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Wireless CCTV, LTD.
TEST REPORT

SCOPE OF WORK
EMC TESTING – BODYWORN CONNECT 1.6

REPORT NUMBER
104286003LEX-010

ISSUE DATE

12/3/2021

PAGES
35

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

EMC TEST REPORT

(PARTIAL COMPLIANCE)

Report Number: 104286003LEX-010
Project Number: G104286003

Report Issue Date: 12/3/2021

Model(s) Tested: Bodyworn Connect 1.6

Standards: FCC Part 15C
RSS-247 Issue 2
(Limited to Radiated Spurious Emissions)

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

Client:
Wireless CCTV, LTD.
Charles Babbage House
Kingsway Business Park
Rochdale
Lancashire
OL16 4NW
United Kingdom

Report prepared by

Bryan Taylor, Team Leader

Report reviewed by

Brian Lackey, Staff Engineer

Table of Contents

1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. 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

Section	Test full name	Result
6	Radiated Spurious Emissions (Transmitters Active) (ANSI C63.10:2013)	Pass

Note: testing was limited to just radiated spurious emissions due to the new antenna used and due to the Wi-Fi/BT radio integration in the Host Device

3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	Wireless CCTV, LTD.
Address:	Charles Babbage House Kingsway Business Park Rochdale Lancashire OL16 4NW United Kingdom
Contact:	Ian Ramsdale
Telephone:	+44 1706 631166
Email:	ianramsdale@wcctv.com
Manufacturer Information	
Manufacturer Name:	Wireless CCTV, LTD.
Manufacturer Address:	Charles Babbage House Kingsway Business Park Rochdale Lancashire OL16 4NW United Kingdom

4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	Bodyworn Connect 1.6
Model Number	Bodyworn Connect 1.6
Serial Number	35850206473249
Hardware Version	Rev 1.9us
Software Version	V1.5.6.106
Supported Transmit Bands	LTE Bands: 2, 4, 5, 13, 17 WCDMA Bands: 2, 5 802.11b, g, n: 2412 – 2462MHz
Embedded Modules	Ublox Toby L201 Texas Insttuments WL18MODGB
Cellular Embedded Module hardware Version	TOBY-L201-02S-01 (218B01)
Cellular Embedded Module Software Version	20.06,A01.00
Embedded Module FCCIDs	XPYTOBYL201 2AUUQ-CONNECTV1-6
WiFI/BT Antenna Type	Taoglas FXP74.07.072A
Receive Date	5/7/2021
Test Start Date	11/9/2021
Test End Date	11/26/2021
Device Received Condition	Good
Test Sample Type	Production
Rated Voltage	3.7VDC
Description of Equipment Under Test (provided by client)	
The Bodyworn Connect 1.6 is a CCTV device which has the ability to stream live video via LTE to a cloud environment. While charging the WiFi radio onboard is active.	

4.1 Variant Models:

There were no variant models covered by this evaluation.

5 System Setup and Method

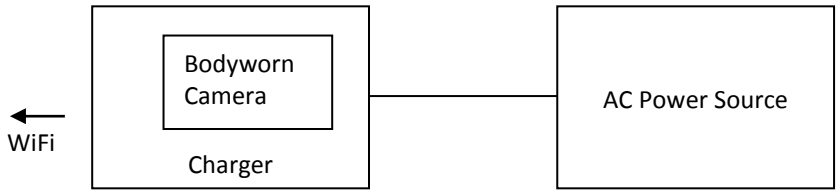
5.1 Method:

Configuration as required by ANSI C63.10:2013.

No.	Descriptions of EUT Exercising
1	During the testing the sample was placed in a charger with the wifi radio onboard was actively transmitting with the use of test commands provided by Wireless CCTV, LTD.

Cables					
Qty	**Description**	**Length**	**Shielding**	**Ferrites**	**Termination**
1	DC Cable From Power Adapter	2ft	None	None	Charging Base
1	AC Power Cable	5ft	None	None	120VAC Power Source

5.2 EUT Block Diagram:



6 Radiated Emissions

6.1 Method

Tests are performed in accordance with ANSI C63.10:2013.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

6.2 Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dBμV/m

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:

FS = RA + AF + CF – AG = 52.0 + 7.4 + 1.6 – 29.0 = 32.0
$UF = 10^{(32\ dB\mu V / 20)}$ = 39.8 μV/m

6.3 Test Equipment Used:

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	8131	Rohde & Schwarz	ESW44	1/15/2020	1/22/2022
Bilog Antenna	3133	ETS	3142C	8/26/2021	8/26/2022
Horn Antenna	4001	ETS	3117	1/26/2021	1/26/2022
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
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
Preamplifier	3919	Rohde & Schwarz	TS-PR3	12/21/2020	12/21/2021
Coaxial Cable	3172			12/21/2020	12/21/2021
Coaxial Cable	2590			12/21/2020	12/21/2021
Coaxial Cable	2589			12/21/2020	12/21/2021
Magnetic Loop Antenna	2366	ETS	6502	7/30/2021	7/30/2022
Horn Antenna (18-40GHz)	3779	ETS	3116c	7/30/2021	7/30/2022
Preamplifier (18-40GHz)	3921	Rohde & Schwarz	TS-PR40	12/21/2020	12/21/2021

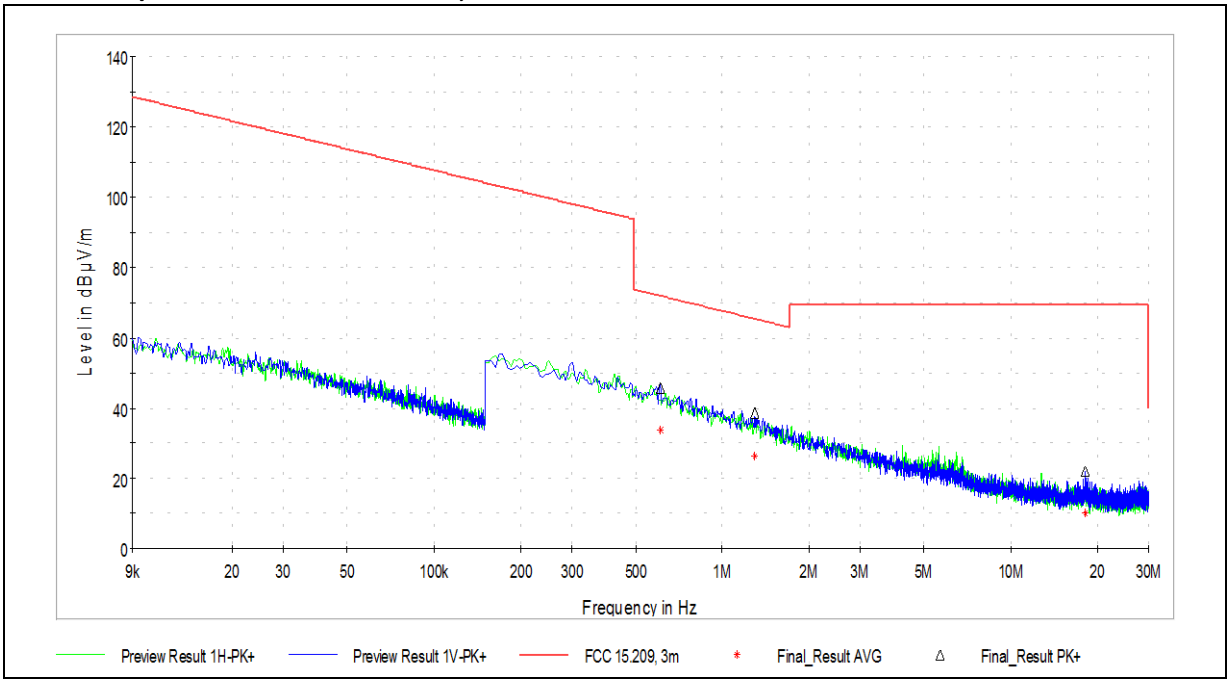
6.4 Software Utilized:

Name	Manufacturer	Version
EMC32	Rohde & Schwarz	Version 9.15.02

6.5 Results:

The sample tested was found to Comply.

