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# Digital Matter TEST REPORT

## SCOPE OF WORK

EMC TESTING – OYSTER EDGE 4G

## REPORT NUMBER

105090357LEX-001

## ISSUE DATE

2/14/2023

## PAGES

32

## DOCUMENT CONTROL NUMBER

Non-Specific EMC Report Shell Rev. December 2017  
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**EMC TEST REPORT**  
(FULL COMPLIANCE)

**Report Number:** 105090357LEX-001

**Project Number:** G105090357

**Report Issue Date:** 2/14/2023

**Model(s) Tested:** Oyster Edge 4G

**Standards:** FCC Part 15B  
ICES-003 Issue 7  
FCC Part 22, 24, 27, 90  
(Radiated Spurious Emissions)

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

**Client:**  
Digital Matter  
The Oval, Ground Floor, St Georges Building. Cnr.  
Meadowbrook Lane and Sloane Street  
Bryanston, Johannesburg, 2021  
South Africa

Report prepared by



Brian Lackey, Team Leader

Report reviewed by



James Sudduth, Senior Staff Engineer

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## 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 Emissions (Transmitters Idle) (ANSI C63.4:2014)	Pass
6	Radiated Spurious Emissions (Transmitters Active) (ANSI C63.26:2015)	Pass
-	Conducted Emissions (ANSI C63.4:2014)	N/A <sup>1</sup>

<sup>1</sup> Test is not applicable. The EUT is battery powered and does not connect directly or indirectly to AC mains.



### 3 Client Information

This product was tested at the request of the following:

Client Information	
<b>Client Name:</b>	Digital Matter
<b>Address:</b>	The Oval, Ground Floor, St Georges Building. Cnr. Meadowbrook Lane and Sloane Street Bryanston, Johannesburg, 2021 South Africa
<b>Contact:</b>	Leon Botha
<b>Telephone:</b>	27726106003
<b>Email:</b>	leon@digitalmatter.com
Manufacturer Information	
<b>Manufacturer Name:</b>	Digital Matter
<b>Manufacturer Address:</b>	The Oval, Ground Floor, St Georges Building. Cnr. Meadowbrook Lane and Sloane Street Bryanston, Johannesburg, 2021 South Africa



#### 4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	Oyster
Model Number	Edge 4G
Serial Number	Unit 1
Hardware Version	V3.0
Software Version	-
Embedded Module	Nordic Semiconductor nRF9160-SICA-B1
Supported Transmit Bands	B2, B4, B5, B12, B13, B26
Embedded Module FCCID	2ANPO00NRF9160
Embedded Module ICID	24529-NRF9160
Embedded Module	SiLabs BGM220PC22
Supported Transmit Bands	2.4GHz BLE
Embedded Module FCCID	QQQ-GM220P
Embedded Module ICID	5123A-GM220P
Receive Date	8/11/2022
Test Start Date	10/12/2022
Test End Date	10/13/2022
Device Received Condition	Good
Test Sample Type	Production
Input Rating	3x AA 1.5V batteries
Description of Equipment Under Test (provided by client)	
Ultra-rugged, Indoor/Outdoor battery-powered GPS asset tracking device and Bluetooth® Gateway. Features cloud-based location solving for 10+ years of battery life.	

##### 4.1 Variant Models:

There were no variant models covered by this evaluation.





### 5.3 EUT Photo (Front):





**5.4 EUT Photo (Back):**





## 6 Radiated Emissions

### 6.1 Method

Tests are performed in accordance with ANSI C63.4:2014 and ANSI C63.26:2015.

**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 dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- 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 dB $\mu$ V 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 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V  
AF = 7.4 dB/m  
CF = 1.6 dB  
AG = 29.0 dB  
FS = 32 dB $\mu$ V/m

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$
$$NF = \text{Net Reading in dB}\mu\text{V}$$

### Example:

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

## 6.3 Field Strength to Power Calculation

As allowable by ANSI C63.26: 2015 section 5.2.7, the output power of unwanted emissions can be calculated from a field strength measurement. The transmitter measurements that follow in this report have applied the following calculation to the -13dBm limit to arrive an equivalent field strength limit at 3 meters as follows:

$E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$ ; where D is the measurement distance (in the far field region) in m.

### Example:

$$\text{Limit (dB}\mu\text{V/m)} = -13 - 20\log(3) + 104.8 = 82.25\text{dB}\mu\text{V/m}$$



#### 6.4 Test Equipment Used:

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	8181	Rohde & Schwarz	ESW44	11/16/2021	11/16/2022
Bilog Antenna	3133	ETS	3142C	8/26/2022	8/26/2023
Horn Antenna	4001	ETS	3117	2/23/2022	2/23/2023
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
Preamplifier	3918	Rohde&Schwarz	TS-PR18	1/13/2022	1/13/2023
Preamplifier	3920	Rohde & Schwarz	TS-PR26	1/13/2022	1/13/2023
Coaxial Cable	3074			1/13/2022	1/13/2023
Coaxial Cable	2588			1/13/2022	1/13/2023
Coaxial Cable	2593			1/13/2022	1/13/2023
Coaxial Cable	2592			1/13/2022	1/13/2023
Coaxial Cable	3339			1/13/2022	1/13/2023

#### 6.5 Software Utilized:

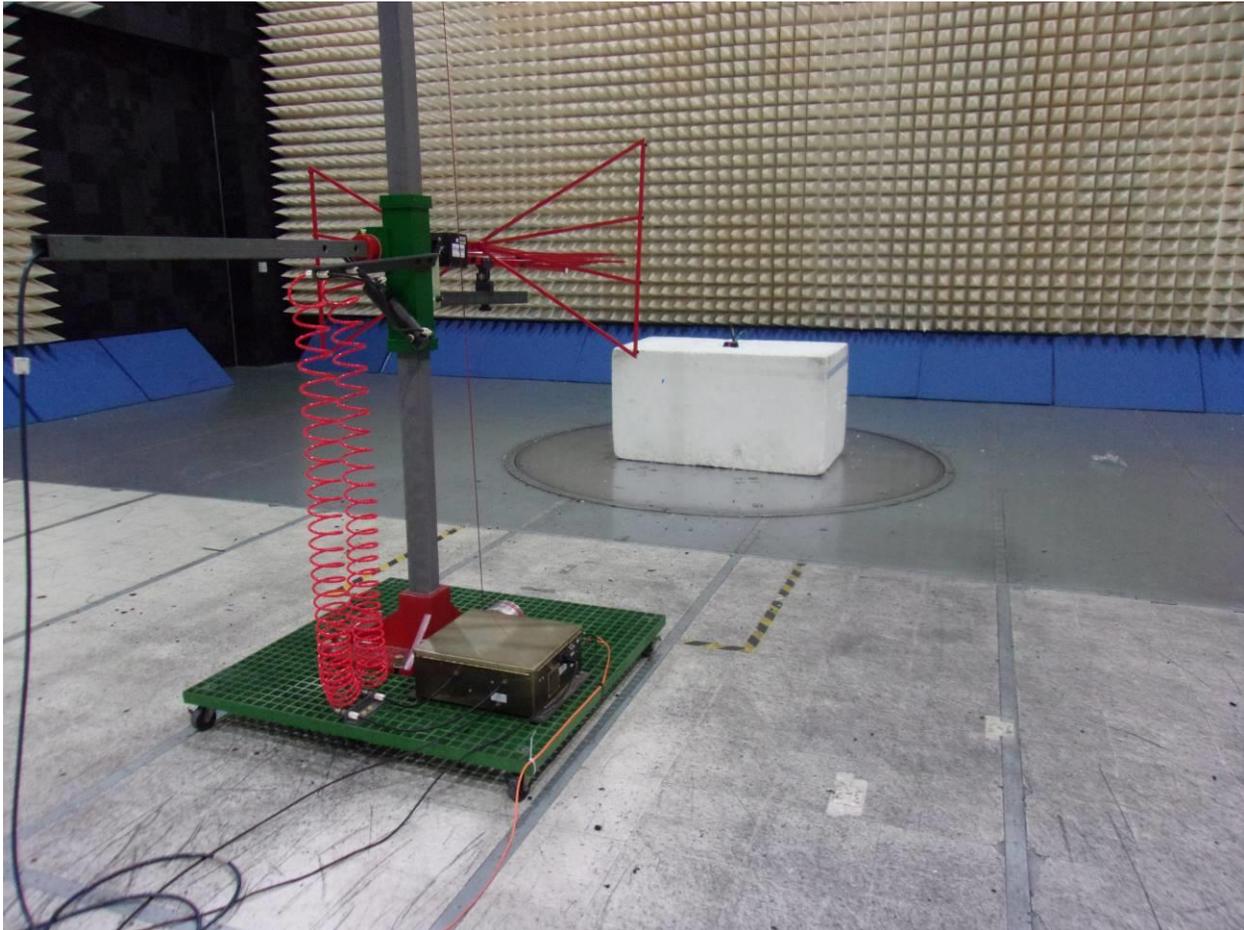
Name	Manufacturer	Version
EMC32	Rohde & Schwarz	Version 10.60.20

#### 6.6 Results:

The sample tested was found to Comply.

