

Report No.: FR7D2234-05AA



# FCC RADIO TEST REPORT

FCC ID : HEDML16035

Equipment : MetroLin Outdoor 60GHz PTP + 5GHz + 2.4GHz

Brand Name : Ignitenet

Model Name : ML1-60-35/ML1-60-19

Applicant : Accton Technology Corp

No. 1, Creation Rd. III, Science-based Industrial

Park Hsin Chu 30077, Taiwan

Manufacturer (1) : Joy Technology (Shen Zhen) Co. Ltd

HengKeng Ind., Shangpai, Shangwu, Aigun Rd.,

Shiyan Town, Shenzhen 518108 China

Manufacturer (2) : Accton Technology Corp

No. 1, Creation Rd. III, Science-based Industrial

Park Hsin Chu 30077, Taiwan

Standard : 47 CFR FCC Part 15.247

The product was received on Apr. 12, 2018, and testing was started from May 02, 2018 and completed on Jun. 22, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number

: 1 of 27

Issued Date

: Jul. 02, 2018

Report Version : 01

## **Table of Contents**

Histo	ry of this test report3
Sumr	mary of Test Result4
1	General Description5
1.1	Information5
1.2	Testing Applied Standards8
1.3	Testing Location Information8
1.4	Measurement Uncertainty8
2	Test Configuration of EUT9
2.1	Test Channel Mode9
2.2	The Worst Case Measurement Configuration10
2.3	EUT Operation during Test11
2.4	Accessories11
2.5	Support Equipment11
2.6	Test Setup Diagram12
3	Transmitter Test Result14
3.1	AC Power-line Conducted Emissions14
3.2	DTS Bandwidth16
3.3	Maximum Conducted Output Power17
3.4	Power Spectral Density19
3.5	Emissions in Non-restricted Frequency Bands21
3.6	Emissions in Restricted Frequency Bands22
4	Test Equipment and Calibration Data26
Appe	endix A. Test Results of AC Power-line Conducted Emissions
Appe	endix B. Test Results of DTS Bandwidth
Appe	endix C. Test Results of Maximum Conducted Output Power
Appe	endix D. Test Results of Power Spectral Density
Appe	endix E. Test Results of Emissions in Non-restricted Frequency Bands
Appe	endix F. Test Results of Emissions in Restricted Frequency Bands
Appe	endix G. Test Photos
Photo	ographs of EUT v01

TEL: 886-3-656-9065 FAX: 886-3-656-9085 Report Template No.: CB Ver1.0 Page Number : 2 of 27
Issued Date : Jul. 02, 2018

Report No.: FR7D2234-05AA

Report Version : 01

# History of this test report

Report No.: FR7D2234-05AA

Report No.	Version	Description	Issued Date
FR7D2234-05AA	01	Initial issue of report	Jul. 02, 2018

TEL: 886-3-656-9065 Page Number : 3 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

# **Summary of Test Result**

Report No.: FR7D2234-05AA

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.3	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Reviewed by: Sam Chen Report Producer: Wendy Pan

TEL: 886-3-656-9065 Page Number : 4 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 1 General Description

### 1.1 Information

#### 1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40)	2422-2452	3-9 [7]

Report No.: FR7D2234-05AA

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	2TX
2.4-2.4835GHz	802.11g	20	2TX
2.4-2.4835GHz	802.11n HT20	20	2TX
2.4-2.4835GHz	802.11n HT40	40	2TX

#### Note 1:

- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

Note 2: This device contains transmitter 60GHz module FCC ID: HED-ML60MDSB

Note 3: WLAN and 60G work at the same time.

#### 1.1.2 Table for Multiple Listing

The EUT has two model names which are identical to each other in all aspects except for the following table:

Brand Name	Model Name	EUT No.	WLAN 2.4GHz	WLAN 5GHz	60GHz	
			Ant. Model Name	Ant. Model Name	Ant. Model Name	
Ignitanet	ML1-60-35	EUT 1	OS-242509-NM	120G00000174X	123400001485A	
Ignitenet	ML1-60-19	EUT 2	OS-242509-NM	120G00000175X	123400001486A	

From the above models, model: ML1-60-35 was selected as representative model for the test and its data was recorded in this report.

TEL: 886-3-656-9065 Page Number : 5 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

#### 1.1.3 Antenna Information

#### For WLAN Function:

Set	Brand	P/N	Antenna	Connector	Antenna Gain (dBi)		Cable Loss (dB)		True Gain (dBi)	
		(Model Name)	Туре		2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz
1	FT-RF	OS-242509-NM	Dipole	N-Male	9	-	1.18	-	7.82	-
2	Accton	120G00000174X	Dish Ant.	MMCX	-	20	-	-	-	20
3	Accton	120G00000175X	Dish Ant.	MMCX	-	13.4	-	ı	-	13.4

Report No.: FR7D2234-05AA

Note: EUT 1 go with Set 1 and Set 2 antennas.

EUT 2 go with Set 1 and Set 3 antennas.

Because 5GHz Set 2 and Set 3 are the same type antennas, only the higher gain antenna "Set 2" was tested.

#### For 2.4GHz function:

#### For IEEE 802.11b/g/n mode (2TX/2RX):

Port 1 and Port 2 connect to Set 1.

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

#### For 5GHz function:

#### For IEEE 802.11a/n/ac mode (2TX/2RX):

Port 1 and Port 2 connect to Set 2 or Set 3.

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

#### For 60GHz Function:

Ant.	Brand	Part Number	Antenna Type	Connector	Gain (dBi)
1	Accton	123400001485A	Dish Ant.	N/A	42
2	Accton	123400001486A	Dish Ant.	N/A	38

Note: EUT 1 go with antenna 1.

EUT 2 go with antenna 2.

Ant.1 and Ant.2 can be used as transmitting/receiving antenna.

TEL: 886-3-656-9065 Page Number : 6 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

## 1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.995	0.022	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.964	0.159	2.07m	1k
802.11n HT20	0.984	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11n HT40	0.967	0.146	2.43m	1k

Report No.: FR7D2234-05AA

### 1.1.5 EUT Operational Condition

EUT Power Type	From PoE or DC 48V				
Beamforming Function	☐ With beamforming ☐ Without beamforming				
Function	☐ Point-to-multipoint       Point-to-point				
Test Software Version QCARCT(V3.0.187.0)					

TEL: 886-3-656-9065 Page Number : 7 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Report No.: FR7D2234-05AA

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 558074 D01 v04
- FCC KDB 662911 D01 v02r01
- FCC KDB 412172 D01 v01r01

### 1.3 Testing Location Information

	Testing Location						
	HWA YA ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)						
		TEL	:	886-3-327-3456 FAX : 886-3-327-0973			
$\boxtimes$	JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.			
		TEL	:	886-3-656-9065 FAX : 886-3-656-9085			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Serway Li	22°C / 54%	May 05, 2018 ~ May 09, 2018
Radiated	03CH01-CB	Mason Chen, Stim Sung, Lance Wu	22°C / 54%	May 04, 2018 ~ Jun. 20, 2018
AC Conduction	CO01-CB	Max Lin	25°C / 55%	May 02, 2018 ~ Jun. 22, 2018

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74 x10 <sup>-8</sup>	Confidence levels of 95%

TEL: 886-3-656-9065 Page Number: 8 of 27
FAX: 886-3-656-9085 Issued Date: Jul. 02, 2018

# 2 Test Configuration of EUT

## 2.1 Test Channel Mode

Mode	PowerSetting	
802.11b_Nss1,(1Mbps)_2TX	-	
2412MHz	16	
2437MHz	14	
2462MHz	15	
802.11g_Nss1,(6Mbps)_2TX	-	
2412MHz	15.5	
2417MHz	18.5	
2422MHz	19.5	
2427MHz	21	
2432MHz	22	
2437MHz	23	
2442MHz	21.5	
2447MHz	20.5	
2452MHz	18.5	
2457MHz	18	
2462MHz	15	
802.11n HT20_Nss1,(MCS0)_2TX	-	
2412MHz	17	
2417MHz	18	
2422MHz	19.5	
2427MHz	20.5	
2432MHz 22.5		
2437MHz	23	
2442MHz	21.5	
2447MHz	20.5	
2452MHz	20	
2457MHz	18.5	
2462MHz	14.5	
802.11n HT40_Nss1,(MCS0)_2TX	-	
2422MHz	13	
2427MHz	14.5	
2432MHz	14.5	
2437MHz	15.5	
2442MHz	15	
2447MHz	13.5	
2452MHz	12	

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number : 9 of 27
Issued Date : Jul. 02, 2018

Report No.: FR7D2234-05AA

Report Version : 01

## 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests		
Tests Item	AC power-line conducted emissions	
Condition	AC power-line conducted measurement for line and neutral	
Operating Mode	CTX	
1	EUT 1 WLAN 2.4GHz - AC mode	
2	EUT 1 - WLAN 5GHz - AC mode	
Mode 1 has been evaluate this same test mode.	ed to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow	
3	EUT 1 - WLAN 2.4GHz - DC mode	
For operating mode 1 is the worst case and it was record in this test report.		

