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Ubicquia, Inc.
TEST REPORT

SCOPE OF WORK
EMC TESTING – UBIHUB APAI

REPORT NUMBER
104626259LEX-004.1

ISSUE DATE **REVISED DATE**
10/20/2021 3/1/2022

PAGES
46

DOCUMENT CONTROL NUMBER
Non-Specific EMC Report Shell Rev. December 2017

EMC TEST REPORT
(FULL COMPLIANCE)

Report Number:	104626259LEX-004.1
Project Number:	G104626259
Report Issue Date:	10/20/2021
Report Revised Date:	3/1/2022
Product Tested:	UbiHub APAI
Model Number:	UBH-H-AI
Standards:	FCC Part 15 Subpart C RSS-247 Issue 2

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Dr.
Lexington, KY 40510
USA

Client:
Ubicquia, Inc.
401 Eas Las Olas Blvd.
Suite 1750
Fort Lauderdale, FL 33301
USA

Report prepared by

Bryan Taylor, Team Leader

Report reviewed by

Brian Lackey, Staff Engineer

Table of Contents

1 Introduction and Conclusion

The tests indicated below were performed on the product described in section 4 The remaining test sections are the verbatim text from the actual data sheets used during the investigation. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

FCC Rule	ISED Rule	Test Method	Test Description	Measured Value	Limit	Results
15.247(a)(2)	RSS-247 (5.2.a)	ANSI C63.10 (6.9.2)	6dB Bandwidth	DSSS: 7.64MHz OFDM: 17.54MHz OFDM (40MHz): 36.15MHz	6dB Bandwidth ≥ 500kHz	Pass
	RSS-Gen (6.6)	ANSI C63.10 (6.9.3)	99% Bandwidth	DSSS: 13.07MHz OFDM: 17.64MHz OFDM (40MHz): 36.15MHz	Must Be Measured	Pass
15.247(b)	RSS-247 (5.4.d)	ANSI C63.10 (11.9.2.3.1)	Maximum Conducted Output Power	DSSS: 21.53dBm OFDM: 26.69dBm OFDM (40MHz): 26.68dBm	1 Watt (30dBm)	Pass
	RSS-247 (5.4.d)	ANSI C63.10	Effective Isotropic Radiated Power	DSSS: 29.93dBm OFDM: 35.21dBm OFDM (40MHz): 35.20dBm	4W (36dBm)	Pass
15.247(e)	RSS-247 (5.2.b)	ANSI C63.10 (11.10.2)	Power Spectral Density	DSSS: 4.41dBm / 3kHz OFDM: 0.39dBm / 3kHz OFDM (40MHz): -0.21dBm / 3kHz	8dBm in any 3kHz	Pass
15.247(d)	RSS-247 (5.5)	ANSI C63.10 (11.11.1)	Conducted Spurious Emissions	<-30dBc	<-30dBc (average) <-20dBc (peak)	Pass
15.247(d), 15.205(a) 15.209(a)	RSS-247 (5.5) RSS-247 (3.3)	ANSI C63.10 (11.12.1)	Radiated Spurious Emissions	DSSS: 52.41dBuV/m OFDM: 53.35dBuV/m OFDM (40MHz): 53.57dBuV/m	See 15.209(a) and 15.205(a)	Pass
15.207(a)	RSS-Gen (8.8)	ANSI C63.10	Conducted Emissions	55.13dBuV	See 15.207(a)	Pass
15.203			Antenna Requirement	Internal with unique connector	Permanently attached or unique connector	Pass

3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	Ubicquia, Inc.
Address:	401 Eas Las Olas Blvd. Suite 1750 Fort Lauderdale, FL 33301 USA
Contact:	Shimon Goldstein
Telephone:	(954) 774-6213
Email:	sgoldstein@ubicquia.com
Manufacturer Information	
Manufacturer Name:	Ubicquia, Inc.
Manufacturer Address:	401 Eas Las Olas Blvd. Suite 1750 Fort Lauderdale, FL 33301 USA

4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	UbiHub APAI
Model Number	UBH-H-AI
Serial Number	Test Sample 1
Receive Date	6/1/2021
Test Start Date	6/2/2021
Test End Date	2/21/2022
Transmit Bands Supported	2412 – 2462MHz
Test Channels Utilized	2412MHz Channel 1 2437MHz Channel 6 2462MHz Channel 11 2422MHz Channel 3 (for 40MHz Wide Operation) 2452MHz Channel 9 (for 40MHz Wide Operation)
Modulation Types Supported	802.11b, 802.11g, 802.11n, 802.11ac, 802.11ax
Antenna Information	Manufacturer: Taoglas Part Number: FXP522.A.07.A.001 2.5dBi on each of the 2 transmit paths. Two of these antennas were used in a 4x4MIMO configuration. Array gain calculations for correlated outputs with equal antenna gains yielded an effective array gain of 8.52dBi. Reference KDB662911 D01 Section 2(a) for the methodology used to calculate the array gain
Device Received Condition	Good
Test Sample Type	Production
Ratings	90 – 504VAC, 50/60Hz, 95W

Description of Equipment Under Test (provided by client)
UbiHub is a smart streetlight controller with support for WiFi6 (802.11ax) 5Ghz 8x8 configuration, as well as 2.4Ghz 4x4 configuration, and LTE backhaul (via pre-approved LTE Module: EG25-G or EP06-A).

4.1 Variant Models:

UbiHub is a smart streetlight controller with two versions (with and without optional AI plug in daughterboard). Both versions have the same AP and enable lighting controls and high-speed internet access. The APAI model version additionally provides AI analysis for street traffic.

- The UbiHub Family of products supports 2 different Model Names: UbiHub APAI and UbiHub AP6
- **AP6:** The AP6 Model (UBH-H-WI) supports full WiFi6 (802.11ax) 5Ghz 8x8 configuration, as well as 2.4Ghz 4x4 configuration, and LTE backhaul (via LTE Module: EG25-G or EP06-A).
- **APAI:** The APAI Model (UBH-H-AI) supports identical AP6 functionality (hardware and software), but in addition supports audio/video street traffic analytics via an AI plug-in daughterboard.

All testing in this report was performed on the APAI version since it is more densely populated than the AP6 version. The differences between the AP6 and APAI versions are only in non-transmitter related circuitry so the results within this report should also apply to the AP6 version.

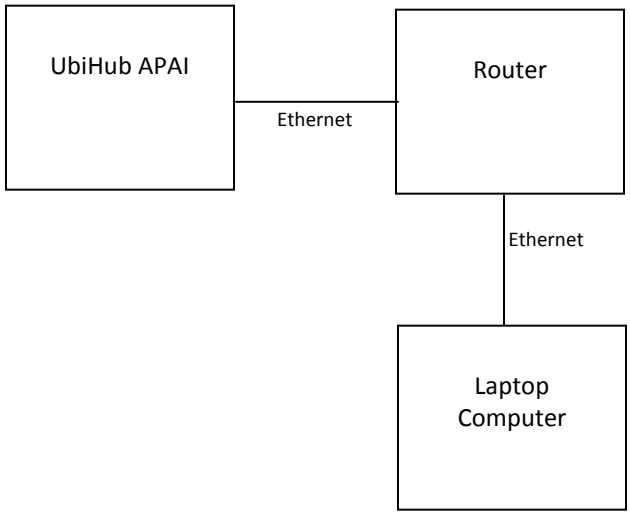
5 System Setup and Method

No.	Descriptions of EUT Exercising
1	The UbiHub APAI was connected to a laptop computer via a router. The laptop was used to send test commands to the UbiHub APAI to force it to transmit on low, mid, or high channels at maximum output power.

Cables					
Qty	Description	Length	Shielding	Ferrites	Termination
1	AC Input	2m	None	None	AC Power Source
1	Ethernet Cable	2m	None	None	Router

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	HP	ProBook 455 G4	5CD7212NFW
Router	Belkin	F9K1115V2	14502GM5200027

5.1 EUT Block Diagram:



5.2 Test Equipment Used (Conducted Antenna Port Tests):

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
Wideband Power Sensor	4022	Rohde&Schwarz	NRP-Z81	9/22/2020	9/22/2021
Spectrum Analyzer	3720	Rohde&Schwarz	FSEK30	10/13/2020	10/13/2021
Spectrum Analyzer	3981	Rohde&Schwarz	FSU8	9/22/2020	9/22/2021

5.3 Test Equipment Used (Conducted AC Input Tests):

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	2327	Rohde & Schwarz	ESI26	10/9/2020	10/9/2021
LISN	2508	Fischer Custom Communication	FCC-LISN-50-50-2M	6/22/2021	6/22/2022
Coaxial Cable	7024			12/21/2020	12/21/2021

5.4 Test Equipment Used (Radiated Tests):

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	3900	Rohde&Schwarz	ESU40	10/5/2020	10/5/2021
Magnetic Loop Antenna	2366	ETS	6502	7/17/2020	7/17/2021
Bilog Antenna (JB6)	7085	SunAR	JB6	9/4/2020	9/4/2021
Horn Antenna (1-18GHz)	4001	ETS	3117	1/26/2021	1/26/2022
Horn Antenna (18-40GHz)	3779	ETS	3116c	7/23/2020	7/23/2021
Preamplifier (18-40GHz)	3921	Rohde & Schwarz	TS-PR40	12/21/2020	12/21/2021
Coaxial Cable (40GHz)	7020			12/21/2020	12/21/2021
Coaxial Cable (40GHz)	7021			12/21/2020	12/21/2021
System Controller	4096	ETS Lindgren	2090	Verify at Time of Use	Verify at Time of Use
System Controller	3957	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
Coaxial Cable	3074			12/21/2020	12/21/2021
3m Cable Preamplifier	3918	Rohde&Schwarz	TS-PR18	12/21/2020	12/21/2021
Coaxial Cable	2588			12/21/2020	12/21/2021
Coaxial Cable	2593			12/21/2020	12/21/2021
Coaxial Cable	2592			12/21/2020	12/21/2021
Coaxial Cable	3339			12/21/2020	12/21/2021

5.5 Software Utilized:

Name	Manufacturer	Version
EMC32	Rohde&Schwarz	Version 9.15.02
TILE7	ETS Lindgren	Version 7.0.6.545
GPIBShot	Rohde&Schwarz	Version 2.7.2
Power Viewer Plus	Rohde&Schwarz	Version 6.1

6 Measurement Procedures and Determination of Worst-Case Modes

The occupied bandwidth, conducted spurious emissions, and conducted output power measurements were all performed with the UbiHub APAI connected to a spectrum analyzer. Measurements were performed per the procedures outlined in ANSI C63.10: 2013. See the summary tables for specific references to the appropriate sections that were used.

The output power measurements were performed with the UbiHub APAI connected to a wideband power meter.

Per KDB662911D01 for MIMO operation, a factor of $10\log_{10}(N_{ant})$ for "N" antenna ports was added to the conducted power, conducted spurious emissions, and power spectral density measurements in order to account for the multiple transmit ports. For 4 correlated output ports this factor was 6dB.

For radiated spurious emission measurements, testing was performed with the bandwidth setting and modulation that produced the highest output power. The frequency spectrum was investigated from 9kHz to at least 10 times the highest frequency used or generated in the device or 40GHz (whichever was lower).

Testing was performed for the lowest order modulation for each transmit mode (DSSS or OFDM) as well as for each transmit bandwidth supported as these present the worst case in terms of spurious emissions and output power.

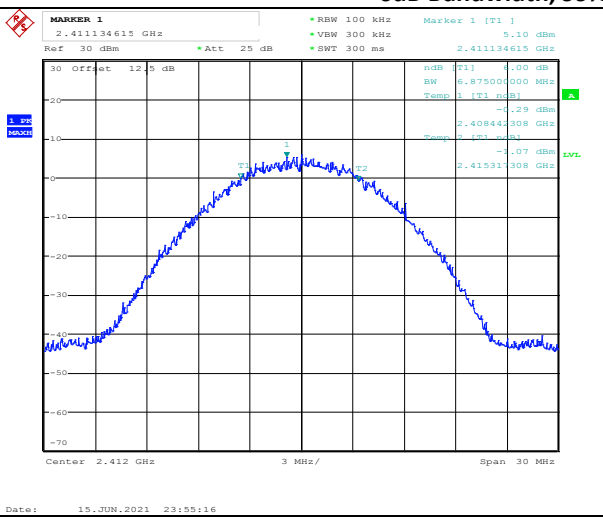
7 Occupied Bandwidth Data

Transmit Mode	Channel	Frequency (MHz)	DTS BW (MHz)	6dB BW (MHz)	99% BW (MHz)	Result
802.11b	1	2412	7.21MHz	7.16MHz	13.07MHz	Pass
	6	2437	8.02MHz	7.64MHz	12.98MHz	Pass
	11	2462	6.68MHz	7.64MHz	13.07MHz	Pass
802.11g	1	2412	15.09MHz	16.05MHz	16.29MHz	Pass
	6	2437	15.76MHz	16.20MHz	16.34MHz	Pass
	11	2462	16.20MHz	16.39MHz	16.39MHz	Pass
802.11n (HT20)	1	2412	16.77MHz	16.34MHz	17.45MHz	Pass
	6	2437	17.31MHz	17.54MHz	17.64MHz	Pass
	11	2462	17.35MHz	17.45MHz	17.59MHz	Pass
802.11n (HT40)	3	2422	35.57MHz	36.25MHz	36.05MHz	Pass
	6	2437	35.76MHz	36.15MHz	36.15MHz	Pass
	9	2452	35.38MHz	36.25MHz	36.05MHz	Pass

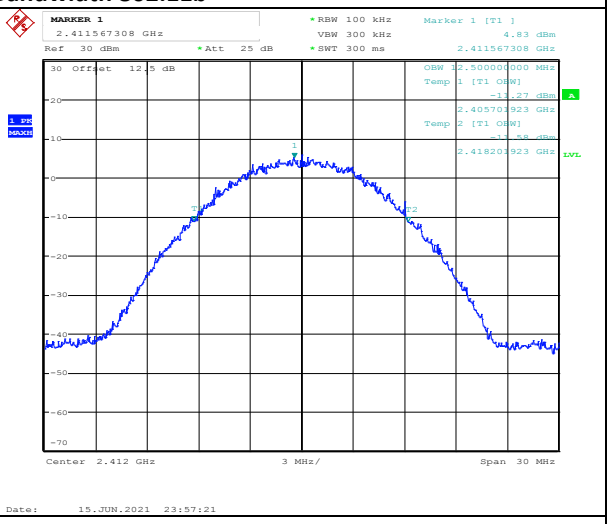
Test Personnel:	Bryan Taylor	Test Date:	6/16/2021- 9/1/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	6dB Bandwidth ≥ 500kHz
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	22.6C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	41.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	991.2mbar