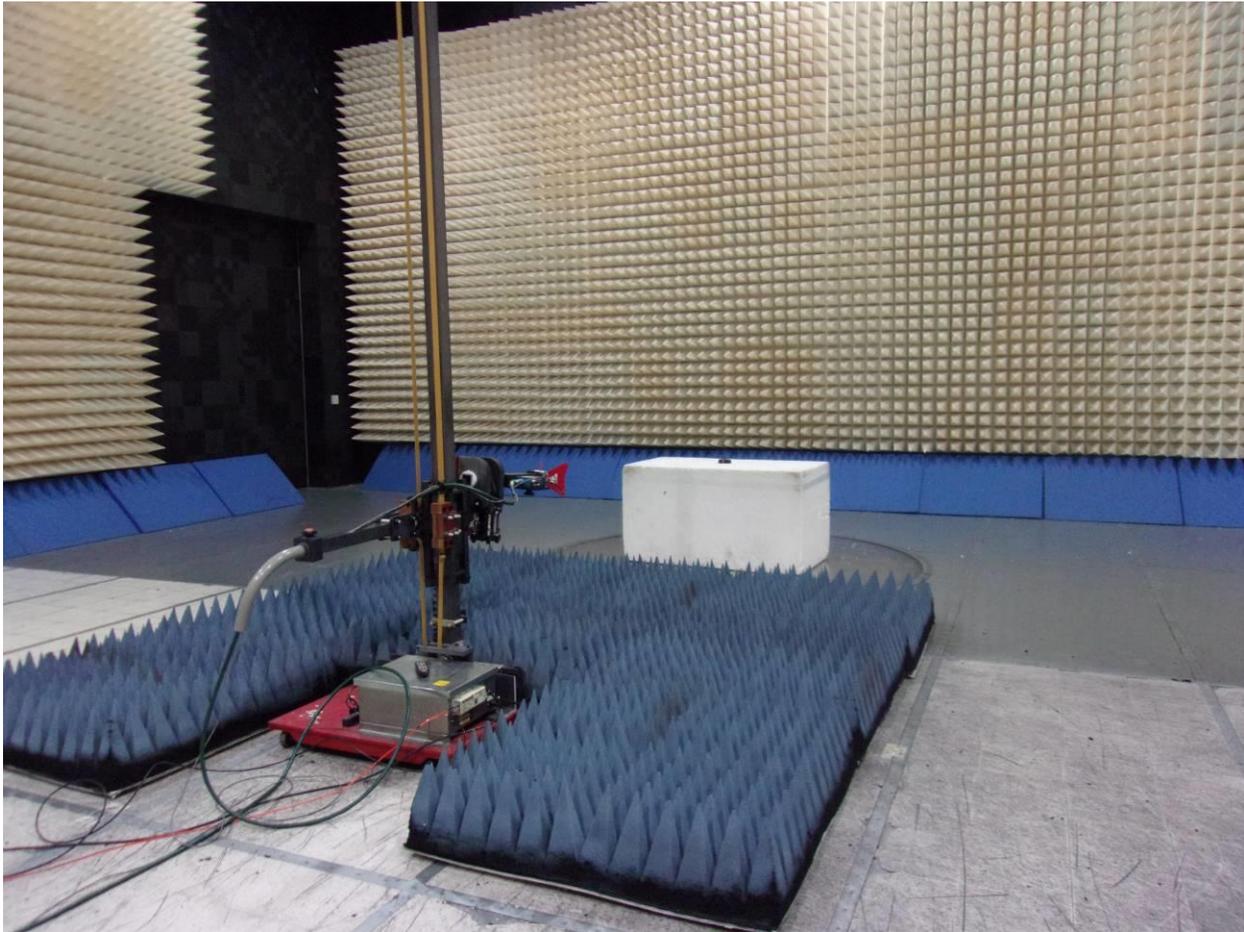


## 6.7 Setup Photographs: Radiated Emissions (FCC Part 15B/22/24/27/90 Below 1GHz)



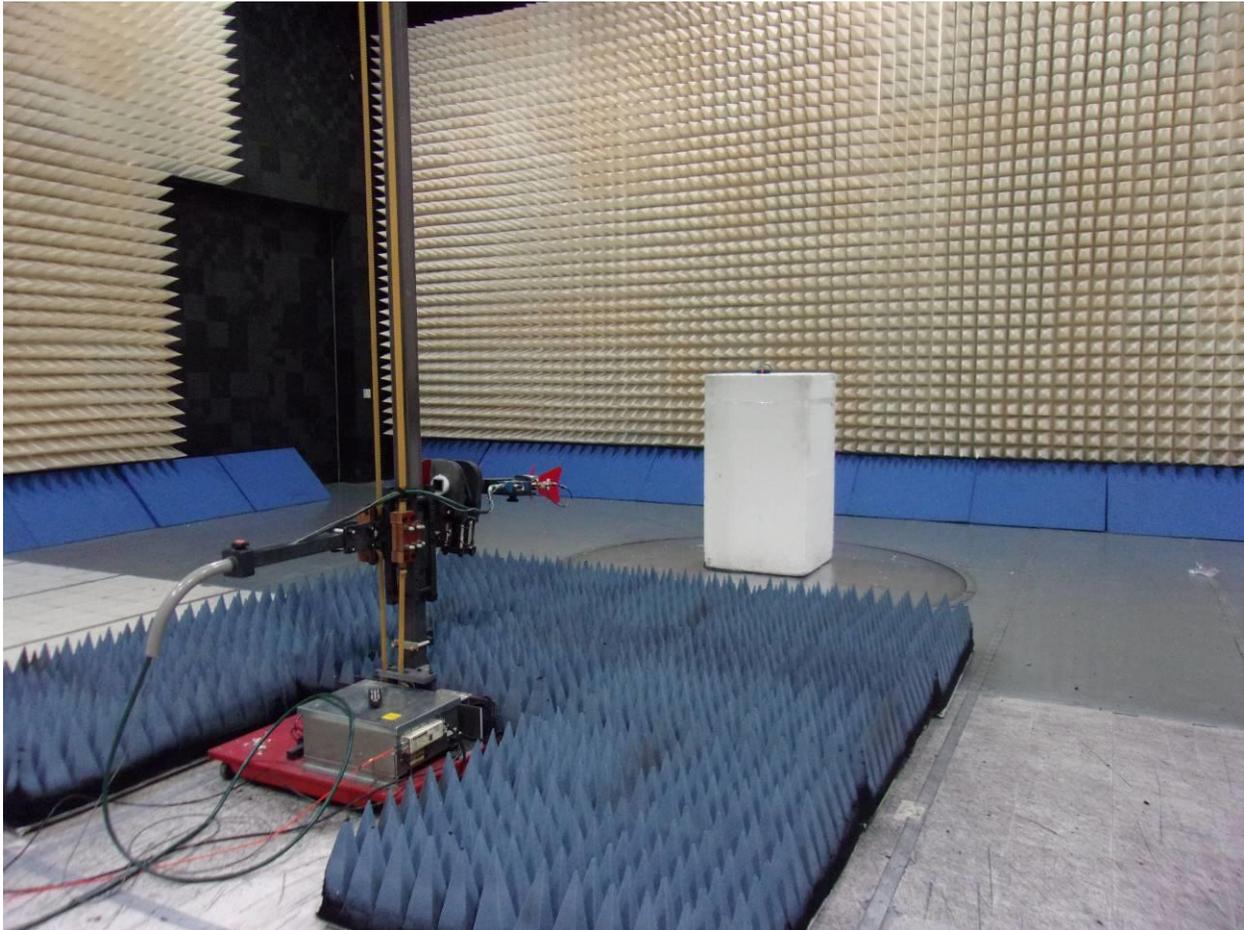


## 6.8 Setup Photographs: Radiated Emissions (FCC Part 15B Above 1GHz)



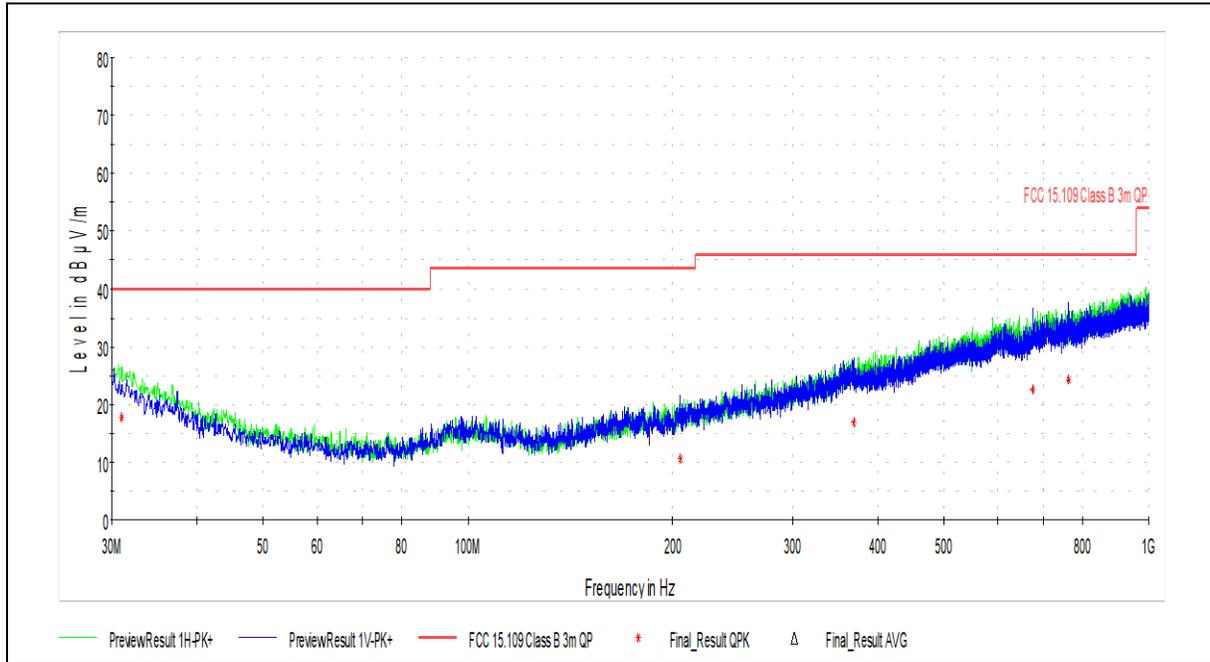


## 6.9 Setup Photographs: Radiated Emissions (FCC Part 22/24/27/90 Above 1GHz)





6.10 Plots/Data: Radiated Emissions, 30MHz – 1GHz (Transmitters Idle)



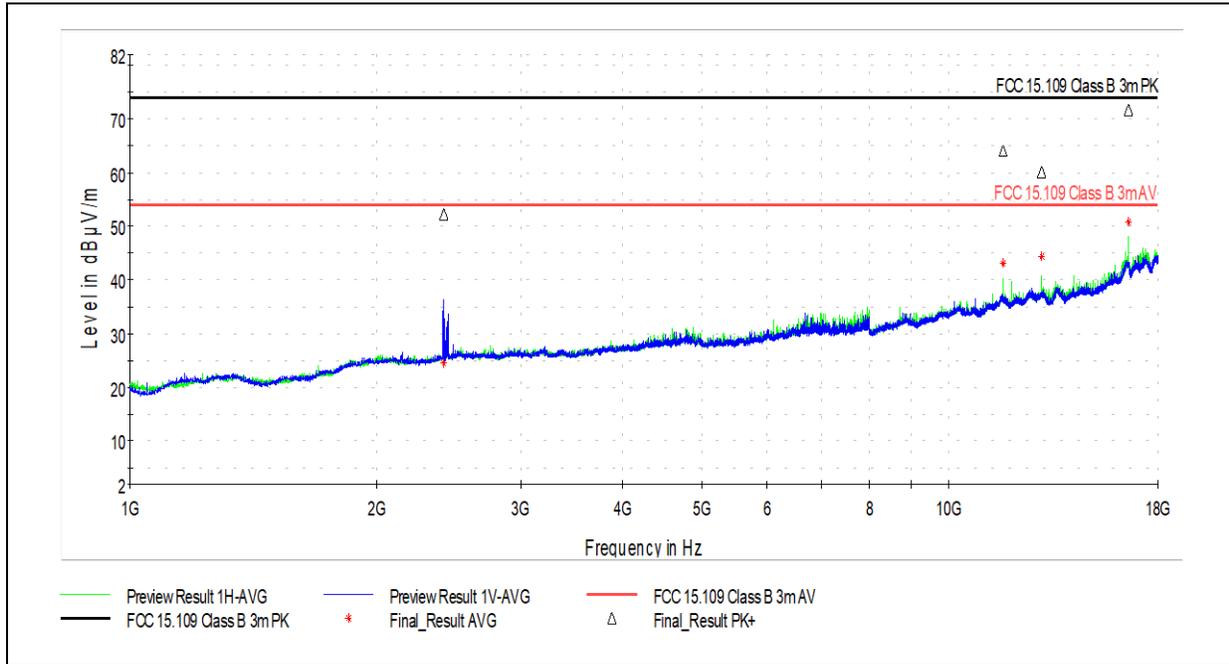
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.970000	17.68	40.000	22.32	120.000	159.0	H	160.0	24.82
205.246667	10.65	43.522	32.87	120.000	343.0	V	93.0	19.88
368.799444	16.86	46.021	29.16	120.000	223.0	V	60.0	25.92
674.888333	22.47	46.021	23.55	120.000	378.0	V	93.0	32.37
762.511667	24.37	46.021	21.65	120.000	105.0	V	188.0	33.41

Test Personnel:	David Perry	Test Date:	10/13/2022
Supervising/Reviewing Engineer:	Brian Lackey	Limit Applied:	Class B
(Where Applicable)	FCC Part 15B	Ambient Temperature:	21.8C
Product Standard:	ICES-003 Issue 7	Relative Humidity:	53.1%
Input Voltage:	Battery	Atmospheric Pressure:	978.5mbar
Pretest Verification w / Ambient Signals or BB Source:	Yes		

Deviations, Additions, or Exclusions: The FCC Part 15.109 limits are more stringent than the corresponding limits from ICES-003 Issue 7.



