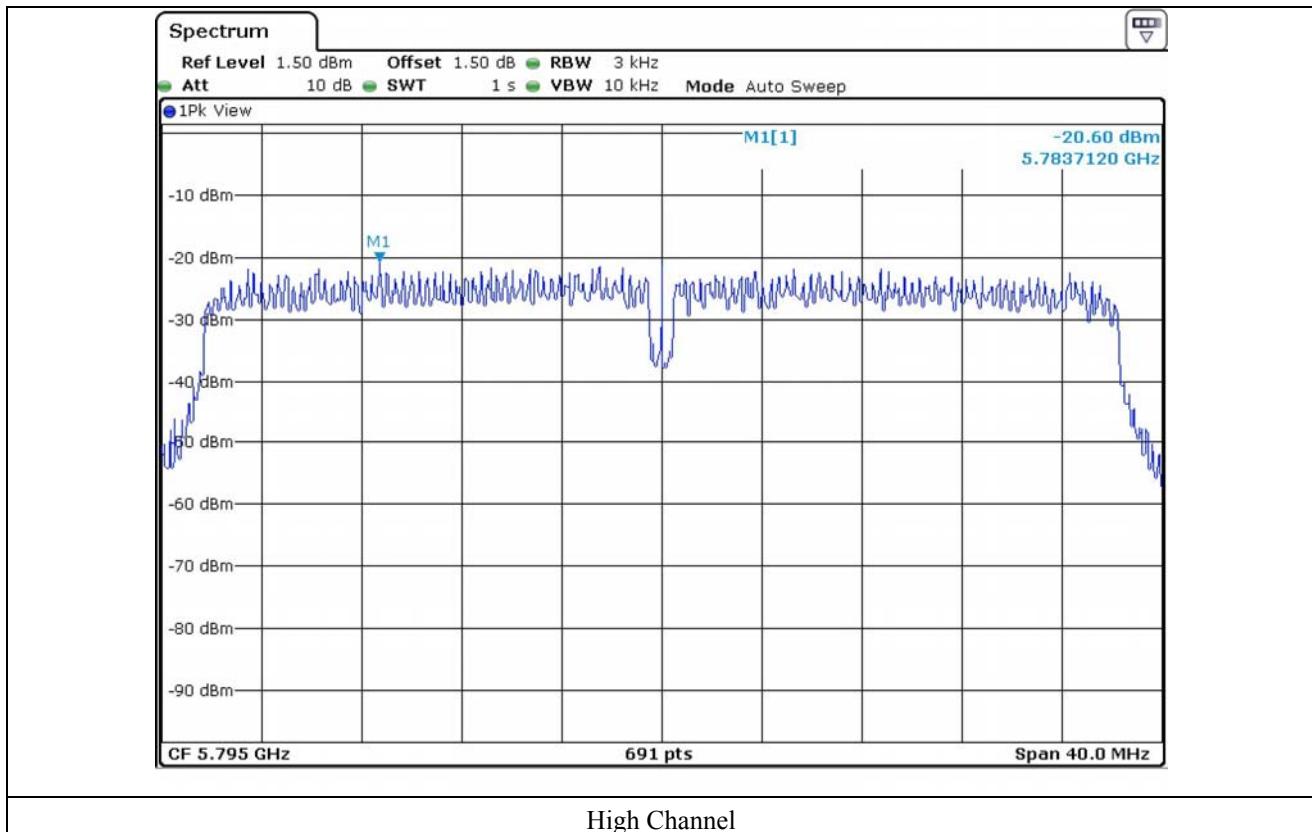
| CHANNEL | FREQUENCY(MHz) | MEASURED VLAUE (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|----------------------|-------------|-------------|
| Low     | 5 755          | -21.03               | 8.00        | 29.03       |
| High    | 5 795          | -20.60               | 8.00        | 28.60       |

Remark. Margin = Limit – Measured value

0 | 33.21.

Tested by: Hong-Kyu, Lee/ Engineer





High Channel

**11.10.3 Test data for Multiple transmit**

- . Test Date : December 27, 2013
- . Test Result : Pass
- . Operating Condition : Continuous transmitting mode

| CHANNEL | FREQUENCY(MHz) | CALCULATED POWER (dBm) | LIMIT (dBm) | MARGIN (dB) |
|---------|----------------|------------------------|-------------|-------------|
| Low     | 5 755          | -17.75                 | 8.00        | 25.75       |
| High    | 5 795          | -17.23                 | 8.00        | 25.23       |

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density =  $10^{\text{Antenna1 Power Density}/10} + 10^{\text{Antenna2 Power Density}/10}$

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**Tested by: Hong-Kyu, Lee/ Engineer**

## 12. RADIATED EMISSION TEST

### 12.1 Operating environment

Temperature : 20 °C  
Relative humidity : 45 % R.H.

### 12.2 Test set-up

The radiated emissions measurements were on the 3 m, open-field test site. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

### 12.3 Test equipment used

| Model Number  | Manufacturer      | Description                   | Serial Number | Last Cal.(Interval) |
|---------------|-------------------|-------------------------------|---------------|---------------------|
| ■ - 8564E     | HP                | Spectrum Analyzer             | 3650A00756    | May 03, 2013(1Y)    |
| ■ - ESU       | Rohde & Schwarz   | EMI Test Receiver             | 100261        | May 27, 2013(1Y)    |
| ■ - 310N      | Sonoma Instrument | AMPLIFIER                     | 312544        | May 21, 2013(1Y)    |
| ■ - 83051A    | Agilent           | Microwave System Preamplifier | 3950M00201    | May 22, 2013(1Y)    |
| ■ - FSV30     | Rohde & Schwarz   | Signal Analyzer               | 101372        | May 20, 2013(1Y)    |
| ■ - SCU-18    | Rohde & Schwarz   | PRE-AMPLIFIER                 | 10041         | Jan. 25, 2013(1Y)   |
| ■ - MA220     | HD                | Turn Table                    | N/A           | N/A                 |
| ■ - HD240     | HD                | Antenna Mast                  | N/A           | N/A                 |
| ■ - VULB9163  | Schwarzbeck       | TRILOG Broadband Antenna      | 9163-255      | Apr. 24, 2012(2Y)   |
| ■ - BBHA9120D | Schwarzbeck       | Horn Antenna                  | BBHA9120D294  | Sep. 30 , 2013 (2Y) |
| ■ - BBHA9170  | Schwarzbeck       | Horn Antenna                  | BBHA9170178   | Jun. 17, 2013 (2Y)  |

All test equipment used is calibrated on a regular basis.

## 12.4 Test data for 802.11b WLAN Mode

### 12.4.1 Test data for Antenna 0

#### 12.4.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.80                   | H                  | 11.50                 | 2.30          | 33.10       | 38.50                           | 43.50                    | 5.00           |
| 239.52             | 52.80                   | H                  | 13.30                 | 3.20          | 33.00       | 36.30                           | 46.00                    | 9.70           |
| 600.36             | 48.20                   | H                  | 20.30                 | 5.10          | 33.30       | 40.30                           | 46.00                    | 5.70           |
| 839.94             | 43.20                   | H                  | 22.70                 | 6.10          | 32.90       | 39.10                           | 46.00                    | 6.90           |
| 961.19             | 23.80                   | V                  | 23.80                 | 6.50          | 31.90       | 22.20                           | 54.00                    | 31.80          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.20                   | H                  | 11.50                 | 2.30          | 33.10       | 38.90                           | 43.50                    | 4.60           |
| 239.52             | 53.00                   | H                  | 13.30                 | 3.20          | 33.00       | 36.50                           | 46.00                    | 9.50           |
| 600.36             | 48.40                   | H                  | 20.30                 | 5.10          | 33.30       | 40.50                           | 46.00                    | 5.50           |
| 839.94             | 43.90                   | H                  | 22.70                 | 6.10          | 32.90       | 39.80                           | 46.00                    | 6.20           |
| 961.19             | 24.40                   | V                  | 23.80                 | 6.50          | 31.90       | 22.80                           | 54.00                    | 31.20          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.80                   | H                  | 11.50                 | 2.30          | 33.10       | 39.50                           | 43.50                    | 4.00           |
| 239.52             | 53.50                   | H                  | 13.30                 | 3.20          | 33.00       | 37.00                           | 46.00                    | 9.00           |
| 600.36             | 48.70                   | H                  | 20.30                 | 5.10          | 33.30       | 40.80                           | 46.00                    | 5.20           |
| 839.94             | 44.30                   | H                  | 22.70                 | 6.10          | 32.90       | 40.20                           | 46.00                    | 5.80           |
| 961.19             | 24.70                   | V                  | 23.80                 | 6.50          | 31.90       | 23.10                           | 54.00                    | 30.90          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

#### 12.4.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

#### 12.4.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

o | 33.21

Tested by: Hong-Kyu, Lee/ Engineer

## 12.4.2 Test data for Antenna 1

### 12.4.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.00                   | H                  | 11.50                 | 2.30          | 33.10       | 38.70                           | 43.50                    | 4.80           |
| 239.52             | 53.50                   | H                  | 13.30                 | 3.20          | 33.00       | 37.00                           | 46.00                    | 9.00           |
| 600.36             | 48.70                   | H                  | 20.30                 | 5.10          | 33.30       | 40.80                           | 46.00                    | 5.20           |
| 839.94             | 43.50                   | H                  | 22.70                 | 6.10          | 32.90       | 39.40                           | 46.00                    | 6.60           |
| 961.19             | 24.60                   | V                  | 23.80                 | 6.50          | 31.90       | 23.00                           | 54.00                    | 31.00          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.40                   | H                  | 11.50                 | 2.30          | 33.10       | 39.10                           | 43.50                    | 4.40           |
| 239.52             | 54.30                   | H                  | 13.30                 | 3.20          | 33.00       | 37.80                           | 46.00                    | 8.20           |
| 600.36             | 49.60                   | H                  | 20.30                 | 5.10          | 33.30       | 41.70                           | 46.00                    | 4.30           |
| 839.94             | 43.90                   | H                  | 22.70                 | 6.10          | 32.90       | 39.80                           | 46.00                    | 6.20           |
| 961.19             | 25.10                   | V                  | 23.80                 | 6.50          | 31.90       | 23.50                           | 54.00                    | 30.50          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.80                   | H                  | 11.50                 | 2.30          | 33.10       | 39.50                           | 43.50                    | 4.00           |
| 239.52             | 54.90                   | H                  | 13.30                 | 3.20          | 33.00       | 38.40                           | 46.00                    | 7.60           |
| 600.36             | 49.80                   | H                  | 20.30                 | 5.10          | 33.30       | 41.90                           | 46.00                    | 4.10           |
| 839.94             | 44.50                   | H                  | 22.70                 | 6.10          | 32.90       | 40.40                           | 46.00                    | 5.60           |
| 961.19             | 25.80                   | V                  | 23.80                 | 6.50          | 31.90       | 24.20                           | 54.00                    | 29.80          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

#### 12.4.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

#### 12.4.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.5 Test data for 802.11g WLAN Mode

### 12.5.1 Test data for Antenna 0

#### 12.5.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.20                   | H                  | 11.50                 | 2.30          | 33.10       | 38.90                           | 43.50                    | 4.60           |
| 239.52             | 53.00                   | H                  | 13.30                 | 3.20          | 33.00       | 36.50                           | 46.00                    | 9.50           |
| 600.36             | 48.30                   | H                  | 20.30                 | 5.10          | 33.30       | 40.40                           | 46.00                    | 5.60           |
| 839.94             | 43.50                   | H                  | 22.70                 | 6.10          | 32.90       | 39.40                           | 46.00                    | 6.60           |
| 961.19             | 23.80                   | V                  | 23.80                 | 6.50          | 31.90       | 22.20                           | 54.00                    | 31.80          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.00                   | H                  | 11.50                 | 2.30          | 33.10       | 38.70                           | 43.50                    | 4.80           |
| 239.52             | 53.10                   | H                  | 13.30                 | 3.20          | 33.00       | 36.60                           | 46.00                    | 9.40           |
| 600.36             | 48.50                   | H                  | 20.30                 | 5.10          | 33.30       | 40.60                           | 46.00                    | 5.40           |
| 839.94             | 43.70                   | H                  | 22.70                 | 6.10          | 32.90       | 39.60                           | 46.00                    | 6.40           |
| 961.19             | 23.90                   | V                  | 23.80                 | 6.50          | 31.90       | 22.30                           | 54.00                    | 31.70          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.50                   | H                  | 11.50                 | 2.30          | 33.10       | 39.20                           | 43.50                    | 4.30           |
| 239.52             | 53.50                   | H                  | 13.30                 | 3.20          | 33.00       | 37.00                           | 46.00                    | 9.00           |
| 600.36             | 49.20                   | H                  | 20.30                 | 5.10          | 33.30       | 41.30                           | 46.00                    | 4.70           |
| 839.94             | 44.00                   | H                  | 22.70                 | 6.10          | 32.90       | 39.90                           | 46.00                    | 6.10           |
| 961.19             | 24.10                   | V                  | 23.80                 | 6.50          | 31.90       | 22.50                           | 54.00                    | 31.50          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.5.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.5.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.5.2 Test data for Antenna 1

