

-. Channel : Middle

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (dBμV/m) - Emission Level (dBμV/m)



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

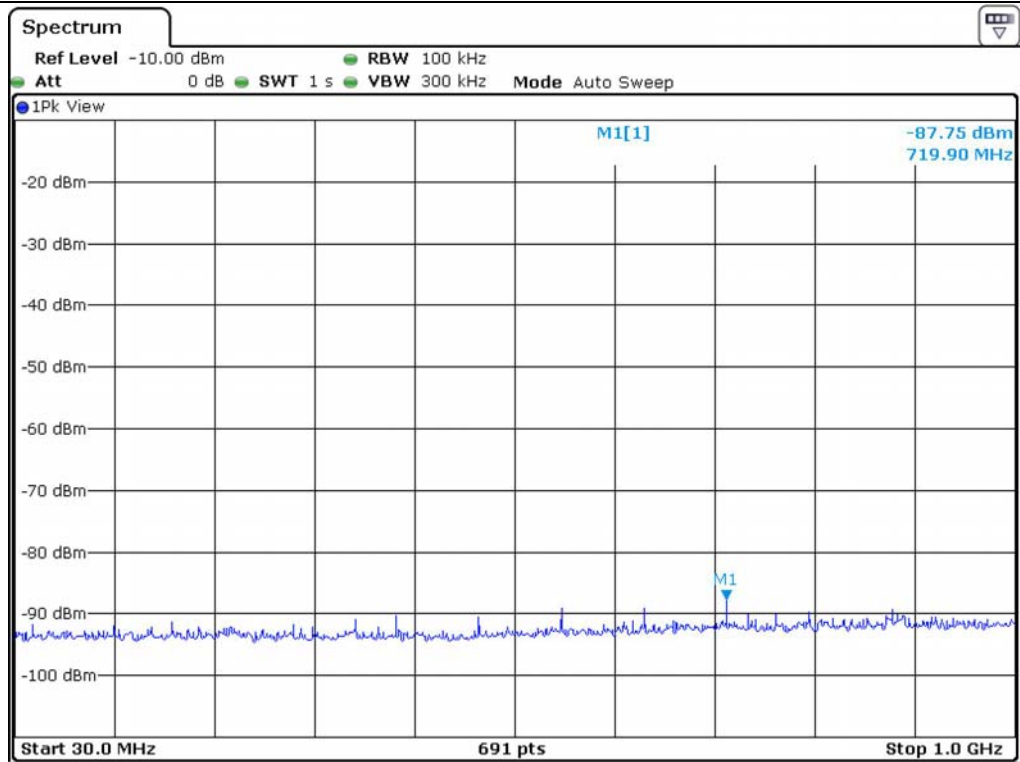
10.11.1 Test data for Antenna 0 – Conducted

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

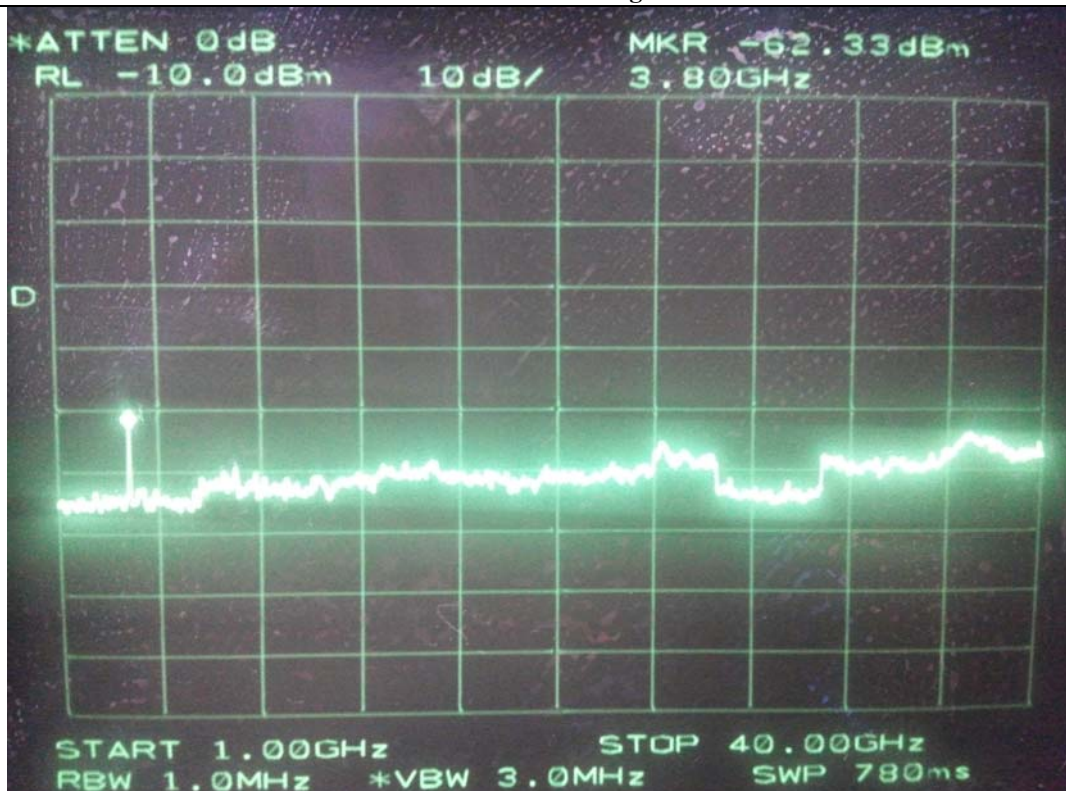
Frequency (MHz)	Spectrum Reading (dBm)	Cable Loss (dB)	Total (dBm)
Test result for Low Channel			
719.90	-87.75	0.19	-87.56
3 800.00	-62.33	0.69	-61.64
Test result for High Channel			
719.00	-88.19	0.19	-88.00
3 800.00	-61.00	0.69	-60.31



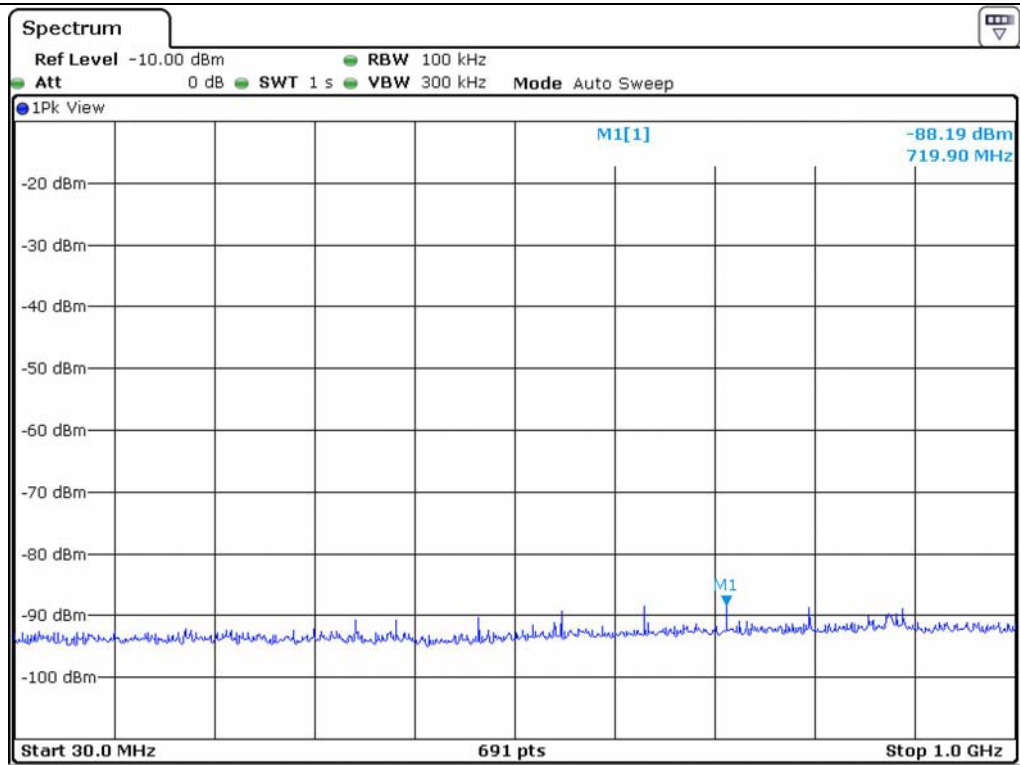
Tested by: Hong-Kyu, Lee/ Engineer



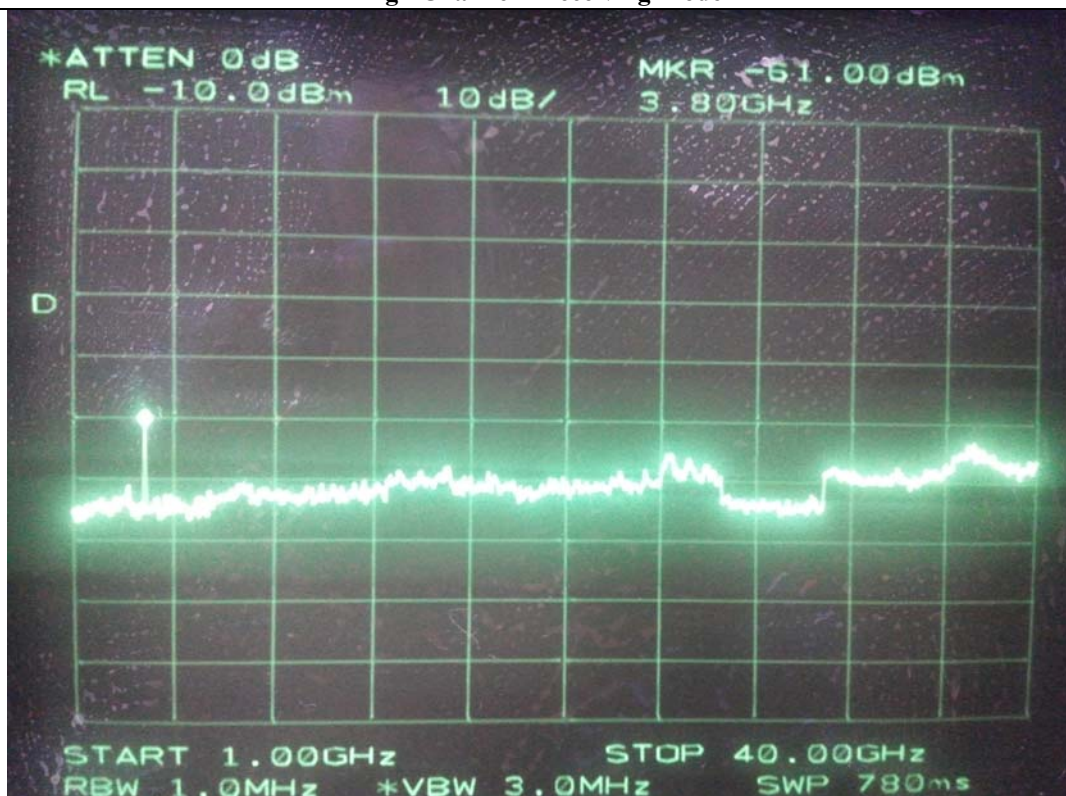
Low Channel - Receiving Mode



Low Channel - Receiving Mode



High Channel - Receiving Mode



High Channel - Receiving Mode

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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								

0 | 30 21.

Tested by: Hong-Kyu, Lee/ Engineer

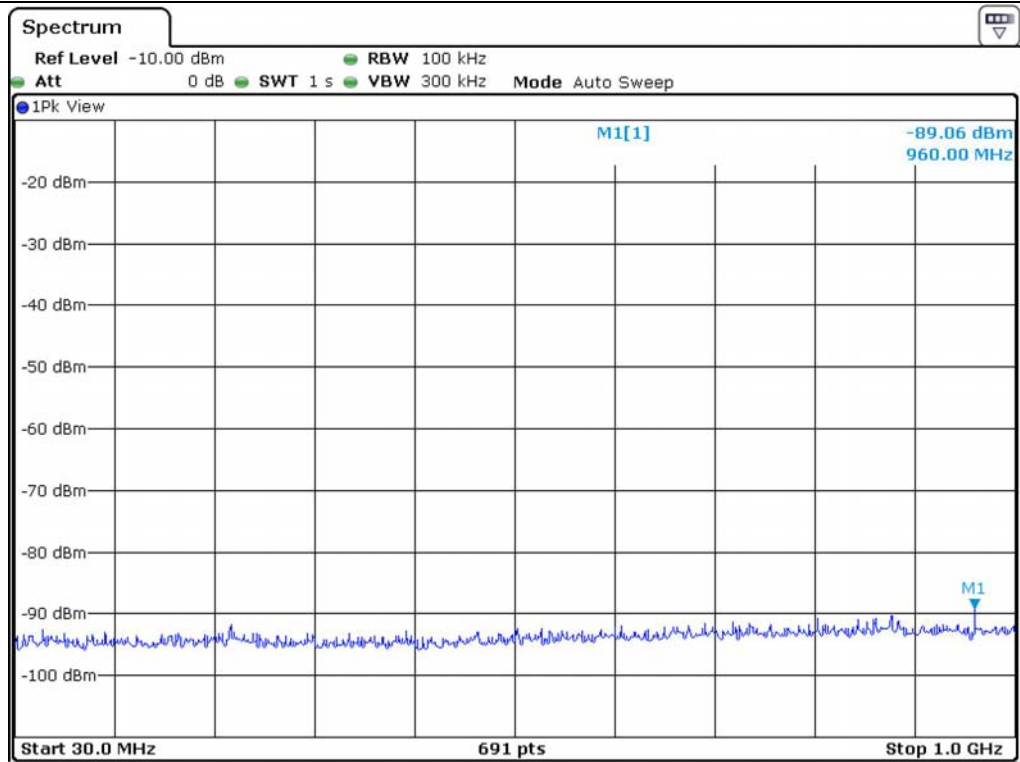
10.11.3 Test data for Antenna 1 – Conducted

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

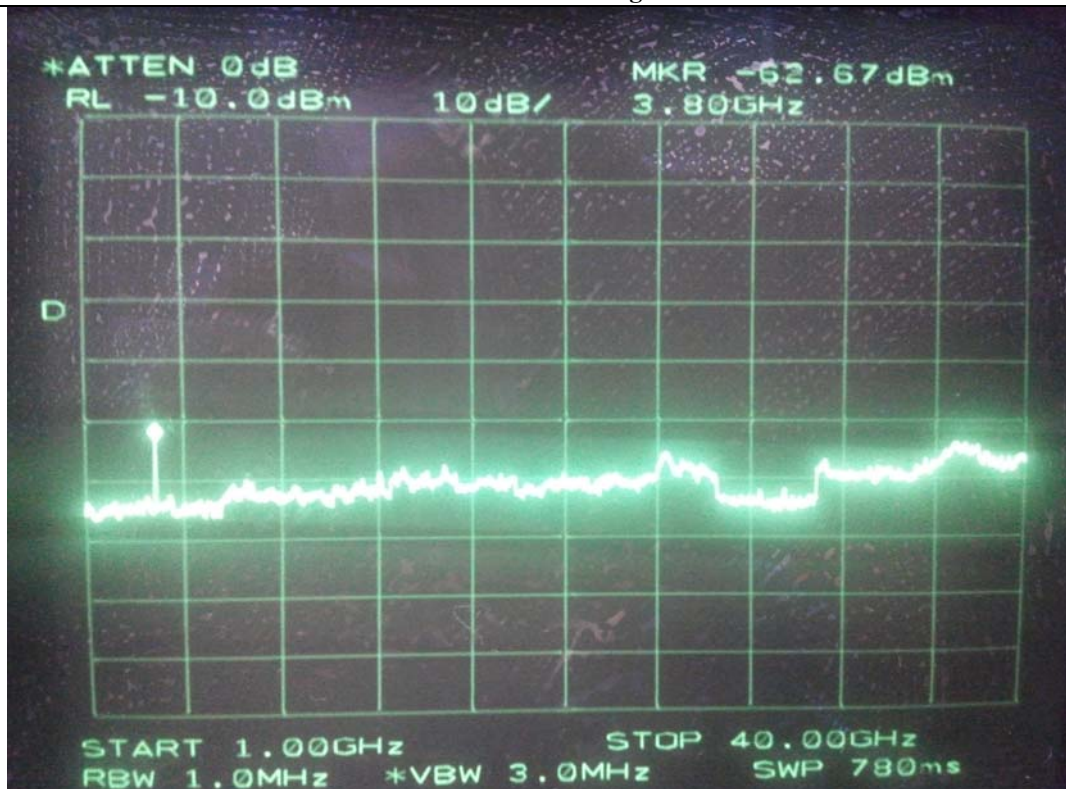
Frequency (MHz)	Spectrum Reading (dBm)	Cable Loss (dB)	Total (dBm)
Test result for Low Channel			
960.00	-89.06	0.22	-88.84
3 800.00	-62.67	0.69	-61.98
Test result for High Channel			
960.00	-88.97	0.22	-88.75
3 800.00	-63.00	0.69	-62.31



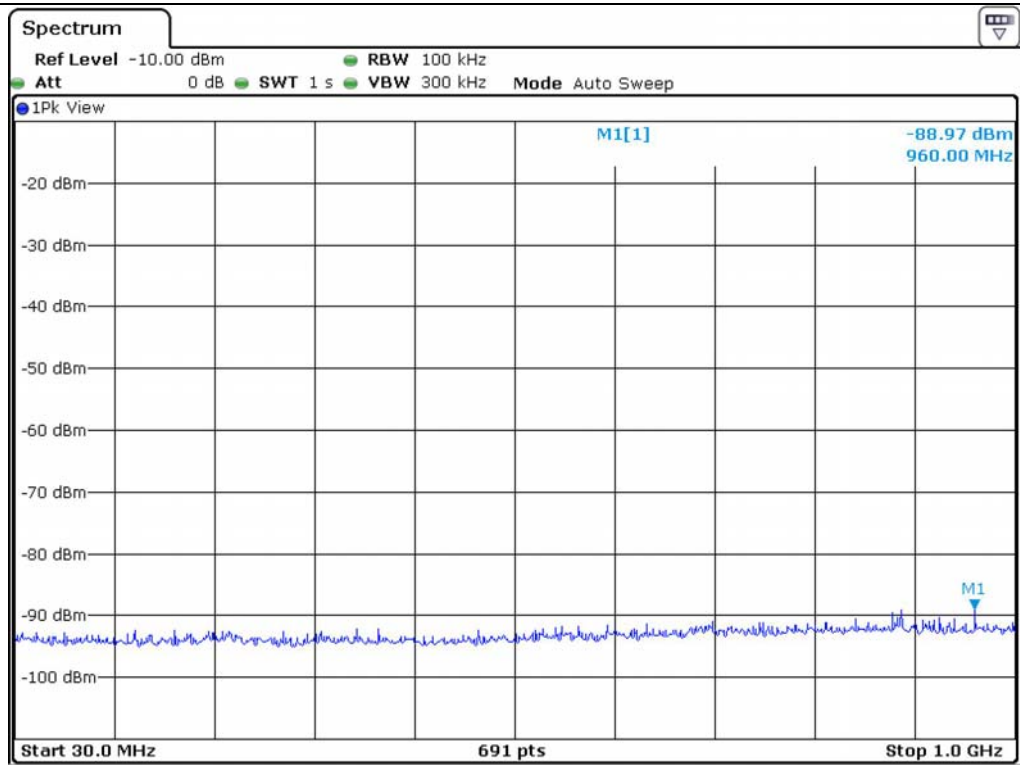
Tested by: Hong-Kyu, Lee/ Engineer



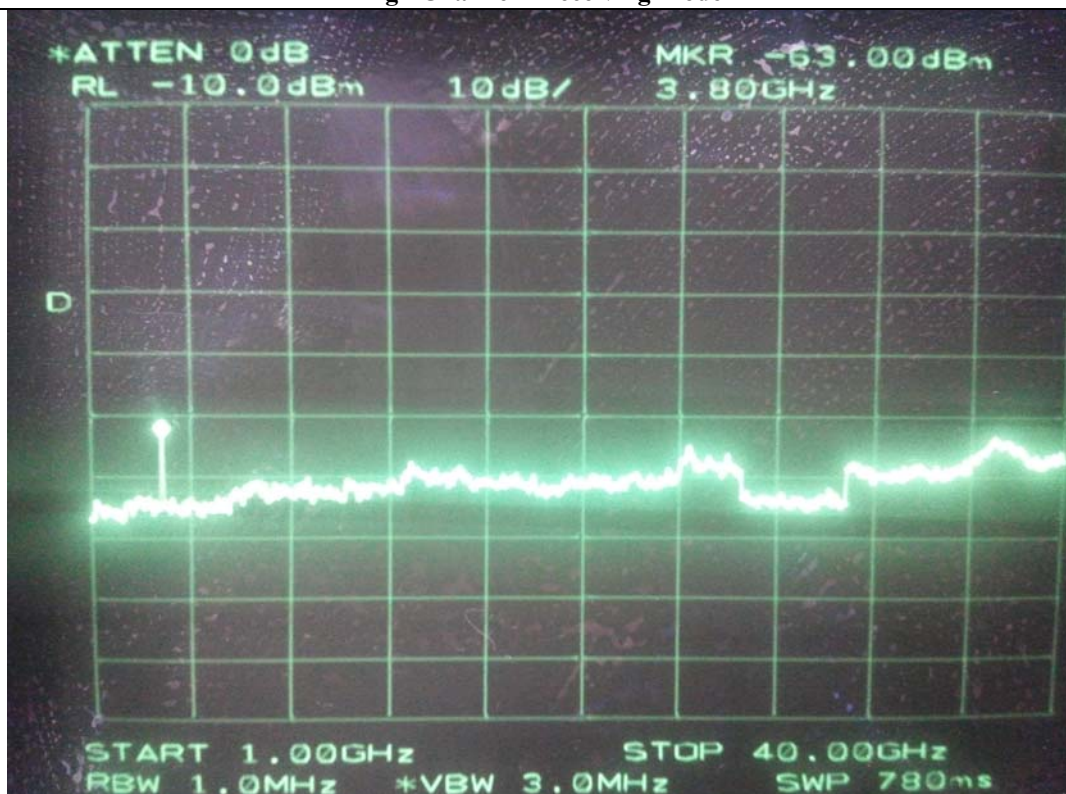
Low Channel - Receiving Mode



Low Channel - Receiving Mode



High Channel - Receiving Mode



High Channel - Receiving Mode

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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (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 (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