Report No.: FR7D2234-05AA

Th	The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands	
Test Condition	Conducted measurement at transmit chains	
Test Mode	EUT 1	

Th	The Worst Case Mode for Following Conformance Tests		
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	EUT 1 - WLAN 2.4GHz - AC mode		
2	EUT 1 - WLAN 5GHz - AC mode		
Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.			
3	EUT 1 - WLAN 2.4GHz - DC mode		
For operating mode 1 is th	e worst case and it was record in this test report.		
Operating Mode > 1GHz	EUT 1 - CTX		

TEL: 886-3-656-9065 Page Number : 10 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation		
Operating Mode			
1	EUT 1 - WLAN 2.4GHz + WLAN 5GHz + 60GHz		
Refer to Sporton Test Report No.: FA7D2234-05 for Co-location RF Exposure Evaluation.			

- Note: 1. The EUT can only be used at Y axis position.
  - 2. The defines from manufacturer, "USB port" without any function, and it was performed test at the load.

Report No.: FR7D2234-05AA

- 3. All the specification of test configurations and test modes were based on customer's request.
- 4. The PoE is for measurement only, would not be marketed, and its information as below:

Equipment	Brand	Model	FCC ID
PoE	GME	GME241DA-480050G	N/A

### 2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 2.4 Accessories

N/A

### 2.5 Support Equipment

For Test Site No: CO01-CB

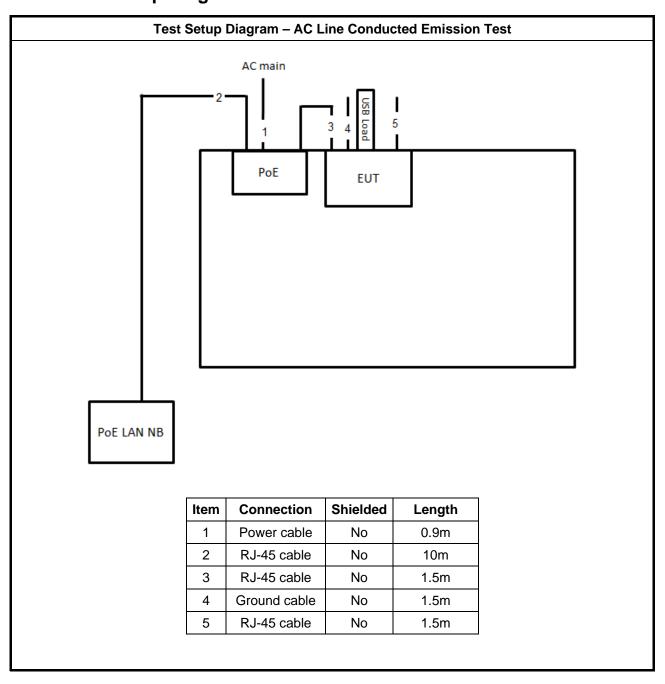
	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E6430	N/A
2	Flash Disk 3.0	Transcend	JetFlash-700	N/A
3	PoE	GME	GME241DA-480050G	N/A

#### For Test Site No: TH01-CB and 03CH01-CB

	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	N/A
2	PoE	GME	GME241DA-480050G	N/A

TEL: 886-3-656-9065 Page Number : 11 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

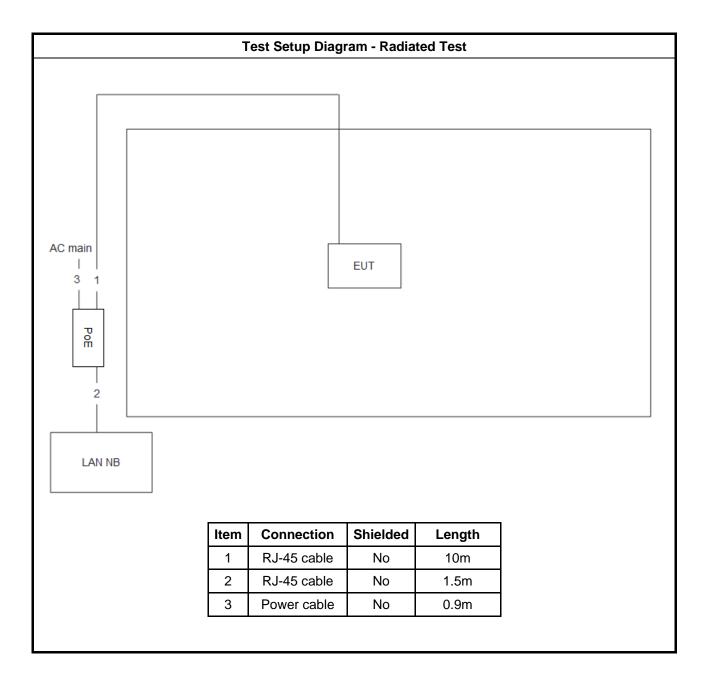
## 2.6 Test Setup Diagram



Report No.: FR7D2234-05AA

TEL: 886-3-656-9065 Page Number : 12 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

Report No. : FR7D2234-05AA



 TEL: 886-3-656-9065
 Page Number
 : 13 of 27

 FAX: 886-3-656-9085
 Issued Date
 : Jul. 02, 2018

### 3 Transmitter Test Result

### 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit			
Frequency Emission (MHz) Quasi-Peak Average			
0.15-0.5	66 - 56 *	56 - 46 *	
0.5-5	56	46	
5-30	60	50	
Note 1: * Decreases with the logarithm of	of the frequency.		

Report No.: FR7D2234-05AA

### 3.1.2 Measuring Instruments

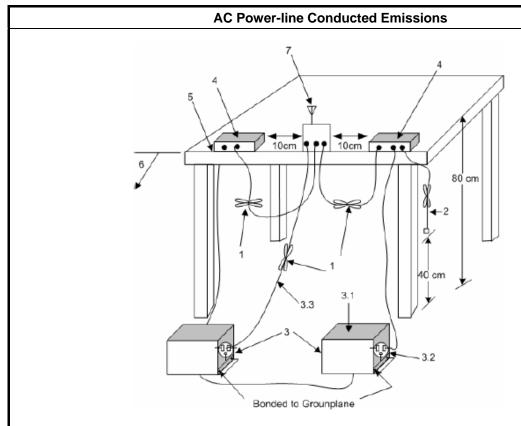
Refer a test equipment and calibration data table in this test report.

### 3.1.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

TEL: 886-3-656-9065 Page Number : 14 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 3.1.4 Test Setup



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.

Report No.: FR7D2234-05AA

- 2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50  $\Omega$  loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
- 3.1—All other equipment powered from additional LISN(s).
- 3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
- 3.3—LISN at least 80 cm from nearest part of EUT chassis.
- 4—Non-EUT components of EUT system being tested.
- 5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
- 6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
- 7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

#### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

TEL: 886-3-656-9065 Page Number: 15 of 27
FAX: 886-3-656-9085 Issued Date: Jul. 02, 2018

### 3.2 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
■ 6 dB bandwidth ≥ 500 kHz.

Report No.: FR7D2234-05AA

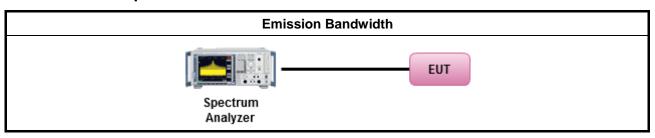
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

	Test Method							
•	■ For the emission bandwidth shall be measured using one of the options below:							
Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.								
	Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.							
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.						

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

TEL: 886-3-656-9065 Page Number : 16 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 3.3 Maximum Conducted Output Power

### 3.3.1 Maximum Conducted Output Power Limit

### **Maximum Conducted Output Power Limit**

- If G<sub>TX</sub> ≤ 6 dBi, then P<sub>Out</sub> ≤ 30 dBm (1 W)
- Point-to-multipoint systems (P2M): If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)$  dBm
- Point-to-point systems (P2P): If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
- Smart antenna system (SAS):
  - Single beam: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
  - Overlap beam: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
  - Aggregate power on all beams: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3 + 8$ dB dBm

Report No.: FR7D2234-05AA

 $\mathbf{P}_{\text{Out}}$  = maximum peak conducted output power or maximum conducted output power in dBm,  $\mathbf{G}_{\text{TX}}$  = the maximum transmitting antenna directional gain in dBi.

### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

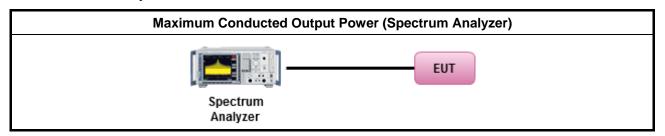
TEL: 886-3-656-9065 Page Number: 17 of 27
FAX: 886-3-656-9085 Issued Date: Jul. 02, 2018

### 3.3.3 Test Procedures

		Test Method
•	Max	imum Peak Conducted Output Power
		Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	$\boxtimes$	Refer as FCC KDB 558074, clause 9.1.3 (peak power meter for VBW ≥ DTS BW)
•	Max	imum Conducted Output Power
	[duty	/ cycle ≥ 98% or external video / power trigger]
		Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
		Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed)
	duty	cycle < 98% and average over on/off periods with duty factor
		Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
		Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
	Mea	surement using a power meter (PM)
	$\boxtimes$	Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM (using an RF average power meter).
		Refer as FCC KDB 558074, clause 9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
•	For	conducted measurement.
	•	If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	•	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n \\ \text{(calculated in linear unit [mW] and transfer to log unit [dBm])} \\ \text{EIRP}_{total} = P_{total} + DG$

Report No.: FR7D2234-05AA

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

 TEL: 886-3-656-9065
 Page Number
 : 18 of 27

 FAX: 886-3-656-9085
 Issued Date
 : Jul. 02, 2018

#### 3.4 **Power Spectral Density**

#### 3.4.1 **Power Spectral Density Limit**

## **Power Spectral Density Limit** Power Spectral Density (PSD) ≤ 8 dBm/3kHz

Report No.: FR7D2234-05AA

### **Measuring Instruments**

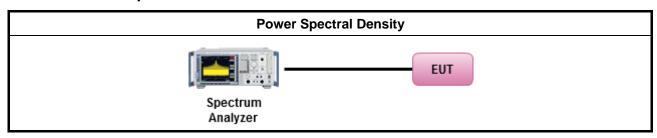
Refer a test equipment and calibration data table in this test report.

#### 3.4.3 **Test Procedures**

	Test Method							
•	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).							
	Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).							
	[duty cycle ≥ 98% or external video / power trigger]							
	Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).							
	Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)							
	duty cycle < 98% and average over on/off periods with duty factor							
	Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).							
	Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)							
•	For conducted measurement.							
	■ If The EUT supports multiple transmit chains using options given below:							
	Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.							
	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectral are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,							
	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit							

TEL: 886-3-656-9065 Page Number : 19 of 27 FAX: 886-3-656-9085 : Jul. 02, 2018 Issued Date

### 3.4.4 Test Setup



Report No.: FR7D2234-05AA

### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

TEL: 886-3-656-9065 Page Number : 20 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 3.5 Emissions in Non-restricted Frequency Bands

### 3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit					
RF output power procedure	Limit (dB)				
Peak output power procedure	20				
Average output power procedure	30				

Report No.: FR7D2234-05AA

- Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
- Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

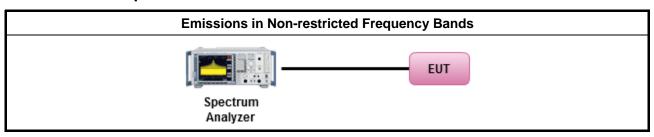
### 3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.5.3 Test Procedures

	Test Method
•	Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.

### 3.5.4 Test Setup



#### 3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

TEL: 886-3-656-9065 Page Number : 21 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 3.6 Emissions in Restricted Frequency Bands

### 3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit							
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)				
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300				
0.490~1.705	24000/F(kHz)	33.8 - 23	30				
1.705~30.0	30	29	30				
30~88	100	40	3				
88~216	150	43.5	3				
216~960	200	46	3				
Above 960	500	54	3				

Report No.: FR7D2234-05AA

- Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
- Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the ELIT
- Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

#### 3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

TEL: 886-3-656-9065 Page Number : 22 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### 3.6.3 Test Procedures

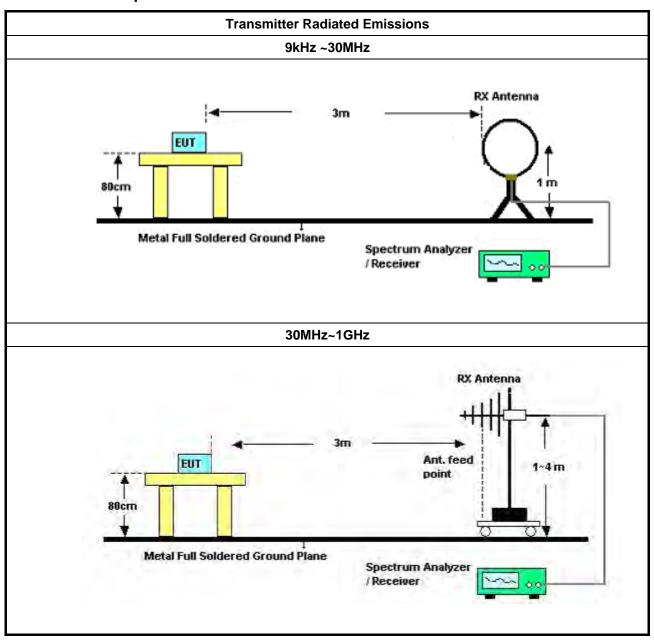
		Test Method
•	The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
•		er as ANSI C63.10, clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency and highest frequency channel within the allowed operating band.
•	For t	he transmitter unwanted emissions shall be measured using following options below:
	•	Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.
		☐ Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle ≥98%)
		Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
		Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW≥1/T).
		☐ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		Refer as FCC KDB 558074, clause 12.2.4 measurement procedure peak limit.
•	For t	he transmitter band-edge emissions shall be measured using following options below:
	•	Refer as FCC KDB 558074 clause 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
		Refer as FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.
		Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
•	For o	conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.
	•	For conducted unwanted emissions into restricted bands (absolute emission limits).  Devices with multiple transmit chains using options given below:  (1) Measure and sum the spectra across the outputs or  (2) Measure and add 10 log(N) dB
	•	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

Report No.: FR7D2234-05AA

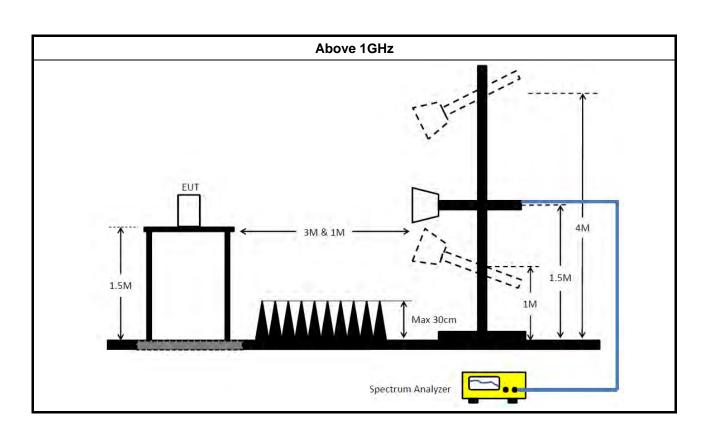
TEL: 886-3-656-9065 Page Number : 23 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

Report No. : FR7D2234-05AA

### 3.6.4 Test Setup



TEL: 886-3-656-9065 Page Number : 24 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018



Report No.: FR7D2234-05AA

### 3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

### 3.6.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix F

TEL: 886-3-656-9065 Page Number : 25 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

# 4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 31, 2018	Jan. 30, 2019	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz	Dec. 20, 2017	Dec. 19, 2018	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 29, 2017	Dec. 28, 2018	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 23, 2017	May 22, 2018	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2017	Aug. 29, 2018	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2018	Mar. 15, 2019	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 20, 2017	Nov. 19, 2018	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Jul. 04, 2018	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2018	May 01, 2019	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 09, 2018	Jan. 08, 2019	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 10, 2017	Jul. 09, 2018	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 23, 2017	Nov. 22, 2018	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100354	9kHz ~ 2.75GHz	Dec. 08, 2017	Dec. 07, 2018	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number : 26 of 27
Issued Date : Jul. 02, 2018

Report No.: FR7D2234-05AA

Report Version : 01

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 21, 2017	Dec. 20, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 20, 2017	Nov. 19, 2018	Conducted (TH01-CB)

