

FCC RADIO TEST REPORT

FCC ID: 2AUX7-MDK100

Product Name: MDK-100

Trade Mark: N/A

Main Model: MDK-100

Additional Model: N/A

Report No.: UNIA20092210ER-02

Prepared for

Estone Technology LTD

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Prepared by

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Community, Xixiang Str, Bao'an District, Shenzhen, China

TEST RESULT CERTIFICATION

Applicant.....: Estone Technology LTD
Address.....: 2F,Building No.1, Jia'an Industrial Park,No.2 Long Chang Road,
Bao'an, Shenzhen 518101, China.

Manufacturer.....: Estone Technology LTD
Address.....: 2F,Building No.1, Jia'an Industrial Park,No.2 Long Chang Road,
Bao'an, Shenzhen 518101, China.

Product description

Product Name.....: MDK-100

Trade Mark.....: N/A

Model Name.....: MDK-100

Test Methods.....: FCC Rules and Regulations Part 15 Subpart C Section 15.247,
ANSI C63.10: 2013

This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of UNI, this document may be altered or revised by Shenzhen United Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.

Date of Test.....:

Date (s) of performance of tests.....: August 20~ September 17, 2020

Date of Issue.....: September 18, 2020

Test Result.....: Pass

Prepared by:

Bob Liao

Bob liao/Editor

Reviewer:

Kahn Yang

Kahn yang/Supervisor

Approved & Authorized Signer:

Liuzze

Liuzze/Manager

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Revision History of This Test Report

Report Number	Description	Issued Date
	Initial Issue	2020-09-18

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

Product Name:	MDK-100
Trade Mark:	N/A
Main Model:	MDK-100
Additional Model:	N/A
Model Difference:	All model's the function, software and electric circuit are the same, only with a product color and model named
FCC ID:	2AUX7-MDK100
Operation Frequency:	802.11b/g/n20: 2412~2462 MHz 802.11n(40MHz): 2422~2452 MHz
Number of Channels:	802.11b/g/n20: 11CH
Modulation Type:	802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM
Number Of Channel:	802.11b/g/n20: 11CH 802.11n 40: 7CH
Antenna Type:	PIFA Antenna
Antenna Gain:	Antenna number: 2 Antenna A gain : 0dBi Antenna B gain : 0dBi
Battery:	Battery 1: Rated Voltage: 11.1V Charge Limit: 12.6V Capacity: 3700 mAh Battery 1: Rated Voltage: 7.4V Charge Limit: 8.4V Capacity: 440 mAh
Adapter:	Adapter 1: Input: AC100-240V, 1700 mA, 50/60Hz Output: DC19 V, 3000mA Adapter 2: Input: AC100-250V, 1.5-0.75A max, 50/60Hz Output: DC19 V, 3.15A Adapter 3: Input: AC100-240V, 1.5 A, 50/60Hz Output: DC18 V, 3.4A
Connecting I/O Port(s):	Please refer to the User's Manual

Note: 802.11b/g: SISO mode only; 802.11n HT20/802.11n HT40: MIMO mode only

WIFI Channel List

802.11 b/g/n(HT20)		802.11 n(HT40)	
Channel	Frequency MHz	Channel	Frequency MHz
1	2412	--	--
2	2417	--	--
3	2422	3	2422
4	2427	4	2427
5	2432	5	2432
6	2437	6	2437
7	2442	7	2442
8	2447	8	2447
9	2452	9	2452
10	2457	--	--
11	2462	--	--

Note: According to section 15.31(m), regards to the operating frequency range over 10MHz, the Lowest, middle, and the Highest frequency of channel were selected to perform the test. The selected frequency see below:

802.11b/g/n(HT20)		802.11n(HT40)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	3	2422
6	2437	6	2437
11	2462	9	2452

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2AUX7-MDK100 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rule.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Support Device

Description	Manufacturer	Model	S/N
Adapter	SOY	SOY-1900300	N/A
DC Cable	N/A	150cm	N/A



1.6 Test Facility and Location

Test Firm : Shenzhen United Testing Technology Co., Ltd.

Address : 2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

A2LA Certificate Number: 4747.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 21947

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

1.7 Summary of Test Results

FCC Rules	Description Of Test	Uncertainty	Result
§15.207 (a)	AC Power Conducted Emission	±1.06dB	Compliant
KDB558074 D01 DTS Meas Guidance v05	Duty cycle	±1.06dB	Compliant
§15.247(b)(3)	Max. Conducted Output Power	±1.06dB	Compliant
§15.247(a)(2)	6dB Bandwidth	±1.42 x10 ⁻⁴ %	Compliant
ANSI C63.10: 2013 Section 6.9.3	99% Occupied Bandwidth	±1.42 x10 ⁻⁴ %	Compliant
§15.247(e)	Power Spectral Density	±1.06dB	Compliant
§15.247(d)	Band Edge and Conducted Spurious Emissions	±1.70dB	Compliant
§15.247(d),§15.209, §15.205	Radiated Spurious Emissions and Restricted Bands	±3.70dB	Compliant
§15.203	Antenna Requirement	N/A	Compliant

2. System Test Configuration

2.1 EUT Configuration

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

2.2 Special Accessories

Not available for this EUT intended for grant.

2.3 Description of test modes

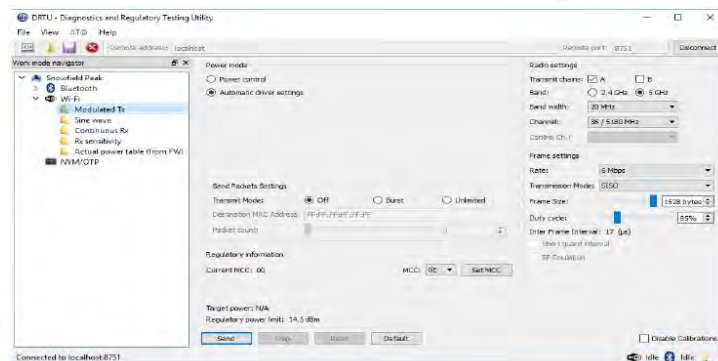
The EUT has been tested under continuous operating condition. Test program used to control the EUT staying in continuous transmitting mode. The Lowest, middle and highest channel were chosen for testing, and modulation type CCK, DQPSK, DBPSK, OFDM and all data rate were tested. But only the worst case data is shown in this report.

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

Test Item	Software	Description
Conducted RF Testing and Radiated testing	DRTU	Set the EUT to different modulation and channel

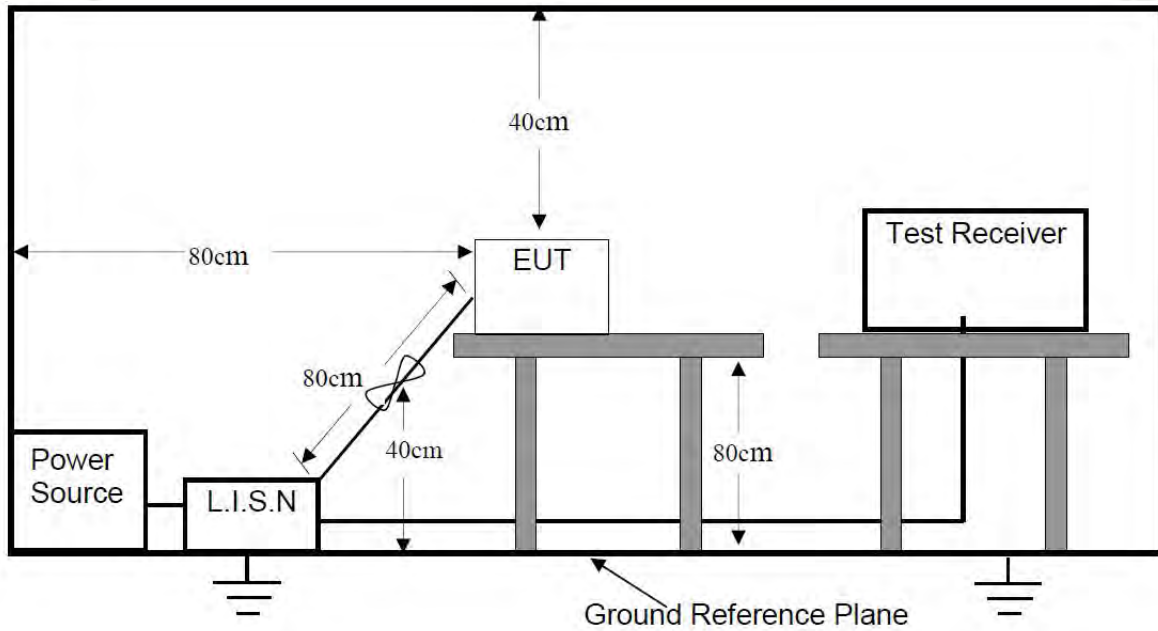
Output power setting table:

Test Mode	Set Tx Output Power Level	Data Rate
802.11b	13	1Mbps
802.11g	13	6Mbps
802.11n(HT20)	13	6.5Mbps
802.11n(HT40)	13	13.5Mbps



3. Conducted Emissions Test

3.1 Test SET-UP (Block Diagram of Configuration)



3.2 Test Condition

Test Requirement: FCC Part 15.207

Frequency Range: 150 KHz ~ 30 MHz

Detector: PEAK, AV

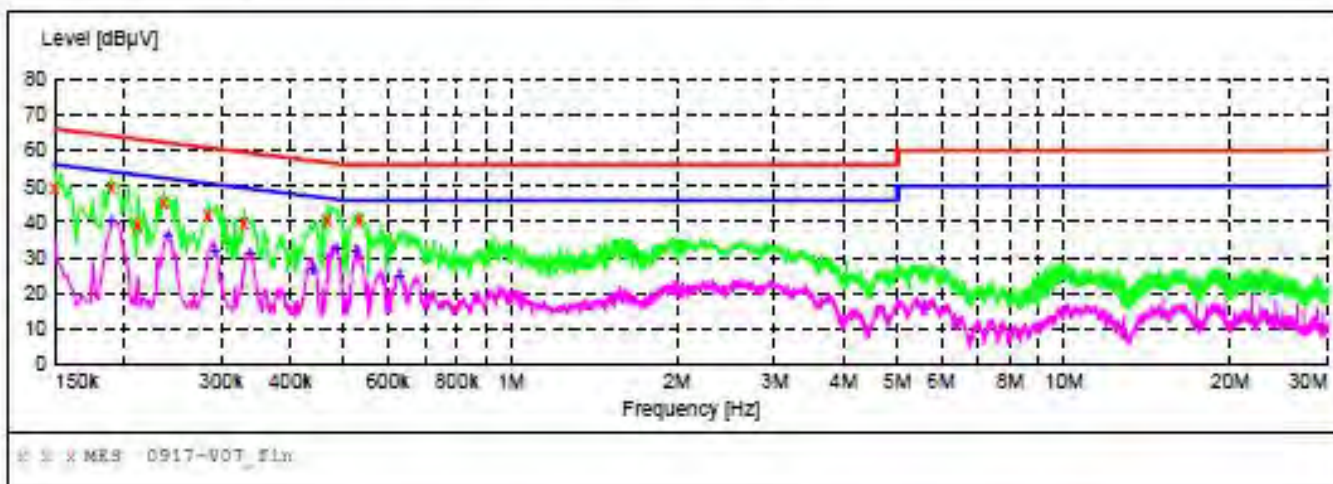
Operation Mode: Wifi Communication

3.3 Measurement Results

Please refer to following plots of the worst case.

E.U.T :	Mdk-100	Model Name :	Mdk-100
Temperature :	25°C	Relative Humidity :	50 %
Pressure :	1006 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	On with WIFI	Phase:	Line

SCAN TABLE: "Voltage (9K-30M)FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "0917-V07_fin"

2020-9-17

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	49.90	10.6	66	16.1	QP	L1	GND
0.190000	49.40	10.6	64	14.6	QP	L1	GND
0.212000	38.90	10.7	63	24.2	QP	L1	GND
0.236000	45.10	10.7	62	17.1	QP	L1	GND
0.284000	42.20	10.8	61	18.5	QP	L1	GND
0.330000	39.50	10.9	60	20.0	QP	L1	GND
0.466000	40.30	11.0	57	16.3	QP	L1	GND
0.532000	40.50	11.0	56	15.5	QP	L1	GND

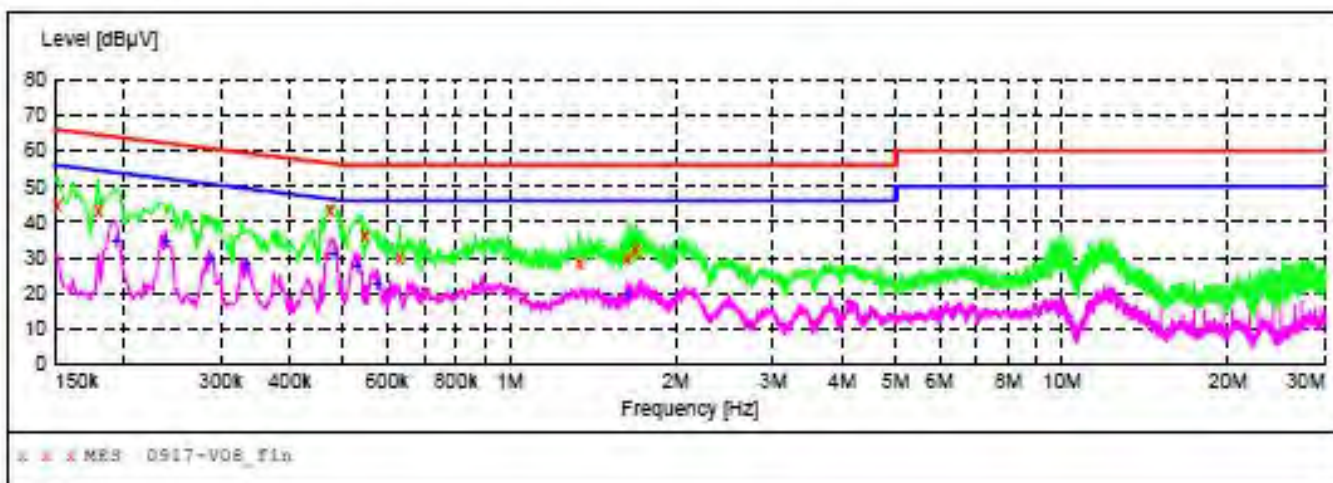
MEASUREMENT RESULT: "0917-V07_fin2"

2020-9-17

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.190000	40.30	10.6	54	13.7	AV	L1	GND
0.240000	36.00	10.7	52	16.1	AV	L1	GND
0.292000	31.70	10.8	51	18.8	AV	L1	GND
0.338000	31.00	10.9	49	18.3	AV	L1	GND
0.438000	27.20	11.0	47	19.9	AV	L1	GND
0.484000	32.40	11.0	46	13.9	AV	L1	GND
0.526000	31.70	11.0	46	14.3	AV	L1	GND
0.630000	25.10	11.0	46	20.9	AV	L1	GND

E.U.T :	MDK-100	Model Name :	MDK-100
Temperature :	24°C	Relative Humidity :	50 %
Pressure :	1006 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	On with WIFI	Phase:	Neutral

SCAN TABLE: "Voltage (9K-30M)FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "0917-V08_fin"

2020-9-17

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.152000	44.90	10.6	66	21.0	QP	N	GND
0.180000	43.50	10.6	65	21.0	QP	N	GND
0.474000	43.10	11.0	56	13.3	QP	N	GND
0.548000	36.20	11.0	56	19.8	QP	N	GND
0.632000	30.20	11.0	56	25.8	QP	N	GND
1.336000	28.40	11.0	56	27.6	QP	N	GND
1.632000	30.20	11.0	56	25.8	QP	N	GND
1.694000	32.20	11.0	56	23.8	QP	N	GND

MEASUREMENT RESULT: "0917-V08_fin2"

2020-9-17

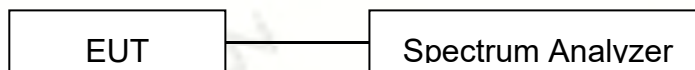
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.194000	34.80	10.6	54	19.1	AV	N	GND
0.238000	34.60	10.7	52	17.6	AV	N	GND
0.286000	30.10	10.8	51	20.9	AV	N	GND
0.332000	28.70	10.9	49	20.7	AV	N	GND
0.480000	31.60	11.0	46	14.7	AV	N	GND
0.528000	27.50	11.0	46	18.9	AV	N	GND
0.576000	23.20	11.0	46	22.8	AV	N	GND
1.632000	19.70	11.0	46	26.3	AV	N	GND

4. Duty Cycle Test
4.1 Measurement Procedure

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

1. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal
 - a. Set the center frequency of the instrument to the centre frequency of the transmission
 - b. Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value(10MHz).
 - c. Set detector = Peak or average.
 - d. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Measurement Results

Please refer to following plots of the worst case.

