EMC TEST REPORT for UNII device
No. SH10100900-002

Applicant	: Aruba Networks, Inc. 1322 Crossman Ave., Sunnyvale CA 94089 USA
Manufacturer	: Aruba Networks, Inc. 1322 Crossman Ave., Sunnyvale CA 94089 USA
Product Name	: Indoor Wireless Mesh Router
Type/Model	: MSR1200, MSR1K2SN0, MSR1K2SN0-US

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2009): Radio Frequency Devices

ANSIC63.4 (2003): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

RSS-210 Issue 8 (December 2010): Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

RSS-Gen Issue 3 (December 2010): General Requirements and Information for the Certification of Radiocommunication Equipment

Date of issue: Feb 24, 2011

Prepared by:

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Reviewed by:

Daniel Zhao (*Reviewer*)

Description of Test Facility

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Content

1. General Information

1.1 Applicant Information

Applicant:		Aruba Networks, Inc. 1322 Crossman Ave., Sunnyvale CA 94089 USA
Name of contact:		Ivaylo Tankov
Tel:		408-754-3035
Fax:		408-227-4550
Manufacturer:		Aruba Networks, Inc. 1322 Crossman Ave., Sunnyvale CA 94089 USA
Sample received date	:	May 17, 2010
Sample Identification No	:	*0100722-30-001*
Date of test	:	May 17, 2010 ~ Feb 24, 2011

1.2 Identification of the EUT

Equipment:	Indoor Wireless Mesh Router
Type/model:	MSR1200, MSR1K2SN0, MSR1K2SN0-US
FCC ID:	Q9DMSR1200N
IC:	4675A-MSR1200N

1.3 Technical specification

Operation Frequency Band: 5180- 5240 MHz for HT20, 5190-5230 for HT40

Modulation:
DBPSK @1Mbps
DQPSK@2Mbp
CCK@5.5/11Mbps
BPSK@6/9 Mbps
QPSK@12/18Mbps
16-QAM@24Mbps
64-QAM@48/54Mpb and above

Description of EUT: Here are three models. They are electrically identical except for different mode name. Therefore, the model MSR1K2SN0 was chose to perform test as representative.
The EUT supports wireless network of 802.11a/b/g/n. There are two same wireless modules (namely card 1 and card 2) inserted in the EUT. Nevertheless, the two modules cannot work on the same channel at no time. Each module contains of two chains, namely chain 0 and chain 1. The 802.11n supports both single and dual chain modes (Note: under 802.11n single chain mode, the RF module only support chain 0 to be used and chain 1 is not opened to ender user).

Antenna Designation: External, Reverse Omnidirectional Antenna

Gain of Antenna: 5.0dBi max.

Rating: 48V d.c. powered by:
1. POE: input 100-240Va.c., 1.5A, 47-63Hz;
   output 48V d.c., 1.2A
2. Adapter: input 100-240Va.c., 50/60Hz, 1.2A
   output 49.5V d.c., 0.8A