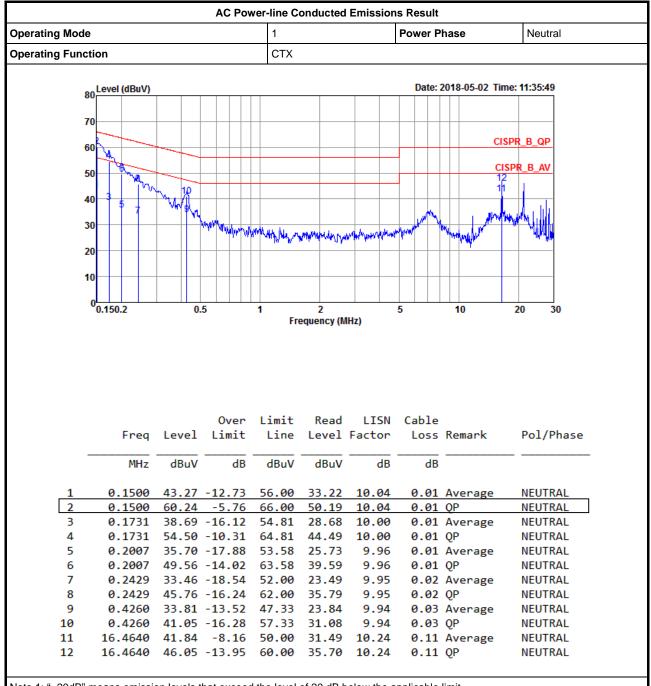
Report No.: FR7D2234-05AA

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.

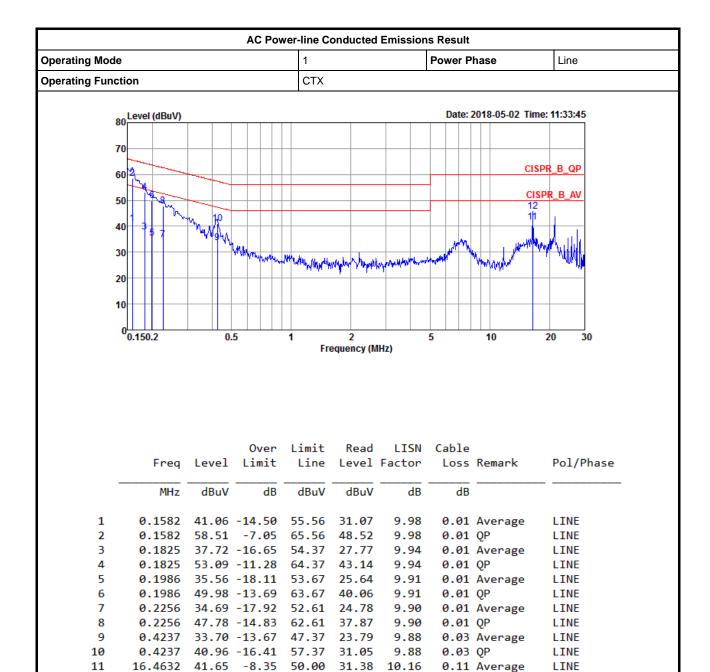
TEL: 886-3-656-9065 Page Number : 27 of 27
FAX: 886-3-656-9085 Issued Date : Jul. 02, 2018

### AC Power-line Conducted Emissions Result



Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)





10.16

0.11 QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

16.4632 45.84 -14.16 60.00 35.57

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

12

LINE



EBW Result Appendix B

**Summary** 

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	8.075M	12.869M	12M9G1D	7.55M	12.744M
802.11g_Nss1,(6Mbps)_2TX	16.35M	16.617M	16M6D1D	16.325M	16.467M
802.11n HT20_Nss1,(MCS0)_2TX	17.6M	17.891M	17M9D1D	17.325M	17.691M
802.11n HT40_Nss1,(MCS0)_2TX	36.3M	36.382M	36M4D1D	35.6M	36.232M

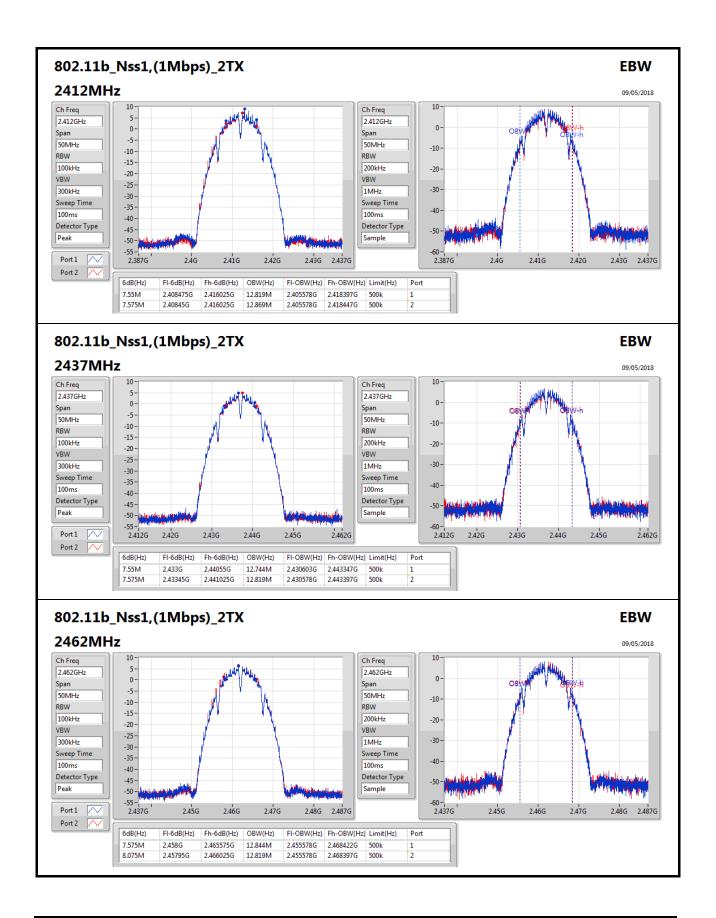
**Max-N dB** = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth; **Min-N dB** = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

#### Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	7.55M	12.819M	7.575M	12.869M
2437MHz	Pass	500k	7.55M	12.744M	7.575M	12.819M
2462MHz	Pass	500k	7.575M	12.844M	8.075M	12.819M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.325M	16.567M	16.35M	16.517M
2437MHz	Pass	500k	16.325M	16.592M	16.35M	16.617M
2462MHz	Pass	500k	16.35M	16.542M	16.325M	16.467M
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	17.55M	17.716M	17.6M	17.741M
2437MHz	Pass	500k	17.575M	17.866M	17.325M	17.891M
2462MHz	Pass	500k	17.575M	17.691M	17.6M	17.766M
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	36.3M	36.232M	36.3M	36.382M
2437MHz	Pass	500k	36.3M	36.282M	36.3M	36.282M
2452MHz	Pass	500k	35.6M	36.232M	35.9M	36.282M

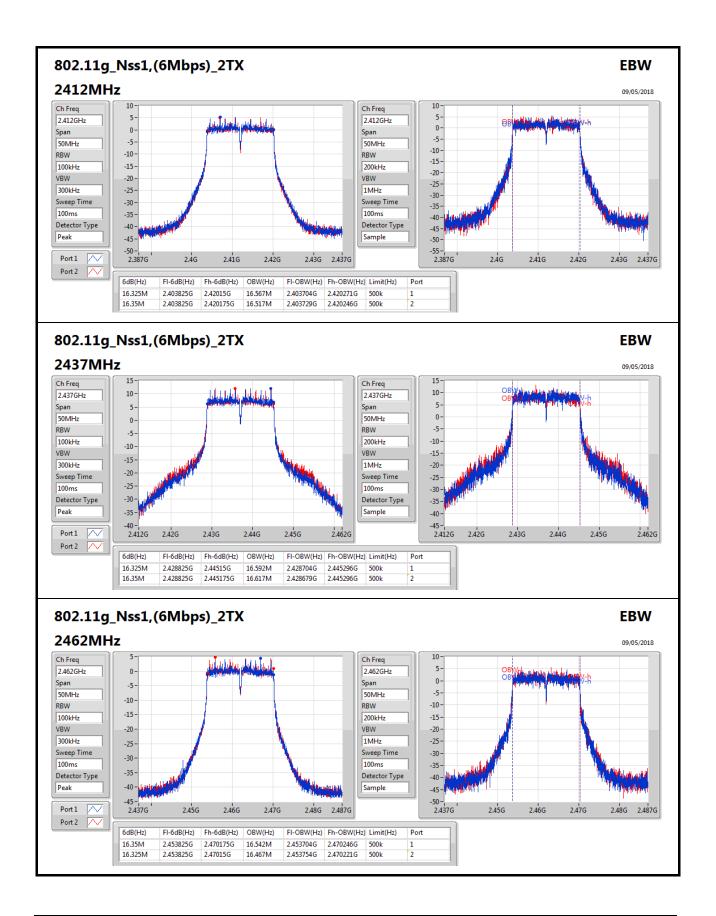
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;