**6.11 Plots/Data: Radiated Emissions, 1GHz – 18GHz (Transmitters Idle)**



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2415.000000	52.28	73.979	21.70	1000.000	377.0	V	208.0	4.07
11661.500000	64.05	73.979	9.93	1000.000	127.0	H	124.0	19.27
12992.000000	60.04	73.979	13.94	1000.000	109.0	H	98.0	21.18
16561.000000	71.70	73.979	2.28	1000.000	362.0	H	266.0	26.32

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2415.000000	24.57	53.979	29.41	1000.000	377.0	V	208.0	4.07
11661.500000	42.99	53.979	10.99	1000.000	127.0	H	124.0	19.27
12992.000000	44.47	53.979	9.51	1000.000	109.0	H	98.0	21.18
16561.000000	50.77	53.979	3.21	1000.000	362.0	H	266.0	26.32

Test Personnel:	<u>Jeremiah Andrade</u>	Test Date:	<u>10/13/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>Class B</u>
(Where Applicable)	<u>FCC Part 15B</u>	Ambient Temperature:	<u>21.8C</u>
Product Standard:	<u>ICES-003 Issue 7</u>	Relative Humidity:	<u>53.1%</u>
Input Voltage:	<u>Battery</u>	Atmospheric Pressure:	<u>978.5mbar</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>		

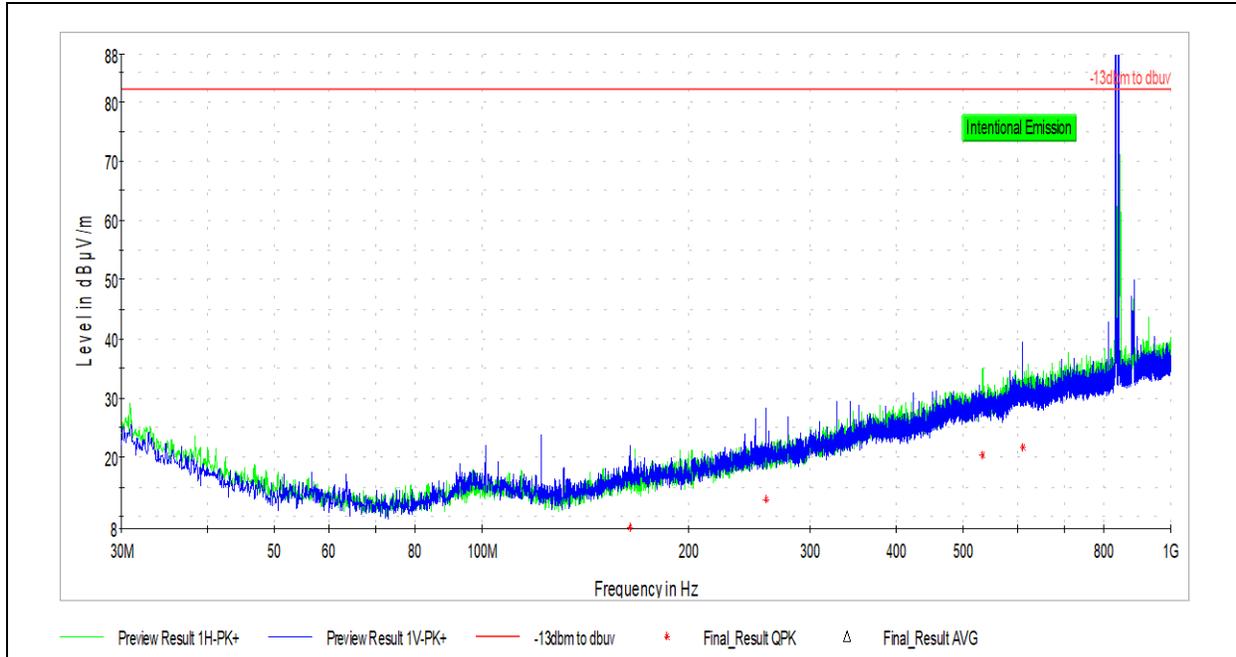
Deviations, Additions, or Exclusions: None



6.12 FCC Part 22 Radiated Spurious Emissions

6.12.1 Radiated Spurious Emissions, 30 MHz – 1 GHz

6.12.1.1 LTE B5



Note: The fundamental emission was present during the scan and is not subject to these limits.

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
101.295000	7.52	82.250	74.73	120.000	313.0	V	106.0	17.47
121.880556	5.63	82.250	76.62	120.000	362.0	V	60.0	16.08
164.183333	8.13	82.250	74.12	120.000	380.0	V	6.0	18.60
258.704444	12.79	82.250	69.46	120.000	356.0	V	216.0	22.19
533.322222	20.35	82.250	61.90	120.000	383.0	H	234.0	30.22
609.575000	21.74	82.250	60.51	120.000	369.0	V	327.0	31.69

Test Personnel: Jordan Coughenour  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 22  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/12/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None

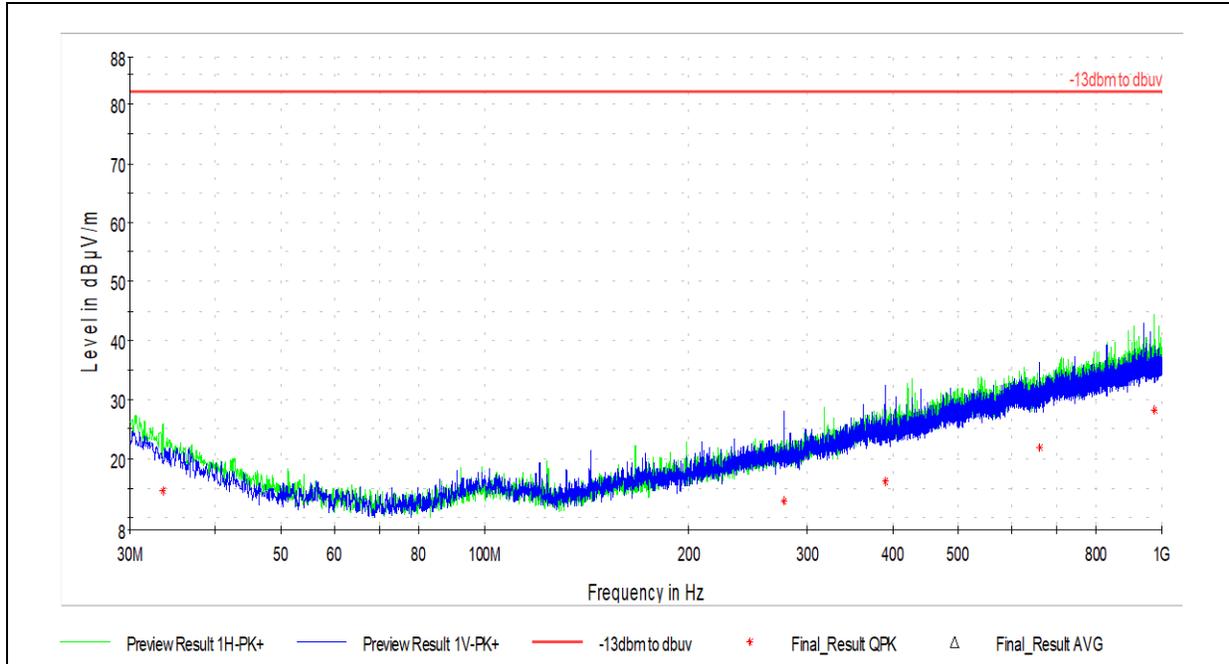




### 6.13 FCC Part 24 Radiated Spurious Emissions

#### 6.13.1 Radiated Spurious Emissions, 30 MHz – 1 GHz

##### 6.13.1.1 LTE B2



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.502778	14.53	82.250	67.72	120.000	400.0	H	28.0	23.44
143.436111	6.11	82.250	76.14	120.000	105.0	V	112.0	16.94
276.972778	12.81	82.250	69.44	120.000	270.0	V	124.0	22.57
389.923889	16.20	82.250	66.05	120.000	194.0	V	6.0	25.75
660.284444	21.85	82.250	60.40	120.000	331.0	V	104.0	31.82
975.803889	28.24	82.250	54.01	120.000	400.0	H	26.0	37.29

Test Personnel: Jordan Coughenour  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 24  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