6.6 Plots/Data: Radiated Emissions, 9kHz – 30MHz

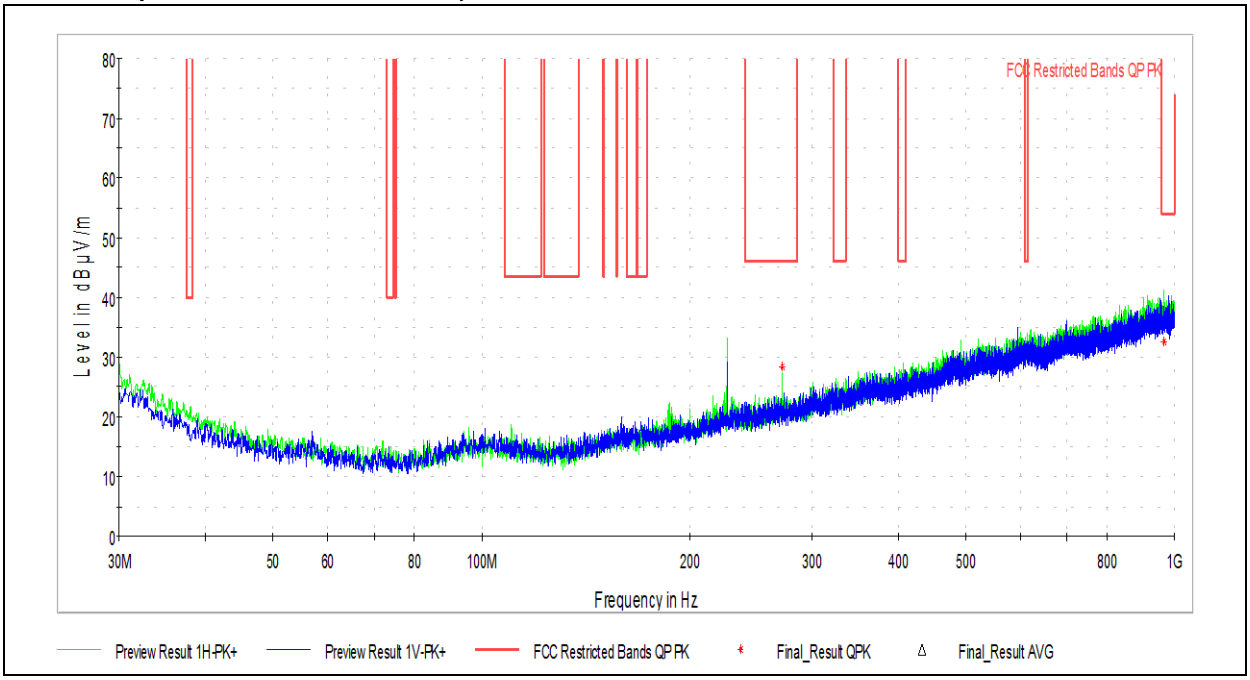


Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.610919	33.86	71.89	38.03	9.000	26.0	12
1.295713	26.34	65.38	39.04	9.000	264.0	12
18.099507	10.13	69.50	59.37	9.000	128.0	11

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: Note the data presented above represents the worst case from all transmit modes.

6.7 Plots/Data: Radiated Emissions, 30MHz – 1GHz

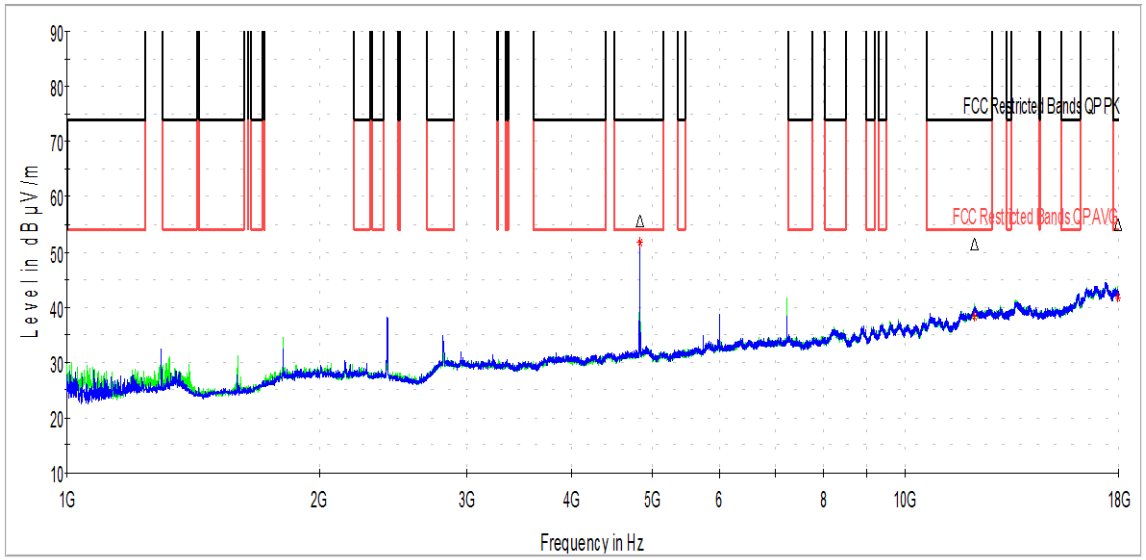


Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
271.530000	28.51	46.02	17.51	120.000	200.0	H	288.0	23
965.996111	32.60	53.98	21.38	120.000	281.0	H	110.0	38

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: Note the data presented above represents the worst case from all transmit modes.

6.8 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11b, low channel)



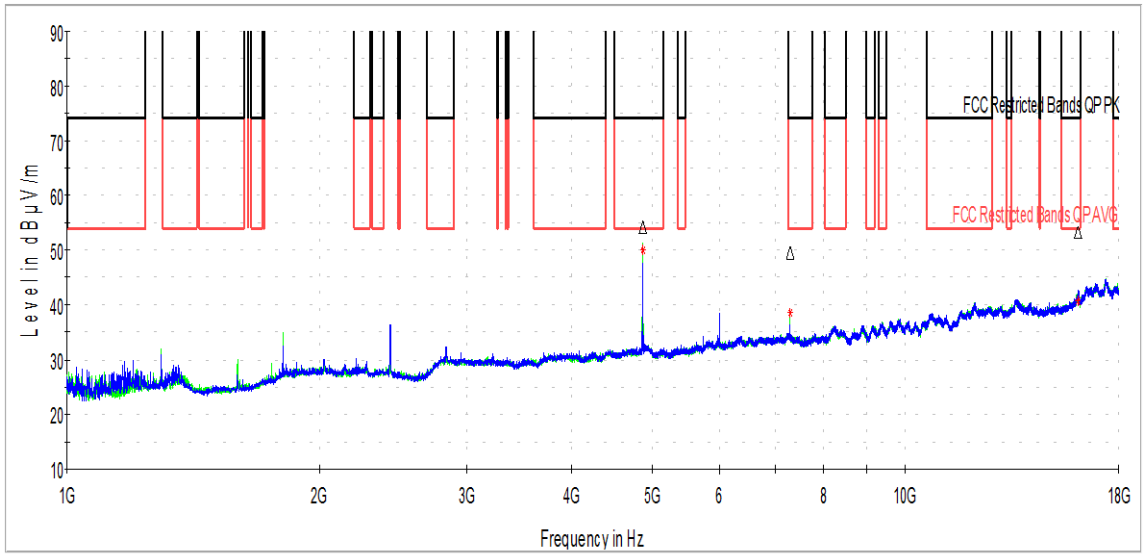
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	55.62	73.98	18.36	1000.000	187.0	H	320.0	10
12095.000000	51.53	73.98	22.45	1000.000	100.0	H	125.0	20
17957.500000	55.01	73.98	18.97	1000.000	100.0	H	48.0	26

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	51.76	53.98	2.22	1000.000	187.0	H	320.0	10
12095.000000	38.24	53.98	15.74	1000.000	100.0	H	125.0	20
17957.500000	41.75	53.98	12.23	1000.000	100.0	H	48.0	26

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.9 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11b, mid channel)