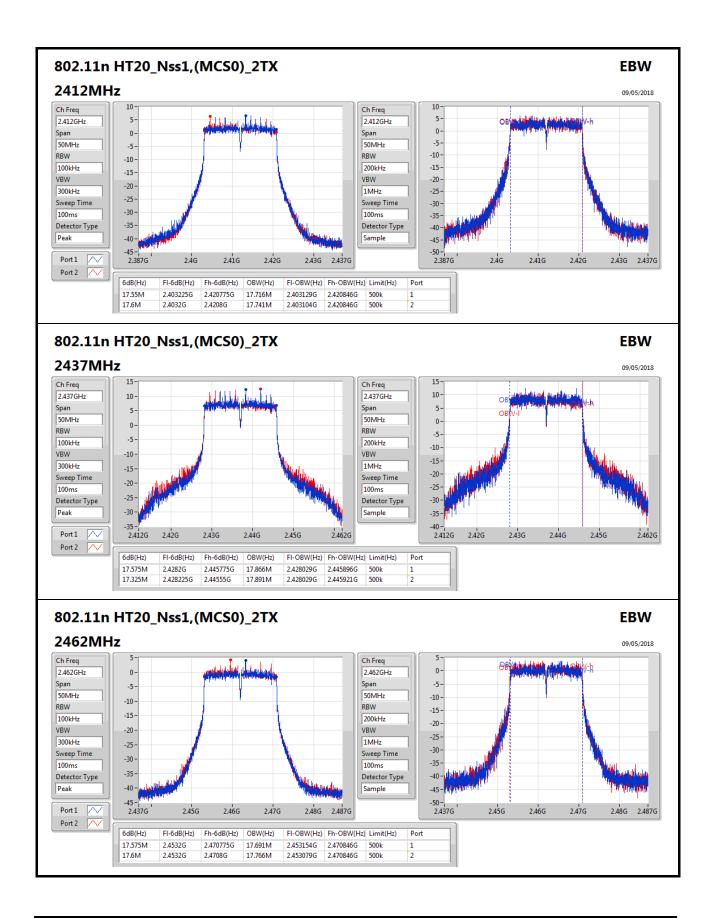


Page No.

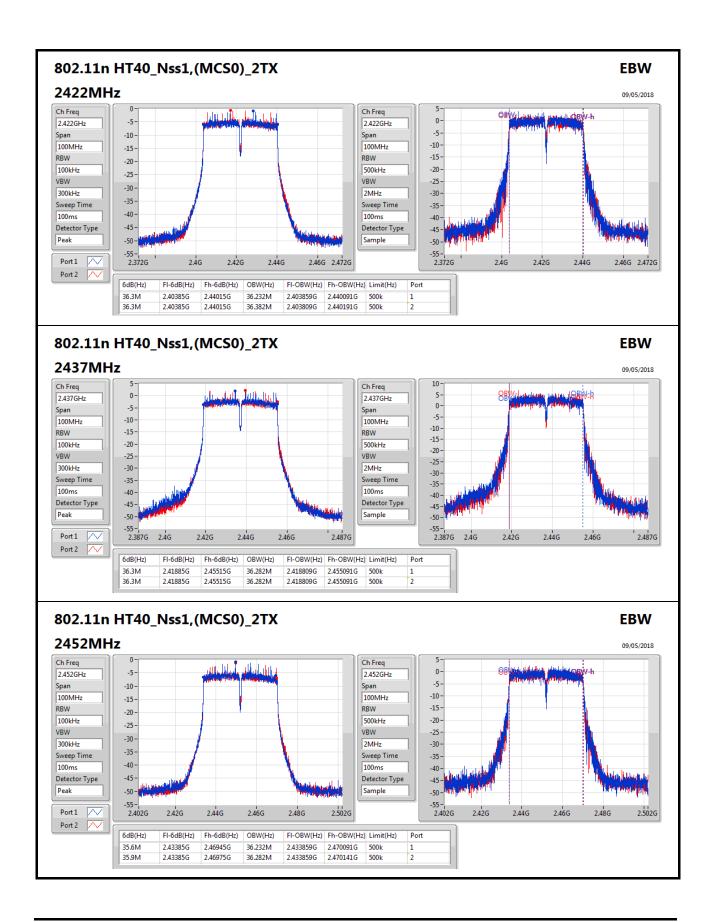












: 5 of 5



AV Power Result Appendix C

**Summary** 

Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	20.17	0.10399
802.11g_Nss1,(6Mbps)_2TX	26.71	0.46881
802.11n HT20_Nss1,(MCS0)_2TX	26.87	0.48641
802.11n HT40_Nss1,(MCS0)_2TX	20.27	0.10641

Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	7.82	17.23	17.09	20.17	30.00
2437MHz	Pass	7.82	14.90	14.78	17.85	30.00
2462MHz	Pass	7.82	16.06	16.24	19.16	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	7.82	17.17	17.04	20.12	30.00
2417MHz	Pass	7.82	20.04	20.26	23.16	30.00
2422MHz	Pass	7.82	20.99	21.11	24.06	30.00
2427MHz	Pass	7.82	22.33	22.34	25.35	30.00
2432MHz	Pass	7.82	23.19	23.14	26.18	30.00
2437MHz	Pass	7.82	23.72	23.67	26.71	30.00
2442MHz	Pass	7.82	22.61	22.85	25.74	30.00
2447MHz	Pass	7.82	21.80	21.93	24.88	30.00
2452MHz	Pass	7.82	19.93	20.09	23.02	30.00
2457MHz	Pass	7.82	19.38	19.57	22.49	30.00
2462MHz	Pass	7.82	16.48	16.71	19.61	30.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	7.82	18.59	18.74	21.68	30.00
2417MHz	Pass	7.82	19.54	19.76	22.66	30.00
2422MHz	Pass	7.82	21.01	21.20	24.12	30.00
2427MHz	Pass	7.82	21.85	21.99	24.93	30.00
2432MHz	Pass	7.82	23.46	23.47	26.48	30.00
2437MHz	Pass	7.82	23.86	23.85	26.87	30.00
2442MHz	Pass	7.82	22.66	22.87	25.78	30.00
2447MHz	Pass	7.82	21.73	21.87	24.81	30.00
2452MHz	Pass	7.82	21.34	21.53	24.45	30.00
2457MHz	Pass	7.82	19.84	19.65	22.76	30.00
2462MHz	Pass	7.82	16.20	16.35	19.29	30.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	7.82	14.41	14.36	17.40	30.00
2427MHz	Pass	7.82	15.99	15.95	18.98	30.00
2432MHz	Pass	7.82	15.79	15.62	18.72	30.00
2437MHz	Pass	7.82	17.32	17.19	20.27	30.00
2442MHz	Pass	7.82	16.72	16.69	19.72	30.00
2447MHz	Pass	7.82	14.49	14.44	17.48	30.00
2452MHz	Pass	7.82	13.00	12.93	15.98	30.00

**DG** = Directional Gain; **Port X** = Port X output power



**PSD Result** Appendix D

**Summary** 

Mode	PD		
	(dBm/RBW)		
2.4-2.4835GHz			
802.11b_Nss1,(1Mbps)_2TX	-6.88		
802.11g_Nss1,(6Mbps)_2TX	-2.62		
802.11n HT20_Nss1,(MCS0)_2TX	-2.68		
802.11n HT40_Nss1,(MCS0)_2TX	-11.01		

RBW=3kHz.