Deviations, Additions, or Exclusions: None

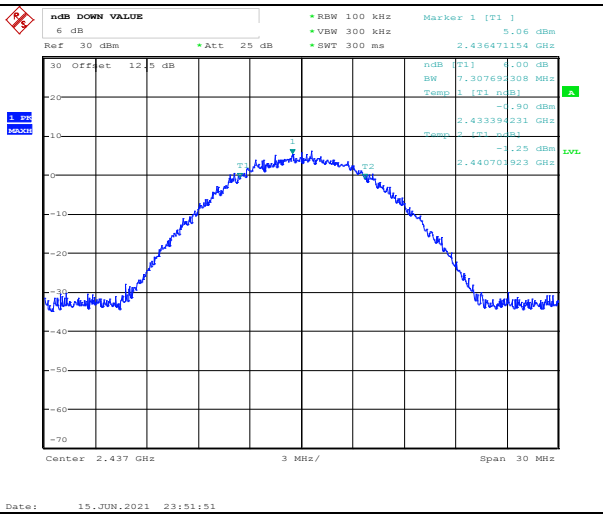
6dB Bandwidth, 99% Bandwidth 802.11b



6dB Bandwidth Channel 1



99% Bandwidth Channel 1



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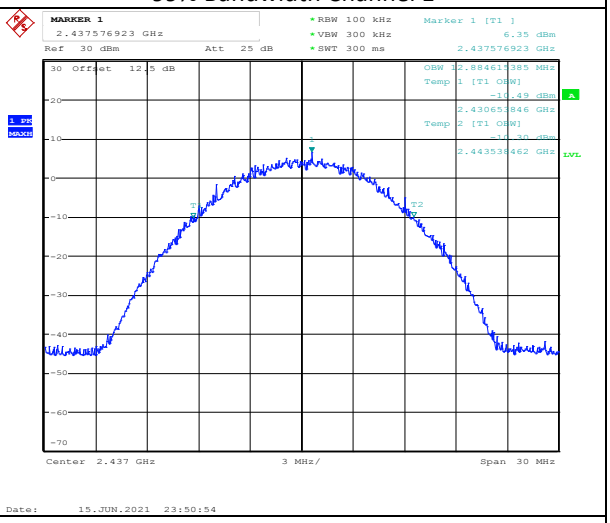

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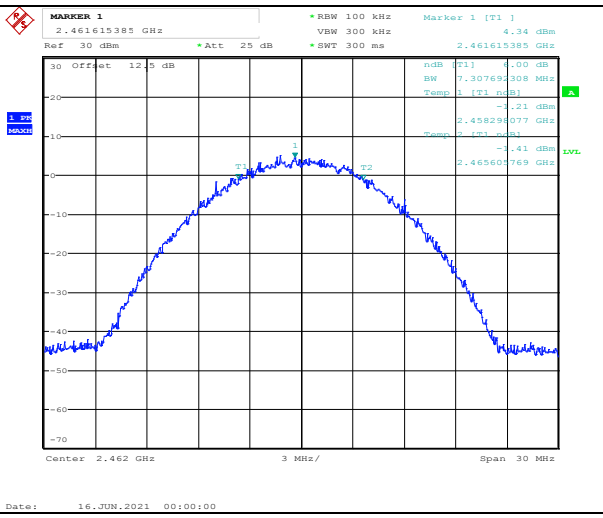

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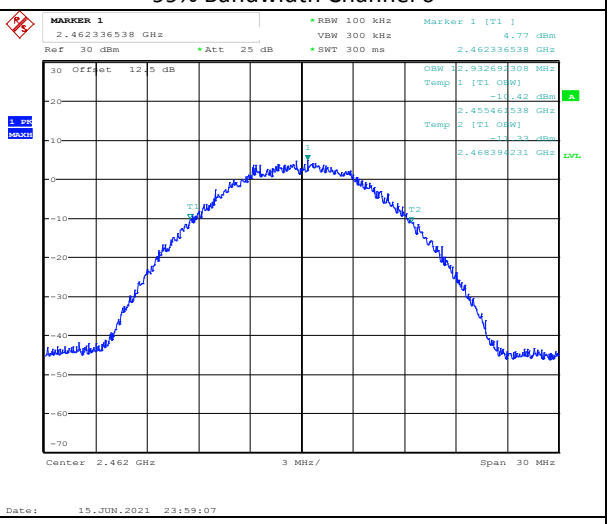
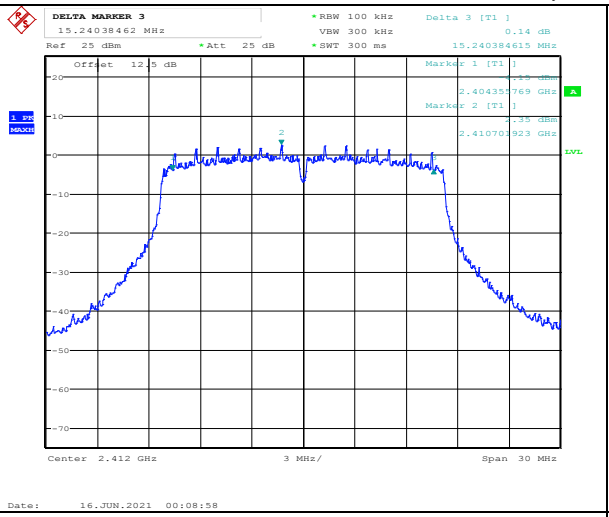


99% Bandwidth Channel 11

6dB Bandwidth, 99% Bandwidth 802.11g



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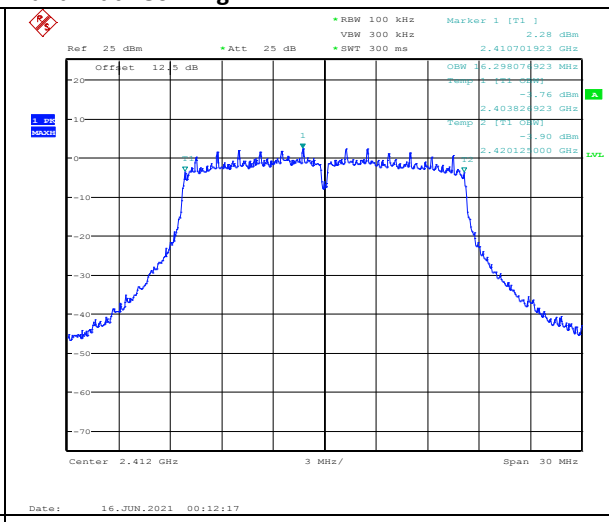

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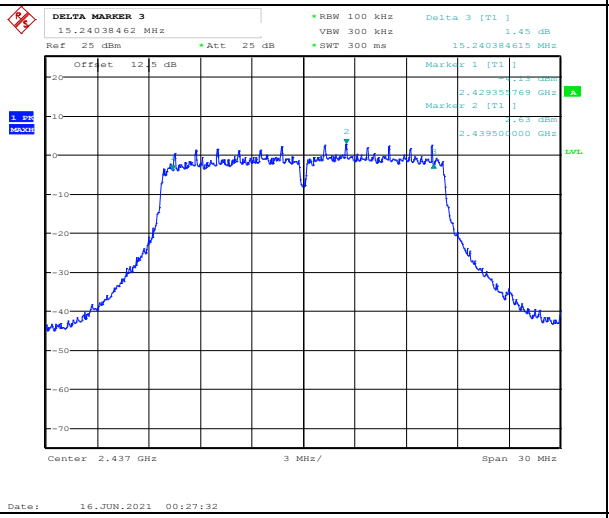

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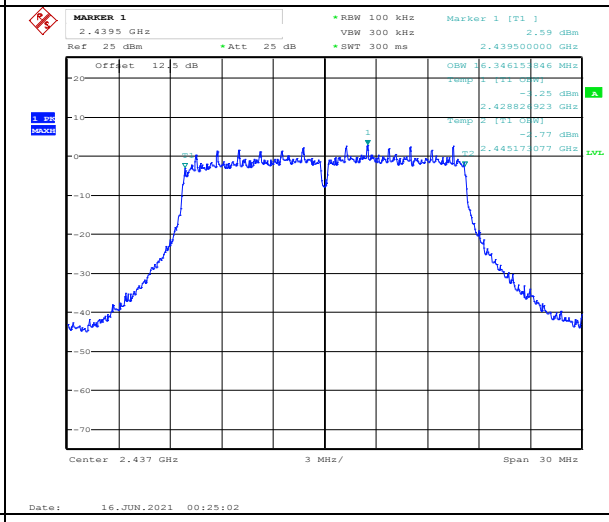

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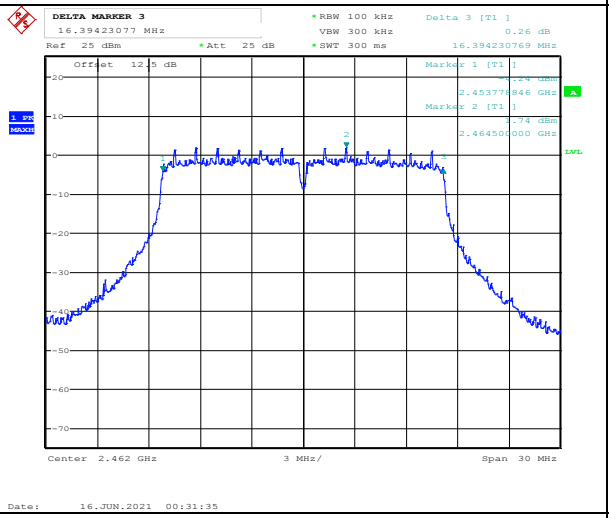

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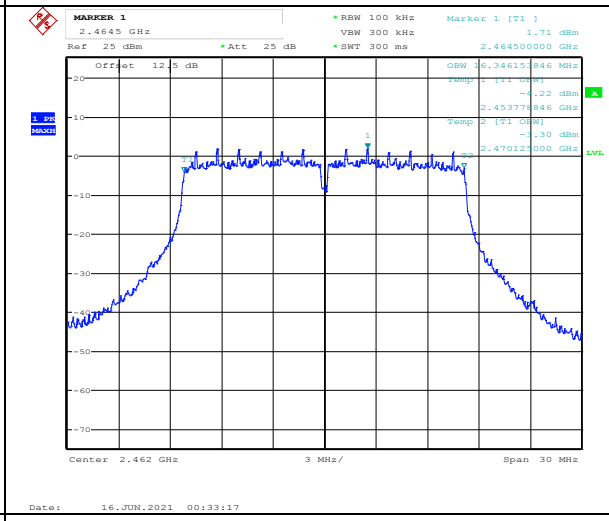
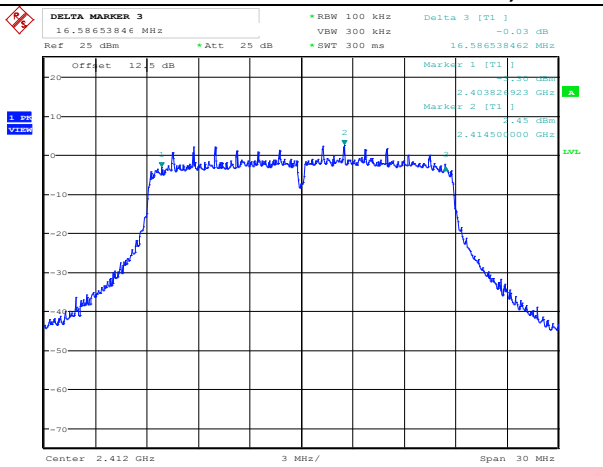


99% Bandwidth Channel 11

6dB Bandwidth, 99% Bandwidth 802.11n (HT20)



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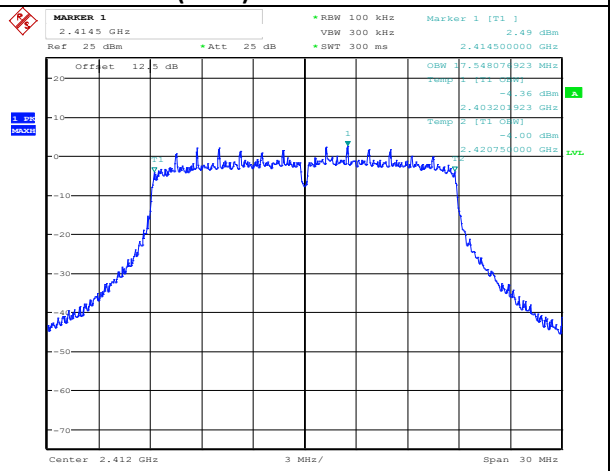

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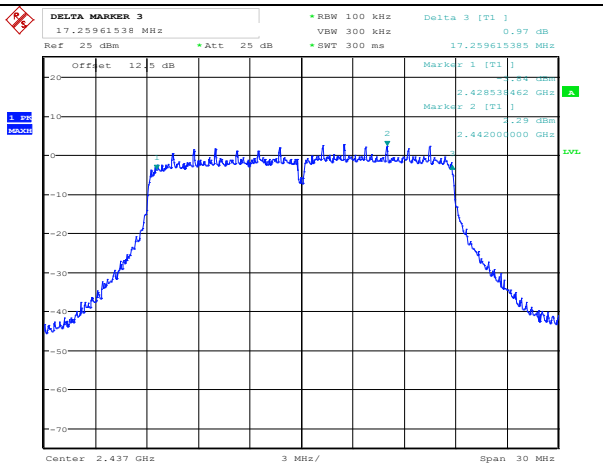

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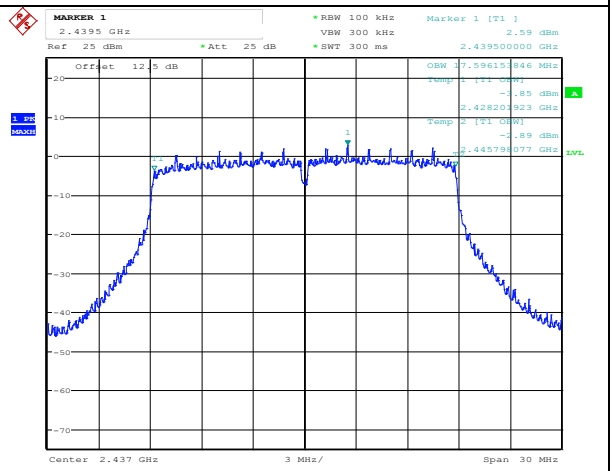

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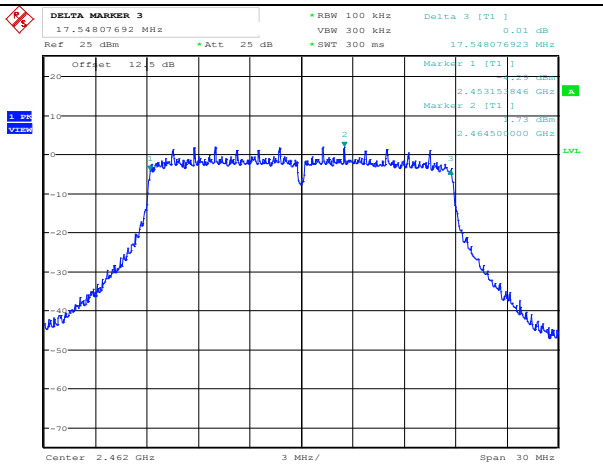
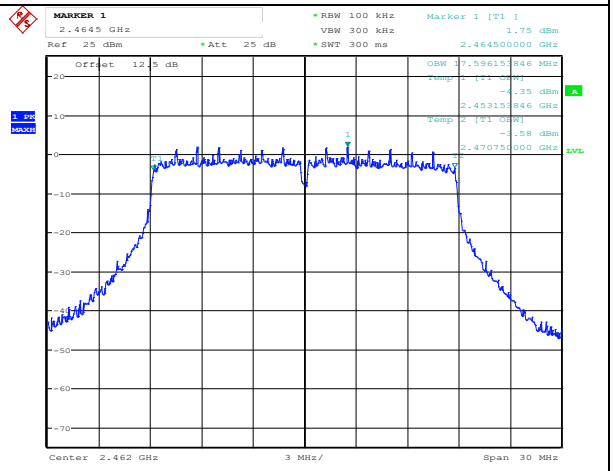
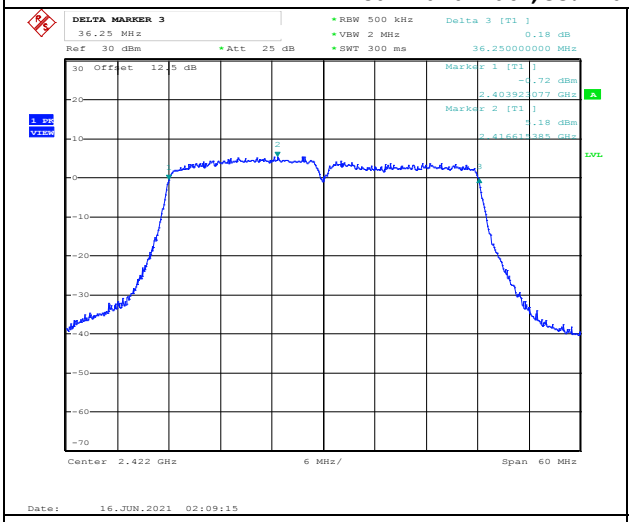


