MEASUREMENT REPORT

FCC PART 15.247 WLAN 802.11b/g/n

FCC ID:	TK4WLE1216VX
Applicant:	Compex Systems Pte Ltd
Application Type:	Certification
Product:	Dual Band 4x4 802.11ac Wave 2 Mini PCIe WiFi Module
Model No.:	WLE1216VX, WLE1216VX-I
Brand Name:	COMPEX
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (Section 15.247)
Test Procedure(s):	ANSI C63.10-2013, KDB 662911 D01v02r01
Test Date	April 14 ~ July 07, 2021

Reviewed By: Kevin Guo

Approved By: Robin Wu

Revision History

Report No.	Version	Description	Issue Date	Note
2103RSU077-U1	Rev. 01	Initial Report	09-01-2021	Valid

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1. GENERAL INFORMATION

1.1. Applicant

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore

1.2. Manufacturer

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore

1.3. Testing Facility

<table>
<tr><td>☒</td><td colspan="5">Test Site – MRT Suzhou Laboratory</td></tr>
<tr><td></td><td colspan="5">Laboratory Location (Suzhou - Wuzhong)
D8 Building, No.2 Tian’edang Rd., Wuzhong Economic Development Zone, Suzhou, China
Laboratory Location (Suzhou - SIP)
4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="5">A2LA: 3628.01 CNAS: L10551
FCC: CN1166 ISED: CN0001
VCCI: ☐R-20025 ☐G-20034 ☐C-20020 ☐T-20020
☐R-20141 ☐G-20134 ☐C-20103 ☐T-20104</td></tr>
<tr><td>☐</td><td colspan="5">Test Site – MRT Shenzhen Laboratory</td></tr>
<tr><td></td><td colspan="5">Laboratory Location (Shenzhen)
1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="5">A2LA: 3628.02 CNAS: L10551
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<tr><td>☐</td><td colspan="5">Test Site – MRT Taiwan Laboratory</td></tr>
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No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="5">TAF: L3261-190725
FCC: 291082, TW3261 ISED: TW3261</td></tr>
</table>

1.4. Product Information

Product Name	Dual Band 4x4 802.11ac Wave 2 Mini PCIe WiFi Module
Model No.	WLE1216VX, WLE1216VX-I
Serial No.	30836757
Wi-Fi Specification	802.11a/b/g/n/ac
Antenna Information	Refer to section 1.7

Remark:

1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.
2. The difference of models is only for marketing different client, so the model (WLE1216VX) was selected for testing in this report.

1.5. Radio Specification

Frequency Range	802.11b/g/n-HT20: 2412 ~ 2462MHz 802.11n-HT40: 2422 ~ 2452MHz
Channel Number	802.11b/g/n-HT20: 11 802.11n-HT40: 7
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps

Note: For other features of this EUT, test report will be issued separately.

1.6. Working Frequencies

802.11b/g/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz	--	--

802.11n-HT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz
06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	--	--	--	--

1.7. Antenna Details

Antenna Type	Frequency Band (GHz)	T_X Paths	Max Antenna Gain (dBi)	Cable Loss (dB)	Actual Antenna Gain (dBi)	Directional Gain (dBi)	
						For Power	For PSD
Dipole Antenna	2.4	4	3.16	0.52	2.64	2.64	8.66
	5.0	4	4.18	0.83	3.35	3.35	9.37

Remark:

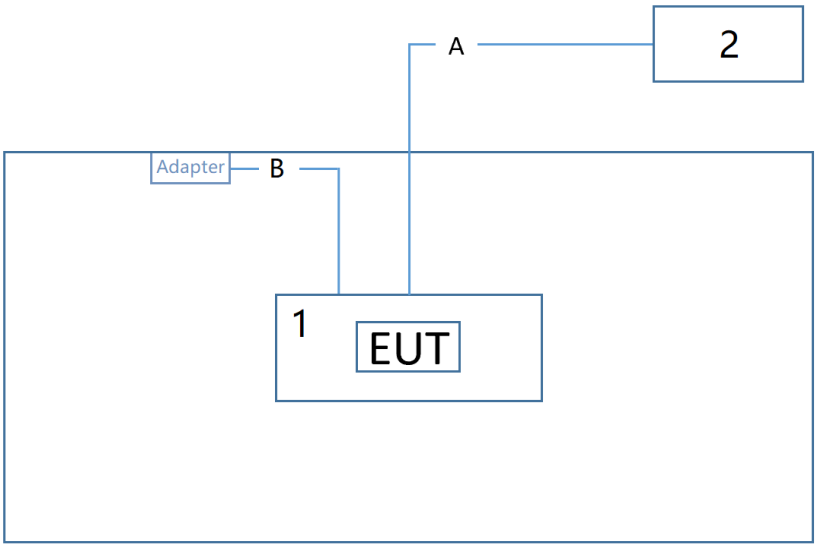
1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
2. For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 4$, $N_{SS} = 1$.
   If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.
   - For power spectral density (PSD) measurements on all devices,
     Array Gain = 10 log (N_{ANT}/ N_{SS}) dB = 6.02;
   - For power measurements on IEEE 802.11 devices,
     Array Gain = 0 dB for $N_{ANT} \leq 4$;

1.8. Test Mode

Test Mode	Mode 1: Transmit by 802.11b (1Mbps)
	Mode 2: Transmit by 802.11g (6Mbps)
	Mode 3: Transmit by 802.11n-HT20 (MCS0)
	Mode 4: Transmit by 802.11n-HT40 (MCS0)

1.9. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram


Cable Type		Cable Description
A	LAN able	Non shielded, > 10m
B	Power Cable	Non shielded, 1.25m

1.10. Test System Details

Product		Manufacturer	Model No.
1	Control Board	Compex	WPJXXX
2	Notebook	Dell	P62G

1.11. Test Software

The test utility software used during testing was “QRCT v4.0”.

Power setting refers to Operation Description.

1.12. Test Environment Condition

Ambient Temperature	15°C~35°C
Relative Humidity	20%RH ~75%RH

1.13. Duty Cycle

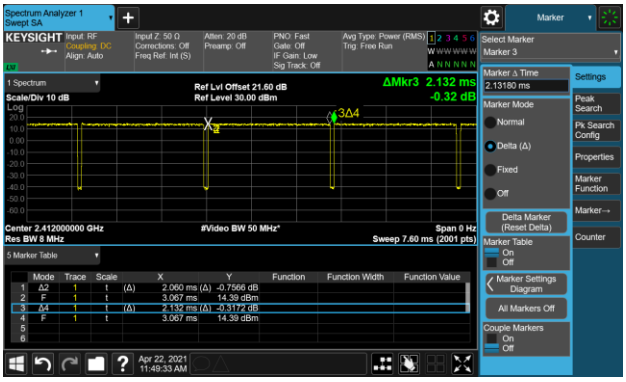
2.4GHz WLAN (DTS) operation is possible in 20MHz, and 40MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Duty Cycle (%)
802.11b	99.20
802.11g	96.62
802.11n-HT20	98.03
802.11n-HT40	96.80

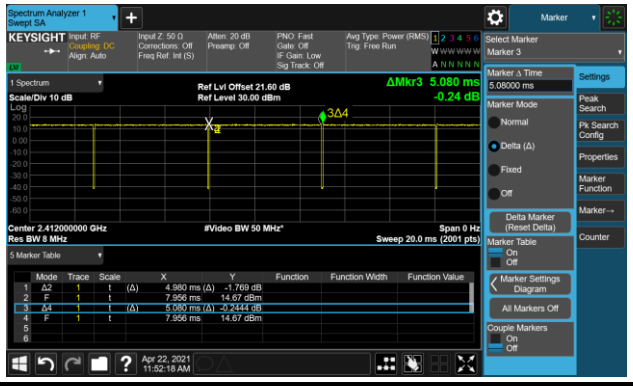
Duty Cycle (T = Transmission Duration)

802.11b (T = 12.40ms)

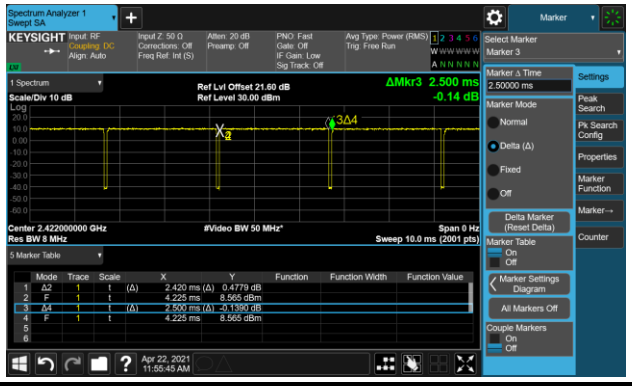
802.11g (T = 2.06ms)



802.11n-HT20 (T = 4.98ms)



802.11n-HT40 (T = 2.42ms)



2. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"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 antenna of the device uses the **unique I-PEX** connector.

Conclusion:

This unit complies with the requirement of §15.203.

