7.3.6 Test data for radiated emission

7.3.6.1 Radiated Emission which fall in the Restricted Band

7.3.6.1.1 Test data for 802.11b

-. Test Date : August 25, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 30 MHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel									
2385.99	57.31	Peak	H	27.10	7.50	43.00	48.91	74.00	25.09
2397.63	40.55	Average	H				32.15	54.00	21.85
2387.53	53.89	Peak	V				45.49	74.00	28.51
2387.53	40.64	Average	V				32.24	54.00	21.76
Test Data for Low Channel (EDGE)									
2397.63	65.44	Peak	H	27.10	7.50	43.00	57.04	74.00	16.96
2397.63	59.27	Average	H				50.87	54.00	3.13
2396.98	66.40	Peak	V				58.00	74.00	16.00
2396.98	58.11	Average	V				49.71	54.00	4.29
Test Data for High Channel									
2479.12	54.52	Peak	H	27.10	7.50	43.00	46.12	74.00	27.88
2479.12	43.76	Average	H				35.36	54.00	18.64
2489.23	53.80	Peak	V				45.40	74.00	28.60
2489.23	36.47	Average	V				28.07	54.00	25.93

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.3.6.1.2 Test data for 802.11g

-. Test Date : August 25, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 30 MHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

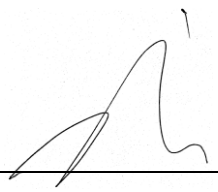
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel									
2388.88	59.12	Peak	H	27.10	7.50	43.00	50.72	74.00	23.28
2388.88	45.72	Average	H				37.32	54.00	16.68
2389.24	59.51	Peak	V				51.11	74.00	22.89
2389.24	46.66	Average	V				38.26	54.00	15.74
Test Data for Low Channel (EDGE)									
2389.04	73.42	Peak	H	27.10	7.50	43.00	65.02	74.00	8.98
2399.41	50.80	Average	H				42.40	54.00	11.60
2389.04	74.66	Peak	V				66.26	74.00	7.74
2389.04	51.60	Average	V				43.20	54.00	10.80
Test Data for High Channel									
2483.63	64.06	Peak	H	27.10	7.50	43.00	55.66	74.00	18.34
2483.51	45.00	Average	H				36.60	54.00	17.40
2483.56	67.21	Peak	V				58.81	74.00	15.19
2483.56	46.21	Average	V				37.81	54.00	16.19

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.3.6.1.3 Test data for 802.11n_HT20

-. Test Date : August 25, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 30 MHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

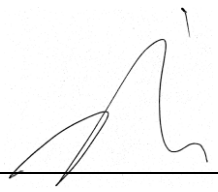
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel									
2389.78	62.66	Peak	H	27.10	7.50	43.00	54.26	74.00	19.74
2389.78	47.51	Average	H				39.11	54.00	14.89
2389.33	60.40	Peak	V				52.00	74.00	22.00
2389.33	44.81	Average	V				36.41	54.00	17.59
Test Data for Low Channel (EDGE)									
2399.97	75.28	Peak	H	27.10	7.50	43.00	66.88	74.00	7.12
2399.97	53.32	Average	H				44.92	54.00	9.08
2399.58	74.07	Peak	V				65.67	74.00	8.33
2399.58	51.69	Average	V				43.29	54.00	10.71
Test Data for High Channel									
2483.78	67.21	Peak	H	27.10	7.50	43.00	58.81	74.00	15.19
2483.78	45.75	Average	H				37.35	54.00	16.65
2483.52	69.71	Peak	V				61.31	74.00	12.69
2483.52	46.72	Average	V				38.32	54.00	15.68

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.3.6.2 Spurious & Harmonic Radiated Emission

7.3.6.2.1 Test data for 802.11b

-. Test Date : August 25, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

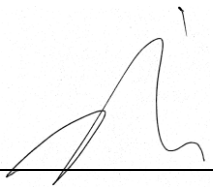
Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
4 824.00	39.08	Peak	H	30.70	11.10	42.50	38.38	73.98	35.60
	31.78	Average	H				31.08	53.98	22.90
	37.69	Peak	V				36.99	73.98	36.99
	29.42	Average	V				28.72	53.98	25.26
Test Data for Middle Channel									
4 884.00	41.00	Peak	H	30.70	11.20	42.40	40.50	73.98	33.48
	31.87	Average	H				31.37	53.98	22.61
	38.16	Peak	V				37.66	73.98	36.32
	28.55	Average	V				28.05	53.98	25.93
Test Data for High Channel									
4 924.00	42.35	Peak	H	30.80	11.80	42.30	42.65	73.98	31.33
	32.57	Average	H				32.87	53.98	21.11
	38.15	Peak	V				38.45	73.98	35.53
	29.39	Average	V				29.69	53.98	24.29

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.3.6.2.2 Test data for 802.11g

-. Test Date : August 25, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

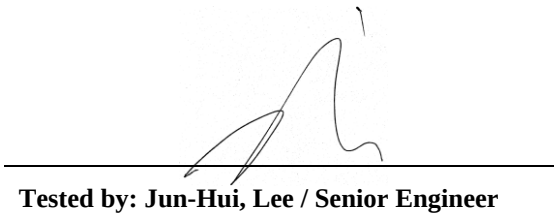
Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
4 824.00	38.12	Peak	H	30.70	11.10	42.50	37.42	73.98	36.56
	29.40	Average	H				28.70	53.98	25.28
	40.30	Peak	V				39.60	73.98	34.38
	28.98	Average	V				28.28	53.98	25.70
Test Data for Middle Channel									
4 884.00	39.26	Peak	H	30.70	11.20	42.40	38.66	73.98	35.32
	29.61	Average	H				29.01	53.98	24.97
	40.02	Peak	V				39.42	73.98	34.56
	29.78	Average	V				29.18	53.98	24.80
Test Data for High Channel									
4 924.00	40.36	Peak	H	30.80	11.80	42.30	40.46	73.98	33.52
	28.75	Average	H				28.85	53.98	25.13
	41.25	Peak	V				41.35	73.98	32.63
	29.15	Average	V				29.25	53.98	24.73

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.3.6.2.3 Test data for 802.11n_HT20

-. Test Date : August 25, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
4 824.00	40.60	Peak	H	30.70	11.10	42.50	41.00	73.98	32.98
	29.43	Average	H				29.83	53.98	24.15
	41.18	Peak	V				41.58	73.98	32.40
	28.74	Average	V				29.14	53.98	24.84
Test Data for Middle Channel									
4 884.00	40.67	Peak	H	30.70	11.20	42.40	41.07	73.98	32.91
	28.34	Average	H				28.74	53.98	25.24
	39.86	Peak	V				40.26	73.98	33.72
	29.41	Average	V				29.81	53.98	24.17
Test Data for High Channel									
4 924.00	40.92	Peak	H	30.80	11.80	42.30	41.52	73.98	32.46
	29.93	Average	H				30.53	53.98	23.45
	39.76	Peak	V				40.36	73.98	33.62
	29.43	Average	V				30.03	53.98	23.95

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.4 PEAK POWER SPECTRUL DENSITY

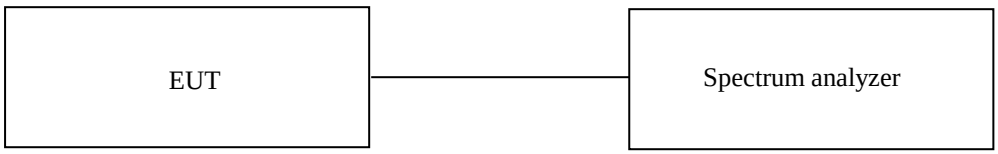
7.4.1 Operating environment

Temperature : 23 ℃

Relative humidity : 53 % R.H.

7.4.2 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.



7.4.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Jul. 22, 2015 (1Y)

All test equipment used is calibrated on a regular basis.