6dB Bandwidth Channel 11

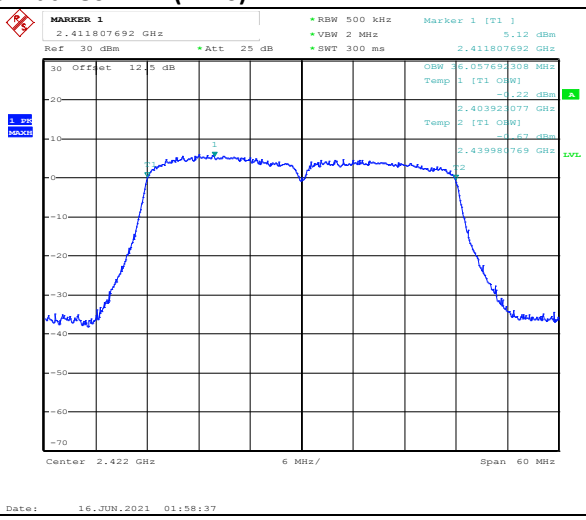


99% Bandwidth Channel 11

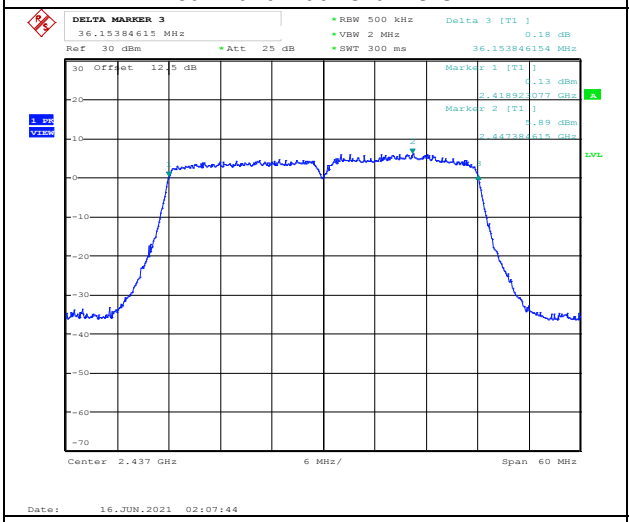
6dB Bandwidth, 99% Bandwidth 802.11n (HT40)



6dB Bandwidth Channel 3



99% Bandwidth Channel 3



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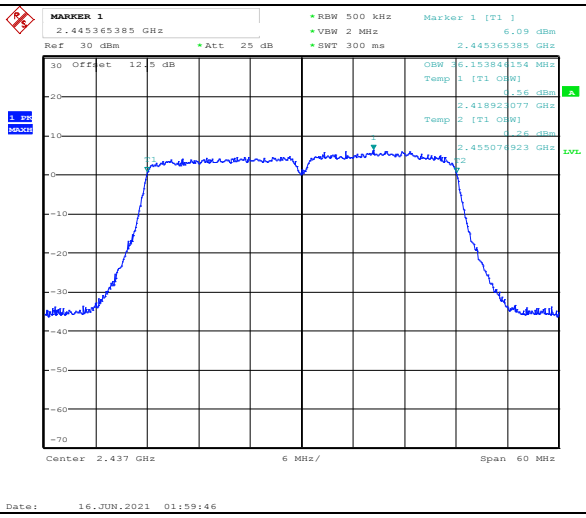

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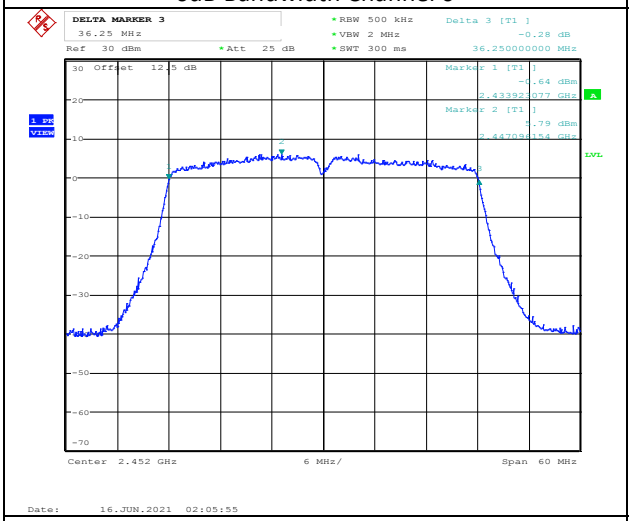
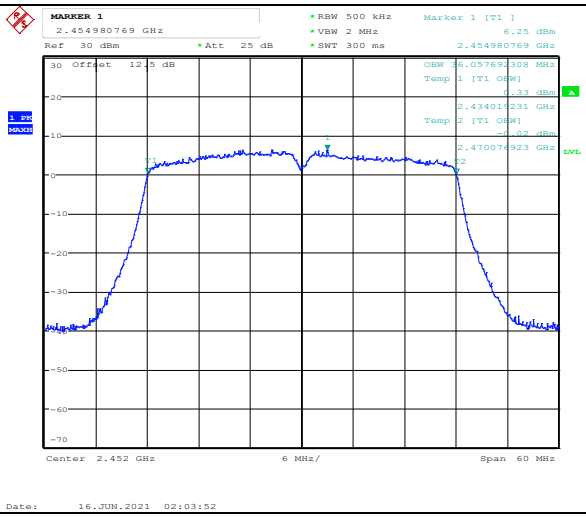
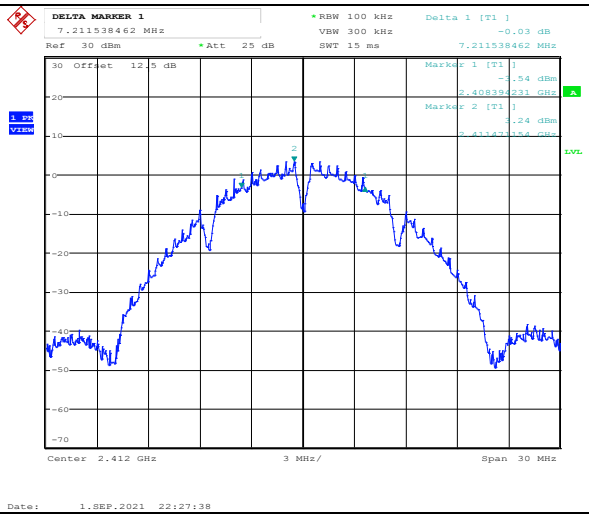


6dB Bandwidth Channel 9

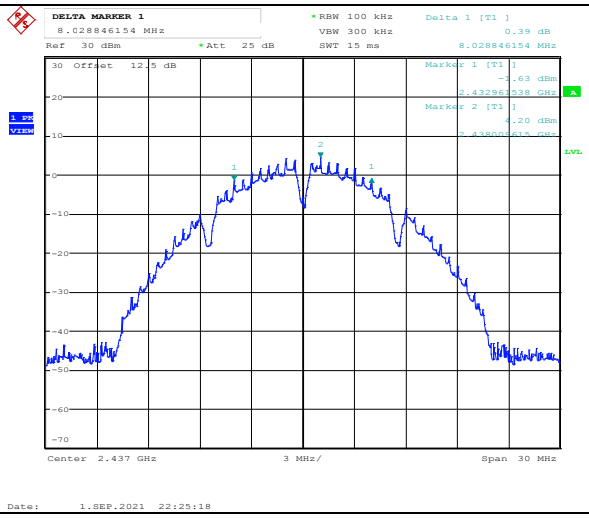


99% Bandwidth Channel 9

DTS Bandwidth 802.11b



DTS Bandwidth Channel 1



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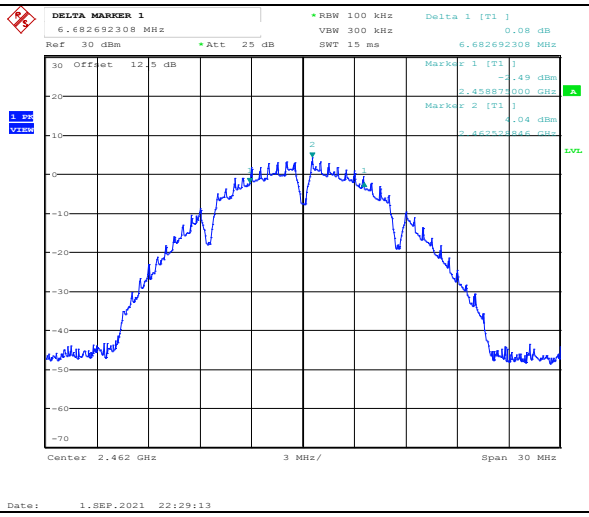
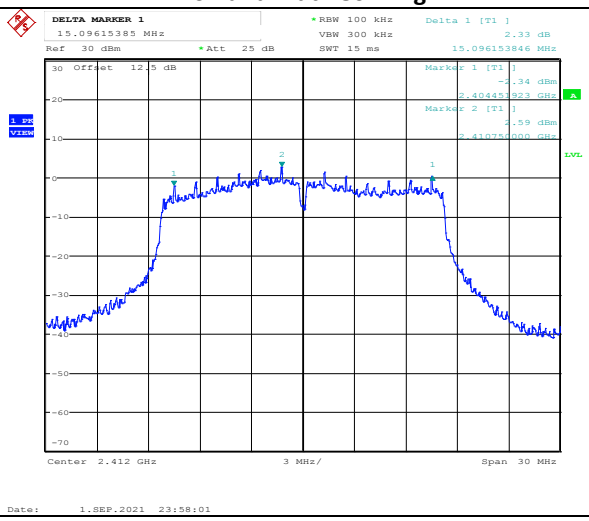


DTS Bandwidth Channel 11

DTS Bandwidth 802.11g



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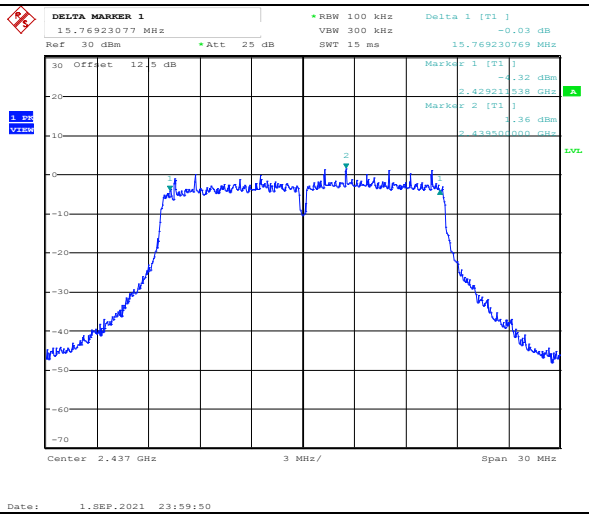
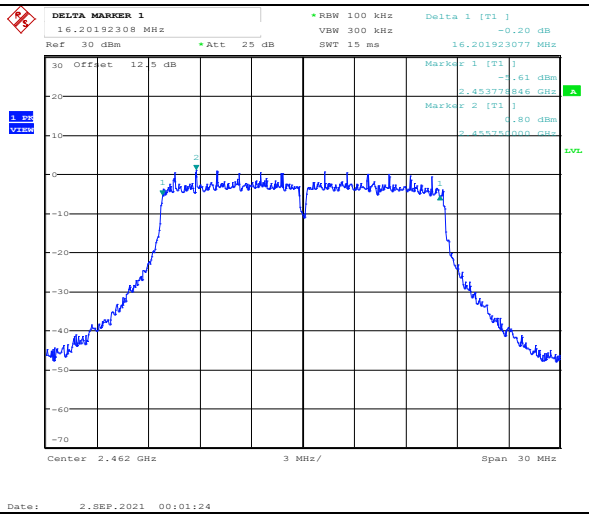
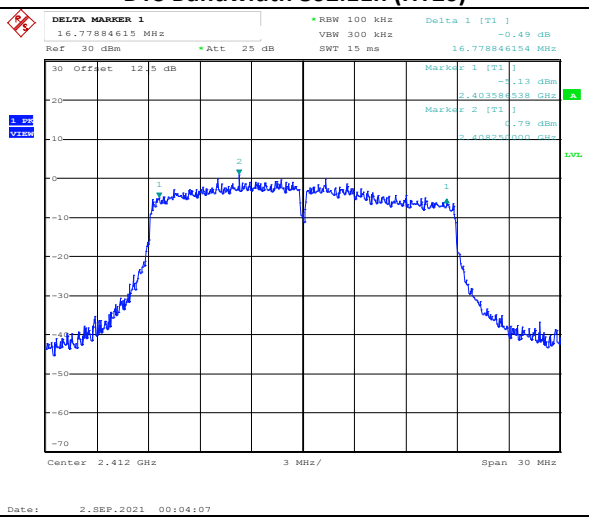


DTS Bandwidth Channel 6

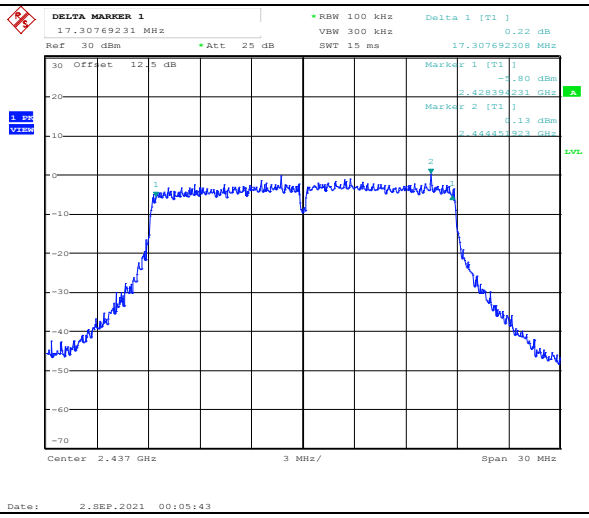


DTS Bandwidth Channel 11

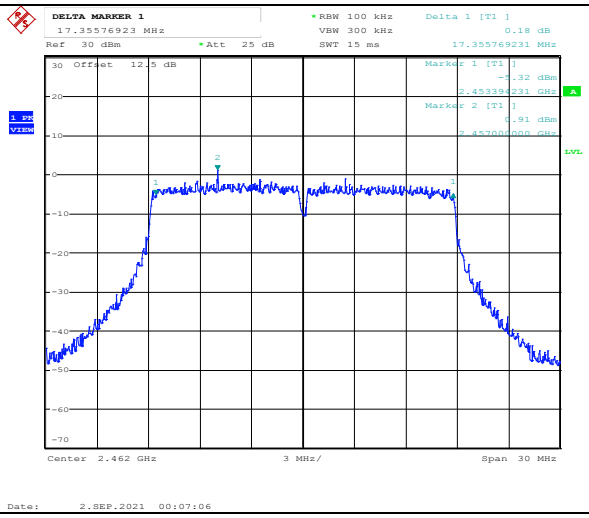
DTS Bandwidth 802.11n (HT20)