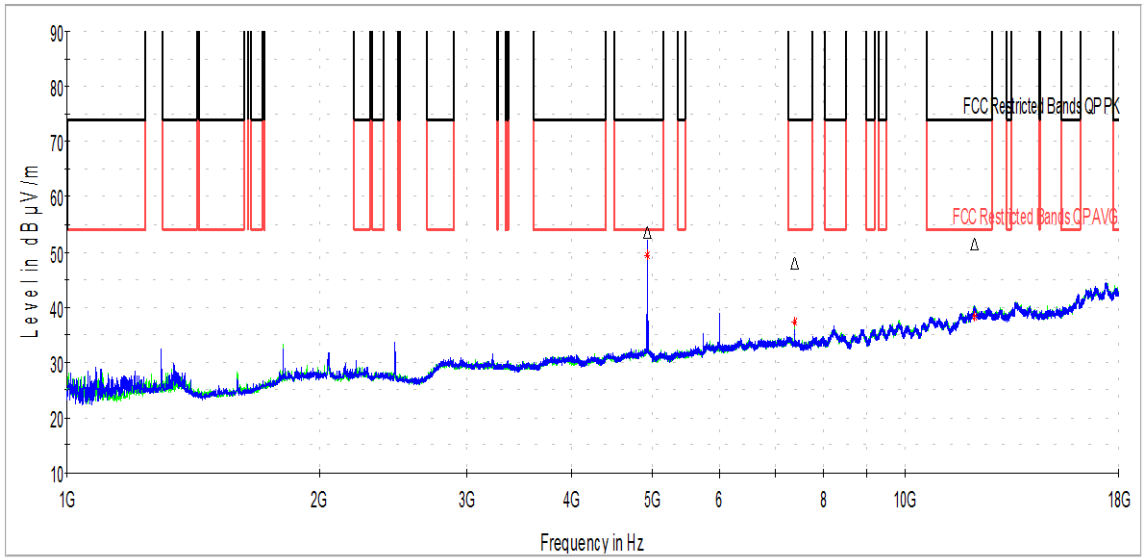
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4864.000000	54.23	73.98	19.75	1000.000	116.0	H	12.0	10
7295.000000	49.46	73.98	24.52	1000.000	215.0	H	88.0	13
16100.500000	53.31	73.98	20.67	1000.000	100.0	V	0.0	25

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4864.000000	49.99	53.98	3.99	1000.000	116.0	H	12.0	10
7295.000000	38.54	53.98	15.44	1000.000	215.0	H	88.0	13
16100.500000	40.56	53.98	13.42	1000.000	100.0	V	0.0	25

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.10 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11b, high channel)



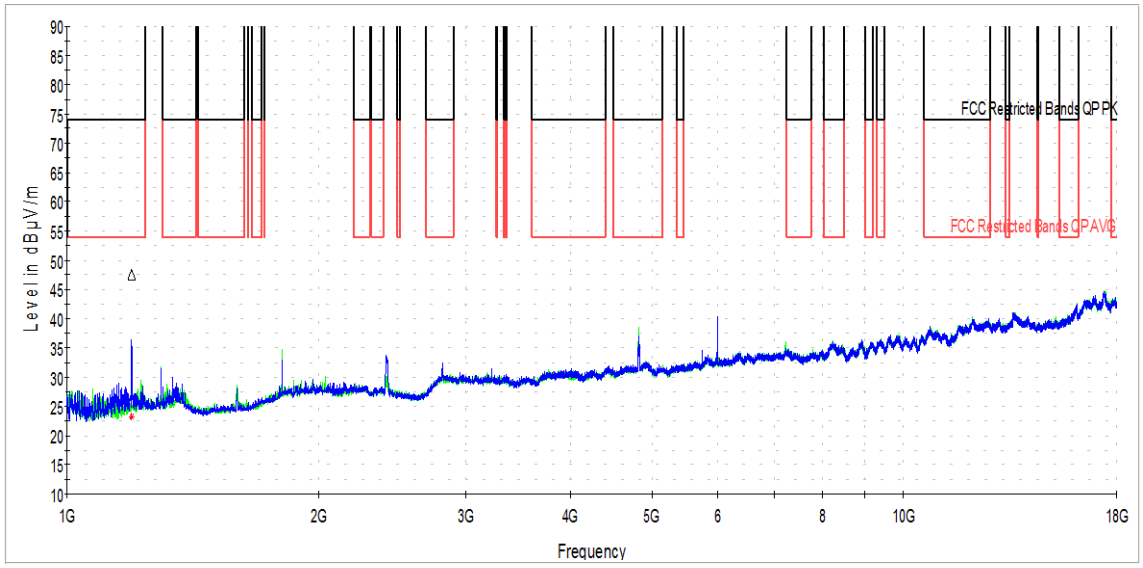
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	53.64	73.98	20.34	1000.000	240.0	V	208.0	10
7384.000000	48.13	73.98	25.85	1000.000	239.0	H	98.0	13
12111.500000	51.54	73.98	22.44	1000.000	100.0	H	0.0	20

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	49.36	53.98	4.62	1000.000	240.0	V	208.0	10
7384.000000	37.26	53.98	16.72	1000.000	239.0	H	98.0	13
12111.500000	38.29	53.98	15.69	1000.000	100.0	H	0.0	20

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.11 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11g, low channel)



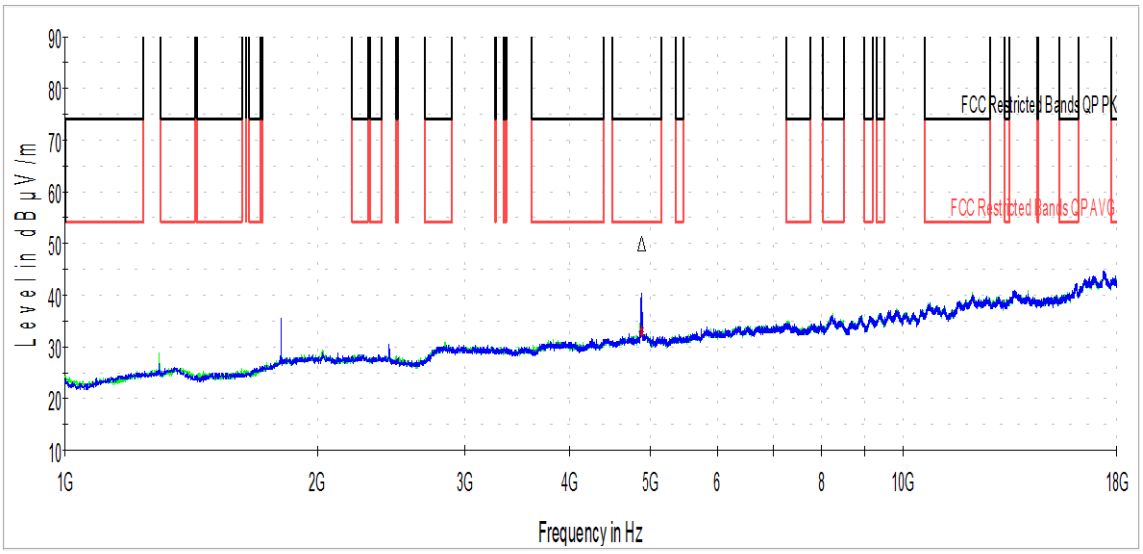
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1195.000000	47.64	73.98	26.34	1000.000	361.0	V	0.0	0

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1195.000000	23.18	53.98	30.80	1000.000	361.0	V	0.0	0

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.12 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11g, mid channel)



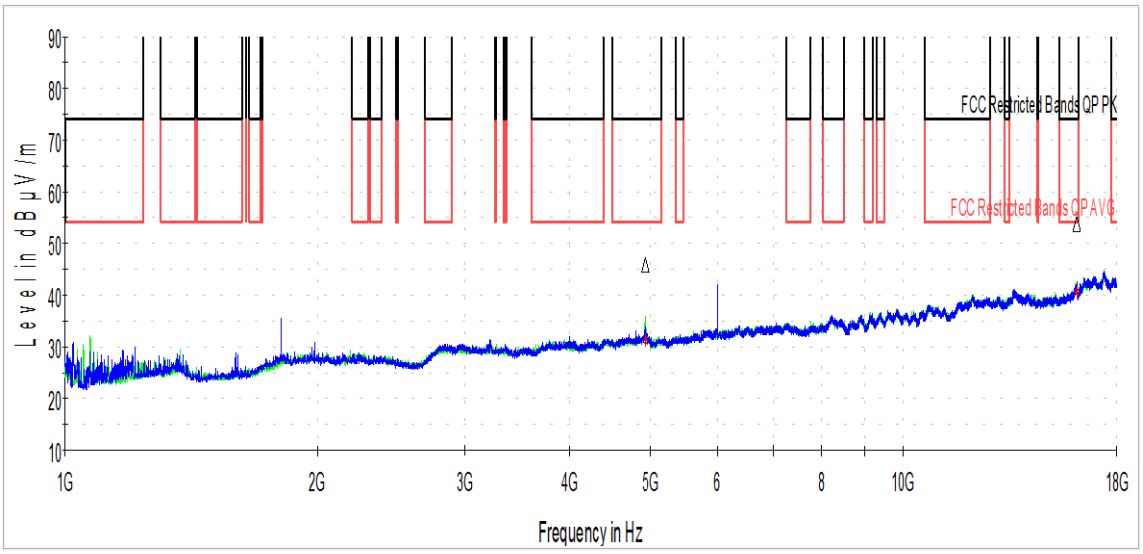
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4876.000000	49.87	73.98	24.11	1000.000	100.0	V	162.0	10