### 12.5.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.40                   | H                  | 11.50                 | 2.30          | 33.10       | 39.10                           | 43.50                    | 4.40           |
| 239.52             | 53.50                   | H                  | 13.30                 | 3.20          | 33.00       | 37.00                           | 46.00                    | 9.00           |
| 600.36             | 48.40                   | H                  | 20.30                 | 5.10          | 33.30       | 40.50                           | 46.00                    | 5.50           |
| 839.94             | 43.80                   | H                  | 22.70                 | 6.10          | 32.90       | 39.70                           | 46.00                    | 6.30           |
| 961.19             | 24.10                   | V                  | 23.80                 | 6.50          | 31.90       | 22.50                           | 54.00                    | 31.50          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.30                   | H                  | 11.50                 | 2.30          | 33.10       | 39.00                           | 43.50                    | 4.50           |
| 239.52             | 53.20                   | H                  | 13.30                 | 3.20          | 33.00       | 36.70                           | 46.00                    | 9.30           |
| 600.36             | 49.10                   | H                  | 20.30                 | 5.10          | 33.30       | 41.20                           | 46.00                    | 4.80           |
| 839.94             | 44.70                   | H                  | 22.70                 | 6.10          | 32.90       | 40.60                           | 46.00                    | 5.40           |
| 961.19             | 24.10                   | V                  | 23.80                 | 6.50          | 31.90       | 22.50                           | 54.00                    | 31.50          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.70                   | H                  | 11.50                 | 2.30          | 33.10       | 39.40                           | 43.50                    | 4.10           |
| 239.52             | 53.90                   | H                  | 13.30                 | 3.20          | 33.00       | 37.40                           | 46.00                    | 8.60           |
| 600.36             | 49.50                   | H                  | 20.30                 | 5.10          | 33.30       | 41.60                           | 46.00                    | 4.40           |
| 839.94             | 44.50                   | H                  | 22.70                 | 6.10          | 32.90       | 40.40                           | 46.00                    | 5.60           |
| 961.19             | 24.40                   | V                  | 23.80                 | 6.50          | 31.90       | 22.80                           | 54.00                    | 31.20          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.5.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.5.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.6 Test data for 802.11n\_HT20 WLAN Mode

### 12.6.1 Test data for Antenna 0

#### 12.6.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.10                   | H                  | 11.50                 | 2.30          | 33.10       | 37.80                           | 43.50                    | 5.70           |
| 239.52             | 52.10                   | H                  | 13.30                 | 3.20          | 33.00       | 35.60                           | 46.00                    | 10.40          |
| 600.36             | 47.50                   | H                  | 20.30                 | 5.10          | 33.30       | 39.60                           | 46.00                    | 6.40           |
| 839.94             | 42.60                   | H                  | 22.70                 | 6.10          | 32.90       | 38.50                           | 46.00                    | 7.50           |
| 961.19             | 21.90                   | V                  | 23.80                 | 6.50          | 31.90       | 20.30                           | 54.00                    | 33.70          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 55.20                   | H                  | 11.50                 | 2.30          | 33.10       | 35.90                           | 43.50                    | 7.60           |
| 239.52             | 50.00                   | H                  | 13.30                 | 3.20          | 33.00       | 33.50                           | 46.00                    | 12.50          |
| 600.36             | 46.00                   | H                  | 20.30                 | 5.10          | 33.30       | 38.10                           | 46.00                    | 7.90           |
| 839.94             | 41.10                   | H                  | 22.70                 | 6.10          | 32.90       | 37.00                           | 46.00                    | 9.00           |
| 961.19             | 20.30                   | V                  | 23.80                 | 6.50          | 31.90       | 18.70                           | 54.00                    | 35.30          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 53.40                   | H                  | 11.50                 | 2.30          | 33.10       | 34.10                           | 43.50                    | 9.40           |
| 239.52             | 48.10                   | H                  | 13.30                 | 3.20          | 33.00       | 31.60                           | 46.00                    | 14.40          |
| 600.36             | 44.10                   | H                  | 20.30                 | 5.10          | 33.30       | 36.20                           | 46.00                    | 9.80           |
| 839.94             | 39.00                   | H                  | 22.70                 | 6.10          | 32.90       | 34.90                           | 46.00                    | 11.10          |
| 961.19             | 20.80                   | V                  | 23.80                 | 6.50          | 31.90       | 19.20                           | 54.00                    | 34.80          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.6.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.6.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.6.2 Test data for Antenna 1

### 12.6.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.60                   | H                  | 11.50                 | 2.30          | 33.10       | 38.30                           | 43.50                    | 5.20           |
| 239.52             | 52.90                   | H                  | 13.30                 | 3.20          | 33.00       | 36.40                           | 46.00                    | 9.60           |
| 600.36             | 48.30                   | H                  | 20.30                 | 5.10          | 33.30       | 40.40                           | 46.00                    | 5.60           |
| 839.94             | 42.90                   | H                  | 22.70                 | 6.10          | 32.90       | 38.80                           | 46.00                    | 7.20           |
| 961.19             | 22.20                   | V                  | 23.80                 | 6.50          | 31.90       | 20.60                           | 54.00                    | 33.40          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 56.10                   | H                  | 11.50                 | 2.30          | 33.10       | 36.80                           | 43.50                    | 6.70           |
| 239.52             | 50.80                   | H                  | 13.30                 | 3.20          | 33.00       | 34.30                           | 46.00                    | 11.70          |
| 600.36             | 46.70                   | H                  | 20.30                 | 5.10          | 33.30       | 38.80                           | 46.00                    | 7.20           |
| 839.94             | 42.10                   | H                  | 22.70                 | 6.10          | 32.90       | 38.00                           | 46.00                    | 8.00           |
| 961.19             | 20.40                   | V                  | 23.80                 | 6.50          | 31.90       | 18.80                           | 54.00                    | 35.20          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 54.10                   | H                  | 11.50                 | 2.30          | 33.10       | 34.80                           | 43.50                    | 8.70           |
| 239.52             | 48.80                   | H                  | 13.30                 | 3.20          | 33.00       | 32.30                           | 46.00                    | 13.70          |
| 600.36             | 45.00                   | H                  | 20.30                 | 5.10          | 33.30       | 37.10                           | 46.00                    | 8.90           |
| 839.94             | 39.90                   | H                  | 22.70                 | 6.10          | 32.90       | 35.80                           | 46.00                    | 10.20          |
| 961.19             | 21.70                   | V                  | 23.80                 | 6.50          | 31.90       | 20.10                           | 54.00                    | 33.90          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.6.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.6.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

### 12.6.3 Test data for Multiple transmit

#### 12.6.3.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.60                   | H                  | 11.50                 | 2.30          | 33.10       | 38.30                           | 43.50                    | 5.20           |
| 239.52             | 52.70                   | H                  | 13.30                 | 3.20          | 33.00       | 36.20                           | 46.00                    | 9.80           |
| 600.36             | 47.90                   | H                  | 20.30                 | 5.10          | 33.30       | 40.00                           | 46.00                    | 6.00           |
| 839.94             | 42.90                   | H                  | 22.70                 | 6.10          | 32.90       | 38.80                           | 46.00                    | 7.20           |
| 961.19             | 22.30                   | V                  | 23.80                 | 6.50          | 31.90       | 20.70                           | 54.00                    | 33.30          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 55.90                   | H                  | 11.50                 | 2.30          | 33.10       | 36.60                           | 43.50                    | 6.90           |
| 239.52             | 51.00                   | H                  | 13.30                 | 3.20          | 33.00       | 34.50                           | 46.00                    | 11.50          |
| 600.36             | 46.80                   | H                  | 20.30                 | 5.10          | 33.30       | 38.90                           | 46.00                    | 7.10           |
| 839.94             | 41.20                   | H                  | 22.70                 | 6.10          | 32.90       | 37.10                           | 46.00                    | 8.90           |
| 961.19             | 20.90                   | V                  | 23.80                 | 6.50          | 31.90       | 19.30                           | 54.00                    | 34.70          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 54.10                   | H                  | 11.50                 | 2.30          | 33.10       | 34.80                           | 43.50                    | 8.70           |
| 239.52             | 48.20                   | H                  | 13.30                 | 3.20          | 33.00       | 31.70                           | 46.00                    | 14.30          |
| 600.36             | 44.60                   | H                  | 20.30                 | 5.10          | 33.30       | 36.70                           | 46.00                    | 9.30           |
| 839.94             | 39.60                   | H                  | 22.70                 | 6.10          | 32.90       | 35.50                           | 46.00                    | 10.50          |
| 961.19             | 21.00                   | V                  | 23.80                 | 6.50          | 31.90       | 19.40                           | 54.00                    | 34.60          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.6.3.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.6.3.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.7 Test data for 802.11n\_HT40 WLAN Mode

### 12.7.1 Test data for Antenna 0

#### 12.7.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.40                   | H                  | 11.50                 | 2.30          | 33.10       | 38.10                           | 43.50                    | 5.40           |
| 239.52             | 52.60                   | H                  | 13.30                 | 3.20          | 33.00       | 36.10                           | 46.00                    | 9.90           |
| 600.36             | 48.00                   | H                  | 20.30                 | 5.10          | 33.30       | 40.10                           | 46.00                    | 5.90           |
| 839.94             | 42.70                   | H                  | 22.70                 | 6.10          | 32.90       | 38.60                           | 46.00                    | 7.40           |
| 961.19             | 23.20                   | V                  | 23.80                 | 6.50          | 31.90       | 21.60                           | 54.00                    | 32.40          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 56.50                   | H                  | 11.50                 | 2.30          | 33.10       | 37.20                           | 43.50                    | 6.30           |
| 239.52             | 51.60                   | H                  | 13.30                 | 3.20          | 33.00       | 35.10                           | 46.00                    | 10.90          |
| 600.36             | 47.20                   | H                  | 20.30                 | 5.10          | 33.30       | 39.30                           | 46.00                    | 6.70           |
| 839.94             | 42.20                   | H                  | 22.70                 | 6.10          | 32.90       | 38.10                           | 46.00                    | 7.90           |
| 961.19             | 21.60                   | V                  | 23.80                 | 6.50          | 31.90       | 20.00                           | 54.00                    | 34.00          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 54.70                   | H                  | 11.50                 | 2.30          | 33.10       | 35.40                           | 43.50                    | 8.10           |
| 239.52             | 49.60                   | H                  | 13.30                 | 3.20          | 33.00       | 33.10                           | 46.00                    | 12.90          |
| 600.36             | 45.30                   | H                  | 20.30                 | 5.10          | 33.30       | 37.40                           | 46.00                    | 8.60           |
| 839.94             | 40.80                   | H                  | 22.70                 | 6.10          | 32.90       | 36.70                           | 46.00                    | 9.30           |
| 961.19             | 22.80                   | V                  | 23.80                 | 6.50          | 31.90       | 21.20                           | 54.00                    | 32.80          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.7.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.7.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.7.2 Test data for Antenna 1