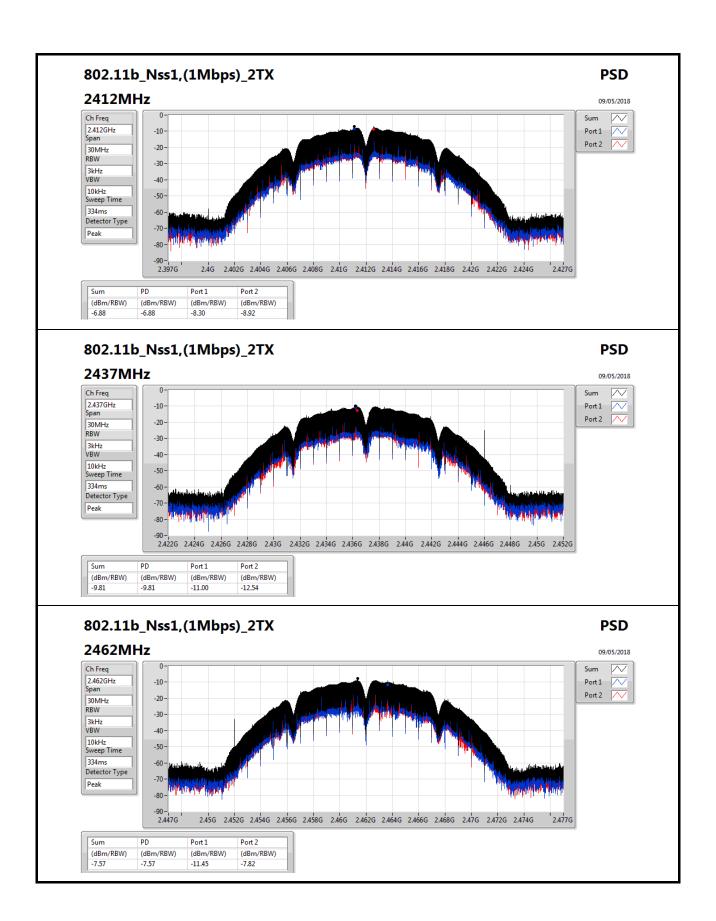
#### Result

Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	10.83	-8.30	-8.92	-6.88	7.00
2437MHz	Pass	10.83	-11.00	-12.54	-9.81	7.00
2462MHz	Pass	10.83	-11.45	-7.82	-7.57	7.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	10.83	-11.61	-11.92	-9.63	7.00
2437MHz	Pass	10.83	-4.58	-4.89	-2.62	7.00
2462MHz	Pass	10.83	-11.51	-12.20	-9.80	7.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	10.83	-9.68	-10.35	-7.92	7.00
2437MHz	Pass	10.83	-3.69	-4.97	-2.68	7.00
2462MHz	Pass	10.83	-12.05	-12.03	-10.16	7.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	10.83	-17.18	-16.44	-14.67	7.00
2437MHz	Pass	10.83	-13.47	-14.08	-11.01	7.00
2452MHz	Pass	10.83	-17.13	-16.43	-14.83	7.00

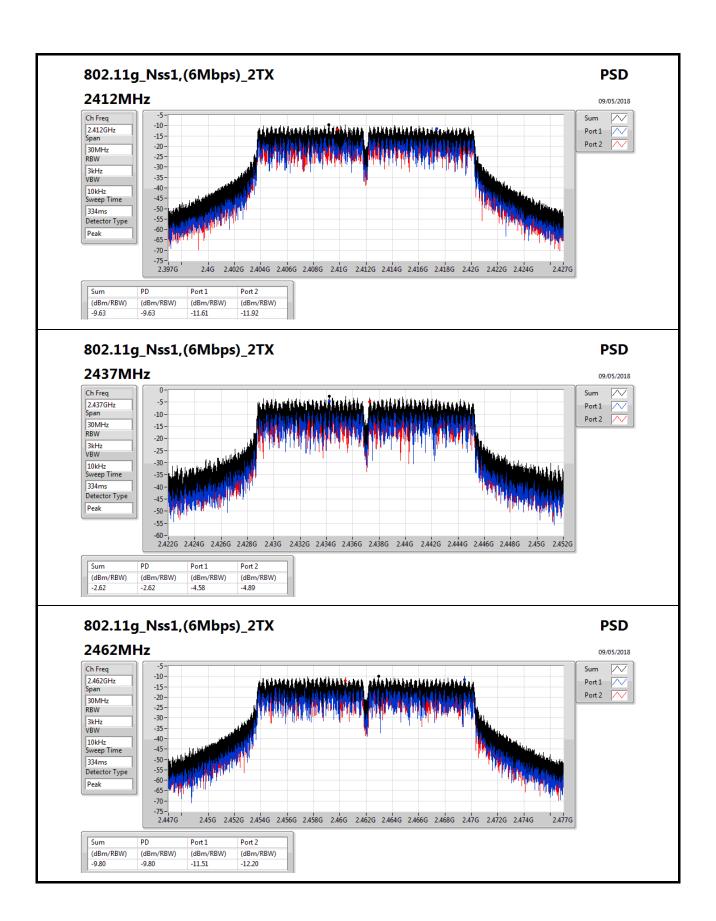
DG = Directional Gain; RBW=3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port Xpower density;