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4876.000000	32.96	53.98	21.02	1000.000	100.0	V	162.0	10

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.13 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11g, high channel)



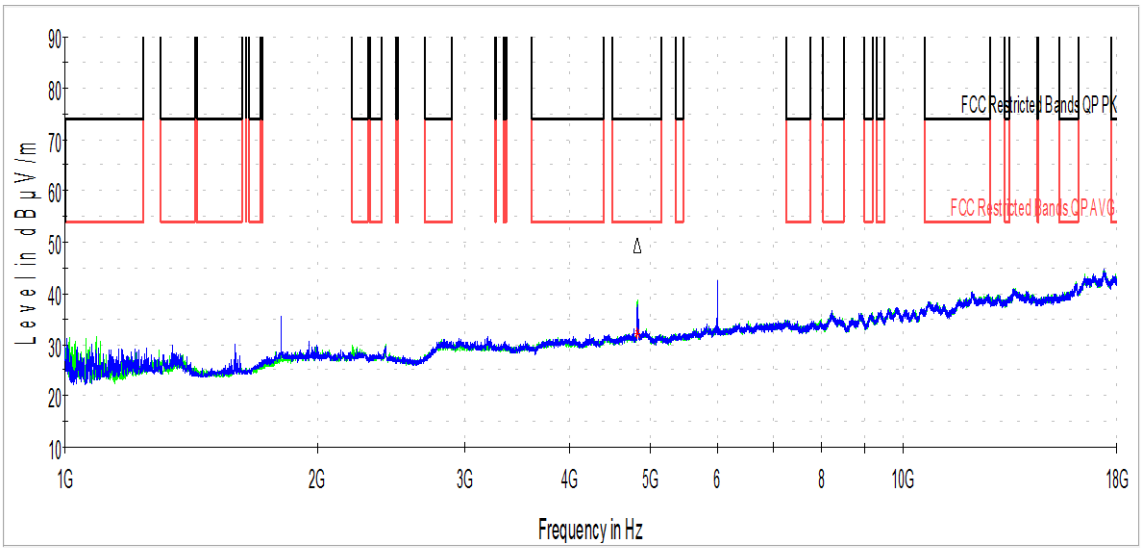
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4922.000000	46.01	73.98	27.97	1000.000	264.0	H	44.0	10
16128.500000	53.87	73.98	20.11	1000.000	155.0	V	0.0	25

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4922.000000	31.09	53.98	22.89	1000.000	264.0	H	44.0	10
16128.500000	40.67	53.98	13.31	1000.000	155.0	V	0.0	25

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.14 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11n, low channel)



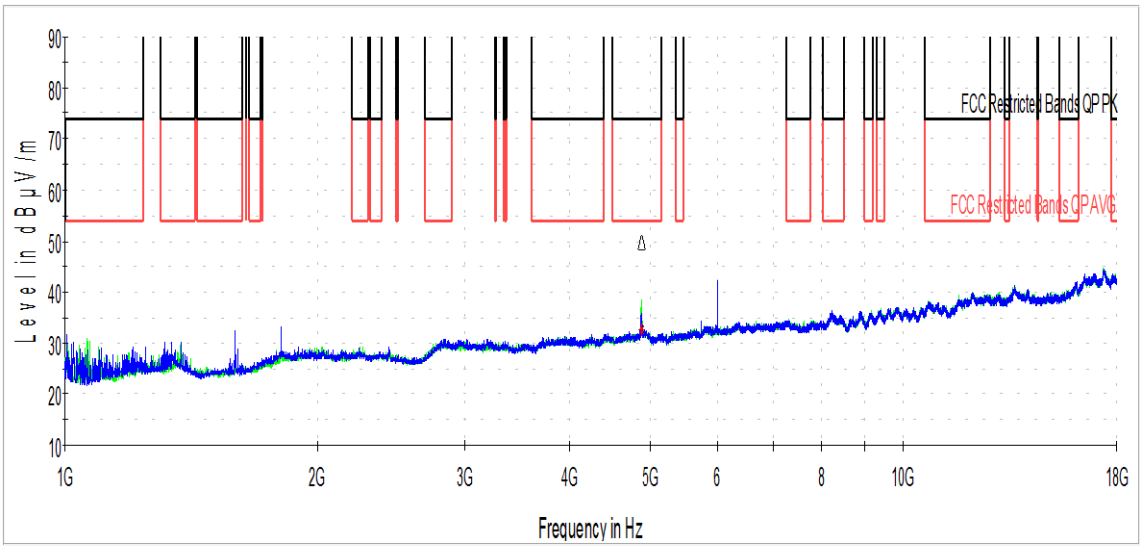
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4819.500000	49.40	73.98	24.58	1000.000	291.0	H	174.0	10

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4819.500000	32.23	53.98	21.75	1000.000	291.0	H	174.0	10

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.15 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11n, mid channel)



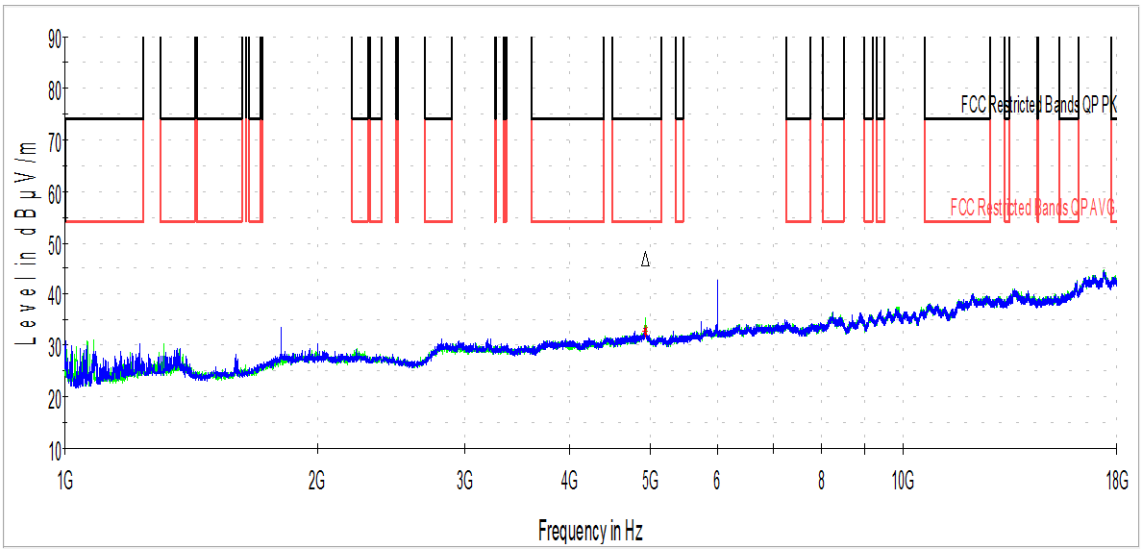
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4872.500000	49.73	73.98	24.25	1000.000	283.0	H	228.0	10

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4872.500000	32.69	53.98	21.29	1000.000	283.0	H	228.0	10

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.16 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11n, high channel)



