CE Radio Test Report

APPLICANT	:	Texas Instruments Incorporated
EQUIPMENT	:	CC3100MODR11MAMOB
BRAND NAME	:	Texas Instruments
MODEL NAME	:	CC3100MODR11MAMOB
MARKETING NAME	:	SimpleLink™ Wi-Fi® CC3100MOD Wireless Network Processor Module
STANDARD	:	ETSI EN 300 328 V2.1.1 (2016-11)
TEST DATE(S)	:	May 10, 2017 ~ Jul. 07, 2017

The measurement shown in this test report is tested in accordance with the test procedures given in ETSI EN 300 328 V2.1.1 (2016-11).

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
ER741317	Rev. 01	Initial issue of report	Jul. 21, 2107

SUMMARY OF TEST RESULT

CLAUSE (EN 300 328)	TEST PARAMETER	PASS/FAIL	REMARK
Transmitter Parameters			
4.3.1.2 4.3.2.2	Maximum Transmit Power	PASS	-
4.3.2.3	Maximum Equivalent Isotropically Radiated Power (E.I.R.P.) Spectral Density	PASS	Only applicable for modulations other than FHSS
4.3.1.8 4.3.2.7	Occupied Channel Bandwidth	PASS	-
4.3.1.4 4.3.1.5	Frequency Hopping Requirements	Not Required	Only applicable for FHSS
4.3.1.9 4.3.2.8	Transmitter spurious emissions in OOB	PASS	-
4.3.1.10 4.3.2.9	Transmitter spurious emissions	PASS	Under limit 10.46 dB at 6993.000 MHz
Receiver Parameters			
4.3.1.11 4.3.2.10	Receiver spurious emissions	PASS	Under limit 6.53 dB at 2396.000 MHz
Adaptive Test Item			
4.3.1.7 4.3.2.6	Adaptivity	PASS	Only applicable for adaptive equipment Output Power >10dBm
4.3.1.12 4.3.2.11	Receiver Blocking	PASS	
Non-Adaptive Test Item			
4.3.1.3 4.3.2.4	Duty cycle, Tx-Sequence, Tx-gap	Not Required	Only applicable for non-adaptive equipment Output Power >10dBm
4.3.1.6 4.3.2.5	Medium Utilisation (MU) factor	Not Required	
Note: WiFi belongs to adaptive equipment and EIRP > 10dBm.			

1 General Description

1.1 Applicant

Texas Instruments Incorporated

12500 TI BLVD., Dallas Texas, 75243

1.2 Manufacturer

Texas Instruments Incorporated

12500 TI BLVD., Dallas Texas, 75243

1.3 Product Feature of Equipment Under Test

Wi-Fi 2.4GHz 802.11b/g/n

	Brand	Antenna Type	Model	2.4GHz gain
1	Ethertronics	Dipole	1000423	-0.6dBi
2	LSR	Rubber Whip / Dipole	001-0012	2dBi
3			080-0013	2dBi
4			080-0014	2dBi
5	Laird	PCB	CAF94504	2dBi
6			CAF94505	2dBi
7	ACX	Multilayer Chip	AT3216-BR2R7HAA	0.5dBi
8			AT312-T2R4PAA	1.5dBi
9	TDK	Multilayer Ceramic Chip Antenna	ANT016008LCD2442MA1	1.6dBi
10	Mitsubishi Material	Chip Antenna	AM03DP-ST01	1.6dBi
11		Antenna Unit	UB18CP-100ST01	-1.0dBi
12	Taiyo Yuden	Chip Antenna / Herical Monopole	AF216M245001	1.5dBi
13		Chip Antenna /Monopole Type	AH212M245001	1.3dBi
14			AH316M245001	1.9dBi
15	Antenna Technology	Dipole	AA2402SPU	2.0dBi
16			AA2402RSPU	2.0dBi
17			AA2402A-UFLLP	2.0dBi
18			AA2402AU-UFLLP	2.0dBi
19	Staf	Mono-pole	1019-016	2.14dBi
20			1019-017	2.14dBi
21			1019-018	2.14dBi
22			1019-019	2.14dBi
23	Map Electronics	Rubber Whip	MEIWX-2411SAXX-2400	2.0dBi
24			MEIWX-2411RSXX-2400	2.0dBi
25			MEIWX-282XSAXX-2400	2.0dBi
26			MEIWX-282XRSXX-2400	2.0dBi
27			MEIWF-HP01RS2X-2400	2.0dBi
28	Yageo	Chip	ANT3216A063R2400A	1.69dBi
29	Mag Layers Scientific	Chip	LTA-3216-2G4S3-A1	1dBi
30			LTA-3216-2G4S3-A3	2dBi

Note: the EUT used a 2.4GHz Chip antenna (Antenna 14 from Taiyo Yuden)

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Facility

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd.,Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No. :** TH05-HY ; DFS02-HY

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No. :** 05CH05-HY ; 03CH13-HY

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of **ETSI EN 300 328 V2.1.1 (2016-11).**

Note: All test items were verified and recorded according to the standards and without any deviation during the test.

1.7 Test Condition

Normal Voltage	DC 3.3V
Normal Temperature	25℃
Extreme Temperature	-20℃ and 70℃

Note: The test temperature was between -20˚C ~ 70˚C by manufacturer request.

2 Test Configuration of Equipment under Test

2.1 Descriptions of Test Mode

a. During testing, the interface cables and equipment positions were varied according to ETSI EN 300 328 V2.1.1 (2016-11).

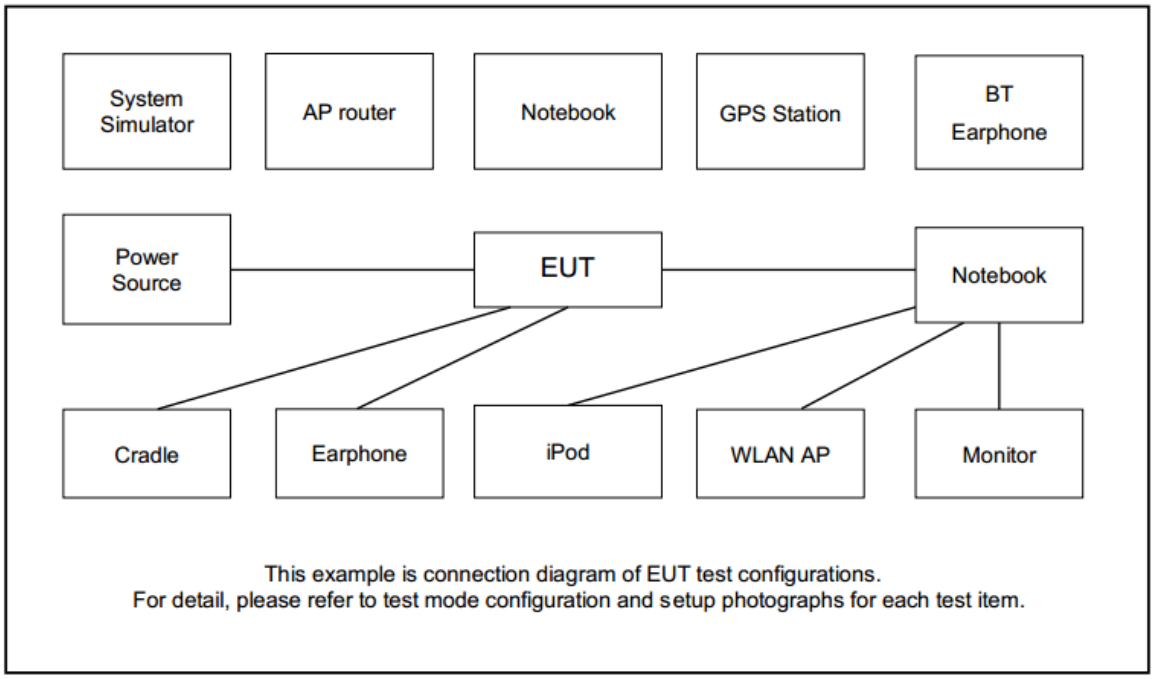
b. The complete test system included EUT for RF test.

c. Preliminary tests were checked in different data rate and recorded worse in the following tables:

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

Test Modes			
RF	802.11b DSSS	802.11g OFDM	802.11n HT20 OFDM
Tx	802.11b CH01 (2412MHz) 802.11b CH13 (2472MHz)	802.11g CH01 (2412MHz) 802.11g CH13 (2472MHz)	802.11n HT20 CH01 (2412MHz) 802.11n HT20 CH13 (2472MHz)
Rx	802.11b CH01 (2412MHz)	802.11g CH13 (2472MHz)	-

2.2 Connection Diagram of EUT Test Configurations



2.3 Supported Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Latitude E3340	FCC DoC/ Contains FCC ID: PD97260NGU	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	DELL	Inspiron 15	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.4 EUT Operation Test Setup

For WLAN function, the RF utility, “CC3100_CC3200 Radio Tool v1.2.5942.19689” was installed in notebook which was programmed in order to make the EUT into the engineering modes to contact with Bluetooth base station for continuous transmitting and receiving signals.

3 Transmitter Parameters

3.1 Maximum Transmit Power

3.1.1 Limit of Effective Isotropic Radiated Power

SUBCLAUSE 4.3.1.2.3 and 4.3.2.2.3	
TEST CONDITION	LIMIT
Normal and Extreme Temperature Conditions	20dBm (e.i.r.p)

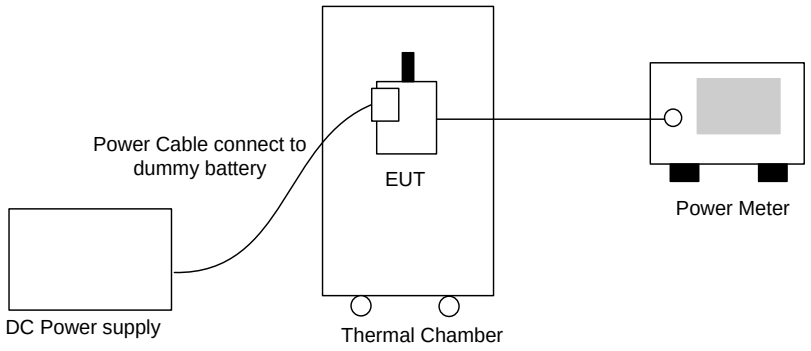
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.1.3 Test Procedure

1. The measurement procedure follows the clause 5.4.2.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. Placing the EUT in thermal chamber.
3. The EUT is connected to external power supply.
4. Setting thermal chamber temperature and power supply voltage at suitable values.
5. The EIRP = A+G+Y, where A is the power measured, G is the assembly gain of the individual antenna of the EUT in dBi and Y is the additional beamforming gain of the EUT in dB if applicable, here, Y=0.
6. The measurement duration is at least 1 second to ensure a minimum number of bursts (at least 10) are captured.

3.1.4 Test Setup



3.1.5 Test Results

Refer to Appendix A of this test report.

3.2 Maximum Equivalent Isotropically Radiated Power (E.I.R.P.) Spectral Density

3.2.1 Limit of Maximum Power Spectral Density

SUBCLAUSE 4.3.2.3.3	
TEST CONDITION	**LIMIT**
Normal and Extreme Temperature Conditions	10dBm / MHz

Remark: Maximum spectral power density is not applicable to FHSS system device.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.2.3 Test Procedure

1. The measurement procedure follows the clause 5.4.3.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. These measurements shall only be performed at normal test conditions.
3. The measurement shall be repeated for the equipment being configured to operate at the lowest, the middle, and the highest frequency of the stated frequency range.
4. The test procedure shall be as follows:

Step 1:

Connect the EUT to the spectrum analyzer and use the following settings:

Start Frequency	2400MHz
Stop Frequency	2483.5MHz
Resolution BW	10kHz
Video BW	30kHz
Sweep Points	8350
Detector	RMS
Trace Mode	Max Hold
Sweep time	10 sec

Step 2:

Add up the values for amplitude (power) for all the samples in the file.

Step 3:

Normalize the individual values for amplitude so that the sum is equal to the RF Output Power (e.i.r.p.) measured.

Step 4:

Starting from the first sample in the file (lowest frequency), add up the power of the following samples representing a 1 MHz segment and record the results for power and position (i.e. sample #1 to #100). This is the Power Spectral Density (e.i.r.p.) for the first 1 MHz segment which shall be recorded.

Step 5:

Shift the start point of the samples added up in step 4 by 1 sample and repeat the procedure in step 4 (i.e. sample #2 to #101).

Step 6:

Repeat step 5 until the end of the data set and record the radiated Power Spectral Density values for each of the 1 MHz segments.

