# **TEST REPORT**

**Dt&C** 

## DT&C Co., Ltd.

42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042 Tel : 031-321-2664, Fax : 031-321-1664

1. Report No: DRTFCC1905-0181

2. Customer

- Name (FCC) : Janam Technologies LLC / Name (IC) : JANAM TECHNOLOGIES LLC
- Address : 100 Crossways Park West Suite 105, Woodbury, New York, 11797, United States
- 3. Use of Report : FCC & IC Original Grant
- 4. Product Name / Model Name : Mobile Computer / XT2WE FCC ID : UTWXT2WE / IC : 6914A-XT2WE
- 5. Test Method Used : KDB 558074, ANSI C63.10-2013
  - Test Specification : FCC Part 15 Subpart C.247

RSS-247 Issue 2, RSS-GEN Issue 5

- 6. Date of Test : 2017.03.20 ~ 2017.07.03(Original test), 2019.02.07 ~ 2019.02.10(Spot check test)
- 7. Testing Environment : See appended test report.
- 8. Test Result : Refer to the attached test result.

Affine ation	Tested by	Technical Manager	_					
Affirmation	Name : SunGeun Lee	Name : GeunKi Son	Signature)					
The test	results presented in this test report are limited	only to the sample supplied by applica	ant and					
the use o	of this test report is inhibited other than its purp	ose. This test report shall not be repro	duced					
	except in full, without the written ap	proval of DT&C Co., Ltd.						
	2019.05	. 03 .						
	DT&C Co., Ltd.							
If this report is required to confirmation of authenticity, please contact to report@dtnc.net								



## **Test Report Version**

Test Report No.	Date	Description
DRTFCC1905-0181	May. 03, 2019	Initial issue

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## **1. GENERAL INFORMATION**

#### 1.1 Testing Laboratory

#### DT&C Co., Ltd.

The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The test site complies with the requirements of § 2.948 according to ANSI C63.4-2014.

#### - FCC MRA Accredited Test Firm No. : KR0034

#### - IC Test site No. : 5740A

www.dtnc.net		
Telephone	:	+ 82-31-321-2664
FAX	:	+ 82-31-321-1664

#### **1.2 Test Environment**

Ambient Condition	Original test	Spot check test	
<ul> <li>Temperature</li> </ul>	+21 ~ +25  ℃	+22 ~ 23 ℃	
<ul> <li>Relative Humidity</li> </ul>	41 % ~ 45 %	35 ~ 38 %	

#### **1.3 Measurement Uncertainty**

Test items	Measurement uncertainty
Transmitter Output Power	0.7 dB (The confidence level is about 95 %, $k = 2$ )
Conducted spurious emission	1.0 dB (The confidence level is about 95 %, $k = 2$ )
AC conducted emission	2.4 dB (The confidence level is about 95 %, $k = 2$ )
Radiated spurious emission (1 GHz Below)	5.1 dB (The confidence level is about 95 %, $k = 2$ )
Radiated spurious emission (1 GHz ~ 18 GHz)	5.4 dB (The confidence level is about 95 %, $k = 2$ )
Radiated spurious emission (18 GHz Above)	5.3 dB (The confidence level is about 95 %, $k = 2$ )

## **1.4 Details of Applicant**

Applicant (FCC)	: Janam Technologies LLC
Applicant (IC)	: JANAM TECHNOLOGIES LLC
Address	: 100 Crossways Park West Suite 105, Woodbury, New York, 11797, United States
Contact person (FCC)	: Harry Lerner
Contact person (IC)	: Scott Leung

## 1.5 Description of EUT

EUT	Mobile computer
Model Name(FCC, IC)	XT2WE
Add Model Name(FCC, IC)	NA
Power Supply	DC 3.8 V
Hardware version	MP
Software version	71.xx
Frequency Range	2.4GHz Band • 802.11b/g/n(HT20) : 2412 MHz ~ 2462 MHz
Max. RF Output Power	2.4GHz Band • 802.11b : 18.81 dBm • 802.11g : 21.33 dBm • 802.11n (HT20) : 21.29 dBm
Modulation Type	802.11b : DSSS/CCK 802.11g/n : OFDM
Antenna Specification	Internal Antenna • 2.4GHz Band Max. peak gain : -0.37 dBi



#### 1.6 Reference test data explanations

#### Introduction

This report includes the test data of FCC ID: V2X-PM80W1/ IC: 10664A-PM80W1 with reference to KDB 484596 D01v01.

The applicant takes full responsibility that the test data as reference section below represents compliance for FCC ID: UTWX2WE /IC: 6914A-XT2WE.

Reference FCC ID/ IC	Exhibit type	Separated FCC ID/ IC
FCC ID: V2X-PM80W1 / IC: 10664A-PM80W1	Original Grant / Certification	NA
FCC ID: UTWXT2WD / IC: 6914A-XT2WD	Change in FCC ID / Multiple listing	FCC ID: UTWXT2WE / IC: 6914A-XT2WE

#### • Explain the differences

FCC ID: UTWXT2WE/ IC: 6914A-XT2WE is same the internal printed circuit board with FCC ID: UTWXT2WD / IC: 6914A-XT2WD. The only difference between the two products is that the NFC chipset was changed. Where, FCC ID: UTWXT2WD/ IC: 6914A-XT2WD was performed the change-in-FCC ID application to FCC ID: V2X-PM80W1/ IC: 10664A-PM80W1.