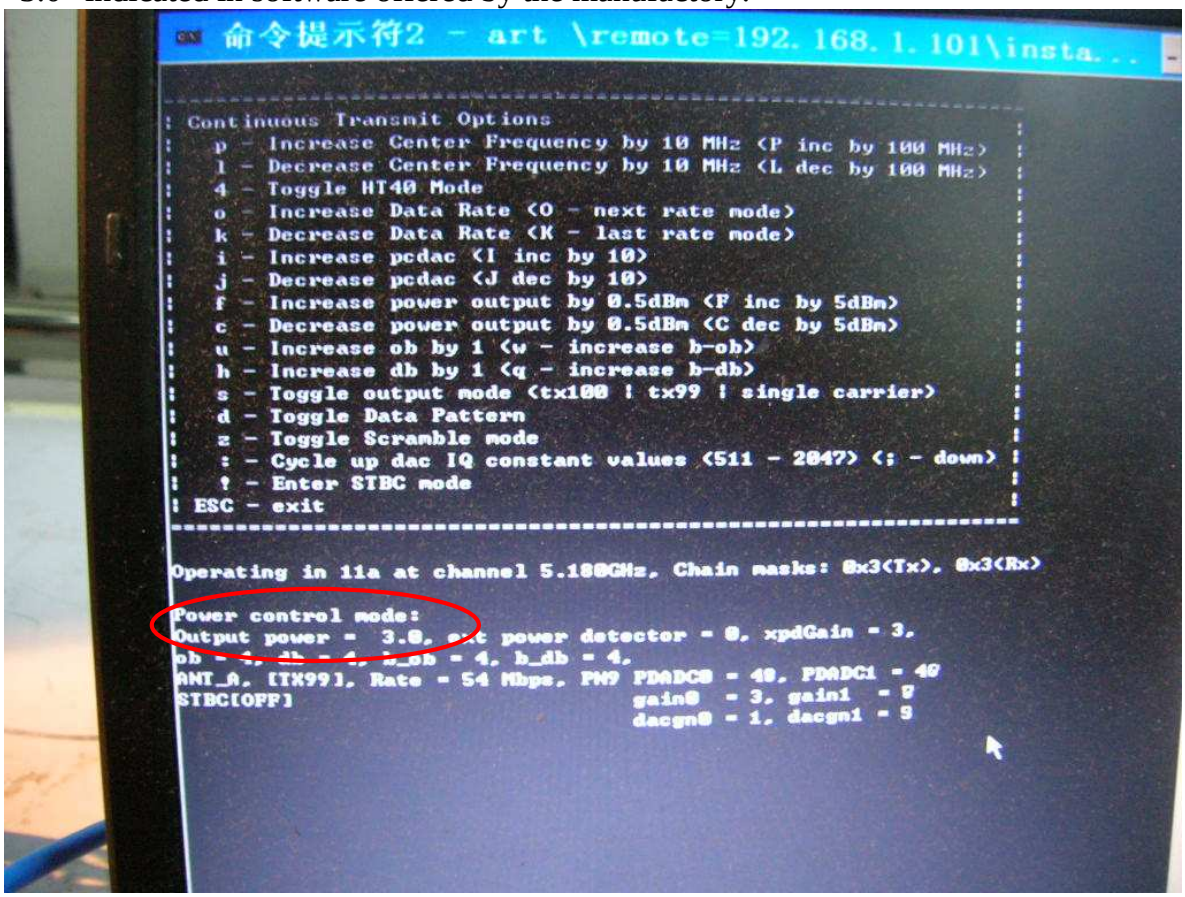
Signal terminal: POE, CONSOLE (USB)

Channel Description:

HT20 Channel	Frequency (MHz)	HT40 Channel	Frequency (MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	/	/
48	5240	/	/

1.4 Mode of operation during the test / Test peripherals used

Within this test report, EUT was tested under 120V/60Hz. The EUT has transmitting as well as receiving modes, so both were assessed.
While testing transmitting mode of EUT, the internal modulation was used.
While testing receiving mode of EUT, the signal generator was employed to generate continuous answer signal.
During test, the maximum power level for 802.11a/n among 5180 – 5240MHz was set as "3.0" indicated in software offered by the manufactory.



Test peripherals used:

Item No	Description	Band and Model	S/No
1	Laptop computer	FUJITSU SIMENS, LIFEBOOK	NA

The lowest, middle and highest channel were tested as representatives.
Lowest, 5180MHz; middle, 5200MHz; highest, 5240MHz for HT20.
Lowest, 5190MHz; highest, 5230MHz for HT40.

All the transmission rate were listed here:

a	**Data rate (Mbps)**	**n HT20 1X**	**Data rate (Mbps)**	**n HT20 2X**	**Data rate (Mbps)**	-	-
MCS0	6	MCS0	6.5	MCS8	13	-	-
MCS1	9	MCS1	13	MCS9	26	-	-
MCS2	12	MCS2	19.5	MCS10	39	-	-
MCS3	18	MCS3	26	MCS11	52	-	-
MCS4	24	MCS4	39	MCS12	78	-	-
MCS5	36	MCS5	52	MCS13	104	-	-
MCS6	48	MCS6	58.5	MCS14	117	-	-
MCS7	54	MCS7	65	MCS15	130	-	-
n HT40 (GI=0)1X	**Data rate (Mbps)**	**n HT40 (GI=0)2X**	**Data rate (Mbps)**	**n HT40 (GI=1)1X**	**Data rate (Mbps)**	**n HT40 (GI=1)2X**	**Data rate (Mbps)**
MCS0	13.5	MCS8	27	MCS0	15	MCS8	30
MCS1	27	MCS9	54	MCS1	30	MCS9	60
MCS2	40.5	MCS10	81	MCS2	45	MCS10	90
MCS3	54	MCS11	108	MCS3	60	MCS11	120
MCS4	81	MCS12	162	MCS4	90	MCS12	180
MCS5	108	MCS13	216	MCS5	120	MCS13	240
MCS6	121.5	MCS14	243	MCS6	135	MCS14	270
MCS7	135	MCS15	270	MCS7	150	MCS15	300