DTS Bandwidth Channel 1

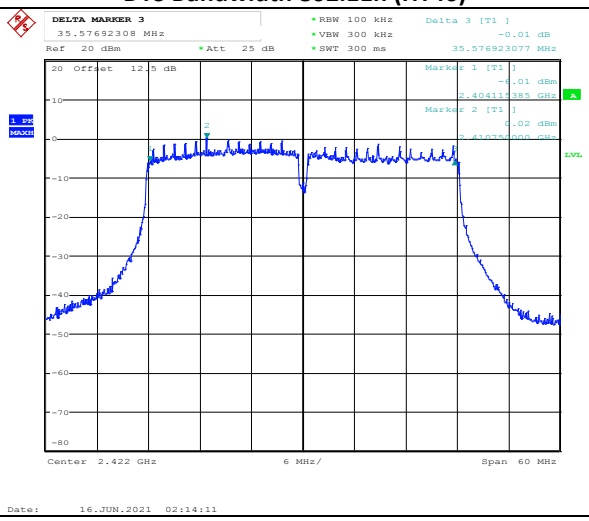


DTS Bandwidth Channel 6

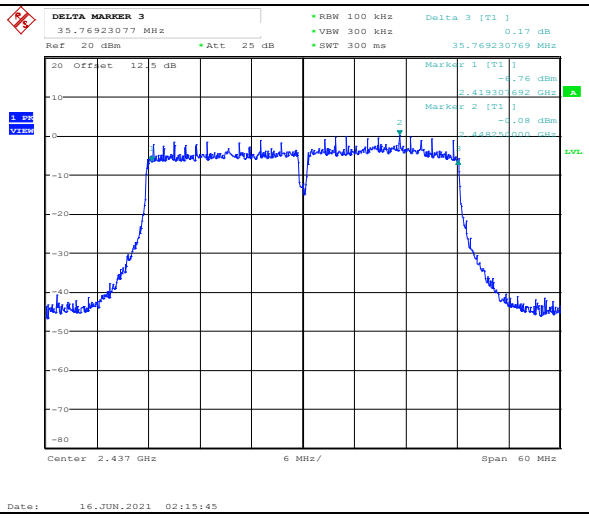


DTS Bandwidth Channel 11

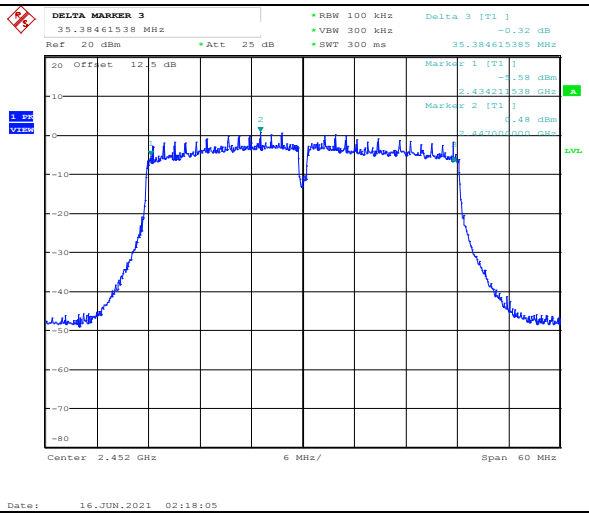
DTS Bandwidth 802.11n (HT40)



DTS Bandwidth Channel 3



DTS Bandwidth Channel 6



DTS Bandwidth Channel 9

8 Output Power Data

Mode	Channel / Frequency (MHz)		Output 0	Output 1	Output 2	Output 3	Total Power (dBm)	15.247 / RSS-247 Limit (dBm)	Margin (dB)
802.11b	1	2412	21.37	21.02	20.84	21.06	27.10	27.48	0.38
	6	2437	21.14	20.78	20.85	21.19	27.01	27.48	0.47
	11	2462	20.95	20.72	20.61	20.91	26.82	27.48	0.66
802.11g	1	2412	21.22	20.77	20.59	20.93	26.90	27.48	0.58
	6	2437	21.22	20.96	20.90	21.22	27.10	27.48	0.38
	11	2462	21.12	20.88	20.83	20.96	26.97	27.48	0.51
802.11n (HT20)	1	2412	20.94	20.46	20.55	20.79	26.71	27.48	0.77
	6	2437	21.07	20.84	20.88	21.04	26.98	27.48	0.50
	11	2462	20.94	20.74	20.66	20.95	26.84	27.48	0.64
802.11n (HT40)	3	2422	20.88	20.51	20.45	20.78	26.68	27.48	0.80
	6	2437	21.10	20.82	20.94	21.10	27.01	27.48	0.47
	9	2452	21.09	20.79	20.77	20.54	26.82	27.48	0.66

Note Since the directional antenna gain is 8.52dBi the limit is adjusted down by 2.52dB (the amount above 6dBi for the antenna gain).

Test Personnel:	Brian Lackey	Test Date:	2/21/2022
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	30dBm – 2.52dB
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	22.6C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	41.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	991.2mbar

Deviations, Additions, or Exclusions: None

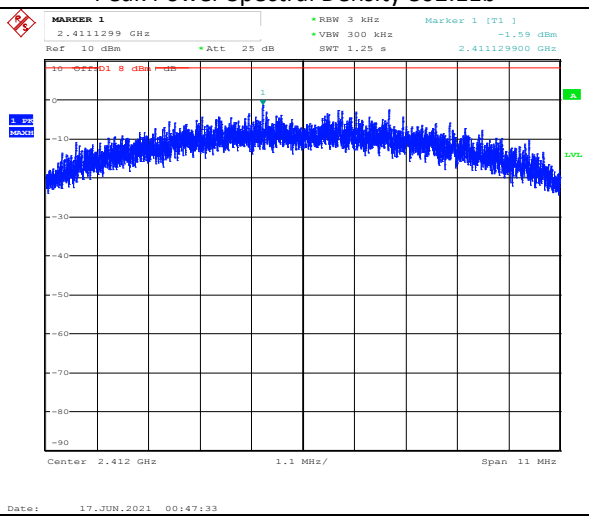
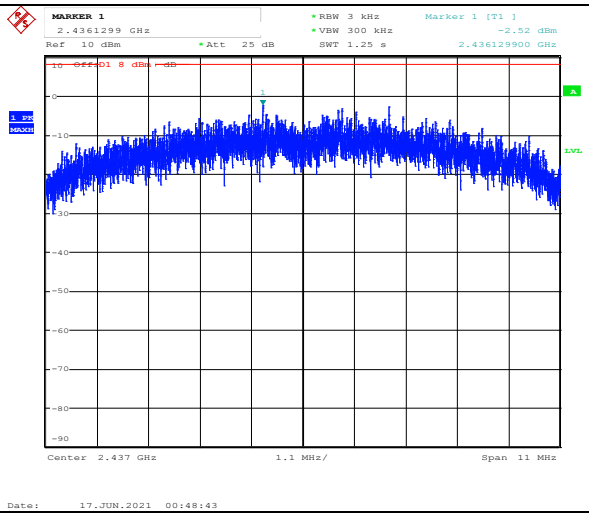
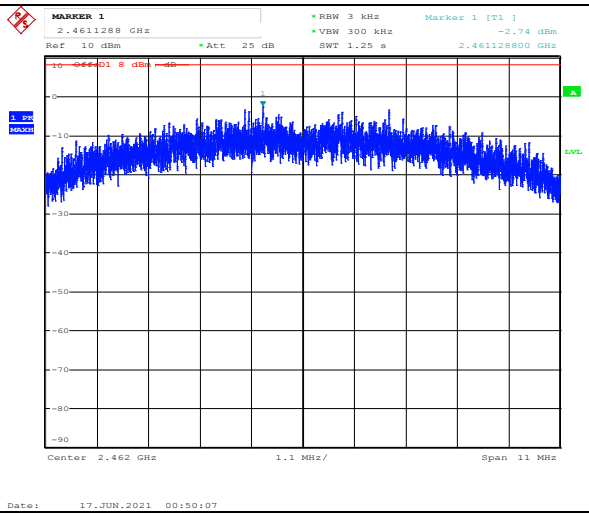
9 Power Spectral Density Data

	Channel	Frequency (MHz)	PPSD Single Port (dBm/3kHz)	10log (Nant) (dB)	Total PPSD (dBm)	15.247 / RSS-247 PPSD Limit (dBm)	Margin (dBm)	Result
802.11b	1	2412	-1.59	6	4.41	5.48	1.07	Pass
	6	2437	-2.52	6	3.48	5.48	2.00	Pass
	11	2462	-2.74	6	3.26	5.48	2.22	Pass
802.11g	1	2412	-6.76	6	-0.76	5.48	6.24	Pass
	6	2437	-6.73	6	-0.73	5.48	6.21	Pass
	11	2462	-7.76	6	-1.76	5.48	7.24	Pass
802.11n (HT20)	1	2412	-5.65	6	0.35	5.48	5.13	Pass
	6	2437	-6.50	6	-0.50	5.48	5.98	Pass
	11	2462	-5.61	6	0.39	5.48	5.09	Pass
802.11n (HT40)	3	2422	-7.79	6	-1.79	5.48	7.27	Pass
	6	2437	-6.21	6	-0.21	5.48	5.69	Pass
	9	2452	-7.39	6	-1.39	5.48	6.87	Pass

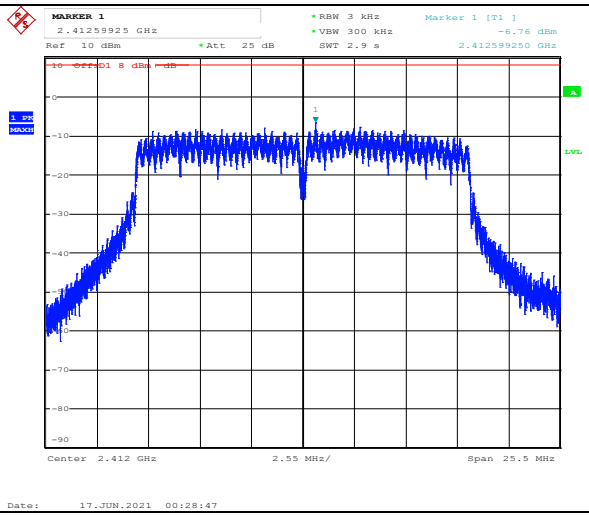
Note Since the directional antenna gain is 8.52dBi the limit is adjusted down by 2.52dB (the amount above 6dBi for the antenna gain).

Test Personnel:	Bryan Taylor	Test Date:	6/17/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	8dBm / 3kHz – 2.52dB
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	22.6C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	41.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	991.2mbar

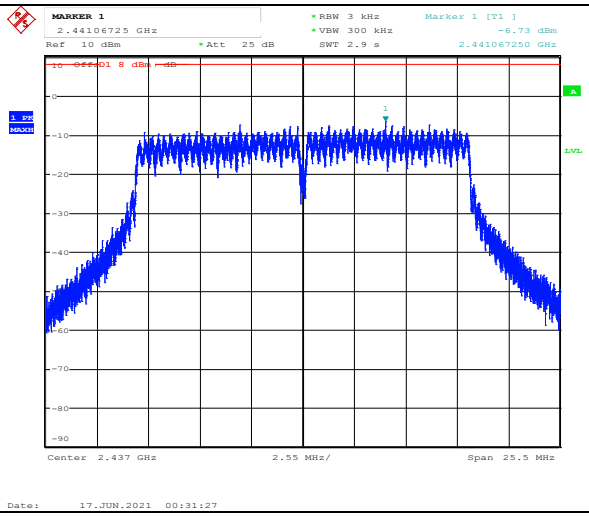
Deviations, Additions, or Exclusions: None

Peak Power Spectral Density 802.11b

Channel 1

Channel 6

Channel 11

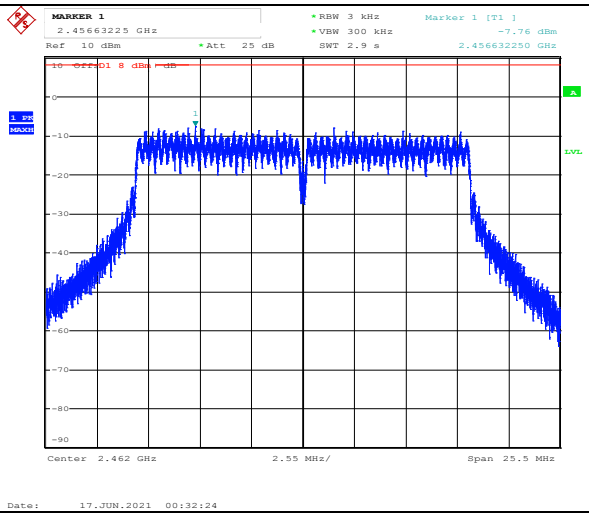
Peak Power Spectral Density 802.11g



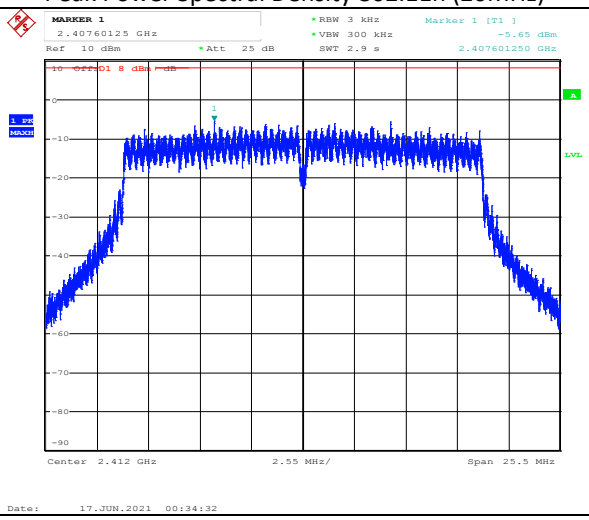
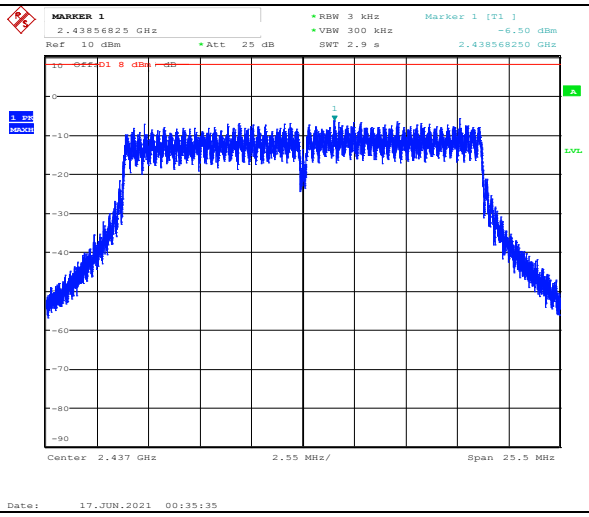
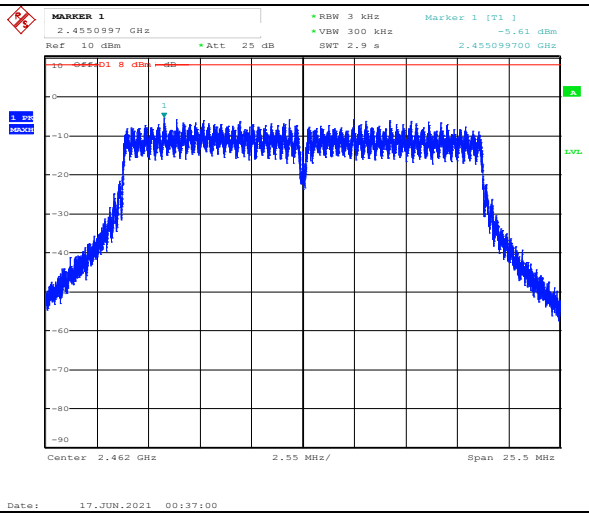
Channel 1