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.4.4 Test data for 802.11b

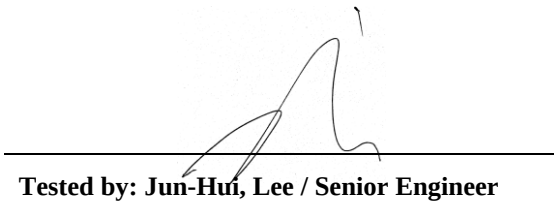
-. Test Date : August 21, 2015

-. Test Result : Pass

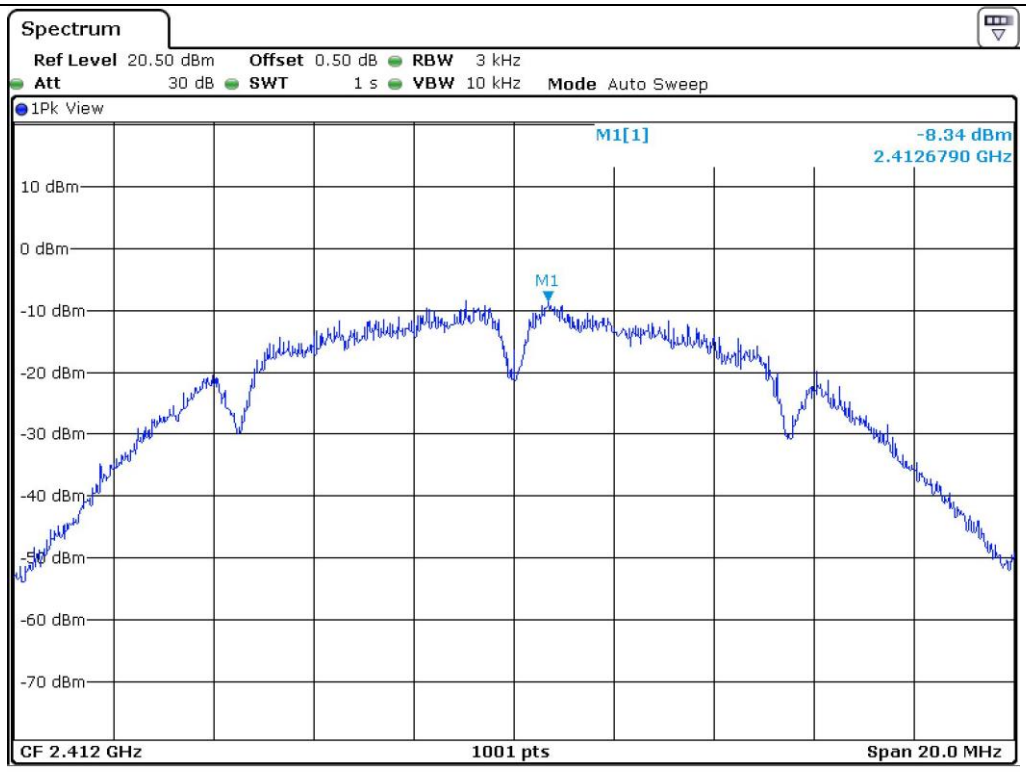
-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2412	-8.34	8.00	16.34
Middle	2437	-7.58	8.00	15.58
High	2462	-6.97	8.00	14.97

Remark. Margin = Limit – Measured value



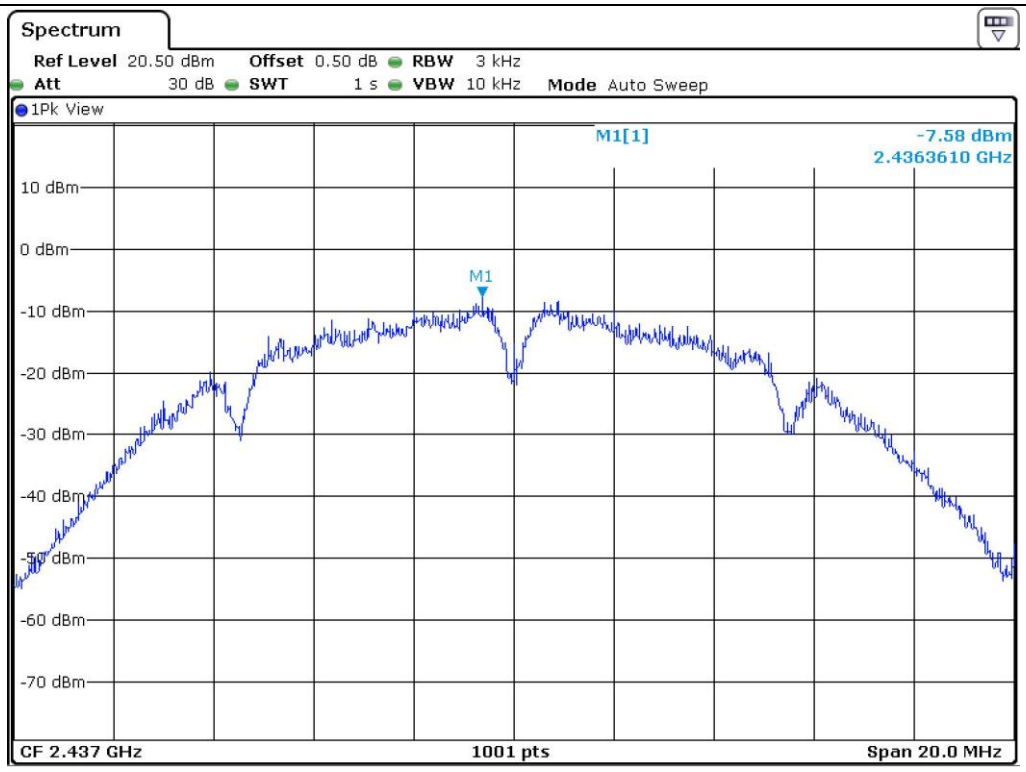
Tested by: Jun-Hui, Lee / Senior Engineer



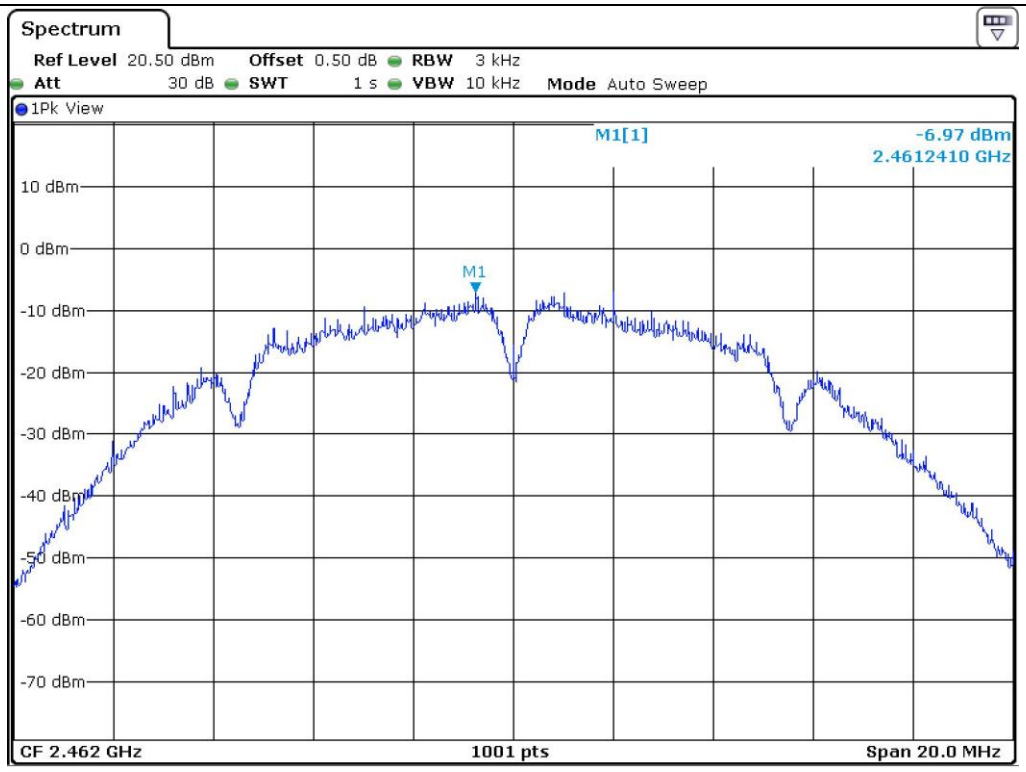
Low Channel

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)



