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# LIFE ALERT EMERGENCY RESPONSE, INC. TEST REPORT

**SCOPE OF WORK**

EMC TESTING – LIFE ALERT HELP PERS LTE DECT (921)

**REPORT NUMBER**

104539488LEX-001.4

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**EMC TEST REPORT**  
(FULL COMPLIANCE)

**Report Number:** 104539488LEX-001.4

**Project Number:** G104539488

**Report Issue Date:** 11/4/2021

**Model(s) Tested:** Life Alert HELP PERS LTE DECT (921)

**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:**  
LIFE ALERT EMERGENCY RESPONSE, INC.  
16027 Ventura Blvd  
Ste 400  
Encino, CA 91436-2747  
USA

Report prepared by



Ben Coolbear,  
Engineer

Report reviewed by



Bryan Taylor,  
Team Leader

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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 C63.10:2013)	Pass
7	Conducted Emissions (ANSI C63.4:2014)	Pass



### 3 Client Information

This product was tested at the request of the following:

Client Information	
<b>Client Name:</b>	LIFE ALERT EMERGENCY RESPONSE, INC.
<b>Address:</b>	16027 Ventura Blvd Ste 400 Encino, CA 91436-2747 USA
<b>Contact:</b>	Yasha Sigal
<b>Telephone:</b>	1+(818)700-7000x1683
<b>Email:</b>	yasha@lifealert.com
Manufacturer Information	
<b>Manufacturer Name:</b>	LIFE ALERT EMERGENCY RESPONSE, INC.
<b>Manufacturer Address:</b>	16027 Ventura Blvd Ste 400 Encino, CA 91436-2747 USA



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

Equipment Under Test	
Product Name	Life Alert HELP PERS LTE DECT (921)
Model Number	Life Alert HELP PERS LTE DECT (921)
Serial Number	1218000115
Hardware Version	V.0.3
Software Version	Ver 1.0
Supported Cellular Transmit Bands	LTE Bands 2, 4, 5, 17
Embedded Module	Gemalto Centurion ALS3.US R4 and DSP Group DECT Module DHAN-M
Embedded Module hardware Version	Revision 2,-4
Embedded Module Software Version	04.003
FCCID (Cellular Module)	QIPALS3-USR4
FCCID (DECT Module)	2AOUK-DHAN.
Receive Date	12/22/2021
Test Start Date	12/22/2020
Test End Date	1/8/2021
Device Received Condition	Good
Test Sample Type	Production
Rated Voltage	5VDC via a 120V60Hz AC Power adapter
Description of Equipment Under Test (provided by client)	
The Life Alert HELP PERS LTE DECT (921) is an emergency alert system with an embedded wireless device.	

##### 4.1 Variant Models:

There were no variant models covered by this evaluation.



## 5 System Setup and Method

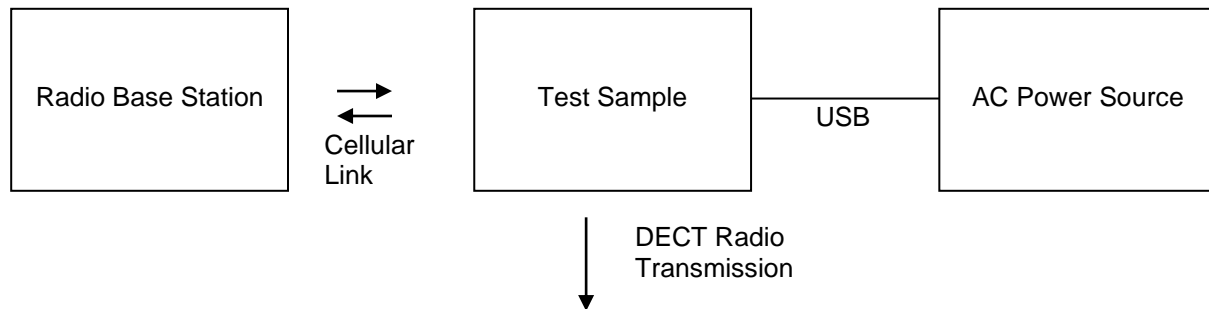
### 5.1 Method:

Configuration as required by ANSI C63.4:2014, ANSI C63.10:2013, and ANSI C63.26:2015.

No.	Descriptions of EUT Exercising
1	The Life Alert HELP PERS LTE DECT (921) was powered for the duration of the evaluation.
2	A call was established with the Cellular Radio base station emulator. The call was monitored for throughput and signal quality. During this testing the DECT radio module was also transmitting.

Cables					
#	Description	Length (m)	Shielding	Ferrites	Termination
1	Power Cable	1	None	None	None

### 5.2 EUT Block Diagram:





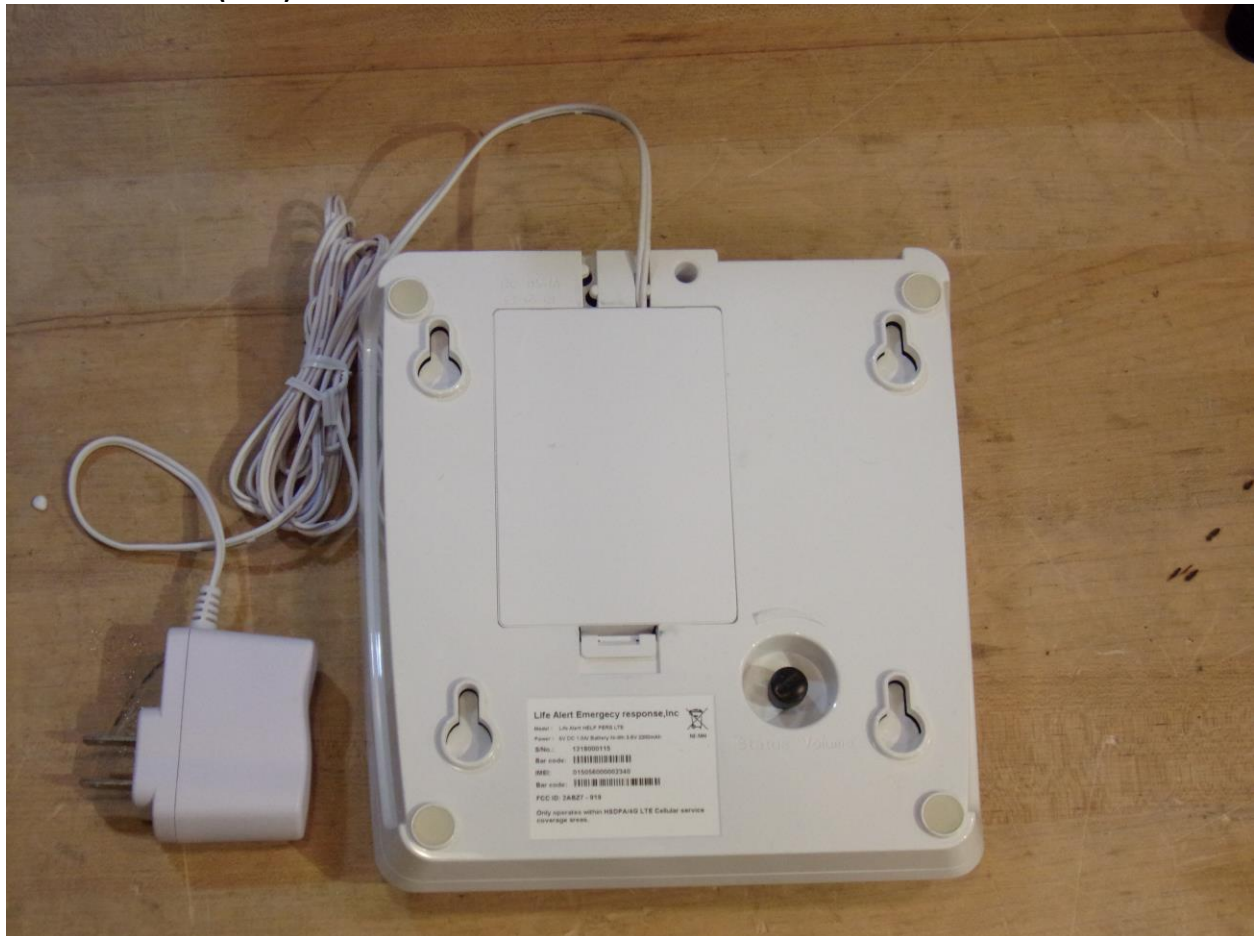
**5.3 EUT Photo (Front):**







5.4 EUT Photo (Back):





## 6 Radiated Emissions

### 6.1 Method

Tests are performed in accordance with ANSI C63.4:2014, and ANSI C63.10:2013.