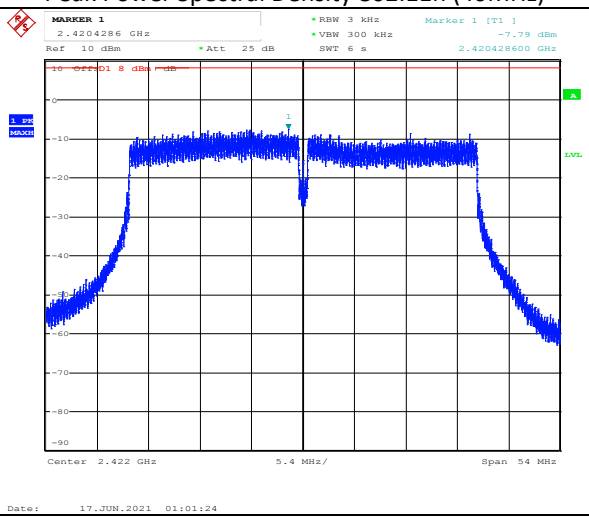
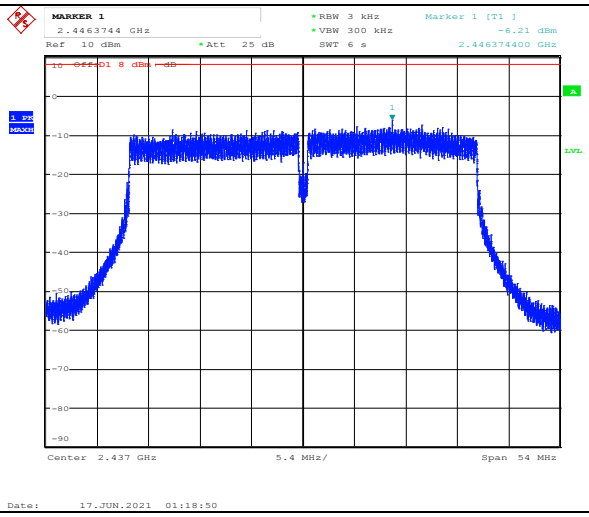
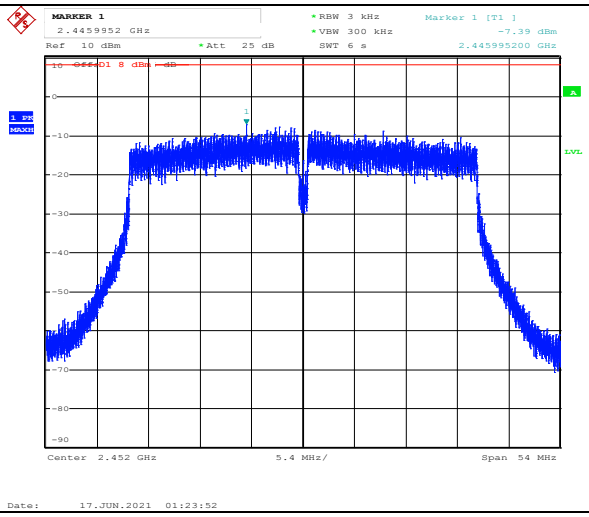


Channel 6



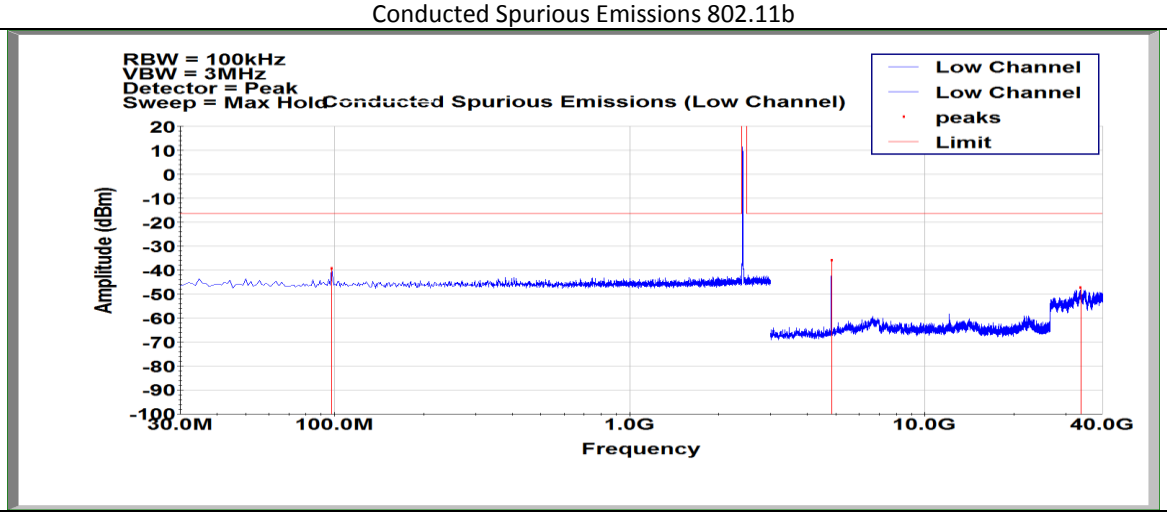
Channel 11

Peak Power Spectral Density 802.11n (20MHz)

Channel 1

Channel 6

Channel 11

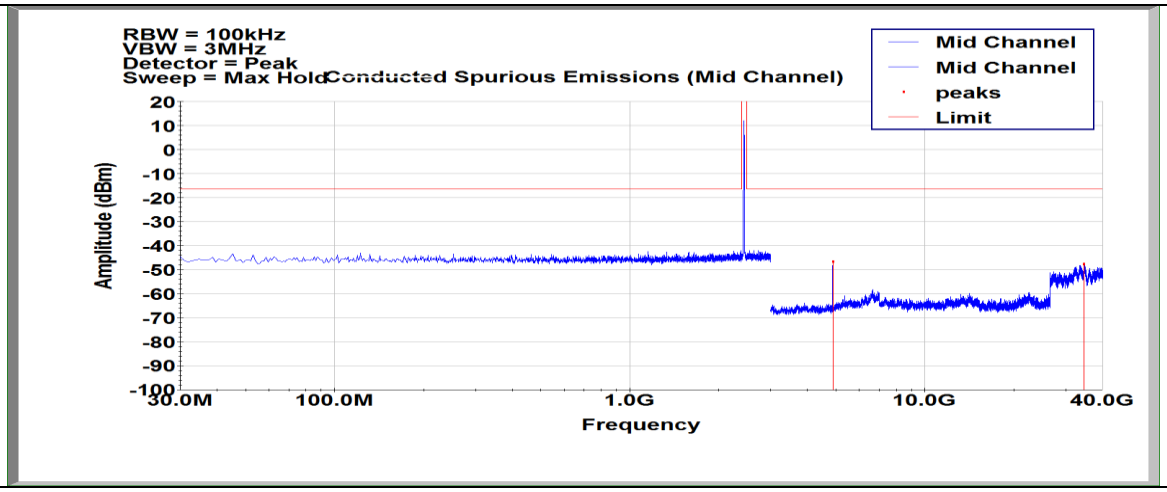
Peak Power Spectral Density 802.11n (40MHz)