Middle Channel



High Channel

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.4.5 Test data for 802.11g

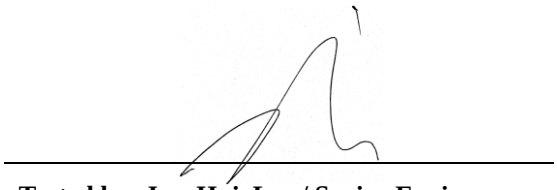
-. Test Date : August 21, 2015

-. Test Result : Pass

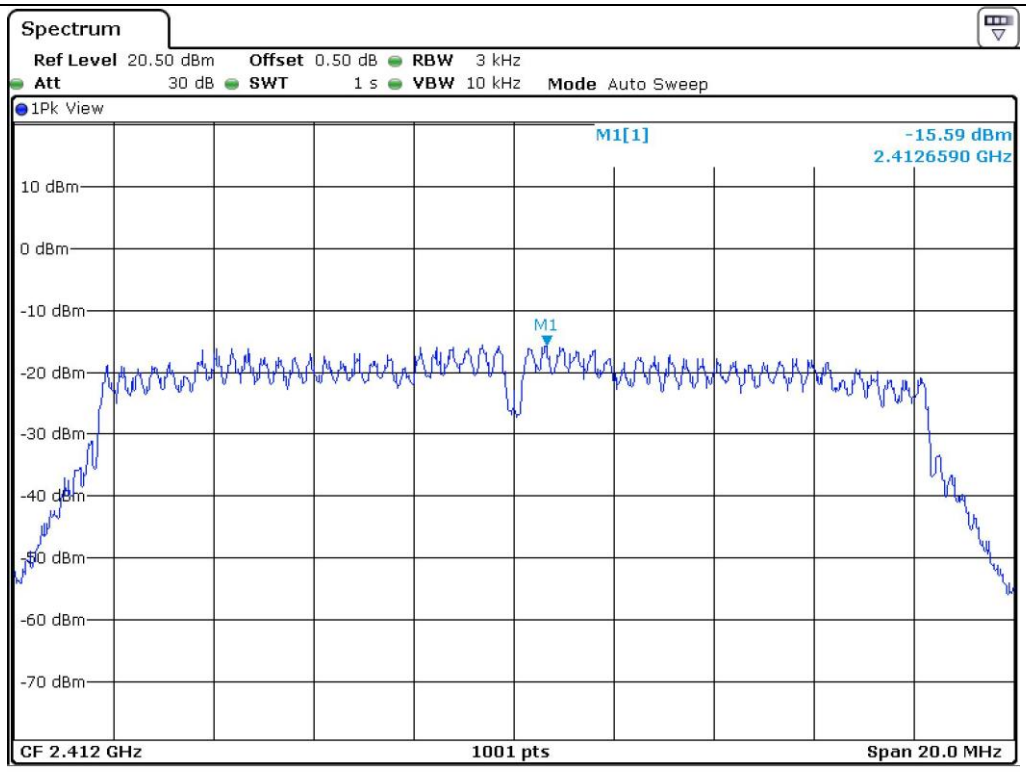
-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2412	-15.59	8.00	23.59
Middle	2437	-15.34	8.00	23.34
High	2462	-14.17	8.00	22.17

Remark. Margin = Limit – Measured value



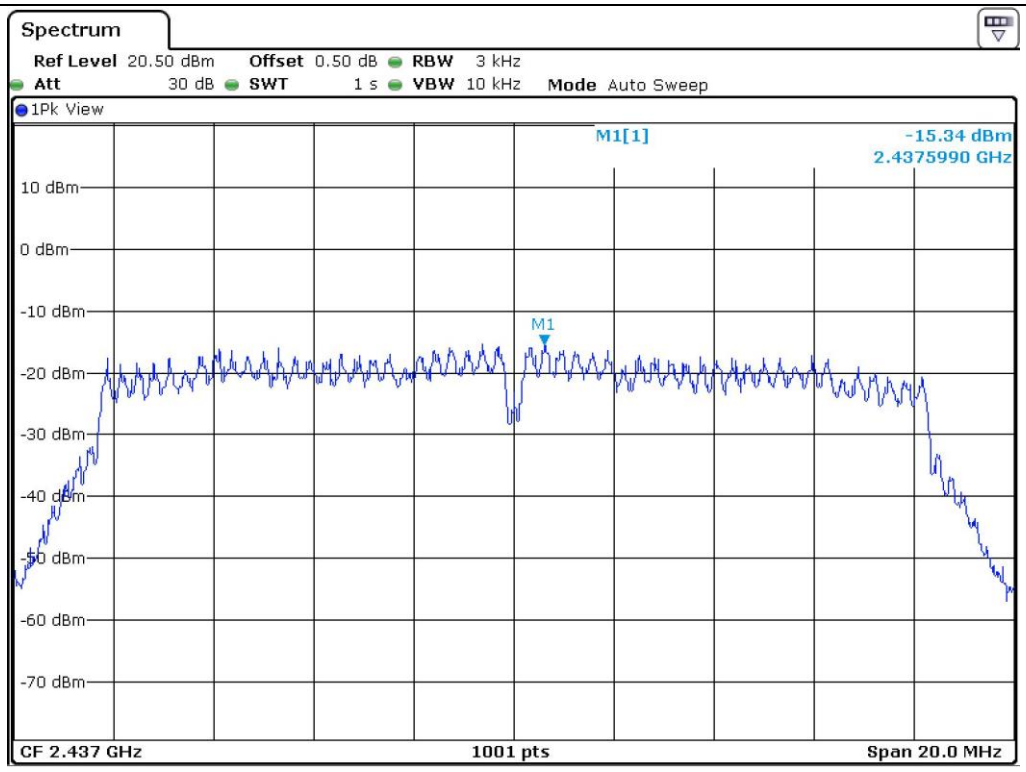
Tested by: Jun-Hui, Lee / Senior Engineer



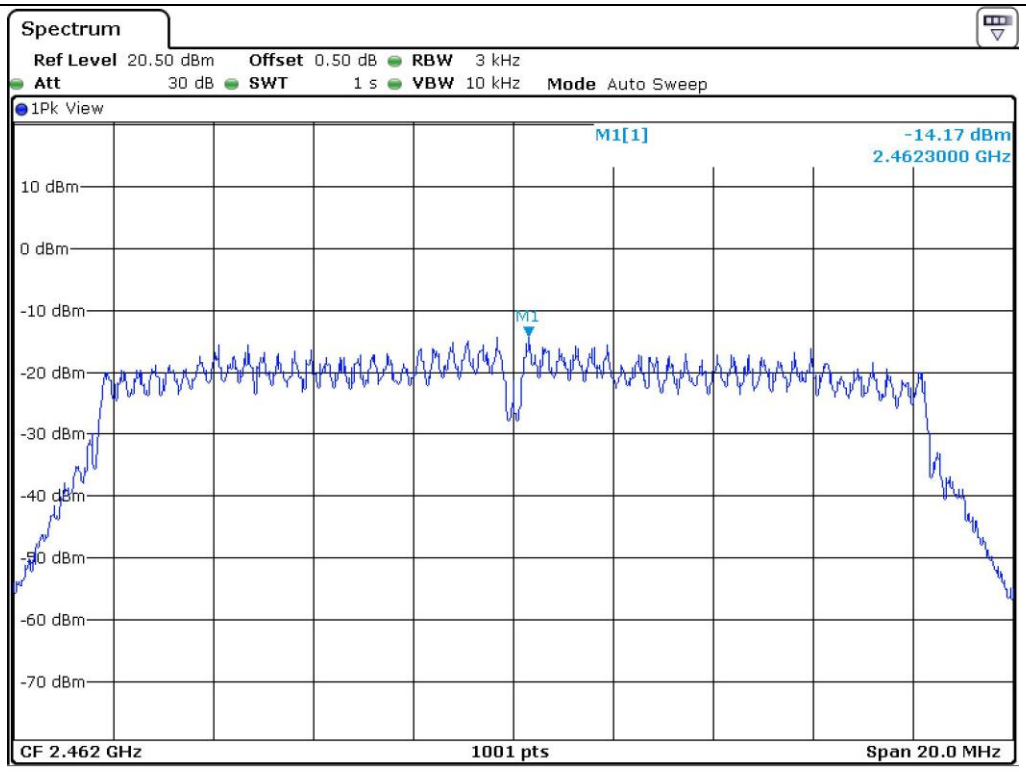
Low Channel

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)



Middle Channel



High Channel

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.4.6 Test data for 802.11n_HT20