From all the recorded results, the highest value is the maximum Power Spectral Density for the EUT. This value shall be recorded in the test report.

3.2.4 Test Setup

3.2.5 Test Results

Refer to Appendix A of this test report.

3.3 Occupied Channel Bandwidth

3.3.1 Limit of Occupied Channel Bandwidth

Occupied Channel Bandwidth fall completely within 2.4 GHz – 2.4835 GHz

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.3.3 Test Procedure

1. The measurement procedure follows the clause 5.4.7.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. The measurement shall be performed only on the lowest and the highest frequency within the stated frequency range.
3. The test procedure shall be as follows:

Step 1:

Connect the EUT to the spectrum analyzer and use the following settings:

Center Frequency	Channel under test
Resolution BW	1 % of the span
Video BW	3 × RBW
Frequency Span	2 × Nominal Channel Bandwidth
Detector	RMS
Trace Mode	Max Hold
Sweep Time	1 s

Step 2:

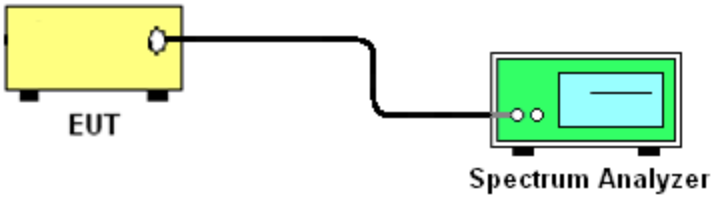
Wait until the trace is completed.

Find the peak value of the trace and place the analyzer marker on this peak.

Step 3:

Use the 99 % bandwidth function of the spectrum analyzer to measure the Occupied Channel Bandwidth of the EUT.

3.3.4 Test Setup



3.3.5 Test Results

Refer to Appendix A of this test report.

3.4 Transmitter unwanted emissions in the out-of-band domain

3.4.1 Transmitter unwanted emissions in the out-of-band domain limit

out-of-band domain limit

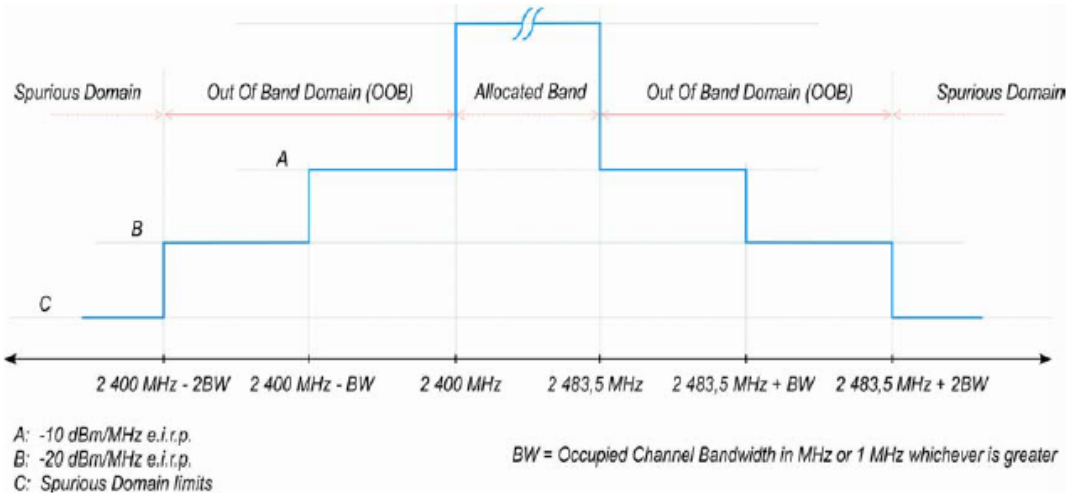


Figure 1: Transmit mask

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

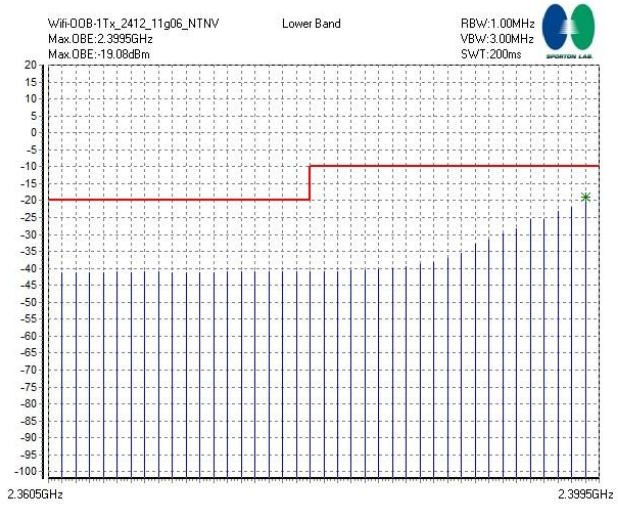
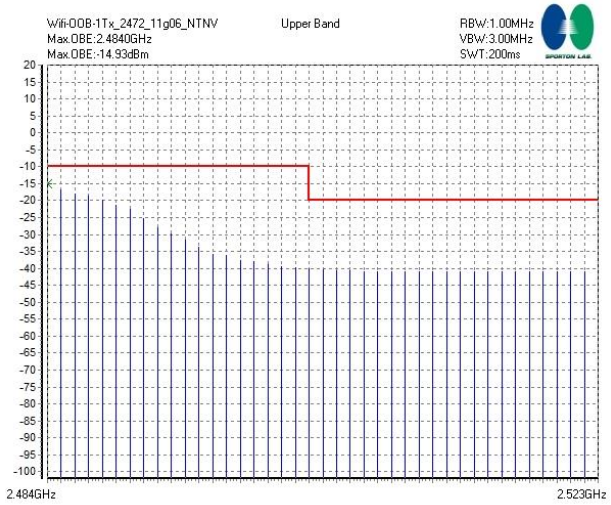
3.4.3 Test Procedures

1. The measurement procedure follows the clause 5.4.8.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. These measurements shall only be performed at normal test conditions.
3. For conducted measurements on devices with multiple transmit chains using the results for each of the transmit chains for the corresponding 1 MHz segments shall be added and compared with the transmit mask limit.

3.4.4 Test Setup

3.4.5 Test Results

Refer to Appendix A of this test report.

WLAN OOB worse case	
Low channel	High channel
	

3.5 Transmitter spurious emissions

3.5.1 Limit of Transmitter spurious emissions

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

SUBCLAUSE 4.3.1.10.3 and 4.3.2.9.3		
FREQUENCY RANGE	**MAXIMUM POWER**	**BANDWIDTH**
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

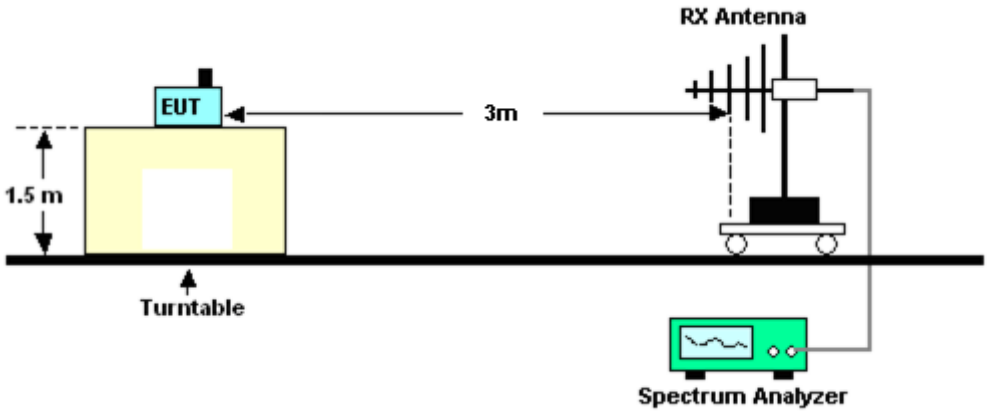
3.5.3 Test Procedures

1. The measurement procedure follows the clause 5.4.9.2.2 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. The EUT was placed on a turntable with 1.5m height.
3. The test distance between the receiving antenna and the EUT is 3meter below 1GHz frequency range, and 3 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna is kept at 1.5 meter height.
4. Set EUT in continuous transmitting with maximum output power.
5. The table was rotated from 0 to 360 degree to search the highest radiated emission.
6. Repeating step 3 and 4 for each polarization and channel to find the worst emission level.
7. The results obtained are compared to the limits in order to prove compliance with the requirement.

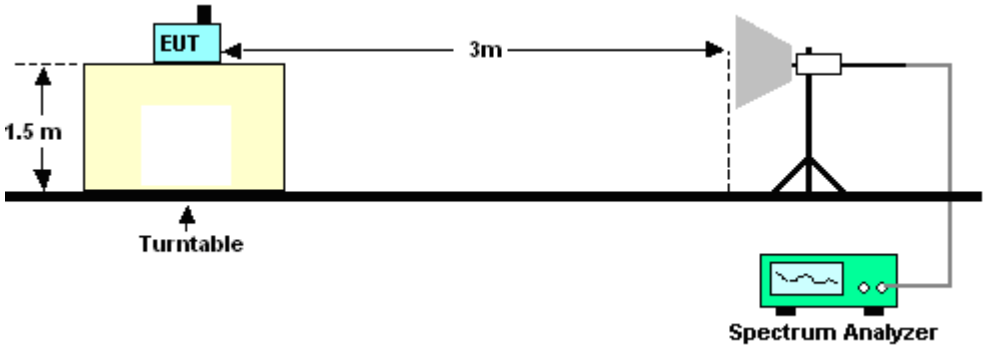
3.5.4 Test Setup

<Conducted Method>

<Below 1GHz>



<Above 1GHz>



3.5.5 Test Results of Conducted Spurious Emission

Refer to Appendix B of this test report.

3.5.6 Test Results of Cabinet Radiation

Refer to Appendix C of this test report.

4 Receiver Parameters

4.1 Receiver spurious emissions

4.1.1 Limit of Receiver spurious emissions

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

SUBCLAUSE 4.3.1.11.3 and 4.3.2.10.3		
FREQUENCY RANGE	MAXIMUM POWER	BANDWIDTH
30 MHz to 1 GHz	-57 dBm	100kHz
1 GHz to 12,75 GHz	-47 dBm	1MHz

4.1.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

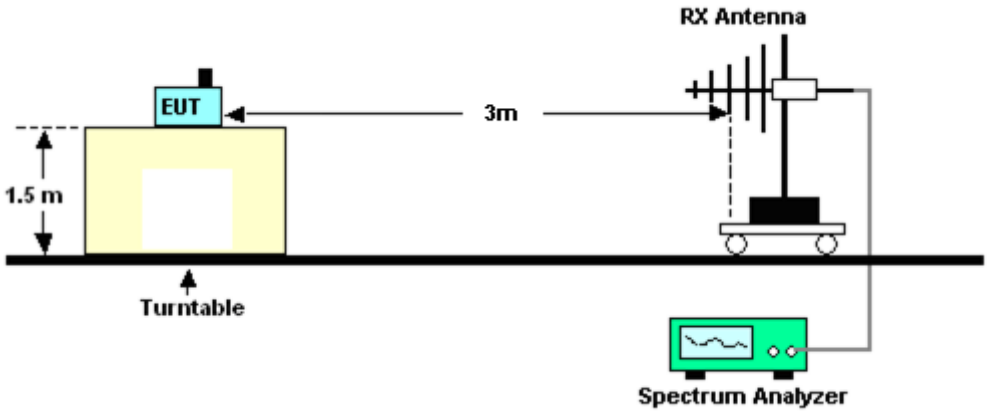
4.1.3 Test Procedures

1. The measurement procedure follows the clause 5.4.10.2.2 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. The EUT was placed on a turntable with 1.5m height.
3. The test distance between the receiving antenna and the EUT is 3meter below 1GHz frequency range, and 3 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna is kept at 1.5 meter height.
4. Set EUT in receiving mode.
5. The table was rotated from 0 to 360 degree to search the highest radiated emission.
6. Repeating step 3 and 4 for each polarization and channel to find the worst emission level.
7. The results obtained are compared to the limits in order to prove compliance with the requirement.