3. TEST EQUIPMENT CALIBRATION DATE

Conducted Emission (WZ-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2021/11/22
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2021/09/09
Thermal Hygrometer	testo	608-H1	MRTSUE06404	1 year	2021/07/26
Shielding Room	MIX-BEP	Chamber-SR2	MRTSUE06215	N/A	N/A

Radiated Emission (WZ-AC1)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022/01/04
PXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/08/30
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/08
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2021/08/08
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2021/09/27
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06597	1 year	2021/12/14
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2021/11/14
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2022/06/09
Thermal Hygrometer	testo	608-H1	MRTSUE06403	1 year	2022/06/28
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2022/04/29

Conducted Test Equipment (WZ-TR3)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2022/04/13
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022/01/06
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2021/10/22
USB wideband power sensor	Keysight	U2021XA	MRTSUE06446	1 year	2022/06/08
USB wideband power sensor	Keysight	U2021XA	MRTSUE06447	1 year	2022/06/08
Attenuator	MVE	3dB	MRTSUE06529	1 year	2021/12/12
Attenuator	MVE	6dB	MRTSUE06534	1 year	2021/12/12
Attenuator	MVE	10dB	MRTSUE06540	1 year	2021/12/12
Attenuator	MVE	20dB	MRTSUE06547	1 year	2021/12/12
DC Power Supply	GWINSTEK	DPS-3303C	MRTSUE06064	N/A	N/A
Temperature & Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2021/10/22
Thermal Hygrometer	testo	608-H1	MRTSUE06401	1 year	2022/06/28

Software	Version	Function
EMI Software	V3	EMI Test Software

4. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%

5. TEST RESULT

5.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	≥ 500kHz	Conducted	Pass	Section 5.2
15.247(b)(3), (4)	Output Power	≤ 1Watt		Pass	Section 5.3
15.247(e)	Power Spectral Density	≤ 8dBm/3kHz		Pass	Section 5.4
15.247(d)	Band Edge / Out-of-Band Emissions	≤ 30dBc (Average)		Pass	Section 5.5
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 5.6 & 5.7
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 5.8

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) Output power test was verified over all data rates of each mode (data refers to operational description), and then choose the maximum power output (low data rate) for the final test of each channel.
3) For radiated emission tests, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

5.2. 6dB Bandwidth Measurement

5.2.1.Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

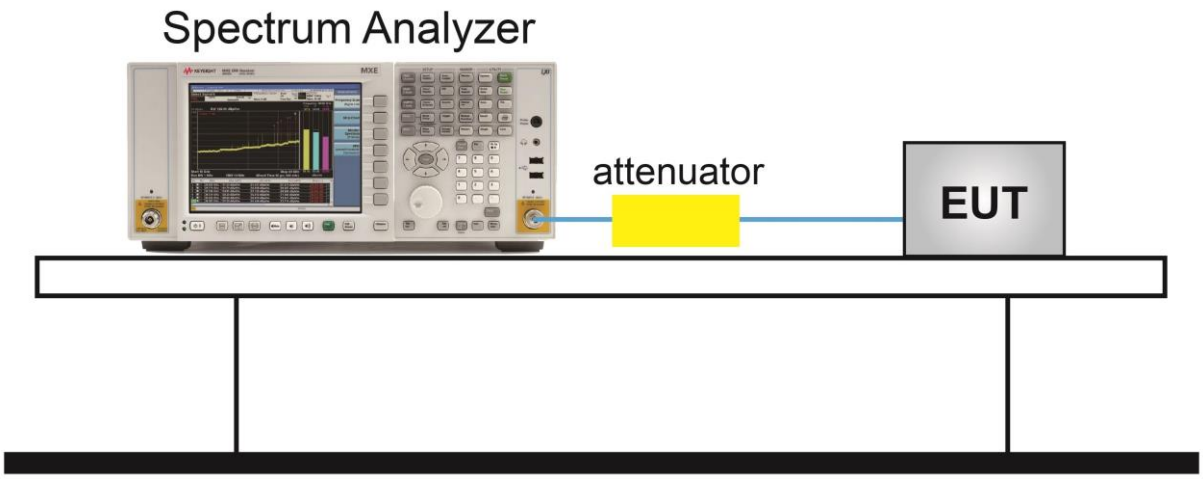
5.2.2.Test Procedure Used

ANSI C63.10 - 2013 Section 11.8.2

5.2.3.Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize

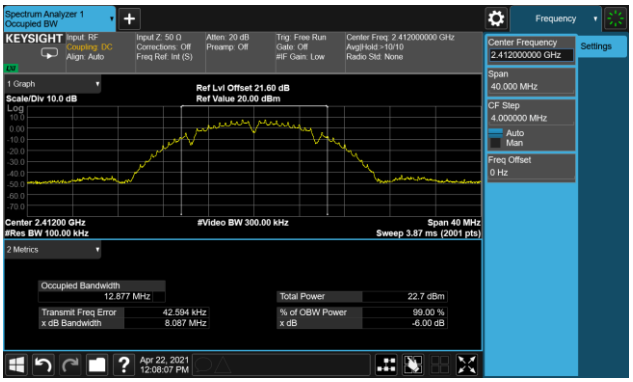
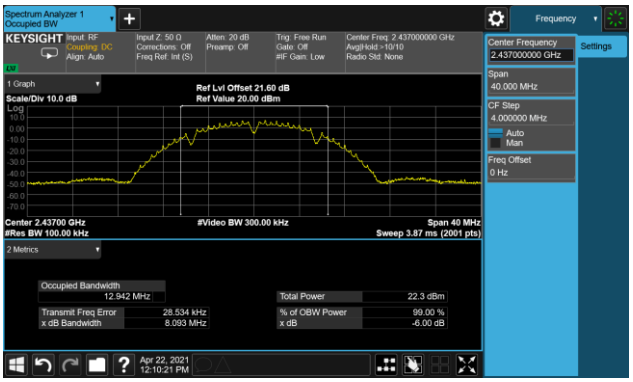
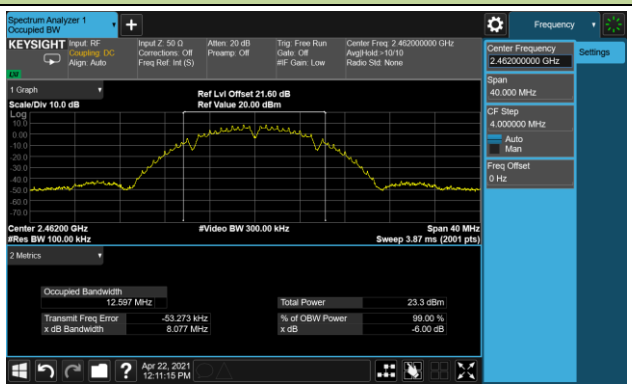
5.2.4.Test Setup

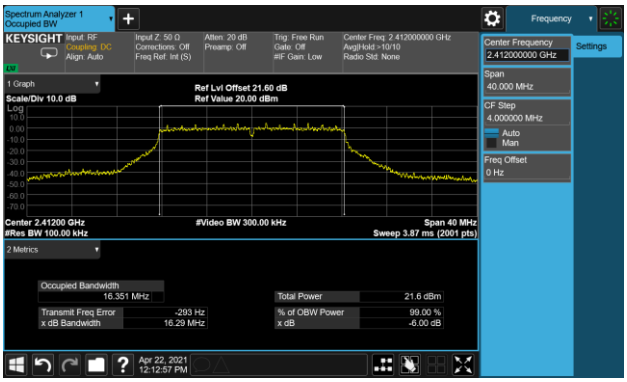
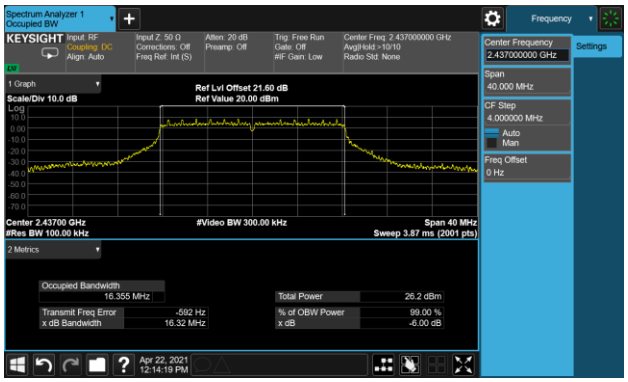
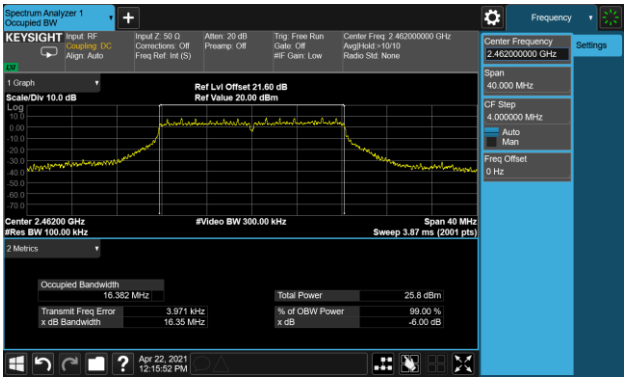