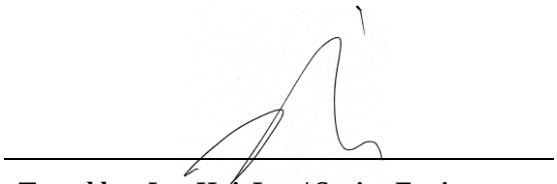
-. Test Date : August 21, 2015

-. Test Result : Pass

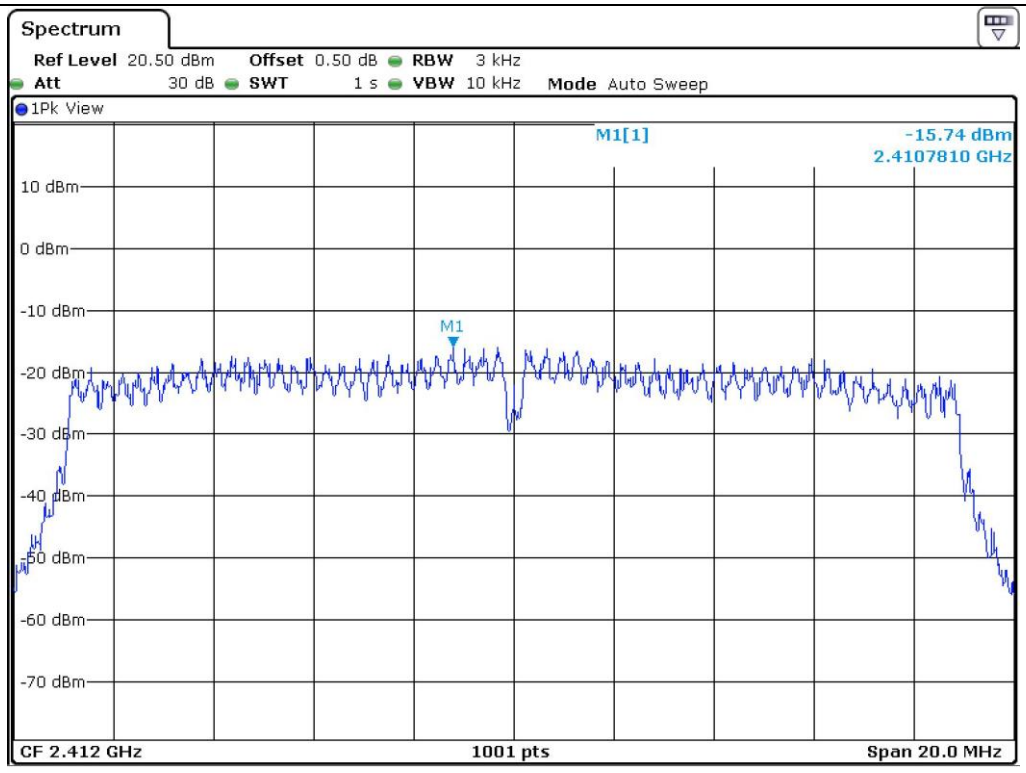
-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2412	-15.47	8.00	23.47
Middle	2437	-14.93	8.00	22.93
High	2462	-14.79	8.00	22.79

Remark. Margin = Limit – Measured value



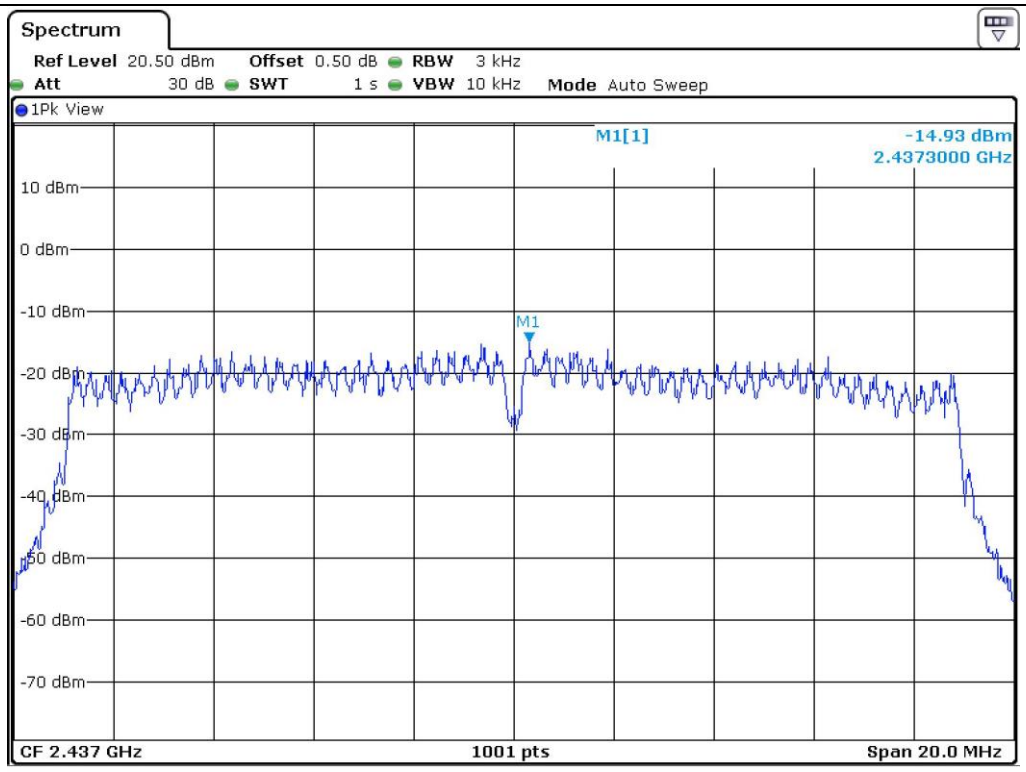
Tested by: Jun-Hui, Lee / Senior Engineer



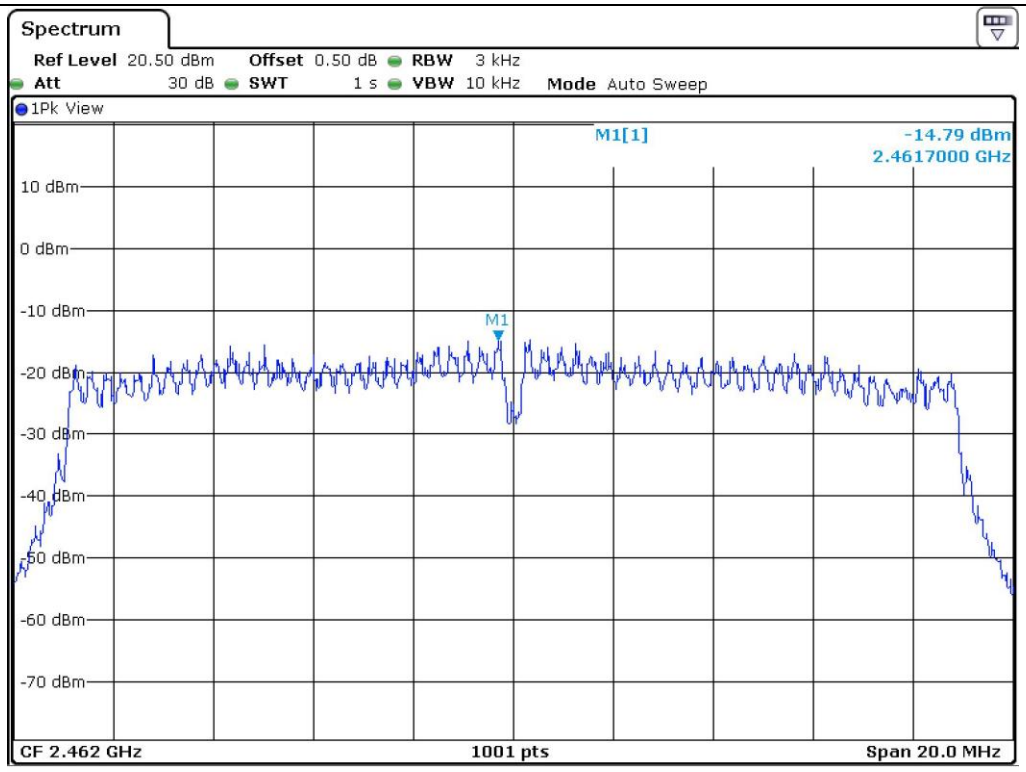
Low Channel

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)



Middle Channel



High Channel

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5 RADIATED EMISSION TEST

7.5.1 Operating environment

Temperature : 24 ℃

Relative humidity : 51 % R.H.

7.5.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. 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.

7.5.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Jul. 22, 2015 (1Y)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101012	Nov. 03, 2014 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 29, 2015 (1Y)
■ -	SCU-18	Rohde & Schwarz	Pre-Amplifier	10041	Nov. 03, 2014 (1Y)
■ -	DT3000	Innco System	Turn Table	930611	N/A
■ -	MA4000-EP	Innco System	Antenna Master	3320611	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Jul. 10, 2014 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 31, 2015 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Aug. 31, 2015 (2Y)

All test equipment used is calibrated on a regular basis.

