FCC 47 CFR PART 15 SUBPART C

Product Type	:	802.11n DOCSIS 3.0 Gateway
Applicant	:	SmartRG Inc.
Address	:	501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661
Trade Name	:	SmartRG
Model Number	:	SR804n
Test Specification	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2013 ANSI C63.4:2009
Receive Date	:	Oct. 08, 2014
Test Period	:	Oct. 11~Oct.20, 2014
Issue Date	:	Oct. 24, 2014

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

Revision History

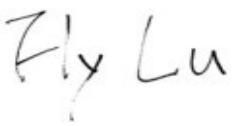
Rev.	Issue Date	Revisions	Revised By
00	Oct. 24, 2014	Initial Issue	

Verification of Compliance

Issued Date: 10/24/2014

Product Type	:	802.11n DOCSIS 3.0 Gateway
Applicant	:	SmartRG Inc.
Address	:	501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661
Trade Name	:	SmartRG
Model Number	:	SR804n
FCC ID	:	VW7SR804N
EUT Rated Voltage	:	DC 12V, 2A
Test Voltage	:	120 Vac / 60 Hz
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2013 ANSI C63.4:2009
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade City, Taoyuan County 334, Taiwan R.O.C. Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247 .
The test results of this report relate only to the tested sample identified in this report.

Approved By	:		Reviewed By	:	
(Manager)		(Murphy Wang)	(Testing Engineer)		(Fly Lu)

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1 General Information

1.1 Summary of Test Result

Standard 15.247	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	-----
15.209	Receiver Radiated Emissions	PASS	-----
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	Max. Output Power	PASS	-----
15.247(a)(2)	6dB RF Bandwidth	PASS	-----
15.247(e)	Power Spectral Density	PASS	-----
15.247(d)	Out of Band Conducted Spurious Emission	PASS	-----
15.247(d)	Band Edge Measurement	PASS	-----
15.203	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Test Item	Frequency Range		Uncertainty (dB)
Conducted Emission	9kHz ~ 30MHz		± 2.02
Radiated Emission	30MHz ~ 1000MHz	Horizontal	± 3.98
		Vertical	± 3.62
	1000MHz ~ 18000MHz	Horizontal	± 3.11
		Vertical	± 3.07
	18000MHz ~ 40000MHz	Horizontal	± 3.66
		Vertical	± 3.54

2 EUT Description

Product Type	802.11n DOCSIS 3.0 Gateway
Trade Name	SmartRG
Model No.	SR804n
Applicant	SmartRG Inc. 501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661
Manufacturer	SmartRG Inc. 501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661
FCC ID	VW7SR804N
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz 20MHz: 2412 ~ 2462 MHz IEEE 802.11n 2.4GHz 40MHz: 2422 ~ 2452 MHz
Modulation Type	IEEE 802.11b:DSSS IEEE 802.11g:DSSS + OFDM IEEE 802.11n 2.4GHz 20MHz: OFDM IEEE 802.11n 2.4GHz 40MHz: OFDM
Antenna Type	External Integral Antenna
Antenna Gain	5 dBi
Antenna Delivery	TX + RX
RF Output Power	IEEE 802.11b: 0.054W / 17.29dBm IEEE 802.11g: 0.160W / 22.04dBm IEEE 802.11n 2.4GHz 20MHz: 0.237W / 23.75 dBm IEEE 802.11n 2.4GHz 40MHz: 0.267 W / 24.27 dBm
99 % Occupied Bandwidth	IEEE 802.11b: 10.16 MHz IEEE 802.11g: 16.29 MHz IEEE 802.11n 2.4GHz 20MHz: 17.47 MHz IEEE 802.11n 2.4GHz 40MHz: 36.12 MHz
Adapter imformation	Adapter 1: Model:RDA024120020-AC Input:100-240V~50/60Hz Max 0.6A Output:12V—2A Manufacturer: Ruide Electronical Industrial Co.,Ltd Adapter 2: Model:S24B12-120A200-Y4 Input:100-240V~50/60Hz Max 0.7A Output:12V—2A Manufacturer: Shenzhen Gongjin Electronics Co.,Ltd

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Normal Operation Mode
Mode 2: IEEE 802.11b Link Mode
Mode 3: IEEE 802.11g Link Mode
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode
Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode
Mode 6: Receiver Mode

Software used to control the EUT for staying in continuous transmitting mode was programmed,and the transimit duty cycle is not less than 98%.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11b mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate and cyclic delay diversity were chosen for full testing.

IEEE 802.11g mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate and cyclic delay diversity were chosen for full testing.

IEEE 802.11n 2.4GHz 20MHz mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with MCS0 data rate were chosen for full testing.

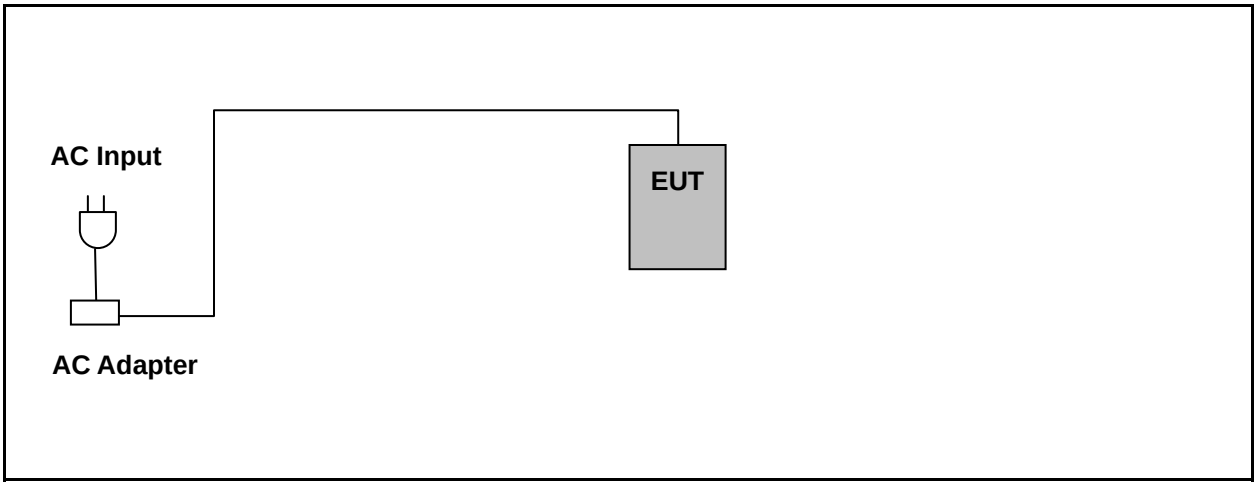
IEEE 802.11n 2.4GHz 40MHz mode:
Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

3.2. EUT Exercise Software

1. Setup the EUT shown on 3.3.
2. Turn on the power of all equipment.
3. Turn on Wi-Fi function link to AP.
4. EUT run test program.

3.3. Configuration of Test System Details



3.4. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

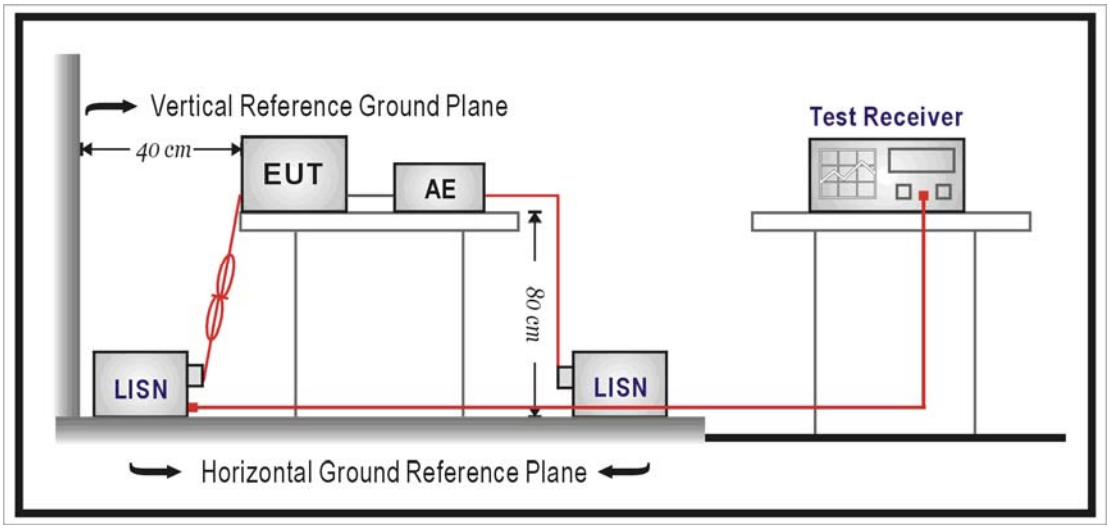
Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/12/2014	(1)
LISN	R&S	ENV216	101040	03/07/2014	(1)
LISN	R&S	ENV216	101041	03/07/2014	(1)
Cable	Woken	/	S02-1404-09-065	2014.05.11	(1)
Cable	Woken	/	S02-1404-09-047	2014.05.11	(1)
Cable	Woken	/	S02-1404-09-052	2014.05.11	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.
Note: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