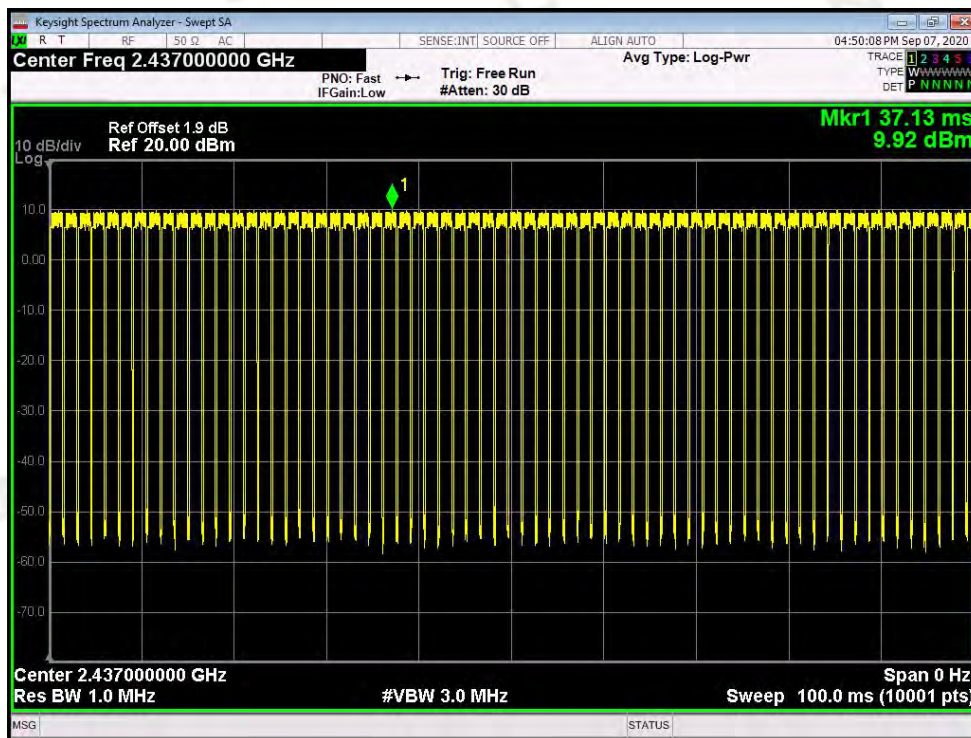
Temperature :		25 °C			Humidity :		50%	
Test By:		PEI			Test Date :		September 04, 2020	
Antenna Gain:		0dBi			Test Result:		PASS	
Channel	Frequency (MHz)	duty cycle(x)			10log(1/x)			
		ANT - A	ANT - B	ANT A+B	ANT - A	ANT - B	ANT A+B	
802.11b								
Middle	2437	99.07%	87.09%	--	0.04	0.60	--	
802.11g								
Middle	2437	87.07%	86.96	--	0.60	0.61	--	
802.11n HT20								
Middle	2437	96.21%	96.2%	96.12%	0.17	0.17	0.17	
802.11n HT40								
Middle	2437	85.6%	85.51%	85.31%	0.68	0.68	0.69	

Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and MCS0 for 802.11n mode.

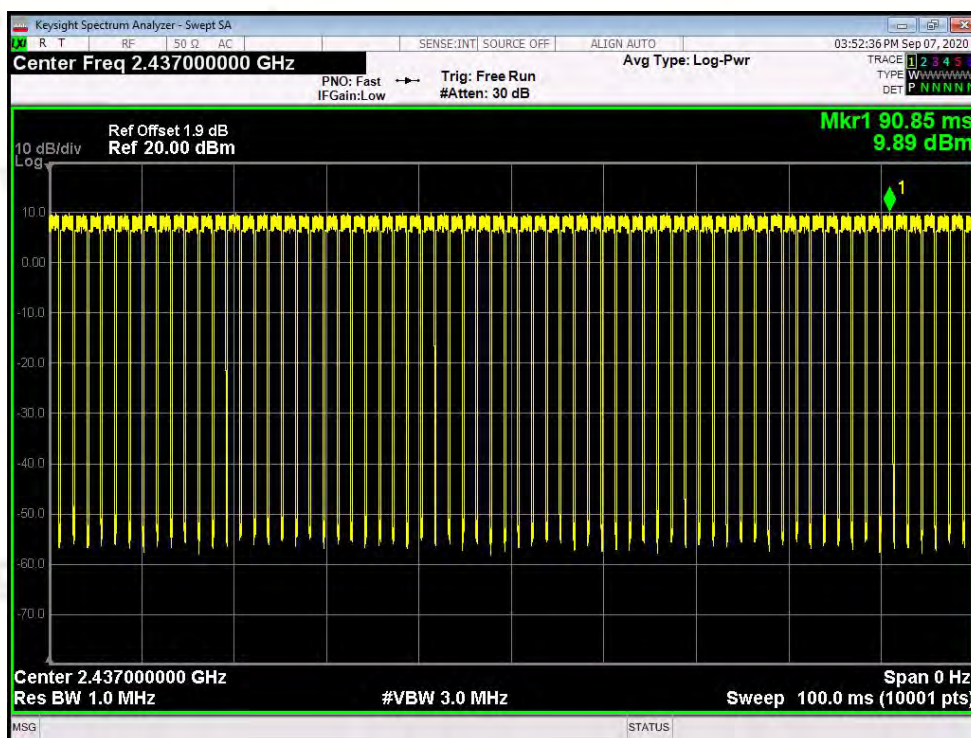
The spectrum analyzer plots are attached as below.

Antenna B

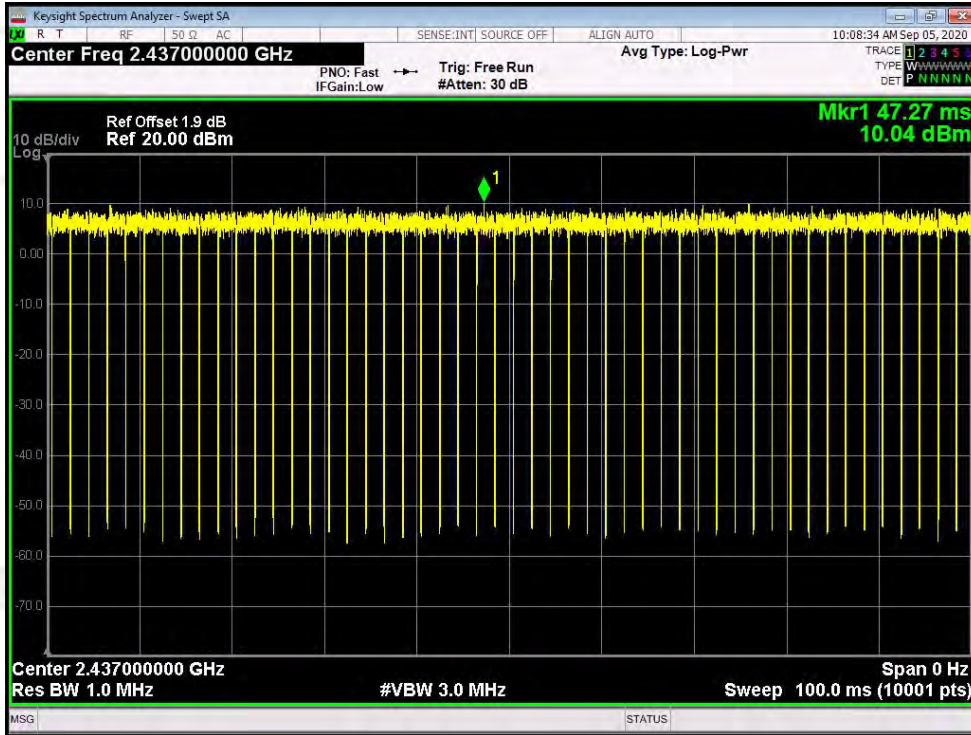
802.11b Middle Channel



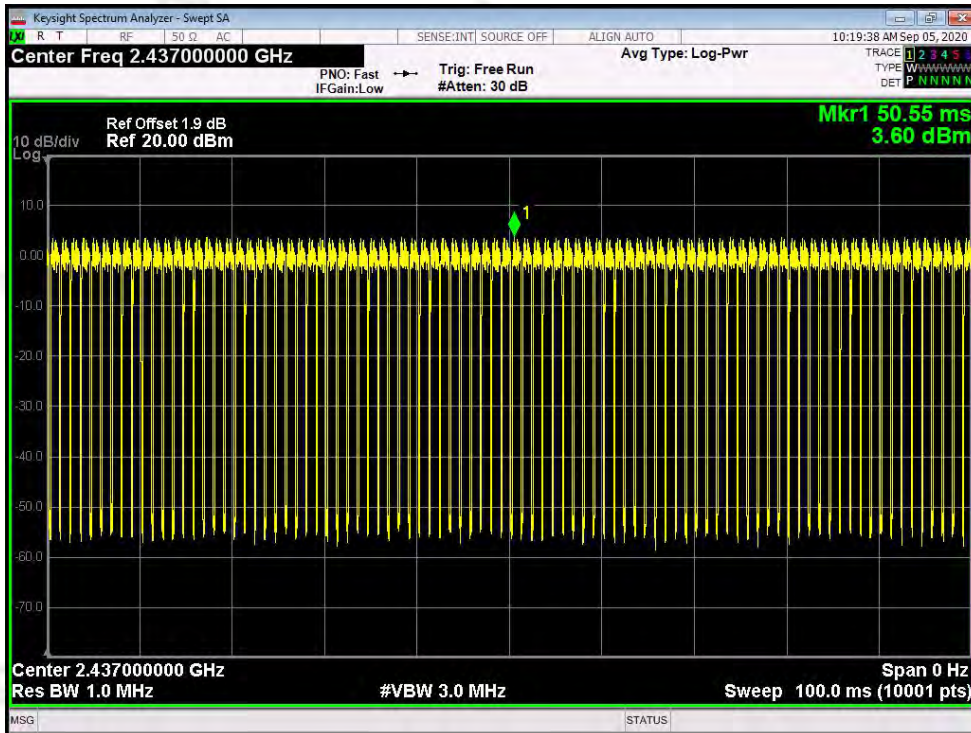
802.11g Middle Channel



802.11n(HT20) Middle Channel



802.11n(HT40) Middle Channel



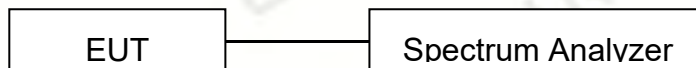
5. Max. Conducted (Average) Output Power
 5.1 Measurement Procedure

Maximum Conducted Output power at Antenna Terminals, FCC Rules 15.247(b)(3):

One of the following procedures may be used to determine the maximum average conducted output power of a DTS EUT.

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Results

Pass

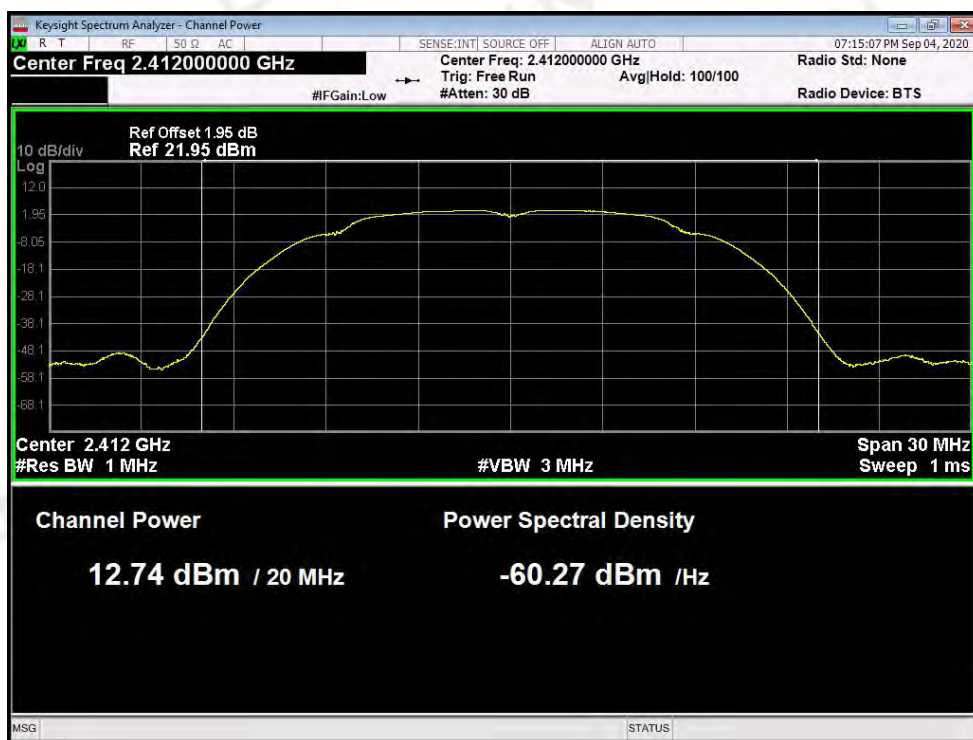
Please refer to following table and plots.

Temperature :	25 °C			Humidity :	50%					
Test By:	PEI			Test Date :	September 04, 2020					
Antenna Gain:	0dBi			Test Result:	PASS					
Frequency (MHz)	10log(1/ duty cycle)			AV Output Power (dBm)			Final Power (dBm)			Limit (dBm)
	ANT A	ANT B	ANT A+B	ANT A	ANT B	ANT A+B	ANT A	ANT B	ANT A+B	
IEEE 802.11b Mode (CCK)										
2412	0.04	0.61	--	12.74	12.76	--	12.78	13.37	--	30
2437	0.04	0.60	--	12.30	12.45	--	12.34	13.05	--	30
2462	0.04	0.61	--	12.46	12.48	--	12.50	13.09	--	30
IEEE 802.11g Mode (OFDM)										
2412	0.61	0.61	--	12.85	13.34	--	13.46	13.95	--	30
2437	0.60	0.61	--	12.48	12.85	--	13.08	13.46	--	30
2462	0.60	0.61	--	12.61	12.86	--	13.21	13.47	--	30
IEEE 802.11n(HT20) Mode (OFDM)										
2412	0.17	0.17	0.17	13.21	13.37	13.84	13.38	13.54	14.01	30
2437	0.17	0.17	0.17	12.78	13.14	13.40	12.95	13.31	13.57	30
2462	0.16	0.17	0.17	13.00	13.12	13.65	13.16	13.29	13.82	30
IEEE 802.11n(HT40) Mode (OFDM)										
2422	0.68	0.68	0.69	12.71	12.94	12.96	13.39	13.62	13.65	30
2437	0.68	0.68	0.69	12.37	12.65	12.74	13.05	13.33	13.43	30
2452	0.68	0.68	0.69	11.79	12.00	12.62	12.47	12.68	13.31	30
Final power= Ave output power+10log(1/ duty cycle)										

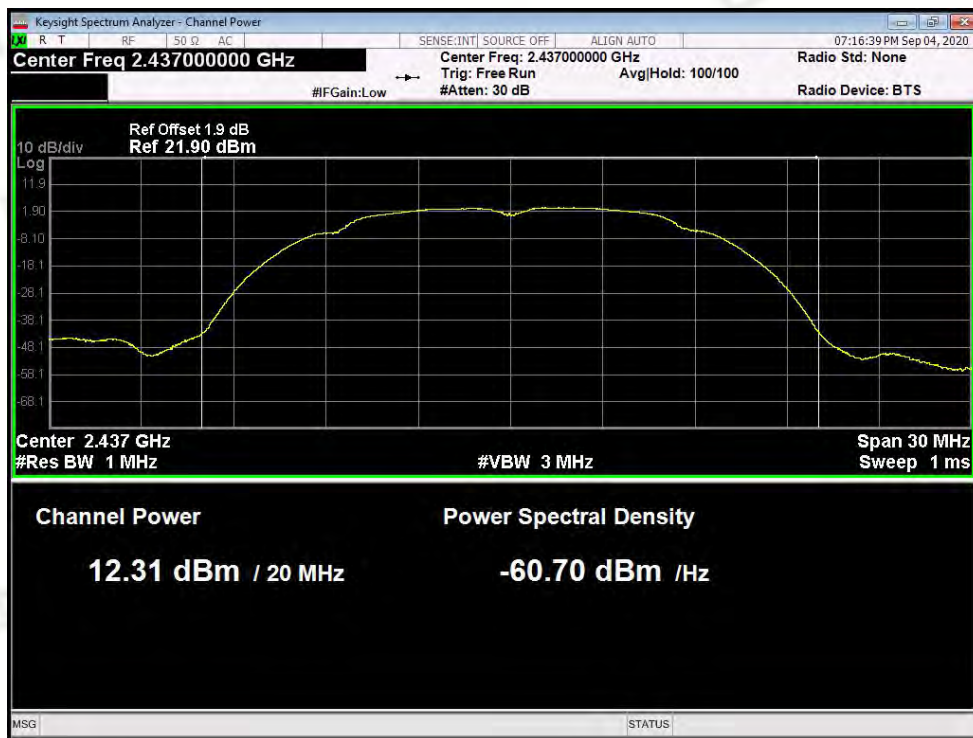
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and MCS0 for 802.11n mode.