**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 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	3900	Rohde & Schwarz	ESU40	10/5/2020	10/5/2021
Bilog Antenna (30MHz-1GHz)	7085	SunAR	JB6	9/4/2020	9/4/2021
Horn Antenna	4001	ETS	3117	1/16/2020	1/16/2021
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
3m Cable Antenna→Preamp	3074			12/21/2020	12/21/2021
3m Cable Preamplifier	3918	Rohde & Schwarz	TS-PR18	12/21/2020	12/21/2021
3m Cable Preamp→Chamber	2588			12/21/2020	12/21/2021
3m Cable Chamber→Control Room	2593			12/21/2020	12/21/2021
3m Cable Control Room→Receiver	2592			12/21/2020	12/21/2021
10m Cable Antenna→Preamp	3339			12/21/2020	12/21/2021
10m Cable Preamplifier	7019	Rohde & Schwarz	TS-PR3	12/21/2020	12/21/2021
10m Cable Preamp→Chamber	3172			12/21/2020	12/21/2021
10m Cable Chamber→Control Room	2590			12/21/2020	12/21/2021
10m Cable Control Room→Receiver	2589			12/21/2020	12/21/2021

#### 6.5 Software Utilized:

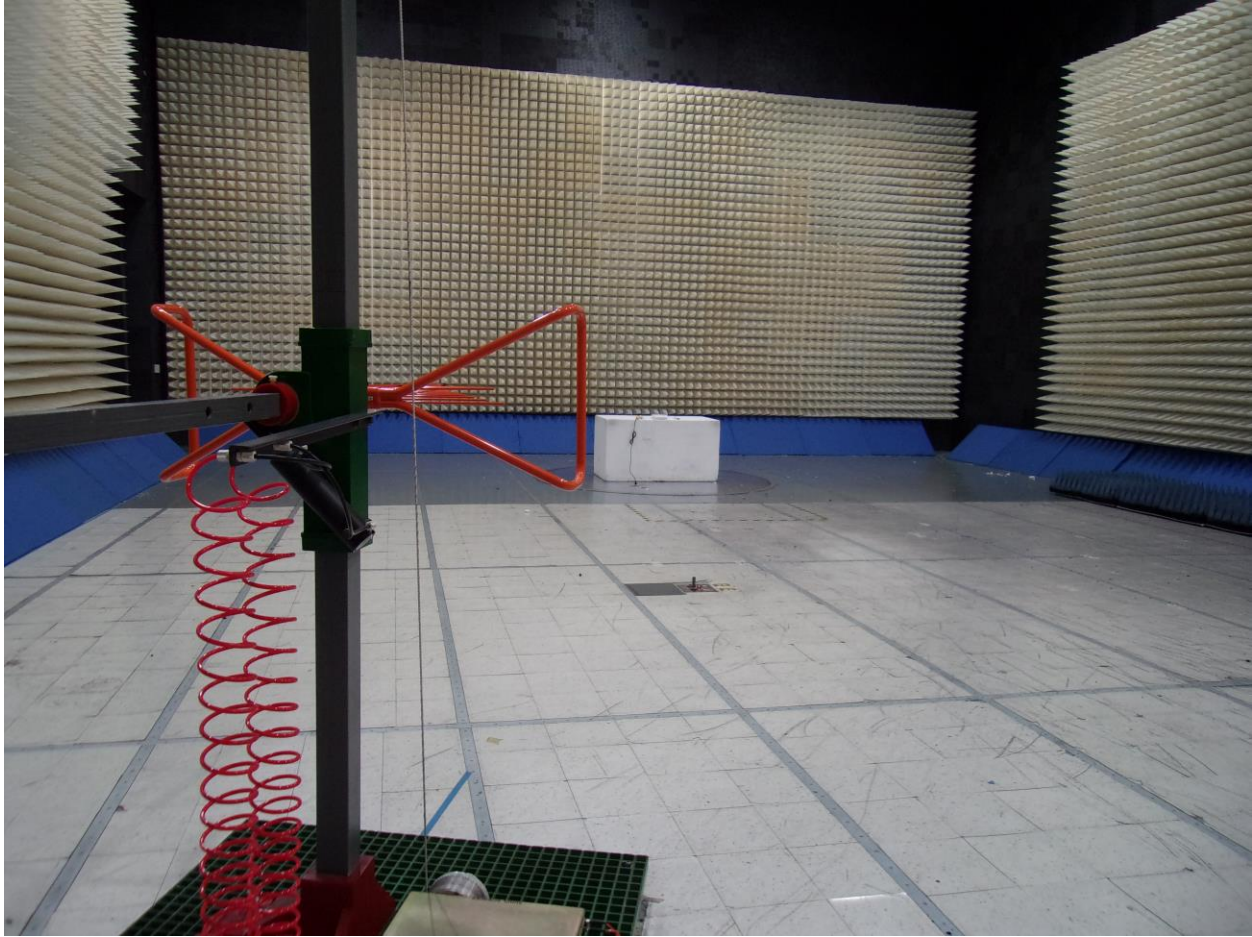
Name	Manufacturer	Version
EMC32	Rohde & Schwarz	Version 9.15.02

#### 6.6 Results:

The sample tested was found to Comply.



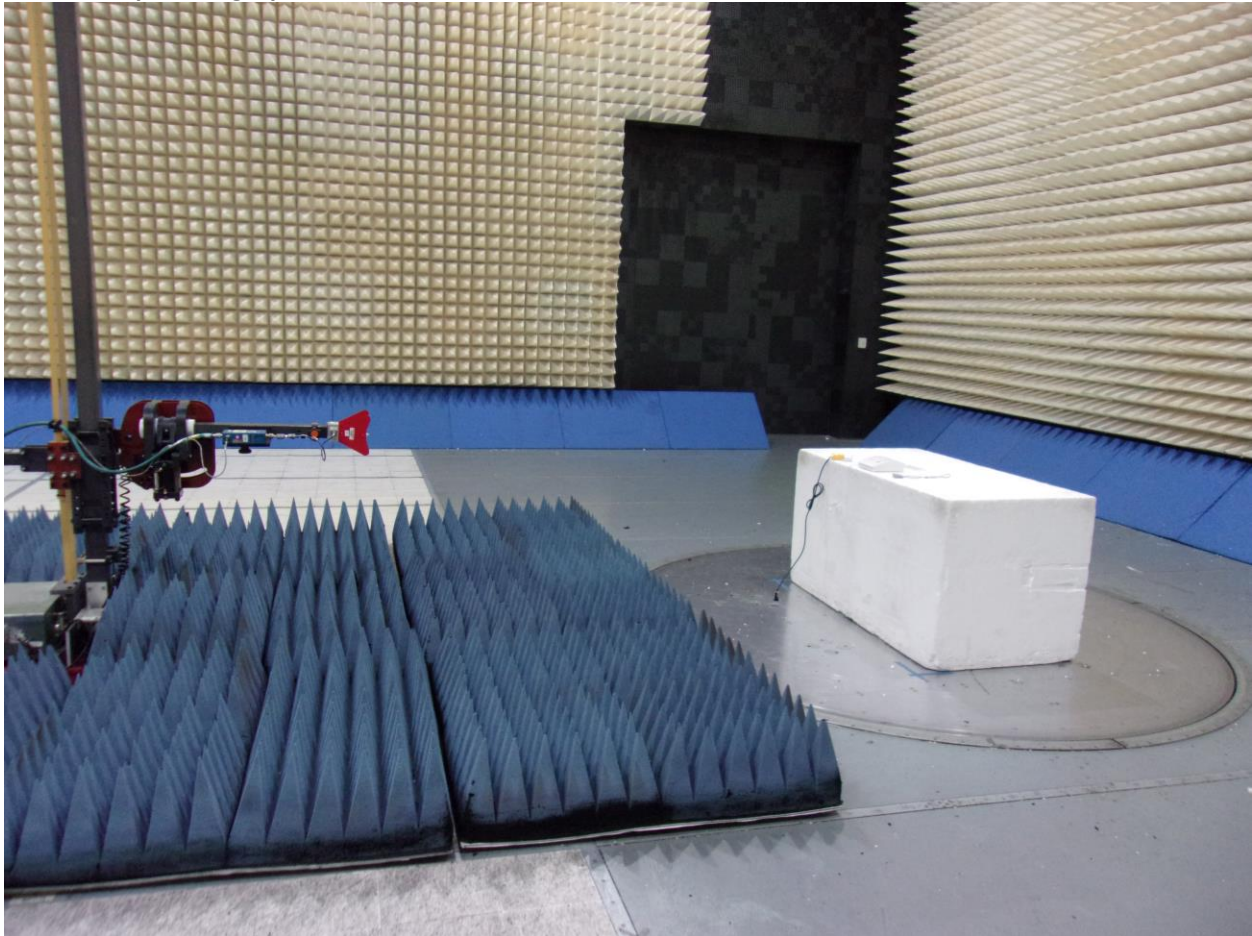
### 6.7 Setup Photographs: Radiated Emissions (FCC Part 15B Below 1GHz)