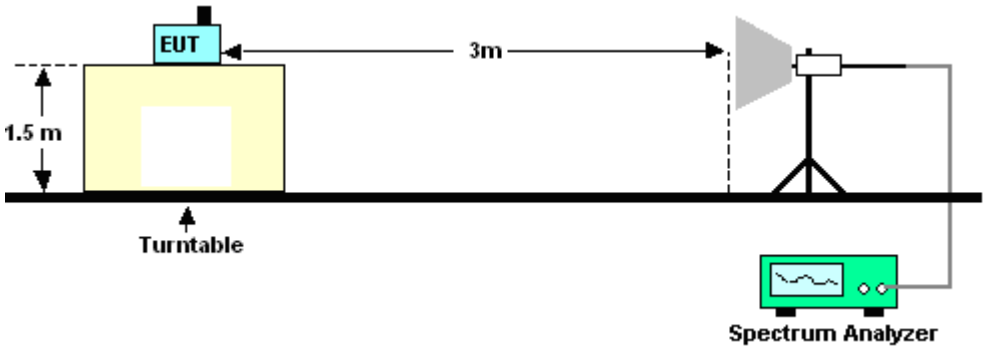
4.1.4 Test Setup

<Conducted Method>

<Below 1GHz>



<Above 1GHz>



4.1.5 Test Results of Conducted Spurious Emission

Refer to Appendix B of this test report.

4.1.6 Test Results of Cabinet Radiation

Refer to Appendix C of this test report.

4.2 Receiver Blocking Test

4.2.1 Limit of Receiver Blocking Test

Receiver category 1

1. Adaptive equipment with maximum RF output power > 10dBm e.i.r.p. (EX: WiFi)

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-53	CW
P_{min} + 6 dB	2 300 2 330 2 360	-47	CW
P_{min} + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-47	CW
NOTE 1: P_{min} is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver category 2

1. Non-adaptive equipment with MU 1% ~ 10%
2. Adaptive equipment with Maximum RF output power < 10dBm e.i.r.p. (EX: Bluetooth)

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-57	CW
P_{min} + 6 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver category 3

1. Non-adaptive equipment with MU < 1%
2. Adaptive equipment with Maximum RF output power < 0dBm e.i.r.p.

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 12 dB	2 380 2 503,5	-57	CW
P_{min} + 12 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

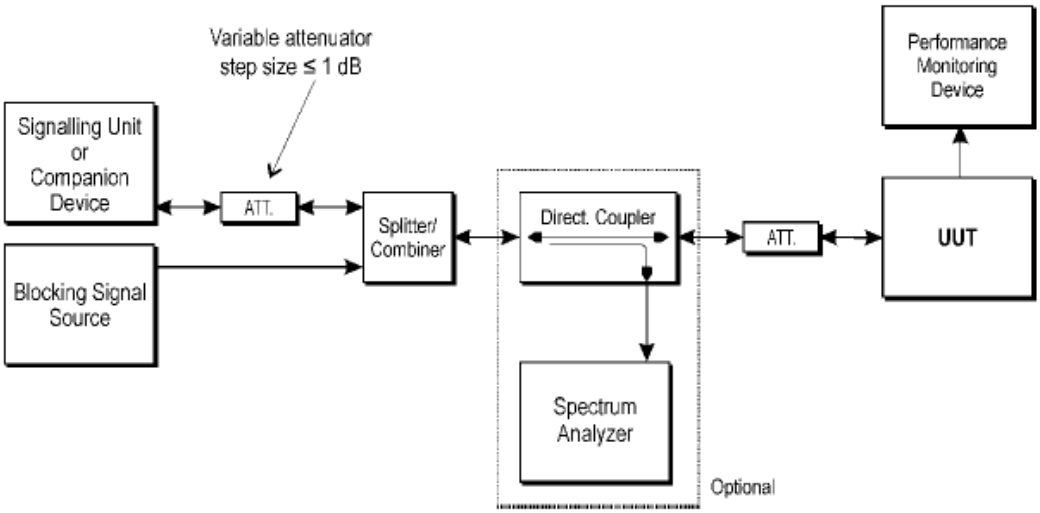
4.2.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

4.2.3 Test Procedures

1. The measurement procedure follows the clause 5.4.11.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. For systems using multiple receive chains only one chain (antenna port) need to be tested. All other receiver inputs shall be terminated.

4.2.4 Test Setup



Test Set-up for receiver blocking

4.2.5 Test Results of Receiver Blocking

Pmin = CMW500 burst power - path cable loss - attenuator.

WiFi 802.11b 1Mbps Channel 01			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-53	0
Pmin + 6dB	2503.5	-53	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2330	-47	0
Pmin + 6dB	2360	-47	0
Pmin + 6dB	2523.5	-47	0
Pmin + 6dB	2553.5	-47	0
Pmin + 6dB	2583.5	-47	0
Pmin + 6dB	2613.5	-47	0
Pmin + 6dB	2643.5	-47	0
Pmin + 6dB	2673.5	-47	0
PER = 6.6 % when Pmin= -94 dBm before blocker is injected.			

Note:

1. Antenna 1 gain is 2.14 dBi.
2. Blocking signal power level has offset antenna gain 2.14 dBi.

WiFi 802.11b 1Mbps Channel 13			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-53	0
Pmin + 6dB	2503.5	-53	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2330	-47	0
Pmin + 6dB	2360	-47	0
Pmin + 6dB	2523.5	-47	0
Pmin + 6dB	2553.5	-47	0
Pmin + 6dB	2583.5	-47	0
Pmin + 6dB	2613.5	-47	0
Pmin + 6dB	2643.5	-47	0
Pmin + 6dB	2673.5	-47	0
PER = 5 % when Pmin= -94 dBm before blocker is injected.			

Note:

1. Antenna 1 gain is 2.14 dBi.
2. Blocking signal power level has offset antenna gain 2.14 dBi.

WiFi 802.11g 6Mbps Channel 01			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-53	0
Pmin + 6dB	2503.5	-53	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2330	-47	0
Pmin + 6dB	2360	-47	0
Pmin + 6dB	2523.5	-47	0
Pmin + 6dB	2553.5	-47	0
Pmin + 6dB	2583.5	-47	0
Pmin + 6dB	2613.5	-47	0
Pmin + 6dB	2643.5	-47	0
Pmin + 6dB	2673.5	-47	0
PER = 8.7 % when Pmin= -90 dBm before blocker is injected.			

Note:

1. Antenna 1 gain is 2.14 dBi.
2. Blocking signal power level has offset antenna gain 2.14 dBi.

WiFi 802.11g 6Mbps Channel 13			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-53	0
Pmin + 6dB	2503.5	-53	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2330	-47	0
Pmin + 6dB	2360	-47	0
Pmin + 6dB	2523.5	-47	0
Pmin + 6dB	2553.5	-47	0
Pmin + 6dB	2583.5	-47	0
Pmin + 6dB	2613.5	-47	0
Pmin + 6dB	2643.5	-47	0
Pmin + 6dB	2673.5	-47	0
PER = 2.8 % when Pmin= -89 dBm before blocker is injected.			

Note:

1. Antenna 1 gain is 2.14 dBi.
2. Blocking signal power level has offset antenna gain 2.14 dBi.

5 Adaptivity Test

5.1 Adaptivity

5.1.1 Limit of Adaptivity

Only for adaptive systems and RF Output Power > 10 dBm

LBT based Detect and Avoid (Load Based Equipment with spectrum sharing mechanism IEEE Std.):

LBT based spectrum sharing mechanism may implement in IEEE Std. 802.11-2012 clauses 9, clause 10, clause 16, clause 17, clause 19 and clause 20, or in IEEE Std. IEEE 802.15.4-2011, clause 4, clause 5 and clause 8.

Short Control Signaling Transmissions shall have a maximum TxOn / (TxOn + TxOff) ratio of 10 % within an observation period of 50 ms.

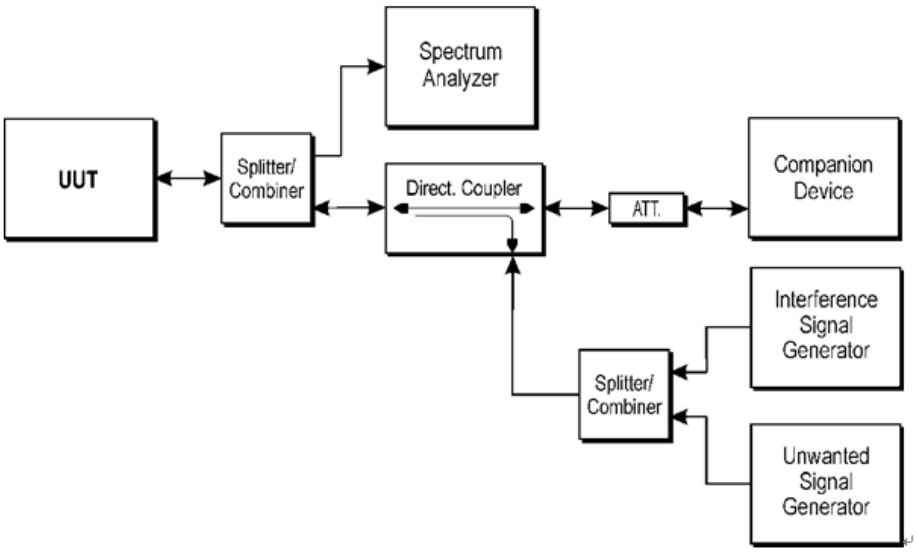
5.1.2 Measurement Instruments

The measuring equipment is listed in the section 8 of this test report.

5.1.3 Test Procedures

1. The measurement procedure follows the clause 5.4.6.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. For conducted measurements on devices with multiple transmit chains and receive chains. The power splitter/combiner shall be used to combine all the transmit/receive chains (antenna outputs) into a single test point. The insertion loss of the power splitter/combiner shall be taken into account.

5.1.4 Test Setup



5.1.5 Support Unit used in test configuration and system

Item	Instrument	Manufacturer	Model No.	Characteristics
1.	WLAN AP	D-LINK	DIR-855	Dual Band AP
2.	Notebook	Lenovo	E335	FTP / LAN

5.1.6 Test Results of Adaptivity Test

Equipment Information:		
☐	Non-Adaptive Equipment	
	The maximum RF output power (E.I.R.P.) dBm:	
	The maximum (Corresponding) Duty Cycle : %	
☒	Adaptive Equipment without the possibility to switch to a non-adaptive mode:	
	☒	The equipment has implemented an LBT based DAA mechanism:
		☐ The equipment is Frame Based equipment
		☒ The equipment is Load Based equipment
		☐ The equipment can switch dynamically between Frame Based and Load Based equipment
	☐	The equipment has implemented an non-LBT based DAA mechanism
	☐	The equipment can operate in more than one adaptive mode
	☐	Adaptive Frequency Hopping using other forms of DAA (non-LBT based)
☐	Adaptive Equipment which can also operate in non-adaptive mode	

	Modulation	Nominal Bandwidth	Channel	Test Frequency	Test Result
WIFI 2.4GHz	802.11b	20MHz	01	2412 MHz	PASS
			13	2472 MHz	PASS
	802.11g	20MHz	01	2412 MHz	PASS
			13	2472 MHz	PASS
	802.11n HT20	20MHz	01	2412 MHz	PASS
			13	2472 MHz	PASS

Note: The CCA time is declared by the manufacturer.