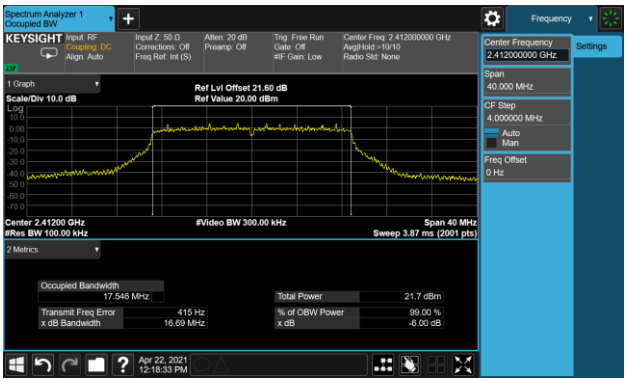
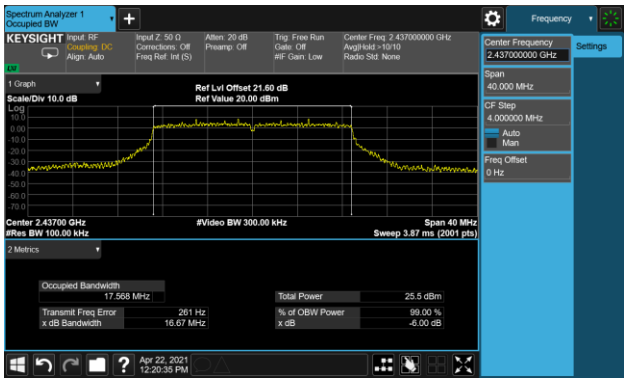
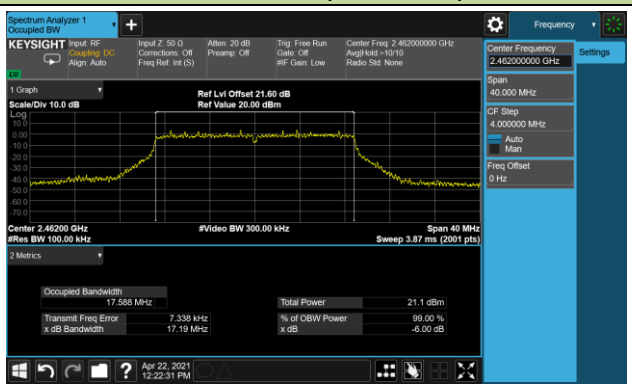
5.2.5.Test Result

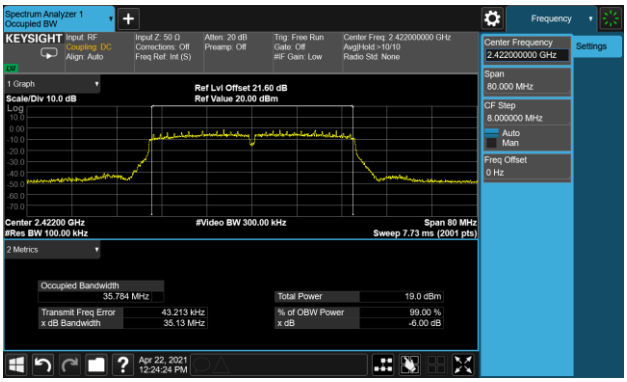
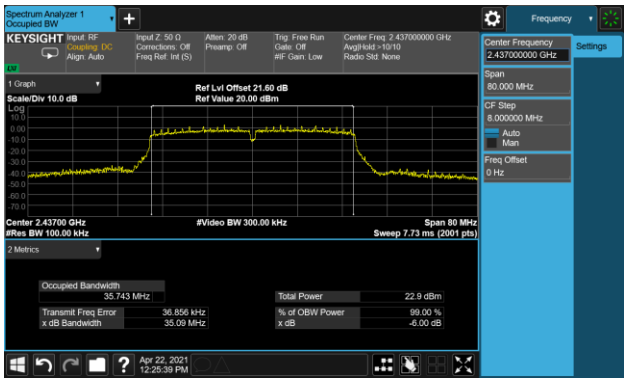
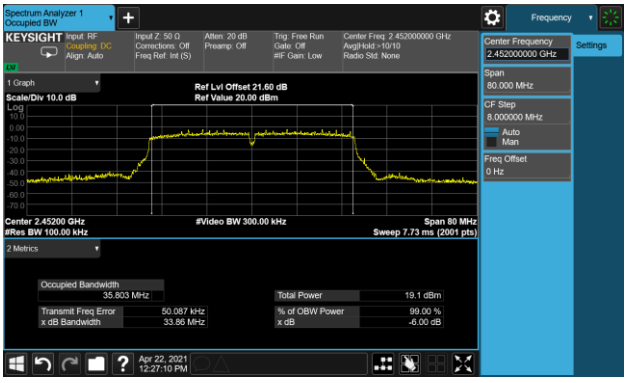
Test Site	WZ-TR3	Test Engineer	Luis Yang
Test Date	2021/04/22		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 0						
b	1Mbps	01	2412	8.09	≥ 0.5	Pass
b	1Mbps	06	2437	8.09	≥ 0.5	Pass
b	1Mbps	11	2462	8.08	≥ 0.5	Pass
g	6Mbps	01	2412	16.29	≥ 0.5	Pass
g	6Mbps	06	2437	16.32	≥ 0.5	Pass
g	6Mbps	11	2462	16.35	≥ 0.5	Pass
n-HT20	MCS0	01	2412	16.69	≥ 0.5	Pass
n-HT20	MCS0	06	2437	16.67	≥ 0.5	Pass
n-HT20	MCS0	11	2462	17.19	≥ 0.5	Pass
n-HT40	MCS0	03	2422	35.13	≥ 0.5	Pass
n-HT40	MCS0	06	2437	35.09	≥ 0.5	Pass
n-HT40	MCS0	09	2452	33.86	≥ 0.5	Pass

802.11b 6dB Bandwidth - Ant 0	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11g 6dB Bandwidth - Ant 0	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11n-HT20 6dB Bandwidth - Ant 0	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11n-HT40 6dB Bandwidth - Ant 0	
Channel 03 (2422MHz)	Channel 06 (2437MHz)
	
Channel 09 (2452MHz)	
	

5.3. Output Power Measurement

5.3.1.Test Limit

The maximum out power shall be less 1 Watt (30dBm).

The conducted output power limit is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3.2.Test Procedure Used

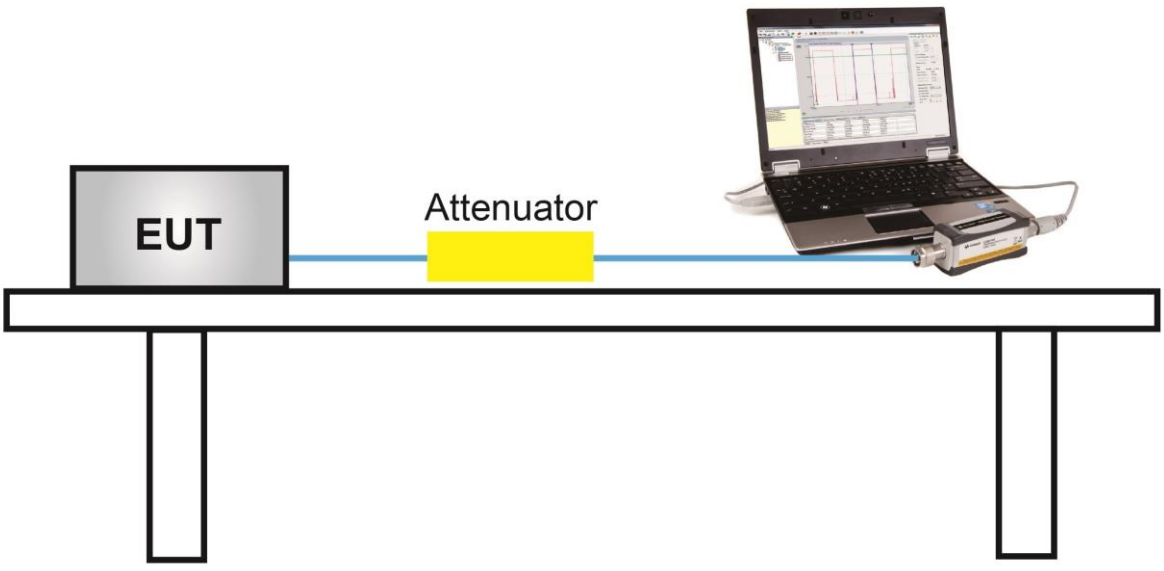
ANSI C63.10 - 2013 Section 11.9.2.3.2

5.3.3.Test Setting

Method AVGPM-G (Measurement using a gated RF average-reading power meter)

Measurements may be performed 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.