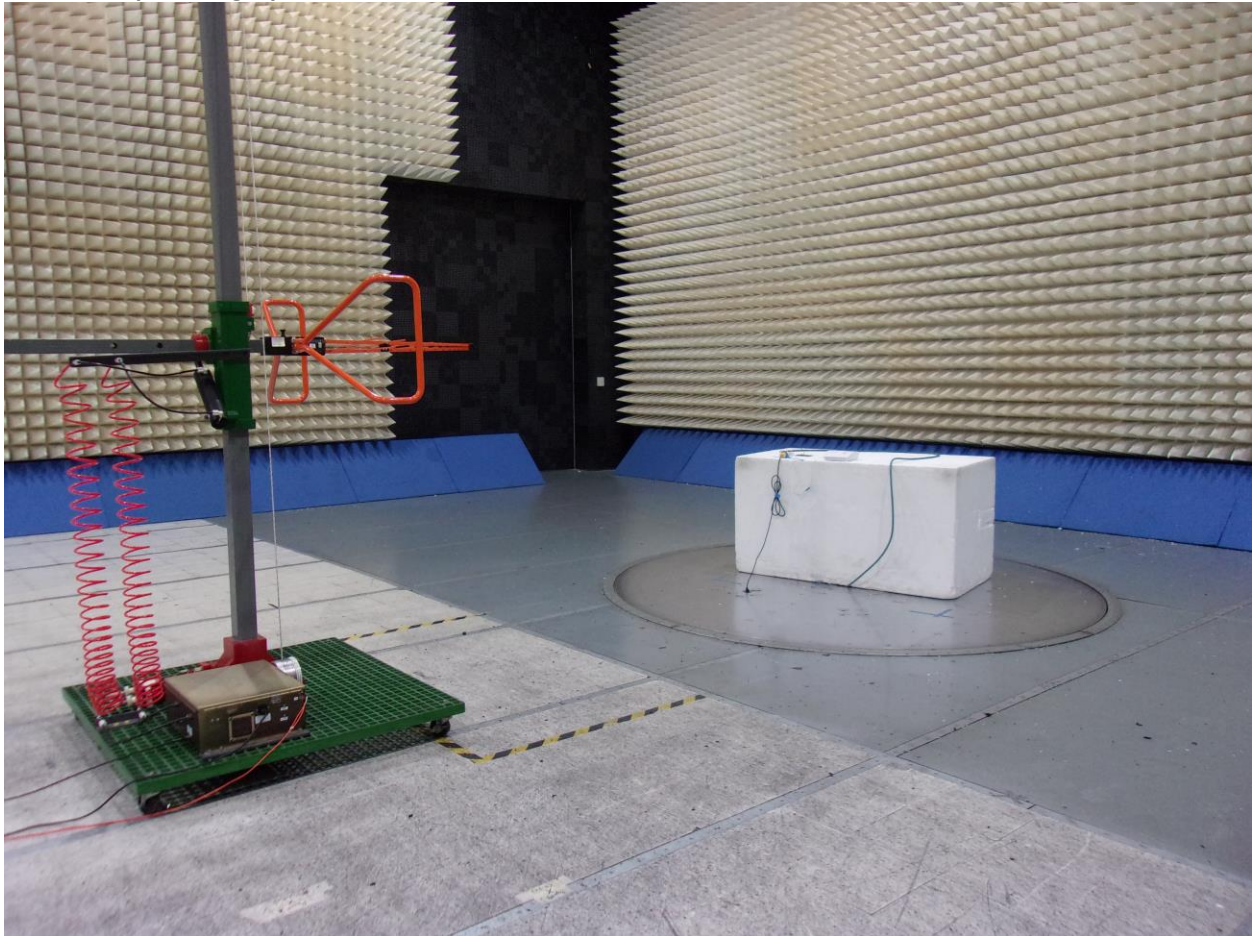


### 6.8 Setup Photographs: Radiated Emissions (FCC Part 15B Above 1GHz)





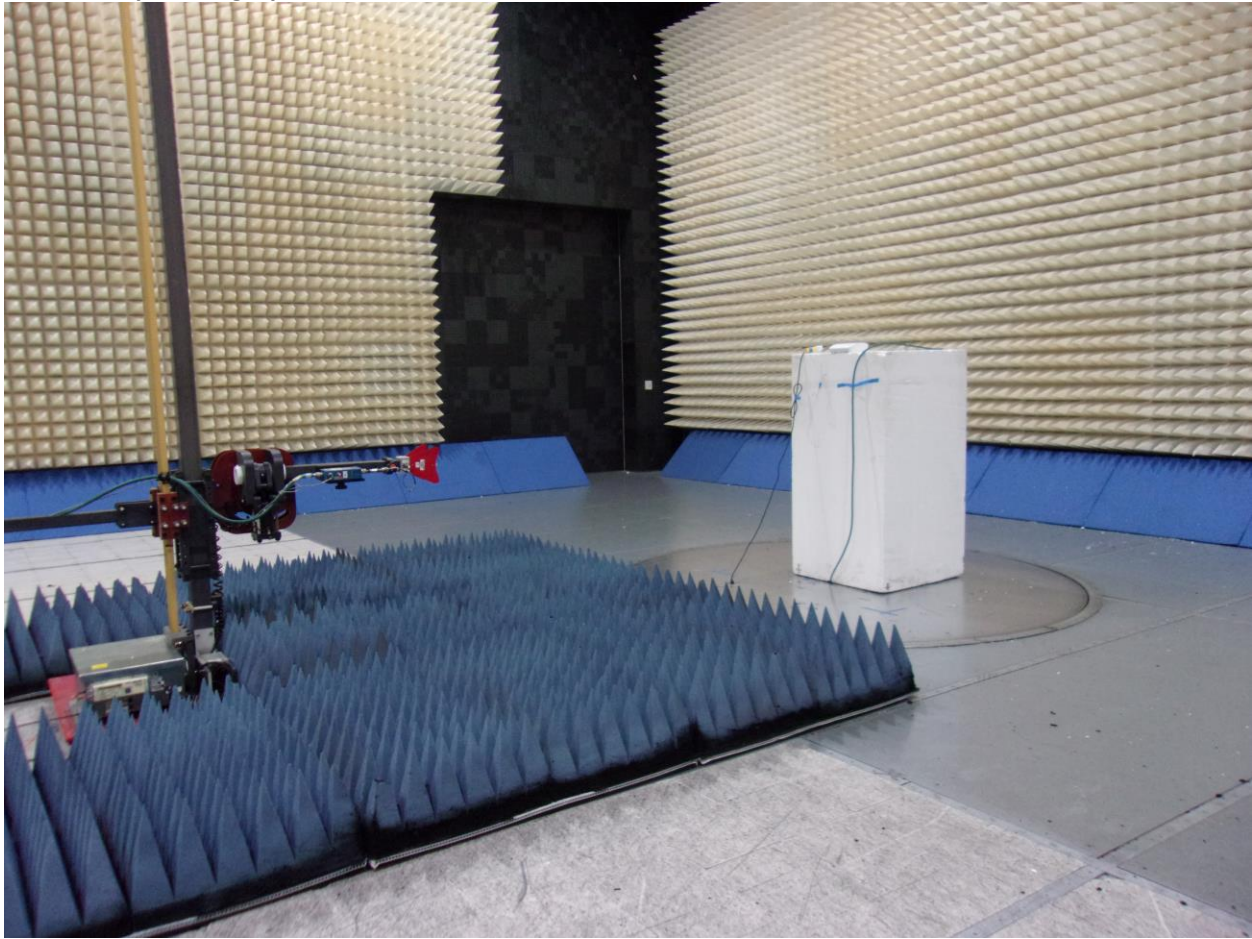
### 6.9 Setup Photographs: Radiated Emissions (FCC Part 22/24/27/90 Below 1GHz)







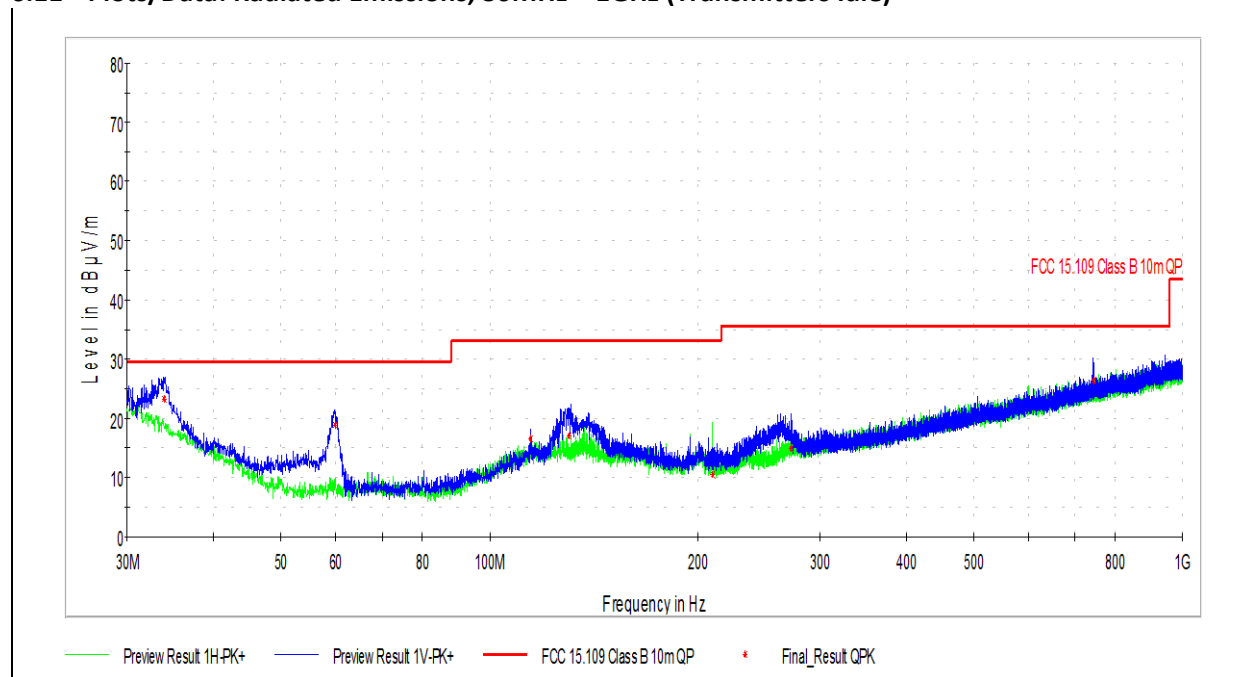
### 6.10 Setup Photographs: Radiated Emissions (FCC Part 15C/22/24/27/90 Above 1GHz)