Antenna A

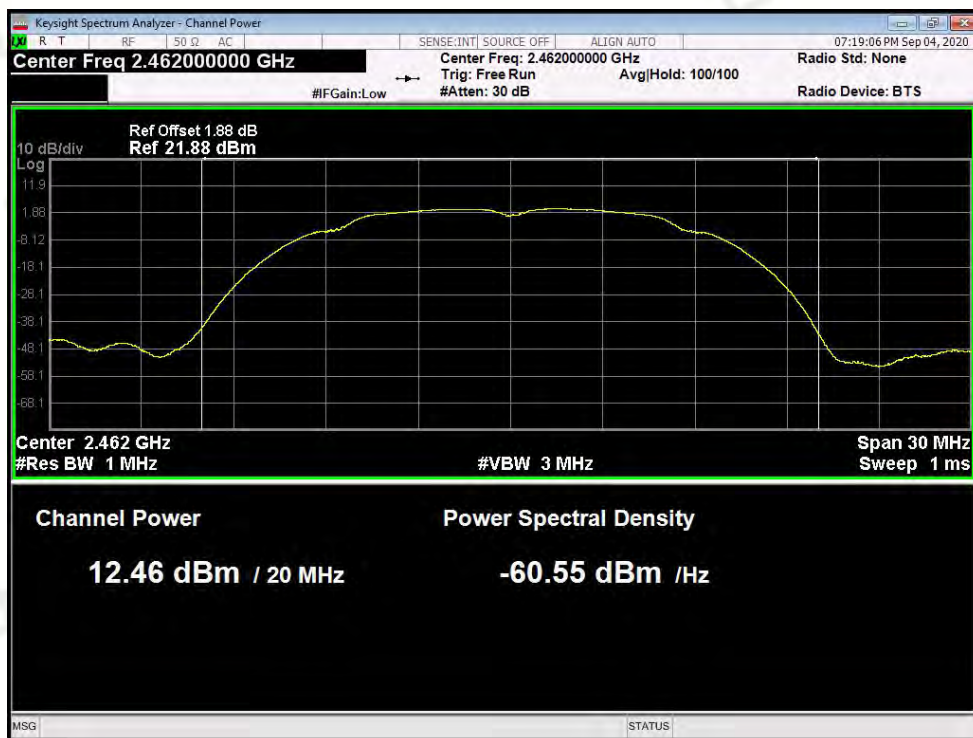
802.11b Low Channel



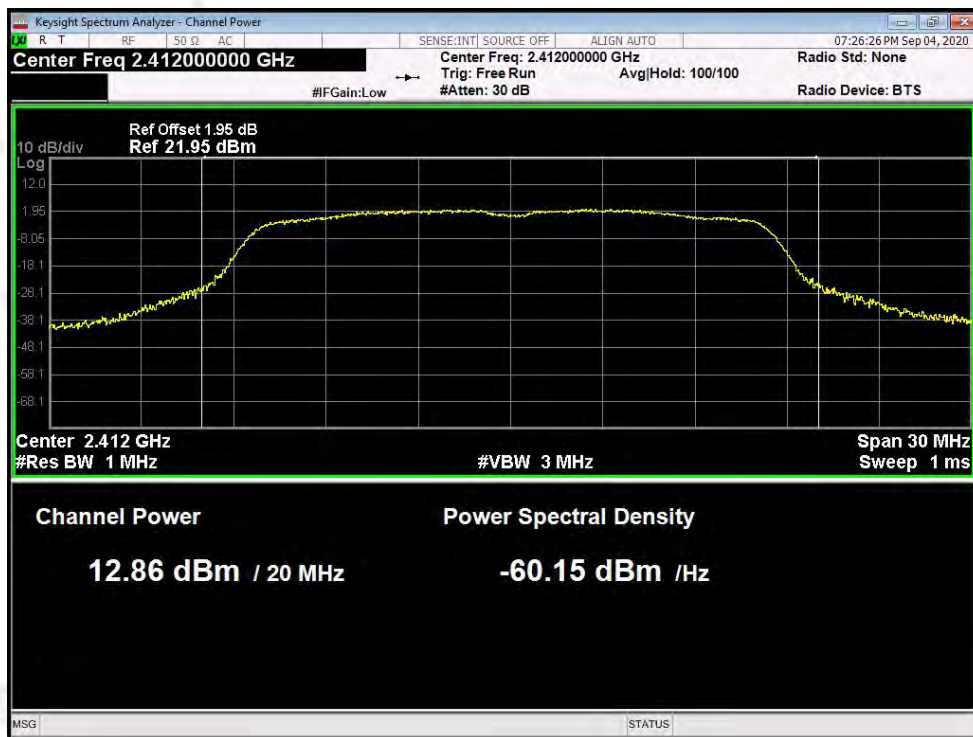
802.11b Middle Channel



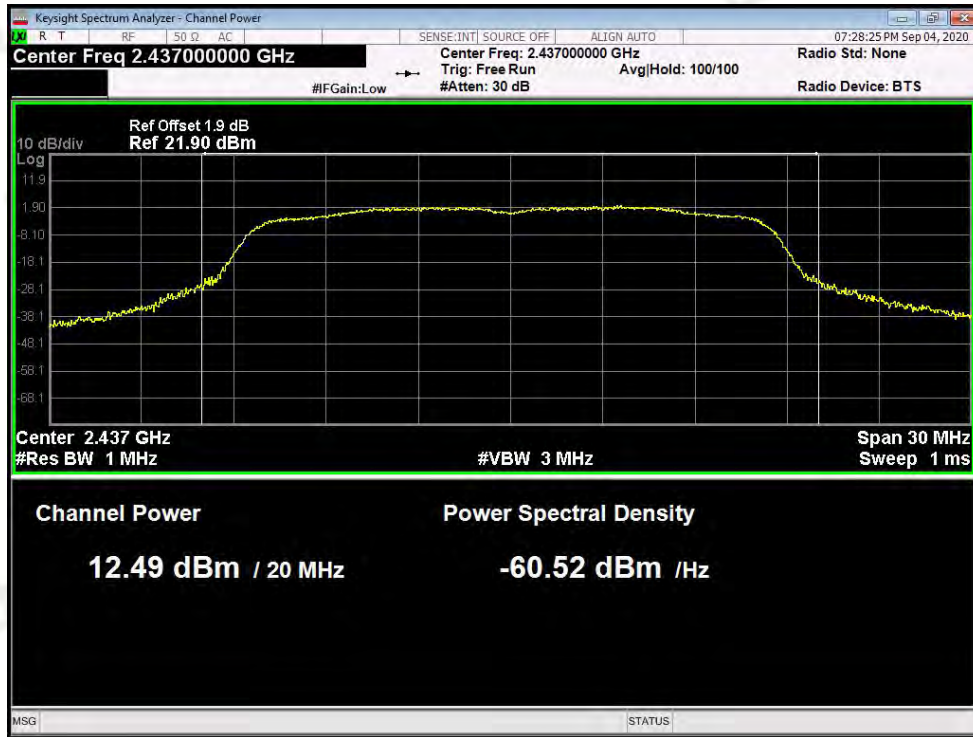
802.11b High Channel



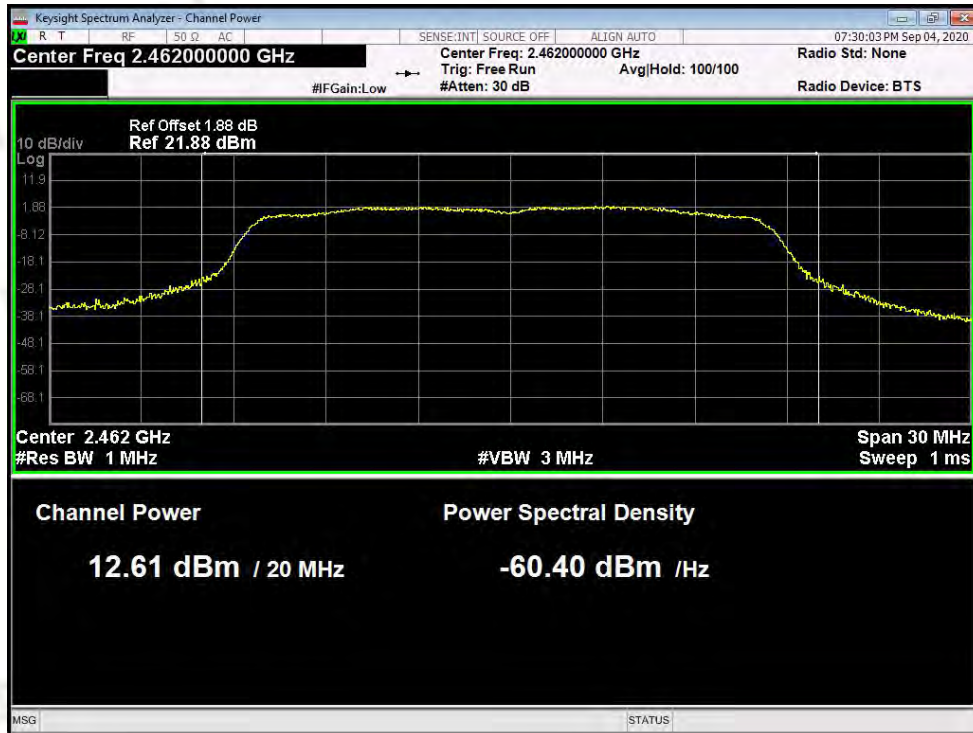
802.11g Low Channel



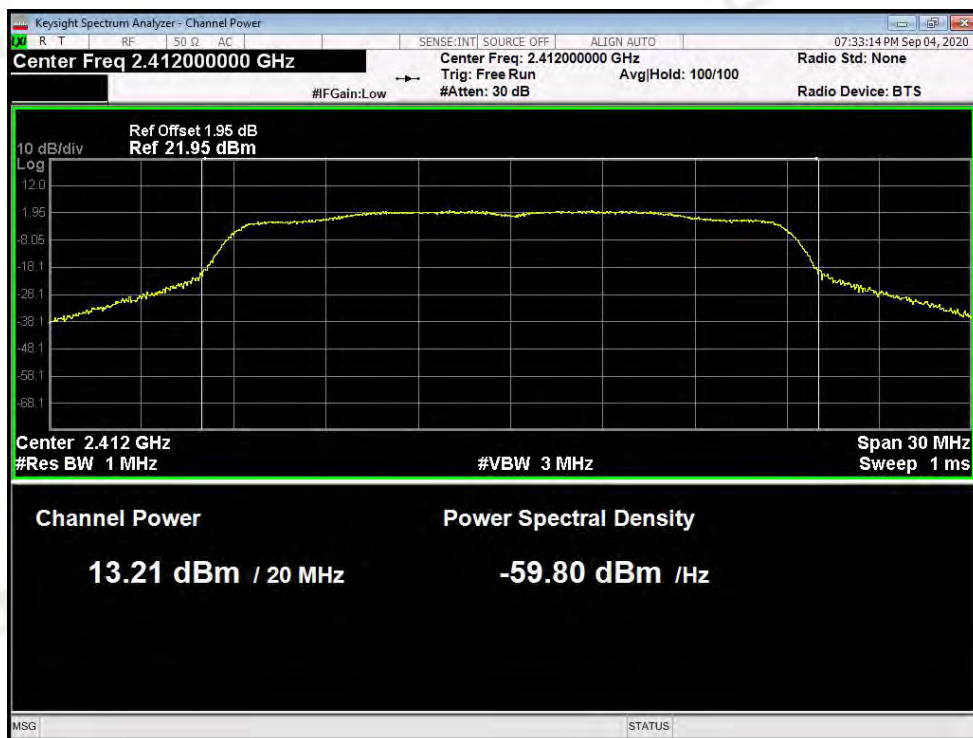
802.11g Middle Channel



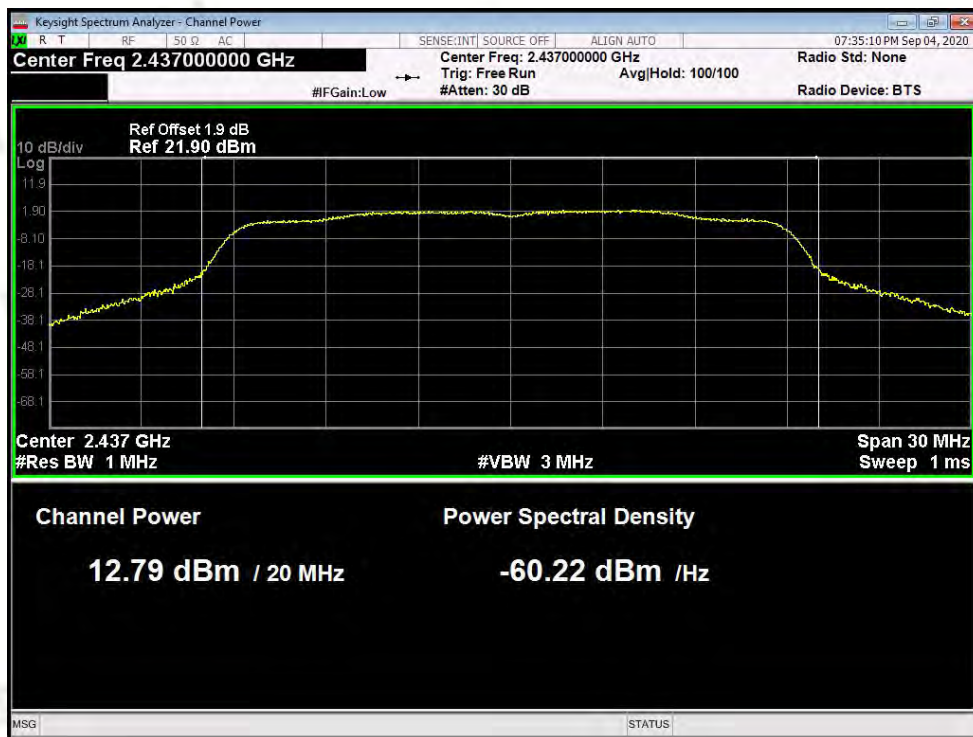
802.11g High Channel



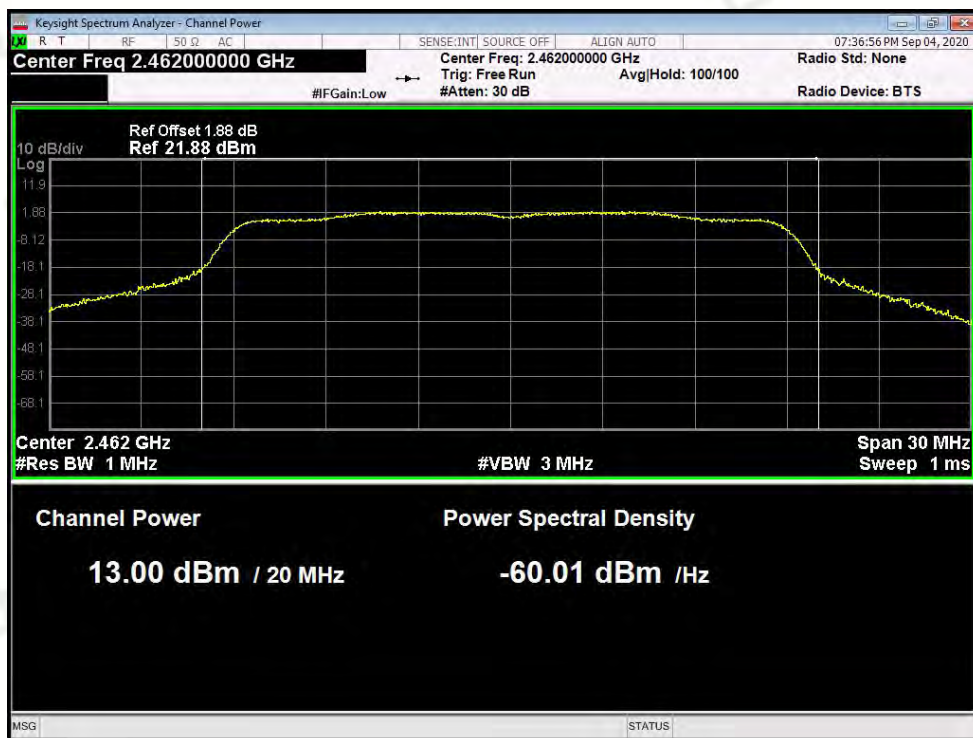
802.11n(HT20) Low Channel



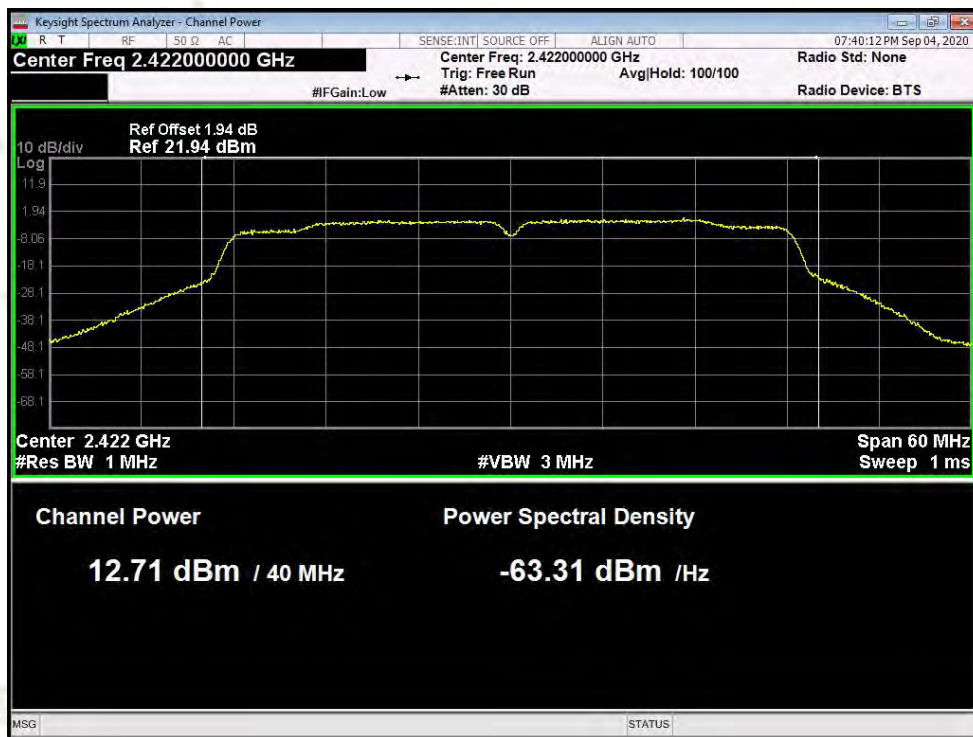
802.11n(HT20) Middle Channel



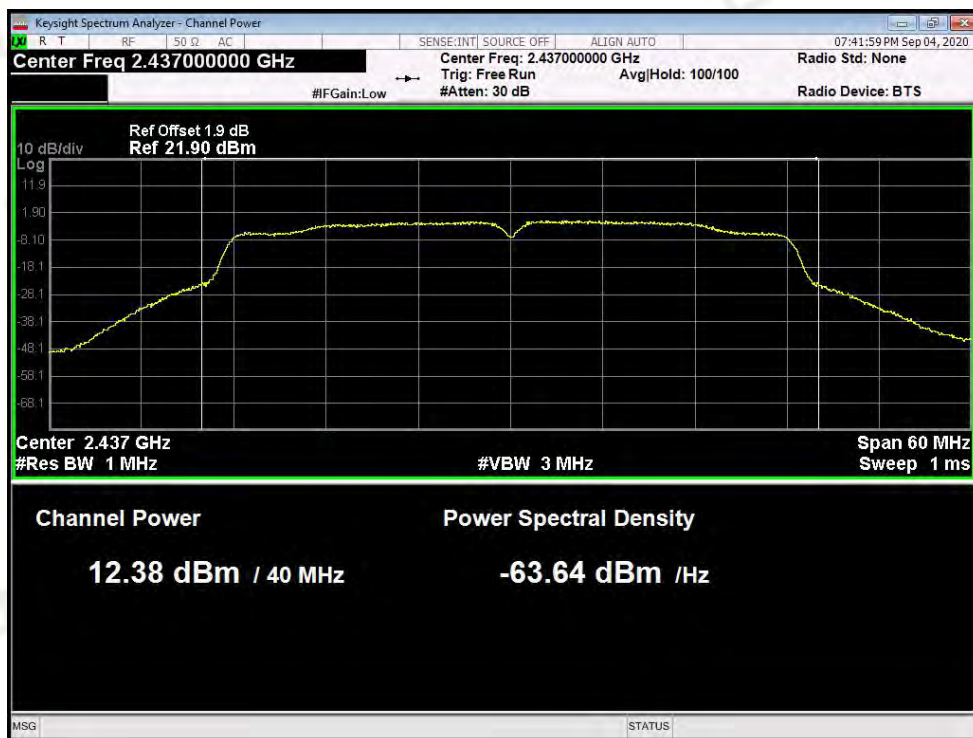
802.11n(HT20) High Channel



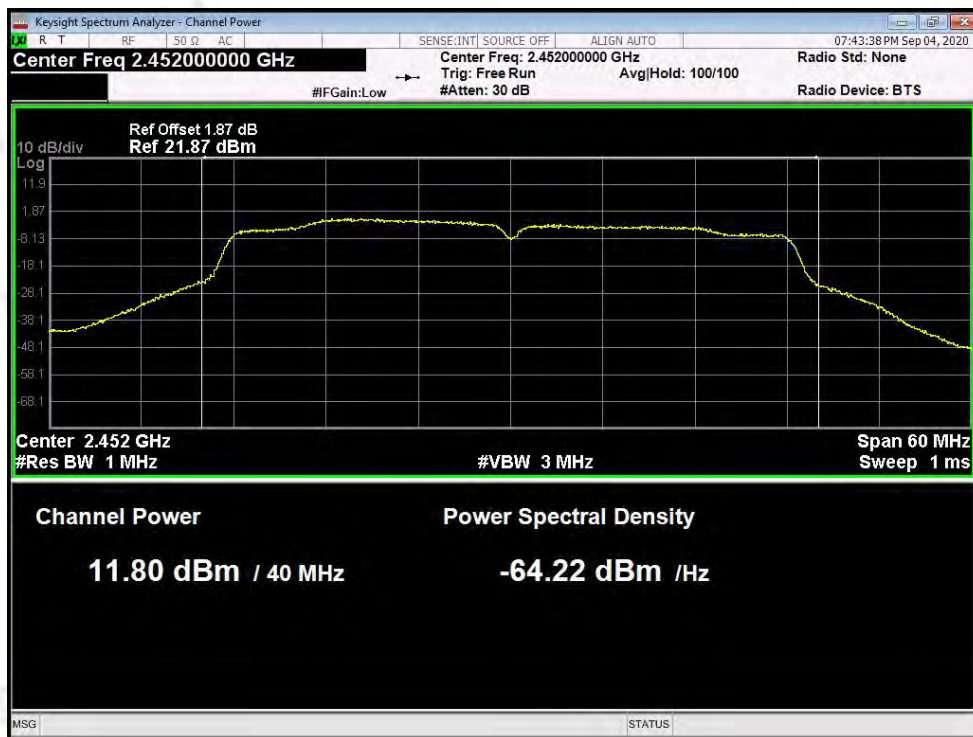
802.11n(HT40) Low Channel