Page No. : 1 of 5

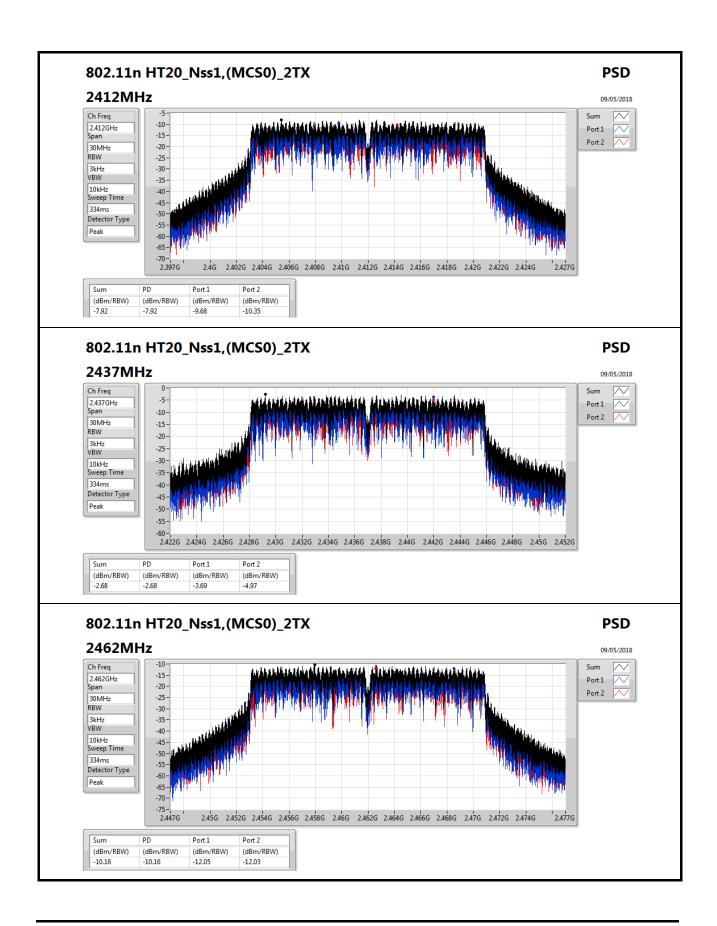




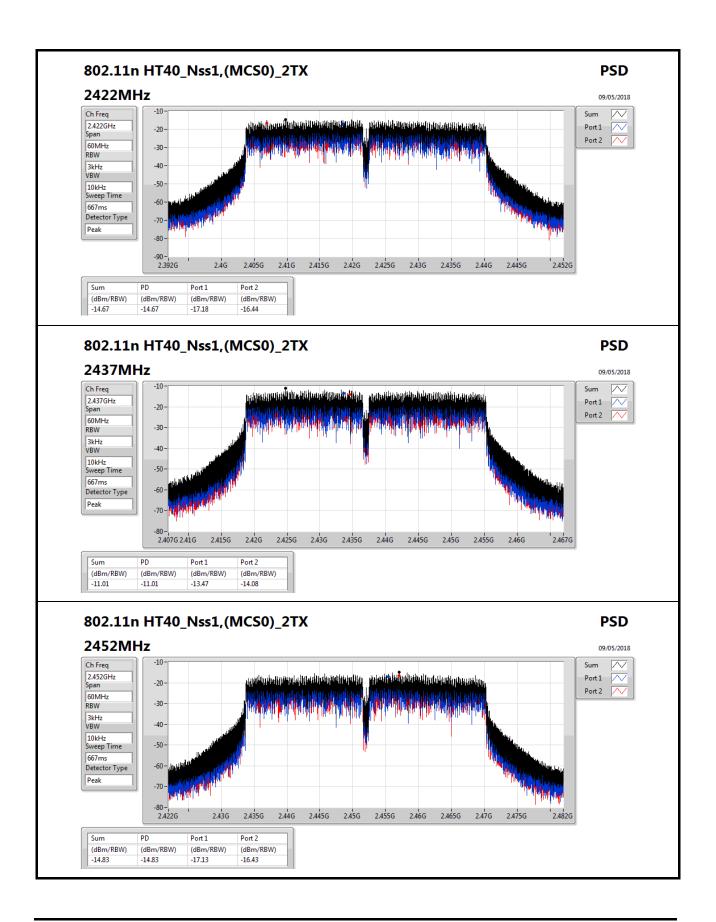














## **CSE Non-restricted Band Result**

Appendix E

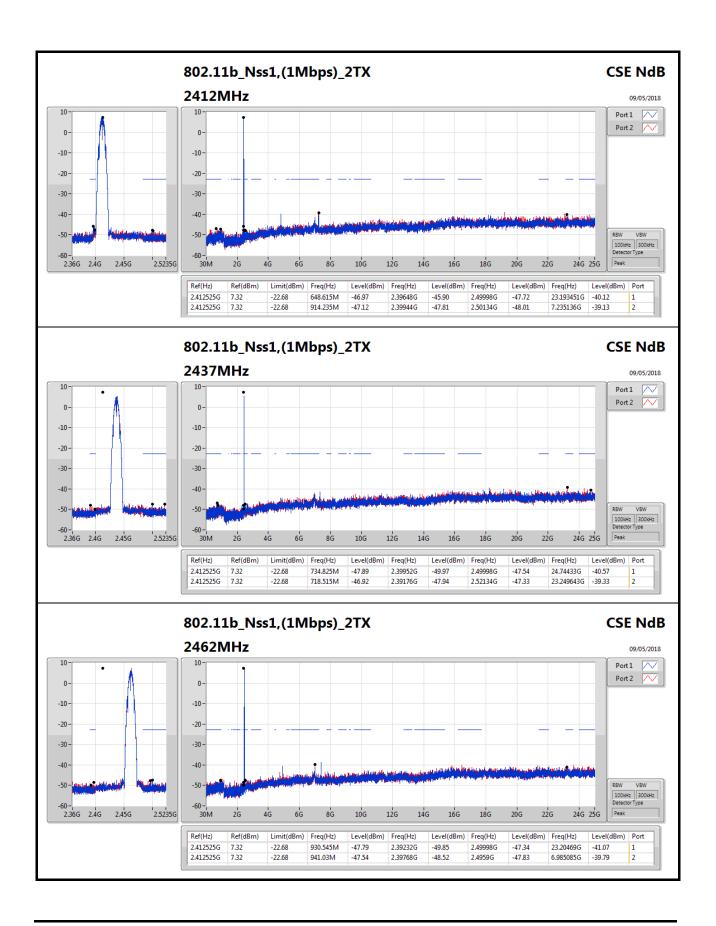
Summary

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz		-	-	-	-		-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	2.412525G	7.32	-22.68	914.235M	-47.12	2.39944G	-47.81	2.50134G	-48.01	7.235136G	-39.13	2
802.11g_Nss1,(6Mbps)_2TX	Pass	2.439412G	11.91	-18.09	697.545M	-37.58	2.39992G	-28.24	2.51918G	-38.91	6.979466G	-31.04	1
802.11n HT20_Nss1,(MCS0)_2TX	Pass	2.438243G	12.49	-17.51	893.265M	-37.81	2.39992G	-24.78	2.49734G	-38.08	16.599408G	-30.80	2
802.11n HT40_Nss1,(MCS0)_2TX	Pass	2.430728G	1.95	-28.05	702.115M	-57.54	2.39968G	-34.94	2.5099G	-54.46	21.749512G	-50.02	2

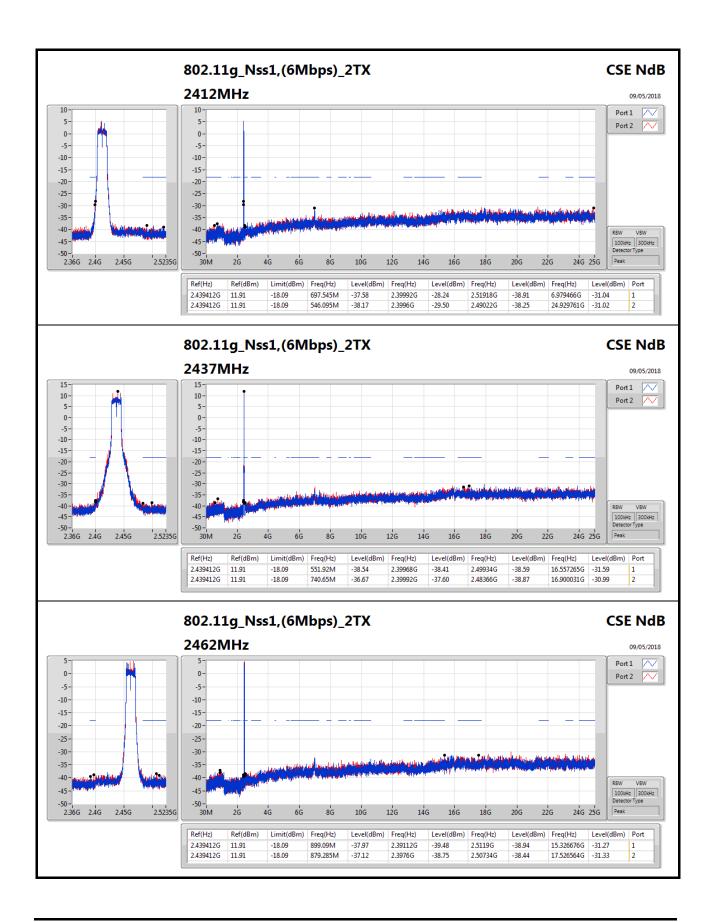
## Result

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Por
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.412525G	7.32	-22.68	648.615M	-46.97	2.39648G	-45.90	2.49998G	-47.72	23.193451G	-40.12	1
2412MHz	Pass	2.412525G	7.32	-22.68	914.235M	-47.12	2.39944G	-47.81	2.50134G	-48.01	7.235136G	-39.13	2
2437MHz	Pass	2.412525G	7.32	-22.68	734.825M	-47.89	2.39952G	-49.97	2.49998G	-47.54	24.74433G	-40.57	1
2437MHz	Pass	2.412525G	7.32	-22.68	718.515M	-46.92	2.39176G	-47.94	2.52134G	-47.33	23.249643G	-39.33	2
2462MHz	Pass	2.412525G	7.32	-22.68	930.545M	-47.79	2.39232G	-49.85	2.49998G	-47.34	23.20469G	-41.07	1
2462MHz	Pass	2.412525G	7.32	-22.68	941.03M	-47.54	2.39768G	-48.52	2.4959G	-47.83	6.985085G	-39.79	2
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.439412G	11.91	-18.09	697.545M	-37.58	2.39992G	-28.24	2.51918G	-38.91	6.979466G	-31.04	1
2412MHz	Pass	2.439412G	11.91	-18.09	546.095M	-38.17	2.3996G	-29.50	2.49022G	-38.25	24.929761G	-31.02	2
2437MHz	Pass	2.439412G	11.91	-18.09	551.92M	-38.54	2.39968G	-38.41	2.49934G	-38.59	16.557265G	-31.59	1
2437MHz	Pass	2.439412G	11.91	-18.09	740.65M	-36.67	2.39992G	-37.60	2.48366G	-38.87	16.900031G	-30.99	2
2462MHz	Pass	2.439412G	11.91	-18.09	899.09M	-37.97	2.39112G	-39.48	2.5119G	-38.94	15.326676G	-31.27	1
2462MHz	Pass	2.439412G	11.91	-18.09	879.285M	-37.12	2.3976G	-38.75	2.50734G	-38.44	17.526564G	-31.33	2
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.438243G	12.49	-17.51	867.635M	-36.93	2.39992G	-25.18	2.51414G	-39.10	23.213118G	-31.25	1
2412MHz	Pass	2.438243G	12.49	-17.51	893.265M	-37.81	2.39992G	-24.78	2.49734G	-38.08	16.599408G	-30.80	2
2437MHz	Pass	2.438243G	12.49	-17.51	875.79M	-38.16	2.3944G	-37.99	2.49918G	-39.18	24.980333G	-31.01	1
2437MHz	Pass	2.438243G	12.49	-17.51	923.555M	-37.16	2.3984G	-37.20	2.50246G	-38.23	23.241214G	-31.45	2
2462MHz	Pass	2.438243G	12.49	-17.51	360.86M	-38.06	2.3928G	-40.71	2.49734G	-38.81	17.61366G	-30.82	1
2462MHz	Pass	2.438243G	12.49	-17.51	673.08M	-37.39	2.39272G	-39.92	2.50702G	-38.58	21.454332G	-31.03	2
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	
2422MHz	Pass	2.430728G	1.95	-28.05	2.305115G	-56.07	2.39984G	-34.99	2.49998G	-50.93	6.966663G	-50.34	1
2422MHz	Pass	2.430728G	1.95	-28.05	702.115M	-57.54	2.39968G	-34.94	2.5099G	-54.46	21.749512G	-50.02	2
2437MHz	Pass	2.430728G	1.95	-28.05	2.305115G	-55.74	2.39824G	-43.89	2.49998G	-51.38	16.754586G	-51.02	1
2437MHz	Pass	2.430728G	1.95	-28.05	762.8M	-57.00	2.39936G	-46.88	2.48366G	-53.94	16.580703G	-51.05	2
2452MHz	Pass	2.430728G	1.95	-28.05	952.87M	-57.67	2.39696G	-53.20	2.49998G	-49.46	16.903228G	-50.61	
2452MHz	Pass	2.430728G	1.95	-28.05	449.07M	-57.13	2.39488G	-54.25	2.48446G	-51.78	24.245573G	-50.67	2