5.1.7 Test Plots of Adaptivity Test

802.11b 2412MHz
Maximum Channel Occupancy Time = 2.191ms
Minimum Idle Period = 429.7 μs

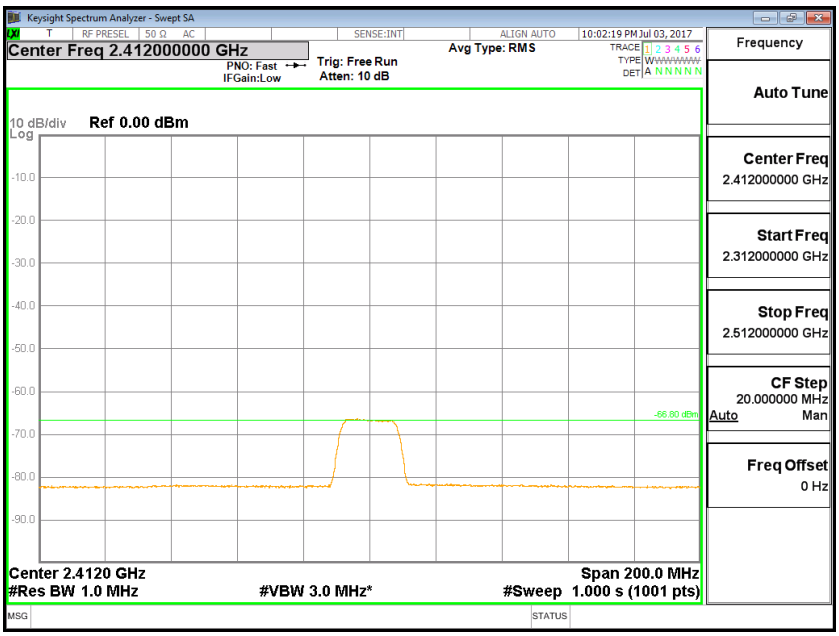
802.11b 2472MHz

Maximum Channel Occupancy Time = 2.192ms

Minimum Idle Period = 429.7 μs

802.11b 2412MHz
AWGN (Interference)

Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



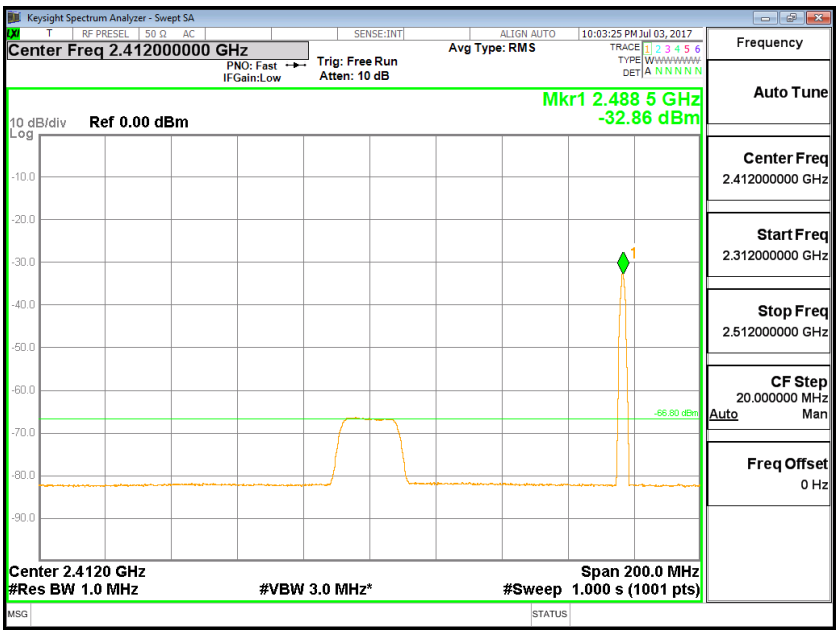
Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

802.11b 2412MHz

AWGN (Interference) + CW (Unwanted Signal)

Detection Level = -66.80dBm/MHz

Interference dwell time = 60 seconds

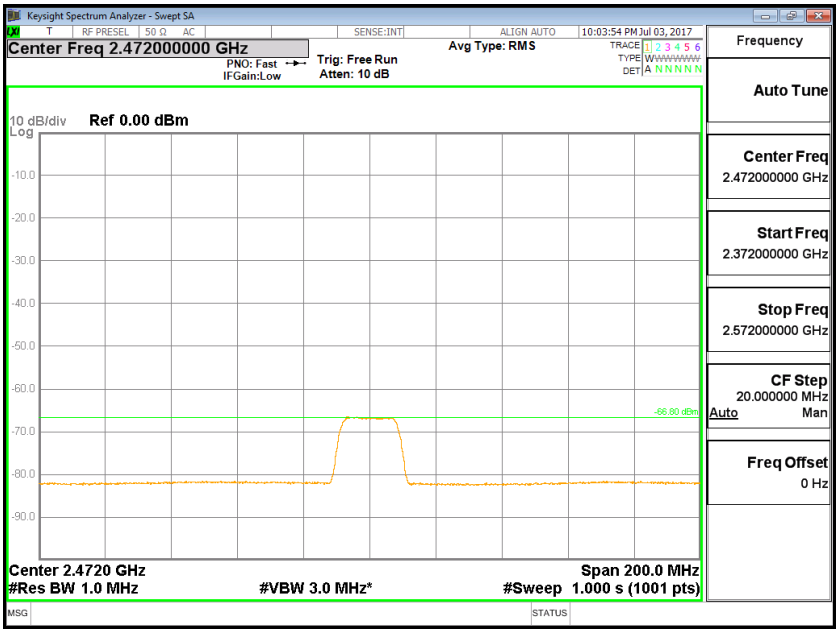


Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

Note: Detection Level = -70 dBm/MHz + 10 × $\log_{10}$ (100 mW / Pout) + Gain for conducted measurement. (Pout in mW e.i.r.p.)

802.11b 2472MHz
AWGN (Interference)

Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



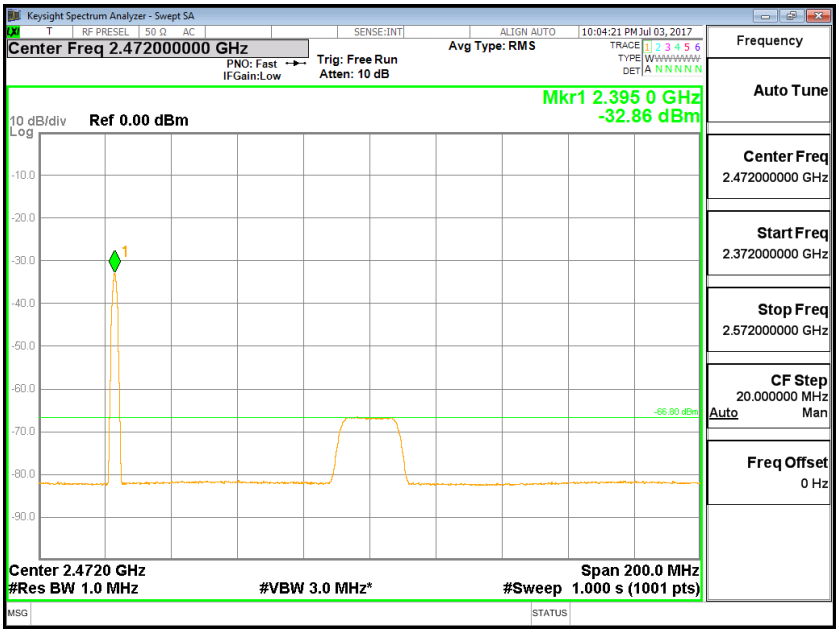
Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

802.11b 2472MHz

AWGN (Interference) + CW (Unwanted Signal)

Detection Level = -66.80dBm/MHz

Interference dwell time = 60 seconds



Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

Note: Detection Level = -70 dBm/MHz + 10 × $\log_{10}$ (100 mW / Pout) + Gain for conducted measurement. (Pout in mW e.i.r.p.)

802.11g 2412MHz

Maximum Channel Occupancy Time = 359.3 μs

Minimum Idle Period = 181.5 μs

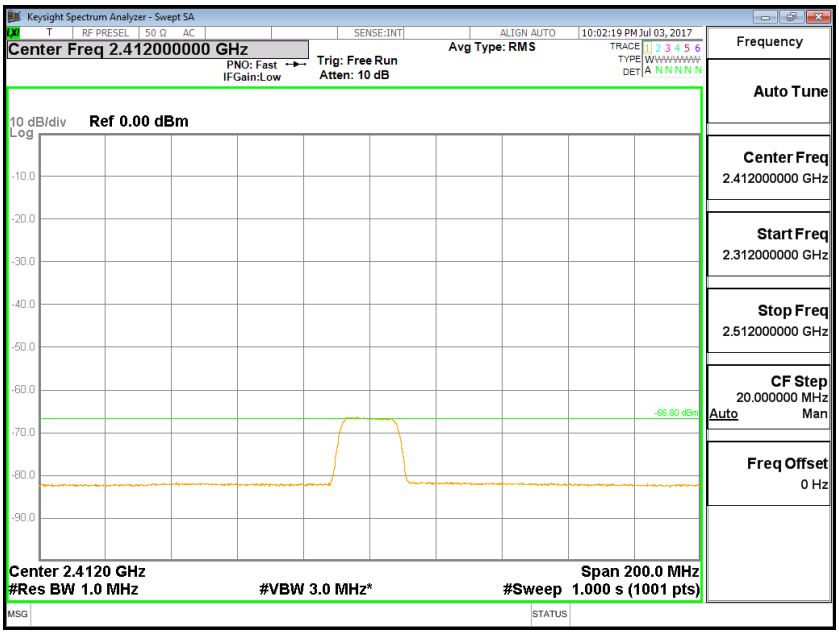
802.11g 2472MHz

Maximum Channel Occupancy Time = 359.5 μs

Minimum Idle Period = 181.7 μs

802.11g 2412MHz
AWGN (Interference)

Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



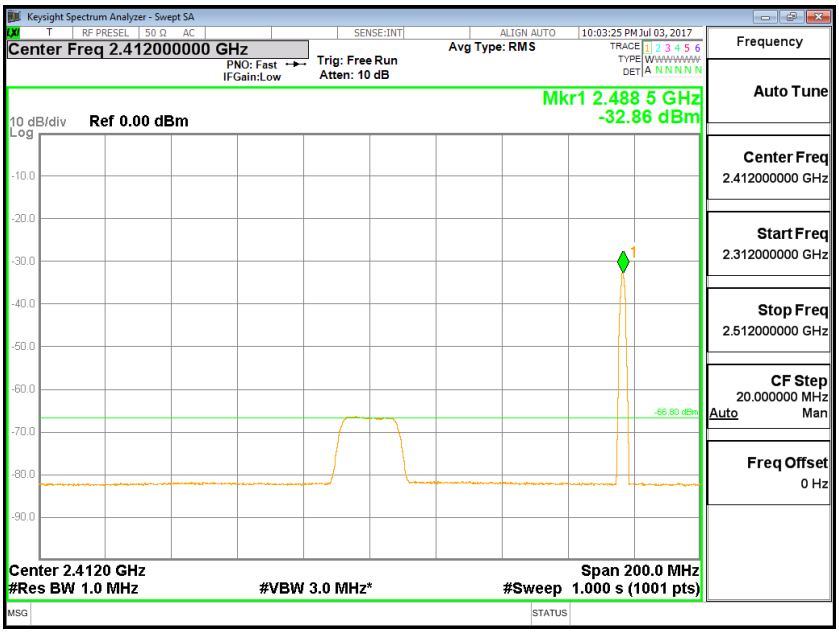
Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

802.11g 2412MHz

AWGN (Interference) + CW (Unwanted Signal)

Detection Level = -66.80dBm/MHz

Interference dwell time = 60 seconds

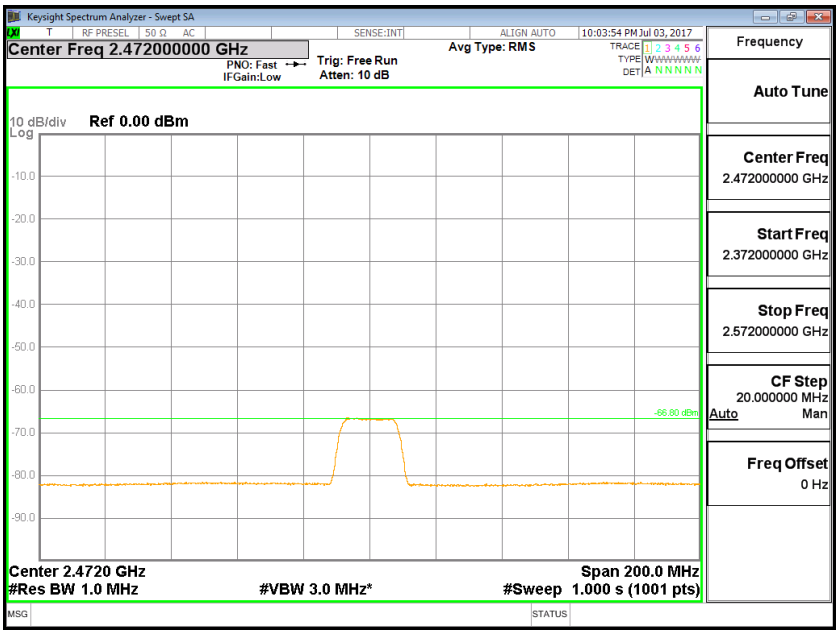


Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

Note: Detection Level = -70 dBm/MHz + 10 × $\log_{10}$ (100 mW / Pout) + Gain for conducted measurement. (Pout in mW e.i.r.p.)