802.11n(HT40) Middle Channel

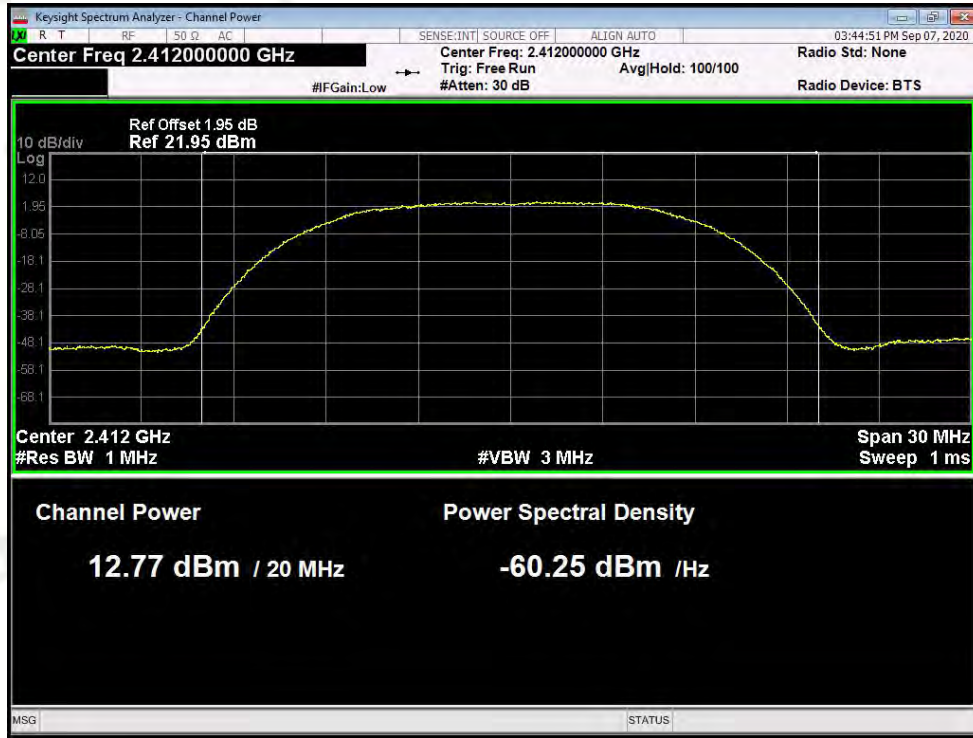


802.11n(HT40) High Channel

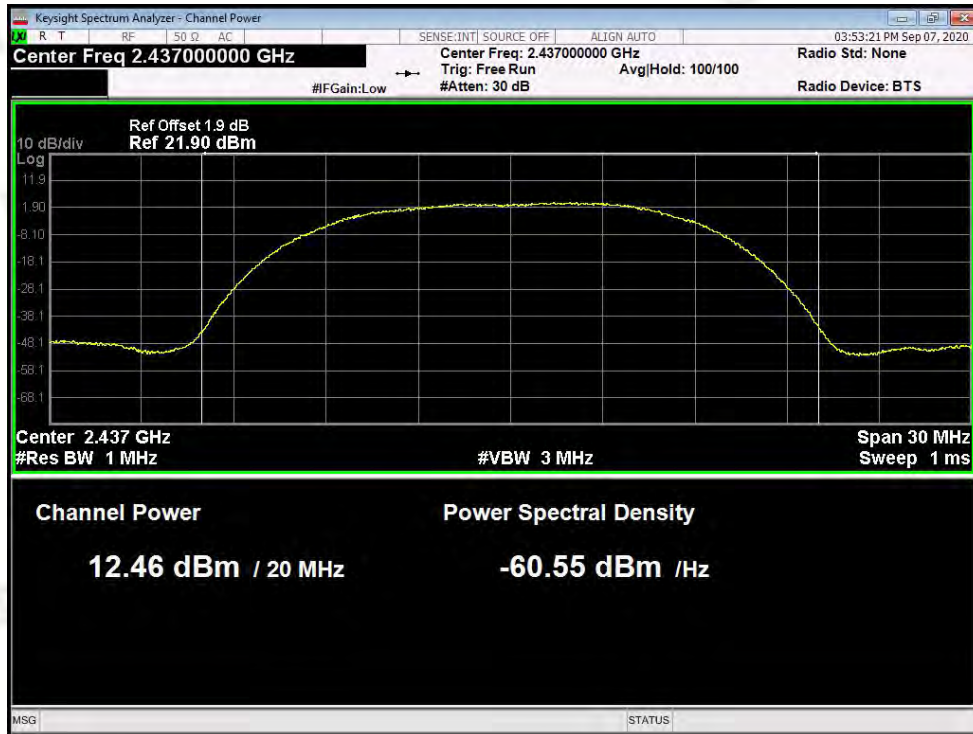


Antenna B

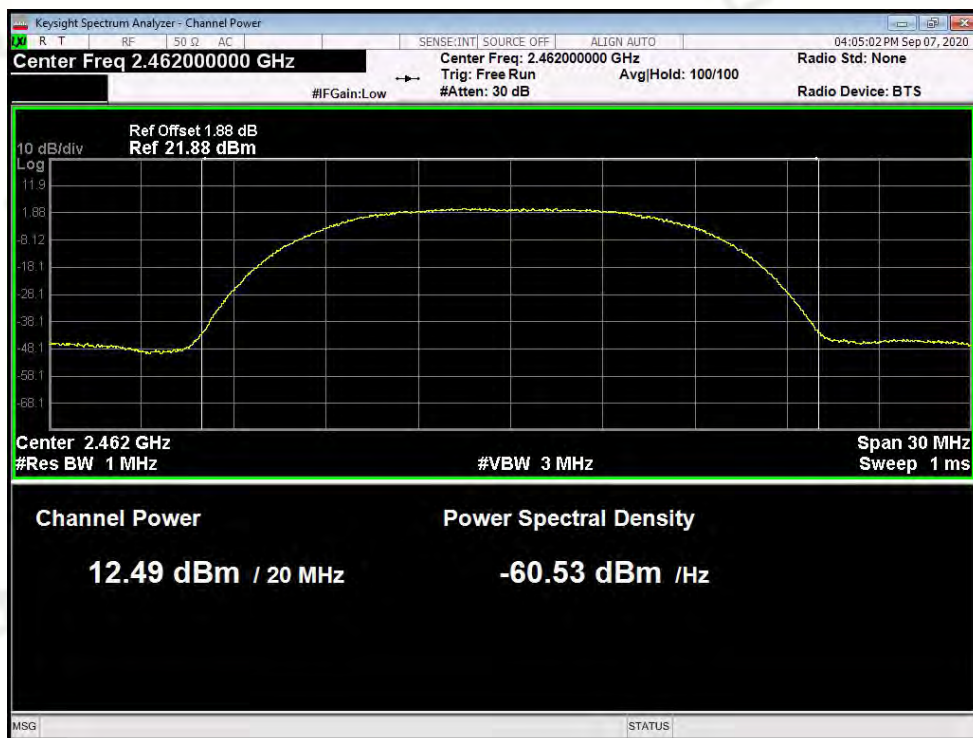
802.11b Low Channel



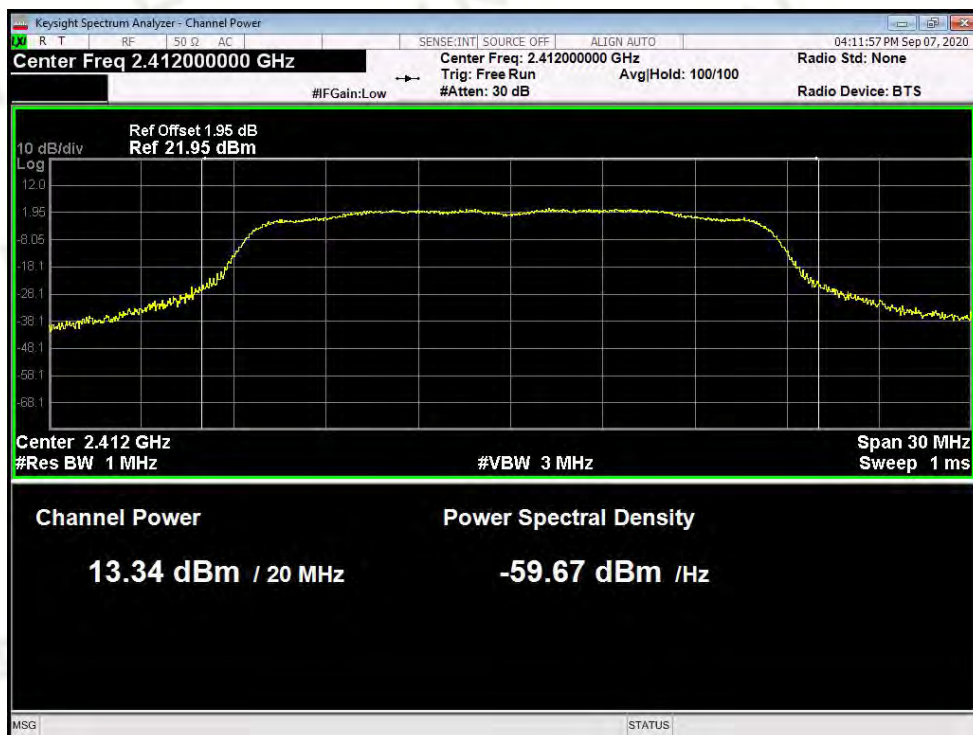
802.11b Middle Channel



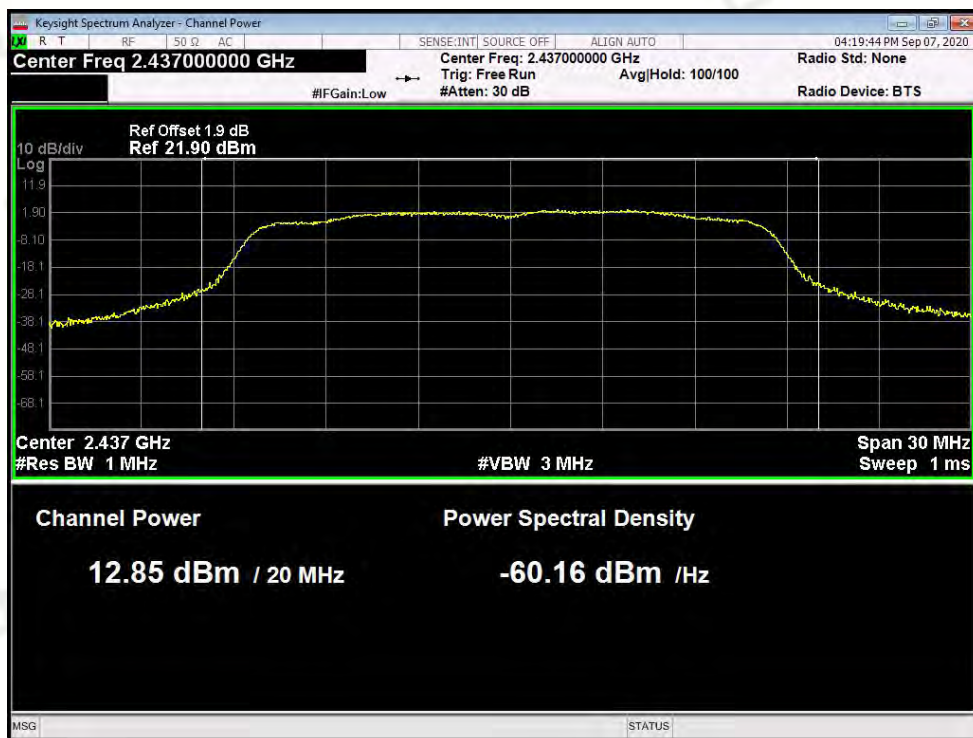
802.11b High Channel



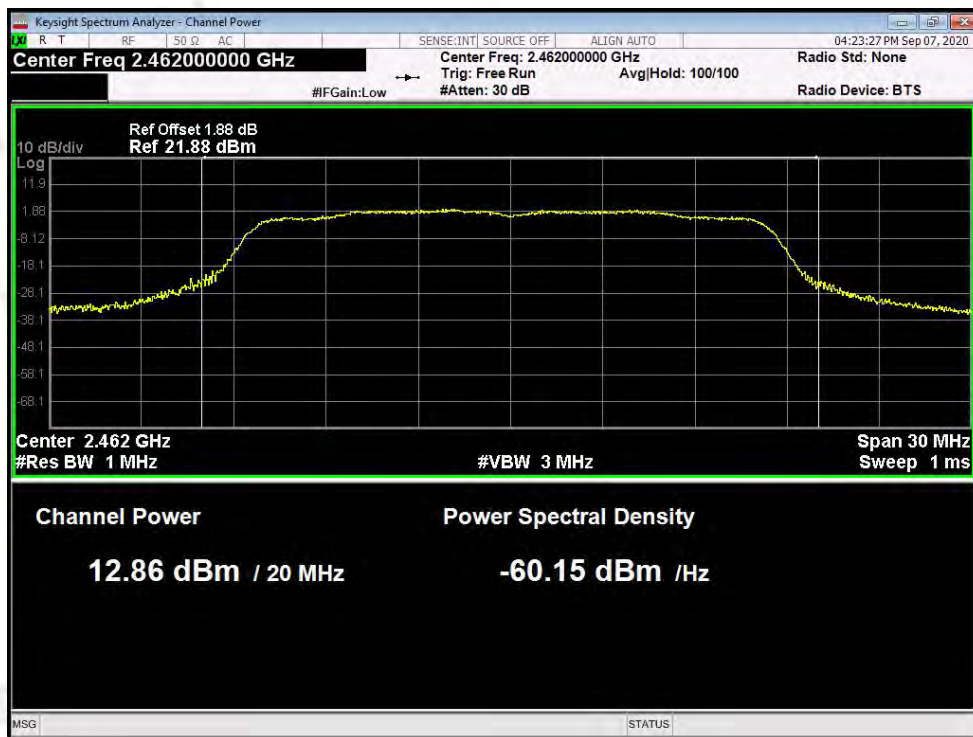
802.11g Low Channel



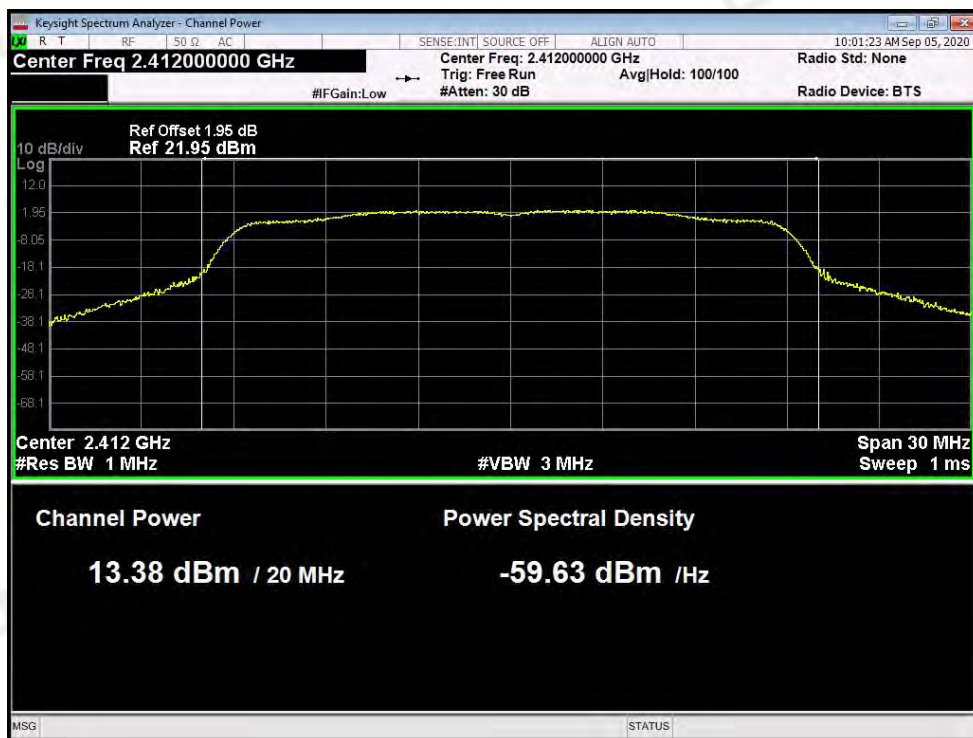
802.11g Middle Channel



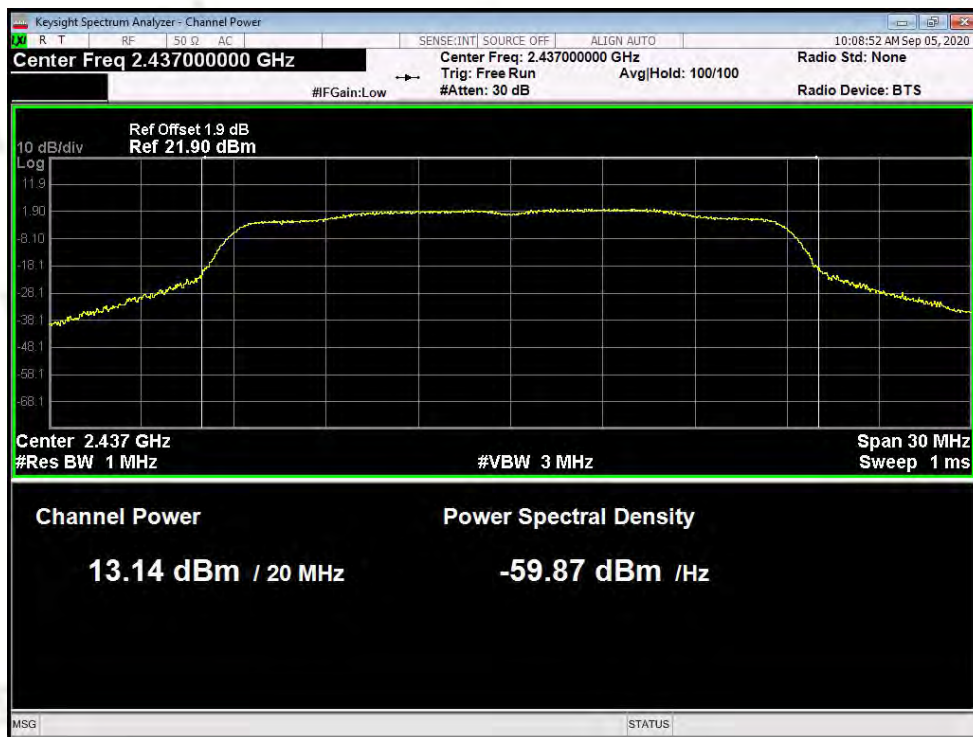
802.11g High Channel



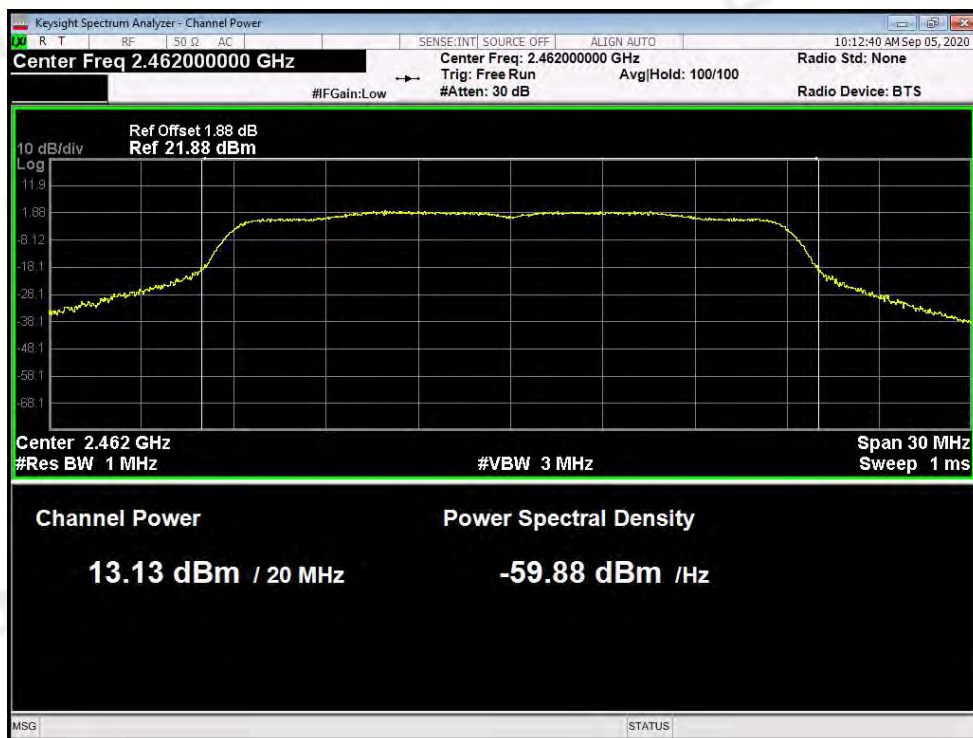
802.11n(HT20) Low Channel



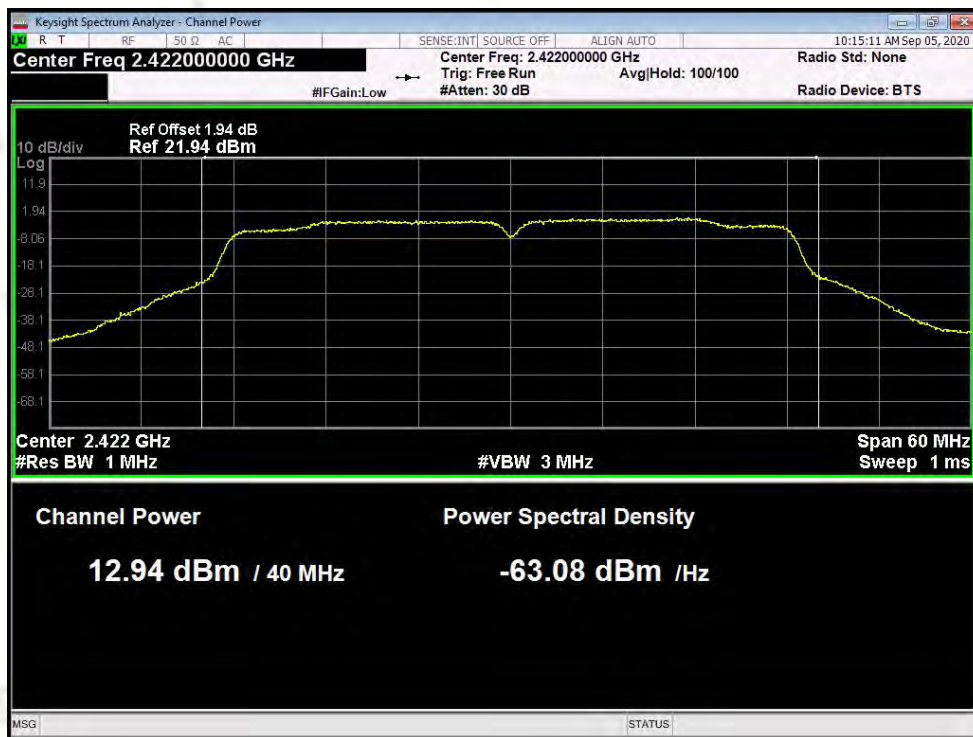
802.11n(HT20) Middle Channel