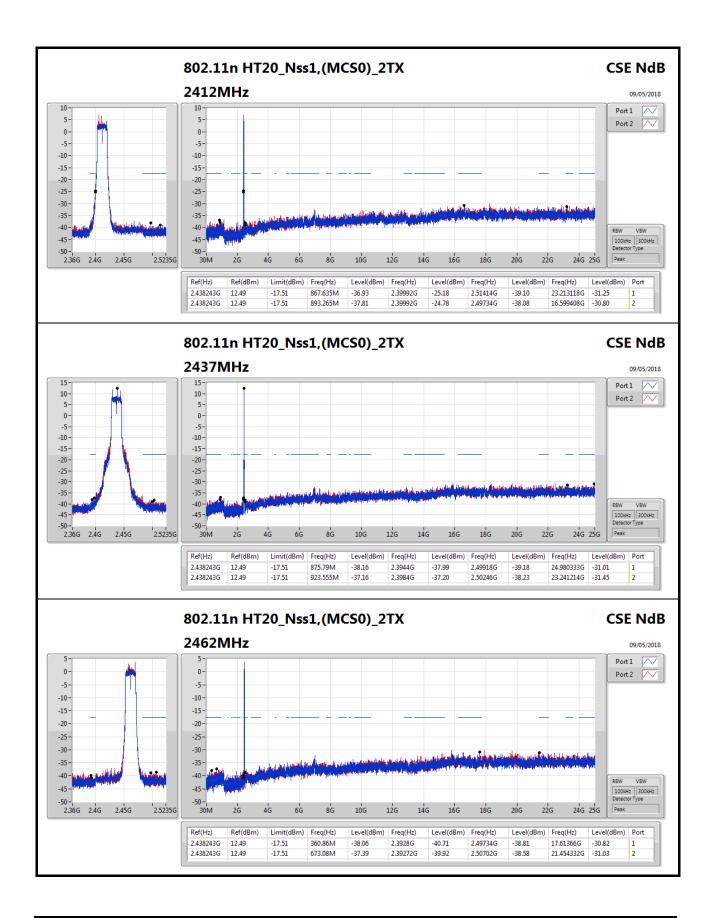




Page No.

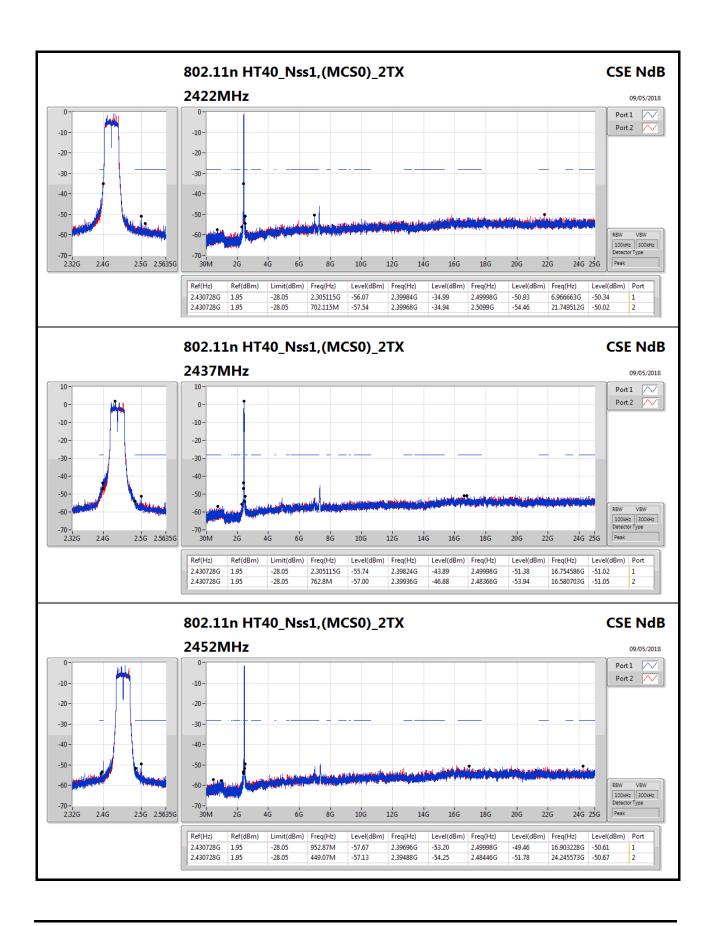
: 3 of 5





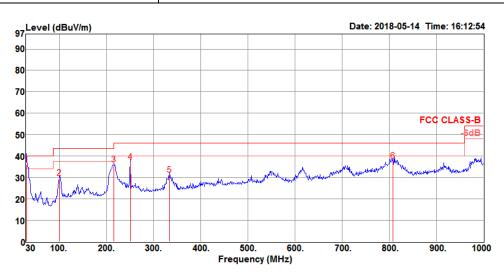
Page No.







RSE below 1GHz Result											
Operating Mode 1 Polarization Horizontal											
Operating Function	СТХ										

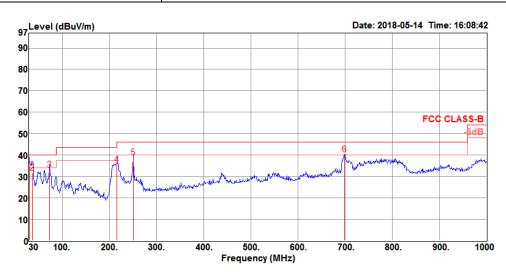


	Freq	Level	Limit Line					Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	CM	deg		
1	30.00	35.94	40.00	-4.06	38.61	0.97	24.91	28.55	143	297	QP	HORIZONTAL
2	100.81	29.67	43.50	-13.83	40.51	0.85	16.75	28.44	121	278	QP	HORIZONTAL
3	216.24	36.01	46.00	-9.99	47.10	2.10	14.82	28.01	105	300	QP	HORIZONTAL
4	251.16	37.28	46.00	-8.72	44.71	2.38	18.14	27.95	102	298	QP	HORIZONTAL
5	333.61	31.07	46.00	-14.93	38.11	1.76	19.33	28.13	141	302	QP	HORIZONTAL
6	807.94	37.71	46.00	-8.29	37.79	3.33	25.70	29.11	145	277	QP	HORIZONTAL

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



RSE below 1GHz Result											
Operating Mode	1	1 Polarization Vertical									
Operating Function	CTX										



	Freq	Level	Limit Line					Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	$\overline{\text{dBuV/m}}$	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.00	35.33	40.00	-4.67	38.00	0.97	24.91	28.55	100	314	QP	VERTICAL
2	36.79	31.75	40.00	-8.25	38.00	1.07	21.22	28.54	161	303	QP	VERTICAL
3	73.65	33.32	40.00	-6.68	48.49	0.86	12.46	28.49	111	325	QP	VERTICAL
4	216.24	35.61	46.00	-10.39	46.70	2.10	14.82	28.01	132	344	QP	VERTICAL
5	251.16	38.98	46.00	-7.02	46.41	2.38	18.14	27.95	121	311	QP	VERTICAL
6	698.33	40.24	46.00	-5.76	41.60	3.28	24.69	29.33	142	333	QP	VERTICAL

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



## RSE TX above 1GHz Result

Appendix F.2

**Summary** 

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11n HT20_Nss1,(MCS0)_2TX	Pass	PK	2.4844G	73.98	74.00	-0.02	31.80	3	Vertical	358	1.67	-