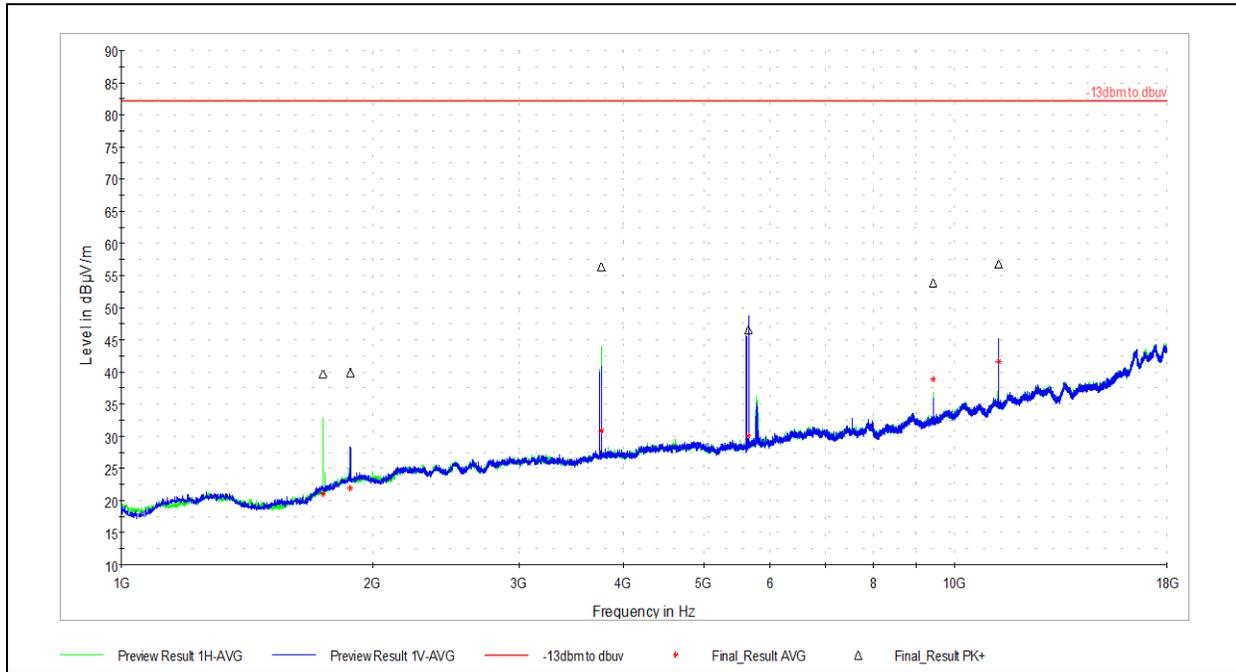
Test Date: 10/12/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



6.13.2 Radiated Spurious Emissions, 1 GHz – 18 GHz

6.13.2.1 LTE B2



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1745.500000	39.76	82.250	42.49	1000.000	399.0	H	14.0	0.77
1884.000000	39.90	82.250	42.35	1000.000	100.0	V	11.0	2.60
3768.500000	56.41	82.250	25.84	1000.000	257.0	H	264.0	7.17
5653.000000	46.55	82.250	35.70	1000.000	250.0	V	187.0	10.10
9422.000000	53.87	82.250	28.38	1000.000	256.0	H	254.0	16.08
11306.000000	56.90	82.250	25.35	1000.000	410.0	V	125.0	18.73

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1745.500000	21.03	82.250	61.22	1000.000	399.0	H	14.0	0.77
1884.000000	21.98	82.250	60.27	1000.000	100.0	V	11.0	2.60
3768.500000	30.91	82.250	51.34	1000.000	257.0	H	264.0	7.17
5653.000000	30.06	82.250	52.19	1000.000	250.0	V	187.0	10.10
9422.000000	38.95	82.250	43.30	1000.000	256.0	H	254.0	16.08
11306.000000	41.67	82.250	40.58	1000.000	410.0	V	125.0	18.73

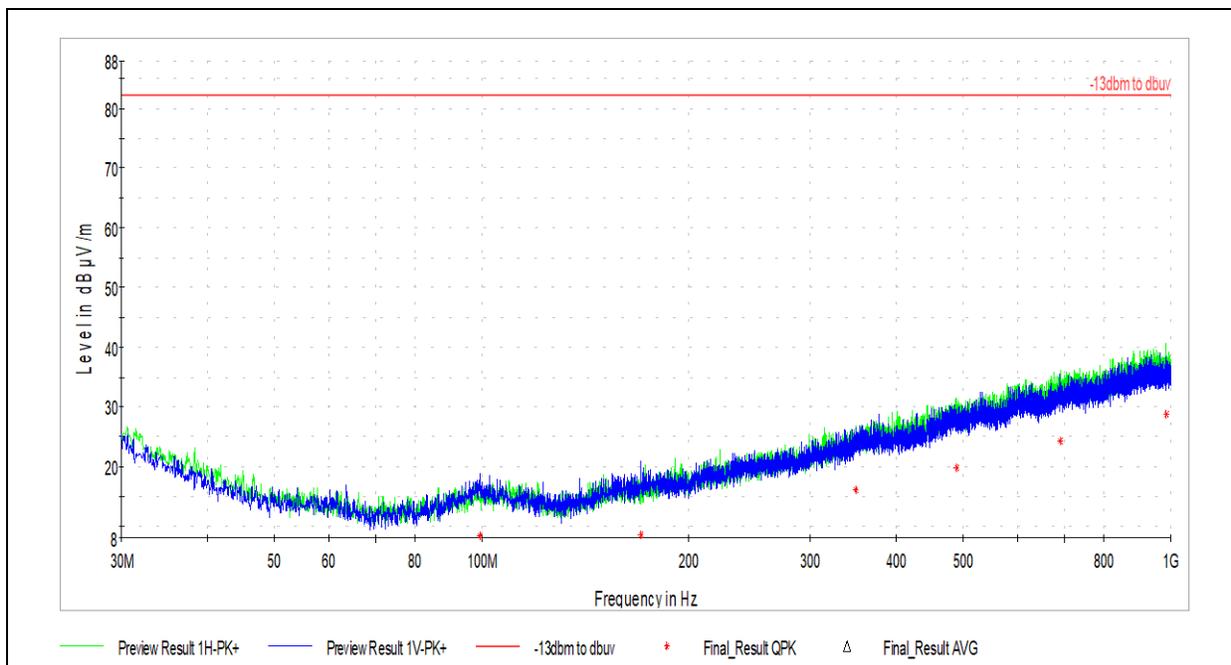
Test Personnel: Jeremiah Andrade  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) Brian Lackey  
 Product Standard: FCC Part 24  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/13/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



**6.14 FCC Part 27 Radiated Spurious Emissions**  
**6.14.1 Radiated Spurious Emissions, 30 MHz – 1 GHz**  
**6.14.1.1 LTE B4**



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
99.301111	8.38	82.250	73.87	120.000	105.0	V	296.0	17.48
170.111111	8.64	82.250	73.61	120.000	170.0	V	0.0	18.96
349.076111	15.96	82.250	66.29	120.000	324.0	H	61.0	25.68
488.648333	19.77	82.250	62.48	120.000	100.0	H	0.0	29.66
690.839444	24.22	82.250	58.03	120.000	400.0	H	0.0	33.75
985.072778	28.68	82.250	53.57	120.000	284.0	H	251.0	37.33

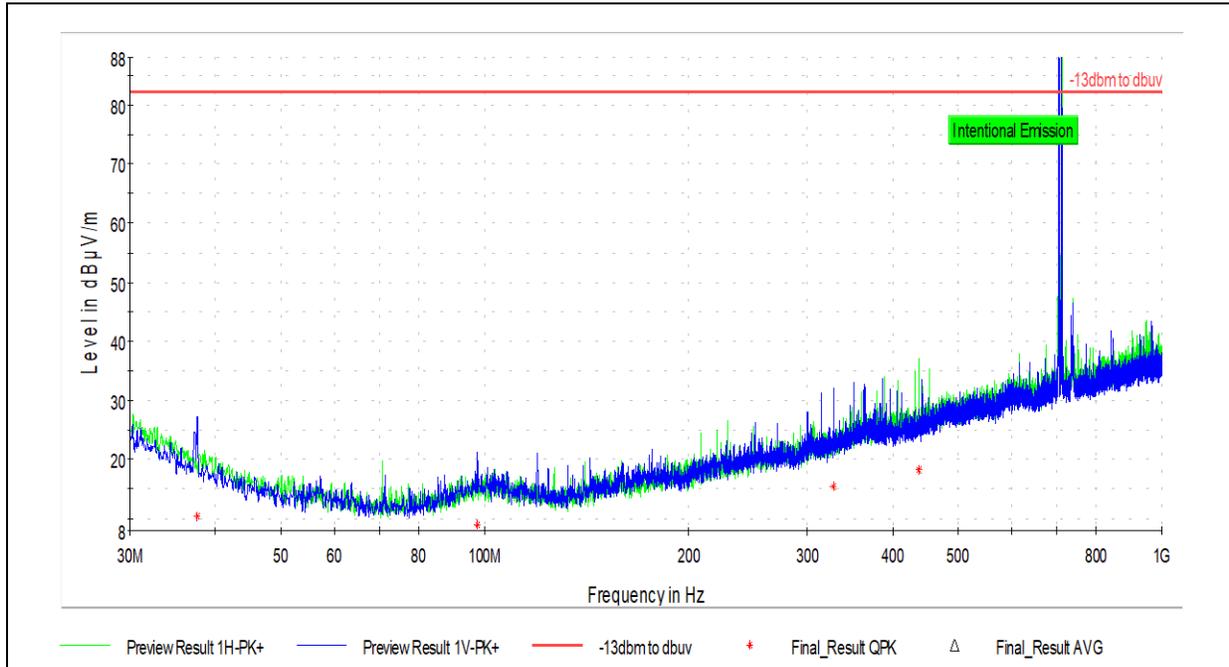
Test Personnel: Jordan Coughenour  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 27  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/12/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



6.14.1.2 LTE B12



Note: The fundamental emission was present during the scan and is not subject to these limits.