5.3.4.Test Setup



5.3.5.Test Result

Test Site	WZ-TR3	Test Engineer	Luis Yang
Test Date	2021/04/21~04/23		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)				Total Average Power (dBm)	Limit (dBm)	Result
				Ant 0	Ant 1	Ant 2	Ant 3			
11b	1Mbps	1	2412	16.28	16.20	15.65	16.39	22.16	≤ 30	Pass
11b	1Mbps	6	2437	15.53	15.31	15.21	16.15	21.59	≤ 30	Pass
11b	1Mbps	11	2462	15.13	15.30	16.25	16.13	21.75	≤ 30	Pass
11g	6Mbps	1	2412	14.50	14.89	14.55	14.66	20.67	≤ 30	Pass
11g	6Mbps	2	2417	17.10	17.80	17.40	17.12	23.38	≤ 30	Pass
11g	6Mbps	6	2437	18.00	19.16	18.73	18.53	24.65	≤ 30	Pass
11g	6Mbps	10	2457	16.58	17.79	17.48	17.26	23.32	≤ 30	Pass
11g	6Mbps	11	2462	13.40	14.03	13.94	13.78	19.81	≤ 30	Pass
11n-HT20	MCS0	1	2412	14.45	14.75	14.41	14.73	20.61	≤ 30	Pass
11n-HT20	MCS0	2	2417	17.25	17.73	17.52	17.53	23.53	≤ 30	Pass
11n-HT20	MCS0	6	2437	18.40	18.56	18.71	18.40	24.54	≤ 30	Pass
11n-HT20	MCS0	10	2457	16.75	18.06	17.72	17.80	23.63	≤ 30	Pass
11n-HT20	MCS0	11	2462	13.70	14.61	14.26	14.30	20.25	≤ 30	Pass
11n-HT40	MCS0	3	2422	8.63	11.78	11.32	11.01	16.86	≤ 30	Pass
11n-HT40	MCS0	4	2427	10.29	11.61	11.53	11.31	17.24	≤ 30	Pass
11n-HT40	MCS0	5	2432	12.02	12.66	12.88	12.61	18.57	≤ 30	Pass
11n-HT40	MCS0	6	2437	15.23	15.88	15.41	15.62	21.56	≤ 30	Pass
11n-HT40	MCS0	7	2442	12.60	13.18	13.33	13.45	19.17	≤ 30	Pass
11n-HT40	MCS0	8	2447	11.18	11.73	11.70	11.89	17.65	≤ 30	Pass
11n-HT40	MCS0	9	2452	11.75	12.23	12.29	12.33	18.18	≤ 30	Pass

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)} + 10^{(\text{Ant 2 Average Power }/10)} + 10^{(\text{Ant 3 Average Power }/10)}\}$ (dBm)

5.4. Power Spectral Density Measurement

5.4.1.Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the conducted power spectral density from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

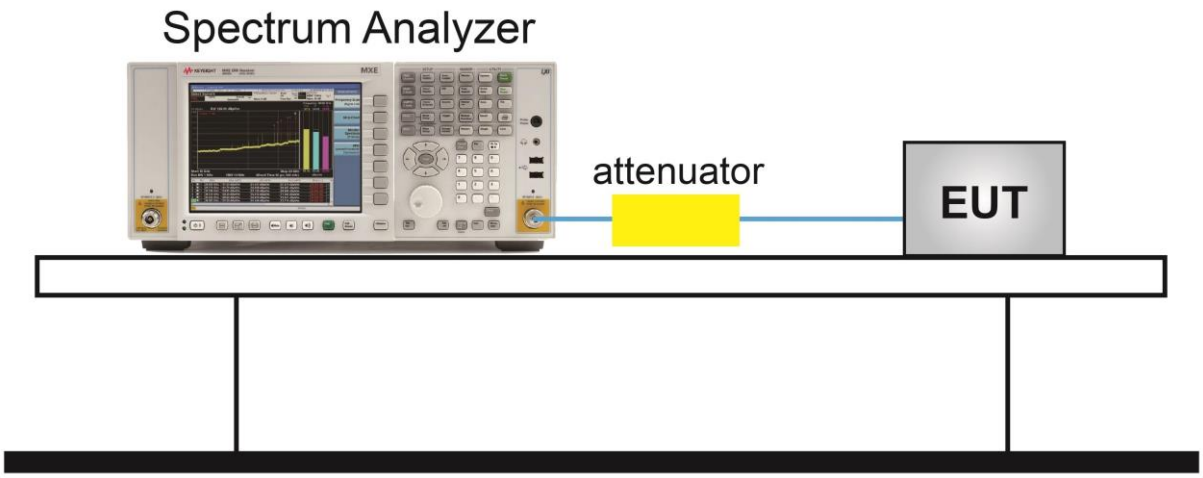
5.4.2.Test Procedure Used

ANSI C63.10-2013 Section 11.10.5

5.4.3.Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 10kHz
4. VBW = 30kHz
5. Detector = RMS
6. Ensure that the number of measurement points in the sweep ≥ 2 span/RBW
7. Sweep time = auto couple
8. Employ trace averaging (RMS) mode over a minimum of 100 traces
9. Use the peak marker function to determine the maximum amplitude level
10. If duty cycle < 98 %, add 10*log (1/x), where x is the duty cycle measured to the measured PSD to compute the average PSD during the actual transmission time.

5.4.4.Test Setup



5.4.5.Test Result

Test Site	WZ-TR3	Test Engineer	Luis Yang
Test Date	2021/04/22~2021/05/24		

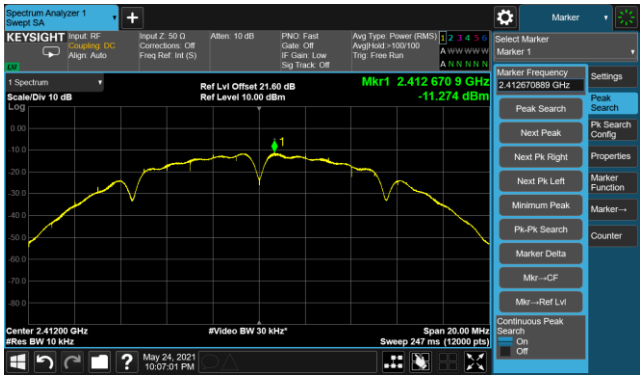
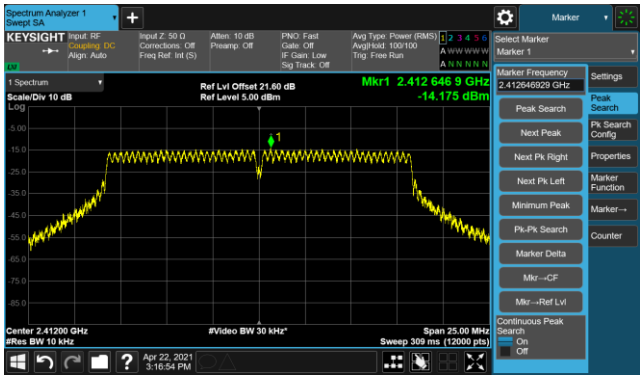
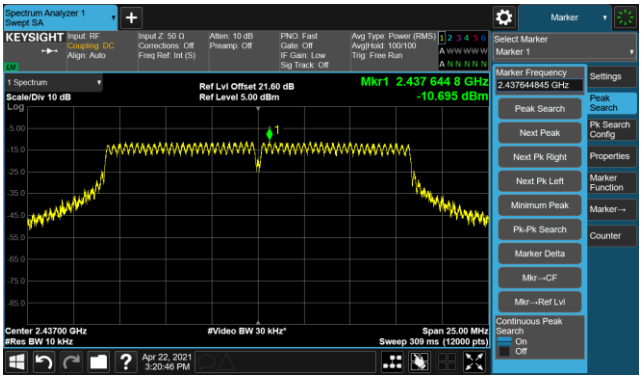
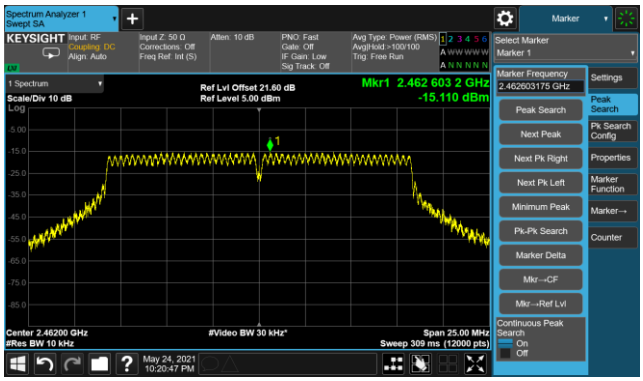
Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm / 10kHz)				Duty Cycle (%)	Final PSD (dBm / 10kHz)	Limit (dBm / 3kHz)	Result
				Ant 0	Ant 1	Ant 2	Ant 3				
11b	1Mbps	1	2412	-11.27	-11.08	-8.83	-10.37	99.20	-4.26	≤ 5.34	Pass
11b	1Mbps	6	2437	-9.64	-9.41	-11.40	-10.77	99.20	-4.21	≤ 5.34	Pass
11b	1Mbps	11	2462	-10.53	-9.42	-8.49	-10.15	99.20	-3.56	≤ 5.34	Pass
11g	6Mbps	1	2412	-14.18	-13.44	-14.06	-13.74	96.62	-7.67	≤ 5.34	Pass
11g	6Mbps	6	2437	-10.70	-9.52	-9.72	-9.93	96.62	-3.77	≤ 5.34	Pass
11g	6Mbps	11	2462	-15.11	-15.35	-14.64	-15.06	96.62	-8.86	≤ 5.34	Pass
11n-HT20	MCS0	1	2412	-14.41	-13.91	-14.15	-14.16	98.03	-8.13	≤ 5.34	Pass
11n-HT20	MCS0	6	2437	-10.76	-10.22	-9.95	-10.11	98.03	-4.23	≤ 5.34	Pass
11n-HT20	MCS0	11	2462	-14.75	-14.79	-13.92	-14.22	98.03	-8.38	≤ 5.34	Pass
11n-HT40	MCS0	3	2422	-23.13	-20.23	-19.96	-20.71	96.80	-14.68	≤ 5.34	Pass
11n-HT40	MCS0	6	2437	-16.24	-15.68	-16.35	-16.10	96.80	-9.92	≤ 5.34	Pass
11n-HT40	MCS0	9	2452	-19.93	-19.38	-19.56	-19.58	96.80	-13.45	≤ 5.34	Pass