Channel 3

Channel 6

Channel 9

10 Conducted Spurious Emission Data

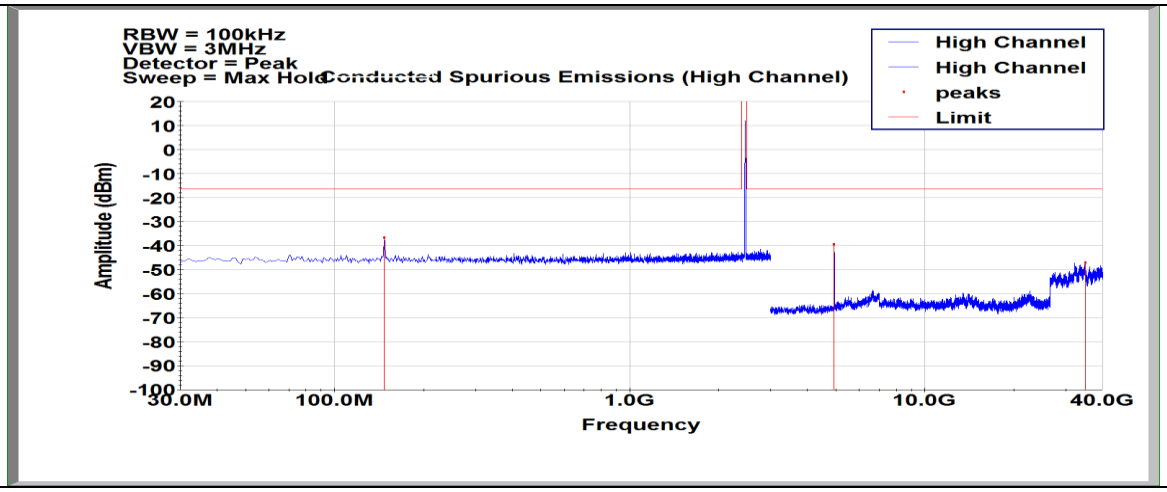
Conducted Spurious Emissions 802.11b



Channel 1

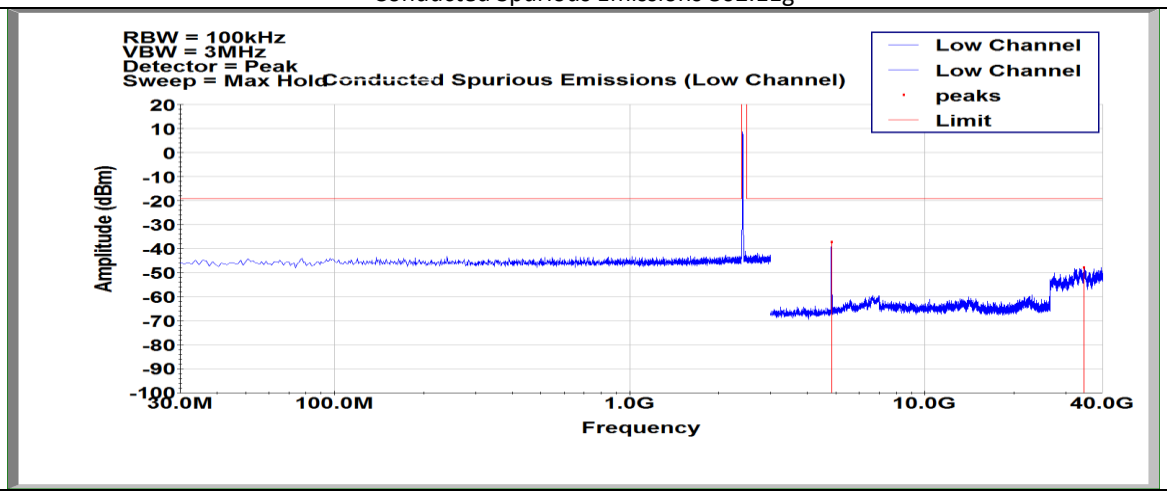


Channel 6

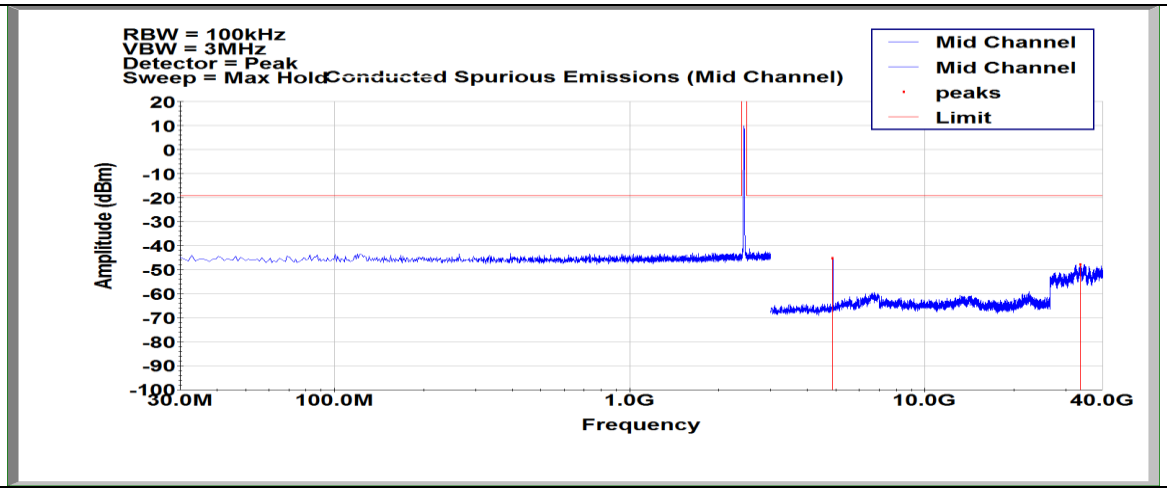


Channel 11

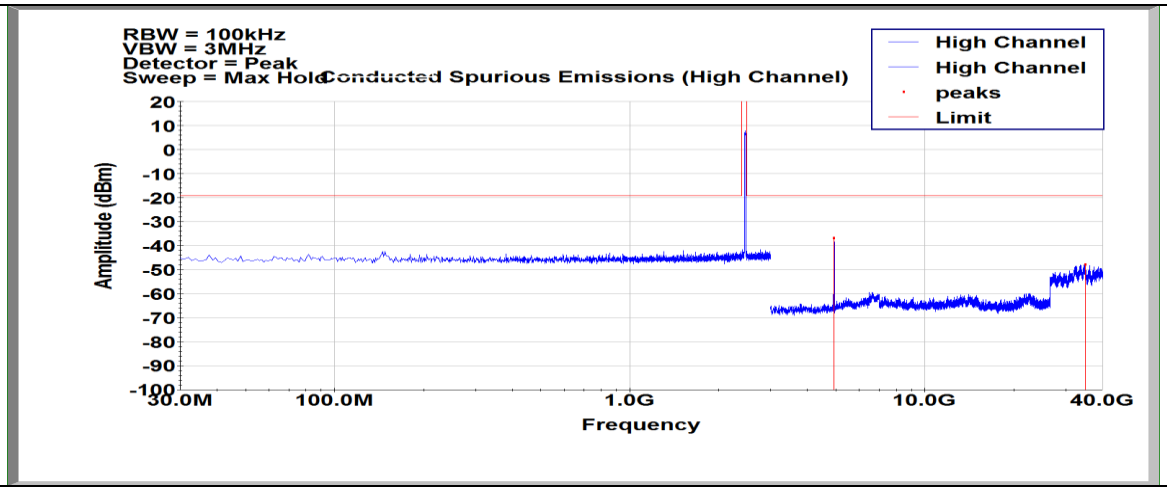
Conducted Spurious Emissions 802.11g



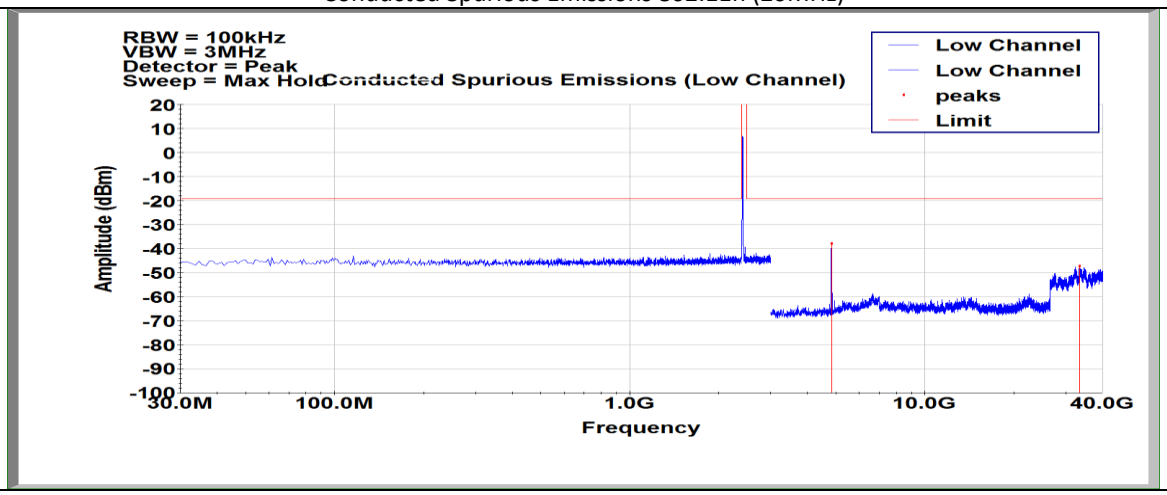
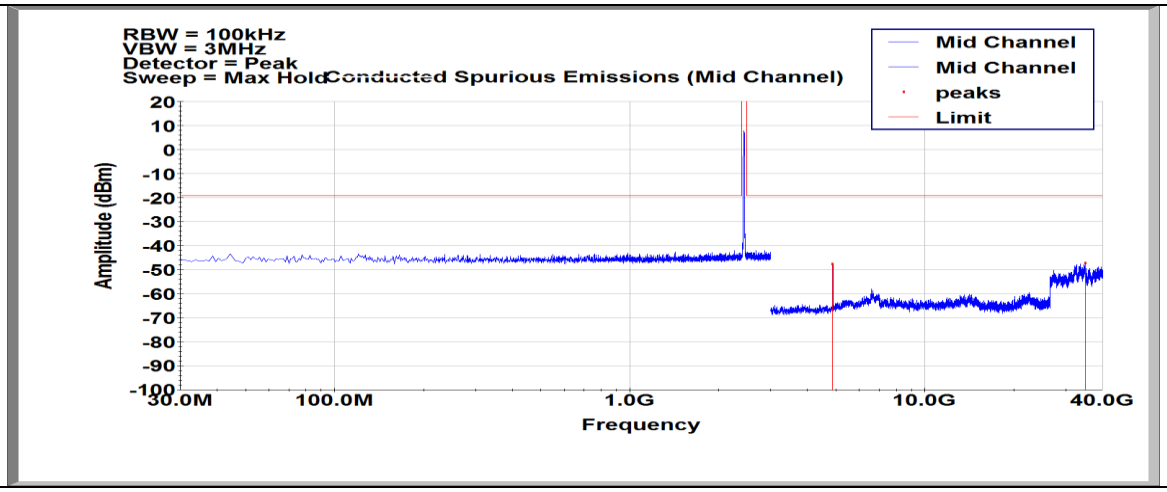
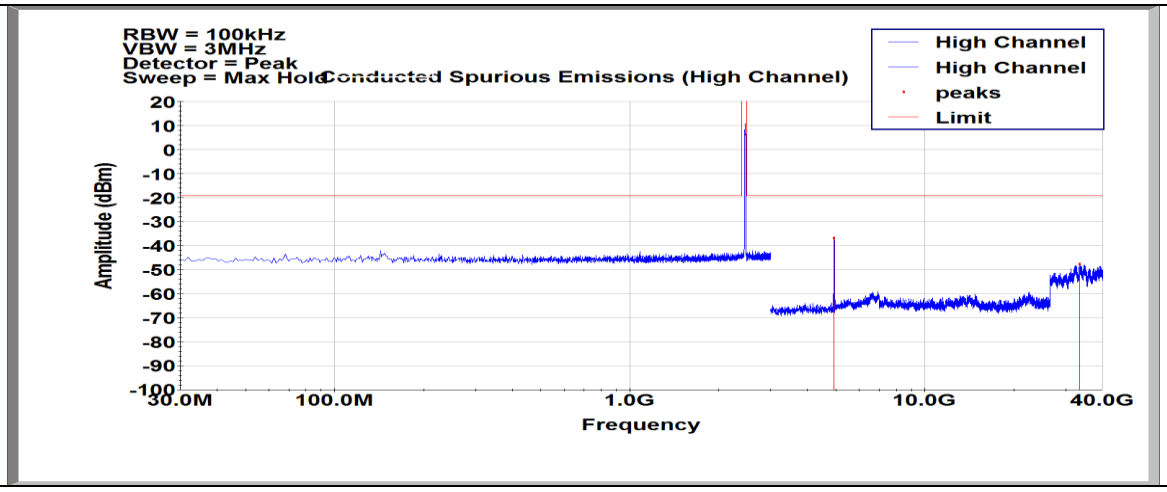
Channel 1



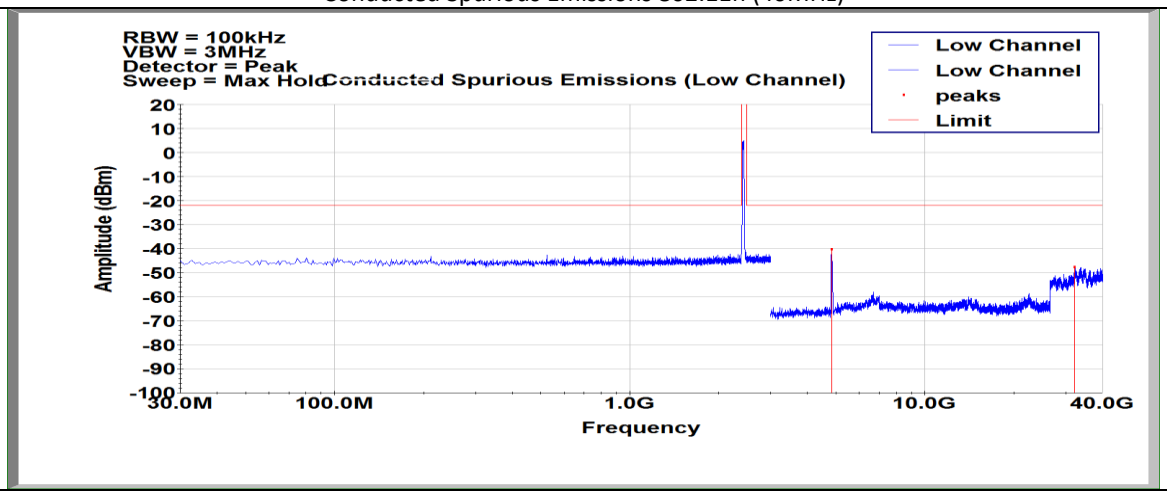
Channel 6



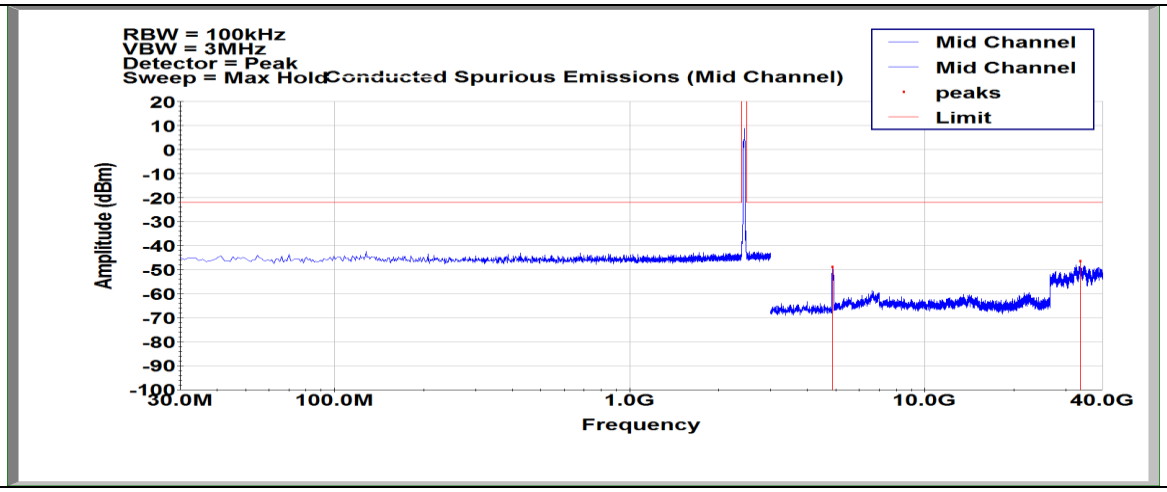
Channel 11

Conducted Spurious Emissions 802.11n (20MHz)

Channel 1

Channel 6

Channel 11

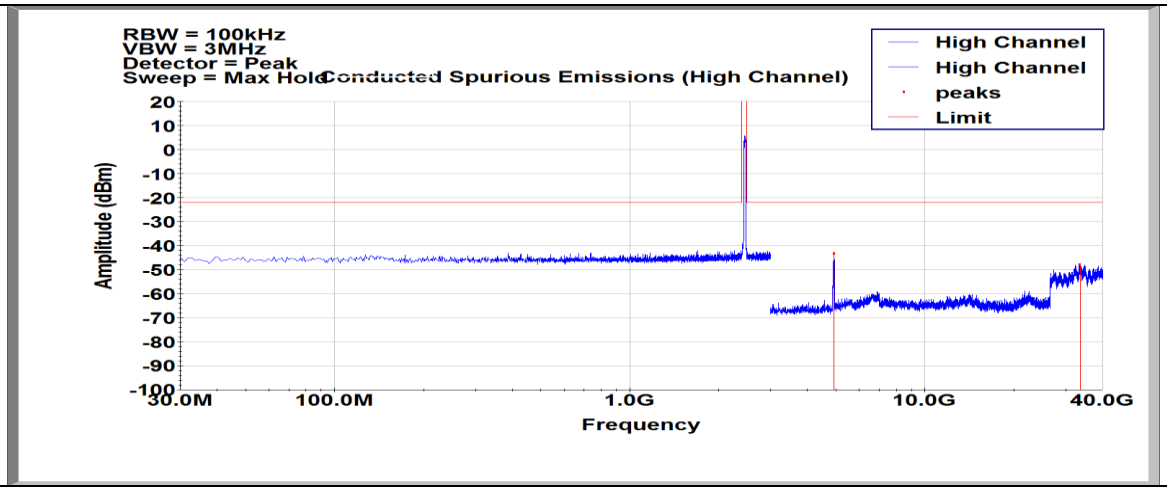
Conducted Spurious Emissions 802.11n (40MHz)