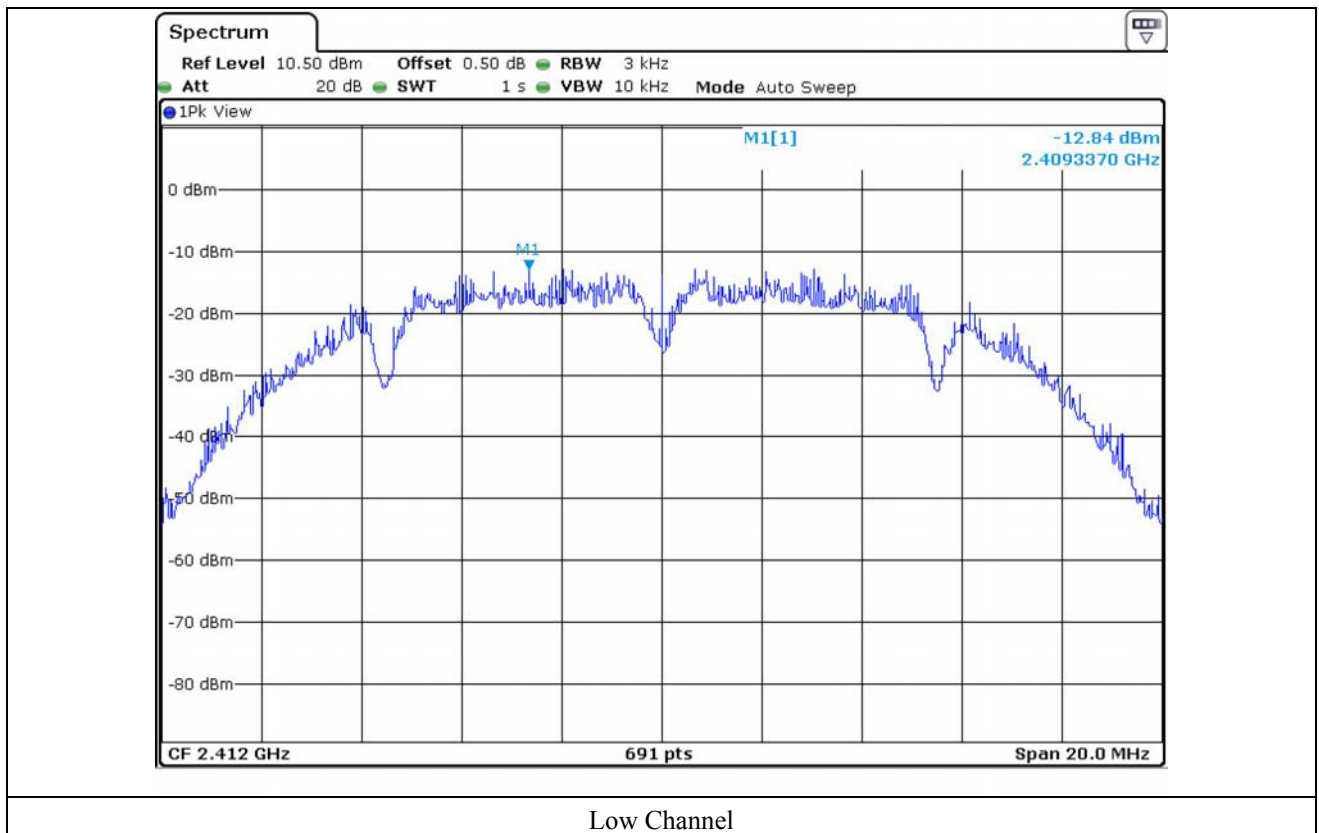
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

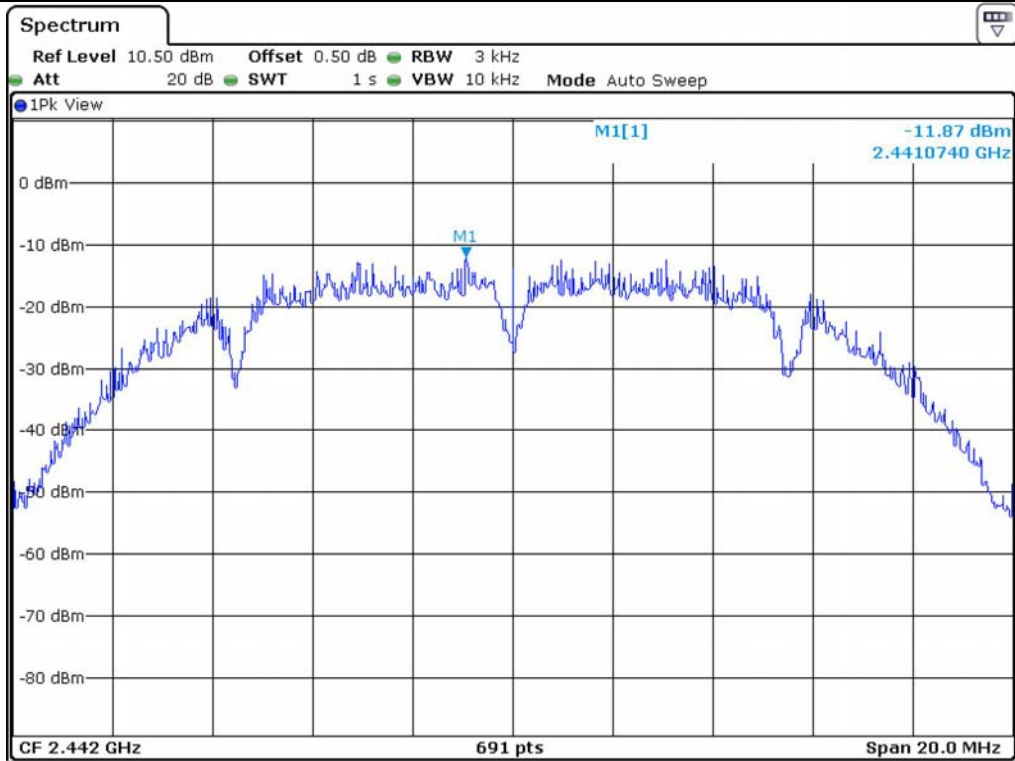
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412	-12.84	8.00	20.84
Middle	2 442	-11.87	8.00	19.87
High	2 462	-12.46	8.00	20.46

Remark. Margin = Limit – Measured value

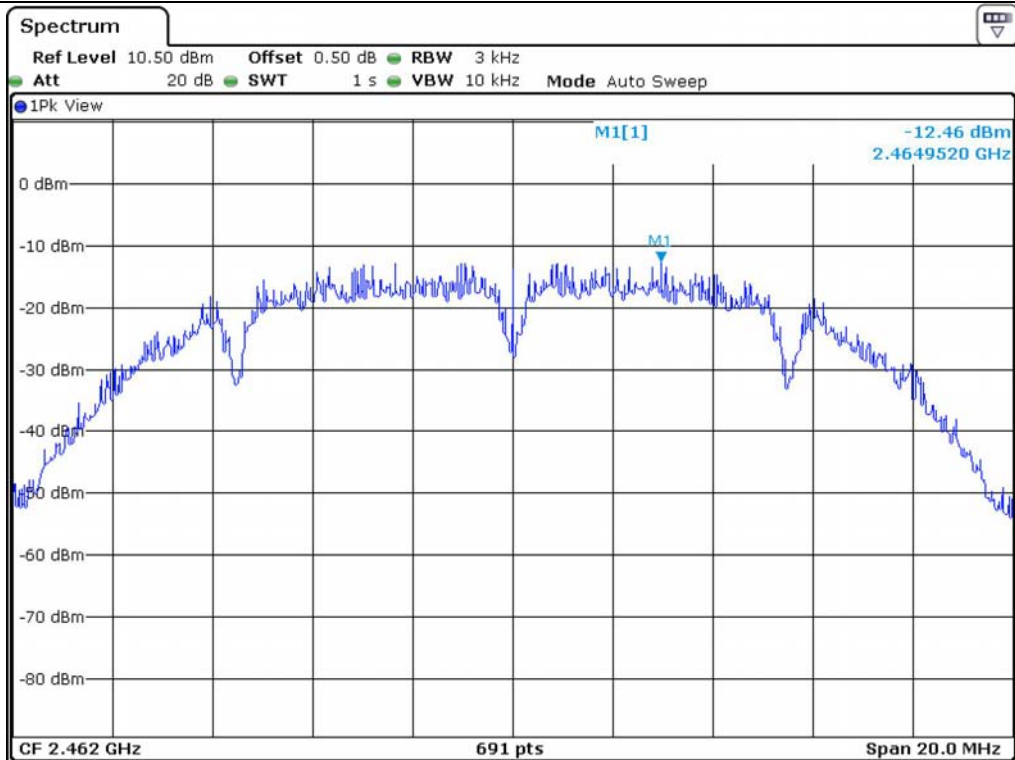
013021

Tested by: Hong-Kyu, Lee/ Engineer





Middle Channel



High Channel

11.4.2 Test data for Antenna 1

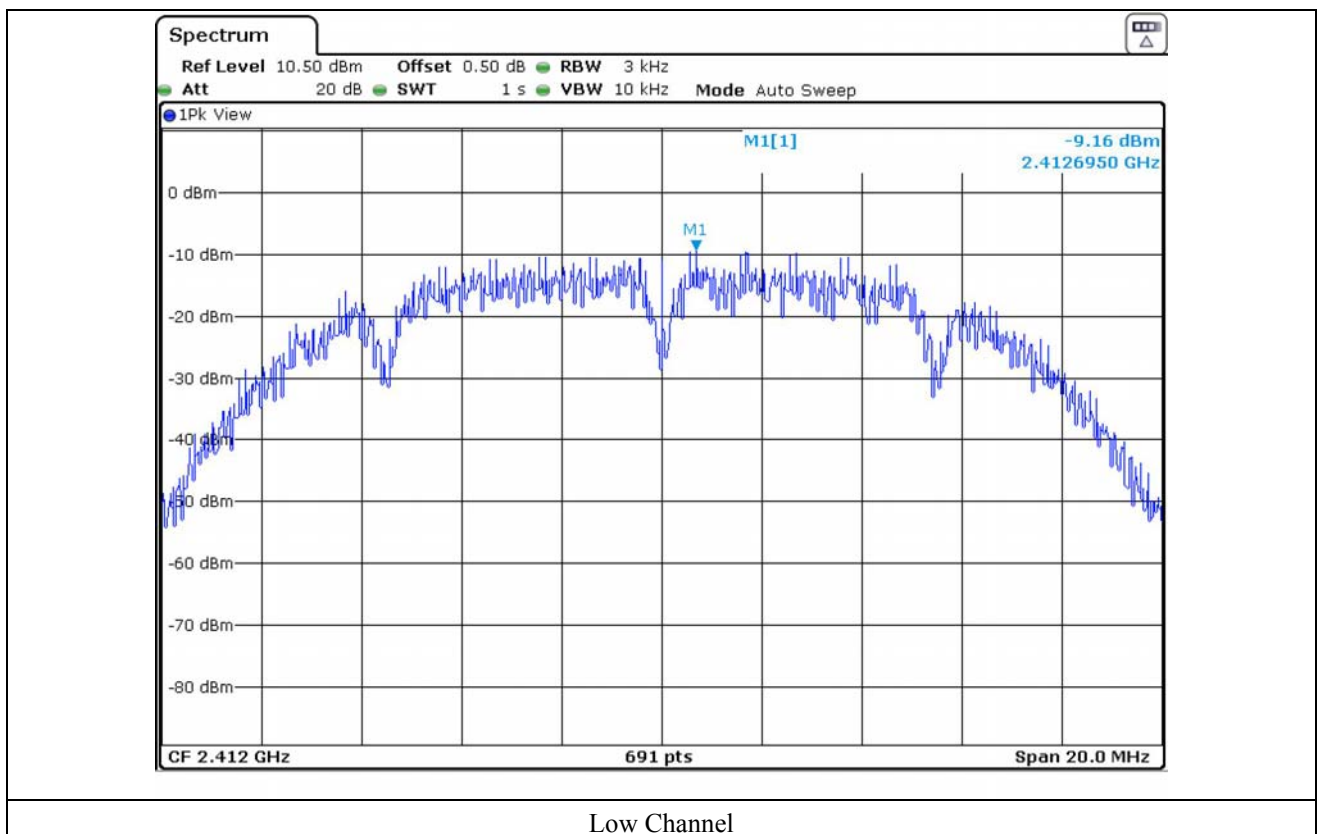
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

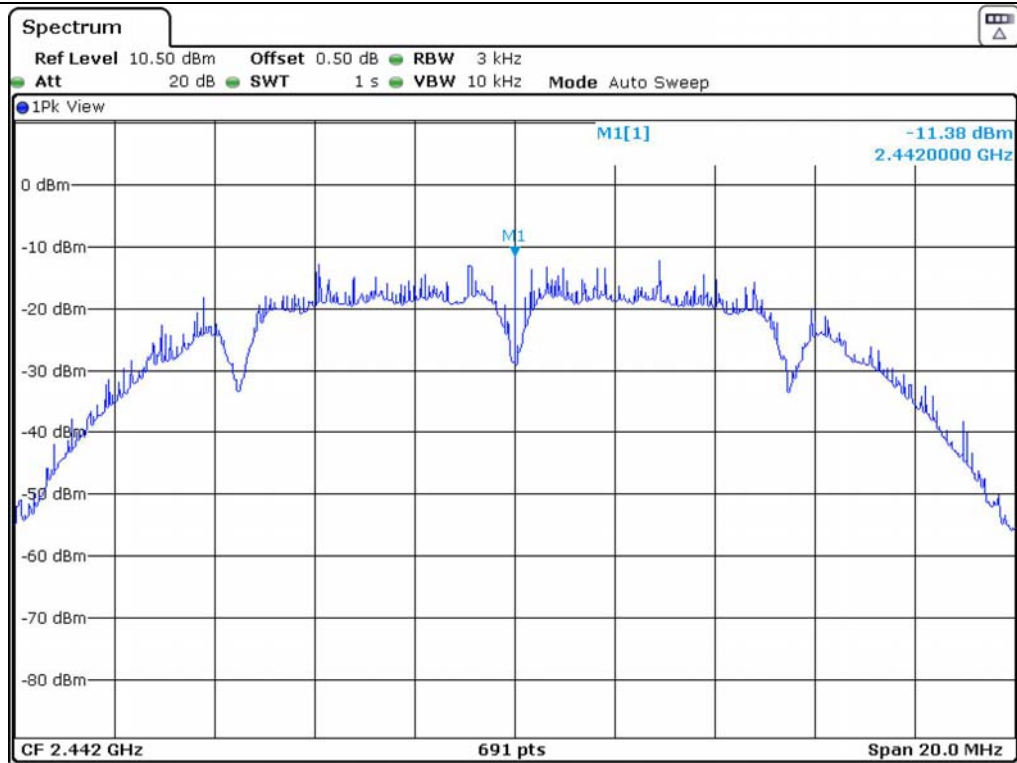
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412	-9.16	8.00	17.16
Middle	2 442	-11.38	8.00	19.38
High	2 462	-11.85	8.00	19.85

Remark. Margin = Limit – Measured value

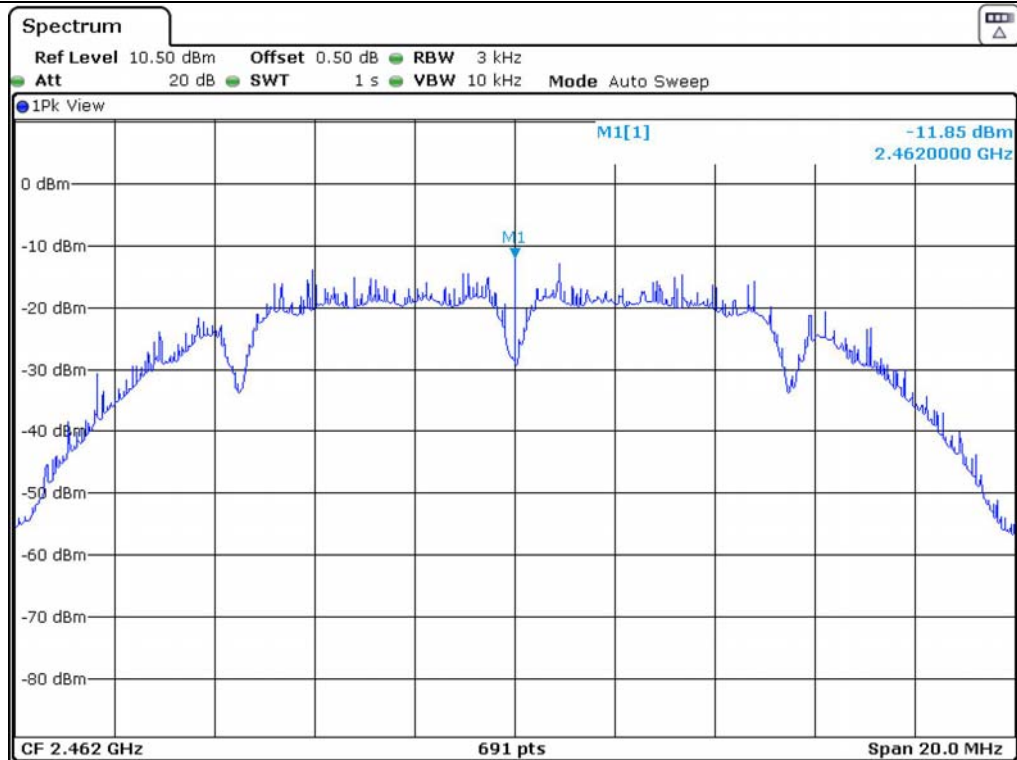
013021

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

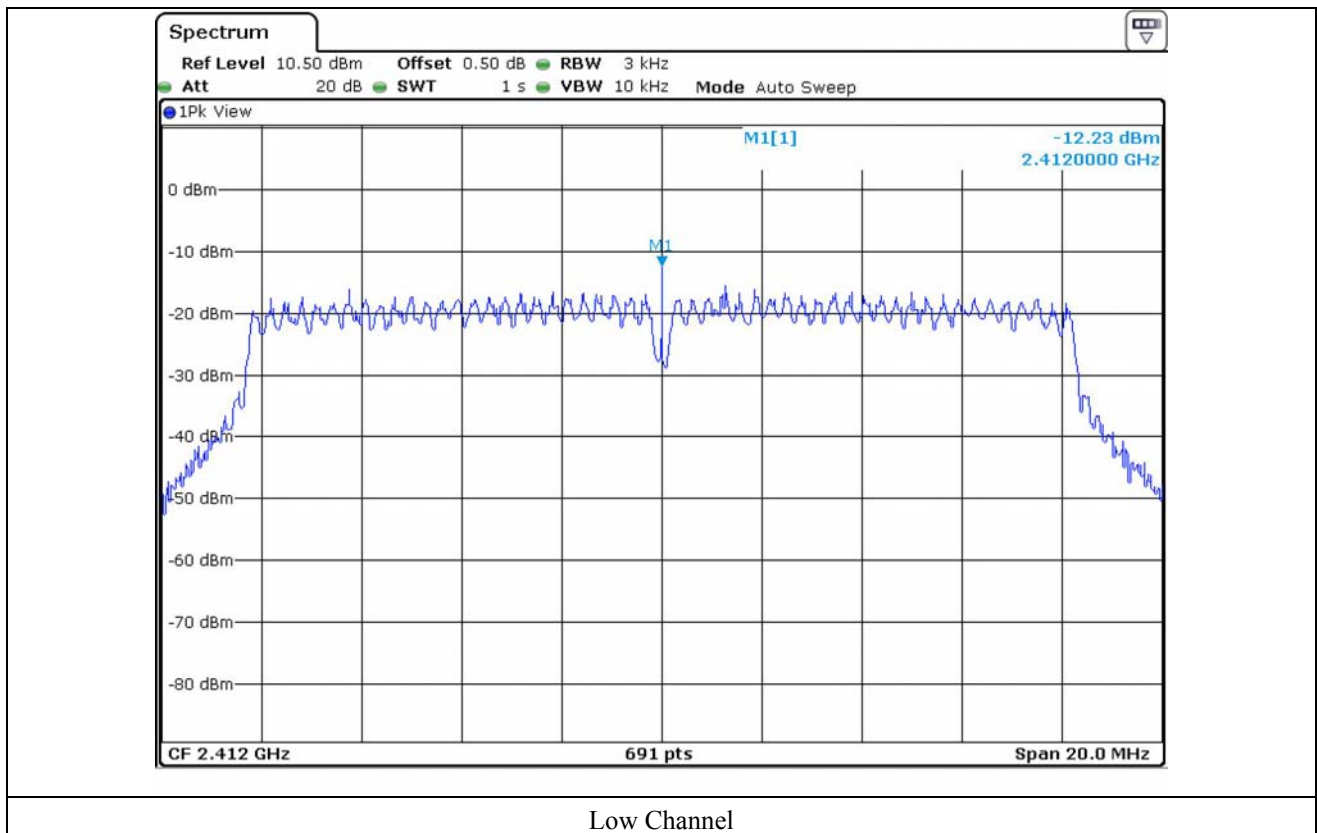
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

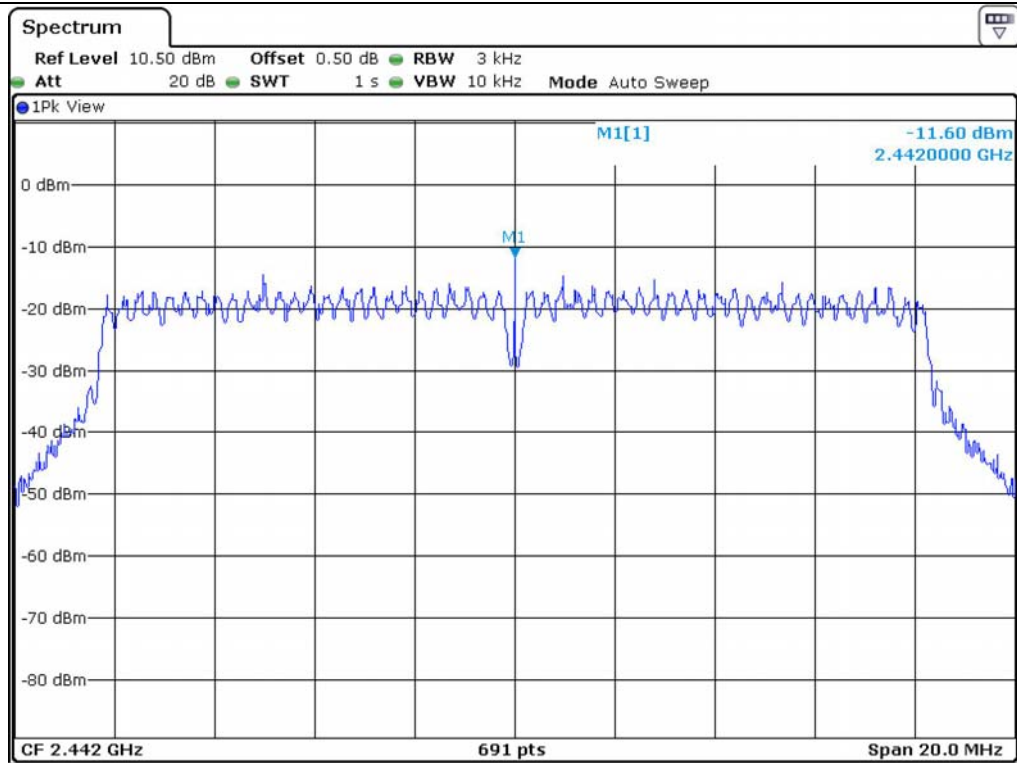
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412	-12.23	8.00	20.23
Middle	2 442	-11.60	8.00	19.60
High	2 462	-11.62	8.00	19.62