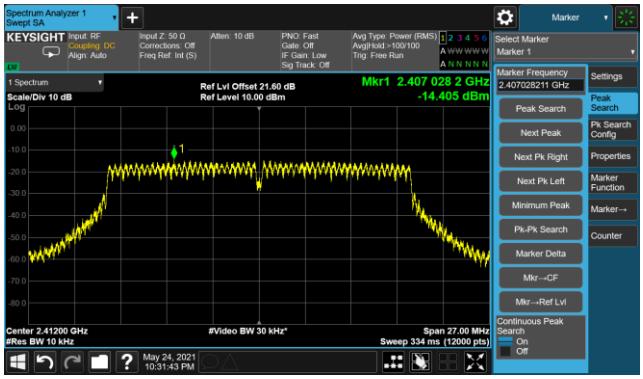
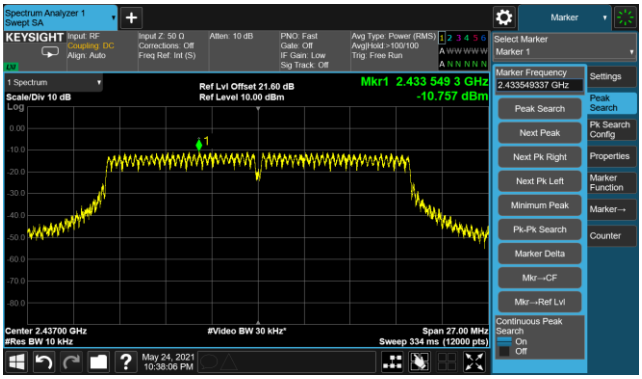
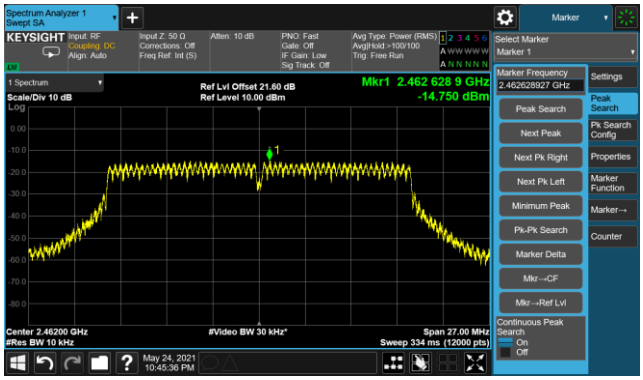
Note 1:

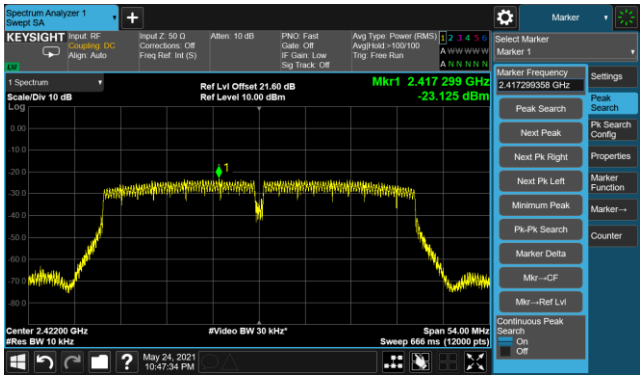
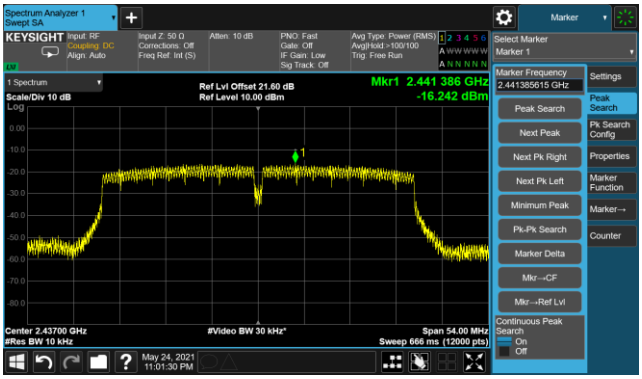
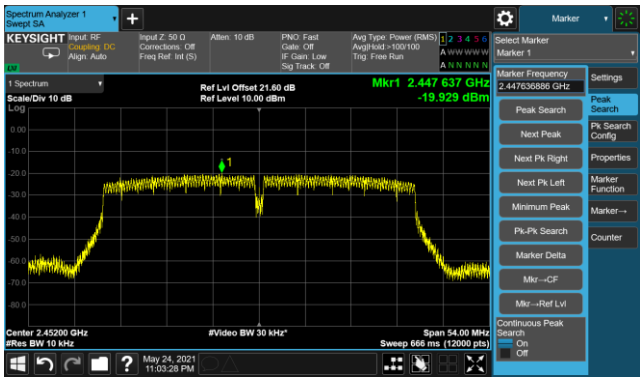
When duty cycle < 98%, Final PSD (dBm / 10kHz) = $10*\log \{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)}\}$ + 10*log (1/Duty Cycle).

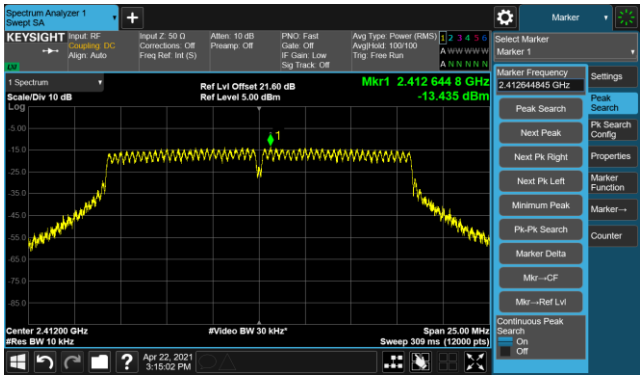
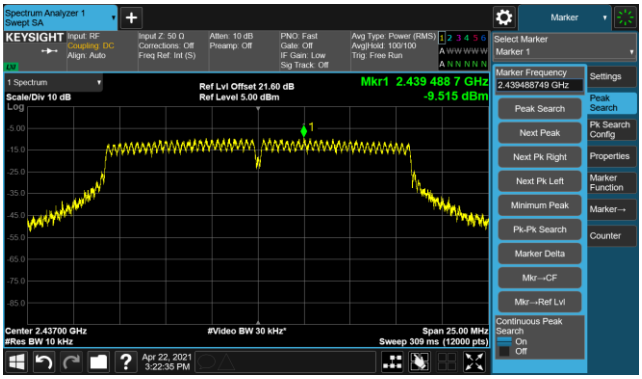
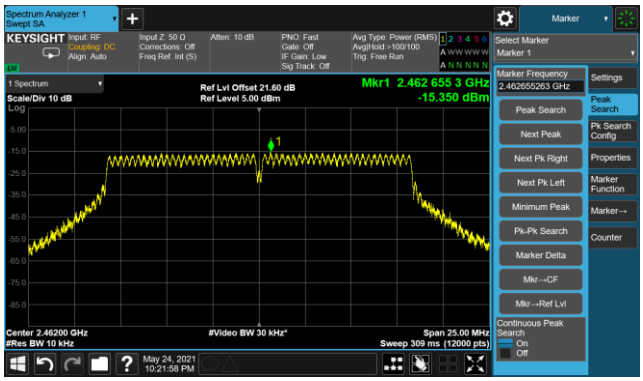
When duty cycle ≥ 98%, Final PSD (dBm / 10kHz) = $10*\log \{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)}\}$.