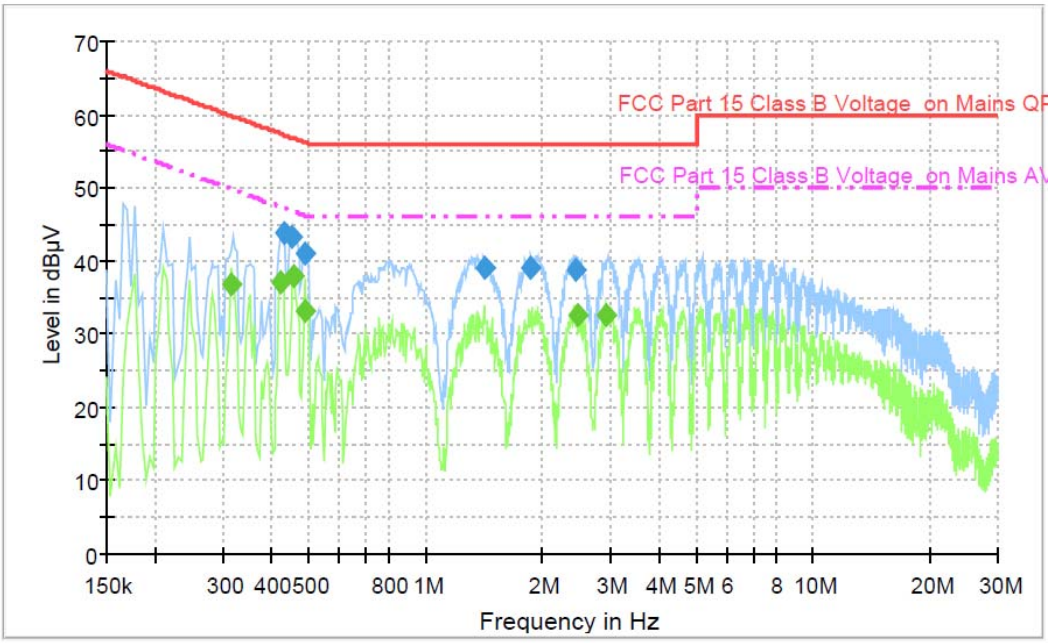
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	1	Date:	10/11/2014
		Test By:	Fly
Description:	Adapter 1		



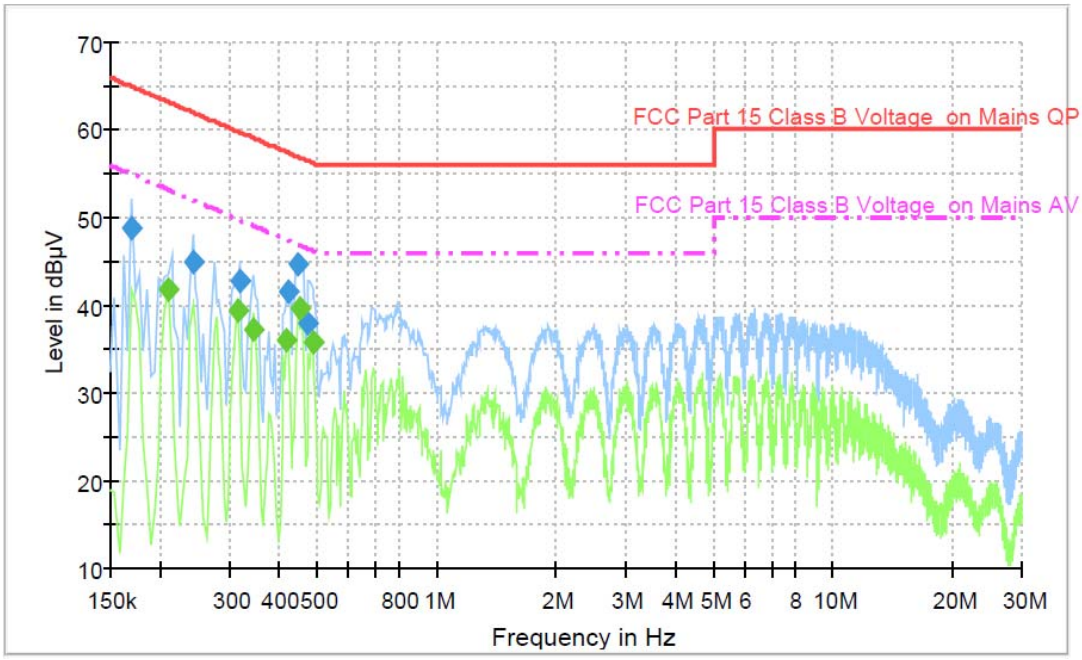
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	43.9	FLO	L1	10.0	13.4	57.3
0.450000	43.4	FLO	L1	10.0	13.5	56.9
0.486000	41.1	FLO	L1	10.0	15.2	56.2
1.422000	39.0	FLO	L1	10.1	17.0	56.0
1.874000	39.1	FLO	L1	10.1	16.9	56.0
2.442000	38.8	FLO	L1	10.1	17.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.314000	36.9	FLO	L1	10.0	13.0	49.9
0.422000	37.1	FLO	L1	10.0	10.3	47.4
0.458000	37.9	FLO	L1	10.0	8.8	46.7
0.486000	33.1	FLO	L1	10.0	13.1	46.2
2.478000	32.6	FLO	L1	10.2	13.4	46.0
2.938000	32.6	FLO	L1	10.1	13.4	46.0

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	1	Date:	10/11/2014
		Test By:	Fly
Description:	Adapter 1		



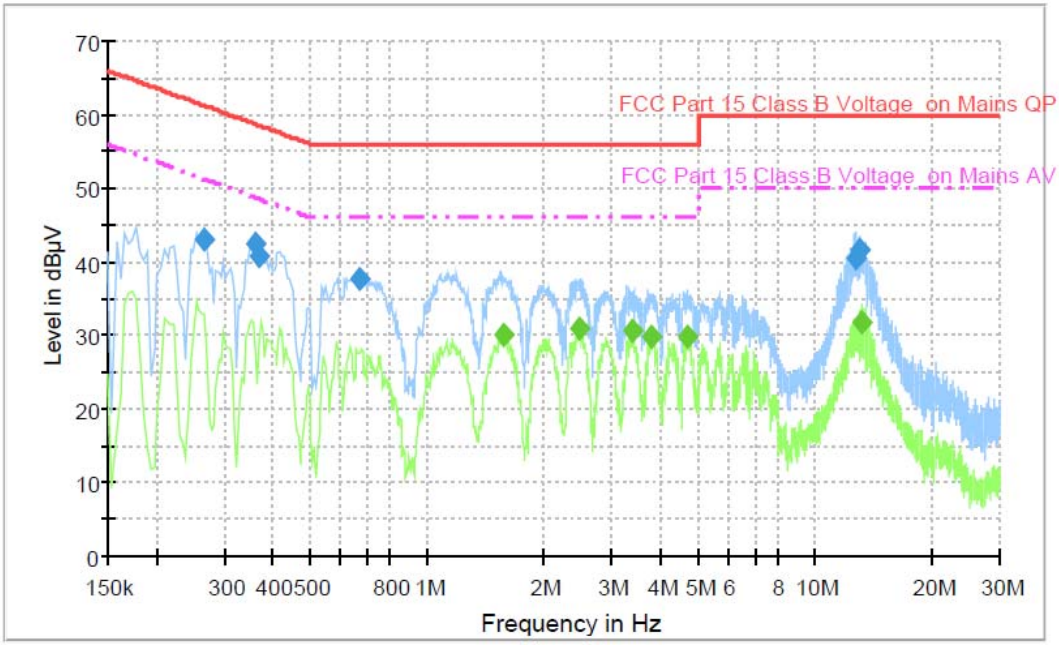
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.170000	48.9	FLO	N	10.1	16.1	65.0
0.242000	44.9	FLO	N	10.0	17.2	62.0
0.318000	42.7	FLO	N	10.0	17.0	59.8
0.422000	41.6	FLO	N	10.1	15.8	57.4
0.446000	44.7	FLO	N	10.1	12.3	56.9
0.474000	38.0	FLO	N	10.1	18.4	56.4