#### • Spot check verification data

Equipment Class	FCC Part/ Technology			Mode Tx Freq. Test item (MHz)	Detector Mode	Reference FCC ID: V2X-PM80W1 IC: 10664A-PM80W1		FCC ID: UTWXT2WE IC: 6914A-XT2WE		Limit (dBuV/m)	Deviation		
Class	RSS Std.				Mode	Frequency (MHz)	Result (dBuV/m)	Frequency (MHz)	Result (dBuV/m)	(dBuv/iii)	(dB)		
		15C/ RSS-247 WLAN	802.11g	2462	Radiated Band	Peak	2483.72	64.33	2483.58	63.87	74.00	-0.46	
DTC	15C/		15C/ W(LAN)	002.11g	002.11g 2402	edge	Average	2483.51	50.65	2483.57	49.36	54.00	-1.29
DIS	DTS RSS-247 WLAN			2.11b 2412	Radiated	Peak	4823.97	56.16	4824.13	54.52	74.00	-1.64	
				602.11D	2412	Spurious emission	Average	4824.04	50.65	4823.97	48.82	54.00	-1.83

Note1: The spot check were performed based on worst-case results reported in the original FCC/IC report.

The spot check test results are within 3dB and two products shows a good correlation. It also complies with the FCC/IC limit.

#### • Reference section

Reference FCC ID: V2X-PM80W1 / Reference IC: 10664A-PM80W1

Equipment Class	FCC Part/ RSS Std.	Technology	Frequency range(MHz)	Exhibit type	Report title	Reference Sections
DSS	15C/ RSS-247	Bluetooth	2402 ~ 2480	Original Grant	DSS	All
DTS	15C/ RSS-247	BLE	2402 ~ 2480	Original Grant	DTS LE	All
DTS	15C/ RSS-247	WLAN	2412 ~ 2462	Original Grant	DTS WLAN	All
NII	15E/ RSS-247	WLAN	5180 ~ 5240 5260 ~ 5320 5500 ~ 5700 5745 ~ 5825	Original Grant	NII, DFS	All
DXX	15C/ RSS-210	NFC	13.56	Original Grant	Not Applicable	Not Applicable

## 2. SUMMARY OF TESTS

FCC Part	RSS Std.	Parameter	Limit	Test Condition	Status Note 1
15.247(a)	RSS-247 [5.2]	6 dB Bandwidth	> 500 kHz		С
15.247(b)	RSS-247 [5.4]	Transmitter Output Power	nsmitter Output Power < 1 Watt		С
15.247(d)	RSS-247 [5.5]	Out of Band Emissions / Band Edge	20 dBc in any 100 kHz BW	Conducted	С
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8 dBm/3 kHz		С
-	RSS-Gen [6.7]	Occupied Bandwidth (99 %)	RSS-Gen(6.7)		С
15.247(d) 15.205 15.209	RSS-247 [5.5] RSS-GEN [8.9] RSS-GEN [8.10]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.209 limits	Radiated	C Note 3
15.207	RSS-Gen [8.8]	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	С
15.203	RSS-Gen [8.3]	Antenna Requirements	FCC 15.203	-	С
Note 1: C=0		Comply NT=Not Tested NA=N	ot Applicable	amber which is	correlated

Note 2: For radiated emission tests below 30 MHz were performed on semi-anechoic chamber which is correlated with OATS.

Note 3: This test item was performed in each axis and the worst case data was reported.

## **3. TEST METHODOLOGY**

The measurement procedures described in the ANSI C63.10-2013 and the guidance provided in KDB558074 D01v05 were used in measurement of the EUT.

The EUT was tested per the guidance of KDB558074 D01v05. And ANSI C63.10-2013 was used to reference appropriate EUT setup and maximizing procedures of radiated spurious emission and AC line conducted emission testing.

#### **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2 EUT EXERCISE**

The EUT was operated in the test mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

### **3.3 GENERAL TEST PROCEDURES**

#### **Conducted Emissions**

The power-line conducted emission test procedure is not described on the KDB558074 D01v05.

So this test was fulfilled with the requirements in Section 6.2 of ANSI C63.10-2013.

The EUT is placed on the wooden table, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and Average detector

#### **Radiated Emissions**

Basically the radiated tests were performed with KDB558074 D01v05. But some requirements and procedures like test site requirements, EUT setup and maximizing procedure were fulfilled with the requirements in Section 5 and 6 of the ANSI C63.10-2013.

The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axes.

#### **3.4 DESCRIPTION OF TEST MODES**

The EUT has been tested with all modes of operating conditions to determine the worst case emission characteristics. A test program is used to control the EUT for staying in continuous transmitting mode.



## 4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

## 5. ANTENNA REQUIREMENTS

### 5.1 According to FCC 47 CFR §15.203:

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The internal antenna is attached on the main PCB using the special spring tension. (Refer to Internal Photo file.) Therefore this E.U.T Complies with the requirement of §15.203.



## 6. TEST RESULT

#### 6.1 6 dB Bandwidth

#### Test Requirements and limit, §15.247(a)

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

#### The minimum permissible 6 dB bandwidth is 500 kHz.

#### **TEST CONFIGURATION**

Refer to the APPENDIX I.