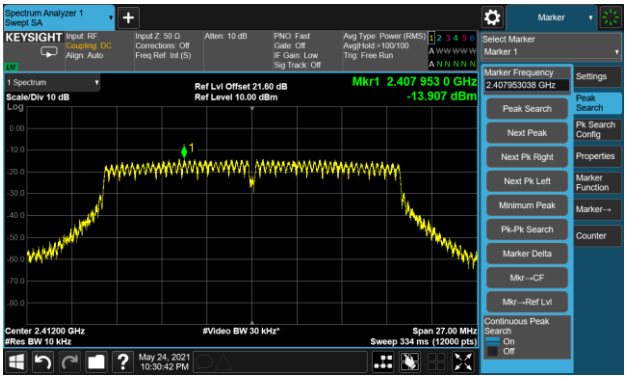
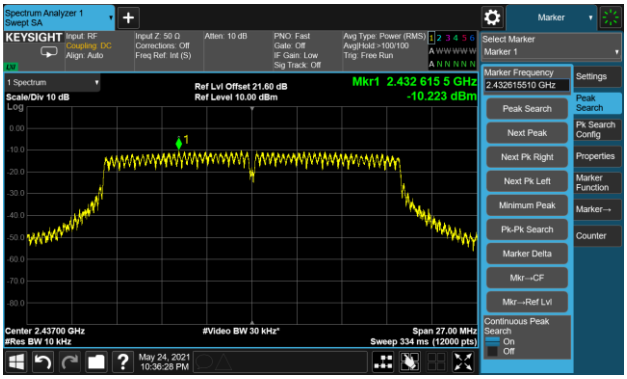
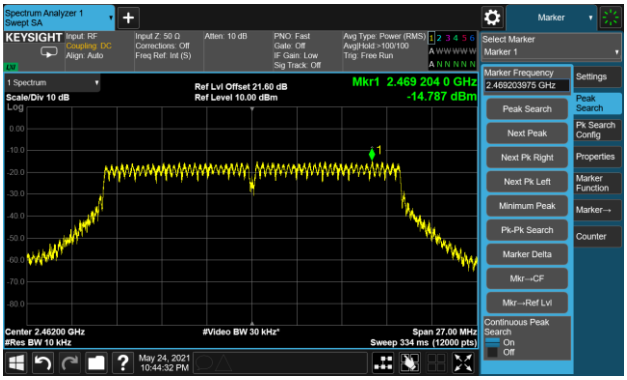
Note 2: Limit = 8 (dBm / 3kHz) - (8.66dBi - 6dBi) = 5.34(dBm / 3kHz)

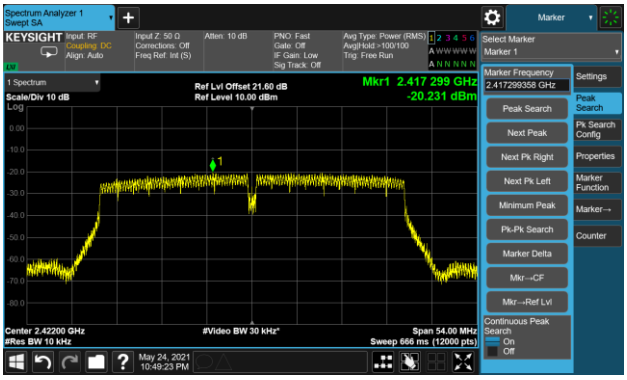
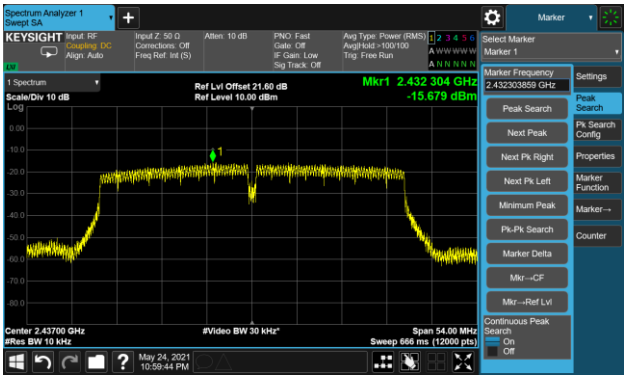
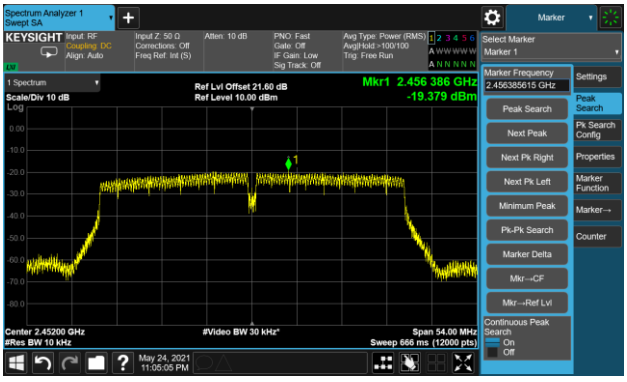
802.11b PSD - Ant 0	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	
802.11g PSD - Ant 0	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

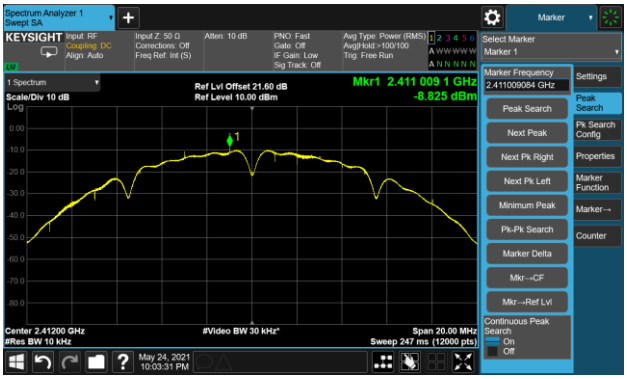
802.11n-HT20 PSD - Ant 0	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

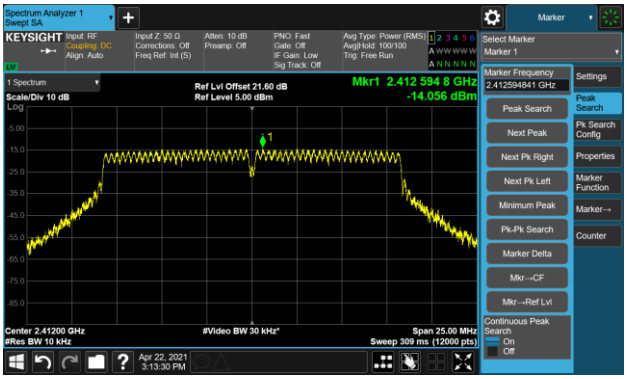
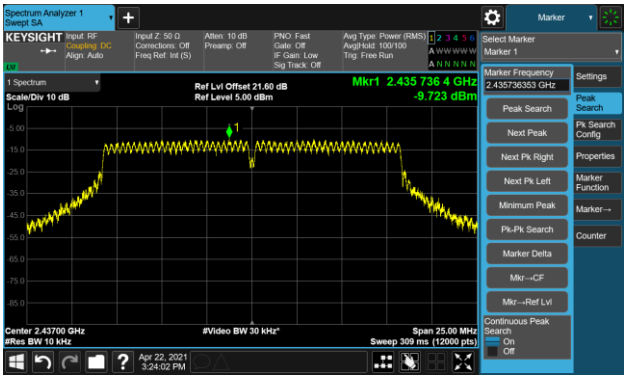
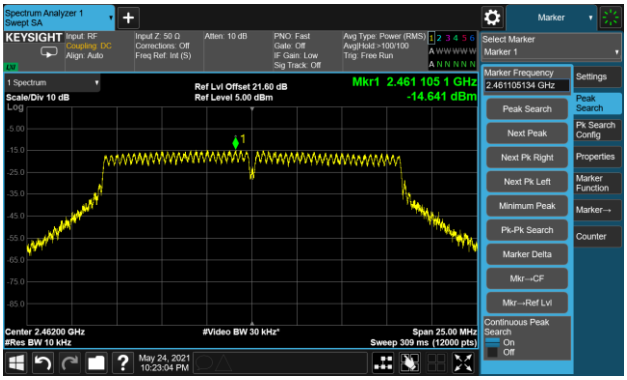
802.11n-HT40 PSD - Ant 0	
Channel 03 (2422MHz)	Channel 06 (2437MHz)
	
Channel 09 (2452MHz)	
	

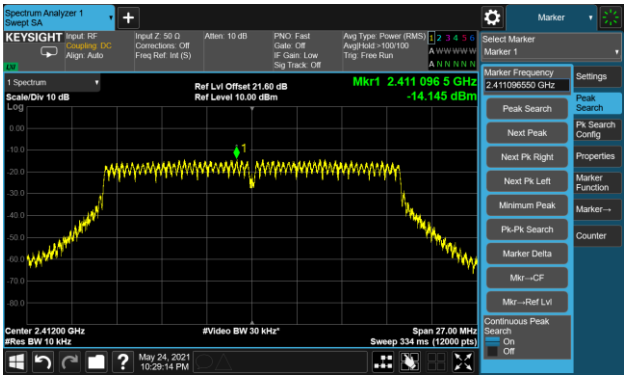
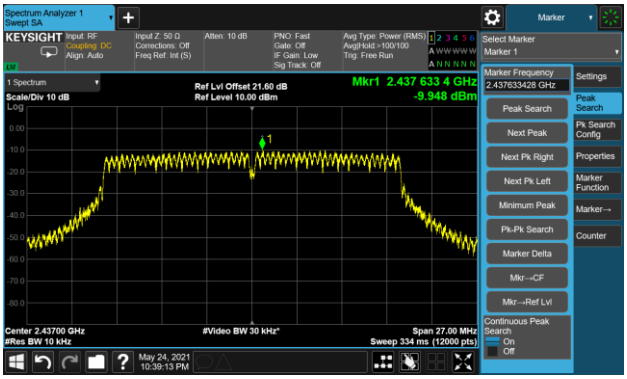
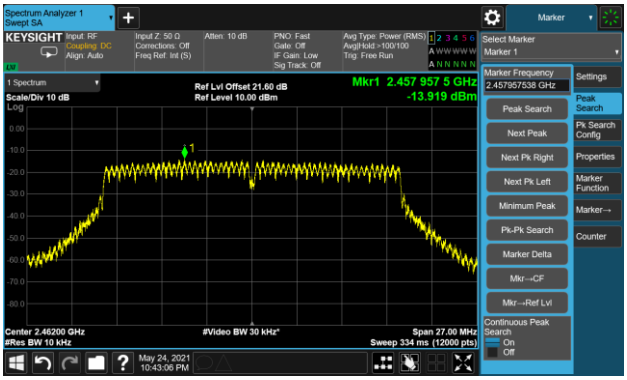
802.11b PSD - Ant 1	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	
802.11g PSD - Ant 1	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