### 12.7.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.20                   | H                  | 11.50                 | 2.30          | 33.10       | 38.90                           | 43.50                    | 4.60           |
| 239.52             | 53.00                   | H                  | 13.30                 | 3.20          | 33.00       | 36.50                           | 46.00                    | 9.50           |
| 600.36             | 48.70                   | H                  | 20.30                 | 5.10          | 33.30       | 40.80                           | 46.00                    | 5.20           |
| 839.94             | 43.10                   | H                  | 22.70                 | 6.10          | 32.90       | 39.00                           | 46.00                    | 7.00           |
| 961.19             | 24.00                   | V                  | 23.80                 | 6.50          | 31.90       | 22.40                           | 54.00                    | 31.60          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.50                   | H                  | 11.50                 | 2.30          | 33.10       | 38.20                           | 43.50                    | 5.30           |
| 239.52             | 51.70                   | H                  | 13.30                 | 3.20          | 33.00       | 35.20                           | 46.00                    | 10.80          |
| 600.36             | 47.20                   | H                  | 20.30                 | 5.10          | 33.30       | 39.30                           | 46.00                    | 6.70           |
| 839.94             | 42.40                   | H                  | 22.70                 | 6.10          | 32.90       | 38.30                           | 46.00                    | 7.70           |
| 961.19             | 21.60                   | V                  | 23.80                 | 6.50          | 31.90       | 20.00                           | 54.00                    | 34.00          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 55.30                   | H                  | 11.50                 | 2.30          | 33.10       | 36.00                           | 43.50                    | 7.50           |
| 239.52             | 50.00                   | H                  | 13.30                 | 3.20          | 33.00       | 33.50                           | 46.00                    | 12.50          |
| 600.36             | 45.50                   | H                  | 20.30                 | 5.10          | 33.30       | 37.60                           | 46.00                    | 8.40           |
| 839.94             | 41.60                   | H                  | 22.70                 | 6.10          | 32.90       | 37.50                           | 46.00                    | 8.50           |
| 961.19             | 23.80                   | V                  | 23.80                 | 6.50          | 31.90       | 22.20                           | 54.00                    | 31.80          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.7.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.7.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

o | 332

Tested by: Hong-Kyu, Lee/ Engineer

### 12.7.3 Test data for Multiple transmit

#### 12.7.3.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.20                   | H                  | 11.50                 | 2.30          | 33.10       | 38.90                           | 43.50                    | 4.60           |
| 239.52             | 53.10                   | H                  | 13.30                 | 3.20          | 33.00       | 36.60                           | 46.00                    | 9.40           |
| 600.36             | 48.90                   | H                  | 20.30                 | 5.10          | 33.30       | 41.00                           | 46.00                    | 5.00           |
| 839.94             | 42.80                   | H                  | 22.70                 | 6.10          | 32.90       | 38.70                           | 46.00                    | 7.30           |
| 961.19             | 23.70                   | V                  | 23.80                 | 6.50          | 31.90       | 22.10                           | 54.00                    | 31.90          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 56.70                   | H                  | 11.50                 | 2.30          | 33.10       | 37.40                           | 43.50                    | 6.10           |
| 239.52             | 52.00                   | H                  | 13.30                 | 3.20          | 33.00       | 35.50                           | 46.00                    | 10.50          |
| 600.36             | 47.70                   | H                  | 20.30                 | 5.10          | 33.30       | 39.80                           | 46.00                    | 6.20           |
| 839.94             | 42.40                   | H                  | 22.70                 | 6.10          | 32.90       | 38.30                           | 46.00                    | 7.70           |
| 961.19             | 22.40                   | V                  | 23.80                 | 6.50          | 31.90       | 20.80                           | 54.00                    | 33.20          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 54.90                   | H                  | 11.50                 | 2.30          | 33.10       | 35.60                           | 43.50                    | 7.90           |
| 239.52             | 50.40                   | H                  | 13.30                 | 3.20          | 33.00       | 33.90                           | 46.00                    | 12.10          |
| 600.36             | 45.70                   | H                  | 20.30                 | 5.10          | 33.30       | 37.80                           | 46.00                    | 8.20           |
| 839.94             | 41.70                   | H                  | 22.70                 | 6.10          | 32.90       | 37.60                           | 46.00                    | 8.40           |
| 961.19             | 23.70                   | V                  | 23.80                 | 6.50          | 31.90       | 22.10                           | 54.00                    | 31.90          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.7.3.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.7.3.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.8 Test data for 802.11a RLAN Mode

### 12.8.1 Test data for Antenna 0

#### 12.8.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.00                   | H                  | 11.50                 | 2.30          | 33.10       | 37.70                           | 43.50                    | 5.80           |
| 239.52             | 52.40                   | H                  | 13.30                 | 3.20          | 33.00       | 35.90                           | 46.00                    | 10.10          |
| 600.36             | 48.00                   | H                  | 20.30                 | 5.10          | 33.30       | 40.10                           | 46.00                    | 5.90           |
| 839.94             | 42.30                   | H                  | 22.70                 | 6.10          | 32.90       | 38.20                           | 46.00                    | 7.80           |
| 961.19             | 41.00                   | V                  | 23.80                 | 6.50          | 31.90       | 39.40                           | 54.00                    | 14.60          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 56.80                   | H                  | 11.50                 | 2.30          | 33.10       | 37.50                           | 43.50                    | 6.00           |
| 239.52             | 52.30                   | H                  | 13.30                 | 3.20          | 33.00       | 35.80                           | 46.00                    | 10.20          |
| 600.36             | 47.70                   | H                  | 20.30                 | 5.10          | 33.30       | 39.80                           | 46.00                    | 6.20           |
| 839.94             | 43.00                   | H                  | 22.70                 | 6.10          | 32.90       | 38.90                           | 46.00                    | 7.10           |
| 961.19             | 40.70                   | V                  | 23.80                 | 6.50          | 31.90       | 39.10                           | 54.00                    | 14.90          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 56.80                   | H                  | 11.50                 | 2.30          | 33.10       | 37.50                           | 43.50                    | 6.00           |
| 239.52             | 52.30                   | H                  | 13.30                 | 3.20          | 33.00       | 35.80                           | 46.00                    | 10.20          |
| 600.36             | 47.50                   | H                  | 20.30                 | 5.10          | 33.30       | 39.60                           | 46.00                    | 6.40           |
| 839.94             | 42.90                   | H                  | 22.70                 | 6.10          | 32.90       | 38.80                           | 46.00                    | 7.20           |
| 961.19             | 40.90                   | V                  | 23.80                 | 6.50          | 31.90       | 39.30                           | 54.00                    | 14.70          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.8.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.8.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

o | 30.21.

Tested by: Hong-Kyu, Lee/ Engineer

## 12.8.2 Test data for Antenna 1

### 12.8.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.20                   | H                  | 11.50                 | 2.30          | 33.10       | 38.90                           | 43.50                    | 4.60           |
| 239.52             | 53.40                   | H                  | 13.30                 | 3.20          | 33.00       | 36.90                           | 46.00                    | 9.10           |
| 600.36             | 48.50                   | H                  | 20.30                 | 5.10          | 33.30       | 40.60                           | 46.00                    | 5.40           |
| 839.94             | 43.30                   | H                  | 22.70                 | 6.10          | 32.90       | 39.20                           | 46.00                    | 6.80           |
| 961.19             | 41.90                   | V                  | 23.80                 | 6.50          | 31.90       | 40.30                           | 54.00                    | 13.70          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.20                   | H                  | 11.50                 | 2.30          | 33.10       | 37.90                           | 43.50                    | 5.60           |
| 239.52             | 52.70                   | H                  | 13.30                 | 3.20          | 33.00       | 36.20                           | 46.00                    | 9.80           |
| 600.36             | 47.80                   | H                  | 20.30                 | 5.10          | 33.30       | 39.90                           | 46.00                    | 6.10           |
| 839.94             | 42.20                   | H                  | 22.70                 | 6.10          | 32.90       | 38.10                           | 46.00                    | 7.90           |
| 961.19             | 41.00                   | V                  | 23.80                 | 6.50          | 31.90       | 39.40                           | 54.00                    | 14.60          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.10                   | H                  | 11.50                 | 2.30          | 33.10       | 37.80                           | 43.50                    | 5.70           |
| 239.52             | 52.10                   | H                  | 13.30                 | 3.20          | 33.00       | 35.60                           | 46.00                    | 10.40          |
| 600.36             | 48.00                   | H                  | 20.30                 | 5.10          | 33.30       | 40.10                           | 46.00                    | 5.90           |
| 839.94             | 42.80                   | H                  | 22.70                 | 6.10          | 32.90       | 38.70                           | 46.00                    | 7.30           |
| 961.19             | 41.20                   | V                  | 23.80                 | 6.50          | 31.90       | 39.60                           | 54.00                    | 14.40          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.8.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.8.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

o | 30.2.

Tested by: Hong-Kyu, Lee/ Engineer

## 12.9 Test data for 802.11n\_HT20 RLAN Mode

### 12.9.1 Test data for Antenna 0

#### 12.9.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.40                   | H                  | 11.50                 | 2.30          | 33.10       | 38.10                           | 43.50                    | 5.40           |
| 239.52             | 52.60                   | H                  | 13.30                 | 3.20          | 33.00       | 36.10                           | 46.00                    | 9.90           |
| 600.36             | 48.00                   | H                  | 20.30                 | 5.10          | 33.30       | 40.10                           | 46.00                    | 5.90           |
| 839.94             | 42.80                   | H                  | 22.70                 | 6.10          | 32.90       | 38.70                           | 46.00                    | 7.30           |
| 961.19             | 41.20                   | V                  | 23.80                 | 6.50          | 31.90       | 39.60                           | 54.00                    | 14.40          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.60                   | H                  | 11.50                 | 2.30          | 33.10       | 38.30                           | 43.50                    | 5.20           |
| 239.52             | 51.90                   | H                  | 13.30                 | 3.20          | 33.00       | 35.40                           | 46.00                    | 10.60          |
| 600.36             | 47.70                   | H                  | 20.30                 | 5.10          | 33.30       | 39.80                           | 46.00                    | 6.20           |
| 839.94             | 42.80                   | H                  | 22.70                 | 6.10          | 32.90       | 38.70                           | 46.00                    | 7.30           |
| 961.19             | 41.00                   | V                  | 23.80                 | 6.50          | 31.90       | 39.40                           | 54.00                    | 14.60          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 56.90                   | H                  | 11.50                 | 2.30          | 33.10       | 37.60                           | 43.50                    | 5.90           |
| 239.52             | 52.40                   | H                  | 13.30                 | 3.20          | 33.00       | 35.90                           | 46.00                    | 10.10          |
| 600.36             | 48.10                   | H                  | 20.30                 | 5.10          | 33.30       | 40.20                           | 46.00                    | 5.80           |
| 839.94             | 42.60                   | H                  | 22.70                 | 6.10          | 32.90       | 38.50                           | 46.00                    | 7.50           |
| 961.19             | 40.90                   | V                  | 23.80                 | 6.50          | 31.90       | 39.30                           | 54.00                    | 14.70          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.9.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.9.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.9.2 Test data for Antenna 1

### 12.9.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.70                   | H                  | 11.50                 | 2.30          | 33.10       | 39.40                           | 43.50                    | 4.10           |
| 239.52             | 53.30                   | H                  | 13.30                 | 3.20          | 33.00       | 36.80                           | 46.00                    | 9.20           |
| 600.36             | 49.00                   | H                  | 20.30                 | 5.10          | 33.30       | 41.10                           | 46.00                    | 4.90           |
| 839.94             | 43.80                   | H                  | 22.70                 | 6.10          | 32.90       | 39.70                           | 46.00                    | 6.30           |
| 961.19             | 41.80                   | V                  | 23.80                 | 6.50          | 31.90       | 40.20                           | 54.00                    | 13.80          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.30                   | H                  | 11.50                 | 2.30          | 33.10       | 38.00                           | 43.50                    | 5.50           |
| 239.52             | 51.90                   | H                  | 13.30                 | 3.20          | 33.00       | 35.40                           | 46.00                    | 10.60          |
| 600.36             | 47.50                   | H                  | 20.30                 | 5.10          | 33.30       | 39.60                           | 46.00                    | 6.40           |
| 839.94             | 42.80                   | H                  | 22.70                 | 6.10          | 32.90       | 38.70                           | 46.00                    | 7.30           |
| 961.19             | 41.10                   | V                  | 23.80                 | 6.50          | 31.90       | 39.50                           | 54.00                    | 14.50          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.20                   | H                  | 11.50                 | 2.30          | 33.10       | 37.90                           | 43.50                    | 5.60           |
| 239.52             | 52.10                   | H                  | 13.30                 | 3.20          | 33.00       | 35.60                           | 46.00                    | 10.40          |
| 600.36             | 47.70                   | H                  | 20.30                 | 5.10          | 33.30       | 39.80                           | 46.00                    | 6.20           |
| 839.94             | 42.40                   | H                  | 22.70                 | 6.10          | 32.90       | 38.30                           | 46.00                    | 7.70           |
| 961.19             | 41.50                   | V                  | 23.80                 | 6.50          | 31.90       | 39.90                           | 54.00                    | 14.10          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.9.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.9.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