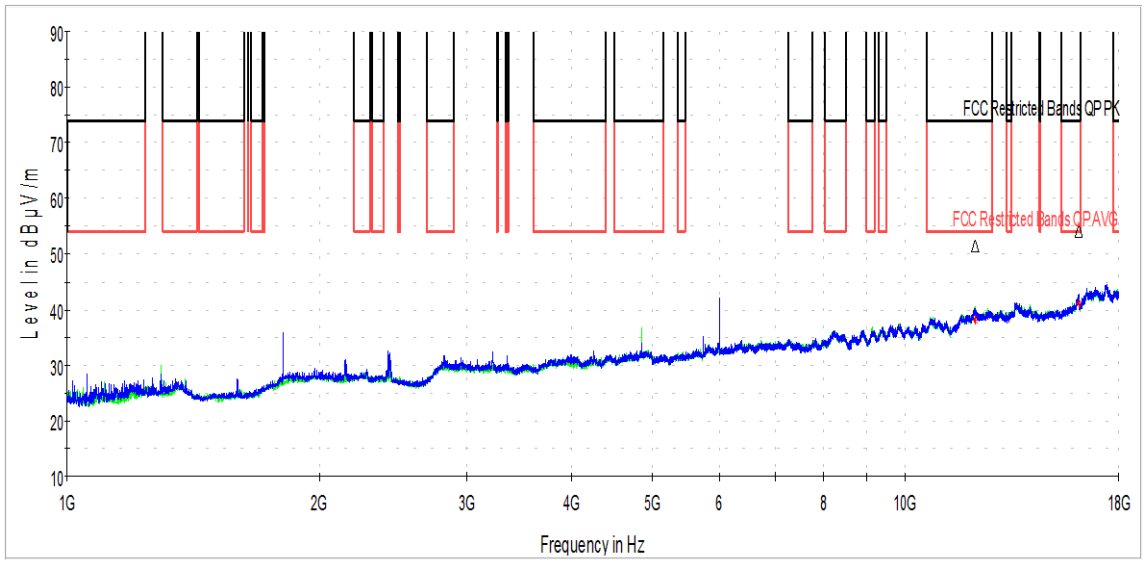
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.500000	46.94	73.98	27.04	1000.000	109.0	H	117.0	10

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.500000	32.70	53.98	21.28	1000.000	109.0	H	117.0	10

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.17 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11n 40MHz, low channel)



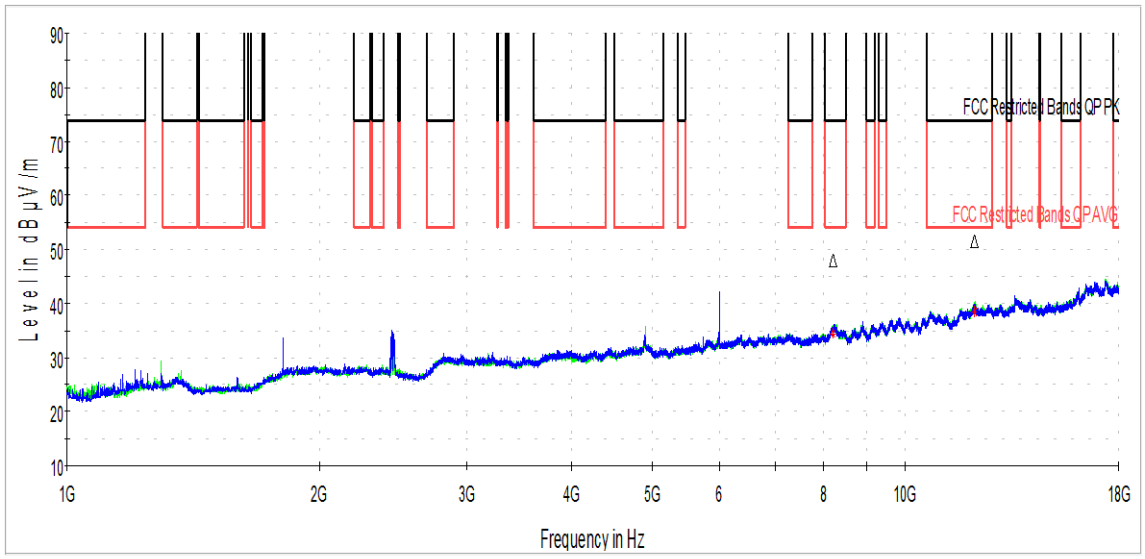
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
12123.500000	51.55	73.98	22.43	1000.000	100.0	H	0.0	20
16124.500000	54.29	73.98	19.69	1000.000	100.0	V	0.0	25

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
12123.500000	38.13	53.98	15.85	1000.000	100.0	H	0.0	20
16124.500000	41.15	53.98	12.83	1000.000	100.0	V	0.0	25

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.18 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11n 40MHz, mid channel)



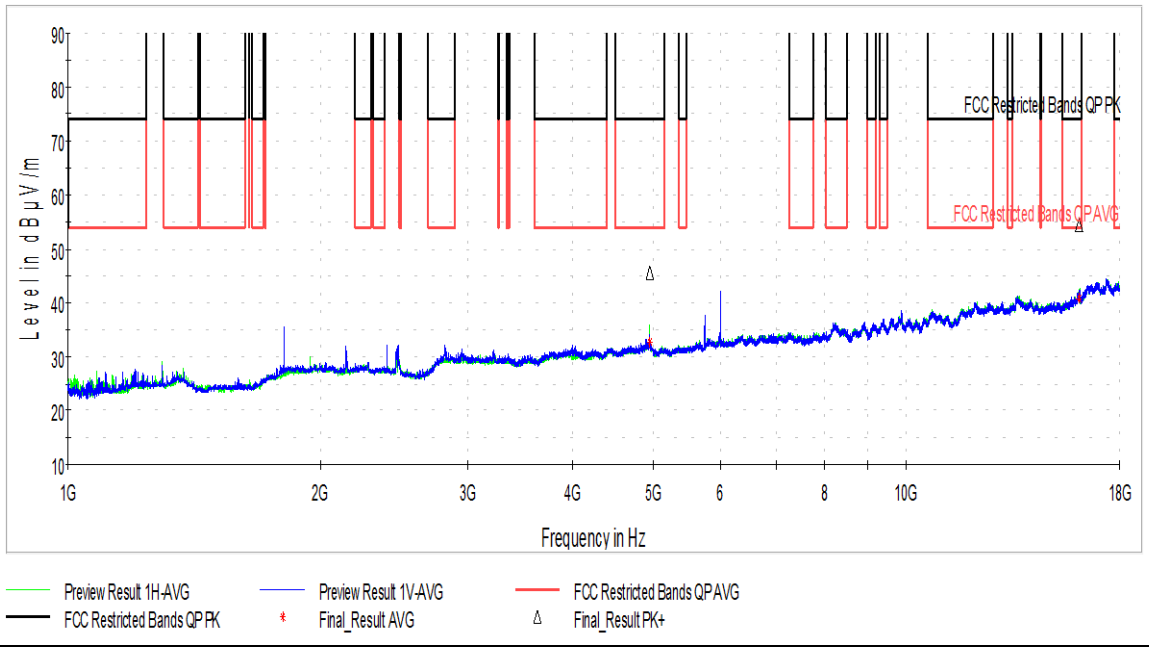
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
8215.500000	47.94	73.98	26.04	1000.000	100.0	H	243.0	15
12105.000000	51.57	73.98	22.41	1000.000	100.0	H	72.0	20

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
8215.500000	34.37	53.98	19.61	1000.000	100.0	H	243.0	15
12105.000000	38.42	53.98	15.56	1000.000	100.0	H	72.0	20

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.19 Plots/Data: Radiated Emissions, 1GHz – 18GHz (802.11n 40MHz, high channel)