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5.4 Test data for 802.11b

7.5.4.1 Test data for 30 MHz ~ 1 000 MHz

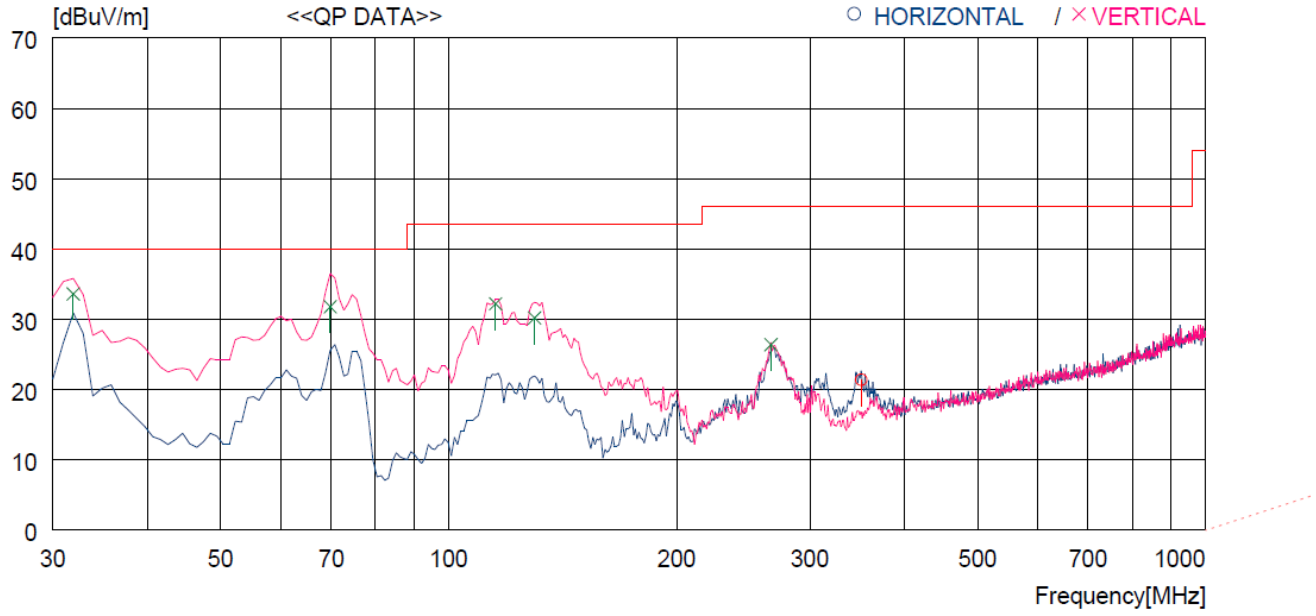
Humidity Level : 51 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Mobile Payment Terminal Date: August 27, 2015

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	351.070	34.1	14.8	5.5	33.0	21.4	46.0	24.6	100	53
----- Vertical ------										
2	31.940	53.2	11.7	1.7	33.0	33.6	40.0	6.4	100	0
3	69.770	52.6	9.8	2.4	33.0	31.8	40.0	8.2	100	186
4	115.360	51.6	10.6	3.1	33.1	32.2	43.5	11.3	100	0
5	129.910	50.7	9.2	3.3	33.0	30.2	43.5	13.3	100	0
6	266.680	41.8	12.8	4.7	32.9	26.4	46.0	19.6	100	0

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5.4.2 Test data for Below 30 MHz

-. Test Date : August 27, 2015

-. 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. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

7.5.4.3 Test data for above 1 GHz

-. Test Date : August 27, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

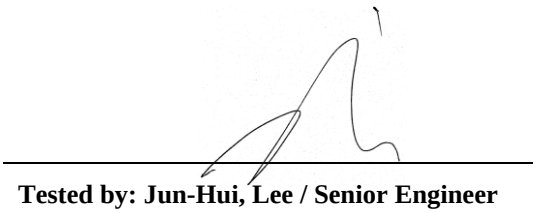
-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

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



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5.5 Test data for 802.11g

7.5.5.1 Test data for 30 MHz ~ 1 000 MHz

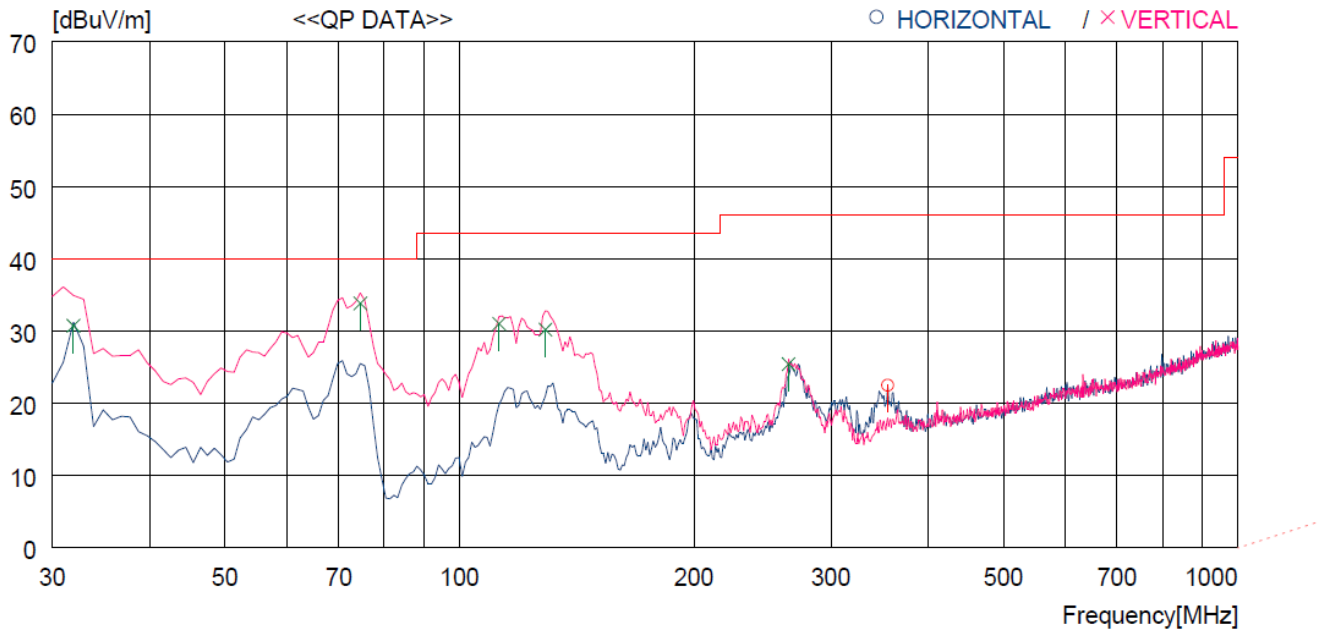
Humidity Level : 51 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Mobile Payment Terminal Date: August 27, 2015

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	354.950	34.7	14.9	5.5	32.6	22.5	46.0	23.5	100	359
----- Vertical ------										
2	31.940	50.1	11.7	1.7	32.8	30.7	40.0	9.3	100	1
3	74.620	55.8	8.7	2.5	33.2	33.8	40.0	6.2	100	0
4	112.450	50.3	10.9	3.1	33.3	31.0	43.5	12.5	100	144
5	128.940	50.7	9.3	3.3	33.1	30.2	43.5	13.3	100	0
6	264.740	40.7	12.8	4.7	32.8	25.4	46.0	20.6	100	0

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5.5.2 Test data for Below 30 MHz

-. Test Date : August 27, 2015

-. 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. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

7.5.5.3 Test data for above 1 GHz

-. Test Date : August 27, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

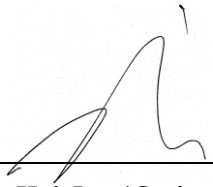
-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

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



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5.6 Test data for 802.11n_HT20