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESIB 26	R&S	EC 3045	2010-6-1	2011-5-31
Semi-anechoic chamber	-	Albatross project	EC 3048	2010-6-1	2011-5-31
A.M.N.	ESH2-Z5	R&S	EC 3119	2011-1-23	2012-1-22
Test Receiver	ESCS 30	R&S	EC 2107	2011-1-23	2012-1-22
Ultra-broadband Antenna	CBL 6112D	TESEQ	EC 4206	2010-5-30	2011-6-1
Horn Antenna	HF 906	R&S	EC 3049	2010-6-30	2011-6-29
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2010-6-30	2011-6-29
Signal generator	SMR 20	R&S	EC 3044-1	2010-8-21	2011-8-20
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2011-2-8	2012-2-7
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2011-2-8	2012-2-7
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2011-2-8	2012-2-7
Band Reject Filter	WRCGV 2400/2483-2390/2493-35/10SS	Wainwright	EC4297-4	2011-2-8	2012-2-7
Spectrum Analyzer	E4408B	Agilent	MY45102679	2010-11-20	2011-11-19
Spectrum Analyzer	E4446A	Agilent	MY45300103	2010-6-11	2011-6-10
EMI Test Receiver	ESCI	R&S	100573	2010-5-23	2011-5-22
Preamplifier	AP-025C	Quietek	QT-AP003	2010-11-25	2011-11-24
Preamplifier	AP-180C	Quietek	CHM-0602013	2010-11-25	2011-11-24
Broad-Band Horn Antenna	BBHA9120D	Schwarzbeck	496	2010-11-25	2011-11-24
Broad-Band Horn Antenna	BBHA9170	Schwarzbeck	294	2010-11-25	2011-11-24

2.2 Test Standard

47CFR Part 15 (2009)
ANSI C63.4: 2003
RSS-210 Issue 8 (December 2010)
RSS-Gen Issue 3 (December 2010)

2.3 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Maximum conducted output power	15.407(a)(1)	RSS-210 Issue 8 Annex 9.2(1)	Pass
Power spectrum density	15.407(a)(1)	RSS-210 Issue 8 Annex 9.2(1)	Pass
Peak excursion	15.407(a)(6)	-	Pass
Radiated emission	15.407 (b)(1) & 15.407 (b)(6)	RSS-210 Issue 8 Annex 9.2(1)	Pass
Power line conducted emission	15.407 (b)(6)	RSS-Gen Issue 3 Clause 7.2.4	Pass
Occupied bandwidth	-	RSS-Gen Issue 3 Clause 4.6.1	Tested
Spurious emission for receiver	-	RSS-Gen Issue 3 Clause 4.6.1	Pass

2.4 Data rate VS power

Mode	Data Rate	CH	Level at certain a chain (dBm)
11a	MCS0	M	24.08
	MCS1	M	23.98
	MCS2	M	23.88
	MCS3	M	23.84
	MCS4	M	24.33
	MCS5	M	24.13
	MCS6	M	24.17
	MCS7	M	**24.39**
11n HT40 GI=1	MCS0	M	24.53
	MCS1	M	24.21
	MCS2	M	24.19
	MCS3	M	24.74
	MCS4	M	24.36
	MCS5	M	24.52
	MCS6	M	24.62
	MCS7	M	**24.80**

Conclusion: For all RF test items in this report, MCS7 should be set.

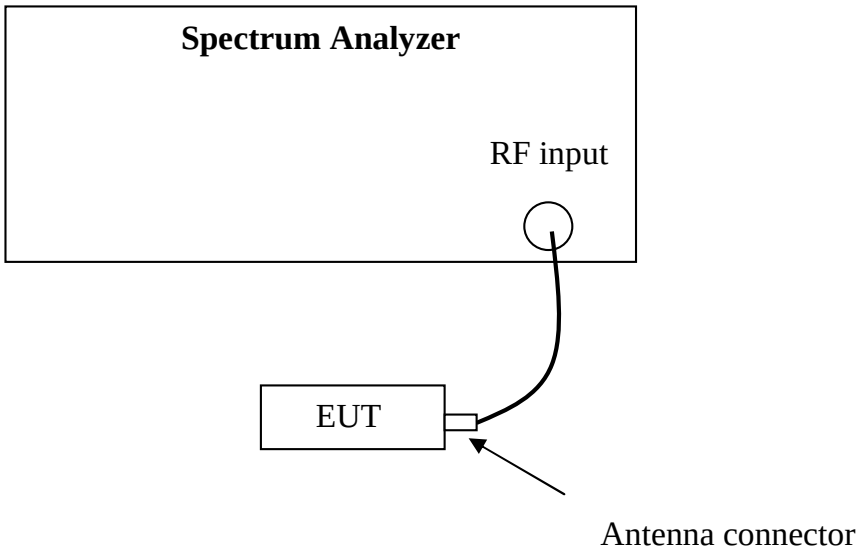
3. Maximum Conducted Output Power

Test result: Pass

3.1 Test limit

For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50mW or 4dBm + 10log B, where B is the 26-dB emission bandwidth in MHz.
If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Test Configuration