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



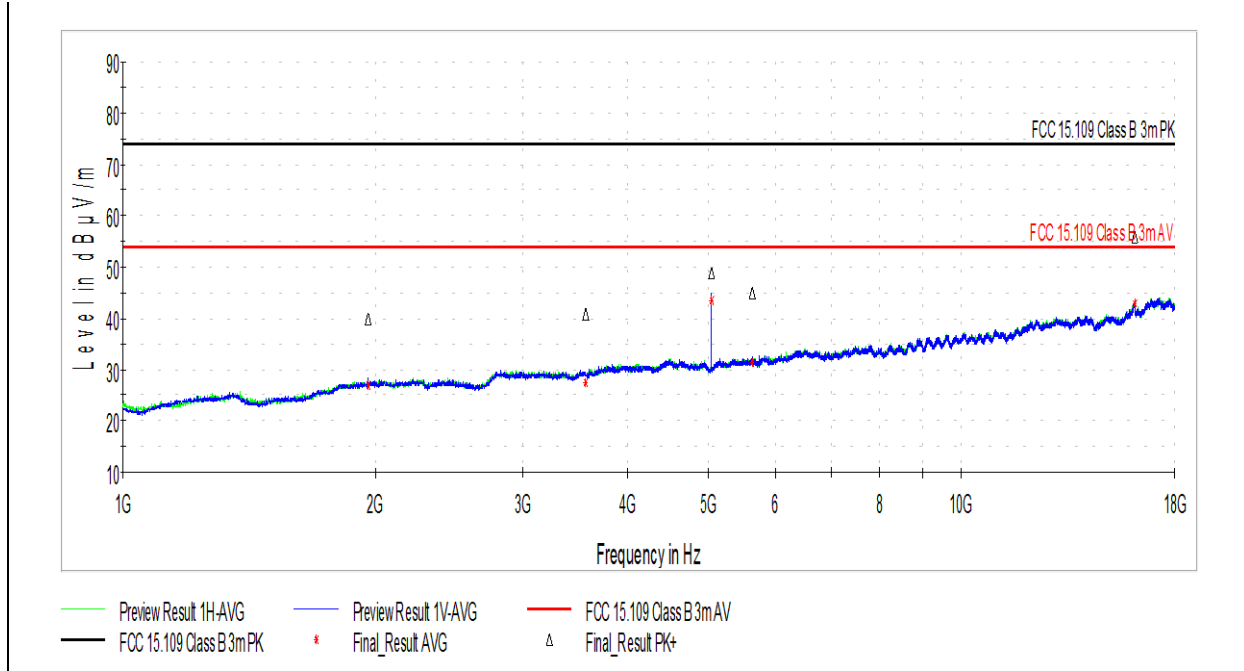
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.886111	23.32	29.55	6.23	120.000	100.3	V	0.0	-9.3
59.840556	18.78	29.55	10.77	120.000	116.7	V	1.0	-21.1
114.531667	16.64	33.10	16.46	120.000	400.0	V	118.0	-16.2
130.301667	16.93	33.10	16.17	120.000	201.9	V	72.0	-15.6
209.771111	10.47	33.10	22.63	120.000	105.9	H	0.0	-18.0
272.188889	14.87	35.55	20.68	120.000	103.7	V	92.0	-14.9
743.632778	26.36	35.55	9.19	120.000	284.4	V	351.0	-4.3

Test Personnel:	<u>Ben Coolbear</u>	Test Date:	<u>12/22/2020</u>
Supervising/Reviewing Engineer:	<u>(Where Applicable) N/A</u>	Limit Applied:	<u>Class B</u>
Product Standard:	<u>FCC Part 15B ICES-003 Issue 7 5VDC via a 120V60Hz AC</u>	Ambient Temperature:	<u>24.1°C</u>
Input Voltage:	<u>Power adapter</u>	Relative Humidity:	<u>29.0 %</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>982.0 mbar</u>

Deviations, Additions, or Exclusions: Note, the limits used above are for FCC Part 15B which are lower and more restrictive than the ICES-003 Issue 7 limits.



**6.12 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)
1961.000000	39.85	73.98	34.13	1000.000	100.0	V	270.0	4.1
3565.000000	40.71	73.98	33.27	1000.000	100.0	V	336.0	7.1
5034.000000	48.77	73.98	25.21	1000.000	200.0	V	178.0	9.3
5630.000000	44.94	73.98	29.04	1000.000	100.0	V	298.0	10.8
16118.000000	55.82	73.98	18.16	1000.000	410.0	H	298.0	25.3

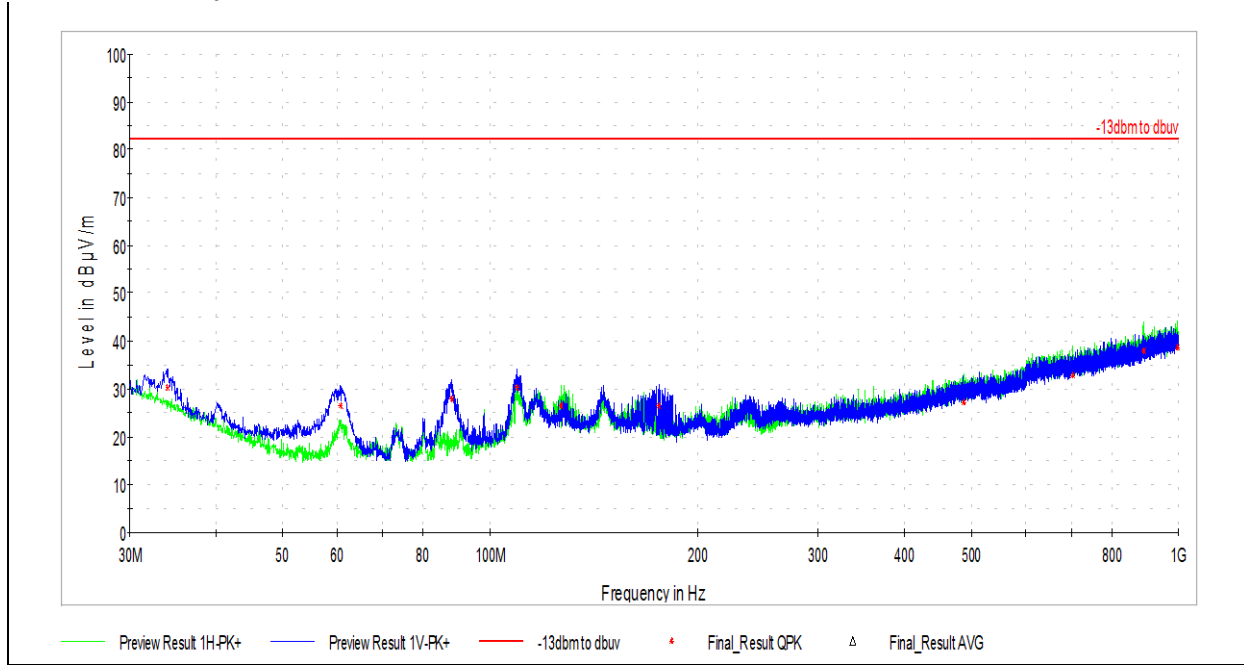
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1961.000000	26.88	53.98	27.10	1000.000	100.0	V	270.0	4.1
3565.000000	27.60	53.98	26.38	1000.000	100.0	V	336.0	7.1
5034.000000	43.56	53.98	10.42	1000.000	200.0	V	178.0	9.3
5630.000000	31.36	53.98	22.62	1000.000	100.0	V	298.0	10.8
16118.000000	42.96	53.98	11.02	1000.000	410.0	H	298.0	25.3

Test Personnel:	<u>Ben Coolbear</u>	Test Date:	<u>12/22/2020</u>
Supervising/Reviewing Engineer:	<u>(Where Applicable) N/A</u>	Limit Applied:	<u>Class B</u>
Product Standard:	<u>FCC Part 15B ICES-003 Issue 7</u>	Ambient Temperature:	<u>24.1°C</u>
Input Voltage:	<u>5VDC via a 120V60Hz AC Power adapter</u>	Relative Humidity:	<u>29.0 %</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>982.0 mbar</u>

Deviations, Additions, or Exclusions: None



### 6.13 Radiated Spurious Emissions (LTE Band 2, 30MHz – 1GHz)



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.041667	30.16	82.25	52.09	120.000	101.8	V	313.0	24.5
60.716667	26.48	82.25	55.77	120.000	105.3	V	204.0	15.0
88.038333	27.88	82.25	54.37	120.000	104.3	V	267.0	16.5
109.432222	30.10	82.25	52.15	120.000	109.6	V	266.0	20.9
126.946111	26.54	82.25	55.71	120.000	399.9	H	28.0	22.0
176.200556	26.56	82.25	55.69	120.000	106.5	V	0.0	20.8
487.355000	27.28	82.25	54.97	120.000	117.8	H	154.0	29.0
702.156111	32.74	82.25	49.51	120.000	212.9	H	226.0	33.0
889.150556	37.98	82.25	44.27	120.000	143.3	H	308.0	36.6
998.167778	38.53	82.25	43.72	120.000	373.3	H	339.0	38.4

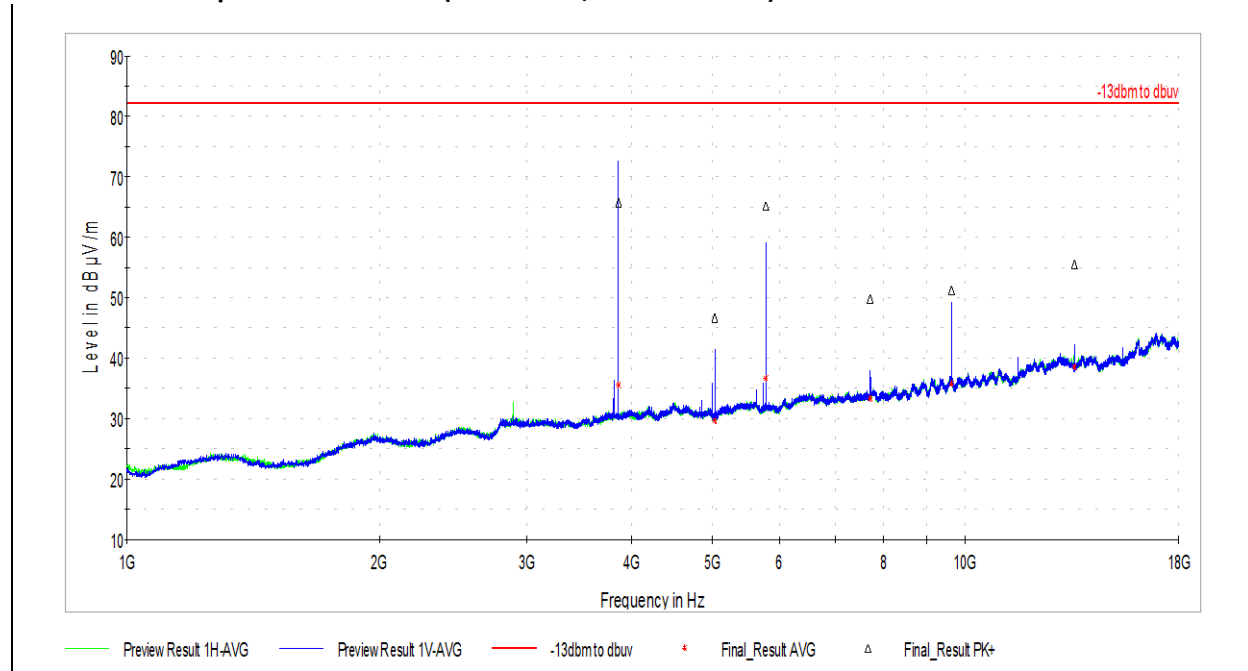
Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) N/A  
 Product Standard: FCC Part 24  
 5VDC via a 120V60Hz AC  
 Input Voltage: Power adapter  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/4/2021  
 Limit Applied: -13dBm to dBuv  
 Ambient Temperature: 22.9°C  
 Relative Humidity: 25.5 %  
 Atmospheric Pressure: 995.59 mbar