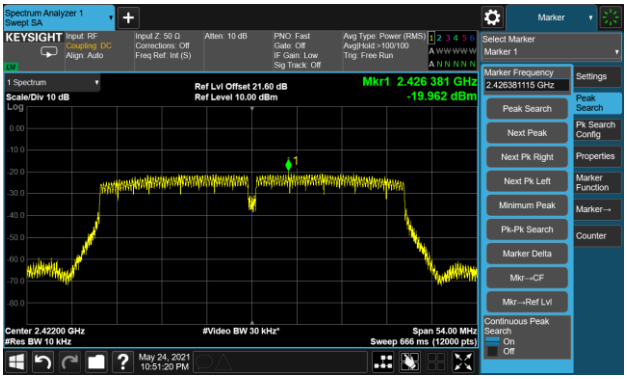
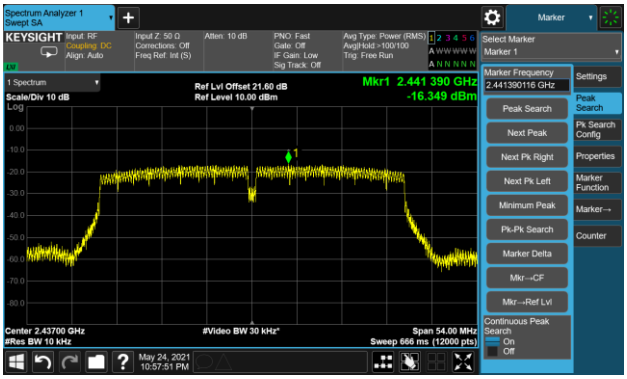
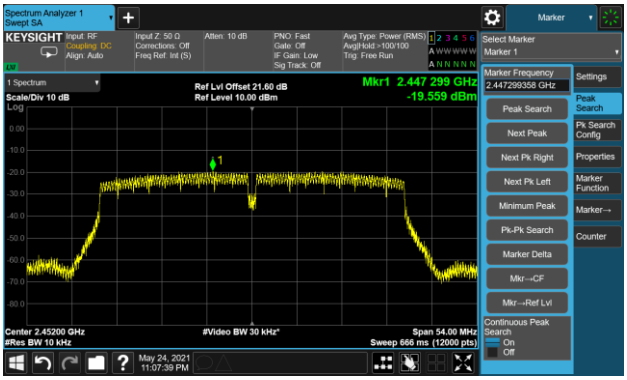
802.11n-HT20 PSD - Ant 1	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

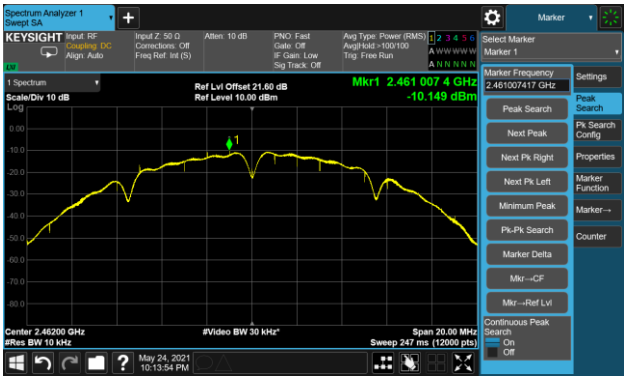
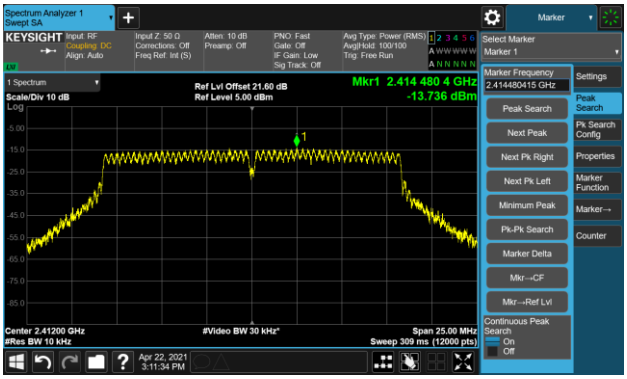
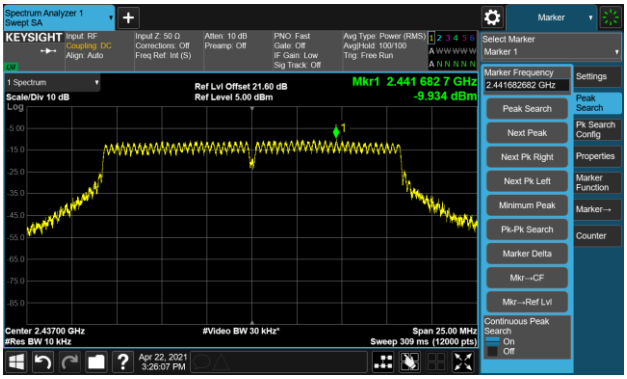
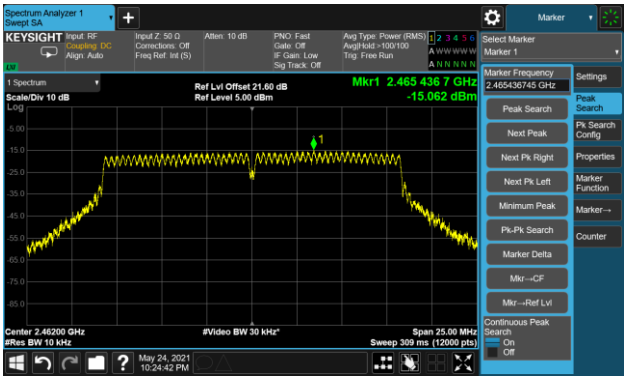
802.11n-HT40 PSD - Ant 1	
Channel 03 (2422MHz)	Channel 06 (2437MHz)
	
Channel 09 (2452MHz)	
	

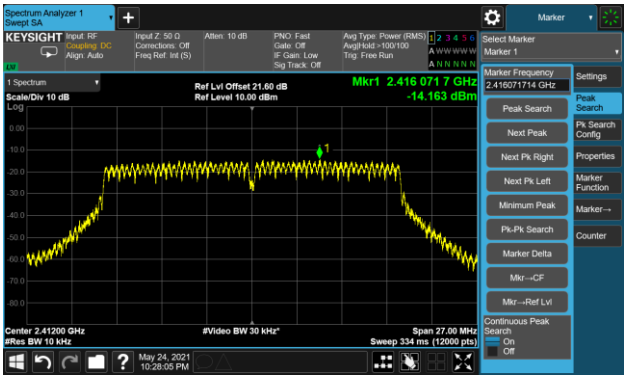
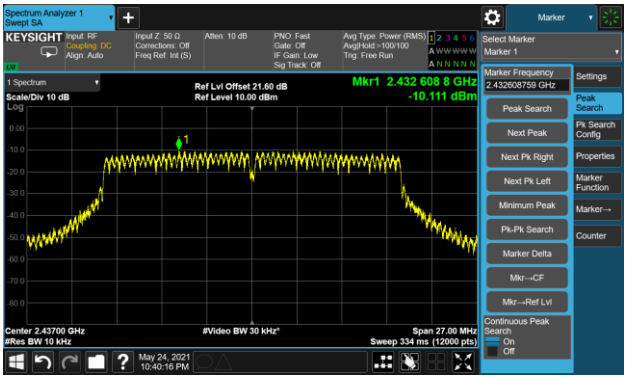
802.11b PSD - Ant 2	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11g PSD - Ant 2	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11n-HT20 PSD - Ant 2	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11n-HT40 PSD - Ant 2	
Channel 03 (2422MHz)	Channel 06 (2437MHz)
	
Channel 09 (2452MHz)	
	

802.11b PSD - Ant 3	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	
802.11g PSD - Ant 3	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
Channel 11 (2462MHz)	
	

802.11n-HT20 PSD - Ant 3	
Channel 01 (2412MHz)	Channel 06 (2437MHz)
	