### 12.9.3 Test data for Multiple transmit

#### 12.9.3.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.70                   | H                  | 11.50                 | 2.30          | 33.10       | 39.40                           | 43.50                    | 4.10           |
| 239.52             | 53.10                   | H                  | 13.30                 | 3.20          | 33.00       | 36.60                           | 46.00                    | 9.40           |
| 600.36             | 48.90                   | H                  | 20.30                 | 5.10          | 33.30       | 41.00                           | 46.00                    | 5.00           |
| 839.94             | 43.40                   | H                  | 22.70                 | 6.10          | 32.90       | 39.30                           | 46.00                    | 6.70           |
| 961.19             | 42.10                   | V                  | 23.80                 | 6.50          | 31.90       | 40.50                           | 54.00                    | 13.50          |

- Channel : Middle

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.00                   | H                  | 11.50                 | 2.30          | 33.10       | 37.70                           | 43.50                    | 5.80           |
| 239.52             | 52.80                   | H                  | 13.30                 | 3.20          | 33.00       | 36.30                           | 46.00                    | 9.70           |
| 600.36             | 47.20                   | H                  | 20.30                 | 5.10          | 33.30       | 39.30                           | 46.00                    | 6.70           |
| 839.94             | 42.80                   | H                  | 22.70                 | 6.10          | 32.90       | 38.70                           | 46.00                    | 7.30           |
| 961.19             | 41.50                   | V                  | 23.80                 | 6.50          | 31.90       | 39.90                           | 54.00                    | 14.10          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.90                   | H                  | 11.50                 | 2.30          | 33.10       | 38.60                           | 43.50                    | 4.90           |
| 239.52             | 53.40                   | H                  | 13.30                 | 3.20          | 33.00       | 36.90                           | 46.00                    | 9.10           |
| 600.36             | 49.00                   | H                  | 20.30                 | 5.10          | 33.30       | 41.10                           | 46.00                    | 4.90           |
| 839.94             | 43.50                   | H                  | 22.70                 | 6.10          | 32.90       | 39.40                           | 46.00                    | 6.60           |
| 961.19             | 41.80                   | V                  | 23.80                 | 6.50          | 31.90       | 40.20                           | 54.00                    | 13.80          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.9.3.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.9.3.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

## 12.10 Test data for 802.11n\_HT40 RLAN Mode

### 12.10.1 Test data for Antenna 0

#### 12.10.1.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency (MHz) | Reading (dB $\mu$ V) | Ant. Pol. (H/V) | Ant. Factor (dB/m) | Cable Loss | Amp Gain | Emission Level(dB $\mu$ V/m) | Limits (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|-----------------|--------------------|------------|----------|------------------------------|-----------------------|-------------|
| 119.24          | 57.30                | H               | 11.50              | 2.30       | 33.10    | 38.00                        | 43.50                 | 5.50        |
| 239.52          | 51.90                | H               | 13.30              | 3.20       | 33.00    | 35.40                        | 46.00                 | 10.60       |
| 600.36          | 47.30                | H               | 20.30              | 5.10       | 33.30    | 39.40                        | 46.00                 | 6.60        |
| 839.94          | 42.50                | H               | 22.70              | 6.10       | 32.90    | 38.40                        | 46.00                 | 7.60        |
| 961.19          | 41.20                | V               | 23.80              | 6.50       | 31.90    | 39.60                        | 54.00                 | 14.40       |

- Channel : High

| Frequency (MHz) | Reading (dB $\mu$ V) | Ant. Pol. (H/V) | Ant. Factor (dB/m) | Cable Loss | Amp Gain | Emission Level(dB $\mu$ V/m) | Limits (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|-----------------|--------------------|------------|----------|------------------------------|-----------------------|-------------|
| 119.24          | 58.50                | H               | 11.50              | 2.30       | 33.10    | 39.20                        | 43.50                 | 4.30        |
| 239.52          | 53.60                | H               | 13.30              | 3.20       | 33.00    | 37.10                        | 46.00                 | 8.90        |
| 600.36          | 49.10                | H               | 20.30              | 5.10       | 33.30    | 41.20                        | 46.00                 | 4.80        |
| 839.94          | 43.60                | H               | 22.70              | 6.10       | 32.90    | 39.50                        | 46.00                 | 6.50        |
| 961.19          | 41.70                | V               | 23.80              | 6.50       | 31.90    | 40.10                        | 54.00                 | 13.90       |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.10.1.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.10.1.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

o | 3321

Tested by: Hong-Kyu, Lee/ Engineer

## 12.10.2 Test data for Antenna 1

### 12.10.2.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 58.10                   | H                  | 11.50                 | 2.30          | 33.10       | 38.80                           | 43.50                    | 4.70           |
| 239.52             | 53.30                   | H                  | 13.30                 | 3.20          | 33.00       | 36.80                           | 46.00                    | 9.20           |
| 600.36             | 48.90                   | H                  | 20.30                 | 5.10          | 33.30       | 41.00                           | 46.00                    | 5.00           |
| 839.94             | 43.70                   | H                  | 22.70                 | 6.10          | 32.90       | 39.60                           | 46.00                    | 6.40           |
| 961.19             | 42.40                   | V                  | 23.80                 | 6.50          | 31.90       | 40.80                           | 54.00                    | 13.20          |

- Channel : High

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|--------------------|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| 119.24             | 57.70                   | H                  | 11.50                 | 2.30          | 33.10       | 38.40                           | 43.50                    | 5.10           |
| 239.52             | 52.70                   | H                  | 13.30                 | 3.20          | 33.00       | 36.20                           | 46.00                    | 9.80           |
| 600.36             | 47.60                   | H                  | 20.30                 | 5.10          | 33.30       | 39.70                           | 46.00                    | 6.30           |
| 839.94             | 42.40                   | H                  | 22.70                 | 6.10          | 32.90       | 38.30                           | 46.00                    | 7.70           |
| 961.19             | 41.40                   | V                  | 23.80                 | 6.50          | 31.90       | 39.80                           | 54.00                    | 14.20          |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

Tested by: Hong-Kyu, Lee/ Engineer

### 12.10.2.2 Test data for Below 30 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

### 12.4.2.3 Test data for above 1 GHz

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 40 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

o | 30.12.

Tested by: Hong-Kyu, Lee/ Engineer

### 12.10.3 Test data for Multiple transmit

#### 12.10.3.1 Test data for 30 MHz ~ 1 000 MHz

- Test Date : December 17, 2013
- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode
- Channel : Low

| Frequency (MHz) | Reading (dB $\mu$ V) | Ant. Pol. (H/V) | Ant. Factor (dB/m) | Cable Loss | Amp Gain | Emission Level(dB $\mu$ V/m) | Limits (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|-----------------|--------------------|------------|----------|------------------------------|-----------------------|-------------|
| 119.24          | 57.70                | H               | 11.50              | 2.30       | 33.10    | 38.40                        | 43.50                 | 5.10        |
| 239.52          | 52.40                | H               | 13.30              | 3.20       | 33.00    | 35.90                        | 46.00                 | 10.10       |
| 600.36          | 47.40                | H               | 20.30              | 5.10       | 33.30    | 39.50                        | 46.00                 | 6.50        |
| 839.94          | 42.60                | H               | 22.70              | 6.10       | 32.90    | 38.50                        | 46.00                 | 7.50        |
| 961.19          | 40.70                | V               | 23.80              | 6.50       | 31.90    | 39.10                        | 54.00                 | 14.90       |

- Channel : High

| Frequency (MHz) | Reading (dB $\mu$ V) | Ant. Pol. (H/V) | Ant. Factor (dB/m) | Cable Loss | Amp Gain | Emission Level(dB $\mu$ V/m) | Limits (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|-----------------|--------------------|------------|----------|------------------------------|-----------------------|-------------|
| 119.24          | 57.50                | H               | 11.50              | 2.30       | 33.10    | 38.20                        | 43.50                 | 5.30        |
| 239.52          | 52.20                | H               | 13.30              | 3.20       | 33.00    | 35.70                        | 46.00                 | 10.30       |
| 600.36          | 47.60                | H               | 20.30              | 5.10       | 33.30    | 39.70                        | 46.00                 | 6.30        |
| 839.94          | 43.10                | H               | 22.70              | 6.10       | 32.90    | 39.00                        | 46.00                 | 7.00        |
| 961.19          | 40.70                | V               | 23.80              | 6.50       | 31.90    | 39.10                        | 54.00                 | 14.90       |

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dB $\mu$ V/m) - Emission Level (dB $\mu$ V/m)

0 | 33.3

Tested by: Hong-Kyu, Lee/ Engineer

**12.10.3.2 Test data for Below 30 MHz**

- Test Date : December 17, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

**12.10.3.3 Test data for above 1 GHz**

- Test Date : December 17, 2013
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Operating mode : Transmitting mode

| Frequency<br>(MHz)                              | Reading<br>(dB $\mu$ V) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|---|-------------------------|--------------------|-----------------------|---------------|-------------|---------------------------------|--------------------------|----------------|
| It was not observed any emissions from the EUT. |                         |                    |                       |               |             |                                 |                          |                |

Tested by: Hong-Kyu, Lee/ Engineer

## 13. CONDUCTED EMISSION TEST

### 13.1 Operating environment

Temperature : 27 °C  
Relative humidity : 46 % R.H.

### 13.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a  $50 \Omega / 50 \mu\text{H} + 5 \Omega$  Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

### 13.3 Test equipment used

| Model Number  | Manufacturer    | Description       | Serial Number | Last Cal.         |
|---------------|-----------------|-------------------|---------------|-------------------|
| ■ - ESiB26    | Rohde & Schwarz | EMI Test Receiver | 100296        | Nov. 05, 2013(1Y) |
| ■ - NSLK 8126 | Schwarzbeck     | AMN               | 8126-404      | May 29, 2013(1Y)  |
| □ - 3825/2    | EMCO            | AMN               | 9109-1867     | May 20, 2013(1Y)  |

All test equipment used is calibrated on a regular basis.

### 13.4 Test data for 802.11b WLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.17               | N    | 53.60                   | 64.90      | 11.30          |
| 0.67               | H    | 46.90                   | 56.00      | 9.10           |
| 1.34               | H    | 41.70                   | 56.00      | 14.30          |
| 1.59               | N    | 44.50                   | 56.00      | 11.50          |
| 14.33              | N    | 49.50                   | 60.00      | 10.50          |
| 14.34              | H    | 50.90                   | 60.00      | 9.10           |
| Frequency<br>(MHz) | Line | Average (dB $\mu$ V)    |            | Margin<br>(dB) |
|                    |      | Emission level          | Limits     |                |
| 0.67               | H    | 38.20                   | 46.00      | 7.80           |
| 1.59               | N    | 32.00                   | 46.00      | 14.00          |
| 14.33              | N    | 41.00                   | 50.00      | 9.00           |
| 14.34              | H    | 42.20                   | 50.00      | 7.80           |