3.3 Test procedure and test setup

The maximum conducted output power per FCC § 15.407(a)(1) is measured using the Spectrum Analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth set at 3MHz, and the SPAN>>RBW. The test was performed at 3 channels (lowest, middle and highest channel).
The EUT was tested according to UNII test procedure of April 2007 KDB289238 for compliance to FCC 47CFR 15.407 requirements (Peak conducted transmit output power, method#1).

3.4 Test protocol

Temperature : 22 °C
Relative Humidity : 43 %

Single Chain

Mode	CH	Card 1, Chain 0 (dBm)	Card 1, Chain 1 (dBm)	Card 2, Chain 0 (dBm)	Card 2, Chain 1 (dBm)	Limit (dBm)
11a	L	11.43	11.05	10.90	11.77	≤17
	M	11.74	10.01	10.70	10.40	≤17
	H	11.78	11.02	10.19	6.08	≤17
11n HT20	L	11.19	/	/	/	≤17
	M	10.67	/	/	/	≤17
	H	11.38	/	/	/	≤17
11n HT40 GI=0	L	11.58	/	/	/	≤17
	H	11.62	/	/	/	≤17
11n HT40 GI=1	L	11.61	/	/	/	≤17
	H	11.64	/	/	/	≤17

Note: 1. For the minimum B = 27.15MHz, the limit should be 50mW, namely 17dBm.
2. After testing at 802.11a mode, it is found card 1 has higher output power than that of card 2. Therefore, card 1 is chosen to perform all tests.
3. The EUT doesn't support emission of chain 1 under 802.11n single chain mode.

Dual Chain

Mode	CH	Chain 0 (dBm)	Chain 1 (dBm)	Chain 0 + Chain 1 (dBm)	Limit (dBm)
11n HT20	L	11.51	11.24	14.38	≤17
	M	11.30	10.98	14.15	≤17
	H	10.85	11.22	14.05	≤17
11n HT40 GI=0	L	11.77	11.68	**14.74**	≤17
	H	11.49	11.55	14.53	≤17
11n HT40 GI=1	L	11.83	11.43	14.64	≤17
	H	11.35	11.26	14.32	≤17

For the gain of Antenna = 5.0dBi, the maximum e.i.r.p = 14.74dBm + 5.00dBi = 19.74dBm = 95.19mW (lower than the e.i.r.p limit of 200mW showed in RSS-210.).

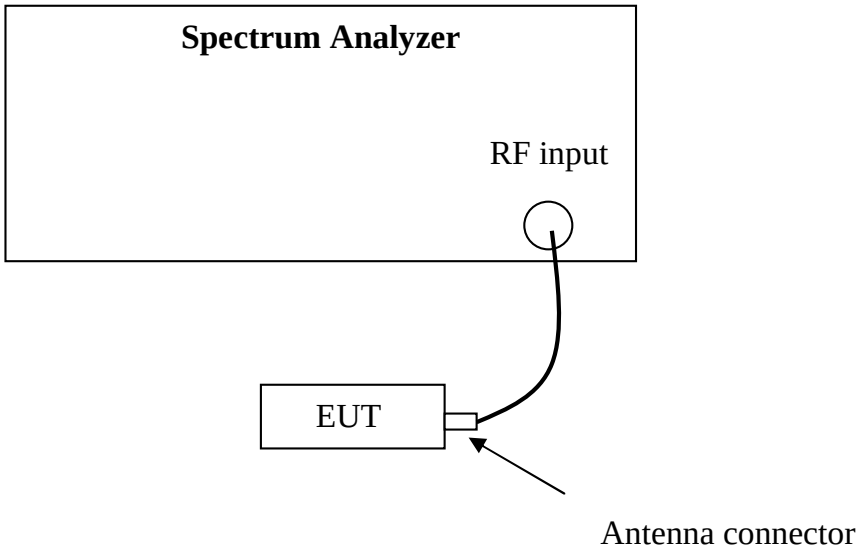
4. Power spectrum density

Test result: **Pass**

4.1 Test limit

For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Test Configuration



4.3 Test procedure and test setup

The power spectral density per FCC § 15.407(a)(1) is measured using the Spectrum Analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth set at 3MHz, and the SPAN>>RBW. The test was performed at 3 channels (lowest, middle and highest channel).
The EUT was tested according to UNII test procedure of April 2007 KDB289238 for compliance to FCC 47CFR 15.407 requirements (Peak power spectral density).