Deviations, Additions, or Exclusions: None



**6.14 Radiated Spurious Emissions (LTE Band 2, 1GHz – 18GHz)**



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3856.000000	35.60	82.25	46.65	1000.000	326.0	V	244.0	8.3
5024.000000	29.68	82.25	52.57	1000.000	109.0	V	35.0	9.3
5784.500000	36.72	82.25	45.53	1000.000	109.0	V	123.0	11.2
7712.500000	33.25	82.25	49.00	1000.000	337.0	V	196.0	13.9
9640.500000	35.68	82.25	46.57	1000.000	170.0	V	334.0	16.8
13502.000000	38.58	82.25	43.67	1000.000	306.0	V	108.0	20.6

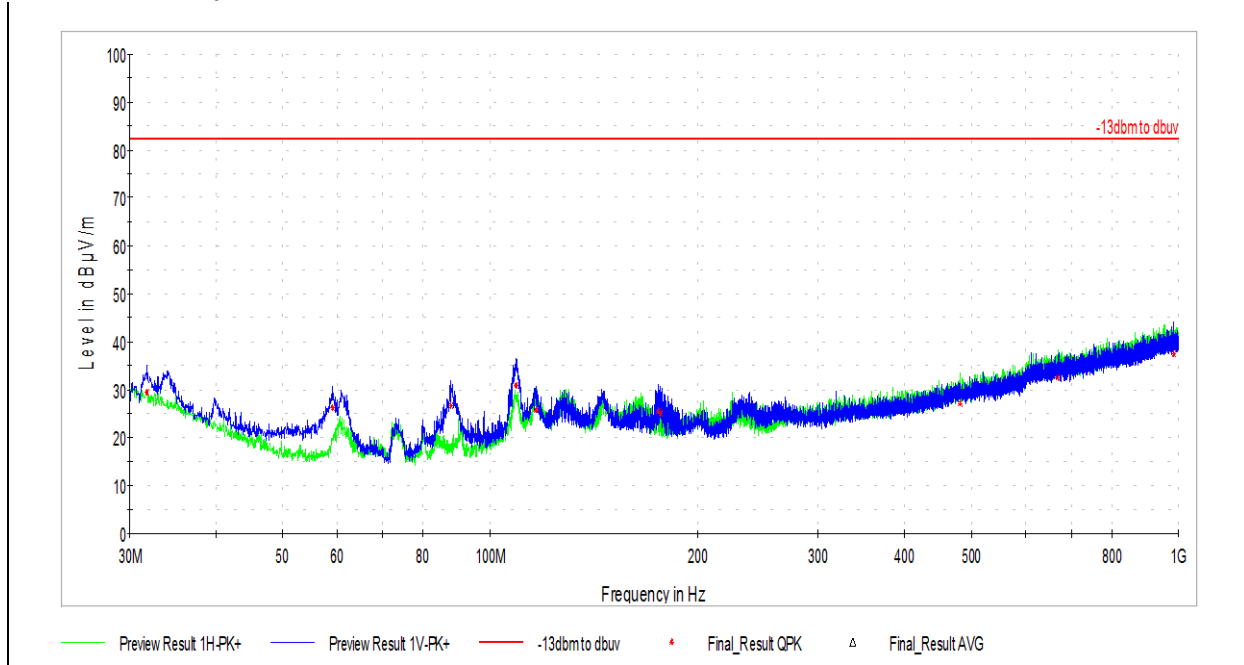
Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: N/A  
 (Where Applicable)  
 Product Standard: FCC Part 24  
5VDC via a 120V60Hz AC  
 Input Voltage: Power adapter  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/4/2021  
 Limit Applied: -13dBm to dBuv  
 Ambient Temperature: 22.9 °C  
 Relative Humidity: 25.5 %  
 Atmospheric Pressure: 995.59 mbar

Deviations, Additions, or Exclusions: None



**6.15 Radiated Spurious Emissions (LTE Band 4, 30MHz – 1GHz)**



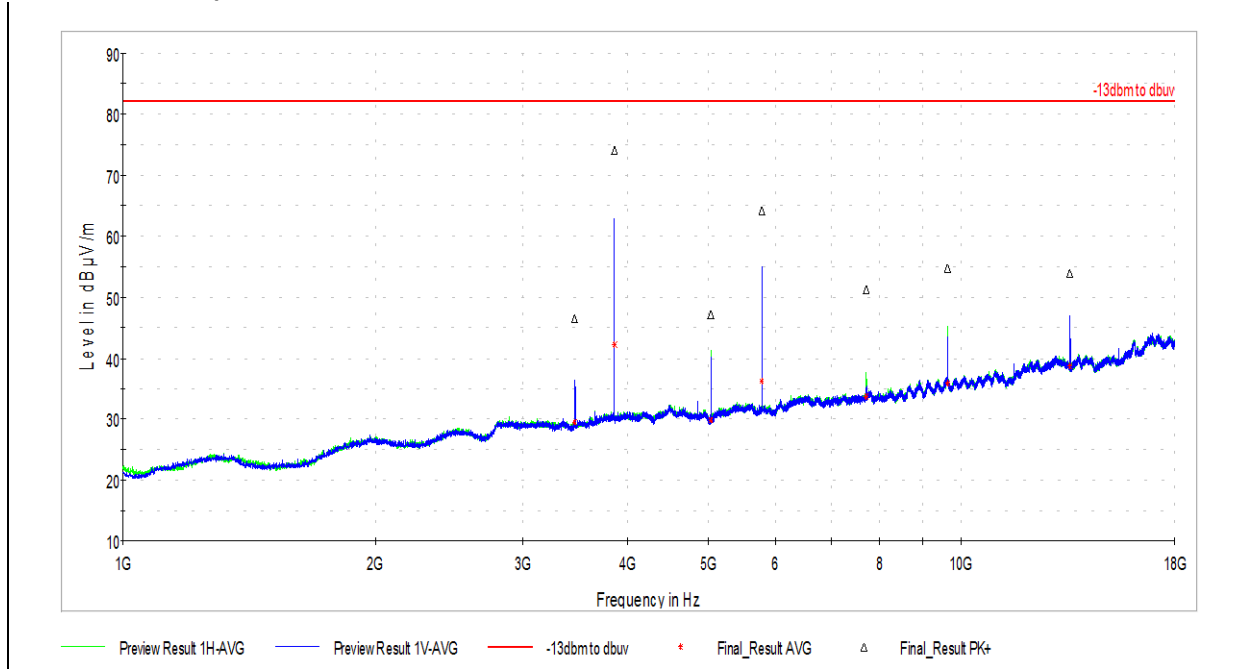
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.778333	29.52	82.25	52.73	120.000	105.6	V	305.0	26.1
59.153889	26.18	82.25	56.07	120.000	101.3	V	195.0	14.9
87.822778	26.65	82.25	55.60	120.000	104.8	V	284.0	16.4
109.162778	30.92	82.25	51.33	120.000	110.8	V	268.0	20.8
116.761111	25.68	82.25	56.57	120.000	105.1	V	264.0	21.8
175.607778	25.43	82.25	56.82	120.000	100.0	V	6.0	20.8
177.062778	25.08	82.25	57.17	120.000	104.7	V	0.0	20.6
481.588889	27.16	82.25	55.09	120.000	384.7	H	341.0	29.0
667.343889	32.55	82.25	49.70	120.000	155.1	H	0.0	32.6
984.749444	37.48	82.25	44.77	120.000	105.2	V	82.0	37.3

Test Personnel:	<u>Ben Coolbear</u>	Test Date:	<u>1/4/2021</u>
Supervising/Reviewing Engineer:	<u>(Where Applicable) N/A</u>	Limit Applied:	<u>-13dBm to dBuv</u>
Product Standard:	<u>FCC Part 27</u>	Ambient Temperature:	<u>22.9 °C</u>
	<u>5VDC via a 120V60Hz AC</u>	Relative Humidity:	<u>25.5 %</u>
Input Voltage:	<u>Power adapter</u>	Atmospheric Pressure:	<u>995.59 mbar</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>		