#### TEST PROCEDURE

- KDB558074 D01v05 Section 8.2
- ANSI C63.10-2013 Section 11.8.2
- 1. Set resolution bandwidth (RBW) = 100 kHz.
- 2. Set the video bandwidth (VBW)  $\ge$  3 x RBW.
- (<u>RBW : 100 kHz / VBW : 300 kHz</u>) 3. Detector = **Peak**.
- 4. Trace mode = **Max hold**.
- 5. Sweep = **Auto couple**.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### TEST RESULTS: Comply

Test Mode	Data Rate	Frequency [MHz]	Test Results [MHz]
		2412	9.063
802.11b	1 Mbps	2437	9.078
		2462	8.539
		2412	16.390
802.11g	6 Mbps	2437	16.380
		2462	16.120
		2412	17.620
802.11n (HT20)	MCS 0	2437	17.380
()		2462	16.950

#### RESULT PLOTS

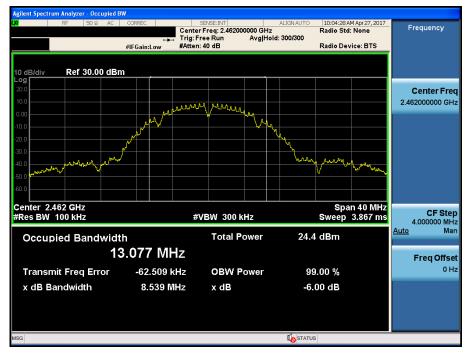
#### 6 dB Bandwidth Test Mode: 802.11b & 1 Mbps & 2412 MHz m Analy Occupied B Service S 10:03:31 AM Apr 27, 201 Radio Std: None Frequency Avg|Hold: 300/300 Radio Device: BTS Ref 30.00 dBm **Center Freq** 2.412000000 GHz 15 M MARIN mm Center 2.412 GHz #Res BW 100 kHz Span 40 MHz Sweep 3.867 ms CF Step 4.000000 MHz #VBW 300 kHz Man Auto Total Power 23.6 dBm **Occupied Bandwidth** 13.471 MHz Freq Offset Transmit Freq Error 212.80 kHz **OBW Power** 99.00 % 0 Hz x dB Bandwidth 9.063 MHz x dB -6.00 dB

#### 6 dB Bandwidth

Test Mode: 802.11b & 1 Mbps & 2437 MHz



#### Test Mode: 802.11b & 1 Mbps & 2462 MHz



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#### Test Mode: 802.11g & 6 Mbps & 2412 MHz



#### 6 dB Bandwidth

Test Mode: 802.11g & 6 Mbps & 2437 MHz

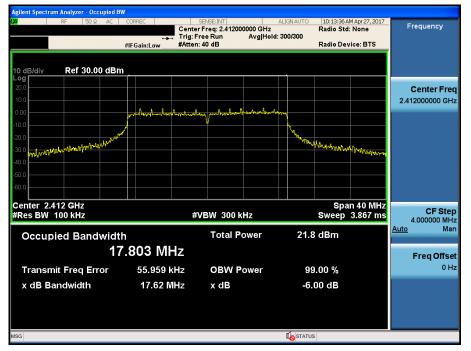


#### Test Mode: 802.11g & 6 Mbps & 2462 MHz



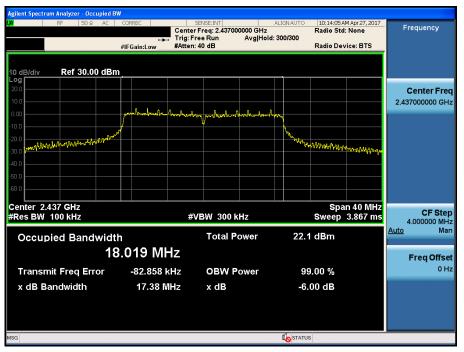
**Dt&C** 

#### Test Mode: 802.11n(HT20) & MCS 0 & 2412 MHz

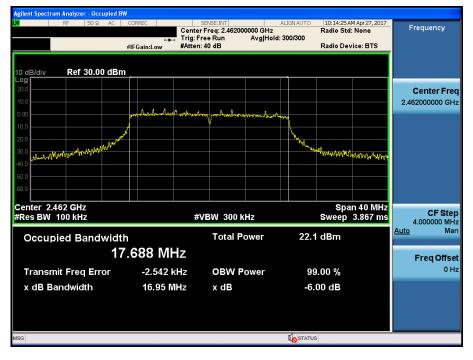


#### 6 dB Bandwidth

Test Mode: 802.11n(HT20) & MCS 0 & 2437 MHz



#### Test Mode: 802.11n(HT20) & MCS 0 & 2462 MHz

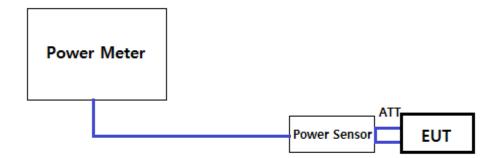


#### 6.2 Maximum Peak Conducted Output Power

#### Test Requirements and limit, §15.247(b)

The maximum permissible conducted output power is 1 Watt.

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

#### 1. PKPM1 Peak power meter method of KDB558074 D01v05

The maximum conducted output powers were measured using a broadband peak RF power meter which has greater video bandwidth than DUT's DTS bandwidth and utilize a fast-responding diode detector.