Remark. Margin = Limit – Measured value

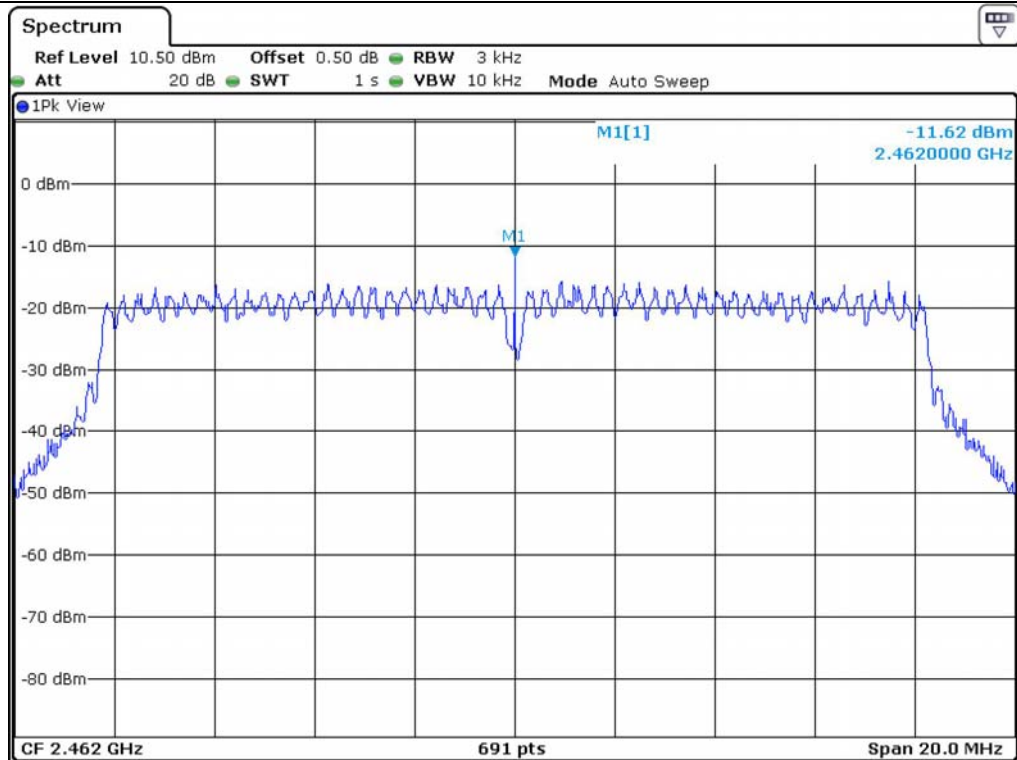
01 30 21

Tested by: Hong-Kyu, Lee/ Engineer





Middle Channel



High Channel

11.5.2 Test data for Antenna 1

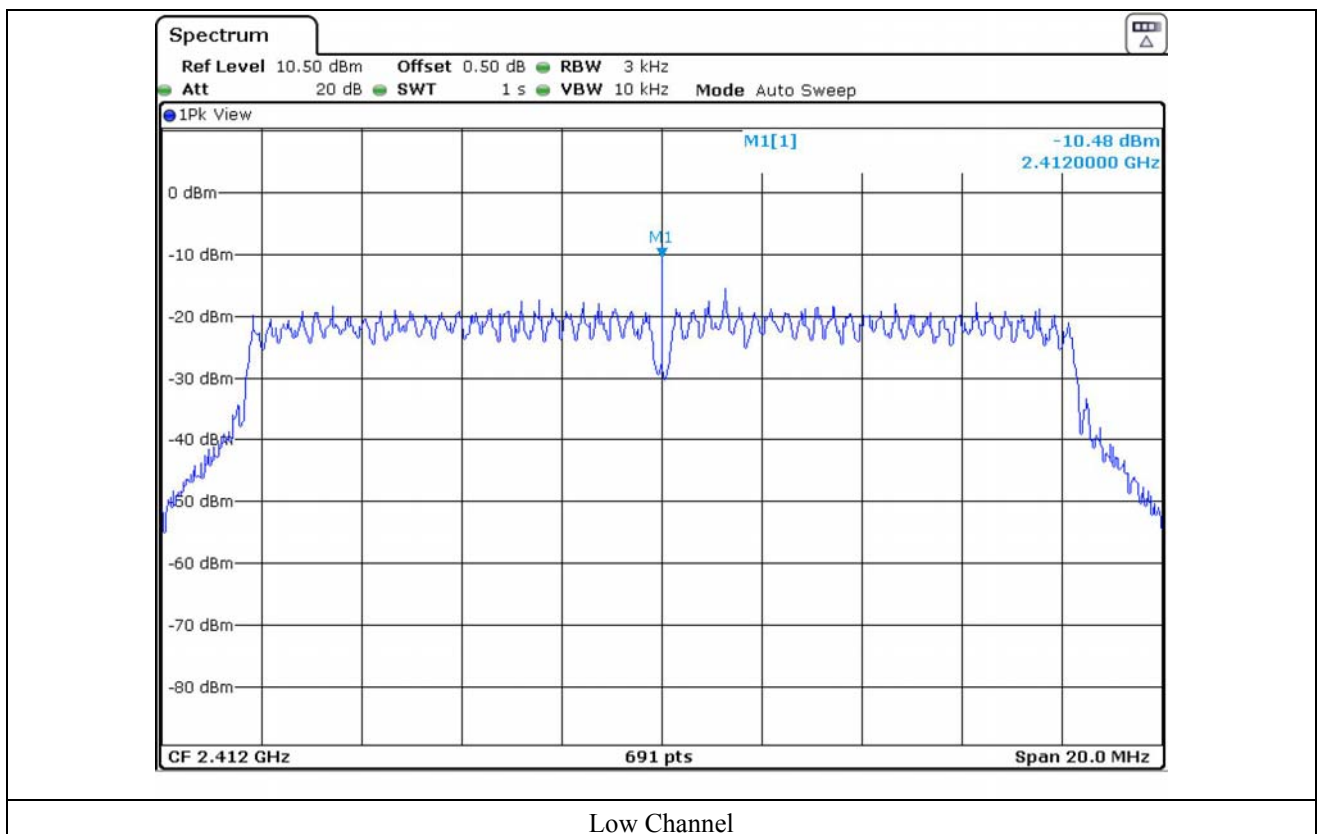
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

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

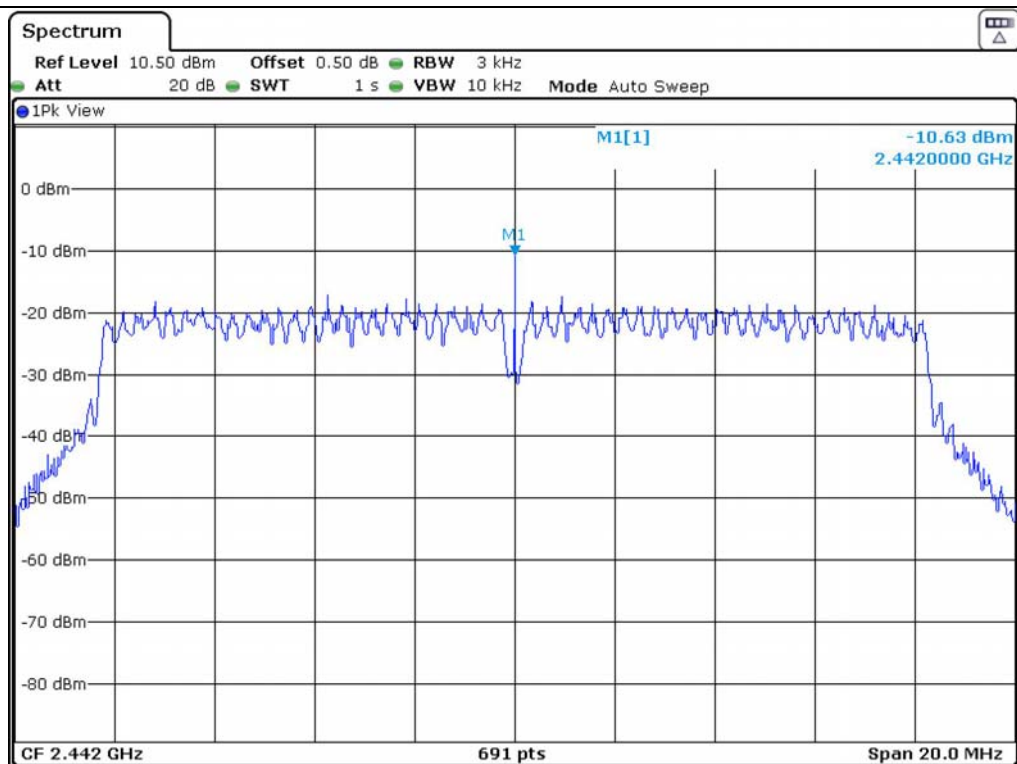
Remark. Margin = Limit – Measured value

01 30 21

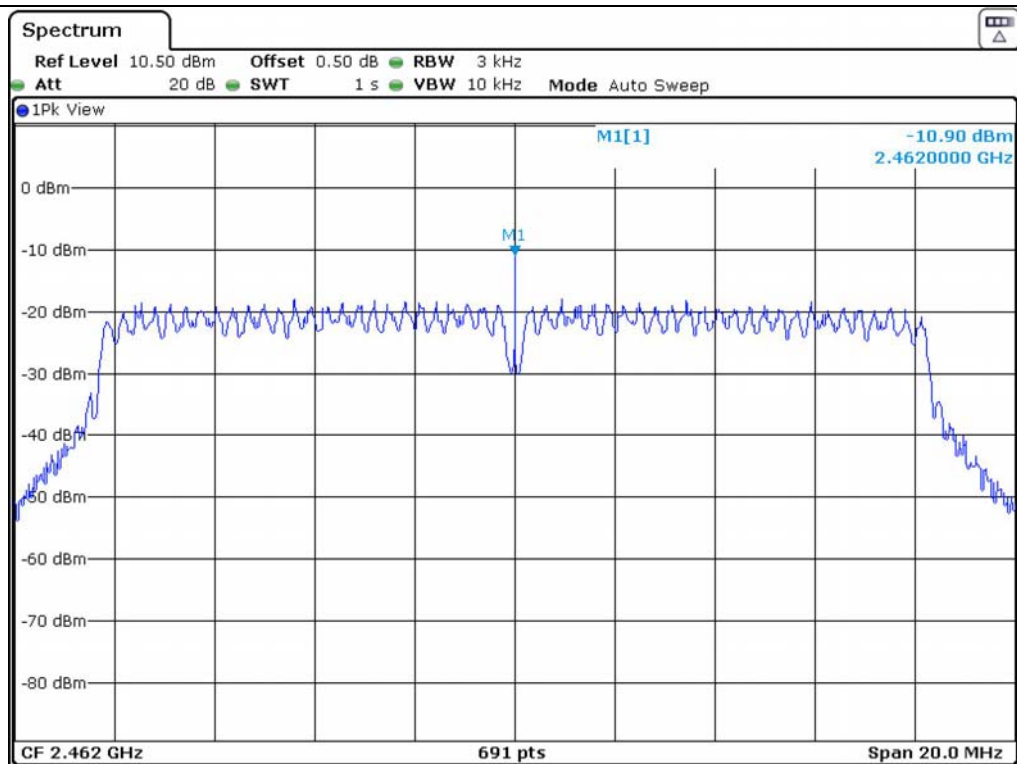
Tested by: Hong-Kyu, Lee/ Engineer



Low Channel



Middle Channel



High Channel

11.6 Test data for 802.11n_HT20 WLAN Mode

11.6.1 Test data for Antenna 0

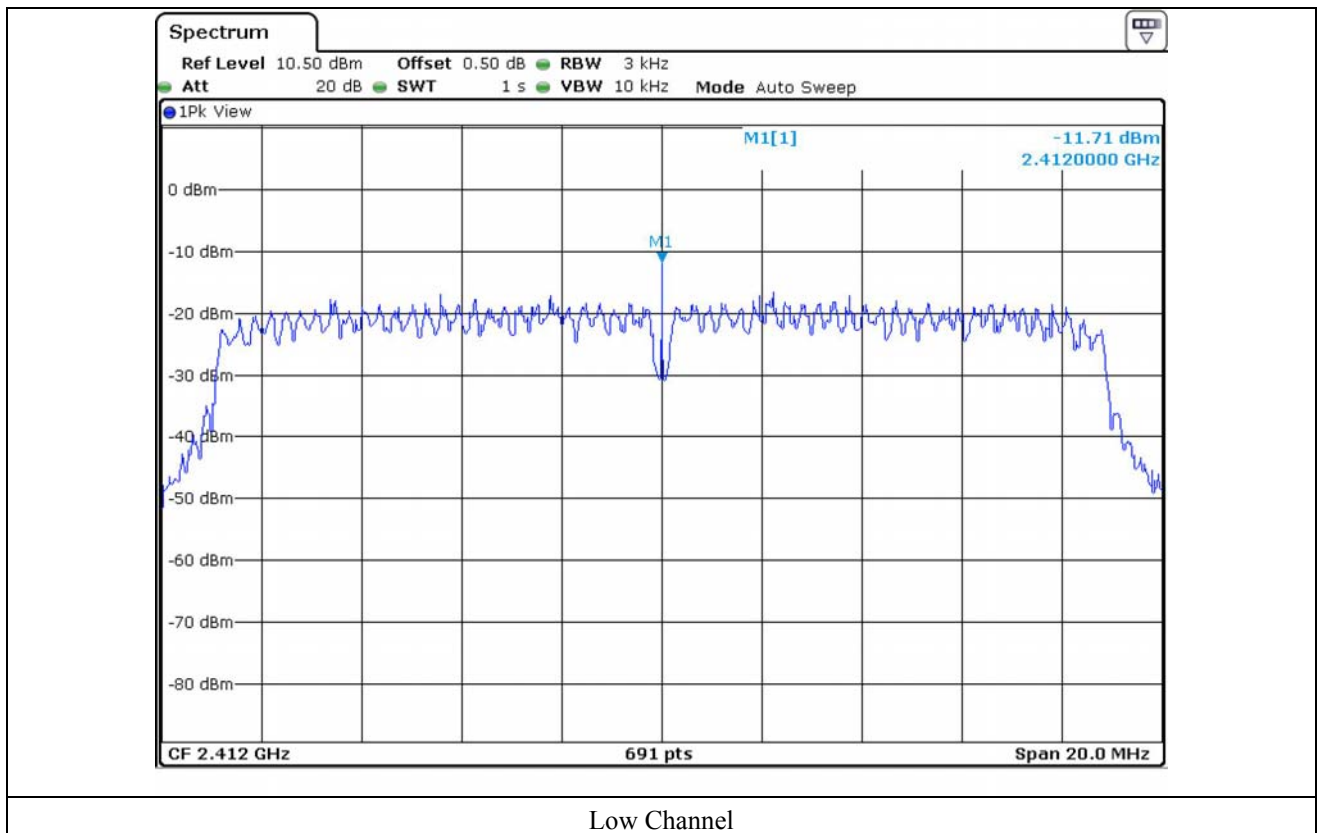
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

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

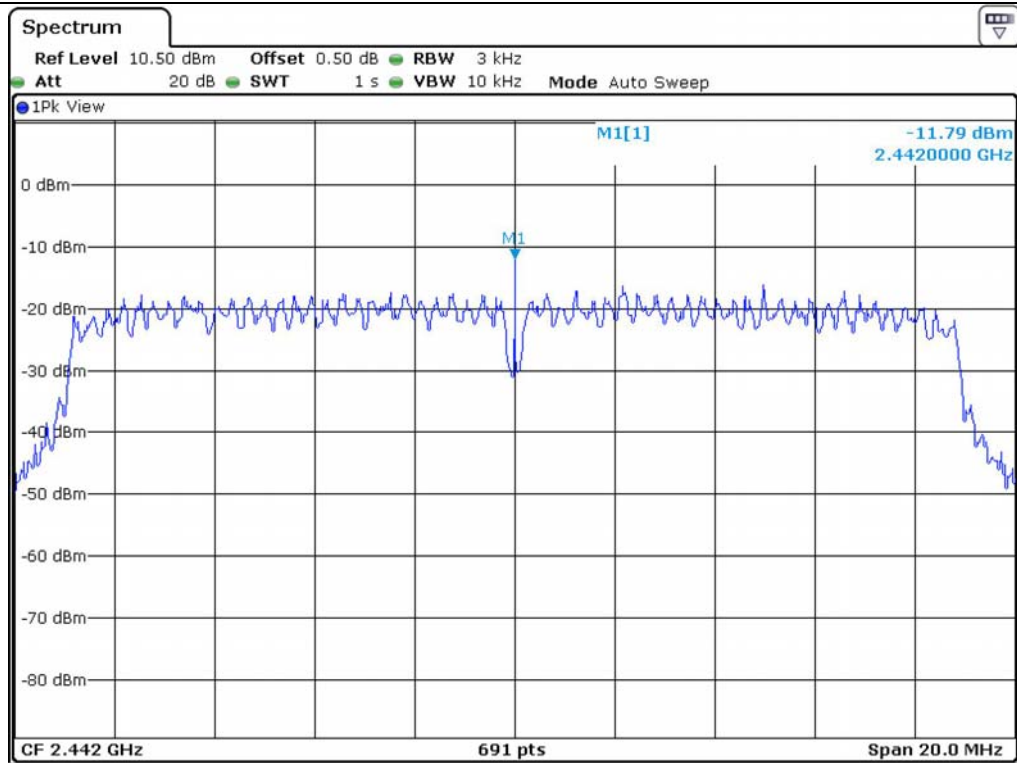
Remark. Margin = Limit – Measured value

01 30 21

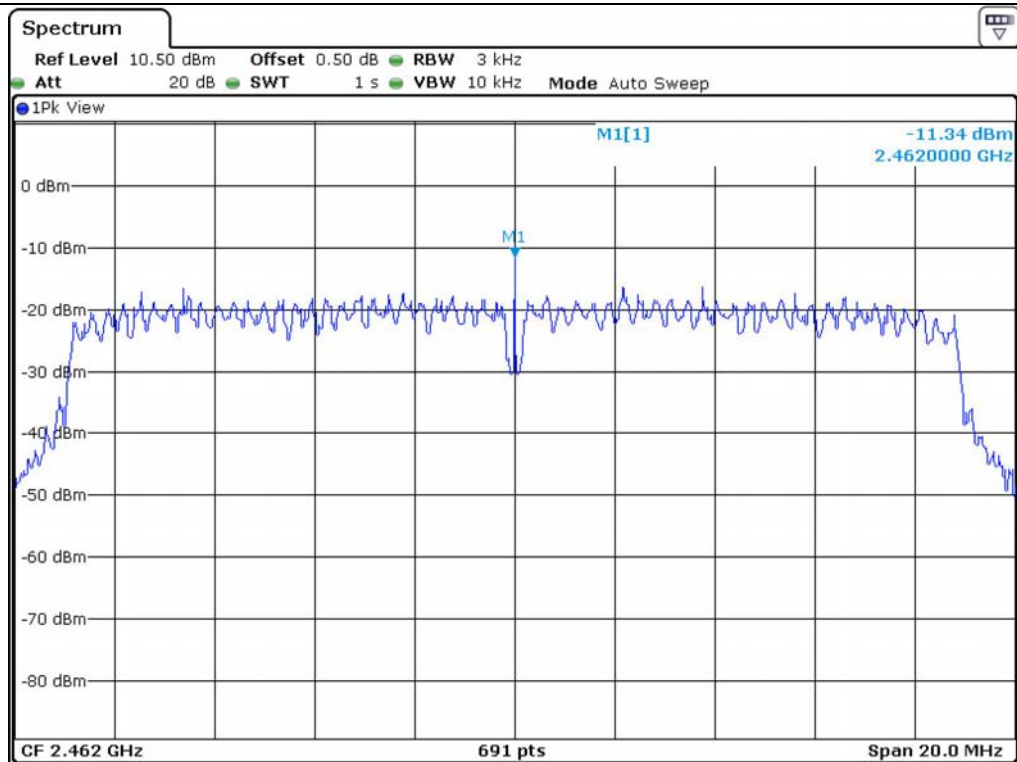
Tested by: Hong-Kyu, Lee/ Engineer



Low Channel



Middle Channel



High Channel

11.6.2 Test data for Antenna 1

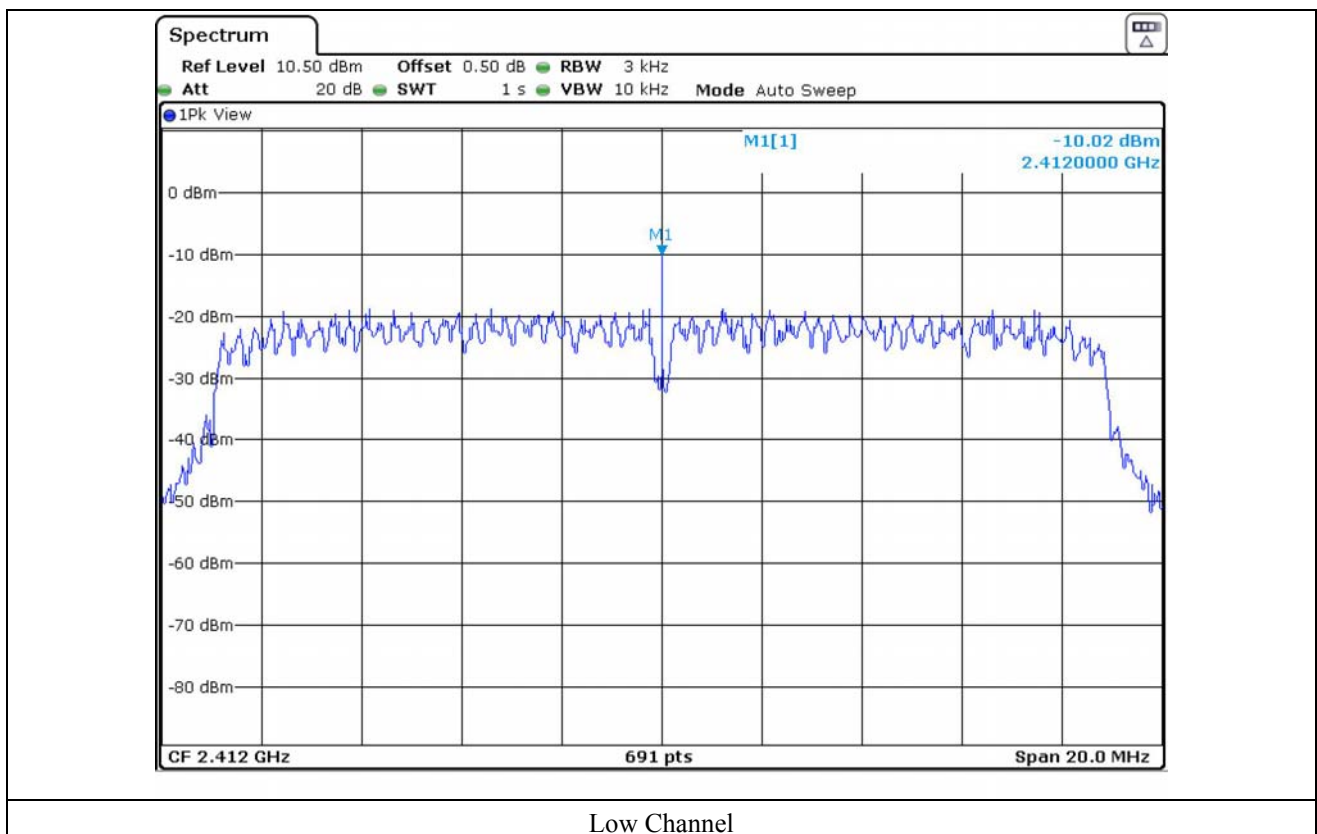
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