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.706111	10.36	82.250	71.89	120.000	216.0	V	338.0	19.57
97.630556	8.91	82.250	73.34	120.000	277.0	V	294.0	17.49
327.251111	15.39	82.250	66.86	120.000	400.0	V	71.0	24.43
437.292222	18.31	82.250	63.94	120.000	130.0	H	38.0	27.56

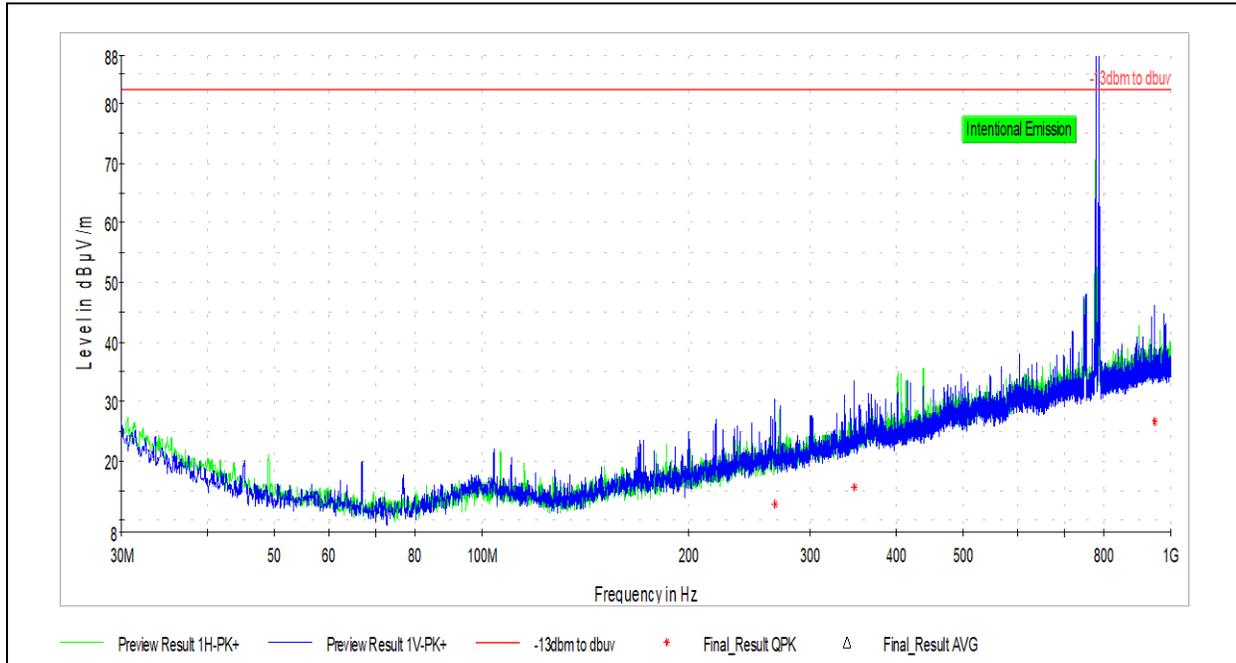
Test Personnel: Jordan Coughenour  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 27  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/12/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



6.14.1.3 LTE B13



Note: The fundamental emission was present during the scan and is not subject to these limits.

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
66.967778	4.46	82.250	77.79	120.000	123.0	V	157.0	13.59
104.312778	7.59	82.250	74.66	120.000	341.0	V	325.0	17.44
266.518333	12.79	82.250	69.46	120.000	301.0	V	187.0	22.43
347.028333	15.57	82.250	66.68	120.000	313.0	V	125.0	25.27
946.703889	26.58	82.250	55.67	120.000	106.0	V	219.0	36.07

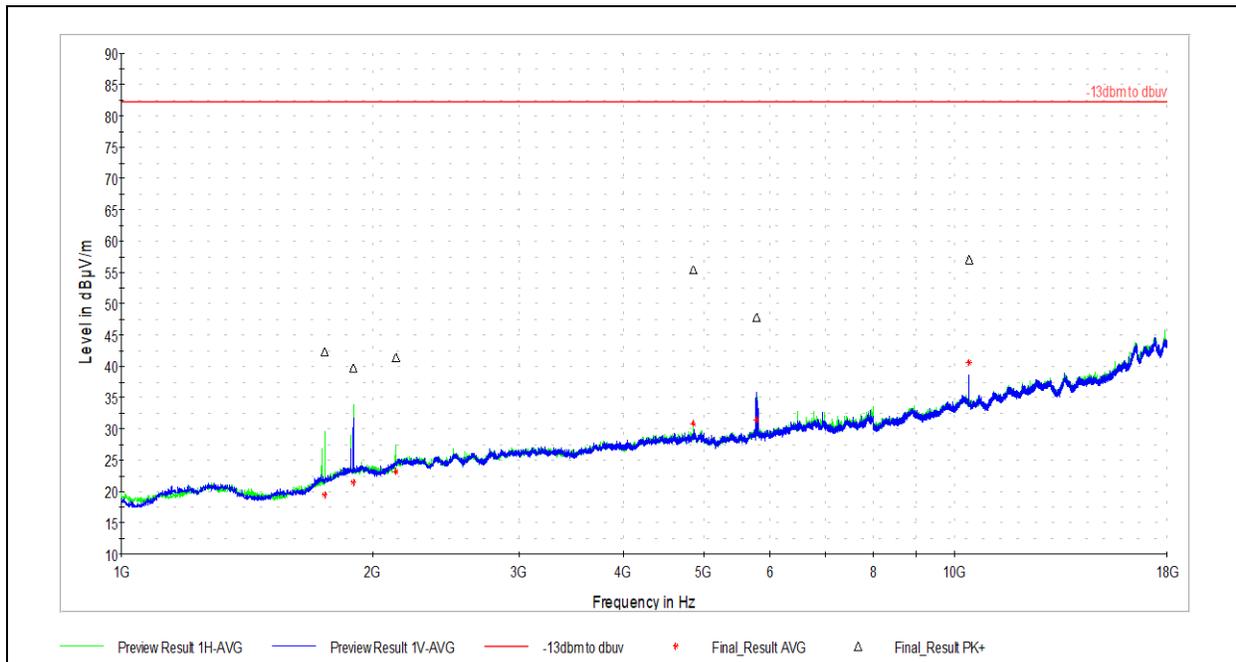
Test Personnel: Jordan Coughenour  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 27  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/12/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



**6.14.2 Radiated Spurious Emissions, 1 GHz – 18 GHz**  
**6.14.2.1 LTE B4**



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1753.500000	42.31	82.250	39.94	1000.000	342.0	H	332.0	0.83
1897.500000	39.74	82.250	42.51	1000.000	410.0	H	0.0	2.63
2134.000000	41.42	82.250	40.83	1000.000	360.0	H	123.0	3.05
4862.000000	55.46	82.250	26.79	1000.000	310.0	H	14.0	9.22
5782.500000	47.86	82.250	34.39	1000.000	341.0	V	13.0	10.41
10421.000000	56.95	82.250	25.30	1000.000	410.0	V	124.0	17.79