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line

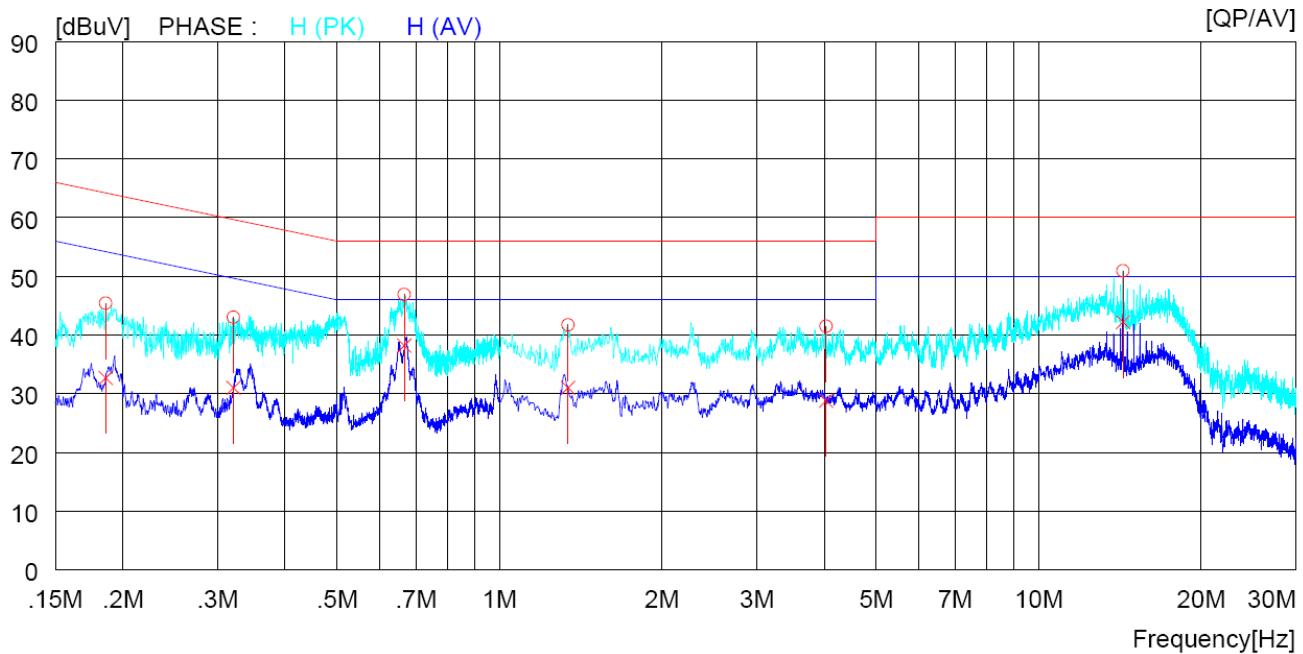
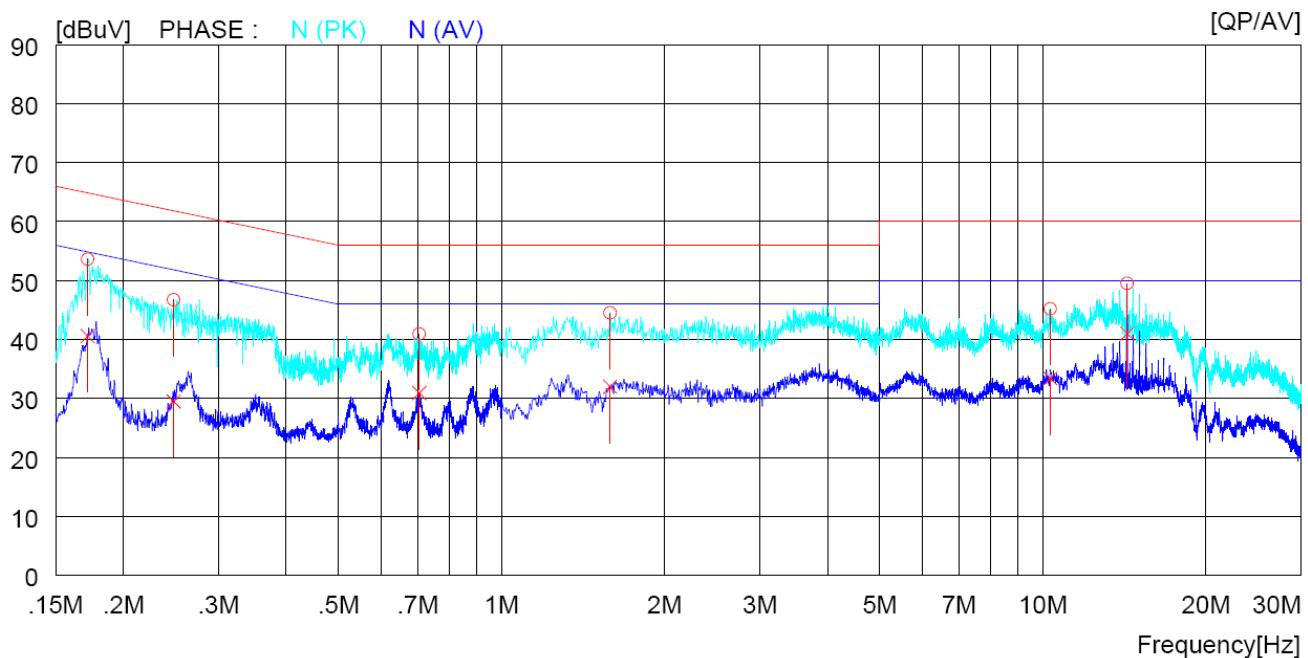
See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

0 | 33 21

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

### 13.5 Test data for 802.11g WLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.65               | H    | 37.00                   | 56.00      | 19.00          |
| 0.66               | N    | 36.30                   | 56.00      | 19.70          |
| 4.24               | N    | 32.90                   | 56.00      | 23.10          |
| 4.25               | H    | 33.30                   | 56.00      | 22.70          |
| 13.36              | H    | 37.00                   | 60.00      | 23.00          |
| 13.37              | N    | 37.80                   | 60.00      | 22.20          |
| Frequency<br>(MHz) | Line | Average (dB $\mu$ V)    |            | Margin<br>(dB) |
|                    |      | Emission level          | Limits     |                |
| 0.31               | H    | 28.20                   | 49.90      | 21.70          |
| 0.65               | H    | 28.70                   | 46.00      | 17.30          |
| 0.66               | N    | 27.60                   | 46.00      | 18.40          |
| 13.37              | N    | 28.60                   | 50.00      | 21.40          |

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line

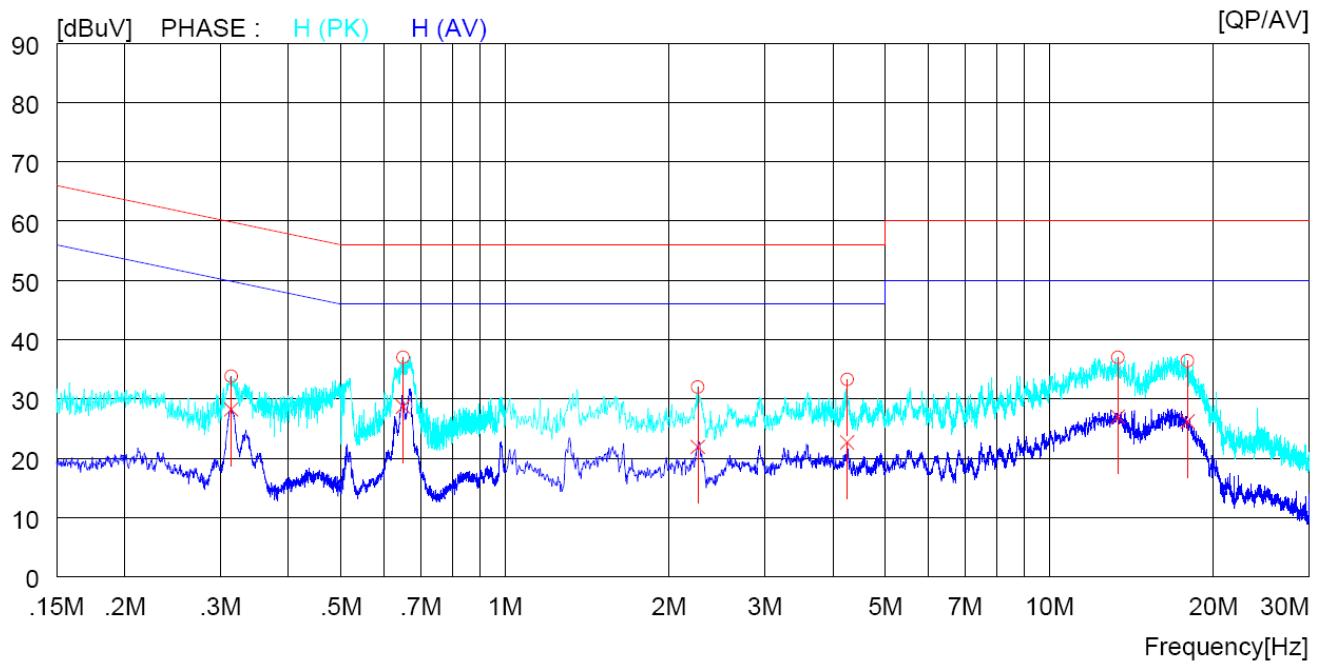
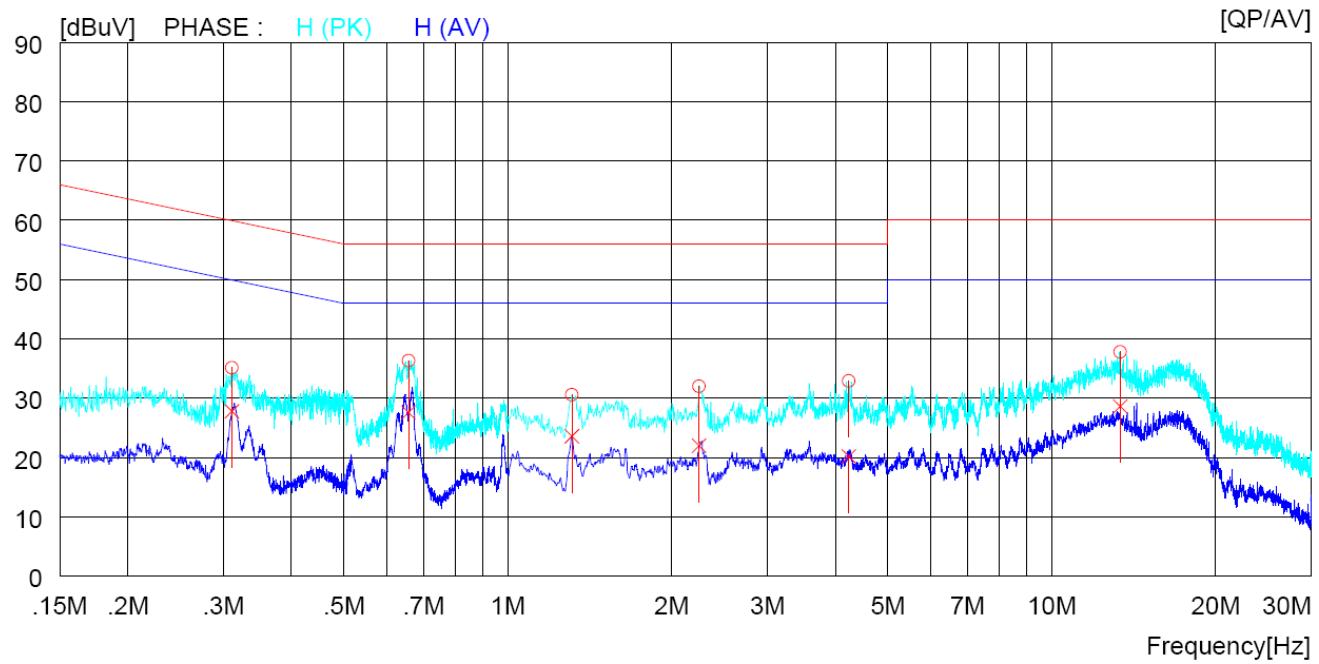
See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

0 | 30.21

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

### 13.6 Test data for 802.11n\_HT20 WLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.63               | N    | 36.40                   | 56.00      | 19.60          |
| 0.65               | H    | 37.00                   | 56.00      | 19.00          |
| 0.67               | H    | 36.60                   | 56.00      | 19.40          |
| 4.25               | H    | 33.60                   | 56.00      | 22.40          |
| 13.37              | H    | 37.40                   | 60.00      | 22.60          |
| 14.34              | N    | 38.30                   | 60.00      | 21.70          |

| Frequency<br>(MHz) | Line | Average (dB $\mu$ V) |        | Margin<br>(dB) |
|--------------------|------|----------------------|--------|----------------|
|                    |      | Emission level       | Limits |                |
| 0.63               | N    | 27.80                | 46.00  | 18.20          |
| 0.65               | H    | 29.30                | 46.00  | 16.70          |
| 0.67               | H    | 31.90                | 46.00  | 14.10          |
| 14.34              | N    | 29.10                | 50.00  | 20.90          |