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

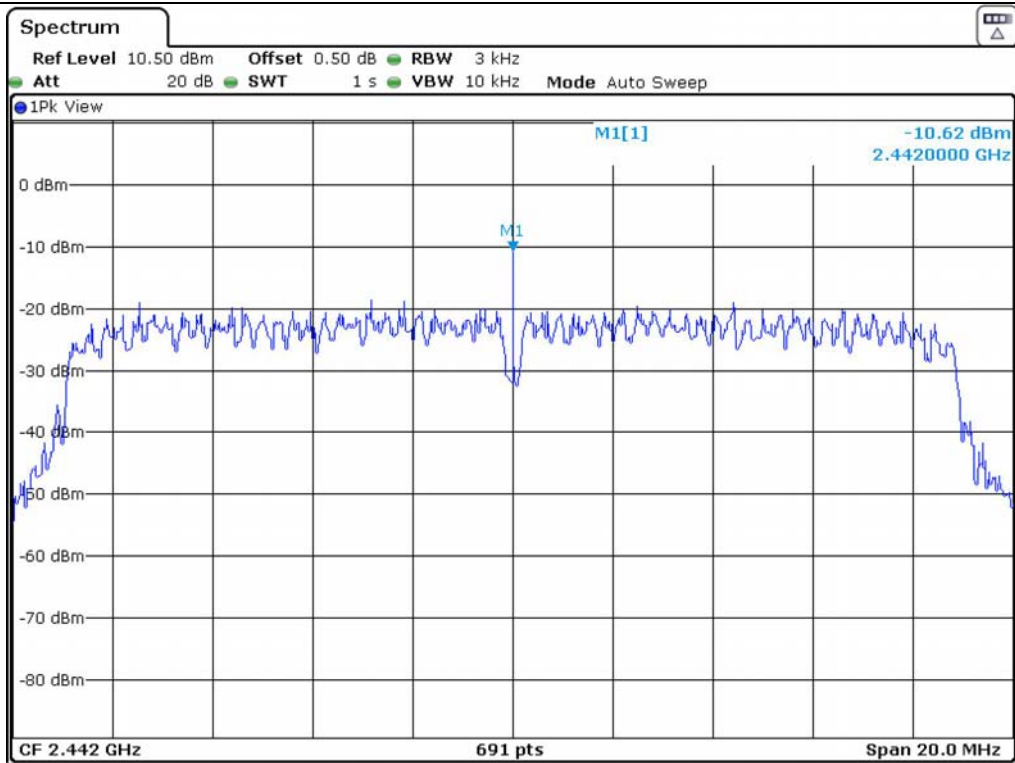
Remark. Margin = Limit – Measured value

013021

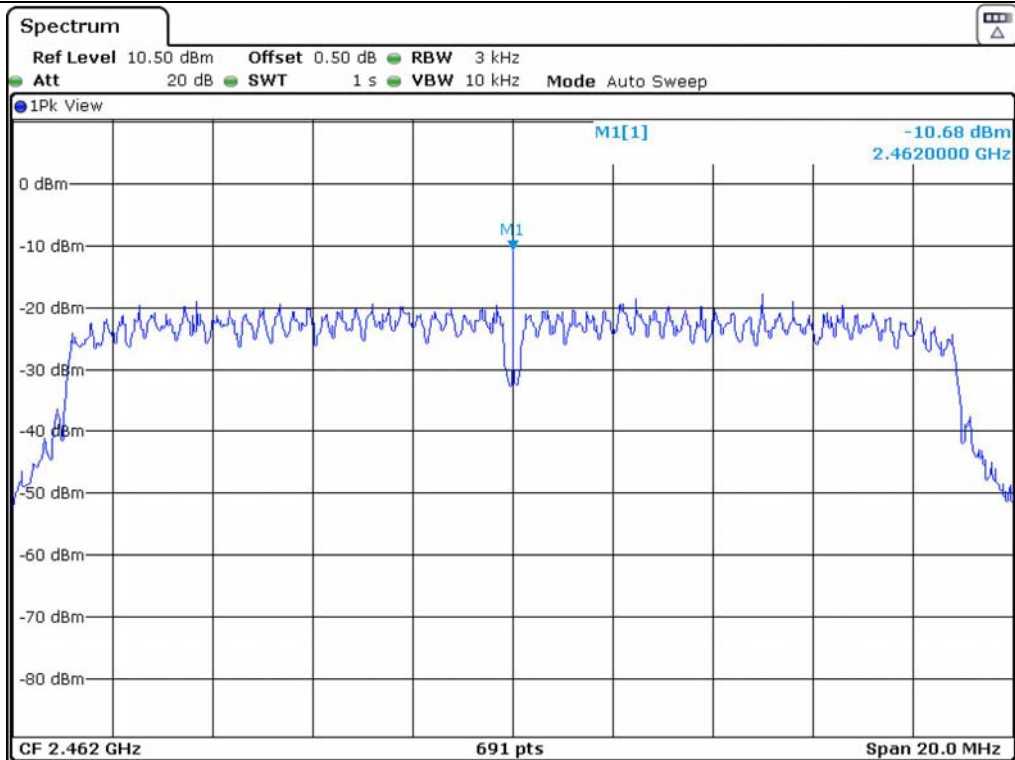
Tested by: Hong-Kyu, Lee/ Engineer



Low Channel



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



Tested by: Hong-Kyu, Lee/ Engineer

11.7 Test data for 802.11n_HT40 WLAN Mode

11.7.1 Test data for Antenna 0

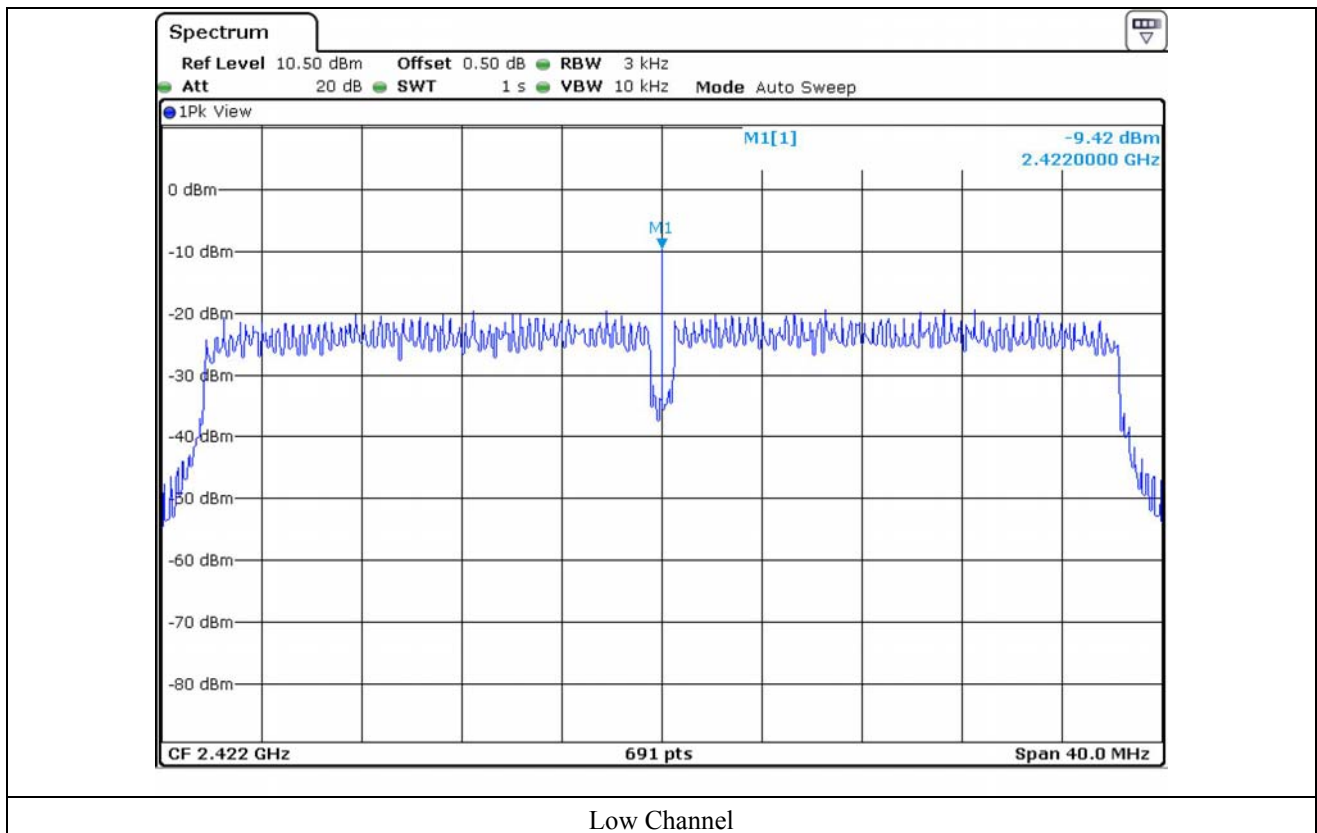
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

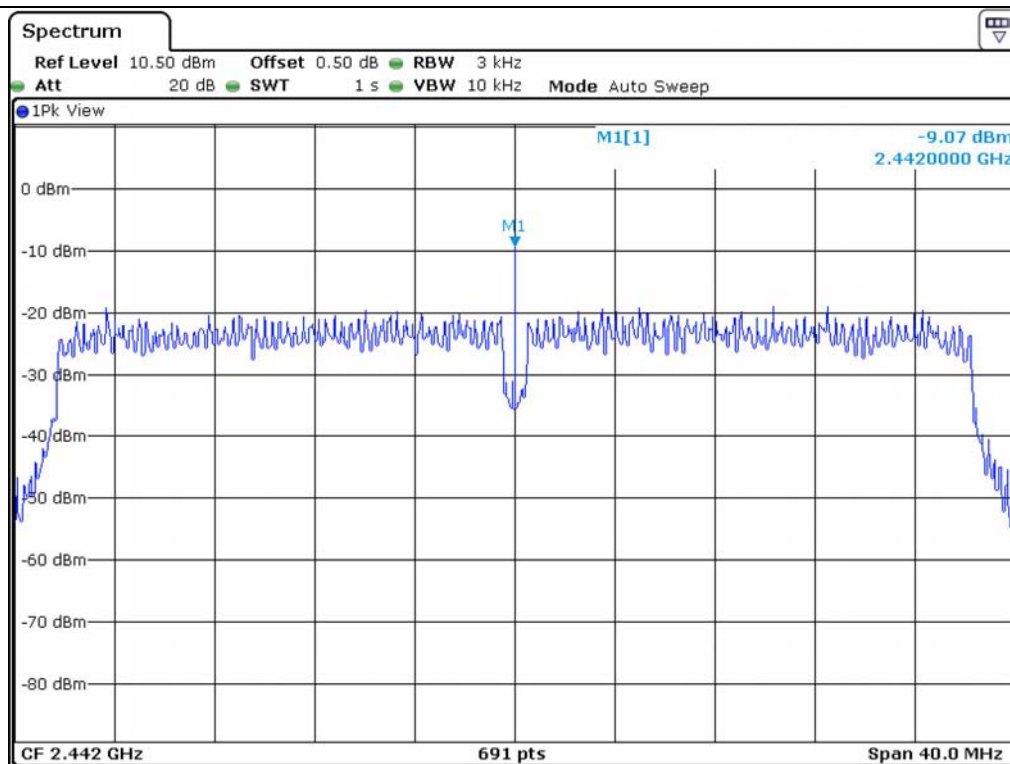
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 422	-9.42	8.00	17.42
Middle	2 442	-9.07	8.00	17.07
High	2 452	-10.57	8.00	18.57

Remark. Margin = Limit – Measured value

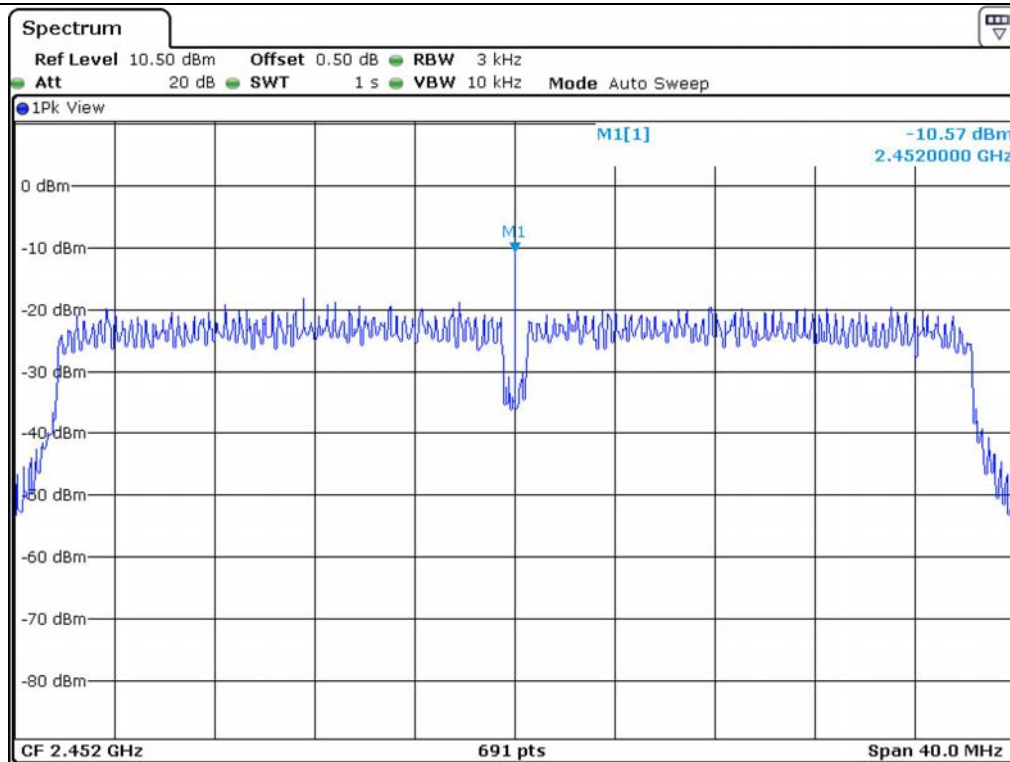
01 장 2.

Tested by: Hong-Kyu, Lee/ Engineer





Middle Channel



High Channel

11.7.2 Test data for Antenna 1

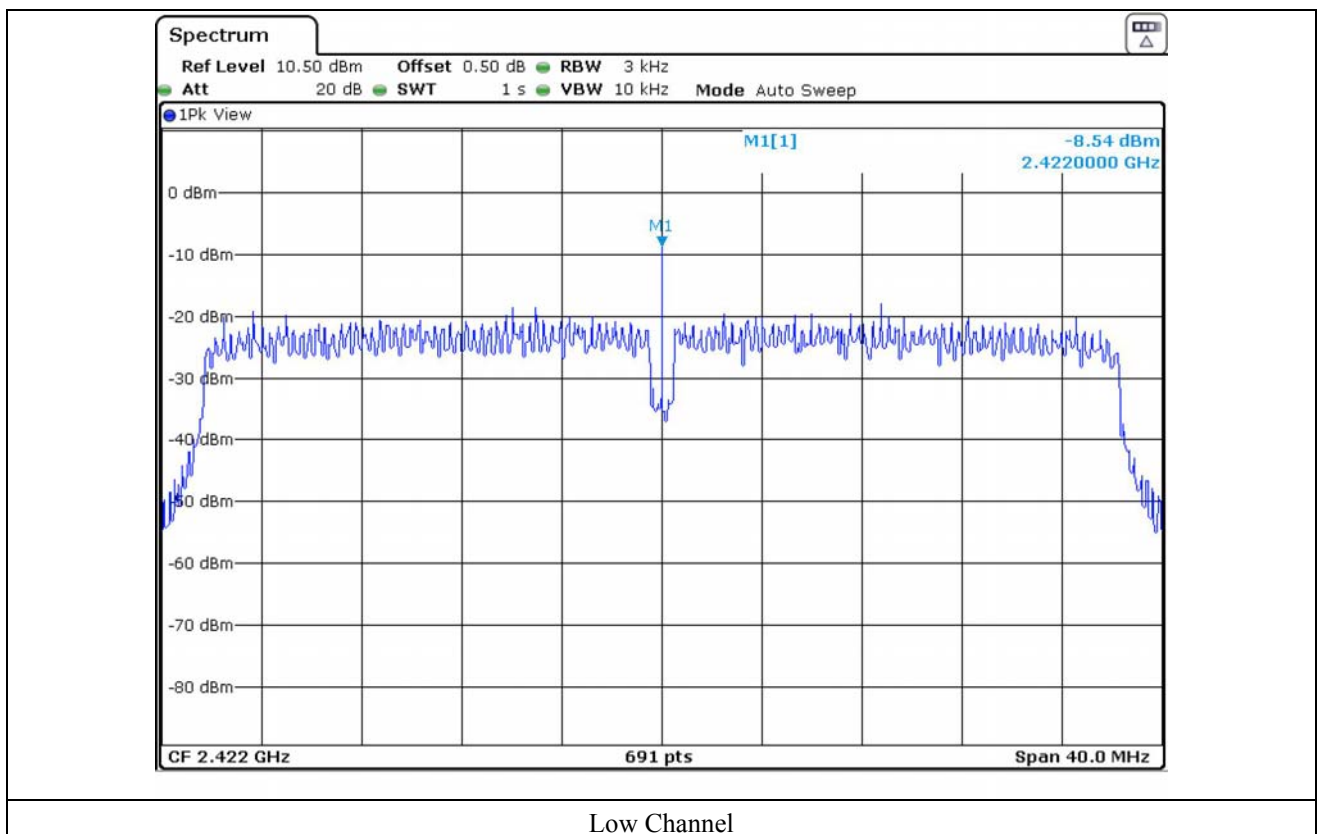
- Test Date : December 26, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