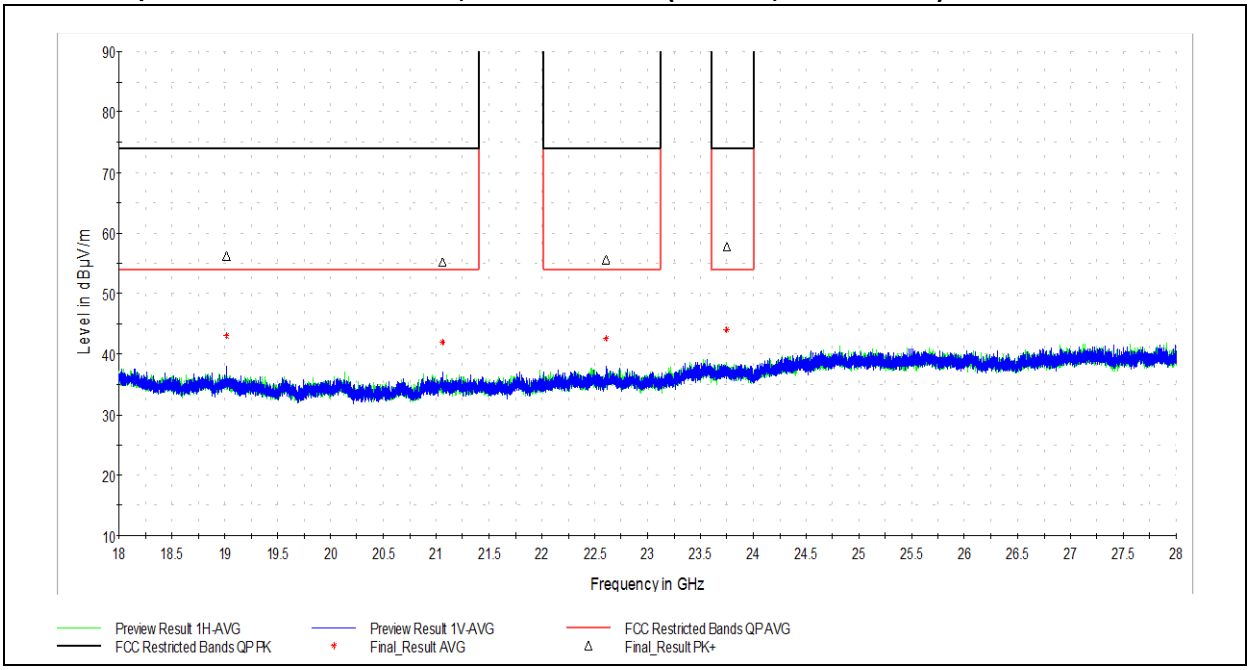
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4944.000000	45.51	73.98	28.47	1000.000	200.0	H	272.0	10
16104.500000	54.45	73.98	19.53	1000.000	100.0	H	0.0	25

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4944.000000	32.80	53.98	21.18	1000.000	200.0	H	272.0	10
16104.500000	40.79	53.98	13.19	1000.000	100.0	H	0.0	25

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.20 Plots/Data: Radiated Emissions, 18GHz – 28GHz (802.11b, mid channel)



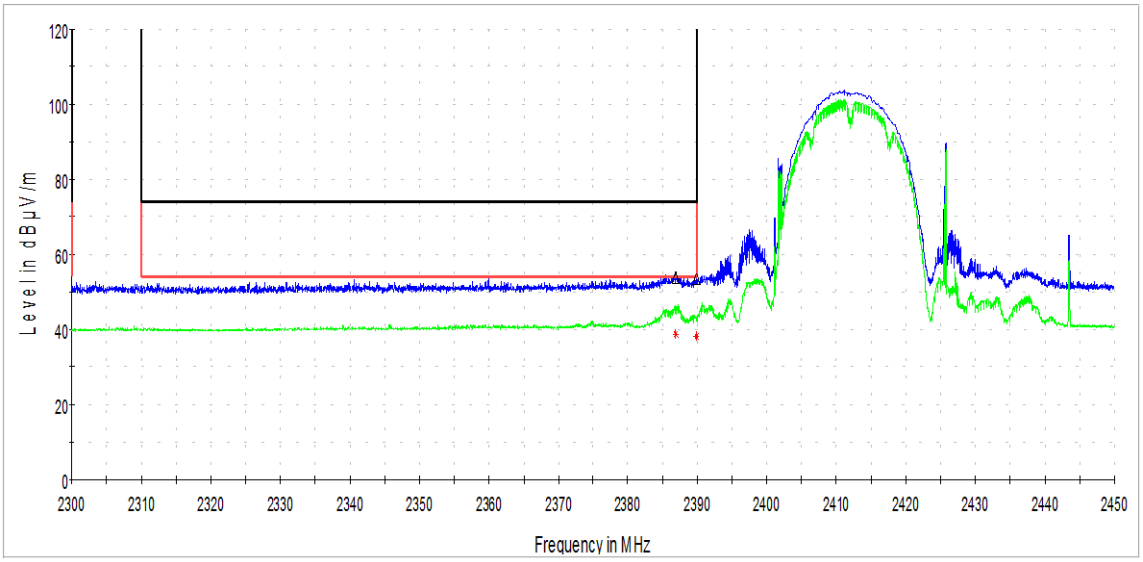
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
19018.500000	56.30	73.98	17.68	1000.000	410.0	V	102.0	19
21057.000000	55.25	73.98	18.73	1000.000	153.0	V	314.0	13
22604.500000	55.69	73.98	18.29	1000.000	410.0	V	84.0	10
23750.500000	57.66	73.98	16.32	1000.000	318.0	H	68.0	11

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
19018.500000	43.03	53.98	10.95	1000.000	410.0	V	102.0	19
21057.000000	42.04	53.98	11.94	1000.000	153.0	V	314.0	13
22604.500000	42.52	53.98	11.46	1000.000	410.0	V	84.0	10
23750.500000	44.11	53.98	9.87	1000.000	318.0	H	68.0	11

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: The above data is representative of the worst case for all transmit modes.

6.21 Plots/Data: Low Restricted Band Edge (802.11b)



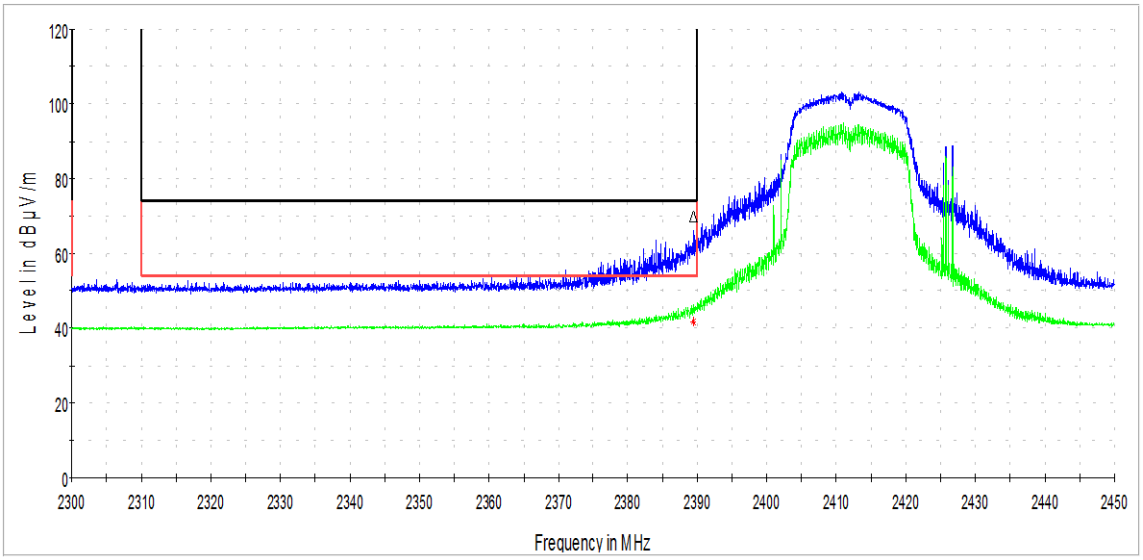
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2386.913462	53.76	73.98	20.22	1000.000	263.0	H	1.0	39
2389.884615	53.48	73.98	20.50	1000.000	260.0	H	1.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2386.913462	38.69	53.98	15.29	1000.000	263.0	H	1.0	39
2389.884615	38.20	53.98	15.78	1000.000	260.0	H	1.0	39

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.22 Plots/Data: Low Restricted Band Edge (802.11g)