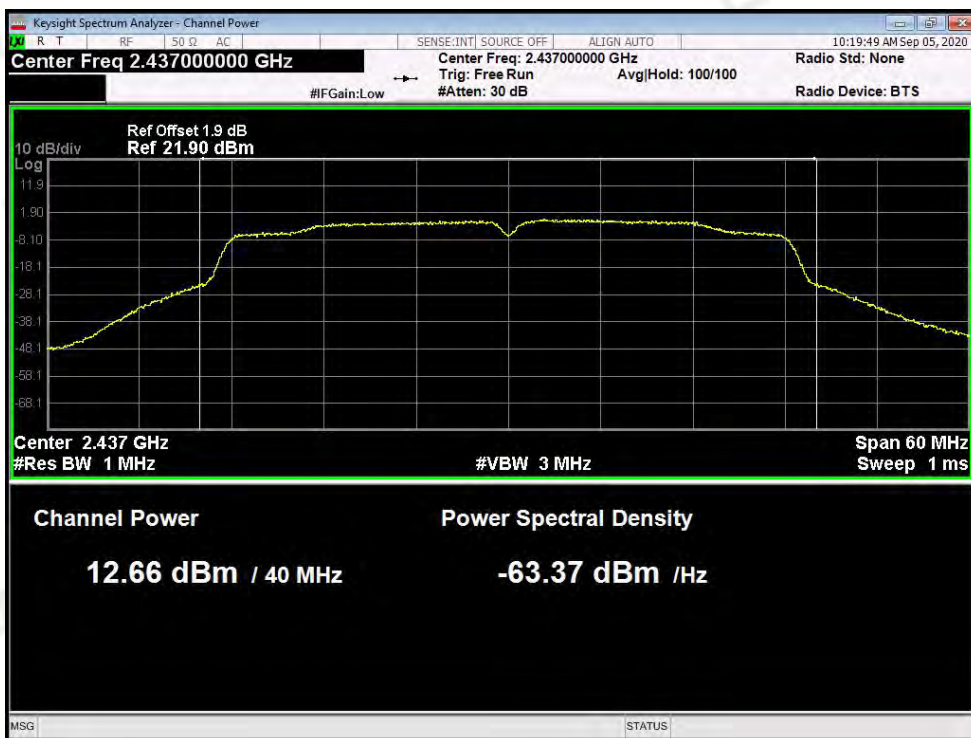
802.11n(HT20) High Channel



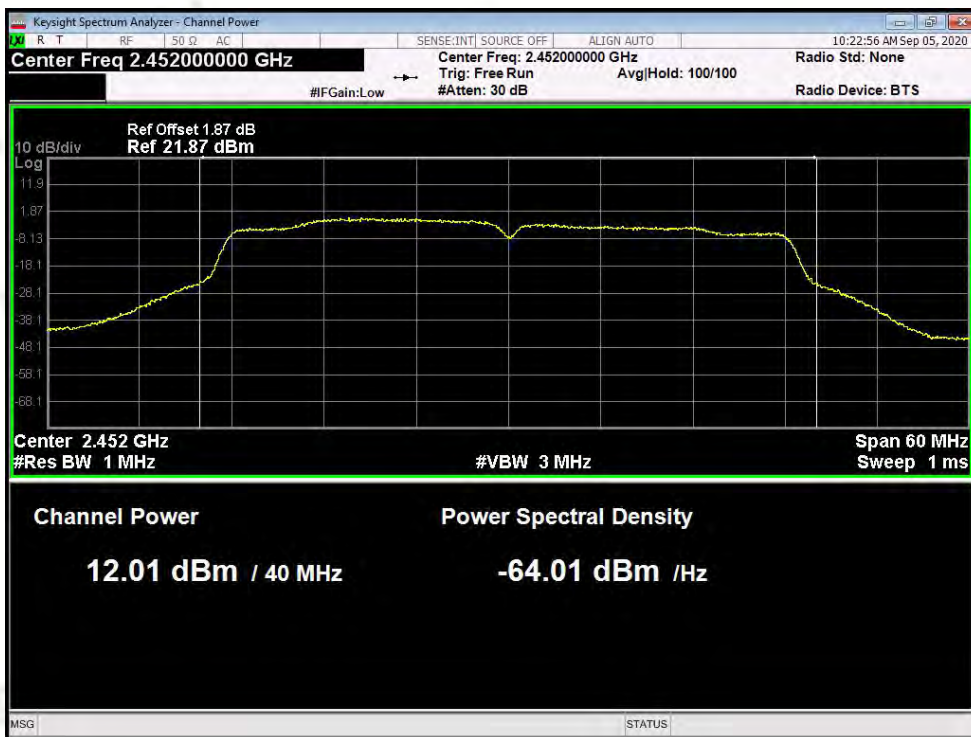
802.11n(HT40) Low Channel



802.11n(HT40) Middle Channel



802.11n(HT40) High Channel



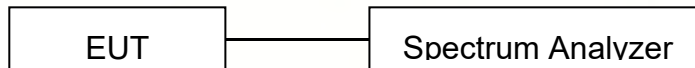
6. 6dB Bandwidth Measurement Procedure

DTS 6dB Channel Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to FCC KDB558074(v03r03):

1. For 6dB bandwidth, Set the RBW = 100KHz.
2. Set the VBW $\geq 3 \times$ RBW
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully 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 frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Measurement Results

Pass

Please refer to following table and plots.

Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and MCS0 for 802.11n mode.

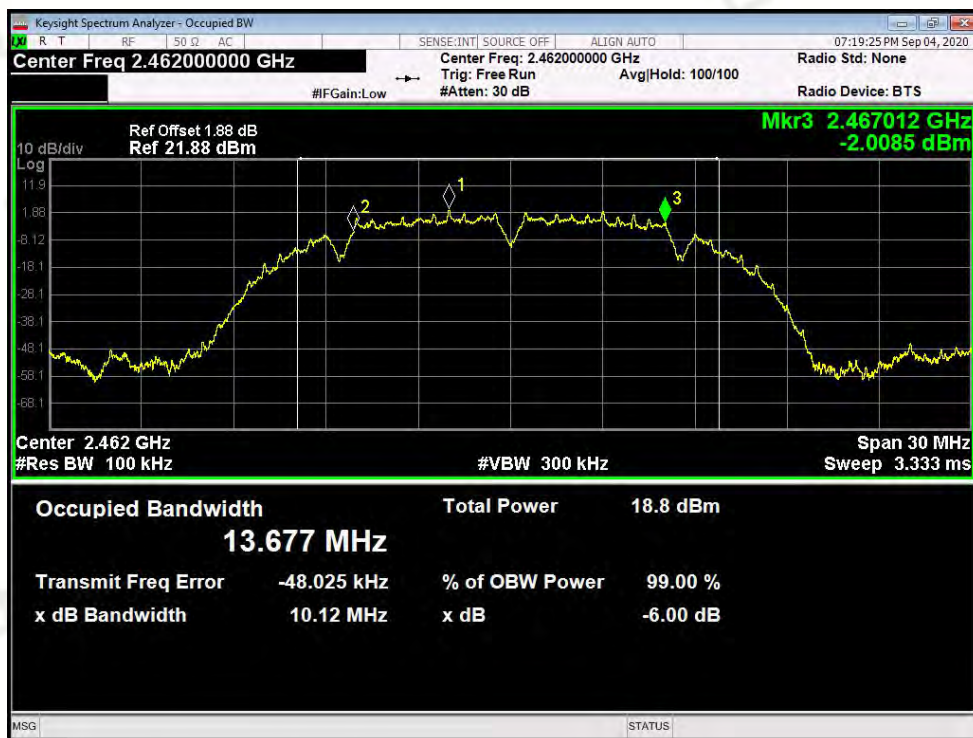
Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11b Mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Channel Separation (kHz)	Result
	ANTENNA-A	ANTENNA-B		
2412	9.846	11.041	>=500	PASS
2437	10.117	11.054	>=500	PASS
2462	10.119	11.232	>=500	PASS

Antenna A

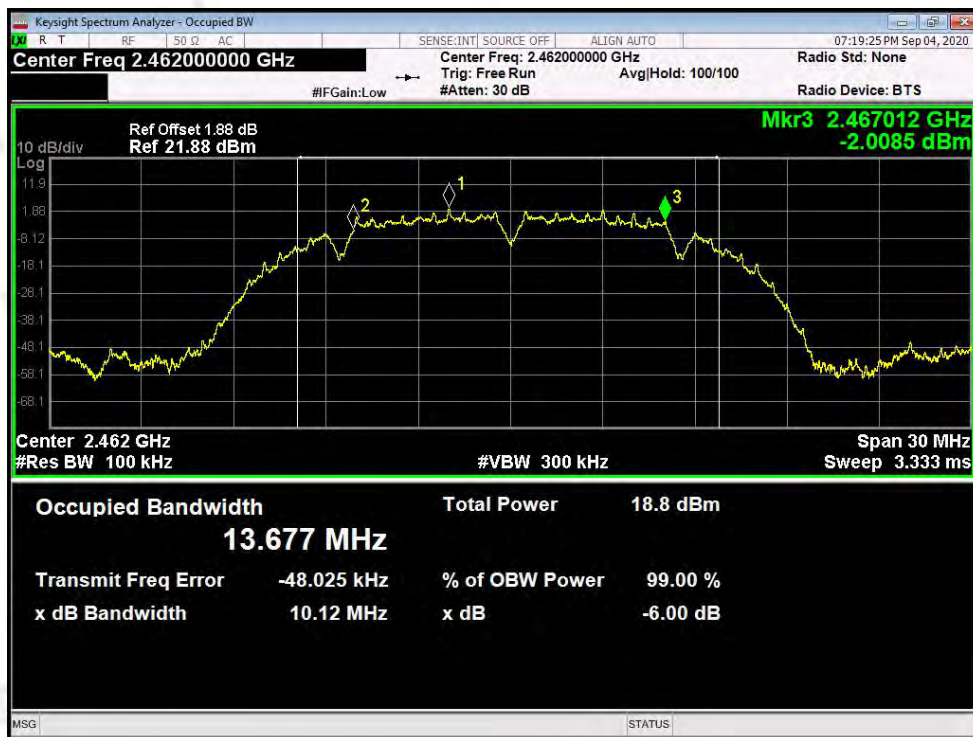
802.11b Low Channel



802.11b Middle Channel



802.11b High Channel



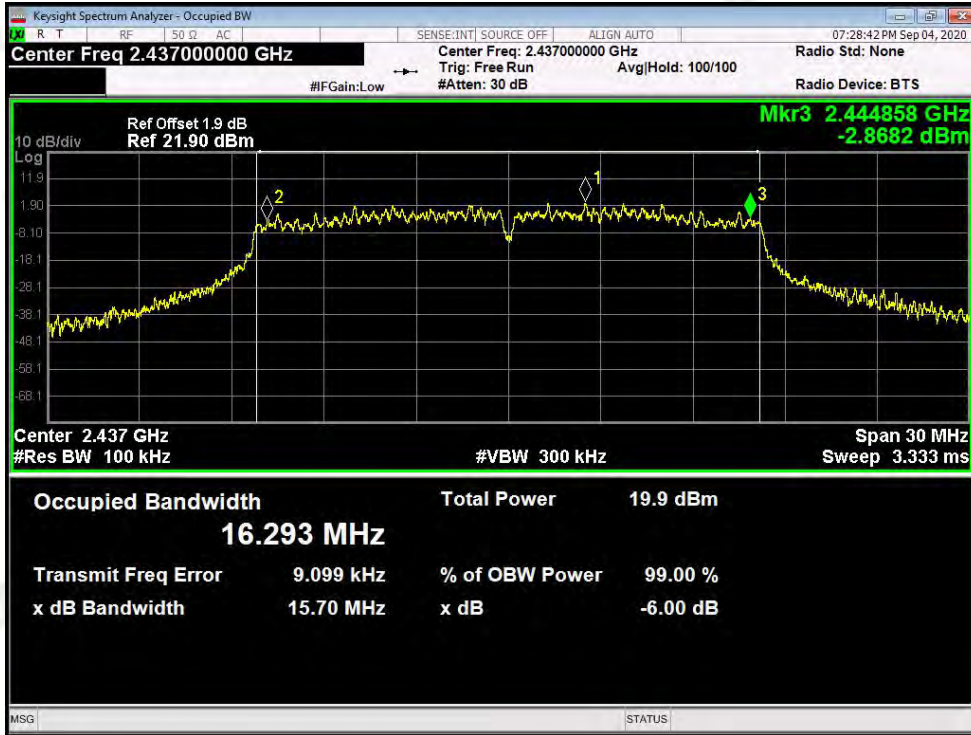
Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11g Mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Channel Separation (kHz)	Result
	ANTENNA-A	ANTENNA-B		
2412	15.667	15.656	>=500	PASS
2437	15.698	15.427	>=500	PASS
2462	16.291	16.317	>=500	PASS

Antenna A

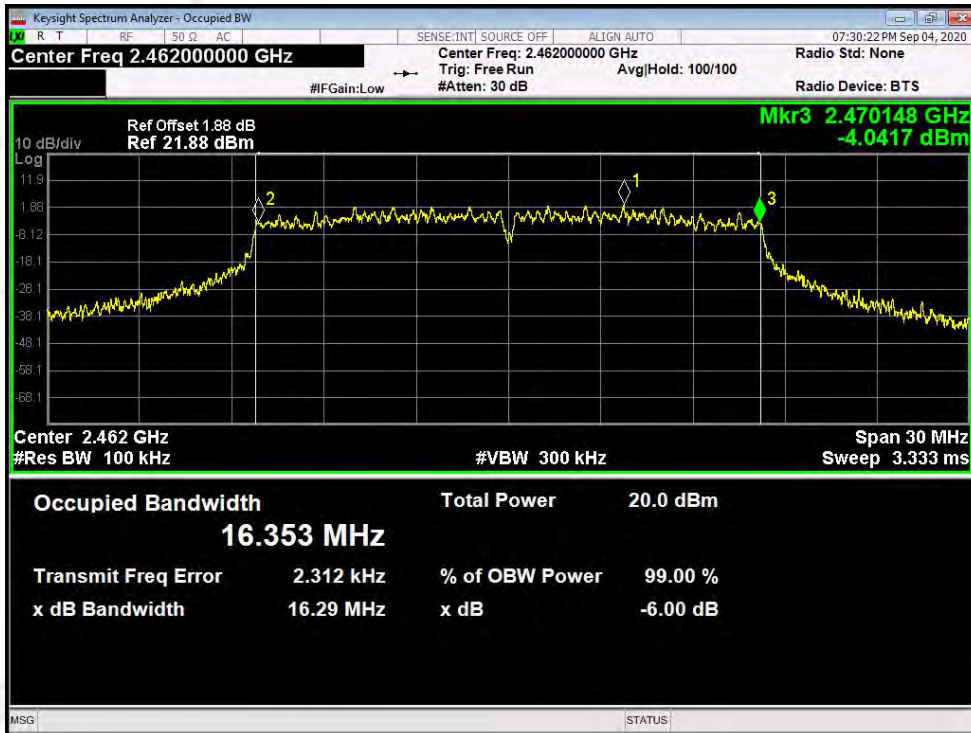
802.11g Low Channel



802.11g Middle Channel



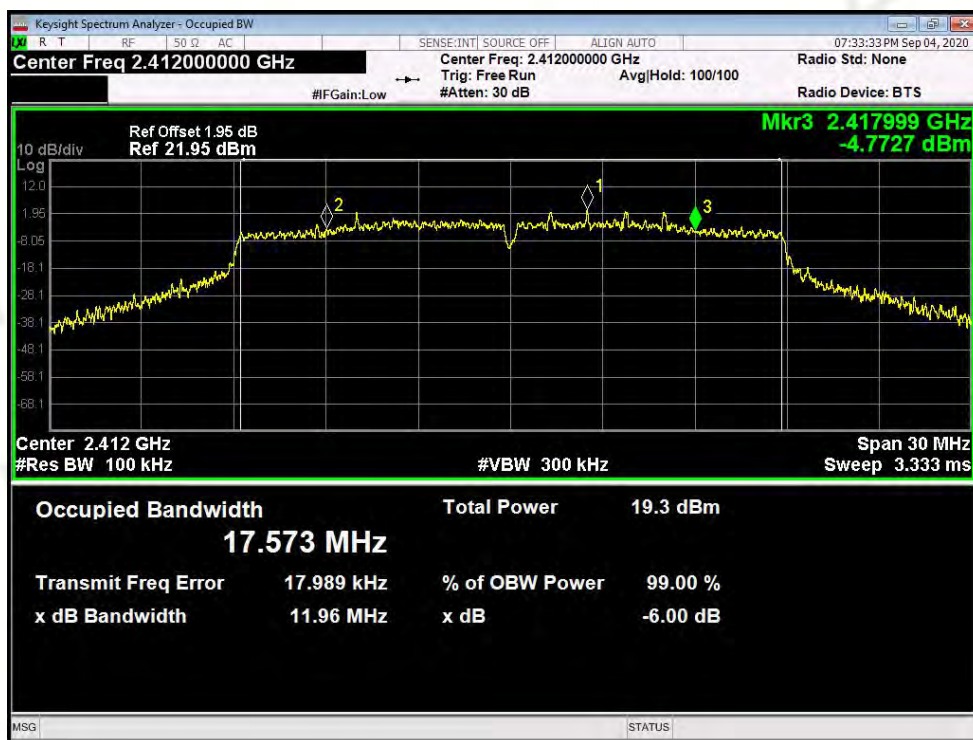
802.11g High Channel



Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11n HT20 Mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Channel Separation (kHz)	Result
	ANTENNA-A	ANTENNA-B		
2412	11.961	12.974	>=500	PASS
2437	12.998	15.124	>=500	PASS
2462	16.265	15.418	>=500	PASS

Antenna A

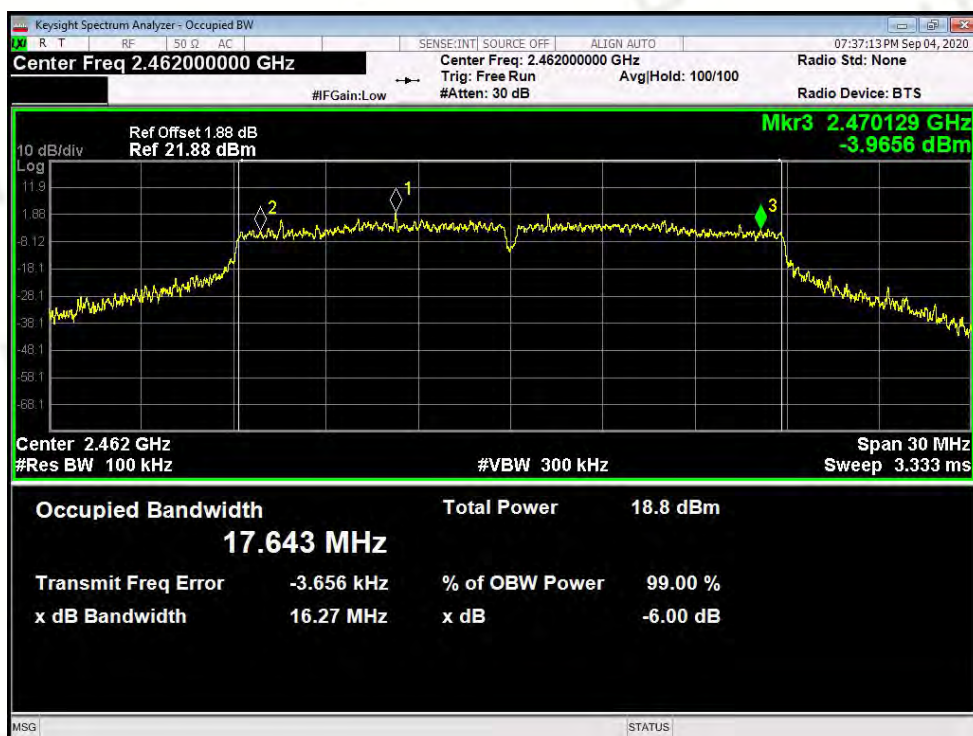
802.11n(HT20) Low Channel



802.11n(HT20) Middle Channel



802.11n(HT20) High Channel



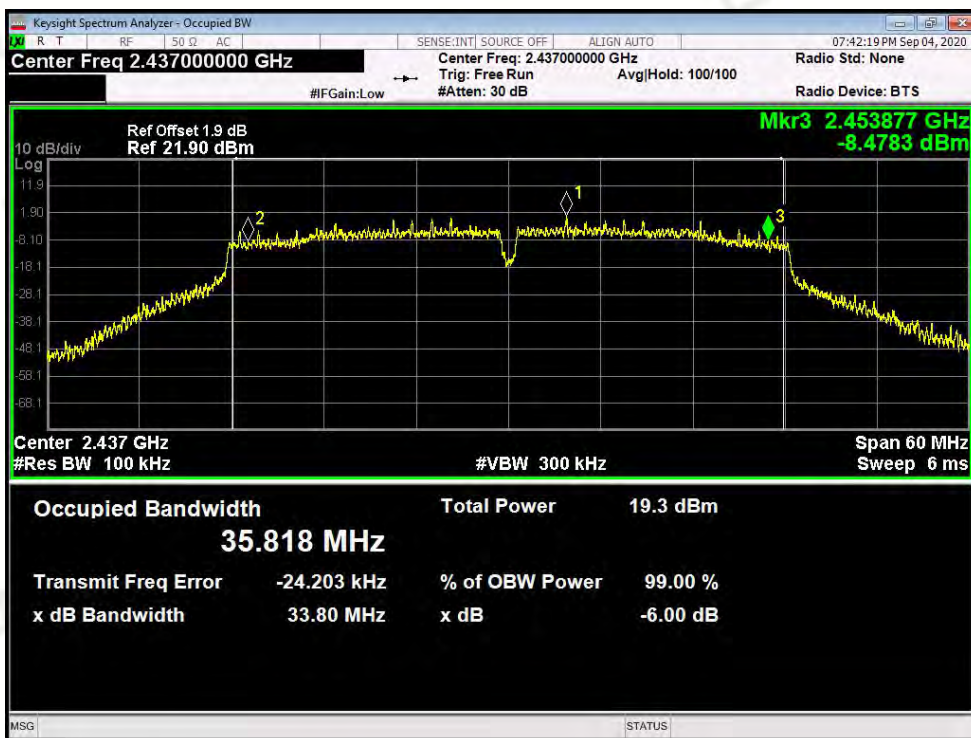
Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11n HT40 Mode				
Frequency (MHz)	6dB Bandwidth (MHz)		Channel Separation (kHz)	Result
	ANTENNA-A	ANTENNA-B		
2412	34.435	35.361	>=500	PASS
2437	33.803	33.775	>=500	PASS
2462	33.834	30.032	>=500	PASS