#### 2. Method AVGPM-G (Measurement using a gated RF average power meter) of KDB558074 D01v05

The average conducted output powers were measured using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

#### TEST RESULTS: Comply

#### - Measurement Data:

#### - Test Results

				Test Result [dBm]								
Mode	Channel	Frequency [MHz]	Detector			D	ATA RAT	E [Mbps	]			
				1	2	5.5	11	NA	NA	NA	NA	
		2442	PK	17.82	17.80	17.77	17.76	-	-	-	-	
	1	2412	AV	15.33	15.31	15.28	15.30	-	-	-	-	
000 445	6	0.407	РК	18.22	18.16	18.18	18.20	-	-	-	-	
802.11b	6	2437	AV	15.71	15.66	15.70	15.62	-	-	-	-	
	11		РК	18.81	18.77	18.76	18.78	-	-	-	-	
		2462	AV	15.91	15.88	15.82	15.84	-	-	-	-	

				Test Result [dBm]									
Mode	Channel	Frequency [MHz]	Detector		DATA RATE [Mbps]								
		[·····]		6	9	12	18	24	36	48	54		
		2412	PK	21.23	21.15	21.10	21.08	21.16	21.18	21.19	21.21		
	1	2412	AV	13.81	13.77	13.69	13.71	13.75	13.79	13.69	13.68		
902 11 a	c	2427	PK	21.33	21.28	21.22	21.31	21.23	21.25	21.26	21.22		
802.11g	6	2437	AV	14.15	14.05	14.11	14.06	14.02	14.09	14.13	14.08		
	44	2462	PK	21.31	21.26	21.19	21.26	21.21	21.22	21.24	21.19		
	11	2462	AV	14.11	14.05	14.09	14.06	14.02	14.08	14.07	14.05		

				Test Result [dBm]									
Mode Channe	Channel	Frequency [MHz]	Detector			[	DATA RA	TE [MCS	]				
				0	1	2	3	4	5	6	7		
		2412	PK	20.97	20.91	20.88	20.85	20.87	20.92	20.83	20.85		
	1	2412	AV	12.94	12.90	12.88	12.91	12.79	12.86	12.82	12.83		
802.11n	c	2427	PK	20.98	20.89	20.90	20.90	20.91	20.95	20.86	20.91		
(HT20)	6	2437	AV	13.32	13.25	13.21	13.19	13.26	13.27	13.22	13.25		
		2462	PK	21.29	21.22	21.19	21.25	21.19	21.24	21.25	21.20		
	11	2462	AV	13.15	13.11	13.08	13.06	13.09	13.07	13.05	13.06		



#### 6.3 Maximum Power Spectral Density

#### Test requirements and limit, §15.247(e)

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

#### **TEST CONFIGURATION**

Refer to the APPENDIX I.

#### Test Procedure

- KDB558074 D01v05 Section 8.4
- ANSI C63.10-2013 Section 11.10.2

#### Method PKPSD (peak PSD)

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS bandwidth.
- 3. Set the RBW to :  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- 4. Set the VBW  $\geq$  3 x RBW
- 5. Detector = **Peak**
- 6. Sweep time = **Auto couple**
- 7. Trace mode = **Max hold.**
- 8. Allow trace to fully stabilize.
- 9. Use the **peak marker function** to determine the maximum amplitude level within the RBW.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### TEST RESULTS: Comply

Test Mode	Data Rate	Frequency [MHz]	RBW	PKPSD [dBm]
		2412	3 kHz	-5.97
802.11b	1 Mbps	2437	3 kHz	-5.72
		2462	3 kHz	-5.09
	6 Mbps	2412	3 kHz	-8.40
802.11g		2437	3 kHz	-10.00
		2462	3 kHz	-8.55
		2412	3 kHz	-10.89
802.11n HT20	MCS 0	2437	3 kHz	-9.46
		2462	3 kHz	-9.58