Deviations, Additions, or Exclusions: None



**6.16 Radiated Spurious Emissions (LTE Band 4, 1GHz – 18GHz)**



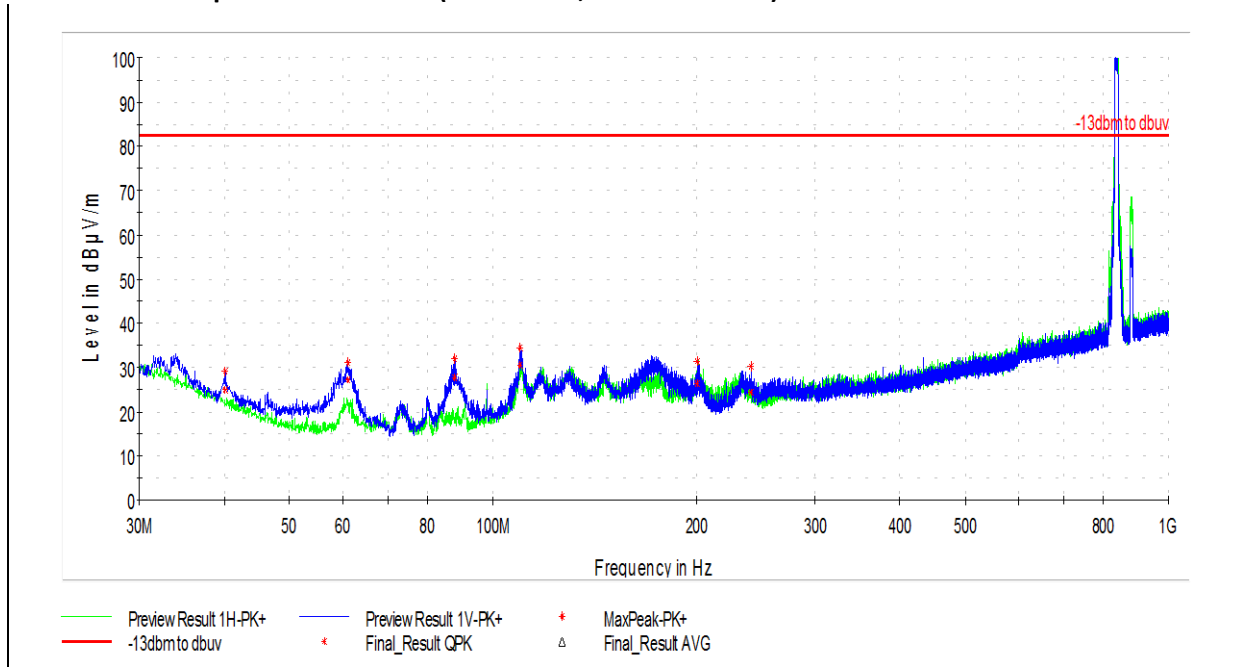
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3460.000000	29.45	82.25	52.80	1000.000	410.0	V	202.0	6.6
3856.500000	42.17	82.25	40.08	1000.000	330.0	V	249.0	8.3
5025.000000	29.82	82.25	52.43	1000.000	100.0	H	166.0	9.3
5784.500000	36.27	82.25	45.98	1000.000	108.0	V	120.0	11.2
7712.500000	33.64	82.25	48.61	1000.000	410.0	H	256.0	13.9
9640.500000	35.91	82.25	46.34	1000.000	108.0	H	298.0	16.9
13496.500000	38.63	82.25	43.62	1000.000	410.0	V	107.0	20.7

Test Personnel:	<u>Ben Coolbear</u>	Test Date:	<u>1/4/2021</u>
Supervising/Reviewing Engineer:	<u>N/A</u>	Limit Applied:	<u>-13dBm to dBuv</u>
(Where Applicable)		Ambient Temperature:	<u>22.9°C</u>
Product Standard:	<u>FCC Part 27</u>	Relative Humidity:	<u>25.5 %</u>
	<u>5VDC via a 120V60Hz AC</u>	Atmospheric Pressure:	<u>995.59 mbar</u>
Input Voltage:	<u>Power adapter</u>		
Pretest Verification w / Ambient			
Signals or BB Source:	<u>Yes</u>		

Deviations, Additions, or Exclusions: None



### 6.17 Radiated Spurious Emissions (LTE Band 5, 30MHz – 1GHz)



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.185000	24.82	82.25	57.43	120.000	101.8	V	250.0	20.1
61.093889	27.14	82.25	55.11	120.000	101.3	V	218.0	15.0
87.822778	27.73	82.25	54.52	120.000	105.5	V	285.0	16.4
109.809445	30.55	82.25	51.70	120.000	105.8	V	274.0	20.9
200.827778	26.41	82.25	55.84	120.000	101.0	V	347.0	22.0
240.867222	24.32	82.25	57.93	120.000	103.3	V	257.0	21.6

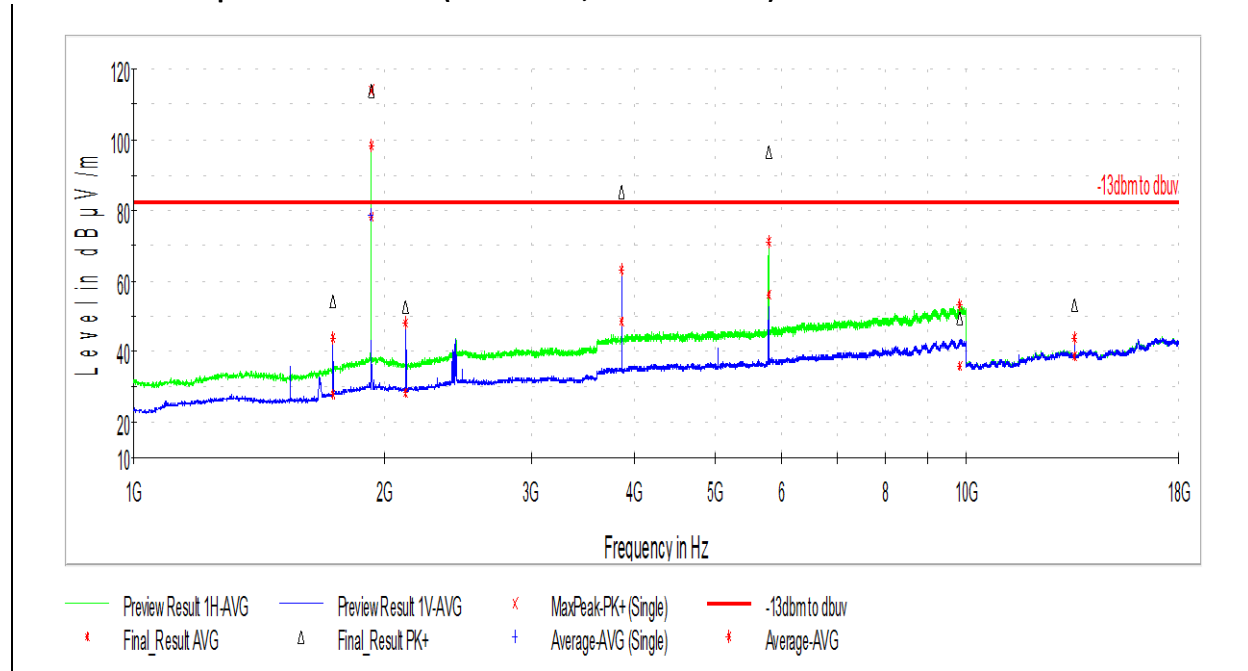
Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) N/A  
 Product Standard: FCC Part 22  
5VDC via a 120V60Hz AC  
 Input Voltage: Power adapter  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/4/2021  
 Limit Applied: -13dBm to dBuv  
 Ambient Temperature: 22.9°C  
 Relative Humidity: 25.5 %  
 Atmospheric Pressure: 995.59 mbar

Deviations, Additions, or Exclusions: None



**6.18 Radiated Spurious Emissions (LTE Band 5, 1GHz – 18GHz)**



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1735.500000	28.05	82.25	54.20	1000.000	329.0	V	0.0	2.2
1928.000000	78.14	82.25	4.11	1000.000	100.0	H	345.0	3.9
2121.000000	28.34	82.25	53.91	1000.000	291.0	V	0.0	3.7
3856.500000	48.57	82.25	33.68	1000.000	336.0	V	124.0	8.3
5786.000000	56.08	82.25	26.17	1000.000	285.0	H	341.0	11.3
9825.000000	35.87	82.25	46.38	1000.000	100.0	H	236.0	17.2
13496.500000	38.53	82.25	43.72	1000.000	410.0	V	290.0	20.7

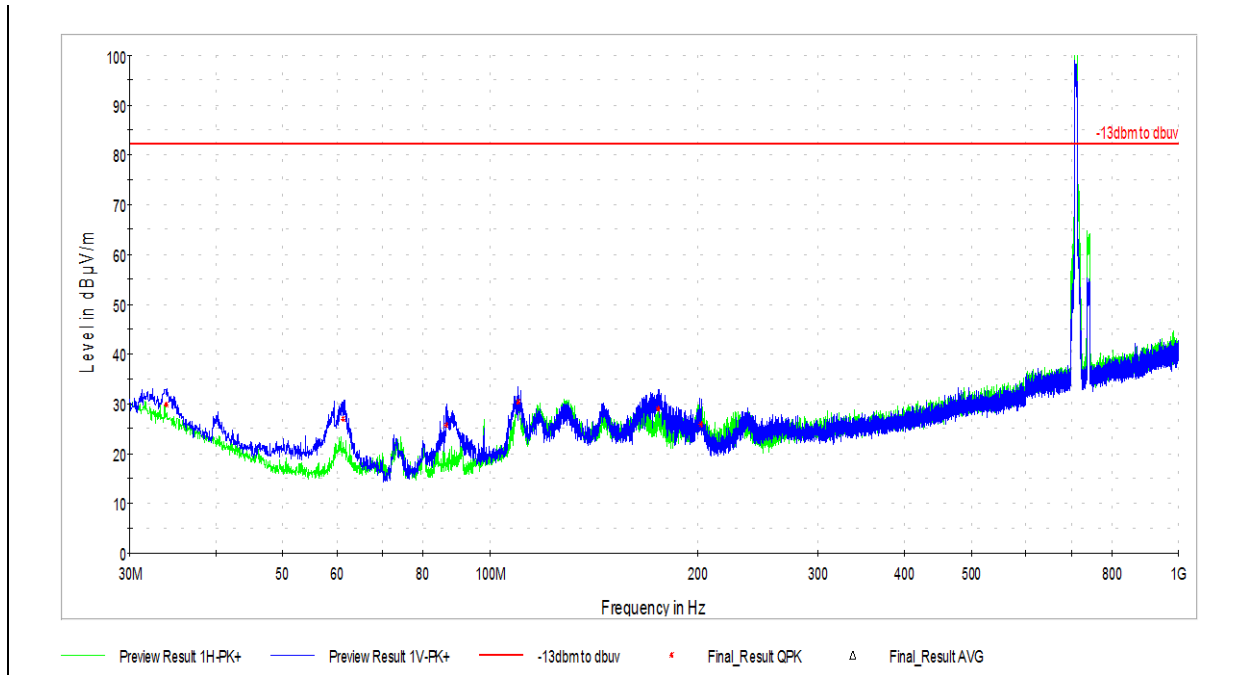
Test Personnel:	<u>Ben Coolbear</u>	Test Date:	<u>1/4/2021</u>
Supervising/Reviewing Engineer:	<u>(Where Applicable) N/A</u>	Limit Applied:	<u>-13dBm to dBuv</u>
Product Standard:	<u>FCC Part 22</u>	Ambient Temperature:	<u>22.9°C</u>
	<u>5VDC via a 120V60Hz AC</u>	Relative Humidity:	<u>25.5 %</u>
Input Voltage:	<u>Power adapter</u>	Atmospheric Pressure:	<u>995.59 mbar</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>		