802.11g 2472MHz
AWGN (Interference)

Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



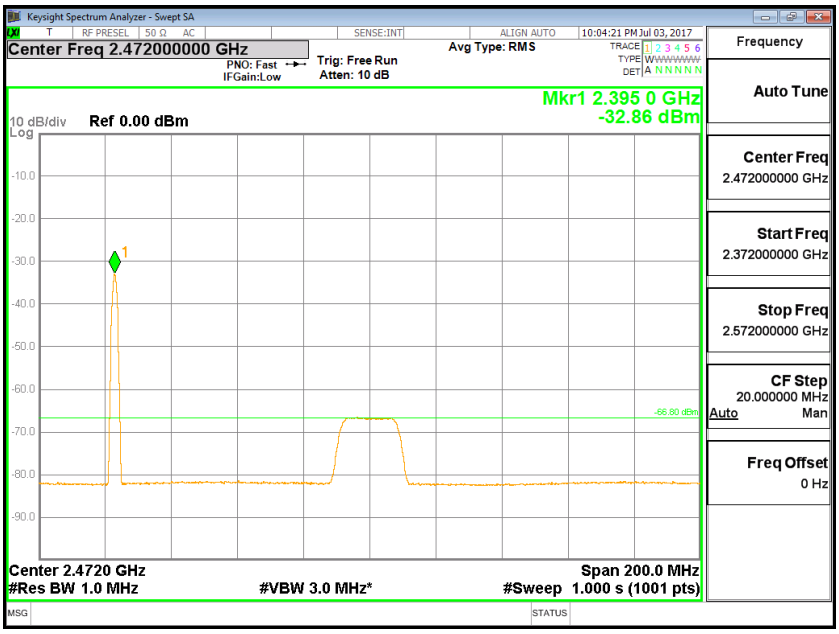
Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

802.11g 2472MHz

AWGN (Interference) + CW (Unwanted Signal)

Detection Level = -66.80dBm/MHz

Interference dwell time = 60 seconds



Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

Note: Detection Level = -70 dBm/MHz + 10 × $\log_{10}$ (100 mW / Pout) + Gain for conducted measurement. (Pout in mW e.i.r.p.)

802.11n HT20 2412MHz

Maximum Channel Occupancy Time = 347.7 μs

Minimum Idle Period = 147.8 μs

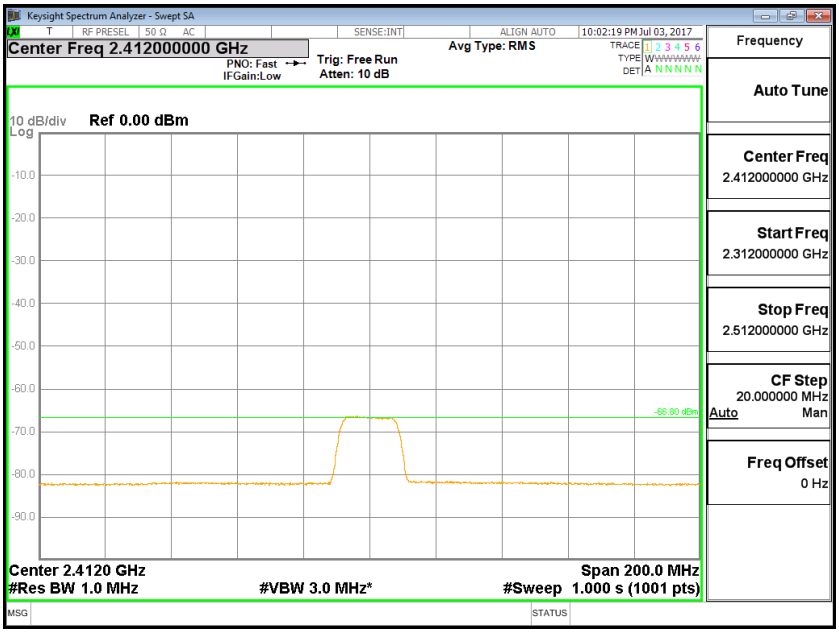
802.11n HT20 2472MHz

Maximum Channel Occupancy Time = 347.1 μs

Minimum Idle Period = 205.6 μs

802.11n HT20 2412MHz
AWGN (Interference)

Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



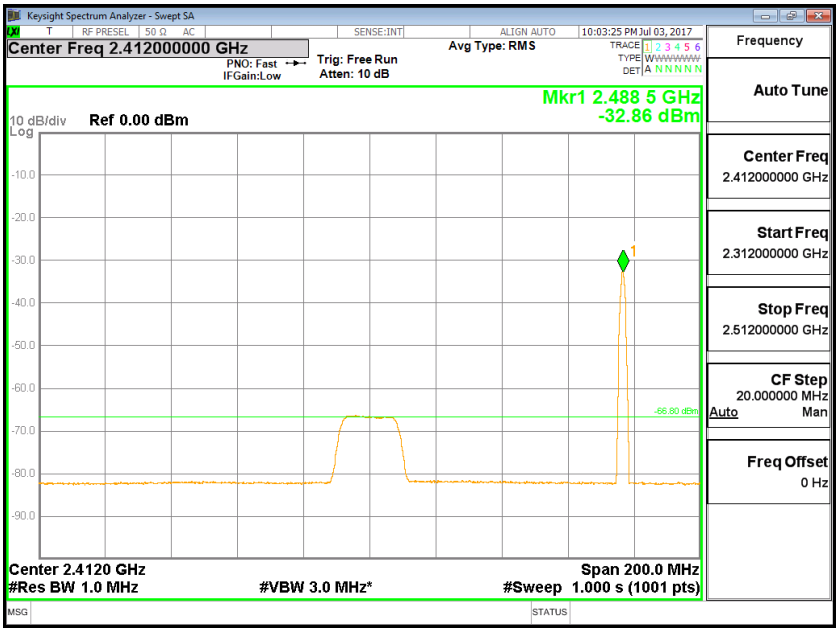
Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

802.11n HT20 2412MHz

AWGN (Interference) + CW (Unwanted Signal)

Detection Level = -66.80dBm/MHz

Interference dwell time = 60 seconds

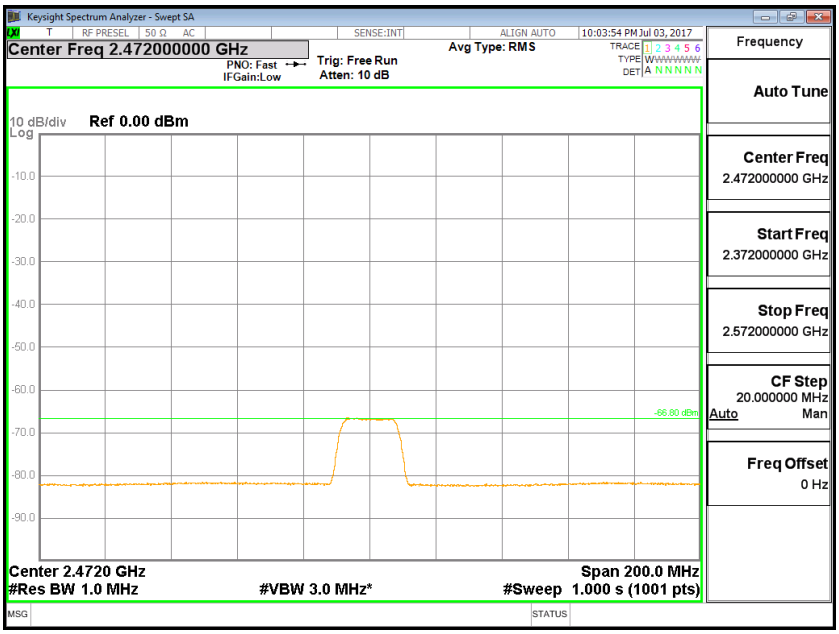


Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

Note: Detection Level = -70 dBm/MHz + 10 × $\log_{10}$ (100 mW / Pout) + Gain for conducted measurement. (Pout in mW e.i.r.p.)

802.11n HT20 2472MHz
AWGN (Interference)

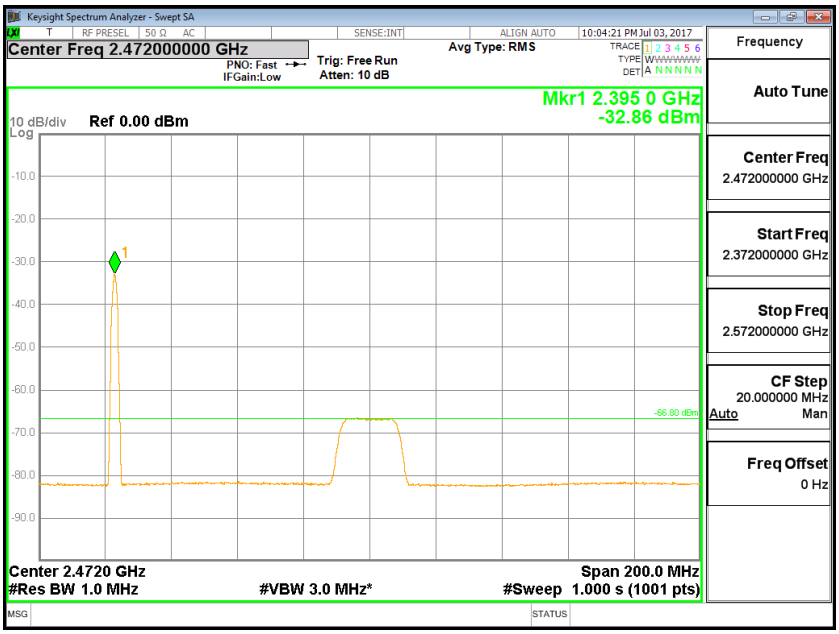
Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

802.11n HT20 2472MHz
AWGN (Interference) + CW (Unwanted Signal)

Detection Level = -66.80dBm/MHz
Interference dwell time = 60 seconds



Transmission abort within Maximum Channel Occupancy Time after interference added and the short control signaling is less than 10% duty cycle

Note: Detection Level = -70 dBm/MHz + 10 × $\log_{10}$ (100 mW / Pout) + Gain for conducted measurement. (Pout in mW e.i.r.p.)

6 Geo-location Capability

6.1 Geo-location

6.1.1 Definition and Requirement

Geo-location capability is a feature of the equipment to determine its geographical location with the purpose to configure itself according to the regulatory requirements applicable at the geographical location where it operates.

The geo-location capability may be present in the equipment or in an external device (temporary) associated with the equipment operating at the same geographical location during the initial power up of the equipment. The geographical location may also be available in equipment already installed and operating at the same geographical location.

The geographical location determined by the equipment shall not be accessible to the user.

6.1.2 Description

This device does not support this capability declared by the manufacturer.

7 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Sensor	DARE	RPR3006W	13I00030SNO31	10MHz~6GHz	Sep. 21, 2016	May 10, 2017 ~ Jul. 04, 2017	Sep. 22, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	May 10, 2017 ~ Jul. 04, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 01, 2016	May 10, 2017 ~ Jul. 04, 2017	Aug. 31, 2017	Conducted (TH05-HY)
Bilog Antenna	Teseq GmbH	CBL6112D	35379	30MHz~2GHz	Oct. 15, 2016	Jun. 03, 2017	Oct. 14, 2017	Radiation (05CH05-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Jul. 14, 2016	Jun. 03, 2017	Jul. 13, 2017	Radiation (05CH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	101749	10Hz~30GHz	Jan. 04, 2017	Jun. 03, 2017	Jan. 03, 2018	Radiation (05CH05-HY)
Preamplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Dec. 27, 2016	Jun. 03, 2017	Dec. 26, 2017	Radiation (05CH05-HY)
Amplifier	EMCI	EMC001830	980191	10MHz~8GHz	Jan. 17, 2017	Jun. 03, 2017	Jan. 16, 2018	Radiation (05CH05-HY)
Antenna Mast	ChainTek	MD-200	1308055	1m~4m	N/A	Jun. 03, 2017	N/A	Radiation (05CH05-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degre	N/A	Jun. 03, 2017	N/A	Radiation (05CH05-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 23, 2017	May 21, 2017	Mar. 22, 2018	Radiation (05CH05-HY)
Spectrum Analyzer	Agilent	E4445A	MY41000161	3Hz~13.2GHz	Nov. 28, 2016	May 17, 2017 ~ Jul. 07, 2017	Nov. 27, 2017	Rx Blocking (DFS02-HY)
Base Station	Rohde & Schwarz	CMW500	132247	GSM/GPRS/WCDMA/FD-LTE/TD-LTE/MIMO	Dec. 14, 2016	May 17, 2017 ~ Jul. 07, 2017	Dec. 13, 2017	Rx Blocking (DFS02-HY)
Signal Generator	Agilent	E8247C	MY43321356	CW Signal Generator	Sep. 30, 2016	May 17, 2017 ~ Jul. 07, 2017	Sep. 29, 2017	Rx Blocking (DFS02-HY)
Divider	MTJ	2.8GHz 3Ways SMA	STI08-0010(#1)	0.5GHz to 6GHz	Dec. 06, 2016	May 17, 2017 ~ Jul. 07, 2017	Dec. 05, 2017	Rx Blocking (DFS02-HY)
Signal Generator (Interferer)	Rohde & Schwarz	SMU200A	103008	9KHz~3GHz	Aug. 02, 2016	May 16, 2017 ~ Jul. 03, 2017	Aug. 01, 2017	Adaptivity (DFS02-HY)
Signal Generator (Interferer)	Rohde & Schwarz	SMJ100A	101375	100kHz~6GHz	Jan. 25, 2017	May 16, 2017 ~ Jul. 03, 2017	Jan. 24, 2018	Adaptivity (DFS02-HY)
Spectrum Analyzer	Keysight	N9010A	MY56070412	10Hz~7GHz	Aug. 05, 2016	May 16, 2017 ~ Jul. 03, 2017	Aug. 04, 2017	Adaptivity (DFS02-HY)

Note: Test equipment calibration is traceable to the procedure of ISO17025.