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.210000	41.9	FLO	N	10.1	11.3	53.2
0.314000	39.5	FLO	N	10.1	10.4	49.9
0.346000	37.3	FLO	N	10.0	11.8	49.1
0.418000	36.1	FLO	N	10.1	11.4	47.5
0.450000	39.7	FLO	N	10.1	7.1	46.9
0.486000	35.8	FLO	N	10.1	10.4	46.2

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	1	Date:	10/11/2014
		Test By:	Fly
Description:	Adapter 2		



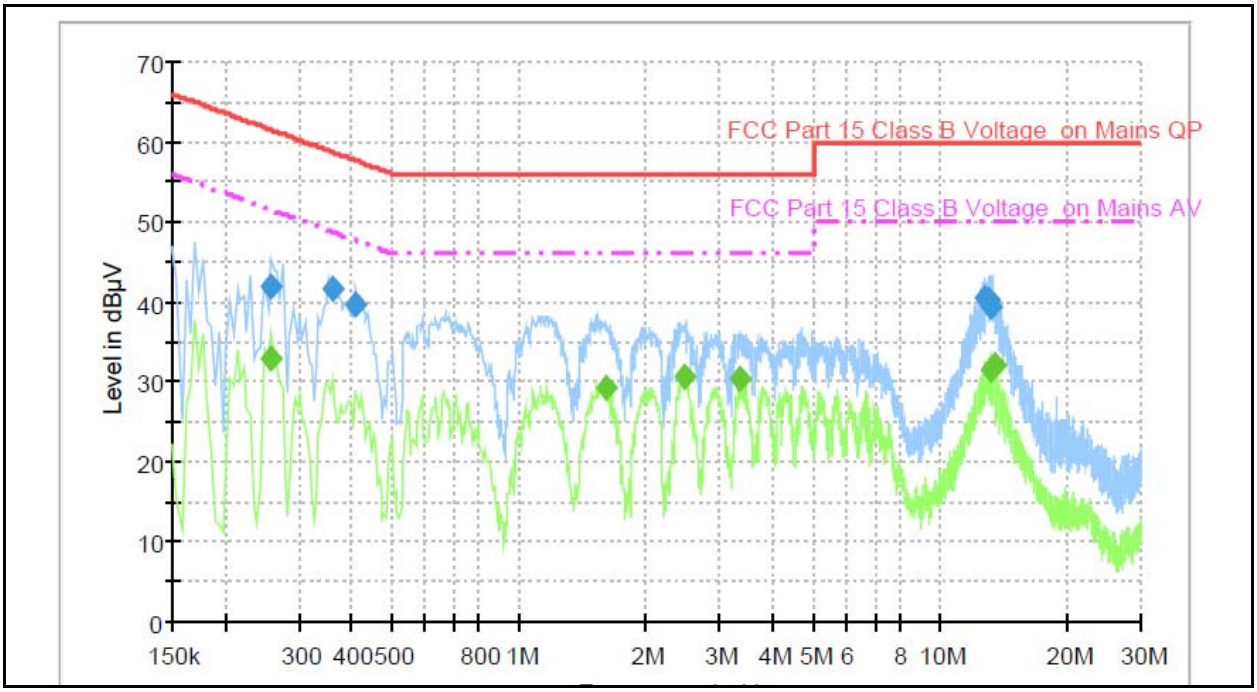
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.266000	43.0	FLO	L1	10.0	18.3	61.2
0.362000	42.5	FLO	L1	10.0	16.2	58.7
0.370000	40.7	FLO	L1	10.0	17.8	58.5
0.666000	37.6	FLO	L1	10.0	18.4	56.0
12.690000	40.4	FLO	L1	10.4	19.6	60.0
13.054000	41.5	FLO	L1	10.4	18.5	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.574000	30.1	FLO	L1	10.1	15.9	46.0
2.470000	30.9	FLO	L1	10.1	15.1	46.0
3.374000	30.7	FLO	L1	10.2	15.3	46.0
3.790000	29.8	FLO	L1	10.2	16.2	46.0
4.682000	29.9	FLO	L1	10.2	16.1	46.0
13.146000	31.8	FLO	L1	10.4	18.2	50.0

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	1	Date:	10/11/2014
		Test By:	Fly
Description:	Adapter 2		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.258000	41.9	FLO	N	10.1	19.6	61.5
0.362000	41.7	FLO	N	10.1	16.9	58.7
0.410000	39.7	FLO	N	10.1	18.0	57.6
12.734000	40.6	FLO	N	10.5	19.4	60.0
13.054000	40.3	FLO	N	10.5	19.7	60.0
13.254000	39.3	FLO	N	10.5	20.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.258000	32.9	FLO	N	10.1	18.6	51.5
1.618000	29.4	FLO	N	10.1	16.6	46.0
2.470000	30.6	FLO	N	10.2	15.4	46.0
3.358000	30.5	FLO	N	10.2	15.5	46.0
13.202000	31.6	FLO	N	10.5	18.4	50.0
13.466000	32.1	FLO	N	10.5	17.9	50.0

5 Radiated Emission Measurement

5.1. Limit

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m at meter)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

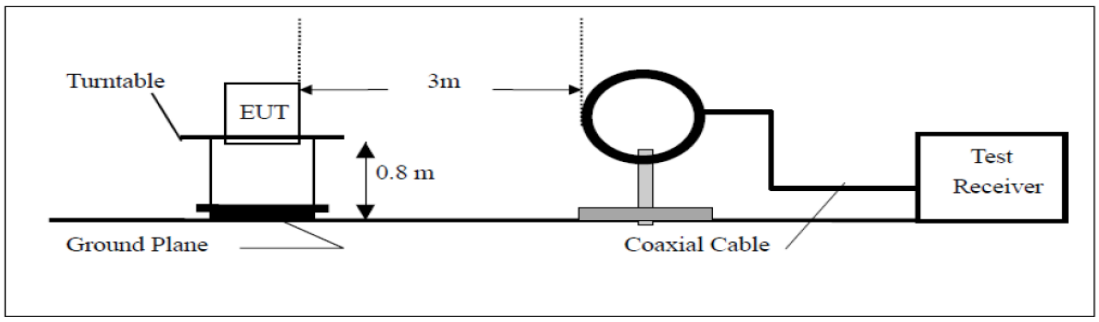
5.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/10/2014	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/10/2014	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2014	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2014	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	07/22/2014	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/11/2014	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/02/2014	(1)
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	08/14/2014	(3)
Cable	Woken	/	S02-1404-09-142	2014.05.11	(1)
Cable	Woken	/	S02-1404-09-166	2014.05.11	(1)
Test Site	ATL	TE01	888001	08/28/2014	(1)