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

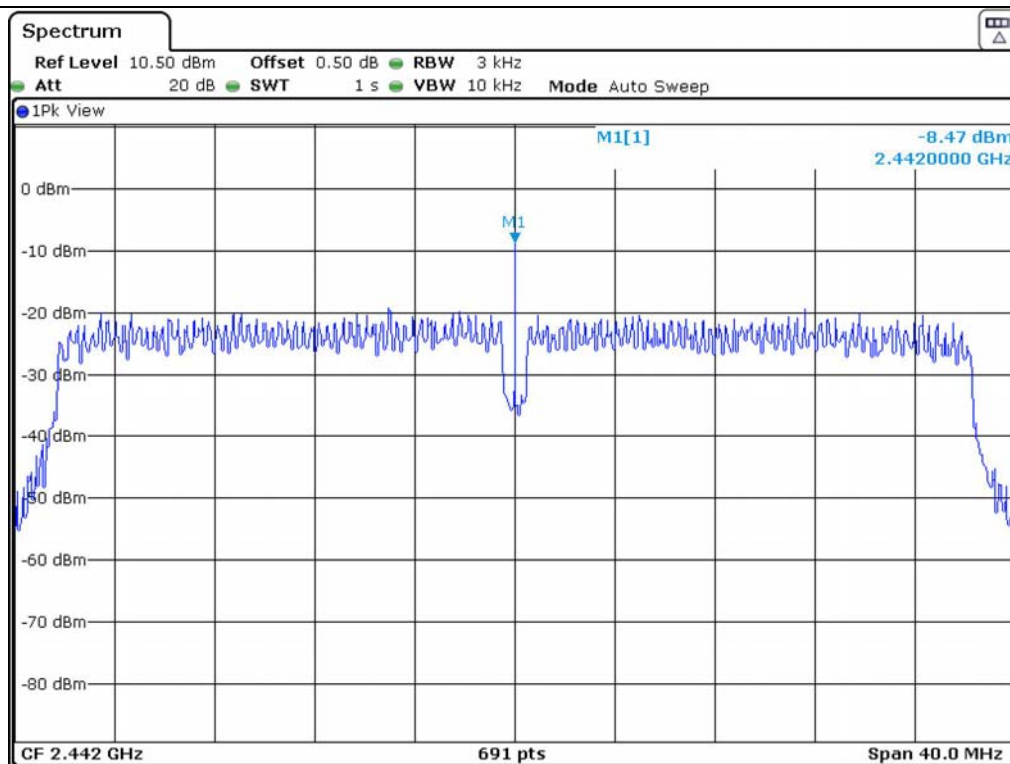
Remark. Margin = Limit – Measured value

013021

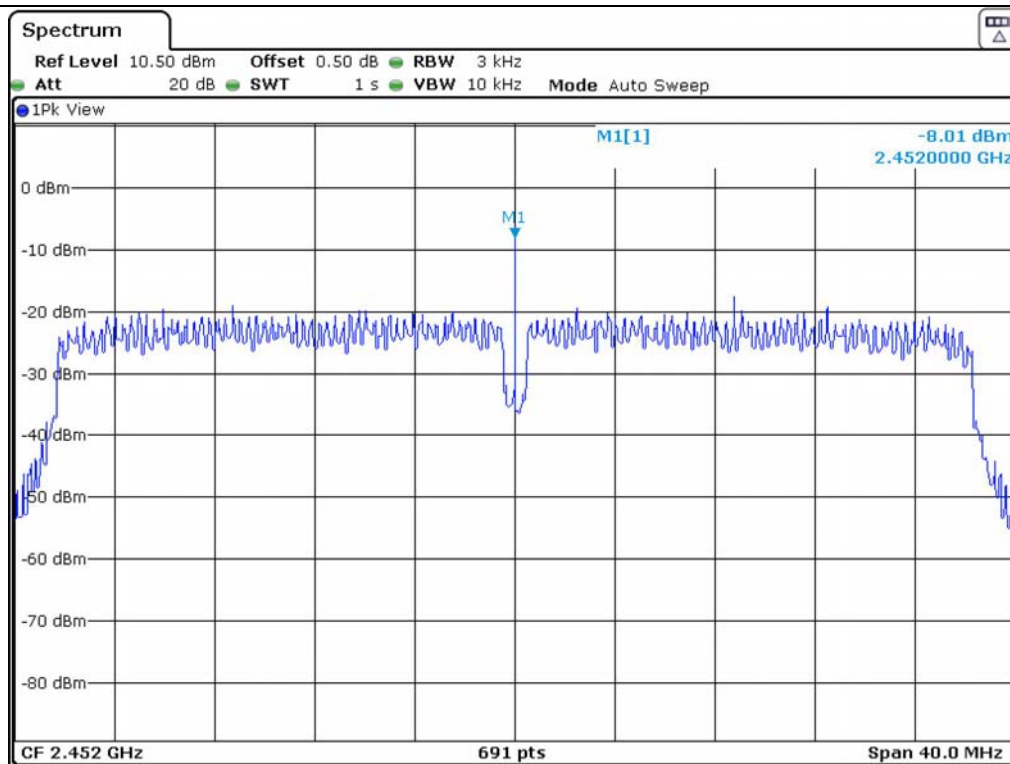
Tested by: Hong-Kyu, Lee/ Engineer



Low Channel



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



Tested by: Hong-Kyu, Lee/ Engineer

11.8 Test data for 802.11a RLAN Mode

11.8.1 Test data for Antenna 0

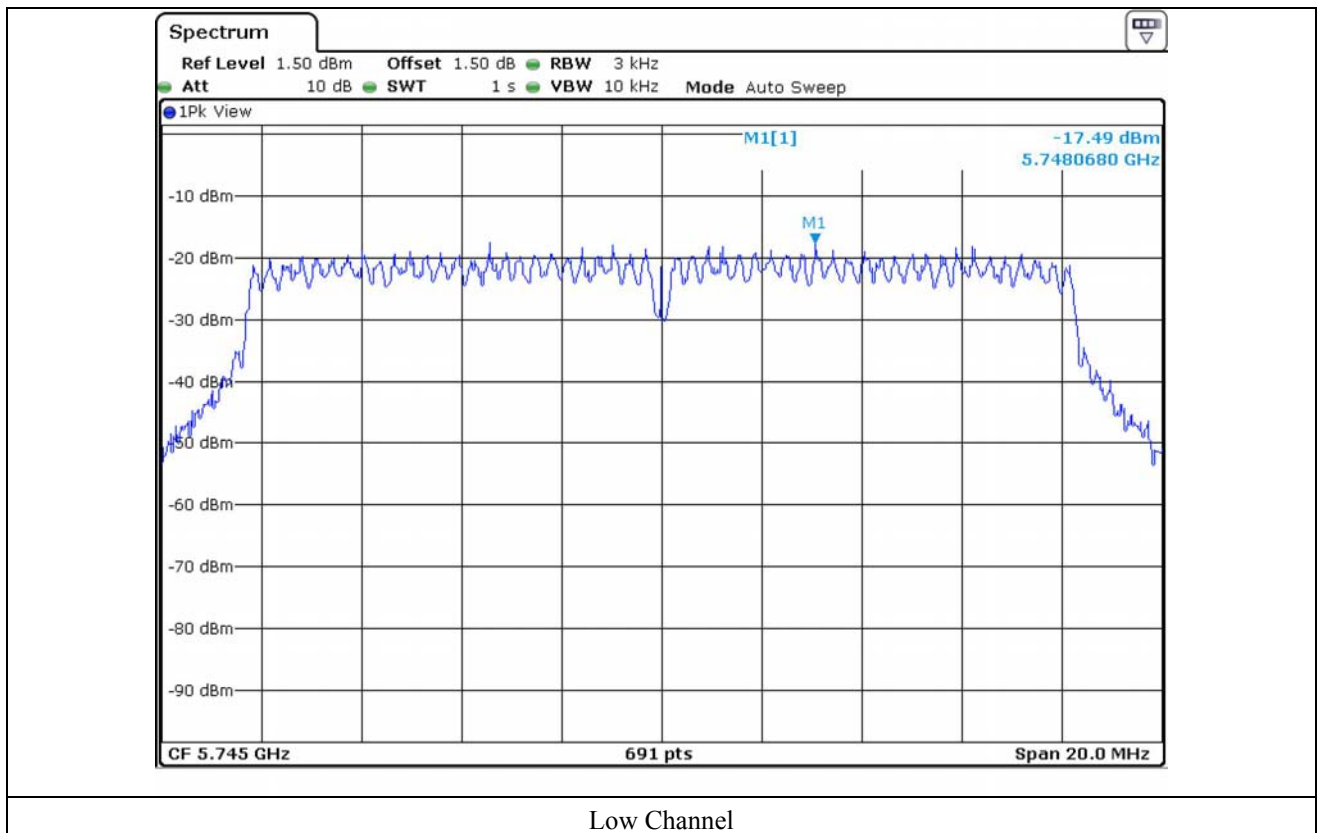
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

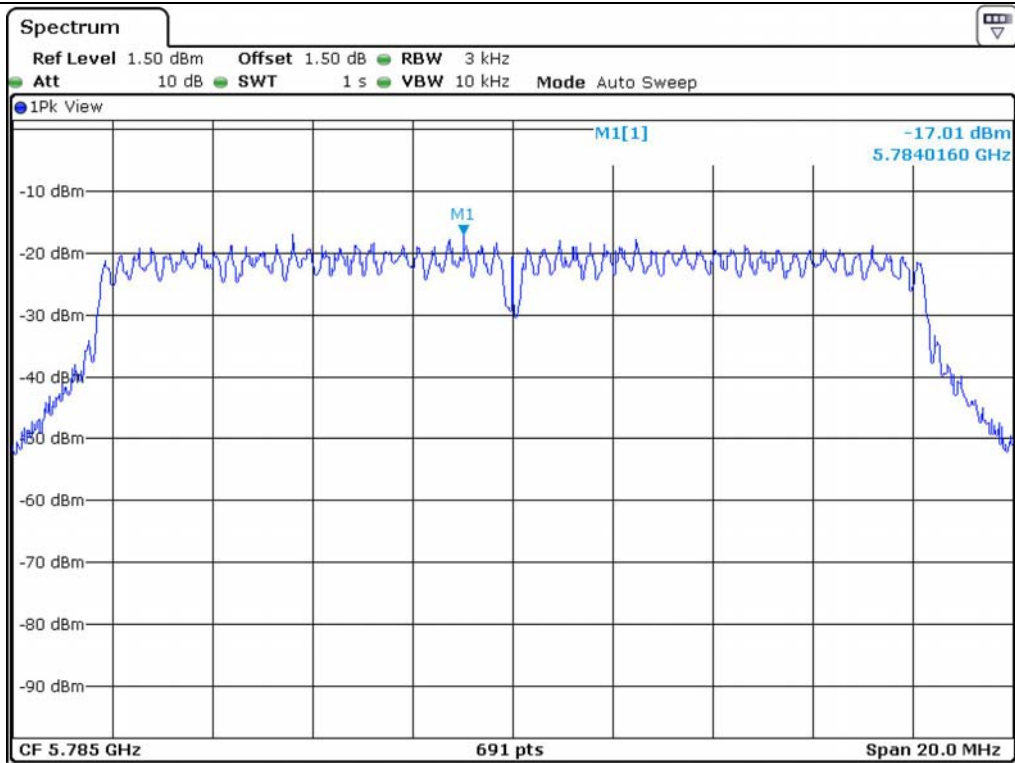
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5 745	-17.49	8.00	25.49
Middle	5 785	-17.01	8.00	25.01
High	5 825	-17.06	8.00	25.06

Remark. Margin = Limit – Measured value

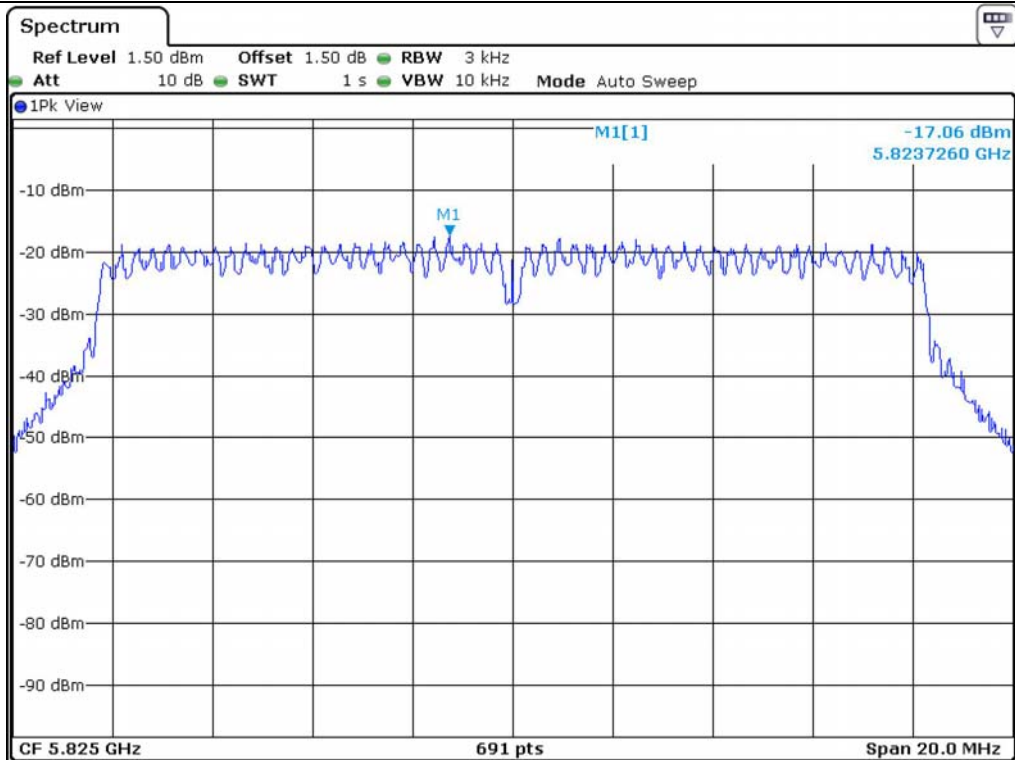
01 30 21

Tested by: Hong-Kyu, Lee/ Engineer





Middle Channel



High Channel

11.8.2 Test data for Antenna 1

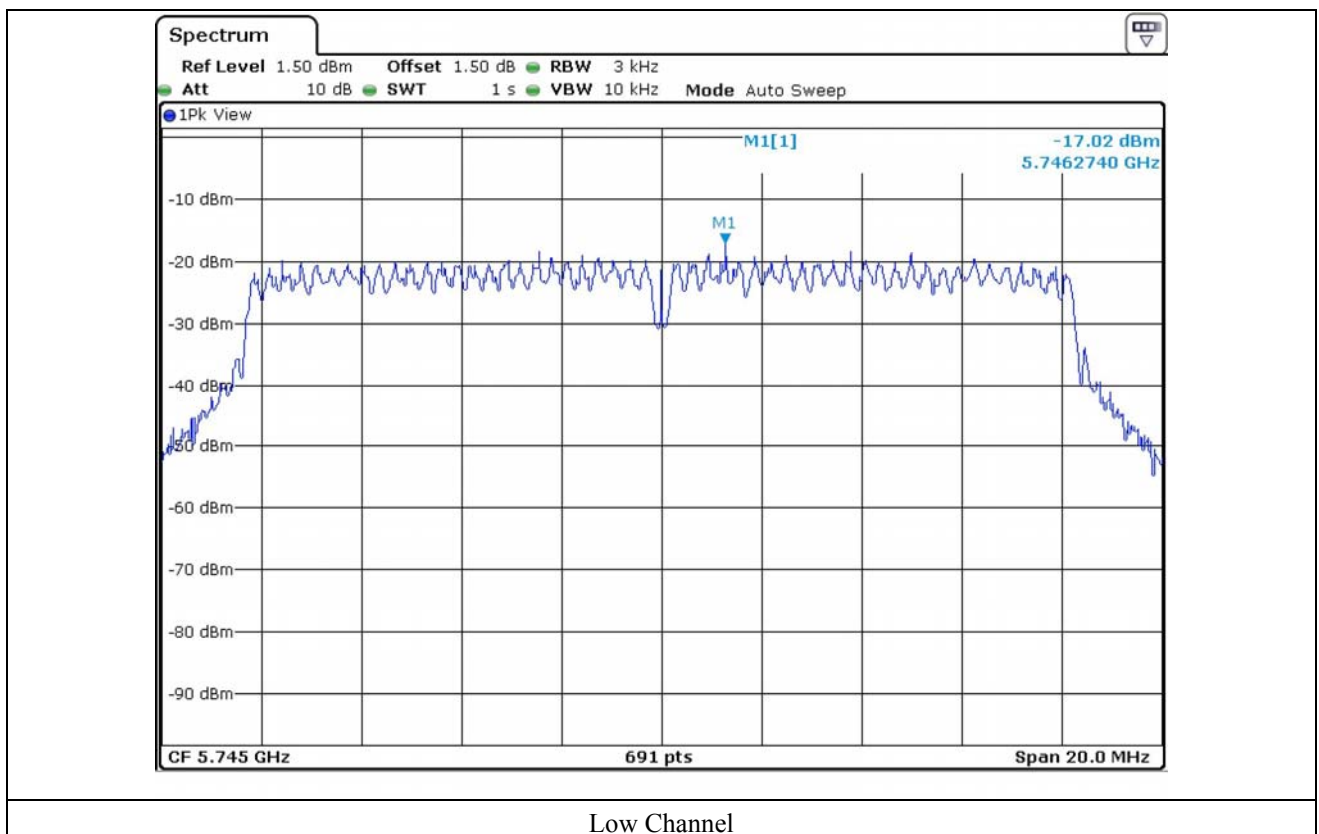
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

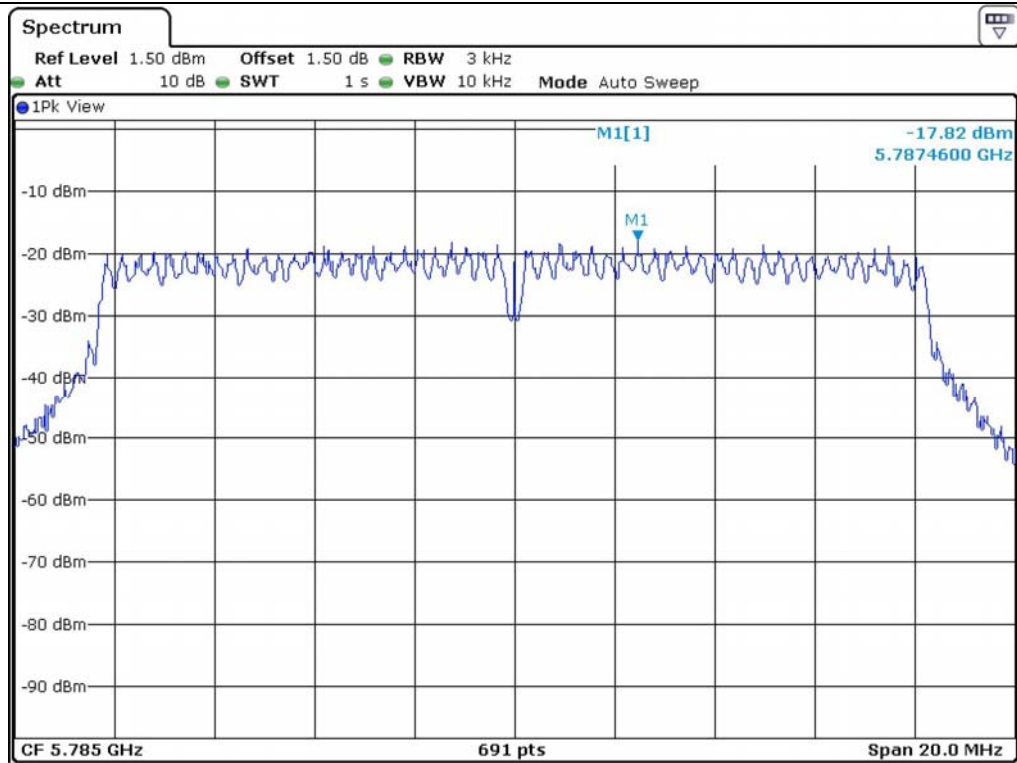
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5 745	-17.02	8.00	25.02
Middle	5 785	-17.82	8.00	25.82
High	5 825	-16.09	8.00	24.09

Remark. Margin = Limit – Measured value

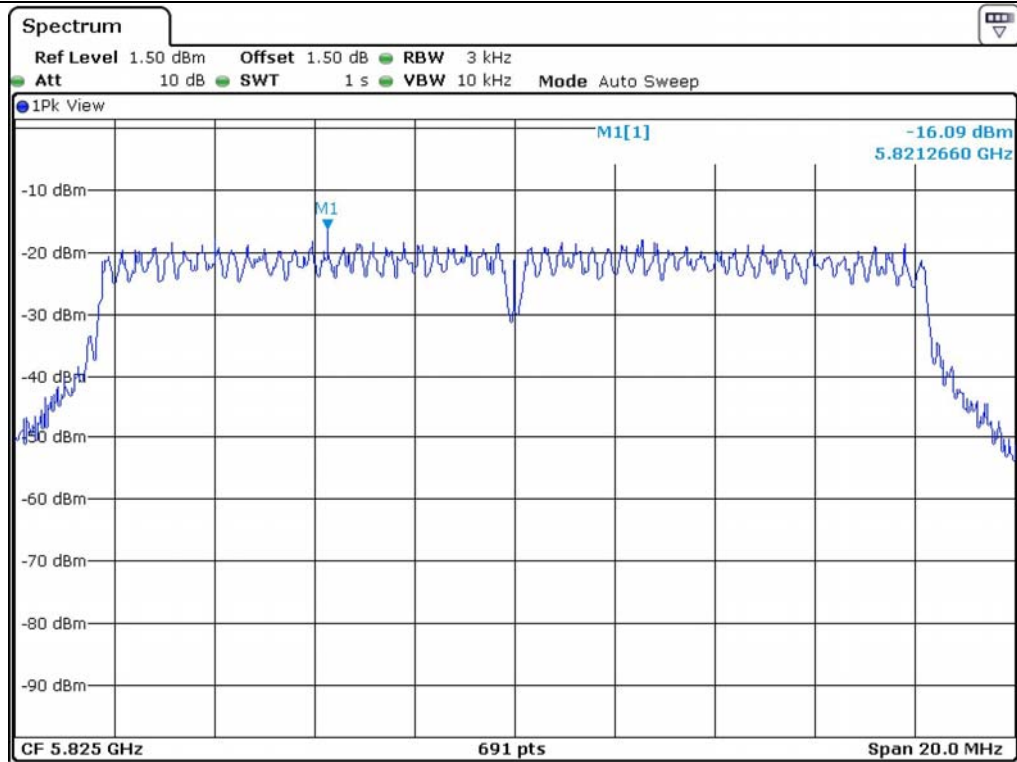
013027

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

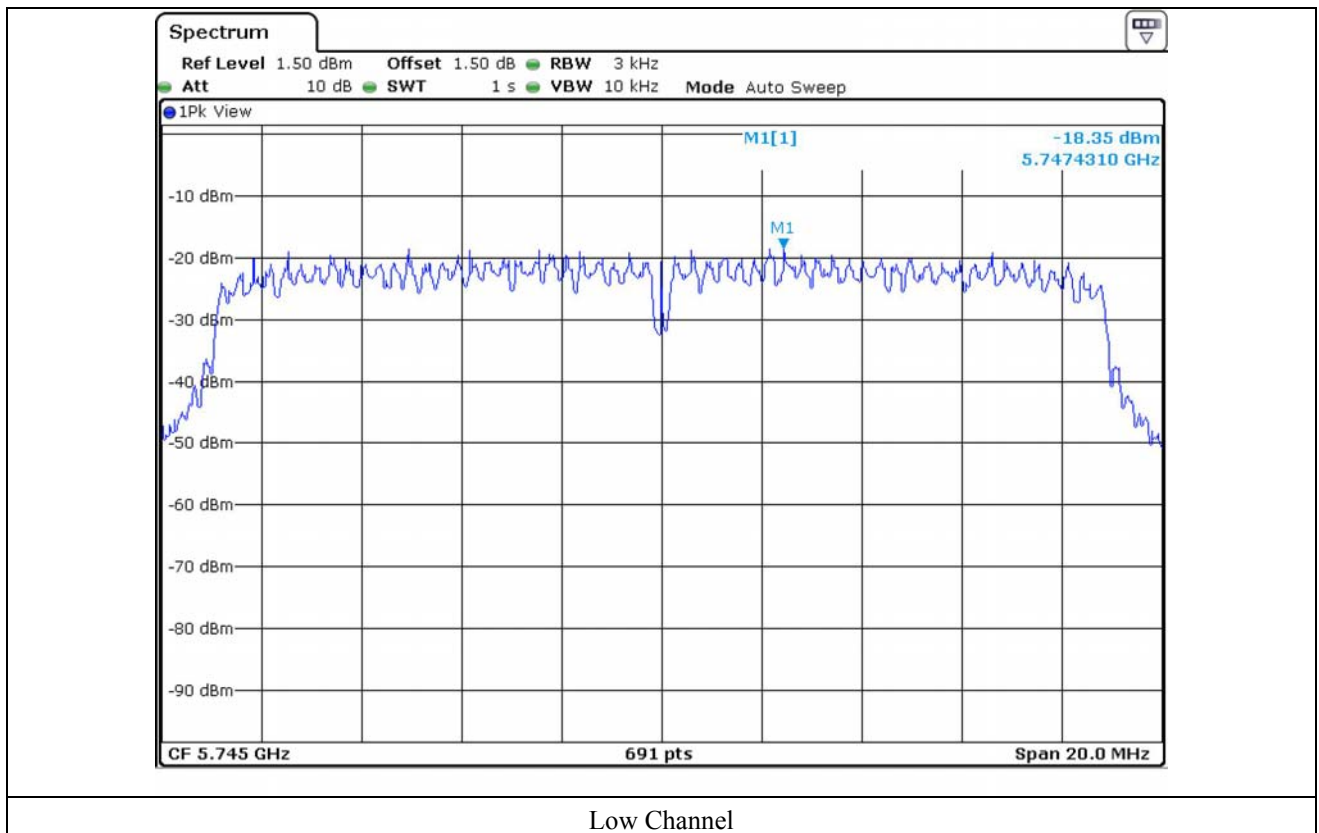
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