Test Mode: 802.11b & 1 Mbps & 2412 MHz

#### RESULT PLOTS

Maximum PKPSD



#### **Maximum PKPSD**

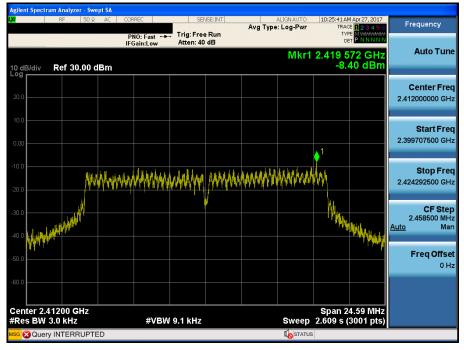
Test Mode: 802.11b & 1 Mbps & 2437 MHz



#### Test Mode: 802.11b & 1 Mbps & 2462 MHz

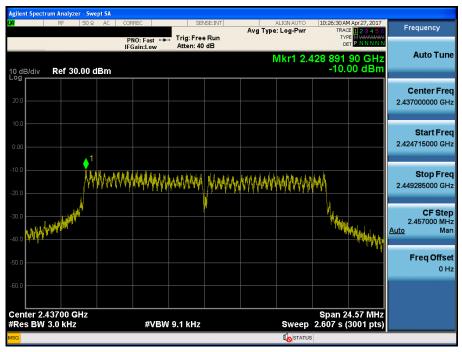


#### Test Mode: 802.11g & 6 Mbps & 2412 MHz

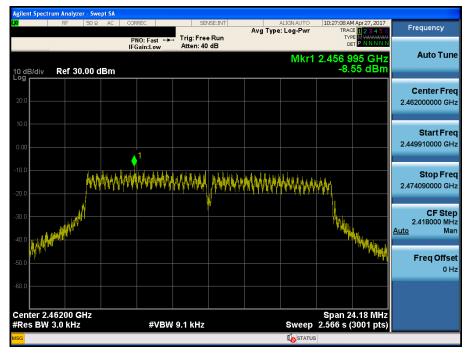


#### Maximum PKPSD

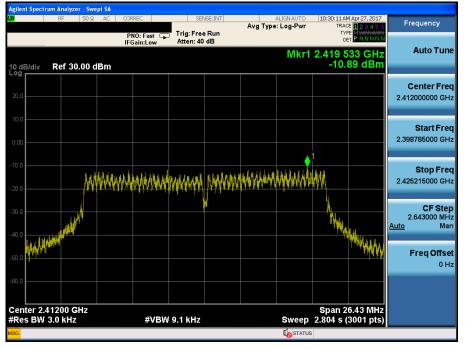
Test Mode: 802.11g & 6 Mbps & 2437 MHz



#### Test Mode: 802.11g & 6 Mbps & 2462 MHz

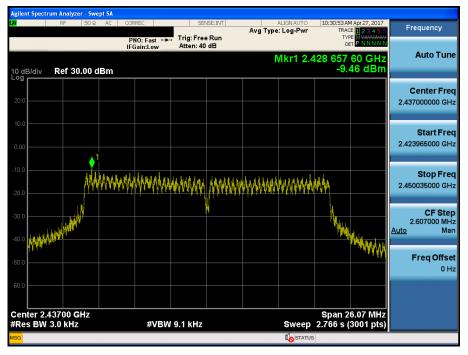


#### Test Mode: 802.11n(HT20) & MCS 0 & 2412 MHz

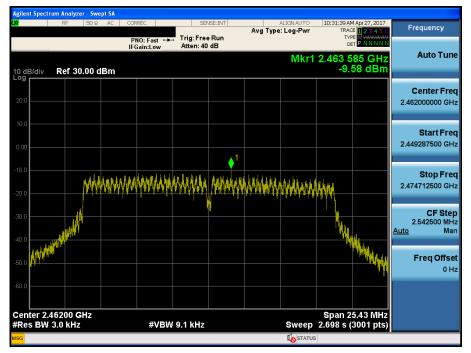


#### Maximum PKPSD

Test Mode: 802.11n(HT20) & MCS 0 & 2437 MHz



#### Test Mode: 802.11n(HT20) & MCS 0 & 2462 MHz





## 6.4 Out of Band Emissions at the Band Edge / Conducted Spurious Emissions

#### Test requirements and limit, §15.247(d)

**§15.247(d)** specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** 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.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** 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. In either case, attenuation to levels below the general emission limits specified in §15.209(a) is not required.

#### **Test Configuration:**

Refer to the APPENDIX I.

#### Test Procedure

- KDB558074 D01v05 Section 8.5
- ANSI C63.10-2013 Section 11.11

#### - Reference level measurement

1. Set instrument center frequency to DTS channel center frequency.

- 2. Set the span to  $\geq$  1.5 times the DTS bandwidth.
- 3. Set the RBW = 100 kHz.
- 4. Set the VBW  $\geq$  3 x RBW.
- 5. Detector = Peak.
- 6. Sweep time = Auto couple.
- 7. Trace mode = Max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum PSD level.

#### - Emission level measurement

- 1. Set the center frequency and span to encompass frequency range to be measured.
- 2. Set the RBW = 100 kHz. (Actual 1 MHz , See below note)
- 3. Set the VBW ≥ 3 x RBW. (Actual 3 MHz, See below note)
- 4. Detector = **Peak**.
- 5. Ensure that the number of measurement points  $\geq$  Span / RBW.
- 6. Sweep time = Auto couple.
- 7. Trace mode = **Max hold.**
- 8. Allow the trace to stabilize. (this may take some time, depending on the extent of the span)
- 9. Use the peak marker function to determine the maximum amplitude level.

Note : The conducted spurious emission was tested with below settings. Frequency range: 9 kHz ~ 30 MHz RBW = 100 kHz, VBW = 300 kHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

Frequency range: 30 MHz ~ 10 GHz, 10 GHz ~25 GHz RBW = 1 MHz, VBW = 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)

If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

Also the path loss for conducted measurement setup was used as described on the Appendix I of this test report.