Deviations, Additions, or Exclusions: None





**6.19 Radiated Spurious Emissions (LTE Band 17, 30MHz – 1GHz)**



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.826111	29.82	82.25	52.43	120.000	101.2	V	286.0	24.7
61.201667	26.81	82.25	55.44	120.000	103.6	V	208.0	15.0
86.529445	25.74	82.25	56.51	120.000	109.0	V	271.0	16.1
109.971111	30.38	82.25	51.87	120.000	105.8	V	267.0	20.9
175.661667	28.87	82.25	53.38	120.000	105.8	V	-1.0	20.8
202.606111	25.95	82.25	56.30	120.000	104.9	V	344.0	22.1

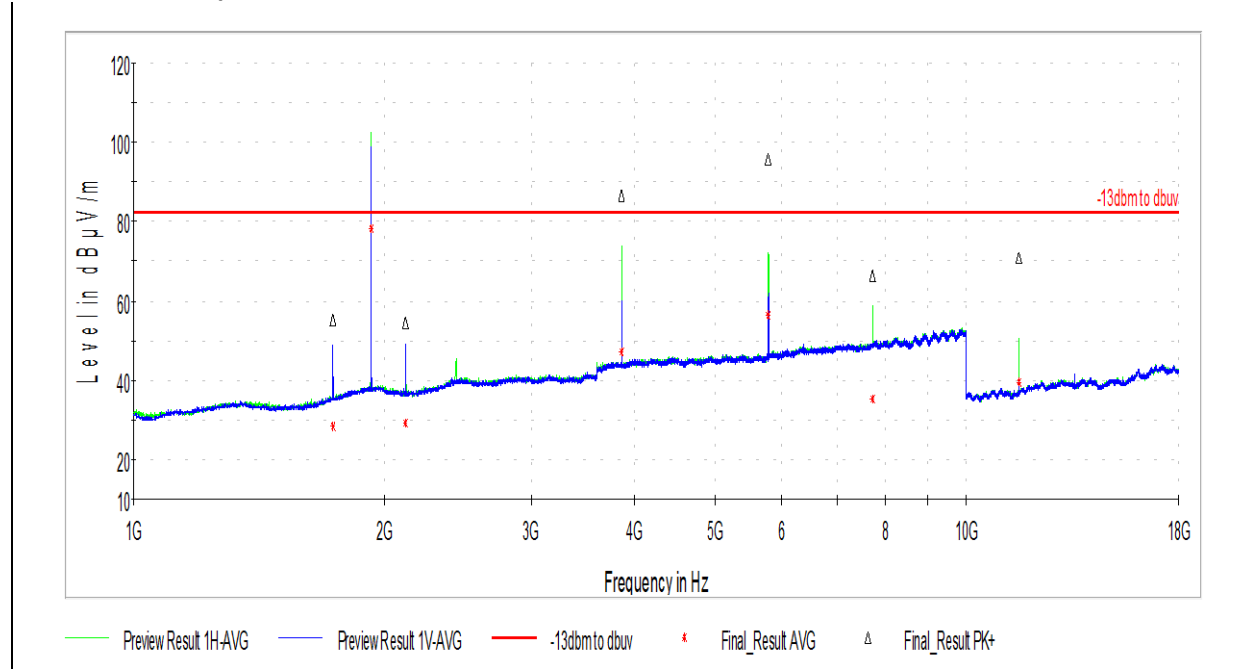
Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) N/A  
 Product Standard: FCC Part 27  
5VDC via a 120V60Hz AC  
 Input Voltage: Power adapter  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/4/2021  
 Limit Applied: -13dBm to dBuv  
 Ambient Temperature: 22.9 °C  
 Relative Humidity: 25.5 %  
 Atmospheric Pressure: 995.59 mbar

Deviations, Additions, or Exclusions: None



**6.20 Radiated Spurious Emissions (LTE Band 17, 1GHz – 18GHz)**



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1735.500000	28.40	82.25	53.85	1000.000	344.0	V	145.0	2.2
1928.000000	78.25	82.25	4.00	1000.000	100.0	H	346.0	3.9
2121.000000	29.20	82.25	53.05	1000.000	410.0	V	160.0	3.7
3857.000000	47.28	82.25	34.97	1000.000	220.0	H	0.0	8.4
5784.500000	56.26	82.25	25.99	1000.000	320.0	H	0.0	11.2
7712.000000	35.44	82.25	46.81	1000.000	100.0	H	322.0	13.9
11572.500000	39.47	82.25	42.78	1000.000	322.0	H	350.0	18.6

Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: N/A  
 (Where Applicable)  
 Product Standard: FCC Part 27  
5VDC via a 120V60Hz AC  
 Input Voltage: Power adapter  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/4/2021  
 Limit Applied: -13dBm to dBuv  
 Ambient Temperature: 22.9°C  
 Relative Humidity: 25.5 %  
 Atmospheric Pressure: 995.59 mbar

Deviations, Additions, or Exclusions: None



## 7 Conducted Emissions

### 7.1 Method

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

**TEST SITE:** Ground Plane

**Site Designation:** Ground Plane

#### Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U <sub>CISPR</sub>
Power Line Conducted Emissions	150 kHz - 30 MHz	3.1dB	3.4dB

As shown in the table above our conducted 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.

### 7.2 Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB $\mu$ V

RF = Reading from receiver in dB $\mu$ V

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

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

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

NF = Net Reading in dB $\mu$ V

#### **Example:**

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 285.1 \mu\text{V/m}$$



### 7.3 Test Equipment Used:

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	2327	Rohde & Schwarz	ES126	10/9/2020	10/9/2021
LISN	2509	Fischer Custom Communication	FCC-LISN-50-50-2M	4/21/2020	4/21/2021
Coaxial Cable (COND 3)	6026			12/21/2020	12/21/2021

### 7.4 Software Utilized:

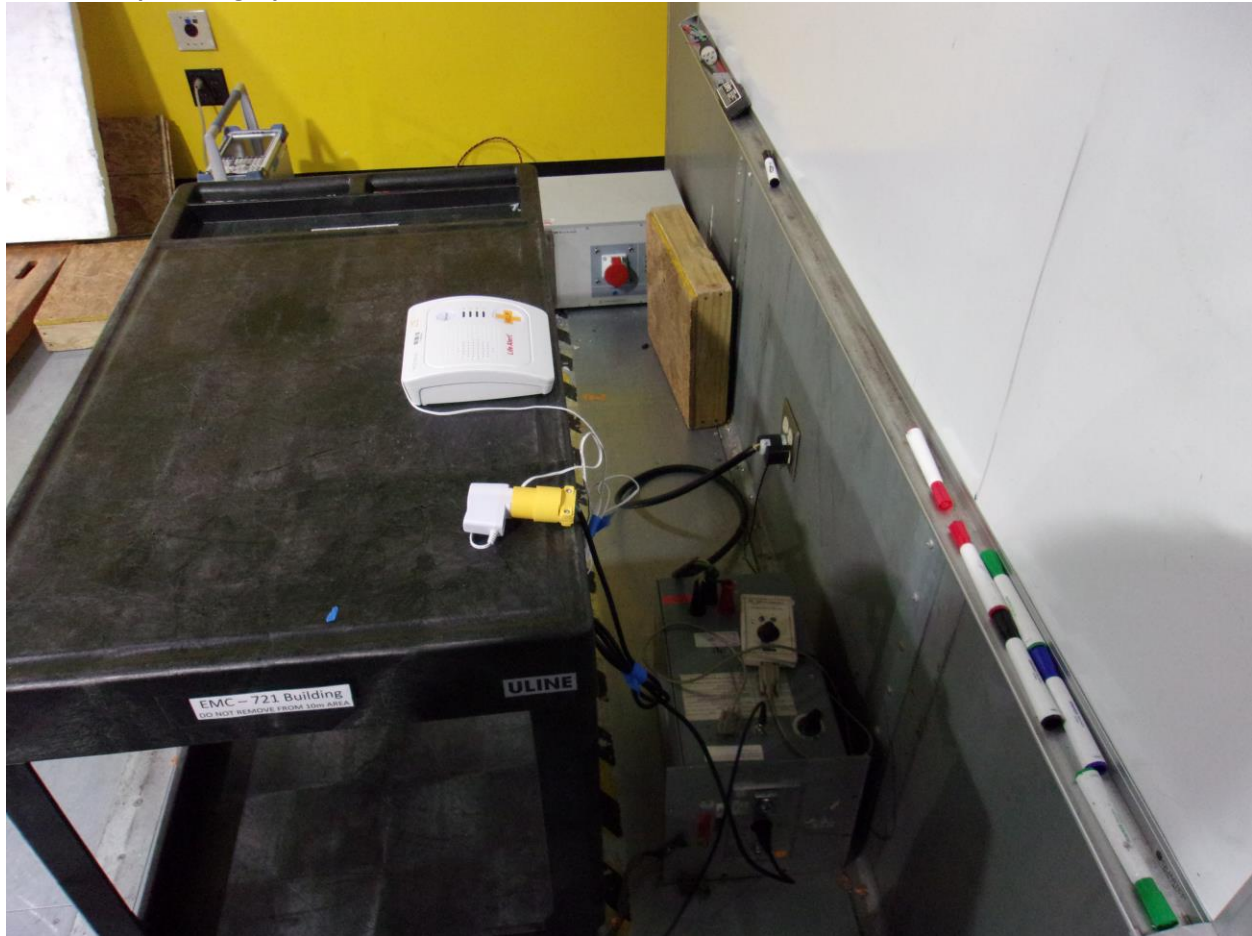
Name	Manufacturer	Version
TILE	ETS Lindgren	V7.0.6.545

### 7.5 Results:

The sample tested was found to Comply.