8 Uncertainty Evaluation

Test Item	Uncertainty
Occupied Channel Bandwidth	± 0.49 %
RF output power, conducted	±0.61 dB
Power density, conducted	±0.60 dB
Radiated emissions	±2.96dB
Conducted Spurious Emission (30MHz~1000MHz)	±4.90dB
Conducted Spurious Emission (1000MHz~18000MHz)	±5.40dB
Temperature	±0.8 °C
Humidity	±3 %
Time	±0.33 %

Report Number : ER741317

Test Engineer:	Derek Hsu	Temperature:	24	°C
Test Date:	2017/5/10~2017/07/04	Relative Humidity:	54~55	%

Report Number : ER741317

TEST RESULTS DATA
EIRP Power

Conducted Power (dBm)								
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Temperature Nomal	Extreme Temperature Low	Extreme Temperature High	Gain (dBi)
					25 °C	-20 °C	70 °C	
11b	1Mbps	1	1	2412	14.30	14.20	13.20	2.14
11b	1Mbps	1	7	2442	15.80	16.00	15.00	2.14
11b	1Mbps	1	13	2472	14.30	14.20	13.20	2.14
11g	6Mbps	1	1	2412	13.50	13.90	12.20	2.14
11g	6Mbps	1	7	2442	16.30	16.80	15.20	2.14
11g	6Mbps	1	13	2472	15.10	15.60	13.90	2.14
HT20	MCS0	1	1	2412	12.80	13.20	11.50	2.14
HT20	MCS0	1	7	2442	16.30	16.50	15.00	2.14
HT20	MCS0	1	13	2472	14.90	15.20	13.70	2.14

EIRP Power (dBm)									
Mod.	Data Rate	NTX	Channe	Freq. (MHz)	Temperature Nomal	Temperature Low	Temperature High	Limit (dBm)	Pass/Fail
11b	1Mbps	1	1	2412	16.44	16.34	15.34	20	Pass
11b	1Mbps	1	7	2442	17.94	18.14	17.14	20	Pass
11b	1Mbps	1	13	2472	16.44	16.34	15.34	20	Pass
11g	6Mbps	1	1	2412	15.64	16.04	14.34	20	Pass
11g	6Mbps	1	7	2442	18.44	18.94	17.34	20	Pass
11g	6Mbps	1	13	2472	17.24	17.74	16.04	20	Pass
HT20	MCS0	1	1	2412	14.94	15.34	13.64	20	Pass
HT20	MCS0	1	7	2442	18.44	18.64	17.14	20	Pass
HT20	MCS0	1	13	2472	17.04	17.34	15.84	20	Pass

Report Number : ER741317

TEST RESULTS DATA
EIRP Power Density

Power Density							
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	EIRP Power Density (dBm/MHz)	EIRP Limit (dBm /MHz)	Pass/Fail
11b	1Mbps	1	1	2412	8.03	10	Pass
11b	1Mbps	1	7	2442	9.53	10	Pass
11b	1Mbps	1	13	2472	8.03	10	Pass
11g	6Mbps	1	1	2412	4.99	10	Pass
11g	6Mbps	1	7	2442	7.99	10	Pass
11g	6Mbps	1	13	2472	6.67	10	Pass
HT20	MCS0	1	1	2412	4.18	10	Pass
HT20	MCS0	1	7	2442	7.81	10	Pass
HT20	MCS0	1	13	2472	6.24	10	Pass

Report Number : ER741317

TEST RESULTS DATA
99% Occupied Bandwidth

Occupied Bandwidth									
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	99% Occupied BW (MHz)	Freq. Low (MHz)	Freq. High (MHz)	Limit (Within operating Band)	Pass/Fail
11b	1Mbps	1	1	2412	14.20	2404.92	2419.12		Pass
11b	1Mbps	1	13	2472	14.28	2464.92	2479.20		Pass
11g	6Mbps	1	1	2412	16.84	2403.60	2420.44		Pass
11g	6Mbps	1	13	2472	16.92	2463.56	2480.48		Pass
HT20	MCS0	1	1	2412	17.92	2403.04	2420.96		Pass
HT20	MCS0	1	13	2472	17.96	2463.04	2481.00		Pass

Report Number : ER741317

TEST RESULTS DATA
OOB Emission Level

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	OOB Emission Worst Level (dBm/MHz)	Limit (dBm /MHz)	Pass/Fail
11b	1Mbps	1	1	2412	-33.36	-10,-20	Pass
11b	1Mbps	1	13	2472	-33.48	-10,-20	Pass
11g	6Mbps	1	1	2412	-19.08	-10,-20	Pass
11g	6Mbps	1	13	2472	-14.93	-10,-20	Pass
HT20	MCS0	1	1	2412	-20.32	-10,-20	Pass
HT20	MCS0	1	13	2472	-16.58	-10,-20	Pass

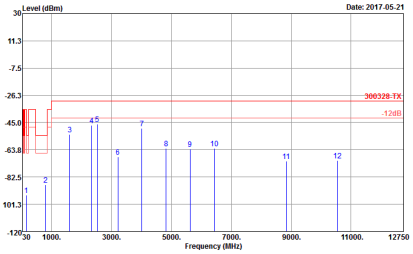
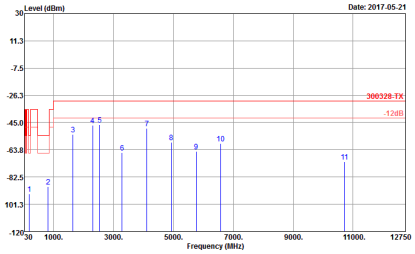
Appendix B. Conducted Spurious Emission Plots

WLAN TX Conducted Spurious Emission Plots

Test Engineer :	Karl Hou	Temperature :	21~22℃
		Relative Humidity :	45~46%

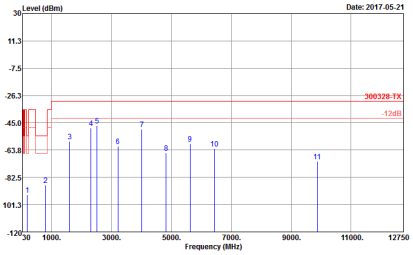
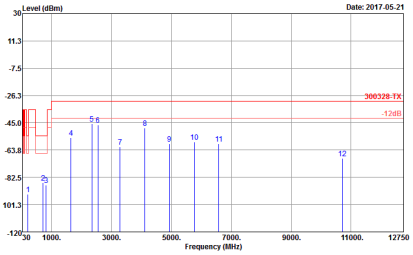
2.4GHz 2400~2483.5MHz

WIFI 802.11b

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b	
1	CH01 2412MHz	CH13 2472MHz
TX	 Site : 03CH13-HY Condition : 300328-TX Project : 741317 Mode : 1 1 170.94 -94.92 -58.92 -36.00 -95.85 0.53 0.40 0.00 2 804.70 -88.00 -34.00 -54.00 -89.82 1.14 0.68 0.00 3 1608.00 -52.97 -22.97 -30.00 -55.42 1.68 0.77 0.00 4 2338.00 -46.99 -16.99 -30.00 -49.97 2.06 0.92 0.00 5 2528.00 -46.09 -16.09 -30.00 -49.21 2.15 0.97 0.00 6 3219.00 -68.54 -38.54 -30.00 -73.28 2.45 2.29 0.00 7 4017.00 -48.87 -18.87 -30.00 -53.56 2.77 1.92 0.00 8 4824.00 -62.96 -32.96 -30.00 -67.91 3.10 1.85 0.00 9 5628.00 -63.13 -33.13 -30.00 -68.46 3.43 1.90 0.00 10 6432.00 -62.55 -32.55 -30.00 -66.37 3.70 2.12 0.00 11 8844.00 -71.62 -41.62 -30.00 -78.90 4.55 2.73 0.00 12 10541.25 -71.17 -41.17 -30.00 -79.06 5.12 2.77 0.00	 Site : 03CH13-HY Condition : 300328-TX Project : 741317 Mode : 2 1 199.83 -93.90 -39.90 -54.00 -94.87 0.56 0.41 0.00 2 824.50 -89.12 -35.12 -54.00 -90.96 1.16 0.68 0.00 3 1648.00 -53.03 -23.03 -30.00 -55.53 1.70 0.80 0.00 4 2312.00 -46.69 -16.69 -30.00 -49.66 2.06 0.91 0.00 5 2546.00 -46.51 -16.51 -30.00 -49.63 2.15 0.97 0.00 6 3294.00 -65.68 -35.68 -30.00 -70.39 2.49 2.22 0.00 7 4119.00 -48.80 -18.80 -30.00 -53.55 2.83 1.92 0.00 8 4944.00 -58.76 -28.76 -30.00 -63.73 3.14 1.83 0.00 9 5766.00 -64.88 -34.88 -30.00 -70.26 3.46 1.92 0.00 10 6591.00 -59.39 -29.39 -30.00 -65.39 3.76 2.24 0.00 11 10710.00 -71.96 -41.96 -30.00 -79.93 5.17 2.80 0.00

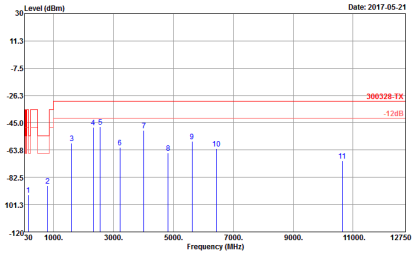
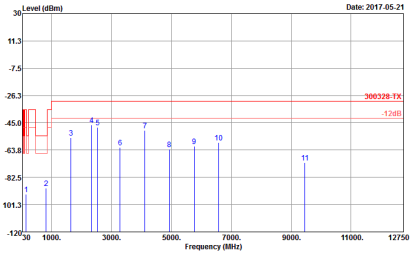
2.4GHz 2400~2483.5MHz

WIFI 802.11g

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g	
1	CH01 2412MHz	CH13 2472MHz
TX.	 Site : 03CH13-HY Condition : 300328-TX Project : 741317 Mode : 3 1 199.83 -94.59 -40.59 -54.00 -95.56 0.56 0.41 0.00 2 801.90 -87.89 -33.89 -54.00 -89.71 1.14 0.68 0.00 3 1608.00 -57.76 -27.76 -30.00 -60.21 1.68 0.77 0.00 4 2318.00 -48.54 -18.54 -30.00 -51.51 2.06 0.91 0.00 5 2526.00 -46.99 -16.99 -30.00 -50.11 2.15 0.97 0.00 6 3216.00 -61.17 -31.17 -30.00 -65.02 2.45 2.30 0.00 7 4017.00 -49.39 -19.39 -30.00 -54.08 2.77 1.92 0.00 8 4824.00 -65.55 -35.55 -30.00 -70.50 3.10 1.85 0.00 9 5628.00 -59.32 -29.32 -30.00 -64.65 3.43 1.90 0.00 10 6432.00 -62.66 -32.66 -30.00 -68.48 3.70 2.12 0.00 11 9877.50 -71.33 -41.33 -30.00 -78.95 4.92 2.70 0.00	 Site : 03CH13-HY Condition : 300328-TX Project : 741317 Mode : 4 1 221.70 -93.99 -39.99 -54.00 -95.01 0.61 0.41 0.00 2 719.50 -86.30 -32.30 -54.00 -87.96 1.08 0.58 0.00 3 822.90 -87.74 -33.74 -54.00 -89.58 1.16 0.68 0.00 4 1648.00 -55.25 -25.25 -30.00 -57.75 1.70 0.80 0.00 5 2348.00 -45.59 -15.59 -30.00 -48.59 2.07 0.93 0.00 6 2550.00 -46.46 -16.46 -30.00 -49.58 2.15 0.97 0.00 7 3294.00 -61.50 -31.50 -30.00 -66.21 2.49 2.22 0.00 8 4116.00 -48.45 -18.45 -30.00 -53.19 2.82 1.92 0.00 9 4944.00 -59.49 -29.49 -30.00 -64.46 3.14 1.83 0.00 10 5766.00 -58.27 -28.27 -30.00 -63.65 3.46 1.92 0.00 11 6591.00 -59.36 -29.36 -30.00 -65.36 3.76 2.24 0.00 12 10913.75 -69.58 -39.58 -30.00 -77.55 5.17 2.80 0.00	