7.5.6.1 Test data for 30 MHz ~ 1 000 MHz

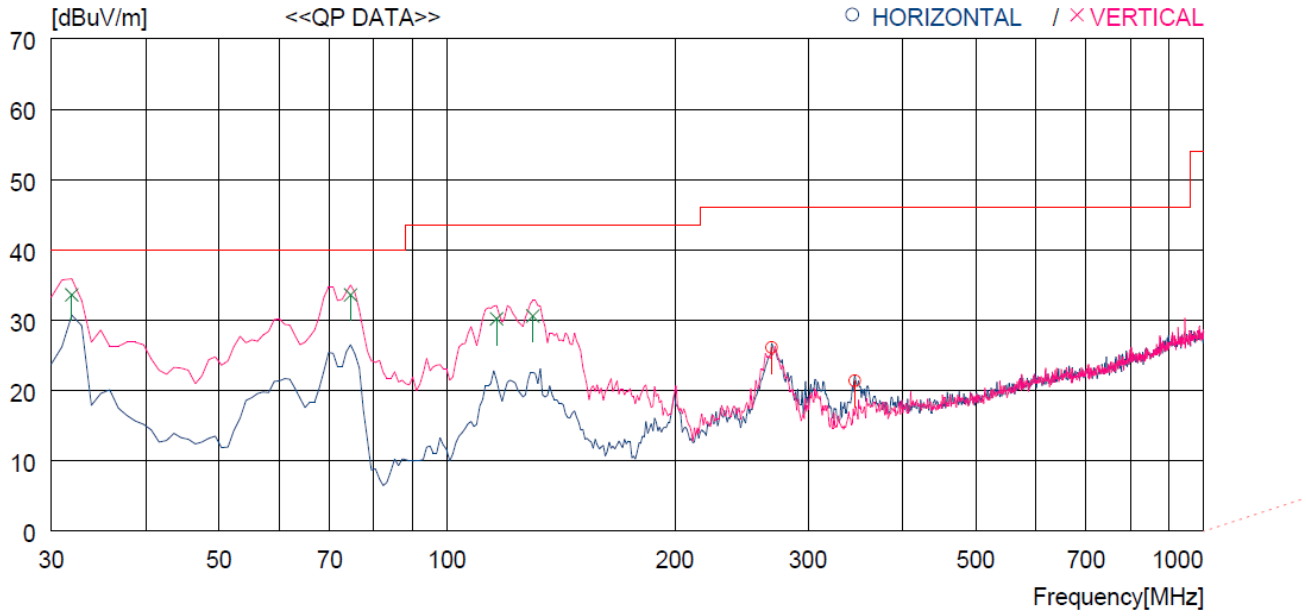
Humidity Level : 51 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Mobile Payment Terminal Date: August 27, 2015

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	268.620	41.2	12.9	4.8	32.8	26.1	46.0	19.9	100	201
2	346.220	33.9	14.7	5.4	32.6	21.4	46.0	24.6	100	54
----- Vertical ------										
3	31.940	53.0	11.7	1.7	32.8	33.6	40.0	6.4	100	0
4	74.620	55.6	8.7	2.5	33.2	33.6	40.0	6.4	100	0
5	116.330	49.7	10.6	3.1	33.2	30.2	43.5	13.3	100	131
6	129.910	51.2	9.2	3.3	33.1	30.6	43.5	12.9	100	0

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.5.6.2 Test data for Below 30 MHz

-. Test Date : August 27, 2015

-. 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. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

7.5.6.3 Test data for above 1 GHz

-. Test Date : August 27, 2015

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

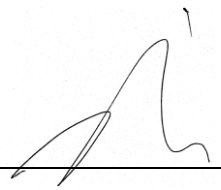
-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

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



Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

7.6 CONDUCTED EMISSION TEST

7.6.1 Operating environment

Temperature : (20 ~ 21) ℃

Relative humidity : (44 ~ 45) % R.H.

7.6.2 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 μH + 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.

7.6.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESPI	Rohde & Schwarz	EMI Test Receiver	101278	Nov. 03, 2014 (1Y)
☐ -	ESHS10	Rohde & Schwarz	EMI Test Receiver	834467/007	Apr. 29, 2015 (1Y)
☐	NSLK8128	Schwarzbeck	AMN	8128-216	Apr. 06, 2015 (1Y)
■ -	NSLK8126	Schwarzbeck	AMN	8126-404	Apr. 29, 2015 (1Y)
☐ -	3825/2	EMCO	AMN	9109-1869	Apr. 29, 2015 (1Y)
■ --	3825/2	EMCO	AMN	9109-1867	Apr. 29, 2015 (1Y)

All test equipment used is calibrated on a regular basis.

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

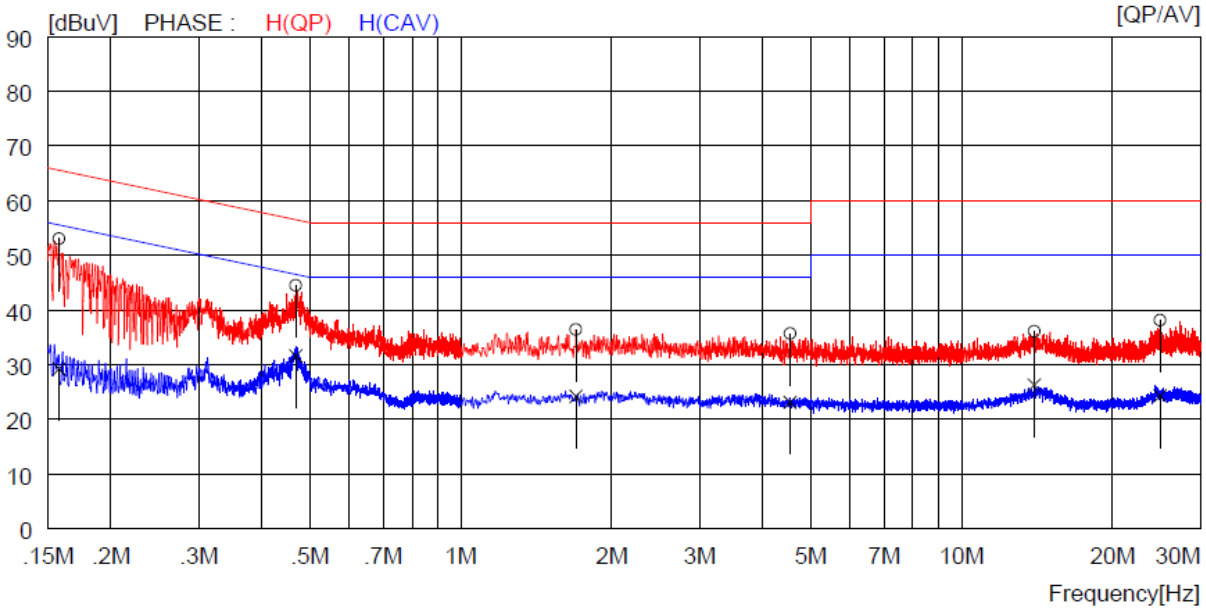
7.6.4 Test data for 802.11b

-. Test Date : August 27, 2015

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE

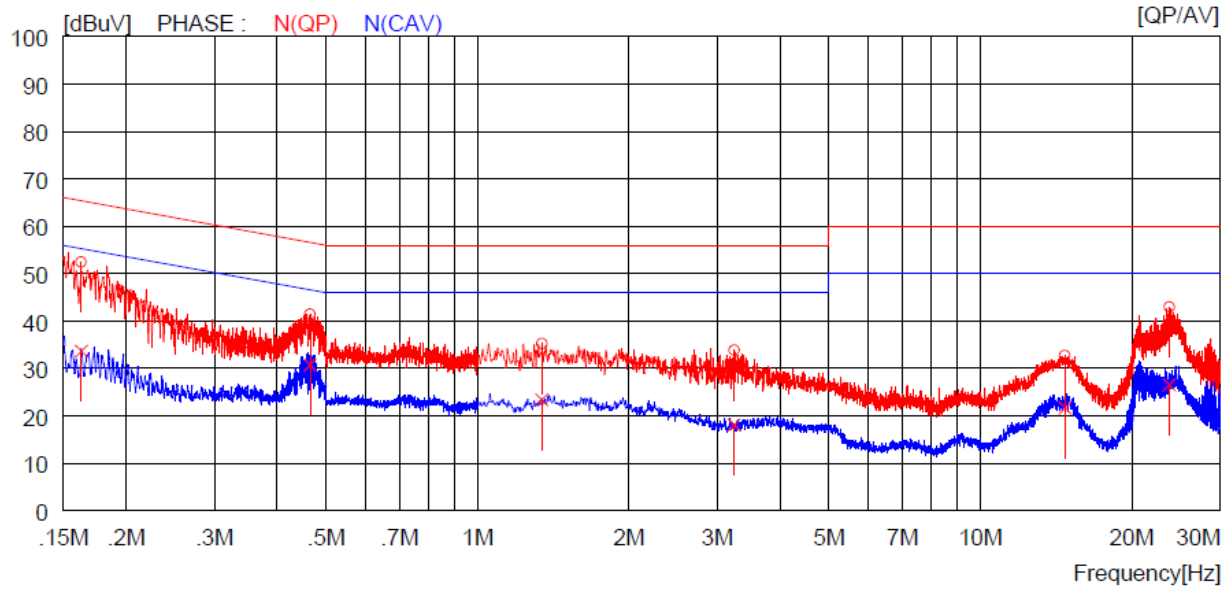


NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15800	32.8	----	20.2	53.0	----	65.6	----	12.6	----	H(QP)
2	0.46900	24.3	----	20.2	44.5	----	56.5	----	12.0	----	H(QP)
3	1.70000	16.2	----	20.2	36.4	----	56.0	----	19.6	----	H(QP)
4	4.54800	15.4	----	20.3	35.7	----	56.0	----	20.3	----	H(QP)
5	13.98000	15.8	----	20.3	36.1	----	60.0	----	23.9	----	H(QP)
6	24.91000	17.7	----	20.4	38.1	----	60.0	----	21.9	----	H(QP)
7	0.15800	----	9.0	20.2	----	29.2	----	55.6	----	26.4	H(CAV)
8	0.46900	----	11.4	20.2	----	31.6	----	46.5	----	14.9	H(CAV)
9	1.70000	----	4.0	20.2	----	24.2	----	46.0	----	21.8	H(CAV)
10	4.54800	----	2.8	20.3	----	23.1	----	46.0	----	22.9	H(CAV)
11	13.98000	----	6.0	20.3	----	26.3	----	50.0	----	23.7	H(CAV)
12	24.91000	----	3.9	20.4	----	24.3	----	50.0	----	25.7	H(CAV)