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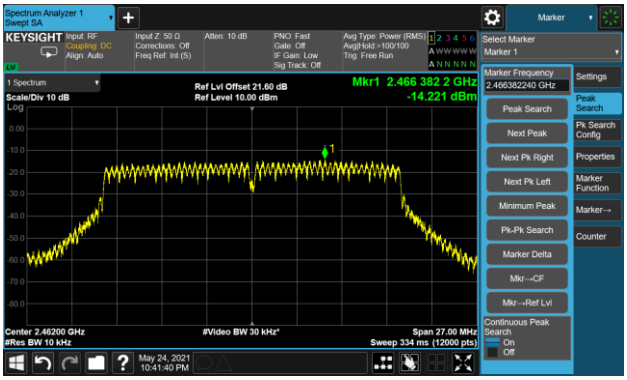	

802.11n-HT40 PSD - Ant 3	
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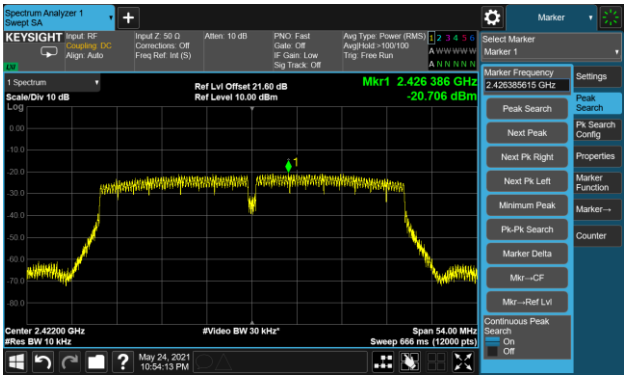
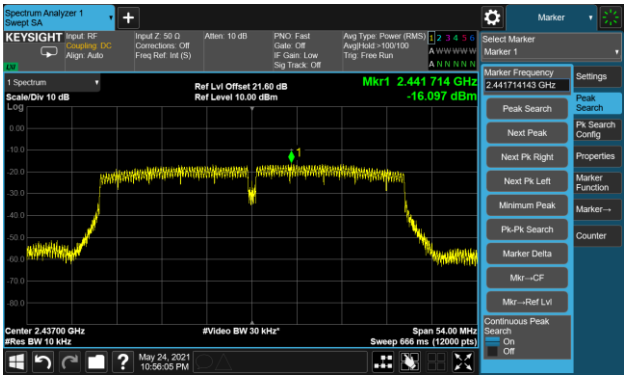
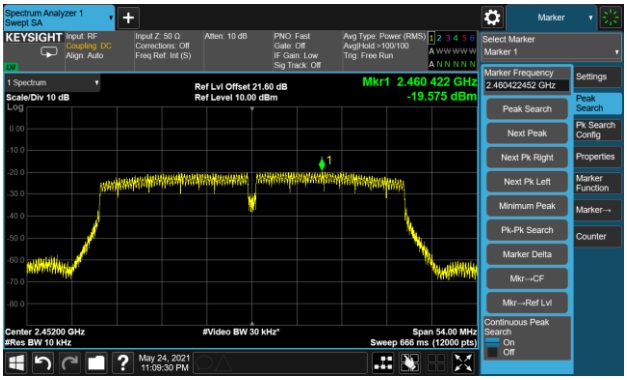
	
Channel 09 (2452MHz)	
	

5.5. Conducted Band Edge and Out-of-Band Emissions

5.5.1.Test Limit

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

5.5.2.Test Procedure Used

ANSI C63.10-2013 Section 11.11

5.5.3.Test Settitng

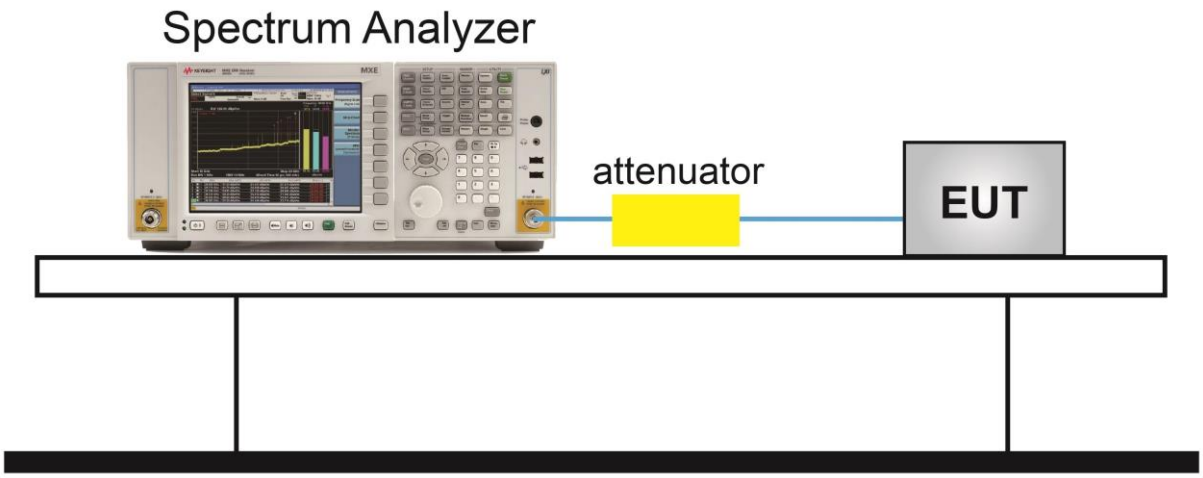
Reference level measurement

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW ≥ 3 x RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

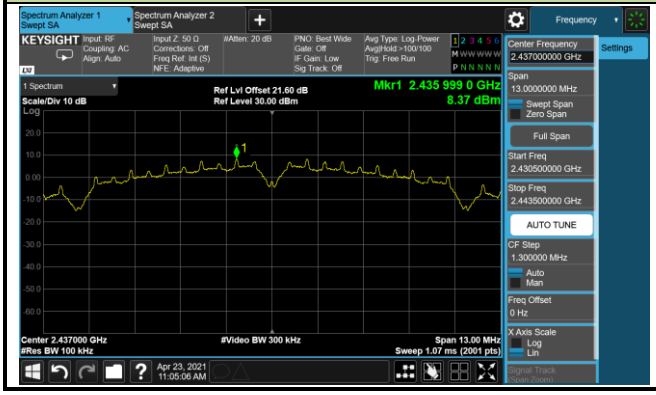
5.5.4.Test Setup

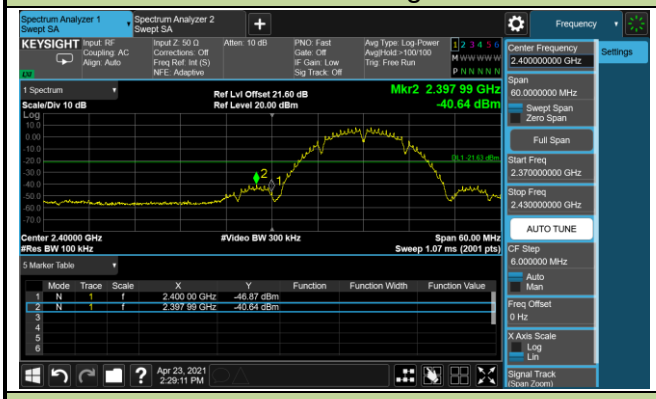
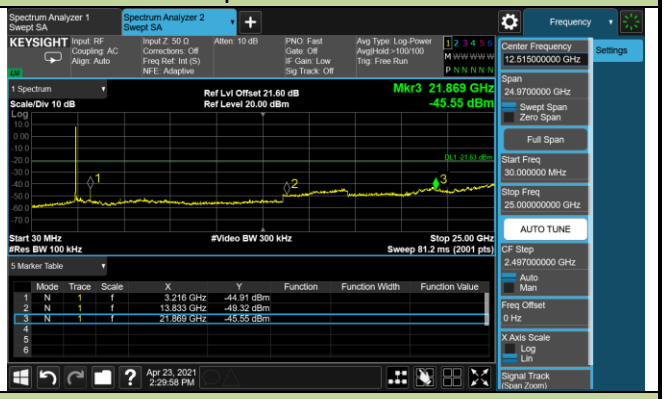


5.5.5.Test Result

Test Site	WZ-TR3	Test Engineer	Luis Yang
Test Date	2021/04/23		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Limit	Result
802.11b	1Mbps	01	2412	30dBc	Pass
802.11b	1Mbps	06	2437	30dBc	Pass
802.11b	1Mbps	11	2462	30dBc	Pass
802.11g	6Mbps	01	2412	30dBc	Pass
802.11g	6Mbps	06	2437	30dBc	Pass
802.11g	6Mbps	11	2462	30dBc	Pass
802.11n-HT20	MCS0	01	2412	30dBc	Pass
802.11n-HT20	MCS0	06	2437	30dBc	Pass
802.11n-HT20	MCS0	11	2462	30dBc	Pass
802.11n-HT40	MCS0	03	2422	30dBc	Pass
802.11n-HT40	MCS0	06	2437	30dBc	Pass
802.11n-HT40	MCS0	09	2452	30dBc	Pass

100kHz PSD Reference Level	--
	--

802.11b Out-of-Band Emissions - Ant 0	
Channel 01 (2412MHz)	
Low Band Edge	Spurious Emission
	
Channel 06 (2437MHz)	
Spurious Emission	
	
Channel 11 (2462MHz)	
High Band Edge	Spurious Emission