Channel 3

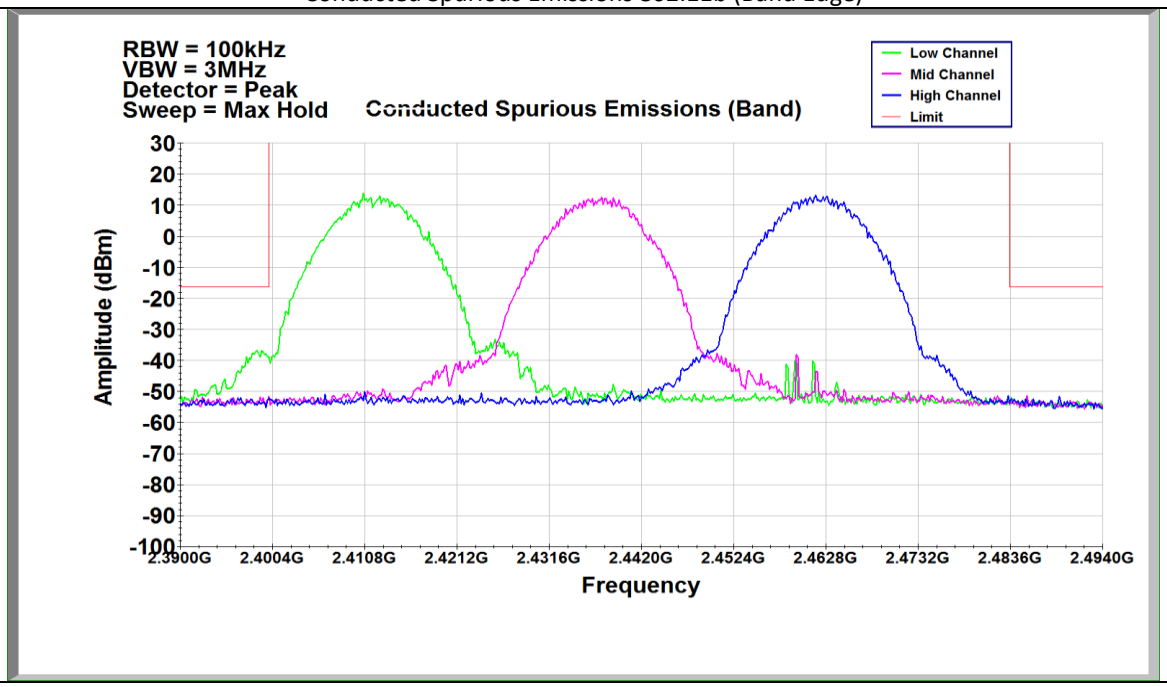


Channel 6

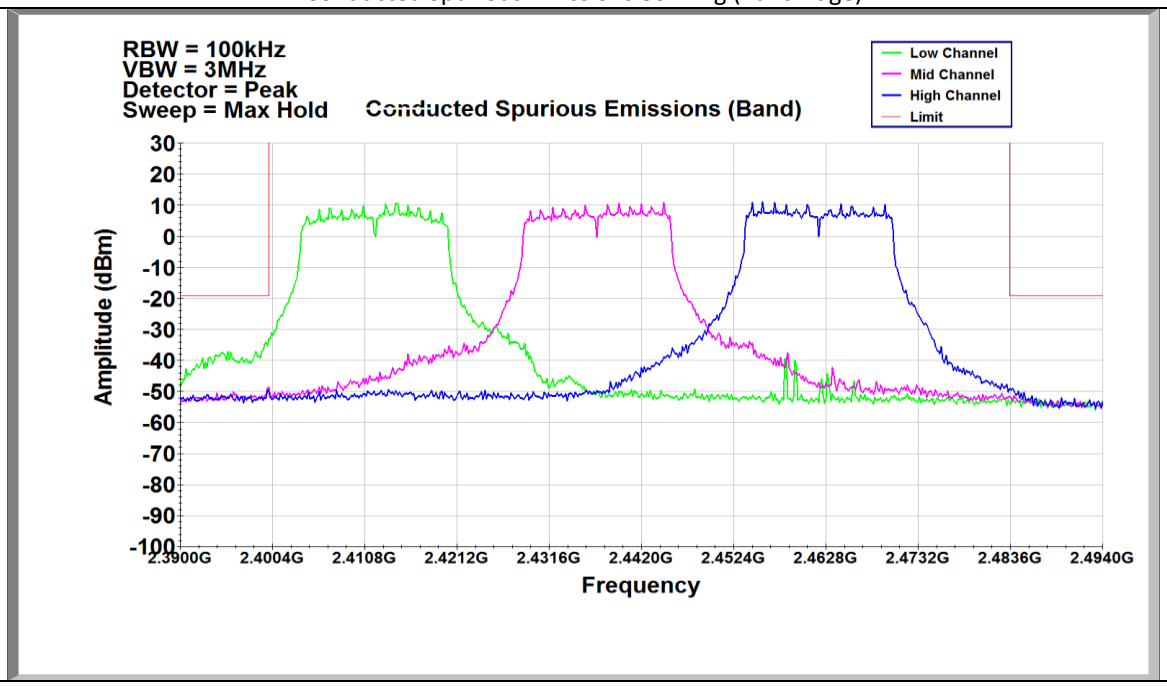


Channel 9

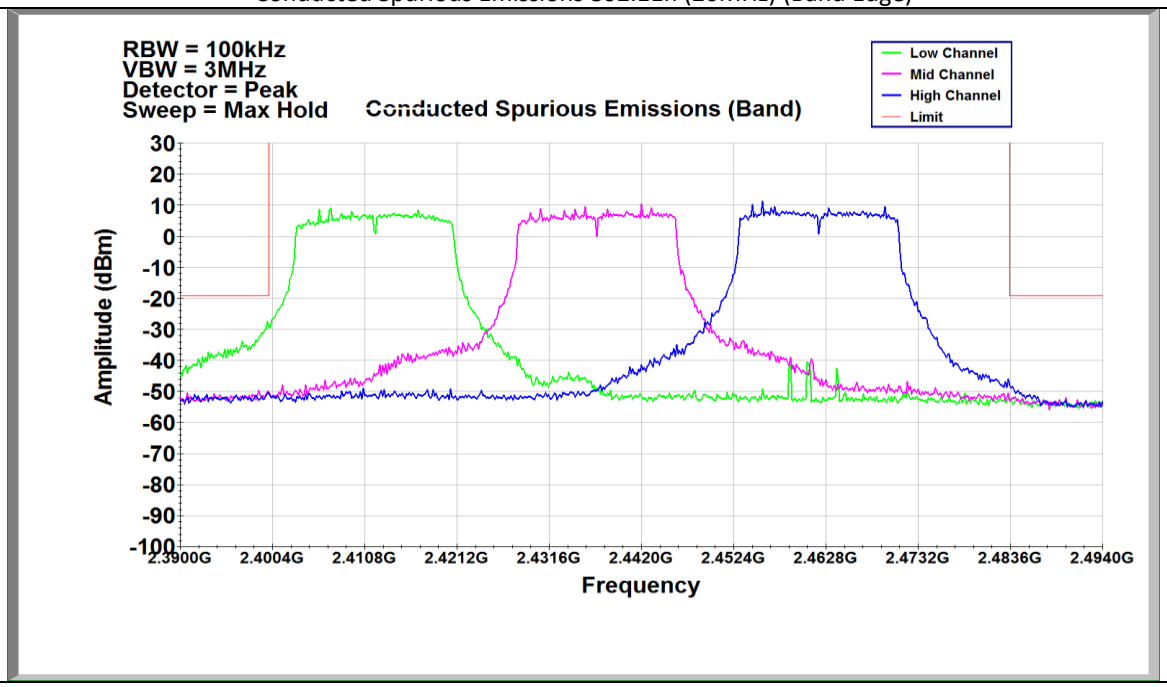
Conducted Spurious Emissions 802.11b (Band Edge)



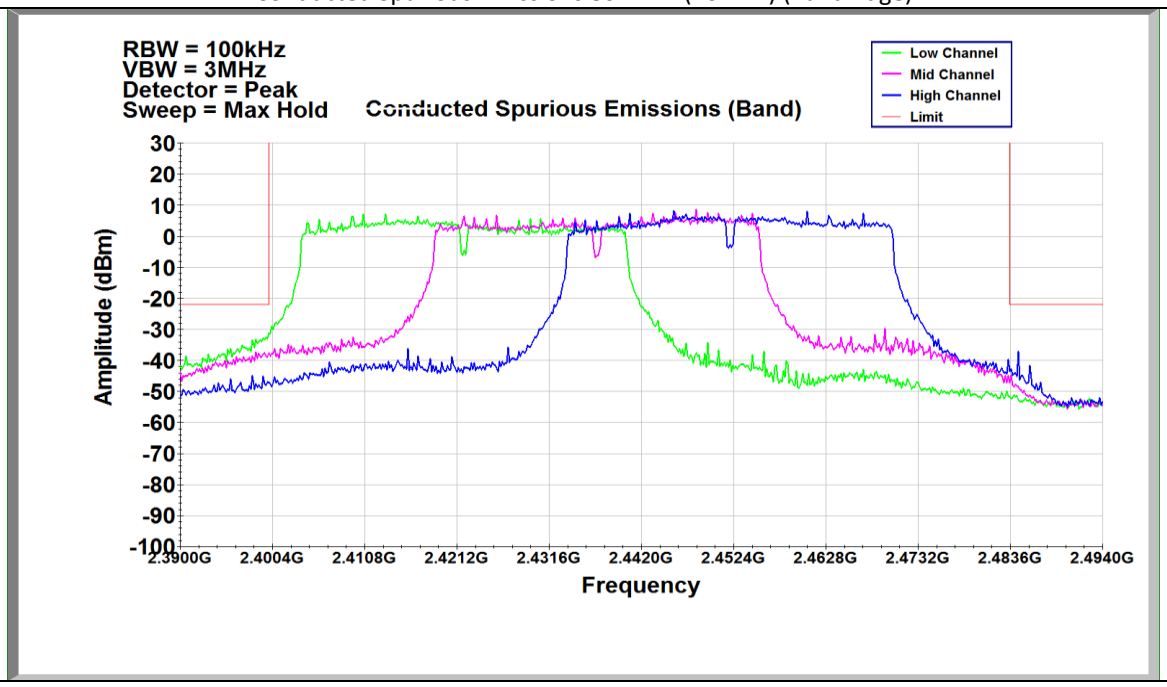
Conducted Spurious Emissions 802.11g (Band Edge)



Conducted Spurious Emissions 802.11n (20MHz) (Band Edge)



Conducted Spurious Emissions 802.11n (40MHz) (Band Edge)



11 Worst Case Radiated Spurious Emissions Data

11.1 Worst Case Radiated Spurious Emissions Data (802.11b, Channel 1)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
11490.000000	57.15	73.98	16.83	1000.000	201.0	V	249.0	19
12061.000000	55.76	73.98	18.22	1000.000	279.0	H	148.0	20
14472.000000	57.95	73.98	16.03	1000.000	320.0	V	83.0	21

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
11490.000000	52.41	53.98	1.57	1000.000	201.0	V	249.0	19
12061.000000	42.39	53.98	11.59	1000.000	279.0	H	148.0	20
14472.000000	46.52	53.98	7.46	1000.000	320.0	V	83.0	21

Low Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.700000	54.75	73.98	19.23	1000.000	300.0	H	143.0	39
2389.316667	53.87	73.98	20.11	1000.000	175.4	V	39.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.700000	44.31	53.98	9.67	1000.000	280.1	H	143.0	39
2389.316667	44.27	53.98	9.71	1000.000	175.4	V	39.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.2 Worst Case Radiated Spurious Emissions Data (802.11b, Channel 6)

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
124.952222	33.97	43.52	9.56	120.000	100.0	V	37.0	22
270.075000	40.14	46.02	5.88	120.000	104.0	V	162.0	23
401.779444	33.43	46.02	12.59	120.000	211.0	H	170.0	27

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1124.000000	52.42	73.98	21.56	1000.000	100.0	V	104.0	-1
1344.000000	55.90	73.98	18.08	1000.000	198.0	H	137.0	1
1500.000000	38.80	73.98	35.18	1000.000	353.0	V	282.0	0
4687.500000	50.12	73.98	23.86	1000.000	338.0	V	92.0	10
4868.000000	52.44	73.98	21.54	1000.000	282.0	H	273.0	10
4874.000000	57.06	73.98	16.92	1000.000	285.0	H	274.0	10
4879.500000	55.67	73.98	18.31	1000.000	258.0	H	281.0	10
11490.000000	52.37	73.98	21.61	1000.000	410.0	H	306.0	19
22483.500000	57.46	73.98	16.52	1000.000	268.0	V	24.0	11
23797.500000	56.78	73.98	17.20	1000.000	390.0	V	-1.0	11
31502.000000	62.89	73.98	11.09	1000.000	392.0	H	226.0	17
36451.500000	63.76	73.98	10.22	1000.000	410.0	V	346.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1124.000000	22.19	53.98	31.79	1000.000	100.0	V	104.0	-1
1344.000000	40.26	53.98	13.72	1000.000	198.0	H	137.0	1
1500.000000	27.35	53.98	26.63	1000.000	353.0	V	282.0	0
4687.500000	41.74	53.98	12.24	1000.000	338.0	V	92.0	10
4868.000000	36.13	53.98	17.85	1000.000	282.0	H	273.0	10
4874.000000	45.01	53.98	8.97	1000.000	285.0	H	274.0	10
4879.500000	36.36	53.98	17.62	1000.000	258.0	H	281.0	10
11490.000000	41.91	53.98	12.07	1000.000	410.0	H	306.0	19
22483.500000	44.04	53.98	9.94	1000.000	268.0	V	24.0	11
23797.500000	43.78	53.98	10.20	1000.000	390.0	V	-1.0	11
31502.000000	49.15	53.98	4.83	1000.000	392.0	H	226.0	17
36451.500000	50.49	53.98	3.49	1000.000	410.0	V	346.0	19

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.3 Worst Case Radiated Spurious Emissions Data (802.11b, Channel 11)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	50.05	73.98	23.93	1000.000	100.0	V	106.0	10
4924.000000	57.44	73.98	16.54	1000.000	251.0	H	270.0	10
11489.500000	54.65	73.98	19.33	1000.000	324.0	V	221.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	42.56	53.98	11.42	1000.000	100.0	V	106.0	10
4924.000000	45.49	53.98	8.49	1000.000	251.0	H	270.0	10
11489.500000	48.08	53.98	5.90	1000.000	324.0	V	221.0	19

High Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.10000	59.56	73.98	14.42	1000.000	300.0	H	256.0	39
2485.10000	58.33	73.98	15.65	1000.000	200.0	V	205.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.10000	51.94	53.98	2.04	1000.000	300.0	H	256.0	39
2485.10000	50.89	53.98	3.00	1000.000	200.0	V	205.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.4 Worst Case Radiated Spurious Emissions Data (802.11g, Channel 1)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	62.78	73.98	11.20	1000.000	410.0	H	298.0	10
11489.500000	52.03	73.98	21.95	1000.000	296.0	V	210.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	48.41	53.98	5.57	1000.000	410.0	H	298.0	10
11489.500000	41.58	53.98	12.40	1000.000	296.0	V	210.0	19

Low Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.25000	57.06	73.98	16.92	1000.000	300.0	H	143.0	39
2389.31461	56.12	73.98	17.86	1000.000	175.4	V	39.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.25000	46.78	53.98	7.20	1000.000	280.1	H	143.0	39
2389.31461	44.97	53.98	9.01	1000.000	175.4	V	39.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.5 Worst Case Radiated Spurious Emissions Data (802.11g, Channel 6)

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
73.811667	25.19	40.00	14.81	120.000	101.0	V	195.0	15
124.952222	33.89	43.52	9.63	120.000	100.0	V	38.0	22
270.721667	40.12	46.02	5.90	120.000	99.0	V	174.0	23
403.557778	32.04	46.02	13.98	120.000	173.0	H	178.0	27

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1120.000000	57.96	73.98	16.02	1000.000	186.0	V	0.0	-1
1344.000000	55.29	73.98	18.69	1000.000	205.0	H	140.0	1
4687.500000	46.15	73.98	27.83	1000.000	316.0	V	56.0	10
4867.500000	57.35	73.98	16.63	1000.000	264.0	H	201.0	10
7305.000000	49.57	73.98	24.41	1000.000	188.0	V	34.0	13
11489.500000	54.11	73.98	19.87	1000.000	198.0	V	35.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1120.000000	24.44	53.98	29.54	1000.000	186.0	V	0.0	-1
1344.000000	40.51	53.98	13.47	1000.000	205.0	H	140.0	1
4687.500000	35.27	53.98	18.71	1000.000	316.0	V	56.0	10
4867.500000	42.24	53.98	11.74	1000.000	264.0	H	201.0	10
7305.000000	34.53	53.98	19.45	1000.000	188.0	V	34.0	13
11489.500000	46.51	53.98	7.47	1000.000	198.0	V	35.0	19

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.6 Worst Case Radiated Spurious Emissions Data (802.11g, Channel 11)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1123.000000	58.48	73.98	15.50	1000.000	188.0	V	118.0	-1
1344.000000	55.96	73.98	18.02	1000.000	204.0	H	129.0	1
3840.000000	44.01	73.98	29.97	1000.000	259.0	V	84.0	8
4687.500000	47.98	73.98	26.00	1000.000	279.0	V	59.0	10
4926.500000	69.54	73.98	4.44	1000.000	376.0	H	218.0	10
7384.500000	49.34	73.98	24.64	1000.000	341.0	H	0.0	13
11489.500000	55.96	73.98	18.02	1000.000	293.0	V	223.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1123.000000	23.10	53.98	30.88	1000.000	188.0	V	118.0	-1
1344.000000	39.41	53.98	14.57	1000.000	204.0	H	129.0	1
3840.000000	31.62	53.98	22.36	1000.000	259.0	V	84.0	8
4687.500000	38.87	53.98	15.11	1000.000	279.0	V	59.0	10
7384.500000	35.32	53.98	18.66	1000.000	341.0	H	0.0	13
11489.500000	50.57	53.98	3.41	1000.000	293.0	V	223.0	19

High Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.60000	66.77	73.98	7.21	1000.000	125.3	H	234.8	39
2483.60000	64.36	73.98	9.62	1000.000	180.4	V	211.2	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.60000	51.88	53.98	2.10	1000.000	125.3	H	234.8	39
2483.60000	50.27	53.98	3.71	1000.000	180.4	V	211.2	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.7 Worst Case Radiated Spurious Emissions Data (802.11n, Channel 1)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1344.000000	50.01	73.98	23.97	1000.000	292.0	H	211.0	1
4062.500000	44.75	73.98	29.23	1000.000	196.0	H	131.0	8
4687.500000	49.99	73.98	23.99	1000.000	322.0	H	122.0	9
4822.500000	62.27	73.98	11.71	1000.000	392.0	V	166.0	10
11489.500000	57.49	73.98	16.49	1000.000	320.0	H	212.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1344.000000	40.07	53.98	13.91	1000.000	292.0	H	211.0	1
4062.500000	34.62	53.98	19.36	1000.000	196.0	H	131.0	8
4687.500000	42.20	53.98	11.78	1000.000	322.0	H	122.0	9
4822.500000	45.75	53.98	8.23	1000.000	392.0	V	166.0	10
11489.500000	53.35	53.98	0.63	1000.000	320.0	H	212.0	19

Low Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.838889	60.86	73.98	13.12	1000.000	157.0	H	90.0	39
2389.405556	60.79	73.98	13.19	1000.000	300.0	V	122.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.838889	44.25	53.98	9.73	1000.000	157.0	H	90.0	39
2389.405556	44.43	53.98	9.55	1000.000	300.0	V	122.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.8 Worst Case Radiated Spurious Emissions Data (802.11n, Channel 6)

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
38.029444	26.85	40.00	13.15	120.000	99.0	V	-1.0	22
124.952222	34.02	43.52	9.50	120.000	101.0	V	38.0	22
256.333333	38.06	46.02	7.97	120.000	100.0	H	100.0	22
270.182778	41.24	46.02	4.78	120.000	100.0	H	225.0	23

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1120.000000	61.16	73.98	12.82	1000.000	158.0	H	334.0	-1
1344.000000	58.01	73.98	15.97	1000.000	337.0	V	130.0	1
4062.500000	44.64	73.98	29.34	1000.000	196.0	H	129.0	8
4866.500000	48.23	73.98	25.75	1000.000	410.0	V	184.0	10
11489.500000	57.39	73.98	16.59	1000.000	307.0	H	212.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1120.000000	25.72	53.98	28.26	1000.000	158.0	H	334.0	-1
1344.000000	38.47	53.98	15.51	1000.000	337.0	V	130.0	1
4062.500000	34.05	53.98	19.93	1000.000	196.0	H	129.0	8
4866.500000	31.48	53.98	22.50	1000.000	410.0	V	184.0	10
11489.500000	52.54	53.98	1.44	1000.000	307.0	H	212.0	19

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.9 Worst Case Radiated Spurious Emissions Data (802.11n, Channel 11)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	47.12	73.98	26.86	1000.000	100.0	V	106.0	10
4926.000000	47.80	73.98	26.18	1000.000	372.0	H	225.0	10
7386.000000	47.79	73.98	26.19	1000.000	201.0	V	95.0	13
11399.500000	52.40	73.98	21.58	1000.000	134.0	V	248.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	37.63	53.98	16.35	1000.000	100.0	V	106.0	10
4926.000000	33.78	53.98	20.20	1000.000	372.0	H	225.0	10
7386.000000	34.45	53.98	19.53	1000.000	201.0	V	95.0	13
11399.500000	42.32	53.98	11.66	1000.000	134.0	V	248.0	19

High Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.604167	58.32	73.98	15.66	1000.000	300.0	H	256.0	39
2483.572222	57.03	73.98	16.95	1000.000	100.0	V	80.0	39

High Band Edge

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.604167	44.55	53.98	9.43	1000.000	300.0	H	256.0	39
2483.572222	43.76	53.98	10.22	1000.000	100.0	V	80.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.10 Worst Case Radiated Spurious Emissions Data (802.11n(40MHz), Channel 3)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	50.94	73.98	23.04	1000.000	181.0	H	108.0	9
4801.000000	63.59	73.98	10.39	1000.000	214.0	V	285.0	9
4807.000000	61.04	73.98	12.94	1000.000	177.0	V	272.0	9

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	43.63	53.98	10.35	1000.000	181.0	H	108.0	9
4801.000000	47.12	53.98	6.86	1000.000	214.0	V	285.0	9
4807.000000	45.36	53.98	8.62	1000.000	177.0	V	272.0	9

Low Band Edge

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.416667	67.44	73.98	6.54	1000.000	200.0	H	10.0	39
2389.555556	64.78	73.98	9.20	1000.000	156.0	V	9.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.416667	52.81	53.98	1.17	1000.000	200.0	H	10.0	39
2389.555556	49.96	53.98	4.02	1000.000	156.0	V	9.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.11 Worst Case Radiated Spurious Emissions Data (802.11n (40MHz), Channel 6)

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.975556	26.94	40.00	13.06	120.000	101.0	V	6.0	22
125.006111	37.99	43.52	5.53	120.000	101.0	V	0.0	22
256.441111	38.48	46.02	7.54	120.000	103.0	H	86.0	22
257.303333	36.73	46.02	9.29	120.000	103.0	H	92.0	22
258.003889	37.55	46.02	8.47	120.000	103.0	H	100.0	22
259.081667	33.80	46.02	12.22	120.000	102.0	H	100.0	22
259.458889	34.31	46.02	11.71	120.000	102.0	H	109.0	22
269.967222	39.11	46.02	6.91	120.000	104.0	V	153.0	23
400.055000	35.75	46.02	10.27	120.000	208.0	H	173.0	27
610.976111	30.87	46.02	15.16	120.000	177.0	V	184.0	31

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1344.000000	54.02	73.98	19.96	1000.000	349.0	H	208.0	1
4687.500000	50.62	73.98	23.36	1000.000	308.0	V	122.0	10
11489.500000	57.66	73.98	16.32	1000.000	321.0	V	212.0	19

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1344.000000	38.43	53.98	15.55	1000.000	349.0	H	208.0	1
4687.500000	42.80	53.98	11.18	1000.000	308.0	V	122.0	10
11489.500000	53.29	53.98	0.69	1000.000	321.0	V	212.0	19

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

11.12 Worst Case Radiated Spurious Emissions Data (802.11n (40MHz), Channel 9)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	51.11	73.98	22.87	1000.000	182.0	H	108.0	9
4901.000000	53.57	73.98	20.41	1000.000	143.0	V	247.0	10
4904.000000	61.41	73.98	12.57	1000.000	188.0	H	280.0	10
4907.000000	56.59	73.98	17.39	1000.000	279.0	V	313.0	10

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4687.500000	43.62	53.98	10.36	1000.000	182.0	H	108.0	9
4901.000000	38.01	53.98	15.97	1000.000	143.0	V	247.0	10
4904.000000	48.97	53.98	5.01	1000.000	188.0	H	280.0	10
4907.000000	40.97	53.98	13.01	1000.000	279.0	V	313.0	10

High Band Edge

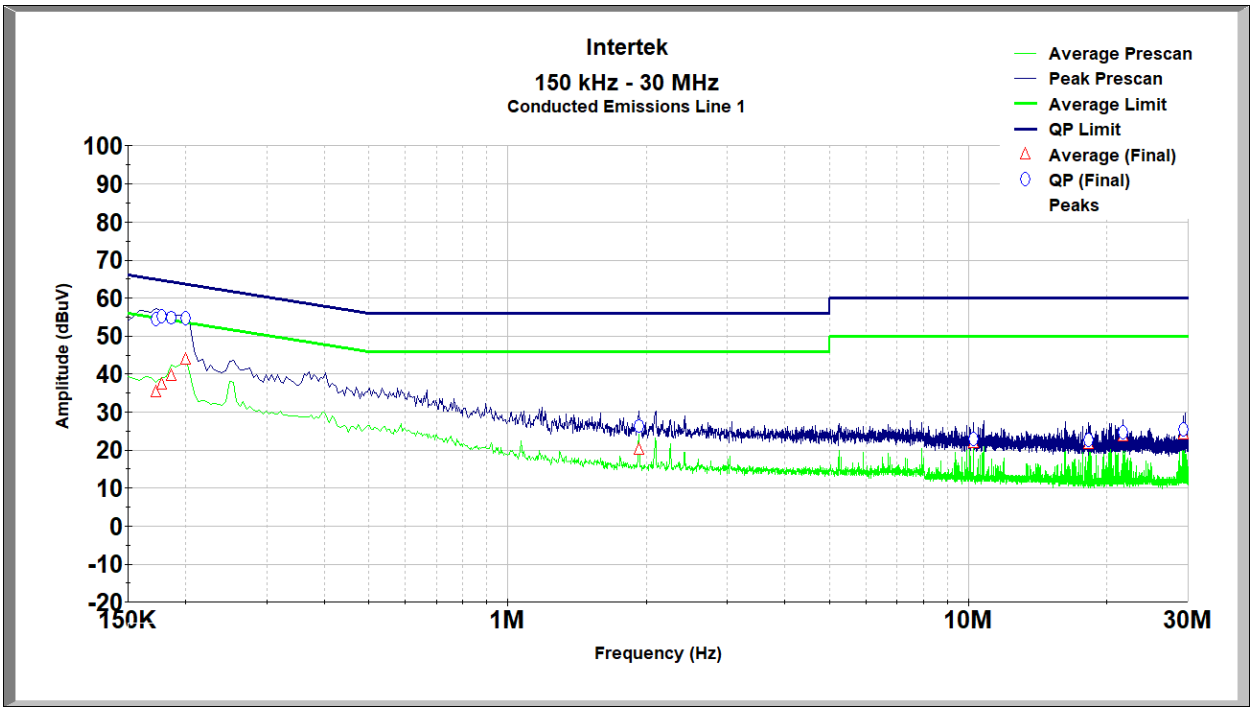
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.530556	69.45	73.98	4.53	1000.000	200.0	H	217.0	39
2483.545833	68.74	73.98	5.24	1000.000	233.0	V	246.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.530556	50.27	53.98	3.71	1000.000	200.0	H	217.0	39
2483.545833	53.57	53.98	0.41	1000.000	233.0	V	246.0	39

Test Personnel:	Ben Coolbear, Michael Carlson	Test Date:	6/2/2021 – 7/20/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.205 Restricted Bands, 15.209
Product Standard:	FCC Part 15.247 RSS-247 Issue 2	Ambient Temperature:	21.5 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	40.2 %
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8 mbar

Deviations, Additions, or Exclusions: None

12 Conducted Emissions on AC Power Ports

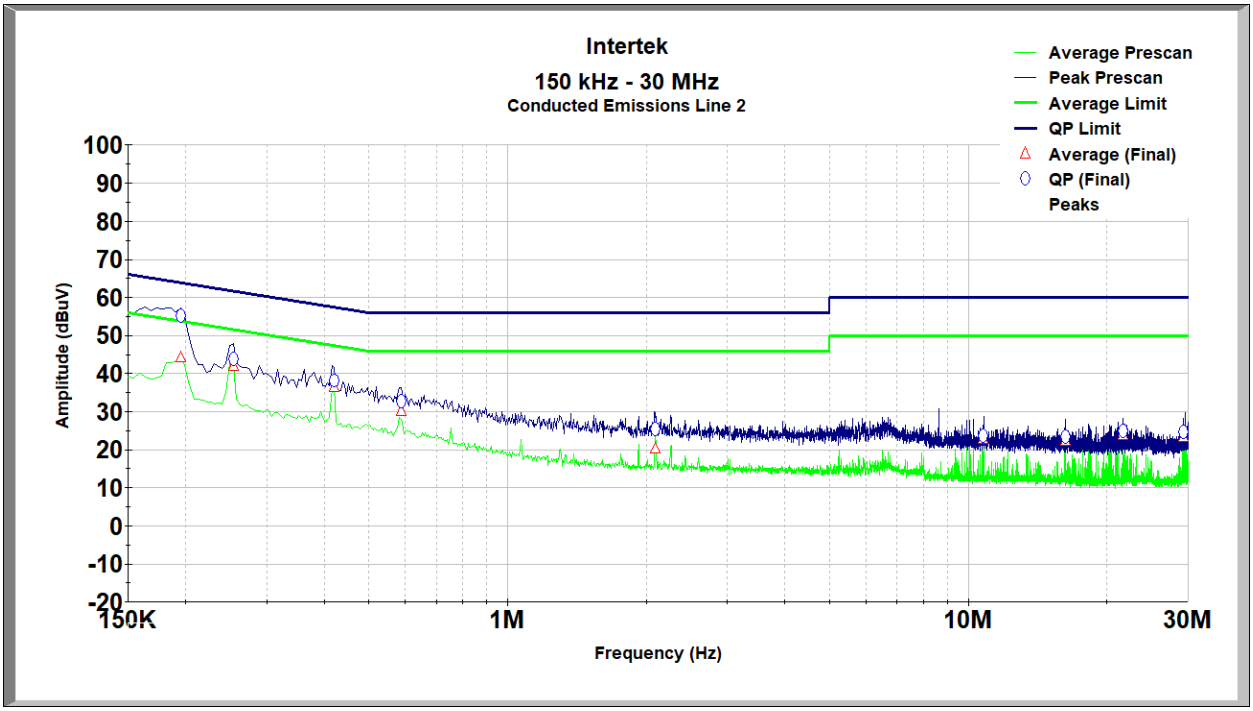


Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Margin (dB)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)
0.172	54.348	65.357	11.009	35.296	55.357	20.061
0.177	55.187	65.229	10.042	37.253	55.229	17.975
0.186	55.040	64.971	9.931	39.620	54.971	15.352
0.200	54.651	64.586	9.935	43.951	54.586	10.635
1.923	26.318	56.000	29.682	20.037	46.000	25.963
10.243	23.034	60.000	36.966	21.951	50.000	28.049
18.244	22.677	60.000	37.323	21.596	50.000	28.404
21.662	24.748	60.000	35.252	23.733	50.000	26.267
29.233	25.333	60.000	34.667	24.028	50.000	25.972

Line

Test Personnel:	Ben Coolbear	Test Date:	6/18/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.207
Product Standard:	FCC Part 15C, RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	51.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.9 mbar

Deviations, Additions, or Exclusions: None



Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Margin (dB)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)
0.195	55.130	64.714	9.584	44.335	54.714	10.379
0.254	43.942	63.043	19.101	42.014	53.043	11.029
0.420	38.252	58.286	20.034	36.499	48.286	11.787
0.587	32.831	56.000	23.169	30.255	46.000	15.745
2.094	25.423	56.000	30.577	20.407	46.000	25.593
10.793	23.796	60.000	36.204	22.906	50.000	27.094
16.227	23.352	60.000	36.648	22.408	50.000	27.592
21.662	24.833	60.000	35.167	23.860	50.000	26.140
29.233	24.689	60.000	35.311	23.356	50.000	26.644

Neutral

Test Personnel:	Ben Coolbear	Test Date:	6/18/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	15.207
Product Standard:	FCC Part 15C, RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz	Relative Humidity:	51.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.9 mbar

Deviations, Additions, or Exclusions: None

13 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	10/20/2021	104626259LEX-004	BCT	BL	Original Issue
1	3/1/2022	104626259LEX-004.1	BCT	BL	Updated output power measurements