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.16300	42.5	----	9.9	52.4	----	65.3	----	12.9	----	N(QP)
2	0.46500	31.4	----	10.0	41.4	----	56.6	----	15.2	----	N(QP)
3	1.34400	25.2	----	10.1	35.3	----	56.0	----	20.7	----	N(QP)
4	3.24400	23.7	----	10.1	33.8	----	56.0	----	22.2	----	N(QP)
5	14.75000	22.2	----	10.5	32.7	----	60.0	----	27.3	----	N(QP)
6	23.79000	32.5	----	10.5	43.0	----	60.0	----	17.0	----	N(QP)
7	0.16300	----	23.7	9.9	----	33.6	----	55.3	----	21.7	N(CAV)
8	0.46500	----	20.7	10.0	----	30.7	----	46.6	----	15.9	N(CAV)
9	1.34400	----	13.3	10.1	----	23.4	----	46.0	----	22.6	N(CAV)
10	3.24400	----	8.0	10.1	----	18.1	----	46.0	----	27.9	N(CAV)
11	14.75000	----	11.1	10.5	----	21.6	----	50.0	----	28.4	N(CAV)
12	23.79000	----	16.1	10.5	----	26.6	----	50.0	----	23.4	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

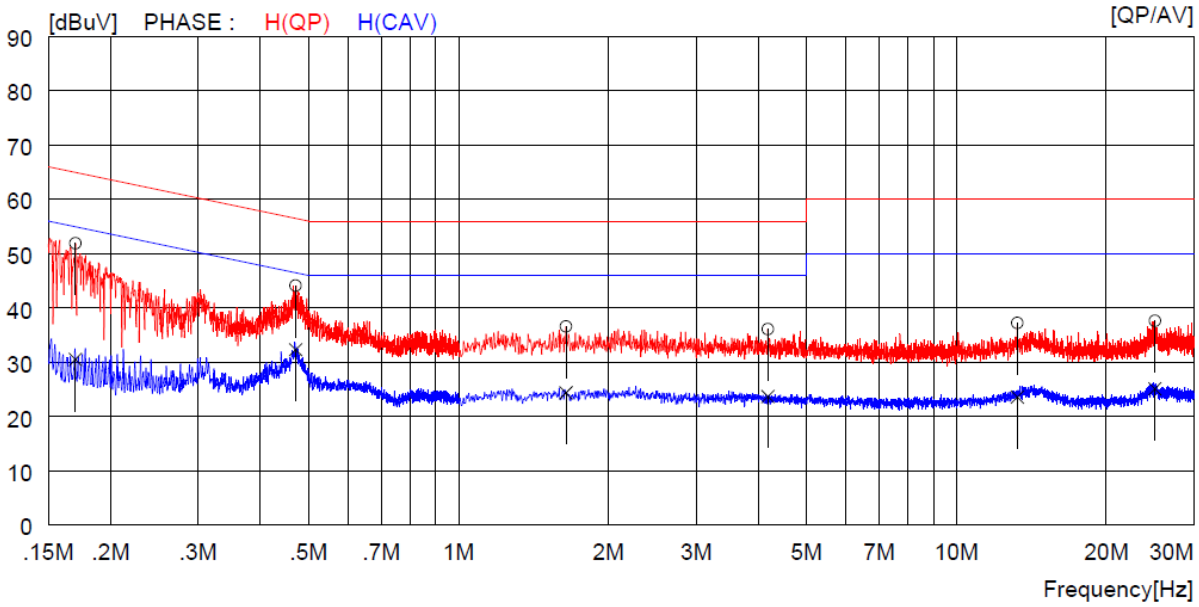
7.6.5 Test data for 802.11g

-. Test Date : August 27, 2015

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

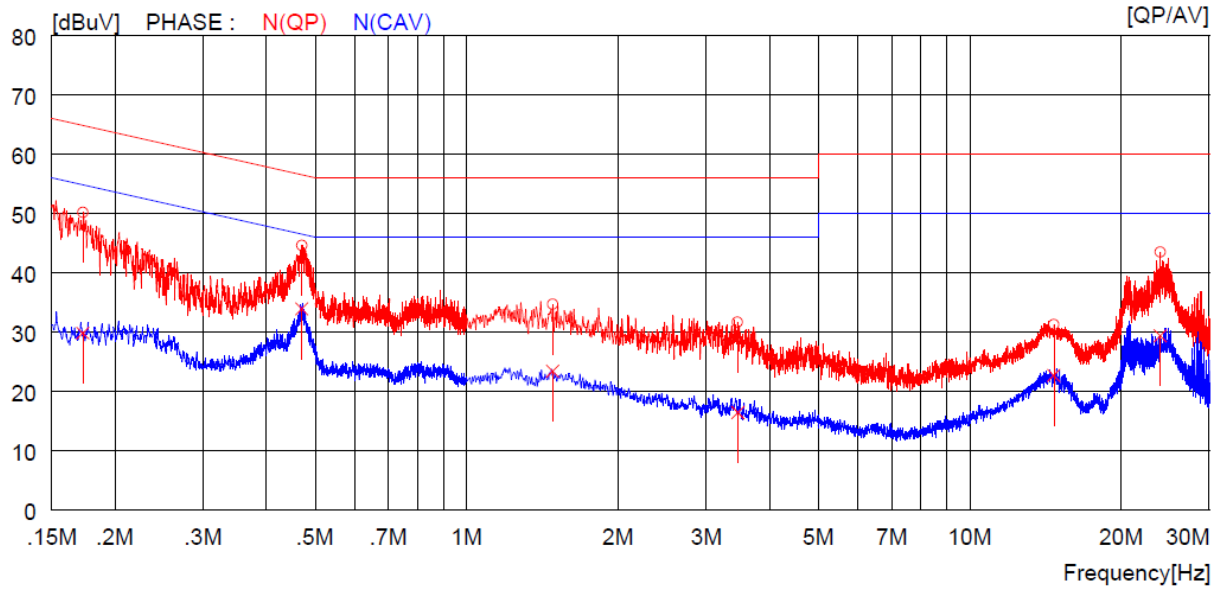
-. Tested Line : HOT LINE



NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.17000	31.7	----	20.2	51.9	----	65.0	----	13.1	----	H(QP)
2	0.47100	23.9	----	20.2	44.1	----	56.5	----	12.4	----	H(QP)
3	1.64400	16.4	----	20.2	36.6	----	56.0	----	19.4	----	H(QP)
4	4.18400	15.8	----	20.3	36.1	----	56.0	----	19.9	----	H(QP)
5	13.25000	16.9	----	20.3	37.2	----	60.0	----	22.8	----	H(QP)
6	25.04000	17.2	----	20.4	37.6	----	60.0	----	22.4	----	H(QP)
7	0.17000	----	10.3	20.2	----	30.5	----	55.0	----	24.5	H(CAV)
8	0.47100	----	12.1	20.2	----	32.3	----	46.5	----	14.2	H(CAV)
9	1.64400	----	4.2	20.2	----	24.4	----	46.0	----	21.6	H(CAV)
10	4.18400	----	3.4	20.3	----	23.7	----	46.0	----	22.3	H(CAV)
11	13.25000	----	3.3	20.3	----	23.6	----	50.0	----	26.4	H(CAV)
12	25.04000	----	4.7	20.4	----	25.1	----	50.0	----	24.9	H(CAV)