4.4 Test Protocol

Temperature : 22 °C
Relative Humidity : 43 %

Single Chain

Mode	CH	Chain 0 (dBm/MHz)	Chain 1 (dBm/MHz)	Limit (dBm/MHz)
11a	L	1.50	0.55	≤4
	M	1.45	0.59	≤4
	H	1.41	0.59	≤4
11n HT20	L	1.17	/	≤4
	M	0.17	/	≤4
	H	1.06	/	≤4
11n HT40 GI=0	L	-1.89	/	≤4
	H	-1.26	/	≤4
11n HT40 GI=1	L	-2.35	/	≤4
	H	-1.83	/	≤4

Note: The EUT doesn't support emission of chain 1 under 802.11n single chain mode.

Dual Chain

Mode	CH	Chain 0 (dBm/MHz)	Chain 1 (dBm/MHz)	Chain 0 + Chain 1 (dBm/MHz)	Limit (dBm/MHz)
11n HT20	L	0.96	0.91	**2.48**	≤4
	M	0.78	0.34	2.28	≤4
	H	0.70	0.98	2.43	≤4
11n HT40 GI=0	L	-1.57	-1.99	1.24	≤4
	H	-1.80	-2.31	0.96	≤4
11n HT40 GI=1	L	-1.54	-2.61	0.97	≤4
	H	-2.49	-2.59	0.47	≤4

Note: The EUT doesn't support emission of chain 1 under 802.11n single chain mode.

For the gain of Antenna = 5.0dBi, the maximum e.i.r.p. spectral density = 2.48dBm/MHz + 5.00dBi =7.48dBm/MHz (lower than limit of 10dBm/MHz showed in RSS-210).

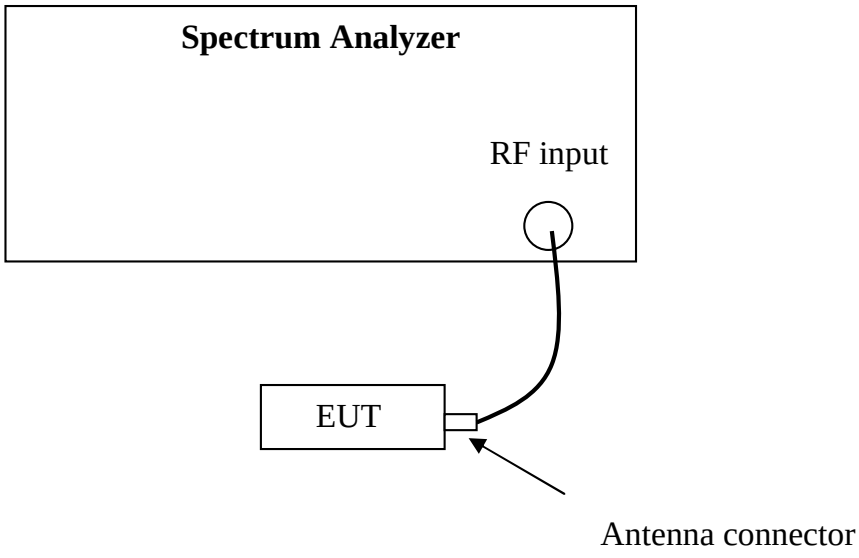
5. Peak Excursion

Test result: PASS

5.1 Limit

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

5.2 Test Configuration



5.3 Test Procedure and test setup

The power spectral density per FCC § 15.407(a)(6) is measured using the Spectrum Analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth set at 3MHz, and the SPAN>>RBW. The test was performed at 3 channels (lowest, middle and highest channel).
The EUT was tested according to UNII test procedure of April 2007 KDB289238 for compliance to FCC 47CFR 15.407 requirements (Peak excursion measurement).

For 1st trace, set RBW = 1 MHz, VBW = 3 MHz with peak detector and maxhold settings;
For 2nd trace, set RBW = 1 MHz, VBW = 3 MHz with sample detector and average settings;

5.4 Test Protocol

Temperature : 22°C
Relative Humidity : 43%

Single Chain

Mode	CH	Chain 0 (dB)	Chain 1 (dB)	Limit (dB)
11a	L	10.70	10.03	≤13
	M	9.65	10.93	≤13
	H	11.09	11.15	≤13
11n HT20	L	11.13	/	≤13
	M	10.50	/	≤13
	H	11.12	/	≤13
11n HT40 GI=0	L	10.57	/	≤13
	H	10.83	/	≤13
11n HT40 GI=1	L	11.75	/	≤13
	H	12.19	/	≤13

Note: The EUT doesn't support emission of chain 1 under 802.11n single chain mode.