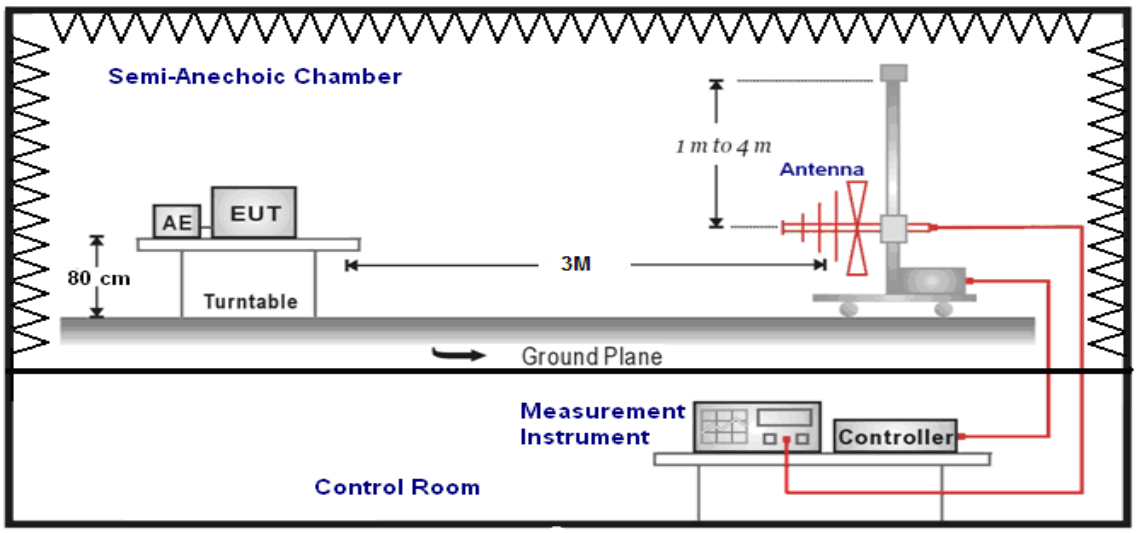
Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.
Note: N.C.R. = No Calibration Request..

5.3. Setup

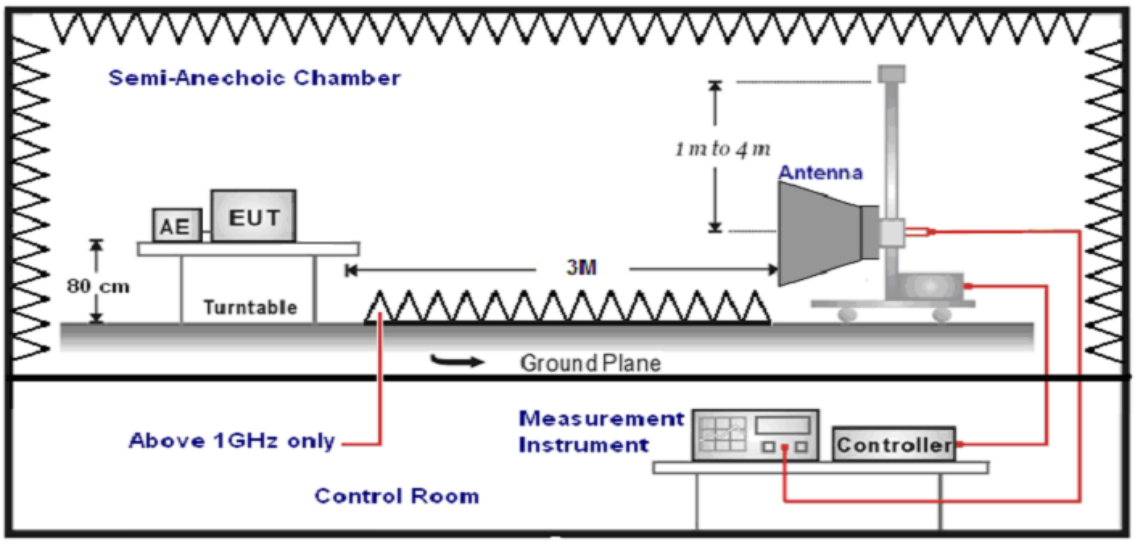
9kHz-30MHz



Below 1GHz



Above 1GHz



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)
The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:
(a) For fundamental frequency : Transmitter Output < +30dBm
(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5.5. Test Result

Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	1	Date:	10/11/2014
		Test By:	Fly

Description: Adapter 1

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
110.5	60.04	-35.6	24.44	43.5	19.06	QP	H
253.4	71.61	-34.4	37.21	46.0	8.79	QP	H
382.1	62.56	-31.3	31.26	46.0	14.74	QP	H
622.7	61.40	-26.4	35.00	46.0	11.00	QP	H
824.8	54.01	-23.5	30.51	46.0	15.49	QP	H
872.7	67.33	-22.6	44.73	46.0	1.27	QP	H
173.1	70.07	-38.3	31.77	43.5	11.73	QP	V
250.9	72.54	-34.4	38.14	46.0	7.86	QP	V
380.4	62.12	-31.5	30.62	46.0	15.38	QP	V
610.5	67.40	-27.2	40.20	46.0	5.80	QP	V
653.3	57.26	-26.6	30.66	46.0	15.34	QP	V
872.7	67.46	-22.5	44.96	46.0	1.04	QP	V

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	1	Date:	10/11/2014
		Test By:	Fly

Description: Adapter 2

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
55.1	59.8	-34.3	25.5	40.0	14.5	QP	H
161.2	74.1	-39.3	34.8	43.5	8.7	QP	H
251.8	70.3	-34.4	35.9	46.0	10.1	QP	H
390.1	65.2	-31.1	34.1	46.0	11.9	QP	H
800.1	63.6	-23.6	40.0	46.0	6.0	QP	H
852.7	63.3	-22.9	40.4	46.0	5.6	QP	H
51.9	59.6	-34.7	24.9	40.0	15.1	QP	V
188.2	66.7	-36.7	30.0	43.5	13.5	QP	V
257.6	73.3	-34.6	38.7	46.0	7.3	QP	V
510.2	69.4	-29.3	40.1	46.0	5.9	QP	V
788.4	60.2	-24.9	35.3	46.0	10.7	QP	V
852.7	66.4	-23.7	42.7	46.0	3.3	QP	V

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Above 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	2	Date:	10/11/2014
Frequency:	2412MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3214.096	50.92	-5.89	45.03	74.00	28.97	peak	H
3214.096	33.32	-5.89	27.43	54.00	26.57	Average	H
3214.096	57.81	-5.89	51.92	74.00	22.08	peak	V
3214.096	55.49	-5.89	49.60	54.00	4.40	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	2	Date:	10/11/2014
Frequency:	2437MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3258.176	50.73	-5.52	45.21	74.00	28.79	peak	H
3258.176	43.22	-5.52	37.70	54.00	16.30	Average	H
3258.176	58.17	-5.52	52.65	74.00	21.35	peak	V
3258.176	56.51	-5.52	50.99	54.00	3.01	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	2	Date:	10/11/2014
Frequency:	2462MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3296.439	52.56	-5.25	47.31	74.00	26.69	peak	H
3296.439	43.88	-5.25	38.63	54.00	15.37	Average	H
3296.439	59.51	-5.25	54.26	74.00	19.74	peak	V
3296.439	56.48	-5.25	51.23	54.00	2.77	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	3	Date:	10/11/2014
Frequency:	2412MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3258.176	51.49	-5.52	45.97	74.00	28.03	peak	H
3258.176	47.61	-5.52	42.09	54.00	11.91	Average	H
3258.176	58.74	-5.52	53.22	74.00	20.78	peak	V
3258.176	56.37	-5.52	50.85	54.00	3.15	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	3	Date:	10/11/2014
Frequency:	2437MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3258.176	50.73	-5.52	45.21	74.00	28.79	peak	H
3258.176	43.22	-5.52	37.70	54.00	16.30	Average	H
3258.176	58.17	-5.52	52.65	74.00	21.35	peak	V
3258.176	56.51	-5.52	50.99	54.00	3.01	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	3	Date:	10/11/2014
Frequency:	2462MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3296.439	52.41	-5.25	47.16	74.00	26.84	peak	H
3296.439	48.88	-5.25	43.63	54.00	10.37	Average	H
3296.439	61.01	-5.25	55.76	74.00	18.24	peak	V
3296.439	56.50	-5.25	51.25	54.00	2.75	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	4	Date:	10/11/2014
Frequency:	2412MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3214.096	52.92	-5.89	47.03	74.00	26.97	peak	H
3214.096	47.04	-5.89	41.15	54.00	12.85	Average	H
3214.096	59.24	-5.89	53.35	74.00	20.65	peak	V
3214.096	56.21	-5.89	50.32	54.00	3.68	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	4	Date:	10/11/2014
Frequency:	2437MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3258.176	51.90	-5.52	46.38	74.00	27.62	peak	H
3258.176	43.02	-5.52	37.50	54.00	16.50	Average	H
3258.176	58.92	-5.52	53.40	74.00	20.60	peak	V
3258.176	50.83	-5.52	45.31	54.00	8.69	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	4	Date:	10/11/2014
Frequency:	2462MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3296.439	52.10	-5.25	46.85	74.00	27.15	peak	H
3296.439	43.89	-5.25	38.64	54.00	15.36	Average	H
3296.439	60.11	-5.25	54.86	74.00	19.14	peak	V
3296.439	52.90	-5.25	47.65	54.00	6.35	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	5	Date:	10/11/2014
Frequency:	2422MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3232.914	50.37	-5.78	44.59	74.00	29.41	peak	H
3232.914	40.47	-5.78	34.69	54.00	19.31	Average	H
3232.914	57.33	-5.78	51.55	74.00	22.45	peak	V
3232.914	48.27	-5.78	42.49	54.00	11.51	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	5	Date:	10/11/2014
Frequency:	2437MHz	Test By:	Fly