Antenna A

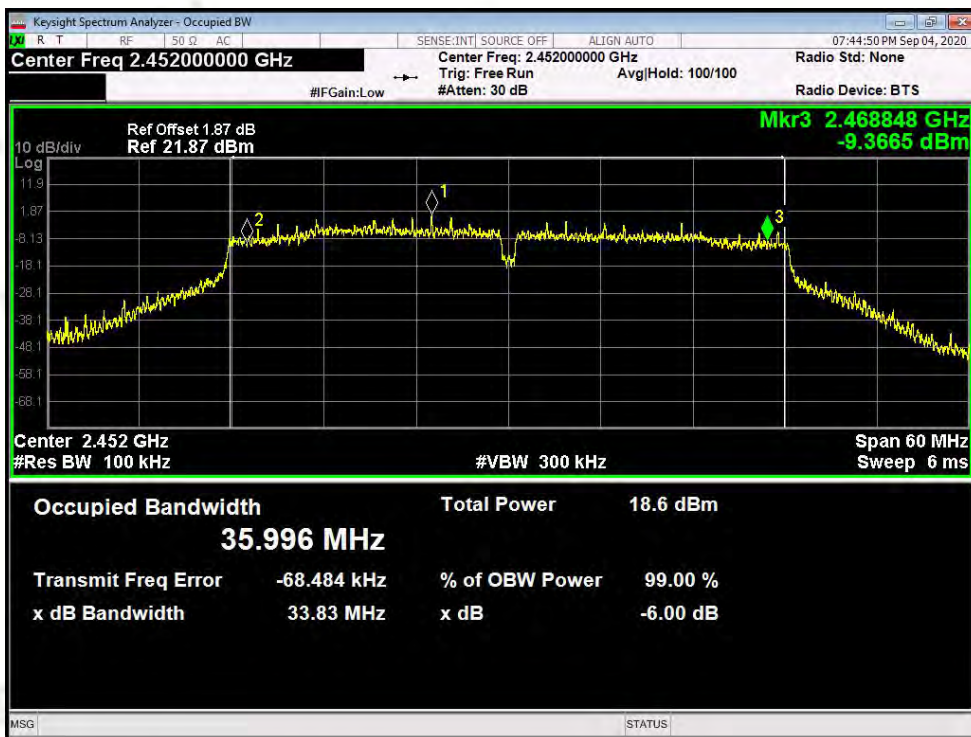
802.11n(HT40) Low Channel



802.11n(HT40) Middle Channel



802.11n(HT40) High Channel

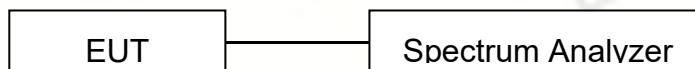


7. 99% Occupied Bandwidth Test
7.1 Measurement Procedure

ANSI C63.10: 2013 Section 6.9.3: The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

1. The transmitter output was connected to the spectrum analyzer through a low loss cable. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
2. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.
3. A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.
4. Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

7.2 Test SET-UP (Block Diagram of Configuration)



7.3 Measurement Results

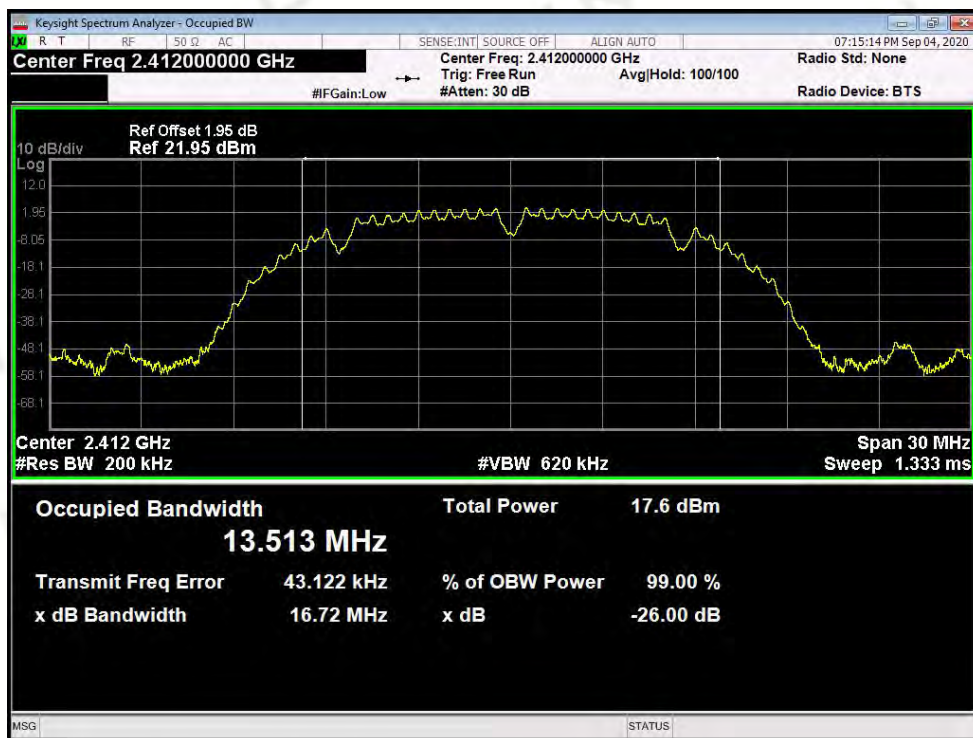
Pass

Please refer to following table and plots.

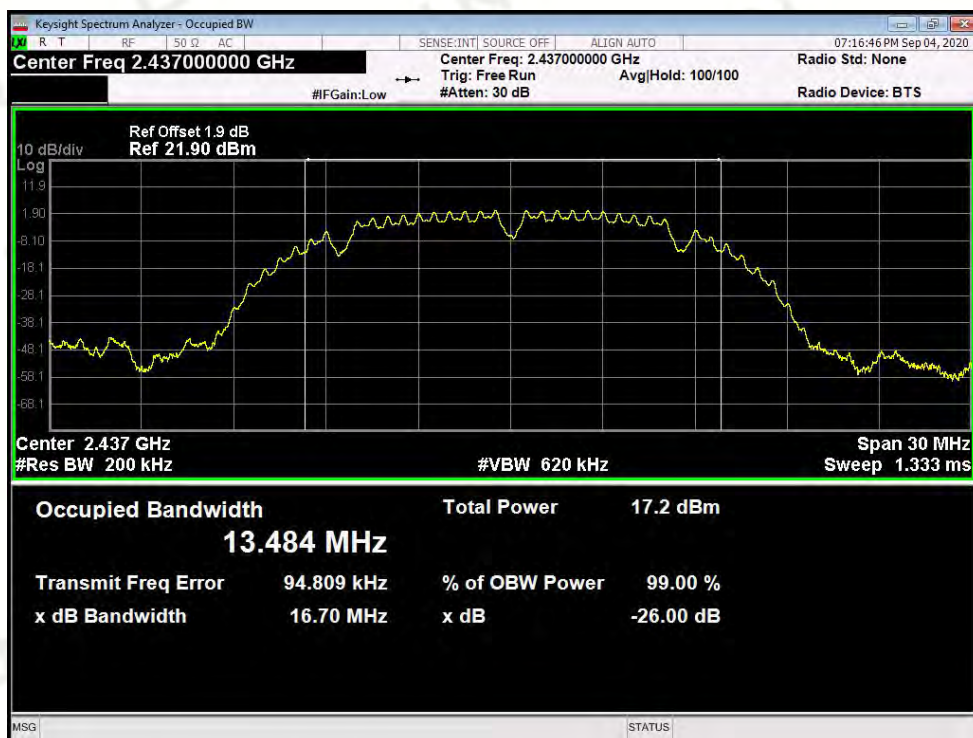
Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11b Mode (CCK)				
Frequency (MHz)	6dB Bandwidth (MHz)		Data Rate (Mbps)	99% Bandwidth (MHz)
	ANTENNA-A	ANTENNA-B		
2412	13.513	13.425	1	PASS
2437	13.484	13.438	1	PASS
2462	14.511	13.646	1	PASS

Antenna A

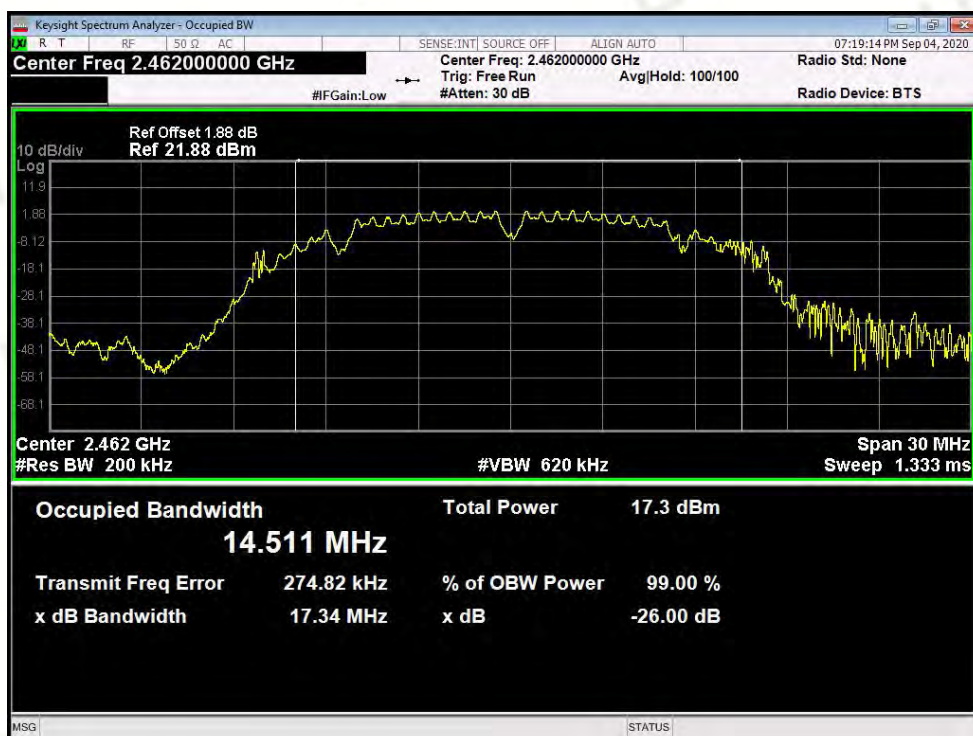
802.11b Low Channel



802.11b Middle Channel



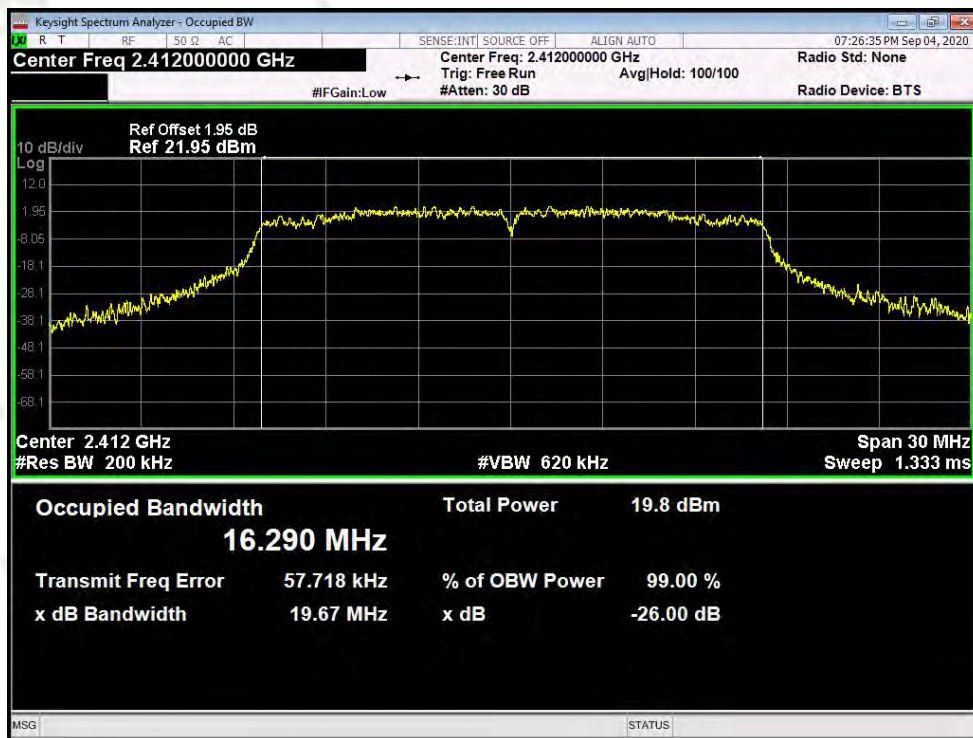
802.11b High Channel



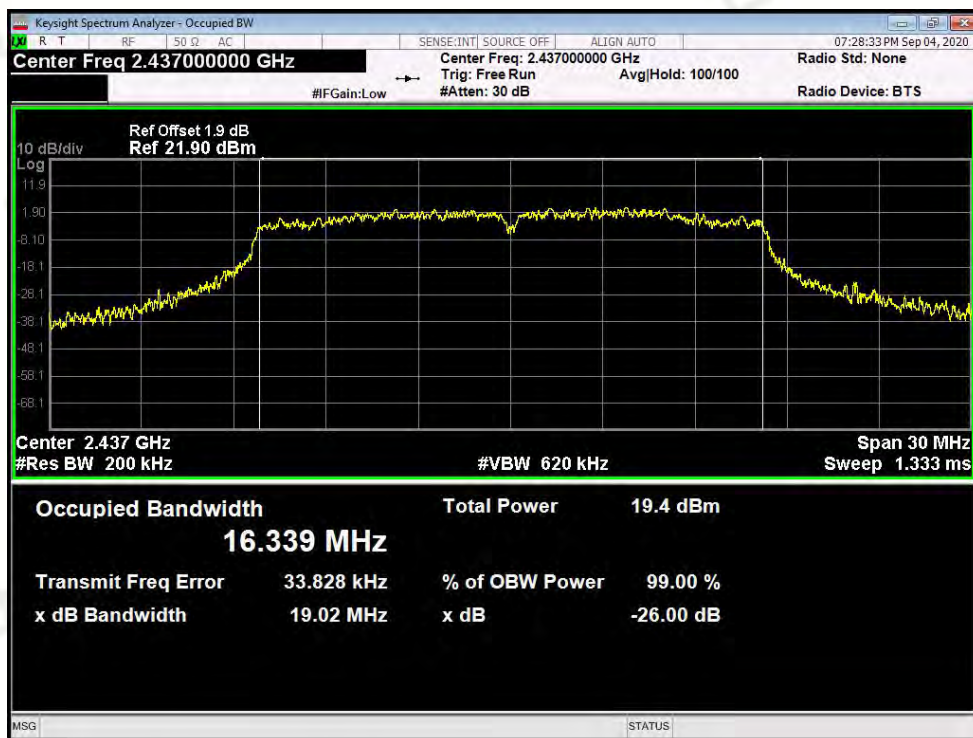
Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11g Mode (OFDM)				
Frequency (MHz)	6dB Bandwidth (MHz)		Data Rate (Mbps)	99% Bandwidth (MHz)
	ANTENNA-A	ANTENNA-B		
2412	16.290	16.312	6	PASS
2437	16.339	16.358	6	PASS
2462	16.401	16.425	6	PASS