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line

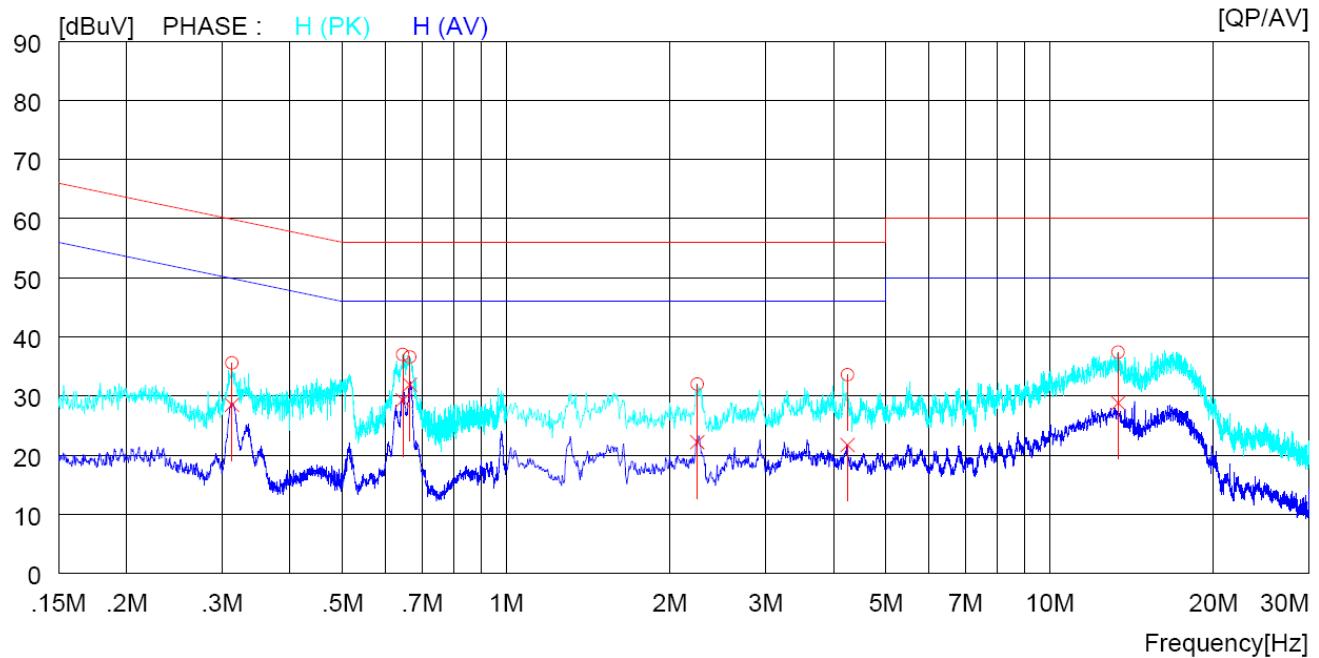
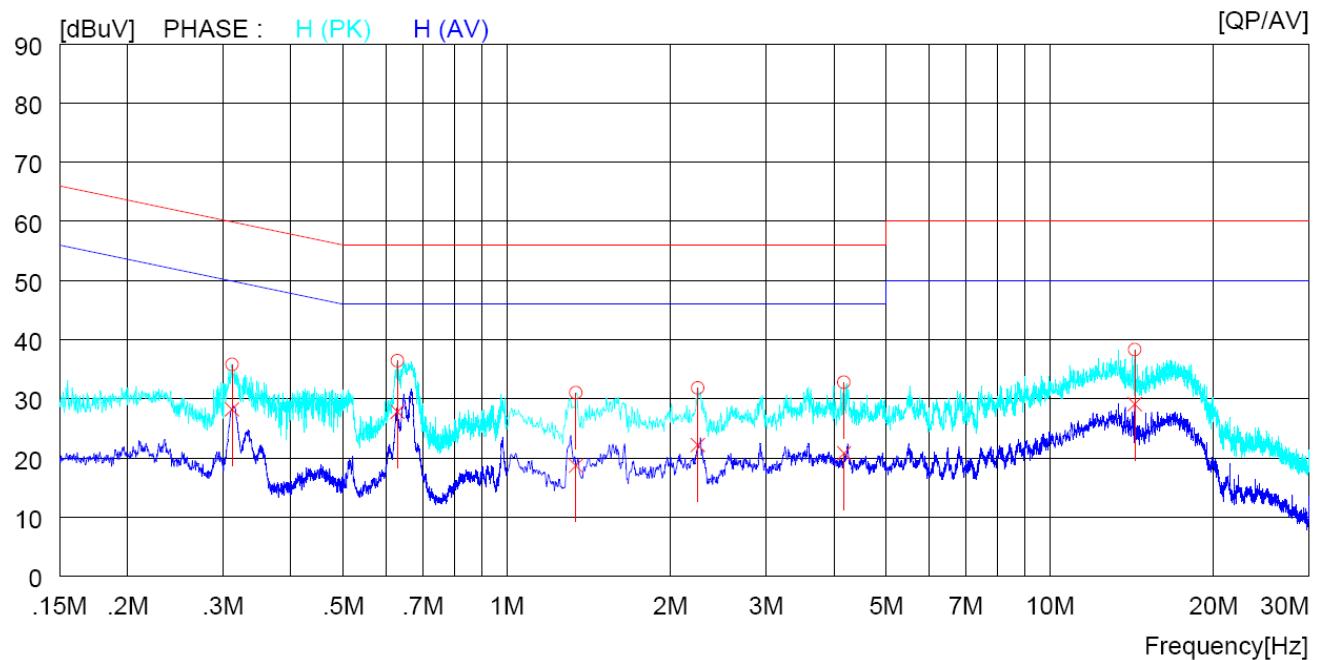
See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

### 13.7 Test data for 802.11n\_HT40 WLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.31               | N    | 36.60                   | 59.90      | 23.30          |
| 0.63               | N    | 37.20                   | 56.00      | 18.80          |
| 0.65               | H    | 37.10                   | 56.00      | 18.90          |
| 13.20              | H    | 37.20                   | 60.00      | 22.80          |
| 15.40              | N    | 36.30                   | 60.00      | 23.70          |
| 17.34              | H    | 37.10                   | 60.00      | 22.90          |
| Frequency<br>(MHz) | Line | Average (dB $\mu$ V)    |            | Margin<br>(dB) |
|                    |      | Emission level          | Limits     |                |
| 0.31               | N    | 28.90                   | 49.90      | 21.00          |
| 0.63               | N    | 27.60                   | 46.00      | 18.40          |
| 0.65               | H    | 29.80                   | 46.00      | 16.20          |
| 13.20              | H    | 28.90                   | 50.00      | 21.10          |

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line

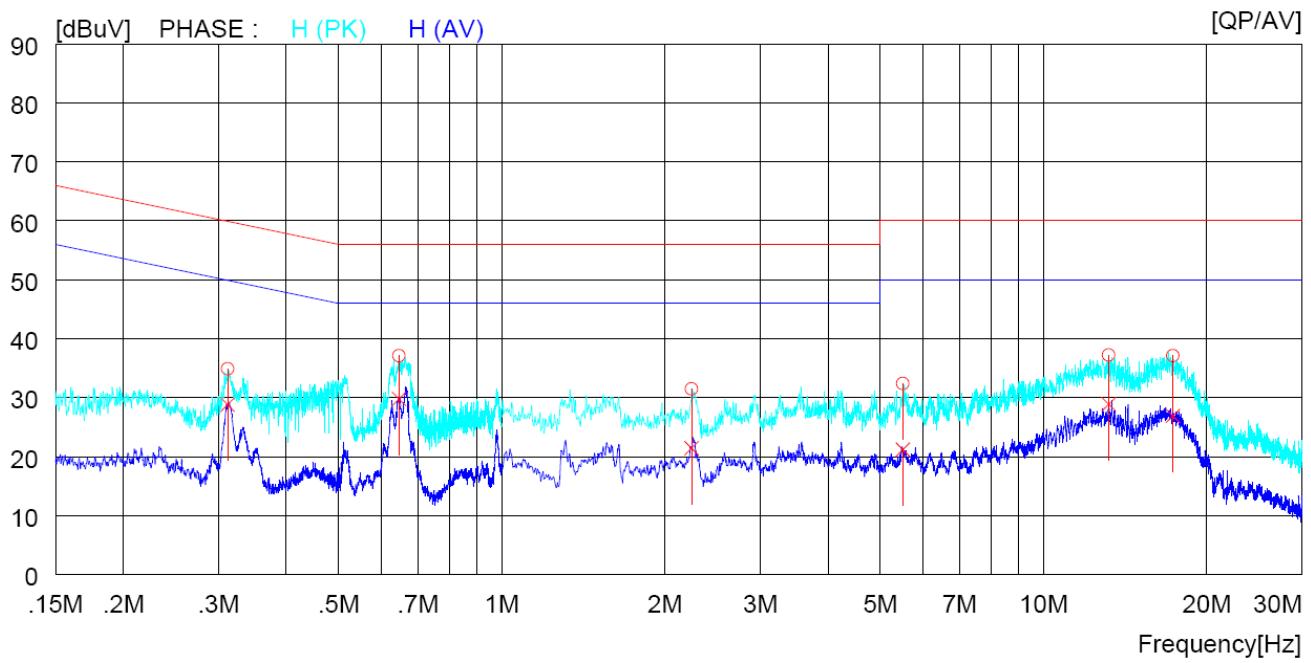
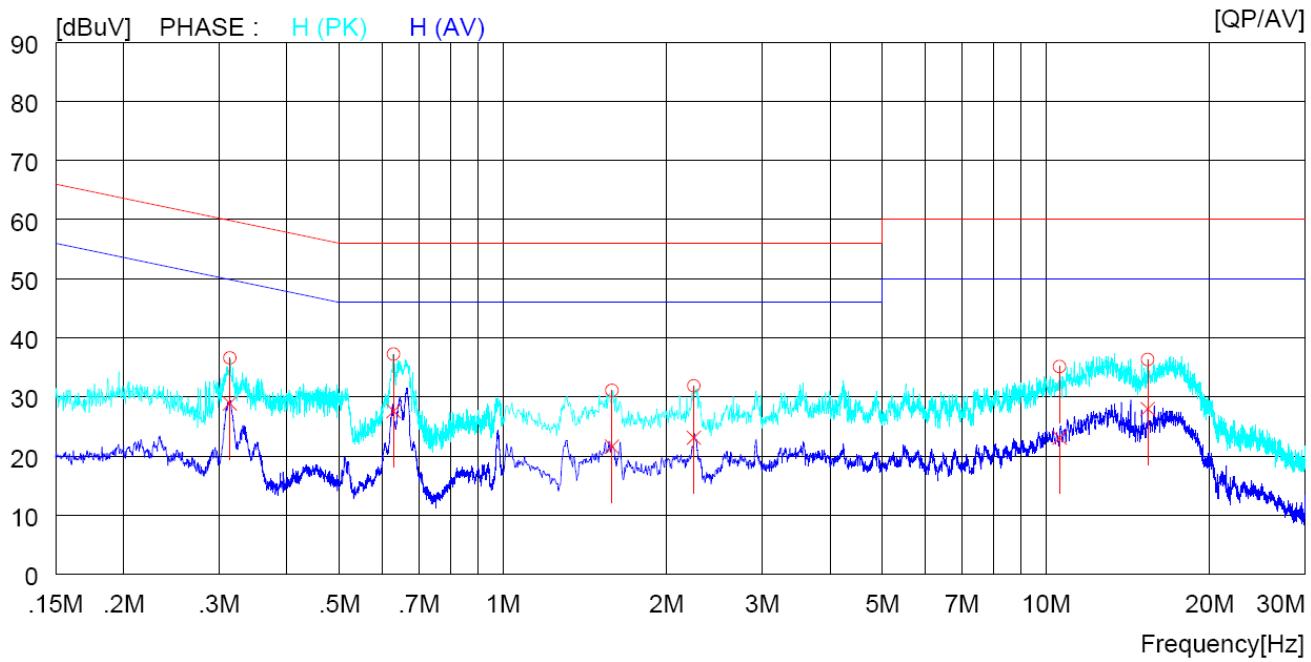
See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