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3258.176	57.60	-5.52	52.08	74.00	21.92	peak	H
3258.176	48.64	-5.52	43.12	54.00	10.88	Average	H
3258.176	51.24	-5.52	45.72	74.00	28.28	peak	V
3258.176	40.72	-5.52	35.20	54.00	18.80	Average	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	SR804n	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	5	Date:	10/11/2014
Frequency:	2452MHz	Test By:	Fly

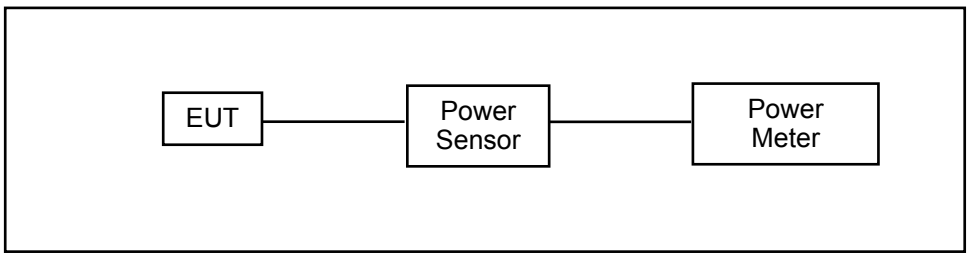
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3258.176	51.18	-5.52	45.66	74.00	28.34	peak	H
3258.176	41.22	-5.52	35.70	54.00	18.30	Average	H
3258.176	57.44	-5.52	51.92	74.00	22.08	peak	V
3258.176	49.16	-5.52	43.64	54.00	10.36	Average	V

6 Maximum Conducted Output Power Measurement

6.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Power Sensor	Anritsu	MA2411B	1126022	08/21/2014	(1)
Power Meter	Anritsu	ML2495A	1135009	08/21/2014	(1)
RF Cable	Woken	/	S02-1404-09-077	2014.05.11	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.
Note: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.

The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

6.5. Test Result

Model Number	SR804n		
Test Item	Maximum Conducted Output Power		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	10/14/2014	Test Site	TE05

Frequency (MHz)	Peak Power (dBm)		Limit (dBm)
	Antenna 0	Antenna 1	
2412	16.63	16.70	< 30
2437	16.19	17.29	< 30
2462	16.44	17.20	< 30

Model Number	SR804n		
Test Item	Maximum Conducted Output Power		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	10/14/2014	Test Site	TE05

Frequency (MHz)	Peak Power (dBm)		Limit (dBm)
	Antenna 0	Antenna 1	
2412	21.27	21.38	< 30
2437	21.04	21.85	< 30
2462	21.00	22.04	< 30

Model Number	SR804n		
Test Item	Maximum Conducted Output Power		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	10/14/2014	Test Site	TE05

Frequency (MHz)	Peak Power (dBm)			Limit (dBm)
	Antenna 0	Antenna 1	Antenna 0+Antenna 1	
2412	20.44	20.82	23.64	< 30
2437	20.58	20.75	23.68	< 30
2462	20.66	20.81	23.75	< 30

Model Number	SR804n			
Test Item	Maximum Conducted Output Power			
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode			
Date of Test	10/14/2014		Test Site	TE05
Frequency (MHz)	Peak Power (dBm)			Limit (dBm)
	Antenna 0	Antenna 1	Antenna 0+Antenna 1	
2422	20.58	21.26	23.94	< 30
2437	20.72	21.11	23.93	< 30
2452	20.59	21.76	24.27	< 30

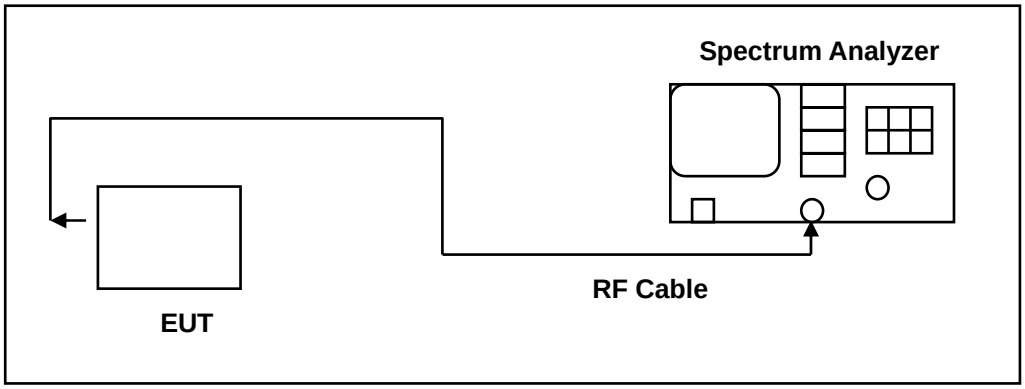
Note: The EUT incorporates a MIMO function when operation in 802.11n mode.Physically,the EUT provides two completed transmitters.All transmit signal are completely uncorrelated.And the relevant measured result has the offset with cable loss already

7 6dB RF Bandwidth and 99 % Occupied Bandwidth Measurement

7.1. Limit

6dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.
99 % Occupied Bandwidth: N/A

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	N9020A	MY53420615	05/13/2014	(2)
RF Cable	Woken	/	S02-1404-09-077	2014.05.11	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

dRemark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.
Note: N.C.R. = No Calibration Request.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of KDB558074D01 v03r02 for compliance to FCC 47CFR 15.247 requirements.
6dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.
The test was performed at 3 channels (Channel low, middle, high)
99 % Occupied Bandwidth: The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.
The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

7.5. Test Result

Model Number	SR804n		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	10/21/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	8.07	10.16	> 0.500
2437	8.54	10.16	> 0.500
2462	8.11	10.15	> 0.500