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.17300	40.2	----	9.9	50.1	----	64.8	----	14.7	----	N(QP)
2	0.47100	34.6	----	10.0	44.6	----	56.5	----	11.9	----	N(QP)
3	1.48400	24.6	----	10.1	34.7	----	56.0	----	21.3	----	N(QP)
4	3.46000	21.5	----	10.1	31.6	----	56.0	----	24.4	----	N(QP)
5	14.69000	20.7	----	10.5	31.2	----	60.0	----	28.8	----	N(QP)
6	23.90000	33.0	----	10.5	43.5	----	60.0	----	16.5	----	N(QP)
7	0.17300	----	19.9	9.9	----	29.8	----	54.8	----	25.0	N(CAV)
8	0.47100	----	23.9	10.0	----	33.9	----	46.5	----	12.6	N(CAV)
9	1.48400	----	13.3	10.1	----	23.4	----	46.0	----	22.6	N(CAV)
10	3.46000	----	6.3	10.1	----	16.4	----	46.0	----	29.6	N(CAV)
11	14.69000	----	12.2	10.5	----	22.7	----	50.0	----	27.3	N(CAV)
12	23.90000	----	18.9	10.5	----	29.4	----	50.0	----	20.6	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

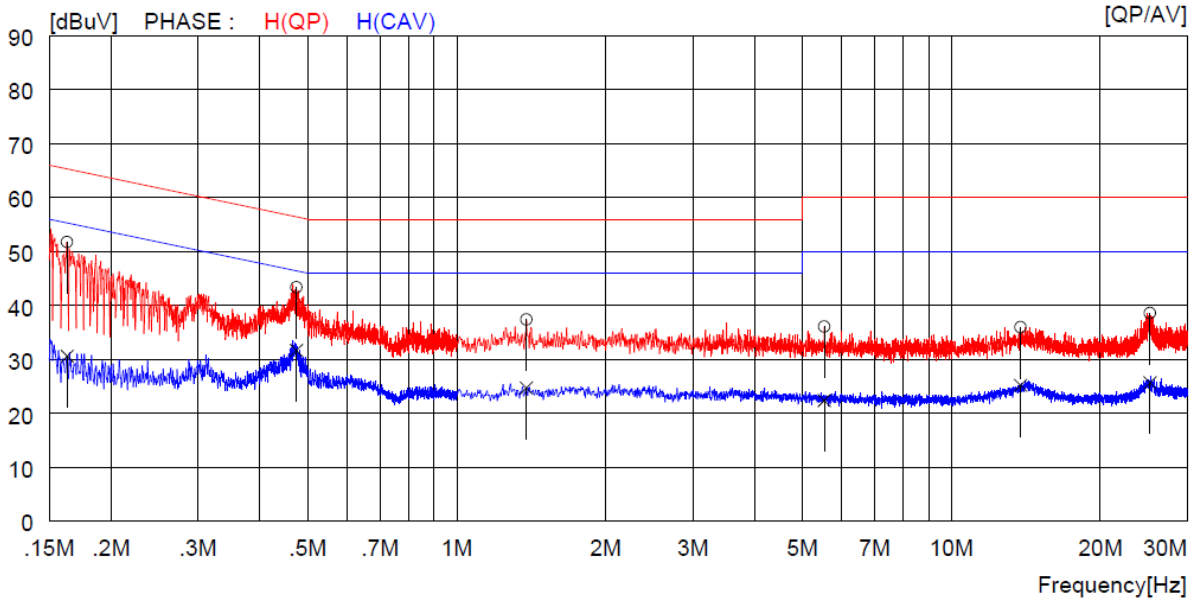
7.6.6 Test data for 802.11n_HT20

-. Test Date : August 27, 2015

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE

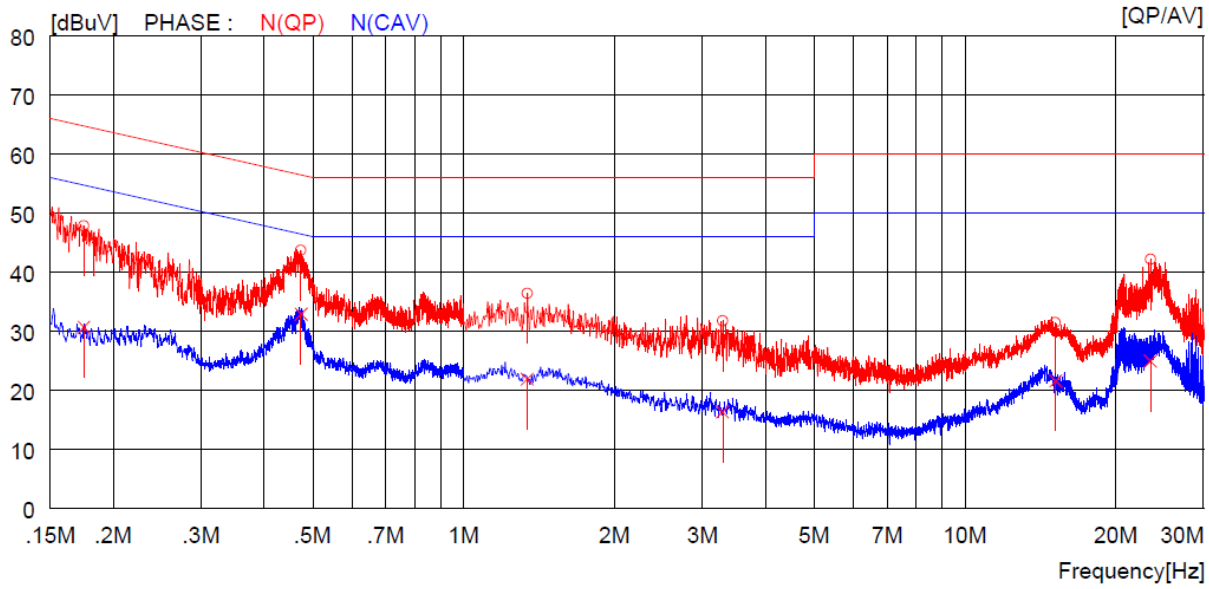


NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.16300	31.6	----	20.2	51.8	----	65.3	----	13.5	----	H(QP)
2	0.47400	23.2	----	20.2	43.4	----	56.4	----	13.0	----	H(QP)
3	1.38400	17.2	----	20.2	37.4	----	56.0	----	18.6	----	H(QP)
4	5.53000	15.7	----	20.4	36.1	----	60.0	----	23.9	----	H(QP)
5	13.79000	15.7	----	20.3	36.0	----	60.0	----	24.0	----	H(QP)
6	25.20000	18.2	----	20.4	38.6	----	60.0	----	21.4	----	H(QP)
7	0.16300	----	10.4	20.2	----	30.6	----	55.3	----	24.7	H(CAV)
8	0.47400	----	11.5	20.2	----	31.7	----	46.4	----	14.7	H(CAV)
9	1.38400	----	4.5	20.2	----	24.7	----	46.0	----	21.3	H(CAV)
10	5.53000	----	2.0	20.4	----	22.4	----	50.0	----	27.6	H(CAV)
11	13.79000	----	4.9	20.3	----	25.2	----	50.0	----	24.8	H(CAV)
12	25.20000	----	5.3	20.4	----	25.7	----	50.0	----	24.3	H(CAV)

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.17500	37.9	----	9.9	47.8	----	64.7	----	16.9	----	N(QP)
2	0.47400	33.6	----	10.0	43.6	----	56.4	----	12.8	----	N(QP)
3	1.34000	26.3	----	10.1	36.4	----	56.0	----	19.6	----	N(QP)
4	3.28800	21.6	----	10.1	31.7	----	56.0	----	24.3	----	N(QP)
5	15.17000	20.9	----	10.5	31.4	----	60.0	----	28.6	----	N(QP)
6	23.46000	31.6	----	10.5	42.1	----	60.0	----	17.9	----	N(QP)
7	0.17500	----	20.8	9.9	----	30.7	----	54.7	----	24.0	N(CAV)
8	0.47400	----	22.9	10.0	----	32.9	----	46.4	----	13.5	N(CAV)
9	1.34000	----	11.8	10.1	----	21.9	----	46.0	----	24.1	N(CAV)
10	3.28800	----	6.2	10.1	----	16.3	----	46.0	----	29.7	N(CAV)
11	15.17000	----	11.1	10.5	----	21.6	----	50.0	----	28.4	N(CAV)
12	23.46000	----	14.4	10.5	----	24.9	----	50.0	----	25.1	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Jun-Hui, Lee / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)