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20

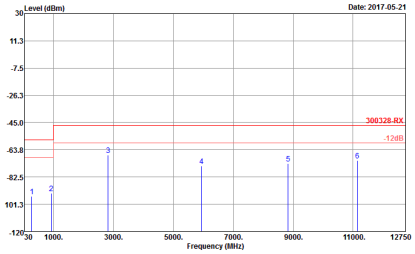
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20	
1	CH01 2412MHz	CH13 2472MHz
TX	 Site : 03CH13-HY Condition : 300328-TX Project : 741317 Mode : 5 1 163.65 -94.47 -58.47 -36.00 -95.34 0.49 0.38 0.00 2 801.90 -88.28 -34.28 -54.00 -90.10 1.14 0.68 0.00 3 1608.00 -59.03 -29.03 -30.00 -61.48 1.68 0.77 0.00 4 2330.00 -48.09 -18.09 -30.00 -51.07 2.06 0.92 0.00 5 2564.00 -47.71 -17.71 -30.00 -50.84 2.16 0.97 0.00 6 3216.00 -61.72 -31.72 -30.00 -66.47 2.45 2.30 0.00 7 4020.00 -50.34 -20.34 -30.00 -55.03 2.77 1.92 0.00 8 4824.00 -65.87 -35.87 -30.00 -70.82 3.10 1.85 0.00 9 5625.00 -57.65 -27.65 -30.00 -62.98 3.43 1.90 0.00 10 6432.00 -62.62 -32.62 -30.00 -68.44 3.70 2.12 0.00 11 10638.75 -71.17 -41.17 -30.00 -79.11 5.15 2.79 0.00	 Site : 03CH13-HY Condition : 300328-TX Project : 741317 Mode : 6 1 152.58 -93.92 -57.92 -36.00 -94.74 0.49 0.33 0.00 2 820.80 -90.00 -36.00 -54.00 -91.84 1.16 0.68 0.00 3 1648.00 -55.28 -25.28 -30.00 -57.78 1.70 0.80 0.00 4 2340.00 -46.65 -16.65 -30.00 -49.65 2.07 0.93 0.00 5 2544.00 -48.33 -18.33 -30.00 -51.45 2.15 0.97 0.00 6 3294.00 -61.91 -31.91 -30.00 -66.62 2.49 2.22 0.00 7 4116.00 -50.04 -20.04 -30.00 -54.78 2.82 1.92 0.00 8 4941.00 -63.17 -33.17 -30.00 -68.14 3.14 1.83 0.00 9 5769.00 -60.91 -30.91 -30.00 -66.29 3.46 1.92 0.00 10 6591.00 -58.71 -28.71 -30.00 -64.71 3.76 2.24 0.00 11 9453.75 -72.18 -42.18 -30.00 -79.65 4.79 2.68 0.00

WLAN RX Conducted Spurious Emission Plots

Test Engineer :	Karl Hou	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

WIFI 802.11g

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g	
1	CH13 2472MHz	-
TX.	 Site : 03CH13-HY Condition : 300328-RX Project : 741317 Mode : 7 Freq Level Over Limit Limit Line Read Level Cable Loss Aux Factor Aux2 Factor MHz dBm dB dBm dBm dB dB dB 1 272.73 -95.80 -38.80 -57.00 -96.88 0.67 0.41 0.00 2 930.00 -93.81 -36.81 -57.00 -95.83 1.24 0.78 0.00 3 2828.00 -67.26 -20.26 -47.00 -70.52 2.27 0.99 0.00 4 5943.00 -74.81 -27.81 -47.00 -80.33 3.52 2.00 0.00 5 8832.00 -73.10 -26.10 -47.00 -80.38 4.55 2.73 0.00 6 11148.75 -71.01 -24.01 -47.00 -79.15 5.31 2.83 0.00	Left blank

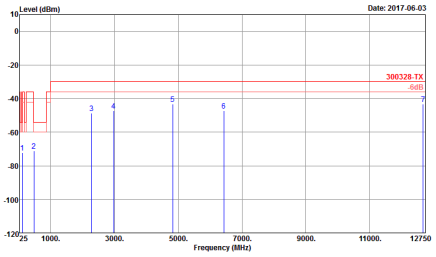
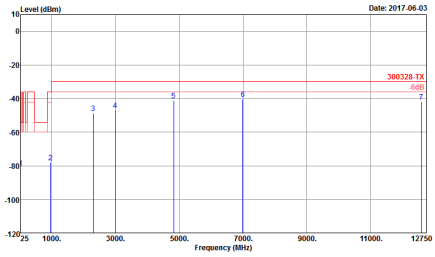
Appendix C. Cabinet Radiation Plots

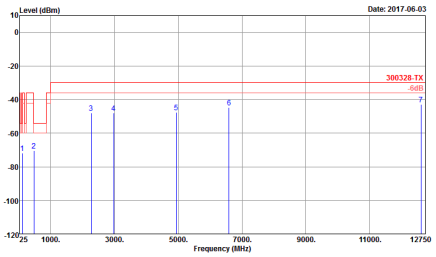
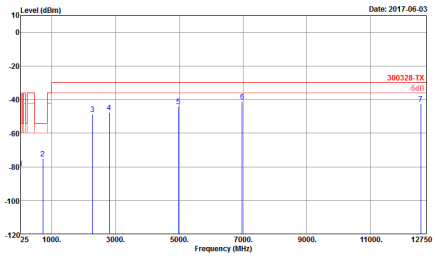
WLAN TX Radiated Spurious Emission Plots

Test Engineer :	Karl Hou	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

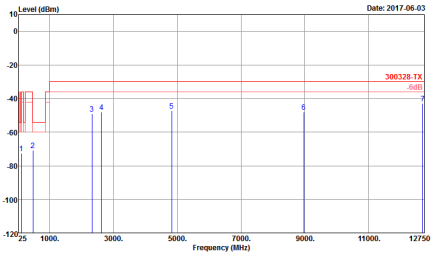
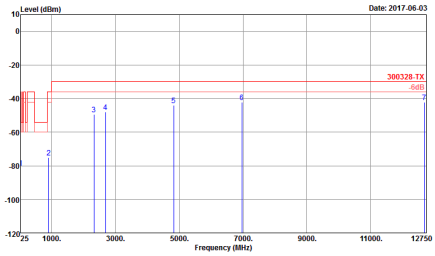
WIFI 802.11b

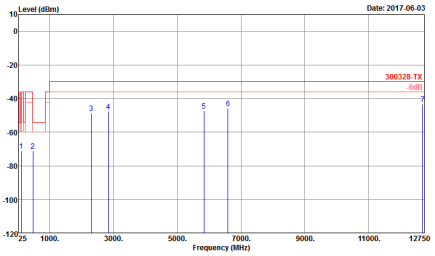
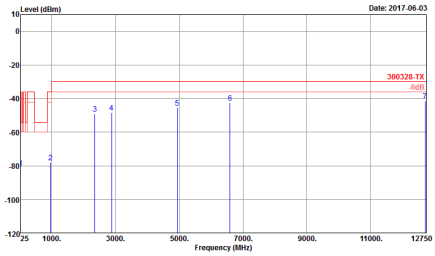
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
TX	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741317 Mode : 1 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 119.88 -72.14 -36.14 -36.00 -56.25 -15.89 HORIZONTAL 2 479.90 -70.94 -16.94 -54.00 -60.47 -10.47 HORIZONTAL 3 2280.00 -48.64 -18.64 -30.00 -62.09 13.45 HORIZONTAL 4 2982.00 -47.27 -17.27 -30.00 -61.64 14.37 HORIZONTAL 5 4824.00 -43.40 -13.40 -30.00 -62.52 19.12 HORIZONTAL 6 6432.00 -47.24 -17.24 -30.00 -69.07 21.83 HORIZONTAL 7 @ 12678.75 -43.25 -13.25 -30.00 -71.19 27.94 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741317 Mode : 1 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 29.95 -81.21 -45.21 -36.00 -72.43 -8.78 VERTICAL 2 960.10 -77.84 -41.84 -36.00 -71.03 -6.81 VERTICAL 3 2306.00 -48.68 -18.68 -30.00 -62.16 13.48 VERTICAL 4 2994.00 -46.89 -16.89 -30.00 -61.19 14.30 VERTICAL 5 4824.00 -41.11 -11.11 -30.00 -60.25 19.14 VERTICAL 6 @ 6993.00 -40.46 -10.46 -30.00 -63.37 22.91 VERTICAL 7 12588.75 -41.90 -11.90 -30.00 -70.93 29.03 VERTICAL

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b CH13 2472MHz	
1	Horizontal	Vertical
TX	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741317 Mode : 2 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 119.88 -71.92 -35.92 -36.00 -56.03 -15.89 HORIZONTAL 2 479.90 -70.22 -16.22 -54.00 -59.75 -10.47 HORIZONTAL 3 2272.00 -47.94 -17.94 -30.00 -61.39 13.45 HORIZONTAL 4 2978.00 -48.08 -18.08 -30.00 -62.45 14.37 HORIZONTAL 5 4944.00 -47.51 -17.51 -30.00 -66.53 19.02 HORIZONTAL 6 6591.00 -44.85 -14.85 -30.00 -66.89 22.04 HORIZONTAL 7 @ 12615.00 -42.80 -12.80 -30.00 -70.47 27.67 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741317 Mode : 2 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 30.23 -80.85 -44.85 -36.00 -72.07 -8.78 VERTICAL 2 730.50 -75.11 -21.11 -54.00 -66.94 -8.17 VERTICAL 3 2280.00 -48.74 -18.74 -30.00 -62.13 13.39 VERTICAL 4 2802.00 -47.71 -17.71 -30.00 -61.76 14.05 VERTICAL 5 4983.00 -43.90 -13.90 -30.00 -63.26 19.36 VERTICAL 6 @ 6978.00 -41.15 -11.15 -30.00 -64.04 22.89 VERTICAL 7 12577.50 -42.36 -12.36 -30.00 -71.36 29.00 VERTICAL

2.4GHz 2400~2483.5MHz

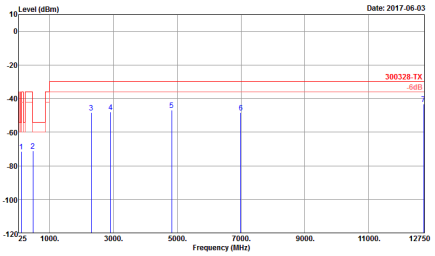
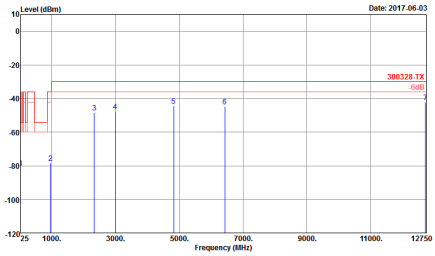
WIFI 802.11g