Dual Chain

Mode	CH	Chain 0 (dB)	Chain 1 (dB)	Limit (dB)
11n HT20	L	11.02	10.79	≤13
	M	10.30	10.66	≤13
	H	11.71	10.45	≤13
11n HT40 GI=0	L	11.16	11.73	≤13
	H	10.92	12.21	≤13
11n HT40 GI=1	L	10.58	10.83	≤13
	H	10.83	11.43	≤13

6. Radiated emission

Test result: PASS

6.1 Test limit

6.1.1 The radiated emissions which are lower than 1GHz or fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) showed as below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

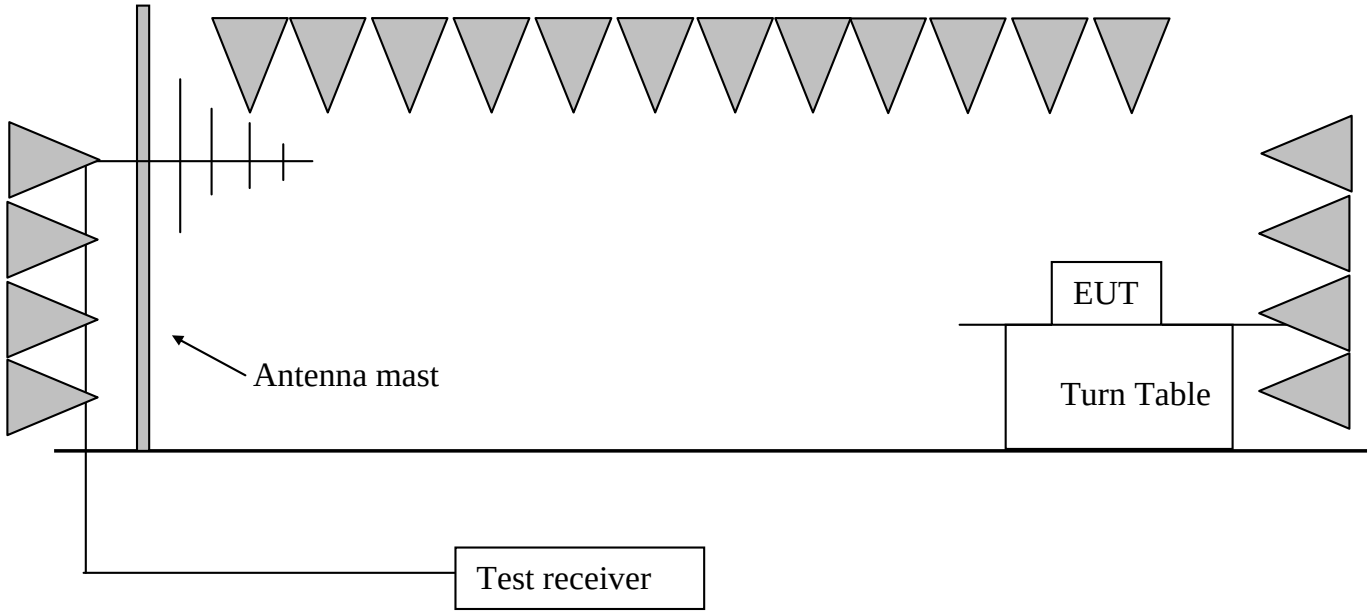
6.1.2 The emission which is outside the restrict bands, should comply with the EIRP limit as below:

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
1000-5150	-27	68.30
5350-40000	-27	68.30

Note: The Equivalent Field Strength is converted from EIRP with the formula:

E = (1000000$\sqrt{30P}$ / 3) μV/m, where P is the EIRP (Watts).

6.2 Test Configuration



6.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.
The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);
RBW = 1MHz, VBW = 10Hz (>1GHz for AV);

6.4 Test protocol

11n HT40, GI=0, dual chain (which mode with max. conducted output power)