Antenna A

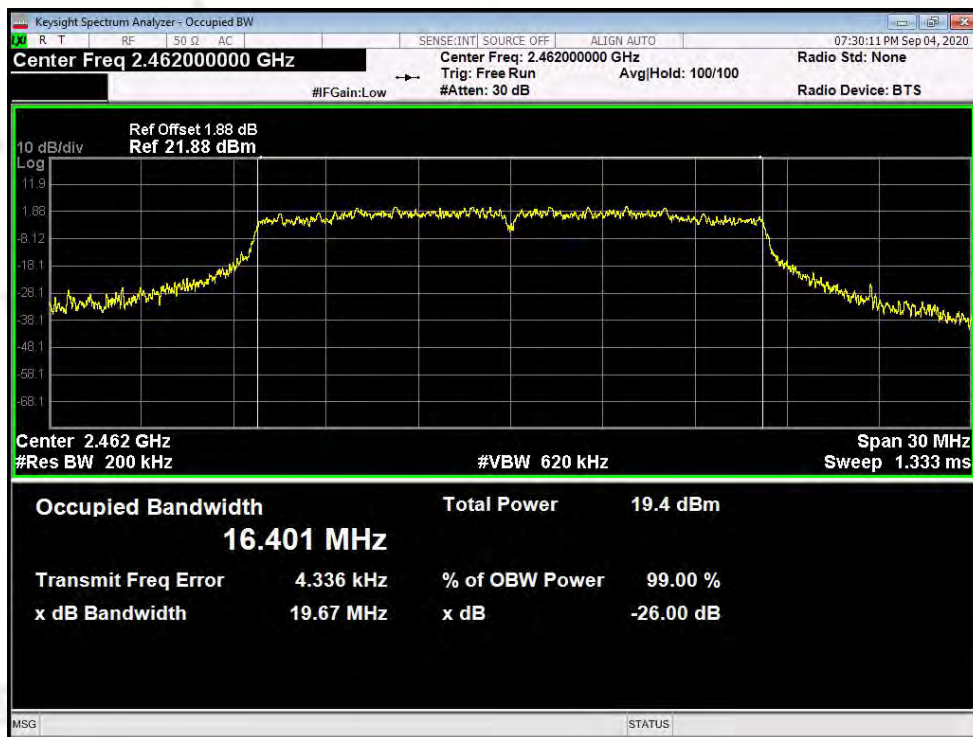
802.11g Low Channel



802.11g Middle Channel



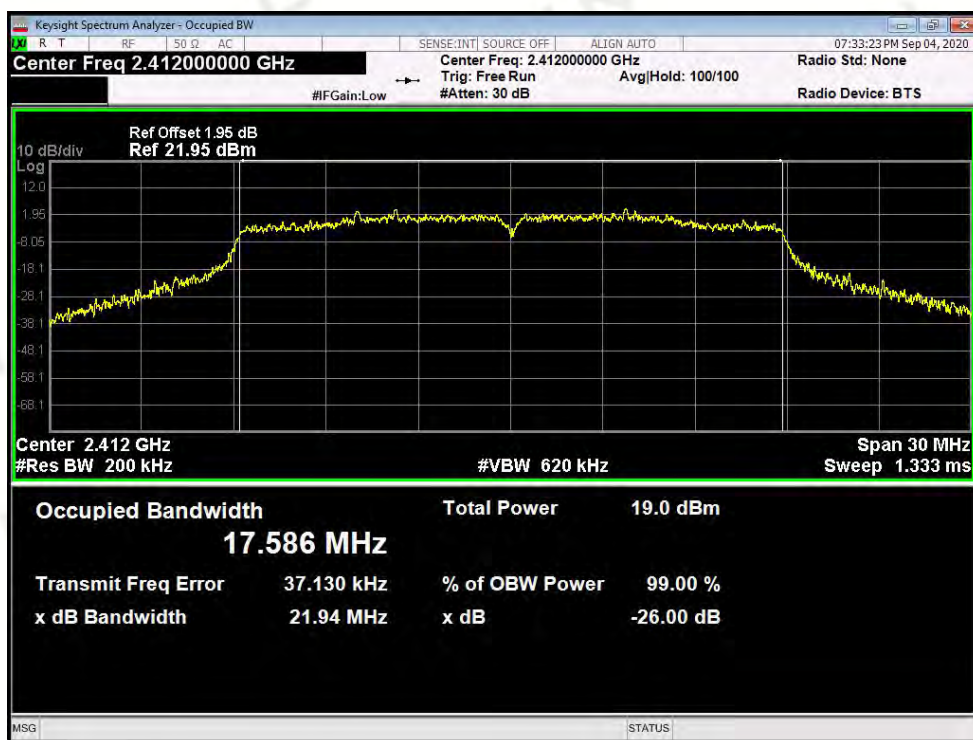
802.11g High Channel



Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11n HT20 Mode (OFDM)				
Frequency (MHz)	6dB Bandwidth (MHz)		Data Rate (Mbps)	99% Bandwidth (MHz)
	ANTENNA-A	ANTENNA-B		
2412	17.586	17.585	6.5	PASS
2437	17.601	17.583	6.5	PASS
2462	17.705	17.703	6.5	PASS

Antenna A

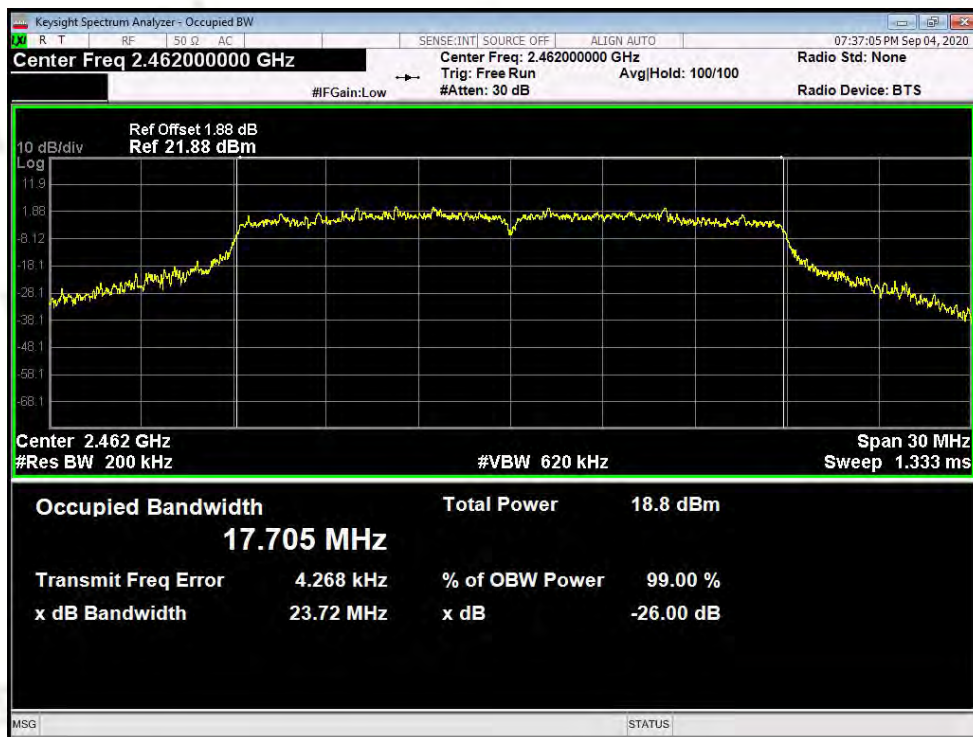
802.11n(HT20) Low Channel



802.11n(HT20) Middle Channel

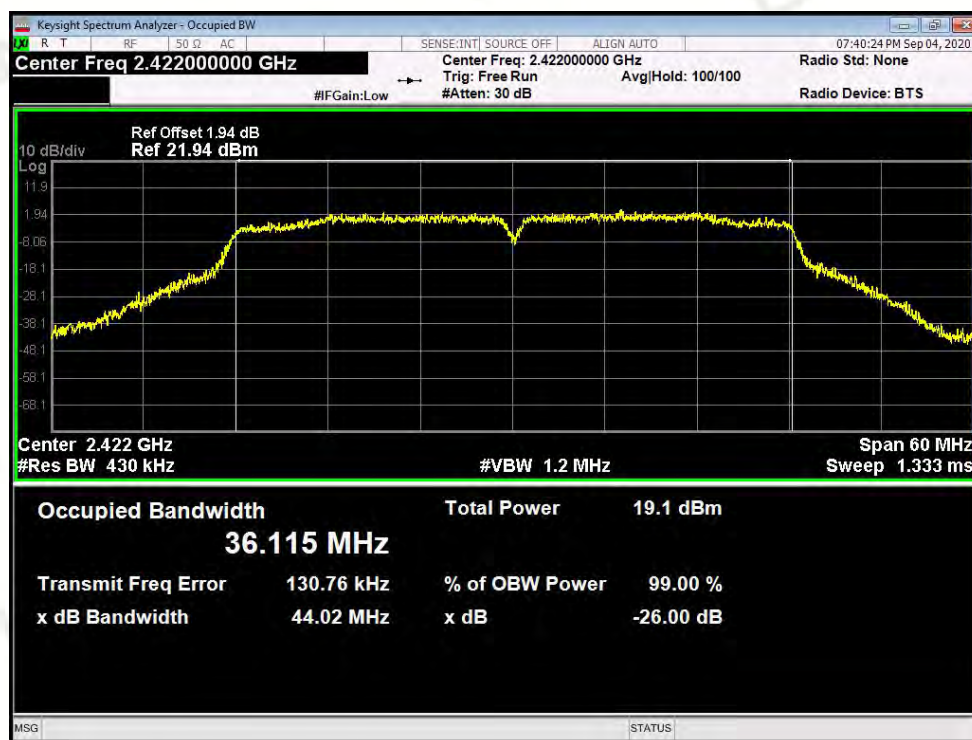


802.11n(HT20) High Channel



Temperature:	25 °C	Humidity:	50%	
Test By:	PEI	Test Date:	September 04, 2020	
Test Result:	PASS			
TX 802.11n HT40 Mode (OFDM)				
Frequency (MHz)	6dB Bandwidth (MHz)		Data Rate (Mbps)	99% Bandwidth (MHz)
	ANTENNA-A	ANTENNA-B		
2422	36.115	36.182	13.5	PASS
2437	35.855	35.892	13.5	PASS
2452	36.119	36.035	13.5	PASS

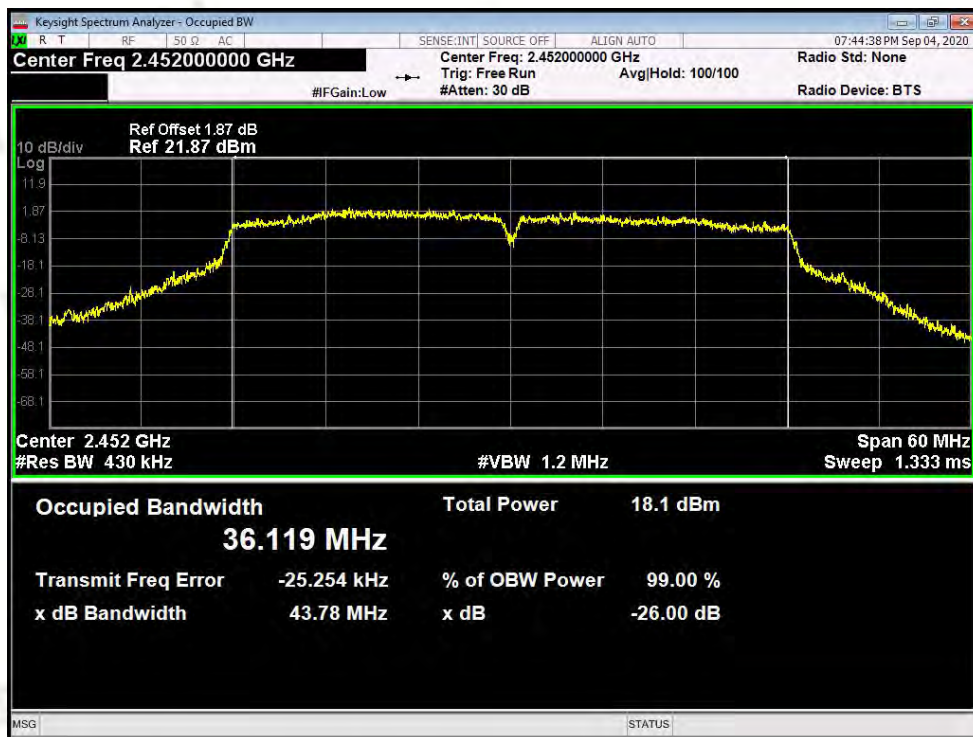
802.11n(HT40) Low Channel



802.11n(HT40) Middle Channel



802.11n(HT40) High Channel



8. Power Spectral Density
8.1 Measurement Procedure

DTS 6dB Channel Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to FCC KDB558074 (v03r03):

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 $\geq 3 \times \text{RBW}$.
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.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Measurement Results

Pass

Please refer to following table and plots.

Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and MCS0 for 802.11n mode.

Temperature:	25 °C	Humidity:	50%		
Test By:	PEI	Test Date:	September 04, 2020		
Test Result:	PASS				
TX 802.11b Mode					
Frequency (MHz)	Power Density (dBm)			Limit (dBm)	Result
	ANT A(dBm)	ANT B(dBm)	TOTAL(dBm)		
2412	-4.845	-5.134	--	8	PASS
2437	-5.435	-5.827	--	8	PASS
2462	-5.549	-5.635	--	8	PASS

Antenna A

802.11b Low Channel



802.11b Middle Channel

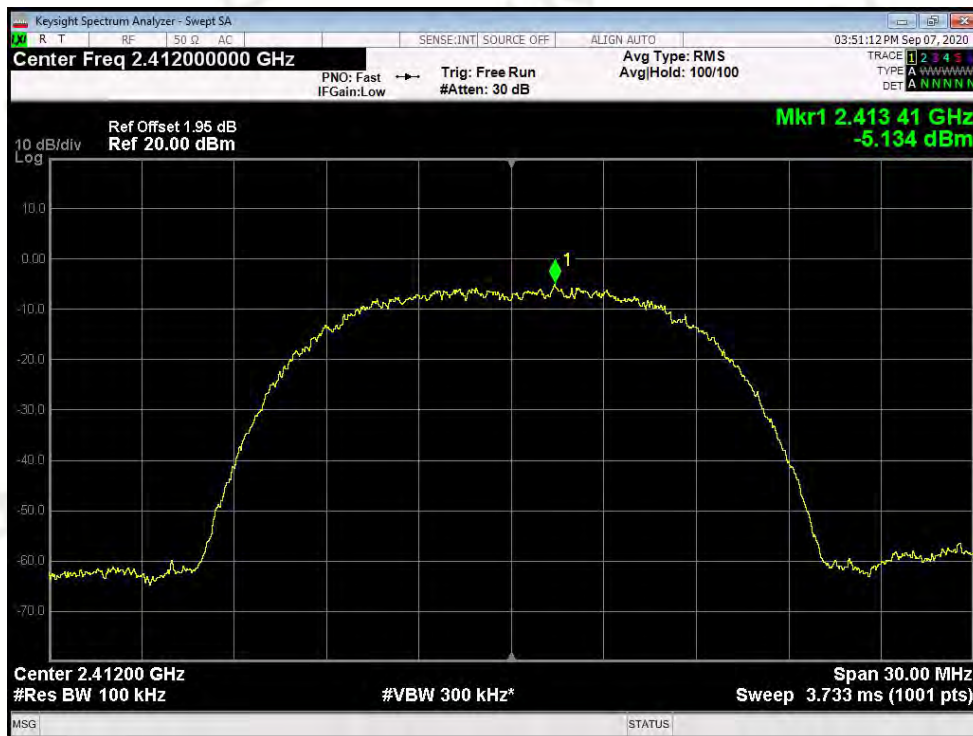


802.11b High Channel

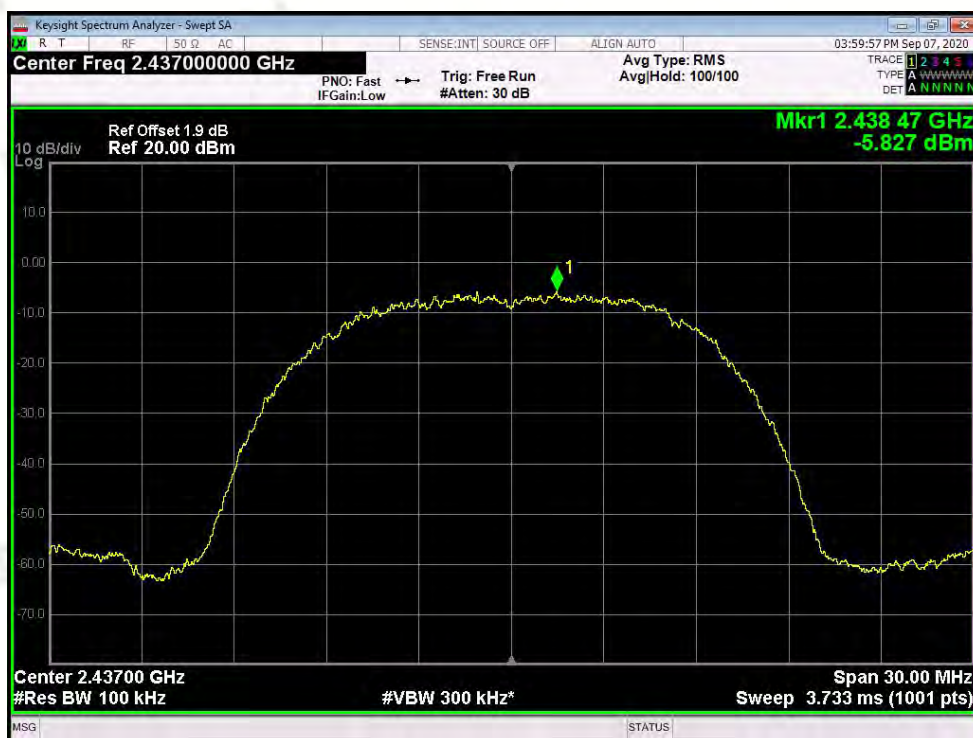


Antenna B

802.11b Low Channel



802.11b Middle Channel



802.11b High Channel