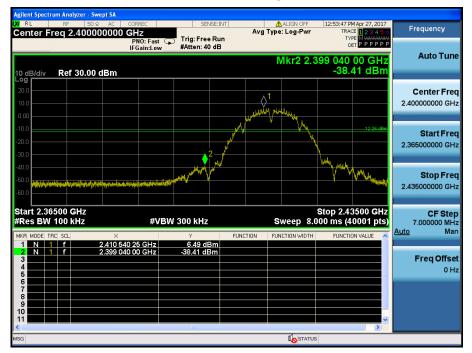
#### RESULT PLOTS

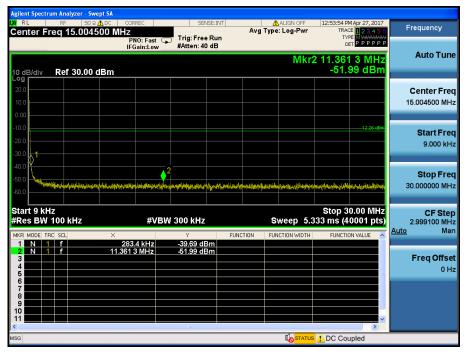
#### 802.11b & 1 Mbps & 2412 MHz



Reference

Low Band-edge





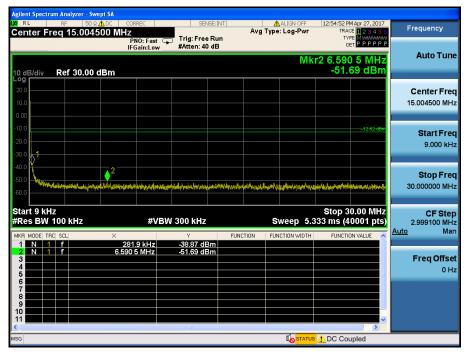
Agilent Spectrum Analyzer - Sv					
Center Freq 5.0150		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	12:54:08 PM Apr 27, 2017 TRACE 1 2 3 4 5 6	Frequency
Center freq 5.0150	PNO: Fast 🗔	Trig: Free Run		TYPE MINANANANA DET PPPPP	
	IFGain:Low	#Atten: 40 dB			Auto Tune
			Mkr1	0 5.942 96 GHz	Auto Tune
10 dB/div Ref 30.00	dBm			-35.95 dBm	
20.0	4				Center Freq
	\O'				•
10.0					5.015000000 GHz
0.00					
-10.0				12.26 dBm	Start Freq
-20.0					30.000000 MHz
-30.0	<u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u>_</u> <u>_</u> <u>_</u> <u></u>	<mark>م</mark> ر	<sup>10</sup> <del>3</del>		00.000000 Mil 12
-40.0		A CARLES AND A CAR	and the second	a Miller and a state of a state of the state	
and the second se	No. of Concession, Name of Street, or other	a control delivery of the local desired in the	A DESCRIPTION OF THE OWNER OWNER	and the second	Stop Freq
-50.0					10.00000000 GHz
-60.0					
Start 30 MHz				Stop 10.000 GHz	
#Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sween 18	.67 ms (40001 pts)	CF Step 997.000000 MHz
			-		Auto Man
MKR MODE TRC SCL	× 2.413 33 GHz	Y F 10.58 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f	3.174 29 GHz	-35.12 dBm			_
3 N 1 f	7.214 13 GHz 2.790 94 GHz	-35.73 dBm -35.77 dBm			Freq Offset
5 N 1 f	5.421 03 GHz	-35.81 dBm			0 Hz
6 N 1 f	3.222 64 GHz	-35.82 dBm			
	5.360 21 GHz 3.297 67 GHz	-35.87 dBm -35.91 dBm			
9 N 1 f	2.616 97 GHz	-35.92 dBm			
10 N 1 f	5.942 96 GHz	-35.95 dBm			
<		III		>	
MSG			STATUS		

Agilent Spectrum Analyzer - Sw	wept SA Ω AC CORREC	SENSE:INT	ALIGN OFF	12:54:17 PM Apr 27, 2017	
Center Freq 17.500	000000 GHz PN0: Fast		Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P P	Frequency
10 dB/div Ref 30.00	IFGain:Low	#Atten: 40 dB	Mkr5 2	3.393 125 GHz -27.31 dBm	Auto Tune
20.0 10.0 0.00					Center Freq 17.50000000 GHz
-10.0	no no 1. u. presidence discripto attribute	Coloradore and a second second		12.26 dBm	Start Freq 10.000000000 GHz
-40.0 -50.0 -60.0					<b>Stop Freq</b> 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBW	/ 3.0 MHz		Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GH: Auto Mar
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6	24.206 125 GHz 24.049 000 GHz 24.440 875 GHz 24.388 375 GHz 23.393 125 GHz	-25.56 dBm -25.87 dBm -26.40 dBm -26.52 dBm -27.31 dBm	CTION FUNCTION WIDTH		Freq Offset 0 Hz
7 8 9 10 11 4				×	
ISG					