CH	Polarization	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5190.18	32.10	99.80	Fundamental	/	PK
	V	37.78	14.00	39.00	40.00	1.00	QP
	H	166.58	10.30	28.50	43.50	15.00	PK
	H	270.34	13.50	28.30	46.00	17.70	PK
	V	5150.00	32.10	60.50	74.00	13.50	PK
	V	5150.00	32.10	49.30	54.00	4.70	AV
	V	6283.17	-1.40	51.90	68.30	16.40	PK
	V	8541.60	2.50	53.40	68.30	14.90	PK
	V	10380.28	10.20	63.60	74.00	10.40	PK
	V	10380.28	10.20	41.70	54.00	12.30	AV
H	V	5231.49	32.10	99.00	Fundamental	/	PK
	V	37.78	14.00	39.00	40.00	1.00	QP
	H	166.58	10.30	28.50	43.50	15.00	PK
	H	270.34	13.50	28.30	46.00	17.70	PK
	V	5350.00	32.70	56.60	74.00	17.40	PK
	V	5350.00	32.70	42.70	54.00	11.30	AV
	V	6283.17	-1.40	51.90	68.30	16.40	PK
	V	8541.60	2.50	53.40	68.30	14.90	PK
	V	10525.71	10.40	63.90	74.00	10.10	PK
	V	10525.71	10.40	42.50	54.00	11.50	AV

Remark: 1. For fundamental & restrict emission at 5000-5150MHz and 5350-5460MHz test, no amplifier is employed.
2. Correct Factor = Antenna Factor + Cable Loss (-Amplifier, is employed)
3. Corrected Reading = Original Receiver Reading + Correct Factor
4. Margin = limit – Corrected Reading
5. If the PK reading is lower than AV limit, the AV test can be elided.
6. Please refer to the “test data” for PK reading lower than 1GHz.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV.

Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m; Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m

Assuming limit = 54dBuV/m, Corrected Reading = 10.20dBuV/m, then Margin = 54 -10.20 = 43.80dBuV/m

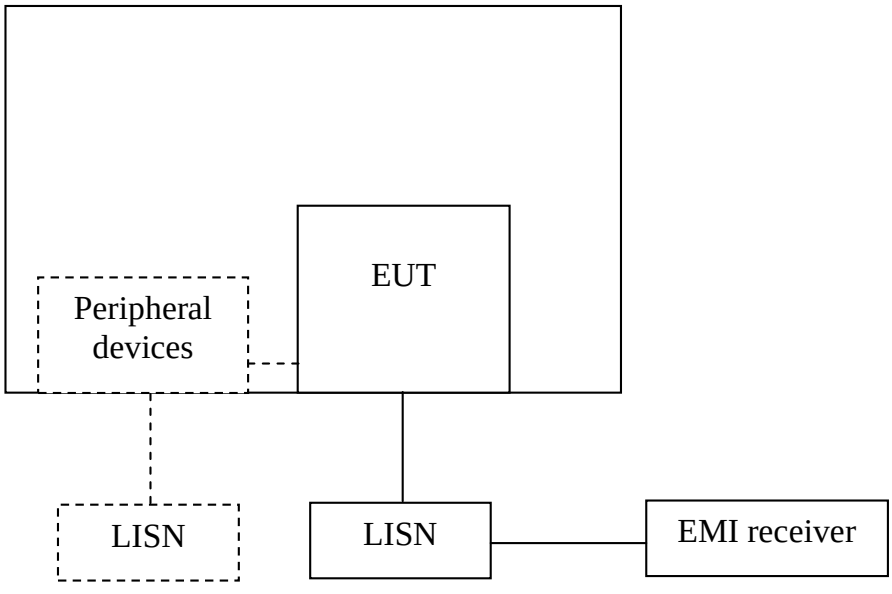
7. Power line conducted emission

Test result: **Pass**

7.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

7.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

7.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.
The bandwidth of the test receiver is set at 9 kHz.

7.4 Test protocol

POE powered

Frequency	Correct Factor (dB)	Corrected Reading (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV	QP	AV	QP	AV
0.31 (L)	3.00	36.97	27.25	60.04	50.04	23.07	22.79
0.38 (L)	3.00	34.47	26.04	58.19	48.19	23.72	22.15
0.46 (N)	3.00	34.47	26.00	56.68	46.68	21.73	20.68
4.73 (L)	3.00	14.65	11.99	56.00	46.00	41.35	34.01
17.64 (N)	3.00	25.47	20.01	60.00	50.00	34.53	29.99
26.91 (N)	3.00	32.28	28.34	60.00	50.00	27.72	21.66
Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB). 2. Margin (dB) = Limit - Corrected Reading.							

Adapter powered

Frequency	Correct Factor (dB)	Corrected Reading (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV	QP	AV	QP	AV
0.18 (N)	3.00	37.68	28.36	64.31	54.31	26.63	25.95
0.25 (N)	3.00	36.08	32.16	61.79	51.79	25.71	19.63
3.35 (N)	3.00	28.72	21.63	56.00	46.00	27.28	24.37
23.01 (L)	3.00	39.16	32.61	60.00	50.00	20.84	17.39
23.03 (N)	3.00	30.42	22.24	60.00	50.00	29.58	27.76
27.09 (N)	3.00	43.33	36.94	60.00	50.00	16.67	13.06
Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB). 2. Margin (dB) = Limit - Corrected Reading.							