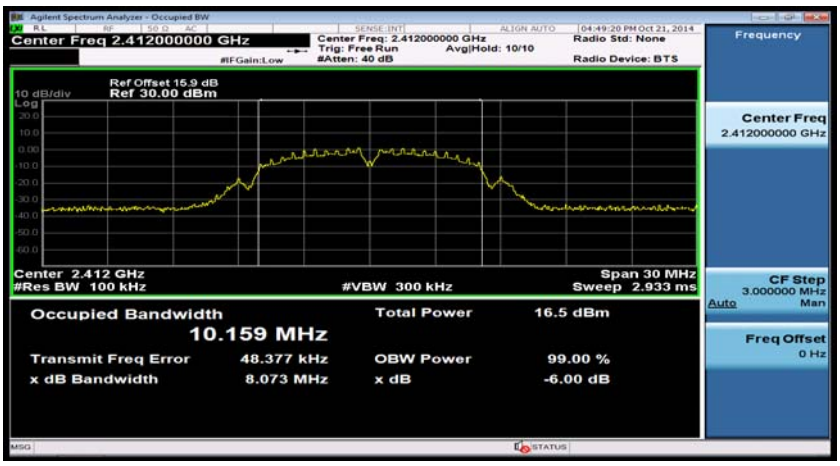
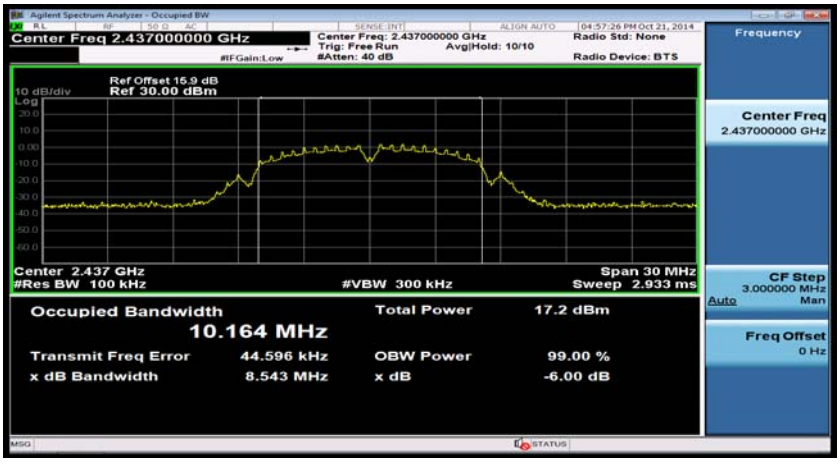
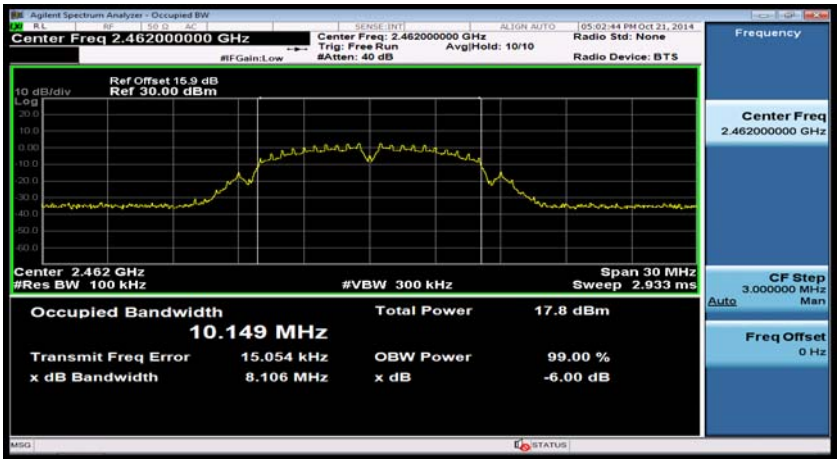
Model Number	SR804n		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	10/21/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	15.10	16.29	> 0.500
2437	15.11	16.29	> 0.500
2462	15.10	16.29	> 0.500

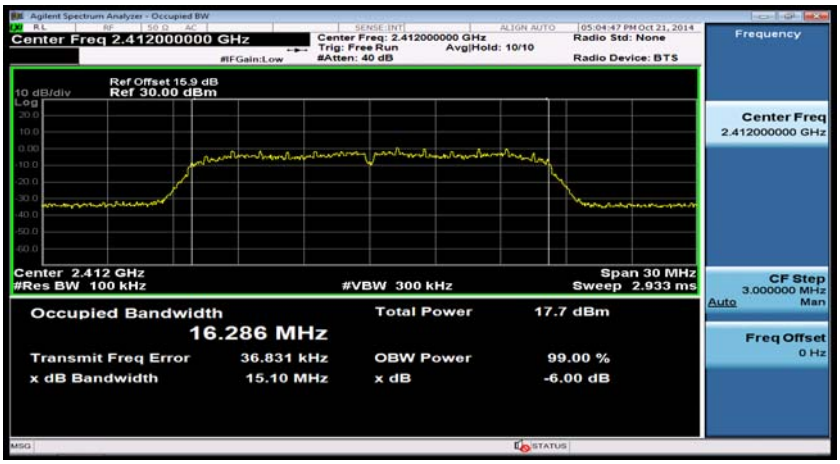
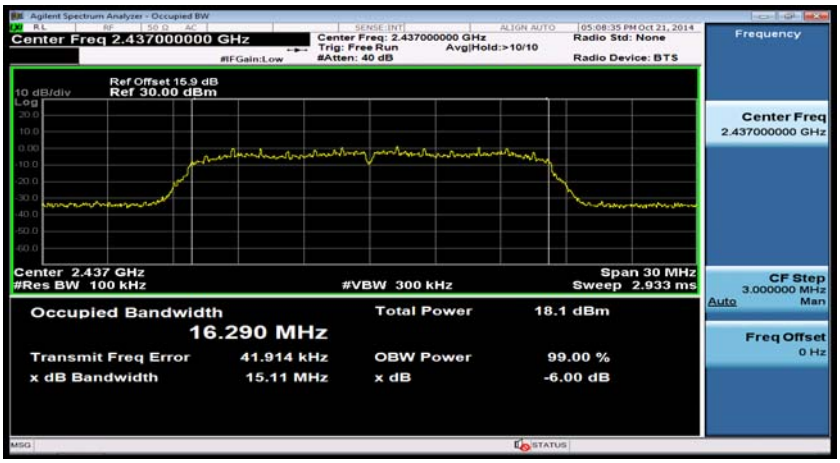
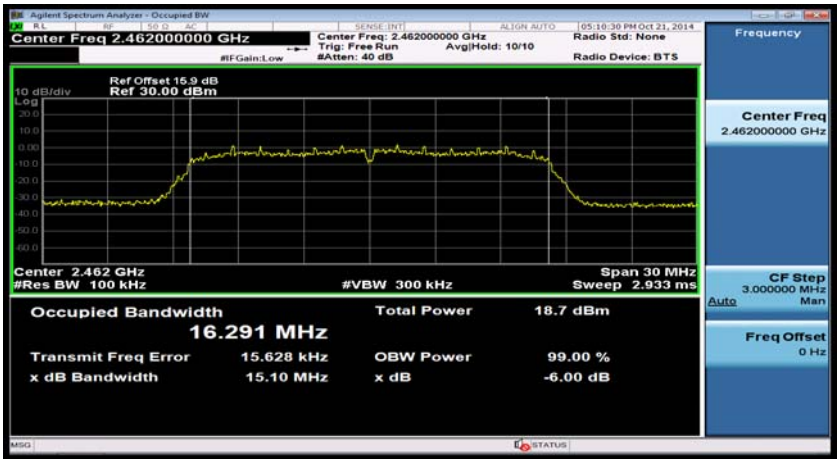
Model Number	SR804n		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	10/21/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	15.09	17.43	> 0.500
2437	14.11	15.92	> 0.500
2462	15.11	17.47	> 0.500