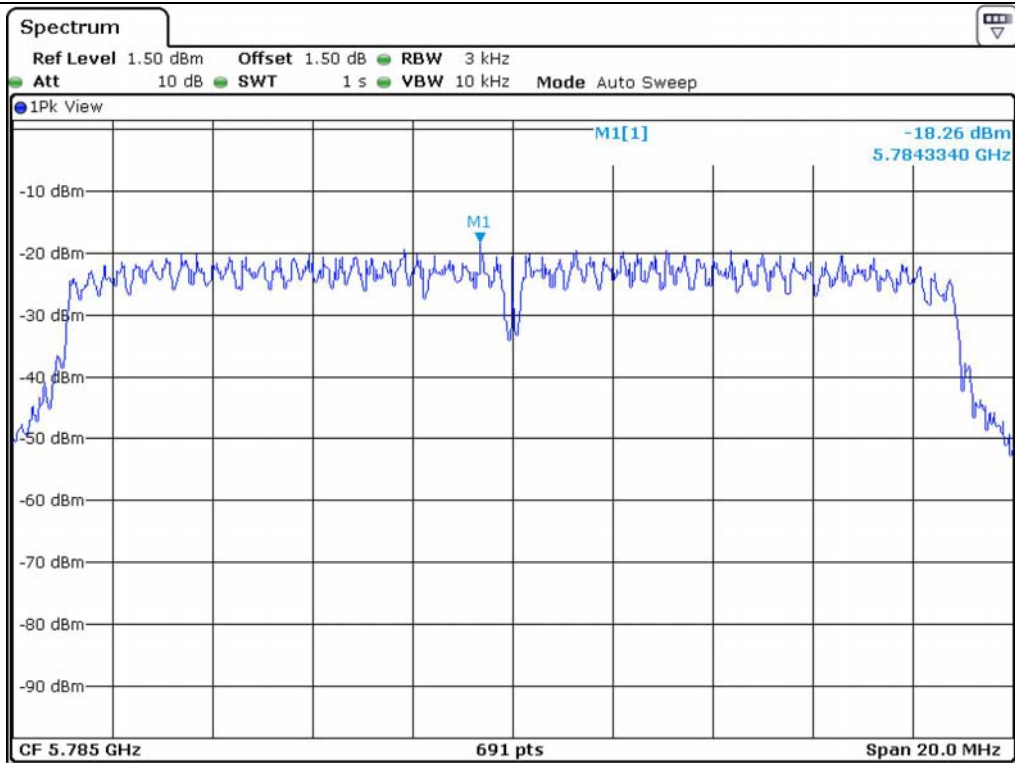
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5 745	-18.35	8.00	26.35
Middle	5 785	-18.26	8.00	26.26
High	5 825	-18.97	8.00	26.97

Remark. Margin = Limit – Measured value

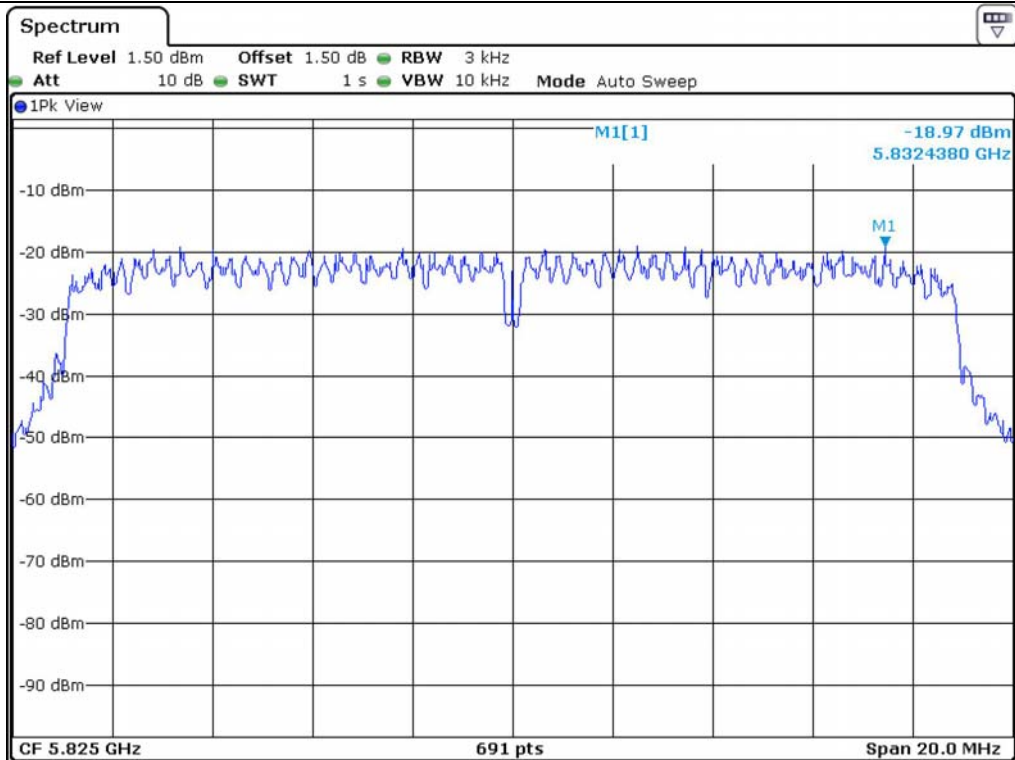
0 | 30 21.

Tested by: Hong-Kyu, Lee/ Engineer





Middle Channel



High Channel

11.9.2 Test data for Antenna 1

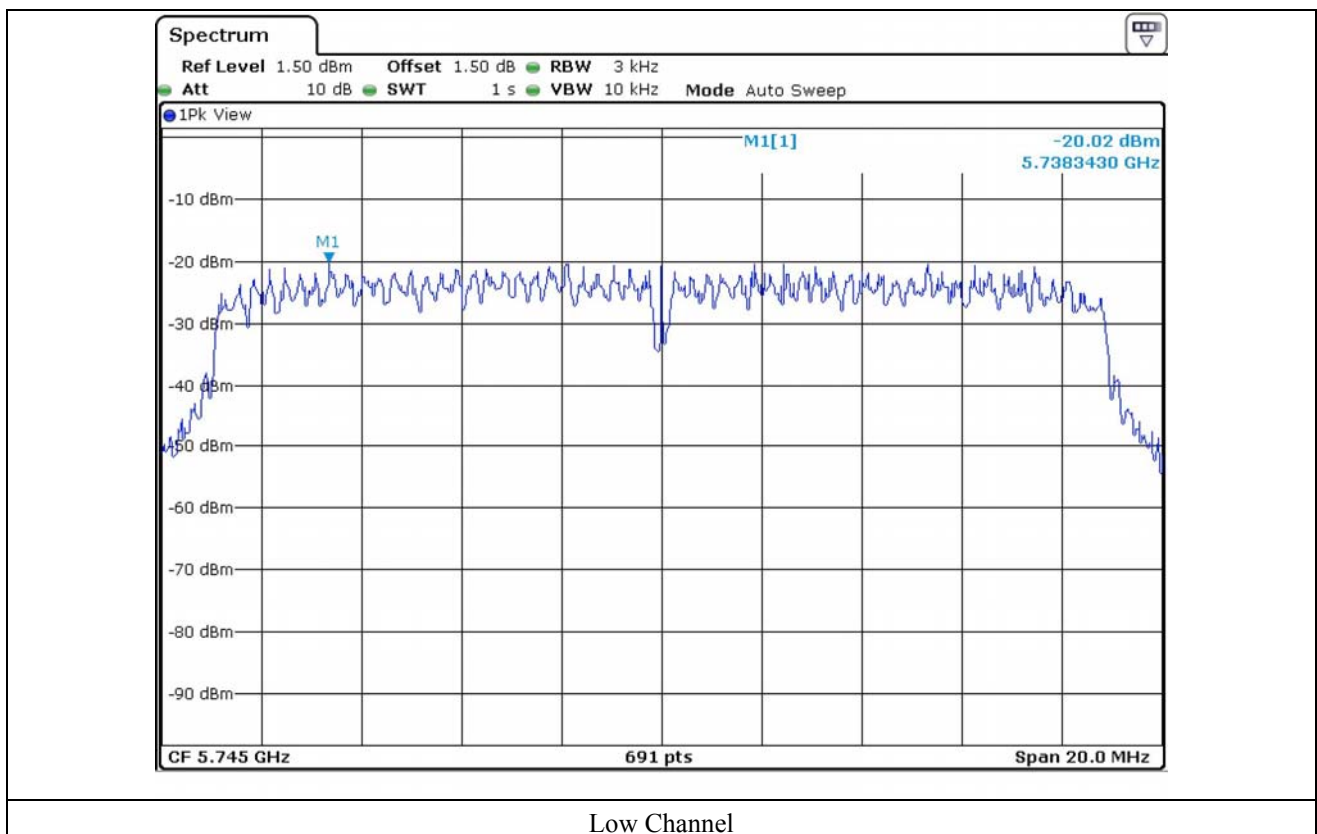
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

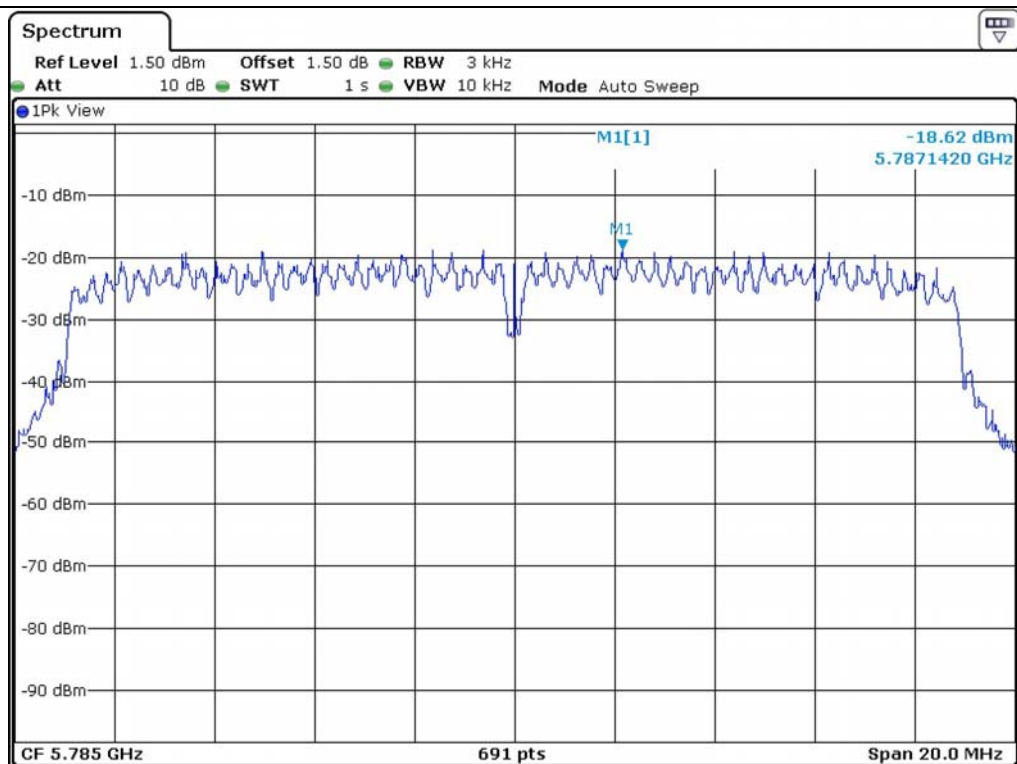
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5 745	-20.02	8.00	28.02
Middle	5 785	-18.62	8.00	26.62
High	5 825	-18.11	8.00	26.11

Remark. Margin = Limit – Measured value

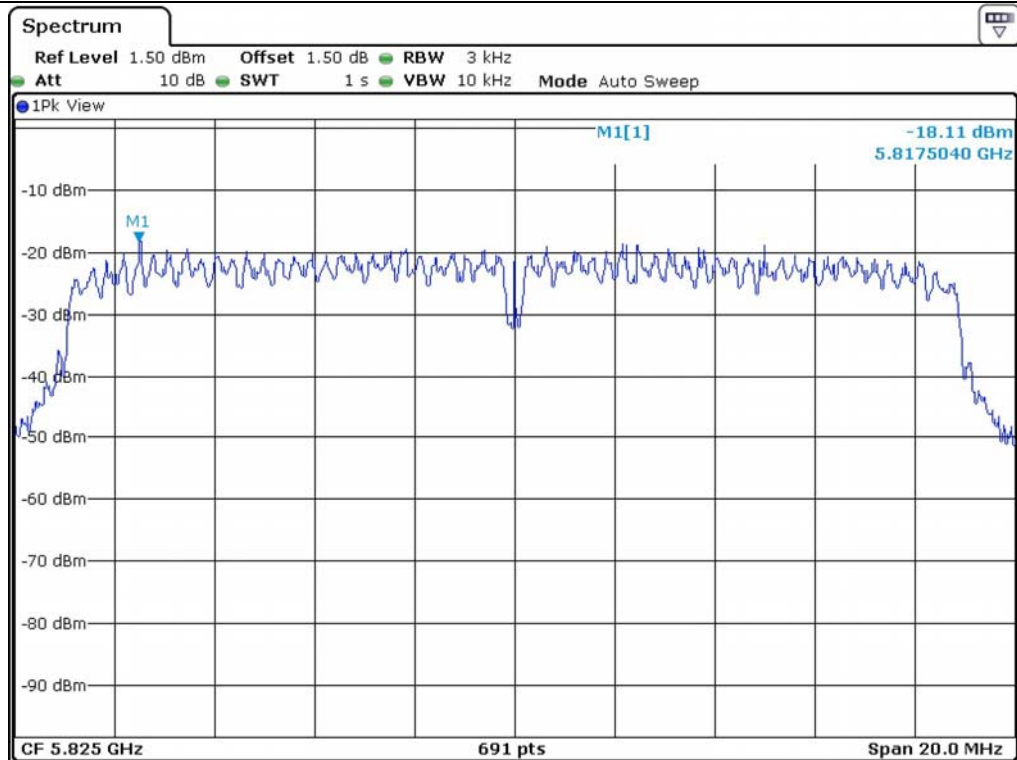
01/30/14

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



Tested by: Hong-Kyu, Lee/ Engineer

11.10 Test data for 802.11n_HT40 RLAN Mode

11.10.1 Test data for Antenna 0

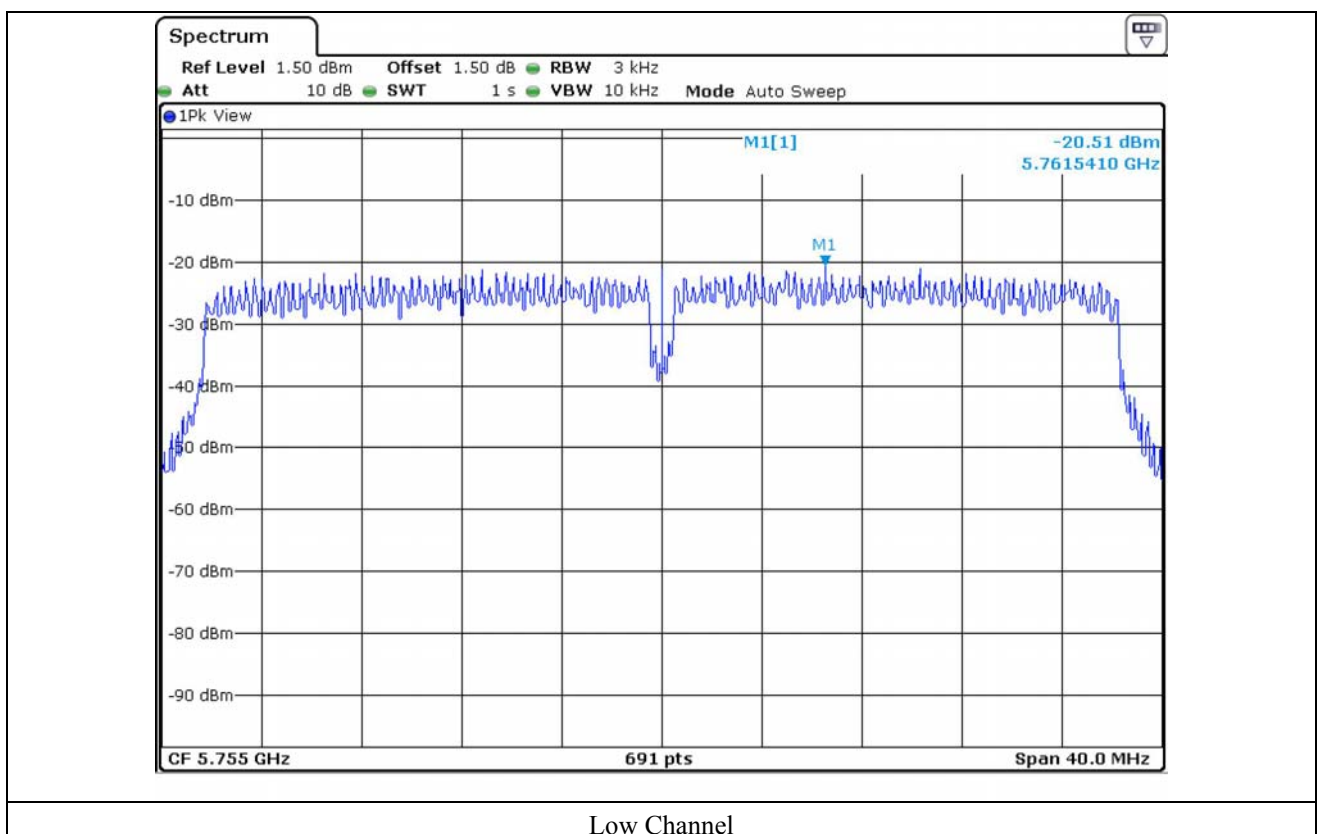
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

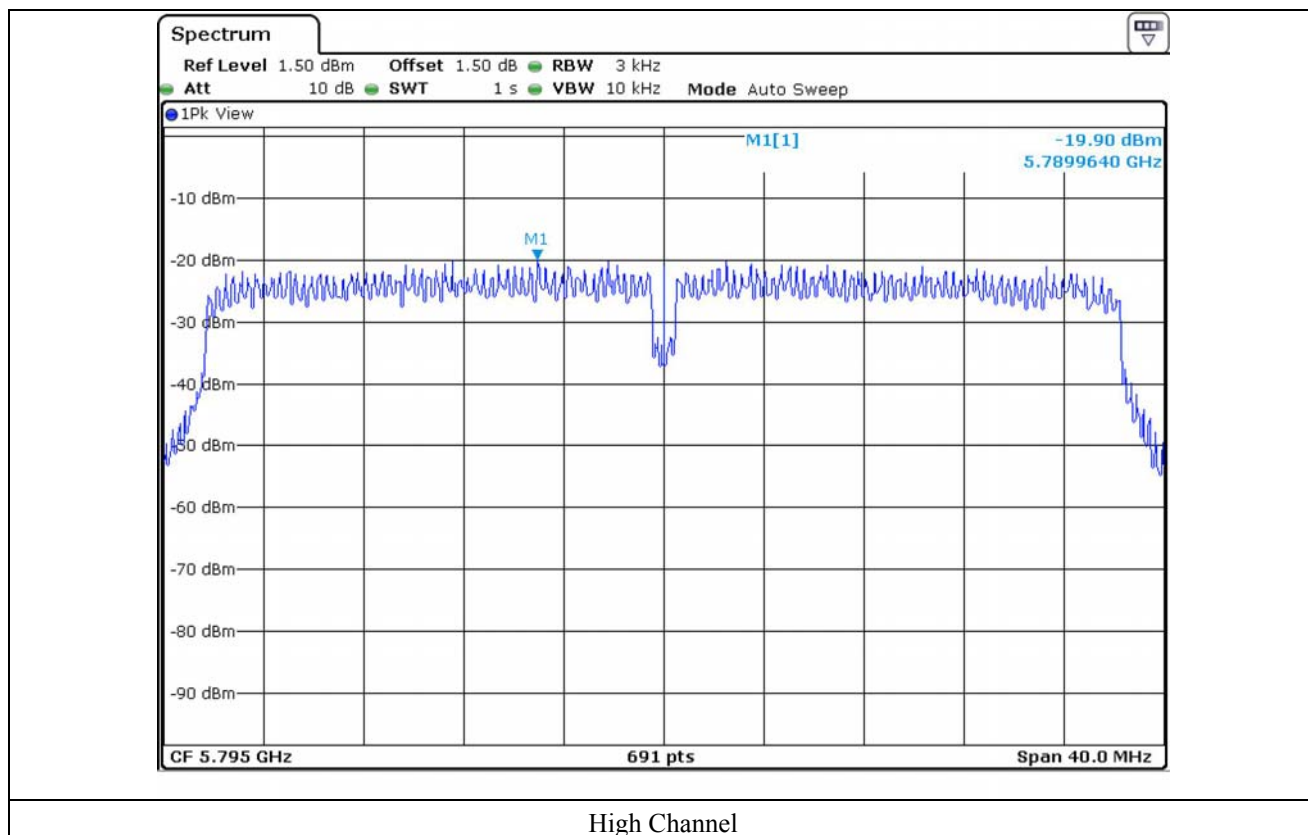
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5 755	-20.51	8.00	28.51
High	5 795	-19.90	8.00	27.90