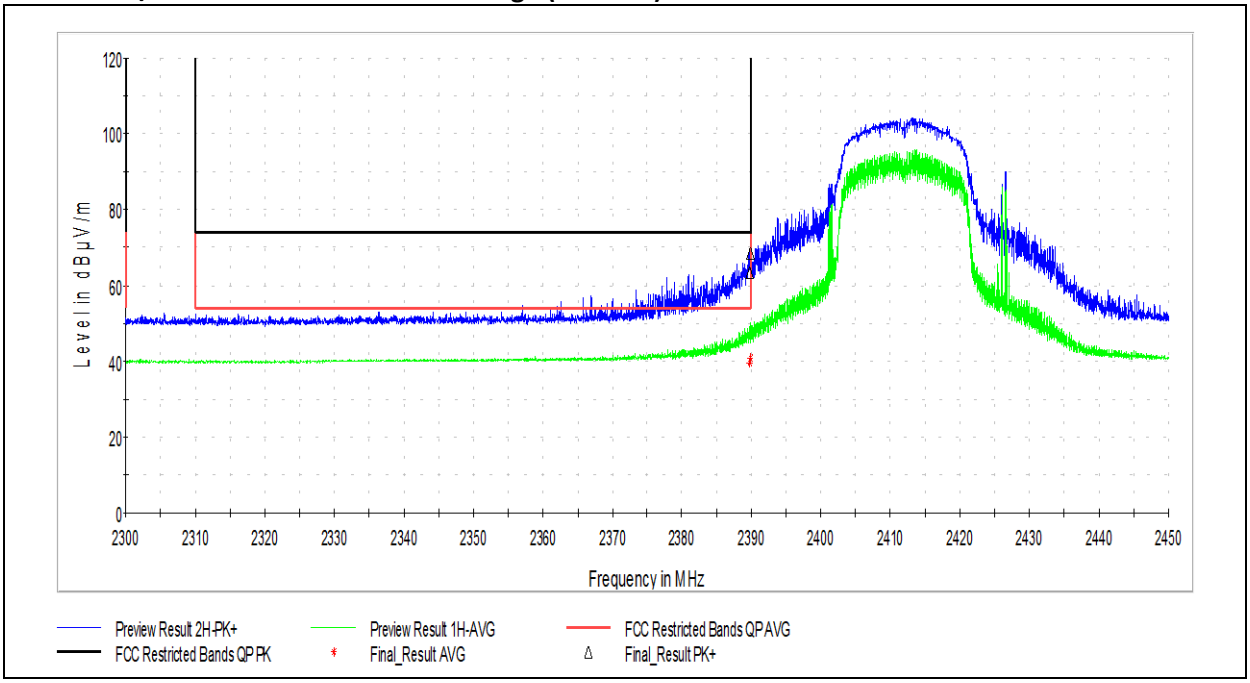
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.394231	69.80	73.98	4.18	1000.000	262.0	H	90.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.394231	41.63	53.98	12.35	1000.000	262.0	H	90.0	39

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.23 Plots/Data: Low Restricted Band Edge (802.11n)



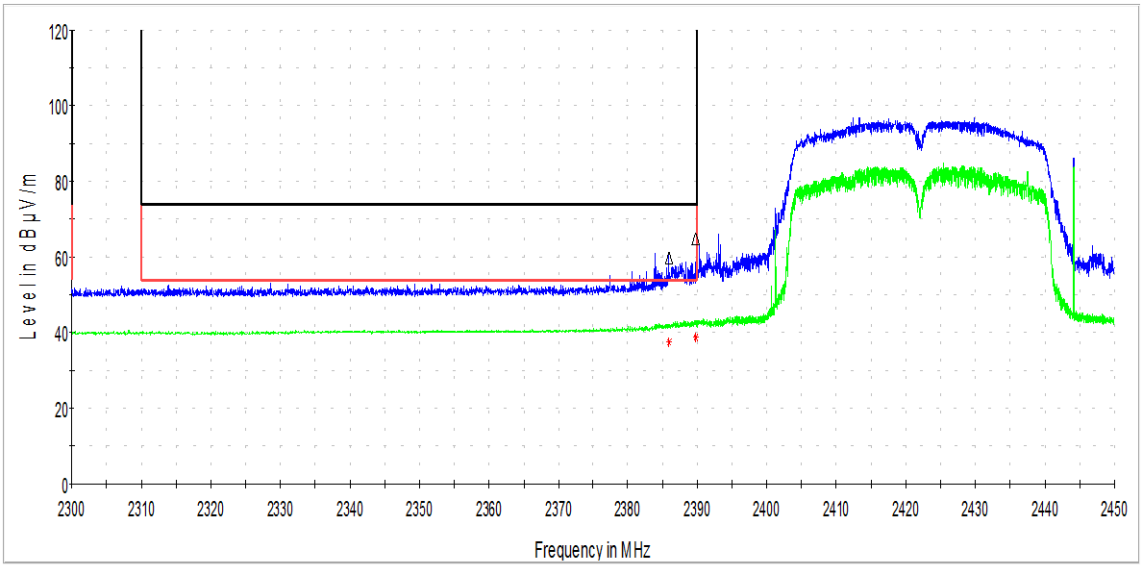
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.711539	63.46	73.98	10.52	1000.000	260.0	H	1.0	39
2389.826923	68.45	73.98	5.53	1000.000	264.0	H	104.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.711539	39.63	53.98	14.35	1000.000	260.0	H	1.0	39
2389.826923	40.77	53.98	13.21	1000.000	264.0	H	104.0	39

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.24 Plots/Data: Low Restricted Band Edge (802.11n 40Mhz)



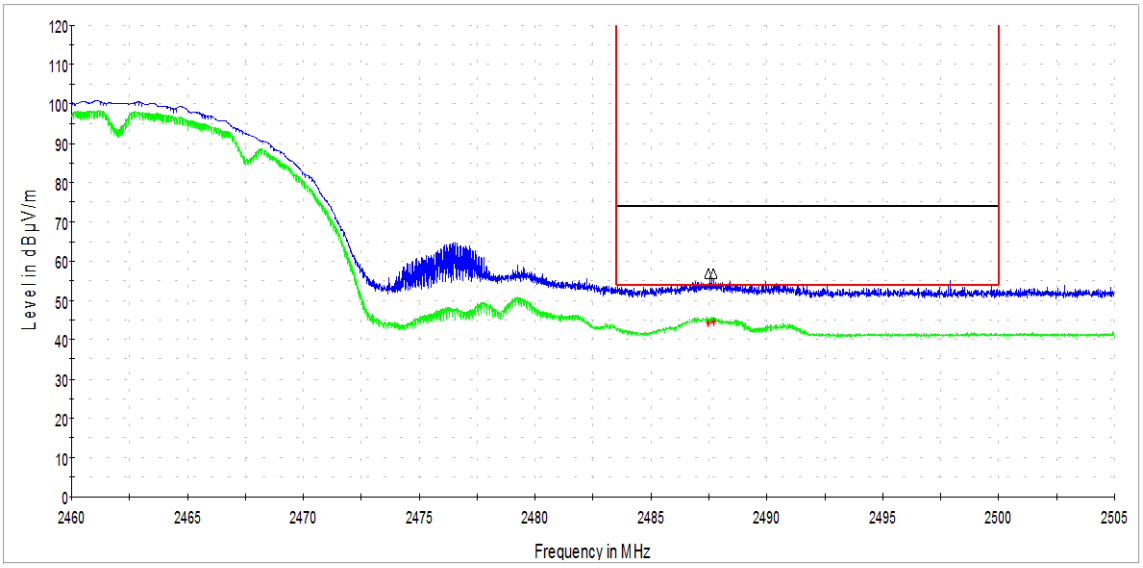
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2385.903846	59.75	73.98	14.23	1000.000	262.0	H	1.0	39
2389.769231	64.91	73.98	9.07	1000.000	262.0	H	23.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2385.903846	37.53	53.98	16.45	1000.000	262.0	H	1.0	39
2389.769231	38.64	53.98	15.34	1000.000	262.0	H	23.0	39

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.25 Plots/Data: High Restricted Band Edge (802.11b)