0 | 30.2

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

### 13.8 Test data for 802.11a RLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.63               | H    | 37.30                   | 56.00      | 18.70          |
| 2.25               | N    | 32.70                   | 56.00      | 23.30          |
| 13.17              | N    | 37.90                   | 60.00      | 22.10          |
| 14.18              | H    | 37.40                   | 60.00      | 22.60          |
| 16.63              | H    | 37.40                   | 60.00      | 22.60          |
| 17.63              | N    | 36.80                   | 60.00      | 23.20          |
| Frequency<br>(MHz) | Line | Average (dB $\mu$ V)    |            | Margin<br>(dB) |
|                    |      | Emission level          | Limits     |                |
| 0.31               | H    | 29.20                   | 49.90      | 20.70          |
| 0.63               | H    | 28.80                   | 46.00      | 17.20          |
| 14.18              | H    | 28.80                   | 50.00      | 21.20          |
| 16.63              | H    | 27.20                   | 50.00      | 22.80          |

Line Conducted Emissions Tabulated Data

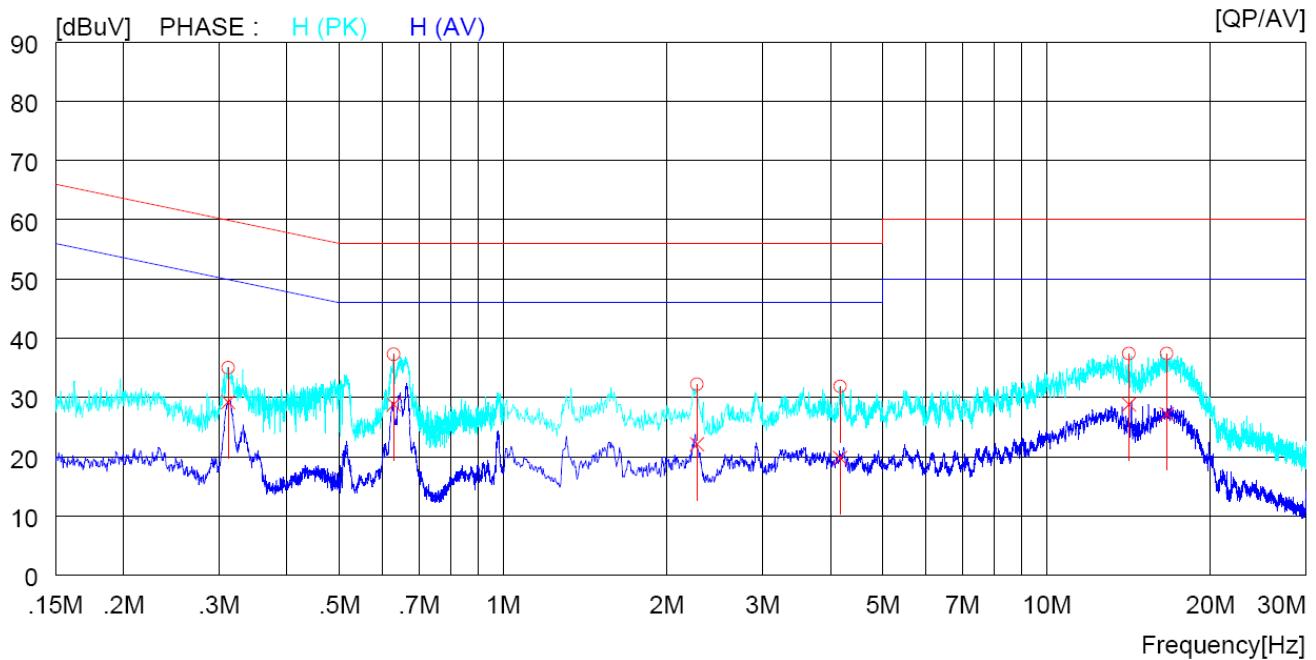
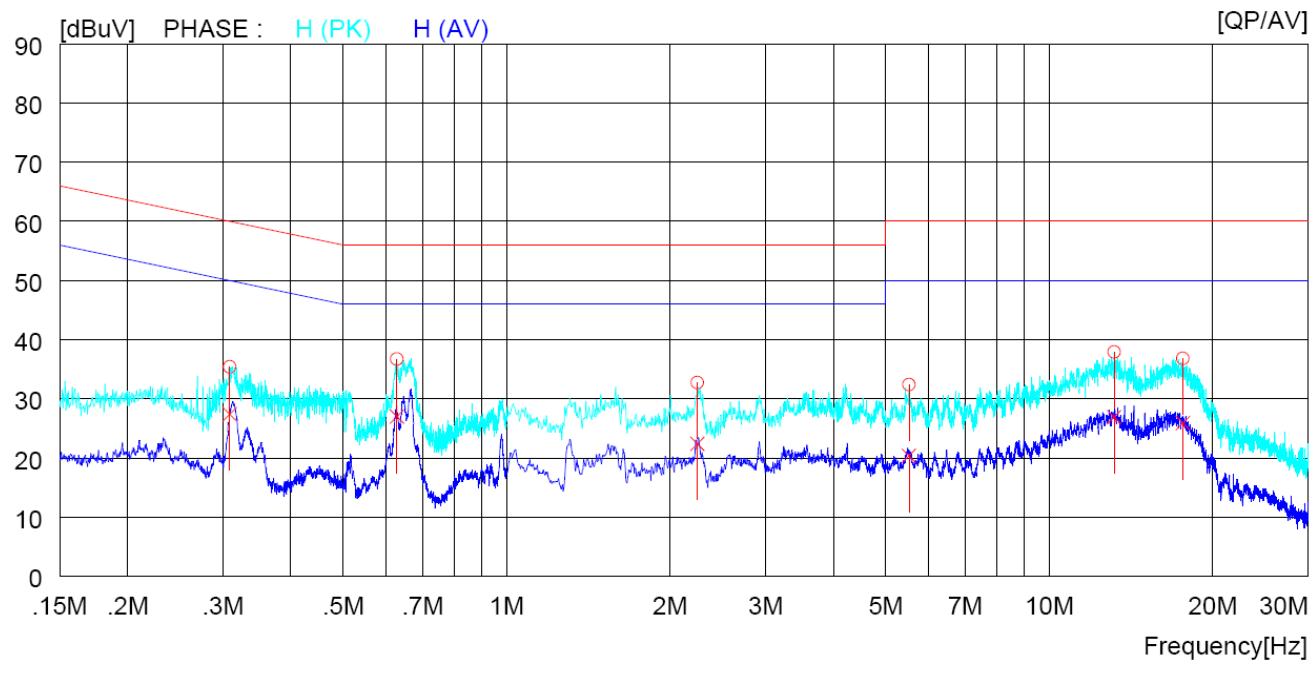
Remark : "H": Hot Line, "N": Neutral Line

See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

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EMC-003 (Rev.2)

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### 13.9 Test data for 802.11n\_HT20 RLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.64               | H    | 37.30                   | 56.00      | 18.70          |
| 0.66               | N    | 36.70                   | 56.00      | 19.30          |
| 3.58               | H    | 33.10                   | 56.00      | 22.90          |
| 13.79              | H    | 39.10                   | 60.00      | 20.70          |
| 16.83              | H    | 38.40                   | 60.00      | 21.60          |
| 17.51              | N    | 36.90                   | 60.00      | 23.10          |
| Frequency<br>(MHz) | Line | Average (dB $\mu$ V)    |            | Margin<br>(dB) |
|                    |      | Emission level          | Limits     |                |
| 0.31               | H    | 28.50                   | 49.90      | 21.40          |
| 0.64               | H    | 28.90                   | 46.00      | 17.10          |
| 0.66               | N    | 28.30                   | 46.00      | 17.70          |
| 13.78              | H    | 30.30                   | 50.00      | 19.70          |

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line

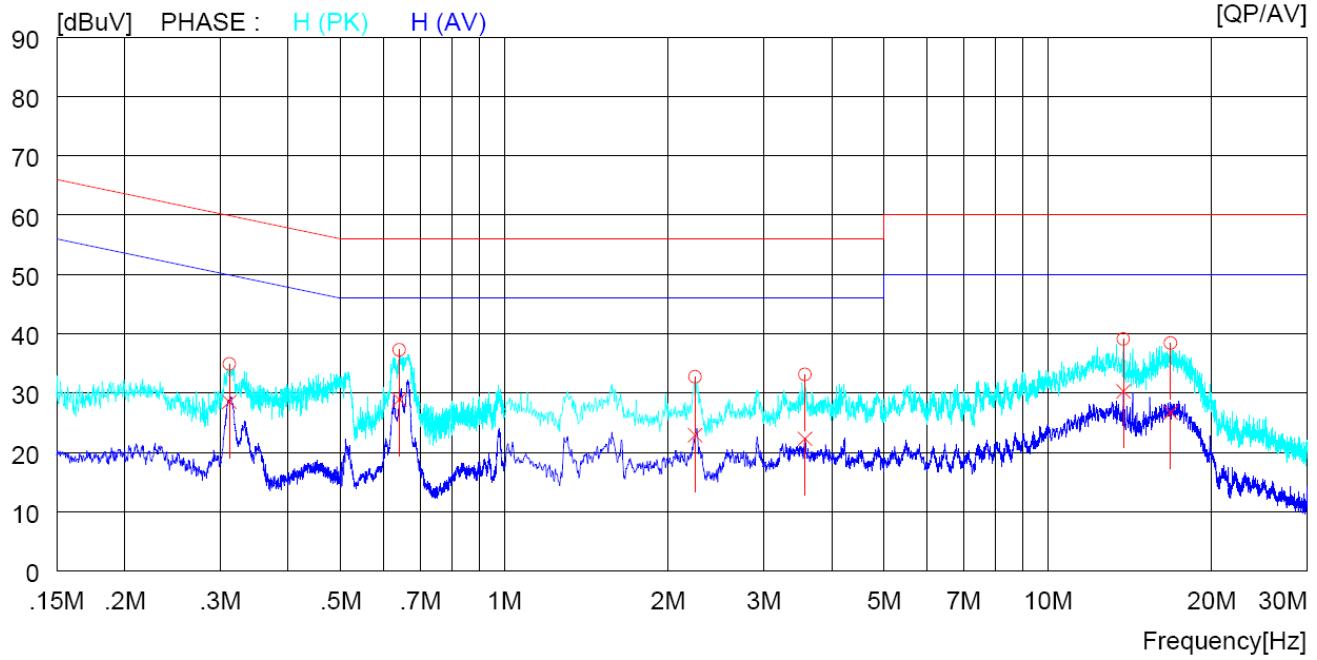
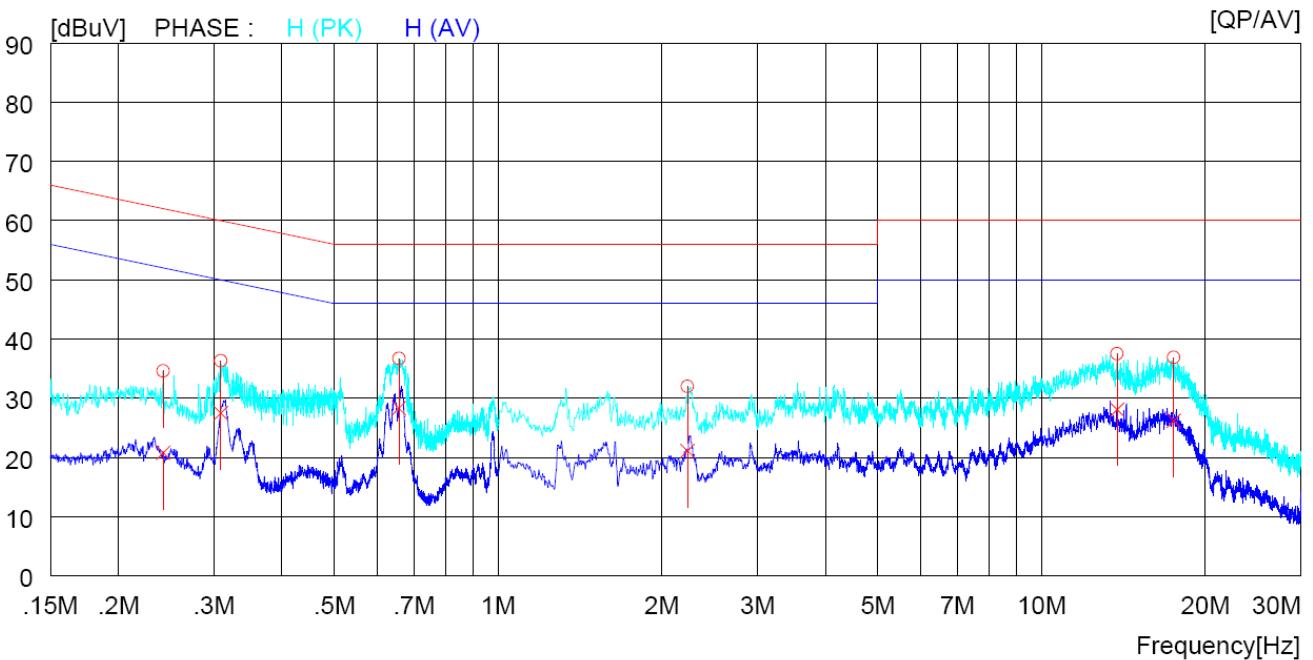
See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