#### 802.11b & 1 Mbps & 2437 MHz



#### Reference



Agilent Spectrum Analyzer - S X/ RL RF 50	wept SA Ω AC CORREC	SENSE:INT	ALIGN OFF	12:55:05 PM Apr 27, 2017	
Center Freq 5.0150	2000000 GHz PN0: Fast	Trig: Free Run	Avg Type: Log-Pwr	TRACE 2 3 4 5 6 TYPE MWWWWW	Frequency
	IFGain:Low	#Atten: 40 dB		DETPPPPP	
10 dB/div Ref 30.00	) dBm		Mkr1	0 6.488 32 GHz -36.09 dBm	Auto Tune
20.0	1				Center Fred
10.0					5.015000000 GH:
-10.0				-12.62 dBm	
-20.0					Start Freq 30.000000 MHz
-30.0				<b>∂</b> <sup>2</sup>	
-40.0					Stop Fred
-60.0					10.00000000 GH:
Start 30 MHz				Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	#VB\	V 3.0 MHz	Sweep 18	.67 ms (40001 pts)	997.000000 MH Auto Mar
MKR MODE TRC SCL	× 2.435 76 GHz	Y FUI 10.63 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f	8.157 29 GHz	-35.48 dBm			
3 N 1 f	3.318 11 GHz	-35.66 dBm			Freq Offset
4 N 1 f	2.653 85 GHz 2.553 16 GHz	-35.68 dBm -35.73 dBm			0 Hz
6 N 1 f	6.420 27 GHz	-35.79 dBm			
7 N 1 f	3.049 91 GHz	-36.04 dBm			
8 N 1 f	5.367 69 GHz 3.187 50 GHz	-36.05 dBm -36.07 dBm			
10 N 1 f	6.488 32 GHz	-36.09 dBm			
11				~	
<		III		>	
ISG			STATU:	3	

	Analyzer - Swept SA							
LXI RL	RF 50 Ω AC		SENSE:IN		ALIGN OFF	12:55:14 PM Apr		Frequency
Center Free	q 17.5000000	DU GHZ PNO: Fast	Trig: Free Rur		Type: Log-Pwr	TYPE M	23456	,
		IFGain:Low	#Atten: 40 dB			DET P	PPPPP	
					Mkr5 2	4.674 125	GHz	Auto Tune
10 dB/div	Ref 30.00 dBm					-26.79	dBm	
Log 20.0								
								Center Freq
10.0								17.50000000 GHz
0.00								
-10.0							12.62 dBm	Start Freq
-20.0								10.00000000 GHz
-30.0			Land State Land Land	A DESCRIPTION OF THE OWNER OF THE	The second s			
-40.0 all different inte				وماطلط والإعاد ومعدو		A DESCRIPTION OF THE OWNER OF THE		
-50.0								Stop Freq
-60.0								25.00000000 GHz
Start 10.000						Stop 25.00	0 GHz	CF Step
#Res BW 1.	0 MHz	#VBV	/ 3.0 MHz		Sweep 40	.00 ms (4000	01 pts)	1.500000000 GHz
MKR MODE TRC			Y	FUNCTION	FUNCTION WIDTH	FUNCTION VA	LUE 🔼	<u>Auto</u> Man
1 N 1 2 N 1		31 750 GHz 32 125 GHz	-25.63 dBm -26.03 dBm					
3 N 1	f 24.1	59 625 GHz	-26.47 dBm					Freq Offset
4 N 1 5 N 1	f 23.4 f 24.6	04 375 GHz 74 125 GHz	-26.56 dBm -26.79 dBm				_	0 Hz
6	24.0		E0.F0 dBill					
7 8								
9								
10							~	
<			ш				>	
MSG					🚺 STATUS			

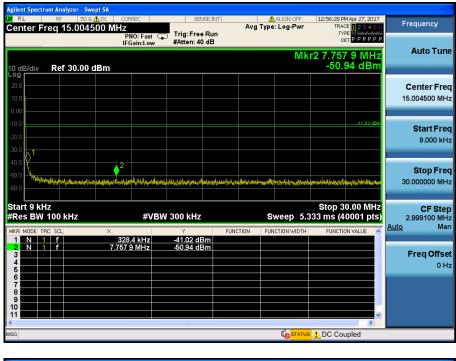
#### 802.11b & 1 Mbps & 2462 MHz



Reference

#### **High Band-edge**





Agilent Spectrum Analyzer - Swe					
RE RF 50 Ω     Center Freq 5.01500		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	12:56:41 PM Apr 27, 2017 TRACE 1 2 3 4 5 6	Frequency
Center Freq 5.01500	PNO: Fast 🗔	Trig: Free Run #Atten: 40 dB		TYPE MIMAAAAAAAA DET P P P P P P	
	IFGain:Low	#Atten: 40 dB			Auto Tune
			IVIKET	0 5.749 79 GHz -36.40 dBm	
10 dB/div Ref 30.00 d	IBM			-30.40 UBIII	
20.0	<u>_</u> 1				Center Freq
10.0	<u> </u>				5.015000000 GHz
0.00					
-10.0				-11.83 dBm	
-20.0					Start Freq
	A 2452		10 48		30.000000 MHz
-30.0	M.	In a state with			
-40.0	and the second second second second	Constant of the second s	and the second distance of the second se	a filiation and a file and the statement is in	Stop Freq
-50.0					10.000000000 GHz
-60.0					
Start 30 MHz				Stop 10.000 GHz	CE Oton
#Res BW 1.0 MHz	#VBW	/ 3.0 MHz	Sweep 18	.67 ms (40001 pts)	CF Step 997.000000 MHz
MKRI MODEL TRCI SCL	×	Y FUN	ICTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.460 94 GHz	11.51 dBm			
2 N 1 f 3 N 1 f	3.322 09 GHz 3.081 32 GHz	-35.54 dBm -35.76 dBm			Freq Offset
4 N 1 f	5.666 79 GHz	-35.98 dBm			0 Hz
5 N 1 f	5.689 22 GHz 3.229 87 GHz	-36.01 dBm -36.17 dBm		=	
7 N 1 f	5.805 62 GHz	-36.27 dBm			
8 N 1 f 9 N 1 f	7.263 98 GHz 5.879 40 GHz	-36.27 dBm -36.29 dBm			
10 N 1 f	5.749 79 GHz	-36.40 dBm			
11 <		ш		×	
MSG			In STATU	3	