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1753.500000	19.41	82.250	62.84	1000.000	342.0	H	332.0	0.83
1897.500000	21.38	82.250	60.87	1000.000	410.0	H	0.0	2.63
2134.000000	23.14	82.250	59.11	1000.000	360.0	H	123.0	3.05
4862.000000	30.87	82.250	51.38	1000.000	310.0	H	14.0	9.22
5782.500000	31.44	82.250	50.81	1000.000	341.0	V	13.0	10.41
10421.000000	40.60	82.250	41.65	1000.000	410.0	V	124.0	17.79

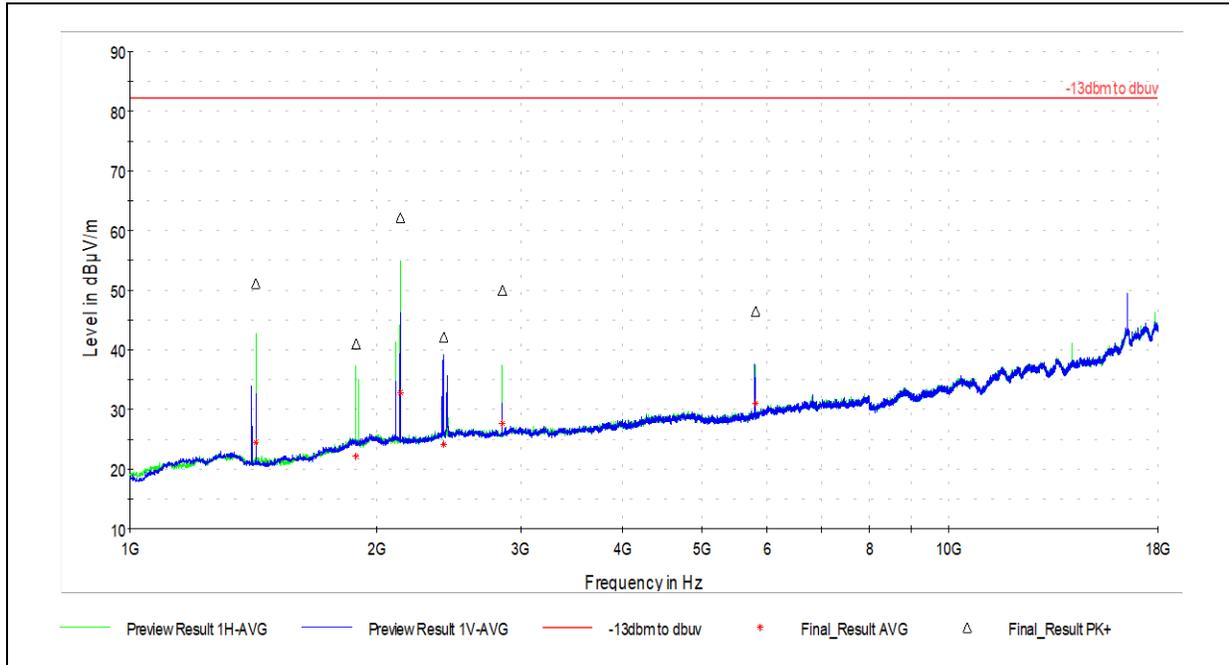
Test Personnel: Jeremiah Andrade  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 27  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/13/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



6.14.2.2 LTE B12



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1423.500000	51.11	82.250	31.14	1000.000	363.0	H	197.0	-0.83
1886.500000	40.93	82.250	41.32	1000.000	410.0	H	171.0	2.69
2135.500000	62.16	82.250	20.09	1000.000	248.0	H	216.0	3.07
2414.500000	42.16	82.250	40.09	1000.000	100.0	V	120.0	4.07
2847.500000	49.97	82.250	32.28	1000.000	347.0	H	158.0	4.74
5802.500000	46.55	82.250	35.70	1000.000	100.0	H	114.0	10.49

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1423.500000	24.50	82.250	57.75	1000.000	363.0	H	197.0	-0.83
1886.500000	22.22	82.250	60.03	1000.000	410.0	H	171.0	2.69
2135.500000	32.82	82.250	49.43	1000.000	248.0	H	216.0	3.07
2414.500000	24.15	82.250	58.10	1000.000	100.0	V	120.0	4.07
2847.500000	27.66	82.250	54.59	1000.000	347.0	H	158.0	4.74
5802.500000	30.98	82.250	51.27	1000.000	100.0	H	114.0	10.49

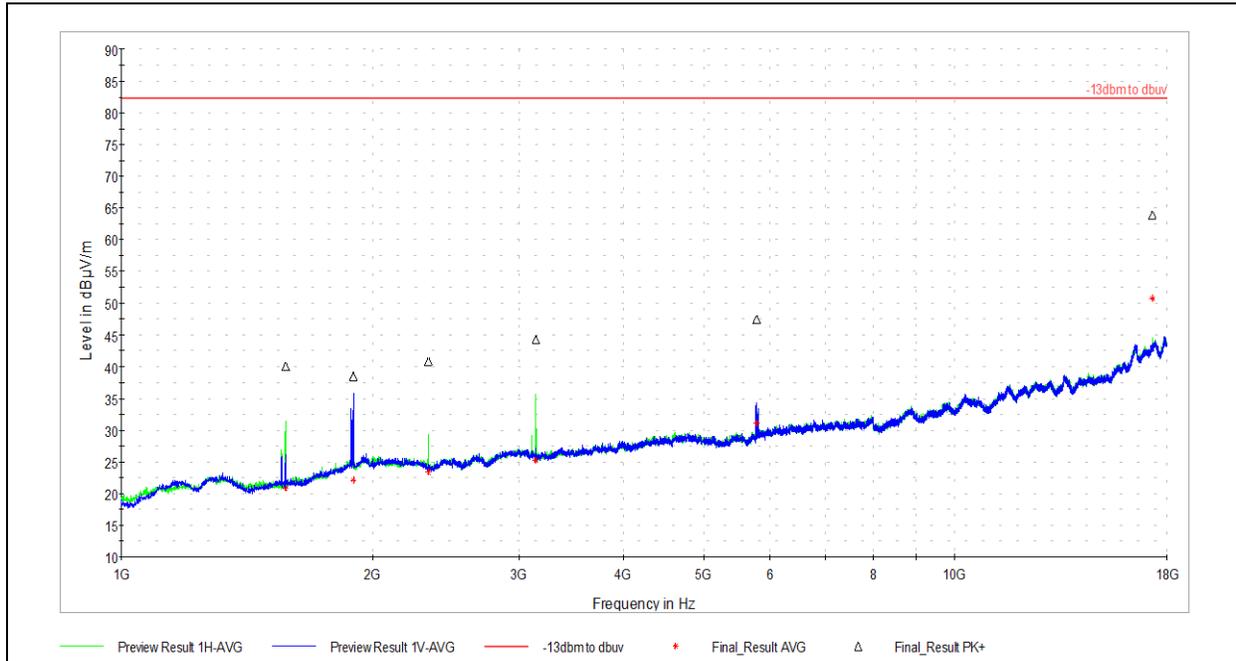
Test Personnel: Jeremiah Andrade  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 27  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/13/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



6.14.2.3 LTE B13



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1572.500000	40.09	82.250	42.16	1000.000	362.0	H	137.0	-1.02
1897.000000	38.40	82.250	43.85	1000.000	311.0	V	236.0	2.73
2334.500000	40.94	82.250	41.31	1000.000	372.0	H	194.0	3.55
3145.500000	44.32	82.250	37.93	1000.000	100.0	H	281.0	5.75
5787.000000	47.48	82.250	34.77	1000.000	396.0	V	181.0	10.43
17270.000000	64.00	82.250	18.25	1000.000	100.0	H	23.0	26.82

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1572.500000	20.85	82.250	61.40	1000.000	362.0	H	137.0	-1.02
1897.000000	22.09	82.250	60.16	1000.000	311.0	V	236.0	2.73
2334.500000	23.39	82.250	58.86	1000.000	372.0	H	194.0	3.55
3145.500000	25.29	82.250	56.96	1000.000	100.0	H	281.0	5.75
5787.000000	31.00	82.250	51.25	1000.000	396.0	V	181.0	10.43
17270.000000	50.76	82.250	31.49	1000.000	100.0	H	23.0	26.82