0 | 30.3

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

### 13.10 Test data for 802.11n\_HT40 RLAN Mode

- Test Date : December 24, 2013
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz

| Frequency<br>(MHz) | Line | Quasi-Peak (dB $\mu$ V) |            | Margin<br>(dB) |
|--------------------|------|-------------------------|------------|----------------|
|                    |      | Emission level          | Q.P Limits |                |
| 0.52               | H    | 34.10                   | 56.00      | 21.90          |
| 0.62               | H    | 36.90                   | 56.00      | 19.10          |
| 0.63               | N    | 36.20                   | 56.00      | 19.80          |
| 1.37               | N    | 33.40                   | 56.00      | 22.60          |
| 12.96              | N    | 38.10                   | 60.00      | 21.90          |
| 16.81              | H    | 37.70                   | 60.00      | 22.30          |
| Frequency<br>(MHz) | Line | Average (dB $\mu$ V)    |            | Margin<br>(dB) |
|                    |      | Emission level          | Limits     |                |
| 0.31               | H    | 29.50                   | 49.90      | 20.40          |
| 0.62               | H    | 29.40                   | 46.00      | 16.60          |
| 0.63               | N    | 27.20                   | 46.00      | 18.80          |
| 12.96              | H    | 28.10                   | 50.00      | 21.90          |

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line

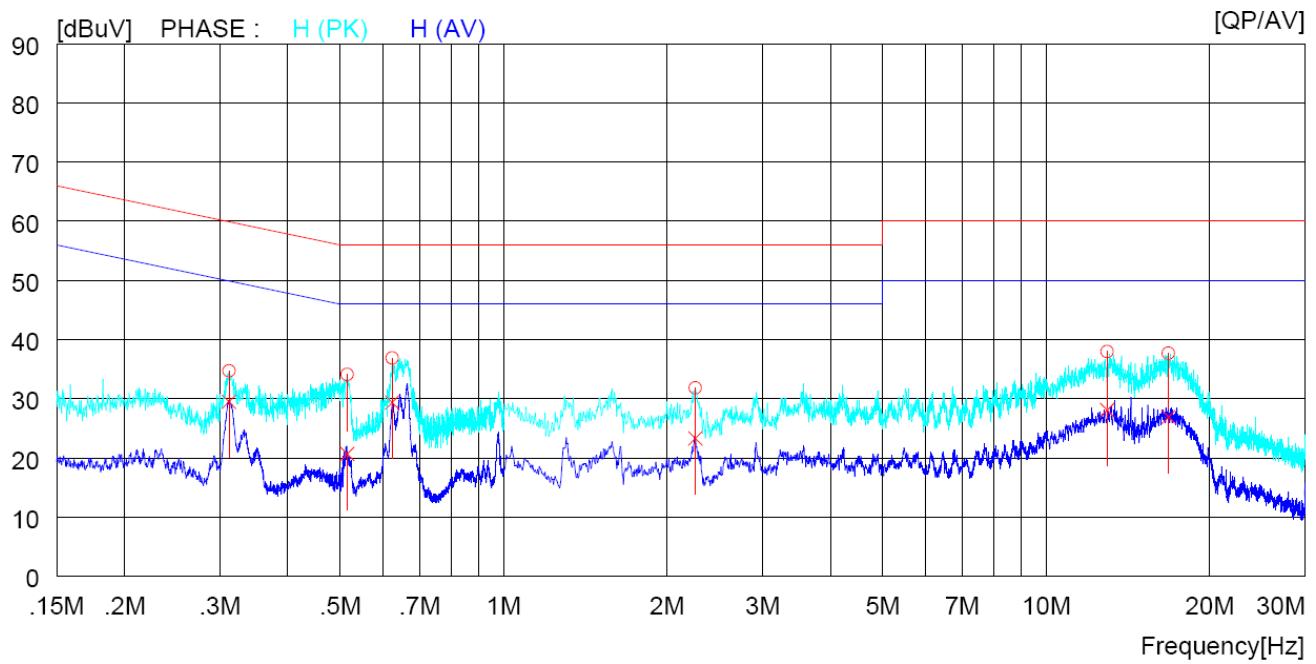
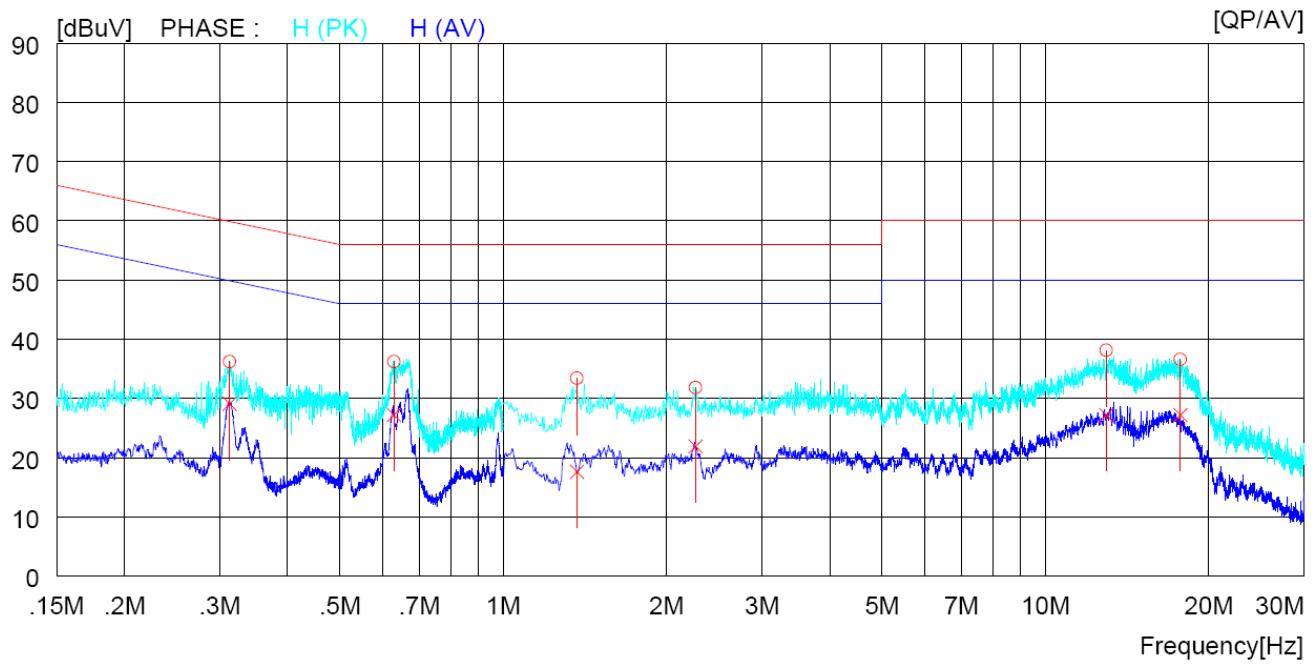
See next page for an overview sweep performed with quasi-peak and average detector modes.

Margin (dB) = Limits (dB $\mu$ V) – Emission Level (dB $\mu$ V)

Emission Level = Receiver reading + Cable loss + Insertion loss of AMN

0 | 33.21

Tested by: Hong-Kyu, Lee/ Engineer

**Graphical representation of Conducted Emission****HOT LINE****NEUTRAL LINE**

## 14. RADIO FREQUENCY EXPOSURE

### 14.1 RF Exposure Limit

According to the FCC rule §1.1310 and IC rule RSS-102 Section 2.5.1, the limit for General Population/Uncontrolled exposure is 1 mW/cm<sup>2</sup> for the device operating 1 500 ~ 100 000 MHz.

### 14.2 EUT Description

| Kind of EUT                 | Main Control Unit  |  |            |  |            |  |
|-----------------------------|--|--|------------|--|------------|--|
| Operating Frequency Band    | <input type="checkbox"/> Wireless Microphone: 494.000 MHz ~ 501.000 MHz<br><input type="checkbox"/> and 498.200 MHz ~ 505.200 MHz<br><input checked="" type="checkbox"/> WLAN: 2 412 MHz ~ 2 462 MHz<br><input type="checkbox"/> WLAN: 5 180 MHz ~ 5 320 MHz / 5 500 MHz ~ 5 700 MHz<br><input checked="" type="checkbox"/> WLAN: 5 745 MHz ~ 5 825 MHz<br><input type="checkbox"/> Bluetooth: 2 402 MHz ~ 2 480 MHz<br><input type="checkbox"/> GFSK Modulation: 2403 MHz , 2443 MHz , 2478 MHz |  |            |  |            |  |
| Device Category             | <input type="checkbox"/> Portable (< 20 cm separation)<br><input type="checkbox"/> Mobile (> 20 cm separation)<br><input checked="" type="checkbox"/> Others   |  |            |  |            |  |
| Max. Output Power           | <table><tr><td>2 GHz Band</td><td>802.11b: 17.57 dBm<br/>802.11g: 15.18 dBm<br/>802.11n(HT20): 13.81 dBm<br/>802.11n(HT40): 12.92 dBm</td></tr><tr><td>5 GHz Band</td><td>802.11a: 13.43 dBm<br/>802.11n(HT20): 11.93 dBm<br/>802.11n(HT40): 10.88 dBm</td></tr></table>   |  | 2 GHz Band | 802.11b: 17.57 dBm<br>802.11g: 15.18 dBm<br>802.11n(HT20): 13.81 dBm<br>802.11n(HT40): 12.92 dBm | 5 GHz Band | 802.11a: 13.43 dBm<br>802.11n(HT20): 11.93 dBm<br>802.11n(HT40): 10.88 dBm |
| 2 GHz Band                  | 802.11b: 17.57 dBm<br>802.11g: 15.18 dBm<br>802.11n(HT20): 13.81 dBm<br>802.11n(HT40): 12.92 dBm   |  |            |  |            |  |
| 5 GHz Band                  | 802.11a: 13.43 dBm<br>802.11n(HT20): 11.93 dBm<br>802.11n(HT40): 10.88 dBm   |  |            |  |            |  |
| Used Antenna Gain           | 1.5 dBI  |  |            |  |            |  |
| Exposure Evaluation Applied | <input checked="" type="checkbox"/> MPE<br><input type="checkbox"/> SAR<br><input type="checkbox"/> N/A  |  |            |  |            |  |

## 14.3 Evaluation Results

### 14.3.1 Test result of RF Conducted Power and antenna gain

| Operating Freq.<br>(MHz) | Max. Output Power<br>dBm | Max. Output Power<br>Watts | Antenna Gain<br>Log | Antenna Gain<br>Linear | Distance<br>m | E Field Strength (V/m)<br>Result | E Field Strength (V/m)<br>Limit |
|--------------------------|--------------------------|----------------------------|---------------------|------------------------|---------------|----------------------------------|---------------------------------|
| 2 442                    | 17.57                    | 0.057                      | 1.50                | 1.41                   | 0.2           | 7.78                             | 61.4                            |
| 5 825                    | 13.43                    | 0.022                      | 1.50                | 1.41                   | 0.2           | 4.83                             | 61.4                            |

### 14.3.2 Results

The maximum E Field strength level of this EUT is 7.78 V/m when safety distance between the EUT and human body is maintained at least 0.2m, so the electromagnetic field of the EUT are MET the RF exposure requirement mentioned on the clause 4 in the standard., RSS-102.