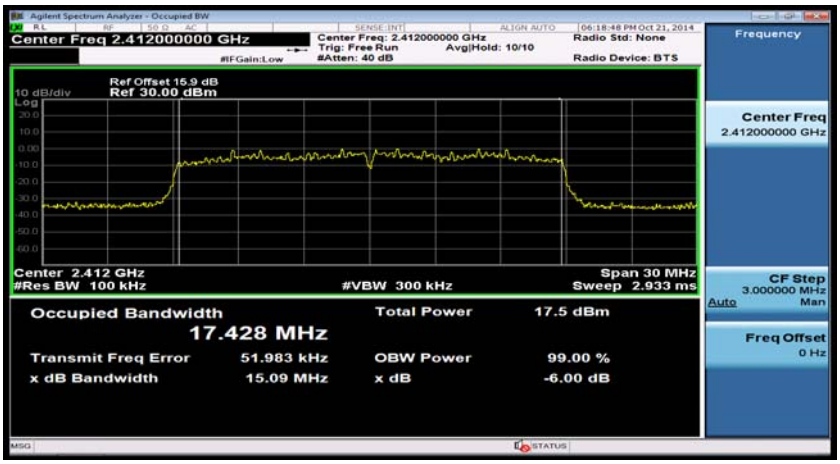
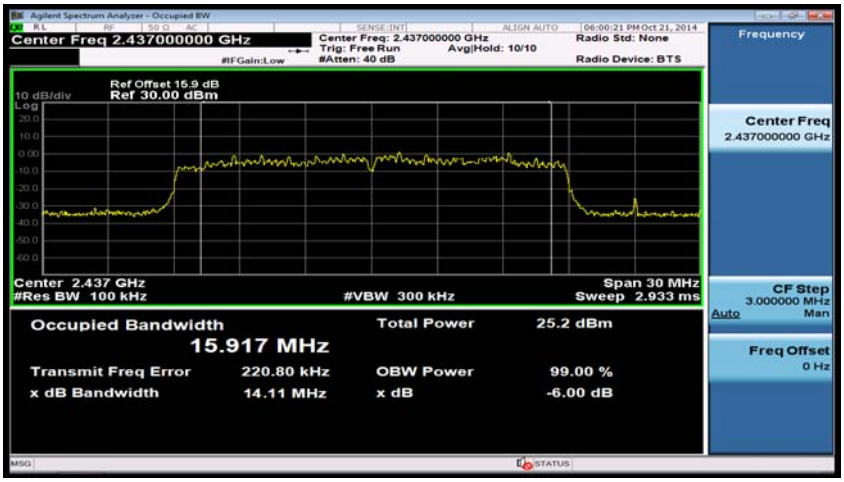
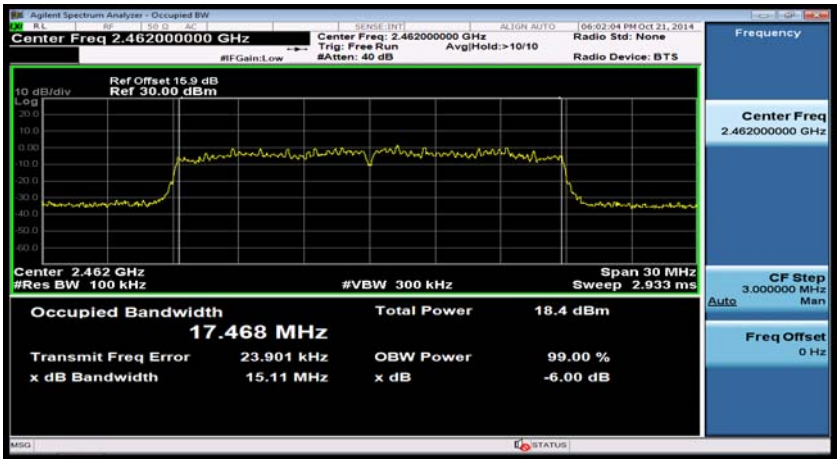
Model Number	SR804n		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	10/21/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2422	35.76	36.12	> 0.500
2437	35.70	36.08	> 0.500
2452	35.17	36.10	> 0.500

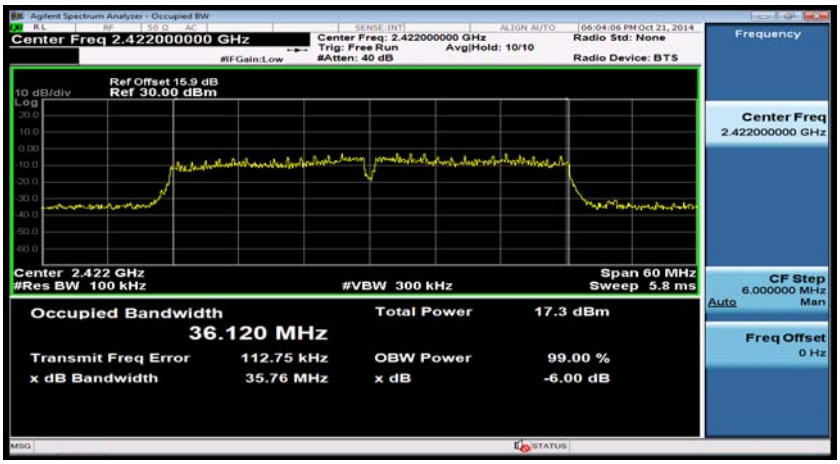
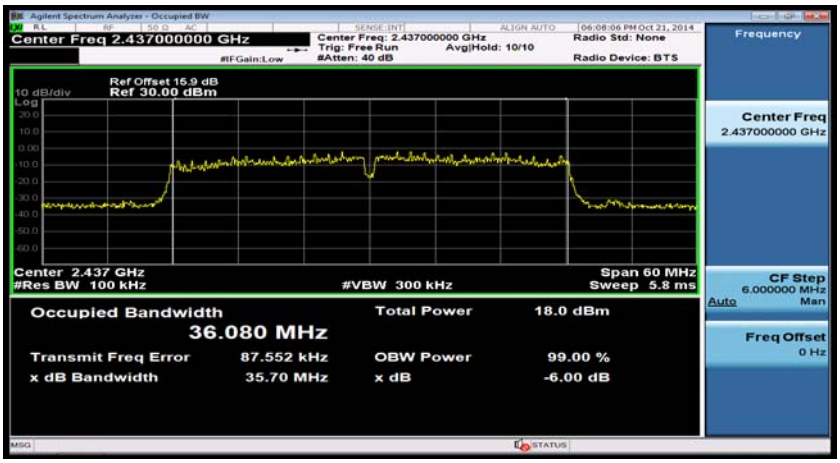
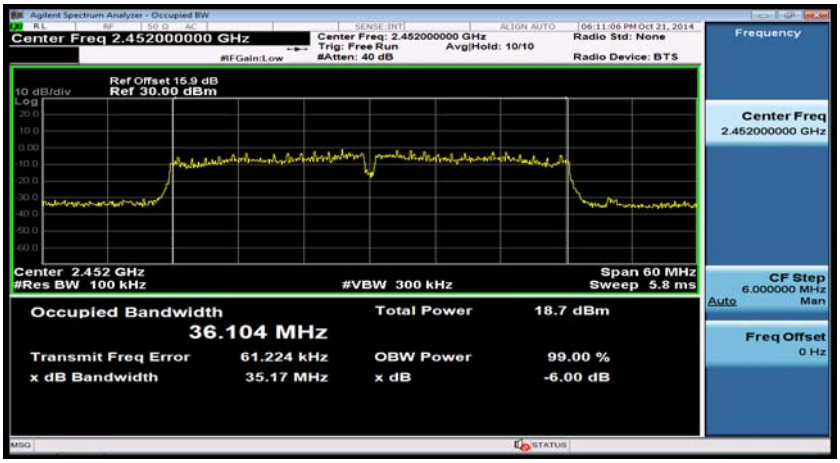
7.6. Test Graphs

6dB RF Bandwidth & 99 % Occupied Bandwidth

Mode 2: IEEE 802.11b Link Mode	
2412	
2437	
2462	

Mode 3: IEEE 802.11g Link Mode	
2412	
2437	
2462	

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode	
2412	
2437	
2462	

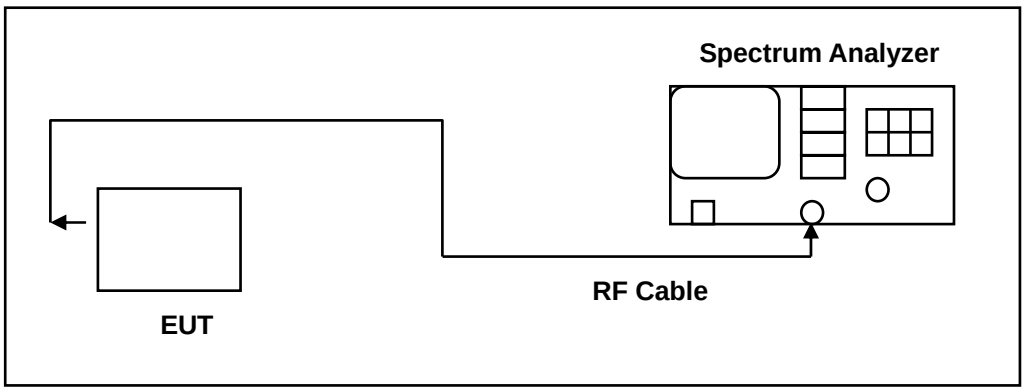
Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode	
2422	
2437	
2452	

8 Maximum Power Density Measurement

8.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.2. Test Setup



8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	N9020A	MY53420615	05/13/2014	(2)
RF Cable	Woken	/	S02-1404-09-077	2014.05.11	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.
Note: N.C.R. = No Calibration Request.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of KDB558074D01 v03r02 for compliance to FCC 47CFR 15.247 requirements.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 × RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