Remark. Margin = Limit – Measured value

01 2013

Tested by: Hong-Kyu, Lee/ Engineer





11.10.2 Test data for Antenna 1

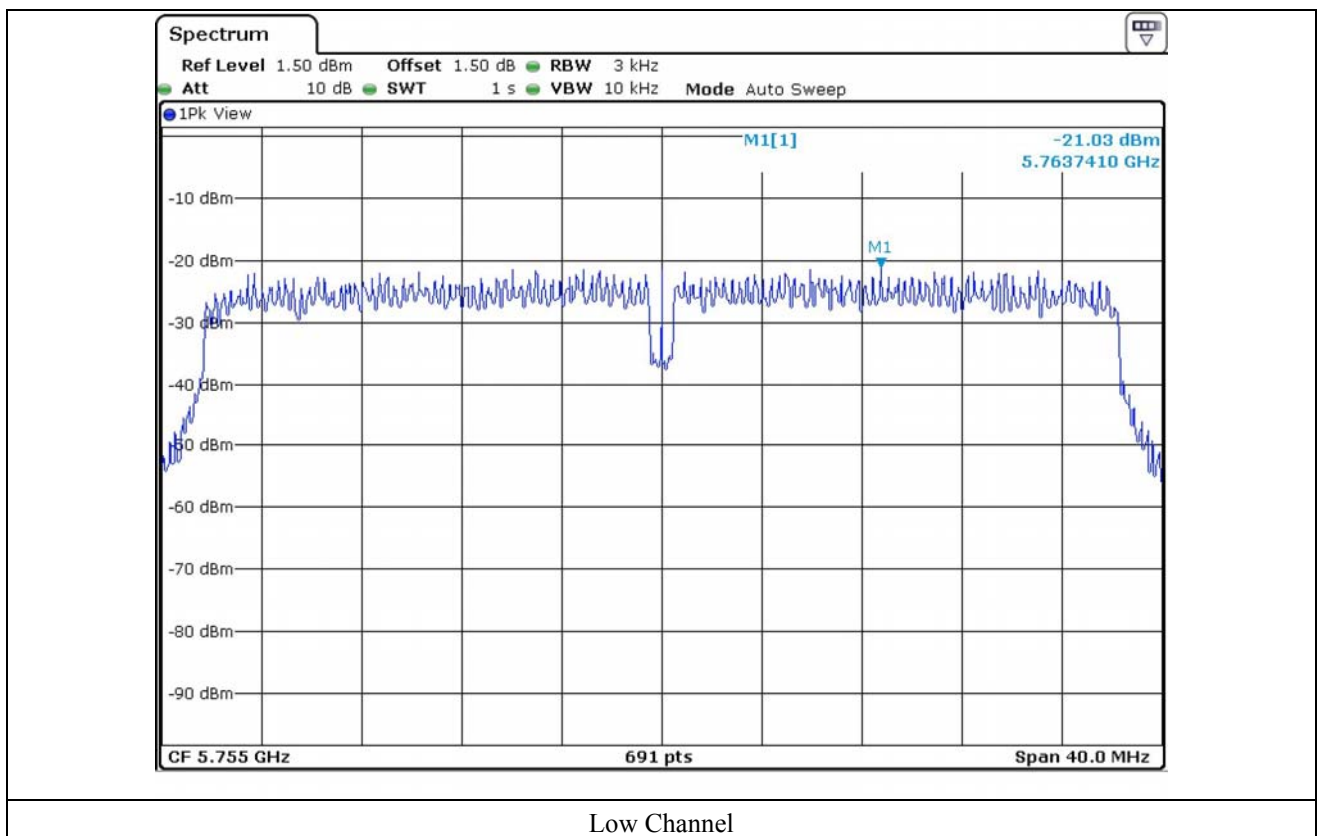
- Test Date : December 27, 2013
- Test Result : Pass
- Operating Condition : Continuous transmitting mode

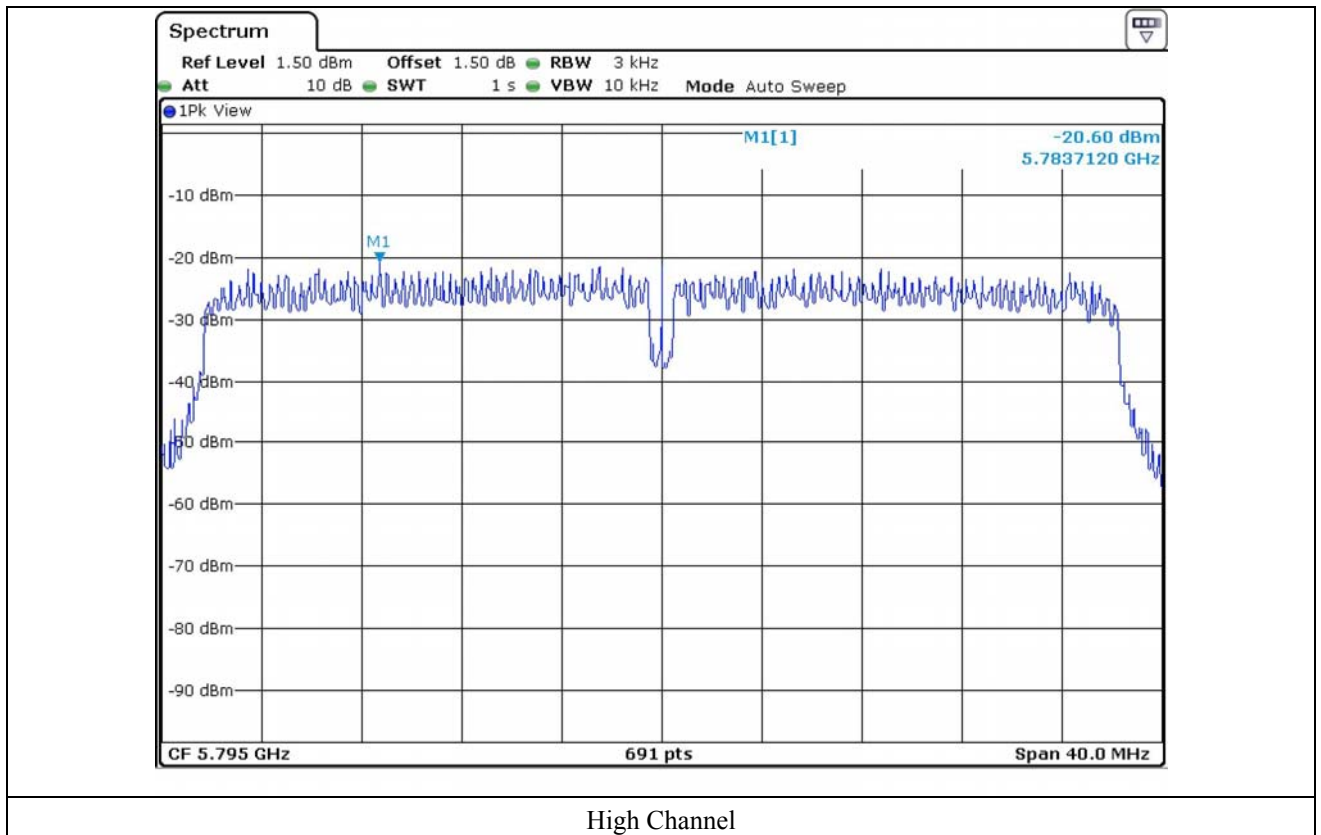
CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5 755	-21.03	8.00	29.03
High	5 795	-20.60	8.00	28.60

Remark. Margin = Limit – Measured value

01 2013

Tested by: Hong-Kyu, Lee/ Engineer





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



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

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



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/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	47.50	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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

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



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/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 (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/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

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



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$

01 30 21

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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.								



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 (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/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 (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/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

$$\text{Margin (dB)} = \text{Limits (dBμV/m)} - \text{Emission Level (dBμV/m)}$$



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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (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 Ω / 50 μ H + 5 Ω 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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

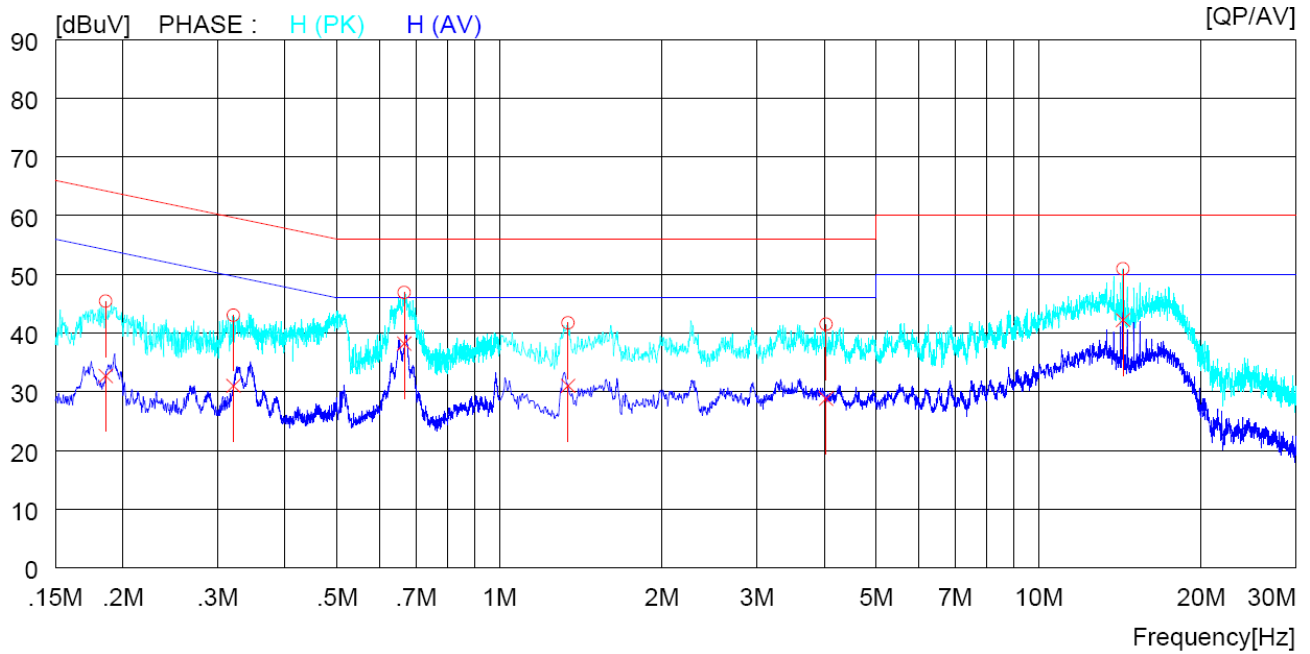
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

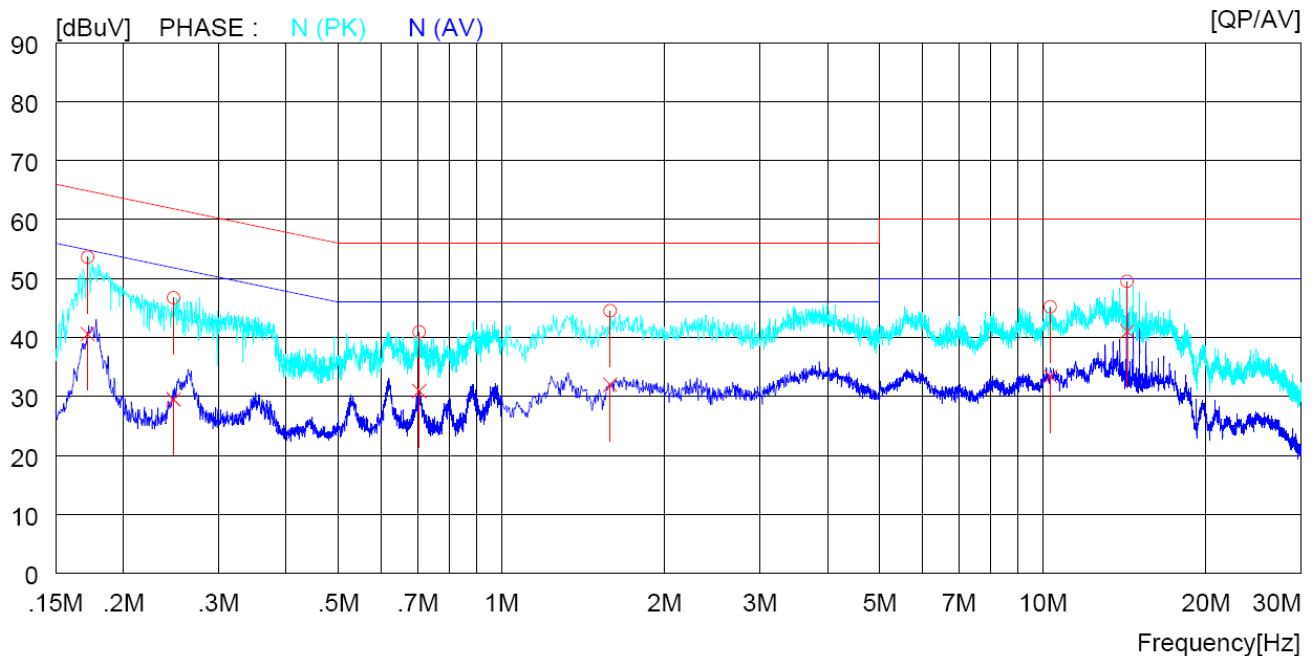


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

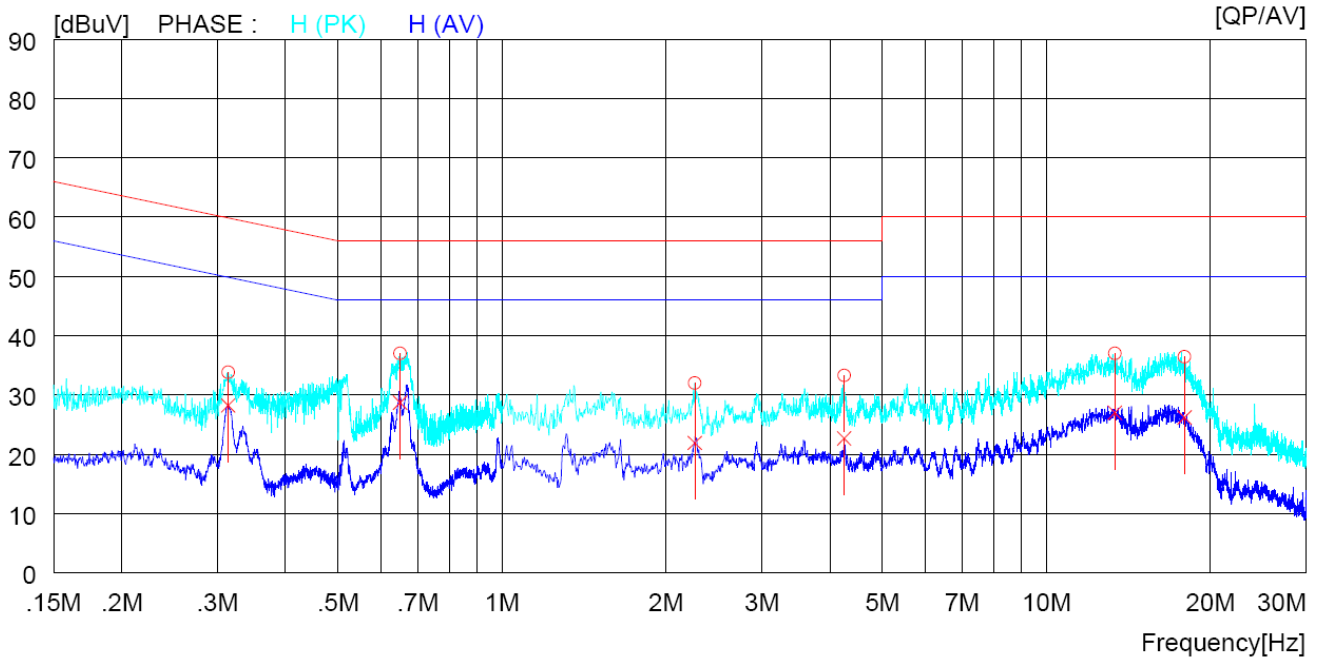
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

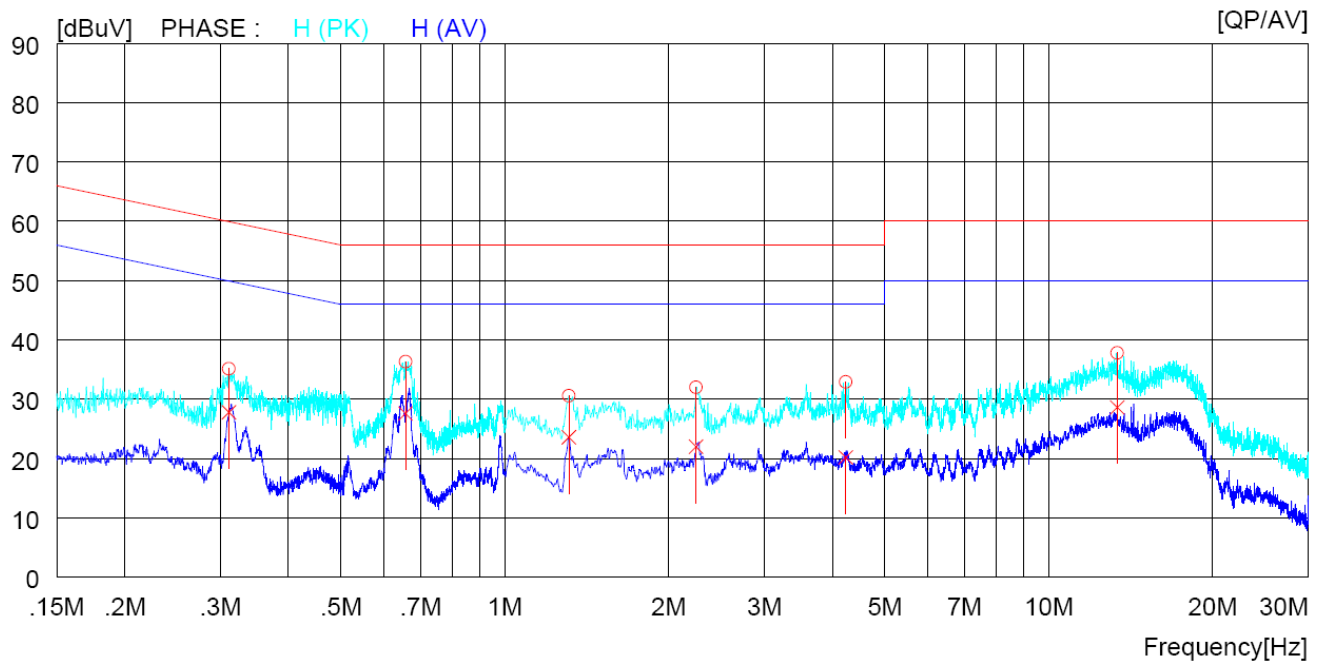


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

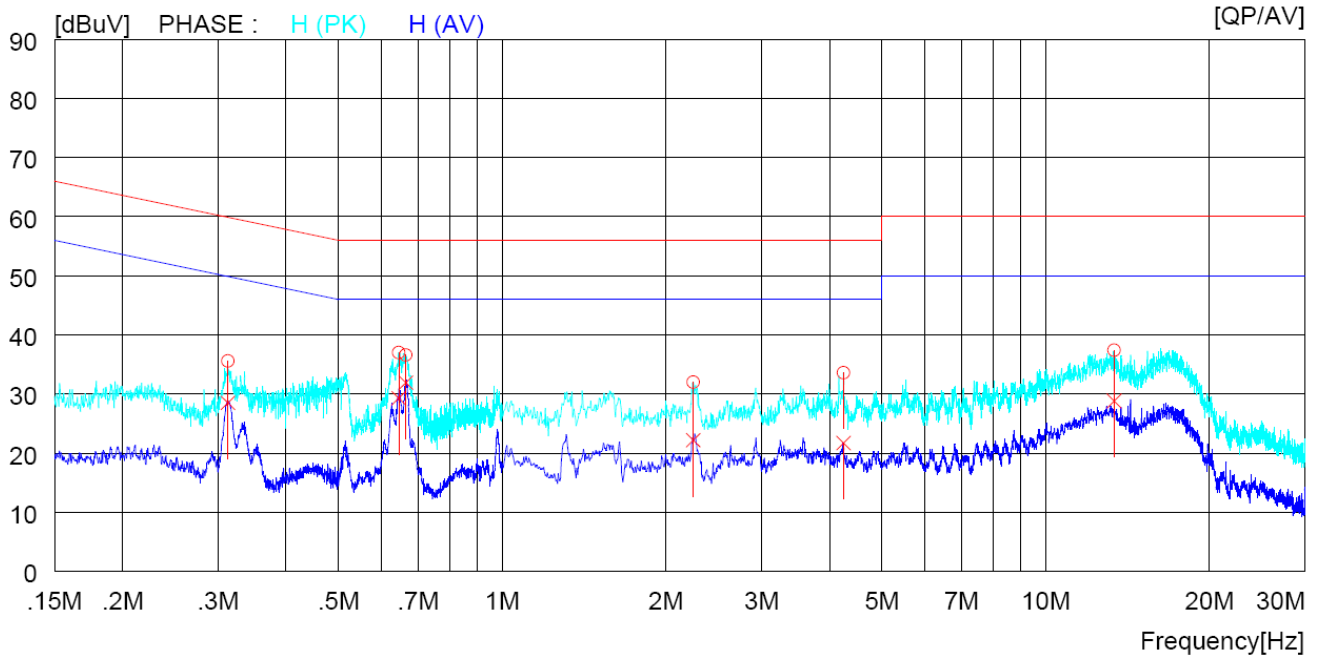
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

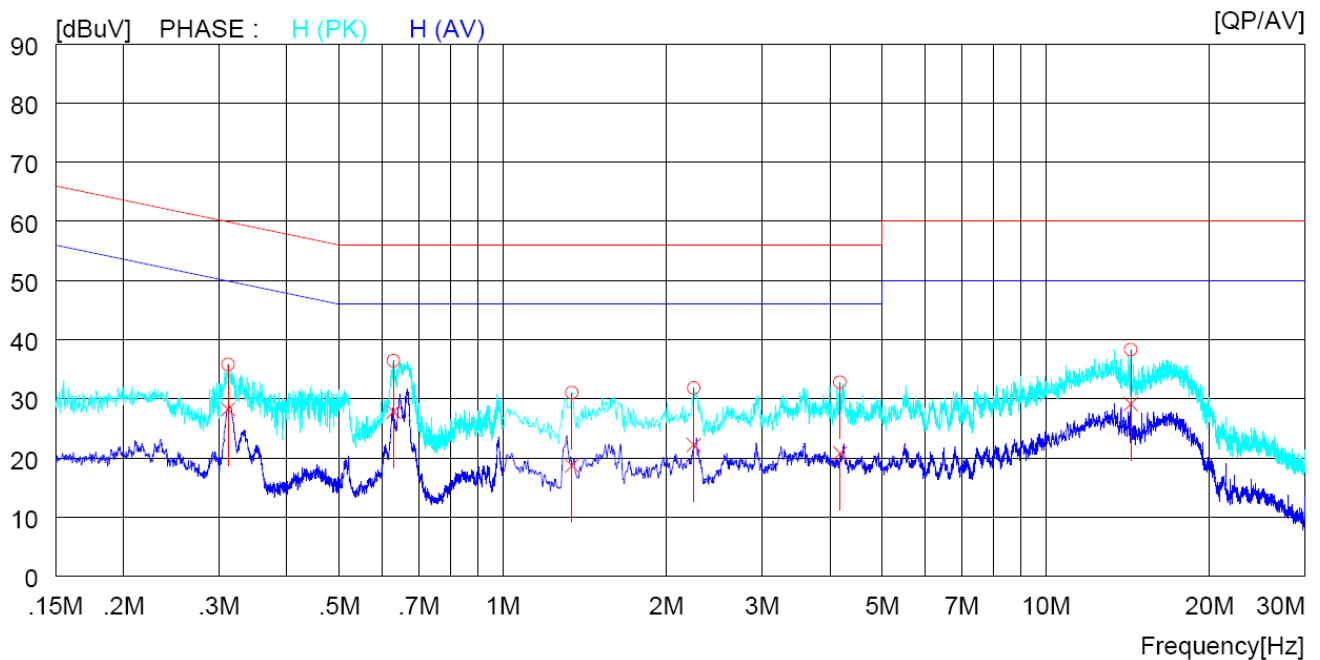


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

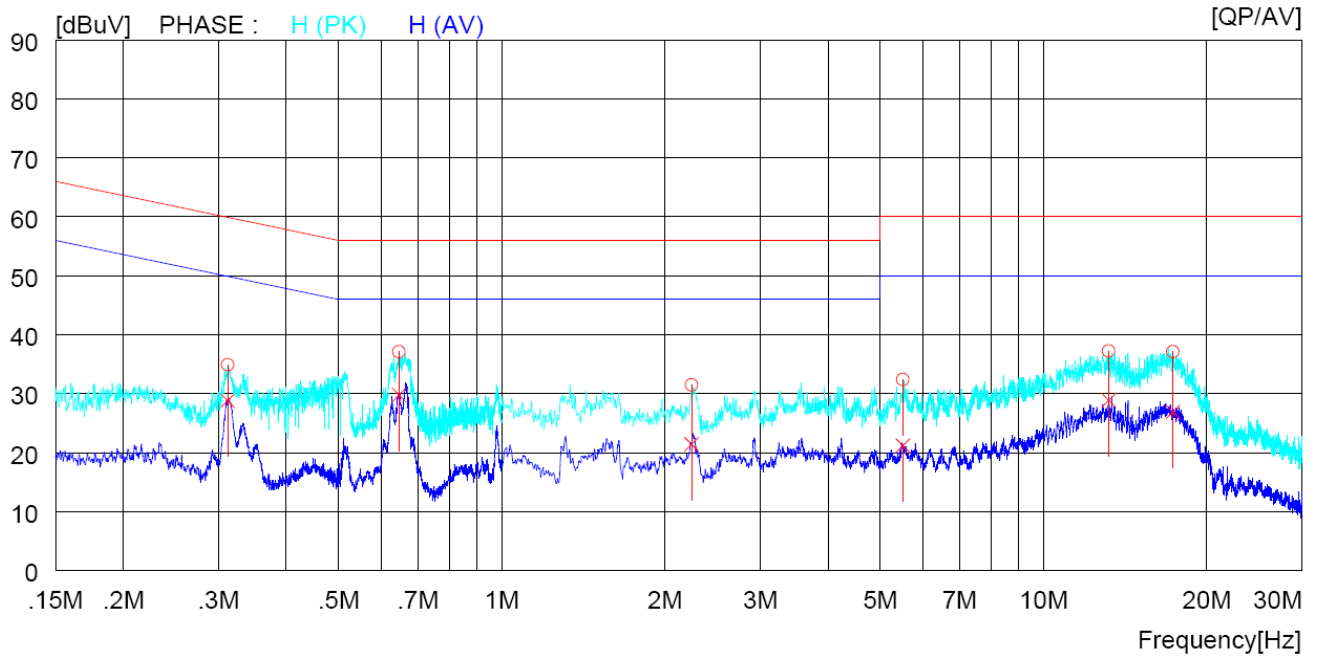
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