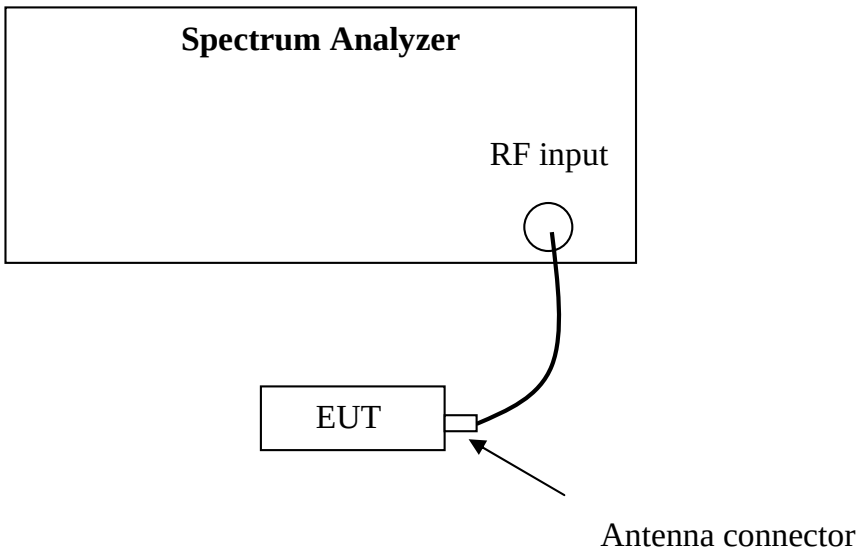
8. Occupied Bandwidth

Test Status: Tested

8.1 Test limit

None

8.2 Test Configuration



8.3 Test procedure and test setup

The occupied bandwidth per RSS-Gen Issue 3 Clause 4.6.1 was measured using the Spectrum Analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth set at 3MHz.

8.4 Test protocol

Temperature : 22 °C
Relative Humidity : 43 %

Mode	Occupied Bandwidth (MHz)
11a	19.44
11n HT20	20.44
11n HT40 GI=0	38.00
11n HT40 GI=1	38.20

9. Spurious emission for receiver

Test result: PASS

9.1 Test limit

The spurious emission shall test through 3 times tuneable or local oscillator frequency whichever is the higher, without exceeding 40 GHz.
1) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2nW per any 4 kHz spurious frequency in the band 30-1000 MHz, or 5nW above 1 GHz.
2) If a radiated measurement is made, all spurious emissions shall comply with the limits of Table below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

9.2 Test Configuration

Please refer to clause 6.2

9.3 Test procedure and test setup

Please refer to clause 6.3.

9.4 Test protocol

POE powered

Polarization	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
V	37.78	14.00	39.20	40.00	0.80	QP
V	43.61	10.90	38.60	40.00	1.40	QP
H	199.12	10.50	40.40	43.50	3.10	PK
H	339.08	16.30	41.00	46.00	5.00	PK
H	366.29	17.20	42.50	46.00	3.50	PK
H	376.01	17.50	43.40	46.00	2.60	PK
V	2737.47	-3.80	51.10	54.00	2.90	PK
H	4100.20	-2.60	40.40	54.00	13.60	PK

Remark: 1. Correct Factor = Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = limit – Corrected Reading
4. Please refer to the “test data” for PK reading lower than 1GHz.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Original Receiver Reading = 10dBuV.
Then Correct Factor = 30.20 + 2.00 = 32.20dB/m; Corrected Reading = 10dBuV + 32.20dB/m = 42.20dBuV/m
Assuming limit = 54dBuV/m, Corrected Reading = 42.20dBuV/m, then Margin = 54 -42.20 = 11.80dBuV/m

Adapter powered

Polarization	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
V	30.00	18.80	37.10	40.00	2.90	PK
V	43.61	10.90	38.90	40.00	1.10	QP
H	63.05	5.90	37.50	40.00	2.50	PK
H	199.12	10.50	36.10	43.50	7.40	PK
H	300.20	15.00	45.00	46.00	1.00	PK
H	366.29	17.20	43.00	46.00	3.00	PK
H	376.01	17.50	44.60	46.00	1.40	PK
V	2737.47	-3.80	51.10	54.00	2.90	PK
H	4100.20	-2.60	40.40	54.00	13.60	PK