8.5. Test Result

Model Number	SR804n		
Test Item	Maximum Power Density		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	10/21/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
	Antenna 0	Antenna 1	
2412	0.76	0.89	< 8
2437	1.83	1.91	< 8
2462	2.82	2.88	< 8

Model Number	SR804n		
Test Item	Maximum Power Density		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	10/21/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
	Antenna 0	Antenna 1	
2412	0.69	0.72	< 8
2437	0.21	0.28	< 8
2462	0.88	0.95	< 8

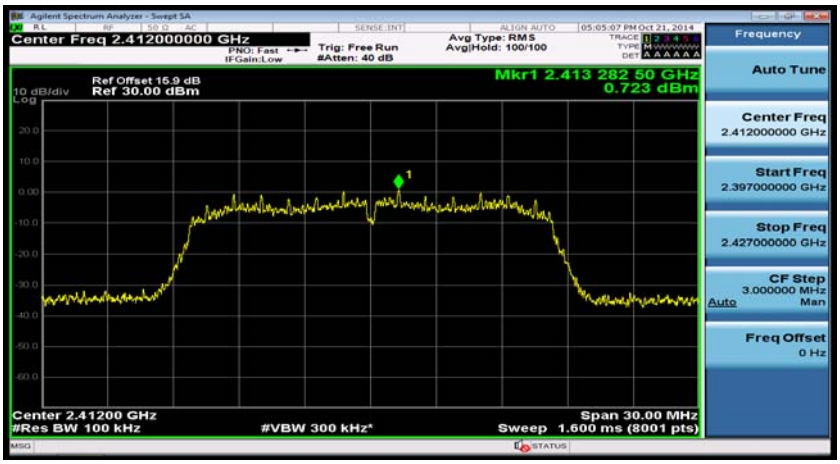
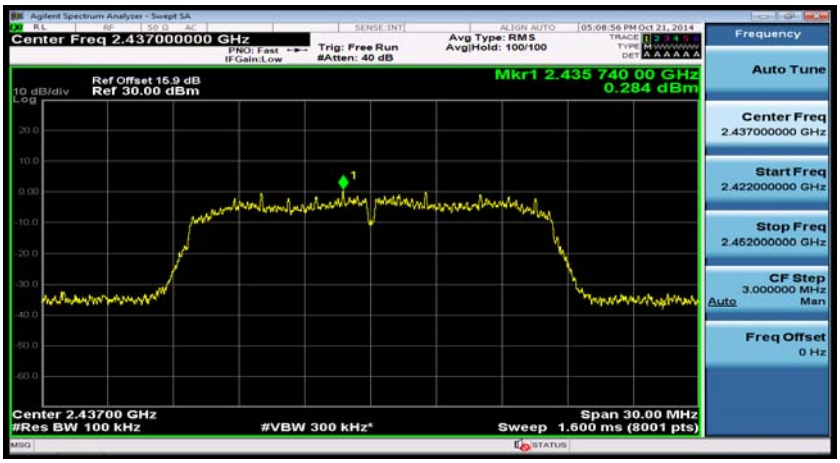
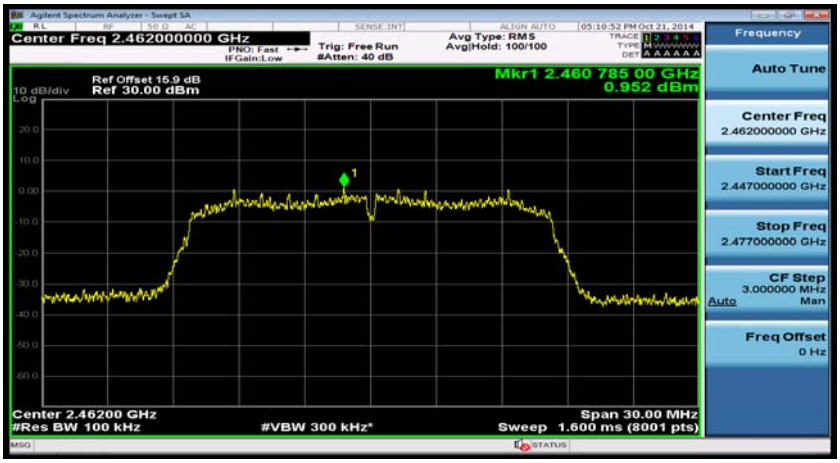
Model Number	SR804n			
Test Item	Maximum Power Density			
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode			
Date of Test	10/21/2014		Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)			Limit (dBm)
	Antenna 0	Antenna 1	Antenna 0+ Antenna 1	
2412	0.03	0.03	3.04	< 8
2437	0.87	0.94	3.92	< 8
2462	0.93	1.00	3.98	< 8

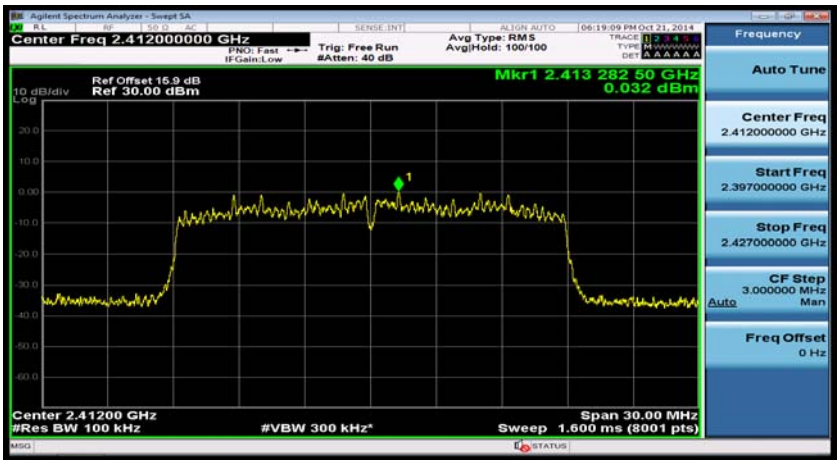
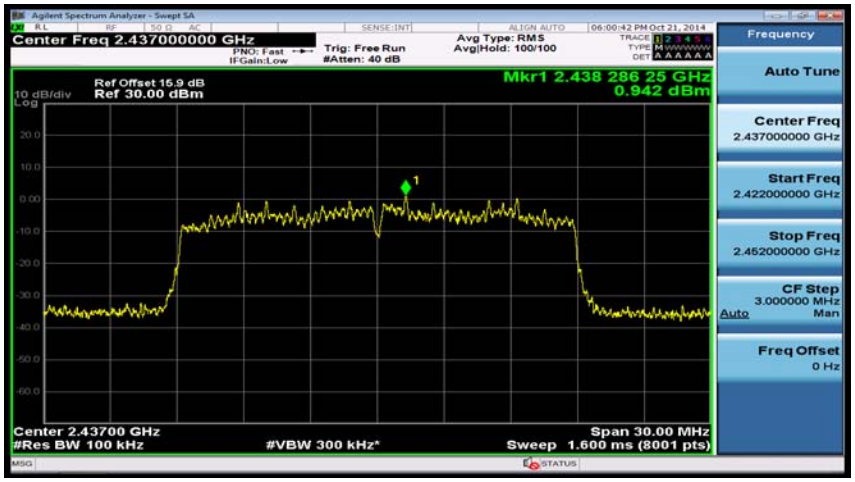
Model Number	SR804n			
Test Item	Maximum Power Density			
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode			
Date of Test	10/21/2014		Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)			Limit (dBm)
	Antenna 0	Antenna 1	Antenna 0+ Antenna 1	
2422	-5.44	-5.33	-2.37	< 8
2437	-1.99	-1.91	1.06	< 8
2452	-6.10	-5.99	-3.03	< 8

Note: The EUT incorporates a MIMO function when operation in 802.11n mode.Physically,the EUT provides two completed transmitters.All transmit signal are completely uncorrelated.And the relevant measured result has the offset with cable loss already

8.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode	
2412	
2437	
2462	

Mode 3: IEEE 802.11g Link Mode	
2412	
2437	
2462	

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode	
2412	
2437	
2462