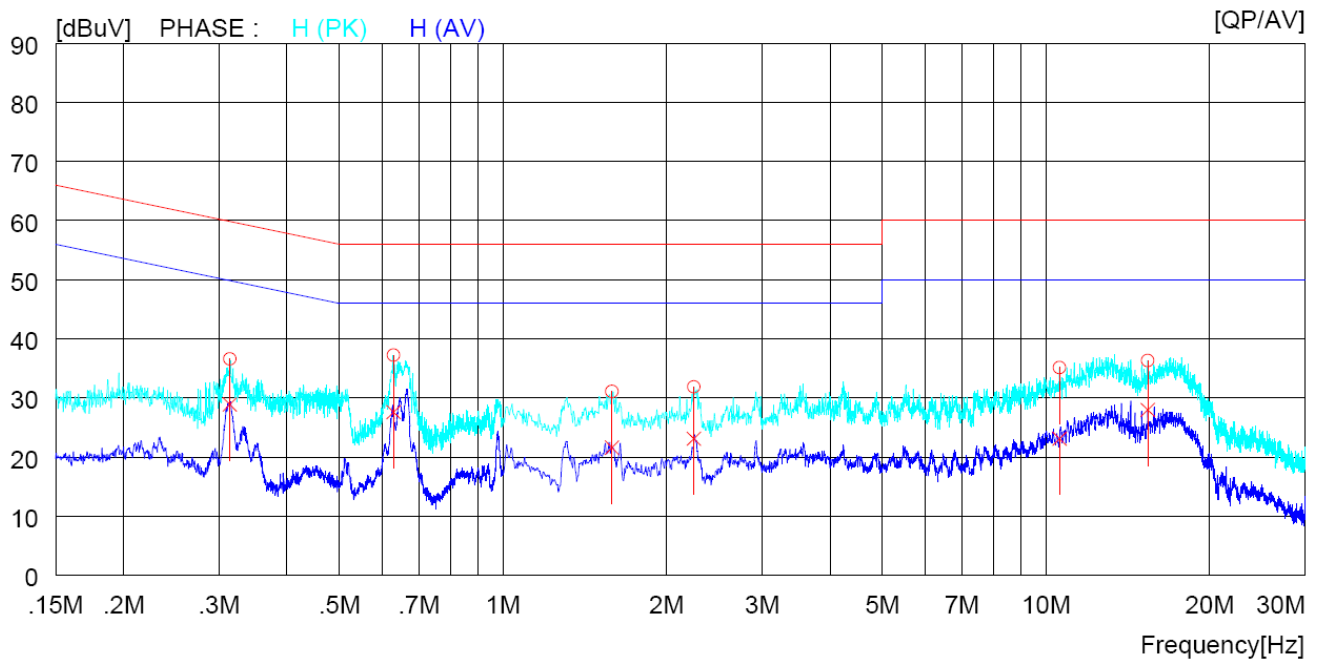


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

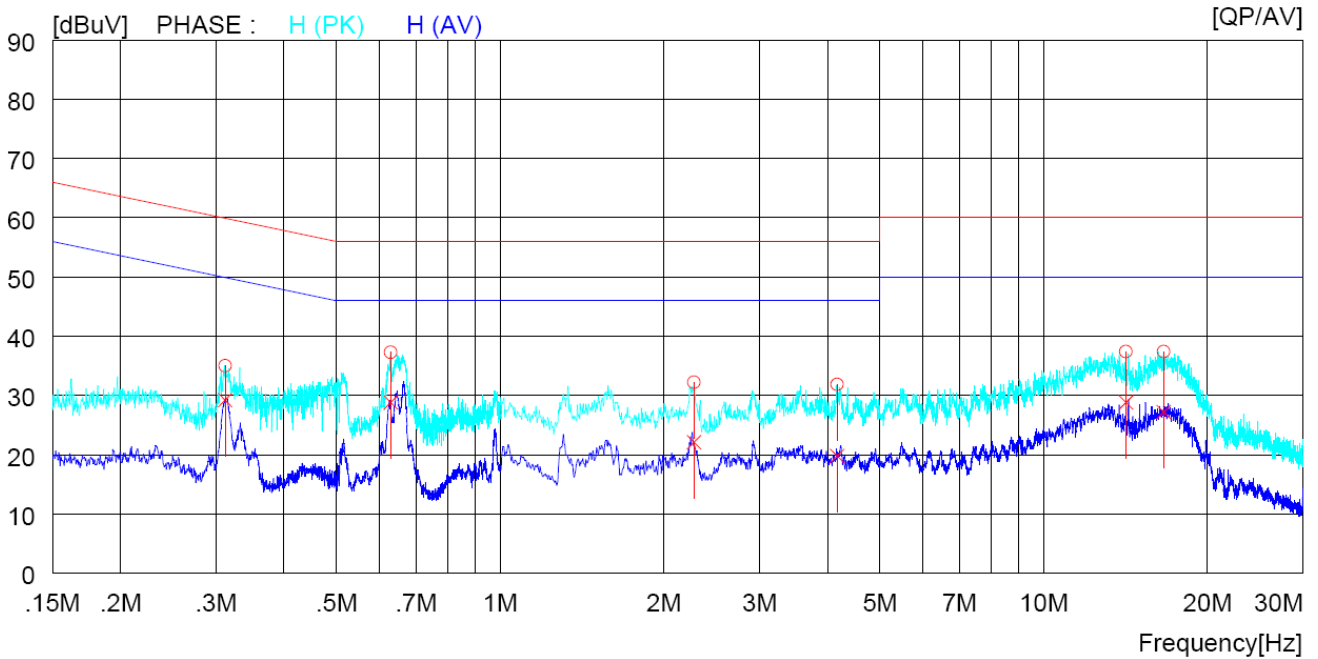
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

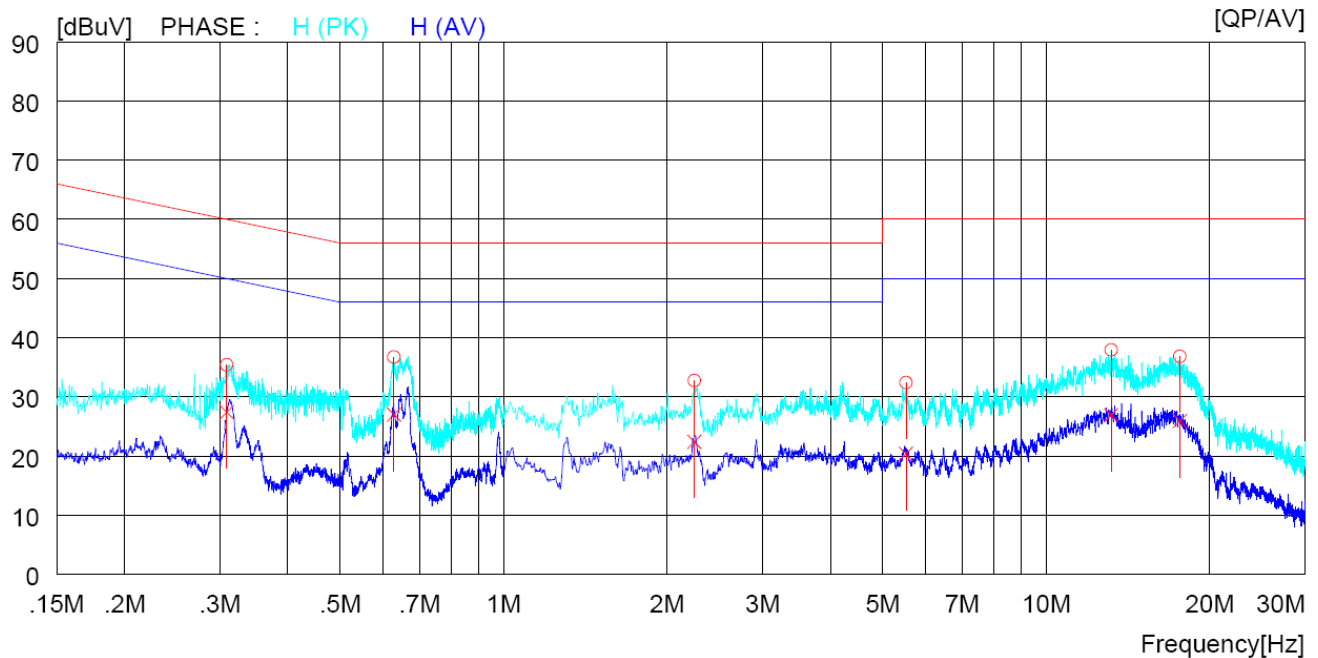


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

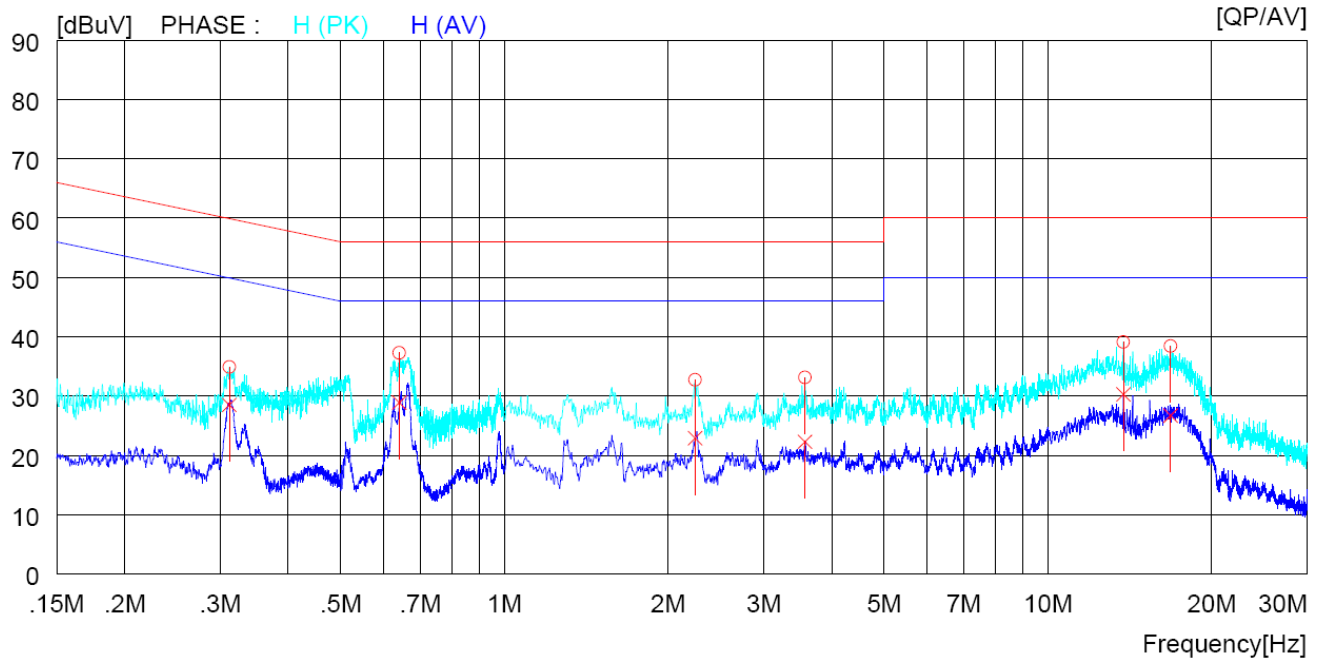
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

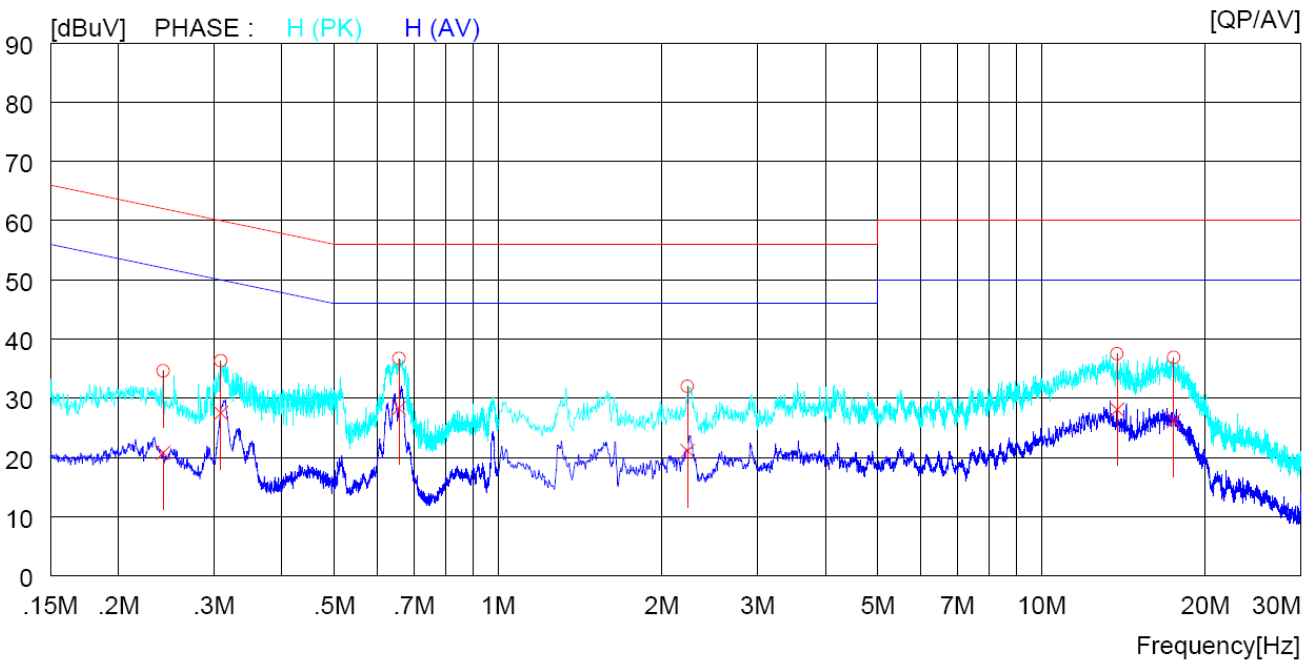


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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 (MHz)	Line	Quasi-Peak (dBμV)		Margin (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 (MHz)	Line	Average (dBμV)		Margin (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.

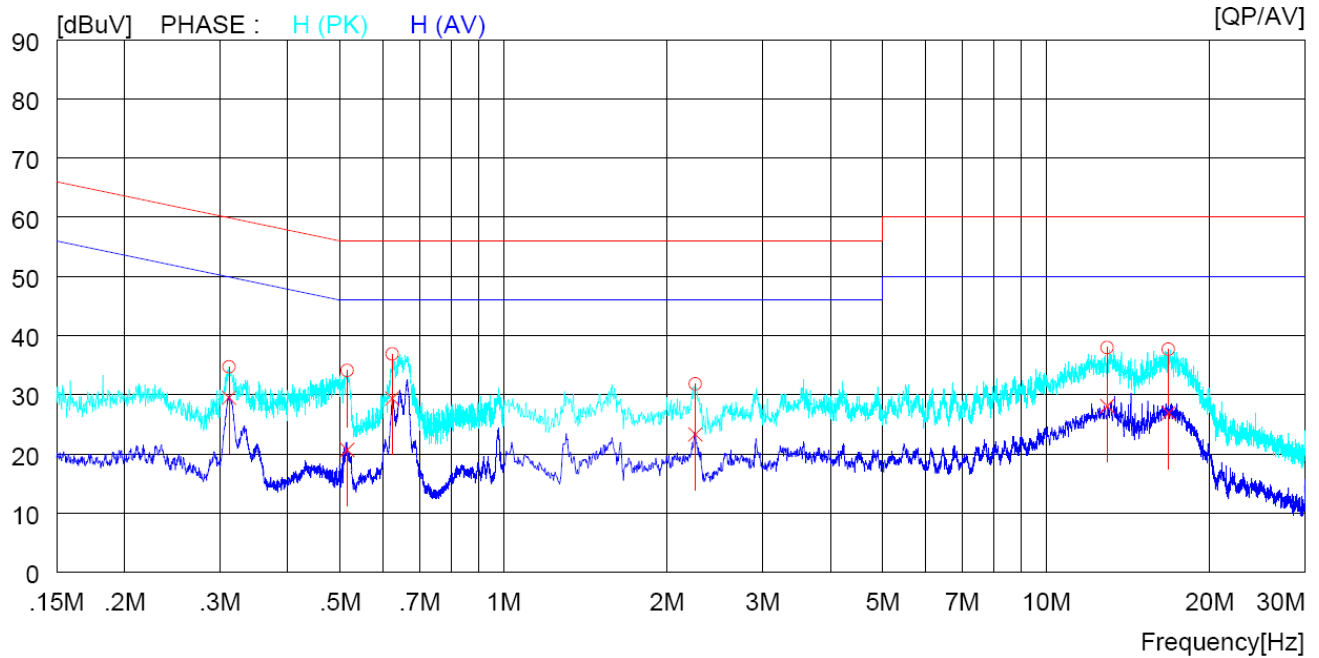
Margin (dB) = Limits (dBμV) – Emission Level (dBμV)

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

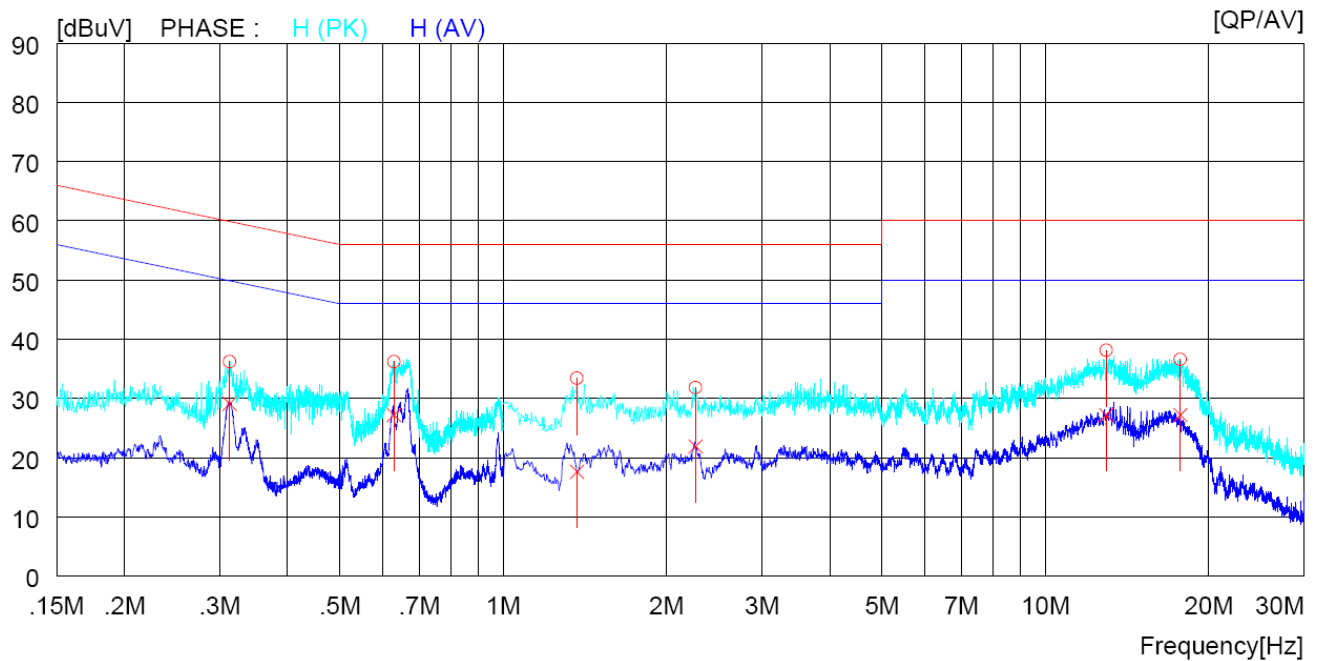


Tested by: Hong-Kyu, Lee/ Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

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/cm² for the device operating 1 500 ~ 100 000 MHz.

14.2 EUT Description

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

14.3 Evaluation Results

14.3.1 Test result of RF Conducted Power and antenna gain

Operating Freq. (MHz)	Max. Output Power		Antenna Gain		Distance m	E Field Strength (V/m)	
	dBm	Watts	Log	Linear		Result	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.