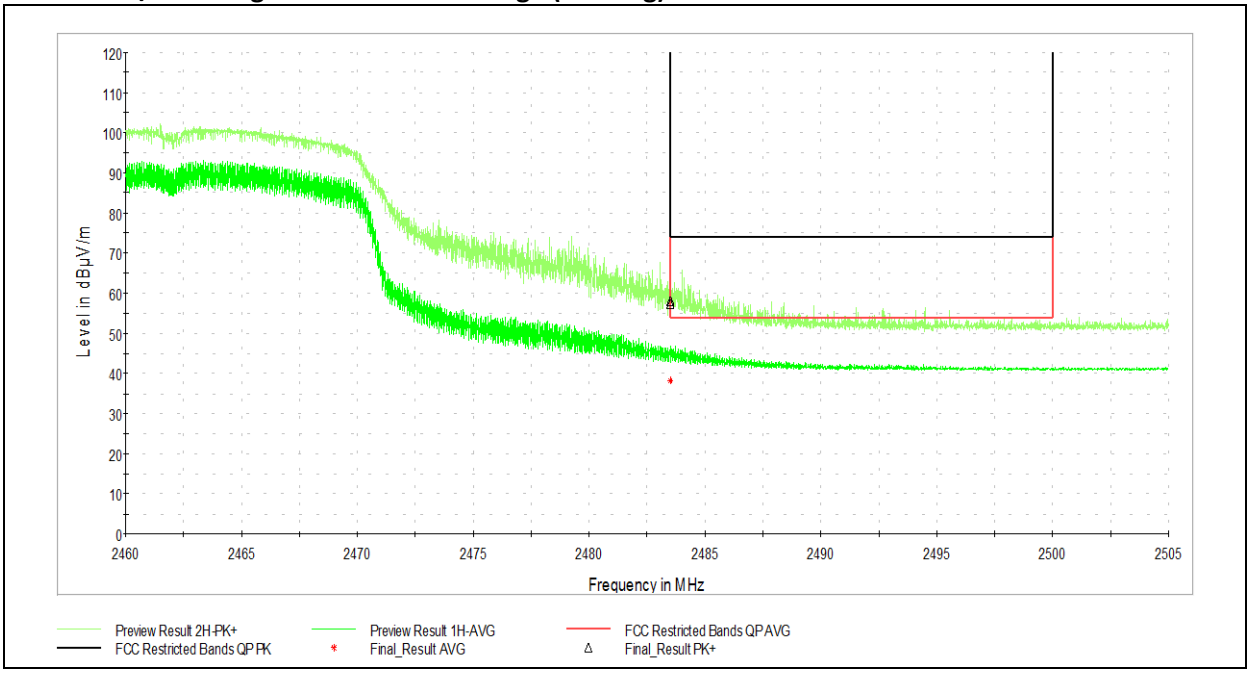
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2487.458654	56.94	73.98		1000.000	262.0	H	97.0	39
2487.700962	56.78	73.98		1000.000	262.0	H	96.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2487.458654	44.19	53.98		1000.000	262.0	H	97.0	39
2487.700962	44.50	53.98		1000.000	262.0	H	96.0	39

Test Personnel:	Bryan Taylor	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.26 Plots/Data: High Restricted Band Edge (802.11g)



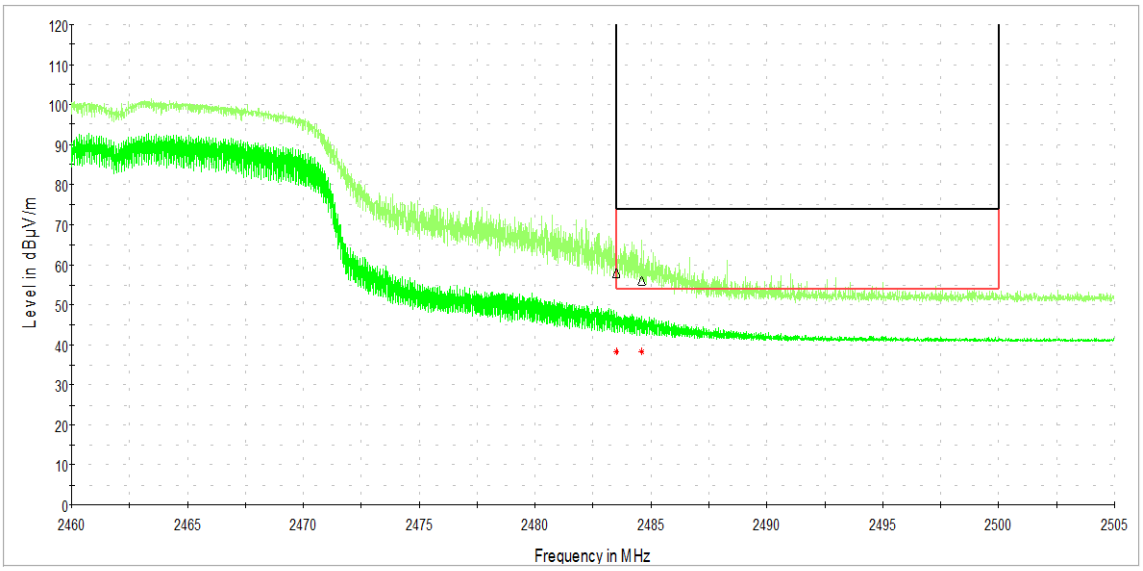
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.503846	58.20	73.98	15.78	1000.000	261.0	H	185.0	39
2483.512500	57.44	73.98	16.54	1000.000	262.0	H	0.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.503846	38.21	53.98	15.77	1000.000	261.0	H	185.0	39
2483.512500	38.12	53.98	15.86	1000.000	262.0	H	0.0	39

Test Personnel:	Ben Coolbear	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.27 Plots/Data: High Restricted Band Edge (802.11n)



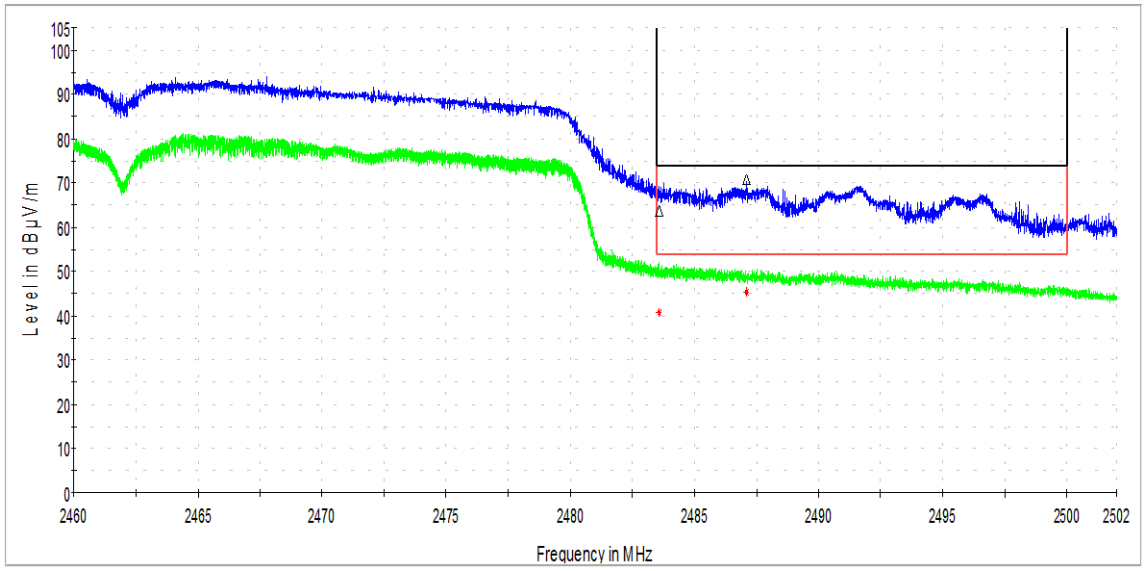
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.503846	58.00	73.98	15.98	1000.000	262.0	H	2.0	39
2484.594231	56.20	73.98	17.78	1000.000	262.0	H	2.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.503846	38.37	53.98	15.61	1000.000	262.0	H	2.0	39
2484.594231	38.25	53.98	15.73	1000.000	262.0	H	2.0	39

Test Personnel:	Ben Coolbear	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

6.28 Plots/Data: High Restricted Band Edge (802.11n 40Mhz)



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.581731	63.67	73.98	10.31	1000.000	158.0	H	10.0	39
2487.103846	70.78	73.98	3.20	1000.000	265.0	H	10.0	39

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.581731	40.78	53.98	13.20	1000.000	158.0	H	10.0	39
2487.103846	45.40	53.98	8.58	1000.000	265.0	H	10.0	39

Test Personnel:	Ben Coolbear	Test Date:	11/9/2021 – 11/26/2021
Supervising/Reviewing Engineer: (Where Applicable)	NA	Limit Applied:	Restricted Band Limits
Product Standard:	FCC Part 15C RSS-247	Ambient Temperature:	23.3 °C
Input Voltage:	120VAC / 60Hz into battery charger	Relative Humidity:	48.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	992 mbar

Deviations, Additions, or Exclusions: None

7 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	12/3/2021	104286003LEX-010	BCT	BL	Original Issue