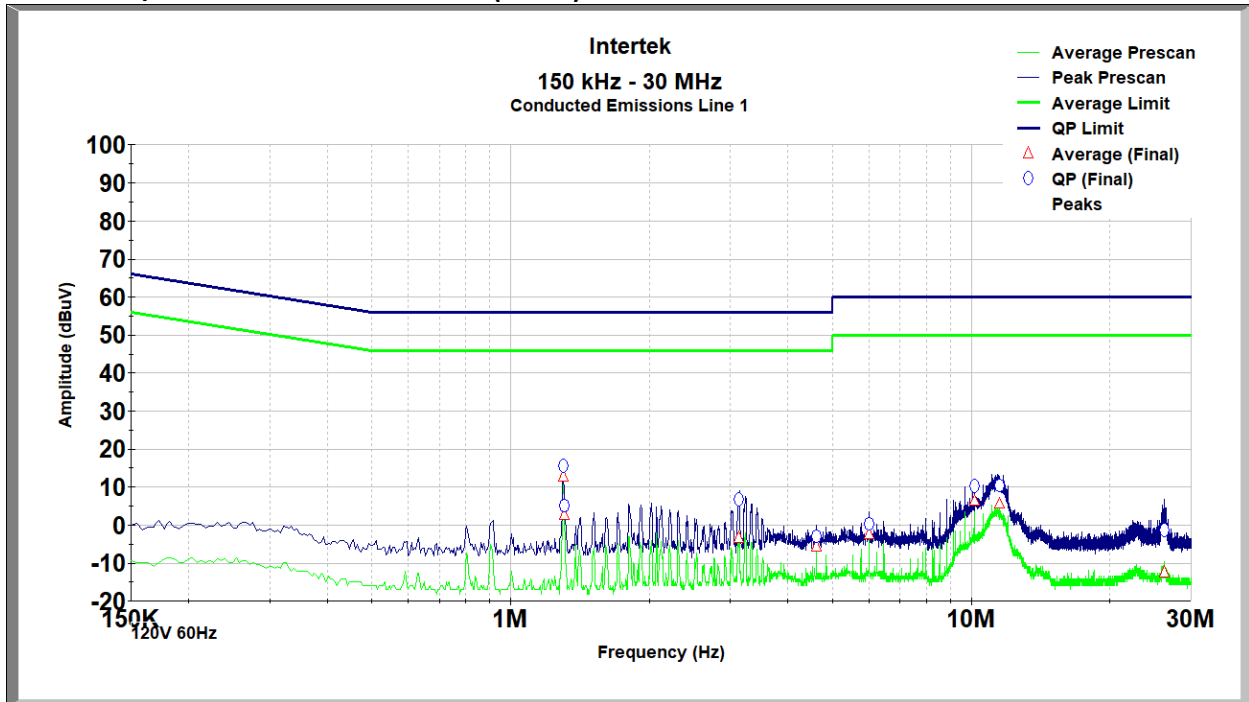


### 7.6 Setup Photographs: Conducted Emissions





7.7 Plots/Data: Conducted Emissions (Line 1)



Frequency (MHz)	Quasi-Peak (dBUV)	Quasi-Peak Limit (dBUV)	Quasi-Peak Margin (dB)	Average (dBUV)	Average Limit (dBUV)	Average Margin (dB)
1.302	15.527	56.000	40.473	12.922	46.000	33.078
1.307	5.257	56.000	50.743	2.766	46.000	43.234
3.135	6.879	56.000	49.121	-3.445	46.000	49.445
4.611	-2.724	56.000	58.724	-5.555	46.000	51.555
5.997	0.584	60.000	59.416	-2.341	50.000	52.341
10.145	10.337	60.000	49.663	6.408	50.000	43.592
11.531	10.570	60.000	49.430	5.792	50.000	44.208
26.230	-1.400	60.000	61.400	-12.432	50.000	62.432

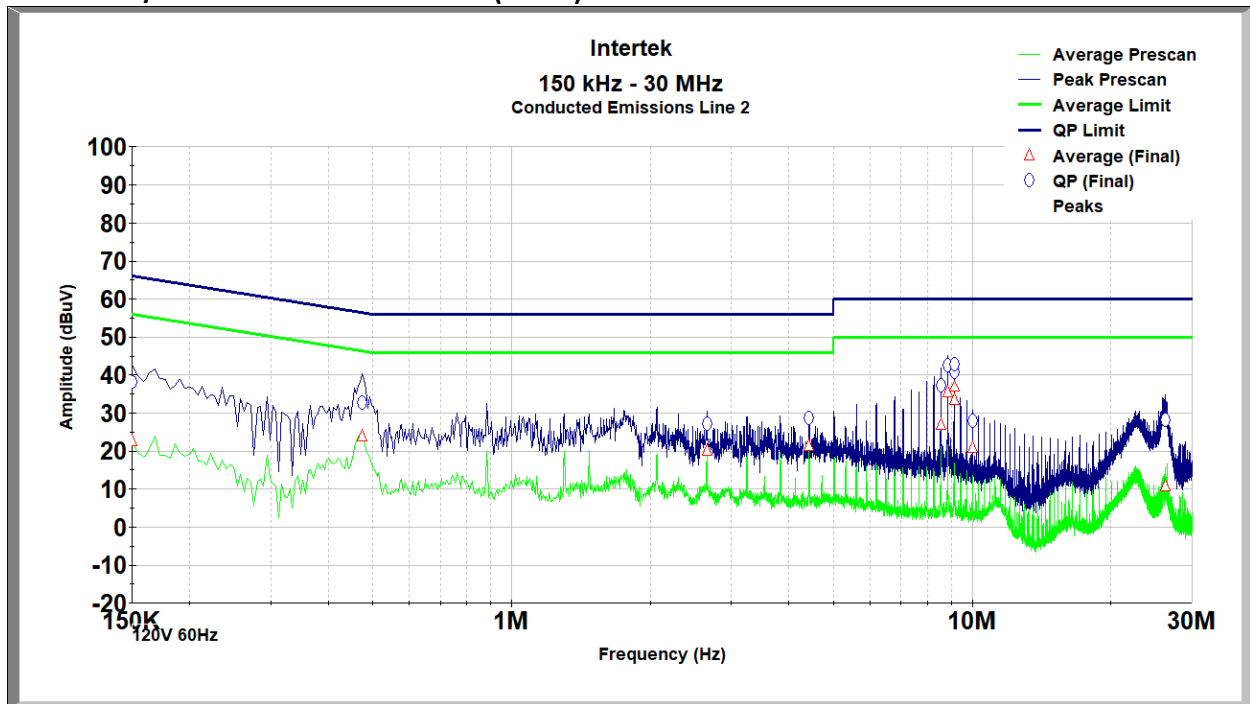
Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: N/A  
 (Where Applicable) FCC Part 15B  
 Product Standard: ICES-003 Issue 7  
 5VDC via a 120V60Hz AC  
 Input Voltage: Power adapter  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/8/2021  
 Limit Applied: Class B  
 Ambient Temperature: 23.2 °C  
 Relative Humidity: 32.9 %  
 Atmospheric Pressure: 982.05 mbar

Deviations, Additions, or Exclusions: None



7.8 Plots/Data: Conducted Emissions (Line 2)



Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Margin (dB)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)
0.150	38.427	66.000	27.573	22.589	56.000	33.411
0.474	32.637	56.743	24.105	23.806	46.743	22.937
2.652	27.222	56.000	28.778	20.226	46.000	25.774
4.422	28.633	56.000	27.367	21.347	46.000	24.653
8.546	37.375	60.000	22.625	26.853	50.000	23.147
8.842	42.642	60.000	17.358	35.549	50.000	14.451
9.136	40.826	60.000	19.174	33.590	50.000	16.410
9.141	42.871	60.000	17.129	36.983	50.000	13.017
10.023	28.037	60.000	31.963	20.899	50.000	29.101
26.235	28.130	60.000	31.870	10.717	50.000	39.283

Test Personnel: Ben Coolbear  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) N/A  
 Product Standard: FCC Part 15B  
 ICES-003 Issue 7  
 5VDC via a 120V60Hz AC  
 Power adapter  
 Input Voltage: \_\_\_\_\_  
 Pretest Verification w / Ambient Signals or BB Source: Yes

Test Date: 1/8/2021  
 Limit Applied: Class B  
 Ambient Temperature: 23.2 °C  
 Relative Humidity: 32.9 %  
 Atmospheric Pressure: 982.05 mbar

Deviations, Additions, or Exclusions: None



## 8 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	3/11/2021	104539488LEX-001	<i>JB</i>	<i>BCT</i>	Original Issue
1	11/4/2021	104539488LEX-001.4	<i>JB</i>	<i>BCT</i>	Included notes that the DECT radio was active and transmitting during the radiated spurious emission tests.  Updated the ICES-003 version to Issue 7.