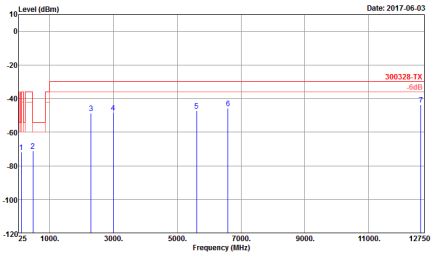
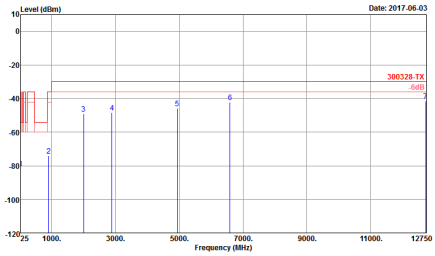
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
TX.	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741317 Mode : 3 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 119.88 -72.72 -36.72 -36.00 -56.83 -15.89 HORIZONTAL 2 479.90 -70.91 -16.91 -54.00 -60.44 -10.47 HORIZONTAL 3 2324.00 -48.99 -18.99 -30.00 -62.54 13.55 HORIZONTAL 4 2622.00 -47.77 -17.77 -30.00 -61.86 14.09 HORIZONTAL 5 4827.00 -47.05 -17.05 -30.00 -66.17 19.12 HORIZONTAL 6 8970.00 -47.99 -17.99 -30.00 -70.67 22.68 HORIZONTAL 7 @ 12697.50 -43.03 -13.03 -30.00 -71.06 28.03 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741317 Mode : 3 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 29.95 -81.13 -45.13 -36.00 -72.35 -8.78 VERTICAL 2 903.40 -75.25 -39.25 -36.00 -67.80 -7.45 VERTICAL 3 2332.00 -49.34 -19.34 -30.00 -62.87 13.53 VERTICAL 4 2694.00 -48.01 -18.01 -30.00 -61.92 13.91 VERTICAL 5 4827.00 -44.08 -14.08 -30.00 -63.22 19.14 VERTICAL 6 6969.00 -42.05 -12.05 -30.00 -64.91 22.86 VERTICAL 7 @ 12686.25 -41.99 -11.99 -30.00 -71.33 29.34 VERTICAL

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g CH13 2472MHz	
1	Horizontal	Vertical
TX	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741317 Mode : 4 1 119.88 -71.21 -35.21 -36.00 -55.32 -15.89 HORIZONTAL 2 479.90 -71.15 -17.15 -54.00 -60.68 -10.47 HORIZONTAL 3 2312.00 -48.55 -18.55 -30.00 -62.06 13.51 HORIZONTAL 4 2848.00 -47.47 -17.47 -30.00 -61.75 14.28 HORIZONTAL 5 5835.00 -47.15 -17.15 -30.00 -67.94 20.79 HORIZONTAL 6 6591.00 -45.90 -15.90 -30.00 -67.94 22.04 HORIZONTAL 7 @ 12701.25 -43.23 -13.23 -30.00 -71.26 28.03 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741317 Mode : 4 1 30.23 -81.11 -45.11 -36.00 -72.33 -8.78 VERTICAL 2 960.10 -78.10 -42.10 -36.00 -71.29 -6.81 VERTICAL 3 2354.00 -48.93 -18.93 -30.00 -62.55 13.62 VERTICAL 4 2878.00 -48.32 -18.32 -30.00 -62.47 14.15 VERTICAL 5 4947.00 -45.35 -15.35 -30.00 -64.62 19.27 VERTICAL 6 6591.00 -42.69 -12.69 -30.00 -65.11 22.42 VERTICAL 7 @ 12708.75 -41.46 -11.46 -30.00 -70.91 29.45 VERTICAL

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
TX	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741317 Mode : 5 1 119.88 -71.40 -35.40 -36.00 -55.51 -15.89 HORIZONTAL 2 479.90 -71.01 -17.01 -54.00 -60.54 -10.47 HORIZONTAL 3 2308.00 -48.23 -18.23 -30.00 -61.74 13.51 HORIZONTAL 4 2906.00 -47.77 -17.77 -30.00 -62.09 14.32 HORIZONTAL 5 4824.00 -46.91 -16.91 -30.00 -66.03 19.12 HORIZONTAL 6 6993.00 -48.19 -18.19 -30.00 -70.64 22.45 HORIZONTAL 7 @ 12723.75 -43.41 -13.41 -30.00 -71.55 28.14 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741317 Mode : 5 1 29.95 -81.07 -45.07 -36.00 -72.29 -8.78 VERTICAL 2 960.10 -78.24 -42.24 -36.00 -71.43 -6.81 VERTICAL 3 2340.00 -48.27 -18.27 -30.00 -61.85 13.58 VERTICAL 4 2994.00 -47.61 -17.61 -30.00 -61.91 14.30 VERTICAL 5 4830.00 -44.27 -14.27 -30.00 -63.41 19.14 VERTICAL 6 6432.00 -44.71 -14.71 -30.00 -66.91 22.20 VERTICAL 7 @ 12716.25 -42.07 -12.07 -30.00 -71.52 29.45 VERTICAL

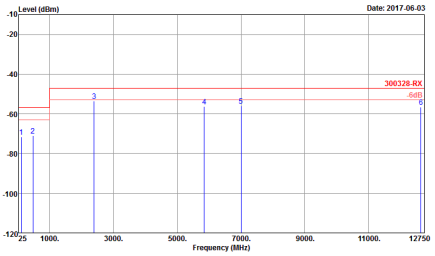
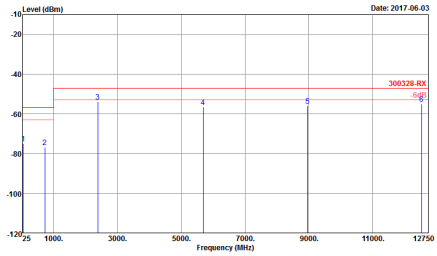
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 CH13 2472MHz	
1	Horizontal	Vertical
TX.	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741317 Mode : 6 1 119.88 -71.81 -35.81 -36.00 -55.92 -15.89 HORIZONTAL 2 479.90 -71.11 -17.11 -54.00 -60.64 -10.47 HORIZONTAL 3 2304.00 -48.78 -18.78 -30.00 -62.29 13.51 HORIZONTAL 4 2992.00 -48.13 -18.13 -30.00 -62.50 14.37 HORIZONTAL 5 5613.00 -47.38 -17.38 -30.00 -67.88 20.50 HORIZONTAL 6 6591.00 -45.78 -15.78 -30.00 -67.82 22.04 HORIZONTAL 7 @ 12641.25 -43.69 -13.69 -30.00 -71.51 27.82 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741317 Mode : 6 1 29.95 -81.47 -45.47 -36.00 -72.69 -8.78 VERTICAL 2 904.10 -74.08 -38.08 -36.00 -66.64 -7.44 VERTICAL 3 2000.00 -49.08 -19.08 -30.00 -61.74 12.66 VERTICAL 4 2892.00 -48.36 -18.36 -30.00 -62.53 14.17 VERTICAL 5 4944.00 -45.64 -15.64 -30.00 -64.91 19.27 VERTICAL 6 6591.00 -42.04 -12.04 -30.00 -64.46 22.42 VERTICAL 7 @ 12727.50 -41.25 -11.25 -30.00 -70.76 29.51 VERTICAL

WLAN RX Radiated Spurious Emission Plots

Test Engineer :	Karl Hou	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

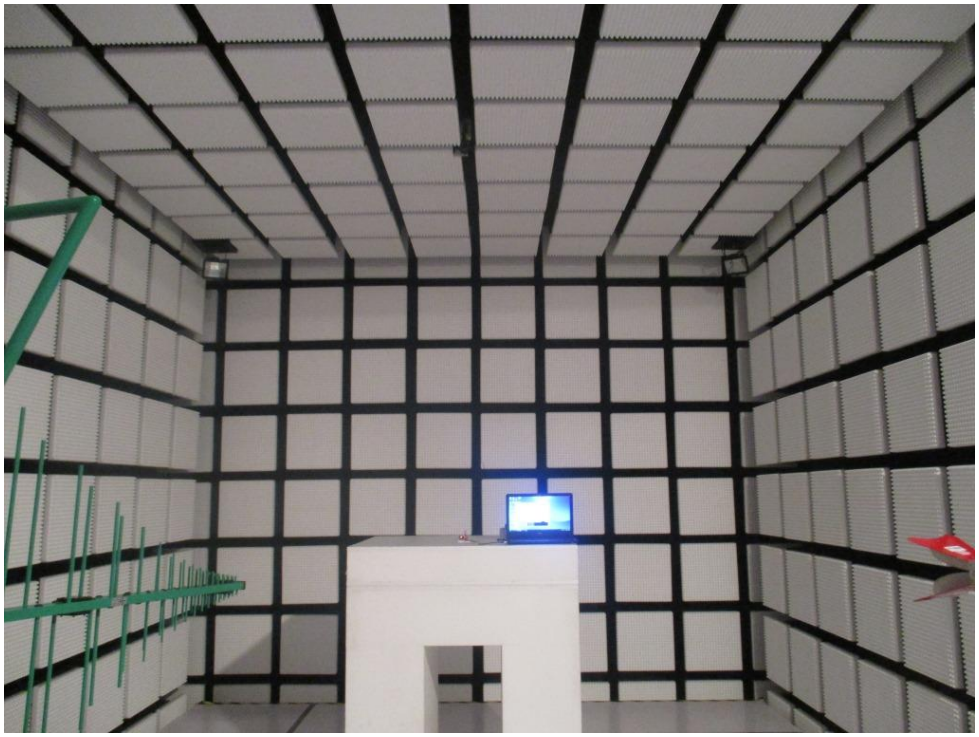
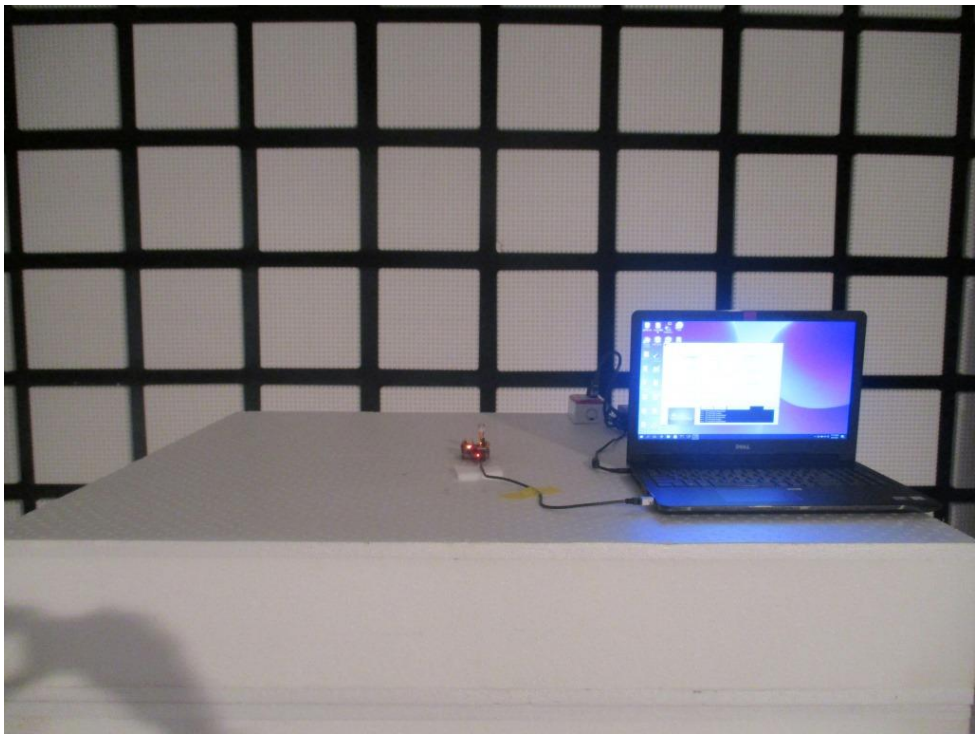
WIFI 802.11b

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
RX	 Site : 05CH05-HY Condition : 300328-RX HORIZONTAL Power : From System Project : ER 741317 Mode : 7 1 119.88 -71.61 -14.61 -57.00 -55.72 -15.89 HORIZONTAL 2 479.90 -70.98 -13.98 -57.00 -60.51 -10.47 HORIZONTAL 3 @ 2396.00 -53.53 -6.53 -47.00 -40.53 -13.00 HORIZONTAL 4 5853.00 -56.35 -9.35 -47.00 -49.09 -7.26 HORIZONTAL 5 6999.00 -55.96 -8.96 -47.00 -50.46 -5.50 HORIZONTAL 6 12645.00 -56.45 -9.45 -47.00 -55.66 -0.79 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-RX VERTICAL Power : From System Project : ER 741317 Mode : 7 1 53.60 -74.86 -17.86 -57.00 -55.42 -19.44 VERTICAL 2 729.80 -76.79 -19.79 -57.00 -68.59 -8.20 VERTICAL 3 @ 2390.00 -53.69 -6.69 -47.00 -40.72 -12.97 VERTICAL 4 5685.00 -56.63 -9.63 -47.00 -49.48 -7.15 VERTICAL 5 8961.00 -55.90 -8.90 -47.00 -53.16 -2.74 VERTICAL 6 12540.00 -54.94 -7.94 -47.00 -55.46 0.52 VERTICAL

Appendix D. Photographs of Radiated Emission Test Configuration

WLAN Tx/Rx Mode

Remote View



Near View