Agilent Spectrum Analyzer - S					
Center Freq 17.50		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	12:56:50 PM Apr 27, 2017 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 40 dB		TYPE MINAMANA DET PPPPP	
	IFGain:Low_	WALLEN: 40 GB	Mkr5 (	24.114 625 GHz	Auto Tune
10 dB/div Ref 30.00	dBm			-26.27 dBm	
20.0					Center Fred
10.0					17.500000000 GHz
0.00					
-10.0				-11.83 dBm	Otent From
-20.0				5	Start Freq 10.000000000 GHz
-30.0		. Mallin	The second s		10.00000000 GH2
-40.0 Ministration of a strain state	and a second	The second se	And the state of t		
-50.0					Stop Freq
-60.0					25.00000000 GHz
Start 10.000 GHz				Oton 25 000 OU	
#Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 40	Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz
MKR MODE TRC SCL	×		NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
1 N 1 f 2 N 1 f	24.855 625 GHz 24.871 375 GHz	-25.11 dBm -25.11 dBm			
3 N 1 f	24.802 000 GHz 24.763 000 GHz	-26.03 dBm -26.14 dBm			Freq Offset
5 N 1 f	24.114 625 GHz	-26.14 dBm -26.27 dBm		=	0 Hz
6 7					
8					
10					
<				>	
MSG			<b>I</b> o STATUS	3	

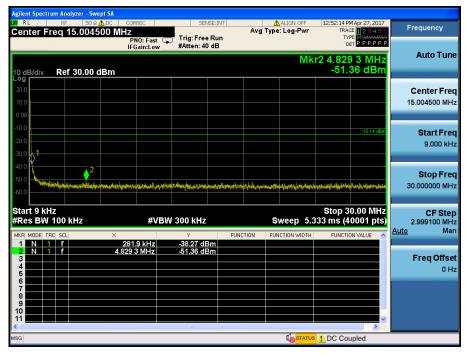
#### 802.11g & 6 Mbps & 2412 MHz



Reference

#### Low Band-edge





Agilent Spectrum Analyzer - Swe	pt SA				
<b>LXI</b> RL RF 50Ω	AC CORREC	SENSE:INT	ALIGN OFF	01:00:35 PM Apr 27, 2017 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast G	Trig: Free Run #Atten: 40 dB	ing type. Log i m		
	IFGain:Low	WAtten: 40 GB	Mkr	7 5.645 10 GHz	Auto Tune
10 dB/div Ref 30.00 d	IBm		WIKI	-35.69 dBm	
20.0	1				Center Freq
10.0					5.015000000 GHz
0.00					
-10.0					
-20.0				-15.14 dBm	Start Freq
-30.0	2 65	7	6		30.000000 MHz
-40.0		A REAL PROPERTY AND A REAL	approximation and a state of the strength	وملخصين بالاستعاد المتعادين ومعاقلت	
-50.0					Stop Freq
-60.0					10.00000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#\/D\	V 3.0 MHz	Swoon 19	Stop 10.000 GHz .67 ms (40001 pts)	CF Step
					997.000000 MHz Auto Man
MKR MODE TRC SCL	× 2.416 82 GHz	Y FUN 11.97 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f 3 N 1 f	2.443 24 GHz 3.190 49 GHz	-33.89 dBm -35.03 dBm			Freq Offset
4 N 1 f	3.149 61 GHz	-35.38 dBm			0 Hz
5 N 1 f 6 N 1 f	3.293 68 GHz 6.387 37 GHz	-35.43 dBm -35.68 dBm		=	
7 N 1 f	5.645 10 GHz	-35.69 dBm			
9					
10				×	
<		III .		>	
MSG				3	

Agilent Spectrum Analyzer - Swe					
Center Freq 17.500		SENSE:INT	Avg Type: Log-Pwr	12:52:36 PM Apr 27, 2017 TRACE 1 2 3 4 5 6	Frequency
echiel freq 17.5000	PNO: Fast G	Trig: Free Run #Atten: 40 dB	• •		
	IFGain:Low	#Atten: 40 dB	NAL		Auto Tune
0 dB/div Ref 30.00 dBm27.62 dBm					
20.0					Center Freq
10.0					17.500000000 GHz
0.00					11.0000000000000
-10.0					
-20.0				-15.14 dBm	Start Freq
-30.0					10.00000000 GHz
-40.0	a present patron of the second state of the			and the second second second second	
-50.0					Stop Freq
-60.0					25.00000000 GHz
-00.0					
Start 10.000 GHz				Stop 25.000 GHz	CF Step
#Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sweep 40	.00 ms (40001 pts)	1.500000000 GHz Auto Mar
MKR MODE TRC SCL	× 24.624 250 GHz	Y FU -25.53 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Wan
2 N 1 f	24.310 750 GHz	-26.15 dBm			_
3 N 1 f	23.695 000 GHz 24.548 125 GHz	-26.93 dBm -26.95 dBm			Freq Offset
5 N 1 f	23.867 500 GHz	-27.62 dBm		= =	0 Hz
7					
8					
10					
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MSG					