Test Personnel: Jeremiah Andrade  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 27  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/13/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None

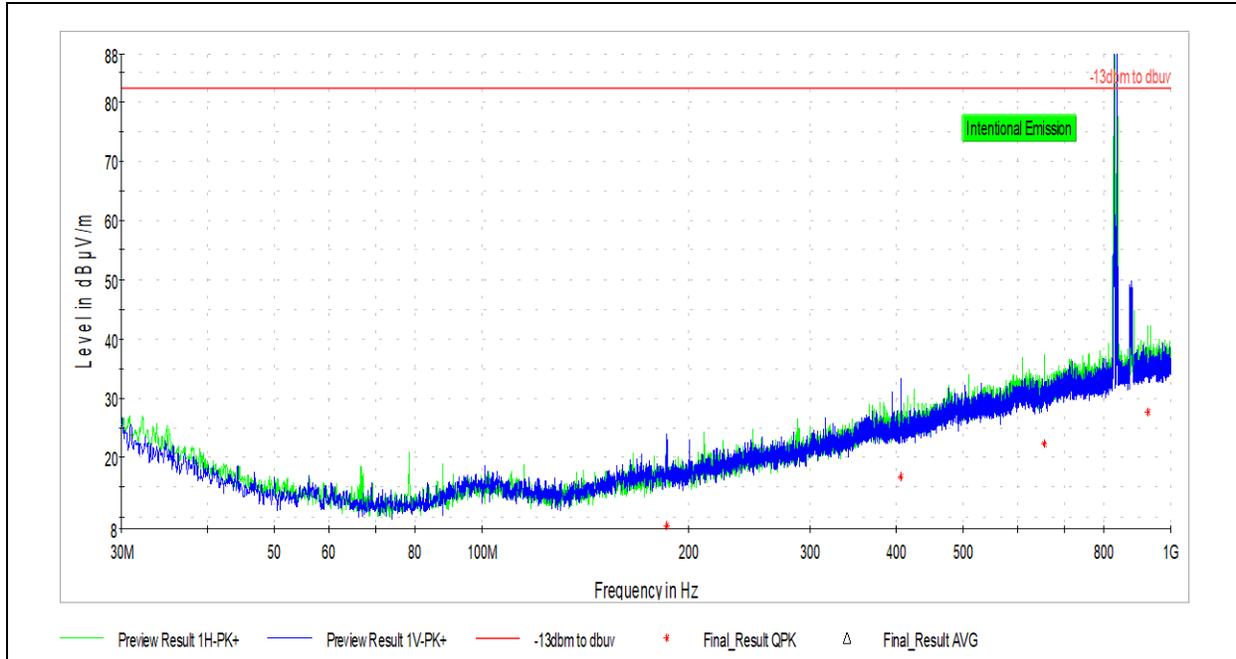




**6.15 FCC Part 90 Radiated Spurious Emissions**

**6.15.1 Radiated Spurious Emissions, 30 MHz – 1 GHz**

**6.15.1.1 LTE B26**



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
78.500000	5.41	82.250	76.84	120.000	352.0	H	54.0	14.50
87.715000	5.58	82.250	76.67	120.000	177.0	H	6.0	15.34
185.631111	8.57	82.250	73.68	120.000	369.0	V	124.0	19.08
405.497778	16.72	82.250	65.53	120.000	149.0	V	0.0	25.89
655.272778	22.41	82.250	59.84	120.000	400.0	H	268.0	32.47
925.741111	27.67	82.250	54.58	120.000	252.0	H	168.0	37.00

Test Personnel: Jeremiah Andrade  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 90  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

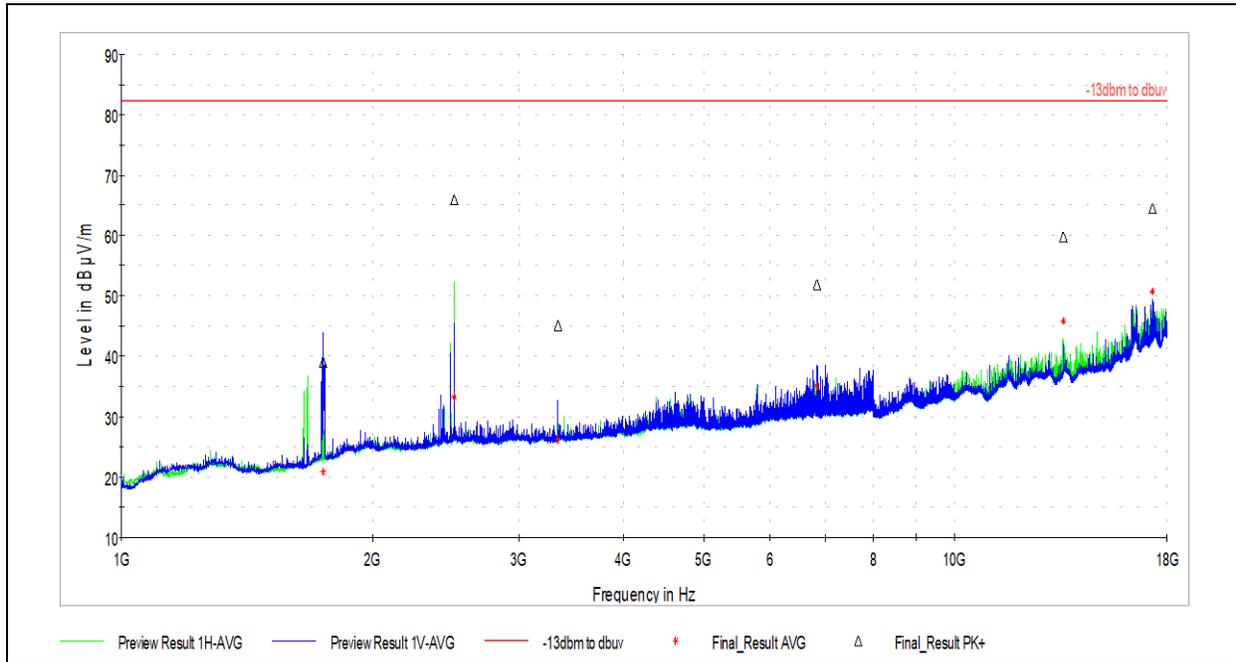
Test Date: 10/13/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None



6.15.2 Radiated Spurious Emissions, 1 GHz – 18 GHz

6.15.2.1 LTE B26



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1745.500000	39.00	82.250	43.25	1000.000	181.0	V	182.0	1.13
2507.500000	65.86	82.250	16.39	1000.000	370.0	H	218.0	4.60
3343.500000	45.18	82.250	37.07	1000.000	134.0	H	297.0	5.92
6840.000000	51.96	82.250	30.29	1000.000	279.0	V	99.0	11.97
13524.500000	59.80	82.250	22.45	1000.000	155.0	H	100.0	20.98
17295.000000	64.51	82.250	17.74	1000.000	164.0	V	0.0	26.79

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1745.500000	20.89	82.250	61.36	1000.000	181.0	V	182.0	1.13
2507.500000	33.18	82.250	49.07	1000.000	370.0	H	218.0	4.60
3343.500000	26.11	82.250	56.14	1000.000	134.0	H	297.0	5.92
6840.000000	34.96	82.250	47.29	1000.000	279.0	V	99.0	11.97
13524.500000	45.76	82.250	36.49	1000.000	155.0	H	100.0	20.98
17295.000000	50.68	82.250	31.57	1000.000	164.0	V	0.0	26.79

Test Personnel: Jeremiah Andrade  
 Supervising/Reviewing Engineer: Brian Lackey  
 (Where Applicable)  
 Product Standard: FCC Part 90  
 Input Voltage: Battery  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 10/13/2022  
 Limit Applied: -13dBm converted to field strength  
 Ambient Temperature: 22.5C  
 Relative Humidity: 46.4%  
 Atmospheric Pressure: 984.2mbar

Deviations, Additions, or Exclusions: None





## 7 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	2/14/2023	105090357LEX-001	BZ	JTS	Original Issue